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000001 A 1 VORTEX SET 1 PUT LAST FOR VORTEX 01 00001
000001 A 2 V75 SET 1 V75 *****
3 *THIS IS A COPYRIGHTED PROGRAM. COPYRIGHT 1972 BY VARIAN DATA MACHINV2 01 00002
4 * 01 00003
5 * V.D.M. PART NO. 92L0205-020C 01 00004
6 * 01 00005
7 * 01 00006
8 * 01 00007
9 * 01 00008
10 * 01 00009
11 * 01 00010
12 * TITLE V$SNAP 01 00011
13 * 01 00012
14 * SNAP 01 00013
15 * 01 00014
16 * THIS IS THE SNAPSHOT ROUTINE. 01 00015
17 * 01 00016
18 * ENTER VIA CALL SNAP 01 00017
19 * DATA START ADDRESS OF DUMP LOCATION 01 00018
20 * DATA END ADDRESS OF DUMP LOCATION 01 00019
21 * DATA TIDB DUMP FLAG C 01 00020
22 * NEG IF TIDB DUMP REQUESTED C 01 00021
23 * POS IF NU TIDB DUMP C 01 00022
24 * 01 00023
25 * IF START ADDRESS CONTAINS A NEGATIVE VALUE NO DUMP 01 00024
26 * IS MADE. 01 00025
27 * 01 00026
28 * 01 00027
29 * 01 00028
30 * 01 00029
31 * SN** TASK NAME FOLLOWED BY FIRST ALLOCATABLE LOCATION 01 00030
32 * THEN FOLLOWED BY DUMP REQUEST. 01 00031
33 * EXAMPLE: 01 00032
34 * 01 00033
35 * SN** TEST01 001000 01 00034
36 * 001200 005000 017660 017662 000001 01 00035
37 * TIDB LOC 55000 -CONTENTS: (IF REQUESTED) C 01 00036
38 * DUMP OF TIDB CONTENTS C 01 00037
39 * SNAP DUMP C 01 00038
40 * DUMP OF SNAP AREA C 01 00039
41 * 01 00040
42 * WHERE SNAP LOCATION = 001200 01 00041
43 * A REGISTER = 005000 01 00042
44 * B REGISTER = 017660 01 00043
45 * X REGISTER = 017662 01 00044
46 * OVERFLOW = 000001 (DN) 01 00045
47 * TIDB LOCATION = 055000 C 01 00046
48 * 01 00047
49 * 01 00048
50 * 01 00049
51 * 01 00050
000000 A 52 W EQU 0 WAIT 01 00051
000001 A 53 NW EQU 1 NO WAIT 01 00052
000300 A 54 LC EQU 0300 01 00053
000300 A 55 V$CTL EQU LC 01 00054
000420 A 56 MT EQU 0420 01 00055
000422 A 57 TWO EQU MT+2 01 00056
000011 A 58 TWENTY EQU 2 V2 01 00057
000424 A 59 BS3 EQU MT+4 V2 01 00058
000425 A 60 BS4 EQU MT+5 V2 01 00059
000467 A 61 SEVEN EQU MT+39 V2 01 00060
000022 A 62 TBKN1 EQU 18 TASK NAME 01 00061
000023 A 63 TBKN2 EQU 19 01 00062
000024 A 64 TBKN3 EQU 20 01 00063
000025 A 65 TLTLC EQU 21 01 00064
000421 A 66 BCO EQU MT+1 V75 *****
000002 A 67 TB75 EQU 2 V75 *****
000016 A 68 TB75B EQU 14 V75 *****
000001 A 69 TB75Z EQU 1 V75 *****
70 IFT V75-1 V75 *****
71 GOTO 1 V75 *****
72 * TEST BI MACRO V75 *****
73 TESTF MAC V75 *****
74 LDA P(2),P(1) PICK UP WORD CONTAINING V75 *****
75 ANA BSO+P(3) V75 *****
76 EMAC V75 *****
77 * SAVE AND RESTORE V75 REG V75 *****
78 SAVE75 MAC V75 *****
79 ST,3 P(1) V75 *****
80 ST,4 P(2) V75 *****
81 ST,5 P(3) V75 *****
82 ST,6 P(4) V75 *****
83 ST,7 P(5) V75 *****
84 EMAC V75 *****
85 LOAD75 MAC V75 *****
86 LD,3 P(1) V75 *****
87 LD,4 P(2) V75 *****
88 LD,5 P(3) V75 *****
89 LD,6 P(4) V75 *****
90 LD,7 P(5) V75 *****
91 EMAC V75 *****
92 1 CNT V75 *****
000000 000000 A 93 SNAP ENTR 01 00065

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Address	Op	Op	Op	Op	Op	Op	Op
000001	054564	A	94	STA	AP	SAVE A,B,X REGISTERS.	01 00066
000002	064564	A	95	STB	BP		01 00067
000003	074564	A	96	STX	XP		01 00068
000004	005001	A	97	TZA			01 00069
000005	005511	A	98	ADFA		SAVE OVERFLOW	01 00070
000006	054562	A	99	STA	OP		01 00071
			100	IFT	VORTEX-2		V2 01 00072
			101	GOTO	ENDC01		V2 01 00073
			102	LDX	BS4		V2 01 00074
			103	TZA		CLEAR FIRST 16 LOC OF SNBUF	V2 01 00075
			104	SCL STAE	SNBUF,X		V2 01 00076
			105	DXR			V2 01 00077
			106	JXNZ	SCL		V2 01 00078
			107	LDA	V\$CTL	GET TIDB ADDR.	V2 01 00079
			108	STA	P2	STORE ADDR. IN PASS CALL	V2 01 00080
			109	ANA	SEVEN		V2 01 00081
			110	STA	P1+1	SAVE LAST DIGIT OF TIDB ADDR.	V2 01 00082
			111	LDAI	SNBUF	NOW SNBUF AT XXXXX0 ADDR.	V2 01 00083
			112	ANAI	0177770		01 00084
			113	ADD	BS3	010	V2 01 00085
			114	STA	SNAPA	SAVE FOR DUMP	01 00086
			115	P1 DRAI	0	PASS RELATIVE TO LAST DIGIT OF	V2 01 00087
			116	STA	P2+1	TIDB FOR DUMP	V2 01 00088
			117	SPAC			V2 01 00089
			118	PASS	37,*-*,SNBUF		V75*****
			119	P2 EQU	*-2		V2 01 00091
			120	SPAC			V2 01 00092
			121	LDXE	P2+1	GET ADDR WHERE TIDB WAS PASSED	V2 01 00093
			122	LDA	TBKN1,X	STORE TASK NAME FROM TIDB	V2 01 00094
			123	STA	SNM1		V2 01 00095
			124	LDA	TBKN2,X		V2 01 00096
			125	STA	SNM1+1		V2 01 00097
			126	LDA	TBKN3,X		V2 01 00098
			127	STA	SNM1+2		V2 01 00099
			128	IFT	V75-1		V75*****
			129	GOTO	2		V75*****
			130	*		TEST IF A V75 MACHINE	V75*****
			131	LDA	TB75,X	V75 FLAG IN TIDB	V75*****
			132	ANAI	040000		V75*****
			133	STAE	V75FLG	SET/RESET V75 FLAG	V75*****
			134	2 CONT			V75*****
			135	LDB	TBENTY,X	DISPLAY TBENTY AS START LOC.	V2 01 00100
			136	ENDC01 CONT			V2 01 00101
			137	IFT	VORTEX-2		V2 01 00102
			138	GOTO	ENDC02		V2 01 00103
			139	LDB	V\$CTL	CURRENT TASK TIDB	01 00104
000007	020300	A	140	LDA	TBKN1,B		01 00105
000010	016022	A	141	STA	SNM1		01 00106
000011	054437	A	142	LDA	TBKN2,B	STORE TASK NAME	01 00107
000012	016023	A	143	STA	SNM1+1		01 00108
000013	054436	A	144	LDA	TBKN3,B		01 00109
000014	016024	A	145	STA	SNM1+2		01 00110
000015	054435	A	146	IFT	V75-1		V75*****
			147	GOTO	3		V75*****
			148	TESTF	B,TB75,TB75B,TB752		V75*****
000016	016002	A					
000017	150437	A					
000020	006057	A	149	STAE	V75FLG		V75*****
000021	000577	R					
			150	3 CONT			V75*****
000022	026011	A	151	LDB	TBENTY,B		V2 01 00111
			152	ENDC02 CONT			V2 01 00112
			153	IFT	V75-1		V75*****
			154	GOTO	4		V75*****
			155	*		SAVE V75 REGISTERS	V75*****
000023	006017	A	156	LDAE	V75FLG		V75*****
000024	000577	R					
000025	001010	A	157	JAZ	EEE	JMP IF NOT V75	V75*****
000026	000041	R	158	SAVE75	R3P,R4P,R5P,R6P,R7P		V75*****
000027	007130	A					
000030	000572	R					
000031	007140	A					
000032	000573	R					
000033	007150	A					
000034	000574	R					
000035	007160	A					
000036	000575	R					
000037	007170	A					
000040	000576	R					
	000041	R	159	EEE	*		V75*****
			160	4 CONT			V75*****
000041	006030	A	161	LDXI	SNM2	BUFFER ADDR	01 00113
000042	000455	R					
000043	002000	A	162	CALL	CONV	CONVERT/STORE FIRST ALLOCATABLE LOC.	01 00114
000044	000347	R					
000045	005144	A	163	IXR			01 00115
000046	005027	A	164	LDSE	SNAP	X=SNM3+1.NOW GET SNAP LOCATION	01 00116
000047	000000	R					
000050	005322	A	165	DBR			01 00117
000051	005322	A	166	DBR			01 00118
000052	002000	A	167	CALL	CONV		01 00119
000053	000347	R					

E.2 VORTEX LISTING

V\$SNAP

PROGRAM PAGE 3

LISTING PAGE (413)

000054	024511	A	168	LDB	AP		X=SNM4.NOW GET A REGISTER CONTENT	01	00120
000055	002000	A	169	CALL	CONV			01	00121
000056	000347	R							
000057	024507	A	170	LDB	BP		X=SNM5.NOW GET B REGISTER CONTENT	01	00122
000060	002000	A	171	CALL	CONV			01	00123
000061	000347	R							
000062	024505	A	172	LDB	XP		X=SNM6.NOW GET X REGISTER CONTENT	01	00124
000063	002000	A	173	CALL	CONV			01	00125
000064	000347	R							
000065	024503	A	174	LDB	OP		X=SNM7.NOW GET OVERFLOW INDICATOR	01	00126
000066	002000	A	175	CALL	CONV			01	00127
000067	000347	R							
			176	SN01	WRITE	SNDCB,DD,0,0	OUTPUT MESSAGE. DD=LOGICAL UNIT,NO-WAIT	01	00128
000070	006505	A							
000071	000000	E							
000072	100000	A							
000073	000414	A							
000074	000442	R							
000075	000000	A							
000076	000000	A							
			177	IFT	V75-1			V75	*****
			178	GOTO	5			V75	*****
			179	*		PRINT	V75 REGISTERS	V75	*****
000077	014477	A	180	LDA	V75FLG			V75	*****
000100	001010	A	181	JAZ	SN12	JMP IF NOT A	V75	V75	*****
000101	000132	R							
000102	006030	A	182	LDXI	SNR3			V75	*****
000103	000506	R							
000104	024465	A	183	LDB	R3P			V75	*****
000105	002000	A	184	CALL	CONV	R3		V75	*****
000106	000347	R							
000107	024463	A	185	LDB	R4P	R4		V75	*****
000110	002000	A	186	CALL	CONV			V75	*****
000111	000347	R							
000112	024461	A	187	LDB	R5P	R5		V75	*****
000113	002000	A	188	CALL	CONV			V75	*****
000114	000347	R							
000115	024457	A	189	LDB	R6P	R6		V75	*****
000116	002000	A	190	CALL	CONV			V75	*****
000117	000347	R							
000120	024455	A	191	LDB	R7P	R7		V75	*****
000121	002000	A	192	CALL	CONV			V75	*****
000122	000347	R							
			193	WRITE	SNDCBR,DD,W,1	PRINT REGISTERS R3-R7		V75	*****
000123	006505	A							
000124	000071	E							
000125	100000	A							
000126	010414	A							
000127	000536	R							
000130	000000	A							
000131	000000	A							
	000132	R							
			194	SN12	EQU	*		V75	*****
			195	5	CONT			V75	*****
000132	006027	A	196	LDDB	SNAP			C	01 00129
000133	000000	R							
000134	016002	A	197	LDA	2,B	TIDB DUMP FLAG		C	01 00130
000135	001002	A	198	JAP	SN03	JUMP IF NOT SET		C	01 00131
000136	000206	R							
000137	020300	A	199	LDB	0300	CURRENT TIDB LOCATION			01 00132
000140	006030	A	200	LDXI	TIDB+5				01 00133
000141	000542	R							
000142	002000	A	201	CALL	CONV	STORE IN HEADER			01 00134
000143	000347	R							
			202	WRITE	STIDB,DD,0,1	OUTPUT TIDB HEADER			01 00135
000144	006505	A							
000145	000124	E							
000146	100000	A							
000147	010414	A							
000150	000532	R							
000151	000000	A							
000152	000000	A							
000153	010300	A	203	LDA	0300				01 00136
000154	005014	A	204	TAX					01 00137
000155	001004	A	205	JAN	SN03	IF IN DISPATCHER			01 00138
000156	000206	R							
000157	006140	A	206	SUBI	027				01 00139
000160	000037	A							
000161	001010	A	207	JAZ	SN03	IF IN REAL TIME CLOCK			01 00140
000162	000206	R							
			208	IFT	VORTEX-1	GO TO 1 IF VORTEX II		E.2	*****
			209	GOTO	1			E.2	*****
000163	005041	A	210	TXA		TIDB LOCATION		E.2	*****
000164	006150	A	211	ANAI	017770	SET TO DUMP BOUNDARY		E.2	*****
000165	177770	A							
000166	054053	A	212	STA	SNAPA	SET START DUMP ADDR		E.2	*****
			213	1	CONT			E.2	*****
			214	IFT	V75-1			V75	*****
			215	GOTO	SN133			V75	*****
000167	014407	A	216	LDA	V75FLG			V75	*****
000170	001010	A	217	JAZ	SN133			V75	*****
000171	000177	R							
000172	014047	A	218	LDA	SNAPA			V75	*****
000173	006120	A	219	ADDI	36			V75	*****

Address	Code	Label	Op	Op	Op	Op	Op	Op	Op
000174	000044	A							
000175	001000	A	220	JMP	SN144				V75*****
000176	000202	R							
	000177	R	221	SN133	EQU	*			V75*****
000177	014042	A	222		LDA	SNAPA	SNBUF = XXXXX0 ADDR		V2 01 00143
000200	006120	A	223		ADDI	28			V2 01 00144
000201	000034	A							
	000202	R	224	SN144	EQU	*			V75*****
000202	005012	A	225		TAB				V2 01 00145
000203	014036	A	226		LDA	SNAPA	SNBUF ADDR. RELATIVE TO TIDB LAST DGT		V2 01 00146
000204	002000	A	227		CALL	SNAPA	OUTPUT CONTENTS		01 00148
000205	000242	R							
	000206	R	228	SN03	EQU	*			01 00150
000206	006027	A	229		LDBE	SNAP			01 00151
000207	000000	R							
000210	005021	A	230		TBA				01 00152
000211	006120	A	231		ADDI	3			C 01 00153
000212	000003	A							
000213	054025	A	232		STA	SNEXIT+1	RETURN ADDR.		01 00154
000214	016000	A	233		LDA	0,B	START ADDR.		01 00155
000215	001004	A	234		JAN	SN04	NEGATIVE NO DUMP		01 00156
000216	000231	R							
			235		WRITE	SNOMP,00,0,1	OUTPUT DUMP HEADER		E.2*****
000217	006505	A							
000220	000145	E							
000221	100000	A							
000222	010414	A							
000223	000553	R							
000224	000000	A							
000225	000000	A							
			236		IFF	VORTEX-2			01 00157
			237		TZX				V2 01 00158
000226	026001	A	238		LDB	1,B	B=END ADDR.		01 00159
000227	002000	A	239		CALL	SNAPA	DUMP		01 00160
000230	000242	R							
	000231	R	240	SN04	EQU	*			01 00161
000231	007401	A	241		SDF				01 00162
000232	014336	A	242		LDA	BP	GET OVERFLOW		01 00163
000233	001011	A	243		JIF	011,*+2	RESET OVERFLOW IF A=0		01 00164
000234	000235	R							
000235	014330	A	244		LDA	AP			01 00165
000236	024330	A	245		LDB	BP	RESTORE A,B,X AND OVERFLOW		01 00166
000237	034330	A	246		LDX	XP			01 00167
000240	001000	A	247	SNEXIT	JMP	*	NOW RETURN		01 00163
000241	000240	R							
000242	000000	A	248	SNAPA	ENIR		SUBROUTINE TO DUMP MEMORY		01 00169
000243	004343	A	249		LSRA	3	A= STARTING ADDR		01 00170
000244	001010	A	250		JAZ	*+4	JMP IF 0		V2 01 00171
000245	000250	R							
000246	005311	A	251		DAR		B= END ADDR		01 00172
000247	004203	A	252		ASLA	3			01 00173
000250	054121	A	253		STA	ADDR			01 00174
			254		IFT	VORTEX-2			01 00175
			255		GOTO	S1			01 00176
			256		ADD	DE			V2 01 00177
			257		STA	SADDR	SAVE DUMP ADDR.		V2 01 00178
			258		JXZ	SNP1			V2 01 00179
			259		TXA				V2 01 00180
			260		ANAI	0177770	START AT 0		V2 01 00181
			261		STA	SADDR			V2 01 00182
			262	SNP1	EQU	*			V2 01 00183
			263	S1	CONT				V2 01 00184
000251	064121	A	264		STB	ADDR+1			01 00185
000252	005101	A	265		INCR	1			01 00186
000253	054113	A	266		STA	ZFLG+1	RESET SKIP LINE FLAG		01 00187
	000254	R	267	DMPA	EQU	*			01 00188
000254	014115	A	268		LDA	ADDR			01 00189
000255	124112	A	269		ADD	DE	=8		01 00190
			270		IFT	VORTEX-2			01 00191
000256	005012	A	271		TAB				01 00192
000257	144113	A	272		SUB	ADDR+1	END OF DUMP?		01 00193
000260	001002	A	273		JAP*	SNAPA			01 00194
000261	100242	R							
			274		IFF	VORTEX-2			01 00195
			275		LDB	SADDR	GET PRINT ADDR.		V2 01 00196
000262	034060	A	276		LDX	AEUF			01 00197
000263	002000	A	277		CALL	CONV	CONVERT ADDR		01 00198
000264	000347	R							
000265	064100	A	278		STB	ZFLG	B=0. RESET LINE COMPARE WORD		01 00199
000266	024103	A	279	DMPB	LDB	ADDR			01 00200
000267	016010	A	280		LDA	S+2			01 00201
000270	136000	A	281		ERA	0,2	COMPARE LINE WITH PREVIOUS WORD		01 00202
000271	114074	A	282		DRA	ZFLG			01 00203
000272	054073	A	283		STA	ZFLG			01 00204
000273	026010	A	284		LDB	S+2	GET DATA WORD		01 00205
000274	044075	A	285		INR	ADDR	INCREMENT ADDR.		01 00206
			286		IFF	VORTEX-2			01 00207
			287		INR	SADDR			V2 01 00208
			288		CALL	CONV	CONVERT DATA WORD		01 00209
000275	002000	A							
000276	000347	R							
000277	006140	A	289		SUBI	BUF+36			01 00210
000300	000441	R							
000301	001004	A	290		JAN	DMPB	END OF LINE		01 00211

Address	Hex	Op	Label	Comments	Page	Line
000302	000266	R				
000303	024062	A	291	LDB ZFLG		01 00212
000304	014062	A	292	LDA ZFLG+1	CHECK SKIP LINE FLAGS	01 00213
000305	001030	A	293	JIF 030,DMPA	SKIP IDENTICAL LINES	01 00214
000306	000254	R				
000307	001024	A	294	JIF 024,ZLIN	PRINT MARK FOR SKIPPED LINES	01 00215
000310	000323	R	295	WRITE SNMDCB,DO,W,0	OUTPUT LINE, WAIT	01 00216
000311	006505	A				
000312	000220	E				
000313	100000	A				
000314	000414	A				
000315	000335	R				
000316	000000	A				
000317	000000	A				
000320	005301	A	296	DECR 1	SET PREVIOUS LINE PRINTED FLAG	01 00217
000321	001000	A	297	JMP DMPA-1		01 00218
000322	000253	R	298	ZLIN WRITE SNADCB,DO,NH,0	OUTPUT * FOR SKIPPED LINES	01 00219
000323	006505	A				
000324	000312	E				
000325	100000	A				
000326	100414	A				
000327	000340	R				
000330	000000	A				
000331	000000	A				
000332	005001	A	299	TZA		01 00220
000333	001000	A	300	JMP DMPA-1		01 00221
000334	000253	R	301	SNMDCB DCB 07,BUF-1,0	DCB FOR 1 LINE	01 00222
000335	000045	A				
000336	000374	R				
000337	000000	A	302	SNADCB DCB 1,SNASK,0	DCB FOR *	01 00223
000340	000001	A				
000341	000344	R				
000342	000000	A				
000343	000375	R	303	ABUF DATA BUF		01 00224
000344	120252	A	304	SNASK DATA 0120252	BLANK,*	01 00225
000345	005145	A	305	CNV1 INCR 045	A=X=BUFFER END +2	01 00226
000346	001000	A	306	JMP *	EXIT	01 00227
000347	000346	R				
000350	014020	A	307	CONV EQU *-1	CONVERT OCTAL TO ASC AND STORE	01 00228
000351	004441	A	308	LDA INDIR	B= OCTAL NUMBER	01 00229
000352	004245	A	309	LLRL 1	X= BUFFER ADDR. TO STORE ASC CHAR.	01 00230
000353	004443	A	310	CONV2 LLRL 5	SIGN BIT	01 00231
000354	114010	A	311	LLRL 3	NEXT OCTAL DIGIT	01 00232
000355	055000	A	312	ORR *-9	=130250	01 00233
000356	005001	A	313	STA 0,X	STORE ASC CHARS.	01 00234
000357	005144	A	314	TZA		01 00235
000360	004443	A	315	IXR	INCREMENT BUFFER ADDR	01 00236
000361	001020	A	316	LLRL 3	NEXT OCTAL DIGIT.	01 00237
000362	000345	R	317	JRZ CNV1	ALL DONE.	01 00238
000363	001000	A	318	JMP CNV2	DO NEXT 2 DIGITS.	01 00239
000364	000352	R				
000365	130260	A	319	DATA *00*		01 00240
000366	000000	A	320	ZFLG DATA 0,-1		01 00241
000367	177777	A	321	IFF VORTEX-2		01 00242
000370	000010	A	322	SADDR DATA 0	PRINT ADDR.	V2 01 00243
000371	100000	A	323	DS DATA 8		01 00244
000372	000000	A	324	INDIR DATA 0100000		01 00245
000373	000000	A	325	ADDR DATA 0,0		01 00246
000374	120240	A	326	DATA * *	PRINT CONTROL	01 00247
000375	000000	A	327	BUF DATA 0,0,0,* * ,0,0,0,* * ,0,0,0,* * ,0,0,0		01 00248
000376	000000	A				
000377	000000	A				
000400	120240	A				
000401	000000	A				
000402	000000	A				
000403	000000	A				
000404	120240	A				
000405	000000	A				
000406	000000	A				
000407	000000	A				
000410	120240	A				
000411	000000	A				
000412	000000	A				
000413	000000	A				
000414	120240	A	328	DATA * * ,0,0,0,* * ,0,0,0,* * ,0,0,0,* * ,0,0,0		01 00249
000415	000000	A				
000416	000000	A				
000417	000000	A				
000420	120240	A				
000421	000000	A				
000422	000000	A				
000423	000000	A				
000424	120240	A				
000425	000000	A				
000426	000000	A				
000427	000000	A				


```

000554 000561 R
000555 000000 A
      357          IFF          V75-1
      358 SNDCBR DCB          21,SNR,0          V75 *****
                                          V75 *****

000556 000025 A
000557 000505 R
000560 000000 A
000561 120323 A      359 DMPMSG DATA      * SNAP DUMP*          C      01 00269
000562 147301 A
000563 150240 A
000564 142325 A
000565 146720 A
000566 000000 A      360 AP          DATA      0          A REGISTER CONTENT          01 00270
000567 000000 A      361 BP          DATA      0          B REGISTER CONTENT          01 00271
000570 000000 A      362 XP          DATA      0          X REGISTER CONTENT          01 00272
000571 000000 A      363 DP          DATA      0          OVERFLOW INDICATOR          01 00273
      364          IFT          V75-1          V75 *****
      365          GOTO          7          V75 *****
000572 000000 A      366 R3P          DATA      0          R3          V75 *****
000573 000000 A      367 R4P          DATA      0          R4          V75 *****
000574 000000 A      368 R5P          DATA      0          R5          V75 *****
000575 000000 A      369 R6P          DATA      0          R6          V75 *****
000576 000000 A      370 R7P          DATA      0          R7          V75 *****
000577 000000 A      371 V75FLG      DATA      0          V75 FLAG. 1 MEANS V75 MACHINE V75 *****
      372 7          CONT          V75 *****
      000001 A      373 X          EQU          1          01 00274
      000002 A      374 B          EQU          2          01 00275
      000013 A      375 DI         EQU          11         DEBUG INPUT LOGICAL UNIT      01 00276
      000014 A      376 DD         EQU          12         DEBUG OUTPUT LOGICAL UNIT     01 00277
      377          END

```

ENTRY NAMES
000000 R SNAP
EXTERNAL NAMES
000324 E V\$IDC
SYMBOLS

```

000343 R ABUF      000372 R ADDR      000566 R AP          000002 A B
000567 R BP      000421 A BS0      000424 A BS3      000425 A BS4
000375 R BUF      000345 R CNV1     000352 R CNV2     000347 R CONV
000370 R DS      000013 A DI      000254 R DMPA     000266 R DMPB
000561 R DMPMSG  000014 A DD      000041 R EEE      000371 R INDIR
000300 R LC      000420 A MT      000001 A NW      000571 R DP
000572 R R3P     000573 R R4P     000574 R R5P     000575 R R6P
000576 R R7P     000467 A SEVEN  000070 R SN01     000206 R SN03
000231 R SN04   000132 R SN12     000177 R SN133    000202 R SN144
000340 R SNDCB  000000 R SNAP     000242 R SNAPA     000344 R SNASK
000442 R SNDCB  000553 R SNDCBR  000553 R SNDMP     000240 R SNEXIT
000451 R SNM1   000455 R SNM2     000461 R SNM3     000461 R SNM4
000472 R SNM5   000476 R SNM6     000502 R SNM7     000335 R SNMDCB
000445 R SNMSG  000505 R SNR      000506 R SNR3     000512 R SMR4
000516 R SNRS   000522 R SNR6     000526 R SNR7     000532 R STIDB
000002 A TB75   000016 A TB75B   000001 A TB75Z   000011 A TBENTY
000322 A TBKN1  000023 A TBKN2   000024 A TBKN3   000025 A TBTLC
000535 R TIDB   000422 A TWO      000300 A V$CTL     000324 E V$IDC
000001 A V75    000577 R V75FLG  000001 A VORTEX   000000 A W
000001 A X      000570 R XP      000316 R ZFLG     000323 R ZLIM

```

0 ERRORS ASSEMBLY COMPLETE

303	ABUF	276								
325	ADDR	253	264	268	272	279	285			
360	AP	94	169	244						
374	B	140	142	144	148	151	197	233	238	
361	BP	95	170	245						
66	BS0	75								
59	BS3	113								
60	BS4	102								
327	BUF	285	301	303						
305	CNV1	317								
310	CNV2	318								
307	CONV	162	167	169	171	173	175	184	186	188
		190	192	201	277	288				
323	DS	256	269							
267	DMPA	293	297	300						
279	DMPB	290								
359	DMPMSG	356								
376	DD	176	193	202	235	295	298			
159	EEE	157								
136	ENDC01	181								
152	ENDC02	138								
324	INDIR	309								
54	LC	55								
56	MT	57	59	60	61	66				
53	NW	293								
363	DP	99	174	242						
0	P	74	74	75						
115	P1	110								
119	P2	108	116	121						
366	R3P	158	183							
367	R4P	158	185							
368	R5P	158	187							
369	R6P	158	189							
370	R7P	158	191							


```

1 *THIS IS A COPYRIGHTED PROGRAM.COPYRIGHT 1974 BY VARIAN DATA MACHINE 01 00001
2 * 01 00002
3 * V.D.M. PART NO. 01 00003
4 * 01 00004
5 * * * * * E.2 * * * * * 01 00006
6 * 01 00007
7 * 01 00008
8 * THE FOLLOWING ARE SUPPLEMENTAL OPCODES 01 00009
9 * FOR USE WITH THE MICRO ASSEMBLER 01 00010
10 * 01 00011
11 * 01 00012
12 ADD EQU 9 01 00013
13 ALUC EQU 8 01 00014
14 ALUD EQU 6 01 00015
15 ALUS EQU 7 01 00016
16 ALUZ EQU 9 01 00017
17 AND EQU X'B 01 00018
18 ANE EQU 2 01 00019
19 AZERO EQU 1 01 00020
20 A$GPR EQU 0 01 00021
21 A$GPRL EQU 2 01 00022
22 A$GPRR EQU 3 01 00023
23 A$P EQU 1 01 00024
24 A$SPEC EQU 0 01 00025
25 B$ALU EQU 7 01 00026
26 B$MIR EQU X'F 01 00027
27 B$DVR EQU 3 01 00028
28 B$P EQU X'B 01 00029
29 B$GPR EQU 0 01 00030
30 B$SPEC EQU 1 01 00031
31 CRY1 EQU 3 01 00032
32 DECA EQU X'F 01 00033
33 DECB EQU 9 01 00034
34 DECODE EQU 4 01 00035
35 DECODE$ EQU 5 01 00036
36 EOR EQU 6 01 00037
37 FT EQU 3 01 00038
38 GPROUT EQU 1 01 00039
39 GPRS EQU X'D 01 00040
40 IBRSI EQU 1 01 00041
41 IF$ALU EQU 4 01 00042
42 IF$MIR EQU X'C 01 00043
43 IF$DVR EQU 0 01 00044
44 IF$P EQU 8 01 00045
45 INCA EQU 0 01 00046
46 INCB EQU 1 01 00047
47 INCP EQU 4 01 00048
48 INCSC EQU 5 01 00049
49 IOR EQU 2 01 00050
50 IQSR EQU 1 01 00051
51 KOUT EQU 6 01 00052
52 LFT EQU 0 01 00053
53 LIT EQU 3 01 00054
54 LOG EQU 1 01 00055
55 MEMC EQU 1 01 00056
56 MEMC$ EQU 2 01 00057
57 MIR EQU 1 01 00058
58 MIRS EQU X'B 01 00059
59 MSK EQU 2 01 00060
60 NORM EQU X'E 01 00061
61 NOTA EQU 0 01 00062
62 NOTB EQU 5 01 00063
63 OF$ALU EQU 5 01 00064
64 OF$MIR EQU X'D 01 00065
65 OF$DVR EQU 1 01 00066
66 OF$P EQU 9 01 00067
67 OLDF EQU 7 01 00068
68 OLSE EQU 5 01 00069
69 ONES EQU 3 01 00070
70 OPR EQU 0 01 00071
71 OPROUT EQU 3 01 00072
72 OR EQU 1 01 00073
73 ORSE EQU 4 01 00074
74 ORZF EQU 6 01 00075
75 O$ALU EQU 6 01 00076
76 O$MIR EQU X'E 01 00077
77 O$DVR EQU 2 01 00078
78 O$P EQU X'A 01 00079
79 OVFL EQU 0 01 00080
80 PUMP EQU 3 01 00081
81 PJMP$ EQU 4 01 00082
82 PUPDEL EQU 1 01 00083
83 POYJMP EQU 4 01 00084
84 POUT EQU 1 01 00085
85 PUSH EQU 2 01 00086
86 QUQS EQU X'F 01 00087
87 R0 EQU 0 01 00088
88 R1 EQU 1 01 00089
89 R2 EQU 2 01 00090
90 R3 EQU 3 01 00091
91 R4 EQU 4 01 00092
92 R5 EQU 5 01 00093
93 R6 EQU 6

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0007 94 R7 EQU 7
0008 95 R8 EQU 8
0009 96 R9 EQU 9
000A 97 RA EQU X'A
000B 98 RB EQU X'B
000C 99 RC EQU X'C
000D 100 RD EQU X'D
000E 101 RE EQU X'E
000F 102 RF EQU X'F
0001 103 RGHT EQU 1
0002 104 SCOUT EQU 2
000C 105 SFYC EQU X'C
000C 106 SHFA EQU X'C
000A 107 SHFT EQU X'A
0001 108 SHFTDP EQU 1
0000 109 SPEC EQU 0
0004 110 SSW1 EQU 4
0003 111 SSW2 EQU 3
0002 112 SSW3 EQU 2
000D 113 STACK EQU X'D
0003 114 STAT EQU 3
0006 115 SUB EQU 6
0002 116 S$ALU EQU 2
0006 117 S$OVFL EQU 6
0001 118 S$SHFT EQU 1
0002 119 TCB EQU 2
0003 120 TESTT EQU 3
0002 121 TESTF EQU 2
0005 122 TFIR EQU 5
000F 123 TRNA EQU X'F
000A 124 TRNB EQU X'A
0002 125 TT EQU 2
0001 126 WAITMD EQU 1
0003 127 ZERO EQU 3
129 *
130 * FOLLOWING ARE ROM STANDARD STATE ADDRESSES
131 *
013E 132 SS1M EQU X'13E RESTART PIPELINE @ P
0092 133 SS2M EQU X'092 MAINTAIN PIPELINE
002D 134 SS3M EQU X'02D DECODE NEXT INSTRUCTION (IN IBR)
136 ALDC 0
137 *
138 * INITIALIZE ALL ENTRY POINTS
0000 0490000180000000 139 GEN /P(SS2M),10(PJMP),1(0),6(0),5(0)
0001 0490000180000000 140 GEN /P(SS2M),10(PJMP),1(0),6(0),5(0)
0002 0490000180000000 141 GEN /P(SS2M),10(PJMP),1(0),6(0),5(0)
0003 0490000180000000 142 GEN /P(SS2M),10(PJMP),1(0),6(0),5(0)
0004 0490000180000000 143 GEN /P(SS2M),10(PJMP),1(0),6(0),5(0)
0005 0490000180000000 144 GEN /P(SS2M),10(PJMP),1(0),6(0),5(0)
0006 0490000180000000 145 GEN /P(SS2M),10(PJMP),1(0),6(0),5(0)
0007 0490000180000000 146 GEN /P(SS2M),10(PJMP),1(0),6(0),5(0)
0008 0490000180000000 147 GEN /P(SS2M),10(PJMP),1(0),6(0),5(0)
0009 0490000180000000 148 GEN /P(SS2M),10(PJMP),1(0),6(0),5(0)
000A 0490000180000000 149 GEN /P(SS2M),10(PJMP),1(0),6(0),5(0)
000B 0490000180000000 150 GEN /P(SS2M),10(PJMP),1(0),6(0),5(0)
000C 0490000180000000 151 GEN /P(SS2M),10(PJMP),1(0),6(0),5(0)
000D 0490000180000000 152 GEN /P(SS2M),10(PJMP),1(0),6(0),5(0)
000E 0490000180000000 153 GEN /P(SS2M),10(PJMP),1(0),6(0),5(0)
000F 0490000180000000 154 GEN /P(SS2M),10(PJMP),1(0),6(0),5(0)
0010 0490000180000000 155 GEN /P(SS2M),10(PJMP),1(0),6(0),5(0)
0011 0490000180000000 156 GEN /P(SS2M),10(PJMP),1(0),6(0),5(0)
0012 0490000180000000 157 GEN /P(SS2M),10(PJMP),1(0),6(0),5(0)
0013 0490000180000000 158 GEN /P(SS2M),10(PJMP),1(0),6(0),5(0)
0014 0490000180000000 159 GEN /P(SS2M),10(PJMP),1(0),6(0),5(0)
0015 0490000180000000 160 GEN /P(SS2M),10(PJMP),1(0),6(0),5(0)
0016 0490000180000000 161 GEN /P(SS2M),10(PJMP),1(0),6(0),5(0)
0017 0490000180000000 162 GEN /P(SS2M),10(PJMP),1(0),6(0),5(0)
0018 0490000180000000 163 GEN /P(SS2M),10(PJMP),1(0),6(0),5(0)
0019 0490000180000000 164 GEN /P(SS2M),10(PJMP),1(0),6(0),5(0)
001A 0490000180000000 165 GEN /P(SS2M),10(PJMP),1(0),6(0),5(0)
001B 0490000180000000 166 GEN /P(SS2M),10(PJMP),1(0),6(0),5(0)
001C 0490000180000000 167 GEN /P(SS2M),10(PJMP),1(0),6(0),5(0)
001D 0490000180000000 168 GEN /P(SS2M),10(PJMP),1(0),6(0),5(0)
001E 0490000180000000 169 GEN /P(SS2M),10(PJMP),1(0),6(0),5(0)
001F 0490000180000000 170 GEN /P(SS2M),10(PJMP),1(0),6(0),5(0)
171 *
172 * THIS FIRMWARE USED WITH VORTEX I
173 *
174 * V78 WCS FLOATING POINT FIRMWARE
175 *
0200 176 P EQU X'200 PAGE ADDRESS (PAGE 1)
177 *
178 * MUST BE ASSEMBLED WITH SUPPLEMENTAL OPCODE EQUATE DECK
179 *
0020 180 FLTRM EQU X'20
181 * ENTRY FOR FLOATING POINT
001C 182 ORG X'1C
001C 0A90000080000000 183 GEN /N(FLPNT),6(SPEC),10(WAITMD)
184 *
003E 185 ORG FLTRM+X'1E
003E 0208040284060009 186 FLPNT2 GEN /N(FLPT2),10(OF$ALU),6(MEMC),12(A$GPR),24(R9), 2ND OF
187 C14(INCA),16(CRY1),13(INCP) OF DP2/ INCREMENT PC
188 FLPNT1 GEN /N(FLPT3),10(OF$MIR),6(MEMC),11(B$GPR),23(R1),14(TRNB), 01 0018

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03F 0200040680A90017 189 C15(LOG),17(GPROUT),24(R7) SAVE 2ND WORD/FETCH 1ST OF DP2 01 00189
190 * SET STORAGE ADDR OR INDIRECT 01 00190
191 FLPT3 GEN /T(FLPNT1,FLPNT2),5(11),11(B$SPEC),14(TRNB),15(LOG), 01 00191
0040 71F822C020A90019 192 C17(GPROUT),24(R9),7(MIRS),23(MIR) 01 00192
193 FLPT2 GEN /*,11(B$SPEC),23(MIR),14(TRNB),15(LOG),17(GPROUT), 01 00193
0041 0210000020A90019 194 C24(R9) SAVE 1ST WORD OF DP2 01 00194
195 GEN /*,6(SPEC),10(WAITMD),12(ASP),14(TRNA),15(LOG), 01 00195
0042 0218000088F90005 196 C17(GPROUT),24(R5) WAIT FOR MEMORY/ SAVE PC 01 00196
197 * SAVE 2ND WORD OF DP2/RESET OVERFLOW 01 00197
198 GEN /N(FP0),11(B$SPEC),23(MIR),14(TRNB),15(LOG), 01 00198
0043 0880050020A9001A 199 C17(GPROUT),24(RA),SF1,GF4 01 00199
200 * REALY MUST BE ON EVEN BOUNDARY - 01 00200
201 * FOLLOWED BY FIX 01 00201
202 * 01 00202
203 * 01 00203
204 REALY GEN TEST DP2 FOR ZERO, BREAK INTO DIV/MUL/ADD/SUB 01 00204
205 /F(REALD),FS9,2(X*3),5(0),6(0),7(S$ALU), 01 00205
0044 291A4080001000A9 206 C12(ASGPR),24(R9),11(B$GPR),23(RA),14(OR) 01 00206
0045 02300000000A900AD 207 * FIX GEN /*,FFA,MF1,WR1,BBA,AA0 MOVE DP2 WORD 2 TO 01 00207
208 * SUBROUTINE REGISTER 01 00208
0046 111A4006E0002EF2 209 GMSK 1(P/512),2(FIXD+3),FS9,IMD,LB3, SELECT FIXED POINT 01 00209
210 * C15(FIXE+P),AK2 OPERATION 01 00210
0047 420A800062A00000 211 REAL1 GMSK /F(REAL2),2(X*1),FSA,LB3,RF2, TEST IF MUL/DIV 01 00211
212 CFFA,MK0000 /SET SHIFT K 01 00212
213 * 01 00213
214 * REAL2 MUST BE ON EVEN BOUNDARY - 01 00214
215 * FOLLOWED BY REAL3 01 00215
216 * 01 00216
0048 18F80006E0002492 217 REAL2 GMSK /P(SHIFT+P),IMD,LB3,15(REAL3+P),AK2 SCALE DP1 01 00217
218 * 01 00218
219 * 01 00219
0049 02500000000A90006 220 REAL3 GEN /*,FFA,MF1,WR1,BB0,AA6 SAVE DP1 MANTISSA 01 00220
004A 02580000000A90017 221 GEN /*,FFA,MF1,WR1,BB1,AA7 01 00221
004B 02600000000A900B8 222 GEN /*,FFA,MF1,WR1,BB2,AA8 AND EXPONENT 01 00222
004C 02680000000A90090 223 GEN /*,FFA,MF1,WR1,BB3,AA9 MOVE DP2 TO ACCUMULATOR 01 00223
004D 02700000000A900A1 224 GEN /*,FFA,MF1,WR1,BB4,AA0 01 00224
004E 13C000006E00024F2 225 GMSK /P(FSM+P),IMD,LB3,15(*+1+P),AK2 DECOMPOSE DP2 01 00225
004F 02800000000A90009 226 GEN /*,FFA,MF1,WR1,BB0,AA9 SAVE DP2 MANTISSA 01 00226
227 GEN /F(FMD),2(X*1),FSA,FFA,MF1, SELECT MUL/DIV/ADDSUB 01 00227
0050 210A8000000A9001A 228 CHR1,BB1,AA0 01 00228
0051 0290000020A90001 229 SHFT2 GEN /*,LB1,FFA,MF1,WR1,AA1 DPREG TO AR1 01 00229
0052 000000006E0000004 230 COMPOP GEN IMD,LB3,AA4 COMMON POP/RETURN 01 00230
231 * 01 00231
232 * 01 00232
233 * SINGLE PRECISION FIXED DIVIDE (DIV) 01 00233
234 * 01 00234
235 * CALLING SEQUENCE 01 00235
236 * 01 00236
237 * AR0/AR1=DIVIDEND 01 00237
238 * ARC =DIVISOR 01 00238
239 * 01 00239
240 * RETURN 01 00240
241 * 01 00241
242 * AR0 =REMAINDER 01 00242
243 * AR1 =QUOTIENT 01 00243
244 * 01 00244
245 * 01 00245
008C 04680000000A900FE 246 DIV2 ORG FLTRM+X*60 01 00246
008D 84782280002701FF 247 GEN /*,FFA,MF1,BBF,AAE,WR1 /T(DIV5,DIV4),TF2,GFA,FF2,CF3,WR1,SH1,BBF,AAF 01 00247
248 DIV1 GEN /T(DIV5,DIV4),TF2,GFA,FF2, 01 00248
249 CCF2,WR1,SH1,BBF,AAE 01 00249
008E 84782280002701FE 249 DIV5 GEN /N(DIV18),LA2,WR1,AA1 01 00250
008F 0488000010010001 250 DIV4 GEN /N(DIV7),RF3,AA1 01 00251
0090 04980000003000001 251 DIV18 GEN /N(DIV18A),GF2,RF3,FF2,CF3,SH1,BB1 NOT B TO DPREG 01 00252
0091 0500008003260110 252 DIV17 GEN /N(CMPOP),LB1,FF2,CF3,WR1,SH1,AA1 NOT PPREG TO AR1 01 00253
0092 0290000020270101 253 DIV7 GEN /N(DIV7A),GF2,FF9,WR1,SC1,XF2; 01 00254
254 CBBE,AA0 ARE + AR0 01 00255
0093 04A00080009190E0 255 DIV7A GEN /T(DIV10,DIV9),TF2,GFD,LB3,RF2, SET -DIVIDE COUNT 01 00256
256 CFFA,BBE 01 00257
0094 54E0234062A000E0 257 DIV0 GEN /T(DIV2,DIV1),TF2,GFF,VF1 TEST SIGN 01 00258
0095 746023C000004000 258 DIV10 GEN /T(DIV19,DIV10),TF2,GFC,WR1,LA2, SHIFT/ADD/INCREMENT 01 00259
259 CFF9,WR1,SC1,XF2,SH2,BBF,RF5 COUNT TILL DONE 01 00260
0096 34B82320159192F0 260 DIV19 GEN /*,GF2,LB2,FFA (HERE ON ZERO COUNT) 01 00261
0097 04C0008040A00000 261 GEN /T(DIV12,DIV13),TF2,GFD TEST SIGN OF REMAINDER 01 00262
0098 64D8234000000000 262 DIV GEN /N(DIV0),FFA,MF1,WR1,BBC,AAF,VF1 MOVE DIVISOR/ 01 00263
263 * SAMPLE SIGN 01 00264
264 * SET OVERFLOW 01 00265
009A 04B0048000000000 265 DIV9 GEN /N(DIV10),SF1,GF2 ADD DIVISOR TO IT 01 00266
009B 04E00000009100F0 266 DIV12 GEN /*,FF9,WR1,BBF,AA0 TEST SIGN OF DIVIDEND 01 00267
009C 74E8228000000000 267 DIV13 GEN /T(DIV14,DIV15),TF2,GFA COMPLEMENT AR0/TEST 01 00268
268 DIV14 GEN /T(DIV16,DIV17),TF2,GFF,FF2,CF3, SIGN OF DIVISOR 01 00269
269 CHR1,SH1 TEST SIGN OF DIVISOR 01 00270
009D 14F823C000270100 270 DIV15 GEN /N(CMPOP),LB1,FFA,MF1,WR1,AA1 DPREG TO AR1 01 00271
009E 14F833C000000000 271 DIV16 GEN /N(DIV7),FF2,CF1,WR1,SC1,WF1,SH1 SHIFT DPREG RIGHT 01 00272
009F 0290000020A90001 272 * 01 00273
00A0 0498000000023A100 273 * 01 00274
274 * NEGATE DOUBLE REGISTER (ICOMP) 01 00275
275 * 01 00276
276 * CALLING SEQUENCE 01 00277
277 * AR0/AR1= OPERAND 01 00278
278 * AR4 = SIGN FLAG 01 00279
279 * 01 00280
280 * RETURN 01 00281
281 * AR0/AR1= NEGATED OPERAND 01 00282

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Address	Label	Operation	Comments	Line
00A1	0530008000F80001	ICOMP GEN	/N(ICOMP4),GF2,FFF,MF1,AA1	282
00A2	0518000000F10000	ICOMP2 GEN	/*,FFF,WR1,AA0	283
00A3	0520008000090000	ICOMP3 GEN	/*,GF2,MF1,WR1,AA0	284
00A4	00000006E0070004	GEN	IMD,LB3,CF3,WR1,AA4	285
00A5	05380000000670111	ICOMP1 GEN	/N(ICOMP5),FF6,CF3,WR1,SH1,AA1,BB1	286
00A6	15283240000000000	ICOMP4 GEN	/T(ICOMP1,ICOMP2),TF3,GF9	287
00A7	05400000063E80001	ICOMP5 GMSK	/*,LB3,RF3,FFB,MK8000,AK1	288
00A8	05180000020A90001	GEN	/N(ICOMP3),LB1,FFA,MF1,WR1,AA1	289
292	*			292
293	*			293
294	*			294
295	*			295
296	*			296
297	*			297
298	*			298
299	*			299
300	*			300
301	*			301
302	*			302
303	*			303
304	*			304
305	*			305
306	*			306
307	*			307
00A9	15080006E0002AB2	IMUL1A GMSK	/P(ICOMP+P),IMD,LB3,15(IMUL1B+P),AK2	308
00AA	0548008000A90071	IMUL1 GEN	/N(IMUL1A),GF2,FFA,MF1,WR1,BB7,AA1	309
00AB	159821C000A90006	IMUL1B GEN	/T(IMULX,IMUL2),TF2,GF7,FFA,MF1,	310
00AC	259821C000A90009	IMUL4A GEN	CHR1,BB0,AA6	311
00AD	0640008000A90060	IMUL GEN	/N(IMULX,IMUL5),TF2,GF7,FFA,MF1,	312
00AE	0578008000A90090	IMUL3 GEN	CHR1,BB0,AA9	313
00AF	05A831C0000000000	IMUL4 GEN	/N(IMUL0),GF2,FFA,MF1,WR1,BB6,AA0	314
00B0	0588008000A900A1	IMUL4 GEN	/*,GF2,FFA,MF1,WR1,BB9,AAU	315
00B1	15080006E0002AC2	IMUL2 GEN	/T(IMUL6,IMUL4),TF3,GF7	316
00B2	0570000000A90017	IMUL2 GEN	/*,GF2,FFA,MF1,WR1,BB8,AA1	317
00B3	02900480000000000	IMULX GEN	/P(ICOMP+P),IMD,LB3,15(IMUL4A+P),AK2	318
00B4	05A8000000A9001A	IMUL5 GEN	/N(ICOMPPOP),GF2,GF1	319
00B5	05B00000033ABFFF0	IMUL6 GMSK	/*,FFA,MF1,WR1,BB1,AAA	320
00B6	05B80000020A90000	IMUL6 GEN	/*,LB3,RF3,FFA,MK8FFF	321
00B7	05C0000000A900A1	GEN	/*,LB1,FFA,MF1,WR1,AA0	322
00B8	05C8000000A9006C	GEN	/*,FFA,MF1,WR1,BB8,AA1	323
00B9	16480006E0002BA2	GMSK	/P(MUL+P),IMD,LB3,15(*+1+P),AK2	324
00BA	05D8000000A90091	GEN	/*,FFA,MF1,WR1,BB9,AA1	325
00BB	16480006E0002BC2	GMSK	/P(MUL+P),IMD,LB3,15(*+1+P),AK2	326
00BC	05E8000000A9001D	GEN	/*,FFA,MF1,WR1,BB1,AAA	327
00BD	05F0000000A90003	GEN	/*,FFA,MF1,WR1,BB2,AA0	328
00BE	05F8000000A90071	GEN	/*,FFA,MF1,WR1,BB3,AA1	329
00BF	0600000000A9009C	GEN	/*,FFA,MF1,WR1,BB4,AA0	330
00C0	06080000063ABFFF0	GMSK	/*,LB3,RF3,FFA,MK8FFF	331
00C1	06100000020A90000	GEN	/*,LB1,FFA,MF1,WR1,AA0	332
00C2	16480006E0002C32	GMSK	/P(MUL+P),IMD,LB3,15(*+1+P),AK2	333
00C3	0620000000A90001	GEN	/*,FFA,MF1,WR1,BB0,AA1	334
00C4	0628000000A9003C	GEN	/*,FFA,MF1,WR1,BB1,AA0	335
00C5	0630000000390000	GEN	/*,FFA,MF1,WR1,BB2,AA1	336
00C6	11100006E0002C72	GMSK	/P(FIXA+P),IMD,LB3,15(*+1+P),AK2	337
00C7	0298008000A90044	GEN	/N(IMUL7A),GF2,FFA,MF1,WR1,BB4,AA4	338
00C8	755021C0000000000	IMUL7A GEN	FLTRM+X*33	339
00C9	0668000000A900CF	MUL GEN	/T(IMUL7,COMPPOP),TF2,GF9	340
00CA	0670000013004001	MUL4 GEN	/P(ICOMP+P),IMD,LB3,15(COMPPOP+P),AK2	341
00CB	06600080009000F1	MUL1 GEN	FLTRM+X*33	342
00CC	7678224013004001	MUL2 GEN	/T(IMUL1,IMUL3),TF2,GF7	343
00CD	5658334062A000E0	MULA GMSK		344
00CE	068000000039000E	MUL5 GEN		345
00CF	06700200009000F1	MUL3 GEN		346
00D0	068800200000A800	MUL6 GEN		347
00D1	069000200591A900	MUL8 GEN		348
00D2	169823201D91A900	MUL9 GEN		349
00D3	06A000001801A800	MUL9 GEN		350
00D4	36A8228020A90001	MUL12 GEN		351
00D5	06B000000006700F0	MUL12 GEN		352

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00D6 0290000018010401 375 MUL13  GEN  /N(COMPOP),LA3,WR1,SH4,AA1 01 00375
376 * 01 00376
377 * 01 00377
378 * 01 00378
379 * 01 00379
380 * 01 00380
381 * 01 00381
382 * 01 00382
383 * 01 00383
384 * 01 00384
385 * 01 00385
386 * 01 00386
387 * 01 00387
388 * 01 00388
389 * 01 00389
390 * 01 00390
391 IDIV0  GEN  /T(IDIV1, IDIV5),TF3,GF5,FFA, ACCUMULATOR/TEST 01 00391
CMF1,WR1,BB,AA1 IF DIVISOR = 0 01 00392
00D8 0708000000A9A009 393 IDIV5  GEN  /N(IDIV5A),FFA,MF1,WR1,SC1,WF1,BB0 ,AA9  SAVE NORMALIZED 01 00393
00D9 56D831C000000000 394 IDIV1  GEN  /T(IDIV3, IDIV2),TF3,GF7 GR NEGATIVE 01 00394
00DA 15080006E0002D82 395 IDIV2  GMSK  /P(ICOMP+P),IMD,LB3,15(*+1+P),AK2 NEGATE DP2 01 00395
00DB 06E0000013F80001 396 IDIV3  GEN  /*,LA2,RF3,FFF,MF1,AA1 AR1 (SHIFTED) TO DPREG 01 00396
00DC 06E8000000F90000 397 IDIV3  GEN  /*,FFF,MF1,WR1,AA0 SAMPLE AR0 01 00397
00DD 46F0338004000000 398 IDIV4  GEN  /T(IDIV4A, IDIV5),TF3,GFE,RF4 INCREMENT SHIFT COUNT/ 01 00398
399 * TEST IF NORMALIZED 01 00399
400 IDIV4A GEN  /N(IDIV4),LA2,RF5,WR1,SC1,XF1, NORMALIZING SHIFT 01 00400
00DE 06E8000015018A00 401 * 01 00401
00DF 0740004001380000 402 IDIV0A GEN /N(IDIV0B),GF1,RF1,FF3,MF1 MOVE IB ID IR/ZERO PC 01 00402
00E0 06F8000060AFDE70 403 IDIV GMSK /N(IDIV0A),LB3,FFA,MKFDE7 PUT 'JIF' IN IB 01 00403
00E1 0710000020A9000A 404 IDIV5A GEN /*,LB1,FFA,MF1,WR1,AAA DIVISOR 01 00404
00E2 071800000A090003 405 * -SHIFT COUNT IN PC TO 01 00405
406 * SHIFT COUNTER AND AR3 01 00406
00E3 0720008000A90060 407 GEN /*,GF2,FFA,MF1,WR1,BB6,AA0 MOVE DIVIDEND (DP1) TO 01 00407
00E4 0728000005A90071 408 GEN /*,RF5,FFA,MF1,WR1,BB7,AA1 ACCUMULATOR 01 00408
409 * (STEP SHIFT COUNTER) 01 00409
00E5 371831C005000000 410 GEN /T(IDIV7, IDIV6),TF3,GF7,RF5 TEST IF -DIVIDEND/ 01 00410
411 * (STEP SHIFT COUNTER) 01 00411
00E6 15080006E0002E72 412 IDIV6 GMSK /P(ICOMP+P),IMD,LB3,15(IDIV7+P),AK2 NEGATE DP1 01 00412
00E7 0790008000F90033 413 IDIV7 GEN /N(IDIV7B),GF2,FFF,MF1,WR1,BB3,AA3 SAMPLE AR3 01 00413
00E8 0768000000C90004 414 IDIV0B GEN /N(IDIV0C),FFF,MF1,WR1,AA4 INITIALIZE SIGN FLAG 01 00414
00E9 0798000000A9A006 415 IDIVA  GEN  /N(IDIVA1),FFA,MF1,WR1,SC1,WF1,BB0,AA6  SAVE SCALED DIVID 01 00415
00EA 07A8000000390003 416 IDIV32 GEN /N(IDIVA3),FF3,MF1,WR1,AA3 ZERO AR3 01 00416
00EB 076000000A080000 417 IDIV7D GEN /*,LA1,RF2,MF1 -SHIFT COUNT IN PC TO 01 00417
418 * SHIFT COUNTER 01 00418
00EC 7748238000000000 419 GEN /T(IDIVA, IDIV7A),TF2,GFE TEST IF DIVIDEND NORM 01 00419
00ED 06E8008000A90090 420 IDIV0C GEN /N(IDIV0),GF2,FFA,MF1,WR1,BB9,AA0 MOVE DIVISOR (DP2) TO 01 00420
00EE 0780000013F80001 421 IDIV7A GEN /N(IDIV8),LA2,RF3,FFF,MF1,AA1 AR1 (SHIFTED) TO DPREG 01 00421
422 * SELECT PROPER PROCESOR 01 00422
00EF 730A800000000000 423 FIXE GMSK /F(FIXXT),2(X*1),FSA NORMALIZING SHIFT 01 00423
424 IDIV8 GEN /T(IDIV9, IDIVX),TF3,GFD,LA2,WR1, NORMALIZING SHIFT 01 00424
00F0 7788334010018A00 425 * CSC1,XF1,SH2,AA0 TEST IF NEGATIVE(ERROR) 01 00425
00F1 8748230005000000 426 IDIV9 GEN /T(IDIVA, IDIV8),TF2,GFC,RF5 INCREMENT SHIFT K/ 01 00426
427 * TEST IF SCALED 01 00427
428 IDIV7B GEN /T(IDIV42, IDIV7C),TF3,GF6,FFA, TEST IF DIVDND SCALED 01 00428
00F2 A750318000A90006 429 CMF1,WR1,BB0,AA6 01 00429
00F3 0750000020A90007 430 IDIVA1 GEN /N(IDIVA2),LB1,FFA,MF1,WR1,AA7 01 00430
00F4 0758008000A90000 431 IDIV7C GEN /N(IDIV7D),GF2,FFA,MF1,WR1,BB0,AA0 SAMPLE AR0 01 00431
00F5 07B0000000A9009C 432 IDIV33 GEN /*,FFA,MF1,WR1,BB9,AA0 01 00432
00F6 14C80006E0002F72 433 GMSK /P(DIV+P),IMD,LB3,15(*+1+P),AK2 COMPUTE (Q1) 01 00433
434 GEN /T(IDIV8, IDIVX),TF3,GF0,FFA, 01 00434
CMF1,WR1,BB0,AA7 SAVE R1 01 00435
00F7 77C0300000A90007 435 IDIVB GEN /*,FFA,MF1,WR1,BB1,AA6 AND Q1 01 00436
00F8 07C8000000A90016 436 GEN /N(IDIVB2),FFF,MF1,WR1,AA0 ZERO AR0 01 00437
00F9 0800000000390000 437 IDIVC GEN /N(IDIVD),CF3,WR1,AA3 IF NOT, INCR MSW 01 00438
00FA 0808000000070003 438 IDIV3 GMSK /P(NUL+P),IMD,LB3,15(*+1+P),AK2 COMPUTE (Q1*Y2) 01 00439
00FB 15480006E0002FC2 439 GEN /*,GF2,FF6,CF3,WR1,BB9,AA0 (Q1*Y2)-Y1 01 00440
00FC 07E8008000670090 440 IDIV3 GEN /T(IDIVG, IDIVC),TF2,GF7 TEST IF NEGATIVE (OVFL) 01 00441
00FD 57F821C000000000 441 IDIVX GEN /N(COMPOP),GF2,CF1 SET OVERFLOW 01 00442
00FE 0290048C00000000 442 IDIVG GEN /N(IDIVD),FF2,WR1,BB0,AA0 RESTORE AR0 01 00443
00FF 0808000000910090 443 IDIVB2 GEN /N(IDIVB3),FFA,MF1,WR1,BB1,AA0 01 00444
0100 07D8000000A900AC 444 IDIVB GEN /*,FFA,MF1,WR1,BB9,AA0 01 00445
0101 0810000000A9009C 445 IDIVD GMSK /P(DIV+P),IMD,LB3,15(*+1+P),AK2 COMPUTE (Q1*Y2/Y1) 01 00446
0102 14C80006E0003032 446 GEN /*,FFA,MF1,WR1,BB1,AA0 01 00447
0103 0820000000A9001B 447 GEN /*,FFA,MF1,WR1,BB7,AA0 01 00448
0104 0828000000A90070 448 GMSK /P(DIV+P),IMD,LB3,15(*+1+P),AK2 COMPUTE (R1*2**R/Y1) 01 00449
0105 14C80006E0003062 449 GEN /*,FFA,MF1,WR1,BB0,AA0 01 00450
0106 0838000000A9003C 450 GEN /*,FFA,MF1,WR1,BB6,AA0 GET 1ST WORD 01 00451
0107 0840000000A90060 451 * OF QUOTIENT 01 00452
452 * COMPUTE Q1*2**R - 01 00453
453 * Q1*Y2/Y1 + R1*2**R/Y1 01 00454
0108 11180006E0003092 454 * 01 00455
455 * 01 00456
0109 02A8008000A90044 456 DRO FLTRN+X*35 01 00457
0055 1230224000000000 457 IDIVF GEN /T(DIVE, COMPOP),TF3,GF9 TEST SIGN FLAG FOR ZERO 01 00458
0056 15080006E0002522 458 IDIVE GMSK /P(ICOMP+P),IMD,LB3,15(COMPOP+P),AK2 IF ZERO, NEGATE 01 00459
459 * RESULT 01 00459
010A 460 DRO FLTRN+X*EA 01 00460
461 * 01 00461
462 * 01 00462
463 * 01 00463
464 * 01 00464
465 * 01 00465
466 * 01 00466
467 * 01 00467

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	468	*	RETURN		01	00468
	469	*	ARC/ARI= RESULT		01	00469
	470	*			01	00470
010A	08580080109100D1	471	IADD	GEN /*,GF2,LA2,FF9,WR1,BBD,AA1	01	00471
010B	0860000018010401	472	GEN	/*,LA3,WR1,SH4,AA1	01	00472
	473	*			01	00473
010C	02900280009300C0	474	GEN	/(COMPOP),GFA,FF9,CF1,WR1,BBC,AA0	01	00474
	475	*			01	00475
	476	*	DOUBLE PRECISION FIXED POINT SUBTRACT (ISUB)		01	00476
	477	*			01	00477
	478	*	CALLING SEQUENCE		01	00478
	479	*	ARC/ARI= 1ST OPERAND		01	00479
	480	*	ARC/ARD= 2ND OPERAND		01	00480
	481	*			01	00481
	482	*	RETURN		01	00482
	483	*	ARC/ARI= RESULT		01	00483
	484	*			01	00484
010D	08700080106700D1	485	ISUB	GEN /*,GF2,LA2,FF6,CF3,WR1,BBD,AA1	01	00485
010E	0878000018010401	486	GEN	/*,LA3,WR1,SH4,AA1	01	00486
	487	*			01	00487
010F	02900280006300C0	488	GEN	/(COMPOP),GFA,FF6,CF1,WR1,BBC,AA0	01	00488
	489	*			01	00489
	490	*	SAVE DP1 MSW IN CASE FLOAT ADD/SUB		01	00490
0110	01E8000000A9000E	491	FPO	GEN /*,GF2,LA2,FF6,CF3,WR1,BBD,AA1	01	00491
	492		GEN	/*,LA3,WR1,SH4,AA1	01	00492
0020		493	DRG	/*,GF2,LA2,FF6,CF3,WR1,BBD,AA1	01	00493
	494	*	ORG	/*,LA3,WR1,SH4,AA1	01	00494
	495	*	SELECT FIXED POINT OPERATIONS		01	00495
	496	*			01	00496
	497	*			01	00497
	498	*	FIXD THROUGH FIXS MUST BE IN CONTIGUOUS		01	00498
	499	*	BLOCK AND ORIGINATE AT A MODULO 4 ADDRESS		01	00499
	500	*			01	00500
	501	*			01	00501
0020	07000000260AFDE70	502	FIXD	GMSK /*,GF2,LA2,FF6,CF3,WR1,BBD,AA1	01	00502
0021	05680000000C90004	503	FIXM	GEN /*,GF2,LA2,FF6,CF3,WR1,BBD,AA1	01	00503
0022	0850008010010000D	504	FIXA	GEN /*,GF2,LA2,FF6,CF3,WR1,BBD,AA1	01	00504
0023	0868008010010000D	505	FIXS	GEN /*,GF2,LA2,FF6,CF3,WR1,BBD,AA1	01	00505
	506	*			01	00506
	507	*	FMD MUST BE ON EVEN BOUNDARY -		01	00507
	508	*	FOLLOWED BY FAS		01	00508
	509	*			01	00509
0024	0320000000PADFFF0	510	FMD	GMSK /*,GF2,LA2,FF6,CF3,WR1,BBD,AA1	01	00510
0025	0130000000A9000BC	511	FAS	GEN /*,GF2,LA2,FF6,CF3,WR1,BBD,AA1	01	00511
0026	0138008000067003B	512	GEN	/*,GF2,LA2,FF6,CF3,WR1,BBD,AA1	01	00512
	513	GMSK	/*,GF2,LA2,FF6,CF3,WR1,BBD,AA1	01	00513	
0027	8148324062A00050	514	FAS1	GEN /*,GF2,LA2,FF6,CF3,WR1,BBD,AA1	01	00514
	515	GEN	/*,GF2,LA2,FF6,CF3,WR1,BBD,AA1	01	00515	
0028	615021C000390003	516	FAS0	GEN /*,GF2,LA2,FF6,CF3,WR1,BBD,AA1	01	00516
	517	GEN	/*,GF2,LA2,FF6,CF3,WR1,BBD,AA1	01	00517	
0029	414833001001020B	518	FAS2	GEN /*,GF2,LA2,FF6,CF3,WR1,BBD,AA1	01	00518
002A	015800000006701BB	519	GEN	/*,GF2,LA2,FF6,CF3,WR1,BBD,AA1	01	00519
002B	0160000000070003	520	GEN	/*,GF2,LA2,FF6,CF3,WR1,BBD,AA1	01	00520
002C	01680000063AFFE80	521	FAS3	GMSK /*,GF2,LA2,FF6,CF3,WR1,BBD,AA1	01	00521
002D	0170000000A900000	522	GEN	/*,GF2,LA2,FF6,CF3,WR1,BBD,AA1	01	00522
002E	017800800006600B0	523	GEN	/*,GF2,LA2,FF6,CF3,WR1,BBD,AA1	01	00523
	524	GEN	/*,GF2,LA2,FF6,CF3,WR1,BBD,AA1	01	00524	
002F	118831C0002080000	525	CMF1,AA0	/*,GF2,LA2,FF6,CF3,WR1,BBD,AA1	01	00525
0030	0C50000000A900060	526	FAS9	GEN /*,GF2,LA2,FF6,CF3,WR1,BBD,AA1	01	00526
0031	0190000000208000B	527	FAS5	GEN /*,GF2,LA2,FF6,CF3,WR1,BBD,AA1	01	00527
0032	01980080005F80003	528	FAS6	GEN /*,GF2,LA2,FF6,CF3,WR1,BBD,AA1	01	00528
	529	*			01	00529
0033	41A83240000000000	530	GEN	/*,GF2,LA2,FF6,CF3,WR1,BBD,AA1	01	00530
	531	*			01	00531
	532	*	SHIFT MANTISSA ASSOCIATED WITH		01	00532
	533	*	SMALLER EXPONENT		01	00533
	534	*			01	00534
0034	31A033001D01AA09	535	FAS7B	GEN /*,GF2,LA2,FF6,CF3,WR1,BBD,AA1	01	00535
0035	01A000001300400A	536	GEN	/*,GF2,LA2,FF6,CF3,WR1,BBD,AA1	01	00536
0036	01B8000000000B800	537	FAS7	GEN /*,GF2,LA2,FF6,CF3,WR1,BBD,AA1	01	00537
0037	0180000000A90000A	538	FAS7A	GEN /*,GF2,LA2,FF6,CF3,WR1,BBD,AA1	01	00538
0038	01C8000013004007	539	GEN	/*,GF2,LA2,FF6,CF3,WR1,BBD,AA1	01	00539
	540	GEN	/*,GF2,LA2,FF6,CF3,WR1,BBD,AA1	01	00540	
	541	GEN	/*,GF2,LA2,FF6,CF3,WR1,BBD,AA1	01	00541	
0039	51C833001D01AA06	542	CMR1,SC1,WF1,XF1,SH2,AA6	/*,GF2,LA2,FF6,CF3,WR1,BBD,AA1	01	00542
003A	01D8000000000B800	543	FAS9A	GEN /*,GF2,LA2,FF6,CF3,WR1,BBD,AA1	01	00543
003B	01E0000000A900007	544	GEN	/*,GF2,LA2,FF6,CF3,WR1,BBD,AA1	01	00544
003C	0180000000A9000C8	545	GEN	/*,GF2,LA2,FF6,CF3,WR1,BBD,AA1	01	00545
	546	FPO	/*,GF2,LA2,FF6,CF3,WR1,BBD,AA1	01	00546	
003D	220AC00000A9009C	547	GEN	/*,GF2,LA2,FF6,CF3,WR1,BBD,AA1	01	00547
	548	*			01	00548
	549	*			01	00549
	550	*			01	00550
018A		551	ORG	X'18A	01	00551
	552	*			01	00552
018A	0C48000000A90071	553	FAS10	GEN /*,GF2,LA2,FF6,CF3,WR1,BBD,AA1	01	00553
0189		554	ORG	X'189	01	00554
0189	02E8000000A9000A	555	FAS11	GEN /*,GF2,LA2,FF6,CF3,WR1,BBD,AA1	01	00555
005D		556	ORG	FLTRM+X'3D	01	00556
	557	*	SELECT ADD/SUB (PDP FROM STACK)		01	00557
005D	0290000000A9009C	558	FAS12	GEN /*,GF2,LA2,FF6,CF3,WR1,BBD,AA1	01	00558
	559	*			01	00559
005E	11100006E0002602	560	FASA	GMSK /*,GF2,LA2,FF6,CF3,WR1,BBD,AA1	01	00560

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005F 11180006E0002662 561 FASS GMSK /P(FIXS+P),IMD,LB3,15(FASC+P),AK2 SUBTRACT 01 00561
562 * 01 00562
563 * 01 00563
564 * IF RESULT NEGATIVE (OVERFLOW), SHIFT IT RIGHT ONE 01 00564
565 * AND ADD EXPONENT INCREMENT 01 00565
566 * 01 00566
567 FASA0 GEN /T(FASA1,FASC),TF2,GF7,LB3,RF2, TEST IF NEGATIVE/
0060 332821C062A00000 568 CFFA,MK0000 SET SHIFT COUNTER 01 00567
0061 0310000020A90003 569 FASA2 GEN /N(FASB),LB1,FFA,MF1,WR1,AA3 01 00568
0062 0318000000910038 570 FASB GEN /*,FF9,WR1,BB3,AA8 INCREMENT EXPONENT 01 00570
0063 18F80006E0002662 571 GMSK /P(SHIFT+P),IMD,LB3,15(FASC+P),AK2 SCALE MANTISSA 01 00571
572 FMD1 GEN /F(FDIV),2(X'1),FS9,LB1,FFA,MF1, SELECT FDIV/FMUL 01 00572
0064 430A400020A90000 573 CWR1,AA3 01 00573
0065 0308000063AFFBF0 574 FASA1 GMSK /N(FASA2),LB3,RF3,FFA,MKFFBF 01 00574
0066 13F80006E0002672 575 FASC GMSK /P(FMUL+P),IMD,LB3,15(*+1+P),AK2 NORMALIZE RESULT 01 00575
576 * TEST FOR ZERO RESULT 01 00576
577 * GEN /N(FSC01),12(A$GPR),24(R0),11(B$GPR),23(R1), 01 00577
0067 0328008000100010 578 C14(R),5(C),3(C),7($$ALU) 01 00578
579 * 01 00579
580 * 01 00580
581 * FDIV MUST BE ON EVEN WORD BOUNDARY - 01 00581
582 * FOLLOWED BY FMUL 01 00582
583 * 01 00583
584 * DPI HAS BEEN SHIFTED RIGHT ONE FOR FDIV AND FMUL 01 00584
585 * 01 00585
0068 03500000006700B8 586 FDIV GEN /N(FDIV1),FFC,CF3,WR1,BBB,AA8 SUBTRACT DP1/DP2 EXPS 01 00586
0069 0360000000670038 587 FMUL GEN /N(FMUL1),FFS,CF3,WR1,BBB,AA8 SUBTRACT BIAS FROM DP1 01 00587
006A 0358000000910038 588 FDIV1 GEN /*,FF9,WR1,BB3,AA8 ADD EXPONENT BIAS 01 00588
589 * GO MULTIPLY OR DIVIDE 01 00589
006B 110A4006E00026D2 590 FDIV2 GMSK 1(P/512),2(FIXD+1),FS9,IMD,LB3,15(FASCMD+P),AK2 01 00590
006C 03580000009100B8 591 FMUL1 GEN /N(FDIV2),FF9,WR1,BB3,AA8 01 00591
592 * FLOATING POINT MULTIPLY/DIVIDE REAR END PROCFS 01 00592
593 * NORMALIZE RESULT 01 00593
006D 13F80006E0003392 594 FASCMD GMSK /P(FMUL+P),IMD,LB3,15(FASCMD+P),AK2 01 00594
595 * 01 00595
596 * FIXXT MUST BE ON EVEN ADDRESS FOLLOWED BY EXIT 01 00596
597 * 01 00597
598 * EXIT IF NO OVERFLOW 01 00598
599 FIXXT GMSK /T(EXIT,FIX01),5(FT),7(OVFL),11(LIT),15(X'8000), 01 00599
600 CFFA,13(GPROUT) 01 00600
006E 9378300063A80000 601 NOCOMP EQU * NOCOMP IS REALLY EXIT 01 00601
006F 0A60000001F80005 602 EXIT GEN /N(EXIT),RF1,FFF,MF1,AA5 RELOAD PC 01 00602
603 * TEST EXPONENT FOR NEGATIVE 01 00603
604 FSC02 GEN /N(FSC03),12(A$GPR),24(R8),14(TRNA),15(LOG), 01 00604
0070 0A28008000F80008 605 C5(C),6(C),7($$ALU) 01 00605
606 * EXIT IF ZERO/SAVE EXPONENT 01 00606
607 FSC01 GEN /T(EXIT,FSC02),5(TT),7(ALUZ),11(B$GPR),23(R8), 01 00607
0071 8378224000A90089 608 C14(TRNB),15(LOG),17(GPROUT),24(R9) 01 00608
609 * SET TEST FOR ZERO EXPONENT 01 00609
610 FIX01 GEN /N(FIX02),11(B$GPR),23(R4),14(TRNB),15(LOG), 01 00610
0072 09B8008000A80040 611 C5(C),6(C),7($$ALU) 01 00611
612 * EITHER COMPLIMENT MSW OR EXIT 01 00612
0073 A37831C000000000 613 FSC11 GEN /T(EXIT,FSC12),5(FT),7(ALUS) 01 00613
614 * COMPLIMENT MSW 01 00614
615 NOCOMP EQU * COMPLIMENT MSW 01 00615
0074 027800000090000 616 FSC12 GEN /N(EXIT),12(A$GPR),24(R9),14(NTA),15(LOG),17(GPROUT) 01 00616
617 * SET MAXIMUM IN R3 (TEST FOR COMPLIMENT MSW) 01 00617
618 FIX03 GEN /T(EXIT,FIX04),5(FT),11(B$GPR),23(R1),14(TRNB), 01 00618
0075 B378324000A90010 619 C15(LOG),17(GPROUT),24(R9),7(ALUZ) 01 00619
620 * TWO'S COMPLIMENT RESULT 01 00620
0076 15080006E00026F2 621 FIX04 GMSK /P(ICOMP+P),IMD,LB3,15(EXIT+P),AK2 01 00621
622 * 01 00622
623 * 01 00623
624 * 01 00624
625 * SEPERATE MANTISSA (FSM) 01 00625
626 * 01 00626
627 * CALLING SEQUENCE 01 00627
628 * AR0/AR1= REAL OPERAND 01 00628
629 * 01 00629
630 * RETURN 01 00630
631 * AR0/AR1= NORMALIZED MANTISSA 01 00631
632 * ARB = EXPONENT 01 00632
633 * 01 00633
0077 0290000020A90001 634 FSM2 GEN /N(COMPDP),LB1,FFA,MF1,WR1,AA1 01 00634
0078 03C8000063B807FC 635 FSM GMSK /*,LB3,RF3,FFB,MK007F SAVE EXPONENT 01 00635
0079 03D000000000A000 636 GEN /*,SC1,MF1 (SHIFTED RIGHT ONE) 01 00636
007A 03D8000020A9000B 637 GEN /*,LB1,FFA,MF1,WR1,AA2 IN ARB 01 00637
007B 03E0000062A00070 638 GMSK /*,LB3,RF2,FFA,MK0007 SET SHIFT COUNTER 01 00638
007C 03E8000013A04001 639 GEN /*,LA2,RF3,VF1,AA1 01 00639
640 GEN /T(*,FSM1),TF3,GF3,LA2,RF5,WR1, SHIFT MANTISSA LEFT 01 00640
007D 73E8330015019E00 641 C5C1,XF3,SH6 01 00641
007E 03B800000000B800 642 FSM1 GEN /N(FSM2),WF1,XF3,SC1 01 00642
643 * 01 00643
644 * 01 00644
645 * NORMALIZE FLOATING POINT (FMUL) 01 00645
646 * 01 00646
647 * CALLING SEQUENCE 01 00647
648 * AR0/AR1=UNNORMALIZED MANTISSA 01 00648
649 * AR8 =RESULT EXPONENT 01 00649
650 * AR4 =TEMPORARY STORAGE 01 00650
651 * 01 00651
652 * RETURN 01 00652
653 * AR0/AR1=NORMALIZED FLOATING POINT NUMBER 01 00653

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654	*			(NEGATIVE NORMALIZING COUNT	01	00654
655	*			IN SIGN AND EXPONENT FIELDS)	01	00655
656	*	ARS		=SIGN FLAG (EXPONENT)	01	00656
657	*				01	00657
007F	0400008000F80000	007F	FNML EQU	*	01	00658
0080	4288224062A00170	659	X0 GEN	/N(X),GF2,FFF,MF1,AA0	01	00659
		660	X GMSK	/T(X1,X3),TF2,GF9,RF2,LB3,FFA,MK0017	01	00660
		661			01	00661
0081	4290224000000000	662	X2 GEN	/T(COMPPOP,X3),TF2,GF9	01	00662
0057		663	DRG	FLTFRM+X*37	01	00663
0057	0408008000F80001	664	X1 GEN	/N(X2),GF2,FFF,MF1,AA1	01	00664
0058	0A58000001380000	665	X3 GEN	/N(NML1),RF1,FF3,MF1	01	00665
0082		666	DRG	FLTFRM+X*62	01	00666
0082	3418234000F80000	667	NML1B GEN	/T(NML3,NML5),TF2,GFD,FFF,MF1	01	00667
0083	15080006E0002852	668	NML3 GMSK	/P(ICOMP+P),IMD,LB3,15(NML4+P),AK2	01	00668
0084	0448000000590044	669	NML12A GEN	/N(NML13),FF5,MF1,WR1,BB4,AA4	01	00669
0085	043000000090008	670	NML4 GEN	/*,MF1,WR1,AA8	01	00670
0086	0438000013F80001	671	NML5 GEN	/*,LA2,RF3,FFF,MF1,AA1	01	00671
0087	0450000000F90000	672	GEN	/N(NML5A),FFF,MF1,WR1,AA0	01	00672
0088	0290000000110040	673	NML14 GEN	/N(COMPPOP),FF1,WR1,AA0,BB4	01	00673
		674	NML13 GEN	/T(*,NML14),TF3,SF3,GFC,LA2,RF5,	01	00674
0089	44483F0015010404	675		CWR1,SH4,AA4	01	00675
008A	1888338004000000	676	NML5A GEN	/T(NML6,NML8),TF3,GFE,RF4	01	00676
		677	*		01	00677
		678	*		01	00678
		679	*	SET MAXIMUM IN R0	01	00679
008B	0378048000A90001	680	MYDVR1 GEN	/N(EXIT),11(B\$GPR),23(R0),14(TRNB),15(LOG),	01	00680
0111		681		C17(GPROUT),24(R1),SF1,GF2	01	00681
		682	DRG	FLTFRM+X*F1	01	00682
		683	*		01	00683
		684	*		01	00684
		685	NML6 GEN	/N(NML5A),LA2,RF5,WR1,SC1,XF1,	01	00685
0111	0450000015018A00	686		CSH2,AA0	01	00686
0112	0898050008F10004	687	NML8 GEN	/*,SF1,GF4,LA1,FFF,WR1,AA4	01	00687
0113	08A0000020A90001	688	GEN	/*,LB1,FFA,MF1,WR1,AA1	01	00688
0114	08A8000063AFEFF0	689	GMSK	/*,LB3,RF3,FFA,MKFEFF	01	00689
0115	08B0008020A90003	690	GEN	/*,GF2,LB1,FFA,MF1,WR1,AA3	01	00690
0116	08B8008000930031	691	GEN	/*,GF2,GF9,CF1,WR1,BB3,AA1	01	00691
0117	48D8320000F10004	692	GEN	/T(NML10,NML8A),TF3,GF8,FFF,WR1,AA4	01	00692
0118	08C8028000970100	693	NML8A GEN	/*,GFA,FF9,CF3,WR1,SH1	01	00693
		694	GMSK	/T(NML10,NML9),TF3,LB3,RF2,FFA,	01	00694
		695		CMK0008	01	00695
0119	58D8300062A00080	696	NML9 GEN	/N(NML11),SF1,GF4,FFF,WR1,AA4	01	00696
011A	08E8050000F10004	697	*		01	00697
011B	08E0000062A00070	698	NML10 GMSK	/*,LB3,RF2,FFA,MK0007	01	00698
011C	08E8000018F90401	699	GEN	/*,LA3,FFF,MF1,WR1,SH4,AA1	01	00699
011D	18F800006E00031E2	700	NML11 GMSK	/P(SHIFT+P),IMD,LB3,15(*+1+P),AK2	01	00700
011E	0420000062A00060	701	NML12 GMSK	/N(NML12A),LB3,RF2,FFA,MK0006	01	00701
		702	*		01	00702
		703	*		01	00703
		704	*	LONG ARITHMETIC SHIFT RIGHT	01	00704
		705	*		01	00705
		706	*	CALLING SEQUENCE	01	00706
		707	*	SHIFT K= SHIFT COUNT	01	00707
		708	*	AR0/AR1= OPERAND	01	00708
		709	*		01	00709
		710	*	RETURN	01	00710
		711	*	AR0/AR1= OPERAND (SHIFTED)	01	00711
		712	*	(AR0 SIGN NOT PROPAGATED)	01	00712
		713	*		01	00713
011F	0900000013004001	714	SHIFT GEN	/*,LA2,RF3,VF1,AA1	01	00714
		715	GEN	/T(SHFT1,*),TF2,GFC,LA3,RF5,WR1,	01	00715
0120	090823001D01AC00	716		CSC1,WF1,XF1,SH4	01	00716
0121	0288000000000B800	717	SHFT1 GEN	/N(SHFT2),SC1,WF1,XF3	01	00717
		718	*		01	00718
		719	*		01	00719
		720	*		01	00720
		721	*	SET MAXIMUM IN R1/SET OVERFLOW	01	00721
0122	0458000020A90000	722	MYDVER GEN	/N(MYDVR1),11(B\$SPEC),23(OPR),14(TRNB),15(LOG),	01	00722
		723		C17(GPROUT),24(R0)	01	00723
		724	*	ZERO A/B AND RESET OVERFLOW	01	00724
0123	09A0000000F90100	725	ZERANS GEN	/N(ZERAN1),12(A\$SPEC),22(AZERO),14(TRNA),15(LOG),	01	00725
		726		C17(GPROUT),24(R0)	01	00726
		727	*	REALD THRU REALS MUST BE IN CONTIGUOUS BLDCK	01	00727
		728	*	AND ORIGINATE AT A MODULO 4 ADDRESS	01	00728
		729	*		01	00729
		730	*	TEST OP2 FOR ZERO- OVERFLOW	01	00730
0124	4910224063A80000	731	REALD GMSK	/T(MYDVER,REALMD),5(TT),7(ALUZ),11(LIT),15(X*8000),	01	00731
		732		CFFA,13(OPROUT)	01	00732
		733	*	TEST OP2 FOR ZERO- ZERO ANSWER	01	00733
0125	4918224000000000	734	REALM GEN	/T(ZERANS,REALMD),5(TT),7(ALUZ)	01	00734
		735	*	CLEAR P- TO BE USED AS FLAG FOR COMPLIMENT RESULT	01	00735
		736	REALA GEN	/N(FLP3A),12(A\$SPEC),22(ADNE),14(TRNA),15(LOG),	01	00736
0126	0958000001F80200	737		C13(ROUT)	01	00737
		738	*	COMPLIMENT MSW FOR SUBTRACT	01	00738
0127	0930000000090009	739	REALS GEN	/N(REALA),12(A\$GPR),24(R9),14(NOTA),15(LOG),17(GPROUT)	01	00739
		740	*		01	00740
		741	*	TEST OP1 FOR ZERO- ZERO ANSWER	01	00741
0128	0948008000100010	742	REALMD GEN	/N(REALM1),12(A\$GPR),24(R0),11(B\$GPR),23(R1),14(OR),	01	00742
0129	3918224000000000	743		C5(0),6(0),7(\$\$ALU)	01	00743
		744	REALM1 GEN	/T(ZERANS,REALA),5(TT),7(ALUZ)	01	00744
		745	*	COMPLIMENT OP1 MSW AND INCREMENT COMPLIMENT FLAG	01	00745
		746	FLPNT4 GEN	/N(FLPNT5),12(A\$GPR),24(R6),14(NOTA),15(LOG),	01	00746

Address	Label	OpCode	Comment	Address	OpCode
012A 0960000004090006		747	C17(GPROUT),13(INCP)	01	00747
	*	748	TEST OP1 FOR NEGATIVE/ TRANSFER OP2 MSW TO ARC	01	00748
	FLP3A	749	GEN /T(FLPNT5,FLPNT4),5(FT),7(GPRS),11(B\$GPR),23(R9),	01	00749
012B 5960334000A90090		750	C14(TRNB),15(LOG),17(GPROUT),24(R0)	01	00750
	*	751	TEST OP2 FOR NEGATIVE AND SET OP1 MSW IN R0	01	00751
	FLPNT5	752	GEN /T(FLPNT6,FLPNT7),5(TT),11(B\$GPR),23(R6),14(TRNB),	01	00752
012C 7968234000A90050		753	C15(LOG),17(GPROUT),24(R0),7(GPRS)	01	00753
	*	754	COMPLIMENT OP2 MSW AND INCREMENT COMPLIMENT RESULT	01	00754
	FLPNT6	755	GEN /N(FLPNT7),12(A\$GPR),24(R9),14(NTA),15(LOG),	01	00755
012D 0970000004090009		756	C17(GPROUT),13(INCP)	01	00756
	*	757	SAMPLE COMPLIMENT RESULT COUNTER	01	00757
	*	758	PROCESS ADD/SUB OR CD REAL	01	00758
	FLPNT7	759	GEN /F(FLPN7A),FSA,2(X*1),12(A\$P),14(TRNA),15(LOG),	01	00759
012E 098A808003F80000		760	C5(0),6(0),7(\$ALU)	01	00760
	FLPNT8	761	GMSK /P(REAL+P),10(STACK),16(PUSH),15(DDCOMP+P),LB3,	01	00761
012F 19980006E0002742		762	CTF0,SF0	01	00762
	*	763	FLPN7A MUST BE ON EVEN ADDRESS FOLLOWED BY FLPN7B	01	00763
	FLPN7A	764	GEN /T(FLPNT8,FLPNT9),5(IT),7(ALUZ)	01	00764
	*	765	SET TO ADD OR SUBTRACT	01	00765
	FLPN7B	766	GEN /T(FLPNTC,FLPNTD),5(TT),7(ALUZ)	01	00766
	*	767	SET NO COMPLIMENT ON STACK	01	00767
	FLPNT9	768	GMSK /P(REAL+P),10(STACK),16(PUSH),15(NDCOMP+P),LB3,	01	00768
0132 19980006E00026F2		769	CTF0,SF0	01	00769
	*	770		01	00770
	*	771		01	00771
	*	772		01	00772
	REAL	773	GMSK /P(FSM+P),IMD,LB3,15(REAL1+P),AK2 DECOMPOSE OP1	01	00773
	ZERAN1	774	GEN /N(EXIT),11(B\$GPR),23(R0),14(TRNB),15(LOG),	01	00774
0134 0378000000A90001		775	C17(GPROUT),24(R1)	01	00775
	*	776	SET SUBTRACT ROUTINE ON STACK	01	00776
	FLPNTC	777	GMSK /P(REAL+P),10(STACK),16(PUSH),15(FASS+P),LB3,	01	00777
0135 19980006E00025F2		778	CTF0,SF0	01	00778
	*	779	SET ADD ROUTINE ON STACK	01	00779
	FLPNTD	780	GMSK /P(REAL+P),10(STACK),16(PUSH),15(FASA+P),LB2,	01	00780
0136 19980006E00025E2		781	CTF0,SF0	01	00781
	*	782		01	00782
	*	783	DO FIXED POINT REAR END	01	00783
	*	784	SET MAXIMUM VALUE IN A/B	01	00784
	FIX02	785	GEN /N(FIX03),11(B\$SPEC),23(OPR),14(TRNB),15(LOG),	01	00785
0137 03A8000020A90001		786	C17(GPROUT),24(R1)	01	00786
	*	787	SET MAXIMUM IN B	01	00787
	FSC09	788	GEN /N(FSC10),11(B\$GPR),23(R0),14(TRNB),15(LOG),	01	00788
0138 0A00000000A90001		789	C17(GPROUT),24(R1)	01	00789
	*	790	SELECT DIV/MULT OPERATION	01	00790
	*	791	SAMPLE EXPONENT	01	00791
	FASCM1	792	GEN /N(FASCM2),12(A\$GPR),24(R8),14(TRNA),15(LOG),	01	00792
0139 09E0008000F80008		793	C5(0),6(0),7(\$ALU)	01	00793
	*	794	INCREMENT EXPONENT	01	00794
	FASCM4	795	GEN /N(FASCM5),12(A\$GPR),24(R8),11(B\$SPEC),23(OPR),	01	00795
013A 09F8000020910008		796	C14(ADD),17(GPROUT)	01	00796
	*	797	COMPLIMENT EXPONENT	01	00797
	FASCM3	798	GEN /N(FASCM4),12(A\$GPR),24(R8),14(NTA),15(LOG),	01	00798
013B 09D0000000090008		799	C17(GPROUT)	01	00799
	*	800	SET MSW RESULT FOR TESTING	01	00800
	FASCM2	801	GMSK /T(FASCM3,FASCM4),5(TT),7(ALUS),11(LIT),15(X'FFBF),	01	00801
013C 59D821C063AFFBF0		802	CFFA,13(OPROUT)	01	00802
	*	803	PROCESS UNDERFLOW AND SET EXPONENT	01	00803
	FASCM6	804	GEN /T(FASCM8,FASCM7),5(FT),7(ALUS),24(R8),17(GPROUT),	01	00804
013D 1A2031C010010108		805	CLA2,SH1	01	00805
	*	806	ON OUR WAY OUT IF NOT NEGATIVE	01	00806
	FSC06	807	GEN /T(FSC07,FSC10),5(IT),7(ALUS),11(B\$GPR),23(R8),	01	00807
013E 0A0821C000A90030		808	C14(TRNB),15(LOG),17(GPROUT),24(R0)	01	00808
	*	809	TEST FOR UNDERFLOW	01	00809
	FASCM5	810	GEN /N(FASCM6),5(0),6(0),7(\$ALU),14(ADD),11(B\$GPR),	01	00810
013F 09E8008018900280		811	C23(R8),LAB,SH2,24(R0)	01	00811
	*	812	NEGATE MSW?	01	00812
	FSC10	813	GEN /N(FSC11),12(A\$GPR),24(RE),11(B\$GPR),23(R9),14(EOR),	01	00813
0140 039800800068009E		814	C15(LOG),5(0),6(0),7(\$ALU)	01	00814
	*	815	IF NO OVERFLOW- ITS UNDERFLOW	01	00815
	FSC07	816	GMSK /T(FSC08,FASCM7),5(TT),7(OVFL),11(LIT),15(X'8000),	01	00816
0141 1A18200063A80000		817	CFFA,13(OPROUT)	01	00817
	*	818	UNDERFLOW- SET A,B TO ZERO	01	00818
	FASCM7	819	GEN /F(FASCM8),2(X*1),FSA,12(A\$SPEC),23(AZERO),14(TRNA),	01	00819
0142 3A0A800000F90100		820	C15(LOG),17(GPROUT),24(R0)	01	00820
	*	821	WE OVERFLOWED- SET MAXIMUM IN A/B	01	00821
	FSC08	822	GEN /N(FSC09),11(B\$SPEC),23(OPR),14(TRNB),15(LOG),	01	00822
0143 09C0048020A90000		823	C17(GPROUT),24(R0),SF1,GF2	01	00823
	*	824	BUILD PRELIMINARY MSW	01	00824
	FASCM8	825	GEN /N(FASCM9),12(A\$GPR),24(R8),11(B\$GPR),23(R8),14(ADD),	01	00825
0144 02C8008000910080		826	C17(GPROUT),5(0),6(0),7(\$ALU)	01	00826
	*	827	FASCM8 MUST BE ON EVEN ADDRESS FOLLOWED BY FASCM9	01	00827
	*	828	COMPLIMENT EXPONENT IF NEGATIVE	01	00828
	FSC03	829	GEN /T(FSC04,FSC03),5(TT),7(ALUS)	01	00829
	*	830	DELETE COMPLIMENT STACK ENTRY AND EXIT	01	00830
	FASCMB	831	GEN /P(FASCM9+P),10(STACK),23(POPDEL),LB3,5(0),6(0),AA4	01	00831
0146 1A380006E0000014		832	ZERO B- SET OVERFLOW	E.2***	00831
	*	833		01	00831
	FASCM9	834	GEN /N(EXIT),11(B\$GPR),23(R0),14(TRNB),15(LOG),	01	00831
0147 0378048000A90001		835	C17(GPROUT),24(R1),SF1,GF2	01	00831
0059		836	FLTRM+X*33	01	00831
	*	837	TEST FOR OVERFLOW	01	00831
	FASCM9	838	GMSK /T(FASCM10,COMPDP),5(TT),7(ALUS),11(LIT),15(X'8000),	01	00831
0059 12D021C060A80003		839	CFFA,16(OPROUT)	01	00831
	*	839	OVERFLOW- SET MAXIMUM VALUE IN A/B	01	00831

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840 FASC10 GEN /N(FASC1A),11(B$SPEC),23(OPR),14(TRNB),15(LOG), 01 00840
005A 0A40048020A90000 841 C17(GPROUT),24(R0),SF1,GF2 01 00841
0148 842 DRG FLTRM+X*128 01 00842
843 * SET MAXIMUM IN B 01 00843
844 FASC1A GEN /N(COMPDP),11(B$GPR),23(R0),14(TRNB),15(LOG), 01 00844
0148 02900000000A90001 845 C17(GPROUT),24(R1) 01 00845
846 * 01 00846
847 * DO FLOAT ADD/SUB REAR END PROCESSING 01 00847
848 * 01 00848
849 * COMPLIMENT EXPONENT 01 00849
850 FSC04 GEN /N(FSC05),12(A$GPR),24(R8),14(NOTA),15(LOG), 01 00850
0149 0A500000000090008 851 C17(GPROUT) 01 00851
852 * ADD MANTISSA TO SHIFTED EXPONENT (SAMPLE) 01 00852
853 FSC05 GEN /N(FSC06),24(R8),11(B$GPR),23(R0),14(ADD),17(GPROUT), 01 00853
014A 09F0008010910408 854 C5(0),6(0),7($$ALU),LA2,SH4 01 00854
014B 0410008000F90000 855 NML1 GEN /N(NML1B),GF2,FFF,MF1,WR1,AA0 SAMPLE SIGN OF ARO 01 00855
856 * TEST FOR OVERFLOW 01 00856
014C 857 EXIT2 EQU * 01 00857
858 EXIT1 GEN /T(INTR20,INTR),5(FT),7(OVFL),14(ZERO),15(LOG), 01 00858
014C 7A68300000390003 859 C17(GPROUT),24(R3) 01 00859
860 * RETURN TO PIPELINE 01 00860
861 INTR20 GEN /P(SS2M),10(IF$P),7(PJMP$),1(0),5(0),6(MEMC$), 01 00861
014D 0490090400F90205 862 C12(A$SPEC),22(ADNE),14(TRNA),15(LOG),17(GPROUT),24(R5) 01 00862
863 * TEST FOR FOREGROUND OR BACKGROUND- FETCH TASK 01 00863
864 INTR GMSK /N(VORT12),10(DF$ALU),6(MEMC),11(LIT),15(X'FF3E), 01 00864
014E 0C080402E0AFF3E0 865 CFFA 01 00865
014F 0A80000260A7EDB0 866 INTR10 GMSK /N(INTR30),11(LIT),15(X'7EDB),SF0,IM4,FFA 01 00866
0150 0A88000060A7EDB0 867 INTR30 GMSK /N(INTR40),11(LIT),15(X'7EDB),FFA 01 00867
868 INTR40 GEN /P(SS3M),1(0),5(0),6(0),12(A$SPEC),22(ADNE), 01 00868
0151 0168000180F90205 869 C14(TRNA),15(LOG),17(GPROUT),24(R5),10(PJMP) 01 00869
870 FLPNT GEN /N(FLPNT1),11(B$GPR),23(R0),14(TRNB),15(LOG), 01 00870
0152 01F8000000A90006 871 C17(GPROUT),24(R6) SAVE 1ST WORD OF DP1 01 00871
872 * 01 00872
873 * ENTRY FOR $DO WITH INCREMENT = 1 D.101 00873
874 * D.101 00874
875 * SET RF = 1, ENTER INTO DO LOOP D.101 00875
876 * D.101 00876
0017 877 DRG X*17 D.101 00877
878 $DDIN1 GEN /N(VALUE),12(A$SPEC),22(AZERO),14(INCA),16(CRY1), D.101 00878
0017 0BA800008007010F 879 C17(GPROUT),24(RF),10(WAITMD),6(SPEC) D.101 00879
001A 880 DRG X*1A 01 00880
001A 0AE8000080000000 881 * WAIT FOR MEMORY COMPLETE 01 00881
882 * GEN /N(FLDAD),6(SPEC),10(WAITMD) 01 00882
883 * WAIT FOR MEMORY COMPLETE 01 00883
001B 0B18000080000000 884 * GEN /N(FSTOR),6(SPEC),10(WAITMD) 01 00884
001D 885 DRG X*1D 01 00885
001D 0B90000084000000 886 $DO GEN /N(YDO1),10(WAITMD),6(SPEC),13(INCP) 01 00886
887 * FOLLOWING IS BCS ENTRY POINT- 01 00887
001E 0B70000080000000 888 * GEN /N(DOSE1),6(SPEC),10(WAITMD) 01 00888
889 * WAIT FOR MEMORY COMPLETE 01 00889
001F 0B40000080000000 890 * GEN /N(FMOVE),6(SPEC),10(WAITMD) 01 00890
891 * 01 00891
892 * 01 00892
893 * 01 00893
894 * 01 00894
895 * 01 00895
896 * ROUTINE TO FETCH PARAMETERS FOR SUBROUTINE INTERFACE 01 00896
897 * 01 00897
898 * CALLING SEQUENCE* 01 00898
899 * BSS 1 SUBROUTINE ENTRY POIN 01 00899
900 * BCS X*8A1E WCS CALL 01 00900
901 * DATA NUMBER OF PARAMETER ADDRESSES 01 00901
902 * BSS N STORAGE FOR ADDRESSES 01 00902
903 * NOTE* INDIRECTS ARE RESOLVED 01 00903
904 * 01 00904
905 * THE CALLING PROGRAM MUST CALL A SUBROUTINE AS FOLLOWS 01 00905
906 * CALL SUB SUBROUTINE CALL 01 00906
907 * DATA A,B,C,... PARAMETER ADDRESSES TO BE PASSED 01 00907
908 * (MAY BE INDIRECT) 01 00908
909 * 01 00909
910 * FORTSE PASSES PARAMETER ADDRESSES FROM THE CALLING PROGRAM TO 01 00910
911 * THE SUBROUTINE AND SETS A PROPER RETURN ADDRESS 01 00911
912 * 01 00912
913 * 01 00913
914 * 01 00914
0153 915 DRG X*153 01 00915
916 * SET MOVE AMOUNT IN SHIFT COUNT 01 00916
0153 0AA0000022660110 917 FORTSE GEN /*,11(B$SPEC),23(MIR),12(A$SPEC),22(AZERO),14(SUB), 01 00917
918 C16(CRY1),13(SCOUT) 01 00918
919 * WAIT FOR MEMORY 01 00919
0154 0AA8000080000000 920 GEN /*,6(SPEC),10(WAITMD) 01 00920
921 * SET UP FROM PARAMETER ADDRESS 01 00921
922 GEN /N(FORTS1),11(B$SPEC),23(MIR),14(DEC8),17(GPROUT), 01 00922
0155 0AB0000020910219 923 C24(R9),12(A$SPEC),22(ADNE) E.2*****
924 * FETCH FROM PARAMETER (OR INDIRECT ADDRESS) 01 00924
925 FORTS1 GEN /*,10(DF$ALU),12(A$GPR),24(R9),14(INCA),16(CRY1), E.2*****
0156 0AB8040280070009 926 C17(GPROUT),6(MEMC) 01 00926
0157 0AC0040680000000 927 FORTS2 GEN /N(FORTS9),6(MEMC),10(DF$MIR) 01 00927
928 * STORE PARAMETER (DUMMY IF INDIRECT) 01 00928
929 FORTS9 GEN /N(FORTS8),11(B$SPEC),23(MIR),17(GPROUT), 01 00929
0158 0C00008020A90018 930 C24(R8),14(TRNB),15(LOG),5(0),6(0),7($$ALU) 01 00930
931 * COMPLETE DATA STORAGE AND INCREMENT MOVE COUNT 01 00931
932 FORTS5 GEN /N(FORTS6),12(A$GPR),24(R8),14(TRNA),15(LOG), 01 00932
0159 0AD8000080F80008 933 C6(SPEC),10(WAITMD) 01 00933
934 * STORE VALUE 01 00934

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935 FORTS3 GEN /N(FORTS5),10(DSP),6(MEMC),13(INCP),12(A$GPR), 01 00935
936 C24(R8),14(TRNA),15(LDG) 01 00936
937 * STORE RETURN IF COMPLETE/FETCH NEXT IF NOT 01 00937
938 FORTS6 GEN /T(FORTS4,FORTS1),5(IT),7(SFTC),10(D$ALU),6(TESTT), 01 00938
939 C11(B$SPEC),23(OPR),14(TRNB),15(LDG),13(INCSC), 01 00939
015B 3AE02F0325A80009 940 C12(A$GPR),24(R9) E.2*****
941 * RETURN TO NORMAL MICRO CONTROL 01 00941
015C 0B78040404070009 942 FORTS4 GEN /N(FORTS7),10(IF$P),12(A$GPR),24(R9),14(INCA), E.2*****
943 C16(CRY1),6(MEMC),13(INCP),17(GPROUT) 01 00943
944 * 01 00944
945 * 01 00945
946 * 01 00946
947 * 01 00947
948 * 01 00948
949 * 01 00949
950 * ROUTINE TO LOAD DOUBLE WORD FROM MEMORY TO REGISTER A (R0) 01 00950
951 * AND B (R1) 01 00951
952 * 01 00952
953 * CALLING SEQUENCE: 01 00953
954 * BCS '8A1A 01 00954
955 * ADDRESS OF DOUBLE WORD (MAY BE MULTI LEVEL INDIRECT) 01 00955
956 * 01 00956
957 * RETURN 01 00957
958 * TWO WORDS IN A (R0) AND B (R1) 01 00958
959 * 01 00959
960 * 01 00960
015D 0AF8040620000000 961 FLOAD GEN /N(FLOAD1),10(DF$MIR),6(MEMC) 01 00961
962 * (NOTE- NEXT TWO WORDS MUST BE WITHIN FLOAD+/-32) 01 00962
963 * 01 00963
964 * 01 00964
965 FLOAD2 GEN /N(FLOAD3),10(DF$ALU),12(A$GPR),24(R0),14(INCA), 01 00965
966 C16(CRY1),6(MEMC) 01 00966
967 * SAVE ADDRESS AND LOOP IF INDIRECT 01 00967
015E 0B00040280060000 968 FLOAD1 GEN /T(FLOAD,FLOAD2),5(IT),11(B$SPEC),23(MIR),14(TRNB), 01 00968
969 C15(LDG),7(MIRC),17(GPROUT),24(R0) 01 00969
970 * 01 00970
971 FLOAD3 GEN /*,11(B$SPEC),23(MIR),14(TRNB),15(LDG), 01 00971
972 C17(GPROUT),24(R0) 01 00972
973 * 01 00973
0160 0B08000020A90010 974 * GEN /*,6(SPEC),10(WAITMD),13(INCP) 01 00974
975 * 01 00975
976 * GEN /N(SS2M),7(PUMP$),1(0),5(0),6(MEMC$),10(IF$P), 01 00976
0162 0490090420A90011 977 C11(B$SPEC),23(MIR),14(TRNB),15(LDG),17(GPROUT),24(R1) 01 00977
978 * 01 00978
979 * 01 00979
980 * 01 00980
981 * 01 00981
982 * 01 00982
983 * ROUTINE TO STORE DOUBLE WORD 01 00983
984 * 01 00984
985 * CALLING SEQUENCE: 01 00985
986 * DOUBLE WORD IN A (R0) AND B (R1) 01 00986
987 * BCS '8A1B 01 00987
988 * ADDRESS TO STORE DOUBLE WORD (MAY BE MULTILEVEL INDIRECT) 01 00988
989 * 01 00989
990 * RETURN 01 00990
991 * DOUBLE WORD STORED 01 00991
992 * 01 00992
993 * 01 00993
0163 0B28040680000000 994 FSTOR GEN /N(FSTOR1),10(DF$MIR),6(MEMC) 01 00994
995 * (NOTE- NEXT 2 WORDS MUST BE WITHIN FSTOR+/-32) 01 00995
996 * 01 00996
997 * 01 00997
998 FSTOR2 GEN /N(FSTOR3),12(A$GPR),24(R0),14(TRNA),15(LDG), 01 00998
999 C6(SPEC),10(WAITMD) 01 00999
1000 * 01 1000
1001 FSTOR1 GEN /T(FSTOR,FSTOR2),5(IT),7(MIRS),10(D$OVR),6(TESTF), 01 1001
1002 C12(A$GPR),24(R0),14(TRNA),15(LDG) 01 1002
1003 * 01 1003
1004 FSTOR3 GEN /*,10(D$ALU),11(B$SPEC),23(MIR),14(INCR),16(CRY1), 01 1004
1005 C12(B$SPEC),23(AZER),6(MEMC) 01 1005
1006 * 01 1006
1007 * GEN /N(FSTOR4),10(IF$P),6(MEMC),13(INCP),12(A$GPR), 01 1007
0167 0B28040404F80001 1008 C24(R1),14(TRNA),15(LDG) 01 1008
1009 * 01 1009
1010 * 01 1010
1011 * 01 1011
1012 * 01 1012
1013 * 01 1013
1014 * 01 1014
1015 * ROUTINE TO PERFORM MEMORY TO MEMORY DOUBLE WORD MOVE 01 1015
1016 * 01 1016
1017 * CALLING SEQUENCE: 01 1017
1018 * BCS '8A1F 01 1018
1019 * ADDRESS OF SOURCE (MAY BE MULTILEVEL INDIRECT) 01 1019
1020 * ADDRESS OF TARGET (MAY BE MULTILEVEL INDIRECT) 01 1020
1021 * 01 1021
1022 * RETURN 01 1022
1023 * A (R0) AND B (R1) ARE DESTROYED, DOUBLE WORD IS STORED 01 1023
1024 * 01 1024
1025 * 01 1025
0168 0B48040680000000 1026 FMOVE GEN /N(FMOVE1),10(DF$MIR),6(MEMC) 01 1026
1027 * 01 1027
1028 * 01 1028
1029 FMOVE1 GEN /T(FMOVE,FMOVE2),5(IT),7(MIRS),11(B$SPEC),23(MIR), 01 1029

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0169 5B4022C020A90010 1030 C14( TRNB ), 15( LOG ), 17( GPROUT ), 24( R0 ) 01 01030
      1031 *      FETCH SECOND WORD 01 01031
      1032 *      ( MUST BE ON EVEN ADDRESS ) 01 01032
      1033 FMOVE2 GEN      /N( FMOVE3 ), 10( OF$ALU ), 6( MEMC ), 12( A$GPR ), 24( R0 ), 01 01033
016A 0B58040280060000 1034 C14( INCA ), 16( CRY1 ) 01 01034
      1035 *      SAVE MSW IN A ( R0 ) 01 01035
      1036 FMOVE3 GEN      /*, 11( B$SPEC ), 23( MIR ), 14( TRNB ), 15( LOG ), 17( GPROUT ), 01 01036
      1037 C24( R0 ) 01 01037
      1038 *      FETCH STORAGE ADDRESS 01 01038
016C 0B68040484000000 1039 /*, 10( OF$P ), 6( MEMC ), 13( INCP ) 01 01039
      1040 *      SAVE MSW IN B ( R1 ) AND GO STORE A ( R0 ) AND B ( R1 ) 01 01040
      1041 *      GEN      /N( FSTOR ), 11( B$SPEC ), 23( MIR ), 14( TRNB ), 15( LOG ), 01 01041
016D 0B18000020A90011 1042 C17( GPROUT ), 24( R1 ) 01 01042
      1043 * 01 01043
      1044 * 01 01044
      1045 * 01 01045
      1046 * 01 01046
      1047 * 01 01047
      1049 *      FETCH INPUT PARAMETERS ADDRESS 01 01049
      1050 DDSE1 GMSK      /N( FORTSE ), 6( MEMC ), 10( OF$ALU ), 12( A$P ), 11( LIT ), 01 01050
016E 0A980402EB900010 1051 C15( 0001 ), 14( ADD ), 13( OPROUT ) 01 01051
      1052 *      FORTS7 GEN      /P( SS3M ), 10( IF$P ), 12( A$GPR ), 24( R9 ), 14( TRNA ), 01 01051
016F 0168090404F80009 1053 C15( LOG ), 7( PJMP$ ), 1( 0 ), 5( 0 ), 6( MEMC ), 13( INCP ) 01 01053
      1054 *      FSTOR4 GEN      /N( SS3M ), 7( PJMP$ ), 1( 0 ), 5( 0 ), 6( MEMC ), 10( IF$P ), 01 01054
0170 0168090404F80001 1055 C13( INCP ), 12( A$GPR ), 24( R1 ), 14( TRNA ), 15( LOG ) 01 01055
      1057 * 01 01057
      1058 *      DO LOOP TERMINATOR ROUTINE FOR V74 FIRMWARE 01 01058
      1059 *      REPLACES $DD 01 01059
      1060 * 01 01060
      1061 *      CALLING SEQUENCE: 01 01061
      1062 * 01 01062
      1063 *      BCS $DDF 01 01063
      1064 *      DATA INCREMENT 01 01064
      1065 *      DATA VALUE 01 01065
      1066 *      DATA LIMIT 01 01066
      1067 *      DATA RETURN 01 01067
      1068 * 01 01068
      1069 *      VALUE = VALUE + INCREMENT 01 01069
      1070 *      IF VALUE GREATER THAN OR EQUAL TO LIMIT 01 01070
      1071 *      CONTROL IS RETURNED TO INSTRUCTION 01 01071
      1072 *      AFTER "DATA RETURN", OTHERWISE CONTROL 01 01072
      1073 *      IS TRANSFERRED TO RETURN 01 01073
      1074 * 01 01074
      1075 *      AS PART OF PIPELINE MIR = ADDRESS OF INCREMENT 01 01075
      1076 *      START GETTING INCREMENT 01 01076
      1077 * 01 01077
      1078 *      TEST INDIRECT CHAIN-$DD IF MORE, OTHERWISE GET INCREMENT 01 01078
      1079 * 01 01079
      1080 DD3 GEN      /N( VALUX ), 10( OF$P ), 11( B$SPEC ), 23( MIR ), 14( TRNB ), 15( LOG ), 01 01080
0171 0BA00404ACA9001F 1081 C17( GPROUT ), 24( RF ), 6( MEMC ) 01 01081
      1082 * 01 01082
      1083 *      SAVE INCREMENT IN RF, GET VALUE 01 01083
      1084 * 01 01084
      1085 YDD1 GEN      /N( YDD2 ), 10( OF$MIR ), 6( MEMC ), 11( B$SPEC ), 23( MIR ), 01 01085
0172 0BF80406A0A9001C 1086 C14( TRNB ), 15( LOG ), 17( GPROUT ), 24( R0 ) 01 01086
0173 1B8831C030000000 1087 $DD1 GEN      /T( DD3, YDD1 ), 5( FT ), 7( ALUS ), 10( WAITMD ), 6( SPEC ) 01 01087
      1088 * 01 01088
      1089 *      GET VALUE INTO MIR, VALUE ADDRESS IN ALU 01 01089
      1090 * 01 01090
0174 0BA8000030000000 1091 VALUX GEN      /N( VALUE ), 10( WAITMD ), 6( SPEC ) 01 01091
      1092 VALUE GEN      /T( VALUX, VAL2 ), 10( OF$MIR ), 6( MEMC ), 7( MIRS ), 5( TT ), 01 01092
0175 3BA026C6A0A9001E 1093 C23( MIR ), 14( TRNB ), 15( LOG ), 17( GPROUT ), 24( RE ), 11( B$SPEC ) 01 01093
      1094 * 01 01094
      1095 *      PUT NEW VALUE BACK 01 01095
      1096 * 01 01096
      1097 VAL2 GEN      /N( VAL3 ), 10( OF$ALU ), 6( MEMC ), 12( A$GPR ), 24( RF ), 01 01097
0176 0BB8040304A800EF 1098 C11( B$GPR ), 23( RE ), 14( TRNB ), 15( LOG ), 13( INCP ) 01 01098
      1099 VAL3 GEN      /N( LIMIT ), 12( A$GPR ), 24( RF ), 11( B$SPEC ), 23( MIR ), 01 01099
0177 0BC00404A091001F 1100 C14( ADD ), 17( GPROUT ), 10( OF$P ), 6( MEMC ) 01 01100
      1101 * 01 01101
      1102 *      GET LIMIT 01 01102
      1103 * 01 01103
0178 0BC8000080000000 1104 LIM1 GEN      /N( LIM1 ), 6( SPEC ), 10( WAITMD ) 01 01104
0179 5BC026C680000000 1105 /T( LIMIT, LIM2 ), 5( TT ), 10( OF$MIR ), 7( MIRS ), 6( MEMC ) 01 01105
      1106 LIM2 GEN      /N( LIM3 ), 10( OF$P ), 12( A$GPR ), 24( RF ), 14( DECA ), 01 01106
017A 0BE0040484F1000F 1107 C17( GPROUT ), 6( MEMC ), 13( INCP ) 01 01107
      1108 * 01 01108
      1109 *      IF VALUE LT LIMIT RETURN 01 01109
      1110 * 01 01110
017B 7BE831C080000000 1111 /T( NEXT, RETURN ), 5( FT ), 7( ALUS ), 10( WAITMD ), 6( SPEC ) 01 01111
      1112 LIM4 GEN      /N( LIM4 ), 12( A$GPR ), 24( RF ), 11( B$SPEC ), 23( MIR ), 14( SUB ), 01 01112
      1113 LIM3 GEN      C17( GPROUT ), 16( CRY1 ), 5( 0 ), 6( 0 ), 7( S$ALU ) 01 01113
017C 0BD8008C2067001F 1114 /N( SS2M ), 7( PJMP$ ), 1( 0 ), 10( IF$P ), 6( MEMC ), 13( INCP ) 01 01114
017D 0490090404000000 1115 /N( SS2M ), 7( PJMP$ ), 1( 0 ), 10( IF$MIR ), 11( B$SPEC ), 23( MIR ), 01 01115
      1116 C14( TRNB ), 15( LOG ), 13( OPROUT ), 6( MEMC ) 01 01116
017E 0490090621A80010 1117 /N( 001 ), 11( A$GPR ), 24( R0 ), 14( TRNA ), 15( LOG ) 01 01117
      1118 C17( GPROUT ), 5( 0 ), 6( 0 ), 7( S$ALU ) 01 01118
017F 0B98008000F9000C 1119 /T( FORTS2, FORTS3 ), 5( TT ), 7( ALUS ) 01 01119
0180 5AB821C000000000 1120 *      FETCH MARK LOCATION IN CASE FOREGROUND 01 01120
      1121 VORT12 GMSK      /N( VORT13 ), 10( OF$ALU ), 6( MEMC ), 11( LIT ), 15( X$FFEC ), 01 01121
0181 0C100402E0AFFEC0 1122 OFFA 01 01122
      1123 *      SAVE TASK FOR TESTING 01 01123
      1124 VORT13 GEN      /N( VORT14 ), 11( B$SPEC ), 23( MIR ), 24( R4 ), 12( GPROUT ), 01 01124

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0182 0C18000020A900141125 C14(TRNB),15(LOG) 01 01125
          1126 * TEST FOR BACKGROUND 01 01126
          1127 VORT14 GMSK /N(VORT15),12(ASGPR),AK4,11(LIT),15(X'0001), 01 01127
0183 0C200080609000141128 C14(ADD),5(0),6(0),7(S$ALU) 01 01128
          1129 * SELECT FOREGROUND OR BACKGROUND 01 01129
          1130 VORT15 GEN /T(INT5,VORT16),5(TI),7(ALUS),12(ASP),14(DECA), 01 01130
0184 3C2821C088F100041131 C17(GPROUT),24(R4),6(SPEC),10(WAITMD) 01 01131
          1132 INT5 GMSK /N(INTR10),12(ASP),11(LIT),15(X'1),14(ADD), 01 01132
0185 0A780000699000101133 C13(POUT) 01 01133
          1134 * FOREGROUND- SET MARK AND JUMP 01 01134
          1135 VORT16 GEN /N(VORT17),10(0$MIR),6(MEMO),11(B$SPEC),23(MIR), 01 01135
0186 0C380407211601101136 C14(INCB),16(CRY1),12(AS$SPEC),22(AZERO),13(POUT) 01 01136
          1137 * COMPLETE MARK 01 01137
          1138 VORT17 GEN /N(VORT18),12(ASGPR),24(R4),14(DECA), 01 01137
0187 0C40000080F000041139 C10(WAITMD),6(SPEC) E.2***** 01 01139
          1140 * EXIT- RESTORE PIPELINE E.2***** 01 01139
          1141 VORT18 GEN /P(SS2M),14(TRNA),15(LOG),17(GPROUT),24(R5),12(AS$SPEC), 01 01140
0188 0490090400F902051142 C22(ADNE),7(PJMP$),1(0),5(0),6(MEMO$),10(IF$P) 01 01142
          1143 * 01 01143
          1144 * 01 01144
          1145 * 01 01145
          1146 * MUST BE ASSEMBLED WITH SUPPLEMENTAL DPCODE EQUATE DECK 01 01146
          1147 * 01 01147
          1148 * 01 01148
          00991149 DIV EQU X'99 DIVIDE SUBROUTINE 01 01149
          00521150 COMPPDP EQU X'52 COMMON STACK PDP 01 01149
          00CD1151 MULA EQU X'CD MULTIPLY SUBROUTINE 01 01150
          02001152 P EQU X'200 PAGE 1 ADDRESS 01 01151
0019 1153 * X'19 01 01152
          1154 STACKS GEN /N(STACK1),12(ASP),14(DECA), SAVE PROGRAM COUNTER 01 01153
0019 0CC8000088F100091155 C15(000),17(GPROUT),24(R9),10(WAITMD),6(SPEC) 01 01154
          1156 * 01 01155
018B 1157 ORG X'18B 01 01156
          1158 * 01 01157
          1159 * 01 01158
          1160 INCR0B GEN /N(INCTOS), 01 01158
          C11(B$SPEC),23(MIR),14(TRNB),15(LOG), TRANSFER MIR 01 01159
          C17(GPROUT),24(R0) TO GPR 01 01160
018B 0DB8000020A900101161 INCLR1 GEN /N(INCR1A),10(OF$ALU),6(MEMO),24(R8) 01 01161
018C 0E100402800000081162 INCR1B GEN /N(INCTOS), 01 01162
          C11(B$SPEC),23(MIR),14(TRNB),15(LOG), TRANSFER MIR 01 01163
          C17(GPROUT),24(R1) TO GPR 01 01164
018D 0DB8000020A900111165 INCLRB GEN /N(INCRBA),10(OF$ALU),6(MEMO),24(R8) 01 01165
018E 0E080402800000081166 INCR0B GEN /N(INCTOS), 01 01166
          C11(B$SPEC),23(MIR),14(TRNB),15(LOG), TRANSFER MIR 01 01167
018F 0DB8000020A9001B1169 C17(GPROUT),24(R8) TO GPR 01 01168
          1170 * 01 01169
          1171 * 01 01170
          1172 * 01 01171
0190 1C700006E00039D21173 SADD GMSK /P(INCLRB+P),IMD,LB3,15(SADD3+P),AK2 INCR STACK PTR 01 01172
0191 1C700006E0003A121174 SSUB GMSK /P(INCLRB+P),IMD,LB3,15(SSUB3+P),AK2 INCR STACK PTR 01 01173
0192 1C600006E0003A321175 SMUL GMSK /P(INCLR1+P),IMD,LB3,15(SMUL3+P),AK2 INCR STACK PTR 01 01174
0193 1E000006E0003A21176 SDIV GMSK /P(INCLR0+P),IMD,LB3,15(SDIV3+P),AK2 01 01175
0194 1DB00006E0003B321177 PUSHB GMSK /P(DECTOS+P),IMD,LB3,15(PUSH1+P),AK2 DECR TOP OF STACK01 01176
0195 1DB00006E0003B221178 PUSHD GMSK /P(DECTOS+P),IMD,LB3,15(PUSHD1+P),AK2 DECR TOP OF STACK01 01177
0196 1E000006E0003A21179 POP GMSK /P(INCLR0+P),IMD,LB3,15(SEXIT+P),AK2 INCR STACK PTR 01 01178
0197 1E000006E00039821180 POPD GMSK /P(INCLR0+P),IMD,LB3,15(POPDA+P),AK2 INCR STACK PTR 01 01179
0198 1C600006E0003AA21181 POPDA GMSK /P(INCLR1+P),IMD,LB3,15(SEXIT+P),AK2 INCR STACK PTR 01 01180
          1182 STACK1 GEN /T(STACK3,STACK2),5(TI),7(MIR$), SAVE STACK CONTROL BLK01 01181
          1183 C11(B$SPEC),17(GPROUT),24(R0), PTR IN 'P', TEST E.2***** 01 01182
          1184 C23(MIR),14(7UD),13(UD) INDIRECT ADDRESS 01 01183
0199 5CD832C020A9001D1184 STACK2 GEN /N(STACK3),10(OF$MIR),6(MEMO),13(INC0) INDIRECT,TRY NEXT01 01184
019A 00C80406850000001185 STACK3 GEN /N(STACK5),10(OF$MIR),6(MEMO) GET TOP OF STACK PTR 01 01185
019B 0E200406800000001186 STACK4 GEN /P(SADD),F8,2(X'7),11(B$SPEC),23(MIR), SAVE PTR IN R3 01 01186
          1187 C14( TRNB),15( LOG),17(GPROUT),24(R8) FIELD SELECT 5-7 01 01187
019C 0CBA400020A900181188 * 01 01188
          1189 * 01 01189
          1190 * 01 01190
019D 0E280404800000001191 SADD3 GEN /N(SADD4),10(OF$P),6(MEMO) FETCH NEXT DATA 01 01191
019E 0CF8000020A9001A1192 SADD4 GEN /N(SADD5),11(B$SPEC),23(MIR),14(TRNB), TRANSFER DATA TO 01 01192
          C15(UD),17(GPROUT),24(RA) R3 01 01193
019F 0D000585009100AB1193 SADD5 GEN /N(SADD6),10(OF$P),6(MEMO),12(ASGPR),24(RB), 01 01194
          C14(ADD),11(ACPT),2(7EA),17(GPROUT),5(0),7(S$OVFL) 01 01195
01A0 0F50000080F8000B1196 SADD6 GEN /N(SEXIT),10(WAITMD),12(ASGPR),24(0),14(TRNA),15(LOG) 01 01196
          1197 STORE RESULT OF RA + RB 01 01197
          1198 * 01 01198
          1199 * 01 01199
01A1 0E300404800000001199 SSUB3 GEN /N(SSUB4),10(OF$P),6(MEMO) FETCH NEXT DATA 01 01199
01A2 0CF800002027011A1201 SSUB4 GEN /N(SADD5),11(B$SPEC),22(AZERO),11(B$SPEC), 01 01200
          C23(MIR),14(7UD),16(CRY1),17(GPROUT),24(RA) 01 01201
          1202 * 01 01202
          1203 * 01 01203
          1204 * 01 01204
01A3 0D20040480A9000B1205 SMUL3 GEN /N(SMUL4),10(OF$P),6(MEMO),11(B$GPR),23(R0), 01 01205
          C14( TRNB),15( LOG),17(GPROUT),24(RB) 01 01206
01A4 0D280000803900001207 SMUL4 GEN /N(SMUL6),10(WAITMD),6(SPEC),14(ZERO), 01 01207
          C15( LOG),17(GPROUT),24(R0) 01 01208
01A5 0D30000020A9001F1209 SMUL6 GEN /N(SMUL7),11(B$SPEC),23(MIR),14(TRNB), RF = MULTIPLICAND01 01209
          C15( LOG),17(GPROUT),24(RF) 01 01210
01A6 16680006E0003A721210 SMUL7 GMSK /P(MULA+P),IMD,LB3,15(SMUL8+P),AK2 MULTIPLY SUBROUTINE01 01210
01A7 0D40040300F800081212 SMUL8 GEN /N(SMUL9),12(ASGPR),24(R8),14(TRNA), 01 01211
          C15( LOG),10(OF$ALU),6(MEMO) 01 01212
01A8 0E48000080F800011213 SMUL9 GEN /N(SMUL12),12(ASGPR),24(R1),14(TRNA),15( LOG),10(WAITMD) 01 01213
01A9 1DB00006E0003AB21214 SMUL12 GMSK /P(DECTOS+P),IMD,LB3,15(SMUL13+P),AK2 DECR TOP OF STACK01 01214
          1215 SEXIT GMSK /P(SS2M),10(OF$ALU),7(PJMP$), PRG CNTR = R9+1 01 01215
          1216 C6(MEMO),13(ASGPR),AK9, FETCH NEXT INSTR01 01216
01AA 04900902619FFFD91217 C13(POUT),11(LIT),14(ADD),AK9FFD 01 01217
          1218 SMUL13 GEN /N(SMUL13A),10(OF$P),6(MEMO),11(B$GPR), 01 01217

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Address	Instruction	Comment	Address	Address
01AB	0D6004050CA900A1	1219	C23(RA),14(TRNB),15(LOG),17(GPROUT),24(R1)	01 01218
01AC	0D68000080F80000	1220	/N(SMU14),12(A\$GPR),24(R0),14(TRNA),15(LOG),10(WAITMD)	01 01219
		1221	SMU14 GEN	01 01220
01AD	0D50000000A900B0	1222	/N(SEXIT),11(B\$GPR),23(RB),14(TRNB),15(LOG),	01 01221
		1223	C17(GPROUT),24(R0)	01 01222
		1224	*	01 01223
01AE	1C600006E0003AF2	1225	/P(INCLR1+P),IMD,LB3,15(SDIV8+P),AK2 INCR STACK PTR	01 01224
01AF	0E38040280000008	1226	/N(SDIVY),10(DF\$ALU),6(MEMC),24(R8)	01 01225
		1227	SDIV8 GEN	01 01226
		1228	/N(SDIV10),11(B\$SPEC),23(MIR),14(TRNB), RF = DIVISOR	01 01227
01B0	0D88000020A9001C	1229	C15(LOG),17(GPROUT),24(RC)	01 01228
01B1	14C80006E0003A72	1230	/P(DIV+P),IMD,LB3,15(SMUL8+P),AK2	01 01229
		1231	*	01 01230
		1232	PUSHD1 GEN	01 01231
01B2	0DA8040300F80008	1233	/N(PUSH5),10(OS\$ALU),6(MEMC),12(A\$GPR), STORE R1 ON TO	01 01232
		1234	C24(R8),14(TRNA),15(LOG) TOP OF STACK	01 01233
		1235	*	01 01234
		1236	PUSH1 GEN	01 01235
01B3	0DA0040300F80008	1237	/N(PUSH2),10(OS\$ALU),6(MEMC),12(A\$GPR), STORE R0 ON TO TOP	01 01236
		1238	C24(R8),14(TRNA),15(LOG) OF STACK	01 01237
01B4	0D50000080000000	1239	/N(SEXIT),10(WAITMD)	01 01238
01B5	0CA0000080F80001	1240	/N(PUSH5),AA1,10(WAITMD),14(TRNA),15(LOG)	01 01239
		1241	*	01 01240
		1242	DECTDS GEN	01 01241
01B6	0DC0000000F10008	1243	/N(MCTDS),12(A\$GPR), CTDS=CTDS-1, STORE	01 01242
		1244	C24(R8),14(DECA),17(GPROUT)	01 01243
		1245	INCDTS GEN	01 01244
		1246	/N(MCTDS),12(A\$GPR), CTDS=CTDS+1, STORE	01 01245
01B7	0DC0000000070008	1247	C24(R8),14(INCA),16(CRY1),17(GPROUT)	01 01246
01B8	0DC804030100000D	1248	/N(MCTDSX),10(OS\$ALU),6(MEMC),24(RD),13(POUT)	01 01247
		1249	MCTDSX GEN	01 01248
		1250	/N(MCTOSA),10(DF\$P),6(MEMC),13(INCP), READ STACK LD LIMIT	01 01249
01B9	0E40040484F80008	1251	CBP0,AA8,14(TRNA),15(LOG) HOLD ALU	01 01250
01BA	0DD8008020660018	1252	/N(MCTOS2),12(A\$GPR),24(R8),11(B\$SPEC), CTDS-(LD LIMIT)-1	01 01251
		1253	C23(MIR),14(SUB),16(3),5(0),6(0),7(C\$ALU) ALU0	01 01252
01BB	62D835C484000000	1254	/T(MCTOSB,FAULT),10(DF\$P),6(MEMC), READ HI LIMIT, GO TO	01 01253
		1255	C13(INCP),5(FT),7(ALUS) "FAULT" IF CTDS<LO LIM	01 01254
01BC	0DE800802060001C	1256	/N(MCTOS4),12(A\$GPR),24(RC),11(B\$SPEC), CTDS-(HI LIMIT)	01 01255
01BD	629021C001F80008	1257	C22(MIR),14(SUB),16(0000),5(0),6(0),7(C\$ALU)	01 01256
		1258	MCTOS4 GEN	01 01257
		1259	/T(COMPOP,FAULT),5(TT),7(ALUS),12(A\$GPR), TEST HI LIM	01 01258
01BE	0DF8000080F80009	1260	C24(R8),14(TRNA),15(LOG)	01 01259
01BF	09F00006E4000014	1261	/P(SS1M),IMD,LB3,AA4,BB1,RF4 BRANCH/DELETE	01 01260
		1262	*	01 01261
01C0	0E18040280000008	1263	/N(INCR0A),10(DF\$ALU),6(MEMC),24(R8)	01 01262
01C1	0C78000080000000	1264	/N(INCRBB),10(WAITMD),6(SPEC)	01 01263
		1265	INCR1A GEN	01 01264
01C2	0C68000080A9001A	1266	/N(INCR0B),10(WAITMD),6(SPEC)	01 01265
		1267	C11(B\$GPR),23(R1),14(TRNB),15(LOG),17(GPROUT),24(RA)	01 01266
01C3	0C58000080A9000B	1268	/N(INCR0C),10(WAITMD),6(SPEC)	01 01267
01C4	0CE0000080000000	1269	C11(B\$GPR),23(R0),14(TRNB),15(LOG),17(GPROUT),24(RB)	01 01268
01C5	0CF0000080000000	1270	/N(STACK4),10(WAITMD),6(SPEC)	01 01269
01C6	0D10000080000000	1271	/N(SADD4),10(WAITMD),6(SPEC)	01 01270
01C7	0D80000080000000	1272	/N(SSUB4),10(WAITMD),6(SPEC)	01 01271
01C8	0DD0000080000000	1273	/N(SDIV9),10(WAITMD),6(SPEC)	01 01272
005B		1274	MCTOSA GEN	01 01273
		1275	X*5B	01 01274
005C	0DE0000080B1028C	1276	/N(MCTOSB),10(WAITMD),6(SPEC),FFB,12(A\$SPEC), RC=R8-1	01 01275
		1277	C11(B\$GPR),23(R8),23(AONE),17(GPROUT),24(RC)	01 01276
		1278	FAULT GMSK	01 01277
		1279	/N(FAULTA),10(OS\$ALU),6(MEMC),12(A\$GPR), LOC OF BCS	01 01278
		1280	C16(RD),11(LIT),MKFFFC,14(ADD),13(POUT)	01 01279
		1281	*	01 01280
		1282	MOVE BYTE STRING	01 01281
		1283	*	01 01282
		1284	CALL: DATA 0105070	01 01283
		1285	*	01 01284
		1286	ON ENTRY: B REG - BYTE POINTER TO SOURCE	01 01285
		1287	X REG - BYTE POINTER TO DESTINATION	01 01286
		1288	A REG - NUMBER OF BYTES TO BE MOVED	01 01287
		1289	*	01 01288
		1290	FOLLOWING IS BCS ENTRY POINT - BIT 5 = 0 FOR CBS, = 1 FOR MBS	01 01289
0018		1291	ORG X*18	01 01290
0018	7F8A400000000000	1292	GEN /F(CBS),FS9,2(1)	01 01291
01CD		1293	ORG X*10D	01 01292
		1294	DEC SOURCE ADDR. PUT IT IN P. SET BYTE FLAG FROM SOURCE PTR.	01 01293
01CD	0E80000019F00401	1295	GEN /N(MBS4),12(A\$GPR),24(R1),22(4),14(DECA),13(POUT)	01 01294
		1296	MBS2-MBS3 IS A 2-WORD TABLE WHICH MUST START ON AN EVEN ADDRESS	01 01295
		1297	* SELECT ROUTINE - L TO L, L TO R, R TO R OR R TO L BYTE MOVE	01 01296
		1298	MBS2 GEN	01 01297
01CE	6E88224000F10002	1299	/T(MBS5,MBS20),5(TT),12(A\$GPR),24(R2),14(DECA),	01 01298
		1300	C17(GPROUT),7(ALUZ)	01 01299
01CF	5EA8324000F10002	1301	/T(MBS9,MBS14),5(FT),12(A\$GPR),24(R2),14(DECA),	01 01300
		1302	C17(GPROUT),7(ALUZ)	01 01301
		1303	* SET ALU FLAGS FROM BYTE NUMBER OF DEST PTR. JUMP ON SOURCE BYTE	01 01302
01D0	7E08808060BFFFE2	1304	MBS4 GMSK	01 01303
		1305	/F(MBS2),FS2,2(1),12(A\$GPR),16(R2),11(LIT),15(X'FFFE),	01 01304
		1306	C14(AND),7(C\$ALU)	01 01305
		1307	*	01 01306
		1308	START L TO L BYTE MOVE - FETCH A WORD, FINISH PREVIOUS BYTE STORE	01 01307
01D1	0E900404A4A80010	1309	GEN /N(MBS6),12(A\$GPR),24(R0),14(DECA),17(GPROUT),7(C\$ALU)	01 01308
		1310	C15(LOG),13(INCP)	01 01309
		1311	* DECREMENT BYTE COUNT	01 01310
01D2	0E98008000F10000	1312	MBS6 GEN	01 01311
			/N(MBS7),12(A\$GPR),24(R0),14(DECA),17(GPROUT),7(C\$ALU)	
			* INCREMENT DEST PTR. TEST FOR DONE - LOOP OR RETURN.	

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1313 MBS7 GEN /T(MBS8,MBS24),5(FT),7(ALUS),12(A$GPR),24(R2),14(INCA), 01 01312
01D3 7EA031C080070002 1314 C16(CRY1),17(GPROUT),6(SPEC),10(WAITMD) 01 01313
1315 * INITIATE L TO L BYTE STORE 01 01314
1316 MBS8 GEN /N(MBS10),10(B$ALU),6(MEMO),12(A$GPR),24(R2),22(4), 01 01315
01D4 0EB0040398F80402 1317 C14(TRNA),15(LDG) 01 01316
1318 * 01 01317
1319 * 01 01318
1320 * 01 01319
01D5 0EB0040484000000 1321 MBS9 GEN /N(MBS11),10(DF$P),6(MEMO),13(INCP) 01 01320
1322 * FINISH L TO L BYTE STORE 01 01321
1323 MBS10 GEN /N(MBS11),11(B$SPEC),23(MIR),14(TRNB),15(LDG), 01 01322
01D6 0EB0000A0A80010 1324 C6(SPEC),10(WAITMD) 01 01323
1325 * DECREMENT BYTE COUNT 01 01324
01D7 0EC0008000F10000 1326 MBS11 GEN /N(MBS12),12(A$GPR),24(R0),14(DECA),17(GPROUT),7(S$ALU) 01 01325
1327 * INCREMENT DESTINATION PTR. TEST FOR DONE - LOOP OR RETURN. 01 01326
1328 MBS12 GEN /T(MBS13,MBS24),5(FT),7(ALUS),12(A$GPR),24(R2), 01 01327
01D8 7EC831C080070002 1329 C14(INCA),16(CRY1),17(GPROUT),6(SPEC),10(WAITMD) 01 01328
1330 * INITIATE R TO R BYTE STORE 01 01329
1331 MBS13 GEN /N(MBS5),10(B$ALU),6(MEMO),12(A$GPR),24(R2),22(4), 01 01330
01D9 0E88040398F80402 1332 C14(TRNA),15(LDG) 01 01331
1333 * 01 01332
1334 * 01 01333
1335 * 01 01334
01DA 0F20040484000000 1336 MBS14 GEN /N(MBS16),10(DF$P),6(MEMO),13(INCP) 01 01335
1337 * TRANSFER SOURCE WORD TO OPERAND REG FOR BYTE SHIFT 01 01336
01DB 0F30000023A80010 1338 MBS18 GEN /N(MBS19),11(B$SPEC),23(MIR),14(TRNB),15(LDG),13(OPROUT) 01 01337
1339 * 01 01338
1340 * 01 01339
1341 * 01 01340
01DC 0F380404A4A80070 1342 MBS20 GEN /N(MBS21),10(DF$P),6(MEMO),11(B$SPEC),23(DLZF), 01 01341
1343 C14(TRNB),15(LDG),13(INCP) 01 01342
1344 * TRANSFER DATA WORD TO OPERAND REG FOR BYTE SHIFT 01 01343
01DD 0EF8000023A80010 1345 MBS23 GEN /N(MBS25),11(B$SPEC),23(MIR),14(TRNB),15(LDG),13(OPROUT) 01 01344
1346 * RESTORE P FROM R9 AND RETURN E.2*****
1347 MBS24 GEN /P(SS2M),10(JMP),17(A$GPR),24(R9),14(TRNA),15(LDG), 01 01344
01DE 0490000181F80009 1348 C13(OUT) E.2*****
1349 * INITIATE L TO R BYTE STORE E.2*****
01DF 0F48040398F80402 1351 MBS25 GEN /N(MBS15),10(B$ALU),6(MEMO),12(A$GPR),24(R2),22(4), 01 01348
1352 C14(TRNA),15(LDG) 01 01349
1353 * 01 01351
1354 * CBS4 IS A 4-WORD TABLE WHICH MUST START AT AN ADDR DIV BY X'10 01 01352
1355 * START LOOP FETCH WORD FROM STRING1 IF FIRST-READ OR IF L BYTE 01 01353
01E0 0FB0040298F80401 1356 CBS4 GEN /N(CBS5),10(B$ALU),6(MEMO),12(A$GPR),24(R1),22(4), 01 01354
1357 C14(TRNA),15(LDG) 01 01355
01E1 0FC0000000070001 1357 GEN /N(CBS7),12(A$GPR),24(R1),14(INCA),16(CRY1),17(GPROUT) 01 01356
1358 GEN /N(CBS5),10(B$ALU),6(MEMO),12(A$GPR),24(R1),22(4), 01 01357
01E2 0F20040298F80401 1359 C14(TRNA),15(LDG) 01 01358
1360 GEN /N(CBS5),10(B$ALU),6(MEMO),12(A$GPR),24(R1),22(4), 01 01359
01E3 0F20040298F80401 1361 C14(TRNA),15(LDG) 01 01360
1362 * 01 01361
1363 * 01 01362
01E4 0F28008000F10000 1364 MBS16 GEN /N(MBS17),12(A$GPR),24(R0),14(DECA),17(GPROUT),7(S$ALU) 01 01363
1365 * WAIT FOR FETCH, INCREMENT DEST PTR, TEST FOR DONE 01 01364
1366 MBS17 GEN /T(MBS18,MBS24),5(FT),7(ALUS),12(A$GPR),24(R2), 01 01365
01E5 7ED831C080070002 1367 C14(INCA),16(CRY1),17(GPROUT),6(SPEC),10(WAITMD) 01 01366
1368 * INITIATE R TO L BYTE STORE, FINISH PREVIOUS BYTE STORE 01 01367
1369 MBS19 GEN /N(MBS20),10(B$ALU),6(MEMO),12(A$GPR),24(R2),22(4), 01 01368
1370 C14(TRNA),15(LDG) 01 01369
1371 * DECREMENT BYTE COUNT 01 01370
01E7 0F40008000F10000 1372 MBS21 GEN /N(MBS22),12(A$GPR),24(R0),14(DECA),17(GPROUT),7(S$ALU) 01 01371
1373 * INCREMENT DEST PTR, WAIT FOR FETCH, TEST FOR DONE 01 01372
1374 MBS22 GEN /T(MBS23,MBS24),5(FT),7(ALUS),12(A$GPR),24(R2), 01 01373
01E8 7EES31C080070002 1375 C14(INCA),16(CRY1),17(GPROUT),6(SPEC),10(WAITMD) 01 01374
1376 * FINISH L TO R BYTE STORE 01 01375
1377 MBS15 GEN /N(MBS16),11(B$SPEC),23(DLSE),14(TRNB),15(LDG), 01 01376
01E9 0F200000A0A80050 1378 C6(SPEC),10(WAITMD) 01 01377
1379 * 01 01378
1380 * 01 01379
1381 * 01 01380
1382 * 01 01381
1383 * CALL: DATA 0105030 01 01382
1384 * DATA UNEQUAL JUMP ADDRESS 01 01383
1385 * 01 01384
1386 * ON ENTRY: B REG - BYTE POINTER TO STRING 1 01 01385
1387 * X REG - BYTE POINTER TO STRING 2 01 01386
1388 * A REG - NUMBER OF BYTES TO BE COMPARED 01 01387
1389 * 01 01388
1390 * EXIT CONDITIONS: IF THE TWO STRINGS ARE NOT EQUAL, THE SECOND 01 01389
1391 * WORD IS USED AS A DIRECT JUMP ADDRESS. OTHERWISE, 01 01390
1392 * EXECUTION CONTINUES AFTER THE SECOND WORD. 01 01391
1393 * POINTERS POINT TO THE BYTE AFTER THE LAST BYTE READ. 01 01392
1394 * OVERFLOW TO SET IF STRING 1 IS GREATER, ELSE RESET. 01 01393
1395 * 01 01394
1396 * 01 01395
1397 CBS0 GEN /N(CBS1),6(SPEC),10(WAITMD),12(A$GPR),24(R2), 01 01396
01EA 0F5800008039400E 1398 C19(SS$HFT),14(ZEP),15(LDG),17(GPROUT) 01 01397
1399 * SAVE PARAMETER IN R5, INC P, REST PARAMETER, RESET OVFL 01 01398
1400 CBS1 GEN /N(CBS2),11(B$SPEC),23(MIR),14(TRNB),15(LDG), 01 01399
01EB 0F90050024A9001F 1401 C17(GPROUT),6(R2),7(4),6(MEMO),13(INCP) 01 01400
1402 * UNEQUAL RETURN - SET P TO 01 01401
1403 CBS16 GEN /T(CBS17,CBS18),5(FT),12(A$GPR),24(R2),14(TRNA), 01 01402
01EC 7F6831C001F8000F 1404 C15(LDG),13(OUT),7(ALUS) 01 01403
1405 * SET OVFL IF STRING1 IS GREATER 01 01404

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01ED 0F700480000000001406 CBS17 GEN /N(CBS18),6(MEMC),7(2) 01 01405
      1407 * RETURN 01 01406
01EE 04900904000000001408 CBS18 GEN /N(SS2M),7(PJMP$),1(0),10(IF$P),6(MEMC$) 01 01407
      1409 * TEST FOR DONE (UNEQUAL) OR LOOP (EQUAL), CLEAR FIRST-READ FLAG 01 01408
      1410 CBS19 GEN /T(CBS16,CBS2),5(FT),7(ALUZ),12(ASGPR),24(RE), 01 01409
      1411 C19(SS$HFT) 01 01410
      1412 * CBS10 IS A 2-WORD TABLE WHICH MUST START ON AN ADDR DIV BY X'10 01 01411
      1413 * START WORD FETCH FROM STRING2 IF FIRST-READ OR IF L BYTE 01 01412
      1414 CBS10 GEN /N(CBS11),10(OF$ALU),6(MEMC),12(ASGPRR),24(R2),22(4), 01 01413
      1415 C14(TRNA),15(LOG) 01 01414
01F0 0FC8040298F804021415 * STRING2 R BYTE - INCREMENT STRING2 PTR AND GO USE OLD WORD 01 01415
      1416 GEN /N(CBS13),12(ASGPR),24(R2),14(INCA),16(CRY1),17(GPROUT) 01 01416
01F1 0FD80000000700021417 * DECREMENT BYTE COUNT 01 01417
      1418 CBS2 GEN /N(CBS3),12(ASGPR),24(RC),14(DECA),17(GPROUT),7(S$ALU) 01 01418
01F2 0F98008000F100001419 * TEST FOR END OF STRINGS - LOOP OR RETURN 01 01419
      1420 CBS3 GEN /S(CBS4,CBS18),FS2,2(3),5(FT), 01 01420
      1421 C12(ASGPRR),24(R1),22(4),7(ALUS) 01 01421
01F3 7F18B1C0190004011422 * CBS8-CBS9 IS A 2-WORD TABLE WHICH MUST START ON AN EVEN ADDRESS 01 01422
      1423 * MOVE STRING1 L BYTE TO OPERAND REG 01 01423
      1424 CBS8 GEN /N(CBS9),12(ASGPRR),24(R2),22(4),11(B$SPEC),23(DLSE), 01 01424
      1425 C14(TRNB),15(LOG),13(OPROUT) 01 01425
01F4 0FA800003BA804521426 * PUT STRING1 BYTE IN RC, RT-ADJUSTED, ZERO-FILLED, SELECT STR2 RTN 01 01426
      1427 CBS9 GEN /S(CBS10,CBS10),FS2,2(1),5(FT),11(B$SPEC),23(DRZF), 01 01427
      1428 C14(TRNB),15(LOG),17(GPROUT),24(RC),7(SHFT) 01 01428
01F5 0F88B28020A9006C1429 * INCREMENT STRING1 PTR, WAIT FOR FETCH 01 01429
      1430 CBS5 GEN /N(CBS6),6(SPEC),10(WAITMD),12(ASGPR),24(R1),14(INCA), 01 01430
      1431 C16(CRY1),17(GPROUT) 01 01431
01F6 0FB80000800700011432 * SAVE STRING1 WORD IN RA AND DPR, SELECT SHIFT ROUTINE 01 01432
      1433 CBS6 GEN /F(CBS8),FS2,2(1),11(B$SPEC),23(MIR), 01 01433
      1434 C14(TRNB),15(LOG),17(GPROUT),24(RA),13(OPROUT) 01 01434
01F7 2F88800023A9001A1435 * FOR STRING1 R BYTE USE PREVIOUSLY FETCHED WORD IN RA 01 01435
      1436 CBS7 GEN /N(CBS9),12(ASGPRR),24(R2),22(4),11(B$GPR),23(RA), 01 01436
      1437 C14(TRNB),15(LOG),13(OPROUT) 01 01437
01F8 0FA800001BA804A21438 * STRING2 FIRST-READ OR L BYTE - INC STRING2 PTR, WAIT FOR FETCH 01 01438
      1439 CBS11 GEN /N(CBS12),6(SPEC),10(WAITMD),12(ASGPR),24(R2),14(INCA), 01 01439
      1440 C16(CRY1),17(GPROUT) 01 01440
01F9 0FD00000800700021441 * SAVE STRING2 WORD IN RB AND DPR, SELECT SHIFT ROUTINE 01 01441
      1442 CBS12 GEN /F(CBS14),FS2,2(1),11(B$SPEC),23(MIR),14(TRNB),15(LOG), 01 01442
      1443 C17(GPROUT),24(RB),13(OPROUT) 01 01443
01FA 6F88800023A9001B1444 * FOR STRING2 R BYTE USE PREVIOUSLY FETCHED WORD IN RB 01 01444
      1445 CBS13 GEN /N(CBS15),12(ASGPR),24(RB),14(TRNA),15(LOG),13(OPROUT) 01 01445
01FB 0FE8000003F8000B1446 * CBS14-CBS15 IS A 2-WORD TABLE WHICH MUST START ON AN EVEN ADDR 01 01446
      1447 * MOVE STRING2 L BYTE TO OPERAND REG 01 01447
      1448 CBS14 GEN /N(CBS15),11(B$SPEC),23(DLSE),14(TRNB),15(LOG),13(OPROUT) 01 01448
01FC 0FE8000023A800501449 * SUBTRACT STRING1 BYTE - STRING2 BYTE (RC - DPR REG, ZERO-FILLED) 01 01449
      1450 CBS15 GEN /N(CBS19),12(ASGPR),24(RC),11(B$SPEC),23(DRZF),14(SUB), 01 01450
      1451 C16(CRY1),7(S$ALU) 01 01451
      1452 * 01 01452
      1453 * 01 01453
      1454 * CBS-MBS IS A TWO-WORD TABLE FOR FIELD-SELECT ADDRESSING 01 01454
01FE 0F5000000031000E1456 CBS GEN /N(CBS0),16(ONES),17(GPROUT),24(RE) 01 01455
      1457 * SAVE P IN R9 E.2*****
01FF 0E68000008F900091458 MBS GEN /N(MBS1),12(AS$P),14(TRNA),15(LOG),17(GPROUT),24(R9) E.2*****
      1459 END 01 01458

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SYMBOLS
0010 SDO 0173 SDO1 0017 SDDIM1 0000 ASGPR 0002 ASGPRL
0003 ASGPRR 0001 AS$P 0000 AS$SPEC 0009 ADD 0008 ALLO
0006 ALUD 0007 ALUS 0009 ALUZ 000E AND 0002 ANE
0001 AZERO 0000 B$GPR 0001 B$SPEC 0007 B$SALU 000F B$MIR
0003 B$SDVR 000B B$SP 01FE CBS 01EA CBS0 01EB CBS1
01F0 CBS10 01F9 CBS11 01FA CBS12 01FB CBS13 01FC CBS14
01FD CBS15 01EC CBS16 01ED CBS17 01EE CBS18 01EF CBS19
01F2 CBS2 01F3 CBS3 01E0 CBS4 01F6 CBS5 01F7 CBS6
01F8 CBS7 01F4 CBS8 01F5 CBS9 0052 COMPOP 0003 CRY1
000F DECA 0009 DECB 0005 DECDD$ 0004 DECODE 01B6 DECTDS
0099 DIV 0095 DIV0 008E DIV1 0096 DIV10 009B DIV12
009C DIV13 009D DIV14 009E DIV15 009F DIV16 0092 DIV17
0091 DIV18 00A0 DIV18A 0097 DIV19 008C DIV2 0090 DIV4
008F DIV5 0093 DIV7 0094 DIV7A 009A DIV9 0171 DGS
0074 DDCCMP 016L D0SE1 0006 EDR 006F EXIT 014C EXIT1
014C EXIT2 0025 FAS 0029 FAS0 0028 FAS1 018A FAS10
0189 FAS11 005D FAS12 002A FAS2 002C FAS3 0031 FAS5
0032 FAS6 0035 FAS7 0036 FAS7A 0034 FAS7B 0038 FAS8
003A FAS8A 0030 FAS9 005E FASA 0060 FASAO 0065 FASA1
0061 FASA2 0062 FASB 0066 FASC 005A FASC10 0148 FASC1A
0139 FASCM1 013C FASCM2 013B FASCM3 013A FASCM4 013F FASCM5
013D FASCM6 0142 FASCM7 0144 FASCM8 0059 FASC9 0147 FASCMA
0146 FASCMB 006D FASCMD 005F FASS 005C FAULT 013F FAULT1
01BE FAULTA 006B FDIV 006A FDIV1 006B FDIV2 0045 FIX
0072 FIX01 0137 FIX02 0075 FIX03 0076 FIX04 0022 FIXA
0020 FIXD 00EF FIXE 0021 FIXM 0023 FIXS 006E FIXXT
015D FLOAD 015F FLOAD1 015E FLOAD2 0160 FLOAD3 012B FLP3A
0130 FLPN7A 0131 FLPN7B 0152 FLPNT 003F FLPNT1 003E FLPNT2
012A FLPNT4 012C FLPNT5 012D FLPNT6 012E FLPNT7 012F FLPNT8
0132 FLPNT9 0135 FLPNTC 0136 FLPNTD 0041 FLPT2 0040 FLPT3
0020 FLTFRM 0024 FMD 0064 FMD1 0163 FMOVE 0169 FMOVE1
016A FMOVE2 0158 FMOVE3 0069 FMUL 006C FMUL1 007F FNML
0156 FORTS1 0157 FORTS2 015A FORTS3 015C FORTS4 0159 FORTS5
015B FORTS6 016F FORTS7 0180 FORTS8 0158 FORTS9 0153 FORTSE
0110 FPO 003D FPI 0071 FSC01 0070 FSC02 0145 FSC03
0149 FSC04 014A FSC05 013E FSC06 0141 FSC07 0143 FSC08
0138 FSC09 0140 FSC10 0073 FSC11 0074 FSC12 0078 FSA
007E FSN1 0077 FSM2 0163 FSTDR 0165 FSTDR1 0164 FSTDR2

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0166 FSTOR3 0170 FSTOR4 0003 FT 0001 GPROUT 000D GPRS
010A IADD 0001 IBSR1 00A1 ICOMP 00A5 ICOMP1 00A2 ICOMP2
00A3 ICOMP3 00A6 ICOMP4 00A7 ICOMP5 00E0 IDIV 00D7 IDIV0
00DF IDIV0A 00E8 IDIV0B 00ED IDIV0C 00D9 IDIV1 00DA IDIV2
00DB IDIV3 00DD IDIV4 00DE IDIV4A 00D8 IDIV5 00E1 IDIV5A
00E6 IDIV6 00E7 IDIV7 00EE IDIV7A 00F2 IDIV7B 00F4 IDIV7C
00EB IDIV7D 00F0 IDIV8 00F1 IDIV9 00F9 IDIVA 00F3 IDIVA1
00EA IDIVA2 00F5 IDIVA3 00F8 IDIVB 0100 IDIVB2 00FB IDIVB3
00FA IDIVC 0101 IDIVD 0056 IDIVE 0055 IDIVF 00FF IDIVG
00FE IDIVX 0004 IF$ALU 000C IF$MIR 0000 IF$DVR 0008 IF$P
00AD IMUL 00C8 IMUL0 00AA IMUL1 00A9 IMUL1A 00AB IMUL1B
00B2 IMUL2 00AE IMUL3 00B0 IMUL4 00AC IMUL4A 00B4 IMUL5
00B5 IMUL6 0054 IMUL7 0053 IMUL7A 0033 IMULX 0000 INCA
0001 INCB 01C0 INCLR0 018C INCLR1 018E INCLR2 0004 INCP
01C3 INCR0A 018B INCR0B 01C2 INCR1A 018D INCR1B 01C1 INCRBA
013F INCRBB 0005 INCSC 0187 INCTOS 0185 INT5 014E INTR
014F INTR10 014D INTR20 0150 INTR30 0151 INTR40 0002 IDR
0001 IDSR 010D ISUB 0006 KOUT 0000 LFT 0179 LIM1
017A LIM2 017C LIM3 017E LIM4 0178 LIMIT 0003 LIT
0001 LDG 01FF MBS 01CD MBS1 01D6 MBS10 01D7 MBS11
01D8 MBS12 01D9 MBS13 01DA MBS14 01E9 MBS15 01E4 MBS16
01E5 MBS17 01DB MBS18 01E6 MBS19 01CE MBS2 01DC MBS20
01E7 MBS21 01E8 MBS22 01DD MBS23 01DE MBS24 01DF MBS25
01CF MBS3 01D0 MBS4 01D1 MBS5 01B2 MBS6 01D3 MBS7
01D4 MBS8 01D5 MBS9 01B8 MCTOS 01BA MCTOS1 01BB MCTOS2
01BC MCTOS3 01BD MCTOS4 01C8 MCTOSA 005B MCTOSB 01B9 MCTOSX
0001 MEMC 0002 MEMCS 0001 MIR 0008 MIRS 0002 MSK
00C9 MUL 00CB MUL1 00D5 MUL12 00D6 MUL13 00CC MUL2
00CF MUL3 00CA MUL4 00CE MUL5 00D0 MUL6 00D2 MUL8
00D3 MUL9 00CD MULA 0122 MYOVR 008B MYDVR1 017D NEXT
014B NML1 011B NML10 011D NML11 011E NML12 0084 NML12A
0089 NML13 0088 NML14 0082 NML1B 0083 NML3 0085 NML4
0086 NML5 008A NML5A 0111 NML6 0112 NML8 0118 NML8A
011A NML9 006F NDCOMP 000E NORM 0000 NOTA 0005 NOTB
0005 OF$ALU 000D OF$MIR 0001 OF$DVR 0009 OF$P 0005 OLSE
0007 OLZF 0003 ONES 0000 OPR 0003 OPROUT 0001 OR
0004 ORSE 0006 ORZF 0006 OS$ALU 000E OS$MIR 0002 OS$DVR
000A OS$P 0000 OVFL 0200 P 0003 PJMP 0004 PJPMP
0196 POP 0197 POPD 0198 POPDA 0001 POPDEL 0004 POPJMP
0001 POUT 0002 PUSH 01B3 PUSH1 01B4 PUSH2 01B5 PUSH5
0195 PUSHD 01B2 PUSHD1 0194 PUSH5 000F QUOS 0000 R0
0001 R1 0002 R2 0003 R3 0004 R4 0005 R5
0006 R6 0007 R7 0008 R8 0009 R9 000A RA
000B RB 000C RC 000D RD 000E RE 0133 REAL
0047 REAL1 0048 REAL2 0049 REAL3 0126 REALA 0124 REALD
0125 REALM 0129 REALM1 0128 REALMD 0127 REALS 0044 REALY
017E RETURN 00CF RF 0001 RGHT 0002 S$ALU 0006 S$OVFL
0001 SSSHFT 0190 SADD 0191 SADD3 0192 SADD4 019F SADD5
01A0 SADD6 01C5 SADD8 0002 SCOUT 0193 SDIV 01B1 SDIV10
01AE SDIV5 01AF SDIV8 01P0 SDIV9 01C7 SDIVY 01AA SEXIT
000C SFTC 000C SHFA 000A SHFT 0121 SHFT1 0051 SHFT2
0001 SHFTUP 011F SHIFT 01AC SMU13A 01AD SMU14 0192 SMUL
01A9 SMUL12 01AB SMUL13 01A3 SMUL3 01A4 SMUL4 01A5 SMUL6
01A6 SMUL7 01A7 SMUL8 01A8 SMUL9 0000 SPEC 013E SSIM
0092 SS2M 002D SS3M 0191 SSUB 01A1 SSUB3 01A2 SSUB4
01C6 SSUBA 0004 SSW1 0003 SSW2 0002 SSW3 000D STACK
0199 STACK1 019A STACK2 019B STACK3 019C STACK4 01C4 STACK5
0019 STACKS 0003 STAT 0005 SUB 0002 TCE 0002 TESTF
0003 TESTT 0005 TFIR 000F TRNA 000A TRNB 0002 TF
0176 VAL2 0177 VAL3 0175 VALUE 0174 VALUX 0181 VORT12
0182 VORT13 0183 VORT14 0184 VORT15 0186 VORT16 0187 VORT17
0188 VORT18 0001 WAITMD 0080 X 007F X0 0057 X1
0091 X2 0058 X3 0172 YDD1 017F YDD2 0134 ZERAN1
0123 ZERANS 0003 ZERO
0 ERRORS ASSEMBLY COMPLETE
    
```

1087	\$DD1	1117								
0	A	106								
20	A\$GPR	186	205	577	604	616	739	742	746	755
		792	795	798	813	825	850	925	932	935
		940	942	965	998	1002	1007	1033	1052	1055
		1097	1099	1106	1112	1117	1127	1138	1194	1196
		1211	1213	1216	1220	1232	1236	1242	1244	1249
		1253	1255	1258	1276	1298	1300	1303	1311	1313
		1326	1328	1347	1357	1364	1366	1372	1374	1397
		1403	1410	1417	1419	1431	1440	1446	1451	
22	A\$GPRR	1295	1316	1331	1350	1355	1358	1360	1369	1414
		1422	1425	1437						
23	ASP	195	1050	1130	1132	1154	1458			
24	ASSPEC	725	736	862	868	878	917	923	1095	1136
		1141	1200	1274						
0	AA0	223	255	260	284	285	314	315	323	334
		338	347	401	407	420	425	431	437	440
		443	448	451	474	488	522	523	525	526
		659	672	673	686	855				
0	AA1	224	229	250	251	253	271	283	288	291
		309	317	324	327	331	336	360	361	362
		366	373	375	390	396	408	431	471	472
		485	486	553	634	639	664	671	698	691
		699	714	1239						
0	AA3	330	405	413	416	438	516	520	523	569

32	DECA	1106	1130	1138	1154	1243	1295	1298	1300	1311
		1326	1364	1372	1419					
33	DECB	922								
1242	DECTDS	1177	1178	1214						
263	DIV	433	446	449	1229					
258	DIV0	263								
248	DIV1	258								
259	DIV10	256	259	265						
266	DIV12	262								
267	DIV13	262								
268	DIV14	267								
270	DIV15	267								
271	DIV16	268	270							
253	DIV17	268	270							
252	DIV18	250								
272	DIV18A	252								
261	DIV19	259								
246	DIV2	258								
251	DIV4	247	248							
250	DIV5	247	248							
254	DIV7	251	272							
256	DIV7A	254								
265	DIV9	256								
1080	DO3	1087								
615	DOCOMP	761								
1050	DOSE1	888								
0	E	180								
0	EDE	866								
36	EOR	813								
602	EXIT	599	607	613	616	618	621	680	774	833
857	EXIT2	602								
0	F	101	204	211	227	423	546	572	759	819
		1187	1292	1303	1434	1443				
517	FAS0	513								
515	FAS1	517								
553	FAS10	526								
555	FAS11	553								
558	FAS12	555								
519	FAS2	515								
521	FAS3	515								
527	FAS5	524								
528	FAS6	524								
537	FAS7	530								
538	FAS7A	535								
535	FAS7B	537								
540	FAS8	530								
543	FAS8A	541								
526	FAS9	513	539	545						
560	FASA	780								
567	FASA0	560								
574	FASA1	567								
569	FASA2	574								
570	FASB	569								
575	FASC	561	567	571						
840	FASC10	837								
844	FASC1A	840								
792	FASCM1	594								
801	FASCM2	792								
798	FASCM3	801								
795	FASCM4	798	801							
810	FASCM5	795								
804	FASCM6	810								
819	FASCM7	804	816							
825	FASCM8	804								
837	FASCM9	825								
833	FASCM9A	831								
831	FASCM9B	819								
594	FASCMD	590								
561	FASD	777								
1276	FAULT	1251	1255							
1260	FAULT1	1258								
1258	FAULTA	1276								
586	FDIV	572								
588	FDIV1	586								
590	FDIV2	591								
0	FF1	673								
0	FF2	247	248	252	253	268	272			
0	FF3	338	365	402	416	437	515	665		
0	FF5	669								
0	FF6	288	374	440	485	488	512	519	523	586
		307								
0	FF9	254	266	351	366	368	369	443	471	474
		570	588	591	691	693				
0	FFA	206	220	221	220	323	224	226	229	246
		261	263	271	291	309	310	312	314	315
		317	319	321	322	323	324	325	327	329
		330	331	332	333	334	336	337	340	359
		363	372	391	393	403	404	407	408	415
		420	428	430	431	432	434	436	444	445
		447	448	450	451	455	502	510	511	521
		522	526	539	544	545	553	555	559	569
		574	634	637	638	660	688	689	690	694
		698	701	866						

0	FFB	290	635	1274						
0	FFC	414	503							
0	FFF	283	284	396	397	413	421	528	602	659
		664	667	671	672	687	692	696	699	855
610	FIX01	599								
785	FIX02	610								
618	FIX03	785								
621	FIX04	618								
504	FIXA	339	560							
502	FIXD	208	590							
423	FIXE	209								
505	FIXS	453	561							
599	FIXXT	423								
901	FLOAD	882	968							
968	FLOAD1	961								
965	FLOAD2	968								
971	FLOAD3	965								
749	FLP3A	736								
764	FLPN7A	759								
870	FLPNT	183								
188	FLPNT1	191	870							
186	FLPNT2	191								
746	FLPNT4	749								
752	FLPNT5	746	749							
755	FLPNT6	752								
759	FLPNT7	752	755							
761	FLPNT8	764								
768	FLPNT9	764								
777	FLPNTC	766								
780	FLPNTD	766								
193	FLPT2	186								
191	FLPT3	188								
180	FLTFRM	185	245	341	344	456	460	493	556	663
		666	682	835	842					
510	FMD	227								
572	FMD1	510								
1026	FMOVE	890	1029							
1029	FMOVE1	1026								
1033	FMOVE2	1029								
1036	FMOVE3	1033								
591	FMUL1	587								
658	FNML	575	594							
925	FORTS1	922	938							
927	FORTS2	1119								
935	FORTS3	1119								
942	FORTS4	938								
932	FORTS5	935								
938	FORTS6	932								
1052	FORTS7	942								
1119	FORTS8	929								
929	FORTS9	927								
917	FORTSC	1050								
491	FP0	198								
546	FP1	491								
0	FS2	1303	1421	1428	1434	1443				
0	FS9	204	208	590	1187	1292				
0	FSA	759								
607	FSC01	577								
604	FSC02	607								
829	FSC03	604								
850	FSC04	829								
853	FSC05	829	850							
807	FSC06	853								
816	FSC07	807								
822	FSC08	816								
788	FSC09	822								
813	FSC10	788	807							
613	FSC11	813								
616	FSC12	613								
635	FSM	225	773							
642	FSM1	640								
634	FSM2	642								
994	FSTOR	884	1001	1041						
1001	FSTOR1	994								
998	FSTOR2	1001								
1004	FSTOR3	998								
1054	FSTUR4	1007								
37	FT	599	613	618	749	804	858	1087	1111	1182
		1252	1300	1313	1328	1366	1374	1403	1410	1421
		1428								
0	GF0	434								
0	GF1	402								
0	GF2	252	254	261	265	283	285	309	314	315
		317	320	340	361	407	413	420	431	440
		442	455	471	485	504	505	512	523	528
		659	664	681	690	691	823	834	841	855
0	GF4	199	687	696						
0	GF5	391								
0	GF6	428								
0	GF7	310	312	316	345	394	410	441	515	524
		567								
0	GF8	366	602							

1264	INCR1A	1162								
1163	INCR1B	1264								
1263	INCRBA	1166								
1167	INCRBB	1263								
48	INCSC	939	1185							
1244	INCTDS	1159	1163	1167						
1132	INT5	1130								
864	INTR	858								
866	INTR10	1132								
861	INTR20	858								
867	INTR30	866								
868	INTR40	867								
485	ISUB	503								
0	LA1	405	417	687						
0	LA2	250	259	360	362	396	400	421	424	471
		485	504	505	537	540	539	640	671	674
		685	714	854						
0	LA3	369	371	375	472	486	517	535	541	699
		715	811							
0	LB1	229	253	271	291	323	334	372	404	430
		522	539	544	569	634	637	688	690	
0	LB2	261								
0	LB3	208	217	225	230	256	286	290	308	318
		322	326	328	333	335	339	343	363	395
		403	412	433	439	446	449	453	458	502
		510	513	521	560	561	567	571	574	575
		590	594	621	635	638	666	668	689	694
		698	700	701	761	768	773	777	780	831
		1173	1174	1175	1176	1177	1178	1179	1180	1181
		1210	1214	1225	1229	1260				
1105	LIM1	1104								
1106	LIM2	1105								
1112	LIM3	1106								
1111	LIM4	1112								
1104	LIMIT	1099	1105							
53	LIT	599	731	801	816	837	864	866	867	1050
		1121	1127	1132	1217	1277	1303			
54	LOG	189	191	193	195	198	491	604	608	610
		616	619	680	722	725	736	739	746	750
		753	755	774	785	788	792	798	808	814
		820	822	833	840	844	850	858	862	869
		870	930	932	936	939	969	971	977	998
		1002	1008	1030	1036	1041	1053	1055	1080	1086
		1093	1098	1116	1117	1125	1141	1160	1164	1168
		1184	1188	1193	1196	1205	1207	1209	1212	1213
		1219	1220	1221	1228	1233	1237	1239	1248	1256
		1259	1265	1267	1309	1317	1323	1332	1338	1343
		1345	1347	1351	1356	1359	1361	1370	1377	1398
		1400	1404	1415	1426	1429	1435	1438	1443	1446
		1449	1458							
1295	MES1	1458								
1323	MES10	1316								
1326	MES11	1321	1323							
1328	MES12	1326								
1331	MES13	1328								
1336	MES14	1300								
1377	MES15	1350								
1364	MES16	1336	1377							
1366	MES17	1364								
1338	MES18	1366								
1369	MES19	1338								
1298	MES2	1303								
1342	MES20	1298	1369							
1372	MES21	1342								
1374	MES22	1372								
1345	MES23	1374								
1347	MES24	1313	1328	1366	1374					
1350	MES25	1345								
1303	MES4	1295								
1308	MES5	1298	1331							
1311	MES6	1308								
1313	MES7	1311								
1316	MES8	1313								
1321	MES9	1300								
1246	MCTDS	1242	1244							
1249	MCTDS1	1272								
1251	MCTDS2	1249								
1253	MCTDS3	1274								
1255	MCTDS4	1253								
1272	MCTDSA	1247								
1274	MCTDSB	1251								
1247	MCTDSX	1246								
55	MEMC	186	188	864	926	927	935	943	961	966
		994	1005	1007	1026	1033	1039	1050	1081	1085
		1092	1097	1100	1105	1107	1121	1135	1162	1166
		1185	1186	1191	1194	1199	1204	1212	1218	1226
		1232	1236	1246	1247	1251	1262	1276	1308	1316
		1321	1331	1336	1342	1350	1355	1358	1360	1369
		1401	1406	1414						
56	MEMCS	861	976	1053	1054	1114	1116	1142	1216	1408
0	MF1	206	220	221	222	223	224	226	229	246
		263	271	283	285	291	309	316	318	314

		998	1002	1008	1052	1055	1117	1141	1196	1211
		1213	1220	1233	1237	1239	1248	1256	1259	1317
		1332	1347	1351	1356	1359	1361	1370	1403	1415
		1446	1458							
124	TRNB	188	191	193	198	491	608	610	618	680
		722	750	752	774	785	788	808	822	833
		840	844	870	930	939	968	971	977	1030
		1036	1041	1080	1086	1093	1098	1116	1125	1160
		1164	1168	1184	1188	1192	1205	1208	1219	1221
		1227	1265	1267	1308	1323	1338	1343	1345	1377
		1400	1426	1429	1435	1438	1443	1449		
125	TT	191	607	731	734	744	752	764	766	801
		807	816	829	837	938	968	1001	1029	1092
		1105	1119	1130	1255	1298				
1097	VAL2	1092								
1099	VAL3	1097								
1092	VALUE	878	1091							
1091	VALUX	1080	1092							
0	VF1	258	360	362	537	540	639	714		
1121	VORT12	864								
1124	VORT13	1121								
1127	VORT14	1124								
1130	VORT15	1127								
1135	VORT16	1130								
1138	VORT17	1135								
1141	VORT18	1138								
126	WAITMD	183	195	879	882	884	886	888	890	920
		933	974	999	1087	1091	1104	1111	1131	1139
		1155	1196	1206	1213	1220	1238	1239	1259	1263
		1264	1266	1268	1269	1270	1271	1272	1274	1314
		1324	1329	1367	1375	1378	1397	1431	1440	
0	WF1	263	272	367	368	370	371	393	415	536
		538	542	543	630	642	716	717		
0	WR1	206	220	221	222	223	224	226	229	246
		247	249	250	253	254	260	263	266	271
		272	284	285	286	288	291	309	314	315
		317	319	321	323	324	325	327	329	330
		331	332	334	336	337	338	340	359	365
		368	371	373	374	375	392	393	397	400
		404	405	407	403	413	414	415	416	420
		424	429	430	431	432	435	436	437	438
		440	443	444	445	447	448	450	451	455
		471	472	474	485	486	488	503	504	505
		511	512	519	520	522	526	539	544	545
		553	555	558	569	570	586	587	588	591
		634	637	640	669	670	672	673	680	687
		688	690	691	692	693	696	699	715	855
660	X	17	26	28	32	39	42	58	60	64
		76	78	86	97	98	99	100	101	102
		105	106	107	113	123	124	132	133	134
		176	180	182	185	204	211	227	245	341
		344	423	456	460	546	551	554	556	572
		599	659	663	666	682	731	759	801	816
		819	835	837	842	864	866	867	877	880
		885	915	1121	1127	1132	1149	1150	1151	1152
		1153	1157	1187	1273	1291	1293	1303		
664	X1	660								
662	X2	664								
665	X3	660	662							
0	XF1	367	368	370	371	400	425	536	542	685
		716								
0	XF2	254	260							
0	XF3	538	543	641	642	717				
1085	YDD1	886	1087							
1117	YDD2	1085								
774	ZERAN1	725								
725	ZERANS	734	744							
127	ZERO	858	1206	1398						

```

000001 A 1 VORTEX SET 1 E.203 00001
2 ***** E.203 00002
3 * E.203 00003
4 * PATCH E.203 00004
5 * TITLE PATCH E.203 00005
6 * E.203 00006
7 * THIS IS A FOREGROUND UTILITY PROGRAM E.203 00007
8 * E.203 00008
9 * PATCH PERFORMS TWO BASIC FUNCTIONS: E.203 00009
10 * E.203 00010
11 * 1) ON-LINE MODIFICATION OF THE VORTEX NUCLEUS IN E.203 00011
12 * MAIN MEMORY OR CREATION OF A "PATCH IMAGE" FILE E.203 00012
13 * TO BE USED FOR AUTOMATIC NUCLEUS PATCHING UPON E.203 00013
14 * VORTEX SYSTEM BOOT. E.203 00014
15 * E.203 00015
16 * 2) PERMANENT MODIFICATION TO A LIBRARY TASK'S LOAD E.203 00016
17 * MODULE FILE ON RMD. E.203 00017
18 * E.203 00018
19 ***** E.203 00019
21 EXT V$LUT1 E.203 00021
22 EXT V$STWD E.203 00022
000003 A 23 SO EQU 3 E.203 00023
000005 A 24 LD EQU 5 E.203 00024
000013 A 25 DI EQU 11 E.203 00025
000014 A 26 DO EQU 12 E.203 00026
000147 A 27 DL EQU 103 E.203 00027
000152 A 28 FL EQU 106 E.203 00028
000001 A 29 X EQU 1 E.203 00029
000002 A 30 B EQU 2 E.203 00030
31 ***** E.203 00031
32 * E.203 00032
33 **** LOW CORE DESCRIPTION *** E.203 00033
34 * E.203 00034
35 ***** E.203 00035
000300 A 37 LC EQU 0300 E.203 00037
000300 A 38 V$CTL EQU LC E.203 00038
000301 A 39 V$CPL EQU LC+1 E.203 00039
000302 A 40 V$CRS EQU LC+2 E.203 00040
000303 A 41 V$TB EQU LC+3 E.203 00041
000304 A 42 V$UTB EQU LC+4 E.203 00042
000305 A 43 V$PTVB EQU LC+5 E.203 00043
000306 A 44 V$FLRS EQU LC+6 E.203 00044
000307 A 45 V$LRSK EQU LC+7 E.203 00045
000310 A 46 V$CKPT EQU LC+8 E.203 00046
000311 A 47 V$OPCL EQU LC+9 E.203 00047
000312 A 48 V$LSAL EQU LC+10 E.203 00048
000313 A 49 V$LER EQU LC+11 E.203 00049
000314 A 50 V$TJCP EQU LC+12 E.203 00050
000315 A 51 V$BTB EQU LC+13 E.203 00051
000316 A 52 V$LUP EQU LC+14 E.203 00052
000317 A 53 V$LLUP EQU LC+15 E.203 00053
000320 A 54 V$IM EQU LC+16 E.203 00054
000330 A 55 V$HPM EQU LC+24 E.203 00055
000334 A 56 V$CAM EQU LC+28 E.203 00056
57 * EQU LC+32 E.203 00057
000341 A 58 V$ORDR EQU LC+33 E.203 00058
000342 A 59 V$TBGT EQU LC+34 E.203 00059
000343 A 60 V$TMS EQU LC+35 E.203 00060
000344 A 61 V$THN EQU LC+36 E.203 00061
000345 A 62 V$LUNT EQU LC+37 E.203 00062
000346 A 63 V$DPCF EQU LC+38 E.203 00063
000347 A 64 V$FGLB EQU LC+39 E.203 00064
000350 A 65 V$FREE EQU LC+40 E.203 00065
000351 A 66 V$CTMS EQU LC+41 E.203 00066
000352 A 67 V$SCV EQU LC+42 E.203 00067
000353 A 68 V$CKE EQU LC+43 E.203 00068
000354 A 69 V$CRM EQU LC+44 E.203 00069
000355 A 70 V$OSTB EQU LC+45 E.203 00070
000356 A 71 V$LIT EQU LC+46 E.203 00071
72 * EQU LC+47 E.203 00072
000360 A 73 V$CTAD EQU LC+48 E.203 00073
000361 A 74 V$CTL EQU LC+49 E.203 00074
000362 A 75 V$NCTR EQU LC+50 E.203 00075
000363 A 76 V$PINN EQU LC+51 E.203 00076
77 * EQU LC+52 E.203 00077
78 * EQU LC+59 E.203 00078
79 * EQU LC+60 E.203 00079
000375 A 80 V$SLFG EQU LC+61 E.203 00080
000376 A 81 V$ERFG EQU LC+62 E.203 00081
000377 A 82 V$JOP EQU LC+63 E.203 00082
83 *V$LUT1 EQU LC+64 E.203 00083
000401 A 84 V$LUT2 EQU LC+65 E.203 00084
000402 A 85 V$LUT3 EQU LC+66 E.203 00085
000403 A 86 V$IMIN EQU LC+67 E.203 00086
87 * EQU LC+68 E.203 00087
88 * EQU LC+69 E.203 00088
89 * EQU LC+70 E.203 00089
90 * EQU LC+71 E.203 00090
000410 A 91 V$IDA EQU LC+72 E.203 00091
000411 A 92 V$CKIT EQU LC+73 E.203 00092
000412 A 93 V$JCB EQU LC+74 E.203 00093
94 * E.203 00094
95 * E.203 00095

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000413 A 96 V$OCB EQU LC+75 OPCODEM WILL READ OPERATOR KEY-IN REQUESTS 03 00096
97 * IN THIS BUFFER. IF JCP IS SET NOT ACTIVE 03 00097
98 * AND A 1 DIRECTIVE IS INPUTED, OPCODEM 03 00098
99 * WILL MOVE THE DIRECTIVE TO V$JCB BEFORE 03 00099
100 * SCHEDULING JCP. 03 00100
000414 A 101 V$BVN EQU LC+76 BOTTOM OF VORTEX NUCLEUS 03 00101
000415 A 102 V$BFC EQU LC+77 TOP OF FG RES. AREA/BOTTOM OF FG BLK COMM. 03 00102
000416 A 103 V$TFC EQU LC+78 TOP OF FG BLK COMMON/TOP OF VORTEX CORE. 03 00103
104 * EQU LC+79 UNUSED 03 00104
105 EJECT 03 00105
106 ***** 03 00106
107 * 03 00107
108 **** MASK TABLE DESCRIPTION **** 03 00108
109 * 03 00109
110 ***** 03 00110
000420 A 112 NT SET 0420 03 00112
000420 A 113 ZERO EQU MT ZERO WORD 03 00113
000421 A 114 BS0 EQU MT+1 BIT MASK CONTENTS 000001 03 00114
000422 A 115 BS1 EQU MT+2 000002 03 00115
000423 A 116 BS2 EQU MT+3 000004 03 00116
000424 A 117 BS3 EQU MT+4 000010 03 00117
000425 A 118 BS4 EQU MT+5 000020 03 00118
000426 A 119 BS5 EQU MT+6 000040 03 00119
000427 A 120 BS6 EQU MT+7 000100 03 00120
000430 A 121 BS7 EQU MT+8 000200 03 00121
000431 A 122 BS8 EQU MT+9 000400 03 00122
000432 A 123 BS9 EQU MT+10 001000 03 00123
000433 A 124 BS10 EQU MT+11 002000 03 00124
000434 A 125 BS11 EQU MT+12 004000 03 00125
000435 A 126 BS12 EQU MT+13 010000 03 00126
000436 A 127 BS13 EQU MT+14 020000 03 00127
000437 A 128 BS14 EQU MT+15 040000 03 00128
000440 A 129 BS15 EQU MT+16 0100000 03 00129
000441 A 130 BR0 EQU MT+17 BIT MASK CONTENTS 0177776 03 00130
000442 A 131 BR1 EQU MT+18 0177775 03 00131
000443 A 132 BR2 EQU MT+19 0177773 03 00132
000444 A 133 BR3 EQU MT+20 0177767 03 00133
000445 A 134 BR4 EQU MT+21 0177757 03 00134
000446 A 135 BR5 EQU MT+22 0177737 03 00135
000447 A 136 BR6 EQU MT+23 0177677 03 00136
000450 A 137 BR7 EQU MT+24 0177577 03 00137
000451 A 138 BR8 EQU MT+25 0177377 03 00138
000452 A 139 BR9 EQU MT+26 0176777 03 00139
000453 A 140 BR10 EQU MT+27 0175777 03 00140
000454 A 141 BR11 EQU MT+28 0173777 03 00141
000455 A 142 BR12 EQU MT+29 0167777 03 00142
000456 A 143 BR13 EQU MT+30 0157777 03 00143
000457 A 144 BR14 EQU MT+31 0137777 03 00144
000460 A 145 BR15 EQU MT+32 0077777 03 00145
000461 A 146 NEG EQU MT+33 SET ALL BITS 03 00146
000462 A 147 LHM EQU MT+34 LEFT HALF WORD MASK 0177400 03 00147
000463 A 148 RHM EQU MT+35 RIGHT HALF WORD MASK 0377 03 00148
000421 A 149 ONE EQU MT+1 CONTAINS NUMBER 1 03 00149
000422 A 150 TWO EQU MT+2 CONTAINS NUMBER 2 03 00150
000464 A 151 THREE EQU MT+36 CONTAINS NUMBER 3 03 00151
000423 A 152 FOUR EQU MT+3 CONTAINS NUMBER 4 03 00152
000465 A 153 FIVE EQU MT+37 CONTAINS NUMBER 5 03 00153
000466 A 154 SIX EQU MT+38 CONTAINS NUMBER 6 03 00154
000467 A 155 SEVEN EQU MT+39 CONTAINS NUMBER 7 03 00155
000424 A 156 EIGHT EQU MT+4 CONTAINS NUMBER 8 03 00156
000470 A 157 NINE EQU MT+40 CONTAINS NUMBER 9 03 00157
000471 A 158 TEN EQU MT+41 CONTAINS NUMBER 10 03 00158
000421 A 159 BM1 EQU MT+1 BIT MASK WORD 00001 03 00159
000464 A 160 BM3 EQU MT+36 BIT MASK WORD 00003 03 00160
000467 A 161 BM7 EQU MT+39 BIT MASK WORD 00007 03 00161
000472 A 162 BM17 EQU MT+42 BIT MASK WORD 00017 03 00162
000473 A 163 BM37 EQU MT+43 BIT MASK WORD 00037 03 00163
000474 A 164 BM77 EQU MT+44 BIT MASK WORD 00077 03 00164
000473 A 165 BM177 EQU MT+45 BIT MASK WORD 00177 03 00165
000463 A 166 BM377 EQU MT+35 BIT MASK WORD 00377 03 00166
000476 A 167 BM777 EQU MT+46 BIT MASK WORD 00777 03 00167
000477 A 168 BM1777 EQU MT+47 BIT MASK WORD 01777 03 00168
169 EJECT 03 00169
170 ***** 03 00170
171 * 03 00171
172 **** BIT TEST BIT DESIGNATION **** 03 00172
173 * 03 00173
174 ***** 03 00174
000040 A 176 RA0 EQU 040 BT JUMPS WHEN A REGISTER IS 0 03 00175
000000 A 177 RA1 EQU 000 BT JUMPS WHEN A REGISTER IS 1 03 00177
000060 A 178 RB0 EQU 060 BT JUMPS WHEN B REGISTER IS 0 03 00178
000020 A 179 RB1 EQU 020 BT JUMPS WHEN B REGISTER IS 1 03 00179
181 ***** 03 00181
182 * 03 00182
183 ** THE BIT CHECKED ** 03 00183
184 * 03 00184
185 ***** 03 00185
000000 A 187 B0 EQU 0 03 00187
000001 A 188 B1 EQU 1 03 00188
000002 A 189 B2 EQU 2 03 00189
000003 A 190 B3 EQU 3 03 00190
000004 A 191 B4 EQU 4 03 00191
000005 A 192 B5 EQU 5 03 00192

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Address	Op	Label	Op	Op	Op	Op	Op	Op	
000006	A	193	B6	EDU	*			03 00193	
000012	A	197	B10	EDU	10			03 00194	
000013	A	198	B11	EDU	11			03 00195	
000014	A	199	B12	EDU	12			03 00196	
000015	A	200	B13	EDU	13			03 00197	
000016	A	201	B14	EDU	14			03 00198	
000017	A	202	B15	EDU	15			03 00199	
		203		EJEC				03 00200	
		204	*****						03 00201
		205	*****						03 00202
		206	ROUTINE--NUC						03 00203
		207	*****						03 00204
		208	PURPOSE--TO PROVIDE MAIN LINE CONTROL AND HANDLE THE FUNCTIONS						03 00205
		209	OF THE .PATCH DIRECTIVE.						03 00206
		210	*****						03 00207
		211	*****						03 00208
		212	*****						03 00209
		213	VSPTCH	EDU	*			03 00210	
		214	NUC10	EDU	*			03 00211	
000000	R	215	LDAL	IMBUF				03 00212	
000001	R							E.203 00213	
000002	R							03 00214	
000003	R							03 00215	
000004	R							03 00216	
000005	R							03 00217	
000006	A	216	STA	XFCPTR	RESET CURRENT TRANSFER POINTER			E.203 00218	
000007	A	217	LDAL	NUC15				E.203 00219	
000008	A	218	STA	NUC14B	SET DEFAULT ERROR RETURN			E.203 00220	
000009	A	219	WRITE	PRDCB,DD,0.1	OUTPUT PROMPT			03 00221	
000010	E								
000011	A								
000012	R								
000013	R								
000014	R								
000015	R	220	NUC12	EDU	*			03 00220	
000016	R	221	RLAD	DIDCB,DI,0.1	INPUT DIRECTIVE			03 00221	
000017	E								
000018	A								
000019	A								
000020	A								
000021	R								
000022	R								
000023	R								
000024	A	222	STAT	NUC12,ERR,ERR,ERR,*				03 00222	
000025	E								
000026	R								
000027	R								
000028	R								
000029	R								
000030	R								
000031	R								
000032	R								
000033	R	223	NUC14	EDU	*			03 00223	
000034	R	224	LDAL	INBUF				03 00224	
000035	R	225	LDAL	0				03 00225	
000036	R	226	ENAI	0				03 00226	
000037	R								
000038	R								
000039	R								
000040	R	227	JANZ	0	IF NOT SPECIAL DIRECTIVE			E.203 00227	
000041	R	228	NUC14B	BES	0			E.203 00228	
000042	R	229	LDAL	NUDIR				03 00229	
000043	R								
000044	R	230	CALL	DIREC	IDENTIFY DIRECTIVE			03 00230	
000045	R								
000046	R	231	JAN	BIRER	IF NOT VALID DIRECTIVE			03 00231	
000047	R								
000048	R	232	STA	NUC14A	SET SERVICE ADDR			03 00232	
000049	R	233	JMP	*				03 00233	
000050	R								
000051	R								
000052	R	234	NUC14A	BES	0			03 00234	
000053	R	235	NUC15	EDU	*			03 00235	
000054	R	236	LDAL	INBUF				03 00236	
000055	R								
000056	R	237	CPA	0				03 00237	
000057	R	238	STAE	BURPT	INITIALIZE BUFFER POINTER			03 00238	
000058	R								
000059	R	239	CALL	FETCH	FETCH ADDR			03 00239	
000060	R								
000061	R								
000062	R	240	DATA	NUC35,NUC40	NULL FIELD/END OF RECORD			E.203 00240	
000063	R								
000064	R	241	DATA	PIERR	INVALID ITEM			E.203 00241	
000065	R	242	NUC17	EDU	*			E.203 00242	
000066	R	243	LDX	XFCPTR				E.203 00243	
000067	R	244	STA	0.1	PUT ADDR IN TRANSFER BLOCK			E.203 00244	
000068	R	245	NUC20	EDU	*			03 00245	
000069	R	246	CALL	FETCH	FETCH CHANGE VALUE			03 00246	
000070	R								
000071	R	247	DATA	NUC30,NUC40	NULL FIELD/END OF RECORD			E.203 00247	
000072	R								
000073	R	248	DATA	PIERR	INVALID ITEM			E.203 00248	
000074	R	249	LDX	XFCPTR				E.203 00249	
000075	R	250	STA	0.1	PUT CHANGE VALUE IN ADDR BLOCK			E.203 00250	

Address	Hex	Mode	Label	Op	Op	Comment	Line	Page
000076	005041	A	251	TXA				E.203 00251
000077	120464	A	252	ADD	THREE			E.203 00252
000100	054133	A	253	STA	XFCPTR	UPDATE CURRENT TRANSFER POINTER		E.203 00253
000101	005012	A	254	TAB				E.203 00254
000102	015000	A	255	LDA	0,1	CURRENT STORE		E.203 00255
000103	005111	A	256	IAR				E.203 00256
000104	056000	A	257	STA	0,2	NEXT STORE		E.203 00257
000105	001000	A	258	JMP	NUC20			03 00258
000106	000067	R						
	000107	R	259	NUC30	EQU	*		E.203 00259
000107	024124	A	260	LDB	XFCPTR			E.203 00260
000110	046000	A	261	INR	0,2	UPDATE NEXT STORE ADDR BY ONE		E.203 00261
000111	001000	A	262	JMP	NUC20			03 00262
000112	000067	R						
	000113	R	263	NUC35	EQU	*		E.203 00263
000113	024124	A	264	LDB	XFCPTR			E.203 00264
000114	016000	A	265	LDA	0,2	NEXT STORE ADDR		E.203 00265
000115	001000	A	266	JMP	NUC17			E.203 00266
000116	000065	R						
	000117	R	267	NUC40	EQU	*		E.203 00267
000117	014114	A	268	LDA	XFCPTR	CURRENT TRANSFER POINTER		E.203 00268
000120	054114	A	269	STA	XFCPTR	SET END OF TRANSFER POINTER		E.203 00269
000121	006140	A	270	SUBI	IMBUF	START OF TRANSFER BLOCK		E.203 00270
000122	005225	R						
000123	001010	A	271	JAZ	NUC10	IF TRANSFER BLOCK EMPTY		E.203 00271
000124	000000	R						
000125	005012	A	272	TAB				E.203 00272
000126	005001	A	273	TZA				E.203 00273
000127	170464	A	274	DIV	THREE	SET TRANSFER COUNT		E.203 00274
000130	005021	A	275	TEA		TRANSFER COUNT		E.203 00275
000131	006020	A	276	LDRI	IMBUF	TRANSFER BLOCK		E.203 00276
000132	005225	R						
			277	ALOC	V\$STWD	PATCH MEMORY		E.203 00277
000133	006505	A						
000134	000000	E						
000135	000600	A						
000136	000000	E						
	000137	A	278	LDRI	IMBUF	START OF TRANSFER BLOCK		E.203 00278
000140	005225	R						
000141	054072	A	279	STA	XFCPTR	RESET TRANSFER BUFFER POINTER		E.203 00279
	000142	R	280	NUC45	EQU	*		E.203 00280
000142	024071	A	281	LDB	XFCPTR			E.203 00281
000143	026000	A	282	LDB	0,2	STORE ADDR		E.203 00282
000144	006030	A	283	LDXI	NUMSG			E.203 00283
000145	004376	R						
000146	002000	A	284	CALL	B120C	CONVERT TO ASCII		E.203 00284
000147	004132	R						
000150	006030	A	285	LDXI	NUMSG+4			E.203 00285
000151	004602	R						
	000152	A	286	LLB	XFCPTR			E.203 00286
000153	026001	A	287	LDR	1,2	ORIGINAL CONTENTS		E.203 00287
000154	002000	A	288	CALL	B120C	CONVERT TO ASCII		E.203 00288
000155	004132	R						
000156	006030	A	289	LDXI	NUMSG+8			E.203 00289
000157	004606	R						
	000160	A	290	LTR	XFCPTR			E.203 00290
000161	026002	A	291	LDB	2,2	NEW CONTENTS		E.203 00291
000162	002000	A	292	CALL	B120C	CONVERT TO ASCII		E.203 00292
000163	004132	R						
			293	WRITE	B0BC8,DD,0,1	OUTPUT HISTORY		E.203 00293
000164	006505	A						
000165	000016	E						
000166	100000	A						
000167	010414	A						
000170	000665	R						
000171	000000	A						
000172	000000	A						
000173	014040	A	294	LDA	XFCPTR			E.203 00294
	120464	A	295	ADD	THREE			E.203 00295
000175	054036	A	296	STA	XFCPTR	UPDATE CURRENT TRANSFER POINTER		E.203 00296
000176	144036	A	297	SUB	XFCPTR	END TRANSFER POINTER		E.203 00297
000177	001016	A	298	JANZ	NUC45	IF NOT END OF XFER BLOCK		E.203 00298
000200	000142	R						
000201	001000	A	299	JMP	NUC10	GET NEXT DIRECTIVE		E.203 00299
000202	000000	R						
			300	EXIT	EXIT			03 00300
000203	006505	A						
000204	000134	E						
000205	000200	A						
000206	000000	R	301	NUDIR	DATA	NUC10	PYCH SERVICE	03 00301
000207	000342	R	302		DATA	DUMP	DUMP SERVICE	03 00302
000210	000203	R	303		DATA	EXIT	EXIT SERVICE	03 00303
000211	001050	R	304		DATA	HIST	HIST SERVICE	03 00304
000212	000710	R	305		DATA	APND	APND SERVICE	03 00305
000213	001360	R	306		DATA	LIBR	LIBR SERVICE	E.203 00306
000214	001244	R	307		DATA	BASET	BASE SERVICE	E.203 00307
			308	* END OF TABLE				E.203 00308
000215	002000	A	309	ERR	CALL	RECDV,NUC10,NUC14,5		E.203 00309
000216	000326	R						
000217	000000	R						
000220	000033	R						
000221	000005	A						
000222	002000	A	310	DIRER	CALL	RECDV,NUC10,NUC14,1		E.203 00310

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000223 000326 R
000224 000000 R
000225 000033 R
000226 000001 A
000227 002000 A 311 PTERR CALL RECDV,NUC10,NUC14,2 E.203 00311
000230 000326 R
000231 000000 R
000232 000033 R
000233 000002 A
000234 005225 R 312 XFCPTR DATA INBUF CURRENT TRANSFER POINTER E.203 00312
000235 005225 R 313 XFEPTD DATA INBUF END TRANSFER POINTER E.203 00313
314 FJEC E.203 00314
315 ***** E.203 00315
316 * E.203 00316
317 * SUBROUTINE--RECDV (ERROR RECOVERY) E.203 00317
318 * E.203 00318
319 * PURPOSE--TO OUTPUT THE SPECIFIED ERROR MESSAGE AND EFFECT E.203 00319
320 * THE SPECIFIED RECOVERY E.203 00320
321 * E.203 00321
322 * CALLING SEQUENCE E.203 00322
323 * CALL RECDV E.203 00323
324 * DATA ADDR FOR REREAD E.203 00324
325 * DATA ADDR FOR NEW RECORD FROM SD E.203 00325
326 * DATA ERROR CODE VALUE E.203 00326
327 * E.203 00327
328 * EXITS TO APPROPRIATE ROUTINE FOR RECOVERY SPECIFIED E.203 00328
329 * E.203 00329
330 ***** E.203 00330
000236 000236 R 332 REC10 EQU * E.203 00332
000237 025002 A 333 LDX RECDV PARAM AREA E.203 00333
000240 006026 A 334 LDR 2,X ERROR CODE E.203 00334
000241 000331 R 335 LDRE ERALK,B ERROR MESSAGE ADDR E.203 00335
000242 016000 A 336 LDA 0,B MESSAGE LENGTHJ E.203 00336
000243 054424 A 337 STA ERDCB E.203 00337
000244 005122 A 338 YBR MESSAGE ADDR E.203 00338
000245 064420 A 339 STB ERDCB+1 E.203 00339
340 WRITE ERDCB,SD,0,1 POST ERROR E.203 00340
000246 006505 A
000247 000165 E
000250 100000 A
000251 010403 A
000252 000670 R
000253 000000 A
000254 000000 A
341 REC20 READ D1DCB,SD,0,1 GET RECOVERY FROM SD E.203 00341
000255 006505 A
000256 000247 E
000257 100000 A
000260 010003 A
000261 000662 R
000262 000000 A
000263 000000 A
342 STAT REC20,ERR,ERR,ERR,* E.203 00342
000264 006505 A
000265 000025 E
000266 000255 R
000267 000215 R
000270 000213 R
000271 000215 R
000272 000264 R
000273 006017 A 343 LDRE INBUF FIRST WORD E.203 00343
000274 004765 R
000275 004350 A 344 LSRA 8 E.203 00344
000276 006140 A 345 SUBI 'C' E.203 00345
000277 000303 A
000300 001016 A 346 JANZ REC20 IF NOT A 'C' E.203 00346
000301 000322 R
000302 006017 A 347 LDRE REC20+5 NUMBER OF WORDS READ E.203 00347
000303 000262 R
000304 100422 A 348 SUB TWO E.203 00348
000305 001002 A 349 JAP REC30 IF MORE THAN 1 CHAR INPUT E.203 00349
000306 000322 P
350 SREC D1DCB,DI,0,1 REPOSITION DI FOR REREAD E.203 00350
000307 006505 A
000310 000256 E
000311 100000 A
000312 012010 A
000313 000662 R
000314 000000 A
000315 000000 A
000316 034007 A 351 LDX RECDV E.203 00351
000317 015000 A 352 LDA 0,X REREAD RECOVERY ADDR E.203 00352
000320 001000 A 353 JMP REC40 E.203 00353
000321 000324 R
000322 034003 A 354 REC30 LDX RECDV PARAM AREA E.203 00354
000323 015001 A 355 LDA 1,X NEW RECORD RECOVERY ADDR E.203 00355
000324 054001 A 356 REC40 STA RECDV E.203 00356
000325 001000 A 357 JMP * E.203 00357
000326 000000 A
000326 000000 A 358 RECDV BES 0 ***** E.203 00358
000327 001000 A 359 JMP REC10 E.203 00359
000330 000236 R

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360 *
361 *   ERROR MESSAGE ADDR BLOCK
362 *
000331 000000 A
000332 004616 R
000333 004630 R
000334 004642 R
000335 004657 R
000336 004671 R
000337 004703 R
000340 004715 R
000341 004730 R
363 ERBLK DATA 0, DIMSG, PMMSG, CLMSG, DMPMSG, STMSG, LMSG, DVMSG
364 DATA REMSG
365 EJECT
366 *****
367 *
368 *   SUBROUTINE--DUMP (CREATE BPTCH IMAGE)
369 *
370 *   PURPOSE--TO CREATE THE CONTENTS OF THE FL FILE PTCHIM FOR
371 *   USE BY BPTCH IN PERFORMING AUTOMATIC PATCHES
372 *
373 *   DUMP READS THE PATCH DIRECTIVES FROM DI AND CREATES THREE
374 *   WORD ENTRIES FOR PTCHIM. THE FIRST WORD IS THE ADDR AND
375 *   THE THIRD WORD IS THE CHANGE VALUE. WORD 2 IS NOT USED.
376 *
377 *   UP TO 40 THREE WORD ENTRIES ARE ENTERED PER RECORD. THE
378 *   FINAL PAIR IS FOLLOWED BY A MINUS ONE.
379 *
380 *   DUMP OPENS AND REWINDS PTCHIM BUT DOES NOT UPDATE ON A CLOSE.
381 *
382 *
383 *****
000342 R
000342 005001 A
000343 006057 A
000344 003473 R
000345 R
385 DUMP EQU *
386 TZA
387 STAE IMCNT ZERO ENTRY COUNT
388 DMP01 EQU *
389 OPEN IMFCB,FL,0,0
000345 006505 A
000346 000310 E
000347 100000 A
000350 003152 A
000351 000701 R
000352 000000 A
000353 000000 A
390 STAT DMP01, DERR, DERR, DERR, *
000354 006505 A
000355 000265 E
000356 000345 R
000357 000636 R
000360 000636 R
000361 000636 R
000362 000354 R
000363 005311 A
000364 005311 A
000365 006057 A
000366 003470 R
000367 006057 A
000370 003472 R
000371 002000 A
000372 003444 R
391 DAR
392 DAR
393 STAE PTADR
394 STAE PTADR+2
395 CALL IMAGE SET START IMAGE INDICATOR
396 DMP05 WRITE PRDCB,DD,0,1 OUTPUT PROMPT
000373 006505 A
000374 000346 E
000375 100000 A
000376 010414 A
000377 000673 R
000400 000000 A
000401 000000 A
397 DMP10 READ MIDCB,DI,0,1 INPUT DIRECTIVE
000402 006505 A
000403 000374 E
000404 100000 A
000405 010013 A
000406 000662 R
000407 000000 A
000410 000000 A
398 STAT DMP10, DME, DME, DME, *
000411 006505 A
000412 000355 E
000413 000402 R
000414 000643 R
000415 000643 R
000416 000643 R
000417 000411 R
000420 006017 A
000421 004765 R
000422 004350 A
000423 006130 A
000424 000250 A
000425 004016 A
000426 000440 R
000427 006010 A
399 DMP12 EQU *
400 LDAE INBJF
401 LSRA 3
402 ERAT *
403 JANZ DMP15 IF NOT SPECIAL DIRECTIVE
404 LDAI DMDIR
E.203 00360
E.203 00361
E.203 00362
E.203 00363
E.203 00364
03 00365
03 00366
03 00367
03 00368
03 00369
03 00370
03 00371
03 00372
03 00373
03 00374
03 00375
03 00376
03 00377
03 00378
03 00379
03 00380
03 00381
03 00382
03 00383
03 00385
03 00386
E.203 00387
E.203 00388
03 00389
E.203 00390
E.203 00391
E.203 00392
E.203 00393
E.203 00394
E.203 00395
03 00396
03 00397
E.203 00398
03 00399
03 00400
03 00401
03 00402
03 00403
03 00404

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000430	000567	R							
000431	002000	A	405	CALL	DIREC	IDENTIFY DIRECTIVE		03	00405
000432	003404	R							
000433	001004	A	406	JAN	DMO	IF NOT VALID DIRECTIVE		E.203	00406
000434	000650	R							
000435	054001	A	407	STA	DMP14	SET SERVICE ADDR		03	00407
000436	001000	A	408	JMP	*			03	00408
000437	000436	R							
000437			409	DMP14	BES	0		03	00409
			410	DMP15	EQU	*		03	00410
000440	006010	A	411	LDAI	INBUF			03	00411
000441	004765	R							
000442	005211	A	412	CPA				03	00412
000443	006057	A	413	STAE	BUFPT	INITIALIZE BUFFER POINTER		03	00413
000444	004172	R							
000445	002000	A	414	CALL	FETCH	FETCH CHANGE ADDR		03	00414
000446	003713	R							
000447	000454	R	415	DATA	DMP25,DMP05	NULL FIELD/END OF INPUTS		03	00415
000450	000373	R							
000451	000655	R	416	DATA	DMERR	INVALID ITEM		E.203	00416
000452	006057	A	417	STAE	PTADR	SET ADDR		E.203	00417
000453	003470	R							
	000454	R	418	DMP25	EQU	*		03	00418
000454	002000	A	419	CALL	FETCH	FETCH CHANGE VALUE		03	00419
000455	003713	R							
000456	000516	R	420	DATA	DMP40,DMP05	NULL FIELD/END OF INPUTS		03	00420
000457	000373	R							
000460	000655	R	421	DATA	DMERR	INVALID ITEM		E.203	00421
000461	006057	A	422	STAE	PTADR+2	SET CHANGE VALUE		E.203	00422
000462	003472	R							
000463	002000	A	423	CALL	IMAGE	MAKE ENTRY IN IMAGE		03	00423
000464	003444	R							
000465	006017	A	424	LDAE	IMCNT	ENTRY COUNT		E.203	00424
000466	003473	R							
000467	006140	A	425	SUBI	120			E.203	00425
000470	000170	A							
000471	001004	A	426	JAN	DMP25	IF MORE ROOM IN RECORD		03	00426
000472	000454	R							
			427	DMP30	WRITE	IMFCB,FL,0,0	OUTPUT IMAGE RECORD	03	00427
000473	006505	A							
000474	000403	E							
000475	100000	A							
000476	000552	A							
000477	000701	R							
000500	000000	A							
000501	000000	A							
			428	STAT	DMP30,DERR,DERR,DERR,*			03	00428
000502	006505	A							
000503	000412	E							
000504	000473	R							
000505	000636	R							
000506	000636	R							
000507	000636	R							
000510	000502	R							
000511	005001	A	429	TZA				03	00429
000512	006057	A	430	STAE	IMCNT	SET COUNT TO ZERO		E.203	00430
000513	003473	R							
000514	001000	A	431	JMP	DMP25	CONTINUE, FETCH NEXT CHANGE VALUE		03	00431
000515	000454	R							
	000516	R	432	DMP40	EQU	*		03	00432
000516	006047	A	433	INRE	PTADR	SET FOR NEXT ADDR		E.203	00433
000517	003470	R							
000520	001000	A	434	JMP	DMP25	GET NEXT CHANGE VALUE		03	00434
000521	000454	R							
000522	005301	A	435	DMEOF	DECR	1		03	00435
000523	006057	A	436	STAE	PTADR			E.203	00436
000524	003470	R							
000525	006057	A	437	STAE	PTADR+2			E.203	00437
000526	003472	R							
000527	002000	A	438	CALL	IMAGE	SET END OF IMAGE INDICATOR		03	00438
000530	003444	R							
			439	DME10	WRITE	IMFCB,FL,0,0	OUTPUT FINAL IMAGE RECORD	03	00439
000531	006505	A							
000532	000474	E							
000533	100000	A							
000534	000552	A							
000535	000701	R							
000536	000000	A							
000537	000000	A							
			440	STAT	DME10,DERR,DERR,DERR,*			03	00440
000540	006505	A							
000541	000503	E							
000542	000531	R							
000543	000636	R							
000544	000636	R							
000545	000636	R							
000546	000540	R							
			441	CLOSE	IMFCB,FL,0,0	CLOSE WITHOUT UPDATE		03	00441
000547	006505	A							
000550	000532	E							
000551	100000	A							
000552	003552	A							
000553	000701	R							

000554	000000	A						
000555	000000	A						
			442	WRITE	DCDCB,DD,0,1			03 00442
000556	006505	A						
000557	000550	E						
000560	100000	A						
000561	010414	A						
000562	000676	R						
000563	000000	A						
000564	000000	A						
000565	001000	A	443	JMP	*	RETURN AS DIRECTED		03 00443
000566	000565	R						
000566			444	DMP50	BES	0		03 00444
000567	000576	R	445	DMDIR	DATA	DMPT	PTCH SERVICE	03 00445
000570	000602	R	446		DATA	DMDU	DUMP SERVICE	03 00446
000571	000606	R	447		DATA	DMEX	EXIT SERVICE	03 00447
000572	000612	R	448		DATA	DMHI	HIST SERVICE	03 00448
000573	000616	R	449		DATA	DMPD	APND SERVICE	03 00449
000574	000622	R	450		DATA	DML1	LIBR SERVICE	E.203 00450
000575	000626	R	451		DATA	DMBA	BASE SERVICE	E.203 00451
			452	* END OF TABLE				E.203 00452
000576	006010	A	453	DMPT	LDAI	NUC10	PTCH ROUTINE	03 00453
000577	000000	R						
000600	001000	A	454	JMP	DM60			03 00454
000601	000632	R						
000602	006010	A	455	DMDU	LDAI	DUMP	DUMP ROUTINE	03 00455
000603	000342	R						
000604	001000	A	456	JMP	DM60			03 00456
000605	000632	R						
000606	006010	A	457	DMEX	LDAI	EXIT	EXIT ROUTINE	03 00457
000607	000203	R						
000610	001000	A	458	JMP	DM60			03 00458
000611	000632	R						
000612	006010	A	459	DMHI	LDAI	HIST	HIST ROUTINE	03 00459
000613	001050	R						
000614	001000	A	460	JMP	DM60			03 00460
000615	000632	R						
000616	006010	A	461	DMPD	LDAI	APND	APND ROUTINE	03 00461
000617	000713	R						
000620	001000	A	462	JMP	DM60			03 00462
000621	000632	R						
000622	006010	A	463	DML1	LDAI	LIBR	LIBR ROUTINE	E.203 00463
000623	001360	R						
000624	001000	A	464	JMP	DM60			E.203 00464
000625	000632	R						
000626	006010	A	465	DMBA	LDAI	BASE	BASE ROUTINE	E.203 00465
000627	001244	R						
000630	001000	A	466	JMP	DM60			E.203 00466
000631	000632	R						
000632	006057	R	467	DM60	STAE	DMP50	SET EXIT ADDR	03 00467
000633	000566	R						
000634	001000	A	468	JMP	DMEDF			03 00468
000635	000522	R						
	000636	R	469	DER	EQU	*		E.203 00469
000636	002000	A	470	DERR	CALL	RECDV,NUC10,NUC14,4		E.203 00470
000637	000326	R						
000640	000000	R						
000641	000033	R						
000642	000004	A						
000643	002000	A	471	DME	CALL	RECDV,DMP05,DMP12,5		E.203 00471
000644	000326	R						
000645	000373	R						
000646	000420	R						
000647	000005	A						
000650	002000	A	472	DMD	CALL	RECDV,DMP05,DMP12,1		E.203 00472
000651	000326	R						
000652	000373	R						
000653	000420	R						
000654	000001	A						
000655	002000	A	473	DMERR	CALL	RECDV,DMP05,DMP12,2		E.203 00473
000656	000326	R						
000657	000373	R						
000660	000420	R						
000661	000002	A						
			474	DIDCB	DCB	40,INBUF		03 00474
000662	000050	A						
000663	004765	R						
000664	000000	A						
			475	DODCB	DCB	12,NUMSG		03 00475
000665	000014	A						
000666	004576	R						
000667	000000	A						
			476	ERDCB	DCB	0,0		03 00476
000670	000000	A						
000671	000000	A						
000672	000000	A						
			477	PRDCB	DCB	3,PRMSG		03 00477
000673	000003	A						
000674	004613	R						
000675	000000	A						
			478	DLDCB	DCB	8,DCMSG		03 00478
000676	000010	A						
000677	004744	R						

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000700 000000 A
000701 000170 A
000702 005225 R
000703 000706 A
000704 000000 A
000705 000000 A
000706 000000 A
000707 000000 A
000710 150324 A
000711 141710 A
000712 144715 A

479 IMFCB FCB 120,IMBUF,1,'F','PT','CH','IM' 03 00479

480 EJEC 03 00480
481 ***** 03 00481
482 * 03 00482
483 * SUBROUTINE--APND (APPEND PATCH IMAGE TO FILE PTCHIM) 03 00483
484 * 03 00484
485 * PURPOSE--TO APPEND A PATCH IMAGE TO THE EXISTING PATCH 03 00485
486 * IMAGE IN THE FILE PTCHIM. 03 00486
487 * 03 00487
488 * APND SEARCHES PTCHIM FOR THE PATCH IMAGE TERMINATOR (MINUS 1) 03 00488
489 * AND WHEN FOUND SETS POINTER TO THAT ENTRY AND ENTERS ROUTINE 03 00489
490 * DUMP. 03 00490
491 * 03 00491
492 * APND DOES NOT PERFORM ANY PATCHING 03 00492
493 * 03 00493
494 * IF THE PATCH FILE DOES NOT BEGIN WITH A STORE ADDR OF 03 00494
495 * -2 THEN THE FILE IS ASSUMED TO BE EMPTY AND A NEW DUMP 03 00495
496 * OPERATION IS ASSUMED 03 00496
497 * 03 00497
498 ***** 03 00498
000713 R 500 APND EQU * 03 00500
501 APN02 OPEN IMFCB,FL,0,0 OPEN AND REWIND PTCHIM 03 00501

000713 006505 A
000714 000557 E
000715 100000 A
000716 003152 A
000717 000701 R
000720 000000 A
000721 000000 A

502 STAT APN02,DER,DER,DER,* 03 00502

000722 006505 A
000723 000541 E
000724 000713 R
000725 000636 R
000726 000636 R
000727 000636 R
000730 000722 R

503 APN03 READ IMFCB,FL,0,0 INPUT IMAGE RECORD E.203 00503

000731 006505 A
000732 000714 E
000733 100000 A
000734 000152 A
000735 000701 R
000736 000000 A
000737 000000 A

504 STAT APN03,DERR,DERR,DERR,* E.203 00504

000740 006505 A
000741 000723 E
000742 000731 R
000743 000636 R
000744 000636 R
000745 000636 R
000746 000740 R
000747 006017 A
000750 005225 R
000751 120422 A
000752 001016 A
000753 000342 R
000754 006030 A
000755 005225 R
000756 005001 A
000757 006057 A
000760 003473 R
000761 001000 A
000762 001006 R
000763 005001 A
000764 006057 A
000765 003473 R

505 LDAE IMBUF FIRST STORE ADDR E.203 00505
506 ADD TWO E.203 00506
507 JANZ DUMP IF NOT =-2, THEN FILE IS EMPTY E.203 00507
508 LDXI IMBUF E.203 00508
509 TZA E.213 00509
510 STAE IMCNT CLEAR ENTRY COUNT E.213 00510
511 JMP APN20 FOUND START, SEARCH FOR END OF IMAGE E.203 00511
512 APN05 TZA 03 00512
513 STAE IMCNT CLEAR ENTRY COUNT E.203 00513
514 APN10 READ IMFCB,FL,0,0 INPUT IMAGE RECORD 03 00514

000766 006505 A
000767 000732 E
000770 100000 A
000771 000152 A
000772 000701 R
000773 000000 A
000774 000000 A

515 STAT APN10,DERR,DERR,DERR,* 03 00515

000775 006505 A
000776 000741 E
000777 000766 R
001000 000636 R
001001 000636 R

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001002 000636 R
001003 000775 R
001004 006030 A 516 LDXI IMBUF 03 00516
001005 005225 R
001006 015000 A 517 APN20 LDA 0,1 PATCH ADDRESS 03 00517
001007 005111 A 518 IAR E.203 00518
001010 001010 A 519 JAZ APN30 IF END OF PATCH IMAGE E.203 00519
001011 001030 R
001012 006017 A 520 LDAE IMCNT E.203 00520
001013 003473 R
001014 120464 A 521 ADD THREE E.203 00521
001015 006057 A 522 STAE IMCNT UPDATE ENTRY COUNT E.203 00522
001016 003473 R
001017 006140 A 523 SUBI 123 03 00523
001020 000173 A
001021 001010 A 524 JAZ APN05 IF END OF RECORD 03 00524
001022 000763 R
001023 005144 A 525 IXR 03 00525
001024 005144 A 526 IXR 03 00526
001025 003144 A 527 IXR 03 00527
001026 001000 A 528 JMP APN20 CHECK NEXT ENTRY 03 00528
001027 001006 R
001030 001030 R 529 APN30 EQU * 03 00529
530 SREC IMFCB,FL,0,1 POSITION BACK TO RECORD INPUT 03 00530
001030 006505 A
001031 000767 E
001032 100000 A
001033 012152 A
001034 000701 R
001035 000000 A
001036 000000 A
531 STAT APN30,DERR,DERR,DERR,* 03 00531
001037 006505 A
001040 000776 E
001041 001030 R
001042 000636 R
001043 000636 R
001044 000636 R
001045 001037 R
001046 001000 A 532 JMP DMP05 03 00530
001047 000373 R
533 EJEC 03 00533
534 ***** 03 00534
535 * 03 00535
536 * SUBROUTINE--HIST (LIST PATCH HISTORY) 03 00536
537 * 03 00537
538 * PURPOSE--TO LIST THE PATCH HISTORY FROM FILE PTCHIM 03 00538
539 * 03 00539
540 * HIST READS RECORDS FROM FILE PTCHIM AND OUTPUTS TO LD 03 00540
541 * THREE ITEM RECORDS IN THE SAME MANNER AS PTCH. 03 00541
542 * IF THE PATCH FILE DOES NOT BEGIN WITH A STORE ADDR OF E.203 00542
543 * -2 THEN THE FILE IS ASSUMED EMPTY AND NO HISTORY IS GIVEN E.203 00543
544 * 03 00544
545 * HIST DOES NOT PERFORM ANY PATCHING 03 00545
546 * 03 00546
547 ***** 03 00547
001050 R 549 HIST EQU * 03 00549
550 HI10 OPEN IMFCB,FL,0,0 OPEN AND REWIND IMAGE FILE 03 00550
001050 006505 A
001051 001031 E
001052 100000 A
001053 003152 A
001054 000701 R
001055 000000 A
001056 000000 A
551 STAT HI10,HER,HER,HER,* E.203 00551
001057 006505 A
001060 001040 E
001061 001050 R
001062 001231 R
001063 001231 R
001064 001231 R
001065 001057 R
552 HI12 READ IMFCB,FL,0,0 E.203 00552
001066 006505 A
001067 001051 E
001070 100000 A
001071 000152 A
001072 000701 R
001073 000000 A
001074 000000 A
553 STAT HI12,HER,HER,HER,* E.203 00553
001075 006503 A
001076 001060 E
001077 001066 R
001100 001231 R
001101 001231 R
001102 001231 R
001103 001075 R
001104 006017 A 554 LDAE IMBUF FIRST STORE ADDR E.203 00554
001105 005225 R
001106 120422 A 555 ADD TWO E.203 00555
001107 001016 A 556 JANZ HI50 IF NOT =-2, ASSUME FILE IS EMPTY E.203 00556

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001110	001220	R					
001111	010464	A	557	LDA	THREE		E.203 00557
001112	006057	A	558	STAE	IMCNT	SET FOR SECOND ENTRY IN IMAGE	E.203 00558
001113	003473	R					
001114	001000	A	559	JMP	HI25		E.203 00559
001115	001137	R					
			560	HI15	READ	IMFCB,FL,0,0 INPUT IMAGE RECORD	03 00560
001116	006505	A					
001117	001067	E					
001120	100000	A					
001121	000152	A					
001122	000701	R					
001123	000000	A					
001124	000000	A					
			561	STAT	HI15,HER,HER,HER,*		E.203 00561
001125	006505	A					
001126	001076	E					
001127	001116	R					
001130	001231	R					
001131	001231	R					
001132	001231	R					
001133	001125	R					
001134	005001	A	562	IZA			03 00562
001135	006057	A	563	STAE	IMCNT	ZERO IMAGE POINTER	03 00563
001136	003473	R					
	001137	R	564	HI25	EQU *		03 00564
001137	006010	A	565	LDAI	IMBUF		03 00565
001140	005225	R					
001141	006127	A	566	ADDE	IMCNT	CURRENT BUFFER POINTER	E.203 00566
001142	003473	R					
001143	005012	A	567	TAB			03 00567
001144	016000	A	568	LDA	0,2	PATCH ADDR	03 00568
001145	005111	A	569	IAR			E.203 00569
001146	001010	A	570	JAZ	HI50	IF END OF HISTORY	E.203 00570
001147	001220	R					
001150	005311	A	571	DAR			E.203 00571
001151	054064	A	572	STA	HIBLK		03 00572
001152	016001	A	573	LDA	1,2	ORIG CONTENTS	03 00573
001153	054063	A	574	STA	HIBLK+1		03 00574
001154	016002	A	575	LDA	2,2	NEW CONTENTS	03 00575
001155	054062	A	576	STA	HIBLK+2		03 00576
001156	024057	A	577	LDR	HIBLK	ADDR	03 00577
001157	006030	A	578	LDXI	NUMSG		03 00578
001160	004576	R					
001161	002000	A	579	CALL	BIZDC	CONVERT TO ASCII	03 00579
001162	004132	R					
001163	006030	A	580	LDXI	NUMSG+4		03 00580
001164	004602	R					
001165	024051	A	581	LDB	HIBLK+1	ORIG CONTENTS	03 00581
001166	002000	A	582	CALL	BIZDC	CONVERT TO ASCII	03 00582
001167	004132	R					
001170	006030	A	583	LDXI	NUMSG+8		03 00583
001171	004606	R					
001172	024045	A	584	LDB	HIBLK+2	NEW CONTENTS	03 00584
001173	002000	A	585	CALL	BIZDC	CONVERT TO ASCII	03 00585
001174	004132	R					
			586	WRITE	DODCB,LD,0,1	OUTPUT MESSAGE	03 00586
001175	006505	A					
001176	001117	E					
001177	100000	A					
001200	010403	A					
001201	000663	R					
001202	000000	A					
001203	000000	A					
001204	006017	A	587	LDAE	IMCNT		03 00587
001205	003473	R					
001206	006140	A	588	SUBI	117		E.203 00588
001207	000165	A					
001210	001010	A	589	JAZ	HI15	IF END IMAGE RECORD	03 00589
001211	001116	R					
001212	006120	A	590	ADDI	120		E.203 00590
001213	000170	A					
001214	006057	A	591	STAE	IMCNT		03 00591
001215	003473	R					
001216	001000	A	592	JMP	HI25	CONTINUE HISTORY	03 00592
001217	001137	R					
			593	HI50	WRITE	HIBCB,DO,0,1	03 00593
001220	006505	A					
001221	001176	E					
001222	100000	A					
001223	010414	A					
001224	001241	R					
001225	000000	A					
001226	000000	A					
001227	001000	A	594	JMP	NUC10		03 00594
001230	000000	R					
001231	002000	A	595	HER	CALL	RECDV,NUC10,NUC10,4	E.203 00595
001232	000326	R					
001233	000000	R					
001234	000000	R					
001235	000000	A					
001236	000000	A	596	HIBLK	DATA	0,0,0	03 00596
001237	000000	A					

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001240 000000 A
001241 000011 A
001242 004754 R
001243 000000 A
597 HIDCB DCB 9,HIMSG 00 00597
598 EJEC E.203 00598
599 ***** E.203 00599
600 * E.203 00600
601 * SUBROUTINE--BASET (SET BASE ADDRESS) E.203 00601
602 * E.203 00602
603 * PURPOSE--TO SET OR DISPLAY THE CURRENT BASE ADDR E.203 00603
604 * E.203 00604
605 * TO SET THE BASE ADDRESS THE DESIRED VALUE (OCTAL) IS ENTERED E.203 00605
606 * AFTER THE PT** PROMPT IS GIVEN BY THE BASE DIRECTIVE. E.203 00606
607 * TO DISPLAY THE CURRENT BASE ADDRESS AN = SIGN IS ENTERED E.203 00607
608 * AS THE RESPONSE TO THE PT** PROMPT E.203 00608
609 * E.203 00609
610 * WHENEVER AN ASTERISK IS USED IN A PATCH DIRECTIVE THE E.203 00610
611 * ASTERISK WILL RETURN THE CURRENT BASE VALUE. E.203 00611
612 * E.203 00612
613 ***** E.203 00613
001244 R 615 BASET EQU * E.203 00615
616 BAS05 WRITE PRDCB,DO,0,1 OUTPUT PROMPT E.203 00616
001244 006505 A
001245 001221 E
001246 100000 A
001247 010414 A
001250 000673 R
001251 000000 A
001252 000000 A
617 BAS10 READ DIDCB,DI,0,1 INPUT DIRECTIVE E.203 00617
001253 006505 A
001254 001245 E
001255 100000 A
001256 010013 A
001257 000662 R
001260 000000 A
001261 000000 A
618 STAT BAS10,BAER,BAER,BAER,* E.203 00618
001262 006505 A
001263 001126 E
001264 001253 R
001265 001352 R
001266 001352 R
001267 001352 R
001270 001262 R
001271 006017 A
001272 004765 R
001273 004350 A
001274 006130 A
001275 000275 A
001276 001010 A
001277 001321 R
001300 006010 A
001301 004765 R
001302 005211 A
001303 006057 A
001304 004172 R
001305 002000 A
001306 003713 R
001307 001315 R
001310 001315 R
001311 001352 R
001312 054044 A
001313 001000 A
001314 000000 R
001315 005001 A
001316 054040 A
001317 001000 A
001320 000000 R
001321 024035 A
001322 006030 A
001323 001347 R
001324 005244 A
001325 002000 A
001326 004132 R
619 BAS15 LDAE INBUF E.203 00619
620 LSRA 8 E.203 00620
621 ERAI '* E.203 00621
622 JAZ BAS30 IF DISPLAY REQUEST E.203 00622
623 LDAI INBUF E.203 00623
624 CPA SET FOR LEFT BYTE E.203 00624
625 STAE DUFPT E.203 00625
626 CALL FETCH FETCH BASE VALUE E.203 00626
627 DATA BAS25,BAS25 NULL FIELD/END OF RECORD E.203 00627
628 DATA BAER INVALID ITEM E.203 00628
629 STA BASE SET BASE VALUE E.203 00629
630 JMP NUC10 E.203 00630
631 BAS25 TZA E.203 00631
632 STA BASE CLEAR BASE VALUE E.203 00632
633 JMP NUC10 E.203 00633
634 BAS30 LDB BASE E.203 00634
635 LDXI BSMSG+4 E.203 00635
636 CPX E.203 00636
637 CALL RI2DC CONVERT TO ASCII E.203 00637
638 WRITE BSDCB,DO,0,1 OUTPUT MESSAGE E.203 00638
001327 006505 A
001330 001254 E
001331 100000 A
001332 010414 A
001333 001340 R
001334 000000 A
001335 000000 A
001336 001000 A
001337 000000 R
639 JMP NUC10 E.203 00639
640 BSDCB DCB 7,BSMSG E.203 00640
001340 000007 A
001341 001343 R
001342 000000 A
001343 120302 A
001344 140723 A
001345 142640 A
641 BSMSG DATA ' BASE = XXXXXX' E.203 00641

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001346	136640	A											
001347	154330	A											
001350	154330	A											
001351	154330	A											
001352	002000	A	642	BAER	CALL	RECDV,BAS05,BAS15,2				E.203	00642		
001353	000326	R											
001354	001244	R											
001355	001271	R											
001356	000002	A											
001357	000000	A	643	BASE	DATA	0	CURRENT BASE VALUE			E.203	00643		
			644		EJEC					E.203	00644		
			645	*****								03	00645
			646	*						E.203	00646		
			647	*	SUBROUTINE--LIBR (PATCH LIBRARY MODULE)						E.203	00647	
			648	*	PURPOSE--TO PERFORM PATCHES TO A LIBRARY ROUTINE. THE PATCHES						E.203	00648	
			649	*	ARE MADE TO THE LOAD MODULE FILE IN THE LIBRARY DISC						E.203	00649	
			650	*	PARTITION.						E.203	00650	
			651	*	WARNING--THE NUCLEUS PATCH AREA (VSPSTR) CANNOT BE						E.203	00651	
			652	*	USED AS AN OUTSIDE PATCH AREA.						E.203	00652	
			653	*						E.203	00653		
			654	*****								03	00654
	001360	R	655	LIBR	EQU	*				E.203	00655		
			657		WRITE	LIDCB,DD,0,1	REQUEST LUN, PROTECT KEY, FILENAME			E.203	00657		
001360	006505	A											
001361	001330	E											
001362	100000	A											
001363	010414	A											
001364	002552	R											
001365	000000	A											
001366	000000	A											
			658	LIB10	READ	DIDCB,DI,0,1	INPUT RESPONSE			E.203	00658		
001367	006505	A											
001370	001361	E											
001371	100000	A											
001372	010013	A											
001373	000662	R											
001374	000000	A											
001375	000000	A											
	001376	R	659	LIB11	EDU	*				E.203	00659		
001376	006017	A	660		LDAE	INBUF				E.203	00660		
001377	004765	R											
001400	004350	R	661		LSRA	8				E.203	00661		
001401	006130	A	662		ERAI	'.'				E.203	00662		
001402	000256	A											
001403	001010	A	663		JAZ	NUC14B+1	IF SPECIAL PATCH CONTROL DIR			E.203	00663		
001404	000042	R											
001405	006010	A	664		LDAI	INBUF				E.203	00664		
001406	004765	R											
001407	005211	A	665		CPA					E.203	00665		
001410	006057	A	666		STAE	LIB12+2	INITIALIZE BUFFER POINTER			E.203	00666		
001411	001445	R											
001412	006017	A	667		LDAE	INBUF				E.203	00667		
001413	004765	R											
001414	004350	A	668		LSRA	8				E.203	00668		
001415	006140	A	669		SUBI	0260	ASCII ZERO			E.203	00669		
001416	000260	A											
001417	001004	A	670		JAN	LIB13	IF LUN IS NOT NUMERIC			E.203	00670		
001420	001424	R											
001421	140471	A	671		SUB	TEN				E.203	00671		
001422	001004	A	672		JAN	LIB12	IF LUN IS NUMERIC			E.203	00672		
001423	001443	R											
001424	030345	A	673	LIB13	LDX	VSLUNT	LOGICAL UNIT NAME TABLE POINTER			E.203	00673		
001425	015000	A	674	LIB14	LDA	0,X	LOGICAL UNIT NAME			E.203	00674		
001426	006137	A	675		ERAE	INBUF	INPUT LOGICAL NAME			E.203	00675		
001427	004765	R											
001430	001010	A	676		JAZ	LIB15	IF A MATCH IS FOUND			E.203	00676		
001431	001436	R											
001432	005144	A	677		IXR					E.203	00677		
001433	005144	A	678		IXR					E.203	00678		
001434	001000	A	679		JMP	LIB14	CONTINUE WITH NEXT ENTRY			E.203	00679		
001435	001425	R											
001436	015001	A	680	LIB15	LDA	1,X	LOGICAL UNIT NUMBER			E.203	00680		
001437	006020	A	681		LDR1	INBUF+1	SET BUFPTR FOR NEXT BYTE			E.203	00681		
001440	004766	R											
001441	001000	A	682		JMP	LIB16				E.203	00682		
001442	001451	R											
			683		EXT	CR2B				E.203	00683		
001443	006505	A	684	LIB12	JSR	CR2B,X	FETCH LOGICAL UNIT NUMBER			E.203	00684		
001444	000000	E											
001445	000000	A	685		DATA	0	ASCII STRING ADDR			E.203	00685		
001446	002541	R	686		DATA	TRBLK	TERMINATION CHAR BLOCK			E.203	00686		
001447	001001	A	687		JDF	LIBR	JUMP IF ILLEGAL CHAR FOUND			E.203	00687		
001450	002105	R											
	001451	R	688	LIB16	EDU	*				E.203	00688		
001451	006067	A	689		STBE	BUFPTR	SAVE BUFFER POINTER			E.203	00689		
001452	004172	R											
001453	005012	A	690		TAB		SAVE LUN			E.203	00690		
001454	014656	A	691		LDA	LIB20+3				E.203	00691		
001455	150462	A	692		ANA	LHW				E.203	00692		
001456	005031	A	693		MERGE	031				E.203	00693		
001457	054653	A	694		STA	LIB20+3	SET LUN IN READ/WRITE REQUEST			E.203	00694		
			695		IFF	VORTEX-1	ASSM IF NOT V2			E.203	00695		
001460	006057	A	696		STAE	RE10+3	SET LUN IN /RELD READ/WRITE			E.203	00696		

001461	003162	R							
001462	150463	A	697	ANA	RHW			E.203	00697
001463	006130	A	698	ERAI	03000			E.203	00698
001464	003000	A							
001465	054115	A	699	STA	LIB21+3			E.203	00699
001466	006017	A	700	LDAE	DBLNK			E.203	00700
001467	002544	R							
001470	006057	A	701	STAE	ITBUF	CLEAR ITEM BUFFER		E.203	00701
001471	004565	R							
001472	002000	A	702	CALL	SCAN	FETCH PROTECTION CODE		E.203	00702
001473	003722	R							
001474	006140	A	703	SUBI	' , '			E.203	00703
001475	000254	A							
001476	001016	A	704	JANZ	LIBER	IF TERMINATOR NOT A COMMA, THEN ERROR		E.203	00704
001477	002105	R							
001500	017000	I	705	LDA	LIFCB+2			E.203	00705
001501	150462	A	706	ANA	LHW			E.203	00706
001502	005012	A	707	TAB				E.203	00707
001503	006017	A	708	LDAE	ITBUF			E.203	00708
001504	004565	R							
001505	004350	A	709	LSRA	8	PUT PROTECT REV IN RIGHT BYTE		E.203	00709
001506	005031	A	710	MERGE	031			E.203	00710
001507	057000	I	711	STA	LIFCB+2	SET PROTECT KEY		E.203	00711
			712	IFF	VORTEX-1	ASSM IF NOT V2		E.203	00712
			713	STAE	REFCB+2	SET PROTECT KEY IN RELO RCB		E.203	00713
001510	006057	A							
001511	003204	R							
001512	017000	I	714	LDA	DBLNK			E.203	00714
001513	006020	A	715	LDBI	ITBUF			E.203	00715
001514	004565	R							
001515	056000	A	716	STA	0,B	CLEAR		E.203	00716
001516	056001	A	717	STA	1,B	INPUT BUFFER		E.203	00717
001517	056002	A	718	STA	2,B	FOR FILE NAME		E.203	00718
			719	EXT	MOVE			E.203	00719
			720	JSR	MOVE,X	BLNK OVERLAY NAME		E.203	00720
001520	006505	A							
001521	000000	E							
001522	000003	A	721	DATA	3,ITBUF,LIDVLY			E.203	00721
001523	004565	R							
001524	002520	R							
001525	002000	A	722	CALL	SCAN	FETCH FILE NAME		E.203	00722
001526	003722	R							
001527	006017	A	723	LDAE	COUNT	NUMBER OF CHARACTERS		E.203	00723
001530	004167	R							
001531	001010	A	724	JAZ	LIBER	ERROR IF NO FILE NAME SPECIFIED		E.203	00724
001532	002105	R							
001533	006505	A	725	JSR	MOVE,X	MOVE FILE NAME TO FCB		E.203	00725
001534	001521	E							
001535	000003	A	726	DATA	3,ITBUF,LIFCB+7			E.203	00726
001536	004565	R							
001537	002536	R							
			727	IFT	VORTEX-1	SKIP IF V2		E.203	00727
			728	GOTO	1			E.203	00728
			729	JSR	MOVE,X	MOVE FILE NAME TO RELO FCB		E.203	00729
001540	006505	A							
001541	001534	E							
001542	000003	A	730	DATA	3,ITBUF,REFCB+7			E.203	00730
001543	004565	R							
001544	003211	R							
			731	1	COMT			E.203	00731
001545	006017	A	732	LDAE	PTSTS	STATUS WORD		E.203	00732
001546	002543	R							
001547	150441	A	733	ANA	BR0	SET PROCESSING ROOT SEGMENT BIT		E.203	00733
001550	006057	A	734	STAE	PTSTS			E.203	00734
001551	002543	R							
001552	014771	A	735	LDA	DBLNK			03	00735
001553	006020	A	736	LDBI	ITBUF			E.203	00736
001554	004565	R							
001555	056000	A	737	STA	0,B	BLANK ITBUF		E.203	00737
001556	056001	A	738	STA	1,B	FOR		E.203	00738
001557	056002	A	739	STA	2,B	OVERLAY NAME		E.203	00739
001560	002000	A	740	CALL	SCAN	FETCH OVER LAY NAME		E.203	00740
001561	003722	R							
001562	006017	A	741	LDAE	COUNT	NUMBER OF CHARS		E.203	00741
001563	004167	R							
001564	001010	A	742	JAZ	LIB21	IF ZERO, NO OVERLAY REQUESTED		E.203	00742
001565	001600	R							
001566	006505	A	743	JSR	MOVE,X	MOVE OVERLAY NAME		E.203	00743
001567	001541	E							
001570	000003	A	744	DATA	3,ITBUF,LIDVLY			E.203	00744
001571	004565	R							
001572	002520	R							
001573	006017	A	745	LDAE	PTSTS	STATUS WORD		E.203	00745
001574	002543	R							
001575	130421	A	746	ERA	BS0	SET PROCESSING OVERLAY BIT		E.203	00746
001576	006057	A	747	STAE	PTSTS			E.203	00747
001577	002543	R							
			748	LIB21	OPEN	LIFCB,0,0,0	OPEN LIBRARY FILE	E.203	00748
001600	006505	A							
001601	001370	E							
001602	100000	A							
001603	003000	A							
001604	002527	R							
001605	000000	A							
001606	000000	A							
			749	STAT	LIB21,LIBER,LIBER,LIBER,*			E.203	00749


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001607 006505 A
001610 001263 E
001611 001600 R
001612 002112 RR
001613 002112 RR
001614 002112 RR
001615 001607 R
750 IFT VORTEX-1 SKIP IF VORTEX 2 E.203 00750
751 GOTO 1 E.203 00751
752 JSR MOVE,X MOVE LIFCB INFO TO RELO FCB E.203 00752
001616 006505 A
001617 001567 E
001620 000010 A 753 DATA 3,LIFCB+2,REFCB+2 E.203 00753
001621 002531 R
001622 003204 R
754 1 CONT E.203 00754
755 INCR 01 E.203 00755
756 TZO E.203 00756
757 CALL LIBID READ IN THE PSEUDO TIDB E.203 00757
001623 005101 A
001624 005002 A 758 JSR MOVE,X MOVE FIRST 5 WORDS OF P TIDB E.203 00758
001625 002000 A
001626 002310 R
001627 006505 A 759 DATA 5,LIBUF,PTIDB E.203 00759
001630 001617 E
001631 000005 A
001632 002571 R
001633 002513 RR
001634 014661 A 760 LDA PTIDB+3 LOAD MODULE SIZE E.203 00760
001635 054445 A 761 STA SEGSZ SEGMENT SIZE E.203 00761
001636 005101 A 762 INCR 01 E.203 00762
001637 054447 A 763 STA LIB99 E.203 00763
001640 010464 A 764 LDA THREE E.203 00764
001641 054444 A 765 STA LIB98 E.203 00765
001642 014700 A 766 LDA PTSTS STATUS WORD E.203 00766
001643 006440 A 767 BT RA0+B0,LIB22A SKIP IF NOT PROCESSING OVERLAY E.203 00767
001644 001675 R
001645 014645 A 768 LDA PTIDB MODULE STATUS WORD E.203 00768
001646 006442 A 769 BT RA0+B2,OVLER ERROR IF NO OVERLAYS E.203 00769
001647 002124 R
001650 006411 A 770 BT RA1+B9,LIB23 IF FOREGROUND TASK E.203 00770
001651 001654 R
001652 010464 A 771 LDA THREE OVERLAY DIRECTORY POSITION, BG E.203 00771
001653 001006 A 772 DATA 01006 SKIP NEXT INST E.203 00772
001654 010422 A 773 LIB23 LDA TWO OVERLAY DIRECTORY POSITION, FG E.203 00773
001655 002000 A 774 CALL OVSRCH SEARCH FO OVERLAY E.203 00774
001656 002350 R
001657 001010 A 775 JAZ OVLER IF NOT FOUND E.203 00775
001660 002124 R
001661 054007 A 776 STA LIB24+3 SET FROM ADDR E.203 00776
001662 024647 A 777 LDR LIFCB+3 E.203 00777
001663 064423 A 778 STB LIB99 'SAVE OVERLAY SECTOR NUMBER E.203 00778
001664 120420 A 779 ADD FOUR E.203 00779
001665 054420 A 780 STA LIB98 SAVE SEGMENT SIZE POINTER E.203 00780
001666 006505 A 781 LIB24 JSR MOVE,X MOVE OVERLAY DIRECTORY INFO E.203 00781
001667 001630 E
001670 000007 A 782 DATA 7,0,LIOVLY E.203 00782
001671 000000 A
001672 002520 R
001673 014630 A 783 LDA LIOVLY+4 E.203 00783
001674 054406 A 784 STA SEGSZ SET SEGMENT SIZE TO OVERLAY SIZE E.203 00784
001675 001675 R 785 LIB22A EQU * E.203 00785
001675 002000 A 786 CALL ADCAL CALCULATE ADDR PARAM E.203 00786
001676 002441 R
001677 014607 A 787 LDA PM1 E.203 00787
001700 144607 A 788 SUB PM2 E.203 00788
001701 124607 A 789 ADD PM3 E.203 00789
001702 124607 A 790 ADD PM4 FORM ORGN ADDR E.203 00790
001703 006057 A 791 STAE ORGN E.203 00791
001704 003721 R
001705 014375 A 792 LDA SEGSZ E.203 00792
001706 024634 A 793 LDR PTSTS E.203 00793
001707 006420 A 794 BT RB1+B0,LIB22B SKIP IF PROCESSING OVERLAY E.203 00794
001710 001713 R
001711 006127 A 795 ADDE ORGN E.203 00795
001712 003721 RR
001713 005012 A 796 LIB22B TAB E.203 00796
001714 005001 A 797 TZA E.203 00797
001715 006170 A 798 DIVI 120 E.203 00798
001716 000170 A
001717 005121 A 799 INCR 021 B+1 TO A E.203 00799
001720 005111 A 800 IAR E.203 00800
001721 024627 A 801 LDB PTSTS E.203 00801
001722 006460 A 802 BT ABC+B0,LIB22C SKIP IF NOT PROCESSING OVERLAY E.203 00802
001723 001725 R
001724 124576 A 803 ADD LIOVLY+3 OVERLAY STARTING SECTOR E.203 00803
001725 054357 A 804 LIB22C STA LIB97 MAX SECTOR NUMBER FOR SEGMENT E.203 00804
805 LIB22 WRITE PROCB,DO,0,1 OUTPUT PROMPT E.203 00805
001726 006505 A
001727 001601 E
001730 100000 A
001731 010414 A
001732 000673 R
001733 000000 A
001734 000000 A
806 LIB25 READ DIDCB,DI,0,1 INPUT DIRECTIVE E.203 00806
001735 006505 A

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001736	001727	E							
001737	100000	A							
001740	010013	A							
001741	000662	R							
001742	000000	A							
001743	000000	A	807	STAT	LIB25,LER,LER,LER,*			E.203	00807
001744	006505	A							
001745	001610	E							
001746	001735	R							
001747	002117	R							
001750	002117	R							
001751	002117	R							
001752	001744	R							
001753	006017	A	808	LIB26	LDAC	INBUF		E.203	00808
001754	004765	R							
001755	004350	A	809	LSRA	8			E.203	00809
001756	006130	A	810	ERAI	*,*			E.203	00810
001757	000256	A							
001760	001010	A	811	JAZ	LIB50	IF A CONTROL DIRECTIVE		E.203	00811
001761	002044	A							
001762	006010	A	812	LDAI	INBUF			E.203	00812
001763	004765	R							
001764	005211	A	813	CPA				E.203	00813
001765	006057	A	814	STAC	BUFPT	INITIALIZE BUFFER POINTER		E.203	00814
001766	004172	R							
001767	002000	A	815	CALL	FETCH	FETCH CHANGE ADDR		E.203	00815
001770	003713	R							
001771	001775	R	816	DATA	LIB30,LIB22	NULL FIELD/END OF RECORD		E.203	00816
001772	001726	R							
001773	002117	R	817	DATA	LER	INVALID ITEM		E.203	00817
001774	054550	A	818	STA	LIBLK			E.203	00818
	001775	A	819	LIB30	EQU	*		E.203	00819
001775	002000	R	820	CALL	FETCH	FETCH CHANGE VALUE		E.203	00820
001776	003713	R							
001777	002041	R	821	DATA	LIB32,LIB22	NULL FIELD/END OF RECORD		E.203	00821
002000	001726	R							
002001	002117	R	822	LIB31	DATA	LER	INVALID ITEM	E.203	00822
	002002	R	823	EQU	*			E.203	00823
002002	054544	A	824	STA	LIBLK+2			E.203	00824
002003	002000	A	825	CALL	ENTER	MAKE CHANGE IN MODULE		E.203	00825
002004	002136	R							
002005	024537	A	826	LIB	LIBLK	CHANGE ADDR		E.203	00826
002006	006030	A	827	LDXI	NUMSG			E.203	00827
002007	004576	R							
002010	002000	A	828	CALL	R120C	CONVERT TO ASCII		E.203	00828
002011	004132	R							
002012	006030	A	829	LDXI	NUMSG+4			E.203	00829
002013	004602	R							
002014	024531	A	830	LIB	LIBLK+1	CURRENT VALUE		E.203	00830
002015	002000	A	831	CALL	R120C	CONVERT TO ASCII		E.203	00831
002016	004132	R							
002017	006030	A	832	LDXI	NUMSG+8			E.203	00832
002020	004606	R							
002021	024525	A	833	LIB	LIBLK+2	NEW VALUE		E.203	00833
002022	002000	A	834	CALL	R120C	CONVERT TO ASCII		E.203	00834
002023	004132	R							
002024	006027	A	835	LDDE	RETP	RELD/ABS TYPE FLAG		E.203	00835
002025	004277	R							
002026	006016	A	836	LDAC	LIB90,B	RELD/ABS MESSAGE CHAR		E.203	00836
002027	002131	R							
002030	006057	A	837	STAC	NUMSG+12	STORE IN HISTORY MESSAGE		E.203	00837
002031	004612	R	838	WRITE	LEDCB,DD,0,1	OUTPUT HISTORY		E.203	00838
002032	006505	A							
002033	001736	E							
002034	100000	A							
002035	010414	A							
002036	002133	R							
002037	000000	A							
002040	000000	A							
002041	044503	A	839	LIB32	LIBLK	INCREMENT STORE ADDR		E.203	00839
002042	001000	A	840	JMP	LIB30			E.203	00840
002043	001770	R							
002044	014465	A	841	LIB50	LDA	LIFCB+3	CURRENT SECTOR NUMBER	E.203	00841
002045	020431	A	842	LIB	358			E.203	00842
002046	002000	A	843	CALL	LIBID	OUTPUT FINAL SECTOR		E.203	00843
002047	002316	R							
002050	014472	A	844	LIB	PTSTS			E.203	00844
002051	006440	A	845	BT	RA0+B0,LIB55	SKIP IF NOT PROCESSING OVERLAY		E.203	00845
002052	002053	R							
002053	014450	A	846	LIB	LIDVLY+4	OVERLAY SIZE		E.203	00846
002054	001006	A	847	DATA	01006	SKIP NEXT INST		E.203	00847
002055	014446	A	848	LIB55	PTIDB+3	SEGMENT SIZE		E.203	00848
002056	144224	A	849	SUB	SEGSZ	NEW SEGMENT SIZE		E.203	00849
002057	001002	A	850	JAP	NJC14B+1	IF SIZE DID NOT INCREASE		E.203	00850
002060	000042	R							
002061	014223	A	851	LIB	LIB99	SEGMENT SIZE SECTOR		E.203	00851
002062	005002	A	852	LIB	12B			E.203	00852
002063	002000	A	853	CALL	LIBID	READ IN SECTOR		E.203	00853
002064	002310	R							
002065	034220	A	854	LIB	LIB98	SEGMENT SIZE POINTER		E.203	00854
002066	014214	A	855	LIB	SEGSZ	SEGMENT SIZE		E.203	00855

Address	Hex	Op	Label	Op	Comment	Page	Line		
002067	005111	A	856	IAR	SET FOR NEXT ADDR	E.203	00856		
002070	006055	A	857	STAE	LIBUF,X SET NEW SEGMENT SIZE	E.203	00857		
002071	002571	R							
			858	IFF	VORTEX-1 SKIP IF VORTEX 1	E.203	00858		
			859	GOTO	1	E.203	00859		
			860	LDB	PTSTS	E.203	00860		
			861	BT	RE1+BO,LIB60 SKIP IF PROCESSING OVERLAY	E.203	00861		
			862	STAE	LIBUF+3,X SET TOTAL LOAD MODULE SIZE	E.203	00862		
			863	LIB60 EQU	*	E.203	00863		
			864	1 CONT		E.203	00864		
002072	014214	A	865	LDA	LIB99	E.203	00865		
002073	020431	A	866	LDB	BS8	E.203	00866		
002074	002000	A	867	CALL	LIBID OUTPUT SECTOR	E.203	00867		
002075	002310	R							
002076	001000	A	868	JMP	NUC14B+1	E.203	00868		
002077	000042	R							
002100	002000	A	869	LIDER	CALL RECDV,LIB22,LIB26,6	E.203	00869		
002101	000326	R							
002102	001726	R							
002103	001753	R							
002104	000006	A							
002105	002000	A	870	LIDER	CALL RECDV,LIBR,LIB11,1	E.203	00870		
002106	000326	R							
002107	001360	R							
002110	001376	R							
002111	000001	A							
002112	002000	A	871	LIER	CALL RECDV,LIBR,LIB11,4	E.203	00871		
002113	000326	R							
002114	001360	R							
002115	001376	R							
002116	000004	A							
002117	002000	A	872	LER	CALL RECDV,LIB22,LIB26,5	E.203	00872		
002120	000326	R							
002121	001726	R							
002122	001753	R							
002123	000005	A							
002124	002000	A	873	DVLER	CALL RECDV,LIBR,LIB11,7	E.203	00873		
002125	000326	R							
002126	001360	R							
002127	001376	R							
002130	000007	A							
002131	120240	A	874	LIB90	DATA ' ','R '	E.203	00874		
002132	151240	A							
			875	LBDCE	DCB 13,HUMSG	E.203	00875		
002133	000015	A							
002134	004576	R							
002135	000000	A							
			876	EJEC		02	00876		
			877	*****				03	00877
			878	*		E.203	00878		
			879	*	SUBROUTINE--ENTER (ENTER PATCH)	E.203	00879		
			880	*		E.203	00880		
			881	*	PURPOSE--TO CHANGE THE SPECIFIED WORD IN THE LIBRARY LOAD	E.203	00881		
			882	*	MODULE. IF THE CURRENT SECTOR IN MEMORY IS THE	E.203	00882		
			883	*	TARGET SECTOR A REREAD IS NOT PERFORMED. THE CURRENT	E.203	00883		
			884	*	SECTOR IS OUTPUT WHEN A NEW SECTOR IS REQUESTED	E.203	00884		
			885	*	OR LIBR PROCESSING IS TERMINATED.	E.203	00885		
			886	*		E.203	00886		
			887	*	FOR VORTEX 1 FOREGROUND PROGRAMS THE RELOCATION BIT	E.203	00887		
			888	*	FILE IS ALSO UPDATED.	E.203	00888		
			889	*		E.203	00889		
			890	*	CALLING SEQUENCE	E.203	00890		
			891	*	CALL ENTER	E.203	00891		
			892	*	LIBLK CONTAINS TRIPLET (ADDR,ORIGINAL,NEW)	E.203	00892		
			893	*		E.203	00893		
			894	*	RETURNS TO CALLER	E.203	00894		
			895	*	WITH CURRENT LIBRARY SECTOR IN BUFFER AND UPDATED	E.203	00895		
			896	*	ENTRY MADE	E.203	00896		
			897	*		E.203	00897		
			898	*****				02	00898
002136	000000	A	900	ENTER	ENTER	E.203	00900		
002137	014403	A	901	LDA	PTSTS STATUS WORD	E.203	00901		
002140	006440	A	902	BT	RAP+BO,ENT01 SKIP IF NOT PROCESSING OVERLAY	E.203	00902		
002141	002144	R							
002142	014261	A	903	LDA	LIBVLY+4 OVERLAY SIZE	E.203	00903		
002143	001006	A	904	DATA	01006 SKIP NEXT INST	E.203	00904		
002144	014351	A	905	ENT01	LDA PTIDB+3 ROOT SEGMENT SIZE	E.203	00905		
002145	144377	A	906	SUB	LIBLK CHANGE ADDR	E.203	00906		
002146	001004	A	907	JAN	ENT00 IF PATCHING OUTSIDE SEGMENT SIZE	E.203	00907		
002147	002272	R							
			908	ENT01A	EQU *	E.203	00908		
002150	014374	A	909	LDA	LIBLK CHANGE ADDR	E.203	00909		
002151	024371	A	910	LDB	PTSTS STATUS WORD	E.203	00910		
002152	006420	A	911	BT	RE1+BO,#+4 SKIP IF PROCESSING OVERLAY	E.203	00911		
002153	002156	R							
002154	006127	A	912	ADDE	OPGN ADD IN ORGN ADDR	E.203	00912		
002155	003721	R							
002156	005012	A	913	TAB		E.203	00913		
002157	005001	A	914	TZA		E.203	00914		
002160	006170	A	915	DIVI	120 WORDS PER SECTOR	E.203	00915		
002161	000170	A							
002162	054065	A	916	STA	ENTWD SAVE WORD LOCATION	E.203	00916		
002163	014357	A	917	LDA	PTSTS STATUS WORD	E.203	00917		

Address	Code	Label	Instruction	Comment	Page
002164	006440	A	918 BT	RA0+B0,ENT02	SKIP IF NOT PROCESSING OVERLAY
002165	002175	R			
			919 IFT	VORTEX-1	SKIP IF VORTEX 2
			920 GOTO	1	
002166	014337	A	921 LDA	LIDVLY+6	OVERLAY RELO FILE ADDR
002167	057000	I	922 STA	REFCB+3	SET IN RELO IO CALL
			923 1	CONT	
			924 TBA		SECTOR DISPLACEMENT
002170	005021	A	925 ADD	LIDVLY+3	OVERLAY STARTING SECTOR
002171	124331	A	926 TAB		
002172	005012	A	927 JMP	ENT05	
002173	001000	A			
002174	002201	R			
	002175	R	928 ENT02	EQU *	
			929 IFT	VORTEX-1	SKIP IF VORTEX 2
			930 GOTO	1	
002175	014321	A	931 LDA	PTIDB+4	RELO FILE ADDR
002176	057000	I	932 STA	REFCB+3	
			933 1	CONT	
			934 IER		
002177	005122	A	935 INCR	023	UPDATE PAST 7 TIDS AND DVLY DIR
002200	005123	A	936 ENT05	EQU *	
	002201	R	937 TBA		
002201	005021	A	938 SURE	LIB97	MAX SECTOR NUMBER FOR SEGMENT
002202	006147	A			
002203	002305	R			
002204	001010	A	939	JAZ	ENT06
002205	002214	R			
002206	001004	A	940	JAN	ENT06
002207	002214	R			
002210	014073	A	941 LDA	LIB96	
002211	054071	A	942 STA	SEGSZ	RESTORE SEGMENT SIZE TO ORIGINAL VALUE
002212	001000	A	943 JMP	LIDFR	REPORT ERROR
002213	002100	R			
	002214	R	944 ENT06	EQU *	
002214	005021	A	945 TBA		
002215	144314	A	946 SUB	LIFCB+3	PREVIOUS SECTOR NUMBER
002216	001010	A	947	JAZ	ENT10
					IF NEW SECTOR=PREVIOUS SECTOR
002217	002231	R			
002220	064330	A	948 STB	ENTSC	SAVE NEW SECTOR
002221	014310	A	949 LDA	LIFCB+3	PREVIOUS SECTOR
002222	020431	A	950 LDB	BSS	WRITE OPERATION
002223	002000	A	951 CALL	LIBID	WRITE OUT PREVIOUS SECTOR
002224	002310	R			
002225	014323	A	952 LDA	ENTSC	
002226	005002	A	953 TZE		READ OPERATION
002227	002000	A	954 CALL	LIBID	READ IN NEW SECTOR
002230	002310	R			
	002231	R	955 ENT10	EQU *	
002231	034316	A	956 LDX	ENTWD	WORD LOCATION
002232	006015	A	957 LDAE	LIBUF,X	CURRENT VALUE
002233	002571	R			
002234	054311	A	958 STA	LIBLK+1	
002235	014311	A	959 LDA	LIBLK+2	NEW VALUE
002236	006027	A	960 LDBE	RETP	ADDRESS TYPE INDICATOR
002237	004277	R			
002240	001020	A	961 JNZ	ENT15	IF NOT SPECIFYING AN ADDR
002241	002250	R			
002242	006127	A	962 ADDE	ORGN	IF ADDR, THEN ADD IN LOAD ORIGIN
002243	003721	R			
002244	006147	A	963 SUBE	PM3	ADJUST ADDRESS
002245	002511	R			
002246	006127	A	964 ADDE	PM2	VALUE
002247	002510	R			
	002250	R	965 ENT15	EQU *	
002250	006055	A	966 STAE	LIBUF,X	
002251	002571	R			
			967 IFT	VORTEX-1	SKIP IF VORTEX 2
			968 GOTO	1	
002252	014240	A	969 LDA	PTIDB	MODULE STATUS WORD
002253	006411	A	970 BT	RA1+B9,ENT20	JUMP IF A FOREGROUND TASK
002254	002257	R			
002255	001000	A	971 RETU*	ENTER	
002256	102136	R			
	002257	R	972 ENT20	EQU *	
002257	014265	A	973 LDA	LIBLK	CHANGE ADDR
002260	006127	A	974 ADDE	ORGN	ADD IN ORGN ADDR
002261	003721	R			
002262	124155	A	975 ADD	OVSAD	ADD IN OVERLAY START ADDR
002263	005012	A	976 TAB		SET CHANGE ADDR FOR CALL
002264	006017	A	977 LDAE	RETP	RELO TYPE FLAG (0=NON ADDR, 1=ADDR)
002265	004277	R			
002266	002000	A	978 CALL	RELO	SET/RESET RELO BIT
002267	002761	R			
			979 1	CONT	
002270	001000	A	980 RETU*	ENTER	
002271	102136	R			
002272	014010	A	981 ENT30	LDA	SEGSZ
002273	054010	A	982 STA	LIB96	NEW SEGMENT SIZE
002274	144250	A	983 SUB	LIBLK	SAVE ORIGINAL SEG SIZE FOR ERROR RECOVERY
002275	001002	A	984 JAP	ENT01A	CHANGE ADDR
					IF NOT BEYOND NEW SIZE
002276	002150	R			
002277	014245	A	985 LDA	LIBLK	
002300	054002	A	986 STA	SEGSZ	SET NEW SEGMENT SIZE
002301	001000	A	987 JMP	ENT01A	

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002302 002150 R
          988 *
          989 * DATA BLOCK
          990 *
002303 000000 A 991 SEGSZ DATA 0 SEGMENT SIZE E.203 00991
002304 000000 A 992 LIB96 DATA 0 PREVIOUS SEGMENT SIZE E.203 00992
002305 000000 A 993 LIB97 DATA 0 MAX SECTOR NUMBER FOR SEGMENT E.203 00993
002306 000000 A 994 LIB98 DATA 0 POINTER TO SEGMENT SIZE E.203 00994
002307 000000 A 995 LIB99 DATA 0 SEGMENT SIZE SECTOR E.203 00995
          996 EJEC
          997 *****
          998 *
          999 * SUBROUTINE--LIBIO (PERFORM I/O) E.203 00999
1000 *
1001 * PURPOSE--TO PERFORM I/O OPERATIONS ON THE SPECIFIED E.203 01000
1002 * LUN AND FILE GIVEN THE OPERATION CODE AND RECORD E.203 01002
1003 * NUMBER E.203 01003
1004 *
1005 * CALLING SEQUENCE E.203 01005
1006 * LDA RECORD NUMBER E.203 01006
1007 * LDB I/O OPERATION CODE (BITS 11-8) E.203 01007
1008 * CALL LIBIO E.203 01008
1009 *
1010 * RETURNS TO CALLER UPON COMPLETION OR TO ERROR ROUTINE IF AN E.203 01010
1011 * I/O ERROR OCCURS. E.203 01011
1012 *
1013 *****
002310 000000 A 1015 LIBIO ENTR E.203 01015
002311 005014 A 1016 TAX E.203 01016
002312 140421 A 1017 SUB ONE BEGINNING OF FILE E.203 01017
002313 001004 A 1018 JAN LIDER ERROR IS AHEAD OF FILE E.203 01018
002314 002100 R
002315 005041 A 1019 TXA E.203 01019
002316 144214 A 1020 SUB LIFCB+4 ENDING FILE ADDR E.203 01020
002317 001002 A 1021 JAP LIDER ERROR IF BEYOND FILE E.203 01021
002320 002100 R
002321 005041 A 1022 TXA E.203 01022
002322 054207 A 1023 STA LIFCB+3 SET RECORD NUMBER E.203 01023
002323 014007 A 1024 LDA LIB20+3 E.203 01024
002324 006150 A 1025 ANAI 0170377 CLEAR OPCODE E.203 01025
002325 170377 A
002326 005031 A 1026 MERGE 031 E.203 01026
002327 054003 A 1027 STA LIB20+3 SET NEW OPCODE E.203 01027
          002330 R 1028 LIB20 EQU * E.203 01028
          1029 LID20 READ LIFCB,0,0,0 PERFORM I/O OPERATION E.203 01029
002330 006505 A
002331 002033 E
002332 100000 A
002333 000000 A
002334 002527 R
002335 000000 A
002336 000000 A
          1030 STAT LID20, LIER, LIER, LIER, * E.203 01030
002337 006505 A
002340 001743 E
002341 002330 R
002342 002112 R
002343 002112 R
002344 002112 R
002345 002337 R
002346 001000 A 1031 RETUR LIBIO E.203 01031
002347 102310 R
          1032 EJEC E.203 01032
          1033 *****
          1034 *
          1035 * SUBROUTINE--OVSRCH (SEARCH OVERLAY DIRECTORY) E.203 01035
          1036 *
          1037 * PURPOSE--TO SEARCH AN OVERLAY DIRECTORY FOR A SPECIFIED E.203 01037
          1038 * OVERLAY E.203 01038
          1039 *
          1040 * CALLING SEQUENCE E.203 01040
          1041 * LDA OVERLAY DIRECTORY SECTOR NUMBER E.203 01041
          1042 * CALL OVSRCH E.203 01042
          1043 *
          1044 * RETURNS TO CALLER WITH E.203 01044
          1045 * (A) = 0 IF NAME NOT FOUND E.203 01045
          1046 * (A) = POINTER TO DIRECTORY ENTRY IF OVERLAY FOUND E.203 01046
          1047 *
          1048 *****
002350 000000 A 1050 OVSRCH ENTR E.203 01050
002351 005002 A 1051 T2B E.203 01051
002352 002000 A 1052 CALL LIBIO READ IN OVERLAY DIRECTORY SECTOR E.203 01052
002353 002310 R
002354 005001 A 1053 T2A E.203 01053
002355 024135 A 1054 LDB PTIDB MODULE STATUS WORD E.203 01054
002356 006431 A 1055 RT RB1+B9, DVS10-1 IF FOREGROUND TASK E.203 01055
002357 002362 R
002360 006120 A 1056 ADDI 72 DISPLACE PAST LITERAL POOL E.203 01056
002361 000110 A
002362 120467 A 1057 ADD SEVEN DISPLACE PAST ROOT SEGMENT ENTRY E.203 01057
002363 005014 A 1058 DVS10 TAX E.203 01058
002364 006015 A 1059 LDAE LIBUF-6, X E.203 01059
002365 002563 R

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002366 054051 A 1060 STA DVSAD SAVE OVERLAY LOAD ADDR E.203 01060
002367 006015 A 1061 DVS20 LDAE LIBUF,X OVERLAY NAME E.203 01061
002370 002571 R JAZ DVS40 IFEND OF OVERLAY DIRECTORY E.203 01062
002371 001010 A 1062 ERA LIOVLY TARGET NAME E.203 01063
002372 002435 R JANZ DVS30 IF NOT A MATCH E.203 01064
002373 134124 A 1063 LDAE LIBUF+1,X E.203 01065
002374 001016 A 1064 ERA LIOVLY+1 E.203 01066
002375 002415 R JANZ DVS30 IF NOT A MATCH E.203 01067
002376 006015 A 1065 LDAE LIBUF+2,X E.203 01068
002377 002572 R ERA LIOVLY+2 E.203 01069
002400 134120 A 1066 JANZ DVS30 IF NOT A MATCH E.203 01070
002401 001016 A 1067 LDAE LIBUF+2,X E.203 01070
002402 002415 R ERA LIOVLY+2 E.203 01071
002403 006015 A 1068 JANZ DVS30 IF NOT A MATCH E.203 01072
002404 002573 R TXA LIBUF E.203 01071
002405 134114 A 1069 ADDI LIBUF E.203 01072
002406 001016 A 1070 RETUR* DVSRCB MATCH FOUND E.203 01073
002407 002415 R TXA DVS30 E.203 01074
002410 005041 A 1071 ADD SEVEN E.203 01075
002411 006120 A 1072 TAX E.203 01076
002412 002571 R SUBI 120 E.203 01077
002413 001000 A 1073 JAN DVS20 E.203 01078
002414 102350 R STA DVS35+1 SAVE DISPLACEMENT E.203 01079
002415 005041 A 1074 LDA LIFCB+3 E.203 01080
002416 120467 A 1075 IAR E.203 01081
002417 005014 A 1076 TZB E.203 01082
002420 006140 A 1077 CALL LIBID READ IN NEXT DIRECTORY SECTOR E.203 01083
002421 000170 A 1078 TZA DVS35 E.203 01084
002422 001000 A 1079 JMP DVS20 CONTINUE DIRECDRY SEARCH E.203 01085
002423 002367 R TZX DVS40 E.203 01086
002424 054006 A 1080 RETUR* DVSRCB RETURN WITH OVERLAY NOT FOUND E.203 01087
002425 014104 A 1081 DVSAD DATA 0 OVERLAY LOAD ADDR E.203 01088
002426 005111 A 1082 EJEJ E.203 01089
002427 005002 A 1083 ***** E.203 01090
002430 002000 A 1084 * E.203 01091
002431 002310 R 1085 * SUBROUTINE--ADCAL (CALCULATE ADDR PARAMS) E.203 01092
002432 005001 A 1086 * E.203 01093
002433 001000 A 1087 * PURPOSE--TO CALCULATE THE PARAMETERS USED TO LOCATE THE E.203 01094
002434 002367 R 1088 * SPECIFIED ADDR ON THE DISC SECTOR. FACTORS INVOLVED E.203 01095
002435 005004 A 1089 * INCLUDE: FG/BG, OVERLAY/NO OVERLAY, ROOT/OVERLAY E.203 01096
002436 001000 A 1090 * E.203 01097
002437 102350 R 1091 * CALLING SEQUENCE E.203 01098
002440 000000 A 1092 * CALL ADCAL E.203 01099
002441 000000 A 1093 * RETURNS TO CALLER WITH: E.203 01100
002442 005001 A 1094 * PM1=TASK LOAD ADDR (=0 IF V1 FG OR V1/V2 DVLY) E.203 01101
002443 054043 A 1095 * PM2=01000 FOR ROOT SEG, =0 FOR OVERLAY SEG E.203 01102
002444 054043 A 1096 * PM3=0300 FOR BACKGROUND, =0 FOR FOREGROUND E.203 01103
002445 054043 A 1097 * PM4=0 FOR ROOT SEG, DVLY START - DVLY LOAD FOR DVLY E.203 01104
002446 054043 A 1098 * ***** E.203 01105
002447 006057 A 1099 * ***** E.203 01106
002450 002440 R 1100 * ***** E.203 01107
002441 000000 A 1109 ADCAL ENTR E.203 01109
002442 005001 A 1110 TZA E.203 01110
002443 054043 A 1111 STA PM1 CLEAR E.203 01111
002444 054043 A 1112 STA PM2 ALL E.203 01112
002445 054043 A 1113 STA PM3 ADDRESS E.203 01113
002446 054043 A 1114 STA PM4 PARAMETERS E.203 01114
002447 006057 A 1115 STAE DVSAD E.203 01115
002450 002440 R 1116 * FORM PM1 PARAMETER E.203 01116
002451 006020 A 1117 LDBI PTIDB E.203 01117
002452 002513 R 1118 LDA PTSTS STATUS WORD E.203 01118
002453 014067 A 1119 IFF VORTEX-1 SKIP NEXT INST IF V2 E.203 01119
002454 006411 A 1120 BT RA1+B9,ADC20 SKIP IF FOREGROUND MODULE E.203 01120
002455 002476 R 1121 LDA BS9 TASK LOAD ADDR E.203 01121
002456 010432 A 1122 STA PM1 E.203 01122
002457 054027 A 1123 * FORM PM2 PARAMETER E.203 01123
002460 016000 A 1124 IFT VORTEX-1 SKIP IF VORTEX 2 E.203 01124
002461 006411 A 1125 GDTD 1 E.203 01125
002462 002476 R 1126 LDA 0,B E.203 01126
002463 010432 A 1127 BT RA1+B9,ADC20 SKIP IF A FOREGROUND MODULE E.203 01127
002464 054023 A 1128 1 CNT E.203 01128
002465 016000 A 1129 LDA BS9 01000 E.203 01129
002466 006411 A 1130 STA PM2 E.203 01130
002467 002476 R 1131 * FORM PM3 PARAMETER E.203 01131
002468 016000 A 1132 ADC10 LDA 0,B PSEUDO TIDB STATUS E.203 01132
002469 006411 A 1133 BT RA1+B9,ADC20 IF FOREGROUND TASK, SKIP E.203 01133
002470 014052 A 1134 LDA PTSTS STATUS WORD E.203 01134

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002471 006400 A 1135 BT RA1+B0,ADC20 SKIP IF PROCESSING AN OVERLAY E.203 01135
002472 002476 R
002473 006010 A 1136 LDAI 0300 LITERAL POOL SIZE E.203 01136
002474 000300 A
002475 054013 A 1137 STA PM3 E.203 01137
1138 * FORM PM4,PARAMETER E.203 01138
002476 014044 A 1139 ADC20 LDA PTSTS STATUS WORD E.203 01139
002477 006440 A 1140 BT RA0+B0,ADC30 SKIP IF NOT PROCESSING AN OVERLAY E.203 01140
002500 002505 R
002501 014023 A 1141 LDA LIDVLY+5 OVERLAY START LOCATION E.203 01141
002502 006147 A 1142 SURE QVSRD SUBTRACT OVERLAY LOAD ADDR E.203 01142
002503 002440 R
002504 054005 A 1143 STA PM4 E.203 01143
002505 001000 A 1144 ADC30 RETU* ADCAL E.203 01144
002506 102441 R
1145 * E.203 01145
1146 * ADDR CALC PARAM BLK E.203 01146
1147 * E.203 01147
002507 000000 A 1148 PM1 DATA 0 E.203 01148
002510 000000 A 1149 PM2 DATA 0 E.203 01149
002511 000000 A 1150 PM3 DATA 0 E.203 01150
002512 000000 A 1151 PM4 DATA 0 E.203 01151
1152 * E.203 01152
1153 * LIBR DATA BLOCK E.203 01153
1154 * E.203 01154
002513 1155 PTIDB BSS 5 FIRST 5 WORDS OF PSUEDO TIDB E.203 01155
002520 1156 LIDVLY BSS 7 OVERLAY DIRECTORY IN FD E.203 01156
1157 LIFCB FCB 120,LIBUF,0,0,'XX','XX','XX' E.203 01157
002527 000170 A
002530 002571 R
002531 000000 A
002532 000000 A
002533 000000 A
002534 000000 A
002535 000000 A
002536 154330 A
002537 154330 A
002540 154330 A
002541 000254 A 1158 TRBLK DATA 0254,0 TERMINATION CHARACTER BLOCK E.203 01158
002542 000000 A
002543 000000 A 1159 PTSTS DATA 0 PATCH STATUS E.203 01159
002544 120240 A 1160 DBLNK DATA ' ' TWO ASCII BLANKS E.203 01160
002545 000000 A 1161 LIBLK DATA 0 CHANGE ADDR E.203 01161
002546 000000 A 1162 DATA 0 ORIGINAL CONTENTS E.203 01162
002547 000000 A 1163 DATA 0 NEW CONTENTS E.203 01163
002550 000000 A 1164 ENTWD DATA 0 WORD POINTER E.203 01164
002551 000000 A 1165 ENTSC DATA 0 SECTOR NUMBER E.203 01165
1166 LIDCB DCB 12,LIREQ E.203 01166
002552 000014 A
002553 002555 R
002554 000000 A
002555 120314 A 1167 LIREQ DATA ' LUN,KEY,FILENAME,QVLAY ' E.203 01167
002556 152716 A
002557 126316 A
002560 142731 A
002561 126306 A
002562 144714 A
002563 142716 A
002564 140715 A
002565 142654 A
002566 147726 A
002567 146301 A
002570 154640 A
002571
1168 LIBUF BSS 120 LIBRARY SECTOR IMAGE E.203 01168
1169 EJEC E.203 01169
1170 IFT VORTEX-1 SKIP IF VORTEX 2 E.203 01170
1171 GOTO : E.203 01171
1172 ***** E.203 01172
1173 * E.203 01173
1174 * SUBROUTINE--RELO (UPDATE RELOCATION FILE) E.203 01174
1175 * E.203 01175
1176 * PURPOSE--TO SET OR RESET THE RELOCATION BIT CORRESPONDING E.203 01176
1177 * TO THE CHANGE ADDR. E.203 01177
1178 * E.203 01178
1179 * IF A RELOCATION BIT EXISTS FOR A CHANGE ADDR THAT BIT IS E.203 01179
1180 * SET OR RESET ACCORDINGLY. E.203 01180
1181 * IF A RELOCATION BIT DOES NOT EXIST FOR A CHANGE ADDR THE E.203 01181
1182 * RELOCATION FILE IS UPDATED TO INCLUDE THE RELOCATION BIT. E.203 01182
1183 * NEW RELOCATION INFORMATION IS ADDED TO THE END OF THE E.203 01183
1184 * RELOCATION FILE IF THERE IS ROOM E.203 01184
1185 * SHOULD A CHANGE IN RELOCATION INFORMATION CAUSE A RELOCATION E.203 01185
1186 * FILE OVERFLOW, A PTO8 DIAGNOSTIC IS OUTPUT AND THE ROUTINE E.203 01186
1187 * RETURNS TO THE CALLER. E.203 01187
1188 * E.203 01188
1189 * THIS ROUTINE IS USED ONLY BY VORTEX FOREGROUND LIBRARY FILES E.203 01189
1190 * E.203 01190
1191 * CALLING SEQUENCE E.203 01191
1192 * LDA TYPE INDICATOR (0 FOR RESET, 1 FOR SET) E.203 01192
1193 * LDB CHANGE ADDR (INCLUDING ORGN) E.203 01193
1194 * CALL RELO E.203 01194
1195 * E.203 01195
1196 * RETURNS TO CALLER UPON COMPLETION OR AN ERROR E.203 01196
1197 * E.203 01197

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Address	Hex	Mode	Label	Op	Op2	Description	Page	Line
002761	000000	A	1198	RELO	ENTR		03	01198
002762	054214	A	1200		STA	REL90	E.203	01200
002763	064214	A	1201		STB	REL91	E.203	01201
002764	005001	A	1202	REL05	TZA		E.203	01202
002765	002000	A	1203		CALL	REID	E.203	01203
002766	003150	R	1204				E.203	01204
002767	005005	A	1205		ZERO	05	E.203	01205
002770	006140	A	1206	REL10	SUBI	120	E.203	01206
002771	000170	A						
002772	001002	A	1207		JAP	REL50	E.203	01207
002773	003053	R						
002774	006015	A	1208		LDAE	REBUF,X	E.203	01208
002775	003214	R						
002776	001002	A	1209		JAP	REL55	E.203	01209
002777	003056	R						
003000	005012	A	1210		TAB		E.203	01210
003001	150460	A	1211		ANA	BR15	E.203	01211
003002	001010	A	1212		JAZ	REL65	E.203	01212
003003	003106	R						
003004	005223	A	1213		COMP	023	E.203	01213
003005	054173	A	1214		STA	REL92	E.203	01214
003006	144171	A	1215	REL15	SUB	REL91	E.203	01215
003007	001010	A	1216		JAZ	*+4	E.203	01216
003010	003013	R						
003011	001002	A	1217		JAP	REL60	E.203	01217
003012	003065	R						
003013	005021	A	1218		TBA		E.203	01218
003014	006120	A	1219		ADDI	14	E.203	01219
003015	000016	A						
003016	144161	A	1220		SUB	REL91	E.203	01220
003017	001004	A	1221		JAN	REL70	E.203	01221
003020	003136	R						
003021	005144	A	1222	REL20	IXR		E.203	01222
003022	014155	A	1223		LDA	REL91	E.203	01223
003023	144155	A	1224		SUB	REL92	E.203	01224
003024	054003	A	1225		STA	REL21+1	E.203	01225
003025	006010	A	1226		LDAI	14	E.203	01226
003026	000016	A						
003027	006140	A	1227	REL21	SUBI	0	E.203	01227
003030	000000	A						
003031	005012	A	1228		TAB		E.203	01228
003032	006015	A	1229		LDAE	REBUF,X	E.203	01229
003033	003214	R						
003034	156441	A	1230		ANA	0441,B	E.203	01230
003035	064004	A	1231		STB	REL35+1	E.203	01231
003036	024140	A	1232		LDB	REL90	E.203	01232
003037	001020	A	1233		JBZ	REL40	E.203	01233
003040	003044	R						
003041	006020	A	1234	REL35	LDBI	0	E.203	01234
003042	000000	A						
003043	136421	A	1235		ERA	0421,B	E.203	01235
003044	006055	A	1236	REL40	STAE	REBUF,X	E.203	01236
003045	003214	R						
003046	010431	A	1237		LDA	B38	E.203	01237
003047	002000	A	1238		CALL	REID	E.203	01238
003050	003150	R						
003051	001000	A	1239		RETURN	RELO	E.203	01239
003052	102761	R						
003053	044131	A	1240	REL50	INR	REFCB+3	E.203	01240
003054	001000	A	1241		JMP	REL05	E.203	01241
003055	002764	R						
003056	014122	A	1242	REL55	LDA	REL92	E.203	01242
003057	006120	A	1243		ADDI	15	E.203	01243
003060	000017	A						
003061	054117	A	1244		STA	REL92	E.203	01244
003062	005012	A	1245		TAB		E.203	01245
003063	001000	A	1246		JMP	REL15	E.203	01246
003064	003006	R						
003065	005041	A	1247	REL60	TXA		E.203	01247
003066	006140	A	1248		SUBI	120	E.203	01248
003067	000170	A						
003070	001002	A	1249		JAP	REL75	E.203	01249
003071	003141	R						
003072	005144	A	1250		IXR		E.203	01250
003073	006015	A	1251		LDAE	REBUF,X	E.203	01251
003074	003214	R						
003075	001002	A	1252		JAP	REL60	E.203	01252
003076	003065	R						
003077	005012	A	1253		TAB		E.203	01253
003100	150460	A	1254		ANA	BR15	E.203	01254
003101	001010	A	1255		JAZ	REL65	E.203	01255
003102	003106	R						
003103	005223	A	1256		COMPL	023	E.203	01256
003104	001000	A	1257		JMP	REL15-1	E.203	01257
003105	003005	R						
003106	005041	A	1258	REL65	TXA		E.203	01258
003107	006140	A	1259		SUBI	117	E.203	01259
003110	000165	A						
003111	001002	A	1260		JAP	REL68	E.203	01260
003112	003131	R						
003113	014064	A	1261		LDA	REL91	E.203	01261
003114	005012	A	1262		TAB		E.203	01262

E.2 VORTEX LISTING

PATCH

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LISTING PAGE (467)

003115	005211	A	1263	CPA				E.203	01263
003116	006035	A	1264	STAE	REBUF,X	SET NEW RELO ADDR		E.203	01264
003117	003214	R							
003120	064060	A	1265	STB	REL92	UPDATE NEW RELO ADDR CELL		E.203	01265
003121	005001	A	1266	TZA				E.203	01266
003122	006055	A	1267	STAE	REBUF+1,X	SET ZERO WORD FOR RELO BITS		E.203	01267
003123	003215	R							
003124	130440	A	1268	ERA	BS15			E.203	01268
003125	006055	A	1269	STAE	REBUF+2,X	SET NEW END OF RELO FILE INDICATOR		E.203	01269
003126	003216	R							
003127	001000	A	1270	JMP	REL20	GO SET/RESET RELO BIT		E.203	01270
003130	003021	R							
003131	002000	A	1271	REL68	CALL	RECDV,LIBR,LIB11,8	POST 'NO ROOM' ERROR	E.203	01271
003132	000326	R							
003133	001360	R							
003134	001376	R							
003135	000010	A							
			1272	*				E.203	01272
003136	005145	A	1273	REL70	INCR	045	SET FOR NEXT ENTRY	E.203	01273
003137	001000	A	1274	JMP	REL10			E.203	01274
003140	002770	R							
003141	044043	A	1275	REL75	INR	REFCB+3	SET FOR NEXT RELO SECTOR	E.203	01275
003142	005001	A	1276	TZA				E.203	01276
003143	002000	A	1277	CALL	REID	READIN NEXT RELO SECTOR		E.203	01277
003144	003150	R							
003145	005004	A	1278	TZX				E.203	01278
003146	001000	A	1279	JMP	REL60	CONTINUE SEARCH FOR END		E.203	01279
003147	003065	R							
			1280	EJEC				E.203	01280
			1281	*				E.203	01281
			1282	*				E.203	01282
			1283	*	SUBROUTINE--REID	(RELO I/O ROUTINE)		E.203	01283
			1284	*				E.203	01284
			1285	*	PURPOSE--TO PERFORM I/O OPERATIONS ON THE SPECIFIED LUN			E.203	01285
			1286	*	AND FILE GIVEN THE OPERATION CODE			E.203	01286
			1287	*				E.203	01287
			1288	*	CALLING SEQUENCE			E.203	01288
			1289	*	LDA	I/O OPERATION CODE (BITS 11-8)		E.203	01289
			1290	*	CALL	REID		E.203	01290
			1291	*				E.203	01291
			1292	*				E.203	01292
			1294	REID	ENTR			E.203	01294
003150	000000	A	1295	TAB		I/O CODE		E.203	01295
003151	005012	A	1296	LDA	RE10+3			E.203	01296
003152	014007	A	1297	ANAI	0170377	CLEAR OPCODE		E.203	01297
003153	006150	A							
003154	170377	A							
003155	005031	A	1298	MERGE	031			E.203	01298
003156	054000	A	1299	STA	RE10+3	SET NEW OPCODE		E.203	01299
			1300	REID	READ	REFCB,0,0,0	PERFORM I/O OPERATION	E.203	01300
003157	006505	A							
003160	002331	E							
003161	100000	A							
003162	000000	A							
003163	003202	R							
003164	000000	A							
003165	000000	A							
			1301	STAT	RE10,REL68,REL68,REL68,*			E.203	01301
003166	006505	A							
003167	002340	E							
003170	003157	R							
003171	003131	R							
003172	003131	R							
003173	003131	R							
003174	003160	R							
003175	001000	A	1302	RETU	REID			E.203	01302
003176	103150	R							
			1303	*				E.203	01303
			1304	*	RELO DATA BLOCK			E.203	01304
			1305	*				E.203	01305
003177	000000	A	1306	REL90	DATA	0	TYPE INDICATOR (0=RESET, 1=SET)	E.203	01306
003200	000000	A	1307	REL91	DATA	0	CHANGE ADDR	E.203	01307
003201	000000	A	1308	REL92	DATA	0	CURRENT RELO ADDR	E.203	01308
			1309	REFCB	FCB	120,REBUF,0,0,'XX','XX','XX'		E.203	01309
003202	000170	A							
003203	003214	R							
003204	000000	A							
003205	000000	A							
003206	000000	A							
003207	000000	A							
003210	000000	A							
003211	154330	A							
003212	154330	A							
003213	154330	A							
003214			1310	REBUF	BSS	120	RELO FILE BUFFER	E.203	01310
			1311	1	CONT			E.203	01311
			1312	EJEC					
			1313	*					
			1314	*					
			1315	*	SUBROUTINE--DIREC	(IDENTIFY DIRECTIVE)			
			1316	*					
			1317	*	PURPOSE--TO IDENTIFY THE PATCH DIRECTIVE AND FETCH THE				
			1318	*	SERVICE ROUTINE ADDR				
			1319	*					

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1320 * CALLING SEQUENCE 03 01320
1321 * LDA XX WHERE XX POINTS TO THE SERVICE ROUTINE 03 01321
1322 * CALL DIREC ADDR BLOCK 03 01322
1323 * 03 01323
1324 * RETURNS TO CALLER WITH: 03 01324
1325 * A REG CONTAINING SERVICE ROUTINE ADDR, -1 IF DIR NOT FOUND 03 01325
1326 * 03 01326
1327 * ***** 03 01327
003404 000000 A 1329 DIREC ENTR 03 01329
003405 054025 A 1330 STA DITMP 03 01330
003406 005002 A 1331 TZE 03 01331
003407 006016 A 1332 DI10 LDAE DIR,2 03 01332
003410 003434 R 03 01333
003411 001610 A 1333 JAZ DI50 IF END OF DIRECTIVE LIST 03 01333
003412 003430 R 03 01334
003413 006137 A 1334 ERAE INBUF 03 01334
003414 004765 R 03 01335
003415 001016 A 1335 JANZ DI20 IF NO MATCH 03 01335
003416 003425 R 03 01336
003417 005021 A 1336 TBA TABLE INDEX 03 01336
003420 124012 A 1337 ADD DITMP START OF SERVICE ROUTINE TABLE 03 01337
003421 005012 A 1338 TAB 03 01338
003422 016000 A 1339 LDA C,2 SERVICE ROUTINE ADDR 03 01339
003423 001000 A 1340 RETUM* DIREC 03 01340
003424 103404 R 03 01341
003425 005122 A 1341 DI20 IBR 03 01342
003426 001000 R 1342 JMP DI10 CONTINUE SEARCH 03 01342
003427 003407 R 03 01343
003430 005311 A 1343 DI50 DAR SET DIR NOT FOUND 03 01343
003431 001000 A 1344 RETUM* DIREC 03 01344
003432 103404 R 03 01345
003433 000000 A 1345 DITMP DATA 0 03 01345
003434 127320 A 1346 DIR DATA '.P' PATCH DIR 03 01346
003435 127304 A 1347 DATA '.D' DUMP DIR 03 01347
003436 127305 A 1348 DATA '.E' EXIT DIR 03 01348
003437 127310 A 1349 DATA '.H' HIST DIR 03 01349
003440 127301 A 1350 DATA '.A' APND DIRECTIVE 03 01350
003441 127314 A 1351 DATA '.L' LIBR DIRECTIVE E.203 01351
003442 127302 A 1352 DATA '.B' BASE DIRECTIVE E.203 01352
003443 000000 A 1353 DATA 0 END OF TABLE 03 01353
1354 EJEC 03 01354
1355 ***** 03 01355
1356 * 03 01356
1357 * SUBROUTINE--IMAGE (MAKE ENTRY TO PATCH IMAGE) 03 01357
1358 * 03 01358
1359 * CALLING SEQUENCE 03 01359
1360 * CALL IMAGE 03 01360
1361 * IMCNT CONTAINS CURRENT POINTER INTO IMBUF 03 01361
1362 * PTADR BLOCK CONTAINS 3 WORD ENTRY 03 01362
1363 * 03 01363
1364 * RETURNS TO CALLER WITH: 03 01364
1365 * PTADR INCREMENTED 03 01365
1366 * IMCNT UPDATED BY 3 03 01366
1367 * 03 01367
1368 * ***** 03 01368
003444 000000 A 1370 IMAGE ENTR 03 01370
003445 034025 A 1371 LDX IMCNT BUFFER POINTER 03 01371
003446 006020 A 1372 LDBI PTADR ENTRY BLOCK ADDR 03 01372
003447 003470 R 03 01373
003450 016000 A 1373 LDA C,2 03 01373
003451 006055 A 1374 STAE IMBUF,1 03 01374
003452 005225 R 03 01375
003453 016001 A 1375 LDA 1,2 03 01375
003454 005144 A 1376 IXR 03 01376
003455 006055 A 1377 STAE IMBUF,1 03 01377
003456 005225 R 03 01378
003457 016002 A 1378 LDA 2,2 03 01378
003460 005144 A 1379 IXR 03 01379
003461 006055 A 1380 STAE IMBUF,1 03 01380
003462 005225 R 03 01381
003463 005144 A 1381 IXR 03 01381
003464 074006 A 1382 STX IMCNT SET FOR NEXT ENTRY 03 01382
003465 044002 A 1383 INR PTADR SET FOR NEXT ADDR 03 01383
003466 001000 A 1384 RETUM* IMAGE 03 01384
003467 103444 R 03 01385
003470 000000 A 1385 PTADR DATA 0,0,0 PATCH IMAGE ENTRY BLOCK 03 01385
003471 000000 A 03 01386
003472 000000 A 1386 IMCNT DATA 0 IMAGE ENTRY POINTER 03 01386
003473 000000 A 1387 EJEC 03 01387
1388 ***** 03 01388
1389 * 03 01389
1390 * SUBROUTINE--FETCH (FETCH AN ITEM) 03 01390
1391 * 03 01391
1392 * PURPOSE--TO FETCH AN ITEM FROM A BUFFER 03 01392
1393 * 03 01393
1394 * CALLING SEQUENCE 03 01394
1395 * CALL FETCH 03 01395
1396 * DATA NULL FIELD SERVICE ADDRESS 03 01396
1397 * DATA END OF RECORD SERVICE ADDRESS 03 01397
1398 * DATA INVALID ITEM SERVICE ADDR E.203 01398
1399 * LOCATION BUPT CONTAINS THE BUFFER POINTER 03 01399
1400 * COMPL--LEFT BYTE, FOS--RIGHT BYTE 03 01400

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1401 *
1402 * RETURNS TO CALLER WITH:
1403 * IF NULL FIELD, TO NULL FIELD SERVICE ADDR
1404 * IF END OF RECORD, TO END OF RECORD SERVICE ADDR
1405 * IF INVALID ITEM, TO INVALID ITEM SERVICE ADDR
1406 * IF VALID VLAUE, A+VLAUE
1407 * BUFPNT POINTING TO NEXT AVAILABLE BYTE
1408 *
1409 *****
003474 003474 R 1411 FET05 EQU *
003475 005001 A 1412 TZA
003476 054601 A 1413 STA RETYP
003477 054221 A 1414 STA VALUE CLEAR VALUE
003500 054466 A 1415 STA PVTRM CLEAR PREVIOUS TERMINATOR INDICATOR
003501 002000 A 1416 FET10 STA COUNT CLEAR CHAR COUNT
003502 003722 R 1417 CALL SCAN SCAN UNTIL TERMINATOR
003503 005012 A 1418 TAB
003504 006140 A 1419 SUBI . .
003505 000240 A
003506 001010 A 1420 JAZ FET70 IF BLANK TERM, CHECK IF NULL RECORD
003507 003667 R
003510 006140 A 1421 SUBI ',--'
003511 000014 A
003512 001010 A 1422 JAZ FET20 IF COMMA TERM
003513 003526 R
003514 006140 A 1423 SUBI '+--',
003515 177777 A
003516 001010 A 1424 JAZ FET50 IF ADDITION EXPRESSION
003517 003653 R
003520 006140 A 1425 SUBI '--'+
003521 000002 A
003522 001010 A 1426 JAZ FET51 IF SUBTRACTION EXPRESSION
003523 003661 R
003524 001000 A 1427 JMP FETER IF INVALID ITEM
003525 003701 R
003526 003526 P 1428 FET20 EQU *
003526 005111 A 1429 IAR
003527 054167 A 1430 STA TERM SET END OF EXPRESSION
003530 014436 A 1431 LDA COUNT
003531 001016 A 1432 JANZ FET25 IF NOT A NULL FIELD
003532 003540 R
003533 024157 A 1433 LDB FETCH NULL FIELD SERVICE ADDR
003534 016000 A 1434 LDA 0,2
003535 054155 A 1435 STA FETCH
003536 001000 A 1436 RETUM* FETCH
003537 103713 R
003540 006030 A 1437 FET25 LDXI ITBUF
003541 004565 R
003542 006140 A 1438 SUBI 7
003543 000007 A
003544 001002 A 1439 JAP FETER IF MORE THAN SIX CHAR
003545 003701 R
003546 005244 A 1440 CPX SET FDR LEFT BYTE
003547 002000 A 1441 CALL FBYTE FETCH BYTE
003550 004045 R
003551 006140 A 1442 SUBI '0'
003552 000260 A
003553 001004 A 1443 JAN FET40 IF NOT NUMERIC
003554 003613 R
003555 006140 A 1444 SUBI 10
003556 000012 A
003557 001002 A 1445 JAP FET40 IF NOT NUMERIC
003560 003613 R
003561 002000 A 1446 CALL DC2BI CONVERT TO BINARY
003562 003773 R
003563 003701 R 1447 DATA FETER IF INVALID ITEM
003564 003564 R 1448 FET30 EQU *
003565 024131 A 1449 LDB PVTRM PREVIOUS TERMINATOR INDICATOR
003566 001020 A 1450 JNZ FET35 IF NO ARITH OPERATION
003567 003575 R
003570 005322 A 1451 DBR
003570 001020 A 1452 JNZ FET32 IF ADDITION
003571 003574 R
003572 005211 A 1453 CPA
003573 005111 A 1454 IAR SET TO MINUS VALUE FOR SUB
003574 003574 R 1455 FET32 EQU *
003575 124123 A 1456 ADD VALUE
003575 003575 R 1457 FET35 EQU *
003576 054122 A 1458 STA VALUE UPDATE VALUE
003576 014371 A 1459 LDA ARITH CURRENT TERMINATOR INDICATOR
003577 054116 A 1460 STA PVTRM SET TO PREVIOUS TERMINATOR
003600 014116 A 1461 LDA TERM
003601 001010 A 1462 JAZ FET10 IF NOT END OF EXPRESSION
003602 003500 R
003603 005001 A 1463 TZA
003604 054363 A 1464 STA ARITH CLEAR ARITH OPERATION FLAG
003605 014112 A 1465 LDA VALUE
003606 044104 A 1466 INR FETCH UPDATE RETURN
003607 044103 A 1467 INR FETCH UPDATE RETURN
003610 044102 A 1468 INR FETCH UPDATE RETURN
003611 001000 A 1469 RETUM* FETCH
003612 103713 R

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003613 006010 A 1470 FET40 LDAI 6
003614 000006 A
003615 144351 A 1471 SUB COUNT
003616 054352 A 1472 STA FETCT
003617 001010 A 1473 JAZ FET45 IF 6 CHARS
003620 003635 R
003621 006030 A 1474 LDXI ITBUF+2
003622 004567 R
003623 003623 R 1475 FET42 EQU *
003624 000240 A 1476 LDAI *
003625 005002 A 1477 TZB SET REVERSE STORE
003626 002000 A 1478 CALL SBYTE
003627 004065 R
003630 014340 A 1479 LDA FEICT
003631 005311 A 1480 DAR
003632 054336 A 1481 STA FETCT DECREMENT BLANK FILL COUNT
003633 001016 A 1482 JANZ FET42 CONTINUE BLANK FILLING
003634 003623 R
003635 003635 R 1483 FET45 EQU *
003636 002000 A 1484 CALL INST SEARCH INST TABLE FOR NAME
003637 004173 R
003638 005111 A 1485 IAR
003639 001010 A 1486 JAZ FET47 IF NAME NOT FOUND IN INST TABLE
003640 003643 R
003641 005311 A 1487 DAR
003642 001000 A 1488 JMP FET30
003643 003564 R
003644 002000 A 1489 FET47 CALL CLSRCH SEARCH CL FOR NAME
003645 004300 R
003646 001004 A 1490 JAN FETR1 IF NOT FOUND
003647 003704 R
003648 001000 A 1491 JMP FET30
003649 003564 R
003650 003653 R 1492 FET50 EQU *
003651 054043 A 1493 STA TERM CLEAR END OF EXPRESSION
003652 005111 A 1494 IAR
003653 054312 A 1495 STA ARITH SET ADDITION
003654 014310 A 1496 LDA COUNT
003655 001000 A 1497 JMP FET25
003656 003540 R
003657 003661 R 1498 FET51 EQU *
003658 054035 A 1499 STA TERM CLEAR END OF EXPRESSION
003659 005311 A 1500 DAR
003660 054304 A 1501 STA ARITH SET SUBTRACTION
003661 014302 A 1502 LDA COUNT
003662 001000 A 1503 JMP FET25
003663 003540 R
003664 003667 R 1504 FET70 EQU *
003665 005111 A 1505 IAR
003666 054026 A 1506 STA TERM SET END OF EXPRESSION
003667 014275 A 1507 LDA COUNT
003668 001016 A 1508 JANZ FET25 IF NOT NULL FIELD
003669 003540 R
003670 024016 A 1509 LDB FETCH
003671 016001 A 1510 LDA 1,B RECORD TERMINATOR SERVICE ADDR
003672 054014 A 1511 STA FETCH
003673 001000 A 1512 RETUM* FETCH
003674 103713 R
003675 010422 A 1513 FETER LDA TWO
003676 001000 A 1514 JMP FETR10
003677 003705 R
003678 010464 A 1515 FETR1 LDA THREE
003679 024005 A 1516 FETR10 LDB FETCH PARAM AREA
003680 026002 A 1517 LDB 2,B ERROR SERVICE ADDR
003681 056004 A 1518 STA 4,B SET ERROR CODE
003682 064002 A 1519 STB FETCH SET ERROR SERVICE ADDR IN RETURN
003683 001000 A 1520 RETUM* RETRUN
003684 103713 R
003685 000000 A 1521 FETCH ENTR
003686 001000 A 1522 JMP FET05
003687 003474 R
003688 000000 A 1523 PVTRM DATA 0 PREVIOUS TERMINATOR INDICATOR
003689 000000 A 1524 TERM DATA 0 END OF EXPRESSION FOUND
003690 000000 A 1525 VALUE DATA 0
003691 000000 A 1526 ORGM DATA 0
003692 1527 EQUJEC
003693 1528 *****
003694 1529 *
003695 1530 * SUBROUTINE--SCAN (SCAN UNTIL TERMINATOR)
003696 1531 *
003697 1532 * PURPOSE-- TO MOVE AN ITEM FROM AN INPUT BUFFER TO THE ITEM
003698 1533 * BUFFER UNTIL A LEGAL TERMINATOR IS FOUND
003699 1534 *
003700 1535 * TERMINATORS: BLANK, COMMA, PLUS, OR MINUS
003701 1536 *
003702 1537 * CALLING SEQUENCE
003703 1538 * CALL SCAN
003704 1539 * LOCATION BUFPNT POINTS TO FIRST BYTE
003705 1540 * LOCATION ITBUF IS START OF STORAGE
003706 1541 *
003707 1542 * RETURNS TO CALLER WITH:
003708 1543 * 0=TERMINATOR
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1544 *          COUNT=NUMBER OF DIGITS          03 01544
1545 *          BUFP POINTING TO NEXT BYTE      03 01545
1546 *
1547 *-----*
003722 000000 A 1549 SCAN  ENTR          03 01549
003723 005001 A 1550      TZA          E.203 01550
003724 054242 A 1551      STA  COUNT      CLEAR CHARACTER COUNT E.203 01551
003725 006030 A 1552      LDXI  ITRUF          03 01552
003726 004565 R
003727 005244 A 1553      CPX          03 01553
003730 074041 A 1554      STX  SCBPT      SET UP STORE BYTE POINTER 03 01554
003731 034240 A 1555 SCN10  LDX  BUFP          03 01555
003732 002000 A 1556      CALL  FBYTE      FETCH ONE BYTE          03 01556
003733 004045 R
003734 074235 A 1557      STX  BUFP          03 01557
003735 005012 A 1558      TAB          03 01558
003736 006140 A 1559      SUBI  ' '          03 01559
003740 001010 A 1560      JAZ  SCN20      IF BLANK          03 01560
003741 003767 R
003742 006140 A 1561      SUBI  ',.-'      03 01561
003743 000014 A
003744 001010 A 1562      JAZ  SCN20      IF COMMA          03 01562
003745 003767 R
003746 006140 A 1563      SUBI  '+.-',      03 01563
003747 177777 A
003750 001010 A 1564      JAZ  SCN20      IF PLUS          03 01564
003751 003767 R
003752 006140 A 1565      SUBI  '-.-'+      03 01565
003753 000002 A
003754 001010 A 1566      JAZ  SCN20      IF MINUS          03 01566
003755 003767 R
003756 044210 A 1567      INR  COUNT      UPDATE BYTE COUNT      03 01567
003757 034012 A 1568      LDX  SCBPT      BYTE POINTER          03 01568
003760 005021 A 1569      TBA          BYTE          03 01569
003761 005102 A 1570      INCR 02        SET FOR FORWARD STORE 03 01570
003762 002000 A 1571      CALL  SBYTE      STORE BYTE          03 01571
003763 004065 R
003764 074005 A 1572      STX  SCBPT      UPDATE BYTE POINTER      03 01572
003765 001000 A 1573      JMP  SCN10          03 01573
003766 003731 R
003767 005021 A 1574 SCN20  TBA          03 01574
003770 001000 A 1575      RETU* SCAN          03 01575
003771 103722 R
003772 000000 A 1576 SCBPT  DATA  0          03 01576
1577      EJE          03 01577
1578 *-----*
1579 *
1580 *          SUBROUTINE--DC2BI (CONVERT OCTAL TO BINARY) 03 01580
1581 *
1582 *          PURPOSE--TO CONVERT 1-6 ASCII DIGITS TO A BINARY VALUE 03 01582
1583 *
1584 *          CALLING SEQUENCE          03 01584
1585 *          CALL  DC2BI          03 01585
1586 *          DATA  INVALID VALUE SERVICE ADDR E.203 01586
1587 *          COUNT=NUMBER OF DIGITS      03 01587
1588 *          ITRUF=CONTAINS ASCII STRING 03 01588
1589 *
1590 *          RETURNS TO CALLER WITH:    03 01589
1591 *          A=BINARY VALUE              03 01591
1592 *          OR TO INVALID SERVICE IF A NON OCTAL DIGIT FOUND E.203 01592
1593 *
1594 *-----*
003773 000000 A 1596 DC2BI  ENTR          03 01596
003774 005001 A 1597      TZA          03 01597
003775 054165 A 1598      STA  DCVAL      CLEAR ACCUM          03 01598
003776 006030 A 1599      LDXI  ITRUF          03 01599
003777 004565 R
004000 005244 A 1600      CPX          03 01600
004001 002000 A 1601 DCB10  CALL  FBYTE      FETCH BYTE          03 01601
004002 004045 R
004003 006140 A 1602      SUBI  0260          03 01602
004004 000260 A
004005 001004 A 1603      JAN  DCBRER      IF NOT NUMERIC          E.2 03 01603
004006 004036 R
004007 006140 A 1604      SUBI  0          03 01604
004010 000010 A
004011 001002 A 1605      JAP  DCBER      IF NOT OCTAL DIGIT      E.203 01605
004012 004036 R
004013 006120 A 1606      ADDI  8          03 01606
004014 000010 A
004015 054144 A 1607      STA  OCTMP          03 01607
004016 014144 A 1608      LDA  DCVAL      ACCUM          03 01608
004017 004243 A 1609      LRLA  3          03 01609
004020 124141 A 1610      ADD  OCTMP          03 01610
004021 054141 A 1611      STA  DCVAL      UPDATE ACCUM          03 01611
004022 006017 A 1612      LDAE  COUNT          03 01612
004023 004167 R
004024 005311 A 1613      DAR          03 01613
004025 006057 A 1614      STAE  COUNT          03 01614
004026 004167 R
004027 001016 A 1615      JANZ  DCB10      IF MORE DIGITS          03 01615
004030 004001 R

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Address	Code	Label	Operation	Comments	Page	Address
004031	014131	A	1616	LDA DCVAL	ACCUM	03 01616
004032	006047	A	1617	INRE DC2BI	UPDATE RETURN	E.203 01617
004033	003773	R				
004034	001000	A	1618	RETU*	DC2BI	03 01618
004035	103773	R				
004036	006027	A	1619	DCBER LDBE	DC2BI	E.203 01619
004037	003773	R				
004040	016000	A	1620	LDA 0.2	INVALID ITEM SERVICE ADDR	E.203 01620
004041	006057	A	1621	STAE DC2BI	SFT UP IN RETURN	E.203 01621
004042	003773	R				
004043	001000	A	1622	RETU*	DC2BI	E.203 01622
004044	103773	R				
			1623	EJEC		03 01623
			1624	*****		03 01624
			1625	*		03 01625
			1626	*	SUBROUTINE--FBYTE (FETCH BYTE)	03 01626
			1627	*		03 01627
			1628	*	PURPOSE--FETCH ONE BYTE, RIGHT JUSTIFIED	03 01628
			1629	*		03 01629
			1630	*	CALLING SEQUENCE	03 01630
			1631	*	CALL FBYTE	03 01631
			1632	*	X=BUFFER POINTER	03 01632
			1633	*	POS=RIGHTBYTE, NEG(COMP)=LEFT BYTE	03 01633
			1634	*		03 01634
			1635	*	RETURNS TO CALLER WITH:	03 01635
			1636	*	X=UPDATED BUFFER POINTER	03 01636
			1637	*	A=BYTE (RIGHT JUSTIFIED)	03 01637
			1638	*		03 01638
			1639	*****		03 01639
004045	000000	A	1641	FBYTE ENTR		03 01641
004046	005041	A	1642	TXA	BYTE POINTER	03 01642
004047	001002	A	1643	JAP FB10	IF RIGHT BYTE	03 01643
004050	004056	R				
004051	005244	A	1644	CPX	FETCH	03 01644
004052	015000	A	1645	LDA 0.1	LEFT	03 01645
004053	004350	A	1646	LSRA 8	BYTE	03 01646
004054	001000	A	1647	RETU*	1 BYTE	03 01647
004055	104045	R				
004056	015000	A	1648	FB10 LDA 0.1	FETCH	03 01648
004057	006150	A	1649	ANAI 0377	RIGHT BYTE	03 01649
004060	000377	A				
004061	005144	A	1650	IXR	SET X FOR	03 01650
004062	005244	A	1651	CPX	NEXT BYTE	03 01651
004063	001000	A	1652	RETU*	FBYTE	03 01652
004064	104045	R				
			1653	EJEC		03 01653
			1654	*****		03 01654
			1655	*		03 01655
			1656	*	SUBROUTINE--SBYTE (STORE ONE BYTE)	03 01656
			1657	*		03 01657
			1658	*	PURPOSE--STORE ONE BYTE	03 01658
			1659	*		03 01659
			1660	*	CALLING SEQUENCE	03 01660
			1661	*	CALL SBYTE	03 01661
			1662	*	X=BUFFER POINTER	03 01662
			1663	*	POS=RIGHT BYTE, NEG(COMP)=LEFT BYTE	03 01663
			1664	*	B=DIRECTION OF NEXT BYTE	03 01664
			1665	*	=0 FOR REVERSE, =1 FOR FORWARD	03 01665
			1666	*	RETURNS TO CALLER WITH:	03 01666
			1667	*	X=UPDATED BUFFER POINTER	03 01667
			1668	*		03 01668
			1669	*****		03 01669
004065	000000	A	1671	SBYTE ENTR		03 01671
004066	054041	A	1672	STA SBTMA	SAVE BYTE	03 01672
004067	064041	A	1673	STR SBTMB	SAVE DIRECTION	03 01673
004070	005041	A	1674	TXA	BYTE POINTER	03 01674
004071	001002	A	1675	JAP SB20	IF RIGHT BYTE	03 01675
004072	004111	R				
004073	005244	A	1676	CPX		03 01676
004074	014033	A	1677	LDA SBTMA		03 01677
004075	025000	A	1678	LDB 0.1	INSERT	03 01678
004076	004050	A	1679	LRLB 8	BYTE IN	03 01679
004077	004450	A	1680	LLRL 8	LEFT BYTE	03 01680
004100	055000	A	1681	STA 0.1		03 01681
004101	014027	A	1682	LDA SBTMB	DIRECTION	03 01682
004102	001010	A	1683	JAZ SB10	IF REVERSE	03 01683
004103	004106	R				
004104	001000	A	1684	RETU*	SBYTE	03 01684
004105	104065	R				
004106	005344	A	1685	SB10 DXR	SET FOR PREVIOUS RIGHT BYTE	03 01685
004107	001000	A	1686	RETU*	SBYTE	03 01686
004110	104065	R				
004111	014016	A	1687	SB20 LDA SBTMA		03 01687
004112	025000	A	1688	LDB 0.1	INSERT	03 01688
004113	004550	A	1689	LLSR 8	BYTE IN	03 01689
004114	004050	A	1690	LRLB 8	RIGHT BYTE	03 01690
004115	065000	A	1691	STA 0.1		03 01691
004116	014012	A	1692	LDA SBTMB	DIRECTION	03 01692
004117	001010	A	1693	JAZ SB30	IF REVERSE	03 01693
004120	004125	R				
004121	005144	A	1694	IXR		03 01694
004122	005244	A	1695	CPX	SET FOR NEXT LEFT BYTE	03 01695
004123	001000	A	1696	RETU*	SBYTE	03 01696

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004124 104065 R
004125 005244 A 1697 SB30 CPX          SET FOR LEFT BYTE      03 01697
004126 001000 A 1698          RETU*    SBYTE          03 01698
004127 104065 R
004130 000000 A 1699 SBTMA DATA 0          BYTE          03 01699
004131 000000 A 1700 SBTMB DATA 0          DIRECTION     03 01700
1701          EJEC          03 01701
1702 *****
1703 *
1704 *          SUBROUTINE--BI20C (CONVERT BINARY TO OCTAL ASCII) 03 01704
1705 *
1706 *          PURPOSE--TO CONVERT A BINARY VALUE TO 6 ASCII DIGITS 03 01706
1707 *
1708 *          CALLING SEQUENCE
1709 *          CALL          BI20C
1710 *                   X=STORE ADDR (BYTE POINTER)
1711 *                   B=BINARY VALUE
1712 *
1713 *          RETURNS TO CALLER
1714 *
1715 *****
004132 000000 A 1717 BI20C ENTR
004133 006010 A 1718          LDAI          6
004134 000000 A
004135 054021 A 1719          STA          BICNT          03 01719
004136 005001 A 1720          TZA
004137 004441 A 1721          LLRL          1          BIT 15 TO A      03 01721
004140 124020 A 1722 BI10  ADD          N260
004141 064016 A 1723          STB          BITMB          SAVE REMAINDER 03 01723
004142 005102 A 1724          INCR          2
004143 002000 A 1725          CALL          SBYTE          STORE BYTE      03 01725
004144 004065 R
004145 014011 A 1726          LDA          BICNT          LOOP COUNT     03 01726
004146 005311 A 1727          ZAR
004147 001010 A 1728          JAZ*          BI20C          IF DONE        03 01728
004150 104132 R
004151 054005 A 1729          STA          BICNT          03 01729
004152 024005 A 1730          LDB          BITMB          03 01730
004153 005001 A 1731          TZA          CLEAR ACCUM   03 01731
004154 004443 A 1732          LLRL          3          NEXT BYTE     03 01732
004155 001000 A 1733          JMP          BI10          03 01733
004156 004140 R
004157 000000 A 1734 BICNT DATA 0          LOOP COUNT     03 01734
004160 000000 A 1735 BITMB DATA 0
004161 000260 A 1736 N260 DATA 0260
004162 000000 A 1737 OCTMP DATA 0
004163 000000 A 1738 OCVAL DATA 0
004164 000000 A 1739 STWBK DATA 0          STORE ADDR     03 01739
004165 000000 A 1740          DATA 0          ORIG CONTENTS 03 01740
004166 000000 A 1741          DATA 0          NEW CONTENTS  03 01741
004167 000000 A 1742 COUNT DATA 0
004170 000000 A 1743 ARITH DATA 0
004171 000000 A 1744 FETCT DATA 0
004172 000000 A 1745 BUFPT DATA 0          BYTE POINTER   03 01745
1746          EJEC          03 01746
1747 *****
1748 *
1749 *          SUBROUTINE--INST (IDENTIFY INSTRUCTION MNEMONIC) 03 01749
1750 *
1751 *          PURPOSE--TO RETURN AN INSTRUCTION VALUE GIVEN THE
1752 *                   INSTRUCTION
1753 *
1754 *          THE FIRST CHARACTER OF THE INST IS USED TO INDEX INTO
1755 *          THE POINTER TABLE (INTBL). THE TABLE ENTRY IS USED AS
1756 *          A POINTER TO THE SCAN START. THE NEXT NON-ZERO ENTRY
1757 *          IN INTBL IS USED TO CALCULATE THE SCAN COUNT. A ZERO
1758 *          OR IF THE SCAN COUNT IS REACHED WITHOUT A MATCH A VALUE
1759 *          OF MINUS ONE IS RETURNED
1760 *
1761 *          CALLING SEQUENCE
1762 *          CALL          INST
1763 *                   ITEM CONTAINS 4 CHAR INST (LEFT JUSTIFIED)
1764 *
1765 *          RETURNS TO CALLER WITH
1766 *          A REG = -1 IF INST NOT FOUND
1767 *                   INST VALUE IF FOUND
1768 *
1769 *****
004173 000000 A 1771 INST ENTR
004174 005001 A 1772          TZA
004175 054101 A 1773          STA          RETYP          SET RELO TYPE TO RESET  E.200 01773
004176 006017 A 1774          LDAE          ITRUF          TARGET INST    03 01774
004177 004365 R
004200 004350 A 1775          LSRA          8          ISOLATED LEFT BYTE 03 01775
004201 005012 A 1776          TAB          SAVE BYTE     E.200 01776
004202 006140 A 1777          SUBI          '*'          E.200 01777
004203 000252 A
004204 001016 A 1778          JANZ          INOS          IF NOT AN ASTERISK E.200 01778
004205 004214 R
004206 005101 A 1779          INCR          01          E.200 01779
004207 054067 A 1780          STA          RETYP          SET RELO TYPE TO SET  E.200 01780
004210 006017 A 1781          LDAE          BASE          CURRENT BASE VALUE E.200 01781
004211 001357 R

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Address	Op	Op	Op	Op	Op	Op	Op	Op	Op
004212	001000	A	1782	RETU*	INST	RETURN			E.203 01782
004213	104173	R							
004214	005021	A	1783	IN05	TBA	RESTORE BYTE			E.203 01783
004215	006140	A	1784		SUBI	0301			03 01784
004216	000301	A							
004217	005014	A	1785		TAX				03 01785
004220	006025	A	1786		LDDE	INTEL,1	INTBL ENTRY		03 01786
004221	005415	R							
004222	001020	A	1787		JBZ	IN50	IF NO ENTRY		03 01787
004223	004272	R							
004224	064050	A	1788		STB	INSCN			03 01788
004225	005144	A	1789	IN10	IXR				03 01789
004226	006015	A	1790		LDDE	INTBL,1	NEXT ENTRY		03 01790
004227	005415	R							
004230	001004	A	1791		JAN	IN30	IF END OF TABLE		03 01791
004231	004263	R							
004232	001010	A	1792		JAZ	IN10	IF NULL ENTRY		03 01792
004233	004225	R							
004234	144040	A	1793	IN12	SUB	INSCN			03 01793
004235	054040	A	1794		STA	INCNT	SET SCAN COUNT		03 01794
004236	024036	A	1795		LDB	INSCN			03 01795
004237	006030	A	1796		LDXI	ITBUF	TARGET WORD		03 01796
004240	004565	R							
004241	016000	A	1797	IN15	LDA	0,2			03 01797
004242	135000	A	1798		ERA	0,1			03 01798
004243	001013	A	1799		JANZ	IN25	IF NOT A MATCH		03 01799
004244	004251	R							
004245	016001	A	1800		LDA	1,2			03 01800
004246	135001	A	1801		ERA	1,1			03 01801
004247	001010	A	1802		JAZ	IN40	IF A MATCH FOUND		03 01802
004250	004267	R							
004251	014024	A	1803	IN25	LDA	INCNT	SCAN COUNT		03 01803
004252	005311	A	1804		DAR				03 01804
004253	054022	A	1805		STA	INCNT			03 01805
004254	001010	A	1806		JAZ	IN50	IF NO MATCH TO BE FOUND		03 01806
004255	004272	R							
004256	005122	A	1807		IBR				03 01807
004257	005122	A	1808		IBR				03 01808
004260	005122	A	1809		IBR		POINT TO NEXT ENTRY		03 01809
004261	001000	A	1810		JMP	IN15	CONTINUE SCAN		03 01810
004262	004241	R							
004263	006010	A	1811	IN30	LDAI	INEND			03 01811
004264	006526	R							
004265	001000	A	1812		JMP	IN12	SET TO END OF TABLE ADDR		03 01812
004266	004234	R							
004267	016002	A	1813	IN40	LDA	2,2	INST VALUE		03 01813
004270	001000	A	1814		RETU*	INST	RETURN		03 01814
004271	104173	R							
004272	005301	A	1815	IN50	DECR	01	SIGNAL INST NOT FOUND		03 01815
004273	001000	A	1816		RETU*	INST	RETURN		03 01816
004274	104173	R							
004275	000000	A	1817	INSCN	DATA	0	START SCAN ADDR		03 01817
004276	000000	A	1818	INCNT	DATA	0	SCAN COUNT		03 01818
004277	000000	A	1819	RETYE	DATA	0	RELD TYPE		E.203 01819
1820					EJEC				03 01820
1821					*****				03 01821
1822					*				03 01822
1823					*	SUBROUTINE--CLSRCH (SEARCH CL DIRECTORY FOR NAME)			03 01823
1824					*				03 01824
1825					*	PURPOSE--TO SEARCH THE CL DIRECTORY FOR THE NAME IN ITBUF			03 01825
1826					*	AND RETURN ADDR IF FOUND			03 01826
1827					*				03 01827
1828					*	CALLING SEQUENCE			03 01828
1829					*	CALL CLSRCH			03 01829
1830					*	IFBUF CONTAINS NAME IN ASCII			03 01830
1831					*				03 01831
1832					*	RETURNS TO CALLER WITH:			03 01832
1833					*	A LT 0 IF NOT FOUND			03 01833
1834					*	A GE 0 FOR NAME'S ADDR			03 01834
1835					*				03 01835
1836					*	*****			03 01836
004300	000000	A	1838	CLSRCH	ENR				03 01838
004301	006030	A	1839		LDXI	CLFCB+7	POINTER TO FILE NAME IN FCB		03 01839
004302	004456	R							
004303	006020	A	1840		LDBI	ITBUF	POINTER TO DESIRED FILE NAME		03 01840
004304	004565	R							
004305	016000	A	1841		LDA	0,2	MOVE		03 01841
004306	055000	A	1842		STA	0,1	FILE		03 01842
004307	016001	A	1843		LDA	1,2	NAME		03 01843
004310	055001	A	1844		STA	1,1	TO		03 01844
004311	016002	A	1845		LDA	2,2	THE		03 01845
004312	055002	A	1846		STA	2,1	FCB		03 01846
004313	004313	R	1847	CLS02	EQU	*			03 01847
004314	006010	A	1848		LDAI	5	MAX BYTE COUNT		03 01848
004315	000006	A							
004316	006147	A	1849		SUBE	COUNT	NUMBER OF BITES INPUT		03 01849
004317	006057	A	1850		STAE	COUNT	SET TO RIGHT JUSTIFY SHIFT COUNT		03 01850
004320	004167	R							
004321	001010	A	1851		JAZ	CLS05	IF SIX BYTES		03 01851
004322	004350	R							
1852				*		RIGHT JUSTIFY NAME			03 01852
004323		R	1853	CLS03	EQU	*			03 01853

004323	014242	A	1854	LDA	ITBUF+1	WORD 1		03	01854
004324	024242	A	1855	LDB	ITBUF+2	WORD 2		03	01855
004325	004550	A	1856	LLSR	8			03	01856
004326	064240	A	1857	STB	ITBUF+2			03	01857
004327	004250	A	1858	LRLA	8	RESTORE A		03	01858
004330	005012	A	1859	TAB				03	01859
004331	014233	A	1860	LDA	ITBUF	WORD 0		03	01860
004332	004550	A	1861	LLSR	8			03	01861
004333	064232	A	1862	STB	ITBUF+1			03	01862
004334	006150	A	1863	ANAI	0377			03	01863
004335	000377	A							
004336	006110	A	1864	ORAI	0120000	BLANK LEFT BYTE		03	01864
004337	120000	A							
004340	054224	A	1865	STA	ITRUF			03	01865
004341	006017	A	1866	LDAE	COUNT			03	01866
004342	004167	R							
004343	005311	A	1867	DAR				03	01867
004344	006057	A	1868	STAE	COUNT	DECREMENT BYTE COUNT FOR JUSTIFYING		03	01868
004345	004167	R							
004346	001016	A	1869	JANZ	CLS03	IF TO CONTINUE JUSTIFY		03	01869
004347	004323	R							
	004350	R	1870	EQU	*			03	01870
004350	002000	A	1871	CALL	SIXBT	CONVERT NAME TO LOADER CODE		03	01871
004351	004472	R							
	004352	R	1872	EQU	*			03	01872
		R	1873	OPEN	CLFCB,CL,0,0			03	01873
004352	006505	A							
004353	003160	E							
004354	100000	A							
004355	003147	A							
004356	004457	R							
004357	000000	A							
004360	000000	A							
			1874	STAT	CLS07,CLER,CLEF,CLER,*			03	01874
004361	006505	A							
004362	003167	E							
004363	004352	R							
004364	004447	R							
004365	004447	R							
004366	004447	R							
004367	004361	R							
			1875	CLS10	READ	CLFCB,CL,0,0		03	01875
004370	006505	A							
004371	004353	E							
004372	100000	A							
004373	000147	A							
004374	004457	R							
004375	000000	A							
004376	000000	A							
			1876	STAT	CLS10,CLER,CLEF,CLER,*			03	01876
004377	006505	A							
004400	004362	E							
004401	004370	R							
004402	004447	R							
004403	004447	R							
004404	004447	R							
004405	004377	R							
004406	006010	A	1877	LDAI	12			03	01877
004407	000014	A							
004410	054060	A	1878	STA	CLCNT	ENTRY COUNT		03	01878
004411	006030	A	1879	LDXI	CLBUF+11	START OF DIRECTORY NAMES		03	01879
004412	005050	R							
004413	006020	A	1880	CL15	LDBI	ITRUF		03	01880
004414	004565	R							
004415	016000	A	1881	LDA	0,2	FIRST WORD		03	01881
004416	135000	A	1882	ERA	0,1			03	01882
004417	001016	A	1883	JANZ	CL20	NO MATCH		03	01883
004420	004434	R							
004421	016001	A	1884	LDA	1,2	SECOND WORD		03	01884
004422	135001	A	1885	ERA	1,1			03	01885
004423	001016	A	1886	JANZ	CL20	NO MATCH		03	01886
004424	004434	R							
004425	016002	A	1887	LDA	2,2	THIRD WORD		03	01887
004426	135002	A	1888	ERA	2,1			03	01888
004427	001016	A	1889	JANZ	CL20	NO MATCH		03	01889
004430	004434	R							
004431	015003	A	1890	LDA	3,1	FOUND, GET ADDR		03	01890
004432	001000	A	1891	RETU*	CLSRCH			03	01891
004433	104000	R							
004434	014034	A	1892	CL20	LDA	CLCNT	DIRECTORY ENTRY COUNT	03	01892
004435	005311	A	1893	DAR				03	01893
004436	001010	A	1894	JAZ	CLER	ERROR IF END OF ENTRIES AND NAME NOT FOUND		03	01894
004437	004447	R							
004440	054030	A	1895	STA	CLCNT			03	01895
004441	005041	A	1896	TXA				03	01896
004442	006120	A	1897	ADDI	4			03	01897
004443	000004	A							
004444	005014	A	1898	TAM		UPDATE DIRECTORY POINTER		03	01898
004445	001000	A	1899	JMP	CL15			03	01899
004446	004413	R							
	004447	R	1900	CLER	EQU	*		E.203	01900
	004447	R	1901	CLEF	EQU	*		E.203	01901
004447	006505	A	1902	JSR	MOVE,X	MOVE NAME TO ERROR MESSAGE		E.203	01902

004564	104472	R						
004565			1975	ITBUF	BSS	4		03 01975
004571	000000	A	1976	SITMB	DATA	0		03 01976
004572	000000	A	1977	SITMX	DATA	0		03 01977
004573	000240	A	1978	N240	DATA	0240		03 01978
004574	000000	A	1979	SIBUF	DATA	0,0		03 01979
004575	000000	A						
			1980		EJEC			03 01980
			1981	*				03 01981
			1982	*	MESSAGE BLOCK			03 01982
			1983	*				03 01983
004576	120330	A	1984	NUMSG	DATA	' XXXXXX (BBBBBB) AAAAAA '		E.203 01984
004577	154330	A						
004600	154330	A						
004601	154240	A						
004602	124302	A						
004603	141302	A						
004604	141302	A						
004605	141251	A						
004606	120301	A						
004607	140701	A						
004610	140701	A						
004611	140640	A						
004612	120340	A						
004613	120320	A	1985	PRMSG	DATA	' PT** '		03 01985
004614	152252	A						
004615	125240	A						
004616	000011	A	1986	DIMSG	DATA	9, ' PT01, ILLEGAL DIR'		E.203 01986
004617	120320	A						
004620	152260	A						
004621	130654	A						
004622	120311	A						
004623	146314	A						
004624	142707	A						
004625	140711	A						
004626	120304	A						
004627	144722	A						
004630	000011	A	1987	PMMSG	DATA	9, ' PT02, PARAM ERRDR'		E.203 01987
004631	120320	A						
004632	152260	A						
004633	131254	A						
004634	120320	A						
004635	140722	A						
004636	140715	A						
004637	120365	A						
004640	151322	A						
004641	147722	A						
004642	000014	A	1988	CLMSG	DATA	12, ' PT03, CL DIR ER--XXXXXX'		E.203 01988
004643	120320	A						
004644	152260	A						
004645	131654	A						
004646	120303	A						
004647	146240	A						
004650	142311	A						
004651	151240	A						
004652	142722	A						
004653	126655	A						
004654	154330	A						
004655	154330	A						
004656	154330	A						
004657	000011	A	1989	DMPMSG	DATA	9, ' PT04, IMAGE ERRDR'		E.203 01989
004660	120320	A						
004661	152260	A						
004662	132254	A						
004663	120311	A						
004664	146701	A						
004665	143705	A						
004666	120303	A						
004667	151322	A						
004670	147722	A						
004671	000011	A	1990	STMSG	DATA	9, ' PT05, STAT ERRDR '		E.203 01990
004672	120320	A						
004673	152260	A						
004674	132254	A						
004675	120320	A						
004676	152307	A						
004677	152240	A						
004700	142722	A						
004701	151317	A						
004702	151240	A						
004703	000011	A	1991	LIMSG	DATA	9, ' PT06, ADDR EXTENT'		E.203 01991
004704	120320	A						
004705	152260	A						
004706	133254	A						
004707	120301	A						
004710	142304	A						
004711	151240	A						
004712	142730	A						
004713	152305	A						
004714	147324	A						
004715	000012	A	1992	DVMSG	DATA	10, ' PT07, OVERLAY ERRDR'		E.203 01992
004716	120320	A						
004717	152260	A						

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004720 133654 A
004721 120317 A
004722 153305 A
004723 151314 A
004724 140731 A
004725 120305 A
004726 151322 A
004727 147722 A
004730 000013 A 1993 REMSG DATA 11, ' PT08, RELO DIR ERROR ' E.203 01993
004731 120320 A
004732 152260 A
004733 134254 A
004734 120322 A
004735 142714 A
004736 147640 A
004737 142311 A
004740 151240 A
004741 142722 A
004742 151317 A
004743 151240 A
004744 120304 A 1994 DCMSG DATA ' DUMP COMPLETED ' 03 01994
004745 152715 A
004746 150240 A
004747 141717 A
004750 146720 A
004751 146303 A
004752 152305 A
004753 142240 A
004754 120310 A 1995 HIMSG DATA ' HISTORY COMPLETE ' 03 01995
004755 144723 A
004756 152317 A
004757 151331 A
004760 120303 A
004761 147715 A
004762 150314 A
004763 142724 A
004764 142640 A
004765 1996 INBUF BSS 40 DI INPUT 03 01996
005035 1997 CLBUF BSS 120 03 01997
005225 1998 IMBUF BSS 120 PATCH IMAGE BUFFER 03 01998
1999 EJEC 03 01999
2000 * 03 02000
2001 * INSTRUCTION TABLE POINTERS. USED TO SELECT START SCAN MARK 03 02001
2002 * 03 02002
005415 005450 R 2003 INTBL DATA INA A 03 02003
005416 005533 R 2004 DATA INB B 03 02004
005417 005552 R 2005 DATA INC C 03 02005
005420 005577 R 2006 DATA IND D 03 02006
005421 005632 R 2007 DATA INE E 03 02007
005422 000000 A 2008 DATA 0 F 03 02008
005423 000000 A 2009 DATA 0 G 03 02009
005424 005654 R 2010 DATA INH H 03 02010
005425 005657 R 2011 DATA INI I 03 02011
005426 005731 R 2012 DATA INJ J 03 02012
005427 000000 A 2013 DATA 0 K 03 02013
005430 006071 R 2014 DATA INL L 03 02014
005431 006176 R 2015 DATA INM M 03 02015
005432 006220 R 2016 DATA INN N 03 02016
005433 006223 R 2017 DATA IND O 03 02017
005434 000000 A 2018 DATA 0 P 03 02018
005435 000000 A 2019 DATA 0 Q 03 02019
005436 006256 R 2020 DATA INR R 03 02020
005437 006261 R 2021 DATA INS S 03 02021
005440 006377 R 2022 DATA INT T 03 02022
005441 000000 A 2023 DATA 0 U 03 02023
005442 000000 A 2024 DATA 0 V 03 02024
005443 000000 A 2025 DATA 0 W 03 02025
005444 006435 R 2026 DATA INX X 03 02026
005445 000000 A 2027 DATA 0 Y 03 02027
005446 006523 R 2028 DATA INZ Z 03 02028
005447 177777 A 2029 DATA -1 END OF POINTER TABLE 03 02029
2030 * 03 02030
2031 * INSTRUCTION TABLE 03 02031
2032 * 03 02032
005450 140704 A 2033 INA DATA 'ADD ',0120000 03 02033
005451 142240 A
005452 120000 A
005453 140704 A 2034 DATA 'ADDX',0125000 03 02034
005454 142330 A
005455 125000 A
005456 140704 A 2035 DATA 'ADDB',0126000 03 02035
005457 142302 A
005460 126000 A
005461 140704 A 2036 DATA 'ADDE',06127 03 02036
005462 142305 A
005463 006127 A
005464 140704 A 2037 DATA 'ADDI',06120 03 02037
005465 142311 A
005466 006120 A
005467 140716 A 2038 DATA 'ANA ',0150000 03 02038
005470 140640 A
005471 150000 A
005472 140716 A 2039 DATA 'ANAX',0155000 03 02039

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005473	140730	A					
005474	155000	A					
005475	140716	A	2040	DATA	'ANAB',0156000		03 02040
005476	140702	A					
005477	156000	A					
005500	140716	A	2041	DATA	'ANAE',06157		03 02041
005501	140705	A					
005502	006157	A					
005503	140716	A	2042	DATA	'ANAI',06150		03 02042
005504	140711	A					
005505	006150	A					
005506	140717	A	2043	DATA	'ADFA',05511		03 02043
005507	143301	A					
005510	005511	A					
005511	140717	A	2044	DATA	'ADFB',05522		03 02044
005512	143302	A					
005513	005522	A					
005514	140717	A	2045	DATA	'ADFX',05544		03 02045
005515	143330	A					
005516	005544	A					
005517	140723	A	2046	DATA	'ASLA',04200		03 02046
005520	146301	A					
005521	004200	A					
005522	140723	A	2047	DATA	'ASLB',04000		03 02047
005523	146302	A					
005524	004000	A					
005525	140723	A	2048	DATA	'ASRA',04300		03 02048
005526	151301	A					
005527	004300	A					
005530	140723	A	2049	DATA	'ASRB',04100		03 02049
005531	151302	A					
005532	004100	A					
005533	141324	A	2050 INB	DATA	'ET ',06400		03 02050
005534	120240	A					
005535	006400	A					
005536	141324	A	2051	DATA	'ETA0',06440		03 02051
005537	140660	A					
005540	006440	A					
005541	141324	A	2052	DATA	'ETA1',06400		03 02052
005542	140661	A					
005543	006400	A					
005544	141324	A	2053	DATA	'ETE0',06460		03 02053
005545	141260	A					
005546	006460	A					
005547	141324	A	2054	DATA	'ETI1',06420		03 02054
005550	141261	A					
005551	006420	A					
005552	141711	A	2055 INC	DATA	'CIA ',0102500		03 02055
005553	140640	A					
005554	102500	A					
005555	141711	A	2056	DATA	'CIAB',0102700		03 02056
005556	140702	A					
005557	102700	A					
005560	141711	A	2057	DATA	'CIB ',0102600		03 02057
005561	141240	A					
005562	102600	A					
005563	141717	A	2058	DATA	'COMP',05200		03 02058
005564	146720	A					
005565	005200	A					
005566	141720	A	2059	DATA	'CPA ',05211		03 02059
005567	140640	A					
005570	005211	A					
005571	141720	A	2060	DATA	'CPB ',05222		03 02060
005572	141240	A					
005573	005222	A					
005574	141720	A	2061	DATA	'CPX ',05244		03 02061
005575	154240	A					
005576	005244	A					
005577	142301	A	2062 IND	DATA	'DAR ',05311		03 02062
005600	151240	A					
005601	005311	A					
005602	142302	A	2063	DATA	'DBR ',05322		03 02063
005603	151240	A					
005604	005322	A					
005605	142303	A	2064	DATA	'DECR',05300		03 02064
005606	141722	A					
005607	005300	A					
005610	142311	A	2065	DATA	'DIV ',0170000		03 02065
005611	153240	A					
005612	170000	A					
005613	142311	A	2066	DATA	'DIVX',0175000		03 02066
005614	153330	A					
005615	175000	A					
005616	142311	A	2067	DATA	'DIVB',0176000		03 02067
005617	153302	A					
005620	176000	A					
005621	142311	A	2068	DATA	'DIVE',06177		03 02068
005622	153305	A					
005623	006177	A					
005624	142311	A	2069	DATA	'DIVI',06170		03 02069
005625	153311	A					
005626	006170	A					
005627	142330	A	2070	DATA	'DXR ',05344		03 02070

E.2 VORTEX LISTING

PATCH

PROGRAM PAGE

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LISTING PAGE (480)

Address	Hex	Label	Text	Value	Page	
005630	151240	A				
005631	005344	A				
005632	142722	A	2071 INE	DATA	'ERR ',0130000	03 02071
005633	140640	A				
005634	130000	A				
005635	142722	A	2072	DATA	'ERAX',0133000	03 02072
005636	140730	A				
005637	135000	A				
005640	142722	A	2073	DATA	'ERAB',0136000	03 02073
005641	140702	A				
005642	136000	A				
005643	142722	A	2074	DATA	'ERAE',06137	03 02074
005644	140705	A				
005645	006137	A				
005646	142722	A	2075	DATA	'ERAI',06130	03 02075
005647	140711	A				
005650	006130	A				
005651	142730	A	2076	DATA	'EAC ',0100000	03 02076
005652	141610	A				
005653	100000	A				
005654	144314	A	2077 INH	DATA	'HLT ',00	03 02077
005655	152240	A				
005656	000000	A				
005657	144701	A	2078 INI	DATA	'IAR ',05111	03 02078
005660	151240	A				
005661	005111	A				
005662	144702	A	2079	DATA	'IRR ',05122	03 02079
005663	151240	A				
005664	005122	A				
005665	144712	A	2080	DATA	'IIMP',06700	03 02080
005666	146720	A				
005667	006700	A				
005670	144715	A	2081	DATA	'IME ',0100000	03 02081
005671	142640	A				
005672	102000	A				
005673	144710	A	2082	DATA	'INA ',0102100	03 02082
005674	140540	A				
005675	102100	A				
005676	144716	A	2083	DATA	'INAB',0100000	03 02083
005677	140702	A				
005700	102300	A				
005701	144710	A	2084	DATA	'INB ',0100200	03 02084
005702	141240	A				
005703	102300	A				
005704	144710	A	2085	DATA	'INCR',05100	03 02085
005705	141722	A				
005706	005100	A				
005707	144710	A	2086	DATA	'INR ',040000	03 02086
005710	151240	A				
005711	040000	A				
005712	144710	A	2087	DATA	'INRX',045000	03 02087
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005714	045000	A				
005715	144710	A	2088	DATA	'INRB',040000	03 02088
005716	151000	A				
005717	045000	A				
005720	144710	A	2089	DATA	'INRE',06047	03 02089
005721	151305	A				
005722	006047	A				
005723	144710	A	2090	DATA	'INRI',06040	03 02090
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005725	006040	A				
005726	144730	A	2091	DATA	'IXP ',05144	03 02091
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005730	005144	A				
005731	145301	A	2092 INJ	DATA	'JAN ',01004	03 02092
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005733	001004	A				
005734	145301	A	2093	DATA	'JANM',02004	03 02093
005735	147315	A				
005736	002004	A				
005737	145301	A	2094	DATA	'JANZ',01016	03 02094
005740	147332	A				
005741	001016	A				
005742	145301	A	2095	DATA	'JAP ',01002	03 02095
005743	152240	A				
005744	001002	A				
005745	145301	A	2096	DATA	'JAPM',02002	03 02096
005746	150315	A				
005747	002002	A				
005750	145301	A	2097	DATA	'JAZ ',01010	03 02097
005751	155240	A				
005752	001010	A				
005753	145301	A	2098	DATA	'JAZM',02010	03 02098
005754	153310	A				
005755	002010	A				
005756	145302	A	2099	DATA	'JBNZ',01026	03 02099
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005761	145302	A	2100	DATA	'J8Z ',01000	03 02100
005762	155240	A				
005763	001000	A				
005764	145302	A	2101	DATA	'J8ZM',02000	03 02101

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005767	145311	A	2102	DATA	'JIF ',01000	03 02102
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005771	001000	A				
005772	145311	A	2103	DATA	'JIFM',02000	03 02103
005773	143315	A				
005774	002000	A				
005775	145315	A	2104	DATA	'JNP ',01000	03 02104
005776	150240	A				
005777	001000	A				
006000	145313	A	2105	DATA	'JNPM',02000	03 02105
006001	150315	A				
006002	002000	A				
006003	145317	A	2106	DATA	'JDF ',01001	03 02106
006004	143240	A				
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006006	145317	A	2107	DATA	'JDFN',01007	03 02107
006007	143316	A				
006010	001007	A				
006011	145317	A	2108	DATA	'JDFM',02001	03 02108
006012	143315	A				
006013	002001	A				
006014	145320	A	2109	DATA	'JSR ',06500	03 02109
006015	151240	A				
006016	006500	A				
006017	145323	A	2110	DATA	'JSRX',06505	03 02110
006020	151330	A				
006021	006505	A				
006022	145323	A	2111	DATA	'JSRB',06506	03 02111
006023	151308	A				
006024	006505	A				
006025	145323	A	2112	DATA	'JS1M',02100	03 02112
006026	130715	A				
006027	002100	A				
006030	145322	A	2113	DATA	'JS2M',02200	03 02113
006031	131315	A				
006032	002200	A				
006033	145323	A	2114	DATA	'JS3M',02400	03 02114
006034	131715	A				
006035	002400	A				
006036	145323	A	2115	DATA	'JS1N',01106	03 02115
006037	130715	A				
006040	001105	A				
006041	145323	A	2116	DATA	'JS2N',01206	03 02116
006042	131315	A				
006043	001200	A				
006044	145323	A	2117	DATA	'JS3N',01406	03 02117
006045	131715	A				
006046	001400	A				
006047	145323	A	2118	DATA	'JS1',01100	03 02118
006050	151661	A				
006051	001100	A				
006052	145323	A	2119	DATA	'JS2',01200	03 02119
006053	151662	A				
006054	001200	A				
006055	145323	A	2120	DATA	'JS3',01400	03 02120
006056	151662	A				
006057	001400	A				
006060	145330	A	2121	DATA	'JXNZ',01046	03 02121
006061	147322	A				
006062	001046	A				
006063	145330	A	2122	DATA	'JXZ ',01040	03 02122
006064	155240	A				
006065	001040	A				
006066	145330	A	2123	DATA	'JXZM',02040	03 02123
006067	155315	A				
006070	002040	A				
006071	146301	A	2124 INL	DATA	'LASL',04400	03 02124
006072	151714	A				
006073	004400	A				
006074	146301	A	2125	DATA	'LASR',04500	03 02125
006075	151722	A				
006076	004500	A				
006077	146301	A	2126	DATA	'LDC ',010000	03 02126
006100	141540	A				
006101	010000	A				
006102	146301	A	2127	DATA	'LPAK',015000	03 02127
006103	140730	A				
006104	015000	A				
006105	146301	A	2128	DATA	'LPAS',015000	03 02128
006106	140700	A				
006107	015000	A				
006110	146301	A	2129	DATA	'LPBE',06017	03 02129
006111	140700	A				
006112	006017	A				
006113	146304	A	2130	DATA	'LPAI',06010	03 02130
006114	140711	A				
006115	006017	A				
006116	146301	A	2131	DATA	'LDB ',020000	03 02131
006117	141240	A				
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006121	146304	A	2132	DATA	'LBEX',025000	03 02132

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006123	025000	A				
006124	146304	A	2133	DATA	'LDBB',026000	03 02133
006125	141302	A				
006126	026000	A				
006127	146304	A	2134	DATA	'LDBE',06027	03 02134
006130	141303	A				
006131	006027	A				
006132	146304	A	2135	DATA	'LDBI',03020	03 02135
006133	141311	A				
006134	006020	A				
006135	146304	A	2136	DATA	'LDX ',030000	03 02136
006136	154240	A				
006137	030000	A				
006140	146304	A	2137	DATA	'LDXX',035000	03 02137
006141	154330	A				
006142	035000	A				
006143	146304	A	2138	DATA	'LDXB',036000	03 02138
006144	154302	A				
006145	036000	A				
006146	146304	A	2139	DATA	'LDXE',06037	03 02139
006147	154303	A				
006150	006037	A				
006151	146304	A	2140	DATA	'LDXI',06030	03 02140
006152	154311	A				
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006154	146314	A	2141	DATA	'LURL',04440	03 02141
006155	151314	A				
006156	004440	A				
006157	146314	A	2142	DATA	'LLSR',04540	03 02142
006160	151730	A				
006161	004540	A				
006162	146302	A	2143	DATA	'LRLA',04240	03 02143
006163	146301	A				
006164	004240	A				
006165	146322	A	2144	DATA	'LRLB',04040	03 02144
006166	146302	A				
006167	004040	A				
006170	146323	A	2145	DATA	'LSPA',04340	03 02145
006171	151301	A				
006172	004340	A				
006173	146323	A	2146	DATA	'LSRE',04140	03 02146
006174	151302	A				
006175	004140	A				
006176	146703	A	2147 INN	DATA	'MERG',05000	03 02147
006177	151307	A				
006200	005000	A				
006201	146723	A	2148	DATA	'MUL ',0160000	03 02148
006202	146240	A				
006203	160000	A				
006204	146725	A	2149	DATA	'MULX',0165000	03 02149
006205	146330	A				
006206	165000	A				
006207	146725	A	2150	DATA	'MULB',0166000	03 02150
006210	146300	A				
006211	166000	A				
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006213	146305	A				
006214	006167	A				
006215	146725	A	2152	DATA	'MULI',06160	03 02152
006216	146311	A				
006217	006160	A				
006220	147317	A	2153 INN	DATA	'MDF ',05000	03 02153
006221	150240	A				
006222	005000	A				
006223	147701	A	2154 IND	DATA	'DAB ',0103300	03 02154
006224	141240	A				
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006226	147701	A	2155	DATA	'DAR ',0103100	03 02155
006227	151240	A				
006230	103100	A				
006231	147700	A	2156	DATA	'DBR ',0103200	03 02156
006232	151240	A				
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006234	147710	A	2157	DATA	'DME ',0103000	03 02157
006235	142640	A				
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006237	147720	A	2158	DATA	'DBA ',0110000	03 02158
006240	140640	A				
006241	110000	A				
006242	147722	A	2159	DATA	'DRAX',0115000	03 02159
006243	140730	A				
006244	115000	A				
006245	147722	A	2160	DATA	'DRAB',0116000	03 02160
006246	140702	A				
006247	116000	A				
006250	147722	A	2161	DATA	'DRAE',06117	03 02161
006251	140700	A				
006252	006117	A				
006253	147722	A	2162	DATA	'DRAI',06110	03 02162
006254	140711	A				
006255	006110	A				
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006265	143240	A							
006266	007401	A							
006267	151717	A	2166		DATA	'SDFB',05711			03 02166
006270	143301	A							
006271	005711	A							
006272	151717	A	2167		DATA	'SDFB',05722			03 02167
006273	143302	A							
006274	005722	A							
006275	151717	A	2168		DATA	'SDFX',05744			03 02168
006276	143333	A							
006277	005744	A							
006300	151722	A	2169		DATA	'SRE ',06600			03 02169
006301	142640	A							
006302	006600	A							
006303	151722	A	2170		DATA	'STA ',050000			03 02170
006304	140640	A							
006305	050000	A							
006306	151724	A	2171		DATA	'STAX',055000			03 02171
006307	140730	A							
006310	055000	A							
006311	151724	A	2172		DATA	'STAB',056000			03 02172
006312	140702	A							
006313	056000	A							
006314	151724	A	2173		DATA	'STAE',06057			03 02173
006315	140700	A							
006316	006057	A							
006317	151724	A	2174		DATA	'STAI',06050			03 02174
006320	140711	A							
006321	006050	A							
006322	151724	A	2175		DATA	'STB ',060000			03 02175
006323	141240	A							
006324	060000	A							
006325	151724	A	2176		DATA	'STBX',065000			03 02176
006326	141330	A							
006327	065000	A							
006330	151724	A	2177		DATA	'STEB',066000			03 02177
006331	141302	A							
006332	066000	A							
006333	151724	A	2178		DATA	'STEE',06067			03 02178
006334	141305	A							
006335	006067	A							
006336	151724	A	2179		DATA	'STBI',06060			03 02179
006337	141311	A							
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006342	154240	A							
006343	070000	A							
006344	151724	A	2181		DATA	'STXX',075000			03 02181
006345	154330	A							
006346	075000	A							
006347	151724	A	2182		DATA	'STXB',076000			03 02182
006350	154302	A							
006351	076000	A							
006352	151724	A	2183		DATA	'STXE',06077			03 02183
006353	154305	A							
006354	006077	A							
006355	151724	A	2184		DATA	'STXI',06070			03 02184
006356	154311	A							
006357	006070	A							
006360	151723	A	2185		DATA	'SUB ',0140000			03 02185
006361	141240	A							
006362	140000	A							
006363	151723	A	2186		DATA	'SUBX',0145000			03 02186
006364	141330	A							
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006366	151723	A	2187		DATA	'SUBB',0146000			03 02187
006367	141302	A							
006370	146000	A							
006371	151723	A	2188		DATA	'SURE',06147			03 02188
006372	141305	A							
006373	006147	A							
006374	151723	A	2189		DATA	'SUBI',06110			03 02189
006375	141311	A							
006376	006140	A							
006377	152301	A	2190	INT	DATA	'TAE ',05012			03 02190
006400	141240	A							
006401	005012	A							
006402	152301	A	2191		DATA	'TAX ',05014			03 02191
006403	154240	A							
006404	005014	A							
006405	152302	A	2192		DATA	'TBE ',05021			03 02192
006406	140640	A							
006407	005021	A							
006410	152302	A	2193		DATA	'TBX ',05024			03 02193
006411	154240	A							
006412	005024	A							
006413	152323	A	2194		DATA	'TSA ',07402			03 02194

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006415	007402	A							
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006420	005041	A							
006421	152330	A	2196	DATA	'TXB'	,05042		03	02196
006422	141240	A							
006423	005042	A							
006424	152332	A	2197	DATA	'TZA'	,05001		03	02197
006425	140640	A							
006426	005001	A							
006427	152332	A	2198	DATA	'TZB'	,05002		03	02198
006430	141240	A							
006431	005002	A							
006432	152332	A	2199	DATA	'TZX'	,05004		03	02199
006433	154240	A							
006434	005004	A							
006435	154301	A	2200 INX	DATA	'XAN'	,03004		03	02200
006436	147240	A							
006437	003004	P							
006440	154301	A	2201	DATA	'XANZ'	,03016		03	02201
006441	147332	A							
006442	003016	A							
006443	154301	A	2202	DATA	'XAP'	,03002		03	02202
006444	150240	A							
006445	003002	A							
006446	154301	A	2203	DATA	'XAZ'	,03010		03	02203
006447	155240	A							
006450	003010	A							
006451	154302	A	2204	DATA	'XBNZ'	,03026		03	02204
006452	147332	A							
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006454	154302	A	2205	DATA	'XBZ'	,03020		03	02205
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006457	154303	A	2206	DATA	'XCC'	,03000		03	02206
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006462	154311	A	2207	DATA	'XIF'	,03000		03	02207
006463	143240	A							
006464	003000	A							
006465	154317	A	2208	DATA	'XDF'	,03001		03	02208
006466	143240	A							
006467	003001	A							
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006471	143316	A							
006472	003007	A							
006473	154323	F	2210	DATA	'XS1'	,03100		03	02210
006474	130640	A							
006475	003100	A							
006476	154323	A	2211	DATA	'XS2'	,03200		03	02211
006477	131240	A							
006500	003200	A							
006501	154323	A	2212	DATA	'XS3'	,03400		03	02212
006502	131640	A							
006503	003400	P							
006504	154323	A	2213	DATA	'XS1N'	,03106		03	02213
006505	130716	A							
006506	003106	A							
006507	154323	A	2214	DATA	'XS2N'	,03206		03	02214
006510	131316	A							
006511	003206	A							
006512	154323	A	2215	DATA	'XS3N'	,03406		03	02215
006513	131716	A							
006514	003406	A							
006515	154330	A	2216	DATA	'XXNZ'	,03046		03	02216
006516	147332	A							
006517	003046	A							
006520	154330	A	2217	DATA	'XXZ'	,03040		03	02217
006521	155240	A							
006522	003040	A							
006523	155305	A	2218 INZ	DATA	'ZERO'	,05000		03	02218
006524	151317	A							
006525	005000	A							
006526	000000	A	2219 INEND	DATA	0		END OF TABLE	03	02219
006527			2220	BSS	50		PATCH'S PATCH AREA	03	02220
	000000	R	2221	END	VSPATCH			03	02221

ENTRY NAMES		
EXTERNAL NAMES		
001444	E	CA23
004400	E	V\$IPST
SYMBOLS		
002465	R	ADC10
000713	R	APN02
001006	R	APN20
000002	A	B
000013	A	B11
000017	A	B15
000005	A	B5
000011	A	B9
001271	R	BAS15
001244	R	BASET
004160	R	BITMB
002476	R	ADC20
000731	R	APN03
001030	R	APN30
000000	A	B0
000014	A	B12
000002	A	B2
000006	A	B6
001352	R	BAER
001315	R	BAS25
004140	R	B110
000421	A	BM1
002505	R	ADC30
000763	R	APN05
000713	R	APND
000001	A	B1
000015	A	B13
000003	A	B3
000007	A	B7
001214	R	PAS05
001321	R	BAS30
004132	R	B1200
000472	A	BM17
002441	R	ADCAL
000766	R	APN10
004170	R	ARITH
000012	A	B10
000016	A	B14
000001	A	B4
000010	A	B8
001253	R	BAS10
001357	R	BASE
004157	R	B1CNT
000475	A	BM177

000477 A BM1777	000464 A BM3	000473 A BM37	000463 A BM377
000467 A BM7	000474 A BM77	000476 A BM777	000441 A BR0
000442 A BR1	000453 A BR10	000454 A BR11	000455 A BR12
000456 A BR13	000457 A BR14	000460 A BR15	000443 A BR2
000444 A BR3	000445 A BR4	000446 A BR5	000447 A BR6
000450 A BR7	000451 A BR8	000452 A BR9	000421 A BS0
000422 A BS1	000433 A BS10	000434 A BS11	000435 A BS12
000436 A BS13	000437 A BS14	000440 A BS15	000423 A BS2
000424 A BS3	000425 A BS4	000426 A BS5	000427 A BS6
000430 A BS7	000431 A BS8	000432 A BS9	001340 R BSDCB
001343 R BSMSG	004172 R BUFPT	001444 E CA2E	000147 A CL
004413 R CL15	004434 R CL20	005035 R CLBUF	004471 R CLCNT
004447 R CLF1	004447 R CLER	004457 R CLFCE	004642 R CLMSG
004318 R CLS02	004323 R CLS03	004350 R CLS05	004352 R CLS07
004370 R CLS10	004300 R CLSRCH	004167 R CDUNT	002544 R DBLNK
000676 R DCDCB	004741 R DCMSG	000606 R DER	000606 R DERR
000010 A DI	003407 R DI10	003425 R DI20	003430 R DI50
000662 R DDCB	004616 R DIMSG	003434 R DIP	003404 R DIREC
000222 R DIRER	003433 R DITMP	000632 R DM60	000616 R DMAP
000626 R DMBA	000650 R DMD	000567 R DMDIR	000602 R DMDU
000643 R DME	000531 R DME10	000522 R DME0F	000655 R DMERR
000006 R DMEX	000612 R DMHI	000622 R DML1	000345 R DMP01
000373 R DMP05	000402 R DMP10	000420 R DMP12	000437 R DMP14
000440 R DMP13	000454 R DMP25	000473 R DMP30	000516 R DMP40
000566 R DMP50	004657 R DMPMSG	000576 R DMPT	000014 A DO
000663 R DDUCB	000342 R DUMP	000424 A EIGHT	002144 R ENT01
002150 R ENT01A	002175 R ENT02	002201 R ENT05	002214 R ENT06
002231 R ENT10	002250 R ENT15	002237 R ENT20	002272 R ENT30
002136 R ENTER	002551 R ENTSC	002550 R ENTWD	000331 R ERBLK
000678 R ERDCB	000215 R ERR	000203 R EXIT	004056 R FB10
004045 R FBYTE	003474 R FET05	003500 R FET10	003526 R FET20
003540 R FET25	003564 R FET30	003574 R FET32	003575 R FET35
003613 R FET40	003623 R FET42	003635 R FET45	003643 R FET47
003653 R FET50	003661 R FETS1	003667 R FET70	003713 R FETCH
004171 R FETUT	003701 P FETER	003704 R FETR1	003703 R FETR10
000465 R FIVE	000132 A FL	000423 A FOUR	001201 R HER
001050 R HI10	001066 R HI12	001116 R HI15	001107 R HI25
001220 R HI50	001236 R HIBLK	001241 R HIDCB	004754 R HIMSG
001050 R HIST	003444 R IMAGE	005225 R IMBUF	003473 R IMCNT
000701 R IMFCB	004214 R IN05	004213 R IN10	004234 R IN12
004241 R IN15	004251 R IN25	004263 R IN30	004267 R IN40
004272 R IN50	005450 R INA	005533 R INB	004763 R INBUF
005552 R INC	004276 R INCNT	005572 R IND	005632 R INE
005526 R INEND	005654 R INH	005637 R INI	005731 R INJ
006071 R INL	006176 R INM	006220 R INN	006200 R INO
000256 R INR	006261 R INS	004275 R INSCH	004173 R INST
006377 R INT	005415 R INTBL	006435 R INX	006522 R INZ
004565 R ITBUF	002133 R LBDCB	000300 A LC	002117 R LER
000462 A LHM	001367 R LIB10	001376 P LIB11	001443 R LIB12
001424 R LIB13	001425 R LIB14	001436 R LIB15	001451 R LIB16
000330 R LIB20	001600 R LIB21	001726 R LIB22	001675 R LIB22A
001713 R LIB22B	001725 R LIB22C	001654 R LIB23	001666 R LIB24
001735 R LIB25	001753 R LIB26	001775 R LIB30	002002 R LIB31
002041 R LIB32	002044 R LIB33	002055 R LIB55	002131 R LIB50
002304 R LIB36	002305 R LIB57	002306 R LIB98	002307 R LIB99
002105 R LIBER	002310 R LIB10	002513 R LIPLK	001360 R LIER
002571 R LIBUF	002552 R LIDCB	002112 R LIER	002527 R LIFCB
004700 R LIMSG	002330 R LI020	002107 R LI0ER	002528 R LIVELY
002555 R LIREQ	000005 A LD	004450 E MOVE	000400 P MT
004573 R N240	004161 P N260	000401 A NEG	000420 A NINE
000000 R NUC10	000015 R NUC12	000008 R NUC14	000058 R NUC14A
000041 R NUC14B	000053 R NUC15	000065 R NUC17	000067 R NUC23
000107 R NUC30	000113 R NUC35	000117 R NUC40	000140 P NUC45
000206 R NUDIR	004576 R NUMSG	003773 R DC2PI	004001 R DC23
004036 R DCBER	004163 R DCTMP	004163 R DCVAL	000421 A ONE
003721 R ORGN	002124 R DVLEB	004710 R DVMSG	002353 R DV310
002367 R DV320	002415 R DV330	002412 R DV335	002435 R DV340
002440 R DV370	002350 R DVSRCH	002507 R PM1	002510 R PM2
002511 R FMS	002512 R PM4	004600 R PMMSG	000678 R PRDCB
004613 R PRMSG	003470 R PTADR	000227 R PTERR	002510 K PY100
002543 R PTSTS	003716 R PVTIM	000000 R RAO	000010 A RA1
000060 A RB0	000020 A RB1	003157 R REC10	003214 R REBUF
000236 R REC10	000255 R REC20	000322 R REC30	000331 R REC40
000326 R RECV	003200 R REFCB	003130 R REIC	002704 R REL05
002770 R REL10	003006 R REL15	003001 R REL20	003007 R REL21
003041 R REL30	003044 R REL40	003050 R REL30	003053 R REL35
003065 R REL50	003105 R REL65	003121 R REL68	003126 R REL70
003141 R REL75	003177 R REL80	003270 R REL91	003201 R REL30
002761 R RELO	004730 R REMSG	004277 R RETYP	000433 R RHW
004106 R SB10	004111 R SB20	004125 R CB30	004130 P SBTNA
004131 R SBTMB	004065 R SBYT	003722 R SCAN	003722 R SCRT
003731 R SCN10	003767 R SCN10	002303 R SEGS2	000467 R SEVEN
004574 R SIBUF	004571 R SITAR	004572 R SITHX	000466 A SIX
004472 R SIXA	000003 A SD	004671 R STMSG	004154 R STWBY
000471 A TEN	003717 R TERM	000400 R THREE	002541 R TRBLK
000422 A THD	000403 A V\$1MIN	000415 A V\$BFC	000315 A V\$BTB
000414 A V\$BVN	000334 A V\$CAN	000353 A V\$CKT	000411 A V\$CKIT
000010 A V\$CMPT	000301 A V\$CPL	000311 A V\$CRER	000354 A V\$CRM
000302 A V\$CRS	000360 A V\$CTAD	000330 A V\$CTL	000351 A V\$CMSG
000355 A V\$DSTB	000376 A V\$EPCG	000204 Z V\$EYFC	000347 A V\$FGLB
000306 A V\$FLRS	000350 A V\$FRC	000320 A V\$IN	000410 A V\$IDA
004371 E V\$IDC	004400 E V\$1OST	000412 A V\$JOB	000327 A V\$JOP
000313 A V\$LER	000356 A V\$LIT	000317 A V\$LLUP	000307 A V\$LRK

Address	Label	Value 1	Value 2	Value 3	Value 4	Value 5	Value 6	Value 7	Value 8	Value 9	Value 10
000312	A VSLAL	000345	A VSLUNT	000316	A VSLUP	000000	E VSLUT1				
000401	A VSLUT2	000402	A VSLUT3	000330	A VSMMPM	000362	A VSNCTR				
000413	A VSOCB	000346	A VSOPCF	000311	A VSOPCL	000363	A VSPIMN				
000000	R VSPTCH	000305	A VSPTVB	000361	A VSSCTL	000352	A VSSCV				
000375	A VSSLFG	000136	E VSSTHD	000303	A VSTB	000342	A VST8GT				
000216	A VSTFC	000314	A VSTJCP	000344	A VSTMN	000343	A VSTMS				
000304	A VSUTB	003720	R VALUE	000001	A VORTEX	000001	A X				
000234	R XFCPTR	000235	R XFEPTR	000420	A ZERO						
0 ERRORS ASSEMBLY COMPLETE											
1139	ADC20	1120	1127	1133	1135						
1144	ADC30	1140									
1109	ADCAL	786	1144								
501	APN02	502									
503	APN03	504									
512	APN05	524									
514	APN10	515									
517	APN20	511	528								
529	APN30	519	531								
500	APND	305	461								
0	ARITH	1459									
30	B	335	336	716	717	718	737	738	739	836	
		1126	1132	1230	1235						
107	B0	767	794	802	845	861	902	911	918	1135	
		1140									
189	B2	769									
196	B9	770	970	1055	1120	1127	1133				
642	BAER	618	618	618	628						
616	BAS05	642									
617	BAS10	618									
619	BAS15	642									
631	BAS25	627	627								
634	BAS30	622									
643	BASE	629	632	634							
615	BASET	307	465								
0	BI20C	284	288	292	579	582	585	637	828	831	
		834									
130	BR0	733									
145	BR15	1211	1234								
114	BS0	746									
129	BS15	1268									
122	BS8	842	866	950	1237						
123	BS9	1121	1129								
640	BSDCB	638									
641	BSMSG	635	640								
0	BUFFT	238	413	625	689	814					
0	CA2B	683	684								
0	CLMSG	363									
0	COUNT	723	741	1416	1431						
1160	DBLNK	700	714	735							
478	DCDCB	442									
0	DCMSG	478									
469	DER	502	502	502							
470	DERR	390	390	390	428	428	428	440	440	440	
		504	504	504	515	515	515	531	531	531	
		221	350	297	617	658	806				
25	DI	1342									
1332	DI10	1335									
1341	DI20	1333									
1343	DI50	1333									
474	DIDCB	221	341	350	397	617	658	806			
0	DIMSG	363									
1346	DIR	1332									
1329	DIREC	230	405	1340	1344						
310	DIRER	231									
1345	DITNP	1330	1337								
467	DM60	454	456	458	460	462	464	466			
461	DMAP	449									
465	DMBA	451									
472	DMD	406									
445	DMDIR	404									
455	DMDU	446									
471	DME	398	398								
439	DME10	440									
435	DMEDF	468									
473	DMERR	416	421								
457	DMEX	447									
459	DMHI	448									
463	DML1	450									
388	DMP01	390									
396	DMP05	415	420	471	472	473	532				
397	DMP10	398									
399	DMP12	471	472	473							
409	DMP14	407									
410	DMP15	403									
418	DMP25	413	426	431	434						
427	DMP30	428									
432	DMP40	420									
444	DMP50	467									
0	DMPMSG	363									
453	DMPT	445									
26	DD	219	293	396	442	593	616	638	657	805	
		838									
475	DDDCB	293	586								
385	DUMP	302	455	507							

F.2 VORTEX LISTING

PATCH

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1166	LIDCB	657								
871	LIER	749	749	749	1030	1030	1030			
1157	LIFCB	705	711	726	748	753	777	841	946	949
		1020	1023	1029	1080					
0	LIMSG	363								
1029	LID20	691	694	1030						
869	LIDER	943	1018	1021						
1156	LIDVLY	721	744	782	783	803	846	903	921	925
		1063	1066	1069	1141					
1167	LIREQ	1166								
24	LD	586								
0	MOVE	719	720	725	729	743	752	758	781	
112	MT	113	114	115	116	117	118	119	120	121
		122	123	124	125	126	127	128	129	130
		131	132	133	134	135	136	137	138	139
		140	141	142	143	144	145	146	147	148
		149	150	151	152	153	154	155	156	157
		158	159	160	161	162	163	164	165	166
		167	168							
214	NUC10	271	299	301	309	310	311	453	470	594
		595	595	630	633	639				
220	NUC12	222								
223	NUC14	309	310	311	470					
234	NUC14A	232								
228	NUC14B	218	663	850	868					
235	NUC15	217								
242	NUC17	266								
243	NUC20	258	262							
259	NUC30	247								
263	NUC35	240								
267	NUC40	240	247							
280	NUC45	298								
301	NUDIR	229								
0	NUMSG	283	285	289	475	578	580	583	827	829
		832	837	875						
0	QC2BI	1446								
149	DNE	1017								
0	DRGN	791	795	912	962	974				
373	DVLER	769	775							
0	DVMSG	363								
1058	DVS10	1055								
1061	DVS20	1078	1085							
1074	DVS30	1064	1067	1070						
1084	DVS35	1079								
1086	DVS40	1062								
1088	DVSAD	975	1060	1115	1142					
1050	DVSRCH	774	1073	1087						
0	PATCH	5								
1148	PM1	787	1111	1122						
1149	PM2	788	964	1112	1130					
1150	PM3	789	963	1113	1137					
1151	PM4	790	1114	1143						
0	PMMSG	363								
477	PRDCB	219	396	616	805					
0	PRMSG	477								
1385	PTADR	393	394	417	422	433	436	437	1372	1383
311	PTERR	241	248							
1155	PTIDB	759	760	768	848	905	931	969	1054	1117
1159	PTSTS	732	734	745	747	766	793	801	844	860
		901	910	917	1118	1134	1139			
0	PVTRM	1415	1449	1460						
176	RA0	767	769	845	902	918	1140			
177	RA1	770	970	1120	1127	1133	1135			
178	RB0	802								
179	RB1	794	861	911	1055					
1300	RE10	696	1296	1299	1301					
1310	REXUF	1203	1229	1236	1251	1264	1267	1269	1309	
332	REC10	359								
341	REC20	342	347							
354	REC30	346	349							
356	REC40	353								
358	RECDV	309	310	311	333	351	354	356	470	471
		472	473	595	642	869	870	871	872	873
		1271								
1309	REFCB	713	730	753	922	932	1240	1275	1300	
1294	REID	1204	1238	1277	1302					
1203	REL05	1241								
1206	REL10	1274								
1215	REL15	1246	1257							
1222	REL20	1270								
1227	REL21	1225								
1234	REL35	1231								
1236	REL40	1233								
1240	REL50	1207								
1242	REL55	1209								
1247	REL60	1217	1252	1279						
1258	REL65	1212	1255							
1271	REL68	1260	1301	1301	1301					
1273	REL70	1221								
1275	REL75	1249								
1306	REL90	1201	1232							
1307	REL91	1202	1215	1226	1223	1261				
1308	REL92	1214	1224	1242	1244	1265				

E.2 VORTEX LISTING

PATCH

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1000	RELD	978	1239							
0	REMSG	364								
0	RETP	835	960	977	1413					
148	RHW	697								
0	SCAN	702	722	740	1417					
991	SEGSZ	761	784	792	849	855	942	981	986	
155	SEVEN	1057	1075							
23	SD	340	341							
0	STMSG	363								
158	TEN	671								
0	TERM	1430	1461							
151	THREE	252	274	295	521	557	764	771		
1158	TREBLK	686								
150	TWO	348	506	555	773					
62	VSLUNT	673								
0	VSLUT1	21								
0	VSTWD	22	277							
0	VALUE	1414	1456	1458						
1	VORTEX	895	712	727	750	858	919	929	967	1119
		1124	1170							
29	X	334	352	353	674	680	684	720	725	729
		743	752	758	781	857	862	957	966	1059
		1061	1065	1068	1208	1229	1236	1251	1264	1267
		1269								
312	XFCPTR	216	243	249	253	260	268	279	281	286
		290	294	296						
313	XFEPTR	264	269	297						

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1 *
2 * BTPTCH 01 00001
3 * TITLE BTPTCH 01 00002
4 * 01 00003
5 * THIS IS A FOREGROUND LIBRARY ROUTINE WHICH IS SCHEDULED BY 01 00004
6 * V$SCPT WHEN SSW1 IS SET. THIS ROUTINE READS PATCH IMAGES 01 00005
7 * CREATED BY THE DUMP ROUTINE IN PATCH FROM THE FL FILE 'PTCHIM' 01 00007
8 * AND PERFORMS THE NUCLEUS PATCHES. 01 00008
9 * 01 00009
10 * EACH RECORD OF 'PTCHIM' CONTAINS UP TO 40 THREE WORD PATCH 01 00010
11 * BLOCKS FOR SUBMISSION TO V$STWD FOR ACTUAL PATCHING 01 00011
12 * 01 00012
13 * THE PATCH IMAGE MUST BE TERMINATED BY AN ADDR OF MINUS 1 01 00013
14 * 01 00014
15 * BTPTCH EXITS UPON COMPLETION OF PATCHING 01 00015
16 * 01 00016
17 * FILE PTCHIM IS OPENED AND REWOUND 01 00017
18 * 01 00018
19 DC EQU 1 01 00019
20 FL EQU 106 01 00020
21 EXT V$STWD 01 00021
22 BTPTCH EQU * 01 00022
23 BT10 OPEN IMFCB,FL,0,0 OPEN AND REWIND IMAGE FILE 01 00023

000000 006505 A
000001 000000 E
000002 100000 A
000003 003152 A
000004 000241 R
000005 000000 A
000006 000000 A

24 STAT BT10,ERR,ERR,ERR,* 01 00024

000007 006505 A
000010 000000 E
000011 000000 R
000012 000214 R
000013 000214 R
000014 000214 R
000015 000007 R

25 BT12 READ IMFCB,FL,0,0 INPUT IMAGE RECORD E.201 00025

000016 006505 A
000017 000001 E
000020 100000 A
000021 000152 A
000022 000241 R
000023 000000 A
000024 000000 A

26 STAT BT12,RER,RER,RER,* E.201 00026

000025 006505 A
000026 000010 E
000027 000016 R
000030 000226 R
000031 000226 R
000032 000226 R
000033 000025 R
000034 014271 A
27 LDA IMBUF FIRST STORE ADDR E.201 00027
28 ADDI R E.201 00028
000035 006120 A
000036 000002 A
29 JANZ EXIT IF NOT =-2, THEN FILE IS EMPTY E.201 00029
000037 001016 A
000040 000211 R
30 LDAI 3 E.201 00030
000042 000003 A
000043 054174 A
31 STA IMCNT SET FOR SECOND IMAGE ITEM E.201 00031
000044 001000 A
32 JMP BT25 E.201 00032
000045 000066 R

33 BT15 READ IMFCB,FL,0,0 INPUT IMAGE RECORD 01 00033

000046 006505 A
000047 000017 E
000050 100000 A
000051 000152 A
000052 000241 R
000053 000000 A
000054 000000 A

34 STAT BT15,RER,RER,RER,* 01 00034

000055 006505 A
000056 000026 E
000057 000040 R
000060 000226 R
000061 000226 R
000062 000226 R
000063 000055 R
000064 005001 A
35 TZA 01 00035
000065 054152 A 36 STA IMCNT SET FOR FIRST ENTRY 01 00036
000066 000066 R 37 BT25 EQU * 01 00037
000066 024151 A 38 LDB IMCNT E.201 00038
000067 006016 A 39 LDAE IMBUF,2 E.201 00039
000070 000326 R
000071 001004 A
40 JAN BT30 IF END OF IMAGE E.201 00040
000072 000105 R
000073 014144 A
41 LDA IMCNT E.201 00041
000074 006140 A 42 SUBI 117 E.201 00042
000075 000163 A
000076 001010 A
43 JAZ BT35 IF END OF RECORD E.201 00043
000077 000117 R

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E.2 VORTEX LISTING

BTPTCH

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000100	006120	A	44	ADDI	120			E.201 00044
000101	000170	A						
000102	054135	A	45	STA	IMCNT			E.201 00045
000103	001000	A	46	JMP	BT25	CONTINUE SCAN		E.201 00045
000104	000066	R						
000105	006010	A	47	LDAI	BT50			E.201 00047
000106	000134	R						
000107	054023	A	48	STA	BT45	SET JUMP FOR END OF IMAGE		E.201 00048
000110	024127	A	49	LDB	IMCNT	IMBUF POINTER		E.201 00049
000111	005001	A	50	IZA				E.201 00050
000112	006170	A	51	DIVI	3	CALCULATE IMAGE COUNT		E.201 00051
000113	000003	A						
000114	005021	A	52	T2A		SET FOR V\$STWD COUNT		E.201 00052
000115	001000	A	53	JMP	BT36			E.201 00053
000116	000124	R						
000117	006010	A	54	LDAI	BT55			E.201 00054
000120	000150	R						
000121	054011	A	55	STA	BT45	SET JUMP FOR CONTINUE PATCH		E.201 00055
000122	006010	A	56	LDAI	40	SET IMAGE COUNT FOR FULL RECORD		E.201 00055
000123	000050	A						
000124	006020	A	57	LDBI	IMBUF			E.201 00057
000125	000326	R						
			58	ALOC	V\$STWD	PERFORM PATCH		E.201 00058
000126	006505	A						
000127	000000	E						
000130	000600	A						
000131	000000	E						
000132	001000	A	59	JMP	0			E.201 00059
000133	000000	A						
000133		R	60	BT45	BES	JUMP AS DIRECTED FROM ABOVE		E.201 00060
	000134	R	61	BT50	EQW	*		01 00061
			62	WRITE	PCDCB,DC,0,1			01 00062
000134	006505	A						
000135	000047	E						
000136	100000	A						
000137	010401	A						
000140	000261	R						
000141	000000	A						
000142	000000	A						
000143	006010	A	63	LDAI	EXIT			01 00063
000144	000211	R						
000145	054042	A	64	STA	BT70	SET FOR EXIT UPON COMPLETION		01 00064
000146	001000	A	65	JMP	BT60			01 00065
000147	000153	R						
000150	006010	A	66	BT55	LDAI	BT15		01 00066
000151	000046	R						
000152	054035	A	67	STA	BT70	SET FOR CONTINUE ON COMPLETION		01 00067
			68	BT60	SREC	INFCB,FL,0,1	REPOSITION TO LAST READ	01 00068
000153	006505	A						
000154	000130	E						
000155	100000	A						
000156	012152	A						
000157	000241	R						
000160	000000	A						
000161	000000	A						
			69	STAT	BT60,RER,RER,RER,*			01 00069
000162	006505	A						
000163	000056	E						
000164	000153	R						
000165	000220	R						
000166	000226	R						
000167	000220	R						
000170	000162	R						
			70	BT65	WRITE	IMFCB,FL,0,0	OUTPUT HISTORY IMAGE	01 00070
000171	006505	A						
000172	000134	E						
000173	100000	A						
000174	000552	A						
000175	000241	R						
000176	000000	A						
000177	000000	A						
			71	STAT	BT65,RER,RER,RER,*			01 00071
000200	006505	A						
000201	000163	E						
000202	000171	R						
000203	000220	R						
000204	000220	R						
000205	000220	R						
000206	000200	R						
000207	001000	A	72	JMP	*	RETURN AS DIRECTED		01 00072
000210	000207	R						
000210			73	BT70	BES	0		01 00073
			74	EXIT	EXIT			01 00074
000211	006505	A						
000212	000127	E						
000213	000200	A						
			75	ERR	WRITE	ERDCB,DC,0,1		01 00075
000214	006505	A						
000215	000172	E						
000216	100000	A						
000217	010401	A						
000220	000253	R						
000221	000000	A						

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000222 000000 A      76      EXIT                                01 00076
000223 006505 A
000224 000212 E
000225 000200 A      77 RER      WRITE      DRDCB,DC,0,1                01 00077
000226 006505 A
000227 000215 E
000230 100000 A
000231 010401 A
000232 000256 R
000233 000000 A
000234 000000 A      78      EXIT                                01 00078
000235 006505 A
000236 000224 E
000237 000200 P
000240 000000 A      79 IMCNT  DATA      0      PATCH IMAGE POINTER                01 00079
000241 000170 A      80 IMFCB  FCB      120,IMBUF,1,'F','PT','CH','IM'  01 00080
000242 000326 R
000243 000706 A
000244 000000 A
000245 000000 A
000246 000000 A
000247 000000 A
000250 150324 A
000251 141710 A
000252 144715 A      81 ERDCB  DCB      11,ERMSG                                01 00081
000253 000013 A
000254 000264 R
000255 000000 A      82 DRDCB  DCB      13,DRMSG                                01 00082
000256 000013 A
000257 000277 R
000260 000000 A      83 PCDCB  DCB      10,PCMSG                                01 00083
000261 000012 A
000262 000314 K
000263 000000 A      84 ERMSG  DATA      ' FILE PTCHIM NOT FOUND'                01 00084
000264 120306 A
000265 144714 A
000266 142640 A
000267 150324 A
000270 141710 A
000271 144715 A
000272 120316 A
000273 147724 A
000274 120306 A
000275 147720 A
000276 147304 A
000277 120322 A      85 DRMSG  DATA      ' READ ERROR IN FILE PTCHIM'                01 00085
000300 142701 A
000301 142240 A
000302 142722 A
000303 151317 A
000304 151240 A
000305 144716 A
000306 120306 A
000307 144714 A
000310 142640 A
000311 150324 A
000312 141710 A
000313 144715 A
000314 120320 A      86 PCMSG  DATA      ' PATCHING COMPLETED'                01 00086
000315 140724 A
000316 141710 A
000317 144716 A
000320 143640 A
000321 141717 A
000322 140720 A
000323 146305 A
000324 152305 A
000325 142240 A
000326 000000 R      87 IMBUF  BSS      120                                01 00087
000000 R      88      END      BTPTCH                                01 00088

```

```

ENTRY NAMES
EXTERNAL NAMES
000236 E V$EXEC 000227 E V$IOC 000201 E V$IOST 000131 E V$STND
SYMBOLS
000000 R BT10 000016 R BT12 000046 R BT15 000066 R BT25
000105 R BT30 000117 R BT35 000124 R BT36 000133 R BT45
000134 R BT50 000150 R BT55 000153 R BT60 000171 R BT65
000210 R BT70 000000 R BTPTCH 000256 R DRDCB 000277 R DRMSG
000253 R ERDCB 000264 R ERMSG 000214 R ERR 000211 R EXIT
000152 A FL 000320 R IMBUF 000240 R IMCNT 000241 R IMFCB
000001 A DC 000261 R PCDCB 000314 R PCMSG 000246 R RER
000236 E V$EXEC 000227 E V$IOC 000201 E V$IOST 000131 E V$STND
* ERRORS ASSEMBLY COMPLETE

```

E.2 VORTEX LISTING

BTPTCH

PROGRAM PAGE 4

LISTING PAGE (493)

25	BT12	26							
33	BT15	34	66						
37	BT25	32	46						
47	BT30	40							
54	BT35	43							
57	BT36	53							
60	BT45	48	55						
61	BT50	47							
66	BT55	34							
68	BT60	65	69						
70	BT65	71							
73	BT70	64	67						
22	BTPTCH	3	88						
82	BRDCB	77							
85	BRMSG	82							
81	ERDCB	75							
84	ERNMSG	81							
75	ERR	24	24	24					
74	EXIT	29	63						
28	FL	23	25	33	62	70			
87	IMBUF	27	39	57	80				
79	IMCNT	31	36	88	41	45	49		
80	IMFCB	23	25	33	68	70			
19	DC	62	75	77					
83	PCDCB	62							
86	PCMSG	82							
77	RER	26	26	26	34	34	34	69	69
		71	71	71					
0	V\$STWD	21	33						

```

000001 A 1 VORTEX SET 1 01 00001
000300 A 2 LC EQU 0300 01 00002
000046 A 3 MPDVAD EQU 046 01 00003
000334 A 4 V$ST0 EQU LC+28 01 00004
000335 A 5 V$ST1 EQU LC+29 01 00005
000336 A 6 V$ST2 EQU LC+30 01 00006
000337 A 7 V$ST3 EQU LC+31 01 00007
8 * 01 00008
9 * V$STWD 01 00009
10 * TITLE V$STWD 01 00010
11 * 01 00011
12 * THIS IS A NUCLEUS ROUTINE WHICH IS USED TO FETCH AND 01 00012
13 * CHANGE A LOCATION IN THE VORTEX NUCLEUS 01 00013
14 * 01 00014
15 * CALLING SEQUENCE 01 00015
16 * 01 00016
17 * LDA WORD COUNT E.201 00017
18 * LDB POINTER TO CONTROL BLOCK 01 00018
19 * ALDC V$STWD 01 00019
20 * 01 00020
21 * CONTROL BLOCK FORMAT : 01 00021
22 * STORE ADDR 01 00022
23 * ORIGINAL VALUE (SET BY ROUTINE) 01 00023
24 * NEW VALUE 01 00024
25 * 01 00025
26 * RETURNS VIA DEALOC 01 00026
27 * 01 00027
28 * 01 00028
29 * NAME V$STWD 01 00029
000000 R 30 V$STWD EQU * 01 00030
000000 A 31 DISCLK EQU 0747 NO TEMPS NEEDED 01 00031
000747 A 32 DISPIM EQU 0444 E.201 00032
000444 A 33 EXC DISCLK E.201 00033
000001 100747 A 34 EXC DISPIM E.201 00034
000002 100444 A 35 STW10 EQU * E.201 00035
000003 R 36 IFF VORTEX-2 01 00036
37 DME MPDVAD,V$ST3 USER FETCH AND STORE 01 00037
000003 016000 A 38 LDA 0,2 STORE ADDR 01 00038
000004 005014 A 39 TAX 01 00039
40 IFF VORTEX-2 01 00040
41 DME MPDVAD,V$ST1 EXEC FETCH, USER STORE 01 00041
000005 015000 A 42 LDA 0,1 ORIGINAL CONTENTS 01 00042
000006 056001 A 43 STA 1,2 STORE IN CONTROL BLOCK 01 00043
44 IFF VORTEX-2 01 00044
45 DME MPDVAD,V$ST2 USER FETCH, EXEC STORE 01 00045
000007 016002 A 46 LDA 2,2 NEW VALUE 01 00046
000010 055000 A 47 STA 0,1 STORE IT 01 00047
48 IFF VORTEX-2 E.201 00048
49 DME MPDVAD,V$ST0 EXEC FETCH AND STORE E.201 00049
000011 000302 A 50 V$CRS EQU 0302 E.201 00050
000012 015000 A 51 LDB V$CRS REENRANT STACK POINTER E.201 00051
000013 005311 A 52 LDA 0,1 (A) = WORD COUNT E.201 00052
000014 055000 A 53 DAB 01 00053
000015 005122 A 54 STA 0,1 UPDATE WORD COUNT E.201 00054
000016 005122 A 55 IDB 01 00055
000017 005122 A 56 IBB 01 00056
000020 001016 A 57 IBB 01 00057
000021 000003 R 58 JANZ STW10 CONTINUE STORAGE IF NOT COUNT END E.201 00058
000147 A 59 ENACLK EQU 0147 E.201 00059
000244 A 60 ENAPIM EQU 0244 E.201 00060
000022 100147 A 61 EXC ENACLK E.201 00061
000023 100244 A 62 EXC ENAPIM E.201 00062
63 DEALOC 01 00063
64 * 01 00064
000027 001106 A 65 V$SCPT NAME V$SCPT 01 00065
000030 000040 R 65 V$SCPT JS1N SCP10 DO NOT SCHEDULE BTPTCH IS SSW1 NOT SET 01 00065
66 SCHED 23,0,106,'F','BT','PT','CH' 01 00066
000031 006505 A 01 00067
000032 000025 E
000033 000127 A
000034 143152 A
000035 141324 A
000036 150324 A
000037 141710 A
67 SCP10 EXIT 01 00067
000040 006505 A
000041 000032 E
000042 000200 A
000000 R 68 END V$STWD 01 00068

ENTRY NAMES
000027 R V$SCPT 000000 R V$STWD
EXTERNAL NAMES
000041 E V$EXEC
SYMBOLS
000747 A DISCLK 000444 A DISPIM 000147 A ENACLK 000244 A ENAPIM
000300 A LC 000046 A MPDVAD 000040 R SCP10 000003 R STW10
000302 A V$CRS 000041 E V$EXEC 000027 R V$SCPT 000334 A V$ST0
000335 A V$ST1 000336 A V$ST2 000337 A V$ST3 000000 R V$STWD
000001 A VORTEX

```

0 ERRORS ASSEMBLY COMPLETE

31	DISCLK	33			
32	DISPIM	34			
59	ENACKL	61			
60	ENAPIM	62			
2	LC	4	5	6	7
3	MPDVAD	37	41	45	49
67	SCP10	65			
35	STW10	58			
50	V\$CRS	51			
65	V\$SCPT	64			
4	V\$ST0	49			
5	V\$ST1	41			
6	V\$ST2	45			
7	V\$ST3	37			
29	V\$STHD	10	28	68	
1	VORTEX	36	40	44	48

```

1 * THIS IS A COPYRIGHTED PROGRAM. COPYRIGHT 1972 BY VARIAN DATA MACHINE 00 00001
2 * 00 00002
3 * V.D.M. PART NO. 92L0605-162A 00 00003
4 * 00 00004
5 * 00 00005
6 * 00 00006
7 * 00 00007
8 * 00 00008
9 * 00 00009
10 * 00 00010
11 * 00 00011
12 * 00 00012
13 * 00 00013
14 * 00 00014
15 * 00 00015

```

SPOOLER CONTROLLER TABLE 0, INCLUDING SPOOLER INITIALIZER.

```

16 * EXT VSSPST
17 * EXT VSEXEC
18 * EXT V$IDC
19 * EXT V$FNR
20 * EXT V$ERR
21 * EXT V$IDST
22 * EXT VSSPMB
23 * EXT VSSPMT
24 * EXT V$LEVT
25 * EXT VSSPMC
26 * EXT TBSP0A
27 * EXT VSSPIR
28 * NAME VSSPIN

```

```

30 * NLIS
326 * LIST
327 * EXEC
328 * CONTROLLER TABLE POSITIONS
329 *
330 *

```

```

000003 A 333 CTDST EQU 3 DST ADR
000004 A 334 CTRQBK EQU 4 RPB ADR
000005 A 335 CTRTRY EQU 5 RETRY CONSTANT
000005 A 336 CTRCNT EQU 5 RETRY COUNT
000006 A 337 CTDVAD EQU 6 DEVICE ADR
000010 A 338 CTSTAT EQU 8 DRIVER STATUS
000011 A 339 CTBICB EQU 9 BIC ADR
000012 A 340 CTFCB EQU 10 FCB ADR
000013 A 341 CTWDS EQU 11 WORDS XMITTED

```

SPOOLER CTBL ADDITIONS

```

342 *
343 *
344 *
000016 A 345 CTRCT EQU 14 RECORD COUNT
000017 A 346 CTBUF EQU 15 4-7 = # OF BUFFERS, 0-3 = STREAM #
000020 A 347 CTSCCT EQU 16 START OF SCT TABLE
000057 A 348 CTDCT EQU 47 START OF DCT TABLE
000071 A 349 CTBFST EQU 071 ADDRESS OF SECOND BUFFER
000072 A 350 CTBF1 EQU 072 ADDRESS OF FIRST BUFFER
000073 A 351 CTBFND EQU 073 ADDRESS OF LAST BUFFER

```

CONTROLLER TIDB POSITIONS

```

352 * EXEC
354 *
355 *
000001 A 357 TBST EQU 1 TASK STATUS
000003 A 358 TBEVNT EQU 3 INTERRUPT EVENT
000010 A 359 TBRSTS EQU 8 CTRL ADR
361 * EXEC

```

FILE CONTROL BLOCK POSITIONS

```

362 *
363 *
364 *
365 *
000000 A 366 FCRECL EQU 0 RECORD LENGTH
000001 A 367 FCBUFF EQU 1 BUFF ADR
000002 A 368 FCACM EQU 2 ACCESS METHOD
000003 A 369 FCCADR EQU 3 CURR ADR
000004 A 370 FCCEDF EQU 4 CURR EOF
000005 A 371 FCIFE EQU 5 INIT FILE EXTENT
000006 A 372 FCFE EQU 6 END FILE EXTENT
000007 A 373 FCNAM1 EQU 7 FILE NAME
000010 A 374 FCNAM2 EQU 8 "
000011 A 375 FCNAM3 EQU 9 "

```

REQUEST BLOCK POSITIONS

```

379 *
380 *
000000 A 382 RPSTPR EQU 0 REQUEST STATUS
000001 A 383 RPOPWD EQU 1 MODE / OP-CODE
384 * EXEC
000001 A 385 X EQU 1
000002 A 386 B EQU 2
000001 A 387 A EQU 1

```

```

388 * *****
389 *
390 *
391 * EXEC
393 CT MAC
394 SRMD EQU 107
395 STRO EQU 100
396 SS FORM 1,1,1,1,1,11
397 DATA *4015
398 SS 0,0,1,1,1,0
399 DATA -1

```

```

400 JSR V$IDC,X 00 00400
401 DATA 0100000 ID COMPLETE BIT 00 00401
402 DATA 0100000+SRMD IMMEDIATE RETURN TO LUN SRMD 00 00402
403 DATA *+5,0,0 00 00403
404 JMP V$SPIR 00 00404
405 DATA 0,0 00 00405
406 S FORM 8,8 00 00406
407 S 0,'S' 00 00407
408 DATA 1,0,0,0 00 00408
409 XX SET 'LO' 00 00409
410 DATA 'SP','00',XX+P(1) 00 00410
411 DATA 1,1,0 00 00411
412 DATA 077777 00 00412
413 DATA *+015 00 00413
414 SS 0,1,0,0,1,0 00 00414
415 DATA -1 00 00415
416 JSR V$IDC,X 00 00416
417 DATA 0100000 00 00417
418 DATA 0100000+STRO+P(1) 00 00418
419 DATA *+5 00 00419
420 DATA 0,0 00 00420
421 JMP V$SPIR 00 00421
422 DATA 0,0,0 00 00422
423 ENAC 00 00423
424 * BIT DEFINITIONS 00 00424
425 * 00 00425
0000001 A 426 BIT0 EQU 0000001 00 00426
0000002 A 427 BIT1 EQU 0000002 00 00427
0000004 A 428 BIT2 EQU 0000004 00 00428
0000010 A 429 BIT3 EQU 0000010 00 00429
0000020 A 430 BIT4 EQU 0000020 00 00430
0000040 A 431 BIT5 EQU 0000040 00 00431
0000100 A 432 BIT6 EQU 0000100 00 00432
0000200 A 433 BIT7 EQU 0000200 00 00433
0000400 A 434 BIT8 EQU 0000400 00 00434
0001000 A 435 BIT9 EQU 0001000 00 00435
0020000 A 436 BIT10 EQU 0020000 00 00436
0040000 A 437 BIT11 EQU 0040000 00 00437
0100000 A 438 BIT12 EQU 0010000 00 00438
0200000 A 439 BIT13 EQU 0020000 00 00439
0400000 A 440 BIT14 EQU 0040000 00 00440
1000000 A 441 BIT15 EQU 0100000 00 00441
442 * 00 00442
443 * 00 00443
444 * REGISTER CONVENTIONS 00 00444
0000001 A 445 X EQU 1 X REGISTER FOR FORMAT 1 INSTRUCTIONS 00 00445
0000002 A 446 B EQU 2 B REGISTER FOR FORMAT 1 INSTRUCTIONS 00 00446
0000002 A 447 BUF EQU 3 BUFFER POINTER=B 00 00447
0000001 A 448 CT EQU 4 CONTROL TABLE POINTER=X 00 00448
0000001 A 449 DA EQU 1 FOR REG XFER INST. - DESTINATION A REG 00 00449
0000002 A 450 DB EQU 2 DESTINATION B REG 00 00450
0000004 A 451 DX EQU 3 DESTINATION X REG 00 00451
0000010 A 452 DA EQU 010 SOURCE A REG 00 00452
0000020 A 453 DB EQU 020 SOURCE B REG 00 00453
0000040 A 454 DX EQU 040 SOURCE X REG 00 00454
455 * 00 00455
456 * 00 00456
457 * SCT DEFINITIONS 00 00457
458 * 00 00458
459 * 00 00459
0000000 A 460 SCTCB EQU 0 BUFFER CHAIN BOTTOM 00 00460
0000001 A 461 SCTSS EQU 1 STREAM STATUS 00 00461
0000002 A 462 SCTLK EQU 2 SCT LINK 00 00462
0000003 A 463 SCTRB EQU 3 I/O REQUEST BLOCK 00 00463
0000005 A 464 SCTR0 EQU 5 REG BLK COMPLETION STATUS 00 00464
0000006 A 465 SCTR1 EQU 6 REG BLK OPCODE/MODE 00 00465
0000010 A 466 SCTR2 EQU 010 REG BLK WORD CNT 00 00466
0000014 A 467 SCTR3 EQU 014 FOR DATA LENGTH 00 00467
0000014 A 468 SCTR4 EQU 014 START OF FOR 00 00468
0000015 A 469 SCTR5 EQU 015 BUFFER CHAIN TOP 00 00469
0000017 A 470 SCTR6 EQU 017 SECTION NO 00 00470
0000026 A 471 SCTR7 EQU 026 CHAIN READ 00 00471
0000027 A 472 SCTR8 EQU 027 RMT IN PTR 00 00472
0000030 A 473 SCTR9 EQU 030 RMT OUT PTR 00 00473
0000031 A 474 SCTR0 EQU 031 BUFFER SEQUENCE NO 00 00474
0000031 A 475 SCTR1 EQU 031 LENGTH 00 00475
476 * 00 00476
477 * 00 00477
478 * 00 00478
1000000 A 479 SOTSA EQU 0100000 SOT ACTIVE 00 00479
0400000 A 480 SOTSU EQU 00 00000 SOT UP 00 00480
0200000 A 481 SSID EQU 0000000 ID B/T=1 00 00481
0100000 A 482 SOTRS EQU 0000000 READ SWITCH 00 00482
0040000 A 483 SOTRS EQU 0004000 WRITE SWITCH 00 00483
484 * 00 00484
485 * 00 00485
486 * SCT DEFINITIONS 00 00486
487 * 00 00487
488 * 00 00488
0000031 A 489 SOTCB EQU 0 SOT+0 BUFFER CHAIN BOTTOM 00 00489
0000032 A 490 SOTSS EQU 0 SOT+1 STREAM STATUS 00 00490
0000033 A 491 SOTLK EQU 0 SOT+2 SCT LINK 00 00491
0000034 A 492 SOTRB EQU 0 SOT+3 REQUEST BLOCK 00 00492

```

```

000036 A 493 DCTRC EQU LSCT+5 REQ BLK COMPLETION STATUS 00 00493
000037 A 494 DCTRD EQU LSCT+6 REQ BLK OP/PCODE/MODE 00 00494
000041 A 495 DCTCNT EQU LSCT+010 WORD CNT 00 00495
000045 A 496 DCTDL EQU LSCT+014 DATA LENGTH 00 00496
000045 A 497 DCTDCB EQU LSCT+014 DCB START 00 00497
000046 A 498 DCTCT EQU LSCT+015 BUFFER CHAIN TOP 00 00498
000047 A 499 DCTFC EQU LSCT+016 FUNCTION CODE 00 00499
500 *
501 * DCTSS DEFINITIONS 00 00501
502 * 00 00502
100000 A 503 DCTDA EQU 0100000 DCT ACTIVE 00 00503
040000 A 504 DCTDU EQU 0040000 DCT UP 00 00504
004000 A 505 DCTWS EQU 0004000 WRITE SWITCH 00 00505
506 * 00 00506
507 * 00 00507
508 * 00 00508
509 * BUFFER DEFINITIONS 00 00509
510 * 00 00510
000000 A 511 SBLK EQU 0 00 00511
000003 A 512 SBRL EQU 3 00 00512
000003 A 513 SBBN EQU 3 00 00513
000004 A 514 SBCTL EQU 4 00 00514
000005 A 515 SBTIME EQU 5 00 00515
000006 A 516 SBDATA EQU 6 00 00516
000110 A 517 LSB EQU 0110 00 00517
518 * 00 00518
519 * 00 00519
520 * BUFFER CONTROL DEFINITIONS 00 00520
521 * AND REQUEST BLOCK DEFINITIONS 00 00521
522 * 00 00522
523 * 00 00523
100000 A 524 SBW EQU 0100000 WRITE REQUEST 00 00524
070000 A 525 BMODE EQU 0070000 REQ BLK MODE 00 00525
007400 A 526 BOPCD EQU 0007400 REQ BLK OP/PCODE 00 00526
100000 A 527 SCTCC EQU 0100000 REQ BLK COMPLETION CODE 00 00527
100000 A 528 DCTCC EQU 0100000 REQ BLK COMPLETION CODE 00 00528
529 * 00 00529
530 * 00 00530
531 * 00 00531
177777 A 532 ONES EQU 0177777 00 00532
000010 A 533 NSCT EQU 8 8 STREAMS DEFINED 00 00533
534 * 00 00534
535 * DISPATCH TABLE DEFINITIONS 00 00535
536 * 00 00536
000002 A 537 DTIDB EQU 2 00 00537
000001 A 538 DTSCCT EQU 1 00 00538
000000 A 539 DTDCT EQU 0 00 00539
540 * 00 00540
541 * EJEC 00 00541
542 * ***** 00 00542
543 * * 00 00543
544 * THIS IS A COPYRIGHTED PROGRAM. COPYRIGHT 1973 VARIAN DATA MACHINES 00 00544
545 * 00 00545
546 * 00 00546
547 * 00 00547
548 * 00 00548
549 * 00 00549
550 * CTSP0A 00 00550
551 * 00 00551
552 * 00 00552
553 * TITLE CTSP0A 00 00553
554 * NAME CTSP0A 00 00554
555 * 00 00555
556 * 00 00556
557 * CONTROLLER TABLE FOR FIRST SPOOLER UNIT 00 00557
558 * 00 00558
559 * FOR VORTEX SYSTEMS 00 00559
560 * 00 00560
000000 R 561 CTSP0A EQU * 00 00561
000112 A 562 RECSIZ EQU 74 E.2 ***** 00 00562
000000 A 563 STREAM EQU 0 00 00563
000000 000000 E 564 DATA CTSP0A CTIDB 00 00564
000001 000541 R 565 DATA CTEND CTADNC 00 00565
000002 000056 A 566 DATA 056 CTOPM 00 00566
000003 000000 A 567 DATA 0 CTDST 00 00567
000004 000000 A 568 DATA 0 CTRQK 00 00568
000005 000000 A 569 DATA 0 CTRTRY = 0 00 00569
000006 123456 A 570 DATA 0123456 CTDVAD 00 00570
000007 000000 A 571 DATA 0 CTIDA 00 00571
000010 000000 A 572 DATA 0 CTSTAT 00 00572
000011 000000 A 573 DATA 0 CTBICB 00 00573
000012 000000 A 574 DATA 0 CTFCR 00 00574
000013 000000 A 575 DATA 0 CTWDS 00 00575
000014 000000 A 576 DATA 0.0 00 00576
000015 000000 A 577 * 00 00577
578 * SPECIAL SPOOLER PARAMETERS 00 00578
579 * 00 00579
000016 000377 A 580 DATA 0377 CTRCT 00 00580
000017 000000 A 581 DATA STREAM CTBUF 00 00581
000018 000000 A 582 CT STREAM SCT + DCT TABLES 00 00582
000020 000035 R 00 00583
000021 034000 A 00 00584

```



```

000022 177777 A
000023 006505 A
000024 000000 E
000025 100000 A
000026 100153 A
000027 000034 R
000030 000000 A
000031 000000 A
000032 001000 A
000033 000000 E
000034 000000 A
000035 000000 A
000036 001723 A
000037 000001 A
000040 000000 A
000041 000000 A
000042 000000 A
000043 151720 A
000044 147717 A
000045 146260 A
000046 000001 A
000047 000001 A
000050 000000 A
000051 077777 A
000052 000007 R
000053 044000 A
000054 177777 A
000055 006505 A
000056 000024 E
000057 100000 A
000060 100264 A
000061 000000 R
000062 000000 R
000063 000000 A
000064 001000 A
000065 000033 E
000066 000001 A
000067 000000 A
000070 000000 A

583      EJEC
584      *
585      *      START OF BUFFER AREA
586      *
000071 000203 R 587 CTBFSX DATA *+RECSIZ      POINTS TO NEXT BUFFER
000072 000071 R 588 DATA CTBFSX      ADR OF FIRST BUFFER
000073 000427 R 589 DATA CTBFSX+RECSIZ+RECSIZ+RECSIZ ADR OF LAST BUF
591      *
592      *
593      *      PART 1 OF CTBL 0 - INITIALIZER PART 1 - LATER USED AS BUFFER
594      *
595      *
596      *      INITIALIZER-USED ONLY FOR FIRST CALL
597      *
000074 000000 A 598 V$SPIM DATA 0
000075 030303 A 599 LDX V$TB      HIGHEST PRIORITY TASK
000076 015022 A 600 INSRCH LDA TBKN1,X SEARCH FOR "LISTER"
000077 144237 A 601 SUB LISTN1
000100 001015 A 602 JNZ NOTLST
000101 000112 R
000102 015023 A 603 LDA TBKN2,X
000103 144234 A 604 SUB LISTN2      HERE IF NOT THIS TIME
000104 001016 A 605 JNZ NOTLST
000105 000112 R
000106 015024 A 606 LDA TBKN3,X
000107 144231 A 607 SUB LISTN3
000110 001010 A 608 JNZ TSKFND
000111 000122 R
000112 035000 A 609 NOTLST LDX TBTPD,X GET START OF NEXT TIME
000113 001046 A 610 JNZ INSRCH      IF NOT 0, KEEP LOOPING
000114 000076 R
000115 100444 A 611 RYC DISPM      TYPE "SP 00" THEN GO TO HARD HALT
000116 100747 A 612 RYC WIOCLK
000117 000000 A 613 INHLT RLT
000120 001000 A 614 JMP INHLT
000121 000117 R
615      *
616      *      LISTER FOUND - LET SPOOLER TALK TO IT
617      *
000122 005041 A 618 TSKFND TXA POINTS TO START OF LISTER TIME
000123 120464 A 619 ADD THREE
000124 006057 A 620 STAE V$LEVT      SAVE ADDRESS OF LISTER EVENT WORD
000125 000000 E
621      *
622      *      FIND SPOOLER CTBL'S AND LINK THEM UP
623      *
000126 010362 A 624 LDA V$NCTR
000127 054206 A 625 STA RMCTR      SAVE # OF CONTROLLERS
000130 030360 A 626 LDX V$CTAD      GET FIRST CONTROLLER TABLE ADDRESS
000131 025000 A 627 INCT1 LDE
000132 016006 A 628 LDA CT$VAD,B IS DEVNUM THAT FOR SPOOLER
000133 144206 A 629 SUB DEVNUM      IS IT SPOOLER CTBL
000134 001010 A 630 JAZ INCT1F      HERE IF MATCH WITH "V2SPA "
000135 000204 R

```

```

000136 014177 A 631 LDA NMCTR
000137 005311 A 632 DAR DECREMENT # OF TABLES LEFT
000140 054175 A 633 STA NMCTR
000141 005144 A 634 IXR POINT X TO NEXT ENTRY
000142 001000 A 635 JMP INCT1
000143 000131 R
636 EJEC
637 *
638 * PART 2 OF INITIALIZER
639 *
000203 000315 R 641 CTBF2 ORG CTBFSX+RECSIZ BUFFER 2
000203 000315 R 642 DATA *+RECSIZ
643 *
644 * CONTROLLER TABLE 1 FOUND
645 *
000204 074130 A 646 INCT1F STX INTEMP SAVE
000205 016072 A 647 LDA CTBF1,B ADDRESS OF FIRST BUFFER
000206 006057 A 648 STAE V$SPMT MARK IT AS BEG OF STRING
000207 000000 E
000210 001000 A 649 JMP INCTN
000211 000216 R
000212 074122 A 650 INCTNF STX INTEMP
000213 016072 A 651 LDA CTBF1,B
000214 006057 A 652 STAE* V$SPMB CONTINUE STRING
000215 100000 E
000216 016073 A 653 INCTN LDA CTBFND,B
000217 006057 A 654 STAE V$CPMB MARK CURRENT END OF STRING
000220 000215 E
000221 005021 A 655 TBA
000222 006120 A 656 ADDI CTSCOT A = START OF SCT TABLE
000223 000020 A
000224 036017 A 657 LDX CTBUF,B
000225 006055 A 658 STAE V$SPST,X PUT IN SPSCT TABLE
000226 000000 E
000227 005021 A 659 TBA
000230 006120 A 660 ADDI CTSCOT+SCTFCB GET START OF FCB
000231 000034 A
000232 054004 A 661 STA INDPEN+4
662 INDPEN OPEN INDPEN,SRMD,0 OPEN FILE
000233 006505 A
000234 000404 A
000235 100000 A
000236 003153 A
000237 000233 R
000240 000000 A
000241 000000 A
663 STAT INDPEN,INCON,INCON,INCON,INCON
000242 006505 A
000243 000373 A
000244 000233 R
000245 000327 R
000246 000327 R
000247 000327 R
000250 000327 R
000251 016021 A 664 LDA CTSCOT+SCTSS,B
000252 110437 A 665 JRA BS14
000253 056021 A 666 STA CTSCOT+SCTSS,B INDICATE OPEN OK
000254 001000 A 667 JMP INCON
000255 000327 R
668 EJEC
669 *
670 * PART 3 OF INITIALIZER
671 *
000315 000427 R 673 CTBF3 ORG CTBF2+RECSIZ BUFFER 3
000315 000427 R 674 DATA *+RECSIZ
000316 034016 A 675 INERR LDX INTEMP
000317 025000 A 676 LDB 0,X GET POINTER TO NEXT CTBL
000320 014015 A 677 LDA NMCTR ALL CTBLS USED
000321 001010 A 678 JAZ INFINL ALL CTBLS FOUND
000322 000343 R
000323 016006 A 679 LDA CTDVAD,B
000324 144013 A 680 SUB DEVNUM IS IT SPUDLER CTBL
000325 001010 A 681 JAZ INCTNF YES-SET UP
000326 000212 R
000327 044003 A 682 INCON INR INTEMP
000330 014003 A 683 LDA NMCTR
000331 005311 A 684 DAR
000332 054003 A 685 STA NMCTR
000333 001000 A 686 JMP INERR
000334 000316 R
000335 000000 A 687 INTEMP DATA 0
000336 000000 A 688 NMCTR DATA 0
000337 153244 A 689 LISTN1 DATA 'V$SPLP'
000340 151720 A
000341 146320 A
000340 000340 R 690 LISTN2 EQU LISTN1+1
000341 R 691 LISTN3 EQU LISTN1+2
000342 123456 A 692 DEVNUM DATA 0123456
693 *
694 * COUNT NUMBER OF BUFFERS AND SET V$SPMC
695 *
000343 005001 A 696 INFINL TZA CLEAR BUFFER COUNT
000344 006027 A 697 LUBE V$SPMT GET FIRST BUFFER ADDRESS

```

```

000345 000207 E
000346 005111 A 699 INFIN1 JBR INCREMENT BUFFER COUNT 00 00698
000347 001020 A 699 JBR INFIN2 END OF STRING 00 00699
000350 000334 R 700 LDB 0,8 NO- GET NEXT BUFFER 00 00700
000351 026000 A 701 IMP INFIN1 00 00701
000352 001000 A 701 INFIN2 JBR THREE CHANGE COUNT TO INDEX NUMBER 00 00702
000353 000346 R 702 LDB 1 PUT INTO INDEX 00 00703
000354 40464 A 702 INFIN2 JBR THREE CHANGE COUNT TO INDEX NUMBER 00 00702
000355 004941 A 703 LDB 1 PUT INTO INDEX 00 00703
000356 005014 A 704 LDB 1 PUT INTO INDEX 00 00703
000357 006015 A 705 LDB 1 PUT INTO INDEX 00 00703
000360 000365 R 706 STAC V&SPMC SAVE 00 00706
000361 006057 A 706 STAC V&SPMC SAVE 00 00706
000362 000000 F 707 LDB* V&SPIN EXIT 00 00707
000363 001000 A 707 LDB* V&SPIN EXIT 00 00707
000364 100074 R 708 * 00 00708

```

MEMORY BUFFER THRESHOLD COUNTER TABLE

```

000365 177775 A 711 MOVAL DATA -2 4 BUFFERS 00 00711
000366 177776 A 712 MOVAL DATA -4 6 BUFFERS 00 00712
000367 177777 A 713 MOVAL DATA -6 8 BUFFERS 00 00713
000368 177778 A 714 MOVAL DATA -8 10 BUFFERS 00 00714
000369 177779 A 715 MOVAL DATA -10 12 BUFFERS 00 00715
000370 177780 A 716 MOVAL DATA -12 14 BUFFERS 00 00716
000371 177781 A 717 MOVAL DATA -14 16 BUFFERS 00 00717
000372 177782 A 718 MOVAL DATA -16 18 BUFFERS 00 00718
000373 177783 A 719 MOVAL DATA -18 20 BUFFERS 00 00719
000374 177784 A 720 MOVAL DATA -20 22 BUFFERS 00 00720
000375 177785 A 721 MOVAL DATA -22 24 BUFFERS 00 00721
000376 177786 A 722 MOVAL DATA -24 26 BUFFERS 00 00722
000377 177787 A 723 MOVAL DATA -26 28 BUFFERS 00 00723
000378 177788 A 724 MOVAL DATA -28 30 BUFFERS 00 00724
000379 177789 A 725 MOVAL DATA -30 32 BUFFERS 00 00725
000380 177790 A 726 MOVAL DATA -32 34 BUFFERS 00 00726
000381 177791 A 727 MOVAL DATA -34 36 BUFFERS 00 00727
000382 177792 A 728 MOVAL DATA -36 38 BUFFERS 00 00728
000383 177793 A 729 MOVAL DATA -38 40 BUFFERS 00 00729
000384 177794 A 730 MOVAL DATA -40 42 BUFFERS 00 00730
000385 177795 A 731 MOVAL DATA -42 44 BUFFERS 00 00731

```

```

000407 000000 A 732 CTEND 00 00732
000408 000541 R 733 CTEND 00 00733
000409 000000 A 734 CTEND 00 00734
000410 000541 R 735 CTEND 00 00735
000411 000000 A 736 CTEND 00 00736
000412 000541 R 737 CTEND 00 00737
000413 000000 A 738 CTEND 00 00738
000414 000541 R 739 CTEND 00 00739
000415 000000 A 740 CTEND 00 00740
000416 000541 R 741 CTEND 00 00741
000417 000000 A 742 CTEND 00 00742
000418 000541 R 743 CTEND 00 00743
000419 000000 A 744 CTEND 00 00744
000420 000541 R 745 CTEND 00 00745
000421 000000 A 746 CTEND 00 00746
000422 000541 R 747 CTEND 00 00747
000423 000000 A 748 CTEND 00 00748
000424 000541 R 749 CTEND 00 00749
000425 000000 A 750 CTEND 00 00750
000426 000541 R 751 CTEND 00 00751
000427 000000 A 752 CTEND 00 00752
000428 000541 R 753 CTEND 00 00753
000429 000000 A 754 CTEND 00 00754
000430 000541 R 755 CTEND 00 00755
000431 000000 A 756 CTEND 00 00756
000432 000541 R 757 CTEND 00 00757
000433 000000 A 758 CTEND 00 00758
000434 000541 R 759 CTEND 00 00759
000435 000000 A 760 CTEND 00 00760
000436 000541 R 761 CTEND 00 00761
000437 000000 A 762 CTEND 00 00762
000438 000541 R 763 CTEND 00 00763
000439 000000 A 764 CTEND 00 00764
000440 000541 R 765 CTEND 00 00765
000441 000000 A 766 CTEND 00 00766
000442 000541 R 767 CTEND 00 00767
000443 000000 A 768 CTEND 00 00768
000444 000541 R 769 CTEND 00 00769
000445 000000 A 770 CTEND 00 00770
000446 000541 R 771 CTEND 00 00771
000447 000000 A 772 CTEND 00 00772
000448 000541 R 773 CTEND 00 00773
000449 000000 A 774 CTEND 00 00774
000450 000541 R 775 CTEND 00 00775
000451 000000 A 776 CTEND 00 00776
000452 000541 R 777 CTEND 00 00777
000453 000000 A 778 CTEND 00 00778
000454 000541 R 779 CTEND 00 00779
000455 000000 A 780 CTEND 00 00780
000456 000541 R 781 CTEND 00 00781
000457 000000 A 782 CTEND 00 00782
000458 000541 R 783 CTEND 00 00783
000459 000000 A 784 CTEND 00 00784
000460 000541 R 785 CTEND 00 00785
000461 000000 A 786 CTEND 00 00786
000462 000541 R 787 CTEND 00 00787
000463 000000 A 788 CTEND 00 00788
000464 000541 R 789 CTEND 00 00789
000465 000000 A 790 CTEND 00 00790
000466 000541 R 791 CTEND 00 00791
000467 000000 A 792 CTEND 00 00792
000468 000541 R 793 CTEND 00 00793
000469 000000 A 794 CTEND 00 00794
000470 000541 R 795 CTEND 00 00795
000471 000000 A 796 CTEND 00 00796
000472 000541 R 797 CTEND 00 00797
000473 000000 A 798 CTEND 00 00798
000474 000541 R 799 CTEND 00 00799
000475 000000 A 800 CTEND 00 00800
000476 000541 R 801 CTEND 00 00801
000477 000000 A 802 CTEND 00 00802
000478 000541 R 803 CTEND 00 00803
000479 000000 A 804 CTEND 00 00804
000480 000541 R 805 CTEND 00 00805
000481 000000 A 806 CTEND 00 00806
000482 000541 R 807 CTEND 00 00807
000483 000000 A 808 CTEND 00 00808
000484 000541 R 809 CTEND 00 00809
000485 000000 A 810 CTEND 00 00810
000486 000541 R 811 CTEND 00 00811
000487 000000 A 812 CTEND 00 00812
000488 000541 R 813 CTEND 00 00813
000489 000000 A 814 CTEND 00 00814
000490 000541 R 815 CTEND 00 00815
000491 000000 A 816 CTEND 00 00816
000492 000541 R 817 CTEND 00 00817
000493 000000 A 818 CTEND 00 00818
000494 000541 R 819 CTEND 00 00819
000495 000000 A 820 CTEND 00 00820
000496 000541 R 821 CTEND 00 00821
000497 000000 A 822 CTEND 00 00822
000498 000541 R 823 CTEND 00 00823
000499 000000 A 824 CTEND 00 00824
000500 000541 R 825 CTEND 00 00825

```

```

1000000 A SBH 0000031 A SCTBN 0000000 A SCTCB 1000000 A SCTCC
0000010 A SCTCNT 0000026 A SCTCR 0000015 A SCTCT 0000014 A SCTDL
0000014 A SCTFCB 0000027 A SCTIN 0000002 A SCTLK 0000030 A SCTOUT
0000014 A SCTRB 0000005 A SCTRC 0000006 A CTRD 0100000 A SCTRS
1000000 A SCTSA 0000017 A SCTSN 0000001 A SCTSS 0400000 A SCTSU
0040000 A SCTHS 0004667 A SEVEN 0004666 A SIX 000153 A SRMD
0200000 A SSID 000264 A STRO 0000000 A STREAM 000040 A SX
0000027 A TBATSK 0000026 A TBCPTH 0000011 A TBENTY 0000003 A TBEVNT
0000021 A TBID 0000014 A TBISA 0000015 A TBISB 0000017 A TBISP
0000020 A TBISRS 0000016 A TBISX 0000022 A TBKN1 0000023 A TBKN2
0000024 A TBKN3 0000002 A TBPL 0000004 A TBRSA 0000005 A TBRSE
0000030 A TBRSE 0000007 A TBRSP 0000010 A TBRST 0000006 A TBRSTX
0000000 A TBS0 0000001 A TBS1 0000012 A TBS10 0000013 A TBS11
0000014 A TBS12 0000015 A TBS13 0000016 A TBS14 0000017 A TBS15
0000002 A TBS2 0000003 A TBS3 0000004 A TBS4 0000005 A TBS5
0000006 A TBS6 0000007 A TBS7 0000010 A TBS8 0000011 A TBS9
0000000 E TBSP0A 0000001 A TBST 0000025 A TBTLC 0000013 A TBTMIN
0000012 A TBTMS 0000000 A TBTRD 000471 A TEN 000464 A THREE
000122 R TSKFND 000422 A TWO 000403 A VSIMIN 000415 A VSBFC
0000075 A VSBFLB 0000056 A VSBIC1 000315 A VSBTB 000414 A VSBVN
000334 A VSCAM 000353 A VSCKB 000411 A VSCKIT 000310 A VSCKPT
000301 A VSCPL 000076 A VSCRD 000341 A VSCRDR 000354 A VSCRM
000302 A VSCRS 000360 A VSCRAD 000300 A VSCTL 000351 A VSCIMS
0000070 A VSDATE 000355 A VSDSTB 000376 A VSERFG 000000 E VSERR
0000000 E VSEXEC 000347 A VSFGLB 000306 A VSFGRS 000000 E VSFNR
000350 A VSFREE 000320 A VSIM 000410 A VSIDA 000056 E VSIDC
0000000 E VSIDST 000412 A VSJCB 000055 A VSJCFG 000077 A VSJCTM
0000050 A VSJNAM 000377 A VSJDP 000054 A VSLCNT 000313 A VSLER
000125 E V$LEVT 000356 A V$LIT 000317 A V$LLUP 000307 A V$LRSK
000312 A V$LCAL 000345 A V$LUNT 000316 A V$LUP 000400 A V$LUT1
000401 A V$LUT2 000402 A V$LUT3 000330 A V$MPM 000362 A V$NCTR
000413 A V$OCB 000346 A V$OPCF 000311 A V$OPCL 000363 A V$PIMH
0000074 A V$PLOT 000305 A V$PTVB 000361 A V$SCTL 000352 A V$SCV
000375 A V$SLFG 000074 R V$SPIN 000065 E V$SPIR 000220 E V$SPMB
000362 E V$SPMC 000345 E V$SPMT 000226 E V$SPST 000303 A V$TB
000342 A V$TGT 000416 A V$TFC 000314 A V$TJCP 000344 A V$TMN
000343 A V$TMS 000304 A V$UTR 000001 A X 146260 A XX
000420 A ZERO

```

0 ERRORS ASSEMBLY COMPLETE

```

322 APIM 324 325
386 B 447
318 CLOCK 320 321
144 LC 145 146 147 148 149 150 151 152 153
154 155 156 157 158 159 160 161 162
163 164 165 166 167 168 169 170 171 172
173 174 175 176 177 178 180 181 182
183 187 188 189 190 191 192 193 198
199 200 203 208 209 210
119 LCJP 120 121 122 129 130 131 132 133 136
475 LSCT 489 490 491 492 493 494 495 496 497
498 499
219 MT 220 221 222 223 224 225 226 227 228
229 230 231 232 233 234 235 236 237
238 239 240 241 242 243 244 245 246
247 248 249 250 251 252 253 254 255
256 257 258 259 260 261 262 263 264
265 266 267 268 269 270 271 272 273
274 275
0 P 410 418
394 SRMD 402
395 STRO 418
0 TBSP0A 26
0 VSERR 20
0 VSEXEC 17
0 VSFNR 19
0 VSIDC 18 400 416
0 VSIDST 21
0 V$LEVT 24
0 V$SPIN 28
0 V$SPIR 27 404 421
0 V$SPMB 22
0 V$SPMC 23
0 V$SPMT 23
0 V$SPST 16
385 X 400 416 448
489 XX 410

```

```

1 * THIS IS A COPYRIGHTED PROGRAM. COPYRIGHT 1972 BY VARIAN DATA MACHINE 00 000001
2 * V.D.M. PART NO. 92L0605-163A 00 000002
3 * 00 000003
4 * 00 000004
5 * 00 000005
6 * 00 000006
7 * 00 000007
8 * 00 000008
9 * 00 000009
10 * 00 000010
11 * 00 000011
12 * 00 000012
13 * 00 000013
14 * 00 000014
15 * 00 000015
16 * 00 000016
17 * 00 000017
18 * 00 000018
19 * 00 000019
20 * 00 000020

```

RELEASED 03/01/74

SPOOLER CONTROLLER TABLE 1

```

15 TITLE CTSP1A
16 NAME CTSP1A
17 EXT VS10C
18 EXT VS20IR
19 EXT VS30IR
20 STREAM EQU 1
21 RECSIZ EQU 74
22 EQU EQU
23 X EQU 1
24 CT MAC
25 SRMD EQU 107
26 STRO EQU 100
27 SS EQU 1+1,1,1,1,11
28 DATA EQU 1+015
29 SS EQU 0+0,1,1,1,0
30 DATA EQU 1
31 JCR EQU VS10C,X
32 DATA EQU 0100000 ID COMPLETE BIT
33 DATA EQU 0100000+SRMD IMMEDIATE RETURN TO LUN SRMD
34 DATA EQU 0+5,0,0
35 JMP EQU VS20IR
36 DATA EQU 0+0
37 EQU EQU
38 S EQU 0+1,0
39 DATA EQU 1+0,0,0
40 XX SET EQU 1LS
41 DATA EQU 1SP', '00', XX+P(1)
42 DATA EQU 1+1,0
43 DATA EQU 02, 27
44 DATA EQU 0+015
45 SS EQU 0+1,0,0,1,0
46 DATA EQU 1
47 JMP EQU VS10C,X
48 DATA EQU 0100000
49 DATA EQU 0100000+STRO+P(1)
50 DATA EQU 0+0
51 DATA EQU 0+0
52 JMP EQU VS20IR
53 EQU EQU
54 EQU EQU
55 EQU EQU
56 EQU EQU
57 EQU EQU
58 EQU EQU
59 EQU EQU
60 EQU EQU
61 EQU EQU
62 EQU EQU
63 EQU EQU
64 EQU EQU
65 EQU EQU
66 EQU EQU
67 EQU EQU
68 EQU EQU
69 EQU EQU
70 EQU EQU
71 EQU EQU
72 EQU EQU
73 EQU EQU
74 EQU EQU
75 EQU EQU
76 EQU EQU
77 EQU EQU
78 EQU EQU
79 EQU EQU
80 EQU EQU
81 EQU EQU
82 EQU EQU

```

CONTROLLER TABLE FOR SPOOLER UNIT 1

FOR VORTEX SYSTEMS

```

63 CTSP1A EQU 0
64 DATA EQU 1P1A CTIDB
65 DATA EQU 0ENB CTADMC
66 DATA EQU 000 CTUPM
67 DATA EQU 1 CTASL
68 DATA EQU 0 CTROCK
69 DATA EQU 1 CTSTRY = 0
70 DATA EQU 123456 CTSPAD
71 DATA EQU 0 CTICA
72 DATA EQU 1 CTIAG
73 DATA EQU 1 CTILR
74 DATA EQU 0 CTICR
75 DATA EQU 0 CTICD

```

SPECIAL SPOOLER PARAMETERS

```

80 DATA EQU 1 CTACT
81 DATA EQU 1 STREAM CTUDF
82 DATA EQU 1 STREAM SCT + DCT TABLES
83 EQU EQU
84 EQU EQU
85 EQU EQU
86 EQU EQU
87 EQU EQU
88 EQU EQU
89 EQU EQU
90 EQU EQU
91 EQU EQU
92 EQU EQU

```

```

000033 000000 E
000034 000000 A
000035 000000 A
000036 001723 A
000037 000001 A
000040 000000 A
000041 000000 A
000042 000000 A
000043 151720 A
000044 147717 A
000045 146261 A
000046 000001 A
000047 000001 A
000050 000000 A
000051 077777 A
000052 000067 R
000053 044000 A
000054 177777 A
000055 006303 A
000056 000024 E
000057 100000 A
000060 100263 A
000061 000066 R
000062 000000 A
000063 000000 A
000064 001000 A
000065 000033 E
000066 000000 A
000067 000000 A
000070 000000 A

```

```

83      EJECT
84 *
85 *      START OF BUFFER AREA
86 *
87 CTBFSX DATA      *+RECSIZ      POINTS TO NEXT BUFFER
88          DATA      CTBFSX      ADR OF FIRST BUFFER
89          DATA      CTBFSX+RECSIZ START OF LAST BUFFER
90          ORG        CTBFSX+RECSIZ BUFFER 2
91          DATA      0
92          BSS        RECSIZ-1
93 CTEND   EQU        *
94          END

```

```

00 00083
00 00084
00 00085
00 00086
00 00087
00 00088
00 00089
00 00090
00 00091
00 00092
00 00093
00 00094

```

ENTRY NAMES

000000 R CTSP1A

EXTERNAL NAMES

000000 E TBSP1A 000056 E V\$IDC 000065 E V\$SPIR

SYMBOLS

```

000071 R CTBFSX 000315 R CTEND 000000 R CTSP1A 000112 A RECSIZ
000153 A SRMD 000264 A STRO 000001 A STREAM 000000 E TBSP1A
000056 E V$IDC 000065 E V$SPIR 000001 A X 146260 A XX
0 ERRORS ASSEMBLY COMPLETE

```

```

87 CTBFSX      88      89      90
93 CTEND      63
63 CTSP1A     15      16
0 P          42      50
21 RECSIZ    87      89      90      92
26 SRMD      34
27 STRO      50
20 STREAM    81      82
0 TBSP1A     19      64
0 V$IDC      17      32      48
0 V$SPIR     18      36      53
23 X         32      48
41 XX        42

```

```

1 * THIS IS A COPYRIGHTED PROGRAM. COPYRIGHT 1972 BY VARIAN DATA MACHINE 00 00001
2 * V.D.M. PART NO. 92L0605-164A 00 00002
3 * 00 00003
4 * 00 00004
5 * 00 00005
6 * 00 00006
7 * 00 00007
8 * 00 00008
9 * 00 00009
10 * SPOOLER CONTROLLER TABLE 2 00 00010
11 * 00 00011
12 * 00 00012
13 * 00 00013
14 * 00 00014
15 * 00 00015
16 * 00 00016
17 * 00 00017
18 * 00 00018
19 * 00 00019
20 * 00 00020
21 * 00 00021
22 * 00 00022
23 * 00 00023
24 * 00 00024
25 * 00 00025
26 * 00 00026
27 * 00 00027
28 * 00 00028
29 * 00 00029
30 * 00 00030
31 * 00 00031
32 * 00 00032
33 * 00 00033
34 * 00 00034
35 * 00 00035
36 * 00 00036
37 * 00 00037
38 * 00 00038
39 * 00 00039
40 * 00 00040
41 * 00 00041
42 * 00 00042
43 * 00 00043
44 * 00 00044
45 * 00 00045
46 * 00 00046
47 * 00 00047
48 * 00 00048
49 * 00 00049
50 * 00 00050
51 * 00 00051
52 * 00 00052
53 * 00 00053
54 * 00 00054
55 * 00 00055
56 * 00 00056
57 * 00 00057
58 * 00 00058
59 * 00 00059
60 * 00 00060
61 * 00 00061
62 * 00 00062
63 * 00 00063
64 * 00 00064
65 * 00 00065
66 * 00 00066
67 * 00 00067
68 * 00 00068
69 * 00 00069
70 * 00 00070
71 * 00 00071
72 * 00 00072
73 * 00 00073
74 * 00 00074
75 * 00 00075
76 * 00 00076
77 * 00 00077
78 * 00 00078
79 * 00 00079
80 * 00 00080
81 * 00 00081
82 * 00 00082

```

```

000002 A
000112 A
000001 A

```

```

E.2 *****

```

```

15 * TITLE CTSP2A
16 * NAME CTSP2A
17 * EXT V$IOC
18 * EXT V$SPIR
19 * EXT T$SP2A
20 * STREAM EQU 2
21 * RECSIZ EQU 74
22 * EJECT EQU 1
23 * CT MAC
24 * SRMD EQU 107
25 * STRO EQU 100
26 * SS FORM 1:1:1:1:1:11
27 * DATA *+015
28 * SS 0:0:1:1:1:0
29 * DATA -1
30 * ISR V$IOC,X
31 * DATA 0100000 ID COMPLETE BIT
32 * DATA 0100000+SRMD IMMEDIATE RETURN TO LUN SRMD
33 * DATA *+5:0,0
34 * JMP V$SPIR
35 * DATA 0:0
36 * S FORM 0:0
37 * S 0:0
38 * DATA 1:0,0,0
39 * XX SET 'L0'
40 * DATA 'SP', 'DD', XX+P(1)
41 * DATA 1:1,0
42 * DATA 077777
43 * DATA *+015
44 * SS 0:1:0,0,1:0
45 * DATA -1
46 * ISR V$IOC,X
47 * DATA 0100000
48 * DATA 0100000+STRO+P(1)
49 * DATA *+5
50 * DATA 0:0
51 * JMP V$SPIR
52 * DATA 0:0,0
53 * EQU
54 * EQU
55 * EQU
56 * EQU
57 * EQU
58 * EQU
59 * EQU
60 * EQU
61 * EQU
62 * EQU
63 * EQU
64 * EQU
65 * EQU
66 * EQU
67 * EQU
68 * EQU
69 * EQU
70 * EQU
71 * EQU
72 * EQU
73 * EQU
74 * EQU
75 * EQU
76 * EQU
77 * EQU
78 * EQU
79 * EQU
80 * EQU
81 * EQU
82 * EQU

```

CONTROLLER TABLE FOR SPOOLER UNIT 2
FOR VORTEX SYSTEMS

```

000000 000000 R
000001 000541 R
000002 000056 A
000003 000000 A
000004 000000 A
000005 000000 A
000006 123456 A
000007 000000 A
000010 000006 A
000011 000000 A
000012 000000 A
000013 000000 A
000014 000000 A
000015 000000 A
000016 177777 A
000017 000002 A
000020 000035 R
000021 034000 C
000022 177777 A
000023 006505 A
000024 000000 C
000025 100000 R
000026 100153 S
000027 000034 R
000030 000000 R
000031 000000 A
000032 001000 A

```

```

63 * CTSP2A EQU *
64 * DATA T$SP2A CTIBR
65 * DATA CTSRMD CTALNC
66 * DATA *+5 CTDRM
67 * DATA 1 CTBSI
68 * DATA 0 CTADCK
69 * DATA 0 CTSTRY = 0
70 * DATA 0000456 CTSTAD
71 * DATA 0 CTSTDA
72 * DATA 0 CTALAT
73 * DATA 0 CTSECT
74 * DATA 1 CTFLY
75 * DATA 0 CTPLK
76 * DATA 100
77 *
78 *
79 *
80 * DATA -1 CTROCT
81 * DATA STREAM CTSTF
82 * CT STREAM SCT + DCT TABLES

```

```

00 00063
00 00064
00 00065
00 00066
00 00067
00 00068
00 00069
00 00070
00 00071
00 00072
00 00073
00 00074
00 00075
00 00076
00 00077
00 00078
00 00079
00 00080
00 00081
00 00082
00 00083
00 00084
00 00085
00 00086
00 00087
00 00088
00 00089
00 00090
00 00091
00 00092

```

```

000033 000000 E
000034 000000 A
000035 000000 A
000036 001723 A
000037 000001 A
000040 000000 A
000041 000000 A
000042 000000 A
000043 151720 A
000044 147717 A
000045 146262 A
000046 000001 A
000047 000001 A
000050 000000 A
000051 077777 A
000052 000067 R
000053 044000 A
000054 177777 A
000055 006505 A
000056 000024 E
000057 100000 A
000060 100266 A
000061 000066 R
000062 000000 A
000063 000000 A
000064 001000 A
000065 000033 E
000066 000000 A
000067 000000 A
000070 000000 A

```

```

83      EJEC
84 *
85 *      START OF BUFFER AREA
86 *
87 CTBFSX DATA      *+RECSIZ      POINTS TO NEXT BUFFER
88      DATA      CTBFSX      ADR OF FIRST BUFFER
89      DATA      CTBF4      ADR OF LAST BUFFER
90 CTBF2  ORG      CTBFSX+RECSIZ BUFFER 2
91      DATA      CTBF3      ADR OF THIRD BUFFER
92      ORG      CTBF2+RECSIZ BUFFER 3
93 CTBF3  DATA      CTBF4      ADR OF FOURTH BUFFER
94      ORG      CTBF3+RECSIZ BUFFER 4
95 CTBF4  DATA      0
96      BSS      RECSIZ-1
97 CTEND  EQU      *
98      END

```

```

00 00083
00 00084
00 00085
00 00086
00 00087
00 00088
00 00089
00 00090
00 00091
00 00092
00 00093
00 00094
00 00095
00 00096
00 00097
00 00098

```

ENTRY NAMES

000000 R CTSP2A

EXTERNAL NAMES

000000 E TBSP2A 000056 E V\$IQC 000065 E V\$SPIR

SYMBOLS

```

000203 R CTBF2 000315 R CTBF3 000427 R CTBF4 000071 R CTBFSX
000541 R CTEND 000000 R CTSP2A 000112 A RECSIZ 000153 A SRMB
000264 A STRO 000002 A STREAM 000000 E TBSP2A 000056 E V$IQC
000065 E V$SPIR 000001 A X 146260 A XX

```

0 ERRORS ASSEMBLY COMPLETE

```

90 CTBF2 92
93 CTBF3 91 94
95 CTBF4 89 93
87 CTBFSX 88 90
87 CTEND 65
63 CTSP2A 15 16
0 P 42 50
21 RECSIZ 97 90 92 94 96
26 SRMB 34
27 STRO 50
20 STREAM 81 82
0 TBSP2A 19 64
0 V$IQC 17 32 48
0 V$SPIR 18 36 53
83 X 32 48
41 XX 42

```



```

1 * THIS IS A COPYRIGHTED PROGRAM. COPYRIGHT 1972 BY VARIAN DATA MACHINE 00 00001
2 * 00 00002
3 * V.D.M. PART NO. 92L0605-165A 00 00003
4 * 00 00004
5 * 00 00005
6 * 00 00006
7 * 00 00007
8 * 00 00008
9 * 00 00009
10 * SPOOLER CONTROLLER TABLE 3 00 00010
11 * 00 00011
12 * 00 00012
13 * 00 00013
14 * 00 00014
15 * 00 00015
16 * 00 00016
17 * 00 00017
18 * 00 00018
19 * 00 00019
20 * 00 00020
21 * 00 00021
22 * 00 00022
23 * 00 00023
24 * 00 00024
25 * 00 00025
26 * 00 00026
27 * 00 00027
28 * 00 00028
29 * 00 00029
30 * 00 00030
31 * 00 00031
32 * 00 00032
33 * 00 00033
34 * 00 00034
35 * 00 00035
36 * 00 00036
37 * 00 00037
38 * 00 00038
39 * 00 00039
40 * 00 00040
41 * 00 00041
42 * 00 00042
43 * 00 00043
44 * 00 00044
45 * 00 00045
46 * 00 00046
47 * 00 00047
48 * 00 00048
49 * 00 00049
50 * 00 00050
51 * 00 00051
52 * 00 00052
53 * 00 00053
54 * 00 00054
55 * 00 00055
56 * 00 00056
57 * 00 00057
58 * 00 00058
59 * 00 00059
60 * 00 00060
61 * 00 00061
62 * 00 00062
63 * 00 00063
64 * 00 00064
65 * 00 00065
66 * 00 00066
67 * 00 00067
68 * 00 00068
69 * 00 00069
70 * 00 00070
71 * 00 00071
72 * 00 00072
73 * 00 00073
74 * 00 00074
75 * 00 00075
76 * 00 00076
77 * 00 00077
78 * 00 00078
79 * 00 00079
80 * 00 00080
81 * 00 00081
82 * 00 00082
83 * 00 00083
84 * 00 00084
85 * 00 00085
86 * 00 00086
87 * 00 00087
88 * 00 00088
89 * 00 00089
90 * 00 00090
91 * 00 00091
92 * 00 00092
93 * 00 00093
94 * 00 00094
95 * 00 00095
96 * 00 00096
97 * 00 00097
98 * 00 00098
99 * 00 00099
00 * 00 00100

```

000003 A 20 STREAM EQU 3
000112 A 21 RECSIZ EQU 74
000001 A 22 X EQU 1
23 CT MAC 107
24 SRMD EQU 130
25 STRO EQU 1,1,1,1,1,11
26 SS DATA *+015
27 SS DATA 0,0,1,1,1,0
28 DATA -1
29 JSR V\$IOCX
30 DATA 0100000 IO COMPLETE BIT
31 DATA 0100000+SRMD IMMEDIATE RETURN TO LUN SRMD
32 DATA *+0,0,0
33 JMP V\$SPIR
34 DATA 0,0
35 S EQU 0,0
36 S DATA 0,0,0,0
37 XX SET 'LQ'
38 DATA 'SP', 'DD', XX+P(1)
39 DATA 1,1,0
40 DATA 077777
41 DATA *+015
42 SS DATA 0,1,0,0,1,0
43 DATA -1
44 JSR V\$IOCX
45 DATA 0100000
46 DATA 0100000+STRO+P(1)
47 LATA *+5
48 DATA 0,0
49 JMP V\$SPIR
50 DATA 0,0,0
51 CMAC
52 EQUFC

63 CTSP3A EQU *
64 DATA CTSP3A CTIDB
65 DATA CTSTAD CTAINC
66 DATA CTSC CTCPM
67 DATA CTST CTBST
68 DATA CTSC CTROBK
69 DATA CTSC CTIRY = 0
70 DATA CTSC CTQVAB
71 DATA CTSC CTIDA
72 DATA CTSC CTIAT
73 DATA CTSC CTIAD
74 DATA CTSC CTICP
75 DATA CTSC CTIDB
76 DATA CTSC

80 DATA 1 CTACT
81 DATA STREAM CTBUT
82 CT STREAM SCT * DCT TABLES

```

000033 000000 E
000034 000000 A
000035 000000 A
000036 001723 A
000037 000001 A
000040 000000 A
000041 000000 A
000042 000000 A
000043 151720 A
000044 147717 A
000045 146263 A
000046 000001 A
000047 000001 A
000050 000000 A
000051 077777 A
000052 000067 R
000053 044000 A
000054 177777 A
000055 006505 A
000056 000024 E
000057 100000 A
000060 100267 A
000061 000066 R
000062 000000 A
000063 000000 A
000064 001000 A
000065 000033 E
000066 000000 A
000067 000000 A
000070 000000 A

```

```

83      EJEC
84 *
85 *      START OF BUFFER AREA
86 *
87 CTBFSX DATA *+RECSIZ POINTS TO NEXT BUFFER
88      DATA CTBFSX ADR OF FIRST BUFFER
89      DATA CTBFSX+RECSIZ START OF LAST BUFFER
90      ORG CTBFSX+RECSIZ BUFFER 2
91      DATA 0
92      BSS RECSIZ-1
93 CTEND EQU *
94      END

```

```

00 00083
00 00084
00 00085
00 00086
00 00087
00 00088
00 00089
00 00090
00 00091
00 00092
00 00093
00 00094

```

ENTRY NAMES

000000 R CTSP3A

EXTERNAL NAMES

000000 E TBSP3A 000056 E V\$IOC 000065 E V\$SPIR

SYMBOLS

```

000071 R CTBFSX 000315 R CTEND 000000 R CTSP3A 000112 A RECSIZ
000153 A SRMD 000264 A STRO 000003 A STREAM 000000 E TBSP3A
000056 E V$IOC 000065 E V$SPIR 000001 A X 146260 A XX

```

0 ERRORS ASSEMBLY COMPLETE

87	CTBFSX	88	89	90
93	CTEND	65		
63	CTSP3A	15	16	
0	P	42	50	
21	RECSIZ	87	89	90 92
26	SRMD	34		
27	STRO	50		
20	STREAM	81	82	
0	TBSP3A	19	64	
0	V\$IOC	17	32	48
0	V\$SPIR	18	36	53
23	X	32	48	
41	XX	42		

```

1 * THIS IS A COPYRIGHTED PROGRAM. COPYRIGHT 1972 BY VARIAN DATA MACHINE 00 00001
2 ***** 00 00002
3 V.D.M. PART NO. 9210605-166A 00 00003
4 ***** 00 00004
5 ***** 00 00005
6 ***** 00 00006
7 ***** 00 00007
8 ***** 00 00008
9 ***** 00 00009

```

RELEASED 03/01/74

SPDOLER CONTROLLER TABLE 4

```

10 *****
11 *****
12 *****
13 *****
14 *
15 TITLE CTSP4A
16 NAME CTSP4A
17 EXT V$10C
18 EXT V$SPIR
19 EXT 1$SP4A
000004 A 20 STREAM EQU 4
000112 A 21 RECSIZ EQU 74
000001 A 22 X EQU 1
23 CT MAC
24 SRMD EQU 107
25 STR0 EQU 100
26 SS FORM 1,1,1,1,1,11
27 DATA *+015
28 SS 0,0,1,1,1,0
29 DATA -1
30 JOP V$10C,X
31 DATA 0100000 IO COMPLETE BIT
32 DATA 0100000+SRMD IMMEDIATE RETURN TO LUN SRMD
33 DATA *+0,0,0
34 JOP V$SPIR
35 DATA 0,0
36 S FORM 0,0
37 DATA 0,0,0
38 XX LET 'L0'
39 DATA 'JOP', '00', 'XX+P(1)'
40 DATA 1,1,0
41 DATA 022227
42 DATA *+015
43 SS 0,1,0,0,1,0
44 DATA -1
45 JOP V$10C,X
46 DATA 0100000
47 DATA 0100000+STR0+P(1)
48 DATA *+0
49 DATA 0,0
50 JOP V$SPIR
51 DATA 0,0,0
52 MAC
53 DATA
54 *****
55 *****
56 *****
57 *****
58 *****
59 *****
60 *****
61 *****
62 *****
63 CTSP4A EQU *
64 DATA 1$SP4A CTIDR
65 DATA CTEND CTABNC
66 DATA 000 CTAPM
67 DATA 0 CTAST
68 DATA 0 CTABOK
69 DATA 0 CTAPRY = 0
70 DATA 123456 CTAVAB
71 DATA 0 CTIDR
72 DATA 0 CTISST
73 DATA 0 CTIDR
74 DATA 0 CTIDR
75 DATA 0 CTIDR
76 DATA 0,0 CTIDR
77 *****
78 *****
79 *****
80 DATA -1 CTROI
81 DATA STREAM CTROF
82 CT STREAM SCT + DCT TABLES

```

E.2 *****

CONTROLLER TABLE FOR SPDOLER UNIT 4 FOR VORTEX SYSTEMS

```

000000 000000 R
000001 000541 R
000002 000056 R
000003 000000 A
000004 000000 A
000005 000000 A
000006 123456 A
000007 000000 S
000010 000000 A
000011 000000 A
000012 000000 A
000013 000000 A
000014 000000 S
000015 000000 A
000016 177777 A
000017 000004 A
000020 000035 R
000021 034000 A
000022 177777 A
000023 006505 A
000024 000000 E
000025 100000 A
000026 100133 A
000027 000034 R
000030 000000 A
000031 000000 A
000032 001000 A

```

```

000033 000000 E
000034 000000 A
000035 000000 A
000036 001723 A
000037 000001 A
000040 000000 A
000041 000000 A
000042 000000 A
000043 151720 A
000044 147717 A
000045 146264 A
000046 000001 A
000047 000001 A
000050 000000 A
000051 077777 A
000052 000067 R
000053 044000 A
000054 177777 A
000055 006505 A
000056 000024 E
000057 100000 A
000060 100270 A
000061 000066 R
000062 000000 A
000063 000000 A
000064 001000 A
000065 000033 E
000066 000000 A
000067 000000 A
000070 000000 A

```

```

83      EJEC
84 *
85 *      START OF BUFFER AREA
86 *
87 CTBFSX DATA *+RECSIZ      POINTS TO NEXT BUFFER
88      DATA CTBFSX      ADR OF FIRST BUFFER
89      DATA CTBF4      ADR OF LAST BUFFER
90 CTBF2  ORG CTBFSX+RECSIZ BUFFER 2
91      DATA CTBF3      ADR OF THIRD BUFFER
92      ORG CTBF2+RECSIZ BUFFER 3
93 CTBF3  DATA CTBF4      ADR OF FOURTH BUFFER
94      ORG CTBF3+RECSIZ BUFFER 4
95 CTBF4  DATA 0
96      BSS RECSIZ-1
97 CTEND  EQU *
98      END

```

```

00 00083
00 00084
00 00085
00 00086
00 00087
00 00088
00 00089
00 00090
00 00091
00 00092
00 00093
00 00094
00 00095
00 00096
00 00097
00 00098

```

ENTRY NAMES

000000 R CTSP4A

EXTERNAL NAMES

000000 E TBSP4A 000056 E V\$IOC 000065 E V\$SPIR

SYMBOLS

```

000203 R CTBF2 000315 R CTBF3 000427 R CTBF4 000071 R CTBFSX
000541 R CTEND 000000 R CTSP4A 000112 A RECSIZ 000153 A SRMD
000264 A STR0 000004 A STREAM 000000 E TBSP4A 000056 E V$IOC
000065 E V$SPIR 000001 A X 146250 A XX
0 ERRORS ASSEMBLY COMPLETE

```

```

90 CTBF2 92
93 CTBF3 91 94
95 CTBF4 89 93
87 CTBFSX 88 90
97 CTEND 65
63 CTSP4A 15 16
0 P 42 50
21 RECSIZ 87 90 92 94 96
26 SRMD 34
27 STR0 50
20 STREAM 91 82
0 TBSP4A 19 64
0 V$IOC 17 32 48
0 V$SPIR 18 36 53
23 X 32 48
41 XX 42

```

```

1 * THIS IS A COPYRIGHTED PROGRAM. COPYRIGHT 1972 BY VARIAN DATA MACHINE 00 00001
2 *** 00 00002
3 V.D.M. PART NO. 92L0605-167A 00 00003
4 *** 00 00004
5 *** 00 00005
6 *** 00 00006
7 *** 00 00007
8 *** 00 00008
9 *** 00 00009
10 SPOOLER CONTROLLER TABLE 5 00 00010
11 *** 00 00011
12 *** 00 00012
13 *** 00 00013
14 *** 00 00014
15 TITLE CTSP5A 00 00015
16 NAME CTSP5A 00 00016
17 EXT VSIDC 00 00017
18 EXT VSPIR 00 00018
19 EXT TSP5A 00 00019
20 STREAM EQU 5 00 00020
000005 A 21 RECSIZ EQU 74 E.2 *****
000112 A 22 EJECT EQU 1 00 00022
23 X EQU 1 00 00023
24 CT MAC 00 00024
25 SRMD EQU 107 00 00025
26 STR0 EQU 180 00 00026
27 SS EQU 1,1,1,1,1,11 00 00027
28 SS DATA *+015 00 00028
29 SS DATA 0,1,1,1,1,0 00 00029
30 DATA -1 00 00030
31 JSR VSIDC,X 00 00031
32 DATA 0100000 ID COMPLETE BIT 00 00032
33 DATA 0100000+SRMD IMMEDIATE RETURN TO LUN SRMD 00 00033
34 DATA 7+0,0,0 00 00034
35 JMP VSPIR 00 00035
36 DATA 0,0 00 00036
37 S EQU 0,0 00 00037
38 S EQU 0,1,0,0 00 00038
39 XX SET 'L0', '00', XX+P(1) 00 00039
40 DATA 1,1,0 00 00040
41 DATA 022777 00 00041
42 DATA *+015 00 00042
43 SS 0,1,0,0,1,0 00 00043
44 DATA 0 00 00044
45 JSR VSIDC,X 00 00045
46 DATA 0100000 00 00046
47 DATA 0100000+STR0+P(1) 00 00047
48 DATA 0,0 00 00048
49 JMP VSPIR 00 00049
50 DATA 0,0,0 00 00050
51 EQU 0 00 00051
52 EQU 0 00 00052
53 EQU 0 00 00053
54 EQU 0 00 00054
55 EQU 0 00 00055
56 EQU 0 00 00056
57 EQU 0 00 00057
58 EQU 0 00 00058
59 EQU 0 00 00059
60 EQU 0 00 00060
61 EQU 0 00 00061
62 EQU 0 00 00062
63 CTSP5A EQU 0 00 00063
64 EQU 0 00 00064
65 EQU 0 00 00065
66 EQU 0 00 00066
67 EQU 0 00 00067
68 EQU 0 00 00068
69 EQU 0 00 00069
70 EQU 123456 00 00070
71 EQU 0 00 00071
72 EQU 0 00 00072
73 EQU 0 00 00073
74 EQU 0 00 00074
75 EQU 0 00 00075
76 EQU 0 00 00076
77 * 00 00077
78 * 00 00078
79 * 00 00079
80 DATA -1 CTACT 00 00080
81 DATA STREAM CTPUF 00 00081
82 CT STREAM SCT + DCT TABLES 00 00082
000020 000035 R 00 00083
000021 034000 A 00 00084
000022 177777 A 00 00085
000023 005503 A 00 00086
000024 000000 E 00 00087
000025 100000 A 00 00088
000026 100153 A 00 00089
000027 000034 R 00 00090
000030 000000 A 00 00091
000031 000000 A 00 00092
000032 001000 A 00 00093

```

```

000033 000000 E
000034 000000 A
000035 000000 A
000036 001723 A
000037 000001 A
000040 000000 A
000041 000000 A
000042 000000 A
000043 151720 A
000044 147717 A
000045 146263 A
000046 000001 A
000047 000001 A
000050 000000 A
000051 077777 A
000052 000067 R
000053 044000 A
000054 177777 A
000055 006505 A
000056 000024 E
000057 100000 A
000060 100271 A
000061 000066 R
000062 000000 A
000063 000000 A
000064 001000 A
000065 000033 E
000066 000000 A
000067 000000 A
000070 000000 A

```

```

83      EJEC
84 *
85 *      START OF BUFFER AREA
86 *
87 CTBFSX DATA *RECSIZ      POINTS TO NEXT BUFFER
88      DATA CTBFSX      ADR OF FIRST BUFFER
89      DATA CTBFSX+RECSIZ START OF LAST BUFFER
90      ORG   CTBFSX+RECSIZ BUFFER 2
91      DATA 0
92      BSS   RECSIZ-1
93 CTEND   EQU   *
94      END

```

```

00 00083
00 00084
00 00085
00 00086
00 00087
00 00088
00 00089
00 00090
00 00091
00 00092
00 00093
00 00094

```

```

000071 000203 R
000072 000071 R
000073 000203 R
000203 000000 A
000204 000315 R

```

ENTRY NAMES

000000 R CTSP5A

EXTERNAL NAMES

000000 E TBSP5A 000056 E V\$IDC 000065 E V\$SPIR

SYMBOLS

```

000071 R CTBFSX 000315 R CTEND 000000 R CTSP5A 000112 A RECSIZ
000153 A SRMD 000264 A STRO 000005 A STREAM 000000 E TBSP5A
000056 E V$IDC 000065 E V$SPIR 000001 A X 146260 A XX
0 ERRORS ASSEMBLY COMPLETE

```

```

87 CTBFSX 88 89 90
93 CTEND 65
63 CTSP5A 15 16
0 P 42 50
21 RECSIZ 87 89 90 92
26 SRMD 34
27 STRO 50
20 STREAM 81 82
0 TBSP5A 19 64
0 V$IDC 17 32 48
0 V$SPIR 18 36 53
23 X 32 48
41 XX 42

```

```

1 * THIS IS A COPYRIGHTED PROGRAM. COPYRIGHT 1972 BY VARIAN DATA MACHINE 00 00001
2 * 00 00002
3 * V.D.M. PART NO. 92L0605-163A 00 00003
4 * 00 00004
5 * 00 00005
6 * 00 00006
7 * 00 00007
8 * 00 00008
9 * 00 00009

```

RELEASED 03/01/74

SPDOLER CONTROLLER TABLE 6

```

10 *
11 *
12 *
13 *
14 *
15 TITLE CTSP6A 00 00015
16 NAME CTSP6A 00 00016
17 EXT V%IOC 00 00017
18 EXT V%SPIR 00 00018
19 EXT %SSP6A 00 00019
20 STREAM EQU 00 00020
21 RECSIZ EQU 24 00 00021
22 EQU 00 00022
23 X EQU 1 00 00023
24 EQU 00 00024
25 EQU 00 00025
26 SRMD EQU 107 00 00026
27 STR0 EQU 100 00 00027
28 EQU 00 00028
29 EQU 00 00029
30 EQU 00 00030
31 EQU 00 00031
32 EQU 00 00032
33 EQU 00 00033
34 EQU 00 00034
35 EQU 00 00035
36 EQU 00 00036
37 EQU 00 00037
38 EQU 00 00038
39 EQU 00 00039
40 EQU 00 00040
41 XX SET 'L0' 00 00041
42 EQU 00 00042
43 EQU 00 00043
44 EQU 00 00044
45 EQU 00 00045
46 EQU 00 00046
47 EQU 00 00047
48 EQU 00 00048
49 EQU 00 00049
50 EQU 00 00050
51 EQU 00 00051
52 EQU 00 00052
53 EQU 00 00053
54 EQU 00 00054
55 EQU 00 00055
56 EQU 00 00056
57 EQU 00 00057
58 EQU 00 00058
59 EQU 00 00059
60 EQU 00 00060

```

ID COMPLETE BIT
IMMEDIATE RETURN TO LUN SRMD

CONTROLLER TABLE FOR SPDOLER UNIT 6

FOR VORTEX SYSTEMS

```

61 *
62 *
63 CTSP6A EQU 00 00063
64 EQU 00 00064
65 EQU 00 00065
66 EQU 00 00066
67 EQU 00 00067
68 EQU 00 00068
69 EQU 00 00069
70 EQU 00 00070
71 EQU 00 00071
72 EQU 00 00072
73 EQU 00 00073
74 EQU 00 00074
75 EQU 00 00075
76 EQU 00 00076

```

SPECIAL SPDOLER PARAMETERS

```

77 *
78 *
79 *
80 EQU 00 00080
81 EQU 00 00081
82 EQU 00 00082
83 EQU 00 00083
84 EQU 00 00084
85 EQU 00 00085
86 EQU 00 00086
87 EQU 00 00087
88 EQU 00 00088
89 EQU 00 00089
90 EQU 00 00090
91 EQU 00 00091
92 EQU 00 00092

```

```

000033 000000 E
000034 000000 A
000035 000000 A
000036 001723 A
000037 000001 A
000040 000000 A
000041 000000 A
000042 000000 A
000043 151720 A
000044 147717 A
000045 146266 A
000046 000001 A
000047 000001 A
000050 000000 A
000051 077777 A
000052 000067 R
000053 044000 A
000054 177777 A
000055 006503 A
000056 000024 E
000057 100000 A
000060 100272 A
000061 000066 R
000062 000000 A
000063 000000 A
000064 001000 A
000065 000033 E
000066 000000 A
000067 000000 A
000070 000000 A

```

```

83      EJEC
84 *
85 *      START OF BUFFER AREA
86 *
000071 000203 R 87 CTBFSX DATA *+RECSIZ POINTS TO NEXT BUFFER
000072 000071 R 88      DATA CTBFSX ADR OF FIRST BUFFER
000073 000427 R 89      DATA CTBF4 ADR OF LAST BUFFER
000203 000315 R 90 CTBF2 DRG CTBFSX+RECSIZ BUFFER 2
000315 000315 R 91      DATA CTBF3 ADR OF THIRD BUFFER
000315 000427 R 92      DRG CTBF2+RECSIZ BUFFER 3
000427 000000 A 93 CTBF3 DATA CTBF4 ADR OF FOURTH BUFFER
000427 000000 A 94      DRG CTBF3+RECSIZ BUFFER 4
000430 000541 R 95 CTBF4 DATA 0
96      BSS RECSIZ-1
97 CTEND EQU *
98      END

```

```

00 00083
00 00084
00 00085
00 00086
00 00087
00 00088
00 00089
00 00090
00 00091
00 00092
00 00093
00 00094
00 00095
00 00096
00 00097
00 00098

```

ENTRY NAMES

000000 R CTSP6A

EXTERNAL NAMES

000000 E TBSP6A 000056 E V\$IDC 000065 E V\$SPIR

SYMBOLS

```

000203 R CTBF2 000315 R CTBF3 000427 R CTBF4 000071 R CTBFSX
000541 R CTEND 000000 R CTSP6A 000112 A RECSIZ 000153 A SRMD
000264 A STRO 000006 A STREAM 000000 E TBSP6A 000056 E V$IDC
000065 E V$SPIR 000001 A X 146260 A XX

```

0 ERRORS ASSEMBLY COMPLETE

```

90 CTBF2 92
93 CTBF3 91 94
95 CTBF4 89 93
87 CTBFSX 88 90
97 CTEND 65
63 CTSP6A 15 16
0 P 42 50
21 RECSIZ 87 90 92 94 96
26 SRMD 34
27 STRO 50
20 STREAM 81 82
0 TBSP6A 19 64
0 V$IDC 17 32 48
0 V$SPIR 18 36 53
23 X 32 48
41 XX 42

```



```

1 * THIS IS A COPYRIGHTED PROGRAM. COPYRIGHT 1972 BY VARIAN DATA MACHINE 00 00001
2 * 00 00002
3 * V.D.M. PART NO. 92L0605-169A 00 00003
4 * 00 00004
5 * 00 00005
6 * 00 00006
7 * 00 00007
8 * 00 00008
9 * 00 00009

```

RELEASED 03/01/74

SPooler Controller Table 7

```

10 *
11 *
12 *
13 *
14 *
15 * TITLE CTSP7A 00 00015
16 * NAME CTSP7A 00 00016
17 * EXT V$1DC 00 00017
18 * EXT V$3PIR 00 00018
19 * EXT TRSP7A 00 00019
000007 A 20 * STREAM EQU 7 00 00020
000112 A 21 * RECSIZ EQU 74 00 00021
000001 A 22 * EQU 1 00 00022
23 * X EQU 1 00 00023
24 * CT MAC 00 00024
25 * SRMD EQU 107 00 00025
26 * STRO EQU 100 00 00026
27 * SS FORM 1,1,1,1,1,11 00 00027
28 * DATA *+015 00 00028
29 * SS 0,0,1,1,1,0 00 00029
30 * DATA -1 00 00030
31 * JSR V$1DC,X 00 00031
32 * DATA 0100000 00 00032
33 * DATA 0100000+SRMD ID COMPLETE BIT 00 00033
34 * DATA *+5,0,0 IMMEDIATE RETURN TO LUN SRMD 00 00034
35 * JMP V$3PIR 00 00035
36 * DATA 0,0 00 00036
37 * S FORM 0,0 00 00037
38 * S 0,1,0 00 00038
39 * DATA 1,0,0,0 00 00039
40 * XX SET 'L0' 00 00040
41 * DATA '00', '00', XX+P(1) 00 00041
42 * DATA 1,1,0 00 00042
43 * DATA 077777 00 00043
44 * DATA *+015 00 00044
45 * SS 0,1,0,0,1,0 00 00045
46 * DATA -1 00 00046
47 * JSR V$1DC,X 00 00047
48 * DATA 0100000 00 00048
49 * DATA 0100000+STRO+P(1) 00 00049
50 * DATA *+5 00 00050
51 * DATA 0,0 00 00051
52 * JMP V$3PIR 00 00052
53 * DATA 0,0,0 00 00053
54 * EMAC 00 00054
55 * EQU 00 00055
56 *
57 *
58 *
59 *
60 *
61 *
62 *

```

CONTROLLER TABLE FOR SPOOLER UNIT 7

FOR VORTEX SYSTEMS

```

63 * CTSP7A EQU Y 00 00063
000000 000000 R 64 * DATA TRSP7A CTI08 00 00064
000001 000315 R 65 * DATA CTI09 CTI09C 00 00065
000002 000056 A 66 * DATA 056 CTI0F 00 00066
000003 000000 A 67 * DATA 0 CTI0T 00 00067
000004 000000 A 68 * DATA 0 CTI0PK 00 00068
000005 000000 A 69 * DATA 0 CTI0RY = 0 00 00069
000006 123456 A 70 * DATA 0123456 CTI0V0 00 00070
000007 000000 A 71 * DATA 0 CTI0A 00 00071
000010 000000 A 72 * DATA 0 CTI0T0T 00 00072
000011 000000 A 73 * DATA 0 CTI0L0 00 00073
000012 000000 A 74 * DATA 0 CTI0P 00 00074
000013 000000 A 75 * DATA 0 CTI0S 00 00075
000014 000000 A 76 * DATA 0 00 00076
000015 000000 A

```

SPECIAL SPOOLER PARAMETERS

```

77 *
78 *
79 *
000016 177777 A 80 * DATA -1 CTI0T 00 00080
000017 000007 A 81 * DATA STREAM CTI0UF 00 00081
82 * CT STREAM CTI0SCT + DCT TABLES 00 00082
000020 000035 R
000021 034000 A
000022 177777 A
000023 006503 A
000024 000000 E
000025 100000 A
000026 100153 A
000027 000034 R
000030 000000 A
000031 000000 A
000032 001000 A

```

```

000033 000000 E
000034 000000 A
000035 000000 A
000036 001723 A
000037 000001 A
000040 000000 A
000041 000000 A
000042 000000 A
000043 151720 A
000044 147717 P
000045 146267 A
000046 000001 A
000047 000001 A
000050 000000 A
000051 077777 A
000052 000067 R
000053 044000 A
000054 177777 A
000055 006503 A
000056 000024 E
000057 100000 A
000060 100273 A
000061 000066 R
000062 000000 A
000063 000000 A
000064 001000 A
000065 000033 E
000066 000000 A
000067 000000 A
000070 000000 A

```

```

83      EJEC
84 *
85 *      START OF BUFFER AREA
86 *
87 CTBFSX DATA *+RECSIZ POINTS TO NEXT BUFFER
88      DATA CTBFSX ADR OF FIRST BUFFER
89      DATA CTBFSX+RECSIZ START OF LAST BUFFER
90      DRG CTBFSX+RECSIZ BUFFER 2
91      DATA 0
92      BSS RECSIZ-1
93 CTEND EQU *
94      END

```

```

00 00083
00 00084
00 00085
00 00086
00 00087
00 00088
00 00089
00 00090
00 00091
00 00092
00 00093
00 00094

```

ENTRY NAMES

000000 R CTSP7A

EXTERNAL NAMES

000000 E TBSP7A 000056 E V\$IDC 000065 E V\$SPIR

SYMBOLS

```

000071 R CTBFSX 000315 R CTEND 000000 R CTSP7A 000112 A RECSIZ
000153 A SRMD 000264 A STRO 000007 A STREAM 000000 E TBSP7A
000056 E V$IDC 000065 E V$SPIR 000001 A X 146260 A XX

```

0 ERRORS ASSEMBLY COMPLETE

87	CTBFSX	88	89	90
93	CTEND	65		
63	CTSP7A	15	16	
0	P	42	50	
21	RECSIZ	87	89	90 92
26	SRMD	34		
27	STRO	50		
20	STREAM	81	82	
0	TBSP7A	19	64	
0	V\$IDC	17	32	48
0	V\$SPIR	18	36	53
23	X	32	48	
41	XX	42		

```

000001 A 1 VORTEX SET 1 PUT LAST FOR VORTEX V2 04 00001
2 * THIS IS A COPYRIGHTED PROGRAM.COPYRIGHT 1972 BY VARIAN DATA MACHINES 04 00002
3 * 04 00003
4 * V.D.M. PART NO. 92L0605-094D 04 00004
5 * 04 00005
6 * 04 00006
7 * RELEASED 03/01/74 04 00007
8 * 04 00008
9 * 04 00009
10 * 04 00010
11 * 04 00011
12 ***** 04 00012
13 **** TIDB SETUP **** 04 00013
14 * 04 00014
15 ***** 04 00015
000000 A 17 TBTRD EQU 0 TASK THREAD 04 00017
000001 A 18 TBST EQU 1 TASK STATUS 04 00018
000002 A 19 TBPL EQU 2 STATUS CONT. (BITS15-6),PRIORITY LEVEL(5-0) 04 00019
000003 A 20 TBEVNT EQU 3 INTERRUPT EVENT 04 00020
000004 A 21 TBRSA EQU 4 A REENTRANT AND SUSPEND STACK 04 00021
000005 A 22 TBRSE EQU 5 B REENTRANT AND SUSPEND STACK 04 00022
000006 A 23 TBRX EQU 6 X REENTRANT AND SUSPEND STACK 04 00023
000007 A 24 TBRSP EQU 7 DF/P REENTRANT AND SUSPEND STACK 04 00024
000010 A 25 TBRSTS EQU 8 TEMP. STG. REENTRANT AND SUSPEND STACK 04 00025
000011 A 26 TBEVNT EQU 9 TASK ENTRY LOCATION 04 00026
000012 A 27 TBTMS EQU 10 TIME COUNTER - CLOCK RESOLUTION IN SMS INC 04 00027
000013 A 28 TBTMIN EQU 11 TIME COUNTER - CLOCK MINUTE INCREMENTS 04 00028
000014 A 29 TBISA EQU 12 A INTERRUPT STACK 04 00029
000015 A 30 TBISB EQU 13 B INTERRUPT STACK 04 00030
000016 A 31 TBISX EQU 14 X INTERRUPT STACK 04 00031
000017 A 32 TBISP EQU 15 DF/P INTERRUPT STACK 04 00032
000020 A 33 TBISRS EQU 16 REENT. STACK INTERRUPT STACK 04 00033
000021 A 34 TEID EQU 17 BLK ALLOC(13-10),I/O THR(9-5),I/O ACT(4-0) 04 00034
000022 A 35 TBKN1 EQU 18 TASK NAME 04 00035
000023 A 36 TBKN2 EQU 19 TASK NAME 04 00036
000024 A 37 TBKN3 EQU 20 TASK NAME 04 00037
000025 A 38 TBTLG EQU 21 1ST LOC. OF TASK ALLOCATABLE 04 00038
000026 A 39 TBCPIH EQU 22 BACKGROUND TASK QUEUE 04 00039
000027 A 40 TBATSK EQU 23 TIDB LOC. OF ACTIVATING TASK 04 00040
000030 A 41 TBRSE EQU 24 TASK ERROR CODE 04 00041
42 1ST 04 00042
43 0010 VORTEX-2 V2 04 00043
44 0010 ENDC01 V2 04 00044
45 TBISZ EQU 25 TASK SIZE, BITS 13-10 V2 04 00045
46 YDHULL EQU 26 NUCLEUS MODULE INDICATOR, BITS 15-08 V2 04 00046
47 TBKEY EQU 27 TASK'S MAP KEY, BITS 03-00 V2 04 00047
48 TBIMG EQU 28 TASK'S MAP IMAGE V2 04 00048
49 ENDC01 CONT V2 04 00049
50 0010 04 00050
51 ***** 04 00051
52 * 04 00052
53 **** TASK STATUS DESCRIPTION (BIT SET WORD 1) **** 04 00053
54 * 04 00054
55 ***** 04 00055
000017 A 57 TB015 EQU 15 INTERRUPT SUSPEND 04 00057
000016 A 58 TB014 EQU 14 TASK SUSPEND 04 00058
000015 A 59 TB013 EQU 13 TASK ABORT 04 00059
000014 A 60 TB012 EQU 12 TASK EXIT 04 00060
000013 A 61 TB011 EQU 11 TIDB CORE RESIDENT 04 00061
000012 A 62 TB010 EQU 10 CORE RESIDENT TASK 04 00062
000011 A 63 TB009 EQU 9 FOREGROUND TASK 04 00063
000010 A 64 TB008 EQU 8 TASK PROTECTED 04 00064
000007 A 65 TB007 EQU 7 TASK SCHEDULED BY TIME DELAY 04 00065
000006 A 66 TB006 EQU 6 TIME DELAY ACTIVE 04 00066
000005 A 67 TB005 EQU 5 TASK WAITING TO BE LOADED 04 00067
000004 A 68 TB004 EQU 4 TASK ERROR 04 00068
000003 A 69 TB003 EQU 3 TASK INTERRUPT EXPECTED 04 00069
000002 A 70 TB002 EQU 2 OVERLAY TASK 04 00070
000001 A 71 TB001 EQU 1 UPON PERMISSION ACTIVATE TASK SCHED TASK 04 00071
000000 A 72 TB000 EQU 0 TASK SEARCH-ALLOCATED-LOADER 04 00072
73 0010 04 00073
74 0010 04 00074
75 0010 04 00075
76 0010 04 00076
77 0010 04 00077
78 0010 04 00078
79 ***** 04 00079
80 * 04 00080
81 **** TASK STATUS DESCRIPTION (BIT SET WORD 2) **** 04 00081
82 * 04 00082
83 ***** 04 00083
84 * 04 00084
85 * BIT 15 - TASK OPENED 04 00085
86 * BIT 14 - UNUSED 04 00086
87 * BIT 13 - OVERLAY LOAD 04 00087
88 * BIT 12 - TASK WAITING FOR BACKGROUND TASK I/O TO COMPLETE 04 00088
89 * TASK LOCKED OUT UNTIL CC I/O COMPLETS OR BIT 11 04 00089
90 * IS SET (ALLOCATABLE SPACE AVAILABLE) 04 00090
91 * 04 00091
92 * BIT 11 - DEFINES THAT ALLOCATABLE SPACE IS AVAILABLE, TRY 04 00092
93 * ALLOCATING TASK AGAIN. OVERRIDES BIT 12 SET OR 04 00093
94 * BIT 5 IN STATUS WORD. 04 00094
95 * 04 00095
96 * BIT 10 - BACKGROUND TASK BEING WRITTEN ON CHECKPOINT FILE. 04 00096
97 * TASK WAITING FOR A FILE TO COME AVAILABLE FOR 04 00097
98 * SCHEDULING. 04 00098
99 * 04 00099
100 * BIT 8 TO 6 - UNUSED 04 00100
101 EQUFC 04 00101
102 ***** 04 00102
103 * 04 00103
104 **** JOB PROCESSOR LOW CORE EQUATES ** 04 00104

```

105	*						04	00	105
106	*****						04	00	106
000050	A	108	LCJP	EQU	050				04 00108
000050	A	109	V\$JNAM	EQU	LCJP	JCP NAME			04 00109
000054	A	110	V\$LCMT	EQU	LCJP+4	LINE COUNT			04 00110
000055	A	111	V\$JCFG	EQU	LCJP+5	JCP FLAGS			04 00111
		112	*			BIT 2-0 = LOAD AND GO FLAGS			04 00112
		113	*			BIT 3 = DUMP FLAG 1=DUMP, 0=NO DUMP			04 00113
		114	*			BIT 4 = DUMP FLAG IF LOAD AND GO			04 00114
		115	*			BIT 9-5 = UNUSED			04 00115
		116	*			BIT 15-10 = BG EXTRA CORE BLOCKS TO ALLOC			04 00116
000056	A	118	V\$BIC1	EQU	LCJP+6	BIC INTERRUPT ADDRESS TABLE (10 WORDS)			04 00118
000070	A	119	V\$DATE	EQU	LCJP+16	JCP DATE RECORD			04 00119
000074	A	120	V\$PLCT	EQU	LCJP+20	PERMIMATE LINE COUNT			04 00120
000075	A	121	V\$BGLB	EQU	LCJP+21	JCP LIB KEY AND LU NO. (BACKGROUND LIB)			04 00121
000076	A	122	V\$CRDM	EQU	LCJP+22	CARD KEYPUNCH TYPE, 0=026, 1=029			04 00122
		123	*			BIT 0 = SYSTEM NOMINAL KEYPUNCH MODE.			04 00123
		124	*			BIT 9 = CURRENT JOB KEYPUNCH MODE.			04 00124
000077	A	125	V\$JCTM	EQU	LCJP+23	TEMP. STORAGE FOR /MEM BLOCK			04 00125
		126	EJEC						04 00126
		127	*****						04 00127
		128	*						04 00128
		129	****		LOW CORE DESCRIPTION				04 00129
		130	*						04 00130
		131	*****						04 00131
000300	A	133	LC	EQU	0300	CURRENT TASK TIDB LOCATION			04 00133
000300	A	134	V\$CTL	EQU	LC	CURRENT PRIORITY LEVEL			04 00134
000301	A	135	V\$CPL	EQU	LC+1	CURRENT REENTRANT STACK POINTER			04 00135
000302	A	136	V\$CRS	EQU	LC+2	POINTER TO HIGHEST PRIORITY TIDB			04 00136
000303	A	137	V\$TB	EQU	LC+3	POINTER TO UNUSED TASK TIDB			04 00137
000304	A	138	V\$UTB	EQU	LC+4	POINTER TO NEXT ENTRY IN REENTRANT STACK			04 00138
000305	A	139	V\$PTVB	EQU	LC+5	FIRST LOC. OF REENTRANT STACK			04 00139
000306	A	140	V\$FLRS	EQU	LC+6	LAST LOC. OF REENTRANT STACK+1			04 00140
000307	A	141	V\$LRSK	EQU	LC+7	CHECKPOINT FLAG 1=ON, 0=OFF			04 00141
000310	A	142	V\$CKPT	EQU	LC+8	LOC. OF TIDB FOR OPCOM TASK			04 00142
000311	A	143	V\$OPCL	EQU	LC+9	LOC. OF TIDB FOR SYSTEM SAL TASK			04 00143
000312	A	144	V\$LSAL	EQU	LC+10	LOC. OF TIDB FOR SYSTEM ERROR TASK			04 00144
000313	A	145	V\$LER	EQU	LC+11	LOC. OF TIDB FOR JOB CONTROL PROCESSOR TAS			04 00145
000314	A	146	V\$TJCP	EQU	LC+12	LOC. OF CURRENT ACTIVE BACKGROUND TSK TIDB			04 00146
000315	A	147	V\$BTB	EQU	LC+13	ASSEMBLE FOR VORTEX II	V2		04 00148
		148	IFT		VORTEX-2	NUMBER OF AVAILABLE PAGES IN V\$PAGE	V2		04 00149
		149	GOTO		LC+14	POINTER OF LAST WORD TESTED IN V\$PAGE	V2		04 00150
		150	V\$NPAG	EQU	LC+15	ASSEMBLE IF NOT VORTEX II	V2		04 00151
		151	V\$LPP	EQU		LOC. OF 1ST UNPROTECTED WORD			04 00152
		152	LC+1	CONT		LOC. OF LAST UNPROTECTED WORD	V2		04 00153
		153	IFF		VORTEX-2	INTERRUPT MASK (8 WORDS)	V2		04 00154
		154	GOTO		LC+16	MEMORY PROTECT MASK (4 WORDS)	V2		04 00155
000316	A	155	V\$LUP	EQU		CORE ALLOCATION MASK (4 WORDS)	V2		04 00156
000317	A	156	V\$LLUP	EQU		UNUSED	V2		04 00157
		157	LC+2	CONT		ASSEMBLE IF VORTEX II	V2		04 00158
000320	A	158	V\$IM	EQU		MAP KEY AVAILABILITY MASK	V2		04 00159
		159	IFT		VORTEX-2	BOTTOM OF NUCLEUS TABLE MODULE	V2		04 00160
		160	GOTO		LC+24	GLOBAL FCB MODULE	V2		04 00161
000330	A	161	V\$MPM	EQU		MAP 0 IMAGE ADDRESS	V2		04 00162
000334	A	162	V\$CAM	EQU		FUNC 1 CONTROL WORD TO SWITCH EXECUTIVE	V2		04 00163
		163	*		LC+28	MODE STATES: V\$ST0- STATE 0	V2		04 00164
		164	LC+3	CONT	LC+32	V\$ST1- STATE 1	V2		04 00165
		165	IFT			ETC	V2		04 00166
		166	GOTO			EXECUTING TASK'S MAP KEY	V2		04 00167
		167	V\$MAP	EQU		CORE RESIDENT DIRECTORY LOCATION	V2		04 00168
		168	V\$BTBM	EQU		TOP OF THREAD OF BG TSK WAITING TO BE ALLO	V2		04 00169
		169	V\$GFCB	EQU		TIME OF DAY IN 5 MILLISECOND INCREMENTS	V2		04 00170
		170	V\$MIMG	EQU		TIME OF DAY IN MINUTE INCREMENTS	V2		04 00171
		171	V\$ST0	EQU		ADDR. OF LOGICAL UNIT NAME TABLE	V2		04 00172
		172	V\$ST1	EQU		OPCOM LOCKOUT FLAG	V2		04 00173
		173	V\$ST2	EQU		KEY AND LU NO. FOR FOREGROUND LIB	V2		04 00174
		174	V\$ST3	EQU		FREE RUNNING COUNTER INCR. IN MICROSECONDS	V2		04 00175
		175	V\$KEY	EQU		CLOCK RESOLUTION IN 5 MILLISECOND INCR.	V2		04 00176
		176	LC+4	CONT		CLOCK SELECTED COUNT VALUE (1 TO 4095)	V2		04 00177
000341	A	177	V\$CRDR	EQU		BASIC CLOCK INTERRUPT RATE IN MICROSECONDS	V2		04 00178
000342	A	178	V\$TBGT	EQU		CLOCK RESOLUTION INCR. FOR 1 MINUTE.	V2		04 00179
000343	A	179	V\$TMS	EQU		BASE ADDR. FOR DST BLOCK	V2		04 00180
000344	A	180	V\$TMN	EQU		LAST LOCATION OF BACKGROUND LITERAL TABLE	V2		04 00181
000345	A	181	V\$LUNT	EQU		ASSEMBLE IF VORTEX II	V2		04 00182
000346	A	182	V\$OPCF	EQU		V\$PAGE ADDRESS	V2		04 00183
000347	A	183	V\$FGLB	EQU		ASSEMBLE IF NOT VORTEX II	V2		04 00184
000350	A	184	V\$FREE	EQU		UNUSED	V2		04 00185
000351	A	185	V\$CTMS	EQU		BASE ADDR. FOR CONTROLLER ADDR. TABLE	V2		04 00186
000352	A	186	V\$SCV	EQU		CURRENT CONTROLLER IN SCAN	V2		04 00187
000353	A	187	V\$CKB	EQU		NO. OF CONTROLLERS	V2		04 00188
000354	A	188	V\$CRM	EQU		EXTERNAL DEVICE ADDRESS TABLE FOR PIMS	V2		04 00189
000355	A	189	V\$DSTB	EQU		(8 WORDS DEFINED IN PIM NO ORDER)	V2		04 00190
000356	A	190	V\$LIT	EQU			V2		04 00191
		191	IFT		VORTEX-2				04 00192
		192	V\$PGT	EQU					04 00193
		193	IFT		VORTEX-2				04 00194
		194	*						04 00195
000360	A	195	V\$CTAD	EQU					04 00196
000361	A	196	V\$SCTL	EQU					04 00197
000362	A	197	V\$NCTR	EQU					04 00198
000363	A	198	V\$PIMN	EQU					04 00199
		199	*						04 00200
		200	IFF		VORTEX-2				04 00200

```

201          GOTO      LCD5          ASSEMBLE IF NOT VORTEX II          V2  04 00201
202 *        EQU       LC+59         UNUSED                               04 00202
203 *        EQU       LC+60         UNUSED                               04 00203
204 LCD5     CONT      VORTEX-2          V2  04 00204
205          IFT      VORTEX-2          V2  04 00205
206          GOTO      LCD6          ASSEMBLE IF VORTEX II          V2  04 00206
207 *        EQU       LC+59         JMP V$IDST PAGE 0 ENTRY FOR I/O    V2  04 00207
208 *        EQU       LC+60         STAT CALLS.                          V2  04 00208
209 LCD6     CONT      VORTEX-2          V2  04 00209
000375 A    210 V$SLFG EQU       LC+61   SAI TASK BUSY FLAG 1=BUSY, 0=NOT BUSY 04 00210
000376 A    211 V$ERFG EQU       LC+62   ERROR TASK BUSY FLAG 1=BUSY, 0=NOT BUSY 04 00211
000377 A    212 V$JOP EQU       LC+63   JOP OPERATING FLAG 04 00212
000400 A    213 V$LUT1 EQU       LC+64   START LUN ADDR FOR JOP/OPCOM ASSIGNABLE 04 00213
000401 A    214 V$LUT2 EQU       LC+65   START LUN ADDR FOR UNASSIGNABLE 04 00214
000402 A    215 V$LUT3 EQU       LC+66   START LUN ADDR FOR OPCOM ASSIGNABLE 04 00215
000403 A    216 V$1MIN EQU       LC+67   32767 - (60000/(5*V$CFMS)) + 1 04 00216
217          IFF      VORTEX-2          V2  04 00217
218          GOTO      LCD7          ASSEMBLE IF NOT VORTEX II          V2  04 00218
219 *        EQU       LC+68         UNUSED                               04 00219
220 *        EQU       LC+69         UNUSED                               04 00220
221 *        EQU       LC+70         UNUSED                               04 00221
222 *        EQU       LC+71         UNUSED                               04 00222
223 LCD7     CONT      VORTEX-2          V2  04 00223
224          IFT      VORTEX-2          V2  04 00224
225          GOTO      LCD8          V2  04 00225
226 *        EQU       LC+68         JMP V$IDC PAGE 0 ENTRY FOR IDC      V2  04 00226
227 *        EQU       LC+69         CALLS.                            V2  04 00227
228 *        EQU       LC+70         JMP V$EXEC PAGE 0 ENTRY FOR RTE     V2  04 00228
229 *        EQU       LC+71         CALLS.                            V2  04 00229
230 LCD8     CONT      VORTEX-2          V2  04 00230
000410 A    231 V$IDA EQU       LC+72   I/O ALGORITHM 04 00231
000411 A    232 V$CKIT EQU       LC+73   CLOCK INT. IN PIM BEFORE LOCKOUT FLAG. 04 00232
000412 A    233 V$JCB EQU       LC+74   ALL SYSTEM BACKGROUND PROGRAMS AND JOP USE 04 00233
234 *        EQU       LC+75         THIS SYSTEM BUFFER TO READ DIRECTIVES AND 04 00234
235 *        EQU       LC+75         SOURCE RECORDS IN. 04 00235
000413 A    236 V$DCB EQU       LC+75   OPCOM WILL READ OPERATOR KEY-IN REQUESTS 04 00236
237 *        EQU       LC+75         IN THIS BUFFER. IF JOP IS SET NOT ACTIVE 04 00237
238 *        EQU       LC+75         AND A 1 DIRECTIVE IS INPUTED, OPCOM 04 00238
239 *        EQU       LC+75         WILL MOVE THE DIRECTIVE TO V$JCB BEFORE 04 00239
240 *        EQU       LC+75         SCHEDULING JOP. 04 00240
000414 A    241 V$BVN EQU       LC+76   BOTTOM OF VORTEX NUCLEUS 04 00241
000415 A    242 V$BFC EQU       LC+77   TOP OF FG RES. AREA/BOTTOM OF FG BLK COMM. 04 00242
000416 A    243 V$TFC EQU       LC+78   TOP OF FG BLK COMM/TOP OF VORTEX CORE. 04 00243
244 *        EQU       LC+79         UNUSED                               04 00244
245          EQU       EQU              04 00245
246 ***** 04 00246
247 *        EQU       EQU              04 00247
248 ***** 04 00248
249 ***** 04 00249
250 ***** 04 00250
000420 A    252 MT SET 0420 04 00252
000420 A    253 ZERO EQU MT 04 00253
000421 A    254 B0 EQU MT+1 04 00254
000422 A    255 B01 EQU MT+2 04 00255
000423 A    256 B02 EQU MT+3 04 00256
000424 A    257 B03 EQU MT+4 04 00257
000425 A    258 B04 EQU MT+5 04 00258
000426 A    259 B05 EQU MT+6 04 00259
000427 A    260 B06 EQU MT+7 04 00260
000430 A    261 B07 EQU MT+8 04 00261
000431 A    262 B08 EQU MT+9 04 00262
000432 A    263 B09 EQU MT+10 04 00263
000433 A    264 B010 EQU MT+11 04 00264
000434 A    265 B011 EQU MT+12 04 00265
000435 A    266 B012 EQU MT+13 04 00266
000436 A    267 B013 EQU MT+14 04 00267
000437 A    268 B014 EQU MT+15 04 00268
000440 A    269 B015 EQU MT+16 04 00269
000441 A    270 BR EQU MT+17 04 00270
000442 A    271 BR1 EQU MT+18 04 00271
000443 A    272 BR2 EQU MT+19 04 00272
000444 A    273 BR3 EQU MT+20 04 00273
000445 A    274 BR4 EQU MT+21 04 00274
000446 A    275 BR5 EQU MT+22 04 00275
000447 A    276 BR6 EQU MT+23 04 00276
000450 A    277 BR7 EQU MT+24 04 00277
000451 A    278 BR8 EQU MT+25 04 00278
000452 A    279 BR9 EQU MT+26 04 00279
000453 A    280 BR10 EQU MT+27 04 00280
000454 A    281 BR11 EQU MT+28 04 00281
000455 A    282 BR12 EQU MT+29 04 00282
000456 A    283 BR13 EQU MT+30 04 00283
000457 A    284 BR14 EQU MT+31 04 00284
000460 A    285 BR15 EQU MT+32 04 00285
000461 A    286 NEG EQU MT+33 04 00286
000462 A    287 LHM EQU MT+34 04 00287
000463 A    288 RHM EQU MT+35 04 00288
000421 A    289 ONE EQU MT+1 04 00289
000422 A    290 TWO EQU MT+2 04 00290
000464 A    291 THREE EQU MT+3 04 00291
000423 A    292 FOUR EQU MT+4 04 00292
000465 A    293 FIVE EQU MT+5 04 00293
000466 A    294 SIX EQU MT+6 04 00294

*****
*** MASK TABLE DESCRIPTION ***
*****

ZERO WORD
BIT MASK CONTENTS 000001
000002
000004
000010
000020
000040
000100
000200
000400
001000
002000
004000
010000
020000
040000
080000
100000
BIT MASK CONTENTS 0177776
0177775
0177773
0177767
0177757
0177737
0177677
0177577
0177377
0176777
0175777
0173777
0167777
0157777
0137777
0127777
0077777
SET ALL BITS
LEFT HALF WORD MASK 0177400
RIGHT HALF WORD MASK 0377
CONTAINS NUMBER 1
CONTAINS NUMBER 2
CONTAINS NUMBER 3
CONTAINS NUMBER 4
CONTAINS NUMBER 5
CONTAINS NUMBER 6

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000467 A 295 SEVEN EQU MT+39 CONTAINS NUMBER 7 04 00295
000424 A 296 EIGHT EQU MT+4 CONTAINS NUMBER 8 04 00296
000470 A 297 NINE EQU MT+40 CONTAINS NUMBER 9 04 00297
000471 A 298 TEN EQU MT+41 CONTAINS NUMBER 10 04 00298
000421 A 299 BM1 EQU MT+1 BIT MASK WORD 00001 04 00299
000464 A 300 BM3 EQU MT+36 BIT MASK WORD 00003 04 00300
000467 A 301 BM7 EQU MT+39 BIT MASK WORD 00007 04 00301
000472 A 302 BM17 EQU MT+42 BIT MASK WORD 00017 04 00302
000473 A 303 BM37 EQU MT+43 BIT MASK WORD 00037 04 00303
000474 A 304 BM77 EQU MT+44 BIT MASK WORD 00077 04 00304
000475 A 305 BM177 EQU MT+45 BIT MASK WORD 00177 04 00305
000463 A 306 BM377 EQU MT+35 BIT MASK WORD 00377 04 00306
000476 A 307 BM777 EQU MT+46 BIT MASK WORD 00777 04 00307
000477 A 308 BM1777 EQU MT+47 BIT MASK WORD 01777 04 00308
309 EJEC 04 00309
310 ***** 04 00310
311 * 04 00311
312 **** BIT TEST BIT DESIGNATION *** 04 00312
313 * 04 00313
314 ***** 04 00314
000040 A 316 RA0 EQU 040 BT JUMPS WHEN A REGISTER IS 0 04 00316
000000 A 317 RA1 EQU 000 BT JUMPS WHEN A REGISTER IS 1 04 00317
000060 A 318 RB0 EQU 060 BT JUMPS WHEN B REGISTER IS 0 04 00318
000020 A 319 RB1 EQU 020 BT JUMPS WHEN B REGISTER IS 1 04 00319
321 ***** 04 00321
322 * 04 00322
323 ** THE BIT CHECKED 04 00323
324 * 04 00324
325 ***** 04 00325
000000 A 327 B0 EQU 0 04 00327
000001 A 328 B1 EQU 1 04 00328
000002 A 329 B2 EQU 2 04 00329
000003 A 330 B3 EQU 3 04 00330
000004 A 331 B4 EQU 4 04 00331
000005 A 332 B5 EQU 5 04 00332
000006 A 333 B6 EQU 6 04 00333
000007 A 334 B7 EQU 7 04 00334
000010 A 335 B8 EQU 8 04 00335
000011 A 336 B9 EQU 9 04 00336
000012 A 337 B10 EQU 10 04 00337
000013 A 338 B11 EQU 11 04 00338
000014 A 339 B12 EQU 12 04 00339
000015 A 340 B13 EQU 13 04 00340
000016 A 341 B14 EQU 14 04 00341
000017 A 342 B15 EQU 15 04 00342
343 EJEC 04 00343
344 ***** 04 00344
345 * 04 00345
346 **** DEVICE AND FUNCTION CODES *** 04 00346
347 * 04 00347
348 ***** 04 00348
000047 A 350 **** REAL TIME CLOCK *** 04 00350
351 CLOCK EQU 047 DEVICE NUMBER 047 04 00351
352 * 04 00352
000747 A 353 DISCLK EQU 0700+CLOCK DISABLE CLOCK 04 00353
000147 A 354 ENACLK EQU 0100+CLOCK ENABLE CLOCK 04 00354
355 IFF VORTEX-2 V2 04 00355
356 MPDVAD EQU 046 RAM ADDRESS V2 04 00356
358 * 04 00358
359 **** PIM *** 04 00359
000044 A 360 APIM EQU 044 ALL PIMS DEVICE NUMBER 04 00360
000040 A 361 PIM1 EQU 040 04 00361
000041 A 362 PIM2 EQU 041 04 00362
000042 A 363 PIM3 EQU 042 04 00363
000043 A 364 PIM4 EQU 043 04 00364
000040 A 365 PIM5 EQU 040 04 00365
000040 A 366 PIM6 EQU 040 04 00366
000040 A 367 PIM7 EQU 040 04 00367
000040 A 368 PIM8 EQU 040 04 00368
369 * 04 00369
000444 A 370 DISPIM EQU 0400+APIM 04 00370
000244 A 371 ENAPIM EQU 0200+APIM 04 00371
372 ***** MEMORY PROTECT *** 04 00372
000045 A 374 MP EQU 045 DEVICE ADDRESS 045 04 00374
000745 A 375 DISMP EQU 0700+MP DISABLE MEMORY PROTECT 04 00375
000645 A 376 ENAMP EQU 0600+MP ENABLE MEMORY PROTECT 04 00376
000045 A 377 MPMR0 EQU 0500+MP SELECT MASK REGISTER 0 04 00377
000145 A 378 MPMR1 EQU 0100+MP SELECT MASK REGISTER 1 04 00378
000245 A 379 MPMR2 EQU 0200+MP SELECT MASK REGISTER 2 04 00379
000345 A 380 MPMR3 EQU 0300+MP SELECT MASK REGISTER 3 04 00380
381 EJEC 04 00381
382 * CONTROLLER TABLE , CTBL 04 00382
383 * 04 00383
384 * CTRL FOR EACH CONTROLLER. 04 00384
000000 A 385 CTACT EQU 0 CONTROLLER ACTIVE IND.,1=ACTIVE ,BIT 15 04 00385
000000 A 386 CTIDB EQU 0 CONTROLLER/DRIVER IDB ADDR.,BITS 14-0 04 00386
000001 A 387 CTABNC EQU 0 ADDR. OF NEXT CONTROLLER IN CHAIN 04 00387
000002 A 388 CTOPM EQU 0 OP-CODE MASK 04 00388
000003 A 389 CTJST EQU 0 ADDR. OF CURRENT DST 04 00389
000004 A 390 CTRQBK EQU 0 FIRST REQUEST BLOCK 04 00390
000005 A 391 CTRTRY EQU 0 ERROR RETRY CONSTANT,BITS 15-0 04 00391
000005 A 392 CTRCNT EQU 0 VERR RETRY COUNTER ,BITS 7-0 04 00392
000006 A 393 CTIVAT EQU 0 DEVICE ADDR. 04 00393

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000007 A 394 CTIDA EQU 7 I/O ALGORITHM VALUE 04 00394
000010 A 395 CTSTAT EQU 8 DRIVER STATUS 04 00395
000011 A 396 CTBICB EQU 9 ADDR. FOR BIC FLAG TABLE,BITS 15-0 04 00396
000012 A 397 CTFCB EQU 10 FCB OR DCB ADDR. 04 00397
000013 A 398 CTWDS EQU 11 NO.OF WORDS TRANSFERED. 04 00398
000014 A 399 CTFRCT EQU 12 BITS 15-8,FREQUENCY CONSTANT 04 00399
000014 A 400 CTFREQ EQU 12 BITS 7-0,FREQUENCY COUNT 04 00400
000015 A 401 CTSTSZ EQU 13 NO.OF WORDS PER SECTOR FOR RMD ONLY 04 00401
000016 A 402 CTTRSZ EQU 14 NO.OF SECTORS PER TRACK FOR RMD ONLY 04 00402
000017 A 403 CTPST0 EQU 15 PST BASE ADDR,RMD,UNIT 0 04 00403
000020 A 404 CTPST1 EQU 16 PST BASE ADDR,RMD,UNIT 1 04 00404
000021 A 405 CTPST2 EQU 17 PST BASE ADDR,RMD,UNIT 2 04 00405
000022 A 406 CTPST3 EQU 18 PST BASE ADDR,RMD,UNIT 3 04 00406
407 *
408 * EJECT
409 * DEVICE SPECIFICATION TABLE, DST
410 * DST FOR EACH DEVICE,AND EACH RMD PARTITION
411 *
000000 A 412 DSDVDN EQU 0 DEVICE DOWN INDICATOR,1=DOWN BIT 15 04 00412
000000 A 413 DSDASS EQU 0 DEVICE ASSGNMT INDICATOR,BITS 14-13 04 00413
414 * 00 ASSIGNABLE BY JCP AND OPCOM 04 00414
415 * 01 ASSIGNABLE BY OPCOM ONLY 04 00415
416 * 10 UNASSIGNABLE 04 00416
417 * 00 UNUSED 04 00417
000000 A 418 DSUNAM EQU 0 DEV NAME,CH.3 B12-10,CH.4 B9-4 04 00418
419 * ADD 0-260 TO GET ASCII CHARACTER 04 00419
000000 A 420 DSNDRQ EQU 0 DEVICE REQUEST COUNTER, BITS 3-0. 04 00420
000001 A 421 DSNAME EQU 1 DEVICE NAME+2 ASCII CHAR. 04 00421
000002 A 422 DSREWD EQU 2 DEVICE REWIND INDICATOR,1=REWIND,BIT 15 04 00422
000002 A 423 DSUNTH EQU 2 DEVICE UNIT NO.,BITS 14-13 04 00423
000002 A 424 DSLCKO EQU 2 PARTITION LOCKOUT FLAG BIT 12 04 00424
000002 A 425 DSOPCM EQU 2 OPCOM DEVICE INDICATOR,BIT 11 04 00425
000002 A 426 DSPSTI EQU 2 INDEX TO PST,BITS 10-6. 04 00426
000002 A 427 DSCTAD EQU 2 INDEX TO CTAD,CTRLLR ADDR TABLE,B5-0. 04 00427
428 *
429 *
430 * EJECT
431 * CONTROLLER ADDRESS TABLE,CTAD
432 * 1 ENTRY FOR EACH CTRL.
433 *
000000 A 434 CTAD1 EQU 1 BASE ADDRESS FOR CONTROLLER TABLE 04 00434
435 *
436 * EJECT
437 * BIC FLAG TABLE
438 * 1 ENTRY FOR EACH BIC ,EACH CONTROLLER TABLE,CTRL, WHICH
439 * UTILIZES A BIC CONTAINS AN ADDRESS,CTBICE, POINTING
440 * TO ITS BIC ENTRY.
441 *
000000 A 442 BICHUM EQU 0 BIC NUMBER FOR THIS ENTRY. 04 00442
443 * POSITIVE VALUE MEANS BIC IS AVAILABLE 04 00443
444 * NEGATIVE VALUE,COMPLEMENTED BIC NO., 04 00444
445 * MEANS BIC IS CURRENTLY IN USE. 04 00445
446 *
447 *
448 * EJECT
449 * REQUEST BLOCK , RQBLK
450 * 1 FOR EACH INC REQUEST. RQBLKS ARE QUEUED ACCORDING TO TASK
451 * PRIORITY TO CTRL.
452 *
453 *
000000 A 454 RSTPR EQU 0 BIT 15 = I/O COMPLETED INDICATOR. 04 00454
455 * BITS14-5,DRIVER STATUS 04 00455
456 * BITS 4-0, REQUESTING TASK PRIORITY. 04 00456
000001 A 457 POPWD EQU 1 BIT 15 = WAIT OPTION 04 00457
458 * BITS14-12, NONE,USED BY DRIVERS 04 00458
459 * BITS 11-8,OP-CODE 04 00459
460 * BITS 7-0, LOGICAL UNIT NO. 04 00460
000002 A 461 PFCB EQU 2 FCB OR DCB ADDR. 04 00461
000003 A 462 RTIBB EQU 3 REQUESTING TASK TIDE ADDR. 04 00462
000004 A 463 RADNR EQU 4 ADDR.OF NEXT RQBLK IN QUEUE.,0= NONE. 04 00463
464 *
465 * EJECT
466 *
467 * PARTITION SPECIFICATION TABLE, PST
468 *
469 * A PST EXISTS FOR EACH ROTATING MEMORY DEVICE. EACH PARTITION
470 * ON THE RMD HAS A FIVE WORD ENTRY IN THE PST. THE PARTITION'S
471 * PST ENTRY NUMBER IS SPECIFIED IN THE DEVICE SPECIFICATION
472 * TABLE,DST,THUS LINKING THE PST WITH A LOGICAL UNIT NUMBER.
473 * THE EFFECTIVE ADDR FOR AN ENTRY IS FOUND AS FOLLOWS:
474 *
475 * PST ADDR. FOR ENTRY = (ENTRY NO. * 4) + 1 + PST BASE ADDR
476 *
477 *
000000 A 478 PSBEG EQU 0 PARTITION BEGINNING ADDR. 04 00478
000001 A 479 PSPROT EQU 1 BIT 15, PROTECT FLAG 04 00479
480 * BITS 14-3, UNUSED 04 00480
481 * BITS 2-0, PROTECT KEY 04 00481
000002 A 482 PSBADT EQU 2 ADDR.OF BAD TRACK TABLE 04 00482
000003 A 483 PSNSEC EQU 3 ADDR.OF NEXT AVAILABLE SECTOR IN PARTITN 04 00483
000004 A 484 PSEND EQU 1 PARTITION END ADDR + 1, ALSO BEGINNING 04 00484
485 * ADDR FOR NEXT PARTITION. 04 00485
486 *

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487 *
488 *      EJECT
489 *
490 *      DATA CONTROL BLOCK, DCB
491 *
492 *      A DCB IS REFERENCED BY EACH I/O REQUEST BLOCK, RQBLK, SPECIFY-
493 *      ING A NON-ROTATING MEMORY DEVICE. DCB CONTAINS ADDITION INFOR-
494 *      MATION NECESSARY TO COMPLETE THE I/O OPERATION.
495 *      DCB IS A FIXED LENGTH TABLE OF 3 WORDS EACH. THE FCB IS THE DCB
496 *      EQUIVALENT FOR RMD.
497 *
498 *
000000 A 499 DRECL EQU 0 RECORD LENGTH
000001 A 500 DBUFF EQU 1 USER BUFFER AREA
000002 A 501 DCNT EQU 2 NO. OF COUNTS, USE FOR FUNC REQUESTS.
502 *
503 *
504 *
505 *      EJECT
506 *
507 *
508 *      FILE CONTROL BLOCK, FCB
509 *      A FCB IS REFERENCED BY EACH I/O REQUEST BLOCK, RQBLK, SPECIFY-
510 *      ING A ROTATING MEMORY DEVICE. FCB CONTAINS ADDITION INFORMA-
511 *      TION NECESSARY TO COMPLETE THE I/O INFORMATION ON RMD.
512 *      FCB IS A FIXED LENGTH TABLE OF 10 WORDS.
513 *
514 *
000000 A 515 FRECL EQU 0 RECORD LENGTH
000001 A 516 FBUFF EQU 1 BUFFER AREA
000002 A 517 FACM EQU 2 ACCESS METHOD, BITS 15-8
518 *      0 = DIRECT ACCESS BY LOGICAL RECORD.
519 *      1 = SEQ ACCESS BY LOGICAL RECORD
520 *      2 = DIRECT ACCESS USING ACTUAL ADDR.
521 *      4 = SEQ ACCESS USING ACTUAL ADDR
522 *
000003 A 523 FCADR EQU 3 PROTECT KEY, BITS 7-0
000004 A 524 FCEDF EQU 4 CURRENT RECORD NO., OR CURRENT SECTOR ADDR
000005 A 525 FIFE EQU 5 CURRENT END OF FILE POSITION
000006 A 526 FEFE EQU 6 BEGIN FILE EXTENT
000007 A 527 FHAM1 EQU 7 END FILE EXTENT.
000010 A 528 FHAM2 EQU 8 FILE NAME, CHAR N, CHAR N+1
000011 A 529 FHAM3 EQU 9 CHAR N+2, CHAR N+3
530 *      CHAR N+4, CHAR N+5
531 *      EJECT
532 *      VSTY, TELETYPE DRIVER
533 *
534 *      TTY DRIVER CTBL ADDITION
535 *      IFF VORTEX-2
536 *      CTJDFL EQU CTFREQ JCP/OPCOM INPUT FLAG
537 *
000015 A 537 CTBUFF EQU CTFREQ+1 INPUT RQT USER BUFFER POINTER
000016 A 538 CTOPBF EQU CTFREQ+2 OPCOM BUFFER POINTER
000017 A 539 CTJCPB EQU CTFREQ+3 JCP BUFFER POINTER
000020 A 540 CTWPIM EQU CTFREQ+4 PIM MODULE NUMBER BITS 0-7
000021 A 541 CTWLMK EQU CTFREQ+5 PIM-LINE NUMBER, BITS 0-7
000022 A 542 CTODST EQU CTFREQ+6 OPCOM DEVICE DST
000023 A 543 CTEMP EQU CTFREQ+7 NO. OF CHARACTERS TO OUTPUT
000024 A 544 CTREAD EQU CTFREQ+8 CR/LF BUFFER FOR READ RQT
000025 A 545 CTMODE EQU CTFREQ+9 MODE PARAMETER FROM RQBLK MINUS 4
546 *      IFF VORTEX-2
547 *      CTFLG EQU CTFREQ+10 PRINT CONTROL CHAR (S) FLAG
000002 A 548 B EQU 2
000001 A 549 X EQU 1
000020 A 550 BTB1 EQU 020 TEST B REG FOR 1
000000 A 551 STA1 EQU 0 TEST A REG FOR 1
000040 A 552 BTA0 EQU 040 TEST A REG FOR 0
000012 A 553 POP EQU 10 OPCOM PRIORITY
000306 A 554 KOP EQU 0306 OPCOM PROTECT KEY
000152 A 555 LOP EQU 106 OPCOM CORE RESIDENT LIB LUN
000000 A 556 HW EQU 0 NO WAIT FOR SCHEDULE REQUEST
557 *      EJECT
558 *
559 *
560 *      THE MAJOR SUBCOMPONENTS FOR THIS DRIVER ARE:
561 *
562 *      VSTY, TELETYPE INITIATOR PROCESSOR
563 *      TYIT00, TELETYPE INTERRUPT PROCESSOR
564 *      TYUN00, UNSOLICITED REQUEST PROCESSOR
565 *
566 *
567 *
568 *
569 *
570 *      NAME VSTYA
571 *      EXT VCFNR
572 *      EXT VSERR
573 *      EXT H$SFLG
000000 R 573 VSTYA EQU *
000000 020300 A 574 LDR V$CTL GET CONTROLLER TIDR.
000001 036010 A 575 LDX TBRSTS, B SET TO CTBL.
576 *      IFT VORTEX-2
577 *      GOTO ENDC02
578 *      TZA
579 *      STA CTFLG, X INITIALIZE PRT CONTROL CHAR. FLAG

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60365

V2 04 00534
V2 04 00535
D.1 04 00545
V2 04 00546
E 01 00547
D.1 04 00572
V2 04 00576
V2 04 00577
V2 04 00578
V2 04 00579

Address	Label	Op	Opnd	Description	Flags
580		STA	CTJDFL,X	INITIALIZE JCP/DPCOM INPUT FLAG	V2 04 00580
581	ENDC02	CONT			V2 04 00581
000002	015000	A	582 LDA CTACT,X	CHECK IF CONTROLLER ACTIVE.	04 00582
000003	001004	A	583 JAN TY02	YES.	04 00583
000004	000021	R			
000005	110440	A	584 DRA BS15	NO. CHECK FOR UNSOLICITED KEY-IN.	04 00584
000006	055000	A	585 STA CTACT,X	NOW SET ACTIVE	04 00585
000007	016003	A	586 LDA TBEVNT,B	CHECK TYPE OF INTERRUPT	04 00586
000010	130422	A	587 ERA TWO		04 00587
000011	001010	A	588 JAZ TYU21A	UNSOLICITED OUTPUT	04 00588
000012	001226	R			
000013	005001	A	589 TZA		04 00589
000014	056003	A	590 STA TBEVNT,B	CLEAR EVENT WORD	04 00590
000015	005301	A	591 DECR 01		04 00591
000016	055010	A	592 STA CTSTAT,X	SET CTSTAT NEGATIVE FOR NO REQUEST	04 00592
000017	001000	A	593 JMP TYUN00	GOTO UNSOLICITED REQUEST PROCESSOR.	04 00593
000020	001037	R			
000021	025003	A	594 TY02 LDB CTDST,X	GET DST ADDR	04 00594
000022	016000	A	595 LDA ASDVDN,B	CHECK IF DEVICE DOWN	04 00595
000023	025004	A	596 LDB CTRQBK,X	GET ROBLK ADDR.	04 00596
000024	001004	A	597 JAN TY20	YES	04 00597
000025	000156	R			
000026	016001	A	598 LDA ROPND,B		D.104 00598
000027	004354	A	599 LSRA 12	UNPACK MODE PARAMETER	D.104 00599
000030	150467	A	600 ANA BM7		D.104 00600
000031	140423	A	601 SUB FOUR	IF MODE IS 4; SET TO ZERO, ELSE NON-ZERO.	04 00601
000032	055025	A	602 STA CTHUDE,X	SAVE FOR LATER REFERENCE	D.104 00602
000033	016001	A	603 LDA ROPND,B		04 00603
000034	004350	A	604 LSRA 8	UNPACK DP-CODE.	04 00604
000035	150472	A	605 ANA BM7		04 00605
000036	055010	A	606 STA CTSTAT,X	SAVE FOR LATER REFERENCE	04 00606
000037	007401	A	607 ROT	DO NOT OUTPUT CR/LF	04 00607
000040	001010	A	608 JAZ TY40	READ CODE	04 00608
000041	000347	R			
000042	005311	A	609 DAB		04 00609
000043	001010	A	610 JAZ TY20	WRITE CODE	04 00610
000044	000165	R			
000045	005311	A	611 DAB		04 00611
000046	001010	A	612 JAZ TY10	WEOF CODE	04 00612
000047	000136	R			
000050	140464	A	613 SUB THREE		04 00613
000051	001010	A	614 JAZ TY04	FUNC CODE	04 00614
000052	000055	R			
000053	001000	A	615 JMP TY1EXT	OTHERWISE IGNORE REQUEST, GOTO V\$FNR	04 00615
000054	000630	R			
000055	025012	A	616 TY04 LDB CTRCB,X	DCB ADDR	D.104 00616
000056	010464	A	617 LDA THREE		04 00617
618		IF	VORTEX-2		D.104 00618
619		MAE	MPDVAR,V\$ST3	USER'S MAP	D.104 00619
000057	146002	A	620 SUB 2,B	FUNCTION VALUE	04 00620
621		IF	VORTEX-2		D.104 00621
622		MAE	MPDVAR,V\$ST0	MAP 0	D.104 00622
623		JAB	TY04A		E.1 00623
000060	001002	A			
000061	000063	R			
000062	010464	A	624 LDA THREE		E.1 00624
000063	000063	R	625 TY04A EQU X		E.1 00625
000064	130460	A	626 FRA BS15		E.1 00626
000065	055013	A	627 STA CTHUDE,X	STORE IN WORD COUNT	04 00627
000066	006010	A	628 LDAI TYLF	GET LINE FEED BUFFER ADDR.	04 00628
000067	001342	R			
000067	055015	A	629 STA CTRBUF,X		04 00629
000070	006027	A	630 LSRA TYCR		04 00630
000071	001344	R			
631		IF	VORTEX-2		V2 04 00631
632		INR	INDLG,X	SET FLAG TO INDICATE CONTROL CHARACTER	V2 04 00632
000072	007400	A	633 TY05 ROT		04 00633
000073	100444	A	634 EXD DISPM		04 00634
000074	100747	A	635 EXD MISCLK		04 00635
000075	002000	A	636 JMPM TYMIM	SET OUTPUT INTERRUPT LINE ON.	04 00636
000076	001305	R			
000077	003021	A	637 JAB	AF OUTPUT CHARACTER	04 00637
000100	000100	R			
000100	100444	A	638 TY06 EQU 4		04 00638
000101	100747	A	639 EXD DISPM		04 00639
000102	002000	A	640 EXD MISCLK		04 00640
000103	001527	R	641 JAB		04 00641
000104	001001	A	642 JCB TY01-2	GOTO UNSOLICITED ROT PROCESSOR	04 00642
000105	001043	R			
000106	020300	A	643 TY07 LDR V\$CTL		04 00643
000107	005001	A	644 TZA		04 00644
000110	056003	A	645 STA TBEVNT,B	CLEAR INTERRUPT EVENT WORD.	04 00645
000111	015010	A	646 LDA CTSTAT,X		D.104 00646
000112	001016	A	647 JANZ TY08	NOT READ	D.104 00647
000113	000117	R			
000114	015025	A	648 LDA CTHUDE,X	CHECK MODE	D.104 00648
000115	001013	A	649 JAZ MODE4	MODE = 4(TRANSPARENT)	D.104 00649
000116	000126	R			
650	TY08	DELAY	0000,0,2	DELAY TYPE 2, 15 SEC	04 00650
000117	006505	A			
000120	000406	A			
000121	001102	A			
000122	005670	A			
000123	000000	A			

E.2 VORTEX LISTING

V*TYA

PROGRAM PAGE 8

LISTING PAGE (524)

Address	Label	Op	Op2	Op3	Description	Page	Line
000124		A	651	JMP	TYIT00		
		R					
000126	MODE4	A	652	LDA	CTREAD,X		
000127		A	653	JANZ	TY08		
000130		R					
			654	SUSPND	1		
000131		A					
000132		A					
000133		A					
000134		A	655	JMP	TYIT00		
000135		R					
000136		A	656	EQU	* TY10		
000137		R	657	LDAE	TYBEL		
000140		A	658	EXC	DISPIM		
000141		A	659	EXC	DISCLK		
000142		A	660	JNPM	TYOUT		
000143		R					
000144		A	661	EXC	ENAPIM		
000145		A	662	EXC	ENACKL		
000146		A	663	JOF	TYU1		
000147		R					
000150		A	664	LDA	CTSTAT,X		
000151		A	665	CPR			
000152		A	666	JAZ	TYU21A		
000153		R					
000154		A	667	JMP	TYIEXT		
000155		R					
000156		A	668	LDRI	01640		
000157		A					
000160		A	669	DRA	RSTPR,B		
000161		A	670	STA	RSTPR,B		
000162		A	671	DECR	01		
000163		A	672	JMP	TY50+3		
000164		R					
000165		A	673	EQU	* TY28		
000166		A	674	STA	CTWDS,X		
000167		A	675	TZA			
000170		R	676	STAE	TYPLSF		
000171		A	677	LDA	CTMODE,X		
000172		A	678	JAZ	TY30		
000173		R					
000174		A	679	LDB	RFCB,B		
			680	IFF	VORTEX-2		
			681	OME	MPDVAD,V*ST3		
000175		A	682	LDB	DBUFF,B		
000176		A	683	LDA	0,B		
			684	IFF	VORTEX-2		
			685	OME	MPDVAD,V*ST0		
			686	LSRA	8		
			687	STAE	TYTEMP		
000200		A					
000201		R					
000202		A	688	PURE	TYPLS		
000203		R					
000204		A	689	JANZ	TY28A		
000205		R					
000206		A	690	INCR	01		
000207		A	691	STAE	TYPLSF		
000210		R					
000211		A	692	JMP	TYI17-3		
000212		R					
000213		A	693	EQU	* TY28A		
000214		R	694	LDAE	TYTEMP		
000215		A	695	ERAE	TYBLK		
000216		R					
000217		A	696	JAZ	TYI17-3		
000220		R					
000221		A	697	ANA	ONE		
000222		A	698	IAR			
000223		A	699	STA	CTWDS,X		
000224		A	700	LDA	RS15		
000225		A	701	SUB	CTWDS,X		
000226		A	702	STA	CTWDS,X		
000227		A	703	STA	CTEMP,X		
000230		A	704	TZA			
000231		A	705	STA	CTFCB,X		
000232		A	706	LDRI	TYLF		
000233		R					
000234		A	707	STA	CTRUFF,X		
000235		A	708	LDRE	TYLF		
000236		R					
			709	IFF	VORTEX-2		
			710	INR	CTFLG,X		
			711	JMP	TY05		
000237		A					
000240		R					
000241		A	712	LDB	RFCB,B		
000242		A	713	STB	CTFCB,X		
			714	IFF	VORTEX-2		
			715	OME	MPDVAD,V*ST3		
000243		A	716	LDA	DBUFF,B		
			717	IFF	VORTEX-2		

Address	Label	Op	Opnd	Comment	Mode	Page
000244	055015	A	718	OME MPDVAD,V\$ST0	RESTORE MAP 0	V2 04 00715
000245	015025	A	719	STA CTBUFF,X		04 00716
000246	001010	A	720	LDA CTMODE,X	CHECK MODE	D.104 00717
000247	000261	R	721	JAZ TY31	MODE = 4, NO TRUNCATION	D.104 00718
			722	IFF VORTEX-2		V2 04 00719
000250	016000	A	723	OME MPDVAD,V\$ST3	SWITCH TO USER'S MAP	V2 04 00720
			724	LDA DRECL,B		04 00721
			725	IFF VORTEX-2		V2 04 00722
000251	006140	A	726	OME MPDVAD,V\$ST0	RESTORE MAP 0	V2 04 00723
000252	000045	A	727	SUBI 32	TRUNCATE IF GREATER THAN 36 WORDS	04 00724
000253	001004	A	728	JAN TY31		04 00725
000254	000261	R				
000255	006010	A	729	LDAI 36		04 00726
000256	000044	A				
			730	IFT VORTEX-2		V2 04 00727
			731	GOTO ENDC03		V2 04 00728
			732	JMP TY31A		V2 04 00729
			733	OME MPDVAD,V\$ST3	SWITCH TO USER'S MAP	V2 04 00730
			734	LDA DRECL,B	RECORD LENGTH	V2 04 00731
			735	OME MPDVAD,V\$ST0	RESTORE MAP 0	V2 04 00732
			736	CONT ENDC03		V2 04 00733
			737	IFF VORTEX-2		V2 04 00734
			738	GOTO ENDC09		V2 04 00735
			739	JMP *+3		04 00736
000257	001000	R				
000260	000262	R				
000261	016000	A	740	TY31 LDA DRECL,B		04 00737
			741	IFF VORTEX-2		V2 04 00738
			742	CONT ENDC09		V2 04 00739
			743	IFF VORTEX-2		V2 04 00740
			744	TY31A BSS 0		V2 04 00741
000262	005012	A	745	TAB 0		04 00742
000263	125015	A	746	ADD CTBUFF,X		04 00743
000264	004041	A	747	LRLB 1	* 2	04 00744
000265	065023	A	748	STR CTMP,X	MAX COUNT OF CHARACTERS	04 00745
000266	005012	A	749	TAB 0		04 00746
000267	015025	A	750	LDA CTMODE,X	CHECK MODE	D.104 00747
000270	001010	A	751	JAZ TY34	MODE = 4, NO TRAILING BLANK TRUNCATION	D.104 00748
000271	000320	R				
000272	005322	A	752	TY32 DBR	B= BUFFER END ADDR	04 00749
			753	IFF VORTEX-2		V2 04 00750
000273	016000	A	754	OME MPDVAD,V\$ST3	SWITCH TO USER'S MAP	V2 04 00751
			755	LDA 0,B	GET LAST BUFFER WORD	04 00752
			756	IFF VORTEX-2		V2 04 00753
			757	OME MPDVAD,V\$ST0	RESTORE MAP 0	V2 04 00754
000274	150463	A	758	ANY RNN		04 00755
000275	006137	A	759	SPACE TYBLK	CHECK FOR BLANK CHARS. FROM END OF BUFFER	04 00756
000276	001346	R				
000277	001016	A	760	JANZ TY34	CHAR N+1	04 00757
000300	000320	R				
000301	045013	A	761	INR CTNDS,X	INCREMENT CHARACTER COUNT	04 00758
			762	IFF VORTEX-2		V2 04 00759
			763	OME MPDVAD,V\$ST3	SWITCH TO USER'S MAP	V2 04 00760
000302	016000	A	764	LDA A,B		04 00761
			765	IFF VORTEX-2		V2 04 00762
			766	OME MPDVAD,V\$ST0	RESTORE MAP 0	V2 04 00763
000303	004350	A	767	LARA 0		04 00764
000304	006137	A	768	ERRR TYBLK	CHECK FOR BLANK IN CHARACTER N.	D.104 00765
000305	001346	R				
000306	001016	A	769	JANZ TY34	NON BLANK	04 00766
000307	000320	R				
000310	015013	A	770	LDA CTNDS,X	NOW CHECK IF ALL BLANKS	04 00767
000311	005111	A	771	JAR	IN BUFFER	04 00768
000312	145023	A	772	SUB CTMP,X		04 00769
000313	001010	A	773	JAZ TY34		04 00770
000314	000320	R				
000315	045013	A	774	INR CTNDS,X	INCREMENT FOR ANOTHER BLANK	04 00771
000316	001000	A	775	JMP TY32	NOW CHECK FOR BLANK IN PRECEDING LOC.	04 00772
000317	000272	R				
000320	010443	A	776	TY34 LDA 0,15	FIRST NON BLANK CHARACTER FOUND	04 00773
000321	145023	A	777	SUB CTMP,X	MAX COUNT OF CHAR	04 00774
000322	125013	A	778	ADD CTNDS,X	NO. OF TRAILING BLANKS	04 00775
000323	150463	A	779	AND 0,15		04 00776
000324	055013	A	780	STR CTNDS,X	CLEAR SIGN BIT FOR OVERFLOW	04 00777
000325	055023	A	781	STR CTMP,X	SAVE, IF RESULT NECESSARY	04 00778
000326	025015	A	782	LDA CTBUFF,X	BUFFER ADDR	04 00779
000327	015025	A	783	LDA CTMODE,X	CHECK MODE	D.104 00780
000330	001016	A	784	JANZ NMDE4	MODE NEG 4	D.104 00781
000331	000341	R				
000332	005021	A	785	TPA		D.104 00782
000333	005211	A	786	CPA	SET CHAR. N+1 INDICATOR	D.104 00783
000334	055015	A	787	SIA CTBUFF,X		D.104 00784
			788	IFF VORTEX-2		E.1 00000000
			789	OME MPDVAD,V\$ST3	USER MAP	E.1 00000000
000335	026000	A	790	LDB 0,B		E.1 00000000
			791	IFF VORTEX-2		E.1 00000000
			792	OME MPDVAD,V\$ST0	EXEC MAP	E.1 00000000
000336	004150	A	793	LARB 0		D.104 00786
000337	001000	A	794	JMP TY35	MODE IS 4, OUTPUT 1ST CHR IN BUFFER	D.104 00787
000340	000072	P				
000341	005222	A	795	NMDE4 STR	SET CHAR N+1 INDICATOR	D.104 00788
000342	065015	A	796	STR CTBUFF,X		04 00789

Address	Mode	Label	Operation	Comments	Address	Mode	
000343	A	797	LDBE	TYBLK	BLANK FOR COL. 1	D.104 00790	
000344	R						
000345	A	798	JMP	TY05	OUTPUT CHARACTER	04 00791	
000346	R						
000347	A	799	LDB	RFCB,B	PROCESS INPUT REQUEST	04 00792	
		800	IFF	VORTEX-2		V2 04 00793	
		801	DME	MPDVAD,V\$ST3	SWITCH TO USER'S MAP	V2 04 00794	
000350	A	802	LDA	DBUFF,B		04 00795	
		803	IFF	VORTEX-2		V2 04 00796	
		804	DME	MPDVAD,V\$ST0	RESTORE MAP 0	V2 04 00797	
000351	A	805	STA	CTBUFF,X		04 00798	
		806	IFF	VORTEX-2		V2 04 00799	
		807	EQU	*		V2 04 00800	
		808	LDAE	TYCRLF		D.104 00801	
000352	A						
000353	R						
000354	A	809	STA	CTREAD,X		04 00802	
000355	A	810	TZA			04 00803	
000356	A	811	STA	CTWDS,X		04 00804	
000357	A	812	LDBE	TYBEL		D.104 00805	
000360	R						
000361	A	813	JOF	TY06-1	INITIAL INPUT PROCESSING NO CR/LF	04 00806	
000362	R						
000363	A	814	LDAE	TYCRLF	OUTPUT CR/LF	D.104 00807	
000364	R						
000365	A	815	STA	CTREAD,X		D.104 00808	
000366	A	816	JMP	TY05	OUTPUT CHAR.	04 00809	
000367	R						
000370	A	817	*	ENTER WHEN TTY OUTPUT NOT READY		04 00810	
000371	R	818	TY50	JSR	TYI18,B	SET OUTPUT INTERRUPT OFF	04 00811
000372	A	819	TZA			04 00812	
000373	A	820	LDX	V\$CTL	TIDB	04 00813	
000374	A	821	LDB	TBENTY,X	RESET START ADDR.	04 00814	
000375	A	822	STB	TBRSP,X		04 00815	
000376	A	823	JMP	V\$ERR		04 00816	
000377	E						
		824	*	TYI00, TELETYPE INTERRUPT PROCESSOR		04 00817	
		825	*			04 00818	
		826	*			04 00819	
		827	TYI00	EQU	*	04 00820	
000400	R	828	LDB	V\$CTL	CONTROLLER TIDB	04 00821	
000401	A	829	LDX	TBRSTS,B	GET CTBL ADDR.	04 00822	
000402	A	830	LDA	TBST,B	NOW CLEAR TIME DELAY FLAG	04 00823	
000403	A	831	ANA	BR6		04 00824	
000404	A	832	STA	TBST,B		04 00825	
000405	A	833	LDA	TBEVNT,B		04 00826	
000406	A	834	JANZ	TYI02	INTERRUPT OCCURRED	04 00827	
000407	R						
000410	A	835	LDA	CTOPBF,X		04 00828	
000411	A	836	DRA	CTJCPB,X		04 00829	
000412	A	837	JAZ	TYI00	NOT OPCOM OR JCP. CHECK I/O QUEUE	D.104 00830	
000413	R						
000414	A	838	LDAE	TYBEL		D.104 00831	
000415	R						
000416	A	839	JMP	TY06		04 00832	
000417	R						
000420	A	840	TYI00	EXC	DISPIM	D.104 00833	
000421	A	841	EXC	DISCLK		04 00834	
000422	A	842	STX	TYI01A+1	CTBL ADDR.	04 00835	
000423	A	843	LDB	CTRQBK,X	RQBLK ADDR	04 00836	
000424	A	844	TYI01	LDX	RADNR,B	B=HIGH PRIORITY RQBLK,X=LOW PRIORITY	04 00837
000425	A	845	JXZ	TYI01B	NO OTHER REQUEST	04 00838	
000426	R						
000427	A	846	LDA	RSTPR,X	CHECK PRIORITY OF NEXT REQ IN QUEUE	04 00839	
000430	A	847	SUB	RSTPR,B	B=1,X=2	04 00840	
000431	A	848	JAN	TYI01B	ALL DONE	04 00841	
000432	R						
000433	A	849	LDA	RADNR,X	NOW SWITCH ORDER IN QUEUE.GET =3	04 00842	
000434	A	850	STA	RADNR,B	LINK =3 TO NEW =2	04 00843	
000435	A	851	STB	RADNR,X	LINK NEW =2 TO NEW =1	04 00844	
000436	A	852	TXA		A=NEW=1 ADDR.	04 00845	
000437	A	853	TYI01A	LDXI	*	HIGHEST RQBLK ADDR OR CTBL	04 00846
000440	R						
000441	A	854	STA	RADNR,X	NOW HIGH PRIORITY REQUEST	04 00847	
000442	A	855	LDX	CTRQBK,X		04 00848	
000443	A	856	LDX	RTIDB,X		04 00849	
000444	A	857	INR	TBID,X	INCREMENT ACTIVE COUNT	04 00850	
000445	A	858	LDX	RTIDB,B		04 00851	
000446	A	859	LDA	TBID,X	DECREMENT ACTIVE COUNT	04 00852	
000447	A	860	DAR			04 00853	
000450	A	861	STA	TBID,X		04 00854	
		862	TYI01B	EQU	*	04 00855	
		863	LDB	V\$CTL	TIDB	04 00856	
000451	A	864	LDX	TBRSTS,B	CTBL	04 00857	
000452	A	865	LDB	4,X	RQBLK ADDR	E.2*****	
000453	A	866	LDA	2,B	FCB ADDR	E.2*****	
000454	A	867	STA	10,X	CTFCB	E.2*****	
000455	A	868	IFF	VORTEX-2		V2 04 00858	
		869	GATO	ENDC1B		V2 04 00859	
		870	LDX	CTRQBK,X	REQUEST BLOCK ADDRESS	V2 04 00860	
		871	LDB	RTIDB,X	REQUESTER'S TIDB ADDRESS	V2 04 00861	
		872	LDA	TBKEY,B	USER'S MAP KEY	V2 04 00862	
		873	ANA	BM17		V2 04 00863	

Address	Label	Op	Opnd	Description	Page	Line
001010	016000	A	1089	IFF VORTEX-2	V2	04 01078
			1090	DME MPDVAD,V*ST3	V2	04 01079
			1091	LDA DRECL,B		04 01080
			1092	IFF VORTEX-2	V2	04 01081
			1093	DME MPDVAD,V*ST0	V2	04 01082
001011	004201	A	1094	ASLA 1		04 01083
001012	145013	A	1095	SUB CTWDS,X		04 01084
001013	001010	R	1096	JAZ TYI33		04 01085
001015	025015	A	1097	LDB CTBUFF,X		04 01086
001016	014327	A	1098	LDA TYBLK		04 01087
001017	100444	A	1099	EXC DISPIB		04 01088
001020	100747	A	1100	EXC DISCLK		04 01089
001021	002000	A	1101	JMPM TYSTDR		04 01090
001022	001411	R				
001023	065015	A	1102	STB CTBUFF,X		04 01091
001024	001000	A	1103	JMP TYI30+2	B.2	04 01092
001025	001007	R				
001026	015013	A	1104	TYI32 LDA CTWDS,X		04 01093
001027	004341	A	1105	LSRA 1		04 01094
001030	001000	A	1106	JMP TYI14+2		04 01095
001031	000620	R				
001032	014003	A	1107	TYI33 LDA TYI34		04 01096
001033	005111	A	1108	IAR	B.2	04 01097
001034	001000	A	1109	JMP TYI32+1		04 01098
001035	001027	R				
001036	000000	A	1110	TYI34 DATA 0		04 01099
			1111	EJEC		04 01100
			1112			04 01101
			1113	TYU00 EQU *		04 01102
001037	100444	A	1114	EXC DISPIB		04 01103
001040	100747	A	1115	EXC DISCLK		04 01104
001041	002000	A	1116	JMPM TYOUT		04 01105
001042	001530	R				
001043	100244	A	1117	EXC ENAPIB		04 01106
001044	100147	A	1118	EXC ENACK		04 01107
	001045	R	1119	TYU1 EQU *		04 01108
001045	006506	A	1120	JSR TYI18,B		04 01109
001046	000733	R				
001047	025022	A	1121	LDB CTODSY,X		04 01110
001050	001020	A	1122	JBZ TYU21		04 01111
001051	001213	R				
001052	026002	A	1123	LDB DSOPCM,B		04 01112
001053	006433	A	1124	BT BTB1+11, TYU2		04 01113
001054	001037	R				
001055	001000	A	1125	JMP TYU21		04 01114
001056	001215	R				
001057	005012	A	1126	TYU2 TAB		04 01115
001060	015016	A	1127	LDA CTOPBF,X		04 01116
001061	001016	A	1128	JANZ TYU5		04 01117
001062	001125	R				
001063	015017	A	1129	TYU4 LDA CTJCPB,X		04 01118
001064	001016	A	1130	JANZ TYU5		04 01119
001065	001125	R				
001066	005021	A	1131	TBA		04 01120
001067	134260	A	1132	ERA TYSCOL		04 01121
001070	001010	A	1133	JAZ TYU30		04 01122
001071	001312	R				
001072	005021	A	1134	TBA		04 01123
001073	134255	A	1135	ERA TYSLSH		04 01124
001074	001010	A	1136	JAZ TYU40		04 01125
001075	001330	R				
001076	005021	A	1137	TBA		D.104 01126
001077	006137	A	1138	ERAE HASPCR		D.104 01127
001100	001347	R				
001101	001010	A	1139	JAZ TYU4A		D.104 01128
001102	001105	R				
001103	001000	A	1140	JMP TYU21		04 01129
001104	001215	R				
001105	006017	A	1141	TYU4A LDAE H*SF LG		D.104 01130
001106	000000	E				
001107	001002	A	1142	JAP TYU21		D.104 01131
001110	001215	R				
			1143	*		D.104 01132
001111	020300	A	1144	LDB V*CTL		D.104 01133
001112	016010	A	1145	LDA TBRSTS,B		D.104 01134
			1146	SCHED 9,0,106,'F','HO','PC','		D.104 01135
001113	006505	A				
001114	000406	A				
001115	000111	A				
001116	143152	A				
001117	144317	A				
001120	150303	A				
001121	120240	A				
001122	056010	A	1147	STA TBRSTS,B		D.104 01136
001123	001000	A	1148	JMP TYU20		D.104 01137
001124	001213	R				
	001125	R	1149	TYU5 EQU *		04 01138
001125	100444	A	1150	EXC DISPIB		04 01139
001126	100747	A	1151	EXC DISCLK		04 01140
001127	002000	A	1152	JMPM TYCONT		04 01141
001130	001437	R				
001131	001007	A	1153	JDFN TYU9		04 01142

Address	Hex	Op	Label	Op	Comment	Line	Page	
001132	001164	R						
001133	001020	A	1154	JRZ	TYU6	BACKSLASH	04 01143	
001134	001155	R						
001135	005322	A	1155	DBR			04 01144	
001136	001020	A	1156	JRZ	TYU26	CR	04 01145	
001137	001265	R						
001140	005122	A	1157	IBR		B=UPDATED BUFFER ADDR.	04 01146	
001141	015013	A	1158	LDA	CTWDS,X		04 01147	
001142	001010	A	1159	JAZ	TYU6	FIRST CHAR.,TREAT AS BACKSLASH.	04 01148	
001143	001155	R						
001144	015017	A	1160	LDA	CTJCPB,X	BACKARROW	04 01149	
001145	001016	A	1161	JANZ	*+5		04 01150	
001146	001152	R						
001147	065016	A	1162	STB	CTDPBF,X		04 01151	
001150	001000	A	1163	JMP	TYU7		04 01152	
001151	000106	R						
001152	065017	A	1164	STB	CTJCPB,X		04 01153	
001153	001000	A	1165	JMP	TYU7		04 01154	
001154	000106	R						
001155	005001	A	1166	TYU6	TZA	BACKSLASH	04 01155	
001156	055013	A	1167	STA	CTWDS,X		04 01156	
001157	055017	A	1168	STA	CTJCPB,X	CLEAR JCP,DPCOM POINTERS	04 01157	
001160	055016	A	1169	STA	CTDPBF,X		04 01158	
001161	050346	A	1170	STA	VSDPCF	NON CLEAR DPCOM LOCKOUT FLAG.	04 01159	
			1171	IFF	VURTEX-2		V2 04 01160	
			1172	STA	CTJDFL,X	CLEAR JCP/DPCOM INPUT FLAG	V2 04 01161	
001162	001000	A	1173	JMP	TYU21		04 01162	
001163	001215	R						
			1174	*			04 01163	
	001164	R	1175	TYU9	EQU	*	04 01164	
001164	100444	A	1176	EXC	DISPIM	ENTER IF NOT BACKSLASH,BACKARROW,CR	04 01165	
001165	100747	A	1177	EXC	DISCLK		04 01166	
001166	002000	A	1178	JMPM	TYSTOR		04 01167	
001167	001411	R						
001170	015016	A	1179	LDA	CTDPBF,X		04 01168	
001171	001010	A	1180	JAZ	TYU10	MUST BE JCP	04 01169	
001172	001176	R						
001173	065016	A	1181	STB	CTDPBF,X	STORE BUFFER ADDR.	04 01170	
001174	001000	A	1182	JMP	TYU7		04 01171	
001175	000106	R						
001176	065017	A	1183	TYU10	STB	CTJCPB,X	STORE BUFFER ADDR.	04 01172
001177	001000	A	1184	JMP	TYU7		04 01173	
001200	000106	R						
001201	055017	A	1185	STA	CTJCPB,X		04 01174	
			1186	IFF	VURTEX-2		V2 04 01175	
			1187	STA	CTJDFL,X	INITIALIZE JCP/DPCOM INPUT FLAG	V2 04 01176	
001202	020314	A	1188	TYU19	LDA	VSTJCP	GET JCP TIDE	04 01177
001203	010075	A	1189	LDA	VBRCLR	KEY AND LU NO.	04 01178	
001204	001020	A	1190	JRZ	TYU6	JMP TO NO JCP OR DPCOM	04 01179	
001205	001155	R						
001206	056010	A	1191	STA	IBRSTS,B		04 01180	
001207	016001	A	1192	LDA	TBRST,B		04 01181	
001210	150457	A	1193	ANA	BR14	SET JCP ACTIVE	04 01182	
001211	150441	A	1194	ANA	ZP0	CLEAR TASK LOADED STATUS FLAG	04 01183	
001212	056001	A	1195	STA	IBRST,B		04 01184	
001213	020300	A	1196	TYU20	LDB	VACTL	CTRL	04 01185
001214	036010	A	1197	LDB	IBRSTS,B		04 01186	
001215	015010	A	1198	TYU21	LIA	CTSTAT,X	OUTPUT CR/LF	04 01187
001216	007400	A	1199	ROR			04 01188	
			1200	IFF	VURTEX-2		V2 04 01189	
			1201	JAZ	TYU21		V2 04 01190	
			1202	IFF	VURTEX-2		V2 04 01191	
001217	001010	A	1203	JAZ	TYU21+3		04 01192	
001220	000352	R						
001221	001000	A	1204	JAP	TYU22	CHECK WRITE	04 01193	
001222	001243	A						
001223	014116	A	1205	LDA	TYLF	OUTPUT LF,UNSOLICITED REQUEST	04 01194	
001224	001000	A	1206	JMP	TYU10+2		04 01195	
001225	000140	R						
001226	005001	A	1207	TYU21A	TZA		04 01196	
001227	020399	A	1208	VACTL			04 01197	
001230	056003	A	1209	STA	IBRINT,B		04 01198	
001231	016011	A	1210	LDA	IBRNTY,B		04 01199	
001232	056007	A	1211	STA	IBRSP,B	SET P ADDR. TO ENTRY LOCATION	04 01200	
001233	016001	A	1212	LDA	IBRST,B		04 01201	
001234	110437	A	1213	ANA	BR14		04 01202	
001235	056001	A	1214	STA	IBRST,B	SET INACTIVE	04 01203	
001236	015000	A	1215	LDA	CTACT,X	UNSOLICITED WITH NO INTERRUPTION	04 01204	
001237	150460	A	1216	ANA	BR15	OF REQUEST IN PROGRESS.	04 01205	
001240	055000	A	1217	STA	CTACT,X		04 01206	
			1218	EXT	VDFRNM		04 01207	
001241	001000	A	1219	JMP	VDFRNM		04 01208	
001242	000000	R						
			1220	*			04 01209	
001243	005011	A	1221	TYU22	DAR		04 01210	
001244	001016	A	1222	JANZ	TYU24	CHECK WDEF OR FUNC	04 01211	
001245	001262	R						
001246	015023	A	1223	LDA	CTAMP,X	WRITE. GET PREVIOUSLY CALC CHAR. COUNT	04 01212	
001247	055013	A	1224	STA	CTWDS,X		04 01213	
001250	025012	A	1225	LDA	CTJCPB,X	GET JOB ADDR.	04 01214	
001251	001020	A	1226	JRZ	TYU2	CTJCPB=0 MEANS TO OUTPUT PRINT CONTROL CHAR	04 01215	
001252	000232	R						
			1227	IFF	VURTEX-2		V2 04 01216	

Address	Op	Opnd	Label	Description	Flags
001253	016001	A	1228	ONE MPDVAD,V\$ST3 SWITCH TO USER'S MAP	V2 04 01217
			1229	LDA DBUFF,B RESET OUTPUT TO START OF MESSAGE.	04 01218
			1230	IFF VORTEX-2	V2 04 01219
			1231	ONE MPDVAD,V\$ST0 RESTORE MAP 0	V2 04 01220
001254	055015	A	1232	STA CTBUFF,X	04 01221
001255	024064	A	1233	LDB TYLF GET LINE FEED	04 01222
001256	001000	A	1234	JMP TY05 OUTPUT CHARACTER.	04 01223
001257	000072	R			
001260	005311	A	1235	* TYU24 DAR	04 01224
001261	001010	A	1236	JAZ TY10 WEDF	04 01225
001262	000136	R	1237		04 01226
001263	001000	A	1238	JMP TY04 FUNC	04 01227
001264	000055	R			
001265	001265	R	1239	* TYU26 EQU	04 01228
001266	015013	A	1240	LDA CTWDS,X	04 01229
001267	006440	A	1241	BT BTA0,TYU27	04 01230
001268	001301	R			
001270	014055	A	1243	LDA TYBLK CR PROCESSED.	04 01232
001271	025016	A	1244	LDB CTOPBF,X SET BLANKS FOR ODD CHAR.	04 01233
001272	001026	A	1245	JBN2 *+3	04 01234
001273	001273	R			
001274	025017	A	1246	LDB CTJCPB,X	04 01235
001275	100444	A	1247	EXC DISPIM	04 01236
001276	100747	A	1248	EXC DISCLK	04 01237
001277	002000	A	1249	JMPM TYSTOR	04 01238
001300	001411	A			
001301	015016	A	1250	* TYU27 LDA CTOPBF,X	04 01239
			1251	IFF VORTEX-2	V2 04 01240
			1252	JAZ TYU19-2 MUST BE JCP	V2 04 01241
			1253	IFT VORTEX-2	V2 04 01242
			1254	JAZ TYU19-1 MUST BE JCP	V2 04 01243
001302	001010	A			
001303	001001	R			
001304	005001	A	1255	TZA	04 01244
001305	055016	A	1256	STA CTOPBF,X	04 01245
			1257	IFF VORTEX-2	V2 04 01246
			1258	STA CTJOPFL,X INITIALIZE JCP/OPCOM INPUT FLAG	V2 04 01247
001306	020311	A	1259	LDB V\$OPCL OPCOM TIDB	04 01248
001307	010347	A	1260	LDA V\$FGLB FOREGND LIB KEY AND LU NO.	04 01249
001310	001000	A	1261	JMP TYU19+2	04 01250
001311	001204	R			
001312	055019	A	1262	* TYU30 STA CTWDS,X	04 01251
001313	010346	A	1263	LDA V\$OPCF	04 01252
001314	001016	A	1264	JANZ TYU21 CK OPCOM IN-PROGRSS LOCK OUT FLAG	04 01253
001315	001215	R			
001316	005021	A	1266	TBA	04 01255
001317	020311	A	1267	LDB V\$OPCL OPCOM TIDB	04 01256
001320	026001	A	1268	LDB TBST,B GET STATUS WORD,CHECK BIT 0	04 01257
001321	006420	A	1269	BT BTB1,TYU21 B=1,TASK STILL NOT EXITED	04 01258
001322	001215	R			
001323	040346	A	1270	INR V\$OPCF	04 01259
001324	020413	A	1271	LDB V\$OCB	04 01260
001325	065016	A	1272	STB CTOPBF,X	04 01261
			1273	IFF VORTEX-2	V2 04 01262
			1274	JMP TYU41	V2 04 01263
			1275	IFT VORTEX-2	V2 04 01264
			1276	JMP TYU9	04 01265
001326	001000	A			
001327	001164	R			
001330	010377	A	1277	* TYU40 LDA V\$JOP	04 01266
001331	001016	A	1278	JANZ TYU21	04 01267
001332	001215	R			
001333	055013	A	1280	STA CTWDS,X	04 01269
001334	005021	A	1281	TBA	04 01270
001335	020412	A	1282	LDB V\$JCB	04 01271
001336	065017	A	1283	STB CTJCPB,X	04 01272
			1284	IFF VORTEX-2	V2 04 01273
			1285	TYU41 STB CTJOPFL,X	V2 04 01274
			1286	JMP TYU9	04 01275
001337	001000	A			
001340	001164	R			
001341	120240	A	1287	* TELETYPE SPECIAL CHARACTER CODES	04 01276
001342	105212	A	1288	TYDBLK DATA 0120240 BLANK,BLANK	04 01277
001343	105212	A	1289	TYLF DATA 0105212 LINE FEED BUFFER	04 01278
001344	000215	A	1290	DATA 0105212	04 01279
001345	000207	A	1291	TYCR DATA 0215 CARRIAGE RETURN CHARACTER	04 01280
001346	000207	A	1292	TYBEL DATA 0207 BELL CHARACTER	04 01281
001347	000201	A	1293	TYBLK DATA 0240 ASCII BLANK	04 01282
001348	000201	A	1294	HASPCR DATA 0201 CONTROL-A CHARACTER	D.1 04 01283
001350	000273	A	1295	TYSCOL DATA 0273 SEMI-COLON CHARACTER	04 01284
001351	000257	A	1296	TYSLSH DATA 0257 SLASH CHARACTER	04 01285
001352	000337	A	1297	TYBARR DATA 0337 BACK-ARROW CHARACTER	04 01286
001353	000334	A	1298	TYBSLH DATA 0334 BACKSLASH CHARACTER	04 01287
001354	106612	A	1299	TYCRLF DATA 0106612 CR AND LF	04 01288
			1300	* DATA 0253	04 01289
001355	000253	A	1301	TYPLS DATA 0253 ASCII PLUS SIGN	D.1 04 01290
001356	000000	A	1302	TYPLSF DATA 0 PLUS FLAG	D.1 04 01291
001357	000000	A	1303	TYTEMP DATA 0 TEMPORARY	D.1 04 01292
			1304	EJEC	04 01293
001360	000000	A	1305	TYPIM ENTR	04 01294
			1306	* DATA 0	04 01295
			1307	* DATA 0	04 01296

Address	Hex	Mode	Label	Op	Opnd	Description	Page	Line
001361	064020	A	1308	STR	TYP10+2	X REG = CTBL	04	01297
001362	054021	A	1309	STA	TYP10+4		04	01298
001363	025020	A	1310	LDB	CTHPIM,X	PIM NO.	04	01299
001364	016363	A	1311	LDA	VSPIM,B	GET PIM DEVICE ADDR	04	01300
001365	006110	A	1312	ORAI	#10S100		04	01301
001366	103100	A						
001367	054010	A	1313	STA	TYP10	DAR PIM INSTRUCTION	04	01302
001370	016320	A	1314	LDA	VSPIM,B	GET SYSTEM PIM MASK.	04	01303
001371	025021	A	1315	LDB	CTHLMK,X	LINE NO.	04	01304
001372	116421	A	1316	LDA	BSP,B	GET MASK	04	01305
001373	001001	A	1317	JOF	*#2	JUMP IF TO DISABLE.	04	01306
001374	001376	R						
001375	106421	A	1318	ERA	BSP,B	TURN INTERRUPT ON	04	01307
001376	025020	A	1319	LDB	CTHPIM,X		04	01308
001377	056020	A	1320	STA	VSPIM,B	RESTORE SYSTEM MASK	04	01309
001400	103140	A	1321	DAR	PIM1	INSTRUCTION MODIFIED FOR PROPER PIM	04	01310
001401	006020	A	1322	LDBI	*	RESTORE B REG.	04	01311
001402	001401	R						
001403	006010	A	1323	LDAI	*	RESTORE A REG.	04	01312
001404	001403	R						
001405	100147	A	1324	EXC	ENACKL		04	01313
001406	100244	A	1325	EXC	ENAPIM		04	01314
001407	001000	A	1326	JMP*	TYPIM		04	01315
001410	101360	R						
			1327	SJEC			04	01316
			1328	* ENROUTINE TO STORE 1 CHAR.			04	01317
001411	000000	A	1329	TYSTOR	ENTR	ENTER WITH X=CTBL,A=CHAR IN BITS 7-0	04	01318
			1330	IFX	VORTEX-2		V2	04
			1331	LDA	CTJDFL,X	JOP/BOCOM INPUT FLAG	V2	04
001412	006437	A	1332	BT	B*1+15,TYST1	TEST SIGN BIT OF B REG. B=BUFFER ADDR	04	01321
001413	001422	R						
001414	004250	A						
			1333	LDA	B	CHAR N, POSITION TO BITS 15-8	04	01322
			1334	IFX	VORTEX-2		V2	04
			1335	ENDC07			V2	04
			1336	XNZ	TYST0A	STORE CHARACTER	V2	04
			1337	XNZ	TYST0B		V2	04
			1338	ONE	MPVAD,V\$ST3	SWITCH TO USER MAP	V2	04
			1339	TYST0A	STA	STORE CHARACTER	V2	04
			1340	ONE	MPVAD,V\$ST0	RESTORE MAP 0	V2	04
			1341	TYST0B	SOI	*	V2	04
			1342	ENDC07	CONT		V2	04
			1343	IFX	VORTEX-2		V2	04
001415	056000	A	1344	STA	B	STORE CHAR	04	01327
001416	004250	A	1345	LDA	B		04	01328
001417	005222	A	1346	CFB		COMPLEMENT BUFFER ADDR FOR CHAR N+1	04	01329
001420	001000	R	1347	JMP	TYST2		04	01330
001421	001422	R						
001422	005222	A	1348	TYST1	OPR	CHAR N+1	04	01331
			1349	IFX	VORTEX-2		V2	04
			1350	GOVD	ENDC09		V2	04
			1351	STA	TYST10+1	SAVE CHARACTER TO BE STORED	V2	04
			1352	XNZ	TYST1A	GET PRIOR STORED CHARACTER	V2	04
			1353	XNZ	TYST1B		V2	04
			1354	ONE	MPVAD,V\$ST3	SWITCH TO USER MAP	V2	04
			1355	TYST1A	LDA	GET PRIOR STORED CHARACTER	V2	04
			1356	ONE	MPVAD,V\$ST0	RESTORE MAP 0	V2	04
			1357	TYST1B	SOI	*	V2	04
			1358	ENDC09	CONT		V2	04
			1359	IFX	VORTEX-2		V2	04
			1360	GOVD	ENDC10		V2	04
001423	054003	A	1361	STA	B		04	01340
001424	016000	A	1362	LDA	B	GET PRIOR STORED CHAR N	04	01341
			1363	IFX	VORTEX-2		V2	04
			1364	ENDC10	CONT		V2	04
001425	150462	A	1365	ORA	*	CLEAR IN CASE BACKARROW	04	01342
			1366	IFX	VORTEX-2		V2	04
			1367	GOVD	ENDC11		V2	04
			1368	TYST1C	ORAI	* COMBINE CHARACTERS N AND N+1	V2	04
			1369	XNZ	TYST1D	STORE CHARACTERS N AND N+1	V2	04
			1370	JNZ	TYST1E		V2	04
			1371	ONE	MPVAD,V\$ST3	SWITCH TO USER MAP	V2	04
			1372	TYST1D	STA	STORE CHARACTERS N AND N+1	V2	04
			1373	ONE	MPVAD,V\$ST0	RESTORE MAP 0	V2	04
			1374	TYST1E	SOI	*	V2	04
			1375	ENDC11	CONT		V2	04
			1376	IFX	VORTEX-2		V2	04
			1377	GOVD	ENDC12		V2	04
			1378	ORAI	*		V2	04
001426	006110	A	1379	STA	B	STORE CHAR	04	01347
			1380	IFX	VORTEX-2		V2	04
			1381	ENDC12	CONT		V2	04
001431	005122	A	1382	LDR		INCREMENT TO NEXT BUFFER LOCATION	04	01348
			1383	IFX	VORTEX-2		V2	04
			1384	GOVD	ENDC13		V2	04
			1385	TYST2	IFX	CONTROLLER LINE	V2	04
			1386	LDA	CTHDS,X	CTBL ADDRESS	V2	04
			1387	IND	CTHDS,X	INCREMENT INPUT COUNT	V2	04
			1388	ENDC13	CONT		V2	04
			1389	IFX	VORTEX-2		V2	04
001432	045010	A	1390	TYST2	IFX	RETURN WITH A = CHAR PROCESS IN BITS 7-0	04	01349
001433	100147	A	1391	EXC	ENACKL		04	01350
001434	100244	A	1392	EXC	ENAPIM		04	01351

Address	Op	Op2	Op3	Op4	Description	Op5	Op6	
001435	001000	A	1393	JMP*	TYSTOR	B = NEXT BUFFER LOCATION	04 01382	
001436	101411	R						
			1394	EJEC			04 01383	
			1395	*,			04 01384	
001437	000000	A	1396	TYCONT	ENTR	ENTER WITH CHAR IN B REG, BUFFER IN A REG	04 01385	
			1397	IFF	VORTEX-2		V2 04 01386	
			1398	LDX	CTJDFL,X	JCP/DPCOM INPUT FLAG	V2 04 01387	
001440	054034	A	1399	STA	TYCT20+1	SAVE BUFFER ADDR	04 01388	
001441	054022	A	1400	STA	TYCT5+1		04 01389	
001442	007400	A	1401	ROP			04 01390	
001443	005021	A	1402	TBA			04 01391	
001444	006137	A	1403	ERAE	TYBSLH	BACKSLH CHARACTER	04 01392	
001445	001353	R						
001446	001010	A	1404	JAZ	TYCT10		04 01393	
001447	001471	R						
001450	005021	A	1405	TBA			04 01394	
001451	006137	A	1406	ERAE	TYBARR	BACK-ARROW CHARACTER	04 01395	
001452	001352	R						
001453	001010	A	1407	JAZ	TYCT20		04 01396	
001454	001474	R						
001455	005021	A	1408	TBA			04 01397	
001456	006137	A	1409	ERAE	TYCR		04 01398	
001457	001344	R						
001460	001010	A	1410	JAZ	TYCT24	CR	04 01399	
001461	001524	R						
001462	005021	A	1411	TBA			04 01400	
001463	006020	A	1412	TYCT5	LDBI	*	04 01401	
001464	001463	R						
			1413	IFT	VORTEX-2		V2 04 01402	
			1414	GOTO	ENDC08		V2 04 01403	
			1415	LDX	V\$CTL	CONTROLLER TIDB ADDRESS	V2 04 01404	
			1416	LDB	TERSTS,X	CTBL ADDRESS	V2 04 01405	
			1417	ENDC08	CONT		V2 04 01406	
001465	100244	A	1418	EXC	ENAPIM		04 01407	
001466	100147	A	1419	EXC	ENACLK		04 01408	
001467	001000	A	1420	JMP*	TYCONT	RETURN WITH OVERFLOW OFF	04 01409	
001470	101437	R						
			1421	*			04 01410	
001471	001471	R	1422	TYCT10	EQU	*	04 01411	
001472	005002	A	1423	TZE		ENTER FOR BACKSLASH	04 01412	
001473	001000	A	1424	JMP	TYCT24+1	SET B=0, OVERFLOW TO INDICATE BACKSLASH.	04 01413	
001474	006020	A	1425	TYCT20	LDBI	*	04 01414	
001475	001474	R				ENTER FOR BACK-ARROW		
001476	005021	A	1426	TBA			04 01415	
001477	001004	A	1427	JAN	TYCT22	CHAR. N LAST STORED CHAR.	04 01416	
001500	001515	R						
001501	005322	A	1428	DBR		CHAR. N-1 LAST STORED CHAR	04 01417	
			1429	IFT	VORTEX-2		V2 04 01418	
			1430	GOTO	ENDC14		V2 04 01419	
			1431	XXNZ	TYCTA	GET PRIOR STORED CHARACTER	V2 04 01420	
			1432	JXNZ	TYCTB		V2 04 01421	
			1433	OME	MPQVAD,V\$ST3	SWITCH TO USER MAP	V2 04 01422	
			1434	TYCTA	LDA	0,B	GET PREVIOUSLY STORED CHARACTER	V2 04 01423
			1435	OME	MPQVAD,V\$ST0	RESTORE MAP 0	V2 04 01424	
			1436	TYCTB	EQU	*	V2 04 01425	
			1437	ENDC14	CONT		V2 04 01426	
			1438	IFT	VORTEX-2		V2 04 01427	
001502	016000	A	1439	LDA	0,B	NO	04 01428	
001503	150462	A	1440	ANA	LHW	CLEAR CHAR N+1	04 01429	
001504	006117	A	1441	DRAE	TYBLK	OR ASCII BLANK FOR CHAR N+1	04 01430	
001505	001346	R						
			1442	IFT	VORTEX-2		V2 04 01431	
			1443	GOTO	ENDC15		V2 04 01432	
			1444	XXNZ	TYCTC		V2 04 01433	
			1445	JXNZ	TYCTD		V2 04 01434	
			1446	OME	MPQVAD,V\$ST3	SWITCH TO USER MAP	V2 04 01435	
			1447	TYCTC	STA	0,B	GET PREVIOUSLY STORED CHARACTER	V2 04 01436
			1448	OME	MPQVAD,V\$ST0	RESTORE MAP 0	V2 04 01437	
			1449	TYCTD	EQU	*	V2 04 01438	
			1450	ENDC15	CONT		V2 04 01439	
			1451	IFT	VORTEX-2		V2 04 01440	
001506	056000	A	1452	STA	0,B		04 01441	
001507	005222	A	1453	OPB			04 01442	
			1454	IFT	VORTEX-2		V2 04 01443	
			1455	GOTO	ENDC16		V2 04 01444	
			1456	TYCT21	LDX	V\$CTL	CONTROLLER TIDB	V2 04 01445
			1457	LDB	TERSTS,X	CTBL ADDRESS	V2 04 01446	
			1458	LDB	CTMBS,X		V2 04 01447	
			1459	ENDC16	CONT		V2 04 01448	
			1460	IFT	VORTEX-2		V2 04 01449	
001510	015013	A	1461	TYCT21	LDA	CTMBS,X	04 01450	
001511	005311	A	1462	BAR			04 01451	
001512	055013	A	1463	STA	CTMBS,X		04 01452	
			1464	IFF	VORTEX-2		V2 04 01453	
			1465	JANZ	TYCT24+1	NOI FIRST CHARACTER	V2 04 01454	
			1466	IFF	VORTEX-2		V2 04 01455	
			1467	STA	CTJDFL,X	CLEAR JCP/DPCOM INPUT FLAG	V2 04 01456	
			1468	JMP	TYCT24+1		04 01457	
001513	001000	A						
001514	001525	R						
001515	006017	A	1469	TYCT22	LDAE	TYBLK	04 01458	
001516	001346	R						
001517	004250	A	1470	LRLA	B		04 01459	

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001520 005222 A 1471      OPB
1472      IFT      VORTEX-2
1473      GUTD      ENDC17
1474      YXNZ      TYCTE
1475      JXNZ      TYCTF
1476      DMS      MPDVAD,V$ST3 SWITCH TO USER MAP
1477 TYCTE      STA      0,B
1478      DMS      MPDVAD,V$ST0 RESTORE MAP 0
1479 TYCTF      EQU      *
1480 ENDC17      COUNT
1481      IFT      VORTEX-2
1482      STA      0,B
001522 001000 A 1483      JMP      TYCT21
001523 001510 R
001524 005102 A 1484 TYCT24      INCR      02          CR CHAR.,D=1
001525 007401 A 1485      SHL
001526 001000 A 1486      JMP      TYCT5+2          SET OVERFLOW FOR CR, BACKSLASH, BACKARROW
001527 001465 R
1487      EJECT
1488 *          OUTPUT/INPUT 1 CHARACTER SUBROUTINE
001530 000000 A 1489 TYDUT      ENIR          ENTER VIA JMPM TYDUT
1490 *
1491 *          RETURN OVERFLOW OFF IF OUTPUT SUCCESSFUL
1492 *          OVERFLOW ON IF INPUT CHARACTER
1493 *          TIME-OUT COUNT, MAKE COMPATIBLE TO DEBUG
001531 007400 A 1492      ROP
001532 020432 A 1493      LDB      R09
001533 065005 A 1494      STS      CTCONT,X
001534 005012 A 1495      TAP
001535 006010 A 1496      LDAR      110:100          DETECTED, INPUT IN A REG.
001536 101100 A
001537 115006 A 1497      BSA      OTDVAT,X
001540 054013 A 1498      STA      TYDT2
001541 120427 A 1499      RDB      006
001542 054007 A 1500      STA      TYDT1
001543 006120 A 1501      ADDI      00300
001544 001300 A
001545 054042 A 1502      STA      TYDT5
001546 120431 A 1503      AND      008
001547 054030 A 1504      STA      TYDT3
001550 007400 A 1505      ROP
001551 003021 A 1506      BR      0001, TYDT6
001552 101201 A 1507 TYDT1      SEN          SENSE INPUT READY
001553 001610 R
001554 101101 A 1508 TYDT2      OFN          010:, TYDT3
001555 001605 R
001556 030300 A 1509      LEX      000TL
001557 005002 A 1510      TDB
001560 065000 A 1511      STS      0BEVNT,X
001561 006027 A 1512      LIRE      TYDUT          SAVE RETURN ADDR.
001562 001530 R
1513      DELAY      0,0,0          DELAY 15 MILLISEC
001563 006505 A
001564 000436 A
001565 001100 A
001566 000003 A
001567 000000 A
001570 100444 A 1514      SXC      00SPIM
001571 100747 A 1515      ENI      000CLK
001572 030300 A 1516      LDY      00CTL          RESTORE CTRL
001573 035010 A 1517      LDW      00PARTS,X
001574 006067 A 1518      STBE      TYDUT
001575 001530 R
001576 025005 A 1519      LDB      CTCONT,X
001577 001020 A 1520      JBR      0000
001600 000370 R
001601 005022 A 1521      BRB
001602 065000 A 1522      STA      CTCONT,X
001603 001000 A 1523      SHR      0000T+4
001604 001534 R
001605 103101 A 1524 TYDT3      DAP      01          OUTPUT 1 CHAR
001606 001000 A 1525      JMP*      TYDUT
001607 101530 R
001610 102501 A 1526 TYDT6      CIA      01          INPUT 1 CHAR
001611 007401 A 1527      SHL
001612 001000 A 1528      JMP      TYCT2          NOW SEND CHAR.
001613 001530 R
1529      ENI

```

ENTRY NAMES

```

000000 R VSTYA
EXTERNAL NAMES
001106 E H$SFLG 000377 E V$ERR 000000 E V$EXEC 000638 E V$FNR
001242 E V$FBRM
SYMBOLS

```

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000044 A APIM 000002 A B 000000 A B0 000001 A B1
000012 A B10 000013 A B11 000014 A B12 000015 A B13
000016 A B14 000017 A B15 000018 A B16 000019 A B17
000020 A B18 000021 A B19 000022 A B20 000023 A B21
000024 A B22 000025 A B23 000026 A B24 000027 A B25
000028 A B26 000029 A B27 000030 A B28
000031 A B29 000032 A B30 000033 A B31 000034 A B32
000035 A B33 000036 A B34 000037 A B35 000038 A B36
000039 A B37 000040 A B38 000041 A B39 000042 A B40
000043 A B41 000044 A B42 000045 A B43 000046 A B44
000047 A B45 000048 A B46 000049 A B47 000050 A B48
000051 A B49 000052 A B50 000053 A B51 000054 A B52
000055 A B53 000056 A B54 000057 A B55 000058 A B56
000059 A B57 000060 A B58 000061 A B59 000062 A B60
000063 A B61 000064 A B62 000065 A B63 000066 A B64
000067 A B65 000068 A B66 000069 A B67 000070 A B68
000071 A B69 000072 A B70 000073 A B71 000074 A B72
000075 A B73 000076 A B74 000077 A B75 000078 A B76
000079 A B77 000080 A B78 000081 A B79 000082 A B80
000083 A B81 000084 A B82 000085 A B83 000086 A B84
000087 A B85 000088 A B86 000089 A B87 000090 A B88
000091 A B89 000092 A B90 000093 A B91 000094 A B92
000095 A B93 000096 A B94 000097 A B95 000098 A B96
000099 A B97 000100 A B98 000101 A B99 000102 A B00

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000452 A BR9      000421 A BS0      000422 A BS1      000433 A BS10
000434 A BS11     000435 A BS12     000436 A BS13     000437 A BS14
000440 A BS15     000423 A BS2      000424 A BS3      000425 A BS4
000426 A BS5      000427 A BS6      000430 A BS7      000431 A BS8
000432 A BS9      000040 A BTA0     000000 A BTA1     000020 A BTB1
000047 A CLOCK    000000 A COTAD1   000000 A CTACT    000001 A CTADNC
000011 A CTBICB   000015 A CTBUFF   000003 A CTBST    000006 A CTBVAT
000023 A CTEMP    000012 A CTFCB    000014 A CTFRCT   000014 A CTFREQ
000000 A CTIDB    000007 A CTIDA    000017 A CTJCPB   000025 A CTMODE
000022 A CTODST   000016 A CTOPBF   000002 A CTOPM    000017 A CTPST0
000020 A CTPST1   000021 A CTPST2   000022 A CTPST3   000005 A CTRCNT
000024 A CTREAD   000004 A CTROSK   000005 A CTRTRY   000010 A CTSTAT
000015 A CTSTSZ   000016 A CTRRSZ   000013 A CTWDS    000021 A CTWLWK
000020 A CTWPIM   000001 A DBUFF    000002 A DCNT     000747 A DISCLK
000745 A DISMP    000444 A DISPIM   000000 A DRECL    000002 A DSCTAD
000000 A DSDASS   000000 A DSDVDM   000002 A DSLCKO   000001 A DSNAME
000000 A DSNDRQ   000002 A DSDPCM   000002 A DSPSTI   000002 A DSREND
000000 A DSUNAM   000002 A DSUNTN   000424 A EIGHT    000147 A ENACLK
000645 A ENAMP    000244 A ENAP1M   000002 A FACM     000001 A FBUFF
000003 A FCADR    000004 A FCEOF    000006 A FEFE     000005 A FIFE
000465 A FIVE     000007 A FNAM1    000010 A FNAM2    000011 A FNAM3
000423 A FOUR     000000 A FRECL    001106 E HSSFLG   001347 R HASPCR
000306 A KOP      000300 A LC        000050 A LCJP     000462 A LHW
000152 A LOP      000126 R MUDE4    000045 A MP        000045 A MPMR0
000145 A MPMR1    000245 A MPMR2    000343 A MPMR3    000420 A MT
000461 A NEG      000470 A NINE     000341 R NMDE4    000000 A NW
000421 A ONE      000040 A PIM1     000041 A PIM2     000042 A PIM3
000043 A PIM4     000040 A PIM5     000040 A PIM6     000040 A PIM7
000040 A PIM8     000312 A POP      000002 A PSBADT   000000 A PSBEG
000004 A PSEND    000003 A PSNSEC   000001 A PSPROT   000010 A RAO
000000 A RA1      000004 A RADNR    000060 A RE0      000020 A RB1
000002 A RAFCB   000463 A RHW      000001 A RDPWD    000000 A RSTPR
000003 A RTIDB    000467 A SEVEN    000466 A SIX      000027 A TBAT3K
000026 A TBCPTH   000011 A TBENTY   000003 A TBEVNT   000021 A TBID
000014 A TBISA    000015 A TBISP    000017 A TBISP    000021 A TBICRS
000016 A TBISX    000022 A TEKN1    000023 A TEKN2    000024 A TEKN3
000002 A TBPL     000004 A TERSA    000005 A TERSE    000030 A TERSE
000007 A TBRSP    000010 A TBRSTS   000006 A TERSE    000003 A TBS0
000001 A TBS1     000012 A TBS10    000013 A TBS11    000014 A TBS12
000015 A TBS13    000016 A TBS14    000017 A TBS15    000022 A TBS2
000003 A TBS3     000004 A TBS4     000005 A TBS5     000006 A TBS6
000007 A TBS7     000010 A TBS8     000011 A TBS9     000001 A TBSI
000025 A TBTLC    000013 A TBTMIN   000012 A TBTMS    000000 A TBTRE
000471 A TEN      000464 A THREE    000422 A TWO      000021 R TY02
000055 R TY04    000063 R TY01A    000072 R TY05     000110 R TY06
000106 R TY07    000117 R TY08     000136 R TY10     000541 R TY105
000156 R TY20    000165 R TY28     000213 R TY28A    000232 R TY29
000241 R TY30    000261 R TY31     000272 R TY32     000320 R TY34
000347 R TY40    000355 R TY42     000376 R TY50     001352 R TYBARR
001345 R TYBEL   001346 R TYBLK    001353 R TYBSLH   001437 R TYCNT
001344 R TYCR    001354 R TYCRLF   001471 R TYCT10   001474 R TYCT20
001510 R TYCT21 001515 R TYCT22   001524 R TYCT24   001463 R TYCT5
001341 R TYDBLK   000420 R TYI00    000424 R TYI01    000427 R TYI01A
000451 R TYI01B 000466 R TYI02    000525 R TYI03    000533 R TYI04
000546 R TYI06   000575 R TYI10    000637 R TYI12    000602 R TYI13
000616 R TYI14 000674 R TYI15A   000701 R TYI16    000710 R TYI16A
000710 R TYI16B 000741 R TYI17    000753 R TYI18    000656 R TYI20
000762 R TYI22   000770 R TYI24    001001 R TYI26    001003 R TYI30
001026 R TYI32   001032 R TYI33    001036 R TYI34    000630 R TYIEXT
000400 R TYI700 001342 R TYLF    001552 R TYDT1    001554 R TYDT2
001605 R TYDT3   001610 R TYDT6    001533 R TYDUT    001490 R TYP10
001360 R TYPIM   001355 R TYPLS    001356 R TYPLSF   001356 R TYSCDL
001351 R TYSLSH 001422 R TYST1    001432 R TYST2    001411 R TYSTOR
001357 R TYTEMP 001045 R TYU1     001176 R TYU10    001202 R TYU19
001057 R TYU2     001213 R TYU20    001215 R TYU21    001275 R TYU21A
001243 R TYU22   001260 R TYU24    001265 R TYU26    001301 R TYU27
001312 R TYU30   001063 R TYU4     001330 R TYU40    001105 R TYU1A
001125 R TYU5     001155 R TYU6     001164 R TYU9     001037 R TYU30
000403 A V$IMIN   000410 A V$BFC    000075 A V$BGLB   000055 A V$BIC1
000315 A V$BTB    000414 A V$BVH    000334 A V$CAM    000353 A V$CAN
000411 A V$CKIT   000310 A V$CKPT   000301 A V$CPL    000075 A V$CPLM
000341 A V$CRDR   000354 A V$CRM    000302 A V$CRS    000300 A V$CTAD
000300 A V$CTL    000351 A V$CTMS   000070 A V$DATE   000325 A V$DST3
000376 A V$ERFG   000377 E V$ERR    000000 E V$EXEC   000347 A V$F01R
000306 A V$FLRS   000636 E V$FNR    001242 E V$FNRM   000300 A V$F01F
000320 A V$IM     000412 A V$IDA    000412 A V$JCB    000055 A V$JCMG
000377 A V$JCTM   000050 A V$JNAM   000377 A V$JUP    000054 A V$JUNT
000313 A V$LER    000356 A V$LIT    000317 A V$LLUP   000307 A V$LR3K
000312 A V$LSAL   000345 A V$LUNT   000315 A V$LUP    000400 A V$LUT1
000401 A V$LUT2   000402 A V$LUT3   000330 A V$MPM    000362 A V$ND13
000413 A V$ODC    000345 A V$OPCF   000311 A V$OPCL   000303 A V$PTMN
000074 A V$PLCT   000303 A V$PMB    000341 A V$SCL    000375 A V$SCV
000375 A V$SLFG   000303 A V$STB    000342 A V$TST    000416 A V$TSC
000314 A V$TJCP   000364 A V$TNN    000343 A V$TMS    000000 A V$TYA
000304 A V$UTB    000001 A VORTEX   000001 A X        000420 A ZERO

```

0 ERRORS ASSEMBLY COMPLETE

360	APIM	370	371							
351	CLOCK	353	354							
49	ENDCG:	43								
133	LC	134	135	136	137	138	139	140	141	142
		143	144	145	146	147	150	151	155	156

E.2 VORTEX LISTING

V\$TYA

PROGRAM PAGE 21

LISTING PAGE (587)

		158	161	162	167	168	169	170	171	172
		173	174	175	177	178	179	180	181	182
		183	184	185	186	187	188	189	190	192
		195	196	197	198	210	211	212	213	214
		215	216	231	232	233	236	241	242	243
152	LCD1	149								
157	LCD2	154								
164	LCD3	160								
176	LCD4	166								
204	LCD5	201								
209	LCD6	206								
223	LCD7	218								
230	LCD8	225								
108	LCJP	109	110	111	118	119	120	121	122	125
374	MP	375	376	377	378	379	380			
252	MT	253	254	255	256	257	258	259	260	261
		262	263	264	265	266	267	268	269	270
		271	272	273	274	275	276	277	278	279
		280	281	282	283	284	285	286	287	288
		289	290	291	292	293	294	295	296	297
		298	299	300	301	302	303	304	305	306
		307	308							
0	V\$TYA	11								
1	VORTEX	42	148	153	157	165	191	193	200	205
		217	224	255						

```

000001 A 1 VORTEX SET 1 PUT LAST FOR VORTEX 02 00001
2 * THIS IS A COPYRIGHTED PROGRAM. COPYRIGHT 1972 BY VARIAN DATA MACHINES 02 00002
3 * 02 00003
4 * V.D.M. PART NO. 92L0605-145B 02 00004
5 * 02 00005
6 * 02 00006
7 * 02 00007
8 * 02 00008
9 * 02 00009
10 * 02 00010
11 * 02 00011
12 * 02 00012
13 * 02 00013
14 * TITLE VZDD 02 00014
15 * 02 00015
16 * I/O DRIVER FOR MODEL E2505 02 00016
17 * 02 00017
18 * 02 00018
19 * 02 00019
20 * 02 00020
21 * 02 00021
22 * 02 00022
23 * 02 00023
24 * 02 00024
25 * 02 00025
26 * 02 00026
27 * 02 00027
28 * TIDB SETUP 02 00028
29 * 02 00029
30 * 02 00030
000000 A 32 TBTRD EQU 0 TASK THREAD 02 00031
000001 A 33 TBST EQU 1 TASK STATUS 02 00032
000002 A 34 TBPL EQU 2 STATUS CONT. (BITS15-6), PRIORITY LEVEL(5-0) 02 00033
000003 A 35 TBEVNT EQU 3 INTERRUPT EVENT 02 00034
000004 A 36 TBRSA EQU 4 A REENTRANT AND SUSPEND STACK 02 00035
000005 A 37 TBRSE EQU 5 B REENTRANT AND SUSPEND STACK 02 00036
000006 A 38 TBRSX EQU 6 X REENTRANT AND SUSPEND STACK 02 00037
000007 A 39 TBRSP EQU 7 DF/P REENTRANT AND SUSPEND STACK 02 00038
000010 A 40 TBRSTS EQU 8 TEMP. STG. REENTRANT AND SUSPEND STACK 02 00039
000011 A 41 TBENTY EQU 9 TASK ENTRY LOCATION 02 00040
000012 A 42 TBTMS EQU 10 TIME COUNTER - CLOCK RESOLUTION IN SMS INC 02 00041
000013 A 43 TBTMIN EQU 11 TIME COUNTER - CLOCK MINUTE INCREMENTS 02 00042
000014 A 44 TBISA EQU 12 A INTERRUPT STACK 02 00043
000015 A 45 TBISB EQU 13 B INTERRUPT STACK 02 00044
000016 A 46 TBISX EQU 14 X INTERRUPT STACK 02 00045
000017 A 47 TBISP EQU 15 DF/P INTERRUPT STACK 02 00046
000020 A 48 TBISRS EQU 16 REENT. STACK INTERRUPT STACK 02 00047
000021 A 49 TBID EQU 17 BLK ALLOC(15-10), I/O THR(9-5), I/O ACT(4-0) 02 00048
000022 A 50 TBKN1 EQU 18 TASK NAME 02 00049
000023 A 51 TBKN2 EQU 19 TASK NAME 02 00050
000024 A 52 TBKN3 EQU 20 TASK NAME 02 00051
000025 A 53 TBTL0 EQU 21 1ST LDC. OF TASK ALLOCATABLE 02 00052
000026 A 54 TBCPTH EQU 22 BACKGROUND TASK QUEUE 02 00053
000027 A 55 TBATSK EQU 23 TIDB LDC. OF ACTIVATING TASK 02 00054
000030 A 56 TBRSE EQU 24 TASK ERROR CODE 02 00055
57 * 02 00056
58 * 02 00057
59 * 02 00058
60 * 02 00059
61 * 02 00060
62 * 02 00061
63 * 02 00062
64 * 02 00063
65 * 02 00064
66 * 02 00065
67 * 02 00066
68 * 02 00067
69 * 02 00068
70 * 02 00069
000017 A 72 TBS15 EQU 15 INTERRUPT SUSPEND 02 00070
000016 A 74 TBS14 EQU 14 TASK SUSPEND 02 00071
000015 A 75 TBS13 EQU 13 TASK ABORT 02 00072
000014 A 76 TBS12 EQU 12 TASK EXIT 02 00073
000013 A 78 TBS11 EQU 11 TIDB CORE RESIDENT 02 00074
000012 A 79 TBS10 EQU 10 CORE RESIDENT TASK 02 00075
000011 A 80 TBS9 EQU 9 FOREGROUND TASK 02 00076
000010 A 82 TBS8 EQU 8 TASK PROTECTED 02 00077
000007 A 83 TBS7 EQU 7 TASK SCHEDULED BY TIME DELAY 02 00078
000006 A 84 TBS6 EQU 6 TIME DELAY ACTIVE 02 00079
000005 A 86 TBS5 EQU 5 TASK WAITING TO BE LOADED 02 00080
000004 A 87 TBS4 EQU 4 TASK ERROR 02 00081
000003 A 88 TBS3 EQU 3 TASK INTERRUPT EXPECTED 02 00082
000002 A 90 TBS2 EQU 2 OVERLAY TASK 02 00083
000001 A 91 TBS1 EQU 1 UPON PERMISSION ACTIVATE TASK SCHED TASK 02 00084
000000 A 92 TBS0 EQU 0 TASK SEARCH-ALLOCATED-LOADED 02 00085
93 * 02 00086
94 * 02 00087
95 * 02 00088
96 * 02 00089
97 * 02 00090
98 * 02 00091
100 * BIT 15 - TASK OPENED 02 00092
102 * BIT 14 - UNUSED 02 00093
103 * BIT 13 - OVERLAY LOAD 02 00094

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104 *      BIT 12 - TASK WAITING FOR BACKGROUND TASK I/O TO COMPLETE      R02 00104
105 *      TASK LOCKED-OUT UNTIL BG I/O COMPLETE OR BIT 11                R02 00105
106 *      IS SET (ALLOCATABLE SPACE AVAILABLE)                          R02 00106
108 *      BIT 11 - DEFINES THAT ALLOCATABLE SPACE IS AVAILABLE, TRY      R02 00108
109 *      ALLOCATING TASK AGAIN. OVERRIDES BIT 12 SET OR                R02 00109
110 *      BIT 5 IN STATUS WORD.                                          R02 00110
111 *      BIT 10 - BACKGROUND TASK BEING WRITTEN ON CHECKPOINT FILE.    R02 00111
112 *      BIT 9 - TASK WAITING FOR A TIBB TO COME AVAILABLE FOR        R02 00112
113 *      SCHEDULING.                                                    R02 00113
115 *      BIT 8 TO 6 - UNUSED                                             R02 00115
116 *      EJEC                                                            R02 00116
117 *****                                                                R02 00117
118 *      *****                                                                R02 00118
119 ***      JOB PROCESSOR LOW CORE EQUATES                               ***R02 00119
120 *      *****                                                                R02 00120
121 *****                                                                R02 00121
000050 A 123 LCJP EQU 050 JCP NAME R02 00123
000050 A 124 V$JNAM EQU LCJP LINE COUNT R02 00124
000054 A 125 V$LCNT EQU LCJP+4 JCP FLAGS R02 00125
000055 A 126 V$JCFG EQU LCJP+5 BIT 2-0 = LOAD AND GO FLAGS R02 00127
127 * BIT 3 = DUMP FLAG 1=DUMP, 0=NO DUMP R02 00128
128 * BIT 4 = DUMP FLAG IF LOAD AND GO R02 00129
130 * BIT 9-5 = UNUSED R02 00130
131 * BIT 15-10 = BG EXTRA CORE BLOCKS TO ALLOC R02 00131
000056 A 133 V$BIC1 EQU LCJP+6 BIC INTERRUPT ADDRESS TABLE (10 WORDS) R02 00133
000070 A 134 V$DATE EQU LCJP+16 JCP DATE RECORD R02 00134
000074 A 135 V$PLCT EQU LCJP+20 PERMUNATE LINE COUNT R02 00135
000075 A 136 V$BGLB EQU LCJP+21 JCP LIB KEY AND LU NO. (BACKGROUND LIB) R02 00136
000076 A 137 V$CRDM EQU LCJP+22 CARD KEYPUNCH TYPE, 0=026, 1=029 R02 00137
138 * BIT 0 = SYSTEM NOMINAL KEYPUNCH MODE. R02 00138
139 * BIT 1 = CURRENT JOB KEYPUNCH MODE. R02 00139
000077 A 140 V$JCTM EQU LCJP+23 TEMP. STORAGE FOR /MEM BLOCK R02 00140
141 * EJEC R02 00141
142 ***** R02 00142
143 * ***** R02 00143
144 ***      LOW CORE DESCRIPTION                               ***R02 00144
145 *      ***** R02 00145
146 ***** R02 00146
000300 A 148 LC EQU 0300 CURRENT TASK TIBB LOCATION R02 00148
000300 A 149 V$CTL EQU LC CURRENT PRIORITY LEVEL R02 00149
000301 A 150 V$CPL EQU LC+1 CURRENT REENRANT STACK POINTER R02 00150
000302 A 151 V$CRS EQU LC+2 POINTER TO HIGHEST PRIORITY TIBB R02 00151
000303 A 152 V$TB EQU LC+3 POINTER TO UNUSED TASK TIBB R02 00152
000304 A 153 V$UTB EQU LC+4 POINTER TO NEXT ENTRY IN REENRANT STACK R02 00153
000305 A 154 V$PTVB EQU LC+5 FIRST LOC. OF REENRANT STACK R02 00154
000306 A 155 V$FLRS EQU LC+6 LAST LOC. OF REENRANT STACK+1 R02 00155
000307 A 156 V$LRSK EQU LC+7 CHECKPOINT FLAG 1=ON, 0=OFF R02 00156
000310 A 157 V$CKPT EQU LC+8 LOC. OF TIBB FOR DPCOM TASK R02 00157
000311 A 158 V$OPCL EQU LC+9 LOC. OF TIBB FOR SYSTEM SBL TASK R02 00158
000312 A 159 V$LSAL EQU LC+10 LOC. OF TIBB FOR SYSTEM ERROR TASK R02 00159
000313 A 160 V$LER EQU LC+11 LOC. OF TIBB FOR JOB CONTROL PROCESSOR TASK R02 00160
000314 A 161 V$TJCP EQU LC+12 LOC. OF CURRENT ACTIVE BACKGROUND TASK TIBB R02 00161
000315 A 162 V$BTB EQU LC+13 ***** R02 00162
163 * IFT VORTEX-2 V2 02 00163
164 * GOTO LCD1 LC01 ASSEMBLE FOR VORTEX II V2 02 00164
165 V$HPAG EQU LC+14 NUMBER OF AVAILABLE PAGES IN V$PAGE V2 02 00165
166 V$LPP EQU LC+15 POINTER OF LAST WORD TESTED IN V$PAGE V2 02 00166
167 LCD1 CNT V2 02 00167
168 * IFF VORTEX-2 V2 02 00168
169 * GOTO LCD2 LCD2 ASSEMBLE IF NOT VORTEX II V2 02 00169
000316 A 170 V$LUP EQU LC+14 LOC. OF 1ST UNPROTECTED WORD V2 02 00170
000317 A 171 V$LLUP EQU LC+15 LOC. OF LAST UNPROTECTED WORD V2 02 00171
172 LCD2 CNT V2 02 00172
000320 A 173 V$IM EQU LC+16 INTERRUPT MASK (8 WORDS) V2 02 00173
174 * IFF VORTEX-2 V2 02 00174
175 * GOTO LCD3 LCD3 MEMORY PROTECT MASK (4 WORDS) V2 02 00175
000330 A 176 V$MPM EQU LC+24 CORE ALLOCATION MASK (4 WORDS) R02 00176
000334 A 177 V$CAM EQU LC+28 UNUSED R02 00178
178 * EQU LC+32 ***** R02 00179
179 LCD3 CNT V2 02 00180
180 * IFT VORTEX-2 V2 02 00180
181 * GOTO LCD4 LCD4 ASSEMBLE IF VORTEX II V2 02 00181
182 V$MAP EQU LC+24 MAP KEY AVAILABILITY MASK V2 02 00182
183 V$BTBM EQU LC+25 BOTTOM OF NUCLEUS PABLE MODULE V2 02 00183
184 V$GFCB EQU LC+26 GLOBAL PCB MODULE V2 02 00184
185 V$HIMG EQU LC+27 MAP 2 IMAGE ADDRESS V2 02 00185
186 V$ST0 EQU LC+28 FUNC 1 CONTROL WORD TO SWITCH EXECUTIVE V2 02 00186
187 V$ST1 EQU LC+29 MODE STATES: V$ST0- STATE 0 V2 02 00187
188 V$ST2 EQU LC+30 V$ST1- STATE 1 V2 02 00188
189 V$ST3 EQU LC+31 ETC V2 02 00189
190 V$KEY EQU LC+32 EXECUTING TODAY'S MAP KEY V2 02 00190
191 LCD4 CNT V2 02 00191
000341 A 192 V$CRDR EQU LC+33 CORE RESIDENT DIRECTORY LOCATION R02 00192
000342 A 193 V$TBTG EQU LC+34 TOP OF THREED OF BG TSK WAITING TO BE ALLOC R02 00193
000343 A 194 V$TMS EQU LC+35 TIME OF DAY IN 5 MILLISECOND INCREMENTS R02 00194
000344 A 195 V$TMN EQU LC+36 TIME OF DAY IN MINUTE INCREMENTS R02 00195
000345 A 196 V$LUNT EQU LC+37 ADDR. OF LOGICAL UNIT NAME TABLE R02 00196
000346 A 197 V$DPCF EQU LC+38 OPTION LOCKOUT FLAG R02 00197
000347 A 198 V$FLR EQU LC+39 KEY AND LU NO. FOR FOREGROUND LIB R02 00198
000350 A 199 V$FREE EQU LC+40 FREE RUNNING COUNTER INCR. IN MICROSECONDS R02 00199
000351 A 200 V$CTMS EQU LC+41 CLOCK RESOLUTION IN 5 MILLISECOND INCR. R02 00200
000352 A 201 V$SCV EQU LC+42 CLOCK SELECTOR COUNT VALUE (1 TO 4095) R02 00201

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000353 A 202 V$CKB EQU LC+43 BASIC CLOCK INTERRUPT RATE IN MICROSECONDS R02 00202
000354 A 203 V$CRM EQU LC+44 CLOCK RESOLUTION INCR. FOR 1 MINUTE. R02 00203
000355 A 204 V$DSTB EQU LC+45 BASE ADDR. FOR DST BLOCK R02 00204
000356 A 205 V$LIT EQU LC+46 LAST LOCATION OF BACKGROUND LITERAL TABLE R02 00205
206 IFF VORTEX-2 ASSEMBLE IF VORTEX II V2 02 00206
207 V$PGT EQU LC+47 V$PAGE ADDRESS V2 02 00207
208 IFT VORTEX-2 ASSEMBLE IF NOT VORTEX II V2 02 00208
209 * EQU LC+47 UNUSED R02 00209
000360 A 210 V$CTAD EQU LC+48 BASE ADDR. FOR CONTROLLER ADDR. TABLE R02 00210
000361 A 211 V$SCTL EQU LC+49 CURRENT CONTROLLER IN SCAN R02 00211
000362 A 212 V$NCTR EQU LC+50 NO. OF CONTROLLERS R02 00212
000363 A 213 V$PIMN EQU LC+51 EXTERNAL DEVICE ADDRESS TABLE FOR PIMS R02 00213
214 * EQU LC+51 (8 WORDS DEFINED IN PIM NO ORDER) R02 00214
215 IFF VORTEX-2 ASSEMBLE IF NOT VORTEX II V2 02 00215
216 GOTO LCD5 LC+59 R02 00216
217 * EQU LC+59 UNUSED R02 00217
218 * EQU LC+60 UNUSED R02 00218
219 LCD5 CONT V2 02 00219
220 IFT VORTEX-2 V2 02 00220
221 GOTO LCD6 LC+59 V2 02 00221
222 * EQU LC+59 JMP V$IOST PAGE 0 ENTRY FOR I/O V2 02 00222
223 * EQU LC+60 STAT CALLS. V2 02 00223
224 LCD6 CONT V2 02 00224
000375 A 225 V$SLFG EQU LC+61 SAL TASK BUSY FLAG 1=BUSY, 0=NOT BUSY R02 00225
000376 A 226 V$ERFG EQU LC+62 ERROR TASK BUSY FLAG 1=BUSY, 0=NOT BUSY R02 00226
000377 A 227 V$JOP EQU LC+63 JOP OPERATING FLAG R02 00227
000400 A 228 V$LUT1 EQU LC+64 START LUN ADDR FOR JOP/OPCOM ASSIGNABLE R02 00228
000401 A 229 V$LUT2 EQU LC+65 START LUN ADDR FOR UNASSIGNABLE R02 00229
000402 A 230 V$LUT3 EQU LC+66 START LUN ADDR FOR OPCOM ASSIGNABLE R02 00230
000403 A 231 V$IMIN EQU LC+67 32767 - (60000/(5*V$CTMS)) + 1 R02 00231
232 IFF VORTEX-2 V2 02 00232
233 GOTO LCD7 LC+71 V2 02 00233
234 * EQU LC+68 UNUSED R02 00234
235 * EQU LC+69 UNUSED R02 00235
236 * EQU LC+70 UNUSED R02 00236
237 * EQU LC+71 UNUSED R02 00237
238 LCD7 CONT V2 02 00238
239 IFT VORTEX-2 V2 02 00239
240 GOTO LCD8 LC+71 V2 02 00240
241 * EQU LC+68 JMP V$IOC PAGE 0 ENTRY FOR IOC V2 02 00241
242 * EQU LC+69 CALLS. V2 02 00242
243 * EQU LC+70 JMP V$EXEC PAGE 0 ENTRY FOR RTE V2 02 00243
244 * EQU LC+71 CALLS. V2 02 00244
245 LCD8 CONT V2 02 00245
000410 A 246 V$IOA EQU LC+72 I/O ALGORITHM R02 00246
000411 A 247 V$CKIT EQU LC+73 CLOCK INT. IN PIM BEFORE LOCKOUT FLAG. R02 00247
000412 A 248 V$JCB EQU LC+74 ALL SYSTEM BACKGROUND PROGRAMS AND JCP USE R02 00248
249 * EQU LC+74 THIS SYSTEM BUFFER TO READ DIRECTIVES AND R02 00249
250 * EQU LC+74 SOURCE RECORDS IN. R02 00250
000413 A 251 V$DCB EQU LC+75 OPCOM WILL READ OPERATOR KEY-IN REQUESTS R02 00251
252 * EQU LC+75 IN THIS BUFFER. IF JCP IS SET NOT ACTIVE R02 00252
253 * EQU LC+75 AND A 1 DIRECTIVE IS INPUTED, OPCOM R02 00253
254 * EQU LC+75 WILL MOVE THE DIRECTIVE TO V$JCB BEFORE R02 00254
255 * EQU LC+75 SCHEDULING JCP. R02 00255
000414 A 256 V$RVN EQU LC+76 BOTTOM OF VORTEX NUCLEUS R02 00256
000415 A 257 V$BFC EQU LC+77 TOP OF FC RES. AREA/BOTTOM OF FG BLK COMM. R02 00257
000416 A 258 V$TFC EQU LC+78 TOP OF FG BLK COMM/TOP OF VORTEX CORE. R02 00258
259 * EQU LC+79 UNUSED R02 00259
260 EQU EQU LC+79 EQU R02 00260
261 ***** R02 00261
262 * R02 00262
263 *** MASK TABLE DESCRIPTION *** R02 00263
264 * R02 00264
265 ***** R02 00265
000420 A 267 MT SET 0420 000001 R02 00267
000420 A 268 ZERO EQU MT ZERO WORD R02 00268
000421 A 269 BS0 EQU MT+1 BIT MASK CONTENTS 000002 R02 00269
000422 A 270 BS1 EQU MT+2 000004 R02 00270
000423 A 271 BS2 EQU MT+3 000008 R02 00271
000424 A 272 BS3 EQU MT+4 000010 R02 00272
000425 A 273 BS4 EQU MT+5 000020 R02 00273
000426 A 274 BS5 EQU MT+6 000040 R02 00274
000427 A 275 BS6 EQU MT+7 000100 R02 00275
000430 A 276 BS7 EQU MT+8 000200 R02 00276
000431 A 277 BS8 EQU MT+9 000400 R02 00277
000432 A 278 BS9 EQU MT+10 001000 R02 00278
000433 A 279 BS10 EQU MT+11 002000 R02 00279
000434 A 280 BS11 EQU MT+12 004000 R02 00280
000435 A 281 BS12 EQU MT+13 010000 R02 00281
000436 A 282 BS13 EQU MT+14 200000 R02 00282
000437 A 283 BS14 EQU MT+15 400000 R02 00283
000440 A 284 BS15 EQU MT+16 0100000 R02 00284
000441 A 285 BR0 EQU MT+17 BIT MASK CONTENTS 0177776 R02 00285
000442 A 286 BR1 EQU MT+18 0177775 R02 00286
000443 A 287 BR2 EQU MT+19 0177773 R02 00287
000444 A 288 BR3 EQU MT+20 0177767 R02 00288
000445 A 289 BR4 EQU MT+21 0177757 R02 00289
000446 A 290 BR5 EQU MT+22 0177737 R02 00290
000447 A 291 BR6 EQU MT+23 0177677 R02 00291
000450 A 292 BR7 EQU MT+24 0177577 R02 00292
000451 A 293 BR8 EQU MT+25 0177377 R02 00293
000452 A 294 BR9 EQU MT+26 0176777 R02 00294
000453 A 295 BR10 EQU MT+27 0175777 R02 00295

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000454 A 296 BR11 EQU MT+28 0173777 R02 00296
000455 A 297 BR12 EQU MT+29 0167777 R02 00297
000456 A 298 BR13 EQU MT+30 0157777 R02 00298
000457 A 299 BR14 EQU MT+31 0137777 R02 00299
000460 A 300 BR15 EQU MT+32 0077777 R02 00300
000461 A 301 NEG EQU MT+33 SET ALL BITS R02 00301
000462 A 302 LHW EQU MT+34 LEFT HALF WORD MASK 0177400 R02 00302
000463 A 303 RHN EQU MT+35 RIGHT HALF WORD MASK 0377 R02 00303
000421 A 304 ONE EQU MT+1 CONTAINS NUMBER 1 R02 00304
000422 A 305 TWO EQU MT+2 CONTAINS NUMBER 2 R02 00305
000464 A 306 THREE EQU MT+36 CONTAINS NUMBER 3 R02 00306
000423 A 307 FOUR EQU MT+3 CONTAINS NUMBER 4 R02 00307
000465 A 308 FIVE EQU MT+37 CONTAINS NUMBER 5 R02 00308
000466 A 309 SIX EQU MT+38 CONTAINS NUMBER 6 R02 00309
000467 A 310 SEVEN EQU MT+39 CONTAINS NUMBER 7 R02 00310
000424 A 311 EIGHT EQU MT+4 CONTAINS NUMBER 8 R02 00311
000470 A 312 NINE EQU MT+40 CONTAINS NUMBER 9 R02 00312
000471 A 313 TEN EQU MT+41 CONTAINS NUMBER 10 R02 00313
000421 A 314 BM1 EQU MT+1 BIT MASK WORD 00001 R02 00314
000464 A 315 BM3 EQU MT+36 BIT MASK WORD 00003 R02 00315
000467 A 316 BM7 EQU MT+39 BIT MASK WORD 00007 R02 00316
000472 A 317 BM17 EQU MT+42 BIT MASK WORD 00017 R02 00317
000473 A 318 BM37 EQU MT+43 BIT MASK WORD 00037 R02 00318
000474 A 319 BM77 EQU MT+44 BIT MASK WORD 00077 R02 00319
000475 A 320 BM177 EQU MT+45 BIT MASK WORD 00177 R02 00320
000463 A 321 BM377 EQU MT+35 BIT MASK WORD 00377 R02 00321
000476 A 322 BM777 EQU MT+46 BIT MASK WORD 00777 R02 00322
000477 A 323 BM1777 EQU MT+47 BIT MASK WORD 01777 R02 00323
324 EQU R02 00324
325 ***** R02 00325
326 * R02 00326
327 *** BIT TEST BIT DESIGNATION *** R02 00327
328 * R02 00328
329 ***** R02 00329
000040 A 331 RA0 EQU 040 BT JUMPS WHEN A REGISTER IS 0 R02 00331
000000 A 332 RA1 EQU 000 BT JUMPS WHEN A REGISTER IS 1 R02 00332
000060 A 333 RB0 EQU 060 BT JUMPS WHEN B REGISTER IS 0 R02 00333
000020 A 334 RB1 EQU 020 BT JUMPS WHEN B REGISTER IS 1 R02 00334
335 ***** R02 00335
336 * R02 00336
337 * R02 00337
338 ** THE BIT CHECKED R02 00338
339 * R02 00339
340 ***** R02 00340
000000 A 342 B0 EQU 0 R02 00342
000001 A 343 B1 EQU 1 R02 00343
000002 A 344 B2 EQU 2 R02 00344
000003 A 345 B3 EQU 3 R02 00345
000004 A 346 B4 EQU 4 R02 00346
000005 A 347 B5 EQU 5 R02 00347
000006 A 348 B6 EQU 6 R02 00348
000007 A 349 B7 EQU 7 R02 00349
000010 A 350 B8 EQU 8 R02 00350
000011 A 351 B9 EQU 9 R02 00351
000012 A 352 B10 EQU 10 R02 00352
000013 A 353 B11 EQU 11 R02 00353
000014 A 354 B12 EQU 12 R02 00354
000015 A 355 B13 EQU 13 R02 00355
000016 A 356 B14 EQU 14 R02 00356
000017 A 357 B15 EQU 15 R02 00357
358 EQU R02 00358
359 ***** R02 00359
360 * R02 00360
361 *** DEVICE AND FUNCTION CODES *** R02 00361
362 * R02 00362
363 ***** R02 00363
364 *** REAL TIME CLOCK *** R02 00364
000047 A 366 CLOCK EQU 047 DEVICE NUMBER 047 R02 00367
367 * R02 00367
000747 A 368 DISCLK EQU 0700+CLOCK DISABLE CLOCK R02 00368
000147 A 369 ENACLK EQU 0100+CLOCK ENABLE CLOCK R02 00369
370 IFF VORTEX-2 V0 00370
371 * V0 00371
372 IFF VORTEX-2 V0 00372
373 *** MEMORY MAP DEVICE ADDRESS *** V0 00373
374 IFF VORTEX-2 V0 00374
375 MPBVAD EQU 046 RAM ADDRESS V0 00375
376 * V0 00376
377 * V0 00377
378 *** PIM *** *** R02 00378
000044 A 379 APIM EQU 044 ALL PIMS DEVICE NUMBER R02 00379
000040 A 380 PIM1 EQU 040 R02 00380
000041 A 381 PIM2 EQU 041 R02 00381
000042 A 382 PIM3 EQU 042 R02 00382
000043 A 383 PIM4 EQU 043 R02 00383
000040 A 384 PIM5 EQU 040 R02 00384
000040 A 385 PIM6 EQU 040 R02 00385
000040 A 386 PIM7 EQU 040 R02 00386
000040 A 387 PIM8 EQU 040 R02 00387
388 * R02 00388
000444 A 389 DISPIM EQU 0400+APIM R02 00389
000244 A 390 ENAPIM EQU 0200+APIM R02 00390
391 *** MEMORY PROTECT *** *** R02 00391
000045 A 393 MP EQU 045 DEVICE ADDRESS 045 R02 00393
000745 A 394 DISMP EQU 0700+MP DISABLE MEMORY PROTECT R02 00394

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000645 A 395 ENAMP EQU 0600+MP ENABLE MEMORY PROTECT R02 00395
000045 A 396 MPMR0 EQU 0000+MP SELECT MASK REGISTER 0 R02 00396
000145 A 397 MPMR1 EQU 0100+MP SELECT MASK REGISTER 1 R02 00397
000245 A 398 MPMR2 EQU 0200+MP SELECT MASK REGISTER 2 R02 00398
000345 A 399 MPMR3 EQU 0300+MP SELECT MASK REGISTER 3 R02 00399
400 EJECT R02 00400
401 * CONTROLLER TABLE POSITIONS R02 00401
402 * R02 00402
403 * R02 00403
000003 A 406 CTDST EQU 3 DST ADR R02 00406
000004 A 407 CTRQBK EQU 4 RPB ADR R02 00407
000005 A 408 CTRTRY EQU 5 RETRY CONSTANT R02 00408
000005 A 409 CTRCNT EQU 5 RETRY COUNT R02 00409
000006 A 410 CTDVAD EQU 6 DEVICE ADR R02 00410
000010 A 411 CTSTAT EQU 8 DRIVER STATUS R02 00411
000011 A 412 CTBICB EQU 9 BIC ADR R02 00412
000012 A 413 CTFCB EQU 10 FCB ADR R02 00413
000013 A 414 CTWDS EQU 11 WORDS XMITTED R02 00414
415 * ROTATING MEMORY PORTION R02 00415
000015 A 416 CTSTSZ EQU 13 WORDS / SECTOR R02 00416
000016 A 417 CTTKSZ EQU 14 SECTORS / TRACK R02 00417
000017 A 418 CTPST0 EQU 15 PST BASE ADR FOR UNIT 0 (DRUM/DIST.) R02 00418
000020 A 419 CTPST1 EQU 16 PST BASE ADR FOR UNIT 1 (DISC ONLY) R02 00419
000021 A 420 CTPST2 EQU 17 PST BASE ADR FOR UNIT 2 (DISC ONLY) R02 00420
000022 A 421 CTPST3 EQU 18 PST BASE ADR FOR UNIT 3 (DISC ONLY) R02 00421
000023 A 422 CTBTT EQU CTPST3+1 BAD TK TBL R02 00422
000024 A 423 CTDP EQU CTPST3+2 DP TO DO R02 00423
000025 A 424 CTMODE EQU CTPST3+3 MODE R02 00424
000026 A 425 CTEDDF EQU CTPST3+4 'END OF FILE' R02 00425
000027 A 426 CTEDFT EQU CTPST3+5 TRACK OF EOF R02 00426
000030 A 427 CTEDD EQU CTPST3+6 END OF DEVICE R02 00427
000031 A 428 CTDADR EQU CTPST3+7 RMD ADR R02 00428
000032 A 429 CTDTRK EQU CTPST3+8 TRK OF DADR R02 00429
000033 A 430 CTDSEC EQU CTPST3+9 SEC OF DADR R02 00430
000034 A 431 CTBFAD EQU CTPST3+10 DATA BUFF PSN R02 00431
000035 A 432 CTDPHD EQU CTPST3+11 DP LENGTH TO DO R02 00432
000036 A 433 CTWLFT EQU CTPST3+12 WORDS LEFT TO DO R02 00433
000037 A 434 CTEMP1 EQU CTPST3+13 DRIVER TEMP STORAGE R02 00434
000040 A 435 CTEMP2 EQU CTPST3+14 DRIVER TEMP STORAGE R02 00435
000041 A 436 CTRTN1 EQU CTPST3+15 SUBROUTINE RTN ADR R02 00436
000042 A 437 CTRTN2 EQU CTPST3+16 SUBROUTINE RTN ADR R02 00437
000043 A 438 CTRTN3 EQU CTPST3+17 SUBROUTINE RTN ADR R02 00438
000044 A 439 CTRTN4 EQU CTPST3+18 SUBROUTINE RTN ADR R02 00439
000045 A 440 UTPEXT EQU CTPST3+19 CURRENT PST TRACK NO. R02 00440
000046 A 441 CTBDTK EQU CTPST3+20 R02 00441
000047 A 442 CTRTN EQU CTPST3+21 SAVE RETURN ADR. R02 00442
000050 A 443 CTIST EQU CTPST3+22 DISC INPUT STATUS R02 00443
000051 A 444 CTCONV EQU CTPST3+23 NO. OF PHYSICAL RECORDS IN LOGICAL RECORD R02 00444
000052 A 445 CTUCBF EQU CTPST3+24 START OF OPEN/CLOSE BUFFER R02 00445
000242 A 446 CTHEAD EQU CTPST3+25+119 HEAD NO. R02 00446
000243 A 447 CTUNIT EQU CTHEAD+1 DISC UNIT NUMBER, BITS 14-13 R02 00447
000244 A 448 CTSUN EQU CTHEAD+2 OUTPUT SET-UP WORD R02 00448
449 * BITS 14-13 = UNIT NO. R02 00449
450 * BITS 12-08 = HEAD NO. R02 00450
451 * BITS 07-00 = RECORD NO., CYC DIF R02 00451
000245 A 452 CTCYLN EQU CTHEAD+3 CYLINDER NUMBER R02 00452
000246 A 453 CTWRD EQU CTHEAD+4 WORD COUNT IN TRACK R02 00453
000247 A 454 CTCOYL EQU CTHEAD+5 CURRENT CYL ADDR. FROM DCU R02 00454
455 IFF VORTEX-2 V2 R02 00455
456 CTFCB0 EQU CTHEAD+6 START OF FCB SAVE AREA V2 R02 00456
457 EJECT R02 00457
459 * CONTROLLER TIDB POSITIONS R02 00459
460 * R02 00460
000001 A 462 TBST EQU 1 TASK STATUS R02 00462
000003 A 463 TBVNT EQU 3 INTERRUPT EVENT R02 00463
000010 A 464 TBRSTS EQU 8 CTRL ADR R02 00464
467 * PST POSITIONS R02 00467
468 * R02 00468
000000 A 470 PSBOD EQU 0 BEGIN OF PTN R02 00470
000001 A 471 PSKEY EQU 1 PROTECT KEY WORD R02 00471
000002 A 472 PSBDTK EQU 2 NO. OF BAD TRACKS IN PARTITION R02 00472
000003 A 473 PSEDD EQU 3 END OF PTN R02 00473
474 EJECT R02 00474
477 * DST POSITIONS R02 00477
478 * R02 00478
000002 A 480 DSPST1 EQU 2 R02 00480
000002 A 481 DSUNTN EQU 2 R02 00481
482 EJECT R02 00482
483 * R02 00483
484 * FILE CONTROL BLOCK POSITIONS R02 00484
485 * R02 00485
486 * R02 00486
000000 A 487 FCRECL EQU 0 RECORD LENGTH R02 00487
000001 A 488 FCBUFF EQU 1 BUFF ADR R02 00488
000002 A 489 FCACM EQU 2 ACCESS METHOD R02 00489
000003 A 490 FCCADR EQU 3 CURR ADR R02 00490
000004 A 491 FCCEDF EQU 4 CURR EOF R02 00491
000005 A 492 FCIFE EQU 5 INIT FILE EXTENT R02 00492
000006 A 493 FCCFE EQU 6 END FILE EXTENT R02 00493
000007 A 494 FCNAM1 EQU 7 FILE NAME R02 00494
000010 A 495 FCNAM2 EQU 8 " R02 00495
000011 A 496 FCNAM3 EQU 9 " R02 00496
500 * REQUEST BLOCK POSITIONS R02 00500

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Address	Op Code	Op Name	Op Mode	Description	Register	Value	
000000	A	501 *			R02	00501	
000000	A	503 RPSTPR	EQU 0	REQUEST STATUS	R02	00503	
000001	A	504 RPDPWD	EQU 1	MODE / DP-CODE	R02	00504	
		505	IFF VORTEX-2		V2	02 00505	
		506 RFCB	EMU 2	FCB OR DCB ADDRESS	V2	02 00506	
		507	IFF VORTEX-2		V2	02 00507	
		508 RTIDB	EQU 3	REQUESTER'S TIDB ADDRESS	V2	02 00508	
		509	EJEC		R02	00509	
000001	A	510 X	EQU 1		R02	00510	
000002	A	511 B	EQU 2		R02	00511	
000001	A	512 A	EQU 1		R02	00512	
		513	*****		R02	00513	
		514	*		R02	00514	
		515	*		R02	00515	
		516	*****		R02	00516	
		517	*		R02	00517	
		518	****	DRIVER INITIALIZE PROCESSOR	R02	00518	
		519	*		R02	00519	
		520	*****		R02	00520	
		521	EXT V&BIC		R02	00521	
000000	030300	A	524 VZDD	LDX V&CTL	ADDR. OF CURRENT TIDB	R2	00524
			525	LDX NAME		R2	00525
000001	035010	A	526	LDX TBRSTS,X	CTL ADR	R02	00526
			527	IFT VORTEX-2		V2	02 00527
			528	GOTO ENDC02		V2	02 00528
			529	JSR GETKEY,B	GET REQUESTER'S MAP KEY	V2	02 00529
			530	JSR XFRFCB,B	XFER FCB TO CTL STORAGE AREA	V2	02 00530
			531 ENDC02	CONT		V2	02 00531
000002	025003	A	533	LDB CTBST,X	DST ADR	R02	00533
000003	016002	A	534	LDA DSUNTN,B	GET UNIT NUMBER AND	R02	00534
000004	006150	A	535	ANAI 060000		R2	00535
000005	060000	A					
000006	055243	A	536	STA CTUNIT,X	SET UP UNIT NUMBER	R2	00536
000007	004355	A	537	LSRA 13		R02	00537
000010	006120	A	538	400I 015017	ADD 'LDA CTBST,X' COMMAND	R02	00538
000011	015017	A					
000012	100444	A	539	EXC DISPIM		R2	00539
000013	100747	A	540	EXC DISCLK		R2	00540
000014	054004	A	541	STA VZDC1	STORE CONSTRUCTED COMMAND	R2	00541
000015	016002	A	542	LDA DSPSTI,B		R02	00542
000016	004553	A	543	LSR 11		R02	00543
000017	004153	A	544	LSRB 11		R02	00544
000020	005322	A	545	DBR		R02	00545
000021	015017	A	546 VZDC1	LDA CTBST,X	PST BASE ADDR.	R2	00546
000022	100244	A	547	EXC ENAPIM		R2	00547
000023	100147	A	548	EXC ENACLK		R2	00548
000024	055023	A	549	STA CTBST,X	TEMP STORE PST BASE ADDR.	R2	00549
000025	005111	A	550	JAR		R2	00550
000026	160464	A	551	MUL THREE	B= PST ADDR.	R2	00551
000027	016000	A	553	LDA PS&DD,B		R02	00553
000030	055037	A	554	STA CTMP1,X	SAVE BEGIN OF LUN	R02	00554
000031	055045	A	555	STA CTPEXT,X	SAVE PST TRACK ADDR.	R02	00555
000032	016003	A	556	LDA PS&DD,B		R02	00556
000033	055030	A	557	STA CT&DD,X	END ADR OF LUN	R02	00557
000034	016002	A	559	LDA PS&DTK,B	STOR. NO. OF BAD TRACKS IN PARTITION	R02	00559
000035	055046	A	560	STA CT&DTK,X		R02	00560
000036	025023	A	561	LDF CT&TT,X	GET PST BASE ADDR.	R2	00561
000037	016000	A	562	LDA 0,B	STORE BAD TRK TABLE ADDR.	R2	00562
000040	055023	A	563	STA CT&TT,X		R2	00563
000041	015037	A	564 DC1A	LDA CT&MP1,X	TEST IF GOOD TRACK	R2	00564
000042	006506	A	565	JAR DLTSTS,B		R2	00565
000043	001707	R					
000044	001002	R	566	JAP DC1A	YES	R2	00566
000045	000052	R					
000046	045037	A	567	INR CT&MP1,X	NO. UPDATE TRACK COUNT	R2	00567
000047	045045	A	568	INR CT&PEXT,X		R2	00568
000050	001000	A	569	JMP DC1A		R2	00569
000051	000041	R					
000052	000052	R	570 DC2A	LQU *		R2	00570
000052	005101	A	571	INR 1	A=1	R02	00571
000053	055051	A	572	STA CT&DNV,X	CT&DNV=1 FOR ACCESS BY 120 WD RECORD	R02	00572
000054	025012	A	573	LDS CT&FCB,X		R02	00573
000055	016002	A	574	LDA FC&ACH,B		R02	00574
000056	006411	A	575	BT PA1-9,DC02	JMP IF PHYSICAL 120 WD RECORD	R2	00575
000057	000067	R					
000060	005001	A	576	TZA		R02	00576
000061	026000	A	577	LDA FC&RECL,B		R02	00577
000062	175015	A	578	DIV CT&T&SZ,X		R02	00578
000063	001010	A	579	JAZ DC00-1		R2	00579
000064	000066	R					
000065	005122	A	580	IBR		R2	00580
000066	065051	A	581 DC02	STB CT&DNV,X	NO. OF PHYSICAL RECDKDS IN 1 LOGICAL REC.	R02	00581
	000067	R	582	EMU *		R2	00582
000067	005001	A	583	IBR		R02	00583
000070	055013	A	584	STA CT&NDS,X	RESET NUMBER WORDS XMITTED	R02	00584
000071	055246	A	585	STA CT&DRD,X		R02	00585
000072	025004	A	587	LDB CT&R&BK,X	RPB ADR	R02	00587
000073	016000	A	588	LDA RP&STPR,B		R02	00588
000074	150473	A	589	ANA B&M&T		R02	00589
000075	056000	A	590	STA RP&CTPR,B	ZERO TASK STATUS	R02	00590
000076	016001	A	592	LDA RP&DPWD,B	FETCH DP-CODE	R02	00592
			593	IFT VORTEX-2		V2	02 00593
			594	GOTO ENDC03		V2	02 00594

000343	015040	A	778	LDA	CTEMP2,X	NO	R02 00778
000344	055031	A	779	STA	CTDADR,X	STORE LAST TRACK ACCESSED	R02 00779
000345	015016	A	780	LDA	CTTKSZ,X	TRACK SIZE, 24 SECTORS	02 00780
000346	145033	A	781	SUB	CTDSEC,X	CURRENT SECTOR, 0-23	02 00781
000347	005012	A	782	TAB		NO. OF SECTORS TO XFR	R02 00782
000350	005001	A	783	TZA			R02 00783
000351	165015	A	784	MUL	CTSTSZ,X	NOW NO. OF WORDS TO XFR IN THIS TRACK.	R02 00784
000352	001000	A	785	JMP	DIRWB5		R02 00785
000353	000414	R					
	000354	R	786	DIRWB2	EQU	*	R02 00786
	025012	A	787	LDB	CTFCB,X	LESS THAN 1 TRACK LEFT TO DO	R02 00787
000355	016002	A	788	LDA	FCACM,B	SKIP IF ACCESS BY LOGICAL RECORD	R02 00788
000356	006451	A	789	BT	RA0+9,DIRWB8		R02 00789
000357	000371	R					
000360	015040	A	790	LDA	CTEMP2,X		R02 00790
000361	145045	A	791	SUB	CTPEXT,X	NOW RELATIVE TRK NO. WITHIN PARTITION	R02 00791
000362	005012	A	792	TAB		IN PARTITION	R02 00792
000363	015037	A	793	LDA	CTEMP1,X		R02 00793
000364	165010	A	794	MUL	CTTKSZ,X		R02 00794
000365	005021	A	795	TBA			02 00795
000366	145026	A	796	SUB	CTDEOF,X	TEST NEXT ADR	R02 00796
000367	001002	A	797	JAP	DIRWB3	JUMP IF NOT IN FILE	R02 00797
000370	000374	R					
	000371	R	799	DIRWB8	EQU	*	R02 00799
000371	025036	A	800	LDB	CTWLFT,X	CAN FINISH DP THIS TIME	R02 00800
000372	001000	A	801	JMP	DIRWB4		R02 00801
000373	000412	R					
	000374	R	803	DIRWB3	EQU	*	02 00803
	006010	A	804	DIRWB6	LDAI	000300	R02 00804
000375	000300	A					
000376	025004	A	805	LDB	CTRDBK,X	SET EOF STATUS	02 00805
000377	116000	A	806	ORA	RPSIPR,B		R02 00806
000400	056000	A	807	STA	RPSTPR,B		R02 00807
000401	003001	A	808	DIRWB7	TZA		02 00808
000402	025026	A	809	LDB	CTDEOF,X	DETERMINE MAX. NUMBER	02 00809
000403	175016	A	810	DIV	CTTKSZ,X	OF SECTORS IN TRK	02 00810
000404	145033	A	811	SUB	CTDSEC,X		02 00811
000405	001010	A	812	JAZ	DIRB20	ALL DONE	02 00812
000406	000453	R					
000407	005012	A	813	TAB			R02 00813
000410	005001	A	814	TZA		CONVERT TO WORDS	R02 00814
000411	165015	A	815	MUL	CTSTSZ,X		R02 00815
000412	005101	A	817	DIRWB4	INCR	DRIVER STATUS TO COMPLETE	R02 00817
000413	035010	A	818	STA	CTSTAT,X		R02 00818
000414	065035	A	820	DIRWB5	STB	SAVE DP LENGTH IN WORDS	R02 00820
000415	065246	A	821	STB	CTUPWD,X	USED IN DIBDP TO DETERMINE NUMBER	02 00821
			822		CTWORD,X	OF RECORDS OF TRANSFER PER TRACK	02 00822
	000416	R	823	DIRWB9	EQU	*	R02 00823
000416	020300	A	824	LDB	VSCTL	CONTROLLER TIDB	R02 00824
000417	016003	A	825	LDA	TBEVNT,B		02 00825
000420	001016	A	826	JANZ	DIRB30	IF ALREADY 1, BY-PASS SEEK DELAY	02 00826
000421	000463	R					
000422	005041	A	827	TXA		SAVE X REGISTER.	R02 00827
			828	DELAY	100,0,2	DELAY FOR SEEK COMPLETE, 500 MILLISEC.	02 00828
000423	006505	A					
000424	000406	A					
000425	001102	A					
000426	000144	A					
000427	000000	A					
000430	005014	A	829	TAX		RESTORE N=CTBL	R02 00829
000431	016001	A	830	LDA	TBST,B		R02 00830
000432	006150	A	831	ANAI	0177667	RESET TIMER	R02 00831
000433	177667	A					
000434	056001	A	832	STA	TBST,B		R02 00832
000435	016003	A	833	LDA	TBEVNT,B		R02 00833
000436	001016	A	834	JANZ	DIRB30		E.2*****
000437	000463	R					
000440	006506	A	835	JSR	BRECAL,B	RECALIBRATE	E.2*****
000441	002166	R					
000442	005041	A	836	DIRW10	TXA		02 00838
			837	DELAY	100,0,2	DELAY 500 MSEC FOR RECALIBRATE	02 00839
000443	006505	A					
000444	000406	A					
000445	001102	A					
000446	000144	A					
000447	000000	A					
000450	005014	A	838	TAX		TIMED OUT, NO SEEK COMPLETE.	02 00840
000451	006020	A	839	LOBI	014240		R02 00841
000452	014240	A					
000453	001000	A	840	JMP	DITERR		R02 00842
000454	000201	R					
000455	020300	A	841	DIRB20	LDB	VSCTL	02 00843
000456	016001	A	842	LDA	TBST,B	CLEAR TIME DELAY FLAG	02 00844
000457	150444	A	843	ORA	RBC	TO IGNORE SEEK COMPLETE.	02 00845
000460	056001	A	844	STA	TBST,B		02 00846
000461	001000	A	845	JMP	DICOMP+3		02 00847
000462	001047	R					
	000463	R	846	DIRB30	EQU	*	02 00848
	006506	A	847	JSR	DINST,B	SEEK COMPLETE, CHECK STATUS	02 00849
000464	001373	R					
000465	006150	A	848	ANAI	06677	CHECK FOR MALFUNCTION	02 00850
000466	006677	A					
000467	001016	A	849	JANZ	DIRB31	JUMP ON BAD STATUS FROM SEEK	E.2*****

Address	Code	Label	Operation	Description	Notes
000470	000477	R			
000471	006506	A	850 JSR	DRCA,B	READ CURRENT ADDRESS E.2*****
000472	002076	R			
000473	015245	A	851 LDA	CTCYLN,X	CALCULATED CYLINDER NUMBER E.2*****
000474	145052	A	852 SUB	CTOCBF,X	SUBTRACT ACTUAL CYLINDER NUMBER E.2*****
000475	001010	A	853 JAZ	D1BGDP	0, DN CYLINDER E.2*****
000476	000514	R			
000477	006506	A	854 D1RB31 JSR	DRECAL,B	RECALIBRATE E.2*****
000500	002166	R			
000501	005041	A	855 TXA		SAVE X E.2*****
			856 DELAY	100,0,2	DELAY 500 MS FOR RECALIBRATE E.2*****
000502	006505	A			
000503	000406	A			
000504	001102	A			
000505	000144	A			
000506	000000	A			
000507	005014	A	857 TAX		E.2*****
000510	006020	A	858 LDRI	015240	YES. DC15 MSG. R02 00852
000511	015240	A			
000512	001000	A	859 JMP	D1FER1	ERROR EXIT. R02 00853
000513	000151	R			
			860 EJEC	****	BEGIN I/O DISC OPERATION R02 00854
			861 *		R02 00855
			863 D1BGDP EQU	*	02 00857
000514	006020	A	864 LDRI	3000	APPROX. 25 MSEC 02 00858
000515	005670	A			
000516	006017	A	865 LDAE	DSEN4	=101400 02 00859
000517	002270	R			
000520	115006	A	866 ORA	CTDVAD,X	SENSE UNIT NOT READY. 02 00860
000521	100444	A	867 EXC	DISPIM	02 00861
000522	100747	A	868 EXC	DISCLK	02 00862
000523	054027	A	869 STA	D1BG02	=1014XX 02 00863
000524	015242	A	870 LDA	CTHEAD,X	GET CURRENT HEAD NO. 02 00864
000525	004250	A	871 LKLA	0	POSITION IT FOR SUM 02 00865
000526	115243	A	872 ORA	CTUNIT,X	OR IN UNIT NO. 02 00866
000527	115033	A	873 ORA	CTDSEC,X	OR IN CURRENT SECTOR NO. 02 00867
000530	115024	A	874 ORA	CTOP,X	OR IN READ/WRITE CODE 02 00868
000531	055244	A	875 STA	CTSUM,X	SAVE SUM 02 00869
000532	006010	A	876 LDRI	0100400	FORM READ/WRITE EXC COMMAND 02 00870
000533	100400	P			
000534	115006	A	877 ORA	CTDVAD,X	OR IN DEVICE ADDRESS 02 00871
000535	054106	A	878 STA	D1BG06	SAVE IT 02 00872
000536	006010	A	879 LDRI	0100100	FORM OUTPUT SUM COMMAND 02 00873
000537	103102	A			
000540	115006	A	880 ORA	CTDVAD,X	OR IN DEVICE ADDRESS 02 00874
000541	054046	A	881 STA	D1BG03	SAVE IT 02 00875
000542	054023	A	882 STA	D1BG04+2	02 00876
000543	054054	A	883 STA	D1BG05+2	02 00877
000544	010440	A	884 LDA	PS10	FORM STOP TRANS. AND INITIALIZE COMMAND 02 00878
000545	115006	A	885 ORA	CTDVAD,X	OR IN DEVICE ADDRESS 02 00879
000546	054015	A	886 STA	D1BG04	SAVE IT 02 00880
000547	054037	A	887 STA	D1BG01	02 00881
000550	054045	A	888 STA	D1BG05	02 00882
000551	054021	A	889 STA	D1BG00	02 00883
000552	054030	A	890 STA	D1BG03+1	02 00884
000553	101400	A	891 D1BG02 SEN	0400,D1BG04	IF NOT BUSY,CONTINUE. 02 00885
000554	000564	R			
000555	100241	A	892 EXC	ENAPIM	OTHERWISE ALLOW TIME FOR SHORT RECORD 02 00886
000556	100147	A	893 EXC	ENACK	02 00887
000557	005322	A	894 BR		02 00888
000560	001026	A	895 JRNZ	D1BGDP+2	RETRY. 02 00889
000561	000516	R			
000562	001000	A	896 JMP	D1SKER	DONE. REPORT AS ERROR. 02 00890
000563	000134	R			
000564	100000	A	897 D1BG04 EXC	0	STOP TRANSFER AND INITIALIZE 02 00891
000565	015244	A	898 LDA	CTSUM,X	GET SUM 02 00892
000566	103100	A	899 ORA	0	OUTPUT SUM 02 00893
000567	006010	A	900 LDRI	0102500	02 00894
000570	102500	A			
000571	115006	A	901 ORA	CTDVAD,X	02 00895
000572	054001	P	902 STA	*+2	BUILD INPUT STATUS WORD INSTR. 02 00896
000573	100000	A	903 D1BG00 EXC	0	SELECT THE UNIT 02 00897
000574	102500	A	904 ORA	0	02 00898
000575	025024	A	905 LDR	CTOP,X	GET OPERATION CODE. 02 00899
000576	006477	A	906 BT	R00+15,*+4	READ UP, SKIP NEXT OP 02 00900
000577	000602	R			
000600	006411	A	907 BT	R01+9,*+4	FILE PROTECTED DURING WRITE OP, ERROR 02 00901
000601	000604	R			
000602	006446	A	908 BT	R00+6,D1BG05	UNIT ON-LINE, OK 02 00902
000603	000615	R			
000604	015243	A	909 LDA	CTUNIT,X	GET OFF-LINE UNIT'S NO. 02 00903
000605	006150	A	910 ENAI	000000	02 00904
000606	060000	A			
000607	100000	A	911 D1BG01 EXC	0	STOP XFER AND INITIALIZE 02 00905
000610	103100	A	912 D1BG03 ORA	0	OUTPUT SUM TO SELECT ANOTHER UNIT 02 00906
000611	100000	A	913 EXC	0	SELECT THAT UNIT 02 00907
000612	100244	A	914 EXC	ENAPIM	02 00908
000613	100147	A	915 EXC	ENACK	02 00909
000614	001000	A	916 JMP	D1SKER	GO TELL USER UNIT IS OFF-LINE 02 00910
000615	000134	R			
000616	100000	A	917 D1BG05 EXC	0	STOP XFER AND INITIALIZE 02 00911
000617	015244	A	918 LDA	CTSUM,X	GET SUM 02 00912
000620	103100	A	919 ORA	0	OUTPUT SUM 02 00913

Address	Hex	Op	Label	Comment	Register	Value
920		IFT	VORTEX-2		V2	02 00914
921		GOTO	ENDC04		V2	02 00915
922		LDA	CTSTAT,X	ENTRY STATE CODE	V2	02 00916
923		SUB	TWO		V2	02 00917
924		JAN	D1BGDA	SKIP IF CONT/COMP OF READ/WRITE	V2	02 00918
925		TZA		MAP KEY 0	V2	02 00919
926		JMP	D1BGDA+2		V2	02 00920
927	D1BGDA	LDA	CTMODE,X		V2	02 00921
928		ANA	BM17	EXTRACT MAP KEY VALUE	V2	02 00922
929		STA	MPKEY1	STORE IT IN V%BIC CALLING SEQUENCE	V2	02 00923
930	ENDC04	CONT			V2	02 00924
000621	015246	A	931	LDA	CTWORD,X	02 00925
000622	145013	A	932	SUB	CTSTSZ,X	02 00926
000623	001004	A	933	JAN	*+5	02 00927
000624	000630	R				
000625	015015	A	934	LDA	CTSTSZ,X	02 00928
000626	001000	A	935	JMP	*+5	02 00929
000627	000631	R				
000630	015246	A	936	LDA	CTWORD,X	02 00930
000631	125034	A	937	ADD	CTBFAD,X	02 00931
000632	005311	A	938	DAR		R02 00932
000633	035034	A	939	LDX	CTBFAD,X	R02 00933
000634	006506	A	940	JSR	V%BIC,B	R02 00934
000635	000000	E				
000636	000001	A	941	DATA	1	R02 00935
			942	IFF	VORTEX-2	V2 02 00936
000637	001004	A	943	MPKEY1	DATA	V2 02 00937
000640	000172	R	944	JAN	D1BERR	R02 00938
000641	005001	A				
000642	020300	A	945	TZA		R02 00939
000643	056003	A	946	LDB	V%CTL	R02 00940
000644	100400	A	947	STA	TBEVNT,B	R02 00941
000645	005041	A	948	D1BG06	EXC 0400	02 00942
			949	TXA		R02 00943
			950	DELAY	25,0,2	02 00944
000646	006505	A				
000647	000406	A				
000650	001102	A				
000651	000031	A				
000652	000000	A				
000653	005014	A	952	*	RETURN FROM INTERRUPT OR TIME-OUT.	R02 00946
000654	016001	A	953	TAX	RESTORE X REG.	R02 00947
000655	006150	A	954	LDA	TBST,B	R02 00948
000656	177667	A	955	ANAI	0177667	R02 00949
000657	056001	A	956	STA	TBST,B	R02 00950
000660	016003	A	957	LDA	TBEVNT,B	R02 00951
000661	001010	A	958	JAZ	D1BERR	R02 00952
000662	000172	R				
000663	006506	A	959	JSR	DINST,B	02 00953
000664	001373	R				
000665	150452	A	960	ANA	BR9	02 00954
000666	001016	A	961	JANZ	DIRWE2	R02 00955
000667	000746	R				
000670	006015	A	962	LDAX*	CTBICB,X	R02 00956
000671	100011	A				
000672	006110	A	963	DRAI	0101001	R02 00957
000673	101001	A				
000674	100444	A	964	EXC	DISPIM	R02 00958
000675	100747	A	965	EXC	DISCLK	R02 00959
000676	054000	A	966	STA	*+1	R02 00960
000677	101021	A	967	SEN	021,DIRWE1	R02 00961
000700	000731	R				
968		IFT	VORTEX-2		V2	02 00962
969		GOTO	ENDC05		V2	02 00963
970		LDAX*	CTBICB,X		V2	02 00964
971		ANA	BM27		V2	02 00965
972		IAR		MAKE BIC NUMBER ODD	V2	02 00966
973		DRAI	0101100		V2	02 00967
974		STA	*+1	STORE INLINE	V2	02 00968
975		SEN	0120,D1BER1	SENSE FOR UNASSIGNED MEMORY VIOLATION	V2	02 00969
976	ENDC05	CONT			V2	02 00970
000701	100244	A	977	EXC	ENAPIM	02 00971
000702	100147	A	978	EXC	ENACKL	02 00972
000703	015246	A	979	LDA	CTWORD,X	02 00973
000704	145015	A	980	SUB	CTSTSZ,X	02 00974
000705	001004	A	981	JAN	D1STAT	02 00975
000706	000720	R				
000707	001010	A	982	JAZ	D1STAT	02 00976
000710	000720	R				
000711	055246	A	983	STA	CTWORD,X	02 00977
000712	045033	A	984	INR	CTDSEC,X	02 00978
000713	015034	A	985	LDA	CTBFAD,X	02 00979
000714	125015	A	986	ADD	CTSTSZ,X	02 00980
000715	055034	A	987	STA	CTBFAD,X	02 00981
000716	001000	A	988	JMP	D1BGOP	02 00982
000717	000514	R				
000720	025010	A	989	D1STAT	EQ	02 00983
000721	006026	A	990	LDB	CTSTAT,X	R02 00984
000722	000723	R	991	LDBE	D1STBL,B	R02 00985
000723	006706	A	992	IJMP	C,B	R02 00986
000724	000000	A				

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000725 000777 R 994 DISTBL DATA D1CONT STATUS 0 = CONT R/W R02 00988
000726 001044 R 995 DATA D1COMP 1 = COMPLETE R/W R02 00989
000727 001161 R 996 DATA D1SRCH 2 = SEARCH DIRECTORY R02 00990
000730 001506 R 997 DATA D1FN5H 3 = FINISH DIR. REWRITE R02 00991
000731 006015 A 999 DIRWE1 LDAEM CTBICB,X ABNORMAL BIC TERMINATION R02 00993
000732 100011 A 1000 DRAI 0102500 R02 00994
000733 006110 A 1000 INRI 0 NOTE THE ERROR ***** R02 00995
000734 102500 A 1001 STA *+1 R02 00996
000735 006040 A 1001 CIA *-# R02 00997
000736 000000 A 1002 CTFCB,X GET FCB ADDRESS 02 00998
000737 054000 A 1003 FCBUFF,B SUBTRACT STARTING LDC. FOR THE OPERATION 02 00999
000740 102500 A 1004 STA CTWDS,X UPDATE WORDS XMITTED R02 01000
000741 025012 A 1004 JMP D1ERRR BIC ERROR EXIT R02 01001
000742 146001 A 1005 DIRWE2 TZB ENTER FOR INPUT STATUS ERROR. 02 01002
000743 055013 A 1006 BT RA1+0,DIRWE4 TIMING ERROR, I016 02 01003
000744 001000 A 1007 IBR RA1+2,DIRWE4 FORMAT ERROR, I033 02 01004
000745 000172 R 1008 BT RA1+5,DIRWE4 END-OF-FILE ERROR ,I033 02 01005
000746 005002 A 1008 BT RA1+11,DIRWE4 HEAD SELECT ERROR ,I033 02 01007
000747 006400 A 1009 IBR RA1+3,DIRWE4 SEARCH CYCLIC CHECK ERROR, I030 02 01008
000750 000766 R 1010 BT RA1+4,DIRWE4 DATA CYCLIC CHECK ERROR,I030 02 01010
000751 005122 A 1010 DIRWE4 LDPE DIRWE5,B GET ERROR CODE 02 01011
000752 006400 A 1011 INC R 01 02 01013
000753 000766 R 1012 JMP D1ERRX 02 01014
000754 006405 A 1012 * 02 01015
000755 000766 R 1021 DIRWE5 DATA 016240 TIMING ERROR 02 01016
000756 006413 A 1013 DATA 045240 END OF FILE,FORMAT,HEAD SELECTION V2 02 01017
000757 000766 R 1022 DATA 030240 SEARCH OR DATA CYCLIC CHECK ERROR 02 01018
000758 005122 A 1023 DATA 015240 MALFUNCTION -ALL OTHERS 02 01019
000759 006403 A 1024 IFT VORTEX-2 V2 02 01020
000760 000766 R 1025 COTD ENDC06 V2 02 01021
000761 006403 A 1026 DIBER1 LDBI 046240 ERROR CODE-UNASSIGNED MEMORY VIOLATION V2 02 01022
000762 000766 R 1027 LDA B015 V2 02 01023
000763 006404 A 1028 EXC ENACLK V2 02 01024
000764 000766 R 1029 EXC ENAPIM V2 02 01025
000765 005122 A 1030 JMP D1ERRX V2 02 01026
000766 006026 A 1031 EJEC V2 02 01027
000767 000773 R 1032 ***** V2 02 01028
000768 005101 A 1033 * V2 02 01029
000769 001000 A 1034 * SUBROUTINE: GETKEY * V2 02 01030
000770 000152 R 1035 * PURPOSE: TO OBTAIN THE REQUESTER'S MAP KEY * V2 02 01031
000771 016240 A 1036 * VALUE. IF THE REQUESTER IS V$SAK, * V2 02 01032
000772 045240 A 1037 * THE MAP KEY IS OBTAINED FROM * V2 02 01033
000773 030240 A 1038 * THE REQUESTER'S T$EVNT. * V2 02 01034
000774 015240 A 1039 * OTHERWISE, IT IS OBTAINED FROM THE * V2 02 01035
000775 015240 A 1040 * REQUESTER'S TRKEY. * V2 02 01036
000776 015240 A 1041 * ON ENTRY: (B) = RETURN ADDRESS * V2 02 01037
000777 015240 A 1042 * (X) = CTBL ADDRESS * V2 02 01038
000778 015240 A 1043 * ON EXIT: (X) = CTBL ADDRESS * V2 02 01039
000779 015240 A 1044 * ALL OTHER REGISTERS ARE DESTROYED * V2 02 01040
000780 015240 A 1045 * ***** * V2 02 01041
000781 015240 A 1046 * ***** * V2 02 01042
000782 015240 A 1047 * ***** * V2 02 01043
000783 015240 A 1048 * ***** * V2 02 01044
000784 015240 A 1049 * ***** * V2 02 01045
000785 015240 A 1050 * ***** * V2 02 01046
000786 015240 A 1051 * ***** * V2 02 01047
000787 015240 A 1052 * ***** * V2 02 01048
000788 015240 A 1053 * ***** * V2 02 01049
000789 015240 A 1054 * ***** * V2 02 01050
000790 015240 A 1055 * ***** * V2 02 01051
000791 015240 A 1056 * ***** * V2 02 01052
000792 015240 A 1057 * ***** * V2 02 01053
000793 015240 A 1058 * ***** * V2 02 01054
000794 015240 A 1059 * ***** * V2 02 01055
000795 015240 A 1060 * ***** * V2 02 01056
000796 015240 A 1061 * ***** * V2 02 01057
000797 015240 A 1062 * ***** * V2 02 01058
000798 015240 A 1063 * ***** * V2 02 01059
000799 015240 A 1064 * ***** * V2 02 01060
000800 015240 A 1065 * ***** * V2 02 01061
000801 015240 A 1066 * ***** * V2 02 01062
000802 015240 A 1067 * ***** * V2 02 01063
000803 015240 A 1068 * ***** * V2 02 01064
000804 015240 A 1069 * ***** * V2 02 01065
000805 015240 A 1070 * ***** * V2 02 01066
000806 015240 A 1071 * ***** * V2 02 01067
000807 015240 A 1072 * ***** * V2 02 01068
000808 015240 A 1073 * ***** * V2 02 01069
000809 015240 A 1074 * ***** * V2 02 01070
000810 015240 A 1075 * ***** * V2 02 01071

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1076 *
1077 *   PURPOSE:   TO MOVE THE CONTENTS OF THE FCB TO A
1078 *             STORAGE AREA IN THE CTBL ENTRY.
1079 *
1080 *   ON ENTRY:  (B) = RETURN ADDRESS
1081 *
1082 *   ON EXIT:   (B) = FWA OF CONTROLLER TIDB
1083 *             (X) = FWA OF CTBL ENTRY
1084 *
1085 * *****
1086 *   SPAC
1087 * XFRFCB  EXC    DISPIM
1088 *         EXC    DISCLK
1089 *         STB    XFRRTN    SAVE RETURN ADDRESS
1090 *         LDX    VSCTL    CONTROLLER TIDB
1091 *         LDX    TBRSTS,X  CTBL ADDRESS
1092 *         LDB    CTFCB,X   FWA OF FCB
1093 *         TXA
1094 *         ADDI   CTFCB0    FORM ADDRESS OF FCB SAVE AREA IN CTBL
1095 *         STA    CTFCB,X   SUBSTITUTE STORAGE AREA ADDRESS
1096 *         TAX
1097 *         LDA    BS15
1098 *         SUB    TEN
1099 *         STA    XFRCNT    LOOP COUNTER
1100 *         ROF
1101 *         SPAC
1102 * ***     THE FCB IS TRANSFERRED INTO THE CTBL ENTRY STORAGE AREA IN
1103 * ***     MAP 0.
1104 *         SPAC
1105 * XFR1    OME    MPDVAD,V$ST3 SWITCH TO USER'S MAP
1106 *         LDA    0,B      PICK UP WORD FROM FCB
1107 *         OME    MPDVAD,V$ST0 SWITCH BACK TO MAP 0
1108 *         STA    0,X      STORE FCB WORD IN CTBL ENTRY
1109 *         INR    XFRCNT
1110 *         JOF    XFR2     SKIP IF XFER COMPLETE
1111 *         IBR
1112 *         IXR
1113 *         JMP    XFR1     RETURN TO XFER NEXT WORD
1114 * XFR2    LDB    VSCTL
1115 *         LDX    TBRSTS,B
1116 *         EXC    ENACKL
1117 *         EXC    ENAPIM
1118 *         JMP    *-*      RETURN
1119 * XFRRTN EQU    *-1
1120 * XFRCNT DATA 0
1121 *         EJEJ
1122 * *****
1123 *
1124 *   SUBROUTINE:  RSTFCB
1125 *
1126 *   PURPOSE:    TO TRANSFER THE CONTENTS OF THE FCB
1127 *             STORAGE AREA IN THE CTBL ENTRY BACK
1128 *             TO THE FCB AND TO RESTORE THE
1129 *             POINTER (CTFCB) BACK TO ITS ORIGINAL
1130 *             VALUE.
1131 *
1132 *   ON ENTRY:   (B) = RETURN ADDRESS
1133 *
1134 *   ON EXIT:    (A) = RESTORED
1135 *             (B) = DESTROYED
1136 *             (X) = DESTROYED
1137 *
1138 * *****
1139 *
1140 * RSTERR  SPAC
1141 *         LDBI   VSERR    EXIT ADDRESS
1142 *         JMP    RSTFCB
1143 * RSTFNR  LDBI   V$FNR
1144 * RSTFCB  EQU    *
1145 *         EXC    DISPIM
1146 *         EXC    DISCLK
1147 *         STA    SVAREG    SAVE (A)-REGISTER
1148 *         STB    EXITAD    SAVE EXIT ADDRESS
1149 *         LDA    BS15
1150 *         SUB    SEVEN
1151 *         STA    RSTCNT    LOOP COUNTER
1152 *         ROF
1153 *         LDB    V$CTL    CONTROLLER TIDB
1154 *         LDX    TBRSTS,B  CTBL ENTRY ADDRESS
1155 *         LDB    CTROBK,X  FWA OF REQUEST BLOCK
1156 *         LDA    CTFCB,X   POINTER TO FCB SAVE AREA IN CTBL
1157 *         STA    RSTEMP    SAVE POINTER IN TEMP. STORAGE
1158 *         LDA    RPSTPR,B  PICK UP REQUESTER'S PRIORITY
1159 *         LDB    RFCB,B    REQUESTER'S FCB ADDRESS
1160 *         STB    CTFCB,X   RESTORE ORIGINAL POINTER IN CTBL
1161 *         ANA    RM27     EXTRACT REQUESTER'S PRIORITY
1162 *         LSRA   1        SHIFT OUT LOW ORDER BIT
1163 *         TZX
1164 *         JANZ   RST1     JUMP IF REQUESTER IS NOT PRIORITY 0/1
1165 *         TEA   V$GFCB    FCB ADDRESS ID (A)-REG.
1166 *         SUB   RST1     ADDRESS OF FIRST GLOBAL FCB
1167 *         JAP   RST1     JUMP IF FCB NOT GLOBAL
1168 *         SUBI  80
1169 *         JAP   RST1     JUMP IF FCB NOT GLOBAL

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Address	Label	Operation	Description	Register	Value
1169		IXR	SET (X)-REG. TO INDICATE GLOBAL FCB	V2	02 01163
1170	RST1	LDAE*	PICK UP WORD FROM FCB AREA IN CTBL	V2	02 01164
1171		XXNZ	STORE IN MAP 0 IF GLOBAL FCB	V2	02 01165
1172		XXNZ		V2	02 01166
1173		OME	SWITCH TO USER MAP	V2	02 01167
1174	RST1A	LDI		V2	02 01168
1175		STA	STORE WORD IN USER'S FCB	V2	02 01169
1176		OME	RESTORE MAP 0	V2	02 01170
1177	RST1B	LDI		V2	02 01171
1178		INR		V2	02 01172
1179		JOF	SKIP IF XFER COMPLETE	V2	02 01173
1180		IBR		V2	02 01174
1181		INR	INCREMENT POINTER TO FCB AREA IN CTBL	V2	02 01175
1182		JMP	RETURN TO XFER NEXT WORD	V2	02 01176
1183	RST2	LDI	RESTORE (A)-REGISTER	V2	02 01177
1184	SVAREG	LDI		V2	02 01178
1185		EXC		V2	02 01179
1186		EXC		V2	02 01180
1187		JMP		V2	02 01181
1188	EXITAD	LDI		V2	02 01182
1189	RSTCNT	DATA		V2	02 01183
1190	RSTEMP	DATA		V2	02 01184
1191	ENDC06	DATA		V2	02 01185
1192		LDI	CONTINUE R/W STATE ENTRY	R02	01186
000777	015036	A	OPERATION PARTIALLY COMPLETED	R02	01187
001000	145035	A	DECREMENT WORDS LEFT TO DO	R02	01188
001001	001010	A	COMPLETE IF ALL DONE	R02	01189
001002	001044	R		R02	01190
001003	055036	A		R02	01192
001004	015031	A		R02	01194
001005	055032	A		R02	01195
001006	005001	A	LAST TRACK PROCESSED	R02	01197
001007	055033	A	SET TO NEXT TRK	R02	01198
001010	015016	A		R02	01199
001011	055037	A	SKIP TO	R02	01200
001012	005101	A		R02	01201
001013	055040	A		R02	01202
001014	015013	A		R02	01204
001015	125035	A	INCREMENT WORDS XMITTED	R02	01203
001016	055013	A		R02	01205
001017	015245	A		R02	01207
001020	055047	A	TEMP. SAVE CURRENT CYL ADDRESS	R02	01208
001021	006506	A	DETERMINE NEXT GOOD ADR	R02	01209
001022	001615	R		R02	01210
001023	001004	A	PASS EOF	R02	01216
001024	000126	R		R02	01217
001025	015240	A	GET NEW CYL ADDR	R02	01211
001026	145047	A	SUBTRACT OLD CYL ADDR	R02	01212
001027	001010	A	NO SEEK NECESSARY	R02	01213
001030	001033	R		R02	01214
001031	006506	A	SEEK NEW CYL	R02	01214
001032	002170	R		R02	01215
001033	015027	A	EOF TRACK NUMBER	R02	01215
001034	145032	A	TRACK TO SEEK	R02	01216
001035	001004	A	OUTSIDE OF FILE	R02	01217
001036	000126	R		R02	01218
001037	015034	A		R02	01219
001040	125015	A	INCREMENT BUFFER ADDRESS FOR LAST SECT. DP	R02	01220
001041	055034	A		R02	01221
001042	001000	A		R02	01222
001043	000315	R		R02	01223
1228		LDI	COMPLETE R/W STATE ENTRY	R02	01222
001044	015013	A	OPERATION COMPLETED	R02	01224
001045	125035	A		R02	01225
001046	055013	A	UPDATE WORDS XMITTED	R02	01226
001047	006506	A	SET CURR ADR BY ACCESS METHOD	R02	01228
001050	001053	R		R02	01228
1235		LDI	RESTORE FCB AND EXIT TO V\$RNR	V2	02 01230
1236		JMP		V2	02 01230
1238		LDI	EXIT FROM DRIVER	V2	02 01230
1239		JMP		R02	01230
001051	001000	A		R02	01236
001052	000133	R		R02	01237
001053	065041	A	SET CURRENT ADR FROM ACCESS METHOD	R02	01238
001054	025012	A	TEST ACCESS METHOD	R02	01239
001055	016002	A	IF SEQUENTIAL ACCESS	R02	01239
001056	006450	A		R02	01240
001057	001102	R		R02	01241
001060	046003	A	INCREMENT RECORD #	R02	01241
001061	015024	A		R02	01241
001062	006457	A	SKIP IF READ	R02	01242
001063	001102	R		R02	01243
001064	016004	A	WRITE-CHECK IF CURRENT EOF IS TO BE UPDATED	R02	01244
001065	146005	A		R02	01244
001066	146003	A	POSITION TO WHERE IT WAS	R02	01245
001067	005111	A		R02	01246
001070	001002	A	NO.	R02	01247
001071	001102	R		R02	01248
001072	046004	A	YES	R02	01248
001073	016002	A		R02	01249
001074	006451	A	PHYSICAL RECORD ?	R02	01250
001075	001102	R		R02	01251
001076	016005	A	YES	R02	01251
001077	126005	A		R02	01252

001100	005311	A	1259	DAR						02	01253
001101	056004	A	1260	STA	FCCDF,B	UPDATE FCB(DEF)				02	01254
001102	025041	A	1261	LDB	CTRNI,X	RETURN FROM SUBROUTINE				R02	01255
001103	00670E	A	1262	IJMP	0,B					R02	01256
001104	000000	A									
			1263	EJEC	****	OPEN/CLOSE FILE PROCESSOR	****			R02	01257
			1265	*	INITIATE OPERATION					R02	01259
001105	015025	A	1268	DICLSE	LDA	CYMODE,X	CLOSE FILE			R02	01262
001106	006454	A	1269	BT	RA0+12,DIFNSH	JUMP IF MODE = LEAVE				R02	01263
001107	001506	R									
001110	005001	A	1270	ZERO	A					R02	01264
001111	001016	A	1271	DATA	01016	SKIP NEXT WORD				R02	01265
001112	005301	A	1273	D1OPEN	DECR	A	OPEN FILE			R02	01267
001113	055036	A	1274	STA	CTWLFT,X	SET D/C FLAG				R02	01268
001114	005001	A	1275	TZA						02	01269
001115	055024	A	1276	STA	CTOP,X	SET OP INST TO READ				R02	01270
001116	005041	A	1278	TXA						R02	01272
001117	006120	A	1279	ADDI	CTOCBF					R02	01273
001120	000052	A									
001121	055034	A	1280	STA	CTBFAD,X	SET BUFFER TO D/C BUFF ADR				R02	01274
001122	015015	A	1281	LDA	CTSISZ,X					R02	01275
001123	055035	A	1282	STA	CTOPWD,X	OP LENGTH TO 1 SECTOR				02	01276
001124	055246	A	1283	STA	CTWORD,X					02	01277
001125	025037	A	1285	D1DCI1	LDB	CTEMP1,X	SET RMD ADR TO BEGIN OF LUN			02	01279
001126	005021	A	1286	TBA			TEST IF DADR IN LUN			02	01280
001127	145030	A	1287	SUB	CTEOD,X					R02	01281
001130	001002	A	1288	JAP	DIFERR	BAD DIR THREAD				R02	01282
001131	000147	R									
001132	005001	A	1289	TZA						R02	01283
001133	065032	A	1290	STB	CTDTRK,X	TO TRACK ADR. = PSBU0,PARTITION TRK NO.				02	01284
001134	055033	A	1291	STA	CTUSEC,X	AND SECTOR				R02	01285
001135	005021	A	1293	TBA						R02	01287
001136	006506	A	1294	D1DCI2	JSR	01TSTS,B	TEST IF TRACK GOOD			R02	01288
001137	001707	R									
001140	001004	A	1295	JAN	D1DCI4	TRY NEXT TRACK				R02	01289
001141	001136	R									
001142	005001	A	1296	TZA						02	01290
001143	025032	A	1297	LDB	CTDTRK,X	GET TRACK NO.				02	01291
001144	005322	A	1298	DPR		DECREMENT TO GET PROPER RANGE				02	01292
001145	006170	A	1299	DIVI	20	FIND HEAD NO.				02	01293
001146	000024	A									
001147	055242	A	1300	STA	CTHEAD,X	SET-UP NEW HEAD NO.				02	01294
001150	010422	A	1301	LDA	TWO					R02	01295
001151	055010	A	1302	STA	CTSTAT,X	DRIVER STATUS TO SEARCH				R02	01296
001152	006506	A	1303	D1DCI3	JSR	DSEK,B				02	01297
001153	002170	R									
001154	001000	A	1304	JMP	D1RW89	WAIT FOR INTERRUPT.				R02	01298
001155	000416	R									
001156	045037	A	1305	D1DCI4	INR	CTEMP1,X				R02	01299
001157	001000	A	1306	JMP	D1DCI1	TRY NEXT TRK.				02	01300
001160	001125	R									
			1307	EJEC	****	SEARCH DIRECTORY STATE ENTRY	****			R02	01301
001161	025034	A	1309	*	PERFORMS OPEN; INITIATES	CLOSE-UPDATE				R02	01303
001162	016000	A	1312	D1SRCH	LDB	CTBFAD,X	SEARCH INTERNAL STATE ENTRY			R02	01306
001163	001010	A	1313	LDA	0,B					R02	01307
001164	001276	R		JAZ	D1SCH4	JMP IF NO DIRECTORY ENTRIES				R02	01308
001165	006010	A	1315	LDAI	077754	FOR MAX. OF 19 ENTRIES				R02	01309
001166	077754	A									
001167	055040	A	1316	STA	CTEMP2,X	TEMP STORAGE				R02	01310
001170	005322	A	1317	DBR						R02	01311
001171	035012	A	1318	LDX	CTFCB,X	REFERENCE FCB				R02	01312
001172	005021	A	1320	D1SCH1	TBA					R02	01314
001173	120466	A	1321	ADD	SIX	GET NEXT ENTRY				R02	01315
001174	005012	A	1322	TAE						R02	01316
001175	016000	A	1323	LDA	0,B					R02	01317
001176	001010	A	1324	JAZ	D1SCH3	EMPTY				R02	01318
001177	001270	R									
001200	001002	A	1325	JAP	D1SCH2	END OF DIRECTORY SECTOR				R02	01319
001201	001256	R									
001202	145007	A	1326	SUB	FCNAM1,X					R02	01320
001203	001016	A	1327	JANZ	D1SCH3	TEST FIRST 2 CHARACTERS OF NAME				R02	01321
001204	001270	R									
001205	016001	A	1328	LDA	1,B					R02	01322
001206	145010	A	1329	SUB	FCNAM2,X					R02	01323
001207	001016	A	1330	JANZ	D1SCH0	CHARS 3 AND 4				R02	01324
001210	001270	R									
001211	016002	A	1331	LDA	2,B					R02	01325
001212	145011	A	1332	SUB	FCNAM3,X					R02	01326
001213	001016	A	1333	JANZ	D1SCH3	CHARS 5 AND 6				R02	01327
001214	001270	R									
001215	030300	A	1334	LDX	VSCTL	NAME FOUND - RESTORE X				R02	01328
001216	035010	A	1335	LDX	TBRSTS,X					R02	01329
001217	065024	A	1336	SIX	CTOP,X	SAVE ENTRY POINTER				R02	01330
001220	015036	A	1338	LDA	CTWLFT,X	TEST D/C FLAG				R02	01332
001221	001004	A	1339	JAN	D1SC01	JUMP IF OPEN				R02	01333
001222	001302	R									
001223	025012	A	1342	LDB	CTFCB,X	CLOSE FILE PROCESSING				R02	01336
001224	016005	A	1343	LDA	FCIFE,B					R02	01337
001225	026003	A	1344	LDB	FCCADR,B					R02	01338
001226	005322	A	1345	DBR		CONVERT TO PHYSICAL RECORD NO., IF NOT.				R02	01339
001227	165051	A	1346	MUL	CTCONV,X					R02	01340
001230	005021	A	1347	TBA						R02	01341

Address	Op	Opnd	Label	Description	Address
001231	LDX	CTOP,X		GET PNTR TO DIR ENTRY	R02 01342
001232	STA	CTEMP1,X		COMPARE CADR TO FILE EXTENTS	R02 01343
001233	SUB	4,B			R02 01344
001234	JAN	D,PERR		PARAM ERR IF BELOW IFE	R02 01345
001235	R				
001236	LDA	5,B			R02 01347
001237	SUB	CTEMP1,X			R02 01348
001240	JAN	D,PERR		OR IF ABOVE EFE	R02 01349
001241	R				
001242	LDA	CTEMP1,X			R02 01351
001243	STA	8,B		SET CURR EOF ADR	R02 01352
001244	LDA	ES15			R02 01353
001245	STA	CTOP,X		SFT DP INST TO WRITE	R02 01354
001246	INR	BTSTAT,X		SET DRIVER STATUS TO FINISH	R02 01356
001247	LDA	CTRY,X			R02 01358
001250	TOB				R02 01359
001251	LSRA	8		INIT RETRY COUNT	R02 01360
001252	LLRL	8			R02 01361
001253	STA	CTRNT,X			R02 01362
001254	JMP	D1BDDP		BEGIN REWRITE OF SECTOR, NO SEEKS NEEDED	R02 01364
001255	R				
001256	LDX	V\$CTL	DISCH2	END OF DIRECTORY SECTOR	R02 01365
001257	LDX	TBRSTS,X			R02 01366
001260	DAR				R02 01367
001261	LDB	DISCH4+1			R02 01368
001262	JAZ	D1FER1		END OF DIR - NAME NOT FOUND	R02 01369
001263	R				
001264	JSR	BTSECT,B			R02 01370
001265	R				
001266	JMP	D1DDI2		READ NEXT SECTOR	R02 01371
001267	R				
001270	R				R02 01373
001271	R				R02 01374
001272	R				R02 01375
001273	R				R02 01376
001274	R				R02 01377
001275	R				R02 01378
001276	R				R02 01379
001277	R				R02 01380
001300	R				R02 01381
001301	R				
001302	R				R02 01384
001303	R				R02 01385
001304	R				R02 01387
001305	R				R02 01388
001306	R				R02 01389
001307	R				R02 01390
001310	R				R02 01392
001311	R				R02 01393
001312	R				R02 01394
001313	R				R02 01395
001314	R				R02 01396
001315	R				R02 01397
001316	R				R02 01398
001317	R				R02 01399
001320	R				R02 01400
001321	R				
001322	R				R02 01402
001323	R				R02 01403
001324	R				R02 01404
001325	R				R02 01405
001326	R				R02 01406
001327	R				R02 01407
001330	R				R02 01408
001331	R				R02 01409
001332	R				R02 01410
001333	R				R02 01411
001334	R				R02 01412
001335	R				R02 01413
001336	R				R02 01414
001337	R				R02 01415
001340	R				R02 01416
001341	R				R02 01417
001342	R				R02 01418
001343	R				R02 01419
001344	R				R02 01420
001345	R				R02 01421
001346	R				R02 01422
001347	R				R02 01423
001350	R				R02 01424
001351	R				R02 01425
001352	R				R02 01426
001353	R				R02 01427
001354	R				R02 01428

E.2 VORTEX LISTING

VZDD

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LISTING PAGE (554)

001355	126005	A	1442	ADD	FCIFE,B	INITIAL FILE EXTENT	R02	01436
001356	056004	A	1443	STA	FCCEOF,B	NOW UPDATE CURRENT EOF FOR LOGICAL RECORD.	R02	01437
001357	001000	A	1444	JMP	DISC05		R02	01438
001360	001317	R						
			1445	EJEC			R02	01439
001361	000000	A	1446	DNSECT	ENTR	SUBROUTINE TO CALCULATE NO.OF SECTORS	R02	01440
001362	026000	A	1447	LDB	FCRECL,B	IN FCRECL. ENTER WITH B=FCB	R02	01441
001363	005001	A	1448	TZA		X=CTBL	R02	01442
001364	175015	A	1449	DIV	CTSTSZ,X		R02	01443
001365	003016	A	1450	XANZ	DIIER	INCREMENT TO NEXT SECTOR	R02	01444
001366	000121	R						
001367	100244	A	1451	DNSEC2	EXC	ENAPIM	R02	01445
001370	100147	A	1452	EXC	ENACLK		R02	01446
001371	001000	A	1453	JMP*	DNSECT		R02	01447
001372	101361	R						
			1454	*			R02	01448
			1455	*			R02	01449
	001373	R	1457	DINST	EQU	*	02	01451
001373	065050	A	1458	STB	CTIST,X	SUBROUTINE TO INPUT STATUS WORD.	02	01452
001374	006020	A	1459	LDBI	3200	SAVE RETURN ADDR.	02	01453
001375	006200	A				SET COUNTER FOR APPROX 25 MSEC WAIT	02	01454
	001376	R	1460	DINST5	EQU	*	02	01455
001376	006010	A	1461	LDAI	0101400	BUILD SNSE DCU NOT BUSY INSTR	02	01456
001377	101400	A					02	01457
001400	115006	A	1462	DRA	CTDVAD,X		02	01458
001401	100444	A	1463	EXC	DISPIM		02	01459
001402	100747	A	1464	EXC	DISCLK		02	01460
001403	054000	A	1465	STA	*+1		02	01461
001404	101400	A	1466	SEN	0400,DINST1	SENSE DCU NOT BUSY	02	01462
001405	001415	R						
001406	100244	A	1467	EXC	ENAPIM		02	01463
001407	100147	A	1468	EXC	ENACLK		02	01464
001410	005322	A	1469	DBR		DECREMENT COUNTER	02	01465
001411	001026	A	1470	JBNZ	DINST5	WAIT FOR SHORT RECORD	02	01466
001412	001376	R						
001413	001000	A	1471	JMP	DISKER	ERROR, NOT READY	02	01467
001414	000134	R						
	001415	R	1472	DINST1	EQU	*	02	01468
001415	025050	A	1473	LDB	CTIST,X	REPLACE RETURN ADDR. TO B-REG	02	01469
001416	006010	A	1474	LDAI	0102500	BUILD INPUT STATUS WORD INSTRUCTION.	R02	01470
001417	102500	A						
001420	115006	A	1475	DRA	CTDVAD,X	01025XX	02	01471
001421	054000	A	1476	STA	*+1		02	01472
001422	102516	A	1477	ORA	016	INPUT STATUS WORD.	02	01473
001423	150455	A	1478	ANA	BR12	AND OUT BAD TRACK FLAG	02	01474
001424	055050	A	1479	STA	CTIST,X	STORE INPUT STATUS WORD	R02	01475
001425	006446	A	1480	BT	PA0+6,DINST4	UNIT IS O.K.; CONTINUE	02	01476
001426	001445	R						
001427	006010	A	1481	LDAI	0103100		02	01477
001430	103100	A						
001431	115006	A	1482	DRA	CTDVAD,X		02	01478
001432	054000	A	1483	STA	DINST2	CONSTRUCT OUTPUT SUM INSTR.	02	01479
001433	015243	A	1484	LDA	CTUNIT,X	GET UNIT NO.	02	01480
001434	006150	A	1485	ANA1	060000		02	01481
001435	060000	A						
001436	103100	A	1486	DINST2	DAR	0	02	01482
001437	010440	A	1487	LDA	RS15	OUTPUT SUM TO SELECT ANOTHER UNIT	02	01483
001440	115006	A	1488	DRA	CTDVAD,X		02	01484
001441	054000	A	1489	STA	*+1	BUILD STOP XFER AND INITIAL. INSTR.	02	01485
001442	103000	A	1490	EXC	0	SELECT THAT UNIT	02	01486
001443	001000	A	1491	JMP	DISKER	GO TELL USER UNIT IS OFF-LINE	02	01487
001444	000134	R						
001445	015050	A	1492	DINST4	LDA	CTIST,X	02	01488
001446	100244	A	1493	EXC	ENAPIM		02	01489
001447	100147	A	1494	EXC	ENACLK		R02	01490
001450	006706	A	1495	IJMP	0,B	NOW RETURN	02	01491
001451	000000	A						
			1497	*			R02	01492
			1498	*			R02	01493
001452	065042	A	1499	DTSECT	STB	CTRYN2,X	R02	01494
001453	005012	A	1500	TAB		CALC. TRACK AND SECTOR NO.	R02	01495
001454	005001	A	1501	TZA		ENTER WITH A= RELATIVE SECTOR NUMBER	02	01496
001455	175016	A	1502	DIV	CTTKSZ,X		R02	01497
001456	055033	A	1503	STA	CTISEC,X	WITHIN PARTITION, IE, FCIFE.	R02	01498
001457	005021	A	1504	TBA		X=CTBL	R02	01499
001460	125045	A	1505	ADD	CTPEXT,X	CTDSEC= SECTOR NO. WITHIN TRACK.	R02	01500
001461	055032	A	1506	STA	CTDTRK,X		R02	01501
001462	001020	A	1507	JBZ	DTSET2	CTDTRK= TRACK NO.	02	01502
001463	001476	R				SAME AS PARTITION START.		
001464	025045	A	1508	LDB	CTPEXT,X	A=END TRK NO. B= START TRK NO.	R02	01503
001465	100444	A	1509	EXC	DISPIM		02	01504
001466	100747	A	1510	EXC	DISCLK		02	01505
001467	002000	A	1511	JMPM	DBADTK	FIND NO. OF BAD TRACKS.	R02	01506
001470	001777	R						
001471	125032	A	1512	ADD	CTDTRK,X	RETURN WITH A= NO. OF BAD TRACKS	R02	01507
001472	055032	A	1513	STA	CTDTRK,X		R02	01508
001473	025042	A	1514	DTSET4	LDB	CTRYN2,X	R02	01509
001474	006706	A	1515	IJMP	0,B		02	01510
001475	000000	A						
			1516	*			R02	01511
001476	006506	A	1517	DTSET2	JSR	DTSTS,B	R02	01512
001477	001707	R				CHECK IF GOOD OR BAD TRACK		
001500	001002	A	1518	JAP	DTSET4	GOOD TRACK	R02	01513

001501	001479	R						
001502	045032	R	1519	INR	CTDTRK,X	BAD. INCREMENT TO NEXT TRACK.		R02 01519
001503	015032	R	1520	LDA	CTDTRK,X			R02 01514
001504	001000	R	1521	JMP	BTSET2			R02 01515
001505	001479	R	1522 *					
	025012	R	1523	EJEC	****	FINISH CLOSE STATE ENTRY		R02 01516
001506	005001	R	1526	D1FN3H	CTFCB,X	FINISH THE CLOSE		R02 01517
001507	005001	R	1527	TZA				R02 01520
001510	056003	R	1528	STA	FCCADR,B	ZERO THE FOUR ADDRESS		R02 01521
001511	056004	R	1529	STA	FCCEOF,B	WORDS IN THE FCB, TO		R02 01522
001512	056005	R	1530	STA	FCIFE,B	PREVENT ITS FURTHER USE		R02 01523
001513	056006	R	1531	STA	FCEFE,B			R02 01524
			1533	IFF	VORTEX-2			R02 01525
			1534	JMP	RSTFNR	RESTORE FCB AND EXIT TO V\$FNR	V2	02 01527
			1535	IFT	VORTEX-2		V2	02 01528
001514	001000	R	1536	JMP	V\$FNR	EXIT TO FIND NEXT REQUEST	V2	02 01529
001515	001325	R						R02 01530
	025012	R	1537	EJEC	****	SKIP RECORD PROCESSOR		R02 01531
001516	016002	R	1540	D1SREC	CTFCB,X	FCB ADR		R02 01534
001517	016002	R	1541	LDA	FCACM,B			R02 01535
001520	086430	R	1542	BT	AA0+8,DIAERR	ERROR IF DIRECT ACCESS.		R02 01536
001521	000160	R						
001522	016000	R	1543	LDA	FCEFE,B			R02 01537
001523	146005	R	1544	SUB	FCIFE,B			R02 01538
001524	005012	R	1545	TAB				R02 01539
001525	005001	R	1546	TZA				R02 01540
001526	165005	R	1547	MUL	CTCONV,X	CONVERT TO PHYSICAL RECORD		R02 01541
001527	005021	R	1548	IBM				R02 01542
001530	025012	R	1549	LDA	CTFCB,X			R02 01543
001531	126005	R	1550	ADD	FCIFE,B			R02 01544
001532	055026	R	1551	STA	CTCEOF,X			R02 01545
001533	015025	R	1553	LDA	CTMODE,X			R02 01547
001534	006411	R	1554	BT	AA1+12,D1SRC1	JMP IF MODE = REVERSE		R02 01548
001535	001547	R						
001536	016000	R	1555	LDA	FCIFE,B			R02 01549
001537	126003	R	1556	ADD	FCCADR,B			R02 01550
001540	005111	R	1557	TAR				R02 01551
001541	146006	R	1558	SUB	FCEFE,B	CHECK IF PASS EOF.		R02 01552
001542	001000	R	1559	JAP	DIEXT2	YES		R02 01553
001543	000126	R						
001544	046003	R	1560	INR	FCCADR,B	INCREMENT RECORD NUM		R02 01554
			1561	IFF	VORTEX-2		V2	02 01555
			1562	JMP	RSTFNR	RESTORE FCB THEN EXIT	V2	02 01556
			1563	IFT	VORTEX-2		V2	02 01557
			1564	JMP	VORTR	EXIT TO FIND NEXT REQUEST	R02	01558
001545	001000	R						
001546	001515	R						
	001547	R	1566	D1SRC1		SKIP - REVERSE		R02 01560
001547	016003	R	1567	LDA	FCCADR,B			R02 01561
001550	005311	R	1568	BAR		DECREMENT RECORD NUM		R02 01562
001551	001010	R	1569	JAP	DIEXT1	BEGINNING OF FILE		R02 01563
001552	000120	R						
001553	056003	R	1570	STA	FCCADR,B			R02 01564
			1571	IFF	VORTEX-2		V2	02 01565
			1572	JMP	RSTFNR	RESTORE FCB AND EXIT TO V\$FNR	V2	02 01566
			1573	IFT	VORTEX-2		V2	02 01567
			1574	JMP	V\$FNR	EXIT TO FIND NEXT REQUEST	R02	01568
001554	001000	R						
001555	001545	R						
	065041	R	1575	EJEC		VALIDATE ADDR, SKIP TO CURRENT RECORD		R02 01569
001556	025012	R	1577	D1SRCS	CTSTN1,X			R02 01571
001557	025012	R	1578	LDB	CTFCB,X			R02 01572
001560	016003	R	1579	LDA	FCCADR,B			R02 01573
001561	005311	R	1580	BAR		SET CURR REC NUM		R02 01574
001562	055037	R	1581	STA	CTSTN1,X	INTO SKIP COUNT		R02 01575
001563	016002	R	1583	LDA	FCACM,B			R02 01577
001564	006451	R	1584	BT	AA0+9,D1SRSS1	JUMP IF ACCESS BY LOGICAL RECORD		R02 01578
001565	001571	R						
001566	020421	R	1586	LDA	ONE	RECORD LENGTH = 1 SECTOR		R02 01580
001567	001000	R	1587	JMP	D1SRSS2			R02 01581
001570	001570	R						
001571	100444	R	1588	D1SRSS1	END			R02 01582
001572	100747	R	1589	END	RISCLK			R02 01583
001573	002003	R	1590	JMPM	LDSECT	FIND NO. OF SECTORS.		R02 01584
001574	001361	R						
001575	065049	R	1591	D1SRSS2	CTSTN2,X	STORE IN SKIP LENGTH		R02 01585
001576	015027	R	1593	LDA	CTCEOF,X			R02 01587
001577	145033	R	1594	SUB	CTCSD,X	CHECK IF EOF PASS PARTITION END		R02 01587
001600	001000	R	1595	JAP	DIEXT2	SET EOF		R02 01588
001601	000126	R						
001602	025012	R	1596	LDB	CTFCB,X			R02 01590
001603	016005	R	1597	LDA	FCIFE,B			R02 01591
001604	005311	R	1598	BAR				R02 01592
001605	006506	R	1599	BAR	RISSECT,B	CONVERT TO TRACK AND SECTOR		R02 01593
001606	001450	R						
001607	006506	R	1601	BAR	D1SKPS,B	SKIP TO CURRENT RECORD		R02 01595
001610	001613	R						
001611	001004	R	1602	JAP	DIEXT2	PASS EOF		R02 01596
001612	000126	R						
001613	001000	R	1603	RSTU	RSTRN	RETURN		R02 01597
001614	001100	R						
			1604	EJEC		** SKIP SECTORS SUBROUTINE **		R02 01598
			1605	*				R02 01599
			1606	*	ENTRY: X REG- CTBL ADDR			R02 01600

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1607 * B REG- RETURN ADDR 02 01601
1608 * CTEMP1 = NUMBER OF RECORDS TO SKIP 02 01602
1609 * CTEMP2 = FOR LOGICAL RECORDS, NUMBER OF 120 WD 02 01603
1610 * RECORDS IN LOGICAL RECORD. 02 01604
1611 * CTDTRK = TRK FROM WHICH SKIP STARTS. 02 01605
1612 * 02 01606
1613 * DISKPS UPDATES CTDTRK AND CTDSEC TO THE RECORD SPECIFIED 02 01607
1614 * IN CTEMP1. 02 01608
1615 * 02 01609
1616 * EXIT : A REG = 0 SKIP COMPLETED 02 01610
1617 * = 1 RECORD SPECIFIED IS EOF RECORD 02 01611
1618 * = -1 PAST EOF 02 01612
1619 * 02 01613
1620 * B REG RETURN ADDR 02 01614
1621 * X REG CTBL ADDR 02 01615
1622 * 02 01616
1623 * 02 01617
001615 001615 R 1624 DISKPS EQU * SUBROUTINE ENTRY 02 01618
001616 065044 A 1625 STB CTRTN4,X SAVE RETURN ADDR 02 01619
001617 025037 A 1626 LDA CTDSEC,X CTDTRK/CTDSEC = TRK/SECTOR INITIAL ADDR. 02 01620
001620 165040 A 1627 LDB CTEMP1,X NOW CALC. DESIRED TRK/SECTOR ADDR. 02 01621
001621 005001 A 1628 MUL CTEMP2,X ADJUST FOR LOGICAL RECORD, IF SPECIFIED. 02 01622
001622 175016 A 1629 TZA B= RECORD COUNT. 02 01623
001623 055033 A 1630 DIV CTTKSZ,X CONVERT TO TRKS. 02 01624
001624 005021 A 1631 STA CTDSEC,X SAVE SECTOR COUNT. 02 01625
001625 125032 A 1632 TBA 02 01626
001626 025032 A 1633 ADD CTDTRK,X 02 01627
001627 055032 A 1634 LDB CTDTRK,X 02 01628
001630 100444 A 1635 STA CTDTRK,X UPDATE TRK COUNT TO SPECIFIED TRK. 02 01629
001631 100747 A 1636 EXC DISPIM 02 01630
001632 002000 A 1637 EXC DISCLK 02 01631
001633 001777 R 1638 CALL DRADTK FIND NO. OF BAD TRKS 02 01632

001634 001634 R 1639 DISKPS EQU * 02 01633
001635 125032 A 1640 ADD CTDTRK,X 02 01634
001636 015027 A 1641 STA CTDTRK,X UPDATE TRK COUNT FOR BAD TRKS. 02 01635
001637 145032 A 1642 LDA CTDEOF,X GET EOF, READ= FCEDEF, WRITE=FCEFE. 02 01636
001640 001004 A 1643 SUB CTDTRK,X CTDEOF= TRK WITH EOF SECTOR. 02 01637
001641 001662 R 1644 JAN DISKS4 EXCEEDS EOF 02 01638
001642 001016 A 1645 JANZ DIRTN4 OK 02 01639
001643 001672 R 1646 LDB CTDEOF,X EOF IN SAME TRK, CHECK SECTOR 02 01640
001644 025026 A 1647 DBR START SECTOR COUNT FROM 0. 02 01641
001645 005322 A 1648 DIV CTTKSZ,X CTDEOF = EOF, COUNT = SECTORS. 02 01642
001646 175016 A 1649 JBZ DISKPS 1ST TRK 02 01643
001650 001654 R 1650 JANZ *+3 IF 0, RESET TO LAST SECTOR 02 01644
001651 001016 A 1651 LDA CTTKSZ,X 02 01645
001652 001654 R 1652 DISKPS PAR 02 01646
001653 015016 A 1653 SUB CTDSEC,X CHECK IF SECTOR THE SAME 02 01647
001654 005311 A 1654 JAN DISKS4 02 01648
001655 145033 A 1655 JANZ DIRTN4 02 01649
001656 001004 A 1656 DISKS4 LDB CTDEOF,X 02 01650
001657 001662 R 1657 STB CTDADR,X SET EOF ADDR. 02 01651
001660 001016 A 1658 JANZ DIRTN4-2 AT EOF 02 01652
001661 001672 R 1659 DECR A 02 01653
001662 025026 A 1660 DATA 01040 X NEVER 0, SKIP NEXT INSTR. 02 01654
001663 065031 A 1661 INCR A 02 01655
001664 001010 A 1662 DATA 01040 SKIP NEXT INSTR. 02 01656
001665 001670 R 1663 DIRTN4 TZA 02 01657
001666 005301 A 1664 STA CTEMP1,X SET EOF INDICATOR 02 01658
001667 001040 A 1665 TZA 02 01659
001670 005101 A 1666 LDB CTDTRK,X GET NEW TRK NO. 02 01660
001671 001040 A 1667 DBR DECREMENT TO GET 0-8119 RANGE 02 01661
001672 005001 A 1668 DIVI 20 DIV BY 20 TRKS/CYL 02 01662
001673 055037 A 1669 STB CTCYLN,X MAY BE A NEW CYL SO SAVE IT 02 01663
001674 005001 A 1670 STA CTHEAD,X SAVE NEW HEAD NO. 02 01664
001675 025032 A 1671 LDA CTEMP1,X GET EOF INDICATOR 02 01665
001676 005322 A 1672 LDB CTRTN4,X 02 01666
001677 006170 A 1673 IJMP 0,B RETURN 02 01667
001700 000024 A 1674 EJEC ***** TEST TRACK STATUS SUBROUTINE ***** R02 01668
001701 065245 A 1675 ENTRY: A REG - TRACK TO TEST R02 01670
001702 055242 A 1676 B REG - RETURN ADR R02 01671
001703 015037 A 1677 X REG - CTBL ADR R02 01672
001704 025044 A 1678 ***** R02 01673
001705 006706 A 1679 EXIT: A REG NEGATIVE - TRACK IS BAD R02 01674
001706 000000 A 1680 A REG POSITIVE - TRACK IS GOOD R02 01675
1681 B REG - RETURN ADR R02 01676
1682 X REG - CTBL ADR R02 01677
001707 065043 A 1683 DISKPS EQU SUBROUTINE ENTRY R02 01680
001710 025023 A 1684 STB CTRTN3,X R02 01681
001711 001020 A 1685 LDB CTBT,X R02 01682
001712 001734 R 1686 JBZ DIRTN3 NO BAD TKS THIS LUN R02 01682
001713 100444 A 1690 EXC DISPIM 02 01684
001714 100747 A 1691 EXC DISCLK 02 01685
001715 064007 A 1692 STR DITST2 STORE TABLE ADR R02 01686

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001716	005311	A	1693	DAR				R02	01687
001717	005012	A	1694	TAB				R02	01688
001720	004144	A	1695	LARR	4	WORD NUMBER IN B		R02	01689
001721	150472	A	1696	ANA	BM17	0-15 BIT POSITION		R02	01690
001722	114014	A	1697	DRA	DITST			R02	01691
001723	054003	A	1698	STA	DITST3	STORE BIT TEST INSTRUCTION		R02	01692
001724	006026	A	1699	LARB	**-*,B	LOAD PROPER TABLE WORD		R02	01693
001725	000000	R							
001725	001725	R	1700	DITST2	EAU	*-1	ADDRESS OF BAD TK TBL	R02	01694
001726	005301	A	1701	BEOR	A			R02	01695
001727	006400	A	1703	DITST3	BT	**-*,DITST4	TEST TRACK BIT (EXIT IF BAD)	R02	01697
001730	001732	R							
001731	005001	A	1704	ZERO	A	TRACK GOOD		R02	01698
001732	100147	A	1705	DITST4	EXC	ENACK	ENABLE INTERRUPTS	R02	01699
001733	100244	A	1706	EXC	ENAPM			R02	01700
001734	025043	A	1708	DIRTNS	LDB	DIRTNS,X		R02	01702
001735	006706	A	1709	IJMP	0,B	RETURN		R02	01703
001736	000000	A							
001737	006420	A	1712	DITSET	DATA	00420	BIT TEST INST (B REG, IF BIT SET)	R02	01706
			1713	EJEC	***	REIND UNIT PROCESSOR	***	R02	01707
	001740	R	1716	DIREW		*		R02	01710
001740	015030	A	1717	SOU		END OF LUN		R02	01711
001741	145037	A	1718	LBA	CTEFD,X	BEG. OF LUN		R02	01712
001742	145046	A	1719	SUB	CTEMP1,X	REDUCE SIZE BY NO. OF BAD TRKS IN PARTITH		R02	01713
001743	005012	A	1720	SUB	CTBDTK,X	FIND RELATIVE SECTOR NO.		R02	01715
001744	005001	A	1721	TZR				R02	01716
001745	165016	A	1722	MUL	CTIKSZ,X			R02	01717
001746	005021	A	1723	TBA				R02	01718
001747	025012	A	1724	LDB	CTFCB,X			R02	01719
001750	005111	A	1725	IAR				R02	01720
001751	056004	A	1726	STA	FOCEDF,B	STORE IN CURR EOF		R02	01721
001752	056006	A	1727	STA	FOCFE,B	AND END OF EXTENT		R02	01722
001753	001600	A	1728	LDB	FOADM,B			R02	01723
001754	006451	A	1729	RI	RA0+9,DIREW4	JMP IF LOGICAL RECORD.		R02	01725
001755	001764	R	1731	DIREW2	EAU	*		R02	01726
001756	005101	A	1732	INCR	A	CURA RECORD = 1		R02	01727
001757	056003	A	1733	STA	FOCADP,B			R02	01728
001760	005111	A	1734	IAR		SKIP 1ST SECTOR		R02	01729
001761	056005	A	1735	STA	FOCFE,B	BEG. OF FILE		R02	01731
001762	001000	A	1737	JMP	DIRECT	SET BEGIN OF DEVICE AND EXIT		R02	01732
001763	000122	R							
	001764	R	1738	DIREW4	EAU	*		R02	01733
001764	016004	A	1739	LBA	FOCEDF,B			R02	01734
001765	005312	A	1740	BEOR	A	B=9-1		R02	01735
001766	005001	A	1741	TZR				R02	01736
001767	175051	A	1742	DIV	CTCONV,X			R02	01737
001770	005021	A	1743	TBA				R02	01738
001771	025012	A	1744	LDB	CTFCB,X			R02	01739
001772	005111	A	1745	IAR				R02	01740
001773	056004	A	1746	STA	FOCEDF,B			R02	01741
001774	056006	A	1747	STA	FOCFE,B			R02	01742
001775	001000	A	1748	JMP	DIREW2				
001776	001756	R							
			1749	EJEC					
			1750	*					
			1751	*					
			1752	*	DBADTK				
			1753	*					
			1754	*					
			1755	*					
			1756	*					
			1757	*					
			1758	*					
			1759	*					
			1760	*					
			1761	*					
			1762	*					
			1763	*					
			1764	*					
			1765	*					
001777	000000	A	1766	DBADTK	ENTR			R02	01766
002000	064012	A	1767	STB	DBAD01+1	BEGIN TRK NO.		R02	01767
002001	025023	A	1768	LDB	CTBDTK,X			R02	01768
002002	001020	A	1769	JRZ	DBAD12	NO BAD TRACKS ON THIS UNIT		R02	01769
002003	002073	R							
002004	064025	A	1770	STB	DBAD03+1	BAD TRK TABLE ADDR.		R02	01764
002005	025046	A	1771	LDB	CTBDTK,X			R02	01765
002006	001020	R	1772	JRZ	DBAD12	NO BAD TRACKS THIS PARTITION		R02	01766
002007	002073	R							
002010	144002	A	1773	SUB	DBAD01+1	A= END TRACK NO.		R02	01767
002011	005014	A	1774	TAX	X= NO. OF TRACKS TO TEST - 1			R02	01768
002012	006010	A	1775	DBAD01	LDAI	*	BEGIN TRK NO.	R02	01769
002013	002012	R							
002014	005311	A	1776	DAR				R02	01770
002015	005012	A	1777	TAB				R02	01771
002016	004144	A	1778	LARB	4	B= INDEX INTO BAD TRACK TABLE		R02	01772
002017	150472	A	1779	ANA	BM17	HOW 0-15		R02	01773
002020	054041	A	1780	STA	DBAD09	LSRA INSTRUCTION		R02	01774
002021	124033	A	1781	HEB	DBAD07+1			R02	01775
002022	054010	A	1782	STA	DBAD05			R02	01776
002023	005001	A	1783	TZR				R02	01777
002024	054041	A	1784	STA	DBAD10+3	CLEAR COUNTER		R02	01778

002025	014024	A	1785	LDA	DBAD07-2	=077760	R02 01779
002026	124033	A	1786	ADD	DBAD09		R02 01780
002027	150460	A	1787	ANA	BR15		R02 01781
002030	054031	A	1788	STA	DBAD09	SET BIT COUNTER	R02 01782
002031	006016	A	1789	DBAD03	LD AE	*,B	R02 01783
002032	002031	R				GET BAD TRACK TABLE WORD	
002033	004340	A	1790	DBAD05	LSRA	0	R02 01784
002034	006440	A	1791	BT	RA0+0,DBAD06	MODIFIED ABOVE	R02 01785
002035	002041	R					
002036	044027	A	1792	INR	DBAD10+3	1= BAD TRK. INCREMENT COUNT.	R02 01786
002037	001000	A	1793	JMP	DBAD06+3	CHECK NEXT TRK	R02 01787
002040	002044	R					
002041	001040	A	1794	DBAD06	EQU	*	R02 01788
002042	002063	R	1795	JXZ	DBAD10	ALL CHECKED.	R02 01789
002043	005344	A	1796	DXR		DECREMENT NO. OF TRKS TESTED	R02 01790
002044	044015	A	1797	INR	DBAD09	NO. OF TRKS TO BE TESTED THIS WORD.	R02 01791
002045	004341	A	1798	LSRA	1		R02 01792
002046	001007	A	1799	JOFN	DBAD05+1	TEST	R02 01793
002047	002034	R					
002050	005122	A	1800	IBR		COMPLETED THIS WORD.	R02 01794
002051	006010	A	1801	LD AI	077760		R02 01795
002052	077760	R					
002053	054006	A	1802	STA	DBAD09		R02 01796
002054	006010	A	1803	DBAD07	LD AI	04340	R02 01797
002055	004340	A				LSRA 0	
002056	006057	A	1804	STAE	DBAD05		R02 01798
002057	002033	R					
002060	001001	A	1805	JOF	DBAD03	RESET OVERFLOW.	R02 01799
002061	002031	R					
002062	000000	A	1806	DBAD09	DATA	0	R02 01800
002063	030300	A	1807	DBAD10	LDX	V\$CTL	R02 01801
002064	035010	A	1808	LDX	TRSTS,X	RESTORE X REG.	R02 01802
002065	006010	A	1809	LD AI	0	COUNT OF BAD TRACKS	R02 01803
002066	000000	A					
002067	002067	R	1810	DBAD11	EQU	*	R02 01804
002070	100244	A	1811	EXC	ENAPIM		R02 01805
002071	100147	A	1812	EXC	ENACLK		R02 01806
002072	001000	A	1813	JMP*	DBADTK		R02 01807
002073	005021	A	1814	DBAD12	TBA	SET A=0	R02 01808
002074	001000	A	1815	JMP	DBAD11		R02 01809
002075	002067	R					
			1816	EJEC			
			1817	* SUBROUTINE:	DRCA		E.2*****
			1818	* PURPOSE:	READ CURRENT ADDRESS		E.2*****
			1819	* DESCRIPTION:	READS THE CURRENT ADDRESS FROM THE 5		E.2*****
			1820		WORD COUNT FIELD IN THE RMD RECORD		E.2*****
			1821		UNDER BIC CONTROL. THE CURRENT		E.2*****
			1822		ADDRESS IS READ INTO THE BUFFER		E.2*****
			1823		STARTING AT CTDCBF.		E.2*****
			1824				E.2*****
			1825				E.2*****
			1826				E.2*****
			1827	* CALLING SEQUENCE:	JSR DRCA,B		E.2*****
			1828	* ON ENTRY:	X = CTBL ADDRESS		E.2*****
			1829		B = RETURN ADDRESS		E.2*****
			1830	* ON EXIT:	X = CTBL ADDRESS		E.2*****
			1831				E.2*****
			1832				E.2*****
			1833				E.2*****
002076	065047	A	1834	DRCA	EQU	*	E.2*****
002077	006020	A	1835	STB	CTRTR,X	SAVE RETURN ADDRESS	E.2*****
002100	013560	A	1836	LD BI	6000	APPROX. 50 MS DELAY	E.2*****
			1837	DRCA01	EQU	*	E.2*****
002101	014166	A	1838	LDA	DSN4	OP-CODE FOR SEN 0400	E.2*****
002102	115006	A	1839	DRA	CTDVAD,X		E.2*****
002103	100444	A	1840	EXC	DISPIM	DISABLE PIMS	E.2*****
002104	100747	A	1841	EXC	DISCLK	DISABLE CLOCK	E.2*****
002105	054000	A	1842	STA	*+1		E.2*****
002106	101400	A	1843	SEN	0400,DRCA02	SENSE DCU NOT BUSY	E.2*****
002107	002117	R					
002110	100244	A	1844	EXC	ENAPIM	ENABLE PIMS	E.2*****
002111	100147	A	1845	EXC	ENACLK	ENABLE CLOCK	E.2*****
002112	005322	A	1846	DR			E.2*****
002113	001026	A	1847	JNZ	DRCA01	WAIT	E.2*****
002114	002101	R					
002115	001000	A	1848	JMP	DISKER	REPORT ERROR, DCU BUSY TOO LONG	E.2*****
002116	000134	R					
002117	002117	R	1849	DRCA02	EQU	*	E.2*****
002120	115006	A	1850	LDA	DS15	OP-CODE FOR EXC	E.2*****
002121	054005	A	1851	DRA	CTDVAD,X	:EXC ODD: COMMAND	E.2*****
002122	110430	A	1852	STA	DRCA03		E.2*****
002123	054025	A	1853	DRA	BS7	:EXC 02DD: COMMAND	E.2*****
002124	014142	A	1854	STA	DRCA05	STORE :READ ADDRESS: COMMAND	E.2*****
002125	115006	A	1855	LDA	DDAR	:DAR 0: OP-CODE	E.2*****
002126	054002	A	1856	DRA	CTDVAD,X		E.2*****
002127	100000	A	1857	STA	DRCA04	STORE :DAR ODD: COMMAND	E.2*****
002128	015243	A	1858	DRCA03	EXC	0	E.2*****
002130	015243	A	1859	LDA	CTUNIT,X	STOP TRANSFER AND INITIALIZE	E.2*****
002131	103100	A	1860	DRCA04	DAR		E.2*****
002132	005041	A	1861	TXA	0	OUTPUT SUM	E.2*****

Address	Op Code	Op	Op	Op	Description	Hex
002133	006120	A	1862	ADDI	CTDCBF	FORM FWA OF INPUT BUFFER
002134	000052	A				
002135	005014	A	1863	TAX		
002136	005111	A	1864	IAR		FORM LWA OF ADDRESS BUFFER
002137	006506	A	1865	JSR	V\$BIC,B	COMMON BIC SETUP ROUTINE
002140	000635	E				
002141	000001	A	1866	DATA	1	
			1867	IFF	VORTEX-2	
			1868	DATA	0	MAP KEY VALUE
002142	001004	A	1869	JAN	D1BERR	ERROR IF BIC NOT READY
002143	000172	R				
002144	020300	A	1870	LDB	V\$CTL	CTRL TIDB ADDRESS
002145	016001	A	1871	LDA	TBST,B	
002146	006150	A	1872	ANAI	0177667	CLEAR TIMEOUT AND INTERRUPT
002147	177667	A				
			1873	*		EXPECTED BITS
002150	056001	A	1874	STA	TBST,B	
002151	100200	A	1875	EXC	0200	READ ADDRESS
002152	100244	A	1876	EXC	ENAPIM	
002153	100147	A	1877	EXC	ENACKL	
002154	006506	A	1878	JSR	DINST,B	INPUT STATUS
002155	001373	R				
002156	001016	A	1879	JANZ	D1RWER	JUMP ON BAD STATUS
002157	000746	R				
002160	015053	A	1880	LDA	CTDCBF+1,X	FETCH WORD CONTAINING CYLINDER ADDRESS
002161	150476	A	1881	ANA	PM777	EXTRACT CYLINDER NUMBER
002162	055052	A	1882	STA	CTDCBF,X	SAVE CURRENT ACTUAL CYLINDER NUMBER
002163	025047	A	1883	LDB	CTRTH,X	RESTORE RETURN ADDRESS
002164	006706	A	1884	IJMP	0,P	
002165	000000	A				
			1885	EJEC		
			1886	*		
			1887	* SEEK	CYLINDER ROUTINE	
			1888	*		
			1889	* DSEEK		
			1890	*		
			1891	*	CTDTRK = TRACK TO SEEK	
			1892	*	ENTER VIA JSR DSEEK,B WITH B= RETURN ADDR	
			1893	*	X= CONTROLLER TABLE	
			1894	*		
			1895	*	EXIT WITH TBEVNT = 0 IF SEEK CYLINDER INITIATED.	
			1896	*	TBEVNT = 1 IF NO SEEK REQUIRED.	
			1897	*		
			1898	*		
002166	007400	A	1899	DRECAL	RDF	RESET RECALIBRATE INDICATOR
002167	001001	A	1900	DATA	01001	SDP BPCODE
002170	007401	A	1901	DSEEK	RDF	SET SEEK INDICATOR
002171	065047	A	1902	STB	CTRTH,X	SAVE RETURN ADDRESS
002172	006506	A	1903	JSR	DINST,B	CHECK UNIT ONLINE AND DCU READY
002173	001373	R				
002174	005002	A	1904	TZE		
002175	001007	A	1905	JOPN	DSK01	JUMP FOR RECALIBRATE
002176	002204	R				
002177	005001	A	1906	TZA		
002200	025032	A	1907	LAR	CTDTRK,X	NOW TRK NO. IN CTDTRK TO CYLINDER NUMBER
002201	005322	A	1908	BR		TRACK NUMBER TO SEEK, 1-4060
002202	006170	A	1909	D.VI	20	QUOTIENT = CYLINDER NUMBER, 1-203
002203	000024	A				DIVIDE BY 20 HEADS WITH
			1910	DSK01	ERU	
002204	065245	A	1911	STB	CTCYLN,X	NOW 0-202
002205	006020	A	1912	LDRI	3000	APPROX. 25 MSEC
002206	005670	A				
			1913	DSK20	ERU	
002207	015243	A	1914	LDA	CTUNIT,X	GET UNIT NO.
002210	004347	A	1915	LDB	7	IN BITS 7-6
002211	114057	A	1916	OPB	DSEN	OR IN SENSE INSTR.
002212	115006	A	1917	OPB	CTDVPD,X	AND DEVICE ADDR.
002213	100444	A	1918	EXC	JOPIM	
002214	100747	A	1919	EXC	D1SCLK	
002215	054000	A	1920	STA	*+1	
002216	101000	A	1921	OPN	0,DSK21	SENSE UNIT SEEKING
002217	002232	R				
002220	100244	A	1922	EXC	ENAPIM	
002221	100147	A	1923	EXC	ENACKL	
002222	005322	A	1924	OPB		
002223	001036	A	1925	JANZ	DSK20	WAIT
002224	002207	R				
002225	005101	A	1926	INCR	B1	B=010240
002226	006027	A	1927	LD&K	D1RWE5+3	
002227	000776	R				
002230	001000	A	1928	JMP	D1ERRX	ERROR, DEVICE 'SEEKING' TOO LONG
002231	000152	R				
			1929	DSK21	ERU	DEVICE NOT SEEKING
002232	100244	A	1930	EXC	ENAPIM	
002233	100147	A	1931	EXC	ENACKL	
			1932	DSK04	ERU	
002234	020300	A	1933	LPS	V\$CTL	
002235	015245	A	1934	LPA	CTCYLN,X	BUILD SUM
002236	115243	A	1935	OPB	CTUNIT,X	UNIT NUMBER
002237	055244	A	1936	OPB	CTSUM,X	
			1937	DSK06	ERU	
002240	010440	A	1938	LDB	*+15	
002241	115006	A	1939	OPB	CTDVPD,X	STOP TRANSFER AND INITIALIZE


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002232 R DSK21 000002 A DSPSTI 000002 A DSUNTM 001452 R DTSECT
001476 R DTSET2 001473 R DTSET4 000424 A EIGHT 000147 A ENACLK
000645 A ENAMP 000244 A ENAPIM 000002 A FCACM 000001 A FCBUFF
000003 A FCCADR 000004 A FCCENF 000006 A FCFE 000005 A FCIFE
000007 A FCNAM1 000010 A FCNAM2 000011 A FCNAM3 000000 A FCRECL
000465 A FIVE 000423 A FOUR 000300 A LC 000050 A LCJP
000462 A LHW 000045 A MP 000045 A MPMR0 000145 A MPMR1
000245 A MPMR2 000345 A MPMR3 000420 A MT 000461 A NEG
000470 A NINE 000421 A ONE 000040 A PIM1 000041 A PIM2
000042 A PIM3 000043 A PIM4 000040 A PIM5 000040 A PIM6
000040 A PIM7 000040 A PIM8 000002 A PSBDTK 000000 A PSBDD
000003 A PSEDD 000001 A PSKEY 000040 A RAO 000000 A RAI
000060 A RB0 000020 A RB1 000460 A RHW 000001 A RPOPWD
000000 A RPSTPR 002272 R SETB8 000467 A SEVEN 000466 A SIX
000027 A TBATSK 000026 A TBCPTH 000011 A TBENTY 000003 A TBEVNT
000021 A TBID 000014 A TBISA 000015 A TBISB 000017 A TBISP
000020 A TBISRS 000016 A TBISX 000022 A TBKN1 000023 A TBKN2
000024 A TBKN3 000002 A TBPL 000004 A TERSA 000005 A TBRSE
000030 A TERSE 000007 A TBRSP 000010 A TBRST3 000006 A TBRDX
000000 A TBS0 000001 A TBS1 000012 A TBS10 000013 A TBS11
000014 A TBS12 000015 A TBS13 000016 A TBS14 000017 A TBS15
000002 A TBS2 000003 A TBS3 000004 A TBS4 000005 A TBS5
000006 A TBS6 000007 A TBS7 000010 A TBS8 000011 A TBS9
000001 A TBS 000025 A TBTLC 000013 A TBTMIN 000012 A TBTMS
000000 A TETRD 000471 A TEN 000464 A THREE 000422 A TWO
000403 A VS1MIN 000415 A VSBFC 000075 A VSBGLE 002140 E VSBIO
000056 A VSBIC1 000315 A VSBTB 000414 A VSBVN 000334 A VSCOM
000353 A VSCMB 000411 A VSCKIT 000310 A VSCKPT 000301 A VSCPL
000076 A VSCDM 000341 A VSCDR 000354 A VSCRM 000302 A VSCRS
000360 A VSCDAD 000300 A VSCDL 000351 A VSCDMS 000070 A VSDATE
000355 A VSDSTS 000376 A VSERFG 000161 E VSERR 000000 E VSEXEC
000347 A VSFGLB 000306 A VSFLRS 001555 E VSFNR 000300 E VSFREE
000320 A VSIN 000410 A VSIDA 000000 E VSIDC 000000 E VSIDST
000412 A VSJCB 000055 A VSJCB5 000077 A VSJCTM 000050 A VSJNAM
000377 A VSJDP 000054 A VSLCNT 000313 A VSLER 000356 A VALIT
000317 A VSLUP 000307 A VSLACK 000312 A VSLCAL 000345 A VSLCNT
000316 A VSLUP 000400 A VSLUT1 000401 A VSLUT2 000402 A VSLUT3
000330 A VSMFM 000362 A VSNCTR 000413 A VSDCB 000347 A VSDPCF
000311 A VSDPCL 000360 A VSPIMN 000074 A VSPLOT 000305 A VSPV6
000361 A VSDCTL 000352 A VSDCV 000375 A VSDLFG 000303 A VSTB
000342 A VSTEGT 000416 A VSTFC 000314 A VSTJCP 000347 A VSTMN
000343 A VSTMS 000304 A VSTUS 000001 A VORTEX 000001 R VZDD1
000000 R VZDD 000001 A X 000420 A ZERO

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0 ERRORS ASSEMBLY COMPLETE

379	APIM	389	390							
366	CLOCK	368	369							
446	CTHEAD	447	448	452	453	454	455			
421	CTPST3	422	423	424	425	426	427	428	429	430
		431	432	433	434	435	436	437	438	439
		440	441	442	443	444	445	446		
64	ENDC01	53								
148	LC	149	150	151	152	153	154	155	156	157
		158	159	160	161	162	163	164	165	166
		173	176	177	182	183	184	185	186	187
		188	189	190	192	193	194	195	196	197
		198	199	200	201	202	203	204	205	207
		210	211	212	213	225	226	227	228	229
		230	231	246	247	248	251	256	257	258
167	LCD1	164								
172	LCD2	169								
179	LCD3	175								
191	LCD4	181								
219	LCD5	216								
224	LCD6	221								
238	LCD7	233								
245	LCD8	240								
123	LCJP	124	125	126	132	134	135	136	137	140
393	MP	394	395	396	397	398	399			
267	MT	268	269	270	271	272	273	274	275	276
		277	278	279	280	281	282	283	284	285
		286	287	288	289	290	291	292	293	294
		295	296	297	298	299	300	301	302	303
		304	305	306	307	308	309	310	311	312
		313	314	315	316	317	318	319	320	321
		322	323							
0	VSBIC	521								
149	VSDTL	524								
0	VSERR	24								
0	VSEXEC	21								
0	VSFNR	23								
0	VSIDC	22								
0	VSIDST	25								
1	VORTEX	57	163	168	174	180	206	208	215	220
		232	235	370	372	374	455	500	507	
324	VZDD	14	525							

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000001 A 1 VORTEX SET 1 PUT LAST FOR VORTEX 03 00001
2 * THIS IS A COPYRIGHTED PROGRAM. COPYRIGHT 1972 BY VARIAN DATA MACHINES 03 00002
3 * 03 00003
4 * V.D.M. PART NO. 92L0605-098D C 03 00004
5 * 03 00005
6 * RELEASED 03/01/74 03 00006
7 * 03 00007
8 * VZCRA 03 00008
9 * 03 00009
10 * 03 00010
11 * 03 00011
12 * TITLE VZCRA 03 00012
13 * ***** 03 00013
14 * TIDB SETUP ***** 03 00014
15 * ***** 03 00015
000000 A 17 TBTRD EQU 0 TASK THREAD 03 00017
000001 A 18 TBST EQU 1 TASK STATUS 03 00018
000002 A 19 TBPL EQU 2 STATUS CONT. (BITS15-6), PRIORITY LEVEL(5-0 03 00019
000003 A 20 TBEVNT EQU 3 INTERRUPT EVENT 03 00020
000004 A 21 TBRSA EQU 4 A REENTRANT AND SUSPEND STACK 03 00021
000005 A 22 TBRSE EQU 5 B REENTRANT AND SUSPEND STACK 03 00022
000006 A 23 TBRSE EQU 6 X REENTRANT AND SUSPEND STACK 03 00023
000007 A 24 TBRSP EQU 7 DF/P REENTRANT AND SUSPEND STACK 03 00024
000010 A 25 TBRSTS EQU 8 TEMP. STG. REENTRANT AND SUSPEND STACK 03 00025
000011 A 26 TBENTY EQU 9 TASK ENTRY LOCATION 03 00026
000012 A 27 TBTMS EQU 10 TIME COUNTER - CLOCK RESOLUTION IN SMS INC 03 00027
000013 A 28 TBTMIN EQU 11 TIME COUNTER - CLOCK MINUTE INCREMENTS 03 00028
000014 A 29 TBISA EQU 12 A INTERRUPT STACK 03 00029
000015 A 30 TBISB EQU 13 B INTERRUPT STACK 03 00030
000016 A 31 TBISX EQU 14 X INTERRUPT STACK 03 00031
000017 A 32 TBISP EQU 15 DF/P INTERRUPT STACK 03 00032
000020 A 33 TBISRS EQU 16 REENT. STACK INTERRUPT STACK 03 00033
000021 A 34 TBID EQU 17 BLK ALLOC(15-10), I/O THR(9-5), I/O ACT(4-0) 03 00034
000022 A 35 TBKN1 EQU 18 TASK NAME 03 00035
000023 A 36 TBKN2 EQU 19 TASK NAME 03 00036
000024 A 37 TBKN3 EQU 20 TASK NAME 03 00037
000025 A 38 TBTLC EQU 21 1ST LOC. OF TASK ALLOCATABLE 03 00038
000026 A 39 TBCPTH EQU 22 BACKGROUND TASK QUEUE 03 00039
000027 A 40 TBATSK EQU 23 TIDB LOC. OF ACTIVATING TASK 03 00040
000030 A 41 TBRSE EQU 24 TASK ERROR CODE 03 00041
42 IFT VORTEX-2 V2 03 00042
43 GOTO ENDC01 V2 03 00043
44 TBSIZ EQU 25 TASK SIZE BITS 15-10 V2 03 00044
45 TBNULL EQU 26 NUCLEUS MODULE INDICATOR, BITS 15-08 V2 03 00045
46 TBKEY EQU 26 TASK'S MAP KEY BITS 03-00 V2 03 00046
47 TBMIMG EQU 27 TASK'S MAP IMAGE V2 03 00047
48 TBIST EQU 28 INTERRUPT STATUS V2 03 00048
49 ENDC01 CONT V2 03 00049
50 EJECT 03 00050
51 ***** 03 00051
52 * 03 00052
53 *** TASK STATUS DESCRIPTION (BIT SET WORD 1) *** 03 00053
54 * 03 00054
55 ***** 03 00055
000017 A 57 TBS15 EQU 15 INTERRUPT SUSPEND 03 00057
000016 A 59 TBS14 EQU 14 TASK SUSPEND 03 00059
000015 A 60 TBS13 EQU 13 TASK ABORT 03 00060
000014 A 61 TBS12 EQU 12 TASK EXIT 03 00061
000013 A 63 TBS11 EQU 11 TIDB CORE RESIDENT 03 00063
000012 A 64 TBS10 EQU 10 CORE RESIDENT TASK 03 00064
000011 A 65 TBS9 EQU 9 FOREGROUND TASK 03 00065
000010 A 67 TBS8 EQU 8 TASK PROTECTED 03 00067
000007 A 68 TBS7 EQU 7 TASK SCHEDULED BY TIME DELAY 03 00068
000006 A 69 TBS6 EQU 6 TIME DELAY ACTIVE 03 00069
000005 A 71 TBS5 EQU 5 TASK WAITING TO BE LOADED 03 00071
000004 A 72 TBS4 EQU 4 TASK ERROR 03 00072
000003 A 73 TBS3 EQU 3 TASK INTERRUPT EXPECTED 03 00073
000002 A 75 TBS2 EQU 2 OVERLAY TASK 03 00075
000001 A 76 TBS1 EQU 1 UPON TERMINATION ACTIVATE TASK SCHED TASK 03 00076
000000 A 77 TBS0 EQU 0 TASK SEARCH-ALLOCATED-LOADED 03 00077
78 EJECT 03 00078
79 ***** 03 00079
80 * 03 00080
81 *** TASK STATUS DESCRIPTION (BIT SET WORD 2) *** 03 00081
82 * 03 00082
83 ***** 03 00083
85 * BIT 15 - TASK OPENED 03 00085
87 * BIT 14 - UNUSED 03 00087
88 * BIT 13 - OVERLAY LOAD 03 00088
89 * BIT 12 - TASK WAITING FOR BACKGROUND TASK I/O TO COMPLETE 03 00089
90 * TASK LOCKED-OUT UNTIL B5 I/O COMPLETE OR BIT 11 03 00090
91 * IS SET (ALLOCATABLE SPACE AVAILABLE) 03 00091
93 * BIT 11 - DEFINES THAT ALLOCATABLE SPACE IS AVAILABLE, TRY 03 00093
94 * ALLOCATING TASK AGAIN. OVERRIDES BIT 12 SET OR 03 00094
95 * BIT 5 IN STATUS WORD. 03 00095
96 * BIT 10 - BACKGROUND TASK BEING WRITTEN ON CHECKPOINT FILE. 03 00096
97 * BIT 9 - TASK WAITING FOR A TIDB TO COME AVAILABLE FOR 03 00097
98 * SCHEDULING. 03 00098
100 * BIT 8 TO 6 - UNUSED 03 00100
101 EJECT 03 00101
102 ***** 03 00102
103 * 03 00103
104 *** JOB PROCESSOR LOW CORE EQUATES *** 03 00104

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105 *
106 *****
000050 A 108 LCJP EQU 050 JCP NAME
000050 A 109 V$JNAM EQU LCJP LINE COUNT
000054 A 110 V$LCNT EQU LCJP+4 JCP FLAGS
000055 A 111 V$JCFG EQU LCJP+5
112 * BIT 2-0 = LOAD AND GO FLAGS
113 * BIT 3 = DUMP FLAG 1=DUMP, 0=NO DUMP
114 * BIT 4 = DUMP FLAG IF LOAD AND GO
115 * BIT 9-5 = UNUSED
116 * BIT 15-10 = BG EXTRA CORE BLOCKS TO ALLOC
000056 A 118 V$BIC1 EQU LCJP+6 BIC INTERRUPT ADDRESS TABLE (10 WORDS)
000070 A 119 V$DATE EQU LCJP+16 JCP DATE RECORD
000074 A 120 V$PLOT EQU LCJP+20 PERMUTATE LINE COUNT
000075 A 121 V$GLB EQU LCJP+21 JCP LIB KEY AND LU NO. (BACKGROUND LIB)
000046 A 122 V$CRDM EQU LCJP-2 CARD KEYPUNCH TYPE. 0=026, 1=029 D.1
123 * BIT 0 = SYSTEM NOMINAL KEYPUNCH MODE.
124 * BIT 9 = CURRENT JOB KEYPUNCH MODE.
000047 A 125 V$JCTM EQU LCJP-1 TEMP. STORAGE FOR /MEM BLOCK D.1
126 EJEC
127 *****
128 *
129 *** LOW CORE DESCRIPTION ***
130 *
131 *****
000300 A 133 LC EQU 0300
000300 A 134 V$CTL EQU LC CURRENT TASK TIDB LOCATION
000301 A 135 V$CPL EQU LC+1 CURRENT PRIORITY LEVEL
000302 A 136 V$CRS EQU LC+2 CURRENT REENRANT STACK POINTER
000303 A 137 V$TB EQU LC+3 POINTER TO HIGHEST PRIORITY TIDB
000304 A 138 V$UTB EQU LC+4 POINTER TO UNUSED TASK TIDB
000305 A 139 V$PTVB EQU LC+5 POINTER TO NEXT ENTRY IN REENRANT STACK
000306 A 140 V$FLRS EQU LC+6 FIRST LOC. OF REENRANT STACK
000307 A 141 V$LRSK EQU LC+7 LAST LOC. OF REENRANT STACK+1
000310 A 142 V$CKPT EQU LC+8 CHECKPOINT FLAG 1=ON, 0=OFF
000311 A 143 V$DPCL EQU LC+9 LOC. OF TIDB FOR DPCOM TASK
000312 A 144 V$LSAL EQU LC+10 LOC. OF TIDB FOR SYSTEM SAL TASK
000313 A 145 V$LER EQU LC+11 LOC. OF TIDB FOR SYSTEM ERROR TASK
000314 A 146 V$TJCP EQU LC+12 LOC. OF TIDB FOR JOB CONTROL PROCESSOR TAS
000315 A 147 V$BTD EQU LC+13 LOC. OF CURRENT ACTIVE BACKGROUND TSK TIDB
148 IFT VORTEX-2
149 GOTO LOC1 ASSEMBLE FOR VORTEX II V2
150 V$NPAG EQU LC+14 NUMBER OF AVAILABLE PAGES IN V$PAGE V2
151 V$LPP EQU LC+15 POINTER OF LAST WORD TESTED IN V$PAGE V2
152 LOC1 CONT V2
153 IFF VORTEX-2 V2
154 GOTO LOC2 ASSEMBLE IF NOT VORTEX II V2
000316 A 155 V$LUP EQU LC+14 LOC. OF 1ST UNPROTECTED WORD V2
000317 A 156 V$LLUP EQU LC+15 LOC. OF LAST UNPROTECTED WORD V2
157 LOC2 CONT V2
000320 A 158 V$IM EQU LC+16 INTERRUPT MASK (8 WORDS) V2
159 IFF VORTEX-2 V2
160 GOTO LOC3 V2
000330 A 161 V$MPM EQU LC+24 MEMORY PROTECT MASK (4 WORDS) V2
000334 A 162 V$CAM EQU LC+28 CORE ALLOCATION MASK (4 WORDS) V2
163 * EQU LC+32 UNUSED V2
164 LOC3 CONT V2
165 IFT VORTEX-2 V2
166 GOTO LOC4 ASSEMBLE IF VORTEX II V2
167 V$MAP EQU LC+24 MAP KEY AVAILABILITY MASK V2
168 V$BTBM EQU LC+25 BOTTOM OF NUCLEUS TABLE MODULE V2
169 V$GFCB EQU LC+26 GLOBAL FCB MODULE V2
170 V$MING EQU LC+27 MAP 0 IMAGE ADDRESS V2
171 V$ST0 EQU LC+28 FUNC 1 CONTROL WORD TO SWITCH EXECUTIVE V2
172 V$ST1 EQU LC+29 MODE STATUS: V$ST0- STATE 0 V2
173 V$ST2 EQU LC+30 V$ST1- STATE 1 V2
174 V$ST3 EQU LC+31 ETC V2
175 V$KEY EQU LC+32 EXECUTING TASK'S MAP KEY V2
176 LOC4 CONT V2
000341 A 177 V$CRDR EQU LC+33 CORE RESIDENT DIRECTORY LOCATION V2
000342 A 178 V$TBGT EQU LC+34 TOP OF THREAD OF BG TSK WAITING TO BE ALLO V2
000343 A 179 V$TMS EQU LC+35 TIME OF DAY IN 5 MILLISECOND INCREMENTS V2
000344 A 180 V$TMN EQU LC+36 TIME OF DAY IN MINUTE INCREMENTS V2
000345 A 181 V$LUNT EQU LC+37 ADDR. OF LOGICAL UNIT NAME TABLE V2
000346 A 182 V$UPCF EQU LC+38 DPCOM LOCKOUT FLAG V2
000347 A 183 V$FGLB EQU LC+39 KEY AND LU NO. FOR FOREGROUND LIB V2
000350 A 184 V$FREE EQU LC+40 FREE RUNNING COUNTER INCR. IN MICROSECONDS V2
000351 A 185 V$CTMS EQU LC+41 CLOCK RESOLUTION IN 5 MILLISECOND INCR. V2
000352 A 186 V$SCV EQU LC+42 CLOCK SELECTED COUNT VALUE (1 TO 4095) V2
000353 A 187 V$CKB EQU LC+43 BASIC CLOCK INTERRUPT RATE IN MICROSECONDS V2
000354 A 188 V$CRM EQU LC+44 CLOCK RESOLUTION INCR. FOR 1 MINUTE. V2
000355 A 189 V$DSTB EQU LC+45 BASE ADDR. FOR DST BLOCK V2
000356 A 190 V$LIT EQU LC+46 LAST LOCATION OF BACKGROUND LITERAL TABLE V2
191 IFF VORTEX-2 V2
192 V$PGT EQU LC+47 V$PAGE ADDRESS V2
193 IFT VORTEX-2 V2
194 * EQU LC+47 UNUSED V2
000360 A 195 V$CTAD EQU LC+48 BASE ADDR. FOR CONTROLLER ADDR. TABLE V2
000361 A 196 V$CTL EQU LC+49 CURRENT CONTROLLER IN SCAN V2
000362 A 197 V$CTR EQU LC+50 NO. OF CONTROLLERS V2
000363 A 198 V$PIMN EQU LC+51 EXTERNAL DEVICE ADDRESS TABLE FOR PIMS V2
199 * (8 WORDS DEFINED IN PIM NO ORDER) V2
200 IFF VORTEX-2 V2

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201 GOTO LCD5 ASSEMBLE IF NOT VORTEX II V2 03 00201
202 * EQU LC+59 UNUSED 03 00202
203 * EQU LC+60 UNUSED 03 00203
204 LCD5 CONT V2 03 00204
205 IFT VORTEX-2 V2 03 00205
206 GOTO LCD6 ASSEMBLE IF VORTEX II V2 03 00206
207 * EQU LC+59 JMP V$IUST PAGE 0 ENTRY FOR I/O V2 03 00207
208 * EQU LC+60 STAT CALLS. V2 03 00208
209 LCD6 CONT V2 03 00209
000375 A 210 V$SLFG EQU LC+61 SAL TASK BUSY FLAG 1=BUSY, 0=NOT BUSY 03 00210
000376 A 211 V$ERFG EQU LC+62 ERROR TASK BUSY FLAG 1=BUSY, 0=NOT BUSY 03 00211
000377 A 212 V$JOP EQU LC+63 JCP OPERATING FLAG 03 00212
000400 A 213 V$LUT1 EQU LC+64 START LUN ADDR FOR JCP/OPCOM ASSIGNABLE 03 00213
000401 A 214 V$LUT2 EQU LC+65 START LUN ADDR FOR UNASSIGNABLE 03 00214
000402 A 215 V$LUT3 EQU LC+66 START LUN ADDR FOR OPCOM ASSIGNABLE 03 00215
000403 A 216 V$IMIN EQU LC+67 32767 - (60000/(5*V$CTMS)) + 1 03 00216
217 IFF VORTEX-2 V2 03 00217
218 GOTO LCD7 ASSEMBLE IF NOT VORTEX II V2 03 00218
219 * EQU LC+68 UNUSED 03 00219
220 * EQU LC+69 UNUSED 03 00220
221 * EQU LC+70 UNUSED 03 00221
222 * EQU LC+71 UNUSED 03 00222
223 LCD7 CONT V2 03 00223
224 IFT VORTEX-2 V2 03 00224
225 GOTO LCD8 V2 03 00225
226 * EQU LC+68 JMP V$IDC PAGE 0 ENTRY FOR IDC V2 03 00226
227 * EQU LC+69 CALLS. V2 03 00227
228 * EQU LC+70 JMP V$EXEC PAGE 0 ENTRY FOR RTE V2 03 00228
229 * EQU LC+71 CALLS. V2 03 00229
230 LCD8 CONT V2 03 00230
000410 A 231 V$IDA EQU LC+72 I/O ALGORITHM 03 00231
000411 A 232 V$CKIT EQU LC+73 CLOCK INT. IN PIM BEFORE LOCKOUT FLAG. 03 00232
000412 A 233 V$JCB EQU LC+74 ALL SYSTEM BACKGROUND PROGRAMS AND JCP USE 03 00233
234 * THIS SYSTEM BUFFER TO READ DIRECTIVES AND 03 00234
235 * SOURCE RECORDS IN. 03 00235
000413 A 236 V$OCB EQU LC+75 OPCOM WILL READ OPERATOR KEY-IN REQUESTS 03 00236
237 * IN THIS BUFFER. IF JCP IS SET NOT ACTIVE 03 00237
238 * AND A 1 DIRECTIVE IS INPUTED, OPCOM 03 00238
239 * WILL MOVE THE DIRECTIVE TO V$JCB BEFORE 03 00239
240 * SCHEDULING JCP. 03 00240
000414 A 241 V$BVM EQU LC+76 BOTTOM OF VORTEX NUCLEUS 03 00241
000415 A 242 V$BFC EQU LC+77 TOP OF FG RES. AREA/BOTTOM OF FG BLK COMM. 03 00242
000416 A 243 V$TFC EQU LC+78 TOP OF FG BLK COMMON/TOP OF VORTEX CORE. 03 00243
244 * EQU LC+79 UNUSED 03 00244
245 EJECT 03 00245
246 ***** 03 00246
247 * 03 00247
248 **** MASK TABLE DESCRIPTION **** 03 00248
249 * 03 00249
250 ***** 03 00250
000420 A 252 MT SET 0420 03 00252
000420 A 253 ZERO EQU MT ZERO WORD 03 00253
000421 A 254 BS0 EQU MT+1 BIT MASK CONTENTS 000001 03 00254
000422 A 255 BS1 EQU MT+2 000002 03 00255
000423 A 256 BS2 EQU MT+3 000004 03 00256
000424 A 257 BS3 EQU MT+4 000010 03 00257
000425 A 258 BS4 EQU MT+5 000020 03 00258
000426 A 259 BS5 EQU MT+6 000040 03 00259
000427 A 260 BS6 EQU MT+7 000100 03 00260
000430 A 261 BS7 EQU MT+8 000200 03 00261
000431 A 262 BS8 EQU MT+9 000400 03 00262
000432 A 263 BS9 EQU MT+10 001000 03 00263
000433 A 264 BS10 EQU MT+11 002000 03 00264
000434 A 265 BS11 EQU MT+12 004000 03 00265
000435 A 266 BS12 EQU MT+13 010000 03 00266
000436 A 267 BS13 EQU MT+14 020000 03 00267
000437 A 268 BS14 EQU MT+15 040000 03 00268
000440 A 269 BS15 EQU MT+16 0100000 03 00269
000441 A 270 BR0 EQU MT+17 BIT MASK CONTENTS 0177776 03 00270
000442 A 271 BR1 EQU MT+18 0177775 03 00271
000443 A 272 BR2 EQU MT+19 0177773 03 00272
000444 A 273 BR3 EQU MT+20 0177767 03 00273
000445 A 274 BR4 EQU MT+21 0177757 03 00274
000446 A 275 BR5 EQU MT+22 0177737 03 00275
000447 A 276 BR6 EQU MT+23 0177677 03 00276
000450 A 277 BR7 EQU MT+24 0177577 03 00277
000451 A 278 BR8 EQU MT+25 0177377 03 00278
000452 A 279 BR9 EQU MT+26 0176777 03 00279
000453 A 280 BR10 EQU MT+27 0175777 03 00280
000454 A 281 BR11 EQU MT+28 0173777 03 00281
000455 A 282 BR12 EQU MT+29 0167777 03 00282
000456 A 283 BR13 EQU MT+30 0157777 03 00283
000457 A 284 BR14 EQU MT+31 0137777 03 00284
000460 A 285 BR15 EQU MT+32 0077777 03 00285
000461 A 286 NEG EQU MT+33 SET ALL BITS 03 00286
000462 A 287 LHW EQU MT+34 LEFT HALF WORD MASK 0177400 03 00287
000463 A 288 RHW EQU MT+35 RIGHT HALF WORD MASK 0377 03 00288
000421 A 289 ONE EQU MT+1 CONTAINS NUMBER 1 03 00289
000422 A 290 TWO EQU MT+2 CONTAINS NUMBER 2 03 00290
000464 A 291 THREE EQU MT+36 CONTAINS NUMBER 3 03 00291
000423 A 292 FOUR EQU MT+3 CONTAINS NUMBER 4 03 00292
000465 A 293 FIVE EQU MT+37 CONTAINS NUMBER 5 03 00293
000466 A 294 SIX EQU MT+38 CONTAINS NUMBER 6 03 00294

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000467 A 295 SEVEN EQU MT+39 CONTAINS NUMBER 7 03 00295
000424 A 296 EIGHT EQU MT+40 CONTAINS NUMBER 8 03 00296
000470 A 297 NINE EQU MT+40 CONTAINS NUMBER 9 03 00297
000471 A 298 TEN EQU MT+41 CONTAINS NUMBER 10 03 00298
000421 A 299 BM1 EQU MT+1 BIT MASK WORD 00001 03 00299
000464 A 300 BM3 EQU MT+36 BIT MASK WORD 00003 03 00300
000467 A 301 BM7 EQU MT+39 BIT MASK WORD 00007 03 00301
000472 A 302 BM17 EQU MT+42 BIT MASK WORD 00017 03 00302
000473 A 303 BM37 EQU MT+43 BIT MASK WORD 00037 03 00303
000474 A 304 BM77 EQU MT+44 BIT MASK WORD 00077 03 00304
000475 A 305 BM177 EQU MT+45 BIT MASK WORD 00177 03 00305
000463 A 306 BM377 EQU MT+35 BIT MASK WORD 00377 03 00306
000476 A 307 BM777 EQU MT+46 BIT MASK WORD 00777 03 00307
000477 A 308 BM1777 EQU MT+47 BIT MASK WORD 01777 03 00308
309 EJEC 03 00309
310 ***** 03 00310
311 * 03 00311
312 **** PIT TEST BIT DESIGNATION *** 03 00312
313 * 03 00313
314 ***** 03 00314
000040 A 316 RA0 EQU 040 BT JUMPS WHEN A REGISTER IS 0 03 00316
000060 A 317 RA1 EQU 000 BT JUMPS WHEN A REGISTER IS 1 03 00317
000060 A 318 RB0 EQU 060 BT JUMPS WHEN B REGISTER IS 0 03 00318
000020 A 319 RB1 EQU 020 BT JUMPS WHEN B REGISTER IS 1 03 00319
321 ***** 03 00321
322 * 03 00322
323 ** THE BIT CHECKED 03 00323
324 * 03 00324
325 ***** 03 00325
000000 A 327 B0 EQU 0 03 00327
000001 A 328 B1 EQU 1 03 00328
000002 A 329 B2 EQU 2 03 00329
000003 A 330 B3 EQU 3 03 00330
000004 A 331 B4 EQU 4 03 00331
000005 A 332 B5 EQU 5 03 00332
000006 A 333 B6 EQU 6 03 00333
000007 A 334 B7 EQU 7 03 00334
000010 A 335 B8 EQU 8 03 00335
000011 A 336 B9 EQU 9 03 00336
000012 A 337 B10 EQU 10 03 00337
000013 A 338 B11 EQU 11 03 00338
000014 A 339 B12 EQU 12 03 00339
000015 A 340 B13 EQU 13 03 00340
000016 A 341 B14 EQU 14 03 00341
000017 A 342 B15 EQU 15 03 00342
343 EJEC 03 00343
344 ***** 03 00344
345 * 03 00345
346 **** DEVICE AND FUNCTION CODES *** 03 00346
347 * 03 00347
348 ***** 03 00348
000047 A 351 CLOCK EQU 047 DEVICE NUMBER 047 03 00351
352 * 03 00352
000747 A 353 DISCLK EQU 0700+CLOCK DISABLE CLOCK 03 00353
000147 A 354 ENCLK EQU 0100+CLOCK ENABLE CLOCK 03 00354
355 1FF VORTEX-2 V2 03 00355
356 MPDVAD EQU 046 RAM ADDRESS V2 03 00356
358 * 03 00358
359 **** PIM *** 03 00359
000044 A 360 APIM EQU 044 ALL PIMS DEVICE NUMBER 03 00360
000040 A 361 PIH1 EQU 040 03 00361
000041 A 362 PIM2 EQU 041 03 00362
000042 A 363 PIM3 EQU 042 03 00363
000043 A 364 PIM4 EQU 043 03 00364
000040 A 365 PIM5 EQU 040 03 00365
000040 A 366 PIM6 EQU 040 03 00366
000040 A 367 PIM7 EQU 040 03 00367
000040 A 368 PIM8 EQU 040 03 00368
369 * 03 00369
000444 A 370 DISPIM EQU 0400+APIM 03 00370
000244 A 371 ENAPIM EQU 0200+APIM 03 00371
373 **** MEMORY PROTECT *** 03 00373
000045 A 374 MP EQU 045 DEVICE ADDRESS 045 03 00374
000745 A 375 DISMP EQU 0700+MP DISABLE MEMORY PROTECT 03 00375
000645 A 376 ENAMP EQU 0600+MP ENABLE MEMORY PROTECT 03 00376
000045 A 377 MPMR0 EQU 0000+MP SELECT MASK REGISTER 0 03 00377
000145 A 378 MPMR1 EQU 0100+MP SELECT MASK REGISTER 1 03 00378
000245 A 379 MPMR2 EQU 0200+MP SELECT MASK REGISTER 2 03 00379
000345 A 380 MPMR3 EQU 0300+MP SELECT MASK REGISTER 3 03 00380
381 EJEC 03 00381
382 NAME V2CRA 03 00382
385 EXT V2ERR 03 00385
386 EXT V2ENR 03 00386
387 EXT V2EXEC 03 00387
388 EXT V2BIC 03 00388
000200 A 391 READCD EQU 0200 READ ONE CARD EXT. CONTROL 03 00391
394 * CONTROLLER TABLE EQUATES (CTBL) 03 00394
000000 A 395 CTACT EQU 0 CONTROLLER ACTIVE FLAG (BIT 15) 03 00395
000000 A 396 CTIDB EQU 0 TIME ADDRESS (BITS 14-0) 03 00396
000001 A 397 CTADNC EQU 1 ADDRESS OF NEXT CONTROLLER IN CHAIN 03 00397
000002 A 398 CTUPM EQU 2 OP-CODE MASK 03 00398
000003 A 399 CTIST EQU 3 ADDRESS OF CURRENT DST 03 00399

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000004	A	400	CTRQBK	EQU	4	CURRENT REQUEST BLOCK	03	00400
000005	A	401	CTRTRY	EQU	5	RETRY CONSTDNT (BITS 15-8)	03	00401
000005	A	402	CTR CNT	EQU	5	VSERR RETRY COUNTER (BITS 7-0)	03	00402
000006	A	403	CTDVAT	EQU	6	DEVICE ADDRESS	03	00403
000007	A	404	CTIDA	EQU	7	I/O ALGORITHM VALUE	03	00404
000010	A	405	CTSTAT	EQU	8	DRIVER STATUS	03	00405
000011	A	406	CTBICB	EQU	9	BIC FLAG TABLE ADDRESS	03	00406
000012	A	407	CTFCB	EQU	10	FCB OR DCB ADDRESS	03	00407
000013	A	408	CTWDS	EQU	11	NO. OF WORDS TRANSFERRED	03	00408
000014	A	409	CTFRCT	EQU	12	FREQUENCY CONSTANT (BITS 15-8)	03	00409
000014	A	410	CTFREQ	EQU	12	FREQUENCY COUNT (BITS 7-0)	03	00410
000015	A	411	CTR TLC	EQU	CTFREQ+1	RETURN LOC USED VIA DRIVER SUBROUTINE	03	00411
000016	A	412	CTBUF	EQU	CTFREQ+2	80 WORD BUFFER	03	00412
000017	A	413	CTBUFL	EQU	CTFREQ+3	LAST LOC OF 80 WORD BUFFER	03	00413
000020	A	414	CTUBUF	EQU	CTFREQ+4	USER'S BUFFER LOCATION CURRENTLY STORING	03	00414
000021	A	415	CTCNT	EQU	CTFREQ+5	COLUMN COUNT	03	00415
000022	A	416	CTWCNT	EQU	CTFREQ+6	WORD COUNT	03	00416
000023	A	417	CTOPFG	EQU	CTFREQ+7	OPERATIONS FLAG	D.103	00417
		418		EJEC			03	00418
000000	030300	A	VZCRA	LDX	V\$CTL	GET TIDB LOC	03	00420
000001	005001	A		TZA			03	00421
000002	053003	A		STA	TBEVNT,1	CLEAR EVENT WORD	03	00422
000003	035010	A		LDX	TBRSTS,1	GET CONTROLLER TABLE ADDRESS	03	00423
000004	014636	A		LDA	SENHOP	SENSE HOPPER TYPE CODE	03	00424
000005	125006	A		ADD	CTDVAT,1	DEVICE ADDRESS	03	00425
000006	006506	A		JSR	SENCRD,2	SENSE HOPPER EMPTY	03	00426
000007	000614	R						
000010	001002	A		JAP	NREADY		03	00427
000011	000357	R						
000012	014631	A		LDA	SENRDY	SENSE READER READY CODE	03	00428
000013	125006	A		ADD	CTDVAT,1	DEVICE ADDRESS	03	00429
000014	006506	A		JSR	SENCRD,2	SENSE READER READY	03	00430
000015	000614	R						
000016	001002	A		JAP	VZCR1	IF READY	E.2*****	
000017	000035	R						
		432	DELAY		1,0,0	WAIT 5MS IN CASE READER STILL IN MOTION	E.2*****	
000020	006505	A						
000021	000406	A						
000022	001100	A						
000023	000001	A						
000024	000000	A						
000025	030300	A	433	LDX	V\$CTL	TIDB LOCATION	E.2*****	
000026	035010	A	434	LDX	TBRSTS,1	GET CONTROLLER TABLE ADDR	E.2*****	
000027	014614	A	435	LDA	SENRDY	SENSE READER READY	E.2*****	
000030	125006	A	436	ADD	CTDVAT,1	DEVICE ADDR	E.2*****	
000031	006506	A	437	JSR	SENCRD,2	SENSE READER READY	E.2*****	
000032	000614	R						
000033	001004	A	438	JAN	HREADY	TROUBLE IF STILL NOT READY	E.2*****	
000034	000357	R						
	000035	R	439	VZCR1	EQU	*	*****	
000035	025004	A	440	LDB	CTRQBK,1		D.103	00432
000036	016001	A	441	LDA	1,2	OPERATION WORD	D.03	00433
000037	004350	A	442	LSRA	8		D.03	00434
000040	150472	A	443	ANA	BM17	ISOLATE OP CODE	D.103	00435
000041	055023	A	444	STA	CTOPFG,1	SAVE IT	D.103	00436
000042	015017	A	445	LDA	CTBUFL,1	FINAL BUFFER ADDRESS	03	00437
000043	035016	A	446	LDX	CTBUF,1	INITIAL BUFFER ADDRESS	03	00438
000044	006506	A	447	JSR	V\$BIC,2		03	00439
000045	000000	E						
000046	000001	A	448	DATA	1	EVENT WORD	03	00440
			449	IFF	VORTEX-2		V2	03 00441
			450	MAPKEY	DATA	MAP KEY VALUE	V2	03 00442
000047	001004	A	451	JAN	BICR	CHECK IF BIC ERROR	03	00443
000050	000366	R						
000051	015006	A	452	LDA	CTDVAT,1	CARD READER DEVICE ADDRESS	03	00444
000052	110440	A	453	DRA	BS15	BUILD I/O INST. - READ ONE CARD	03	00445
000053	110430	A	454	DRA	BS7		03	00446
000054	054000	A	455	STA	*+1		03	00447
000055	000000	A	456	DATA	0		03	00448
000056	006505	A	457	JSR	V\$EXEC,1		03	00449
000057	000000	E						
000060	001102	A	458	DATA	01102	DELAY REQUEST TYPE TWO	03	00450
000061	001440	A	459	DATA	800,0	4 SECOND DELAY	03	00451
000062	000000	A						
000063	020300	A	460	CKDRIP	V\$CTL	INTERRUPT PROCESSOR	03	00452
000064	016001	A	461	LDA	TBST,2		03	00453
000065	150444	A	462	ANA	PR3	CLEAR INTERRUPT EXPECTED BIT	03	00454
000066	150447	A	463	ANA	BR6	CLEAR TIME DELAY ACTIVE BIT	03	00455
000067	056001	A	464	STA	TBST,2		03	00456
000070	036010	A	465	LDX	TBRSTS,2	GET CONTROLLER TABLE LOC.	03	00457
000071	100444	A	466	EXC	DISPIM	DISABLE CLOCK AND PIMS	03	00458
000072	100747	A	467	EXC	LISCLK		03	00459
000073	006015	A	468	LDAE*	CTBICB,1	BIC ADDRESS	03	00460
000074	100011	A						
000075	110440	A	469	DRA	BS15	BUILD BIC INITIALIZE INST.	03	00461
000076	005111	A	470	IAR			03	00462
000077	054000	A	471	STA	*+1		03	00463
000100	000000	A	472	DATA	0	I/O BIC INITIALIZE INST.	03	00464
000101	005311	A	473	DAR			03	00465
000102	006110	A	474	DRAI	0102500	BUILD CIA INST.	03	00466
000103	102500	A						
000104	054000	A	475	STA	*+1		03	00467
000105	000000	A	476	DATA	0	I/O INST. TO INPUT LAST LOC+1 BIC'ED INTO	03	00468

000106	100244	A	477	EXC	ENAPIM			03	00469	
000107	100147	A	478	EXC	ENACKL			03	00470	
000110	026003	A	479	LDB	TBEVNT,2	CHECK IF TIMED-OUT		03	00471	
000111	001026	A	480	IBNZ	CRDR2			03	00472	
000112	000120	R								
000113	145016	A	481	SUB	CTBUF,1	CHECK IF NO WORDS TRANSFERRED		03	00473	
000114	001010	A	482	JAZ	NREADY	NOT READ CONDITION - PICK FAILURE.		03	00474	
000115	000357	R								
000116	001000	A	483	JMP	BICER	BIC TIME OUT ERROR		03	00475	
000117	000366	R								
000120	145016	A	484	CRDR2	SUB	CTBUF,1	CHECK IF NO WORDS TRANSFERRED	03	00476	
000121	001010	A	485	JAZ	NREADY	NOT READ CONDITION - PICK FAILURE		03	00477	
000122	000357	R								
000123	125016	A	486	ADD	CTBUF,1			03	00478	
000124	145017	A	487	SUB	CTBUFL,1	CHECK IF ALL 80 COLUMNS TRANSFERRED		03	00479	
000125	005311	A	488	BAR				03	00480	
000126	001010	A	489	JAZ	CRDR5	IF 80 COLUMNS XFERED	C	03	00481	
000127	000134	R								
000130	006140	A	490	SUBI	28	CHECK IF APERTURE CARD (52 COLUMNS)	C	03	00482	
000131	000034	A								
000132	001016	A	491	JANZ	CRDR6	ERROR IF NOT 80 OR 52 COLUMNS	C	03	00483	
000133	000362	R								
000134	014510	A	492	CRDR5	LDA	SENERR	SENSE READER ERROR TYPE CODE	C	03	00484
000135	125006	A	493	ADD	STDVAT,1	DEVICE ADDRESS		03	00485	
000136	006506	A	494	JSR	SENCRD,2	SENSE READER ERROR		03	00486	
000137	000614	R								
000140	001002	A	495	JAP	CRDR6			03	00487	
000141	000362	R								
000142	006015	A	496	LDARE*	CTBUF,1	CHECK IF FIRST COLUMN EOF		03	00488	
000143	100016	A								
000144	134466	A	497	CRA	EOF			03	00489	
000145	001010	A	498	JAZ	CRDR6	IF EOF	D.103	03	00490	
000146	000154	R								
000147	015023	A	499	LDA	CTOPFG,1	OPERATION FLAG	D.103	03	00491	
000150	001010	A	500	JAZ	CRDR4	IF READ	D.103	03	00492	
000151	000164	R								
000152	001000	A	501	JMP	V\$FNR	JUMP TO FIND NEXT REQUEST	D.103	03	00493	
000153	000000	E								
	000154	R	502	CRDR6	EQV	*		D.103	00494	
000154	014457	A	503	LDA	EDFST	EDF STATUS		03	00495	
000155	006025	A	504	CRDR3	LDRE*	CTROBK,1	SET UP STATUS WORD IN ROELK	03	00496	
000156	100004	A								
000157	005032	A	505	MERG	032			03	00497	
000160	006065	A	506	STBE*	CTROBK,1			03	00498	
000161	100004	A								
000162	001000	A	507	JMP	V\$FNR	JUMP TO FIND NEXT REQUEST		03	00499	
000163	000153	E								
000164	005001	A	508	CRDR4	TZA	ZERO CHAR. AND WORD COUNT.		03	00500	
000165	055021	A	509	CTA	CTCNT,1			03	00501	
000166	055022	A	510	CTA	CTCNT,1			03	00502	
000167	025012	A	511	LDB	CTFCB,1	SET UP NO. OF WORD TO TRANSFER		03	00503	
			512	IFT	VORTEX-2			V2	03	00504
			513	GOTO	ENDC04			V2	03	00505
			514	ONE	MPDVAD,V\$ST3	SWITCH TO USER'S MAP	V2	03	00506	
			515	LDA	0,2	RECORD LENGTH	V2	03	00507	
			516	LDB	1,2	RNA OF USER'S BUFFER	V2	03	00508	
			517	ONE	MPDVAD,V\$SFD	RESTORE MAP 0	V2	03	00509	
			518	STA	CTVDS,1		V2	03	00510	
			519	STB	CTUBUF,1		V2	03	00511	
			520	ENDC04	CONT		V2	03	00512	
			521	IFT	VORTEX-2		V2	03	00513	
			522	GOTO	ENDC05		V2	03	00514	
000170	016000	A	523	LDA	0,2		V2	03	00515	
000171	055013	A	524	STA	CTVDS,1		V2	03	00516	
000172	016001	A	525	LDA	1,2	SET UP 1ST LOC. OF USERS BUFFER	V2	03	00517	
000173	055020	A	526	STB	CTUBUF,1		V2	03	00518	
			527	ENDC05	CONT		V2	03	00519	
000174	025004	A	528	LDB	CTROBK,1	GET READ MODE	V2	03	00520	
000175	016001	A	529	LDA	1,2		V2	03	00521	
000176	006415	A	530	BT	RA1+B13,ASCII	TRANSFER TO NON-BINARY PROCESSOR	V2	03	00522	
000177	000302	R								
000200	006414	A	531	BT	RA1+B12,ASCINP	TRANSFER TO NON-BINARY PROCESSOR	V2	03	00523	
000201	000274	R								
000202	015016	A	532	SYSBIN	LDA	CTBUF,1	GET INPUT BUFFER LOCATION	03	00524	
000203	125021	A	533	ADD	CTCNT,1	ADD COLUMN COUNT	03	00525		
000204	005012	A	534	TAB			03	00526		
000205	026000	A	535	LDB	0,2	GET 12 BIT BINARY COLUMN	03	00527		
000206	004044	A	536	LRLB	4		03	00528		
000207	015021	A	537	LDA	CTCNT,1	GET POSITION FORMAT TYPE	03	00529		
000210	150464	A	538	ANA	BMS		03	00530		
			539	IFT	VORTEX-2		V2	03	00531	
			540	GOTO	ENDC06		V2	03	00532	
			541	EXC	DISPIM		V2	03	00533	
			542	EXC	DISCLK		V2	03	00534	
			543	ENDC06	CONT		V2	03	00535	
000211	001010	A	544	JAZ	TYPE4		V2	03	00536	
000212	000226	R								
000213	140422	A	545	SUB	TND		03	00537		
000214	001004	A	546	JAN	TYPE1		03	00538		
000215	000233	R								
000216	001016	A	547	JANZ	TYPE3		03	00539		
000217	000251	R								
			548	IFF	VORTEX-2		V2	03	00540	

Address	Hex	Mode	OpCode	OpName	OpArg	Description	Label	Line
000220	006015	A	549	TYPE2	JMPM	LDAUMP		
000221	100020	A	550		IFT	VORTEX-2		
000222	004350	A	551	TYPE2	LDAE*	CTUBUF,1	LOAD (A) WITH WORD FROM USER'S MAP	V2 03 00541
000223	004450	A	552		LSRA	8		V2 03 00542
000224	001000	A	553		LLRL	8		03 00543
000225	000237	R	554		JMP	TYPE1A		03 00544
			555		IFT	VORTEX-2		03 00545
			556		GOTO	ENDC07		03 00546
			557	TYPE4	TBA			V2 03 00547
			558		JSR	STAUMP,2	STORE CONTENTS OF (A) IN USER'S BUFFER	V2 03 00548
			559	ENDC07	CUNT			V2 03 00549
			560		IFT	VORTEX-2		V2 03 00550
			561	TYPE4	STBE*	CTUBUF,1	STORE BINARY NO. IN USERS BUFFER	V2 03 00551
000226	006065	A	562		INR	CTCNT,1	INCREMEN CHAR. COUNT.	V2 03 00552
000227	100020	A	563		JMP	SYSBIN		03 00553
000230	045021	A	564		IFF	VORTEX-2		03 00554
000231	001000	A	565	TYPE1	JMPM	LDAUMP	LOAD (A) WITH WORD FROM USER' BUFFER	V2 03 00556
000232	000202	R	566		IFT	VORTEX-2		V2 03 00557
			567	TYPE1	LDAE*	CTUBUF,1		V2 03 00558
000233	006015	A	568		LSRA	4		03 00559
000234	100020	A	569		LLRL	4		03 00560
000235	004344	A	570		IFT	VORTEX-2		03 00561
000236	004444	A	571		GOTO	ENDC01		03 00562
			572	TYPE1A	EQU	*	SAVE CONTENTS OF (B)--REG.	V2 03 00563
			573		STB	CTRTLC,1	STORE (A)--REG. IN USER BUFFER	V2 03 00564
			574		JSR	STAUMP,2	RESTORE (B)--REG.	V2 03 00565
			575		LDB	CTRTLC,1		V2 03 00566
			576	ENDC01	CDNT			V2 03 00567
			577		IFT	VORTEX-2		V2 03 00568
			578	TYPE1A	STAE*	CTUBUF,1	STORE BINARY NO. IN USERS BUFFER	V2 03 00569
000237	006055	A	579		INR	CTWCNT,1		03 00570
000240	100020	A	580		INR	CTUBUF,1		03 00571
000241	045022	A	581		LDA	CTWCNT,1	CHECK IF REQUESTED NO. OF WORDS TRANSFERED	03 00572
000242	045020	A	582		SUB	CTWDS,1		03 00573
000243	015022	A	583		JAZ	CRDR10		03 00574
000244	145013	A	584		JMP	TYPE4		03 00575
000245	001010	A	585		IFF	VORTEX-2		03 00576
000246	000352	R	586	TYPE3	JMPM	LDAUMP	LOAD WORD FROM USER'S BUFFER	V2 03 00577
000247	001000	A	587		IFT	VORTEX-2		V2 03 00578
000250	000226	R	588	TYPE3	LDAE*	CTUBUF,1		V2 03 00579
			589		LSRA	12		03 00580
			590		LLRL	12		03 00581
			591		IFF	VORTEX-2		03 00582
			592		JSR	STAUMP,2	STORE CONTENTS OF (A) IN USER'S BUFFER	V2 03 00583
			593		IFT	VORTEX-2		V2 03 00584
			594		STAE*	CTUBUF,1		V2 03 00585
000251	006015	A	595		INR	CTCNT,1	INCREMENT CHAR COUNT	03 00586
000252	100020	A	596		INR	CTWCNT,1	INCREMENT WORD COUNT	03 00587
000253	004354	A	597		INR	CTUBUF,1	INCR BUFFER STORAGE LOCATION	03 00588
000254	004454	A	598		LDA	CTWCNT,1	CHECK IF REQUESTED NO OF WORDS TRANSFERED	03 00589
			599		SUB	CTWDS,1		03 00590
			600		JAZ	CRDR10		03 00591
000255	006055	A	601		LDA	CTCNT,1	CHECK IF 80 COLUMNS TRANSFERED.	03 00592
000256	100020	A	602		SUB	EIGHTY		03 00593
000257	045021	A	603		JAZ	CRDR10		03 00594
000260	045022	A	604		JMP	SYSBIN		03 00595
000261	045020	A	605	ASCINP	LDAE*	CTBUF,1	GET 1ST COLUMN	03 00596
000262	015022	A	606		ANA	BINARY	CHECK IF BINARY INPUT	03 00597
000263	145013	A	607		ERA	BINARY		03 00598
000264	001010	A	608		JAZ	SYSBIN		03 00599
000265	000352	R	609	ASCII	LDA	CTBUF,1	INPUT BUFFER LOC	03 00600
000266	015021	A	610		ADD	CTCNT,1	ADD COLUMN COUNT	03 00601
000267	144351	A	611		TAB			03 00602
000270	001010	A	612		LDA	0,2	GET 12 BIT BINARY COLUMN TO BE CONVERTED.	03 00603
000271	000352	R	613		JSR	CNVA,2		03 00604
000272	001000	A	614		STA	CTRTLC,1	SAVE ASCII CHAR. RIGHT JUSTIFIED	03 00605
000273	000202	R	615		LDA	CTCNT,1	EVEN = LEFT CHAR./ODD = RIGHT CHAR.	03 00606
000274	006015	A	616		ANA	ONE		03 00607
000275	100016	A	617		TAB			03 00608
000276	154343	A	618		IFT	VORTEX-2		03 00609
000277	134342	A	619		GOTO	ENDC08		V2 03 00610
000300	001010	A	620		EXC	DISPIM		V2 03 00611
000301	000202	R	621		EXC	DISPIM		V2 03 00612
000302	015016	A	622		JMPM	LDAUMP	GET WORD FROM USER'S BUFFER	V2 03 00613
000303	125021	A	623	ENDC08	CUNT			V2 03 00614
000304	005012	A	624		IFT	VORTEX-2		V2 03 00615
000305	016000	A	625		LDAE*	CTUBUF,1		03 00616
000306	006506	A						03 00617
000307	000404	R						
000310	055015	A						
000311	015021	A						
000312	150421	A						
000313	005012	A						
000314	006015	A						

Address	Hex	Mode	Label	Op/Reg	Description	Op/Reg	Hex
000315	100020	A					
000316	003020	A	626	XBZ ST1	EXECUTE IF LEFT CHAR. (TZA)		03 00616
000317	000635	R					
000320	115015	A	627	DRA UIRTLCL,1			03 00619
000321	003020	A	628	XBZ ST2	EXECUTE IF RIGHT CHAR.(LRLA 8)		03 00620
000322	000636	R					
			629	IFT VORTEX-2		V2	03 00621
			630	GOTO ENDC09		V2	03 00622
			631	STB CTRTLC,1	SAVE (B)-REGISTER	V2	03 00623
			632	JSR STAUMP,2	STORE CONTENTS OF (A) IN USER'S BUFFER	V2	03 00624
			633	LDB CTRTLC,1	RESTORE (B)-REGISTER	V2	03 00625
			634	ENDC09 CONT		V2	03 00626
			635	IFT VORTEX-2		V2	03 00627
			636	STAEW CTUBUF,1		V2	03 00628
000323	006055	A					
000324	100020	A					
000325	003026	A	637	XBZ ST3	IF RIGHT CHAR. INCR. WORD COUNT (CTWCNT)		03 00629
000326	000637	R					
000327	003026	A	638	XBZ ST4	IF RIGHT CHAR. INCR. BUFFER STORAGE LOC.		03 00630
000330	000640	R					
000331	045021	A	639	COMP INR CTCNT,1	INCR. COLUMN COUNT.		03 00631
000332	015022	A	640	LDB CTWCNT,1			03 00632
000333	145013	A	641	SUB CTWDS,1	CHECK IF REQUIRED NO. OF WORDS TRANSFERED.		03 00633
000334	001010	A	642	JAZ CRDR10			03 00634
000335	000352	R					
000336	015021	A	643	LDB CTCNT,1	CHECK IF 80 COLUMNS TRANSFERED		03 00635
000337	144301	A	644	SUB EIGHTY			03 00636
000340	001010	A	645	JAZ CRDR10			03 00637
000341	000352	R					
000342	001000	A	646	JMP ASCII			03 00638
000343	000302	R					
			647	IFF VORTEX-2		V2	03 00639
			648	UNFORM JSR STAUMP,2	STORE CONTENTS OF (A) IN USER'S BUFFER	V2	03 00640
			649	IFT VORTEX-2		V2	03 00641
			650	UNFORM STAEW CTUBUF,1	STORE IN USERS BUFFER	V2	03 00642
000344	006055	A					
000345	100020	A					
000346	045020	A	651	INR CTUBUF,1			03 00643
000347	045022	A	652	INR CTWCNT,1	WORD COUNT		03 00644
000350	001000	A	653	JMP COMP			03 00645
000351	000331	R					
000352	015022	A	654	CRDR10 LDA CTWCNT,1	STORE WORD COUNT IN NO. OF WORDS		03 00646
000353	053013	A	655	STA CTWDS,1	TRANSFERED.		03 00647
000354	005001	A	656	TZA	NO ERRORS		03 00648
000355	001000	A	657	JMP CRDR3	SET UP RQBLK AND RETURN TO V\$FNR		03 00649
000356	000155	R					
			658	EJEC		V2	03 00650
			659	IFT VORTEX-2		V2	03 00651
			660	GOTO ENDC10		V2	03 00652
			661	* SUBROUTINE: LDAUMP		V2	03 00653
			662	* THIS SUBROUTINE LOADS THE (A)-REGISTER WITH A WORD FROM		V2	03 00654
			663	* A USER'S BUFFER. THE LOCATION FROM WHERE THE WORD IS		V2	03 00655
			664	* OBTAINED IS SPECIFIED BY CTUBUF.		V2	03 00656
			665	* ON ENTRY:		V2	03 00657
			666	* (X) = CTBL ADDRESS		V2	03 00658
			667	* INTERRUPTS MUST BE DISABLED		V2	03 00659
			668	* ON EXIT:		V2	03 00660
			669	* (A) = WORD FROM USER'S BUFFER		V2	03 00661
			670	* (B) = UNCHANGED		V2	03 00662
			671	* (X) = UNCHANGED		V2	03 00663
			672	* INTERRUPTS ARE ENABLED		V2	03 00664
			673	* SPAC		V2	03 00665
			674	* LDAUMP ENR		V2	03 00666
			675	* IBA		V2	03 00667
			676	* LDB CTUBUF,1	GET POINTER INTO USER'S BUFFER	V2	03 00668
			677	* OME MPDVAD,V\$ST3	SWITCH TO USER'S MAP	V2	03 00669
			678	* LDB 0,2	LOAD WORD FROM USER'S BUFFER	V2	03 00670
			679	* OME MPDVAD,V\$ST0	RESTORE MAP 0	V2	03 00671
			680	* LLRL 16	SWAP (A,B)	V2	03 00672
			681	* EXC ENACK		V2	03 00673
			682	* EXC ENAPIM		V2	03 00674
			683	* JMP* LDAUMP	EXIT	V2	03 00675
			684	* EJEC		V2	03 00676
			685	* SUBROUTINE: STAUMP		V2	03 00677
			686	* THIS SUBROUTINE STORES THE CONTENTS OF THE (A)		V2	03 00678
			687	* REGISTER IN THE USER'S BUFFER AT THE ADDRESS SPECIFIED BY		V2	03 00679
			688	* CTUBUF.		V2	03 00680
			689	* ON ENTRY:		V2	03 00681
			690	* (A) = WORD TO BE STORED IN USER'S BUFFER		V2	03 00682
			691	* (B) = RETURN ADDRESS		V2	03 00683
			692	* (X) = CTBL ADDRESS		V2	03 00684
			693	* ON EXIT:		V2	03 00685
			694	* (A) = UNCHANGED		V2	03 00686
			695	* (B) = DESTROYED		V2	03 00687
			696	* (X) = UNCHANGED		V2	03 00688
			697	* SPAC		V2	03 00689
			698	* STAUMP EXC DISPIM		V2	03 00690
			699	* EXC DISCLK		V2	03 00691
			700	* STB RTNADR+1	SAVE RETURN ADDRESS	V2	03 00692
			701	* LDB CTUBUF,1	ADDRESS WHERE WORD IS TO BE STORED	V2	03 00693
			702	* OME MPDVAD,V\$ST3	SWITCH TO USER'S MAP	V2	03 00694

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707 STA 0,2 STORE WORD IN USER'S BUFFER 52 03 00699
708 DME MPDVAD,V*ST0 RESTORE MAP 0 52 03 00700
709 EXC ENACLK 52 03 00701
710 EXC ENAPIM 52 03 00702
711 RTNADR JMP *--* EXIT 52 03 00703
712 ENDC10 CONT 52 03 00704
713 * CARD READER NOT READY PROCESSING 03 00705
714 NREADY TZA SET UP RSTPR BITS 14-5 = 0 A = 0 03 00706
715 JMP BICER1 NOT READY CONDITION 03 00707
000357 005001 A 716 CURDER LDAI 031640 SET UP RSTPR - CARD READER ERROR 03 00708
000360 001000 A 717 JMP BICER1 03 00709
000361 000375 R 718 BICER LDAE* CTBICB,1 GET BIC NO. 03 00710
000362 006010 A 719 LSRA 1 03 00711
000363 031640 A 720 ANA SEVEN C 03 00712
000364 001000 A 721 LRLA 9 SET UP RSTPR - BIC ERROR 03 00713
000365 000375 R 722 ADDI 020640 03 00714
000366 006015 A 723 BICER1 LDBE* CTRQBK,1 GET STATUS WORD IN RQBLK 03 00715
000367 100011 A 724 MERG 032 AND SET UP STATUS 03 00716
000370 004341 A 725 STBE* CTRQBK,1 03 00717
000371 150467 A 726 JMP VSERR A = ERROR TYPE 0=NOT READY/ +=HARDWARE 03 00718
000372 004251 A 727 EJE 03 00719
000373 006120 A 728 ***** 03 00720
000374 020640 A 729 * THIS SUBROUTINE CONVERTS THE A REG. FROM TWELVE-(12) BIT BINARY 03 00721
000375 006025 A 730 * COLUMN FORMAT TO ONE EIGHT BIT ASCII CHARACTER. 03 00722
000376 100004 A 731 * THE METHOD USED IS AS FOLLOWS 03 00723
000377 005032 A 732 * 03 00724
000400 006065 A 733 * 1) ROWS 12, 11, AND ZERO(0) ARE USED TO INDEX INTO AN EIGHT 03 00725
000401 100004 A 734 * WORD TABLE TO GENERATE A 0, 320, 040, OR 060 03 00726
000402 001000 A 735 * 03 00727
000403 000000 E 736 * 2) IF THERE ARE NO PUNCHES IN ROWS 1, 3, 5, 7 OR 9; ONE IS 03 00728
727 EJE 03 00729
728 ***** 03 00730
729 * THIS SUBROUTINE CONVERTS THE A REG. FROM TWELVE-(12) BIT BINARY 03 00731
730 * COLUMN FORMAT TO ONE EIGHT BIT ASCII CHARACTER. 03 00732
731 * THE METHOD USED IS AS FOLLOWS 03 00733
732 * 03 00734
733 * 1) ROWS 12, 11, AND ZERO(0) ARE USED TO INDEX INTO AN EIGHT 03 00735
734 * WORD TABLE TO GENERATE A 0, 320, 040, OR 060 03 00736
735 * 03 00737
736 * 2) IF THERE ARE NO PUNCHES IN ROWS 1, 3, 5, 7 OR 9; ONE IS 03 00738
737 * LOGICALLY OR'D WITH ABOVE. 03 00739
738 * 03 00740
739 * 3) IF THERE ARE NO PUNCHES IN ROWS 2, 3, 6, OR 7; TWO IS 03 00741
740 * LOGICALLY OR'D WITH THE ABOVE. 03 00742
741 * 03 00743
742 * 4) IF THERE ARE NO PUNCHES IN ROWS 4, 5, 6, OR 7; FOUR IS 03 00744
743 * LOGICALLY OR'D WITH THE ABOVE. 03 00745
744 * 03 00746
745 * 5) IF THERE ARE NO PUNCHES IN ROWS 8 OR 9; EIGHT IS 03 00747
746 * LOGICALLY OR'D WITH THE ABOVE. 03 00748
747 * 03 00749
748 * 6) THE RESULTING SIX BIT NUMBER IS USED TO INDEX INTO A 03 00750
749 * THIRTY-TWO WORD TABLE OF ASCII CHARACTERS. 03 00751
750 * 03 00752
751 * 03 00753
752 * 03 00754
753 * CALLING SEQUENCE 03 00755
754 * 03 00756
755 * JSR CNVA,2 03 00757
756 * 03 00758
757 * WITH! 03 00759
758 * A REGISTER CONTAINING COLUMN TO BE CONVERTED 03 00760
759 * X REGISTER CONTAINS CONTROLLER TABLE ADDRESS. 03 00761
760 * B REGISTER CONTAINS RETURN LOCATION 03 00762
761 * 03 00763
762 * RETURNS WITH 03 00764
763 * A REGISTER CONTAINS ASCII CHAR. RIGHT-JUSTIFIED WITH LEADING 03 00765
764 * ZEROS. 03 00766
765 * B REGISTER - DESTROYED 03 00767
766 * X REGISTER CONTAINS CONTROLLER TABLE ADDRESS 03 00768
767 * 03 00769
768 ***** 03 00770
000404 065015 A 770 CNVA STB CRTLC,1 03 00771
000405 025004 A 771 LDB CTRQBK,1 GET MODE 03 00772
000406 026001 A 772 LDB 1,2 CHECK IF ASCII OR UNFORMATTED 03 00773
000407 006435 A 773 BT RB1+B13,UNFORM 03 00774
000410 000344 R 774 JANZ *+6 CHECK IF BLANK CHARACTER. 03 00775
000411 001016 A 775 LDAI 0240 BLANK CHARACTER 03 00776
000412 000417 R 776 JMP CNVA1 03 00777
000413 006010 A 777 LDB BS9 OCTAL 01000 03 00778
000414 000240 A 778 LASR 9 SPLIT OFF ZONE 03 00779
000415 001000 A 779 ADDI ZTRL 03 00780
000416 000477 R 780 TAX 03 00781
000417 020432 A 781 LDX 0,1 GET ZONE CONVERSION 03 00782
000420 004511 A 782 TBA 03 00783
000421 006120 A 783 ANAI 052500 03 00784
000422 000504 R 784 XAZ CNVZ IF NO ROW 1, 3, 5, 7, OR 9 03 00785
000423 005014 A 785 LASL 1 03 00786
000424 035000 A 03 00787
000425 005021 A 03 00788
000426 006150 A 03 00789
000427 052500 A 03 00790
000430 003010 A 03 00791
000431 000503 R 03 00792
000432 004401 A 03 00793

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000433	005021	A	786	TBA					03	00778
000434	006150	A	787	ANAI	063000				03	00779
000435	063000	A		XAZ	CHVZ	IF NO ROW 2, 3, 6, OR 7			03	00780
000436	003010	A	788							
000437	000503	R		LASL	1				03	00781
000440	004401	A	789	TBA					03	00782
000441	005021	A	790	ANAI	036000				03	00783
000442	006150	A	791							
000443	036000	A		XAZ	CHVZ	IF NO ROW 4, 5, 6, OR 7			03	00784
000444	003010	A	792							
000445	000503	R		LASL	1				03	00785
000446	004401	A	793	TBA					03	00786
000447	005021	A	794	ANA	BINARY	OCTAL 03000			03	00787
000448	154171	A	795	XAZ	CHVZ	IF NO ROW 8 OR 9			03	00788
000449	003010	A	796							
000452	000503	R		TXA					03	00789
000453	005041	A	797	TZB					03	00790
000454	005002	A	798	ANA	8M77	CLEAN IT TO 6 BITS			03	00791
000455	150474	A	799	LISR	1				03	00792
000456	004541	A	800	ADDI	CTBL26	GET TABLE ADDRESS			03	00793
000457	006120	A	801							
000460	000514	R		TBX					03	00794
000461	005024	A	802	LDB	V\$CRDM	CHECK IF 026 CODE			03	00795
000462	020046	A	803	BT	RBO+BS,*+4				03	00796
000463	006470	A	804							
000464	000467	R		ADDI	CTBL29-CTBL26	029 CODE ADD RELATIVE ADDRESS FROM 026 TA			03	00797
000465	006120	A	805							
000466	000040	A		TXB					03	00798
000467	005042	A	806	TAX					03	00799
000470	005014	A	807	LDA	0,1	GET WORD			03	00800
000471	015000	A	808	XBZ	CHVY	IF LEFT BYTE			03	00801
000472	003020	A	809							
000473	000502	R		ANA	8M377	CLEAN BYTE			03	00802
000474	150463	A	810	LDB	V\$CTL	TIDE LOC.			03	00803
000475	020300	A	811	LDB	TRSTS,2	CONTROLLER TABLE LOC.			03	00804
000476	036010	A	812	LDB	CTRLOC,1	RETURN LOC. ADDRESS			03	00805
000477	025015	A	813	LDB	CTRLOC,1	RETURN TO CALLING TASK.			03	00806
000478	006706	A	814	JUMP	012					
000501	000000	A								
000502	004350	A	815	CHVY	LSRA	8			03	00807
000503	005064	A	816	CHVZ	MERG	064			03	00808
000504	000000	A	817	ZTEL	DATA	0,060,040,0,020,0,060,0			03	00809
000505	000060	A								
000506	000040	A								
000507	000000	A								
000510	000020	A								
000511	000000	A								
000512	000060	A								
000513	000000	A								
000514		A								
000514	157276	A	818	CTBL26	BSS	0			03	00810
000515	135247	A	819	* CHARACTER TABLE, 026 KEYPUNCH				03	00811
000516	136737	A	820	DATA	'<>'				03	00812
000517	134670	A	821	DATA	0135247				03	00813
000520	133666	A	822	DATA	'*+987654321'				03	00814
000521	132664	A								
000522	131662	A								
000523	130640	A								
000524	123271	A	823	DATA	'<<(> ? I H G F E D C B A + X : * \$! R Q P O N M L K J - # \ " (, @ Z Y X W V U T S / 0 '				03	00815
000525	155651	A								
000526	127277	A								
000527	144710	A								
000530	143706	A								
000531	142704	A								
000532	141702	A								
000533	140653	A								
000534	122673	A								
000535	156652	A								
000536	122241	A								
000537	151321	A								
000540	150317	A								
000541	147315	A								
000542	146313	A								
000543	145255	A								
000544	121734	A								
000545	121250	A								
000546	126300	A								
000547	155331	A								
000550	154327	A								
000551	153325	A								
000552	152323	A								
000553	127660	A								
000554		A	824	* CHARACTER TABLE, 029 KEYPUNCH				03	00816
000554	121275	A	825	CTBL29	BSS	0			03	00817
000555	123700	A	826	DATA	'*+987654321'				03	00818
000556	121672	A	827	DATA	0123700				03	00819
000557	134670	A	828	DATA	'*+987654321'				03	00820
000560	133666	A								
000561	132664	A								
000562	131662	A								
000563	130640	A								

```

000564 157253 A 829 DATA '↑+<<. [IHGFEDCBA&\I)*$IRQPONMLKJ-?>+%, JZYXWVUTS/0' D 03 00821
000565 124274 A
000566 127333 A
000567 144710 A
000570 143706 A
000571 142704 A
000572 141702 A
000573 140646 A
000574 156273 A
000575 124652 A
000576 122241 A
000577 151321 A
000600 150317 A
000601 147315 A
000602 146313 A
000603 145253 A
000604 137676 A
000605 157645 A
000606 126335 A
000607 155331 A
000610 154327 A
000611 153325 A
000612 152323 A
000613 127660 A

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830 EJEC 03 00822
831 ***** 03 00823
832 REENTRANT CARD READER AND BIC SENSE LOOP 03 00824
833 UPON ENTRANCE 03 00825
834 A = SENSE TYPE AND DEVICE ADDRESS 03 00826
835 B = RETURN LOC 03 00827
836 X = CONTROLLER TABLE 03 00828
837 UPON RETURN 03 00829
838 A = NEG. FOR FALSE, POSITIVE NUMBER FOR TRUE 03 00830
839 X = CONTROLLER TABLE 03 00831
840 B = DESTROYED 03 00832
841 CALLING SEQUENCE 03 00833
842 JSR SENC RD,2 03 00834
843 RETURN LOC - INTERRUPTS ENABLED 03 00835
844 ***** 03 00836
000614 100747 A 845 SENC RD EXC DISCLK DISABLE CLOCK AND PIM 03 00837
000615 100444 A 846 EXC DIS PIM 03 00838
000616 084012 A 847 STB RETLOC+1 SAVE RETURN LOC. 03 00839
000617 006110 A 848 DRAI RET10000 SET UP SENSE INSTRUCTION 03 00840
000620 101000 A
000621 054000 A 849 STA *+1 03 00841
000622 005000 A 850 NOP SENSE CARD READER 03 00842
000623 000625 R 851 DATA *+2 03 00843
000624 130440 A 852 ERA BS15 FALSE 03 00844
000625 130440 A 853 ERA BS15 TRUE 03 00845
000626 100147 A 854 EXC ENACKL ENABLE CLOCK AND PIMS 03 00846
000627 100244 A 855 EXC ENAPIM 03 00847
000630 001000 A 856 RETLOC JMP *-* RETURN TO CALLING PROGRAM 03 00848
000631 000000 A
000632 177700 A 857 EJEC 03 00849
000633 000207 A 858 ADRMSK DATA 0177700 ADDRESS MASK 03 00850
000634 000300 A 859 EDF DATA 0207 EDF - TWELVE BIT BINARY COLUMN FORMAT 03 00851
000635 005001 A 860 EDFST DATA 0300 EDF - STATUS 03 00852
000636 004250 A 861 ST1 TRA 03 00853
000637 045022 A 862 ST2 LRLA 8 03 00854
000640 045020 A 863 ST3 INR CTWCNT,1 03 00855
000641 000120 A 864 ST4 INR CTUBUF,1 03 00856
000642 003000 A 865 EIGHTY DATA 80 03 00857
000643 000300 A 866 BINARY DATA 03000 03 00858
000644 000600 A 867 SENHOP DATA 0300 SENSE HOPPER EMPTY 03 00859
000645 000200 A 868 SENRDY DATA 0600 SENSE READER READY 03 00860
869 SENERR DATA 0200 SENSE READER ERROR 03 00861
870 END 03 00862

```

ENTRY NAMES

```

000000 R VZCRA
EXTERNAL NAMES
000045 E V$BIC 0000403 E V$ERR 000057 E V$EXEC 000163 E V$FNR
SYMBOLS
000632 R ADRMSK 000044 A APIM 000302 R ASCII 000274 R ASCINP
000000 A B0 000001 A B1 000012 A B10 000013 A B11
000014 A B12 000015 A B13 000016 A B14 000017 A B15
000002 A B2 000003 A B3 000004 A B4 000005 A B5
000006 A B6 000007 A B7 000010 A B8 000011 A B9
000366 R BICER 000375 R BICER1 000642 R BINARY 000421 A BM1
000472 A BM17 000475 A BM177 000477 A BM1777 000464 A BM3
000473 A BM37 000463 A BM377 000467 A BM7 000474 A BM77
000476 A BM777 000441 A BR0 000442 A BR1 000453 A BR10
000454 A BR11 000455 A BR12 000456 A BR13 000457 A BR14
000460 A BR15 000443 A BR2 000444 A BR3 000445 A BR4
000446 A BR5 000447 A BR6 000450 A BR7 000451 A BR8
000452 A BR9 000421 A BS0 000422 A BS1 000433 A BS10
000434 A BS11 000435 A BS12 000436 A BS13 000437 A BS14
000440 A BS15 000423 A BS2 000424 A BS3 000425 A BS4
000426 A BS5 000427 A BS6 000400 A BS7 000401 A BS8
000432 A BS9 000362 R CDRDR 000047 A CLOCK 000404 R CNVA
000477 R CNVA1 000502 R CNVY 000503 R CNVZ 000331 R CMP
000352 R CRDR10 000120 R CRDR2 000155 R CRDR3 000164 R CRDR4
000134 R CRDR5 000154 R CRDR6 000063 R CRDRIP 000003 A CTACT
000001 A CTADNC 000011 A CTBICB 000514 R CTBL26 000554 R CTBL29

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```

000016 A CTBUF 000017 A CTBUFL 000021 A CTCCNT 000003 A CTDST
000006 A CTDVAT 000012 A CTFCB 000014 A CTFRCT 000014 A CTFREQ
000000 A CTIDB 000007 A CTIDA 000023 A CTOPFG 000002 A CTOPM
000005 A CTRCNT 000004 A CTRQBK 000015 A CTRTLC 000005 A CTRTRY
000010 A CTSTAT 000020 A CTUBUF 000022 A CTWCNT 000013 A CTWDS
000747 A DISCLK 000745 A DISMP 000444 A DISPIM 000424 A EIGHT
000641 R EIGHTY 000147 A ENACLK 000645 A ENAMP 000244 A ENAPIM
000633 R EDF 000634 R EDFST 000465 A FIVE 000423 A FOUR
000300 A LC 000050 A LCJP 000462 A LHW 000045 A MP
000045 A MPMR0 000145 A MPMR1 000245 A MPMR2 000345 A MPMR3
000420 A MT 000461 A NEG 000470 A NINE 000357 R NREADY
000421 A ONE 000040 A PIM1 000041 A PIM2 000042 A PIM3
000043 A PIM4 000040 A PIM5 000040 A PIM6 000040 A PIM7
000040 A PIM8 000040 A RA0 000000 A RA1 000060 A RBO
000020 A RB1 000200 A READCD 000630 R RETLOC 000463 A RHW
000614 R SENCRD 000645 R SENERR 000643 R SENHOP 000644 R SENRDY
000467 A SEVEN 000466 A SIX 000635 R ST1 000636 R ST2
000637 R ST3 000640 R ST4 000202 R SYSBIN 000027 A TBATSK
000026 A TBCPTH 000011 A TBENTY 000003 A TBVNT 000021 A TBID
000014 A TBISA 000015 A TBISB 000017 A TBISP 000020 A TBISPS
000016 A TBISX 000022 A TBKN1 000023 A TBKN2 000024 A TBKN3
000302 A TBPL 000004 A TBRSA 000005 A TBRSE 000030 A TBRSE
000007 A TBRSP 000010 A TBRSTS 000000 A TBRSX 000000 A TBS0
000001 A TBS1 000012 A TBS10 000013 A TBS11 000014 A TBS12
000015 A TBS13 000016 A TBS14 000017 A TBS15 000002 A TBS2
J00003 A TBS3 000004 A TBS4 000005 A TBS5 000006 A TBS6
000007 A TBS7 000010 A TBS8 000011 A TBS9 000001 A TBST
000025 A TBTLC 000013 A TBTMIN 000012 A TBTMS 000000 A TBTRD
000471 A TEN 000464 A THREE 000422 A TWO 000233 R TYPE1
000237 R TYPE1A 000220 R TYPE2 000251 R TYPE3 000226 R TYPE4
000344 R UNFORM 000403 A VS1MIN 000415 A VSBFC 000075 A VSBGLB
000045 E VSBIC 000056 A VSBIC1 000315 A VSBTB 000414 A VSEVN
000334 A VSCAM 000353 A VSKD 000411 A VSKIT 000310 A VSKPT
000301 A VSCPL 000046 A VSCRD 000341 A VSCRD 000354 A VSCRM
000302 A VSCRS 000360 A VSCRAD 000300 A VSCTL 000251 A VSCTMS
000070 A VSDATE 000355 A VSDSTB 000375 A VSERFG 000403 E VSERR
000057 E VSEXEC 000347 A VSFLB 000306 A VSFLRS 000163 E VSFNR
000350 A VSFREE 000320 A VSIM 000410 A VSIDA 000412 A VSJOB
000055 A VSJCFG 000047 A VSJCTM 000050 A VSJNAM 000377 A VSJOP
000054 A VSLCNT 000313 A VSLER 000356 A VSLIT 000317 A VSLUP
000307 A VSLRSK 000312 A VSLSAL 000345 A VSLUNT 000316 A VSLUP
000400 A VSLUT1 000401 A VSLUT2 000402 A VSLUT3 000330 A VSMFM
000362 A VSNCTR 000413 A VSDCB 000346 A VSDPCF 000311 A VSDPCL
000363 A VSPIM 000074 A VSPLCT 000305 A VSPTVB 000361 A VSCOTL
000352 A VSSCV 000375 A VSSLFG 000303 A VSTE 000342 A VSTSET
000416 A VSTFC 000314 A VSTJCP 000344 A VSTMN 000343 A VSTMS
000304 A VSUTH 000001 A VORTEX 000035 R VZCR1 000000 R VZCRA
000420 A ZERO 000504 R ZTBL
0 ERRORS ASSEMBLY COMPLETE
    
```

```

360 APIM 370 371
0 BICER 451 483
302 BM17 443
273 BR3 462
276 BR6 463
269 BS15 453 469
261 BS7 454
0 CDRDR 491 495
351 CLOCK 353 354
484 CRDR2 480
508 CRDR4 500
492 CRDR5 489
502 CRDR6 498
406 CTBICB 468
412 CTBUF 446 481 484 486 496
413 CTBUFL 445 487
415 CTCCNT 509
403 CTDVAT 425 429 436 452 493
407 CTFCB 511
410 CTFREQ 411 412 413 414 415 416 417
417 CTOPFG 444 499
400 CTRQBK 440 504 506
414 CTUBUF 519
416 CTWCNT 510
408 CTWDS 518 524
353 DISCLK 467
370 DISPIM 466
354 ENACLK 478
371 ENAPIM 477
49 ENDC01 43
520 ENDC04 513
0 ENDC03 522
0 EDF 497
0 EDFST 503
133 LC 134 135 136 137 138 139 140 141 142
143 144 145 146 147 150 151 155 156
158 161 162 167 168 169 170 171 172
173 174 175 177 178 179 180 181 182
183 184 185 186 187 188 189 190 192
195 196 197 198 210 211 212 213 214
215 216 221 222 232 236 241 242 243
152 LCD1 149
    
```

E.2 VORTEX LISTING

VZCRA

PROGRAM PAGE

13

LISTING PAGE (574)

157	LCD2	154								
164	LCD3	160								
176	LCD4	166								
204	LCD5	201								
209	LCD6	206								
223	LCD7	218								
230	LCD8	225								
108	LCJP	109	110	111	118	119	120	121	122	125
374	MP	375	376	377	378	379	380			
356	MPDVAD	514	517							
252	MT	253	254	255	256	257	258	259	260	261
		262	263	264	265	266	267	268	269	270
		271	272	273	274	275	276	277	278	279
		280	281	282	283	284	285	286	287	288
		289	290	291	292	293	294	295	296	297
		298	299	300	301	302	303	304	305	306
		307	308							
0	NREADY	427	438	482	485					
0	SENCRD	426	430	437	494					
0	SENERR	492								
0	SENHOP	424								
0	SENRDY	428	435							
20	TBEVNT	422	479							
25	TBRSTS	423	434	465						
18	TBST	461	464							
0	VSBIC	388	447							
134	V\$CTL	420	433	460						
0	V\$ERR	385								
0	V\$EXEC	387	457							
0	V\$FNR	386	501	507						
171	V\$ST0	517								
174	V\$ST3	514								
1	VORTEX	42	148	153	159	165	191	193	200	205
		217	224	355	449	512	521			
439	VZCR1	431								
420	VZCRA	11	382							

```

000001 A 1 VORTEX SET 1 PUT LAST FOR VORTEX 00 00001
2 * THIS IS A COPYRIGHTED PROGRAM. COPYRIGHT 1974 BY VARIAN DATA MACHINES 00 00002
3 * 00 00003
4 * V.D.M. PART NO. 92L0605-199A D.1 00 00004
5 * 00 00005
6 * RELEASED 08/02/74 D.1 00 00006
7 * 00 00007
8 * V$CLPS D.1 00 00008
9 * 00 00009
10 * 00 00010
11 * TITLE V$CLPS D.1 00 00011
12 ***** L00 00012
13 * L00 00013
14 **** TIDB SETUP *** L00 00014
15 * L00 00015
16 ***** L00 00016
000000 A 18 TBTRD EQU 0 TASK THREAD L00 00018
000001 A 19 TBST EQU 1 TASK STATUS L00 00019
000002 A 20 TSPL EQU 2 STATUS CNT. (BITS15-6), PRIORITY LEVEL(5-0) L00 00020
000003 A 21 TBEVNT EQU 3 INTERRUPT EVENT L00 00021
000004 A 22 TBRSA EQU 4 A REENRANT AND SUSPEND STACK L00 00022
000005 A 23 TBRSE EQU 5 B REENRANT AND SUSPEND STACK L00 00023
000006 A 24 TBRSE EQU 6 X REENRANT AND SUSPEND STACK L00 00024
000007 A 25 TBRSP EQU 7 DF/P REENRANT AND SUSPEND STACK L00 00025
000010 A 26 TBRSTS EQU 8 TEMP. STG. REENRANT AND SUSPEND STACK L00 00026
000011 A 27 TRENTY EQU 9 TASK ENTRY LOCATION L00 00027
000012 A 28 TBTMS EQU 10 TIME COUNTER - CLOCK RESOLUTION IN SMS INCL00 00028
000013 A 29 TBTMIN EQU 11 TIME COUNTER - CLOCK MINUTE INCREMENTS L00 00029
000014 A 30 TBISA EQU 12 A INTERRUPT STACK L00 00030
000015 A 31 TBISB EQU 13 B INTERRUPT STACK L00 00031
000016 A 32 TBISX EQU 14 X INTERRUPT STACK L00 00032
000017 A 33 TBISP EQU 15 DF/P INTERRUPT STACK L00 00033
000020 A 34 TBISRS EQU 16 REENT. STACK INTERRUPT STACK L00 00034
000021 A 35 TBID EQU 17 BLK ALLOC(15-10), I/O THR(9-5), I/O ACT(4-0) L00 00035
000022 A 36 TBKN1 EQU 18 TASK NAME L00 00036
000023 A 37 TBKN2 EQU 19 TASK NAME L00 00037
000024 A 38 TBKN3 EQU 20 TASK NAME L00 00038
000025 A 39 TBTLC EQU 21 1ST LOC. OF TASK ALLOCATABLE L00 00039
000026 A 40 TBCPTH EQU 22 CHECK POINT THREAD L00 00040
000027 A 41 TBATSK EQU 23 TIDB LOC. OF ACTIVATING TASK D.1 00 00041
000030 A 42 TBRSE EQU 24 TASK ERROR CODE L00 00042
43 IFT VORTEX-2 V2 00 00043
44 GOTO ENDC01 V2 00 00044
45 TBSIZ EQU 25 TASK SIZE, BITS 15-10 V2 00 00045
46 TBNULL EQU 26 NUCLEUS MODULE INDICATOR, BITS 15-08 V2 00 00046
47 TBKEY EQU 26 TASK'S MAP KEY, BITS 03-00 V2 00 00047
48 TBMING EQU 27 TASK'S MAP IMAGE V2 00 00048
49 TPST EQU 28 INTERRUPT STATUS V2 00 00049
50 ENDC01 CNT V2 00 00050
51 EJEC L00 00051
52 ***** L00 00052
53 * L00 00053
54 **** TASK STATUS DESCRIPTION (BIT SET WORD 1) *** L00 00054
55 * L00 00055
56 ***** L00 00056
000017 A 58 TBS15 EQU 15 INTERRUPT SUSPEND L00 00058
000016 A 60 TBS14 EQU 14 TASK SUSPEND L00 00060
000015 A 61 TBS13 EQU 13 TASK ABORT L00 00061
000014 A 62 TBS12 EQU 12 TASK EXIT L00 00062
000013 A 64 TBS11 EQU 11 TIDB CORE RESIDENT L00 00064
000012 A 65 TBS10 EQU 10 CORE RESIDENT TASK L00 00065
000011 A 66 TBS9 EQU 9 FOREGROUND TASK L00 00066
000010 A 68 TBS8 EQU 8 TASK PROTECTED L00 00068
000007 A 69 TBS7 EQU 7 TASK SCHEDULED BY TIME DELAY L00 00069
000006 A 70 TBS6 EQU 6 TIME DELAY ACTIVE L00 00070
000005 A 72 TBS5 EQU 5 TASK WAITING TO BE LOADED L00 00072
000004 A 73 TBS4 EQU 4 TASK ERROR L00 00073
000003 A 74 TBS3 EQU 3 TASK INTERRUPT EXPECTED L00 00074
000002 A 76 TBS2 EQU 2 OVERLAY TASK L00 00076
000001 A 77 TBS1 EQU 1 UPON TERMINATION ACTIVATE TASK SCHED TASK L00 00077
000000 A 78 TBS0 EQU 0 TASK SEARCH-ALLOCATED-LOADED L00 00078
79 EJEC L00 00079
80 ***** L00 00080
81 * L00 00081
82 *** TASK STATUS DESCRIPTION (BIT SET WORD 2) *** L00 00082
83 * L00 00083
84 ***** L00 00084
86 * BIT 15 - TASK OPENED L00 00086
88 * BIT 14 - UNUSED L00 00088
89 * BIT 13 - OVERLAY LOAD L00 00089
90 * BIT 12 - TASK WAITING FOR BACKGROUND TASK I/O TO COMPLETE L00 00090
91 * TASK LOCKED-OUT UNTIL BG I/O COMPLETE OR BIT 11 L00 00091
92 * IS SET (ALLOCATABLE SPACE AVAILABLE) L00 00092
94 * BIT 11 - DEFINES THAT ALLOCATABLE SPACE IS AVAILABLE, TRY L00 00094
95 * ALLOCATING TASK AGAIN. OVERRIDES BIT 12 SET OR L00 00095
96 * BIT 5 IN STATUS WORD. L00 00096
97 * BIT 10 - BACKGROUND TASK BEING WRITTEN ON CHECKPOINT FILE. L00 00097
98 * BIT 9 - TASK WAITING FOR A TIDB TO COME AVAILABLE FOR L00 00098
99 * SCHEDULING. L00 00099
101 * BIT 8 TO 6 - UNUSED L00 00101
102 EJEC L00 00102
103 ***** L00 00103
104 * L00 00104

```

Address	Label	Value	Description	Segment	Address
105	***	JOB PROCESSOR LOW CORE EQUATES		**L00	00105
106	*			L00	00106
107	*****			L00	00107
000050 A	109	LCJJP EQU 050	JCP NAME	L00	00109
000050 A	110	V\$JNAM EQU LCJJP	LINE COUNT	L00	00110
000054 A	111	V\$LCNT EQU LCJJP+4	JCP FLAGS	L00	00111
000055 A	112	V\$JCFG EQU LCJJP+5	BIT 2-0 = LOAD AND GO FLAGS	L00	00112
	113	*	BIT 3 = DUMP FLAG 1=DUMP, 0=NO DUMP	L00	00113
	114	*	BIT 9-4 = UNUSED	L00	00114
	115	*	BIT 15-10 = BG EXTRA CORE BLOCKS TO ALLOC	L00	00115
000056 A	118	V\$JFCB EQU LCJJP+6	JCP FILE CONTROL BLOCK	L00	00118
000070 A	119	V\$DATE EQU LCJJP+16	JCP DATA RECORD	L00	00119
000074 A	120	V\$PLCT EQU LCJJP+20	PERMUNATE LINE COUNT	L00	00120
000075 A	121	V\$EGLB EQU LCJJP+21	JCP LIB KEY AND LU NO. (BACKGROUND LIB)	L00	00121
000076 A	122	V\$CRDM EQU LCJJP+22	CARD KEYPUNCH TYPE, 0=026, 1=029	L00	00122
	123	*	BIT 0 = SYSTEM NOMINAL KEYPUNCH MODE.	L00	00123
	124	*	BIT 9 = CURRENT JOB KEYPUNCH MODE.	L00	00124
	125	EJEC		L00	00125
	126	*****		L00	00126
	127	*		L00	00127
	128	***	LOW CORE DESCRIPTION	**L00	00128
	129	*		L00	00129
	130	*****		L00	00130
000300 A	132	LC EQU 0300	CURRENT TASK TIDB LOCATION	L00	00132
000300 A	133	V\$CTL EQU LC	CURRENT PRIORITY LEVEL	L00	00133
000301 A	134	V\$CPL EQU LC+1	CURRENT REENRANT STACK POINTER	L00	00134
000302 A	135	V\$CRS EQU LC+2	POINTER TO HIGHEST PRIORITY TIDB	L00	00135
000303 A	136	V\$TB EQU LC+3	POINTER TO UNUSED TASK TIDB	L00	00136
000304 A	137	V\$UTB EQU LC+4	POINTER TO NEXT ENTRY IN REENRANT STACK	L00	00137
000305 A	138	V\$PTVB EQU LC+5	FIRST LOC. OF REENRANT STACK	L00	00138
000306 A	139	V\$FLRS EQU LC+6	LAST LOC. OF REENRANT STACK+1	L00	00139
000307 A	140	V\$LRSK EQU LC+7	CHECKPOINT FLAG 1=ON, 0=OFF	L00	00140
000310 A	141	V\$CKPT EQU LC+8	UNUSED	L00	00141
	142	* EQU LC+9	LOC. OF TIDB FOR SYSTEM SAL TASK	L00	00142
000312 A	143	V\$LSAL EQU LC+10	LOC. OF TIDB FOR SYSTEM ERROR TASK	L00	00143
000313 A	144	V\$LER EQU LC+11	LOC. OF TIDB FOR JOB CONTROL PROCESSOR TASK	L00	00144
000314 A	145	V\$TJCP EQU LC+12	LOC. OF CURRENT ACTIVE BACKGROUND TSK TIDB	L00	00145
000315 A	146	V\$BTB EQU LC+13	ASSEMBLE FOR VORTEX II	V2	00 00146
	147	IFT VORTEX-2	NUMBER OF AVAILABLE PAGES IN V\$PAGE	V2	00 00147
	148	GOTO LCD1	POINTER OF LAST WORD TESTED IN V\$PAGE	V2	00 00148
	149	V\$NPAG EQU LC+14	ASSEMBLE IF NOT VORTEX II	V2	00 00149
	150	V\$LPP EQU LC+15	LOC. OF 1ST UNPROTECTED WORD	L00	00150
	151	LCD1 CNT	LOC. OF LAST UNPROTECTED WORD	L00	00151
	152	IFF VORTEX-2	INTERRUPT MASK (8 WORDS)	V2	00 00152
	153	GOTO LCD2	MEMORY PROTECT MASK (4 WORDS)	L00	00153
000316 A	154	V\$LUP EQU LC+14	CORE ALLOCATION MASK (4 WORDS)	L00	00154
000317 A	155	V\$LLUP EQU LC+15	UNUSED	L00	00155
	156	LCD2 CNT	ASSEMBLE IF VORTEX II	V2	00 00156
000320 A	157	V\$IM EQU LC+16	MAP KEY AVAILABILITY MASK	V2	00 00157
	158	IFF VORTEX-2	BOTTOM OF NUCLEUS TABLE MODULE	V2	00 00158
	159	GOTO LCD3	GLOBAL FCB MODULE	V2	00 00159
000330 A	160	V\$MPM EQU LC+24	MAP 0 IMAGE ADDRESS	V2	00 00160
000334 A	161	V\$CAM EQU LC+28	FUNC 1 CONTROL WORD TO SWITCH EXECUTIVE	V2	00 00161
	162	* EQU LC+32	MODE STATES: V\$ST0- STATE 0	V2	00 00162
	163	LCD3 CNT	V\$ST1- STATE 1	V2	00 00163
	164	IFT VORTEX-2	ETC	V2	00 00164
	165	GOTO LCD4	EXECUTING TASK'S MAP KEY	V2	00 00165
	166	V\$MAP EQU LC+24	CORE RESIDENT DIRECTORY LOCATION	L00	00166
	167	V\$ETBM EQU LC+25	TOP OF THREAD OF BG TSK WAITING TO BE ALLOC	L00	00167
	168	V\$GFCB EQU LC+26	TIME OF DAY IN 5 MILLISECOND INCREMENTS	L00	00168
	169	V\$MIMG EQU LC+27	TIME OF DAY IN MINUTE INCREMENTS	L00	00169
	170	V\$ST0 EQU LC+28	ADDR. OF LOGICAL UNIT NAME TABLE	L00	00170
	171	V\$ST1 EQU LC+29	OPCOM LOCKOUT FLAG	L00	00171
	172	V\$ST2 EQU LC+30	KEY AND LU NO. FOR FOREGROUND LIB	L00	00172
	173	V\$ST3 EQU LC+31	FREE RUNNING COUNTER INCR. IN MICROSECONDS	L00	00173
	174	V\$KEY EQU LC+32	CLOCK RESOLUTION IN 5 MILLISECOND INCR.	L00	00174
	175	LCD4 CNT	CLOCK SELECTED COUNT VALUE (1 TO 4095)	L00	00175
000341 A	176	V\$CRDR EQU LC+33	BASIC CLOCK INTERRUPT RATE IN MICROSECONDS	L00	00176
000342 A	177	V\$TBGT EQU LC+34	CLOCK RESOLUTION INCR. FOR 1 MINUTE.	L00	00177
000343 A	178	V\$TMS EQU LC+35	BASE ADDR. FOR DST BLOCK	L00	00178
000344 A	179	V\$TMN EQU LC+36	LAST LOCATION OF BACKGROUND LITERAL TABLE	L00	00179
000345 A	180	V\$LUNT EQU LC+37	ASSEMBLE IF VORTEX II	V2	00 00180
000346 A	181	V\$OPCF EQU LC+38	V\$PAGE ADDRESS	V2	00 00181
000347 A	182	V\$FGLB EQU LC+39	ASSEMBLE IF NOT VORTEX II	V2	00 00182
000350 A	183	V\$FREE EQU LC+40	RMD TRACK SIZE	L00	00183
000351 A	184	V\$CTMS EQU LC+41	BASE ADDR. FOR CONTROLLER ADDR. TABLE	L00	00184
000352 A	185	V\$SCV EQU LC+42	CURRENT CONTROLLER IN SCAN	L00	00185
000353 A	186	V\$CKB EQU LC+43	NO. OF CONTROLLERS	L00	00186
000354 A	187	V\$CRM EQU LC+44	EXTERNAL DEVICE ADDRESS TABLE FOR PIMS	L00	00187
000355 A	188	V\$ISTB EQU LC+45	(8 WORDS DEFINED IN PIM NO ORDER)	L00	00188
000356 A	189	V\$LIT EQU LC+46	UNUSED	L00	00189
	190	IFF VORTEX-2		V2	00 00190
	191	V\$PGT EQU LC+47		V2	00 00191
	192	IFT VORTEX-2		V2	00 00192
000357 A	193	V\$TKSZ EQU LC+47		L00	00193
000360 A	194	V\$CTAD EQU LC+48		L00	00194
000361 A	195	V\$SCTL EQU LC+49		L00	00195
000362 A	196	V\$NCTR EQU LC+50		L00	00196
000363 A	197	V\$PIMN EQU LC+51		L00	00197
	198	*		L00	00198
	199	* EQU LC+59		L00	00199
	200	IFF VORTEX-2		V2	00 00200

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201          GOTO    LCD5          ASSEMBLE IF NOT VORTEX II          V2  00  00201
202          *      EQU    LC+60    UNUSED                                L00  00202
203          LCD5   CONT                                V2  00  00203
204          IFT    VORTEX-2        V2  00  00204
205          GOTO    LCD6          ASSEMBLE IF VORTEX II          V2  00  00205
206          *      EQU    LC+59    JMP V$IOST PAGE 0 ENTRY FOR I/O    V2  00  00206
207          *      EQU    LC+60    STAT CALLS.                          V2  00  00207
208          LCD6   CONT                                V2  00  00208
000375 A 209 V$SLFG EQU LC+61 SAL TASK BUSY FLAG 1=BUSY, 0=NOT BUSY L00 00209
000376 A 210 V$ERFG EQU LC+62 ERROR TASK BUSY FLAG 1=BUSY, 0=NOT BUSY L00 00210
000377 A 211 V$JOP EQU LC+63 JCP OPERATING FLAG L00 00211
000400 A 212 V$LUT1 EQU LC+64 START LUN ADDR FOR JCP/OPCOM ASSIGNABLE L00 00212
000401 A 213 V$LUT2 EQU LC+65 START LUN ADDR FOR UNASSIGNABLE L00 00213
000402 A 214 V$LUT3 EQU LC+66 START LUN ADDR FOR OPCOM ASSIGNABLE L00 00214
000403 A 215 V$IMIN EQU LC+67 32767 - (60000/(5*V$CTMS)) + 1 L00 00215
216          IFF    VORTEX-2        V2  00  00216
217          GOTO    LCD7          ASSEMBLE IF NOT VORTEX II          V2  00  00217
000404 A 218 V$BIC1 EQU LC+68 BIC ONE INTERRUPT LOCATION L00 00218
000405 A 219 V$BIC2 EQU LC+69 BIC TWO INTERRUPT LOCATION L00 00219
000406 A 220 V$BIC3 EQU LC+70 BIC THREE INTERRUPT LOCATION L00 00220
000407 A 221 V$BIC4 EQU LC+71 BIC FOUR INTERRUPT LOCATION L00 00221
222          LCD7   CONT                                V2  00  00222
223          IFT    VORTEX-2        V2  00  00223
224          GOTO    LCD8          V2  00  00224
225          *      EQU    LC+68    JMP V$IOC PAGE 0 ENTRY FOR IOC    V2  00  00225
226          *      EQU    LC+69    CALLS.                            V2  00  00226
227          *      EQU    LC+70    JMP V$EXEC PAGE 0 ENTRY FOR RTE    V2  00  00227
228          *      EQU    LC+71    CALLS.                            V2  00  00228
229          LCD8   CONT                                V2  00  00229
000410 A 230 V$IOA EQU LC+72 I/O ALGORITHM L00 00230
000411 A 231 V$CKIT EQU LC+73 CLOCK INT. IN PIM BEFORE LOCKOUT FLAG. L00 00231
000412 A 232 V$JCB EQU LC+74 ALL SYSTEM BACKGROUND PROGRAMS AND JCP USE L00 00232
233          *      THIS SYSTEM BUFFER TO READ DIRECTIVES AND L00 00233
234          *      SOURCE RECORDS IN. L00 00234
000413 A 235 V$OCB EQU LC+75 OPCOM WILL READ OPERATOR KEY-IN REQUESTS L00 00235
236          *      IN THIS BUFFER. IF JCP IS SET NOT ACTIVE L00 00236
237          *      AND A 1 DIRECTIVE IS INPUTED, OPCOM L00 00237
238          *      WILL MOVE THE DIRECTIVE TO V$JCB BEFORE L00 00238
239          *      SCHEDULING JCP. L00 00239
000414 A 240 V$BVN EQU LC+76 BOTTOM OF VORTEX NUCLEUS L00 00240
000415 A 241 V$BFC EQU LC+77 TOP OF FG RES. AREA/BOTTOM OF FG BLK COMM. L00 00241
000416 A 242 V$TFC EQU LC+78 TOP OF FG BLK COMMON/TOP OF VORTEX CORE. L00 00242
000417 A 243 V$STSZ EQU LC+79 ACTUAL SECTOR SIZE L00 00243
244          EQU    L00 00244
245          ***** L00 00245
246          *      L00 00246
247          *** MASK TABLE DESCRIPTION *** L00 00247
248          *      L00 00248
249          ***** L00 00249
000420 A 251 MT SET 0420 L00 00251
000420 A 252 ZERO EQU MT ZERD WORD L00 00252
000421 A 253 BS0 EQU MT+1 BIT MASK CONTENTS 000001 L00 00253
000422 A 254 BS1 EQU MT+2 000002 L00 00254
000423 A 255 BS2 EQU MT+3 000004 L00 00255
000424 A 256 BS3 EQU MT+4 000010 L00 00256
000425 A 257 BS4 EQU MT+5 000020 L00 00257
000426 A 258 BS5 EQU MT+6 000040 L00 00258
000427 A 259 BS6 EQU MT+7 000100 L00 00259
000430 A 260 BS7 EQU MT+8 000200 L00 00260
000431 A 261 BS8 EQU MT+9 000400 L00 00261
000432 A 262 BS9 EQU MT+10 001000 L00 00262
000433 A 263 BS10 EQU MT+11 002000 L00 00263
000434 A 264 BS11 EQU MT+12 004000 L00 00264
000435 A 265 BS12 EQU MT+13 010000 L00 00265
000436 A 266 BS13 EQU MT+14 020000 L00 00266
000437 A 267 BS14 EQU MT+15 040000 L00 00267
000440 A 268 BS15 EQU MT+16 0100000 L00 00268
000441 A 269 BR0 EQU MT+17 BIT MASK CONTENTS 0177776 L00 00269
000442 A 270 BR1 EQU MT+18 0177775 L00 00270
000443 A 271 BR2 EQU MT+19 0177773 L00 00271
000444 A 272 BR3 EQU MT+20 0177767 L00 00272
000445 A 273 BR4 EQU MT+21 0177757 L00 00273
000446 A 274 BR5 EQU MT+22 0177737 L00 00274
000447 A 275 BR6 EQU MT+23 0177677 L00 00275
000450 A 276 BR7 EQU MT+24 0177577 L00 00276
000451 A 277 BR8 EQU MT+25 0177377 L00 00277
000452 A 278 BR9 EQU MT+26 0176777 L00 00278
000453 A 279 BR10 EQU MT+27 0175777 L00 00279
000454 A 280 BR11 EQU MT+28 0173777 L00 00280
000455 A 281 BR12 EQU MT+29 0167777 L00 00281
000456 A 282 BR13 EQU MT+30 0157777 L00 00282
000457 A 283 BR14 EQU MT+31 0137777 L00 00283
000460 A 284 BR15 EQU MT+32 0077777 L00 00284
000461 A 285 NEG EQU MT+33 SET ALL BITS L00 00285
000462 A 286 LHW EQU MT+34 LEFT HALF WORD MASK 0177400 L00 00286
000463 A 287 RHW EQU MT+35 RIGHT HALF WORD MASK 0377 L00 00287
000421 A 288 ONE EQU MT+1 CONTAINS NUMBER 1 L00 00288
000422 A 289 TWO EQU MT+2 CONTAINS NUMBER 2 L00 00289
000464 A 290 THREE EQU MT+36 CONTAINS NUMBER 3 L00 00290
000423 A 291 FOUR EQU MT+3 CONTAINS NUMBER 4 L00 00291
000465 A 292 FIVE EQU MT+37 CONTAINS NUMBER 5 L00 00292
000466 A 293 SIX EQU MT+38 CONTAINS NUMBER 6 L00 00293
000467 A 294 SEVEN EQU MT+39 CONTAINS NUMBER 7 L00 00294

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000424 A 295 EIGHT EQU MT+4 CONTAINS NUMBER 8 L00 00295
000470 A 296 NINE EQU MT+40 CONTAINS NUMBER 9 L00 00296
000471 A 297 TEN EQU MT+41 CONTAINS NUMBER 10 L00 00297
000421 A 298 BM1 EQU MT+1 BIT MASK WORD 00001 L00 00298
000464 A 299 BM3 EQU MT+36 BIT MASK WORD 00003 L00 00299
000467 A 300 BM7 EQU MT+39 BIT MASK WORD 00007 L00 00300
000472 A 301 BM17 EQU MT+42 BIT MASK WORD 00017 L00 00301
000473 A 302 BM37 EQU MT+43 BIT MASK WORD 00037 L00 00302
000474 A 303 BM77 EQU MT+44 BIT MASK WORD 00077 L00 00303
000475 A 304 BM177 EQU MT+45 BIT MASK WORD 00177 L00 00304
000463 A 305 BM377 EQU MT+35 BIT MASK WORD 00377 L00 00305
000476 A 306 BM777 EQU MT+46 BIT MASK WORD 00777 L00 00306
000477 A 307 BM1777 EQU MT+47 BIT MASK WORD 01777 L00 00307
308 EJECT L00 00308
309 ***** L00 00309
310 * L00 00310
311 **** BIT TEST BIT DESIGNATION *** L00 00311
312 * L00 00312
313 ***** L00 00313
000040 A 315 RA0 EQU 040 BT JUMPS WHEN A REGISTER IS 0 L00 00315
000000 A 316 RA1 EQU 000 BT JUMPS WHEN A REGISTER IS 1 L00 00316
000060 A 317 RB0 EQU 060 BT JUMPS WHEN B REGISTER IS 0 L00 00317
000020 A 318 RB1 EQU 020 BT JUMPS WHEN B REGISTER IS 1 L00 00318
320 ***** L00 00320
321 * L00 00321
322 ** THE BIT CHECKED L00 00322
323 * L00 00323
324 ***** L00 00324
000000 A 326 B0 EQU 0 L00 00326
000001 A 327 B1 EQU 1 L00 00327
000002 A 328 B2 EQU 2 L00 00328
000003 A 329 B3 EQU 3 L00 00329
000004 A 330 B4 EQU 4 L00 00330
000005 A 331 B5 EQU 5 L00 00331
000006 A 332 B6 EQU 6 L00 00332
000007 A 333 B7 EQU 7 L00 00333
000010 A 334 B8 EQU 8 L00 00334
000011 A 335 B9 EQU 9 L00 00335
000012 A 336 B10 EQU 10 L00 00336
000013 A 337 B11 EQU 11 L00 00337
000014 A 338 B12 EQU 12 L00 00338
000015 A 339 B13 EQU 13 L00 00339
000016 A 340 B14 EQU 14 L00 00340
000017 A 341 B15 EQU 15 L00 00341
342 EJECT L00 00342
343 ***** L00 00343
344 * L00 00344
345 **** DEVICE AND FUNCTION CODES *** L00 00345
346 * L00 00346
347 ***** L00 00347
000047 A 349 **** REAL TIME CLOCK *** L00 00349
350 CLOCK EQU 047 DEVICE NUMBER 047 L00 00350
351 * L00 00351
000747 A 352 DISCLK EQU 0700+CLOCK DISABLE CLOCK L00 00352
000147 A 353 ENACLK EQU 0100+CLOCK ENABLE CLOCK L00 00353
354 IFF VORTEX-2 V2 00 00354
355 MPDVAD EQU 046 RAM ADDRESS V2 00 00355
357 * L00 00357
358 **** PIM *** L00 00358
000044 A 359 APIM EQU 044 ALL PIMS DEVICE NUMBER L00 00359
000040 A 360 PIM1 EQU 040 L00 00360
000041 A 361 PIM2 EQU 041 L00 00361
000042 A 362 PIM3 EQU 042 L00 00362
000043 A 363 PIM4 EQU 043 L00 00363
000040 A 364 PIM5 EQU 040 L00 00364
000040 A 365 PIM6 EQU 040 L00 00365
000040 A 366 PIM7 EQU 040 L00 00366
000040 A 367 PIM8 EQU 040 L00 00367
368 * L00 00368
000444 A 369 DISPIM EQU 0400+APIM L00 00369
000244 A 370 ENAPIM EQU 0200+APIM L00 00370
372 **** MEMORY PROTECT *** L00 00372
000045 A 373 MP EQU 045 DEVICE ADDRESS 045 L00 00373
000745 A 374 DISMP EQU 0700+MP DISABLE MEMORY PROTECT L00 00374
000645 A 375 ENAMP EQU 0600+MP ENABLE MEMORY PROTECT L00 00375
000045 A 376 MPMR0 EQU 0000+MP SELECT MASK REGISTER 0 L00 00376
000145 A 377 MPMR1 EQU 0100+MP SELECT MASK REGISTER 1 L00 00377
000245 A 378 MPMR2 EQU 0200+MP SELECT MASK REGISTER 2 L00 00378
000345 A 379 MPMR3 EQU 0300+MP SELECT MASK REGISTER 3 L00 00379
380 EJECT L00 00380
381 EJECT L00 00381
382 * CTBL FOR EACH CONTROLLER. L00 00382
000000 A 383 CTACT EQU 0 CONTROLLER ACTIVE IND.,1=ACTIVE ,BIT 15 L00 00383
000000 A 384 CTIDB EQU 0 CONTROLLER/DRIVER TIDB ADDR.,BITS 14-0 L00 00384
000001 A 385 CTADNC EQU 1 ADDR. OF NEXT CONTROLLER IN CHAIN L00 00385
000002 A 386 CTOPM EQU 2 OP-CODE MASK L00 00386
000003 A 387 CTDST EQU 3 ADDR. OF CURRENT DST L00 00387
000004 A 388 CTRQBK EQU 4 FIRST REQUEST BLOCK L00 00388
000005 A 389 CTRTRY EQU 5 ERROR RETRY CONSTANT,BITS 15-8 L00 00389
000005 A 390 CTRCNT EQU 5 V$ERR RETRY COUNTER ,BITS 7-0 L00 00390
000006 A 391 CTDVAT EQU 6 DEVICE ADDR. L00 00391
000007 A 392 CTIDA EQU 7 I/O ALGORITHM VALUE L00 00392
000010 A 393 CTSTAT EQU 8 DRIVER STATUS L00 00392

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000011	A	394	CTBICB	EQU	9	ADDR. FOR BIC FLAG TABLE, BITS 15-0	L00	00394
000012	A	395	CTFCB	EQU	10	FCB OR DCB ADDR.	L00	00395
000013	A	396	CTWDS	EQU	11	NO. OF WORDS TRANSFERED.	L00	00396
000014	A	397	CTFRCT	EQU	12	BITS 15-8, FREQUENCY CONSTANT	L00	00397
000014	A	398	CTFREQ	EQU	12	BITS 7-0, FREQUENCY COUNT	L00	00398
000015	A	399	CTSTSZ	EQU	13	NO. OF WORDS PER SECTOR FOR RMD ONLY	L00	00399
000016	A	400	CTRSZ	EQU	14	NO. OF SECTORS PER TRACK FOR RMD ONLY	L00	00400
000017	A	401	CTPST0	EQU	15	PST BASE ADDR, RMD, UNIT 0	L00	00401
000020	A	402	CTPST1	EQU	16	PST BASE ADDR, RMD, UNIT 1	L00	00402
000021	A	403	CTPST2	EQU	17	PST BASE ADDR, RMD, UNIT 2	L00	00403
000022	A	404	CTPST3	EQU	18	PST BASE ADDR, RMD, UNIT 3	L00	00404
405	*						L00	00405
406	*		EJEC				L00	00406
407	*		* DEVICE SPECIFICATION TABLE, DST				L00	00407
408	*		* DST FOR EACH DEVICE, AND EACH RMD PARTITION				L00	00408
409	*						L00	00409
000000	A	410	DSDVDN	EQU	0	DEVICE DOWN INDICATOR, 1=DOWN BIT 15	L00	00410
000000	A	411	DSDASS	EQU	0	DEVICE ASSGNMT INDICATOR, BITS 14-13	L00	00411
412	*					00 ASSIGNABLE BY JCP AND DPCOM	L00	00412
413	*					01 ASSIGNABLE BY DPCOM ONLY	L00	00413
414	*					10 UNASSIGNABLE	L00	00414
415	*					00 UNUSED	L00	00415
000000	A	416	DSUNAM	EQU	0	DEV NAME, CH. 3 B12-10, CH. 4 B9-4	L00	00416
417	*					ADD 0260 TO GET ASCII CHARACTER	L00	00417
000000	A	418	DSNRQ	EQU	0	DEVICE REQUEST COUNTER, BITS 3-0.	L00	00418
000001	A	419	DSNAME	EQU	1	DEVICE NAME, 2 ASCII CHAR.	L00	00419
000002	A	420	DSREWD	EQU	2	DEVICE REWIND INDICATOR, 1=REWIND, BIT 15	L00	00420
000002	A	421	DSUNTN	EQU	2	DEVICE UNIT NO., BITS 14-13	L00	00421
000002	A	422	DSLCKD	EQU	2	PARTITION LOCKOUT FLAG BIT 12	L00	00422
000002	A	423	DSOPCM	EQU	2	DPCOM DEVICE INDICATOR, BIT 11	L00	00423
000002	A	424	DSPSTI	EQU	2	INDEX TO PST, BITS 10-6.	L00	00424
000002	A	425	DSCTAD	EQU	2	INDEX TO CDTAD, CONTRLLR ADDR TABLE, B5-0.	L00	00425
426	*						L00	00426
427	*						L00	00427
428	*		EJEC				L00	00428
429	*		* CONTROLLER ADDRESS TABLE, COTAD				L00	00429
430	*		* 1 ENTRY FOR EACH CTBL.				L00	00430
431	*						L00	00431
000000	A	432	COTAD1	EQU	0	BASE ADDRESS FOR CONTROLLER TABLE	L00	00432
433	*						L00	00433
434	*		EJEC				L00	00434
435	*		* BIC FLAG TABLE				L00	00435
436	*		* 1 ENTRY FOR EACH BIC, EACH CONTROLLER TABLE, CTBL, WHICH				L00	00436
437	*		* UTILIZES A BIC CONTAINS AN ADDRESS, CTBICB, POINTING				L00	00437
438	*		* TO ITS BIC ENTRY.				L00	00438
439	*						L00	00439
000000	A	440	BICNUM	EQU	0	BIC NUMBER FOR THIS ENTRY.	L00	00440
441	*					POSITIVE VALUE MEANS BIC IS AVAILABLE	L00	00441
442	*					NEGATIVE VALUE, COMPLEMENTED BIC NO.,	L00	00442
443	*					MEANS BIC IS CURRENTLY IN USE.	L00	00443
444	*						L00	00444
445	*						L00	00445
446	*		EJEC				L00	00446
447	*		* REQUEST BLOCK, RQBLK				L00	00447
448	*		* 1 FOR EACH I/O REQUEST. RQBLKS ARE QUEUED ACCORDING TO TASK				L00	00448
449	*		* PRIORITY TO CTBL.				L00	00449
450	*						L00	00450
451	*						L00	00451
000000	A	452	RSTPR	EQU	0	BIT 15 = I/O COMPLETED INDICATOR.	L00	00452
453	*					BITS 14-5, DRIVER STATUS	L00	00453
454	*					BITS 4-0, REQUESTING TASK PRIORITY.	L00	00454
000001	A	455	ROPWD	EQU	1	BIT 15 = WAIT OPTION	L00	00455
456	*					BITS 14-12, MODE, USED BY DRIVERS	L00	00456
457	*					BITS 11-8, DR-CODE	L00	00457
458	*					BITS 7-0, LOGICAL UNIT NO.	L00	00458
000002	A	459	RFCB	EQU	2	FCB OR DCB ADDR.	L00	00459
000003	A	460	RTIDB	EQU	3	REQUESTING TASK TIDB ADDR.	L00	00460
000004	A	461	RADNR	EQU	4	ADDR. OF NEXT RQBLK IN QUEUE., 0= NONE.	L00	00461
462	*						L00	00462
463	*		EJEC				L00	00463
464	*						L00	00464
465	*		* PARTITION SPECIFICATION TABLE, PST				L00	00465
466	*						L00	00466
467	*		* A PST EXISTS FOR EACH ROTATING MEMORY DEVICE. EACH PARTITION				L00	00467
468	*		* ON THE RMD HAS A FIVE WORD ENTRY IN THE PST. THE PARTITION'S				L00	00468
469	*		* PST ENTRY NUMBER IS SPECIFIED IN THE DEVICE SPECIFICATION				L00	00469
470	*		* TABLE, DST, THUS LINKING THE PST WITH A LOGICAL UNIT NUMBER.				L00	00470
471	*		* THE EFFECTIVE ADDR FOR AN ENTRY IS FOUND AS FOLLOWS:				L00	00471
472	*						L00	00472
473	*						L00	00473
474	*					BITS 14-8, UNUSED	L00	00474
475	*		EJEC				L00	00475
476	*						L00	00476
477	*		* DATA CONTROL BLOCK, DCB				L00	00477
478	*						L00	00478
479	*		* A DCB IS REFERENCED BY EACH I/O REQUEST BLOCK, RQBLK, SPECIFY-				L00	00479
480	*		* ING A NON-ROTATING MEMORY DEVICE. DCB CONTAINS ADDITION INFOR-				L00	00480
481	*		* MATION NECESSARY TO COMPLETE THE I/O OPERATION.				L00	00481
482	*		* DCB IS A FIXED LENGTH TABLE OF 3 WORDS EACH. THE FCB IS THE DCB				L00	00482
483	*		* EQUIVALENT FOR RMD.				L00	00483
484	*						L00	00484
485	*						L00	00485
000000	A	486	DRECL	EQU	0	RECORD LENGTH	L00	00486

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000001 A 487 DBUFF EQU 1 USER BUFFER AREA L00 00487
000002 A 488 DCNT EQU 2 NO. OF COUNTS,USE FOR FUNC REQUESTS. L00 00488
489 * L00 00489
490 * L00 00490
491 * L00 00491
492 * L00 00492
493 * EJEC L00 00493
494 * L00 00494
495 * FILE CONTROL BLOCK, FCB L00 00495
496 * L00 00496
497 * A FCB IS REFERENCED BY EACH I/O REQUEST BLOCK,RQBLK, SPECIFY- L00 00497
498 * ING A ROTATING MEMORY DEVICE. FCB CONTAINS ADDITION INFORMA- L00 00498
499 * TION NECESSARY TO COMPLETE THE I/O INFORMATION ON RMD. L00 00499
500 * FCB IS A FIXED LENGTH TABLE OF 10 WORDS. L00 00500
501 * L00 00501
502 * L00 00502
000000 A 503 FRECL EQU 0 RECORD LENGTH L00 00503
000001 A 504 FBUFF EQU 1 BUFFER AREA L00 00504
000002 A 505 FACH EQU 2 ACCESS METHOD ,BITS 15-8 L00 00505
506 * 0 = DIRECT ACCESS BY LOGICAL RECORD. L00 00506
507 * 1 = SEQ ACCESS BY LOGICAL RECORD L00 00507
508 * 2 = DIRECT ACCESS USIN ACTUAL ADDR. L00 00508
509 * 4 = SEQ ACCESS USING ACTUAL ADDR L00 00509
510 * PROTECT KEY, BITS 7-0 L00 00510
000003 A 511 FCADR EQU 3 CURRENT RECORD NO.,OR CURRENT SECTOR ADDR L00 00511
000004 A 512 FCEOF EQU 4 CURRENT END OF FILE POSITION L00 00512
000005 A 513 FIFE EQU 5 BEGIN FILE EXTENT L00 00513
000006 A 514 FEFE EQU 6 END FILE EXTENT. L00 00514
000007 A 515 FNAM1 EQU 7 FILE NAME. CHAR N , CHAR N+1 L00 00515
000010 A 516 FNAM2 EQU 8 CHAR N+2, CHAR N+3 L00 00516
000011 A 517 FNAM3 EQU 9 CHAR N+4, CHAR N+5 L00 00517
518 * L00 00518
519 * EJEC L00 00519
520 * L00 00520
521 * L00 00521
522 * VORTEX STATUS 31/33 PRINTER/PLOTTER D.1 00 00522
523 * L00 00523
524 * THIS MODULE IS COMMON TO ALL STATUS MODELS ON THE SYSTEM D.1 00 00524
525 * L00 00525
526 * L00 00526
527 * THE MAJOR SUBCOMPONENTS OF THE DRIVER ARE: L00 00527
528 * L00 00528
529 * VZLPF - WRITE/FUNC INITIATOR 00 00529
530 * STS4 - WRITE PROCESSOR (PRINT/PLOT) 00 00530
531 * STS8 - FUNC PROCESSOR (FUNCTION) 00 00531
532 * STINT - INTERRUPT PROCESSOR 00 00532
533 * L00 00533
534 * L00 00534
535 * L00 00535
536 * 00 00536
537 * NAME V$CLPS D.1 00 00537
538 * EXT V$FNR,V$ERR,V$BIC D.1 00 00538
539 * NAME V$STEP,V$TOFM,V$SPAC,V$STBD D.1 00 00539
540 * 00 00540
541 * L00 00541
000015 A 542 CTBUFF EQU CTFREQ+1 STATUS BUFFER POINTER D.1 00 00542
000016 A 543 CTMODE EQU CTFREQ+2 FLAG FOR WRITE/PLOT D.1 00 00543
000017 A 544 CTATTR EQU CTFREQ+3 STATUS MODEL ATTRIBUTES D.1 00 00544
000020 A 545 CTEMP1 EQU CTFREQ+4 TEMPORARY STORAGE D.1 00 00545
000021 A 546 CTEMP2 EQU CTFREQ+5 TEMPORARY STORAGE D.1 00 00546
000022 A 547 CTEMP3 EQU CTFREQ+6 TEMPORARY STORAGE D.1 00 00547
000023 A 548 CTEMP4 EQU CTFREQ+7 TEMPORARY STORAGE D.1 00 00548
000024 A 549 CTEMP5 EQU CTFREQ+8 TEMPORARY STORAGE D.1 00 00549
000025 A 550 CWRT1 EQU CTFREQ+9 TEMPORARY STORAGE D.1 00 00550
000026 A 551 CWRT2 EQU CTFREQ+10 TEMPORARY STORAGE D.1 00 00551
000027 A 552 CTBEND EQU CTFREQ+11 ENDING ADDRESS FOR BIC TRANSFER D.1 00 00552
000030 A 553 CTCI EQU CTFREQ+12 STATUS CONTROL WORD D.1 00 00553
000031 A 554 CTDBFP EQU CTFREQ+13 POINTER TO USER BUFFER D.1 00 00554
000032 A 555 CSLIN EQU CTFREQ+14 RASTER STEP COUNTER D.1 00 00555
000033 A 556 CTLWID EQU CTFREQ+15 MAXIMUM LINE WIDTH CODE D.1 00 00556
000034 A 557 CTSIZE EQU CTFREQ+16 CURRENT PRINT SIZE CODE D.1 00 00557
000035 A 558 CTLINC EQU CTFREQ+17 RASTER LINES/CHARACTER D.1 00 00558
000036 A 559 CTTERM EQU CTFREQ+18 LINE TERMINATION CHARACTER D.1 00 00559
000037 A 560 CTENAB EQU CTFREQ+19 BUFFER BUSY FLAG D.1 00 00560
000040 A 561 CLINE EQU CTFREQ+20 MATRIX SCAN INDEX D.1 00 00561
000041 A 562 CINDX EQU CTFREQ+21 CHARACTER CONVERSION INDEX D.1 00 00562
000042 A 563 CBITPD EQU CTFREQ+22 SHIFT FACTOR FOR PACKING BUFFER D.1 00 00563
000043 A 564 CBITPT EQU CTFREQ+23 RASTER BIT POINTER TO USER BUFFER D.1 00 00564
000044 A 565 CWIDTH EQU CTFREQ+24 WIDTH OF MATRIX ROW IN BITS D.1 00 00565
000045 A 566 CTLSIZ EQU CTFREQ+25 LINE WIDTH IN CHARACTERS D.1 00 00566
000046 A 567 CTWRIT EQU CTFREQ+26 POINTER TO AUXILIARY WRITE ROUTINE D.1 00 00567
000047 A 568 CTFUNC EQU CTFREQ+27 POINTER TO AUXILIARY FUNC ROUTINE D.1 00 00568
000050 A 569 CTBUFA EQU CTFREQ+28 POINTER TO BEGINNING OF STATUS BUFFER D.1 00 00569
000051 A 570 CTEND EQU CTFREQ+29 POINTER TO END OF STATUS BUFFER D.1 00 00570
000052 A 571 CTLWCH EQU CTFREQ+30 MAXIMUM LINE WIDTH IN CHARACTERS D.1 00 00571
000053 A 572 CTLWWD EQU CTFREQ+31 MAXIMUM LINE WIDTH IN RASTER WORDS D.1 00 00572
000054 A 573 CTHCGS EQU CTFREQ+32 HARDWARE CHAR GEN SELECT CODE D.1 00 00573
000055 A 574 CTBUFF EQU CTFREQ+33 STATUS BUFFER D.1 00 00574
575 * 00 00575
000001 A 576 X EQU 1 L00 00576
000002 A 577 B EQU 2 L00 00577
578 * D.1 00 00578
579 * STATUS DRIVER ATTRIBUTE BITS (CTATTR) D.1 00 00579

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580 *
581 *      BITS 0-8
582 *
583 *      MODEL CODE
584 *      0=MODEL D
585 *      1=MODEL E
586 *      2=MODEL G
587 *      3=MODEL H
588 *      4=MODEL J
589 *      HAS HCG
590 *      HAS SIMULTANEOUS PRINT/PLOT OPTION
591 *      HAS HCG-41
592 *      HAS HCG-42
593 *      HAS SINGLE LINE BUFFER OPTION
594 *      MODEL 31 STATUS
595 *      NOT USED
596 *
597 *      EJEC
598 *
599 *
000000 000000 R 600 V$CLPS EQU *
000001 020300 A 601 LDB V$CTL GET CONTROLLER TIDB
000002 015006 A 602 LDX TBRSTS,B SET TO CONTROLLER TABLE
000003 006117 A 603 LDA CTDVAT,X GET DEVICE ADDRESS
000004 001544 R 604 ORAE SENSI AND SENSE NOT READY INSTRUCTION
000005 100444 A 605 EXC DISPIM DISABLE PIMS
000006 100747 A 606 EXC DTSClk DISABLE CLOCK
000007 054000 A 607 STA *+1
000010 101000 A 608 SEN C,ENAB GO ON STATUS NOT READY
000011 001403 R
000012 000012 R 609 STS0 EQU X
000013 001543 A 610 LDRA SENSO
000014 006306 A 611 JSR STS9,B TEST IF INPUT BUSY
000015 001440 R
000016 015052 A 612 LDA CTLWCH,X CHECK IF LINE WIDTH ALREADY CALCULATED
000017 001016 A 613 JANZ STS3A
000020 000045 R
000021 013017 A 614 LDA CTATTR,X GET ATTRIBUTE WORD
000022 150463 A 615 ANA RHW EXTRACT MODEL CODE WORD
000023 004203 A 616 ASLA 3 MULTIPLY BY 8
000024 055020 A 617 STA CTEMP1,X
000025 015033 A 618 LDA CTLWID,X GET LINE WIDTH CODE
000026 150464 A 619 ANA THREE EXTRACT TWO BITS
000027 004201 A 620 ASLA 1 MULTIPLY BY 2
000030 125020 A 621 ADD CTEMP1,X
000031 125030 A 622 ADD CTBUFA,X ADD ORIGIN OF LINE WIDTH TABLE
000032 005012 A 623 TAB
000033 016000 A 624 LDA 0,B GET PRINT LINE WIDTH (IN CHARS)
000034 055052 A 625 STA CTLWCH,X
000035 016001 A 626 LDA 1,2 GET PLOT LINE
000036 055053 A 627 STA CTLWID,X
000037 015033 A 628 LDA CTLWID,X GET LINE WIDTH CODE
000040 006442 A 629 BT RAO+B2, STS3A JUMP IF SLIB SPECIFIED
000041 000045 R
000042 015017 A 630 LDA CTATTR,X IF NOT, RESET SLIB BIT
000043 150456 A 631 ANA BR13 IN ATTRIBUTE WORD
000044 055017 A 632 STS3A EQU *
000045 000045 R 633 STS3A EQU *
000046 015050 A 634 LDA CTBUFA,X
000047 005001 A 635 STA CTBUFP,X INITIALIZE ADDRESS OF STATUS BUFFER
000050 055030 A 637 STA CTCL,X
000051 055016 A 638 STA CTMODE,X
000052 025004 A 639 LDB CTREQBK,X GET REQUEST BLOCK ADDRESS
000053 016001 A 640 LDA ROPND,B GET OP CODE, MODE
000054 055020 A 641 STA CTEMP1,X AND SAVE
000055 026002 A 642 LDB RFOCB,B GET CONTROL BLOCK ADDRESS
000056 004350 A 643 LORA 8
000057 150472 A 644 ANP BR17 EXTRACT OP CODE
000060 005311 A 645 DAR
000061 001010 P 646 JAZ STS4 WRITE
000062 000527 R
647 *
648 *      EJEC
649 *
650 *      FUNCTION OPERATION
651 *
652 *
653 *      COUNT = 0 TOP OF FORM
654 *      COUNT = 1 SINGLE SPACE
655 *      COUNT = 2 DOUBLE SPACE
656 *      COUNT = 7 BOTTOM OF FORM
657 *      COUNT = 8 STEP STATUS
658 *      COUNT = 10-17 SELECT CHARACTER SIZE/ORIENTATION
659 *      COUNT = 20 CUT PAPER
660 *      COUNT = 21 END CUT PAPER
661 *      COUNT = 40 DISABLE STATUS
662 *
663 *
664 *      FUNCTIONS INAPPROPRIATE TO A PARTICULAR MODEL, OR FUNCTION
665 *      CODES NOT SPECIFIED, ARE IGNORED BY THE DRIVER

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		666	*					00	00660
		667	*					00	00661
		668	*					L00	00662
		669	STS8	EQU	*			L00	00663
000063	006010	A	670	LDAI	-1			00	00664
000064	177777	A							
000065	055016	A	671	STA	CTMODE,X	CTMODE NEG = FUNC OPERATION		00	00665
			672	IFF	VORTEX-2		V2	00	00666
			673	ONE	MPDVAD,V\$ST3	SWITCH TO USER'S MAP	V2	00	00667
000066	016002	A	674	LDA	DCNT,B	GET COUNT FIELD		00	00668
			675	IFF	VORTEX-2			00	00669
			676	ONE	MPDVAD,V\$ST0	RESTORE MAP 0		00	00670
000067	055021	A	677	STA	CTEMP2,X	SAVE FUNCTION CODE	D.1	00	00671
000070	001010	A	678	JAZ	STS8A	TOP OF FORM	L00	00	00672
000071	000257	R							
000072	005311	A	679	DAR			L00	00	00673
000073	001010	A	680	JAZ	STS8B	SINGLE SPACE	L00	00	00674
000074	000270	R							
000075	005311	A	681	DAR			L00	00	00675
000076	001010	A	682	JAZ	STS8C	DOUBLE SPACE	L00	00	00676
000077	000301	R							
000100	140465	A	683	SUB	FIVE			00	00677
000101	001010	A	684	JAZ	STS8E	BOTTOM OF FORM		00	00678
000102	000311	R							
000103	005311	A	685	DAR				00	00679
000104	001016	A	686	JANZ	STS8D	JUMP IF NOT STEP FUNCTION	D.1	00	00680
000105	000112	R							
000106	006506	A	687	JSR	STEP,B	8 = STEP PLOTTER		00	00681
000107	000317	R							
000110	001000	A	688	JMP	STINT2	RETURN TO RTE		00	00682
000111	001002	R							
	000112	R	689	STS8D	EQU	*	D.1	00	00683
000112	140422	A	690	SUB	TWO		D.100	00	00684
000113	001004	A	691	JAN	STINT2	NOT VALID	D.100	00	00685
000114	001002	R							
000115	140424	A	692	SUB	EIGHT	CHECK IF 10-17 RANGE	D.100	00	00686
000116	001004	A	693	JAN	STS3B		D.100	00	00687
000117	000134	R							
000120	140422	A	694	SUB	TWO	CHECK IF CUT FUNCTION	D.100	00	00688
000121	001010	A	695	JAZ	STS3D		D.100	00	00689
000122	000175	R							
000123	005311	A	696	DAR		OR END CUT FUNCTION	D.100	00	00690
000124	001010	A	697	JAZ	STS3E		D.100	00	00691
000125	000201	R							
000126	006147	A	698	SUBE	D19	CHECK IF STATUS DISABLED	D.1	00	00692
000127	001526	R							
000130	001010	A	699	JAZ	STS3G		D.100	00	00693
000131	000220	R							
000132	001000	A	700	JMP	STINT2		D.100	00	00694
000133	001002	R							
			701	*			D.100	00	00695
			702	*			D.100	00	00696
			703	*	SIZE AND ORIENTATION CONTROL FUNCTIONS (10-17)		D.100	00	00697
			704	*			D.100	00	00698
			705	STS3B	EQU	*	D.100	00	00699
000134	000134	R	706	LDA	CTEMP2,X	GET FUNCTION CODE	D.100	00	00700
000135	140471	A	707	SUB	TEN		D.100	00	00701
000136	025017	A	708	LDB	CTATTR,X		D.100	00	00702
000137	006471	A	709	BT	RB0+B9,STS3B1	JUMP IF SOFTWARE CHAR GENERATOR	D.100	00	00703
000140	000154	R							
000141	006474	A	710	BT	RB0+B12,STINT2	OR NOT HCG-42	D.1	00	00704
000142	001002	R							
000143	005012	A	711	TAB			D.100	00	00705
000144	006016	A	712	LDAE	SIZTBL,B		D.100	00	00706
000145	001553	R							
000146	055034	A	713	STA	CTSIZE,X	SET CURRENT SIZE	D.100	00	00707
000147	006016	A	714	LDAE	FTBL,B		D.100	00	00708
000150	001563	R							
000151	055035	A	715	STA	CTLINC,X	SET LINE COUNTER	D.100	00	00709
000152	001000	A	716	JMP	STINT2	RETURN TO RTE	D.100	00	00710
000153	001002	R							
			717	*			D.100	00	00711
			718	STS3B1	EQU	*	D.100	00	00712
000154	000154	R	719	JAZ	STS3B2		D.100	00	00713
000155	000170	R							
000156	140423	A	720	SUB	FOUR		D.100	00	00714
000157	001016	A	721	JANZ	STINT2	INVALID FOR THIS MODEL	D.100	00	00715
000160	001002	R							
000161	010421	A	722	LDA	JNE		D.100	00	00716
000162	055034	A	723	STA	CTSIZE,X	SET TO LARGE CHAR SIZE	D.100	00	00717
			724	*	LARGE CHARACTER SIZE		D.100	00	00718
000163	015052	A	725	LDA	CTLNCH,X		D.100	00	00719
000164	004301	A	726	ASRA	:		D.100	00	00720
000165	055045	A	727	STA	CTLSIZ,X	SET LINE WIDTH IN CHARS	D.100	00	00721
000166	001000	A	728	JMP	STINT2		D.100	00	00722
000167	001002	R							
			729	*	SMALL CHARACTER SIZE		D.100	00	00723
			730	STS3B2	EQU	*	D.100	00	00724
000170	000170	R	731	STA	CTSIZE,X	SET TO NORMAL CHAR SIZE	D.100	00	00725
000171	015052	A	732	LDA	CTLNCH,X		D.100	00	00726
000172	055045	A	733	STA	CTLSIZ,X	SET LINE WIDTH IN CHARS	D.100	00	00727
000173	001000	A	734	JMP	STINT2		D.100	00	00728
000174	001002	R							

			735 *			D.100	00729
			736 *			00	00730
			737 *	FAPER CUT CONTROL FUNCTIONS (20,21)		D.100	00731
			738 *			00	00732
			739 *	PAPER CUT		D.100	00733
			740 STS3D	EQU *		D.100	00734
000175	000175	R	741	JSR STCUT,B	OUTPUT PAPER CUT COMMAND	D.100	00735
000176	000512	R					
000177	001000	A	742	JMP STINT2	RETURN TO RTE	00	00736
000200	001002	R					
			743 *	END PAPER CUT		D.100	00737
			744 STS3E	EQU *		D.100	00738
000201	000201	R	745	JSR STCUT,B	OUTPUT PAPER CUT COMMAND	D.100	00739
000202	000512	R					
000203	005001	A	746	TZA		00	00740
000204	055021	A	747	STA CTEMP2,X	RESET STEP COUNTER	D.100	00741
000205	006506	A	748 STS3F	JSR STEP,B	STEP PRINTER/PLOTTER	00	00742
000206	000317	R					
000207	015021	A	749	LDA CTEMP2,X		D.100	00743
000210	005111	A	750	IAR	INCREMENT STEP COUNTER	00	00744
000211	055021	A	751	STA CTEMP2,X		D.100	00745
000212	006140	A	752	SUBI 3400		00	00746
000213	006510	A					
000214	001010	A	753	JAZ STINT2	RETURN TO RTE	D.100	00747
000215	001002	R					
000216	001000	A	754	JMP STS3F	DO ANOTHER STEP	00	00748
000217	000205	R					
			755 *	DISABLE STATOS (IF STATOS 31 ONLY)		D.100	00749
			756 *			D.100	00750
			757 STS3G	EQU *		D.100	00751
000220	000220	R	758	LDA CATTR,X		D.100	00752
000221	006456	A	759	BT RAO+B14,STINT2	IGNORE IF STATOS 33	D.100	00753
000222	001002	R					
000223	006017	A	760	LDAE SENS0		D.100	00754
000224	001543	R					
000225	006506	A	761	JSR STS9,B	CHECK INPUT BUSY	D.100	00755
000226	001440	R					
000227	015006	A	762	LDA CTDVAT,X		D.100	00756
000230	110440	A	763	DRA BS15		D.100	00757
000231	100444	A	764	EXC DISPIM		D.100	00758
000232	100747	A	765	EXC DISCLK		D.100	00759
000233	054000	A	766	STA DISAB1		D.100	00760
000234	100000	A	767 DISAB1	EXC 0	STATOS CONTROL SELECT	D.100	00761
000235	006017	A	768	LDAE SENS3		D.100	00762
000236	001543	R					
000237	006506	A	769	JSR STS9,B	TEST IF PAPER CONTROL BUSY	D.100	00763
000240	001440	R					
000241	100444	A	770	EXC DISPIM		D.100	00764
000242	100747	A	771	EXC DISCLK		D.100	00765
000243	015006	A	772	LDA CTDVAT,X		D.100	00766
000244	110440	A	773	DRA BS15		D.100	00767
000245	006117	A	774	DRAE D31		D.100	00768
000246	001527	R					
000247	054002	A	775	STA DISAB4		D.100	00769
000250	006017	A	776	LDAE DISABL		D.100	00770
000251	001533	R					
000252	103100	A	777 DISAB4	DAR 0	DISABLE STATOS	D.100	00771
000253	100147	A	778	EXC ENACKL		D.100	00772
000254	100244	A	779	EXC ENAPIM		D.100	00773
000255	001000	A	780	JMP STINT2	RETURN TO RTE	D.100	00774
000256	001002	R					
			781	EJEC		00	00775
			782 *			00	00776
			783 *	PAPER MOVEMENT CONTROL FUNCTIONS (0,1,2,7,8)		00	00777
			784 *			00	00778
			785 *			00	00779
			786 *	TOP OF FORM		00	00780
			787 *			00	00781
			788 STS8A	EQU *		00	00782
000257	000257	R	789	STB CTEMP2,X	SAVE B REGISTER	00	00783
000260	006506	A	790	JSR TOFM,B	TOP OF FORM	00	00784
000261	000423	R					
000262	025021	A	791	LDB CTEMP2,X	RECOVER B REGISTER	00	00785
000263	015010	A	792	LDA CTSTAT,X	GET DRIVER STATUS	00	00786
000264	001010	A	793	JAZ STINT2	PREPARE TO EXIT FROM DRIVER	00	00787
000265	001002	R					
000266	001000	A	794	JMP STS4B1		D.100	00788
000267	000714	R					
			795 *			00	00789
			796 *	SINGLE SPACE		00	00790
			797 *			00	00791
			798 STS8B	EQU *		00	00792
000270	000270	R	799	STB CTEMP2,X	SAVE B REGISTER	00	00793
000271	006506	A	800	JSR SPAC,B	SPACE ONE LINE	00	00794
000272	000365	R					
000273	025021	A	801	LDB CTEMP2,X	RECOVER B REGISTER	00	00795
000274	015010	A	802	LDA CTSTAT,X	GET DRIVER STATUS	00	00796
000275	001010	A	803	JAZ STINT2		00	00797
000276	001002	R					
000277	001000	A	804	JMP STS4B1		D.100	00798
000300	000714	R					
			805 *			00	00799
			806 *	DOUBLE SPACE		00	00800

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000301 065021 A 807 *
000302 065021 A 808 STS8C EQU *
000303 006506 A 809 STB CTEMP2,X SAVE B REGISTER
000304 006506 A 810 JSR SPAC,B SPACE TWO LINES
000305 000365 R 811 JSR SPAC,B
000306 025021 A 812 LDB CTEMP2,X RECOVER B REGISTER
000307 001000 A 813 JMP STINT2
000310 001002 R

814 *
815 * BOTTOM OF FORM
816 *
000311 065021 A 817 STS8E EQU *
000312 006506 A 818 STB CTEMP2,X SAVE B REGISTER
000313 000466 R 819 JSR BDFM,B BOTTOM OF FORM
000314 025021 A 820 LDB CTEMP2,X RECOVER B REGISTER
000315 001000 A 821 JMP STINT2
000316 001002 R

822 *
823 *
824 * STEP STATUS ROUTINE
825 *
000317 000317 R 826 V$STEP EQU *
000317 000317 R 827 STEP EQU *
000320 065025 A 828 STB CWRT1,X SAVE RETURN LOCATION
000321 001545 R 829 LDAE SENS3
000322 006506 A 830 JSR STS9,B TEST IF PAPER CONTROL BUSY
000323 001440 R
000324 015006 A 831 LDA CTDVAT,X
000325 110440 A 832 ORA BS15
000326 100444 A 833 EXC DISPIM
000327 100747 A 834 EXC DISCLK
000330 054003 A 835 STA STEP1A
000331 006117 A 836 ORAE D31
000332 001527 R
000333 054006 A 837 STA STEP2A
000334 100000 A 838 EXC 0 STATUS CONTROL SELECT
000335 020300 A 839 LDB V$CTL GET CONTROLLER TIDB
000336 005001 A 840 TZA
000337 056003 A 841 STA TBEVNT,B
000340 006017 A 842 LDAE STP1
000341 001552 R
000342 103100 A 843 STEP2A ORA 0 PLOT MODE/STEP
844 DELAY 1000,0,2 WAIT FOR INTERRUPT

000343 006505 A
000344 000406 A
000345 001102 A
000346 001750 A
000347 000000 A

845 *
846 * RETURN HERE AFTER PAPER CONTROL INTERRUPT
847 *
000350 020300 A 848 LDB V$CTL GET CONTROLLER TIDB
000351 036010 A 849 LDX TBRSTS,B GET CONTROLLER TABLE
000352 016001 A 850 LDA TBST,B
000353 150447 A 851 ANA BR6 RESET DELAY TIMER BIT
000354 150444 A 852 ANA BR3
000355 056001 A 853 STA TBST,B
000356 016003 A 854 LDA TBEVNT,B
000357 001010 A 855 JAZ STS7 TIMEOUT
000360 001356 R
000361 045032 A 856 STEP1 EQU *
000362 000362 R 857 INR CSLIN,X STEP RASTER COUNT
000363 025025 A 858 STEP2 EQU *
000363 006706 A 859 LDB CWRT1,X
000364 000000 A 860 IJMP 0,P RETURN

861 *
862 *
863 *
864 * SPACE STATUS ONE ASCII LINE
865 *
000365 000365 R 866 V$SPAC EQU *
000365 000365 R 867 SPAC EQU *
000366 065026 A 868 STB CWRT2,X SAVE RETURN ADDR
000367 015017 A 869 LDA CTATTR,X
000370 000410 R 870 BT RA0+B9,SPAC2 JUMP IF NO HCG
000371 006010 A 871 LDAI LNFD LOAD LINE FEED CODE
000372 001551 R
000373 055015 A 872 STA CTBUFP,X SET UP ADDRESSES FOR BIC XFER
000374 055027 A 873 STA CTBEND,X
000375 015054 A 874 LDA CTHCGS,X LOAD HCG SELECT
000376 055030 A 875 STA CTCI,X
000377 006506 A 876 JSR STED,B GO DO LINE FEED
000400 001131 R
000401 015032 A 877 LDA CSLIN,X BUMP RASTER COUNTER BY NO OF STEPS
000402 006125 A 878 ADDE CTLINC,X
000403 000035 A
000404 055032 A 879 STA CSLIN,X

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000405 000405 R 880 SPAC1 EQU *
000405 025026 A 881 LDB CWRT2,X GET RETURN ADDR D.1 00 00874
000406 006706 A 882 IJMP 0,B D.1 00 00875
000407 000000 A
000410 015035 A 883 SPAC2 LDA CTLINC,X GET RASTER LINES/CHARACTER D.1 00 00877
000411 055047 A 884 STA CTFUNC,X SET STEP COUNT E.1 *****
000412 006506 A 885 SPAC3 JSR STEP,B STEP STATUS D.1 00 00879
000413 000317 R
000414 015047 A 886 LDA CTFUNC,X E.1 *****
000415 005311 A 887 JAR E.1 *****
000416 055047 A 888 STA CTFUNC,X E.1 *****
000417 001010 A 889 JAZ SPAC1 D.1 00 00883
000420 000405 R
000421 001000 A 890 JMP SPAC3 D.1 00 00884
000422 000412 R
891 *
892 *
893 * POSITION STATUS TO TOP OF FORM
894 *
000423 R 895 VSTDFM EQU *
000423 000423 R 896 TDFM EQU * D.1 00 00889
000423 065044 A 897 STB CWIDTH,X SAVE RETURN LOCATION D.1 00 00890
000424 000424 R 898 TDFM1 EQU * L.00 00891
000424 006506 A 899 JSR BOFM,B SET BOF FLAG IN STATUS 31 L.00 00892
000425 000466 R
000426 000426 R 900 TDFMA EQU * L.00 00894
000426 006506 A 901 JSR TDFBS,B BUILD SENSE BOF INST 00 00895
000427 000434 R
000430 101000 A 902 TDFMB SEN 0,TDFZF IF FLAG SET THEN HAVE Z FOLD 00 00896
000431 000444 R
000432 006506 A 903 TDFR1 JSR STEP,B MOVE PAPER 00 00897
000433 000317 R
000434 015032 A 904 LDA CSLIN,X LINE COUNT 00 00898
000435 006140 A 905 SUBI 106 00 00899
000436 000152 A
000437 001004 A 906 JAN TDFR1 IF NOT AT TOF YET 00 00900
000440 000432 R
000441 025044 A 907 TDFMC LDB CWIDTH,X RECOVER RETURN ADDRESS D.1 00 00901
000442 006706 A 908 IJMP 0,B RETURN 00 00902
000443 000000 A
909 *
000444 006506 A 910 TDFZF JSR STEP,B MOVE PAPER 00 00903
000445 000317 R
000446 006506 A 911 JSR TDFBS,B BUILD SENSE BOF INST 00 00905
000447 000434 R
000450 101000 A 912 TDFZ1 SEN 0,TDFZF IF FLAG STILL SET, CONTINUE 00 00906
000451 000444 R
000452 001000 A 913 JMP TDFMC 00 00907
000453 000441 R
914 *
000454 R 915 TDFBS EQU *
000454 100444 A 916 EXC DISPIM 00 00908
000455 100747 A 917 EXC DISCLK 00 00909
000456 015006 A 918 LDA CTDVAT,X DEVICE ADDR 00 00910
000457 006117 A 919 DRAB SENSE6 BUILD SENSE INSTR D.1 00 00918
000460 001547 R
000461 056000 A 920 STA 0,B STORE AT RETURN 00 00914
000462 100147 A 921 EXC ENACKL 00 00915
000463 100244 A 922 EXC ENAPIM 00 00916
000464 006706 A 923 IJMP 0,B 00 00917
000465 000000 A
924 *
925 *
926 * POSITION STATUS TO BOTTOM OF FORM
927 *
000466 R 928 BOFM EQU *
000466 065026 A 929 STB CWRT2,X SAVE RETURN LOCATION L.00 00920
000467 000467 R 930 BOFM1 EQU * L.00 00921
000467 006506 A 931 JSR TDFBS,B BUILD SENSE FOR INSTRUCTION L.00 00922
000470 000434 R
000471 101000 A 932 SEN 0,BOFM2 GO IF AT BOF MARK 00 00924
000472 000505 R
000473 006506 A 933 JSR STEP,B MOVE PAPER 00 00927
000474 000317 R
000475 015032 A 934 LDA CSLIN,X 00 00928
000476 001002 A 935 JAP *+3 00 00929
000477 000501 R
000500 005211 A 936 CPA DONT ALLOW NEGATIVE VALUES 00 00930
000501 006140 A 937 SUBI 1120 RASTERS PER PAGE (PLUS SLACK) E.1 *****
000502 002140 A
938 *
000502 000502 R 939 V$STPL NAME V$STPL E.1 *****
000503 001004 A 940 BES 0 E.1 *****
000504 000467 R 941 JAN BOFM1 LOOP UNTIL COUNT EXCEEDS 11 INCH PAPER 00 00932
000505 000505 R
000505 025026 A 942 BOFM2 EQU * 00 00933
000506 005001 A 943 LDB CWRT2,X 00 00934
000507 055032 A 944 TZA 00 00935
000510 006706 A 945 STA CSLIN,X RESET LINE COUNT 00 00936
000511 000000 A 945 IJMP 0,B RETURN 00 00937
946 *
947 *
948 *
948 * CUT PAPER ROUTINE
948 *

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Address	Op	Label	Code	Comment	Page	Line
000512	R	949 STCUT	EQU *		00	00941
000512	A	950	STB	CWRT1,X SAVE RETURN ADDRESS	00	00942
000513	A	951	LDAI	NOB OUTPUT CHARACTER	00	00943
000514	R					
000515	A	952	STA	CTBUFF,X	00	00944
000516	A	953	STA	CTBEND,X	00	00945
000517	A	954	LDAE	RASCUT RASTER/CUT CODES	D.1	00 00946
000520	R					
000521	A	955	STA	CTCI,X	00	00947
000522	A	956	JSR	STBD,B	00	00948
000523	R					
000524	A	957	LDB	CWRT1,X GET RETURN ADDRESS	00	00949
000525	A	958	IJMP	0,B	00	00950
000526	A					
		959	EJEC		00	00951
		960	*		L00	00952
		961	*		L00	00953
		962	*		L00	00954
		963	*	WRITE OPERATION	L00	00955
		964	*		L00	00956
		965	*		L00	00957
		966	*		D.1	00 00958
		967	*	MODE 1 = ASCII PRINT MODE	D.1	00 00959
		968	*	MODE 3 = PLOT MODE	D.1	00 00960
		969	*	MODE 4 = SIZE/ORIENTATION PRINT MODE (31-142 HCG ONLY)	D.1	00 00961
		970	*	MODE 5 = SIMULTANEOUS PRINT MODE (31-151 OPTION ONLY)	D.1	00 00962
		971	*	MODE 6 = SIMULTANEOUS PLOT MODE (31-151 OPTION ONLY)	D.1	00 00963
		972	*		D.1	00 00964
		973	*	ALL OTHER MODES DEFAULT TO MODE 1	D.1	00 00965
		974	*		D.1	00 00966
		975	STS4	EQU *	L00	00967
000527	A	976	LDA	CTEMP1,X	L00	00968
000530	A	977	LSRA	12	L00	00969
000531	A	978	ANA	BM7	00	00970
000532	A	979	STA	CTMODE,X EXTRACT WRITE MODE	00	00971
000533	A	980	SUB	SIX	00	00972
000534	A	981	JAZ	STSM6	00	00973
000535	R					
000536	A	982	LDAE	SENS4	D.1	00 00974
000537	R					
000540	A	983	JSR	STS9,B TEST IF BUFFER BUSY	D.1	00 00975
000541	R					
000542	A	984	LDB	CTRQBK,X GET REQUEST BLOCK ADDRESS	D.1	00 00976
000543	A	985	LDB	RFCB,B GET CONTROL BLOCK ADDRESS	00	00977
000544	A	986	LDA	CTMODE,X GET MODE	00	00978
000545	A	987	SUB	THREE	00	00979
000546	A	988	JAZ	STSM3	00	00980
000547	R					
000550	A	989	DAR	MODE 4	00	00981
000551	A	990	JAZ	STSM4	D.1	00 00982
000552	R					
000553	A	991	DAR	MODE 5	00	00983
000554	A	992	JAZ	STSM5	D.1	00 00984
000555	R					
		993	*		00	00985
		994	*		00	00986
		995	*	PRINT MODE - MODE 1 OR DEFAULT ANY MODE	D.1	00 00987
		996	*	OTHER THAN 3,4,5 OR 6	D.1	00 00988
		997	*		00	00989
		998	*		00	00990
000556	A	999	LDA	RS0	D.1	00 00991
000557	A	1000	STA	CTSTAT,X SET STATUS FOR FORMATTED PRINT	D.1	00 00992
000560	A	1001	STA	CTMODE,X	D.1	00 00993
000561	A	1002	LDA	CTATTR,X	D.1	00 00994
000562	A	1003	BT	RA0+B9,STS4E DOES MODEL HAVE HCG? JUMP IF NOT	D.1	00 00995
000563	R					
000564	R	1004	STS1D	EQU *	D.1	00 00996
000565	A	1005	LDA	CTATTR,X	D.1	00 00997
000566	A	1006	BT	RA1+B12,STSM1G TEST IF HCG-42	D.1	00 00998
000567	R					
000567	A	1007	LDA	CTHCGS,X GET HCG-41 SELECT CODE	D.1	00 00999
000570	A	1008	JMP	STSM41	D.1	00 01000
000571	R					
000572	R	1009	STSM1G	EQU *	D.1	00 01001
000573	A	1010	LDAE	LFTBL	D.1	00 01002
000574	A	1011	STA	CTLINC,X SET LINE INCREMENT = SMALL/UP	D.1	00 01003
000575	A	1012	LDAE	SMUPLO	D.1	00 01004
000576	R					
000577	A	1013	STAE*	CTBUFF,X SET WORD 1 OF BUFFER =SMALL UPRIGHT/SLO	00	01005
000600	A	1014	INR	CTBUFF,X	D.1	00 01006
000601	A	1015	JMP	STSM31	D.1	00 01007
000602	R					
000603	R					
		1016	*		00	01006
		1017	*	MODE 4	D.1	00 01009
		1018	*		00	01010
000604	R	1019	STSM4	EQU *	D.1	00 01011
000605	A	1020	LDA	CTATTR,X	D.1	00 01012
000606	A	1021	BT	RA0+B12,STINT2 IF NOT HCG-42,IGNORE	D.1	00 01013
000607	R					
000610	A	1022	LDA	CTSIZE,X	D.1	00 01014
000610	A	1023	STAE*	CTBUFF,X SET TO SELECT SIZE/ORIENTATION	D.1	00 01015

000611	100015	A							
000612	045015	A	1024	INR	CTBUFF,X				D.1 00 01016
000613	001000	A	1025	JMP	STSM31				D.1 00 01017
000614	000635	R							
			1026	*					D.1 00 01018
			1027	*	MODE 5				D.1 00 01019
			1028	*					D.1 00 01020
	000615	R	1029	STSM5	EQU	*			D.1 00 01021
000615	015017	A	1030	LDA	CTATTR,X				D.1 00 01022
000616	006452	A	1031	BT	RA0+B10,STINT2	JUMP IF NO SIMULTANEOUS PRINT PLOT			D.1 00 01023
000617	001002	R							
000620	006413	A	1032	BT	RA1+B11,STSM51	DR IF HCG-41			D.1 00 01024
000621	000626	R							
000622	015034	A	1033	LDA	CTSIZE,X				D.1 00 01025
000623	006055	A	1034	STAE*	CTBUFF,X	SET TO SELECT SIZE/ORIENTATION			D.1 00 01026
000624	100015	A							
000625	045015	A	1035	INR	CTBUFF,X				D.1 00 01027
	000626	R	1036	STSM51	EQU	*			D.1 00 01028
000626	006010	A	1037	LDA	0752				D.1 00 01029
000627	000752	A							
000630	006055	A	1038	STAE*	CTBUFF,X	SET TO SELECT PLOT MODE/MAX SPEED			D.1 00 01030
000631	100015	A							
000632	045015	A	1039	INR	CTBUFF,X				D.1 00 01031
000633	001000	A	1040	JMP	STSM32				D.1 00 01032
000634	000642	R							
	000635	R	1041	STSM31	EQU	*			D.1 00 01033
000635	006010	A	1042	LDA	0751				D.1 00 01034
000636	000751	A							
000637	006055	A	1043	STAE*	CTBUFF,X	SET TO SELECT PRINT MODE/MAX SPEED			D.1 00 01035
000640	100015	A							
000641	045015	A	1044	INR	CTBUFF,X				D.1 00 01036
000642	015054	A	1045	STSM32	LDA	CTHCGS,X	GET HCG-42 SELECT CODE		D.1 00 01037
000643	055030	A	1046	STSM41	STA	CTCI,X	SET CONTROL SELECT TO HCG SELECT		D.1 00 01038
000644	015015	A	1047	LDA	CTBUFF,X				D.1 00 01039
000645	004241	A	1048	LRLA	1	CREATE STORE BYTE POINTER			D.1 00 01040
000646	055043	A	1049	STA	UBITPT,X				D.1 00 01041
			1050	IFF	VORTEX-2				V2 00 01042
			1051	ONE	MPDVAD,V\$ST3	SWITCH TO USER'S MAP			V2 00 01043
000647	016000	A	1052	LDA	DRECL,B	CHECK IF RECORD SIZE LARGER THAN BUFR			V2 00 01044
			1053	IFF	VORTEX-2				V2 00 01045
			1054	ONE	MPDVAD,V\$ST0	RESTORE MAP 0			V2 00 01046
000650	055013	A	1055	STA	CTWDS,X				V2 00 01047
000651	004201	A	1056	ASLA	1	MAKE CHARACTER COUNT			D.1 00 01048
000652	005311	A	1057	DAR					D.1 00 01049
000653	055041	A	1058	STA	CINDX,X	SAVE IT			D.1 00 01050
000654	145052	A	1059	SUB	CTLWCH,X				D.1 00 01051
000655	005311	A	1060	DAR					00 01052
000656	001004	A	1061	JAN	STS4A	JUMP IF OK SIZE			?? 01053
000657	000664	R							
	000660	A	1062	LDA	CTLWCH,X				D.1 00 01054
000661	055041	A	1063	STA	CINDX,X				D.1 00 01055
000662	004341	A	1064	LSRA	1	SET UP NUMBER OF WORDS TRANSFERRED			D.1 00 01056
000663	055013	A	1065	STA	CTWDS,X				D.1 00 01057
000664	015050	A	1066	STSM4A	LDA	CTBUFA,X	GET ADDR OF STATUS BUFFER		00 01058
000665	120422	A	1067	ADD	TWO				00 01059
000666	055015	A	1068	STA	CTBUFF,X	POINT TO IT			00 01060
			1069	IFF	VORTEX-2				V2 00 01061
			1070	ONE	MPDVAD,V\$ST3	SELECT USER'S MAP			V2 00 01062
000667	016001	A	1071	LDA	DBUFF,B	GET ADDR OF USER'S BUFFER			V2 00 01063
			1072	IFF	VORTEX-2				V2 00 01064
			1073	ONE	MPDVAD,V\$ST0	RESTORE MAP 0			V2 00 01065
000670	055031	A	1074	STA	CTDBFP,X	SET POINTER TO USER'S BUFFER			V2 00 01066
			1075	IFT	VORTEX-2				V2 00 01067
			1076	GOTO	ENDC02				V2 00 01068
			1077	STSM4B	LDB	CTDBFP,X	POINTER TO USER'S DATA BUFFER		V2 00 01069
			1078	ONE	MPDVAD,V\$ST3	USER'S MAP			V2 00 01070
			1079	LDA	0,2	PICK UP TWO CHARS			V2 00 01071
			1080	ONE	MPDVAD,V\$ST0	MAP 0			V2 00 01072
			1081	ENDC02	CONT				V2 00 01073
			1082	IFT	VORTEX-2				V2 00 01074
000671	006015	A	1083	STSM4B	LDAE*	CTDBFP,X	GET FIRST WORD OF USER BUFFER		00 01075
000672	100031	A							
000673	055023	A	1084	STA	CTEMP4,X				D.1 00 01076
000674	015010	A	1085	LDA	CTSTAT,X				D.1 00 01077
000675	001010	A	1086	JAZ	STS4D	JUMP IF NOT FORMATTED PRINT			D.1 00 01078
000676	000723	R							
000677	015023	A	1087	LDA	CTEMP4,X				D.1 00 01079
000700	055010	A	1088	STA	CTSTAT,X				D.1 00 01080
000701	025015	A	1089	LDB	CTBUFF,X				D.1 00 01081
000702	150462	A	1090	ANA	LHW	LOOK AT FIRST CHARACTER			D.1 00 01082
000703	004350	A	1091	LSRA	8				D.1 00 01083
000704	144623	A	1092	SUB	D260				D.1 00 01084
000705	001010	A	1093	JAZ	STS8B	SKIP LINE BEFORE PRINT			D.1 00 01085
000706	000270	R							
000707	005311	A	1094	DAR					D.1 00 01086
000710	001010	A	1095	JAZ	STS8A	TOP OF FORM BEFORE PRINT			D.1 00 01087
000711	000257	R							
000712	001000	A	1096	JMP	STS4B2				D.1 00 01088
000713	000717	R							
	000714	R	1097	STSM4B1	EQU	*			D.1 00 01089
000714	065015	A	1098	STB	CTBUFF,X	RESTORE STATUS BUFFER POINTER			D.1 00 01090
000715	015010	A	1099	LDA	CTSTAT,X	AND FIRST CHARACTER			D.1 00 01091
000716	055023	A	1100	STA	CTEMP4,X				00 01092

Address	Op	Label	Code	Description	Mode	Value
000717	R	1101 STS4B2	EQU	*	D.1	00 01093
000717	A	1102	TZA		D.1	00 01094
000720	A	1103	STA	CTSTAT,X		00 01095
000721	A	1104	JMP	STS5A		00 01096
000722	R	1105	*		D.1	00 01097
		1106	IFT	VORTEX-2	V2	00 01098
		1107	GOTO	ENDC06	V2	00 01099
		1108	LDR	CTDBFP,X	V2	00 01100
		1109	DME	MPDVAD,V\$ST3	V2	00 01101
		1110	LDA	0,B	V2	00 01102
		1111	DME	MPDVAD,V\$ST0	V2	00 01103
		1112	ENDC06	CONT	V2	00 01104
		1113	IFT	VORTEX-2	V2	00 01105
		1114	STS4D	LDAEM	V2	00 01106
000723	A	1115	STA	CTEMP4,X	D.1	00 01107
000724	A	1116	LSRA	8	D.1	00 01108
000725	A	1117	JSR	SBT,B	D.1	00 01109
000726	R	1118	LDA	CINDX,X	D.1	00 01110
000727	A	1119	DAR		D.1	00 01111
000728	A	1120	JAZ	STS4C	D.1	00 01112
000729	R	1121	STA	CINDX,X	D.1	00 01113
000730	R	1122	STS5A	EQU	D.1	00 01114
000731	A	1123	LDA	CTEMP4,X	D.1	00 01115
000732	A	1124	ANA	RHW	D.1	00 01116
000733	A	1125	JSR	SBT,B	D.1	00 01117
000734	R	1126	LDA	CINDX,X	D.1	00 01118
000735	A	1127	DAR		D.1	00 01119
000736	A	1128	JAZ	STS4C	D.1	00 01120
000737	R	1129	STA	CINDX,X	D.1	00 01121
000738	A	1130	INR	CTDBFP,X	D.1	00 01122
000739	A	1131	INR	CTBUFF,X	D.1	00 01123
000740	A	1132	JMP	STS4D	D.1	00 01124
000741	R	1133	STS4C	EQU	D.1	00 01125
000742	A	1134	LDA	CTTERM,X	D.1	00 01126
000743	A	1135	JSR	SBT,B	D.1	00 01127
000744	R	1136	LDA	CBITPT,X	D.1	00 01128
000745	A	1137	DAR		D.1	00 01129
000746	A	1138	LSRA	1	D.1	00 01130
000747	A	1139	STA	CTBEND,X	D.1	00 01131
000748	A	1140	LDA	CTBUFA,X	D.1	00 01132
000749	A	1141	STA	CTBUFF,X	D.1	00 01133
000750	A	1142	STS4C2	JSR	D.1	00 01134
000751	R	1143	STS4C3	EQU	D.1	00 01135
000752	A	1144	LDA	CTLIN,X	00	01136
000753	A	1145	ADD	CSLIN,X	00	01137
000754	A	1146	STA	CSLIN,X	00	01138
000755	R	1147	STS4C8	EQU	D.1	00 01139
000756	A	1148	EXC	DISPIM	D.1	00 01140
000757	A	1149	EXC	DISCLK	D.1	00 01141
000758	A	1150	LDA	CTATTR,X	D.1	00 01142
000759	A	1151	BT	RAC+B10,STINT2	D.1	00 01143
000760	R	1152	LDA	CTMODE,X	D.1	00 01144
000761	A	1153	SUB	SIX	D.1	00 01145
000762	A	1154	JAZ	STS4C6	D.1	00 01146
000763	R	1155	STINT2	LDB	00	01151
000764	A	1156	LDA	CTRQBK,X	00	01152
000765	A	1157	ANA	RSTPR,B	00	01153
000766	A	1158	STA	BM37	00	01154
000767	A	1159	JMP	RSTPR,B	00	01155
000768	E	1160	STS4C5	STA	D.1	00 01156
000769	A	1161	LDB	CTEMP1,X	D.1	00 01157
000770	A	1162	LDA	CTRQBK,X	D.1	00 01158
000771	A	1163	ANA	RSTPR,B	D.1	00 01159
000772	A	1164	ORA	BM37	D.1	00 01160
000773	A	1165	STA	CTEMP1,X	D.1	00 01161
000774	A	1166	JMP	RSTPR,B	D.1	00 01162
000775	E	1167	STS4C6	EQU	D.1	00 01163
000776	R	1168	LDA	CTDVAT,X	D.1	00 01164
000777	A	1169	ORA	SENS4	D.1	00 01165
000778	A	1170	STA	*+1	D.1	00 01166
000779	A	1171	REN	0,STS4C7	D.1	00 01167
000780	R	1172	JMP	STINT2	D.1	00 01168
000781	R	1173	STS4C7	EQU	D.1	00 01169
000782	A	1174	LDA	N340	D.1	00 01170
000783	A	1175	JMP	STS4C5	D.1	00 01171
000784	*	1176	*		00	01172
000785	*	1177	*	BUILD -JSR- TO AUXILIARY WRITE ROUTINE	D.1	00 01173

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1179 * TO USE SOFTWARE CHARACTER GENERATOR
1179 *
001032 R 1180 STS4E EQU *
001033 015046 A 1181 LDA CTWRIT,X GET ENTRY TO AUXILIARY WRITE
001034 100444 A 1182 EXC DISPIM
001035 100747 A 1183 EXC DISCLK
001036 054001 A 1184 STA STS4E1 PUT DESTINATION IN JSR
001037 006506 A 1185 JSR STS4C3,B
001037 000766 R
001040 001000 A 1186 STS4E1 BES 0
001041 000771 R 1187 JMP STS4C8 GO END OPERATION
1188 EJEC
1189 *
1190 * MODE 6
1191 *
1192 *
1193 *
1194 * WRITE MODE = 6 (SIMULTANEOUS PRINT/PLOT)
1195 * SELECTS OUTPUT VIA MUX (150 SELECT)
1196 *
1197 *
001042 R 1198 STSM6 EQU *
001043 100147 A 1199 EXC ENACLK
001044 100244 A 1200 EXC ENAPIM
001045 015017 A 1201 LDA CTATTR,X
001046 006452 A 1202 BT RAO+B10,STINT2 JUMP IF NO SIMULTANEOUS PRINT/PLOT
001047 014465 A 1203 LDA MUXLSN GET MULTIPLEX SELECT/LINE SEYNC
001048 055030 A 1204 STA CTCI,X SAVE CONTROL SELECT
001051 001000 A 1205 JMP STPLT GO OUTPUT BINARY DATA
001052 001060 R
1206 *
1207 * WRITE MODE = 3 (RASTER MODE ONLY)
1208 * SELECTS OUTPUT VIA RASTER (3540 SELECT)
1209 *
001053 R 1210 STSM3 EQU *
001054 015017 A 1211 LDA CTATTR,X
001055 006451 A 1212 BT RAO+B9,STPLT JUMP IF NO HCG
001056 014455 A 1213 LDA RASLSN GET MULTIPLEXOR SELECT/LINE SYNC
001057 055030 A 1214 STA CTCI,X SAVE CONTROL SELECT
1215 *
1216 * IF NOT ASCII MODE, TRANSFER RASTER PLOT DATA
1217 *
001060 R 1218 STPLT EQU *
1219 IFF VORTEX-2
1220 DME MPDVAD,V$ST3 USER'S MAP
001060 016001 A 1221 LDA EBUFF,B GET USER'S BUFFER ADDR
1222 IFF VORTEX-2
1223 DME MPDVAD,V$ST0 MAP 0
001061 055015 A 1224 STA CTBUFF,X SAVE FOR BIG XFER
1225 IFF VORTEX-2
1226 DME MPDVAD,V$ST3 USER'S MAP
001062 016000 A 1227 LDA BRECL,B GET RECORD LENGTH
1228 IFF VORTEX-2
1229 DME MPDVAD,V$ST0 MAP 0
001063 055020 A 1230 STA CTEMP1,X SAVE TOTAL COUNT
001064 001064 R 1231 STPLT1 EQU *
001064 145053 A 1232 SUB CTLWWD,X
001065 055021 A 1233 STA CTEMP2,X SAVE REMAINING COUNT
001066 001004 A 1234 JAN STPLT2
001067 001073 R
001070 015053 A 1235 LDA CTLWWD,X SET UP FOR FULL RASTER
001071 001000 A 1236 JMP STPLT3
001072 001074 R
001073 015020 A 1237 STPLT2 LDA CTEMP1,X OUTPUT SHORT RASTER
001074 055013 A 1238 STPLT3 STA CTWDS,X SAVE NO WORDS TRANSFERED
001075 125015 H 1239 ADD CTBUFF,X
001076 005311 A 1240 DAR
001077 055027 A 1241 STA CTBEND,X SET UP FINAL BIG ADDR
001100 015017 A 1242 LDA CTATTR,X
001101 006456 A 1243 BT RAO+B14,STPLT4 JUMP IF STATUS 93
001102 001111 R
001103 006506 A 1244 JSR STEP,B STEP STATUS
001104 000317 R
001105 006506 A 1245 JSR STBO,B PROCESS WRITE
001106 001131 R
001107 001000 A 1246 JMP STPLT5
001110 001115 R
001111 001111 R 1247 STPLT4 EQU *
001111 006506 A 1248 JSR STBO,B PROCESS WRITE
001112 001131 R
001113 006506 A 1249 JSR STEP,B STEP STATUS
001114 000317 R
001115 001115 R 1250 STPLT5 EQU *
001115 015021 A 1251 LDA CTEMP2,X
001116 055020 A 1252 STA CTEMP1,X
001117 001010 A 1253 JAZ STS4C8 END OUTPUT
001120 000771 R
001121 001004 A 1254 JAN STS4C8 END OUTPUT
001122 000771 R
001123 015027 A 1255 LDA CTBEND,X LOAD END ADDRESS

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Address	Op	Opnd	Description	Mode	Start	End
001124	005111	A 1256	IAR		00	01247
001125	055015	A 1257	STA	CTBUFF,X	00	01248
001126	015020	A 1258	LDA	CTEMP1,X	00	01249
001127	001000	A 1259	JMP	STPLT1	00	01250
001130	001064	R				
1260			EJEC		00	01251
1261			*****		00	01252
1262			*		00	01253
1263			THIS ROUTINE INITIATES BIC XFER TO STATOS		00	01254
1264			IT CHECKS FOR ERROR CONDITIONS IN XFER		00	01255
1265			ENTRY:		00	01256
1266			CTBUFF = 1ST WORD OF BIC XFER		00	01257
1267			CTBEND = LAST WORD OF BIC XFER		00	01258
1268			*		00	01259
1269			*****		00	01260
001131	001131	R 1270	V*STBD EQU	*	00	01261
001131	001131	R 1271	STBD EQU	*	00	01262
001132	065022	A 1272	STB	CTEMP3,X	00	01263
001132	015006	A 1273	LDA	CTDVAT,X	L00	01264
001133	110440	A 1274	DRA	BS15	L00	01265
001134	100444	A 1275	EXC	DISPIM	L00	01266
001135	100747	A 1276	EXC	DISCLK	L00	01267
001136	054000	A 1277	STA	STS6A	L00	01268
001137	100000	A 1278	STS6A	EXC 0	L00	01269
001140	015017	A 1279	LDA	CTATTR,X	D.1	00 01270
001141	006456	A 1280	BT	RA0+B14,STS6A0	D.1	00 01271
001142	001143	R				
001143	006455	A 1281	BT	RA0+B13,STS6A2	D.1	00 01272
001144	001210	R				
001145	001145	R 1282	STS6A0 EQU	*	D.1	00 01273
001145	015016	A 1283	LDA	CTMODE,X	D.1	00 01274
001146	140464	A 1284	SUB	THREE	D.1	00 01275
001147	001010	A 1285	JAZ	STS6A2	D.1	00 01276
001150	001210	R				
001151	140422	A 1286	SUB	TWO	D.1	00 01277
001152	001010	A 1287	JAZ	STS6A2	D.1	00 01278
001153	001210	R				
001154	005911	A 1288	DAR		D.1	00 01279
001155	001010	A 1289	JAZ	STS6A2	D.1	00 01280
001156	001210	R				
001157	015017	A 1290	LDA	CTATTR,X	E.1	*****
001160	006456	A 1291	BT	RA0+B14,STS6A3	E.1	*****
001161	001213	R				
001162	014360	A 1292	LDA	SENS0	D.1	00 01282
001163	006506	A 1293	JSR	STS9,B	D.1	00 01283
001164	001440	R				
001165	014360	A 1294	LDA	SENS4	D.1	00 01284
001166	006506	A 1295	JSR	STS9,B	D.1	00 01285
001167	001440	R				
001170	015006	A 1296	LDA	CTDVAT,X	D.1	00 01286
001171	110440	A 1297	DRA	BS15	D.1	00 01287
001172	114334	A 1298	DRA	D31	D.1	00 01288
001173	100444	A 1299	EXC	DISPIM	D.1	00 01289
001174	100747	A 1300	EXC	DISCLK	D.1	00 01290
001175	054001	A 1301	STA	STS6A1	D.1	00 01291
001176	014340	A 1302	LDA	SLBS	D.1	00 01292
001177	103100	A 1303	STS6A1	DAR 0	D.1	00 01293
001200	014342	A 1304	LDA	SENS0	D.1	00 01294
001201	006506	A 1305	JSR	STS9,B	D.1	00 01295
001202	001440	R				
001203	014342	A 1306	LDA	SENS4	D.1	00 01296
001204	006506	A 1307	JSR	STS9,B	D.1	00 01297
001205	001440	R				
001206	001000	A 1308	JMP	STS6A3	D.1	00 01298
001207	001213	R				
001210	001210	R 1309	STS6A2 EQU	*	D.1	00 01299
001210	014334	A 1310	LDA	SENS3	D.1	00 01300
001211	006506	A 1311	JSR	STS9,B	D.1	00 01301
001212	001440	R				
001213	001213	R 1312	STS6A3 EQU	*	D.1	00 01302
001213	015006	A 1313	LDA	CTDVAT,X	D.1	00 01303
001214	110440	A 1314	DRA	BS15	D.1	00 01304
001215	114311	A 1315	DRA	D31	D.1	00 01305
001216	100444	A 1316	EXC	DISPIM	D.1	00 01306
001217	100747	A 1317	EXC	DISCLK	D.1	00 01307
001220	054001	A 1318	STA	STS6B	D.1	00 01308
001221	015030	A 1319	LDA	CTCI,X	00	01309
001222	103100	A 1320	STS6B	DAR 0	00	01310
1321			IFT	VORTEX-2	V2	00 01311
1322			GOTO	ENDC03	V2	00 01312
1323			LDB	V*CTL	00	01313
1324			LDA	CTMODE,X	00	01314
1325			JAN	STS6B1	00	01315
1326			ANA	BS1	00	01316
1327			JAZ	STS6B1	00	01317
1328			LDB	CTROBK,X	00	01318
1329			LDB	RTIDB,B	00	01319
1330			STS6B1	LDA TBKEY,B	00	01320
1331			ANA	BM17	00	01321
1332			STA	MAPKEY	00	01322
1333			ENDC03	CONT	00	01323
001223	025015	A 1334	LDB	CTBUFF,X	00	01324
001224	015027	A 1335	LDA	CTBEND,X	00	01325

E.2 VORTEX LISTING

V*CLPS

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001225	005024	A	1336	TBX		INITIAL ADDRESS	L00	01326
001226	006506	A	1337	JSR	V*BIC,B	INITIATE TRANSFER	L00	01327
001227	000000	E						
001230	000001	A	1338	DATA	1		L00	01328
			1339	IFF	VORTEX-2		V2	00 01329
			1340	MAPKEY DATA	0	MAP KEY VALUE	V2	00 01330
001231	001004	A	1341	JAN	STS7B	UNSUCCESSFUL	L00	01331
001232	001371	R						
001233	020300	A	1342	LDB	V*CTL	GET CONTROLLER TIDB	L00	01332
001234	036010	A	1343	LDB	TBRSTS,B	GET CONTROLLER TABLE	L00	01333
001235	014305	A	1344	LDA	SENS0		D.1	00 01334
001236	006506	A	1345	JSR	STS9,B	TEST IF INPUT BUSY	D.1	00 01335
001237	001440	R						
001240	020300	A	1346	LDB	V*CTL	GET CONTROLLER TIDB	L00	01336
001241	005001	A	1347	TZA			L00	01337
001242	056003	A	1348	STA	TBEVNT,B	ZERO INTERRUPT EVENT WORD	L00	01338
001243	015006	A	1349	LDA	CTDVAT,X		D.1	00 01339
001244	110440	A	1350	DRA	BS15		D.1	00 01340
001245	114261	A	1351	DRA	D31		D.1	00 01341
001246	100444	A	1352	EXC	DISPIM		D.1	00 01342
001247	100747	A	1353	EXC	DISCLK		D.1	00 01343
001250	054001	A	1354	STA	STS6C		D.1	00 01344
001251	014253	A	1355	LDA	BIC0		L00	01345
001252	103100	A	1356	DAR	0	OUTPUT BIC CONNECT/DATA SELECT	L00	01346
			1357	DELAY	2000,0,2	WAIT FOR INTERRUPT	00	01347
001253	006505	A						
001254	000406	A						
001255	001102	A						
001256	003720	A						
001257	000000	A						
			1358	*			L00	01348
			1359	*	RETURN HERE FROM BIC COMPLETE INTERRUPT		00	01349
			1360	*			L00	01350
001260	020300	A	1361	LDB	V*CTL		00	01351
001261	036010	A	1362	LDB	TBRSTS,B		00	01352
001262	015015	A	1363	LDA	CTMODE,X		00	01353
001263	001004	A	1364	JAN	STS6D	FUNC OPERATION	00	01354
001264	001315	R						
001265	140464	A	1365	SUB	THREE		00	01355
001266	001010	A	1366	JAZ	STS6D	JUMP FOR PLOT	00	01356
001267	001315	R						
001270	140422	A	1367	SUB	TWO		00	01357
001271	001010	A	1368	JAZ	STS6D	MODE = 5	00	01358
001272	001315	R						
001273	140421	A	1369	SUB	ONE	MODE = 6	00	01359
001274	001010	A	1370	JAZ	STS6D	PLOT MODE	00	01360
001275	001315	R						
001276	015017	A	1371	LDA	CTATTR,X		D.1	00 01361
001277	006451	A	1372	BT	RAC+B9,STS6D	JUMP IF NO MCG	D.1	00 01362
001300	001315	R						
001301	016003	A	1373	LDA	TBEVNT,B		00	01363
001302	150441	A	1374	ANA	BP0		00	01364
001303	056003	A	1375	STA	TBEVNT,B		00	01365
			1376	DELAY	2000,0,2	DELAY FOR BUFFER NOT BUSY INTERRUPT	00	01366
001304	006505	A						
001305	000406	A						
001306	001102	A						
001307	003720	A						
001310	000000	A						
			1377	*			00	01367
			1378	*	RETURN HERE FROM BUFFER NOT BUSY INTERRUPT		00	01368
			1379	*			00	01369
001311	020300	A	1380	LDB	V*CTL		00	01370
001312	036010	A	1381	LDB	TBRSTS,B	POINT X TO CONTROLLER TABLE	00	01371
001313	001000	A	1382	JMP	STINT	JUMP TO TEST FOR TIME OUT	00	01372
001314	001331	R						
001315	015006	A	1383	STS6D	LDA	CTDVAT,X	00	01373
001316	110440	A	1384	DRA	BS15	SELECT INSTRUCTION	00	01374
001317	100444	A	1385	EXC	DISPIM	DISABLE PIMS	00	01375
001320	100747	A	1386	EXC	DISCLK	DISABLE CLOCK	00	01376
001321	054002	A	1387	STA	CTSL		00	01377
001322	114204	A	1388	DRA	D31		00	01378
001323	054002	A	1389	STA	LYSC		00	01379
001324	100000	A	1390	EXC	0	STATUS CONTROL SELECT	00	01380
001325	014210	A	1391	LDA	LSYN		00	01381
001326	103100	A	1392	LYSC	0	OUTPUT LINE SYNC	00	01382
001327	100147	A	1393	STS6E	EXC	ENABLE CLOCK	00	01383
001330	100244	A	1394	EXC	ENAPIM	ENABLE PIMS	00	01384
			1395	*			00	01385
			1396	*	STINT		L00	01386
001331	016001	A	1397	EQU	*		L00	01387
001332	150447	A	1398	LDA	TBST,B		L00	01388
001333	150444	A	1399	ANA	BR0	RESET DELAY TIMER BIT	L00	01389
001334	056001	A	1400	ANA	BR3		00	01390
001335	016003	A	1401	STA	TBEVNT,B		L00	01391
001336	001010	A	1402	LDB	TBEVNT,B		L00	01392
001337	001356	R		JAZ	STS7	TIMEOUT	L00	01393
001340	006015	A	1403	LDAE*	CTBICB,X		L00	01394
001341	100011	A						
001342	005111	A	1404	DAR			L00	01394
001343	114177	A	1405	DRA	SENS0		D.1	00 01395
001344	100444	A	1406	EXC	DISPIM		L00	01396
001345	100747	A	1407	EXC	DISCLK		L00	01397

001346	054000	A	1408	STA	*+1			L00	01398
001347	101000	A	1409	SEN	0,STS7B	BIC ABNORMAL STOP		L00	01399
001350	001371	R							
			1410	IFT	VORTEX-2			V2	00 01400
			1411	GOTO	ENDC04			V2	00 01401
			1412	DRAI	0120	BUILD SENSE COMMAND		V2	00 01402
			1413	STA	*+1			V2	00 01403
			1414	SEN	0120,STBERR	SKIP IF UNASSIGNED MEMORY ERROR		V2	00 01404
			1415	ENDC04	CONT			V2	00 01405
001351	100147	A	1416	EXC	ENACLK	ENABLE CLOCK		L00	01406
001352	100244	A	1417	EXC	ENAPIM	ENABLE PIMS		L00	01407
001353	025022	A	1418	LDB	CTEMP3,X	GET RETURN LOCATION			00 01408
001354	006706	A	1419	IJMP	0,B				00 01409
001355	000000	A							
			1420	*				L00	01410
001356	001356	R	1421	STS7	EQU	*		L00	01411
001357	000240	A	1422	LDAI	0240	INDICATE UNIT NOT READY		L00	01412
001360	025004	A	1423	LDB	CTRQBK,X			L00	01413
001361	005004	A	1424	TZX				L00	01414
001362	100147	A	1425	STS7A	FNACLK	ENABLE CLOCK		L00	01415
001363	100244	A	1426	EXC	ENAPIM	ENABLE PIMS		L00	01416
001364	116000	A	1427	DRA	RSTPR,B			L00	01417
001365	056000	A	1428	STA	RSTPR,B	UPDATE REQUEST BLOCK STATUS		L00	01418
001366	005041	A	1429	TXA				L00	01419
001367	001000	A	1430	JMP	V\$ERR			L00	01420
001370	000000	E							
			1431	*				L00	01421
001371	006015	A	1432	STS7B	EQU	*		L00	01422
001372	100011	A	1433	LDAEM	CTBICB,X	GET BIC DEVICE ADDRESS		L00	01423
001373	150467	A	1434	ANA	SEVEN			L00	01424
001374	004250	A	1435	LRLA	8			L00	01425
001375	006110	A	1436	DRAI	020240	INDICATE POSSIBLE BIC ERROR		L00	01426
001376	020240	A							
001377	025004	A	1437	LDB	CTRQBK,X	GET REQUEST BLOCK ADDRESS		L00	01427
001400	005104	A	1438	INCR	04	SET X REG EQUAL 1			00 01428
001401	001000	A	1439	JMP	STS7A			L00	01429
001402	001362	R							
			1440	IFT	VORTEX-2			V2	00 01430
			1441	GOTO	ENDC05			V2	00 01431
			1442	STBERR	LDAI	046240	UNASSIGNED MEMORY ERROR	V2	00 01432
			1443	LDB	BS15			V2	00 01433
			1444	JMP	STS7A			V2	00 01434
			1445	ENDC05	CONT			V2	00 01435
			1446	EJEC					00 01436
			1447	*				L00	01437
			1448	*				L00	01438
			1449	*				L00	01439
			1450	*				L00	01440
			1451	*	ENABLE STATUS ROUTINE			L00	01441
			1452	*				L00	01442
001403	001403	R	1453	ENAB	EQU	*		L00	01443
001404	110440	A	1454	LDA	CTDVAT,X			L00	01444
001405	100444	A	1455	DRA	BS15			L00	01445
001406	100747	A	1456	EXC	DISPIM			L00	01446
001407	054002	A	1457	EXC	DISCLK			L00	01447
001410	114116	A	1458	STA	ENAB1			L00	01448
001411	054010	A	1459	DRA	D31			L00	01449
001412	100000	A	1460	STA	ENAB2			L00	01450
001413	015017	A	1461	ENAB1	EXC	0	STATUS CONTROL SELECT	L00	01451
001414	006456	A	1462	LDA	CTATTR,X			D.1	00 01452
001415	001421	R	1463	BT	RA0+B14,ENAB2A	JUMP IF MODEL 33		D.1	00 01453
001416	014112	A	1464	LDA	ENABL1			L00	01454
001417	001000	A	1465	JMP	ENAB2			D.1	00 01455
001420	001422	R							
001421	014110	A	1466	ENAB2A	LDA	ENABL2	GET LOW SPEED/LINE SYNC CODES	D.1	00 01456
001422	103100	A	1467	ENAB2	DAR	0	PLUT MODE/REMOTE ENABLE	L00	01457
001423	014120	A	1468	LDA	SENS1			D.1	00 01458
001424	006506	A	1469	JSR	STS9,B	TEST IF STATUS BUSY		D.1	00 01459
001425	001440	R							
			1470	*				L00	01460
001426	001426	R	1471	ENAB5	EQU	*		L00	01461
001427	110440	A	1472	LDA	CTDVAT,X			L00	01462
001430	114076	A	1473	DRA	BS15			L00	01463
001431	100444	A	1474	DRA	D31				00 01464
001432	100747	A	1475	EXC	DISPIM			D.1	00 01465
001433	054001	A	1476	EXC	DISCLK			D.1	00 01466
001434	014075	A	1477	STA	ENAB6			L00	01467
001435	103100	A	1478	LDA	ENABL2				00 01468
001436	001000	A	1479	ENAB6	DAR	0	LOW SPEED/LINE SYNC	L00	01469
001437	000012	R	1480	JMP	STS0			L00	01470
			1481	EJEC				D.1	00 01471
			1482	*				D.1	00 01472
			1483	*	STATUS SENSE ROUTINE			D.1	00 01473
			1484	*				D.1	00 01474
			1485	*	CALLING SEQUENCE:			D.1	00 01475
			1486	*	LDA	SENSE INSTRUCTION SKELETON		D.1	00 01476
			1487	*	JSR	STS9,B		D.1	00 01477
			1488	*	GOES TO	-STS7- IF DEVICE TIMEOUT		D.1	00 01478
			1489	*	RETURN	WHEN CONDITION FALSE		D.1	00 01479

001440	001440	R	1490	*						D.1 00	01480
			1491	*	STS9	EQU	*			D.1 00	01481
			1492			STB	CTEMP4,X	SAVE RETURN ADDRESS		D.1 00	01482
001441	055037	A	1493			STA	CTENAB,X	SAVE SENSE INSTRUCTION SKELETON		D.1 00	01483
001442	010475	A	1494			LDA	BM177			D.1 00	01484
001443	055020	A	1495			STA	CTEMP1,X	SET WAIT LOOP TIMER		D.1 00	01485
			1496	*	STS9A	EQU	*			D.1 00	01486
			1497			LDA	CTDVAT,X	GET DEVICE ADDRESS		D.1 00	01487
001444	015006	A	1498			ORA	CTENAB,X	CREATE SENSE INSTRUCTION		D.1 00	01488
001445	115037	A	1499			EXC	DISPIM			D.1 00	01489
001446	100444	A	1500			EXC	DISCLK			D.1 00	01490
001447	100747	A	1501			STA	*+1			D.1 00	01491
001450	054000	A	1502			SEN	0,STS9B			D.1 00	01492
001451	101000	A								D.1 00	01493
001452	001460	R	1503			EXC	ENACKL			D.1 00	01494
001453	100147	A	1504			EXC	ENAPIM			D.1 00	01495
001454	100244	A	1505			LDR	CTEMP4,X	GET RETURN ADDRESS		D.1 00	01496
001455	025023	A	1506			LJMP	0,B			D.1 00	01497
001456	006706	A								D.1 00	01498
001457	000000	A								D.1 00	01499
	001460	R	1507	*	STS9B	EQU	*			D.1 00	01500
			1508			LDA	CTEMP1,X			D.1 00	01501
001460	015020	A	1509			DAR				D.1 00	01502
001461	005311	A	1510			JAZ	STS7	DEVICE TIMEOUT		D.1 00	01503
001462	001010	A	1511					DECREMENT TIMER		D.1 00	01504
001463	001356	R								D.1 00	01505
001464	005311	A	1512			DAR				D.1 00	01506
001465	055020	A	1513			STA	CTEMP1,X	SAVE CONTROLLER TABLE POINTER		D.1 00	01507
001466	005041	A	1514			TXA		WAIT 50 MS		D.1 00	01508
			1514			DELAY	10			D.1 00	01509
001467	006505	A								D.1 00	01510
001470	000406	A								D.1 00	01511
001471	001100	A								D.1 00	01512
001472	000012	A								D.1 00	01513
001473	000000	A								D.1 00	01514
001474	005014	A	1515			TAX				D.1 00	01515
001475	001000	A	1516			JMP	STS9A			D.1 00	01516
001476	001444	R								D.1 00	01517
			1517	*						D.1 00	01518
			1518	*						D.1 00	01519
			1519	*						D.1 00	01520
			1520	*	STORE BYTE ROUTINE					D.1 00	01521
001477	001477	R	1520	*	SBT	EQU	*			D.1 00	01522
			1521			STB	CTEMP5,X	SAVE RETURN ADDRESS		D.1 00	01523
001500	055040	A	1522			STA	CLINE,X	SAVE CHARACTER		D.1 00	01524
001501	015043	A	1523			LDA	CBITPT,X	GET BYTE POINTER		D.1 00	01525
001502	005012	A	1524			TAB				D.1 00	01526
001503	004141	A	1525			LSRB	1	MAKE WORD ADDRESS		D.1 00	01527
001504	004257	A	1526			LRLA	8			D.1 00	01528
001505	001004	A	1527			JEN	SET1			D.1 00	01529
001506	001515	R								D.1 00	01530
001507	015040	A	1528			LDA	CLINE,X	GET CHARACTER		D.1 00	01531
001510	004250	A	1529			LRLA	8	LEFT JUSTIFY		D.1 00	01532
001511	150462	A	1530			ANA	LHH			D.1 00	01533
001512	056000	A	1531			STA	0,B	STORE LEFT BYTE		D.1 00	01534
001513	001000	A	1532			JMP	SBT2			D.1 00	01535
001514	001521	R								D.1 00	01536
	001515	R	1533	*	SBT1	EQU	*			D.1 00	01537
			1534			LDA	0,B	GET WORD FROM STATUS BUFFER		D.1 00	01538
001515	016000	A	1535			ANA	LHH	EXTRACT LEFT BYTE		D.1 00	01539
001516	150462	A	1536			ORA	CLINE,X	OR IN RIGHT BYTE		D.1 00	01540
001517	115040	A	1537			STA	0,B			D.1 00	01541
001520	056000	A	1538			STA	0,B			D.1 00	01542
			1538	*	SBT2	EQU	*			D.1 00	01543
			1539			INR	CBITPT,X	INCREMENT BYTE POINTER		D.1 00	01544
001521	045043	A	1540			LDB	CTEMP5,X			D.1 00	01545
001522	025024	A	1541			LJMP	0,B	GET RETURN LOCATION		D.1 00	01546
001523	006706	A								D.1 00	01547
001524	000000	A								D.1 00	01548
			1542	*	EXEC					D.1 00	01549
			1543	*						D.1 00	01550
			1544	*	*****					D.1 00	01551
			1545	*						D.1 00	01552
			1546	*	DATA BLOCK					D.1 00	01553
			1547	*						D.1 00	01554
			1548	*	*****					D.1 00	01555
001525	000307	A	1549		BIC0	DATA	0307	BIC CONNECT/DATA SELECT		D.1 00	01556
001526	000023	A	1550		D19	DATA	19			D.1 00	01557
001527	003100	A	1551		D31	DATA	03100			D.1 00	01558
001530	000260	A	1552		D260	DATA	0260			D.1 00	01559
001531	160040	A	1553		ENABL1	DATA	0160040	PLOT MODE/REMOTE ENABLE		D.1 00	01560
001532	033642	A	1554		ENABL2	DATA	033642	LOW SPEED/LINE SYNC		D.1 00	01561
001533	000241	A	1555		DISABL	DATA	0241	REMOTE DISABLE		D.1 00	01562
001534	160242	A	1556		RASLSN	DATA	0160242	RASTER/LINE SYNC		D.1 00	01563
001535	064242	A	1557		MUXLSN	DATA	064242	MUX/LINE SYNC		D.1 00	01564
001536	121000	A	1558		LSYN	DATA	0121000	LINE SYNC		D.1 00	01565
001537	000320	A	1559		SLBS	DATA	0320	SINGLE LINE BUFFER SELECT		D.1 00	01566
001540	160367	A	1560		SMUPLD	DATA	0160367	SMALL /UPRIGHT/SLO SPD		D.1 00	01567
001541	000000	A	1561		N0P	DATA	0	STATUS POP CODE		D.1 00	01568
001542	160062	A	1562		RASCUT	DATA	0160062	RASTER SELECT/OUT SELECT		D.1 00	01569
001543	101000	A	1563		SENS0	DATA	0101000	INPUT BUSY		D.1 00	01570
001544	101100	A	1564		SENS1	DATA	0101100	STATUS NOT READY		D.1 00	01571
001545	101300	A	1565		SENS3	DATA	0101300	PAPER CONTROL BUSY		D.1 00	01572
001546	101400	A	1566		SENS4	DATA	0101400	BUFFER BUSY		D.1 00	01573
001547	101600	A	1567		SENS6	DATA	0101600	BOTTOM OF FORM		D.1 00	01574
001550	000300	A	1568		N300	DATA	0300			D.1 00	01575
001551	000212	A	1569		LHFD	DATA	0212	LINE FEED CODE		D.1 00	01576
001552	160064	A	1570		STP1	DATA	0160064	RASTER MODE/STEP STATUS		D.1 00	01577

```

001553 R 1571 N340 EQU *
000340 A 1572 SIZTBL DATA 0340,0341,0342,0343 SMALL SIZES
001554 000341 A
001555 000342 A
001556 000343 A
001557 000344 A 1573 DATA 0344,0345,0346,0347 LARGE SIZES
001560 000345 A
001561 000346 A
001562 000347 A
001563 001563 R 1574 LFTBL EQU *
000012 A 1575 DATA 10,8,10,8
001564 000010 A
001565 000012 A
001566 000010 A
001567 000021 A 1576 DATA 17,13,17,13
001570 000015 A
001571 000021 A
001572 000015 A
1577 *
1578 *
1579 *
END

```

```

D.1 00 01561
00 01562
00 01563
00 01564
00 01565
00 01566
00 01567
L00 01568
00 01569

```

```

ENTRY NAMES
000000 R V%CLPS 000365 R V%SPAC 001131 R V%STBD 000317 R V%STEP
000302 R V%STPL 000423 R V%STDFM
EXTERNAL NAMES
001227 E V%BIC 001370 E V%ERR 000000 E V%EXEC 001017 E V%FNR
SYMBOLS
000044 A APIM 000002 A B 000000 A B0 000001 A B1
000012 A B10 000013 A B11 000014 A B12 000015 A B13
000016 A B14 000017 A B15 000002 A B2 000003 A B3
000004 A B4 000005 A B5 000006 A B6 000007 A B7
000010 A B8 000011 A B9 000000 A BICNUM 001525 R BICO
000421 A BM1 000472 A BM17 000475 A BM177 000477 A BM1777
000464 A BM3 000473 A BM37 000463 A BM377 000467 A BM7
000474 A BM77 000476 A BM777 000466 A BDFM 000467 R BDFM1
000505 R BDFM2 000441 A BR0 000442 A BR1 000453 A BR10
000454 A BR11 000455 A BR12 000456 A BR13 000457 A BR14
000460 A BR15 000443 A BR2 000444 A BR3 000445 A BR4
000446 A BR5 000447 A BR6 000450 A BR7 000451 A BR8
000452 A BR9 000421 A BS0 000422 A BS1 000433 A BS10
000434 A BS11 000435 A BS12 000436 A BS13 000437 A BS14
000440 A BS15 000423 A BS2 000424 A BS3 000425 A BS4
000426 A BS5 000427 A BS6 000430 A BS7 000431 A BS8
000432 A BS9 000042 A CBITPD 000043 A CBITPT 000041 A CINDX
000040 A CLINE 000047 A CLOCK 000000 A COTAD1 000032 A CSLIN
000000 A CTACT 000001 A CTADNC 000017 A CTATTR 000027 A CTBEND
000011 A CTBICB 000050 A CTBUFA 000055 A CTBUFF 000015 A CTBUFP
000030 A CTCI 000031 A CTDBFP 000003 A CTDST 000006 A CTDVAT
000020 A CTEMP1 000021 A CTEMP2 000022 A CTEMP3 000023 A CTEMP4
000024 A CTEMP5 000037 A CTENAB 000051 A CTEND 000012 A CTFCB
000014 A CTFRCT 000014 A CTFREQ 000047 A CTFUNC 000054 A CTHCGS
000000 A CTIDB 000007 A CTIOA 000035 A CTLINC 000045 A CTLSIZ
000052 A CTLNCH 000033 A CTLWID 000053 A CTLWWD 000016 A CTMODE
000002 A CTOPM 000017 A CTPST0 000020 A CTPST1 000021 A CTPST2
000022 A CTPST3 000005 A CTRCNT 000004 A CTRQBK 000005 A CTRTRY
000034 A CTSIZE 001324 R CTSL 000010 A CTSTAT 000015 A CTSTSZ
000036 A CTTERM 000016 A CTTRSZ 000013 A CTWDS 000046 A CTWRIT
000044 A CWIDTH 000025 A CWRT1 000026 A CWRT2 001526 R D19
001530 R D260 001527 R D31 000001 A DBUFF 000002 A DCNT
000234 R DISAB1 000252 R DISAB4 001533 R DISABL 000747 A DISCLK
000745 A DISMP 000444 A DISPIM 000000 A DRECL 000002 A DSCTAD
000000 A DSDASS 000000 A DSDVBN 000002 A DSLCKD 000001 A DSNAME
000000 A DSNDRQ 000002 A DSPPCM 000002 A DSPSTI 000002 A DSREWD
000000 A DSUNAM 000002 A DSUNTN 000424 A EIGHT 001403 R ENAB
001412 R ENAB1 001422 R ENAB2 001421 R ENAB2A 001426 R ENAB5
001435 R ENAB6 001531 R ENABL1 001532 R ENABL2 000147 A ENACLK
000645 A ENAMP 000244 A ENAPIM 000002 A FACH 000001 A FBUFF
000003 A FCADR 000004 A FCEDF 000006 A FEFE 000005 A FIFE
000465 A FIVE 000007 A FNAM1 000010 A FNAM2 000011 A FNAM3
000423 A FOUR 000000 A FRECL 000300 A LC 000050 A LCJP
001563 R LFTBL 000462 A LHW 001551 R LNFD 001536 R LSYN
001326 R LYSC 000045 A MP 000045 A MPMR0 000145 A MPMR1
000245 A MPMR2 000345 A MPMR3 000420 A MT 001535 R MUXLSN
001550 R N300 001553 R N340 000461 A NEG 000420 A NINE
001541 R NDP 000421 A ONE 000040 A PIM1 000041 A PIM2
000042 A PIM3 000043 A PIM4 000040 A PIM5 000040 A PIM6
000040 A PIM7 000040 A PIM8 000040 A RA0 000000 A RA1
000004 A RADNR 001542 R RASCUT 001534 R RASLSN 000060 A RBO
000020 A RB1 000002 A RFCB 000463 A RHW 000001 A ROPND
000000 A RSTPR 000003 A RTIDB 001477 R SBT 001515 R SBT1
001521 R SBT2 001543 R SENS0 001544 R SENS1 001545 R SENS3
001546 R SENS4 001547 R SENS6 000467 A SEVEN 000466 A SIX
001553 R SIZTBL 001537 R SLBS 001540 R SMUPLD 000365 R SPAC
000405 R SPAC1 000410 R SPAC2 000412 R SPAC3 001131 R STBD
000512 R STCUT 000317 R STEP 000361 R STEP1 000364 R STEP1A
000362 R STEP2 000342 R STEP2A 001331 R STINT 001002 R STINT2
001552 R STP1 001060 R STPLT 001064 R STPLT1 001073 R STPLT2
001074 R STPLT3 001111 R STPLT4 001115 R STPLT5 000012 R STS0
000564 R STS1D 000045 R STS3A 000134 R STS3B 000154 R STS3B1
000170 R STS3B2 000175 R STS3D 000201 R STS3E 000205 R STS3F
000220 R STS3G 000527 R STS4 000664 R STS4A 000671 R STS4B
000714 R STS4B1 000717 R STS4B2 000753 R STS4C 000764 R STS4C2
000766 R STS4C3 001010 R STS4C5 001020 R STS4C6 001027 R STS4C7

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000771 R STS4C8 000723 R STS4D 001032 R STS4E 001037 R STS4E1
000736 R STS5A 001137 R STS6A 001145 R STS6A0 001177 R STS6A1
001210 R STS6A2 001213 R STS6A3 001222 R STS6B 001252 R STS6C
001315 R STS6D 001327 R STS6E 001356 R STS7 001362 R STS7A
001371 R STS7B 000063 R STS8 000257 R STS8A 000270 R STS8B
000301 R STS8C 000112 R STS8D 000311 R STS8E 001440 R STS9
001444 R STS9A 001460 R STS9B 000572 R STSM1G 001053 R STSM3
000635 R STSM31 000642 R STSM32 000604 R STSM4 000643 R STSM41
000615 R STSM5 000626 R STSM51 001042 R STSM6 000027 A TBATSK
000026 A TBCPTH 000011 A TBENTY 000003 A TBEVNT 000021 A TBID
000014 A TBISA 000015 A TBICP 000017 A TBICP 000020 A TBISRS
000016 A TBISX 000022 A TBKN1 000023 A TBKN2 000024 A TBKN3
000002 A TBPL 000004 A TBRSA 000005 A TBRSE 000030 A TBRSE
000007 A TBRSP 000018 A TBRSTS 000006 A TBRSX 000000 A TBS0
000001 A TBS1 000012 A TBS10 000013 A TBS11 000014 A TBS12
000015 A TBS13 000016 A TBS14 000017 A TBS15 000002 A TBS2
000003 A TBS3 000004 A TBS4 000005 A TBS5 000006 A TBS6
000007 A TBS7 000010 A TBS8 000011 A TBS9 000001 A TBST
000025 A TBTLC 000013 A TBTMIN 000012 A TBTMS 000000 A TBTRD
000471 A TEN 000464 A THREE 000454 R TOFBS 000420 R TOFM
000424 R TOFM1 000426 R TOFMA 000430 R TOFMB 000441 R TOFMC
000432 R TOFR1 000450 R TOFZ1 000444 R TOFZF 000422 A TWO
000403 A V$1MIN 000415 A V$BFC 000075 A V$BGLB 001227 E V$BIC
000404 A V$BIC1 000405 A V$BIC2 000406 A V$BIC3 000407 A V$BIC4
000315 A V$BTB 000414 A V$BVN 000334 A V$CAM 000353 A V$CKB
000411 A V$CKIT 000310 A V$CKPT 000000 R V$CLPS 000331 A V$CPL
000076 A V$CRDM 000341 A V$CRDR 000354 A V$CRM 000300 A V$CRS
000360 A V$CTAD 000300 A V$CTL 000351 A V$CTMS 000070 A V$DATE
000355 A V$DSTB 000376 A V$ERFG 001370 E V$ERR 000000 E V$EXEC
000347 A V$FGLB 000306 A V$FLRS 001017 E V$FNR 000356 A V$FREE
000320 A V$FM 000410 A V$IDA 000412 A V$JCB 000055 A V$JCFG
000056 A V$JFCB 000050 A V$JHAM 000377 A V$JOP 000054 A V$LCHT
000313 A V$LER 000356 A V$LIT 000317 A V$LLUP 000307 A V$LRK
000312 A V$LSAL 000345 A V$LUNT 000313 A V$LUP 000400 A V$LUT1
000401 A V$LUT2 000402 A V$LUT3 000330 A V$MPM 000360 A V$NCTR
000413 A V$OPB 000346 A V$OPCP 000363 A V$PIMN 000074 A V$PLCT
000305 A V$PTVB 000361 A V$SCTL 000352 A V$SCV 000375 A V$SLTB
000365 R V$SPAC 001131 R V$STED 000317 R V$STEP 000532 R V$STPL
000417 A V$ST3Z 000303 A V$TB 000342 A V$TBGT 000416 A V$TFC
000314 A V$TJCP 000357 A V$TKSZ 000344 A V$TMN 000343 A V$TMS
000423 R V$TOFM 000304 A V$UTB 000001 A VORTEX 000001 A X
000420 A ZERO

```

0 ERRORS ASSEMBLY COMPLETE

359	APIM	369	370							
350	CLOCK	352	353							
50	ENDC01	44								
132	LC	133	134	135	136	137	138	139	140	141
		143	144	145	146	149	150	154	155	157
		160	161	166	167	168	169	170	171	172
		173	174	176	177	178	179	180	181	182
		183	184	185	186	187	188	189	191	193
		194	195	196	197	209	210	211	212	213
		214	215	218	219	220	221	230	231	232
		235	240	241	242	243				
151	LCD1	148								
156	LCD2	153								
163	LCD3	159								
175	LCD4	165								
203	LCD5	201								
208	LCD6	205								
222	LCD7	217								
229	LCD8	224								
109	LCJP	110	111	112	118	119	120	121	122	
373	MP	374	375	376	377	378	379			
251	MT	252	253	254	255	256	257	258	259	260
		261	262	263	264	265	266	267	268	269
		270	271	272	273	274	275	276	277	278
		279	280	281	282	283	284	285	286	287
		288	289	290	291	292	293	294	295	296
		297	298	299	300	301	302	303	304	305
		306	307							
0	V\$CLPS	11								
1	VORTEX	43	147	152	156	164	190	192	200	204
		216	223	254						

```

000001 A 1 VORTEX SET 1 PUT LAST FOR VORTEX D.1 00 00001
2 * THIS IS A COPYRIGHTED PROGRAM.COPYRIGHT 1974 BY VARIAN DATA MACHINES 00 00002
3 * 00 00003
4 * V.D.M. PART NO. 92L0605-200A D.1 00 00004
5 * 00 00005
6 * RELEASED 08/02/74 D.1 00 00006
7 * 00 00007
8 * VZLPDX D.1 00 00008
9 * 00 00009
10 * 00 00010
11 * TITLE VZLPDX D.1 00 00011
12 ***** L00 00012
13 * L00 00013
14 ***** TIDB SETUP ***L00 00014
15 * L00 00015
16 ***** L00 00016
000000 A 18 TBTRD EQU 0 TASK THREAD L00 00018
000001 A 19 TBST EQU 1 TASK STATUS L00 00019
000002 A 20 TBPL EQU 2 STATUS CONT. (BITS15-6),PRIORITY LEVEL(5-0 L00 00020
000003 A 21 TBEVNT EQU 3 INTERRUPT EVENT L00 00021
000004 A 22 TBRSA EQU 4 A REENRANT AND SUSPEND STACK L00 00022
000005 A 23 TBRSE EQU 5 B REENRANT AND SUSPEND STACK L00 00023
000006 A 24 TBRSE EQU 6 X REENRANT AND SUSPEND STACK L00 00024
000007 A 25 TBRSP EQU 7 DF/P REENRANT AND SUSPEND STACK L00 00025
000010 A 26 TBRSTS EQU 8 TEMP. STG. REENRANT AND SUSPEND STACK L00 00026
000011 A 27 TBENTY EQU 9 TASK ENTRY LOCATION L00 00027
000012 A 28 TBTMS EQU 10 TIME COUNTER - CLOCK RESOLUTION IN SMS INCL00 00028
000013 A 29 TBTMIN EQU 11 TIME COUNTER - CLOCK MINUTE INCREMENTS L00 00029
000014 A 30 TBISA EQU 12 A INTERRUPT STACK L00 00030
000015 A 31 TBISB EQU 13 B INTERRUPT STACK L00 00031
000016 A 32 TBISX EQU 14 X INTERRUPT STACK L00 00032
000017 A 33 TBISP EQU 15 DF/P INTERRUPT STACK L00 00033
000020 A 34 TBISRS EQU 16 REENT. STACK INTERRUPT STACK L00 00034
000021 A 35 TBID EQU 17 BLK ALLOC(15-10),I/O THR(9-5),I/O ACT(4-0) L00 00035
000022 A 36 TBKN1 EQU 18 TASK NAME L00 00036
000023 A 37 TBKN2 EQU 19 TASK NAME L00 00037
000024 A 38 TBKN3 EQU 20 TASK NAME L00 00038
000025 A 39 TBTLC EQU 21 1ST LOC. OF TASK ALLOCATABLE L00 00039
000026 A 40 TBCPTH EQU 22 CHECK POINT THREAD L00 00040
000027 A 41 TBATSK EQU 23 TIDB LOC. OF ACTIVATING TASK D.1 00 00041
000030 A 42 TBRSE EQU 24 TASK ERROR CODE L00 00042
43 IFT VORTEX-2 V2 00 00043
44 GOTO ENDC01 V2 00 00044
45 TBSIZ EQU 25 TASK SIZE, BITS 15-10 V2 00 00045
46 TBNULL EQU 26 NUCLEUS MODULE INDICATOR, BITS 15-08 V2 00 00046
47 TBKEY EQU 26 TASK'S MAP KEY, BITS 03-00 V2 00 00047
48 TBMIMG EQU 27 TASK'S MAP IMAGE V2 00 00048
49 TBIST EQU 28, INTERRUPT STATUS V2 00 00049
50 ENDC01 COMT V2 00 00050
51 EJEC L00 00051
52 ***** L00 00052
53 * L00 00053
54 ***** TASK STATUS DESCRIPTION (BIT SET WORD 1) ***L00 00054
55 * L00 00055
56 ***** L00 00056
000017 A 58 TBS15 EQU 15 INTERRUPT SUSPEND L00 00058
000016 A 60 TBS14 EQU 14 TASK SUSPEND L00 00060
000015 A 61 TBS13 EQU 13 TASK ABORT L00 00061
000014 A 62 TBS12 EQU 12 TASK EXIT L00 00062
000013 A 64 TBS11 EQU 11 TIDB CORE RESIDENT L00 00064
000012 A 65 TBS10 EQU 10 CORE RESIDENT TASK L00 00065
000011 A 66 TBS9 EQU 9 FOREGROUND TASK L00 00066
000010 A 68 TBS8 EQU 8 TASK PROTECTED L00 00068
000007 A 69 TBS7 EQU 7 TASK SCHEDULED BY TIME DELAY L00 00069
000006 A 70 TBS6 EQU 6 TIME DELAY ACTIVE L00 00070
000005 A 72 TBS5 EQU 5 TASK WAITING TO BE LOADED L00 00072
000004 A 73 TBS4 EQU 4 TASK ERROR L00 00073
000003 A 74 TBS3 EQU 3 TASK INTERRUPT EXPECTED L00 00074
000002 A 76 TBS2 EQU 2 OVERLAY TASK L00 00076
000001 A 77 TBS1 EQU 1 UPON TERMINATION ACTIVATE TASK SCHED TASK L00 00077
000000 A 78 TBS0 EQU 0 TASK SEARCH-ALLOCATED-LOADED L00 00078
79 EJEC L00 00079
80 ***** L00 00080
81 * L00 00081
82 ***** TASK STATUS DESCRIPTION (BIT SET WORD 2) ***L00 00082
83 * L00 00083
84 ***** L00 00084
86 * BIT 15 - TASK OPENED L00 00086
88 * BIT 14 - UNUSED L00 00088
89 * BIT 13 - OVERLAY LOAD L00 00089
90 * BIT 12 - TASK WAITING FOR BACKGROUND TASK I/O TO COMPLETE L00 00090
91 * TASK LOCKED-OUT UNTIL BG I/O COMPLETE OR BIT 11 L00 00091
92 * IS SET (ALLOCATABLE SPACE AVAILABLE) L00 00092
94 * BIT 11 - DEFINES THAT ALLOCATABLE SPACE IS AVAILABLE, TRY L00 00094
95 * ALLOCATING TASK AGAIN. OVERRIDES BIT 12 SET OR L00 00095
96 * BIT 5 IN STATUS WORD. L00 00096
97 * BIT 10 - BACKGROUND TASK BEING WRITTEN ON CHECKPOINT FILE. L00 00097
98 * BIT 9 - TASK WAITING FOR A TIDB TO COME AVAILABLE FOR L00 00098
99 * SCHEDULING. L00 00099
101 * BIT 8 TO 6 - UNUSED L00 00101
102 EJEC L00 00102
103 ***** L00 00103
104 * L00 00104

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105 ***          JOB PROCESSOR LOW CORE EQUATES          ***L00 00105
106 *
107 *****
000050 A 109 LCJF EQU 050
000050 A 110 V$JNAM EQU LCJF JCP NAME
000054 A 111 V$LCNT EQU LCJF+4 LINE COUNT
000055 A 112 V$JCFG EQU LCJF+5 JCP FLAGS
113 * BIT 2-0 = LOAD AND GO FLAGS
114 * BIT 3 = DUMP FLAG 1=DUMP, 0=NO DUMP
115 * BIT 9-4 = UNUSED
116 * BIT 15-10 = BG EXTRA CORE BLOCKS TO ALLOC
000056 A 118 V$JFCB EQU LCJF+6 JCP FILE CONTROL BLOCK
000070 A 119 V$DATE EQU LCJF+16 JCP DATA RECORD
000074 A 120 V$PLCT EQU LCJF+20 PERMINATE LINE COUNT
000075 A 121 V$BGLB EQU LCJF+21 JCP LIB KEY AND LU NO. (BACKGROUND LIB)
000076 A 122 V$CRDM EQU LCJF+22 CARD KEYPUNCH TYPE, 0=026, 1=029
123 * BIT 0 = SYSTEM NOMINAL KEYPUNCH MODE.
124 * BIT 9 = CURRENT JOB KEYPUNCH MODE.
125 *
126 *****
127 *
128 ***          LOW CORE DESCRIPTION          ***L00 00128
129 *
130 *****
000300 A 132 LC EQU 0300
000300 A 133 V$CTL EQU LC CURRENT TASK TIBB LOCATION
000301 A 134 V$CPL EQU LC+1 CURRENT PRIORITY LEVEL
000302 A 135 V$CRS EQU LC+2 CURRENT REENRANT STACK POINTER
000303 A 136 V$TB EQU LC+3 POINTER TO HIGHEST PRIORITY TIBB
000304 A 137 V$UTB EQU LC+4 POINTER TO UNUSED TASK TIBB
000305 A 138 V$PTVB EQU LC+5 POINTER TO NEXT ENTRY IN REENRANT STACK
000306 A 139 V$FLRS EQU LC+6 FIRST LOC. OF REENRANT STACK
000307 A 140 V$LRSK EQU LC+7 LAST LOC. OF REENRANT STACK+1
000310 A 141 V$CKPT EQU LC+8 CHECKPOINT FLAG 1=ON, 0=OFF
142 * UNUSED
000312 A 143 V$LSAL EQU LC+10 LOC. OF TIBB FOR SYSTEM SAL TASK
000313 A 144 V$LER EQU LC+11 LOC. OF TIBB FOR SYSTEM ERROR TASK
000314 A 145 V$TJCP EQU LC+12 LOC. OF TIBB FOR JOB CONTROL PROCESSOR TASK
000315 A 146 V$BTE EQU LC+13 LOC. OF CURRENT ACTIVE BACKGROUND TSK TIBB
147 * IFT VORTEX-2
148 * GOTO LCD1
149 V$HPAG EQU LC+14 ASSEMBLE FOR VORTEX II
150 V$LPP EQU LC+15 NUMBER OF AVAILABLE PAGES IN V$PAGE
151 LCD1 CNT V2 00 00147
152 * IFF VORTEX-2
153 * GOTO LCD2
000316 A 154 V$LUP EQU LC+14 LOC. OF 1ST UNPROTECTED WORD
000317 A 155 V$LLUP EQU LC+15 LOC. OF LAST UNPROTECTED WORD
156 LCD2 CNT V2 00 00150
000320 A 157 V$IM EQU LC+16 INTERRUPT MASK (8 WORDS)
158 * IFF VORTEX-2
159 * GOTO LCD3
000330 A 160 V$MPM EQU LC+24 MEMORY PROTECT MASK (4 WORDS)
000334 A 161 V$CAM EQU LC+28 CPU ALLOCATION MASK (4 WORDS)
162 * EQU LC+32 UNUSED
163 LCD3 CNT V2 00 00158
164 * IFT VORTEX-2
165 * GOTO LCD4
166 V$MAP EQU LC+24 ASSEMBLE IF VORTEX II
167 V$BTEM EQU LC+25 MAP KEY AVAILABILITY TABLE MASK
168 V$GFCB EQU LC+26 BOTTOM OF NUCLEUS TABLE MODULE
169 V$MING EQU LC+27 GLOBAL PCB MODULE
170 V$ST0 EQU LC+28 MAP 0 IMAGE ADDRESS
171 V$ST1 EQU LC+29 FUNC 1 CONTROL WORD TO SWITCH EXECUTIVE
172 V$ST2 EQU LC+30 MODE STATES: V$ST0- STATE 0
173 V$ST3 EQU LC+31 V$ST1- STATE 1
174 V$KEY EQU LC+32 ETC
175 LCD4 CNT V2 00 00170
000341 A 176 V$CRDR EQU LC+33 EXECUTING TASK'S MAP KEY
000342 A 177 V$TSGT EQU LC+34 CORE RESIDENT DIRECTORY LOCATION
000343 A 178 V$TMS EQU LC+35 TOP OF THREAD OF BG TSK WAITING TO BE ALLOC
000344 A 179 V$TMN EQU LC+36 TIME OF DAY IN 5 MILLISECOND INCREMENTS
000345 A 180 V$LUNT EQU LC+37 TIME OF DAY IN MINUTE INCREMENTS
000346 A 181 V$OPCF EQU LC+38 ADDR. OF LOGICAL UNIT NAME TABLE
000347 A 182 V$FGLB EQU LC+39 OPCODE LOCKOUT FLAG
000350 A 183 V$FREE EQU LC+40 KEY AND LU NO. FOR FOREGROUND LIB
000351 A 184 V$CTMS EQU LC+41 FREE RUNNING COUNTER INCR. IN MICROSECONDS
000352 A 185 V$SCV EQU LC+42 CLOCK RESOLUTION IN 5 MILLISECOND INCR.
000353 A 186 V$CKE EQU LC+43 CLOCK SELECTED COUNT VALUE (1 TO 4095)
000354 A 187 V$CRM EQU LC+44 BASIC CLOCK INTERRUPT RATE IN MICROSECONDS
000355 A 188 V$DSTB EQU LC+45 CLOCK RESOLUTION INCR. FOR 1 MINUTE.
000356 A 189 V$LIT EQU LC+46 BASE ADDR. FOR DST BLOCK
190 * IFF VORTEX-2
191 V$PGT EQU LC+47 LAST LOCATION OF BACKGROUND LITERAL TABLE
192 * IFT VORTEX-2
000357 A 193 V$TKSZ EQU LC+47 ASSEMBLE IF VORTEX II
000360 A 194 V$CTAB EQU LC+48 RMD TRACK SIZE
000361 A 195 V$CTL EQU LC+49 BASE ADDR. FOR CONTROLLER ADDR. TABLE
000362 A 196 V$NCTR EQU LC+50 CURRENT CONTROLLER IN STAN
000363 A 197 V$PTMN EQU LC+51 NO. OF CONTROLLERS
198 * EQU LC+59 EXTENSAL DEVICE ADDRESS TABLE FOR PIMS
199 * EQU LC+59 (8 WORDS DEFINED IN PIM NO ORDER)
200 * IFF VORTEX-2

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201          GOTO      LCD5          ASSEMBLE IF NOT VORTEX II          V2  00  00201
202 *          EQU      LC+60        UNUSED                               L00  00202
203 LCD5      CONT          VORTEX-2          V2  00  00203
204          IFT          VORTEX-2          V2  00  00204
205          GOTO      LCD6          ASSEMBLE IF VORTEX II          V2  00  00205
206 *          EQU      LC+59        JMP V$IDST PAGE 0 ENTRY FOR I/O    V2  00  00206
207 *          EQU      LC+60        STAT CALLS.                          V2  00  00207
208 LCD6      CONT          VORTEX-2          V2  00  00208
000375 A 209 V$SLFG EQU      LC+61        SAL TASK BUSY FLAG 1=BUSY, 0=NOT BUSY L00  00209
000376 A 210 V$ERFG EQU      LC+62        ERROR TASK BUSY FLAG 1=BUSY, 0=NOT BUSY L00  00210
000377 A 211 V$JOP EQU      LC+63        JCP OPERATING FLAG L00  00211
000400 A 212 V$LUT1 EQU      LC+64        START LUN ADDR FOR JCP/DPCOM ASSIGNABLE L00  00212
000401 A 213 V$LUT2 EQU      LC+65        START LUN ADDR FOR UNASSIGNABLE L00  00213
000402 A 214 V$LUT3 EQU      LC+66        START LUN ADDR FOR DPCOM ASSIGNABLE L00  00214
000403 A 215 V$IMIN EQU      LC+67        32767 - (60000/(5*V$CTMS)) + 1 L00  00215
216          IFF          VORTEX-2          V2  00  00216
217          GOTO      LCD7          ASSEMBLE IF NOT VORTEX II          V2  00  00217
000404 A 218 V$BIC1 EQU      LC+68        BIC ONE INTERRUPT LOCATION L00  00218
000405 A 219 V$BIC2 EQU      LC+69        BIC TWO INTERRUPT LOCATION L00  00219
000406 A 220 V$BIC3 EQU      LC+70        BIC THREE INTERRUPT LOCATION L00  00220
000407 A 221 V$BIC4 EQU      LC+71        BIC FOUR INTERRUPT LOCATION L00  00221
222 LCD7      CONT          VORTEX-2          V2  00  00222
223          IFT          VORTEX-2          V2  00  00223
224          GOTO      LCD8          VORTEX-2          V2  00  00224
225 *          EQU      LC+68        JMP V$IDC PAGE 0 ENTRY FOR IDC    V2  00  00225
226 *          EQU      LC+69        CALLS.                          V2  00  00226
227 *          EQU      LC+70        JMP V$EXEC PAGE 0 ENTRY FOR RTE    V2  00  00227
228 *          EQU      LC+71        CALLS.                          V2  00  00228
229 LCD8      CONT          VORTEX-2          V2  00  00229
000410 A 230 V$IOA EQU      LC+72        I/O ALGORITHM L00  00230
000411 A 231 V$CKIT EQU      LC+73        CLOCK INT. IN PIM BEFORE LOCKOUT FLAG. L00  00231
000412 A 232 V$JCB EQU      LC+74        ALL SYSTEM BACKGROUND PROGRAMS AND JCP USE L00  00232
233 *          EQU      LC+74        THIS SYSTEM BUFFER TO READ DIRECTIVES AND L00  00233
234 *          EQU      LC+74        SOURCE RECORDS IN. L00  00234
000413 A 235 V$OCB EQU      LC+75        DPCOM WILL READ OPERATOR KEY-IN REQUESTS L00  00235
236 *          EQU      LC+75        IN THIS BUFFER. IF JCP IS SET NOT ACTIVE L00  00236
237 *          EQU      LC+75        AND A 1 DIRECTIVE IS INPUTED, DPCOM L00  00237
238 *          EQU      LC+75        WILL MOVE THE DIRECTIVE TO V$JCB BEFORE L00  00238
239 *          EQU      LC+75        SCHEDULING JCP. L00  00239
000414 A 240 V$BVM EQU      LC+76        BOTTOM OF VORTEX NUCLEUS L00  00240
000415 A 241 V$BFC EQU      LC+77        TOP OF FG RES. AREA/BOTTOM OF FG BLK COMM. L00  00241
000416 A 242 V$TFC EQU      LC+78        TOP OF FG BLK COMMON/TOP OF VORTEX CORE. L00  00242
000417 A 243 V$STSZ EQU      LC+79        ACTUAL SECTOR SIZE L00  00243
244          EJECT          L00  00244
245 ***** L00  00245
246 *          EQU      LC+79        L00  00246
247 ***** MASK TABLE DESCRIPTION ***** L00  00247
248 *          EQU      LC+79        L00  00248
249 ***** L00  00249
000420 A 251 MT SET 0420 L00  00251
000420 A 252 ZERO EQU MT L00  00252
000421 A 253 BS0 EQU MT+1 BIT MASK CONTENTS 000001 L00  00253
000422 A 254 BS1 EQU MT+2 000002 L00  00254
000423 A 255 BS2 EQU MT+3 000004 L00  00255
000424 A 256 BS3 EQU MT+4 000010 L00  00256
000425 A 257 BS4 EQU MT+5 000020 L00  00257
000426 A 258 BS5 EQU MT+6 000040 L00  00258
000427 A 259 BS6 EQU MT+7 000100 L00  00259
000430 A 260 BS7 EQU MT+8 000200 L00  00260
000431 A 261 BS8 EQU MT+9 000400 L00  00261
000432 A 262 BS9 EQU MT+10 001000 L00  00262
000433 A 263 BS10 EQU MT+11 002000 L00  00263
000434 A 264 BS11 EQU MT+12 004000 L00  00264
000435 A 265 BS12 EQU MT+13 010000 L00  00265
000436 A 266 BS13 EQU MT+14 020000 L00  00266
000437 A 267 BS14 EQU MT+15 040000 L00  00267
000440 A 268 BS15 EQU MT+16 0100000 L00  00268
000441 A 269 BR0 EQU MT+17 BIT MASK CONTENTS 0177776 L00  00269
000442 A 270 BR1 EQU MT+18 0177775 L00  00270
000443 A 271 BR2 EQU MT+19 0177773 L00  00271
000444 A 272 BR3 EQU MT+20 0177767 L00  00272
000445 A 273 BR4 EQU MT+21 0177757 L00  00273
000446 A 274 BR5 EQU MT+22 0177737 L00  00274
000447 A 275 BR6 EQU MT+23 0177677 L00  00275
000450 A 276 BR7 EQU MT+24 0177577 L00  00276
000451 A 277 BR8 EQU MT+25 0177377 L00  00277
000452 A 278 BR9 EQU MT+26 0176777 L00  00278
000453 A 279 BR10 EQU MT+27 0175777 L00  00279
000454 A 280 BR11 EQU MT+28 0173777 L00  00280
000455 A 281 BR12 EQU MT+29 0167777 L00  00281
000456 A 282 BR13 EQU MT+30 0157777 L00  00282
000457 A 283 BR14 EQU MT+31 0137777 L00  00283
000460 A 284 BR15 EQU MT+32 0077777 L00  00284
000461 A 285 NEG EQU MT+33 L00  00285
000462 A 286 LHW EQU MT+34 SET ALL BITS L00  00286
000463 A 287 RHW EQU MT+35 LEFT HALF WORD MASK 0177400 L00  00287
000464 A 288 ONE EQU MT+36 RIGHT HALF WORD MASK 0377 L00  00288
000465 A 289 TWO EQU MT+37 CONTAINS NUMBER 1 L00  00289
000466 A 290 THREE EQU MT+38 CONTAINS NUMBER 2 L00  00290
000467 A 291 FOUR EQU MT+39 CONTAINS NUMBER 3 L00  00291
292 FIVE EQU MT+40 CONTAINS NUMBER 4 L00  00292
293 SIX EQU MT+41 CONTAINS NUMBER 5 L00  00293
294 SEVEN EQU MT+42 CONTAINS NUMBER 6 L00  00294

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000424 A 295 EIGHT EQU MT+4 CONTAINS NUMBER 8 L00 00295
000470 A 296 NINE EQU MT+40 CONTAINS NUMBER 9 L00 00296
000471 A 297 TEN EQU MT+41 CONTAINS NUMBER 10 L00 00297
000421 A 298 BM1 EQU MT+1 BIT MASK WORD 00001 L00 00298
000464 A 299 BM3 EQU MT+36 BIT MASK WORD 00003 L00 00299
000467 A 300 BM7 EQU MT+39 BIT MASK WORD 00007 L00 00300
000472 A 301 BM17 EQU MT+42 BIT MASK WORD 00017 L00 00301
000473 A 302 BM37 EQU MT+43 BIT MASK WORD 00037 L00 00302
000474 A 303 BM77 EQU MT+44 BIT MASK WORD 00077 L00 00303
000475 A 304 BM177 EQU MT+45 BIT MASK WORD 00177 L00 00304
000463 A 305 BM377 EQU MT+35 BIT MASK WORD 00377 L00 00305
000476 A 306 BM777 EQU MT+46 BIT MASK WORD 00777 L00 00306
000477 A 307 BM1777 EQU MT+47 BIT MASK WORD 01777 L00 00307
308 EJECT L00 00308
309 ***** L00 00309
310 * L00 00310
311 **** PIT TEST BIT DESIGNATION *** L00 00311
312 * L00 00312
313 ***** L00 00313
000040 A 315 RA0 EQU 040 BT JUMPS WHEN A REGISTER IS 0 L00 00315
000000 A 316 RA1 EQU 000 BT JUMPS WHEN A REGISTER IS 1 L00 00316
000060 A 317 RB0 EQU 060 BT JUMPS WHEN B REGISTER IS 0 L00 00317
000020 A 318 RB1 EQU 020 BT JUMPS WHEN B REGISTER IS 1 L00 00318
320 ***** L00 00320
321 * L00 00321
322 ** THE BIT CHECKED L00 00322
323 * L00 00323
324 ***** L00 00324
000000 A 326 B0 EQU 0 L00 00326
000001 A 327 B1 EQU 1 L00 00327
000002 A 328 B2 EQU 2 L00 00328
000003 A 329 B3 EQU 3 L00 00329
000004 A 330 B4 EQU 4 L00 00330
000005 A 331 B5 EQU 5 L00 00331
000006 A 332 B6 EQU 6 L00 00332
000007 A 333 B7 EQU 7 L00 00333
000010 A 334 B8 EQU 8 L00 00334
000011 A 335 B9 EQU 9 L00 00335
000012 A 336 B10 EQU 10 L00 00336
000013 A 337 B11 EQU 11 L00 00337
000014 A 338 B12 EQU 12 L00 00338
000015 A 339 B13 EQU 13 L00 00339
000016 A 340 B14 EQU 14 L00 00340
000017 A 341 B15 EQU 15 L00 00341
342 EJECT L00 00342
343 ***** L00 00343
344 * L00 00344
345 **** DEVICE AND FUNCTION CODES *** L00 00345
346 * L00 00346
347 ***** L00 00347
349 **** REAL TIME CLOCK *** L00 00349
000047 A 350 CLOCK EQU 047 DEVICE NUMBER 047 L00 00350
351 * L00 00351
000747 A 352 DISCLK EQU 0700+CLOCK DISABLE CLOCK L00 00352
000147 A 353 ENACLK EQU 0100+CLOCK ENABLE CLOCK L00 00353
354 I/P VORTEX-2 V2 L00 00354
355 MPDVAD EQU 046 RAM ADDRESS V2 L00 00355
357 * L00 00357
358 **** PIM *** L00 00358
000044 A 359 APIM EQU 044 ALL PIMS DEVICE NUMBER L00 00359
000040 A 360 PIM1 EQU 040 L00 00360
000041 A 361 PIM2 EQU 041 L00 00361
000042 A 362 PIM3 EQU 042 L00 00362
000043 A 363 PIM4 EQU 043 L00 00363
000040 A 364 PIM5 EQU 040 L00 00364
000040 A 365 PIM6 EQU 040 L00 00365
000040 A 366 PIM7 EQU 040 L00 00366
000040 A 367 PIM8 EQU 040 L00 00367
368 * L00 00368
000444 A 369 DISPIM EQU 0400+APIM L00 00369
000244 A 370 ENAPIM EQU 0200+APIM L00 00370
372 **** MEMORY PROTECT *** L00 00372
000045 A 373 MP EQU 045 DEVICE ADDRESS 045 L00 00373
000745 A 374 DISMP EQU 0700+MP DISABLE MEMORY PROTECT L00 00374
000645 A 375 ENAMP EQU 0600+MP ENABLE MEMORY PROTECT L00 00375
000045 A 376 MPMR0 EQU 0000+MP SELECT MASK REGISTER 0 L00 00376
000145 A 377 MPMR1 EQU 0100+MP SELECT MASK REGISTER 1 L00 00377
000245 A 378 MPMR2 EQU 0200+MP SELECT MASK REGISTER 2 L00 00378
000345 A 379 MPMR3 EQU 0300+MP SELECT MASK REGISTER 3 L00 00379
380 EJECT L00 00380
381 EJECT L00 00381
382 * CTBL FOR EACH CONTROLLER. L00 00382
000000 A 383 CTACT EQU 0 CONTROLLER ACTIVE IND.,1=ACTIVE ,BIT 15 L00 00383
000000 A 384 CTIDB EQU 0 CONTROLLER/DRIVER TIDB ADDR.,BITS 14-0 L00 00384
000001 A 385 CTADNC EQU 1 ADDR. OF NEXT CONTROLLER IN CHAIN L00 00385
000002 A 386 CTDPM EQU 2 DP-CODE MASK L00 00386
000003 A 387 CTIDST EQU 3 ADDR. OF CURRENT DST L00 00387
000004 A 388 CTRGBK EQU 4 FIRST REQUEST BLUCK L00 00388
000005 A 389 CTRTRY EQU 5 ERROR RETRY CONSTANT,BITS 15-8 L00 00389
000005 A 390 CTRCNT EQU 5 VERR RETRY COUNTER ,BITS 7-0 L00 00390
000006 A 391 CTIVAT EQU 6 DEVICE ADDR. L00 00391
000007 A 392 CTIDA EQU 7 I/O ALGORITHM VALUE L00 00392
000010 A 393 CTSTAT EQU 8 DRIVER STATUS L00 00393

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000011 A 394 CTBICB EQU 9 ADDR. FOR BIC FLAG TABLE,BITS 15-0 L00 00394
000012 A 395 CTFCB EQU 10 FCB OR DCB ADDR. L00 00395
000013 A 396 CTWDS EQU 11 NO.OF WORDS TRANSFERED. L00 00396
000014 A 397 CTFRCY EQU 12 BITS 15-8,FREQUENCY CONSTANT L00 00397
000014 A 398 CTFREQ EQU 12 BITS 7-0,FREQUENCY COUNT L00 00398
000015 A 399 CTSTSZ EQU 13 NO.OF WORDS PER SECTOR FOR RMD ONLY L00 00399
000016 A 400 CTTRS2 EQU 14 NO.OF SECTORS PER TRACK FOR RMD ONLY L00 00400
000017 A 401 CTPST0 EQU 15 PST BASE ADDR,RMD,UNIT 0 L00 00401
000020 A 402 CTPST1 EQU 16 PST BASE ADDR,RMD,UNIT 1 L00 00402
000021 A 403 CTPST2 EQU 17 PST BASE ADDR,RMD,UNIT 2 L00 00403
000022 A 404 CTPST3 EQU 18 PST BASE ADDR,RMD,UNIT 3 L00 00404
405 * L00 00405
406 * EJEC L00 00406
407 * DEVICE SPECIFICATION TABLE, DST L00 00407
408 * DST FOR EACH DEVICE,AND EACH RMD PARTITION L00 00408
409 * L00 00409
000000 A 410 DSDVDN EQU 0 DEVICE DOWN INDICATOR,1=DOWN BIT 15 L00 00410
000000 A 411 DSDASS EQU 0 DEVICE ASSGNMT INDICATOR,BITS 14-13 L00 00411
412 * 00 ASSIGNABLE BY JCP AND OPCOM L00 00412
413 * 01 ASSIGNABLE BY OPCOM ONLY L00 00413
414 * 10 UNASSIGNABLE L00 00414
415 * 00 UNUSED L00 00415
000000 A 416 DSUNAM EQU 0 DEV NAME,CH.3 B12-10,CH.4 B9-4 L00 00416
417 * ADD 0260 TO GET ASCII CHARACTER L00 00417
000000 A 418 DSNDRQ EQU 0 DEVICE REQUEST COUNTER, BITS 3-0. L00 00418
000001 A 419 DSNAME EQU 1 DEVICE NAME,2 ASCII CHAR. L00 00419
000002 A 420 DSREWD EQU 2 DEVICE REWIND INDICATOR,1=REWIND,BIT 15 L00 00420
000002 A 421 DSUNTN EQU 2 DEVICE UNIT NO. ,BITS 14-13 L00 00421
000002 A 422 DSLCKD EQU 2 PARTITION LOCKOUT FLAG BIT 12 L00 00422
000002 A 423 DSOPCM EQU 2 OPCOM DEVICE INDICATOR,BIT 11 L00 00423
000002 A 424 DSPSTI EQU 2 INDEX TO PST,BITS 10-6. L00 00424
000002 A 425 DSCTAD EQU 2 INDEX TO COTAD,CONTRLLR ADDR TABLE,B5-0. L00 00425
426 * L00 00426
427 * L00 00427
428 * EJEC L00 00428
429 * CONTROLLER ADDRESS TABLE,COTAD L00 00429
430 * 1 ENTRY FOR EACH CTBL. L00 00430
431 * L00 00431
000000 A 432 COTAD1 EQU 0 BASE ADDRESS FOR CONTROLLER TABLE L00 00432
433 * L00 00433
434 * EJEC L00 00434
435 * BIC FLAG TABLE L00 00435
436 * 1 ENTRY FOR EACH BIC ,EACH CONTROLLER TABLE,CTBL, WHICH L00 00436
437 * UTILIZES A BIC CONTAINS AN ADDRESS,CTBICB, POINTING L00 00437
438 * TO ITS BIC ENTRY. L00 00438
439 * L00 00439
000000 A 440 BICNUM EQU 0 BIC NUMBER FOR THIS ENTRY. L00 00440
441 * POSITIVE VALUE MEANS BIC IS AVAILABLE L00 00441
442 * NEGATIVE VALUE,COMPLEMENTED BIC NO., L00 00442
443 * MEANS BIC IS CURRENTLY IN USE. L00 00443
444 * L00 00444
445 * L00 00445
446 * EJEC L00 00446
447 * REQUEST BLOCK , RQBLK L00 00447
448 * 1 FOR EACH IDC REQUEST; RQBLKS ARE QUEUED ACCORDING TO TASK L00 00448
449 * PRIORITY TO CTBL. L00 00449
450 * L00 00450
451 * L00 00451
000000 A 452 RSTPR EQU 0 BIT 15 = I/O COMPLETED INDICATOR. L00 00452
453 * BITS14-5,DRIVER STATUS L00 00453
454 * BITS 4-0, REQUESTING TASK PRIORITY. L00 00454
000001 A 455 ROPWD EQU 1 BIT 15 = WAIT OPTION L00 00455
456 * BITS14-12, MODE,USED BY DRIVERS L00 00456
457 * BITS 11-8,OP-CODE L00 00457
458 * BITS 7-0, LOGICAL UNIT NO. L00 00458
000002 A 459 RFCB EQU 2 FCB OR DCB ADDR. L00 00459
000003 A 460 RTIDB EQU 3 REQUESTING TASK TIDB ADDR. L00 00460
000004 A 461 RADNR EQU 4 ADDR.OF NEXT RQBLK IN QUEUE.,0= NONE. L00 00461
462 * L00 00462
463 * EJEC L00 00463
464 * L00 00464
465 * PARTITION SPECIFICATION TABLE, PST L00 00465
466 * L00 00466
467 * A PST EXISTS FOR EACH ROTATING MEMORY DEVICE. EACH PARTITION L00 00467
468 * ON THE RMD HAS A FIVE WORD ENTRY IN THE PST. THE PARTITION'S L00 00468
469 * PST ENTRY NUMBER IS SPECIFIED IN THE DEVICE SPECIFICATION L00 00469
470 * TABLE,DST,THUS LINKING THE PST WITH A LOGICAL UNIT NUMBER. L00 00470
471 * THE EFFECTIVE ADDR FOR AN ENTRY IS FOUND AS FOLLOWS: L00 00471
472 * L00 00472
473 * L00 00473
474 * BITS 14-8, UNUSED L00 00474
475 * EJEC L00 00475
476 * L00 00476
477 * DATA CONTROL BLOCK, DCB L00 00477
478 * L00 00478
479 * A DCB IS REFERENCED BY EACH I/O REQUEST BLOCK,RQBLK, SPECIFY- L00 00479
480 * ING A NON-ROTATING MEMORY DEVICE. DCB CONTAINS ADDITION INFOR- L00 00480
481 * MATION NECESSARY TO COMPLETE THE I/O OPERATION. L00 00481
482 * DCB IS A FIXED LENGTH TABLE OF 3 WORDS EACH. THE FCB IS THE DCB L00 00482
483 * EQUIVALENT FOR RMD. L00 00483
484 * L00 00484
485 * L00 00485
000000 A 486 DRECL EQU 0 RECORD LENGTH L00 00486

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000001 A 487 DBUFF EQU 1 USER BUFFER AREA L00 00487
000002 A 488 DCNT EQU 2 NO. OF COUNTS,USE FOR FUNC REQUESTS. L00 00488
489 * L00 00489
490 * L00 00490
491 * L00 00491
492 * EJECT L00 00492
493 * L00 00493
494 * L00 00494
495 * FILE CONTROL BLOCK,FCB L00 00495
496 * L00 00496
497 * A FCB IS REFERENCED BY EACH I/O REQUEST BLOCK,ROBLK, SPECIFY- L00 00497
498 * ING A ROTATING MEMORY DEVICE. FCB CONTAINS ADDITION INFORMA- L00 00498
499 * TION NECESSARY TO COMPLETE THE I/O INFORMATION ON RMD. L00 00499
500 * FCB IS A FIXED LENGTH TABLE OF 10 WORDS. L00 00500
501 * L00 00501
502 * L00 00502
000000 A 503 FRECL EQU 0 RECORD LENGTH L00 00503
000001 A 504 FBUFF EQU 1 BUFFER AREA L00 00504
000002 A 505 FACM EQU 2 ACCESS METHOD ,BITS 15-8 L00 00505
506 * 0 = DIRECT ACCESS BY LOGICAL RECORD. L00 00506
507 * 1 = SEQ ACCESS BY LOGICAL RECORD L00 00507
508 * 2 = DIRECT ACCESS USIN ACTUAL ADDR. L00 00508
509 * 4 = SEQ ACCESS USING ACTUAL ADDR L00 00509
510 * PROTECT KEY, BITS 7-0 L00 00510
000003 A 511 FCADR EQU 3 CURRENT RECORD NO.,OR CURRENT SECTOR ADDR L00 00511
000004 A 512 FCEDF EQU 4 CURRENT END OF FILE POSITION L00 00512
000005 A 513 FIFE EQU 5 BEGIN FILE EXTENT L00 00513
000006 A 514 FEFE EQU 6 END FILE EXTENT. L00 00514
000007 A 515 FNAME1 EQU 7 FILE NAME. CHAR N , CHAR N+1 L00 00515
000010 A 516 FNAME2 EQU 8 CHAR N+2, CHAR N+3 L00 00516
000011 A 517 FNAME3 EQU 9 CHAR N+4, CHAR N+5 L00 00517
518 * L00 00518
519 * EJECT L00 00519
520 * L00 00520
521 * L00 00521
522 * VORTEX STATUS 31/33 PRINTER/PLOTTER D.100 00522
523 * L00 00523
524 * AUXILIARY WRITE MODULE D.100 00524
525 * L00 00525
526 * CONTAINS SOFTWARE CHARACTER GENERATOR FOR USE BY MODEL D D.100 00526
527 * L00 00527
528 * THE MAJOR SUBCOMPONENTS OF THIS MODULE ARE: D.1 00 00528
529 * L00 00529
530 * VSWRIT - PRINT MODE INITIATOR D.1 00 00530
531 * PUTROW - BUFFER PACKING ROUTINE D.1 00 00531
532 * STCLR - BUFFER CLEARING ROUTINE D.1 00 00532
533 * L00 00533
534 * L00 00534
535 * L00 00535
536 * L00 00536
537 * NAME VSWRIT D.100 00537
538 * EXT V$STEP,V$TDFM,V$CPAC,V$STED D.100 00538
539 * L00 00539
540 * L00 00540
000015 A 541 CTBUFF EQU CTAREQ+1 STATUS BUFFER POINTER D.100 00541
000016 A 542 CTMODE EQU CTAREQ+2 FLAG FOR WRITE/PLOT D.100 00542
000017 A 543 CTATTR EQU CTAREQ+3 STATUS MODEL ATTRIBUTES D.100 00543
000020 A 544 CTEMP1 EQU CTAREQ+4 TEMPORARY STORAGE D.100 00544
000021 A 545 CTEMP2 EQU CTAREQ+5 TEMPORARY STORAGE D.100 00545
000022 A 546 CTEMP3 EQU CTAREQ+6 TEMPORARY STORAGE D.100 00546
000023 A 547 CTEMP4 EQU CTAREQ+7 TEMPORARY STORAGE D.100 00547
000024 A 548 CTEMP5 EQU CTAREQ+8 TEMPORARY STORAGE D.100 00548
000025 A 549 CURT1 EQU CTAREQ+9 TEMPORARY STORAGE D.1 00 00549
000026 A 550 CURT2 EQU CTAREQ+10 TEMPORARY STORAGE D.1 00 00550
000027 A 551 CTBEND EQU CTAREQ+11 ENDING ADDRESS FOR BIC TRANSFER D.1 00 00551
000030 A 552 CTCI EQU CTAREQ+12 STATUS CONTACT WORD D.1 00 00552
000031 A 553 CTDBFF EQU CTAREQ+13 POINTER TO USER BUFFER D.100 00553
000032 A 554 CSLIN EQU CTAREQ+14 RASTER STEP COUNTER D.100 00554
000033 A 555 CTLWID EQU CTAREQ+15 MAXIMUM LINE WIDTH CODE D.100 00555
000034 A 556 CTSIZE EQU CTAREQ+16 CURRENT PRINT SIZE CODE D.100 00556
000035 A 557 CTLINC EQU CTAREQ+17 RASTER LINES/CHARACTER D.100 00557
000036 A 558 CTTERM EQU CTAREQ+18 LINE TERMINATION CHARACTER D.100 00558
000037 A 559 CTENAB EQU CTAREQ+19 BUFFER BUSY FLAG D.1 00 00559
000040 A 560 CLINE EQU CTAREQ+20 MATRIX SCAN INDEX D.100 00560
000041 A 561 CINDX EQU CTAREQ+21 CHARACTER CONVERSION INDEX D.100 00561
000042 A 562 CBITPD EQU CTAREQ+22 SHIFT FACTOR FOR PACKING BUFFER D.100 00562
000043 A 563 CBITPT EQU CTAREQ+23 RASTER BIT POINTER TO USER BUFFER D.100 00563
000044 A 564 CNIDTH EQU CTAREQ+24 WIDTH OF MATRIX ROW IN BITS D.100 00564
000045 A 565 CTLSIZ EQU CTAREQ+25 LINE WIDTH IN CHARACTERS D.100 00565
000046 A 566 CTWRIT EQU CTAREQ+26 POINTER TO AUXILIARY WRITE ROUTINE D.100 00566
000047 A 567 CTFUNC EQU CTAREQ+27 POINTER TO AUXILIARY FUNC ROUTINE D.100 00567
000050 A 568 CTBUFA EQU CTAREQ+28 POINTER TO BEGINNING OF STATUS BUFFER D.100 00568
000051 A 569 CTEND EQU CTAREQ+29 POINTER TO END OF STATUS BUFFER D.100 00569
000052 A 570 CTLWCH EQU CTAREQ+30 MAXIMUM LINE WIDTH IN CHARACTERS D.1 00 00570
000053 A 571 CTLWMD EQU CTAREQ+31 MAXIMUM LINE WIDTH IN RASTER WORDS D.1 00 00571
000054 A 572 CTHCGS EQU CTAREQ+32 HARDWARE CHAR GEN SELECT CODE D.1 00 00572
000055 A 573 CTBUFF EQU CTAREQ+33 STATUS BUFFER D.1 00 00573
574 * L00 00574
000001 A 575 X EQU 1 L00 00575
000002 A 576 B EQU 2 L00 00576
577 * L00 00577
578 * L00 00578
579 * L00 00579

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		580	* WRITE OPERATION				L00	00580
		581	* *				L00	00581
		582	* *				L00	00582
	000000	R	583	V\$WRIT EQU *			D.100	00583
	000000	R	584	STS4 *			L00	00584
	000000	A	585	STB CTEMP5,X	SAVE RETURN LOCATION		D.100	00585
000001	025004	A	586	LDB CTRQBK,X	GET REQUEST BLOCK ADDRESS		D.1 00	00586
000002	026002	A	587	LDB RFCB,B	GET CONTROL BLOCK ADDRESS		D.1 00	00587
			588	IFF VORTEX-2			V2 00	00588
			589	DME MPDVAD,V\$ST3	SWITCH TO USER'S MAP		V2 00	00589
000003	016000	A	590	LDA DRECL,B	ASCII MODE, GET RECORD SIZE		L00	00590
			591	IFF VORTEX-2			V2 00	00591
			592	DME MPDVAD,V\$ST0	RESTORE MAP 0		V2 00	00592
000004	055013	A	593	STA CTWDS,X			L00	00593
000005	004201	A	594	ASLA 1			D.1 00	00594
000006	145052	A	595	SUB CTLWCH,X	GREATER THAN LINE WIDTH ?		E.1 *****	
000007	005311	A	596	DAR			L00	00596
000010	001004	A	597	JAN STS4A			L00	00597
000011	000015	R						
000012	015052	A	598	LDA CTLWCH,X			E.1 *****	
000013	004301	A	599	ASRA 1			D.1 00	00599
000014	055013	A	600	STA CTWDS,X			L00	00600
	000015	R	601	STS4A EQU *			L00	00601
000015	005001	A	602	TZA			00	00602
000016	055043	A	603	STA CBITPT,X	RESET CHARACTER ROW BIT POINTER		00	00603
000017	055040	A	604	STA CLINE,X	RESET MATRIX INDEX		L00	00604
000020	010421	A	605	LDA BS0			D.1 00	00605
000021	055041	A	606	STA CINDX,X	RESET CHARACTER INDEX		L00	00606
000022	010423	A	607	LDA BS2			L00	00607
000023	055010	A	608	STA CTSTAT,X	SET DRIVER STATUS TO FORMATTED PRINT		L00	00608
			609	IFF VORTEX-2			V2 00	00609
			610	DME MPDVAD,V\$ST3	SWITCH TO USER'S MAP		V2 00	00610
000024	016001	A	611	LDA DBUFF,B			L00	00611
			612	IFF VORTEX-2			V2 00	00612
			613	DME MPDVAD,V\$ST0	RESTORE MAP 0		V2 00	00613
000025	055031	A	614	STA CTDBFP,X	SAVE USER BUFFER ORIGIN		D.1 00	00614
000026	005012	A	615	TAB			L00	00615
			616	IFF VORTEX-2			V2 00	00616
			617	DME MPDVAD,V\$ST3	SWITCH TO USER'S MAP		V2 00	00617
000027	016000	A	618	LDA 0.2	GET FIRST WORD FROM BUFFER		L00	00618
			619	IFF VORTEX-2			V2 00	00619
			620	DME MPDVAD,V\$ST0	RESTORE MAP 0		V2 00	00620
000030	004350	A	621	LSRA 8	EXAMINE FIRST CHARACTER		L00	00621
000031	006140	A	622	SUBI 0250	ASCII ZERO		00	00622
000032	000260	A						
000033	001010	A	623	JAZ STS8B	SKIP LINE BEFORE PRINT		L00	00623
000034	000342	R						
000035	005311	A	624	DAR	ASCII ONE		L00	00624
000036	001010	A	625	JAZ STS8A	TOP OF FORM BEFORE PRINT		L00	00625
000037	000350	R						
000040	065020	A	626	STB CTEMP1,X			00	00626
000041	006506	A	627	JSR V\$STEP,B			D.1 00	00627
000042	000000	E						
000043	006506	A	628	JSR V\$STEP,B			D.1 00	00628
000044	000042	E						
000045	025020	A	629	LDB CTEMP1,X			00	00629
000046	005001	A	630	TZA			L00	00630
000047	055010	A	631	STA CTSTAT,X	NEITHER. RESET DRIVER STATUS		L00	00631
	000050	R	632	STS4AA EQU *	RETURN HERE AFTER EACH SCAN OF CHAR GEN		L00	00632
000050	006506	A	633	JSR STCLR,B			B.2 00	00633
000051	000322	R						
	000052	R	634	STS5 EQU *			L00	00634
000052	015041	A	635	LDA CINDX,X	GET CHAR INDEX		L00	00635
000053	004301	A	636	ASRA 1			L00	00636
000054	125031	A	637	ADD CTDBFP,X	ADD USER BUFFER ADDRESS		D.1 00	00637
000055	005012	A	638	TAB			L00	00638
			639	IFF VORTEX-2			V2 00	00639
			640	DME MPDVAD,V\$ST3	SWITCH TO USER'S MAP		V2 00	00640
000056	026000	A	641	LDB 0.8	GET TWO CHARACTERS FROM USER BUFFER		L00	00641
			642	IFF VORTEX-2			V2 00	00642
			643	DME MPDVAD,V\$ST0	RESTORE MAP 0		V2 00	00643
000057	015041	A	644	LDA CINDX,X	GET CHAR INDEX		L00	00644
000060	005111	A	645	IAR			L00	00645
000061	150421	A	646	ANA BS0	EXTRACT LSB OF COUNT		L00	00646
000062	001010	A	647	JAZ *+3	JUMP IF CHAR IN BITS 0-7		L00	00647
000063	000065	R						
000064	004050	A	648	LRLB 8	CHAR IN BITS 8-15		L00	00648
000065	005021	A	649	TBA			L00	00649
000066	150463	A	650	ANA 5M377	EXTRACT CHAR		L00	00650
000067	005012	A	651	TAB			L00	00651
000070	144273	A	652	SUB 0215	CARRIAGE RETURN?		L00	00652
000071	001010	A	653	JAZ STS6	OUTPUT TO STATUS		00	00653
000072	000172	R						
000073	005021	A	654	TBA			L00	00654
000074	144270	A	655	SUB 0240	CHAR UNDER 0240?		L00	00655
000075	001004	A	656	JAN *+5	YES, NOT ASCII		L00	00656
000076	000102	R						
000077	140427	A	657	SUB 026	CHAR OVER 0377?		L00	00657
000100	001004	A	658	JAN *+5	NO, LEGAL ASCII CHAR		L00	00658
000101	000105	R						
000102	005001	A	659	STS5A TZA	ILLEGAL CHAR - SUBSTITUTE SPACE CHAR		L00	00659
000103	001000	A	660	JMP *+3			L00	00660
000104	000106	R						

000105	120427	A	661	ADD	BS6			L00	00661	
000106	055023	R	662	STA	CHRT1,X	SAVE INDEX		L00	00662	
			663	*	GET RASTER PAT	PATTERN FOR CHAR		L00	00663	
000107	004301	A	664	ASRA	1	CONVERSION TABLE INDEX		L00	00664	
000110	005012	A	665	TAB				00	00665	
000111	005001	A	666	TZA				00	00666	
000112	006160	A	667	MULI	013	INDEX TIMES ELEVEN		00	00667	
000113	000013	A								
000114	005021	A	668	TBA				00	00668	
000115	125040	A	669	ADD	CLINE,X	ADD MATRIX INDEX		L00	00669	
000116	006127	A	670	ADDE	CONV	ADD CONVERSION TABLE ADDRESS		L00	00670	
000117	000401	R								
000120	005012	A	671	TAB				L00	00671	
000121	026000	A	672	LDB	0,B			L00	00672	
000122	015025	A	673	LDA	CHRT1,X			L00	00673	
000123	005111	A	674	IAR				L00	00674	
000124	150421	A	675	ANA	BS0			L00	00675	
000125	001010	A	676	JAZ	*+3			L00	00676	
000126	000130	R								
000127	004050	A	677	LRLB	8	PATTERN IN BITS 8-15		L00	00677	
000130	005021	A	678	TBA				L00	00678	
000131	150463	A	679	ANA	BM377			L00	00679	
000132	055025	A	680	STA	CHRT1,X	SAVE MATRIX PATTERN		L00	00680	
			681	*	PUT CHARACTER IN STATUS BUFFER			L00	00681	
000133	010471	A	682	LDA	TEN	SET CHARACTER MATRIX WIDTH TO		00	00682	
000134	055044	A	683	STA	CHWIDTH,X	TEN BITS FOR NORMAL SIZE		00	00683	
000135	025034	A	684	LDB	CTSIZE,X			00	00684	
000136	001020	A	685	JBZ	STNRM	NORMAL CHAR SIZE		00	00685	
000137	000163	R								
000140	120471	A	686	STLRG	ADD	TEN	DOUBLE MATRIX WIDTH FOR LARGE SIZE	00	00686	
000141	055044	A	687	STA	CHWIDTH,X	CHARACTERS		00	00687	
000142	005002	A	688	TZR		LARGE SIZE-EXPAND MATRIX		00	00688	
000143	005122	A	689	IPR		SET BIT 10 SERVE AS FLAG TO INDICATE DONE		L00	00689	
000144	015025	A	690	LDA	CHRT1,X	RECOVER MATRIX		L00	00690	
000145	004250	A	691	LPLA	8	PLACE IN TOP BYTE		L00	00691	
000146	055023	A	692	STA	CTEMP4,X	SAVE MATRIX SHIFTED		L00	00692	
000147	015023	A	693	STLRGA	LDA	CTEMP4,X	RECOVER MATRIX SHIFTED	L00	00693	
000150	004301	A	694	ASRA	1	EXTEND SIGN BIT		L00	00694	
000151	004442	A	695	LLRL	2	STORE DOUBLE BIT IN B REGISTER		L00	00695	
000152	055023	A	696	STA	CTEMP4,X			L00	00696	
000153	150421	A	697	ANA	BS0	MASK OF FLAG BIT COMING FROM B REGISTER		L00	00697	
000154	001010	A	698	JAZ	STLRGA	NOT FINISHED YET		L00	00698	
000155	000147	R								
000156	065025	A	699	STB	CHRT1,X	SAVE EXPANDED ROW		00	00699	
000157	006506	A	700	JSR	PUTROW,B	PACK LARGE CHAR INTO BUFFER	B.2	00	00700	
000160	000244	R								
000161	001000	A	701	JMP	STS5B			00	00701	
000162	000165	R								
000163	000163	R	702	STNRM	EQU	*		L00	00702	
000163	006506	A	703	JSR	PUTROW,B	PACK NORMAL CHAR INTO BUFFER	B.2	00	00703	
000164	000244	R								
000165	000165	R	704	STS5B	EQU	*		L00	00704	
000165	015041	A	705	LDA	CINDX,X	GET COUNT OF CHARACTERS TRANSFERRED		00	00705	
000166	004301	A	706	ASRA	1	DIVIDE BY 2 TO GET NUMBER OF WORDS TAKEN		00	00706	
			707	*	FROM USER BUFFER			00	00707	
000167	145013	A	708	SUB	CTNDS,X	SUBTRACT NUMBER OF WORDS IN RECORD		00	00708	
000170	001004	A	709	JAN	STS5	NOT END OF RECORD-MORE WORK TO DO		00	00709	
000171	000052	R								
000172	000172	R	710	STS6	EQU	*		L00	00710	
000172	006506	A	711	JSR	VSSTEP,B	STEP STATUS	D.100	00	00711	
000173	000044	E								
000174	015015	A	712	LDA	CTRUFF,X			D.1	00	00712
000175	055027	A	713	STA	CTREND,X	CREATE BIC ENDING ADDRESS		D.1	00	00713
000176	015050	A	714	LDA	CTBUFA,X			D.1	00	00714
000177	055015	A	715	STA	CTBUFB,X	CREATE BIC STARTING ADDRESS		D.1	00	00715
000200	006506	A	716	JSR	VSTBD,B	OUTPUT RASTER LINE		D.100	00	00716
000201	000000	E								
000202	010421	A	717	LDA	BS0			D.1	00	00717
000203	055041	A	718	STA	CINDX,X	RESET CHARACTER INDEX		L00	00718	
000204	005001	A	719	TZA				D.1	00	00719
000205	055043	A	720	STA	CBITPT,X	RESET BIT POINTER		00	00720	
000206	015034	A	721	LDA	CTSIZE,X	GET CHAR SIZE. ZERO FOR NORMAL		L00	00721	
000207	001010	A	722	JAZ	STINT1	NORMAL SIZE		L00	00722	
000210	000217	R								
000211	005211	A	723	CPA				L00	00723	
000212	055034	A	724	STA	CTSIZE,X	LARGE SIZE NOT ZERO		L00	00724	
000213	001002	A	725	JAP	*+4	NORMAL SIZE THIS TRIP		L00	00725	
000214	000217	R								
000215	001004	A	726	JAN	*+3	FIRST SCAN OF LARGE SIZE CHAR		L00	00726	
000216	000220	R								
000217	000217	R	727	STINT1	EQU	*		L00	00727	
000217	045040	A	728	INR	CLINE,X	STEP MATRIX INDEX ON SECOND SCAN OF LARGE		L00	00728	
000220	015040	A	729	LDA	CLINE,X	CHECK TO SEE IF DONE WITH TEXT		L00	00729	
000221	006140	A	730	SUBI	11			00	00730	
000222	000013	A								
000223	001010	A	731	JAZ	STINTA	DO EXTRA STEPS AT END		L00	00731	
000224	000227	R								
000225	001000	A	732	JMP	STS4AA	DO NEXT SCAN FOR TEXT		L00	00732	
000226	000050	R								
000227	000227	R	733	STINTA	EQU	*		L00	00733	
000227	015034	A	734	LDA	CTSIZE,X	GET CHAR SIZE		L00	00734	
000230	001010	A	735	JAZ	STINTB	SMALL CHARS		L00	00735	
000231	000236	R								

000232	006506	A	736	JSR	V\$STEP,B				D.1 00 00736
000233	000173	E							
000234	006506	A	737	JSR	V\$STEP,B				D.1 00 00737
000235	000233	E							
000236	005001	A	738	STINTB	TZA				L00 00738
000237	055037	A	739	STA	CTENAB,X	RESET BUFFER BUSY FLAG			L00 00739
000240	055010	A	740	STA	CTSTAT,X	RESET FORMAT FLAG			L00 00740
000241	025024	A	741	LDB	CTEMP5,X	GET RETURN LOCATION			D.100 00741
000242	006706	A	742	IJMP	0,B				D.100 00742
000243	000000	A							
			743	*					00 00743
			744	*	PACK CHARACTER ROWS OF RASTER DATA INTO STATOS BUFFER-THE WIDTH OF				00 00744
			745	*	THE MATRIX IS SPECIFIED IN CWIDTH				00 00745
			746	*					00 00746
			747	PUTROW	STB	CTEMP2,X	SAVE ENTRY		C.1 00 00747
000244	065021	A	748	LDB	CBITPT,X	USE BIT POINTER TO COMPUT STATOS BUFFER			00 00748
000245	025043	A	749	TZA					00 00749
000246	005001	A	750	DIY	BS4	WORD AND BIT POSITION			00 00750
000247	170425	A	751	STB	CTBUFF,X	SAVE BUFFER WORD			D.1 00 00751
000250	065015	A	752	STA	CTEMP1,X	SAVE REMAINDER			00 00752
000251	055020	A	753	LDAI	020	ACTUAL BIT POSITION IS 16 MINUS REMAINDER			00 00753
000252	006010	A							
000253	000020	A							
000254	145020	A	754	SUB	CTEMP1,X	COMPUTE BIT POSITION			00 00754
000255	055042	A	755	STA	CBITPD,X	SAVE BIT POSITION			00 00755
000256	025025	A	756	LDB	CBRT1,X	GET CHARACTER MATRIX ROW-SAVE IN B REG			00 00756
000257	015034	A	757	LDA	CTSIZE,X				00 00757
000260	001016	A	758	JANZ	PUT1	JUMP FOR LARGE SIZE CHAR			00 00758
000261	000265	R							
000262	015042	A	759	LDA	CBITPD,X	RECOVER BIT POSITION			00 00759
000263	120424	A	760	ADD	BS8	ADJUST SHIFT FACTOR FOR NORMAL CHAR SIZE			00 00760
000264	055042	A	761	STA	CBITPD,X	SAVE SHIFT FACTOR			00 00761
000265	015015	A	762	PUT1	LDA	CTBUFF,X	GET BUFFER WORD LOCATION		D.1 00 00762
000266	125050	A	763	ADD	CTBUFA,X	ADD BUFFER ORIGIN			D.1 00 00763
000267	055015	A	764	STA	CTBUFF,X	SAVE ACTUAL LOCATION			D.1 00 00764
000270	100747	A	765	EXC	DISCLK	DISABLE CLOCK			00 00765
000271	100444	A	766	EXC	DISPIM	DISABLE PIMS			00 00766
000272	015042	A	767	LDA	CBITPD,X	GET BIT POSITION			00 00767
000273	114062	A	768	DRB	LLRL1				00 00768
000274	054001	A	769	STA	*+2				00 00769
000275	005001	A	770	TZA					00 00770
000276	004440	A	771	LLRL	U	SHIFT AB REG TO POSITION ROW TO PROPER			00 00771
			772	*		BIT POSITION			00 00772
000277	100244	A	773	EXC	ENAPIM	ENABLE PIMS			00 00773
000300	100147	A	774	EXC	ENACKL	ENABLE CLOCK			00 00774
000301	006115	A	775	DRAE*	CTBUFF,X	PUT PART OF ROW IN A REG INTO BUFFER			D.1 00 00775
000302	100015	A							
000303	006035	A	776	STAE*	CTBUFF,X				D.1 00 00776
000304	100015	A							
000305	045015	A	777	INR	CTBUFF,X				D.1 00 00777
000306	005021	A	778	TBA					00 00778
000307	006115	A	779	DRAE*	CTBUFF,X	PUT PART OF ROW IN B REG INTO BUFFER			D.1 00 00779
000310	100015	A							
000311	006035	A	780	STAE*	CTBUFF,X				D.1 00 00780
000312	100015	A							
000313	015043	A	781	LDA	CBITPT,X	INCREMENT THE BUFFER POINTER BY THE			00 00781
000314	125044	A	782	ADD	CWIDTH,X	WIDTH OF THE CHARACTERS TRANSFERRED			00 00782
000315	055043	A	783	STA	CBITPT,X	SAVE BIT POINTER			00 00783
000316	045041	A	784	INR	CINDX,X	UPDATE COUNT OF NUMBER OF CHARACTERS			00 00784
			785	*		TRANSFERRED SO FAR			00 00785
000317	025021	A	786	LDB	CTEMP2,X	RESTORE RETURN ADDRESS			C.1 00 00786
000317		A	787	PUT2	BES	RETURN ADDRESS PUT HERE			B.2 00 00787
000320	006706	A	788	IJMP	0,B	RETURN			B.2 00 00788
000321	000000	A							
			789	*					B.2 00 00789
			790	IFT	VORTEX-2				V2 00 00790
			791	GOTO	ENDC06				00 00791
			792	STCLR	TXA	CTDL ADDRESS			V2 00 00792
			793	ADDI	CTBUFF	FORM POINTER TO STATOS BUFFER			V2 00 00793
			794	ENDC06	CONT				V2 00 00794
			795	IFF	VORTEX-2				V2 00 00795
			796	GOTO	ENDC07				V2 00 00796
000322	015050	A	797	STCLR	LDA	CTBUFA,X	GET ORIGIN OF BUFFER		D.1 00 00797
			798	IFF	VORTEX-2				V2 00 00798
			799	ENDC07	CONT				V2 00 00799
000323	055015	A	800	STA	CTBUFF,X				00 00800
000324	006010	A	801	LDAI	91	INITIALIZE BUFFER INDEX			D.1 00 00801
000325	000133	A							
000326	005311	A	802	STS4A1	DAR				00 00802
000327	055020	A	803	STA	CTEMP1,X	SAVE INDEX			00 00803
000330	125015	A	804	ADD	CTBUFF,X	ADD BUFFER ORIGIN TO INDEX			00 00804
000331	055021	A	805	STA	CTEMP2,X	CTEMP2 HAS ACTUAL ADDRESS OF BUFFER WORD			00 00805
000332	005001	A	806	TZA					00 00806
000333	006055	A	807	STAE*	CTEMP2,X	CLEAR BUFFER WORD			00 00807
000334	100021	A							
000335	015020	A	808	LDA	CTEMP1,X	GET INDEX AND SEE IF DONE CLEARING BUFF			00 00808
000336	001016	A	809	JANZ	STS4A1	JUMP IF NOT DONE			00 00809
000337	000326	R							
000340	006706	A	810	IJMP	0,2	RETURN			B.2 00 00810
000341	000000	A							
			811	STS8B	EQU	*			D.1 00 00811
000342	006506	A	812	JSR	V\$SPAC,B	SPACE ONE LINE			D.1 00 00812
000343	000000	E							
000344	005001	A	813	TZA					D.1 00 00813

000345	055010	A	814	STA	CTSTAT,X	RESET DRIVER STATUS	D.1 00	00814
000346	001000	A	815	JMP	STS4AA		D.1 00	00815
000347	000050	R						
			816	*				00 00816
	000350	R	817	STS8A	EQU	*		
000350	006506	A	818	JSR	V\$TOFM,B	TOP OF FORM	D.1 00	00817
000351	000000	E					D.1 00	00818
000352	005001	A	819	TZA				
000353	055010	A	820	STA	CTSTAT,X	RESET DRIVER STATUS	D.1 00	00819
000354	001000	A	821	JMP	STS4AA		D.1 00	00820
000355	000050	R					D.1 00	00821
			822	*				L00 00822
000356	004440	A	823	LLRL1	DATA	04440		00 00823
000357	160241	A	824	DSABL1	DATA	0160241		00 00824
000360	033642	A	825	ENABL2	DATA	033642		L00 00825
000361	000012	A	826	D12	DATA	012		L00 00826
000362	000015	A	827	D13	DATA	015		00 00827
000363	003100	A	828	D31	DATA	03100		L00 00828
000364	000215	A	829	D215	DATA	0215		L00 00829
000365	000240	A	830	D240	DATA	0240		L00 00830
000366	000260	A	831	D260	DATA	0260		L00 00831
000367	001440	A	832	D800	DATA	800		L00 00832
000370	000120	A	833	DTOP	DATA	80		L00 00833
000371	001560	A	834	DBOT	DATA	880		L00 00834
000372	101100	A	835	SENS1	DATA	0101100		L00 00835
000373	101000	A	836	SENS2	DATA	0101000		L00 00836
000374	000307	A	837	BICD	DATA	0307		L00 00837
000375	160064	A	838	STP1	DATA	0160064		L00 00838
000376	121000	A	839	LSYN	DATA	0121000		L00 00839
000377	160040	A	840	ENABL1	DATA	0160040		L00 00840
000400	160241	A	841	DSAB6	DATA	0160241		L00 00841
			842	*				L00 00842
			843	*				L00 00843
000401	000402	R	844	CONV	DATA	*+1		L00 00844
			845	*				L00 00845
000402	000020	A	846		DATA	0000020		L00 00846
000403	000020	A	847		DATA	0000020		L00 00847
000404	000020	A	848		DATA	0000020		L00 00848
000405	000020	A	849		DATA	0000020		L00 00849
000406	000020	A	850		DATA	0000020		L00 00850
000407	000020	A	851		DATA	0000020		L00 00851
000410	000000	A	852		DATA	0000000		L00 00852
000411	000020	A	853		DATA	0000020		L00 00853
000412	000020	A	854		DATA	0000020		L00 00854
000413	000000	A	855		DATA	0000000		L00 00855
000414	000000	A	856		DATA	0000000		L00 00856
			857	*				L00 00857
000415	024050	A	858		DATA	0024050		L00 00858
000416	024050	A	859		DATA	0024050		L00 00859
000417	024376	A	860		DATA	0024376		L00 00860
000420	024050	A	861		DATA	0024050		L00 00861
000421	000050	A	862		DATA	0000050		L00 00862
000422	000050	A	863		DATA	0000050		L00 00863
000423	000376	A	864		DATA	0000376		L00 00864
000424	000050	A	865		DATA	0000050		L00 00865
000425	000050	A	866		DATA	0000050		L00 00866
000426	000000	A	867		DATA	0000000		L00 00867
000427	000000	A	868		DATA	0000000		L00 00868
			869	*				L00 00869
000430	024100	A	870		DATA	0024100		L00 00870
000431	077242	A	871		DATA	0077242		L00 00871
000432	124244	A	872		DATA	0124244		L00 00872
000433	124110	A	873		DATA	0124110		L00 00873
000434	076020	A	874		DATA	0076020		L00 00874
000435	025044	A	875		DATA	0025044		L00 00875
000436	025112	A	876		DATA	0025112		L00 00876
000437	176212	A	877		DATA	0176212		L00 00877
000440	024004	A	878		DATA	0024004		L00 00878
000441	000000	A	879		DATA	0000000		L00 00879
000442	000000	A	880		DATA	0000000		L00 00880
			881	*				L00 00881
000443	060010	A	882		DATA	0060010		L00 00882
000444	110010	A	883		DATA	0110010		L00 00883
000445	110020	A	884		DATA	0110020		L00 00884
000446	060040	A	885		DATA	0060040		L00 00885
000447	060000	A	886		DATA	0060000		L00 00886
000450	112000	A	887		DATA	0112000		L00 00887
000451	106000	A	888		DATA	0106000		L00 00888
000452	102000	A	889		DATA	0102000		L00 00889
000453	075000	A	890		DATA	0075000		L00 00890
000454	000000	A	891		DATA	0000000		L00 00891
000455	000000	A	892		DATA	0000000		L00 00892
			893	*				L00 00893
000456	004040	A	894		DATA	0004040		L00 00894
000457	010020	A	895		DATA	0010020		L00 00895
000460	020010	A	896		DATA	0020010		L00 00896
000461	020010	A	897		DATA	0020010		L00 00897
000462	020010	A	898		DATA	0020010		L00 00898
000463	020010	A	899		DATA	0020010		L00 00899
000464	020010	A	900		DATA	0020010		L00 00900
000465	010020	A	901		DATA	0010020		L00 00901
000466	004040	A	902		DATA	0004040		L00 00902
000467	000000	A	903		DATA	0000000		L00 00903

LONG LOGICAL ROTATE LEFT INSTRUCTION
PLOT MODE/REMOTE DISABLE
LOW SPEED/LINE SYNC

10 INCHES PER PAGE IS 800 RASTER SCANS
DISTANCE FROM TOP IS ONE INCH
890 SCANS IS 11 INCHES IS BOTTOM OF PAGE

BIC CONNECT/DATA SELECT
RASTER MODE/STEP STATUS
LINE SYNC
PLOT MODE/REMOTE ENABLE
PLOT MODE/REMOTE DISABLE

ASCII/RASTER CONVERSION TABLE
SPACE/EXCLAMATION

QUOTE / NUMBER

DOLLAR SIGN/ PER CENT SIGN

AMPERSAND/APOSTROPHE

OPEN PAREN/CLOSE PAREN

000470	000000	A	904	DATA	0000000
			905 *		
000471	010000	A	906	DATA	0010000
000472	111020	A	907	DATA	0111020
000473	052020	A	908	DATA	0052020
000474	034020	A	909	DATA	0034020
000475	010376	A	910	DATA	0010376
000476	034020	A	911	DATA	0034020
000477	052020	A	912	DATA	0052020
000500	111020	A	913	DATA	0111020
000501	010000	A	914	DATA	0010000
000502	000000	A	915	DATA	0000000
000503	000000	A	916	DATA	0000000
			917 *		
000504	000000	A	918	DATA	0000000
000505	000000	A	919	DATA	0000000
000506	000000	A	920	DATA	0000000
000507	000000	A	921	DATA	0000000
000510	000376	A	922	DATA	0000376
000511	000000	A	923	DATA	0000000
000512	000000	A	924	DATA	0000000
000513	000000	A	925	DATA	0000000
000514	004000	A	926	DATA	0004000
000515	004000	A	927	DATA	0004000
000516	010000	A	928	DATA	0010000
			929 *		
000517	000000	A	930	DATA	0000000
000520	000002	A	931	DATA	0000002
000521	000004	A	932	DATA	0000004
000522	000010	A	933	DATA	0000010
000523	000020	A	934	DATA	0000020
000524	000040	A	935	DATA	0000040
000525	000100	A	936	DATA	0000100
000526	010200	A	937	DATA	0010200
000527	010000	A	938	DATA	0010000
000530	000000	A	939	DATA	0000000
000531	000000	A	940	DATA	0000000
			941 *		
000532	034020	A	942	DATA	0034020
000533	042060	A	943	DATA	0042060
000534	103120	A	944	DATA	0103120
000535	105020	A	945	DATA	0105020
000536	111020	A	946	DATA	0111020
000537	121020	A	947	DATA	0121020
000540	141020	A	948	DATA	0141020
000541	042020	A	949	DATA	0042020
000542	034174	A	950	DATA	0034174
000543	000000	A	951	DATA	0000000
000544	000000	A	952	DATA	0000000
			953 *		
000545	076174	A	954	DATA	0076174
000546	101202	A	955	DATA	0101202
000547	001002	A	956	DATA	0001002
000550	001002	A	957	DATA	0001002
000551	076034	A	958	DATA	0076034
000552	100002	A	959	DATA	0100002
000553	100002	A	960	DATA	0100002
000554	100202	A	961	DATA	0100202
000555	076174	A	962	DATA	0076174
000556	000000	A	963	DATA	0000000
000557	000000	A	964	DATA	0000000
			965 *		
000560	002376	A	966	DATA	0002376
000561	006200	A	967	DATA	0006200
000562	012200	A	968	DATA	0012200
000563	022200	A	969	DATA	0022200
000564	042374	A	970	DATA	0042374
000565	177002	A	971	DATA	0177002
000566	002002	A	972	DATA	0002002
000567	002202	A	973	DATA	0002202
000570	002174	A	974	DATA	0002174
000571	000000	A	975	DATA	0000000
000572	000000	A	976	DATA	0000000
			977 *		
000573	036376	A	978	DATA	0036376
000574	041202	A	979	DATA	0041202
000575	100002	A	980	DATA	0100002
000576	100004	A	981	DATA	0100004
000577	136010	A	982	DATA	0136010
000600	141020	A	983	DATA	0141020
000601	101040	A	984	DATA	0101040
000602	101040	A	985	DATA	0101040
000603	076040	A	986	DATA	0076040
000604	000000	A	987	DATA	0000000
000605	000000	A	988	DATA	0000000
			989 *		
000606	076174	A	990	DATA	0076174
000607	101202	A	991	DATA	0101202
000610	101202	A	992	DATA	0101202
000611	042202	A	993	DATA	0042202
000612	034102	A	994	DATA	0034102
000613	042076	A	995	DATA	0042076
000614	101002	A	996	DATA	0101002

ASTERISK/PLUS

COMMA/MINUS

PERIOD/SLASH

ZERO/1

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000615	101204	A	997	DATA	0101204
000616	076170	A	998	DATA	0076170
000617	000000	A	999	DATA	0000000
000620	000000	A	1000	DATA	0000000
			1001	*	
000621	000000	A	1002	DATA	0000000
000622	000000	A	1003	DATA	0000000
000623	010000	A	1004	DATA	0010000
000624	010000	A	1005	DATA	0010000
000625	000000	A	1006	DATA	0000000
000626	010020	A	1007	DATA	0010020
000627	010020	A	1008	DATA	0010020
000630	000000	A	1009	DATA	0000000
000631	000020	A	1010	DATA	0000020
000632	000020	A	1011	DATA	0000020
000633	000040	A	1012	DATA	0000040
			1013	*	
000634	002000	A	1014	DATA	0002000
000635	004000	A	1015	DATA	0004000
000636	010000	A	1016	DATA	0010000
000637	020174	A	1017	DATA	0020174
000640	040000	A	1018	DATA	0040000
000641	020174	A	1019	DATA	0020174
000642	010000	A	1020	DATA	0010000
000643	004000	A	1021	DATA	0004000
000644	002000	A	1022	DATA	0002000
000645	000000	A	1023	DATA	0000000
000646	000000	A	1024	DATA	0000000
			1025	*	
000647	040174	A	1026	DATA	0040174
000650	020202	A	1027	DATA	0020202
000651	010202	A	1028	DATA	0010202
000652	004004	A	1029	DATA	0004004
000653	002010	A	1030	DATA	0002010
000654	004020	A	1031	DATA	0004020
000655	010000	A	1032	DATA	0010000
000656	020020	A	1033	DATA	0020020
000657	040020	A	1034	DATA	0040020
000660	000000	A	1035	DATA	0000000
000661	000000	A	1036	DATA	0000000
			1037	*	
000662	036020	A	1038	DATA	0036020
000663	041050	A	1039	DATA	0041050
000664	115104	A	1040	DATA	0115104
000665	125202	A	1041	DATA	0125202
000666	125202	A	1042	DATA	0125202
000667	137376	A	1043	DATA	0137376
000670	100202	A	1044	DATA	0010020
000671	041202	A	1045	DATA	0041202
000672	036202	A	1046	DATA	0036202
000673	000000	A	1047	DATA	0000000
000674	000000	A	1048	DATA	0000000
			1049	*	
000675	176070	A	1050	DATA	0176070
000676	041104	A	1051	DATA	0041104
000677	041202	A	1052	DATA	0041202
000700	041200	A	1053	DATA	0041200
000701	076200	A	1054	DATA	0076200
000702	041200	A	1055	DATA	0041200
000703	041202	A	1056	DATA	0041202
000704	041104	A	1057	DATA	0041104
000705	176070	A	1058	DATA	0176070
000706	000000	A	1059	DATA	0000000
000707	000000	A	1060	DATA	0000000
			1061	*	
000710	174376	A	1062	DATA	0174376
000711	042200	A	1063	DATA	0042200
000712	041200	A	1064	DATA	0041200
000713	041200	A	1065	DATA	0041200
000714	041370	A	1066	DATA	0041370
000715	041200	A	1067	DATA	0041200
000716	041200	A	1068	DATA	0041200
000717	042200	A	1069	DATA	0042200
000720	174376	A	1070	DATA	0174376
000721	000000	A	1071	DATA	0000000
000722	000000	A	1072	DATA	0000000
			1073	*	
000723	177070	A	1074	DATA	0177070
000724	100104	A	1075	DATA	0100104
000725	100202	A	1076	DATA	0100202
000726	100200	A	1077	DATA	0100200
000727	176200	A	1078	DATA	0176200
000730	100216	A	1079	DATA	0100216
000731	100202	A	1080	DATA	0100202
000732	100106	A	1081	DATA	0100106
000733	100072	A	1082	DATA	0100072
000734	000000	A	1083	DATA	0000000
000735	000000	A	1084	DATA	0000000
			1085	*	
000736	101174	A	1086	DATA	0101174
000737	101020	A	1087	DATA	0101020
000740	101020	A	1088	DATA	0101020
000741	101020	A	1089	DATA	0101020

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000742	177020	A	1090	DATA	0177020		L00	01090
000743	101020	A	1091	DATA	0101020		L00	01091
000744	101020	A	1092	DATA	0101020		L00	01092
000745	101020	A	1093	DATA	0101020		L00	01093
000746	101174	A	1094	DATA	0101174		L00	01094
000747	000000	A	1095	DATA	0000000		L00	01095
000750	000000	A	1096	DATA	0000000		L00	01096
			1097				L00	01097
000751	007204	A	1098	DATA	0007204	J/K	L00	01098
000752	002210	A	1099	DATA	0002210		L00	01099
000753	002220	A	1100	DATA	0002220		L00	01100
000754	002240	A	1101	DATA	0002240		L00	01101
000755	002340	A	1102	DATA	0002340		L00	01102
000756	002220	A	1103	DATA	0002220		L00	01103
000757	002210	A	1104	DATA	0002210		L00	01104
000760	102204	A	1105	DATA	0102204		L00	01105
000761	074202	A	1106	DATA	0074202		L00	01106
000762	000000	A	1107	DATA	0000000		L00	01107
000763	000000	A	1108	DATA	0000000		L00	01108
			1109				L00	01109
000764	100202	A	1110	DATA	0100202	L/M	L00	01110
000765	100306	A	1111	DATA	0100306		L00	01111
000766	100252	A	1112	DATA	0100252		L00	01112
000767	100222	A	1113	DATA	0100222		L00	01113
000770	100202	A	1114	DATA	0100202		L00	01114
000771	100202	A	1115	DATA	0100202		L00	01115
000772	100202	A	1116	DATA	0100202		L00	01116
000773	101202	A	1117	DATA	0101202		L00	01117
000774	177202	A	1118	DATA	0177202		L00	01118
000775	000000	A	1119	DATA	0000000		L00	01119
000776	000000	A	1120	DATA	0000000		L00	01120
			1121				L00	01121
000777	101070	A	1122	DATA	0101070	N/D	L00	01122
001000	141104	A	1123	DATA	0141104		L00	01123
001001	121202	A	1124	DATA	0121202		L00	01124
001002	111202	A	1125	DATA	0111202		L00	01125
001003	105202	A	1126	DATA	0105202		L00	01126
001004	103202	A	1127	DATA	0103202		L00	01127
001005	101202	A	1128	DATA	0101202		L00	01128
001006	101104	A	1129	DATA	0101104		L00	01129
001007	101070	A	1130	DATA	0101070		L00	01130
001010	000000	A	1131	DATA	0000000		L00	01131
001011	000000	A	1132	DATA	0000000		L00	01132
			1133				L00	01133
001012	176070	A	1134	DATA	0176070	P/Q	L00	01134
001013	101104	A	1135	DATA	0101104		L00	01135
001014	101202	A	1136	DATA	0101202		L00	01136
001015	101202	A	1137	DATA	0101202		L00	01137
001016	176202	A	1138	DATA	0176202		L00	01138
001017	100212	A	1139	DATA	0100212		L00	01139
001020	100212	A	1140	DATA	0100212		L00	01140
001021	100104	A	1141	DATA	0100104		L00	01141
001022	100072	A	1142	DATA	0100072		L00	01142
001023	000000	A	1143	DATA	0000000		L00	01143
001024	000000	A	1144	DATA	0000000		L00	01144
			1145				L00	01145
001025	176174	A	1146	DATA	0176174	R/S	L00	01146
001026	101202	A	1147	DATA	0101202		L00	01147
001027	101200	A	1148	DATA	0101200		L00	01148
001030	101200	A	1149	DATA	0101200		L00	01149
001031	176174	A	1150	DATA	0176174		L00	01150
001032	110002	A	1151	DATA	0110002		L00	01151
001033	104002	A	1152	DATA	0104002		L00	01152
001034	102202	A	1153	DATA	0102202		L00	01153
001035	101174	A	1154	DATA	0101174		L00	01154
001036	000000	A	1155	DATA	0000000		L00	01155
001037	000000	A	1156	DATA	0000000		L00	01156
			1157				L00	01157
001040	177202	A	1158	DATA	0177202	T/U	L00	01158
001041	111202	A	1159	DATA	0111202		L00	01159
001042	010202	A	1160	DATA	0010202		L00	01160
001043	010202	A	1161	DATA	0010202		L00	01161
001044	010202	A	1162	DATA	0010202		L00	01162
001045	010202	A	1163	DATA	0010202		L00	01163
001046	010202	A	1164	DATA	0010202		L00	01164
001047	010202	A	1165	DATA	0010202		L00	01165
001050	010174	A	1166	DATA	0010174		L00	01166
001051	000000	A	1167	DATA	0000000		L00	01167
001052	000000	A	1168	DATA	0000000		L00	01168
			1169				L00	01169
001053	101202	A	1170	DATA	0101202	V/W	L00	01170
001054	101202	A	1171	DATA	0101202		L00	01171
001055	101202	A	1172	DATA	0101202		L00	01172
001056	042202	A	1173	DATA	0042202		L00	01173
001057	042202	A	1174	DATA	0042202		L00	01174
001060	024222	A	1175	DATA	0024222		L00	01175
001061	024222	A	1176	DATA	0024222		L00	01176
001062	010222	A	1177	DATA	0010222		L00	01177
001063	010154	A	1178	DATA	0010154		L00	01178
001064	000000	A	1179	DATA	0000000		L00	01179
001065	000000	A	1180	DATA	0000000		L00	01180
			1181				L00	01181
001066	101202	A	1182	DATA	0101202	X/Y	L00	01182

001067	101202	A	1183	DATA	0101202	L00	01183
001070	042202	A	1184	DATA	0042202	L00	01184
001071	024104	A	1185	DATA	0024104	L00	01185
001072	010050	A	1186	DATA	0010050	L00	01186
001073	024020	A	1187	DATA	0024020	L00	01187
001074	042020	A	1188	DATA	0042020	L00	01188
001075	101020	A	1189	DATA	0101020	L00	01189
001076	101020	A	1190	DATA	0101020	L00	01190
001077	000000	A	1191	DATA	0000000	L00	01191
001100	000000	A	1192	DATA	0000000	L00	01192
			1193			L00	01193
001101	177174	A	1194	DATA	0177174	L00	01194
001102	101100	A	1195	DATA	0101100	L00	01195
001103	002100	A	1196	DATA	0002100	L00	01196
001104	004100	A	1197	DATA	0004100	L00	01197
001105	010100	A	1198	DATA	0010100	L00	01198
001106	020100	A	1199	DATA	0020100	L00	01199
001107	040100	A	1200	DATA	0040100	L00	01200
001110	101100	A	1201	DATA	0101100	L00	01201
001111	177174	A	1202	DATA	0177174	L00	01202
001112	000000	A	1203	DATA	0000000	L00	01203
001113	000000	A	1204	DATA	0000000	L00	01204
			1205			L00	01205
001114	000174	A	1206	DATA	0000174	L00	01206
001115	100004	A	1207	DATA	0100004	L00	01207
001116	040004	A	1208	DATA	0040004	L00	01208
001117	020004	A	1209	DATA	0020004	L00	01209
001120	010004	A	1210	DATA	0010004	L00	01210
001121	004004	A	1211	DATA	0004004	L00	01211
001122	002004	A	1212	DATA	0002004	L00	01212
001123	001004	A	1213	DATA	0001004	L00	01213
001124	000174	A	1214	DATA	0000174	L00	01214
001125	000000	A	1215	DATA	0000000	L00	01215
001126	000000	A	1216	DATA	0000000	L00	01216
			1217			L00	01217
001127	010000	A	1218	DATA	0010000	L00	01218
001130	034000	A	1219	DATA	0034000	L00	01219
001131	052000	A	1220	DATA	0052000	L00	01220
001132	111000	A	1221	DATA	0111000	L00	01221
001133	010000	A	1222	DATA	0010000	L00	01222
001134	010000	A	1223	DATA	0010000	L00	01223
001135	010000	A	1224	DATA	0010000	L00	01224
001136	010000	A	1225	DATA	0010000	L00	01225
001137	010000	A	1226	DATA	0010000	L00	01226
001140	000376	A	1227	DATA	0000376	L00	01227
001141	000000	A	1228	DATA	0000000	L00	01228
			1229			L00	01229
			1230			L00	01230
				END			

Z/LEFT BRACKET

SLASH/RIGHT BRACKET

UP ARROW/UNDERLINE

ENTRY NAMES

000000	R	V\$WRIT									
EXTERNAL NAMES											
000343	E	V\$SPAC	000201	E	V\$STED	000235	E	V\$STEP	000351	E	V\$TDFM
SYMBOLS											
000044	A	APIM	000002	A	B	000000	A	B0	000001	A	B1
000012	A	B10	000013	A	B11	000014	A	B12	000015	A	B13
000016	A	B14	000017	A	B15	000002	A	B2	000003	A	B3
000004	A	B4	000005	A	B5	000006	A	B6	000007	A	B7
000010	A	B8	000011	A	B9	000000	A	BICNUM	000374	R	BICD
000421	A	BM1	000472	A	BM17	000475	A	BM177	000477	A	BM1777
000464	A	BM3	000473	A	BM37	000463	A	BM377	000467	A	BM7
000474	A	BM77	000476	A	BM777	000441	A	BR0	000442	A	BR1
000453	A	BR10	000454	A	BR11	000455	A	BR12	000456	A	BR13
000457	A	BR14	000460	A	BR13	000443	A	BR2	000444	A	BR3
000445	A	BR4	000446	A	BR5	000447	A	BR6	000450	A	BR7
000451	A	BR8	000452	A	BR9	000421	A	BS0	000420	A	BS1
000433	A	BS10	000434	A	BS11	000435	A	BS12	000436	A	BS13
000437	A	BS14	000440	A	BS15	000433	A	BS2	000424	A	BS3
000425	A	BS4	000426	A	BS5	000427	A	BS6	000430	A	BS7
000431	A	BS8	000432	A	BS9	000042	A	CBITPD	000040	A	CBITPT
000041	A	CINDX	000040	A	CLINE	000047	A	CLOCK	000401	R	CONV
000000	A	COIAD1	000032	A	CSLIN	000000	A	CTACT	000001	A	CTADNC
000017	A	CTATTR	000027	A	CTBEND	000011	A	CTBICE	000050	A	CTBUFA
000055	A	CTBUFF	000015	A	CTBUFP	000000	A	CTCI	000001	A	CTDEFP
000003	A	CTDST	000006	A	CTDVAT	000020	A	CTEMP1	000021	A	CTEMP2
000022	A	CTEMP3	000023	A	CTEMP4	000024	A	CTEMP5	000037	A	CTENAE
000051	A	CTEND	000012	A	CTFCB	000014	A	CTFRCT	000014	A	CTFRSQ
000047	A	CTFINC	000054	A	CTHGS	000000	A	CTIBB	000007	A	CYIDQ
000035	A	CTLINC	000045	A	CTL12	000052	A	CTLNCH	000033	A	CTLWD
000053	A	CTLWHD	000016	A	CTMODE	000002	A	CTOPM	000017	A	CTPST0
000020	A	CTPST1	000021	A	CTPST2	000022	A	CTPST3	000005	A	CTPST4
000004	A	CTRPEK	000005	A	CTRTRY	000004	A	CTSIZ2	000010	A	CTSTAT
000013	A	CTSIS2	000036	A	CTTERM	000016	A	CTTRSZ	000013	A	CTWDS
000046	A	CTWRIT	000044	A	CWIDTH	000025	A	CHRT1	000026	A	CHRT2
000361	R	D12	000362	R	D13	000364	R	D215	000365	R	D240
000366	R	D260	000363	R	D31	000367	R	D300	000371	R	DBDT
000001	A	DBUFF	000002	A	DCNT	000747	A	DISCLK	000745	A	DISMP
000444	A	DISPIM	000000	A	DRECL	000400	R	DSAB6	000357	R	DSABL1
000002	A	DSCTAD	000000	A	DSDASS	000000	A	DSDVBN	000002	A	DSLCKD
000001	A	DSNAME	000000	A	DSNDR	000002	A	DSDFCM	000003	A	DSDFTI
000002	A	DSRFRD	000000	A	DSUMAM	000002	A	DSUNTM	000370	R	DTOP
000424	A	EIGHT	000377	R	ENABL1	000363	R	ENABL2	000147	A	ENACK
000645	A	ENAMP	000244	A	ENAPIM	000002	A	FACM	000001	A	FBUFF
000003	A	FCAOR	000004	A	FCEJF	000006	A	FEFE	000005	A	FIFE

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000465 A FIVE      000007 A FNAM1  000010 A FNAM2  000011 A FNAM3
000423 A FOUR      000000 A FRECL  000300 A LC      000050 A LCJP
000462 A LHW        000356 R LLRL1  000376 R LSYN   000045 A MP
000045 A MPMR0    000145 A MPMR1  000245 A MPMR2  000345 A MPMR3
000420 A MT        000461 A NEG    000470 A NINE   000421 A ONE
000040 A PIM1     000041 A PIM2   000042 A PIM3   000043 A PIM4
000040 A PIM5     000040 A PIM6   000040 A PIM7   000040 A PIM8
000265 R PUT1     000317 R PUT2   000244 R PUTROW 000040 A RAO
000000 A RA1      000004 A RADNR  000060 A RBO    000020 A RB1
000002 A RFCE     000463 A RHW    000001 A ROPWD  000000 A RSTPR
000003 A RTIDB    000372 R SENS1  000373 R SENS2  000467 A SEVEN
000466 A SIX      000322 R STCLR  000217 R STINT1 000227 R STINTA
000236 R STINTB  000140 R STLRG  000147 R STLRGA 000163 R STNRM
000375 R STP1     000000 R STS4   000015 R STS4A  000326 R STS4A1
000050 R STS4AA  000052 R STS5   000102 R STS5A  000165 R STS5B
000172 R STS6   000350 R STS8A  000342 R STS8B  000027 A TBATSK
000026 A TBCPTH  000011 A TBENTY 000003 A TBEVNT 000021 A TBID
000014 A TBISA   000015 A TBISB  000017 A TBISP  000020 A TBISRS
000016 A TBISX   000022 A TBKN1  000023 A TBKN2  000024 A TBKN3
000002 A TBPL    000004 A TBRSA  000005 A TBRSE  000030 A TBRSE
000007 A TBRSP   000010 A TBRSTS 000006 A TBRSX  000000 A TBS0
000001 A TBS1    000012 A TBS10  000013 A TBS11  000014 A TBS12
000015 A TBS13  000016 A TBS14  000017 A TBS15  000002 A TBS2
000003 A TBS3   000004 A TBS4   000005 A TBS5   000006 A TBS6
000007 A TBS7   000010 A TBS8   000011 A TBS9   000001 A TBST
000025 A TBTLC  000013 A TBTMIN 000012 A TBTMS  000000 A TBTRO
000471 A TEN      000464 A THREE  000422 A TWO    000403 A V$1MIN
000415 A V$BFC   000075 A V$BGLB 000404 A V$BIC1 000405 A V$BIC2
000406 A V$BIC3  000407 A V$BIC4 000315 A V$BTE  000414 A V$BVN
000334 A V$CAM   000353 A V$CKB  000411 A V$CKIT 000310 A V$CKPT
000301 A V$CPL  000075 A V$CRDM 000341 A V$CRDR 000354 A V$CRM
000302 A V$CRS  000360 A V$CTAD  000300 A V$CTL  000351 A V$CTMS
000070 A V$DATE  000355 A V$DSTB 000376 A V$ERFG 000347 A V$FGLB
000306 A V$FLRS  000350 A V$FREE  000320 A V$IM   000410 A V$IDA
000412 A V$JCB  000055 A V$JCFG  000056 A V$JFCB 000050 A V$JNAM
000377 A V$JDP  000054 A V$LCNT  000313 A V$LER  000356 A V$LIT
000317 A V$LLUP 000307 A V$LRSK 000312 A V$LSAL 000345 A V$LUNT
000316 A V$LUP  000400 A V$LUT1  000401 A V$LUT2  000402 A V$LUT3
000330 A V$MPM  000362 A V$NCTR  000413 A V$OCB  000346 A V$OPCF
000363 A V$PIMN 000074 A V$PLCT  000305 A V$PTVB  000361 A V$SCTL
000352 A V$SCV  000375 A V$SLFG  000343 E V$SPAC 000201 E V$STBC
000235 E V$STEP 000417 A V$STSZ  000333 A V$TB   000342 A V$TBGT
000416 A V$TFC  000314 A V$TJCP  000357 A V$TKSZ  000344 A V$TMN
000343 A V$TMS  000351 E V$TDFM  000304 A V$UTB  000000 R V$WRIT
000001 A VORTEX 000001 A X      000420 A ZERO
    
```

0 ERRORS ASSEMBLY COMPLETE

359	APIM	369	370							
350	CLOCK	352	353							
30	ENDC01	44								
132	LC	133	134	135	136	137	138	139	140	141
		143	144	145	146	149	150	154	155	157
		160	161	166	167	168	169	170	171	172
		173	174	176	177	178	179	180	181	182
		183	184	185	186	187	188	189	191	193
		194	195	196	197	209	210	211	212	213
		214	215	218	219	220	221	230	231	232
		235	240	241	242	243				
151	LCD1	148								
156	LCD2	153								
163	LCD3	159								
175	LCD4	165								
203	LCD5	201								
208	LCD6	205								
222	LCD7	217								
229	LCD8	224								
109	LCJP	110	111	112	118	119	120	121	122	
373	MP	374	375	376	377	378	379			
251	MT	252	253	254	255	256	257	258	259	260
		261	262	263	264	265	266	267	268	269
		270	271	272	273	274	275	276	277	278
		279	280	281	282	283	284	285	286	287
		288	289	290	291	292	293	294	295	296
		297	298	299	300	301	302	303	304	305
		306	307							
1	VORTEX	43	147	152	153	164	190	192	200	204
0	VZLPDX	216	223	354						
		11								


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000001 A 1 VORTEX SET 1 PUT LAST FOR VORTEX 02 00001
2 * THIS IS A COPYRIGHTED PROGRAM.COPYRIGHT 1972 BY VARIAN DATA MACHINES 02 00002
3 * 02 00003
4 * V.D.M. PART NO. 92L0605-101B 02 00004
5 * 02 00005
6 * RELEASED 03/01/74 02 00006
7 * 02 00007
8 * 02 00008
9 * 02 00009
10 * 02 00010
11 * 02 00011
12 * ***** 02 00012
13 * TIDB SETUP *** 02 00013
14 * 02 00014
15 * ***** 02 00015
17 TBTRD EQU 0 TASK THREAD 02 00017
18 TBST EQU 1 TASK STATUS 02 00018
19 TBPL EQU 2 STATUS CONT. (BITS15-6),PRIORITY LEVEL(5-0 02 00019
20 TBEVNT EQU 3 INTERRUPT EVENT 02 00020
21 TBRSA EQU 4 A REENTRANT AND SUSPEND STACK 02 00021
22 TBRSB EQU 5 B REENTRANT AND SUSPEND STACK 02 00022
23 TBR SX EQU 6 X REENTRANT AND SUSPEND STACK 02 00023
24 TBRSP EQU 7 DF/P REENTRANT AND SUSPEND STACK 02 00024
25 TBRSTS EQU 8 TEMP. STG. REENTRANT AND SUSPEND STACK 02 00025
26 TBENTY EQU 9 TASK ENTRY LOCATION 02 00026
27 TBTMS EQU 10 TIME COUNTER - CLOCK RESOLUTION IN 5MS INC 02 00027
28 TBTMIN EQU 11 TIME COUNTER - CLOCK MINUTE INCREMENTS 02 00028
29 TBISA EQU 12 A INTERRUPT STACK 02 00029
30 TBISB EQU 13 B INTERRUPT STACK 02 00030
31 TBISX EQU 14 X INTERRUPT STACK 02 00031
32 TBISP EQU 15 DF/P INTERRUPT STACK 02 00032
33 TBISRS EQU 16 REENT. STACK INTERRUPT STACK 02 00033
34 TBID EQU 17 BLK ALLOC(15-10),I/O THR(9-5),I/O ACT(4-0) 02 00034
35 TBKM1 EQU 18 TASK NAME 02 00035
36 TBKM2 EQU 19 TASK NAME 02 00036
37 TBKN3 EQU 20 TASK NAME 02 00037
38 TBTLC EQU 21 1ST LOC. OF TASK ALLOCATABLE 02 00038
39 TBCPTH EQU 22 BACKGROUND TASK QUEUE 02 00039
40 TBATSK EQU 23 TIDB LOC. OF ACTIVATING TASK 02 00040
41 TBRSE EQU 24 TASK ERROR CODE 02 00041
42 IFT VORTEX-2 V2 02 00042
43 GRID ENDC01 V2 02 00043
44 TBSIZ EQU 25 TASK SIZE V2 02 00044
45 TBNULL EQU 26 NUCLEUS INDICATOR, BITS 15-10 V2 02 00045
46 TBKEY EQU 27 TASK' MAP KEY, BITS 00-00 V2 02 00046
47 TBNIMG EQU 28 TASK'S MAP IMAGE ADDRESS V2 02 00047
48 TBIST EQU 28 INTERRUPT STATUS V2 02 00048
49 ENDC01 CONT V2 02 00049
50 EJEC 02 00050
51 * ***** 02 00051
52 * 02 00052
53 * TASK STATUS DESCRIPTION (BIT SET WORD 1) *** 02 00053
54 * 02 00054
55 * ***** 02 00055
57 TBS15 EQU 15 INTERRUPT SUSPEND 02 00057
58 TBS14 EQU 14 TASK SUSPEND 02 00058
59 TBS13 EQU 13 TASK ABORT 02 00059
60 TBS12 EQU 12 TASK EXIT 02 00060
61 TBS11 EQU 11 TIDB CORE RESIDENT 02 00061
62 TBS10 EQU 10 CORE RESIDENT TASK 02 00062
63 TBS9 EQU 9 FOREGROUND TASK 02 00063
64 TBS8 EQU 8 TASK PROTECTED 02 00064
65 TBS7 EQU 7 TASK SCHEDULED BY TIME DELAY 02 00065
66 TBS6 EQU 6 TIME DELAY ACTIVE 02 00066
67 TBS5 EQU 5 TASK WAITING TO BE LOADED 02 00067
68 TBS4 EQU 4 TASK ERROR 02 00068
69 TBS3 EQU 3 TASK INTERRUPT EXPECTED 02 00069
70 TBS2 EQU 2 OVERLAY TASK 02 00070
71 TBS1 EQU 1 UPON TERMINATION ACTIVATE TASK SCHED TASK 02 00071
72 TBS0 EQU 0 TASK SEARCH-ALLOCATED-LOADED 02 00072
73 * ***** 02 00073
74 * 02 00074
75 * TASK STATUS DESCRIPTION (BIT SET WORD 2) *** 02 00075
76 * 02 00076
77 * ***** 02 00077
78 * 02 00078
79 * 02 00079
80 * 02 00080
81 * 02 00081
82 * 02 00082
83 * ***** 02 00083
84 * 02 00084
85 * BIT 15 - TASK OPENED 02 00085
86 * BIT 14 - UNUSED 02 00086
87 * BIT 13 - OVERLAY LOAD 02 00087
88 * BIT 12 - TASK WAITING FOR BACKGROUND TASK I/O TO COMPLETE 02 00088
89 * TASK LOCKED-OUT UNTIL SO I/O COMPLETE OR BIT 11 02 00089
90 * IS SET (ALLOCATABLE SPACE AVAILABLE) 02 00090
91 * 02 00091
92 * BIT 11 - DEFINES THAT ALLOCATABLE SPACE IS AVAILABLE, TRY 02 00092
93 * ALLOCATING TASK AGAIN. OVERRIDES BIT 12 SET OR 02 00093
94 * BIT 5 IN STATUS WORD. 02 00094
95 * 02 00095
96 * BIT 10 - BACKGROUND TASK BEING WRITTEN ON CHECKPOINT FILE. 02 00096
97 * BIT 9 - TASK WAITING FOR A TIDB TO COME AVAILABLE FOR 02 00097
98 * SCHEDULING. 02 00098
99 * 02 00099
100 * BIT 8 TO 6 - UNUSED 02 00100
101 * 02 00101
102 * ***** 02 00102
103 * 02 00103
104 * JOB PROCESSOR LOW CORE EQUATES *** 02 00104

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105 * 02 00105
106 ***** 02 00106
000050 A 108 LCJP EQU 050 02 00108
000050 A 109 V$JNAM EQU LCJP JCP NAME 02 00109
000054 A 110 V$LCNT EQU LCJP+4 LINE COUNT 02 00110
000055 A 111 V$JCFG EQU LCJP+5 JCP FLAGS 02 00111
112 * BIT 2-0 = LOAD AND GO FLAGS 02 00112
113 * BIT 3 = DUMP FLAG 1=DUMP, 0=NO DUMP 02 00113
114 * BIT 4 = DUMP FLAG IF LOAD AND GO 02 00114
115 * BIT 9-5 = UNUSED 02 00115
116 * BIT 15-10 = BG EXTRA CORE BLOCKS TO ALLOC 02 00116
000056 A 118 V$BIC1 EQU LCJP+6 BIC INTERRUPT ADDRESS TABLE (10 WORDS) 02 00118
000070 A 119 V$DATE EQU LCJP+16 JCP DATE RECORD 02 00119
000074 A 120 V$PLCT EQU LCJP+20 PERMUTATE LINE COUNT 02 00120
000075 A 121 V$BGLB EQU LCJP+21 JCP LIB KEY AND LU NO. (BACKGROUND LIB) 02 00121
000046 A 122 V$CRDM EQU LCJP-2 CARD KEYPUNCH TYPE. 0=026, 1=029 D.1 02 00122
123 * BIT 0 = SYSTEM NOMINAL KEYPUNCH MODE. 02 00123
124 * BIT 9 = CURRENT JOB KEYPUNCH MODE. 02 00124
000047 A 125 V$JCTM EQU LCJP-1 TEMP. STORAGE FOR /MEM BLOCK D.1 02 00125
126 EJEJ 02 00126
127 ***** 02 00127
128 * 02 00128
129 *** LOW CORE DESCRIPTION *** 02 00129
130 * 02 00130
131 ***** 02 00131
000300 A 133 LC EQU 0300 02 00133
000300 A 134 V$CTL EQU LC CURRENT TASK TIDB LOCATION 02 00134
000301 A 135 V$CPL EQU LC+1 CURRENT PRIORITY LEVEL 02 00135
000302 A 136 V$CRS EQU LC+2 CURRENT REENRANT STACK POINTER 02 00136
000303 A 137 V$TB EQU LC+3 POINTER TO HIGHEST PRIORITY TIDB 02 00137
000304 A 138 V$UTB EQU LC+4 POINTER TO UNUSED TASK TIDB 02 00138
000305 A 139 V$PTVB EQU LC+5 POINTER TO NEXT ENTRY IN REENRANT STACK 02 00139
000306 A 140 V$FLRS EQU LC+6 FIRST LOC. OF REENRANT STACK 02 00140
000307 A 141 V$LRSE EQU LC+7 LAST LOC. OF REENRANT STACK+1 02 00141
000310 A 142 V$CKPT EQU LC+8 CHECKPOINT FLAG 1=ON, 0=OFF 02 00142
000311 A 143 V$OPCL EQU LC+9 LOC. OF TIDB FOR OPCOM TASK 02 00143
000312 A 144 V$LSAL EQU LC+10 LOC. OF TIDB FOR SYSTEM SAL TASK 02 00144
000313 A 145 V$LER EQU LC+11 LOC. OF TIDB FOR SYSTEM ERROR TASK 02 00145
000314 A 146 V$TJCP EQU LC+12 LOC. OF TIDB FOR JOB CONTROL PROCESSOR TSK 02 00146
000315 A 147 V$BTB EQU LC+13 LOC. OF CURRENT ACTIVE BACKGROUND TSK TIDB 02 00147
148 IFT VORTEX-2 V2 02 00148
149 GOTO LCD1 ASSEMBLE FOR VORTEX II V2 02 00149
150 V$NPAG EQU LC+14 NUMBER OF AVAILABLE PAGES IN V$PAGE V2 02 00150
151 V$LPP EQU LC+15 POINTER OF LAST WORD TESTED IN V$PAGE V2 02 00151
152 LCD1 CNT V2 02 00152
153 IFF VORTEX-2 V2 02 00153
154 GOTO LCD2 ASSEMBLE IF NOT VORTEX II V2 02 00154
000316 A 155 V$LUP EQU LC+14 LOC. OF 1ST UNPROTECTED WORD 02 00155
000317 A 156 V$LLUP EQU LC+15 LOC. OF LAST UNPROTECTED WORD 02 00156
157 LCD2 CNT V2 02 00157
000320 A 158 V$IM EQU LC+16 INTERRUPT MASK (8 WORDS) 02 00158
159 IFF VORTEX-2 V2 02 00159
160 GOTO LCD3 V2 02 00160
000330 A 161 V$MPM EQU LC+24 MEMORY PROTECT MASK (4 WORDS) 02 00161
000334 A 162 V$CAN EQU LC+28 CORE ALLOCATION MASK (4 WORDS) 02 00162
163 * EQU LC+32 UNUSED 02 00163
164 LCD3 CNT V2 02 00164
165 IFF VORTEX-2 V2 02 00165
166 GOTO LCD4 ASSEMBLE IF VORTEX II V2 02 00166
167 V$MAP EQU LC+24 MAP KEY AVAILABILITY MASK V2 02 00167
168 V$BTBM EQU LC+25 BOTTOM OF NUCLEUS TABLE MODULE V2 02 00168
169 V$GFCB EQU LC+26 GLOBAL FCB MODULE V2 02 00169
170 V$MING EQU LC+27 MAP 0 IMAGE ADDRESS V2 02 00170
171 V$ST0 EQU LC+28 FUNC 1 CONTROL WORD TO SWITCH EXECUTIVE V2 02 00171
172 V$ST1 EQU LC+29 MODE STATES: V$ST0- STATE 0 V2 02 00172
173 V$ST2 EQU LC+30 V$ST1- STATE 1 V2 02 00173
174 V$ST3 EQU LC+31 ETC V2 02 00174
175 V$KEY EQU LC+32 EXECUTING TASK'S MAP KEY V2 02 00175
176 LCD4 CNT V2 02 00176
000341 A 177 V$CRDR EQU LC+33 CORE RESIDENT DIRECTORY LOCATION 02 00177
000342 A 178 V$TGT EQU LC+34 TOP OF THREAD OF BG TSK WAITING TO BE ALLO 02 00178
000343 A 179 V$TMS EQU LC+35 TIME OF DAY IN 5 MILLISECOND INCREMENTS 02 00179
000344 A 180 V$TMN EQU LC+36 TIME OF DAY IN MINUTE INCREMENTS 02 00180
000345 A 181 V$LUNT EQU LC+37 ADDR. OF LOGICAL UNIT NAME TABLE 02 00181
000346 A 182 V$OPCF EQU LC+38 OPCOM LOCKOUT FLAG 02 00182
000347 A 183 V$FGLB EQU LC+39 KEY AND LU NO. FOR FOREGROUND LIB 02 00183
000350 A 184 V$FREE EQU LC+40 FREE RUNNING COUNTER INCR. IN MICROSECONDS 02 00184
000351 A 185 V$CTMS EQU LC+41 CLOCK RESOLUTION IN 5 MILLISECOND INCR. 02 00185
000352 A 186 V$SCV EQU LC+42 CLOCK SELECTED COUNT VALUE (1 TO 4095) 02 00186
000353 A 187 V$CKB EQU LC+43 BASIC CLOCK INTERRUPT RATE IN MICROSECONDS 02 00187
000354 A 188 V$CRM EQU LC+44 CLOCK RESOLUTION INCR. FOR 1 MINUTE. 02 00188
000355 A 189 V$DSTB EQU LC+45 BASE ADDR. FOR DST BLOCK 02 00189
000356 A 190 V$LIT EQU LC+46 LAST LOCATION OF BACKGROUND LITERAL TABLE 02 00190
191 IFF VORTEX-2 V2 02 00191
192 V$PGT EQU LC+47 V$PAGE ADDRESS V2 02 00192
193 IFF VORTEX-2 V2 02 00193
194 * EQU LC+47 ASSEMBLE IF NOT VORTEX II V2 02 00194
000360 A 195 V$CTAD EQU LC+48 UNUSED 02 00194
000361 A 196 V$SCTL EQU LC+49 BASE ADDR. FOR CONTROLLER ADDR. TABLE 02 00195
000362 A 197 V$NCTR EQU LC+50 CURRENT CONTROLLER IN SCAN 02 00196
000363 A 198 V$PIMN EQU LC+51 NO. OF CONTROLLERS 02 00197
199 * EQU LC+51 EXTERNAL DEVICE ADDRESS TABLE FOR PIMS 02 00198
200 IFF VORTEX-2 V2 02 00199
200 IFF VORTEX-2 V2 02 00200

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201      GOTO      LCD5      ASSEMBLE IF NOT VORTEX II      V2 02 00201
202      *      EQU      LC+59  UNUSED      02 00202
203      *      EQU      LC+60  UNUSED      02 00203
204      LCD5      CONT      V2 02 00204
205      IFT      VORTEX-2    V2 02 00205
206      GOTO      LCD6      ASSEMBLE IF VORTEX II      V2 02 00206
207      *      EQU      LC+59  JMP V%IOST PAGE 0 ENTRY FOR I/O      V2 02 00207
208      *      EQU      LC+60  STAT CALLS.      V2 02 00208
209      LCD6      CONT      V2 02 00209
000375 A 210      V%3LFG EQU      LC+61  SAL TASK BUSY FLAG 1=BUSY, 0=NOT BUSY      02 00210
000376 A 211      V%ERFG EQU      LC+62  ERROR TASK BUSY FLAG 1=BUSY, 0=NOT BUSY      02 00211
000377 A 212      V%JOP EQU      LC+63  JCP OPERATING FLAG      02 00212
000400 A 213      V%LUT1 EQU      LC+64  START LUN ADDR FOR JCP/OPCOM ASSIGNABLE      02 00213
000401 A 214      V%LUT2 EQU      LC+65  START LUN ADDR FOR UNASSIGNABLE      02 00214
000402 A 215      V%LUT3 EQU      LC+66  START LUN ADDR FOR OPCOM ASSIGNABLE      02 00215
000403 A 216      V%1MIN EQU      LC+67  32767 - (60000/(5*V%CTMS)) + 1      02 00216
217      IFF      VORTEX-2    V2 02 00217
218      GOTO      LCD7      ASSEMBLE IF NOT VORTEX II      V2 02 00218
219      *      EQU      LC+68  UNUSED      02 00219
220      *      EQU      LC+69  UNUSED      02 00220
221      *      EQU      LC+70  UNUSED      02 00221
222      *      EQU      LC+71  UNUSED      02 00222
223      LCD7      CONT      V2 02 00223
224      IFT      VORTEX-2    V2 02 00224
225      GOTO      LCD8      V2 02 00225
226      *      EQU      LC+68  JMP V%IOC PAGE 0 ENTRY FOR IOC      V2 02 00226
227      *      EQU      LC+69  CALLS.      V2 02 00227
228      *      EQU      LC+70  JMP V%EXEC PAGE 0 ENTRY FOR RTE      V2 02 00228
229      *      EQU      LC+71  CALLS.      V2 02 00229
230      LCD8      CONT      V2 02 00230
000410 A 231      V%IDA EQU      LC+72  I/O ALGORITHM      02 00231
000411 A 232      V%CKIT EQU      LC+73  CLOCK INT. IN PIM BEFORE LOCKOUT FLAG.      02 00232
000412 A 233      V%JCB EQU      LC+74  ALL SYSTEM BACKGROUND PROGRAMS AND JCP USE      02 00233
234      *      THIS SYSTEM BUFFER TO READ DIRECTIVES AND      02 00234
235      *      SOURCE RECORDS IN.      02 00235
000413 A 236      V%OCB EQU      LC+75  OPCOM WILL READ OPERATOR KEY-IN REQUESTS      02 00236
237      *      IN THIS BUFFER. IF JCP IS SET NOT ACTIVE      02 00237
238      *      AND A 1 DIRECTIVE IS INPUTED, OPCOM      02 00238
239      *      WILL MOVE THE DIRECTIVE TO V%JCB BEFORE      02 00239
240      *      SCHEDULING JCP.      02 00240
000414 A 241      V%BNM EQU      LC+76  BOTTOM OF VORTEX NUCLEUS      02 00241
000415 A 242      V%BFC EQU      LC+77  TOP OF FG RES. AREA/BOTTOM OF FG BLK COMM.      02 00242
000416 A 243      V%TFC EQU      LC+78  TOP OF FG BLK COMM/TOP OF VORTEX CORE.      02 00243
244      *      EQU      LC+79  UNUSED      02 00244
245      SUEC      02 00245
246      *****      02 00246
247      *      02 00247
248      ****      MASK TABLE DESCRIPTION      ***      02 00248
249      *      02 00249
250      *****      02 00250
000420 A 252      MT      SET      0420      02 00252
000420 A 253      ZERO      EQU      MT      ZERO WORD      02 00253
000421 A 254      B00      EQU      MT+1      BIT MASK CURRENTS 000001      02 00254
000422 A 255      B01      EQU      MT+2      000002      02 00255
000423 A 256      B02      EQU      MT+3      000004      02 00256
000424 A 257      B03      EQU      MT+4      000010      02 00257
000425 A 258      B04      EQU      MT+5      000020      02 00258
000426 A 259      B05      EQU      MT+6      000040      02 00259
000427 A 260      B06      EQU      MT+7      000100      02 00260
000430 A 261      B07      EQU      MT+8      000200      02 00261
000431 A 262      B08      EQU      MT+9      000400      02 00262
000432 A 263      B09      EQU      MT+10     001000      02 00263
000433 A 264      B010     EQU      MT+11     002000      02 00264
000434 A 265      B011     EQU      MT+12     004000      02 00265
000435 A 266      B012     EQU      MT+13     010000      02 00266
000436 A 267      B013     EQU      MT+14     020000      02 00267
000437 A 268      B014     EQU      MT+15     040000      02 00268
000440 A 269      B015     EQU      MT+16     080000      02 00269
000441 A 270      B00      EQU      MT+17     BIT MASK CONTENTS 0100000      02 00270
000442 A 271      B01      EQU      MT+18     017776      02 00271
000443 A 272      B02      EQU      MT+19     017775      02 00272
000444 A 273      B03      EQU      MT+20     017773      02 00273
000445 A 274      B04      EQU      MT+21     017757      02 00274
000446 A 275      B05      EQU      MT+22     017737      02 00275
000447 A 276      B06      EQU      MT+23     017677      02 00276
000450 A 277      B07      EQU      MT+24     017577      02 00277
000451 A 278      B08      EQU      MT+25     017377      02 00278
000452 A 279      B09      EQU      MT+26     016777      02 00279
000453 A 280      B010     EQU      MT+27     015777      02 00280
000454 A 281      B011     EQU      MT+28     014777      02 00281
000455 A 282      B012     EQU      MT+29     013777      02 00282
000456 A 283      B013     EQU      MT+30     012777      02 00283
000457 A 284      B014     EQU      MT+31     011777      02 00284
000460 A 285      B015     EQU      MT+32     007777      02 00285
000461 A 286      NEG      EQU      MT+33     SET ALL BITS      02 00286
000462 A 287      LHM      EQU      MT+34     LEFT HALF WORD MASK 0177400      02 00287
000463 A 288      RHM      EQU      MT+35     RIGHT HALF WORD MASK 0377      02 00288
000421 A 289      ONE      EQU      MT+1      CONTAINS NUMBER 1      02 00289
000422 A 290      TWO      EQU      MT+2      CONTAINS NUMBER 2      02 00290
000464 A 291      THREE     EQU      MT+36     CONTAINS NUMBER 3      02 00291
000423 A 292      FOUR      EQU      MT+3      CONTAINS NUMBER 4      02 00292
000465 A 293      FIVE      EQU      MT+37     CONTAINS NUMBER 5      02 00293
000466 A 294      SIX      EQU      MT+38     CONTAINS NUMBER 6      02 00294

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000467 A 295 SEVEN EQU MT+39 CONTAINS NUMBER 7 02 00295
000424 A 296 EIGHT EQU MT+4 CONTAINS NUMBER 8 02 00296
000470 A 297 NINE EQU MT+40 CONTAINS NUMBER 9 02 00297
000471 A 298 TEN EQU MT+41 CONTAINS NUMBER 10 02 00298
000421 A 299 BM1 EQU MT+1 BIT MASK WORD 00001 02 00299
000464 A 300 BM3 EQU MT+36 BIT MASK WORD 00003 02 00300
000467 A 301 BM7 EQU MT+39 BIT MASK WORD 00007 02 00301
000472 A 302 BM17 EQU MT+42 BIT MASK WORD 00017 02 00302
000473 A 303 BM37 EQU MT+43 BIT MASK WORD 00037 02 00303
000474 A 304 BM77 EQU MT+44 BIT MASK WORD 00077 02 00304
000475 A 305 BM177 EQU MT+45 BIT MASK WORD 00177 02 00305
000463 A 306 PM377 EQU MT+35 BIT MASK WORD 00377 02 00306
000476 A 307 BM777 EQU MT+46 BIT MASK WORD 00777 02 00307
000477 A 308 BM1777 EQU MT+47 BIT MASK WORD 01777 02 00308
309 EJEC 02 00309
310 ***** 02 00310
311 * 02 00311
312 **** BIT TEST BIT DESIGNATION *** 02 00312
313 * 02 00313
314 ***** 02 00314
000040 A 316 RA0 EQU 040 BT JUMPS WHEN A REGISTER IS 0 02 00316
000000 A 317 RA1 EQU 000 BT JUMPS WHEN A REGISTER IS 1 02 00317
000060 A 318 RB0 EQU 060 BT JUMPS WHEN B REGISTER IS 0 02 00318
000020 A 319 RB1 EQU 020 BT JUMPS WHEN B REGISTER IS 1 02 00319
321 ***** 02 00321
322 * 02 00322
323 ** THE BIT CHECKED 02 00323
324 * 02 00324
325 ***** 02 00325
000000 A 327 B0 EQU 0 02 00327
000001 A 328 B1 EQU 1 02 00328
000002 A 329 B2 EQU 2 02 00329
000003 A 330 B3 EQU 3 02 00330
000004 A 331 B4 EQU 4 02 00331
000005 A 332 B5 EQU 5 02 00332
000006 A 333 B6 EQU 6 02 00333
000007 A 334 B7 EQU 7 02 00334
000010 A 335 B8 EQU 8 02 00335
000011 A 336 B9 EQU 9 02 00336
000012 A 337 B10 EQU 10 02 00337
000013 A 338 B11 EQU 11 02 00338
000014 A 339 B12 EQU 12 02 00339
000015 A 340 B13 EQU 13 02 00340
000016 A 341 B14 EQU 14 02 00341
000017 A 342 B15 EQU 15 02 00342
343 EJEC 02 00343
344 ***** 02 00344
345 * 02 00345
346 **** DEVICE AND FUNCTION CODES *** 02 00346
347 * 02 00347
348 ***** 02 00348
000047 A 350 **** REAL TIME CLOCK *** 02 00350
351 CLOCK EQU 047 DEVICE NUMBER 047 02 00351
352 * 02 00352
000747 A 353 DISCLK EQU 0700+CLOCK DISABLE CLOCK 02 00353
000147 A 354 ENACLK EQU 0100+CLOCK ENABLE CLOCK 02 00354
355 IFF VORTEX-2 V2 02 00355
356 MPDVAD EQU 046 RAM ADDRESS V2 02 00356
358 * 02 00358
359 **** PIM *** 02 00359
000044 A 360 APIM EQU 044 ALL PIMS DEVICE NUMBER 02 00360
000040 A 361 PIM1 EQU 040 02 00361
000041 A 362 PIM2 EQU 041 02 00362
000042 A 363 PIM3 EQU 042 02 00363
000043 A 364 PIM4 EQU 043 02 00364
000040 A 365 PIM5 EQU 040 02 00365
000040 A 366 PIM6 EQU 040 02 00366
000040 A 367 PIM7 EQU 040 02 00367
000040 A 368 PIM8 EQU 040 02 00368
369 * 02 00369
000444 A 370 DISPIM EQU 0400+APIM 02 00370
000244 A 371 ENAPIM EQU 0200+APIM 02 00371
373 **** MEMORY PROTECT *** 02 00373
000045 A 374 MP EQU 045 DEVICE ADDRESS 045 02 00374
000745 A 375 DISMP EQU 0700+MP DISABLE MEMORY PROTECT 02 00375
000645 A 376 ENAMP EQU 0600+MP ENABLE MEMORY PROTECT 02 00376
000045 A 377 MPMR0 EQU 0000+MP SELECT MASK REGISTER 0 02 00377
000145 A 378 MPMR1 EQU 0100+MP SELECT MASK REGISTER 1 02 00378
000245 A 379 MPMR2 EQU 0200+MP SELECT MASK REGISTER 2 02 00379
000345 A 380 MPMR3 EQU 0300+MP SELECT MASK REGISTER 3 02 00380
381 EJEC 02 00381
382 * 02 00382
383 * 02 00383
384 * CARD PUNCH DRIVER 02 00384
385 * VORTEX OPERATING SYSTEM 02 00385
386 * 02 00386
387 * 02 00387
388 * 02 00388
389 * 02 00389
000001 A 390 EXT V$CTL,V$FNR,V$ERR,V$CRDM 02 00390
000002 A 391 X EQU 1 02 00391
392 B EQU 2 02 00392
393 * 02 00393

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Address	Hex	Op	Op2	Op3	Description	Page	Line	
394	*				CONTROLLER TABLE, DEVICE TABLE,	02	00394	
395	*				AND RQBLK EQUATES	02	00395	
396	*					02	00396	
000004	A	397	CTRQBK	EQU	4	02	00397	
000006	A	398	CTDVAD	EQU	6	02	00398	
000003	A	399	CTCST	EQU	3	02	00399	
000010	A	400	CTSTAT	EQU	8	02	00400	
000013	A	401	CTWDS	EQU	11	02	00401	
000000	A	402	RSTPR	EQU	0	02	00402	
000001	A	403	RDPWD	EQU	1	02	00403	
000002	A	404	RFCB	EQU	2	02	00404	
000003	A	405	RTIDB	EQU	3	02	00405	
000000	A	406	DRECL	EQU	0	02	00406	
000001	A	407	DBUFF	EQU	1	02	00407	
000011	A	408	CTRICB	EQU	9	02	00408	
000016	A	409	CTBBGN	EQU	14	02	00409	
000017	A	410	CTBEND	EQU	CTBBGN+1	02	00410	
000020	A	411	CTMPA	EQU	CTBEND+1	02	00411	
000021	A	412	CTMPB	EQU	CTMPA+1	02	00412	
000022	A	413	CTMPC	EQU	CTMPB+1	02	00413	
		414	EJEC			02	00414	
		415	NAME	VZCPA		02	00415	
000000	030300	A	416	VZCPA	V\$CTL	02	00416	
000001	025010	A	417	LDB	TBRSTS,X	02	00417	
000002	016010	A	418	LDA	CTSTAT,B	02	00418	
000003	001010	A	419	BRZ	CPA1	02	00419	
000004	000045	R						
000005	100444	A	420	EXC	DISPIM	02	00420	
000006	100747	A	421	EXC	DISCLK	02	00421	
000007	016006	A	422	LDA	CTDVAD,B	02	00422	
000010	006110	A	423	BRAI	0100300	02	00423	
000011	100300	A						
000012	054000	A	424	STA	CPA3	02	00424	
000013	005000	A	425	NOP		02	00425	
			426	DELAY	200,0,0	02	00426	
000014	006505	A						
000015	000406	A						
000016	001100	A						
000017	000310	A						
000020	000000	A						
000021	030300	A	427	LDB	V\$CTL	02	00427	
000022	025010	A	428	LDB	TBRSTS,X	02	00428	
000023	016006	A	429	LDA	CTDVAD,B	02	00429	
000024	006110	A	430	BRAI	0100100	02	00430	
000025	100100	A						
000026	100747	A	431	EXC	DISCLK	02	00431	
000027	100444	A	432	EXC	DISPIM	02	00432	
000030	054000	A	433	STA	CPA2	02	00433	
000031	005000	A	434	NOP		02	00434	
000032	100147	A	435	EXC	ENACKL	02	00435	
000033	100244	A	436	EXC	ENAPIM	02	00436	
000034	005001	A	437	TZA		02	00437	
000035	056010	A	438	STA	CTSTAT,B	02	00438	
			439	CPA4	DELAY	1000,0,0	02	00439
000036	006505	A						
000037	000406	A						
000040	001100	A						
000041	001750	A						
000042	000000	A						
000043	030300	A	440	LDB	V\$CTL	02	00440	
000044	025010	A	441	LDB	TBRSTS,X	02	00441	
000045	014427	A	442	CPA1	CPASRDY	02	00442	
000046	116006	A	443	DRA	CTDVAD,B	02	00443	
000047	100444	A	444	EXC	DISPIM	02	00444	
000050	100747	A	445	EXC	DISCLK	02	00445	
000051	054000	A	446	STA	CPA3	02	00446	
000052	005000	A	447	CPA3	NOP	02	00447	
000053	000063	R	448	DATA	CPA3	02	00448	
000054	005001	A	449	TZA		02	00449	
000055	100244	A	450	CPA3	EXC	ENAPIM	02	00450
000056	100147	A	451	EXC	ENACKL	02	00451	
000057	056010	A	452	STA	CTSTAT,B	02	00452	
000060	005001	A	453	TZA		02	00453	
000061	001000	A	454	JMP	V\$ERR	02	00454	
000062	000000	E						
000063	006010	A	455	CPA3	LDAI	0101100	02	00455
000064	101100	A						
000065	116006	A	456	DRA	CTDVAD,B	02	00456	
000066	054001	A	457	STA	CPA3B	02	00457	
000067	010421	A	458	LDA	ONE	02	00458	
000070	005000	A	459	CPA3B	NOP	02	00459	
000071	000055	R	460	DATA	CPA3	02	00460	
000072	100147	A	461	EXC	ENACKL	02	00461	
000073	100244	A	462	EXC	ENAPIM	02	00462	
000074	036016	A	463	LDB	CTBBGN,B	02	00463	
000075	024003	A	464	LDB	B00	02	00464	
000076	005001	A	465	TZA		02	00465	
000077	035000	A	466	CPA3	STA	0,X	02	00466
000100	005144	A	467	INR	CP	02	00467	
000101	005322	A	468	BRZ	BUFER	02	00468	
000102	001026	A	469	BRZ	CPA3	02	00469	
000103	000077	A						
000104	030300	A	470	LDB	V\$CTL	02	00470	

000105	025010	A	471	LDB	TBRSTS,X			02	00471	
000106	036004	A	472	LDX	CTRQBK,B	GET RQBLK ADRS		02	00472	
000107	015001	A	473	LDA	ROPWD,X			02	00473	
000110	154372	A	474	ANA	N7400	GET OP CODE		02	00474	
000111	140431	A	475	SUB	BS8	WRITE OPERATION ?		02	00475	
000112	001010	A	476	JAZ	CPBA	YES		02	00476	
000113	000132	R								
000114	140431	A	477	SUB	BS8	NO - WEDF OPERATION ?		02	00477	
000115	001016	A	478	JANZ	CPAH	NO		02	00478	
000116	000124	R								
000117	014364	A	479	LDA	WEDFCH	YES - GET WEDF CHAR		02	00479	
000120	036016	A	480	LDX	CTBBGN,B	GET BUFR ADRS		02	00480	
000121	055000	A	481	STA	0,X	STORE CHAR IN BUFR		02	00481	
000122	001800	A	482	JMP	CPEA	GO TO PUNCH CARD		02	00482	
000123	000402	R								
000124	140431	A	483	CPAH	SUB	BS8	TEST FOR	02	00483	
000125	140432	A	484	SUB	BS9	FUNC OPERATION		02	00484	
000126	001016	A	485	JANZ	V\$FNR	NO - EXIT		02	00485	
000127	000000	E								
000130	001000	A	486	JMP	CPEA	YES - GO TO PUNCH CARD		02	00486	
000131	000402	R								
000132	035002	A	487	CPBA	LDX	RFCB,X		02	00487	
			488		IFT	VORTEX-2		V2	02	00488
			489		GOTO	ENDC02		V2	02	00489
			490		DME	MPDVAD,V\$ST3	SWITCH TO USER'S MAP	V2	02	00490
			491		LDA	DRECL,X	GET RECORD LENGTH	V2	02	00491
			492		LDX	DBUFF,X	GET BUFFER ADDRESS	V2	02	00492
			493		DME	MPDVAD,V\$ST0	RESTORE MAP 0	V2	02	00493
			494		STX	CTMPC,B		V2	02	00494
			495	ENDC02	CONT			V2	02	00495
			496		IFT	VORTEX-2		V2	02	00496
000133	015000	A	497	LDA	DRECL,X	GET RECORD LENGTH		02	00497	
000134	056021	A	498	STA	CTMPB,B	SAVE IN CTRLR TABLE		02	00498	
			499		IFF	VORTEX-2		V2	02	00499
			500		GOTO	ENDC03		V2	02	00500
000135	015001	A	501	LDA	DBUFF,X	GET BUFR ADRS		02	00501	
000136	056022	A	502	STA	CTMPC,B	SAVE IN CTRLR TABLE		02	00502	
			503		IFF	VORTEX-2		V2	02	00503
			504	ENDC03	CONT			V2	02	00504
000137	036004	A	505	LDX	CTRQBK,B			02	00505	
000140	015001	A	506	LDA	ROPWD,X	GET MODE		02	00506	
000141	154340	A	507	ANA	N70000	= SYSTEM BINARY ?		02	00507	
000142	001010	A	508	JAZ	CPCA	YES		02	00508	
000143	000177	R								
000144	140435	A	509	SUB	BS12	NO, = ASCII		02	00509	
000145	001010	A	510	JAZ	CRDA	YES		02	00510	
000146	000275	R								
000147	016021	A	511	LDA	CTMPB,B	MODE = UNFORMATTED		02	00511	
000150	144330	A	512	SUB	D80	GET COUNT		02	00512	
000151	001004	A	513	JAN	CPBC	IF GTR THAN		02	00513	
000152	000156	R								
000153	014325	A	514	LDA	D80	80, SET TO 80		02	00514	
000154	056021	A	515	STA	CTMPB,B			02	00515	
000155	056013	A	516	STA	CTWDS,B			02	00516	
000156	016016	A	517	CPBC	LDA	CTBBGN,B	SET UP	02	00517	
000157	056020	A	518	STA	CTMPA,B	PUNCH BUFR ADRS		02	00518	
000160	036022	A	519	CPBE	LDX	CTMPC,B		02	00519	
			520		IFF	VORTEX-2		02	00520	
			521		DME	MPDVAD,V\$ST3	SWITCH TO USER'S MAP	V2	02	00521
000161	015000	A	522	LDA	0,X	PICK UP WORD		02	00522	
			523		IFF	VORTEX-2		V2	02	00523
			524		DME	MPDVAD,V\$ST0	RESTORE MAP 0	V2	02	00524
000162	005144	A	525	IXR				02	00525	
000163	076022	A	526	STX	CTMPC,B	SAVE POINTER		02	00526	
000164	036020	A	527	LDX	CTMPA,B			02	00527	
000165	055000	A	528	STA	0,X	STORE WORD		02	00528	
000166	005144	A	529	IXR				02	00529	
000167	076020	A	530	STX	CTMPA,B	SAVE POINTER		02	00530	
000170	016021	A	531	LDA	CTMPB,B			02	00531	
000171	005311	A	532	DAR		DECREMENT COUNT		02	00532	
000172	056021	A	533	STA	CTMPB,B			02	00533	
000173	001016	A	534	JANZ	CPBE	GO BACK FOR NEXT		02	00534	
000174	000160	R								
000175	001000	A	535	JMP	CPEA			02	00535	
000176	000402	R								
000177	016021	A	536	CPCA	LDA	CTMPB,B	SYSTEM BINARY MODE	02	00536	
000200	144277	A	537	SUB	D60	GET WORD COUNT		02	00537	
000201	001004	A	538	JAN	CPCC	IF GTR THAN		02	00538	
000202	000206	R								
000203	014274	A	539	LDA	D60	60, SET TO 60		02	00539	
000204	056021	A	540	STA	CTMPB,B			02	00540	
000205	056013	A	541	STA	CTWDS,B			02	00541	
000206	016016	A	542	CPCC	LDA	CTBBGN,B	SET UP	02	00542	
000207	056020	A	543	STA	CTMPA,B	PUNCH BUFR ADRS		02	00543	
000210	036022	A	544	CPCE	LDX	CTMPC,B		02	00544	
			545		IFF	VORTEX-2		V2	02	00545
			546		DME	MPDVAD,V\$ST3	SWITCH TO USER'S MAP	V2	02	00546
000211	015000	A	547	LDA	0,X	GET 1ST WORD		02	00547	
			548		IFF	VORTEX-2		V2	02	00548
			549		DME	MPDVAD,V\$ST0	RESTORE MAP 0	V2	02	00549
000212	004254	A	550	LRLA	12	SHIFT		02	00550	
000213	036020	A	551	LDX	CTMPA,B			02	00551	
000214	055000	A	552	STA	0,X	STORE IN PUNCH BUFFER		02	00552	

Address	Label	Op	Opnd	Description	Line	Page
000215	004344	A	553	LSRA	4	ADJUST FOR NEXT
000216	006150	A	554	ANAI	07400	
000217	007400	A				
000220	055001	A	555	STA	1,X	SAVE REMAINDER
000221	036021	A	556	LDX	CTMPB,B	
000222	005344	A	557	DXR		DECREMENT COUNT
000223	001040	A	558	JXZ	CPCA	JUMP IF DONE
000224	000402	R				
000225	076021	A	559	STX	CTMPB,B	
000226	036022	A	560	LDX	CTMPC,B	
			561	IFF	VORTEX-2	
			562	OME	MPDVAD,V\$ST3	SWITCH TO USER'S MAP
000227	015001	A	563	LDA	1,X	GET 2ND WORD
			564	IFF	VORTEX-2	
			565	OME	MPDVAD,V\$ST0	RESTORE MAP 0
000230	036020	A	566	LDX	CTMPA,B	
000231	055002	A	567	STA	2,X	SAVE IT
000232	004350	A	568	LSRA	8	
000233	115001	A	569	DRA	1,X	ADJUST WORD AND COMBINE WITH PREVIOUS
000234	055001	A	570	STA	1,X	STORE IN BUFFER
000235	015002	A	571	LDA	2,X	
000236	004244	A	572	LRLA	4	ADJUST REMAINDER
000237	006150	A	573	ANAI	07760	OF WORD
000240	007760	A				
000241	055002	A	574	STA	2,X	
000242	036021	A	575	LDX	CTMPB,B	
000243	005344	A	576	DXR		DECREMENT COUNT
000244	001040	A	577	JXZ	CPCA	JUMP IF DONE
000245	000402	R				
000246	076021	A	578	STX	CTMPB,B	
000247	036022	A	579	LDX	CTMPC,B	
			580	IFF	VORTEX-2	
			581	OME	MPDVAD,V\$ST3	SWITCH TO USER'S MAP
000250	015002	A	582	LDA	2,X	GET 3RD WORD
			583	IFF	VORTEX-2	
			584	OME	MPDVAD,V\$ST0	RESTORE MAP 0
000251	036020	A	585	LDX	CTMPA,B	
000252	055003	A	586	STA	2,X	STORE IN BUFR
000253	004244	A	587	LRLA	4	
000254	006150	A	588	ANAI	017	COMBINE WITH REMAINDER
000255	000017	A				
000256	115002	A	589	DRA	2,X	OF PREVIOUS WORD
000257	055002	A	590	STA	2,X	STORE IN BUFR
000260	036021	A	591	LDX	CTMPB,B	
000261	005344	A	592	DXR		DECREMENT COUNT
000262	001040	A	593	JXZ	CPCA	JUMP IF DONE
000263	000402	R				
000264	076021	A	594	STX	CTMPB,B	
000265	016020	A	595	LDA	CTMPA,B	
000266	120423	A	596	ADD	FOUR	INCREMENT PUNCH
000267	056020	A	597	STA	CTMPA,B	BUFFER POINTER
000270	016022	A	598	LDA	CTMPC,B	
000271	120464	A	599	ADD	THREE	INCREMENT USER
000272	056022	A	600	STA	CTMPC,B	BUFFER POINTER
000273	001000	A	601	JMP	CPDC	GO BACK FOR NEXT
000274	000210	R				
000275	016021	A	602	LDA	CTMPB,B	ASCII MODE
000276	144200	A	603	SUB	240	GET WORD COUNT
000277	001004	A	604	JAN	CPDC	IF STR THAN
000300	000304	R				
000301	014175	A	605	LDA	R40	40, SET TO 40
000302	056021	A	606	STA	CTMPB,B	
000303	056013	A	607	STA	CTMDS,B	
000304	016016	A	608	LDA	CTSBGN,B	SET UP PUNCH
000305	056020	A	609	STA	CTMPA,B	BUFR ADRS
000306	036022	A	610	LDX	CTMPC,B	
			611	IFF	VORTEX-2	
			612	OME	MPDVAD,V\$ST3	SWITCH TO USER'S MAP
000307	015000	A	613	LDA	0,1	GET WORD FROM USER BUFR
			614	IFF	VORTEX-2	
			615	OME	MPDVAD,V\$ST0	RESTORE MAP 0
000310	036020	A	616	LDX	CTMPA,B	
000311	055001	A	617	STA	1,X	SAVE IT
000312	004250	A	618	LRLA	8	
000313	150463	A	619	ANA	RHU	GET HIGH ORDER 8 BITS
000314	144161	A	620	SUB	R240	COMPUTE TABLE DISPLACEMENT
000315	005014	A	621	TAX		
000316	006015	A	622	LDAE	CPCTAB,X	CONVERT
000317	000500	R				
000320	001002	A	623	JAP	CPDG	
000321	000335	R				
000322	150463	A	624	ANA	RHU	SPECIAL CHARACTER -
000323	005014	A	625	TAX		
000324	010046	A	626	LDA	V\$CRDM	WHAT TYPE KEYPUNCH
000325	006450	A	627	BT	550,CPDF	
000326	000333	R				V75***666**
000327	000015	A	628	LDAE	CPCT29,X	029 KEYPUNCH
000330	000605	R				
000331	001000	A	629	JMP	CPDG	
000332	000335	R				
000333	006015	A	630	LDAE	CPCT26,X	026 KEYPUNCH
000334	000630	R				
000335	036020	A	631	LDX	CTMPA,B	

Address	Op	Mode	Label	Op	Mode	Op	Mode	Description	Page
000336	055000	A	632	STA	0,X			STORE IN PUNCH BUFR	02 00633
000337	015001	A	633	LDA	1,X				02 00634
000340	150463	A	634	ANA	RHW			GET LOW ORDER 8 BITS	02 00635
000341	144134	A	635	SUB	N240			COMPUTE TABLE DISPLACEMENT	02 00636
000342	005014	A	636	TAX					02 00637
000343	006015	A	637	LDAE	CPCTAB,X			CONVERT	02 00638
000344	000505	R							
000345	001002	A	638	JAP	CPDN				02 00639
000346	000363	R							
000347	150463	A	639	ANA	RHW			SPECIAL CHARACTER -	02 00640
000350	005014	A	640	TAX					02 00641
000351	010046	A	641	LDA	V\$CRDM			WHAT TYPE KEYPUNCH	02 00642
000352	004341	A	642	LSRA	1				02 00643
000353	001010	A	643	JAZ	CPDK				02 00644
000354	000361	R							
000355	006015	A	644	LDAE	CPCT29,X			029 KP	02 00645
000356	000605	R							
000357	001000	A	645	JMP	CPDN				02 00646
000360	000363	R							
000361	006015	A	646	CPDK LDAE	CPCT26,X			026 KP	02 00647
000362	000630	R							
000363	036020	A	647	CPDN LDX	CTMPA,B				02 00648
000364	055001	A	648	STA	1,X			STORE IN PUNCH BUFR	02 00649
000365	005144	A	649	IXR					02 00650
000366	005144	A	650	IXR				INCR PUNCH BUFR PNTR	02 00651
000367	076020	A	651	STX	CTMPA,B				02 00652
000370	036021	A	652	LDX	CTMPB,B				02 00653
000371	005344	A	653	DXR				DECREMENT WORD COUNT	02 00654
000372	001040	A	654	JXZ	CPEA			JUMP IF DONE	02 00655
000373	000402	R							
000374	076021	A	655	STX	CTMPB,B				02 00656
000375	036022	A	656	LDX	CTMPC,B				02 00657
000376	005144	A	657	IXR				INCR USER BUFR PNTR	02 00658
000377	076022	A	658	STX	CTMPC,B				02 00659
000400	001000	A	659	JMP	CPDE			GO BACK FOR NEXT	02 00660
000401	000306	R							
000402	036016	A	660	CPEA LDX	CTBBGN,B			GET BUFR BEGIN ADRS	02 00661
000403	016017	A	661	LDA	CTBEND,B			GET BUFR END ADRS	02 00662
000404	006506	A	662	JSR	V\$BIC,B			GO SET UP BIC	02 00663
000405	000000	E							
000406	000001	A	663	DATA	1				02 00664
			664	IFF	VORTEX-2				V2 02 00665
			665	MAPKEY DATA	0				V2 02 00666
000407	055021	A	666	STA	CTMPB,X			SAVE BIC NO.	02 00667
000410	001002	A	667	JAP	CPED			GOOD RETURN	02 00668
000411	000425	R							
000412	100244	A	668	EXC	ENAPIN			ERROR -	02 00669
000413	100147	A	669	EXC	ENACLK			ENABLE INTERRUPTS	02 00670
000414	005211	A	670	CPA					02 00671
000415	004251	A	671	LRLA	9				02 00672
000416	006120	A	672	ADDI	017000				02 00673
000417	017000	A							
000420	035004	A	673	LDX	CTRQBK,X				02 00674
000421	115000	A	674	ORA	RSTPR,X			SET ERROR CODE	02 00675
000422	055000	A	675	STA	RSTPR,X			IN RQBK	02 00676
000423	001000	A	676	JMP	V\$ERR			ERROR EXIT	02 00677
000424	000062	E							
000425	005042	A	677	CPEB TXB					02 00678
000426	016006	A	678	LDA	CTDYAD,B			BUILD	02 00679
000427	006110	A	679	DRAI	0100200			CONNECT BIC COMMAND	02 00680
000430	100200	A							
000431	054000	A	680	CPEF STA	CPEF			CONNECT BIC	02 00681
000432	005000	A	681	NOP					02 00682
000433	030300	A	682	LDX	V\$CTL				02 00683
000434	005001	A	683	TZA				CLEAR	02 00684
000435	055003	A	684	STA	TBEVNT,X			EVENT WORD IN TIDB	02 00685
			685	DELAY	01000,0,2				02 00686
000436	006505	A							
000437	000406	A							
000440	001102	A							
000441	001000	A							
000442	000000	A							
000443	030300	A	686	LDX	V\$CTL				02 00687
000444	015001	A	687	LDA	TBST,X				02 00688
000445	150447	A	688	ANA	BR3			CLEAR TIME BIT IN TIDB	02 00689
000446	150444	A	689	ANA	BR3			CLEAR INT EXPECTED BIT	02 00690
000447	055001	A	690	STA	TBST,X				02 00691
000450	015003	A	691	LDA	TBEVNT,X			GET EVENT WORD	02 00692
000451	005002	A	692	TZB					02 00693
000452	065003	A	693	STB	TBEVNT,X			CLEAR EVENT WORD	02 00694
000453	025010	A	694	LDB	TBRSTS,X				02 00695
000454	001016	A	695	JANZ	CPEN			GOOD RETURN	02 00696
000455	000461	R							
000456	010431	A	696	LDA	R38			TIME OUT -	02 00697
000457	001000	A	697	JMP	CPEW			IRRECOVERABLE I/O ERROR	02 00698
000460	000470	R							
			698	CPEN DELAY	0,0,0			WAIT	02 00699
000461	006505	A							
000462	000406	A							
000463	001100	A							
000464	000010	A							
000465	000030	A							
000466	001000	A	699	JMP	V\$FNR			RETURN	02 00700

E.2 VORTEX LISTING

VZCPA

PROGRAM PAGE 12

LISTING PAGE (622)

391	X	417	428	441	456	471	473	481	487	491
		492	497	501	506	522				

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000001 A 1 VORTEX SET 1 00 00001
2 * THIS IS A COPYRIGHTED PROGRAM. COPYRIGHT 1972 BY VARIAN DATA MACHINE 00 00002
3 * 00 00003
4 * V.D.M. PART NO. 92L0605-170A 00 00004
5 * 00 00005
6 * 00 00006
7 * 00 00007
8 * 00 00008
9 * 00 00009
10 * 00 00010
11 * TITLE VZSPA 00 00011
12 * 00 00012
13 * I/O DRIVER FOR VORTEX SPOOLING SYSTEM 00 00013
14 * 00 00014
15 * 00 00015
16 * 00 00016
17 * 00 00017
18 * EXT V$EXEC 00 00018
19 * EXT V$JDC 00 00019
20 * EXT V$FNR 00 00020
21 * EXT V$ERR 00 00021
22 * EXT V$IDST 00 00022
23 * NAME VZSP0A 00 00023
24 * NAME VZSP1A 00 00024
25 * NAME VZSP2A 00 00025
26 * NAME VZSP3A 00 00026
27 * NAME VZSP4A 00 00027
28 * NAME VZSP5A 00 00028
29 * NAME VZSP6A 00 00029
30 * NAME VZSP7A 00 00030
31 * 00 00031
32 * 00 00032
33 **** TIDB SETUP *** 00 00033
34 * 00 00034
35 * 00 00035
000000 A 37 TBTRD EQU 0 TASK THREAD 00 00037
000001 A 38 TBST EQU 1 TASK STATUS 00 00038
000002 A 39 TBPL EQU 2 STATUS CNT. (BITS15-6), PRIORITY LEVEL(5-0) 00 00039
000003 A 40 TBEVNT EQU 3 INTERRUPT EVENT 00 00040
000004 A 41 TBRSA EQU 4 A REENRANT AND SUSPEND STACK 00 00041
000005 A 42 TBRSE EQU 5 B REENRANT AND SUSPEND STACK 00 00042
000006 A 43 TBRSE EQU 6 X REENRANT AND SUSPEND STACK 00 00043
000007 A 44 TBRSP EQU 7 DF/P REENRANT AND SUSPEND STACK 00 00044
000010 A 45 TBRSTS EQU 8 TEMP. STG. REENRANT AND SUSPEND STACK 00 00045
000011 A 46 TBENTY EQU 9 TASK ENTRY LOCATION 00 00046
000012 A 47 TBTMS EQU 10 TIME COUNTER - CLOCK RESOLUTION IN SNS INC 00 00047
000013 A 48 TBTMIN EQU 11 TIME COUNTER - CLOCK MINUTE INCREMENTS 00 00048
000014 A 49 TBISA EQU 12 A INTERRUPT STACK 00 00049
000015 A 50 TBISB EQU 13 B INTERRUPT STACK 00 00050
000016 A 51 TBISX EQU 14 X INTERRUPT STACK 00 00051
000017 A 52 TBISP EQU 15 DF/P INTERRUPT STACK 00 00052
000020 A 53 TBISRS EQU 16 REENT. STACK INTERRUPT STACK 00 00053
000021 A 54 TBID EQU 17 BLK ALLOC(15-10), I/O THR(9-5), I/O ACT(4-0) 00 00054
000022 A 55 TBKN1 EQU 18 TASK NAME 00 00055
000023 A 56 TBKN2 EQU 19 TASK NAME 00 00056
000024 A 57 TBKN3 EQU 20 TASK NAME 00 00057
000025 A 58 TBTLC EQU 21 1ST LOC. OF TASK ALLOCATABLE 00 00058
000026 A 59 TBCPTH EQU 22 BACKGROUND TASK QUEUE 00 00059
000027 A 60 TBATSK EQU 23 TIDB LOC. OF ACTIVATING TASK 00 00060
000030 A 61 TBRSE EQU 24 TASK ERROR CODE 00 00061
62 EQU 00 00062
63 * 00 00063
64 * 00 00064
65 **** TASK STATUS DESCRIPTION (BIT SET WORD 1) *** 00 00065
66 * 00 00066
67 * 00 00067
000017 A 69 TBS15 EQU 15 INTERRUPT SUSPEND 00 00069
000016 A 71 TBS14 EQU 14 TASK SUSPEND 00 00071
000015 A 72 TBS13 EQU 13 TASK ABORT 00 00072
000014 A 73 TBS12 EQU 12 TASK EXIT 00 00073
000013 A 75 TBS11 EQU 11 TIME CORE ACCIDENT 00 00075
000012 A 76 TBS10 EQU 10 CORE RESIDENT TASK 00 00076
000011 A 77 TBS9 EQU 9 FOREGROUND TASK 00 00077
000010 A 79 TBS8 EQU 8 TASK PROTECTED 00 00079
000007 A 80 TBS7 EQU 7 TASK SCHEDULED BY TIME DELAY 00 00080
000006 A 81 TBS6 EQU 6 TIME DELAY ACTIVE 00 00081
000005 A 83 TBS5 EQU 5 TASK WAITING TO BE LOADED 00 00083
000004 A 84 TBS4 EQU 4 TASK ERROR 00 00084
000003 A 85 TBS3 EQU 3 TASK INTERRUPT EXPECTED 00 00085
000002 A 87 TBS2 EQU 2 OVERLAY TASK 00 00087
000001 A 88 TBS1 EQU 1 UPON TERMINATION ACTIVATE TASK SCHED TASK 00 00088
000000 A 89 TBS0 EQU 0 TASK SEARCH-ALLOCATED-LOADED 00 00089
90 EQU 00 00090
91 * 00 00091
92 * 00 00092
93 **** TASK STATUS DESCRIPTION (BIT SET WORD 2) *** 00 00093
94 * 00 00094
95 * 00 00095
97 * 00 00097
99 * 00 00099
100 * 00 00100
101 * 00 00101
102 * 00 00102
103 * 00 00103

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105 *      BIT 11 -  DEFINES THAT ALLOCATABLE SPACE IS AVAILABLE, TRY      00 00105
106 *      ALLOCATING TASK AGAIN.  OVERRIDES BIT 12 SET OR              00 00106
107 *      BIT 5 IN STATUS WORD.                                         00 00107
108 *      BIT 10 -  BACKGROUND TASK BEING WRITTEN ON CHECKPOINT FILE.    00 00108
109 *      BIT 9  -  TASK WAITING FOR A TIDB TO COME AVAILABLE FOR        00 00109
110 *      SCHEDULING.                                                    00 00110
112 *      BIT 8 TO 6 -  UNUSED                                           00 00112
113 *      EJECC                                                           00 00113
114 *      *****                                                         00 00114
115 *      *****                                                         00 00115
116 ***      JOB PROCESSOR LOW CORE EQUATES                               ** 00 00116
117 *      *****                                                         00 00117
118 *      *****                                                         00 00118
000050 A 120 LCJPC      EQU      050                                     00 00120
000050 A 121 V$JNAM    EQU      LCJPC      JCP NAME                      00 00121
000054 A 122 V$LCNT    EQU      LCJPC+4    LINE COUNT                    00 00122
000055 A 123 V$JCFG    EQU      LCJPC+5    JCP FLAGS                      00 00123
124 *      BIT 2-0 = LOAD AND GO FLAGS                                  00 00124
125 *      BIT 3 = DUMP FLAG 1=DUMP, 0=NO DUMP                          00 00125
126 *      BIT 4 = DUMP FLAG IF LOAD AND GO                             00 00126
127 *      BIT 9-5 = UNUSED                                             00 00127
128 *      BIT 15-10 = BG EXTRA CORE BLOCKS TO ALLDC                   00 00128
000056 A 130 V$BIC1    EQU      LCJPC+6    BIC INTERRUPT ADDRESS TABLE (10 WORDS) 00 00130
000070 A 131 V$DATE    EQU      LCJPC+16   JCP DATE RECORD                00 00131
000074 A 132 V$PLCT    EQU      LCJPC+20   PERMINATE LINE COUNT           00 00132
000075 A 133 V$BGLB    EQU      LCJPC+21   JCP LIB KEY AND LU NO. (BACKGROUND LIB) 00 00133
000076 A 134 V$CRDM    EQU      LCJPC+22   CARD KEYPUNCH TYPE, 0=026, 1=029   00 00134
135 *      BIT 0 = SYSTEM NOMINAL KEYPUNCH MODE.                      00 00135
136 *      BIT 9 = CURRENT JOB KEYPUNCH MODE.                          00 00136
000077 A 137 V$JCTM    EQU      LCJPC+23   TEMP. STORAGE FOR /NEM BLOCK     00 00137
138 *      EJECC                                                           00 00138
139 *      *****                                                         00 00139
140 *      *****                                                         00 00140
141 ****     LOW CORE DESCRIPTION                                       *** 00 00141
142 *      *****                                                         00 00142
143 *      *****                                                         00 00143
000300 A 145 LC        EQU      0300                                     00 00145
000300 A 146 V$CTL    EQU      LC          CURRENT TASK TIDB LOCATION       00 00146
000301 A 147 V$CPL    EQU      LC+1       CURRENT PRIORITY LEVEL         00 00147
000302 A 148 V$CRS    EQU      LC+2       CURRENT REENTRANT STACK POINTER 00 00148
000303 A 149 V$TB     EQU      LC+3       POINTER TO HIGHEST PRIORITY TIDB 00 00149
000304 A 150 V$UTB    EQU      LC+4       POINTER TO UNUSED TASK TIDB    00 00150
000305 A 151 V$PTVB   EQU      LC+5       POINTER TO NEXT ENTRY IN REENTRANT STACK 00 00151
000306 A 152 V$FLRS   EQU      LC+6       FIRST LOC. OF REENTRANT STACK   00 00152
000307 A 153 V$LRSK   EQU      LC+7       LAST LOC. OF REENTRANT STACK+1 00 00153
000310 A 154 V$CKPT    EQU      LC+8       CHECKPOINT FLAG 1=ON, 0=OFF    00 00154
000311 A 155 V$OPCL   EQU      LC+9       LOC. OF TIDB FOR OPCOM TASK    00 00155
000312 A 156 V$LSAL   EQU      LC+10      LOC. OF TIDB FOR SYSTEM SAL TASK 00 00156
000313 A 157 V$LER    EQU      LC+11      LOC. OF TIDB FOR SYSTEM ERROR TASK 00 00157
000314 A 158 V$TJCP   EQU      LC+12      LOC. OF TIDB FOR JOB CONTROL PROCESSOR TSK 00 00158
000315 A 159 V$BTB    EQU      LC+13      LOC. OF CURRENT ACTIVE BACKGROUND TSK TIDB 00 00159
000316 A 160 V$LUP    EQU      LC+14      LOC. OF 1ST UNPROTECTED WORD   00 00160
000317 A 161 V$LLUP   EQU      LC+15      LOC. OF LAST UNPROTECTED WORD  00 00161
000320 A 162 V$IM     EQU      LC+16      INTERRUPT MASK (8 WORDS)       00 00162
000330 A 163 V$MPM    EQU      LC+24      MEMORY PROTECT MASK (4 WORDS)  00 00163
000334 A 164 V$CAM     EQU      LC+28      CORE ALLOCATION MASK (4 WORDS)  00 00164
165 *      EQU      LC+32       UNUSED                          00 00165
000341 A 166 V$CRDR   EQU      LC+33      CORE RESIDENT DIRECTORY LOCATION 00 00166
000342 A 167 V$TBGT   EQU      LC+34      TOP OF THREAD OF BG TSK WAITING TO BE ALLO 00 00167
000343 A 168 V$TMS    EQU      LC+35      TIME OF DAY IN 5 MILLISECOND INCREMENTS 00 00168
000344 A 169 V$TMN    EQU      LC+36      TIME OF DAY IN MINUTE INCREMENTS 00 00169
000345 A 170 V$LUNT   EQU      LC+37      ADDR. OF LOGICAL UNIT NAME TABLE 00 00170
000346 A 171 V$OPCF   EQU      LC+38      OPCOM LOCKOUT FLAG            00 00171
000347 A 172 V$FGLB   EQU      LC+39      KEY AND LU NO. FOR FOREGROUND LIB 00 00172
000350 A 173 V$FREE    EQU      LC+40      FREE RUNNING COUNTER INCR. IN MICROSECONDS 00 00173
000351 A 174 V$CTMS   EQU      LC+41      CLOCK RESOLUTION IN 5 MILLISECOND INCR. 00 00174
000352 A 175 V$SCV    EQU      LC+42      CLOCK SELECTED COUNT VALUE (1 TO 4095) 00 00175
000353 A 176 V$CKB    EQU      LC+43      BASIC CLOCK INTERRUPT RATE IN MICROSECONDS 00 00176
000354 A 177 V$CRM    EQU      LC+44      CLOCK RESOLUTION INCR. FOR 1 MINUTE. 00 00177
000355 A 178 V$DSTB   EQU      LC+45      BASE ADDR. FOR DST BLOCK       00 00178
000356 A 179 V$LIT    EQU      LC+46      LAST LOCATION OF BACKGROUND LITERAL TABLE 00 00179
180 *      EQU      LC+47       UNUSED                          00 00180
000360 A 181 V$CTAD   EQU      LC+48      BASE ADDR. FOR CONTROLLER ADDR. TABLE 00 00181
000361 A 182 V$SCTL   EQU      LC+49      CURRENT CONTROLLER IN SCAN     00 00182
000362 A 183 V$NCTR   EQU      LC+50      NO. OF CONTROLLERS            00 00183
000363 A 184 V$PIMN   EQU      LC+51      EXTERNAL DEVICE ADDRESS TABLE FOR PIMS 00 00184
185 *      EQU      LC+55      (8 WORDS DEFINED IN PIM NO ORDER) 00 00185
186 *      EQU      LC+59      UNUSED                          00 00186
187 *      EQU      LC+60      UNUSED                          00 00187
000375 A 188 V$SLFG   EQU      LC+61      SAL TASK BUSY FLAG 1=BUSY, 0=NOT BUSY 00 00188
000376 A 189 V$ERFG   EQU      LC+62      ERROR TASK BUSY FLAG 1=BUSY, 0=NOT BUSY 00 00189
000377 A 190 V$JDP    EQU      LC+63      JCP OPERATING FLAG            00 00190
000400 A 191 V$LUT1   EQU      LC+64      START LUN ADDR FOR JCP/OPCOM ASSIGNABLE 00 00191
000401 A 192 V$LUT2   EQU      LC+65      START LUN ADDR FOR UNASSIGNABLE 00 00192
000402 A 193 V$LUT3   EQU      LC+66      START LUN ADDR FOR OPCOM ASSIGNABLE 00 00193
000403 A 194 V$1MIN    EQU      LC+67      32767 - (60000/(5*V$CTMS)) + 1 00 00194
195 *      EQU      LC+68      UNUSED                          00 00195
196 *      EQU      LC+69      UNUSED                          00 00196
197 *      EQU      LC+70      UNUSED                          00 00197
198 *      EQU      LC+71      UNUSED                          00 00198
000410 A 199 V$IDA    EQU      LC+72      I/O ALGORITHM                  00 00199
000411 A 200 V$CKIT   EQU      LC+73      CLOCK INT. IN PIM BEFORE LOCKOUT FLAG. 00 00200
000412 A 201 V$JCB    EQU      LC+74      ALL SYSTEM BACKGROUND PROGRAMS AND JCP USE 00 00201

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202 * THIS SYSTEM BUFFER TO READ DIRECTIVES AND 00 00202
203 * SOURCE RECORDS IN. 00 00203
000413 A 204 V$DCB EQU LC+75 OPCODE WILL READ OPERATOR KEY-IN REQUESTS 00 00204
205 * IN THIS BUFFER. IF JCP IS SET NOT ACTIVE 00 00205
206 * AND A 1 DIRECTIVE IS INPUTED, OPCODE 00 00206
207 * WILL MOVE THE DIRECTIVE TO V$DCB BEFORE 00 00207
208 * SCHEDULING JCP. 00 00208
000414 A 209 V$EVN EQU LC+76 BOTTOM OF VORTEX NUCLEUS 00 00209
000415 A 210 V$EFC EQU LC+77 TOP OF FG RES. AREA/BOTTOM OF FG BLK COMM. 00 00210
000416 A 211 V$TFC EQU LC+78 TOP OF FG BLK COMMON/TOP OF VORTEX CORE. 00 00211
212 * EQU LC+79 UNUSED 00 00212
213 * 00 00213
214 ***** 00 00214
215 * 00 00215
216 *** MASK TABLE DESCRIPTION *** 00 00216
217 * 00 00217
218 ***** 00 00218
000420 A 220 MT SET 0420 00 00220
000420 A 221 ZERO EQU MT 00 00221
000421 A 222 B00 EQU MT+1 ZERO WORD 00 00222
000422 A 223 B01 EQU MT+2 BIT MASK CONTENTS 000001 00 00223
000423 A 224 B02 EQU MT+3 000002 00 00224
000424 A 225 B03 EQU MT+4 000004 00 00225
000425 A 226 B04 EQU MT+5 000010 00 00226
000426 A 227 B05 EQU MT+6 000040 00 00227
000427 A 228 B06 EQU MT+7 000100 00 00228
000430 A 229 B07 EQU MT+8 000200 00 00229
000431 A 230 B08 EQU MT+9 000400 00 00230
000432 A 231 B09 EQU MT+10 001000 00 00231
000433 A 232 B010 EQU MT+11 002000 00 00232
000434 A 233 B011 EQU MT+12 004000 00 00233
000435 A 234 B012 EQU MT+13 010000 00 00234
000436 A 235 B013 EQU MT+14 020000 00 00235
000437 A 236 B014 EQU MT+15 040000 00 00236
000440 A 237 B015 EQU MT+16 080000 00 00237
000441 A 238 B08 EQU MT+17 BIT MASK CONTENTS 0100000 00 00238
000442 A 239 B01 EQU MT+18 0177776 00 00239
000443 A 240 B02 EQU MT+19 0177775 00 00240
000444 A 241 B03 EQU MT+20 0177773 00 00241
000445 A 242 B04 EQU MT+21 0177767 00 00242
000446 A 243 B05 EQU MT+22 0177737 00 00243
000447 A 244 B06 EQU MT+23 0177677 00 00244
000450 A 245 B07 EQU MT+24 0177577 00 00245
000451 A 246 B08 EQU MT+25 0177377 00 00246
000452 A 247 B09 EQU MT+26 0176777 00 00247
000453 A 248 B010 EQU MT+27 0175777 00 00248
000454 A 249 B011 EQU MT+28 0173777 00 00249
000455 A 250 B012 EQU MT+29 0167777 00 00250
000456 A 251 B013 EQU MT+30 0157777 00 00251
000457 A 252 B014 EQU MT+31 0137777 00 00252
000460 A 253 B015 EQU MT+32 0077777 00 00253
000461 A 254 NEG EQU MT+33 SET ALL BITS 00 00254
000462 A 255 LHM EQU MT+34 LEFT HALF WORD MASK 0177400 00 00255
000463 A 256 RHM EQU MT+35 RIGHT HALF WORD MASK 0377 00 00256
000464 A 257 ONE EQU MT+1 CONTAINS NUMBER 1 00 00257
000464 A 258 TWO EQU MT+2 CONTAINS NUMBER 2 00 00258
000464 A 259 THREE EQU MT+3 CONTAINS NUMBER 3 00 00259
000464 A 260 FOUR EQU MT+4 CONTAINS NUMBER 4 00 00260
000464 A 261 FIVE EQU MT+5 CONTAINS NUMBER 5 00 00261
000466 A 262 SIX EQU MT+6 CONTAINS NUMBER 6 00 00262
000467 A 263 SEVEN EQU MT+7 CONTAINS NUMBER 7 00 00263
000464 A 264 EIGHT EQU MT+8 CONTAINS NUMBER 8 00 00264
000470 A 265 NINE EQU MT+9 CONTAINS NUMBER 9 00 00265
000471 A 266 TEN EQU MT+10 CONTAINS NUMBER 10 00 00266
000464 A 267 BM1 EQU MT+1 BIT MASK WORD 00001 00 00267
000464 A 268 BM2 EQU MT+2 BIT MASK WORD 00003 00 00268
000467 A 269 BM7 EQU MT+7 BIT MASK WORD 00007 00 00269
000472 A 270 BM17 EQU MT+17 BIT MASK WORD 00017 00 00270
000473 A 271 BM37 EQU MT+37 BIT MASK WORD 00037 00 00271
000474 A 272 BM77 EQU MT+44 BIT MASK WORD 00077 00 00272
000475 A 273 BM177 EQU MT+45 BIT MASK WORD 00177 00 00273
000463 A 274 BM377 EQU MT+35 BIT MASK WORD 00377 00 00274
000476 A 275 BM777 EQU MT+46 BIT MASK WORD 00777 00 00275
000477 A 276 BM1777 EQU MT+47 BIT MASK WORD 01777 00 00276
277 * 00 00277
278 ***** 00 00278
279 * 00 00279
280 *** BIT TEST BIT DESIGNATION *** 00 00280
281 * 00 00281
282 ***** 00 00282
000040 A 284 B0 EQU 040 BT JUMPS WHEN A REGISTER IS 0 00 00284
000000 A 285 B01 EQU 000 BT JUMPS WHEN A REGISTER IS 1 00 00285
000060 A 286 B0 EQU 060 BT JUMPS WHEN B REGISTER IS 0 00 00286
000020 A 287 B01 EQU 020 BT JUMPS WHEN B REGISTER IS 1 00 00287
288 ***** 00 00288
289 * 00 00289
290 * 00 00290
291 * THE BIT CHECKED 00 00291
292 * 00 00292
293 ***** 00 00293
000000 A 295 B0 EQU 0 00 00295
000001 A 296 B1 EQU 1 00 00296
000002 A 297 B2 EQU 2 00 00297
000003 A 298 B3 EQU 3 00 00298

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000004 A 299 B4 EQU 4
000005 A 300 B5 EQU 5
000006 A 301 B6 EQU 6
000007 A 302 B7 EQU 7
000010 A 303 B8 EQU 8
000011 A 304 B9 EQU 9
000012 A 305 B10 EQU 10
000013 A 306 B11 EQU 11
000014 A 307 B12 EQU 12
000015 A 308 B13 EQU 13
000016 A 309 B14 EQU 14
000017 A 310 B15 EQU 15
311 EJECT
312 *****
313 *
314 **** DEVICE AND FUNCTION CODES ****
315 *
316 *****
318 **** REAL TIME CLOCK ****
000047 A 319 CLOCK EQU 047 DEVICE NUMBER 047
320 *
000747 A 321 DISCLK EQU 0700+CLOCK DISABLE CLOCK
000147 A 322 ENACKL EQU 0100+CLOCK ENABLE CLOCK
324 *
325 **** PIM ****
000044 A 326 APIM EQU 044 ALL PIMS DEVICE NUMBER
000040 A 327 PIM1 EQU 040
000041 A 328 PIM2 EQU 041
000042 A 329 PIM3 EQU 042
000043 A 330 PIM4 EQU 043
000040 A 331 PIM5 EQU 040
000040 A 332 PIM6 EQU 040
000040 A 333 PIM7 EQU 040
000040 A 334 PIM8 EQU 040
335 *
000444 A 336 DISPIM EQU 0400+APIM
000244 A 337 ENAPIM EQU 0200+APIM
339 **** MEMORY PROTECT ****
000045 A 340 MP EQU 045 DEVICE ADDRESS 045
000745 A 341 DISMP EQU 0700+MP DISABLE MEMORY PROTECT
000645 A 342 ENAMP EQU 0600+MP ENABLE MEMORY PROTECT
000045 A 343 MPMR0 EQU 0000+MP SELECT MASK REGISTER 0
000145 A 344 MPMR1 EQU 0100+MP SELECT MASK REGISTER 1
000245 A 345 MPMR2 EQU 0200+MP SELECT MASK REGISTER 2
000345 A 346 MPMR3 EQU 0300+MP SELECT MASK REGISTER 3
347 EJECT
348 * CONTROLLER TABLE POSITIONS
349 *
350 *
000001 A 353 CTTEMP EQU 1 TEMPORARY STORAGE
000003 A 354 CTDST EQU 3 DST ADR
000004 A 355 CTRQSK EQU 4 RPB ADR
000005 A 356 CTRTRY EQU 5 RETRY CONSTANT
000005 A 357 CTRCNT EQU 5 RETRY COUNT
000006 A 358 CTDVAD EQU 6 DEVICE ADR
000010 A 359 CTSTAT EQU 8 DRIVER STATUS
000011 A 360 CTBICB EQU 9 BIC ADR
000012 A 361 CTFCB EQU 10 FCB ADR
000013 A 362 CTWDS EQU 11 WORDS XMITTED
363 *
364 * SPOOLER CTBL ADDITIONS
365 *
000016 A 366 CTRCT EQU 14 RECORD COUNT
000017 A 367 CTBUF EQU 15 0-3 = STREAM #
000020 A 368 CTSCT EQU 16 START OF SCT TABLE
000037 A 369 CTDCT EQU 17 START OF DCT TABLE
000071 A 370 CTBFST EQU 071 ADDRESS OF SECOND BUFFER
000072 A 371 CTBF1 EQU 072 ADDRESS OF FIRST BUFFER
000073 A 372 CTBFND EQU 073 ADDRESS OF LAST BUFFER
373 EJECT
374 *
375 * DATA CONTROL BLOCK POSITIONS
376 *
000000 A 377 DCRECL EQU 0 RECORD LENGTH
000001 A 378 DCRUFF EQU 1 BUFFER ADR
000002 A 379 DCFUNC EQU 2 FUNCTION CODE
380 EJECT
382 * CONTROLLER TIDB POSITIONS
383 *
000001 A 385 TBST EQU 1 TASK STATUS
000003 A 386 TBEVNT EQU 3 INTERRUPT EVENT
000010 A 387 TBRSTS EQU 8 CTBL ADR
390 * PST POSITIONS
391 *
000000 A 393 PSBDD EQU 0 BEGIN OF PTN
000001 A 394 PSKEY EQU 1 PROTECT KEY WORD
000002 A 395 PSBDTK EQU 2 NO. OF BAD TRACKS IN PARTITION
000003 A 396 PSEDD EQU 3 END OF PTN
397 EJECT
400 * DST POSITIONS
401 *
000002 A 403 DSPSTI EQU 2
000002 A 404 DSUNTN EQU 2
    
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405      EJECT
409      * REQUEST BLOCK POSITIONS
410      *
000000  A 412  RPSTPR EQU 0 REQUEST STATUS
000001  A 413  RPOFWD EQU 1 MODE / OP-CODE
414      EJECT
415      *
416      *          SPOOL BUFFER
417      *
000000  A 418  SBLK EQU 0 CHAIN LINK
000003  A 419  SPBN EQU 3 BUFFER NUMBER (LEFT BYTE)
000003  A 420  SBRL EQU 0 RECORD LENGTH (RIGHT BYTE)
000004  A 421  SBCTL EQU 4 15= WRITE (1),12-14=MODE,8-11=OPCODE,
                                0-2= STREAM NUMBER
000005  A 423  SBTIME EQU 5
000006  A 424  SBDATA EQU 6
425      EJECT
000007  A 426  N EQU 1
000002  A 427  B EQU 2
000001  A 428  H EQU 1
000334  A 429  VEST0 EQU 3334
000336  A 430  VEST2 EQU 3336
000046  B 431  MAP EQU 346
432      *****
433      *
434      *
435      *****
436      *
437      *          DRIVER INITIALIZE PROCESSOR          *
438      *
439      *          *****
440      *          EXT VSCTL,VSFNR,VSERR
441      *          EXT VSGPSB GET BUFFER
442      *          EXT VSGPBS QUEUE BUFFER
443      *          NAME VBLEVT EVENT WORD OF LISTED
000000  100444  A 444  VZSP0A EQU DISCIM DISABLE INTERRUPTS
000000  R 445  VZSP1A EQU VZSP0A
000000  R 446  VZSP2A EQU VZSP0A
000000  R 447  VZSP3A EQU VZSP0A
000000  R 448  VZSP4A EQU VZSP0A
000000  R 449  VZSP5A EQU VZSP0A
000000  R 450  VZSP6A EQU VZSP0A
000000  R 451  VZSP7A EQU VZSP0A
000001  100747  A 452  EQU DISCLK
000002  014020  A 453  LDB DNEFLG IS THIS FIRST TIME = 0
000003  001016  A 454  LDZ INTDLY
000004  000027  R
000005  044020  A 455  JNF DNEFLG FIRST TIME
000006  100244  A 456  LXC ENAFIM ENABLE INTERRUPTS
000007  100147  A 457  LXC ENACLK
000010  002000  A 458  JMP VASPIN INITIALIZE
000011  000000  E
459      EXT VASPIN
460      LXC DISCIM DISABLE INTERRUPTS
461      LXC DISCLK
462      LDB JMP MAKE VZSPA"JMP VZSPA1"
463      STAE VZSP0A
464      LDB JMP+1
465      STAE VZSP0A+1
466      LXC ENAFIM ENABLE INTERRUPTS
467      LXC ENACLK
468      JMP JMP START SPOOLING
469      DNEFLG DATA 0 SET TO 1 FOR SECOND TRY
470      INTDLY EQU ENACLK ENABLE INTERRUPTS
471      LXC ENAFIM
472      DELAY 200,0 DELAY 60MSEC SO INIT CAN FINISH
000031  006505  H
000032  000406  A
000033  001100  A
000034  000014  A
000035  000000  A
000036  001000  R 473      JMP VZSP0A
000037  000000  R
474      *
475      *          HERE ACTUAL SPOOLING BEGINS
476      *
000040  030300  A 477  VZSPA1 LDX VSCTL ADR OF TIB
000041  035010  A 478      LDX TRPSTS,X CTPL ADR
000042  025004  A 479      LDR CTPOBK,X RPS ADR
000043  016001  A 480      LDB RPOFWD,B FECH OP CODE
000044  004244  A 481      LDBA 4
000045  005002  A 482      TOS
000046  004444  A 483      LDBL 4 OP-CODE IN B
000047  006026  A 484      LDBE DIBTBL,B
000050  000053  F
000051  006706  A 485      JMP 0,0
000052  000000  A
000053  000063  R 486  DIBTBL DATA TIBLTR READ RECORD
000054  000065  R 487      DIBTBL DATA DIBTBL WRITE RECORD
000055  000214  R 488      DIBTBL DATA DIBTBL WRITE END OF FILE

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000056 000214 R 489      DATA      DIREW      REWIND UNIT      00 00489
000057 000063 R 490      DATA      DIILTR     SKIP RECORD      00 00490
000060 000214 R 491      DATA      DIFUNC     FUNCTION          00 00491
000061 000063 R 492      DATA      DIILTR     OPEN FILE        00 00492
000062 000063 R 493      DATA      DIILTR     CLOSE FILE       00 00493
000063 001000 A 494  DIILTR  JMP          V$FNR      ILLEGAL I/O-CAUGHT BY IDC 00 00494
000064 000000 E
495 *
496 *          WRITE PROCESSOR - CHECK RECORD LENGTH GT MAX      00 00495
497 *
000065 025012 A 498  DIWRIT  LDB        CTFCB,X      START OF FCB          00 00498
499          IFF        VORTEX-2
500          DME        MAP,V$ST2
000066 016000 A 501          LDA        DCRECL,B      RECORD LENGTH        00 00501
502          IFF        VORTEX-2
503          DME        MAP,V$ST0
000067 055013 A 504          STA        CTWDS,X      SET                   00 00503
000070 055005 A 505          STA        CTRCNT,X     SAVE FOR LATER BUFFER MOVE 00 00504
000071 144134 A 506          SUB        BFSZ
000072 001004 A 507          JAN        DIWR1      BUFFER LENGTH OK      E.2*****
000073 000106 R
000074 014131 A 508          LDA        BFSZ      SET BUFFER LENGTH TO MAX E.2*****
000075 055013 A 509          STA        CTWDS,X
000076 055005 A 510          STA        CTRCNT,X
000077 030300 A 511          LDX        V$CTL
000100 006010 A 512          LDAI       02247      ERROR FLAG            00 00511
000101 002247 A
000102 055030 A 513          STA        TBRSE,X
000103 015001 A 514          LDA        TBST,X      SET FLAG TO OUTPUT ERROR MSG 00 00513
000104 110425 A 515          ORA        BS4
000105 055001 A 516          STA        TBST,X
000106 005001 A 517  DIWR1  TZA          SET WRITE FLAG       00 00514
518 *
519 *          SET UP WRITE
520 *
000107 030300 A 521  DIWROK  LDX        V$CTL
000110 035010 A 522          LDX        TBRSTS,X   GET STREAM NUMBER     00 00521
000111 055006 A 523          STA        CTDVAD,X   SAVE WRITE/FUNC FLAG 00 00522
000112 015017 A 524          LDA        CTBUF,X
000113 006505 A 525          JSR        V$SPSB,X   REQUEST BUFFER FOR WRITE 00 00523
000114 000000 E
000115 030300 A 526          LDX        V$CTL
000116 035010 A 527          LDX        TBRSTS,X   CTBL START           00 00526
000117 065014 A 528          STB        CTWDS+1,X  SAVE START ADDRESS   00 00527
000120 007400 A 529          ROF
000121 015006 A 530          LDA        CTDVAD,X   GET WRITE/FUNC FLAG   00 00528
000122 001010 A 531          JAZ        *+3      SKIP IF WRITE         00 00529
000123 000125 R
000124 007401 A 532          SOF
000125 015016 A 533          LDA        CTRCT,X   SET FUNC FLAG        00 00530
000126 005111 A 534          IAR
000127 150463 A 535          ANA        BM377     MASK OUT LEFT BYTE   00 00531
000130 055016 A 536          STA        CTRCT,X   INCREMENTED WORD COUNT 00 00532
000131 004250 A 537          LRLA       8
000132 115013 A 538          ORA        CTWDS,X   GET INTO LEFT BYTE   00 00533
000133 056003 A 539          STA        SBRL,B    DR IN # WORDS        00 00534
000134 010344 A 540          LDA        V$TMN     PUT BUFFER NO, REC LEN INTO BUFFER 00 00535
000135 056005 A 541          STA        SBTIME,B  PUT TIME INTO BUFFER  00 00536
000136 035004 A 542          LDX        CTRQBK,X
000137 015001 A 543          LDA        RPOPWD,X  GET OP CODE           00 00537
000140 150462 A 544          ANA        LHW      MASK OUT LU           00 00538
000141 030300 A 545          LDX        V$CTL
000142 035010 A 546          LDX        TBRSTS,X  CTBL START           00 00539
000143 115017 A 547          ORA        CTBUF,X   INCLUDE STREAM NUMBER 00 00540
000144 003007 A 548          XOPN       DICM     SET WRITE FLAG IF WRITE 00 00541
000145 000205 R
000146 056004 A 549          STA        SBCTL,B
000147 001001 A 550          JOF        SRFUNC    JUMP IF NOT WRITE    00 00542
000150 000220 R
000151 005021 A 551          TBA
000152 125013 A 552          ADD        CTWDS,X
000153 055006 A 553          STA        CTDVAD,X  SAVE LAST ADR -5 OF SPOOL BUFFER 00 00543
000154 025012 A 554          LDR        CTFCB,X
555          IFF        VORTEX-2
556          DME        MAP,V$ST2
000155 016001 A 557          LDA        DCBUFF,B  CALCULATE ADR OF USER DATA BUFFER 00 00544
558          IFF        VORTEX-2
559          DME        MAP,V$ST0
000156 125013 A 560          ADD        CTWDS,X
000157 005311 A 561          DAR
000160 055001 A 562          STA        CTTEMP,X  POINT A TO END OF BUFFER 00 00545
000161 025001 A 563  DIMOVE  LDB        CTTEMP,X   SAVE                   00 00546
564          IFF        VORTEX-2
565          DME        MAP,V$ST2
000162 016000 A 566          LDA        U,B      GET DATA FROM BUFFER  00 00547
567          IFF        VORTEX-2
568          DME        MAP,V$ST0
000163 005322 A 569          DBR
000164 065001 A 570          STB        CTTEMP,X  DECREMENT FOR NEXT WORD 00 00548
000165 025006 A 571          LDB        CTDVAD,X
000166 056005 A 572          STA        SBDATA-1,B PUT DATA IN SPOOL BUFFER 00 00549
000167 005322 A 573          DBR
000170 065006 A 574          STB        CTDVAD,X  DEC SPOOL POINTER     00 00550

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000171 015005 A 575 LDA CTCNT,X
000172 005311 A 576 DCR DECREMENT WORD COUNT
000173 055005 A 577 STA CTCNT,X
000174 001016 A 578 JRNZ B1MOVE IF FULL BUFFER MOVED
000175 000161 R
000176 025014 A 579 LDB CTWDS+1,X B=START OF SPOOL BUFFER
000177 006505 A 580 DIFINI LSR VSPQSG,X QUEUE BUFFER
000200 000000 E
000201 100444 A 581 EXC DISPIM
000202 100747 A 582 EXC DISCLK
000203 006017 A 583 FDBE* V$LEVT TURN LISTER ON
000204 100225 A
000205 110440 A 584 B1DN BRB BS15
000206 006057 A 585 STAE* V$LEVT
000207 100225 R
000210 100244 A 586 EXC ENAPIM
000211 100147 A 587 EXC ENACLK
000212 001000 A 588 JMP V$FNR EXIT
000213 000064 E
000214 F 589 D1MEDF COB *
000214 F 590 D1REW COB *
000214 R 591 D1FUNC COB *
000214 005101 A 592 INCR 01 A=1, FUNC FLAG
000215 055010 A 593 STA CTWDS,X SET
000216 001000 A 594 JMP V$WRDK
000220 035012 A 595 SPFUNC LDX CTFCB,X START OF DCB
596 IFB VORTEX-2
597 DMC MAP,V$ST2
000221 015002 A 598 LDA R,X GET FUNCTION CODE
599 IFB VORTEX-2
600 DMC MAP,V$ST0
000222 056006 A 601 STA V$DATA,B PUT IN BUFFER
000223 001000 A 602 JMP DIFINI EXIT
000224 000177 R
000225 000000 A 603 V$LEVT DATA 0 ADDRESS OF LISTER EVENT WORD
000226 000104 A 604 B$Z2 DATA 0104
605 END

```

E.2 *****
09 00605

```

ENTRY NAMES
000225 R V$LEVT 000000 R VZSP04 000000 R VZSP1A 000000 R VZSP2A
000000 R VZSP3A 000000 R VZSP4A 000000 R VZSP5A 000000 R VZSP6A
000000 R VZSP7A
EXTERNAL NAMES
000000 E V$EPR 000000 E V$EXEC 000213 E V$FNR 000000 E V$IOO
000000 E V$IDST 000011 E V$SPIN 000200 E V$SPQS 000114 E V$SPSB
SYMBOLS
000001 A A 000044 A APIM 000002 A B 000000 A B0
000001 A B1 000012 A B10 000013 A B11 000014 A B12
000015 A B13 000016 A B14 000017 A B15 000018 A B2
000003 A B3 000004 A B4 000005 A B5 000006 A B6
000007 A B7 000010 A B8 000011 A B9 000226 R B$SZ
000421 A BM1 000472 A BM17 000473 A BM177 000477 A BM1777
000464 A BM3 000473 A BM37 000463 A BM377 000467 A BM7
000474 A BM77 000476 A BM777 000441 A BR0 000442 A BR1
000453 A BR10 000454 A BR11 000455 A BR12 000456 A BR13
000457 A BR14 000460 A BR15 000443 A BR2 000444 A BR3
000445 A BR4 000446 A BR5 000447 A BR6 000450 A BR7
000451 A BR8 000452 A BR9 000481 A BS0 000482 A BS1
000433 A BS10 000434 A BS11 000435 A BS12 000436 A BS13
000437 A BS14 000440 A BS15 000483 A BS2 000484 A BS3
000425 A BS4 000426 A BS5 000427 A BS6 000430 A BS7
000431 A BS8 000432 A BS9 000047 A CLOCK 000072 A CTB$1
000073 A CTB$ND 000071 A CTB$ST 000011 A CTB$CB 000017 A CTB$F
000057 A CTB$T 000003 A CTD$T 000006 A CTD$VAD 000012 A CTFCB
000005 A CTCNT 000016 A CTRCT 000004 A CTRCBK 000003 A CTRISY
000020 A CTBCT 000010 A CTSTAT 000001 A CTTEWF 000013 A CTWDS
000053 R D1CTBL 000177 R D1FINI 000214 R D1FUNC 000060 R D1ICTR
000161 R D1MOVE 000205 R D1DN 000214 R D1REW 000214 R D1WDF
000106 R D1WR1 000065 R D1WRIT 000107 R D1WRDK 000001 A DCB$F
000002 A DCFUNC 000000 A DCREOL 000747 A DISCLK 000745 A DISPM
000444 A DISPIM 000008 A DSP$TI 000007 A DSUNTN 000474 A EIG$1
000147 A ENACLK 000613 A ENAGR 000214 A ENAPIM 000455 A FIVE
000423 A FOUR 000027 R INTEL 000024 R JMP 000300 A LC
000050 A LQSP 000412 A LHM 000040 A MAP 000045 A MP
000045 A MPAR0 000115 A MPAR1 000245 A MPAR2 000345 A MPAR3
000420 A MT 000181 A NEG 000470 A NINE 000401 A ONE
000026 R ONEFLG 000010 R PIM1 000004 A PIM2 000042 A PIM3
000043 A PIM4 000043 A PIM5 000010 A PIM6 000040 A PIM7
000040 A PIMS 000002 A PSB$TH 000000 A PSB$B 000003 A PSB$D
000001 A PCKEY 000040 A RA0 000000 A RA1 000060 A RBU
000020 A RB1 000463 A RHW 000001 A RPOPWD 000000 A RPS$PR
000003 A SBN 000004 A SBCTL 000000 A SEDATA 000000 A SELK
000002 A SBRL 000015 A SBTIME 000467 A SEVEN 000466 A SIX
000220 R SPFUNC 000027 A TBAT$K 000026 A TBCTH 000011 A TBCTY
000003 A TBEVNT 000021 A TB10 000014 A TB15A 000015 A TB15B
000017 A TB15F 000000 A TB15G 000016 A TB15X 000028 A TBK$1
000023 A TBK$2 000024 A TBK$3 000025 A TBPL 000004 A TBRC0
000005 A TERSE 000020 A TERSE 000027 A TERSP 000028 A TERST0
000006 A TER$X 000000 A TBS0 000001 A TBS1 000010 A TBS10
000013 A TBS11 000014 A TBS12 000015 A TBS13 000016 A TBS14
000017 A TBS15 000012 A TBS2 000003 A TBS3 000004 A TBS4
000005 A TBS5 000006 A TBS6 000007 A TBS7 000010 A TBS8
000011 A TBS9 000001 A TBSY 000002 A TBTL 000013 A TB15N

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000012 A TBIMS 000000 A TBTRD 000471 A TEN 000464 A THREE
000422 A TWO 000403 A VS1MIN 000415 A VSBFC 000075 A VSBGLB
000056 A VSBIC1 000315 A VSBTB 000414 A VSBVN 000334 A VSCAM
000353 A V$CKB 000411 A V$CKIT 000310 A V$CKPT 000301 A V$CPL
000076 A V$CRDM 000341 A V$CRDR 000354 A V$CRM 000302 A V$CRS
000360 A V$CTAD 000300 A V$CTL 000351 A V$CTMS 000070 A V$DATE
000355 A V$DSTB 000376 A V$ERFG 000000 E V$ERR 000000 E V$EXEC
000347 A V$FGLB 000306 A V$FLRS 000213 E V$FNR 000350 A V$FREE
000320 A V$IM 000410 A V$IDA 000000 E V$IDC 000000 E V$IDST
000412 A V$JOB 000055 A V$JCFG 000077 A V$JCTM 000050 A V$JNAM
000377 A V$JOP 000054 A V$LCNT 000313 A V$LER 000225 R V$LEVT
000356 A V$LIT 000317 A V$LLUP 000307 A V$LRSK 000312 A V$LSAL
000345 A V$LUNT 000316 A V$LUP 000400 A V$LUT1 000401 A V$LUT2
000402 A V$LUT3 000330 A V$MPM 000362 A V$NCTR 000413 A V$OCB
000346 A V$OPCF 000311 A V$OPCL 000363 A V$PIMN 000074 A V$PLCT
000305 A V$PTVB 000361 A V$SCTL 000352 A V$SCV 000375 A V$SLFG
000011 E V$SPIN 000200 E V$SPQS 000114 E V$SPSB 000334 A V$STO
000336 A V$ST2 000303 A V$TB 000342 A V$TBGT 000416 A V$TFC
000314 A V$TJCP 000344 A V$TMN 000343 A V$TMS 000304 A V$UTB
000001 A VORTEX 000000 R VZSP0A 000000 R VZSP1A 000000 R VZSP2A
000000 R VZSP3A 000000 R VZSP4A 000000 R VZSP5A 000000 R VZSP6A
000000 R VZSP7A 000040 R VZSPA1 000001 A X 000420 A ZERO
0 ERRORS ASSEMBLY COMPLETE
    
```

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326 APIM 336 337
427 B 480 484 485 501
0 BFSZ 506 508
226 BS4 515
319 CLOCK 321 322
367 CTBUF 524
358 CTDVAD 523
361 CTFCB 498
357 CTRCNT 505 510
355 CTRQBK 479
362 CTWDS 504 509
486 D10TBL 484
0 D1FUNC 491
494 D1ILTR 486 490 492 493
0 DIREW 489
0 DIWEOF 488
517 DIWR1 507
498 DIWRIT 487
377 DCRECL 501
321 DISCLK 452 461
336 DISPIM 444 460
322 ENACLK 457 467 470
337 ENAPIM 456 466 471
470 INTDLY 454
468 JMP 462 464
145 LC 146 147 148 149 150 151 152 153 154
145 155 156 157 158 159 160 161 162 163
164 166 167 168 169 170 171 172 173
174 175 176 177 178 179 181 182 183
184 188 189 190 191 192 193 194 199
200 201 204 209 210 211 211 211 211
120 LCJP 121 122 123 130 131 132 133 134 137
431 MAP 500 503
340 MP 341 342 343 344 345 346
220 MT 221 222 223 224 225 226 227 228 229
220 230 231 232 233 234 235 236 237 238
239 240 241 242 243 244 245 246 247
248 249 250 251 252 253 254 255 256
257 258 259 260 261 262 263 264 265
266 267 268 269 270 271 272 273 274
275 276
469 ONEFLG 453 455
413 RPOFWD 480
61 TERSE 513
45 TERSTS 478 522
38 TBST 514 516
146 V$CTL 440 477 511 521
0 V$ERR 21 440
0 V$EXEC 18
0 V$FNR 20 440 494
0 V$IDC 19
0 V$IDST 22
0 V$LEVT 443
0 V$SPIN 458 459
0 V$SPQS 442
0 V$SPSB 441 525
429 V$STO 503
430 V$ST2 500
1 VORTEX 499 502
444 VZSP0A 23 445 446 447 448 449 450 451 463
445 465 473
445 VZSP1A 24
446 VZSP2A 25
447 VZSP3A 26
448 VZSP4A 27
449 VZSP5A 28
450 VZSP6A 29
451 VZSP7A 30
    
```

E.2 VORTEX LISTING

VZSPA

PROGRAM PAGE 9

LISTING PAGE (631)

0	VZSPA	11								
477	VZSPA1	468								
426	X	478	479	498	504	505	509	510	513	514
		516	522	523	524	525				

```

000000 A 1 VORTEX SET 0 PUT LAST FOR VORTEX 07 00001
2 * 07 00002
3 ***** 07 00003
4 * 07 00004
5 * RE EN TR AN T R U N - T I M E I / O * 07 00005
6 * 07 00006
7 * NAME: SOFTWARE: VSRERS 07 00007
8 * FIRMWARE: VSRERF 07 00008
9 * 07 00009
10 * BITS IN FLAG WORD 'VORTEX' ARE DEFINED THUS: 07 00010
11 * 07 00011
12 * BIT 0: SET FOR VORTEX II 07 00012
13 * BIT 1: SET IF VSRERR IN NUCLEUS 07 00013
14 * BIT 2: SET IF WCS AVAILABLE 07 00014
15 * 07 00015
16 * 07 00016
17 ***** 07 00017
000000 A 19 WCS SET VORTEX/4 SET WCS=BIT 2 OF VORTEX FG 07 00019
000000 A 20 NUC SET WCS*4 FG 07 00020
000000 A 21 VII SET VORTEX-NUC FG 07 00021
000000 A 22 NUC SET VII/2 SET NUC=BIT 1 OF VORTEX FG 07 00022
000000 A 23 VII SET VII-NUC-NUC SET VII=BIT 0 OF VORTEX FG 07 00023
25 IFF WCS 07 00025
26 TITLE VSRERS SOFTWARE NAME 07 00026
27 IFT WCS 07 00027
28 TITLE VSRERF FIRMWARE NAME 07 00028
30 ***** 07 00030
31 * ENTRIES * 07 00031
32 ***** 07 00032
33 NAME VSRERR ALDC ENTRY 07 00033
34 NAME VSRER1 NON-ALDC ENTRY 07 00034
35 NAME VSRERN VSRERR NUCLEUS FLAG V2 07 00035
37 IFF WCS 07 00037
38 NAME VSRERS SOFTWARE NAME 07 00038
39 IFT WCS 07 00039
40 NAME VSRERF FIRMWARE NAME 07 00040
000000 R 42 VSRERS EQU * SOFTWARE NAME 07 00042
000000 R 43 VSRERF EQU * FIRMWARE NAME 07 00043
45 VSRERN IFT NUC FG 07 00045
46 VSRERN EQU 1 VSRERN = 1 IF VSRERR IN NUCLEUS FG 07 00046
47 VSRERN IFF NUC FG 07 00047
000000 A 48 VSRERN EQU 0 VSRERN = 0 IF VSRERR IN DM FG 07 00048
50 ***** 07 00050
51 * EXTERNALS * 07 00051
52 ***** 07 00052
53 EXT SIFCB 07 00053
54 EXT PIFCB 07 00054
55 EXT LOFCB 07 00055
56 EXT BIFCB 07 00056
57 EXT BOFCB 07 00057
58 EXT SSFCB 07 00058
59 EXT GOFCB 07 00059
60 EXT POFCB 07 00060
61 EXT VSEXEC VORTEX EXEC 07 00061
63 ***** 07 00063
64 * VDM 620/I INSTRUCTION SYMBOLS * 07 00064
65 ***** 07 00065
000040 A 66 ARST SET 040 A-REG BIT RESET 07 00066
000000 A 67 ASET SET 0 A-REG BIT SET 07 00067
000002 A 68 B SET 2 B-REGISTER 07 00068
000000 A 69 B0 SET 0 07 00069
000001 A 70 B1 SET 1 07 00070
000002 A 71 B2 SET 2 07 00071
000003 A 72 B3 SET 3 07 00072
000004 A 73 B4 SET 4 07 00073
000005 A 74 B5 SET 5 07 00074
000006 A 75 B6 SET 6 07 00075
000014 A 76 B12 SET 12 07 00076
000015 A 77 B13 SET 13 07 00077
000016 A 78 B14 SET 14 07 00078
000017 A 79 B15 SET 15 07 00079
000046 A 80 MAP SET 046 MAP DEVICE ADDRESS V2 07 00080
000001 A 81 X SET 1 X-REGISTER 07 00081
83 ***** 07 00083
84 * VORTEX LOW-CORE SYMBOLS * 07 00084
85 ***** 07 00085
000300 A 86 LC SET 0300 07 00086
000420 A 87 MT SET 0420 07 00087
000472 A 88 BM17 SET MT+42 07 00088
000473 A 89 BM37 SET MT+43 07 00089
000474 A 90 BM77 SET MT+44 07 00090
000441 A 91 BR0 SET MT+17 07 00091
000442 A 92 BR1 SET MT+18 07 00092
000443 A 93 BR2 SET MT+19 07 00093
000444 A 94 BR3 SET MT+20 07 00094
000445 A 95 BR4 SET MT+21 07 00095
000446 A 96 BR5 SET MT+22 07 00096
000447 A 97 BR6 SET MT+23 07 00097
000450 A 98 BR7 SET MT+24 07 00098
000451 A 99 BR8 SET MT+25 07 00099
000454 A 100 BR11 SET MT+28 07 00100
000455 A 101 BR12 SET MT+29 07 00101
000457 A 102 BR14 SET MT+31 07 00102

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Address	Label	Operation	Register	Description	Value	Hex
000460	A	103	BR15	SET	MT+32	07 90103
000421	A	104	BS0	SET	MT+1	V2 07 00104
000422	A	105	BS1	SET	MT+2	07 00105
000424	A	106	BS3	SET	MT+4	07 00106
000425	A	107	BS4	SET	MT+5	07 00107
000426	A	108	BS5	SET	MT+6	07 00108
000428	A	109	D16	SET	BS4	07 00109
000429	A	110	BS2	SET	MT+3	07 00110
000430	A	111	BS7	SET	MT+8	07 00111
000431	A	112	BS8	SET	MT+9	07 00112
000432	A	113	BS9	SET	MT+10	07 00113
000433	A	114	BS10	SET	MT+11	07 00114
000434	A	115	BS11	SET	MT+12	07 00115
000435	A	116	BS12	SET	MT+13	07 00116
000437	A	117	BS14	SET	MT+15	07 00117
000440	A	118	BS15	SET	MT+16	07 00118
000451	A	119	BFB	SET	BR0+BF	V2 07 00119
000431	A	120	BFS	SET	BS0+BF	V2 07 00120
000430	D	121	BXSBIAS	SET	BS7	V2 07 00121
000472	A	122	D15	SET	BS17	07 00122
000465	A	123	FIVE	SET	MT+37	07 00123
000015	A	124	FLF	SET	SH+LF	V2 07 00124
000423	A	125	FOUR	SET	MT+9	07 00125
000016	A	126	FPO	SET	SH+PO	V2 07 00126
000457	A	127	FPOR	SET	BR0+FPD	V2 07 00127
000437	A	128	FPUS	SET	BS0+FPD	V2 07 00128
000017	A	129	FRB	SET	SH+RB	V2 07 00129
000440	A	130	FRBS	SET	BS0+FRB	V2 07 00130
000014	A	131	FRM	SET	SH+RM	V2 07 00131
000430	A	132	SFS	SET	BS0+GF	V2 07 00132
000424	A	133	EIGHT	SET	MT+4	07 00133
000447	A	134	INR	SET	BR0+IN	V2 07 00134
000427	A	135	INS	SET	BS0+IN	V2 07 00135
000422	A	136	LF	SET	BS0+LF	V2 07 00136
000462	A	137	LHM	SET	MT+34	07 00137
000470	A	138	NINE	SET	MT+40	07 00138
000421	A	139	ONE	SET	MT+1	07 00139
000443	A	140	PDR	SET	BR0+PD	V2 07 00140
000423	A	141	PDS	SET	BS0+PD	V2 07 00141
000424	A	142	RDA	SET	BS0+RB	V2 07 00142
000463	A	143	RHM	SET	MT+35	07 00143
000446	A	144	SCR	SET	BR0+SC	V2 07 00144
000467	A	145	SEVEN	SET	MT+39	07 00145
000466	A	146	SIX	SET	MT+38	07 00146
000001	A	147	SR	SET	1	07 00147
000003	A	148	SR	SET	3	V2 07 00148
000421	A	149	RMD	SET	BS0+RM	V2 07 00149
000426	A	150	SCS	SET	BS0+SC	V2 07 00150
000471	A	151	TEN	SET	MT+41	07 00151
000464	A	152	THREE	SET	MT+36	07 00152
000425	A	153	TRS	SET	BS0+TR	V2 07 00153
000422	A	154	TWO	SET	MT+2	07 00154
000414	A	155	V\$BVN	SET	LC+76	07 00155
000301	A	156	V\$CPL	SET	LC+1	07 00156
000302	A	157	V\$CRS	SET	LC+2	07 00157
000353	A	158	V\$DSTB	SET	LC+43	07 00158
000316	A	159	V\$LUP	SET	LC+14	07 00159
000317	A	160	V\$LLUP	SET	LC+15	07 00160
000400	A	161	V\$LUT1	SET	LC+64	07 00161
000401	A	162	V\$LUT2	SET	LC+65	07 00162
000402	A	163	V\$LUT3	SET	LC+66	07 00163
000334	A	164	V\$ST0	SET	LC+28	07 00164
000335	A	165	V\$ST1	SET	LC+29	07 00165
000336	A	166	V\$ST2	SET	LC+30	07 00166
000337	A	167	V\$ST3	SET	LC+31	07 00167
000452	A	168	WR	SET	BR0+WR	V2 07 00168
000432	A	169	WRS	SET	BS0+WR	V2 07 00169
000420	D	170	Z\$RD	SET	MT	07 00170
172			*****			07 00172
173			* CHARACTER TYPE FLAGS *			07 00173
174			*****			07 00174
000000	A	175	AL	SET	0	07 00175
000001	A	176	BL	SET	1	07 00176
000002	A	177	CH	SET	2	07 00177
000003	A	178	LP	SET	3	07 00178
000004	A	179	SH	SET	4	07 00179
000005	A	180	NM	SET	5	07 00180
000006	A	181	PL	SET	6	07 00181
000007	A	182	PC	SET	7	07 00182
000010	A	183	PT	SET	8	07 00183
000011	A	184	OT	SET	9	07 00184
000012	A	185	PD	SET	10	07 00185
000013	A	186	SL	SET	11	07 00186
187			*****			07 00187
188			* READ/WRITE FLAGS *			07 00188
189			*****			07 00189
000000	A	190	RH	SET	0	V2 07 00190
000001	A	191	LF	SET	1	V2 07 00191
000002	A	192	PD	SET	2	V2 07 00192
000003	A	193	RD	SET	3	V2 07 00193
000014	A	194	SH	SET	15-RB	V2 07 00194
000004	A	195	TR	SET	4	V2 07 00195
000005	A	196	SC	SET	5	V2 07 00196

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000006 A 197 IN SET 6 INITIALIZE FLAG V2 07 00197
000007 A 198 GF SET 7 GLOBAL FCB FLAG V2 07 00198
000010 A 199 BF SET 8 BUFFER FILL FLAG V2 07 00199
000400 A 200 BFA SET 0400 BF ABS VALUE 07 00200
000011 A 201 WR SET 9 WRITE FLAG V2 07 00201
000012 A 202 EC SET 10 ENCODE/DECODE FLAF PD 07 00202
000013 A 203 DA SET 11 DIRECT ACCESS FLAG 07 00203
204 07 00204
206 ***** 07 00206
207 * STACK OPS * 07 00207
208 ***** 07 00208
000012 A 209 STKSZ SET 10 STACK SIZE 07 00209
000420 A 210 CXC SET ZERO CALL EXEC FOR IOLINK 07 00210
000421 A 211 CER SET ONE CALL ERROR 07 00211
000422 A 212 CEX SET TWO CALL EXIT 07 00212
000464 A 213 CID SET THREE CALL I/O 07 00213
000423 A 214 CRB SET FOUR CALL REENTRANT BLOCK 07 00214
000465 A 215 CTR SET FIVE TERMINATE 07 00215
000005 A 216 CTRV SET 5 07 00216
000466 A 217 CXF SET SIX PARAMETER XFER V2 07 00217
000467 A 218 CBK SET SEVEN BACKSPACE V2 07 00218
000424 A 219 CEF SET EIGHT ENDFILE V2 07 00219
000470 A 220 CRW SET NINE REWIND V2 07 00220
000471 A 221 CRD SET TEN READ V2 07 00221
222 *CHR SET ELEVEN WRITE V2 07 00222
223 *CCL SET TWELVE CLOSE FILE V2 07 00223
224 *CCB SET THIRTEEN CLOSE BLOCKED FILE V2 07 00224
225 *CDP SET FOURTEEN OPEN FILE V2 07 00225
000016 A 226 COPV SET 14 V2 07 00226
227 *COB SET FIFTEEN OPEN BLOCKED FILE V2 07 00227
000020 A 228 CDC SET 16 DECODE PD 07 00228
000021 A 229 CEN SET 17 ENCODE PD 07 00229
000022 A 230 CRA SET 18 DIRECT ACCESS READ 07 00230
231 *CHA SET 19 DIRECT ACCESS WRITE 07 00231
233 ***** 07 00233
234 * MACROS * 07 00234
235 ***** 07 00235
237 ***** 07 00237
238 * ADD B-REF TO B-REF INTO B-REF * 07 00238
239 ***** 07 00239
240 ADBBB MAC 07 00240
241 LDA P(1),B 07 00241
242 ADD P(2),B 07 00242
243 STA P(3),B 07 00243
244 EMAC 07 00244
246 ***** 07 00246
247 * DECREMENT/IN A/B-REF * 07 00247
248 ***** 07 00248
249 DAB MAC 07 00249
250 LDA P(1),B 07 00250
251 DAR 07 00251
252 STA P(1),B 07 00252
253 EMAC 07 00253
255 ***** 07 00255
256 * DECREMENT B-REF/IN A/TO B-REF * 07 00256
257 ***** 07 00257
258 DABB MAC 07 00258
259 LDA P(1),B 07 00259
260 DAR 07 00260
261 STA P(2),B 07 00261
262 EMAC 07 00262
264 ***** 07 00264
265 * DECREMENT/IN A/X-REF * 07 00265
266 ***** 07 00266
267 DAX MAC 07 00267
268 LDA P(1),X 07 00268
269 DAR 07 00269
270 STA P(1),X 07 00270
271 EMAC 07 00271
273 ***** 07 00273
274 * MOVE B-REF OP TO B-REF OP THRU A * 07 00274
275 ***** 07 00275
276 MOVBAB MAC 07 00276
277 LDA P(1),B 07 00277
278 STA P(2),B 07 00278
279 EMAC 07 00279
281 ***** 07 00281
282 * MOVE B-REF TO X-REF THRU A * 07 00282
283 ***** 07 00283
284 MOVBAK MAC 07 00284
285 LDA P(1),B 07 00285
286 STA P(2),X 07 00286
287 EMAC 07 00287
289 ***** 07 00289
290 * MOVE P-REF OP TO B-REF OP THRU A * 07 00290
291 ***** 07 00291
292 MOVPAK MAC 07 00292
293 LDA P(1) 07 00293
294 STA P(2),B 07 00294
295 EMAC 07 00295
297 ***** 07 00297
298 * MOVE P-REF/ THRU A/ TO X-REF * 07 00298
299 ***** 07 00299

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300 MOVPAK MAC
301 LDA P(1)
302 STA P(2),X
303 EMAC
304 *****
306 * MOVE X-REF TO B-REF THRU A *
307 *****
308 MOVXAB MAC
309 LDA P(1),X
310 STA P(2),B
311 EMAC
312 *****
314 * MOVE X-REF TO X-REF THRU A *
315 *****
316 MOVXAX MAC
317 LDA P(1),X
318 STA P(2),X
319 EMAC
321 *****
322 * POP/JUMP *
323 *****
325 POPJ MAC
326 IFF WCS
327 GOTO WCS1
328 DATA 0105065
329 GOTO WCS2
330 WCS1 CONT
331 JMP POPJ
332 WCS2 CONT
333 EMAC
334 *****
336 * POP OP TO X *
337 *****
338 POPX MAC
339 LDX UPSTKP,B
340 INR OPSTKP,B
341 LDX 0,X
342 EMAC
343 *****
345 * PUSH P(1) *
346 *****
347 PUSH MAC
348 INR OPSTKP,B
349 LDX OPSTKP,B
350 LDA P(1)
351 STA 0,X
352 EMAC
353 *****
354 * PUSH OP ONTO VSFURTID STACK *
355 *****
357 PUSHF MAC
358 LDX ANRB,B
359 LDX OPSTKP,X
360 BDR
361 STA 0,X
362 TMR
363 LDX ANRB,B
364 STA UPSTKP,X
365 EMAC
366 *****
368 * PUSH/JUMP TO P(1) *
369 *****
370 PUSHJ MAC
371 IFF WCS
372 GOTO WCS1
373 DATA 0105025
374 DATA P(1)
375 GOTO WCS2
376 WCS1 CONT
377 LDAI P(1)
378 JSR P(1),X
379 WCS2 CONT
380 EMAC
381 *****
383 * SUBTRACT B-REF MINUS B-REF *
384 *****
385 SUTBB MAC
386 LDA P(1),B
387 SUB P(2),B
388 EMAC
389 *****
391 * SUBTRACT B-REF MINUS B-REF TO B-REF *
392 *****
393 SUTBBB MAC
394 LDA P(1),B
395 SUB P(2),B
396 STA P(3),B
397 EMAC
398 *****
400 * SUBTRACT B-REF MINUS P-REF TO B-REF *
401 *****
402 SUTBPB MAC
403 LDA P(1),B

```

```

07 00300
07 00301
07 00302
07 00303
07 00305
07 00306
07 00307
07 00308
07 00309
07 00310
07 00311
07 00312
07 00314
07 00315
07 00316
07 00317
07 00318
07 00319
07 00321
FG 07 00322
FG 07 00323
FG 07 00325
FG 07 00326
FG 07 00327
FG 07 00328
FG 07 00329
FG 07 00330
FG 07 00331
FG 07 00332
FG 07 00333
V2 07 00334
V2 07 00336
V2 07 00337
07 00338
07 00339
FG 07 00340
FG 07 00341
07 00342
V2 07 00344
V2 07 00345
V2 07 00346
07 00347
07 00348
07 00349
07 00350
07 00351
07 00352
07 00353
07 00354
07 00355
07 00357
07 00358
07 00359
FG 07 00360
07 00361
FG 07 00362
FG 07 00363
FG 07 00364
07 00365
07 00366
V2 07 00368
07 00369
07 00370
FG 07 00371
FG 07 00372
FG 07 00373
FG 07 00374
FG 07 00375
FG 07 00376
V2 07 00377
07 00378
FG 07 00379
07 00380
07 00381
07 00382
07 00383
07 00384
07 00385
07 00386
07 00387
07 00388
07 00389
07 00390
07 00391
07 00392
07 00393
07 00394
07 00395
07 00396
07 00397
07 00398
07 00399
07 00400
07 00401
07 00402
07 00403

```

```

404 SUB P(2)
405 STA P(3),B
406 EMAC
408 *****
409 * TEST NEGATIVE/IN A/B-REF *
410 *****
411 TNAB MAC
412 LDA P(1),B
413 JAN P(2)
414 EMAC
416 *****
417 * TEST NEGATIVE/IN A/X-REF *
418 *****
419 TNAX MAC
420 LDA P(1),X
421 JAN P(2)
422 EMAC
424 *****
425 * TEST NOT ZERO/IN A/B-REF *
426 *****
427 TNZAB MAC
428 LDA P(1),B
429 JANZ P(2)
430 EMAC
432 *****
433 * TEST POSITIVE/IN A/B-REF *
434 *****
435 TPAB MAC
436 LDA P(1),B
437 JAP P(2)
438 EMAC
440 *****
441 * TEST BIT/RESET/IN A/B-REF *
442 *****
443 TRAB MAC
444 LDA P(1),B
445 BT ARST+P(2),P(3)
446 EMAC
448 *****
449 * TEST BIT/SET/IN A/B-REF *
450 *****
451 TSAB MAC
452 LDA P(1),B
453 BT ASET+P(2),P(3)
454 EMAC
456 *****
457 * TEST ZERO/ IN A / B-REF *
458 *****
459 TZAB MAC
460 LDA P(1),B
461 JAZ P(2)
462 EMAC
464 *****
465 * TEST ZERO/IN A/X-REF *
466 *****
467 TZAX MAC
468 LDA P(1),X
469 JAZ P(2)
470 EMAC
472 *****
473 * ZERO THRU A/B-REF *
474 *****
475 ZAB MAC
476 IZA
477 STA P(1),B
478 EMAC
479 *****
480 * ZERO X-REF THRU A *
481 *****
482 ZAX MAC
483 TZA
484 STA P(1),X
485 EMAC
486 ZJEC
487 *****

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BASE-RELATIVE SYMBOLS

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000001 A 493 LOC SET 1
000001 A 494 AACC SET LOC ADDRESS OF ACCUMULATOR ACC V2 07 00494
000002 A 495 LOC SET LOC+1 V2 07 00495
000002 A 496 ABSCB SET LOC ADDRESS OF BUFFER SCB V2 07 00496
000003 A 497 LOC SET LOC+1 V2 07 00497
000003 A 498 ACC SET LOC 4-WORD ACCUMULATOR V2 07 00498
000007 A 499 LOC SET LOC+4 V2 07 00499
000010 A 500 ACHB SET LOC ADDRESS OF DECIMAL DIGIT ARRAY V2 07 00500
000010 A 501 LOC SET LOC+1 V2 07 00501
000010 A 502 ADFCB SET LOC DCB/FCB ADDRESS V2 07 00502
000011 A 503 LOC SET LOC+1 V2 07 00503
000011 A 504 AFSCB SET LOC ADDRESS OF FORMAT SCB V2 07 00504
000012 A 505 LOC SET LOC+1 V2 07 00505
000012 A 506 AGPAR SET LOC ADDRESS OF 'G' GROUP BLOCK V2 07 00506

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000013	A	507	LDC	SET	LDC+1		V2	07	00507
000110	A	508	AIBUF	SET	ISCB+1	LIST ITEM ADDRESS	V2	07	00508
000013	A	509	AISCB	SET	LDC	ADDRESS OF LIST ITEM SCB	V2	07	00509
000014	A	510	LDC	SET	LDC+1		V2	07	00510
000027	A	511	ALBF	SET	RSCB+1	ADDRESS OF LOGICAL BUFFER	V2	07	00511
000014	A	512	ALDC	SET	LDC	ALDC ENTRY FLAG	V2	07	00512
000015	A	513	LDC	SET	LDC+1		V2	07	00513
000015	A	514	ANPOJ	SET	LDC	ADDRESS OF V\$FORTIO POP/JUMP	V2	07	00514
000016	A	515	LDC	SET	LDC+1		V2	07	00515
000016	A	518	AMRB	SET	LDC	ADDRESS OF V\$FORTIO DATA BLOCK	V2	07	00516
000017	A	517	LDC	SET	LDC+1		V2	07	00517
000017	A	518	ROPSTK	SET	LDC	ADDRESS OF OP STACK	V2	07	00518
000020	A	519	LDC	SET	LDC+1		V2	07	00519
000020	A	520	APBF	SET	LDC	ADDRESS OF PHYSICAL BUFFER	V2	07	00520
000021	A	521	LDC	SET	LDC+1		V2	07	00521
000021	A	522	RSCB	SET	LDC	SCAN BLOCK ADDRESS	V2	07	00522
000022	A	523	LDC	SET	LDC+1		V2	07	00523
000022	A	524	ASFL	SET	LDC	** FLAG	V2	07	00524
000023	A	525	LDC	SET	LDC+1		V2	07	00525
000023	A	526	ASYSDB	SET	LDC	ADDRESS OF SYSTEM DCB	V2	07	00526
000024	A	527	LDC	SET	LDC+1		V2	07	00527
000030	A	528	BCHAR	SET	RSCB+2	BUFFER CHARACTER	V2	07	00528
000031	A	529	BCCDE	SET	RSCB+3	BUFFER CHARACTER CODE	V2	07	00529
000024	A	530	BEXP	SET	LDC	BINARY EXPONENT	V2	07	00530
000025	A	531	LDC	SET	LDC+1		V2	07	00531
000026	A	532	BFT	SET	RSCB	BUFFER CHARACTER POINTER	V2	07	00532
000025	A	533	BWPT	SET	LDC	BUFFER WORD POINTER	V2	17	00533
000026	A	534	LDC	SET	LDC+1		V2	07	00534
000026	A	535	BSCB	SET	LDC	BUFFER SCB	V2	07	00535
000032	A	536	LDC	SET	LDC+4		V2	07	00536
000032	A	537	CHB	SET	LDC	DECIMAL DIGIT ARRAY	V2	07	00537
000050	A	538	LDC	SET	LDC+14		V2	07	00538
000050	A	539	CHBPT	SET	LDC	CHB ARRAY POINTER	V2	07	00539
000051	A	540	LDC	SET	LDC+1		V2	07	00540
000051	A	541	CHNHDR	SET	LDC	FCB CHAIN HEADER	V2	07	00541
000052	A	542	LDC	SET	LDC+1		V2	07	00542
000052	A	543	COUNT	SET	LDC	COUNTER	V2	17	00543
000053	A	544	LDC	SET	LDC+1		V2	07	00544
000053	A	545	CVFL	SET	LDC	CHARACTER VALIDITY FLAGS	V2	17	00545
000054	A	546	LDC	SET	LDC+1		V2	07	00546
000054	A	547	D	SET	LDC	FRACTIONAL FIELD WIDTH	V2	07	00547
000055	A	548	LDC	SET	LDC+1		V2	07	00548
000055	A	549	DEXP	SET	LDC	DECIMAL EXPONENT	V2	07	00549
000056	A	550	LDC	SET	LDC+1		V2	07	00550
000056	A	551	D1	SET	LDC	WORKING FRACTIONAL FIELD WIDTH	V2	07	00551
000057	A	552	LDC	SET	LDC+1		V2	07	00552
000057	A	553	DEXP	SET	LDC	EXPLICIT DECIMAL EXPONENT	V2	07	00553
000060	A	554	LDC	SET	LDC+1		V2	07	00554
000060	A	555	ERN	SET	LDC	ERROR NUMBER	V2	07	00555
000061	A	556	LDC	SET	LDC+1		V2	07	00556
000064	A	557	FCHAR	SET	RSCB+2	FORMAT CHARACTER	V2	17	00557
000065	A	558	FCCDE	SET	RSCB+3	FORMAT CHARACTER CODE	V2	07	00558
000061	A	559	FDCKEY	SET	LDC	FIELD DESCRIPTOR KEY	V2	07	00559
000062	A	560	LDC	SET	LDC+1		V2	17	00560
000062	A	561	FWPT	SET	RSCB	FORMAT STRING POINTER	V2	17	00561
000063	A	562	FRMT	SET	RSCB+1	ADDRESS OF FORMAT STRING(0 IF NONE)	V2	07	00562
000062	A	563	FRPT	SET	RSCB	FORMAT STRING CURRENT POINTER	V2	07	00563
000062	A	564	FSDB	SET	LDC	FORMAT STRING SCB	V2	07	00564
000066	A	565	LDC	SET	LDC+4		V2	07	00565
000066	A	566	GURPC	SET	LDC	*(' GROUP DYNAMIC REPEAT COUNT	V2	07	00566
000077	A	567	LDC	SET	LDC+9		V2	07	00567
000071	A	568	GFRPT	SET	GURPC+3	*(' GROUP FORMAT POINTER	V2	07	00568
000074	A	569	GURPC	SET	GURPC+6	*(' GROUP STATIC REPEAT COUNT	V2	17	00569
000111	A	570	ICHAR	SET	ISCB+2	LIST ITEM CHARACTER	V2	07	00570
000077	A	571	IDEXP	SET	LDC	IMPLICIT DECIMAL EXPONENT	V2	17	00571
000100	A	572	LDC	SET	LDC+1		V2	07	00572
000100	A	573	IAN	SET	LDC	INTEGER FIELD WIDTH	V2	17	00573
000101	A	574	LDC	SET	LDC+1		V2	07	00574
000101	A	575	ITBSZ	SET	LDC	INDIVIDUAL ITEM BYTE SIZE	V2	17	00575
000102	A	576	LDC	SET	LDC+1		V2	07	00576
000102	A	577	ITWSZ	SET	LDC	INDIVIDUAL ITEM WORD SIZE	V2	07	00577
000103	A	578	LDC	SET	LDC+1		V2	17	00578
000103	A	579	INFL	SET	LDC	INITIAL ENTRY FLAG	V2	17	00579
000104	A	580	LDC	SET	LDC+1		V2	07	00580
000104	A	581	IDCNT	SET	LDC	V\$IDC CONTROL WORD	V2	17	00581
000105	A	582	LDC	SET	LDC+1		V2	17	00582
000105	A	583	IDLNK	SET	LDC	IDLNK CONTROL WORD	V2	07	00583
000106	A	584	LDC	SET	LDC+1		V2	07	00584
000106	A	585	IDSTAT	SET	LDC	I/O STATUS	V2	07	00585
000107	A	586	LDC	SET	LDC+1		V2	07	00586
000107	A	587	ISCB	SET	LDC	ITEM SCB	V2	07	00587
000110	A	588	LDC	SET	LDC+4		V2	07	00588
000113	A	589	ITEMAD	SET	LDC	ADDRESS OF LIST ITEM	V2	07	00589
000114	A	590	LDC	SET	LDC+1		V2	07	00590
000114	A	591	ITEMWC	SET	LDC	COUNT OF WORDS REMAINING IN ITEM	V2	17	00591
000115	A	592	LDC	SET	LDC+1		V2	17	00592
000115	A	593	ITWIC	SET	LDC	LIST ITEM WORD INCREMENT	V2	17	00593
000116	A	594	LDC	SET	LDC+1		V2	17	00594
000116	A	595	ITWDE	SET	LDC	LIST ITEM CODE	V2	17	00595
000117	A	596	LDC	SET	LDC+1		V2	07	00596
000123	A	597	LDCV	SET	LDCV	LOGICAL RECORD OVERLAP	V2	07	00597
000117	A	598	LISTFL	SET	LDC	LIST DATA XFER FLAG	V2	07	00598
000120	A	599	LDC	SET	LDC+1		V2	07	00599

000120	A	600	LNKCNT	SET	LDC	LINK COUNT	V2	07	00600
000121	A	601	LDC	SET	LDC+1		V2	07	00601
000121	A	602	LRECNO	SET	LDC	LOGICAL RECORD NUMBER	V2	07	00602
000122	A	603	LDC	SET	LDC+1		V2	07	00603
000122	A	604	LRSZ	SET	LDC	LOGICAL RECORD SIZE	V2	07	00604
000123	A	605	LDC	SET	LDC+1		V2	07	00605
000123	A	606	LRWC	SET	LDC	LOGICAL RECORD REMAINING WORD COUNT	V2	07	00606
000124	A	607	LDC	SET	LDC+1		V2	07	00607
000124	A	608	MDV	SET	LDC	MULTIPLY OVERFLOW SWITCH	V2	07	00608
000125	A	609	LDC	SET	LDC+1		V2	07	00609
000125	A	610	N	SET	LDC	H/T/X FIELD WIDTH	V2	07	00610
000126	A	611	LDC	SET	LDC+1		V2	07	00611
000126	A	612	NFF	SET	LDC	NUMERIC FORMAT FIELD VALUE	V2	07	00612
000127	A	613	LDC	SET	LDC+1		V2	07	00613
000127	A	614	DPSTK	SET	LDC	DP STACK	V2	07	00614
000141	A	615	LDC	SET	LDC+STKSZ		V2	07	00615
000000	A	616	DPSTKP	SET	0	DP STACK POINTER	FG	07	00616
000141	A	617	PARLV	SET	LDC	FORMAT 'C' GROUP LEVEL COUNT	V2	07	00617
000142	A	618	LDC	SET	LDC+1		V2	07	00618
000142	A	619	PBRC	SET	LDC	PHYSICAL BUFFER RECORD COUNT	V2	07	00619
000143	A	620	LDC	SET	LDC+1		V2	07	00620
000143	A	621	PBSZ	SET	LDC	PHYSICAL BUFFER SIZE	V2	07	00621
000144	A	622	LDC	SET	LDC+1		V2	07	00622
000144	A	623	PBWC	SET	LDC	PHYSICAL BUFFER REMAINING WORD COUNT	V2	07	00623
000145	A	624	LDC	SET	LDC+1		V2	07	00624
000145	A	625	PRECNO	SET	LDC	PHYSICAL RECORD NUMBER	V2	07	00625
000146	A	626	LDC	SET	LDC+1		V2	07	00626
000146	A	627	PRLINK	SET	LDC	PREVIOUS FCB LINK	V2	07	00627
000147	A	628	LDC	SET	LDC+1		V2	07	00628
000147	A	629	PTFL	SET	LDC	'.' FLAG	V2	07	00629
000150	A	630	LDC	SET	LDC+1		V2	07	00630
000150	A	631	QFL	SET	LDC	QUOTE FLAG	V2	07	00631
000151	A	632	LDC	SET	LDC+1		V2	07	00632
000125	A	633	R	SET	R	REPEAT COUNT	V2	07	00633
000012	A	634	ROPSTP	SET	STKSZ	V\$RERR DP STACK POINTER	V2	07	00634
000151	A	635	RETURN	SET	LDC	RETURN ADDR/'END' ADDR/'ERR' ADDR	PD	07	00635
000154	A	636	LDC	SET	LDC+3		PD	07	00636
000154	A	637	RWFL	SET	LDC	FLAG WORD	V2	07	00637
000155	A	638	LDC	SET	LDC+1		V2	07	00638
000155	A	639	S	SET	LDC	SCALE FACTOR	V2	07	00639
000156	A	640	LDC	SET	LDC+1		V2	07	00640
000032	A	641	SAVE	SET	CHB	SAVE PARAMETERS	V2	07	00641
000156	A	642	SCF	SET	LDC	SCALE FACTOR FLAG	V2	07	00642
000157	A	643	LDC	SET	LDC+1		V2	07	00643
000157	A	644	SGFL	SET	LDC	SIGN FLAG	V2	07	00644
000160	A	645	LDC	SET	LDC+1		V2	07	00645
000160	A	646	SVRECN	SET	LDC	SAVE RECORD NO	V2	07	00646
000161	A	647	LDC	SET	LDC+1		V2	07	00647
000162	A	648	SYSBF	SET	SYSDCB+1	ADDRESS OF SYSTEM BUFFER \$BUF	V2	07	00648
000161	A	649	SYSDCB	SET	LDC	SYSTEM DCB	V2	07	00649
000164	A	650	LDC	SET	LDC+3		V2	07	00650
000164	A	651	TEMP	SET	LDC	TEMP STORE	V2	07	00651
000165	A	652	LDC	SET	LDC+1		V2	07	00652
000165	A	653	TEMP1	SET	LDC	TEMP STORE	V2	07	00653
000166	A	654	LDC	SET	LDC+1		V2	07	00654
000166	A	655	TERM	SET	LDC	PRODUCT TERM	V2	07	00655
000167	A	656	LDC	SET	LDC+1		V2	07	00656
000167	A	657	UNIT	SET	LDC	I/O UNIT NUMBER	V2	07	00657
000170	A	658	LDC	SET	LDC+1		V2	07	00658
000170	A	659	W	SET	LDC	FIELD WIDTH	V2	07	00659
000171	A	660	LDC	SET	LDC+1		V2	07	00660
000171	A	661	WT	SET	LDC	WORKING VALUE OF W	V2	07	00661
000172	A	662	LDC	SET	LDC+1		V2	07	00662
000172	A	663	XFFL	SET	LDC	PARAMETER XFER ENABLE FLAG	V2	07	00663
000173	A	664	LDC	SET	LDC+1		V2	07	00664
000173	A	665	XFL	SET	LDC	EXPONENT FIELD NON-BLANK FLAG	V2	07	00665
000174	A	666	LDC	SET	LDC+1		V2	07	00666
000174	A	667	XFN	SET	LDC	EXPONENT FIELD WIDTH	V2	07	00667
000175	A	668	LDC	SET	LDC+1		V2	07	00668
000175	A	669	XSG	SET	LDC	EXPONENT SIGN FLAG	V2	07	00669
000176	A	670	LDC	SET	LDC+1		V2	07	00670
000176	A	671	ZFW	SET	LDC	LEADING ZERO FIELD WIDTH	V2	07	00671
000177	A	672	LDC	SET	LDC+1		V2	07	00672
000177	A	673	YYY	SET	LDC	END OF SAVE BLOCK	V2	07	00673
000177	A	674	AZER	SET	LDC	ASCII ZERO	V2	07	00674
000200	A	675	LDC	SET	LDC+1		V2	07	00675
000200	A	676	BD14	SET	LDC	DECIMPL 14	V2	07	00676
000201	A	677	LDC	SET	LDC+1		V2	07	00677
000201	A	678	BD120	SET	LDC	DECIMAL 120	V2	07	00678
000202	A	679	LDC	SET	LDC+1		V2	07	00679
000202	A	680	BLNK1	SET	LDC	ASCII BLANK CHARACTER	V2	07	00680
000203	A	681	LDC	SET	LDC+1		V2	07	00681
000203	A	682	BLNK2	SET	LDC	ASCII BLANK WORD	V2	07	00682
000204	A	683	LDC	SET	LDC+1		V2	07	00683
000204	A	684	ZZZ	SET	LDC	END OF DATA BLOCK	V2	07	00684
000204	A	685	EJEC	SET			V2	07	00685
686			*****						07 00686
687			*						07 00687
688			* PROCESS A FORMAT DESCRIPTOR (AID)						07 00688
689			*						07 00689
690			* FUNCTION: TO PROCESS THE A FORMAT DESCRIPTOR: RAW						07 00690
691			*						07 00691
692			* ENTRY: DIRECT FROM FRS						07 00692

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693 *          WT = W = TOTAL FIELD WIDTH                               * 07 00693
694 *          IIBSZ = BYTE COUNT OF SINGLE LIST ITEM                   * 07 00694
695 *          ITEMAD = ADDRESS OF LIST ITEM                             * 07 00695
696 *          RWFL(BIT WR) = 0 READ                                     * 07 00696
697 *          = 1 WRITE                                                 * 07 00697
698 *                                                                 * 07 00698
699 * EXIT : INPUT : DIRECT TO FRS                                       * 07 00699
700 *          OUTPUT: DIRECT TO FRS THRU DBC                             * 07 00700
701 *                                                                 * 07 00701
702 * *****                                                                * 07 00702
000000 R 704 AIN      EQU      *                                       * 07 00704
000000 F 705 AOUT    EQU      *                                       * 07 00705
000000 005001 A 707      ZAB      AIBUF-1      SET LIST ITEM SCB(0) = 0 (BYTE COUNT) * 07 00707
000001 056107 A
708      MOVAB     ITEMAD,AIBUF  SET LIST ITEM SCB(1) = ITEM ADDRESS           * 07 00708
000002 016113 A
000003 056110 A
709      SUTBBB   WT,IIBSZ,COUNT  GET EXCESS CHAR COUNT WT-IIBSZ           * 07 00709
000004 016171 A
000005 146101 A
000006 056052 A
710 *****                                                                * 07 00710
711 * SLEW THRU W-IIBSZ CHARS *                                         * 07 00711
712 *****                                                                * 07 00712
000007 016202 A 713      MOVAB     BLNK1,BCHAR  LOAD BLANK AS REPEAT CHARACTER      V2  * 07 00713
000010 056030 A
714      PUSHJ    RCH              REPEAT CHARACTER I/O                      V2  * 07 00714
000011 006010 A
000012 005176 R
000013 006505 A
000014 004774 R
715      TSAB     RWFL,WR,AIDL2    TEST IF INPUT OR OUTPUT                 * 07 00715
000015 016154 A
000016 006411 A
000017 000063 R
716 *****                                                                * 07 00716
717 * INPUT *                                                             * 07 00717
718 *****                                                                * 07 00718
000020 006010 A 719 AIDL1  PUSHJ    CBC          INPUT BUFFER CHARACTER            V2  * 07 00719
000021 000104 R
000022 006505 A
000023 004774 R
720      MOVAB     BCHAR,ICHAR     MOVE CHAR FROM BUFF SCB TO ITEM SCB      * 07 00720
000024 016030 A
000025 056111 A
721      MOVAB     AISC0,ASC0      SET SCR TO LIST ITEM                    * 07 00721
000026 016013 A
000027 056021 A
722      PUSHJ    PCH              PUT CHARACTER IN ITEM                    V2  * 07 00722
000030 006010 A
000031 003535 R
000032 006505 A
000033 004774 R
723      TNZAB    WT,AIDL1        LOOP TILL FIELD WIDTH WT EXHAUSTED      * 07 00723
000034 016171 A
000035 001016 A
000036 000020 R
724      SUTBBB   IIBSZ,W,COUNT  GET COUNT OF EXCESS CHARS IN ITEM        * 07 00724
000037 016101 A
000040 146170 A
000041 056052 A
000042 005311 A
000043 001004 A
000044 001067 R
725      DAB      FRS65           EXIT TO FRS IF LIST ITEM FILLED          * 07 00725
726      JAN      FRS65           * 07 00726
727      MOVAB     BLNK1,ICHAR    LOAD BLANK AS FILL CHARACTER            V2  * 07 00727
000045 016202 A
000046 056111 A
728      LDA      RWFL,B          SET WRITE FLAG                          V2  * 07 00728
000047 016154 A
729      ORA      WRB              * 07 00729
000050 110432 A
730      STA      RWFL,B          * 07 00730
000051 056154 A
731      PUSHJ    RCH              FILL OUT ITEM WITH BLANKS              V2  * 07 00731
000052 006010 A
000053 005176 R
000054 006505 A
000055 004774 R
732      LTA      RWFL,B          RESTORE I/O MODE TO READ                V2  * 07 00732
000056 016154 A
733      ANA      WRB              * 07 00733
000057 150452 A
734      STA      RWFL,B          * 07 00734
000060 056154 A
735      JMP      FRS65           AND RETURN TO FORMAT SCAN              * 07 00735
000061 001000 A
000062 001067 R
736 *****                                                                * 07 00736
737 * OUTPUT *                                                            * 07 00737
738 *****                                                                * 07 00738
000063 016013 A 739 AIDL2  MOVAB     AISC0,ASC0      SET SCR TO LIST ITEM            * 07 00739
000064 056021 A
740      PUSHJ    ICC              INPUT CHARACTER FROM LIST ITEM          V2  * 07 00740
000065 006010 A
000066 001743 R
000067 006505 A

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000070 004774 R
000071 016111 A
000072 056030 A
000073 006010 A
000074 002635 R
000075 006503 A
000076 004774 R
000077 001000 A
000100 000063 R
741      MOVBAB  ICHAR,BCHAR      MOVE CHAR FROM LIST SCB TO BUFF SCB      07 00741
742      PUSHJ   DCB              OUTPUT CHARACTER TO BUFFER/EXIT          V2 07 00742
743      JMP     A10L2            LOOP TILL DONE                          07 00743
744      EJECT
745 *****
746 *
747 *      CALL NON-REENTRANT BLOCK (CAN)
748 *
749 * FUNCTION: TO RETURN TO V$FORTIO
750 *
751 * ENTRY: ALOC .NE. 0 IF V$RERR ENTERED BY ALOC          V2* 07 00751
752 *           .EQ. 0 IF V$RERR ENTERED BY DIRECT JUMP    V2* 07 00752
753 *
754 *           V$CRS = CURRENT REENTRANT STACK POINTER
755 *           V$CRS(PR) = LOCATION WHERE P-REG(RETURN ADDRESS) IS STORED
756 *
757 * EXIT : TO V$FORTIO POP/JUMP ADDRESS IN ANPOJ
758 *
759 *           VIA DEALOC IF ENTERED BY ALOC              V2* 07 00759
760 *           VIA DIRECT JUMP IF ENTERED BY DIRECT JUMP V2* 07 00760
761 *
762 * RETURN ADDRESSES IN V$FORTIO STACK SAVED IN V$RERR IF
763 * VORTEX II CALL FROM BACKGROUND TO NUCLEUS.
764 *
765 *****
000101 036015 A
767 CAN   LDX     ANPOJ,B        POINT X AT V$FORTIO POP/JUMP          V2 07 00767
768       IFF     NUC
769       GOTO    NUC1
770       SPAC
771       IFT     VII
772       GOTO    NUC2
773       SPAC
774       LDA     ALOC,B          GET ALOC ENTRY FLAG
775       JANZ   CAN1            TEST VORTEX BACKGROUND CALL TO NUCLEUS
776       SPAC
777 *****
778 * EXIT TO V$FORTIO VIA DIRECT JUMP *
779 *****
780 *****
781       SPAC
782 NUC1   CONT
783       IJMP   0,X
784 NUC2   CONT
785 *****
786 * EXIT TO V$FORTIO VIA DEALOC *
787 *****
788 *****
000102 006705 A
000103 000000 A
000104 R
790 CAN1  EQU     *
791       IFF     NUC
792       GOTO    NUC1
793       SPAC
794       IFT     VII
795       DME     MAP,V$ST2      SET EXEC STATE TO NO
796       TBA     SAVE B
797       LDB     V$CRS          POINT B AT ALOC STACK
798       STX     PR,B          STORE POP/JUMP ADDR IN P-REG FIELD
799       SPAC
800       IFF     VII
801       GOTO    VII1
802       SPAC
803 *****
804 * V$RERR IS IN VORTEX II NUCLEUS *
805 *****
806 *****
807       SPAC
808       TAB     RESTORE B
809       LDXI    BASE
810       DECR   1
811       STA     ROPSTK,X      INITIALIZE COUNT TO -1
812       LDX    OPSTKP,B
813       SPAC
814 *****
815 * LOOP TO FIND TOP OF RETURN ADDRESSES IN V$FORTIO STACK *
816 *****
817       SPAC
818       TXA
819 CANL1  SUB     AOPSTK,B
820       JAP    CANS           END OF STACK ?
821       LDA    0,X           NO. GET OP FROM STACK
822       SUB    CEX
823       JAZ   CANS           DONT SAVE STACK WITH EXIT OP
824       LDA    0,X           LOAD OP
825       L$RA  6
826       JANZ  CANS2          EXIT ON ADDRESS OP
827       INCR  045           BUMP POINTER
828       JNP   CANL1
829       SPAC

```

```

030 *****
031 * TOP OF RETURN ADDRESS STACK FOUND - MOVE FROM V$FORTID TO VSRERR *
032 *****
033      SPAC
034 CAN2  TXA
035      SUB      ADPSTK,B
036      CPA
037      LDY1     PALE
038      STA     ADPSTP,X      STORE STACK ITEM COUNT-1
039      CPA
040      INCR     014          SET Y = -(STACK ITEM COUNT-1)
041      ADD     ANPS,B
042      ADDI    DPSTK+STKSE
043      TAB
044 CANL2 LDA      0,B          POINT B AT V$FORTID STACK
045      STAE    BASE+STKS7-1,X MOVE STACK ADDRESSES
046      JXZ     CAN5          EXIT AT END
047      IRR     BUMP POINTERS
048      IRR
049      JMP     CANL2        LOOP TILL DONE
050 VII1  CONT
051 CAN5  DEALOC          RETURN TO V$FORTID VIA DEALOC
052 NUC1  CONT
053      EJECT
054 *****
055 *
056 *      C Y C L E   B U F F E R   C H A R A C T E R ( C B C )
057 *
058 * FUNCTION: TO HANDLE CHARACTER I/O FROM/TO BUFFER
059 *
060 * ENTRY: BUFFER SUB(0) = CURRENT CHAR COUNT
061 *        RWFL(BIT WR) = 0 READ
062 *                = 1 WRITE
063 *        WT = WIDTH REMAINING IN FORMAT FIELD
064 *
065 * EXIT : RWFL(BIT WR) = 0 DIRECT TO ICC(INPUT)
066 *                = 1 DIRECT TO PCH(OUTPUT)
067 *        WT = WT-1
068 *
069 *****
070
071 CBC   LDX     ASOCB,B      SET CBC TO BUFFER
072      STX     ASOCB,B
073      LDA     0,X          SET CURRENT CHAR COUNT
074      BT      ASCT+B0,CBC4  ON WORD BOUNDARY ?
075      PUSHJ  BCR          YES, SET NEXT BUFFER ADDRESS
076
076 CBC4  DAB     WT          DECREMENT REMAINING FIELD WIDTH
077
077      TRAB   RWFL,EC,CBC6  JUMP IF NOT ENCODE/DECODE
078
078      LDX     RETURN+1,B   NO COUNT ADDRESS
079      JXC
080
080      INR     0,X          BUMP CHARACTER-PROCESSED COUNT
081 CBC6  TRAB   RWFL,WR,ICC  READ: EXIT TO INPUT CHAR FROM BUFFER
082
082      JMP     PCH          WRITE: EXIT TO PUT CHAR IN BUFFER
083
083      EJECT
084 *****
085 *
086 *      C L E A R   B U F F E R   C O U N T
087 *
088 * FUNCTION: TO CLEAR A BUFFER
089 *
090 * ENTRY: PRMT = 0 IF UNFORMATTED
091 *        RWPT = ADDRESS OF PREVIOUS BUFFER WORD
092 *        LRWC = LOGICAL RECORD REMAINING WORD COUNT
093 *        PBWC = PHYSICAL BUFFER REMAINING WORD COUNT
094 *
095 * EXIT : BUFFER = BLANKS ON FORMATTED I/O
096 *        = 0 ON UNFORMATTED I/O
097 *
098 *****
099
099 CLR   MOVAB   LRWC,TEMP1
100
100
101      SUB     PRWC,B
102      JAB     CLR          SET COUNT = MINIMUM(LRWC,PBWC)
103
103      MOVAB   PRWC,TEMP1

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000143 016165 A 904 CLB4 TZAB TEMP1,CLBX EXIT IF COUNT=0 07 00904
000144 001010 A
000145 000167 R
000146 016154 A 905 TSAB RWFL,RB,CLBX DONT CLEAR IF READ-BEFORE-WRITE FLAG SET 07 00905
000147 006403 A
000150 000167 R
000151 016063 A 906 TZAB FRMT,CLB8 CLEAR TO ZEROS ON UNFORMATTED V2 07 00906
000152 001010 A
000153 000155 R
000154 016203 A 907 LDA BLNK2,B CLEAR TO BLANKS ON FORMATTED V2 07 00907
000155 056164 A 908 CLB8 STA TEMP,B V2 07 00908
000156 036025 A 909 LDX BFWPT,B V2 07 00909
910 *****
911 * FILL LOOP *
912 *****
000157 R 913 CLBLP EQU * V2 07 00913
000157 005144 A 914 IXR LOAD X AS BUFFER POINTER V2 07 00914
915 MOVBAK TEMP,0 MOVE FILL WORD TO BUFFER V2 07 00915
000160 016164 A
000161 055000 A
000162 005041 A 916 TXA V2 07 00916
000163 146025 A 917 SUB BFWPT,B V2 07 00917
000164 146165 A 918 SUB TEMP1,B 07 00918
000165 001004 A 919 JAN CLBLP LOOP TILL DONE 07 00919
000166 000157 R
000167 001000 A 920 CLBX POPJ EXIT FG 07 00920
000170 004066 R
921 EJEC 07 00921
922 ***** 07 00922
923 * 07 00923
924 * CLOSE FILE (CLS) 07 00924
925 * 07 00925
926 * FUNCTION: TO PROCESS CALLS TO CLOSE AN RMD FILE 07 00926
927 * 07 00927
928 * ENTRY: DIRECT FROM RBE 07 00928
929 * TEMP = DP = CCL CLOSE NORMAL RMD FILE V2* 07 00929
930 * CCB CLOSE BLOCKED(LOGICAL) FILE V2* 07 00930
931 * RETURN = CALL SEQUENCE ADDRESS * 07 00931
932 * RETURN(5) = ADDRESS OF UPDATE/LEAVE CLOSE PARAMETER * 07 00932
933 * 07 00933
934 * EXIT : FCB REMOVED FROM CHAIN * 07 00934
935 * BUFFER FLUSHED IF LOGICAL FILE * 07 00935
936 * 07 00936
937 * ERRORS: ER4 IF U NOT ON CHAIN * 07 00937
938 * 07 00938
939 ***** 07 00939
941 ***** 07 00941
942 * SET UP CONTROL * 07 00942
943 ***** 07 00943
000171 010432 A 944 CLS LDA WRS SET WRITE FLAG V2 07 00944
000172 056154 A 945 STA RWFL,B 07 00945
946 ***** 07 00946
947 * SEARCH FCB CHAIN FOR U * 07 00947
948 ***** 07 00948
949 PUSHJ SCH SEARCH FCB CHAIN V2 07 00949
000173 006010 A
000174 005735 R
000175 006505 A
000176 004774 R
000177 001010 A 950 JAZ ER4 ERROR 4/ FCB(U) NOT ON CHAIN / 07 00950
000200 005467 R 951 PUSHJ PRU PROCESS FORTRAN UNIT NUMBER U V2 07 00951
000201 006010 A
000202 004162 R
000203 006505 A
000204 004774 R
000205 036016 A 952 LDX ANRB,B V2 07 00952
953 MOVBAK UNIT,IDCONT INITIALIZE IDC CONTROL WORD V2 07 00953
000206 016167 A
000207 055104 A
000210 036010 A 954 LDX ADFCB,B POINT X AT FCB 07 00954
000211 015014 A 955 LDA 12,X 07 00955
000212 006455 A 956 BT ARST+FLF,CLS20 TEST FOR LOGICAL FILE V2 07 00956
000213 000241 R
000214 006454 A 957 BT ARST+FRM,CLS20 AND RMD V2 07 00957
000215 000241 R
958 ***** V2 07 00958
959 * U IS RMD LOGICAL FILE * V2 07 00959
960 ***** V2 07 00960
000216 006456 A 961 BT ARST+FPD,CLS10 ANY UNPOSTED DATA ? V2 07 00961
000217 000227 R
962 MOVBAK PBSZ,0 YES. LOAD FCB(0) WITH PHYSICAL BUFF SIZE 07 00962
000220 016143 A
000221 055000 A 963 PUSHJ PSB AND POST BUFFER V2 07 00963
000222 006010 A
000223 004743 R
000224 006505 A
000225 004774 R

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000226 036010 A 964 LDX R0FCB,B RESTORE X
000227 016201 A 965 CLS10 MOVBA3 B0120,0 SET FCB(0) = 120 WORDS V2 07 00965
000230 055000 A 966 TRAB L0DV,CLS15 LOGICAL RECORD OVERLAP ? 07 00966
000231 016123 A
000232 001010 A
000233 000237 R 967 R0BB2 PRECND,PBRC,PRECND YES. BUMP PHYSICAL RECORD NUMBER 07 00967
000234 016145 A
000235 126142 A
000236 056145 A 968 CLS15 MOVBA3 PRECND,3 SET FCB(3) = PHYSICAL RECORD NUMBER 07 00968
000237 016145 A
000240 055003 A
969 *****
970 * CALL IDC TO CLOSE FILE *
971 *****
000241 036151 A 972 CLS20 LDX RETURN,B POINT X AT CALL SEQUENCE
000242 035005 A 973 LDX 5,X POINT X AT UPDATE/LEAVE PARAMETER
000243 015000 A 974 LDB 3,X GET UPDATE/LEAVE PARAMETER
000244 001010 A 975 JAB *+3
000245 000247 R
000246 010435 A 976 LBA B0120 SET FLAG FOR UPDATE
000247 006110 A 977 SPAL B0400 MERGE IN IDC CLOSE SKELETON WORD V2 07 00977
000250 003400 A
000251 116167 A 978 ORA UNIT,B OR IN LUN
000252 036016 A 979 LDX ANFB,B POINT X AT VSFORTID DATA BLOCK
000253 055104 A 980 STA INCONT,X STORE IDC CONTROL WORD IN VSFORTID
981 LAR INCONT DECREMENT LINK COUNT 07 00981
000254 015120 A
000255 005311 A
000256 055120 A
000257 010464 A 982 LBA C00 CALL IDC V2 07 00982
000260 006505 A 983 JAB PS0,X V2 07 00983
000261 004774 R
000262 036010 A 984 LDX R0FCB,B POINT X AT FCB
985 TRAB RWFL,LF,CLS30 LOGICAL FILE ? 07 00985
000263 016154 A
000264 006441 A
000265 000270 R 986 MOVBA3 LRNZ,0 YES. RESTORE LOGICAL REC SIZE IN FCB(0) 07 00986
000266 016122 A
000267 055000 A
987 *****
988 * TAKE FOR OFF CHAIN *
989 *****
000270 015012 A 990 CLS30 LBA 10,X GET FORWARD LINK
000271 036146 A 991 LDX PRLINK,B
000272 055012 A 992 STA 10,X HOOK TO PREVIOUS LINK
993 *****
994 * EXIT *
995 *****
000273 010422 A 996 LBA C0X
997 PUSHF PUSH EXIT OF ONTO VSFORTID STACK
000274 036016 A
000275 035000 A
000276 005344 A
000277 055000 A
000300 005041 A
000301 036016 A
000302 055000 A
000303 001000 A 998 JMP CAN EXIT TO VSFORTID 07 00998
000304 000101 R
999 SJECC
1000 *****
1001 *
1002 * 4 - W O R D D I V I D E B Y 1 0 ( 2 0 0 )
1003 *
1004 * FUNCTION: TO DIVIDE A 4-WORD NUMBER BY 10
1005 *
1006 * ENTRY: ACC = DIVIDEND
1007 *
1008 * EXIT : ACC = ACC/10
1009 *
1010 *****
000305 005024 A 1012 B10 LAR X AS BASE REGISTER
000306 005001 A 1013 TRB CLEAR HIGH-ORDER WORD OF DIVIDEND
000307 025003 A 1014 LDB ACC,X
000310 170471 A 1015 DIV ACC(0) ACC(0)/10
000311 065003 A 1016 LDB ACC,X
000312 025004 A 1017 TRB ACC+1,X
000313 170471 A 1018 DIV ACC(1)=(ACC(1)+REM(0))/10
000314 065004 A 1019 LDB ACC+1,X
000315 025005 A 1020 TRB ACC+2,X
000316 170471 A 1021 DIV ACC(2)=(ACC(2)+REM(1))/10
000317 065005 A 1022 LDB ACC+2,X
000320 025006 A 1023 TRB ACC+3,X
000321 170471 A 1024 DIV ACC(3)=(ACC(3)+REM(2))/10
000322 065006 A 1025 LDB ACC+3,X
000323 005042 A 1026 TRB RESTORE BASE REGISTER B
1027 POPJ AND EXIT FG 07 00999
000324 001000 A

```

000325 004066 R

```

1028          EJEC
1029 *****
1030 *
1031 *   P R O C E S S   D / E / F   O U T P U T   D E S C R I P T O R S
1032 *
1033 *           ( D E F )
1034 *
1035 * FUNCTION: TO PROCESS OUTPUT UNDER THE FORMAT DESCRIPTORS: SRDW.D
1036 *                                                    SREW.D
1037 *                                                    SRFW.D
1038 *                                                    SRGW.D
1039 *
1040 * ENTRY: A = INTEGER FIELD COUNT
1041 *
1042 * EXIT : DIRECT TO ONF
1043 *       PTFL = 1 = ' ' FLAG
1044 *       IF A.GE.0 IFW = A = INTEGER FIELD WIDTH
1045 *       IF A.LT.0 ZFW = -A = ZERO FILL FIELD WIDTH
1046 *
1047 *****

```

000326 001004 A
000327 000333 R
000330 056100 A
000331 001000 A
000332 000336 R
000333 005211 A
000334 005111 A
000335 056176 A
000336 046147 A
000337 001000 A
000340 002670 R

```

1049 DEF     JAN     DEF4     IS A .GE. ZERO ?
1050          STA     IFW,B     YES. STORE AS INTEGER FIELD WIDTH
1051          JMP     DEF8
1052 DEF4     CPA          A NEGATIVE
1053          IAR
1054          STA     ZFW,B     LOAD LEADING ZERO FILL COUNT
1055 DEF8     INR     PTFL,B    D/E/F HAVE A ' '
1056          JMP     ONF      EXIT TO OUTPUT NUMERIC FIELD

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1057          EJEC
1058 *****
1059 *
1060 *   P R O C E S S   D / E   O U T P U T   D E S C R I P T O R S
1061 *
1062 *           ( D E D )
1063 *
1064 * FUNCTION: TO PROCESS OUTPUT UNDER THE FORMAT DESCRIPTORS: SRDW.D
1065 *                                                    SREW.D
1066 *                                                    SRGW.D
1067 *
1068 * ENTRY: DIRECT FROM FRS
1069 *       TO DOUT FOR 'D' FORMAT DESCRIPTOR
1070 *       TO EDUT FOR 'E' FORMAT DESCRIPTOR
1071 *       TO EDUT FOR 'G' FORMAT DESCRIPTOR
1072 *       S = SCALE FACTOR
1073 *
1074 * EXIT : DIRECT TO DEF
1075 *       A = S
1076 *       DEXP = DEXP - S = DECIMAL EXPONENT
1077 *       XFL = 1 = EXPONENT FIELD FLAG
1078 *       XFW = 4 = EXPONENT FIELD WIDTH
1079 *       IF S .GT. 0, DT = MAX(0,DT-S+1)
1080 *
1081 *****

```

000341 016054 A
000342 056052 A
000343 016155 A
000344 001010 A
000345 000363 R
000346 001004 A
000347 000361 R
000350 046052 A
000351 146054 A
000352 005311 A
000353 001004 A
000354 000363 R
000355 016155 A
000356 056052 A
000357 001000 A
000360 000363 R
000361 126056 A
000362 056052 A
000363 006010 A
000364 005617 R
000365 006505 A
000366 004774 R
000367 046173 A
000370 016055 A
000371 146155 A
000372 056055 A
000373 010423 A
000374 056174 A

```

1083 DOUT    EQU     *
1084 EDUT    EQU     *
1085          MOVBBB  D,COUNT   SET SIGNIFICANT DIGIT COUNT TO D
1086          TZAB   S,DED10   EXIT IF NO SCALE FACTOR
1087          JAN     DED5
1088          INR     COUNT,B    SCALE FACTOR IS +. BUMP COUNT TO D+1
1089          SUB     D,B
1090          DAR
1091          JAN     DED10     OK IF D.GE.S
1092          MOVBBB  S,COUNT   OTHERWISE, GET S SIGNIFICANT DIGITS
1093          JMP     DED10
1094 DE05     ADD     DT,B      SCALE FACTOR IS -. SET COUNT TO DT-S
1095          STA     COUNT,B
1096 DE010   PUSHJ   RND      ROUND DECIMAL FIELD
1098          INR     XFL,B     'D' AND 'E' BOTH HAVE EXPONENT FIELDS
1099          SUBBBB  DEXP,S,DEXP SET DEXP = DEXP - S
1100          MOVBBB  FOUR,XFW  EXPONENT FIELD IS 4 CHARS WIDE

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000375 016155 A 1101 LDA S,B
000376 001004 A 1102 JAN DEF
000377 000326 R
000400 001010 A 1103 JAZ DEF S .GT. 0 ?
000401 000326 R
000402 016056 A 1104 LDA DT,B YES
000403 146155 A 1105 SUB S,B
000404 005111 A 1106 IAR
000405 001002 A 1107 JAP *+3 SET DT = MAX(0,DT-S+1)
000406 000410 R
000407 005001 A 1108 TZA
000410 056056 A 1109 STA DT,B
000411 016155 A 1110 LDA S,B EXIT WITH A = S
000412 001000 A 1111 JMP DEF PROCESS S
000413 000326 R
1112 EJEC
1113 *****
1114 *
1115 * PROCESS F OUTPUT DESCRIPTOR ( F O U ) *
1116 * *
1117 * FUNCTION: TO PROCESS OUTPUT UNDER THE FORMAT DESCRIPTOR: SRFW.D *
1118 * *
1119 * ENTRY: DIRECT FROM FRS *
1120 * DEXP = DECIMAL EXPONENT *
1121 * S = SCALE FACTOR *
1122 * *
1123 * EXIT : DIRECT TO DEF *
1124 * A = DEXP = DEXP+S *
1125 *
1126 *****
000414 000414 R 1128 FOUT EQU *
000414 016155 A 1130 LDA S,B GET SCALE FACTOR
000415 126055 A 1131 ADD DEXP,B ADD DECIMAL EXPONENT
000416 126054 A 1132 ADD S,B ADD FRACTIONAL FIELD COUNT
000417 056052 A 1133 STA COUNT,B STORE AS SIGNIFICANT FIGIT COUNT
1134 PUSHJ RND ROUND TO SIGNIFICANT DIGIT COUNT V2
000420 006010 A
000421 005617 R
000422 006505 A
000423 004774 R
000424 016055 A 1135 LDA DEXP,B
000425 126155 A 1136 ADD S,B BUMP EXPONENT BY S
000426 056055 A 1137 STA DEXP,B
000427 001000 A 1138 JMP DEF EXIT WITH INTEGER FIELD WIDTH IN A
000430 000326 R
1139 EJEC
1140 *****
1141 *
1142 * F O R M A T S C A N ( F R S ) *
1143 * *
1144 * FUNCTION: TO SCAN AND DECODE A FORMAT CHARACTER STRING *
1145 * *
1146 * ENTRY: NO SPECIAL CONDITIONS *
1147 * *
1148 * EXIT : FOLKEY = CONVERSION CODE ID KEY *
1149 * TO DESCRIPTOR PROCESSOR FOR H/X/T (NO DATA XFER FROM LIST) *
1150 * TO DESCRIPTOR PROCESSOR FOR OTHERS IF LIST NOT EXHAUSTED *
1151 * OTHERWISE EXIT TO V$FORTID THRU SNL *
1152 * *
1153 * ERRORS: ER1 ON INVALID FORMAT STRING *
1154 * *
1155 *****
1157 *****
1158 * INITIAL ENTRY *
1159 *****
000431 005001 A 1160 FRS ZAB FRPT CLEAR FORMAT STRING POINTER
000432 056062 A
000433 056075 A 1161 STA GSRPC+1,B CLEAR LEVEL 2 GROUP REPEAT COUNT
000434 056117 A 1162 STA LISTFL,B CLEAR LIST DATA XFER FLAG
000435 056141 A 1163 STA PARLV,B CLEAR '*' GROUP LEVEL COUNT
000436 056155 A 1164 STA S,B CLEAR SCALE FACTOR
000437 005101 A 1165 INCR 1
000440 056125 A 1166 STA R,B SET INITIAL '*' REPEAT COUNT TO 1
1167 PUSHJ INF INPUT NON-BLANK FORMAT CHARACTER V2
000441 006010 A
000442 002102 R
000443 006505 A
000444 004774 R
000445 006443 A 1168 BT ARST+LP,ER1 ERROR 1/ 1ST FORMAT CHAR NOT '*' /
000446 005472 R
1169 *****
1170 * '*' ENTRY *
1171 *****
000447 046141 A 1172 FRS2 INR PARLV,B BUMP '*' LEVEL
000450 016141 A 1173 LDA PARLV,B
000451 140423 A 1174 SUB FOUR
000452 001002 A 1175 JAP ER1 ERROR 1/ MORE THAN 3 '*' LEVELS /
000453 005472 R
000454 016012 A 1176 LDA AGPAR,B
000455 126141 A 1177 ADD PARLV,B
000456 005014 A 1178 TAX
000457 016125 A 1179 LDA R,B POINT X AT GROUP REPEAT COUNT
GET REPEAT COUNT

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000564 016114 A 1235 ADDBB ITEMWC,ITMINC,ITEMWC 07 01235
000565 126115 A
000566 056114 A
000567 006010 A 1236 PUSHJ RCL RECYCLE LOGICAL BUFFER V2 07 01236
000570 005251 R
000571 006505 A
000572 004774 R
000573 016117 A 1237 LDA LISTFL,B
000574 001010 A 1238 JAZ ER1 ERROR 1/ NO DATA XFER DESCRIPTORS / 07 01238
000575 005472 R
000576 005001 A 1239 ZAB LISTFL CLEAR LIST DATA XFER FLAG 07 01239
000577 056117 A
000600 036012 A 1240 LDX AGPAR,B 07 01240
000601 005144 A 1241 IXR IXR POINT X AT '' LEVEL 1 07 01241
000602 046141 A 1242 INR PARLV,B ALSO LEVEL COUNTER 07 01242
000603 015006 A 1243 LDA GSRPC-GDRPC,X
000604 055000 A 1244 STA 0,X RELOAD LEVEL 1 DYNAMIC REPEAT COUNT 07 01243
000605 015007 A 1245 LDA GSRPC-GDRPC+1,X
000606 001010 A 1246 JAZ FRS19 IS THERE A 2ND LEVEL ? 07 01246
000607 000614 R
000610 046141 A 1247 INR PARLV,B YES 07 01247
000611 005144 A 1248 IXR USE 2ND '' LEVEL 07 01248
000612 015006 A 1249 LDA GSRPC-GDRPC,X GET STATIC REPEAT COUNT 07 01249
000613 055000 A 1250 STA 0,X RELOAD DYNAMIC REPEAT COUNT 07 01250
000614 015003 A 1251 FRS19 LDA GFRPT-GDRPC,X
000615 056062 A 1252 STA ERPT,B BACK UP SCAN TO '' 07 01252
000616 001000 A 1253 JMP FRS5 RESUME SCAN AFTER CORRESPONDING '' 07 01253
000617 000464 R
1254 *****
1255 * '-' INPUT *
1256 *****
000620 046157 A 1257 FRS20 INR SGFL,B SET SIGN FLAG
1258 PUSHJ INF INPUT NON-BLANK FOLLOWING '-' V2 07 01258
000621 006010 A
000622 002102 R
000623 006505 A
000624 004774 R
000625 006445 A 1259 BT ARST+NM,ER1 ERROR 1/ NOT NUMERIC / 07 01259
000626 005472 R
1260 *****
1261 * NUMERIC CHAR INPUT *
1262 *****
1263 FRS25 PUSHJ IFF INPUT NUMERIC FORMAT FIELD V2 07 01263
000627 006010 A
000630 002043 R
000631 006505 A
000632 004774 R
000633 006150 A 1264 ANAI 0211 ENABLE 'P'/''/ALPHA V2 07 01264
000634 000211 A
000635 001010 A 1265 JAZ ER1 ERROR 1/ ILLEGAL TERMINATOR / 07 01265
000636 005472 R
000637 016065 A 1266 LDA FCODE,B
000640 006447 A 1267 BT ARST+PS,FRS30 TEST IF TERMINATOR IS 'P' 07 01267
000641 000657 R
1268 *****
1269 * DESCRIPTOR HAS 'P' FIELD *
1270 *****
000642 046156 A 1271 INR SCF,B SET SCALE FACTOR FLAG
000643 016126 A 1272 LDA NFF,B GET SCALE FACTOR ABS VALUE IN A
000644 036157 A 1273 LDX SGFL,B GET SIGN FLAG IN X
000645 001040 A 1274 JXZ *+4
000646 000651 R
000647 005211 A 1275 CPA NEGATE A IF SIGN FLAG SET 07 01275
000650 005111 A 1276 IAR
000651 056155 A 1277 STA S,B LOAD SCALE FACTOR S
000652 006010 A 1278 LDAB 041 V2 07 01278
000653 000041 A
000654 056053 A 1279 STA CVFL,B ENABLE ONLY NUMERIC/ALPHA V2 07 01279
000655 001000 A 1280 JMP FRS10
000656 000476 R
1281 *****
1282 * NUMERIC - NOT SCALE FACTOR *
1283 *****
1284 FRS30 TNZAB SGFL,ER1 ERROR 1/ '-' PRECEDES REPEAT COUNT / 07 01284
000657 016157 A
000660 001016 A
000661 005472 R
1285 MOVAB NFF,R LOAD REPEAT COUNT 07 01285
000662 016126 A
000663 056125 A
000664 056171 A 1286 STA WT,B ALSO AS FIELD WIDTH FOR H/X 07 01286
000665 016065 A 1287 LDA FCODE,B
000666 006403 A 1288 BT ASET+LP,FRS2 TEST FOR '' 07 01288
000667 000447 R
000670 006440 A 1289 BT ARST+AL,ER1 ERROR 1/ TERMINATOR NOT ALPHA / 07 01289
000671 005472 R
1290 *****
1291 * ALPHABETIC CHAR INPUT *
1292 *****
000672 R 1293 FRS35 EQU * V2 07 01293

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000672 016064 A 1294 LDA FCHAR,B GET FORMAT DESCRIPTOR CHARACTER V2 07 01294
1295 IFF NUC FG 07 01295
1296 GOTO NV2NUC FG 07 01296
1297 IFT VII FG 07 01297
1298 DME MAP,V$ST0 SET EXEC STATE TO 00 V2 07 01298
1299 NV2NUC CONT FG 07 01299
1300 LDXI FRSJT-FRSCHT-1 GET TABLE COUNT IN X V2 07 01300
000673 006030 A 1301 FRSL1 SUBE FRSCHT,X V2 07 01301
000674 000012 A 1302 JAZ FRS40 MATCH ? 07 01302
000675 006145 A 1303 IFF NUC FG 07 01303
000676 001121 R 1304 GOTO NV2NUC FG 07 01304
000677 001010 A 1305 IFT VII FG 07 01305
000700 000706 R 1306 GOTO VIINUC FG 07 01306
1307 NV2NUC CONT FG 07 01307
1308 JXZ ER1 ERROR 1/ ILLEGAL FORMAT CHAR / V2 07 01308
000701 001040 A 1309 GOTO NV2NUC FG 07 01309
000702 005472 R 1310 VIINUC CONT FG 07 01310
1311 JXZ FRS39 V2 07 01311
1312 NV2NUC CONT FG 07 01312
000703 005344 A 1313 DXR DROP TABLE COUNT V2 07 01313
000704 001000 A 1314 JMP FRSL1 AND CONTINUE COMPARISON 07 01314
000705 000675 R 1315 IFF NUC FG 07 01315
1316 GOTO NV2NUC FG 07 01316
1317 IFF VII FG 07 01317
1318 GOTO NV2NUC FG 07 01318
1319 FRS39 DME MAP,V$ST3 SET EXEC STATE TO NN V2 07 01319
1320 JMP ER1 V2 07 01320
1321 NV2NUC CONT FG 07 01321
000706 R 1322 FRS40 EQU * V2 07 01322
1323 IFF NUC FG 07 01323
1324 GOTO NV2NUC FG 07 01324
1325 IFT VII FG 07 01325
1326 DME MAP,V$ST3 SET EXEC STATE TO NN V2 07 01326
1327 NV2NUC CONT FG 07 01327
000706 005041 A 1328 TXA V2 07 01328
000707 056061 A 1329 STA FDLKEY,B SAVE AS DESCRIPTOR KEY 07 01329
1330 ***** 07 01330
1331 * SCAN BEYOND DESCRIPTOR LETTER * 07 01331
1332 ***** 07 01332
1333 TZAB SCF,FRS45 DOES DESCRIPTOR HAVE A SCALE FACTOR ? 07 01333
000710 016156 A
000711 001010 A
000712 000717 R
000713 016061 A 1334 LDA FDLKEY,B YES 07 01334
000714 140423 A 1335 SUB FOUR 07 01335
000715 001002 A 1336 JAF ER1 ERROR 1/ ILLEGAL SCALE FACTOR / 07 01336
000716 005472 R
000717 016061 A 1337 FRS45 LDA FDLKEY,B 07 01337
000720 140424 A 1338 SUB EIGHT 07 01338
000721 001004 A 1339 JAN FRS46 07 01339
000722 000732 R
000723 140422 A 1340 SUB TWO 07 01340
000724 001016 A 1341 JANZ FRS60 SCAN FINISHED FOR H/X 07 01341
000725 001054 R
000726 016125 A 1342 LDA R,B 07 01342
000727 140422 A 1343 SUB TWO 07 01343
000730 001002 A 1344 JAF ER1 ERROR 1/ 'T' DESCRIPTOR HAS REPEAT COUNT 07 01344
000731 005472 R 1345 FRS46 PUSHJ INF INPUT NON-BLANK FORMAT CHARACTER V2 07 01345
000732 006010 A
000733 002102 R
000734 006305 A
000735 004774 R
000736 006445 A 1346 BT ARST+NM,ER1 ERROR 1/ NON-NUM AFTER DESCRIPTOR LETTER / 07 01346
000737 005472 R 1347 PUSHJ IFF INPUT NUMERIC FIELD V2 07 01347
000740 006010 A
000741 002043 R
000742 006305 A
000743 004774 R
000744 016126 A 1348 LDA NFF,B 07 01348
000745 056170 A 1349 STA W,B LOAD FIELD WIDTH W 07 01349
000746 001010 A 1350 JAZ ER1 ERROR 1/ ZERO FIELD WIDTH / 07 01350
000747 005472 R
000750 016061 A 1351 LDA FDLKEY,B 07 01351
000751 140423 A 1352 SUB FOUR 07 01352
000752 001004 A 1353 JAN FRS47 CONTINUE SCAN FOR D/E/F/G 07 01353
000753 000761 R
000754 140423 A 1354 SUB FOUR 07 01354
000755 001004 A 1355 JAN FRS50 NO FRACTIONAL D FIELD FOR I/L/A V2 07 01355
000756 001000 R
000757 001000 A 1356 JMP FRS60 SCAN FINISHED FOR T 07 01356
000760 001054 R
000761 016065 A 1357 FRS47 LDA FCODE,B 07 01357
000762 006450 A 1358 BT ARST+PT,ER1 ERROR 1/ TERMINATOR NOT '.' / 07 01358
000763 005472 R 1359 PUSHJ INF INPUT NON-BLANK FORMAT CHARACTER V2 07 01359
000764 006010 A

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000765 002102 R
000766 006505 A
000767 004774 R
000770 006445 A 1360      BT      ARST+NM,ER1  ERROR 1/ NON-NUMERIC AFTER LETTER /
000771 005472 R          1361      PUSHJ   IFF      INPUT NUMERIC FIELD          V2 07 01361

000772 006010 A
000773 002043 R
000774 006505 A
000775 004774 R
000776 016126 A 1362      LDA      NFF,B
000777 056054 A 1363      STA      D,B      STORE DECIMAL FIELD WIDTH D
1364      *****
1365      * DESCRIPTOR REQUIRES LIST ITEM *
1366      *****
1367 FRS50  PUSHJ   GNL      GET ADDRESS OF NEXT LIST ITEM/EXIT  V2 07 01367

001000 006010 A
001001 001550 R
001002 006505 A
001003 004774 R
001004 046117 A 1368      INR      LISTFL,B  SET LIST FLAG
1369      MOVBAR  W,WT    SET WT=W

001005 016170 A
001006 056171 A 1370      MOVBAR  D,DT    SET DT=D

001007 016054 A
001010 056056 A 1371      ZAB     ACC     CLEAR ACCUMULATOR ACC

001011 005001 A
001012 056003 A
001013 056004 A 1372      STA     ACC+1,B
001014 056005 A 1373      STA     ACC+2,B
001015 056006 A 1374      STA     ACC+3,B
001016 056022 A 1375      STA     ASFL,B   CLEAR '*' FLAG
001017 056055 A 1376      STA     DEXP,B  CLEAR DECIMAL EXPONENT
001020 056100 A 1377      STA     IFW,B   CLEAR INTEGER FIELD WIDTH
001021 056147 A 1378      STA     PTFL,B  CLEAR '.' FLAG
001022 056157 A 1379      STA     SGFL,B  CLEAR SIGN FLAG
001023 056173 A 1380      STA     XFL,B   CLEAR EXPONENT FIELD FLAG
001024 056174 A 1381      STA     XFW,B   SET EXPONENT FIELD WIDTH TO ZERO
001025 056176 A 1382      STA     ZFW,B   CLEAR ZERO FILL FIELD WIDTH
001026 056166 A 1383      STA     TERM,B  CLEAR TERMINATING DIGIT
1384      MOVBAR  ABSCB,ASCB SET SCB TO BUFFER          V2 07 01384

001027 016002 A
001030 056021 A
001031 016061 A 1385      LDA     FDLKEY,B
001032 140465 A 1386      SUB     FIVE
001033 001002 A 1387      JAP     FRS60    EXIT ON NON-NUMERIC DESCRIPTOR
001034 001054 R          1388      *****
1389      * NUMERIC DESCRIPTOR *
1390      *****
001035 005111 A 1391      IAR
001036 056156 A 1392      STA     SCF,B   DISABLE SCALE FACTOR FOR I INPUT
1393      TSAB  RWFL,WR,FRS55 TEST READ OR WRITE          V2 07 01393

001037 016154 A
001040 006411 A
001041 001050 R          1394      *****
1395      * READ *
1396      *****
1397      PUSHJ  IXN   INPUT EXTERNAL NUMERIC FIELD          V2 07 01397

001042 006010 A
001043 002126 R
001044 006505 A
001045 004774 R
001046 001000 A 1398      JMP     FRS60
001047 001054 R          1399      *****
1400      * WRITE *
1401      *****
1402 FRS55  PUSHJ  GNI   GET NUMERIC LIST ITEM          V2 07 01402

001050 006010 A
001051 001244 R
001052 006505 A
001053 004774 R          1403      *****
1404      * EXIT TO PROCESSOR *
1405      *****
001054 016061 A 1406 FRS60  LDA     FDLKEY,B
001055 004241 A 1407      LRLA   1
001056 005014 A 1408      TAX
1409      LDA     RWFL,B  SET X = DESCRIPTOR READ KEY
001057 016154 A 1409      LDA     NRS
001060 150432 A 1410      ANA
001061 003016 A 1411      XANZ   IXR      BUMP KEY FOR WRITE          V2 07 01411
1412      IFF     MUC
1413      GOTO   NV2NUC
1414      IFT     VII
1415      OME    MAP,V$STO SET EXEC STATE TO 00          V2 07 01415
001063 006035 A 1416 NV2NUC CONT
001064 001134 R 1417      LDXE   FRSJT,X  GET PROCESSOR ADDRESS FROM TABLE          FG 07 01417
    
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1418      IFF      NUC
1419      GOTO     NV2NUC
1420      IFT      VII
1421      OME     MAP,VSST3      SET EXEC STATE TO NN
1422 NV2NUC  CONT
1423      IJMP     0,X          EXIT TO PROCESSOR
001065 006705 A
001066 000000 A
1424 *****
1425 * TEST REPEAT COUNT *
1426 *****
1427 FRS65  DAB      R          DECREMENT REPEAT COUNT
001067 016125 A
001070 005311 A
001071 056125 A
001072 001016 A 1428      JANZ     FRS50      REPEAT DESCRIPTOR R TIMES
001073 001000 A
001074 001000 A 1429      JMP      FRS85      THEN RESUME SCAN
001075 001110 R
1430 *****
1431 * PROCESS '/' *
1432 *****
1433 FRS70  PUSHJ   RCL          RECYCLE LOGICAL BUFFER
001076 006010 A
001077 005251 R
001100 006505 A
001101 004774 R
001102 001000 A 1434      JMP      FRS5        AND SCAN FORWARD FOR NEXT DESCRIPTOR
001103 000464 R
1435 *****
1436 * PROCESS FIELD SEPARATOR *
1437 *****
1438 FRS75  PUSHJ   INF          GET TERMINATING CHARACTER
001104 006010 A
001105 002102 R
001106 006505 A
001107 004774 R
001110 016065 A 1439 FRS85  LDA      FCODE,B      GET CHAR CODE
001111 006402 A 1440      BT       ASET+CM,FRS5     TEST FOR ','
001112 000464 R
001113 006413 A 1441      BT       ASET+SL,FRS70    TEST FOR '/'
001114 001076 R
001115 006412 A 1442      BT       ASET+RP,FRS15    TEST FOR '>'
001116 000536 R
001117 001000 A 1443      JMP      ER1              ERROR 1/ ILLEGAL TERMINATOR /
001120 005472 R
1444 *****
1445 * TABLE OF VALID FORMAT SPEC CHARS *
1446 *****
001121 001121 R 1447 FRSCHT EQU      *
001122 177777 A 1448      DATA   -1             SRDW.D
001123 177777 A 1449      DATA   -1             SREW.D
001124 177776 A 1450      DATA   -1             SRFW.D
001125 177757 A 1451      DATA   -2             SRGW.D
001126 000016 A 1453      DATA   -021            RIW
001127 000013 A 1455      DATA   016             RZW
001130 177771 A 1456      DATA   013             RLW
001131 177760 A 1457      DATA   -7             RAW
001132 000004 A 1459      DATA   -020            NH...
001133 000324 A 1460      DATA   4              NX
1461      DATA   0324        TN
1463 *****
1464 * JUMP TABLE *
1465 *****
001134 001134 R 1466 FRSJT  EQU      *
001135 000341 R 1467      PZE     DIN
001136 000341 R 1468      PZE     DOUT
001137 000341 R 1469      PZE     EIN
001140 000341 R 1470      PZE     EDUT
001141 000414 R 1471      PZE     FIN
001142 000341 R 1472      PZE     FOUT
001143 001604 R 1473      PZE     GIN
001144 000341 R 1474      PZE     GOUT
001145 002114 R 1475      PZE     IIN
001146 006274 R 1476      PZE     IOUT
001147 006274 R 1477      PZE     ZIN
001150 002432 R 1478      PZE     ZOUT
001151 002470 R 1479      PZE     LIN
001152 000000 R 1480      PZE     LOUT
001153 000000 R 1481      PZE     AIN
001154 001636 R 1482      PZE     ADUT
001155 001636 R 1483      PZE     HIN
001156 006260 R 1484      PZE     HOUT
001157 006260 R 1485      PZE     XIN
001160 006034 R 1486      PZE     XDUT
001161 006034 R 1487      PZE     TIN
1488      PZE     TOUT
1490      EJEC
1491 *****
1492 *
1493 * GET BUFFER ADDRESS (GBA) *
1494 *
1495 * FUNCTION: TO GET ADDRESS OF NEXT BUFFER WORD, AND HANDLE CROSSING *
1496 * OF LOGICAL AND PHYSICAL RECORD BOUNDARIES *

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1497 *
1498 * ENTRY: PBWC = COUNT OF WORDS REMAINING IN PHYSICAL BUFFER
1499 *          LRWC = COUNT OF WORDS REMAINING IN LOGICAL BUFFER
1500 *          BFWPT = ADDRESS OF PREVIOUS BUFFER WORD
1501 *          RWFL(TR) = 1 ON TERMINATE CALL
1502 *
1503 * EXIT : IF PBWC .LE. 0
1504 *          ROP CALLED TO RECYCLE PHYSICAL BUFFER
1505 *
1506 *          BFWPT = BFWPT+1
1507 *
1508 *          IF LRWC .LE. 0
1509 *              LRECNO = LRECNO+1
1510 *              ALBF = BFWPT
1511 *              LRWC = LRSZ
1512 *              BFPT = 0
1513 *              CLB CALLED ON WRITE IF TR=0
1514 *              PBWC = PBWC-1
1515 *              LRWC = LRWC-1
1516 *
1517 *****
1519 *****
1520 * TEST FOR END OF PHYSICAL BUFFER *
1521 *****
001162 016144 A 1522 GBA LDA PBWC,B
001163 005311 A 1523 DAB
001164 001002 A 1524 JAB GBA50
001165 001175 R 1525 TSAB RWFL,EC,GBA80 PD 07 01525
001166 016154 A
001167 006412 A
001170 001236 R
1526 ***** 07 01526
1527 * END OF PHYSICAL BUFFER * 07 01527
1528 ***** 07 01528
1529 PUSHJ ROP RECYCLE PHYSICAL BUFFER V2 07 01529
001171 006010 A
001172 005313 R
001173 006505 A
001174 004774 R
1530 ***** 07 01530
1531 * TEST FOR END OF LOGICAL RECORD * 07 01531
1532 ***** 07 01532
001175 046025 A 1533 GBA50 INR BFWPT,B BUMP BUFFER WORD POINTER 07 01533
001176 016123 A 1534 LDA LRWC,B 07 01534
001177 005311 A 1535 DAB 07 01535
001200 001002 A 1536 JAB GBA70 07 01536
001201 001226 R
1537 ***** 07 01537
1538 * END OF LOGICAL RECORD * 07 01538
1539 ***** 07 01539
001202 046121 A 1540 INR LRECNO,B BUMP LOGICAL RECORD NUMBER 07 01540
001203 016025 A 1541 MOVBA BFWPT,ALBF UPDATE LOGICAL BUFFER ADDRESS 07 01541
001204 056027 A
1542 GBA55 MOVBA B LRSZ,LRWC RELOAD REMAINING WORD COUNT PD 07 01542
001205 016122 A
001206 056123 A
1543 ZAB BFPT CLEAR BUFFER CHARACTER POINTER 07 01543
001207 005001 A
001210 056026 A
1544 TRAB RWFL,WR,GBA70 WRITE ? 07 01544
001211 016154 A
001212 006451 A
001213 001226 R
001214 006404 A 1545 BT ASET+TR,GBA70 YES. TERMINATE ? 07 01545
001215 001226 R
1546 GBA60 EQU * 07 01546
1547 DAB BFWPT NO. SET UP CLB V2 07 01547
001216 016025 A
001217 005311 A
001220 056025 A
1548 PUSHJ CLB CLEAR LOGICAL BUFFER V2 07 01548
001221 006010 A
001222 000134 R
001223 006505 A
001224 004774 R
001225 046025 A 1549 INR BFWPT,B RESTORE BFWPT V2 07 01549
1550 ***** 07 01550
1551 * DECREMENT REMAINING WORD COUNTERS * 07 01551
1552 ***** 07 01552
1553 GBA70 DAB LRECNO 07 01553
001226 016144 A
001227 005311 A
001230 056144 A
1554 DAB LRWC 07 01554
001231 016123 A
001232 005311 A
001233 056123 A
1555 POPJ EXIT FG 07 01555
001234 001000 A
001235 004066 R
1556 GBA80 MOVBA B BRSZ,PBWC RESET ENCODE/DECODE POINTERS PD 07 01556

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001236 016143 A
001237 056144 A
1557      MOVZAB  ALBF,BFAPT      PD 07 01557

001240 016027 A
001241 056025 A
001242 001000 A
001243 001205 R
1558      JMP      GBA55      PD 07 01558

1559      EJEC
1560 *****
1561 *
1562 *           G E T   N U M E R I C   I T E M ( G N I )
1563 *
1564 * FUNCTION: TO GET A LIST ITEM AND CONVERT IT TO A CHAR STRING
1565 *
1566 * ENTRY:  ITEMAD = ADDRESS OF LIST ITEM
1567 *         ITMODE = MODE OF LIST ITEM:
1568 *             = 0 1-WORD INTEGER/LOGICAL
1569 *             = 1 2-WORD INTEGER/LOGICAL
1570 *             = 2 REAL
1571 *             = 3 DOUBLE PRECISION
1572 *             = 4 COMPLEX
1573 *             > 5 DOUBLE PRECISION INTEGER
1574 *
1575 * EXIT :  CHB = FRACTIONAL PART(NORMALIZED STRING OF DECIMAL DIGITS)
1576 *         DEXP = DECIMAL EXPONENT(=1 IF CHB=0)
1577 *         SGFL =  0 POSITIVE ITEM
1578 *             = -1 NEGATIVE ITEM
1579 *
1580 * ERRORS: ER3 IF INTEGER ITEM = 2**15
1581 *
1582 *****
001244 036113 A 1584 GNI      LDZ      ITEMAD,B      POINT X AT ITEM      07 01584
001245 015000 A 1585      LDA      0,X      GET 1ST WORD OF ITEM  07 01585
001246 004317 A 1586      ASRA     15
001247 056157 A 1587      STA      SGFL,B      SAVE SIGN            07 01587
001250 016116 A 1588      LDA      ITMODE,B
001251 140422 A 1589      SUB      TWO
001252 001002 A 1590      JAP      GNI4      TEST FOR INTEGER LIST ITEM  07 01590
001253 001270 R
1591 *****
1592 * INTEGER ITEM *
1593 *****
001254 015000 A 1594      LDA      0,X      GET INTEGER
001255 001002 A 1595      JAP      GNI2      V2 07 01595
001256 001263 R
001257 005211 A 1596      CPA
001260 005111 A 1597      IAR
001261 001004 A 1598      JAN      ER3      ERROR 3/ INVALID INTEGER / 07 01598
001262 005470 R
001263 056003 A 1599 GNI2   STA      ACC,B      STORE IN ACC        V2 07 01599
1600      MOVZAB  D15,BEXP  LOAD INTEGER BIAS AS BINARY EXPONENT 07 01600

001264 010472 A
001265 056024 A
001266 001000 A 1601      JMP      GNI10
001267 001401 R
001270 005311 A 1602 GNI4   DAR
001271 001010 A 1603      JAZ      GNI8      DOUBLE PRECISION #    07 01603
001272 001324 R
001273 140422 A 1604      SUB      TWO      NO
001274 001010 A 1605      JAZ      GNI9      TEST DP INTEGER      07 01605
001275 001347 R
1606 *****
1607 * REAL ITEM *
1608 *****
001276 015000 A 1609      LDA      0,X      GET 1ST WORD OF REAL ITEM  07 01609
001277 001002 A 1610      JAP      *+3      CONVERT TO ABS      07 01610
001300 001302 R
001301 005211 A 1611      CPA
001302 056164 A 1612      STA      TEMP,B      SAVE
001303 015001 A 1613      LDA      1,X      GET 2ND WORD OF REAL ITEM  07 01613
001304 150460 A 1614      ANA      BR15      CLEAR B15          D.1 07 01614
001305 005024 A 1615      TXB      LOAD X AS BASE REGISTER
001306 005012 A 1616      TAB      2ND WORD TO B-REG
001307 015164 A 1617      LDA      TEMP,X      1ST WORD TO B-REG
001310 065164 A 1618      STB      TEMP,X      SAVE 2ND WORD
001311 004507 A 1619      LASR     7          GET BINARY EXPONENT
001312 140430 A 1620      SUB      BXB1AS      UNBIAS IT          V2 07 01619
001313 055024 A 1621      STA      BEXP,X      SAVE
001314 065003 A 1622      STB      ACC,X      STORE 1ST MANTISSA WORD
001315 015164 A 1623      LDA      TEMP,X      RESTORE 2ND WORD
001316 005002 A 1624      TZE     CLEAR B
001317 004507 A 1625      LASR     7
001320 065004 A 1626      STB      ACC+1,X      SAVE
001321 005042 A 1627      TXB      RESTORE BASE REGISTER B
001322 001000 A 1628      JMP      GNI10
001323 001401 R
1629 *****
1630 * DOUBLE PRECISION ITEM *
1631 *****
001324 015001 A 1632 GNI8   LDA      1,X      GET 1ST MANTISSA WORD  07 01632
001325 004317 A 1633      ASRA     15
001326 056157 A 1634      STA      SGFL,B      GET SIGN
001327 015001 A 1635      LDA      1,X      RELOAD WORD 1      07 01635

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001330 001002 A 1636 JAP *+3 IS ITEM NEGATIVE ? V2 07 01636
001331 001333 R
001332 005211 A 1637 CPA YES. GET ABS VALUE 07 01637
001333 056003 A 1638 STA ACC,B LOAD WORD 0 OF ACCUMULATOR 07 01638
001334 015000 A 1639 LDA 0,X GET BINARY EXPONENT 07 01639
001335 140430 A 1640 SUB BXBAS UNBIAS IT V2 07 01640
001336 056024 A 1641 STA BEXP,B SAVE 07 01641
001337 015002 A 1642 LDA 2,X GET WORD 2 D.1 07 01642
001340 150460 A 1643 ANA BR15 CLEAR B15 D.1 07 01643
001341 056004 A 1644 STA ACC+1,B D.1 07 01644
001342 015003 A 1645 LDA 3,X GET WORD 3 D.1 07 01645
001343 150460 A 1646 ANA BR15 CLEAR B15 D.1 07 01646
001344 056003 A 1647 STA ACC+2,B D.1 07 01647
001345 001000 A 1648 JMP GNI10 07 01648
001346 001401 R
1649 *****
1650 * DP INTEGER *
1651 *****
001347 006010 A 1652 GNI9 LDAI 00 07 01652
001350 000036 A
001351 056024 A 1653 STA BEXP,B LOAD BIAS IN BINARY EXPONENT 07 01653
001352 015001 A 1654 LDA 1,X GET 2ND WORD 07 01654
001353 150460 A 1655 ANA BR15 CLEAR HIGH BIT 07 01655
001354 050000 A 1656 STA STORE 07 01656
001355 056004 A 1657 STA ACC+1,B GET 1ST WORD 07 01657
001356 015000 A 1658 LDA 0,X GET 1ST WORD 07 01658
001357 056003 A 1659 STA ACC,B SAVE 07 01659
001360 001002 A 1660 JAP GNI10 NEGATIVE # 07 01660
001361 001401 R
001362 005211 A 1661 CPA YES. TAKE 1-COMP 07 01661
001363 056003 A 1662 STA ACC,B 07 01662
001364 016004 A 1663 LDA ACC+1,B 07 01663
001365 007400 A 1664 ROF 07 01664
001366 001016 A 1665 JANZ GNI9A IS WORD 2 ZERO # 07 01665
001367 001375 R
001370 046003 A 1666 INR ACC,B YES. 2-COMP WORD 1 07 01666
001371 001001 A 1667 JOF ER3 ERROR 3/INVALID NUMBER/ 07 01667
001372 005470 R
001373 001000 A 1668 JMP GNI10 07 01668
001374 001401 R
001375 005211 A 1669 GNI9A CPA TAKE 2-COMP OF WORD 2 07 01669
001376 005111 A 1670 IAR 07 01670
001377 150460 A 1671 ANA BR15 07 01671
001400 056004 A 1672 STA ACC+1,B 07 01672
1673 *****
1674 * TEST FOR ZERO *
1675 *****
001401 016003 A 1676 GNI10 LDA ACC,B 07 01676
001402 116004 A 1677 ORA ACC+1,B 07 01677
001403 116005 A 1678 ORA ACC+2,B 07 01678
001404 001016 A 1679 JANZ GNI11 IS ITEM = ZERO ? 07 01679
001405 001412 R
001406 005101 A 1680 INCR 1 YES 07 01680
001407 056055 A 1681 STA BEXP,B YES. SET DECIMAL EXPONENT TO 1 07 01681
001410 001000 A 1682 JMP GNI50 07 01682
001411 001527 R
1683 *****
1684 * CONVERT TO NORMALIZED FRACTION AND DECIMAL EXPONENT *
1685 *****
1686 GNI11 PUSHJ NRM NORMALIZE MANTISSA V2 07 01686
001412 006010 A
001413 002564 R
001414 006505 A
001415 004774 R
001416 016024 A 1687 LDA BEXP,B 07 01687
001417 001010 A 1688 JAZ GNI50 FINISHED IF BINARY EXPONENT = ZERO 07 01688
001420 001527 R
001421 001004 A 1689 JAN GNI20 07 01689
001422 001432 R
1690 *****
1691 * (ACC,BEXP).GE.1 DIVIDE BY 10 *
1692 *****
001423 046053 A 1693 INR BEXP,B BUMP DECIMAL EXPONENT 07 01693
1694 PUSHJ D10 ACC = ACC/10 V2 07 01694
001424 006010 A
001425 000305 R
001426 006505 A
001427 004774 R
001430 001000 A 1695 JMP GNI11 LOOP TILL DONE 07 01695
001431 001412 R
1696 *****
1697 * (ACC,BEXP).LT.1 TEST IF .GE. .1 *
1698 *****
001432 120464 A 1699 GNI20 ADD THREE 07 01699
001433 001004 A 1700 JAN GNI30 (ACC,BEXP) .LT. .1 IF BEXP .LT. -3 07 01700
001434 001506 R
001435 001016 A 1701 JANZ GNI25 (ACC,BEXP) .GT. .1 IF BEXP .GT. -3 07 01701
001436 001475 R
001437 016055 A 1702 LDA BEXP,B 07 01702
001440 005311 A 1703 IAR 07 01703
001441 001002 A 1704 JAP GNI25 DONT OSCILLATE 07 01704
001442 001475 R
001443 016003 A 1705 LDA ACC,B 07 01705

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001444 006140 A 1706 SUBI 063146 V2 07 01706
001445 063146 A
001446 001004 A 1707 JAN GNI30 TEST WORD 0.LT..1 07 01707
001447 001506 R
001450 001016 A 1708 JANZ GNI25 07 01708
001451 001475 R
001452 016004 A 1709 LDA ACC+1,B 07 01709
001453 006140 A 1710 SUBI 031463 V2 07 01710
001454 031463 A
001455 001004 A 1711 JAN GNI30 TEST WORD 1.LT..1 07 01711
001456 001506 R
001457 001016 A 1712 JANZ GNI25 07 01712
001460 001475 R
001461 016005 A 1713 LDA ACC+2,B 07 01713
001462 006140 A 1714 SUBI 014631 V2 07 01714
001463 014631 A
001464 001004 A 1715 JAN GNI30 TEST WORD 2.LT..1 07 01715
001465 001506 R
001466 001016 A 1716 JANZ GNI25 07 01716
001467 001475 R
001470 016006 A 1717 LDA ACC+3,B 07 01717
001471 006140 A 1718 SUBI 046315 V2 07 01718
001472 046315 A
001473 001004 A 1719 JAN GNI30 TEST WORD 3.LT..1 07 01719
001474 001506 R
1720 *****
1721 * .1 .LE. (ACC,BEXP) .LT. 1 SHIFT ACC TO POSITION *
1722 *****
001475 005001 A 1723 GNI25 TZA 07 01723
001476 146024 A 1724 SUB BEXP,B 07 01724
001477 056052 A 1725 STA COUNT,B LOAD SHIFT COUNT 07 01725
1726 PUSHJ SHA SHIFT ACC TO POSITION V2 07 01726
001500 006010 A
001501 005765 R
001502 006505 A
001503 004774 R
001504 001000 A 1727 JMP GNI50 07 01727
001505 001527 R
1728 *****
1729 * (ACC,BEXP) .LT. .1 MULTIPLY BY 10 *
1730 *****
1731 GNI30 MOVPA B FOUR,COUNT SET SHIFT COUNT TO 4 07 01731
001506 010423 A
001507 056052 A
001510 126024 A 1732 ADD BEXP,B BUMP BINARY EXPONENT BY 4 07 01732
001511 056024 A 1733 STA BEXP,B 07 01733
1734 PUSHJ SHA SHIFT ACC RIGHT 4 V2 07 01734
001512 006010 A
001513 005765 R
001514 006505 A
001515 004774 R
1735 PUSHJ M10 ACC = ACC*10 V2 07 01735
001516 006010 A
001517 002517 R
001520 006505 A
001521 004774 R
1736 DAB DEXP DRUP DECIMAL EXPONENT 07 01736
001522 016055 A
001523 005311 A
001524 056055 A
001525 001000 A 1737 JMP GNIL1 LOOP TILL DONE 07 01737
001526 001412 R
1738 *****
1739 * GENERATE DECIMAL DIGITS *
1740 *****
1741 GNI50 MOVBA B ACHE,CHBPT INITIALIZE CHB POINTER 07 01741
001527 016007 A
001530 056050 A
001531 046124 A 1742 INR MOV,B SET MULTIPLY OVERFLOW FLAG 07 01742
1743 GNIL2 PUSHJ M10 ACC = ACC*10 V2 07 01743
001532 006010 A
001533 002517 R
001534 006505 A
001535 004774 R
001536 036050 A 1744 LDX CHBPT,B POINT X AT ARRAY CHB 07 01744
001537 055000 A 1745 STA 0,X STORE DECIMAL DIGIT IN ARRAY CHB 07 01745
001540 005145 A 1746 INCR 045 BUMP ARRAY POINTER 07 01746
001541 076050 A 1747 STX CHBPT,B 07 01747
001542 146007 A 1748 SUB ACHE,B 07 01748
001543 146200 A 1749 SUB BD14,B V2 07 01749
001544 001004 A 1750 JAN GNIL2 LOOP TILL 14 DECIMAL DIGITS GENERATED 07 01750
001545 001532 R
1751 POPJ EXIT FG 07 01751
001546 001000 A
001547 004066 R
1752 EJEC 07 01752
1753 ***** 07 01753
1754 * 07 01754
1755 * GET NEXT LIST ADDRESS (GNL) * 07 01755
1756 * 07 01756
1757 * FUNCTION: TO GET ADDRESS OF NEXT ITEM ON I/O LIST * 07 01757
1758 * 07 01758
1759 * ENTRY: ITEMAD = ADDRESS OF PREVIOUS LIST ITEM * 07 01759

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1821 *
1822 *          P R O C E S S   H   D E S C R I P T O R ( H I D )
1823 *
1824 * FUNCTION: TO PROCESS THE FORMAT DESCRIPTORS
1825 *
1826 *          NH..
1827 *          '....'
1828 *
1829 * ENTRY: N = FIELD WIDTH( = 2**15-1 FOR '...' DESCRIPTOR)
1830 *          HIN : INPUT ENTRY
1831 *          HOUT : OUTPUT ENTRY
1832 *          QFL = 0 NH.. SPECIFIER
1833 *          = 1 '....' SPECIFIER
1834 *
1835 * EXIT : DIRECT TO FRS
1836 *
1837 *****
001636 R 1839 HIN   EQU   *
001636 R 1840 HOUT  EQU   *
1842     TZAB  QFL,HID6      TEST IF H OR '...' DESCRIPTOR
001636 016150 A
001637 001010 A
001640 001677 R

1843 *****
1844 * '...' SPECIFIER *
1845 *****
001641 005311 A 1846     DAR
001642 001010 A 1847     JAZ   HID2      QFL = 2 ?
001643 001647 R
001644 056150 A 1848     STA   QFL,B      YES. SET QFL = 1
001645 001000 A 1849     JMP   HID10     AND INPUT OVER 2ND QUOTE OF PAIR
001646 001707 R

001647 016011 A 1850 HID2  MOVBAB AFSCB,ASCB  SET SCB TO FORMAT STRING
001650 056021 A

1851     PUSHJ ICC          INPUT FORMAT CHARACTER      V2 07 01851

001651 006010 A
001652 001743 R
001653 006505 A
001654 004774 R
001655 006451 A 1852     BT    ARST+QT,HID4    IS CHAR A QUOTE ?
001656 001674 R

1853     PUSHJ ICC          YES. INPUT NEXT CHARACTER      V2 07 01853

001657 006010 A
001660 001743 R
001661 006505 A
001662 004774 R
001663 006451 A 1854     BT    ARST+QT,FRS85  EXIT TO FORMAT SCAN ON SINGLE QUOTE
001664 001110 R

1855     DAB   FMPT          2 CONSECUTIVE QUOTES - BACK UP FORMAT PTR 07 01855

001665 016062 A
001666 005311 A
001667 056062 A

1856     TSAB  RWFL,WR,HID15  READ ?
001670 016154 A
001671 006411 A
001672 001725 R
001673 046150 A 1857     INR   QFL,B      YES. SET QFL = 2
1858 HID4  DAB   FMPT      BACK UP FORMAT POINTER
001674 016062 A
001675 005311 A
001676 056062 A

1859 *****
1860 * NH.. SPECIFIER *
1861 *****
1862 HID6  DAB   N          DECREMENT FIELD WIDTH N
001677 016125 A
001700 005311 A
001701 056125 A
001702 001004 A 1863     JAN   FRS5          EXIT WHEN FIELD EXHAUSTED
001703 000464 R

1864     TSAB  RWFL,WR,HID15
001704 016154 A
001705 006411 A
001706 001725 R

1865 *****
1866 * INPUT *
1867 *****
1868 HID10 PUSHJ CBC          INPUT BUFFER CHARACTER      V2 07 01868

001707 006010 A
001710 000104 R
001711 006505 A
001712 004774 R

1869     MOVBAB AFSCB,ASCB  SET SCB TO FORMAT STRING
001713 016011 A
001714 056021 A

1870     MOVBAB BCHAR,FCHAR  MOVE CHAR FROM BUFFER SCB TO FORMAT SCB
001715 016030 A
001716 056064 A

1871     PUSHJ PCH          PUT CHARACTER IN FORMAT STRING      V2 07 01871

001717 006010 A
001720 003535 R
001721 006505 A

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001722 004774 R
001723 001000 A 1872      JMP      HIN      PROCESS NEXT CHAR      07 01872
001724 001636 R
1873 *****
1874 * OUTPUT *
1875 *****
1876 HID15 MOVBAB AFSCB,ASCB SET SCB TO FORMAT STRING 07 01876

001725 016011 A
001726 036021 A
1877      PUSHJ   ICC      INPUT FORMAT CHARACTER      V2 07 01877

001727 006010 A
001730 001743 R
001731 006505 A
001732 004774 R
1878      MOVBAB   FCHAR,BCHAR MOVE CHAR FROM FORMAT SCB TO BUFFER SCB 07 01878

001733 016064 A
001734 036030 A
1879      PUSHJ   DCB      OUTPUT FORMAT CHARACTER TO BUFFER  V2 07 01879

001735 006010 A
001736 002635 R
001737 006505 A
001740 004774 R
001741 001000 A 1880      JMP      HOUT     PROCESS NEXT CHAR      07 01880
001742 001636 R
1881      EJECT
1882 *****
1883 *
1884 * INPUT / CLASSIFY CHARACTER ( ICC )
1885 *
1886 * FUNCTION: TO INPUT AND CLASSIFY A CHARACTER FROM A STRING.
1887 *
1888 * ENTRY: ASCB = ADDRESS OF STRING CONTROL BLOCK SCB
1889 *
1890 *          SCB(0): CURRENT CHARACTER COUNTER
1891 *          SCB(1): STRING START ADDRESS
1892 *
1893 * EXIT : A = SCB(3) = CHARACTER CODE
1894 *          SCB(2) = CHARACTER
1895 *
1896 *****
1897 *****
1898 *****
1899 * GET CHAR FROM STRING *
1900 *****
001743 036021 A 1901  ICC      LDX      ASCB,B      POINT X AT SCB
001744 015000 A 1902      LDA      0,X      GET CURRENT POINTER
001745 045000 A 1903      INR      0,X      BUMP CURRENT POINTER
001746 007401 A 1904  SOF      SOF
001747 004257 A 1905      LRLA    15      CONVERT BYTE TO WORD COUNT
001750 003004 A 1906      XAN      PDF      OVFL SET IF HIGH BYTE 07 01906

001751 002340 R
001752 150460 A 1907      ANA      BR15     CLEAR SIGN BIT
001753 125001 A 1908      ADD      1,X      ADD STRING START ADDRESS
001754 005014 A 1909      TAX
001755 015000 A 1910      LDA      0,X      GET WORD
001756 003001 A 1911      XDF      LSRAB    RIGHT JUSTIFY BYTE 07 01911

001757 002042 R
001760 150463 A 1912      ANA      RH4      CLEAR HIGH BYTE 07 01912
001761 036021 A 1913      LDX      ASCB,B    POINT X AT SCB 07 01913
001762 055002 A 1914      STA      0,X      STORE CHAR IN SCB 07 01914
1915 *****
1916 * CLASSIFY CHAR *
1917 *****
1918      IFF      NUC
1919      GOTO    NV2NUC
1920      IFT      VII
1921      DME      NAP,VSST0 SET EXEC STATE TO 00  V2 07 01921
1922 NV2NUC CONT
1923      LDX      ICCCT
1924 ICCLP  INR
1925      SUB      0,X
1926      JAP      ICCLP
1927      LDA      ICCCT1-ICCCT,X GET CHARACTER CLASSIFICATION CODE 07 01927
1928      IFF      NUC
1929      GOTO    NV2NUC
1930      IFT      VII
1931      DME      NAP,VSST3 SET EXEC MODE TO NN  V2 07 01931
1932 NV2NUC CONT
1933      LDX      ASCB,B    POINT X AT SCB 07 01933
001771 036021 A 1934      STA      0,X      A = SCB(3) = CODE 07 01934
001772 055003 A 1935      POCJ
1936 *****
1937 * CLASSIFICATION TABLE - CHARS *
1938 *****
1939 *****
001775 001775 R 1939  ICCCT  PZE      *
001776 000240 A 1940      DATA   0240      SPECIAL CHAR 07 01940
001777 000001 A 1941      DATA   0241-0240 BLANK 07 01941
002000 000006 A 1942      DATA   0247-0241 SPECIAL CHAR 07 01942
002001 000001 A 1943      DATA   0250-0247 * QUOTE 07 01943
002002 000001 A 1944      DATA   0251-0250 '(' LEFT PAREN 07 01944
002003 000001 A 1945      DATA   0252-0251 ')' RIGHT PAREN 07 01945

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002004 000001 A 1946 DATA 0253-0252 SPECIAL CHAR 07 01946
002005 000001 A 1947 DATA 0254-0253 '+' PLUS SIGN 07 01947
002006 000001 A 1948 DATA 0255-0254 ',' COMMA 07 01948
002007 000001 A 1949 DATA 0256-0255 '-' MINUS SIGN 07 01949
002010 000001 A 1950 DATA 0257-0256 '.' PERIOD 07 01950
002011 000001 A 1951 DATA 0260-0257 '/' SLASH 07 01951
002012 000012 A 1952 DATA 0272-0260 NUMERIC 07 01952
002013 000007 A 1953 DATA 0301-0272 SPECIAL CHAR 07 01953
002014 000017 A 1954 DATA 0320-0301 ALPHA 07 01954
002015 000001 A 1955 DATA 0321-0320 P 07 01955
002016 000012 A 1956 DATA 0333-0321 ALPHA 07 01956
002017 000045 A 1957 DATA 0400-0333 SPECIAL CHAR 07 01957
1959 *****
1960 * CLASSIFICATION TABLE - CODES *
1961 *****
002017 R 1962 ICCCT1 EQU *-1 07 01962
002020 000000 A 1963 DATA 0 SPECIAL CHAR 07 01963
002021 000002 A 1964 DATA 2 BLANK 07 01964
002022 000000 A 1965 DATA 0 SPECIAL CHAR 07 01965
002023 001000 A 1966 DATA 01000 ' QUOTE 07 01966
002024 000010 A 1967 DATA 010 '(' LEFT PAREN 07 01967
002025 002000 A 1968 DATA 02000 ')' RIGHT PAREN 07 01968
002026 000000 A 1969 DATA 0 SPECIAL CHAR 07 01969
002027 000100 A 1970 DATA 0100 '+' PLUS SIGN 07 01970
002030 000004 A 1971 DATA 4 ',' COMMA 07 01971
002031 000020 A 1972 DATA 020 '-' MINUS SIGN 07 01972
002032 000400 A 1973 DATA 0400 '.' PERIOD 07 01973
002033 004000 A 1974 DATA 04000 '/' SLASH 07 01974
002034 000040 A 1975 DATA 040 NUMERIC 07 01975
002035 000000 A 1976 DATA 0 SPECIAL CHAR 07 01976
002036 000001 A 1977 DATA 1 ALPHA 07 01977
002037 000200 A 1978 DATA 0200 P 07 01978
002040 000001 A 1979 DATA 1 ALPHA 07 01979
002041 000000 A 1980 DATA 0 SPECIAL CHAR 07 01980
002042 004350 A 1981 LSRAB LSRA 8 07 01981
1982 EJEC 07 01982
1983 *****
1984 *
1985 * INPUT NUMERIC FORMAT FIELD ( I F F ) *
1986 * *
1987 * FUNCTION: TO INPUT AND CONVERT AN ASCII DECIMAL STRING FROM A *
1988 * FORMAT FIELD *
1989 *
1990 * ENTRY: 1ST DIGIT IN FCHAR *
1991 *
1992 * EXIT : BINARY EQUIVALENT IN NFF *
1993 *
1994 * ERRORS: ER1 IF NUMBER .GT. 2**16 - 1 *
1995 *
1996 *****
1998 IFF ZAB NFF CLEAR COUNTER 07 01998
002043 005001 A
002044 036126 A
1999 *****
2000 * INPUT/CONVERT LOOP *
2001 *****
2002 IFFL SUTBBB FCHAR,AZER,FCHAR CONVERT ASCII DIGIT TO BINARY V2 07 02002
002045 016064 A
002046 146177 A
002047 056064 A
002050 016126 A 2003 LDA NFF,B GET COUNTER 07 02003
002051 006140 A 2004 SUBI 3277 TEST IF IT CAN BE MULTIPLIED BY 10 V2 07 02004
002052 006315 A
002053 001002 A 2005 JAP ER1 ERROR 1/ NUMBER TOO LARGE / 07 02005
002054 005472 R
002055 016126 A 2006 LDA NFF,B RESTORE COUNTER IN A 07 02006
002056 005024 A 2007 TBX SAVE BASE REGISTER IN X 07 02007
002057 004560 A 2008 LLSR 16 07 02008
002060 160471 A 2009 MUL TEN 07 02009
002061 005021 A 2010 TBA 07 02010
002062 005042 A 2011 TXB RESTORE BASE REGISTER B 07 02011
002063 007400 A 2012 ROP CLRAR OVFL 07 02012
002064 126064 A 2013 ADD FCHAR,B ADD IN NEW DIGIT 07 02013
002065 001001 A 2014 JCF ER1 ERPOP 1/ NUMBER TOO LARGE / 07 02014
002066 005472 R
002067 055126 A 2015 STA NFF,X UPDATE COUNTER 07 02015
2016 IFFL1 PUSBJ ICC INPUT NEXT FORMAT CHARACTER V2 07 02016
002070 006010 A
002071 001743 R
002072 006503 A
002073 004774 R
002074 006405 A 2017 BT ASET+NM, IFFL LOOP ON NUMERIC 07 02017
002075 002045 R
002076 006401 A 2018 BT ASET+BL, IFFL1 IGNORE BLANKS 07 02018
002077 002070 R 2019 POPJ EXIT ON NON-NUMERIC FG 07 02019
002100 001000 A
002101 004066 R
2020 EJEC 07 02020
2021 *****
2022 *
2023 * INPUT NON-BLANK FORMAT CHAR ( I N F ) *
2024 * *

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2025 * FUNCTION: TO SCAN THRU A FORMAT CHAR STRING TO A NON-BLANK * 07 02025
2026 * * 07 02026
2027 * ENTRY: NO SPECIAL CONDITIONS * 07 02027
2028 * * 07 02028
2029 * EXIT : A = FCODE = NON-BLANK FORMAT CHAR CODE * 07 02029
2030 * FCHAR = FORMAT CHAR * 07 02030
2031 * * 07 02031
2032 ***** * 07 02032
2034 INF MOVBAB AFSCB,ASCB SET SCB TO FORMAT STRING 07 02034
002102 016011 A
002103 056021 A
2035 INFLP PUSHJ ICC INPUT/CLASSIFY CHARACTER V2 07 02035
002104 006010 A
002105 001743 R
002106 006505 A
002107 004774 R
002110 006401 A 2036 BT ASET+BL,INFLP LOOP TILL NON-BLANK INPUT 07 02036
002111 002104 R
2037 POPJ EXIT FG 07 02037
002112 001000 A
002113 004066 R
2038 EJEC 07 02038
2039 ***** * 07 02039
2040 * * 07 02040
2041 * P R O C E S S I O U T P U T D E S C R I P T O R ( I O U ) * 07 02041
2042 * * 07 02042
2043 * FUNCTION: TO PROCESS OUTPUT UNDER THE FORMAT DESCRIPTOR: RIW * 07 02043
2044 * * 07 02044
2045 * ENTRY: DIRECT TO IOUT * 07 02045
2046 * NUMBER IN (CHB,DEXP,SGFL) WHERE * 07 02046
2047 * * 07 02047
2048 * CHB = 14-WORD ARRAY OF BINARY DECIMAL DIGITS * 07 02048
2049 * DEXP = DECIMAL EXPONENT * 07 02049
2050 * SGFL .EQ. 0 + * 07 02050
2051 * .NE. 0 - * 07 02051
2052 * * 07 02052
2053 * EXIT : DIRECT TO DNF * 07 02053
2054 * IFW = DEXP * 07 02054
2055 * * 07 02055
2056 ***** * 07 02056
002114 R 2058 IOUT EQU * 07 02058
002114 016055 A 2060 MOVBAB DEXP,COUNT 07 02060
002115 056052 A
2061 PUSHJ RND ROUND TO DEXP DIGITS V2 07 02061
002116 006010 A
002117 005617 R
002120 006505 A
002121 004774 R
2062 MOVBAB DEXP,IFW SET INTEGER COUNT TO DEXP 07 02062
002122 016055 A
002123 056100 A
002124 001000 A 2063 JMP DNF OUTPUT NUMERIC FIELD 07 02063
002125 002670 R
2064 EJEC 07 02064
2065 ***** * 07 02065
2066 * * 07 02066
2067 * I N P U T E X T E R N A L N U M E R I C F I E L D ( I X N ) * 07 02067
2068 * * 07 02068
2069 * FUNCTION: TO INPUT/CONVERT AN EXTERNAL NUMERIC FIELD * 07 02069
2070 * * 07 02070
2071 * ENTRY: ACC(0,1,2,3) = 0 * 07 02071
2072 * PTFI = 0 * 07 02072
2073 * S = SCALE FACTOR * 07 02073
2074 * SCF = 0 FOR I FORMAT DESCRIPTOR * 07 02074
2075 * SGFL = 0 * 07 02075
2076 * WT = W = FIELD WIDTH IN CHARACTERS * 07 02076
2077 * * 07 02077
2078 * EXIT : INPUT NUMBER = (SGFL,ACC,BEXP) , WHERE * 07 02078
2079 * SGFL = SIGN FLAG = 0 FOR + * 07 02079
2080 * = 1 FOR - * 07 02080
2081 * ACC = NORMALIZED BINARY FRACTION * 07 02081
2082 * BEXP = BINARY EXPONENT * 07 02082
2083 * * 07 02083
2084 ***** * 07 02084
2085 ***** * 07 02085
2086 ***** * 07 02086
2087 * CLEAR FLAGS AND COUNTERS * 07 02087
2088 ***** * 07 02088
002126 005001 A 2089 IXN ZAB EDEXP CLEAR EXPLICIT DECIMAL EXPONENT 07 02089
002127 056057 A
002130 056077 A 2090 STA IDEXP,B CLEAR IMPLICIT DECIMAL EXPONENT 07 02090
002131 056124 A 2091 STA MOV,B CLEAR MULTIPLY OVERFLOW FLAG 07 02091
002132 056175 A 2092 STA XSG,B CLEAR EXPONENT SIGN FLAG 07 02092
002133 006010 A 2093 LDAI 60 V2 07 02093
002134 000074 A
002135 056024 A 2094 STA DEXP,B BIAS ACC AS INTEGER ACCUMULATOR V2 07 02094
2095 ***** * 07 02095
2096 * INPUT INTEGER AND FRACTIONAL PART * 07 02096
2097 ***** * 07 02097
002136 006010 A 2098 LDAI 0566 ENABLE BLANK/','/'-'/NUMERIC/'+'/'.' V2 07 02098
002137 000566 A
002140 056053 A 2099 STA CVFL,B 07 02099

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2100 IXNL1 TZAB WT,IXN50 EXIT IF FIELD EXHAUSTED 07 02100
002141 016171 A
002142 001010 A
002143 002331 R
2101 PUSHJ CBC INPUT BUFFER CHARACTER V2 07 02101
002144 006010 A
002145 000104 R
002146 006505 A
002147 004774 R
002150 156053 A 2102 ANA CVFL,B 07 02102
002151 001010 A 2103 JAZ ER3 ERROR 3/ ILLEGAL CHAR / 07 02103
002152 005470 R
002153 016031 A 2104 LDA BCODE,B RELOAD CHARACTER CODE 07 02104
002154 006402 A 2105 BT ASET+CM,IXN50 STOP SCAN ON ',' 07 02105
002155 002331 R
002156 006400 A 2106 BT ASET+AL,IXN15 TEST ALPHA 07 02106
002157 002237 R
2107 *****
2108 * PROCESS BLANK CHAR * 07 02107
2109 ***** 07 02108
002160 006441 A 2110 BT ARST+BL,IXN4 TEST FOR BLANK 07 02109
002161 002166 R
2111 MOVBAB AZER,BCHAR REPLACE ASCII BLANK WITH ASCII ZERO V2 07 02111
002162 016177 A
002163 056030 A
002164 001000 A 2112 JMP IXN10 07 02112
002165 002226 R
002166 016053 A 2113 IXN4 LDA CVFL,B NON-BLANK INPUT 07 02113
002167 150445 A 2114 ANA BR4 DISABLE '-' 07 02114
002170 150447 A 2115 ANA BR6 DISABLE '+' 07 02115
002171 056053 A 2116 STA CVFL,B 07 02116
2117 ***** 07 02117
2118 * PROCESS '+' AND '-' * 07 02118
2119 ***** 07 02119
002172 016031 A 2120 LDA BCODE,B RELOAD CHAR CODE 07 02120
002173 006406 A 2121 BT ASET+PL,IXN5 TEST '+' 07 02121
002174 002205 R
002175 006444 A 2122 BT ARST+MM,IXN6 TEST '-' 07 02122
002176 002212 R
002177 016053 A 2123 LDA CVFL,B 07 02123
002200 006414 A 2124 BT ASET+B12,IXN18 '-' IS EXPONENT IF BIT 12 SET 07 02124
002201 002275 R
002202 046157 A 2125 INR SGFL,B SET '-' FLAG 07 02125
002203 001000 A 2126 JMP IXNL1 CONTINUE SCAN 07 02126
002204 002141 R
002205 016053 A 2127 IXN5 LDA CVFL,B 07 02127
002206 006414 A 2128 BT ASET+B12,IXN18 '+' IS EXPONENT IF BIT 12 SET 07 02128
002207 002275 R
002210 001000 A 2129 JMP IXNL1 CONTINUE SCAN 07 02129
002211 002141 R
002212 006450 A 2130 IXN6 BT ARST+PT,IXN8 TEST '.' 07 02130
002213 002222 R
002214 046147 A 2131 INR PTFL,B '.' INPUT. SET FLAG 07 02131
002215 016053 A 2132 LDA CVFL,B 07 02132
002216 150451 A 2133 ANA ZR8 DISABLE '.' 07 02133
002217 056053 A 2134 STA CVFL,B 07 02134
002220 001000 A 2135 JMP IXNL1 CONTINUE SCAN 07 02135
002221 002141 R
2136 ***** 07 02136
2137 * PROCESS NUMERIC CHAR * 07 02137
2138 ***** 07 02138
002222 016053 A 2139 IXN8 LDA CVFL,B 07 02139
002223 006110 A 2140 ORAI 010121 ENABLE ALPHA/EXPONENT SIGN V2 07 02140
002224 010121 A
002225 056053 A 2141 STA CVFL,B 07 02141
002226 016030 A 2142 IXN10 LDA BCHAR,B GET INPUT NUMERIC CHAR 07 02142
002227 146177 A 2143 SUB AZER,B CONVERY ASCII DIGIT TO BINARY V2 07 02143
002230 056166 A 2144 STA TERM,B 07 02144
2145 PUSHJ M10 ACC = ACC*10 + TERM V2 07 02145
002231 006010 A
002232 002517 R
002233 006505 A
002234 004774 R
002235 001000 A 2146 JMP IXNL1 CONTINUE SCAN 07 02146
002236 002141 R
2147 ***** 07 02147
2148 * ALPHA CHAR INPUT * 07 02148
2149 ***** 07 02149
002237 016030 A 2150 IXN15 LDA BCHAR,B 07 02150
002240 006140 A 2151 SUBI 0304 V2 07 02151
002241 000304 A
002242 001004 A 2152 JAN ER3 ERROR 3/ NOT 'D' OR 'E' / 07 02152
002243 005470 R
002244 140422 A 2153 SUB TND 07 02153
002245 001062 A 2154 JAP ER3 ERROR 3/ NOT 'D' OR 'E' / 07 02154
002246 005470 R
2155 ***** 07 02155
2156 * PROCESS EXPONENT FIELD * 07 02156
2157 ***** 07 02157
002247 006010 A 2158 LDAI 0166 V2 07 02158
002250 000166 A
002251 056053 A 2159 STA CVFL,B ENABLE BLANK/'+'/'-'/'.'/NUMERIC V2 07 02159
2160 IXNL2 TZAB WT,IXN30 EXIT IF FIELD EXHAUSTED 07 02160

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002252	016171	A								
002253	001010	A								
002254	002327	R	2161	PUSHJ	CBC	INPUT BUFFER CHARACTER		V2	07 02161	
002255	006010	A								
002256	000104	R								
002257	006505	A								
002260	004774	R								
002261	156053	A	2162	ANA	CVFL,B				07 02162	
002262	001010	A	2163	JAZ	ER3	ERROR 3/ ILLEGAL CHAR /			07 02163	
002263	005470	R								
002264	016031	A	2164	LDA	BCODE,B	RELOAD CHARACTER CODE			07 02164	
002265	006402	A	2165	BT	ASET+CM,IXN30	STOP SCAN ON ','			07 02165	
002266	002327	R								
002267	006441	A	2166	BT	ARST+BL,IXN20	TEST FOR BLANK			07 02166	
002270	002300	R	2167	MOVBAB	APER,BCHAR	REPLACE BLANK WITH ZERO		V2	07 02167	
002271	016177	A								
002272	056030	A								
002273	001000	A	2168	JMP	IXN25				07 02168	
002274	002314	R								
002275	006010	A	2169	IXN18	LDAI	0166		V2	07 02169	
002276	000166	A								
002277	056053	A	2170	STA	CVFL,B	ENABLE BLANK/NUMERIC		V2	07 02170	
002300	016053	A	2171	IXN20	LDA	CVFL,B	NON-BLANK INPUT		07 02171	
002301	150445	A	2172	ANA	BR4	DISABLE '-'			07 02172	
002302	150447	A	2173	ANA	BR6	DISABLE '+'			07 02173	
002303	056053	A	2174	STA	CVFL,B				07 02174	
			2175	*****						07 02175
			2176	* PROCESS EXPONENT '+' OR '-' *						07 02176
			2177	*****						07 02177
002304	016031	A	2178	LDA	BCODE,B	RELOAD BUFFER CHARACTER CODE			07 02178	
002305	006406	A	2179	BT	ASET+PL,IXN12	CONTINUE SCAN ON '+'			07 02179	
002306	002252	R								
002307	006444	A	2180	BT	ARST+MN,IXN25	TEST FOR '-'			07 02180	
002310	002314	R								
002311	046175	A	2181	INR	XSG,B	SET '-' EXPONENT SIGN FLAG			07 02181	
002312	001000	A	2182	JMP	IXN12	CONTINUE SCAN			07 02182	
002313	002252	R								
			2183	*****						07 02183
			2184	* PROCESS NUMERIC EXPONENT DIGIT *						07 02184
			2185	*****						07 02185
002314	016030	A	2186	IXN25	LDA	BCHAR,B	GET ASCII DIGIT		07 02186	
002315	146177	A	2187	SUB	AZER,B	CONVERT TO BINARY		V2	07 02187	
002316	005024	A	2188	TEX		SAVE BASE REGISTER SETTING IN X			07 02188	
002317	025057	A	2189	LDB	EDEXP,X				07 02189	
002320	160471	A	2190	MUL	TEN				07 02190	
002321	065057	A	2191	STR	EDEXP,X	UPDATE EXPLICIT DECIMAL EXPONENT			07 02191	
002322	005042	A	2192	TXB		RESTORE BASE REGISTER B			07 02192	
002323	001016	A	2193	JANZ	ER3	ERROR 3/ EXPONENT TOO LARGE /			07 02193	
002324	005470	R								
002325	001000	A	2194	JMP	IXN12	CONTINUE SCAN			07 02194	
002326	002252	R	2195	IXN30	ZAB	SCF	DISABLE SCALE FACTOR IF EXTERNAL EXPONENT		07 02195	
002327	005001	A								
002330	056156	A	2196	*****						07 02196
			2197	* CONVERT TO STANDARD FORM *						07 02197
			2198	*****						07 02198
002331	036001	A	2199	IXN50	LDX	ACC,B	POINT X AT ACC		07 02199	
002332	015000	A	2200	LDA	0,X				07 02200	
002333	115001	A	2201	ORA	1,X				07 02201	
002334	115002	A	2202	ORA	2,X				07 02202	
002335	115003	A	2203	ORA	3,X				07 02203	
002336	001010	A	2204	JAZ	IXN57	EXIT IF ACC=0		FG	07 02204	
002337	002376	R								
002340	007400	A	2205	RDF	RDF				07 02205	
			2206	TZAB	XSG,IXN52	IS EXPONENT SIGN FLAG SET ?		V2	07 02206	
002341	016175	A								
002342	001010	A								
002343	002347	R								
002344	005001	A	2207	TZA		YES			07 02207	
002345	146057	A	2208	SUB	EDEXP,B	NEGATE EXPLICIT DECIMAL EXPONENT			07 02208	
002346	056057	A	2209	STA	EDEXP,B				07 02209	
			2210	IXN52	TNZAB	PTFL,IXN53	HAS A '.' BEEN INPUT ?	V2	07 02210	
002347	016147	A								
002350	001016	A								
002351	002355	R								
			2211	SUTBBB	IDEXP,D,IDEXP	NO. DECREMENT EXPONENT BY D			07 02211	
002352	016077	A								
002353	146054	A								
002354	056077	A	2212	IXN53	TZAB	SCF,IXN55	IS SCALE FACTOR ENABLED ?	V2	07 02212	
002355	016156	A								
002356	001010	A								
002357	002362	R								
002360	005001	A	2213	TZA		YES			07 02213	
002361	146155	A	2214	SUB	S,B				07 02214	
002362	126077	A	2215	IXN55	ADD	IDEXP,B	ADD IMPLICIT DECIMAL EXPONENT	V2	07 02215	
002363	126057	A	2216	ADD	EDEXP,B	ADD EXPLICIT DECIMAL EXPONENT			07 02216	
002364	056055	A	2217	STA	DEXP,B	STORE IN DEXP			07 02217	
002365	001001	A	2218	JOF	ER3	ERROR 3/ EXPONENT TOO LARGE /			07 02218	
002366	005470	R								

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002367 006010 A 2219 IXNL3 PUSHJ NRM NORMALIZE ACC V2 07 02219
002370 002564 R
002371 006505 A
002372 004774 R
002373 016055 A 2220 TNZAB DEXP,IXN58 FG 07 02220
002374 001016 A
002375 002400 R
002376 001000 A 2221 IXN57 POPJ EXIT WHEN DEXP=0 FG 07 02221
002377 004066 R
002400 001002 A 2222 IXN58 JAP IXN60 TEST SIGN OF DEXP FG 07 02222
002401 002411 R
2223 *****
2224 * NEGATIVE DECIMAL EXPONENT *
2225 *****
2226 PUSHJ D10 ACC = ACC/10 V2 07 02226
002402 006010 A
002403 000305 R
002404 006505 A
002405 004774 R
002406 046055 A 2227 INR DEXP,B BUMP DEXP 07 02227
002407 001000 A 2228 JMP IXNL3 CONTINUE CONVERSION 07 02228
002410 002367 R
2229 *****
2230 * POSITIVE DECIMAL EXPONENT *
2231 *****
2232 IXN60 MOVPA8 FOUR,COUNT SET RIGHT SHIFT COUNT TO 4 07 02232
002411 010423 A
002412 056052 A
002413 126024 A 2233 ADD BEXP,B BUMP BINARY EXPONENT 07 02233
002414 056024 A 2234 STA BEXP,B 07 02234
2235 PUSHJ SHA SHIFT ACC RIGHT 4 V2 07 02235
002415 006010 A
002416 005765 R
002417 006505 A
002420 004774 R
2236 PUSHJ M10 ACC = ACC*10 V2 07 02236
002421 006010 A
002422 002517 R
002423 006505 A
002424 004774 R
2237 DAB DEXP DROP DEXP 07 02237
002425 016055 A
002426 005311 A
002427 056055 A
002430 001000 A 2238 JMP IXNL3 CONTINUE CONVERSION 07 02238
002431 002367 R
2239 EJEC 07 02239
2240 ***** 07 02240
2241 * 07 02241
2242 * PROCESS L INPUT DESCRIPTORS ( L I N ) * 07 02242
2243 * 07 02243
2244 * FUNCTION: TO PROCESS THE INPUT FORMAT DESCRIPTOR: RLW 07 02244
2245 * 07 02245
2246 * ENTRY: DIRECT FROM FRS 07 02246
2247 * WT = W = TOTAL FIELD WIDTH 07 02247
2248 * ITEMAD = ADDRESS OF LIST ITEM 07 02248
2249 * 07 02249
2250 * EXIT : DIRECT TO FRS 07 02250
2251 * (ITEMAD) = -1 IF 1ST CHAR 'T' 07 02251
2252 * = 0 IF 1ST CHAR 'F' 07 02252
2253 * 07 02253
2254 * ERRORS: ER3 IF 1ST NON-BLANK CHAR NOT 'T' OR 'F' 07 02254
2255 * 07 02255
2256 ***** 07 02256
2258 LIN TZAB NT,ER3 ERROR 3/ BLANK FIELD / 07 02258
002432 016171 A
002433 001010 A
002434 005470 R
2259 PUSHJ CBC INPUT BUFFER CHARACTER V2 07 02259
002435 006010 A
002436 000104 R
002437 006505 A
002440 004774 R
002441 006401 A 2260 BT ASET+BL,LIN SLEW THRU BLANKS 07 02260
002442 002432 R
002443 036113 A 2261 LDX ITEMAD,B POINT X AT LIST ITEM 07 02261
002444 005301 A 2262 DECR 1 07 02262
002445 055000 A 2263 STA 0,X SET LIST ITEM TO .TRUE. (-1) 07 02263
002446 016030 A 2264 LDA BCHAR,B GET INPUT CHAR 07 02264
002447 006140 A 2265 SUBI 0324 V2 07 02265
002450 000324 A
002451 001010 A 2266 JAZ LINX EXIT TO FORMAT SCAN IF 'T' 07 02266
002452 002460 R
002453 045000 A 2267 INR 0,X SET LIST ITEM TO .FALSE. (0) 07 02267
002454 006120 A 2268 ADDI 016 TEST FOR 'F' V2 07 02268
002455 000016 A
002456 001016 A 2269 JANZ ER3 ERROR 3/ 1ST CHAR NOT 'T' OR 'F' / 07 02269
002457 005470 R
2270 LINX MOVBA8 WT,COUNT LOAD REMAINING FIELD WIDTH AS REPEAT COUNT 07 02270
002460 016171 A

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002461 056052 A
2271 PUSHJ RCH GOBBLE REST OF FIELD V2 07 02271
002462 006010 A
002463 005176 R
002464 006505 A
002465 004774 R
002466 001000 A 2272 JMP FRS65 EXIT TO FORMAT SCAN 07 02272
002467 001067 R
2273 EJEC 07 02273
2274 ***** 07 02274
2275 * 07 02275
2276 * P R O C E S S L O U T P U T D E S C R I P T O R S ( L O U ) * 07 02276
2277 * 07 02277
2278 * F U N C T I O N : T O P R O C E S S T H E O U T P U T F O R M A T D E S C R I P T O R : R L U * 07 02278
2279 * 07 02279
2280 * E N T R Y : D I R E C T F R O M F R S * 07 02280
2281 * W T = W = T O T A L F I E L D W I D T H * 07 02281
2282 * I T E M A D = A D D R E S S O F L I S T I T E M * 07 02282
2283 * 07 02283
2284 * E X I T : T O F R S T H R U O B C * 07 02284
2285 * W T - 1 L E A D I N G B L A N K S O U T P U T * 07 02285
2286 * ' F ' O U T P U T I F ( I T E M A D ) . E Q . Z E R O * 07 02286
2287 * ' T ' O U T P U T O T H E R W I S E * 07 02287
2288 * 07 02288
2289 ***** 07 02289
2291 LOUT MOVBAB BLNK1,BCHAR LOAD BLANK AS FILL CHARACTER V2 07 02291
002470 016202 A
002471 056030 A
2292 DABB WT,COUNT SET COUNT TO WT-1 07 02292
002472 016171 A
002473 005311 A
002474 056052 A
2293 PUSHJ RCH OUTPUT WT-1 LEADING BLANKS V2 07 02293
002475 006010 A
002476 005176 R
002477 006505 A
002500 004774 R
002501 006010 A 2294 LDAI 0306 V2 07 02294
002502 000306 A
002503 056030 A 2295 STA BCHAR,B LOAD 'F' AS OUTPUT CHARACTER V2 07 02295
002504 036113 A 2296 LDX ITEMAD,B POINT X AT LIST ITEM 07 02296
2297 TZAX 0,LOU4 TEST LIST ITEM = 0 (FALSE) 07 02297
002505 015000 A
002506 001010 A
002507 002513 R
002510 006010 A 2298 LDAI 0324 SET OUTPUT CHAR TO 'T' IF NOT V2 07 02298
002511 000324 A
002512 056030 A 2299 STA BCHAR,B V2 07 02299
2300 LOU4 PUSHJ RCH OUTPUT 'T' OR 'F'/EXIT V2 07 02300
002513 006010 A
002514 002635 R
002515 006505 A
002516 004774 R
2301 EJEC 07 02301
2302 ***** 07 02302
2303 * 07 02303
2304 * M U L T I P L Y B Y 1 0 ( M 1 0 ) * 07 02304
2305 * 07 02305
2306 * F U N C T I O N : M U L T I P L I E S A 4 - W O R D F I E L D A C C B Y 1 0 A N D A D D S A N I N T E G E R I * 07 02306
2307 * T O T H E P R O D U C T . M O N I T O R S O V E R F L O W A N D D E C I M A L E X P O N E N T * 07 02307
2308 * 07 02308
2309 * E N T R Y : T E R M = 1 * 07 02309
2310 * P T F L = 1 I F A ' . ' H A S B E E N P A S S E D , 0 I F N O T * 07 02310
2311 * M O V = 1 I F O V E R F L O W A L L O W E D , 0 I F N O T * 07 02311
2312 * 07 02312
2313 * E X I T : A C C = A C C * 1 0 + I * 07 02313
2314 * A = O V E R F L O W D I G I T * 07 02314
2315 * I D E X P I N C R E M E N T E D O N O V E R F L O W I F P T F L = 0 * 07 02315
2316 * I D E X P D E C R E M E N T E D I F N O O V F L A N D P T F L . N E . 0 * 07 02316
2317 * 07 02317
2318 ***** 07 02318
002517 005024 A 2320 M10 TBX LOAD X AS BASE REGISTER 07 02320
002520 015003 A 2321 LDA ACC,X 07 02321
002521 006140 A 2322 SUBI 3276 V2 07 02322
002522 006314 A
002523 001004 A 2323 JAN M104 CAN ACC BE MULTIPLIED BY 10 ? 07 02323
002524 002536 R
002525 015124 A 2324 LDA MOV,X NO 07 02324
002526 001016 A 2325 JANZ M104 MULTIPLY ANYWAY IF MOV SET 07 02325
002527 002536 R
002530 015147 A 2326 LDA PTFL,X 07 02326
002531 001016 A 2327 JANZ M10X EXIT IF '.' PASSED FG 07 02327
002532 002562 R
002533 045077 A 2328 INR IDEXP,X OTHERWISE BUMP IMPLICIT DECIMAL EXPONENT 07 02328
2329 POPJ AND EXIT FG 07 02329
002534 001000 A
002535 004066 R
002536 015166 A 2330 M104 LDA TERM,X LOAD I 07 02330
002537 025000 A 2331 LDB ACC+3,X 07 02331
002540 160471 A 2332 MUL TEN ACC(3)=ACC(3)*10 + I 07 02332
002541 065006 A 2333 STB ACC+3,X 07 02333
002542 025005 A 2334 LDB ACC+2,X 07 02334
002543 160471 A 2335 MUL TEN ACC(2)=ACC(2)*10 + OVFL(3) 07 02335

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002544 065005 A 2336 STB ACC+2,X 07 02336
002545 025004 A 2337 LDB ACC+1,X 07 02337
002546 160471 A 2338 MUL TEN ACC(1)=ACC(1)*10 + OVFL(2) 07 02338
002547 065004 A 2339 STB ACC+1,X 07 02339
002550 025003 A 2340 LDB ACC,X 07 02340
002551 160471 A 2341 MUL TEN ACC(0)=ACC(0)*10 + OVFL(1) 07 02341
002552 065003 A 2342 STB ACC,X 07 02342
002553 005042 A 2343 TXB RESTORE BASE REGISTER B 07 02343
002554 036147 A 2344 LDX PTFB,B 07 02344
002555 001040 A 2345 JXZ M10X HAS A '.' BEEN PASSED ? FG 07 02345
002556 002562 R 07 02346
002557 036077 A 2346 LDX IDEXP,B YES 07 02346
002560 005344 A 2347 DXR DECREMENT IMPLICIT DECIMAL EXPONENT 07 02347
002561 076077 A 2348 STX IDEXP,B 07 02348
2349 M10X POPJ EXIT FG 07 02349
    
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002562 001000 A 2350 EJECT 07 02350
002563 004066 R 2351 ***** 07 02351
2352 * 07 02352
2353 * 07 02353
2354 * NORMALIZE ACCUMULATOR (NRM) * 07 02354
2355 * FUNCTION: TO NORMALIZE THE 4-WORD ACCUMULATOR ACC WITH BINARY * 07 02355
2356 * EXPONENT BEXP. * 07 02356
2357 * * 07 02357
2358 * ENTRY: ACC.NE.0 * 07 02358
2359 * * 07 02359
2360 * EXIT : (ACC,BEXP) NORMALIZED * 07 02360
2361 * * 07 02361
2362 ***** 07 02362
    
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002564 005024 A 2364 NRM TBX LOAD X AS BASE REGISTER 07 02364
002565 015003 A 2365 NRML LDA ACC,X 07 02365
002566 004241 A 2366 LRLA 1 07 02366
002567 001004 A 2367 JAN NRMX EXIT WHEN NORMALIZED 07 02367
002570 002632 R 07 02368
002571 001016 A 2368 JANZ NRM4 ACC(0) = 0 ? 07 02368
002572 002610 R 2369 MOVXAX ACC+1,ACC YES. SHIFT 1 WORD 07 02369
002573 015004 A 2370 MOVXAX ACC+2,ACC+1 07 02370
002574 055003 A 2371 MOVXAX ACC+3,ACC+2 07 02371
002577 015006 A 2372 ZAX ACC+3 07 02372
002600 055005 A 07 02373
    
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002601 005001 A 2373 LDA BEXP,B 07 02373
002602 055006 A 2374 SUB D15 07 02374
002603 016021 A 2375 STA BEXP,B 07 02375
002604 140472 A 2376 JNP NRML 07 02376
002605 056024 A 07 02377
002606 001000 A 2377 NRM4 LDA ACC,X 07 02377
002607 002565 R 2378 LDB ACC+1,X 07 02378
002610 015003 A 2379 LASL 1 07 02379
002611 025004 A 2380 STA ACC,X SHIFT ACC(0) LEFT 1 07 02380
002612 004401 A 2381 LDA ACC+1,X 07 02381
002613 055003 A 2382 LDB ACC+2,X 07 02382
002614 015004 A 2383 LASL 1 07 02383
002615 025005 A 2384 STA ACC+1,X SHIFT ACC(1) LEFT 1 07 02384
002616 004401 A 2385 LDA ACC+2,X 07 02385
002617 055004 A 2386 LDB ACC+3,X 07 02386
002620 015005 A 2387 LASL 1 07 02387
002621 025006 A 2388 STA ACC+2,X SHIFT ACC(2) LEFT 1 07 02388
002622 004401 A 2389 STB ACC+3,X SHIFT ACC(3) LEFT 1 07 02389
002623 055005 A 2390 LDA BEXP,X 07 02390
002624 065006 A 2391 DCR DECREMENT BINARY EXPONENT BEXP 07 02391
002625 015024 A 2392 STA BEXP,X 07 02392
002626 005311 A 2393 JMP NRML CONTINUE NORMALIZE LOOP 07 02393
002627 055024 A 07 02394
002628 001000 A 2394 NRMX TXB RESTORE BASE REGISTER B 07 02394
002629 002565 R 2395 POPJ EXIT FG 07 02395
002630 005042 A 07 02396
    
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002631 002565 R 2396 EJECT 07 02396
002632 005042 A 2397 ***** 07 02397
2398 * 07 02398
2399 * OUTPUT CHARACTER TO BUFFER (DCB) * 07 02399
2400 * * 07 02400
2401 * FUNCTION: TO OUTPUT A CHARACTER TO THE BUFFER * 07 02401
2402 * * 07 02402
2403 * ENTRY: BCHAR = CHAR TO BE OUTPUT * 07 02403
2404 * ASFL.NE.0 IF FIELD IS TO BE TERMINATED BY AN '*' * 07 02404
2405 * WT = FIELD WIDTH * 07 02405
2406 * * 07 02406
2407 * EXIT : '*' OUTPUT IF ASFL.NE.0 AND WT=1 * 07 02407
2408 * DIRECT TO FRS IF WT=0 * 07 02408
2409 * * 07 02409
2410 ***** 07 02410
2412 DCB TXAB ASFL,DCB4 IS '*' FLAG SET ? 07 02412
    
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002633 001000 A 07 02411
002634 004066 R 07 02412
002635 016022 A 07 02413
    
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002636	001010	A								
002637	002647	R								
002640	016171	A	2413	LDA	WT,B	YES		07	02413	
002641	005311	A	2414	DAR				07	02414	
002642	001016	A	2415	JANZ	DCB4	WT = 1 ?		07	02415	
002643	002647	R								
002644	006010	A	2416	LLAI	0252			V2	07 02416	
002645	000252	A								
002646	056030	A	2417	STA	BCHAR,B	YES. LOAD '** AS OUTPUT CHARACTER		V2	07 02417	
			2418	PUSHJ	0BC	OUTPUT CHAR TO BUFFER		V2	07 02418	
002647	006010	A								
002650	000104	R								
002651	006505	A								
002652	004774	R								
			2419	TZAB	WT,DCB6	FIELD EXHAUSTED ?		FG	07 02419	
002653	016171	A								
002654	001010	A								
002655	002660	R								
			2420	POPJ		NO. RETURN		FG	07 02420	
002656	001000	A								
002657	004066	R								
			2421	DCB6	MUVBAB	ADPSTK,DPSTKP	YES. CLEAR STACK	FG	07 02421	
002660	016017	A								
002661	056000	A								
002662	016061	A	2422	LDA	FOLKEY,B			07	02422	
002663	140424	A	2423	SUB	EIGHT			07	02423	
002664	001002	A	2424	JAP	FRSS	SCAN FOR NEXT FORMAT CHAR ON H/X		07	02424	
002665	000464	R								
002666	001000	A	2425	JMP	FRS65	RETURN TO FORMAT SCAN		07	02425	
002667	001067	R								
			2426	EJEC				07	02426	
			2427	*****					07	02427
			2428	*****					07	02428
			2429	*****					07	02429
			2430	*****					07	02430
			2431	*****					07	02431
			2432	*****					07	02432
			2433	*****					07	02433
			2434	*****					07	02434
			2435	*****					07	02435
			2436	*****					07	02436
			2437	*****					07	02437
			2438	*****					07	02438
			2439	*****					07	02439
			2440	*****					07	02440
			2441	*****					07	02441
			2442	*****					07	02442
			2443	*****					07	02443
			2444	*****					07	02444
			2445	*****					07	02445
			2446	*****					07	02446
			2447	*****					07	02447
			2448	*****					07	02448
			2449	*****					07	02449
			2450	*****					07	02450
			2451	*****					07	02451
			2452	*****					07	02452
			2453	*****					07	02453
			2454	*****					07	02454
			2455	*****					07	02455
			2456	*****					07	02456
			2457	*****					07	02457
002670	016171	A	2458	DNF	LDA	WT,B	GET FIELD WIDTH	07	02458	
002671	126157	A	2459		ADD	SGFL,B	SUBTRACT '-'	07	02459	
002672	146100	A	2460		SUB	IFW,B	SUBTRACT WIDTH OF INTEGER FIELD	07	02460	
002673	146147	A	2461		SUB	PTFL,B	SUBTRACT SPACE FOR '.'	07	02461	
002674	146056	A	2462		SUB	DT,B	SUBTRACT WIDTH OF FRACTIONAL FIELD	07	02462	
002675	146174	A	2463		SUB	XFW,B	SUBTRACT WIDTH OF EXPONENT FIELD	07	02463	
002676	056052	A	2464		STA	COUNT,B	STORE LEADING BLANK COUNT	07	02464	
002677	001002	A	2465		JAP	DNFS	TEST FOR FIELD OVERFLOW	07	02465	
002700	002720	R								
			2466	*****					07	02466
			2467	*****					07	02467
			2468	*****					07	02468
002701	005311	A	2469		DAR		ALLOW 1 SPACE FOR '**	07	02469	
002702	056022	A	2470		STA	SGFL,B	SET '** FLAG	07	02470	
002703	126056	A	2471		ADD	DT,B		07	02471	
002704	056056	A	2472		STA	DT,B	REDUCE FRACTIONAL FIELD	07	02472	
002705	001002	A	2473		JAP	DNFS	DOES FIELD STILL OVERFLOW ?	07	02473	
002706	002720	R								
002707	005004	A	2474		TZX		YES	07	02474	
002710	076050	A	2475		JTX	DT,B	SET FRACTIONAL FIELD WIDTH = 0	07	02475	
002711	126147	A	2476		ADD	PTFL,B	DELETE '.'	07	02476	
002712	076147	A	2477		JTX	DTFL,B		07	02477	
002713	126100	A	2478		ADD	IFW,B		07	02478	
002714	056100	A	2479		STA	IFW,B	REDUCE INTEGER FIELD WIDTH	07	02479	
002715	001002	A	2480		JAP	DNFS	DOES FIELD STILL OVERFLOW ?	07	02480	
002716	002720	R								
002717	076100	A	2481		STX	IFW,B	YES. SET INTEGER FIELD WIDTH = 0	07	02481	
			2482	DNF5	MUVBAB	BLNK1,BCHAR	LOAD BLANK AS REPEAT CHARACTER	V2	07 02482	
002720	016202	A								
002721	056030	A								
			2483		PUSHJ	PCB	OUTPUT COUNT PLANKS	V2	07 02483	
002722	006010	A								

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002723 005176 R
002724 006505 A
002725 004774 R
2484 *****
2485 * OUTPUT SIGN *
2486 *****
2487      TZAB      SGFL,ONF20      DONT OUTPUT '+' SIGN      07 02484
002726 016157 A
002727 001010 A
002730 002740 R
002731 006010 A 2488      LDAI      0255      V2 07 02488
002732 000255 A
002733 056030 A 2489      STA      BCHAR,B      V2 07 02489
2490      PUSHJ     DCB      OUTPUT '-'      V2 07 02490
002734 006010 A
002735 002635 R
002736 006505 A
002737 004774 R
2491 *****
2492 * OUTPUT INTEGER FIELD *
2493 *****
2494 ONF20  MOVBAB  IFW,COUNT      LOAD LOOP COUNT      07 02491
002740 016100 A
002741 056052 A
2495      MOVBAB  ACHB,CHBPT      INITIALIZE CHB ARRAY POINTER      07 02495
002742 016007 A
002743 056050 A
002744 016052 A 2496 ONFL1  LDA      COUNT,B      07 02496
002745 005311 A 2497      DAR      DECREMENT COUNT      07 02497
002746 001004 A 2498      JAN      ONF30      EXIT WHEN FINISHED      07 02498
002747 002775 R
002750 056052 A 2499      STA      COUNT,B      07 02499
002751 036050 A 2500      LDX      CHBPT,B      07 02500
002752 046050 A 2501      INR      CHBPT,B      BUMP CHB POINTER      07 02501
002753 015000 A 2502      LDA      0,X      GET DIGIT      07 02502
002754 126177 A 2503      ADD      AZER,B      CONVERT TO ASCII      V2 07 02503
002755 056030 A 2504      STA      BCHAR,B      07 02504
2505      PUSHJ     DCB      OUTPUT CHARACTER TO BUFFER      V2 07 02505
002756 006010 A
002757 002635 R
002760 006505 A
002761 004774 R
002762 016050 A 2506      LDA      CHEPT,B      07 02506
002763 146007 A 2507      SUB      ACHB,B      07 02507
002764 146200 A 2508      SUB      BN14,B      V2 07 02508
002765 001004 A 2509      JAN      ONFL1      07 02509
002766 002744 R
2510      MOVBAB  AZER,BCHAR      LOAD '0' AS REPEAT CHARACTER      V2 07 02510
002767 016177 A
002770 056030 A
2511      PUSHJ     RCH      OUTPUT '0' FILL      V2 07 02511
002771 006010 A
002772 005176 R
002773 006505 A
002774 004774 R
2512 *****
2513 * OUTPUT '.' *
2514 *****
2515 ONF30  TZAB      ?TFL,ONF40      SKIP IF NO '.'      07 02512
002775 016147 A
002776 001010 A
002777 003053 R
003000 006010 A 2516      LDAI      0256      V2 07 02516
003001 000256 A
003002 056030 A 2517      STA      BCHAR,B      LOAD '.' AS OUTPUT CHARACTER      V2 07 02517
2518      PUSHJ     DCB      OUTPUT '.'      V2 07 02518
003003 006010 A
003004 002635 R
003005 006505 A
003006 004774 R
2519 *****
2520 * OUTPUT LEADING ZEROS IN FRACTIONAL FIELD *
2521 *****
2522      MOVBAB  ZFW,COUNT      LOAD LEADING ZERO COUNT      07 02519
003007 016176 A
003010 056052 A
2523      MOVBAB  AZER,BCHAR      LOAD '0' AS REPEAT CHARACTER      V2 07 02523
003011 016177 A
003012 056030 A
2524      PUSHJ     RCH      OUTPUT LEADING ZEROS      V2 07 02524
003013 006010 A
003014 005176 R
003015 006505 A
003016 004774 R
2525 *****
2526 * OUTPUT FRACTIONAL PART *
2527 *****
2528      SUTBBB  DT,ZFW,COUNT      LOAD COUNTER      07 02525
003017 016056 A
003020 146176 A
003021 056052 A
003022 016052 A 2529 ONFL2  LDA      COUNT,B      07 02529
003023 005311 A 2530      DAR      DECREMENT COUNT      07 02530

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003024 001004 A 2531      JAN      DNF40      EXIT WHEN FINISHED      07 02531
003025 003053 R
003026 056052 A 2532      STA      COUNT,B      POINT X AT DIGIT      07 02532
003027 036050 A 2533      LDX      CHEPT,B      BUMP CHB POINTER      07 02533
003030 046050 A 2534      INR      CHEPT,B      GET DIGIT      07 02534
003031 015000 A 2535      LDA      0,X      CONVERT TO ASCII      V2 07 02535
003032 126177 A 2536      ADD      AZER,B      OUTPUT CHAR TO BUFFER  V2 07 02536
003033 056030 A 2537      STA      BCHAR,B      07 02537
003034 006010 A 2538      PUSHJ   DCB      07 02538
003035 002635 R
003036 006505 A
003037 004774 R
003040 016050 A 2539      LDA      CHEPT,B      07 02539
003041 146007 A 2540      SUB      ACHB,B      07 02540
003042 146200 A 2541      SUB      ED14,B      V2 07 02541
003043 001004 A 2542      JAN      DNFL2      07 02542
003044 003022 R 2543      MOVBAB  AZER,BCHAR  LOAD '0' AS REPEAT CHARACTER  V2 07 02543
003045 016177 A
003046 056030 A 2544      PUSHJ   RCH      OUTPUT '0' FILL      V2 07 02544
003047 006010 A
003050 005176 R
003051 006505 A
003052 004774 R 2545 DNF40  TNZAB  XFL,DNF50  TEST EXPONENT FLAG      V2 07 02545
003053 016173 A
003054 001016 A
003055 003066 R 2546 *****
2547 * OUTPUT BLANK EXPONENT FIELD *
2548 *****
2549      MOVPA  FOUR,COUNT  SET BLANK COUNT TO 4      07 02548
003056 010423 A
003057 056052 A 2550      MOVBAB  BLNK1,BCHAR  07 02549
003060 016202 A
003061 056030 A 2551      PUSHJ   RCH      OUTPUT 4 BLANKS AND EXIT  V2 07 02550
003062 006010 A
003063 005176 R
003064 006505 H
003065 004774 R 2552 *****
2553 * OUTPUT EXPONENT FIELD *
2554 *****
2555 DNF50  LDAI   0305      V2 07 02554
003066 006010 A
003067 000305 A 2556      STA      BCHAR,B      SET EXPONENT CHARACTER TO 'E'  V2 07 02556
003070 056030 A 2557      TNZAB   FDLKEY,DNF52  IS FORMAT DESCRIPTOR 'D' ?  V2 07 02557
003071 016061 A
003072 001016 A
003073 003077 R 2558      DAB     BCHAR      YES. LOAD 'D'      V2 07 02558
003074 016030 A
003075 005311 A
003076 056030 A 2559 DNF52  PUSHJ   DCB      OUTPUT 'D' OR 'E'      V2 07 02559
003077 006010 A
003100 002635 R
003101 006505 A
003102 004774 R 2560      MOVBAB  BLNK1,BCHAR  LOAD BLANK FOR PLUS      V2 07 02560
003103 016202 A
003104 056030 A 2561      TPAB    DEXP,DNF55  IS EXPONENT NEGATIVE ?      07 02561
003105 016055 A
003106 001002 A
003107 003116 R 2562      CPA     YES      07 02562
003110 005211 A 2563      IAR     CONVERT TO ABS      07 02563
003111 005111 A 2564      STA     DEXP,B      07 02564
003112 056055 A 2565      LDAI   0255      V2 07 02565
003113 006010 A
003114 000255 A
003115 056030 A 2566      STA     BCHAR,B      LOAD '-'      V2 07 02566
003116 006010 A 2567 DNF55  PUSHJ   DCB      OUTPUT EXPONENT SIGN      V2 07 02567
003117 002635 R
003120 006505 A
003121 004774 R
003122 005024 A 2568      TBX     LOAD X AS BASE REGISTER      07 02568
003123 005001 A 2569      LZA     07 02569
003124 025055 A 2570      LDE     GET EXPONENT      07 02570
003125 170471 A 2571      DIV     GET DECIMAL DIGITS      07 02571
003126 055055 A 2572      STA     DEXP,X      07 02572
003127 005021 A 2573      TBA     GET TENS DIGIT IN A      07 02573
003130 005042 A 2574      TXB     RESTORE BASE REGISTER B      07 02574
003131 126177 A 2575      ADD     AZER,B      CONVERT TO ASCII      V2 07 02575
003132 056030 A 2576      STA     BCHAR,B      07 02576
003133 006010 A 2577      PUSHJ   DCB      OUTPUT TENS DIGIT OF EXPONENT  V2 07 02577
003134 002635 R

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003135 006505 A
003136 004774 R
003137 016055 A 2578          LDA      0EXP,B      RESTORE UNITS DIGIT          07 02578
003140 126177 A 2579          ADD      AZER,B      CONVERT TO ASCII           V2 07 02579
003141 056030 A 2580          STA      BCHAR,B     OUTPUT UNITS DIGIT/ '*' / EXIT 07 02580
2581 DNF60  PUSHJ     DCB                                     V2 07 02581

003142 006010 A
003143 002635 R
003144 006505 A
003145 004774 R
003146 001000 A 2582          JMP      DNF60                                     07 02582
003147 003142 R

2583          EJECT                                     07 02583
2584 *****
2585 *
2586 *           O P E N   F I L E ( O P N )
2587 *
2588 * FUNCTION: TO PROCESS CALLS TO OPEN AN RMD FILE
2589 *
2590 * ENTRY: DIRECT FROM RBE
2591 * UNIT = FORTRAN UNIT NUMBER U
2592 * RETURN = CALL SEQUENCE ADDRESS
2593 * RETURN(5) = ADDRESS OF LOGICAL UNIT NUMBER L
2594 * RETURN(6) = ADDRESS OF FCB ARRAY
2595 * RETURN(7) = MODE(REWIND OR LEAVE) OF VSIOC OPEN CALL
2596 *
2597 * FOR LOGICAL FILES ONLY:
2598 *
2599 * RETURN(8) = ADDRESS OF LOGICAL RECORD SIZE
2600 * RETURN(9) = ADDRESS OF I/O BUFFER ARRAY
2601 * RETURN(10) = ADDRESS OF READ BEFORE WRITE FLAG
2602 *
2603 * EXIT : FCB LINKED TO CHAIN
2604 * ADFCB = ADDRESS OF FCB
2605 * FCB(0) = LOGICAL RECORD SIZE
2606 * FCB(1) = BUFFER ADDRESS
2607 * FCB OPENED BY VSIOC OPEN CALL
2608 * FCB(11) = U = FORTRAN UNIT NUMBER
2609 * FCB(12)(BITS 0-7) = L = LOGICAL UNIT NUMBER
2610 *
2611 * LOGICAL FILES ONLY:
2612 *
2613 * FCB(?) = CURRENT LOGICAL RECORD NUMBER
2614 * FCB(12)(BIT RB) = 1 ENABLE READ BEFORE WRITE          V2* 07 02614
2615 *                  = 0 DISCABLE READ BEFORE WRITE      V2* 07 02615
2616 * (BIT LF) = 1 LOGICAL FILE                             V2* 07 02616
2617 *                  0 NOT LOGICAL FILE                   V2* 07 02617
2618 * (BIT RM) = 1 RMD DEVICE                               V2* 07 02618
2619 *                  0 NOT RMD DEVICE                     V2* 07 02619
2620 * (BIT GF) = 1 GLOBAL FCB                               V2* 07 02620
2621 *                  0 NOT GLOBAL FCB                     V2* 07 02621
2622 * FCB(13) = 0
2623 *
2624 *****
2625 *****
2626 *****
2627 * INITIALIZE *
2628 *****
003150 016164 A 2629 DPM      LDA      TEMP,B      GET OP
003151 006140 A 2630      SUBI     COPY          BIAS IT          V2 07 02630
003152 000016 A
003153 001010 A 2631          JAZ      *+3          LOGICAL FILE ?          V2 07 02631
003154 003156 R
003155 010422 A 2632          LDA      LFS          YES. SET FLAG          V2 07 02632
003156 110427 A 2633          ORA      INS          SET INITIALIZE FLAG      V2 07 02633
003157 056134 A 2634          STA      RWFL,B      STORE FLAG WORD          V2 07 02634
003160 036016 A 2635          LDX      ANRB,B      POINT X AT VSFORTIO DATA BLOCK 07 02635
2636          MOVXAB  SYSBF,SAVE+3 STORE =SEUF AS BUFFER ADDRESS 07 02636

003161 015162 A
003162 056035 A
2637 *****
2638 * MOVE PARAMETERS FROM CALL SEQ TO DATA BLOCK *
2639 *****
003163 036151 A 2640          LDX      RETURN,B     POINT X AT CALL SEQ      07 02640
2641          MOVXAB  5,SAVE     MOVE ADDRESS OF LOGICAL UNIT NUMBER L 07 02641

003164 015005 A
003165 056032 A
2642          MOVXAB  6,SAVE+6     MOVE ADDRESS OF FCB ARRAY          V2 07 02642

003166 015006 A
003167 056040 A
2643          MOVXAB  7,SAVE+1     MOVE ADDRESS OF OPEN MODE PARAMETER 07 02643

003170 015007 A
003171 056033 A
2644          TRAB   RWFL,LF,OPN4 LOGICAL FILE ?          V2 07 02644

003172 016154 A
003173 006441 A
003174 003203 R
2645          MOVXAB  8,SAVE+2     YES. MOVE ADDRESS OF LOGICAL RECORD SIZE 07 02645

003175 015010 A
003176 056034 A
2646          MOVXAB  9,SAVE+3     MOVE BUFFER ADDRESS          07 02646

003177 015011 A
003200 056035 A
2647          MOVXAB 10,SAVE+4     SAVE ADDRESS OF READ BEFORE WRITE FLAG 07 02647

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Address	Code	Label	Operation	Comments	Flags	Address
003201	A	015012				
003202	A	056036				
2648			*****			07 02648
2649			* PROCESS PARAMETERS *			07 02649
2650			*****			07 02650
003203	R	2651	OPN4 EQU *		V2	07 02651
2652			IFF NUC		FG	07 02652
2653			GOTO NUC1		FG	07 02653
2654			IFT VII		FG	07 02654
2655			GOTO VII1		FG	07 02655
2656			TZAB ALOC,OPN5	SKIP BOUNDS TEST IF NOT BACKGROUND	E.1	07 02656
2657			LDA SAVE+6,B		D.1	07 02657
2658			JSR TBK,X	TEST FCB IN BACKGROUND	V2	07 02658
2659			ADD BD14,B		V2	07 02659
2660			JSR TBK,X		V2	07 02660
2661			OPN5 EQU *		E.1	07 02661
2662			VII1 CONT		FG	07 02662
2663			NUC1 CONT		FG	07 02663
003203	A	036032	2664 LDX SAVE,B	GET ADDRESS OF LOGICAL UNIT NUMBER L	V2	07 02664
2665			MOVXAB 0,SAVE	GET L	07	02665
003204	A	015000				
003205	A	056032	2666	PUSHJ PRU	PROCESS UNIT NUMBERS U,L	V2 07 02666
003206	A	006010				
003207	R	004162				
003210	A	006505				
003211	A	004774				
003212	A	036033	2667 LDX SAVE+1,B	POINT X AT OPEN MODE M(REWIND,LEAVE)	07	02667
003213	A	015000	2668 LDA 0,X	GET M	07	02668
003214	A	001010	2669 JAZ *+3		07	02669
003215	A	003217				
003216	A	010435	2670 LDA BS12	SET LEAVE BIT	07	02670
003217	A	116032	2671 ORA SAVE,B	MERGE IN L	07	02671
003220	A	006110	2672 ORAI 03000	MERGE IN SKELETON OF IOC OPEN CONT WD	V2 07	02672
003221	A	003000				
003222	A	036016	2673 LDX ANRB,B	POINT X AT V\$FORTID	07	02673
003223	A	055104	2674 STA IOCNT,X	STORE I/O CONTROL WORD IN V\$FORTID	07	02674
2675			MOVXAB SAVE+6,ADFCB	GET FCB ADDRESS	V2 07	02675
003224	A	016040				
003225	A	056010				
003226	A	055010	2676 STA ADFCB,X	ALSO IN V\$FORTID	V2 07	02676
003227	A	005014	2677 TAX	POINT X AT FCB	07	02677
2678			MOVXAB BD120,0	SET FCB(0) = 120 WORDS	V2 07	02678
003230	A	016201				
003231	A	055003	2679	MOVXAB SAVE+3,1	LOAD BUFFER ADDRESS INTO FCB(1)	07 02679
003232	A	016035				
003233	A	055001				
003234	A	015002	2680 LDA 0,X	GET KEY WORD	07	02680
003235	A	150463	2681 ANA ANH	CLEAR UPPER BYTE	07	02681
003236	A	006110	2682 ORAI 01100	SET MODE TO SEQUENTIAL	V2 07	02682
003237	A	001400				
003240	A	055002	2683 STA 0,X		07	02683
2684			*****		07	02684
2685			* MAKE IOC OPEN CALL *		07	02685
2686			*****		07	02686
003241	A	010464	2687 LDA CID		V2 07	02687
003242	A	006505	2688 JSR PSJ,X	CALL V\$FORTID TO DO IOC OPEN	V2 07	02688
003243	R	004774				
2689			*****		07	02689
2690			* LINK FCB ON CHAIN *		07	02690
2691			*****		07	02691
003244	A	036146	2692 LDX P\$LINK,B	POINT X AT LAST LINK OF FCB CHAIN	07	02692
2693			MOVXAB ADFCB,10	LINK FCB ON CHAIN	07	02693
003245	A	016010				
003246	A	055012				
003247	A	036016	2694 LDX ANRB,B	POINT X AT V\$FORTID DATA BLOCK	07	02694
003250	A	045120	2695 INR LNKCNT,X	BUMP LINK COUNT	07	02695
2696			*****		07	02696
2697			* LOAD PARAMETERS INTO FCB ARRAY *		07	02697
2698			*****		07	02698
003251	A	005014	2699 TAX	POINT X AT FCB(U)	07	02699
2700			MOVXAB UNIT,11	MOVE FORTRAN UNIT NUMBER U TO FCB(11)	07	02700
003252	A	016167				
003253	A	055013				
003254	A	016154	2701 LDA SWFL,B	GET FLAG WORD	V2 07	02701
003255	A	150447	2702 ANA INP	CLEAR INITIALIZE FLAG	V2 07	02702
003256	A	004254	2703 LRLA 0H	POSITION	V2 07	02703
003257	A	116032	2704 ORA SAVE,B	MERGE IN LOGICAL UNIT NUMBER L	V2 07	02704
003260	A	055014	2705 STA 12,X	STORE IN FCB(12)	V2 07	02705
003261	A	006455	2706 BT ANFL,RM,OPN30	TEST IF LOGICAL FILE	V2 07	02706
003262	R	003322				
2707			*****		07	02707
2708			* PROCESS LOGICAL FILE PARAMETERS *		07	02708
2709			*****		07	02709
003263	A	036034	2710 LDX SAVE+2,B		07	02710
2711			MOVXAB 0,SAVE+2	SAVE LOGICAL RECORD SIZE	07	02711
003264	A	015000				
003265	A	056034				
003266	A	036010	2712 LDX ADFCB,B	POINT X AT FCB	07	02712
003267	A	055000	2713 STA 0,X	STORE LOGICAL RECORD SIZE IN FCB(0)	07	02713
2714			TRAB ANFL,RM,OPN30	EXIT IF NOT RMD	V2 07	02714
003270	A	016154				

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003271 006440 A
003272 003322 R
003273 036036 A 2715 LDX SAVE+4,B POINT X AT ADDR OF READ BEFORE WRITE FLAG 07 02715
003274 015000 A 2716 LDA 0,X GET FLAG 07 02716
003275 001010 A 2717 JAZ *+3 07 02717
003276 003300 R
003277 010440 A 2718 LDA FRBS SET READ BEFORE WRITE FLAG V2 07 02718
003300 036010 A 2719 LDX ADFCB,B POINT X AT FCB 07 02719
003301 115014 A 2720 ORA 12,X MERGE WITH L 07 02720
003302 055014 A 2721 STA 12,X STORE IN FCB(12) 07 02721
003303 005001 A 2722 ZAX 13 SET FCB(13)=0 TO MARK BUFFER EMPTY 07 02722
003304 055015 A
003305 015003 A 2723 LDA 3,X GET CURRENT RECNO 07 02723
003306 005311 A 2724 DAR CHANGE FROM BASE 1 TO BASE 0 07 02724
003307 001010 A 2725 JAZ DPN30 EXIT IF AT START OF FILE 07 02725
003310 003322 R
2726 *****
2727 * CONVERT PHYSICAL RECNO TO LOGICAL RECNO IN FCB(3) *
2728 *****
003311 005024 A 2729 TBX SAVE BASE REGISTER IN X 07 02729
003312 004560 A 2730 LLSR 16 07 02730
003313 165201 A 2731 MUL BD120,X V2 07 02731
003314 175034 A 2732 DIV SAVE+2,X CONVERT PHYSICAL POSITION TO LOGICAL 07 02732
003315 005021 A 2733 TBA 07 02733
003316 005042 A 2734 TXB RESTORE BASE REGISTER B 07 02734
003317 036010 A 2735 LDX ADFCB,B POINT X AT FCB 07 02735
003320 005111 A 2736 IAR CHANGE FROM BASE 0 TO BASE 1 07 02736
003321 055003 A 2737 STA 3,X STORE LOGICAL RECORD POSITION IN FCB(3) 07 02737
003322 010422 A 2738 DPN30 LDA CEX 07 02738
003323 036016 A 2739 PUSHF PUSH EXIT OP ONTO V$FORTIO STACK 07 02739
003324 035000 A
003325 005344 A
003326 055000 A
003327 005041 A
003330 036016 A
003331 055000 A
003332 001000 A 2740 JMP CAN EXIT TO V$FORTIO 07 02740
003333 000101 R
2741 EJE
2742 *****
2743 *
2744 * PROCESS AUXILIARY I/O (PAX) *
2745 *
2746 * FUNCTION: TO PROCESS THE FORTRAN AUXILIARY I/O STATEMENTS:
2747 *
2748 * BACKSPACE U
2749 * ENDFILE U
2750 * REWIND U
2751 *
2752 * ENTRY: DIRECT FROM RBE
2753 * UNIT = FORTRAN UNIT NUMBER U
2754 * TEMP = OP = 6 BACKSPACE
2755 * = 7 ENDFILE
2756 * = 8 REWIND
2757 *
2758 * EXIT : TO V$FORTIO WITH EXIT OP STACKED
2759 * I/O AND EXIT OPS STACKED
2760 *
2761 *****
2763 PAX SUTBPB TEMP,CBK,SAVE+1 GET BIASED OP V2 07 02763
003334 016164 A
003335 140467 A
003336 056033 A
2764 ZAB RWFL CLEAR FLAG WORD 07 02764
003337 005001 A
003340 056154 A
2765 PUSHJ PRU PROCESS FORTRAN UNIT NUMBER U V2 07 02765
003341 006010 A
003342 004162 R
003343 006505 A
003344 004774 R
2766 TRAB RWFL,RM,PAX50 TEST IF RMD V2 07 02766
003345 016154 A
003346 006440 A
003347 003475 R
2767 *****
2768 * U IS RMD *
2769 *****
2770 TZAB SAVE+1,PAX10 BACKSPACE 07 02770
003350 016033 A
003351 001010 A
003352 003360 R
003353 005311 A 2771 DAR NO 07 02771
003354 001010 A 2772 JAZ PAX15 ENDFILE ? 07 02772
003355 003374 R
003356 001000 A 2773 JMP PAX30 NO. REWIND 07 02773
003357 003461 R
2774 *****
2775 * BACKSPACE RMD *
2776 *****
2777 PAX10 TSAB RWFL,GF,PAX50 CALL V$IDC BACKSPACE IF GLOBAL FCBV2 07 02777

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003360 016154 A
003361 006407 A
003362 003475 R
2778 *****
2779 * BACKSPACE BY SETTING FCB(3) = FCB(3)-1 *
2780 *****
003363 036010 A 2781 LDX ADFCB,B POINT X AT FCB
2782 PAX 3 DECREMENT CURRENT RECORD NUMBER IN FCB(3) 07 02782
003364 015003 A
003365 005311 A
003366 055003 A
003367 005311 A 2783 DAR
003370 001004 A 2784 JAN PAX30 DO REWIND IF FCB(3).LT.1 07 02784
003371 003461 R
003372 001000 A 2785 JMP PAX70 EXIT 07 02785
003373 003505 R
2786 *****
2787 * ENDFILE RMD *
2788 *****
2789 PAX15 TRAB RNFL,PD,PAX16 POST BIT SET ? V2 07 02789
003374 016154 A
003375 006442 A
003376 003403 R
2790 PUSHJ PSB YES. POST BUFFER V2 07 02790
003377 006010 A
003400 004743 R
003401 006505 A
003402 004774 R
003403 006010 A 2791 PAX16 LDAI 013400 GET SKELETON CLOSE/UPDATE CONTROL WD V2 07 02791
003404 013400 A
003405 116167 A 2792 DRA UNIT,B MERGE IN LOGICAL UNIT NUMBER 07 02792
003406 036016 A 2793 LDX ANRB,B POINT X AT V$FORTIO DATA BLOCK 07 02793
003407 055104 A 2794 STA IOCONT,X STORE IO CONTROL WORD IN V$FORTIO 07 02794
003410 016154 A 2795 LDA RWFL,B
003411 006441 A 2796 RT ARST+LF,PAX20 LOGICAL FILE ? 07 02796
003412 003434 R
003413 036010 A 2797 LDX ADFCB,B YES. POINT X AT FCB 07 02797
2798 MOVBAK ED120,0 SET RECORD SIZE FCB(0) = 120 WORDS V2 07 02798
003414 016201 A
003415 055000 A
003416 016121 A 2799 LDA LRECNO,B 07 02799
003417 005311 A 2800 DAR CONVERT FROM BASE 1 TO BASE 0 07 02800
003420 005024 A 2801 TBX SAVE BASE REGISTER IN X 07 02801
003421 004560 A 2802 LLSR 16 07 02802
003422 165122 A 2803 MUL LRSZ,X GET WORD COUNT 07 02803
003423 175201 A 2804 DIV ED120,X CONVERT TO 120-WORD PHYSICAL REC CNT V2 07 02804
003424 001010 A 2805 JAZ *+3 07 02805
003425 003427 R
003426 005122 A 2806 IBR BUMP 1 FOR PARTIAL RECORD 07 02806
003427 005122 A 2807 IBR BUMP 1 TO CONVERT TO BASE 1 07 02807
003430 005021 A 2808 TRA 07 02808
003431 005042 A 2809 TXB RESTORE BASE REGISTER B 07 02809
003432 036010 A 2810 LDX ADFCB,B POINT X AT FCB 07 02810
003433 055003 A 2811 STA C,X STORE CURRENT PHYSICAL RECNO IN FCB(3) 07 02811
003434 010464 A 2812 PAX20 LDA CIO V2 07 02812
003435 006505 A 2813 JSR PSJ,X CALL V$IOC FOR CLOSE/UPDATE V2 07 02813
003436 004774 R
003437 006010 A 2814 LDAI 013000 GET IOC OPEN/LEAVE SKELETON CONTROL WD V2 07 02814
003440 013000 R
003441 116167 A 2815 DRA UNIT,B MERGE IN LOGICAL UNIT NUMBER 07 02815
003442 036016 A 2816 LDX ANRB,B POINT X AT V$FORTIO 07 02816
003443 055104 A 2817 STA IOCONT,X STORE IO CONTROL WORD IN V$FORTIO 07 02817
003444 010464 A 2818 LDA CIO V2 07 02818
003445 006505 A 2819 JSR PSJ,X CALL V$IOC FOR OPEN/LEAVE V2 07 02819
003446 004774 R
2820 TRAB RWFL,LF,PAX70 EXIT IF NOT LOGICAL FILE V2 07 02820
003447 016154 A
003450 006441 A
003451 003505 R
003452 036010 A 2821 LDX ADFCB,B POINT X AT FCB 07 02821
2822 MOVBAK LRSZ,0 RESTORE LOGICAL RECORD SIZE IN FCB(0) 07 02822
003453 016122 A
003454 055000 A 2823 MOVBAK LRECNO,3 RESTORE CURR LOG RECORD NUMBER IN FCB(3) 07 02823
003455 016121 A
003456 055003 A
003457 001000 A 2824 JMP PAX70 EXIT 07 02824
003460 003505 R
2825 *****
2826 * REWIND RMD *
2827 *****
2828 PAX30 TRAB RWFL,GF,PAX33 GLOBAL FCB ? V2 07 02828
003461 016154 A
003462 006447 A
003463 003470 R
003464 006010 A 2829 LDAI 03000 YES. CALL V$IOC OPEN/REWIND V2 07 02829
003465 003000 A
003466 001000 A 2830 JMP PAX55 07 02830
003467 003500 R
003470 036010 A 2831 PAX33 LDX ADFCB,B POINT X AT FCB 07 02831
003471 005101 A 2832 INCR 1 07 02832
003472 055003 A 2833 STA C,X SET CURRENT RECORD NUMBER TO 1 07 02833
003473 001000 A 2834 JMP PAX70 EXIT 07 02834

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003474 003505 R 2835 *****
2836 * CALL V$IOC TO DD OP *
2837 *****
003475 036033 A 2838 PAX50 LDX SAVE+1,B GET BIASED OP IN X
2839 IFF NUC
2840 GOTO NV2NUC
2841 IFT VII
2842 OME MAP,V$ST0 SET EXEC STATE TO 00
2843 NV2NUC CONT
2844 LDAE PAXTAB,X GET IOC CONTROL WORD MODEL
003476 006015 A
003477 003532 R 2845 IFF NUC
2846 GOTO NV2NUC
2847 IFT VII
2848 OME MAP,V$ST3 SET EXEC STATE TO NN
2849 NV2NUC CONT
003500 116167 A 2850 PAX55 ORA UNIT,B MERGE IN LOGICAL UNIT NUMBER
003501 036016 A 2851 LDX ANRB,B
003502 055104 A 2852 STA IOCNT,X STORE AS IOC CONTROL WORD
003503 007400 A 2853 ROP
003504 001006 A 2854 DATA 01006
003505 007401 A 2855 PAX70 SDF
003506 010422 A 2856 LDA CEX
2857 PUSHF PUSH EXIT OP
003507 036016 A
003510 035000 A
003511 005344 A
003512 055000 A
003513 005041 A
003514 036016 A
003515 055000 A
003516 001001 A 2858 JOF CAN EXIT IF DONE
003517 000101 R
003520 010464 A 2859 LDA CID
2860 PUSHF PUSH I/O OP
003521 036016 A
003522 035000 A
003523 005344 A
003524 055000 A
003525 005041 A
003526 036016 A
003527 055000 A
003530 001000 A 2861 JMP CAN EXIT
003531 000101 R
2862 *****
2863 * AUXILIARY I/O CONTROL WORD TABLE *
2864 *****
003532 012000 A 2865 PAXTAB DATA 012000 BACKSPACE
003533 001000 A 2866 DATA 01000 WRITE EOF
003534 001400 A 2867 DATA 01400 REWIND
2868 EJEJ
2869 *****
2870 *
2871 * PUT CHARACTER ( PCH )
2872 *
2873 * FUNCTION: TO STORE A CHARACTER
2874 *
2875 * ENTRY: ASCB = ADDRESS OF STRING CONTROL BLOCK SCB
2876 *
2877 * SCB(0): CURRENT CHARACTER COUNTER
2878 * SCB(1): STRING START ADDRESS
2879 * SCB(2): CHARACTER TO BE STORED
2880 *
2881 * EXIT : SCB(0) = SCB(0)+1
2882 *
2883 *****
003535 036021 A 2885 PCH LDX ASCB,B POINT X AT SCB
2886 MOVXAB 2,TEMP SAVE CHAR
003536 015002 A
003537 056164 A
003540 015000 A 2887 LDA 0,X GET CURRENT POINTER
003541 045000 A 2888 INR 0,X BUMP CURRENT POINTER
003542 007401 A 2889 SDF
003543 004257 A 2890 LRLA 15 CONVERT BYTE TO WORD COUNT
003544 003004 A 2891 XAN ROP OVFL SET IF HIGH BYTE
003545 002340 R
003546 150460 A 2892 ANA BR15 CLEAR SIGN BIT
003547 125001 A 2893 ADD 1,X ADD STRING START ADDRESS
003550 005014 A 2894 TAX POINT X AT WUPD
003551 015000 A 2895 LDA 0,X GET WORD
003552 001007 A 2896 JOFN *+4 HIGH BYTE ?
003553 003556 R
003554 007401 A 2897 SDF YES
003555 004250 A 2898 LRLA 8 SWAP BYTES
003556 150462 A 2899 ANA LHW CLEAR UNWANTED BYTE
003557 116164 A 2900 ORA TEMP,B MERGE IN NEW CHARACTER
003560 003001 A 2901 XCF LRLA8 SWAP BYTES IF HIGH BYTE
003561 003555 R
003562 055000 A 2902 STA 0,X STORE IN MEMORY
2903 POPJ EXIT
003563 001000 A
003564 004066 R

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2904          E J E C                               07 02904
2905 *****                                       07 02905
2906 *                                           07 02906
2907 *   P R O C E S S   N U M E R I C   I N P U T   D E S C R I P T O R   * 07 02907
2908 *                                           07 02908
2909 *           ( P N I )                               * 07 02909
2910 *                                           07 02910
2911 *   F U N C T I O N :   T O   P R O C E S S   T H E   I N P U T   F O R M A T   D E S C R I P T O R S : * 07 02911
2912 *                                           07 02912
2913 *           S R D E . D                               * 07 02913
2914 *           S R E W . D                               * 07 02914
2915 *           S R F W . D                              * 07 02915
2916 *           S R G W . D                              * 07 02916
2917 *           R I N                                    * 07 02917
2918 *                                           07 02918
2919 *   E N T R Y :   ( A C C , B E X P , S G F L ) = I N P U T   N U M B E R ,   W H E R E * 07 02919
2920 *           A C C = N O R M A L I Z E D   B I N A R Y   F R A C T I O N * 07 02920
2921 *           B E X P = B I N A R Y   E X P O N E N T * 07 02921
2922 *           S G F L = S I G N . E Q . 0 + * 07 02922
2923 *                   . N E . 0 - * 07 02923
2924 *           I T E M A D = A D D R E S S   O F   L I S T   I T E M * 07 02924
2925 *           I I W S Z = W O R D   C O U N T   O F   L I S T   I T E M * 07 02925
2926 *           I T M O D E = L I S T   I T E M   M O D E * 07 02926
2927 *                   = 0 1 - W O R D   I N T E G E R / L O G I C A L * 07 02927
2928 *                   = 1 2 - W O R D   I N T E G E R / L O G I C A L * 07 02928
2929 *                   = 2 R E A L * 07 02929
2930 *                   = 3 D O U B L E   P R E C I S I O N * 07 02930
2931 *                   = 4 C O M P L E X * 07 02931
2932 *                                           07 02932
2933 *   E X I T :   D I R E C T   T O   F R S * 07 02933
2934 *                                           07 02934
2935 *****                                       07 02935
003565 R 2937 DIN EQU * 07 02937
003565 R 2938 EIN EQU * 07 02938
003565 R 2939 FIN EQU * 07 02939
003565 R 2940 GIN EQU * 07 02940
003565 R 2941 IIN EQU * 07 02941
2943 *****                                       07 02943
2944 *   T E S T   F O R   Z E R O * 07 02944
2945 *****                                       07 02945
003565 007401 A 2946 SDF 07 02946
003566 016004 A 2947 LDA ACC+1,B 07 02947
003567 116005 A 2948 DRA ACC+2,B 07 02948
003570 116006 A 2949 DRA ACC+3,B 07 02949
003571 003010 A 2950 XAZ RZF DVFL RESET IF ACC(1)=ACC(2)=ACC(3)=0 07 02950
003572 002340 R
003573 116003 A 2951 DRA ACC,B 07 02951
003574 001010 A 2952 JAZ PN150 EXIT IF ACC=0 07 02952
003575 003770 R
003576 016116 A 2953 LDA ITMODE,B 07 02953
003577 140422 A 2954 SUB TND 07 02954
003600 001002 A 2955 JAP PN14 TEST INTEGER LIST ITEM 07 02955
003601 003650 R
2956 *****                                       07 02956
2957 *   I N T E G E R   L I S T   I T E M * 07 02957
2958 *****                                       07 02958
003602 001001 A 2959 JDF ER3 ERROR 3/ NOT INTEGER / 07 02959
003603 005470 R
003604 016024 A 2960 LDA BEXP,B GET BINARY EXPONENT 07 02960
003605 005311 A 2961 DAR 07 02961
003606 001004 A 2962 JAN ER3 ERROR 3/ NOT INTEGER / 07 02962
003607 005470 R
003610 140472 A 2963 SUB D15 07 02963
003611 001002 A 2964 JAP ER3 ERROR 3/ NOT INTEGER / 07 02964
003612 005470 R
2965 MOVSBAB ACC,TEMP SAVE LEFT-JUSTIFIED INTEGER 07 02965
003613 016003 A
003614 056164 A 2966 ZAB ACC CLEAR ACCUMULATOR ACC 07 02966
003615 005001 A
003616 056003 A
2967 *****                                       07 02967
2968 *   I N T E G E R   S H I F T   L O O P * 07 02968
2969 *****                                       07 02969
003617 005024 A 2970 TBX USE X AS BASE REGISTER 07 02970
2971 PNIL1 DAX BEXP DECREMENT BINARY EXPONENT 07 02971
003620 015024 A
003621 005311 A
003622 055024 A
003623 001004 A 2972 JAN PNILIX EXIT ON FINISH 07 02972
003624 003634 R
003625 015003 A 2973 LDA ACC,X 07 02973
003626 025164 A 2974 LDB TEMP,X 07 02974
003627 004401 A 2975 LASH 1 SHIFT INTEGER INTO ACC 07 02975
003630 055003 A 2976 STA ACC,X 07 02976
003631 065164 A 2977 STB TEMP,X 07 02977
003632 001000 A 2978 JMP PNIL1 CONTINUE TILL DONE 07 02978
003633 003620 R
003634 001026 A 2979 PNILIX JBNZ ER3 ERROR 3/ NOT INTEGER / V2 07 02979
003635 005470 R
003636 005042 A 2980 TXB RESTORE BASE REGISTER B V2 07 02980
2981 TZAB SGFL,PN150 IS SIGN NEGATIVE ? 07 02981
003637 016157 A

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003640 001010 A
003641 003770 R
003642 016003 A 2982 LDA ACC,B YES 07 02982
003643 005211 A 2983 CPA NEGATE INTEGER 07 02983
003644 005111 A 2984 IAR 07 02984
003645 056003 A 2985 STA ACC,B 07 02985
003646 001000 A 2986 JMP PNI50 07 02986
003647 003770 R
003650 130464 A 2987 PNI4 ERA THREE 07 02987
003651 001010 A 2988 JAZ PNI60 D.P. INTEGER 07 02988
003652 004013 R
003653 140422 A 2989 SUB TWO 07 02989
003654 001010 A 2990 JAZ PNI8 D.P. 07 02990
003655 002712 R
2991 *****
2992 * CONSTRUCT REAL *
2993 *****
003656 016004 A 2994 LDA ACC+1,B GET 2ND MANTISSA WORD 07 02994
003657 120430 A 2995 ADD BS7 ROUND UPWARD 07 02995
003660 007400 A 2996 RDF 07 02996
003661 001002 A 2997 JAP *+4 OVERFLOW ? 07 02997
003662 003665 R
003663 005001 A 2998 TZA YES. CLEAR WORD 07 02998
003664 046003 A 2999 INR ACC,B BUMP WORD 0 07 02999
003665 056004 A 3000 STA ACC+1,B 07 03000
003666 001007 A 3001 JOFN *+5 OVERFLOW ? 07 03001
003667 003673 R
003670 046024 A 3002 INR BEXP,B YES. BUMP BINARY EXPONENT 07 03002
3003 MOVAB BS14,ACC SHIFT FIELD 07 03003
003671 010437 A
003672 056003 A
003673 005024 A 3004 TBX LOAD X AS BASE REGISTER 07 03004
003674 015024 A 3005 LDA BEXP,X GET BINARY EXPONENT IN A 07 03005
003675 120430 A 3006 ADD BXBIAS ADD BINARY EXPONENT BIAS V2 07 03006
003676 025003 A 3007 LDB ACC,X GET HIGH WORD OF MANTISSA IN B 07 03007
003677 004407 A 3008 LASL 7 POSITION AS TO MAKE 1ST WORD OF REAL 07 03008
003700 055164 A 3009 STA TEMP,X SAVE 1ST WORD OF REAL 07 03009
003701 015003 A 3010 LDA ACC,X GET 1ST MANTISSA WORD IN A 07 03010
003702 025004 A 3011 LDB ACC+1,X GET 2ND MANTISSA WORD IN B 07 03011
003703 004407 A 3012 LASL 7 POSITION AS 2ND WORD OF REAL 07 03012
003704 055004 A 3013 STA ACC+1,X STORE IN ACC 07 03013
003705 005042 A 3014 TXB RESTORE BASE REGISTER B 07 03014
3015 MOVAB TEMP,ACC LOAD 1ST WORD OF REAL INTO ACC(0) 07 03015
003706 016164 A
003707 056003 A
003710 001000 A 3016 JMP PNI19 07 03016
003711 003753 R
3017 *****
3018 * CONSTRUCT DOUBLE PRECISION *
3019 *****
003712 016006 A 3020 PNI8 LDA ACC+3,B 07 03017
003713 004241 A 3021 LRLA 1 07 03018
003714 001002 A 3022 JAP PNI18 OVERFLOW ? 07 03019
003715 003741 R 07 03020
003716 046005 A 3023 INR ACC+2,B YES. BUMP WORD 2 07 03023
003717 016005 A 3024 LDA ACC+2,B GET WORD 07 03024
003720 001002 A 3025 JAP PNI18 OVERFLOW ? 07 03025
003721 003741 R
003722 046004 A 3026 INR ACC+1,B YES. BUMP WORD 1 07 03026
003723 005001 A 3027 TZA 07 03027
003724 056005 A 3028 STA ACC+2,B CLEAR WORD 2 07 03028
003725 016004 A 3029 LDA ACC+1,B GET WORD 1 07 03029
003726 001002 A 3030 JAP PNI18 OVERFLOW ? 07 03030
003727 003741 R
003730 046003 A 3031 INR ACC,B YES. BUMP WORD 0 07 03031
003731 005001 A 3032 TZA 07 03032
003732 056004 A 3033 STA ACC+1,B CLEAR WORD 1 07 03033
003733 016003 A 3034 LDA ACC,B GET WORD 0 07 03034
003734 001002 A 3035 JAP PNI18 OVERFLOW ? 07 03035
003735 003741 R
003736 046024 A 3036 INR BEXP,B YES. BUMP BINARY EXPONENT 07 03036
003737 010437 A 3037 LDA BS14 AND SHIFT OVERFLOW BIT 07 03037
003740 056003 A 3038 STA ACC,B STORE WORD 0 07 03038
3039 PNI18 MOVAB ACC+2,ACC+3 SHIFT FIELD 07 03039
003741 016005 A
003742 056006 A
3040 MOVAB ACC+1,ACC+2 07 03040
003743 016004 A
003744 056005 A
3041 MOVAB ACC,ACC+1 07 03041
003745 016003 A
003746 056004 A
003747 016024 A 3042 LDA BEXP,B GET BINARY EXPONENT 07 03042
003750 120430 A 3043 ADD BXBIAS ADD BINARY EXPONENT BIAS V2 07 03043
003751 056003 A 3044 STA ACC,B STORE IN WORD 0 07 03044
003752 005124 A 3045 INCR 024 POINT X AT BASE+1 07 03045
003753 016157 A 3046 PNI19 LDA SGFL,B 07 03046
003754 001010 A 3047 JAZ PNI20 IS SIGN FLAG SET ? 07 03047
003755 003761 R
003756 015003 A 3048 LDA ACC,X YES 07 03048
003757 005211 A 3049 CPA NEGATE NUMBER 07 03049
003760 055003 A 3050 STA ACC,X 07 03050
3051 ***** 07 03051

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3052 * CHECK EXPONENT RANGE *
3053 *****
003761 016024 A 3054 PNI20 LDA BEXP,B GET BINARY EXPONENT
003762 120430 A 3055 ADD BXBIAS ADD BINARY EXPONENT BIAS
003763 001004 A 3056 JAN ER3 ERROR 3/ UNDERFLOW /
003764 005470 R
003765 150462 A 3057 ANA LHW
003766 001016 A 3058 JANZ ER3 ERROR 3/ OVERFLOW /
003767 005470 R

3059 *****
3060 * LOAD LIST ITEM *
3061 *****
003770 005001 A 3062 PNI50 ZAB COUNT CLEAR COUNTER
003771 056052 A
3063 MOVBAB ACC,TEMP INITIALIZE ACC POINTER
003772 016001 A
003773 056164 A
3064 MOVBAB ITEMAD,BEXP INITIALIZE LIST ITEM POINTER
003774 016113 A
003775 056024 A
003776 036164 A 3065 PNI12 LDX TEMP,B POINT X AT ACC
003777 015000 A 3066 LDA 0,X GET WORD
004000 036024 A 3067 LDX BEXP,B POINT X AT LIST ITEM
004001 055000 A 3068 STA 0,X STORE DATA IN LIST ITEM
004002 046164 A 3069 INR TEMP,B BUMP ACC POINTER
004003 046024 A 3070 INR BEXP,B BUMP LIST ITEM POINTER
004004 046052 A 3071 INR COUNT,B BUMP LOOP COUNT
004005 016052 A 3072 LDA COUNT,B
004006 146102 A 3073 SUB IIMSZ,B
004007 001004 A 3074 JAN PNI12 LOOP TILL ITEM FILLED
004010 003776 R
004011 001000 A 3075 JMP FRS65 EXIT TO FRS
004012 001067 R

3077 * PROCESS DOUBLE PRECISION INTEGER *
004013 016005 A 3078 PNI60 LDA ACC+2,B
004014 116006 A 3079 ORA ACC+3,B
004015 001016 A 3080 JANZ ER3 NOT INTEGER
004016 005470 R
004017 016024 A 3081 LDA BEXP,B
004020 005311 A 3082 DAR
004021 001004 A 3083 JAN ER3 NOT INTEGER
004022 005470 R
004023 006140 A 3084 SUBI 30
004024 000036 A
004025 001002 A 3085 JAP ER3 NOT INTEGER
004026 005470 R
004027 005024 A 3086
004030 005111 A 3087 PNI62 IAR POSITION VALUE
004031 001002 A 3088 JAP PNI64 DDNE
004032 004044 R
004033 055024 A 3089 STA BEXP,X
004034 015003 A 3090 LDA ACC,X
004035 025004 A 3091 LDB ACC+1,X
004036 004501 A 3092 LASR 1
004037 055003 A 3093 STA ACC,X
004040 065004 A 3094 STB ACC+1,X
004041 015024 A 3095 LDA BEXP,X
004042 001000 A 3096 JMP PNI62
004043 004030 R
004044 005042 A 3097 PNI64 TXB RESTORE BASE REGISTER B
3098 TZAB SGFL,PNI50 POSITIVE SIGN
004045 016157 A
004046 001010 A
004047 003770 R
004050 015004 A 3099 LDA ACC+1,X NEGATE VALUE
004051 025003 A 3100 LDB ACC,X
004052 005211 A 3101 CPA
004053 005222 A 3102 CPB
004054 005111 A 3103 IAR
004055 001002 A 3104 JAP PNI66
004056 004061 R
004057 130440 A 3105 ERA BS15
004060 005122 A 3106 IER
004061 055004 A 3107 PNI66 STA ACC+1,X
004062 065003 A 3108 STB ACC,X
004063 005042 A 3109 TXB
004064 001000 A 3110 JMP PNI50
004065 003770 R

3111 EJEC
3112 *****
3113 *
3114 * P O P / J U M P ( P O J )
3115 *
3116 * FUNCTION: TO PROVIDE A POP/JUMP CAPABILITY
3117 *
3118 * ENTRY: DPSTKP = DP STACK POINTER
3119 *
3120 * EXIT : DIRECT TO ROUTINE SPECIFIED BY DP
3121 * DPSTKP INCREMENTED
3122 *
3123 *****
004066 036000 A 3125 POJ LDX DPSTKP,B POINT X AT DP

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004067	035000	A	3126	LDX	0,X	GET DP IN X	FG	07	03126	
004070	046000	A	3127	INR	DPSTKP,B	BUMP STACK POINTER	FG	07	03127	
004071	006705	A	3128	IJMP	0,X	EXIT	07	03128		
004072	000000	A								
			3129	EJEC			PD	07	03129	
			3130	*****				*PD	07	03130
			3131	*****				*PD	07	03131
			3132	PROCESS ENCODE / DECODE				*PD	07	03132
			3133	*****				*PD	07	03133
			3134	FUNCTION: TO PROCESS THE FORTRAN STATEMENTS				*PD	07	03134
			3135	ENCODE(S,F,B,C)				*PD	07	03135
			3136	DECODE(S,F,B,C)				*PD	07	03136
			3137	*****				*PD	07	03137
			3138	ENTRY: DIRECT FROM RBE				*PD	07	03138
			3139	RETURN = ADDRESS OF PARAMETER LIST				*PD	07	03139
			3140	UNIT = BUFFER SIZE				*PD	07	03140
			3141	TEMP = DP = CDC DECODE				*PD	07	03141
			3142	CEN ENCODE				*PD	07	03142
			3143	*****				*PD	07	03143
			3144	EXIT: ENCODE - BUFFER BLANKED				*PD	07	03144
			3145	FRMT = ADDRESS OF FORMAT STRING				*PD	07	03145
			3146	XFFL = 1 PARAMETER XFER ENABLED				*PD	07	03146
			3147	ITEMWC = 0 COUNT OF WORDS REMAINING IN LIST ITEM				*PD	07	03147
			3148	DIRECT TO FR5 TO START FORMAT SCAN				*PD	07	03148
			3149	*****				*PD	07	03149
			3150	*****				*PD	07	03150
			3151	PRD	LDA	TEMP,B	PD	07	03151	
			3152		SUBI	CDC	PD	07	03152	
			3153	LRLA	8	POSITION READ/WRITE FLAG	PD	07	03153	
			3154	STA	IOCONT,B		PD	07	03154	
			3155	JAZ	*+3		PD	07	03155	
			3156	LDA	WRS	SET WRITE BIT	PD	07	03156	
			3157	ORA	BFS	SET FILL FLAG	PD	07	03157	
			3158	ORAI	02000	SET ENCODE/DECODE BIT	PD	07	03158	
			3159	STA	RWFL,B	INITIALIZE READ/WRITE FLAG WORD	PD	07	03159	
			3160	LDX	RETURN,B	POINT X TO PARAMETER LIST	PD	07	03160	
			3161	MOVXAB	5,FRMT	SAVE FOR MAT STRING ADDRESS	PD	07	03161	
			3162	MOVXAB	6,APBF	BUFFER ADDRESS	PD	07	03162	
			3163	STA	ALBF,B		PD	07	03163	
			3164	DAR			07	03164		
			3165	STA	BFNPT,B		PD	07	03165	
			3166	LDA	Z,X	CHARACTER-PROCESSED COUNT ADDRESS	PD	07	03166	
			3167	STA	RETURN+1,B		PD	07	03167	
			3168	JAZ	PRD1	NO COUNT FIELD	PD	07	03168	
			3169	TAX			PD	07	03169	
			3170	TZA			PD	07	03170	
			3171	STA	0,X	INITIALIZE COUNT VARIABLE	PD	07	03171	
			3172	LDX	RETURN,B		PD	07	03172	
			3173	PRD1	LDA	UNIT,B	PD	07	03173	
			3174	IAR			PD	07	03174	
			3175	ASRA	:	MAKE BUFFER COUNT WORDS	PD	07	03175	
			3176	STA	PBSZ,B		PD	07	03176	
			3177	STA	PBWC,B		PD	07	03177	
			3178	STA	LRSZ,B		PD	07	03178	
			3179	STA	LRWC,B		PD	07	03179	
			3180	TZA			PD	07	03180	
			3181	STA	UNIT,B	SET NO UNIT	PD	07	03181	
			3182	LDX	ANRB,X	POINT X AT VSFORTIO DATA BLOCK	PD	07	03182	
			3183	LDA	BS12	IOC MODE IS ASCII	PD	07	03183	
			3184	ORA	IOCONT,X		PD	07	03184	
			3185	STA	IOCONT,X		PD	07	03185	
			3186	MOVXAB	RWFL,RWFL		PD	07	03186	
			3187	IFF	NUC		FG	07	03187	
			3188	GOTO	NUC1		FG	07	03188	
			3189	IFT	VII		FG	07	03189	
			3190	GOTO	VII1		FG	07	03190	
			3191	TZAB	ALOC,PRD2	ALOC ENTRY FROM BACKGROUND	PD	07	03191	
			3192	LDA	APBF,X	YES	PD	07	03192	
			3193	JSR	TBK,X	TEST BUFFER START ADDRESS	PD	07	03193	
			3194	ADD	PBSZ,B		PD	07	03194	
			3195	DAR			PD	07	03195	
			3196	JSR	TBK,X	TEST BUFFER END ADDRESS	PD	07	03196	
			3197	VII1	CONT		FG	07	03197	
			3198	NUC1	CONT		FG	07	03198	
			3199	PRD2	ZAB	BFPT	PD	07	03199	
			3200	TRAB	RWFL,WR,PRD4	WRITE?	PD	07	03200	
			3201	PUSHJ	CLB	YES, CLEAR BUFFER	PD	07	03201	
004146	005001	A								
004147	036026	A								
004150	016154	A								
004151	006451	A								
004152	004157	R								
004153	006010	A								

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004154 000134 R
004155 006505 A
004156 004774 R
004160 001000 A 3202 PRD4 INR XFFL,B ENABLE PARAMETER XFER PD 07 03202
004161 000431 R 3203 JMP FRS TO FORMAT SCAN PD 07 03203
3204 EJEC
3205 *****
3206 *
3207 * PROCESS UNIT NUMBER ( P R U )
3208 *
3209 * FUNCTION: TO PROCESS A FORTRAN UNIT NUMBER U
3210 *
3211 * ENTRY: UNIT = FORTRAN UNIT NUMBER U
3212 * RWFL(BF) = 1
3213 * RWFL(IN) = 1 IF OPEN CALL V2 07 03212
3214 * FCB CHAIN ITEM XFCB HAS FORMAT: V2* 07 03213
3215 * XFCB(12)(BITS 0-7) = L(XFCB) * 07 03214
3216 * XFCB(12)(BIT 12) = 1 RMD FILE V2 07 03215
3217 * 0 NOT RMD FILE V2 07 03216
3218 * XFCB(12)(BIT 13) = 1 LOGICAL FILE V2* 07 03217
3219 * 0 NOT LOGICAL FILE V2* 07 03218
3220 * XFCB(12)(BIT 14) = 1 UNPOSTED DATA IN BUFFER * 07 03219
3221 * = 0 NO UNPOSTED DATA IN FILE * 07 03220
3222 * XFCB(12)(BIT 15) = 1 ENABLE READ BEFORE WRITE * 07 03221
3223 * = 0 DISABLE READ BEFORE WRITE * 07 03222
3224 * XFCB(13) = PHYSICAL RECORD NUMBER IN BUFFER(0 IF NONE) * 07 03223
3225 *
3226 * EXIT : ADFCB = ADDRESS OF DCB/FCB * 07 03224
3227 * UNIT = LOGICAL UNIT NUMBER L * 07 03225
3228 * LRSZ = FCB(0) = LOGICAL RECORD SIZE IN WORDS * 07 03226
3229 * APBF = ADDRESS OF PHYSICAL BUFFER * 07 03227
3230 * ALBF = ADDRESS OF LOGICAL BUFFER * 07 03228
3231 * PBSZ = PHYSICAL BUFFER SIZE IN WORDS * 07 03229
3232 * RWFL(BIT RM) = FCB(12)(BIT 12) RMD FLAG V2 07 03230
3233 * RWFL(BIT LF) = FCB(12)(BIT 13) LOGICAL FILE FLAG V2 07 03231
3234 * RWFL(BIT PD) = FCB(12)(BIT 14) POST FLAG V2 07 03232
3235 * RWFL(BIT RB) = FCB(12)(BIT 15) READ BEFORE WRITE FLAG V2 07 03233
3236 * RWFL(BIT BF) = 0 IF READ IS TO RETURN I/O WORD COUNT V2 07 03234
3237 * 1 IF READ IS TO RETURN FULL BUFF(BLANK FILL) V2* 07 03235
3238 * RWFL(BIT GF) = 1 IF GLOBAL FCB V2* 07 03236
3239 *
3240 * THE FOLLOWING APPLY ONLY TO LOGICAL FILES: * 07 03237
3241 *
3242 * LGOV = INCREMENT FROM START OF PHYSICAL TO START OF LOGICAL * 07 03238
3243 * LRECD = FCB(3) = LOGICAL RECORD NUMBER * 07 03239
3244 * PBRC = COUNT OF 120-WORD RECORDS IN PHYSICAL BUFFER * 07 03240
3245 *
3246 * ERRORS: ER4 IF U NOT IN RANGE 1-255 * 07 03241
3247 * ER4 IF L INVALID * 07 03242
3248 * ER4 IF FOREGROUND RMD NOT OPENED * 07 03243
3249 * ER4 IF BACKGROUND RMD NOT OPENED NOR N/GLOBAL FCB * 07 03244
3250 * ER4 IF U ALREADY ON CHAIN FOR OPEN CALL V2* 07 03245
3251 *
3252 *****
3253 *****
3254 *****
3255 * TEST RANGE OF U *
3256 *****
004162 016167 A 3257 PRU LDA UNIT,B GET U 07 03256
004163 150462 A 3258 ANA LHM 07 03257
004164 001016 A 3259 JANZ ER4 ERROR 4/ U NOT IN (1,255) / 07 03258
004165 005467 R
3260 *****
3261 * SEARCH FCB CHAIN FOR U ALREADY DEFINED *
3262 *****
3263 TRAB RWFL,DA,PRU 07 03263
004166 016154 A
004167 006453 A
004170 004175 P
004171 036151 A 3264 LDX RETURN,B DIRECT ADDRESS 07 03264
004172 015011 A 3265 LDA R,X FCB ADDRESS 07 03265
004173 001000 A 3266 JMP PRU5 07 03266
004174 004203 R
3267 PRU0 PUSHJ SCH SEARCH FCB CHAIN 07 03267
004175 006010 A
004176 005735 R
004177 006505 A
004200 004774 R
004201 001010 A 3268 JAZ PRU5 07 03268
004202 004311 R
3269 *****
3270 * U IS ON FCB CHAIN *
3271 *****
004203 056010 A 3272 PRU5 STA ADFCB,B STORE FCB ADDRESS 07 03272
004204 036016 A 3273 LDX ANRB,B E 07 03273
004205 055010 A 3274 STA ADFCB,X E 07 03274
004206 005014 A 3275 TAX ALSO IN V$PORTID 07 03275
3276 TSAB RWFL,IN,ER4 ERROR 4/ OPEN CALL FINDS U ON CHAIN / V2 07 03276
004207 016154 A
004210 006436 A
004211 005467 R
3277 MOVXAB B,SVRECQ SAVE RECORD NO 07 03277
004212 015003 A

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Address	Label	Code	Op/Arg	Description	Flags
004213	056160	A			
		3278	MOVXAB 0,LRSZ	SET LOGICAL RECORD SIZE = FCB(0)	07 03278
004214	015000	A			
004215	056122	A			
004216	056143	A	3279 STA PBSZ,B	ALSO PHYSICAL RECORD SIZE	07 03279
		3280	MOVXAB 1,APBF	SET PHYSICAL BUFFER ADDRESS = FCB(1)	07 03280
004217	015001	A			
004220	056020	A			
004221	056027	A	3281 STA ALBF,B	ALSO LOGICAL BUFFER ADDRESS	07 03281
004222	015014	A	3282 LDA 12,X	GET L	07 03282
004223	150463	A	3283 ANA RHW		07 03283
004224	056167	A	3284 STA UNIT,B	STORE LOGICAL UNIT NUMBER L IN UNIT	07 03284
004225	015014	A	3285 LDA 12,X	GET FLAGS FROM FCB	07 03285
004226	004354	A	3286 LSRA SH	POSITION	V2 07 03286
004227	116154	A	3287 ORA RWFL,B	MERGE INTO READ/WRITE FLAG	07 03287
004230	056154	A	3288 STA RWFL,B		07 03288
004231	006441	A	3289 BT ARST+LF,PRU50	EXIT ON NON-LOGICAL FILE	FG 07 03289
004232	004561	R			
004233	006400	A	3290 BT ASET+RM,PRU1	RMD ?	V2 07 03290
004234	004241	R			
004235	150451	A	3291 ANA BFR	NO. CLEAR FILL FLAG	V2 07 03291
004236	056154	A	3292 STA RWFL,B		V2 07 03292
		3293	POPJ	EXIT	FG 07 03293
004237	001000	A			
004240	004066	R			
		3294	*****		V2 07 03294
		3295	* U IS AN RMD LOGICAL FILE *		V2 07 03295
		3296	*****		V2 07 03296
	004241	R	3297 PRU1 EQU *		V2 07 03297
		3298	MOVXAB 3,LRECND	LOAD LOGICAL RECORD NUMBER	07 03298
004241	015003	A			
004242	056121	A			
004243	016122	A	3299 LDA LRSZ,B	GET LOGICAL RECORD SIZE	07 03299
004244	005024	A	3300 TBX	SAVE BASE POINTER IN X	07 03300
004245	145201	A	3301 SUB BD120,X		V2 07 03301
004246	001002	A	3302 JAP PRU2	IS LOGICAL RECORD SIZE .LT. 120 WORDS ?	07 03302
004247	004256	R			
004250	015201	A	3303 LDA BD120,X	YES	V2 07 03303
004251	004560	A	3304 LLSR 16		07 03304
004252	175122	A	3305 DIV LRSZ,X		07 03305
004253	005102	A	3306 INCR B	SET BUFFER SIZE TO 1 RECORD	07 03306
004254	001000	A	3307 JMP PRU3		07 03307
004255	004265	R			
004256	015122	A	3308 PRU2 LDA LRSZ,X		07 03308
004257	004560	A	3309 LLSR 16		07 03309
004260	175201	A	3310 DIV BD120,X	GET COUNT OF PHYSICAL RECS IN LOG REC	V2 07 03310
004261	001010	A	3311 JAZ PRU4	ANY REMAINDER ?	07 03311
004262	004270	R			
004263	005122	A	3312 IBR	YES. BUMP ALLOCATION	07 03312
004264	005311	A	3313 DAR		07 03313
004265	001010	A	3314 PRU3 JAZ #+3		07 03314
004266	004270	R			
004267	005122	A	3315 IBR	BUMP COUNT IF NOT FACTOR OR MULTIPLE	07 03315
004270	065142	A	3316 PRU4 STB PBRD,X	STORE PHYSICAL RECORD COUNT	07 03316
004271	005001	A	3317 TZA		07 03317
004272	165201	A	3318 MUL BD120,X	GET PHYSICAL BUFFER SIZE	V2 07 03318
004273	065143	A	3319 STB PBSZ,X	STORE	07 03319
004274	015121	A	3320 LDA LRECND,X	GET LOGICAL RECORD NUMBER	07 03320
004275	005311	A	3321 DAR	CONVERT FROM BASE 1 TO BASE 0	07 03321
004276	004560	A	3322 LLSR 16		07 03322
004277	165122	A	3323 MUL LRSZ,X	GET WORD COUNT TO START OF LRECND	07 03323
004300	175201	A	3324 DIV BD120,X	GET PHYSICAL RECORD COUNT TO LRECND	V2 07 03324
004301	005122	A	3325 IBR	CONVERT FROM BASE 0 TO BASE 1	07 03325
004302	065145	A	3326 STB PRECND,X	SAVE PHYSICAL RECORD NUMBER	07 03326
004303	055123	A	3327 STA LGDV,X	STORE OVERFLOW	07 03327
004304	125020	A	3328 ADD APBF,X		07 03328
004305	055027	A	3329 STA ALBF,X	STORE ADDRESS OF LOGICAL BUFFER	07 03329
004306	005042	A	3330 TXB	RESTORE BASE REGISTER B	07 03330
		3331	POPJ	EXIT	FG 07 03331
004307	001000	A			
004310	004066	R			
		3332	*****		07 03332
		3333	* U NOT ON FCB CHAIN - SET L=U *		07 03333
		3334	*****		07 03334
004311	036016	A	3335 PRU5 LDX ANRB,B	POINT X AT V\$FORTIO DATA BLOCK	07 03335
		3336	MOVXAB ASYSDC,ADFCB	USE V\$FORTIO SYSTEM DCB	07 03336
004312	015020	A			
004313	056010	A			
004314	055010	A	3337 STA ADFCB,X		07 03337
004315	005014	A	3338 TAX		07 03338
		3339	MOVXAB 1,APBF	USE V\$FORTIO SYSTEM BUFFER \$BUF	07 03339
004316	015001	A			
004317	056020	A			
004320	056027	A	3340 STA ALBF,B		07 03340
		3341	MOVXAB BD120,0	SET RECORD SIZE TO 120 WORDS	V2 07 03341
004321	016201	A			
004322	055000	A			
004323	056143	A	3342 STA PBSZ,B		07 03342
004324	056122	A	3343 STA LRSZ,B		07 03343
		3344	*****		07 03344
		3345	* TEST VALIDITY OF L *		07 03345
		3346	*****		07 03346
004325	036032	A	3347 LDX SAVE,B	L = SAVE ON OPEN CALL	V2 07 03347

004437	005014	A	3420	TAX		SAVE		V2	07	03420
004440	001004	A	3421	JAN	PRU25	IF SPOOL UNIT		E.1	07	03421
004441	004460	R								
			3422	IFF	NUC			FG	07	03422
			3423	GOTO	NV2NUC			FG	07	03423
			3424	IFT	VII			FG	07	03424
			3425	DME	MAP,V\$ST3	SET EXEC STATE TO NN		V2	07	03425
			3426	NV2NUC	CONT			FG	07	03426
004442	150431	A	3427	ANA	BFS			V2	07	03427
004443	056164	A	3428	STA	TEMP,B	SAVE			07	03428
004444	005041	A	3429	TXA		RESTORE A		V2	07	03429
004445	036010	A	3430	LDX	ADFCB,B	POINT X AT DCB			07	03430
004446	150463	A	3431	ANA	RHW	GET RECORD SIZE			07	03431
004447	055000	A	3432	STA	0,X	STORE IN DCB			07	03432
004450	056143	A	3433	STA	PBSZ,B	ALSO AS PHYSICAL BUFFER SIZE			07	03433
004451	056122	A	3434	STA	LRSZ,B	ALSO LOGICAL BUFFER SIZE			07	03434
004452	016154	A	3435	LDA	RWFL,B			V2	07	03435
004453	150451	A	3436	ANA	BFR			V2	07	03436
004454	116164	A	3437	DRA	TEMP,B	MERGE FILL FLAG		V2	07	03437
004455	056154	A	3438	STA	RWFL,B	INTD READ/WRITE FLAGS			07	03438
			3439	POPJ		EXIT		FG	07	03439
004456	001000	A								
004457	004066	R								
	004460	R								
			3440	PRU25	EDU	*		E.207	07	03440
			3441	IFF	NUC			E.207	07	03441
			3442	GOTO	NV2NUC			E.207	07	03442
			3443	IFT	VII			E.207	07	03443
			3444	DME	MAP,V\$ST3	SET EXEC STATE TO NN		E.207	07	03444
			3445	NV2NUC	CONT			E.207	07	03445
004460	036032	A	3446	LDX	SAVE,B	DST ADDR		E.207	07	03446
004461	015000	A	3447	LDA	0,X	DSUNAM (BITS 12-4)		E.1	07	03447
004462	004352	A	3448	LSRA	10	POSITION MSB		E.1	07	03448
004463	150467	A	3449	ANA	SEVEN			E.1	07	03449
004464	006120	A	3450	ADDI	180	SET TO LUN 18N		E.1	07	03450
004465	000264	A								
004466	005014	A	3451	TAX				E.1	07	03451
004467	001000	A	3452	JMP	PRU6			E.1	07	03452
004470	004332	R								
			3453	*****					07	03453
			3454	* RMD FILE *					07	03454
			3455	*****					07	03455
004471	010301	A	3456	PRU30	LDA	V\$CPL	GET PRIORITY LEVEL		07	03456
004472	140422	A	3457	SUB	TWO				07	03457
004473	001002	A	3458	JAP	ERA	ERROR 4/ FOREGROUND RMD FILE NOT OPEN /			07	03458
004474	005467	R								
			3459	*****					07	03459
			3460	* BACKGROUND PROGRAM - CHECK GLOBAL FCB'S *					07	03460
			3461	*****					07	03461
004475	016167	A	3462	LDA	UNIT,B	GET L			07	03462
004476	006110	A	3463	DRAI	01400	MERGE IOLINK SKELETON CONTROL WORD		V2	07	03463
004477	001400	A								
004500	056105	A	3464	STA	IOLNK,B	IOLINK CONTROL WORD FOR L GLOBAL FCB			07	03464
004501	016167	A	3465	LDA	UNIT,B	GET L			07	03465
004502	140422	A	3466	SUB	TWO				07	03466
004503	001004	A	3467	JAN	PRU35	IGNORE L=1			07	03467
004504	004520	R								
004505	140470	A	3468	SUB	NINE				07	03468
004506	001002	A	3469	JAP	PRU35	NO GLOBAL FCB.GT.10			07	03469
004507	004520	R								
			3470	IFF	NUC			FG	07	03470
			3471	GOTO	NV2NUC			FG	07	03471
			3472	IFT	VII			FG	07	03472
			3473	DME	MAP,V\$ST0	SET EXEC STATE TO GO		V2	07	03473
			3474	NV2NUC	CONT				07	03474
004510	124063	A	3475	ADD	PRUGT	ADD TABLE ADDRESS			07	03475
004511	005014	A	3476	TAX		POINT X AT GLOBAL FCB TABLE			07	03476
004512	035000	A	3477	LUX	0,X	POINT X AT GLOBAL FCB			07	03477
			3478	IFF	NUC			FG	07	03478
			3479	GOTO	NV2NUC			FG	07	03479
			3480	IFT	VII			FG	07	03480
			3481	DME	MAP,V\$ST3	SET EXEC STATE TO NN			07	03481
			3482	NV2NUC	CONT			FG	07	03482
004513	001040	A	3483	JXZ	PRU35	'SD' HAS NO GLOBAL FCB			07	03483
004514	004520	R								
004515	015005	A	3484	LDA	5,X	TEST GLOBAL FCB ENABLED			07	03484
004516	001016	A	3485	JANZ	PRU40				07	03485
004517	004545	R								
			3486	*****					07	03486
			3487	* NO GLOBAL FCB - TEST U=SI *					07	03487
			3488	*****					07	03488
004520	030400	A	3489	PRU35	LDX	V\$LUT1	GET SI ASSIGNMENT		07	03489
004521	015002	A	3490	LDA	2,X				07	03490
004522	146037	A	3491	SUB	SAVE+5,B	COMPARE WITH L ASSIGNMENT		V2	07	03491
004523	150463	A	3492	ANA	RHW				07	03492
004524	001015	A	3493	JANZ	ERA	ERROR 4/ RMD FILE NOT OPEN /			07	03493
004525	005467	R								
004526	010422	A	3494	LDA	TWO	L = SI			07	03494
004527	006110	A	3495	DRAI	01400	MERGE IOLINK SKELETON CONTROL WORD		V2	07	03495
004530	001400	A								
004531	056105	A	3496	STA	IOLNK,B	IOLINK CONTROL WORD FOR SIFCB			07	03496
004532	006010	A	3497	LDAI	40			V2	07	03497
004533	000050	A								
004534	056143	A	3498	STA	PBSZ,B	ALSO PHYSICAL BUFFER SIZE			07	03498

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004535 056122 A 3499 STA LRSZ,B ALSO LOGICAL BUFFER SIZE 07 03499
004536 036010 A 3500 LDX ADFCB,B POINT X AT V$FORTIO DATA BLOCK 07 03500
004537 055000 A 3501 STA 0,X SET RECORD SIZE DCB(CO) = 40 WORDS 07 03501
004540 006030 A 3502 LDXI SIFCB POINT X AS SI GLOBAL FCB V2 07 03502
004541 000000 E
004542 015005 A 3503 LDA 5,X 07 03503
004543 001010 A 3504 JAZ ER4 ERROR 4/ RMD NOT OPEN / 07 03504
004544 005467 R
004545 005041 A 3505 PRU40 TXA GET FCB ADDRESS IN A 07 03505
004546 056010 A 3506 STA STURE 07 03506
004547 036016 A 3507 LDX ANRE,B POINT X AT V$FORTIO 07 03507
004550 055010 A 3508 STA ADFCB,X STORE IN V$FORTIO 07 03508
004551 016105 A 3509 NOVBAZ IOLNK,IOLNK MOVE IOLINK CONTROL WORD TO V$FORTIO 07 03509
004552 055105 A
004553 016154 A 3510 LDA RWFL,B 07 03510
004554 110430 A 3511 ORA GFS SET GLOBAL FCB FLAG V2 07 03511
004555 056154 A 3512 STA RWFL,B V2 07 03512
004556 010420 A 3513 LDA CXC V2 07 03513
004557 006505 A 3514 JSR PSJ,X PUSH IOLINK DP V2 07 03514
004560 004774 R
004561 001000 A 3515 PRU50 POPJ EXIT FG 07 03515
004562 004066 R
3516 *****
3517 * GLOBAL FCB POINTERS *
3518 *****
004563 004541 E 3519 PRUASI PZE SIFCB SIC(2) GLOBAL FCB 07 03519
004564 000000 A 3520 DATA 0 SDX(3) NO GLOBAL FCB 07 03520
004565 000000 E 3521 PZE PIFCB PIK(4) GLOBAL FCB 07 03521
004566 000000 E 3522 PZE LOFCB LOK(5) GLOBAL FCB 07 03522
004567 000000 E 3523 PZE BIFCB BIK(6) GLOBAL FCB 07 03523
004570 000000 E 3524 PZE BOFCB BOK(7) GLOBAL FCB 07 03524
004571 000000 E 3525 PZE SSFCB SS(8) GLOBAL FCB 07 03525
004572 000000 E 3526 PZE GOFCB GOK(9) GLOBAL FCB 07 03526
004573 000000 E 3527 PZE POFCB POK(10) GLOBAL FCB 07 03527
004574 004574 R 3528 PRUGT PZE * 07 03528
3529 *****
3530 * DEVICE TABLE *
3531 *****
004575 004575 R 3532 PRUDTB PZE * 07 03532
004576 141720 A 3533 DATA 'CP' 1ST 2 CHARS OF DEVICE NAME 07 03533
004577 000002 A 3534 DATA 2 'CR' V2 07 03534
004600 000002 A 3535 DATA 2 'CT' V2 07 03535
004601 004374 A 3536 DATA 04374 'LP' V2 07 03536
004602 003400 A 3537 DATA 03400 :SP: E.1 07 03537
004603 000411 A 3538 DATA 0411 :TY: E.1 07 03538
004604 077777 A 3539 PRUDE DATA 077777 TABLE END MARKER V2 07 03539
004605 004604 R 3540 PRUDE FOU *-1 07 03540
004606 000050 A 3541 DATA 40 CONSOLE FLAG/BUFFER SIZE 07 03541
004607 000050 A 3542 DATA 40 07 03542
004608 000450 A 3543 DATA 40+BFA V2 07 03543
004610 000102 A 3544 DATA 06 07 03544
004611 177777 A 3545 DATA -1 SPOOL UNIT INDICATOR E.1 07 03545
004612 000450 A 3546 DATA 40+BFA V2 07 03546
004613 000074 A 3547 DATA 00 07 03547
3548 SUCC 07 03548
3549 *****
3550 *
3551 * PROCESS READ/WRITE (PRW) *
3552 *
3553 * FUNCTION: TO PROCESS THE FORTRAN STATEMENTS: *
3554 *
3555 * READ(U) *
3556 * READ(U,F) *
3557 * WRITE(U) *
3558 * WRITE(U,F) *
3559 *
3560 *
3561 * ENTRY: DIRECT FROM RBE *
3562 * RETURN = ADDRESS OF PARAMETER LIST *
3563 * RETURN(CO) = 0 IF UNFORMATTED *
3564 * UNIT = FORTRAN UNIT NUMBER U *
3565 * TEMP = DP = CRD READ V2 07 03565
3566 * CHR WRITE V2 07 03566
3567 *
3568 * EXIT : READ : 1ST RECORD READ *
3569 * WRITE: BUFFER CLEARED *
3570 * FRMT = ADDRESS OF FORMAT STRING *
3571 * 0 IF UNFORMATTED *
3572 * XFFL = 1 PARAMETER XFER ENABLED *
3573 * ITEMWC = 0 = COUNT OF WORDS REMAINING IN LIST ITEM *
3574 * UNFORMATTED: DIRECT TO UID *
3575 * FORMATTED : DIRECT TO FRS TO START FORMAT SCAN *
3576 * IDCONT = IDC CONTROL WORD *
3577 *
3578 *****
004614 016164 A 3580 PRW LDA TEMP,B GET DP 07 03580
004615 140471 A 3581 SUB CRD V2 07 03581
004616 004250 A 3582 LRLA 0 POSITION READ/WRITE FLAG 07 03582
004617 056104 A 3583 STA IDCONT,B FOR IDC CALL CONTROL WORD 07 03583
004620 001010 A 3584 JAZ #+3 V2 07 03584
004621 004623 R

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Address	Label	Op	Op2	Op3	Comment	Mode	Page	Page
004622	010432	A	3585	LDA	WRS			
004623	110431	A	3586	DRA	BFS			
004624	056154	A	3587	STA	RWFL,B			
004625	036151	A	3588	LDX	RETURN,B			
004626	015003	A	3589	LDA	3,X			
004627	140422	A	3590	SUB	TWO			
004630	001016	A	3591	JANZ	PRW0			
004631	004636	R						
004632	056152	A	3592	STA	RETURN+1,B			
004633	056153	A	3593	STA	RETURN+2,B			
004634	001000	A	3594	JMP	PRW1			
004635	004642	R						
004636	015007	A	3595	LDA	7,X			
004637	056152	A	3596	STA	RETURN+1,B			
004640	015010	A	3597	LDA	8,X			
004641	056153	A	3598	STA	RETURN+2,B			
	004642	R	3599	EQV	*			
			3600	MOVXAB	5,FRMT			
004642	015005	A						
004643	056063	A						
			3601	PUSHJ	PRU			
004644	006010	A						
004645	004162	R						
004646	006505	A						
004647	004774	R						
			3602	TZAB	FRMT,PRW2			
004650	016063	A						
004651	001010	A						
004652	004654	R						
004653	010435	A	3603	LDA	BS12			
004654	036016	A	3604	LDX	ANRB,B			
004655	116167	A	3605	DRA	UNIT,B			
004656	116104	A	3606	DRA	IDCONT,B			
004657	055104	A	3607	STA	IDCONT,X			
			3608	MOVBA	RWFL,RWFL			
004660	016154	A						
004661	055154	A						
004662	016152	A	3609	LDA	RETURN+1,B			
004663	055152	A	3610	STA	RETURN+1,X			
004664	016153	A	3611	LDA	RETURN+2,B			
004665	055153	A	3612	STA	RETURN+2,X			
			3613	IFF	NUC			
			3614	GOTO	NUC1			
			3615	IFT	VII			
			3616	GOTO	VIII			
			3617	TZAB	ALOC,PRW4			
			3618	LDA	APBF,B			
			3619	JSR	TBK,X			
			3620	ADD	PBSZ,B			
			3621	DAR				
			3622	JSR	TBK,X			
			3623	CONT	VIII			
			3624	NUC1	CONT			
			3625	PRW4	ZAB			
004666	005001	A						
004667	056026	A						
			3626	TRAB	RWFL,LF,PRW6			
004670	016154	A						
004671	006441	A						
004672	004676	R						
004673	036010	A	3627	LDX	ADFCB,B			
			3628	MOVBA	PBSZ,0			
004674	016143	A						
004675	055000	A						
			3629	PRW6	PUSHJ	RFL		
004676	006010	A						
004677	005507	R						
004700	006505	A						
004701	004774	R						
			3630	TRAB	RWFL,WR,PRW10			
004702	016154	A						
004703	006451	A						
004704	004712	R						
			3631	PUSHJ	CLB			
004705	006010	A						
004706	000134	R						
004707	006505	A						
004710	004774	R						
004711	001006	A	3632	DATA	01006			
004712	046121	A	3633	PRW10	INR	LDRECNO,B		
			3634		MOVBA	LRSZ,LRWC		
004713	016122	A						
004714	056123	A						
004715	046172	A	3635	INR	XFFL,B			
			3636	TZAB	FRMT,UID			
004716	016063	A						
004717	001010	A						
004720	006231	R						
004721	001000	A	3637	JMP	FRS			
004722	000431	R						
			3638	EJEC				
			3639					
			3640	*				


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005011 010423 A 3724 LDA CRB 07 03724
          3725 PUSHF PUSH RETURN TO V$RERR 07 03725
005012 036016 A
005013 035000 A
005014 005344 A
005015 055000 A
005016 005041 A
005017 036016 A
005020 055000 A
005021 016164 A 3726 LDA TEMP,B RESTORE CALLED OP 07 03726
          3727 PUSHF PUSH V$FORTIO OP 07 03727
005022 036016 A
005023 035000 A
005024 005344 A
005025 055000 A
005026 005041 A
005027 036016 A
005030 055000 A
005031 001000 A 3728 JMP CAN EXIT TO V$FORTIO 07 03728
005032 000101 R
          3729 EJEJ 07 03729
          3730 ***** 07 03730
          3731 * 07 03731
          3732 * P A R A M E T E R T R A N S F E R ( P X F ) * 07 03732
          3733 * 07 03733
          3734 * F U N C T I O N : T O P R O C E S S E N T R I E S T O X F E R D A T A T O / F R O M A N I / O L I S T * 07 03734
          3735 * 07 03735
          3736 * E N T R Y : I T M O D E = 0 1 - W O R D I N T E G E R / L O G I C A L * 07 03736
          3737 * = 1 2 - W O R D I N T E G E R / L O G I C A L * 07 03737
          3738 * = 2 R E A L * 07 03738
          3739 * = 3 D O U B L E P R E C I S I O N * 07 03739
          3740 * = 4 C O M P L E X * 07 03740
          3741 * = 5 D O U B L E P R E C I S I O N I N T E G E R * 07 03741
          3742 * 07 03742
          3743 * E X I T : I I W S Z = I N D I V I D U A L I T E M W O R D S I Z E * 07 03743
          3744 * = 1 F O R 1 - W O R D I N T E G E R / L O G I C A L S * 07 03744
          3745 * = 2 F O R 2 - W O R D I N T E G E R / L O G I C A L S * 07 03745
          3746 * = 2 F O R R E A L S * 07 03746
          3747 * = 4 F O R D O U B L E P R E C I S I O N S * 07 03747
          3748 * = 2 F O R C O M P L E X E S * 07 03748
          3749 * = 2 F O R D O U B L E P R E C I S I O N I N T E G E R * 07 03749
          3751 * I I B S Z = 2 * I I W S Z = I N D I V I D U A L I T E M B Y T E S I Z E * 07 03751
          3752 * I T M I N C = I N D I V I D U A L I T E M A L L O C A T I O N I N W O R D S * 07 03752
          3753 * = I I W S Z F O R A L L I T E M S E X C E P T 2 - W O R D I N T E G E R / L O G I C A L S * 07 03753
          3754 * = 2 F O R 2 - W O R D I N T E G E R / L O G I C A L S * 07 03754
          3755 * I T E M A D = A D D R E S S O F L I S T I T E M * 07 03755
          3756 * I T E M W C = T O T A L W O R D C O U N T A L L O C A T E D T O L I S T I T E M * 07 03756
          3757 * 07 03757
          3758 * E R R O R S : E R 2 I F I L L E G A L C A L L T O $ I 1 , $ I 2 , . . . V 2 * 07 03758
          3759 * 07 03759
          3760 ***** 07 03760
005033 016172 A 3762 PXF LFA XFFL,B 07 03762
005034 001010 R 3763 JAZ ER2 ERROR 2/ ILLEGAL CALL TO $IX / 07 03763
005035 005471 R
005036 036016 A 3764 LDX AMRB,B POINT X AT V$FORTIO 07 03764
005037 015116 A 3765 LDA ITMODE,X 07 03765
005040 056116 A 3766 STA ITMODE,B MOVE MODE FROM V$FORTIO TO V$RERR 07 03766
005041 016063 A 3767 LDA FRMT,B 07 03767
005042 005004 A 3768 TZX SET ITEM WORD SIZE TO 1 07 03768
005043 001010 R 3769 JAZ PXF5 ITEM WORD SIZE = 1 FOR UNFORMATTED 07 03769
005044 005046 R
005045 036110 A 3770 LDX ITMODE,B 07 03770
          005046 R 3771 PXF5 EQU * V2 07 03771
          3772 IFF NUC FG 07 03772
          3773 GOTO NV2NUC FG 07 03773
          3774 IFT VII FG 07 03774
          3775 DME MAP,V$ST0 SET EXEC STATE TO 00 V2 07 03775
          3776 NV2NUC CONT FG 07 03776
          3777 LDAE PXFSZT,X GET ITEM WLRD SIZE FROM TABLE V2 07 03777
005046 006015 A 3778 IFF NUC FG 07 03778
005047 005105 P 3779 GOTO NV2NUC FG 07 03779
          3780 IFT VII FG 07 03780
          3781 DME MAP,V$ST3 SET EXEC STATE TO NN V2 07 03781
          3782 NV2NUC CONT FG 07 03782
005050 056102 A 3783 STA IIWSZ,B STORE 07 03783
005051 056110 A 3784 STA ITMINC,B ALSO ITEM INCREMENT 07 03784
005052 004241 A 3785 LRLA I GET ITEM BYTE SIZE 07 03785
005053 056101 A 3786 STA IIBSZ,B STORE IN TABLE 07 03786
005054 005344 A 3787 DXR 07 03787
005055 001046 A 3788 JXNZ *+3 2-WORD INTEGER/LOGICAL ? V2 07 03788
005056 005060 R
005057 046115 A 3789 INR ITMINC,B YES. SET INCREMENT TO 2 07 03789
005060 016063 A 3790 LDA FRMT,B V2 07 03790
005061 001010 A 3791 JAZ PXF10 ALL MODES OK FOR UNFORMATTED V2 07 03791
005062 005076 R
005063 016061 A 3792 LDA FDLKEY,B 07 03792
005064 140423 A 3793 SUB FOUR 07 03793
005065 001016 A 3794 JANZ PXF10 I FORMAT DESCRIPTOR ? 07 03794
005066 005076 R
005067 016116 A 3795 LDA ITMODE,B YES 07 03795
005070 140422 A 3796 SUB TWO 07 03796
005071 001004 A 3797 JAN PXF10 INTEGER ITEM 07 03797

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005072 005076 R
005073 140464 A 3798 SUB THREE 07 03798
005074 001016 A 3799 JANZ ER2 ERR 2/NDN-INTEGGER ITEM/ 07 03799
005075 005471 R
005076 036151 A 3800 PXF10 LDX RETURN,B POINT X AT CALL SEQUENCE 07 03800
3801 MOVXAB 4,ITEMWC SAVE LIST ITEM WORD COUNT 07 03801
005077 015004 A
005100 056114 A 3802 MOVXAB 5,ITEMAD SAVE LIST ITEM ADDRESS 07 03802
005101 015005 A
005102 056113 A 3803 IFF NUC FG 07 03803
3804 GOTO NUC1 FG 07 03804
3805 IFT VII FG 07 03805
3806 GOTO VIII FG 07 03806
3807 IZAB ALDC,PXF20 EXIT IF NDT VORTEX BKGND CALLING NUC FG 07 03807
3808 LDA ITEMAD,B 07 03808
3809 JSR TBK,X TEST START OF ITEM ADDRESS 07 03809
3810 ADD ITEMWC,B 07 03810
3811 DAR 07 03811
3812 JSR TBK,X TEST END OF ITEM ADDRESS 07 03812
3813 VIII CONT FG 07 03813
3814 NUC1 CONT FG 07 03814
3815 PXF20 POPJ EXIT FG 07 03815
005103 001000 A
005104 004066 R 3816 ***** 07 03816
3817 * TABLE OF ITEM SIZES IN WORDS * 07 03817
3818 ***** 07 03818
005105 000001 A 3819 PXFSZT DATA 1 1-WORD INTEGER/LOGICAL 07 03819
005106 000001 A 3820 DATA 1 2-WORD INTEGER/LOGICAL 07 03820
005107 000002 A 3821 DATA 2 REAL 07 03821
005110 000004 A 3822 DATA 4 DOUBLE PRECISION 07 03822
005111 000002 A 3823 DATA 2 COMPLEX 07 03823
005112 000002 A 3824 DATA 2 DOUBLE PRECISION INTEGER 07 03824
3825 EJEC 07 03825
3826 ***** 07 03826
3827 * 07 03827
3828 * REENTRANT BLOCK ENTRY (RBE) * 07 03828
3829 * 07 03829
3830 * FUNCTION: TO PROVIDE AN ENTRY INTO MODULE VSRERR V2* 07 03830
3831 * 07 03831
3832 * ENTRY: B = V$FORTIO DATA BLOCK ADDRESS V2* 07 03832
3833 * INFL .NE. 0, ON INITIAL ENTRY V2* 07 03833
3834 * .EQ. 0 ON CONTINUATION ENTRY V2* 07 03834
3835 * TO LABEL VSRERR VIA ALDC IF: V2* 07 03835
3836 * V2* 07 03836
3837 * VORTEX: BACKGROUND CALLING NUCLEUS VSRERR V2* 07 03837
3838 * VORTEX II: ANYBODY CALLING NUCLEUS VSRERR V2* 07 03838
3839 * V2* 07 03839
3840 * TO LABEL VSRERR1 VIA DIRECT JUMP OTHERWISE V2* 07 03840
3841 * 07 03841
3842 * EXIT : TO POPJ IF TOP OF IS .GE. 0Y00(ADDRESS OPERAND) V2* 07 03842
3843 * TO OP PROCESSOR OTHERWISE V2* 07 03843
3844 * ALDC = 1 IF ENTRY THRU VSRERR V2* 07 03844
3845 * 0 IF ENTRY THRU VSRERR1 V2* 07 03845
3846 * INFL = 0 V2* 07 03846
3847 * 07 03847
3848 * ERRORS: ER4 IF ILLEGAL OP CODE * 07 03848
3849 * 07 03849
3850 ***** 07 03850
3851 ***** 07 03851
3852 ***** 07 03852
3853 * REENTRANT MODULE CALLED BY ALDC * 07 03853
3854 ***** 07 03854
005113 R 3855 VSRERR EQU * ALDC ENTRY V2 07 03855
3856 IFF NUC FG 07 03856
3857 GOTO NUC1 FG 07 03857
3858 DATA 0 V2 07 03858
3859 IFF VII FG 07 03859
3860 GOTO VIII FG 07 03860
3861 EXC2 0500+MAP V2 07 03861
3862 ONE MAP,V$ST3 SET EXEC STATE TO ON V2 07 03862
3863 LDA INFL,B V2 07 03863
3864 JANZ RBE1 V2 07 03864
3865 ***** 07 03865
3866 * VORTEX II CONTINUATION * V2 07 03866
3867 ***** 07 03867
3868 ***** 07 03868
3869 LDA V$CPL V2 07 03869
3870 JANZ RBE4 TEST IF BACKGROUND V2 07 03870
3871 ***** 07 03871
3872 * RESTORE STACK ADDRESSES FROM VSRERR TO V$FORTIO * V2 07 03872
3873 ***** 07 03873
3874 LDA ANRB,B V2 07 03874
3875 ONE MAP,V$ST1 SET EXEC STATE TO ON V2 07 03875
3876 ADDI 0YTK+STKSZ-1 FG 07 03876
3877 LDXI BASE POINT X AT VSRERR STACK BASE V2 07 03877
3878 SPB POPSTP,X FG 07 03878
3879 TAB POINT B AT V$FORTIO STACK V2 07 03879
3880 LDA POPSTP,X GET COUNT FG 07 03880
3881 JAN RBEX EXIT IF NO MOVE V2 07 03881
3882 CPA FG 07 03882
3883 INCR A(4 SET X = -(COUNT-1) FG 07 03883
3884 RBEL1 LAE BASE+STKSZ-1,X FG 07 03884

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3885 STA 0,B
3886 JXZ RBEX EXIT WHEN DONE
3887 IBR BUMP POINTERS
3888 IXR
3889 JMP RBEL1
3890 RBEX LDX VSCR5
3891 LDB 0,X RESTORE B
3892 DME ANR,B,X SET EXEC STATE TO NN
3893 V111 CDNT
3894 *****
3895 * INITIALIZE *
3896 *****
3897 RBE1 EQU *
3898 IFT VII
3899 ZAB INFL CLEAR INITIAL ENTRY FLAG
3900 IFT VII
3901 GOTO V111
3902 LDXI BASE POINT X AT VSRERR DATA BLOCK
3903 STB ANR,B,X SAVE ADDRESS OF NON-REENTRANT BLOCK
3904 ZAX ERN CLEAR ERROR COUNTER
3905 *****
3906 * TEST VSFORTIO STACK EMPTY *
3907 *****
3908 LDA UPSTKP,B
3909 SUB ADPSTK,B
3910 JANZ RBE5
3911 *****
3912 * VSFORTIO STACK EMPTY - RESUME EXECUTION FROM VSRERR STACK *
3913 *****
3914 LDA UPSTKP,X
3915 SUB ADPSTK,X
3916 JAZ RBE90 ERROR/ VSRERR STACK EMPTY /
3917 TXB LOAD BASE REGISTER B
3918 POPJ RESUME EXECUTION FROM VSRERR STACK
3919 *****
3920 * VSFORTIO STACK HAS OP - TEST VALIDITY *
3921 *****
3922 RBE5 LDX OPSTKP,B
3923 LDA 0,X GET OP
3924 SUBI 13
3925 JAN RBE90 ERROR/ ILLEGAL OP /
3926 SUBI 11
3927 JAP RBE90 ERROR/ ILLEGAL OP /
3928 ADD D16 RESTORE OP
3929 LDX RBEB POINT X AT VSRERR DATA BLOCK
3930 STA TEMP,X SAVE OP
3931 SUB CXP
3932 JAZ RBE10 PARAMETER XFER ?
3933 LDA ADPSTK,X NO. INITIALIZE VSRERR STACK
3934 DATA D1006 SKIP
3935 RBE10 LDA OPSTKP,X
3936 DAR PUSH VSRERR STACK
3937 STA UPSTKP,X
3938 TAX
3939 LDB RBEB POINT B AT VSRERR DATA BLOCK
3940 LDA TEMP,B RELOAD OP
3941 STA 0,X PUSH OP ONTO VSRERR STACK
3942 LDB ANR,B,B POINT B AT VSFORTIO DATA BLOCK
3943 LDX RBEB POINT X AT VSRERR DATA BLOCK
3944 SPAC
3945 *****
3946 * MOVE ADDRESSES FROM NON-REENTRANT MODULE TO REENTRANT *
3947 *****
3948 SPAC
3949 LDA RETURN,B
3950 STA RETURN,X MOVE CALL SEQ ADDRESS
3951 JSR TBK,X TEST RETURN ADDRESS IN BACKGROUND
3952 ADD TEN
3953 JSR TBK,X TEST PARAMETER LIST IN BACKGROUND
3954 TBA
3955 JSR TBK,X TEST 1ST WORD OF DATA BLOCK IN BACKGRND
3956 ADDI YYY-1
3957 JSR TBK,X TEST LAST WORD OF DATA BLOCK IN BACKGRND
3958 LDX RBEL
3959 LDA ANPOJ,B
3960 STA ANPOJ,X MOVE NON-REENTRANT POP/JUMP ADDRESS
3961 JSR TBK,X TEST NON-REENTRANT POP/JUMP IN BACKGROUND
3962 LDX RBEB POINT X AT REENTRANT BLOCK
3963 LDA OPSTKP,B
3964 SUB ANR,B,X
3965 SUBI VOPSTK-BASE COMPARE WITH BOTTOM OF STACK
3966 JAN RBE90 ERROR/ PROTECTION /
3967 SUBI STKSZ
3968 JAP RBE90 ERROR/ PROTECTION /
3969 IHR OPSTKP,B POP VSFORTIO STACK
3970 LDB RBEB POINT B AT VSRERR DATA BLOCK
3971 LDA TEMP,B RELOAD OP
3972 SUB CXP
3973 JANZ RBE4 IS OP PARAMETER XFER ?
3974 LDA XFER,B YES. GET XFER ENABLE FLAG
3975 JAZ RBE90 EXIT IF ILLEGAL OP
3976 V111 CDNT
3977 RBE4 EQU *

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V2 07 03885
V2 07 03886
FG 07 03887
FG 07 03888
V2 07 03889
V2 07 03890
V2 07 03891
V2 07 03892
FG 07 03893
FG 07 03894
V2 07 03895
V2 07 03896
V2 07 03897
FG 07 03898
V2* 07 03899
FG 07 03900
FG 07 03901
V2 07 03902
07 03903
07 03904
07 03905
07 03906
07 03907
07 03908
07 03909
07 03910
07 03911
07 03912
07 03913
07 03914
07 03915
07 03916
07 03917
FG 07 03918
07 03919
07 03920
07 03921
07 03922
PD 07 03923
07 03924
V2 07 03925
07 03926
07 03927
07 03928
07 03929
07 03930
V2 07 03931
07 03932
07 03933
07 03934
07 03935
FG 07 03936
07 03937
07 03938
07 03939
07 03940
07 03941
07 03942
07 03943
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07 03946
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07 03948
07 03949
07 03950
07 03951
07 03952
07 03953
07 03954
07 03955
V2 07 03956
07 03957
07 03958
07 03959
07 03960
07 03961
07 03962
07 03963
07 03964
V2 07 03965
07 03966
V2 07 03967
07 03968
FG 07 03969
07 03970
07 03971
V2 07 03972
V2 07 03973
07 03974
07 03975
FG 07 03976
V2 07 03977

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Address	Label	Operation	Comments	Flags	Value
3978	IFF	VORTEX-2		V2	07 03978
3979	DME	MAP,VSST3	SET EXEC STATE TO NN	V2	07 03979
3980	INCR	1	SET ALOC ENTRY FLAG	V2	07 03980
3981	DATA	01006		V2	07 03981
3982	NUC1	CONT		FG	07 03982
3983	*****	*****	*****		07 03983
3984			* REentrant MODULE CALLED BY DIRECT JUMP *		07 03984
3985			*****		07 03985
005113	005113	R	VSRER1 EQU *		07 03986
005114	005001	A	TZA		07 03987
005114	056014	A	STA ALOC,B	V2	07 03988
3989	*****	*****	*****		07 03989
3990			* TEST OP *		07 03990
3991	*****	*****	*****		07 03991
005115	036000	A	LDX UPSTKP,B	V2	07 03992
005116	015000	A	LDA 0,X		07 03993
005117	056164	A	STA TEMP,B		07 03994
005120	004346	A	LSRA 6		07 03995
005121	001010	A	JAZ RBE15	FG	07 03996
005122	005125	R			
3997			POPJ	FG	07 03997
005123	001000	A			
005124	004066	A			
005125	015000	A	RBE15 LDA 0,X	FG	07 03998
005126	005144	A	IXR	FG	07 03999
005127	076000	A	STX DPSTKP,B		07 04000
005130	140465	A	SUB CTR	V2	07 04001
005131	001004	A	JAM ER4		07 04002
005132	005467	R			
005133	001010	A	JAZ RBE25		07 04003
005134	005150	R			
005135	005311	A	BAR	V2	07 04004
005136	001010	A	JAZ RBE30		07 04005
005137	005152	R			
005140	006140	A	SUBI RBEJTE-RBEJT-1	V2	07 04006
005141	000016	A			
005142	001002	A	JAP ER4		07 04007
005143	005467	R			
005144	036151	A	LDX RETURN,B		07 04008
005145	035004	A	LDX 0,X		07 04009
005146	015000	A	LDA 0,X		07 04010
005147	056167	A	STA UNIT,B		07 04011
005150	005001	A	RBE25 TZA		07 04012
005151	056172	A	STA XFFL,B		07 04013
005152	036164	A	RBE30 LDX TEMP,B	V2	07 04014
4015			IFF NUC	FG	07 04015
4016			GOTO NV2NUC	FG	07 04016
4017			IFT VII	FG	07 04017
4018			DME MAP,VSST0	V2	07 04018
4019			NV2NUC CONT	FG	07 04019
005153	006035	A	4020 LANE RBEJT-CTRV,X	V2	07 04020
005154	005152	R			
4021			IFF NUC	FG	07 04021
4022			GOTO NV2NUC	FG	07 04022
4023			IFT VII	FG	07 04023
4024			DME MAP,VSST3	V2	07 04024
4025			NV2NUC CONT	FG	07 04025
005155	006705	A	4026 IJMP 0,X	FG	07 04026
005156	000000	A			
4027			*****		07 04027
4028			* PROTECTION ERROR *		07 04028
4029			*****		07 04029
4030			IFF NUC	FG	07 04030
4031			GOTO NUC1	FG	07 04031
4032			IFT VII	FG	07 04032
4033			GOTO VII1	FG	07 04033
4034			RBE90 TZA		07 04034
4035			JMP TBK		07 04035
4036			VII1 CONT	FG	07 04036
4037			NUC1 CONT	FG	07 04037
4038			*****		07 04038
4039			* EXIT JUMP TABLE *		07 04039
4040			*****		07 04040
005157	006137	R	4041 RBEJT PZE TRM		07 04041
005160	005033	R	4042 PZE PNF	V2	07 04042
005161	003334	R	4043 PZE PAX		07 04043
005162	003334	R	4044 PZE PAX		07 04044
005163	003334	R	4045 PZE PAX		07 04045
005164	004614	R	4046 PZE PRW		07 04046
005165	004614	R	4047 PZE PRW		07 04047
005166	000171	R	4048 PZE CLS		07 04048
005167	000171	R	4049 PZE CLR		07 04049
005170	003150	R	4050 PZE OPN		07 04050
005171	003150	R	4051 PZE OPN		07 04051
005172	004073	R	4052 PZE PRD		07 04052
005173	004073	R	4053 PZE PRD		07 04053
005174	004723	R	4054 PZE PRX		07 04054
005175	004723	R	4055 PZE PRX		07 04055
005176	005176	R	4056 RBEJTE EQU *	V2	07 04056
4057			IFT VII	FG	07 04057
4058			GOTO VII1	FG	07 04058
4059			IFF NUC	FG	07 04059
4060			GOTO NUC1	FG	07 04060

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4061 RBEB DATA BASE V2 07 04061
4062 NUC1 CONT FG 07 04062
4063 VIII1 CONT FG 07 04063
4064 EJEC 07 04064
4065 ***** 07 04065
4066 * 07 04066
4067 * REPEAT CHARACTER I/O (RCH) * 07 04067
4068 * 07 04068
4069 * FUNCTION: TO REPEAT A CHARACTER I/O OPERATION N TIMES * 07 04069
4070 * 07 04070
4071 * ENTRY: COUNT = N * 07 04071
4072 * BCHAR = CHARACTER TO BE OUTPUT * 07 04072
4073 * 07 04073
4074 * EXIT : NO SPECIAL CONDITIONS * 07 04074
4075 * 07 04075
4076 ***** 07 04076
005176 016052 A 4078 RCH LDA COUNT,B 07 04078
005177 005311 A 4079 DAR DECREMENT COUNT 07 04079
005200 001002 A 4080 JAP RCH2 FG 07 04080
005201 005204 R 4081 POPJ EXIT IF COUNT .LE. 0 FG 07 04081
005202 001000 A 4082 RCH2 STA COUNT,B FG 07 04082
005203 004066 R 4083 LDA ASCB,B 07 04083
005204 056052 A 4084 SUB ABSCB,B 07 04084
005205 016021 A 4085 ROP 07 04085
005206 146002 A 4086 XAZ SDF SET DVFL IF BUFFER SCB V2 07 04086
005207 007400 A 4087 TSAB RWFL,WR,RCH10 V2 07 04087
005210 003010 A
005211 001746 R
005212 016154 A
005213 006411 A
005214 005233 R
4088 ***** 07 04088
4089 * INPUT * 07 04089
4090 ***** 07 04090
005215 001001 A 4091 JOP RCH5 V2 07 04091
005216 005225 R
4092 ***** 07 04092
4093 * INPUTTING FROM NON-BUFFER * 07 04093
4094 ***** 07 04094
4095 PUSHJ ICC INPUT CHARACTER V2 07 04095
005217 006010 A
005220 001743 R
005221 006505 A
005222 004774 R
005223 001000 A 4096 JMP RCH LOOP TILL DONE 07 04096
005224 005176 R
4097 ***** 07 04097
4098 * INPUTTING FROM BUFFER * 07 04098
4099 ***** 07 04099
4100 RCH5 PUSHJ CBC INPUT CHARACTER FROM BUFFER V2 07 04100
005225 006010 A
005226 000104 R
005227 006505 A
005230 004774 R
005231 001000 A 4101 JMP RCH LOOP TILL DONE 07 04101
005232 005176 R
4102 ***** 07 04102
4103 * OUTPUT * 07 04103
4104 ***** 07 04104
005233 001001 A 4105 RCH10 JOP RCH15 V2 07 04105
005234 005243 R
4106 ***** 07 04106
4107 * OUTPUT TO NON-BUFFER * 07 04107
4108 ***** 07 04108
4109 PUSHJ RCH PUT CHARACTER V2 07 04109
005235 006010 A
005236 003535 R
005237 006505 A
005240 004774 R
005241 001000 A 4110 JMP RCH LOOP TILL DONE 07 04110
005242 005176 R
4111 ***** 07 04111
4112 * OUTPUT TO BUFFER * 07 04112
4113 ***** 07 04113
4114 RCH15 PUSHJ CBC OUTPUT CHARACTER TO BUFFER V2 07 04114
005243 006010 A
005244 002635 R
005245 006505 A
005246 004774 R
005247 001000 A 4115 JMP RCH LOOP TILL DONE 07 04115
005250 005176 R
4116 EJEC 07 04116
4117 ***** 07 04117
4118 * 07 04118
4119 * RECYCLE LOGICAL BUFFER (RCL) * 07 04119
4120 * 07 04120
4121 * FUNCTION: TO MOVE FORWARD TO NEXT LOGICAL RECORD * 07 04121
4122 * 07 04122
4123 * ENTRY: LRWC = COUNT OF WORDS REMAINING IN LOGICAL RECORD * 07 04123
4124 * 07 04124
4125 * EXIT : LRWC = LRSZ * 07 04125

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4126 *
4127 *****
4129 RCL TRAB RWFL,LF,RCL5 LOGICAL FILE ? V2 07 04129
005251 016154 A
005252 006441 A
005253 005256 R
005254 006400 A 4130 BT ASET+RM,RCL10 YES. RMD ? D.1 07 04130
005255 005263 R 4131 RCL5 ZAB LRWC NO. FORCE RECYCLE V2 07 04131
005256 005001 A
005257 056123 A 4132 STA PWWC,B CLEAR WORD COUNTS 07 04132
005260 056144 A 4133 JMP RCL15 D.1 07 04133
005262 005273 R
005263 006444 A 4134 RCL10 BT ARST+TR,RCL15 TERMINATE LOGICAL RMD ? D.1 07 04134
005264 005273 R 4135 TNZAB LRWC,RCL15 YES. END OF LOGICAL RECORD ? D.1 07 04135
005265 016123 A
005266 001016 A
005267 005273 R
005270 046121 A 4136 INR LRECND,B YES. BUMP LOGICAL RECORD NUMBER D.1 07 04136
4137 POPJ EXIT FG 07 04137
005271 001000 A
005272 004066 R 4138 RCL15 PUSHJ GBA STEP THRU LOGICAL BUFFER D.1 07 04138
005273 006010 A
005274 001162 R
005275 006505 A
005276 004774 R
005277 016123 A 4139 LDA LRWC,B 07 04139
005300 005111 A 4140 IAR 07 04140
005301 146122 A 4141 SUB LRSZ,B 07 04141
005302 001004 A 4142 JAN RCL LOOP TILL LOGICAL BOUNDARY PASSED D.1 07 04142
005303 005251 R
005304 046123 A 4143 INR LRWC,B RESTORE WORD COUNTS 07 04143
005305 046144 A 4144 INR PWWC,B 07 04144
4145 BAB BFWPT AND BUFFER POINTER 07 04145
005306 016025 A
005307 005311 A
005310 056025 A
4146 POPJ EXIT FG 07 04146
005311 001000 A
005312 004066 R
4147 EJEC 07 04147
4148 ***** 07 04148
4149 * 07 04149
4150 * R E C Y C L E P H Y S I C A L B U F F E R ( R C P ) * 07 04150
4151 * * 07 04151
4152 * F U N C T I O N : T O R E C Y C L E A P H Y S I C A L B U F F E R * 07 04152
4153 * * 07 04153
4154 * E N T R Y : P B S Z = P H Y S I C A L B U F F E R S I Z E I N W O R D S * 07 04154
4155 * A P B F = P H Y S I C A L B U F F E R S T A R T A D D R E S S * 07 04155
4156 * I N = 1 I F I N I T I A L I Z I N G V2* 07 04156
4157 * P O = 1 I F B U F F E R M U S T B E P O S T E D V2* 07 04157
4158 * * 07 04158
4159 * E X I T : I N = 1 V2* 07 04159
4160 * * 07 04160
4161 * B U F F E R P O S T E D I F P O S E T V2* 07 04161
4162 * I / O S U P P R E S S E D V2* 07 04162
4163 * * 07 04163
4164 * I N = 0 V2* 07 04164
4165 * * 07 04165
4166 * P B W C = P B S Z V2* 07 04166
4167 * B U F F E R C L E A R E D B E F O R E N O N - R M D R E A D V2* 07 04167
4168 * * 07 04168
4169 ***** 07 04169
005313 R 4171 RCP EQU * V2 07 04171
4172 TRAB RWFL,IN,RCP5 INITIALIZING ? V2 07 04172
005313 016154 A
005314 006446 A
005315 005331 R
005316 006442 A 4173 BT ARST+PO,RCP3 YES. ANY UNPOSTED DATA ? 07 04173
005317 005325 R 4174 PUSHJ PSB YES. POST BUFFER V2 07 04174
005320 006010 A
005321 004743 R
005322 006505 A
005323 004774 R
005324 016154 A 4175 LDA RWFL,B RESTORE FLAG WORD 07 04175
005325 006451 A 4176 RCP3 BT ARST+WR,RCP15 READ ? V2 07 04176
005326 005355 R
005327 001000 A 4177 JMP RCP25 NO. WRITE 07 04177
005330 005404 R 4178 RCP5 MOVZAB PBSZ,PBWC RELOAD PHYSICAL WORD COUNT 07 04178
005331 016143 A
005332 056144 A
005333 016027 A 4179 LDA ALBF,B D.1 07 04179
005334 146025 A 4180 SUB BFWPT,B D.1 07 04180
005335 005311 A 4181 DAR D.1 07 04181
005336 126020 A 4182 ADD APBF,B D.1 07 04182
005337 056027 A 4183 STA ALBF,B UPDATE ADDRESS OF LOGICAL BUFFER D.1 07 04183
4184 DABBF APBF,BFWPT INITIALIZE BUFFER POINTER D.1 07 04184
005340 016020 A

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005341	005311	A						
005342	056025	A						
			4185	TSAB	RWFL,WR,RCP20	READ ?		V2 07 04185
005343	016154	A						
005344	006411	A						
005345	005375	R						
005346	006442	A	4186	BT	ARST+PD,RCP15	YES. ANY UNPOSTED DATA ?		C.1 07 04186
005347	005355	R						
			4187	PUSHJ	PSB	YES. POST BUFFER		V2 07 04187
005350	006010	A						
005351	004743	R						
005352	006505	A						
005353	004774	R						
005354	016154	A	4188	LDA	RWFL,B	RESTORE FLAG WORD		V2 07 04188
			4189	*****				V2 07 04189
			4190	* CLEAR BUFFER ON NON-RMD READ *				V2 07 04190
			4191	*****				V2 07 04191
005355	006400	A	4192	RCP15	BT	ASET+RM,RCP20	RMD ?	V2 07 04192
005356	005375	R						
			4193	TZAB	UNIT,RCP20	NO. DONT CLEAR IF L=0		D.1 07 04193
005357	016167	A						
005360	001010	A						
005361	005375	R						
005362	036010	A	4194	LDX	ADFCB,B			D.1 07 04194
			4195	MOVBAB	LRWC,SAVE+2	SAVE LRWC		07 04195
005363	016123	A						
005364	056034	A						
			4196	MOVXAB	0,LRWC	SET LOGICAL WORD COUNT = FCB(0)		07 04196
005365	015000	A						
005366	056123	A						
			4197	PUSHJ	CLB	CLEAR BUFFER		V2 07 04197
005367	006010	A						
005370	000134	R						
005371	006505	A						
005372	004774	R						
			4198	MOVBAB	SAVE+2,LRWC	RESTORE LRWC		07 04198
005373	016034	A						
005374	056123	A						
			4199	*****				V2 07 04199
			4200	* READ/WRITE PHYSICAL RECORD *				V2 07 04200
			4201	*****				V2 07 04201
			4202	RCP20	PUSHJ	RPB	REFRESH PHYSICAL BUFFER	V2 07 04202
005375	006010	A						
005376	005672	R						
005377	006505	A						
005400	004774	R						
			4203	TRAB	RWFL,WR,RCP50	READ ?		V2 07 04203
005401	016154	A						
005402	006451	A						
005403	005461	R						
005404	006441	A	4204	RCP25	BT	ARST+LF,RCP40	NO. WRITE. LOGICAL FILE ?	D.1 07 04204
005405	005450	R						
005406	036010	A	4205	LDX	ADFCB,B	YES. POINT X AT FCB		V2 07 04205
005407	006440	A	4206	BT	ARST+RM,RCP40	RMD ?		D.1 07 04206
005410	005450	R						
005411	110423	A	4207	ORA	PDS	YES. SET POST FLAG		D.1 07 04207
005412	056154	A	4208	STA	RWFL,B			07 04208
005413	015014	A	4209	LDA	12,X			07 04209
005414	110437	A	4210	ORA	PDS	ALSO IN FCB(12)		V2 07 04210
005415	055014	A	4211	STA	12,X			07 04211
			4212	TRAB	RWFL,RB,RCP35	IS READ BEFORE WRITE ENABLED ?		07 04212
005416	016154	A						
005417	006443	A						
005420	005445	R						
005421	036016	A	4213	LDX	ANRB,B	YES. POINT X AT V\$FORTIO DATA BLOCK		07 04213
005422	015104	A	4214	LDA	IDCONT,X	GET STATUS OF READ		07 04214
005423	150451	A	4215	ANA	BSS	CLEAR WRITE BIT IN V\$IOC CONTROL WORD		07 04215
005424	055104	A	4216	STA	IDCONT,X			07 04216
			4217	PUSHJ	RPB	READ NEXT PHYSICAL RECORD		V2 07 04217
005425	006010	A						
005426	005672	R						
005427	006505	A						
005430	004774	R						
			4218	SUTBBB	PRECND,PBRC,PRECND	RESTORE PHYSICAL RECORD NUMBER		07 04218
005431	016145	A						
005432	146142	A						
005433	056145	A						
005434	036016	A	4219	LDX	ANRB,B	POINT X AT V\$FORTIO DATA BLOCK		07 04219
005435	015106	A	4220	LDA	IDSTAT,X	GET STATUS OF READ		07 04220
005436	005311	A	4221	DAR				07 04221
005437	001004	A	4222	JAN	*+3	TEST FOR EOF		07 04222
005440	005442	R						
005441	055106	A	4223	STA	IDSTAT,X	CLEAR EOF FLAG ON READ BEFORE WRITE		07 04223
005442	015104	A	4224	LDA	IDCONT,X			07 04224
005443	110431	A	4225	ORA	BSS	RESTORE WRITE BIT IN V\$IOC CONTROL WORD		07 04225
005444	055104	A	4226	STA	IDCONT,X			07 04226
005445	036010	A	4227	RCP35	LDX	ADFCB,B		07 04227
			4228	MOVBAX	PRECND,13	UPDATE FCB(13)		07 04228
005446	016145	A						
005447	055015	A						
			4229	RCP40	TSAB	RWFL,IN,RCP50	EXIT ON INITIALIZE	D.1 07 04229
005450	016154	A						
005451	006406	A						


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005452 005461 R
005453 006405 A 4230 BT ASET+SC,RCP50 D.1 07 04230
005454 005461 R 4231 PUSHJ CLB CLEAR BUFFER AFTER WRITE D.1 07 04231
005455 006010 A
005456 000134 R
005457 006505 A
005460 004774 R
005461 016154 A 4232 RCP50 LDA RWFL,B D.1 07 04232
005462 150446 A 4233 ANA SCR CLEAR CLEAR SUPPRESS FLAG D.1 07 04233
005463 150447 A 4234 ANA INR CLEAR INITIALIZE FLAG V2 07 04234
005464 056154 A 4235 STA RWFL,B 07 04235
4236 POPJ EXIT FG 07 04236
005465 001000 A
005466 004066 R
4237 EJEC 07 04237
4238 ***** 07 04238
4239 * 07 04239
4240 * REENTRANT ERROR PROCESSOR (RER) * 07 04240
4241 * 07 04241
4242 * FUNCTION: TO PROCESS ERRORS IN V$RERR V2* 07 04242
4243 * 07 04243
4244 * ENTRY: ER1 FORMAT * 07 04244
4245 * ER2 MODE * 07 04245
4246 * ER3 DATA * 07 04246
4247 * ER4 I/O ERROR * 07 04247
4248 * 07 04248
4249 * EXIT : DIRECT TO CAN * 07 04249
4250 * ERN = ERROR NUMBER-1 * 07 04250
4251 * ERROR OP PUSHED V2* 07 04251
4252 * 07 04252
4253 ***** 07 04253
005467 046060 A 4255 ER4 INR ERN,B I/O 07 04255
005470 046060 A 4256 ER3 INR ERN,B DATA 07 04256
005471 046060 A 4257 ER2 INR ERN,B MODE 07 04257
005472 036016 A 4258 ER1 LDX ANRB,B POINT X AT V$FORTIO DATA BLOCK 07 04258
005473 016060 A 4259 LDA ERN,B 07 04259
005474 055060 A 4260 STA ERN,X MOVE ERROR NUMBER 07 04260
005475 010421 A 4261 LDA DER GET ERROR OP 07 04261
4262 PUSHF 07 04262
005476 036016 A
005477 035000 A
005500 005344 A
005501 055000 A
005502 005041 A
005503 036016 A
005504 055000 A
005505 001000 A 4263 JMP CAN EXIT TO V$FORTIO 07 04263
005506 000101 R
4264 EJEC 07 04264
4265 ***** 07 04265
4266 * 07 04266
4267 * REPOSITION FILE (RFL) * 07 04267
4268 * 07 04268
4269 * FUNCTION: TO REPOSITION A FILE AT START OF A READ OR WRITE, OR IF * 07 04269
4270 * A T FORMAT SPECIFIER REQUIRES A PHYSICAL BACKSPACE * 07 04270
4271 * 07 04271
4272 * ENTRY: ADFCB = ADDRESS OF DCB/FCB * 07 04272
4273 * APBF = ADDRESS OF PHYSICAL BUFFER * 07 04273
4274 * ALBF = ADDRESS OF LOGICAL BUFFER * 07 04274
4275 * PBSZ = PHYSICAL BUFFER SIZE IN WORDS * 07 04275
4276 * LRSZ = LOGICAL RECORD SIZE IN WORDS * 07 04276
4277 * PRECND = PHYSICAL RECORD NUMBER * 07 04277
4278 * 07 04278
4279 * EXIT : READ : 1ST RECORD IN BUFFER * 07 04279
4280 * WRITE: BUFFER CLEARED * 07 04280
4281 * 07 04281
4282 ***** 07 04282
4284 RFL MOVBAB LRSZ,LRWC INITIALIZE LOGICAL WORD COUNT 07 04284
005507 016122 A
005510 056123 A 4285 LABB ALBF,BFWPT INITIALIZE BUFFER WORD POINTER V2 07 04285
005511 016027 A
005512 005311 A
005513 056025 A 4286 MOVBAB PBSZ,PBWC INITIALIZE PHYSICAL WORD COUNT 07 04286
005514 016143 A
005515 056144 A 4287 TRAB RWFL,LF,RFL5 LOGICAL FILE ? V2 07 04287
005516 016154 A
005517 006441 A
005520 005523 A
005521 006400 A 4288 BT ASET+RM,RFL10 YES. TEST IF RMD V2 07 04288
005522 005527 R
4289 ***** V2 07 04289
4290 * NOT LOGICAL RMD FILE * V2 07 04290
4291 ***** V2 07 04291
005523 006411 A 4292 RFL5 BT ASET+WR,RFL40 READ ? FG 07 04292
005524 005610 R
005525 001000 A 4293 JMP RCP YES. RECYCLE PHYSICAL BUFFER 07 04293
005526 005313 R
4294 ***** V2 07 04294
4295 * LOGICAL RMD FILE * V2 07 04295

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005527 016020 A 4296 *****
005530 126143 A 4297 RFL10 LDA APBF,B V2 07 04296
005531 146027 A 4298 ADD PBSZ,B 07 04297
005532 056144 A 4299 SUB ALBF,B 07 04298
4300 STA PBWC,B 07 04299
INITIALIZE PHYSICAL WORD COUNT 07 04300
4301 *****
4302 * TEST IF LRECND IN BUFFER * 07 04301
4303 ***** 07 04302
005533 036010 A 4304 LDX QDFCB,B 07 04303
005534 015015 A 4305 LDA 13,X 07 04304
005535 001010 A 4306 JAZ RFL50 TEST IF BUFFER EMPTY 07 04305
005536 005612 R 4307 SUB PRECND,B COMPARE BUFFER ADDRESS WITH PRECND 07 04306
005537 146145 A 4308 JAZ RFL20 LRECND RESIDENT IF EQUAL 07 04307
005541 005572 R 4309 JAP RFL50 07 04308
005542 001002 A 4310 STA TEMP,B SAVE -(RECORD INCREMENT) 07 04309
005543 005612 R 4311 ADD PBRC,B 07 04310
005544 056164 A 4312 DAR 07 04311
005545 126142 A 4313 JAN RFL50 07 04312
005546 005311 A 4314 ***** 07 04313
005547 001004 A 4315 * LRECND IS RESIDENT * 07 04314
005550 005612 R 4316 ***** 07 04315
4317 MOVXAB 13,PRECND UPDATE PHYSICAL RECORD NUMBER 07 04316
005551 015015 A 4318 TBX 07 04317
005552 056145 A 4319 TZA SAVE BASE REGISTER 07 04318
005553 005024 A 4320 SUB TEMP,B GET RECORD INCREMENT 07 04319
005554 005001 A 4321 LLSR 16 07 04320
005555 146164 A 4322 MUL BD120,X CONVERT TO WORD INCREMENT V2 07 04321
005556 004560 A 4323 STB TEMP,X 07 04322
005557 165201 A 4324 TXB RESTORE BASE REGISTER B 07 04323
005560 065164 A 4325 LDA ALBF,B 07 04324
005561 005042 A 4326 ADD TEMP,B BUMP LOGICAL BUFFER ADDRESS 07 04325
005562 016027 A 4327 STA ALBF,B 07 04326
005563 126164 A 4328 DAR 07 04327
005564 056027 A 4329 STA PFWP,B ALSO BUFFER WORD POINTER 07 04328
005565 005311 A 4330 LDA PBWC,B DECREMENT PHYSICAL WORD COUNT 07 04329
005566 056025 A 4331 SUB TEMP,B 07 04330
005567 016144 A 4332 STA PBWC,B 07 04331
005570 146164 A 4333 RFL20 TSAB RWFL,WR,RFL30 READ ? V2 07 04332
005571 056144 A 4334 ***** 07 04333
005572 016154 A 4335 POPJ AND EXIT FG 07 04334
005573 006411 A 4336 RFL30 ORA POS SET POST FLAG ON WRITE V2 07 04335
005574 005602 R 4337 STA RWFL,B V2 07 04336
005575 016145 A 4338 LDX QDFCB,B POINT X AT PCB V2 07 04337
005576 126142 A 4339 LDA 12,X V2 07 04338
005577 056145 A 4340 ORA POS ALSO IN PCB V2 07 04339
005600 001000 A 4341 STA 12,X V2 07 04340
005601 004066 R 4342 RFL40 POPJ AND EXIT FG 07 04341
005602 110423 A 4343 ***** 07 04342
005603 056154 A 4344 * LRECND NOT IN BUFFER * 07 04343
005604 036010 A 4345 ***** 07 04344
005605 015014 A 4346 RFL50 LDA RWFL,B SET INITIALIZE FLAG V2 07 04345
005606 110437 A 4347 ORA INS 07 04346
005607 055014 A 4348 STA RWFL,B 07 04347
4349 JMP RCP RECYCLE PHYSICAL BUFFER 07 04348
005610 001000 A 4350 EJC 07 04349
005611 004066 R 4351 ***** 07 04350
4352 * 07 04351
4353 * ROUND DECIMAL ARRAY (RND) * 07 04352
4354 * 07 04353
4355 * FUNCTION: TO ROUND DECIMAL DIGIT STRING IN ARRAY CHB, PROPAGATING * 07 04354
4356 * CARRIES FORWARD * 07 04355
4357 * 07 04356
4358 * ENTRY: ARRAY CHB CONTAINS BINARY EQUIVALENTS OF DECIMAL DIGITS * 07 04357
4359 * COUNT = ROUND POSITION * 07 04358
4360 * DEXP = DECIMAL EXPONENT * 07 04359
4361 * ACC = BINARY FRACTION REMAINING AFTER 14 DIGITS V2* 07 04360
4362 * 07 04361
4363 * EXIT : DEXP = DEXP+1 ON FIELD OVERFLOW * 07 04362
4364 * 07 04363
4365 ***** 07 04364
005612 016154 A 4366 RNA EQU * 07 04365
005613 110427 A 4367 RND LDA COUNT,B 07 04366
005614 056154 A 4368 JAN ANDX EXIT IF COUNT NEGATIVE FG 07 04367
005615 001000 A 4369 SUB PD14,B 07 04368
005616 005313 R 4370 JAN ANDX IS COUNT .GE. 14 ? V2 07 04369
005617 016052 A 4371 ***** 07 04370
005620 001004 A 4372 ***** 07 04371
005621 005670 R 4373 ***** 07 04372
005622 146200 A 4374 ***** 07 04373
005623 001004 A 4375 ***** 07 04374

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005624 005636 R
005625 016007 A 4372 LDA ACHB,B YES
005626 126200 A 4373 ADD BD14,B V2 07 04373
005627 005314 A 4374 DECR 014 POINT X AT LAST DIGIT 07 04374
005630 016003 A 4375 LDA ACC,B 07 04375
005631 004241 A 4376 LRLA 1 07 04376
005632 001002 A 4377 JAP RNDX EXIT IF NO BUMP FG 07 04377
005633 005670 R
005634 001000 A 4378 JMP RNDL OTHERWISE PROPAGATE CARRY 07 04378
005635 005652 R
005636 016007 A 4379 RND5 LDA ACHB,B 07 04379
005637 126052 A 4380 ADD COUNT,B 07 04380
005640 005314 A 4381 DECR 014 POINT X AT ROUND POSITION-1 07 04381
005641 015001 A 4382 LDA 1,X GET DECIMAL DIGIT 07 04382
005642 140465 A 4383 SUB FIVE 07 04383
005643 001004 A 4384 JAM RNDX EXIT IF NO CARRY FG 07 04384
005644 005670 R
4385 TZAB COUNT,RND10 TEST COUNT=0 07 04385
005645 016052 A
005646 001010 A
005647 005665 R
4386 ZAX 1 CLEAR LAST DIGIT IN CASE OF OVERFLOW 07 04386
005650 005001 A
005651 055001 A
4387 *****
4388 * LOOP TO PROPAGATE CARRIES *
4389 *****
005652 045000 A 4390 RNDL INR 0,X BUMP PRECEDING DIGIT
005653 015000 A 4391 LDA 0,X
005654 140471 A 4392 SUB TEN
005655 001004 A 4393 JAM RNDX EXIT IF NO CARRY FG 07 04393
005656 005670 R
005657 005001 A 4394 TZA
005660 055000 A 4395 STA 0,X CLEAR DIGIT 07 04395
005661 005345 A 4396 DECR 045 DECREMENT CHB ARRAY POINTER 07 04396
005662 146007 A 4397 SUB ACHB,B 07 04397
005663 001002 A 4398 JAP RNDL IS CARRY PROPAGATED OUT OF CHB ? 07 04398
005664 005652 R
005665 046055 A 4399 RND10 INR DEXP,B YES. BUMP DECIMAL EXPONENT 07 04399
005666 005101 A 4400 INCR 1 07 04400
005667 055001 A 4401 STA 1,X SHIFT CHB RIGHT 1 07 04401
4402 RNDX POPJ EXIT FG 07 04402
005670 001000 A
005671 004066 R
4403 EJEC
4404 *****
4405 *
4406 * R E F R E S H P H Y S I C A L B U F F E R ( R P B )
4407 *
4408 * FUNCTION: TO READ OR WRITE A PHYSICAL BUFFER
4409 *
4410 * ENTRY: ADFCB = ADDRESS OF DCB/FCB
4411 *
4412 * LOGICAL FILES ONLY:
4413 *
4414 * PRECNO = CURRENT PHYSICAL RECORD NUMBER
4415 * PBRG = COUNT OF 120-WORD RECORDS IN PHYSICAL BUFFER
4416 *
4417 * EXIT : FBWC = PHYSICAL WORD COUNT
4418 * PRECNO = PRECNO + PBRG
4419 *
4420 *****
4422 RPB TZAB RWFL,LF,RPB10 TEST IF LOGICAL FILE 07 04422
005672 016154 A
005673 006441 A
005674 005701 R
4423 *****
4424 * LOGICAL FILE - SET UP FCB *
4425 *****
005675 036010 A 4426 LUX ADFCB,B POINT X AT FCB 07 04426
4427 MOVMAX PRECNO,3 MOVE PHYSICAL RECNO TO FCB(3) 07 04427
005676 016145 A
005677 055003 A
005700 055015 A 4428 STA 13,X ALSO FCB(13) 07 04428
4429 *****
4430 * CALL I/O TO DO I/O *
4431 *****
005701 010464 A 4432 RPB10 LDA CID CALL VSIOG TO DO I/O V2 07 04432
005702 006505 A 4433 JSR PSJ,X V2 07 04433
005703 004774 R
4434 TZAB RWFL,IN,RPB11 INITIALIZING I E.1 07 04434
005704 016154 A
005705 006446 A
005706 005711 R
005707 016020 A 4435 LDA APRT,B YES E.1 07 04435
005710 126143 A 4436 ADD PPSZ,B E.1 07 04436
005711 146027 A 4437 SUB ALBT,B COMPUTE REMAINING PHYSICAL WORD COUNT E.1 07 04437
005712 001000 A 4438 JMP RPB12 E.1 07 04438
005713 005716 R
005714 036016 A 4439 RPB11 LDX ANRE,B NOT INITIALIZING E.1 07 04439
005715 015144 A 4440 LDA PBRG,X XFER I/O WORD COUNT FROM VSORTIO E.1 07 04440
005716 056144 A 4441 RPB12 STA PBRG,B E.1 07 04441
4442 TZAB RWFL,LF,RPB15 LOGICAL FILE ? V2 07 04442

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005717 016154 A
005720 006441 A
005721 005724 R
005722 006400 A 4443      BT      ASET+RM,RPB20      YES. RMD ?      V2 07 04443
005723 005730 R      4444 RPB15  MOVBAB  PBWC,LRSZ      NO. UPDATE LOGICAL WORD COUNT      V2 07 04444
005724 016144 A
005725 056122 A      4445      POPJ      EXIT      FG 07 04445
005726 001000 A
005727 004066 R      4446 RPB20  ADDBB  PRECND,PBRC,PRECND      BUMP PHYSICAL RECORD NUMBER      07 04446
005730 016145 A
005731 126142 A
005732 056145 A      4447      POPJ      EXIT      FG 07 04447
005733 001000 A
005734 004066 R      4448      EJEC      07 04448
4449 ***** 07 04449
4450 * 07 04450
4451 * SEARCH FCB CHAIN (SCH) * 07 04451
4452 * 07 04452
4453 * FUNCTION: TO SEARCH AN FCB CHAIN FOR A GIVEN FORTRAN UNIT NUMBER U * 07 04453
4454 * 07 04454
4455 * ENTRY: UNIT = U * 07 04455
4456 * LNKCNT = COUNT OF FCB'S ON CHAIN V2 07 04456
4457 * EACH CHAIN ITEM XFCB HAS FORMAT: * 07 04457
4458 * XFCB(10) = ADDRESS OF NEXT FCB ON CHAIN * 07 04458
4459 * XFCB(11) = U(XFCB) * 07 04459
4460 * ALOC .NE. 0 IF V$RERR ENTERED BY ALOC V2 07 04460
4461 * 07 04461
4462 * EXIT : A = ADDRESS OF FCB ARRAY, IF U ON CHAIN * 07 04462
4463 * = 0 IF U NOT ON CHAIN * 07 04463
4464 * PRLINK = ADDRESS OF PREVIOUS CHAIN LINK * 07 04464
4465 * 07 04465
4466 ***** 07 04466
4467 ***** 07 04467
4468 * INITIALIZE SEARCH LOOP * 07 04468
4469 ***** 07 04469
4470 ***** 07 04470
005735 036016 A 4471 SCH LDX ANRB,B 07 04471
005736 005041 A 4472 TXA GET DATA BLOCK ADDRESS 07 04472
005737 006120 A 4473 ADDI CHNHDR-10 ADD BIAS V2 07 04473
005740 000037 A
005741 056146 A 4474 STA PRLINK,B POINT PREVIOUS LINK AT CHAIN HEADER 07 04474
005742 015120 A 4475 LDA LNKCNT,X GET LINK COUNT 07 04475
005743 056052 A 4476 STA COUNT,B STORE AS LOOP COUNT 07 04476
005744 035051 A 4477 LDX CHNHDR,X POINT X AT HEAD OF CHAIN 07 04477
4478 ***** 07 04478
4479 * SEARCH LOOP * 07 04479
4480 ***** 07 04480
005745 016052 A 4481 SCHLP LDA COUNT,B 07 04481
005746 001010 A 4482 JAZ SCHY FLAG NO FIND BY EXIT WITH A=0 FG 07 04482
005747 005763 R
005750 005311 A 4483 DAR DECREMENT COUNT 07 04483
005751 056052 A 4484 STA COUNT,B 07 04484
4485 IFF NUC FG 07 04485
4486 GOTO NUC1 FG 07 04486
4487 IFT VII FG 07 04487
4488 GOTO VII1 FG 07 04488
4489 TZAB ALOC,SCH5 VORTEX BKGND CALLING NUCLEUS ? V2 07 04489
4490 STX TEMP,B YES. SAVE X 07 04490
4491 TXA 07 04491
4492 JSR TBK,X TEST FCB(0) IN BACKGROUND 07 04492
4493 ADD B15 07 04493
4494 JSR TBK,X TEST FCB(14) IN BACKGROUND 07 04494
4495 LDX TEMP,B RESTORE X 07 04495
4496 NUC1 CNT FG 07 04496
4497 VII1 CNT FG 07 04497
005752 015013 A 4498 SCH5 LDA 11,X 07 04498
005753 146167 A 4499 SUB UNIT,B COMPARE WITH U 07 04499
005754 001010 A 4500 JAZ SCHX EXIT ON FIND WITH X=FCB ADDRESS 07 04500
005755 005762 R
005756 076140 A 4501 STX PRLINK,B UPDATE PREVIOUS LINK 07 04501
005757 035012 A 4502 LDX 10,X POINT X AT NEXT LINK 07 04502
005760 001000 A 4503 JMP SCHLP LOOP TILL CHAIN EXHAUSTED 07 04503
005761 005745 R
005762 005041 A 4504 SCHX TXA FLAG FIND BY A.NE.0 (FCB ADDRESS) 07 04504
4505 SCHY POPJ EXIT FG 07 04505
005763 001000 A
005764 004066 R      4506      EJEC      07 04506
4507 ***** 07 04507
4508 * 07 04508
4509 * SHIFT ACCUMULATOR ACC (SHA) * 07 04509
4510 * 07 04510
4511 * FUNCTION: TO SHIFT THE 4-WORD ACCUMULATOR ACC * 07 04511
4512 * 07 04512
4513 * ENTRY: COUNT = + SHIFT RIGHT COUNT * 07 04513
4514 * = - SHIFT LEFT 1 * 07 04514
4515 * 07 04515
4516 * EXIT : NO SPECIAL CONDITIONS * 07 04516
4517 * 07 04517

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005765 005024 A 4518 *****
005766 015052 A 4520 SHA TBX LOAD X AS BASE POINTER
005770 006014 R 4521 SHAL TMAX COUNT,SHA50 TEST DIRECTION OF SHIFT V2 07 04521
005771 001010 A 4522 JAZ SHAX EXIT WHEN FINISHED 07 04522
005772 006031 R 4523 DAR DECREMENT SHIFT COUNT 07 04523
005773 005311 A 4524 STA COUNT,X 07 04524
005774 055052 A 4525 ***** 07 04525
4526 * RIGHT SHIFT * 07 04526
4527 ***** 07 04527
005775 025006 A 4528 LDB ACC+3,X 07 04528
005776 015005 A 4529 LDA ACC+2,X 07 04529
005777 004501 A 4530 LASR 1 07 04530
006000 065006 A 4531 STB ACC+3,X SHIFT ACC(3) 07 04531
006001 025005 A 4532 LDB ACC+2,X 07 04532
006002 015004 A 4533 LDA ACC+1,X 07 04533
006003 004501 A 4534 LASR 1 07 04534
006004 065005 A 4535 STB ACC+2,X SHIFT ACC(2) 07 04535
006005 025004 A 4536 LDB ACC+1,X 07 04536
006006 015003 A 4537 LDA ACC,X 07 04537
006007 004501 A 4538 LASR 1 07 04538
006010 065004 A 4539 STB ACC+1,X SHIFT ACC(1) 07 04539
006011 055003 A 4540 STA ACC,X SHIFT ACC(0) 07 04540
006012 001000 A 4541 JMP SHAL LOOP TILL DONE 07 04541
006013 005766 R 4542 ***** 07 04542
4543 * LEFT SHIFT * 07 04543
4544 ***** 07 04544
006014 015003 A 4545 SHA50 LDA ACC,X 07 04545
006015 025004 A 4546 LDB ACC+1,X 07 04546
006016 004401 A 4547 LASL 1 07 04547
006017 055003 A 4548 STA ACC,X SHIFT ACC(0) 07 04548
006020 015004 A 4549 LDA ACC+1,X 07 04549
006021 025005 A 4550 LDB ACC+2,X 07 04550
006022 004401 A 4551 LASL 1 07 04551
006023 055004 A 4552 STA ACC+1,X SHIFT ACC(1) 07 04552
006024 015005 A 4553 LDA ACC+2,X 07 04553
006025 025006 A 4554 LDB ACC+3,X 07 04554
006026 004401 A 4555 LASL 1 07 04555
006027 055003 A 4556 STA ACC+2,X SHIFT ACC(2) 07 04556
006030 065006 A 4557 STB ACC+3,X SHIFT ACC(3) 07 04557
006031 005042 A 4558 SHAX TMB RESTORE BASE REGISTER B 07 04558
4559 POPJ EXIT FG 07 04559
006032 001000 A 4560 EJEC 07 04560
006033 004066 R 4561 IFF NUC FG 07 04561
4562 GOTO NUC1 FG 07 04562
4563 IFT VII FG 07 04563
4564 GOTO VII1 FG 07 04564
4565 ***** 07 04565
4566 * 07 04566
4567 * TEST BACKGROUND ADDRESS (TBK) * 07 04567
4568 * 07 04568
4569 * FUNCTION: TO TEST IF AN ADDRESS IS IN THE BACKGROUND * 07 04569
4570 * 07 04570
4571 * ENTRY: A = TEST ADDRESS * 07 04571
4572 * 07 04572
4573 * CALLING SEQUENCE: JSR TBK,X * 07 04573
4574 * 07 04574
4575 * EXIT : IF OK, RETURN WITH A UNCHANGED * 07 04575
4576 * OTHERWISE, SET UP A MEMORY PROTECT ERROR * 07 04576
4577 * 07 04577
4578 ***** 07 04578
4579 SPAC 07 04579
4580 TBK SUB V$LUP 07 04580
4581 JAN TBK10 ERROR IF A.LT.V$LUP 07 04581
4582 ADD V$LUP RESTORE A 07 04582
4583 SUB V$LLUP 07 04583
4584 JAZ *+4 07 04584
4585 JAP TBK10 ERROR IF A.GT.V$LLUP 07 04585
4586 ADD V$LLUP RESTORE A 07 04586
4587 IJMP 0,X RETURN IF OK 07 04587
4588 ***** 07 04588
4589 * ERROR - CONSTRUCT MEMORY PROTECT VIOLATION * 07 04589
4590 ***** 07 04590
4591 TBK10 LDX V$LUP POINT X AT 1ST BACKGROUND WORD 07 04591
4592 LDR TBKJMP 07 04592
4593 STA 0,X 07 04593
4594 TZA 07 04594
4595 STA 1,X STORE *JMP 0* IN BACKGROUND 07 04595
4596 LDB V$CRS POINT B AT STACK 07 04596
4597 SIX PR,P SET DEALOC ADDRESS TO 1ST BACKGROUND WORD 07 04597
4598 DEALOC 07 04598
4599 TBKJMP SET BS9 07 04599
4600 VII1 CONT FG 07 04600
4601 NUC1 CONT FG 07 04601
4602 EJEC 07 04602
4603 ***** 07 04603
4604 * 07 04604

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4605 * PROCESS T FORMAT DESCRIPTION ( T I D ) * 07 04605
4606 * * 07 04606
4607 * FUNCTION: TO PROCESS THE FORMAT DESCRIPTOR: TW * 07 04607
4608 * * 07 04608
4609 * ENTRY: DIRECT FROM FRS * 07 04609
4610 * BFPT = CURRENT BUFFER CHARACTER POSITION(BASE 0) * 07 04610
4611 * W = SPECIFIED BUFFER CHARACTER POSITION(BASE 1) * 07 04611
4612 * * 07 04612
4613 * EXIT : DIRECT TO FRS * 07 04613
4614 * BFPT = W-1 * 07 04614
4615 * BFWPT = ALBF + BFPT/2 * 07 04615
4616 * RWFL(BIT SC) = 1 IF LOGICAL FILE PHYSICALLY POSITIONED BACKV2 07 04616
4617 * * 07 04617
4618 * ERRORS: ER1 IF W OUTSIDE LOGICAL RECORD * 07 04618
4619 * * 07 04619
4620 ***** 07 04620
006034 R 4622 TIN EQU * 07 04622
006034 R 4623 TOUT EQU * 07 04623
4625 MOV BAB BFPT,SAVE SAVE CURRENT VALUE OF BUFFER CHAR PTR 07 04625

006034 016026 A 4626 LDA W,B GET W 07 04626
006035 056032 A 4627 DAR CONVERT FROM BASE 1 TO BASE 0 07 04627
006036 016170 A 4628 STA BFPT,B STORE AS BUFFER CHARACTER POINTER 07 04628
006037 005311 A 4629 SUB SAVE,B 07 04629
006040 056026 A 4630 JAM TIO10 TEST DIRECTION OF REPOSITION V2 07 04630
006041 146032 A 4631 ***** V2 07 04631
006042 001004 A 4632 * POSITION FORWARD * V2 07 04632
006043 006053 R 4633 ***** V2 07 04633
006044 016122 A 4634 LDA LRSZ,B YES 07 04634
006045 004241 A 4635 LRLA 1 GET LOGICAL RECORD BYTE COUNT 07 04635
006046 146170 A 4636 SUB W,B 07 04636
006047 001004 A 4637 JAM ER1 ERROR 1/ W OUTSIDE RECORD / 07 04637
006050 005472 R 4638 JMP TIO1P 07 04638
006051 001000 A 4639 ***** V2 07 04639
006052 006120 R 4640 * POSITION BACKWARD * V2 07 04640
4641 ***** V2 07 04641
006053 016026 A 4642 TIO10 LDA BFPT,B GET WORD POSITION 07 04642
006054 004341 A 4643 LSRA 1 GET ADDRESS 07 04643
006055 126027 A 4644 ADD ALBF,B GET ADDRESS 07 04644
006056 146020 A 4645 SUB APBF,B COMPARE WITH BUFFER START ADDRESS 07 04645
006057 001002 A 4646 JAP TIO20 EXIT IF STILL IN BUFFER 07 04646
006060 006105 R 4647 ***** 07 04647
4648 * REPOSITION BUFFER * 07 04648
4649 ***** 07 04649
006061 036010 A 4650 LDX ADFOB,B GET BUFFER RECORD NUMBER 07 04650
006062 015015 A 4651 LDA 13,X 07 04651
006063 146142 A 4652 SUB PERC,B 07 04652
006064 056145 A 4653 STA PRECND,B BACK UP FILE 07 04653
4654 ADDBB ALBF,PBSZ,ALBF BUMP LOGICAL BUFFER ADDRESS 07 04654
006065 016027 A 4655 MOV BAB RWFL,SAVE+1 SAVE FLAG WORD 07 04655
006066 126143 A 4656 BT ARST+WR,TIO15 WRITE ? V2 07 04656
006067 056027 A 4657 ORA RBS YES, SET READ BEFORE WRITE FLAG V2 07 04657
006070 016154 A 4658 STA RWFL,B 07 04658
006071 056033 A 4659 TIO15 PUSHJ RFL REPOSITION FILE V2 07 04659
006072 006451 A 4660 ***** 07 04660
006073 006076 R 4661 LDA SAVE+1,B RESTORE FLAG WORD 07 04661
006074 110424 A 4662 ORA SCS SET CLEAR SUPPRESS FLAG V2 07 04662
006075 056154 A 4663 STA RWFL,B 07 04663
4664 TIO20 DABB ALBF,BFWPT INITIALIZE BUFFER WORD POINTER 07 04663
006105 016027 A 4664 LDA APBF,B 07 04664
006106 005311 A 4665 ADD PBSZ,B 07 04665
006107 056025 A 4666 SUB ALBF,B 07 04666
006110 016020 A 4667 STA PBWC,B REINITIALIZE PHYSICAL WORD COUNT 07 04667
006111 126143 A 4668 MOV BAB LRSZ,LRWC ALSO LOGICAL WORD COUNT 07 04668
006112 146027 A 4669 ZAB SAVE ALSO CHAR COUNTER 07 04669
006113 056144 A 4670 ***** 07 04670
006114 016122 A 4671 * POSITION LOOP * 07 04671
006115 056123 A 4672 ***** 07 04672
006120 016026 A 4673 TIO1P LDA BFPT,B 07 04673
006121 146032 A 4674 SUB SAVE,B 07 04674
006122 001010 A 4675 JAZ FRS85 EXIT TO FORMAT SCAN WHEN DONE 07 04675
006123 001110 R

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006124 016032 A 4676 LDA SAVE,B 07 04676
006125 046032 A 4677 INR SAVE,B 07 04677
006126 004257 A 4678 LPLA 15 BUMP CHAR COUNTER 07 04678
006127 001004 A 4679 JAN TIDL P WORD BOUNDARY ? 07 04679
006130 006120 R 4680 PUSHJ GBA YES. GET NEXT BUFFER ADDRESS V2 07 04680
006131 006010 A
006132 001162 R
006133 006505 A
006134 004774 R
006135 001000 A 4681 JMP TIDL P LOOP TILL DONE 07 04681
006136 006120 R 4682 EJEC 07 04682
4683 ***** 07 04683
4684 * 07 04684
4685 * T E R M I N A T E ( T R M ) * 07 04685
4686 * * 07 04686
4687 * FUNCTION: TO PROCESS A TERMINATE($ND) CALL * 07 04687
4688 * * 07 04688
4689 * ENTRY: NO SPECIAL CONDITIONS * 07 04689
4690 * * 07 04690
4691 * EXIT : LOGICAL BUFFER RECYCLED ON WRITE * 07 04691
4692 * EXIT OP PUSHED V2* 07 04692
4693 * I/O OP PUSHED ON TERMINATE WRITE NON-LOGICAL V2* 07 04693
4694 * * 07 04694
4695 ***** 07 04695
006137 016154 A 4697 TRM LDA RWFL,B V2 07 04697
006140 110425 A 4698 ORA TRS SET TERMINATE FLAG V2 07 04698
006141 056154 A 4699 STA RWFL,B V2 07 04699
006142 006441 A 4700 BT ARST+LF,TRM20 TEST LOGICAL FILE V2 07 04700
006143 006171 P 4701 ***** 07 04701
4702 * LOGICAL FILE * 07 04702
4703 ***** 07 04703
006144 006440 A 4704 BT ARST+RM,TRM20 RMD ? V2 07 04704
006145 006171 R
006146 006451 A 4705 BT ARST+WR,TRM10 YES. WRITE ? V2 07 04705
006147 006155 R
006150 056154 A 4706 STA RWFL,B 07 04706
4707 PUSHJ RCL YES. RECYCLE LOGICAL BUFFER V2 07 04707
006151 006010 A
006152 005251 R
006153 006505 A
006154 004774 R
006155 036010 A 4708 TRM10 LDX ADFCB,B POINT X AT FCB 07 04708
4709 MOV BAX LRSZ,0 LOAD FCB(0) WITH LOGICAL RECORD SIZE 07 04709
006156 016122 A
006157 055000 A
006160 015002 A 4710 LDA 2,X GET ACCESS MODE FROM FCB 07 04710
006161 007401 A 4711 SDF 07 04711
006162 006410 A 4712 BT ASET+8,*+3 SET OVFL IF SEQUENTIAL 07 04712
006163 006165 R
006164 007400 A 4713 RDF 07 04713
006165 016160 A 4714 LDA SVRECN,B RESTORE RECORD NUMBER IF DIRECT 07 04714
006166 003001 A 4715 XDF TRM1 OTHERWISE UPDATE 07 04715
006167 006230 R
006170 055003 A 4716 STA 3,X STORE IN FCB 07 04716
006171 010422 A 4717 TRM20 LDA CEX 07 04717
4718 PUSHF PUSH EXIT OP 07 04718
006172 036016 A
006173 035000 A
006174 005344 A
006175 055000 A
006176 005041 A
006177 036016 A
006200 055000 A 4719 CRAB RWFL,LF,TRM30 LOGICAL ? V2 07 04719
006201 016154 A
006202 006441 A
006203 006211 R
006204 006400 A 4720 BT ASET+RM,CAN YES. EXIT IF RMD V2 07 04720
006205 000101 R
006206 036010 A 4721 LDX ADFCB,B V2 07 04721
4722 MOV BAX PBSZ,0 IF NON-RMD, SET FCB(0) = PBSZ V2 07 04722
006207 016143 A
006210 055000 A 4723 TRM30 TRAB RWFL,WR,CAN EXIT ON READ D.1 07 04723
006211 016154 A
006212 006451 A
006213 000101 R
006214 006412 A 4724 BT EQ,CAN EXIT FOR ENCODE/DECODE PD 07 04724
006215 000101 R
006216 010464 A 4725 LDA CIG 07 04725
4726 PUSHF WRITE LAST NON-LOGICAL RECORD 07 04726
006217 036016 A
006220 035000 A
006221 005344 A
006222 055000 A
006223 005041 A
006224 036016 A
006225 055000 A
006226 001000 A 4727 JMP CAN EXIT TO V$FORTID 07 04727
006227 000101 R

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006230 016121 A 4728 TRMI LDA LRECNO,B 07 04728
4729 EJEC 07 04729
4730 ***** 07 04730
4731 * 07 04731
4732 * UNFORMATTED INPUT/OUTPUT (UID) * 07 04732
4733 * 07 04733
4734 * FUNCTION: TO PROCESS UNFORMATTED I/O CALLS * 07 04734
4735 * 07 04735
4736 * ENTRY: ITEMAD = LIST ITEM ADDRESS * 07 04736
4737 * BFWPT = ADDRESS OF DATA WORD IN BUFFER * 07 04737
4738 * 07 04738
4739 * EXIT : TO V$FORTIO THRU GNL * 07 04739
4740 * 07 04740
4741 ***** 07 04741
4742 ***** 07 04742
4743 ***** 07 04743
4744 * TRANSFER LOOP * 07 04744
4745 ***** 07 04745
4746 UID PUSHJ GNL GET NEXT LIST ITEM ADDRESS/EXIT V2 07 04746

006231 006010 A
006232 001550 R
006233 006505 A
006234 004774 R
4747 PUSHJ GBA GET BUFFER ADDRESS V2 07 04747

006235 006010 A
006236 001162 R
006237 006505 A
006240 004774 R
4748 TSAB RWFL,WR,UID4 TEST INPUT OR OUTPUT V2 07 04748

006241 016154 A
006242 006411 A
006243 006252 R
4749 ***** 07 04749
4750 * INPUT * 07 04750
4751 ***** 07 04751
006244 036025 A 4752 LDX BFWPT,B POINT X AT DATA WORD IN BUFFER 07 04752
006245 015000 A 4753 LDA 0,X GET DATA WORD 07 04753
006246 036113 A 4754 LDX ITEMAD,B POINT X AT LIST ITEM 07 04754
006247 055000 A 4755 STA 0,X STORE INPUT DATA WORD IN LIST ITEM 07 04755
006250 001000 A 4756 JMP UID LOOP UNTIL DONE 07 04756
006251 006231 R
4757 ***** 07 04757
4758 * OUTPUT * 07 04758
4759 ***** 07 04759
006252 036113 A 4760 UID4 LDX ITEMAD,B POINT X AT LIST ITEM 07 04760
006253 015000 A 4761 LDA 0,X GET DATA WORD 07 04761
006254 036025 A 4762 LDX BFWPT,B POINT X AT DATA WORD IN BUFFER 07 04762
006255 055000 A 4763 STA 0,X STORE DATA WORD IN OUTPUT BUFFER 07 04763
006256 001000 A 4764 JMP UID LOOP UNTIL DONE 07 04764
006257 006231 R
4765 EJEC 07 04765
4766 ***** 07 04766
4767 * 07 04767
4768 * PROCESS X FORMAT DESCRIPTOR (XIO) * 07 04768
4769 * 07 04769
4770 * FUNCTION: TO PROCESS THE FORMAT DESCRIPTOR: NX * 07 04770
4771 * 07 04771
4772 * ENTRY: DIRECT FROM FRS * 07 04772
4773 * N = FIELD WIDTH * 07 04773
4774 * 07 04774
4775 * EXIT : TO FRS * 07 04775
4776 * 07 04776
4777 ***** 07 04777
006260 R 4779 XIN EQU * 07 04779
006260 R 4780 XOUT EQU * 07 04780
4782 MOVBAB BLNK1,BCHAR LOAD BLANK AS REPEAT CHARACTER V2 07 04782

006260 016202 A
006261 056030 A
4783 MOVBAB N,COUNT SET REPEAT COUNT TO N 07 04783

006262 016125 A
006263 056052 A
4784 MOVBAB ABSOB,ASOB SET SOB TO BUFFER 07 04784

006264 016002 A
006265 056021 A
4785 PUSHJ RCH REPEAT CHARACTER I/O N TIMES V2 07 04785

006266 006010 A
006267 005176 R
006270 006505 A
006271 004774 R
006272 001000 A
006273 000464 R
4786 JMP FR5 RESUME FORMAT SCAN 07 04786

4787 EJEC 07 04787
4788 ***** 07 04788
4789 * 07 04789
4790 * PROCESS Z DESCRIPTOR (ZIN/ZOUT) * 07 04790
4791 * 07 04791
4792 * FUNCTION: TO PROCESS THE Z FORMAT DESCRIPTOR: RZW * 07 04792
4793 * 07 04793
4794 * ENTRY: DIRECT FROM FRS * 07 04794
4795 * WT = W TOTAL FIELD WIDTH * 07 04795
4796 * IIBSZ = BYTE COUNT OF SINGLE LIST ITEM * 07 04796
4797 * ITEMAD = ADDRESS OF LIST, ITEM * 07 04797
4798 * RWFL(BIT WR) = 0 READ * 07 04798
4799 * = 1 WRITE * 07 04799

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4800 *
4801 * EXIT: INPUT : DIRECT TO FRS
4802 * OUTPUT: DIRECT TO FRS THRU DBC
4803 *
4804 *****
006274 R 4806 ZIN EQU *
006274 R 4807 ZOUT EQU *
006274 005001 A 4809 ZAB AIBUF-1 SET LIST ITEM SCB(0)=0 (BYTE COUNT)
006275 056107 A
4810 MOVBAB ITEMAD,AIBUF SET LIST ITEM SCB(1)=ITEM ADDRESS
006276 016113 A
006277 056110 A
006300 016171 A 4811 LDA WT,B
006301 005111 A 4812 IAR
006302 004301 A 4813 ASRA 1 (A)=BYTES TO PROCESS
006303 146101 A 4814 SUB IIBSZ,B
006304 056052 A 4815 STA COUNT,B EXCESS BYTES
4816 MOVBAB BLNK1,BCHAR SLEW THRU W/2-IIBSZ CHAR
006305 016202 A
006306 056030 A
4817 PUSHJ RCH
006307 006010 A
006310 005176 R
006311 006505 A
006312 004774 R
4818 TSAB RWFL,WR,ZI04 I/O TEST
006313 016154 A
006314 006411 A
006315 006362 R
4820 * INPUT
4821 ZI01 PUSHJ CBC GET BUFFER CHARACTER
006316 006010 A
006317 000104 R
006320 006505 A
006321 004774 R
4822 PUSHJ ZI06 INPUT CHARACTER TEST
006322 006010 A
006323 006413 R
006324 006505 A
006325 004774 R
4823 MOVBAB BCHAR,ICHR
006326 016030 A
006327 056111 A
4824 TZAB WT,ZI02 FIELD WIDTH EXHAUSTED
006330 016171 A
006331 001010 A
006332 006347 R
4825 PUSHJ CBC GET NEXT CHARACTER
006333 006010 A
006334 000104 R
006335 006505 A
006336 004774 R
4826 PUSHJ ZI06 INPUT CHARACTER TEST
006337 006010 A
006340 006413 R
006341 006505 A
006342 004774 R
006343 016111 A 4827 LDA ICHAR,B APPEND RT HALF
006344 004204 A 4828 ASLA 4
006345 126030 A 4829 ADD BCHAR,B
006346 056111 A 4830 STA ICHAR,B
4831 ZI02 MOVBAB AISC,BASCB SET SCB TO LIST ITEM
006347 016013 A
006350 056021 A
4832 PUSHJ RCH PUT CHARACTER IN ITEM
006351 006010 A
006352 003535 R
006353 006505 A
006354 004774 R
4833 TNZAB WT,ZI01 LOOP UNTILL FIELD WIDTH EXHAUSTED
006355 016171 A
006356 001010 A
006357 006316 R
006360 001000 A 4834 JMP FRS65 TO FORMAT SCAN
006361 001067 R
4836 * OUTPUT
4837 ZI04 MOVBAB AISC,BASCB SET SCB TO LIST ITEM
006362 016013 A
006363 056021 A
4838 PUSHJ ICC INPUT CHARACTER FROM LIST ITEM
006364 006010 A
006365 001743 R
006366 006505 A
006367 004774 R
4839 PUSHJ ZI08 OUTPUT CHARACTER
006370 006010 A
006371 006437 R
006372 006505 A
006373 004774 R
006374 016111 A 4840 LDA ICHAR,B
006375 004304 A 4841 ASRA 4
006376 016111 A 4842 LDA ICHAR,B

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E.2 VORTEX LISTING

V\$RERS

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LISTING PAGE (700)

Address	Op	Op	Op	Op	Op	Op	Op	Op	Op	
006377	006150	A	4843	ANAI	0177	GET RT HALF		07	04843	
006400	000177	A	4844	PUSHJ	ZI08	OUTPUT CHARACTER		07	04844	
006401	006010	A	4845	PUSHJ	DCB	OUTPUT CHARACTER TO BUFFER		07	04845	
006402	006437	R								
006403	006505	A								
006404	004774	R								
006405	006010	A	4846	JMP	ZI04	LODP UNTILL DONE		07	04846	
006406	002635	R								
006407	006505	A								
006410	004774	R								
006411	001000	A	4848	*						
006412	006362	R	4849	ZI06	TEST INPUT CHARACTER			07	04848	
			4850	LDA	BCHAR,B			07	04849	
			4851	SUBI	'0'			07	04850	
006413	016030	A	4851	JAN	ER3			07	04851	
006414	006140	A	4852	STA	BCHAR,B			07	04852	
006415	000260	A	4853	SUB	TEN			07	04853	
006416	001004	A	4854	JAN	ZI07	0-9		07	04854	
006417	005470	R	4855	SUB	SEVEN			07	04855	
006420	056030	A	4856	JAN	ER3			07	04856	
006421	140471	A	4857	SUB	SEVEN			07	04857	
006422	001004	A	4858	JAP	ER3			07	04858	
006423	006435	R	4859	ADDI	020			07	04859	
006424	140467	A	4860	STA	BCHAR,B			07	04860	
006425	001004	A	4861	ZI07	POPJ	EXIT		07	04861	
006426	005470	R								
006427	140467	A	4863	*	GENERATE CHARACTER			07	04863	
006430	001002	A	4864	ZI08	LDA	ICHAR,B		07	04864	
006431	005470	R	4865	ADDI	'0'			07	04865	
006432	006120	A	4866	STA	ICHAR,B			07	04866	
006433	000020	A	4867	SUBI	0272			07	04867	
006434	056030	A	4868	JAN	ZI09			07	04868	
			4869	ADD	SEVEN			07	04869	
			4870	STA	ICHAR,B			07	04870	
			4871	ZI09	POPJ	EXIT		07	04871	
006435	001000	A								
006436	004066	R								
006437	016111	A	4872	EJEC				07	04872	
006440	006120	A	4873	*				07	04873	
006441	000260	A	4874	*				07	04874	
006442	056111	A	4875	*	V \$ R E R R D A T A B L O C K		V2*	07	04875	
006443	006140	A	4876	*				07	04876	
006444	000272	A	4877	*				07	04877	
006445	001004	A	006453	R	BASE EQU *	BASE ADDRESS OF DATA BLOCK		07	04879	
006446	006451	R	4880	IFF	NUC		FG	07	04880	
006447	120467	A	4881	GOTO	NUC1		FG	07	04881	
006450	056111	A	4882	IFT	VII		FG	07	04882	
			4883	GOTO	VIII		FG	07	04883	
			4884	VOPSTP	BSS	1	FG	07	04884	
			4885	VAACC	PZE	VACC		07	04885	
			4886	VABSCB	PZE	VABSCB		07	04886	
			4887	VACC	BSS	4		07	04887	
			4888	VACHB	PZE	VACHB		07	04888	
			4889	VADFCB	BSS	1		07	04889	
			4890	VAFSCB	PZE	VAFSCB		07	04890	
			4891	VAGPAR	PZE	VGDRP-1		07	04891	
			4892	VAI SCB	PZE	VISC B		07	04892	
			4893	VALDC	BSS	1		V2	07	04893
			4894	VANPOJ	DATA	0		V2	07	04894
			4895	VANRB	BSS	1		V2	07	04895
			4896	VADPST	PZE	VOPSTK+STKSZ		FG	07	04896
			4897	VAPBF	BSS	1		07	04897	
			4898	VASCB	BSS	1		07	04898	
			4899	VASFL	BSS	1		07	04899	
			4900	VASYSB	PZE	VSYSDC		07	04900	
			4901	VBEXP	BSS	1		07	04901	
			4902	VBFWPT	BSS	1		07	04902	
			4903	VBSCB	BSS	4		07	04903	
			4904	VCHB	BSS	14		07	04904	
			4905	VCHBPT	BSS	1		07	04905	
			4906	VCHMHD	BSS	1		07	04906	
			4907	VCOUN	BSS	1		07	04907	
			4908	VCVFL	BSS	1		07	04908	
			4909	VD	BSS	1		07	04909	
			4910	VDEXP	BSS	1		07	04910	
			4911	VDT	BSS	1		07	04911	
			4912	VEDEXP	BSS	1		07	04912	
			4913	VERN	DATA	0		07	04913	
			4914	VFDLKY	BSS	1		07	04914	
			4915	VFSCB	BSS	4		07	04915	

4916	VGRP	BSS	9	*C	GROUP DYNAMIC REPEAT COUNT	07	04916
4917	VIDEXP	BSS	1		IMPLICIT DECIMAL EXPONENT	07	04917
4918	VIFW	BSS	1		INTEGER FIELD WIDTH	07	04918
4919	VIBSZ	BSS	1		INDIVIDUAL ITEM BYTE SIZE	07	04919
4920	VIIWSZ	DATA	1		INDIVIDUAL ITEM WORD SIZE	07	04920
4921	VINFL	BSS	1		INITIAL ENTRY FLAG	V2	07 04921
4922	VIOCON	BSS	1		I/O CONTROL WORD	07	04922
4923	VIOLNK	BSS	1		IOLINK CONTROL WORD	07	04923
4924	VIOSTA	DATA	0		I/O STATUS	07	04924
4925	VISCB	BSS	4		LIST ITEM SCB	07	04925
4926	VITEMA	BSS	1		ADDRESS OF LIST ITEM	07	04926
4927	VITEMW	BSS	1		COUNT OF WORDS REMAINING IN ITEM	07	04927
4928	VITMIN	BSS	1		LIST ITEM WORD INCREMENT	07	04928
4929	VITHDD	BSS	1		LIST ITEM MODE	07	04929
4930	VLISTF	BSS	1		LIST DATA XFER FLAG	07	04930
4931	VLNKC	BSS	1		FCB CHAIN LINK COUNT	07	04931
4932	VLRECN	BSS	1		LOGICAL RECORD NUMBER	07	04932
4933	VLRSZ	BSS	1		LOGICAL RECORD SIZE	07	04933
4934	VLROW	BSS	1		LOGICAL RECORD REMAINING WORD COUNT	07	04934
4935	VMDV	BSS	1		MULTIPLY OVERFLOW SWITCH	07	04935
4936	VN	BSS	1		H/T/X FIELD WIDTH	07	04936
4937	VNFF	BSS	1		NUMERIC FORMAT FIELD	07	04937
4938	VIII	CONT				FG	07 04938
4939	VDPSTK	BSS	STKSZ		OP STACK	07	04939
4940	VPARLV	BSS	1		FORMAT *C GROUP LEVEL COUNT	FG	07 04940
4941	VIF	BSS	VII			FG	07 04941
4942	VGTD	BSS	VIII			FG	07 04942
4943	VPERC	BSS	1		PHYSICAL BUFFER RECORD COUNT	07	04943
4944	VPBSZ	BSS	1		PHYSICAL BUFFER SIZE	07	04944
4945	VPRWC	BSS	1		PHYSICAL BUFFER REMAINING WORD COUNT	07	04945
4946	VPRECH	BSS	1		PHYSICAL RECORD NUMBER	07	04946
4947	VPRLIN	BSS	1		PREVIOUS LINK OF FCB CHAIN	07	04947
4948	VPTFL	BSS	1		*. POINT FLAG	07	04948
4949	VQFL	BSS	1		QUOTE FLAG	07	04949
4950	VRETUR	BSS	1		RETURN ADDRESS	07	04950
4951	VRWFL	BSS	1		FLAG WORD	V2	07 04951
4952	VS	BSS	1		SCALE FACTOR	07	04952
4953	VSCF	BSS	1		SCALE FACTOR FLAG	07	04953
4954	VSGFL	BSS	1		*- SIGN FLAG	07	04954
4955	VSVREC	BSS	1		SAVE RECORD NO	07	04955
4956	VSYSDC	DATA	0,0,0		SYSTEM DCB	07	04956
4957	VTEMP	BSS	1		TEMP STORE	07	04957
4958	VTEMP1	BSS	1		TEMP STORE	07	04958
4959	VTERM	BSS	1		PRODUCT TERM	07	04959
4960	VUNIT	BSS	1		I/O UNIT NUMBER	07	04960
4961	VW	BSS	1		FIELD WIDTH	07	04961
4962	VWT	BSS	1		WORKING VALUE OF W	07	04962
4963	VXFFL	DATA	0		PARAMETER XFER ENABLE FLAG	07	04963
4964	VXFL	BSS	1		EXPONENT FIELD NON-BLANK FLAG	07	04964
4965	VXFW	BSS	1		EXPONENT FIELD WIDTH	07	04965
4966	VXSG	BSS	1		EXPONENT SIGN FLAG	07	04966
4967	VZFW	BSS	1		LEADING ZERO FIELD WIDTH	07	04967
4968		DATA	0260		ASCII ZERO	V2	07 04968
4969		DATA	14		DECIMAL 14	V2	07 04969
4970		DATA	120		DECIMAL 120	V2	07 04970
4971		DATA	0240		ASCII BLANK	V2	07 04971
4972		DATA	*		ASCII BLANK WORD	V2	07 04972
4973	VIII	CONT				FG	07 04973
4974	NUC1	CONT				FG	07 04974
006453	R		*		END OF DATA BLOCK		
4975	VZZZ	EQU					
4976		END					

ENTRY NAMES

005113	R	VSRER1	000000	A	VSREPR	005113	R	VSRERR	000000	R	VSRERS
004567	E	BIFCB	004576	E	BDFCB	004572	E	GDFCB	004566	E	LDFCB
004565	E	PIFCB	004573	E	PDFCB	004563	E	SIFCB	004571	E	SSFCB
000000	E	V\$EXEC									
SYMBOLS											
000001	A	ARCC	000002	A	ARSCB	000003	A	ACC	000007	A	ACHB
000010	A	ARFCB	000011	A	ARSCB	000012	A	AGPAR	000110	A	AIBUF
000000	R	AIN	000020	V	AIDL1	000003	R	AIDL2	000013	A	AISCB
000000	A	AL	000027	A	ALBF	000014	A	ALOC	000015	A	ANPBJ
000016	A	ANRB	000017	A	ADPSTK	000000	R	ADUT	000020	A	AFBF
000040	A	ARST	000021	A	ASCB	000000	A	ASET	000022	A	ASFL
000023	A	ASYSDC	000177	A	AZER	000002	A	F	000000	A	B0
000001	A	B1	000014	A	B12	000015	A	B13	000016	A	B14
000017	A	B15	000002	A	B2	000003	A	B3	000004	A	B4
000005	A	B5	000006	A	B6	006453	R	BASE	000030	A	BCHAR
000031	A	B0BDE	000201	A	BD120	000200	A	BD14	000024	A	BEXP
000010	A	BF	000400	A	BFA	000026	A	BFPT	000431	A	BFR
000431	A	BFS	000025	A	BFWFT	004577	E	BIFCB	000001	A	BL
000202	A	BLNK1	000203	A	BLNK2	000472	A	BM17	000473	A	BM37
000474	A	BM77	004570	E	BDFCB	000001	A	BR	000441	A	BR0
000442	A	BR1	000454	A	BR11	000455	A	BR12	000457	A	BR14
000460	A	BR15	000443	A	BR2	000414	A	BR3	000445	A	BR4
000446	A	BR5	000447	A	BR6	000450	A	BR7	000451	A	BR8
000421	A	BS0	000422	A	BS1	000433	A	BS10	000434	A	BS11
000435	A	BS12	000437	A	BS14	000440	A	BS15	000423	A	BS2
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000431	A	BS8	000432	A	BS9	000026	A	BSCB	000430	A	BXB14S
000101	R	CAN	000104	R	CAN1	000104	R	CBC	000115	R	CBC4
000127	R	CBC6	000467	A	CBK	000020	A	CDC	000424	A	CEF
000021	A	CEN	000491	A	CER	000422	A	CEX	000032	A	CHB

000050	A	CHBPT	000051	A	CHNHDR	000464	A	CID	000134	R	CLB
000143	R	CLB4	000155	R	CLB8	000157	R	CLBLP	000167	R	CLBX
000171	R	CLS	000227	R	CLS10	000237	R	CLS15	000241	R	CLS20
000270	R	CLS30	000002	A	CM	000016	A	COPV	000052	A	COUNT
000022	A	CRA	000423	A	CRB	000471	A	CRD	000470	A	CRW
000465	A	CTR	000003	A	CTRV	000053	A	CVFL	000420	A	CXC
000466	A	CTX	000054	A	D	000305	R	D10	000472	A	D15
000425	A	D16	000013	A	DA	000326	R	DEF	000333	R	DEF4
000336	R	DEF8	000363	R	DED10	000361	R	DE05	000055	A	DEXP
003565	R	DIN	000341	R	DDUT	000056	A	DT	000012	A	EC
000057	A	EDEXP	000424	A	EIGHT	003565	R	EIN	000341	R	EDUT
003472	R	ER1	003471	R	ER2	005470	R	ER3	005467	R	ER4
000060	A	ERN	000064	A	FCHAR	000065	A	FCDDE	000061	A	FDLKEY
003565	R	FIN	000465	A	FIVE	000015	A	FLF	000062	A	FMPT
000423	A	FOUR	000414	R	FOUT	000016	A	FPD	000457	A	FPDR
000437	A	FPOS	000017	A	FRB	000440	A	FRBS	000014	A	FRM
000063	A	FRMT	000062	A	FRPT	000431	R	FRS	000476	R	FRS10
000536	R	FRS15	000614	R	FRS19	000447	R	FRS2	000620	R	FRS20
000627	R	FRS23	000657	R	FRS30	000672	R	FRS35	000706	R	FRS40
000717	R	FRS45	000732	R	FRS46	000761	R	FRS47	000464	R	FRS5
001000	R	FRS50	001050	R	FRS55	001054	R	FRS60	001067	R	FRS65
001076	R	FRS70	001104	R	FRS75	001110	R	FRS85	001121	R	FRSCHT
001134	R	FRSJT	000675	R	FRSL1	000062	A	FSCB	001162	R	GBA
001175	R	GBA50	001205	R	GBA55	001210	R	GBA60	001226	R	GBA70
001236	R	GBA80	000066	A	GDRPC	000007	A	GF	000071	A	GFRPT
000430	A	GFS	003565	R	GIN	001244	R	GNI	001401	R	GNI10
001263	R	GNI2	001432	R	GNI20	001475	R	GNI25	001506	R	GNI30
001270	R	GNI4	001527	R	GNI50	001324	R	GNI8	001347	R	GNI9
001375	R	GNI9A	001412	R	GNIL1	001532	R	GNIL2	001550	R	GNI
001577	R	GNL2	004572	E	GDFCB	001604	R	GDUT	000074	A	GSRPC
001636	R	HIN	001707	R	HID10	001725	R	HID15	001647	R	HID2
001674	R	HID4	001677	R	HID6	001636	R	HDUT	001743	R	ICC
001775	R	ICCCCT	002017	R	ICCCCT1	001764	R	ICCLP	000111	A	ICHR
000077	A	IDEXP	002043	R	IFF	002045	R	IFFL	002070	R	IFFL1
000100	A	IFW	000101	A	IIBSZ	003565	R	IIN	000102	A	IINWZ
000006	A	IN	002102	R	INF	000103	A	INFL	002104	R	INFLP
000447	A	INR	000427	A	INS	000104	A	IDCONT	000103	A	IDLNK
000106	A	IDSTAT	002114	R	IDUT	000107	A	ISCB	000113	A	ITEMAD
000114	A	ITEMWC	000115	A	ITMINC	000116	A	ITMODE	002126	R	IXN
002226	R	IXN10	002237	R	IXN15	002275	R	IXN18	002300	R	IXN20
002314	R	IXN25	002327	R	IXN30	002166	R	IXN4	002205	R	IXN5
002331	R	IXN50	002347	R	IXN52	002355	R	IXN53	002362	R	IXN55
002376	R	IXN57	002400	R	IXN58	002212	R	IXN6	002411	R	IXN60
002222	R	IXN8	002141	R	IXNL1	002252	R	IXNL2	002367	R	IXNL3
000601	R	IXR	000300	A	LC	000001	A	LF	000422	A	LFS
000123	A	LGOV	000462	A	LHW	002432	R	LIN	002460	R	LINX
000117	A	LISTFL	000120	A	LNKCNT	000204	A	LOC	004566	E	LOFCB
002513	R	LDU4	002470	R	LDUT	000003	A	LP	000121	A	LRECND
003555	R	LRLA3	000122	A	LRSZ	000123	A	LRWC	002042	R	LSRAS
002517	R	M10	002536	R	M104	002562	R	M10X	000046	A	MAP
000004	A	MN	000124	A	MOV	000420	A	MT	000125	A	N
000126	A	NFF	000470	A	NINE	000005	A	NM	002564	R	NRM
002610	R	NRM4	002565	R	NRML	002632	R	NRMX	000000	A	NUC
002635	R	DCB	002647	R	DCB4	002660	R	DCRC	000421	A	ONE
002670	R	DNF	002740	R	DNF20	002775	R	DNF30	003053	R	DNF40
002720	R	DNF5	003066	R	DNF50	003077	R	DNF52	003116	R	DNF55
003142	R	DNF60	002744	R	DNFL1	003082	R	DNFL2	003150	R	DPN
003322	R	DPN30	003203	R	DPN4	000127	A	DPSTK	000006	A	DPSTKP
000141	A	PARLV	003334	R	PAX	003360	R	PAX10	003374	R	PAX15
003403	R	PAX16	003434	R	PAX20	003461	R	PAX30	003470	R	PAX33
003475	R	PAX50	003500	R	PAX55	003505	R	PAX70	003532	R	PAXTAB
000142	A	PERC	000143	A	PBSZ	000144	A	PBWC	003535	R	PCH
004565	E	PIFCB	000006	A	PL	003741	R	PNI18	003753	R	PNI19
003761	R	PNI20	003650	R	PNI4	003770	R	PNI50	004013	R	PNI67
004030	R	PNI62	004044	P	PNI64	004061	R	PNI66	003712	R	PNI8
003620	R	PNIL1	003634	R	PNIL1X	003776	R	PNIL2	000002	A	PO
004573	E	POFCB	004066	R	POJ	000443	A	PDR	000423	A	POS
000003	A	PR	004073	R	PRD	004127	R	PRD1	004146	R	PRD2
004157	R	PRD4	000145	A	PRECND	000146	A	PRLINK	004162	R	PRU
004175	R	PRU0	004203	R	PRU5	004241	R	PRU1	004356	R	PRU10
004422	R	PRU15	004256	R	PRU2	004434	R	PRU20	004460	R	PRU25
004265	R	PRU3	004471	R	PRU30	004520	R	PPU35	004270	R	PRU4
004545	R	PRU40	004311	R	PRU5	004561	R	PRU50	004332	R	PRU6
004563	R	PRUASI	004575	R	PRUPTB	004604	R	PRUPTC	004574	R	PRUGT
004424	R	PRUL1	004614	R	PRW	004606	R	PRW0	004623	R	PRW05
004642	R	PRW1	004712	R	PRW10	004604	R	PRW2	004666	R	PRW4
004676	R	PRW6	004723	R	PRX	000007	A	PS	004743	R	PSB
004772	R	PSBX	004774	R	PSJ	000010	A	PT	000147	A	PTFL
005033	R	PXF	005076	R	PXF10	005103	R	PXF20	005046	R	PXF5
005105	R	PXF5ZT	000150	A	QFL	000011	A	QT	000125	A	R
000003	A	RB	005125	R	RBE15	005150	R	RBE25	005152	R	RBE30
005157	R	RBEJT	005176	R	RBEJTE	000424	A	RBS	005176	R	RCH
005233	R	RCH10	005243	R	RCH15	005204	R	RCH2	005223	R	RCH5
005251	R	RCL	005263	R	RCL10	005273	R	RCL15	005256	R	RCL5
005313	R	RCP	005355	R	RCP15	005375	R	RCP20	005404	R	RCP25
005325	R	RCP3	005445	R	RCP35	005450	R	RCP40	005331	R	RCP5
005461	R	RCP30	000151	A	RETURN	005507	R	RFL	005527	R	RFL10
005572	R	RFL20	005602	R	RFL30	005610	R	RFL40	005523	R	RFL5
005612	R	RFL50	000463	A	RHW	000000	A	RM	000421	A	RMS
005617	R	RNA	005617	R	RND	005665	R	RND10	005636	R	RND5
005652	R	RNDL	005670	R	RNDX	002340	R	RDF	000012	A	ROPSTP
000012	A	RP	005672	R	RPB	005701	R	RPB10	005714	R	RPB11
005716	R	RPB12	005724	R	RPB15	005730	R	RPB20	000154	A	RWFL

000155	A	S	000032	A	SAVE	000005	A	SC	000156	A	SCF
005735	R	SCH	005752	R	SCHG	005745	R	SCHLP	005762	R	SCHX
005763	R	SCHY	000446	A	SCR	000426	A	SCS	000467	A	SEVEN
000157	A	SGFL	000014	P	SH	005765	R	SHA	006014	R	SHA50
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000013	A	SL	001746	R	SOF	004571	E	SSFCB	000012	A	STK3Z
000160	A	SVRECN	000162	A	SY3BF	000161	A	SY3DCB	000164	A	TEMP
000165	A	TEMP1	000471	P	TEN	000166	A	TERM	000464	A	THREE
006034	R	TIN	006053	R	TID10	006076	R	TID15	006105	R	TID20
006120	R	TIDL	006034	R	TOUT	000004	A	TR	006137	R	TRM
006155	R	TRM10	006171	R	TRM20	006211	R	TRM30	006230	R	TRMI
000425	A	TRS	000422	A	TWO	006231	R	UID	006252	R	UID4
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000171	A	WT	000001	A	X	000172	A	XFFL	000173	A	XFL
000174	A	XFW	006260	R	XIN	006260	R	XOUT	000175	A	XSG
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0 ERRORS ASSEMBLY COMPLETE

494	AACC	2199	3063								
496	ABSCB	871	1384	4084	4784						
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508	AIBUF	707	708	4809	4810						
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509	AISCB	721	739	4831	4837						
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512	ALDC	775	2656	3191	3617	3807	3988	4489			
514	ANFDJ	767	3959	3960							
516	ANRB	358	363	841	952	979	2635	2673	2694	2793	
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705	ADUT	1482									
520	APBF	3162	3192	3260	3320	3339	3318	4182	4184	4297	
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66	ARST	445	936	957	961	1168	1259	1267	1299	1346	
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67	ASET	453	874	1207	1207	1209	1210	1211	1212	1213	
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524	ASFL	1197	1275	2412	2470						
526	ASYSDC	3336									
674	AZER	2002	2111	2143	2167	2187	2503	2510	2523	2536	
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68	B	241	242	243	251	252	259	261	277	278	
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529	BCODE	2104	2120	2164	2178			
678	BD120	965	2678	2731	2798	2804	3301	3303
		3324	3341	4322			3310	3318
676	BD14	1749	2508	2541	2659	4370	4373	
530	BEXP	1600	1621	1641	1653	1687	1724	1732
		2233	2234	2373	2375	2390	2392	2960
		3005	3036	3042	3054	3064	3067	3079
		3095					3081	3089
199	BF	119	120					
200	BFA	3543	3546					
532	BFPT	1543	3199	3625	4625	4628	4642	4673
119	BFR	3291	3436					
120	BFS	3157	3427	3586	3651			
533	BFWPT	909	917	1533	1541	1547	1549	1557
		4180	4184	4285	4329	4663	4752	4762
0	BIFCB	56	3523					
176	BL	2018	2036	2110	2166	2260		
680	BLNK1	713	727	2291	2482	2550	2560	4782
682	BLNK2	907					4816	
88	BM17	122						
89	BM37	3390						
0	BDFCB	57	3524					
147	BR	3891						

91	BR0	119	127	134	140	144	158				
103	BR15	1215	1614	1643	1646	1655	1671	1907	2892		
95	BR4	2114	2172								
97	BR6	2115	2173								
99	BR8	2133	3690	4215							
104	BS0	120	128	130	132	135	136	141	142	149	
		150	153	169							
115	BS11	3652									
116	BS12	976	2670	3183	3603						
117	BS14	3003	3637								
118	BS15	3105									
107	BS4	109									
111	BS7	121	2995								
112	BS8	3683	4225								
113	BS9	4599									
535	BSCB	511	528	529	532						
121	BXBIAS	1620	1640	3006	3043	3055					
767	CAN	998	1780	2740	2853	2861	3728	4263	4720	4723	
		4724	4727								
790	CAN1	776									
834	CAN2	826									
851	CAN5	820	823	846							
819	CANL1	828									
844	CANL2	849									
871	CBC	719	1868	2101	2161	2259	2418	4100	4821	4825	
876	CBC4	874									
881	CBC6	877	879								
218	CBK	2763									
228	CDC	3152									
211	CER	4261									
212	CEX	822	996	1778	2738	2856	4717				
537	CHB	641									
539	CHBPT	1741	1744	1747	2495	2500	2501	2506	2533	2534	
		2539									
541	CHNHDR	4473	4477								
213	CIO	982	2687	2812	2810	2859	3685	4432	4725		
900	CLB	1548	3201	3631	4197	4231					
904	CLB4	902									
908	CLB8	906									
913	CLBLP	919									
920	CLBX	904	905								
944	CLS	4048	4049								
965	CLS10	961									
968	CLS15	966									
972	CLS20	956	957								
990	CLS30	985									
177	CM	1207	1440	2105	2165						
226	CPV	2630									
543	COUNT	709	724	1085	1088	1092	1095	1103	1725	1731	
		1809	2060	2232	2270	2292	2464	2494	2496	2499	
		2522	2528	2529	2532	2549	3062	3071	3072	4078	
		4082	4368	4380	4385	4476	4481	4484	4521	4524	
		4783	4815								
230	CRA	3646									
214	CRB	3724									
221	CRD	3581									
215	CTR	4001									
216	CTRV	4020									
545	CVFL	1192	1201	1279	2099	2102	2113	2116	2123	2127	
		2132	2134	2139	2141	2159	2162	2170	2171	2174	
210	CXC	3513									
217	CXF	3931	3972								
547	D	1085	1089	1102	1196	1363	1370	1806	2211		
1012	D10	1694	2026								
122	D15	1600	2374	2963	4493						
109	D16	3928									
203	DA	3263									
1049	DEF	1102	1103	1111	1138	1818					
1052	DEF4	1049									
1055	DEF8	1051									
1096	DED10	1086	1091	1093							
1094	DED5	1087									
549	DEXP	1099	1099	1131	1135	1137	1376	1681	1693	1702	
		1736	1804	1812	1817	2060	2062	2217	2220	2227	
		2237	2561	2564	2570	2572	2578	4399			
2937	DIN	1467									
1083	DOUT	1468									
551	DT	1094	1104	1109	1370	1809	1811	1814	2462	2471	
		2472	2475	2528							
202	FC	877	1525	4724							
553	EDEXP	2089	2189	2191	2209	2209	2216				
133	EIGHT	219	1217	1338	2423	3655					
2938	EIN	1469									
1084	EDUT	1470	1805	1808	1813						
4258	ER1	1168	1175	1202	1233	1259	1265	1284	1289	1308	
		1320	1336	1344	1346	1350	1358	1360	1440	2005	
		2014	4637								
4257	ER2	3763	3799								
4256	ER3	1398	1667	2103	2152	2154	2163	2193	2218	2258	
		2269	2959	2962	2964	2979	3056	3058	3080	3083	
		3085	4851	4856	4858						
4255	ER4	950	3259	3276	3367	3458	3493	3504	4002	4007	
555	ERN	3904	4255	4256	4257	4259	4260				

E.2 VORTEX LISTING

V#REPS

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577	IIWSZ	3073	3783							
197	IN	134	135	3276	3348	3395	4172	4229	4434	
2034	INF	1167	1200	1258	1345	1359	1438			
579	INFL	3864	3899							
2035	INFLP	2036								
134	INR	2702	4234							
135	INS	2633	4347							
581	IOCDNT	953	980	2674	2794	2817	2852	3154	3184	3185
		3583	3606	3607	3648	3682	3684	3689	3691	4214
		4216	4224	4226						
583	IDLNK	3464	3496	3509	3509					
585	IDSTAT	4220	4223							
2058	IDUT	1476								
587	ISCB	508	570							
589	ITEMAD	708	1234	1234	1584	1769	1769	2261	2296	3064
		3802	3808	4754	4760	4810				
591	ITEMWC	1235	1235	1770	1781	1781	3801	3810		
593	ITMINC	1234	1235	1769	1781	3784	3789			
595	ITMODE	1588	2953	3765	3766	3770	3795			
2089	IXN	1397								
2142	IXN10	2112								
2150	IXN15	2106								
2169	IXN18	2124	2128							
2171	IXN20	2166								
2186	IXN25	2168	2180							
2195	IXN30	2160	2165							
2113	IXN4	2110								
2127	IXN5	2121								
2199	IXN50	2100	2105							
2210	IXN52	2206								
2212	IXN53	2210								
2215	IXN55	2212								
2221	IXN57	2204								
2222	IXN58	2220								
2130	IXN6	2122								
2232	IXN60	2222								
2139	IXN8	2130								
2100	IXNL1	2126	2129	2135	2146					
2160	IXNL2	2179	2182	2194						
2219	IXNL3	2228	2238							
1241	IXR	1411								
86	LC	155	156	157	158	159	160	161	162	163
		164	165	166	167					
191	LF	124	136	995	2644	2796	2820	3289	3626	4129
		4204	4287	4422	4442	4700	4719			
136	LFS	2632								
597	LGOV	966	3327							
137	LHW	2899	3057	3258						
2258	LIN	1479	2260							
2270	LINX	2266								
598	LISTFL	1162	1237	1239	1368					
600	LKNCNT	981	2695	4475						
493	LOC	494	495	496	497	498	499	500	501	502
		503	504	505	506	507	509	510	512	513
		514	515	516	517	518	519	520	521	522
		523	524	525	526	527	530	531	533	534
		535	536	537	538	539	540	541	542	543
		544	545	546	547	548	549	550	551	552
		553	554	555	556	559	560	564	565	566
		567	571	572	573	574	575	576	577	578
		579	580	581	582	583	584	585	586	587
		588	589	590	591	592	593	594	595	596
		598	599	600	601	602	603	604	605	606
		607	608	609	610	611	612	613	614	615
		617	618	619	620	621	622	623	624	625
		626	627	628	629	630	631	632	635	636
		637	638	639	640	642	643	644	645	646
		647	649	650	651	652	653	654	655	656
		657	658	659	660	661	662	663	664	665
		666	667	668	669	670	671	672	673	674
		675	676	677	678	679	680	681	682	683
		684								
0	LOFCB	55	3522							
2300	LOU4	2297								
2291	LOUT	1480								
178	LP	1168	1208	1288						
602	LRECND	1540	2799	2823	3298	3320	3633	4136	4728	
2898	LRLAS	2901								
604	LRSZ	986	1542	2893	2822	3178	3278	3299	3205	3308
		3323	3343	3434	3499	3634	4141	4284	4444	4634
		4668	4709							
606	LRWC	597	980	1534	1542	1554	3179	3634	4131	4135
		4139	4143	4195	4196	4198	4284	4663		
1981	LSRAS	1911								
2320	M10	1735	1743	2145	2236					
2330	M104	2323	2325							
2349	M10X	2327	2345							
80	MAP	796	1298	1319	1326	1415	1421	1921	1931	2842
		2848	3407	3425	3444	3473	3481	3775	3781	3862
		3863	3875	3892	3979	4018	4024			
179	MN	1210	2122	2180						
608	MOV	1742	2091	2324						
87	MT	88	89	90	91	92	93	94	95	96

4292	RFL5	4287								
4346	RFL50	4306	4309	4313						
143	RHW	1912	2681	3283	3375	3431	3492			
190	RM	131	149	2714	2766	3290	3396	4130	4192	4206
		4288	4443	4704	4720					
149	RMS	3392								
4368	RND	1096	1134	1810	2061					
4399	RND10	4385								
4379	RND5	4371								
4390	RNDL	4378	4398							
4402	RNDX	4369	4377	4384	4393					
2205	RDF	1906	2891	2950						
634	RDPSTP	811	838	3878	3880					
185	RP	1209	1442							
4422	RPB	4202	4217							
4432	RPB10	4422								
4439	RPB11	4434								
4441	RPB12	4438								
4444	RPB15	4442								
4446	RPB20	4443								
637	RWFL	715	728	730	732	734	877	881	905	945
		985	1393	1409	1525	1544	1856	1864	2634	2644
		2701	2714	2764	2766	2777	2789	2795	2820	2828
		3159	3186	3106	3200	3263	3276	3287	3288	3292
		3348	3393	3394	3435	3438	3510	3512	3587	3608
		3608	3626	3630	3652	3673	3675	3687	4087	4129
		4172	4175	4185	4188	4203	4208	4212	4229	4232
		4235	4287	4333	4337	4346	4348	4422	4434	4442
		4655	4658	4662	4697	4699	4706	4719	4722	4748
		4818								
639	S	1086	1092	1099	1101	1105	1110	1130	1136	1164
		1277	2214							
641	SAVE	2636	2641	2642	2643	2645	2646	2647	2657	2664
		2665	2667	2671	2675	2679	2704	2710	2711	2715
		2732	2763	2770	2838	3347	3376	3403	3448	3491
		4195	4198	4625	4629	4655	4660	4669	4674	4676
		4677								
196	SC	144	150	4230						
642	SCF	1195	1271	1393	1392	2195	2212			
4471	SCH	949	3267							
4498	SCH5	4489								
4481	SCHLP	4503								
4504	SCHX	4500								
4505	SCHY	4482								
144	SCR	4233								
150	SCS	4661								
145	SEVEN	218	3449	4855	4857	4869				
644	SGFL	1199	1257	1273	1284	1379	1587	1634	2125	2459
		2487	2981	3046	3098					
194	SH	124	126	129	131	2703	3286			
4520	SHA	1726	1734	2235						
4545	SHA50	4521								
4521	SHAL	4541								
4558	SHAX	4522								
0	SIFCB	53	3502	3519						
146	SIX	217								
186	SL	1211	1441							
1904	SDF	4086								
0	SSFCB	58	3525							
209	STKSZ	615	634	842	845	3876	3834	3967	4896	4939
646	SVRECN	3277	4714							
648	SYSBF	2636								
649	SYSDCB	648								
4580	TBK	2658	2660	3193	3196	3619	3622	3809	3812	3951
		3953	3955	3957	3961	4035	4492	4494		
4591	TBK10	4581	4585							
4599	TBKJMP	4592								
651	TEMP	908	915	1612	1617	1618	1623	2629	2763	2886
		2900	2965	2974	2977	3009	3015	3063	3065	3069
		3151	3354	3359	3363	3364	3372	3428	3437	3580
		3645	3654	3656	3712	3719	3726	3930	3940	3971
		3994	4014	4310	4320	4323	4326	4331	4490	4495
653	TEMP1	900	903	904	918					
151	TEN	221	1015	1018	1021	1024	2009	2190	2332	2335
		2338	2341	2571	3952	4392	4853			
655	TERN	1383	2144	2330						
132	THREE	213	1699	2387	3381	3798				
4622	TIN	1487								
4642	TIO10	4630								
4659	TIO15	4656								
4663	TIO20	4646								
4673	TIOLP	4638	4679	4681						
4623	TOUT	1488								
195	TR	153	1545	4134						
4697	TRM	4041								
4708	TRM10	4705								
4717	TRM20	4700	4704							
4723	TRM30	4719								
4728	TRM1	4715								
153	TRS	4698								
154	TWO	212	1340	1343	1589	1604	2153	2954	2989	3457
		3466	3494	3500	3796					

170	ZERO	210			
671	ZFW	1054	1382	2522	2528
4806	ZIN	1477			
4821	ZI01	4833			
4831	ZI02	4824			
4837	ZI04	4818	4846		
4849	ZI06	4822	4826		
4861	ZI07	4854			
4864	ZI08	4839	4844		
4871	ZI09	4868			
4807	ZOUT	1478			