SH20-1048-2

Program Product

Customer Information Control System (CICS) Operations Guide

Program Number 5734-XX7 (OS-STANDARD V2)

The IBM Customer Information Control System (CICS) is a transaction-oriented, multiapplication data base/data communication interface between a System/360 or System/370 operating system and user-written application programs. In addition to the functions required for inquiry and conversational data entry, this open-ended, table-controlled, event-driven system provides many of the facilities necessary for standard terminal applications such as message switching, broadcasting, data collection, and order distribution.

CICS is available in three systems—two for DOS users and one for OS users. Because the two CICS/DOS systems are compatible with each other and with the CICS/OS system, it is possible to start with a small data base/data communication configuration and move up through DOS into OS.

This manual provides information of interest to persons responsible for the definition, preparation, and execution of CICS. Included is the information necessary to generate and operate CICS.

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PREFACE

This publication contains information necessary for generating and operating the CICS/OS-STANDARD V2 program product. It provides system analysts, system programmers, and customer operating personnel with information that is primarily operating system dependent; for example, the job control language (JCL) required to unpack the machine-readable material and to perform system generation.

This publication should be used in conjunction with the System Programmer's Reference Manual when generating CICS and when preparing the system tables that describe the environment CICS is to support.

For further information concerning the CICS/OS-STANDARD V2 system, see the following IBM publications:

General Information Manual (GH20-1028)
Application Programmer's Reference Manual (SH20-1047)
System Programmer's Reference Manual (SH20-1043)
Terminal Operator's Guide (SH20-1044)
Logic Manual (CICS/OS-STANDARD V2) (LY20-0714)

All references to CICS/OS and CICS/OS-STANDARD in this publication are references to the CICS/OS-STANDARD V2 system.

Third Edition (December 1972)

This edition is a major revision obsoleting SH20-1048-1.

This edition applies to Version 2, Modification Level 3, of the program product Customer Information Control System (CICS) OS-Standard (5734-XX7) and to all subsequent versions and modifications until otherwise indicated in new editions or Technical Newsletters.

Changes are continually made to the information herein. Therefore, before using this publication, consult the latest System/360 and System/370 SRL Newsletter (GN20-0360) for the editions that are applicable and current.

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INTRODUCTION

The IBM Customer Information Control System (CICS) is a multi-application data base/data communication interface between OS or DOS and user-written application programs. Applicable to most online systems, CICS provides many of the facilities for standard terminal applications: message switching, inquiry, data collection, order entry, and conversational data entry.

Functions performed by CICS include:

- Control of a mixed telecommunications network
- Concurrent management of a variety of programs
- Controlled access to the data base
- Management of resources for continuous operation
- Prioritization of processing

By eliminating many of the development requirements for such functions of a real-time control system, CICS lets programmers concentrate on implementing applications, dramatically reducing implementation time and cost.

Functions needed to support a data base/data communication system and standard terminal applications are provided by the following CICS management programs.

TASK MANAGEMENT: Provides the dynamic multitasking facilities necessary for effective, concurrent transaction processing. Functions associated with this facility include priority scheduling, transaction synchronization, and control of serially reusable resources.

STORAGE MANAGEMENT: Controls main storage allocated to CICS. Storage acquisition, disposition, initialization, and request queuing are among the services and functions performed by this component of CICS.

PROGRAM MANAGEMENT: Provides a multiprogramming capability through dynamic program management while offering a real-time program fetch capability.

PROGRAM INTERRUPT MANAGEMENT: Provides for the interception of program interrupts by CICS to prevent total system termination. Individual transactions that program check are terminated by CICS with a dump (if Dump Management is used), thus preventing the entire CICS partition/region from terminating. Supports the CICS/OS runaway task control function of Time Management.

TIME MANAGEMENT: Provides control of various optional task functions (system stall detection, runaway task control, task synchronization, etc.) based on specified intervals of time or the time of day.

DUMP MANAGEMENT: Provides a facility to assist in analysis of programs and transactions undergoing development or modification. Specified areas of main storage are dumped onto a sequential data set, either tape or disk, for subsequent offline formatting and printing using a CICS utility program.

TERMINAL MANAGEMENT: Provides polling according to user-specified line traffic control as well as user requested reading and writing. This facility supports automatic task initiation to process new transactions. Optionally, the user can request that certain lines be under the control of TCAM instead of BTAM. Polling and other network

control functions will be performed in the TCAM MCP which resides in another region/partition. The testing of application programs is accommodated by the simulation of terminals through sequential devices such as card readers, line printers, disk, tape, etc.

FILE MANAGEMENT: Provides a data base facility using Direct Access and Indexed Sequential data management. This function supports updates, additions, random retrieval, and sequential retrieval (browsing) of logical data on the data base. Optional access to the Data Language/I (DL/I) facility of the IBM Information Management System Version 2 (IMS/360) is also provided. Use of DL/I requires the installation of the IMS/360 Version 2, Modification Level 2 (or later) Data Base System (5734-XX6).

TRANSIENT DATA MANAGEMENT: Provides the optional queuing facility for the management of data in transit to and from user defined destinations. This function has been included to facilitate message switching, data collection, and logging.

TEMPORARY STORAGE MANAGEMENT: Provides the optional general purpose "scratch pad" facility. This facility is intended for video display paging, broadcasting, data collection suspension, conservation of main storage, retention of control information, etc.

In addition to these management functions, CICS provides system service programming to identify terminal operators, to give dynamic control of the entire system to a master terminal, to display real-time system statistics, to intercept abnormal conditions not handled directly by the operating system, and to end operation by gathering summary statistics, closing data sets, and returning control to the operating system.

The CICS/OS-STANDARD system (1) analyzes the specific requests of the processing programs and other CICS management programs and service programs, (2) communicates requests for OS services through the OS macro instructions, (3) retains the status of each request until the request is fulfilled, (4) performs some control type processing upon selected requests, and (5) maintains statistical information that can be used to evaluate system performance.

Design of the CICS/OS-STANDARD system is such that related functions are grouped and performed in each module. For example, Terminal Control communicates with the Basic Telecommunications Access Method (BTAM), and/or the Telecommunications Access Method (TCAM), and/or the Graphics Access Method (GAM), and performs all read or write requests to the data processing system terminals. Terminal Control determines when an event (a read or write) is to be initiated or is to be completed. Completion of an event may initiate transaction processing.

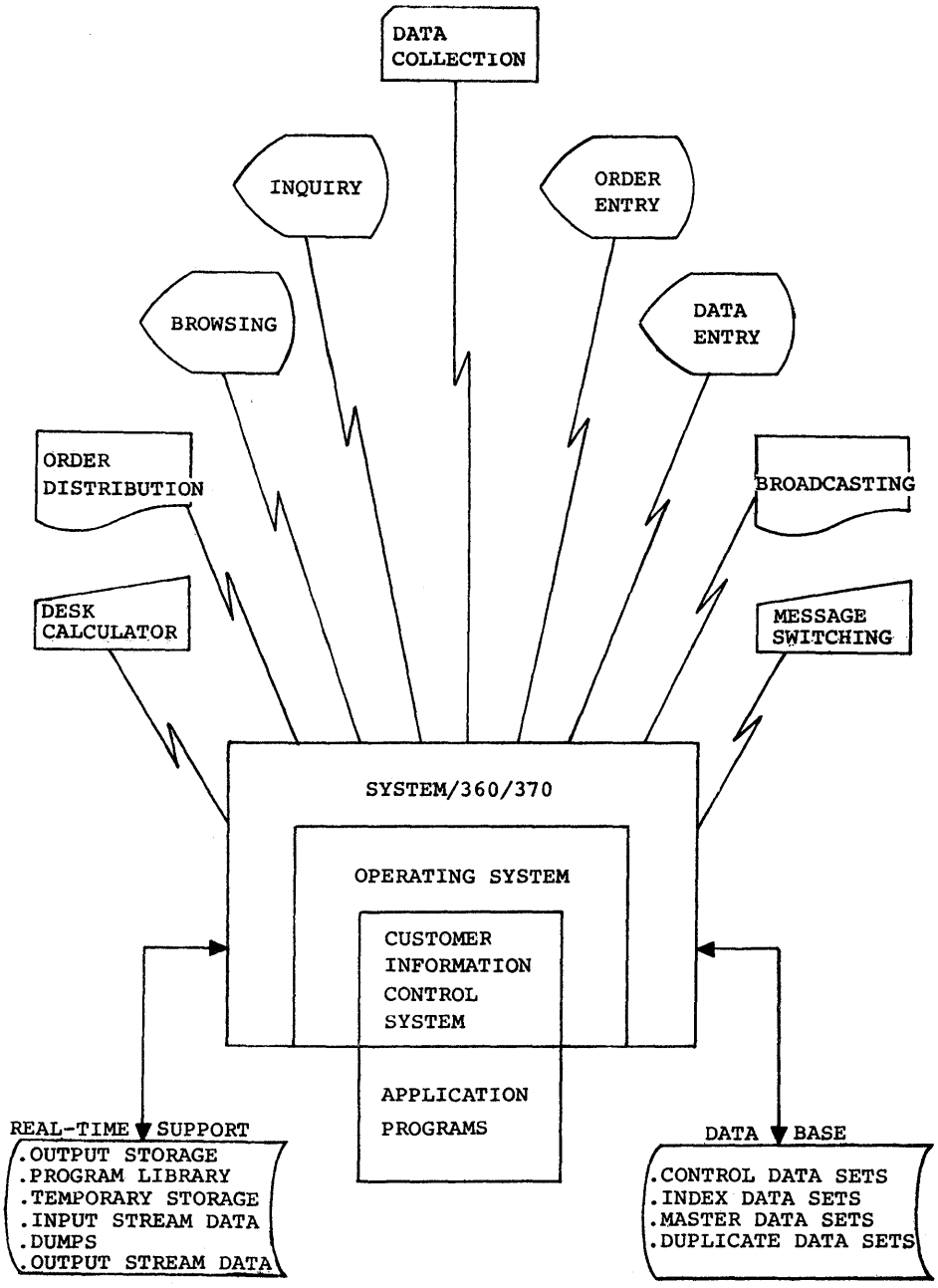

Figure 1. Data base/data communications system

SYSTEM PREPARATION AND GENERATION

The preparation and generation of CICS/OS for testing and real-time operation are described in this section. Some of the options available to the user are discussed. Information is presented in the following subsections:

1. OS system generation
2. Preparing the machine-readable material
3. System generation
4. Preparation of the system tables
5. Preparation of Assembler language application programs
6. Preparation of high-level language application programs

For further information concerning the preparation and generation of CICS, see the CICS/OS Program Directory.

OS SYSTEM GENERATION

CICS/OS requires that the following features be generated as part of the Operating System (OS): the Basic Telecommunications Access Method (BTAM), optionally, the Telecommunications Access Method (TCAM), the Basic Direct Access Method (BDAM), the Multiple WAIT and Interval Timer options. The CVT macro definition must be included in SYS1.MACLIB. If support for the 7770 Audio Response Unit is to be generated within CICS, a Type 4 user SVC must also be made available to CICS during the generation of OS via the SVCTABLE macro instruction.

If DL/I access is to be supported under MFT, the Storage Protection and Subtasking features are required; the PCI Fetch, Resident Access Methods, Resident IDENTIFY, SPIE, STAE, and ATTACH features are highly recommended.

Otherwise, the generation of OS is left completely to the user. The user must determine which of the options available in the OS generation process are functionally required for the operation of his system and are dictated by his system configuration.

The user should refer to the IBM publication System/360 Operating System Generation (GC28-6554) to determine the applicability of the various system generation options of OS and to determine the amount of main storage required.

For further details, see the "Programming Systems" and "System Configuration" sections of this publication.

PREPARING THE MACHINE-READABLE MATERIAL

The machine-readable material is shipped by the IBM Program Information Department on an unlabeled Distribution Tape Reel (DTR), either 9-track or 7-track (Data Conversion feature required). The recording density is 800 or 1600 bpi as specified by the user.

The contents of the DTR consists of four unloaded partitioned data sets as follows:

1. CICS.SOURCE contains the Assembler language source code for all CICS management programs and system service programs.

2. CICS.MACLIB contains all CICS macro source code including service request macros, table generation macros, system generation macros, and dummy sections. This library is always required when assembling CICS control modules, Assembler language application programs, table generations, and CICS system generations.

3. CICS.COBLIB contains the source coding for all CICS macros and dummy sections used in the compilation of COBOL application programs.

4. CICS.PL1LIB contains the source coding for all CICS macros and dummy sections used in the compilation of PL/I application programs.

Before processing the DTR, the user must allocate and catalog the following data sets (libraries) in preparation for system generation. The indicated space requirements should be considered minimum requirements. Note that 'CICS' is the default prefix for each of these data sets. Other prefix names can be selected at the option of the user through use of the DFHSG TYPE=INITIAL,PREFIX=prefix macro instruction.

DATA SET NAME	RECFM	BLKSIZE	LRECL	SPACE ALLOC (CYL,(X,Y,Z))		
				3330 X,Y,Z	2314 X,Y,Z	2311 X,Y,Z
CICS.SOURCE	FB	3360	80	25,3,25	40,5,25	150,10,25
CICS.MACLIB	FB	3360	80	10,2,15	15,3,15	58,6,15
CICS.COBLIB	FB	400	80	3,1,5	5,1,5	19,2,5
CICS.PL1LIB	FB	400	80	3,1,5	5,1,5	19,2,5
CICS.LOADLIB	U	SEE NOTE	N.A.	6,2,10	10,3,10	35,5,10

Note 1: When blocksize needs to be specified it should be (3625 for 2311), (7294 for 2314), or (13030 for 3330).

When the above data sets have been allocated and cataloged, the four partitioned data sets on the DTR may be moved to their proper direct access libraries using JCL similar to the following:

```
//LOAD        JOB     accounting info,'programmer's name',MSGLEVEL=1
//            EXEC    PGM=IEHMOVE
//SYSPRINT    DD      SYSOUT=A
//SYSUT1      DD      UNIT=2314,VOL=SER=231400,DISP=OLD
//USRPAK      DD      DISP=SHR,UNIT=2314,VOL=SER=USRPAK
//DTR         DD      DSN=NULL,UNIT=2400,VOL=SER=SCRTCH,
//                    DISP=(OLD,PASS),LABEL=(1,NL),
//                    DCB=(RECFM=FB,LRECL=80,BLKSIZE=800,DEN=2)
//SYSIN       DD      *
      MOVE        PDS=CICS.SOURCE,FROM=2400=(SCRTCH,1),        C
                      TO=2314=USRPAK,FROMDD=DTR
      MOVE        PDS=CICS.MACLIB,FROM=2400=(SCRTCH,2),        C
                      TO=2314=USRPAK,FROMDD=DTR
      MOVE        PDS=CICS.COBLIB,FROM=2400=(SCRTCH,3),        C
```

```
                    TO=2314=USRPAK,FROMDD=DTR
      MOVE        PDS=CICS.PL1LIB,FROM=2400=(SCRTCH,4),       C
                    TO=2314=USRPAK,FROMDD=DTR
/*
```

When the CICS source is on the proper libraries, the user may proceed with CICS system generation.

Note: Before proceeding with CICS system generation, the user must ensure that the block size of SYS1.MACLIB is at least as large as either CICS.SOURCE or CICS.MACLIB. These CICS libraries are originally blocked 42 to 1 (block size = 3360).

When moving from CICS/OS-STANDARD V1 to CICS/OS-STANDARD V2, the user must do the following:

1. When preallocating data sets, data set names other than those indicated on the preceding page must be used. This is accomplished through use of the DFHSG TYPE=INITIAL,PREFIX=prefix macro instruction, as described in the "System Generation" section of the CICS System Programmer's Reference Manual.

2. In the LOAD job shown, a RENAME operand must be added to each MOVE card to match the new preallocated data set names chosen. For example:

```
MOVE PDS=CICS.SOURCE,FROM=2400=(SCRTCH,1),      C
     TO=2314=USRPAK,FROMDD=DTR,RENAME=CICSV2.SOURCE
```

3. All application programs to be used with CICS/OS-STANDARD V2 must be reassembled after completing system generation.

When moving from Modification Level 0 to Modification Level 1 of CICS/OS-STANDARD V2, application programs must be reassembled if they reference any of the following fields:

1.	CSARSTSK	Resumed task's control address
2.	CSATRTR	Type of Trace request
3.	CSATRID	Trace entry identification
4.	CSATRF1	Trace entry data area 1
5.	CSATRF2	Trace entry data area 2
6.	TCASVMID	Service module control identification and runaway task control

In addition, application programs that reference the following fields must be modified to establish addressability to the fields; the programs must then be reassembled:

1.	TCASAACL	Class of storage
2.	TCASAAFI	Format identification
3.	TCASAAD	Storage displacement
4.	TCASCCA	Address of first transaction storage area in chain
5.	TCAKCTIA	Task identification number
6.	TCATCPC	Program Control Table entry address
7.	TCATCQC	Task Control task queue chain address
8.	TCAKCQC	Task Queue Element chain address
9.	TCAICEAD	Interval Control Element address
10.	TCAPCTA	Processing Program Table address
11.	TCAPCSA	Program register storage address (LINK support)
12.	TCAPCCA	Area address acquired by ANS COBOL
13.	TCAPCLC	Load program chain address
14.	TCAIDAA	Intrapartition data area address

For information concerning how to establish addressability to these fields, see the discussion of the DFHTCA CICSYST=YES macro instruction in the "Assembler Language Application Programming" section of the CICS Application Programmer's Reference Manual.

Note: Any application programs that search the Terminal Control Table (TCT) must be recoded and reassembled when moving from Modification Level 0 to Modification Level 1.

SYSTEM GENERATION

The generation process provides the user with the means of specifying the specific CICS management and service programs that will satisfy his requirements and meet his equipment environmental needs.

The generation of a CICS/OS system is comprised of two stages. Stage I consists of the assembly of the CICS generation macro instructions. This assembly produces a job stream which is used as input for Stage II. The Stage II input job stream is comprised of jobs which add CICS procedures to SYS1.PROCLIB, assemble CICS management and service programs, and link edit all modules to CICS.LOADLIB (or to prefix.LOADLIB, where "prefix" is specified by the user in the DFHSG TYPE=INITIAL macro instruction) and SYS1.LINKLIB. The CICS Dummy CSA program (DFHDCSA) is link edited into SYS1.LINKLIB rather than CICS.LOADLIB (or prefix.LOADLIB).

If support for the 7770 Audio Response Unit is to be generated within CICS, a Type 4 SVC and a channel end/abnormal end appendage are link edited onto SYS1.SVCLIB.

If the CICS/OS user selects the File Browse option, a CVT macro must be created and placed in SYS1.MACLIB. File Browse uses the OS track address conversion routines which are addressed by fields in the CVT. Refer to the OS System Programmer's Guide (GC28-6550) for guidance concerning how to create the CVT macro.

The user must refer to the CICS System Programmer's Reference Manual for instructions concerning the format and preparation of the DFHSG (System Generation) macro instructions, the options available, and the table of program names. Examples of the DFHSG macro instruction are also provided for the user in the System Programmer's Reference Manual.

The assembly of the CICS/OS generation macros (Stage I) automatically prepares the job stream input for the assembly and link edit of the user's CICS/OS system. Figure 2 provides a simplified overview of the total system generation procedure.

The jobstream produced by Stage I is defined by the //SYSPUNCH DD statement. It may define a card punch, magnetic tape, or sequential disk data set.

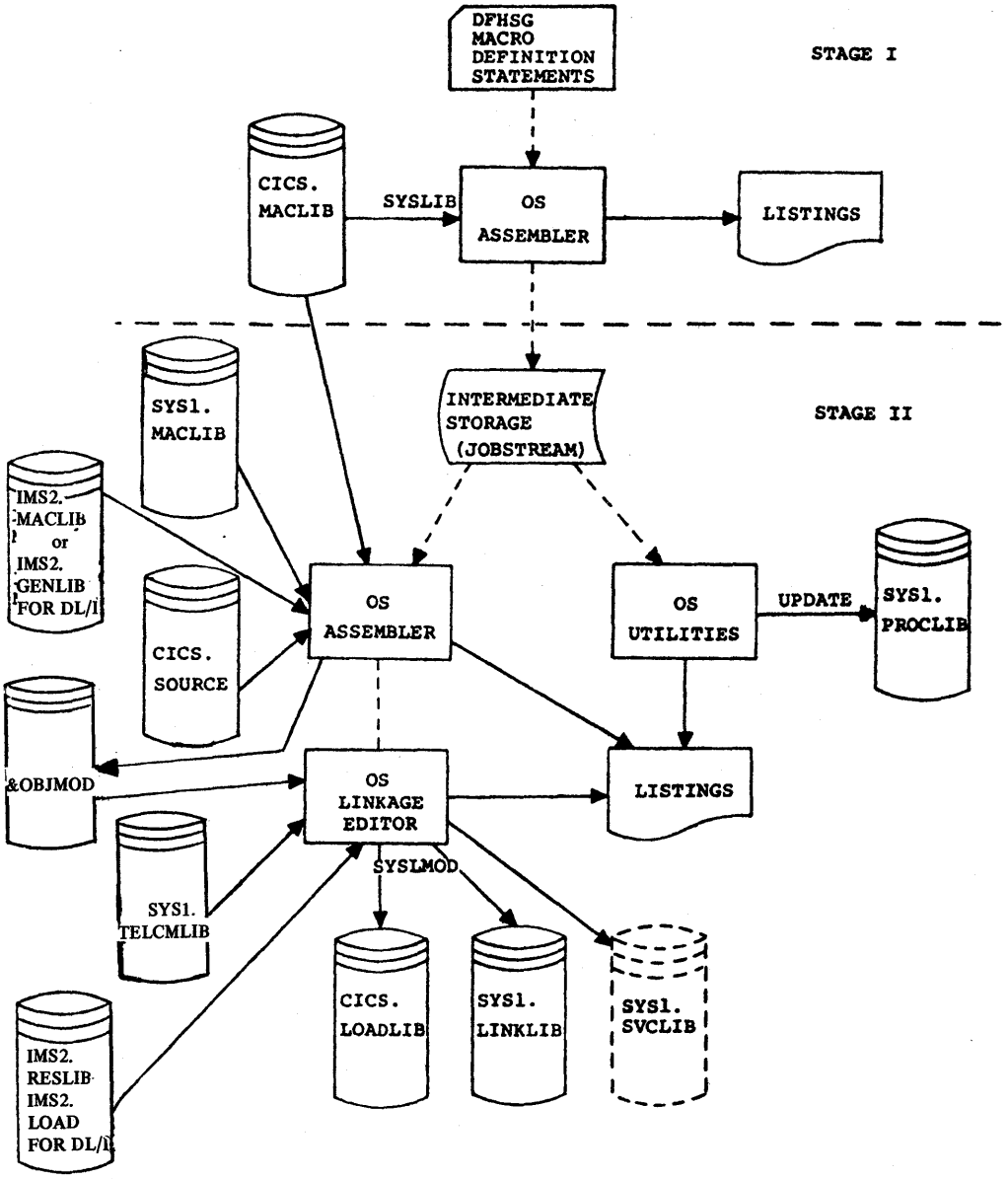

Figure 2. System generation

After the DFHSG macro instruction cards have been prepared, the deck must be assembled using the OS/360 Assembler. The following is an example of the JCL that may be used:

```
//STAGE1   JOB accounting info,'programmer's name',MSGLEVEL=1
//ASSEMBLY EXEC PGM=IEUASM
//SYSLIB   DD  DSNAME=CICS.MACLIB,
//             UNIT=2314,
//             VOLUME=SER=USRPAK,
//             DISP=(OLD,KEEP)
//SYSUT1   DD  UNIT=SYSSQ,
//             SPACE=(1700,(400,40)),
//             DISP=(NEW,DELETE)
//SYSUT2   DD  UNIT=SYSSQ,
//             SPACE=(1700,(400,40)),
//             DISP=(NEW,DELETE)
//SYSUT3   DD  UNIT=SYSSQ,
//             SPACE=(1700,(400,40)),
//             DISP=(NEW,DELETE)
//SYSPUNCH DD  DSNAME=&&OBJMOD,
//             DCB=(DSORG=PS,
//             RECFM=FB,
//             LRECL=80,
//             BLKSIZE=400),
//             SPACE=(80,(100,20)),
//             UNIT=SYSSQ,
//             DISP=(NEW,PASS)
//SYSPRINT DD  SYSOUT=A
//SYSIN    DD  *
           Source Deck
/*
```

The output from the Stage I assembly is a job stream containing the job control language and control cards necessary to assemble and process the Stage II operation. The system reader must be assigned to the device that contains the output of Stage I.

The following are the procedures produced by Stage I in response to the DFHSG TYPE=INITIAL,STATUS=FIRST macro instruction. These procedures can be given unique names through use of the DFHSG TYPE=INITIAL,PROCNMS=(procedure names) macro instruction. The default procedure names are DFHASMV2, DFHLNKV2, DFHUPDV2, and DFHAUPLK. Note that the //SYSUT2 and //SYSUT3 cards are not punched if the name of the Assembler begins with the characters IEV.

The procedures provided by CICS are intended for general use. The user may be required to modify these procedures for his installation and he should consider the following:

1. Storage allocation for CICS work data sets is by blocks to provide device independence; this allocation might need to be increased for large assemblies such as the Terminal Control Program depending on the options selected.
2. Concatenation of CICS system data sets occurs before the concatenation of other CICS data sets.
3. No SPACE or OUTLIM specifications are provided for SYSOUT data sets.
4. The SYSSQ (system sequential) unit specification is used.

The prefix names of the CICS libraries are selected at the option of the user through use of the DFHSG TYPE=INITIAL,PREFIX=prefix macro instruction.

```
//OUTPUTI  JOB   accounting info,'programmer's name',MSGLEVEL=1
//        EXEC  PGM=IEBUPDTE,PARM=NEW
//SYSUT2   DD    DSNAME=SYS1.PROCLIB,DISP=(OLD,KEEP)
//SYSPRINT DD    SYSOUT=A
//SYSIN    DD    DATA
./          ADD   NAME=DFHASMV2
//ASSEM    EXEC  PGM=IEUASM
//SYSLIB   DD    DSNAME=SYS1.MACLIB,DISP=(SHR,KEEP)
//        DD    DSNAME=CICS.MACLIB,DISP=SHR
//        DD    DSN=CICS.SOURCE,DISP=SHR
//SYSUT1   DD    UNIT=SYSSQ,SPACE=(1700,(400,40))
//SYSUT2   DD    UNIT=SYSSQ,SPACE=(1700,(400,40))
//SYSUT3   DD    UNIT=SYSSQ,SPACE=(1700,(400,40))
//SYSPUNCH DD    DSNAME=&&OBJMOD,DCB=(RECFM=FB,LRECL=080,BLKSIZE=400),
//                SPACE=(0400,(0100,100)),UNIT=SYSSQ,DISP=(NEW,PASS)
//SYSPRINT DD    SYSOUT=A
./          ADD   NAME=DFHLNKV2
//LNK      EXEC  PGM=LINKEDIT,PARM=(LIST,XREF,LET,OL)
//SYSUT1   DD    UNIT=SYSDA,SPACE=(1024,(100,10))
//SYSLMOD  DD    DSNAME=CICS.LOADLIB,DISP=SHR
//SYSPRINT DD    SYSOUT=A
//SYSLIN   DD    DSNAME=&&OBJMOD,DISP=(OLD,DELETE)
//        DD    DDNAME=DFHLEIN
./          ADD   NAME=DFHUPDV2
//        EXEC  PGM=IEBUPDTE,PARM=NEW
//SYSUT2   DD    DSN=&&TEMPPDS,SPACE=(80,(100,100,1)),UNIT=SYSDA,
//                DISP=(NEW,PASS),DCB=CICS.SOURCE
//SYSPRINT DD    SYSOUT=A
./          ADD   NAME=DFHAUPLK
//ASSEM    EXEC  PGM=IEUASM
//SYSLIB   DD    DSNAME=SYS1.MACLIB,DISP=(SHR,KEEP)
//        DD    DSNAME=CICS.MACLIB,DISP=(SHR,KEEP)
//SYSUT1   DD    UNIT=SYSSQ,SPACE=(1700,(400,40))
//SYSUT2   DD    UNIT=SYSSQ,SPACE=(1700,(400,40))
//SYSUT3   DD    UNIT=SYSSQ,SPACE=(1700,(400,40))
//SYSPUNCH DD    DSNAME=&&OBJMOD,DCB=(RECFM=FB,LRECL=080,
//                BLKSIZE=400),SPACE=(0400,(0100,100)),UNIT=SYSSQ,
//                DISP=(NEW,PASS)
//SYSPRINT DD    SYSOUT=A
//SYSGO    DD    DUMMY
//BLDMBR   EXEC  PGM=IEBUPDTE,PARM=NEW,COND=(7,LT)
//SYSPRINT DD    DUMMY
//SYSUT2   DD    DSN=&&TEMPPDS,UNIT=SYSDA,DISP=(NEW,PASS,DELETE),
//                SPACE=(80,(1000,500,100)),DCB=(RECFM=F,BLKSIZE=80)
//SYSIN    DD    DSN=*.ASSEM.SYSPUNCH,DISP=(OLD,DELETE)
//LNKEDT   EXEC  PGM=IEWL,PARM='LIST,XREF,LET',COND=(7,LT)
//SYSUT1   DD    UNIT=SYSDA,SPACE=(1024,(100,50))
//SYSPRINT DD    SYSOUT=A
//SYSLMOD  DD    DSN=CICS.LOADLIB,DISP=SHR
//OBJMOD   DD    DSN=&&TEMPPDS,DISP=(OLD,DELETE,DELETE)
//SYSLIN   DD    DSN=&&TEMPPDS(LNKCTL),DISP=(OLD,DELETE,DELETE),
//                VOL=REF=*.OBJMOD
./          ENDUP
/*                                          END OF DATA
            .
            .
            .
```

As a result of the Stage II operation, all CICS management programs and service programs are assembled, link edited, and placed in CICS.LOADLIB or SYS1.LINKLIB. The user must then prepare the system tables and compile and link edit all user-written application programs.

Note: In the system generation output for DFHSAP, the following unresolved address constants (ADCON's) appear: IBMBPIRD, IBMBPIRE, IBMBPIRF, IHEERRA, IHEMAIN, IHEOCLD, IHEBEGA, IHEITAX, IHEERRC, IHETABS, IHEITAZ, IHEPRTA, IHEPRTB, IHEDDOD, IHEOCLC, IBMBOCLA, IBMBERRA, IBMBEERA, IBMBPITA. These ADCON's may be ignored since the linkage is not required.

Since CICS maintenance fixes are distributed by IBM as modifications to source programs, procedures DFHASMV2 and DFHLNKV2 can be used to reassemble the programs after they have been modified.

PREPARATION OF THE SYSTEM TABLES

The system tables are prepared by the user after the generation of CICS has been completed. Using procedure DFHAUPLK (provided as part of the output of Stage I and located on SYS1.PROCLIB), the system tables are assembled and link edited to CICS.LOADLIB.

The system tables include:

System Initialization Table (SIT)
Terminal Control Table (TCT)
Destination Control Table (DCT)
File Control Table (FCT)
Processing Program Table (PPT)
Program Control Table (PCT)
Sign-on Table (SNT)
Terminal List Table (TLT)

As illustrated in Figure 3, the system table macros punch the Linkage Editor and IEBUPDTE (OS system utility) control statements necessary to link edit the system tables.

Procedure DFHAUPLK consists of three functional steps:

1. ASSEM - In the assembly step, SYSPUNCH output is directed to intermediate storage. This output consists of IEBUPDTE control statements, Linkage Editor control statements, and object decks.

2. BLDMBR - The IEBUPDTE step builds two partitioned data set members: INKCTL (OS Linkage Editor control statements) and OBJECT (object decks).

3. LNKEDT - The link edit step uses partitioned data sets LNKCTL and OBJECT to complete the preparation of the system tables.

The following is an example of the JCL required to assemble and link edit the Terminal Control Table (TCT):

```
//TCTAL     JOB     accounting info,'programmer's name',MSGLEVEL=1
//ASM       EXEC    DFHAUPLK
//ASSEM.SYSIN DD    *
            .
            .
            .
TCT macro definition statements
            .
            .
            .
/*
```

See the CICS System Programmer's Reference Manual for information concerning the preparation of the control cards for the system tables.

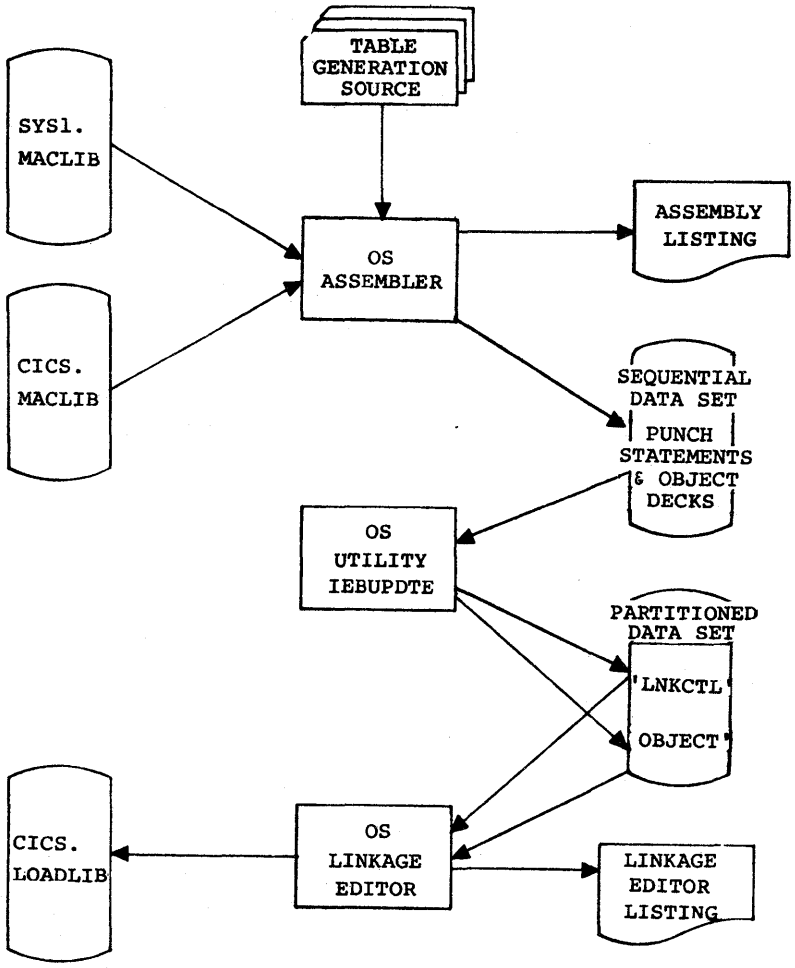

Figure 3. Preparation of the system tables

PREPARATION OF ASSEMBLER LANGUAGE APPLICATION PROGRAMS

The preparation of the user's Assembler language application programs is similar to the preparation of system tables as described in the previous section.

The application program is assembled and link edited into CICS.LOADLIB and must have the same load module name that appears in the Processing Program Table (PPT). Figure 4 illustrates the two-step process necessary to prepare Assembler language application programs. The JCL might be similar to the following:

```
//PREP          JOB     accounting info,'programmer's name',MSGLEVEL=1
//STEP1         EXEC    DFHASMV2
//SYSPUNCH      DD      DSN=&&TEMP,DCB=(RECFM=F,BLKSIZE=80),
//                      SPACE=(80,(100,100)),UNIT=SYSDA,DISP=(NEW,PASS)
//SYSIN         DD      *
                .
                .
                .
Source Statements
                .
                .
                .
/*
//STEP2         EXEC    PGM=LINKEDIT,PARM='LIST,LET,XREF'
//SYSUT1        DD      UNIT=SYSDA,SPACE=(1024,(100,10))
//SYSLMOD       DD      DSN=CICS.LOADLIB,DISP=SHR
//SYSPRINT      DD      SYSOUT=A
//SYSLIN        DD      DSN=&&TEMP,DISP=(OLD,DELETE)
//              DD      *
                NAME    anyname(R)
/*
```

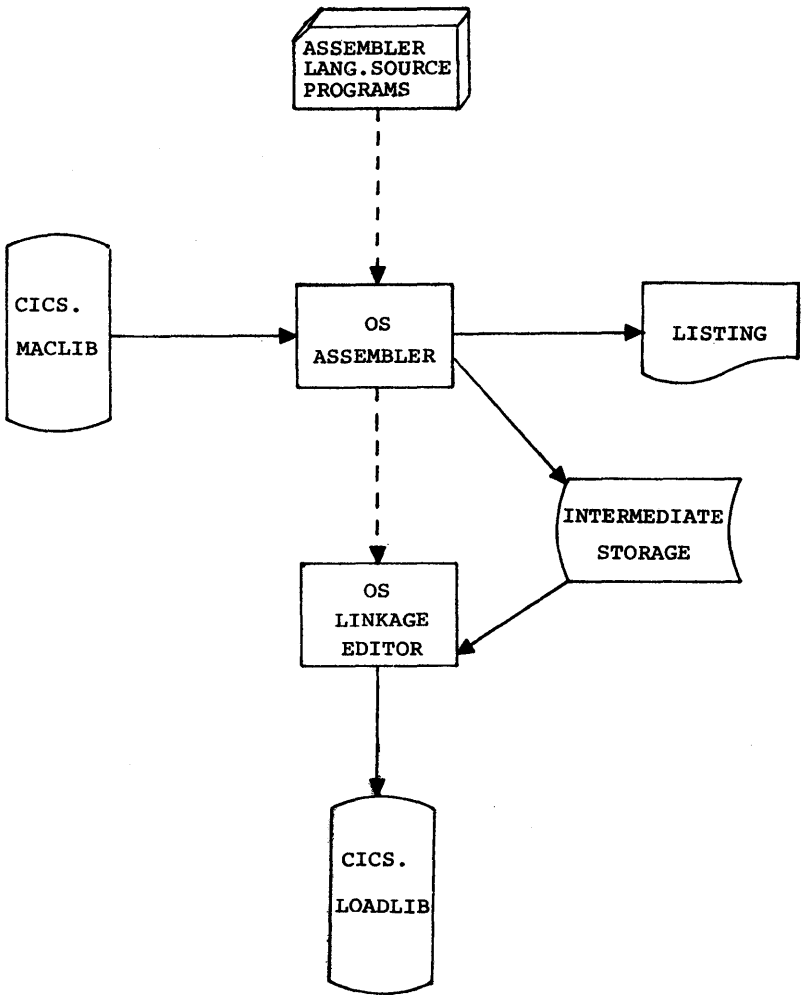

Figure 4. Preparation of assembler language application programs

PREPARATION OF HIGH-LEVEL LANGUAGE APPLICATION PROGRAMS

The preparation of the user's high-level language application programs (both PL/I and ANS COBOL), illustrated in Figure 5, involves four steps as follows:

1. CICS Preprocessor (DFHPRPR)
2. OS Assembler
3. Compilation (PL/I or ANS COBOL)
4. Link edit

Although this basic procedure is essentially the same, regardless of whether the programs are written in PL/I or COBOL, the actual JCL and link-edit control statements vary slightly.

The following JCL is an example of PL/I F program preparation:

```
//EBPRPR   JOB     accounting info,'programmer's name',MSGLEVEL=1
//JOBLIB   DD      DSNAME=CICS.LOADLIB,DISP=(SHR,KEEP)
//DFHPREP  EXEC    PGM=DFHPRPR
//OUTPUT   DD      DSNAME=&&TEMP,
//                 DCB=(RECFM=F,
//                 LRECL=80,BLKSIZE=80),
//                 SPACE=(80,(100,100)),
//                 UNIT=SYSSQ,
//                 DISP=(NEW,PASS)
//SYSUDUMP DD      SYSOUT=A
//SYSIN    DD      *
           .
           .
           .
PL/I Source Statements
           .
           .
           .
/*
//DFHASMBL EXEC    PROC=DFHASMV2
//SYSLIB   DD      DSNAME=CICS.PL1LIB,DISP=(SHR,KEEP)
//SYSPUNCH DD      DSNAME=&&TEMP1
//SYSIN    DD      DSNAME=*.DHPREP.OUTPUT,DISP=(OLD,DELETE)

//DFHCOMPL EXEC    PGM=IEMAA           EXECUTE - PROGRAM = IEMAA    *
//                 PARM='NOSTMT,LIST,EXTREF,MACRO',
//                 REGION=48K          EXECUTE - REGION = 48K       *
//                 ************************************************
//                 *                                              *
//                 *   O P E R A T I N G   S Y S T E M / 3 6 0    *
//                 *                                              *
//                 *   L A N G U A G E   T R A N S L A T O R      *
//                 *                                              *
//                 *   P L / I   C O M P I L A T I O N            *
//                 *                                              *
//                 ************************************************
//SYSLIB   DD      DSNAME=CICS.PL1LIB, DATA DEFINITION - SYSLIB     *
//                 DISP=(SHR,KEEP)     DISPOSITION = SHARE & KEEP   *
//                 ************************************************
//SYSUT1   DD      UNIT=SYSDA,         DATA DEFINITION - SYSUT1     *
//                 DCB=(DSORG=PS,      DCB - DATA SET ORG=PHYS SEQ  *
//                 BLKSIZE=1024),      DCB - BLOCK SIZE             *
//                 SPACE=(1024,        SPACE - ALLOCATION BY RECORD *
//                 (100,               SPACE - PRIMARY ALLOCATION   *
//                 100)),              SPACE - SECONDARY ALLOCATION *
//                 DISP=(NEW,DELETE)   DISPOSITION = NEW & DELETE   *
//                 ************************************************
```

```
//SYSUT3   DD      UNIT=SYSSQ,          UNIT = SYSTEM SEQ DATA SET   *
//                 SPACE=(80,(250,250)), SPACE ALLOCATION BY RECORD *
//                 DISP=(NEW,DELETE)    DISPOSITION = NEW & DELETE   *
//                 ************************************************
//SYSLIN   DD      DSNAME=&&OBJMOD,     DATA DEFINITION - SYSLIN     *
//                 DCB=(DSORG=PS,       DCB - DATA SET ORG=PHYS SEQ  *
//                 RECFM=FB,            DCB - RECORD FORMAT=FXD&BLKD *
//                 LRECL=80,            DCB - LOGICAL RECORD LENGTH  *
//                 BLKSIZE=400),        DCB - BLOCK SIZE             *
//                 SPACE=(400,          SPACE - ALLOCATION BY RECORD *
//                 (200,                SPACE - PRIMARY ALLOCATION   *
//                 100)),               SPACE - SECONDARY ALLOCATION *
//                 UNIT=SYSSQ,          UNIT=SYSTEM SEQUENTIAL UNIT  *
//                 DISP=(MOD,PASS)      DISPOSITION=MODIFY & PASS    *
//                 ************************************************
//SYSPRINT DD      SYSOUT=A             DATA DEFINITION - SYSPRINT   *
//                 ************************************************
//SYSIN    DD      DSNAME=*.DFHASMBL.ASSEM.SYSPUNCH,DISP=(OLD,DELETE)
//*
//*
//DFHLNKDT EXEC    PGM=LINKEDIT,PARM='LIST,XREF,LET'
//SYSUT1   DD      UNIT=SYSDA,SPACE=(1024,(100,10))
//SYSLMOD  DD      DSNAME=CICS.LOADLIB,DISP=(OLD,KEEP)
//SYSLIB   DD      DSNAME=CICS.LOADLIB,DISP=(OLD,KEEP)
//         DD      DSNAME=SYS1.PL1LIB,DISP=(OLD,KEEP)
//SYSPRINT DD      SYSOUT=A
//OBJMOD   DD      DSNAME=&&OBJMOD,DISP=(OLD,DELETE)
//SYSLIN   DD      *
         INCLUDE SYSLIB(DFHPL1I)
         REPLACE IHENTRY
         INCLUDE OBJMOD               INCLUDE OBJECT MODULE
         NAME anyname(R)
/*                                    END OF DATA - LINKEDIT
```

Note that when link editing PL/I F application programs, the following control statements must always be present in the link edit step:

```
INCLUDE SYSLIB(DFHPL1I)
REPLACE IHENTRY
```

The following JCL is an example of PL/I Optimizing Compiler program preparation:

```
//EBPRPR   JOB     accounting info,'programmer's name',MSGLEVEL=1
//JOBLIB   DD      DSNAME=CICS.LOADLIB,DISP=(SHR,KEEP)
//DFHPREP  EXEC    PGM=DFHPRPR
//OUTPUT   DD      DSNAME=&&TEMP,
//                 DCB=(RECFM=F,
//                 LRECL=80,BLKSIZE=80),
//                 SPACE=(80,(100,100)),
//                 UNIT=SYSSQ,
//                 DISP=(NEW,PASS)
//SYSUDUMP DD      SYSOUT=A
//SYSIN    DD      *
         .
         .
         .
PL/I Source Statements
         .
         .
         .
/*
//DFHASMBL EXEC    PROC=DFHASMV2
//SYSLIB   DD      DSNAME=CICS.PL1LIB,DISP=(SHR,KEEP)
```

```
//SYSPUNCH DD      DSNAME=&&TEMP1
//SYSIN    DD      DSNAME=*.DHPREP.OUTPUT,DISP=(OLD,DELETE)

//DFHCOMPL EXEC    PGM=IEL0AA          EXECUTE - PROGRAM = IEL0AA   *
//                 PARM='NOSTMT,LIST,EXTREF,MACRO',
//                 REGION=48K          EXECUTE - REGION = 48K       *
//                 ************************************************
//                 *                                              *
//                 *   O P E R A T I N G   S Y S T E M / 3 6 0    *
//                 *                                              *
//                 *   L A N G U A G E   T R A N S L A T O R      *
//                 *                                              *
//                 *   P L / I   C O M P I L A T I O N            *
//                 *                                              *
//                 ************************************************
//SYSLIB   DD      DSNAME=CICS.PL1LIB, DATA DEFINITION - SYSLIB     *
//                 DISP=(SHR,KEEP)     DISPOSITION = SHARE & KEEP   *
//                 ************************************************
//SYSUT1   DD      UNIT=SYSDA,         DATA DEFINITION - SYSUT1     *
//                 DCB=(DSORG=PS,      DCB - DATA SET ORG=PHYS SEQ  *
//                 BLKSIZE=1024),      DCB - BLOCK SIZE             *
//                 SPACE=(1024,        SPACE - ALLOCATION BY RECORD *
//                 (100,               SPACE - PRIMARY ALLOCATION   *
//                 100)),              SPACE - SECONDARY ALLOCATION *
//                 DISP=(NEW,DELETE)   DISPOSITION = NEW & DELETE   *
//                 ************************************************
//SYSUT3   DD      UNIT=SYSSQ,         UNIT = SYSTEM SEQ DATA SET   *
//                 SPACE=(80,(250,250)), SPACE ALLOCATION BY RECORD *
//                 DISP=(NEW,DELETE)   DISPOSITION = NEW & DELETE   *
//                 ************************************************
//SYSLIN   DD      DSNAME=&&OBJMOD,    DATA DEFINITION - SYSLIN     *
//                 DCB=(DSORG=PS,      DCB - DATA SET ORG=PHYS SEQ  *
//                 RECFM=FB,           DCB - RECORD FORMAT=FXD&BLKD *
//                 LRECL=80,           DCB - LOGICAL RECORD LENGTH  *
//                 BLKSIZE=400),       DCB - BLOCK SIZE             *
//                 SPACE=(400,         SPACE - ALLOCATION BY RECORD *
//                 (200,               SPACE - PRIMARY ALLOCATION   *
//                 100)),              SPACE - SECONDARY ALLOCATION *
//                 UNIT=SYSSQ,         UNIT=SYSTEM SEQUENTIAL UNIT  *
//                 DISP=(MOD,PASS)     DISPOSITION=MODIFY & PASS    *
//                 ************************************************
//SYSPRINT DD      SYSOUT=A            DATA DEFINITION - SYSPRINT   *
//                 ************************************************
//SYSIN    DD      DSNAME=*.DFHASMBL.ASSEM.SYSPUNCH,DISP=(OLD,DELETE)
//*
//*
//DFHLNKDT EXEC    PGM=LINKEDIT,PARM='LIST,XREF,LET'
//SYSUT1   DD      UNIT=SYSDA,SPACE=(1024,(100,10))
//SYSLMOD  DD      DSNAME=CICS.LOADLIB,DISP=(OLD,KEEP)
//SYSLIB   DD      DSNAME=CICS.LOADLIB,DISP=(OLD,KEEP)
//         DD      DSNAME=SYS1.PL1BASE,DISP=(OLD,KEEP)
//SYSPRINT DD      SYSOUT=A
//OBJMOD   DD      DSNAME=&&CBJMOD,DISP=(OLD,DELETE)
//SYSLIN   DD      *
         INCLUDE SYSLIB(DFHPL1OI)
         REPLACE PLISTART
         INCLUDE OBJMOD               INCLUDE OBJECT MODULE
         NAME anyname(R)
/*                                    END OF DATA - LINKEDIT
```

Note that when link editing PL/I optimizing compiler programs, the fcllowing control statements must always be present in the link edit step:

```
      INCLUDE SYSLIB(DFHPL10I)
      REPLACE PLISTART
```

The following is an example of the JCL necessary to prepare an ANS COBOL application program:

```
//EBPRPR   JOB     accounting info,'programmer's name',MSGLEVEL=1
//JOBLIB   DD      DSNAME=CICS.LOADLIB,DISP=(SHR,KEEP)
//DFHPREP  EXEC    PGM=DFHPRPR
//OUTPUT   DD      DSNAME=&&TEMP,
//                 DCB=(RECFM=F,
//                 LRECL=80,BLKSIZE=80),
//                 SPACE=(80,(100,100)),
//                 UNIT=SYSSQ,
//                 DISP=(NEW,PASS)
//SYSUDUMP DD      SYSOUT=A
//SYSIN    DD      *
           .
           .
           .
COBOL Source Statements
           .
           .
           .
/*
//DFHASMBL EXEC    PROC=DFHASMV2
//SYSLIB   DD      DSNAME=CICS.COBLIB,DISP=(SHR,KEEP)
//SYSPUNCH DD      DSNAME=&&TEMP1
//SYSIN    DD      DSNAME=*.DFHPREP.OUTPUT,DISP=(OLD,DELETE)
//         EXEC    PGM=IKFCBL00,
//                 PARM='SIZE=150000,BUF=010000,DMAP,PMAP,XREF,NOTRUNC'
//                 ************************************************
//*                *                                              *
//*                *   O P E R A T I N G   S Y S T E M / 3 6 0    *
//*                *                                              *
//*                *   L A N G U A G E   T R A N S L A T O R      *
//*                *                                              *
//*                *   C O B O L   C O M P I L A T I O N          *
//*                *                                              *
//*                ************************************************
//SYSLIB   DD      DSNAME=CICS.COBLIB, DATA DEFINITION - SYSLIB    *
//                 DISP=(SHR,KEEP)     DISPOSITION=SHARE & KEEP    *
//                 ************************************************
//SYSUT1   DD      UNIT=SYSDA,         DATA DEFINITION - SYSUT1    *
//                 SPACE=(460,(700,100)), SPACE ALLOCATION BY RECORD*
//                 DISP=(NEW,DELETE)   DISPOSITION=NEW & DELETE    *
//                 ************************************************
//SYSUT2   DD      UNIT=SYSDA,         DATA DEFINITION - SYSUT2    *
//                 SPACE=(460,(700,100)), SPACE ALLOCATION BY RECORD*
//                 DISP=(NEW,DELETE)   DISPOSITION=NEW & DELETE    *
//                 ************************************************
//SYSUT3   DD      UNIT=SYSDA,         DATA DEFINITION - SYSUT3    *
                   SPACE=(460,(700,100)), SPACE ALLOCATION BY RECORD*
                   DISP=(NEW,DELETE)   DISPOSITION=NEW & DELETE    *
//                 ************************************************
//SYSUT4   DD      UNIT=SYSDA,         DATA DEFINITION - SYSUT4    *
//                 SPACE=(460,(700,100)), SPACE ALLOCATION BY RECORD*
//                 DISP=(NEW,DELETE)   DISPOSITION=NEW & DELETE    *
//                 ************************************************
//SYSLIN   DD      DSNAME=&&OBJMOD,    DATA DEFINITION - SYSLIN    *
//                 DCB=(DSORG=PS,      DCB - DATA SET ORG=PHYS SEQ *
//                 RECFM=FB,           DCB - RECORD FORMAT=FXC&BLND*
//                 LRECL=80,           DCB - LOGICAL RECORD LENGTH *
//                 BLKSIZE=400),       DCB - BLOCK SIZE            *
//                 SPACE=(400,         SPACE - ALLOCATION BY RECORD*
```

```
//                (100,                SPACE - PRIMARY ALLOCATION   *
//                100)),               SPACE - SECONDARY ALLOCATION *
//                UNIT=SYSSQ           UNIT - SYSTEM SEQUENTIAL UNIT*
//                DISP=(MOD,PASS)      DISPOSITION - MODIFY & PASS  *
//                ***********************************************
//SYSPRINT DD     SYSOUT=A             DATA DEFINITION - SYSPRINT   *
//                ***********************************************
//SYSPUNCH DD     DUMMY
//SYSIN    DD     DSNAME=*.DFHASMBL.ASSEM.SYSPUNCH,DISP=(OLD,DELETE)
//LINK     EXEC   PGM=LINKEDIT,PARM='LIST,XREF,LET'
//SYSUT1   DD     UNIT=SYSDA,SPACE=(1024,(100,10))
//SYSLMOD  DD     DSN=CICS.LOADLIB,DISP=SHR
//SYSLIB   DD     DSN=SYS1.COBLIB,DISP=SHR
//SYSPRINT DD     SYSOUT=A
//SYSLIN   DD     DSN=&&CBJMOD,DISP=(OLD,DELETE)
//         DD     *
         LIBRARY (DFHCBLI)
         NAME anyname(R)
/*
```

Note: In the compilation step, the NOTRUNC option must be specified if it is not a default.

In the link-edit step, the LIBRARY control statement is required for all link edits of COBOL application programs. A warning message is received indicating that DFHCBLI is unresolved; however, since DFHCBLI is resolved during system execution, no further action is required on the part of the user in the link-edit step.

During initial assembly, a listing of the intermediate step (including error messages) may be desired. The listing can be inhibited on subsequent assemblies by specifying PARM='NOLIST' in the Assembler step. If the listing is inhibited, and if a macro in the original source contains an error, no indication of the error is given to the user, and the statement containing the error does not appear in the compiled program.

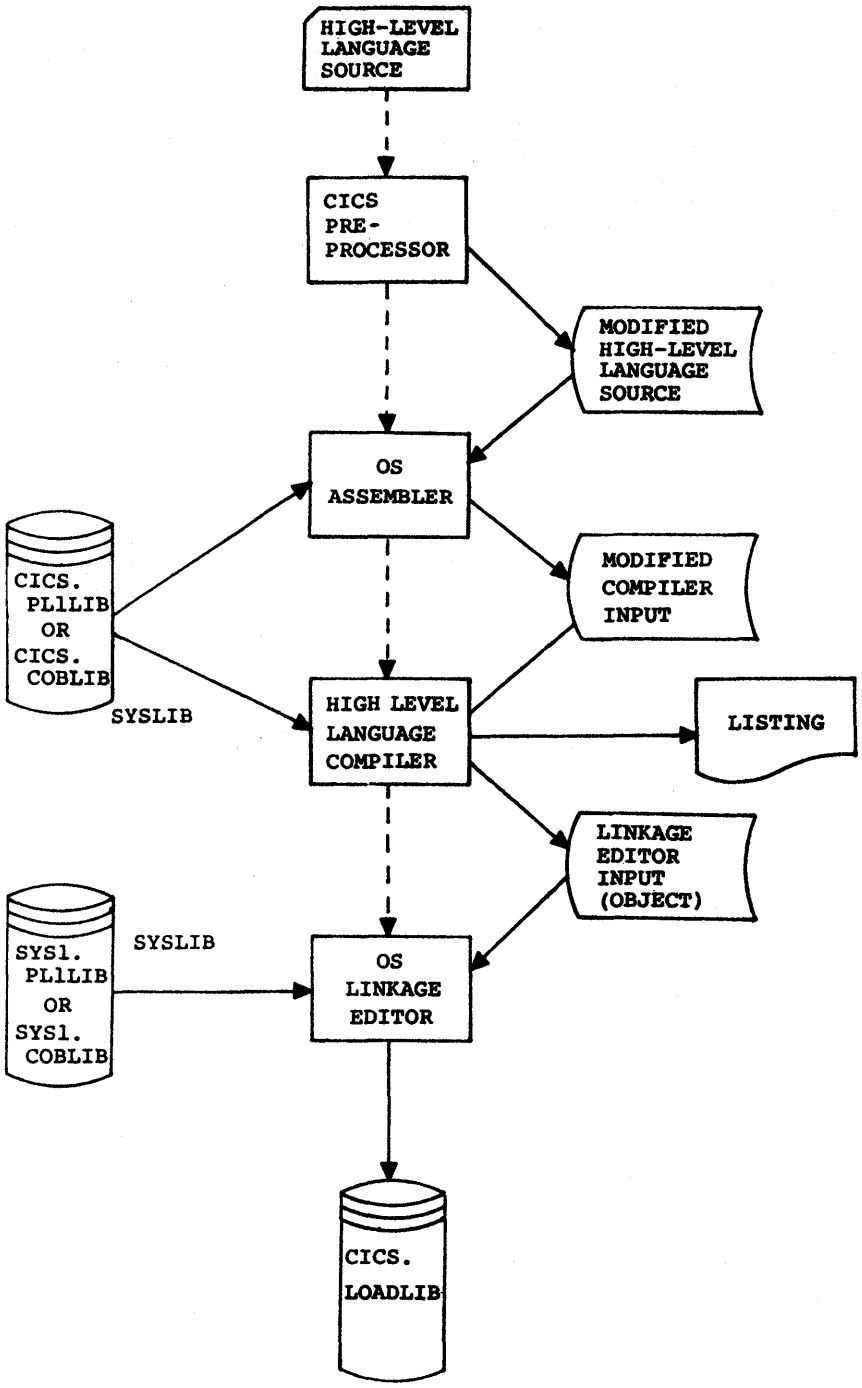

Figure 5. Preparation of high-level language application programs

PREPARATION OF MAPS FOR 3270 BASIC MAPPING SUPPORT

Maps for 3270 Basic Mapping support (BMS) are generated using the CICS DFHMDI and DFHMDF macro instructions. (See the Application Programmer's Reference Manual for a discussion of these macro instructions.) The maps are then stored in CICS.LOADLIB. The procedure for generating the maps, illustrated in Figure 6, is similar to that for preparing Assembler Language application programs. For example:

```
//PREP          JOB     accounting info,'programmer's name',MSGLEVEL=1
//STEP1         EXEC    DFHASMV2
//SYSPUNCH      DD      DSN=&&TEMP,DCB=(RECFM=F,BLKSIZE=80),
//                      SPACE=(80,(100,100)),UNIT=SYSDA,DISP=(NEW,PASS)
//SYSIN         DD      *
                .
                .
                .
Source Statements
                .
                .
                .
/*
//STEP2         EXEC    PGM=LINKEDIT,PARM='LIST,LET,XREF'
//SYSUT1        DD      Unit=SYSDA,SPACE=(1024,(100,10))
//SYSLMOD       DD      DSN=CICS.LOADLIB,DISP=SHR
//SYSPRINT      DD      SYSOUT=A
//SYSLIN        DD      DSN=&&TEMP,DISP=(OLD,DELETE)
//              DD      *
                NAME    mapname(R)
/*
```

In this example, a NAME card is used to specify the map name under which BMS will load the input/output map into main storage.

Note: Programmers in Assembler language have the option of compiling maps into their application programs. In this case, no separate map generation run is performed, as the Assembler language application program passes the address of the map to BMS whenever a mapping operation is requested.

Using the DFHMDI and DFHMDF macro instructions, symbolic storage definitions (dummy sections) are generated which give the application programmer symbolic reference to the fields in the map. The DFHMDI and DFHMDF macro instructions are assembled using procedure DFHASMV2; the symbolic storage definitions are then output to SYSPUNCH. When initially testing the assembly of a symbolic storage definition for a particular map, SYSPUNCH can be directed to SYSOUT=A to obtain a listing of the storage definition. Figure 7 illustrates the preparation of symbolic storage definitions for 3270 Basic Mapping support.

To use the symbolic storage definition in his program, the user must assemble the map and obtain a punched copy of the storage definition through SYSPUNCH. Where many maps are to be used in an installation, or where there are multiple users of common maps, it is recommended that the user establish a private Copy library. Map symbolic storage definitions should be placed in this library, from which they can be copied into any application program. The user must ensure that the Copy library is correctly concatenated with SYSLIB.

When a map symbolic storage definition is generated under the same name for more than one programming language, a separate copy of the symbolic storage definition must be placed in each Copy library dedicated to maps for a particular language.

The following is an example of the JCL that might be used to obtain a listing cf a map symbolic storage definition, irrespective of the programming language used:

```
//DSECT    JOB  accounting info,'programmer's name',MSGLEVEL=1
//ASM      EXEC DFHASMV2
//SYSPUNCH DD   SYSOUT=A
//SYSIN    DD   *
           .
           .
           .
Source Statements
           .
           .
           .
/*
```

To obtain a punched copy of a symbolic storage definition, the //SYSPUNCH statement in the above example should direct output to the punch data stream. For example:

```
//SYSPUNCH DD   SYSOUT=B
```

To store a map symbolic storage definition into a private Copy library, JCL similar to the following might be used:

```
//SYSPUNCH DD   DSN=USER.MAPLIB.ASM(copyname),DISP=OLD
//SYSPUNCH DD   DSN=USER.MAPLIB.COB(copyname),DISP=OLD
//SYSPUNCH DD   DSN=USER.MAPLIB.PL1(copyname),DISP=OLD
```

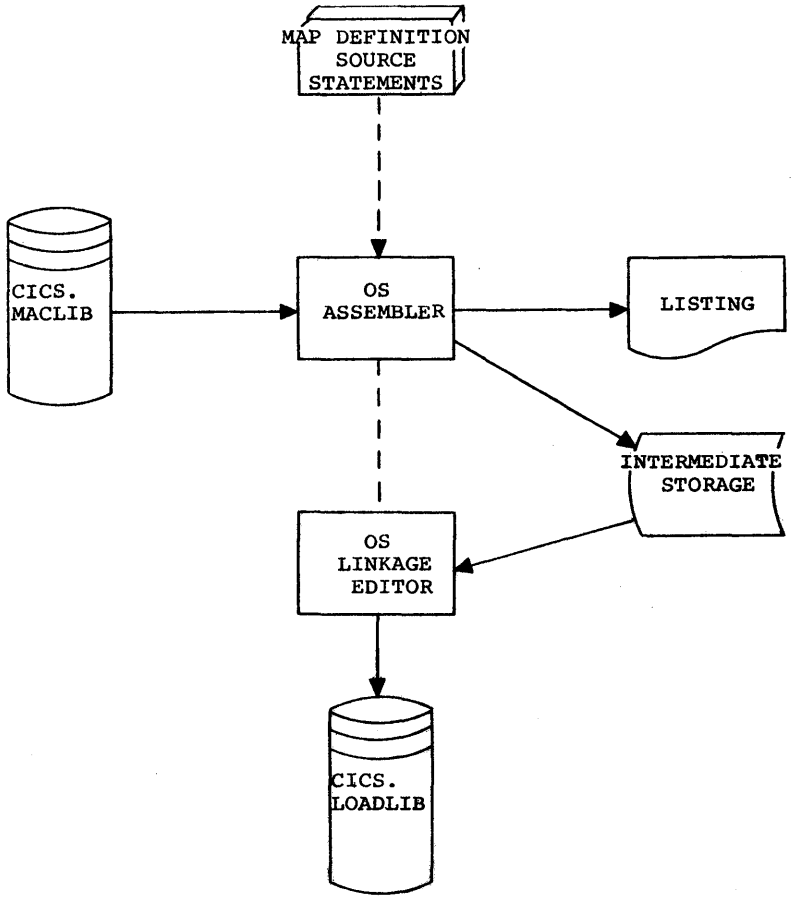

Figure 6. Preparation of maps for 3270 basic mapping support

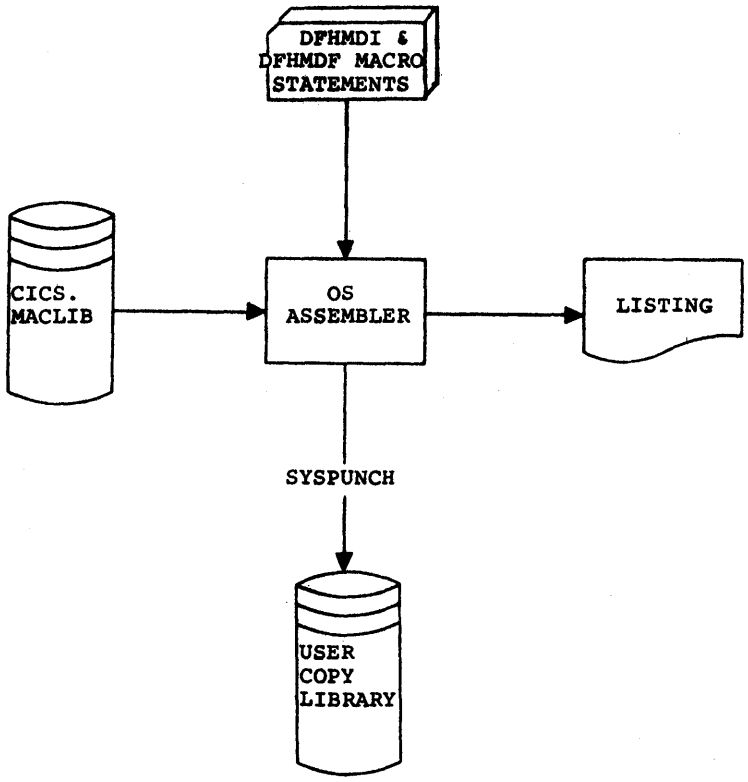

Figure 7. Preparation of symbolic storage definitions for 3270 basic mapping support

PREPARATION OF PDIR'S AND DDIR'S FOR DL/I ACCESS

Access to the Data Language/I (DL/I) facility of the IBM Information Management System (Version 2, Modification Level 2 or later) requires that a list of Program Specification Block Directories (PDIR's) and a list of Data Management Block Directories (DDIR's) be generated. PDIR's are lists of Program Specification Blocks (PSB's) which define for DL/I the use of data bases by application programs; DDIR's are lists of Data Management Blocks (DMB's) which define for DL/I the physical and logical characteristics of these data bases.

PDIR's and DDIR's are generated by assembling statements DFHDLPSB and DFHDLDBD, respectively. For example:

```
//GENDIRS          JOB    accounting info,'programmer's name',MSGLEVEL=1
//STEP1            EXEC   DFHASMV2
//ASSEM.SYSLIB     DD     DSNAME=IMS2.GENLIB,DISP=SHR
//                 DD     DSNAME=CICS.MACLIB,DISP=SHR
//                 DD     DSNAME=SYS1.MACLIB,DISP=SHR
//ASSEM.SYSIN      DD     *
        .
        .
        .
DFHDLPSB or DFHDLDBD statements
        .
        .
        .
/*
//STEP2            EXEC    PGM=LINKEDIT,PARM='LIST,LET,XREF'
//SYSUT1           DD      UNIT=SYSDA,SPACE=(1024,(100,10))
//SYSLMOD          DD      DSN=CICS.LOADLIB,DISP=SHR
//SYSPRINT         DD      SYSOUT=A
//SYSLIN           DD      DSN=&OBJMOD,DISP=(OLD,DELETE)
//                 DD      *
                   NAME DFHDLPSB(R) or DFHDLDBD(R)
/*
```

In the above example, all DFHDLPSB statements must be assembled in one program; the Linkage Editor NAME card must specify DFHDLPSB(R). All DFHDLDBD statements must be assembled in another program; the Linkage Editor NAME card must specify DFHDLDBD(R). After either or both of these programs have been assembled or reassembled, the DL/I application program (DFHDLQ) must be reassembled since its link edit step includes DFHDLPSB and DFHDLDBD.

The load modules produced by these assemblies are INCLUDED during the link-edit step of the assembly of DFHDLQ. If these two lists are not assembled and link edited before the assembly and link edit of DFHDLQ during Stage II of CICS System Generation, unresolved references to the following labels are noted by the Linkage Editor:

```
DFSIPSBQ
DFHDLPSB
DFSIDMBQ
DFHDLDBD
DFSIDIRQ
DFSIDMDQ
DFSISMNQ
```

After the PDIR list and DDIR lists are assembled and link edited, assembly and link edit of DFHDLQ produces the fcllcwing unresolved references:

DFHDLDBD
DFSISMNO

These two errors can be ignored with no effect on CICS-DL/I Interface cperation. Anytime the lists are changed, the appropriate list must te reassembled and re-link edited, and then DFHDLQ must be reassembled and re-link edited. For information concerning how to code DFHDLPSB and DFHDLDBD statements, see the System Programmer's Reference Manual.

SYSTEM EXECUTION DATA SET REQUIREMENTS

The essential CICS/OS data sets, the optional CICS/OS data sets and the user data sets are discussed in this section. Also discussed are the space requirements and the means of determining the data set space.

The OS data set definitions are divided into three categories for purposes of discussion:

1. Essential CICS/OS data set definitions
2. Optional CICS/OS data set definitions
3. User data set definitions

ESSENTIAL CICS/OS DATA SETS

CICS LOAD LIBRARY

The CICS load library (CICS.LOADLIB) contains load modules of the CICS management programs and tables and of the user's application programs. These load modules are placed in CICS.LOADLIB by the OS Linkage Editor and are asynchronously loaded by the Program Control program during real-time execution of CICS. CICS.LOADLIB must be defined using the DFHRPL DDNAME.

If the System Initialization program (DFHSIP) is in CICS.LOADLIB, a JOBLIB or STEPLIB DDNAME must be provided in addition to the DFHRPL DDNAME. DFHRPL and JOBLIB or STEPLIB must point to the data set name, CICS.LOADLIB.

The required size of DFHRPL can be determined only by the user because it consists of both the CICS modules as well as his application programs. The CICS modules may not necessarily all be present due to user options provided for system generation. In addition, many modules are variable in size due to the generatable features within the module. The CICS modules which reside in DFHRPL should take no more than 20 cylinders on a 2311 or five cylinders on a 2314.

TERMINAL DATA SETS

The user must have DD job control statements for each telecommunication device he has defined in his Terminal Control Table.

For example:

```
//DTF60L   DD  UNIT=010
//         DD  UNIT=011
//         DD  UNIT=012
//DTF60R   DD  UNIT=0E0
//DTF1030  DD  UNIT=0E1
//DTF50MD  DD  UNIT=0E2
//DTF40SC  DD  UNIT=09F
//DTF70BI  DD  UNIT=0AB
//DTF40B   DD  UNIT=09D
//DTF41L   DD  UNIT=050
//         DD  UNIT=051
//         DD  UNIT=052
//DTF41C   DD  UNIT=0A0
//         DD  UNIT=0A2
```

OPTIONAL CICS/OS DATA SETS

In addition to the essential CICS/OS data set definitions described above, the user may require certain optional data sets, depending upon the configuration of CICS/OS he has selected.

DUMP DATA SETS

The dump data set (ddname DFHDMPA) is used by the CICS/OS Dump Control program to record dumps of transactions within the system. It is a sequential data set located on either unlabeled magnetic tape or direct access.

Optionally, the user can define two dump data sets (ddnames DFHDMPA and DFHDMPB), alternating between them during real-time execution of CICS. This is accomplished in essentially a "flip-flop" manner; that is, if DFHDMPA is opened by the System Initialization program and if a request to switch the dump data set is issued, DFHDMPA is closed and DFHDMPB is opened. Another request to switch the dump data set causes DFHDMPB to be closed and DFHDMPA to be opened. If the user plans to use this facility, a DD statement for both DFHDMPA and DFHDMPB must be submitted in the System Initialization JCL. For example:

```
//DFHDMPA  DD  DSN=CICS.DUMPA,DISP=OLD,
//             DCB=(DSORG=PS,RECFM=UT,
//             BLKSIZE=32760),UNIT=2314
//             VOL=SER=USRPAK
//DFHDMPB  DD  DSN=CICS.DUMPB,DISP=OLD,
//             DCB=(DSORG=PS,RECFM=UT,
//             BLKSIZE=32760),UNIT=2314,
//             VOL=SER=USRPAK
```

For details concerning "switching" the dump data sets using the Master Terminal function, see the CICS Terminal Operator's Guide.

During the initial installation of CICS/OS, the user should anticipate more abnormal termination conditions than after the system has been operational for a period of time. In this early period, 5-10 cylinders are probably in order while 2-3 cylinders may suffice after the system has settled to normal operation. If the allocated space for the dump data set is exhausted, CICS will abnormally terminate. To prevent this, a secondary allocation may be used.

TCAM PROCESS QUEUE DATA SETS

If TCAM is used, the Process Queue Data Sets must be defined in the Terminal Control Table (TCT) and appropriate DD statements must be included in system initialization JCL. For more information, see the section entitled "Writing TCAM Compatible Application Programs" in the OS/MFT and OS/MVT TCAM Programmer's Guide (GC30-2024).

TRANSIENT DATA INTRAPARTITION DATA SET

The Transient Data Intrapartition data set is a direct access data set used for the queuing of messages and data within the system.

If the reusable queue space feature is included in CICS during preparation of the Destination Control Table, track space occupied by intrapartition data sets is reused when all data records on the track have been read via Transient Data READ macro instructions. If all available space has been used by intrapartition data sets, programs issuing Transient Data PUT macro instructions receive a NOSPACE response

from the CICS Transient Data Control program until such time as space is made available via subsequent Transient Data READ or PURGE macro instructions. Therefore, sufficient track space should be allocated by the user for Transient Data intrapartition data sets to avoid a NOSPACE condition.

The applicable ddname is DFHINTRA. For example:

```
//DFHINTRA DD  DSN=INTRA.MSG.Q,DISP=OLD,
//             DCB=(DSORG=DA,RECFM=U,BLKSIZE=7294),
//             UNIT=2314,VOL=SER=USRPAK
```

If the Asynchronous Transaction Processing facility is to be used, the Transient Data intrapartition data set is required.

TEMPORARY STORAGE DATA SET

The Temporary Storage data set is a direct access data set that is required if the Temporary Storage facility or the automatic task initiation feature of Time Management (Interval Control program) is selected. The space allocated depends upon the user and system requirements for Temporary Storage. For details concerning the use of Temporary Storage by the Time Management facility, see the discussion of "Time Services" in the CICS Application Programmer's Reference Manual.

The user specifies the block size of this data set in the DD statement. The block size specified is used to format this data set during System Initialization. For example, assume the user allocated ten tracks on a 2311 Disk Storage Drive and specified a block size of 500 bytes in the DD statement. Since six 500-byte blocks fit on a 2311 track, the data set is formatted with 60 blocks which are available to the user during CICS execution through use of the Temporary Storage facility.

Unlike the Transient Data Intrapartition data set, the Temporary Storage data set blocks are reusable. If a transaction requests Temporary Storage and all blocks are in use, the transaction is suspended until a block becomes available.

The applicable ddname is DFHTEMP. For example:

```
//DFHTEMP  DD  DSN=TEMP.STORAGE,DISP=OLD,
//             DCB=(DSORG=PS,RECFM=FT,
//             BLKSIZE=1000),UNIT=2314,
//             VOL=SER=USRPAK
```

USER DATA SET DEFINITIONS

TRANSIENT DATA EXTRAPARTITION DATA SETS

The user must include a data set definition for each entry representing an extrapartition data set in the Destination Control Table. The ddname must be the same as that specified in the DSCNAME operand of the DFHDCT TYPE=SDSCI macro instruction.

DATA BASE DATA SETS

The user must include a data set definition for each entry he creates in the File Control Table selected to control data base activity during CICS execution. The ddname must be the same as that specified in the DATASET operand of the DFHFCT TYPE=DATASET macro instruction. For example:

```
//DBASE1   DD  DSN=ISAM.FILE,DISP=OLD,
//             DCB=(DSORG=IS,RECFM=FB,BLKSIZE=500,
//             IRECL=100,KEYLEN=13,RKP=5),
//             UNIT=2314,VOL=SER=USRPAK
//DBASE2   DD  DSN=BDAM.FILE,DISP=OLD,
//             DCB=(DSORG=DA,RECFM=U,BLKSIZE=3625),
//             UNIT=2314,VOL=SER=USRPAK
```

TERMINAL CONTROL SEQUENTIAL DATA SETS

The user must include a data set definition for each entry he creates in the Terminal Control Table which is not a telecommunications device. This is normally a sequential data set on disk or tape but could be the card reader and printer. The ddname must be the same as that specified in the DDNAME operand of the DFHTCT TYPE=SDSCI macro instruction. For example:

```
//TERM1IN  DD  *,DCB=BLKSIZE=80
       .
       .
       .
Cards containing valid transactions
       .
       .
       .
/*
//TERM1OUT DD  SYSOUT=A
```

DATA LANGUAGE/I DATA SETS

Optional access to the Data Language/I (DL/I) facility of the IBM Information Management System (Version 2, Modification Level 2) requires the installation of the IMS/360 Version 2, Modification Level 2 (or later) Data Base System (5734-XX6).

As CICS is initialized, an IMS batch job is attached (via OS) as an OS subtask of CICS in much the same fashion as an ordinary IMS system is executed as an OS job. All data sets required for a batch IMS job are required for access to DL/I under CICS. IMS2.PGMLIB is not required, since application programs are contained in CICS.LOADLIB. IMS2.ACBLIB is used rather than IMS2.PSBLIB and IMS2.DBDLIB. The use of the log is highly recommended for systems which alter data bases.

SYSTEM EXECUTION

This section deals with the actual operation of the CICS/OS systems. Included in this section is a discussion of the following:

1. System Initialization. The means of initializing the CICS/OS systems and the various options available at startup time.
2. System Termination. The means of terminating CICS/OS system operation.

SYSTEM INITIALIZATION

Daily operation and maintenance of the CICS/OS system involves a combination of independent programs which operate under the control of the system as transactions or parts of transations. Operational requirements and considerations are described in this section.

The general procedure for activating CICS/OS is as follows:

1. Be sure all volumes and devices required to run CICS/OS are ready.

2. IPL OS/360, following standard procedures.

3. If any tables or application programs must be updated, process the necessary jobs to handle these functions. See the section on System Preparation and Generation.

4. Ensure that the PARM field in the EXEC card contains correct information. The PARM field may contain up to 100 characters in the form of "keyword=value". Each keyword and associated value should be separated by commas.

5. Execute the CICS/OS start-up deck. A sample start-up deck appears in Figure 8.

6. The following messages may appear on the system console depending on the message level setting in the System Initialization Table.

```
DFH1500 -   CICS START-UP IS IN PROGRESS
DFH1500 -   LOADING CICS NUCLEUS
DFH1500 -   PL/I MODULE IS BEING LOADED
DFH1500 -   RELOCATABLE PROGRAM LIBRARY IS BEING OPENED
DFH1500 -   INITIALIZING TEMPORARY STORAGE
DFH1500 -   INITIALIZING INTRAPARTITION STORAGE
DFH1500 -   TRANSIENT DATA SETS ARE BEING OPENED
DFH1500 -   CICS CHECKING FOR TCAM MCP
DFH1500 -   TERMINAL DATA SETS ARE BEING OPENED
DFH1500 -   SPAR MACRO IS BEING ISSUED
DFH1500 -   DATA BASE DATA SETS ARE BEING OPENED
DFH1500 -   DUMP DATA SET IS BEING OPENED
DFH1500 -   DL/I SUBTASK IS BEING ATTACHED
DFH1500 -   LOADING RESIDENT APPLICATION MODULES
DFH1500 -   SPIE MACRO IS BEING ISSUED
DFH1500 -   CONTROL IS BEING GIVEN TO CICS
```

Each message is displayed at the initiation of the specific function. After the last message, the system is ready to process terminal requests.

7. In addition to the above messages, several "critical" and/or "warning" error messages may appear if the System Initialization program detects errors which prevent it from continuing the initialization process or cause it to initialize differently from what the user specified. Most of these messages are self-explanatory but a more complete explanation may be found with the description of the particular message in the section on Console Messages.

Note: If TCAM is to be used, the TCAM MCP start-up deck should be executed before executing the CICS/OS start-up deck. If CICS is started first, CICS will check for the presence of the TCAM MCP and the operator is given the opportunity to retry establishing communication with TCAM, cancelling CICS, or continuing CICS initialization without TCAM. See messages DFH1500 and DFH1520 for an explanation of these options.

```
//CICSINIT   JOB     accounting info,'programmer's name',MSGLEVEL=1
//JOBLIB     DD      DSN=CICS.LOADLIB,DISP=SHR
//           DD      DSN=IMS2.RESLIB,DISP=SHR IF DL/I ACCESS IS
                     DESIRED
//STEP       EXEC    PGM=DFHSIP,
//                   PARM=('SIT=J,FCT=55,SCS=10000,DL1=YES,',
//                   'BUFPL=20,PSBPL=10,DMBPL=10')
//SYSUDUMP   DD      SYSOUT=A
//*********------------------------------------------------------------
//********   RELOCATABLE PROGRAM LIBRARY ***-----------------------
//*********------------------------------------------------------------
//DFHRPL     DD      DSN=CICS.LOADLIB,DISP=SHR
//*********------------------------------------------------------------
//*******    TERMINAL DATA SETS ****-------------------------------
//*------------------------------------------------------------------
//DFH1030    DD      UNIT=0E1
//DFH2260    DD      UNIT=010
//           DD      UNIT=011
//DFH2741    DD      UNIT=050
//           DD      UNIT=051
//*------------------------------------------------------------------
//*******    DUMP DATA SETS  ****----------------------------------
//*------------------------------------------------------------------
//DFHDMPA    DD      DSN=CICS.DUMPA,DISP=SHR
//DFHDMPB    DD      DSN=CICS.DUMPB,DISP=SHR
//*------------------------------------------------------------------
//********   INTRAPARTITION DATA SET ****--------------------------
//*------------------------------------------------------------------
//DFHINTRA   DD      DSN=INTRA.MSG.Q,DISP=(OLD,KEEP)
//*------------------------------------------------------------------
//********   TEMPORARY AUXILIARY STORAGE ****----------------------
//*------------------------------------------------------------------
//DFHTEMP    DD      DSN=TEMP.STORAGE,DISP=(NEW,DELETE),
//                   DCB=(DSORG=PS,RECFM=FT,BLKSIZE=1000),
//                   UNIT=2314,VOL=SER=USRPAK,
//                   SPACE=(1000,(50),,CONTIG,ROUND)
//**------------------------------------------------------------------
//********   DATA BASE DATA SETS ****------------------------------
//**------------------------------------------------------------------
//DBASE1     DD      DSN=MASTER.FILE,DISP=OLD
//DBASE2     DD      DSN=DUPLICATE.FILE,DISP=OLD
//INDEX      DD      DSN=CROSS.INDEX,DISP=OLD
//*------------------------------------------------------------------
//********   EXTRAPARTITION DATA SETS ****-------------------------
//**------------------------------------------------------------------
//JOURNAL    DD      UNIT=TAPE,VOL=SER=SCRTCH,DISP=(NEW,KEEP)
//STATS      DD      SYSOUT=A,DCB=(DSORG=PS,RECFM=V,BLKSIZE=136)
//*------------------------------------------------------------------
//********   INSERT DD CARDS FOR
//********   IMS DATA SETS REQUIRED FOR DL/I ACCESS
//*------------------------------------------------------------------
//********   IMS DATA BASE CHANGE LOG ****-------------------------
//*------------------------------------------------------------------
//IEFRDER    DD      DSN=IMSLOG,DISP=(,KEEP),VOL=(,,,99),
//                   UNIT=(2400,,DEFER),DCB=(RECFM=VBS,BLKSIZE=1408,
//                   LRECL=1400,BUFNO=1)
```

Figure 8. Example of coding required to start up CICS/OS

In figure 8, System Initialization selects System Initialization Table DFHSITJ and uses all the values in that table to configure CICS except for the File Control Table (DFHFCT55), the cushion size (10,000 bytes), DL/I support included, DL/I Data Base buffer pool size (20),

DL/I Program Specification Block pool size (10), and DL/I Data Management Block pool size (10). The values specified in the PARM field override any values in the selected System Initialization Table. The user must provide DD cards for CICS data bases and CICS terminals. Remember that the space parameters are only examples and that the user must determine the space needed for each data set. The STATS DD card is used to define the extrapartition data set to which statistics have been written. If access to Data Language/I (DL/I) is desired under CICS, the user must add DD cards for data sets comprising DL/I data bases.

Table 1 lists all the keywords, their meaning, and the parameter values that can be specified in the PARM field of the EXEC JCL statement. The default values in each case are as specified in the System Initialization Table. If the parameter value specified is 'NO' (where applicable), that facility is not provided; a corresponding dummy facility is provided instead. For further details concerning allowable values, see the discussion of System Initialization Table preparation in the CICS System Programmer's Reference Manual.

Table 1 (Part 1 of 3). Startup parameters

KEYWORD	MEANING	VALUE
SIT	System Initialization Table suffix	Any one or two characters
TRT	Number of Trace Table entries	Number of entries (TRT=0 means no trace)
SCS	Storage cushion size	Number of bytes
ICV	System partition/region exit time interval	Number of milliseconds
MXT	Maximum number of tasks	Number of tasks (0-999)
TCT	Terminal Control Table suffix	Any one or two characters
FCT	File Control Table suffix	Any one or two characters or NO
DCT	Destination Control Table suffix	Any one or two characters or NO
CSA	Common System Area suffix	Any one or two characters
KCP	Task Control program suffix	Any one or two characters
SCP	Storage Control program suffix	Any one or two characters
PCP	Program Control program suffix	Any one or two characters
DCP	Dump Control program suffix	Any one or two characters or NO

Table 1 (Part 2 of 3). Startup parameters

KEYWORD	MEANING	VALUE
PPT	Processing Program Table suffix	Any one or two characters
PCT	Program Control Table suffix	Any one or two characters
ICVS	Stall time interval	Number of milliseconds
ICVR	Runaway task time interval	Number of milliseconds
ICP	Interval Control program suffix	Any one or two characters or NO
TCP	Terminal Control program suffix	Any one or two characters
FCP	File Control program suffix	Any one or two characters
TDP	Transient Data Control program suffix	Any one or two characters
TSP	Temporary Storage Control program suffix	Any one or two characters or NO
TRP	Trace Control program suffix	Any one or two characters
PIP	Program Interrupt program suffix	Any one or two characters or NO
PL1	PL/I Interface required	YES or NO
CSCOR	Amount of main storage released to OS	A number (0-999,999)
MSGLVL	1, all messages are printed 0, only critical messages are printed	0 or 1
ATP	Asynchronous Transaction Processing support	YES or NO
ATPMT	Maximum number of active, batched tasks	A number (cannot exceed ATPMB specification)
ATPMB	ATP task initiation inhibitor value	A number (cannot exceed MXT specification minus one)
DL1	DL/I Data Base support	YES or NO
PSBPL	DL/I Program Specification Block pool size in 1024-byte blocks	A number (0-999)
DMBPL	DL/I Data Management Block pool size in 1024-byte blocks	A number (0-999)

Table 1 (Part 3 of 3). Startup parameters

KEYWORD	MEANING	VALUE
BUFPL	DL/I Data Base buffer pool size in 1024-byte blocks	A number (0-999)
PSB	DL/I Program Specification Block name	One to eight characters

SYSTEM TERMINATION

CICS/OS may be terminated from the master terminal through the use of the Master Terminal system service program. The operator enters the transaction identification:

```
CSMT
```

The system responds:

```
WHAT SERVICE IS REQUESTED?
```

The operator should enter:

```
SHUTDOWN
```

The system will respond:

```
IS SHUTDOWN TO BE IMMEDIATE?
```

The operator may respond with one of the following:

```
NO
NO,DUMP
YES
YES,DUMP
```

If immediate termination is requested (for example, YES,DUMP), no attempt is made to quiesce the system before shutdown begins. If the dump option is specified (NO,DUMP), a main storage dump is taken when shutdown is complete.

If immediate termination is not requested, and if the Asynchronous Transaction Processor (ATP) is being used, and there are batches currently awaiting output or in a HOLD status, the operator must do one of the following to complete the quiescing process:

1. submit the appropriate ATP commands to release or delete any batches in a HOLD status and/or to transmit the awaiting batch output; or

2. request CATP STOP. If this is done, all data associated with those batches will be permanently lost. The batches may be re-run the next time CICS is initialized.

When termination is initiated, the following message is displayed on the system console and on the master terminal:

```
DFH1701 - CICS IS BEING TERMINATED
```

When termination is complete, the following message is displayed on the system console:

DFH1702 - NORMAL TERMINATION COMPLETE

If a dump is requested, the following message is displayed on the system console when termination is complete:

DFH1791 - ABNORMAL TERMINATION COMPLETE

Note: For sequential devices, the last entry in the input stream must be "CSSF GOODNIGHT" to provide a logical close. If all input is sequential, "CSMI SHUTDOWN" must be entered at one of the terminals to terminate CICS.

Note: If TCAM is being used and if the Message Control program (MCP) terminates abnormally, any TCAM application programs currently active are automatically terminated abnormally, providing there is at least one open line group in the MCP; the CICS application program is no exception. CICS does not provide RESTART capability. For further information, see the discussion concerning "Coordinating MCP and Application Program Restarts" in the OS/MFT and OS/MVT TCAM Programmer's Guide (GC30-2024).

PROCESSING OF DUMP DATA SETS

The output from the Dump Control program of CICS/OS is placed on a tape or on a direct access storage device. The location is dependent upon user JCL definitions. The Dump Utility program (DFHDUP) is used to prepare the dump output for printing and to print the formatted information.

When preparing the JCL to execute the Dump Utility Program, it must include a //DFHDMPDS DD statement which defines the input data set and a //DFHPRINT which defines the output data set, usually a printer. For example:

```
//PRTDMP   JOB  accounting info,'programmer's name',MSGLEVEL=1
//JOBLIB   DD   DSN=CICS.LOADLIB,DISP=SHR
//         EXEC PGM=DFHDUP
//DFHDMPDS DD   DSN=DUMPA,DISP=SHR,
//              UNIT=2314,VOL=SER=USRPAK
//DFHPRINT DD   SYSOUT=A
```

If the Dump Utility is to be run concurrently with CICS in order to process the inactive dump data set, and the dump data sets are allocated on a direct access device, it is imperative that the user specify DISP=SHR in the DD statements which define the dump data sets in the start-up deck.

During execution of CICS/OS, the Dump Control program always starts its output at the beginning of a data set; that is, it overlays any previous output that is there. However, if it is never called during an execution, nothing is written; therefore, what was there previously will remain. It is suggested that the Dump Utility program be run following each execution of CICS. This action ensures that all dumps taken are printed.

The user should refer to the section "Processing Dump Data Sets" in the CICS System Programmer's Reference Manual for details concerning the use of two dump data sets during real-time execution of CICS.

CONSOLE MESSAGES AND ABEND CODES

If an abnormal condition occurs within CICS which prevents it from continuing normally, a numbered message is displayed on the system console and a user ABEND is issued as indicated in the following discussion of console messages. The user ABEND code is the same as the message number without the DFH prefix.

PROGRAM CONTROL

DFH0401-CICSDUMP

Program Control has been entered with an abend request while the Terminal Control or Task Control TCA is in control or after the resident control counter in the Processing Program Table (PPT) has gone negative. A dump is provided.

STORAGE CONTROL

DFH0501-CICS ABEND

Storage Control has detected an invalid address in the storage accounting field when attempting to free a piece of main storage. User should verify that his application program is not accidentally storing information in the storage acccunting field (always the first eight bytes of any storage acquired). A dump is provided.

PROGRAM INTERRUPT

If the optional Program Interrupt program is provided during system generation and activated during system initialization, and if a program interrupt occurs, the old program PSW and contents of the general purpose registers at the time of the program interrupt are located in a 72-byte save area within the Program Interrupt program itself. The old program PSW and registers 14 through 13 appear in that order, starting 32 bytes into the program.

The beginning of the Program Interrupt program can be identified in the storage printout by the eight-character designation *DFHPIP*.

The following console messages are applicable:

DFH0601 - PROGRAM INTERRUPT OCCURRED WITH SYSTEM TASK IN CONTROL

Indicates that a program check occurred while a CICS management program (for example, Terminal Control) was executing as a system-provided task. A dump is provided.

DFH0602 - PROGRAM INTERRUPT HAS BEEN REENTERED BY SAME TASK

Indicates that a program check occurred while corrective action was being taken as a result of an earlier program check which occurred during the execution of a user-provided task. A dump is provided.

DUMP CONTROL

DFH0701 - DUMP DATA SET CLOSED

Dump Control has detected an "end of extent" condition in a dump data set (file) and has closed the data set. The user may use the Master Terminal program to switch the dump data set if an alternate dump data set is available.

TIME MANAGEMENT

DFH0801 - CICS TIME ALTERED FROM hh.mm.sss TO hh.mm.sss

This message is applicable only if the optional Time Adjustment program feature is included in CICS. This informational console message is printed after the OS-maintained time of day has been "rolled-back" (for example, when the operating system clock is reset to zero at midnight). The message logs the fact that CICS has recognized the condition and adjusted its own time of day to agree with that of the operating system.

DYNAMIC OPEN/CLOSE

DFH0901 - AN ABEND HAS OCCURRED DURING OPEN/CLOSE PROCESSING
CICS IS BEING ABENDED

This message indicates that the Dynamic Open/Close program has intercepted an unrecoverable system ABEND during open/close processing. A dump is provided.

DFH0902 - AN OS ABEND HAS OCCURRED DURING OPEN/CLOSE PROCESSING
RECOVERY WILL BE ATTEMPTED

This message indicates that the Dynamic Open/Close program has intercepted an OS ABEND. CICS will attempt to recover. Note that if STAE processing (error recovery) was entered due to an OS GETMAIN/FREEMAIN abend, system performance may be degraded.

2980 MESSAGE

DFH1029 - PLEASE RE-SEND

This message is sent to 2980 terminal operators when the system is under stress or the input is unsolicited (the active task associated with the terminal has not issued a read).

SYSTEM INITIALIZATION

DFH1500 - 'message text'

This message number is used during System Initialization to display general information messages pertaining to action being taken by the System Initialization program. Not all messages will appear, depending on various options specified in the System Initialization Table. The following messages may appear with number 1500:

CICS START-UP IS IN PROGRESS
LOADING CICS NUCLEUS
PL/I MODULE IS BEING LOADED
RELOCATABLE PROGRAM LIBRARY IS BEING OPENED

INITIALIZING TEMPORARY STORAGE
INITIALIZING INTRAPARTITION STORAGE
TRANSIENT DATA SETS ARE BEING OPENED
CICS CHECKING FOR TCAM MCP
TERMINAL DATA SETS ARE BEING OPENED
SPAR MACRO IS BEING ISSUED
DATA BASE DATA SETS ARE BEING OPENED
DUMP DATA SET IS BEING OPENED
DL/I SUBTASK IS BEING ATTACHED
LOADING RESIDENT APPLICATION MODULES
SPIE MACRO IS BEING ISSUED
CONTROL IS BEING GIVEN TO CICS

These messages are informational only; no action is required on the part of the operator.

DFH1500 - CICS CHECKING FOR TCAM MCP

This message is issued as CICS is checking for the presence of a TCAM MCP partition/region. This message is issued three times with a time interval of ten seconds. If the TCAM MCP is not available at the end of that time, message DFH1520 is issued.

DFH1501 - DFHSITxx IS BEING LOADED

This message is displayed if a suffix is specified for the System Initialization Table. "xx" represents the one-or-two-character suffix specified.

DFH1502 - INVALID DATA FOR KEYWORD xxxxxx

This message is displayed if the data supplied for an override in the PARM field is invalid (for example, nonnumeric data for the OSCOR keyword). "xxxxxx" represents the keyword for which the specified value is in error.

DFH1505 - REPLY GO OR CANCEL

This message allows the user to continue the system initialization process by responding GO or to terminate the system initialization process by responding CANCEL.

DFH1510 - FOLLOWING TRANSACTION CODES NOW VOID

This message is displayed whenever the user chooses to continue after message DFH1596A has indicated certain application programs could not be located on the Relocatable Program Library (DFHRPL). This message is followed by a list of transaction codes which would transfer control to one of the missing programs. The transaction codes specified are cleared from the PCT. Receipt of this message means that the first program required by that transaction has not been located, not that the remaining transaction codes are valid. If a located program links or transfers control to a program that could not be found, the error is discovered only when the transaction is executed.

DFH1520 - TCAM MCP IS NOT CURRENTLY AVAILABLE
REPLY RETRY OR CANCEL OR CONTINUE

These messages are issued as a result of a missing TCAM MCP. The user has the choice of rechecking to see if the TCAM MCP is available by replying RETRY, terminating CICS by replying CANCEL, or continuing initialization of CICS without the TCAM partition/region present by replying CONTINUE. However, all DD cards that reference a TCAM queue must have been previously removed from the start-up deck or an abend will result. This reply applies to a mixed (ETAM-TCAM) system when TCAM lines are not being used during execution of CICS.

DFH1560 - DDNAME xxxxxxxx MISSING, DESTINATION ID yyyy CLOSED

The ddname for a Transient Data extrapartition data set was not found during OPEN. The destination is closed. "xxxxxxxx" represents the ddname and "yyyy" is the extrapartition destination identification.

DFH1570 - DDNAME xxxxxxxx MISSING, DATA BASE DATA SET CLOSED

The ddname for a data base (File Control) data set was not found during OPEN. The data base data set is closed. "xxxxxxxx" represents the ddname and is the same as the data base identification in the File Control Table.

DFH1571 - 7770 LINE xxx DID NOT COMPLETE, PLACED OUT OF SERVICE

The communication line associated with a 7770 Audio Response Unit and indicated by "xxx" did not respond to a NOP command within 15 seconds. The line is placed out of service.

DFH1572 - 7770 LINE xxx NOT OPERATIONAL, PLACED OUT OF SERVICE

The communication line associated with a 7770 Audio Response Unit and indicated by "xxx" responded to a NOP command with a completion status that indicated the line is not operational. The line is placed out of service.

DFH1573 - 7770 LINE xxx I/O ERROR cccc,ss,dd,ii, PLACED OUT OF SERVICE

The communication line associated with a 7770 Audio Response Unit and indicated by "xxx" responded to a NOP command with a completion status that indicated an I/O (hardware) error. "cccc" represents CSW status, "ss" represents the status byte, "dd" represents the DECB error status, and "ii" represents the IOB status. The line is placed out of service.

DFH1580 - DDNAME DFHDMPA MISSING, DUMP CONTROL DATA SET CLOSED

The ddname (DFHDMPA) for the primary dump data set was not found during OPEN. The dump data set is closed; no CICS dumps are taken.

DFH1590 - DDNAME xxxxxxxx MISSING, LINE PLACED OUT OF SERVICE

The ddname for the terminal data set was not found during OPEN. The line is placed out of service. "xxxxxxxx" represents the ddname not found.

DFH1591 - TEMPORARY STORAGE FORMAT ERROR

An I/O error occurred while formatting the auxiliary Temporary Storage data set. A dump is provided.

DFH1592 - I/O ERROR FORMATTING TRANSIENT DATA

An I/O error occurred while formatting the intrapartition data set for Transient Data. A dump is provided.

DFH1593 - I/O ERROR ENCOUNTERED WHILE READING DFHRPL

An I/O error occurred while loading CICS nucleus modules from the Relocatable Program library (DFHRPL). A dump is provided.

DFH1594 - I/O ERROR BUILDING PPT

An I/O error occurred when the OS BLDL macro instruction was issued to locate the DASD information for an entry in the PPT. A dump is provided.

DFH1595 - CUSHION SIZE SPECIFIED EXCEEDS AVAILABLE STORAGE

The cushion size, as specified in the System Initialization Table or in the PARM field of the EXEC statement, is larger than the available CICS dynamic storage. The user should either decrease the cushion size or increase the partition/region allocation. A dump is provided.

DFH1596 - xxxxxxxx NUCLEUS MODULE NOT LOCATED

"xxxxxxxx" represents the name of a CICS control module which could not be located on the Relocatable Program Library during the loading of the CICS nucleus. The user may have provided the wrong suffix in the System Initialization Table or the PARM field of the EXEC statement, thus creating a unique program name which does not exist. A dump is provided.

DFH1596A - INVALID APPLICATION DEFINED IN PPT

This message is followed by a list of application programs defined in the Program Processing Table (PPT) which (1) could not be located on the Relocatable Program Library when the CICS nucleus was loaded, or (2) are written in a language not supported in the system being initialized. When the list is complete, the user is given the option of continuing or terminating system initialization. If the user chooses to continue without the missing programs, the DFH1510 message may appear immediately on the console.

DFH1597 - CSAC TRANSACTION CANNOT BE FOUND

When the appropriate PCT was loaded by System Initialization, the CSAC transaction code could not be found. This transaction is required for real-time CICS execution. (Refer to Appendix A of the CICS System Programmer's Reference Manual.) A dump is provided.

DFH1598 - DL/I SUBTASK ABEND DURING INITIALIZATION

The CICS-DL/I subtask abended during the initialization phase. The completion code can be found in the Communications ECB beginning 20 bytes into the CICS-DL/I Interface module (DFHDLI). A dump is provided, identified by either the IMS user abend code or the OS system abend code.

DFH1599 - PARTITION/REGION SIZE INSUFFICIENT TO INITIALIZE CICS

This message is displayed and system initialization is terminated whenever the main storage available in the partition/region is insufficient to initialize the configuration specified by the user. The user must either increase the partition/region size or reduce the storage requirements of CICS. A dump is provided.

CICS-DL/I INTERFACE

In addition to the following CICS-DL/I Interface messages, IMS messages (with prefix DFS) are displayed on the system console. For an explanation of these messages, see the IMS Version 2 Messages and Codes Reference Manual (SH20-0914).

DFH3900 - DL/I INTERFACE FAILED

This message is displayed when there is a program check in the CICS-DL/I Interface or when some other type of error makes it impossible for the CICS-DL/I interface to continue processing DL/I calls. Any DL/I calls made after this condition occurs are rejected as invalid and result in an "invalid request" response.

DFH3910 - DL/I SERVICES REQUESTED BUT DUMMY PROGRAM WAS LOADED

This message is displayed only after the first occurrence of the condition that caused it. A transaction was entered that requested DL/I services; either the DL/I Interface dummy program was loaded at system initialization, or the CICS-DL/I Interface has failed.

DFH3920 - DL/I INTERFACE SUCCESSFULLY TERMINATED

This message is displayed during system termination when all applicable IMS, DL/I, and DL/I interface modules have successfully terminated. The log and all data bases have been successfully closed.

CICS-TCAM INTERFACE

DFH4000 - CICS SYNAD EXIT TAKEN FOR xxxxxxxx, INPUT MSG TRUNCATED

This message is displayed when the CICS SYNAD exit is taken for an input queue; "xxxxxxxx" represents the DSCNAME. The DCB is closed and then reopened. The data is truncated to the specified blocksize and is passed to the user.

PROGRAMMING SYSTEMS

All CICS management programs are coded using System/360 Assembler language. Communication with CICS occurs via the CICS macro instructions and the coding which is included in the user-written programs. Normal diagnostic and serviceability aids are utilized by the operating system, as applicable.

CICS operates as a single task within a partition/region and may operate in a dedicated or multiprogramming environment. The selection of the environment is the user's responsibility, as is the selection of system options beyond those required for the operation of CICS.

CICS/OS-STANDARD V2 operates under the IBM System/360 Operating System (OS/360). The following components of OS/360 are required:

- Supervisor: MFT, 360S-CI-505, or MVT, 360S-CI-535
- Primary Data Management, 360S-DM-508
- Direct Access Method (BDAM), 360S-DM-509
- Basic Telecommunications Access Method (BTAM), 360S-CQ-513 and/or Graphic Programming Services, 360S-IO-523 and/or Telecommunications Access Method (TCAM) Level 4, 360S-CQ-548
- Assembler F, 360S-AS-037, and/or Assembler H, 5734-AS1
- Linkage Editor (E), 360S-ED-510 or Linkage Editor (F), 360S-ED-521
- Utilities, 360S-UT-506

The Multiple WAIT and Interval Timer options must be included in the OS system generation.

In addition to the above OS/360 components, the user may require any of the following:

- Indexed Sequential Access Method (ISAM), 360S-IO-526
- ANS COBOL, 360S-CB-545, and ANS COBOL Library, 360S-LM-546
- ANS COBOL Version 3 Compiler and Library, 5734-CB1
- ANS COBOL Version 4 Compiler and Library, 5734-CB2
- PL/I F, 360S-NL-511, and PL/I F Subroutine Library, 360S-LM-512
- PL/I Optimizing Compiler and Libaries, 5734-PL3
- A Type 4 SVC number to be assigned to CICS for support of the 7770 Audio Response Unit
- IMS (Version 2, Modification Level 2 or later) Data Base System (5734-XX6) and OS system generation options required to handle an IMS Data Communication System
- 3735 Form Description Macros and Utility, 360S-CQ-596

Note: To use the optional "browsing" feature of CICS File Management, the user must have an operating system at least as current as Release 20.1 of OS/360. To use the optional dynamic open/close facility, the user must have an operating system at least as current as Release 20.0 of OS/360.

SYSTEM CONFIGURATION

The minimum processing unit for the CICS/OS-STANDARD V2 system is a 2040 Model G (128K) using OS/360 MFT, or, a 2040 Model H (256K) using OS/360 MFT or MVT.

Unless incorporated as standard features on the processing units the Decimal Arithmetic (#3237) and Interval Timer (#4760) features are required. The configuration must include sufficient I/O devices to support the requirements for: system output, system residence, and system data sets. Sufficient direct access storage must be provided to satisfy user information storage requirements and may consist of 2311 Disk Storage Drives and/or 2314/2319 Direct Access Storage Facilities and/or 2321 Data Cell Drives and/or the 3330 Disk Storage.

The appropriate line adapters and telecommunications control units must be included in the system configuration.

Distribution and maintenance of CICS requires the availability of either one 9-track or one 7-track tape drive (with Data Conversion feature).

The following terminals, terminal control units, and programmable special features are supported by CICS. The user should be aware that many terminal and control unit special features are transparent to programming, and are therefore readily usable even though not specifically identified.

TERMINALS CONNECTED VIA NON-SWITCHED LINES USING BTAM

START STOP TRANSMISSION

- 1030 Data Collection System with:
  1031 Control Unit/Input Station and, optionally:
  1033 Printer
  1035 Badge Readers

- 1050 Data Communication System with:
  1051 Control Unit Model 1 or 2
  1052 Printer Keyboard with, optionally:
  1053 Printer Model 1
  1056 Card Reader

- 2260 Display Station Model 1 or 2 with:
  2848 Display Control Model 1, 2, or 3 with, optionally:
  Line Addressing (#4787), and/or
  1053 Printer Model 4

- 2265 Display Station with:
  2845 Display Control with, optionally:
  Line Addressing (#4801), and/or
  Tab (#7801), and/or
  1053 Printer Model 4

- 2740 Communication Terminal Model 1 with, optionally:
  Record Checking (#6114), and/or
  Station Control (7#7479)

- 2740 Communication Terminal Model 2 with, optionally:
  Record Checking (#6114), and/or

Buffer Receive (#1499)

- 2741 Communications Terminal

- 2760 Optical Image Unit attached to a
  2740 Communication Terminal Model 1 with:
  Record Checking (#6114)

- System/7
  5010 Processor Module Models A2-A16 with:
  Asynchronous Communications Control (#1610), and, for
  point-to-point:
  Line Adapter, Leased Line Type 1A (#4751), or
  Line Adapter, Leased Line Type 1B (#4752)

BINARY SYNCHRONOUS COMMUNICATION

- System/360 or System/370 via:
  Integrated Communications Attachment (Models 25 and 135)
  2701 Data Adapter Unit, or
  2703 Transmission Control

- System/360 Model 20 Processing Unit with:
  Binary Synchronous Communication Adapter (#2074), and
  EBCDIC Transmission Code (#9060), or
  ASCII Transmission Code (#9061), and, optionally:
  Station Selection (#7477)

- 2770 Data Communication System
  2772 Multipurpose Control Unit with:
  EBCDIC Transmission Code (#9761), or
  ASCII Transmission Code (#9762) and, optionally:
  WACK Response (#9936), and/or
  Buffer Expansion (#1490), and/or
  Conversational Mode (#1910), and/or
  Multi-point Data Link Control (#5010), and
  545 Output Punch, and/or
  1053 Printer, or
  2213 Printer, and/or
  2265 Display Station, and/or
  2502 Card Reader

- 2780 Data Transmission Terminal with:
  EBCDIC Code (#9761), or
  ASCII Code (#9762), or
  6-Bit Transcode (#9760) and, optionally:
  Multi-point Line Control (#5020)

- 2980 General Banking Terminal System
  2972 Terminal Control Unit Model 8 (RPQ858160), or
  2972 Terminal Control Unit Model 11 (RPQ858231) with:
  2980 Teller Station Model 1 (RPQ835504), and/or
  2980 Administrative Station Model 2 (RPQ835505), and/or
  2980 Teller Station Model 4 (RPQ858147) with, optionally:
  Buffer Expansion (RPQ858165) for 2980 Models 1, 2, and 4, and/or
  Auditor key (RPQ858188) for 2980 Model 2

- 3270 Information Display System
  3271 Control Unit Model 1 or 2 with:
  3277 Display Station Model 1 or 2,
  3284 Printer Model 1 or 2,
  3286 Printer Model 1 or 2,
  3275 Display Station Model 1 or 2 with:
  Printer Adapter (#5550) for 3284 Printer Model 3

and, optionally:
ASCII Transmission Code (#1087)
Keyboard Numeric Lock (#4690)
Selector Pen (#6350)
Audible Alarm (#1090)
Security Keylock (#6340)
Copy (#1550) for 3271 Control Unit

- System/3 Models 6 and 10
  5406 Processing Unit Models B2-B4, or
  5410 Processing Unit Models A2-A16, with:
  Binary Synchronous Communications Adapter (#2074) and,
  optionally:
  Station Selection (#7477)

- 1130 Computing System with:
  Synchronous Communications Adapter (#7690)

TERMINALS CONNECTED VIA SWITCHED LINES USING BTAM

START STOP TRANSMISSION

- 1050 Data Communication System with:
  1051 Control Unit Model 1 or 2
  1052 Printer Keyboard with, optionally:
  1053 Printer Model 1
  1056 Card Reader

- 2740 Communication Terminal Model 1 with:
  Dial-Up (#3255) and, optionally:
  Record Checking (#6114)

- 2741 Communications Terminal with:
  Dial-Up (#3255)

- 2760 Optical Image Unit attached to a
  2740 Communication Terminal Model 1 with:
  Dial-Up (#3255), and
  Record Checking (#6114)

- System/7
  5010 Processor Module Models A2-A16 with:
  Asynchronous Communications Control (#1610)
  Autocall (#1310) on 2702 Transmission Control, or
  Autocall (#1340) on 2703 Transmission Control

- TWX Common Carrier Teletypewriter Exchange Terminal Station
  (Model 33/35) eight-level code at 110 bps on common carrier
  switched 150-baud networks

BINARY SYNCHRONOUS COMMUNICATION

- System/360 or System/370 via:
  Integrated Communications Attachment (Model 25 only)
  2701 Data Adapter Unit, or
  2703 Transmission Control

- System/360 Model 20 Processing Unit with:
  Binary Synchronous Communication Adapter (#2074), and
  EBCDIC Transmission Code (#9060), or
  ASCII Transmission Code (#9061) and, optionally:
  Automatic Calling (#1315)

- 2770 Data Communication System
  2772 Multipurpose Control Unit, with:
  EBCDIC Transmission Code (#9761), or
  ASCII Transmission Code (#9762) and, optionally:
  WACK Response (#9936), and/or
  Buffer Expansion (#1490), and/or
  Conversational Mode (#1910), and/or
  Automatic Answering (#1310), and/or
  Identification (#4610), or
  Security Identification (#6310), and
  545 Output Punch, and/or
  1053 Printer, or
  2213 Printer, and/or
  2265 Display Station, and/or
  2502 Card Reader

- 2780 Data Transmission Terminal with:
  EBCDIC Transmission Code (#9761), or
  ASCII Transmission Code (#9762), or
  6-Bit Transcode (#9760) and, optionally:
  Automatic Answering (#1340)

- 3735 Programmable Buffered Terminal with:
  EBCDIC Transmission Code (#9761), or
  ASCII Transmission Code (#9762)

- System/3 Models 6 and 10
  5406 Processing Unit Models B2-B4, or
  5410 Processing Unit Models A2-A16, with:
  Binary Synchronous Communications Adapter (#2074) with, optionally:
  Automatic Calling (#1315)

- 1130 Computing System with:
  Synchronous Communications Adapter (#7690)

TERMINALS CONNECTED VIA LOCAL ATTACHMENT USING ETAM

- 2260 Display Station Model 1 or 2 with:
  2848 Display Control Model 1, 2, 3, 21, or 22 with, optionally:
  Line Addressing (#4787) and/or
  1053 Printer Model 4

- 3270 Information Display System
  3272 Control Unit Model 1 or 2 with:
  3277 Display Station Model 1 or 2, and/or
  3284 Printer Model 1 or 2, and/or
  3286 Printer Model 1 or 2, and, optionally:
  Keyboard Numeric Lock (#4690)
  Selector Pen (#6350)
  Audible Alarm (#1090)
  Security Keylock (#6340)

- 7770 Audio Response Unit Model 3
  Touch-Tone* telephone, or equivalent equipment, and the IBM 2721 Portable Audio Terminal are supported through the 7770 Audio Response Unit Model 3.

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*Trademark of the American Telephone & Telegraph Co.

TERMINALS SUPPORTED USING TCAM

The following terminals are supported by CICS/OS using TCAM. Only those terminal features supported by both CICS/OS and TCAM are applicable for use by CICS application programs which are associated with terminals attached to TCAM. For information concerning terminals supported by TCAM see the OS TCAM Programmer's Guide and Reference Manual (GC30-2024).

Switched and Non-Switched	Non-Switched	Local Attachment
1050	2260	2260
2740 Model 1	2265	3270
2741	2740 Model 2	7770
System/370	3270	
2770		
2780		
System/3		
TWX Model 33/35		

Note: The user should be aware that TCAM supports some terminals and terminal control urits not supported by CICS/OS, and conversely.

SAMPLE PROBLEM

The CICS sample problem is distributed as two members of the CICS Source Statement Library. The first member, DFHSPE, contains the jobs necessary to create the sample program libraries, to execute CICS, and to delete the sample problem libraries. The second member, DFHSPS, contains a listing of all the input used to generate the sample problem. This input can be displayed by using IEBPTPCH to print DFHSPS.

The following assumptions have been made in the preparation of the sample problem:

1. Approximately ten cylinders are available on the volume containing CICS.LOADLIB (which is contained at unit name SYSDA). If the library is not named CICS.LOADLIB, all statements that reference CICS.LOADLIB must be changed accordingly. If the unit named SYSDA is not available, the unit parameters must also be changed accordingly.
2. Standard SYSIN/SYSOUT=A are available as a terminal.
3. An unsuffixed Transient Data Control program exists with intrapartition and extrapartition facilities.
4. An unsuffixed Terminal Control program exists with BSAM facilities. If either an unsuffixed Transient Data Control program or unsuffixed Terminal Control program does not exist, the PARM field of the EXEC card can be changed as follows:
   // EXEC PGM=DFHSIP,PARM='SIT=SP,TCP=x,TDP=x'
   where 'x' is the suffix.
5. The Dump Utility program and an unsuffixed Dump Control program have been generated. If Dump Control has been generated with a suffix, the PARM field can be changed as in item 4 (DCP=x). If the Dump Control program has not been generated but the Dummy Dump Control program has been generated, the PARM field should be changed as in item 4 to read DCP=NO. If the Dump Utility program has not been generated, the job step that executes DFHDUP should be removed.
6. The CICS service programs have been generated. That is, the DFHSG PROGRAM=CSS macro instruction has been included in Stage 1 of system generation.
7. The Dummy File Control and Temporary Storage modules have been generated. This is accomplished by including the DFHSG PRCGRAM=CSD macro instruction in Stage 1 of CICS System Generation.

The following tables are provided for the sample problem:

1. System Initialization Table (DFHSITSP)
2. Terminal Control Table (DFHTCTSP)
3. Destination Control Table (DFHDCTSP)
4. Program Control Table (DFHPCTSP)
5. Processing Program Table (DFHPPTSP)
6. Sign-on Table (DFHSNT)

To obtain the sample problem, punch member DFHSPE of CICS.SOURCE using the OS Utility program IEBPTPCH. Make any necessary alterations to the JCL and execute the punched cards as an OS job.

The following is the output from the sample problem. Note that the 'from' value indicated for time interval and cushion size depends on the system configuration generated by the user.

Note: If the printer has the Universal Character Set installed and the FOLD latch option has been specified, extra characters are printed: N for carriage control characters and P for idle characters.

```
  SIGN ON IS COMPLETE
 WHAT SERVICE IS REQUESTED?
 WHAT IS THE NEW TIME INTERVAL VALUE
 TIME INTERVAL IS CHANGED TO       120 FROM      1000
 WHAT SERVICE IS REQUESTED?
 WHAT IS THE NEW CUSHION SIZE
 CUSHION SIZE IS CHANGED TO  2000 FROM 10240
 ENTER  RECEIVE
 TRANSCEIVE TRANSACTION
 STATUS IS
 IN SERVICE
 TRANSCEIVE
DFHSF001 SPR 00004 000
  SIGN ON IS COMPLETE
TO PRINT ALL CHARACTERS, ENTER PRINT OTHERWISE WE WILL SEND YOU WHAT YOU SEND US TO TERMINATE THIS TRANSACTION, ENTER END
ABCDEFGHIJKLMNOPQRSTUVWXYZ 0123456789 $@<>%+*()_-=#¬|"&;,.?/
THIS MESSAGE HAS BEEN RECEIVED FROM THE TERMINAL AND IS BEING SENT BACK.
TRANSACTION COMPLETE
INVALID TRANSACTION IDENTIFICATION - PLEASE RESUBMIT
         DATA COLLECTION HAS BEEN REQUESTED AND IS ABOUT TO BEGIN
         YOUR MESSAGE HAS BEEN RECEIVED AND DISPATCHED TO THE DESIGNATED DESTINATION
         •
         •
         •
         YOUR MESSAGE HAS BEEN RECEIVED AND DISPATCHED TO THE DESIGNATED DESTINATION
         YOUR MESSAGE HAS BEEN RECEIVED AND DISPATCHED TO THE DESIGNATED DESTINATION
         THE FOLLOWING DATA HAS BEEN TRIGGERED FOR AUTOMATIC TERMINAL OUTPUT
THIS TRANSACTION IS DATA COLLECTION
A CICS DUMP IS BEING TAKEN
SAMA SAMA
SAMA SAMA
SAMA SAMA
SAMA SAMA ************************************************************************
SAMA SAMA *                                                                      *
SAMA SAMA *                                                                      *
SAMA SAMA *                                                                      *
SAMA SAMA * CONGRATULATIONS YOU HAVE SUCESSFULLY COMPLETED THE SAMPLE PROBLEM    *
SAMA SAMA *                                                                      *
SAMA SAMA *  THE TRANSACTIONS THAT WERE PROCESSED WERE                           *
SAMA SAMA *                                                                      *
SAMA SAMA *      1. SIGN-ON SIGN-OFF (CSSN-CSSF)                                 *
SAMA SAMA *      2. SYSTEM STATUS CHANGE (CSMT)                                  *
SAMA SAMA *      3. OPERATOR TERMINAL STATUS CHANGE (CSOT)                       *
SAMA SAMA *      4. TERMINAL TEST (CSFE)                                         *
SAMA SAMA *      5. INVALID TRANSACTION IDENTIFICATION (CSXX-CSAC)               *
SAMA SAMA *      6. DATA COLLECTION (CSDC)                                       *
SAMA SAMA *      7. MESSAGE ENTRY (CSME)                                         *
SAMA SAMA *      8. MESSAGE RETRIEVAL (CSTO)                                     *
SAMA SAMA *                                                                      *
SAMA SAMA * THE CUSTOMER INFORMATION CONTROL SYSTEM CONTROL MODULES THAT WERE    *
SAMA SAMA * TESTED ARE                                                           *
SAMA SAMA *                                                                      *
SAMA SAMA *      1. TERMINAL CONTROL                                             *
SAMA SAMA *      2. TASK CONTROL                                                 *
SAMA SAMA *      3. PROGRAM CONTROL                                              *
SAMA SAMA *      4. TRANSIENT DATA CONTROL                                       *
SAMA SAMA *      5. STORAGE CONTROL                                              *
SAMA SAMA *      6. DUMP CONTROL                                                 *
SAMA SAMA *                                                                      *
SAMA SAMA * THE CUSTOMER INFORMATION CONTROL SYSTEM SERVICE MODULES THAT WERE    *
SAMA SAMA * TESTED ARE                                                           *
SAMA SAMA *                                                                      *
SAMA SAMA *      1. MASTER TERMINAL PROGRAM GROUP                                *
SAMA SAMA *      2. SIGN ON AND SIGN OFF PROGRAM GROUP                           *
SAMA SAMA *      3. F. E. TERMINAL TEST PROGRAM                                  *
SAMA SAMA *      4. ABNORMAL CONDITION PROGRAM                                   *
SAMA SAMA *                                                                      *
SAMA SAMA ************************************************************************
SAMA SAMA
SAMA SAMA
SAMA SAMA
```

```
 WHAT SERVICE IS REQUESTED?
 IS SHUTDOWN TO BE IMMEDIATE ?
 DFHI1701 - C. I. C. S.  IS BEING TERMINATED
CUSTOMER INFORMATION CONTROL SYSTEM ELAPSE TIME IS          9   SEC
DFHKC***************************TASK CONTROL STATISTICS*****************************
DFHKC         PEAK NUMBER OF TASKS                    1
DFHKC         NUMBER OF TIMES AT MAX TASK
DFHKC         TOTAL NUMBER OF TASKS                  53
DFHST***************************STORAGE STATISTICS******************************
DFHST          NUMBER OF STORAGE ACQUSITIONS              197
DFHST          NUMBER OF STORAGE RELEASES                 177
DFHPG***************************TRANSACTION STATISTICS**************************
DFHPG     TRANSACTION           PROGRAM     TIMES CALLED BY
DFHPG     IDENTIFICATION         NAME        TRANSACTION
DFHPG          CSAC             DFHACP                1
DFHPG          CSOC             DFHMCP                1
DFHPG          CSFE             DFHFEP                1
DFHPG          CSME             DFHMCP               42
DFHPG          CSMT             DFHMTPA               3
DFHPG          CSOT             DFHMTPA               1
DFHPG          CSSN             DFHSNP                2
DFHPG          CSTE             DFHTACP               1
DFHPG          CSTO             DFHTOP                1
DFHPG          *****TOTALS*****                      53
DFHPG***************************PROGRAM STATISTICS******************************
DFHPG                           PROGRAM      TIMES PROGRAM
DFHPG                            NAME            USED
DFHPG                           DFHACP                1
DFHPG                           DFHFEP                1
DFHPG                           DFHMCP               43
DFHPG                           DFHMTPA               8
DFHPG                           DFHMTPB               1
DFHPG                           DFHMTPC               1
DFHPG                           DFHMTPF               4
DFHPG                           DFHSNP                2
DFHPG                           DFHSFP                1
DFHPG                           DFHSNT                2
DFHPG                           DFHSTKC               1
DFHPG                           DFHSTP                1
DFHPG                           DFHTACP               1
DFHPG                           DFHTEP                1
DFHPG                           DFHTOP                1
DFHPG          *****TOTALS*****                      69
DFHDP***************************DUMP STATISTICS*********************************
DFHDP          NUMBER OF STORAGE DUMPS      1
DFHTR***************************TERMINAL STATISTICS******************************
DFHTR  LINE    NO OF  TERMINAL  INPUT  OUTPUT  TRANS-    TRANS-  TRANS-
DFHTR   ID     POLLS      ID     MSGS   MSGS  MISSION    ACTION  ACTION
DFHTR                                        ERRORS              ERRORS
DFHTR  0001
DFHTR                  SAMA       66     109              48       1
**TOTALS**                        66     109              48       1
DFHTD***************************TRANSIENT DATA STATISTICS***********************
DFHTD          DESTINATION EXTRAPARTITION INTRAPARTITION  INDIRECT  AUTOMATIC
DFHTD            IDENT        OUTPUTS        OUTPUTS       OUTPUTS TRANSACTION
DFHTD                                                              INITIATION OUTPUT
DFHTD            CSLP              54
DFHTD            CSML                                              1
DFHTD            CSSL                                             55
DFHTD            SAMA                            44
DFHTD            **TOTALS**        54            44               56
DFHTD   NUMBER OF TRACKS USED BY TRANSIENT DATA FOR INTRAPARTITION        2
DFHTS***************************TEMPORARY STORAGE STATISTICS********************
DFHTS          MAIN STORAGE USES
DFHTS          AUXILARY STORAGE USES
```

```
CUSTOMER INFORMATION CONTROL SYSTEM STORAGE DUMP                                                    PAGE 01
DUMP IDENTIFICATION CODE = TRAN
REGS 14-4          480A2068  00000000  00000000  00000000          00000000  000A1860  00000000
REGS 5-11          00000000  00000000  00000000  00000000          00000000  0009C098  010AD97C

TASK CONTROL AREA (USER AREA)  ADDRESS  09C6C0  TO  09C7DF
000000  0009C680 00000000 010AD97C 000A8C50  000A8904 000A8D60 8040FF00 00210000  *..F.......R.............. ......*  09C6C0
000020  480A8C9C 9208DE70 00000000 000A8D60  580AB918 A80AB966 0009C680 880A8C6C  *............................F......*  09C6E0
000040  00000040 00000000 00000000 00000000  0009C098 010AD97C 480A8C9C 0009C098  *... ...................R.........*  09C700
000060  480A2052 00000000 00000000 00000000  00000000 000A1860 00000000 00000000  *.....................................*  09C720
000080  FE00C0A0 E2C1D4C1 C3D74040 E3D9C1D5  00000000 00000000 00000000 00000000  *....SAMACP  TRAN..................*  09C740
0000A0  480A2068 00000000 00000000 00000000  00000000 000A1860 00000000 00000000  *.....................................*  09C760
0000C0  00000000 00000000 00000000 00000000  0009C098 010AD97C 00000000 00000000  *.........................R.........*  09C780
0000E0  00000000 00000000 24F00000 00000000  00000000 00000000 00000000 00000000  *.........0.........................*  09C7A0
000100  00000000 E2C1D4C1 00000000 00000000  00000000 00000000 00000000 00000000  *....SAMA..........................*  09C7C0

TASK CONTROL AREA (SYSTEM AREA)ADDRESS  09C680  TO  09C68F
000000  8A000160 0009C0F8 0000008C 000AEC60  00000000 00000000 00000000 00000000  *........8.........................*  09C680
000020  00000000 00000000 000AEE18 00000000  00000000 00000000 0009C0F8 00000000  *.............................8....*  09C6A0
```

```
CUSTOMER INFORMATION CONTROL SYSTEM STORAGE DUMP                                                    PAGE 02
COMMON SYSTEM AREA                ADDRESS  0A8860  TO  0A8C3F
000000  00000000 000AF758 00000000 480A8C9C  9208DE70 00000000 000A8D60 580AB918  *.......7.........................*  0A8860
000020  A80AB9AE 0009C680 880A8C6C 00000040  00000000 00000000 00000000 0009C098  *.......F......... ...............*  0A8880
000040  010AD97C 0009C098 0000255C 0009C6C0  0931397F 00000000 07D00000 00000000  *..R...........F...................*  0A88A0
000060  0034565E 00002400 00028280 000085F9  000007D0 00097080 000AF758 0072104F  *.................9..........7... .*  0A88C0
000080  000A8EF0 FFFF0000 00000000 00000000  00000000 00000000 00099888 00000000  *...0..............................*  0A88E0
0000A0  00000000 00000000 000A88FC 000A88FC  0009C6C0 000A8C50 000A8C50 1000FF00  *.....................F......... ...*  0A8900
0000C0  00000000 00000000 000A8BF0 00000000  00000000 00000000 C3D6D5E2 E3D5E3E2  *.............0.............CONSTNTS*  0A8920
0000E0  000A908C 000A9D08 000AA364 030AB018  000AB8F4 000ABDF8 000ADA10 000ADA90  *.....................4...8... ....*  0A8940
000100  000AE88C 00000000 000AE8B8 000AAE80  000A9000 00000000 00000000 000A8190  *..Y.......Y.......................*  0A8960
000120  000AEC40 000AEDE0 000AD9E4 00000000  000AE7F0 00000000 00000000 00000000  *... ......RU......XO.............*  0A8980
000140  000AA360 000AB8F0 000AD9EC 00000000  000AE858 00000000 00000000 00000000  *........0..R.......Y..............*  0A89A0
000160  080AAE70 7FDF0000 00000000 00000000  00000000 00000000 00000000 00000000  *.....................................*  0A89C0
000180  000A9000 000A9004 7F00A28E 000A9014  00000000 00000000 00000000 FF0AB890  *.....................................*  0A89E0
0001A0  07FE58E0 D19C07FE 009D031A 009D0337  00050C00 000C0000 E6D6D9D2 C1D9C5C1  *....J.....................WORKAREA*  0A8A00
0001C0  0000000C 00000000 001C001C 00008C00  00047C00 00033C00 0C000C00 0C000C00  *.....................................*  0A8A20
0001E0  0C001C00 000C0000 0C000C00 0C00000C  00001C00 000C0000 0C00000C 00000C14  *.....................................*  0A8A40
000200  00000000 00000000 00000000 00000000  00000000 00000000 00000000 00000000  *.....................................*  0A8A60
   LINES    000220-000360    SAME AS ABOVE
000380  00000000 00000000 00000000 00000000  00000000 00000000 00000000 477081C2  *.................................B@*  0A8BE0
0003A0  5CC4C6C8 E3C3E3C3 C1029CF0 F2F0F15C  94000000 00000000 00E3C3D7 00000000  *.DFHTCTCA..0201..........TCP....*  0A8C00
0003C0  00000000 00000000 0009C6C0 00000000  00000000 00000000 00000000 00000000  *..........F.......................*  0A8C20
```

TRACE TABLE ADDRESS 0A8190 TO 0A87DF

```
000000  000A8520 000A81A0 000A87D0 00000000  F10AC038 40E3C3D7 85400050 0009C0F8  *.................1... TCP. ....8*  0A819C
000020  C90A9EEC 00E3C3D7 0009C0F8 85400050  F00A8EC4 40E3C3D7 40000000 000AD9E0  *I....TCP...8. ..0..D TCP .....R.*  0A81BC
000040  F00AC9F6 10E3C3D7 010AD97C C3E2C4C3  F10A9286 8AE3C3D7 00000160 00000000  *0.I6 TCP..R.CSDC1....TCP........*  0A81D0
000060  C80A9F60 00E3C3D7 0009C680 8AD00160  F00ABEC4 40E3C3D7 40000000 000AD9E0  *H....TCP..F.....0..D TCP .....R.*  0A81F0
000080  F20AA364 0200008C C4C6C804 C3D74040  F10AA6DC 8800008C 00000788 00000000  *2.......DFHMCP  1...............*  0A8210
0000A0  C80A9F60 0000008C 000A1858 88000788  F10AA728 9C00008C 0000011C 00000000  *H..............1...............*  0A8230
0000C0  C80A9F60 0000008C 0009C0F8 8C000124  F00AAB62 4000008C 80000000 0009C100  *H..........8....0... ..........A.*  0A8250
0000E0  FD000000 00000000 00000000 0000001C  F00ABEC4 40E3C3D7 40000000 000AD9E0  *.................0..D TCP .....R.*  0A8270
000100  F00AA862 4000008C 80000000 0009C100  F00ABEC4 40E3C3D7 40000000 000AD9E0  *0... ..........A.0..D TCP .....R.*  0A8290
000120  F10AA7CC 4000008C 8C000124 0009C0F8  C90A9EEC 0000008C 0009C0F8 8C000124  *1... ...........8I...........8....*  0A82B0
000140  F00A1F32 4000008C 10000000 0009C100  F00ABEC4 40E3C3D7 40000000 000AD9E0  *0... ... ....A.0..D TCP .....R.*  0A82D0
000160  FD000000 00000000 00000000 0000001C  F00AC54E 08E3C3D7 0009C6C0 00000000  *.................0.E..TCP..F.....*  0A82F0
000180  F00ABEC4 40E3C3D7 40000000 000AD9E0  F60A2024 4000008C 4009C0A0 E2C1D4C1  *0..D TCP .....R.6... ... ...SAMA*  0A8310
0001A0  F10ADFC0 9C00008C 00000034 00000000  C80A9F60 0000008C 0009C0F8 8C00003C  *1.................H...........8....*  0A8330
0001C0  F00AE08A 4000008C 80000000 0009C100  FD000000 00000000 00000000 0000001C  *0... ..........A.................*  0A8350
0001E0  F00ABEC4 40E3C3D7 40000000 000AD9E0  F10A2052 4000008C 8500005F 0009C098  *0..D TCP .....R.1... ...........*  0A8370
000200  C90A9EEC 0000008C 0009C098 8500005F  F00A1F32 4000008C 10000000 0009C100  *I.................0... ... .....A.*  0A8390
000220  F10ABFA4 85E3C3D7 00000052 00000000  C80A9F60 00E3C3D7 0009C098 8500005F  *1....TCP.........H....TCP.........*  0A83B0
000240  F00ABEC4 40E3C3D7 40000000 000AD9E0  F00AC54E 08E3C3D7 0009C6C0 00000000  *0..D TCP .....R.0.E..TCP..F.....*  0A83D0
000260  F00ABEC4 40E3C3D7 40000000 000AD9E0  F60A2024 4000008C 4009C0A0 E2C1D4C1  *0..D TCP .....R.6... ... ...SAMA*  0A83F0
000280  F00AE08A 4000008C 80000000 0009C100  F10A2052 4000008C 8500005F 0009C098  *0... ..........A.1... ...........*  0A8410
0002A0  C90A9EEC 0000008C 0009C098 8500005F  F00A1F32 4000008C 10000000 0009C100  *I.................0... ... .....A.*  0A8430
0002C0  F10ABFA4 85E3C3D7 00000052 00000000  C80A9F60 00E3C3D7 0009C098 8500005F  *1....TCP.........H....TCP.........*  0A8450
0002E0  F00ABEC4 40E3C3D7 40000000 000AD9E0  F00AC54E 08E3C3D7 0009C6C0 00000000  *0..D TCP .....R.0.E..TCP..F.....*  0A8470
000300  F00ABEC4 40E3C3D7 40000000 000AD9E0  F40A2068 0000008C FE000000 E3D9C1D5  *0..D TCP .....R.4............TRAN*  0A8490
000320  F00ABC9C 4000008C 80000000 000A8D60  FD000000 00000000 00000000 0000001C  *0... .............................*  0A84B0
000340  F00ABEC4 40E3C3D7 40000000 000AD9E0  F00ABC9C 4000008C 80000000 000A8D60  *0..D TCP .....R.0... ...........*  0A84D0
```



```
000360  FD000000 00000000 00000000 0000004C  F00ABEC4 40E3C3D7 40000000 000AD9E0  *.................0..D TCP .....R.*  0A84F0
000380  F00ABC9C 4000008C 80000000 000A8D60  F00ABEC4 40E3C3D7 40000000 000AD9E0  *0... ...........0..D TCP .....R.*  0A8510
0003A0  F00ABEC4 40E3C3D7 40000000 000AD9E0  F00A11C4 4000004C 10000000 0009C100  *0..D TCP .....R.0..D ... .....A.*  0A8530
0003C0  F00ABEC4 40E3C3D7 40000000 000AD9E0  FD000000 00000000 00000000 0000001C  *0..D TCP .....R.................*  0A8550
0003E0  F00AC54E 08E3C3D7 0009C6C0 00000000  F00ABEC4 40E3C3D7 40000000 000AD9E0  *0.E..TCP..F.....0..D TCP .....R.*  0A8570
000400  F10A1238 6000006C 00000000 00000000  C90A9EEC 0000006C 0009C098 8500005F  *1.................1...............*  0A8590
000420  F10A124A 9500006C 00400014 00000000  C80A9F60 0000006C 0009C098 85400021  *1......... .....H.............. ..*  0A85B0
000440  F20AA364 1000006C C4C6C8C4 C5D74040  F00AA522 8000006C 00000000 00000000  *2... ...DFHMFEP  0................*  0A85D0
000460  F10A93EC 40D2C3D7 8A0001A4 0009C680  C90A9EEC 00D2C3D7 0009C680 8A0001A4  *1... KCP......F.1....KCP..F.....*  0A85F0
000480  F00ABEC4 40E3C3D7 40000000 000AD9E0  F10AC038 40E3C3D7 85400021 0009C098  *0..D TCP .....R.1... TCP. ......*  0A8610
0004A0  C90A9EEC 00E3C3D7 0009C098 85400021  F10ABFA4 85E3C3D7 00000052 00000000  *I....TCP..... ..1...TCP.........*  0A8630
0004C0  C80A9F60 00E3C3D7 0009C098 8500005F  F00ABEC4 40E3C3D7 40000000 000AD9E0  *H....TCP.........0..D TCP .....R.*  0A8650
0004E0  F00AC9F6 10E3C3D7 010AD97C C3E2E7E7  F10A9286 8AE3C3D7 000001A4 00000000  *0.I6 TCP..R.CSXX1....TCP.........*  0A8670
000500  C80A9F60 00E3C3D7 0009C680 8A0001A4  F00ABEC4 40E3C3D7 40000000 000AD9E0  *H....TCP..F.....0..D TCP .....R.*  0A8690
000520  F20AA364 0200007C C4C6C8C1 C3D74040  F10AA6DC 8800007C 00000640 00000000  *2.......DFHACP  1.......... ....*  0A86B0
000540  C80A9F60 0000007C 000A1518 88000640  F10AA728 9C00007C 0000011C 00000000  *H..............  1...............*  0A86D0
000560  C80A9F60 0000007C 0009C0F8 8C000124  F00AA862 4000007C 80000000 0009C100  *H..........8....0... ..........A.*  0A86F0
000580  FD000000 00000000 00000000 0000001C  F00ABEC4 40E3C3D7 40000000 000AD9E0  *.................0..D TCP .....R.*  0A8710
0005A0  F00AA862 4000007C 80000000 0009C100  F00ABEC4 40E3C3D7 40000000 000AD9E0  *0... ..........A.0..D TCP .....R.*  0A8730
0005C0  F10AA7CC 4000007C 8C000124 0009C0F8  C90A9EEC 0000007C 0009C0F8 8C000124  *1... ...........8I...........8....*  0A8750
0005E0  F10A171A 9500007C 00400050 00000000  C80A9F60 0000007C 0009C0F8 85400050  *1......... .....H...........8. ..*  0A8770
000600  F20AA364 1000007C C4C6C8C1 C3D74040  F00AA522 8000007C 00000000 00000000  *2... ...DFHACP  0................*  0A8790
000620  F10A93EC 40D2C3D7 8A0001A4 0009C680  C90A9EEC 00D2C3D7 0009C680 8A0001A4  *1... KCP......F.1....KCP..F.....*  0A87B0
000640  F00ABEC4 40E3C3D7 40000000 000AD9E0  3A004878 5A013634 00353713 36390018  *0..D TCP .....R.................*  0A87D0
```

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CUSTOMER INFORMATION CONTROL SYSTEM STORAGE DUMP                                                                    PAGE 05
TRANSACTION STORAGE              ADDRESS  09C0F8  TO  09C133
000000   8C00003C 00000000 40000000 800200IE   000AD8C4 4009C0A0 000AF018 00000000   *........ ...........D .....0.....*   09C0F8
000020   000AE839 00140000 00000000 E2C1D4C1   00000000 00000000 00000000 000AD9E0   *..Y.........SAMA..............R.*   09C118

TERMINAL CONTROL TABLE           ADDRESS  0AD97C  TO  0AD98F
000000   E2C1D4C1 80000000 18F06406 00019C00   019C000C E2D7D9FF FFFFFF00 004C001C   *SAMA.....0...........SPR.........*   0AD97C
000020   0009C098 0009C098 0009C6C0 00000C00   00000000 00000000 00000044 00010C00   *...........F.....................*   0AD99C
000040   00000000 10E3C3D7 010AD97C C3E2C4C3   F10A9286 BAE3C3D7 00000160 00000000   *.... TCP..R.CSDC1....TCP.........*   0AD9BC

TERMINAL STORAGE                 ADDRESS  09C098  TO  09C0F6
000000   8500005F 00000000 00040000 C4E4D4D7   E0404040 40404040 40404040 40404040   *.............DUMP.              *   09C098
000020   40404040 40404040 40404040 40404040   40404040 40404040 40404040 40404040   *                                *   09C0B8
000040   40404040 40404040 40404040 40404040   40404040 40404040 40404040 00000000   *                            ....*   09C0D8
```

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CUSTOMER INFORMATION CONTROL SYSTEM STORAGE DUMP                                                                    PAGE 06
PROGRAM STORAGE                  ADDRESS  0A1860  TO  0A230F
000000   183E47F0 3280003C 00001517 17171717   171717C4 C5E2E3C9 D5C1E3C9 D6D540C9   *...0.............DESTINATION I*   0A1860
000020   C4C5D5E3 C9C6C9C3 C1E3C906 D540C5D9   D9D6D940 60400703 C5C1E2C5 4009C5E2   *DENTIFICATION ERROR . PLEASE RES*   0A1880
000040   E4C2D4C9 E3150044 00001517 17171717   171717C4 C1E3C140 C3D603D3 C5C3E3C9   *UBMIT.............DATA COLLECTI*   0A18A0
000060   D6D540C8 C1E240C2 C5C5D540 D9C5D8E4   C5E2E3C5 C440C1D5 C440C9E2 40C1C2D6   *ON HAS BEEN REQUESTED AND IS ABO*   0A18C0
000080   E4E340E3 D640C2C5 C7C9D515 17170053   00001517 17171717 171717E3 C8C540C4   *UT TO BEGIN.................THE D*   0A18E0
0000A0   C1E3C140 C8C1E240 C2C5C5D5 40D9C5C3   C5C9E5C5 C440C1D5 C440C4C9 E2D7C1E3   *ATA HAS BEEN RECEIVED AND DISPAT*   0A1C00
0000C0   C3C8C5C4 40E3D640 E3C8C540 C4C5E2C9   C7D5C1E3 C5C440C4 C5E2E3C9 D5C1E3C9   *CHED TO THE DESIGNATED DESTINATI*   0A1C20
0000E0   D6D51517 17000033 00001517 17171717   171717C5 D5C440D6 C640E5D6 D3E404C5   *ON.................END OF VOLUME*   0A1C40
000100   40D9C5D8 E4C5E2E3 40C8C1E2 40C2C5C5   D540D9C5 C3C5C9E5 C5C41517 17000037   * REQUEST HAS BEEN RECEIVED......*   0A1C60
000120   00001517 17171717 171717C4 C1E3C140   C3D6D3D3 C5C3E3C9 D6D540E2 E4E2D7C5   *............DATA COLLECTION SUSPE*   0A1C80
000140   D5E2C9D6 D540C8C1 E240C2C5 C5D54009   C5D8E4C5 E2E3C5C4 1500004D 00001517   *NSION HAS BEEN REQUESTED........*   0A1CA0
000160   17171717 171717C4 C1E3C140 C3D603D3   C5C3E3C9 D6D540D9 C5E2E404 D7E3C9D6   *.......DATA COLLECTION RESUMPTIO*   0A1CC0
000180   D540C8C1 E240C2C5 C5D54009 C5D8E4C5   E2E3C5C4 40C1D5C4 40C9E240 C1C2D6E4   *N HAS BEEN REQUESTED AND IS ABOU*   0A1CE0
0001A0   E340E3D6 40C2C5C7 C9D51500 00570000   15171717 17171717 17E8D6E4 D940D4C5   *T TO BEGIN.................YOUR ME*   0A1D00
0001C0   E2E2C1C7 C540C8C1 E240C2C5 C5D54009   C5C3C5C9 E5C5C440 C1D5C440 C4C9E2D7   *SSAGE HAS BEEN RECEIVED AND DISP*   0A1D20
0001E0   C1E3C3C8 C5C440E3 D640E3C8 C540C4C5   E2C9C7D5 C1E3C5C4 40C4C5E2 E3C9D5C1   *ATCHED TO THE DESIGNATED DESTINA*   0A1D40
000200   E3C9D6D5 15171700 00400000 15171717   17171717 17E3C8C5 D9C540C1 D9C54005   *TION..... ............THERE ARE N*   0A1D60
000220   D640D4D6 D9C540D4 C5E2E2C1 C7C5E240   D8E4C5E4 C5C440C6 D6D940E3 C8C9E240   *O MORE MESSAGES QUEUED FOR THIS *   0A1D80
000240   C4C5E2E3 C9D5C1E3 C9D6D515 003B0000   15171717 17171717 17E3C8C5 D9C540C1   *DESTINATION..............THERE A*   0A1DA0
000260   D9C540D5 D640D4C5 E2E2C1C7 C5E240D8   E4C5E4C5 C440C6D6 D940E3C8 C9E240C4   *RE NO MESSAGES QUEUED FOR THIS D*   0A1DC0
000280   C5E2E3C9 D5C1E3C9 D6D51540 E2E3D607   D4C5E2E2 C1C7C540 C3D6D5E3 C9D6D340   *ESTINATION. STOPMESSAGE CONTROL *   0A1DE0
0002A0   D7D9D6C7 D9C1D440 40404040 40404040   5880C008 58A0B024 D5033758 A00C4780   *PROGRAM         ........N.......*   0A1E00
0002C0   3306D503 375CA00C 47803564 D5033760   A00C4780 36109260 C080D203 C08C3764   *..N.........N........ ....K.....*   0A1E20
0002E0   58E000E8 07FEC4C1 E3C140C3 D6D303C5   C3E3C9D6 D540D7D9 D6C7D9C1 04404040   *...Y..DATA COLLECTION PROGRAM   *   0A1E40
000300   40404040 4040D505 3790A011 4770337C   D250A008 315AD203 C0843758 0203C088   *       N.........K.....K.....K...*   0A1E60
000320   B00041E0 C10050E0 C0809280 C08058E0   D10005EE 91FFC080 478033A0 9260C080   *....A.............J.................*   0A1E80
000340.  D203C08C 376858E0 00E807FE 9220C080   58E0D0FC 05EED236 A00830E6 9526B008   *K.........Y.............K....M....*   0A1EA0
```

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CUSTOMER INFORMATION CONTROL SYSTEM STORAGE DUMP                                                                    PAGE 07

000360  47703374 9201C080 D207C084 375058E0    D0E805EE 9601B02C 47F03744 D203C104  *........K.........Y.......O..K.A.*  0A1EC0
000380  A011D203 C084C104 D503A016 376C4780    334CD247 A0083046 95848008 4780338C  *..K...A.N.........K.............*  0A1EE0
0003A0  95268008 47703388 9201C080 D207C084    375058E0 D0E805EE 9601B02C 9610B02C  *.............K.........Y....... ..*  0A1F00
0003C0  9604B02C 9240C019 9210C018 58E0D0E0    05EE58A0 80249526 B0084770 3400D503  *..... ... .....................N.*  0A1F20
0003E0  3770A00D 476034F6 D502379E A00D4780    3516D506 37A1A00D 477034A0 47F0341E  *........6N.........N..........O..*  0A1F40
000400  D5033770 A00C4780 34F6D502 379EA00C    47803516 D50637A1 A00C4770 34A0D201  *N.........6N.........N.........K.*  0A1F60
000420  C1003796 D203C084 3758D203 C088B000    D5033774 A0154770 345041E0 C10050E0  *A...K.....K.....N...........A...*  0A1F80
000440  C0809248 C08058E0 D100D5EE 47F03462    41E0C100 50E0C080 9240C080 58E0D100  *.........J....O....A...... ....J.*  0A1FA0
000460  05EE91FF C0804780 347A9260 C080D203    C08C3778 58E0D0E8 07FED23A A008311E  *..............K.........Y..K.....*  0A1FC0
000480  95268008 47703498 9201C080 D207C084    375058E0 D0E805EE 9601B02C 47F03744  *.............K.........Y.......O..*  0A1FE0
0004A0  D203C084 C10448E0 A00841E0 E00440E0    A00841E0 A00850E0 C0809240 C08058E0  *K...A.......... ..............  ....*  0A2000
0004C0  D0FC05EE 91FFC080 478034E4 9102C080    4710371E 9260C080 D203C08C 377C58E0  *............U..... ......K........*  0A2020
0004E0  D0E807FE 50A0C05C 9240C05C 58E0D0E4    05EE47F0 338CD201 C0803798 D203C08C  *.Y.......  .....U...O..K......K...*  0A2040
000500  378058E0 D0F005EE D7038024 B0249610    B02C47F0 34E49584 B0084780 3744D256  *.....O..P.......  ...O.U.........K.*  0A2060
000520  A0083D8E 95268008 4770353C 9201C080    D207C084 375058E0 D0E805EE 9601B02C  *.................K.........Y......*  0A2080
000540  47F03744 D4C5E2E2 C1C7C540 C5D5E3D9    E840D7D9 D6C7D9C1 D4404040 40404040  *.O..MESSAGE ENTRY PROGRAM       *  0A20A0
000560  40404040 D203C084 A011D203 A00CB000    48E0A008 41E0E004 40E0A008 41E0A008  *    K.....K.............. ........*  0A20C0
000580  50E0C080 9240C080 58E0D0FC 05EE91FF    C0804780 35AE9102 C0804710 37229260  *..... ..........................  ....*  0A20E0
0005A0  C080D203 C08C3784 58E0D0E8 07FE9200    C05DD201 C05E379A 9295C05C 58E0D0E4  *..K.........Y.......K.............U*  0A2100
0005C0  05EE58A0 C05C50A0 B024D25F A00831AC    95268008 477035E8 9201C080 D207C084  *..........K.............Y....K....*  0A2120
0005E0  375058E0 D0E805EE 9601B02C 47F03744    D4C5E2E2 C1C7C540 D9C5E3D9 C9C5E5C1  *.....Y.......O..MESSAGE RETRIEVA*  0A2140
000600  D340D7D9 D6C7D9C1 D4404040 40404040    D203C108 A016D203 C1048000 D50237A8  *L PROGRAM        K.A...K.A...N...*  0A2160
000620  A0114770 363OD203 C108A011 47F03640    D5033788 A0114780 3640D203 C104A011  *.......K.A....O. N........ K.A...*  0A2180
000640  D203C084 C1049280 C08058E0 D0FC05EE    91FFC080 47803678 9101C080 471036D4  *K...A.........................  .M*  0A21A0
000660  9102C080 47103722 9260C080 D203C08C    378C58E0 D0E807FE 5890C080 9604B02C  *.....  ......K.........Y..........*  0A21C0
000680  9240C019 9210C018 58E0D0E0 05EED200    36959025 D200A008 902448E0 A0084BE0  *. ... .........K.....K..........*  0A21E0
0006A0  379C40E0 A0089526 B0084770 36BE9201    C080D207 C0843750 58E0D0E8 05EE9641  *.. ................K.........Y....*  0A2200
0006C0  B02C0502 37A8C108 47703744 92FFC10C    47F03640 95FFC10C 478036E6 D23EA008  *..N...A.......A..O. ..A....WK...*  0A2220
```

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CUSTOMER INFORMATION CONTROL SYSTEM STORAGE DUMP                                                                    PAGE 08

0006E0  324C47F0 36FE9604 B02C9240 C0199210    C01858E0 D0E005EE D243A008 32089526  *...O.......  ... .........K........*  0A2240
000700  B0084770 37169201 C080D207 C0843750    58E0D0E8 05EE9601 B02C47F0 374450A0  *.....  .....K.........Y.......O....*  0A2260
000720  B024D23F A0083006 95268008 47703740    9201C080 D207C084 375058E0 D0E805EE  *..K.............  ....K.........Y..*  0A2280
000740  9601B02C 9210C080 58E0D0E8 07FE0080    C4C6C8E3 C4C3D740 C3E2C4C3 C3E2D4C5  *.....  .....Y....DFHTDCP CSDCCSME*  0A22A0
000760  C3E2D4D9 C1C1D7E3 C1C4C3D9 C6C5D6E5    C4E4D4D7 D4C1C9D5 C1C4C3E2 C1C4C3D7  *CSMRAAPTADCRFEDVDUMPMAINADCSADCP*  0A22C0
000780  E3D9C1D5 C1D4C5D7 40404040 C1D4D9D7    D9C5E2E4 D4C50020 FE000064 0004C5D6  *TRANAMEP     AMRPRESUME........EO*  0A22E0
0007A0  C4E2E4E2 D7C5D5C4 C1D3D3C1 D3D30080    372F3A00 48785234 00177401 34001721  *DSUSPENDALLALL...................*  0A2300
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