Program Number B06-154R03

SERIES 32
PROCESSOR TEST
PART 1

CONSISTS OF:

BOOTSTRAP OBJECT TAPE	06-154R03M14
TEST PROGRAM LISTING	06-154M91R03A13
TEST PROGRAM DESCRIPTION	B06-154M95R03A15

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SERIES 32 PROCESSOR TEST PART 1

1 TEST PROGRAM TITLE

Series 32 Processor Test, Part 1 06-154R03

1.1 RELATED ITEMS

Series 32 Processor Test, Part 1, Program Tape	06-154R03M14
Series 32 Processor Test, Part 1, Program Listing	06-154M91R03A13
Series 32 Basic Test	06-158

2 PURPOSE OF THE TEST

This program checks all features of the 32-bit processors that do not require manual intervention. The program consists of 15 subtests. Refer to the program listing for a detailed description of each subtest. The subtests check the following instruction/features:

Test 1: LPSW, BTC, BFC, BTBS, BTFS, BFBS, BFFS,

Test 2: LI, CLI, L, CLR, CL, LR, LHL, LA, LCS, LHI, CLHI, LH, CLH, LIS

Test 3: ST, LM, STM, TS, STH

Test 4: BXLE, BXH, BAL, BFCR, BTCR, BALR, Double Indexing Test

Test 5: XR, XI, X, OR, OI, O, NR, NI, N, XHI, XH, OHI, OH, NHI, NH

Test 6: EPSR, LPSWR, TI, THI, EXHR, SLLS, SRLS, SLHLS, SRHLS, SLHL, SRHL, SLHA, SRHA

Test 7: LB, CLB, STB, STBR, LBR, EXBR

Test 8: AIS, SIS, AR, SR, A, S, AI, SI, AM, AH, SH, AHI, SHI, AHM, CR, C, CI, CH, CHI

Test 9: SVC

Test 10: SINT, Illegal Instruction Interrupt

Test 11: SRL, SLL, SRA, SLA, RRL, RLL

Test 12: MR, M, D, DR, MH, MHR, DH, DHR

Test 13: ATL, ABL, RTL, RBL

Test 14: privileged instruction interrupt

Test 15: TBT, SBT, RBT, CBT, TLATE, CRC12, CRC16, SCP, CHVR
To skip test 15, write 0894 into loc 3279
Refer to Appendix E for a summary of all legal op-codes.

3 MINIMUM HARDWARE REQUIRED

- Model 7-32 Processor
- Minimum 32kb of memory
- A Teletype typewriter with a paper-tape reader
- display panel is optional
- high-speed, paper-tape reader is optional

4 REQUIREMENTS OF MACHINE UNDER TEST

A console must be connected at a device address of X'02'; otherwise, location labelled IO (see the listing) must be changed to reflect the console type and address used.

5 LOADING PROCEDURES

The program tape is a self-loading bootstrap tape (M14 core image format) and loads using the 50 sequence in Appendix C, Part 3.

When the program is loaded, this message is output:

```
S32PT1 06-154 R03

CPU

*
```

If this message is not printed, follow these steps:

1. Using the display panel and the program listing and referring to Appendix B, change location CPUNO. On the program tape, it is set up as 7X for Model 7/32; so, this location should be changed only if the model being tested differs.
2. Using the display panel, start program execution at ORIGIN2. When the program is started at ORIGIN2, it assumes that the

I/O operations cannot be performed. When an error is detected, the program halts by loading a PSW of X'80F0'. The error number is copied into the display panel indicators. Refer to the program listing for further diagnosis.

NOTE

When a spurious interrupt is detected, the processor is halted by loading a PSW of X'8000' after displaying the error number.

6 OPERATING PROCEDURES

6.1 NORMAL TESTING

This program can be executed starting from location ORIGIN1 or location ORIGIN2. The program should be started at ORIGIN1 if the user wants to print the error messages. If the user does not want the error messages printed (i.e., if the Series 32 Basic Test failed; or, if for some reason the user suspects an error in the I/O), the program can be started at ORIGIN2. In this case, follow the procedure explained in Section 5.

When the program is loaded, it branches ORIGIN1 and prints the characters shown below:

```
S32PT1  06-154 R03

CPU

*
```

The user should depress the two keys, identifying the processor under test, by referring to Appendix B. The program executes all subtests (explained in Section 2) applicable for the processor being tested. When all tests are executed without detecting an error, they are repeated NTIMES where NTIMES is set to 10 on the program tape. If no errors are detected, the characters NO ERROR are printed.

6.2 OPTIONAL TESTING

The constant NTIMES can be changed to repeat the test a different number of times. Refer to the listing. If NTIMES is set to zero,

the tests are continuously executed until the break key on the console is depressed.

The console can be turned OFF to run the test for a long period of time. The display panel indicators are lit as shown in Appendix C.

The program counts TOTAL (the number of times all the tests are repeated) and TOTERR (the total errors detected). When the console is turned ON, the program prints the contents of TOTAL and TOTERR: XXXX YYYY. The test is then terminated.

If an irrecoverable error is detected (e.g., illegal instruction, machine malfunction) when the console is turned OFF, the test is aborted. The error number is copied into the display panel indicators 'Memory Address'. The processor is halted by loading a PSW of X'8000'. When the console is turned back ON and the RUN switch depressed, the error message is printed and the program branches to OPTIN.

To run the test continuously and print only the error messages, the user can set NTIMES = 0 (see the listing). In this case, the test can be terminated by depressing the break key on the console.

6.3 ERROR PROCEDURES

When the program detects an error, further action depends on the options selected.

Normally, when no options are selected and the program is started at ORIGIN1, the program prints an error message on the console when an error is detected. A subroutine ERROR (see the listing) handles the messages. It stores all the registers in memory starting at REGSAV. An error message consists of:

ERROR TTNN

where:

TT = subtest in which the error is detected

NN = error number

Refer to Appendix D for an explanation of each error message. The error number is also copied into the display panel indicators as shown in Appendix C. In addition to the error number, in some cases, certain other useful parameters are also printed on the con-

sole. See Appendix D.

If the program execution is started at ORIGIN2 when an error is detected, no error message is printed. The program stores all the registers starting at REGSAV. The error number is copied into the display panel indicators as shown in Appendix C. The processor is halted by loading a PSW of X'80F0'. The user can then open up memory locations or observe the registers.

When the console is turned OFF, no messages are printed. If any errors are detected, the program counts the errors. It aborts the test that failed and executes the next test. The program copies TOTAL and TOTERR into the display panel indicators as explained in Section 6.2.

If a total of X'FFFF' errors are detected or an irrecoverable error occurs, testing is aborted. The program copies TOTAL and either TOTERR (X'FFFF') or the unrecoverable error number (e.g., TTF3) into the indicators. The processor is then halted.

Each subtest assumes the previous subtest was executed without error. Therefore, when an error is detected in a subtest, the user can single step through the subtest that failed to determine which instruction/operation failed. Each subtest is further divided into various parts, identified by an error number.

Each part is independent; so, it can be executed by itself. The user must single step through only one part. This is recommended for all nonarithmetic errors.

The last instruction in each subtest is a branch to the next subtest. e.g.,

```
T3END B TEST4
```

To loop on Subtest 3 continuously, this instruction can be changed to:

```
T3END B TEST3
```

7 PROGRAMMING NOTE

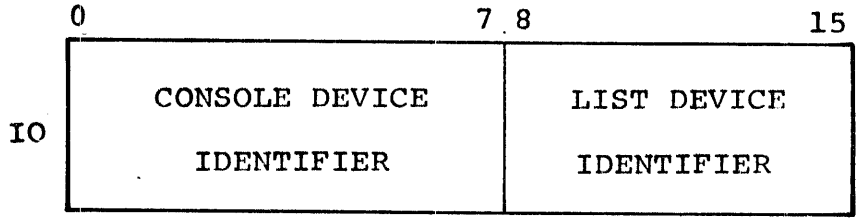
If it is difficult to load the program tape and execute the program, the program can also be loaded by changing the memory locations X'52' - X'54' to perform the auto load instruction (RX3 format) to the value of 'LNZB' in the listing. Also, locations X'56'- X'58' can be changed to reflect the start of the actual program, X'A00'.

0050	D500	
0052	4000	
0054	XXXX	WHERE XXXX = 'LNZB'
0056	4300	
0058	0A00	

In this case, the entire program is loaded into memory without using the short loader at the beginning of the tape by addressing location X'50' and by executing the autoload instruction in single mode. Refer to Section 5.

APPENDIX A
USER DEVICE DEFINITION

The halfword labeled 'IO' (see the program listing) has the default value for the Teletype typewriter, CRT, or Carousel 15/30 (all on current loop interface) as the input/output console device. If the setup is different, 'IO' must be changed as follows:



CONSOLE DEVICE IDENTIFIER	MEANING
X'01'	GDT/CRT on PASLA/PALM interface, strapped for FDX operation and highest baud rate.
X'02'	TTY/GDT/CRT/Carousel 15/30/35 on TTY/current loop interface.
X'03'	Reserved; interpreted as X'02'.
X'04'	Carousel 300 on PASLA/PALM interface, strapped for FDX operation and highest baud rate.
X'00', X'05 - X'FF'	Reserved; interpreted as X'02'.

LIST DEVICE IDENTIFIER	MEANING
X'01'	As above.
X'02'	As above.
X'03'	Line printer (Data Printer or Centronics) on line printer interface.
X'04'	As above.
X'00', X'05' - X'FF'	As above.

1. The Graphic Display Terminal (GDT) or CRT, if used on PASLA/PALM interface, should be strapped for device addresses X'10' and X'11',for receive and transmit sides, respectively. If the addresses are different, the halfword labled 'PASLADR' (see the program listing) must be changed accordingly.

2. If used, the Teletype typewriter or current loop interface should be strapped for the deivce address X'02'. If the address is different, the halfword labled 'CLIFADR' (see the program listing) must be changed accordingly.

3. The Carousel 300 on PASLA/PALM interface, if used, should be strapped for the device addresses X'10' and X'11' for receive and transmit sides, respectively. If the addresses are different, the halfword labled 'C300ADR' (see the program listing) must be changed accordingly.

4. If used, the line printer should be strapped for device address X'62'. If the address is different, the halfword labled 'LPADR' (see the program listing) must be changed accordingly.

APPENDIX B
50 SEQUENCE TO LOAD THE SERIES 32 PROCESSOR TEST, PART 1

LOCATION	SUGGESTED SETTING	FUNCTION
0030	0000	ILLEGAL INSTRUCTION NEW PSW
0032	8000	
0034	0000	
0036	0050	
0038	0000	MACHINE MALFUNCTION NEW PSW
003A	8000	
003C	0000	
003E	0050	
0050	D500	50 SEQUENCE
0052	00CF	
0054	4300	
0056	0080	
0078	YYZZ	

YYZZ = Tape Reader Device Number and Command Byte
= 1399 for HSPTR/P
= 0399 for HSPTR
= 0294 for TTY Tape Reader

APPENDIX C
DISPLAY PANEL INDICATORS

PART 1

When the TTY is OFF:

TOTAL TOTERR

0000	0000	0000	0000	0000	0000	0000	0000

Memory Address Memory Data

TOTAL = Total times the tests are repeated.

TOTERR = Total errors detected.

PART 2

When an error is detected:

ERRNO

T T N N

0000	0000	0000	0000	0000	0000	0000	0000

Memory Address Memory Data

PART 3

CPU Type

KEYS	MODELS DENOTED
7X	7-32 WITH DISPLAY 8-32 WITH DISPLAY, NO DCS
7D	7-32 NO DISPLAY
8X	8-32 WITH DISPLAY, WITH DCS
8D	8-32 NO DISPLAY, WITH DCS

NOTE

The two characters, denoting the model under test, are stored in memory location labelled CPUNO. See the listing.

APPENDIX D
ERROR MESSAGES

TEST NUMBER	ERROR NUMBER	TYPE OF FAILURE, INSTRUCTIONS FAILED
1	0101	LPSW
	0102	BTC,BFC (CONDITION CODE = 0)
	0103	BTC,BFC (CONDITION CODE = F)
	0104	BTFS, BTBS
	0105	BFFS, BFBS
2	0201	LI,CLI,LIS
	0202	L,CLR
	0203	CL
	0204	LR
	0205	LHL
	0206	LA
	0207	LCS
	0208	LHI
	0209	CLHI
	020A	LH
	020B	CLH
3	0301	ST
	0302	LM
	0303	STM
	0304	TS
	0305	STH
4	0401	BXLE
	0402	BXH
	0403	BAL
	0404	BFCR,BTCR
	0405	BALR
	0406	DOUBLE INDEXING TEST FAILURE
5	0501	XR
	0502	XI
	0503	X
	0504	OR
	0505	OI
	0506	O

APPENDIX D (Continued)
ERROR MESSAGES

TEST NUMBER	ERROR NUMBER	TYPE OF FAILURE, INSTRUCTIONS FAILED
5	0507	NR
	0508	NI
	0509	N
	050A	XHI
	050B	XH
	050C	OHI
	050D	OH
	050E	NHI
	050F	NH
6	0601	EPSR
	0602	LPSWR
	0603	TI
	0604	THI
	0605	EXHR
	0606	SLLS,SRLS
	0607	SLHLS,SRHLS
	0608	SLHL,SRHL
	0609	SLHA
	060A	SRHA
7	0701	LB
	0702	CLB
	0703	STB
	0704	STBR
	0705	LBR
	0706	EXBR

In Test 8, the contents of pertinent registers and/or the PSW may be printed following the error number:

AAAAAAAA BBBBBBBB CCCCCCCC .... (Maximum of 4 fullwords printed)
(i) (ii) (iii)

The PSW after the operation is ANDed with Y'0000000F' to force all bits in the PSW to ZERO except the condition code.

ERROR NUMBER	INSTRUCTION USED	VALUES PRINTED
0801	AIS, SIS	(See the Listing)
ERROR NUMBER	OPERATIONS CHECKED	VALUES PRINTED
0802	AIS, SIS (M+N)-N=M	(i) M (ii) M+N (iii) (M+N)-N
NOTE: (REG1)=M; (REG2)=M+N; (REG3)=M+N=N		

Error numbers 0811 through 081B indicate the detection of an error while testing the instructions AR, SR. The operands used are obtained from the Table T83TABL, in memory. The result and condition code are checked with the expected value. The result obtained and the PSW after the operation are printed.

ERROR NUMBER	FIRST OPERAND	SECOND OPERAND	INSTRUCTION USED	EXPECTED RESULT	EXPECTED CONDITION CODE CVGL
0811	0000 0000	0000 0000	AR	0000 0000	0000
0812	0000 0000	0000 0000	SR	0000 0000	0000
0813	0000 0000	FFFF FFFF	AR	FFFF FFFF	0001
0814	0000 0000	FFFF FFFF	SR	0000 0001	1010
0815	7FFF 8000	0000 0001	AR	7FFF 8001	0010
0816	0000 0000	8000 0000	AR	8000 0000	0001
0817	FFFF FFFF	7FFF FFFF	SR	8000 0000	0001
0818	0000 0000	8000 0000	SR	8000 0000	1101
0819	0000 0001	8000 0001	SR	8000 0000	1101
081A	8000 0000	0000 0001	SR	7FFF FFFF	0110
081B	7FFF FFFF	0000 0001	AR	8000 0000	0101

Error numbers 0821 through 082B indicate the detection of an error while testing the instructions A,S. The operands used are obtained from the Table T83TABL, in memory. The result and the condition code are checked with the expected value. The result obtained and the PSW after the operations are printed.

ERROR NUMBER	FIRST OPERAND	SECOND OPERAND	INSTRUCTION USED	EXPECTED RESULT	EXPECTED CONDITION CODE CVGL
0821	0000 0000	0000 0000	A	0000 0000	0000
0822	0000 0000	0000 0000	S	0000 0000	0000
0823	0000 0000	FFFF FFFF	A	FFFF FFFF	0001
0824	0000 0000	FFFF FFFF	S	0000 0001	1010
0825	7FFF 8000	0000 0001	A	7FFF 8001	0010
0826	0000 0000	8000 0000	A	8000 0000	0001
0827	FFFF FFFF	7FFF FFFF	S	8000 0000	0001
0828	0000 0000	8000 0000	S	8000 0000	1101
0829	0000 0001	8000 0001	S	8000 0000	1101
082A	8000 0000	0000 0001	S	7FFF FFFF	0110
082B	7FFF FFFF	0000 0001	A	8000 0000	0101

Error numbers 0831 through 083B indicate the detection of an error while testing the instructions AI, SI. The operands used are obtained from the Table T83TABL, in memory. The result obtained and the condition code after the operation are compared with the expected value. Both are printed.

ERROR NUMBER	FIRST OPERAND	SECOND OPERAND	INSTRUCTION USED	EXPECTED RESULT	EXPECTED CONDITION CODE CVGL
0831	0000 0000	0000 0000	AI	0000 0000	0000
0832	0000 0000	0000 0000	SI	0000 0000	0000
0833	0000 0000	FFFF FFFF	AI	FFFF FFFF	0001
0834	0000 0000	FFFF FFFF	SI	0000 0001	1010
0835	7FFF 8000	0000 0001	AI	7FFF 8001	0010
0836	0000 0000	8000 0000	AI	8000 0000	0001
0837	FFFF FFFF	7FFF FFFF	SI	8000 0000	0001
0838	0000 0000	8000 0000	SI	8000 0000	1101
0839	0000 0001	8000 0001	SI	8000 0000	1101
083A	8000 0000	0000 0001	SI	7FFF FFFF	0110
083B	7FFF FFFF	0000 0001	AI	8000 0000	0101

Error numbers 0841 through 0849 indicate the detection of an error while testing the results of operations between the operands M,N. The values of M and N are selected to test the hardware exhaustively.

ERROR NUMBER	OPERATION CHECKED	INSTRUCTIONS USED	CONDITION CODE CVGL	VALUES PRINTED
0841	N+(-N)=0	AR	0000	(i) N
0842	N+(-N)=0	A	0000	(ii) N-N
0843	N+(-N)=0	AI	0000	(iii) PSW
0844	(N+N)-N=N	AR,SR	00XX	(i) N
0845	(N+N)-N=N	A,S	00XX	(ii) N+N
0846	(N+N)-N=N	AI,SI	00XX	(iii) (N+N)-N
0847	(M+N)-N=M	AR,SR	XXXX	(i) N
0848	(M+N)-N=M	A,S	XXXX	(ii) M
0849	(M+N)-N=M	AI,SI	XXXX	(iii) N+M
				(iv) (N+M)-N

NOTE: In condition code bits, X indicates a "DON'T CARE" condition.

APPENDIX D
ERROR MESSAGES

Errors 0851 through 085D, 0861 through 086D, and 0871 through 087D, indicate the failure of instructions CR, C or CI. The operands used are obtained from the table T8COMPR in memory.

ERROR, IN INSTRUCTION			OPERANDS USED	VALUES PRINTED
CR	C	CI		
0851	0861	0871	00000000:00000000	(i) Expected Condition Code (ii) PSW after compare
0852	0862	0872	FFFFFFFF:FFFFFFFF	"
0853	0863	0873	FFFFFFFF:FFFFFFFF	"
0854	0864	0874	00000001:00000000	"
0855	0865	0875	FFFFFFFF:FFFFFFFE	"
0856	0866	0876	FFFFFFFF:00000000	"
0857	0867	0877	80000001:80000001	"
0858	0868	0878	80000001:80000002	"
0859	0869	0879	00000000:80000001	"
085A	086A	087A	7FFF0000:7FFE0001	"
085B	086B	087B	FFFE0002:FFFF0001	"
085C	086C	087C	FFFE8000:FFFF8000	"
085D	086D	087D	8001FFFF:8000FFFF	"

Error numbers 0881 through 088B indicate the detection of an error while testing the instruction AM. The operands used are obtained from the Table T83TABL, in memory. The result obtained and the PSW are checked with the expected value. Both are printed.

ERROR NUMBER	FIRST OPERAND	SECOND OPERAND	INSTRUCTION USED	EXPECTED RESULT	EXPECTED CONDITION CODE CVGL
0881	0000 0000	0000 0000	AM	0000 0000	0000
0883	0000 0000	FFFF FFFF	AM	FFFF FFFF	0001
0885	7FFF 8000	0000 0001	AM	7FFF 8001	0010
0886	0000 0000	8000 0000	AM	8000 0000	0001
088B	7FFF FFFF	0000 0001	AM	8000 0000	0101

Error numbers 0891 through 0895 indicate the detection of errors while testing instructions AH and SH. The operands are obtained from the table T83TABL, in memory. The result obtained and the PSW are checked with the expected values. Both are printed.

ERROR NUMBER	FIRST OPERAND	SECOND OPERAND	INSTRUCTION USED	EXPECTED RESULT	EXPECTED CONDITION CODE CVGL
0891	0000 0000	0000	AH	0000 0000	0000
0892	0000 0000	0000	SH	0000 0000	0000
0893	0000 0000	FFFF	AH	FFFF FFFF	0001
0894	0000 0000	FFFF	SH	0000 0001	1010
0895	7FFF 8000	0001	AH	7FFF 8001	0001

Error numbers 08A1 through 08A5 indicate the detection of errors while testing instructions AHI, SHI. The operands are obtained from Table T83TABL, in memory. The result obtained and the PSW are checked with the expected value. Both are printed.

ERROR NUMBER	FIRST OPERAND	SECOND OPERAND	INSTRUCTION USED	EXPECTED RESULT	EXPECTED CONDITION CODE CVGL
08A1	0000 0000	0000	AHI	0000 0000	0000
08A2	0000 0000	0000	SHI	0000 0000	0000
08A3	0000 0000	FFFF	AHI	FFFF FFFF	0001
08A4	0000 0000	FFFF	SHI	0000 0001	1010
08A5	7FFF 8000	0001	AHI	7FFF 8001	0001

Error numbers 08B1 through 08B5 indicate the detection of errors while testing the instruction AHM. The operands are obtained from Table T83TABL, in memory. The result obtained and the PSW are checked with the expected value. Both are printed.

ERROR NUMBER	FIRST OPERAND	SECOND OPERAND	INSTRUCTION USED	EXPECTED RESULT	EXPECTED CONDITION CODE CVGL
08B1	0000 0000	0000	AHM	0000 0000	0000
08B3	0000 0000	FFFF	AHM	FFFF FFFF	0001
08B5	7FFF 8000	0001	AHM	7FFF 8001	0001

Errors 08C1 through 08CD and 08D1 through 08DD indicate the failure of the CH or CHI instructions. The operands used are obtained from the Table T8COMPR in memory.

ERROR/ INSTRUCTIONS CH	CHI	FULLWORD FIRST OPERAND	HALFWORD SECOND OPERAND	VALUES PRINTED
08C1	08D1	0000 0000	0000	(i) Expected Condition Code (ii) PSW after compare
08C2	08D2	FFFF FFFF	FFFE	"
08C3	08D3	FFFF FFFF	FFFF	"
08C4	08D4	0000 0001	0000	"
08C5	08D5	FFFF FFFF	FFFE	"
08C6	08D6	FFFF FFFF	0000	"
08C7	08D7	8000 0001	0001	"
08C8	08D8	8000 0001	0002	"
08C9	08D9	0000 0000	0001	"
08CA	08DA	7FFF 0000	0001	"
08CB	08DB	FFFE 0002	0001	"
08CC	08DC	FFFF 8000	8000	"
08CD	08DD	8001 FFFF	FFFF	"

TEST NUMBER	ERROR NUMBER	TYPE OF FAILURE; INSTRUCTION FAILED
9	0901	SVC did not generate an interrupt.
	0902	PSW swap was incorrect after the SVC.
10	0A01	When the SINT instruction was executed, no interrupt was generated.
	0A02	Service pointer was incorrect when the SINT instruction was executed.
	0A03	SINT generated halfword mode external interrupt.
	0A04	PSW swap incorrect when executing SINT instruction.
	0A05	No interrupt by illegal instruction.
	0A06	PSW swap incorrect when illegal instruction interrupt occurred.
11	0B01	SRL
	0B02	SLL
	0B03	SRA
	0B04	SLA
	0B05	RRL, RLL

After printing the error number, some of the pertinent register values and/or PSW in Test 12, are printed. Errors 0C01 through 0C08 and 0C11 through 0C18 can occur if MR or M instructions fail. The operands are obtained from the Table T12MUTBL in memory. The result obtained is checked with the expected result in the table. The PSW before and after the multiply instruction are compared and they must be the same. In the case of an error, the values are printed as described below:

AAAAAAAA BBBBBBBB CCCCCCCC DDDDDDDD EEEEEEEE FFFFFFFF GGGGGGGG HHHHHHHH

Where:

```
         AAAAAAAA = Operand 1
         BBBBBBBB = Operand 2
CCCCCCCC,DDDDDDDD = Expected Result
         EEEEEEEE = PSW before the operation
FFFFFFFF,GGGGGGGG = Result obtained
         HHHHHHHH = PSW after the operation
```

ERROR/ INSTRUCTIONS		OPERATION CHECKED
MR	M	
0C01	0C11	A * B
0C02	0C12	B * A
0C03	0C13	(-A) * (-B)
0C04	0C14	(-B) * (-A)
0C05	0C15	(A) * (-B)
0C06	0C16	(-B) * (A)
0C07	0C17	(-A) * (B)
0C08	0C18	(B) * (-A)

Errors 0C21 through 0C2A and 0C31 through 0C3A indicate the failure of the instructions MHR, MH. The operands used are obtained from the Table T12MHTBL, in memory. The result obtained is checked with the expected result. The PSW before and after the operation are compared; they must be the same. If an error is detected, the values are printed as:

AAAAAAAA BBBBBBBB CCCCCCCC DDDDDDDD EEEEEEEE FFFFFFFF GGGGGGGG HHHHHHHH

Where:

AAAAAAAA = Operand 1
BBBBBBBB = Operand 2
CCCCCCCC,DDDDDDDD = Expected Result
EEEEEEEE = PSW before the operation
FFFFFFFF,GGGGGGGG = Result obtained
HHHHHHHH = PSW after the operation

ERROR NUMBER	INSTRUCTION FAILURE
0C21 - 0C2A	MHR
0C31 - 0C3A	MH

Errors 0C40 through 0C4B and 0C60 through 0C6B indicate the failure of the instructions DR,D. The operands used are obtained from the Table T12DVTBL in memory. The results, remainder, and quotient are checked with the expected values. The register values are printed as shown below:

AAAAAAAA BBBBBBBB CCCCCCCC DDDDDDDD EEEEEEEE

Where:

AAAAAAAA = Flag denoting the arithmetic fault interrupt
AAAAAAAA = 00010000 if interrupt is detected when it was disabled
AAAAAAAA = 00020000 if the interrupt is detected when enabled in the PSW but not expected.
AAAAAAAA = 00030000 if the interrupt is enabled in the PSW, it is expected but no interrupt was detected.
AAAAAAAA = 00000000 if no error in the interrupt logic.

BBBBBBBB = Remainder obtained
CCCCCCCC = Quotient obtained
DDDDDDDD = PSW before the operation
EEEEEEEE = PSW after the operation

The operand values and expected results are listed in the following table along with the error numbers. Flag indicates if the arithmetic fault interrupt is expected; it is 0 if no interrupt is expected and 1 if an interrupt is expected.

APPENDIX D (Continued)
ERROR MESSAGES

ERROR NUMBER DR	D	DIVIDEND	DIVISOR	FLAG	REMAINDER	QUOTIENT
0C40	0C60	0000000000000000	00000000	1	00000000	00000000
0C41	0C61	0000000000000001	00000000	1	00000000	00000001
0C42	0C62	FFFFFFFFFFFFFFFF	00000000	1	FFFFFFFF	FFFFFFFF
0C43	0C63	0000000000000000	7FFFFFFF	0	00000000	00000000
0C44	0C64	0000000000000000	FFFFFFFF	0	00000000	00000000
0C45	0C65	0000000000000000	80000000	0	00000000	00000000
0C46	0C66	0000000000000001	FFFFFFFF	0	00000000	FFFFFFFF
0C47	0C67	3FFFFFFF80000000	7FFFFFFF	1	3FFFFFFF	80000000
0C48	0C68	C000000080000000	80000001	1	C0000000	80000000
0C49	0C69	FFFFFFFFEEEEEEEF	FFFFFFFF	0	00000000	11111111
0C4A	0C6A	3FFFFFFFFFFFFFFF	80000001	1	3FFFFFFF	FFFFFFFF
0C4B	0C6B	C000000000000001	7FFFFFFF	1	C0000000	00000001

Errors 0C80 through 08CF and 0C90 through 0C9F indicate the failure of the DHR and DH instructions. The operands used are obtained from the Table T12DHTAB in memory. The results, remainder, and quotient are checked with the expected values. The register values are printed as:

AAAAAAAA BBBBBBBB CCCCCCCC DDDDDDDD EEEEEEEE

Where:

AAAAAAAA = Flag denoting the arithmetic fault interrupt.
AAAAAAAA = 00010000 If the interrupt was detected when disabled.
AAAAAAAA = 00020000 If the interrupt was detected when enabled in the PSW, but not expected.
AAAAAAAA = 00030000 If the interrupt was enabled in the PSW, and was expected, but was not detected.
AAAAAAAA = 00000000 If no error in the interrupt logic.

BBBBBBBB = Remainder obtained
CCCCCCCC = Quotient obtained
DDDDDDDD = PSW before the operation
EEEEEEEE = PSW after the operation

In the following table, FLAG is an indication of whether or not the arithmetic fault interrupt was expected. If the interrupt is expected, FLAG = 1; if the interrupt is not expected, FLAG = 0.

ERROR NUMBER DHR	DH	DIVIDEND	DIVISOR	FLAG	REMAINDER	QUOTIENT
0C80	0C90	00000000	0000	1	00000000	00000000
0C81	0C91	00000001	0000	1	00000001	00000000
0C82	0C92	FFFFFFFF	0000	1	FFFFFFFF	00000000
0C83	0C93	00000000	7FFF	0	00000000	00000000
0C84	0C94	00000000	FFFF	0	00000000	00000000
0C85	0C95	00000000	8000	0	00000000	00000000
0C86	0C96	3FFF8000	7FFF	1	3FFF8000	00000000
0C87	0C97	C0008000	8001	1	C0008000	00000000
0C88	0C98	3FFF7FFF	7FFF	0	00007FFE	00007FFF
0C89	0C99	C0008001	8001	0	FFFF8002	00007FFF
0C8A	0C9A	3FFFFFFE	8001	0	00007FFE	FFFF8000
0C8B	0C9B	C0000002	7FFF	0	FFFF8002	FFFF8000
0C8C	0C9C	3FFFFFFF	8001	1	3FFFFFFF	00000000
0C8D	0C9D	C0000001	7FFF	1	C0000001	00000000
0C8E	0C9E	00000001	FFFF	0	00000000	FFFFFFFF
0C8F	0C9F	FFFFFFFC	0002	0	00000000	FFFFFFFE

TEST NUMBER	ERROR NUMBER	TYPE OF FAILURE, INSTRUCTION FAILED
13	0D01	ATL
	0D02	ABL
	0D03	RTL
	0D04	RBL
14	0E01	No interrupt by privileged instruction when in protect mode.
	0E02	PSW swap not performed correctly on privileged instruction interrupt.
	0E03	SVC error in protect mode.
15	0F01	TBT
	0F02	SBT
	0F03	RBT
	0F04	CBT
	0F05	TLATE, branch to translation routine attempted when not required (Translation table entry bit 0 = 1).
	0F06	TLATE, no branch to translation routine taken when required (Translation table entry bit 0 = 0).
	0F07	TLATE, incorrect translation was performed.
	0F08	CRC16
	0F09	CRC12
	0F0A	SCP
	0F0B	CHVR

Other Errors Common To All The Tests

ERROR NUMBER	TYPE OF FAILURE
NNF1	Arithmetic fault interrupt (NOTE 2)
NNF2	Illegal instruction interrupt (NOTE 2)
NNF3	Machine malfunction interrupt (NOTES 2,3)
NNF4	External interrupt (HW Mode) (NOTE 2)
NNF5	Memory access controller interrupt
NNF6	System queue service interrupt
NNF7	SVC executed from one of the locations from X'80' through X'CF' (NOTE 2)
NNF8	Incorrect service pointer used (one of X'D0' through X'2CE') (NOTE 2)

NOTE

1. NN = Test Number from 01 through FF.

2. Certain registers of set 0 are used by the microprogram for interrupt handling. Prior to printing an error message, the 16 fullword registers of set 0 are stored in memory starting at location labelled REGSAV. These locations may be opened to study the old PSW at the time of the interrupt etc.

NOTE (Continued)

3. The new PSW is captured in register 0 and stored in memory location labelled REG0. The last 4 bits define the type of failure as:

X100	parity error on data fetch
0010	parity error on instruction fetch
X001	power fail
0000	power restore
1X0X	parity error during an auto driver channel operation.

APPENDIX E

SERIES 32 OP-CODE MAP

MSD / LSD	0	1	2	3	4	5	6	7	9	C	D	E	F
0		SRLS	BTBS		STH	ST	STE[2]	STD[3]	SRHLS	BXH	STM	TS	
1	BALR	SLLS	BTFS		BAL	AM	AHM	STME	SLHLS	BXLE	LM	SVC	
2	BTCR	CHVR	BRBS		BTC			LME	STBR	LPSW	STB	*SINT	
3	BFCR		BFBS		BFC			LHL	LBR	THI	LB	*SCP	TI
4	NR		LIS	EXHR	NH	N	ATL	TBT	EXBR	NHI	CLB		NI
5	CLR		LCS		CLH	CL	ABL	SBT	*EPSR	CLHI	*AL	*BDCS[1]	CLI
6	OR		AIS		OH	O	RTL	RBT	*WBR	OHI	*WB	LA	OI
7	XR		SIS		XH	X	RBL	CBT	*RBR	XHI	*RB	TLATE	XI
8	LR	*LPSWR	LER[2]	LDR[3]	LH	L	LE[2]	LD[3]	*WHR	LHI	*WH	*R/WDCS[1]	LI
9	CR		CER[2]	CDR[3]	CH	C	CE[2]	CD[3]	*RHR	CHI	*RH	ECS[1]	CI
A	AR		AER[2]	ADR[3]	AH	A	AE[2]	AD[3]	*WDR	AHI	*WD	RRL	AI
B	SR		SER[2]	SDR[3]	SH	S	SE[2]	SD[3]	*RDR	SHI	*RD	RLL	SI
C	MHR	MR	MER[2]	MDR[3]	MH	M	ME[2]	MD[3]		SRHL		SRL	
D	DHR	DR	DER[2]	DDR[3]	DH	D	DE[2]	DD[3]	*SSR	SLHL	*SS	SLL	
E			FXR[2]	FXDR[3]		CRC12		STMD[3]	*OCR	SRHA	*OC	SRA	
F			FLR[2]	FLDR[3]		CRC16		LMD[3]		SLHA		SLA	

1. Writable Control Store (optional) instructions: RDCS = E82, WDCS = E80
2. Single Precision Floating Point (optional) instructions.
3. Double Precision Floating Point (optional) instructions.
* Priviledged Instructions

PROG= S32PT1 ASSEMBLED BY CAL 03-066R05-00 (32-BIT)

```
 1  S32PT1   PROG  SERIES 32 PROCESSOR TEST PART 1          06-154M91R03A13   XP100010
 2           TARGT 32                                                         XP100020
 3           CROSS                                                            XP100030
 4           NORX3                                                            XP100040
 5           WIDTH 120                                                        XP100050
 6  *                                                                         XP100060
 7  * COPYRIGHT (C) 1978 BY PERKIN-ELMER CORPORATION                          XP100070
 8  * PRINTED IN U.S.A.  APRIL 1978                                           XP100080
 9  *                                                                         XP100090
10  * PROGRAM USES SERIES 32 INSTRUCTION SET.                                 XP100100
11  *                                                                         XP100110
12  * PURPOSE OF TEST:                                                       XP100120
13  *   THIS PROGRAM IS DESIGNED TO TEST ALL THE FEATURES OF THE SERIES 32    XP100130
14  * PROCESSORS THAT DO NOT REQUIRE MANUAL INTERVENTION, INCLUDING ALL       XP100140
15  * INSTRUCTIONS EXCEPT THE FOLLOWING:                                      XP100150
16  *   FLOATING POINT INSTRUCTIONS.                                          XP100160
17  *   INPUT/OUTPUT INSTRUCTIONS.                                            XP100170
18  *   DOUBLE PRECISION FLOATING POINT INSTRUCTIONS.                         XP100180
19  *   COMMUNICATIONS INSTRUCTIONS.                                          XP100190
20  *                                                                         XP100200
21  * ASSUMPTIONS:                                                           XP100210
22  *   THIS PROGRAM ASSUMES THAT THE SERIES 32 BASIC TEST (06-158) HAS       XP100220
23  * RUN WITHOUT DETECTING AN ERROR, FOR FURTHER TESTING, REFER TO:          XP100230
24  *    SERIES 32 PROCESSOR TEST PART 2  (06-155)                            XP100240
25  *    SERIES 32 PROCESSOR TEST PART 3  (06-178)                            XP100250
26  *                                                                         XP100260
27  * NORMAL TESTING:                                                        XP100270
28  *   THIS TEST REQUIRES A CONSOLE DEVICE BE ATTACHED AT THE                XP100280
29  *   ADDRESS POINTED TO BY THE LOCATION IO (SEE LISTING).                  XP100290
30  *        IO = 0101 FOR CRT ON PASLA                                       XP100300
31  *           = 0202 FOR TTY,CAROUSEL(15,30),OR CRT ON CURRENT LOOP         XP100310
32  *           = 0404 FOR CAROUSEL 300 ON PASLA                              XP100320
33  *   ALTERNATELY,A LINE PRINTER MAY BE USED FOR THE LIST DEVICE.           XP100330
34  *        IO = XX03 FOR LINE PRINTER                                       XP100340
35  *                                                                         XP100350
36  *   THE DEVICE ADDRESS IS CONTAINED IN THE LOCATIONS CORRESPONDING        XP100360
37  *   TO THE DEVICE(S) USED  (SEE LISTING).                                 XP100370
38  *                                                                         XP100380
39  *   THIS PROGRAM SHOULD BE STARTED AT X'A00' IF USER WISHES TO PRINT      XP100390
40  * THE ERROR MESSAGES.  IF THE ERROR MESSAGES ARE NOT TO BE PRINTED        XP100400
41  * (E.G. IF THE SERIES 32 BASIC TEST FAILED), THE USER SHOULD START        XP100410
42  * THE PROGRAM AT X'A04'. IN THIS CASE, NO I/O IS ATTEMPTED, AND THE       XP100420
43  * ERROR NUMBER IS COPIED INTO THE DISPLAY. THE PROCESSOR IS               XP100430
44  * THEN HALTED BY LOADING A PSW OF X'80F0'. IN ALL CASES, DETECTION OF     XP100440
45  * A SPURIOUS INTERRUPT WILL CAUSE THE PROCESSOR TO BE HALTED BY           XP100450
46  * LOADING A PSW OF X'8000'.                                              XP100460
47  *                                                                         XP100470
48  * NOTE THAT EACH TEST ASSUMES THAT ALL PREVIOUS MODULES HAVE RUN         XP100480
49  * WITHOUT DETECTING ANY ERRORS.                                          XP100490
50  *                                                                         XP100500
51  * OPTIONAL TESTING:                                                      XP100510
52  *   THE CONSTANT 'NTIMES' MAY BE CHANGED TO REPEAT THE TEST A DIFFERENT   XP100520
53  * NUMBER OF TIMES. IF NTIMES IS SET TO ZERO, THE TESTS ARE CONTINUOUSLY   XP100530
```

```
54  * EXECUTED UNTIL THE BREAK KEY ON THE CONSOLE  IS DEPRESSED.          XP100540
55  *                                                                     XP100550
56  *   THE CONSOLE  MAY BE TURNED OFF TO RUN THE TEST FOR A LONG PERIOD  XP100560
57  * OF TIME. THE PROGRAM COUNTS 'TOTAL' (NO. OF TIMES ALL THE TESTS ARE XP100570
58  * REPEATED) AND 'TOTERR' (TOTAL NUMBER OF ERRORS DETECTED).WHEN THE   XP100580
59  * CONSOLE IS TURNED BACK ON, THE CONTENTS OF THESE LOCATIONS ARE       XP100590
60  * PRINTED  XXXX YYYY  ,AND THE TESTING TERMINATES.                     XP100600
61  *                                                                     XP100610
62  *   WHILE THE CONSOLE  IS TURNED OFF IF AN IRRECOVERABLE ERROR IS     XP100620
63  * DETECTED, THE TEST IS ABORTED. THE ERROR NUMBER IS COPIED TO THE    XP100630
64  *  DISPLAY, AND THE PROCESSOR IS HALTED BY LOADING A PSW              XP100640
65  * OF X'80F0'. WHEN THE CONSOLE  IS TURNED BACK ON, AND THE RUN SWITCH XP100650
66  * DEPRESSED, THE ERROR MESSAGE IS PRINTED, AND THE PROGRAM BRANCHES TO XP100660
67  * THE NEXT TEST.                                                     XP100670
68  *                                                                     XP100680
69  *   TO RUN THE TEST CONTINUOUSLY AND PRINT ONLY THE ERROR MESSAGES,   XP100690
70  * THE USER MAY SET 'NTIMES' = 0. THE TEST MAY BE TERMINATED BY        XP100700
71  * DEPRESSING THE BREAK KEY ON THE CONSOLE .                           XP100710
72  *                                                                     XP100720
73  *                                                                     XP100730
74  * NOTE:                                                              XP100740
75  *   IF TEST WILL NOT RUN AFTER LOADING, IT MAY BE STARTED FROM        XP100750
76  *   LOCATION 'TEST1' AND EXECUTED IN SINGLE MODE.                     XP100760
77  *                                                                     XP100770
```

```
                           *
           0000 0000       R0        EQU   0                                                   XP100790
           0000 0001       R1        EQU   1                                                   XP100800
           0000 0002       R2        EQU   2                                                   XP100810
           0000 0003       R3        EQU   3                                                   XP100820
           0000 0004       R4        EQU   4                                                   XP100830
           0000 0005       R5        EQU   5                                                   XP100840
           0000 0006       R6        EQU   6                                                   XP100850
           0000 0007       R7        EQU   7                                                   XP100860
           0000 0008       R8        EQU   8                                                   XP100870
           0000 0009       R9        EQU   9                                                   XP100880
           0000 000A       R10       EQU   10                                                  XP100890
           0000 000B       R11       EQU   11                                                  XP100900
           0000 000C       R12       EQU   12                                                  XP100910
           0000 000D       R13       EQU   13                                                  XP100920
           0000 000E       R14       EQU   14                                                  XP100930
           0000 000E       RET       EQU   14                                                  XP100940
           0000 000F       R15       EQU   15                                                  XP100950
           0000 000F       LINK      EQU   15                                                  XP100960
                           *                                                                   XP100970
                           *   BOOTLOADER WITH CHKSUM                                          XP100980
                           *                                                                   XP100990
000000I                              ORG   X'80'                                               XP101000
000080  2421                         LIS   R2,1                                                XP101010
000082  2303                         BS    BOOT                                                XP101020
000084  3900                         DC    Z(PSWSAVE)     CURRENT PSW SAVE POINTER(32-BIT M/C) XP101030
000086  3F44                         DC    Z(REGSAVE)     REGISTER SAVE POINTER(32-BIT M/C)    XP101040
000088  C810 0A00          BOOT      LHI   R1,ORIGIN1     R1 = ADR( FIRST BYTE OF TEST PROG )  XP101050
00008C  C830 4307                    LHI   R3,LNZB        R3 = ADR( LAST NON-ZERO BYTE )       XP101060
000090  C860 0000          MN        LHI   R6,0           R6 = CHKSUM BYTE = X'MN'             XP101070
000094  D340 0078                    LB    R4,X'78'       INPUT DEV ADR                        XP101080
000098  DE40 0079                    OC    R4,X'79'                                            XP101090
00009C  9D45               LEADER    SSR   R4,R5                                               XP101100
00009E  2091                         BTBS  9,1            DU,BSY                               XP101110
0000A0  9B45                         RDR   R4,R5                                               XP101120
0000A2  0855                         LDAR  R5,R5                                               XP101130
0000A4  2234                         BZS   LEADER         IGNORE LEADER                        XP101140
0000A6  D251 0000          LOAD      STB   R5,0(R1)       STORE 1ST NON-ZERO & SUBSEQUENT BYTE XP101150
0000AA  D351 0000                    LB    R5,0(R1)       RELOAD DATA BYTE TO                  XP101160
0000AE  0765                         XAR   R6,R5          GENERATE CHKSUM                      XP101170
0000B0  9481                         EXBR  R8,R1                                               XP101180
0000B2  9828                         WHR   R2,R8          DISPLAY MEMORY ADDRESS               XP101190
0000B4  9D45                         SSR   R4,R5                                               XP101200
0000B6  2091                         BTBS  9,1            DU,BSY                               XP101210
0000B8  9B45                         RDR   R4,R5                                               XP101220
0000BA  C110 00A6                    BXLE  R1,LOAD        LOAD TILL LAST BYTE                  XP101230
0000BE  9486                         EXBR  R8,R6                                               XP101240
0000C0  9828                         WHR   R2,R8          FINAL CHKSUM                         XP101250
0000C2  2478               LDWT      LIS   R7,8                                                XP101260
0000C4  117C                         SLLS  R7,12          R7 = X'8000'                         XP101270
0000C6  9557                         EPSR  R5,R7          HALT PROCESSOR.                      XP101280
0000C8  2203                         BS    LDWT                                                XP101290
0000CA  0000               LOADEND   DCX   0              END OF BOOTLOADER                    XP101300
                                                                                               XP101310
```

```
0000CC                         ORG   X'A00'                                                 XP101330
000A00   4300 0A30   ORIGIN1   B     START1         START HERE FOR 32-BIT PROCESSOR        XP101340
         0000 0A04   ORIGIN2   EQU   *                                                      XP101350
000A04   4300 0A38             B     START2         START HERE FOR NO I/O                  XP101360
000A08   4300 0A5C   ORIGIN3   B     START3         SPECIAL 32-BIT PROCESSOR START         XP101370
000A0C   4300 0A60   ORIGIN4   B     START4                                                 XP101380
                     *                                                                      XP101390
                     *-----------------------------                                         XP101400
                     *    TEST CONSTANTS                          *                         XP101410
                     *                                                                      XP101420
000A10   0202        IO        DC    X'0202'        I/O DEVICE(S) IDENTIFIER               XP101430
000A12   1011        PASLADR   DC    X'1011'        PASLA/PALM READ/WRITE ADDRESSES        XP101440
000A14   0202        CLIFADR   DC    X'0202'        CURRENT LOOP INTERFACE R/W ADDRESSES   XP101450
000A16   6262        LPADR     DC    X'6262'        LINE PRINTER ADDRESS                   XP101460
000A18   1011        C300ADR   DC    X'1011'        CAROUSEL 300/PASLA ADDRESSES           XP101470
000A1A   C0C0        MICROBUS  DC    X'C0C0'        MICROBUS ADDRESS                       XP101480
000A1C   0000                  DCX   0              PROVISION FOR SPECIAL DEVICE           XP101490
                     *                                                                      XP101500
                     * IO =    0101  FOR CRT ON PASLA                                       XP101510
                     *         0202  FOR TELETYPE, CAROUSEL 15/30                           XP101520
                     *         XX03  FOR LINE PRINTER                                       XP101530
                     *         0404  FOR CAROUSEL 300                                       XP101540
                     *         0505  FOR MICROBUS                                           XP101550
                     *                                                                      XP101560
000A1E   0140        TIME      DC    X'140'         CONSTANT FOR 1 MS DELAY                XP101570
000A20   0000                  DCX   0              RESERVED                               XP101580
000A22   70F0        PSW       DCX   70F0           PSW USED IN PROGRAM                    XP101590
000A24   30F0        PSW2      DCX   30F0           PSW USED IN EXEC                       XP101600
000A26   0000                  DCX   0              RESERVED                               XP101610
000A28   0000                  DCX   0              RESERVED                               XP101620
000A2A   0000                  DCX   0              RESERVED                               XP101630
000A2C   0000                  DCX   0              RESERVED                               XP101640
000A2E   0000                  DCX   0              RESERVED                               XP101650
                     *-----------------------------                                         XP101660
                     *                                                                      XP101670
000A30   2410        START1    LIS   R1,0                                                   XP101680
000A32   4010 1182             STH   R1,NOIO                                                XP101690
000A36   2304                  BS    ST                                                     XP101700
000A38   2511        START2    LCS   R1,1                                                   XP101710
000A3A   4010 1182             STH   R1,NOIO                                                XP101720
000A3E   2410        ST        LIS   R1,0                                                   XP101730
000A40   4010 0030             STH   R1,X'30'                                               XP101740
000A44   4820 0A24             LH    R2,PSW2                                                XP101750
000A48   4020 0032             STH   R2,X'32'                                               XP101760
000A4C   C820 0A64             LHI   R2,START                                               XP101770
000A50   4010 0034             STH   R1,X'34'                                               XP101780
000A54   4020 0036             STH   R2,X'36'                                               XP101790
000A58   0000                  DCX   0                                                      XP101800
000A5A   2200                  BS    *                                                      XP101810
                     *                                                                      XP101820
000A5C   4300 0A30   START3    B     START1         INSERT SPECIAL ROUTINE HERE            XP101830
000A60   4300 0A38   START4    B     START2         INSERT SPECIAL ROUTINE HERE            XP101840
                     *                                                                      XP101850
000A64   41F0 1082   START     BAL   LINK,LCORE     SET UP LOW CORE                        XP101860
000A68   4820 1182             LH    R2,NOIO                                                XP101870
```

```
000A6C  2333          188          BZS   STARTIO          IF IO THEN SET UP KB AND LIST IDENT   XP101880
000A6E  4300 11CE     189          B     ENTRY2           IF NOT SKIP SETUP                     XP101890
000A72  D310 0A10     190  STARTIO LB    R1,IO            GET I/O IDENTIFIERS                   XP101900
000A76  D320 0A11     191          LB    R2,IO+1                                                XP101910
000A7A  2436          192          LIS   R3,6             IDENTIFIER CAN BE 1,2,3,4,5           XP101920
000A7C  0513          193          CLAR  R1,R3                                                  XP101930
000A7E  2182          194          BLS   IO.OK1           BRANCH IF KB IDENTIFIER OK            XP101940
000A80  2412          195          LIS   R1,2             OTHERWISE FORCE IT TO BE TTY          XP101950
000A82  0523          196  IO.OK1  CLAR  R2,R3                                                  XP101960
000A84  2182          197          BLS   IO.OK2           SAME TEST FOR LIST DEVICE             XP101970
000A86  2422          198          LIS   R2,2                                                   XP101980
000A88  D210 0A10     199  IO.OK2  STB   R1,IO            REESTABLISH VALUES                    XP101990
000A8C  D220 0A11     200          STB   R2,IO+1                                                XP102000
000A90  D362 1148     201          LB    R6,CONRQ2S(R2)                                         XP102010
000A94  4060 112A     202          STH   R6,PASFLG2       SET PASLA FLAG (LIST DEVICE)          XP102020
000A98  0866          203          LDAR  R6,R6                                                  XP102030
000A9A  2336          204          BZS   IO.OK3           SKIP IF NOT PASLA                     XP102040
000A9C  9121          205          SLHLS R2,1                                                   XP102050
000A9E  D302 0A11     206          LB    R0,IO+1(R2)                                            XP102060
000AA2  DE02 113C     207          OC    R0,CON2ND(R2)    ISSUE 2ND COMMAND (TO LIST DEVICE)    XP102070
                      208  *                                                                     XP102080
000AA6  41F0 1040     209  IO.OK3  BAL   LINK,SETKB       ESTABLISH KEYBOARD DEVICE (& IOSAVF)  XP102090
000AAA  9310          210          LBR   R1,R0            (R1) = 1,2,4,5 ; (R0 = KBIDENT)       XP102100
000AAC  9111          211          SLHLS R1,1             (R1) = 2,4,6,A                        XP102110
000AAE  4831 0A10     212          LH    R3,IO(R1)                                              XP102120
000AB2  4030 112E     213          STH   R3,CONADR        SET UP CONSOLE DEVICE ADDRESS         XP102130
000AB6  4821 1130     214          LH    R2,CONRD(R1)                                           XP102140
000ABA  4020 1130     215          STH   R2,CONRD         SET UP R/W COMMANDS                   XP102150
000ABE  4821 113C     216          LH    R2,CON2ND(R1)                                          XP102160
000AC2  4020 113C     217          STH   R2,CON2ND        2ND CMD: ENABLE READ CMD              XP102170
000AC6  9011          218          SRHLS R1,1                                                   XP102180
000AC8  D341 1148     219          LB    R4,CONRQ2S(R1)                                         XP102190
000ACC  D240 1148     220          STB   R4,CONRQ2S       CONSOLE REQUEST TO SEND               XP102200
000AD0  4040 1128     221          STH   R4,PASFLG        SET PASLA FLAG (CONSOLE)              XP102210
000AD4  9333          222          LBR   R3,R3            MASK CONSOLE ADDRESS TO 8 BITS        XP102220
000AD6  0844          223          LDAR  R4,R4                                                  XP102230
000AD8  2333          224          BZS   IO.OK4           SKIP 2ND OC IF NOT PASLA DEVICE       XP102240
000ADA  9422          225          EXBR  R2,R2                                                  XP102250
000ADC  9E32          226          OCR   R3,R2            ISSUE 2ND COMMAND (TO CONSOLE)        XP102260
000ADE  DE30 1130     227  IO.OK4  OC    R3,CONRD         PUT CONSOLE IN READ MODE              XP102270
000AE2  9B3F          228          RDR   R3,R15           READ A DUMMY CHARACTER (SET BUSY)     XP102280
                      229  *                                                                     XP102290
000AE4  2400          230          LIS   R0,0                                                   XP102300
000AE6  4000 1154     231          STH   R0,WASDU         RESET 'DEVICE UNAVAILABLE' FLAGS      XP102310
000AEA  4000 1156     232          STH   R0,WASDU1                                              XP102320
000AEE  41F0 0EAC     233          BAL   LINK,CRLF                                              XP102330
000AF2  C850 1188     234          LHI   R5,TITLE                                               XP102340
000AF6  41F0 0E32     235          BAL   R15,PRINT        PRINT TEST PROGRAM TITLE              XP102350
                      236  *----------------------------                                       XP102360
                      237  *  KEYBOARD INPUT ROUTINE                                           XP102370
                      238  *                                                                     XP102380
000AFA  41F0 0EAC     239  OPTIN   BAL   LINK,CRLF        CR,LF TO LIST DEVICE                  XP102390
                      240  *                                                                     XP102400
000AFE  4820 0A24     241  OPTIN1  LH    R2,PSW2                                                XP102410
000B02  9512          242          EPSR  R1,R2            NO INT. REG SET 15                    XP102420
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000B04  41F0 1040          243          BAL   LINK,SETKB          ESTABLISH CONSOLE                          XP102430
000B08  D340 11C0          244          LB    R4,AMSG             OUTPUT AN * TO INDICATE                    XP102440
000B0C  41F0 0EBA          245          BAL   LINK,OUTCHR          COMMAND MODE ESTABLISHED                   XP102450
000B10  2541               246          LCS   R4,1                X'FF'                                      XP102460
000B12  41F0 0EBA          247          BAL   LINK,OUTCHR                                                    XP102470
000B16  C8C0 0F76          248          LHI   R12,QUESTN          SET UP R12 FOR ERR ROUTINE                 XP102480
000B1A  2410               249          LIS   R1,0                CLEAR OPTBUF INDEX                         XP102490
000B1C  41F0 0F48          250  RDCHR   BAL   R15,GETCHR          GET A CHAR IN R4                           XP102500
000B20  C540 0060          251          CLHI  R4,X'60'            UPPER CASE ALPHA ?                         XP102510
000B24  2183               252          BLS   RDCHAR0             BRANCH IF NO.                              XP102520
000B26  CB40 0020          253          SHI   R4,X'20'            CONVERT TO LOWER CASE                      XP102530
000B2A  C540 0023          254  RDCHAR0 CLHI  R4,X'23'            IS IT # ?                                  XP102540
000B2E  4330 0AFA          255          BE    OPTIN                                                          XP102550
000B32  C540 005F          256          CLHI  R4,X'5F'            LEFT ARROW, UNDERLINE OR DELETE ?          XP102560
000B36  2334               257          BES   RDCHAR1                                                        XP102570
000B38  C540 0008          258          CLHI  R4,X'08'            BACK SPACE ?                               XP102580
000B3C  2135               259          BNES  RDCHR1              NO, BRANCH                                 XP102590
000B3E  2711               260  RDCHAR1 SIS   R1,1                YES, DECREMENT INDEX                       XP102600
000B40  021C               261          BMR   R12                 BUFFER UNDERFLOW; PRINT '?'                XP102610
000B42  4300 0B1C          262          B     RDCHR                                                          XP102620
000B46  C540 0037          263  RDCHR1  CLHI  R4,C'7'                                                        XP102630
000B4A  4330 0B6A          264          BE    KEY1                                                           XP102640
000B4E  C540 0038          265          CLHI  R4,C'8'                                                        XP102650
000B52  4330 0B6A          266          BE    KEY1                                                           XP102660
000B56  C540 0058          267          CLHI  R4,C'X'                                                        XP102670
000B5A  4330 0B7A          268          BE    KEY2                                                           XP102680
000B5E  C540 0044          269          CLHI  R4,C'D'                                                        XP102690
000B62  4330 0B7A          270          BE    KEY2                                                           XP102700
000B66  4300 0F76          271  KEYERR  B     QUESTN                                                         XP102710
000B6A  C510 0000          272  KEY1    CLHI  R1,0                                                         XP102720
000B6E  2034               273          BNES  KEYERR                                                       XP102730
000B70  2611               274          AIS   R1,1                                                         XP102740
000B72  D240 1184          275          STB   R4,CPUNO                                                     XP102750
000B76  4300 0B1C          276          B     RDCHR                                                        XP102760
000B7A  C510 0001          277  KEY2    CLHI  R1,1                                                         XP102770
000B7E  203C               278          BNES  KEYERR                                                       XP102780
000B80  D240 1185          279          STB   R4,CPUNO+1                                                   XP102790
000B84  4800 0A10          280          LH    R0,IO               RESTORE IO CHOICE                        XP102800
000B88  4000 112C          281          STH   R0,IOSAVE                                                    XP102810
000B8C  41F0 0EAC          282          BAL   LINK,CRLF                                                    XP102820
000B90  4300 11CE          283          B     ENTRY2                                                       XP102830
                           284  *                                                                          XP102840
                           285  *                                                                          XP102850
                           286  *                                                                          XP102860
                           287  *       ALL THE TESTS IN S32PT1 ARE DONE                                   XP102870
                           288  ************************************************************              XP102880
000B94  4800 115A          289  TSTENDX LH    R0,TOTERR           IF ERRORS, DO NOT ENABLE                 XP102890
000B98  4230 0BBC          290          BNZ   TSTEND2             INTERRUPTS AFTER FIRST TEST ROUND        XP102900
        0000 0B9C          291  TSTEND  EQU   *                                                            XP102910
                           292  *                                                                          XP102920
000B9C  C810 7AF0          293          LHI   R1,X'7AF0'          ENABLE ALL INTERRUPTS                    XP102930
000BA0  4010 3932          294          STH   R1,T2PSW+2          * AFTER FIRST TIME THROUGH               XP102940
000BA4  4010 3962          295          STH   R1,T6PSW2+2                                                  XP102950
000BA8  4010 398A          296          STH   R1,T10P3+2                                                   XP102960
000BAC  4010 399A          297          STH   R1,T10Z+2                                                    XP102970
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000BB0   4010 39A2              STH   R1,T13PSW+2                                     XP102980
000BB4   C810 7AF5              LHI   R1,X'7AF5'                                      XP102990
000BB8   4010 3992              STH   R1,T10M+2                                       XP103000
                      *                                                               XP103010
000BBC   4810 1158    TSTEND2   LH    R1,TOTAL        INCREMENT TOTAL                 XP103020
000BC0   2611                   AIS   R1,1                                            XP103030
000BC2   4010 1158              STH   R1,TOTAL                                        XP103040
000BC6   2421                   LIS   R2,1                                            XP103050
000BC8   DE20 1126              OC    R2,INCR         DISPLAY: INCREMENTAL MODE       XP103060
000BCC   4800 115A              LH    R0,TOTERR                                       XP103070
000BD0   9400                   EXBR  R0,R0                                           XP103080
000BD2   9820                   WHR   R2,R0           DISPLAY TOTERR                  XP103090
000BD4   9401                   EXBR  R0,R1           FORMAT FOR DISPLAY              XP103100
000BD6   9820                   WHR   R2,R0           DISPLAY TOTAL                   XP103110
000BD8   DE20 1125              OC    R2,NORM         DISPLAY: NORMAL MODE            XP103120
000BDC   C510 7FFF              CLHI  R1,X'7FFF'      TOTAL < MAX RETAINABLE ?        XP103130
000BE0   4380 0C26              BNL   HALT                                            XP103140
000BE4   41F0 0F90              BAL   LINK,TSTBRK     CHECK FOR BREAK KEY             XP103150
000BE8   4800 1186    CHECKN    LH    R0,NTIMES                                       XP103160
000BEC   4330 1200              BZ    ENTRY3                                          XP103170
000BF0   0510                   CLAR  R1,R0           TOTAL LESS THAN NTIMES ?        XP103180
000BF2   4280 1200              BL    ENTRY3          IF LESS RETURN FOR NEXT PASS    XP103190
000BF6   4820 1182              LH    R2,NOIO         IO PERMITTED?                   XP103200
000BFA   4230 0C26              BNZ   HALT                                            XP103210
000BFE   41F0 100A              BAL   LINK,TSTDU                                      XP103220
000C02   4230 1200              BNZ   ENTRY3                                          XP103230
000C06   4010 1154              STH   R1,WASDU                                        XP103240
                      *                                                               XP103250
000C0A   4810 1156    HALT1     LH    R1,WASDU1                                       XP103260
000C0E   4230 0C2E              BNZ   END                                             XP103270
000C12   4810 115A              LH    R1,TOTERR                                       XP103280
000C16   4230 0C2E              BNZ   END                                             XP103290
000C1A   C850 11B4              LHI   R5,NOERMSG                                      XP103300
000C1E   41F0 0E32              BAL   LINK,PRINT                                      XP103310
000C22   4300 0C50              B     NONE                                            XP103320
000C26   C810 080F    HALT      LHI   R1,X'80F'                                       XP103330
000C2A   9114                   SLHLS R1,4            (R1) = X'80F0'                  XP103340
000C2C   9521                   EPSR  R2,R1           HALT PROCESSOR                  XP103350
                      *                                                               XP103360
                      *   WHEN EXE/RUN IS PRESSED, PRINT TOTAL & TOTERR               XP103370
                      *                                                               XP103380
000C2E   4820 1182    END       LH    R2,NOIO                                         XP103390
000C32   2036                   BNZS  HALT                                            XP103400
000C34   41F0 100A              BAL   LINK,TSTDU      SEE IF LIST DEV IS ON           XP103410
000C38   2039                   BNZS  HALT            NO, HALT                        XP103420
000C3A   2400         KEEP10    LIS   R0,0                                            XP103430
000C3C   4000 1154              STH   R0,WASDU        RESET FLAG                      XP103440
000C40   41F0 0EAC              BAL   LINK,CRLF                                       XP103450
000C44   C850 11A4              LHI   R5,TOTMSG                                       XP103460
000C48   4050 1150              STH   R5,ISITERR                                      XP103470
000C4C   41F0 0E32              BAL   LINK,PRINT      PRINT 'TOTAL   TOTERR'          XP103480
000C50   2404         NONE      LIS   R0,4            TO PRINT 4 HEX DIGITS           XP103490
000C52   4850 1158              LH    R5,TOTAL                                        XP103500
000C56   41F0 0E08              BAL   LINK,R5HEX      PRINT TOTAL IN HEX              XP103510
000C5A   2434                   LIS   R3,4                                            XP103520
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000C5C    C840 0020                LHI   R4,C' '              SPACE                               XP103530
000C60    41F0 0EBA      KEEP101   BAL   LINK,OUTCHR          OUTPUT IT                           XP103540
000C64    2731                     SIS   R3,1                                                     XP103550
000C66    2023                     BPS   KEEP101              4 TIMES                             XP103560
000C68    2404                     LIS   R0,4                 TO PRINT 4 HEX DIGITS               XP103570
000C6A    4850 115A                LH    R5,TOTERR                                                XP103580
000C6E    41F0 0E08                BAL   LINK,R5HEX           PRINT TOTERR IN HEX                 XP103590
000C72    4300 0AFA                B     OPTIN                GO TO BEGINNING                     XP103600
                         *                                                                        XP103610
                         *                                                                        XP103620
                         **        A SPURIOUS INTERRUPT IS DETECTED                               XP103630
                         ************************************************************             XP103640
000C76    247C           ARTFLT    LIS   R7,12                ARITHMETIC FAULT INTERRUPT          XP103650
000C78    D470 1180                CLB   R7,TESTNO                                                XP103660
000C7C    4330 3080                BE    T12AINT                                                  XP103670
000C80    24B1                     LIS   R11,1                ERROR TTF1                          XP103680
000C82    230B                     BS    ERRF6                                                    XP103690
000C84    24B2           ILGINT    LIS   R11,2                ILLEGAL INTERRUPT ERROR             XP103700
000C86    2309                     BS    ERRF6                                                    XP103710
000C88    9500                     EPSR  R0,R0                SAVE CC                             XP103720
000C8A    24B3           MALFTN    LIS   R11,3                MACH.MALFTN.INTRPT.ERROR            XP103730
000C8C    2306                     BS    ERRF6                                                    XP103740
000C8E    24B5           MACINT    LIS   R11,5                MEM.ACCESS CONTROL.INTRPT.          XP103750
000C90    2304                     BS    ERRF6                                                    XP103760
000C92    24B4           XINTHW    LIS   R11,4                HALFWORD EXT. INTERRUPT             XP103770
000C94    2302                     BS    ERRF6                                                    XP103780
000C96    24B6           CHANIO    LIS   R11,6                SYSTEM QUEUE SERVICE INTERRUPT      XP103790
000C98    2304           ERRF6     BS    ERRINT                                                   XP103800
000C9A    24B7           SVCERR    LIS   R11,7                SVC ERROR                           XP103810
000C9C    2302                     BS    ERRINT                                                   XP103820
000C9E    24B8           DEVERR    LIS   R11,8                I/O DEVICE ERROR (D0-2CE)           XP103830
                         *                                                                        XP103840
                         *                                                                        XP103850
000CA0    C6B0 00F0      ERRINT    OHI   R11,X'F0'            ERROR TTF1 THROUGH TTF8     *****   XP103860
000CA4    D2B0 1181                STB   R11,ERRNO            STORE ERR.NO.                       XP103870
000CA8    D000 3F44                STM   R0,REG0              STORE REG.SET 0                     XP103880
                         * WRITE TO DISPLAY                                                       XP103890
000CAC    2411                     LIS   R1,1                                                     XP103900
000CAE    C830 0080                LHI   R3,X'80'             DISPLAY IN NORMAL MODE              XP103910
000CB2    9E13                     OCR   R1,R3                                                    XP103920
000CB4    4840 1180                LH    R4,TESTNO                                                XP103930
000CB8    9444                     EXBR  R4,R4                                                    XP103940
000CBA    9814                     WHR   R1,R4                DISPLAY ERROR                       XP103950
000CBC    9433                     EXBR  R3,R3                NO INTPTS, REG SET 0                XP103960
000CBE    9553                     EPSR  R5,R3                WAIT                                XP103970
000CC0    C860 00F0                LHI   R6,X'00F0'           AFTER RUN DEPRESSED                 XP103980
000CC4    9556                     EPSR  R5,R6                                                    XP103990
000CC6    2306                     BS    ERRB                                                     XP104000
          0000 0CC8      ERROR     EQU   *                    COMMON ERROR ROUTINE                XP104010
                         ************************************************************             XP104020
                         *                                                                        XP104030
                         *         ERRNO =    1 BYTE OF ERROR NO IN HEX X'01' THRU X'FF'          XP104040
                         *                                                                        XP104050
                         *         TESTNO=    1 BYTE OF TEST NO IN HEX X'01' THRU X'0F'           XP104060
                         *                                                                        XP104070
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                                    408  *       NXTST =    4 BYTE ADDRESS OF NEXT TEST TO PERFORM                XP104080
                                    409  *                                                                        XP104090
                                    410  *       REGSAVE=  STORAGE AREA FOR ALL REGISTER SETS                    XP104100
                                    411  *                                                                        XP104110
                                    412  *       PSWSAVE=   PSW AT THE TIME ERROR WAS DETECTED                   XP104120
                                    413  *                                                                        XP104130
000CC8  D000 3F84                   414          STM   R0,REG10          STORE ALL REGS IN SET F                XP104140
000CCC  95EE                        415          EPSR  R14,R14           CAPTURE PSW IN R14                     XP104150
000CCE  50E0 3900                   416          ST    R14,PSWSAVE                                              XP104160
        0000 0CD2                   417  ERRB    EQU   *                                                        XP104170
000CD2  2411                        418          LIS   R1,1              DISPLAY ADDRESS                        XP104180
000CD4  6110 115A                   419          AHM   R1,TOTERR                                                XP104190
000CD8  DE10 1125                   420          OC    R1,NORM           DISPLAY IN NORMAL MODE                 XP104200
000CDC  4840 1180                   421          LH    R4,TESTNO                                                XP104210
000CE0  9444                        422          EXBR  R4,R4                                                    XP104220
000CE2  9814                        423          WHR   R1,R4             DISPLAY TESTNO, ERRNO                  XP104230
000CE4  4800 1182                   424          LH    R0,NOIO                                                  XP104240
000CE8  2337                        425          BZS   MAYPRT            IF NOIO = 0, WE MIGHT PRINT            XP104250
000CEA  F850 0000 80F0              426          LI    R5,X'80F0'        SEL REG SET F, WAIT                    XP104260
000CF0  9565                        427          EPSR  R6,R5             HALT IF NOIO = 1                       XP104270
000CF2  4300 0D16                   428          B     CONTIN            GO ON WITH NORMAL SEQUENCE             XP104280
000CF6  41F0 100A                   429  MAYPRT  BAL   LINK,TSTDU                                               XP104290
000CFA  4010 1154                   430          STH   R1,WASDU                                                 XP104300
000CFE  4330 0D1C                   431          BZ    PRTERR                                                   XP104310
000D02  4010 1156                   432  NOPRT   STH   R1,WASDU1                                                XP104320
000D06  4870 115A                   433          LH    R7,TOTERR         ERROR COUNT                            XP104330
000D0A  C570 FFFF                   434          CLHI  R7,X'FFFF'                                               XP104340
000D0E  2134                        435          BNES  CONTIN                                                   XP104350
000D10  9817                        436          WHR   R1,R7             FFFF ERRORS, HALT                      XP104360
000D12  4300 0C26                   437          B     HALT                                                     XP104370
000D16  5850 39C0                   438  CONTIN  L     R5,NXTST                                                 XP104380
000D1A  0305                        439          BR    R5                                                       XP104390
000D1C  D000 B2E4 =004004           440  PRTERR  STM   R0,ERRSAVE                                               XP104400
000D20  4120 0D3C                   441          BAL   R2,ERRCOM                                                XP104410
000D24  4300 0D5E                   442          B     ERR1                                                     XP104420
000D28  2400                        443  ERRCOM2 LIS   R0,0                                                     XP104430
000D2A  4000 1150                   444          STH   R0,ISITERR        RESET ERROR FLAG                       XP104440
000D2E  4820 0A22                   445          LH    R2,PSW                                                   XP104450
000D32  9502                        446          EPSR  R0,R2                                                    XP104460
000D34  D100 B2CC =004004           447          LM    R0,ERRSAVE        RESTORE REGISTERS                      XP104470
000D38  4300 0D16                   448          B     CONTIN            RETURN                                 XP104480
                                    449  *                                                                      XP104490
000D3C  5020 116C                   450  ERRCOM  STA   R2,COMRET         STORE RETURN ADDRESS                   XP104500
000D40  4810 0A24                   451          LH    R1,PSW2                                                  XP104510
000D44  9501                        452          EPSR  R0,R1             DISABLE INT. @ PROCESSOR LEVEL         XP104520
000D46  41F0 100A                   453          BAL   LINK,TSTDU        GET LIST DEVICE DU BIT IN R1           XP104530
000D4A  2138                        454          BNZS  ERRCOM1           BRANCH IF OFF-LINE                     XP104540
000D4C  4020 1150                   455          STH   R2,ISITERR        SET ERROR FLAG                         XP104550
000D50  4020 1152                   456          STH   R2,NOERR                                                 XP104560
000D54  5820 116C                   457          LDA   R2,COMRET                                                XP104570
000D58  0302                        458          BR    R2                GO, PRINT ERROR MESSAGE                XP104580
                                    459  *                                                                      XP104590
000D5A  4300 0D02                   460  ERRCOM1 B     NOPRT                                                    XP104600
000D5E  41F0 0DD0                   461  ERR1    BAL   LINK,COMMERR                                             XP104610
000D62  C850 11C2                   462          LHI   R5,ERRMSG                                                XP104620
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000D66  41F0 0E32            463          BAL   LINK,PRINT                                          XP104630
                             464  *                                                                   XP104640
                             465  *                                                                   XP104650
000D6A  D300 1180            466          LB    R0,TESTNO          FOR TESTS 8 AND 12               XP104660
000D6E  2708                 467          SIS   R0,8               PRINT THE OPERANDS               XP104670
000D70  2334                 468          BZS   TST812                                                XP104680
000D72  2704                 469          SIS   R0,4                                                  XP104690
000D74  4230 0DC0            470          BNZ   PRTEND                                                XP104700
                             471  *                                                                   XP104710
        0000 0D78            472  TST812  EQU   *                                                     XP104720
                             473  **  FOR TESTS 8 AND 12,PRINT THE USEFUL OPERAND VALUES              XP104730
                             474  **  ALL THE REG.ARE STORED IN MEMORY STARTING AT REG10              XP104740
                             475  **  REG10 = TOTAL NO.OF REGISTERS TO BE PRINTED                     XP104750
000D78  D390 1181            476          LB    R9,ERRNO           WAS THE ERROR A SPURIOUS INTPT ?  XP104760
000D7C  C490 00F0            477          NHI   R9,X'F0'                                              XP104770
000D80  C590 00F0            478          CLHI  R9,X'F0'                                              XP104780
000D84  4330 0DC0            479          BE    PRTEND             SPURIOUS INTPT IF EQUAL.         XP104790
000D88  5890 3F84            480          L     R9,REG10           IF REG10=0,PRINT NO REG.         XP104800
000D8C  4330 0DC0            481          BZ    PRTEND                                                XP104810
000D90  E630 B3F0 =004184    482          LA    R3,T15TRTBL                                           XP104820
000D94  C8C0 0020            483          LHI   R12,X'20'          SPACE AFTER 8 CHAR.              XP104830
000D98  E680 3F86            484          LA    R8,REG11                                              XP104840
000D9C  5808 0000            485  PRG812  L     R0,0(R8)                                              XP104850
000DA0  41E0 0DE4            486          BAL   R14,CONVR8                                            XP104860
000DA4  2791                 487          SIS   R9,1                                                  XP104870
000DA6  2336                 488          BZS   PRTR812                                               XP104880
000DA8  2684                 489          AIS   R8,4                                                  XP104890
000DAA  D2C3 0008            490          STB   R12,8(R3)                                             XP104900
000DAE  2639                 491          AIS   R3,9                                                  XP104910
000DB0  220A                 492          BS    PRG812                                                XP104920
000DB2  24CD                 493  PRTR812 LIS   R12,13             CR                               XP104930
000DB4  D2C3 0008            494          STB   R12,8(R3)                                             XP104940
000DB8  E650 B3C8 =004184    495          LA    R5,T15TRTBL                                           XP104950
000DBC  41F0 0E32            496          BAL   LINK,PRINT                                            XP104960
000DC0  4800 1156            497  PRTEND  LH    R0,WASDU1                                             XP104970
000DC4  4230 0C0A            498          BNZ   HALT1                                                 XP104980
000DC8  41F0 0F90            499          BAL   LINK,TSTBRK                                           XP104990
000DCC  4300 0D28            500          B     ERRCOM2                                               XP105000
000DD0  4800 1180            501  COMMERR LH    R0,TESTNO                                             XP105010
000DD4  E630 11C8            502          LA    R3,PRTRNO                                             XP105020
000DD8  41E0 0DDE            503          BAL   R14,CONVR4                                            XP105030
000DDC  030F                 504          BR    LINK                                                  XP105040
                             505  *                                                                   XP105050
                             506  **  SUBROUTIN CONVR8 UNPACKS REG.0 FROM HEX. TO ASCII               XP105060
                             507  **  TOTAL 8 BYTES ARE STORED IN MEMORY LOCATIONS 0,7(R3)            XP105070
                             508  *                                                                   XP105080
                             509  **  SUBROUTINE CONVR4 UNPACKS REG.0 FROM HEX. TO ASCII             XP105090
                             510  **  TOTAL 4 BYTES ARE STORED IN MEMORY LOCATIONS 0(R3),3(R3)        XP105100
                             511  *                                                                   XP105110
000DDE  2633                 512  CONVR4  AIS   R3,3                                                  XP105120
000DE0  2444                 513          LIS   R4,4                                                  XP105130
000DE2  2303                 514          BS    CONVR                                                 XP105140
000DE4  2637                 515  CONVR8  AIS   R3,7                                                  XP105150
000DE6  2448                 516          LIS   R4,8                                                  XP105160
000DE8  0850                 517  CONVR   LR    R5,R0                                                 XP105170
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000DEA  C450 000F      518          NHI   R5,X'F'          ZERO OUT OTHER BITS                    XP105180
000DEE  CA50 0030      519          AHI   R5,X'30'                                                 XP105190
000DF2  C550 003A      520          CLHI  R5,X'3A'         IF LESS THAN 3A ,NO. 1 THRU 9          XP105200
000DF6  2182           521          BLS   CONV1                                                    XP105210
000DF8  2657           522          AIS   R5,7             OTHERWISE A THRU F                     XP105220
000DFA  D253 0000      523  CONV1   STB   R5,0(R3)                                                XP105230
000DFE  1004           524          SRLS  R0,4             SHIFT R0 4 BITS TO GET NEXT BYTE       XP105240
000E00  2741           525          SIS   R4,1                                                     XP105250
000E02  033E           526          BZR   R14                                                      XP105260
000E04  2731           527          SIS   R3,1                                                     XP105270
000E06  220F           528          BS    CONVR                                                    XP105280
                       529  *                                                                      XP105290
                       530  *----------------------------                                         XP105300
                       531  *  R5HEX PRINTS CONTENTS OF R5 IN HEX                                  XP105310
                       532  *        PRINTS UPTO 4 DIGITS     (8 DIGITS, TARGT 32)                 XP105320
                       533  *                                                                      XP105330
000E08  D000 3FC4      534  R5HEX   STM   R0,RSAVE         STORE REGISTERS                        XP105340
000E0C  0820           535          LDAR  R2,R0            R2 = # OF DIGITS TO BE PRINTED         XP105350
000E0E  2721           536          SIS   R2,1                                                     XP105360
000E10  4210 0E2C      537          BM    R5XB                                                     XP105370
000E14  1122           538          SLLS  R2,2             R2 = 4(DIGITS-1)                       XP105380
000E16  0845           539  R5X     LDAR  R4,R5                                                    XP105390
000E18  EC42 0000      540          SRAL  R4,0(R2)                                                 XP105400
000E1C  C440 000F      541          NHI   R4,15            R4 = HEX DIGIT                         XP105410
000E20  D344 1170      542          LB    R4,HEXTAB(R4)                                            XP105420
000E24  41F0 0EBA      543  R5XA    BAL   R15,OUTCHR                                               XP105430
000E28  2724           544          SIS   R2,4                                                     XP105440
000E2A  221A           545          BNMS  R5X              LOOP TILL ALL DIGITS                   XP105450
000E2C  D100 3FC4      546  R5XB    LM    R0,RSAVE         RESTORE REGISTERS                      XP105460
000E30  030F           547          BR    LINK             RETURN                                 XP105470
                       548  *----------------------------                                         XP105480
                       549  *  TO PRINT THE ASCII MESSAGE                                         XP105490
                       550  *                                                                      XP105500
000E32  D000 3FC4      551  PRINT   STM   R0,RSAVE         STORE REGISTERS                        XP105510
000E36  41F0 100A      552          BAL   LINK,TSTDU                                               XP105520
000E3A  2337           553          BZS   P1                                                       XP105530
000E3C  4010 1154      554          STH   R1,WASDU         SET FLAG                               XP105540
000E40  4010 1156      555          STH   R1,WASDU1        SET FLAG                               XP105550
000E44  4300 0EA2      556          B     PRINT5           EXIT                                   XP105560
000E48  4820 1154      557  P1      LH    R2,WASDU                                                 XP105570
000E4C  4330 0E7A      558          BZ    PRINT2                                                   XP105580
000E50  C810 0140      559          LHI   R1,X'140'        DELAY CONSTANT                         XP105590
000E54  C800 1000      560          LHI   R0,X'1000'                                               XP105600
000E58  2701           561          SIS   R0,1                                                     XP105610
000E5A  2031           562          BTBS  3,1                                                      XP105620
000E5C  2711           563          SIS   R1,1                                                     XP105630
000E5E  2035           564          BTBS  3,5              LOOP TILL TIMEOUT                      XP105640
                       565  *                             (20 SEC FOR CRT WARM-UP)               XP105650
000E60  2440           566          LIS   R4,0                                                     XP105660
000E62  4040 1154      567          STH   R4,WASDU                                                 XP105670
000E66  2541           568          LCS   R4,1             CHARACTER = X'FF'                      XP105680
000E68  4040 1156      569          STH   R4,WASDU1                                                XP105690
000E6C  2434           570          LIS   R3,4                                                     XP105700
000E6E  41F0 0EBA      571  P2      BAL   LINK,OUTCHR                                              XP105710
000E72  2731           572          SIS   R3,1                                                     XP105720
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000E74  2023                      BPS   P2                                       XP105730
000E76  4300 0C3A                 B     KEEP10          PRINT TOTAL, TOTERR      XP105740
                        *                                                        XP105750
000E7A  D345 0000       PRINT2    LB    R4,0(R5)        GET A MESSAGE BYTE       XP105760
000E7E  41F0 0EBA                 BAL   LINK,OUTCHR     OUTPUT IT                XP105770
000E82  274D                      SIS   R4,13           CR ?                     XP105780
000E84  2333                      BZS   PRINT3          MSG OVER                 XP105790
000E86  2651                      AIS   R5,1                                     XP105800
000E88  2207                      BS    PRINT2          LOOP FOR NEXT CHAR       XP105810
000E8A  244A            PRINT3    LIS   R4,10           LF                       XP105820
000E8C  D310 112D                 LB    R1,IOSAVE+1     GET LIST DEV IDENTIFIER  XP105830
000E90  2713                      SIS   R1,3            LINE PRINTER ?           XP105840
000E92  2335                      BZS   PRINT3A         BRANCH IF YES.           XP105850
000E94  41F0 0EBA                 BAL   LINK,OUTCHR     LF                       XP105860
000E98  2541                      LCS   R4,1            DEL                      XP105870
000E9A  2302                      BS    PRINT3B                                  XP105880
000E9C  2441            PRINT3A   LIS   R4,1            YES, OUTPUT X'01'        XP105890
000E9E  41F0 0EBA       PRINT3B   BAL   LINK,OUTCHR     TERMINAL CHARACTER       XP105900
000EA2  41F0 0F90       PRINT5    BAL   LINK,TSTBRK                              XP105910
000EA6  D100 3FC4                 LM    R0,RSAVE        RESTORE REGISTERS        XP105920
000EAA  030F                      BR    LINK            RETURN                   XP105930
                        *--------------------------------                        XP105940
                        *  SMALL SUPPORT ROUTINES                                XP105950
                        *                                                        XP105960
                        *  TO OUTPUT CR,LF TO LIST DEVICE                        XP105970
                        *                                                        XP105980
000EAC  D000 3FC4       CRLF      STM   R0,RSAVE        STORE REGISTERS          XP105990
000EB0  244D                      LIS   R4,13                                    XP106000
000EB2  41F0 0EBA                 BAL   LINK,OUTCHR     OUTPUT CR                XP106010
000EB6  4300 0E8A                 B     PRINT3          LINE FEED, RESTORE, RETURN XP106020
                        *----------------------------                            XP106030
                        *  TO OUTPUT A CHARACTER TO THE LIST DEVICE              XP106040
000EBA  50F0 1160       OUTCHR    STA   R15,OUT.SAV     SAVE RETURN ADDRESS      XP106050
000EBE  D300 112D                 LB    R0,IOSAVE+1                              XP106060
000EC2  2704                      SIS   R0,4                                     XP106070
000EC4  4230 0F02                 BNZ   OUTCHR2         BRANCH IF NOT CAROUSEL   XP106080
000EC8  4000 115C                 STH   R0,PAUSE                                 XP106090
000ECC  41F0 100A       OTC.0     BAL   LINK,TSTDU      ON LINE ?                XP106100
000ED0  4230 0F3E                 BNZ   OUT0            NO, BRANCH               XP106110
000ED4  9D01                      SSR   R0,R1           GET CAROUSEL STATUS      XP106120
000ED6  2386                      BFFS  8,OTC.2         BRANCH IF CHAR. IS TO BE READ XP106130
000ED8  4810 115C       OTC.1     LH    R1,PAUSE        PAUSED NOW ?             XP106140
000EDC  2038                      BNZS  OTC.0           YES, LOOP                XP106150
000EDE  4300 0F02                 B     OUTCHR2         NO, GO OUTPUT CHARACTER  XP106160
000EE2  9B01            OTC.2     RDR   R0,R1           GET CAROUSEL CHARACTER   XP106170
000EE4  C410 007F                 NHI   R1,X'7F'                                 XP106180
000EE8  CB10 0012                 SHI   R1,X'12'        DC2 ?                    XP106190
000EEC  2134                      BNZS  OTC.3                                    XP106200
000EEE  4010 115C                 STH   R1,PAUSE                                 XP106210
000EF2  2308                      BS    OUTCHR2                                  XP106220
000EF4  2712            OTC.3     SIS   R1,2            DC4 ?                    XP106230
000EF6  4230 0ECC                 BNZ   OTC.0           NO, GO WAIT FOR DC2      XP106240
000EFA  40F0 115C                 STH   LINK,PAUSE                               XP106250
000EFE  4300 0ECC                 B     OTC.0                                    XP106260
                        *                                                        XP106270
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000F02  4010 115C        628 OUTCHR2  STH   R1,PAUSE          RESET FLAG                                  XP106280
000F06  41F0 100A        629          BAL   LINK,TSTDU         OFF-LINE ?                                  XP106290
000F0A  4230 0F3E        630          BNZ   OUT0               BRANCH IF OFF-LINE                          XP106300
000F0E  4110 106A        631          BAL   R1,SETUP           SET UP FOR OUTPUT                           XP106310
000F12  9D01             632 OTC.4    SSR   R0,R1             WAIT FOR NOT BUSY                           XP106320
000F14  4230 0F3E        633          BTC   3,OUT0             BRANCH IF OFF-LINE                          XP106330
000F18  C510 000C        634          CLHI  R1,12              PASLA OFFLINE ?                             XP106340
000F1C  4330 0F3E        635          BE    OUT0               BRANCH: YES.                                XP106350
000F20  C310 0008        636          THI   R1,8               BUSY ?                                      XP106360
000F24  2039             637          BNZS  OTC.4              WAIT FOR NOT BUSY.                          XP106370
000F26  9A04             638          WDR   R0,R4              OUTPUT DATA BYTE                            XP106380
000F28  41F0 100A        639 OTC.5    BAL   LINK,TSTDU                                                     XP106390
000F2C  2139             640          BNZS  OUT0                                                          XP106400
000F2E  D310 112D        641          LB    R1,IOSAVE+1                                                   XP106410
000F32  9111             642          SLHLS R1,1                                                          XP106420
000F34  D301 0A11        643          LB    R0,IO+1(R1)        GET CONSOLE WRITE ADDRESS                   XP106430
000F38  9D01             644          SSR   R0,R1                                                         XP106440
000F3A  2089             645          BTBS  8,OTC.5            WAIT FOR BUSY TO DROP                       XP106450
000F3C  2303             646          BS    OUT1                                                          XP106460
000F3E  4010 1154        647 OUT0     STH   R1,WASDU           SET FLAG                                    XP106470
000F42  58F0 1160        648 OUT1     LDA   R15,OUT.SAV                                                   XP106480
000F46  030F             649          BR    R15                RETURN AS SET UP ABOVE                      XP106490
                         650 *-----------------------------                                               XP106500
                         651 *  TO GET A CHAR FROM KEYBOARD (IN REG R4)                                   XP106510
                         652 *                                                                            XP106520
000F48  4140 104E        653 GETCHR   BAL   R4,KBREAD           PUT KB DEVICE IN READ MODE                  XP106530
000F4C  0890             654          LDAR  R9,R0              SAVE CONSOLE ADDRESS                        XP106540
000F4E  9D04             655          SSR   R0,R4                                                         XP106550
000F50  2081             656          BTBS  8,1                IF BUSY, LOOP (POSSIBLE HANG)               XP106560
000F52  9B04             657          RDR   R0,R4              READ A CHAR IN R4                           XP106570
                         658 * TO ECHO RECEIVED CHARACTERS TO CONSOLE DEVICE IN FOX MODE                   XP106580
000F54  D400 0A1A        659 ECHO     CLB   R0,MICROBUS                                                   XP106590
000F58  2338             660          BES   ECHO1              IF MICROBUS, BRANCH                         XP106600
000F5A  D390 1130        661          LB    R9,CONRD                                                      XP106610
000F5E  C590 00A9        662          CLHI  R9,X'A9'           CAROUSEL ?                                  XP106620
000F62  2137             663          BNES  ECHRTN             DO NOT ECHO                                 XP106630
000F64  D390 112F        664          LB    R9,CONADR+1                                                   XP106640
000F68  DD90 1124        665          SS    R9,SINK                                                       XP106650
000F6C  2082             666          BTBS  8,2                                                           XP106660
000F6E  9A94             667 ECHO1    WDR   R9,R4              ECHO RECEIVED BYTE                          XP106670
000F70  C440 007F        668 ECHRTN   NHI   R4,X'7F'            REMOVE PARITY BIT                           XP106680
000F74  030F             669          BR    LINK               RETURN                                      XP106690
                         670 *-----------------------------                                               XP106700
                         671 *  TO OUTPUT '?' TO CONSOLE                                                  XP106710
                         672 *                                                                            XP106720
000F76  41F0 0EAC        673 QUESTN   BAL   LINK,CRLF                                                     XP106730
000F7A  40F0 1150        674          STH   LINK,ISITERR       SET FLAG                                    XP106740
000F7E  C850 11BE        675          LHI   R5,QMSG                                                       XP106750
000F82  41F0 0E32        676          BAL   LINK,PRINT         PRINT '?'                                   XP106760
000F86  2400             677          LIS   R0,0                                                          XP106770
000F88  4000 1150        678          STH   R0,ISITERR                                                    XP106780
000F8C  4300 0AFE        679          B     OPTIN1             TO ACCEPT COMMAND INPUT                     XP106790
                         680 *-----------------------------                                               XP106800
                         681 * IF BREAK KEY DEPRESSED, GO TO 'OPTIN' OR (BRKVECT); ELSE RETURN.           XP106810
                         682 *                                                                            XP106820
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000F90  D000 B070 =004004     683  TSTBRK   STM   R0,RSAVE+64        STORE REGISTERS                          XP106830
000F94  50F0 1164             684            STA   LINK,BRK.SAV      SAVE RETURN ADDRESS                      XP106840
000F98  D300 112E             685            LB    R0,CONADR        GET KEYBOARD DEVICE ADDRESS              XP106850
000F9C  9D01                  686            SSR   R0,R1                                                     XP106860
000F9E  4210 0FFA             687            BTC   1,TSTBRK3                                                 XP106870
000FA2  C510 000C             688            CLHI  R1,X'0C'                                                  XP106880
000FA6  4330 0FFA             689            BE    TSTBRK3                                                   XP106890
000FAA  C310 0020             690            THI   R1,X'20'         'BREAK' KEY PRESSED ?                    XP106900
000FAE  4330 0FFA             691            BZ    TSTBRK3          NO. EXIT                                 XP106910
000FB2  D320 0A10             692            LB    R2,IO                                                     XP106920
000FB6  C520 0005             693            CLHI  R2,5             IS IT MICROBUS ?                         XP106930
000FBA  2139                  694            BNES  TSTBRK4          NO, BRANCH                               XP106940
000FBC  9B02                  695  TSTBRK5  RDR   R0,R2                                                     XP106950
000FBE  9D01                  696            SSR   R0,R1                                                     XP106960
000FC0  C310 0020             697            THI   R1,X'20'                                                  XP106970
000FC4  4230 0FBC             698            BNZ   TSTBRK5          WAIT FOR BREAK KEY RELEASE               XP106980
000FC8  4300 0FEE             699            B     TSTBRK2                                                   XP106990
000FCC  4820 1128             700  TSTBRK4  LH    R2,PASFLG        PASLA ?                                  XP107000
000FD0  233B                  701            BZS   TSTBRK1          BRANCH IF NO.                            XP107010
000FD2  C310 0008             702            THI   R1,8             ALREADY ACKNOWLEDGED ?                   XP107020
000FD6  4230 0FFA             703            BNZ   TSTBRK3          BRANCH IF YES                            XP107030
000FDA  9B02                  704            RDR   R0,R2                                                     XP107040
000FDC  9D01                  705            SSR   R0,R1                                                     XP107050
000FDE  2281                  706            BFBS  8,1                                                       XP107060
000FE0  0822                  707            LDAR  R2,R2            ZERO CHARACTER ?                         XP107070
000FE2  213C                  708            BNZS  TSTBRK3          NO, BRANCH: JUST FRAMING ERROR           XP107080
000FE4  2305                  709            BS    TSTBRK2          YES, BRANCH: TRUE BREAK                  XP107090
000FE6  9D01                  710  TSTBRK1  SSR   R0,R1                                                     XP107100
000FE8  C310 0020             711            THI   R1,X'20'                                                  XP107110
000FEC  2033                  712            BTBS  3,3              WAIT FOR BREAK KEY RELEASE               XP107120
000FEE  48F0 114E             713  TSTBRK2  LH    R15,BRKVECT      CHECK FOR SPECIAL ROUTINE                XP107130
000FF2  4330 0AFA             714            BZ    OPTIN            BRK W/NO VECTOR: BRANCH TO EXEC          XP107140
000FF6  50F0 1164             715            STA   R15,BRK.SAV      SET UP FOR EXIT                          XP107150
000FFA  2400                  716  TSTBRK3  LIS   R0,0                                                      XP107160
000FFC  4000 114E             717            STH   R0,BRKVECT       DELETE VECTOR AFTER ONE SHOT.            XP107170
001000  D100 B000 =004004     718            LM    R0,RSAVE+64      RESTORE REGISTERS                        XP107180
001004  58F0 1164             719            LDA   LINK,BRK.SAV                                              XP107190
001008  030F                  720            BR    LINK             RETURN TO PROGRAM                        XP107200
                              721  *----------------------------                                            XP107210
                              722  * SEE IF CURRENT LIST DEVICE IS OFF-LINE (R1 & CC NON-ZERO IF OFF)        XP107220
                              723  *                                                                         XP107230
00100A  2401                  724  TSTDU    LIS   R0,1               SET CLI STATUS MASK                      XP107240
00100C  4810 112A             725            LH    R1,PASFLG2       LIST DEVICE ON PASLA ?                   XP107250
001010  2333                  726            BZS   $TSTDU0          BRANCH: NO.                              XP107260
001012  C600 00FC             727            LHI   R0,X'FC'         SET PASLA STATUS MASK                    XP107270
001016  D310 1120             728  $TSTDU0  LB    R1,IOSAVE+1      GET I/O POINTER FOR LIST DEVICE          XP107280
00101A  9111                  729            SLHLS R1,1                                                      XP107290
00101C  D311 0A10             730            LB    R1,IO(R1)        GET DEVICE ADDRESS                       XP107300
001020  D210 1124             731            STB   R1,SINK          AND SAVE IT                              XP107310
001024  9D11                  732            SSR   R1,R1            GET LIST DEVICE STATUS                   XP107320
001026  0410                  733            NAR   R1,R0            MASK OFF UNWANTED BITS                   XP107330
001028  C310 0001             734            THI   R1,1             DU FOR CLI ?                             XP107340
00102C  2135                  735            BNZS  $TSTDU2          BRANCH: YES.                             XP107350
00102E  C510 000C             736            CLHI  R1,X'0C'         DU FOR PASLA ?                           XP107360
001032  2332                  737            BES   $TSTDU2          BRANCH: YES.                             XP107370
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001034  2511                738  $TSTDU1  LCS   R1,1              "NOT DU" EXIT: R1=CC=0          XP107380
001036  C710 FFFF           739  $TSTDU2  XHI   R1,-1             "DU" EXIT: R1=CC<>0             XP107390
00103A  D300 1124           740           LB    R0,SINK          PUT DEVICE ADDRESS IN R0        XP107400
00103E  030F                741           BR    LINK             RETURN                          XP107410
                            742  * ------------------------------                                 XP107420
                            743  * TO DIRECT INPUT AND OUTPUT TO CONSOLE DEVICE                    XP107430
                            744  *                                                                 XP107440
001040  D300 0A10           745  SETKB    LB    R0,IO            GET KEYBOARD DEVICE             XP107450
001044  9410                746           EXBR  R1,R0                                            XP107460
001046  0610                747           OAR   R1,R0                                            XP107470
001048  4010 112C           748           STH   R1,IOSAVE        KB DEVICE = LIST DEVICE  ***    XP107480
00104C  030F                749           BR    LINK             RETURN                          XP107490
                            750  *----------------------------                                   XP107500
                            751  *  TO PUT KEYBOARD DEVICE IN READ MODE                          XP107510
                            752  *                                                                 XP107520
00104E  D300 112E           753  KBREAD   LB    R0,CONADR                                        XP107530
001052  DE00 1130           754           OC    R0,CONRD         OC CONSOLE - READ COMMAND       XP107540
001056  DB00 1124           755           RD    R0,SINK          READ A DUMMY CHARACTER (SET BUSY) XP107550
00105A  4890 1128           756           LH    R9,PASFLG        PASLA ?                         XP107560
00105E  4200 105E           757           NOP   *                FOR SPECIAL KB DEVICE           XP107570
001062  2333                758  TTYGET   BZS   KBXIT           NO, BRANCH TO EXIT              XP107580
001064  DE00 1148           759           OC    R0,CONRQ2S       YES, OC (REQUEST TO SEND)       XP107590
001068  0304                760  KBXIT    BR    R4               RETURN                          XP107600
                            761  *----------------------------                                   XP107610
                            762  *  LIST DEVICE SET UP ROUTINE                                   XP107620
                            763  *                                                                 XP107630
00106A  5010 1168           764  SETUP    STA   R1,SET.RTN                                       XP107640
00106E  D310 112D           765           LB    R1,IOSAVE+1      GET LIST DEVICE IDENTIFIER      XP107650
001072  9111                766           SLHLS R1,1             HW INDEX                        XP107660
001074  D301 0A11           767           LB    R0,IO+1(R1)      GET LIST DEVICE ADDRESS         XP107670
001078  DE01 1131           768           OC    R0,CONWRT(R1)                                    XP107680
00107C  5810 1168           769           LDA   R1,SET.RTN                                       XP107690
001080  0301                770           BR    R1               RETURN                          XP107700
                            771  * ***************************                                   XP107710
                            772  *  LOW CORE SET UP ROUTINE                                      XP107720
                            773  *                                                                 XP107730
                            774  *                                                                 XP107740
001082  2410                775  LCORE    LIS   R1,0                                             XP107750
001084  C820 00C0           776           LHI   R2,X'C0'                                         XP107760
001088  9E12                777  SYSCLR   OCR   R1,R2            DISARM ALL EXTERNAL DEVICE      XP107770
00108A  2611                778           AIS   R1,1             INTERRUPTS                      XP107780
00108C  C510 0400           779           CLHI  R1,X'400'        1024 DEVICE ADDRESSES           XP107790
001090  2084                780           BLS   SYSCLR                                           XP107800
                            781  *                                                                 XP107810
                            782  *        SET UP LOW CORE FOR SPURIOUS INTERRUPTS                 XP107820
001092  2400                783           LIS   R0,0                                             XP107830
001094  C810 0020           784           LHI   R1,X'20'         R1 = LOCATION ZEROED            XP107840
001098  5001 0000           785  XD0      ST    R0,0(R1)                                         XP107850
00109C  2614                786           AIS   R1,4                                             XP107860
00109E  C510 0050           787           CLHI  R1,X'50'         SKIP X'50' - X'80'              XP107870
0010A2  2133                788           BNES  X50                                              XP107880
0010A4  CA10 0030           789           AHI   R1,X'30'                                         XP107890
0010A8  C510 0A00           790  X50      CLHI  R1,X'A00'                                        XP107900
0010AC  208A                791           BLS   XD0                                              XP107910
                            792  *                                                                 XP107920
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0010AE   E610 0C84             LA    R1,ILGINT          NEW PSW LOC.                         XP107930
0010B2   5010 0034             ST    R1,X'34'           ILLG.INSTR.INTRPT                    XP107940
0010B6   E610 0C8A             LA    R1,MALFTN          NEW PSW LOC.                         XP107950
0010BA   5010 003C             ST    R1,X'3C'           MACH.MALFTN                          XP107960
0010BE   C810 0C92             LHI   R1,XINTHW                                               XP107970
0010C2   5010 0044             ST    R1,X'44'           NEW PSW , HW EXT. INTRPT             XP107980
0010C6   E610 0C76             LA    R1,ARTFLT          ARITH.FAULT INTRPT                   XP107990
0010CA   5010 004C             ST    R1,X'4C'                                                XP108000
0010CE   5000 3EC0             ST    R0,QUEUE           INITIALIZE SYSTEM QUEUE              XP108010
0010D2   5000 3EC4             ST    R0,QUEUE+4                                              XP108020
0010D6   E610 3EC0             LA    R1,QUEUE                                                XP108030
0010DA   5010 0080             ST    R1,X'80'                                                XP108040
0010DE   C810 3900             LHI   R1,PSWSAVE         CURRENT PSW SAVE POINTER             XP108050
0010E2   4010 0084             STH   R1,X'84'                                                XP108060
0010E6   C810 3F44             LHI   R1,REGSAVE         REG.SAVE POINTER (SET 0)             XP108070
0010EA   4010 0086             STH   R1,X'86'                                                XP108080
0010EE   E610 0C96             LA    R1,CHANIO                                               XP108090
0010F2   5010 008C             ST    R1,X'8C'                                                XP108100
0010F6   E610 0C8E             LA    R1,MACINT          NEW PSW                              XP108110
0010FA   5010 0094             ST    R1,X'94'           MAC  INTRPT                          XP108120
0010FE   C830 0C9A             LHI   R3,SVCERR                                               XP108130
001102   C810 009C             LHI   R1,X'9C'                                                XP108140
001106   4031 0000    X9C      STH   R3,0(R1)           SVC CALL,ERR.TRAP                    XP108150
00110A   2612                  AIS   R1,2                                                    XP108160
00110C   C510 00BC             CLHI  R1,X'BC'                                                XP108170
001110   2035                  BNES  X9C                                                     XP108180
001112   C830 0C9E             LHI   R3,DEVERR          DEVICE CALL ERROR TRAP               XP108190
001116   4031 0000    XD0B     STH   R3,0(R1)                                                XP108200
00111A   2612                  AIS   R1,2                                                    XP108210
00111C   C510 02D0             CLHI  R1,X'2D0'                                               XP108220
001120   2035                  BNES  XD0B                                                    XP108230
001122   030F                  BR    LINK               RETURN                               XP108240
                      *                                                                      XP108250
                      * *****************************                                        XP108260
001124   00           SINK     DB    0                  BIT BUCKET                           XP108270
001125   80           NORM     DB    X'80'                                                   XP108280
001126   40           INCR     DB    X'40'                                                   XP108290
001127   00                    DB    *                  (ALIGN ON HW BOUNDRY)                XP108300
001128   0000         PASFLG   DCX   0                  SET WHEN CONSOLE ON PASLA/PALM       XP108310
00112A   0000         PASFLG2  DCX   0                  SET WHEN LIST DEVICE ON PASLA        XP108320
00112C   0000         IOSAVE   DCX   0                                                       XP108330
                      * --------------------                                                 XP108340
                      *  ETPE IO COMMANDS                                                    XP108350
                      *                                                                      XP108360
00112E   0000         CONADR   DCX   0                  CONSOLE DEVICE ADDRESS               XP108370
                      *                                                                      XP108380
001130   0000         CONRD    DCX   0                  CONSOLE READ/WRITE COMMANDS          XP108390
         0000 1131    CONWRT   EQU   CONRD+1                                                 XP108400
001132   B9AB         CRTRD    DCX   B9AB               FOR CRT                              XP108410
001134   A4D8         CLIFRD   DCX   A4D8               *   CURRENT LOOP INTERFACE           XP108420
001136   0080         LPWRT    DCX   0080               *   LINE PRINTER                     XP108430
001138   A9AB         CARRD    DCX   A9AB               *   CAROUSEL 300                     XP108440
00113A   8202         MREADC   DCX   8202               *   MICROBUS                         XP108450
                      *                                                                      XP108460
00113C   0000         CON2ND   DCX   0                  2ND COMMAND; ENABLE READ COMMAND     XP108470
```

```
                0000 113D
00113E          F879
001140          0064
001142          0000
001144          F069
001146          0000

001148          00
001149          3B
00114A          00
00114B          00
00114C          23
00114D          00
00114E

00114E          0000
001150          0000
001152          0000
001154          0000
001156          0000
001158          0000
00115A          0000
00115C          0000
001160          0000 0000
001164          0000 0000
001168          0000 0000
00116C          0000 0000
001170          3031 3233 3435 3637
001178          3839 4142 4344 4546
001180          0000
                0000 1181
001182          0000
001184          3758
001186          000A
001188          5333 3250 5431 2020
001190          3036 2D31 3534 2020
001198          5230 3320
00119C          8D0A
00119E          4350 5520
0011A2          0D00
0011A4          544F 5441 4C20 2020
0011AC          544F 5445 5252
0011B2          0D00
0011B4          4E4F 2045 5252 4F52
0011BC          0D00
0011BE          3F0D
0011C0          2A0D
                0000 11C2
0011C2          4552 524F 5220
0011C8          3030 3030
0011CC          0D00


                0000 11CE
0011CE          2400
```

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848   CONENRD  EQU   CON2ND+1
849   CRT2ND   DCX   F879                FOR CRT                                  XP108480
850   CLIF2ND  DCX   0064                *   CURRENT LOOP INTERFACE               XP108490
851            DCX   0                   *   DUMMY HW FOR LP                      XP108500
852   CAR2ND   DCX   F069                *   CAROUSEL 300                         XP108510
853            DCX   0                   *   DUMMY HW FOR MICROBUS                XP108520
854   *                                                                           XP108530
855   CONRQ2S  DB    0                   CONSOLE REQUEST TO SEND CMD              XP108540
856   CRTRQ2S  DB    X'3B'               FOR CRT                                  XP108550
857            DB    0                   *   DUMMY BYTE FOR CLI                   XP108560
858            DB    0                   *   DUMMY BYTE FOR LP                    XP108570
859   CARRQ2S  DB    X'23'               *   CAROUSEL 300                         XP108580
860            DB    0                   *   DUMMY BYTE FOR MICROBUS              XP108590
861            DB    *                   (ALIGN ON HW BOUNDRY)                    XP108600
862   * ------------------                                                        XP108610
863   BRKVECT  DC    Z(0)                BREAK KEY VECTOR                         XP108620
864   ISITERR  DCX   0                                                           XP108630
865   NOERR    DCX   0                                                           XP108640
866   WASDU    DCX   0                   1 IF KEYBOARD DEVICE WAS OFF             XP108650
867   WASDU1   DCX   0                   NON-ZERO IF TOTAL,TOTERR TO PRINT        XP108660
868   TOTAL    DCX   0                   # OF TIMES THE SELECTED TESTS RUN        XP108670
869   TOTERR   DCX   0                   TOTAL ERRORS DETECTED WHILE DU           XP108680
870   PAUSE    DCX   0                   SET DURING TRANSMISSION PAUSE            XP108690
871   OUT.SAV  DAC   0                   OUTCHR RETURN ADDRESS SAVE               XP108700
872   BRK.SAV  DAC   0                   TSTBRK RETURN ADDRESS SAVE               XP108710
873   SET.RTN  DAC   0                   SETUP RETURN ADDRESS SAVE                XP108720
874   COMRET   DAC   0                   ERRCOM RETURN ADDRESS SAVE               XP108730
875   HEXTAB   DB    C'0123456789ABCDEF'                                         XP108740
                                                                                 XP108750
876   TESTNO   DC    X'0'                                                        XP108760
877   ERRNO    EQU   *-1                                                         XP108770
878   NOIO     DC    X'0'                                                        XP108780
879   CPUNO    DC    C'7X'                                                       XP108790
880   NTIMES   DC    X'A'                                                        XP108800
881   TITLE    DC    C'S32PT1  06-154  R03',X'8D0A',C'CPU',X'0D00'              XP108810

882   TOTMSG   DC    C'TOTAL   TOTERR',X'0D00'                                   XP108820

883   NOERMSG  DC    C'NO ERROR',X'0D00'                                         XP108830

884   QMSG     DC    X'3F0D'                                                     XP108840
885   AMSG     DC    X'2A0D'                                                     XP108850
886   ERRMSG   EQU   *                                                          XP108860
887            DC    C'ERROR'                                                    XP108870
888   PRTRNO   DC    C'0000'                                                     XP108880
889            DC    X'0D00'                                                     XP108890
890   *                                                                         XP108900
891   ************************************************************              XP108910
892   ENTRY2   EQU   *                                                          XP108920
893            LIS   R0,0                                                        XP108930
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0011D0   4000 1156               STH    R0,WASDU1                                           XP108940
0011D4   4000 1154               STH    R0,WASDU                                            XP108950
0011D8   4000 1158               STH    R0,TOTAL                                            XP108960
0011DC   4000 115A               STH    R0,TOTERR                                           XP108970
                          *                                                                 XP108980
0011E0   C810 00F0               LHI    R1,X'F0'        DISABLE ALL INTERRUPTS              XP108990
0011E4   4010 3932               STH    R1,T2PSW+2      * FIRST TIME THROUGH                XP109000
0011E8   4010 3962               STH    R1,T6PSW2+2     * OR ON RESTART                     XP109010
0011EC   4010 398A               STH    R1,T10P3+2                                          XP109020
0011F0   4010 399A               STH    R1,T10Z+2                                           XP109030
0011F4   4010 39A2               STH    R1,T13PSW+2                                         XP109040
0011F8   C810 00F5               LHI    R1,X'F5'                                            XP109050
0011FC   4010 3992               STH    R1,T10M+2                                           XP109060
         0000 1200        ENTRY3 EQU    *                                                   XP109070
                          ***********************************************************       XP109080
         0000 1200        TEST1  EQU    *                                                   XP109090
                          ** CHECK LPSW AND CONDITIONAL BRANCH INSTRUCTIONS (SEE ALSO TEST 6) XP109100
                          ***********************************************************       XP109110
001200   C800 0001               LHI    R0,1                                                XP109120
001204   D200 1180               STB    R0,TESTNO                                           XP109130
001208   E610 13D2               LA     R1,TEST2                                            XP109140
00120C   5010 39C0               ST     R1,NXTST                                            XP109150
         0000 1210        LPSW   EQU    *                                                   XP109160
         0000 1210        BTC    EQU    *                                                   XP109170
         0000 1210        BFC    EQU    *                                                   XP109180
                          *                                                                 XP109190
001210   C200 3920               LPSW   T1P1            NEW PSW, REG. SET 0                 XP109200
001214   0200                    NOPR                                                       XP109210
001216   0200                    NOPR                                                       XP109220
001218   0200                    NOPR                                                       XP109230
00121A   4300 128A               B      T1R1            ERROR 0101, LPSW            *****   XP109240
00121E   4210 1232        T1L1   BTC    1,T1R2                                              XP109250
001222   4220 1232               BTC    2,T1R2                                              XP109260
001226   4240 1232               BTC    4,T1R2                                              XP109270
00122A   4280 1232               BTC    8,T1R2                                              XP109280
00122E   4310 123A               BFC    1,T1D1                                              XP109290
001232   C8D0 0002        T1R2   LHI    R13,2           ERROR 0102, BTC, BFC, LPSW  *****   XP109300
001236   4300 128E               B      T1R             COND CODE = 0000                    XP109310
00123A   4320 1242        T1D1   BFC    2,T1D2                                              XP109320
00123E   4300 1232               B      T1R2                                                XP109330
001242   4340 124A        T1D2   BFC    4,T1D3                                              XP109340
001246   4300 1232        T1R2A  B      T1R2                                                XP109350
00124A   4380 1252        T1D3   BFC    8,T1D4                                              XP109360
00124E   4300 1232               B      T1R2                                                XP109370
                          *                                                                 XP109380
001252   C200 3928        T1D4   LPSW   T1P2            NEW PSW, SEL REG SET F              XP109390
001256   4310 126A        T1L2   BFC    1,T1R3                                              XP109400
00125A   4320 126A               BFC    2,T1R3                                              XP109410
00125E   4340 126A               BFC    4,T1R3                                              XP109420
001262   4380 126A               BFC    8,T1R3                                              XP109430
001266   4210 1272               BTC    1,T1E1                                              XP109440
00126A   C8D0 0003        T1R3   LHI    R13,3           ERROR 0103, BTC, BFC        *****   XP109450
00126E   4300 128E               B      T1R             COND CODE = 1111                    XP109460
001272   4220 127A        T1E1   BTC    2,T1E2                                              XP109470
001276   4300 126A               B      T1R3                                                XP109480
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00127A   4240 1282   T1E2   BTC   4,T1E3                                              XP109490
00127E   4300 126A   T1R3A  B     T1R3                                                XP109500
001282   4280 129A   T1E3   BTC   8,T1E4                                              XP109510
001286   4300 126A          B     T1R3                                                XP109520
                     ****   COND CODE = 1111                                          XP109530
00128A   C8D0 0001   T1R1   LHI   R13,1                                               XP109540
00128E   D2D0 1181   T1R    STB   R13,ERRNO                                           XP109550
001292   C200 3908          LPSW  T1PSW1                                              XP109560
001296   4300 0CC8   T1RR   B     ERROR                                               XP109570
         0000 129A   T1E4   EQU   *                                                   XP109580
         0000 129A   BTBS   EQU   *                                                   XP109590
         0000 129A   BFBS   EQU   *                                                   XP109600
         0000 129A   BTFS   EQU   *                                                   XP109610
         0000 129A   BFFS   EQU   *                                                   XP109620
00129A   C200 3910          LPSW  T1PSW2                                              XP109630
00129E   2301        T1E5   BFFS  0,1     BS +1                * CC = 1111 *          XP109640
0012A0   2302               BFFS  0,2     BS+2                                        XP109650
0012A2   2302               BFFS  0,2                                                 XP109660
0012A4   2304               BFFS  0,4     BS+4                                        XP109670
0012A6   0200               NOPR                                                      XP109680
0012A8   4300 134E          B     T1R4                                                XP109690
0012AC   2304               BFFS  0,4     BS+4                                        XP109700
0012AE   0200               NOPR                                                      XP109710
0012B0   4300 134E          B     T1R4                                                XP109720
0012B4   2308               BFFS  0,8     BS+8      1                                 XP109730
0012B6   0200               NOPR                                                      XP109740
0012B8   4300 134E          B     T1R4                                                XP109750
0012BC   2307               BFFS  0,7     BS+7      3                                 XP109760
0012BE   0200               NOPR                                                      XP109770
0012C0   4300 134E          B     T1R4                                                XP109780
0012C4   2307               BFFS  0,7     BS+7                                        XP109790
0012C6   2204               BFBS  0,4     BS-4      2                                 XP109800
0012C8   2302               BFFS  0,2     BS+2                                        XP109810
0012CA   2203               BFBS  0,3     BS-3      4                                 XP109820
0012CC   0200               NOPR                                                      XP109830
0012CE   4300 134E          B     T1R4                                                XP109840
0012D2   230F        T1F    BFFS  0,15    BS+15     1                                 XP109850
0012D4   2302               BFFS  0,2                                                 XP109860
0012D6   2303               BFFS  0,3     BS+3                                        XP109870
0012D8   2302               BFFS  0,2                                                 XP109880
0012DA   230F               BFFS  0,15    BS+15     3                                 XP109890
0012DC   2302               BFFS  0,2                                                 XP109900
0012DE   230E               BFFS  0,14    BS+14     5                                 XP109910
0012E0   2302               BFFS  0,2                                                 XP109920
0012E2   230D               BFFS  0,13    BS+13     7                                 XP109930
0012E4   2302               BFFS  0,2                                                 XP109940
0012E6   230C               BFFS  0,12    BS+12     9                                 XP109950
0012E8   2302               BFFS  0,2                                                 XP109960
0012EA   230B               BFFS  0,11    BS+11     11                                XP109970
0012EC   2303               BFFS  0,3                                                 XP109980
0012EE   230A               BFFS  0,10    BS+10     13   TO T1F2                      XP109990
0012F0   220B               BFBS  0,11    BS-11     2                                 XP110000
0012F2   0200               NOPR                                                      XP110010
0012F4   4300 134E          B     T1R4                                                XP110020
0012F8   220D               BFBS  0,13    BS-13     4                                 XP110030
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0012FA   220C             1004        BFBS  0,12          BS-12     6                  XP110040
0012FC   220B             1005        BFBS  0,11          BS-11     8                  XP110050
0012FE   220A             1006        BFBS  0,10          BS-10     10                 XP110060
001300   2209             1007        BFBS  0,9           BS-9      12                 XP110070
001302   2308             1008  T1F2  BFFS  0,8           BS+8      1                  XP110080
001304   2302             1009        BFFS  0,2                                        XP110090
001306   2307             1010        BFFS  0,7           BS+7      3                  XP110100
001308   2302             1011        BFFS  0,2                                        XP110110
00130A   2306             1012        BFFS  0,6           BS+6      5                  XP110120
00130C   2302             1013        BFFS  0,2                                        XP110130
00130E   2305             1014        BFFS  0,5           BS+5      7                  XP110140
001310   2306             1015        BFFS  0,6                                        XP110150
001312   2206             1016        BFBS  0,6           BS-6      2                  XP110160
001314   2205             1017        BFBS  0,5           BS-5      4                  XP110170
001316   2204             1018        BFBS  0,4           BS-4      6                  XP110180
001318   2305             1019        BFFS  0,5           BS+5      8                  XP110190
00131A   2301             1020        BFFS  0,1           BS+1                         XP110200
00131C   0200             1021        NOPR                                             XP110210
00131E   4300 134E        1022        B     T1R4                                       XP110220
                          1023  *                                                      XP110230
001322   230F             1024        BS    T1F3                                       XP110240
001324   2302             1025        BFFS  0,2                                        XP110250
001326   2307             1026        BFFS  0,7           9    BS+7                    XP110260
001328   2302             1027        BFFS  0,2                                        XP110270
00132A   230F             1028        BFFS  0,15          6    BS+15                   XP110280
00132C   2302             1029        BFFS  0,2                                        XP110290
00132E   2204             1030        BFBS  0,4           8    BS-4                    XP110300
001330   2304             1031        BFFS  0,4                                        XP110310
001332   230D             1032        BFFS  0,13                                       XP110320
001334   230C             1033        BS    T1F4                                       XP110330
001336   2308             1034        BFFS  0,8           4    BS+8                    XP110340
001338   2302             1035        BFFS  0,2                                        XP110350
00133A   2202             1036        BFBS  0,2           3    BS-3                    XP110360
00133C   2303             1037        BFFS  0,3                                        XP110370
00133E   2202             1038        BFBS  0,2           2    BS-2                    XP110380
001340   2201             1039  T1F3  BFBS  0,1           1    BS-1                    XP110390
001342   2306             1040        BS    T1R4                                       XP110400
001344   2305             1041        BS    T1R4                                       XP110410
001346   220E             1042        BFBS  0,14          5    BS-14                   XP110420
001348   220D             1043        BFBS  0,13          7    BS-13                   XP110430
00134A   2302             1044        BS    T1R4                                       XP110440
00134C   230B             1045  T1F4  BS    T1G2                                       XP110450
00134E   C8D0 0004        1046  T1R4  LHI   R13,X'04'     ERROR 0104, BTFS, BTBS  *****  XP110460
001352   0200             1047        NOPR                                             XP110470
001354   4300 128E        1048        B     T1R                                        XP110480
001358   0200             1049        NOPR                                             XP110490
00135A   4300 128E        1050        B     T1R                                        XP110500
                          1051  *     COND CODE = 1111                                 XP110510
00135E   2134             1052  T1G   BTFS  3,4           3                            XP110520
001360   2302             1053        BFFS  0,2                                        XP110530
001362   2154             1054  T1G2  BTFS  5,4           1                            XP110540
001364   2302             1055        BFFS  0,2                                        XP110550
001366   218A             1056        BTFS  8,10          4                            XP110560
001368   2302             1057        BFFS  0,2                                        XP110570
00136A   2056             1058        BTBS  5,6           2                            XP110580
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00136C  2302                       BFFS  0,2                                            XP110590
00136E  2174                       BTFS  7,4           6                                XP110600
001370  2302                       BFFS  0,2                                            XP110610
001372  2118                       BTFS  1,8           8                                XP110620
001374  2302                       BFFS  0,2                                            XP110630
001376  2092                       BTBS  9,2           7                                XP110640
001378  2302                       BFFS  0,2                                            XP110650
00137A  2046                       BTBS  4,6           5                                XP110660
00137C  0200                       NOPR                                                 XP110670
00137E  4300 13C6                  B     T1R5                                           XP110680
001382  2315                       BFFS  1,5           *                * CC = 1111 *   XP110690
001384  2344                       BFFS  4,4                                            XP110700
001386  2393                       BFFS  9,3           ERR. IF BRANCH                   XP110710
001388  2372                       BFFS  7,2                                            XP110720
00138A  2304                       BFFS  0,4           BRANCH TO T1G3                   XP110730
00138C  0200                       NOPR                                                 XP110740
00138E  4300 13C6                  B     T1R5                                           XP110750
                        *                                                               XP110760
001392  C200 3918       T1G3       LPSW  T1H           CC = 0000                        XP110770
001396  2304                       BS    T1H1+2                                         XP110780
001398  2334                       BFFS  3,4           3                                XP110790
00139A  2302                       BFFS  0,2                                            XP110800
00139C  2354            T1H1       BFFS  5,4           1                                XP110810
00139E  2302                       BFFS  0,2                                            XP110820
0013A0  238A                       BFFS  8,10          4                                XP110830
0013A2  2302                       BFFS  0,2                                            XP110840
0013A4  2256                       BFBS  5,6           2                                XP110850
0013A6  2302                       BFFS  0,2                                            XP110860
0013A8  2374                       BFFS  7,4           6                                XP110870
0013AA  2302                       BFFS  0,2                                            XP110880
0013AC  2318                       BFFS  1,8           8                                XP110890
0013AE  2302                       BFFS  0,2                                            XP110900
0013B0  2292                       BFBS  9,2           7                                XP110910
0013B2  2302                       BFFS  0,2                                            XP110920
0013B4  2246                       BFBS  4,6           5                                XP110930
0013B6  0200                       NOPR                                                 XP110940
0013B8  4300 13C6                  B     T1R5                                           XP110950
                        *                                                               XP110960
0013BC  2115                       BTFS  1,5           COND CODE = 0000 , SO            XP110970
0013BE  2144                       BTFS  4,4                                            XP110980
0013C0  2193                       BTFS  9,3           ERR. IF BRANCH                   XP110990
0013C2  2172                       BTFS  7,2                                            XP111000
0013C4  2305                       BFFS  0,5                                            XP111010
0013C6  C8D0 0005       T1R5       LHI   R13,X'05'     ERROR 0105, BFFS,BFBS     *****  XP111020
0013CA  4300 128E                  B     T1R                                            XP111030
0013CE  4300 13D2       T1END      B     TEST2                                          XP111040
                        *                                                               XP111050
        0000 13D2       TEST2      EQU   *             TEST THE INSTRUCTIONS            XP111060
                        ************************************************************   XP111070
                        **  LIS,                                                        XP111080
                        **  LI ,CLI;L,CLR;CL  ;LR  ;LHL ;LA   ;LCS ;LHI ;CLHI;LH   ;CLH  XP111090
                        **  T2R1   ;T2R2  ;T2R3;T2R4;T2R5;T2R6;T2R7;T2R8;T2R9;T2R10;T2R11  XP111100
        0000 13D2       LI         EQU   *                                              XP111110
        0000 13D2       CLI        EQU   *                                              XP111120
        0000 13D2       LIS        EQU   *                                              XP111130
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0013D2  C800 0002          1114          LHI   R0,2                                                    XP111140
0013D6  D200 1180          1115          STB   R0,TESTNO                                               XP111150
0013DA  E610 1746          1116          LA    R1,TEST3                                                XP111160
0013DE  5010 39C0          1117          ST    R1,NXTST                                                XP111170
0013E2  C200 3930          1118          LPSW  T2PSW                                                   XP111180
0013E6  F850 5555 5555     1119  T2A     LI    R5,Y'55555555'      R5 = 55555555                       XP111190
0013EC  4320 1470          1120          BNP   T2R1                COND. CODE  ,  G=1  ?               XP111200
0013F0  42D0 1470          1121          BTC   13,T2R1             CC = 0010                           XP111210
0013F4  F550 5555 5555     1122          CLI   R5,Y'55555555'                                          XP111220
0013FA  42B0 1470          1123          BTC   11,T2R1             CC = 0X00                           XP111230
0013FE  F8A0 AAAA AAAA     1124          LI    R10,Y'AAAAAAAA'     R10 = AAAAAAAA                      XP111240
001404  4310 1470          1125          BNM   T2R1                                                    XP111250
001408  42E0 1470          1126          BTC   14,T2R1             CC = 0001                           XP111260
00140C  F5A0 AAAA AAAA     1127          CLI   R10,Y'AAAAAAAA'                                         XP111270
001412  42B0 1470          1128          BTC   11,T2R1             CC = 0X00                           XP111280
001416  2400               1129          LIS   R0,0                R0 = 0                              XP111290
001418  42F0 1470          1130          BTC   15,T2R1             CC = 0000                           XP111300
00141C  2422               1131          LIS   R2,2                R2 = 2                              XP111310
00141E  4320 1470          1132          BFC   2,T2R1                                                  XP111320
001422  42D0 1470          1133          BTC   13,T2R1             CC = 0010                           XP111330
001426  F520 0000 0002     1134          CLI   R2,2                                                    XP111340
00142C  42B0 1470          1135          BTC   11,T2R1             CC = 0X00                           XP111350
001430  F8D2 AAAA AAAA     1136          LI    R13,Y'AAAAAAAA'(R2) R13 = AAAAAAAC                      XP111360
001436  4310 1470          1137          BNM   T2R1                                                    XP111370
00143A  42E0 1470          1138          BTC   14,T2R1                                                 XP111380
00143E  F5D0 AAAA AAAC     1139          CLI   R13,Y'AAAAAAAC'                                         XP111390
001444  21BC               1140          BTFS  11,12               (BTC   11,T2R1)                     XP111400
001446  F5D2 AAAA AAAA     1141          CLI   R13,Y'AAAAAAAA'(R2)                                     XP111410
00144C  21B8               1142          BTFS  11,8                (BTC   11,T2R1)                     XP111420
00144E  F8D0 0000 0000     1143          LI    R13,0               R13 = 00000000                      XP111430
001454  21FE               1144          BTFS  15,14               CC = 0000     (BTC   15,T2R1)       XP111440
001456  F5D0 0000 0000     1145          CLI   R13,0                                                   XP111450
00145C  21BA               1146          BTFS  11,10               CC = 0X00     (BTC   11,T2R1)       XP111460
00145E  F8F0 FFFF FFFE     1147          LI    R15,-2              R15 = FFFFFFFE                      XP111470
001464  2316               1148          BNMS  T2R1                CC = 0001                           XP111480
001466  21E5               1149          BTFS  14,5                (BTC   14,T2R1)                     XP111490
001468  F5F0 FFFF FFFE     1150          CLI   R15,-2                                                  XP111500
00146E  23B7               1151          BFFS  11,7                CC = 0X00     (BFC   11,T2A1)       XP111510
001470  C8D0 0001          1152  T2R1    LHI   R13,1               ERROR 0201, LI, CLI, LIS      *****   XP111520
001474  D2D0 1181          1153  T2R     STB   R13,ERRNO                                               XP111530
001478  4300 0CC8          1154          B     ERROR                                                   XP111540
00147C  F5F0 FFFF FFFD     1155  T2A1    CLI   R15,Y'FFFFFFFD'     R15 = FFFFFFFE                      XP111550
001482  2239               1156  T2A1A   BZS   T2R1                                                    XP111560
001484  208A               1157  T2A1B   BCS   T2R1                CC = 0X10 OR 0X01                   XP111570
                           1158  *                                               (BTC   8,T2R1)        XP111580
001486  F5F2 FFFF FFFD     1159          CLI   R15,Y'FFFFFFFD'(R2) =FFFFFFFF                           XP111590
00148C  228E               1160  T2R1A   BNCS  T2R1                CC = 1X01 OR 1X10                   XP111600
00148E  2236               1161  T2R1B   BZS   T2A1A               (BZ   T2R1)                         XP111610
001490  F522 0000 0001     1162          CLI   R2,1(R2)                                                XP111620
001496  2285               1163          BNCS  T2R1A               CC = 1X01 OR 1X10                   XP111630
                           1164  *                                               (BTC   8,T2R1)        XP111640
001498  2235               1165          BZS   T2R1B               (BZ   T2R1)                         XP111650
00149A  F522 FFFF FFFE     1166          CLI   R2,Y'FFFFFFFE'(R2)  = 00000000                          XP111660
0014A0  2239               1167          BZS   T2R1B               CC = 0X10 OR 0X01                   XP111670
                           1168  *                                               (BZ   T2R1)           XP111680
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0014A2   208F                  1169          BCS   T2A1B              (BTC    8,T2R1)                       XP111690
         0000 14A4             1170   L      EQU   *                                                        XP111700
         0000 14A4             1171   CLR    EQU   *                                                        XP111710
0014A4   2422                  1172   T2B    LIS   R2,2                                                     XP111720
0014A6   5872 3EB2             1173          L     R7,FIVE-2(R2)      R7 = 55555555                         XP111730
0014AA   4320 14DE             1174          BFC   2,T2R2             CC = 0010                             XP111740
0014AE   42D0 14DE             1175          BTC   13,T2R2                                                  XP111750
0014B2   0575                  1176          CLR   R7,R5              R7 = R5 = 55555555                    XP111760
0014B4   21B9                  1177          BTFS  11,9               CC = 0X00      (BTC    11,T2R2)       XP111770
0014B6   0577                  1178          CLR   R7,R7                                                    XP111780
0014B8   21B7                  1179          BTFS  11,7               (BTC    11,T2R2)                      XP111790
0014BA   2444                  1180          LIS   R4,4               R4 = 4 = INDEX VALUE                  XP111800
0014BC   58C4 3EB4             1181          L     R12,TEN-4(R4)      R12 = AAAAAAAA                        XP111810
0014C0   231F                  1182          BNMS  T2R2               (BNM    T2R2)                         XP111820
0014C2   21EE                  1183          BTFS  14,14              CC = 0001      (BTC    14,T2R2)       XP111830
0014C4   05AC                  1184          CLR   R10,R12            R10 = R12 = AAAAAAAA  ?               XP111840
0014C6   21BC                  1185          BTFS  11,12              (BTC    11,T2R2)                      XP111850
0014C8   5870 3EAC             1186          L     R7,ZERO            R7 = ZERO = 0                         XP111860
0014CC   21F9                  1187          BTFS  15,9               CC = 0000      (BTC    15,T2R2)       XP111870
0014CE   0507                  1188          CLR   R0,R7              R7 = R0 = 0 ?                         XP111880
0014D0   21B7                  1189          BTFS  11,7               CC = 0X00      (BTC    11,T2R2)       XP111890
0014D2   58C0 3EB0             1190          L     R12,ONE            R12 = FFFFFFFF                        XP111900
0014D6   2314                  1191          BNMS  T2R2                                                     XP111910
0014D8   21E3                  1192          BTFS  14,3               CC = 0001      (BTC    14,T2R2)       XP111920
0014DA   05CF                  1193          CLR   R12,R15            R15 = FFFFFFFE, R12 = FFFFFFFF        XP111930
0014DC   2134                  1194          BNZS  T2B1               CC = 0X01 OR 0X10                     XP111940
0014DE   24D2                  1195   T2R2   LIS   R13,2              ERROR 0202, L, CLR           *****    XP111950
0014E0   4300 1474             1196          B     T2R                                                      XP111960
0014E4   2083                  1197   T2B1   BCS   T2R2                                                     XP111970
0014E6   5862 4400 3EB2        1198          L     R6,TEN-6(R2,R4)    = TEN                                 XP111980
0014EC   056A                  1199          CLR   R6,R10                                                   XP111990
0014EE   2088                  1200          BTBS  11,8               (BTC    11,T2R2)                      XP112000
0014F0   0576                  1201          CLR   R7,R6              R7 = 00000000                         XP112010
0014F2   228A                  1202   T2R2A  BNCS  T2R2               CC = 1X01 OR 1X10                     XP112020
0014F4   223B                  1203   T2R2B  BZS   T2R2                                                     XP112030
0014F6   0567                  1204          CLR   R6,R7                                                    XP112040
0014F8   223D                  1205          BZS   T2R2               CC = 0X10 OR 0X01                     XP112050
0014FA   208E                  1206   T2R2C  BCS   T2R2                                                     XP112060
0014FC   056F                  1207          CLR   R6,R15             R15 = FFFFFFFE                        XP112070
0014FE   2286                  1208          BNCS  T2R2A                                                    XP112080
001500   2236                  1209          BZS   T2R2B              CC = 1X01 OR 1X10                     XP112090
001502   05F6                  1210          CLR   R15,R6             CC = 0X01 OR 0X10                     XP112100
001504   2238                  1211          BZS   T2R2B              (BZ     T2R2)                         XP112110
001506   2086                  1212          BCS   T2R2C              (BC     T2R2)                         XP112120
         0000 1508             1213   CL     EQU   *                                                        XP112130
001508   5554 3EB0             1214   T2C    CL    R5,FIVE-4(R4)      R5 = 55555555  ?                      XP112140
00150C   21B6                  1215          BTFS  11,6               CC = 0X00      (BTC    11,T2R3)       XP112150
00150E   55A2 3EB6             1216          CL    R10,TEN-2(R2)      R10 = AAAAAAAA  ?                     XP112160
001512   21B3                  1217          BTFS  11,3               CC = 0X00      (BTC    11,T2R3)       XP112170
001514   5504 3EA8             1218          CL    R0,ZERO-4(R4)      R0 = 0  ?                             XP112180
001518   21BD                  1219          BTFS  11,13              CC = 0X00      (BTC    11,T2R3)       XP112190
00151A   5550 3EB8             1220          CL    R5,TEN             R5 IS NOT = TEN                       XP112200
00151E   233A                  1221          BZS   T2R3               CC = 1X01 OR 1X10                     XP112210
001520   2389                  1222          BNCS  T2R3                                                     XP112220
001522   55A0 3EB4             1223          CL    R10,FIVE           R10 IS NOT = FIVE                     XP112230
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001526   2186                1224          BCS   T2R3               CC = 0X01 OR 0X10                    XP112240
                             1225   *                                                  (BC    T2R3)     XP112250
001528   2335                1226          BZS   T2R3                                                    XP112260
00152A   5500 3F08           1227          CL    R0,BUF2+4                                               XP112270
00152E   2382                1228          BNCS  T2R3               CC = 1X01 OR 1X10                    XP112280
001530   2134                1229          BNZS  T2C1                                                    XP112290
001532   24D3                1230   T2R3   LIS   R13,3              ERROR 0203, CL               *****   XP112300
001534   4300 1474           1231          B     T2R                                                     XP112310
001538   5552 4400 3EAE      1232   T2C1   CL    R5,FIVE-6(R2,R4)   R5 = 55555555                        XP112320
00153E   20B6                1233          BTBS  11,6               (BTC   11,T2R3)                      XP112330
         0000 1540           1234   LR     EQU   *                                                       XP112340
001540   08C5                1235   T2D    LR    R12,R5             R12 = 55555555                       XP112350
001542   2327                1236          BNPS  T2R4A                                                   XP112360
001544   2106                1237          BTFS  13,6               CC = 0010     (BTC   13,T2R4)        XP112370
001546   08EA                1238          LR    R14,R10            R14 = AAAAAAAA                       XP112380
001548   2314                1239          BNMS  T2R4A                                                   XP112390
00154A   21E3                1240          BTFS  14,3               CC = 0001     (BTC   14,T2R4)        XP112400
00154C   05C5                1241          CLR   R12,R5                                                  XP112410
00154E   2332                1242          BES   T2D2                                                    XP112420
001550   2300                1243   T2R4A  BS    T2R4                                                    XP112430
001552   05EA                1244   T2D2   CLR   R14,R10            R14 = R10 = AAAAAAAA ?               XP112440
001554   2032                1245          BNES  T2R4A                                                   XP112450
001556   08CE                1246          LR    R12,R14            R12 = R14 = AAAAAAAA                 XP112460
001558   2214                1247          BNMS  T2R4A                                                   XP112470
00155A   21E8                1248          BTFS  14,8               CC = 0001     (BTC   14,T2R4)        XP112480
00155C   05CA                1249          CLR   R12,R10            R12 IS NOT = R10                     XP112490
00155E   2136                1250          BNES  T2R4               COND CODE = NON ZERO  ?              XP112500
001560   08E5                1251          LR    R14,R5             R14 = R5 = 55555555                  XP112510
001562   2324                1252          BNPS  T2R4                                                    XP112520
001564   2103                1253          BTFS  13,3               CC = 0010     (BTC   13,T2R4)        XP112530
001566   05E5                1254          CLR   R14,R5                                                  XP112540
001568   2334                1255          BES   T2E                                                     XP112550
00156A   24D4                1256   T2R4   LIS   R13,4              ERROR 0204, LR               *****   XP112560
00156C   4300 1474           1257          B     T2R                                                     XP112570
         0000 1570           1258   LHL    EQU   *                                                       XP112580
001570   2450                1259   T2E    LIS   R5,0               R5 = 00000000                        XP112590
001572   24A0                1260          LIS   R10,0              R4 = 4 = INDEX VALUE                 XP112600
001574   2444                1261          LIS   R4,4                                                    XP112610
001576   7350 3EB6           1262          LHL   R5,FIVE+2          R5 = 00005555                        XP112620
00157A   4330 15AC           1263          BZ    T2R5                                                    XP112630
00157E   21CA                1264          BTFS  12,10              CC = 0001 OR 0010                    XP112640
                             1265   *                                                 (BTC   12,T2R5)    XP112650
001580   F550 0000 5555      1266          CLI   R5,Y'5555'                                              XP112660
001586   213B                1267          BNES  T2R5A                                                   XP112670
001588   F8A0 FFFF FFFF      1268          LI    R10,-1             R10 = FFFFFFFF                       XP112680
00158E   73A4 3EB6           1269          LHL   R10,TEN-2(R4)                                           XP112690
001592   21CD                1270          BTFS  12,13              (BTC   12,T2R5)                      XP112700
001594   233C                1271          BZS   T2R5               CC = 0010 OR 0001                    XP112710
001596   F5A0 0000 AAAA      1272          CLI   R10,Y'AAAA'        R10 = 0000AAAA  ?                    XP112720
00159C   2138                1273   T2R5A  BNES  T2R5                                                    XP112730
00159E   73B4 4400 3EB0      1274          LHL   R11,TEN-8(R4,R4)                                        XP112740
0015A4   21C4                1275          BTFS  12,4               (BTC   12,T2R5)                      XP112750
0015A6   2333                1276          BZS   T2R5                                                    XP112760
0015A8   05BA                1277          CLR   R11,R10                                                 XP112770
0015AA   2334                1278          BES   T2F                                                     XP112780
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0015AC  24D5             1279  T2R5    LIS   R13,5              ERROR 0205, LHL                *****  XP112790
0015AE  4300 1474        1280          B     T2R                                                      XP112800
        0000 1582        1281  LA      EQU   *                                                        XP112810
0015B2  2444             1282  T2F     LIS   R4,4                                                     XP112820
0015B4  2488             1283          LIS   R8,8                                                     XP112830
0015B6  E664 4800 3EA8   1284          LA    R6,FIVE-12(R4,R8)                                        XP112840
0015BC  2400             1285          LIS   R0,0                                                     XP112850
0015BE  E634 3E80        1286          LA    R3,FIVE-4(R4)                                            XP112860
0015C2  F530 0000 3EB4   1287          CLI   R3,FIVE            R3 = 55555555  ?                     XP112870
0015C8  213C             1288          BNES  T2R6A                                                    XP112880
0015CA  0536             1289          CLR   R3,R6                                                    XP112890
0015CC  213A             1290          BNES  T2R6A                                                    XP112900
0015CE  E6F0 3E88        1291          LA    R15,TEN                                                  XP112910
0015D2  F5F0 0000 3EB8   1292          CLI   R15,TEN                                                  XP112920
0015D8  2134             1293          BNES  T2R6A                                                    XP112930
0015DA  E6F0 0000        1294          LA    R15,0                                                    XP112940
0015DE  05F0             1295          CLR   R15,R0                                                   XP112950
0015E0  2138             1296  T2R6A   BNES  T2R6                                                     XP112960
0015E2  E670 400F FFFE   1297          LA    R7,Y'FFFFE'                                              XP112970
0015E8  F570 000F FFFE   1298          CLI   R7,Y'FFFFE'                                              XP112980
0015EE  2334             1299          BES   T2F1                                                     XP112990
0015F0  24D6             1300  T2R6    LIS   R13,6              ERROR 0206, LA                 *****  XP113000
0015F2  4300 1474        1301          B     T2R                                                      XP113010
0015F6  E610             1302  T2F1    DCX   E610,FF00          LA R1,T2F1A-256 (RX2-)                 XP113020
0015F8  FF00
0015FA  F510 0000 14FA   1303  T2F1A   CLI   R1,T2F1A-256                                             XP113030
001600  2038             1304          BNES  T2R6                                                     XP113040
001602  E640             1305          DCX   E640,8000          LA R4,T2F1B (RX2+)                     XP113050
001604  8000
001606  F540 0000 1606   1306  T2F1B   CLI   R4,T2F1B                                                 XP113060
00160C  203E             1307  T2R6B   BNES  T2R6                                                     XP113070
00160E  E641             1308          DCX   E641,FFFE          LA R4,T2F1C-2(R1) (RX2-)               XP113080
001610  FFFE
001612  F541 0000 1610   1309  T2F1C   CLI   R4,T2F1C-2(R1)                                           XP113090
001618  2036             1310          BNES  T2R6B                                                    XP113100
00161A  E674             1311          DCX   E674,8100          LA R7,T2F1D+X'100'(R4) (RX2+)          XP113110
00161C  8100
00161E  F574 0000 171E   1312  T2F1D   CLI   R7,T2F1D+X'100'(R4)                                      XP113120
001624  203C             1313          BNES  T2R6B                                                    XP113130
        0000 1626        1314  LCS     EQU   *                                                        XP113140
001626  2551             1315  T2G     LCS   R5,1               R5 = FFFFFFFF                         XP113150
001628  231D             1316          BFFS  1,13               (BFC   1,T2R7)                        XP113160
00162A  21EC             1317          BTFS  14,12              CC = 0001      (BTC   14,T2R7)        XP113170
00162C  F550 FFFF FFFF   1318          CLI   R5,-1                                                    XP113180
001632  2138             1319          BNES  T2R7                                                     XP113190
001634  257F             1320          LCS   R7,15              R7 = FFFFFFF1                         XP113200
001636  2316             1321          BNMS  T2R7                                                     XP113210
001638  21E5             1322          BTFS  14,5               CC = 0001      (BTC   14,T2R7)        XP113220
00163A  F570 FFFF FFF1   1323          CLI   R7,-15                                                   XP113230
001640  2334             1324          BES   T2H                                                      XP113240
001642  24D7             1325  T2R7    LIS   R13,7              ERROR 0207, LCS                *****  XP113250
001644  4300 1474        1326          B     T2R                                                      XP113260
                         1327  **  TEST HALFWORD INSTRUCTIONS IN FULLWORD MODE                        XP113270
        0000 1648        1328  LHI     EQU   *                                                        XP113280
001648  C850 5555        1329  T2H     LHI   R5,X'5555'         R5 = 00005555                         XP113290
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00164C  21DE             1330          BTFS  13,14              CC = 0010      (BTC   13,T2R8)          XP113300
00164E  232D             1331          BNPS  T2R8                                                       XP113310
001650  F550 0000 5555   1332          CLI   R5,Y'5555'                                                 XP113320
001656  2139             1333          BNES  T2R8                                                       XP113330
001658  C8A0 AAAA        1334          LHI   R10,X'AAAA'        R10 = FFFFAAAA                          XP113340
00165C  2316             1335          BNMS  T2R8                                                       XP113350
00165E  21E5             1336          BTFS  14,5               CC = 0001      (BTC   14,T2R8)          XP113360
001660  F5A0 FFFF AAAA   1337          CLI   R10,Y'FFFFAAAA'                                            XP113370
001666  2334             1338          BES   T2H1                                                       XP113380
001668  24D8             1339  T2R8    LIS   R13,8              ERROR 0208, LHI                *****   XP113390
00166A  4300 1474        1340          B     T2R                                                        XP113400
00166E  C865 5555        1341  T2H1    LHI   R6,X'5555'(R5)     R6 = 0000AAAA                           XP113410
001672  2225             1342          BNPS  T2R8                                                       XP113420
001674  20D6             1343          BTBS  13,6               CC = 0010      (BTC   13,T2R8)          XP113430
001676  F560 0000 AAAA   1344          CLI   R6,Y'AAAA'                                                 XP113440
00167C  203A             1345          BNES  T2R8                                                       XP113450
        0000 167E        1346  CLHI    EQU   *                                                          XP113460
00167E  C550 5555        1347  T2I     CLHI  R5,X'5555'         R5 = 00005555                           XP113470
001682  21BA             1348          BTFS  11,10              CC = 0X00      (BTC   11,T2R9)          XP113480
001684  C5A0 AAAA        1349          CLHI  R10,X'AAAA'        R10 = FFFFAAAA                          XP113490
001688  21B7             1350          BTFS  11,7               CC = 0X00      (BTC   11,T2R9)          XP113500
00168A  F880 EFFF 5FFE   1351          LI    R8,Y'EFFF5FFE'     R8(FW) = >5FFF                          XP113510
001690  C580 5FFF        1352          CLHI  R8,X'5FFF'         CC = 0X10 OR 0X01                       XP113520
001694  2384             1353          BNCS  T2I2                                                       XP113530
001696  24D9             1354  T2R9    LIS   R13,9              ERROR 0209, CLHI               *****   XP113540
001698  4300 1474        1355          B     T2R                                                        XP113550
00169C  2233             1356  T2I2    BZS   T2R9                                                       XP113560
00169E  C555 0000        1357          CLHI  R5,0(R5)                                                   XP113570
0016A2  20B6             1358          BTBS  11,6               (BTC   11,T2R9)                         XP113580
0016A4  25F1             1359          LCS   R15,1                                                      XP113590
0016A6  C5F5 AAAA        1360          CLHI  R15,X'AAAA'(R5)                                            XP113600
0016AA  20BA             1361          BTBS  11,10              (BTC   11,T2R9)                         XP113610
0016AC  C5FA 0000        1362          CLHI  R15,0(R10)                                                 XP113620
0016B0  208D             1363          BCS   T2R9               CC = 0X01 OR 0X10                       XP113630
0016B2  223E             1364          BZS   T2R9                                                       XP113640
        0000 16B4        1365  LH      EQU   *                                                          XP113650
0016B4  2422             1366  T2J     LIS   R2,2                                                       XP113660
0016B6  4840 3EB4        1367          LH    R4,FIVE            R4 = 00005555                           XP113670
0016BA  232A             1368          BNPS  T2R10                                                      XP113680
0016BC  21D9             1369          BTFS  13,9               CC = 0010      (BTC   13,T2R10)         XP113690
0016BE  4860 3EB8        1370          LH    R6,TEN             R6 = FFFFAAAA                           XP113700
0016C2  2316             1371          BNMS  T2R10                                                      XP113710
0016C4  21E5             1372          BTFS  14,5               CC = 0001      (BTC   14,T2R10)         XP113720
0016C6  0545             1373          CLR   R4,R5                                                      XP113730
0016C8  2133             1374          BNES  T2R10                                                      XP113740
0016CA  056A             1375          CLR   R6,R10                                                     XP113750
0016CC  2334             1376          BES   T2J1                                                       XP113760
0016CE  24DA             1377  T2R10   LIS   R13,10             ERROR 020A, LH                 *****   XP113770
0016D0  4300 1474        1378          B     T2R                                                        XP113780
0016D4  4842 3EB2        1379  T2J1    LH    R4,FIVE-2(R2)                                              XP113790
0016D8  20D5             1380          BTBS  13,5               (BTC   13,T2R10)                        XP113800
0016DA  2226             1381          BNPS  T2R10                                                      XP113810
0016DC  0545             1382          CLR   R4,R5                                                      XP113820
0016DE  2038             1383          BNES  T2R10                                                      XP113830
0016E0  2440             1384          LIS   R4,0                                                       XP113840
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0016E2  4842 4200 3EB0   1385          LH    R4,FIVE-4(R2,R2)                                        XP113850
0016E8  20DD             1386          BTBS  13,13              (BTC   13,T2R10)                   XP113860
0016EA  222E             1387          BNPS  T2R10                                                   XP113870
0016EC  0545             1388          CLR   R4,R5                                                   XP113880
0016EE  4230 16CE        1389          BNE   T2R10                                                   XP113890
        0000 16F2        1390  CLH     EQU   *                                                       XP113900
0016F2  4550 3EB4        1391  T2K     CLH   R5,FIVE             R5 = 00005555                       XP113910
0016F6  21B3             1392          BTFS  11,3                CC = 0X00      (BTC   11,T2R11)     XP113920
0016F8  45A0 3EBA        1393          CLH   R10,TEN+2           R10 = FFFFAAAA                      XP113930
0016FC  21BE             1394          BTFS  11,14               CC = 0X00      (BTC   11,T2R11)     XP113940
0016FE  5830 3EB4        1395          L     R3,FIVE             R3 = 55555555                       XP113950
001702  4530 3EB6        1396          CLH   R3,FIVE+2           CC = 0X01 OR 0X10                   XP113960
001706  2338             1397          BZS   T2R11                                                   XP113970
001708  2187             1398          BCS   T2R11                                                   XP113980
00170A  F870 0000 B000   1399          LI    R7,Y'B000'          R7 = 0000B000                       XP113990
001710  4570 3EBA        1400          CLH   R7,TEN+2            CC = 1X01 OR 1X10                   XP114000
001714  2184             1401          BCS   T2K2                                                    XP114010
001716  240B             1402  T2R11   LIS   R13,11              ERROR 020B, CLH              *****  XP114020
001718  4300 1474        1403          B     T2R                                                     XP114030
00171C  2233             1404  T2K2    BZS   T2R11                                                   XP114040
00171E  2422             1405          LIS   R2,2                                                    XP114050
001720  45A2 3EB6        1406          CLH   R10,TEN-2(R2)                                           XP114060
001724  20B7             1407          BTBS  11,7                (BTC   11,T2R11)                    XP114070
001726  4552 4200 3EB0   1408          CLH   R5,FIVE-4(R2,R2)                                        XP114080
00172C  20BB             1409          BTBS  11,11               (BTC   11,T2R11)                    XP114090
00172E  45A2 3EB2        1410          CLH   R10,FIVE-2(R2)                                          XP114100
001732  208E             1411          BCS   T2R11               CC = 0X10 OR 0X01                   XP114110
001734  223F             1412  T2R11A  BZS   T2R11                                                   XP114120
001736  4552 4200 3EB4   1413          CLH   R5,TEN-4(R2,R2)                                         XP114130
00173C  4380 1716        1414          BNC   T2R11               CC = 1X01 OR 1X10                   XP114140
001740  2236             1415          BZS   T2R11A                                                  XP114150
001742  4300 1746        1416  T2END   B     TEST3                                                   XP114160
                         1417  *                                                                     XP114170
                         1418  *                                                                     XP114180
                         1419  *                                                                     XP114190
        0000 1746        1420  TEST3   EQU   *                                                       XP114200
                         1421  ********************************************************************  XP114210
001746  2403             1422          LIS   R0,3                                                    XP114220
001748  D200 1180        1423          STB   R0,TESTNO                                               XP114230
00174C  E610 1946        1424          LA    R1,TEST4                                                XP114240
001750  5010 39C0        1425          ST    R1,NXTST                                                XP114250
                         1426  **                                                                    XP114260
                         1427  **  ST   , LM   , STM  , TS   , STH                                   XP114270
                         1428  **  T3R1 , T3R2 , T3R3 , T3R4 , T3R5                                  XP114280
                         1429  **                                                                    XP114290
                         1430  **  BUF0 = 16 FULLWORDS OF ZEROS                                     XP114300
                         1431  **  BUF2 = 16 FULLWORDS OF DATA 0,1,2,3.....13,14,15                  XP114310
                         1432  **  BUF3 = 16 FULLWORDS OF STORAGE AREA                               XP114320
                         1433  **  BUF1 = BUF2 + 28  (STARTS AT FW 7 )                               XP114330
        0000 1754        1434  BST     EQU   *                                                       XP114340
001754  2501             1435          LCS   R0,1                R0 = FFFFFFFF                       XP114350
001756  2512             1436          LCS   R1,2                R1 = FFFFFFFE                       XP114360
001758  2523             1437          LCS   R2,3                R2 = FFFFFFFD                       XP114370
00175A  2470             1438          LIS   R7,0                INIT CC = 0000                      XP114380
00175C  5000 AA24 =004184 1439         ST    R0,T2WRD0           STORE THREE FULLWORDS IN MEM.       XP114390
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001760  5010 AA24 =004188   1440          ST    R1,T2WRD1                                                    XP114400
001764  5020 AA24 =00418C   1441          ST    R2,T2WRD2                                                    XP114410
001768  21FD                1442          BTFS  15,13             CC = 0000, UNCHANGED ?                       XP114420
                            1443  *                                       (BTC   15,T3R1)                    XP114430
00176A  5860 AA16 =004184   1444          L     R6,T2WRD0         LOAD THREE FULLWORDS FROM MEMORY           XP114440
00176E  5870 AA16 =004188   1445          L     R7,T2WRD1                                                    XP114450
001772  5880 AA16 =00418C   1446          L     R8,T2WRD2                                                    XP114460
001776  0506                1447          CLR   R0,R6             R6=R0=T2WRD0=FFFFFFFF  ?                   XP114470
001778  2135                1448          BNES  T3R1              R7=R1=T2WRD1=FFFFFFFE  ?                   XP114480
00177A  0517                1449          CLR   R1,R7                                                        XP114490
00177C  2133                1450          BNES  T3R1                                                         XP114500
00177E  0528                1451          CLR   R2,R8                                                        XP114510
001780  2336                1452          BES   T3A1                                                         XP114520
001782  24D1                1453  T3R1    LIS   R13,1             ERROR 0301, ST                  *****      XP114530
001784  D2D0 1181            1454  T3R     STB   R13,ERRNO                                                    XP114540
001788  4300 0CC8            1455          B     ERROR                                                        XP114550
00178C  2460                1456  T3A1    LIS   R6,0                                                         XP114560
00178E  0876                1457          LR    R7,R6                                                        XP114570
001790  0886                1458          LR    R8,R6                                                        XP114580
001792  5060 A9EE =004184   1459          ST    R6,T2WRD0         STORE THREE FULLWORDS OF ZERO              XP114590
001796  5070 A9EE =004188   1460          ST    R7,T2WRD1         IN MEMORY                                  XP114600
00179A  5080 A9EE =00418C   1461          ST    R8,T2WRD2                                                    XP114610
00179E  2400                1462          LIS   R0,0                                                         XP114620
0017A0  5500 A9E0 =004184   1463          CL    R0,T2WRD0         CHECK THE THREE FULLWORDS IN MEM           XP114630
0017A4  4230 1782           1464  T3R1A   BNE   T3R1                                                         XP114640
0017A8  5500 A9DC =004188   1465          CL    R0,T2WRD1                                                    XP114650
0017AC  2034                1466          BNES  T3R1A                                                        XP114660
0017AE  5500 A9DA =00418C   1467          CL    R0,T2WRD2                                                    XP114670
0017B2  2037                1468          BNES  T3R1A                                                        XP114680
        0000 17B4           1469  LM      EQU   *                                                            XP114690
0017B4  2455                1470  T3B     LIS   R5,5                                                         XP114700
0017B6  24FF                1471          LIS   R15,15                                                       XP114710
0017B8  2470                1472          LIS   R7,0              SET CC = 0000                              XP114720
0017BA  D100 3EC4           1473          LM    R0,BUF0           R0 THRU R15 = 0                            XP114730
0017BE  42F0 181E           1474          BTC   15,T3R2           CC = 0000, UNCHANGED ?                     XP114740
0017C2  0800                1475          LR    R0,R0                                                        XP114750
0017C4  2134                1476          BNZS  T3R2D                                                        XP114760
0017C6  050F                1477          CLR   R0,R15                                                       XP114770
0017C8  2132                1478          BNES  T3R2D                                                        XP114780
0017CA  0505                1479          CLR   R0,R5                                                        XP114790
0017CC  213E                1480  T3R2D   BNES  T3R2C                                                        XP114800
0017CE  D170 3F20           1481          LM    R7,BUF1           R7=7,R8=8,.....R15=15                      XP114810
0017D2  42B0 181E           1482          BTC   11,T3R2           CC = 0X00, UNCHANGED ?                     XP114820
                            1483  **      THE REGISTERS SHOULD HAVE THE VALUES :                             XP114830
                            1484  **  R0=R1=R2=R3=R4=R5=R6= 0                                                XP114840
                            1485  **  R7=7 , R8 = 8 , R9 = 9   .........R15 = 15                             XP114850
0017D6  0800                1486          LR    R0,R0                                                        XP114860
0017D8  2138                1487          BNZS  T3R2C                                                        XP114870
0017DA  0506                1488          CLR   R0,R6                                                        XP114880
0017DC  2136                1489          BNES  T3R2C                                                        XP114890
0017DE  C570 0007           1490          CLHI  R7,7                                                         XP114900
0017E2  2133                1491          BNES  T3R2C                                                        XP114910
0017E4  C5F0 000F           1492          CLHI  R15,15                                                       XP114920
0017E8  2136                1493  T3R2C   BNES  T3R2B                                                        XP114930
0017EA  C5E0 000E           1494          CLHI  R14,14                                                       XP114940
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0017EE  2133
0017F0  C580 0008
0017F4  213A
0017F6  2544
0017F8  2555
0017FA  2566
0017FC  D150 3EC4
001800  231F
001802  21EE

001804  C540 FFFC
001808  2138
00180A  0800
00180C  2139
00180E  0505
001810  2137
001812  0506
001814  2135
001816  050F
001818  2133
00181A  050E
00181C  2334
00181E  24D2
001820  4300 1784
        0000 1824
001824  D100 3EC4
001828  D000 A958 =004184
00182C  D100 A954 =004184
001830  0800
001832  2136
001834  0501
001836  2134
001838  0507
00183A  2132
00183C  050F
00183E  2138
001840  D100 3F04
001844  D000 A93C =004184
001848  21BD

00184A  55F0 A972 =0041C0
00184E  2133
001850  55E0 A968 =0041BC
001854  2137
001856  5550 A93E =004198
00185A  2134
00185C  5510 A928 =004188
001860  2334
001862  24D3
001864  4300 1784
001868  D00E A90E =00417A
00186C  20B5
00186E  5500 A916 =004188
001872  2038
001874  5550 A924 =00419C
```

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1495
1496
1497  T3R2B   BNES  T3R2B
1498          CLHI  R8,8
1499          BNES  T3R2A
1500          LCS   R4,4
1501          LCS   R5,5
1502          LCS   R6,6
1503          LM    R5,BUF0
1504  *       BFFS  1,15
1505          BTFS  14,14
1506  T3R2A   CLHI  R4,-4
1507          BNES  T3R2
1508          LR    R0,R0
1509          BNZS  T3R2
1510          CLR   R0,R5
1511          BNES  T3R2
1512          CLR   R0,R6
1513          BNES  T3R2
1514          CLR   R0,R15
1515          BNES  T3R2
1516          CLR   R0,R14
1517  T3R2    BES   T3C
1518          LIS   R13,2
1519  STM     B     T3R
1520  T3C     EQU   *
1521          LM    R0,BUF0
1522          STM   R0,BUF3
1523          LM    R0,BUF3
1524          LR    R0,R0
1525          BNZS  T3R3A
1526          CLR   R0,R1
1527          BNES  T3R3A
1528          CLR   R0,R7
1529          BNES  T3R3A
1530  T3R3A   CLR   R0,R15
1531          BNES  T3R3B
1532          LM    R0,BUF2
1533          STM   R0,BUF3
1534  *       BTFS  11,13
1535          CL    R15,BUF3+60
1536          BNES  T3R3B
1537          CL    R14,BUF3+56
1538  T3R3B   BNES  T3R3
1539          CL    R5,BUF3+20
1540          BNES  T3R3
1541          CL    R1,BUF3+4
1542          BES   T3C1
1543  T3R3    LIS   R13,3
1544          B     T3R
1545  T3C1    STM   R0,BUF3-10(R14)
1546          BTBS  11,5
1547          CL    R0,BUF3+4
1548          BNES  T3R3
1549          CL    R5,BUF3+24
```

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                                                                    XP114950
                                                                    XP114960
                                                                    XP114970
R4 = FFFFFFFC                                                       XP114980
R5 = FFFFFFFB                                                       XP114990
R6 = FFFFFFFA                                                       XP115000
R5 THRU R15 = 0                                                     XP115010
(BFC    1,T3R2)                                                     XP115020
CC = 0001, UNCHANGED                                                XP115030
                        (BTC    14,T3R2)                            XP115040
R4 = FFFFFFFC  ?                                                    XP115050
                                                                    XP115060
R0 = 0  ?                                                           XP115070
                                                                    XP115080
R5 = 0  ?                                                           XP115090
                                                                    XP115100
R6 = 0  ?                                                           XP115110
                                                                    XP115120
                                                                    XP115130
                                                                    XP115140
                                                                    XP115150
                                                                    XP115160
ERROR 0302, LM                                      *****           XP115170
                                                                    XP115180
                                                                    XP115190
R0 THRU R15 = 0                                                     XP115200
BUF3 = 0                                                            XP115210
                                                                    XP115220
                                                                    XP115230
                                                                    XP115240
                                                                    XP115250
                                                                    XP115260
                                                                    XP115270
                                                                    XP115280
                                                                    XP115290
                                                                    XP115300
R0=0,R1=1,.....,R15=15                                              XP115310
                                                                    XP115320
CC = 0X00, UNCHANGED ?                                              XP115330
                        (BTC    11,T3R3)                            XP115340
                                                                    XP115350
                                                                    XP115360
                                                                    XP115370
                                                                    XP115380
                                                                    XP115390
                                                                    XP115400
                                                                    XP115410
ERROR 0303, STM                                     *****           XP115420
                                                                    XP115430
= BUF3+4                                                            XP115440
(BTC    11,T3R3)                                                    XP115450
                                                                    XP115460
                                                                    XP115470
                                                                    XP115480
                                                                    XP115490
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001878   203B                  1550           BNES  T3R3                                                  XP115500
00187A   55E0 A942 =0041C0     1551           CL    R14,BUF3+60                                           XP115510
00187E   203E                  1552  T3R3C    BNES  T3R3                                                  XP115520
001880   D0F6 4800 417E        1553           STM   R15,BUF3-6(R6,R8)   = BUF3+8                          XP115530
001886   20BD                  1554           BTBS  11,13               (BTC   11,T3R3)                   XP115540
001888   55F0 A900 =00418C     1555           CL    R15,BUF3+8                                            XP115550
00188C   2037                  1556           BNES  T3R3C                                                 XP115560
00188E   5520 A8FE =004190     1557           CL    R2,BUF3+12          OVERRUN ?                         XP115570
001892   203A                  1558           BNES  T3R3C                                                 XP115580
         0000 1894             1559  TS       EQU   *                   TEST AND SET                      XP115590
001894   D100 3EC4             1560  T3D      LM    R0,BUF0             ALL ZEROS                         XP115600
001898   D000 A8E8 =004184     1561           STM   R0,BUF3                                               XP115610
00189C   73F0 3EB0             1562           LHL   R15,ONE             R15 = 0000FFFF                    XP115620
0018A0   F8E0 FFFF 0001        1563           LI    R14,Y'FFFF0001'     R14 = FFFF0001                    XP115630
0018A6   D0E0 A8DE =004188     1564           STM   R14,BUF3+4          BUF3+4=FFFF0001,0000FFFF          XP115640
0018AA   D100 3F04             1565           LM    R0,BUF2             R0, R1, R2... = 0, 1, 2...        XP115650
0018AE   E004 A8D8 =00418A     1566           TS    BUF3+6(R4)          R0 = BUF3+6+4 = FFFF              XP115660
0018B2   231A                  1567           BNMS  T3R4                                                  XP115670
0018B4   E002 A8CC =004184     1568           TS    BUF3(R2)            R0 = BUF3+2 = 8XXX                XP115680
0018B8   2117                  1569           BMS   T3R4                                                  XP115690
0018BA   4800 A8D0 =00418E     1570           LH    R0,BUF3+10          BUF3+10 = 8XXX                    XP115700
0018BE   2314                  1571           BNMS  T3R4                                                  XP115710
0018C0   4800 A8C2 =004186     1572           LH    R0,BUF3+2           BUF3+2 = 8XXX                     XP115720
0018C4   2114                  1573           BMS   T3D2                                                  XP115730
0018C6   24D4                  1574  T3R4     LIS   R13,4               ERROR 0304, TS           *****    XP115740
0018C8   4300 1784             1575           B     T3R                                                   XP115750
0018CC   E001 4200 4185        1576  T3D2     TS    BUF3+1(R1,R2)       BUF3+1+1+2 = FFFF                 XP115760
0018D2   2216                  1577           BNMS  T3R4                                                  XP115770
0018D4   E002 4400 418A        1578           TS    BUF3+6(R2,R4)       BUF3+6+2+4 = 0000                 XP115780
0018DA   201A                  1579           BMS   T3R4                                                  XP115790
0018DC   4800 A8A8 =004188     1580           LH    R0,BUF3+4           BUF3+4 = FFFF                     XP115800
0018E0   221D                  1581           BNMS  T3R4                                                  XP115810
0018E2   4800 A8AA =004190     1582           LH    R0,BUF3+12          BUF3+12 = 8000 NOW ?              XP115820
0018E6   4310 18C6             1583           BNM   T3R4                                                  XP115830
                               1584  **  TEST HALFWORD INSTRUCTION IN FULLWORD MODE                        XP115840
         0000 18EA             1585  STH      EQU   *                                                     XP115850
0018EA   D100 3EC4             1586  T3E      LM    R0,BUF0                                               XP115860
0018EE   D000 A892 =004184     1587           STM   R0,BUF3                                               XP115870
0018F2   D100 3F04             1588           LM    R0,BUF2                                               XP115880
0018F6   4800 3EBA             1589           LH    R0,TEN+2            R0 = FFFFAAAA                     XP115890
0018FA   5810 3EB4             1590           L     R1,FIVE             R1 = 55555555                     XP115900
0018FE   2521                  1591           LCS   R2,1                R2 = FFFFFFFF                     XP115910
001900   4000 A882 =004186     1592           STH   R0,BUF3+2           BUF3 = 0000AAAA                   XP115920
001904   4010 A882 =00418A     1593           STH   R1,BUF3+6           BUF3+4 = 00005555                 XP115930
001908   4020 A882 =00418E     1594           STH   R2,BUF3+10          BUF3+8 =  0000FFFF                XP115940
00190C   4004 A87C =00418C     1595           STH   R0,BUF3+8(R4)       = BUF3+12                         XP115950
001910   4016 4800 4184        1596           STH   R1,BUF3(R6,R8)      = BUF3 + 14                       XP115960
001916   21EF                  1597           BTFS  14,15               (BTC   14,T3R5)                   XP115970
001918   231E                  1598           BNMS  T3R5                CC = 0001, UNCHANGED ?            XP115980
00191A   D130 A866 =004184     1599           LM    R3,BUF3                                               XP115990
00191E   F530 0000 AAAA        1600           CLI   R3,Y'AAAA'                                            XP116000
001924   2138                  1601           BNES  T3R5                                                  XP116010
001926   C540 5555             1602           CLHI  R4,Y'5555'                                            XP116020
00192A   2135                  1603           BNES  T3R5                                                  XP116030
00192C   F550 0000 FFFF        1604           CLI   R5,Y'FFFF'                                            XP116040
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001932  2334
001934  24D5
001936  4300 1784
00193A  F560 AAAA 5555
001940  2036
001942  4300 1946

        0000 1946

001946  2404
001948  D200 1180
00194C  E610 1B48
001950  5010 39C0

        0000 1954
001954  2440
001956  2451
001958  2468
00195A  C540 0009
00195E  238C
001960  233B
001962  C540 0009
001966  2338
001968  C140 195E
00196C  2385
00196E  2334
001970  C540 0009
001974  2336
001976  24D1
001978  D2D0 1181
00197C  4300 0CC8
001980  2449
001982  2551
001984  2461
001986  2432
001988  0543
00198A  C140 1996
00198E  2323
001990  0543
001992  2284
001994  220F
001996  20F1
001998  0543
00199A  2283
00199C  F870 7FF1 9684
0019A2  2482
0019A4  F890 7FF1 F436
0019AA  F570 7FF1 F437
0019B0  2387
0019B2  C170 19AA
0019B6  F570 7FF1 F438
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1605            BES   T3E1
1606  T3R5      LIS   R13,5                ERROR 0305, STH                *****
1607            B     T3R
1608  T3E1      CLI   R6,Y'AAAA5555'
1609            BNES  T3R5
1610  T3END     B     TEST4
1611  *
1612  *
1613  TEST4     EQU   *                    CHECK THE BRANCH INSTRUCTIONS
1614  ************************************************************
1615  **   BXLE , BXH  , BAL  , BFCR , BTCR , BALR
1616  **  (T4R1 , T4R2.,T4R3 , T4R4         , T4R5
1617  *
1618            LIS   R0,4
1619            STB   R0,TESTNO
1620            LA    R1,TEST5
1621            ST    R1,NXTST
1622  **
1623  BXLE      EQU   *
1624            LIS   R4,0                 R4 = 0 = STARTING VALUE
1625            LIS   R5,1                 R5 = 1 = INCREMENT
1626            LIS   R6,8                 R6 = 8 = FINAL VALUE
1627            CLHI  R4,9                 INITIALIZE CC = 1X01
1628  T4A2      BFFS  8,12                 (BFC   8,T4R1)
1629            BZS   T4R1                 CC = 1X01 OR 1X10
1630            CLHI  R4,9                 IF R4 = 9,ERROR
1631            BES   T4R1
1632            BXLE  R4,T4A2
1633            BNCS  T4R1                 CC UNCHANGED ?
1634            BES   T4R1                 CC = 1X01 OR 1X10
1635            CLHI  R4,9                 IF R4 = 9,OK
1636            BES   T4B2
1637  T4R1      LIS   R13,1                ERROR 0401, BXLE               *****
1638  T4R       STB   R13,ERRNO
1639            B     ERROR
1640  T4B2      LIS   R4,9                 STARTING VALUE
1641            LCS   R5,1                 INCREMENT = -1
1642            LIS   R6,1                 FINAL VALUE
1643            LIS   R3,2
1644            CLR   R4,R3                INITIALIZE CC = 0X10
1645  T4B2A     BXLE  R4,T4B2X             EXIT HERE
1646            BNPS  T4R1B                CC = 0010
1647            CLR   R4,R3
1648            BNLS  T4B2A
1649  T4R1B     BS    T4R1                 XITED TOO LATE - BXLE, NEG INCRE
1650  T4B2X     BTBS  15,1                 CC = 0000      (BTC   15,T4R1)
1651            CLR   R4,R3
1652            BNLS  T4R1B                EXITED TOO SOON - BXLE, NEG INCRE
1653  T4A3      LI    R7,Y'7FF19684'       R7 = STARTING VALUE
1654            LIS   R8,2                 R8 = INCREMENT
1655            LI    R9,Y'7FF1F436'       R9 = FINAL VALUE
1656  T4A4      CLI   R7,Y'7FF1F437'
1657            BNLS  T4R1A
1658            BXLE  R7,T4A4
1659            CLI   R7,Y'7FF1F438'
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XP116050
XP116060
XP116070
XP116080
XP116090
XP116100
XP116110
XP116120
XP116130
XP116140
XP116150
XP116160
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XP116210
XP116220
XP116230
XP116240
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XP116270
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XP116290
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XP116540
XP116550
XP116560
XP116570
XP116580
XP116590
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0019BC  2333                1660         BES    T4L1                                               XP116600
0019BE  4300 1976           1661  T4R1A  B      T4R1                                               XP116610
0019C2  F870 7FF1 F436      1662  T4L1   LI     R7,Y'7FF1F436'      INITIAL VALUE                  XP116620
0019C8  2582                1663         LCS    R8,2                INCREMENT = -2                 XP116630
0019CA  F890 7FF1 9684      1664         LI     R9,Y'7FF19684'      INITIAL VALUE                  XP116640
0019D0  C170 19DE           1665  T4L1A  BXLE   R7,T4L1X            EXIT HERE                      XP116650
0019D4  F570 7FF1 9685      1666         CLI    R7,Y'7FF19685'                                     XP116660
0019DA  2285                1667         BNLS   T4L1A                                              XP116670
0019DC  220F                1668  T4R1C  BS     T4R1A               EXITED TOO LATE - BXLE, NEG INCRE  XP116680
0019DE  F570 7FF1 9685      1669  T4L1X  CLI    R7,Y'7FF19685'                                     XP116690
0019E4  2284                1670         BNLS   T4R1C               EXITED TOO SOON - BXLE, NEG INCRE  XP116700
                            1671  *                                           (BNL   T4R1)         XP116710
        0000 19E6           1672  BXH    EQU    *                                                  XP116720
0019E6  F840 003F 7329      1673  T4B    LI     R4,Y'3F7329'                                       XP116730
0019EC  2452                1674         LIS    R5,2                                               XP116740
0019EE  F860 003F 9648      1675         LI     R6,Y'3F9648'                                       XP116750
0019F4  C040 1A06           1676  T4B3   BXH    R4,T4B4                                            XP116760
0019F8  F540 003F 9649      1677         CLI    R4,Y'3F9649'                                       XP116770
0019FE  2085                1678         BLS    T4B3                                               XP116780
001A00  2402                1679  T4R2   LIS    R13,2               ERROR 0402, BXH          *****  XP116790
001A02  4300 1978           1680         B      T4R                                                XP116800
001A06  F540 003F 9649      1681  T4B4   CLI    R4,Y'3F9649'                                       XP116810
001A0C  2036                1682         BNES   T4R2                                               XP116820
001A0E  2743                1683         SIS    R4,3                FINAL-2                        XP116830
001A10  C040 1A00           1684         BXH    R4,T4R2             CHECK NO BRANCH ON =           XP116840
001A14  F840 003F 9648      1685  T4BA   LI     R4,Y'3F9648'        STARTING VALUE                 XP116850
001A1A  2552                1686         LCS    R5,2                NEGATIVE INCREMENT             XP116860
001A1C  F860 003F 7329      1687         LI     R6,Y'3F7329'        FINAL VALUE                    XP116870
001A22  F540 003F 7329      1688  T4BA4  CLI    R4,Y'3F7329'                                       XP116880
001A28  4280 1A00           1689         BL     T4R2                                               XP116890
001A2C  C040 1A22           1690  T4BA3  BXH    R4,T4BA4                                           XP116900
001A30  F540 003F 7329      1691         CLI    R4,Y'3F7329'                                       XP116910
001A36  4380 1A00           1692         BNL    T4R2                                               XP116920
        0000 1A3A           1693  BAL    EQU    *                                                  XP116930
001A3A  2401                1694  T4C    LIS    R0,1                CC = 0010                      XP116940
001A3C  41E0 1A46           1695         BAL    R14,T4C2            R14 = ADR. T4R3                XP116950
001A40  2403                1696  T4R3   LIS    R13,3               ERROR 0403, BAL          *****  XP116960
001A42  4300 1978           1697         B      T4R                                                XP116970
001A46  2003                1698  T4C2   BTBS   13,3                CC UNCHANGED = 0010 ?          XP116980
                            1699  *                                           (BTC   13,T4R3)      XP116990
001A48  2224                1700         BFBS   2,4                 (BFC   2,T4R3)                 XP117000
001A4A  C5E0 1A40           1701         CLHI   R14,T4R3                                           XP117010
001A4E  2037                1702         BNES   T4R3                                               XP117020
001A50  2470                1703         LIS    R7,0                                               XP117030
001A52  4170 1A58           1704         BAL    R7,T4C4                                            XP117040
001A56  220B                1705  T4R3A  BS     T4R3                                               XP117050
001A58  20FC                1706  T4C4   BTBS   15,12               CC UNCHANGED, = 0000 ?         XP117060
                            1707  *                                           (BTC   15,T4R3)      XP117070
001A5A  C570 1A56           1708         CLHI   R7,T4R3A                                           XP117080
001A5E  2034                1709         BNES   T4R3A                                              XP117090
        0000 1A60           1710  BFCR   EQU    *                                                  XP117100
        0000 1A60           1711  BTCR   EQU    *                                                  XP117110
001A60  E630 1A6E           1712  T4D    LA     R3,T4D2                                            XP117120
001A64  2400                1713         LIS    R0,0                CC = 0000                      XP117130
001A66  0303                1714         BFCR   0,R3                (BR R3)                        XP117140
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001A68   24D4
001A6A   4300 1978
001A6E   20F3
001A70   E640 1A8E
001A74   E660 1A82
001A78   E650 1A98
001A7C   2400
001A7E   0304
001A80   220C
001A82   2211
001A84   2222
001A86   2243
001A88   2284
001A8A   0305
001A8C   2206
001A8E   20F7
001A90   C200 3940
001A94   0306
001A96   2208
001A98   E600 1AAE
001A9C   E610 1A68
001AA0   E630 1AB2
001AA4   2490
001AA6   0291
001AA8   0261
001AAA   0350
001AAC   2208
001AAE   03A3
001AB0   220D
001AB2   C200 3938
001AB6   02A1
001AB8   0341
001ABA   0311
         0000 1ABC
001ABC   2400
001ABE   E630 1ACA
001AC2   0103
001AC4   24D5
001AC6   4300 1978
001ACA   20F3

001ACC   C500 1AC4
001AD0   2036
001AD2   C530 1ACA
001AD6   2039
001AD8   E680 1AE4
001ADC   C200 3948
001AE0   0128
001AE2   220F
001AE4   0380
001AE6   0340
001AE8   0320
001AEA   0310
001AEC   C520 1AE2
001AF0   2037

1715  T4R4     LIS   R13,4
1716            B     T4R
1717  T4D2      BTBS  15,3
1718            LA    R4,T4D6
1719            LA    R6,T4D5
1720            LA    R5,T4D8
1721            LIS   R0,0
1722            BR    R4
1723  T4R4G     BS    T4R4
1724  T4D5      BFBS  1,1
1725            BFBS  2,2
1726            BFBS  4,3
1727            BFBS  8,4
1728            BR    R5
1729            BS    T4R4G
1730  T4D6      BTBS  15,7
1731            LPSW  T4PSW2
1732  T4D6A     BR    R6
1733  T4R4G1    BS    T4R4G
1734  T4D8      LA    R0,T4D9
1735            LA    R1,T4R4
1736            LA    R3,T4D10
1737            LIS   R9,0
1738            BTCR  9,R1
1739            BTCR  6,R1
1740            BFCR  5,R0
1741            BS    T4R4G1
1742  T4D9      BFCR  10,R3
1743            BS    T4R4G1
1744  T4D10     LPSW  T4PSW1
1745  T4LOC1    BTCR  10,R1
1746            BFCR  4,R1
1747            BFCR  1,R1
1748  BALR      EQU   *
1749  T4E       LIS   R0,0
1750            LA    R3,T4E2
1751            BALR  R0,R3
1752  T4R5      LIS   R13,5
1753            B     T4R
1754  T4E2      BTBS  15,3
1755  *
1756            CLHI  R0,T4R5
1757            BNES  T4R5
1758            CLHI  R3,T4E2
1759            BNES  T4R5
1760            LA    R8,T4E4
1761            LPSW  T4PSW3
1762  T4E2A     BALR  R2,R8
1763  T4R5A     BS    T4R5
1764  T4E4      BFCR  8,R0
1765            BFCR  4,R0
1766            BFCR  2,R0
1767            BFCR  1,R0
1768            CLHI  R2,T4R5A
1769            BNES  T4R5A

ERROR 0404, BTCR, BFCR                    *****  XP117150
                                                 XP117160
CC = 0000      (BTC    15,T4R4)                  XP117170
                                                 XP117180
                                                 XP117190
                                                 XP117200
CC = 0                                           XP117210
BRANCH TO T4D6                                   XP117220
                                                 XP117230
CC = 1111      (BFC    1,T4R4)                   XP117240
(BFC    2,T4R4)                                  XP117250
(BFC    4,T4R4)                                  XP117260
(BFC    8,T4R4)                                  XP117270
BRANCH TO T4D8                                   XP117280
(B    T4R4)                                      XP117290
CC = 0000      (BTC    15,T4R4)                  XP117300
CC = 1111                                        XP117310
BRANCH TO T4D5                                   XP117320
(B    T4R4)                                      XP117330
                                                 XP117340
                                                 XP117350
                                                 XP117360
COND CODE = 0                                    XP117370
ERR. IF BRANCH ON R1                             XP117380
                                                 XP117390
COND.CODE=0,BRANCH TO T5D9                       XP117400
(B    T4R4)                                      XP117410
CC = 0;BRANCH TO T4D10                           XP117420
(B    T4R4)                                      XP117430
                                                 XP117440
ERR.IF BRANCH ON R1                              XP117450
ERR. IF BRANCH ON R1                             XP117460
                                                 XP117470
                                                 XP117480
                                                 XP117490
                                                 XP117500
BRANCH TO T4E2                                   XP117510
ERROR 0405, BALR                          *****  XP117520
                                                 XP117530
CC = 0000, UNCHANGED ?                           XP117540
                  (BTC    15,T4R5)               XP117550
RETURN ADDRESS LOADED PROPERLY ?                 XP117560
                                                 XP117570
MODIFIED ?                                       XP117580
                                                 XP117590
                                                 XP117600
STAT = 00FF, LOC = T4E2A                         XP117610
BRANCH TO T4E4                                   XP117620
                                                 XP117630
CC = 1111, UNCHANGED ?                           XP117640
ELSE GO TO T4R5                                  XP117650
                                                 XP117660
                                                 XP117670
                                                 XP117680
                                                 XP117690
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                               *                                                          XP117700
         0000 1AF2             INDEXX   EQU    *                  DOUBLE INDEXING TFST    XP117710
001AF2   C820 0080             T4F1     LHI    R2,128                                     XP117720
001AF6   C810 FF80                      LHI    R1,-128                                    XP117730
001AFA   5801 4200 39C4        T4F1A    L      R0,DATUM(R1,R2)    USE THESE LOCATIONS FOR DATA   XP117740
001B00   58D0 39C4                      L      R13,DATUM                                  XP117750
001B04   050D                           CLR    R0,R13                                     XP117760
001B06   2135                           BNES   T4R6A                                      XP117770
001B08   5802 4100 39C4                 L      R0,DATUM(R2,R1)    REVERSE INDEXING        XP117780
001B0E   050D                           CLR    R0,R13                                     XP117790
001B10   2135                  T4R6A    BNES   T4R6                                       XP117800
001B12   2611                           AIS    R1,1                                       XP117810
001B14   2721                           SIS    R2,1                                       XP117820
001B16   2115                           BMS    T4F2                                       XP117830
001B18   220F                           BS     T4F1A                                      XP117840
                               *                                  ALL LOADS MADE FROM DATUM   XP117850
001B1A   24D6                  T4R6     LIS    R13,6              ERROR 0406, DOUBLF INDEXING   *****   XP117860
001B1C   4300 1978                      B      T4R                                        XP117870
001B20   E620 3944             T4F2     LA     R2,DATUM-128                               XP117880
001B24   2410                           LIS    R1,0                                       XP117890
001B26   5801 4200 0080        T4F2A    L      R0,128(R1,R2)      (NEGATIVE INDEXING)     XP117900
001B2C   050D                           CLR    R0,R13                                     XP117910
001B2E   203A                           BNES   T4R6                                       XP117920
001B30   5802 4100 0080                 L      R0,128(R2,R1)      REVERSE INDEXING        XP117930
001B36   050D                           CLR    R0,R13                                     XP117940
001B38   203F                  T4R6B    BNES   T4R6                                       XP117950
001B3A   2621                           AIS    R2,1                                       XP117960
001B3C   2711                           SIS    R1,1                                       XP117970
001B3E   C520 39C5                      CLHI   R2,DATUM+1                                 XP117980
001B42   208E                           BLS    T4F2A                                      XP117990
001B44   4300 1B48             T4END    B      TEST5                                      XP118000
                               *                                                          XP118010
                               *                                                          XP118020
         0000 1B48             TEST5    EQU    *                                          XP118030
                               ********************************************************** XP118040
                               **  TEST THE INSTRUCTIONS                                  XP118050
                               **  XR    ,XI   ,X    ,OR   ,OI   ,O    ,NR   ,NI   ,N     XP118060
                               ** (T5R1 ,T5R2 ,T5R3 ,T5R4 ,T5R5 ,T5R6 ,T5R7 ,T5R8 ,T5R9  XP118070
                               **  XHI   , XH   , OHI   , OH   , NHI   , NH               XP118080
                               **  T5R10 , T5R11 , T5R12 , T5R13 , T5R14 , T5R15          XP118090
001B48   2405                           LIS    R0,5                                       XP118100
001B4A   D200 1180                      STB    R0,TESTNO                                  XP118110
001B4E   E610 2018                      LA     R1,TEST6                                   XP118120
001B52   5010 39C0                      ST     R1,NXTST                                   XP118130
                               *                                                          XP118140
                               *                                                          XP118150
         0000 1B56             XR       EQU    *                                          XP118160
001B56   D100 3EC4                      LM     R0,BUF0            R0 THRU R15 = 0         XP118170
001B5A   E6E0 1B8E                      LA     R14,T5R1           ERROR RETURN            XP118180
001B5E   5850 3EB4                      L      R5,FIVE                                    XP118190
001B62   58A0 3EB8                      L      R10,TEN                                    XP118200
001B66   25F1                           LCS    R15,1              R15 = FFFFFFFF          XP118210
001B68   0705                           XR     R0,R5              R0 = R5 = 55555555      XP118220
001B6A   032E                           BNPR   R14                                        XP118230
001B6C   020E                           BTCR   13,R14                                     XP118240
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001B6E  0505                      CLR   R0,R5                                         XP118250
001B70  023E                      BNER  R14                                           XP118260
001B72  070A                      XR    R0,R10             R0 = FFFF FFFF             XP118270
001B74  031E                      BNMR  R14                                           XP118280
001B76  02EE                      BTCR  14,R14                                        XP118290
001B78  050F                      CLR   R0,R15                                        XP118300
001B7A  023E                      BNER  R14                                           XP118310
001B7C  070A                      XR    R0,R10             R0 = 5555 5555             XP118320
001B7E  032E                      BNPR  R14                                           XP118330
001B80  02DE                      BTCR  13,R14                                        XP118340
001B82  0505                      CLR   R0,R5                                         XP118350
001B84  023E                      BNER  R14                                           XP118360
001B86  0705                      XR    R0,R5              R0 = 0                     XP118370
001B88  02FE                      BTCR  15,R14                                        XP118380
001B8A  0800                      LR    R0,R0                                         XP118390
001B8C  2336                      BZS   T5B                                           XP118400
001B8E  24D1               T5R1   LIS   R13,1              ERROR 0501, XR      *****  XP118410
001B90  D2D0 1181          T5R    STB   R13,ERRNO                                     XP118420
001B94  4300 0CC8                 B     ERROR                                         XP118430
        0000 1B98          XI     EQU   *                                             XP118440
001B98  E6E0 1BE4          T5B    LA    R14,T5R2           ERROR RETURN               XP118450
001B9C  2400                      LIS   R0,0                                          XP118460
001B9E  F705 0000 0000            XI    R0,0(R5)           R0 = 55555555              XP118470
001BA4  032E                      BNPR  R14                                           XP118480
001BA6  02DE                      BTCR  13,R14                                        XP118490
001BA8  0505                      CLR   R0,R5                                         XP118500
001BAA  023E                      BNER  R14                                           XP118510
001BAC  2400                      LIS   R0,0                                          XP118520
001BAE  F700 5555 5555            XI    R0,Y'55555555'     R0 = 55555555              XP118530
001BB4  032E                      BNPR  R14                                           XP118540
001BB6  02DE                      BTCR  13,R14                                        XP118550
001BB8  0505                      CLR   R0,R5                                         XP118560
001BBA  023E                      BNER  R14                                           XP118570
001BBC  F700 AAAA AAAA            XI    R0,Y'AAAAAAAA'     R0 = FFFFFFFF              XP118580
001BC2  031E                      BNMR  R14                                           XP118590
001BC4  02EE                      BTCR  14,R14                                        XP118600
001BC6  050F                      CLR   R0,R15                                        XP118610
001BC8  023E                      BNER  R14                                           XP118620
001BCA  F700 5555 5555            XI    R0,Y'55555555'     R0 = AAAAAAAA              XP118630
001BD0  031E                      BNMR  R14                                           XP118640
001BD2  02EE                      BTCR  14,R14                                        XP118650
001BD4  050A                      CLR   R0,R10                                        XP118660
001BD6  023E                      BNER  R14                                           XP118670
001BD8  F700 AAAA AAAA            XI    R0,Y'AAAAAAAA'                                XP118680
001BDE  02FE                      BTCR  15,R14                                        XP118690
001BE0  0800                      LR    R0,R0                                         XP118700
001BE2  2334                      BZS   T5B1                                          XP118710
001BE4  24D2               T5R2   LIS   R13,2              ERROR 0502, XI      *****  XP118720
001BE6  4300 1B90                 B     T5R                                           XP118730
001BEA  2501               T5B1   LCS   R0,1                                          XP118740
001BEC  F70A 5555 5555            XI    R0,Y'55555555'(R10)                           XP118750
001BF2  02FE                      BTCR  15,R14                                        XP118760
001BF4  0800                      LR    R0,R0                                         XP118770
001BF6  023E                      BNZR  R14                                           XP118780
        0000 1BF8          X      EQU   *                                             XP118790
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001BF8  E6E0 1C3C          1880  T5C     LA    R14,T5R3                                    XP118800
001BFC  2400               1881          LIS   R0,0                                        XP118810
001BFE  2444               1882          LIS   R4,4                                        XP118820
001C00  25F1               1883          LCS   R15,1                                       XP118830
001C02  5700 3EB4          1884          X     R0,FIVE           R0 = 5555 5555            XP118840
001C06  032E               1885          BNPR  R14                                         XP118850
001C08  02DE               1886          BTCR  13,R14                                      XP118860
001C0A  0505               1887          CLR   R0,R5                                       XP118870
001C0C  023E               1888          BNER  R14                                         XP118880
001C0E  5700 3EB8          1889          X     R0,TEN            R0 = FFFF FFFF            XP118890
001C12  031E               1890          BNMR  R14                                         XP118900
001C14  02EE               1891          BTCR  14,R14                                      XP118910
001C16  050F               1892          CLR   R0,R15                                      XP118920
001C18  023E               1893          BNER  R14                                         XP118930
001C1A  5700 3EB8          1894          X     R0,TEN            R0 = 5555 5555            XP118940
001C1E  032E               1895          BNPR  R14                                         XP118950
001C20  02DE               1896          BTCR  13,R14                                      XP118960
001C22  0505               1897          CLR   R0,R5                                       XP118970
001C24  023E               1898          BNER  R14                                         XP118980
001C26  5700 3EC4          1899          X     R0,BUF0           R0 = 55555555             XP118990
001C2A  032E               1900          BNPR  R14                                         XP119000
001C2C  02DE               1901          BTCR  13,R14                                      XP119010
001C2E  0505               1902          CLR   R0,R5                                       XP119020
001C30  023E               1903          BNER  R14                                         XP119030
001C32  5704 3EB0          1904          X     R0,FIVE-4(R4)     R0 = 00000000             XP119040
001C36  02FE               1905          BTCR  15,R14                                      XP119050
001C38  0800               1906          LR    R0,R0                                       XP119060
001C3A  2334               1907          BZS   T5C1                                        XP119070
001C3C  24D3               1908  T5R3    LIS   R13,3             ERROR 0503, X     *****   XP119080
001C3E  4300 1B90          1909          B     T5R                                         XP119090
001C42  5704 4400 3EAC     1910  T5C1    X     R0,FIVE-8(R4,R4)                            XP119100
001C48  032E               1911          BNPR  R14                                         XP119110
001C4A  02DE               1912          BTCR  13,R14                                      XP119120
001C4C  0505               1913          CLR   R0,R5                                       XP119130
001C4E  023E               1914          BNER  R14                                         XP119140
        0000 1C50          1915  OR      EQU   *                                           XP119150
001C50  E6E0 1C80          1916  T5D     LA    R14,T5R4            ERROR RETURN          XP119160
001C54  2470               1917          LIS   R7,0                                        XP119170
001C56  5850 3EB4          1918          L     R5,FIVE                                     XP119180
001C5A  58A0 3EB8          1919          L     R10,TEN                                     XP119190
001C5E  25F1               1920          LCS   R15,1                                       XP119200
001C60  0675               1921          OR    R7,R5               R7 = 55555555         XP119210
001C62  032E               1922          BNPR  R14                                         XP119220
001C64  02DE               1923          BTCR  13,R14                                      XP119230
001C66  0575               1924          CLR   R7,R5                                       XP119240
001C68  023E               1925          BNER  R14                                         XP119250
001C6A  067A               1926          OR    R7,R10              R7 = FFFFFFFF         XP119260
001C6C  031E               1927          BNMR  R14                                         XP119270
001C6E  02EE               1928          BTCR  14,R14                                      XP119280
001C70  057F               1929          CLR   R7,R15                                      XP119290
001C72  023E               1930          BNER  R14                                         XP119300
001C74  2400               1931          LIS   R0,0                                        XP119310
001C76  0670               1932          OR    R7,R0                                       XP119320
001C78  031E               1933          BNMR  R14                                         XP119330
001C7A  02EE               1934          BTCR  14,R14                                      XP119340
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001C7C  057F                       CLR   R7,R15                                      XP119350
001C7E  2334                       BES   T5E                                         XP119360
001C80  24D4                T5R4   LIS   R13,4                                       XP119370
001C82  4300 1B90                  B     T5R           ERROR 0504, OR        *****   XP119380
        0000 1C86           OI     EQU   *                                           XP119390
001C86  E6E0 1CCC           T5E    LA    R14,T5R5      ERROR RETURN                  XP119400
001C8A  2488                       LIS   R8,8                                        XP119410
001C8C  2490                       LIS   R9,0                                        XP119420
001C8E  F690 A55A 5AA5             OI    R9,Y'A55A5AA5'                              XP119430
001C94  031E                       BNMR  R14                                         XP119440
001C96  02EE                       BTCR  14,R14                                      XP119450
001C98  F590 A55A 5AA5             CLI   R9,Y'A55A5AA5'                              XP119460
001C9E  023E                       BNER  R14                                         XP119470
001CA0  2490                       LIS   R9,0                                        XP119480
001CA2  F695 0000 0000             OI    R9,0(R5)      R9 = 55555555                 XP119490
001CA8  032E                       BNPR  R14                                         XP119500
001CAA  02DE                       BTCR  13,R14                                      XP119510
001CAC  0595                       CLR   R9,R5                                       XP119520
001CAE  023E                       BNER  R14                                         XP119530
001CB0  F69A 0000 0000             OI    R9,0(R10)     R9 = FFFFFFFF                 XP119540
001CB6  031E                       BNMR  R14                                         XP119550
001CB8  02EE                       BTCR  14,R14                                      XP119560
001CBA  059F                       CLR   R9,R15                                      XP119570
001CBC  023E                       BNER  R14                                         XP119580
001CBE  F698 0000 0000             OI    R9,0(R8)                                    XP119590
001CC4  031E                       BNMR  R14                                         XP119600
001CC6  02EE                       BTCR  14,R14                                      XP119610
001CC8  059F                       CLR   R9,R15                                      XP119620
001CCA  2334                       BES   T5E1                                        XP119630
001CCC  24D5                T5R5   LIS   R13,5                                       XP119640
001CCE  4300 1B90                  B     T5R           ERROR 0505, OI        *****   XP119650
001CD2  2490                T5E1   LIS   R9,0                                        XP119660
001CD4  F695 AAAA AAAA             OI    R9,Y'AAAAAAAA'(R5)  R9 = FFFFFFFF           XP119670
001CDA  031E                       BNMR  R14                                         XP119680
001CDC  02EE                       BTCR  14,R14                                      XP119690
001CDE  059F                       CLR   R9,R15                                      XP119700
001CE0  023E                       BNER  R14                                         XP119710
        0000 1CE2           O      EQU   *                                           XP119720
001CE2  E6E0 1D1A           T5F    LA    R14,T5R6      ERROR RETURN                  XP119730
001CE6  24B0                       LIS   R11,0                                       XP119740
001CE8  2488                       LIS   R8,8                                        XP119750
001CEA  56B0 3EB4                  O     R11,FIVE      R11 = 55555555                XP119760
001CEE  032E                       BNPR  R14                                         XP119770
001CF0  02DE                       BTCR  13,R14                                      XP119780
001CF2  05B5                       CLR   R11,R5                                      XP119790
001CF4  023E                       BNER  R14                                         XP119800
001CF6  56B0 3EB8                  O     R11,TEN       R11 = FFFFFFFF                XP119810
001CFA  031E                       BNMR  R14                                         XP119820
001CFC  02EE                       BTCR  14,R14                                      XP119830
001CFE  05BF                       CLR   R11,R15                                     XP119840
001D00  023E                       BNER  R14                                         XP119850
001D02  56B0 3EAC                  O     R11,ZERO                                    XP119860
001D06  031E                       BNMR  R14                                         XP119870
001D08  02EE                       BTCR  14,R14                                      XP119880
001D0A  05BF                       CLR   R11,R15                                     XP119890
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001D0C  023E                    BNER  R14
001D0E  56B0 3EB0               O     R11,ONE
001D12  031E                    BNMR  R14
001D14  02EE                    BTCR  14,R14
001D16  05BF                    CLR   R11,R15
001D18  2334                    BES   T5F1
001D1A  24D6             T5R6   LIS   R13,6              ERROR 0506, O        *****
001D1C  4300 1B90               B     T5R
001D20  24B0             T5F1   LIS   R11,0
001D22  56B8 3EAC               O     R11,FIVE-8(R8)     R11 = 55555555
001D26  032E                    BNPR  R14
001D28  02DE                    BTCR  13,R14
001D2A  05B5                    CLR   R11,R5
001D2C  023E                    BNER  R14
001D2E  56B8 4800 3EA8          O     R11,TEN-16(R8,R8)  R11 = FFFFFFFF
001D34  031E                    BNMR  R14
001D36  02EE                    BTCR  14,R14
001D38  05BF                    CLR   R11,R15
001D3A  023E                    BNER  R14
        0000 1D3C        NR     EQU   *
001D3C  E6E0 1D76        T5G    LA    R14,T5R7           ERROR RETURN
001D40  2400                    LIS   R0,0
001D42  24C0                    LIS   R12,0
001D44  5850 3EB4               L     R5,FIVE
001D48  58A0 3EB8               L     R10,TEN
001D4C  25F1                    LCS   R15,1
001D4E  04C5                    NR    R12,R5             R12 = 0
001D50  02FE                    BTCR  15,R14
001D52  05C0                    CLR   R12,R0
001D54  023E                    BNER  R14
001D56  08C5                    LR    R12,R5             R12 = 55555555
001D58  04CA                    NR    R12,R10            R12 = (5) AND (10)
001D5A  02FE                    BTCR  15,R14
001D5C  05C0                    CLR   R12,R0
001D5E  023E                    BNER  R14
001D60  08CA                    LR    R12,R10            AAAAAAAA
001D62  04C5                    NR    R12,R5
001D64  02FE                    BTCR  15,R14
001D66  05C0                    CLR   R12,R0
001D68  023E                    BNER  R14
001D6A  08CA                    LR    R12,R10            AAAAAAAA
001D6C  04CA                    NR    R12,R10
001D6E  031E                    BNMR  R14
001D70  02EE                    BTCR  14,R14
001D72  05CA                    CLR   R12,R10
001D74  2334                    BES   T5G1
001D76  24D7             T5R7   LIS   R13,7              ERROR 0507, NR       *****
001D78  4300 1B90               B     T5R
001D7C  08C5             T5G1   LR    R12,R5
001D7E  04C5                    NR    R12,R5
001D80  032E                    BNPR  R14
001D82  02DE                    BTCR  13,R14
001D84  05C5                    CLR   R12,R5
001D86  023E                    BNER  R14
        0000 1D88        NI     EQU   *
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001D88  E6C0 1DD8       T5H    LA     R12,T5R8                 ERROR RETURN                XP120450
001D8C  25E1                   LCS    R14,1                                                XP120460
001D8E  F4E0 AAAA AAAA         NI     R14,Y'AAAAAAAA'          R14 = 55555555              XP120470
001D94  031C                   BNMR   R12                                                  XP120480
001D96  02EC                   BTCR   14,R12                                               XP120490
001D98  05EA                   CLR    R14,R10                                              XP120500
001D9A  023C                   BNER   R12                                                  XP120510
001D9C  24E0                   LIS    R14,0                                                XP120520
001D9E  F4E5 0000 0000         NI     R14,0(R5)                                            XP120530
001DA4  02FC                   BTCR   15,R12                                               XP120540
001DA6  05E0                   CLR    R14,R0                                               XP120550
001DA8  023C                   BNER   R12                                                  XP120560
001DAA  08E5                   LR     R14,R5                   R14 = 55555555              XP120570
001DAC  F4EA 0000 0000         NI     R14,0(R10)                                           XP120580
001DB2  02FC                   BTCR   15,R12                                               XP120590
001DB4  05E0                   CLR    R14,R0                                               XP120600
001DB6  023C                   BNER   R12                                                  XP120610
001DB8  08EA                   LR     R14,R10                  R14 = AAAAAAAA              XP120620
001DBA  F4EA 0000 0000         NI     R14,0(R10)                                           XP120630
001DC0  031C                   BNMR   R12                                                  XP120640
001DC2  02EC                   BTCR   14,R12                                               XP120650
001DC4  05EA                   CLR    R14,R10                                              XP120660
001DC6  023C                   BNER   R12                                                  XP120670
001DC8  25E1                   LCS    R14,1                                                XP120680
001DCA  F4EA 5555 5555         NI     R14,Y'55555555'(R10) R14 = FFFFFFFF                  XP120690
001DD0  031C                   BNMR   R12                                                  XP120700
001DD2  02EC                   BTCR   14,R12                                               XP120710
001DD4  05EF                   CLR    R14,R15                                              XP120720
001DD6  2334                   BES    T5I                                                  XP120730
001DD8  24D8            T5R8   LIS    R13,8                    ERROR 0508, NI        ***** XP120740
001DDA  4300 1B90              B      T5R                                                  XP120750
        0000 1DDE       N      EQU    *                                                    XP120760
001DDE  E6E0 1E0A       T5I    LA     R14,T5R9                 ERROR RETURN                XP120770
001DE2  2444                   LIS    R4,4                                                 XP120780
001DE4  086F                   LR     R6,R15                   R6 = FFFFFFFF               XP120790
001DE6  5460 3EB8              N      R6,TEN                                               XP120800
001DEA  031E                   BNMR   R14                                                  XP120810
001DEC  02EE                   BTCR   14,R14                                               XP120820
001DEE  056A                   CLR    R6,R10                   R6 = AAAAAAAA               XP120830
001DF0  023E                   BNER   R14                                                  XP120840
001DF2  086F                   LR     R6,R15                                               XP120850
001DF4  5460 3EB4              N      R6,FIVE                                              XP120860
001DF8  032E                   BNPR   R14                                                  XP120870
001DFA  02DE                   BTCR   13,R14                                               XP120880
001DFC  0565                   CLR    R6,R5                                                XP120890
001DFE  023E                   BNER   R14                                                  XP120900
001E00  5460 3EAC              N      R6,ZERO                                              XP120910
001E04  02FE                   BTCR   15,R14                                               XP120920
001E06  0560                   CLR    R6,R0                                                XP120930
001E08  2334                   BES    T5I1                                                 XP120940
001E0A  24D9            T5R9   LIS    R13,9                    ERROR 0509, N         ***** XP120950
001E0C  4300 1B90              B      T5R                                                  XP120960
001E10  086F            T5I1   LR     R6,R15                                               XP120970
001E12  5464 3EB0              N      R6,FIVE-4(R4)            R6 = 55555555               XP120980
001E16  032E                   BNPR   R14                                                  XP120990
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001E18  02DE              2100          BTCR  13,R14                                          XP121000
001E1A  0565              2101          CLR   R6,R5                                           XP121010
001E1C  023E              2102          BNER  R14                                             XP121020
001E1E  5464 4400 3EB0    2103          N     R6,TEN-8(R4,R4)     R6 = 00000000             XP121030
001E24  02FE              2104          BTCR  15,R14                                          XP121040
001E26  0560              2105          CLR   R6,R0                                           XP121050
001E28  023E              2106          BNER  R14                                             XP121060
                          2107  **  CHECK HALFWORD INSTRUCTIONS IN FULLWORD MODE              XP121070
        0000 1E2A         2108  XHI     EQU   *                                               XP121080
001E2A  E6E0 1E66         2109  T5J     LA    R14,T5R10                                       XP121090
001E2E  5850 3EB4         2110          L     R5,FIVE                                         XP121100
001E32  58A0 3EB8         2111          L     R10,TEN                                         XP121110
001E36  25F1              2112          LCS   R15,1                                           XP121120
001E38  0875              2113          LR    R7,R5               R7 = R5 = 55555555        XP121130
001E3A  C770 AAAA         2114          XHI   R7,X'AAAA'          R7 = AAAAFFFF             XP121140
001E3E  031E              2115          BNMR  R14                                             XP121150
001E40  02EE              2116          BTCR  14,R14                                          XP121160
001E42  F570 AAAA FFFF    2117          CLI   R7,Y'AAAAFFFF'                                  XP121170
001E48  023E              2118          BNER  R14                                             XP121180
001E4A  C770 5555         2119          XHI   R7,X'5555'          R7 = AAAAAAAA             XP121190
001E4E  031E              2120          BNMR  R14                                             XP121200
001E50  02EE              2121          BTCR  14,R14                                          XP121210
001E52  057A              2122          CLR   R7,R10                                          XP121220
001E54  023E              2123          BNER  R14                                             XP121230
001E56  C770 AAAA         2124          XHI   R7,X'AAAA'          R7 = 55550000             XP121240
001E5A  032E              2125          BNPR  R14                                             XP121250
001E5C  02DE              2126          BTCR  13,R14                                          XP121260
001E5E  F570 5555 0000    2127          CLI   R7,Y'55550000'                                  XP121270
001E64  2334              2128          BES   T5J1                                            XP121280
001E66  24DA              2129  T5R10   LIS   R13,10              ERROR 050A, XHI     *****  XP121290
001E68  4300 1B90         2130          B     T5R                                             XP121300
001E6C  C775 0000         2131  T5J1    XHI   R7,0(R5)           R7 = 55555555             XP121310
001E70  032E              2132          BNPR  R14                                             XP121320
001E72  02DE              2133          BTCR  13,R14                                          XP121330
001E74  C570 5555         2134          CLHI  R7,X'5555'                                      XP121340
001E78  023E              2135          BNER  R14                                             XP121350
        0000 1E7A         2136  XH      EQU   *                                               XP121360
001E7A  E6E0 1EB6         2137  T5K     LA    R14,T5R11           ERROR RETURN              XP121370
001E7E  2444              2138          LIS   R4,4                                            XP121380
001E80  089A              2139          LR    R9,R10              R9 = R10 = AAAAAAAA       XP121390
001E82  4790 3EB4         2140          XH    R9,FIVE             R9 = AAAAFFFF             XP121400
001E86  031E              2141          BNMR  R14                                             XP121410
001E88  02EE              2142          BTCR  14,R14                                          XP121420
001E8A  F590 AAAA FFFF    2143          CLI   R9,Y'AAAAFFFF'                                  XP121430
001E90  023E              2144          BNER  R14                                             XP121440
001E92  4790 3EB8         2145          XH    R9,TEN              R9 = 55555555             XP121450
001E96  032E              2146          BNPR  R14                                             XP121460
001E98  02DE              2147          BTCR  13,R14                                          XP121470
001E9A  0595              2148          CLR   R9,R5                                           XP121480
001E9C  023E              2149          BNER  R14                                             XP121490
001E9E  4790 3EAC         2150          XH    R9,ZERO                                         XP121500
001EA2  032E              2151          BNPR  R14                                             XP121510
001EA4  02DE              2152          BTCR  13,R14                                          XP121520
001EA6  0595              2153          CLR   R9,R5                                           XP121530
001EA8  023E              2154          BNER  R14                                             XP121540
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001EAA  4790 3EB0          2155
001EAE  031E               2156
001EB0  02EE               2157
001EB2  059A               2158
001EB4  2334               2159
001EB6  24DB               2160  T5R11
001EB8  4300 1B90          2161
001EBC  4794 3EB4          2162  T5K1
001EC0  032E               2163
001EC2  02DE               2164
001EC4  F590 5555 0000     2165
001ECA  023E               2166
001ECC  4794 4400 3EAC     2167
001ED2  032E               2168
001ED4  02DE               2169
001ED6  0595               2170
001ED8  023E               2171
        0000 1EDA          2172  OHI
001EDA  E6E0 1F04          2173  T5L
001EDE  084A               2174
001EE0  C64A 0000          2175
001EE4  031E               2176
001EE6  02EE               2177
001EE8  054A               2178
001EEA  023E               2179
001EEC  C645 0000          2180
001EF0  031E               2181
001EF2  02EE               2182
001EF4  054F               2183
001EF6  023E               2184
001EF8  C640 AAAA          2185
001EFC  031E               2186
001EFE  02EE               2187
001F00  054F               2188
001F02  2334               2189
001F04  24DC               2190  T5R12
001F06  4300 1B90          2191
001F0A  2440               2192  T5L1
001F0C  C640 5555          2193
001F10  032E               2194
001F12  02DE               2195
001F14  C540 5555          2196
001F18  023E               2197
                           2198  **  OH
001F1A  E6E0 1F58          2199  T5M
001F1E  2444               2200
001F20  24B0               2201
001F22  46B0 3EB4          2202
001F26  032E               2203
001F28  02DE               2204
001F2A  C5B0 5555          2205
001F2E  023E               2206
001F30  46B0 3EB8          2207
001F34  031E               2208
001F36  02EE               2209

        XH    R9,ONE       R9 = AAAAAAAA                    XP121550
        BNMR  R14                                           XP121560
        BTCR  14,R14                                        XP121570
        CLR   R9,R10                                        XP121580
        BES   T5K1                                          XP121590
        LIS   R13,11       ERROR 0508, XH           *****   XP121600
        B     T5R                                           XP121610
        XH    R9,TEN-4(R4) R9 = 55550000                    XP121620
        BNPR  R14                                           XP121630
        BTCR  13,R14                                        XP121640
        CLI   R9,Y'55550000'                                XP121650
        BNER  R14                                           XP121660
        XH    R9,FIVE-8(R4,R4) R9 = 55555555                XP121670
        BNPR  R14                                           XP121680
        BTCR  13,R14                                        XP121690
        CLR   R9,R5                                         XP121700
        BNER  R14                                           XP121710
        EQU   *                                             XP121720
        LA    R14,T5R12    ERROR RETURN                     XP121730
        LR    R4,R10       R4 = R10 = AAAAAAAA              XP121740
        OHI   R4,0(R10)                                     XP121750
        BNMR  R14                                           XP121760
        BTCR  14,R14                                        XP121770
        CLR   R4,R10                                        XP121780
        BNER  R14                                           XP121790
        OHI   R4,0(R5)     R4 = FFFFFFFF                    XP121800
        BNMR  R14                                           XP121810
        BTCR  14,R14                                        XP121820
        CLR   R4,R15                                        XP121830
        BNER  R14                                           XP121840
        OHI   R4,X'AAAA'   R4 = FFFFFFFF                    XP121850
        BNMR  R14                                           XP121860
        BTCR  14,R14                                        XP121870
        CLR   R4,R15                                        XP121880
        BES   T5L1                                          XP121890
        LIS   R13,12       ERROR 050C, OHI          *****   XP121900
        B     T5R                                           XP121910
        LIS   R4,0                                          XP121920
        OHI   R4,X'5555'   R4 = 00005555                    XP121930
        BNPR  R14                                           XP121940
        BTCR  13,R14                                        XP121950
        CLHI  R4,X'5555'                                    XP121960
        BNER  R14                                           XP121970
                                                            XP121980
        LA    R14,T5R13    ERROR RETURN                     XP121990
        LIS   R4,4                                          XP122000
        LIS   R11,0        R11 = 00000000                   XP122010
        OH    R11,FIVE     R11 = 00005555                   XP122020
        BNPR  R14                                           XP122030
        BTCR  13,R14                                        XP122040
        CLHI  R11,Y'5555'                                   XP122050
        BNER  R14                                           XP122060
        OH    R11,TEN      R11 = FFFFFFFF                   XP122070
        BNMR  R14                                           XP122080
        BTCR  14,R14                                        XP122090
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                                                                                       XP122100
001F38  05BF                          CLR   R11,R15                                    XP122110
001F3A  023E                          BNER  R14                                        XP122120
001F3C  46B0 3EAC                     OH    R11,ZERO                                   XP122130
001F40  031E                          BNMR  R14                                        XP122140
001F42  02EE                          BTCR  14,R14                                     XP122150
001F44  05BF                          CLR   R11,R15                                    XP122160
001F46  023E                          BNER  R14                                        XP122170
001F48  2470                          LIS   R7,0                                       XP122180
001F4A  4670 3EB8                     OH    R7,TEN          R7 = FFFFAAAA              XP122190
001F4E  031E                          BNMR  R14                                        XP122200
001F50  02EE                          BTCR  14,R14                                     XP122210
001F52  C570 AAAA                     CLHI  R7,X'AAAA'                                 XP122220
001F56  2334                          BES   T5M1                                       XP122230
001F58  24DD                 T5R13    LIS   R13,13          ERROR 050D, OH      *****  XP122240
001F5A  4300 1B90                     B     T5R                                        XP122250
001F5E  4674 3EB0            T5M1     OH    R7,FIVE-4(R4)   R7 = FFFFFFFF              XP122260
001F62  031E                          BNMR  R14                                        XP122270
001F64  02EE                          BTCR  14,R14                                     XP122280
001F66  057F                          CLR   R7,R15                                     XP122290
001F68  023E                          BNER  R14                                        XP122300
001F6A  2470                          LIS   R7,0                                       XP122310
001F6C  4674 4400 3EAC                OH    R7,FIVE-8(R4,R4)  R7 = 00005555            XP122320
001F72  032E                          BNPR  R14                                        XP122330
001F74  02DE                          BTCR  13,R14                                     XP122340
001F76  C570 5555                     CLHI  R7,Y'5555'                                 XP122350
001F7A  023E                          BNER  R14                                        XP122360
        0000 1F7C            NHI      EQU   *                                          XP122370
001F7C  E6E0 1FB0            T5N      LA    R14,T5R14       ERROR RETURN               XP122380
001F80  2460                          LIS   R6,0            R6 = 0                     XP122390
001F82  2400                          LIS   R0,0                                       XP122400
001F84  C465 0000                     NHI   R6,0(R5)        R6 = 0                     XP122410
001F88  02FE                          BTCR  15,R14                                     XP122420
001F8A  0560                          CLR   R6,R0                                      XP122430
001F8C  023E                          BNER  R14                                        XP122440
001F8E  C46A 0000                     NHI   R6,0(R10)                                  XP122450
001F92  02FE                          BTCR  15,R14                                     XP122460
001F94  0560                          CLR   R6,R0                                      XP122470
001F96  023E                          BNER  R14                                        XP122480
001F98  2561                          LCS   R6,1                                       XP122490
001F9A  C46A 0000                     NHI   R6,0(R10)       R6 = AAAAAAAA              XP122500
001F9E  031E                          BNMR  R14                                        XP122510
001FA0  02EE                          BTCR  14,R14                                     XP122520
001FA2  056A                          CLR   R6,R10                                     XP122530
001FA4  023E                          BNER  R14                                        XP122540
001FA6  C460 5555                     NHI   R6,X'5555'                                 XP122550
001FAA  02FE                          BTCR  15,R14                                     XP122560
001FAC  0560                          CLR   R6,R0                                      XP122570
001FAE  2334                          BES   T5P                                        XP122580
001FB0  24DE                 T5R14    LIS   R13,14          ERROR 050E, NHI     *****  XP122590
001FB2  4300 1B90                     B     T5R                                        XP122600
        0000 1FB6            NH       EQU   *                                          XP122610
001FB6  E6E0 1FF2            T5P      LA    R14,T5R15       ERROR RETURN               XP122620
001FBA  2400                          LIS   R0,0                                       XP122630
001FBC  2430                          LIS   R3,0                                       XP122640
001FBE  2444                          LIS   R4,4
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001FC0   4430 3EB4                  NH    R3,FIVE                                          XP122650
001FC4   02FE                       BTCR  15,R14                                           XP122660
001FC6   0530                       CLR   R3,R0                                            XP122670
001FC8   023E                       BNER  R14                                              XP122680
001FCA   4430 3EB8                  NH    R3,TEN                                           XP122690
001FCE   02FE                       BTCR  15,R14                                           XP122700
001FD0   0530                       CLR   R3,R0                                            XP122710
001FD2   023E                       BNER  R14                                              XP122720
001FD4   0835                       LR    R3,R5             R3 = 55555555                  XP122730
001FD6   4430 3EB2                  NH    R3,ONE+2          R3 = 55555555                  XP122740
001FDA   032E                       BNPR  R14                                              XP122750
001FDC   02DE                       BTCR  13,R14                                           XP122760
001FDE   0535                       CLR   R3,R5                                            XP122770
001FE0   023E                       BNER  R14                                              XP122780
001FE2   4430 3EB8                  NH    R3,TEN            R3 = 55550000                  XP122790
001FE6   032E                       BNPR  R14                                              XP122800
001FE8   02DE                       BTCR  13,R14                                           XP122810
001FEA   F530 5555 0000             CLI   R3,Y'55550000'                                   XP122820
001FF0   2334                       BES   T5P1                                             XP122830
001FF2   240F             T5R15     LIS   R13,15            ERROR 050F, NH           ***** XP122840
001FF4   4300 1890                  B     T5R                                              XP122850
001FF8   083F             T5P1      LR    R3,R15            R3 = FFFFFFFF                  XP122860
001FFA   4434 3EB4                  NH    R3,TEN-4(R4)      R3 = FFFFAAAA                  XP122870
001FFE   031E                       BNMR  R14                                              XP122880
002000   02EE                       BTCR  14,R14                                           XP122890
002002   C530 AAAA                  CLHI  R3,X'AAAA'                                       XP122900
002006   023E                       BNER  R14                                              XP122910
002008   4434 4400 3EAC             NH    R3,FIVE-8(R4,R4)  R3 = 00000000                  XP122920
00200E   02FE                       BTCR  15,R14                                           XP122930
002010   0530                       CLR   R3,R0                                            XP122940
002012   023E                       BNER  R14                                              XP122950
002014   4300 2018        T5END     B     TEST6                                            XP122960
                          *                                                                XP122970
                          *                                                                XP122980
                          *                                                                XP122990
         0000 2018        TEST6     EQU   *                                                XP123000
                          *************************************************************   XP123010
002018   2406                       LIS   R0,6                                             XP123020
00201A   D200 1180                  STB   R0,TESTNO                                        XP123030
00201E   E610 238E                  LA    R1,TEST7                                         XP123040
002022   5010 39C0                  ST    R1,NXTST                                         XP123050
                          **  EPSR;LPSWR;TI  ;THI;EXHR;SLLS,SRLS;SLHLS,SRHLS,SLHL,SRHL     XP123060
                          **  T6R1;T6R2 ;T6R3;T6R4;T6R5;T6R6     ;T6R7        ;T6R8        XP123070
                          **        SLHA;SRHA                                              XP123080
                          **        T6R9;T6RA                                              XP123090
         0000 2026        EPSR      EQU   *                                                XP123100
002026   C200 3950                  LPSW  T6PSW0            SEL REG SET F                  XP123110
00202A   2521             T6A       LCS   R2,1              IN SET F                       XP123120
00202C   C800 0000                  LHI   R0,0                                             XP123130
002030   9510                       EPSR  R1,R0             NEW PSW = 0                    XP123140
002032   21F6                       BTFS  15,6              (BTC   15,T6R1)                XP123150
002034   2511                       LCS   R1,1                                             XP123160
002036   2422                       LIS   R2,2              IN SET 0                       XP123170
002038   C800 0000                  LHI   R0,0              R0 OF SET 0 = 0                XP123180
00203C   9510                       EPSR  R1,R0             R1=OLD PSW=0 , NEW PSW = 0     XP123190
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00203E  21FD             2320          BTFS  15,13      CC = 0        (BTC   15,T6R1)          XP123200
002040  C500 0000         2321          CLHI  R0,0       R0 MUST BE UNCHANGED                   XP123210
002044  213A             2322          BNES  T6R1                                              XP123220
002046  0510             2323          CLR   R1,R0                                             XP123230
002048  2138             2324          BNES  T6R1                                              XP123240
00204A  2511             2325          LCS   R1,1       R1 = FFFFFFFF  CC = 0001               XP123250
00204C  9511             2326          EPSR  R1,R1      R1 = PSW = 0000 0001                   XP123260
00204E  21E5             2327          BTFS  14,5       (BTC   14,T6R1)                        XP123270
002050  2314             2328          BNMS  T6R1                                              XP123280
002052  C510 0001        2329          CLHI  R1,1                                              XP123290
002056  2338             2330          BES   T6A2                                              XP123300
002058  C200 3958        2331  T6R1    LPSW  T6PSW1     SELECT REGISTER SET F                  XP123310
00205C  24D1             2332  T6R1X   LIS   R13,1      ERROR 0601, EPSR              *****   XP123320
00205E  D2D0 1181        2333  T6R     STB   R13,ERRNO                                        XP123330
002062  4300 0CC8        2334          B     ERROR                                             XP123340
002066  C810 70FF        2335  T6A2    LHI   R1,X'70FF'  CC = 0010                           XP123350
00206A  9501             2336          EPSR  R0,R1      NEW PSW = 70FF, R0 = 0002              XP123360
00206C  C520 FFFF        2337          CLHI  R2,-1      IN SET F                               XP123370
002070  203C             2338  T6R1A   BNES  T6R1                                              XP123380
002072  C800 00F0        2339          LHI   R0,X'F0'   SELECT REG SET F                       XP123390
002076  2440             2340          LIS   R4,0       COND.CODE = 0                          XP123400
002078  9540             2341          EPSR  R4,R0      R4 = 70F0, NEW PSW = 00F0              XP123410
00207A  C540 70F0        2342          CLHI  R4,X'70F0'                                        XP123420
00207E  2037             2343  T6R1B   BNES  T6R1A      (BNE   T6R1)                           XP123430
002080  C820 00F0        2344          LHI   R2,X'F0'                                          XP123440
002084  9512             2345          EPSR  R1,R2      R1 = 00F2, PSW = 00F0                  XP123450
002086  42F0 2058        2346          BTC   15,T6R1                                           XP123460
00208A  C510 00F2        2347          CLHI  R1,Y'00F2'                                        XP123470
00208E  2038             2348          BNES  T6R1B      (BNE   T6R1)                           XP123480
002090  C800 0000        2349          LHI   R0,0                                              XP123490
002094  9540             2350          EPSR  R4,R0      SEL REG SET 0                          XP123500
002096  20F8             2351          BTBS  15,8       (BTC   15,T6R1)                        XP123510
002098  C520 0002        2352          CLHI  R2,2       IN SET 0                               XP123520
00209C  203F             2353          BNES  T6R1B      (BNE   T6R1)                           XP123530
        0000 209E        2354  LPSWR   EQU   *                                                 XP123540
00209E  C800 0000        2355          LHI   R0,0                                              XP123550
0020A2  9590             2356          EPSR  R9,R0      SEL REG SET 0                          XP123560
0020A4  2422             2357          LIS   R2,2       IN SET 0                               XP123570
0020A6  C200 3970        2358          LPSW  T6PSW4     SEL REG SET F                          XP123580
0020AA  D100 3EC4        2359  T6B     LM    R0,BUF0                                           XP123590
0020AE  E620 20C6        2360          LA    R2,T6B2                                           XP123600
0020B2  C810 00FD        2361          LHI   R1,X'FD'                                          XP123610
0020B6  1801             2362          LPSWR R1         NEW PSW = 00FD, A(T6B2)                XP123620
0020B8  0200             2363          NOPR                                                    XP123630
0020BA  0200             2364          NOPR                                                    XP123640
0020BC  C200 3968        2365  T6R2    LPSW  T6PSW3     SEL REG SET F                          XP123650
0020C0  24D2             2366  T6R2X   LIS   R13,2      ERROR 0602, LPSWR             *****   XP123660
0020C2  4300 205E        2367          B     T6R                                               XP123670
0020C6  2285             2368  T6B2    BFBS  8,5        CC = 1101     (BFC   8,T6R2)           XP123680
0020C8  2246             2369          BFBS  4,6        (BFC   4,T6R2)                         XP123690
0020CA  2217             2370          BFBS  1,7        (BFC   1,T6R2)                         XP123700
0020CC  2028             2371          BTBS  2,8        (BTC   2,T6R2)                         XP123710
0020CE  9544             2372          EPSR  R4,R4                                             XP123720
0020D0  0514             2373          CLR   R1,R4                                             XP123730
0020D2  203B             2374  T6R2A   BNES  T6R2                                              XP123740
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0020D4  C840 00F0          2375
0020D8  E650 20E6          2376
0020DC  1804               2377
0020DE  0200               2378
0020E0  0200               2379
0020E2  4300 20BC          2380  T6R2B   B     T6R2
0020E6  9577               2381  T6B3    EPSR  R7,R7
0020E8  0547               2382          CLR   R4,R7
0020EA  203C               2383          BNES  T6R2A
0020EC  C520 20C6          2384          CLHI  R2,T6B2
0020F0  2037               2385          BNES  T6R2B
0020F2  E6F0 2102          2386          LA    R15,T6B4
0020F6  C8E0 0000          2387          LHI   R14,0
0020FA  180E               2388          LPSWR R14
0020FC  0200               2389          NOPR
0020FE  0200               2390          NOPR
002100  220F               2391  T6R2C   BS    T6R2B
002102  20F1               2392  T6B4    BTBS  15,1
002104  C520 0002          2393          CLHI  R2,2
002108  2034               2394          BNES  T6R2C
00210A  C550 20E6          2395          CLHI  R5,T6B3
00210E  2237               2396          BES   T6R2C
002110  C200 3960          2397          LPSW  T6PSW2
                           2398  **  TI
002114  D100 3F04          2399  T6C     LM    R0,BUF2
002118  F300 0000 0000     2400          TI    R0,0
00211E  42F0 2152          2401          BTC   15,T6R3
002122  5850 3EB4          2402          L     R5,FIVE
002126  F350 0000 0001     2403          TI    R5,Y'1'
00212C  4330 2152          2404          BZ    T6R3
002130  42C0 2152          2405          BTC   12,T6R3
002134  5550 3EB4          2406          CL    R5,FIVE
002138  213D               2407          BNES  T6R3
00213A  F350 AAAA AAAA     2408          TI    R5,Y'AAAAAAAA'
002140  21F9               2409  T6R3C   BTFS  15,9
002142  5550 3EB4          2410          CL    R5,FIVE
002146  2136               2411  T6R3A   BNES  T6R3
002148  F384 0000 000A     2412          TI    R8,10(R4)
00214E  21C2               2413          BTFS  12,2
002150  2134               2414          BNZS  T6D
002152  24D3               2415  T6R3    LIS   R13,3
002154  4300 205E          2416          B     T6R
        0000 2158          2417  THI     EQU   *
002158  7350 3EB4          2418  T6D     LHL   R5,FIVE
00215C  C350 0004          2419          THI   R5,4
002160  2338               2420          BZS   T6R4
002162  C550 5555          2421          CLHI  R5,X'5555'
002166  2135               2422          BNES  T6R4
002168  C350 1000          2423          THI   R5,X'1000'
00216C  21C2               2424          BTFS  12,2
00216E  2134               2425          BNZS  T6D2
002170  24D4               2426  T6R4    LIS   R13,4
002172  4300 205E          2427          B     T6R
002176  4550 3EB4          2428  T6D2    CLH   R5,FIVE
00217A  2035               2429          BNES  T6R4
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LHI   R4,Y'F0'          IN SET F                                          XP123750
LA    R5,T6B3                                                             XP123760
LPSWR R4                NEW PSW = 00F0, A(T6B3)                           XP123770
NOPR                                                                      XP123780
NOPR                                                                      XP123790
                                                                          XP123800
                                                                          XP123810
                                                                          XP123820
                        IN SET F                                          XP123830
                        (BNE   T6R2)                                      XP123840
                                                                          XP123850
                        IN SET F                                          XP123860
                        SEL REG SET 0                                     XP123870
                                                                          XP123880
                                                                          XP123890
                        (B    T6R2)                                       XP123900
                        CC = 0000      (BTC   15,T6R2)                    XP123910
                        IN SET 0                                          XP123920
                        (BNE   T6R2)                                      XP123930
                        IN SET 0                                          XP123940
                        (BE    T6R2)                                      XP123950
                        SEL REG SET F                                     XP123960
                                                                          XP123970
LM    R0,BUF2           R0 = 0,R1 = 1 ,ETC.                               XP123980
TI    R0,0                                                                XP123990
BTC   15,T6R3                                                             XP124000
L     R5,FIVE           R5 = 55555555                                     XP124010
TI    R5,Y'1'           R5 AND 1 = 1                                      XP124020
BZ    T6R3                                                                XP124030
BTC   12,T6R3                                                             XP124040
CL    R5,FIVE           CHANGE ?                                          XP124050
BNES  T6R3                                                                XP124060
TI    R5,Y'AAAAAAAA'                                                      XP124070
BTFS  15,9              R5 AND TEN =0                                     XP124080
CL    R5,FIVE           (BTC   15,T6R3)                                   XP124090
BNES  T6R3                                                                XP124100
TI    R8,10(R4)                                                           XP124110
BTFS  12,2              R8 = 8 , 10(R4) = E,RESULT=8                      XP124120
BNZS  T6D               (BTC   12,T6R3)                                   XP124130
LIS   R13,3                                                               XP124140
B     T6R               ERROR 0603, TI                    *****           XP124150
EQU   *                                                                   XP124160
LHL   R5,FIVE                                                             XP124170
THI   R5,4                                                                XP124180
BZS   T6R4              R5 = 00005555                                     XP124190
CLHI  R5,X'5555'        CC = NONZERO IF NO ERROR                          XP124200
BNES  T6R4                                                                XP124210
THI   R5,X'1000'                                                          XP124220
BTFS  12,2              SHOULD BE A 'HIT'                                 XP124230
BNZS  T6D2              (BTC   12,T6R4)                                   XP124240
LIS   R13,4             CC = NONZERO IF NO ERROR                          XP124250
B     T6R               ERROR 0604, THI                   *****           XP124260
CLH   R5,FIVE                                                             XP124270
BNES  T6R4              R5 SHOULD BE UNCHANGED                            XP124280
                                                                          XP124290
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00217C  C354 0000        2430          THI   R5,0(R4)          R4 = 4                          XP124300
002180  20C8             2431          BTBS  12,8              (BTC   12,T6R4)                 XP124310
002182  2239             2432          BZS   T6R4                                              XP124320
002184  C550 5555        2433          CLHI  R5,X'5555'                                        XP124330
002188  203C             2434          BNES  T6R4                                              XP124340
        0000 218A        2435  EXHR    EQU   *                                                 XP124350
00218A  F830 1234 5678   2436  T6E     LI    R3,Y'12345678'                                    XP124360
002190  F870 ABCD EF09   2437          LI    R7,Y'ABCDEF09'                                    XP124370
002196  2400             2438          LIS   R0,0              RESET COND.CODE                 XP124380
002198  3437             2439          EXHR  R3,R7             R3 = EF09ABCD                   XP124390
00219A  42F0 21C4        2440          BTC   15,T6R5           CC = 0000, UNCHANGED ?          XP124400
00219E  F530 EF09 ABCD   2441          CLI   R3,Y'EF09ABCD'                                    XP124410
0021A4  2134             2442          BNES  T6R5A                                             XP124420
0021A6  F570 ABCD EF09   2443          CLI   R7,Y'ABCDEF09'                                    XP124430
0021AC  2134             2444  T6R5A   BNES  T6R5B                                           XP124440
0021AE  3433             2445          EXHR  R3,R3                                             XP124450
0021B0  2132             2446          BNZS  T6R5B             ERR.IF COND.CODE CHANGED        XP124460
0021B2  0537             2447          CLR   R3,R7                                             XP124470
0021B4  2138             2448  T6R5B   BNES  T6R5              ***** XP124480
0021B6  7350 3EB4        2449          LHL   R5,FIVE           R5 = 00005555                   XP124490
0021BA  3475             2450          EXHR  R7,R5             R7 = 55550000                   XP124500
0021BC  F570 5555 0000   2451          CLI   R7,Y'55550000'                                    XP124510
0021C2  2334             2452          BES   T6F                                               XP124520
0021C4  24D5             2453  T6R5    LIS   R13,5             ERROR 0605, EXHR        *****   XP124530
0021C6  4300 205E        2454          B     T6R               ***** XP124540
        0000 21CA        2455  SLLS    EQU   *                 ***** XP124550
        0000 21CA        2456  SRLS    EQU   *                 ***** XP124560
0021CA  E6E0 21F6        2457  T6F     LA    R14,T6R6          ERROR RETURN                    XP124570
0021CE  5850 3EB4        2458          L     R5,FIVE                                           XP124580
0021D2  58A0 3EB8        2459          L     R10,TEN                                           XP124590
0021D6  1151             2460          SLLS  R5,1              NEW R5 = AAAAAAAA,              XP124600
0021D8  02EE             2461          BTCR  14,R14            CC = 0001                       XP124610
0021DA  031E             2462          BFCR  1,R14                                             XP124620
0021DC  055A             2463          CLR   R5,R10                                            XP124630
0021DE  023E             2464          BNER  R14               ***** XP124640
0021E0  1153             2465          SLLS  R5,3              NEW R5 = 55555550               XP124650
0021E2  025E             2466          BTCR  5,R14             CC = 1010                       XP124660
0021E4  038E             2467          BFCR  8,R14                                             XP124670
0021E6  032E             2468          BFCR  2,R14                                             XP124680
0021E8  F550 5555 5550   2469          CLI   R5,Y'55555550'                                    XP124690
0021EE  023E             2470          BNER  R14               ***** XP124700
0021F0  115F             2471          SLLS  R5,15             NEW R5 = AAA80000               XP124710
0021F2  2312             2472          BNMS  T6R6              CC = 0001                       XP124720
0021F4  23E4             2473          BFFS  14,4              (BFC   14,T6F2)                 XP124730
0021F6  24D6             2474  T6R6    LIS   R13,6             ERROR 0606, SLLS, SRLS  *****   XP124740
0021F8  4300 205E        2475          B     T6R               ***** XP124750
0021FC  F550 AAA8 0000   2476  T6F2    CLI   R5,Y'AAA80000'                                    XP124760
002202  023E             2477          BNER  R14               ***** XP124770
002204  2588             2478          LCS   R8,8              R8 = FFFFFFF8                   XP124780
002206  1081             2479          SRLS  R8,1              R8 = 7FFFFFFC                   XP124790
002208  02DE             2480          BTCR  13,R14            CC = 0010                       XP124800
00220A  032E             2481          BFCR  2,R14                                             XP124810
00220C  1082             2482          SRLS  R8,2              R8 = 1FFFFFFF                   XP124820
00220E  02DE             2483          BTCR  13,R14            CC = 0010                       XP124830
002210  032E             2484          BFCR  2,R14                                             XP124840
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002212  1088                        2485
002214  025E                        2486
002216  038E                        2487
002218  032E                        2488
00221A  F580 001F FFFF              2489
002220  023E                        2490
002222  108F                        2491
002224  025E                        2492
002226  038E                        2493
002228  032E                        2494
00222A  C580 003F                   2495
00222E  023E                        2496
002230  1086                        2497
002232  027E                        2498
002234  038E                        2499
002236  0888                        2500
002238  023E                        2501
00223A  F840 5000 0000              2502
002240  1144                        2503
002242  038E                        2504
002244  027E                        2505
        0000 2246                   2506  SLHLS  EQU   *                 XP125050
        0000 2246                   2507  SRHLS  EQU   *                 XP125060
002246  E6E0 2272                   2508         LA    R14,T6R7          XP125070
00224A  25F1                        2509         LCS   R15,1             XP125080
00224C  91F1                        2510         SLHLS R15,1             XP125090
00224E  026E                        2511         BTCR  6,R14             XP125100
002250  038E                        2512         BFCR  8,R14             XP125110
002252  031E                        2513         BFCR  1,R14             XP125120
002254  F5F0 FFFF FFFE              2514         CLI   R15,Y'FFFFFFFE'   XP125130
00225A  023E                        2515         BNER  R14               XP125140
00225C  90F8                        2516         SRHLS R15,8             XP125150
00225E  025E                        2517         BTCR  5,R14             XP125160
002260  038E                        2518         BFCR  8,R14             XP125170
002262  032E                        2519         BFCR  2,R14             XP125180
002264  90F8                        2520         SRHLS R15,8             XP125190
002266  038E                        2521         BFCR  8,R14             XP125200
002268  027E                        2522         BTCR  7,R14             XP125210
00226A  F5F0 FFFF 0000              2523         CLI   R15,Y'FFFF0000'   XP125220
002270  2334                        2524         BES   T6G2              XP125230
002272  24D7                        2525  T6R7   LIS   R13,7             XP125240
002274  4300 205E                   2526         B     T6R               XP125250  *****
002278  2578                        2527  T6G2   LCS   R7,8               XP125260
00227A  9178                        2528         SLHLS R7,8              XP125270
00227C  026E                        2529         BTCR  6,R14             XP125280
00227E  038E                        2530         BFCR  8,R14             XP125290
002280  031E                        2531         BFCR  1,R14             XP125300
002282  C570 F800                   2532         CLHI  R7,X'F800'        XP125310
002286  023E                        2533         BNER  R14               XP125320
002288  9175                        2534         SLHLS R7,5              XP125330
00228A  038E                        2535         BFCR  8,R14             XP125340
00228C  027E                        2536         BTCR  7,R14             XP125350
00228E  057F                        2537         CLR   R7,R15            XP125360
002290  023E                        2538         BNER  R14               XP125370
        0000 2292                   2539  SLHL   EQU   *                 XP125380
                                                                          XP125390
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```
SRLS  R8,8                  R8 = 001FFFFF
BTCR  5,R14                 CC = 1010                                     XP124850
BFCR  8,R14                                                               XP124860
BFCR  2,R14                                                               XP124870
CLI   R8,Y'001FFFFF'                                                      XP124880
BNER  R14                                                                 XP124890
SRLS  R8,15                 R8 = 0000003F                                 XP124900
BTCR  5,R14                 CC = 1010                                     XP124910
BFCR  8,R14                                                               XP124920
BFCR  2,R14                                                               XP124930
CLHI  R8,Y'3F'                                                            XP124940
BNER  R14                                                                 XP124950
SRLS  R8,6                  R8 = 00000000                                 XP124960
BTCR  7,R14                 CC = 1000                                     XP124970
BFCR  8,R14                                                               XP124980
LR    R8,R8                 R8 = 0  ?                                     XP124990
BNZR  R14                                                                 XP125000
LI    R4,Y'50000000'        NEW R4 = 0                                    XP125010
SLLS  R4,4                                                                XP125020
BFCR  8,R14                 CC = 1000                                     XP125030
BTCR  7,R14                                                               XP125040
EQU   *                                                                   XP125050
EQU   *                                                                   XP125060
LA    R14,T6R7              ERROR RETURN                                  XP125070
LCS   R15,1                 R15 = FFFFFFFF                                XP125080
SLHLS R15,1                 NEW R15 = FFFFFFFE                            XP125090
BTCR  6,R14                 CC = 1001                                     XP125100
BFCR  8,R14                                                               XP125110
BFCR  1,R14                                                               XP125120
CLI   R15,Y'FFFFFFFE'                                                     XP125130
BNER  R14                                                                 XP125140
SRHLS R15,8                 NEW R15 = FFFF00FF                            XP125150
BTCR  5,R14                 CC = 1010                                     XP125160
BFCR  8,R14                                                               XP125170
BFCR  2,R14                                                               XP125180
SRHLS R15,8                 NEW R15 = FFFF0000                            XP125190
BFCR  8,R14                 CC = 1000                                     XP125200
BTCR  7,R14                                                               XP125210
CLI   R15,Y'FFFF0000'                                                     XP125220
BES   T6G2                                                                XP125230
LIS   R13,7                 ERROR 0607, SLHLS, SRHLS                      XP125240  *****
B     T6R                                                                 XP125250
LCS   R7,8                  R7 = FFFFFFF8                                 XP125260
SLHLS R7,8                  NEW R7 = FFFFF800                             XP125270
BTCR  6,R14                 CC = 1001                                     XP125280
BFCR  8,R14                                                               XP125290
BFCR  1,R14                                                               XP125300
CLHI  R7,X'F800'            EXPANDS TO 32 BITS                            XP125310
BNER  R14                                                                 XP125320
SLHLS R7,5                  NEW R7 = FFFF0000                             XP125330
BFCR  8,R14                 CC = 1000                                     XP125340
BTCR  7,R14                                                               XP125350
CLR   R7,R15                R7 = FFFF0000 ?                               XP125360
BNER  R14                                                                 XP125370
EQU   *                                                                   XP125380
                                                                          XP125390
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         0000 2292            SRHL    EQU   *                                     XP125400
002292   E6E0 22DA                    LA    R14,T6R8        ERROR RETURN          XP125410
002296   25F1                         LCS   R15,1           R15 = FFFFFFFF        XP125420
002298   2433                         LIS   R3,3            R3 = 3                XP125430
00229A   2422                         LIS   R2,2            R2 = 2                XP125440
00229C   CDF3 0006                    SLHL  R15,6(R3)       SHIFT LEFT (6+3)=9    XP125450
0022A0   026E                         BTCR  6,R14           CC = 1001             XP125460
0022A2   038E                         BFCR  8,R14                                 XP125470
0022A4   031E                         BFCR  1,R14                                 XP125480
0022A6   C5F0 FE00                    CLHI  R15,X'FE00'     EXPANDS TO 32 BITS    XP125490
0022AA   023E                         BNER  R14                                   XP125500
0022AC   CDF2 0004                    SLHL  R15,4(R2)       SHIFT LEFT (4+2)=6    XP125510
0022B0   026E                         BTCR  6,R14           CC = 1001             XP125520
0022B2   038E                         BFCR  8,R14                                 XP125530
0022B4   031E                         BFCR  1,R14                                 XP125540
0022B6   C5F0 8000                    CLHI  R15,X'8000'     EXPANDS TO 32 BITS    XP125550
0022BA   023E                         BNER  R14                                   XP125560
0022BC   CCF3 000C                    SRHL  R15,12(R3)      SHIFT RIGHT (12+3)=15 XP125570
0022C0   02DE                         BTCR  13,R14          CC = 0010             XP125580
0022C2   032E                         BFCR  2,R14                                 XP125590
0022C4   F5F0 FFFF 0001               CLI   R15,Y'FFFF0001'                       XP125600
0022CA   023E                         BNER  R14                                   XP125610
0022CC   CDF3 000C                    SLHL  R15,12(R3)      SHIFT LEFT (12+3) = 15 XP125620
0022D0   02EE                         BTCR  14,R14          CC = 0001             XP125630
0022D2   031E                         BFCR  1,R14                                 XP125640
0022D4   C5F0 8000                    CLHI  R15,X'8000'     EXPANDS TO 32 BITS    XP125650
0022D8   2334                         BES   T6I                                   XP125660
0022DA   24D8                 T6R8    LIS   R13,8           ERROR 0608, SLHL, SRHL    *****  XP125670
0022DC   4300 205E                    B     T6R                                   XP125680
         0000 22E0            SLHA    EQU   *                                     XP125690
0022E0   E6E0 2316            T6I     LA    R14,T6R9        ERROR RETURN          XP125700
0022E4   2444                         LIS   R4,4                                  XP125710
0022E6   F860 FFFF 496C               LI    R6,Y'FFFF496C'                        XP125720
0022EC   CF60 0001                    SLHA  R6,1            SLHA 1                XP125730
0022F0   025E                         BTCR  5,R14           CC = 1010             XP125740
0022F2   038E                         BFCR  8,R14                                 XP125750
0022F4   032E                         BFCR  2,R14                                 XP125760
0022F6   F560 FFFF 12D8               CLI   R6,Y'FFFF12D8'                        XP125770
0022FC   023E                         BNER  R14                                   XP125780
0022FE   CF60 0002                    SLHA  R6,2            SLHA 2                XP125790
002302   02DE                         BTCR  13,R14          CC = 0010             XP125800
002304   032E                         BFCR  2,R14                                 XP125810
002306   F560 FFFF 4B60               CLI   R6,Y'FFFF4B60'                        XP125820
00230C   023E                         BNER  R14                                   XP125830
00230E   9161                         SLHLS R6,1            R6(16-31) = 96C0 (NEGATIVE)  XP125840
002310   CF60 0004                    SLHA  R6,4            SLHA 4                XP125850
002314   23E4                         BFFS  14,4            CC = 0001     (BFC   14,T6I2)  XP125860
002316   2409                 T6R9    LIS   R13,X'9'        ERROR 0609 - SLHA      *****  XP125870
002318   4300 205E                    B     T6R                                   XP125880
00231C   031E                 T6I2    BFCR  1,R14                                 XP125890
00231E   C560 EC00                    CLHI  R6,X'EC00'                            XP125900
002322   023E                         BNER  R14                                   XP125910
002324   C860 ECAA                    LHI   R6,X'ECAA'      EXPANDS TO 32 BITS    XP125920
002328   CF64 0004                    SLHA  R6,4(R4)        SLHA 8                XP125930
00232C   039E                         BFCR  9,R14           CC = 1001             XP125940
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00232E  026E                2595           BTCR  6,R14
002330  C560 AA00            2596           CLHI  R6,X'AA00'          EXPANDS TO 32 BITS                    XP125950
002334  023E                2597           BNER  R14                                                       XP125960
        0000 2336           2598  SRHA     EQU   *                                                         XP125970
002336  E6E0 235C           2599           LA    R14,T6R10           ERROR RETURN                          XP125980
00233A  C870 6729           2600           LHI   R7,X'6729'                                                XP125990
00233E  CE70 0001           2601           SRHA  R7,1                SRHA 1                                XP126000
002342  025E                2602           BTCR  5,R14               CC = 1010                             XP126010
002344  038E                2603           BFCR  8,R14                                                     XP126020
002346  032E                2604           BFCR  2,R14                                                     XP126030
002348  C570 3394           2605           CLHI  R7,X'3394'                                                XP126040
00234C  023E                2606           BNER  R14                                                       XP126050
00234E  CE70 0002           2607           SRHA  R7,2                SRHA 2                                XP126060
002352  02DE                2608           BTCR  13,R14              CC = 0010                             XP126070
002354  032E                2609           BFCR  2,R14                                                     XP126080
002356  C570 0CE5           2610           CLHI  R7,X'0CE5'                                                XP126090
00235A  2334                2611           BES   T6J2                                                      XP126100
00235C  24DA                2612  T6R10    LIS   R13,X'A'            ERROR 060A - SRHA          *****      XP126110
00235E  4300 205E           2613           B     T6R                                                       XP126120
002362  F860 7777 948A      2614  T6J2     LI    R6,Y'7777948A'                                            XP126130
002368  CE64 0000           2615           SRHA  R6,0(R4)            SRHA 4                                XP126140
00236C  026E                2616           BTCR  6,R14               CC = 1001                             XP126150
00236E  038E                2617           BFCR  8,R14                                                     XP126160
002370  031E                2618           BFCR  1,R14                                                     XP126170
002372  F560 7777 F948      2619           CLI   R6,Y'7777F948'                                            XP126180
002378  023E                2620           BNER  R14                                                       XP126190
00237A  CE60 0008           2621           SRHA  R6,8                SRHA 8                                XP126200
00237E  02EE                2622           BTCR  14,R14              CC = 0001                             XP126210
002380  031E                2623           BFCR  1,R14                                                     XP126220
002382  F560 7777 FFF9      2624           CLI   R6,Y'7777FFF9'                                            XP126230
002388  023E                2625           BNER  R14                                                       XP126240
                            2626  *                                                                       XP126250
00238A  4300 238E           2627  T6END    B     TEST7                                                     XP126260
                            2628  *                                                                       XP126270
                            2629  *                                                                       XP126280
                            2630  *                                                                       XP126290
        0000 238E           2631  TEST7    EQU   *                   CHECK BYTE HANDLING INSTR.            XP126300
                            2632  ************************************************************            XP126310
00238E  2407                2633           LIS   R0,7                                                      XP126320
002390  D200 1180           2634           STB   R0,TESTNO                                                 XP126330
002394  E610 2552           2635           LA    R1,TEST8                                                  XP126340
002398  5010 39C0           2636           ST    R1,NXTST                                                  XP126350
                            2637  **       LB  ,CLB ,STB ,STBR,LBR ,EXBR                                   XP126360
                            2638  **     ( T7R1,T7R2,T7R3,T7R4,T7R5,T7R6  )                                XP126370
        0000 239C           2639  LB       EQU   *                                                       XP126380
00239C  D100 3F04           2640  T7A      LM    R0,BUF2                                                 XP126390
0023A0  E6F0 23CC           2641           LA    R15,T7R1            ERROR RETURN                          XP126400
0023A4  2511                2642           LCS   R1,1                R1 = FFFFFFFF                         XP126410
0023A6  24E0                2643           LIS   R14,0                                                     XP126420
0023A8  D310 3EB0           2644           LB    R1,ONE              R1 = 000000FF                         XP126430
0023AC  02FF                2645           BTCR  15,R15              CC = 0000                             XP126440
0023AE  D350 3EB4           2646           LB    R5,FIVE             R5 = 00000055                         XP126450
0023B2  02FF                2647           BTCR  15,R15                                                    XP126460
0023B4  D3A0 3EB8           2648           LB    R10,TEN             R10 = 000000AA                        XP126470
0023B8  02FF                2649           BTCR  15,R15                                                    XP126480
                                                                                                           XP126490
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0023BA  C510 00FF          2650          CLHI  R1,X'FF'                                          XP126500
0023BE  023F               2651          BNER  R15                                               XP126510
0023C0  C550 0055          2652          CLHI  R5,X'55'                                          XP126520
0023C4  023F               2653          BNER  R15                                               XP126530
0023C6  C5A0 00AA          2654          CLHI  R10,X'AA'                                         XP126540
0023CA  2336               2655          BES   T7A1                                              XP126550
0023CC  24D1               2656  T7R1    LIS   R13,1             ERROR 0701, LB          *****  XP126560
0023CE  D2D0 1181          2657  T7R     STB   R13,ERRNO                                         XP126570
0023D2  4300 0CC8          2658          B     ERROR                                             XP126580
0023D6  2400               2659  T7A1    LIS   R0,0                                              XP126590
0023D8  D324 3EB0          2660          LB    R2,FIVE-4(R4)      R4 = 4                       XP126600
0023DC  02FF               2661          BTCR  15,R15                                            XP126610
0023DE  0525               2662          CLR   R2,R5                                             XP126620
0023E0  023F               2663          BNER  R15                                               XP126630
0023E2  D323 4400 3EB1     2664          LB    R2,TEN-7(R3,R4)    R3 = 3, R4 = 4               XP126640
0023E8  02FF               2665          BTCR  15,R15                                            XP126650
0023EA  052A               2666          CLR   R2,R10                                            XP126660
0023EC  023F               2667          BNER  R15                                               XP126670
        0000 23EE          2668  CLB     EQU   *                                                 XP126680
0023EE  E6F0 2438          2669  T7B     LA    R15,T7R2           ERROR RETURN                 XP126690
0023F2  C810 00FF          2670          LHI   R1,X'FF'                                          XP126700
0023F6  D410 3EB0          2671          CLB   R1,ONE                                            XP126710
0023FA  02BF               2672          BTCR  11,R15             CC = 0X00                      XP126720
0023FC  D410 3EB4          2673          CLB   R1,FIVE                                           XP126730
002400  028F               2674          BTCR  8,R15              CC = 0X01 OR 0X10              XP126740
002402  033F               2675          BFCR  3,R15                                             XP126750
002404  D450 3EB0          2676          CLB   R5,ONE             CC = 1X01 OR 1X10              XP126760
002408  038F               2677          BFCR  8,R15                                             XP126770
00240A  033F               2678          BFCR  3,R15                                             XP126780
00240C  D410 3EB3          2679          CLB   R1,ONE+3                                          XP126790
002410  02BF               2680          BTCR  11,R15                                            XP126800
002412  D410 3EB7          2681          CLB   R1,FIVE+3                                         XP126810
002416  033F               2682          BER   R15                                               XP126820
002418  D459 3EAB          2683          CLB   R5,FIVE-9(R9)      R9 = 9                         XP126830
00241C  02BF               2684          BTCR  11,R15                                            XP126840
00241E  D4A4 4D00 3EA7     2685          CLB   R10,TEN-17(R4,R13) R4 = 4, R13 = 13               XP126850
002424  02BF               2686          BTCR  11,R15                                            XP126860
002426  D410 3EB1          2687          CLB   R1,ONE+1                                          XP126870
00242A  023F               2688          BNER  R15                                               XP126880
00242C  D450 3EB5          2689          CLB   R5,FIVE+1                                         XP126890
002430  023F               2690          BNER  R15                                               XP126900
002432  D4A0 3EB8          2691          CLB   R10,TEN                                           XP126910
002436  2334               2692          BES   T7C                                               XP126920
002438  24D2               2693  T7R2    LIS   R13,2              ERROR 0702, CLB            *****  XP126930
00243A  4300 23CE          2694          B     T7R                                               XP126940
        0000 243E          2695  STB     EQU   *                                                 XP126950
00243E  D100 3F04          2696  T7C     LM    R0,BUF2            R0, R1, R2... = 0, 1, 2...   XP126960
002442  5000 9D3E =004184  2697          ST    R0,T2WRD0          T2WRD0 = 00000000            XP126970
002446  2501               2698          LCS   R0,1                                              XP126980
002448  5000 9D3C =004188  2699          ST    R0,T2WRD1          T2WRD1 = FFFFFFFF            XP126990
00244C  5000 9D3C =00418C  2700          ST    R0,T2WRD2          T2WRD2 = FFFFFFFF            XP127000
002450  F870 4567 0123     2701          LI    R7,Y'45670123'                                    XP127010
002456  F880 89AB 4567     2702          LI    R8,Y'89AB4567'                                    XP127020
00245C  F890 0123 89AB     2703          LI    R9,Y'012389AB'                                    XP127030
002462  D270 9D1F =004185  2704          STB   R7,T2WRD0+1        T2WRD0 = 00230000            XP127040
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002466  D280 9D20 =00418A   2705
00246A  D290 9D1E =00418C   2706
00246E  D233 9D1A =00418C   2707
002472  D253 4400 4184      2708
002478  4320 249A           2709
00247C  21DF                2710
                            2711  *
00247E  D140 9D02 =004184   2712
002482  F540 0023 0000      2713
002488  2139                2714
00248A  F550 FFFF 6705      2715
002490  2135                2716
002492  F560 ABFF FF03      2717
002498  2334                2718
00249A  24D3                2719  T7R3
00249C  4300 23CE           2720
        0000 24A0           2721  STBR
0024A0  24A0                2722  T7D
0024A2  25B2                2723
0024A4  25C3                2724
0024A6  C870 0023           2725
0024AA  C880 0067           2726
0024AE  C890 00AB           2727
0024B2  927A                2728
0024B4  928B                2729
0024B6  929C                2730
0024B8  C5A0 0023           2731
0024BC  2137                2732
0024BE  C5B0 FF67           2733
0024C2  2134                2734
0024C4  C5C0 FFAB           2735
0024C8  2334                2736
0024CA  24D4                2737  T7R4
0024CC  4300 23CE           2738
        0000 24D0           2739  LBR
0024D0  2561                2740  T7D2
0024D2  C870 FF23           2741
0024D6  C880 0067           2742
0024DA  C890 00AB           2743
0024DE  9366                2744
0024E0  93A8                2745
0024E2  93B9                2746
0024E4  93C7                2747
0024E6  232E                2748
0024E8  21DD                2749
                            2750  *
0024EA  C560 00FF           2751
0024EE  213A                2752
0024F0  C5A0 0067           2753
0024F4  2137                2754
0024F6  C5B0 00AB           2755
0024FA  2134                2756
0024FC  C5C0 0023           2757
002500  2334                2758
002502  24D5                2759  T7R5

STB   R8,T2WRD1+2          T2WRD1 = FFFF67FF                    XP127050
STB   R9,T2WRD2            T2WRD2 =ABFFFFFF                     XP127060
STB   R3,T2WRD2(R3)        R3 = 3                               XP127070
STB   R5,T2WRD1-4(R3,R4)   R4 = 4                               XP127080
BFC   2,T7R3                                                    XP127090
BTFS  13,15                CC = 0010, UNCHANGED ?               XP127100
                                    (BTC   13,T7R3)             XP127110
LM    R4,T2WRD0                                                 XP127120
CLI   R4,Y'00230000'                                            XP127130
BNES  T7R3                                                      XP127140
CLI   R5,Y'FFFF6705'                                            XP127150
BNES  T7R3                                                      XP127160
CLI   R6,Y'ABFFFF03'                                            XP127170
BES   T7D                                                       XP127180
LIS   R13,3                ERROR 0703, STB              *****   XP127190
B     T7R                                                       XP127200
EQU   *                                                         XP127210
LIS   R10,0                R10 = 00000000                       XP127220
LCS   R11,2                R11 = FFFFFFFE                       XP127230
LCS   R12,3                R12 = FFFFFFFD                       XP127240
LHI   R7,X'23'                                                  XP127250
LHI   R8,X'67'                                                  XP127260
LHI   R9,X'AB'                                                  XP127270
STBR  R7,R10               R10 = 00000023                       XP127280
STBR  R8,R11               R11 = FFFFFF67                       XP127290
STBR  R9,R12               R12 = FFFFFFAB                       XP127300
CLHI  R10,X'0023'                                               XP127310
BNES  T7R4                                                      XP127320
CLHI  R11,X'FF67'          EXPANDS TO 32 BITS                   XP127330
BNES  T7R4                                                      XP127340
CLHI  R12,X'FFAB'          EXPANDS TO 32 BITS                   XP127350
BES   T7D2                                                      XP127360
LIS   R13,4                ERROR 0704, STBR             *****   XP127370
B     T7R                                                       XP127380
EQU   *                                                         XP127390
LCS   R6,1                 R6 = FFFFFFFF                        XP127400
LHI   R7,X'FF23'                                                XP127410
LHI   R8,X'67'                                                  XP127420
LHI   R9,X'AB'                                                  XP127430
LBR   R6,R6                R6 = 000000FF                        XP127440
LBR   R10,R8                                                    XP127450
LBR   R11,R9                                                    XP127460
LBR   R12,R7                                                    XP127470
BFFS  2,14                 (BFC   2,T7R5)                       XP127480
BTFS  13,13                CC = 0010, UNCHANGED ?               XP127490
                                    (BTC   13,T7R5)             XP127500
CLHI  R6,X'00FF'                                                XP127510
BNES  T7R5                                                      XP127520
CLHI  R10,X'67'                                                 XP127530
BNES  T7R5                                                      XP127540
CLHI  R11,X'AB'                                                 XP127550
BNES  T7R5                                                      XP127560
CLHI  R12,X'23'                                                 XP127570
BES   T7E                                                       XP127580
LIS   R13,5                ERROR 0705, LBR              *****   XP127590
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002504  4300 23CE          2760          B     T7R                                                    XP127600
        0000 2508          2761  EXBR    EQU   *                                                      XP127610
002508  F870 4567 0123     2762  T7E     LI    R7,Y'45670123'                                         XP127620
00250E  F880 ABCD 4567     2763          LI    R8,Y'ABCD4567'                                         XP127630
002514  F890 0123 89AB     2764          LI    R9,Y'012389AB'                                         XP127640
00251A  9477               2765          EXBR  R7,R7                                                  XP127650
00251C  21D6               2766          BTFS  13,6          (BTC   13,T7R6)                        XP127660
00251E  2325               2767          BNPS  T7R6          CC = 0010, UNCHANGED ?                 XP127670
002520  F570 4567 2301     2768          CLI   R7,Y'45672301'                                         XP127680
002526  2334               2769          BES   T7E3                                                   XP127690
002528  24D6               2770  T7R6    LIS   R13,6         ERROR 0706, EXBR              *****    XP127700
00252A  4300 23CE          2771          B     T7R                                                    XP127710
00252E  9479               2772  T7E3    EXBR  R7,R9                                                  XP127720
002530  F570 4567 AB89     2773          CLI   R7,Y'4567AB89'                                         XP127730
002536  2037               2774          BNES  T7R6                                                   XP127740
002538  9498               2775          EXBR  R9,R8                                                  XP127750
00253A  F590 0123 6745     2776          CLI   R9,Y'01236745'                                         XP127760
002540  203C               2777          BNES  T7R6                                                   XP127770
002542  24A0               2778          LIS   R10,0                                                  XP127780
002544  94AA               2779          EXBR  R10,R10                                                XP127790
002546  20FF               2780          BTBS  15,15         CC = 0000, UNCHANGED ?                 XP127800
                           2781  *                                   (BTC   15,T7R6)                XP127810
002548  08AA               2782          LR    R10,R10                                                XP127820
00254A  4230 2528          2783          BNZ   T7R6                                                   XP127830
00254E  4300 2552          2784  T7END   B     TEST8                                                  XP127840
                           2785  *                                                                    XP127850
                           2786  *                                                                    XP127860
                           2787  *                                                                    XP127870
        0000 2552          2788  TEST8   EQU   *                                                      XP127880
                           2789  ************************************************************         XP127890
002552  2408               2790          LIS   R0,8                                                   XP127900
002554  D200 1180          2791          STB   R0,TESTNO                                              XP127910
002558  E610 28EA          2792          LA    R1,TEST9                                               XP127920
00255C  5010 39C0          2793          ST    R1,NXTST                                               XP127930
                           2794  *                                                                    XP127940
        0000 2560          2795  AIS     EQU   *                                                      XP127950
        0000 2560          2796  SIS     EQU   *                                                      XP127960
002560  D100 3F04          2797  T81     LM    R0,BUF2       R0=0,R1=1,R2=2,.....R15=15             XP127970
002564  2601               2798          AIS   R0,1          R0= 0 + 1 = 1                          XP127980
002566  2326               2799          BNPS  T8R1          COND.CODE = 0010                       XP127990
002568  21D5               2800          BTFS  13,5          (BTC   13,T8R1)                        XP128000
00256A  0501               2801          CLR   R0,R1         R0 = R1 = 1  ?                         XP128010
00256C  2133               2802          BNES  T8R1                                                 XP128020
00256E  2701               2803          SIS   R0,1          R0,= 1 - 1 = 0                         XP128030
002570  23F4               2804          BFFS  15,4          (BFC   15,T81B)                        XP128040
002572  24D1               2805  T8R1    LIS   R13,1         ERROR 0801 , AIS, SIS         *****    XP128050
002574  4300 2740          2806          B     T8R                                                    XP128060
002578  260F               2807  T81B    AIS   R0,15         R0 = 0 + 15 = 15                       XP128070
00257A  2224               2808          BNPS  T8R1                                                 XP128080
00257C  20D5               2809          BTBS  13,5          (BTC   13,T8R1)                        XP128090
00257E  050F               2810          CLR   R0,R15        R0 = R15 = 15  ?                       XP128100
002580  2037               2811          BNES  T8R1                                                 XP128110
002582  27FF               2812          SIS   R15,15                                               XP128120
002584  20F9               2813          BTBS  15,9          (BTC   15,T8R1)                        XP128130
002586  08FF               2814          LR    R15,R15                                              XP128140
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002588  203B                2815            BNZS  T8R1
                            2816  *
00258A  2403                2817  T82       LIS   R0,3              R0 = NO. OF REG. PRINTED
00258C  F820 FFFE A070      2818            LI    R2,-90000         CHECK INSTRUCTIONS
002592  F850 FFFF 15A0      2819            LI    R5,-60000         AIS , SIS
002598  41E0 274C           2820            BAL   R14,T82A2
                            2821  *
00259C  C820 FED4           2822            LHI   R2,-300
0025A0  C850 012C           2823            LHI   R5,300
0025A4  41E0 274C           2824            BAL   R14,T82A2
                            2825  *
0025A8  F820 0000 EA60      2826            LI    R2,60000
0025AE  F850 0001 5F90      2827            LI    R5,90000
0025B4  41E0 274C           2828            BAL   R14,T82A2
                            2829  **  THIS PART CHECKS ADD AND SUBTRACT INSTRUCTIONS
                            2830  **  THE OPERANDS USED ARE OBTAINED FROM TABLE T83TABL IN MEMORY
                            2831  **  RESULT (IN R1) AND COND. CODE (IN R2)ARE CHECKED
                            2832  **  R1  = RESULT OBTAINED
                            2833  **  R2  = COND.CODE OF THE PSW AFTER THE OPERATION
                            2834  **  R7  = ADR. OF THE OPERAND IN TABLE T83TABL
                            2835  **  R9  = OPERAND1  ,  R10  = OPERAND2
                            2836  **  R11  = EXPECTED COND. CODE
        0000 4190           2837  OP1MEM    EQU   BUF3+12
        0000 4188           2838  OPRND2    EQU   BUF3+4
                            2839  ************************************************************
                            2840  *
0025B8  C8D0 0010           2841  T83       LHI   R13,X'10'
0025BC  2402                2842            LIS   R0,2              R0 = 2 = PRINT REG. 1 & 2
0025BE  E670 39C8           2843            LA    R7,T83TABL
        0000 25C2           2844  T83LOOP   EQU   *
0025C2  248F                2845            LIS   R8,15
0025C4  5897 0000           2846            L     R9,0(R7)          R9 = OPERAND 1
0025C8  58A7 0004           2847            L     R10,4(R7)         R10 = OPERAND 2
0025CC  58B7 0008           2848            L     R11,8(R7)         R11 = EXPECTED RESULT
0025D0  50A0 9BB4 =004188   2849            ST    R10,OPRND2
0025D4  26D1                2850            AIS   R13,1
0025D6  5867 000C           2851            L     R6,12(R7)         ERROR  11 THRU 1B , AR    *****
0025DA  4210 2682           2852            BM    T83SR             R6 = EXPECTED COND. CODE
        0000 25DE           2853  AR        EQU   *                 IF MINUS,SUBTRACT OPERATION
0025DE  0819                2854  T83ADD    LR    R1,R9
0025E0  0A1A                2855            AR    R1,R10            R1 = OPERAND1
0025E2  41E0 28DE           2856            BAL   R14,T83CHK        R1 = OP1 + OP2
0025E6  4230 2740           2857  T8R11     BNE   T8R               CHECK RESULT AND COND.CODE
        0000 25EA           2858  A         EQU   *                 ERROR 11 THRU 1B
0025EA  0819                2859  T83AS     LR    R1,R9
0025EC  5A10 9B98 =004188   2860            A     R1,OPRND2         R1 = R9 = OP1
0025F0  41E0 28DE           2861            BAL   R14,T83CHK        R1 = OP1 + OP2
0025F4  2335                2862            BES   T83AI             CHECK RESULT AND COND.CODE
0025F6  CAD0 0010           2863  T8R21     AHI   R13,X'10'
0025FA  4300 2740           2864            B     T8R               ERROR  21 THRU  2B  ,  A     *****
        0000 25FE           2865  AI        EQU   *
0025FE  0819                2866  T83AI     LR    R1,R9
002600  FA1A 0000 0000      2867            AI    R1,0(R10)         R1 = OP1
002606  41E0 28DE           2868            BAL   R14,T83CHK        R1 = OP 1 + OP2
00260A  2335                2869            BES   T880              CHECK RESULT AND COND.CODE
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00260C  CAD0 0020            2870  T8R31    AHI   R13,X'20'          ERROR 31 THRU 3B  ,  AI       *****   XP128700
002610  4300 2740            2871           B     T8R                                                  XP128710
        0000 2614            2872  AM       EQU   *                                                    XP128720
002614  5090 9B78 =004190    2873  T880     ST    R9,OP1MEM          STORE OP1 IN MEMORY               XP128730
002618  51A0 9B74 =004190    2874           AM    R10,OP1MEM         ADD OP1 TO OP2 IN MEMORY          XP128740
00261C  9522                 2875           EPSR  R2,R2              R2 = PSW                          XP128750
00261E  5810 9B6E =004190    2876           L     R1,OP1MEM          R1 = RESULT FROM MEMORY           XP128760
002622  41E0 28E0            2877           BAL   R14,T83CHK2        CHECK RESULT AND COND.CODE        XP128770
002626  2335                 2878           BES   T890AH                                               XP128780
002628  CAD0 0070            2879  T8R80    AHI   R13,X'70'          ERRORS 81 THRU 8B  ,  AM          XP128790
00262C  4300 2740            2880           B     T8R                                                  XP128800
                             2881  **  CHECK HALFWORD ADDS AH , AHI , AHM                             XP128810
002630  5090 9B5C =004190    2882  T890AH   ST    R9,OP1MEM          CHECK AH,AHI,AHM                  XP128820
002634  C570 3A08            2883           CLHI  R7,T83TBHW1                                          XP128830
002638  4380 26D4            2884           BNL   T83AS2                                               XP128840
        0000 263C            2885  AH       EQU   *                                                    XP128850
00263C  0819                 2886  T890AH2  LR    R1,R9                                               XP128860
00263E  4A10 9B48 =00418A    2887           AH    R1,OPRND2+2                                          XP128870
002642  41E0 28DE            2888           BAL   R14,T83CHK         CHECK RESULT AND COND.CODE        XP128880
002646  2334                 2889           BES   T83AHI                                               XP128890
002648  CAD0 0080            2890  T8R91    AHI   R13,X'80'          ERROR 91 THRU 9B : AH             *****   XP128900
00264C  2309                 2891           BS    T8R10                                                XP128910
        0000 264E            2892  AHI      EQU   *                                                    XP128920
00264E  0819                 2893  T83AHI   LR    R1,R9              R1 = OP1                          XP128930
002650  CA1A 0000            2894           AHI   R1,0(R10)          R2 = OP1 + OP2                    XP128940
002654  41E0 28DE            2895           BAL   R14,T83CHK         CHECK RESULT AND COND.CODE        XP128950
002658  2335                 2896           BES   T83AHM                                               XP128960
00265A  CAD0 0090            2897  T8RA1    AHI   R13,X'90'          ERROR A1 THRU AB , AHI            *****   XP128970
00265E  4300 2740            2898  T8R10    B     T8R                                                  XP128980
        0000 2662            2899  AHM      EQU   *                                                    XP128990
002662  0468                 2900  T83AHM   NR    R6,R8                                               XP129000
002664  61A0 9B2A =004192    2901           AHM   R10,OP1MEM+2                                         XP129010
002668  48B7 000A            2902           LH    R11,10(R7)                                           XP129020
00266C  9522                 2903           EPSR  R2,R2                                                XP129030
00266E  4810 9B20 =004192    2904           LH    R1,OP1MEM+2                                          XP129040
002672  41E0 28E0            2905           BAL   R14,T83CHK2        CHECK RESULT AND COND.CODE        XP129050
002676  4330 26D4            2906           BE    T83AS2                                               XP129060
00267A  CAD0 00A0            2907  T8RB1    AHI   R13,X'A0'          ERROR B1 THRU BB , AHM            *****   XP129070
00267E  4300 2740            2908           B     T8R                                                  XP129080
                             2909  **  CHECK SUBTRACT INSTRUCTIONS SR , S , SI , SH , SHI             XP129090
                             2910  ****************************************************               XP129100
        0000 2682            2911  SR       EQU   *                                                    XP129110
002682  0468                 2912  T83SR    NR    R6,R8              R6 = EXPECTED COND. CODE          XP129120
002684  0819                 2913           LR    R1,R9              R1 = R9 = OP1                     XP129130
002686  0B1A                 2914           SR    R1,R10             R1 = OP1 - OP2                    XP129140
002688  41E0 28DE            2915           BAL   R14,T83CHK         CHECK RESULT AND COND.CODE        XP129150
00268C  4230 2740            2916  T8R11S   BNE   T8R                ERROR 11 THRU 1B , SR             *****   XP129160
        0000 2690            2917  S        EQU   *                                                    XP129170
002690  0819                 2918  T83S     LR    R1,R9                                                XP129180
002692  5B10 9AF2 =004188    2919           S     R1,OPRND2                                            XP129190
002696  41E0 28DE            2920           BAL   R14,T83CHK         CHECK RESULT AND COND.CODE        XP129200
00269A  4230 25F6            2921  T8R21S   BNE   T8R21               ERROR 21 THRU 2B , S              *****   XP129210
        0000 269E            2922  SI       EQU   *                                                    XP129220
00269E  0819                 2923  T83SI    LR    R1,R9              R1 = OP1                          XP129230
0026A0  FB1A 0000 0000       2924           SI    R1,0(R10)          R1 = OP1 - OP2                    XP129240
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0026A6  41E0 28DE            2925            BAL   R14,T83CHK          CHECK RESULT AND COND.CODE                XP129250
0026AA  4230 260C            2926  T8R31S    BNE   T8R31               ERROR 31 THRU 3B . SI          *****      XP129260
                             2927  ** TEST HALF-WORD INSTRUCTIONS IN FULLWORD MODE                                 XP129270
0026AE  50A0 9ADE =004190    2928  T890SH    ST    R10,OP1MEM                                                    XP129280
0026B2  C570 3A08            2929            CLHI  R7,T83TBHW1                                                   XP129290
0026B6  238F                 2930            BNLS  T83AS2                                                        XP129300
        0000 26B8            2931  SH        EQU   *                                                             XP129310
0026B8  0819                 2932  T890SH2   LR    R1,R9                                                       XP129320
0026BA  4B10 9ACC =00418A    2933            SH    R1,OPRND2+2                                                   XP129330
0026BE  41E0 28DE            2934            BAL   R14,T83CHK          CHECK RESULT AND COND.CODE                XP129340
0026C2  4230 2648            2935  T8R91A    BNE   T8R91               ERROR 91 THRU 9B . SH          *****      XP129350
        0000 26C6            2936  SHI       EQU   *                                                             XP129360
0026C6  0819                 2937  T890SHI   LR    R1,R9                                                       XP129370
0026C8  CB1A 0000            2938            SHI   R1,0(R10)                                                     XP129380
0026CC  41E0 28DE            2939            BAL   R14,T83CHK          CHECK RESULT AND COND.CODE                XP129390
0026D0  4230 265A            2940  T8RA1S    BNE   T8RA1               ERROR A1 THRU AB . SHI         *****      XP129400
                             2941  *                                                                               XP129410
0026D4  CA70 0010            2942  T83AS2    AHI   R7,16                                                       XP129420
0026D8  C570 3A78            2943            CLHI  R7,T83TBEND         R7 = ADR. OF NEXT ENTRY                   XP129430
0026DC  4280 25C2            2944            BL    T83LOOP                                                       XP129440
                             2945  **  ALL OPERANDS IN TABLE T83TABL TESTED . NO ERROR                           XP129450
                             2946  **  NEXT PART OF THE TEST IS DESIGNED TO TEST THE HARDWARE                     XP129460
0026E0  2410                 2947  T86       LIS   R1,0               R1 = N = 0                                XP129470
0026E2  0821                 2948            LR    R2,R1               R2 = M = J                                XP129480
0026E4  F890 0101 0101       2949            LI    R9,Y'01010101'      R9 = I = INCREMENT                        XP129490
0026EA  41E0 2790            2950            BAL   R14,T86RTN1                                                   XP129500
                             2951  *                                                                             XP129510
0026EE  C810 0080            2952            LHI   R1,X'80'            R1 = 80 = INITIAL N                       XP129520
0026F2  0821                 2953            LR    R2,R1               R2 = 80 = INITIAL M                       XP129530
0026F4  41E0 2790            2954            BAL   R14,T86RTN1                                                   XP129540
                             2955  *                                                                             XP129550
0026F8  2410                 2956            LIS   R1,0                R1 = N = 0                                XP129560
0026FA  0821                 2957            LR    R2,R1               R2 = M = 0                                XP129570
0026FC  F890 1010 1010       2958            LI    R9,Y'10101010'      R9 = I = INCRE. = 10101010                XP129580
002702  41E0 2790            2959            BAL   R14,T86RTN1                                                   XP129590
                             2960  *         NOTE: REGISTERS ASSIGNED AS ABOVE.                                  XP129600
002706  C810 0080            2961            LHI   R1,X'80'                                                      XP129610
00270A  0821                 2962            LR    R2,R1                                                         XP129620
00270C  41E0 2790            2963            BAL   R14,T86RTN1                                                   XP129630
                             2964  **  THIS PART OF THE TEST CHECKS THE COMPARE INSTRUCTIONS                      XP129640
                             2965  **  THE OPERANDS ARE TAKEN FROM MEMORY IN TABLE T8COMPR                        XP129650
                             2966  **  R8  =  OPERAND1 , R9  =  OPERAND2                                         XP129660
                             2967  ************************************************************                  XP129670
        0000 2710            2968  T850      EQU   *                   CHECK  CR,C,CI                            XP129680
002710  2402                 2969            LIS   R0,2                R0 = 2 NO. OF REG. PRINTED                XP129690
002712  E650 3A78            2970            LA    R5,T8COMPR                                                    XP129700
002716  C8D0 0050            2971            LHI   R13,X'50'           R13 = ERROR NO. = 50                      XP129710
00271A  24BB                 2972            LIS   R11,11                                                        XP129720
00271C  5885 0000            2973  T850A     L     R8,0(R5)            R8 = OPERAND 1                            XP129730
002720  5895 0004            2974            L     R9,4(R5)            R9 = OPERAND 2                            XP129740
002724  5815 0008            2975            L     R1,8(R5)            R1 = EXPECTED COND. CODE                  XP129750
002728  26D1                 2976            AIS   R13,1               R13=ERROR NO. 51 THRU 5D                  XP129760
00272A  041B                 2977            NR    R1,R11              ZERO OUT OTHER BITS IN PSW                XP129770
00272C  41E0 2876            2978            BAL   R14,T85CHK                                                    XP129780
                             2979  *                                                                             XP129790
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002730  265C             2980          AIS   R5,12              R5 = ADR. OF NEXT OPERAND              XP129800
002732  F550 0000 3B14   2981          CLI   R5,T8COMEND        IF R5 = END OF TABLE , DONE            XP129810
002738  203E             2982          BNES  T850A                                                     XP129820
00273A  4300 28EA        2983  T8END   B     TEST9                                                     XP129830
                         2984  *                                                                       XP129840
                         2985  *                                                                       XP129850
                         2986  **  SUBROUTINES USED IN TEST 8                                         XP129860
                         2987  ********************************************************              XP129870
00273E  24D2             2988  T8R2    LIS   R13,2              ERROR    2  ,  AIS  ,  SIS     *****  XP129880
002740  D2D0 1181        2989  T8R     STB   R13,ERRNO                                                 XP129890
002744  D000 3F84        2990          STM   R0,REG10           STORE REG. TO PRINT                    XP129900
002748  4300 0CC8        2991          B     ERROR                                                     XP129910
                         2992  **  SUBROUTINE T82A2 CHECKS INSTRUCTIONS  AIS , SIS                    XP129920
                         2993  **  R2 = STARTING VALUE OF NO. M , R5 = FINAL VALUE OF NO. M            XP129930
00274C  0812             2994  T82A2   LR    R1,R2              R1 = M                                 XP129940
00274E  2621             2995          AIS   R2,1               R2 = M+1                               XP129950
002750  0832             2996          LR    R3,R2              R3 = M+1                               XP129960
002752  2731             2997          SIS   R3,1               R3 = (M+1)-(1) =M ?                    XP129970
002754  0513             2998          CLR   R1,R3                                                     XP129980
002756  203C             2999  T8R2D   BNES  T8R2               ERR.PRINT R1,R2,R3                     XP129990
                         3000  *                                                                       XP130000
002758  0812             3001          LR    R1,R2              R1 = R2 = NEW M                        XP130010
00275A  2622             3002          AIS   R2,2               R2 = M + 2                             XP130020
00275C  0832             3003          LR    R3,R2              R3 = M + 2                             XP130030
00275E  2732             3004          SIS   R3,2               R3 = (M + 2) - 2                       XP130040
002760  0513             3005          CLR   R1,R3              M = (M + 2) - 2  ?                     XP130050
002762  2036             3006  T8R2C   BNES  T8R2D                                                     XP130060
                         3007  *                                                                       XP130070
002764  0812             3008          LR    R1,R2              R1 = R2 = NEW M                        XP130080
002766  2624             3009          AIS   R2,4               R2 = M + 4                             XP130090
002768  0832             3010          LR    R3,R2              R3 = M + 4                             XP130100
00276A  2734             3011          SIS   R3,4               R3 = (M + 4) - 4                       XP130110
00276C  0513             3012          CLR   R1,R3              M = (M + 4) -4   ?                     XP130120
00276E  2036             3013  T8R2B   BNES  T8R2C                                                     XP130130
                         3014  *                                                                       XP130140
002770  0812             3015          LR    R1,R2              R1 = R2 = NEW M                        XP130150
002772  2628             3016          AIS   R2,8               R2 = M + 8                             XP130160
002774  0832             3017          LR    R3,R2              R3 = M +8                              XP130170
002776  2738             3018          SIS   R3,8               R3 = (M +8) - 8                        XP130180
002778  0513             3019          CLR   R1,R3              M = (M + 8) - 8   ?                    XP130190
00277A  2036             3020  T8R2A   BNES  T8R2B                                                     XP130200
                         3021  *                                                                       XP130210
00277C  0812             3022          LR    R1,R2              R1 = R2 = NEW M                        XP130220
00277E  262F             3023          AIS   R2,15              R2 = M + 15                            XP130230
002780  0832             3024          LR    R3,R2              R3 = M + 15                            XP130240
002782  273F             3025          SIS   R3,15              R3 = (M + 15) - 15                     XP130250
002784  0513             3026          CLR   R1,R3              M = (M + 15) - 15   ?                  XP130260
002786  2036             3027  T8R3D   BNES  T8R2A                                                     XP130270
                         3028  *                                                                       XP130280
002788  0525             3029          CLR   R2,R5                                                     XP130290
00278A  4230 274C        3030          BNE   T82A2                                                     XP130300
00278E  030E             3031          BR    R14                 END OF ROUTINE T82A2                  XP130310
                         3032  *                                                                       XP130320
                         3033  ********************************************************              XP130330
        0000 4184        3034  INITM   EQU   BUF3                                                     XP130340
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                0000 4188
                0000 418C
                0000 4190

002790  24CF
002792  5020 99EE =004184
002796  24BF
002798  5010 99F0 =00418C
00279C  5020 99E8 =004188
0027A0  2521
0027A2  0721
0027A4  2621
0027A6  5020 99E6 =004190
0027AA  2403
0027AC  C8D0 0041

0027B0  0A21
0027B2  9533
0027B4  2132
0027B6  0822
0027B8  4230 2740

0027BC  26D1
0027BE  0821
0027C0  5A20 99CC =004190
0027C4  9533
0027C6  2132
0027C8  0822
0027CA  2039
0027CC  26D1
0027CE  5820 99BE =004190
0027D2  FA21 0000 0000
0027D8  9533
0027DA  2038
0027DC  0822
0027DE  2032

0027E0  26D1
0027E2  0821
0027E4  0A21
0027E6  0832
0027E8  0B31
0027EA  0513
0027EC  2136
0027EE  26D1
0027F0  0832
0027F2  5B30 9996 =00418C
0027F6  0513
0027F8  4230 2740
0027FC  26D1
0027FE  0832
002800  FB31 0000 0000
002806  0513
002808  2038

3035  PLUSM     EQU   BUF3+4                                                    XP130350
3036  PLUSN     EQU   BUF3+8                                                    XP130360
3037  MINUSN    EQU   BUF3+12                                                   XP130370
3038  *                                                                         XP130380
3039  T86RTN1   LIS   R12,15          R12 = COUNTER FOR N                       XP130390
3040            ST    R2,INITM                                                  XP130400
3041  T841LOOP  LIS   R11,15          R11 = COUNTER FOR M                       XP130410
3042            ST    R1,PLUSN        STORE N                                   XP130420
3043            ST    R2,PLUSM        STORE M                                   XP130430
3044            LCS   R2,1            R2 = FFFFFFFF                             XP130440
3045            XR    R2,R1                                                     XP130450
3046            AIS   R2,1            R2 = - N                                  XP130460
3047            ST    R2,MINUSN       STORE - N                                 XP130470
3048            LIS   R0,3            R0 = 3 = NO. OF REG. PRINTED              XP130480
3049            LHI   R13,X'41'       R13 = 41 = ERROR NO.          *****       XP130490
3050  **        CHECK  (N) + (-N) = 0                                           XP130500
3051  T841      AR    R2,R1           R2 = -N + N                               XP130510
3052            EPSR  R3,R3           R3 = PSW                                  XP130520
3053            BNZS  T8R41A          R1 = N                                    XP130530
3054            LR    R2,R2                                                     XP130540
3055  T8R41A    BNZ   T8R             ERROR 0841                    *****       XP130550
3056  *         IF ERROR, PRINT R1, R2, R3                                      XP130560
3057  T842      AIS   R13,1           R13 = ERROR NO. = 42                      XP130570
3058            LR    R2,R1           R2 = R1 = N                               XP130580
3059            A     R2,MINUSN       R2 = N + (-N) = 0 ?                       XP130590
3060            EPSR  R3,R3           R3 = PSW                                  XP130600
3061            BNZS  T8R42A                                                    XP130610
3062            LR    R2,R2                                                     XP130620
3063  T8R42A    BNZS  T3R41A          ERROR 0842                    *****       XP130630
3064  T843      AIS   R13,1           R13 = ERROR NO = 43                       XP130640
3065            L     R2,MINUSN       R2 = -N                                   XP130650
3066            AI    R2,0(R1)        R2 = -N + N = 0 ?                         XP130660
3067            EPSR  R3,R3           R3 = PSW                                  XP130670
3068  T8R43A    BNZS  T8R42A          ERROR 0843                    *****       XP130680
3069            LR    R2,R2                                                     XP130690
3070  T8R43B    BNZS  T8R43A                                                    XP130700
3071  **        CHECK (N + N) - (N) = N                                         XP130710
3072  T844      AIS   R13,1           ERROR 0844, AR, SR            *****       XP130720
3073            LR    R2,R1           R2 = R1 = N                               XP130730
3074            AR    R2,R1           R2 = N + N                                XP130740
3075            LR    R3,R2           R3 = N + N                                XP130750
3076            SR    R3,R1           R3 = (N+N) - N = N ?                      XP130760
3077            CLR   R1,R3           R3 = R1 = N ?                             XP130770
3078            BNES  T8R45                                                     XP130780
3079  T845      AIS   R13,1           R13 = ERROR NO = 45 ,  S       *****      XP130790
3080            LR    R3,R2           R3 = R2 = N + N                           XP130800
3081            S     R3,PLUSN        R3 = (N+N) - N                            XP130810
3082            CLR   R1,R3                                                     XP130820
3083  T8R45     BNE   T8R                                                       XP130830
3084  T846      AIS   R13,1           R13 = ERR.NO. = 46 ,  SI       *****      XP130840
3085            LR    R3,R2           R3 = R2 = N+N                             XP130850
3086            SI    R3,0(R1)        R3 = (N+N)-N                              XP130860
3087            CLR   R1,R3                                                     XP130870
3088  T8R46     BNES  T8R45                                                     XP130880
3089  **        CHECK (N + M) - N = M                                           XP130890
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                                  *************************************************************                 XP130900
00280A  2404                                LIS   R0,4              R0 = 4 = NO. OF REG.PRINTED                XP130910
00280C  C8D0 0047                           LHI   R13,X'47'         R13 = ERR.NO. = 47 ,  AR , SR              XP130920
002810  5810 9978 =00418C         T812LOOP  L     R1,PLUSN          R1 = N                                     XP130930
002814  5820 9970 =004188                   L     R2,PLUSM          R2 = M                                     XP130940
002818  0832                                LR    R3,R2             R3 = M                                     XP130950
00281A  0A31                                AR    R3,R1             R3 = M + N                                 XP130960
00281C  0843                                LR    R4,R3             R4 = M + N                                 XP130970
00281E  0B41                                SR    R4,R1             R4 = ( M+N) - N                            XP130980
002820  0524                                CLR   R2,R4             ( M + N ) - ( N )  =  M  ?                 XP130990
002822  2139                      T8R47     BNES  T8R4X                                                        XP131000
                                  *                                                                            XP131010
002824  0841                      T848      LR    R4,R1             R4 = R1 = M                                XP131020
002826  5A40 995E =004188                   A     R4,PLUSM          R4 = M + N                                 XP131030
00282A  5B40 995E =00418C                   S     R4,PLUSN          R4 = (M + N) - N                           XP131040
00282E  0524                                CLR   R2,R4             ( M + N ) - ( N )  =  M  ?                 XP131050
002830  2334                                BES   T849                                                         XP131060
002832  26D1                      T8R48     AIS   R13,1             R13 = ERR.NO. = 48 :  A , S     *****      XP131070
002834  4300 2740                 T8R4X     B     T8R                                                          XP131080
                                  *                                                                            XP131090
002838  0841                      T849      LR    R4,R1             R4 = R1 = N                                XP131100
00283A  FA42 0000 0000                      AI    R4,0(R2)          R4 = M+N                                   XP131110
002840  FB41 0000 0000                      SI    R4,0(R1)          R4 = (M+N) -N = M ?                        XP131120
002846  0524                                CLR   R2,R4             ( M + N ) - ( N )  =  M  ?                 XP131130
002848  2334                                BES   T84789                                                       XP131140
00284A  26D2                      T8R49     AIS   R13,2             R13 = ERR NO = 49 : AI, SI      *****      XP131150
00284C  4300 2740                           B     T8R                                                          XP131160
002850  5820 9934 =004188         T84789    L     R2,PLUSM          R2 = M                                     XP131170
002854  0A29                                AR    R2,R9             R2 = M + INCRE.                            XP131180
002856  5020 992E =004188                   ST    R2,PLUSM                                                     XP131190
00285A  27B1                                SIS   R11,1                                                        XP131200
00285C  4230 2810                           BNZ   T812LOOP                                                     XP131210
                                  *                                                                            XP131220
002860  5820 9920 =004184                   L     R2,INITM          R2 = INITIAL VALUE OF M                    XP131230
002864  5810 9924 =00418C                   L     R1,PLUSN          R1 = N                                     XP131240
002868  0A19                                AR    R1,R9             R1 = N+ INCRE.                             XP131250
00286A  5010 991E =00418C                   ST    R1,PLUSN                                                     XP131260
00286E  27C1                                SIS   R12,1                                                        XP131270
002870  4230 2796                           BNZ   T841LOOP                                                     XP131280
002874  030E                                BR    R14               END OF T86RTN1                             XP131290
                                  *                                                                            XP131300
                                  **  THIS SUBROUTINE CHECKS INSTRUCTIONS  CR , C , CI , CH , CHI               XP131310
                                  **  OPERANDS ARE TAKEN FROM TABLE T8COMPR                                    XP131320
                                  *************************************************************                XP131330
        0000 2876                 CR        EQU   *                                                            XP131340
002876  0989                      T85CHK    CR    R8,R9                                                        XP131350
002878  9522                                EPSR  R2,R2             R2 = NEW PSW TO CHECK CC                   XP131360
00287A  042B                                NR    R2,R11            (R11 = X'B')                               XP131370
00287C  0512                                CLR   R1,R2                                                        XP131380
00287E  213B                      T8R51     BNES  T8R567            ERROR  51 THRU 5D  ,  CR        *****      XP131390
        0000 2880                 C         EQU   *                                                            XP131400
002880  5090 9904 =004188                   ST    R9,BUF3+4         STORE OPERAND 2 IN MEMORY                  XP131410
002884  5980 9900 =004188                   C     R8,BUF3+4         R8 = OP1                                   XP131420
002888  9522                                EPSR  R2,R2             R2 = PSW AFTER COMPARE                     XP131430
00288A  042B                                NR    R2,R11            ZERO OUT OTHER BITS IN PSW                 XP131440
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00288C  0512                          CLR    R1,R2           CHECK COND. CODE                    XP131450
00288E  2335                          BES    T85CHK3                                             XP131460
002890  CAD0 0010           T8R61     AHI    R13,X'10'       ERROR  61  THRU 6D  ,  C     *****  XP131470
002894  4300 2740           T8R567    B      T8R                                                 XP131480
        0000 2898           CI        EQU    *                                                   XP131490
002898  F989 0000 0000      T85CHK3   CI     R8,0(R9)                                            XP131500
00289E  9522                          EPSR   R2,R2           R2 = PSW AFTER COMPARE              XP131510
0028A0  042B                          NR     R2,R11          ZERO OUT OTHER BITS IN PSW          XP131520
0028A2  0512                          CLR    R1,R2                                               XP131530
0028A4  2334                          BES    T85CHK5                                             XP131540
0028A6  CAD0 0020           T8R71     AHI    R13,X'20'       ERRORS 71 THRU 7D  ,  CI     *****  XP131550
0028AA  220B                          BS     T8R567                                              XP131560
        0000 28AC           CH        EQU    *                                                   XP131570
0028AC  5815 0008           T85CHK5   L      R1,8(R5)        GET CC FOR HW MODE                  XP131580
0028B0  1014                          SRLS   R1,4            R1 = EXPECTED COND. CODE            XP131590
0028B2  041B                          NR     R1,R11          ZERO OUT OTHER BITS IN PSW          XP131600
                            *                                                                    XP131610
0028B4  4985 0006           T85CHK6   CH     R8,6(R5)                                            XP131620
0028B8  9522                          EPSR   R2,R2                                               XP131630
0028BA  042B                          NR     R2,R11                                              XP131640
0028BC  0512                          CLR    R1,R2                                               XP131650
0028BE  2335                          BES    T85CHK7                                             XP131660
0028C0  CAD0 0070           T8RC1     AHI    R13,X'70'       ERROR C1 THRU CD, CH         *****  XP131670
0028C4  4300 2740           T8RQ      B      T8R                                                 XP131680
        0000 28C8           CHI       EQU    *                                                   XP131690
0028C8  4895 0006           T85CHK7   LH     R9,6(R5)                                            XP131700
0028CC  C989 0000                     CHI    R8,0(R9)                                            XP131710
0028D0  9522                          EPSR   R2,R2                                               XP131720
0028D2  042B                          NR     R2,R11                                              XP131730
0028D4  0512                          CLR    R1,R2                                               XP131740
0028D6  033E                          BER    R14             END OF ROUTINE T85CHK               XP131750
0028D8  CAD0 0080           T8RD1     AHI    R13,X'80'       ERROR D1 THRU D7, CHI        *****  XP131760
0028DC  220C                          BS     T8RQ            (B    T8R)                          XP131770
                            ** THIS SUBROUTINE CHECKS RESULT AND CC AFTER ADD,SUBTRACT           XP131780
0028DE  9522                T83CHK    EPSR   R2,R2           R2 = NEW COND. CODE                 XP131790
0028E0  051B                T83CHK2   CLR    R1,R11          CHECK RESULT                        XP131800
0028E2  023E                          BNER   R14             R11 = EXPECTED RESULT               XP131810
0028E4  0428                          NR     R2,R8                                               XP131820
0028E6  0526                          CLR    R2,R6           CHECK COND. CODE                    XP131830
0028E8  030E                          BR     R14             R6 = EXPECTED COND. CODE            XP131840
                            ***********************************************************          XP131850
                            *                                                                    XP131860
                            *                                                                    XP131870
        0000 28EA           TEST9     EQU    *               CHECK SVC INSTRUCTIONS              XP131880
                            ***********************************************************          XP131890
0028EA  2409                          LIS    R0,9                                                XP131900
0028EC  D200 1180                     STB    R0,TESTNO                                           XP131910
0028F0  E610 29DE                     LA     R1,TEST10                                           XP131920
0028F4  5010 39C0                     ST     R1,NXTST                                            XP131930
        0000 28F8           SVC       EQU    *                                                   XP131940
0028F8  C200 3978                     LPSW   T9PSW1          SEL REG SET F                       XP131950
0028FC  E6D0 2994           T9A       LA     R13,T9R1                                            XP131960
002900  C810 009C                     LHI    R1,X'9C'        LOAD ERR.ADR. T9R1 INTO             XP131970
002904  40D1 0000           SVC004    STH    R13,0(R1)       EACH SVC 0 THRU 15                  XP131980
002908  2612                          AIS    R1,2                                                XP131990
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00290A  C510 00BC        3200          CLHI  R1,X'BC'                                    XP132000
00290E  2035             3201          BNES  SVC004                                     XP132010
                         3202  *                                                        XP132020
002910  2410             3203          LIS   R1,0          R1 = SVC CALL 0 THRU 15      XP132030
002912  2400             3204  SVC100  LIS   R0,0                                       XP132040
002914  5000 0098        3205          ST    R0,X'98'      SVC INTRPT. NEW PSW STATUS   XP132050
002918  0831             3206          LR    R3,R1         R3 = R1 = SVC CALL 0 THRU 15 XP132060
00291A  1131             3207          SLLS  R3,1          R3 = R1 * 2                  XP132070
00291C  E600 299A        3208          LA    R0,SVCINT     POINTER FOR SVC TESTED       XP132080
002920  4003 009C        3209          STH   R0,X'9C'(R3)                               XP132090
002924  0841             3210          LR    R4,R1                                      XP132100
002926  1142             3211          SLLS  R4,2          R4 = 4 X R1                  XP132110
002928  0A43             3212          AR    R4,R3         R4 = 6 X R1                  XP132120
00292A  E650 2936        3213          LA    R5,SVC200                                  XP132130
00292E  0A54             3214          AR    R5,R4                                      XP132140
002930  C840 7AF5        3215          LHI   R4,X'7AF5'    ENABLED INTERRUPTS           XP132150
002934  1804             3216          LPSWR R4                                         XP132160
                         3217  *                                                        XP132170
002936  E100 0000        3218  SVC200  SVC   0,R0                                       XP132180
00293A  030D             3219          BR    R13                                        XP132190
00293C  E110 0001        3220          SVC   1,R1                                       XP132200
002940  030D             3221          BR    R13                                        XP132210
002942  E120 0002        3222          SVC   2,R2                                       XP132220
002946  030D             3223          BR    R13                                        XP132230
002948  E130 0003        3224          SVC   3,R3                                       XP132240
00294C  030D             3225          BR    R13                                        XP132250
00294E  E140 0004        3226          SVC   4,R4                                       XP132260
002952  030D             3227          BR    R13                                        XP132270
002954  E150 0005        3228          SVC   5,R5                                       XP132280
002958  030D             3229          BR    R13                                        XP132290
00295A  E160 0006        3230          SVC   6,R6                                       XP132300
00295E  030D             3231          BR    R13                                        XP132310
002960  E170 0007        3232          SVC   7,R7                                       XP132320
002964  030D             3233          BR    R13                                        XP132330
002966  E180 0008        3234          SVC   8,R8                                       XP132340
00296A  030D             3235          BR    R13                                        XP132350
00296C  E190 0009        3236          SVC   9,R9                                       XP132360
002970  030D             3237          BR    R13                                        XP132370
002972  E1A0 000A        3238          SVC   10,R10                                     XP132380
002976  030D             3239          BR    R13                                        XP132390
002978  E1B0 000B        3240          SVC   11,R11                                     XP132400
00297C  030D             3241          BR    R13                                        XP132410
00297E  E1C0 000C        3242          SVC   12,R12                                     XP132420
002982  030D             3243          BR    R13                                        XP132430
002984  E1D0 000D        3244          SVC   13,R13                                     XP132440
002988  030D             3245          BR    R13                                        XP132450
00298A  E1E0 000E        3246          SVC   14,R14                                     XP132460
00298E  030D             3247          BR    R13                                        XP132470
002990  E1F0 000F        3248          SVC   15,R15                                     XP132480
002994  24D1             3249  T9R1    LIS   R13,1         ERROR 0901 - NO SVC INTERRUPT ***** XP132490
002996  4300 29C4        3250          B     T9R                                        XP132500
                         3251  *                                                        XP132510
                         3252  *                                                        XP132520
00299A  D000 3F44        3253  SVCINT  STM   R0,REG0       STORE REG.SET 0              XP132530
00299E  D1D0 3EC4        3254          LM    R13,BUF0      RESET R13,R14,R15            XP132540
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0029A2   C870 00F0         3255          LHI   R7,X'F0'           SEL REG SET F                          XP132550
0029A6   9567              3256          EPSR  R6,R7                                                     XP132560
0029A8   5510 3F78         3257  SVCL2   CL    R1,REGD            REG.13 OF SET 0 = SVC PARA. BLOCK?     XP132570
0029AC   213B              3258          BNES  T9R2                                                      XP132580
0029AE   5800 3F7C         3259          L     R0,REGE                                                   XP132590
0029B2   C500 7AF5         3260          CLHI  R0,X'7AF5'         OLD PSW SAVED CORRECTLY ?              XP132600
0029B6   2136              3261          BNES  T9R2                                                      XP132610
0029B8   5800 3F80         3262          L     R0,REGF                                                   XP132620
0029BC   2704              3263          SIS   R0,4                                                      XP132630
0029BE   0505              3264          CLR   R0,R5                                                     XP132640
0029C0   2336              3265          BES   T9B                                                       XP132650
0029C2   24D2              3266  T9R2    LIS   R13,2              ERROR 0902 - SVC PSW SWAP BAD *****    XP132660
0029C4   D2D0 1181         3267  T9R     STB   R13,ERRNO                                                 XP132670
0029C8   4300 0CC8         3268          B     ERROR                                                     XP132680
                           3269  *                                                                       XP132690
                           3270  *                                                                       XP132700
0029CC   40D3 009C         3271  T9B     STH   R13,X'9C'(R3)      RESTORE ERROR POINTER                  XP132710
0029D0   2611              3272          AIS   R1,1                                                      XP132720
0029D2   C510 0010         3273          CLHI  R1,16                                                     XP132730
0029D6   4230 2912         3274          BNE   SVC100                                                    XP132740
0029DA   4300 29DE         3275  T9END   B     TEST10                                                    XP132750
                           3276  *                                                                       XP132760
                           3277  *                                                                       XP132770
                           3278  *                                                                       XP132780
         0000 29DE         3279  TEST10  EQU   *                                                         XP132790
                           3280  *                                  SIMULATE INTERRUPT (SINT)            XP132800
                           3281  *                                  ILLEGAL INSTRUCTION INTERRUPT        XP132810
                           3282  ***********************************************************             XP132820
0029DE   240A              3283          LIS   R0,10                                                     XP132830
0029E0   D200 1180         3284          STB   R0,TESTNO                                                 XP132840
0029E4   E610 2B32         3285          LA    R1,TEST11                                                 XP132850
0029E8   5010 39C0         3286          ST    R1,NXTST                                                  XP132860
         0000 29EC         3287  SINT    EQU   *                                                         XP132870
                           3288  *       GENERATE INTERRUPT TO EACH DEVICE  0  THRU  255                 XP132880
0029EC   C840 02CE         3289          LHI   R4,X'2CE'          T10R2 = ERROR ADDRESS FOR              XP132890
0029F0   C830 2A94         3290          LHI   R3,T10R2           INCORRECT SERVICE POINTER              XP132900
0029F4   4034 0000         3291  T10B    STH   R3,0(R4)           FROM X'D0' THRU  X'2CE'                XP132910
0029F8   2742              3292          SIS   R4,2                                                      XP132920
0029FA   C540 00D0         3293          CLHI  R4,X'D0'                                                  XP132930
0029FE   2035              3294          BNES  T10B                                                      XP132940
                           3295  *                                                                       XP132950
002A00   C830 2A86         3296          LHI   R3,T10R3           T10R3 = ADDR FOR                       XP132960
002A04   4030 0046         3297          STH   R3,X'46'           HALFWORD-MODE EXTERNAL INTERRUPT       XP132970
002A08   2410              3298          LIS   R1,0               R1 = ADR. OF INTRPT. DEV.              XP132980
002A0A   4300 2A72         3299          B     T10FF                                                     XP132990
002A0E   95CC              3300  T10INT  EPSR  R12,R12            CAPTURE PSW ( = 00002800 ?)            XP133000
002A10   D000 3F44         3301          STM   R0,REG0            STORE REG. SET ZERO                    XP133010
002A14   D100 3EC4         3302          LM    R0,BUF0            REG SET 0 = 0                          XP133020
002A18   C200 3980         3303          LPSW  T10P2              REG SET F, A(T10L2)                    XP133030
002A1C   5800 3F44         3304  T10L2   L     R0,REG0                                                   XP133040
002A20   5500 3988         3305          CL    R0,T10P3           REG0 = OLD PSW STAT ?                  XP133050
002A24   213A              3306          BNES  T10R4A                                                    XP133060
002A26   E610 2A90         3307          LA    R1,T10R1                                                  XP133070
002A2A   5510 3F48         3308          CL    R1,REG1            REG1 = OLD PSW LOC ?                   XP133080
002A2E   2135              3309          BNES  T10R4A                                                    XP133090
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002A30  5820 3F4C            L      R2,REG2                                XP133100
002A34  5520 3F88            CL     R2,REG11       REG2 = PROPER DEVICE ADDRESS ?  XP133110
002A38  2139        T10R4A   BNES   T10R4B                                 XP133120
                    *                                                      XP133130
002A3A  5830 3F50            L      R3,REG3        DEVICE STATUS           XP133140
002A3E  58C0 3F74            L      R12,REGC                               XP133150
002A42  C4C0 FFF0            NHI    R12,X'FFF0'                            XP133160
002A46  C5C0 2800            CLHI   R12,X'2800'                            XP133170
002A4A  2135        T10R4B   BNES   T10R4                                  XP133180
002A4C  9D23        T10L2A   SSR    R2,R3          GET STATUS FROM DEVICE  XP133190
002A4E  5530 3F50            CL     R3,REG3        PROPER STATUS SAVED ?   XP133200
002A52  2334                 BES    T10C                                   XP133210
002A54  24D4        T10R4    LIS    R13,4          ERROR 0A04 - BAD SINT PSW SWAP ****  XP133220
002A56  4300 2B0A            B      T10R                                   XP133230
                    *                                                      XP133240
002A5A  D100 3F84   T10C     LM     R0,REG10       RESTORE REGISTERS       XP133250
002A5E  E630 2A94            LA     R3,T10R2       RESTORE ERROR POINTER   XP133260
002A62  4034 0000            STH    R3,0(R4)       FOR DEVICE ADDRESS TESTED  XP133270
002A66  2611                 AIS    R1,1           NEXT DEVICE ADDRESS     XP133280
002A68  C510 0100            CLHI   R1,X'100'      IF 256, LAST DEVICE TESTED  XP133290
002A6C  4330 2A98            BE     T10F3                                  XP133300
002A70  2642                 AIS    R4,2           INCREMENT THE SERVICE POINTER  XP133310
002A72  E630 2A0E   T10FF    LA     R3,T10INT                              XP133320
002A76  4034 0000            STH    R3,0(R4)                               XP133330
002A7A  4010 2A8E            STH    R1,T10DEV                              XP133340
002A7E  D000 3F84            STM    R0,REG10       PRESERVE CONTENTS OF REG SET F  XP133350
002A82  C200 3988   T10SNT   LPSW   T10P3          STAT = 40F0, LOC = T10L3  XP133360
002A86  24D3        T10R3    LIS    R13,3          ERROR 0A03 - HW EXT INT BY SINT ***  XP133370
002A88  4300 2B0A   T10RR    B      T10R                                   XP133380
002A8C  E200        T10L3    DC     X'E200'        SINT                    XP133390
002A8E  0000        T10DEV   DC     X'0'           INTRPT DEV.ADR.         XP133400
002A90  24D1        T10R1    LIS    R13,1          ERROR 0A01 - NO INTPT BY SINT ****  XP133410
002A92  2205                 BS     T10RR                                  XP133420
002A94  24D2        T10R2    LIS    R13,2          ERROR 0A02 - BAD SERVICE PTR, SINT  XP133430
002A96  2207                 BS     T10RR                                  XP133440
                    *                                                      XP133450
                    *        NO ERR. IN SINT                               XP133460
                    *                                                      XP133470
002A98  E600 0C9E   T10F3    LA     R0,DEVERR      RESTORE ERR.ADR."DEVERR" AT  XP133480
002A9C  4004 0000            STH    R0,0(R4)       LOCATIONS X'D0' THRU X'2CE'  XP133490
002AA0  2742                 SIS    R4,2                                   XP133500
002AA2  C540 00CE            CLHI   R4,X'CE'                               XP133510
002AA6  2037                 BNES   T10F3                                  XP133520
                    *                                                      XP133530
002AA8  E630 0C92            LA     R3,XINTHW      RESTORE ERROR PTR, HW MODE EXT INT.  XP133540
002AAC  4030 0046            STH    R3,X'46'                               XP133550
                    **       CHECK ILLEGAL INSTRUCTION INTERRUPT           XP133560
                    **       ILLEGL = ADDRESS OF ILLEGAL INSTRUCTION       XP133570
                    **       ILGINT  =  ADDRESS OF ILLEGAL INSTR. INTPT. HANDLER  XP133580
002AB0  E640 387E            LA     R4,T10M70                              XP133590
002AB4  D300 1184            LB     R0,CPUNO       LOOK FOR DCS OPTION     XP133600
002AB8  C500 0038            CLHI   R0,C'8'                                XP133610
002ABC  2133                 BNES   T10H                                   XP133620
002ABE  E640 3881            LA     R4,T10M80      DCS INSTRUCTION LEGAL   XP133630
                    *                                                      XP133640
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002AC2  C800 0000          3365  T10H    LHI   R0,0                                                    XP133650
002AC6  5000 0030          3366          ST    R0,X'30'          ILLG.INTRPT.NEW PSW                   XP133660
002ACA  E610 2AEA          3367          LA    R1,T10ILG                                               XP133670
002ACE  5010 0034          3368          ST    R1,X'34'          SELECT FW.MODE.REG.SET 0              XP133680
002AD2  D314 0000          3369          LB    R1,0(R4)          R1 = ILG. INSTR. OP CODE              XP133690
002AD6  D210 2ADE          3370          STB   R1,ILLEGL                                               XP133700
002ADA  C200 3990          3371          LPSW  T10M                                                    XP133710
002ADE  0000               3372  ILLEGL  DC    X'0'                                                    XP133720
002AE0  0200               3373          NOPR                                                          XP133730
002AE2  0200               3374          NOPR                                                          XP133740
002AE4  24D5               3375  T10R5   LIS   R13,5             ERROR 0A05 - NO INTPT BY ILLEG INSTR  XP133750
002AE6  4300 2B0A          3376          B     T10R                                                    XP133760
                           3377  *                                                                     XP133770
        0000 2AEA          3378  T10ILG  EQU   *                 ILG.INSTR.INTRPT. DETECTED            XP133780
002AEA  9500               3379          EPSR  R0,R0             R0 = NEW PSW                          XP133790
002AEC  D0E0 3F7C          3380          STM   R14,REGE          STORE FW.REG.14,15 OF SET 0           XP133800
002AF0  55E0 3990          3381          CL    R14,T10M          CHECK OLD PSW STORED                  XP133810
002AF4  2137               3382          BNES  T10R6                                                   XP133820
002AF6  C5F0 2ADE          3383          CLHI  R15,ILLEGL                                              XP133830
002AFA  2134               3384          BNES  T10R6                                                   XP133840
002AFC  5500 0030          3385  T10E    CL    R0,X'30'          CHECK NEW PSW                         XP133850
002B00  2339               3386          BES   T10F                                                    XP133860
002B02  C800 00F0          3387  T10R6   LHI   R0,X'F0'          ERROR 0A06 - PSW SWAP NOT OKAY        XP133870
002B06  9510               3388          EPSR  R1,R0                                                   XP133880
002B08  24D6               3389          LIS   R13,6             ERR 6 IF PSW SWAP NOT OK              XP133890
002B0A  D2D0 1181          3390  T10R    STB   R13,ERRNO                                               XP133900
002B0E  4300 0CC8          3391          B     ERROR                                                   XP133910
002B12  C800 00F0          3392  T10F    LHI   R0,X'F0'          SEL REG SET F                         XP133920
002B16  9510               3393          EPSR  R1,R0                                                   XP133930
002B18  2641               3394  T10J    AIS   R4,1                                                    XP133940
002B1A  C540 38EA          3395          CLHI  R4,LSTILG                                               XP133950
002B1E  4230 2AC2          3396          BNE   T10H                                                    XP133960
002B22  E610 0C84          3397          LA    R1,ILGINT                                               XP133970
002B26  5010 0034          3398          ST    R1,X'34'          RESTORE ERROR POINTER                 XP133980
002B2A  C200 3998          3399          LPSW  T10Z              STAT = X'70F0', LOC = A(T10END)       XP133990
002B2E  4300 2B32          3400  T10END  B     TEST11                                                  XP134000
                           3401  *                                                                     XP134010
                           3402  *                                                                     XP134020
                           3403  *                                                                     XP134030
        0000 2B32          3404  TEST11  EQU   *                                                       XP134040
                           3405  ************************************************************          XP134050
002B32  240B               3406          LIS   R0,11                                                   XP134060
002B34  D200 1180          3407          STB   R0,TESTNO                                               XP134070
002B38  E610 2D9C          3408          LA    R1,TEST12                                               XP134080
002B3C  5010 39C0          3409          ST    R1,NXTST                                                XP134090
                           3410  **  SRL   ,SLL   ,SRA   ,SLA   ,RRL   ,RLL                            XP134100
                           3411  ** (T11R1 ,T11R2 ,T11R3 ,T11R4 ,T11R5       )                       XP134110
        0000 2B40          3412  SRL     EQU   *                                                       XP134120
002B40  E6F0 2BB0          3413  T11A    LA    R15,T11R1                                               XP134130
002B44  F840 AAB4 2D55     3414          LI    R4,Y'AAB42D55'    10101010101110100001011010101010101   XP134140
002B4A  5850 3EB4          3415          L     R5,FIVE                                                 XP134150
002B4E  2470               3416          LIS   R7,0                                                    XP134160
002B50  EC47 0001          3417          SRL   R4,1(R7)          SHIFT RIGHT 1                         XP134170
002B54  038F               3418          BFCR  8,R15             CVGL = 1010                           XP134180
002B56  032F               3419          BFCR  2,R15                                                   XP134190
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002B58  025F             3420          BTCR  5,R15                                    XP134200
002B5A  F540 555A 16AA   3421          CLI   R4,Y'555A16AA'                           XP134210
002B60  023F             3422          BNER  R15                                      XP134220
002B62  2471             3423          LIS   R7,1                                     XP134230
002B64  EC47 0001        3424          SRL   R4,1(R7)          SHIFT RIGHT 2          XP134240
002B68  038F             3425          BFCR  8,R15             CVGL = 1010            XP134250
002B6A  032F             3426          BFCR  2,R15                                    XP134260
002B6C  025F             3427          BTCR  5,R15                                    XP134270
002B6E  F540 1556 85AA   3428          CLI   R4,Y'155685AA'                           XP134280
002B74  023F             3429          BNER  R15                                      XP134290
002B76  EC47 0003        3430          SRL   R4,3(R7)          SHIFT RIGHT 4          XP134300
002B7A  038F             3431          BFCR  8,R15             CC = 1010              XP134310
002B7C  032F             3432          BFCR  2,R15                                    XP134320
002B7E  025F             3433          BTCR  5,R15                                    XP134330
002B80  F540 0155 685A   3434          CLI   R4,Y'0155685A'                           XP134340
002B86  023F             3435          BNER  R15                                      XP134350
002B88  2475             3436          LIS   R7,5                                     XP134360
002B8A  EC47 0003        3437          SRL   R4,3(R7)          SHIFT RIGHT 8          XP134370
002B8E  02DF             3438          BTCR  13,R15            CC = 0010              XP134380
002B90  032F             3439          BFCR  2,R15                                    XP134390
002B92  F540 0001 5568   3440          CLI   R4,Y'00015568'                           XP134400
002B98  023F             3441          BNER  R15                                      XP134410
002B9A  F890 AA95 7355   3442          LI    R9,Y'AA957355'                           XP134420
002BA0  EC97 000B        3443          SRL   R9,11(R7)         SHIFT RIGHT 16         XP134430
002BA4  02DF             3444          BTCR  13,R15                                   XP134440
002BA6  032F             3445          BFCR  2,R15             CC = 0010              XP134450
002BA8  F590 0000 AA95   3446          CLI   R9,Y'AA95'                               XP134460
002BAE  2334             3447          BES   T11B                                     XP134470
002BB0  24D1             3448  T11R1   LIS   R13,1             ERROR 0B01, SRL  *****  XP134480
002BB2  4300 2D90        3449          B     T11R                                     XP134490
        0000 2BB6        3450  SLL     EQU   *                                        XP134500
002BB6  E6F0 2C20        3451  T11B    LA    R15,T11R2                                XP134510
002BBA  F830 D2BB 2D55   3452          LI    R3,Y'D2BB2D55'                           XP134520
002BC0  2481             3453          LIS   R8,1                                     XP134530
002BC2  ED38 0000        3454          SLL   R3,0(R8)          SHIFT LEFT 1           XP134540
002BC6  038F             3455          BFCR  8,R15                                    XP134550
002BC8  031F             3456          BFCR  1,R15             CC = 1001              XP134560
002BCA  026F             3457          BTCR  6,R15                                    XP134570
002BCC  F530 A576 5AAA   3458          CLI   R3,Y'A5765AAA'                           XP134580
002BD2  023F             3459          BNER  R15                                      XP134590
002BD4  ED38 0001        3460          SLL   R3,1(R8)          SHIFT LEFT 2           XP134600
002BD8  02EF             3461          BTCR  14,R15            CC = 0001              XP134610
002BDA  031F             3462          BFCR  1,R15                                    XP134620
002BDC  F530 95D9 6AA8   3463          CLI   R3,Y'95D96AA8'                           XP134630
002BE2  023F             3464          BNER  R15                                      XP134640
002BE4  ED38 0003        3465          SLL   R3,3(R8)          SHIFT LEFT 4           XP134650
002BE8  038F             3466          BFCR  8,R15             CC = 1010              XP134660
002BEA  032F             3467          BFCR  2,R15                                    XP134670
002BEC  025F             3468          BTCR  5,R15                                    XP134680
002BEE  F530 5D96 AA80   3469          CLI   R3,Y'5D96AA80'                           XP134690
002BF4  023F             3470          BNER  R15                                      XP134700
002BF6  2487             3471          LIS   R8,7                                     XP134710
002BF8  ED30 0008        3472          SLL   R3,8                                     XP134720
002BFC  038F             3473          BFCR  8,R15             CC = 1001              XP134730
002BFE  031F             3474          BFCR  1,R15                                    XP134740
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002C00  026F                    3475
002C02  F530 96AA 8000          3476
002C08  213C                    3477
002C0A  F830 96AA 67A5          3478
002C10  ED38 0009               3479
002C14  02DF                    3480
002C16  032F                    3481
002C18  F530 67A5 0000          3482
002C1E  2334                    3483
002C20  24D2                    3484  T11R2   LIS   R13,2          ERROR 0B02, SLL      *****
002C22  4300 2D90               3485          B     T11R
        0000 2C26               3486  SRA     EQU   *
002C26  E6F0 2C92               3487  T11C    LA    R15,T11R3
002C2A  F860 4576 6729          3488          LI    R6,Y'45766729'
002C30  EE60 0001               3489          SRA   R6,1            SHIFT RIGHT 1
002C34  038F                    3490          BFCR  8,R15
002C36  032F                    3491          BFCR  2,R15           CC = 1010
002C38  025F                    3492          BTCR  5,R15
002C3A  F560 22BB 3394          3493          CLI   R6,Y'22BB3394'
002C40  023F                    3494          BNER  R15
002C42  2482                    3495          LIS   R8,2
002C44  EE68 0000               3496          SRA   R6,0(R8)        SHIFT RIGHT 2
002C48  02DF                    3497          BTCR  13,R15          CC = 0010
002C4A  032F                    3498          BFCR  2,R15
002C4C  F560 08AE CCE5          3499          CLI   R6,Y'08AECCE5'
002C52  023F                    3500          BNER  R15
002C54  F840 AB0F 148A          3501          LI    R4,Y'AB0F148A'
002C5A  EE48 0002               3502          SRA   R4,2(R8)        SHIFT RIGHT 4
002C5E  038F                    3503          BFCR  8,R15           CC = 1001
002C60  031F                    3504          BFCR  1,R15
002C62  026F                    3505          BTCR  6,R15
002C64  F540 FAB0 F148          3506          CLI   R4,Y'FAB0F148'
002C6A  023F                    3507          BNER  R15
002C6C  EE48 0006               3508          SRA   R4,6(R8)        SHIFT RIGHT 8
002C70  02EF                    3509          BTCR  14,R15          CC = 0001
002C72  031F                    3510          BFCR  1,R15
002C74  F540 FFFA B0F1          3511          CLI   R4,Y'FFFAB0F1'
002C7A  023F                    3512          BNER  R15
002C7C  F860 730E 0000          3513          LI    R6,Y'730E0000'
002C82  EE60 0010               3514          SRA   R6,16           SHIFT RIGHT 16
002C86  02DF                    3515          BTCR  13,R15          CC = 0010
002C88  032F                    3516          BFCR  2,R15
002C8A  F560 0000 730E          3517          CLI   R6,Y'730E'
002C90  2334                    3518          BES   T11D
002C92  24D3                    3519  T11R3   LIS   R13,3          ERROR 0B03, SRA      *****
002C94  4300 2D90               3520          B     T11R
        0000 2C98               3521  SLA     EQU   *
002C98  E6F0 2D02               3522  T11D    LA    R15,T11R4
002C9C  F8C0 496C B5E3          3523          LI    R12,Y'496CB5E3'
002CA2  EFC0 0001               3524          SLA   R12,1           SHIFT 1
002CA6  038F                    3525          BFCR  8,R15           CC = 1010
002CA8  032F                    3526          BFCR  2,R15
002CAA  025F                    3527          BTCR  5,R15
002CAC  F5C0 12D9 6BC6          3528          CLI   R12,Y'12D96BC6'
002CB2  023F                    3529          BNER  R15
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002CB4   EFC0 0002                   SLA    R12,2              SHIFT 2                        XP135300
002CB8   02DF                        BTCR   13,R15             CC = 0010                      XP135310
002CBA   032F                        BFCR   2,R15                                             XP135320
002CBC   F5C0 4B65 AF18              CLI    R12,Y'4B65AF18'                                   XP135330
002CC2   023F                        BNER   R15                                               XP135340
002CC4   F860 96CA AF18              LI     R6,Y'96CAAF18'                                    XP135350
002CCA   EF68 0002                   SLA    R6,2(R8)           SHIFT 4                        XP135360
002CCE   031F                        BFCR   1,R15                                             XP135370
002CD0   02EF                        BTCR   14,R15             CC = 0001                      XP135380
002CD2   F560 ECAA F180              CLI    R6,Y'ECAAF180'                                    XP135390
002CD8   023F                        BNER   R15                                               XP135400
002CDA   EF68 0006                   SLA    R6,6(R8)           SHIFT 8                        XP135410
002CDE   038F                        BFCR   8,R15              CC = 1001                      XP135420
002CE0   031F                        BFCR   1,R15                                             XP135430
002CE2   026F                        BTCR   6,R15                                             XP135440
002CE4   F560 AAF1 8000              CLI    R6,Y'AAF18000'                                    XP135450
002CEA   023F                        BNER   R15                                               XP135460
002CEC   F890 AAF1 550E              LI     R9,Y'AAF1550E'                                    XP135470
002CF2   EF90 0010                   SLA    R9,16              SHIFT 16                       XP135480
002CF6   02EF                        BTCR   14,R15             CC = 0001                      XP135490
002CF8   031F                        BFCR   1,R15                                             XP135500
002CFA   F590 D50E 0000              CLI    R9,Y'D50E0000'                                    XP135510
002D00   2334                        BES    T11E                                              XP135520
002D02   24D4                T11R4   LIS    R13,4              ERROR 0B04, SLA         *****  XP135530
002D04   4300 2D90                   B      T11R                                              XP135540
         0000 2D08           RLL     EQU    *                                                 XP135550
         0000 2D08           RRL     EQU    *                                                 XP135560
002D08   E6F0 2D8E           T11E    LA     R15,T11R5          ERROR RETURN                   XP135570
002D0C   F860 8F70 E6A0              LI     R6,Y'8F70E6A0'                                    XP135580
002D12   0846                        LR     R4,R6                                             XP135590
002D14   2411                        LIS    R1,1                                              XP135600
002D16   EB61 0000                   RLL    R6,0(R1)           ROTATE 1                       XP135610
002D1A   032F                        BFCR   2,R15              CC = 0010                      XP135620
002D1C   02DF                        BTCR   13,R15                                            XP135630
002D1E   F560 1EE1 CD41              CLI    R6,Y'1EE1CD41'                                    XP135640
002D24   023F                        BNER   R15                                               XP135650
002D26   EA61 0000                   RRL    R6,0(R1)           ROTATE 1                       XP135660
002D2A   031F                        BFCR   1,R15              CC = 0001                      XP135670
002D2C   02EF                        BTCR   14,R15                                            XP135680
002D2E   0546                        CLR    R4,R6                                             XP135690
002D30   023F                        BNER   R15                                               XP135700
002D32   EB61 0001                   RLL    R6,1(R1)           ROTATE 2                       XP135710
002D36   032F                        BFCR   2,R15              CC = 0010                      XP135720
002D38   02DF                        BTCR   13,R15                                            XP135730
002D3A   F560 3DC3 9A82              CLI    R6,Y'3DC39A82'                                    XP135740
002D40   023F                        BNER   R15                                               XP135750
002D42   EA60 0002                   RRL    R6,2               ROTATE 2                       XP135760
002D46   02EF                        BTCR   14,R15             CC = 0001                      XP135770
002D48   031F                        BFCR   1,R15                                             XP135780
002D4A   0546                        CLR    R4,R6                                             XP135790
002D4C   023F                        BNER   R15                                               XP135800
                             *                                                                XP135810
002D4E   EB61 0003                   RLL    R6,3(R1)           ROTATE 4 ,  R6=F70E6A08        XP135820
002D52   02EF                        BTCR   14,R15             CC = 0001                      XP135830
002D54   031F                        BFCR   1,R15                                             XP135840
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002D56  EB60 0008          3585           RLL   R6,8              ROTATE 8  , R6 = 0E6A08F7              XP135850
002D5A  02DF               3586           BTCR  13,R15            CC = 0010                              XP135860
002D5C  032F               3587           BFCR  2,R15                                                    XP135870
002D5E  EA61 0003          3588           RRL   R6,3(R1)          ROTATE 4, R6 = 70E6A08F                XP135880
002D62  02DF               3589           BTCR  13,R15            CC = 0010                              XP135890
002D64  032F               3590           BFCR  2,R15                                                    XP135900
002D66  EA61 0007          3591           RRL   R6,7(R1)          ROTATE 8,  R6 = 8F70E6A0               XP135910
002D6A  02EF               3592           BTCR  14,R15            CC = 0001                              XP135920
002D6C  031F               3593           BFCR  1,R15                                                    XP135930
002D6E  0546               3594           CLR   R4,R6             R4 = R6 = 8F70E6A0  ?                  XP135940
002D70  023F               3595           BNER  R15                                                      XP135950
002D72  EB60 0010          3596           RLL   R6,16             ROTATE 16 , R6 = E6A08F70              XP135960
002D76  02EF               3597           BTCR  14,R15            CC = 0001                              XP135970
002D78  031F               3598           BFCR  1,R15                                                    XP135980
002D7A  F560 E6A0 8F70     3599           CLI   R6,Y'E6A08F70'                                           XP135990
002D80  023F               3600           BNER  R15                                                      XP136000
002D82  EA61 000F          3601           RRL   R6,15(R1)         ROTATE 16  ,  R6 = 8F70E6A0            XP136010
002D86  02EF               3602           BTCR  14,R15            CC = 0001                              XP136020
002D88  031F               3603           BFCR  1,R15                                                    XP136030
002D8A  0546               3604           CLR   R4,R6             R4 = R6 = 8F70E6A0  ?                  XP136040
002D8C  2336               3605           BES   T11END                                                   XP136050
002D8E  24D5               3606  T11R5    LIS   R13,5             ERROR 0B05, RRL, RLL          *****    XP136060
002D90  D2D0 1181          3607  T11R     STB   R13,ERRNO                                                XP136070
002D94  4300 0CC8          3608           B     ERROR                                                    XP136080
002D98  4300 2D9C          3609  T11END   B     TEST12                                                   XP136090
                           3610  *                                                                      XP136100
                           3611  *                                                                      XP136110
                           3612  *                                                                      XP136120
        0000 2D9C          3613  TEST12   EQU   *                 MULTIPLY/DIVIDE TEST                   XP136130
                           3614  ********************************************************               XP136140
002D9C  240C               3615           LIS   R0,12                                                    XP136150
002D9E  D200 1180          3616           STB   R0,TESTNO                                                XP136160
002DA2  E610 3088          3617           LA    R1,TEST13                                                XP136170
002DA6  5010 39C0          3618           ST    R1,NXTST                                                 XP136180
                           3619  **  T12MUTBL  =  CONTAINS THE OPERANDS USED IN MULTIPLY TEST ,          XP136190
                           3620  **  *         =  OP1 , OP2 , RESULT-HI , RESULT-LO (4 WORDS/ENTRY)     XP136200
                           3621  **  R12,R13  =  ACTUAL RESULT OBTAINED AFTER MULTIPLICATION            XP136210
                           3622  **  R11       =  CONDITION CODE PRIOR TO MULTIPLICATION                XP136220
                           3623  **  R14       =  CONDITION CODE AFTER MULTIPLICATION                   XP136230
        0000 4184          3624  MINUSA   EQU   BUF3              STORE  -(OP1)                          XP136240
        0000 4188          3625  MINUSB   EQU   BUF3+4            STORE  -(OP2)                          XP136250
        0000 4190          3626  T12MOP2  EQU   BUF3+12           STORE  OP2                             XP136260
        0000 2DAA          3627  M        EQU   *                                                       XP136270
        0000 2DAA          3628  MR       EQU   *                                                       XP136280
002DAA  E650 3B14          3629           LA    R5,T12MUTBL       R5 = ADR.OF TABLE OF OPERANDS          XP136290
002DAE  2408               3630           LIS   R0,8              R0 = 8 , PRINT 8 REG.                  XP136300
002DB0  5000 3F84          3631           ST    R0,REG10                                                 XP136310
002DB4  D175 0000          3632  T12M1A   LM    R7,0(R5)          R7=OP1;R8=OP2;R9,R10=RESULT            XP136320
002DB8  2460               3633           LIS   R6,0              R6=ERR.NO                              XP136330
002DBA  41F0 3020          3634           BAL   R15,T12M1         CHECK  (A * B) , MR                    XP136340
002DBE  2136               3635           BNZS  T12MR             ERROR 01 THRU 08, MR          *****    XP136350
002DC0  41F0 3012          3636           BAL   R15,T12M2         CHECK (A * B) , M                      XP136360
002DC4  2339               3637           BZS   T12M2A                                                   XP136370
002DC6  CA60 0010          3638  T12R11   AHI   R6,X'10'          ERROR   11  THRU 18  ,  M      *****    XP136380
002DCA  D260 1181          3639  T12MR    STB   R6,ERRNO                                                 XP136390
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002DCE  D070 3F88            3640          STM   R7,REG11          STORE REG.7 THRU 15 TO PRINT          XP136400
002DD2  4300 0CD2            3641          B     ERRB                                                    XP136410
002DD6  0778                 3642  T12M2A  XR    R7,R8                                                   XP136420
002DD8  0787                 3643          XR    R8,R7             R8 = OLD R7 = OP1                     XP136430
002DDA  0778                 3644          XR    R7,R8             R7 = OLD R8 = OP2                     XP136440
002DDC  41F0 3020            3645          BAL   R15,T12M1         CHECK (B * A) ,MR                     XP136450
002DE0  2038                 3646          BNZS  T12MR             ERROR   02  ,  MR             *****   XP136460
002DE2  41F0 3012            3647          BAL   R15,T12M2         CHECK (B * A) , M                     XP136470
002DE6  4230 2DC6            3648          BNZ   T12R11            ERROR   12  ,  M              *****   XP136480
002DEA  D175 0000            3649  T12M3A  LM    R7,0(R5)                                                XP136490
002DEE  F570 8000 0000       3650          CLI   R7,Y'80000000'                                          XP136500
002DF4  2334                 3651          BES   T12MP1                                                  XP136510
002DF6  F580 8000 0000       3652          CLI   R8,Y'80000000'                                          XP136520
002DFC  4330 2EA0            3653  T12MP1  BE    T12MP                                                   XP136530
                             3654  *                                                                     XP136540
002E00  25F1                 3655          LCS   R15,1                                                   XP136550
002E02  077F                 3656          XR    R7,R15                                                  XP136560
002E04  2671                 3657          AIS   R7,1              R7 = (-OP1) = (-A)                    XP136570
002E06  076F                 3658          XR    R8,R15                                                  XP136580
002E08  2681                 3659          AIS   R8,1              R8 = (-OP2) =(-B)                     XP136590
002E0A  5070 9376 =004184    3660          ST    R7,MINUSA                                               XP136600
002E0E  5080 9376 =004188    3661          ST    R8,MINUSB                                               XP136610
                             3662  *                                                                     XP136620
002E12  41F0 3020            3663          BAL   R15,T12M1         CHECK  ( -A) X (-B) , MR              XP136630
002E16  4230 2DCA            3664          BNZ   T12MR             ERROR   03  ,  MR             *****   XP136640
                             3665  *                                                                     XP136650
002E1A  41F0 3012            3666          BAL   R15,T12M2         CHECK (-A) X (-B) , M                 XP136660
002E1E  4230 2DC6            3667          BNZ   T12R11            ERROR   13  ,  M              *****   XP136670
002E22  0778                 3668  T12M4A  XR    R7,R8                                                   XP136680
002E24  0787                 3669          XR    R8,R7             R8 = OLD R7 = (-A)                    XP136690
002E26  0778                 3670          XR    R7,R8             R7 = OLD R8 = (-B)                    XP136700
002E28  41F0 3020            3671          BAL   R15,T12M1         CHECK (-B) X (-A) , MR                XP136710
002E2C  4230 2DCA            3672          BNZ   T12MR             ERROR   04  ,  MR             *****   XP136720
002E30  41F0 3012            3673          BAL   R15,T12M2         CHECK (-B) X (-A) , M                 XP136730
002E34  4230 2DC6            3674          BNZ   T12R11            ERROR   14  ,  M              *****   XP136740
002E38  D175 0000            3675  T12M5A  LM    R7,0(R5)                                                XP136750
002E3C  25F1                 3676          LCS   R15,1             COMPLEMENT  THE RESULT                XP136760
002E3E  079F                 3677          XR    R9,R15                                                  XP136770
002E40  07AF                 3678          XR    R10,R15                                                 XP136780
002E42  26A1                 3679          AIS   R10,1                                                   XP136790
002E44  2382                 3680          BNCS  T12M5B                                                  XP136800
002E46  2691                 3681          AIS   R9,1                                                    XP136810
002E48  5880 933C =004188    3682  T12M5B  L     R8,MINUSB         R7=A,R8=-B,R9,R10=-(A*B)              XP136820
002E4C  41F0 3020            3683          BAL   R15,T12M1         CHECK (A) X (-B) , MR                 XP136830
002E50  4230 2DCA            3684          BNZ   T12MR             ERROR   05  ,  MR             *****   XP136840
002E54  41F0 3012            3685          BAL   R15,T12M2         CHECK (A) X (-B) , M                  XP136850
002E58  4230 2DC6            3686          BNZ   T12R11            ERROR   15  ,  M              *****   XP136860
002E5C  0778                 3687  T12M6A  XR    R7,R8                                                   XP136870
002E5E  0787                 3688          XR    R8,R7             R8 = OLD R7 = (A)                     XP136880
002E60  0778                 3689          XR    R7,R8             R7 = OLD R8 = (-B)                    XP136890
002E62  41F0 3020            3690          BAL   R15,T12M1         CHECK  (-B) X (A)  ,  MR               XP136900
002E66  4230 2DCA            3691          BNZ   T12MR             ERROR   06  ,  MR             *****   XP136910
002E6A  41F0 3012            3692          BAL   R15,T12M2         CHECK  (-B) X (A)  ,  M                XP136920
002E6E  4230 2DC6            3693          BNZ   T12R11            ERROR   16  ,  M              *****   XP136930
002E72  5870 930E =004184    3694  T12M7A  L     R7,MINUSA         R7 = (-A)                             XP136940
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  002E76   5885 0004              3695           L      R8,4(R5)         R8 = (B)                             XP136950
  002E7A   41F0 3020              3696           BAL    R15,T12M1        CHECK (-A) X(B) , MR                 XP136960
  002E7E   4230 2DCA              3697           BNZ    T12MR            ERROR   07  ,  MR           *****    XP136970
  002E82   41F0 3012              3698           BAL    R15,T12M2                                             XP136980
  002E86   4230 2DC6              3699           BNZ    T12R11           ERROR   17  ,  M            *****    XP136990
  002E8A   0778                   3700  T12M8A   XR     R7,R8                                                 XP137000
  002E8C   0787                   3701           XR     R8,R7            R8 = OLD R7 = (-A)                   XP137010
  002E8E   0778                   3702           XR     R7,R8            R7 = OLD R8 = (B)                    XP137020
  002E90   41F0 3020              3703           BAL    R15,T12M1        CHECK  (B) X (-A)  ,  MR             XP137030
  002E94   4230 2DCA              3704           BNZ    T12MR            ERROR   08  ,  MR           *****    XP137040
  002E98   41F0 3012              3705           BAL    R15,T12M2        CHECK  (B) X (-A)   ,  M             XP137050
  002E9C   4230 2DC6              3706           BNZ    T12R11           ERROR   18  ,  M            *****    XP137060
                                  3707  *                                                                     XP137070
  002EA0   CA50 0010              3708  T12MP    AHI    R5,16                                                 XP137080
  002EA4   C550 3BD4              3709           CLHI   R5,T12MTBND                                           XP137090
  002EA8   4230 2DB4              3710           BNE    T12M1A                                                XP137100
                                  3711  **   CHECK HALFWORD SIGN EXTENSION , ETC - MH, MHR                    XP137110
           0000 2EAC              3712  MH       EQU    *                                                     XP137120
           0000 2EAC              3713  MHR      EQU    *                                                     XP137130
           0000 2EAC              3714  T12MH1   EQU    *                                                     XP137140
  002EAC   E650 3BD4              3715           LA     R5,T12MHTBL      ADDRESS OF DATA                      XP137150
  002EB0   2408                   3716           LIS    R0,8             PRINT 8 REGISTERS                    XP137160
  002EB2   5000 3F84              3717           ST     R0,REG10                                              XP137170
  002EB6   C860 0021              3718           LHI    R6,X'21'         ERROR BASE = 21                      XP137180
  002EBA   D175 0000              3719  T12MH1A  LM     R7,0(R5)         DATA                                 XP137190
  002EBE   07CC                   3720           XR     R12,R12                                               XP137200
  002EC0   41F0 2F0C              3721           BAL    R15,T12M9                                             XP137210
  002EC4   2337                   3722           BZS    T12MH2           NO ERRORS YET                        XP137220
  002EC6   D260 1181              3723  T12R     STB    R6,ERRNO         ERROR 0C2X, 0C3X - MHR, MH  *****    XP137230
  002ECA   D070 3F88              3724           STM    R7,REG11                                              XP137240
  002ECE   4300 0CD2              3725           B      ERRB                                                  XP137250
           0000 2ED2              3726  T12MH2   EQU    *                                                     XP137260
  002ED2   D175 0000              3727           LM     R7,0(R5)         NEXT DATA SET                        XP137270
  002ED6   07CC                   3728           XR     R12,R12                                               XP137280
  002ED8   41F0 2EF6              3729           BAL    R15,T12M10                                            XP137290
  002EDC   2334                   3730           BZS    T12MH3                                                XP137300
  002EDE   CA60 0010              3731           AHI    R6,X'10'         ERROR 0C3X ...                       XP137310
  002EE2   220E                   3732           BS     T12R             (B   T12R)                           XP137320
  002EE4   2661                   3733  T12MH3   AIS    R6,1             ERROR 0C2X ...                       XP137330
  002EE6   CA50 0010              3734           AHI    R5,16            BUMP ADDRESS                         XP137340
  002EEA   C550 3C74              3735           CLHI   R5,T12MHTBD                                           XP137350
  002EEE   4280 2EBA              3736           BL     T12MH1A          DO ANOTHER SET                       XP137360
  002EF2   4300 2F1C              3737           B      T12DVD                                                XP137370
                                  3738  *                                                                     XP137380
  002EF6   08D7                   3739  T12M10   LR     R13,R7           R13 = R7 = OP1                       XP137390
  002EF8   5080 9294 =004190      3740           ST     R8,T12MOP2       OP2 = R8                             XP137400
  002EFC   95BB                   3741           EPSR   R11,R11          CC BEFORE                            XP137410
? 002EFE   4CD0 9290 =004192      3742           MH     R13,T12MOP2+2    R13 = OP1 * OP2                      XP137420
  002F02   95EE                   3743           EPSR   R14,R14          CC AFTER                             XP137430
  002F04   05BE                   3744           CLR    R11,R14          CC GOOD?                             XP137440
  002F06   023F                   3745           BNER   R15                                                   XP137450
  002F08   05AD                   3746           CLR    R10,R13          RESULT GOOD?                         XP137460
  002F0A   030F                   3747           BR     R15                                                   XP137470
  002F0C   08D7                   3748  T12M9    LR     R13,R7           R13 = R7 = OP1                       XP137480
  002F0E   95BB                   3749           EPSR   R11,R11          CC BEFORE                            XP137490
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? 002F10  0CD8                       MHR   R13,R8          R13 = OP1 * OP2                    XP137500
  002F12  95EE                       EPSR  R14,R14         CC AFTER                           XP137510
  002F14  05BE                       CLR   R11,R14         CC GOOD ?                          XP137520
  002F16  023F                       BNER  R15                                                XP137530
  002F18  05AD                       CLR   R10,R13         RESULT GOOD?                       XP137540
  002F1A  030F                       BR    R15                                                XP137550
                            *                                                                 XP137560
                            **  R8  = ADR. OF T12DVTBL  WHICH CONTAINS THE OPERANDS & RESULTS  XP137570
                            **  R6  = ERROR NO.                                               XP137580
          0000 4184         T12DVSR  EQU   BUF3        STORE DIVISOR IN MEMORY AT BUF3        XP137590
          0000 418C         T12INT   EQU   BUF3+8      1 IF ARTH. FAULT INTRPT.DETECTED       XP137600
          0000 4190         T12CNT   EQU   BUF3+12     1 IF ARTH. FAULT INTRPT.ENABLED        XP137610
                            **  R1  = 1 IF ARTH.FAULT INTRPT. IS EXPECTED                     XP137620
                            ************************************************************      XP137630
          0000 2F1C         D        EQU   *                                                  XP137640
          0000 2F1C         DR       EQU   *                                                  XP137650
  002F1C  E610 3080         T12DVD   LA    R1,T12AINT        ADDRESS OF INTPT HANDLER         XP137660
  002F20  5010 004C                  ST    R1,X'4C'          NEW PSW LOC                      XP137670
  002F24  C860 0000                  LHI   R6,0                                               XP137680
  002F28  5000 0048                  ST    R0,X'48'                                           XP137690
  002F2C  4060 9260 =004190          STH   R6,T12CNT         R6=0 NO ARTH. FAULT INTRPT       XP137700
  002F30  4060 9258 =00418C          STH   R6,T12INT         T12INT  = 1 IF INTRPT IS DETECTED  XP137710
  002F34  C800 00F0                  LHI   R0,X'F0'          DISABLE INTS., SEL REG SET F     XP137720
  002F38  9510                       EPSR  R1,R0                                              XP137730
  002F3A  E680 3C74         T12DV2   LA    R8,T12DVTBL                                        XP137740
  002F3E  D198 0000         T12DV3   LM    R9,0(R8)                                           XP137750
  002F42  0829                       LR    R2,R9                                              XP137760
  002F44  083A                       LR    R3,R10            R2,R3 = DIVIDEND                 XP137770
  002F46  D316 3D64                  LB    R1,T12DVFLG(R6)   R1 = 1,IF INTRPT.EXPECTED        XP137780
  002F4A  9544                       EPSR  R4,R4             R4 = PSW BEFORE DIVIDE           XP137790
  002F4C  1D2B                       DR    R2,R11            (R2,R3)/R11,R2=REM.,R3=QUOT.     XP137800
  002F4E  41E0 3036                  BAL   R14,T12DVCHK                                       XP137810
  002F52  233A                       BZS   T12D                                               XP137820
  002F54  CA60 0040                  AHI   R6,X'40'                                           XP137830
  002F58  D260 1181         T12R40   STB   R6,ERRNO          ERROR 40 THRU 4B. DR     *****   XP137840
  002F5C  2405              T12R45   LIS   R0,5              R0=5 , PRINT 5 REG. 1 THRU 5     XP137850
  002F5E  D000 3F84                  STM   R0,REG10          STORE REG.TO PRINT               XP137860
  002F62  4300 0CD2                  B     ERRB                                               XP137870
  002F66  0829              T12D     LR    R2,R9                                              XP137880
  002F68  083A                       LR    R3,R10            R2,R3 = DIVIDEND                 XP137890
  002F6A  9544                       EPSR  R4,R4                                              XP137900
  002F6C  5D28 0008                  D     R2,8(R8)          (R2,R3)/R11 ;R2=REM.,R3=QUOT.    XP137910
  002F70  41E0 3036                  BAL   R14,T12DVCHK                                       XP137920
  002F74  2335                       BZS   T12DAGN                                            XP137930
  002F76  CA60 0060         T12R60   AHI   R6,X'60'          ERROR 60 THRU 6B.  D     *****   XP137940
  002F7A  4300 2F58                  B     T12R40                                             XP137950
  002F7E  CA80 0014         T12DAGN  AHI   R8,20             R8 = ADR. OF NEXT ENTRY          XP137960
  002F82  2661                       AIS   R6,1              R6 = ERR.NO.                     XP137970
  002F84  C580 3D64                  CLHI  R8,T12DTBND                                        XP137980
  002F88  4230 2F3E                  BNE   T12DV3                                             XP137990
                            *                                                                 XP138000
  002F8C  7360 9200 =004190          LHL   R6,T12CNT                                          XP138010
  002F90  2139                       BNZS  T12CHKHW                                           XP138020
  002F92  2441                       LIS   R4,1                                               XP138030
  002F94  4040 91F8 =004190          STH   R4,T12CNT                                          XP138040
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  002F98   C810 10F0                  LHI   R1,X'10F0'         ENAB ARITH FLT INT.                      XP138050
  002F9C   9541                       EPSR  R4,R1                                                       XP138060
  002F9E   4300 2F3A                  B     T12DV2                                                      XP138070
                           *          CHECK HALFWORD DIVIDE OPERATIONS                                  XP138080
                           *                                                                            XP138090
           0000 2FA2       DH         EQU   *                                                           XP138100
           0000 2FA2       DHR        EQU   *                                                           XP138110
  002FA2   2460            T12CHKHW   LIS   R6,0               R6 = COUNT ERROR NO.                     XP138120
  002FA4   4060 91E8 =004190          STH   R6,T12CNT          T12CNT=0,DISABLE ARITH.INTRPT.           XP138130
  002FA8   C800 00F0                  LHI   R0,X'F0'           DISABLE ALL INTPTS.                      XP138140
  002FAC   9510                       EPSR  R1,R0                                                       XP138150
  002FAE   E680 3D70       T12HWD     LA    R8,T12DHTAB        R8 =ADR. DH,DHR OPERAND TABLE            XP138160
  002FB2   D1A8 0000       T12DHR     LM    R10,0(R8)                                                   XP138170
                           **  R10 = 32 BIT DIVIDEND, R11=DIVISOR ,R12=REMAINDER,R13=QUOTIENT           XP138180
  002FB6   082A                       LR    R2,R10             R2 = R10 = 32 BIT DIVIDEND               XP138190
  002FB8   0733                       XR    R3,R3                                                       XP138200
  002FBA   D316 3E70                  LB    R1,T12DHFLG(R6)    R1=1,IF INTRPT.IS EXPECTED               XP138210
  002FBE   9544                       EPSR  R4,R4              R4 = PSW BEFORE DIVIDE                   XP138220
? 002FC0   0D2B                       DHR   R2,R11             (R2)/R11; R2=REM.,R3=QUOT.               XP138230
  002FC2   41E0 3036                  BAL   R14,T12DVCHK       CHECK THE RESULT                         XP138240
  002FC6   2335                       BZS   T12DH                                                       XP138250
  002FC8   CA60 0080       T12R80     AHI   R6,X'80'           ERROR 80 THRU 8B,  DHR         *****     XP138260
  002FCC   4300 2F58                  B     T12R40                                                      XP138270
                           *                                                                            XP138280
                           *                                                                            XP138290
  002FD0   082A            T12DH      LR    R2,R10             R2 = R10 = 32 BIT DIVIDEND               XP138300
  002FD2   0733                       XR    R3,R3                                                       XP138310
  002FD4   9544                       EPSR  R4,R4              R4 = PSW BEFORE DIVIDE                   XP138320
? 002FD6   4D28 0006                  DH    R2,6(R8)                                                    XP138330
  002FDA   41E0 3036                  BAL   R14,T12DVCHK       CHECK THE RESULT                         XP138340
  002FDE   2335                       BZS   T12DHOVR                                                    XP138350
  002FE0   CA60 0090       T12R90     AHI   R6,X'90'           ERROR 90 THRU 9B,  DH          *****     XP138360
  002FE4   4300 2F58                  B     T12R40                                                      XP138370
                           *                                                                            XP138380
                           *                                                                            XP138390
  002FE8   CA80 0010       T12DHOVR   AHI   R8,16                                                       XP138400
  002FEC   CA60 0001                  AHI   R6,1               NEXT OPS, FLAG                           XP138410
  002FF0   C580 3E70                  CLHI  R8,T12DHTND                                                 XP138420
  002FF4   4280 2FB2                  BL    T12DHR                                                      XP138430
                           *                                                                            XP138440
  002FF8   4860 9194 =004190          LH    R6,T12CNT                                                   XP138450
  002FFC   2139                       BNZS  T12END                                                      XP138460
  002FFE   2441                       LIS   R4,1                                                        XP138470
  003000   4040 918C =004190          STH   R4,T12CNT          T12CNT = 1,INTRPT. IS ENABLED            XP138480
  003004   C810 10F0                  LHI   R1,X'10F0'         ENAB ARITH FLT INTPT, REG SET F          XP138490
  003008   9541                       EPSR  R4,R1                                                       XP138500
  00300A   4300 2FAE                  B     T12HWD                                                      XP138510
                           *                                                                            XP138520
                           *                                                                            XP138530
  00300E   4300 3088       T12END     B     TEST13                                                      XP138540
                           *                                                                            XP138550
                           *                                                                            XP138560
                           **  SUBROUTINES USED IN TEST 12                                              XP138570
                           ******************************************************                       XP138580
  003012   08D7            T12M2      LR    R13,R7             R13= R7 = OP1                            XP138590
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PREVIOUS WARNING ON PAGE 70

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003014  5080 9178 =004190   3860           ST    R8,T12MOP2          T12MOP2 = R8 = OP2                          XP138600
003018  95BB                3861           EPSR  R11,R11             R11= PSW BEFORE MULTIPLICATION              XP138610
00301A  5CC0 9172 =004190   3862           M     R12,T12MOP2         R12= (OP1) X (OP2)                          XP138620
00301E  2305                3863           BS    T12M3                                                           XP138630
003020  08D7                3864  T12M1    LR    R13,R7              R13 = R7 = OP1                              XP138640
003022  2661                3865           AIS   R6,1                R5=ERR.NO  1  THRU 8                        XP138650
003024  95BB                3866           EPSR  R11,R11                                                         XP138660
003026  1CC8                3867           MR    R12,R8              R12,R13 = (OP1) X (OP2)                     XP138670
003028  95EE                3868  T12M3    EPSR  R14,R14                                                         XP138680
00302A  05BE                3869           CLR   R11,R14             COND. CODE MUST BE UNCHANGED                XP138690
00302C  023F                3870           BNER  R15                                                             XP138700
00302E  059C                3871           CLR   R9,R12                                                          XP138710
003030  023F                3872           BNER  R15                                                             XP138720
003032  05AD                3873           CLR   R10,R13                                                         XP138730
003034  030F                3874           BR    R15                                                             XP138740
                            3875  *                                                                            XP138750
003036  9555                3876  T12DVCHK EPSR  R5,R5                                                         XP138760
003038  052C                3877           CLR   R2,R12              CHECK REMAINDER                             XP138770
00303A  023E                3878           BNER  R14                                                             XP138780
00303C  053D                3879           CLR   R3,R13              CHECK QUOTIENT                              XP138790
00303E  023E                3880           BNER  R14                                                             XP138800
003040  0545                3881           CLR   R4,R5               PSW UNCHANGED ?                             XP138810
003042  023E                3882           BNER  R14                                                             XP138820
003044  73F0 9148 =004190   3883           LHL   R15,T12CNT          R15 = 1 IF INTRPT.ENABLED                   XP138830
003048  2138                3884           BNZS  T12CHKI                                                         XP138840
                            3885  **  ARTH.FAULT INTRPT. IN THE PSW IS DISABLED                                XP138850
00304A  73F0 913E =00418C   3886           LHL   R15,T12INT          CHECK IF INTRPT.DETECTED                    XP138860
00304E  033E                3887           BZR   R14                 WHEN IT WAS DISABLED                        XP138870
003050  F610 0001 0000      3888           OI    R1,Y'10000'         YES, ERROR                                  XP138880
003056  030E                3889           BR    R14                                                             XP138890
                            3890  **  ARITH.FAULT INTRPT. IN THE PSW IS ENABLED                                XP138900
003058  0811                3891  T12CHKI  LR    R1,R1               CHECK IF INTRPT.IS EXPECTED                 XP138910
00305A  2138                3892           BNZS  T12CHKII                                                        XP138920
00305C  73F0 912C =00418C   3893           LHL   R15,T12INT          NO. WAS IT GENERATED ?                      XP138930
003060  033E                3894           BZR   R14                 NO                                          XP138940
003062  F610 0002 0000      3895           OI    R1,Y'20000'         INTRPT.DETECTED WHEN                        XP138950
003068  030E                3896           BR    R14                 IT WAS NOT EXPECTED, ERROR                  XP138960
                            3897  *                                                                            XP138970
00306A  73F0 911E =00418C   3898  T12CHKII LHL   R15,T12INT          INTRPT.ENABLED AND EXPECTED                 XP138980
00306E  2135                3899           BNZS  T12CHKJ             WAS AN INTERRUPT DETECTED  ?                XP138990
003070  F610 0003 0000      3900           OI    R1,Y'30000'         NOT DETECTED , ERROR                        XP139000
003076  030E                3901           BR    R14                                                             XP139010
                            3902  *                                                                            XP139020
003078  24F0                3903  T12CHKJ  LIS   R15,0               INTRPT.DETECTED,NO ERROR                    XP139030
00307A  40F0 910E =00418C   3904           STH   R15,T12INT          RESET T12INT FOR NEXT TIME                  XP139040
00307E  030E                3905           BR    R14                                                             XP139050
                            3906  *                                                                            XP139060
003080  2401                3907  T12AINT  LIS   R0,1                ARTH.FAULT INTRPT. DETECTED                 XP139070
003082  4000 9106 =00418C   3908           STH   R0,T12INT           SO T12INT = 1                               XP139080
003086  180E                3909           LPSWR R14                 RETURN TO CHECK RESULT                      XP139090
                            3910  *                                                                            XP139100
                            3911  *                                                                            XP139110
                            3912  *                                                                            XP139120
        0000 3088           3913  TEST13   EQU   *                                                            XP139130
                            3914  ************************************************************                XP139140
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003088   240D                    LIS    R0,13                                          XP139150
00308A   D200 1180               STB    R0,TESTNO                                      XP139160
00308E   E610 31D6               LA     R1,TEST14                                      XP139170
003092   5010 39C0               ST     R1,NXTST                                       XP139180
                        *        TABLE = 6 FULLWORDS, TOTAL J SLOTS (ENTRIES)          XP139190
                        *                                                              XP139200
                        *        ATL    ,ABL    ,RTL    ,RBL                           XP139210
                        *        T13R1  ,T13R2  ,T13R3  ,T13R4                         XP139220
                        *                                                              XP139230
         0000 3096      ATL      EQU    *                                              XP139240
         0000 3096      ABL      EQU    *                                              XP139250
         0000 3096      RTL      EQU    *                                              XP139260
         0000 3096      RBL      EQU    *                                              XP139270
003096   C200 39A0               LPSW   T13PSW                STAT = 70F0, LOC = T13P1 XP139280
00309A   D100 3EC4      T13P1    LM     R0,BUF0               ALL REGISTERS = 0        XP139290
00309E   D0A0 3E90               STM    R10,TABLE             INITIALIZE THE LIST      XP139300
0030A2   D100 3F04               LM     R0,BUF2                                        XP139310
0030A6   4040 3E90               STH    R4,TABLE              TABLE = 4,0,0,0 ;0,0,0,0 XP139320
0030AA   6440 3E90               ATL    R4,TABLE              TABLE = 4,1,3,0 ;0,0,0,4 XP139330
0030AE   42F0 310C               BTC    15,T13R1                                       XP139340
0030B2   D1A0 3E90               LM     R10,TABLE                                      XP139350
0030B6   F5A0 0004 0001          CLI    R10,Y'40001'                                   XP139360
0030BC   2136                    BNES   T13R1A                                         XP139370
0030BE   F5B0 0003 0000          CLI    R11,Y'30000'          CURRENT TOP=3,NEXT BOTTOM=0 ?  XP139380
0030C4   2132                    BNES   T13R1A                                         XP139390
0030C6   054F                    CLR    R4,R15                                         XP139400
0030C8   4230 310C      T13R1A   BNE    T13R1                                          XP139410
0030CC   6430 3E90               ATL    R3,TABLE                                       XP139420
0030D0   21F6                    BTFS   15,6                  (BTC   15,T13R1)         XP139430
0030D2   6420 3E90               ATL    R2,TABLE                                       XP139440
0030D6   21F3                    BTFS   15,3                  (BTC   15,T13R1)         XP139450
0030D8   6410 3E90               ATL    R1,TABLE              TABLE = 4,4,0,0 : 1,2,3,4  XP139460
0030DC   42F0 310C      T13R10   BTC    15,T13R1                                       XP139470
0030E0   6400 3E90               ATL    R0,TABLE              ADD TO FULL LIST         XP139480
0030E4   4340 310C               BFC    4,T13R1               CHECK OVERFLO - FW       XP139490
0030E8   42B0 310C               BTC    11,T13R1                                       XP139500
0030EC   D1A0 3E90               LM     R10,TABLE                                      XP139510
0030F0   F5A0 0004 0004          CLI    R10,Y'40004'                                   XP139520
0030F6   213B                    BNES   T13R1                                          XP139530
0030F8   08BB                    LR     R11,R11                                        XP139540
0030FA   2139           T13R1C   BNZS   T13R1                                          XP139550
0030FC   091C                    CR     R1,R12                SLOT 0                   XP139560
0030FE   2137                    BNES   T13R1                                          XP139570
003100   092D                    CR     R2,R13                SLOT 1                   XP139580
003102   2135                    BNES   T13R1                                          XP139590
003104   093E                    CR     R3,R14                SLOT 2                   XP139600
003106   2133                    BNES   T13R1                                          XP139610
003108   094F                    CR     R4,R15                SLOT 3                   XP139620
00310A   2336                    BES    T13B                                           XP139630
00310C   2401           T13R1    LIS    R13,1                 ERROR 0001, ATL    ***** XP139640
00310E   4300 31BE      T13RR    B      T13R                                           XP139650
003112   2403           T13R3    LIS    R13,3                 ERROR 0003, RTL    ***** XP139660
003114   2203                    BS     T13RR                                          XP139670
003116   66B0 3E90      T13B     RTL    R11,TABLE             TABLE = 4,3,1,0 : 1,2,3,4  XP139680
00311A   2224                    BNPS   T13R3                                          XP139690
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00311C   2005                3970          BTBS  13,5              (BTC    13,T13R3)                      XP139700
00311E   051B                3971          CLR   R1,R11                                                   XP139710
003120   2037                3972          BNES  T13R3                                                    XP139720
003122   67E0 3E90           3973          RBL   R14,TABLE         TABLE = 4,2,1,3 : 1,2,3,4              XP139730
003126   4320 3164           3974          BFC   2,T13R4           LIST IS NOT YET EMPTY                  XP139740
00312A   20DC                3975          BTBS  13,12             (BTC    13,T13R3)                      XP139750
00312C   054E                3976          CLR   R4,R14                                                   XP139760
00312E   2136                3977          BNES  T13R4B            (BNE    T13R4)                         XP139770
003130   F850 0001 0003      3978          LI    R5,Y'10003'                                              XP139780
003136   5550 3E94           3979          CL    R5,TABLE+4                                               XP139790
00313A   213E                3980  T13R4B  BNES  T13R4Q            (BNE    T13R4)                         XP139800
00313C   66A0 3E90           3981          RTL   R10,TABLE         TABLE = 4,1,2,3 : 1,2,3,4              XP139810
003140   4200 3112           3982          BTC   13,T13R3                                                 XP139820
003144   4320 3112           3983          BNP   T13R3             CC = 0010                              XP139830
003148   052A                3984          CLR   R2,R10                                                   XP139840
00314A   4230 3112           3985          BNE   T13R3                                                    XP139850
                             3986  **                                                                     XP139860
00314E   67A0 3E90           3987          RBL   R10,TABLE         TABLE = 4,0,2,2 : 1,2,3,4              XP139870
003152   21F9                3988          BTFS  15,9              LIST IS NOW EMPTY                      XP139880
                             3989  *                                   (BTC    15,T13R4)                  XP139890
003154   053A                3990          CLR   R3,R10                                                   XP139900
003156   2137                3991  T13R4Q  BNES  T13R4                                                    XP139910
003158   58A0 3E94           3992          L     R10,TABLE+4                                              XP139920
00315C   F5A0 0002 0002      3993          CLI   R10,Y'20002'                                             XP139930
003162   2334                3994          BES   T13C                                                     XP139940
003164   24D4                3995  T13R4   LIS   R13,4             ERROR 0D04, RBL               *****    XP139950
003166   4300 31BE           3996          B     T13R                                                     XP139960
00316A   66A0 3E90           3997  T13C    RTL   R10,TABLE         REMOVE FROM EMPTY LIST                 XP139970
00316E   4340 3112           3998          BFC   4,T13R3                                                  XP139980
003172   42B0 3112           3999          BTC   11,T13R3                                                 XP139990
003176   67A0 3E90           4000          RBL   R10,TABLE                                                XP140000
00317A   224B                4001          BFBS  4,11              (BFC    4,T13R4)                       XP140010
00317C   20BC                4002          BTBS  11,12             (BTC    11,T13R4)                      XP140020
00317E   F8E0 0004 0002      4003          LI    R14,Y'40002'                                             XP140030
003184   F8F0 0001 0003      4004          LI    R15,Y'10003'                                             XP140040
00318A   D0E0 3E90           4005          STM   R14,TABLE         TABLE = 4,2,1,3 : 1,2,3,4              XP140050
                             4006  *                                                                      XP140060
00318E   6510 3E90           4007          ABL   R1,TABLE          TABLE = 4,3,1,0 : 1,2,3,1              XP140070
003192   42F0 31BC           4008          BTC   15,T13R2                                                 XP140080
003196   6540 3E90           4009          ABL   R4,TABLE          4,4,1,1 : 4,2,3,1                      XP140090
00319A   20F4                4010          BTBS  15,4              (BTC    15,T13R2)                      XP140100
00319C   6520 3E90           4011          ABL   R2,TABLE          ADD TO FULL LIST                       XP140110
0031A0   234E                4012          BFFS  4,14              (BFC    4,T13R2)                       XP140120
0031A2   21BD                4013          BTFS  11,13             (BTC    11,T13R2)                      XP140130
0031A4   D1A0 3E90           4014          LM    R10,TABLE                                                XP140140
0031A8   F5A0 0004 0004      4015          CLI   R10,Y'40004'                                             XP140150
0031AE   2137                4016          BNES  T13R2                                                    XP140160
0031B0   F5B0 0001 0001      4017          CLI   R11,Y'10001'                                             XP140170
0031B6   2133                4018          BNES  T13R2                                                    XP140180
0031B8   054C                4019          CLR   R4,R12                                                   XP140190
0031BA   2336                4020          BES   T13D                                                     XP140200
0031BC   24D2                4021  T13R2   LIS   R13,2             ERROR 0D02, ABL               *****    XP140210
0031BE   D2D0 1181           4022  T13R    STB   R13,ERRNO                                                XP140220
0031C2   4300 0CC8           4023          B     ERROR                                                    XP140230
0031C6   052D                4024  T13D    CLR   R2,R13                                                   XP140240
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0031C8   2036                        BNES  T13R2                                                XP140250
0031CA   053E                        CLR   R3,R14                                               XP140260
0031CC   2038                        BNES  T13R2                                                XP140270
0031CE   051F                        CLR   R1,R15                                               XP140280
0031D0   203A                        BNES  T13R2                                                XP140290
0031D2   4300 31D6          T13END   B     TEST14                                               XP140300
                            *                                                                   XP140310
                            *                                                                   XP140320
                            *                                                                   XP140330
         0000 31D6          TEST14   EQU   *                PRIVILEGED INSTRUCTION INTRPT.     XP140340
                            *                                SVC IN PROTECT MODE                XP140350
                            *******************************************************************  XP140360
0031D6   240E                        LIS   R0,14                                                XP140370
0031D8   D200 1180                   STB   R0,TESTNO                                            XP140380
0031DC   E610 329A                   LA    R1,TEST15                                            XP140390
0031E0   5010 39C0                   ST    R1,NXTST                                             XP140400
                            *                                                                   XP140410
0031E4   2410                        LIS   R1,0                                                 XP140420
0031E6   E640 38EA                   LA    R4,T14BYT        R4 = ADR.PRIV. INSTR.               XP140430
0031EA   D364 0000          T14      LB    R6,0(R4)         R6 = PRIV INSTR.                    XP140440
0031EE   D260 3206                   STB   R6,T14PRV        STORE AT 'T14PRV'                   XP140450
0031F2   C800 0000                   LHI   R0,0                                                 XP140460
0031F6   5000 0030                   ST    R0,X'30'         ILLG.INSTR.NEW PSW STATUS           XP140470
0031FA   E630 3212                   LA    R3,T14INT        ILL.INSTR.NEW PSW LOC               XP140480
0031FE   5030 0034                   ST    R3,X'34'                                             XP140490
003202   C200 39A8                   LPSW  T14A             SELECT PROTECT MODE                 XP140500
003206   0000               T14PRV   DC    X'0'                                                 XP140510
003208   0200                        NOPR                                                       XP140520
00320A   0200                        NOPR                                                       XP140530
00320C   24D1               T14R1    LIS   R13,1            ERROR 0E01 - NO INTPT BY PRIV INST** XP140540
00320E   4300 3264                   B     T14R                                                 XP140550
003212   D0E0 3F7C          T14INT   STM   R14,REGE         STORE REG. E , F OF SET 0           XP140560
003216   D1E0 3EC4                   LM    R14,BUF0         CLEAR FOR NEXT TIME                 XP140570
00321A   C870 00F0                   LHI   R7,X'F0'         SEL REG SET F                       XP140580
00321E   9507                        EPSR  R0,R7                                                XP140590
003220   0811               T14L2    LR    R1,R1            R1=0 IF CHECK.PRIV.INSTR.           XP140600
003222   4230 3262                   BNZ   T14R3            R1=1 IF SVC                         XP140610
003226   D1E0 3F7C                   LM    R14,REGE         GET REG. E , F OF SET 0             XP140620
00322A   55E0 39A8                   CL    R14,T14A         OLD PSW STATUS                      XP140630
00322E   2134                        BNES  T14R2                                                XP140640
003230   C5F0 3206                   CLHI  R15,T14PRV       INTERRUPT AT THIS LOCATION ?        XP140650
003234   2334                        BES   T14F                                                 XP140660
003236   24D2               T14R2    LIS   R13,2            ERROR 0E02 - BAD PSW SWAP     ***** XP140670
003238   4300 3264                   B     T14R                                                 XP140680
                            **  PRIV. INSTR.DETECTED AND PSW SWAP OK                            XP140690
00323C   2641               T14F     AIS   R4,1                                                 XP140700
00323E   C540 3900                   CLHI  R4,T14LST                                            XP140710
003242   4280 31EA                   BL    T14              IF NOT AT END OF TABLE              XP140720
                            **  TEST SVC INTERRUPT IN PROTECT MODE.                             XP140730
003246   E600 0C84                   LA    R0,ILGINT        RESTORE ILG.INSTR.TRAP              XP140740
00324A   5000 0034                   ST    R0,X'34'                                             XP140750
00324E   2411                        LIS   R1,1                                                 XP140760
003250   E630 326C                   LA    R3,T14SVC        SVC INTRPT.NEW PSW LOC.             XP140770
003254   4030 009E                   STH   R3,X'9E'         FOR SVC 1                           XP140780
003258   C850 7BF5                   LHI   R5,X'7BF5'       SELECT PROTECT MODE, ETC.           XP140790
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00325C   9505                 4080            EPSR  R0,R5                                            XP140800
00325E   E110 0008            4081  T14K      SVC   1,R8                                             XP140810
003262   24D3                 4082  T14R3     LIS   R13,3               ERROR 0E03 - SVC ERR IN PROT MODE **  XP140820
003264   D2D0 1181            4083  T14R      STB   R13,ERRNO                                        XP140830
003268   4300 0CC8            4084            B     ERROR                                            XP140840
00326C   D0D0 3F78            4085  T14SVC    STM   R13,REGD            STORE REG.D,E,F OF SET 0     XP140850
003270   C800 00F0            4086            LHI   R0,X'F0'            SELECT REG SET F             XP140860
003274   9550                 4087            EPSR  R5,R0                                            XP140870
003276   D1D0 3F78            4088            LM    R13,REGD                                         XP140880
00327A   E600 0C9A            4089            LA    R0,SVCERR           RESTORE SVC 1 ERROR POINTER  XP140890
00327E   4000 009E            4090            STH   R0,X'9E'                                         XP140900
003282   C5E0 7BF5            4091            CLHI  R14,X'7BF5'         OLD PSW STATUS SAVED CORRECTLY ?  XP140910
003286   4230 3262            4092  T14R3A    BNE   T14R3                                            XP140920
00328A   C5D0 0008            4093            CLHI  R13,8                                            XP140930
00328E   2034                 4094            BNES  T14R3A              (BNE   T14R3)                XP140940
003290   C5F0 3262            4095            CLHI  R15,T14R3           OLD PSW LOC.                 XP140950
003294   2037                 4096            BNES  T14R3A              (BNE   T14R3)                XP140960
003296   4300 329A            4097  T14END    B     TEST15                                           XP140970
                              4098  *                                                                XP140980
                              4099  *                                                                XP140990
                              4100  *                                                                XP141000
         0000 329A            4101  TEST15    EQU   *                                                XP141010
                              4102  **  CHFCK THE BIT MANIPULATING INSTRUCTIONS AND CRC12,CRC16       XP141020
                              4103  **  & TLATE,SCP.                                                 XP141030
                              4104  **  TBT    ;SBT     ; RBT   ; CBT     ; TLATE                     XP141040
                              4105  ** (T15R1 ; T15R2 ; T15R3 ; T15R4 ; T15R5,T15R6,T15R7           XP141050
                              4106  **                                                               XP141060
                              4107  ************************************************************     XP141070
                              4108  *                                                                XP141080
00329A   240F                 4109            LIS   R0,15                                            XP141090
00329C   D200 1180            4110            STB   R0,TESTNO                                        XP141100
0032A0   E610 0B94            4111            LA    R1,TSTENDX          NEXT IN TEST SEQUENCE        XP141110
0032A4   5010 39C0            4112            ST    R1,NXTST                                         XP141120
0032A8   C200 39B0            4113            LPSW  T15PSW                                           XP141130
                              4114  **                                                               XP141140
         0000 32AC            4115  TBT       EQU   *                                                XP141150
0032AC   D100 3EC4            4116  T15A      LM    R0,BUF0                                          XP141160
0032B0   D000 8ED0 =004184    4117            STM   R0,BUF3             BUF3 = 0                     XP141170
0032B4   D100 3F04            4118            LM    R0,BUF2             R0=0,R1=1,......R15=15       XP141180
0032B8   58E0 3EB8            4119            L     R14,TEN             R14 = AAAA,AAAA              XP141190
0032BC   58F0 3EB4            4120            L     R15,FIVE            R15 = 5555,5555              XP141200
0032C0   D0E0 8ED4 =004198    4121            STM   R14,BUF3+20                                      XP141210
0032C4   D0E0 8ED8 =0041A0    4122            STM   R14,BUF3+28                                      XP141220
0032C8   D0E0 8EDC =0041A8    4123            STM   R14,BUF3+36                                      XP141230
0032CC   D0E0 3FBC            4124            STM   R14,REG1E           SAVE FOR LATER               XP141240
0032D0   E6F0 331E            4125            LA    R15,T15R1           ERROR RETURN                 XP141250
                              4126  **  BUF3+20 = 10101010,10101010,10101010,10101010  =  BUF3+28     XP141260
                              4127  **  BUF3+24 = 01010101,01010101,01010101,01010101 =  BUF3+32     XP141270
0032D4   7410 8EC8 =0041A0    4128            TBT   R1,BUF3+28          R1 = 1, BIT TESTED = 0       XP141280
0032D8   02FF                 4129            BTCR  15,R15                                           XP141290
0032DA   74D0 8EC2 =0041A0    4130            TBT   R13,BUF3+28         R13 = 13 , BIT TESTED = 0    XP141300
0032DE   02FF                 4131            BTCR  15,R15                                           XP141310
0032E0   7490 8EBC =0041A0    4132            TBT   R9,BUF3+28          R9 = 9 , BIT TESTED = 0      XP141320
0032E4   02FF                 4133            BTCR  15,R15                                           XP141330
0032E6   C870 00FE            4134            LHI   R7,254              R7 = 254 , (254 / 8) = 31 + 6  XP141340
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0032EA  7470 8E98 =004186   4135                TBT   R7,BUF3+2          BIT TESTED = ADR. ( BUF3+2 + 31) + 6   XP141350
0032EE  02FF                4136                BTCR  15,R15                                                    XP141360
0032F0  7418 8EA4 =004198   4137                TBT   R1,BUF3+20(R8)      R1=1, R8=8, BIT = 0                  XP141370
0032F4  02FF                4138                BTCR  15,R15                                                   XP141380
0032F6  2477                4139                LIS   R7,7                                                     XP141390
0032F8  74D7 4800 4191      4140                TBT   R13,BUF3+13(R7,R8)  R13=13, R7=7, R8=8, BIT = 0          XP141400
0032FE  02FF                4141                BTCR  15,R15                                                   XP141410
003300  7410 8EA0 =0041A4   4142                TBT   R1,BUF3+32          R1 = 1 , BIT TESTED = 1              XP141420
003304  02DF                4143                BTCR  13,R15                                                   XP141430
003306  032F                4144                BFCR  2,R15                                                    XP141440
003308  74D0 8E98 =0041A4   4145                TBT   R13,BUF3+32         R13 = 13 , BIT TESTED = 1            XP141450
00330C  02DF                4146                BTCR  13,R15                                                   XP141460
00330E  032F                4147                BFCR  2,R15                                                    XP141470
003310  7490 8E90 =0041A4   4148                TBT   R9,BUF3+32                                               XP141480
003314  02DF                4149                BTCR  13,R15                                                   XP141490
003316  032F                4150                BFCR  2,R15                                                    XP141500
003318  7470 8E80 =00419C   4151                TBT   R7,BUF3+24          BIT SET                              XP141510
00331C  2126                4152                BPS   T15A1                                                    XP141520
00331E  24D1                4153  T15R1         LIS   R13,1               ERROR 0F01, TBT          *****       XP141530
003320  D2D0 1181           4154  T15R          STB   R13,ERRNO                                                XP141540
003324  4300 0CC8           4155                B     ERROR                                                    XP141550
003328  02DF                4156  T15A1         BTCR  13,R15                                                   XP141560
00332A  7418 8E6E =00419C   4157                TBT   R1,BUF3+24(R8)      R1=1, R8=8, BIT = 1                  XP141570
00332E  032F                4158                BFCR  2,R15                                                    XP141580
003330  02DF                4159                BTCR  13,R15                                                   XP141590
003332  74D6 4900 4195      4160                TBT   R13,BUF3+17(R6,R9)  R6=6,R9=9, R13=13, BIT = 1           XP141600
003338  032F                4161                BFCR  2,R15                                                    XP141610
00333A  02DF                4162                BTCR  13,R15                                                   XP141620
00333C  D100 8E58 =004198   4163                LM    R0,BUF3+20          CHECK THAT DATA NOT CHANGED          XP141630
003340  D120 8E5C =0041A0   4164                LM    R2,BUF3+28                                                 XP141640
003344  D140 8E60 =0041A8   4165                LM    R4,BUF3+36                                                 XP141650
003348  D1E0 3FBC           4166                LM    R14,REG1E           ORIGINAL DATA                        XP141660
00334C  050E                4167                CLR   R0,R14                                                   XP141670
00334E  4230 331E           4168  T15R1A        BNE   T15R1                                                    XP141680
003352  051F                4169                CLR   R1,R15                                                   XP141690
003354  2033                4170                BNES  T15R1A              (BNE   T15R1)                        XP141700
003356  052E                4171                CLR   R2,R14                                                   XP141710
003358  2035                4172                BNES  T15R1A              (BNE   T15R1)                        XP141720
00335A  053F                4173                CLR   R3,R15                                                   XP141730
00335C  2037                4174                BNES  T15R1A              (BNE   T15R1)                        XP141740
00335E  054E                4175                CLR   R4,R14                                                   XP141750
003360  2039                4176                BNES  T15R1A              (BNE   T15R1)                        XP141760
003362  055F                4177                CLR   R5,R15                                                   XP141770
003364  203B                4178                BNES  T15R1A              (BNE   T15R1)                        XP141780
        0000 3366           4179  SBT           EQU   *                                                        XP141790
003366  D100 3EC4           4180                LM    R0,BUF0                                                  XP141800
00336A  D000 8E16 =004184   4181                STM   R0,BUF3                                                  XP141810
00336E  D100 3F04           4182                LM    R0,BUF2             R0, R1, R2 ... = 0, 1, 2 ...         XP141820
003372  C870 00FE           4183                LHI   R7,X'FE'                                                 XP141830
003376  D1E0 3FBC           4184  T15B          LM    R14,REG1E                                                XP141840
00337A  D0E0 8E1A =004198   4185                STM   R14,BUF3+20                                              XP141850
00337E  D0E0 8E1E =0041A0   4186                STM   R14,BUF3+28                                              XP141860
003382  D0E0 8E22 =0041A8   4187                STM   R14,BUF3+36                                              XP141870
003386  E6F0 33C8           4188                LA    R15,T15R2                                                XP141880
00338A  7500 8DF6 =004184   4189                SBT   R0,BUF3             R0=0,BUF3=8000                       XP141890
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00338E   02FF                  4190         BTCR  15,R15                                       XP141900
003390   7560 8DF0 =004184     4191         SBT   R6,BUF3          BUF3 = 8200                 XP141910
003394   02FF                  4192         BTCR  15,R15                                       XP141920
003396   75C0 8DEA =004184     4193         SBT   R12,BUF3         BUF3 = 8208                 XP141930
00339A   02FF                  4194         BTCR  15,R15                                       XP141940
00339C   4810 8DE4 =004184     4195         LH    R1,BUF3                                      XP141950
0033A0   C510 8208             4196         CLHI  R1,X'8208'                                   XP141960
0033A4   023F                  4197         BNER  R15                                          XP141970
0033A6   7570 8DDE =004188     4198         SBT   R7,BUF3+4        BUF3+34 = 5557              XP141980
0033AA   02FF                  4199         BTCR  15,R15                                       XP141990
0033AC   7570 8DD4 =004184     4200         SBT   R7,BUF3          BUF3+30 = AAAA              XP142000
0033B0   032F                  4201         BFCR  2,R15                                        XP142010
0033B2   02DF                  4202         BTCR  13,R15                                       XP142020
0033B4   C810 5557             4203         LHI   R1,X'5557'                                   XP142030
0033B8   4510 8DEA =0041A6     4204         CLH   R1,BUF3+34                                   XP142040
0033BC   023F                  4205         BNER  R15                                          XP142050
0033BE   48A0 3EB8             4206         LH    R10,TEN                                      XP142060
0033C2   45A0 8DDC =0041A2     4207         CLH   R10,BUF3+30                                  XP142070
0033C6   2334                  4208         BES   T15B1                                        XP142080
0033C8   24D2                  4209  T15R2  LIS   R13,2            ERROR 0F02, SBT      *****  XP142090
0033CA   4300 3320             4210         B     T15R                                         XP142100
0033CE   D100 3F04             4211  T15B1  LM    R0,BUF2                                      XP142110
0033D2   7514 8DCE =0041A4     4212         SBT   R1,BUF3+32(R4)   R1=1, R4=4, BIT = 0         XP142120
0033D6   02FF                  4213         BTCR  15,R15                                       XP142130
0033D8   48A0 8DCC =0041A8     4214         LH    R10,BUF3+36                                  XP142140
0033DC   C5A0 EAAA             4215         CLHI  R10,X'EAAA'                                  XP142150
0033E0   023F                  4216         BNER  R15                                          XP142160
0033E2   7514 8DBE =0041A4     4217         SBT   R1,BUF3+32(R4)   R1=1, R4=4, BIT = 1         XP142170
0033E6   032F                  4218         BFCR  2,R15                                        XP142180
0033E8   02DF                  4219         BTCR  13,R15                                       XP142190
0033EA   7503 4400 41A5        4220         SBT   R0,BUF3+33(R3,R4)  R0=0, R3=3, R4=4, BIT = 0  XP142200
0033F0   02FF                  4221         BTCR  15,R15                                       XP142210
0033F2   48A0 8DB6 =0041AC     4222         LH    R10,BUF3+40                                  XP142220
0033F6   C5A0 D555             4223         CLHI  R10,X'D555'                                  XP142230
0033FA   023F                  4224         BNER  R15                                          XP142240
0033FC   7503 4400 41A5        4225         SBT   R0,BUF3+33(R3,R4)  R0=0, R3=3, R4=4, BIT = 1  XP142250
003402   032F                  4226         BFCR  2,R15                                        XP142260
003404   02DF                  4227         BTCR  13,R15                                       XP142270
         0000 3406             4228  RBT    EQU   *                                            XP142280
003406   E6F0 3448             4229  T15C   LA    R15,T15R3        ERROR RETURN                XP142290
00340A   7600 8D76 =004184     4230         RBT   R0,BUF3          BUF3 = 0208                 XP142300
00340E   032F                  4231         BFCR  2,R15                                        XP142310
003410   02DF                  4232         BTCR  13,R15                                       XP142320
003412   7310 8D6E =004184     4233         LHL   R1,BUF3                                      XP142330
003416   C510 0208             4234         CLHI  R1,X'0208'                                   XP142340
00341A   023F                  4235         BNER  R15                                          XP142350
00341C   76D0 8D80 =0041A0     4236         RBT   R13,BUF3+28      BUF3 + 28 = AAAA . BIT RESET=0  XP142360
003420   02FF                  4237         BTCR  15,R15                                       XP142370
003422   7600 8D7A =0041A0     4238         RBT   R0,BUF3+28       BUF3+28 = 2AAA              XP142380
003426   032F                  4239         BFCR  2,R15                                        XP142390
003428   02DF                  4240         BTCR  13,R15                                       XP142400
00342A   C870 00FE             4241         LHI   R7,X'FE'                                     XP142410
00342E   7670 8D50 =004182     4242         RBT   R7,BUF3-2        BUF 3+28 = 2AA8             XP142420
003432   032F                  4243         BFCR  2,R15                                        XP142430
003434   02DF                  4244         BTCR  13,R15                                       XP142440
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003436  7660 8D66 =0041A0     4245
00343A  032F                  4246
00343C  02DF                  4247
00343E  7310 8D5E =0041A0     4248
003442  C510 28A8             4249
003446  2334                  4250
003448  24D3                  4251  T15R3   LIS   R13,3              ERROR 0F03, RBT                  *****
00344A  4300 3320             4252          B     T15R
00344E  D100 3F04             4253  T15C1   LM    R0,BUF2
003452  7614 8D4E =0041A4     4254          RBT   R1,BUF3+32(R4)     R1=1, R4=4, BIT = 1
003456  032F                  4255          BFCR  2,R15
003458  02DF                  4256          BTCR  13,R15
00345A  48A0 8D4A =0041A8     4257          LH    R10,BUF3+36
00345E  C5A0 AAAA             4258          CLHI  R10,X'AAAA'
003462  023F                  4259          BNER  R15
003464  7614 8D3C =0041A4     4260          RBT   R1,BUF3+32(R4)     R1=1, R4=4, BIT = 0
003468  02FF                  4261          BTCR  15,R15
00346A  7603 4400 41A5        4262          RBT   R0,BUF3+33(R3,R4)  R0=0, R3=3, R4=4, BIT = 1
003470  032F                  4263          BFCR  2,R15
003472  02DF                  4264          BTCR  13,R15
003474  7603 4400 41A5        4265          RBT   R0,BUF3+33(R3,R4)  R0=0, R3=3, R4=4, BIT = 0
00347A  02FF                  4266          BTCR  15,R15
00347C  48A0 8D2C =0041AC     4267          LH    R10,BUF3+40
003480  C5A0 5555             4268          CLHI  R10,X'5555'
003484  023F                  4269          BNER  R15
        0000 3486             4270  CBT     EQU   *
003486  E6F0 34B4             4271  T15D    LA    R15,T15R4
00348A  7700 8D10 =00419E     4272          CBT   R0,BUF3+26         BUF3+26 = D555
00348E  02FF                  4273          BTCR  15,R15
003490  7790 8D0A =00419E     4274          CBT   R9,BUF3+26         BUF3+26 = D515
003494  032F                  4275          BFCR  2,R15
003496  02DF                  4276          BTCR  13,R15
003498  C870 00FE             4277          LHI   R7,X'FE'
00349C  7770 8CE0 =004180     4278          CBT   R7,BUF3-4          BUF3+26 = D517,BUF3-4+31 + 6
0034A0  02FF                  4279          BTCR  15,R15
0034A2  7750 8CF8 =00419E     4280          CBT   R5,BUF3+26         BUF3+26  D117
0034A6  032F                  4281          BFCR  2,R15
0034A8  02DF                  4282          BTCR  13,R15
0034AA  4810 8CF0 =00419E     4283          LH    R1,BUF3+26
0034AE  C510 D117             4284          CLHI  R1,X'D117'
0034B2  2334                  4285          BES   T15D1
0034B4  24D4                  4286  T15R4   LIS   R13,4              ERROR 0F04, CBT                  *****
0034B6  4300 3320             4287          B     T15R
0034BA  D1E0 3FBC             4288  T15D1   LM    R14,REG1E          R14 = AAAAAAAA, R15 = 55555555
0034BE  D0E0 8CE6 =0041A8     4289          STM   R14,BUF3+36
0034C2  D100 3F04             4290          LM    R0,BUF2            R0, R1, R2... = 0,1,2...
0034C6  E6F0 34B4             4291          LA    R15,T15R4
0034CA  7706 8CD4 =0041A2     4292          CBT   R0,BUF3+30(R6)     R0=0, R6=6, BIT = 1
0034CE  032F                  4293          BFCR  2,R15
0034D0  02DF                  4294          BTCR  13,R15
0034D2  48A0 8CD2 =0041A8     4295          LH    R10,BUF3+36
0034D6  C5A0 2AAA             4296          CLHI  R10,X'2AAA'
0034DA  023F                  4297          BNER  R15
0034DC  7716 8CC2 =0041A2     4298          CBT   R1,BUF3+30(R6)     R1=1, R6=6, BIT = 0
0034E0  02FF                  4299          BTCR  15,R15
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0034E2   48A0 8CC2 =0041A8   4300            LH     R10,BUF3+36                                         XP143000
0034E6   C5A0 6AAA           4301            CLHI   R10,X'6AAA'                                         XP143010
0034EA   023F                4302            BNER   R15                                                 XP143020
0034EC   7702 4400 41A2      4303            CBT    R0,BUF3+30(R2,R4)   R0=0, R2=2, R4=4, BIT = 0       XP143030
0034F2   02FF                4304            BTCR   15,R15                                              XP143040
0034F4   48A0 8CB0 =0041A8   4305            LH     R10,BUF3+36                                         XP143050
0034F8   C5A0 EAAA           4306            CLHI   R10,X'EAAA'                                         XP143060
0034FC   023F                4307            BNER   R15                                                 XP143070
0034FE   7702 4400 41A2      4308            CBT    R0,BUF3+30(R2,R4)   R0=0, R2=2, R4=4, BIT = 1       XP143080
003504   020F                4309            BTCR   13,R15                                              XP143090
003506   032F                4310            BFCR   2,R15                                               XP143100
003508   48A0 8C9C =0041A8   4311            LH     R10,BUF3+36                                         XP143110
00350C   C5A0 6AAA           4312            CLHI   R10,X'6AAA'                                         XP143120
003510   023F                4313            BNER   R15                                                 XP143130
         0000 3512           4314  TLATE     EQU    *                                                   XP143140
003512   C200 3988           4315            LPSW   T15PSW1             STAT = 00F0, LOC = T15E         XP143150
003516   E640 8C6A =004184   4316  T15E      LA     R4,T15TRTBL                                         XP143160
00351A   5040 3EBC           4317            ST     R4,TEMP                                             XP143170
00351E   E650 1ACF           4318            LA     R5,T15R5/2          ERROR IF BRANCH TO ROUTINE      XP143180
003522   4054 0000           4319  T15E1     STH    R5,0(R4)                                            XP143190
003526   2642                4320            AIS    R4,2                                                XP143200
003528   C540 4384           4321            CLHI   R4,T15TRTBL+512     TOTAL 256 ENTRIES               XP143210
00352C   2035                4322            BNES   T15E1                                               XP143220
                             4323  *                                                                    XP143230
00352E   2488                4324            LIS    R8,8                                                XP143240
003530   24CC                4325            LIS    R12,12                                              XP143250
003532   E640 8C4E =004184   4326            LA     R4,T15TRTBL         R4 = ADR. OF T15TRTBL           XP143260
003536   2410                4327            LIS    R1,0                                                XP143270
003538   0871                4328  T15E2     LR     R7,R1               SAVE A COPY                     XP143280
00353A   E660 1AA6           4329            LA     R6,T15SBRTN/2       TRANSLATION SUBROUTINE          XP143290
00353E   4064 0000           4330            STH    R6,0(R4)            INSERT POINTER                  XP143300
003542   E710 3EBC           4331            TLATE  R1,TEMP             BRANCH EFFECTED HERE            XP143310
003546   24D6                4332  T15R6     LIS    R13,6               ERROR 0F06, TLATE        *****  XP143320
003548   4300 3320           4333            B      T15R                                                XP143330
00354C   20D3                4334  T15SBRTN  BTBS   13,3                CC = 00X0, UNCHANGED ?          XP143340
                             4335  *                                      (BTC    13,T15R6)         XP143350
00354E   0517                4336            CLR    R1,R7               DATUM CHANGED ?                 XP143360
003550   2035                4337            BNES   T15R6                                               XP143370
003552   E660 1AB1           4338            LA     R6,T15SBR1/2                                        XP143380
003556   4064 0000           4339            STH    R6,0(R4)                                            XP143390
00355A   2400                4340            LIS    R0,0                INIT, CC = 0000                 XP143400
00355C   E718 3EB4           4341            TLATE  R1,TEMP-8(R8)       BRANCH EFFECTED HERE            XP143410
003560   220D                4342            BS     T15R6                                               XP143420
003562   20FE                4343  T15SBR1   BTBS   15,14               CC = 0000, UNCHANGED ?          XP143430
                             4344  *                                      (BTC    15,T15R6)         XP143440
003564   0517                4345            CLR    R1,R7               DATUM CHANGED ?                 XP143450
003566   213B                4346            BNES   T15R6Q              (BNE    T15R6)                  XP143460
003568   E660 1AC0           4347            LA     R6,T15SBR2/2                                        XP143470
00356C   4064 0000           4348            STH    R6,0(R4)                                            XP143480
003570   C8A0 00FF           4349            LHI    R10,X'FF'                                           XP143490
003574   95DA                4350            EPSR   R13,R10             INIT, CC = 1111                 XP143500
003576   E718 4C00 3EA8      4351            TLATE  R1,TEMP-20(R8,R12)  BRANCH EFFECTED HERE            XP143510
00357C   4300 3546           4352  T15R6Q    B      T15R6                                               XP143520
003580   95DD                4353  T15SBR2   EPSR   R13,R13             CATCH PSW STAT                  XP143530
003582   C5D0 00FF           4354            CLHI   R13,X'FF'           UNCHANGED ?                     XP143540
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003586  2035                          BNES  T15R6Q          (BNE   T15R6)                     XP143550
003588  0517                          CLR   R1,R7           DATUM CHANGED ?                   XP143560
00358A  2037                          BNES  T15R6Q          (BNE   T15R6)                     XP143570
00358C  4054 0000                     STH   R5,0(R4)        RESTORE ERROR POINTER             XP143580
003590  2611                          AIS   R1,1                                              XP143590
003592  2642                          AIS   R4,2                                              XP143600
003594  C540 4384                     CLHI  R4,T15TRTBL+512                                   XP143610
003598  4230 3536                     BNE   T15E2                                             XP143620
00359C  2304                          BS    T15E5                                             XP143630
                            *   ALL 256 ENTRIES TESTED FOR T15SBRTN                           XP143640
00359E  24D5                T15R5     LIS   R13,5           ERROR 0F05,TLATE           *****  XP143650
0035A0  4300 3320                     B     T15R                                              XP143660
0035A4  C880 8000           T15E5     LHI   R8,X'8000'                                        XP143670
0035A8  E640 8DD6 =004382             LA    R4,T15TRTBL+510                                   XP143680
0035AC  2400                          LIS   R0,0                                              XP143690
0035AE  0810                T15E52    LR    R1,R0                                             XP143700
0035B0  0618                          OR    R1,R8                                             XP143710
0035B2  4014 0000                     STH   R1,0(R4)        STORE COMPLEMENT OF CHARACTER     XP143720
0035B6  2742                          SIS   R4,2            E.G., ENTRY 0 = 80FF              XP143730
0035B8  2601                          AIS   R0,1            ENTRY 1 = 80FE, ETC.              XP143740
0035BA  C500 0100                     CLHI  R0,256                                            XP143750
0035BE  2038                          BNES  T15E52          ENTRY 255 = 8000                  XP143760
                            *                                                                 XP143770
0035C0  2642                          AIS   R4,2            R4 = T15TRTBL                     XP143780
0035C2  2470                          LIS   R7,0                                              XP143790
0035C4  C8A0 00FF                     LHI   R10,255         R10 = 00FF                        XP143800
0035C8  2488                T15E55    LIS   R8,8                                              XP143810
0035CA  0817                          LR    R1,R7                                             XP143820
0035CC  E710 3EBC                     TLATE R1,TEMP                                           XP143830
0035D0  051A                          CLR   R1,R10                                            XP143840
0035D2  213C                          BNES  T15R7                                             XP143850
0035D4  0817                          LR    R1,R7                                             XP143860
0035D6  E718 3EB4                     TLATE R1,TEMP-8(R8)   = TEMP                            XP143870
0035DA  051A                          CLR   R1,R10                                            XP143880
0035DC  2137                          BNES  T15R7                                             XP143890
0035DE  0817                          LR    R1,R7                                             XP143900
0035E0  E718 4C00 3EA8                TLATE R1,TEMP-20(R8,R12)  = TEMP                        XP143910
0035E6  051A                          CLR   R1,R10                                            XP143920
0035E8  2334                          BES   T15E6                                             XP143930
0035EA  24D7                T15R7     LIS   R13,7           ERROR 0F07, TLATE          *****  XP143940
0035EC  4300 3320                     B     T15R                                              XP143950
0035F0  2671                T15E6     AIS   R7,1                                              XP143960
0035F2  27A1                          SIS   R10,1                                             XP143970
0035F4  4310 35C8                     BNM   T15E55                                            XP143980
        0000 35F8           CRC16     EQU   *                                                 XP143990
0035F8  D100 3EC4                     LM    R0,BUF0         EACH REG. = 0                     XP144000
0035FC  4000 8C8C =00428C             STH   R0,BUF3+264     ZERO OUT RESIDUE                  XP144010
003600  4000 8C8C =004290             STH   R0,BUF3+268                                       XP144020
003604  4000 8C90 =004298             STH   R0,BUF3+276                                       XP144030
003608  D211 8B78 =004184   T15CRC    STB   R1,BUF3(R1)     STORE DATA BYTE                   XP144040
00360C  2611                          AIS   R1,1            STORE  A TOTAL OF 256 BYTES       XP144050
00360E  C510 0100                     CLHI  R1,256          OF DATA IN BUFR3                  XP144060
003612  2085                          BLS   T15CRC          IF NOT AT END OF 256 BYTES.       XP144070
                            *                                                                 XP144080
003614  2444                          LIS   R4,4                                              XP144090
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003616  2488                          LIS   R8,8                                                XP144100
003618  D363 8B68 =004184    T15CRC16 LB    R6,BUF3(R3)          GET DATA                       XP144110
00361C  2400                          LIS   R0,0                 INIT, CC = 0000                XP144120
00361E  5F60 8C6A =00428C             CRC16 R6,BUF3+264          CHECK 16TH ORDER CRC           XP144130
003622  42F0 3674                     BTC   15,T15R8             CC = 0000, UNCHANGED ?         XP144140
003626  D463 8B5A =004184             CLB   R6,BUF3(R3)          CHANGE ?                       XP144150
00362A  2137                          BNES  T15R8Q2              (BNE   T15R8)                  XP144160
00362C  5F64 8C5C =00428C             CRC16 R6,BUF3+264(R4)      RESIDUE AT BUF3+268            XP144170
003630  42B0 3674                     BTC   11,T15R8             CC = 0X00, UNCHANGED ?         XP144180
003634  D463 8B4C =004184             CLB   R6,BUF3(R3)                                         XP144190
003638  2138                 T15R8Q2  BNES  T15R8Q1              (BNE   T15R8)                  XP144200
00363A  5F64 4800 428C                CRC16 R6,BUF3+264(R4,R8)   RESIDUE AT BUF3+276            XP144210
003640  42B0 3674                     BTC   11,T15R8             CC = 0X00, UNCHANGED ?         XP144220
003644  D463 8B3C =004184             CLB   R6,BUF3(R3)                                         XP144230
003648  213A                 T15R8Q1  BNES  T15R8Q              (BNE   T15R8)                   XP144240
00364A  2631                          AIS   R3,1                                                XP144250
00364C  C530 0100                     CLHI  R3,256                                              XP144260
003650  4230 3618                     BNE   T15CRC16                                            XP144270
003654  4874 8C34 =00428C             LH    R7,BUF3+264(R4)      =BUF3+268                      XP144280
003658  C570 BAD3                     CLHI  R7,X'BAD3'                                          XP144290
00365C  213C                 T15R8Q   BNES  T15R8                                               XP144300
00365E  4874 4800 428C                LH    R7,BUF3+264(R4,R8)   =BUF3+276                      XP144310
003664  C570 BAD3                     CLHI  R7,X'BAD3'                                          XP144320
003668  2136                          BNES  T15R8                                               XP144330
00366A  4870 8C1E =00428C             LH    R7,BUF3+264          CHECK RESIDUE                  XP144340
00366E  C570 BAD3                     CLHI  R7,X'BAD3'                                          XP144350
003672  2334                          BES   T15F                                                XP144360
003674  24D8                 T15R8    LIS   R13,8                ERROR 0F08, CRC16       *****  XP144370
003676  4300 3320                     B     T15R                                                XP144380
                             *                                                                  XP144390
        0000 367A            CRC12    EQU   *                                                   XP144400
00367A  D100 3F04            T15F     LM    R0,BUF2              R0, R1, R2 ... = 0, 1, 2...    XP144410
00367E  E6F0 36FE                     LA    R15,T15R9            ERROR RETURN                   XP144420
003682  D211 8AFE =004184    T15CRCX  STB   R1,BUF3(R1)                                         XP144430
003686  2611                          AIS   R1,1                                                XP144440
003688  C510 0100                     CLHI  R1,256                                              XP144450
00368C  2085                          BLS   T15CRCX                                             XP144460
00368E  4000 8BFA =00428C             STH   R0,BUF3+264                                         XP144470
003692  4004 8BF6 =00428C             STH   R0,BUF3+264(R4)      =BUF3+268                      XP144480
003696  4002 4400 428C                STH   R0,BUF3+264(R2,R4)   =BUF3+270                      XP144490
00369C  2480                          LIS   R8,0                                                XP144500
00369E  D378 8AE2 =004184    T15CRC12 LB    R7,BUF3(R8)                                         XP144510
0036A2  C800 00FF                     LHI   R0,X'FF'             INIT., CC = 1111               XP144520
0036A6  9510                          EPSR  R1,R0                                               XP144530
0036A8  5E70 8BE0 =00428C             CRC12 R7,BUF3+264          CHECK 12TH ORDER CRC           XP144540
0036AC  038F                          BFCR  8,R15                CC = 1111, UNCHANGED ?         XP144550
0036AE  034F                          BFCR  4,R15                                               XP144560
0036B0  032F                          BFCR  2,R15                                               XP144570
0036B2  031F                          BFCR  1,R15                                               XP144580
0036B4  D478 8ACC =004184             CLB   R7,BUF3(R8)                                         XP144590
0036B8  023F                          BNER  R15                                                 XP144600
0036BA  5E74 8BCE =00428C             CRC12 R7,BUF3+264(R4)                                     XP144610
0036BE  02BF                          BTCR  11,R15               CC = 0X00, UNCHANGED ?         XP144620
0036C0  D478 8AC0 =004184             CLB   R7,BUF3(R8)                                         XP144630
0036C4  023F                          BNER  R15                                                 XP144640
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0036C6  5E72 4400 428C      4465          CRC12 R7,BUF3+264(R2,R4)                                    XP144650
0036CC  02BF                4466          BTCR  11,R15              CC = 0X00, UNCHANGED ?            XP144660
0036CE  D478 8AB2 =004184   4467          CLB   R7,BUF3(R8)         CHANGE ?                          XP144670
0036D2  023F                4468          BNER  R15                                                   XP144680
0036D4  2681                4469          AIS   R8,1                                                  XP144690
0036D6  C580 0100           4470          CLHI  R8,256                                                XP144700
0036DA  4230 369E           4471          BNE   T15CRC12                                              XP144710
0036DE  4894 8BAA =00428C   4472          LH    R9,BUF3+264(R4)     =BUF3+268                         XP144720
0036E2  C590 0D0E           4473          CLHI  R9,X'0D0E'                                            XP144730
0036E6  213C                4474          BNES  T15R9                                                 XP144740
0036E8  4892 4400 428C      4475          LH    R9,BUF3+264(R2,R4)  =BUF3+270                         XP144750
0036EE  C590 0D0E           4476          CLHI  R9,X'0D0E'                                            XP144760
0036F2  2136                4477          BNES  T15R9                                                 XP144770
0036F4  4890 8B94 =00428C   4478          LH    R9,BUF3+264         R9 = RESIDUE                      XP144780
0036F8  C590 0D0E           4479          CLHI  R9,X'0D0E'                                            XP144790
0036FC  2334                4480          BES   T15SCP                                                XP144800
0036FE  24D9                4481  T15R9   LIS   R13,9               ERROR 0F09, CRC12          *****  XP144810
003700  4300 3320           4482          B     T15R                                                  XP144820
        0000 3704           4483  SCP     EQU   *                                                     XP144830
003704  2400                4484  T15SCP  LIS   R0,0                STORE 256 ZEROS IN                XP144840
003706  E6D0 8A7A =004184   4485          LA    R13,T15BUF0         T15BUF0                           XP144850
00370A  500D 0000           4486  T15S1   ST    R0,0(R13)                                             XP144860
00370E  26D4                4487          AIS   R13,4                                                 XP144870
003710  C5D0 4284           4488          CLHI  R13,T15BUF0+256                                       XP144880
003714  2035                4489          BNES  T15S1                                                 XP144890
                            4490  *                                                                   XP144900
003716  27D1                4491          SIS   R13,1               R13=T15BUF0+255=BUF0 END ADR.      XP144910
003718  F8C0 0000 FF01      4492          LI    R12,Y'FF01'         BUF0 BYTE COUNT=256 (=255)        XP144920
00371E  24E1                4493          LIS   R14,1               R14=POS.NO.=BUF1 BYTE COUNT       XP144930
003720  E6F0 8BE0 =004304   4494          LA    R15,T15B1END        R15 = BUF1 END ADDRESS            XP144940
003724  D0C0 3E80           4495          STM   R12,T15CCW          SET UP T15CCW TO READ 256         XP144950
003728  D0C0 3FB4           4496          STM   R12,REG1C           SAVE FOR LATER                    XP144960
                            4497  *                                                                   XP144970
00372C  2410                4498          LIS   R1,0                R1 = 0 THRU 255 CHARA.            XP144980
00372E  C8A0 FF02           4499          LHI   R10,X'FF02'         R10 = INCREMENTED BUF0 BYTE COUNT XP144990
003732  E310 3E60           4500  T15S2   SCP   R1,T15CCW                                             XP145000
003736  415D 3752           4501          BAL   R5,CHKSCP           CHECK RESULTS OF SCP              XP145010
00373A  242A                4502          LIS   R2,10                                                 XP145020
00373C  E312 3E76           4503          SCP   R1,T15CCW-10(R2)    = T15CCW                          XP145030
003740  4150 3752           4504          BAL   R5,CHKSCP                                             XP145040
003744  2438                4505          LIS   R3,8                                                  XP145050
003746  E312 4300 3E6E      4506          SCP   R1,T15CCW-18(R2,R3) = T15CCW                          XP145060
00374C  415D 3752           4507          BAL   R5,CHKSCP                                             XP145070
003750  220F                4508          BS    T15S2               (B   T15S2)                       XP145080
003752  9599                4509  CHKSCP  EPSR  R9,R9               CAPTURE NEW PSW TO CHECK CC       XP145090
003754  D411 8A2C =004184   4510          CLB   R1,T15BUF0(R1)      R1 = CHAR.LOADED INTO BUF0 FROM R1 XP145100
003758  2134                4511          BNES  T15R10                                                XP145110
00375A  45AD 3E82           4512          CLH   R10,T15CCW+2        R10=DECREMENTED BUF0 BYTE COUNT   XP145120
00375E  2334                4513          BES   T15S3                                                 XP145130
003760  24DA                4514  T15R10  LIS   R13,10              ERROR 0F0A, SCP            *****  XP145140
003762  4300 3320           4515          B     T15R                                                  XP145150
003766  4160 385C           4516  T15S3   BAL   R6,T15CHKCC                                          XP145160
00376A  26A1                4517          AIS   R10,1                                                 XP145170
00376C  2611                4518          AIS   R1,1                R1=BYTE TO BE TRANSFERRED         XP145180
00376E  C510 0100           4519          CLHI  R1,X'100'           IF 256 BYTES CHECKED,DONE         XP145190
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003772  0235                4520          BNER  R5                    DO MORE                              XP145200
                            4521  *                                                                        XP145210
003774  D1C0 3FB4           4522  T15S4   LM    R12,REG1C             RESTORE THESE REGS                   XP145220
003778  08EC                4523          LR    R14,R12               R14=-255=BUF1 BYTE COUNT(256)        XP145230
00377A  08FD                4524          LR    R15,R13               R15 = BUF1 END ADR.                  XP145240
00377C  F8C0 000C FF01      4525          LI    R12,Y'CFF01'          CCW=BUF1,WRITE;BUF1 COUNT=-255       XP145250
003782  D0C0 3E80           4526          STM   R12,T15CCW            FAST BIT = 0                         XP145260
003786  C8A0 FF02           4527          LHI   R10,-254              R10=INCREMENTED BUF1 BYTE COUNT      XP145270
00378A  2410                4528          LIS   R1,0                                                       XP145280
00378C  2501                4529  T15S5   LCS   R0,1                                                       XP145290
00378E  E300 3E80           4530          SCP   R0,T15CCW                                                  XP145300
003792  4150 37AA           4531          BAL   R5,CHKSCP2            CHECK RESULTS OF SCP                 XP145310
003796  E302 3E76           4532          SCP   R0,T15CCW-10(R2)      = T15CCW                             XP145320
00379A  4150 37AA           4533          BAL   R5,CHKSCP2                                                 XP145330
00379E  E302 4300 3E6E      4534          SCP   R0,T15CCW-18(R2,R3) =T15CCW                                XP145340
0037A4  4150 37AA           4535          BAL   R5,CHKSCP2                                                 XP145350
0037A8  220E                4536          BS    T15S5                                                      XP145360
0037AA  9599                4537  CHKSCP2 EPSR  R9,R9                 CATCH CC                             XP145370
0037AC  0501                4538          CLR   R0,R1                                                      XP145380
0037AE  2133                4539          BNES  T15R10B                                                    XP145390
0037B0  45A0 3E8A           4540          CLH   R10,T15CCW+10         R10=BUF1 BYTE COUNT                  XP145400
0037B4  4230 3760           4541  T15R10B BNE   T15R10                                                     XP145410
0037B8  4160 385C           4542          BAL   R6,T15CHKCC                                                XP145420
0037BC  26A1                4543          AIS   R10,1                                                      XP145430
0037BE  2611                4544          AIS   R1,1                  R1=BYTE LOADED                       XP145440
0037C0  C510 0100           4545          CLHI  R1,X'100'                                                  XP145450
0037C4  0235                4546          BNER  R5                                                         XP145460
                            4547  *                             COUNT IS POSITIVE, THEREFORE               XP145470
                            4548  *                             B BIT = 0 (WAS TOGGLED)                    XP145480
0037C6  24AC                4549  T15S6   LIS   R10,12                POINT TO B BIT                       XP145490
0037C8  75A0 3E80           4550          SBT   R10,T15CCW            SET T15CCW BUFFER BIT                XP145500
0037CC  4220 3760           4551          BP    T15R10                ERROR IF B BIT = 1 (NOT TOGGLED)     XP145510
                            4552  *                                                                        XP145520
                            4553  **  ALL 256 BYTES LOADED FROM BUF1. CHECK OVERFLOW                       XP145530
0037D0  E300 3E80           4554          SCP   R0,T15CCW                                                  XP145540
0037D4  4340 3760           4555          BNO   T15R10                                                     XP145550
0037D8  42B0 3760           4556          BTC   11,T15R10                                                  XP145560
                            4557  *                                                                        XP145570
0037DC  F8C0 0001 0000      4558          LI    R12,Y'10000'          SPECIFY FAST MODE. COUNT = 1         XP145580
0037E2  50C0 3E80           4559          ST    R12,T15CCW            R/W = T = B = C = 0                  XP145590
0037E6  E300 3E80           4560          SCP   R0,T15CCW             SHOULD MAKE COUNT .GT. 0             XP145600
                            4561  *                             F = 1 SO B BIT SHOULD NOT TOGGLE           XP145610
0037EA  24AC                4562          LIS   R10,12                POINT TO B BIT                       XP145620
0037EC  76A0 3E80           4563          RBT   R10,T15CCW            RESET B BIT IN T15CCW                XP145630
0037F0  4220 3760           4564          BP    T15R10                BIT WAS TOGGLED ON COUNT .GT. 0      XP145640
                            4565  *                                   WITH F = 1 (FAST MODE)               XP145650
                            4566  *                                                                        XP145660
        0000 37F4           4567  CHVR    EQU   *                                                          XP145670
0037F4  D100 3F04           4568  T15CHVR LM    R0,BUF2               R0=0,R1=1,R2=2,......,R15=15 ETC.    XP145680
0037F8  E6B0 3852           4569          LA    R11,T15R11                                                 XP145690
0037FC  2400                4570          LIS   R0,0                  R0=0,COND.CODE = 0000                XP145700
0037FE  1200                4571          CHVR  R0,R0                 R0=0,COND.CODE = 0 ?                 XP145710
003800  02FB                4572          BTCR  X'F',R11              IF COND CODE IS NONZERO,ERROR        XP145720
003802  0800                4573          LR    R0,R0                                                      XP145730
003804  023B                4574          BNZR  R11                                                        XP145740
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003806  1201
003808  02DB
00380A  032B

00380C  1001
00380E  120A
003810  025B
003812  032B
003814  038B

003816  73A0 3EB8
00381A  4850 3EB4
00381E  125A
003820  02AB
003822  034B
003824  031B
003826  C550 AAAA
00382A  023B

00382C  F860 0000 8000
003832  0876
003834  1267
003836  034B
003838  031B
00383A  02AB
00383C  C560 8000
003840  023B

003842  0867
003844  1266
003846  02AB
003848  031B
00384A  034B
00384C  C560 8000
003850  2334
003852  24DB
003854  4300 3320

003858  4300 0B94


00385C  08AA
00385E  2135

003860  9589
003862  233B
003864  4300 3760
003868  2115

00386A  9589
00386C  2014
00386E  2225
003870  2304
003872  9589
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4575  *
4576          CHVR   R0,R1              R0=1,COND CODE = 0010                    XP145750
4577          BTCR   X'D',R11           C,V,L = 0 ?                              XP145760
4578          BFCR   2,R11              G = 1 ?                                  XP145770
4579  *                                                                          XP145780
4580          SRLS   R0,1               R0= 0 , COND CODE = 1010                 XP145790
4581          CHVR   R0,R10             R0=0000000A,COND CODE = 1010             XP145800
4582          BTCR   5,R11              V=0,L=0 ?                                XP145810
4583          BFCR   2,R11                                                       XP145820
4584          BFCR   8,R11              CC = 1010                                XP145830
4585  *                                                                          XP145840
4586          LHL    R10,TEN            R10 = 0000AAAA                           XP145850
4587          LH     R5,FIVE            R5  = 00005555 ,COND CODE = 0010         XP145860
4588          CHVR   R5,R10             R5 = FFFFAAAA ,COND.CODE = 0101          XP145870
4589          BTCR   X'A',R11           C = 0, G = 0  ?                          XP145880
4590          BFCR   4,R11              CC = 0101                                XP145890
4591          BFCR   1,R11                                                       XP145900
4592          CLHI   R5,X'AAAA'         R5 = FFFFAAAA        ?                   XP145910
4593          BNER   R11                                                         XP145920
4594  *                                                                          XP145930
4595          LI     R6,Y'8000'         R6 = 00008000 ,COND.CODE = 0010          XP145940
4596          LR     R7,R6                                                       XP145950
4597          CHVR   R6,R7                                                       XP145960
4598          BFCR   4,R11              CC = 0101                                XP145970
4599          BFCR   1,R11                                                       XP145980
4600          BTCR   10,R11                                                      XP145990
4601          CLHI   R6,X'8000'         R6 = FFFF8000                            XP146000
4602          BNER   R11                                                         XP146010
4603  *                                                                          XP146020
4604          LR     R6,R7                                                       XP146030
4605          CHVR   R6,R6                                                       XP146040
4606          BTCR   X'A',R11           R6 = FFFF8000 ,COND.CODE = 0101          XP146050
4607          BFCR   1,R11              C=0 , G=0  ?                             XP146060
4608          BFCR   4,R11              CC = 0101                                XP146070
4609          CLHI   R6,X'8000'         CC = 0101                                XP146080
4610          BES    T15END             R6 = Y'FFFF8000'                         XP146090
4611  T15R11  LIS    R13,11                                                      XP146100
4612          B      T15R               ERROR 0F0B, CHVR              *****      XP146110
4613  *                                                                          XP146120
4614  T15END  B      TSTENDX                                                     XP146130
4615  ************************************************************              XP146140
4616  **  THIS SUBROUTINE CHECKS CC AFTER SCP INSTRUCTION                       XP146150
4617  T15CHKCC LR    R10,R10                                                     XP146160
4618           BNZS  T15CHK2                                                    XP146170
4619  **  NEW COUNT IS ZERO , CHECK CC IN R9 FOR ZERO                           XP146180
4620           EPSR  R8,R9                                                      XP146190
4621           BZS   T15CHKOV                                                   XP146200
4622  T15R10A  B     T15R10                                                     XP146210
4623  T15CHK2  BMS   T15CHK4                                                    XP146220
4624  **  NEW COUNT IS POSITIVE, CHECK CC IN R9 FOR G=1,L=0                     XP146230
4625           EPSR  R8,R9                                                      XP146240
4626           BMS   T15R10A                                                    XP146250
4627           BNPS  T15R10A                                                    XP146260
4628           BS    T15CHKOV                                                   XP146270
4629  T15CHK4  EPSR  R8,R9                                                      XP146280
                                                                               XP146290
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                        4630  **  NEW COUNT FIELD IS NEGATIVE ,CHECK CC IN R9 FOR G=0,L=1   XP146300
003874  2028            4631          BPS   T15R10A                                       XP146310
003876  2219            4632          BNMS  T15R10A                                       XP146320
003878  204A            4633  T15CHKOV BOS   T15R10A                                       XP146330
00387A  2088            4634          BCS   T15R10A             CC = 00XX ?               XP146340
00387C  0306            4635          BR    R6                                           XP146350
                        4636  *                                                            XP146360
                        4637  ************************************************************ XP146370
                        4638  *                                                            XP146380
                        4639  **  ILLEGAL INSTRUCTIONS MODEL 7/32                         XP146390
        0000 387E       4640  T10M70   EQU   *                                            XP146400
00387E  E5              4641          DB    X'E5'               BDCS                     XP146410
00387F  E8              4642          DB    X'E8'               RDCS/WDCS                XP146420
003880  E9              4643          DB    X'E9'               ECS                      XP146430
                        4644  **  ILLEGAL INSTRUCTIONS MODEL 8/32  WITH DCS OPTION       XP146440
003881  00              4645  T10M80   DB    0                                            XP146450
003882  0E              4646          DB    X'0E'                                        XP146460
003883  0F              4647          DB    X'0F'                                        XP146470
003884  13              4648          DB    X'13'                                        XP146480
003885  14              4649          DB    X'14'                                        XP146490
003886  15              4650          DB    X'15'                                        XP146500
003887  16              4651          DB    X'16'                                        XP146510
003888  17              4652          DB    X'17'                                        XP146520
003889  19              4653          DB    X'19'                                        XP146530
00388A  1A              4654          DB    X'1A'                                        XP146540
00388B  1B              4655          DB    X'1B'                                        XP146550
00388C  1E              4656          DB    X'1E'                                        XP146560
00388D  1F              4657          DB    X'1F'                                        XP146570
00388E  00              4658          DB    0                   '30' = MPBSR             XP146580
00388F  31              4659          DB    X'31'                                        XP146590
003890  00              4660          DB    0                   '32' = PBR               XP146600
003891  33              4661          DB    X'33'                                        XP146610
003892  35              4662          DB    X'35'                                        XP146620
003893  36              4663          DB    X'36'                                        XP146630
003894  37              4664          DB    X'37'                                        XP146640
003895  00              4665          DB    0                   '38' = LDR               XP146650
003896  00              4666          DB    0                   '39' = CDR               XP146660
003897  00              4667          DB    0                   '3A' = ADR               XP146670
003898  00              4668          DB    0                   '3B' = SDR               XP146680
003899  00              4669          DB    0                   '3C' = MDR               XP146690
00389A  00              4670          DB    0                   '3D' = DDR               XP146700
00389B  00              4671          DB    0                   '3E' = FXDR              XP146710
00389C  00              4672          DB    0                   '3F' = FLDR              XP146720
00389D  4E              4673          DB    X'4E'                                        XP146730
00389E  4F              4674          DB    X'4F'                                        XP146740
00389F  52              4675          DB    X'52'                                        XP146750
0038A0  53              4676          DB    X'53'                                        XP146760
0038A1  00              4677          DB    0                   '62' = PB                XP146770
0038A2  00              4678          DB    0                   '63' = LRA               XP146780
0038A3  6E              4679          DB    X'6E'                                        XP146790
0038A4  6F              4680          DB    X'6F'                                        XP146800
0038A5  00              4681          DB    0                   '70' = STD               XP146810
0038A6  00              4682          DB    0                   '78' = LD                XP146820
0038A7  00              4683          DB    0                   '79' = CD                XP146830
0038A8  00              4684          DB    0                   '7A' = AD                XP146840
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0038A9  00              4685    DB      0               '7B' = SD       XP146850
0038AA  00              4686    DB      0               '7C' = MD       XP146860
0038AB  00              4687    DB      0               '7D' = DD       XP146870
0038AC  00              4688    DB      0               '7E' = STMD     XP146880
0038AD  00              4689    DB      0               '7F' = LMD      XP146890
0038AE  80              4690    DB      X'80'                           XP146900
0038AF  81              4691    DB      X'81'                           XP146910
0038B0  82              4692    DB      X'82'                           XP146920
0038B1  83              4693    DB      X'83'                           XP146930
0038B2  84              4694    DB      X'84'                           XP146940
0038B3  85              4695    DB      X'85'                           XP146950
0038B4  86              4696    DB      X'86'                           XP146960
0038B5  87              4697    DB      X'87'                           XP146970
0038B6  88              4698    DB      X'88'                           XP146980
0038B7  89              4699    DB      X'89'                           XP146990
0038B8  8A              4700    DB      X'8A'                           XP147000
0038B9  8B              4701    DB      X'8B'                           XP147010
0038BA  8C              4702    DB      X'8C'                           XP147020
0038BB  8D              4703    DB      X'8D'                           XP147030
0038BC  8E              4704    DB      X'8E'                           XP147040
0038BD  8F              4705    DB      X'8F'                           XP147050
0038BE  9C              4706    DB      X'9C'                           XP147060
0038BF  9F              4707    DB      X'9F'                           XP147070
0038C0  A0              4708    DB      X'A0'                           XP147080
0038C1  A1              4709    DB      X'A1'                           XP147090
0038C2  A2              4710    DB      X'A2'                           XP147100
0038C3  A3              4711    DB      X'A3'                           XP147110
0038C4  A4              4712    DB      X'A4'                           XP147120
0038C5  A5              4713    DB      X'A5'                           XP147130
0038C6  A6              4714    DB      X'A6'                           XP147140
0038C7  A7              4715    DB      X'A7'                           XP147150
0038C8  A8              4716    DB      X'A8'                           XP147160
0038C9  A9              4717    DB      X'A9'                           XP147170
0038CA  AA              4718    DB      X'AA'                           XP147180
0038CB  AB              4719    DB      X'AB'                           XP147190
0038CC  AC              4720    DB      X'AC'                           XP147200
0038CD  AD              4721    DB      X'AD'                           XP147210
0038CE  AE              4722    DB      X'AE'                           XP147220
0038CF  AF              4723    DB      X'AF'                           XP147230
0038D0  B0              4724    DB      X'B0'                           XP147240
0038D1  B1              4725    DB      X'B1'                           XP147250
0038D2  B2              4726    DB      X'B2'                           XP147260
0038D3  B3              4727    DB      X'B3'                           XP147270
0038D4  B4              4728    DB      X'B4'                           XP147280
0038D5  B5              4729    DB      X'B5'                           XP147290
0038D6  B6              4730    DB      X'B6'                           XP147300
0038D7  B7              4731    DB      X'B7'                           XP147310
0038D8  B8              4732    DB      X'B8'                           XP147320
0038D9  B9              4733    DB      X'B9'                           XP147330
0038DA  BA              4734    DB      X'BA'                           XP147340
0038DB  BB              4735    DB      X'BB'                           XP147350
0038DC  BC              4736    DB      X'BC'                           XP147360
0038DD  BD              4737    DB      X'BD'                           XP147370
0038DE  BE              4738    DB      X'BE'                           XP147380
0038DF  BF              4739    DB      X'BF'                           XP147390
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0038E0  DC              4740           DB    X'DC'                                                     XP147400
0038E1  DF              4741           DB    X'DF'                                                     XP147410
0038E2  E4              4742           DB    X'E4'                                                     XP147420
0038E3  F0              4743           DB    X'F0'                                                     XP147430
0038E4  F1              4744           DB    X'F1'                                                     XP147440
0038E5  F2              4745           DB    X'F2'                                                     XP147450
0038E6  FC              4746           DB    X'FC'                                                     XP147460
0038E7  FD              4747           DB    X'FD'                                                     XP147470
0038E8  FE              4748           DB    X'FE'                                                     XP147480
0038E9  FF              4749           DB    X'FF'                                                     XP147490
        0000 38EA       4750  LSTILG   EQU   *                   LAST ILLG.INSTR.ADR.+1                XP147500
                        4751  ***********************************************************************  XP147510
                        4752  *                                                                        XP147520
                        4753  **  TABLE OF PRIVILEGED INSTRUCTIONS IN FW MODE                          XP147530
0038EA  18              4754  T14BYT   DB    X'18'               LPSWR                                 XP147540
0038EB  95              4755           DB    X'95'               EPSR                                  XP147550
0038EC  96              4756           DB    X'96'               WBR                                   XP147560
0038ED  97              4757           DB    X'97'               RBR                                   XP147570
0038EE  98              4758           DB    X'98'               WHR                                   XP147580
0038EF  99              4759           DB    X'99'               RHR                                   XP147590
0038F0  9A              4760           DB    X'9A'               WDR                                   XP147600
0038F1  9B              4761           DB    X'9B'               RDR                                   XP147610
0038F2  9D              4762           DB    X'9D'               SSR                                   XP147620
0038F3  9E              4763           DB    X'9E'               OCR                                   XP147630
0038F4  C2              4764           DB    X'C2'               LPSW                                  XP147640
0038F5  D5              4765           DB    X'D5'               AL                                    XP147650
0038F6  D6              4766           DB    X'D6'               WB                                    XP147660
0038F7  D7              4767           DB    X'D7'               RB                                    XP147670
0038F8  D8              4768           DB    X'D8'               WH                                    XP147680
0038F9  D9              4769           DB    X'D9'               RH                                    XP147690
0038FA  DA              4770           DB    X'DA'               WD                                    XP147700
0038FB  DB              4771           DB    X'DB'               RD                                    XP147710
0038FC  DD              4772           DB    X'DD'               SS                                    XP147720
0038FD  DE              4773           DB    X'DE'               OC                                    XP147730
0038FE  E2              4774           DB    X'E2'               SINT                                  XP147740
0038FF  E3              4775           DB    X'E3'               SCP                                   XP147750
        0000 3900       4776  T14LST   EQU   *                                                         XP147760
                        4777  ***********************************************************************  XP147770
                        4778  *                                                                        XP147780
                        4779  **       DOUBLEWORD DATA CONSTANTS USED IN S32PT1                        XP147790
003900                  4780           ALIGN 8                                                         XP147800
        0000 3900       4781  PSWTABLE EQU   *                                                         XP147810
003900  0000 0000       4782  PSWSAVE  DCY   0,0                                                       XP147820
003904  0000 0000
                        4783  **  PSW USED IN TEST1                                                    XP147830
003908  0000 00F0       4784  T1PSW1   DC    Y'F0',T1RR                                                XP147840
00390C  0000 1296
003910  0000 00FF       4785  T1PSW2   DC    Y'FF',T1E5                                                XP147850
003914  0000 129E
003918  0000 00F0       4786  T1H      DC    Y'F0',T1H1          COND CODE = 0000                      XP147860
00391C  0000 139C
003920  0000 0000       4787  T1P1     DCY   0                                                         XP147870
003924  0000 121E       4788           DC    A(T1L1)                                                   XP147880
                        4789  **  PSW USED IN TEST2                                                    XP147890
003928  0000 00FF       4790  T1P2     DCY   00FF                SEL REG SET F, CC = 1111              XP147900
```

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00392C   0000 1256        4791           DC     A(T1L2)                                                  XP147910
003930   0000 70F0        4792  T2PSW    DCY    70F0               SEL REG SET F, ENAB ALL INTPTS         XP147920
003934   0000 13E6        4793           DC     A(T2A)                                                   XP147930
                          4794  **  PSW USED IN TEST 4                                                   XP147940
003938   0000 00F5        4795  T4PSW1   DCY    00F5               SEL REG SET F, CC = 0101               XP147950
00393C   0000 1AB6        4796           DC     T4LOC1                                                   XP147960
003940   0000 00FF        4797  T4PSW2   DCY    00FF               SEL REG SET F, CC = 1111               XP147970
003944   0000 1A94        4798           DC     T4D6A                                                    XP147980
003948   0000 00FF        4799  T4PSW3   DCY    00FF               SEL REG SET F, CC = 1111               XP147990
00394C   0000 1AE0        4800           DC     T4E2A                                                    XP148000
                          4801  **  PSW USED IN TEST6                                                    XP148010
003950   0000 00F0        4802  T6PSW0   DC     Y'F0',T6A                                                XP148020
003954   0000 202A
003958   0000 00F0        4803  T6PSW1   DCY    00F0               SEL REG SET F                          XP148030
00395C   0000 205C        4804           DC     T6R1X                                                    XP148040
003960   0000 70F0        4805  T6PSW2   DCY    70F0               SEL REG SET F, ENAB INTPTS             XP148050
003964   0000 2114        4806           DC     A(T6C)                                                   XP148060
003968   0000 00F0        4807  T6PSW3   DC     Y'F0',T6R2X                                              XP148070
00396C   0000 20C0
003970   0000 00F0        4808  T6PSW4   DC     Y'00F0',T6B                                              XP148080
003974   0000 20AA
                          4809  **  PSW USED IN TEST 9                                                   XP148090
003978   0000 00F0        4810  T9PSW1   DC     Y'F0',T9A                                                XP148100
00397C   0000 28FC
                          4811  **  PSW USED IN TEST 10                                                  XP148110
003980   0000 00F0        4812  T10P2    DCY    00F0               SEL REG SET F                          XP148120
003984   0000 2A1C        4813           DC     A(T10L2)                                                 XP148130
003988   0000 40F0        4814  T10P3    DCY    40F0               IMMED. INTPTS, REG SET F               XP148140
00398C   0000 2A8C        4815           DC     A(T10L3)                                                 XP148150
003990   0000 70F5        4816  T10M     DCY    70F5               SEL REG SET F, INTPTS, CC = 0101       XP148160
003994   0000 2ADE        4817           DC     ILLEGL                                                   XP148170
003998   0000 70F0        4818  T10Z     DCY    70F0                                                     XP148180
00399C   0000 2B2E        4819           DC     A(T10END)                                                XP148190
                          4820  **           PSW USED IN TEST 13.                                        XP148200
0039A0   0000 70F0        4821  T13PSW   DCY    70F0                                                     XP148210
0039A4   0000 309A        4822           DC     A(T13P1)                                                 XP148220
                          4823  **  PSW USED IN TEST 14                                                  XP148230
0039A8   0000 01F0        4824  T14A     DC     Y'1F0',T14PRV      PROT MODE, REG SET F, CC = 0000        XP148240
0039AC   0000 3206
                          4825  **           PSW USED IN TEST 15.                                        XP148250
0039B0   0000 70F0        4826  T15PSW   DCY    70F0                                                     XP148260
0039B4   0000 32AC        4827           DC     T15A                                                     XP148270
0039B8   0000 00F0        4828  T15PSW1  DC     Y'F0',T15E                                               XP148280
0039BC   0000 3516
                          4829  *                                                                        XP148290
                          4830  ************************************************************************ XP148300
                          4831  **           FULLWORD DATA CONSTANTS USED IN S32PT1                      XP148310
                          4832  *                                                                        XP148320
0039C0   0000 0000        4833  NXTST    DCY    00000000           32 BIT ADDRESS FIELD (NEXT TEST)       XP148330
0039C4   A5A5 5A5A        4834  DATUM    DCY    A5A55A5A           USED IN DOUBLE INDEXING TEST           XP148340
                          4835  *******************************************************                  XP148350
         0000 39C8        4836  T83TABL  EQU    *                                                        XP148360
                          4837  **  THIS TABLE CONTAINS THE OPERANDS USED IN THE ADD/SUBTRACT TEST       XP148370
                          4838  **       **     *  *OP1*       OP2        RESULT    OP  ,CC              XP148380
0039C8   0000 0000        4839  T83N01   DCY    00000000,00000000,00000000,00000000                      XP148390
```

```
0039CC  0000 0000
0039D0  0000 0000
0039D4  0000 0000
0039D8  0000 0000          4840  T83NO2   DCY   00000000,00000000,00000000,80000000                    XP148400
0039DC  0000 0000
0039E0  0000 0000
0039E4  8000 0000
0039E8  0000 0000          4841  T83NO3   DCY   00000000,FFFFFFFF,FFFFFFFF,00000001                    XP148410
0039EC  FFFF FFFF
0039F0  FFFF FFFF
0039F4  0000 0001
0039F8  0000 0000          4842  T83NO4   DCY   00000000,FFFFFFFF,00000001,8000000A                    XP148420
0039FC  FFFF FFFF
003A00  0000 0001
003A04  8000 000A
        0000 3A08          4843  T83TBHW1 EQU   *                                                      XP148430
003A08  7FFF 8000          4844  T83NO5   DCY   7FFF8000,00000001,7FFF8001,00000002                    XP148440
003A0C  0000 0001
003A10  7FFF 8001
003A14  0000 0002
003A18  0000 0000          4845  T83NO6   DCY   00000000,80000000,80000000,00000001                    XP148450
003A1C  8000 0000
003A20  8000 0000
003A24  0000 0001
003A28  FFFF FFFF          4846  T83NO7   DCY   FFFFFFFF,7FFFFFFF,80000000,80000001                    XP148460
003A2C  7FFF FFFF
003A30  8000 0000
003A34  8000 0001
        0000 3A38          4847  T83FWOV  EQU   *                    OVERFLOW IN FW OPERATION           XP148470
003A38  0000 0000          4848  T83NO8   DCY   00000000,80000000,80000000,8000000D                    XP148480
003A3C  8000 0000
003A40  8000 0000
003A44  8000 000D
003A48  0000 0001          4849  T83NO9   DCY   00000001,80000001,80000000,8000000D                    XP148490
003A4C  8000 0001
003A50  8000 0000
003A54  8000 000D
003A58  8000 0000          4850  T83NOA   DCY   80000000,00000001,7FFFFFFF,80000006                    XP148500
003A5C  0000 0001
003A60  7FFF FFFF
003A64  8000 0006
003A68  7FFF FFFF          4851  T83NOB   DCY   7FFFFFFF,00000001,80000000,00000005                    XP148510
003A6C  0000 0001
003A70  8000 0000
003A74  0000 0005
        0000 3A78          4852  T83TBEND EQU   *                                                      XP148520
                           4853  *                                                                     XP148530
                           4854  *                                                                     XP148540
        0000 3A78          4855  T8COMPR  EQU   *                                                      XP148550
                           4856  **  THIS TABLE CONTAINS THE OPERANDS USED IN THE COMPARE TEST         XP148560
                           4857  ********************************************************             XP148570
                           4858  *        *        OP1         OP2        CC                           XP148580
003A78  0000 0000          4859  T85NO1   DCY   00000000,00000000,00000000                            XP148590
003A7C  0000 0000
003A80  0000 0000
```

```
003A84  FFFF FFFE          4860  T85NO2   DCY   FFFFFFFE,FFFFFFFE,00000000                    XP148600
003A88  FFFF FFFE
003A8C  0000 0000
003A90  FFFF FFFF          4861  T85NO3   DCY   FFFFFFFF,FFFFFFFF,00000000                    XP148610
003A94  FFFF FFFF
003A98  0000 0000
003A9C  0000 0001          4862  T85NO4   DCY   00000001,00000000,00000022                    XP148620
003AA0  0000 0000
003AA4  0000 0022
003AA8  FFFF FFFF          4863  T85NO5   DCY   FFFFFFFF,FFFFFFFE,00000022                    XP148630
003AAC  FFFF FFFE
003AB0  0000 0022
003AB4  FFFF FFFF          4864  T85NO6   DCY   FFFFFFFF,00000000,00000099                    XP148640
003AB8  0000 0000
003ABC  0000 0099
        0000 3AC0          4865  T85TBHW  EQU   *
003AC0  8000 0001          4866  T85NO7   DCY   80000001,80000001,00000090                    XP148650
003AC4  8000 0001                                                                             XP148660
003AC8  0000 0090
003ACC  8000 0001          4867  T85NO8   DCY   80000001,80000002,00000099                    XP148670
003AD0  8000 0002
003AD4  0000 0099
003AD8  0000 0000          4868  T85NO9   DCY   00000000,80000001,00000092                    XP148680
003ADC  8000 0001
003AE0  0000 0092
003AE4  7FFF 0000          4869  T85NOA   DCY   7FFF0000,7FFE0001,00000022                    XP148690
003AE8  7FFE 0001
003AEC  0000 0022
003AF0  FFFE 0002          4870  T85NOB   DCY   FFFE0002,FFFF0001,00000099                    XP148700
003AF4  FFFF 0001
003AF8  0000 0099
003AFC  FFFE 8000          4871  T85NOC   DCY   FFFE8000,FFFF8000,00000099                    XP148710
003B00  FFFF 8000
003B04  0000 0099
003B08  8001 FFFF          4872  T85NOD   DCY   8001FFFF,8000FFFF,00000092                    XP148720
003B0C  8000 FFFF
003B10  0000 0092
        0000 3B14          4873  T8COMEND EQU   *                                            XP148730
                           4874  *                                                           XP148740
                           4875  **  DATA CONSTANTS USED IN TEST 12                          XP148750
                           4876  ************************************************************ XP148760
        0000 3B14          4877  T12MUTBL EQU   *                                            XP148770
003B14  0000 0000          4878  T12MNO1  DCY   0,0,0,0              OPRND1,OPRND2,RESULT,RESULT XP148780
003B18  0000 0000
003B1C  0000 0000
003B20  0000 0000
003B24  FFFF FFFF          4879  T12MNO2  DCY   FFFFFFFF,FFFFFFFF,00000000,00000001          XP148790
003B28  FFFF FFFF
003B2C  0000 0000
003B30  0000 0001
003B34  FFFF FFFF          4880  T12MNO3  DCY   FFFFFFFF,11111111,FFFFFFFF,EEEEEEEF          XP148800
003B38  1111 1111
003B3C  FFFF FFFF
003B40  EEEE EEEF
003B44  1111 1111          4881  T12MNO4  DCY   11111111,11111111,01234567,87654321          XP148810
```

```
003B48   1111 1111
003B4C   0123 4567
003B50   8765 4321
003B54   7777 7777          4882  T12MNO5  DCY   77777777,10000001,07777777,E7777777                    XP148820
003B58   1000 0001
003B5C   0777 7777
003B60   E777 7777
003B64   7FFF FFFF          4883  T12MNO6  DCY   7FFFFFFF,7FFFFFFF,3FFFFFFF,00000001                    XP148830
003B68   7FFF FFFF
003B6C   3FFF FFFF
003B70   0000 0001
003B74   8000 0000          4884  T12MNO7  DCY   80000000,80000000,40000000,00000000                    XP148840
003B78   8000 0000
003B7C   4000 0000
003B80   0000 0000
003B84   8000 0001          4885  T12MNO8  DCY   80000001,80000000,3FFFFFFF,80000000                    XP148850
003B88   8000 0000
003B8C   3FFF FFFF
003B90   8000 0000
003B94   1234 5678          4886  T12MNO9  DCY   12345678,12345678,014B66DC,1DF4D840                    XP148860
003B98   1234 5678
003B9C   014B 66DC
003BA0   1DF4 D840
003BA4   9ABC 1234          4887  T12MNOA  DCY   9ABC1234,A1234567,25864181,23AF56EC                    XP148870
003BA8   A123 4567
003BAC   2586 4181
003BB0   23AF 56EC
003BB4   FABC 7812          4888  T12MNOB  DCY   FABC7812,73125467,FDA24974,407E373E                    XP148880
003BB8   7312 5467
003BBC   FDA2 4974
003BC0   407E 373E
003BC4   8000 0000          4889  T12MNOC  DCY   80000000,7FFFFFFF,C0000000,80000000                    XP148890
003BC8   7FFF FFFF
003BCC   C000 0000
003BD0   8000 0000
         0000 3BD4          4890  T12MTBND EQU   *                                                      XP148900
                            4891  *                                                                     XP148910
                            4892  ********************************************************************  XP148920
         0000 3BD4          4893  T12MHTBL EQU   *                                                      XP148930
                            4894  *        DATA USED TO TEST INSTRUCTIONS MH, MHR.                      XP148940
                            4895  *        OP1, OP2, RESULT-HI, RESULT-LO.                              XP148950
                            4896  *                                                                     XP148960
003BD4   FFFF FFFF          4897  T12MHN1  DCY   FFFFFFFF,FFFF0001,00000000,FFFFFFFF                    XP148970
003BD8   FFFF 0001
003BDC   0000 0000
003BE0   FFFF FFFF
003BE4   FFFF FFFF          4898  T12MHN2  DCY   FFFFFFFF,0000FFFF,00000000,00000001                    XP148980
003BE8   0000 FFFF
003BEC   0000 0000
003BF0   0000 0001
003BF4   0000 0000          4899  T12MHN3  DCY   00000000,00000000,00000000,00000000                    XP148990
003BF8   0000 0000
003BFC   0000 0000
003C00   0000 0000
003C04   0000 0000          4900  T12MHN4  DCY   00000000,0000FFFF,00000000,00000000                    XP149000
```

```
003C08  0000 FFFF
003C0C  0000 0000
003C10  0000 0000
003C14  0000 7FFF          4901  T12MHN5  DCY   00007FFF,00000000,00000000,00000000                                XP149010
003C18  0000 0000
003C1C  0000 0000
003C20  0000 0000
003C24  0000 1111          4902  T12MHN6  DCY   00001111,00001111,00000000,01234321                                XP149020
003C28  0000 1111
003C2C  0000 0000
003C30  0123 4321
003C34  0000 1111          4903  T12MHN7  DCY   00001111,FFFFFFFF,00000000,FFFFEEEF                                XP149030
003C38  FFFF FFFF
003C3C  0000 0000
003C40  FFFF EEEF
003C44  FFFF FFFF          4904  T12MHN8  DCY   FFFFFFFF,FFFFFFFF,00000000,00000001                                XP149040
003C48  FFFF FFFF
003C4C  0000 0000
003C50  0000 0001
003C54  FFFF 8000          4905  T12MHN9  DCY   FFFF8000,FFFFFFFF,00000000,00008000                                XP149050
003C58  FFFF FFFF
003C5C  0000 0000
003C60  0000 8000
003C64  FFFF 8000          4906  T12MHNA  DCY   FFFF8000,FFFF8000,00000000,40000000                                XP149060
003C68  FFFF 8000
003C6C  0000 0000
003C70  4000 0000
        0000 3C74          4907  T12MHTBS EQU   *                                                                 XP149070
                           4908  ************************************************************************          XP149080
                           4909  *                                                                               XP149090
        0000 3C74          4910  T12DVTBL EQU   *                                                                 XP149100
003C74  0000 0000          4911  T12DN1   DCY   0                    DIVIDEND  (R9)                              XP149110
003C78  0000 0000          4912           DCY   0                    DIVIDEND  (R10)                             XP149120
003C7C  0000 0000          4913           DCY   0                    DIVISOR   (R11)                             XP149130
003C80  0000 0000          4914           DCY   0                    REMAINDER (R12)                             XP149140
003C84  0000 0000          4915           DCY   0                    QUOTIENT  (R13)                             XP149150
003C88  0000 0000          4916  T12DN2   DCY   0,1,0,0,1                                                        XP149160
003C8C  0000 0001
003C90  0000 0000
003C94  0000 0000
003C98  0000 0001
003C9C  FFFF FFFF          4917  T12DN3   DCY   FFFFFFFF,FFFFFFFF                                                XP149170
003CA0  FFFF FFFF
003CA4  0000 0000          4918           DCY   00000000,FFFFFFFF,FFFFFFFF                                        XP149180
003CA8  FFFF FFFF
003CAC  FFFF FFFF
003CB0  0000 0000          4919  T12DN4   DCY   0,0,7FFFFFFF,0,0                                                 XP149190
003CB4  0000 0000
003CB8  7FFF FFFF
003CBC  0000 0000
003CC0  0000 0000
003CC4  0000 0000          4920  T12DN5   DCY   0,0,FFFFFFFF,0,0                                                 XP149200
003CC8  0000 0000
003CCC  FFFF FFFF
003CD0  0000 0000
```

```
003CD4  0000 0000
003CD8  0000 0000          4921  T12DN6   DCY   0,0,80000000,0,0                                                    XP149210
003CDC  0000 0000
003CE0  8000 0000
003CE4  0000 0000
003CE8  0000 0000                                                                                                    XP149220
003CEC  0000 0000          4922  T12DN7   DCY   0,1,-1,0,-1
003CF0  0000 0001
003CF4  FFFF FFFF
003CF8  0000 0000
003CFC  FFFF FFFF                                                                                                    XP149230
003D00  3FFF FFFF          4923  T12DN8   DCY   3FFFFFFF          DIVIDEND                                          XP149240
003D04  8000 0000          4924               DCY   80000000                                                       XP149250
003D08  7FFF FFFF          4925               DCY   7FFFFFFF         DIVISOR                                       XP149260
003D0C  3FFF FFFF          4926               DCY   3FFFFFFF         REMAINDER                                     XP149270
003D10  8000 0000          4927               DCY   80000000         QUOTIENT      (DIVIDE FAULT)                  XP149280
003D14  C000 0000          4928  T12DN9   DCY   C0000000         DIVIDEND                                          XP149290
003D18  8000 0000          4929               DCY   80000000                                                       XP149300
003D1C  8000 0001          4930               DCY   80000001         DIVISOR                                       XP149310
003D20  C000 0000          4931               DCY   C0000000         REMAINDER                                     XP149320
003D24  8000 0000          4932               DCY   80000000         QUOTIENT      (DIVIDE FAULT)                  XP149330
003D28  FFFF FFFF          4933  T12DNA   DCY   FFFFFFFF         DIVIDEND                                          XP149340
003D2C  EEEE EEEF          4934               DCY   EEEEEEEF                                                       XP149350
003D30  FFFF FFFF          4935               DCY   FFFFFFFF         DIVISOR                                       XP149360
003D34  0000 0000          4936               DCY   0                REMAINDER                                     XP149370
003D38  1111 1111          4937               DCY   11111111         QUOTIENT                                      XP149380
003D3C  3FFF FFFF          4938  T12DNB   DCY   3FFFFFFF         DIVIDEND                                          XP149390
003D40  FFFF FFFF          4939               DCY   FFFFFFFF                                                       XP149400
003D44  8000 0001          4940               DCY   80000001         DIVISOR                                       XP149410
003D48  3FFF FFFF          4941               DCY   3FFFFFFF         REMAINDER                                     XP149420
003D4C  FFFF FFFF          4942               DCY   FFFFFFFF         QUOTIENT      (DIVIDE FAULT)                  XP149430
003D50  C000 0000          4943  T12DNC   DCY   C0000000         DIVIDEND                                          XP149440
003D54  0000 0001          4944               DCY   00000001                                                       XP149450
003D58  7FFF FFFF          4945               DCY   7FFFFFFF         DIVISOR                                       XP149460
003D5C  C000 0000          4946               DCY   C0000000         REMAINDER                                     XP149470
003D60  0000 0001          4947               DCY   00000001         QUOTIENT      (DIVIDE FAULT)                  XP149480
        C000 3D64          4948  T12DTBND EQU   *                                                                   XP149490
                           4949  *                                                                                  XP149500
                           4950  *                                                                                  XP149510
        C000 3D64          4951  T12DVFLG EQU   *                                                                   XP149520
                           4952  ************************************************************                        XP149530
003D64  01                 4953  T12DFG1  DB    1                EXPECT ARITH FLT INTPT IF FLAG SET                XP149540
003D65  01                 4954  T12DFG2  DB    1                                                                  XP149550
003D66  01                 4955  T12DFG3  DB    1                                                                  XP149560
003D67  00                 4956  T12DFG4  DB    0                                                                  XP149570
003D68  00                 4957  T12DFG5  DB    0                                                                  XP149580
003D69  00                 4958  T12DFG6  DB    0                                                                  XP149590
003D6A  00                 4959  T12DFG7  DB    0                                                                  XP149600
003D6B  01                 4960  T12DFG8  DB    1                                                                  XP149610
003D6C  01                 4961  T12DFG9  DB    1                                                                  XP149620
003D6D  00                 4962  T12DFGA  DB    0                                                                  XP149630
003D6E  01                 4963  T12DFGB  DB    1                                                                  XP149640
003D6F  01                 4964  T12DFGC  DB    1                                                                  XP149650
                           4965  ************************************************************************           XP149660
                           4966  **  TABLE OF OPERANDS USED TO TEST INSTRUCTIONS DHR , DH
```

```
003D70                   4967             ALIGN 4                                                      XP149670
         0000 3D70       4968  T12DHTAB EQU   *                                                        XP149680
                         4969  *              DIVIDEND, DIVISOR, REMAINDER, QUOTIENT    FLAG           XP149690
003D70   0000 0000       4970  T12DHN0  DCY   00000000,FFFF0000,00000000,00000000 1                    XP149700
003D74   FFFF 0000
003D78   0000 0000
003D7C   0000 0000
003D80   0000 0001       4971  T12DHN1  DCY   00000001,00000000,00000001,00000000 1                    XP149710
003D84   0000 0000
003D88   0000 0001
003D8C   0000 0000
003D90   FFFF FFFF       4972  T12DHN2  DCY   FFFFFFFF,00000000,FFFFFFFF,00000000 1                    XP149720
003D94   0000 0000
003D98   FFFF FFFF
003D9C   0000 0000
003DA0   0000 0000       4973  T12DHN3  DCY   00000000,00007FFF,00000000,00000000 0                    XP149730
003DA4   0000 7FFF
003DA8   0000 0000
003DAC   0000 0000
003DB0   0000 0000       4974  T12DHN4  DCY   00000000,0000FFFF,00000000,00000000 0                    XP149740
003DB4   0000 FFFF
003DB8   0000 0000
003DBC   0000 0000
003DC0   0000 0000       4975  T12DHN5  DCY   00000000,00008000,00000000,00000000 0                    XP149750
003DC4   0000 8000
003DC8   0000 0000
003DCC   0000 0000
003DD0   3FFF 8000       4976  T12DHN6  DCY   3FFF8000,00007FFF,3FFF8000,00000000 1                    XP149760
003DD4   0000 7FFF
003DD8   3FFF 8000
003DDC   0000 0000
003DE0   C000 8000       4977  T12DHN7  DCY   C0008000,00008001,C0008000,00000000 1                    XP149770
003DE4   0000 8001
003DE8   C000 8000
003DEC   0000 0000
003DF0   3FFF 7FFF       4978  T12DHN8  DCY   3FFF7FFF,00007FFF,00007FFE,00007FFF 0                    XP149780
003DF4   0000 7FFF
003DF8   0000 7FFE
003DFC   0000 7FFF
003E00   C000 8001       4979  T12DHN9  DCY   C0008001,FFFF8001,FFFF8002,00007FFF 0                    XP149790
003E04   FFFF 8001
003E08   FFFF 8002
003E0C   0000 7FFF
003E10   3FFF FFFE       4980  T12DHNA  DCY   3FFFFFFE,00008001,00007FFE,FFFF8000 0                    XP149800
003E14   0000 8001
003E18   0000 7FFE
003E1C   FFFF 8000
003E20   C000 0002       4981  T12DHNB  DCY   C0000002,FFFF7FFF,FFFF8002,FFFF8000 0                    XP149810
003E24   FFFF 7FFF
003E28   FFFF 8002
003E2C   FFFF 8000
003E30   3FFF FFFF       4982  T12DHNC  DCY   3FFFFFFF,FFFF8001,3FFFFFFF,00000000 1                    XP149820
003E34   FFFF 8001
003E38   3FFF FFFF
003E3C   0000 0000
```

```
003E40  C000 0001          4983  T12DHND  DCY   C0000001,FFFF7FFF,C0000001,00000000 1                    XP149830
003E44  FFFF 7FFF
003E48  C000 0001
003E4C  0000 0000
003E50  0000 0001          4984  T12DHNE  DCY   00000001,0000FFFF,00000000,FFFFFFFF 0                    XP149840
003E54  0000 FFFF
003E58  0000 0000
003E5C  FFFF FFFF
003E60  FFFF FFFC          4985  T12DHNF  DCY   FFFFFFFC,80000002,00000000,FFFFFFFE 0                    XP149850
003E64  8000 0002
003E68  0000 0000
003E6C  FFFF FFFE
        0000 3E70          4986  T12DHTND EQU   *                                                         XP149860
                           4987  *                                                                       XP149870
                           4988  ************************************************************************ XP149880
        0000 3E70          4989  T12DHFLG EQU   *                                                         XP149890
003E70  01                 4990  T12DHFL0 DB    1                                                        XP149900
003E71  01                 4991  T12DHFL1 DB    1                                                        XP149910
003E72  01                 4992  T12DHFL2 DB    1                                                        XP149920
003E73  00                 4993  T12DHFL3 DB    0                                                        XP149930
003E74  00                 4994  T12DHFL4 DB    0                                                        XP149940
003E75  00                 4995  T12DHFL5 DB    0                                                        XP149950
003E76  01                 4996  T12DHFL6 DB    1                                                        XP149960
003E77  01                 4997  T12DHFL7 DB    1                                                        XP149970
003E78  00                 4998  T12DHFL8 DB    0                                                        XP149980
003E79  00                 4999  T12DHFL9 DB    0                                                        XP149990
003E7A  00                 5000  T12DHFLA DB    0                                                        XP150000
003E7B  00                 5001  T12DHFLB DB    0                                                        XP150010
003E7C  01                 5002  T12DHFLC DB    1                                                        XP150020
003E7D  01                 5003  T12DHFLD DB    1                                                        XP150030
003E7E  00                 5004  T12DHFLE DB    0                                                        XP150040
003E7F  00                 5005  T12DHFLF DB    0                                                        XP150050
                           5006  ************************************************************           XP150060
                           5007  **  BUFFER AREAS AND OTHER FULLWORD DATA CONSTANTS                       XP150070
003E80                     5008          CNOP  4                    ALIGN 4                             XP150080
                           5009  **  CHANNEL COMMAND WORD USED IN TEST15                                  XP150090
003E80  0000 0000          5010  T15CCW   DCY   0                    CCW , BUF0 BYTE COUNT               XP150100
003E84  0000 0000          5011           DCY   0                    BUF0 END ADDRESS                    XP150110
003E88  0000 0000          5012           DCY   0                    CHECK WORD , BUF1 BYTE COUNT        XP150120
003E8C  0000 0000          5013           DCY   0                    BUF1 END ADDRESS                    XP150130
003E90  0000 0000          5014  TABLE    DCY   0                    TOTAL SLOTS , SLOTS USED            XP150140
003E94  0000 0000          5015           DCY   0                    CURRENT TOP , NEXT BOTTOM           XP150150
003E98  0000 0000          5016           DCY   0                    SLOT 0                              XP150160
003E9C  0000 0000          5017           DCY   0                    SLOT 1                              XP150170
003EA0  0000 0000          5018           DCY   0                    SLOT 2                              XP150180
003EA4  0000 0000          5019           DCY   0                    SLOT 3                              XP150190
003EA8  0000 0000          5020           DCY   0                    EXTRA                               XP150200
003EAC  0000 0000          5021  ZERO     DCY   0                    4 BYTES OF ZERO                     XP150210
003EB0  FFFF FFFF          5022  ONE      DCY   -1                   4 BYTES OF 'F'S                     XP150220
003EB4  5555 5555          5023  FIVE     DCY   55555555             4 BYTES OF '5'S                     XP150230
003EB8  AAAA AAAA          5024  TEN      DCY   AAAAAAAA             4 BYTES OF 'A'S                     XP150240
003EBC  0000 0000          5025  TEMP     DCY   0                    TEMPORARY STORAGE AREA              XP150250
        0000 3EC0          5026  QUEUE    EQU   *                    SYSTEM QUEUE (ALWAYS EMPTY)         XP150260
003EC0  0002 0000          5027           DCY   00020000             -HAS SIZE OF TWO.                   XP150270
        0000 3EC4          5028  BUF0     EQU   *                    16 FULLWORDS OF ZERO                XP150280
```

```
003EC4                  5029           DO     16                                      XP150290
003EC4   0000 0000      5030           DCY    0                                       XP150300
003EC8   0000 0000      5030           DCY    0
003ECC   0000 0000      5030           DCY    0
003ED0   0000 0000      5030           DCY    0
003ED4   0000 0000      5030           DCY    0
003ED8   0000 0000      5030           DCY    0
003EDC   0000 0000      5030           DCY    0
003EE0   0000 0000      5030           DCY    0
003EE4   0000 0000      5030           DCY    0
003EE8   0000 0000      5030           DCY    0
003EEC   0000 0000      5030           DCY    0
003EF0   0000 0000      5030           DCY    0
003EF4   0000 0000      5030           DCY    0
003EF8   0000 0000      5030           DCY    0
003EFC   0000 0000      5030           DCY    0
003F00   0000 0000      5030           DCY    0
                        5031  **  BUF2 CONTAINS DATA CONSTANTS 0,1,2,     ,15
003F04   0000 0000      5032  BUF2     DCY    0                                       XP150310
003F08   0000 0001      5033           DCY    1                                       XP150320
003F0C   0000 0002      5034           DCY    2                                       XP150330
003F10   0000 0003      5035           DCY    3                                       XP150340
003F14   0000 0004      5036           DCY    4                                       XP150350
003F18   0000 0005      5037           DCY    5                                       XP150360
003F1C   0000 0006      5038           DCY    6                                       XP150370
003F20   0000 0007      5039  BUF1     DCY    7                                       XP150380
003F24   0000 0008      5040           DCY    8                                       XP150390
003F28   0000 0009      5041           DCY    9                                       XP150400
003F2C   0000 000A      5042           DCY    A                                       XP150410
003F30   0000 000B      5043           DCY    B                                       XP150420
003F34   0000 000C      5044           DCY    C                                       XP150430
003F38   0000 000D      5045           DCY    D                                       XP150440
003F3C   0000 000E      5046           DCY    E                                       XP150450
003F40   0000 000F      5047           DCY    F                                       XP150460
         0000 3F44      5048  REGSAVE  EQU    *                                       XP150470
                        5049  **       REGISTER SET 0                                 XP150480
003F44   0000 0000      5050  REG0     DCY    0                                       XP150490
003F48   0000 0000      5051  REG1     DCY    0                                       XP150500
003F4C   0000 0000      5052  REG2     DCY    0                                       XP150510
003F50   0000 0000      5053  REG3     DCY    0                                       XP150520
003F54   0000 0000      5054  REG4     DCY    0                                       XP150530
003F58   0000 0000      5055  REG5     DCY    0                                       XP150540
003F5C   0000 0000      5056  REG6     DCY    0                                       XP150550
003F60   0000 0000      5057  REG7     DCY    0                                       XP150560
003F64   0000 0000      5058  REG8     DCY    0                                       XP150570
003F68   0000 0000      5059  REG9     DCY    0                                       XP150580
003F6C   0000 0000      5060  REGA     DCY    0                                       XP150590
003F70   0000 0000      5061  REGB     DCY    0                                       XP150600
003F74   0000 0000      5062  REGC     DCY    0                                       XP150610
003F78   0000 0000      5063  REGD     DCY    0                                       XP150620
003F7C   0000 0000      5064  REGE     DCY    0                                       XP150630
003F80   0000 0000      5065  REGF     DCY    0                                       XP150640
                        5066  **       REGISTER SET F                                 XP150650
003F84   0000 0000      5067  REG10    DCY    0                REG 0 OF SET F         XP150660
003F88   0000 0000      5068  REG11    DCY    0                                       XP150670
                                                                                      XP150680
```

```
003F8C  0000 0000          5069  REG12   DCY   0                                  XP150690
003F90  0000 0000          5070  REG13   DCY   0                                  XP150700
003F94  0000 0000          5071  REG14   DCY   0                                  XP150710
003F98  0000 0000          5072  REG15   DCY   0                                  XP150720
003F9C  0000 0000          5073  REG16   DCY   0                                  XP150730
003FA0  0000 0000          5074  REG17   DCY   0                                  XP150740
003FA4  0000 0000          5075  REG18   DCY   0                                  XP150750
003FA8  0000 0000          5076  REG19   DCY   0                                  XP150760
003FAC  0000 0000          5077  REG1A   DCY   0                                  XP150770
003FB0  0000 0000          5078  REG1B   DCY   0                                  XP150780
003FB4  0000 0000          5079  REG1C   DCY   0                                  XP150790
003FB8  0000 0000          5080  REG1D   DCY   0                                  XP150800
003FBC  0000 0000          5081  REG1E   DCY   0                                  XP150810
003FC0  0000 0000          5082  REG1F   DCY   0          REGISTER F OF REG SET F XP150820
        0000 3FC4          5083  RSAVE   EQU   *                                  XP150830
        0000 4004          5084  ERRSAVE EQU   *+64                               XP150840
                           5085  *                                                XP150850
                           5086  *        8 REG SETS TO SAVE ON 8/32              XP150860
                                           AND 8 DPFP REGS IF DFU EQUIPPED        XP150870
003FC4                     5087          DO    112                                XP150880
003FC4  0000 0000          5088          DCY   0
003FC8  0000 0000          5088          DCY   0
003FCC  0000 0000          5088          DCY   0
003FD0  0000 0000          5088          DCY   0
003FD4  0000 0000          5088          DCY   0
003FD8  0000 0000          5088          DCY   0
003FDC  0000 0000          5088          DCY   0
003FE0  0000 0000          5088          DCY   0
003FE4  0000 0000          5088          DCY   0
003FE8  0000 0000          5088          DCY   0
003FEC  0000 0000          5088          DCY   0
003FF0  0000 0000          5088          DCY   0
003FF4  0000 0000          5088          DCY   0
003FF8  0000 0000          5088          DCY   0
003FFC  0000 0000          5088          DCY   0
004000  0000 0000          5088          DCY   0
004004  0000 0000          5088          DCY   0
004008  0000 0000          5088          DCY   0
00400C  0000 0000          5088          DCY   0
004010  0000 0000          5088          DCY   0
004014  0000 0000          5088          DCY   0
004018  0000 0000          5088          DCY   0
00401C  0000 0000          5088          DCY   0
004020  0000 0000          5088          DCY   0
004024  0000 0000          5088          DCY   0
004028  0000 0000          5088          DCY   0
00402C  0000 0000          5088          DCY   0
004030  0000 0000          5088          DCY   0
004034  0000 0000          5088          DCY   0
004038  0000 0000          5088          DCY   0
00403C  0000 0000          5088          DCY   0
004040  0000 0000          5088          DCY   0
004044  0000 0000          5088          DCY   0
004048  0000 0000          5088          DCY   0
00404C  0000 0000          5088          DCY   0
004050  0000 0000          5088          DCY   0
```

004054	0000 0000	5088	DCY	0
004058	0000 0000	5088	DCY	0
00405C	0000 0000	5088	DCY	0
004060	0000 0000	5088	DCY	0
004064	0000 0000	5088	DCY	0
004068	0000 0000	5088	DCY	0
00406C	0000 0000	5088	DCY	0
004070	0000 0000	5088	DCY	0
004074	0000 0000	5088	DCY	0
004078	0000 0000	5088	DCY	0
00407C	0000 0000	5088	DCY	0
004080	0000 0000	5088	DCY	0
004084	0000 0000	5088	DCY	0
004088	0000 0000	5088	DCY	0
00408C	0000 0000	5088	DCY	0
004090	0000 0000	5088	DCY	0
004094	0000 0000	5088	DCY	0
004098	0000 0000	5088	DCY	0
00409C	0000 0000	5088	DCY	0
0040A0	0000 0000	5088	DCY	0
0040A4	0000 0000	5088	DCY	0
0040A8	0000 0000	5088	DCY	0
0040AC	0000 0000	5088	DCY	0
0040B0	0000 0000	5088	DCY	0
0040B4	0000 0000	5088	DCY	0
0040B8	0000 0000	5088	DCY	0
0040BC	0000 0000	5088	DCY	0
0040C0	0000 0000	5088	DCY	0
0040C4	0000 0000	5088	DCY	0
0040C8	0000 0000	5088	DCY	0
0040CC	0000 0000	5088	DCY	0
0040D0	0000 0000	5088	DCY	0
0040D4	0000 0000	5088	DCY	0
0040D8	0000 0000	5088	DCY	0
0040DC	0000 0000	5088	DCY	0
0040E0	0000 0000	5088	DCY	0
0040E4	0000 0000	5088	DCY	0
0040E8	0000 0000	5088	DCY	0
0040EC	0000 0000	5088	DCY	0
0040F0	0000 0000	5088	DCY	0
0040F4	0000 0000	5088	DCY	0
0040F8	0000 0000	5088	DCY	0
0040FC	0000 0000	5088	DCY	0
004100	0000 0000	5088	DCY	0
004104	0000 0000	5088	DCY	0
004108	0000 0000	5088	DCY	0
00410C	0000 0000	5088	DCY	0
004110	0000 0000	5088	DCY	0
004114	0000 0000	5088	DCY	0
004118	0000 0000	5088	DCY	0
00411C	0000 0000	5088	DCY	0
004120	0000 0000	5088	DCY	0
004124	0000 0000	5088	DCY	0
004128	0000 0000	5088	DCY	0
00412C	0000 0000	5088	DCY	0

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004130  0000 0000          5088          DCY   0
004134  0000 0000          5088          DCY   0
004138  0000 0000          5088          DCY   0
00413C  0000 0000          5088          DCY   0
004140  0000 0000          5088          DCY   0
004144  0000 0000          5088          DCY   0
004148  0000 0000          5088          DCY   0
00414C  0000 0000          5088          DCY   0
004150  0000 0000          5088          DCY   0
004154  0000 0000          5088          DCY   0
004158  0000 0000          5088          DCY   0
00415C  0000 0000          5088          DCY   0
004160  0000 0000          5088          DCY   0
004164  0000 0000          5088          DCY   0
004168  0000 0000          5088          DCY   0
00416C  0000 0000          5088          DCY   0
004170  0000 0000          5088          DCY   0
004174  0000 0000          5088          DCY   0
004176  0000 0000          5088          DCY   0
00417C  0000 0000          5088          DCY   0
004180  0000 0000          5088          DCY   0
                           5089  ********************************************************************** XP150890
        0000 4184          5090  T15TRTBL EQU   *                ADR. TRANSLATION TABLE IN TEST 15     XP150900
        0000 4184          5091  T15BUF0  EQU   *                                                      XP150910
        0000 4204          5092  T15BUF1  EQU   T15BUF0+128                                            XP150920
        0000 4304          5093  T15B1END EQU   T15BUF1+256                                            XP150930
        0000 4184          5094  BUF3     EQU   *                BUF3 IS SCRATCH AREA                  XP150940
004184  0000 0000          5095  T2WRD0   DCY   0                THESE THREE WORDS ARE USED            XP150950
004188  0000 0000          5096  T2WRD1   DCY   0                IN TEST 2                             XP150960
00418C  0000 0000          5097  T2WRD2   DCY   0                                                      XP150970
004190                     5098          DO    T15B1END-*/4+1    RESERVE BUFFER AREAS                  XP150980
004190  0000 8000          5099          DCY   8000                                                    XP150990
004194  0000 8000          5099          DCY   8000
004198  0000 8000          5099          DCY   8000
00419C  0000 8000          5099          DCY   8000
0041A0  0000 8000          5099          DCY   8000
0041A4  0000 8000          5099          DCY   8000
0041A8  0000 8000          5099          DCY   8000
0041AC  0000 8000          5099          DCY   8000
0041B0  0000 8000          5099          DCY   8000
0041B4  0000 8000          5099          DCY   8000
0041B8  0000 8000          5099          DCY   8000
0041BC  0000 8000          5099          DCY   8000
0041C0  0000 8000          5099          DCY   8000
0041C4  0000 8000          5099          DCY   8000
0041C8  0000 8000          5099          DCY   8000
0041CC  0000 8000          5099          DCY   8000
0041D0  0000 8000          5099          DCY   8000
0041D4  0000 8000          5099          DCY   8000
0041D8  0000 8000          5099          DCY   8000
0041DC  0000 8000          5099          DCY   8000
0041E0  0000 8000          5099          DCY   8000
0041E4  0000 8000          5099          DCY   8000
0041E8  0000 8000          5099          DCY   8000
0041EC  0000 8000          5099          DCY   8000
```

```
0041F0  0000 8000        5099        DCY   8000
0041F4  0000 8000        5099        DCY   8000
0041F8  0000 8000        5099        DCY   8000
0041FC  0000 8000        5099        DCY   8000
004200  0000 8000        5099        DCY   8000
004204  0000 8000        5099        DCY   8000
004208  0000 8000        5099        DCY   8000
00420C  0000 8000        5099        DCY   8000
004210  0000 8000        5099        DCY   8000
004214  0000 8000        5099        DCY   8000
004218  0000 8000        5099        DCY   8000
00421C  0000 8000        5099        DCY   8000
004220  0000 8000        5099        DCY   8000
004224  0000 8000        5099        DCY   8000
004228  0000 8000        5099        DCY   8000
00422C  0000 8000        5099        DCY   8000
004230  0000 8000        5099        DCY   8000
004234  0000 8000        5099        DCY   8000
004238  0000 8000        5099        DCY   8000
00423C  0000 8000        5099        DCY   8000
004240  0000 8000        5099        DCY   8000
004244  0000 8000        5099        DCY   8000
004248  0000 8000        5099        DCY   8000
00424C  0000 8000        5099        DCY   8000
004250  0000 8000        5099        DCY   8000
004254  0000 8000        5099        DCY   8000
004258  0000 8000        5099        DCY   8000
00425C  0000 8000        5099        DCY   8000
004260  0000 8000        5099        DCY   8000
004264  0000 8000        5099        DCY   8000
004268  0000 8000        5099        DCY   8000
00426C  0000 8000        5099        DCY   8000
004270  0000 8000        5099        DCY   8000
004274  0000 8000        5099        DCY   8000
004278  0000 8000        5099        DCY   8000
00427C  0000 8000        5099        DCY   8000
004280  0000 8000        5099        DCY   8000
004284  0000 8000        5099        DCY   8000
004288  0000 8000        5099        DCY   8000
00428C  0000 8000        5099        DCY   8000
004290  0000 8000        5099        DCY   8000
004294  0000 8000        5099        DCY   8000
004298  0000 8000        5099        DCY   8000
00429C  0000 8000        5099        DCY   8000
0042A0  0000 8000        5099        DCY   8000
0042A4  0000 8000        5099        DCY   8000
0042A8  0000 8000        5099        DCY   8000
0042AC  0000 8000        5099        DCY   8000
0042B0  0000 8000        5099        DCY   8000
0042B4  0000 8000        5099        DCY   8000
0042B8  0000 8000        5099        DCY   8000
0042BC  0000 8000        5099        DCY   8000
0042C0  0000 8000        5099        DCY   8000
0042C4  0000 8000        5099        DCY   8000
0042C8  0000 8000        5099        DCY   8000
```

```
0042CC   0000 8000          5099          DCY   8000
0042D0   0000 8000          5099          DCY   8000
0042D4   0000 8000          5099          DCY   8000
0042D8   0000 8000          5099          DCY   8000
0042DC   0000 8000          5099          DCY   8000
0042E0   0000 8000          5099          DCY   8000
0042E4   0000 8000          5099          DCY   8000
0042E8   0000 8000          5099          DCY   8000
0042EC   0000 8000          5099          DCY   8000
0042F0   0000 8000          5099          DCY   8000
0042F4   0000 8000          5099          DCY   8000
0042F8   0000 8000          5099          DCY   8000
0042FC   0000 8000          5099          DCY   8000
004300   0000 8000          5099          DCY   8000
004304   0000 8000          5099          DCY   8000
                            5100 ************************************************************  XP151000
         0000 4307          5101 LNZB     EQU   *-1                                          XP151010
```

CHKSUM/M14 PUNCHER

```
004308  2400                5103  $CHKSUM  LIS   R0,0            PUNCH M14 TAPE WITH CHECKSUM          XP151030
00430A  9510                5104           EPSR  R1,R0           SELECT REG. SET 0                     XP151040
                            5105  *                                                                    XP151050
00430C  E610 0A00           5106           LDAI  R1,ORIGIN1      START                                 XP151060
004310  2421                5107           LIS   R2,1            INCREMENT                             XP151070
004312  E630 FFF1 =004307   5108           LDAI  R3,LNZB         FINAL                                 XP151080
004316  2440                5109           LIS   R4,0            CHECKSUM BYTE                         XP151090
004318  D351 0000           5110  $GEN     LB    R5,0(R1)                                              XP151100
00431C  0745                5111           XAR   R4,R5                                                 XP151110
00431E  C110 FFF6 =004318   5112           BXLE  R1,$GEN                                               XP151120
004322  D240 0093           5113           STB   R4,MN+3         CHECKSUM BYTE TO BOOT LOADER          XP151130
                            5114  *                                                                    XP151140
004326  C810 0080           5115  $TAPE    LHI   R1,X'0080'                                            XP151150
00432A  9E21                5116           OCR   R2,R1           DISPLAY : NORMAL MODE                 XP151160
00432C  9444                5117           EXBR  R4,R4                                                 XP151170
00432E  9824                5118           WHR   R2,R4           CHECKSUM BYTE TO D1                   XP151180
004330  9411                5119           EXBR  R1,R1                                                 XP151190
004332  9501                5120           EPSR  R0,R1           HALT PROCESSOR.                       XP151200
                            5121  *                                                                    XP151210
                            5122  *---------------------------------                                  XP151220
                            5123  *                                                                    XP151230
004334  D360 007A           5124  $PUNCH   LB    R6,X'7A'       GET BOUTDV (PUNCH) ADDRESS.           XP151240
004338  DE60 007B           5125           OC    R6,X'7B'       START TAPE PUNCH                      XP151250
00433C  9D60                5126           SSR   R6,R0                                                 XP151260
00433E  2081                5127           BTBS  8,1                                                   XP151270
004340  41F0 803E =004382   5128           BAL   R15,$TAPL       PUNCH LEADER                          XP151280
004344  E680 00CA           5129           LDAI  R8,LOADEND      START                                 XP151290
004348  2492                5130           LIS   R9,2            INCREMENT                             XP151300
00434A  E6A0 09FE           5131           LDAI  R10,ORIGIN1-2   TO ZERO OUT BTWN LOADER AND TEST      XP151310
00434E  4038 0000           5132  $ZERO    STH   R3,0(R8)        START CLEARING                        XP151320
004352  C180 FFF8 =00434E   5133           BXLE  R8,$ZERO        UP TO START OF TEST                   XP151330
                            5134  *                                                                    XP151340
004356  D340 0093           5135           LB    R4,MN+3         GET CHECKSUM BYTE                     XP151350
00435A  9411                5136           EXBR  R1,R1           (R1) = X'0080'                        XP151360
00435C  E630 FFA7 =004307   5137           LDAI  R3,LNZB                                               XP151370
004360  D351 0000           5138  $PNCH2   LB    R5,0(R1)        PUNCH PROGRAM                         XP151380
004364  C510 0A00           5139           CLHI  R1,ORIGIN1                                            XP151390
004368  2182                5140           BLS   $PNCH3          NOT TEST? DON'T CALCULATE CHECKSUM    XP151400
00436A  0745                5141           XAR   R4,R5                                                 XP151410
00436C  9A65                5142  $PNCH3   WDR   R6,R5                                                 XP151420
00436E  9401                5143           EXBR  R0,R1                                                 XP151430
004370  9820                5144           WHR   R2,R0           DATA ADDRESS TO DISPLAY.              XP151440
004372  9D60                5145           SSR   R6,R0                                                 XP151450
004374  2081                5146           BTBS  8,1                                                   XP151460
004376  C110 FFE6 =004360   5147           BXLE  R1,$PNCH2                                             XP151470
00437A  41F0 8004 =004382   5148           BAL   R15,$TAPL       PUNCH TRAILER.                        XP151480
00437E  4300 FFA4 =004326   5149           B     $TAPE           DISPLAY CHECKSUM, HALT PROCESSOR.     XP151490
```

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                         5151  *   CHKSUM/M14 PUNCHER  (CONTINUED)                          XP151510
                         5152  *                                                           XP151520
                         5153  *                                                           XP151530
004382   C800 0100       5154  $TAPL    LHI   R0,256          TO PUNCH BLANK LEADER       XP151540
004386   2701            5155  $TAPLP   SIS   R0,1                                        XP151550
004388   032F            5156           BNPR  R15             RETURN                      XP151560
00438A   2430            5157           LIS   R3,0                                        XP151570
00438C   9A63            5158           WDR   R6,R3           PUNCH BLANK FRAME           XP151580
00438E   9D68            5159           SSR   R6,R8                                       XP151590
004390   2081            5160           BTBS  8,1                                         XP151600
004392   2206            5161           BS    $TAPLP          CONTINUE.                   XP151610
                         5162  *                                                           XP151620
004394                   5163           END                                               XP151630
```

ASSEMBLED BY CAL 03-066R05-00 (32-BIT)

START OPTIONS: T=32,CROSS,ERLST,

NO CAL ERRORS
4 CAL WARNINGS PREVIOUS WARNING ON PAGE 71
2 PASSES

$CHKSUM	0000 4308	5103*												
$GEN	0000 4318	5110*	5112											
$PNCH2	0000 4360	5138*	5147											
$PNCH3	0000 436C	5140	5142*											
$PUNCH	0000 4334	5124*												
$TAPE	0000 4326	5115*	5149											
$TAPL	0000 4382	5128	5148	5154*										
$TAPLP	0000 4386	5155*	5161											
$TSTDU0	0000 1016	726	728*											
$TSTDU1	0000 1034	738*												
$TSTDU2	0000 1036	735	737	739*										
$ZERO	0000 434E	5132*	5133											
A	0000 25EA	2858*												
ABL	0000 3096	3925*												
ABSTOP	0000 4394													
ADC	0000 0004													
AH	0000 263C	2885*												
AHI	0000 264E	2892*												
AHM	0000 2662	2899*												
AI	0000 25FE	2865*												
AIS	0000 2560	2795*												
AM	0000 2614	2872*												
AMSG	0000 11C0	244	885*											
AR	0000 25DE	2853*												
ARTFLT	0000 0C76	365*	799											
ATL	0000 3096	3924*												
BAL	0000 1A3A	1693*												
BALR	0000 1ABC	1748*												
BFBS	0000 129A	960*												
BFC	0000 1210	918*												
BFCR	0000 1A60	1710*												
BFFS	0000 129A	962*												
BOOT	0000 0068	103	106*											
BRK.SAV	0000 1164	684	715	719	872*									
BRKVECT	0000 114E	713	717	863*										
BST	0000 1754	1434*												
BTBS	0000 129A	959*												
BTC	0000 1210	917*												
BTCR	0000 1A60	1711*												
BTFS	0000 129A	961*												
BUF0	0000 3EC4	1473	1501	1520	1560	1586	1817	1899	2359	3254	3302	3929	4057	4116
		4180	4400	5028*										
BUF1	0000 3F20	1481	5039*											
BUF2	0000 3F04	1227	1531	1565	1588	2399	2640	2696	2797	3931	4118	4182	4211	4253
		4290	4441	4568	5032*									
BUF3	0000 4184	1521	1522	1532	1535	1537	1539	1541	1545	1547	1549	1551	1553	1555
		1557	1561	1564	1566	1568	1570	1572	1576	1578	1580	1582	1587	1592

			1593	1594	1595	1596	1599	2837	2838	3034	3035	3036	3037	3141	3142
			3624	3625	3626	3759	3760	3761	4117	4121	4122	4123	4128	4130	4132
			4135	4137	4140	4142	4145	4148	4151	4157	4160	4163	4164	4165	4181
			4185	4186	4187	4189	4191	4193	4195	4198	4200	4204	4207	4212	4214
			4217	4220	4222	4225	4230	4233	4236	4238	4242	4245	4248	4254	4257
			4260	4262	4265	4267	4272	4274	4278	4280	4283	4289	4292	4295	4298
			4300	4303	4305	4308	4311	4401	4402	4403	4404	4411	4413	4415	4417
			4419	4421	4423	4428	4431	4434	4443	4447	4448	4449	4451	4454	4459
			4461	4463	4465	4467	4472	4475	4478	5094*					
BXH	0000	19E6	1672*												
BXLE	0000	1954	1623*												
C	0000	2880	3140*												
C300ADR	0000	0A18	147*												
CAR2ND	0000	1144	852*												
CARRD	0000	1138	844*												
CARRQ2S	0000	114C	859*												
CBT	0000	3486	4270*												
CH	0000	28AC	3157*												
CHANIO	0000	0C96	379*	809											
CHECKN	0000	0BE8	316*												
CHI	0000	28C8	3169*												
CHKSCP	0000	3752	4501	4504	4507	4509*									
CHKSCP2	0000	37AA	4531	4533	4535	4537*									
CHVR	0000	37F4	4567*												
CI	0000	2898	3149*												
CL	0000	1508	1213*												
CLB	0000	23EE	2668*												
CLH	0000	16F2	1390*												
CLHI	0000	167E	1346*												
CLI	0000	13D2	1112*												
CLIF2ND	0000	1140	850*												
CLIFADR	0000	0A14	145*												
CLIFRD	0000	1134	842*												
CLR	0000	14A4	1171*												
COMMERR	0000	0DD0	461	501*											
COMRET	0000	116C	450	457	674*										
CON2ND	0000	113C	207	216	217	847*	848								
CONADR	0000	112E	213	664	685	753	837*								
CONENRD	0000	113D	848*												
CONRD	0000	1130	214	215	227	661	754	839*	840						
CONRQ2S	0000	1148	201	219	220	759	855*								
CONTIN	0000	0D16	428	435	438*	448									
CONV1	0000	0DFA	521	523*											
CONVR	0000	0DE8	514	517*	528										
CONVR4	0000	0DDE	503	512*											
CONVR8	0000	0DE4	486	515*											
CONWRT	0000	1131	768	840*											
CPUNO	0000	1184	275	279	879*	3360									
CR	0000	2876	3134*												
CRC12	0000	367A	4440*												
CRC16	0000	35F8	4399*												
CRLF	0000	0EAC	233	239	282	345	599*	673							
CRT2ND	0000	113E	849*												
CRTRD	0000	1132	841*												
CRTRQ2S	0000	1149	856*												

```
D           0000 2F1C    3764*
DATUM       0000 39C4    1774   1775   1778   1788   1798   4834*
DEVERR      0000 0C9E     383*   819   3348
DH          0000 2FA2    3810*
DHR         0000 2FA2    3811*
DR          0000 2F1C    3765*
ECHO        0000 0F54     659*
ECHO1       0000 0F6E     660    667*
ECHRTN      0000 0F70     663    668*
END         0000 0C2E     327    329    339*
ENTRY2      0000 11CE     189    283    892*
ENTRY3      0000 1200     317    319    323    907*
EPSR        0000 2026    2310*
ERR1        0000 0D5E     442    461*
ERRB        0000 0CD2     400    417*  3641   3725   3787
ERRCOM      0000 0D3C     441    450*
ERRCOM1     0000 0D5A     454    460*
ERRCOM2     0000 0D28     443*   500
ERRF6       0000 0C98     369    371    374    376    378    380*
ERRINT      0000 0CA0     380    382    386*
ERRMSG      0000 11C2     462    886*
ERRNO       0000 1181     387    476    877*   955   1153   1454   1638   1842   2333   2657   2989   3267   3390
                         3607   3639   3723   3784   4022   4083   4154
ERROR       0000 0CC8     401*   957   1154   1455   1639   1843   2334   2658   2991   3268   3391   3608   4023
                         4084   4155
ERRSAVE     0000 4004     440    447   5084*
EXBR        0000 2508    2761*
EXHR        0000 218A    2435*
FIVE        0000 3EB4    1173   1214   1223   1232   1262   1284   1286   1287   1367   1379   1385   1391   1395
                         1396   1408   1410   1590   1819   1884   1904   1910   1918   1976   1999   2013   2086
                         2098   2110   2140   2167   2202   2225   2231   2265   2292   2402   2406   2410   2418
                         2428   2449   2458   2646   2660   2673   2681   2683   2689   3415   4120   4587   5023*
GETCHR      0000 0F48     250    653*
HALT        0000 0C26     314    321    333*   340    342    437
HALT1       0000 0C0A     326*   498
HEXTAB      0000 1170     542    875*
ILGINT      0000 0C84     370*   793   3397   4074
ILLEGL      0000 2ADE    3370   3372*  3383   4817
IMPTOP      0000 0000I
INCR        0000 1126     306    829*
INDEXX      0000 1AF2    1771*
INITM       0000 4184    3034*  3040   3123
IO          0000 0A10     143*   190    191    199    200    206    212    280    643    692    730    745    767
IO.OK1      0000 0A82     194    196*
IO.OK2      0000 0A88     197    199*
IO.OK3      0000 0AA6     204    209*
IO.OK4      0000 0ADE     224    227*
IOSAVE      0000 112C     281    583    606    641    728    748    765    833*
ISITERR     0000 1150     347    444    455    674    678    864*
KBREAD      0000 104E     653    753*
KBXIT       0000 1068     758    760*
KEEP10      0000 0C3A     343*   574
KEEP101     0000 0C60     354*   356
KEY1        0000 086A     264    266    272*
KEY2        0000 087A     268    270    277*
```

KEYERR 0000 0B66 271* 273 278
L 0000 14A4 1170*
LA 0000 15B2 1281*
LADC 0000 0002
LB 0000 239C 2639*
LBR 0000 24D0 2739*
LCORE 0000 1082 186 775*
LCS 0000 1626 1314*
LDWT 0000 00C2 127* 130
LEADER 0000 009C 111* 115
LH 0000 16B4 1365*
LHI 0000 1648 1328*
LHL 0000 1570 1258*
LI 0000 13D2 1111*
LINK 0000 000F 97* 186 209 233 239 243 245 247 282 315 322 331 341
345 348 351 354 359 429 453 461 463 496 499 504 547
552 571 577 586 590 591 593 601 610 625 629 639 669
673 674 676 684 719 720 741 749 824
LIS 0000 13D2 1113*
LM 0000 17B4 1469*
LNZB 0000 4307 107 5101* 5108 5137
LOAD 0000 00A6 116* 124
LOADEND 0000 00CA 131* 5129
LPADR 0000 0A16 146*
LPSW 0000 1210 916*
LPSWR 0000 209E 2354*
LPWRT 0000 1136 843*
LR 0000 1540 1234*
LSTILG 0000 38EA 3395 4750*
M 0000 2DAA 3627*
MACINT 0000 0C8E 375* 811
MALFTN 0000 0C8A 373* 795
MAYPRT 0000 0CF6 425 429*
MH 0000 2EAC 3712*
MHR 0000 2EAC 3713*
MICROBUS 0000 0A1A 148* 659
MINUSA 0000 4184 3624* 3660 3694
MINUSB 0000 4188 3625* 3661 3682
MINUSN 0000 4190 3037* 3047 3059 3065
MN 0000 0090 108* 5113 5135
MR 0000 2DAA 3628*
MREADC 0000 113A 845*
N 0000 1DDE 2076*
NH 0000 1FB6 2260*
NHI 0000 1F7C 2236*
NI 0000 1D88 2044*
NOERMSG 0000 1184 330 883*
NOERR 0000 1152 456 865*
NOIO 0000 1182 169 172 187 320 339 424 878*
NONE 0000 0C50 332 349*
NOPRT 0000 0D02 432* 460
NORM 0000 1125 312 420 828*
NR 0000 1D3C 2009*
NTIMES 0000 1186 316 880*
NXTST 0000 39C0 438 915 1117 1425 1621 1813 2305 2636 2793 3193 3286 3409 3618

			3916	4040	4112	4833*								
0	0000	1CE2	1972*											
OHI	0000	1EDA	2172*											
OI	0000	1C86	1939*											
ONE	0000	3EB0	1190	1562	1991	2155	2274	2644	2671	2676	2679	2687	5022*	
OP1MEM	0000	4190	2837*	2873	2874	2876	2882	2901	2904	2928				
OPRND2	0000	4188	2838*	2849	2860	2887	2919	2933						
OPTIN	0000	0AFA	239*	255	360	714								
OPTIN1	0000	0AFE	241*	679										
OR	0000	1C50	1915*											
ORIGIN1	0000	0A00	106	134*	5106	5131	5139							
ORIGIN2	0000	0A04	135*											
ORIGIN3	0000	0A08	137*											
ORIGIN4	0000	0A0C	138*											
OTC.0	0000	0ECC	610*	615	624	626								
OTC.1	0000	0ED8	614*											
OTC.2	0000	0EE2	613	617*										
OTC.3	0000	0EF4	620	623*										
OTC.4	0000	0F12	632*	637										
OTC.5	0000	0F28	639*	645										
OUT.SAV	0000	1160	605	648	871*									
OUT0	0000	0F3E	611	630	633	635	640	647*						
OUT1	0000	0F42	646	648*										
OUTCHR	0000	0EBA	245	247	354	543	571	577	586	590	601	605*		
OUTCHR2	0000	0F02	608	616	622	628*								
P1	0000	0E48	553	557*										
P2	0000	0E6E	571*	573										
PASFLG	0000	1128	221	700	756	831*								
PASFLG2	0000	112A	202	725	832*									
PASLADR	0000	0A12	144*											
PAUSE	0000	115C	609	614	621	625	628	870*						
PLUSM	0000	4188	3035*	3043	3094	3103	3117	3119						
PLUSN	0000	418C	3036*	3042	3081	3093	3104	3124	3126					
PRG812	0000	0D9C	485*	492										
PRINT	0000	0E32	235	331	348	463	496	551*	676					
PRINT2	0000	0E7A	558	576*	581									
PRINT3	0000	0E8A	579	582*	602									
PRINT3A	0000	0E9C	585	589*										
PRINT3B	0000	0E9E	588	590*										
PRINT5	0000	0EA2	556	591*										
PRTEND	0000	0DC0	470	479	481	497*								
PRTERR	0000	0D1C	431	440*										
PRTR812	0000	0DB2	486	493*										
PRTRNO	0000	11C8	502	888*										
PSW	0000	0A22	159*	445										
PSW2	0000	0A24	160*	175	241	451								
PSWSAVE	0000	3900	104	416	805	4782*								
PSWTABLE	0000	3900	4781*											
PURETOP	0000	0000P												
QMSG	0000	11BE	675	884*										
QUESTN	0000	0F76	248	271	673*									
QUEUE	0000	3EC0	801	802	803	5026*								
R0	0000	0000	80*	206	207	210	230	231	232	280	281	289	307	308	308
			309	310	311	316	318	343	344	349	357	372	372	388	414
			424	440	443	444	446	447	452	466	467	469	485	497	501

		517	524	534	535	546	551	560	561	592	599	606	607	609
		612	617	632	638	643	644	654	655	657	659	677	678	683
		685	686	695	696	704	705	710	716	717	718	724	727	733
		740	745	746	747	753	754	755	759	767	768	783	795	801
		802	893	894	895	896	897	912	913	1114	1115	1129	1188	1218
		1227	1285	1295	1422	1423	1435	1439	1447	1462	1463	1465	1467	1473
		1475	1475	1477	1479	1486	1486	1488	1507	1507	1509	1511	1513	1515
		1520	1521	1522	1523	1523	1525	1527	1529	1531	1532	1545	1547	1560
		1561	1565	1570	1572	1580	1582	1586	1587	1588	1589	1592	1595	1618
		1619	1694	1713	1721	1734	1740	1749	1751	1756	1764	1765	1766	1767
		1774	1776	1778	1779	1790	1791	1793	1794	1810	1811	1817	1822	1825
		1827	1830	1832	1835	1837	1839	1839	1846	1847	1850	1852	1853	1856
		1858	1861	1863	1866	1868	1870	1870	1874	1875	1877	1877	1881	1884
		1887	1889	1892	1894	1897	1899	1902	1904	1906	1906	1910	1913	1931
		1932	2011	2018	2023	2028	2055	2060	2093	2105	2239	2242	2246	2256
		2262	2267	2271	2294	2302	2303	2313	2314	2318	2319	2321	2323	2336
		2339	2341	2349	2350	2355	2356	2359	2399	2400	2438	2633	2634	2640
		2659	2696	2697	2698	2699	2700	2790	2791	2797	2798	2801	2803	2807
		2810	2817	2842	2969	2990	3048	3091	3190	3191	3204	3205	3208	3209
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			1822	1825	1835	1837	1847	1850	1856	1887	1897	1902	1913	1918	1921
			1924	1949	1952	1967	1979	2002	2013	2016	2020	2026	2038	2039	2042
			2053	2057	2089	2101	2110	2113	2131	2148	2153	2170	2180	2240	2273
			2277	2376	2395	2402	2403	2406	2408	2410	2418	2419	2421	2423	2428
			2430	2433	2449	2450	2458	2460	2463	2465	2469	2471	2476	2646	2652
			2662	2676	2683	2689	2708	2715	2819	2823	2827	2970	2973	2974	2975
			2980	2981	3029	3158	3162	3170	3213	3214	3228	3264	3415	3629	3632
			3649	3675	3695	3708	3709	3715	3719	3727	3734	3735	3876	3876	3881
			3978	3979	4079	4080	4087	4177	4280	4318	4319	4358	4501	4504	4507
			4520	4531	4533	4535	4546	4587	4588	4592	5110	5111	5138	5141	5142
R5HEX	0000	0E08	351	359	534*										
R5X	0000	0E16	539*	545											
R5XA	0000	0E24	543*												
R5XB	0000	0E2C	537	546*											
R6	0000	0006	86*	108	116	125	201	202	203	203	398	399	427	1198	1199
			1201	1204	1207	1210	1284	1289	1341	1344	1370	1375	1444	1447	1456
			1457	1458	1459	1488	1500	1511	1553	1596	1608	1626	1642	1675	1687
			1719	1732	2079	2080	2083	2085	2036	2089	2091	2093	2097	2098	2101
			2103	2105	2238	2240	2242	2244	2246	2248	2249	2252	2254	2256	2572
			2573	2577	2579	2582	2584	2585	2590	2592	2593	2596	2614	2615	2619
			2621	2624	2717	2740	2744	2744	2751	2851	2900	2912	3183	3230	3256
			3488	3489	3493	3496	3499	3513	3514	3517	3535	3536	3539	3541	3545
			3558	3559	3561	3564	3566	3569	3571	3574	3576	3579	3582	3585	3588
			3591	3594	3596	3599	3601	3604	3633	3638	3639	3718	3723	3731	3733
			3768	3770	3771	3778	3783	3784	3794	3797	3801	3812	3813	3821	3826
			3836	3841	3845	3865	4044	4045	4160	4191	4245	4292	4298	4329	4330
			4338	4339	4347	4348	4411	4413	4415	4417	4419	4421	4423	4516	4542
			4595	4596	4597	4601	4604	4605	4605	4609	4635	5124	5125	5126	5142
			5145	5158	5159										
R7	0000	0007	87*	127	128	129	365	366	433	434	436	1173	1176	1178	1178
			1186	1188	1201	1204	1297	1298	1312	1320	1323	1399	1400	1438	1445
			1449	1457	1460	1472	1481	1490	1527	1653	1656	1658	1659	1662	1665
			1666	1669	1703	1704	1708	1917	1921	1924	1926	1929	1932	1935	2113
			2114	2117	2119	2122	2124	2127	2131	2134	2217	2218	2221	2225	2228
			2230	2231	2234	2381	2381	2382	2437	2439	2443	2447	2450	2451	2527
			2528	2532	2534	2537	2600	2601	2605	2607	2610	2701	2704	2725	2728
			2741	2747	2762	2765	2765	2768	2772	2773	2843	2846	2847	2848	2851
			2883	2902	2929	2942	2943	3232	3255	3256	3416	3417	3423	3424	3430
			3436	3437	3443	3632	3640	3642	3643	3644	3649	3650	3656	3657	3660
			3668	3669	3670	3675	3687	3688	3689	3694	3700	3701	3702	3719	3724
			3727	3739	3748	3859	3864	4058	4059	4134	4135	4139	4140	4151	4183
			4198	4200	4241	4242	4277	4278	4328	4336	4345	4356	4379	4382	4386
			4390	4396	4428	4429	4431	4432	4434	4435	4451	4454	4459	4461	4463
			4465	4467	4596	4597	4604								
R8	0000	0008	88*	119	120	125	126	484	485	489	1283	1284	1351	1352	1446
			1451	1458	1461	1496	1553	1596	1654	1663	1760	1762	1941	1959	1975
			1999	2004	2004	2412	2478	2479	2482	2485	2489	2491	2495	2497	2500
			2500	2702	2705	2726	2729	2742	2745	2763	2775	2845	2900	2912	2973
			3135	3142	3150	3162	3171	3182	3234	3453	3454	3460	3465	3471	3479
			3495	3496	3502	3508	3536	3541	3642	3643	3644	3652	3658	3659	3661
			3668	3669	3670	3682	3687	3688	3689	3695	3700	3701	3702	3740	3750

		3774 3775 3791 3796 3798 3816 3817 3833 3840 3842 3860 3867 4081
		4137 4140 4157 4324 4341 4351 4367 4371 4381 4387 4391 4410 4421
		4431 4450 4451 4459 4463 4467 4469 4470 4620 4625 4629 5129 5132
		5133 5159
R9	0000 0009	89* 476 477 478 480 487 654 661 662 664 665 667 756
		1655 1664 1737 1942 1943 1946 1948 1949 1952 1954 1957 1959 1962
		1966 1967 1970 2139 2140 2143 2145 2148 2150 2153 2155 2158 2162
		2165 2167 2170 2356 2683 2703 2706 2727 2730 2743 2746 2764 2772
		2775 2776 2846 2854 2859 2866 2873 2882 2886 2893 2913 2918 2923
		2932 2937 2949 2958 2974 3118 3125 3135 3141 3150 3170 3171 3236
		3442 3443 3446 3547 3548 3551 3677 3681 3775 3776 3788 3871 4132
		4148 4160 4274 4472 4473 4475 4476 4478 4479 4509 4509 4537 4537
		4620 4625 4629 5130
RBL	0000 3096	3927*
RBT	0000 3406	4228*
RDCHAR0	0000 0B2A	252 254*
RDCHAR1	0000 0B3E	257 260*
RDCHR	0000 0B1C	250* 262 276
RDCHR1	0000 0B46	259 263*
REG0	0000 3F44	388 3253 3301 3304 5050*
REG1	0000 3F48	3308 5051*
REG10	0000 3F84	414 480 2990 3325 3335 3631 3717 3786 5067*
REG11	0000 3F88	484 3311 3640 3724 5068*
REG12	0000 3F8C	5069*
REG13	0000 3F90	5070*
REG14	0000 3F94	5071*
REG15	0000 3F98	5072*
REG16	0000 3F9C	5073*
REG17	0000 3FA0	5074*
REG18	0000 3FA4	5075*
REG19	0000 3FA8	5076*
REG1A	0000 3FAC	5077*
REG1B	0000 3FB0	5078*
REG1C	0000 3FB4	4496 4522 5079*
REG1D	0000 3FB8	5080*
REG1E	0000 3FBC	4124 4166 4184 4288 5081*
REG1F	0000 3FC0	5082*
REG2	0000 3F4C	3310 5052*
REG3	0000 3F50	3314 3320 5053*
REG4	0000 3F54	5054*
REG5	0000 3F58	5055*
REG6	0000 3F5C	5056*
REG7	0000 3F60	5057*
REG8	0000 3F64	5058*
REG9	0000 3F68	5059*
REGA	0000 3F6C	5060*
REGB	0000 3F70	5061*
REGC	0000 3F74	3315 5062*
REGD	0000 3F78	3257 4085 4088 5063*
REGE	0000 3F7C	3259 3380 4056 4062 5064*
REGF	0000 3F80	3262 5065*
REGSAVE	0000 3F44	105 807 5048*
RET	0000 000E	95*
RLL	0000 2D08	3555*
RRL	0000 2D08	3556*

RSAVE 0000 3FC4 534 546 551 592 599 683 718 5083*
RTL 0000 3096 3926*
S 0000 2690 2917*
SBT 0000 3366 4179*
SCP 0000 3704 4483*
SET.RTN 0000 1168 764 769 873*
SETKB 0000 1040 209 243 745*
SETUP 0000 106A 631 764*
SH 0000 26B8 2931*
SHI 0000 26C6 2936*
SI 0000 269E 2922*
SINK 0000 1124 665 731 740 755 827*
SINT 0000 29EC 3287*
SIS 0000 2560 2796*
SLA 0000 2C98 3521*
SLHA 0000 22E0 2569*
SLHL 0000 2292 2539*
SLHLS 0000 2246 2506*
SLL 0000 2BB6 3450*
SLLS 0000 21CA 2455*
SR 0000 2682 2911*
SRA 0000 2C26 3486*
SRHA 0000 2336 2598*
SRHL 0000 2292 2540*
SRHLS 0000 2246 2507*
SRL 0000 2B40 3412*
SRLS 0000 21CA 2456*
ST 0000 0A3E 170 173*
START 0000 0A64 177 186*
START1 0000 0A30 134 168* 183
START2 0000 0A38 136 171* 184
START3 0000 0A5C 137 183*
START4 0000 0A60 138 184*
STARTIO 0000 0A72 188 190*
STB 0000 243E 2695*
STBR 0000 24A0 2721*
STH 0000 18EA 1585*
STM 0000 1824 1519*
SVC 0000 28F8 3194*
SVC004 0000 2904 3198* 3201
SVC100 0000 2912 3204* 3274
SVC200 0000 2936 3213 3218*
SVCERR 0000 0C9A 381* 813 4089
SVCINT 0000 299A 3208 3253*
SVCL2 0000 29A8 3257*
SYSCLR 0000 1088 777* 780
T10B 0000 29F4 3291* 3294
T10C 0000 2A5A 3321 3325*
T10DEV 0000 2A8E 3334 3340*
T10E 0000 2AFC 3385*
T10END 0000 2B2E 3400* 4819
T10F 0000 2B12 3386 3392*
T10F3 0000 2A98 3330 3348* 3352
T10FF 0000 2A72 3299 3332*
T10H 0000 2AC2 3362 3365* 3396

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T10ILG    0000 2AEA    3367   3378*
T10INT    0000 2A0E    3300*  3332
T10J      0000 2B18    3394*
T10L2     0000 2A1C    3304*  4813
T10L2A    0000 2A4C    3319*
T10L3     0000 2A8C    3339*  4815
T10M      0000 3990     300    906   3371   3381   4816*
T10M70    0000 387E    3359   4640*
T10M80    0000 3881    3363   4645*
T10P2     0000 3980    3303   4812*
T10P3     0000 3988     296    902   3305   3336   4814*
T10R      0000 2B0A    3323   3338   3376   3390*
T10R1     0000 2A90    3307   3341*
T10R2     0000 2A94    3290   3326   3343*
T10R3     0000 2A86    3296   3337*
T10R4     0000 2A54    3318   3322*
T10R4A    0000 2A38    3306   3309   3312*
T10R4B    0000 2A4A    3312   3318*
T10R5     0000 2AE4    3375*
T10R6     0000 2B02    3382   3384   3387*
T10RR     0000 2A88    3338*  3342   3344
T10SNT    0000 2A82    3336*
T10Z      0000 3998     297    903   3399   4818*
T11A      0000 2B40    3413*
T11B      0000 2BB6    3447   3451*
T11C      0000 2C26    3483   3487*
T11D      0000 2C98    3518   3522*
T11E      0000 2D08    3552   3557*
T11END    0000 2D98    3605   3609*
T11R      0000 2D90    3449   3485   3520   3554   3607*
T11R1     0000 2BB0    3413   3448*
T11R2     0000 2C20    3451   3477   3484*
T11R3     0000 2C92    3487   3519*
T11R4     0000 2D02    3522   3553*
T11R5     0000 2D8E    3557   3606*
T12AINT   0000 3080     367   3766   3907*
T12CHKHW  0000 2FA2    3802   3812*
T12CHKI   0000 3058    3884   3891*
T12CHKII  0000 306A    3892   3898*
T12CHKJ   0000 3078    3899   3903*
T12CNT    0000 4190    3761*  3770   3801   3804   3813   3845   3848   3883
T12D      0000 2F66    3782   3788*
T12DAGN   0000 2F7E    3793   3796*
T12DFG1   0000 3D64    4953*
T12DFG2   0000 3D65    4954*
T12DFG3   0000 3D66    4955*
T12DFG4   0000 3D67    4956*
T12DFG5   0000 3D68    4957*
T12DFG6   0000 3D69    4958*
T12DFG7   0000 3D6A    4959*
T12DFG8   0000 3D6B    4960*
T12DFG9   0000 3D6C    4961*
T12DFGA   0000 3D6D    4962*
T12DFGB   0000 3D6E    4963*
T12DFGC   0000 3D6F    4964*
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T12DH     0000 2FD0      3825   3830*
T12DHFL0  0000 3E70      4990*
T12DHFL1  0000 3E71      4991*
T12DHFL2  0000 3E72      4992*
T12DHFL3  0000 3E73      4993*
T12DHFL4  0000 3E74      4994*
T12DHFL5  0000 3E75      4995*
T12DHFL6  0000 3E76      4996*
T12DHFL7  0000 3E77      4997*
T12DHFL8  0000 3E78      4998*
T12DHFL9  0000 3E79      4999*
T12DHFLA  0000 3E7A      5000*
T12DHFLB  0000 3E7B      5001*
T12DHFLC  0000 3E7C      5002*
T12DHFLD  0000 3E7D      5003*
T12DHFLE  0000 3E7E      5004*
T12DHFLF  0000 3E7F      5005*
T12DHFLG  0000 3E70      3821   4989*
T12DHN0   0000 3D70      4970*
T12DHN1   0000 3D80      4971*
T12DHN2   0000 3D90      4972*
T12DHN3   0000 3DA0      4973*
T12DHN4   0000 3DB0      4974*
T12DHN5   0000 3DC0      4975*
T12DHN6   0000 3DD0      4976*
T12DHN7   0000 3DE0      4977*
T12DHN8   0000 3DF0      4978*
T12DHN9   0000 3E00      4979*
T12DHNA   0000 3E10      4980*
T12DHNB   0000 3E20      4981*
T12DHNC   0000 3E30      4982*
T12DHND   0000 3E40      4983*
T12DHNE   0000 3E50      4984*
T12DHNF   0000 3E60      4985*
T12DHOVR  0000 2FE8      3835   3840*
T12DHR    0000 2FB2      3817*  3843
T12DHTAB  0000 3D70      3816   4968*
T12DHTND  0000 3E70      3842   4986*
T12DN1    0000 3C74      4911*
T12DN2    0000 3C88      4916*
T12DN3    0000 3C9C      4917*
T12DN4    0000 3CB0      4919*
T12DN5    0000 3CC4      4920*
T12DN6    0000 3CD8      4921*
T12DN7    0000 3CEC      4922*
T12DN8    0000 3D00      4923*
T12DN9    0000 3D14      4928*
T12DNA    0000 3D28      4933*
T12DNB    0000 3D3C      4938*
T12DNC    0000 3D50      4943*
T12DTBND  0000 3D64      3798   4948*
T12DV2    0000 2F3A      3774*  3807
T12DV3    0000 2F3E      3775*  3799
T12DVCHK  0000 3036      3781   3792   3824   3834   3876*
T12DVD    0000 2F1C      3737   3766*
```

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T12DVFLG  0000 3D64    3778   4951*
T12DVSR   0000 4184    3759*
T12DVTBL  0000 3C74    3774   4910*
T12END    0000 300E    3846   3854*
T12HWD    0000 2FAE    3816*  3851
T12INT    0000 418C    3760*  3771   3886   3893   3898   3904   3908
T12M1     0000 3020    3634   3645   3663   3671   3683   3690   3696   3703   3864*
T12M10    0000 2EF6    3729   3739*
T12M1A    0000 2DB4    3632*  3710
T12M2     0000 3012    3636   3647   3666   3673   3685   3692   3698   3705   3859*
T12M2A    0000 2DD6    3637   3642*
T12M3     0000 3028    3863   3868*
T12M3A    0000 2DEA    3649*
T12M4A    0000 2E22    3668*
T12M5A    0000 2E38    3675*
T12M5B    0000 2E48    3680   3682*
T12M6A    0000 2E5C    3687*
T12M7A    0000 2E72    3694*
T12M8A    0000 2E8A    3700*
T12M9     0000 2F0C    3721   3748*
T12MH1    0000 2EAC    3714*
T12MH1A   0000 2EBA    3719*  3736
T12MH2    0000 2ED2    3722   3726*
T12MH3    0000 2EE4    3730   3733*
T12MHN1   0000 3BD4    4897*
T12MHN2   0000 3BE4    4898*
T12MHN3   0000 3BF4    4899*
T12MHN4   0000 3C04    4900*
T12MHN5   0000 3C14    4901*
T12MHN6   0000 3C24    4902*
T12MHN7   0000 3C34    4903*
T12MHN8   0000 3C44    4904*
T12MHN9   0000 3C54    4905*
T12MHNA   0000 3C64    4906*
T12MHTBD  0000 3C74    3735   4907*
T12MHTBL  0000 3BD4    3715   4893*
T12MNO1   0000 3B14    4878*
T12MNO2   0000 3B24    4879*
T12MNO3   0000 3B34    4880*
T12MNO4   0000 3B44    4881*
T12MNO5   0000 3B54    4882*
T12MNO6   0000 3B64    4883*
T12MNO7   0000 3B74    4884*
T12MNO8   0000 3B84    4885*
T12MNO9   0000 3B94    4886*
T12MNOA   0000 3BA4    4887*
T12MNOB   0000 3BB4    4888*
T12MNOC   0000 3BC4    4889*
T12MOP2   0000 4190    3626*  3740   3742   3860   3862
T12MP     0000 2EA0    3653   3708*
T12MP1    0000 2DFC    3651   3653*
T12MR     0000 2DCA    3635   3639*  3646   3664   3672   3684   3691   3697   3704
T12MTBND  0000 3BD4    3709   4890*
T12MUTBL  0000 3B14    3629   4877*
T12R      0000 2EC6    3723*  3732
```

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T12R11      0000 2DC6       3638*  3648   3667   3674   3686   3693   3699   3706
T12R40      0000 2F58       3784*  3795   3827   3837
T12R45      0000 2F5C       3785*
T12R60      0000 2F76       3794*
T12R80      0000 2FC8       3826*
T12R90      0000 2FE0       3836*
T13B        0000 3116       3963   3968*
T13C        0000 316A       3994   3997*
T13D        0000 31C6       4020   4024*
T13END      0000 31D2       4030*
T13P1       0000 309A       3929*  4822
T13PSW      0000 39A0        298    904   3928   4821*
T13R        0000 318E       3965   3996   4022*
T13R1       0000 310C       3934   3941   3947   3949   3950   3953   3955   3957   3959   3961   3964*
T13R1A      0000 30C8       3937   3939   3941*
T13R1C      0000 30FA       3955*
T13R1Q      0000 30DC       3947*
T13R2       0000 31BC       4008   4016   4018   4021*  4025   4027   4029
T13R3       0000 3112       3966*  3969   3972   3982   3983   3985   3998   3999
T13R4       0000 3164       3974   3991   3995*
T13R4B      0000 313A       3977   3980*
T13R4Q      0000 3156       3980   3991*
T13RR       0000 310E       3965*  3967
T14         0000 31EA       4044*  4072
T14A        0000 39A8       4050   4063   4824*
T14BYT      0000 38EA       4043   4754*
T14END      0000 3296       4097*
T14F        0000 323C       4066   4070*
T14INT      0000 3212       4048   4056*
T14K        0000 325E       4081*
T14L2       0000 3220       4060*
T14LST      0000 3900       4071   4776*
T14PRV      0000 3206       4045   4051*  4065   4824
T14R        0000 3264       4055   4068   4083*
T14R1       0000 320C       4054*
T14R2       0000 3236       4064   4067*
T14R3       0000 3262       4061   4082*  4092   4095
T14R3A      0000 3286       4092*  4094   4096
T14SVC      0000 326C       4077   4085*
T15A        0000 32AC       4116*  4827
T15A1       0000 3328       4152   4156*
T15B        0000 3376       4184*
T15B1       0000 33CE       4208   4211*
T15B1END    0000 4304       4494   5093*  5098
T15BUF0     0000 4184       4485   4488   4510   5091*  5092
T15BUF1     0000 4204       5092*  5093
T15C        0000 3406       4229*
T15C1       0000 344E       4250   4253*
T15CCw      0000 3E80       4495   4500   4503   4506   4512   4526   4530   4532   4534   4540   4550   4554   4559
                            4560   4563   5010*
T15CHK2     0000 3868       4618   4623*
T15CHK4     0000 3872       4623   4629*
T15CHKCC    0000 385C       4516   4542   4617*
T15CHKOV    0000 3878       4621   4628   4633*
T15CHVR     0000 37F4       4568*
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T15CRC     0000 3608      4404*  4407
T15CRC12   0000 369E      4451*  4471
T15CRC16   0000 3618      4411*  4427
T15CRCX    0000 3682      4443*  4446
T15D       0000 3486      4271*
T15D1      0000 34BA      4285   4288*
T15E       0000 3516      4316*  4828
T15E1      0000 3522      4319*  4322
T15E2      0000 3538      4328*  4362
T15E5      0000 35A4      4363   4367*
T15E52     0000 35AE      4370*  4376
T15E55     0000 35C8      4381*  4398
T15E6      0000 35F0      4393   4396*
T15END     0000 3858      4610   4614*
T15F       0000 367A      4436   4441*
T15PSW     0000 39B0      4113   4826*
T15PSW1    0000 39B8      4315   4828*
T15R       0000 3320      4154*  4210   4252   4287   4333   4366   4395   4438   4482   4515   4612
T15R1      0000 331E      4125   4153*  4168
T15R10     0000 3760      4511   4514*  4541   4551   4555   4556   4564   4622
T15R10A    0000 3864      4622*  4626   4627   4631   4632   4633   4634
T15R10B    0000 37B4      4539   4541*
T15R11     0000 3852      4569   4611*
T15R1A     0000 334E      4168*  4170   4172   4174   4176   4178
T15R2      0000 33C8      4188   4209*
T15R3      0000 3448      4229   4251*
T15R4      0000 34B4      4271   4286*  4291
T15R5      0000 359E      4318   4365*
T15R6      0000 3546      4332*  4337   4342   4352
T15R6Q     0000 357C      4346   4352*  4355   4357
T15R7      0000 35EA      4385   4389   4394*
T15R8      0000 3674      4414   4418   4422   4430   4433   4437*
T15R8Q     0000 365C      4424   4430*
T15R8Q1    0000 3648      4420   4424*
T15R8Q2    0000 3638      4416   4420*
T15R9      0000 36FE      4442   4474   4477   4481*
T15S1      0000 370A      4486*  4489
T15S2      0000 3732      4500*  4508
T15S3      0000 3766      4513   4516*
T15S4      0000 3774      4522*
T15S5      0000 378C      4529*  4536
T15S6      0000 37C6      4549*
T15SBR1    0000 3562      4338   4343*
T15SBR2    0000 3580      4347   4353*
T15SBRTN   0000 354C      4329   4334*
T15SCP     0000 3704      4480   4484*
T15TRTBL   0000 4184       482    495   4316   4321   4326   4361   4368   5090*
T1D1       0000 123A       929    932*
T1D2       0000 1242       932    934*
T1D3       0000 124A       934    936*
T1D4       0000 1252       936    939*
T1E1       0000 1272       944    947*
T1E2       0000 127A       947    949*
T1E3       0000 1282       949    951*
T1E4       0000 129A       951    958*
```

```
T1E5      0000 129E    964*  4785
T1END     0000 13CE   1104*
T1F       0000 12D2    985*
T1F2      0000 1302   1008*
T1F3      0000 1340   1024  1039*
T1F4      0000 134C   1033  1045*
T1G       0000 135E   1052*
T1G2      0000 1362   1045  1054*
T1G3      0000 1392   1077*
T1H       0000 3918   1077  4786*
T1H1      0000 139C   1078  1081*  4786
T1L1      0000 121E    925*  4788
T1L2      0000 1256    940*  4791
T1P1      0000 3920    920   4787*
T1P2      0000 3928    939   4790*
T1PSW1    0000 3908    956   4784*
T1PSW2    0000 3910    963   4785*
T1R       0000 128E    931    946   955*  1048  1050  1103
T1R1      0000 128A    924    954*
T1R2      0000 1232    925    926   927   928   930*  933   935   937
T1R2A     0000 1246   935*
T1R3      0000 126A    940    941   942   943   945*  948   950   952
T1R3A     0000 127E   950*
T1R4      0000 134E    969    972   975   978   984   1002  1022  1040  1041  1044  1046*
T1R5      0000 13C6   1068   1075  1095  1102*
T1RR      0000 1296    957*  4784
T2A       0000 13E6   1119*  4793
T2A1      0000 147C   1155*
T2A1A     0000 1482   1156*  1161
T2A1B     0000 1484   1157*  1169
T2B       0000 14A4   1172*
T2B1      0000 14E4   1194   1197*
T2C       0000 1508   1214*
T2C1      0000 1538   1229   1232*
T2D       0000 1540   1235*
T2D2      0000 1552   1242   1244*
T2E       0000 1570   1255   1259*
T2END     0000 1742   1416*
T2F       0000 15B2   1278   1282*
T2F1      0000 15F6   1299   1302*
T2F1A     0000 15FA   1303*  1303
T2F1B     0000 1606   1306*  1306
T2F1C     0000 1612   1309*  1309
T2F1D     0000 161E   1312*  1312
T2G       0000 1626   1315*
T2H       0000 1648   1324   1329*
T2H1      0000 166E   1338   1341*
T2I       0000 167E   1347*
T2I2      0000 169C   1353   1356*
T2J       0000 16B4   1366*
T2J1      0000 16D4   1376   1379*
T2K       0000 16F2   1391*
T2K2      0000 171C   1401   1404*
T2PSW     0000 3930    294    900   1118  4792*
T2R       0000 1474   1153*  1196  1231  1257  1280  1301  1326  1340  1355  1378  1403
```

T2R1	0000 1470	1120 1121 1123 1125 1126 1128 1130 1132 1133 1135 1137 1138 1148 1152* 1156 1157 1160
T2R10	0000 16CE	1368 1371 1374 1377* 1381 1383 1387 1389
T2R11	0000 1716	1397 1398 1402* 1404 1411 1412 1414
T2R11A	0000 1734	1412* 1415
T2R1A	0000 148C	1160* 1163
T2R1B	0000 148E	1161* 1165 1167
T2R2	0000 14DE	1174 1175 1182 1191 1195* 1197 1202 1203 1205 1206
T2R2A	0000 14F2	1202* 1208
T2R2B	0000 14F4	1203* 1209 1211
T2R2C	0000 14FA	1206* 1212
T2R3	0000 1532	1221 1222 1224 1226 1228 1230*
T2R4	0000 156A	1243 1250 1252 1256*
T2R4A	0000 1550	1236 1239 1243* 1245 1247
T2R5	0000 15AC	1263 1271 1273 1276 1279*
T2R5A	0000 159C	1267 1273*
T2R6	0000 15F0	1296 1300* 1304 1307
T2R6A	0000 15E0	1288 1290 1293 1296*
T2R6B	0000 160C	1307* 1310 1313
T2R7	0000 1642	1319 1321 1325*
T2R8	0000 1668	1331 1333 1335 1339* 1342 1345
T2R9	0000 1696	1354* 1356 1363 1364
T2WRD0	0000 4184	1439 1444 1459 1463 2697 2704 2712 5095*
T2WRD1	0000 4188	1440 1445 1460 1465 2699 2705 2708 5096*
T2WRD2	0000 418C	1441 1446 1461 1467 2700 2706 2707 5097*
T3A1	0000 178C	1452 1456*
T3B	0000 17B4	1470*
T3C	0000 1824	1516 1520*
T3C1	0000 1868	1542 1545*
T3D	0000 1894	1560*
T3D2	0000 18CC	1573 1576*
T3E	0000 18EA	1586*
T3E1	0000 193A	1605 1608*
T3END	0000 1942	1610*
T3R	0000 1784	1454* 1518 1544 1575 1607
T3R1	0000 1782	1448 1450 1453* 1464
T3R1A	0000 17A4	1464* 1466 1468
T3R2	0000 181E	1474 1482 1506 1508 1510 1512 1514 1517*
T3R2A	0000 1808	1497 1506*
T3R2B	0000 17F4	1493 1495 1497*
T3R2C	0000 17E8	1480 1487 1489 1491 1493*
T3R2D	0000 17CC	1476 1478 1480*
T3R3	0000 1862	1538 1540 1543* 1548 1550 1552
T3R3A	0000 183E	1524 1526 1528 1530*
T3R3B	0000 1854	1530 1536 1538*
T3R3C	0000 187E	1552* 1556 1558
T3R4	0000 18C6	1567 1569 1571 1574* 1577 1579 1581 1583
T3R5	0000 1934	1598 1601 1603 1606* 1609
T4A2	0000 195E	1628* 1632
T4A3	0000 199C	1653*
T4A4	0000 19AA	1656* 1658
T4B	0000 19E6	1673*
T4B2	0000 1980	1636 1640*
T4B2A	0000 198A	1645* 1648
T4B2X	0000 1996	1645 1650*

```
T4B3      0000 19F4      1676*  1678
T4B4      0000 1A06      1676   1681*
T4BA      0000 1A14      1685*
T4BA3     0000 1A2C      1690*
T4BA4     0000 1A22      1688*  1690
T4C       0000 1A3A      1694*
T4C2      0000 1A46      1695   1698*
T4C4      0000 1A58      1704   1706*
T4D       0000 1A60      1712*
T4D10     0000 1AB2      1736   1744*
T4D2      0000 1A6E      1712   1717*
T4D5      0000 1A82      1719   1724*
T4D6      0000 1A8E      1718   1730*
T4D6A     0000 1A94      1732*  4798
T4D8      0000 1A98      1720   1734*
T4D9      0000 1AAE      1734   1742*
T4E       0000 1ABC      1749*
T4E2      0000 1ACA      1750   1754*  1758
T4E2A     0000 1AE0      1762*  4800
T4E4      0000 1AE4      1760   1764*
T4END     0000 1B44      1800*
T4F1      0000 1AF2      1772*
T4F1A     0000 1AFA      1774*  1784
T4F2      0000 1B20      1783   1788*
T4F2A     0000 1B26      1790*  1799
T4L1      0000 19C2      1660   1662*
T4L1A     0000 19D0      1665*  1667
T4L1X     0000 19DE      1665   1669*
T4LOC1    0000 1AB6      1745*  4796
T4PSW1    0000 3938      1744   4795*
T4PSW2    0000 3940      1731   4797*
T4PSW3    0000 3948      1761   4799*
T4R       0000 1978      1638*  1680   1697   1716   1753   1787
T4R1      0000 1976      1629   1631   1633   1634   1637*  1649   1661
T4R1A     0000 19BE      1657   1661*  1668
T4R1B     0000 1994      1646   1649*  1652
T4R1C     0000 19DC      1668*  1670
T4R2      0000 1A00      1679*  1682   1684   1689   1692
T4R3      0000 1A40      1696*  1701   1702   1705
T4R3A     0000 1A56      1705*  1708   1709
T4R4      0000 1A68      1715*  1723   1735
T4R4G     0000 1A80      1723*  1729   1733
T4R4G1    0000 1A96      1733*  1741   1743
T4R5      0000 1AC4      1752*  1756   1757   1759   1763
T4R5A     0000 1AE2      1763*  1768   1769
T4R6      0000 1B1A      1780   1786*  1792   1795
T4R6A     0000 1B10      1777   1780*
T4R6B     0000 1B38      1795*
T5B       0000 1B98      1840   1845*
T5B1      0000 1BEA      1871   1874*
T5C       0000 1BF8      1880*
T5C1      0000 1C42      1907   1910*
T5D       0000 1C50      1916*
T5E       0000 1C86      1936   1940*
T5E1      0000 1CD2      1963   1966*
```

```
T5END    0000 2014    2296*
T5F      0000 1CE2    1973*
T5F1     0000 1D20    1995   1998*
T5G      0000 1D3C    2010*
T5G1     0000 1D7C    2035   2038*
T5H      0000 1D88    2045*
T5I      0000 1DDE    2073   2077*
T5I1     0000 1E10    2094   2097*
T5J      0000 1E2A    2109*
T5J1     0000 1E6C    2128   2131*
T5K      0000 1E7A    2137*
T5K1     0000 1EBC    2159   2162*
T5L      0000 1EDA    2173*
T5L1     0000 1F0A    2189   2192*
T5M      0000 1F1A    2199*
T5M1     0000 1F5E    2222   2225*
T5N      0000 1F7C    2237*
T5P      0000 1FB6    2257   2261*
T5P1     0000 1FF8    2283   2286*
T5R      0000 1B90    1842*  1873   1909   1938   1965   1997   2037   2075   2096   2130   2161   2191   2224
                      2259   2285
T5R1     0000 1B8E    1818   1841*
T5R10    0000 1E66    2109   2129*
T5R11    0000 1EB6    2137   2160*
T5R12    0000 1F04    2173   2190*
T5R13    0000 1F58    2199   2223*
T5R14    0000 1FB0    2237   2258*
T5R15    0000 1FF2    2261   2284*
T5R2     0000 1BE4    1845   1872*
T5R3     0000 1C3C    1880   1908*
T5R4     0000 1C80    1916   1937*
T5R5     0000 1CCC    1940   1964*
T5R6     0000 1D1A    1973   1996*
T5R7     0000 1D76    2010   2036*
T5R8     0000 1DD8    2045   2074*
T5R9     0000 1E0A    2077   2095*
T6A      0000 202A    2312*  4802
T6A2     0000 2066    2330   2335*
T6B      0000 20AA    2359*  4808
T6B2     0000 20C6    2360   2368*  2384
T6B3     0000 20E6    2376   2381*  2395
T6B4     0000 2102    2386   2392*
T6C      0000 2114    2399*  4806
T6D      0000 2158    2414   2418*
T6D2     0000 2176    2425   2428*
T6E      0000 218A    2436*
T6END    0000 238A    2627*
T6F      0000 21CA    2452   2457*
T6F2     0000 21FC    2476*
T6G2     0000 2278    2524   2527*
T6I      0000 22E0    2566   2570*
T6I2     0000 231C    2589*
T6J2     0000 2362    2611   2614*
T6PSW0   0000 3950    2311   4802*
T6PSW1   0000 3958    2331   4803*
```

T6PSW2 0000 3960 295 901 2397 4805*
T6PSW3 0000 3968 2365 4807*
T6PSW4 0000 3970 2358 4808*
T6R 0000 205E 2333* 2367 2416 2427 2454 2475 2526 2568 2588 2613
T6R1 0000 2058 2322 2324 2328 2331* 2338 2346
T6R10 0000 235C 2599 2612*
T6R1A 0000 2070 2338* 2343
T6R1B 0000 207E 2343* 2348 2353
T6R1X 0000 205C 2332* 4804
T6R2 0000 20BC 2365* 2374 2380
T6R2A 0000 20D2 2374* 2383
T6R2B 0000 20E2 2380* 2385 2391
T6R2C 0000 2100 2391* 2394 2396
T6R2X 0000 20C0 2366* 4807
T6R3 0000 2152 2401 2404 2405 2407 2411 2415*
T6R3A 0000 2146 2411*
T6R3C 0000 2140 2409*
T6R4 0000 2170 2420 2422 2426* 2429 2432 2434
T6R5 0000 21C4 2440 2448 2453*
T6R5A 0000 21AC 2442 2444*
T6R5B 0000 21B4 2444 2446 2448*
T6R6 0000 21F6 2457 2472 2474*
T6R7 0000 2272 2508 2525*
T6R8 0000 22DA 2541 2567*
T6R9 0000 2316 2570 2587*
T7A 0000 239C 2640*
T7A1 0000 23D6 2655 2659*
T7B 0000 23EE 2669*
T7C 0000 243E 2692 2696*
T7D 0000 24A0 2718 2722*
T7D2 0000 24D0 2736 2740*
T7E 0000 2508 2758 2762*
T7E3 0000 252E 2769 2772*
T7END 0000 254E 2784*
T7R 0000 23CE 2657* 2694 2720 2738 2760 2771
T7R1 0000 23CC 2641 2656*
T7R2 0000 2438 2669 2693*
T7R3 0000 249A 2709 2714 2716 2719*
T7R4 0000 24CA 2732 2734 2737*
T7R5 0000 2502 2752 2754 2756 2759*
T7R6 0000 2528 2767 2770* 2774 2777 2783
T81 0000 2560 2797*
T812LOOP 0000 2810 3093* 3121
T81B 0000 2578 2807*
T82 0000 258A 2817*
T82A2 0000 274C 2820 2824 2828 2994* 3030
T83 0000 25B8 2841*
T83ADD 0000 25DE 2854*
T83AHI 0000 264E 2889 2893*
T83AHM 0000 2662 2896 2900*
T83AI 0000 25FE 2862 2866*
T83AS 0000 25EA 2859*
T83AS2 0000 26D4 2884 2906 2930 2942*
T83CHK 0000 28DE 2856 2861 2868 2888 2895 2915 2920 2925 2934 2939 3179*
T83CHK2 0000 28E0 2877 2905 3180*

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T83FWOV   0000 3A38    4847*
T83LOOP   0000 25C2    2844*  2944
T83NO1    0000 39C8    4839*
T83NO2    0000 39D8    4840*
T83NO3    0000 39E8    4841*
T83NO4    0000 39F8    4842*
T83NO5    0000 3A08    4844*
T83NO6    0000 3A18    4845*
T83NO7    0000 3A28    4846*
T83NO8    0000 3A38    4848*
T83NO9    0000 3A48    4849*
T83NOA    0000 3A58    4850*
T83NOB    0000 3A68    4851*
T83S      0000 2690    2918*
T83SI     0000 269E    2923*
T83SR     0000 2682    2852   2912*
T83TABL   0000 39C8    2843   4836*
T83TBEND  0000 3A78    2943   4852*
T83TBHW1  0000 3A08    2883   2929   4843*
T841      0000 27B0    3051*
T841LOOP  0000 2796    3041*  3128
T842      0000 27BC    3057*
T843      0000 27CC    3064*
T844      0000 27E0    3072*
T845      0000 27EE    3079*
T846      0000 27FC    3084*
T84789    0000 2850    3114   3117*
T848      0000 2624    3102*
T849      0000 2838    3106   3110*
T850      0000 2710    2968*
T85CA     0000 271C    2973*  2982
T85CHK    0000 2876    2978   3135*
T85CHK3   0000 2898    3146   3150*
T85CHK5   0000 28AC    3154   3158*
T85CHK6   0000 28B4    3162*
T85CHK7   0000 28C8    3166   3170*
T85NO1    0000 3A78    4859*
T85NO2    0000 3A84    4860*
T85NO3    0000 3A90    4861*
T85NO4    0000 3A9C    4862*
T85NO5    0000 3AA8    4863*
T85NO6    0000 3AB4    4864*
T85NO7    0000 3AC0    4866*
T85NO8    0000 3ACC    4867*
T85NO9    0000 3AD8    4868*
T85NOA    0000 3AE4    4869*
T85NOB    0000 3AF0    4870*
T85NOC    0000 3AFC    4871*
T85NOD    0000 3B08    4872*
T85TBHW   0000 3AC0    4865*
T86       0000 26E0    2947*
T86RTN1   0000 2790    2950   2954   2959   2963   3039*
T880      0000 2614    2869   2873*
T890AH    0000 2630    2876   2882*
T890AH2   0000 263C    2886*
```

T890SH 0000 26AE 2928*
T890SH2 0000 26B8 2932*
T890SHI 0000 26C6 2937*
T8COMEND 0000 3B14 2981 4873*
T8COMPR 0000 3A78 2970 4855*
T8END 0000 273A 2983*
T8R 0000 2740 2806 2857 2864 2871 2880 2898 2908 2916 2989* 3055 3083 3108 3116
3148 3168
T8R1 0000 2572 2799 2802 2805* 2808 2811 2815
T8R10 0000 265E 2891 2898*
T8R11 0000 25E6 2857*
T8R11S 0000 268C 2916*
T8R2 0000 273E 2988* 2999
T8R21 0000 25F6 2863* 2921
T8R21S 0000 269A 2921*
T8R2A 0000 277A 3020* 3027
T8R2B 0000 276E 3013* 3020
T8R2C 0000 2762 3006* 3013
T8R2D 0000 2756 2999* 3006
T8R31 0000 260C 2870* 2926
T8R31S 0000 26AA 2926*
T8R3D 0000 2786 3027*
T8R41A 0000 27B8 3053 3055* 3063
T8R42A 0000 27CA 3061 3063* 3068
T8R43A 0000 27DA 3068* 3070
T8R43B 0000 27DE 3070*
T8R45 0000 27F8 3078 3083* 3088
T8R46 0000 2808 3088*
T8R47 0000 2822 3100*
T8R48 0000 2832 3107*
T8R49 0000 284A 3115*
T8R4X 0000 2834 3100 3108*
T8R51 0000 287E 3139*
T8R567 0000 2894 3139 3148* 3156
T8R61 0000 2890 3147*
T8R71 0000 28A6 3155*
T8R80 0000 2628 2879*
T8R91 0000 2648 2890* 2935
T8R91A 0000 26C2 2935*
T8RA1 0000 265A 2897* 2940
T8RA1S 0000 2600 2940*
T8RB1 0000 267A 2907*
T8RC1 0000 28C0 3167*
T8RD1 0000 28D8 3176*
T8RQ 0000 28C4 3168* 3177
T9A 0000 28FC 3196* 4810
T9B 0000 29CC 3265 3271*
T9END 0000 29DA 3275*
T9PSW1 0000 3978 3195 4810*
T9R 0000 29C4 3250 3267*
T9R1 0000 2994 3196 3249*
T9R2 0000 29C2 3258 3261 3266*
TABLE 0000 3E90 3930 3932 3933 3935 3942 3944 3946 3948 3951 3968 3973 3979 3981
3987 3992 3997 4000 4005 4007 4009 4011 4014 5014*
TBT 0000 32AC 4115*

TEMP	0000 3EBC	4317	4331	4341	4351	4383	4387	4391	5025*					
TEN	0000 3EB8	1181	1198	1216	1220	1269	1274	1291	1292	1370	1393	1400	1406	1413
		1589	1820	1889	1894	1919	1981	2004	2014	2080	2103	2111	2145	2162
		2207	2218	2269	2279	2287	2459	2648	2664	2685	2691	4119	4206	4586
		5024*												
TEST1	0000 1200	909*												
TEST10	0000 29DE	3192	3275	3279*										
TEST11	0000 2B32	3285	3400	3404*										
TEST12	0000 2D9C	3408	3609	3613*										
TEST13	0000 3088	3617	3854	3913*										
TEST14	0000 31D6	3917	4030	4034*										
TEST15	0000 329A	4039	4097	4101*										
TEST2	0000 13D2	914	1104	1106*										
TEST3	0000 1746	1116	1416	1420*										
TEST4	0000 1946	1424	1610	1613*										
TEST5	0000 1B48	1620	1800	1803*										
TEST6	0000 2018	1812	2296	2300*										
TEST7	0000 238E	2304	2627	2631*										
TEST8	0000 2552	2635	2784	2788*										
TEST9	0000 28EA	2792	2983	3188*										
TESTNO	0000 1180	366	393	421	466	501	876*	913	1115	1423	1619	1811	2303	2634
		2791	3191	3284	3407	3616	3916	4038	4110					
THI	0000 2158	2417*												
TIME	0000 0A1E	157*												
TITLE	0000 1188	234	881*											
TLATE	0000 3512	4314*												
TOTAL	0000 1158	302	304	350	868*	896								
TOTERR	0000 115A	289	307	328	358	419	433	869*	897					
TOTMSG	0000 11A4	346	882*											
TS	0000 1894	1559*												
TST812	0000 0D78	468	472*											
TSTBRK	0000 0F90	315	499	591	683*									
TSTBRK1	0000 0FE6	701	710*											
TSTBRK2	0000 0FEE	699	709	713*										
TSTBRK3	0000 0FFA	687	689	691	703	708	716*							
TSTBRK4	0000 0FCC	694	700*											
TSTBRK5	0000 0FBC	695*	698											
TSTDU	0000 100A	322	341	429	453	552	610	629	639	724*				
TSTEND	0000 0B9C	291*												
TSTEND2	0000 0BBC	290	302*											
TSTENDX	0000 0B94	289*	4111	4614										
TTYGET	0000 1062	758*												
WASDU	0000 1154	231	324	344	430	554	557	567	647	866*	895			
WASDU1	0000 1156	232	326	432	497	555	569	867*	894					
X	0000 1BF8	1879*												
X50	0000 10A8	788	790*											
X9C	0000 1106	815*	818											
XD0	0000 1098	785*	791											
XD0B	0000 1116	820*	823											
XH	0000 1E7A	2136*												
XHI	0000 1E2A	2108*												
XI	0000 1B98	1844*												
XINTHW	0000 0C92	377*	797	3354										
XR	0000 1B56	1816*												
ZERO	0000 3EAC	1186	1218	1986	2091	2150	2212	5021*						

ERROR & WARNING SUMMARY :

? @ LINE 3742
? @ LINE 3750
? @ LINE 3823
? @ LINE 3833