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BIM-ODIS / VSE

ON-LINE CICS AND VSE SYSTEM STATUS DISPLAY

PROGRAM DESCRIPTION AND OPERATIONS MANUAL

Release 1.8

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GETTING STARTED

Introduction

BIM-ODIS, or just “ODIS” (Online DISplay) is a CICS/VS program whose basic purpose is to easily display, online, a wealth of realtime information about the operation of the CICS system. As the operation of CICS is affected by other components of the system, facilities are also provided to view some of the major elements of VSE, VTAM, and DL/I.

In this document, BIM-ODIS is simply referred to as ODIS, DOS/VSE is referred to as VSE, OS/390 and MVS are referred to as MVS, and CICS/TS is referred to as CICS.

CICS maintains a surprisingly large amount of data in its various tables. As part of the shutdown process a small portion of this data is printed on SYSLST. ODIS extends this facility to the online environment and provides the following features:

1. The amount of information available is many times greater than that provided in the shutdown report and the CEMT transactions.
2. All of this information is instantly available online, at any time that it may be needed.
3. Storage anywhere in the machine may be displayed (and even altered) in hexadecimal and character (“core dump” format).
4. Information about other system components is also available. This includes VSE, VTAM, and DL/I.

ODIS is useful not only for statistical purposes but also as an aid to tuning and problem determination. And, since it reveals much of the internal operation of CICS, it can function as a learning aid. ODIS is most useful for systems programmers. However, some of its displays should also be helpful to a broader group of users including operators and programmers.

ODIS runs as a standard CICS transaction. It requires no modifications to any software on the system and needs no “hooks” for its operation.

The objective behind ODIS is to give you a much information as you could ever use, and then some. For this reason, it is continually growing. Your suggestions for improvement are welcome, and all suggestions will be considered.

New For This Release

This section highlights the new features that have been added to this and recent releases of ODIS. Detailed information on each of these features can be found in the remainder of this manual.

New for Release 1.8

- Support for CICS/TS Release 1.1.
- Support for VSE/ESA Release 2.4.
- Displays have been revised to match the new CICS table access methods.
- A new DSA display has been added. This replaces the PAM display.
- New default alternate PF key settings have been made for HEXDISP. You can now use PF8 to scroll forward, and PF7 to scroll backward. These are alternate settings, so the displays will still show PF1 and PF3 respectively.

New for Release 1.7

- Support for CICS Release 2.2 and 2.3.
- Support for VSE/ESA 1.3.x, 1.4, and 2.1
- Cross Address Space display and alteration support. Refer to the section "Current Address Space" on page 85 for more information.
- Expanded support in various tables for 31-bit control blocks and storage addresses related to the new releases of VSE/ESA and CICS.

New for Release 1.6

- Integrated and improved support for CICS Release 2.1.
- Mixed case screen displays. This improves screen readability and also assists in distinguishing ODIS header fields from system information. The storage SCAN function has been enhanced also to permit scanning on mixed case, upper case only, or case-insensitive search arguments. The latter means in effect that both search argument and storage are converted to upper case for comparison purposes (only).

- The ODIS program was converted from CICS Macro Level assembler language to Command Level assembler. Although this is not an enhancement per se, it may be more convenient for those wishing to write Watchdog user exits. Also, it should be noted that this means that existing user exits from prior ODIS releases must be converted to Command Level for use with ODIS 1.6.

Installation

ODIS is distributed for VSE Version 2.1 and above on a magnetic tape recorded in LIBR BACKUP format. The tape content consists of one sublibrary, named BIMLIB.ODIS, which includes the following:

ODIS . PHASE	Main program
\$\$BODIS . PHASE	Transient program
ODISOPT . PHASE	Default option table
ODISOPT . E	Customization Macro (pre-ESA 2.1)
ODISOPT . A	Customization Macro (ESA 2.1)
ODISEXIT . A	Sample Watchdog exit program
BIMXPC00 . PHASE	Interface module for POWER access

If the separate ODISTRAK feature is ordered, the following phases are also included:

ODISTRAK . PHASE	Main program
ODISTR00 . PHASE	Sort overlay

Loading Tape

Use a job similar to the following one to restore the ODIS sublibrary on the tape to a new disk sublibrary. Then, optionally, move the ODIS members to a permanent sublibrary, and delete the sublibrary created by the restore step.

```
// JOB ODISINST
// ASSGN SYS006,tape-addr
// DLBL USRLIB1, etc.
// EXTENT etc.
// EXEC LIBR,SIZE=256K
RESTORE S=BIMLIB.ODIS:USRLIB1.ODIS TAPE=SYS006
..
.. Optional step - move members to a permanent sublibrary
.. and delete sublibrary created above
..
CONNECT S=USRLIB1.ODIS:USRLIB1.PROD
MOVE *.* LIST=YES      (add REPLACE=YES if BIM-ODIS already in
target)
DELETE S=USRLIB1.ODIS
/*
/ &
```

The sublibrary in which the ODIS phases reside must be included in the LIBDEF search chain for CICS execution, and the sublibrary containing the source members must be referenced in assemblies or other steps which access them.

CICS RDO Definitions

The following RDO definitions must be added to CICS:

```

CEDA DEFINE GROUP(ODIS) PROF(ODISALT) SCRNSIZE(ALT) UCTRAN(No)
CEDA DEFINE GROUP(ODIS) PROG(ODIS) LANG(A) RES(YES) (note 1)
DATA(BELOW) EXECKEY(CICS)
CEDA DEFINE GROUP(ODIS) PROG(ODISOPT) LANG(A)
DATA(BELOW) EXECKEY(USER)
CEDA DEFINE GROUP(ODIS) TRAN(ODIS) PROF(ODISALT) (note 2)
TASKDATALOC(BELOW)
TASKDATAKEY(CICS)
PRIORITY(200)
TRANSEC(14)
CEDA DEFINE GROUP(ODIS) TRAN(D) PROF(ODISALT) (note 2)
TASKDATALOC(BELOW)
TASKDATAKEY(CICS)
PRIORITY(150)

```

Note 1: Although ODIS is a relatively large online program the RES(YES) parameter, while not required, should be specified in order to guarantee that ODIS will be able to run if a short on storage condition occurs.

Note 2: The TRANSID(s) selected may be any values chosen by the installation. A short transaction ID, such as "D" (for display) is recommended for ease of use. Two different transaction IDs are desirable if the optional security feature is desired. See the description of the SECTRAN parameter of the ODISOPT macro on page 11 for a full discussion. In the above example the transaction ID "ODIS" has been secured, while the transaction ID "D" has been left unsecured. A high transaction priority is recommended for times when response time is slow to assist in identifying the cause of the problem.

To install a new release of ODIS on an existing system, merely stop The Watchdog (if active) and all terminals running ODIS in time-initiated mode (if any) and issue a: CEMT SET PROGRAM(ODIS ODISOPT) NEW.

Optional Entries

If the variable PF keys (PF7-PF12 and PF19-PF24) are to be used as TASKREQ transactions, additional RDO entries such as the following must be added:

```

CEDA DEFINE GROUP(ODIS) TRAN(PF7) PROF(ODISALT)
TASKREQ(PF7)
TASKDATALOC(BELOW)
TASKDATAKEY(CICS)
PRIORITY(200)
TRANSEC(14)

```

Prior to adding these entries, see the section "Transaction Initiation By PF Key" on page 19 especially the caution regarding certain pseudo-conversational transactions.

If the ODISTRAK feature is to be used a VSAM ESDS file must be defined and added to the FCT. For a full description, see the section “The ODISTRAK Feature” starting on page 89.

If The Watchdog or ODISTRAK are to be started automatically when CICS is started, by including ODIS in a PLTPI, then the following CICS table entries will be needed:

```
DFHSIT PLTPI=xx  
  
DFHPLT TYPE=ENTRY , PROGRAM=ODIS  
  
DFHPPT TYPE=ENTRY , PROGRAM=DFHPLTxx
```

If the ODISTRAK feature is to be stopped during CICS shutdown (a recommended practice since it minimizes the amount of unrecorded data) by use of a PLTSD, the following CICS table entries will also be needed:

```
DFHSIT PLTSD=yy  
  
DFHPLT TYPE=ENTRY , PROGRAM=ODIS  
  
DFHPPT TYPE=ENTRY , PROGRAM=DFHPLTyy
```

The entry in the PLTSD should be placed BEFORE the PROGRAM=DFHDELIM entry.

If the VTAM function of ODIS, which allows VTAM commands to be executed from a CICS terminal, is desired, the VTAM APPL definition for CICS must be updated to include the AUTH=SPO parameter. For example:

```
DBDCCICS APPL AUTH=( ACQ , PASS , SPO )
```

ODISOPT Macro

As distributed, ODIS should be suitable for most installations. If desired a number of the features may be customized by assembling and cataloging an ODISOPT program. A default module containing all default values has been included as part of the installation procedure.

The ODISOPT macro is supplied in both “.A” and “.E” book formats. If you are using the High-Level Assembler, you should delete the ODISOPT.E member from the ODIS library.

A customized module may be assembled by using a job stream such as the following:

```

// JOB ODISOPT
// LIBDEF PHASE,CATALOG=lib.sublib
// LIBDEF SOURCE,SEARCH=lib.sublib
// OPTION CATAL
// EXEC ASSEMBLY
        ODISOPT LOGPOW=YES,                X
                PF7TAB=(FILE,XYZFILE),    X
                PF24TAB=CLEAR,           X
                SECTRAN=ODIS
        END
/*
// EXEC LNKEDT
/&

```

The parameters available for ODISOPT are listed below. In each case the default value is underlined.

ALARM=YES | NO

This parameter specifies whether or not the terminal should “beep” whenever an ODIS warning is displayed.

APPCOL=NO | nn

This parameter specifies the column in line one to display the CICS applid. if “NO” is specified, the applid is not displayed.

CASE=MIXED | UPPER

This parameter specifies whether screens should be displayed in mixed case or upper case.

DEFAULT=(MENU,CICS) | (a,b)

When the table name supplied with the initial ODIS transaction ID is either omitted or invalid, the specified display is produced. Specify either a table name alone or a table name and an associated entry name. Other values which might prove useful are WHO, CONSOL or PART.

JECL='CLASS=A,DISP=D' | 'any parameters allowed by POWER'

This parameter specifies the LST card parameters to be passed to POWER by the SEG function. Do not specify * \$\$ LST or the LST= parameter. Up to 62 characters may be specified. This parameter must be enclosed in quotes.

```

LOGCONS=NO | YES | xxxx
LOGCP=NO | YES | xxxx
LOGPOW=NO | YES | xxxx
LOGSA=NO | YES | xxxx
LOGVTAM=NO | YES | xxxx
LOGWAT=YES | NO | xxxx

```

These parameters may be used to instruct ODIS to log operator commands, CP commands, POWER commands, storage alterations, VTAM commands and Watchdog messages. LOGxxx=YES will cause these messages to be written to the VSE

console; in the current implementation of CICS they will also be written to SYSLST. LOGxxx=xxxx will cause these messages to be logged to the Transient Data destination, xxxx. This may be any destination with variable length records and a maximum record length of at least 120 bytes. The standard destination CSSL may be used to log messages to SYSLST. For each message, except Watchdog messages, the time, terminal ID and operator ID will be included in the messages. Note that Watchdog messages are always written to the terminal specified by the WATTERM parameter; the LOGWAT parameter may be used to log messages to an additional device. Note also that operator commands are always written (by VSE) to the console, making the specification of LOGCONS=YES unnecessary; LOGCONS=xxxx may be used, however, if it is desired to keep a log in Transient Data of all such commands.

LTA=**NO** | (a,b,c,d,e,f,g,h)

This parameter specifies the locations of additional LTAs provided by non-IBM software. These will be displayed on the SYSCOM display. For installations without such a product LTA=NO should be specified. For installations with additional LTAs specify the displacement of each LTA from the start of the IBM LTA. Up to eight additional LTAs may be specified. For appropriate values see a Supervisor assembly listing or contact the vendor.

PA2=**PA2** | PAn | PFnn

The PA2 key is used for the “toggle” feature. If this key has been given some other special use, such as the print request function, another PA or PF key may be used in its place.

PF1=(PF1,PF13)	(PFm,PFn)	PFm
PF2=(PF2,PF14)	(PFm,PFn)	PFm
PF3=(PF3,PF15)	(PFm,PFn)	PFm
PF4=(PF4,PF16)	(PFm,PFn)	PFm
PF5=(PF5,PF17)	(PFm,PFn)	PFm
PF6=(PF6,PF18)	(PFm,PFn)	PFm

ODIS uses the fixed PF keys to facilitate changing displays. They are assigned in pairs for the convenience of those installations with a mixture of 12-key and 24-key keyboards. Thus, with the default specification PF1 and PF13 are exactly equivalent. Installations without PF keys, or with a limited selection of PF keys, or with many PF keys reserved for BMS paging functions may change the default values to any other PA or PF keys. Each key may have one (e.g. PF1=PF1), two (e.g. PF1=(PF1,PF13)), or no values (e.g. PF1=). It is the user's responsibility to insure that there is no duplication in the use of PA or PF keys. If the default values are modified the prompting line displayed at the bottom of the screen will not be changed. For an installation without PF keys which must reduce the six PF keys (and one PA key) to

three (or less) PA keys the keys will probably prove to be most useful in the following order:

PF1 (the next key)
 PA2 (the toggle key)
 PF6 (the hex+char key)
 PF2 (the first key)
 PF3 (the miscellaneous key)
 PF4 and PF5 (the installation-defined keys)

PF4TAB=**(CSA)** | (a,b)
 PF5TAB=**(TASK)** | (c,d)

The PF4 and PF5 keys are used, by default, to display the CSA and TASK list, respectively. Any other display may be selected by specifying a table name alone or a table name and an associated entry name.

PF7TAB=**(,)** | (a,b)
 PF8TAB=**(,)** | (a,b)
 PF9TAB=**(,)** | (a,b)
 PF10TAB=**(,)** | (a,b)
 PF11TAB=**(,)** | (a,b)
 PF12TAB=**(,)** | (a,b)
 PF19TAB=**(,)** | (a,b)
 PF20TAB=**(,)** | (a,b)
 PF21TAB=**(,)** | (a,b)
 PF22TAB=**(,)** | (a,b)
 PF23TAB=**(,)** | (a,b)
 PF24TAB=**(,)** | (a,b)

The default ODISOPT macro does not define values for any of the variable PF keys. the installation may define its values for these PF keys by specifying the desired table name alone or a table name and an associated entry name. As a convenience, one of the variable PF keys may be used to clear the screen and end ODIS operation on the terminal (just like the clear key) by specifying CLEAR as the table name.

PLTPI=**WATCH** | (xxxxxx,yyyyyy)

This parameter specifies which processing is to be started when ODIS is executed from a startup PLT. Valid values are TRAK (for ODISTRAK) and/or WATCH (for The WATCHDOG.)

SECHEX=**NO** | YES

NO specifies that all hexadecimal displays are to be unsecured and may be run under any transaction ID.

YES specifies that hexadecimal displays are secured and may only be run under the transaction ID specified in the SECTRAN parameter.

SECTRAN=**NO** | xxxx

Certain functions of ODIS may be secured. They are:

storage alteration
 storage display (if SECHEx=YES)
 CONSOL (commands)
 CP
 POWER
 SEG
 TRAK
 VTAM commands (except for (D NET) commands)
 WATCH

The default is for all functions to be unsecured. The above functions may be secured by specifying a CICS transaction ID (which must be in the PCT); in this case another transaction ID may perform any non-secured functions, but an attempt to perform a secured function will be rejected with error message ODIS007. It is possible to completely disable the above functions by specifying a transaction ID which does not exist in the PCT.

THxxxxxx=

The following THxxxxx parameters specify threshold values which are used by the PROB display and The Watchdog. A potential problem will be diagnosed only if the associated threshold is exceeded. For a description of each problem see the discussion of the PROB display on page 48.

parameter name	default value	unit of measure	problem number
THAAMAX	75	of max active task limit	9
THAMAX	75	% of max task limit	7
THAUXTS	90	% of capacity	24
THCASPL	1	number of CA splits	25
THCISPL	5	number of CI splits	26
THDELAY	60	seconds	60
THVSOS	3	number of times VTAM was SOS	28
THWBUFf	0	number of transactions	22
THWSTR	0	number of transactions	21

TIMMIN=0001 | nnnn

This parameter specified the minimum value that can be specified for the "Time-Initiated Mode". See page 97.

TRKINT=15 | nnn

This parameter is used by the ODISTRAK feature. It indicates the time interval (in minutes) between writing of records to the ODISTRK file. The value specified must be between 1 and 99.

TRKTRAN=ODIS | xxxxx

This parameter specifies the transaction ID to be used for the ODISTRAK feature if it is to be started automatically from a PLTPI.

WATINT=**0200** | mmsS

This parameter specifies the default time interval, in minutes and seconds, to be used by The Watchdog. This value is also used as the time interval if The Watchdog is started automatically by using a PLTPI.

WATSUPR=**NO** | LOW | MED | (a , b , c , . . .)

This parameter may be used to suppress some of the messages that are normally written by The Watchdog. Specify “LOW” to suppress all low severity messages. Specify “MED” to suppress all low and medium severity messages. To suppress individual messages specify a list of problem numbers; the problem numbers are described with the description of the PROB display. More complicated editing may be performed in the user exit specified by the WATXIT2 parameter.

WATTERM=**NO** | xxxx

This parameter specifies the terminal ID of the terminal which is to receive messages from The Watchdog. The default value of “NO” indicates that The Watchdog is to run as a nonterminal-oriented transaction; in this case LOGWAT=YES or LOGWAT=XXXX must be specified.

WATTRAN=**AUTO** | xxxx

This parameter specifies the transaction ID to be used by The Watchdog. If SECTRAN=xxxx is specified, WATTRAN must specify the same transaction ID. The default value of “AUTO” indicates that the same transaction ID which is used to issue the ODIS WATCH function is also to be used for The Watchdog. A non-default value for WATTRAN should be used if The Watchdog is started from a PLTPI.

WATXIT1=**NO** | xxxxxxxxx

This parameter specifies the name of a user exit program to receive control each time The Watchdog is invoked.

WATXIT2=**NO** | xxxxxxxxx

This parameter specifies the name of a user exit program to receive control prior to each message issued by The Watchdog.

DUMMY=DUMMY

This is optional, for those of you that like to end macros this way.

Terminal Support

All of the displays produced by ODIS are formatted for 80 byte wide terminals. ODIS will run on any of the 3270 family terminals (except 12-line model 1's), in SNA or non-SNA mode.

For many of its displays ODIS will take advantage of the larger screen sizes of the model 3 and 4 screens (assuming SCRNSZE= ALTERNATE was specified in the PCT). On the model 5 ODIS will always run with the default (24x80) screen size.

ODIS will also run on any non-3270 terminal. However, if the terminal has a width other than 80 columns the displays will be difficult to read because they are formatted for 80 column terminals. The data stream does not contain new line, carriage return or other control characters.

Release Dependencies

Since ODIS is deeply involved in the internal control blocks of CICS and VSE it is normal for new releases of these products to require a corresponding new release of ODIS.

USING BIM-ODIS

How to Use ODIS

ODIS is started by entering a transaction ID followed by a “table” name and, optionally, an “entry” name. These fields must be separated by a blank, comma or any other non-alphabetic, non-numeric character. For example:

```
ODIS FILE PAYMAST
```

The “table” name may be one of the following:

1. a table, such as CSA.
2. the equivalent of a table, such as FILE or TERM.
3. a 1-8 digit hexadecimal address or displacement, such as 4F6B99, 01000078, or +2E. Both 24-bit and 31-bit addresses are supported.
4. a symbol which is equivalent to a hexadecimal address, such as CWA or PC. A full list of these symbols is found in the section “Symbolic Unformatted Displays” on page 20.
5. a function to be performed, such as SCAN or WATCH.
6. a static or dynamic partition ID such as BG, F1, F2, G1, etc.

The “entry” name is the name of the desired entry in the table. This would be a file name for the FILE table, a terminal ID for the TERM table, etc. If the “entry” name is omitted the first entry in the table will be displayed. For some tables, such as CSA, there is no entry name.

After the above information has been entered a display will be returned. The format of the displays and a sample of each screen are given in the section “Formatted Screen Descriptions” starting on page 22.

For non-3270 terminals ODIS will produce the specified display and end immediately. For 3270 terminals ODIS will run in a conversational manner. In this case, the table and/or entry names at the top of the screen may be modified and the enter key hit to produce a different display.

Fixed PF Keys

For terminals with PF keys, PF keys are available as follows (unless changed by the ODISOPT macro):

- PF1 displays the next entry in the table
- PF2 displays the first entry in the table
- PF3 is used for special purposes and differs for each table.

Note: For tables managed by the Table Management Program (TMP), the “next” entry, which is displayed by the PF1 key will not necessarily be the next one in the assembly listing of the associated table. This affects the PROG, TRAN, and TERM displays.

For all displays, the following keys are always available:

PF4	displays the CSA
PF5	displays the TASK list
PF6	displays the same area of storage in hexadecimal and character beginning at the address shown in the upper left hand corner of the screen
PA2	returns to the display just before the current display, thus giving a “toggle” function.

For terminals without PF keys, these may be simulated as follows:

PF1:	setting the first character of the entry name to “+”
PF2:	setting the entry name to spaces or nulls
PF3-PF6:	setting the table and/or entry names as specified
PA2:	setting the first character of either the table name or entry name to a period.

In the ODISOPT phase the above PA and PF keys may be changed to different PA or PF keys; the tables displayed by the PF4 and PF5 keys may also be changed. PF13-PF18 may also be used for the same purposes as PF1-PF6.

ODIS is terminated by hitting the clear key. If a variable PF key (see below) has been set to “CLEAR” that PF key may also be used.

Variable PF Keys

The above PF keys (PF1-PF6 and PF13-PF18) are “fixed” in two respects:

1. Their meanings are predefined and cannot be changed, or can only be changed by reassembling the ODISOPT macro.
2. Their meanings are the same for all terminals.

Variable PF keys (PF7-PF12 and PF19-PF24), on the other hand, have the following characteristics:

1. Their values may be predefined in the ODISOPT macro or dynamically defined during CICS operation as follows:
 - a. a particular table is displayed
 - b. the character string “PF7”, “PF21”, etc. is entered as the table name

This value will be retained as long as CICS is active.

2. Once defined, a PF key's value may be redefined by repeating step 1 above.
3. ODIS maintains a separate set of variable PF keys for each terminal.

It is possible to display the values assigned to a particular terminal's variable PF keys by entered PF as the table name. It is possible to clear all of a particular terminal's PF keys by entering "PF CLEAR" and to reset all of a particular terminal's PF keys to the default values specified in the ODISOPT macro by entering "PF RESET".

This usage of PF keys allows the terminal user to have multiple fingers to remember multiple displays and to easily switch from any one of these displays to any other.

Transaction Initiation By PF Key

After the variable PF keys have been defined for a particular terminal, ODIS may be initiated by hitting one of the variable PF keys. The table and entry which will be displayed are the ones defined for the selected variable PF key at that terminal. There are two ways to accomplish this:

1. Enter the ODIS transaction ID without a table or entry name, and instead of hitting the enter key hit the desired variable PF key.
2. If the desired variable PF key has been defined to CICS as a transaction:

```
CEDA DEFINE GROUP(ODIS) TRAN(PF7)  PROG(ODIS) PROF(ODISALT)
                                     TASKREQ(PF7)
                                     TASKDATALOC(BELOW)
                                     TASKDATAKEY(CICS)
                                     PRIORITY(200)
                                     TRANSEC(14)
```

merely hit the desired PF key. Caution: Some installations may not be able to use this method. If an installation uses pseudo-conversational transactions which place a transaction ID in the upper left hand corner of the screen, return to CICS and wait for a PF key to be hit, that PF key cannot be used as a TASKREQ transaction in the PCT by ODIS (or by any other transaction). Note that this restriction is not caused by ODIS; it is a consequence of this particular programming technique. This restriction does not apply to pseudo-conversational transactions which use the "return with next trans ID" method.

Symbolic Unformatted Displays

In addition to those tables and control blocks which ODIS displays as formatted screens, many others can be displayed in hexadecimal and character (“core dump” format). To do this enter the symbolic name of the tables as the table name. ODIS will locate the table and display it. The following areas may be displayed in this manner:

ATCVT	VTAM	Communication Vector Table
AVT	VTAM	Address Vector Table
CVT	VTAM	Communication Vector Table (same as ATCVT)
DLIAL	DLI	Address List
DIB	VSE	Disk Information Block
GETVIS	VSE	System GETVIS area in SVA
ICCF	ICCF	Vector Table
JA	VSE	Job Accounting Common Table
JCT	CICS	Journal Control Table
LTA	VSE	Logical Transient Area
OPFL	CICS	CSA Optional Features List
PCBA	VSE	Partition Control Block Address Table
PMCOM	VSE	Page Management Communication Area
PSS	VSE	Partition Selection String
PTA	VSE	Physical Transient Area
PUBOWN	VSE	PUB Ownership Table
RAS	VSE	Recoverability, Availability, Serviceability Area
SCBA	VSE	Space Control Block Address Table
SDAID	VSE	SDAIDs Global Table
SIT	CICS	System Initialization Table
SMCOM	VSE	Storage Management Communication Area
SRT	CICS	System Recovery Table
SSA	CICS	Static Storage Area Address List
TCTFX	CICS	Terminal Control Table Prefix
TIBA	VSE	TIB Address Table
TSBM	CICS	Temporary Storage Bit Map
TSUT	CICS	Temporary Storage Unit Table (first such table)

Some of the formatted screens (documented in the section “Formatted Screen Descriptions” starting on page 22) may also be accessed by an alternate name as follows:

<u>alternate</u>	<u>standard</u>
BFRUSE	VBUF
COMRG	COMREG
DCT	DEST
DL1	DLI
FCT	FILE
HELP	MENU
MAP	SMCB
PCT	TRAN

PPT	PROG
SDL	SVA
TCT	TERM
VM	CP

Formatted Screen Descriptions

All displays produced by ODIS have the following format:

1. The top line indicates the name of the table and entry being displayed along with the address in storage where it is located. If no address is appropriate the address field will contain zeroes.
2. The body of the screen shows the detailed information contained in the specified table and entry. There are two basic formats:
 - a. A columnar format with headings over each column. There will be multiple entries on the screen with each entry occupying one line.
 - b. A field-by-field display where each field displayed has three components:
 - i) its displacement into the table
 - ii) an English description
 - iii) the value of the field

In addition, the bottom of the screen may contain a list of attributes. These are short English descriptions of the settings of individual bits, for example whether a file is open or closed.

3. The bottom line is usually a prompting line which tells which PF keys are available and what functions they perform. If PF1, PF2 and PF3 are appropriate to the particular table they will be listed. PF4, PF5 and PF6 are always available but are listed only if there is room for them on the prompting line. If the PF keys have been changed in the ODISOPT phase the prompting line will reflect the default values, not the installation-defined values.

On the following pages a sample of each screen produced by ODIS is given, in alphabetical order, along with a description of the table and its more useful and prominent fields. It must be recognized that this is an unofficial document. For an official description of these tables and fields the reader is directed to the appropriate IBM documentation.

Some of the tables produced by ODIS have been supplemented with information that does not exist in the table being displayed. These may generally be identified by the fact that they have no displacement associated with them. They have been included because they are particularly valuable and would otherwise not be displayed by any ODIS screen. Examples are the CSA display fields 'CURR ACTIVE TASKS' and 'CWA SIZE', and the fields labeled GETVIS ALLOC and GETVIS IN USE in the COMREG display.

AID - CICS Automatic Initiate Descriptor

An AID describes a transaction which is to be started automatically. This is typically accomplished by the trigger level facility of Transient Data or by an Interval Control INITIATE or PUT (or Command Level START). In fact, an ICE (also displayed by ODIS) becomes an AID when it expires. Generally speaking an AID exists only for a short period of time and disappears. If this display shows any AIDs it probably indicates that there is some problem which is preventing the associated work from being performed, for example:

- The terminal or line is out of service
- The transaction is disabled
- The system is SOS or at maximum tasks
- Another transaction is active at the terminal
- The terminal is not in transceive or receive status

The number of AIDs in the system should rarely be so large that they will not fit on a single screen; however, if this happens, an entry name may be specified to indicate the number of AIDs to be skipped before the display begins.

```
Addr 018A54DC ( 2 )   Online DISplay of AID                               16:49:04
                                                                V1.8B
```

Addr	Term	Tran	Data ID	Origin	System	Owner of			
						Term	Tran	Oper	check
018DF030	Q153	CSPG	**...M.	BMS SCHED	VSE3TS11				
018DF0C8	Q152	CSPG	**...M.	BMS SCHED	VSE3TS11				
018DF160	Q254	CSPG	**...M.	BMS SCHED	VSE3TS11				
018DF1F8	Q255	CSPG	**...M.	BMS SCHED	VSE3TS11				

PF3: ICE PF4: CSA PF5: Task list PF6: Hex+Char PA2: Toggle

CHANQ - VSE Channel Queue

The Channel Queue is used to hold requests for I/O while the request is either being executed or waiting to be processed. Since nearly all I/O requests are completed in a matter of milli-seconds, this display is usually useful only when examining such events as long lasting reads (e.g. terminal I/O) or potential lost interrupts. A lost interrupt can generally be recognized by watching the display for a few seconds; if no change is observed for an I/O to a disk or tape device the interrupt has probably been lost.

The entry name and the columns labeled POS and CHAIN are decimal numbers indicating the relative entry in the channel queue.

The column labeled "2 3 C" shows the transmission information found in bytes 2, 3, and 12 of the CCB or IORB.

Addr 085480 (2) Online DISplay of CHANQ 000													15:08:17		
													V1.8B		
Addr	Pos	Chain	CCB	PIK	SYS	TID	2	3	C	Err	PUB	Cuu	Device		
085480	0	1	Unused												
0854A0	1	3	Unused												
0854C0	2	9	Unused												
0854E0	3	14	Unused												
085500	4		5DC1B8	A0		F3	140040		0	20	201	TP			
085520	5	8	Unused												
085540	6	13	Unused												
085560	7		5DC458	A0		F3	140040		0	21	202	TP			
085580	8	10	Unused												
0855A0	9	5	Unused												
0855C0	10	1	Unused												
0855E0	11	2	Unused												
085600	12		5DE1B8	A0		F3	140040		0	3A	700	TP			
085620	13	11	Unused												
085640	14	15	Unused												
085660	15	16	Unused												
085680	16	17	Unused												
0856A0	17	18	Unused												
0856C0	18	19	Unused												
PF1: Next		CHANQ		PF2: First		CHANQ		PF3: SYSCOM		PF4: CSA		PF5: Task list			

COMREG - VSE Partition Communication Region

The Communication Region is the main control block for each partition. (Others are the PCB, PIB, and PIB2.)

The status of each partition is shown in the field(s) labeled RUN CODES. Each task has a two digit hexadecimal number that describes the state of the task. Some of the more common values are:

- 81 Waiting for the Logical Transient Area
- 82 Waiting for an ECB or XECB (typically an I/O event)
- 83 Ready to run

The TID display also shows the name of each task and an English description of its run code.

The fields labeled GETVIS ALLOC and GETVIS IN USE tell how much of the partition GETVIS area is being used. This is especially useful for determining the GETVIS requirements for CICS and VTAM. When the values of EXEC SIZE and GETVIS ALLOC are added together the sum will be about 2K less than the partition size. This is not an error; it is caused by the fact that the first part of the GETVIS area is used for various control information and is not available for general use.

The field labeled MAX FREE AREA indicates the size of the largest contiguous area of free GETVIS storage. Since requests for storage must be allocated contiguously, a low value here may reveal insufficient GETVIS storage even when there is a significant amount of unused storage.

```

Addr 004060 (2) Online DISplay of COMREG F3 15:09:07
V1.8B
00 Job date 08/02/99 40 PUB 32B0 ----- JCL options -----
4F Sys date 080299214 48 FICL 15F8 ACANCL No LIST Yes
0C User ..... 4A NICL 1605 ALIGN Yes LISTX No
000000000000 4C LUB 1B78 CATAL No LOG Yes
000000000000 5A PIB 1528 CHARST 48C RLD No
17 UPSI 00000000 60 DIB 4FD8 DECK No SUBLIB AE
18 Job name VTAMSTRT 7C PIB2 1458 DUMP PART SKREF Yes
D8 Phase name ISTINCVT 74 JA table 0051DD00 EDECK No SYM No
20 PrbProgEnd 00739FFF A8 LUB extsn 00517AC8 ERRS Yes SYSDDMP Yes
2E PIK 00A0 C8 GETVIS ctl 00CF6000 FASTTR NO TERM No
6C Space ID 3 PCB Addr 00049F60 JCANCL No XREF No
8F Proc name ----- POWER ----- LINK No LINECT 56
A0 POWER PCB 00595D60 Pages spooled 1 EXEC size= 232K
B8 Phase list 0051DF20 Lines spooled 15 GETVIS alloc 5912K
SYSPARM Cards spooled 0 In use 3688K
Ptn start 00700000 Max used 3704K
Run codes: 82 82 82 82 82 Free space 2224K
Task IDs: 4E 4F 52 53 24 Max ctg free 2224K
Features supported: CHANSW TRKHOLD RPS
Attributes:

PF1: Next partition PF2: BG COMREG PF3: SYSCOM PF4: CSA PF5: Task list

```

CONSOL - VSE Console Display

This display shows the same information that the VSE operator sees on the system console. This information is only available if the console is a DOC or 3270 terminal. The information is obtained from data in main storage and, thus, requires no disk I/O.

Any operator command or reply may be entered in the input area at the bottom of the screen except for the DOC commands, D and K. The command area will be available on the screen only if the transaction is authorized according to the SECTRAN parameter in the ODISOPT macro.

The PF3 key may be used to recall the most recent console command. It is not necessary for this command to have been issued by ODIS. The recalled command may then be altered, if desired, and reexecuted.

```

Addr 066E4A6C ( 2 )   Online DISplay of CONSOL                               15:10:06
                                                                V1.8B
AR 0015                                     HARDWARE COMPRESSION ENABLED      15:10:05
AR 0015 SEC. MGR. = ALRT001                 SECURITY = ACTIVE                    15:10:05
AR 0015 VIRTCPU = 0004:49:38.702           CP = 0002:28:21.703                 15:10:05
AR 0015 CPU-ADDR. = 0000(IPL) ACTIVE        15:10:05
AR 0015 ACTIVE = 0003:25:21.095           WAIT = 0066:22:41.397               15:10:05
AR 0015 PARALLEL= 0001:04:55.543         SPIN = 0000:00:00.000               15:10:05
AR 0015 CPU timings MEASUREMENT INTERVAL 0072:29:17.521                   15:10:05
AR 0015 TASKS ATT.= 00027                 HIGH-MARK = 00029     MAX = 00180   15:10:05
AR 0015 DYN.PARTS = 00005                 HIGH-MARK = 00005     MAX = 00032   15:10:05
AR 0015                                     15:10:05
AR 0015 COPY-BLKS = 00003                 HIGH-MARK = 00028     MAX = 01500   15:10:05
AR 0015 CHANQ USED= 00003                 HIGH-MARK = 00015     MAX = 00255   15:10:05
AR 0015 PGIN TOT.= 0000000000            EXP.AVRGE.= 0000000000/SEC          15:10:05
AR 0015 PGOUT TOT.= 0000000018           15:10:05
AR 0015 UNC.= 0000000018                 EXP.AVRGE.= 0000000000/SEC          15:10:05
AR 0015 PRE = 0000000000                 EXP.AVRGE.= 0000000000/SEC          15:10:05
AR 0015 LOCKS EXT. = 0000005819          LOCKS INT.= 0000059142              15:10:05
AR 0015 FAIL = 0000000204                 FAIL = 0000000164                 15:10:05
AR 0015 LOCK I/O = 0000001529            LOCK WRITE= 0000000701              15:10:05
AR 0015 I140I READY                       15:10:05
Command:
PF3: Last command   PF4: CSA   PF5: Task list   PF6: Hex+char   PA2: Toggle
    
```

CP - Issue VM CP Commands

This is not a display of any table. It provides the ability to issue VM commands to CP from any CICS terminal. Because of the inherent danger of this command its use may be restricted by specifying a SECTRAN in the ODISOPT macro.

This facility provides the ability to enter one or more CP commands at a time. If multiple commands are entered they must be separated by a pound (#) sign. Note that this is not affected by the setting of the LINEEND character for the virtual machine. After executing the command(s) ODIS will display the response(s) from CP, up to the limits imposed by the screen size.

If this is the initial function to be performed by this execution of ODIS (i.e., the terminal operator enters ODIS CP xxxxxxxx) the command(s) may be entered immediately after specifying CP as the "table" name. If other tables have been displayed previously, use of this feature will be accomplished as a two step procedure. After the terminal operator enters CP as the table name ODIS will return a screen with room to enter to CP command(s). The terminal operator will then fill in the command(s), and ODIS will then pass them to CP and display the results. The command(s) may be up to 132 characters and may be entered in one or two lines on the ODIS screen.

The LOGCP parameter of the ODISOPT macro may be used to instruct ODIS to log all CP commands to the VSE console or to a Transient Data destination.

This facility uses the Diagnose interface of VM to pass the commands to CP. ODIS performs no editing on the commands.

```
Addr 000000 (2) Online Display of CP 15:11:00
Enter CP command(s): IND LOAD V1.8B

AVGPROC-050% 01
MDC READS-000034/SEC WRITES-000001/SEC HIT RATIO-099%
STORAGE-073% PAGING-0001/SEC STEAL-000%
Q0-00001(00000) DORMANT-00011
Q1-00001(00000) E1-00000(00000)

PF4: CSA PF5: Task list PF6: Hex+char PA2: Toggle
```

CSA - CICS Common System Area

The Common System Area has been replaced by data acquired from other internal CICS Domains, starting with CICS/TS we report on this display the current data kept by those Domains.

ODIS will allow the user to display the CSA, however, it must be noted that the data contained in the CSA is no longer kept current.

```

Addr 784D88 (2) Online Display of CSA 15:11:40
V1.8B
GMM Text: B I M CICS/ESA/TS 1.1 - VSE3TS11 Command protect CMDPROT
GMM Text length 34 Runaway task 20.000 Sysdump status SYSDUMP
GMM Tran ID IEGM Scan delay .100 Init status INITCOMPLETE
Job name VSE3TS11 Prty aging .001 Pgm autoinst pgm DFHPGADX
CICS user name CICSUSER Exit time 1.000 Pgm autoinst AUTOINACTIVE
DTR program DFHDYP Operating system VSE/ESA Pgm aut cat CTLMODIFY
Startup date 1999/214 OS release 64 Reent-prot. REENTPROT
Startup time 15:11:41 CICS release 0410 Security EXTSECURITY
Duration 05:27:57 CICS built for F Shutdown status NOTAPPLIC
Relative day 0 DSA(24) limit 5,120K SOS status NOTSOS
Curr task # 470 CDSA(24) size 1,024K Storage protect ACTIVE
Current tasks 17 RDSA(24) size 512K Tran isolate UNSUPPORTED
Peak # of tasks 22 SDSA(24) size 256K XRF Status NOTAPPLIC
Max task 40 UDSA(24) size 256K ----- VTAM -----
Times at MXT 0 DSA(31) limit 15,360K Appl ID VSE3TS11
Curr act user tasks 6 CDSA(31) size 3,072K Max RPLs posted 1
Curr queued usr tsks 0 RDSA(31) size 6,144K Times at max 94
Peak act user tasks 8 SDSA(31) size 1,024K Dynam ACB opens 1
Peak queued usr tsks 0 UDSA(31) size 1,024K Times VTAM SOS 0
MRO batch events req 1 CICS status ACTIVE
Activ KP freq 200 Startup status EMERGENCY
PF3: SYSCOM PF4: CSA PF5: Task list PF6: Hex+char PA2: Toggle
    
```

DEMO - Demonstrate ODIS Displays

The DEMO function may be used to produce a sample of each non-secured display produced by ODIS. It is started by entering "DEMO" as the table name. Subsequently, as each display is produced, hitting PF12 will cause ODIS to advance to the next screen in alphabetical sequence.

```
Addr 000000 (3) Online DISplay of DEMO BIMCICST 15:12:18
V1.8B

This is the beginning of the ODIS demonstration. Most of ODIS's tables will be
presented one at a time in alphabetical order. This will show the status of
your system at the moment you see the information. After each table is
displayed hit PF12 to view the next table in sequence.

To begin hit the PF12 key.

PF4: CSA PF5: Task list PF6: Hex+char PA2: Toggle
```

DEST - CICS Destination Control Table

The Destination Control Table is used to control Transient Data destinations. Each Transient Data destination represents a sequential file on disk, tape, card, or printer.

The field labeled "I TCA" is the address of the input TCA.
 The field labeled "O TCA" is the address of the output TCA.

```

Addr 0140E154 ( 2 )   Online DISplay of DEST   CSNE                               15:13:56
                                                                V1.8B
----- Intrapartition ----- Extra -----
Name Type RSL Sta Writes Queue Trig Tran Term I TCA  O TCA  Open Res DTF
CSNE Indir  Ena    83 Dest=CSSL
CSML Indir  Ena    5 Dest=CSSL
CSMT Indir  Ena   15 Dest=CSSL
CSTL Indir  Ena    0 Dest=CSSL
CDBC Indir  Ena    0 Dest=CSSL
CDUL Indir  Ena    7 Dest=CSSL
CRDI Indir  Ena    0 Dest=CSSL
CSRL Indir  Ena    0 Dest=CSSL
CMIG Indir  Ena    0 Dest=CSSL
CSKL Indir  Ena    0 Dest=CSSL
CSPL Indir  Ena    4 Dest=CSSL
CCPI Indir  Ena    0 Dest=CSSL
CAIL Indir  Ena    0 Dest=CSSL
TRAA Intra  Ena    0      0      1 TRAA      00000000 00000000
L860 Intra  Ena    0      0     30 AORQ L860 00000000 00000000
L86P Intra  Ena    0      0      1 TDWT L86P 00000000 00000000

PF1: Next dest   PF2: First dest           PF4: CSA   PF5: Task list   PF6: Hex+char
    
```

DLI - DL/I Online Control Blocks

This display includes two major DL/I control blocks, the System Contents Directory (SCD) and Buffer Pool Control Block Prefix (BFPL). The SCD contains various statistics and addresses used to control the operation of DL/I under CICS. The BFPL contains various statistics and addresses used to control the DL/I buffer pools. The address in the upper left hand corner of the screen is the address of the DL/I Address List (DLIAL).

```
Addr C63AF0 (3) Online DISplay of DLI BIMCICST 10:23:58
                                                    V1.8B
-----Sys Cont Dir-----      ---Buff Pool Prefix---
   Addr          C63940          Addr          C3C570
 60 DL/I Version  1.70          10 Req received 93642
 66 Max tasks     10           14 Req satisfied 60891
 68 Curr max tasks 10          18 Read req    6500
 D8 Buffer subpools 11          1C Buf alt req  4869
 DC PSB directry C63BA0        20 Writes      457
 E2 PSB entries   14           24 Blks written 457
 EA DMB entries   14           28 New blks creatd 0
 F2 PPST entries  10           2C Chain writes 0
106 Tasks wait cmax 0          30 Blks on wt chn 0
108 Act addr     C6379A        34 Retrieiv by key13572
118 Tasks assgn PPST 0          38 GN calls    4979
11A Tasks wait maxt 0          3C Perm wrt err buf 0
178 DL/I tasks   2831          3D Max wrt err buf 0
17C Deadlocks    0
180 Times at cmax 0
184 Duplicate PSB'S 19

PF3: SCD hex+char  PF4: CSA  PF5: Task list  PF6: Hex+char  PA2: Toggle
```

DSA - CICS Dynamic Storage Area

The Dynamic Storage Area is a display of how the CICS Storage Domain has allocated storage. It is displayed in graph form showing percent in use, peak used, and cushion size. CICS has become much more dynamic in its allocation of storage. Storage is allocated into Sub-pools. Each Sub-pool also has an above the 16mb line counterpart, for those transactions and facilities which can make use of above the line storage. All the storage Sub-pools have limits placed on them. The total limit is reflected in the "Limit" line for both below and above the 16mb line. If the "Total" line is equal to the "Limit" line then all the storage available has been allocated and the cushion values are now valid for Short on Storage conditions. Storage cushion overlap is indicated by a "#" character and should be ignored unless the "Total" line is equal to the "Limit" line. If the "Limit" has been reached then the "#" reflects how far into the storage cushion CICS went in a Short On Storage state.

```

Addr 000000 (2) Online DIStplay of DSA 15:14:43
                                           V1.8B
Key to subpool map:*=Current use _=Peak used #=Potential SOS .=Cushion
Alloc(24) Sub-Pool %--10---20---30---40---50---60---70---80---90---100
 1,024K CDSA *****
 256K UDSA *****
 256K SDSA *****
 512K RDSA *****###
 2,048K Total *****
 5,120K Limit *****
Alloc(31) Sub-Pool %--10---20---30---40---50---60---70---80---90---100
 3,072K ECDSA *****
 1,024K EUDSA *****
 1,024K ESDSA *****
 6,144K ERDSA *****
11,264K Total *****
15,360K Limit *****

Total Getmain requests 24,452 Storage Protect ACTIVE
Total Freemain requests 16,707 Reenterant Program Protect ACTIVE
Total Cushion releases 0 Transaction Isolation NOTACTIVE
Total Times SOS 0

PF3: SYSCOM PF4: CSA PF5: Task list PF6: Hex+char PA2: Toggle
    
```

ENQ - CICS Enqueued Resources

Information about enqueued resources is maintained as a chain of Queue Element Areas (QEAs) and does not form a proper table as such. An enqueue is performed by an application program when it is necessary to insure that only one task is accessing a particular resource. If tasks are waiting for a resource for an extended period of time it probably, but not necessarily, represents a problem to be investigated.

The resource name displayed is restricted to 18 characters; if the name is longer it is truncated on the right and followed by a plus (+) sign to indicate that fact. Similarly, if more than 10 tasks are waiting for a resource, only the first 10 are displayed, and a plus (+) sign appears at the end.

The USE field indicates how many times the owning task has enqueued on the resources and is almost always set to one.

The OWNER and TASKS WAITING indicate the terminal ID for terminal-oriented tasks and the transaction ID for non terminal-oriented tasks.

The number of enqueues in the system should rarely be so large that they will not fit on a single screen; however, if this happens, an entry name may be specified to indicate the number of enqueues to be skipped before the display begins.

```
Addr AD1730 (2) Online DISplay of ENQ BIMCICST 10:31:05
V1.8B
Name of resource Owner Use ----- Tasks waiting -----
BIMSWAPX SWAX 1 No tasks waiting
BIMECHOX ECHX 1 No tasks waiting
BETA M206 1 M205 M214 M203 M210 M212
GAMMA M020 2 No tasks waiting
ALPHA M213 1 M206

PF4: CSA PF5: Task list PF6: Hex+char PA2: Toggle
```

FILE - CICS File Control Table

The FCT contains one entry for each file that is accessed through CICS. Files which are accessed by non-standard methods without using the CICS Macro or Command Level interfaces will probably not be found in the FCT.

The READ REQUESTS field includes only random reads. The BROWSE REQUESTS field includes the READNEXT and READPREV commands; it does not include the STARTBR, ENDBR and RESETBR commands.

The center column is only displayed if the file is a non-DL/I VSAM file. Most of the fields in the right hand column are only displayed for open VSAM files. This information is taken from VSAM (not CICS) control blocks which are built by VSAM at the time the file is opened under CICS. Since these control blocks do not exist for a closed file, this area of the screen will be blank if the file is closed. The fields from % FREE SPACE through TOTAL RECS are determined at the time the file is opened and will not change until the file is closed. The fields from DELET RECS through CA SPLITS reflect just the activity by CICS since the file was opened. These fields can be particularly valuable for tuning VSAM files. For VSAM files that use Shared Resources additional information from the Shared Resources Control Block is available in the SR display.

The fields relating to VSAM strings and buffers should be of particular interest. Generally, speaking, these should be maintained so that tasks rarely, if ever, wait for strings or buffers. For more information, see the section "Using ODIS to Tune VSAM Files" starting on page 115.

The attribute ACB OPEN (or ACB CLOSED) is taken directly from the VSAM ACB and is correct. The attribute OPEN (or CLOSED) is taken from CICS's FCT and should match the VSAM ACB. If not, it probably indicates a problem in CICS or VSAM.

If any tasks are waiting for exclusive control (of a VSAM control interval), VSAM strings, or VSAM buffers, the attributes portion of the display will indicate this fact and, if running on a 3270, sound the alarm.

Addr A78248 (3) Online DISplay of FILE IESCNTRL		BIMCICST 10:48:37	
VSE.CONTROL.FILE			
----- VSAM -----			
			Data Index
10	Record length 1,000	5C EXCPAD wait ECB 40	% free space CI 0 0
16	Rel key positn 0	63 CI split wt ECB 44	% free space CA 0 0
12	Key length 12	4C Buffer wait ECB 00	CI size 4096 512
20	Active DWES 0	50 Curr wait buff 0	Index levels - 2
14	Max str wait ECB 40	52 High wait buff 0	Extents 2 1
15	Psudo max str wt 40	54 Totl wait buff 0	Share option 2 2
18	User journal ID 0	68 Active strings 0	Buffers 35 4
24	Read requests 0	6C Max strings 2	Total recs 204 3
28	Add requests 0	6E Upt/add max str 2	Delet recs 0 0
2C	Updt requests 0	6A Curr wait str 0	Insrt recs 0 0
38	Get updt reqs 0	78 High wait str 0	Updat recs 0 0
3C	Browse reqsts 0	70 Totl wait str 0	Retrv recs 0 0
74	Deletes 0	90 ACB begin A782D8	EXCPS 0 0
	Total I/O 0		CI splits 0 0
			CA splits 0 0
Valid accesses: Read Update Add Browse Delete			
----- Attributes -----			
VSAM KSDS	Enabled	Open by CEMT	Open
ACB open	Var length recs	Unblocked recs	
PF1: Next file	PF2: First file	PF3: File summary	PF4: CSA PF5: Task list

FILE * - CICS File Control Table (Abbreviated)

This is an abbreviated display showing less information about each FCT entry but showing more entries than the full FILE display. This display is selected by specifying a table name of FILE followed by an entry name consisting of one asterisk plus the name of the first file to be displayed.

The STAT column contains spaces if the file is opened normally and enabled. The other values displayed are as follows:

- C Closed
- D Disabled
- E Opened successfully with a non-fatal error
- c Being closed
- o Being opened

The TASK WAIT column indicates the number of tasks waiting for either VSAM strings or buffers. A non-zero (i.e. non-spaces) value in this column indicates that additional strings and/or buffers should probably be allocated to the associated file. For more information see the section "Using ODIS to Tune VSAM Files" starting on page 115

The EXCP'S and CI SPL columns contain the total number of EXCPs and CI splits for the data and index components.

Addr A79D68 (3) Online DISplay of FILE *DEBUGPRF BIMCICST 10:51:21											
V1.8B											
Name	Stat	Reads	Adds	Updates	Browses	Deletes	Total I/O	Act str	Task wait	EXCPs	CI spl
DEBUGPRF	C	0	0	0	0	0	0	0	0	0	0
DEBUGEMP	C	0	0	0	0	0	0	0	0	0	0
DFHCSD	CU	107	0	0	914	0	1,021	0	0	225	0
APSPTRH	C	0	0	0	0	0	0	0	0	0	0
APSPTRD	C	2	1	0	0	1	4	0	0	6	0
BIMJMS		0	0	0	0	0	0	0	0	4	0
DOSISAM	CU	0	0	0	0	0	0	0	0	0	0
CUST		126	12	52	0	0	190	0	0	231	12
CDIR		67	170	22	1,183	41	1,483	0	0	970	14
LABL		183	0	15	0	0	198	0	0	175	0
REFR		170	5	18	150	0	343	0	0	216	3
PROD		184	38	48	40	0	310	0	0	244	8
BILL		10	352	1	113	9	485	0	0	1,194	78
RCAL		10	303	0	0	9	322	0	0	594	46
ACCT		0	0	0	0	0	0	0	0	0	0
TRAN		169	172	96	238	3	678	0	0	844	33
LEGR		0	71	0	227	0	298	0	0	347	18

Stat: C=closed D=disabled E=open with error U=unenabled Lower=transitional
 PF1: Next files PF2: First files PF3: File summary PF4: CSA PF5: Tasks

FILE ** - CICS File Control Table Summary

This display is designed to quickly highlight those files which are not both open and enabled. The values in the STAT column are the same as those used in the FILE * display.

In many installations files are routinely opened and closed while CICS is running. Thus, the fact that a file is closed or disabled does not necessarily indicate a problem.

Addr A78048 (3) Online DISplay of FILE **REMTFIL								BIMCICST 10:54:05	
								V1.8B	
File	Stat	File	Stat	File	Stat	File	Stat		
REMTFIL	C	MOSSTAB		DEBUGPRF	C	BIMVSFL	C		
IESPRB		MOSSIXS		DEBUGEMP	C	VSMCCT	CU		
IESRFL		BLDAIX1	C	DFHCSD	CU	VSMUSER	CU		
IESCNTL		ODISTRK	C	APSPTRH	C	VSMAIX1	CU		
IESROUT		DOSUFLE		APSPTRD		VSMESDS	CU		
INWFILE		BIMPANL	C	BIMJMS		VSMRRDS	CU		
BIMMCAT		PROBFIL		DOSISAM	CU				
BIMUCAT	C	PROBIXP		BIMKSDS	CU				
BIMV2CT	C	PROBIXC		BIMKSRU	CU				
SERVCAT	C	BIMFTRF		BIMESDS	CU				
ONLMSG		BIMFTRL		BIMRRDS	CU				
BIMSUBF	C	BIM\$VB	C	BIMKSFL	CU				
FMAPFLE	C	BIM\$VB0	C	DKSDSIN	CU				
MOSSFIL		BIM\$VB1	C	AKSDSIN	CU				
MOSSIXL		BIM\$VB2	C	BIMARCR	C				
MOSSIXC		BIM\$FB	C	BIMARCD	C				
MOSSIXP		SLSF001	C	BIMARC2	C				

Stat: C=closed D=disabled E=open with error U=unenabled Lower=transitional
 PF1: Next files PF2: First files PF4: CSA PF5: Task list PF6: Hex+char

ICE - CICS Interval Control Element

An ICE describes a transaction which is to be started at some time in the future. (When the time expires the ICE becomes an AID; see the description of AID on page 23.)

The DATA ID will also be found in Temporary Storage (on the TS display) if the task is to be started with data (via a Macro Level DFHIC TYPE=PUT or Command Level START with data). If auxiliary Temporary Storage is not supported this data will be placed in main storage where it can be viewed in hexadecimal and character format.

The number of ICEs in the system should rarely be so large that they will not fit on a single screen; however, if this happens, an entry name may be specified to indicate the number of ICEs to be skipped before the display begins.

```
Addr AD1510 (3) Online DISplay of ICE BIMCICST 10:57:50
                                                V1.8B
```

Addr	Term	Tran	Data ID	Expires	Time left	Owner of Type	Term	Tran	Status
00AD1510	PRTA	DTA*AUTO	10:58:29	:39	INIT			On chain
00AD1560	AFXT	DF000012	10:59:04	1:14	INIT			On chain
00AD1690	CRSQ	DF000008	18:46:31	7:48:41	INIT			On chain

PF3: AID PF4: CSA PF5: Task list PF6: Hex+char PA2: Toggle

LOCK - VSE Lock Table

The Lock Table contains information used to control access to certain resources. Its function is similar to the ENQ facilities of CICS. The main user of locks is VSAM; VSAM resources are those which begin with "V". Generally, resources are locked and unlocked in such a manner that they are not a concern for an installation. However, when a partition is waiting for a resource it may be desirable to identify the owner and, possibly, the resource.

A resource may be locked within one VSE system or across multiple VSE systems. The Lock Table on a given VSE system contains the control information for those resources, internal and external, which it owns. The entries for external resources which it owns (but not those it is waiting for) are also stored on the lock file.

A partition (or task) waiting for an internal resource will be shown on the PART or TID display with a status of 8E WAIT LOCK FREE. A partition (or task) waiting for an external resource will be shown on the PART or TID display with a status of 82, 83, or 8B; unfortunately, these are common status values and do not uniquely describe this condition.

The entry name may be one of the following:

1. a 1-3 digit relative position in the Lock Table
2. EXCL to restrict the display to resources which are owned exclusively
3. NONVSAM to restrict the display to nonVSAM resources
4. VSAM to restrict the display to VSAM resources
5. WAIT to restrict the display to those resources for which one or more tasks are waiting. For this display only, tasks waiting for external resources which are not recorded in this VSE system's lock table, if any, will follow the entries from the lock table; in this case the ADDR column indicates the address of the DTL instead of the address of an entry in the Lock Table. Only partitions which are addressable to the CICS system running ODIS will be shown; this includes partitions running in the same space plus partitions running in the shared space.

The POS column indicates the position of the associated entry relative to the first entry in the lock table. Entries which are not in use will not be displayed; thus, there may be gaps in the numbers shown in the POS column.

The RESOURCE NAME is the name of the resource. Non-displayable characters are represented as periods. The category of the resource may be identified by the first character of the name:

A	basic access methods e.g. VTOC maintenance
B	data security
C	Librarian
DLB	label area routines
I	POWER
V	VSAM

For more information on the names of VSAM resources see VSE/VSAM VSAM Logic, Volume 1 (LY24-5191).

The LO column indicates the resource's lock option.

The C column indicates E for exclusive control and S for shared control. This exclusive control is not related to the exclusive control facility used by CICS File Control Program which is shown on the FILE display.

The X SYS column indicates whether this is or is not a cross-system (external) resource.

The OWNERS and WAITING columns indicate which partitions own, or are waiting for the resource and whether it uses exclusive (E) or shared (S) control. A subtask will be shown with its TID instead of its partition ID.

```

Addr 04F3B8 (3) Online DISplay of LOCK 000 BIMCICST 11:07:07
V1.8B
Pos Addr Resource L Excl X
O C user sys ----- Owners ----- Waiting -----
1 0004F3D8 BIMEDIT 1 E 1 No F9=E None
2 0004F3F8 VDSKC03.... 4 S 0 No F2=S F4=S G1=S Y1=S+ None
3 0004F418 VDSKC03.... 4 S 0 No F2=S F4=S G1=S Y1=S+ None
4 003A9000 VDSKC03.... 4 S 0 No F2=S F4=S G1=S Y1=S+ None
5 003A9020 VDSKC03.... 4 S 0 No F2=S F4=S G1=S Y1=S+ None
6 003A9040 VDSKC03.... 2 S 0 No F2=S F4=S Y1=S F2=S None
7 003A9060 VDSKC03.... 2 S 0 No F2=S F4=S Y1=S F2=S None
8 003A90A0 BIMEDIT EXT 1 E 1 No F9=E None
9 003A9100 VDSKC03..&.. 2 E 1 No F4=E None
10 003A9120 VDSKC03.... 2 E 1 No F4=E None
11 003A9160 VDSKC03.... 1 E 1 No F4=E None
12 003A9180 VDSKC03..+.. 2 E 1 No F4=E None
13 003A91C0 VDSKC03.... 2 E 1 No F4=E None
14 003A91E0 VDSKC03.... 2 E 1 No F4=E None
15 003A9220 VDSKC03.... 2 E 1 No F4=E None
16 003A9280 VDSKC03.... 2 E 1 No F4=E None
17 003A92C0 VBIMVI2.... 2 E 1 No F4=E None
18 003A92E0 VBIMVI2.... 4 S 0 No F4=S None
PF1: Next locks PF2: First locks PF3: LOCK WAIT PF4: CSA PF5: Task list
    
```

LUB - VSE Logical Unit Block

The LUB table contains information about the ASSGNs for all programmer logical units (SYS numbers) and system logical units. Each partition has its own LUB table.

A dash (-) between the SYS number and its associated CUU indicates that this is a temporary ASSGN. Absence of the dash indicates a permanent ASSGN.

For ease of locating the programmer logical units in storage the address of the LUB for SYS000 has been placed on the second line, immediately below the ADDR field on the first line, which represents the address of the LUB for SYSRDR for the specified partition.

The number of LUBs which can be displayed for a partition is limited by the screen size but is guaranteed to handle SYS000 through SYS159 on the smallest screen size.

Addr	001614	(3)	Online DIStplay of LUB						BG	BIMCICST 11:11:38	
SYS000	001678									V1.8B	
SYS	CUU	SYS	CUU	SYS	CUU	SYS	CUU	SYS	CUU		
RDR	02C	000	UA	020	UA	040	UA	060	UA	080	
IPT	02C	001	C00	021	UA	041	UA	061	UA	081	
PCH	02D	002	C00	022	UA	042	UA	062	C01	082	
LST	02E	003	C00	023	UA	043	UA	063	UA	083	
LOG	018	004	C00	024	UA	044	UA	064	UA	084	
LNK	C00	005	UA	025	UA	045	UA	065	UA	085	
RES	C03	006	UA	026	UA	046	UA	066	UA	086	
SLB	UA	007	UA	027	UA	047	UA	067	UA	087	
RLB	UA	008	UA	028	UA	048	UA	068	UA	088	
USE	UA	009	UA	029	UA	049	UA	069	UA	089	
REC	C00	010	UA	030	UA	050	UA	070	562	090	
CLB	UA	011	UA	031	UA	051	UA	071	562	091	
VIS	UA	012	UA	032	UA	052	UA	072	563	092	
CAT	C03	013	UA	033	UA	053	UA	073	UA	093	
		014	UA	034	UA	054	UA	074	UA	094	
		015	UA	035	UA	055	UA	075	UA	095	
		016	UA	036	UA	056	UA	076	UA	096	
		017	UA	037	UA	057	UA	077	UA	097	
		018	UA	038	UA	058	UA	078	UA	098	
		019	UA	039	UA	059	UA	079	UA	099	
PF1:	Next part	PF2:	BG LUBs	PF3:	COMREG	PF4:	CSA	PF5:	Task list		

MENU - List of All ODIS Displays

The menu displays show most of the various displays and functions available with ODIS. There are three menu displays, one for the CICS-related functions, one for the VSE-related tables, and one for other ODIS functions. These menus are displayed with table and entry names of "MENU CICS", "MENU VSE", and "MENU MISC", respectively. Any of the menu displays may be reached by PF key from the other menu displays. The securable ODIS functions are displayed on the MISC menu, but only if SECTRAN=NO is specified in ODISOPT, or if the secured transaction is used.

Unless altered by the DEFAULT parameter of the ODISOPT macro, the MENU CICS display is produced if the initial table name specified with the ODIS transaction ID is omitted or invalid. Once a valid table has been displayed, entering an invalid table name will produce error message ODIS019 rather than a menu screen.

```

Addr 000000 (2) Online DISplay of MENU CICS 15:20:47
                                                    V1.8B

                        CICS Status Displays

AID          Auto Initiate Descriptors   SYSTEM      Connected CICS systems
CSA          Common System Area          TABLES     CICS tables and programs
DEST xxxxx  Destination Control Table    TAS         List of active+susp tasks
ENQ          Engueued resources           TAS *       Abbreviated versn of task
FILE xxxxxxx File Control Table          TERM xxxxx  Terminal Control Table
FILE *xxxxxx Abbreviated versn of FILE   TERM *xxxxx Abbreviated versn of TERM
FILE **xxxxx Summary version of FILE    TERM **xxxxx Summary version of TERM
ICE          Interval Control Elements   TRAN xxxxx  Program Control Table
DSA          Dynamic Storage Area         TRAN *xxxxx Abbreviated versn of TRAN
PROB        Potential CICS problems      TRAN **xxxxx 3-up TRAN display
PROF xxxxxxx PCT profile                 TS xxxxxxxxx Temp Storage queues
PROG xxxxxxx Processing Program Table    TSCOM       Temp Storage common table
SR          Shared Resources ctl block

PF1: CICS menu  PF2: VSE menu  PF3: Misc menu  PF4: CSA  PF5: Task list
    
```

```

Addr 000000 (2) Online DISplay of MENU VSE 15:21:19
                                                    V1.8B

                        VSE status displays

CHANQ xxx   Channel queue
COMREG xx   Partition communications region
LOCK xxx    Locked resources
LUB xx      Logical Unit Blocks
PART        Information about all partitions
PIB         Partition Information Blocks
PUB xxx     Physical Unit Blocks
SMCB        Storage Management Control Blocks
SPACE       Space control blocks
SVA         Shared Virtual Area + SDL
SYSCOM      System communications region
TID xx      Task-related information

PF1: CICS menu  PF2: VSE menu  PF3: Misc menu  PF4: CSA  PF5: Task list
    
```

```
Addr 000000 (2 ) Online DISplay of MENU MISC 15:21:47
                                                    VI.8B

                Miscellaneous displays
CONSOL      Current VSE console display
DEMO       Demonstrate most tables
DLI        DL/I SCD and BFPL
PF         Show the variable PF keys
SCAN       Scan storage in hex+char
T=mmss     Repeat display every mm:ss
VBUF       VTAM buffer pool usage
WHO        Identify this terminal
xxxxxxx    1-8 digit hexadecimal address
+xxxxx     1-5 digit hexadecimal displacement

                Securable features
CP         Issue VM CP commands
POWER      Issue POWER commands
SEG        Segment CICS SYSLST
TRAK ON|OFF Start or stop ODISTRAK recording
VTAM       Issue VTAM commands
WATCH MMSS|Off Start or stop The Watchdog

PF1: CICS menu  PF2: VSE menu  PF3: Misc menu  PF4: CSA  PF5: Task list
```

PART - VSE Partition Status

This display shows information about each partition and is gathered from the PCB, PIB, Job Accounting, and from the partition itself.

The CPU time is rounded (not truncated) to the nearest second.

If the Supervisor has been generated without job accounting (JA=NO) all STEP information will be omitted. Similarly, if start I/O counts were omitted (JA=YES) the STARTIO information will be omitted. A plus (+) sign after the STARTIO count indicates that all the SIO buckets for the partition are full, so there are more start I/Os than those shown, but it is impossible to tell how many.

The RUN CODE will display "83" (READY) if any task in the partition is ready, otherwise it will be the RUN CODE for the main task in the partition. To see the run codes of all subtasks use the TID display. The TID display also includes the English description of the run codes.

If the JOB DURATION is greater than 24 hours, the STEP DURATION will display as "??:??:??". If the JOB DURATION is greater than 99:59:59 it will be displayed as an integer number of days.

If a partition is deactivated, its line on the screen will be highlighted.

```

Addr 000000 ( 2 ) Online DISplay of PART
                                                    15:22:26
                                                    V1.8B
----- Job ----- Step -----
Job name Phase Start Duration Start Duration CPUtime StartIO Run
code
F9 FAQSAO FAQSAO 12:13:42 3:08:44 12:13:41 3:08:45 :15 8,192 82
F8 PCSLOG PCSLOG 12:09:53 3:12:33 12:09:53 3:12:33 :27 19,049 82
F4 VSE3CICS DFHSIP 14:44:03 72:38:23 14:45:53 ??:??:?? 3:51 11,048 82
F3 VTAMSTRT ISTINCVT 11:46:31 3:35:55 11:46:30 3:35:56 :28 19,684 82
F2 VSE3TS11 DFHSIP 09:40:45 5:41:41 09:40:45 5:41:41 2:42 58,618 83
F1 POWSTART POWERNET 14:43:29 72:38:57 14:43:29 ??:??:?? 5:45 33,633 82
Z1 FAQXCONS FAQXCONS 14:44:19 72:38:07 14:44:18 ??:??:?? :51 239 82
C1 AXPL1 AXPL1 14:45:13 72:37:13 14:45:12 ??:??:?? :09 2,723 82
Y1 VSE3EDIT BIMEDIT 14:44:41 72:37:45 14:44:41 ??:??:?? :03 1,886 82
Z2 JCLSCHED JCLSCHED 00:17:16 63:05:10 00:17:16 ??:??:?? 29:08 1138,057 82
Z3 FAQSMAN FAQSIUX 14:44:16 72:38:10 14:44:16 ??:??:?? 24:02 216,218 82
PRTY BG=U=P=C=FB=FA=F7=F6=F5,F4,F2,Y,Z,F9,F3,F8,F1

PF1: Next partition PF2: BG PF3: SYSCOM PF4: CSA PF5: Task list
    
```

PF - Display Values of Variable PF Keys

The variable PF keys (PF7-PF12 and PF19-PF24) are described in the section "Variable PF Keys" on page 18. This display shows the values of all variable PF keys for the terminal executing the display.

The PF keys may be reset to the installation's default values as defined by the PFxxTAB parameters in the ODISOPT macro by specifying "PF RESET". The PF keys may be cleared by specifying "PF CLEAR".

It is possible to eliminate any changes to PF key values made during the current ODIS session by specifying "PF DROP". The values assigned to the PF keys will then be the values in use when the ODIS session was started.

```
Addr 000000 (2 ) Online DIStplay of PF                               13:30:19
                                                                    V1.8B
                                                                    Key  Table  Entry
                                                                    PF7
                                                                    PF8
                                                                    PF9
                                                                    PF10
                                                                    PF11
                                                                    PF12
                                                                    PF19
                                                                    PF20
                                                                    PF21
                                                                    PF22
                                                                    PF23
                                                                    PF24  DSA
                                                                    To set any of the above PF keys:
                                                                    1. Display the desired table and entry
                                                                    2. Change the table name to "PFnn"
                                                                    PF4: CSA  PF5: Task list  PF6: Hex+char  PA2: Toggle
```

PIB - VSE Partition Information Block

The PIB and PIB extension (or PIB2) contain information about each partition.

The SYS LUBS field includes the fourteen standard system logical units plus additional logical units for LIBDEF processing.

The MODE column indicates whether a partition is currently running in VIRTUAL or REAL mode.

```

Addr 001528 (2) Online DIStplay of PIB
PIB2 001458
15:23:37
V1.8B
----- PIB -----
Orig Sys Prog
Flag stat ID V part LUBs LUBs Mode COMREG TID PCB PIK
80 00 AR 000000 50 30 Virt 003CA0 0020 0499C0 0000
00 00 BG 700000 50 255 Virt 0005C8 0021 04B040 0010
00 00 FB 700000 50 255 Virt 004A60 002C 04AE60 0020
00 00 FA 700000 50 255 Virt 004920 002B 04AC80 0030
00 00 F9 700000 50 255 Virt 0047E0 002A 04AAA0 0040
00 83 F8 700000 50 255 Virt 0046A0 0029 04A8C0 0050
00 00 F7 700000 50 255 Virt 004560 0028 04A6E0 0060
00 00 F6 700000 50 255 Virt 004420 0027 04A500 0070
00 00 F5 700000 50 255 Virt 0042E0 0026 04A320 0080
00 00 F4 700000 50 255 Virt 0041A0 0025 04A140 0090
00 00 F3 700000 50 255 Virt 004060 0024 049F60 00A0
00 82 F2 700000 50 255 Virt 003F20 0023 049D80 00B0
00 00 F1 700000 50 30 Virt 003DE0 0022 049BA0 00C0
00 00 Z1 780000 50 255 Virt 5B24F0 002D 5B2088 00D0
00 00 C1 780000 50 255 Virt 5B54F0 002E 5B5088 00E0
++++ (More Partitions) ++++
PF3: SYSCOM PF4: CSA PF5: Task list PF6: Hex+char PA2: Toggle
    
```

POWER - Issue POWER Commands

This is not a display of any table. It provides the ability to issue commands to POWER from a CICS terminal. Because of the potential consequences of this command its use may be restricted by specifying a SECTRAN in the ODISOPT macro.

When initially starting ODIS the POWER command may follow the keyword POWER (e.g. ODIS POWER A RDR,ABCJOB,PRI=4). Subsequently, use of this facility is a two step procedure. After entering POWER as the table name a screen will be returned with room to enter a POWER command on the third line. After filling in the appropriate command and hitting the enter key ODIS will pass the command to POWER and display POWER's response (which is limited to one line).

The LOGPOW parameter of the ODISOPT macro may be used to instruct ODIS to log all POWER commands to the VSE console or to a Transient Data destination.

This facility uses the CTLSPOOL facility of POWER which will not allow certain commands to be executed. These include PGO (G), PFLUSH (F), PSTART (S), PSTOP (P) and PEND.

```
Addr 000000 (2) Online DISplay of POWER 13:31:43
Enter command: D T V1.8B
POWER RESPONSE: 1R46I TIME IS 13:31:43, DATE IS 08/02/1999

PF3: SYSCOM PF4: CSA PF5: Task list PF6: Hex+char PA2: Toggle
```

PROB - Potential CICS Problems

This display is designed to collect in one place many of the various potential problems in CICS. The column labeled IMPACTS contains one of the following values:

- SYSTEM indicates that the problem is capable of affecting nearly every task in the system, for example being Short On Storage (virtual).
- TASKS indicates that the problem will probably affect only some of the tasks in the system, for example a VSAM file's strings all being in use.

The SEV column on the PROB display gives a rough indication of how severe the problem may be. It will be HIGH, MED, LOW or NOTE. NOTE is used to indicate past problems which have been dealt with. The TABLE column gives an indication of another ODIS display which gives more information about the problem.

ODIS checks for the potential problems listed below. The number before each description matches the NUM column on the PROB display and may be used to prevent some of these messages from being reported by The Watchdog. (They are always reported on the PROB display.) Also, the severity assigned to each message is shown. Messages may also be suppressed categorically by severity level. Message suppression is accomplished by using the WATSUPR parameter of the ODISOPT macro or the ENABLE and DISABL functions. The ODISOPT macro also contains a number of user-defined thresholds which determine when some of these problems are to be reported by ODIS. See the THxxxxx parameters of the ODISOPT macro on page 12. Gaps in the numbers are due to entries unique to the VSE version of ODIS, or to entries no longer required or supported for this release of CICS.

1. Short On (Virtual) Storage (Severity: HIGH)
The CICS system is currently Short On Storage. For a more detailed discussion of this problem see the section "Using ODIS to Analyze Storage Utilization" starting on page 107.
5. Runaway Tasks Have Occurred (Severity: NOTE)
CICS has detected and cancelled one or more runaway tasks. These do not cause any particular problems to the CICS system except for a mysterious, but temporary, increase in response for all tasks.
6. Maximum Task Limit (Severity: MED)
The CICS system is currently at the maximum task limit. CICS will not allow any new transactions to be started until some existing transactions end. This condition should generally be avoided by setting the MXT value in the SIT to a number which will never be reached.
7. Approaching Maximum Task Limit (Severity: LOW)

The number of active and suspended tasks in the CICS system exceeds a percentage of the maximum task limit. This percentage is specified by the THAMAX parameter of the ODISOPT macro; the default is 75%.

8. **Maximum Active Task Limit (Severity: MED)**
The CICS system is currently at the maximum active task limit. Generally, this will slow down some transactions in the system but will not prevent them from executing.
9. **Approaching Maximum Active Task Limit (Severity: LOW)**
The number of active tasks in the CICS system exceeds a percentage of the maximum active task limit. This percentage is specified by the THAAMAX parameter of the ODISOPT macro; the default is 75%
10. **Runaway Task Control is Turned Off (Severity: NOTE)**
This will not cause a problem unless a runaway task occurs in which case CICS will not be able to terminate the runaway task, and it may be necessary to cancel CICS.
11. **Auxiliary Temporary Storage Has Been Exhausted (Severity: NOTE)**
The DFHTEMP data set has been filled at least once. It should be enlarged.
21. **Tasks Waiting For VSAM Strings (Severity: HIGH)**
One or more transactions are waiting for a VSAM string. This condition will be recognized only if the number of waiting tasks for one file exceeds the value specified by the THWSTR parameter specified in the ODISOPT macro; the default is zero. For a more detailed discussion see the section "Using ODIS to Tune VSAM Files" starting on page 115.
22. **Tasks Waiting For VSAM Buffers (Severity: HIGH)**
One or more transactions are waiting for a VSAM buffer. This condition will be recognized only if the number of waiting tasks for one file exceeds the value specified by the THWBUFF parameter specified in the ODISOPT macro; the default is zero. For a more detailed discussion see the section "Using ODIS to Tune VSAM Files" starting on page 115.
24. **Auxiliary Temporary Storage is Near Capacity (Severity: LOW)**
The percentage of the DFHTEMP data set which is in use exceeds the value specified by the THAUXTS parameter of the ODISOPT macro; the default is 90%.
25. **Too Many Control Area Splits (Severity: NOTE)**
The number of CA splits for a file exceeds the value specified by THCASPL parameter of the ODISOPT macro; the default is 1. For a more detailed discussion see the section "Using ODIS to Tune VSAM Files" starting on page 115.
26. **Too Many Control Interval Splits (Severity: NOTE)**
The number of CI splits for a file exceeds the value specified by THCISPL parameter of the ODISOPT macro; the default is 5. For a more detailed discussion see the section "Using ODIS to Tune VSAM Files" starting on page 115.

27. VTAM ACB Is Closed (Severity: MED)
The VTAM ACB is closed. CICS cannot access any of its VTAM terminals while CICS'S VTAM ACB is closed.
28. VTAM Has Been Temporarily Short On Storage (Severity: NOTE)
The number of VTAM requests issued by CICS which have been rejected by VTAM due to a temporary short on storage condition in VTAM exceeds the value specified by the THVSOS parameter of the ODISOPT macro; the default is 3.

In addition to the above problems, The Watchdog is able to detect the occurrence of the following events during the time interval between executions of The Watchdog.

60. Delay in Initiating The Watchdog
After the time interval used by The Watchdog expired, The Watchdog was not invoked until after another time interval, specified by the THDELAY parameter of the ODISOPT macro, expired; the default is one minute. This is a broad indicator and may be caused by a number of factors such as:
 - a. the operator stopping the CPU
 - b. CICS not being dispatched due to other higher priority partitions/regions
 - c. CICS conditions such as maximum task limits, Short On Storage storage violation dumps, etc.
 - d. the WATTERM terminal being used by another transaction
61. Storage Violation
A storage violation has been detected, and CICS has recovered successfully. For a more detailed discussion of this problem see the section "Using ODIS to Analyze Storage Utilization" starting on page 107.
63. Maximum Task Limit
The CICS system was at the maximum task limit but is now below the limit (unless problem 6 is also reported).

Miscellaneous Notes

1. The IMPACTS and SEV columns are somewhat subjective and should be treated as such.
2. This display is not capable of detecting every possible error situation.
3. Some of the conditions detected on this display may not, in fact, be errors, for example tasks waiting for enqueued resources. This display shows potential problems as well as guaranteed problems.
4. This display is limited to one screen.

Addr 000000	(2)	Online DISplay of PROB	13:32:30	
Num Impacts	Sev	Description of problem	V1.8B Table	
5	System	Note	Runaway tasks have occurred 3 times	CSA
6	System	Med	Currently at maximum task limit	CSA
9	System	Low	Now approaching maximum active task limit (4 tasks)	CSA
11	System	Note	Aux temporary storage has been filled 4 times	TSCOM
22	Tasks	High	1 tasks waiting for VSAM buffers for file CUSTFILE	FILE
21	Tasks	High	3 tasks waiting for VSAM strings for file MASTFIL	FILE

PF4: CSA PF5: Task list PF6: Hex+Char PA2: Toggle

PROG - CICS Processing Program Table

The Processing Program Table defines the programs which are known to CICS for use by transactions.

A second line appears only for COBOL programs which have been executed at least once.

It is possible to verify that CICS is using a new copy of a program following a CEMT SET PROG(xxxxx) NEW command by comparing its LENGTH with a link map listing.

For a non-resident program the RES field will be NO while the program is not resident in virtual storage and TEMP while it is resident in virtual storage.

The start of the first program shown on the PROG display may be displayed in hexadecimal and character by hitting the PF3 key. It may also be displayed directly by using a table name of PROGST (rather than PROG).

```

Addr 7F000000 ( 2 )   Online DISplay of PROG   BIM$CPPD                               15:25:16
                                                                V1.8B

```

Program	Res	Use Count	Load Address	LPA * Address	Entry Address	Length	Lang	Cpy	Loc	Key	Eset	Shr	Hld	Stat
BIM\$CPPD	0	0					Asm		E Low	CICS	F	P	Ena	
BIM\$CPPR	0	0					Asm		E Low	CICS	F	P	Ena	
BIM\$CPPS	0	0					Asm		E Low	CICS	F	P	Ena	
BIM\$CPSD	0	0					Asm		E Low	CICS	F	P	Ena	
BIM\$TICI	0	0					Asm		E Low	CICS	F	P	Ena	
BIMCMDR	0	0					Asm		E Low	User	F	P	Ena	
BIMCNDEF	0	2	819000		819000	644	Asm		E Low	User	F	P	Ena	
BIMCNEXT	0	0					Asm	Y	E Low	User	F	P	Ena	
BIMCNMSG	0	0					Asm		E Low	User	F	P	Ena	
BIMCNMS2	0	0					Asm		E Low	User	F	P	Ena	
BIMCN SOL	0	2	923100		923120	30,234	Asm		E Low	CICS	F	P	Ena	
BIMCXDEF	1	1	1E00000		1E00000	752	Asm		E Any	User	F	H	P	Ena
BIMCXENA	0	1	1A42000		1A42020	6,858	Asm		E Any	CICS	F	P	Ena	
BIMCXRES	1	1	1A49000		1A49000	7,080	Asm		E Any	CICS	F	H	P	Ena
BIMCXSTA	0	0					Asm		E Any	User	F	P	Ena	
BIMCXTCP	1	1	1A47000		1A47000	4,580	Asm		E Any	CICS	F	H	P	Ena
BIMCXTS1	0	0					Asm		E Any	CICS	F	P	Ena	
BIMDPWR	0	0					Asm		E Low	User	F	P	Ena	
BIMECHO	0	0					Asm		E Low	User	F	P	Ena	

```

PF1: Next prog   PF2: First prog   PF3: Start of top prog   PF4: CSA   PF5: TASK

```

PUB - VSE Physical Unit Block

The PUB table contains information about each physical device which is known to the Supervisor. This has been supplemented by information from the PUBOWNER table which contains information about which partition owns the device, and from the PUBX table, which contains hardware-related information about the device.

The POS column is a sequential number beginning at zero indicating the relative position of the device in the PUB table. This may be useful when using the hexadecimal alteration feature to modify an ASSGN in the LUB table.

The number in the CHQ column refers to a relative entry number in the channel queue and may be used in the CHANQ display.

The DEV and SS columns give the device type and mode. See the IBM Sysgen manual for an explanation of their values.

The FLAGS column is taken from bytes 6 and 7 of the PUB.

The STARTIO column may be used to compare disk devices for load imbalances.

```

Addr 003300 ( 2 ) Online DISplay of PUB 080 12:35:58
                                           V1.8B
----- PUB2 -----
Pos  Cuu  Chq  Erp  Dev  SS  Flags  Partition owners  Addr  StartIO  Volser
10  080  12      DE 00  80F8  Busy      3      060174  15,657
11  081  10      DE 00  80F8  Busy      3      060180  3,651
12  082  14      DE 00  80F8  Busy      3      06018C  3
13  083  15      DE 00  80F8  Busy      3      060198  3
14  084  20      DE 00  80F8  Busy      3      0601A4  3
15  085  17      DE 00  80F8  Busy      3      0601B0  11,719
16  086  22      DE 00  80F8  Busy      3      0601BC  268
17  087      DE 00  00F8      0601C8  1
18  180      52 C3  02C0      0601D4  0
19  190      54 C3  02C0      060230  1
20  191      54 C3  02C0      060250  562
21  266      90 FF  02F8      0123456789AB 06026B  98,935 BIMVIO
22  267      90 FF  02F8      4      06027B  6,798 BIMVI2
23  562      6C FF  02FC      0123456789AB 06028B  482,805 DSK562
24  563      6C FF  02FC      0123456789AB 06029B  128,836 DSK563
25  B40  6      DC 10  80F8  Busy      3      0602AB  1
26  B41  3      DC 10  80F8  Busy      3      0602B7  1
27  B42      DC 10  00F8      0602C3  1
PF1: Next PUB  PF2: First PUB  PF3: SYSCOM  PF4: CSA  PF5: Task list
    
```

SCAN - Scan Storage

The scan facility provides the ability to scan storage, in hexadecimal or character, looking for a specific character string. Use of this facility is a two step procedure. After entering SCAN as the table name and hitting ENTER, a screen will be returned showing the hexadecimal and character information most recently displayed, if any. Entry fields are provided for a new scan argument and method of search.

The "Format" field is used to specify whether the scan data argument is in character (c) or hexadecimal (h or x) format. The "Case" field indicates the manner in which ODIS compares the storage being scanned and the scan argument.

1. U (upper) indicates that the supplied scan data is to be translated to upper case. ODIS will look for an exact match on this string.
2. M (mixed) indicates that the supplied scan data is to be accepted "as is". It may contain any combination of upper and lower case characters. ODIS will look for an exact match on this string.
3. I (ignore) indicates that ODIS is to look for a match by ignoring the distinction between upper and lower case characters. For example,} the string "banana" would be matched by "banana", "BANANA", and "BaNaNa".

The scan data may contain up to 64 characters or hexadecimal digits. ODIS will begin with the first address on the screen (plus one), in the "Current Address Space", and scan for the first occurrence of the specified data. Upon encountering the data ODIS will display the area containing the data. The scan may be repeated by hitting the enter key again. For more information on "Current Address Space", refer to page 85.

During the scan ODIS will display its progress after processing each 64K bytes of storage. It will scan the entire machine if necessary and will skip over any invalid address spaces.

A scan will be terminated when one of the following conditions occurs:

1. The string is found
2. The highest virtual storage address of the machine is reached
3. The end of the CICS partition/region is reached
4. The operator hits the clear key on a non-SNA terminal
5. The operator hits the ATTN key on an SNA terminal
6. A megabyte boundary is reached while scanning above the 16MB boundary

```

Addr 0C6E2B (3) Online DISplay of BIMCICST 12:45:07
Format (C=char H=hex): C Case (U|M|I): U String found at 0C6E2B
Enter data: storage
+C6E2B 0C6E2B E2E3D6D9 C1C7C5C4 E4D4D740 E2E5C16B *STORAGE DUMP SVA,*
+C6E3B 0C6E3B C3E4E47A 40E7E7E7 E7E7E7E7 E7F1C9F5 *CUU: XXXXXXXX1I5*
+C6E4B 0C6E4B F1C940C4 E4D4D740 C3D6D4D7 D3C5E3C5 *1I DUMP COMPLETE*
+C6E5B 0C6E5B E2E8E2E3 C5D440C7 C5E3E5C9 E2404DF2 *SYSTEM GETVIS (2*

+C6E6B 0C6E6B F45D7AE2 E8E2E3C5 D440C7C5 E3E5C9E2 *4):SYSTEM GETVIS*
+C6E7B 0C6E7B 404DF3F1 5D7AD7C1 C7C54DE2 5D40D5D6 * (31):PAGE(S) NO*
+C6E8B 0C6E8B E340E4E2 C5C4F0F1 F2F3F4F5 F6F7F8F9 *T USED0123456789*
+C6E9B 0C6E9B C1C2C3C4 C5C6C9D5 E5C1D3C9 C440C1C4 *ABCDEFINVALID AD*

+C6EAB 0C6EAB C4D9C5E2 E2D7C8C1 E2C540D3 D6C1C440 *DRESSPHASE LOAD *
+C6EBB 0C6EBB D3C9E2E3 E2E8D4D7 E3D6D440 D9C5C3D6 *LISTSYMPTOM RECO*
+C6ECB 0C6ECB D9C4E2E4 D7C5D9E5 C9E2D6D9 7AD7C1D9 *RDSUPERVISOR:PAR*
+C6EDB 0C6EDB E3C9E3C9 D6D5E2E5 C1404DF2 F45D7AE2 *TITIONSVA (24):S*

+C6EEB 0C6EEB E5C1404D F3F15D7A D6D7D9D9 C5D84040 *VA (31):OPRREQ *
+C6EFB 0C6EFB 40404040 40404040 C1D3D340 40404040 * ALL *
+C6F0B 0C6F0B E2E5C1F2 F4404040 E2E5C1F3 F1404040 *SVA24 SVA31 *
+C6F1B 0C6F1B C7C5E3E5 C9E2F2F4 C7C5E3E5 C9E2F3F1 *GETVIS24GETVIS31*

PF1: Forward PF2: Initial PF3: Backward / 24-bit PF4: CSA PF5: Task list
    
```

SEG - Segment CICS Printed Output

This is not a display of any table. It provides the ability to segment the printed output from CICS, thus placing it in POWER LST queue where it may be printed and examined immediately without being required to shut down CICS. Because of the disruptive effect this may have on CICS reports its use may be restricted by specifying a SECTRAN in the ODISOPT macro.

The "entry" name may be LST (to segment SYSLST) or a 1-3 digit decimal number (to segment SYSNNN). The default is SYSLST.

This feature uses the SEGMENT macro. The LST card associated with it is specified by the JECL parameter in the ODISOPT macro. This will apply to the output created after the SEGMENT is issued, not to the output already accumulated.

```
Addr 000000 (3) Online DISplay of SEG LST 12:47:31
                                         V1.8B
SEGMENT macro has been issued RC=X'00'
* $$ LST CLASS=A,DISP=D

PF3: SYSCOM PF4: CSA PF5: Task list PF6: Hex+char PA2: Toggle
```

SMCB - VSE Storage Management Control Block

The SMCB defines the limits of each real and virtual partition along with information about the Supervisor and SVA.

The size of the partition GETVIS area is the default value, not necessarily the size in use by the partition. For the value of the actual size in use see the COMREG display on page 25.

```

Addr 37A998 ( 2 ) Online DISplay of SMCB 12:59:02
                                           V1.8B
PFIX PFIx --- GETVIS --- ----- Virtual ----- ----- Real -----
Limit Count ADDR Size/K ADDR End+1 Size/K ADDR End+1 Size/K
SUP S
BG 0 32 0 00696000 1448 00000000 00077000 476 00000000 00077000 476
FB 0 32 0 00896000 1448 00800000 00A00000 2048 00BBA000 00BDA000 128
FA 2 32 0 00A96000 1448 00A00000 00C00000 2048 00D4A000 00D6A000 128
F9 2 32 0 00896000 1448 00800000 00A00000 2048 00D0A000 00D2A000 128
F8 2 32 0 00696000 1448 00600000 00800000 2048 00CEA000 00D0A000 128
F7 4 32 0 00C96000 5544 00C00000 01200000 6144 00CCA000 00CEA000 128
F6 3 32 0 00896000 1448 00800000 00A00000 2048 00CAA000 00CCA000 128
F5 3 32 0 00696000 1448 00600000 00800000 2048 00C8A000 00CAA000 128
F4 2 32 14 00C96000 9640 00C00000 01600000 10240 00C6A000 00C8A000 128
F3 4 80 30 00696000 5544 00600000 00C00000 6144 00C1A000 00C6A000 320
F2 3 32 4 00A96000 9640 00A00000 01400000 10240 00BFA000 00C1A000 128
F1 1 32 16 00696000 1448 00600000 00800000 2048 00BDA000 00BFA000 128
Y1 Y1 0 0 00720000 4992 00620000 00C00000 6016 00000000 00000000 0
      +---- (More Partitions) +----
SVA S (24-BIT) 00379000 1648 000B7000 00570000 4836 00000000 00000000 0
SVA S (31-BIT) 01CD0000 2240 01A00000 01F00000 5120 00000000 00000000 0
Total 65856K
Sys PFIx limit 2819 Sys PFIx count 370 VSIZE 92,160K Avail 26,304K
      PF3: SPACE PF4: CSA PF5: Task list PF6: Hex+char PA2: Toggle
    
```

SPACE - VSE Space Control Blocks

This display shows information about each of the VSE address spaces.

```
Addr 041400 (2) Online DISplay of SPACE 13:37:53
                                           V1.8B
```

SCB Addr	ID	Storage-Mb Alloc	Unused	Actual End	Next Bdy	-----	Partitions	-----
00041400	R	2.1	5.7	00830000	00DED000	BG	F1 F2 F3 F4 F5 F6 F7 F8 F9 FA FB	
00041484	0	4.0	16.0	00A00000	01A00000	BG	FB	
00041508	1	2.0	18.0	00800000	01A00000	F1		
0004158C	2	16.0	4.0	01600000	01A00000	F8 F9	FA F4	
00041610	3	14.0	6.0	01400000	01A00000	F5 F6	F2	
00041694	4	12.0	8.0	01200000	01A00000	F3	F7	
00041AB4	S	.0	.5	00570000	00600000			
00041B38	00	.3	19.6	00660000	01A00000			

PF3: SMCB PF4: CSA PF5: Task list PF6: Hex+char

SR - CICS Shared Resources Control Block

The Shared Resources Control Block contains information used to manage the use of VSAM Shared Resources for those files which are defined in the FCT with SERVREQ=SHARE. The major resources which are shared are strings and buffers. For more information on Shared Resources see the section "Using ODIS to Tune VSAM Files" starting on page 115.

```
Addr 01A15030 ( 2 )   Online DISplay of SR       1                               15:28:24
                                                                V1.8B
18 Percentile         50      Buffer          Total
38 Max key length    255      size Number    storage
3A Total strings      4         512         5     2,560
1C Activ strings     0         1,024       5     5,120
3C High active str    0         2,048       5    10,240
1E Curr wait str     0         4,096       5    20,480
3E High wait str     0         8,192       5    40,960
40 Totl wait str     0        12,288       5    61,440
                       16,384       5    81,920
0E Open ACBs         1        20,480       5   102,400
                       24,576       5   122,880
                       28,672       5   143,360
                       32,768       5   163,840
                       Total        55   755,200
----- Attributes -----
Calc STRNO           Pool built
PF1: Next pool      PF2: First pool    PF3: File summary  PF4: CSA           PF5: Task list
```

SVA - VSE Shared Virtual Area

The Shared Virtual Area is used to hold programs and other storage which is available to all partitions. It is composed of three areas:

1. The System Directory List (SDL), which contains directory entries for frequently used phases.
2. The Shared Virtual Area (SVA), which contains common programs which can be used simultaneously by all partitions.
3. The GETVIS area, which contains storage which may be dynamically acquired and used by any partition or by the VSE Supervisor.

The size of the SVA is established during IPL; it is loaded during or after IPL. It contains all storage necessary for IBM software plus any other products required by the installation. This display may be used to insure that the allocations of the SVA statement during IPL to not waste virtual storage. Since the contents of the SVA are somewhat dynamic, particularly the GETVIS area, each of the three areas should contain some unused space; as a guideline 10% may be left unused.

```

Addr 0B2000 ( 2 ) Online DISplay of SVA 15:28:58
                                           V1.8B
----- SDL -----
08 Start addr 0B2050
18 Next avail 0BB444
   End addr 0BFFFF
   Length 57,264
   Unused entries 269
1C Used entries 526
   Total entries 795

--- SVA-24 Programs ---
0C Start addr 0C0000
10 Next avail 251E00
20 Prog End 4E9F3F
14 End addr 50AFFF
   Length 4396K
   Unused space 2656K
   VPOOL size 128K

--- SVA-31 Programs ---
24 Start addr 05700000
28 Next avail 0596A36B
2C Prog End 05B5911F
30 End Addr 05BEDFFF
   Length 4452K
   Unused space 1979K

---- GETVIS-24 ----
Start Addr 50B000
End Addr 684FFF
Length 1512K
In use 1248K
Max used 1312K
Free space 264K
Max ctg free 248K

---- GETVIS-31 ----
Start Addr 05BEE000
End Addr 066FFFFF
Length 11336K
In use 4132K
Max used 4360K
Free space 8716K
Max ctg free 8288K

InUse(above) 2884K
Free(above) 8452K

The SVA was last updated 07/30/99 14:43:24

PF3: SYSCOM PF4: CSA PF5: Task list PF6: Hex+char PA2: Toggle
    
```

SYSCOM - VSE System Communication Region

The SYSCOM contains pointers to many VSE tables as well as a number of miscellaneous fields.

The TASK OWNING LTA is interpreted as a partition ID (BG, F1, F2, etc.) if the LTA is owned by a main task. It is displayed in hexadecimal if the LTA is owned by a subtask. If the value is 00 the LTA is not in use; the LTA field continues to show the name of the last transient to occupy the LTA since VSE does not clear this field.

If a non-IBM software product has been installed which provides additional LTAs they may be displayed by specifying the LTA parameter in the ODISOPT macro.

The PAGEINS and PAGEOUTS fields indicate the number of pageins and pageouts which have occurred since the system was IPLed. Documentation which refers to "the paging rate" generally refers to the pagein count only and ignores the pageout count. These fields appear only on non-VM systems with Job Accounting support included in the supervisor.

The LAST I/O INTRPT field is taken from address 0000BA in low core.

```

Addr 000420 ( 2 ) Online DISplay of SYSCOM 15:29:32
                                           V1.8B
00 Error block 02D80C 5C POWER TABLE 58F000 Last I/O intrpt 700
1C LTA addr 0056D8 60 VTAM adr vec 0075C0 58 Task owning LTA 00
94 PTA addr 006280 78 PUBOWNER 003AA4 PTA $$ABERV2
24 Chan queue 085480 7C JA common 000958 LTA $$BATTf2
28 Chan queues 255 88 SDAID comm 0091F8
    Max CHANQ used 255 DC SMCB addr 50CA30
    CHANQs in use 7 SVA (24) 000B2000
2C Partitions 12 SVA (31) 05700000
BC TPBAL partitions 0 11C ICCF vec tab 0074E8 EC End real 03F7BFFF
CE Activ partitions 15 VTAM com vec 007620 30 VSIZE 143,360
CC PUB devices 254 B4 Stg mgmt ar 0084E4
E4 Console addr 01F B8 Page mgmt ar 05C708

Features supported: CKD FBA 3800 RMSR RMS RPS
Features supported: POWER ECPREAL VSAM XECB VMCF

----- Attributes -----
370 mode XA hdw ESA hdw JA=YES
SEC=YES

PF3: BG COMREG PF4: CSA PF5: Task list PF6: Hex+char PA2: Toggle
    
```

SYSTEM - Local and Remote Systems

This display shows the status of the local CICS system and any remote (ISE and MRO) CICS systems which are connected to it.

```

Addr 018F7120 ( 2 )   Online DISplay of SYSTEM                               15:30:08
                                                                V1.8B

```

TCTSE	Sys		Type	Term I/Os	Sessions Rec Send	---Links---		Connected
	idnt	Netname				Recv	Send	
018F7120	BATC	WBYBTCH1	LUC	0				
018F7210	BIMX	BIMAPPL	LUC	0				
018F7030	CICS	VSE3TS11	Loc	0				
018F7300	FTRC	TR20A	LUC	0				
018F73F0	LI2C	LI2C	LUC	0				
018F74E0	LI5C	LI5C	LUC	0				
018F75D0	PRDP	P390CICS	LUC	0				
018F76C0	PRDX	P390CICT	LUC	0				
018F77B0	PVSE	VSE3CICS	LUC	0				
018F78A0	RXCH	BIMRCXHB	LUC	0				
018F7990	TR10	TR10D	LUC	0				
018F7A80	TR3A	TR30A	LUC	0				
018F7B70	TR3B	TR30B	LUC	0				
018F7C60	TR40	TR40A	LUC	0				
018F7D50	TR41	TR40B	LUC	0				
018F7E40	TR50	TR50D	LUC	0				
018F8030	TR7A	TR70A	LUC	0				
018F8120	TR7B	TR70B	LUC	0				

PF4: CSA PF5: Task list PF6: Hex+char PA2: Toggle

TABLES - CICS Table and Program Summary

This display shows a brief summary of the major tables and programs in CICS except those tables which are managed by the Table Management Program (TMP).

The SFX column contains the suffix of the table or program when it was assembled. If subsequently renamed in the disk library, this suffix will retain its original value. This column may contain one of the following values:

1. Two alphanumeric characters indicate a standard, suffixed table or program.
2. NO indicates that the table or program is not being used.
3. DY indicates that a dummy version of a program is being used.
4. -- indicates that the table is created internally by CICS and thus is not suffixed.
5. Spaces indicate that an unsuffixed version is being used (e.g. TCT=YES).

For some tables and programs, the LENGTH is unavailable and will appear on the screen as spaces. For BMS, the LENGTH displayed is the length of DFHMCP (not the total of all BMS programs).

The ASM column indicates whether the table or program was assembled by IBM (I) or by the user (U). However, this field, while displayed accurately by ODIS, may not be correctly built in the table or program.

```

Addr 023C03A0 ( 2 )   Online DISplay of TABLES                               15:30:38
                                                                V1.8B
Table Sfx EntryPt      Level Asm Date   Prog Sfx EntryPt  PTF   Level Asm
-----
DCT  -- 0140E028                BMS 1$ 01565B8A    0410 I
ICE  -- 018D0458                TRP  0145D020    0410 I
JCT  4T 007865B0            0410 I    DCP  015570C0    0410 I
PC/AB -- 00000000                EIP  007EFEE4    0410 I
QCA  -- 00784FF0                ICP  01559D24    0410 I
SIT  6$ 023C03A0            0410 I    KCP  01564238    0410 I
SRT  1$ 0140E790            0410 I    KPP  NO
TCT  DY 0078BC70            0410 I    PCP  0156F410    0410 I
TST  NO                        SMS  CP 024987F0    0410 I
                                SPP  01578F84    0410 I
                                SRP  01458020    0410 I
                                TCP  0078A020    0410 I
                                TDP  007C5080    0410 I
                                TSP  01573424    0410 I
                                ZCP  01587DE4    0410 I

SIT overrides are at 023C6012:  , , , START=AUTO, , , , , DBP=2$, RENTPGM=PROTECT, STGP
ROT=YES, GRPLIST=(DFHLIST, BIMTS11), SVA=NO, APPLID=VSE3TS11, EDSALIM=15M, GMTEXT='B I
M CICS/ESA/TS 1.1 - VSE3TS11', GMTRAN=IEGM, SEC=YES, DFLTUSER=CICSUSER, MXT=40, XR
PF3: SIT overrides  PF4: CSA  PF5: Task list  PF6: Hex+char  PA2: Toggle
    
```

TASK - CICS Active and Suspended Tasks

This display shows the tasks on the active and suspended DCA (Dispatch Control Area) chains. An active task is one which is running, ready to run or waiting for an event which should be completed in a short period of time, such as a file I/O. A suspended task is one which is waiting for an event which may be completed in a longer period of time, such as a read from a terminal.

The active tasks will be displayed in priority sequence. The suspended tasks will be displayed in LIFO sequence.

The TERM column will contain "----" if the task is not running at a terminal.

The MOD column indicates which service module of CICS is active on behalf of the task, for example TCP for Terminal Control Program. If this column contains "---" no CICS module is currently serving this task. In some cases, two CICS service modules will be active simultaneously. These are shown as follows:

B+T BMS and TCP
F+K FCP and KCP
I+KICP and KCP
T+K TSP and KCP

The LAST REQ column indicates the last CICS request made to Task Control Program by the task. This may have been done by either the user's program itself or by a CICS service module on behalf of the user's program. If this column contains "--NONE--" the task has not issued a CICS service request which has been recorded in its TCA.

The DISPATCH CNTL column indicates the task's current dispatching status. When a new task is placed on the active DCA chain, CICS sets its dispatching status to either "waiting for AMAX task limit" or "waiting for CMAX task limit". This is done for internal purposes and does not necessarily indicate that these limits have been exceeded.

The RESOURCE column indicates, if possible, which resource the task is waiting for. It may be one of the following:

1. For file I/O or access to a file, this shows the file name.
2. For a single ECB this shows the address of the ECB.
3. For a list of ECBs this shows the address of the list.
4. For an ENQ this shows the name of the resource.
5. For a VSAM file waiting for a shared string this shows "SR STRING".

A plus sign (+) between the TRAN and TERM columns indicates that there are more active or suspended tasks to be displayed but there is no more room on the screen to display them. If this happens, three methods may be used to display the additional tasks:

1. A numeric entry name may be specified to indicate the number of transactions to be skipped before the display begins.

2. An entry name of "SUSP" may be specified to indicate that the display is to begin with the first suspended transaction.
3. The "TASK *" display may be used.

Additional task-related fields may be found in the TCA portion of the TERM display.

```
Addr 921F38 (2) Online DISplay of TASK 15:31:42
V1.8B
```

Task	Tran	Fac.	Init	ST	Stat	Pri	Cls	UserID	SuspType	SuspInfo	SuspTime
26	CXPB		TASK	S	SUSP	1	1	ALXP	OPEN_ANY	DFHPSPIO	05:31:01
27	JCLR		TASK	SD	SUSP	1	1	ALXP	EKWAIT	SINGLE	05:30:59
35	JMSI		TASK	S	SUSP	1	1	ALXP	EKWAIT	SINGLE	05:30:12
453	CEMT	BC32	TERM	TO	SUSP	255	1	CICSUSER	ZCIOWAIT	DFHZARQ1	00:30:11
470	ODIS	BE12	TERM	TO	RUN	1	1	CICSUSER			
485	S140		TASK	SD	SUSP	1	1	ALXP	ICWAIT		00:00:24

----- End of Task List -----

PF3: TASK * PF4: CSA PF5: Task list PF6: Hex+char

TASK * - CICS Active and Suspended Tasks (Abbreviated)

This is an abbreviated display showing less information about each task but showing more tasks than the full TASK display.

```
Addr 921F38 (2) Online DISplay of TASK * 15:32:17
                                           V1.8B
Task Tran Fac. Init ST Stat Pri Cls
-----
 26 CXPB      TASK S  SUSP  1  1
 27 JCLR      TASK SD SUSP  1  1
 35 JMSI      TASK S  SUSP  1  1
453 CEMT BC32 TERM TO SUSP 255 1
470 ODIS BE12 TERM TO RUN  1  1
485 S140      TASK SD SUSP  1  1
----- End of Task List -----

PF4: CSA PF5: Task list PF6: Hex+char
```

TERM - CICS Terminal Control Table

The TCT entries are defined in RDO, and this screen has been redesigned to reflect all the new information that can be defined for a given terminal.

This screen is generated in one of two formats, depending on your terminal model. If you are using a Mod 2 terminal, all terminal status settings that are prefixed with 'NO' are omitted so that all other information will fit on a single screen. If you are using a Mod 3 or Mod 4 terminal, all terminal status settings will be shown.

Special Entry Names

After a display for a terminal has been displayed it is possible to symbolically address many of its related storage areas and display them in hexadecimal and character ("core dump" format). To do this enter one of the following special names in the entry field on the top of the screen (overstriking the terminal ID):

EIB	Exec Interface Block
EIS	Exec Interface Structure
TCA	User area of TCA
TIOA	Current Terminal I/O Area

Display generated for a Mod 2

Addr 7F000000 (2)	Online DISplay of TERM	BE12	15:32:59
			V1.8B
Terminal type	T3277R	Transaction errors	0
Terminal model	2	Trans ID	ODIS
Access method	VTAM	Task Number	470
LU name	BE12	Next trans ID	
Logmode name		Active screen height	24
Service status	INSERVICE	Active screen width	80
Terminal status	ACQUIRED	Default screen heigh	24
Acquired status	ACQUIRED	Default screen width	80
Device status	(000)	Alt screen height	0
User area	FF000000	Alt screen width	0
User area length	0	Alternate suffix	X'00'
User ID	CICSUSER	Alarm status	AUDALARM
Name		UCTRAN status	UCTRAN
Signon status	SIGNEDON	APLTEXT status	APLTEXT
Operator ID	HSW	ATI status	ATI
Terminal priority	0	Backout	BACKTRANS
Input messages	45	Color status	COLOR
Output messages	49	Data stream	DS3270
Transactions	5	Extended DS	EXTENDED DS
Storage violations	0	Discreg status	DISCREQ
Transmission errors	0	Exit tracing	(000)
PF1: Next term	PF2: First term	PF3: Term summary	PF4: CSA
			PF5: Task list

Display generated for a Mod 3 or Mod 4

```

Addr 7F000000 ( 2 )   Online DISplay of TERM   BE12+                               13:53:10
                                                                V1.8B
Terminal type        T3277R  Backout          BACKTRANS  Form feed        NOFORMFEED
Terminal model      2        Color status     COLOR       HForm status     NOHFORM
Access method       VTAM     Create session   NOCREATE    Vform status     NOVFORM
LU name             BE12    Data stream     DS3270     Alternate printer
Logmode name        Extended DS     EXTENDED DS  Altprt copy     NOALTPRTCOPY
Service status      INSERVICE  Discreq status  DISCREQ     Remote TERMID
Terminal status     ACQUIRED   Exit tracing    (000)       Remote SYSTEM
Acquired status     ACQUIRED   FMH status      NOFMHPARM   GCHARS           697
Device status       (000)     Hilight status  HIGHLIGHT   GCODES           37
User area           00802800  Katakana        NOKATAKANA  TCAM control     X'00'
User area length    255       Lightpen        NOLIGHTPEN  National language X'C5'
User ID             CICSUSER   MSR status      NOMSRCONTROL
Name
Signon status       SIGNEDON   OBFMT status    NOOBFORMAT
Operator ID         HS1        OBOPR status    NOBOPERID
Terminal priority    0          Outline status  NOOUTLINE
Input messages      64        Page status     PAGEABLE
Output messages     68        Page height     43
Transactions        5         Page width     80
Storage violations  0         Default page height 43
Transmission errors 0         Default page width 80
Transaction errors  0         Alt page height 27
Trans ID            ODIS      Alt page width  132
Task Number        390       Partn status    NOPARTITIONS
Next trans ID
ProgSymbol          NOPROGSYMBOL
Active screen height 43        Query status    ALLQUERY
Active screen width 80        RelReq status   NORELREQ
Default screen heigh 43        Security        NOPRESETSEC
Default screen width 80        Session type    NOTAPPLIC
Alt screen height   27        SOSI status     NOSOSI
Alt screen width    132       Text KB status  NOTEXTKYBD
Alternate suffix    X'00'     Tracing         STANTRACE
Alarm status        AUDALARM  TTI status      TTI
DCKYBD status      DUALCASE  Validation       NOVALIDATION
UCTRAN status       UCTRAN    ZCP tracing     NOZCPTRACE
APLKYBD status     NOAPLKYBD Printer         LLDY
APLTEXT status     APLTEXT   Copy status     NOCOPY
ASCII status       NOTAPPLIC Prt adapter     NOPRINTADAPT
ATI status         ATI       Print copy      NOPRTCOPY
Auto connect       NONAUTOCONN Text print      NOTEXTPRINT
PF1: Next term    PF2: First term  PF3: Term summary  PF4: CSA  PF5: Task list
    
```

TERM * - CICS Terminal Control Table (Abbreviated)

This is an abbreviated display showing less information about each TCT entry but showing more entries than the full TERM display. This display is selected by specifying a table name of TERM followed by an entry name consisting of one asterisk plus the four character terminal ID of the first terminal to be displayed.

```

Addr 7F000000 ( 2 )   Online DISplay of TERM   *BC32                               15:34:10
                                                                V1.8B
   Ins  Messages      Term   # OF Tran  Act   Act
Term Acq  Input  Output  Err   Trans  Err  Tran  Task #  Opr  LU Name  Logmode  SV
BC32 I A   20    40    0    22    0  CEMT   453  FLL  BC32      0
BC33 I A   45    69    0    34    2    0  OPE  BC33      0
BE12 I A   46    50    0    5    0  ODIS   470  HSW  BE12      0
BE13 I R    0    0    0    0    0    0    0    BE13      0
CERR I    0    0    0    0    0    0    0
CNSF I    1    1    0    1    0    0
CNSL I    0    0    0    0    0    0
CNSY I    0    0    0    0    0    0
DA04 I R    0    0    0    0    0    0    0    DA04      0
LI08 I R    0    0    0    0    0    0    0    LI08      0
LI2E I R    0    0    0    0    0    0    0    LI2E      0
LLDY I R    0    0    0    0    0    0    0    LLDY      0
Q152 I R    0    0    0    0    0    0    0    Q152      0
Q153 I R    0    0    0    0    0    0    0    Q153      0
Q254 I R    0    0    0    0    0    0    0    Q254      0
Q255 I R    0    0    0    0    0    0    0    Q255      0
TXP1 I R    0    0    0    0    0    0    0    TXP1      0
TX0P I R    0    0    0    0    0    0    0    TX0P      0
TX1P I R    0    0    0    0    0    0    0    TX1P      0
PF1: Next term  PF2: First term  PF3: Term summary  PF4: CSA  PF5: Task list
    
```

TERM ** - CICS Terminal Control Table Summary

This display is designed to quickly highlight those terminals which may not be accessed by CICS. This display is selected by specifying a table name of TERM followed by an entry name consisting of two asterisks plus the four character terminal ID of the first terminal to be displayed. The OUT column will contain spaces if a given terminal may be accessed, otherwise it will contain one or more of the following characters:

```
Addr 7F000000 (2 )   Online DISplay of TERM   **BC32                               15:35:06
                                                                V1.8B
BC32 I A  -AAA I R  -AAV I R
BC33 I A  -AAB I R  -AAW O R
BE12 I A  -AAC I R  -AAX O R
BE13 I R  -AAD O R  -AAY O R
CERR I   -AAE O R  -AAZ I R
CNSF I   -AAF O R  -AA0 I R
CNSL I   -AAG O R  -AA1 I R
CNSY I   -AAH I R  -AA2 I R
DA04 I R  -AAI I R  -AA3 I R
LI08 I R  -AAJ I R  -AA4 I R
LI2E I R  -AAK I R  -AA5 I R
LLDY I R  -AAL I R  -AA6 I R
Q152 I R  -AAM O R  -AA7 I R
Q153 I R  -AAN O R  -AA8 I R
Q254 I R  -AAO O R  -AA9 I R
Q255 I R  -AAP I R  -ABA I R
TXP1 I R  -AAQ I R  -ABB I R
TX0P I R  -AAR O R
TX1P I R  -AAS O R
TX2P I R  -AAT O R
XA04 I R  -AAU I R
PF1: Next term   PF2: First term                               PF4: CSA   PF5: Task list
```

TID - VSE Task-related Information

Each task in the system is managed by two major control blocks: the Task Information Block (TIB) and Task Control Block (TCB). The Partition Control Block (PCB) contains information about the partition associated with the task. Each task has a Task ID (TID) which is used to identify the task. This display collects all of this information into one display and, in addition, displays the name and status of each task.

The TYPE column indicates the type of task as follows:

SYS	system task
PART	VSE partition
SUB	subtask
ICCF	subtask associated with an ICCF interactive partition

The right hand side of the display will indicate "LTA" for the task, if any, which occupies the LTA.

The entry name specified for this display is the hexadecimal Task ID. If omitted TID 21 (for BG) will be used.

A TASK STATUS of "82 WAIT ECB/XECB" indicates that the task is waiting for an ECB or XECB to be posted. In nearly all cases this refers to an outstanding I/O operation.

This display can often be useful when examining a stand-alone dump. The control blocks illustrated by this display can be difficult to locate in an unformatted dump. Assuming that the tasks at the time of the dump were the same as they are on an operational system (which should usually be the case with POWER, VTAM and CICS) the address of the desired control block can be determined from the TID display. This address can then be examined in the stand alone dump. It would be a good idea to double check the control block to see that the TID display actually matches the stand alone dump. This technique can also be used for any of the other VSE control blocks.

Addr 000FD0 (2) Online DISplay of TID 21										15:35:52
										V1.8B
TID	S	Part	Type	Name	TIB	TCB	PCB	--- Task status ---		
21	0	BG	Part	NO NAME	0004BC80	00051A40	0004B040	57	Wait	PWR SRV
22	1	F1	Part	POWERNET	0004C200	00054E80	00049BA0	82	Wait	ECB/XECB
23	2	F2	Part	DFHSIP	0004C180	000549C0	00049D80	83	Ready	to run
24	3	F3	Part	ISTINCVT	0004C100	00054500	00049F60	82	Wait	ECB/XECB
25	4	F4	Part	DFHSIP	0004C080	00054040	0004A140	82	Wait	ECB/XECB
26	5	F5	Part	NO NAME	0004C000	00053B80	0004A320	57	Wait	PWR SRV
27	6	F6	Part	ASMA90	0004BF80	000536C0	0004A500	83	Ready	to run
28	7	F7	Part	NO NAME	0004BF00	00053200	0004A6E0	57	Wait	PWR SRV
29	8	F8	Part	PCSLOG	0004BE80	00052D40	0004A8C0	82	Wait	ECB/XECB
2A	9	F9	Part	FAQSAO	0004BE00	00052880	0004AAA0	82	Wait	ECB/XECB
2B	A	FA	Part	NO NAME	0004BD80	000523C0	0004AC80	57	Wait	PWR SRV
2C	B	FB	Part	NO NAME	0004BD00	00051F00	0004AE60	57	Wait	PWR SRV
2D	Z1	Z1	Part	FAQXCONS	005B2268	005B22E8	005B2088	82	Wait	ECB/XECB
2E	C1	C1	Part	AXPL1	005B5268	005B52E8	005B5088	82	Wait	ECB/XECB
2F	Y1	Y1	Part	BIMEDIT	005B7268	005B72E8	005B7088	82	Wait	ECB/XECB
30	Z2	Z2	Part	JCLSCHED	00610268	006102E8	00610088	82	Wait	ECB/XECB
31	Z3	Z3	Part	FAQSIUX	005C9268	005C92E8	005C9088	82	Wait	ECB/XECB
32			Part	Unused						
33			Part	Unused						
PF1: Next tasks PF2: First tasks PF3: PIB PF4: CSA PF5: Task list										

TRAK - Start or Stop ODISTRAK

This is not a display of any table. It is used to start and stop ODISTRAK. ODISTRAK is started by entering:

```
ODIS TRAK ON
```

ODISTRAK is turned off by entering:

```
ODIS TRAK OFF
```

This feature may be secured by specifying a SECTRAN in the ODISOPT macro.

It is possible to tell if ODISTRAK is active by using the ICE display. When active, there will be an entry whose DATA ID is ODISTINT.

ODISTRAK is fully described in the section "The ODISTRAK Feature" starting on page 89.

```
Addr 000000 (2) Online DISplay of TRAK ON 06:15:52
                                                    V1.8B

ODIS123 - ODISTRAK has been turned on Status: Recording data

PF4: CSA PF5: Task list PF6: Hex+char PA2: Toggle
```

TRAN - CICS Transaction Table

The Transaction Table contains one entry for each transaction (not program) defined in CICS.

Addr 7F000000 (2)		Online DISplay of TRAN		CECI	15:40:17
					V1.8B
Initial Program	DFHECIP	Status	Enabled		
Priority	1	Dynamic Trn Backout	Backout		
Transaction Class	DFHTCL00	Dumping	Trandump		
Transaction Profile	DFHCICST	Routing	Static		
TWASIZE	0	SCRNSIZE	Default		
Runaway Timeout	20000 mSecs	RUNAWAYTYPE	User		
Read Timeout	0 Secs	Purgeability	Purgeable		
Deadlock Timeout	10 Secs	Shutdown XLT	Disabled		
Attach Count	2	Command Security	Yes		
Restart Count	0	Rsrc Level Security	Yes		
Storage Violations	0	TranIsolate	NoIsolate		
		Tracing	Standard		
Dynamic Local Count	0				
Dynamic RemoteCount	0	StoragClear	NoClear		
Remote Start Count	0	TaskDataKey	User		
Remote Tranid		TaskDataLocation	Below		
Remote Sysid					
Routing Profile		Stats last reset at 09:41:00			
PF1: Next tran	PF2: First tran	PF3: First prog	PF4: CSA	PF5: Task list	

TRAN * - CICS Transaction Table (Abbreviated)

This is an abbreviated display showing less information about each transaction, one line for each. This display is selected by specifying a table name of TRAN followed by an asterisk plus the four character transaction ID of the first transaction to be displayed.

```

Addr 7F000000 ( 2 )   Online DISplay of TRAN   *CECI                               13:57:59
                                                                V1.8B
Tran Program St Prty Use StgVi B D R Z W P X C S I T G K L Profile RTRN RSYS
-----
CECI DFHECIP E 1 2 0 B T S D U P D Y Y N S N U B DFHCICST
CECS DFHECSP E 1 0 0 B T S D U P D N N N S N C A DFHCICST
CEDA DFHEDAP E 1 0 0 B T S D U P D N N N S N C A DFHCICST
CEDB DFHEDAP E 1 0 0 B T S D U P D N N N S N C A DFHCICST
CEDC DFHEDAP E 1 0 0 B T S D U P D N N N S N C A DFHCICST
CEDF DFHEDFP E 1 250 0 B T S D U P D Y Y N P N C A DFHCICST
CEGN DFHCEGN E 255 0 0 B T S D U P D N N N S N C A DFHCICST
CEHP DFHCHS E 1 0 0 B T S D U N D N Y N S N C B DFHCICST
CEHS DFHCHS E 1 0 0 B T S D U N D N Y N S N C B DFHCICST
CEMS DFHEMSP E 1 0 0 B T S D U N D N Y N S N C A DFHCICST
CEMT DFHEMTP E 255 2 0 B T S D U N E Y Y N S N C B DFHCICST
CEOS DFHEMSP E 1 0 0 B T S D U N D N Y N S N C A DFHCICST
CEOT DFHEOTP E 255 0 0 B T S D U P D N N N S N C B DFHCICST
CEPW DFHPSOP E 254 0 0 B T S D U N D N Y N S N C A DFHCICST
CESC DFHCESC E 255 0 0 B T S D U N D N N N S N C A DFHCICST
CESF S1S610 E 1 1 0 B T S D U N D N N N S N U B DFHCICST
CESN S1S610 E 1 0 0 B T S D U N D N N N S N U B DFHCICST
Flags: B-DTB D-Dump R-Routing Z-Scrsz W-Runaway P-Purgeability X-XLT Last Reset
C-CMDSEC S-RSRCSEC I-Isolat T-Tracing G-Stgclear K-Datakey L-DataLoc 09:41:00
PF1: Next tran PF2: First tran PF3: First prog PF4: CSA PF5: Task list
    
```

TRAN ** - CICS Transaction Table (3-up)

This is a super-abbreviated display.

Addr 7F000000 (2) Online DISplay of TRAN **CECI													15:41:46	
													V1.8B	
Tran	Program	St	Prty	Use	Tran	Program	St	Prty	Use	Tran	Program	St	Prty	Use
CECI	DFHECIP	E	1	2	CFTS	DFHZATS	E	255	0	CRSR	DFHCRS	E	253	0
CECS	DFHECSP	E	1	0	CGRP	DFHZCGRP	E	254	1	CRSY	DFHRMSY	E	1	0
CEDA	DFHEDAP	E	1	0	CITS	DFHZATS	E	255	0	CRTE	DFHRTE	E	1	0
CEDB	DFHEDAP	E	1	0	CLS1	DFHZLS1	E	254	0	CRTX	#####	E	1	0
CEDC	DFHEDAP	E	1	0	CLS2	DFHLUP	E	254	0	CSAC	DFHACP	E	255	0
CEDF	DFHEDFP	E	1	250	CLS3	DFHCLS3	E	254	0	CSY	DFHCPY	E	1	0
CEGN	DFHCEGN	E	255	0	CLS4	DFHCLS4	E	254	0	CSFE	DFHFEP	E	255	0
CEHP	DFHCHS	E	1	0	CMDR	BIMCMDR	E	1	0	CSFU	DFHFCU	E	1	1
CEHS	DFHCHS	E	1	0	CMXP	DFHMXP	E	1	0	CSGM	DFHGM	E	1	0
CEMS	DFHEMSP	E	1	0	CMSP	DFHMSP	E	1	4	CSKP	DFHAKP	E	1	0
CEMT	DFHEMTP	E	255	4	CMTS	DFHZATS	E	255	0	CSLG	DFHZRLG	E	255	0
CEOS	DFHEMSP	E	1	0	CNSL	BIMCNSOL	E	1	2	CSMI	DFHMIRS	E	1	0
CEOT	DFHEOTP	E	255	0	COVR	DFHZCOVR	E	255	0	CSM1	DFHMIRS	E	1	0
CEPW	DFHPSOP	E	254	0	CPLT	DFHSIPLT	E	254	1	CSM2	DFHMIRS	E	1	0
CESC	DFHCESC	E	255	0	CPMI	DFHMIRS	E	1	0	CSM3	DFHMIRS	E	1	0
CESF	S1S610	E	1	3	CQRY	DFHQRY	E	255	11	CSM5	DFHMIRS	E	1	0
CESN	S1S610	E	1	0	CRMD	DFHZATMD	E	255	0	CSNC	DFHCRNP	E	255	0
CEST	DFHESTP	E	255	0	CRMF	DFHZATMF	E	255	0	CSNE	DFHZNAC	E	255	2
CETR	DFHCETRA	E	255	0	CRSQ	DFHCRQ	E	1	1	CSPG	DFHTPR	E	1	0

PF1: Next tran PF2: First tran PF3: First prog PF4: CSA PF5: Task list

TS - CICS Temporary Storage

Temporary Storage is a facility used as a “scratch” pad to store data outside of a task; it remains available after the task which created it has terminated. The Temporary Storage Table (TST) does not control all of temporary storage as might be suspected; it only defines those elements which are recoverable or remote. ODIS does not examine the TST if one exists.

In order to facilitate displays of Temporary Storage data IDs which contain hexadecimal characters, the entry name is assumed to be generic. For example, specifying TS ABC would cause the display to begin with the first data ID having ABC as its first three characters; the last five characters of the data ID would be ignored.

```

Addr 000000 ( 2 ) Online DISplay of TS **...M. 15:42:31
                                                    V1.8B

```

Data ID-	-Data ID in hex-	Number	Max Item	Min Item	Length
		of Items	Loc	Length	Length
**...M.	5C5CFD000346D400	1	Aux	128	128
**...M.	5C5CFD000346D401	1	Aux	64	64
**...M.	5C5CFD000349D400	1	Aux	128	128
**...M.	5C5CFD000349D401	1	Aux	64	64
**...M.	5C5CFD00034AD400	1	Aux	128	128
**...M.	5C5CFD00034AD401	1	Aux	64	64
**...M.	5C5CFD00034BD400	1	Aux	128	128
**...M.	5C5CFD00034BD401	1	Aux	64	64
BIMLOGO	C2C9D4D3D6C7D640	36	Main	128	64
DF000483	C4C6F0F0F0F4F8F3	1	Aux	64	64
DF00049C	C4C6F0F0F0F4F9C3	1	Aux	64	64
DF00049D	C4C6F0F0F0F4F9C4	1	Aux	64	64
ODIS.t..	D6C4C9E200A36228	1	Aux	256	256
S144BC32	E2F1F4F4C2C3F3F2	1	Aux	128	128

PF1: Next data ID PF2: First data ID PF3: TSCOM PF4: CSA PF5: Task list

TSCOM - Temporary Storage Common Area

The Temporary Storage Common Area contains information which is used to manage Temporary Storage.

The field labeled SUSPENSIONS indicates the number of times that transactions have been suspended because the auxiliary storage file has been full.

```

Addr 01A21028 ( 2 )   Online DISplay of TSCOM                               15:43:10
                                                                V1.8B
36 Entries/group      4          00 Recs put          226      ---- Aux ctl area ----
08 Ques created       10          04 Recs putq         291      Address 01A21140
0C Tsgid extensns    12          10 Put(q) main        36       7C CI reads          6
14 Max stg used       3K          1C Put(q) aux        481      80 CI writes         52
18 Cur stg used       3K
20 Suspensions        0          % aux TS in use      1       A4 Get(q) aux       459
24 Compressions      13          2C Puts > CIsz       0       A8 Get(q) main     529
28 I/O errors         0
                                                                B8 Curr Q IDs       14
                                                                BC Max Q IDs        19
                                                                C0 Max Q size       36
                                                                D0 CI size          4,096

      Number  Number  Max  Curr  Max  Total
      defined in use used  waits waits waits
CIs          104     2     9     0     0     0
Buffers       3     1     0     0     0     0
Strings       3     1     1     0     0     0

PF2: First data ID  PF4: CSA  PF5: Task list  PF6: Hex+char
    
```

VBUF - VTAM Buffer Pool Usage

VTAM buffers are grouped in a number of pools, each of which is controlled by a Pool Control Block (PCB). Information for this display is taken from these PCBs.

A field marked as "NA" indicates that the field does not currently apply to the particular buffer. This may be either permanent (for example, if dynamic buffering is not specified) or temporary (for example, if dynamic buffering is specified but not currently in effect).

Some of the buffer sizes shown in this display may be larger than specified in the VTAM start list. This is due to the additional control fields which are added by VTAM.

If the MAX USED field is less than 75% of MAX ALLOC (and MAX ALLOC is at least 15) the MAX USED and MAX ALLOC fields will be highlighted to indicate that too many buffers have been allocated, thus wasting storage. This is particularly important for the fixed buffers, SF and LF. SIPO users should check for this once their system is in production use.

When a buffer is currently in expansion mode the EXPANSION and THRESHOLD fields will all be highlighted.

The address in the upper left hand corner of the screen is the address of the Buffer Pool Directory (BPDIR).

Addr 4F10D8 (2) Online DISplay of VBUF											15:43:49
											V1.8B
PCB	Size	--Current--		---Max---		-Expansion-		-Threshold-		Free	
		Alloc	Avail	Alloc	Used	Times	Incr	Expan	Contr	buffer	
SF 004F0CD8	112	32	27	32	5	0	32	1	NA	06550D10	
IO 004F0D58	359	70	70	70	45	0	20	6	NA	00640768	
SP 004F0DD8	144	210	210	210	2	0	51	1	NA	0654FF30	
LP 004F0E58	2032	18	8	18	10	1	6	2	14	06557810	
LF 004F0ED8	120	90	87	90	3	0	30	1	NA	06556DE0	
BS 004F0F58	216	34	34	34	0	0	17	17	NA	0655EE90	
XD 004F0FD8	681	10	10	10	0	0	5	5	NA	009EBB10	
CR 004F1108	164	104	48	104	61	2	22	29	73	06551600	

PF3: SYSCOM PF4: CSA PF5: Task list PF6: Hex+char PA2: Toggle

VTAM - Issue VTAM Commands

This function is not, in and of itself, a display of any table. It provides the ability to issue commands to VTAM from a CICS terminal. Because of the potential consequences of this function the non-display commands (such as VARY and MODIFY) may be secured by specifying a SECTRAN in the ODISOPT macro; the DISPLAY command is never secured.

When initially starting ODIS the VTAM command may follow the keyword "VTAM" (e.g. ODIS VTAM D NET,ID=LU1). Subsequently, use of this facility is a two step procedure. After entering VTAM as the table name a screen will be returned with room to enter a VTAM command on the third line of the screen. After the operator fills in the appropriate command and hits the enter key ODIS will pass the command to VTAM and display VTAM's response. The size of the response is limited to the size of the screen. Unfortunately, it is not possible for ODIS to know for sure if it has received the entire response from VTAM. If the terminal operator suspects that the response is not yet complete, he or she may use an asterisk as the first character of the command; this will cause ODIS to request additional responses from VTAM, if any, without executing a new VTAM command.

Since ODIS does not allow the terminal operator to reply to messages issued by VTAM no commands should be issued which may require a reply. There are very few such commands, and they are used infrequently, e.g., dumping an NCP.

The LOGVTAM parameter of the ODISOPT macro may be used to instruct ODIS to log all VTAM commands to the system console or to a Transient Data destination.

This function uses the Program Operator interface to VTAM which does not allow certain commands to be executed; these include START (S) and HALT (Z). This function also requires that:

1. the CICS system includes at least one VTAM terminal
2. the CICS ACB is open
3. the APPL definition for CICS in VTAM includes the AUTH=SPO parameter

```
Addr 000000 ( 2 ) Online DISplay of VTAM 15:49:49
V1.8B
```

```
Enter VTAM command: D NET,ID=BE12
```

```
IST097I DISPLAY ACCEPTED
IST075I NAME = USBIM01.BE12 , TYPE = CDRSC
IST486I STATUS= ACT/S---Y, DESIRED STATE= ACTIV
IST977I MDLTAB=***NA*** ASLTAB=***NA***
IST1333I ADJLIST = ***NA***
IST861I MODETAB=***NA*** USSTAB=***NA*** LOGTAB=***NA***
IST934I DLOGMOD=***NA*** USS LANGTAB=***NA***
IST597I CAPABILITY-PLU ENABLED ,SLU ENABLED ,SESSION LIMIT NONE
IST231I CDRSC MAJOR NODE = ISTCDRDY
IST479I CDRM NAME = M06HOST , VERIFY OWNER = NO
IST1184I CPNAME = USBIM01.M06HOST - NETSRVR = ***NA***
IST082I DEVTTYPE = CDRSC
IST654I I/O TRACE = OFF, BUFFER TRACE = OFF
IST171I ACTIVE SESSIONS = 0000000001, SESSION REQUESTS = 0000000000
IST314I END
```

```
PF4: CSA PF5: Task list PF6: Hex+char PA2: Toggle
```

WATCH - Start or Stop Watchdog Mode

This is not a display of any table. It is used to start and stop Watchdog mode. Watchdog mode is started by entering:

```
ODIS WATCH mmss
```

Where mmss is the time interval in minutes and seconds. Leading zeroes may be omitted. If a time interval is not specified, the value specified by the WATINT parameter of the ODISOPT macro is used. Watchdog mode is turned off by entering:

```
ODIS WATCH OFF
```

This feature may be secured by specifying a SECTRAN in the ODISOPT macro.

It is possible to determine if The Watchdog is active by using the ICE display. When active there will be an entry whose DATA ID is ODISWDOG.

Watchdog mode is fully described in the section "Watchdog Mode" starting on page 98.

```
Addr 000000 (2) Online DISplay of WATCH 0200 06:45:03
                                                    V1.8B

The Watchdog has been started

PF4: CSA PF5: Task list PF6: Hex+char PA2: Toggle
```

WHO - Identify the Terminal

This display combines in one place all of the relevant information for the terminal which is using ODIS. The display is modified according to the environment. This includes:

1. The TP access method: VTAM
2. Multi-Region Operation (MRO)
3. Virtual Machine (VM)

```
Addr 000000 (3 ) Online DISplay of WHO                                06:49:02
                                                                    V1.8B
----- CICS -----
Terminal ID      LL0B
Operator ID     SYS
User ID         SYSTEM
Partition       F2

----- VTAM -----
App1 ID         CICSPROD
LU name        LL0B

----- VM -----
USER ID        VSE3
CPU SERIAL     010833

PF3: TERM display  PF4: CSA  PF5: Task list  PF6: Hex+char  PA2: Toggle
```

Storage Display and Alteration

ODIS provides the ability to access storage anywhere in the machine in hexadecimal and character format. This includes the Supervisor, real partitions, virtual partitions and the SVA. The following functions are available.

1. display storage
2. alter storage
3. scan storage

Storage Display

A hexadecimal and character display of storage may be initiated in any of the following ways:

1. Enter a 1-8 digit hexadecimal address as the "table" name. Leading zeroes are not necessary. This may optionally be followed by an address space number or partition id. See "Current Address Space" on page 85.
2. Enter a 1-7 digit displacement preceded by a plus or minus sign as the "table" name. The displacement is added to the current address.
3. Enter a static or dynamic partition ID such as F1, BG, G1, etc. to display the beginning address of the specified partition. This will also set the "current address space", as discussed below, to the address space containing the specified partition.
4. Hitting the PF6 or PF18 key at any time will display the storage beginning at the address in the upper left hand corner of the screen. The PF6 and PF18 keys may be changed for an installation by the ODISOPT macro.
5. Some displays (for example PROG) use PF3 or PF15 to initiate a hexadecimal and character display related to the contents of the screen.
6. The abbreviation of an area of storage may be entered. Select from the list in the section "Symbolic Unformatted Displays" on page 20.

When a hexadecimal and character display is initiated by one of the above methods (except number 2) ODIS remembers the address. This is called the "initial" address and is used for the PF2 or PF14 key.

```

Addr 01A00000 ( 2 )   Online DISplay of                               09:40:05
                                                                V1.8B
+00000 01A00000 47F0F110 01261EC9 D1C2C3D5 E2C6C96B *.01...IJBNSFI,*
+00010 01A00010 F9F561F0 F361F3F1 6BF1F5C3 60C4E8F0 *95/03/31,15C-DY0*
+00020 01A00020 F0F0F0F0 40F5F6F8 F660F0F6 F6404DC3 *0000 5686-066 (C*
+00030 01A00030 5D40C396 97A89989 8788A340 C9C2D440 *) Copyright IBM *

+00040 01A00040 C3969997 4B40F1F9 F9F46B40 F1F9F9F4 *Corp. 1994, 1994*
+00050 01A00050 4B40C193 9340D989 8788A3A2 40D985A2 *. All Rights Res*
+00060 01A00060 8599A585 844B40E4 E240C796 A5859995 *erved. US Govern*
+00070 01A00070 948595A3 40E4A285 99A240D9 85A2A399 *ment Users Restr*

+00080 01A00080 8983A385 8440D989 8788A3A2 406040E4 *icted Rights - U*
+00090 01A00090 A2856B40 84A49793 898381A3 89969540 *se, duplication *
+000A0 01A000A0 96994084 89A28393 96A2A499 85409985 *or disclosure re*
+000B0 01A000B0 A2A39989 83A38584 4082A840 C7E2C140 *stricted by GSA *

+000C0 01A000C0 C1C4D740 E2838885 84A49385 40C39695 *ADP Schedule Con*
+000D0 01A000D0 A3998183 A340A689 A38840C9 C2D440C3 *tract with IBM C*
+000E0 01A000E0 9699974B 40D38983 8595A285 8440D481 *orp. Licensed Ma*
+000F0 01A000F0 A3859989 8193A240 6040D799 96978599 *terials - Proper*

PF1: Forward  PF2: Initial  PF3: Backward / 24-bit  PF4: CSA  PF5: Task list
    
```

Whenever a hexadecimal and character screen is displayed the PF keys have the following meaning:

PF1 and PF8 advance forward by the number of bytes displayed on one screen (which will vary with the terminal model)

PF2 and PF14 reset the display to the “initial” address

PF3 and PF7 move the display backward by the number of bytes on one screen

PF6 and PF18 reset the “initial” address to the address in the upper left hand corner of the screen (as is done for all of the ODIS displays). This results in the displacements being reset without changing the address being displayed.

The ability to display storage may be secured by specifying SECHX=YES and SECTRN=xxxx in the ODISOPT macro.

Current Address Space

All entered addresses are assumed to be in the “current address space”, which normally is the address space in which ODIS is executing. The current address space is displayed following the current address on the top line of screen, “(3)” in the above example. If the current address space is a dynamic partition, the partition ID is displayed, such as (G1). You can switch to a different address space using any of the following methods:

1. Enter the ID of a partition in the desired address space.
2. Enter the ID of the address space following the address:
 - 100078 1 (This will display address 100078 in address space 1.)
 - 100078 3 (This will display address 100078 in address space 3.)
3. Enter the ID of a partition within the desired address space following the address:

100078 BG	(This will display address 100078 in address space containing static partition BG.)
100078 G1	(This will display address 100078 in address space containing dynamic partition G1.)

Once you change the “current address space”, all storage displays, alterations, and SCANs will occur in the new address space.

When you request the next CICS or VSE table to be displayed, the “current address space” will revert back to the one in which ODIS is executing.

Cursor Positioning

After a hexadecimal and character screen has been displayed another hexadecimal and character screen may be selected by simply positioning the cursor and hitting the enter key. This may be done in one of two ways:

1. Position the cursor beneath any portion of an address in the hexadecimal portion of the display. For this purpose an address is defined as a four byte field (eight hexadecimal digits) which begins on a full word boundary (xxxxx0, xxxxx4, xxxxx8 or xxxxxC). The top byte of the address is ignored. The next display will begin at the selected address.
2. Position the cursor in column one of any row. The next display will begin at the selected line.

If the cursor is positioned at an unsupported screen location it will be ignored, and the same display will be repeated.

Storage Alteration

When running on a 3270 terminal any area of storage which can be displayed in hexadecimal and character can also be modified in hexadecimal and/or character. This includes the Supervisor, all partitions and the SVA. Because of the risks involved with storage alteration this function may be secured by specifying a SECTTRAN parameter in the ODISOPT macro.

Before an area of storage can be altered it must be displayed. It may then be altered by simply moving the cursor to the desired location(s) on the screen and making the alteration(s) in hexadecimal and/or character. Any amount of data, from one byte to the capacity of the screen, can be altered in this manner. The smallest amount of data that can be altered is one byte. When altering data on the “character” part of the screen (right hand side), be sure to enter the data in the intended case, since lower case data will not be translated by ODIS to upper case.

While this feature can be as dangerous as it is useful, a number of safeguards have been included to make it as safe as possible. Storage will be altered only if all of the following conditions are met:

1. The transaction ID matches that in the SECTTRAN parameter of the ODISOPT macro if specified.

2. No characters on the screen have been deleted (by the DEL, ERASE EOF or ERASE INPUT keys)
3. The addresses in the left hand column on the screen have not been altered.
4. The table name at the top of the screen has been left unchanged (i.e. blank)
5. The ENTER key was hit, not a PA or PF key.

For those desiring an exact description of the method of operation the following description is included. This will only be important when dealing with volatile data. First of all, there are three versions of the area of storage:

1. The "old" version as originally displayed on the screen
2. The "new" version on the screen as altered by the terminal operator
3. The "current" version as it exists at any moment in storage

ODIS compares the "old" and "new" versions on a byte by byte basis in hexadecimal and character and performs the following:

1. If the "old" and "new" versions are identical (in both hexadecimal and character) the "current" version of the byte is left unchanged.
2. If the "old" and "new" versions are different (in either hexadecimal or character) the "current" version is altered to the new version.
3. After all bytes on the screen have been processed, the "current" version is displayed.

The net result of this method is that bytes altered by the terminal user will be altered by ODIS. Bytes not altered by the terminal user will not be altered by ODIS; they may, however, have been altered by VSE or another program between the time the data was displayed and the time the terminal operator requested the alteration.

Storage alteration is a facility which should be used with care, and its use should be restricted to those who know the details about the area of storage (CICS, Supervisor, VSAM, database, user program, etc.) being altered. The following is a partial list of uses for this feature:

1. modifying assembler programs without reassembly
2. modifying an instruction in a program which causes it to abend at a particular point during its execution and produce a dump for debugging purposes
3. modifying WORKING-STORAGE in a command level COBOL program (This may be located by the DSA ADDR in the TERM display or by using the "WS" special name)
4. making minor changes to CICS tables such as TWA SIZE on the TRAN display or NEXT TRANSID on the TERM display
5. modifying instructions or data in batch partitions/regions

6. applying emergency APARs to the Supervisor without performing an IPL
7. changing ASSGNs which were specified incorrectly when CICS was started

The LOGSA parameter of the ODISOPT macro may be used to instruct ODIS to log all storage alterations to the system console or to a Transient Data destination.

Storage Scan

Use of this feature is documented in the section “SCAN - Scan Storage” starting on page 54.

The ODISTRK Feature

ODISTRK is a special feature where ODIS records the major CICS statistics and periodically writes them to a VSAM file. Later, batch reports may be run using this data. After initiation, ODISTRK runs independently of other ODIS transactions. The data may be archived to tape for historical purposes. Use of ODISTRK requires the following preparatory work:

1. DEFINE the file using IDCAMS
2. Add an entry to the FCT
3. Select a time interval to be used between successive writes to the file
4. Select a frequency at which the ODISTRK file is to be archived to tape
5. Select a method to start and stop ODISTRK

ODISTRK File Definition

The file used by ODISTRK is a standard VSAM ESDS file. It should be DEFINED by running an IDCAMS job similar to the following:

```
// EXEC IDCAMS,SIZE=AUTO
  DEFINE CLUSTER(
    NAME(ODISTRK.ESDS)
    CISZ(4096)
    NONINDEXED
    RECORDS(pppp ssss)
    RECSZ(1000 2000)
    REUSE
    SHR(2)
    VOL(VOLSER))
    DATA(NAME(ODISTRK.DATA))
    CATALOG(XXXXXXXXXXXX)
/*
```

A file size of 5-20 cylinders or 5,000 - 20,000 FBA blocks is usually sufficient. Secondary allocation is recommended. A more precise estimate of the file size involves the following factors:

1. The number of records written at one time. This will be the sum of:
 - one record for every 247 destinations
 - one record for every 31 files
 - one record for every 139 programs
 - one record for every 98 terminals
 - one record for every 66 transactions
 - one record for every Watchdog message (if any)
 - one record for overall system information

2. The time interval between successive writes to the file (see below).
3. The frequency at which the file is to be archived to tape, at which time the file on disk is cleared.

After the file has been DEFINEd, an entry similar to the following should be added to CICS:

DFHFCT TYPE=DATASET ,	X
DATASET=ODISTRK ,	X
ACCMETH= (VSAM , ESDS) ,	X
SERVREQ= (ADD , REUSE) ,	X
STRNO=1 ,	X
BUFND=2	

Additional data buffers may be allocated if desired.

Selection of Time Intervals

The TRKINT parameter of the ODISOPT macro controls the interval at which records are written. Since ODISTRAK is intended to be used to measure long-term activity, a medium to large interval such as the default value of 15 minutes, should be appropriate under most circumstances. A smaller value may be used for more precise timings, but this increases the overhead of writing the records and increases the amount of disk space required.

The statistics recorded by ODISTRAK should be retained on disk for a reasonable length of time and then purged or archived to tape. While this may be done as frequently as once per CICS startup, a longer period, such as once per week may be more convenient from an operational viewpoint.

Starting ODISTRAK

When initially testing ODISTRAK, it may be started and stopped manually by using the TRAK ON and TRAK OFF functions. For long term production use, however, ODISTRAK should probably be started automatically by using a PLT. Instructions for doing so are documented in the section "CICS RDO " starting on page 7. The PLTPI paramter of the ODISOPT table must include a value of TRAK. Also, if a nonstandard transaction ID is to be used, the TRKTRAN parameter must be specified accordingly.

Batch Report JCL

Batch reports may be produced by running a job step similar to the following:

```
// DLBL ODISTRK, 'ODISTRK.ESDS' , ,VSAM,CAT=xxxxxxx  
// ASSGN SYS001,DISK,...  
// DLBL SORTWK1,...  
// EXTENT SYS001,...  
// EXEC ODISTRK,SIZE=(ODISTRK,64K)  
parameter cards  
/*
```

If the CICS system associated with the file is running, then ODISTRK should be turned off with the TRAK function and the ODISTRK file should be closed before the report step is run. If the ODISTRK file is still open, the reports will probably omit numerous records that are not yet reflected in the VSAM catalog.

Stopping ODISTRK

In order to minimize data lost during the last interval prior to CICS shutdown ODISTRK should be included in a shutdown PLT. Instructions for doing so are documented in the section "CICS RDO " starting on page 7.

Parameter Card Syntax

Parameter cards must observe the following conventions:

1. An asterisk in column 1 indicates a comment card.
2. The keyword (such as REPORT) may be preceded by one or more spaces and must be followed by one or more spaces.
3. The parameters must have no imbedded spaces.
4. Parameters and values are terminated by a space. Comments may follow.
5. Only columns 1 - 72 are examined. Columns 73 - 80 are ignored.
6. Cards cannot be continued.

Parameter Cards

The RANGE card indicates which records from the input file are to be used when producing the reports indicated by subsequent REPORT cards. The format is:

```
RANGE START=(MM/DD/YY,HH:MM:SS),END=(MM/DD/YY,HH:MM:SS)
```

The default for START and END are the first and last records in the file. The time specification in each case is optional. START defaults to 00:00:00 and END defaults to 23:59:59.

The REPORT card indicates which report(s) are to be produced. There is no default. The format is:

```
REPORT xxxxxxxx,yyyyyyyy,...
```

The reports may include any of the following:

DEST	destinations
FILE	files
PROG	programs
SYS	overall CICS system-related information
TERM	terminals
TRAN	transactions
WATCH	Watchdog messages
ALL	all of the above

The INPUT card indicates the file to be read when producing reports. The format is:

```
INPUT xxxxxxxx
```

where xxxxxxxx may be:

ARCHIVE	a tape produced by the ARCHIVE function. Job control must be provided for the ARCHIN tape file as specified below.
CURRENT	a VSAM ESDS file. Generally, this is the file which is written under CICS. (Since this is a read-only function, the file MAY be open for output in the CICS partition. However, if it is open, numerous records toward the end of the file may be omitted.) Job control must be provided for the ODISTRK disk file.

If omitted, INPUT CURRENT is assumed.

Archiving Data

The ARCHIVE card indicates that the current disk file is to be copied in its entirety to tape and that the current disk file is then to be cleared. Additionally, a previous archive tape may be used as input to an archive run in order to produce a cumulative history tape. An archive tape can be used as input to produce reports but cannot be used to restore the ODISTRK file. Generally, an archive run should be done on a periodic basis such as once per week. The format is:

```
ARCHIVE CLEAR=xxx
```

where:

CLEAR=YES	indicates that the current disk file is to be cleared upon completion of the archive. The file must not be open in the CICS partition. This is the default.
-----------	---

CLEAR=NO indicates that the current disk file is to be left unchanged by the archive. The file may be open in the CICS partition, but if so, numerous records near the end of the file will be omitted from this run.

Job control must specify:

1. A TLBL for an old archive tape named ARCHIN and an ASSGN for SYS004. If an input tape is not to be used, assign SYS004 to IGN.
2. A TLBL for a new archive tape named ARCHOUT and an ASSGN for SYS005. If no output tape is desired, assign SYS005 to IGN.

Report Format

The title of each report includes the following information:

1. The date and time of first and last records encountered within the range specified.
2. The number of intervals observed within the range specified.
3. The VTAM application ID except under certain circumstances when it is unavailable.

Under certain circumstances for the System and Watchdog reports the above information will appear at the bottom of the report.

Specific comments concerning some of the information shown on these reports appears following the sample reports.

Sample Reports

Destinations

ODISTRAK V1.8B		HISTORICAL DESTINATION DATA FROM 08/02/98 22:07:36 CICSPROD TO 08/09/98 21:26:22								REPORT PRODUCED 01/08/99 22:14:23 BASED UPON 44 INTERVALS				PAGE 1	
DEST	WRITES	DEST	WRITES	DEST	WRITES	DEST	WRITES	DEST	WRITES	DEST	WRITES	DEST	WRITES	DEST	WRITES
CPLD	0	CPLI	0	CSML	0	CSMT	174	CSSL	546	CSSM	0	CSSN	0	CSTL	372
L86P	0	RCLG	0	RCPH	0										
TOTAL	1,092														

Files

ODISTRK V1.8B		HISTORICAL FILE DATA						FROM 08/02/98 22:07:36		REPORT PRODUCED 01/08/99 22:14:23				PAGE 1
		CICSPROD						TO 08/09/98 21:26:22		BASED UPON 44 INTERVALS				
		GET						--STR WAIT-- --BUFF WAIT--						
FILE	READ	ADD	UPDATE	UPDATE	BROWSE	DELETE	TOTAL	HIGH	TOTAL	HIGH	TOTAL			
FMAPFLE	0	0	8	8	0	0	8							
ODISTRK	0	324	0	0	0	0	324							
ONLMSG	0	0	0	0	19	0	19							
STAGER	0	0	0	0	0	0	0							
TOTALS	0	324	8	8	19	0	351	0	0	0	0			

Programs

ODISTRK V1.8B		HISTORICAL PROGRAM DATA						FROM 08/02/98 22:07:36		REPORT PRODUCED 01/08/99 22:14:23				PAGE 1
		CICSPROD						TO 08/09/98 21:26:22		BASED UPON 43 INTERVALS				
PROGRAM	USED	FETCH	PROGRAM	USED	FETCH	PROGRAM	USED	FETCH	PROGRAM	USED	FETCH			
BIMCMDR	2	2	BIMCNDEF	19,628	2	BIMCNEXT	217	2	BIMCN SOL	19,646	2			
BIMCSDT	2	2	BIMCSED	0	0	BIMCSPS	1,269	2	BIMCSTAT	0	0			
BIMCXDEF	2	2	BIMCXENA	2	2	BIMCXTCP	2	2	BIMDEV	0	0			
BIMDPWR	36	1	BIMECHO	0	0	BIMECHOC	47	2	BIMECHOI	2	2			
BIMECHOX	2	2	BIMECHO1	0	0	BIMECHO2	0	0	BIMEXDIS	0	0			
BIMEXENA	0	0	BIMGETSP	4	2	BIMGMM17	61	2	BIMLIBTB	1	1			
BIMMDEF	4	2	BIMMNR	31	1	BIMPRDEF	3	2	BIMPRINT	0	0			
BIMPXENA	2	2	BIMPXICP	4	2	BIMP3270	0	0	BIMSERV	2	1			
BIMSMS	0	0	BIMSNDEF	1	1	BIMSPCTL	33	1	BIMSPDEF	23	2			
BIMSPEXT	26	1	BIMSPINT	2	2	BIMSPLSR	25	1	BIMSPLXT	0	0			
BIMSPMSG	60	2	BIMSPON	0	0	BIMSPPR	5,063	2	BIMSUBMT	0	0			
BIMSWAP	0	0	BIMSWAPM	0	0	BIMSWAPP	2	2	BIMSWAPX	2	2			
BIMTEST1	0	0	BIMVTCMD	344	2	CMPDRIV	0	0	DFHACP	23	2			
DFHEIGDS	0	0	DFHEITAB	0	0	DFHEITMT	13	2	DFHEITOT	0	0			
DFHEITSP	0	0	DFHEITST	0	0	DFHEMA	0	0	DFHEMB	18	2			
.														
IBMFPGDA	0	0	IBMFPMRA	0	0	IBMFSTVA	0	0	ODIS	96	3			
ODISOPT	3	2												
TOTALS	47,576	109												

System

ODISTRK V1.8B		HISTORICAL CICS SYSTEM DATA										FROM 08/02/98 22:07:36				REPORT PRODUCED 01/08/98 22:14:23				PAGE 1
STARTUP 08/02/94 21:17:17		CICSPROD										TO 08/09/98 21:26:22				BASED UPON 43 INTERVALS				
DATE	TIME	TOTAL TASKS	TIMES MXT	PROG CHECKS	DUMPS TAKEN	R'WAY TASKS	TIMES SOS	STG VIO	DSA FREE	GETMAIN	WDOG MSGS	TSM IN USE	PUT(Q) MAIN	PUT(Q) AUX						
08/02/94	22:07:36	0	0	0	0	0	0	0	1056K	0	0	K	0	0						
08/02/94	22:08:00	2	0	0	0	0	0	0	1068K	43	0	K	1	2						
08/02/94	22:10:00	12	0	1	1	0	0	0	1056K	134	0	K	1	7						
.																				
08/02/94	22:38:00	17	0	2	2	0	0	0	1056K	89	0	K	1	7						
08/02/94	22:40:00	8	0	0	0	0	0	0	1056K	92	0	K	1	7						
TOTAL OF ABOVE		141	0	3	3	0	0	0		1,685	0		19	114						
ENDING VALUE		335	0	3	3	0	0	0	1056K	7,784	0	K	22	262						
MAXIMUM VALUE		13	0	2	2	0	0	0	1068K	167	0	K	2	7						

The fields shown on the system report fall into two categories. The following fields are snapshots which show the value of the field at the time shown:

DSA FREE
TSM IN USE

These fields will be blank in the total lines.

All other fields show the number of times an event occurred within the interval.
The time shown is that of the end (not the beginning) of the interval.

Terminals

ODISTRAK V1.8B		HISTORICAL TERMINAL DATA										FROM 08/02/98 22:07:36		REPORT PRODUCED 01/08/99 22:14:23		PAGE 1	
		CICSPROD										TO 08/09/98 21:26:22		BASED UPON 16 INTERVALS			
TERM	TRANS ACTIONS	--- MESSAGES INPUT	--- MESSAGES OUTPUT	--- XMIT ERRS	STG VIO	TERM	TRANS ACTIONS	--- MESSAGES INPUT	--- MESSAGES OUTPUT	--- XMIT ERRS	STG VIO	TERM	TRANS ACTIONS	--- MESSAGES INPUT	--- MESSAGES OUTPUT	--- XMIT ERRS	STG VIO
BMDY	0	0	0	0		BM01	0	0	0	0		BM02	0	0	0	0	
BM1A	0	0	0	0		BM1B	0	0	0	0		BM1X	0	0	0	0	
BM1Y	0	0	0	0		BM1Z	0	0	0	0		CNSL	2	4	2	0	
DADY	0	0	0	0		DA02	281	14	24	0		DA04	4,815	0	71	0	1
.																	0
.																	0
LL7A	49	357	354	0		LL7B	0	0	1	1		TS01	0	0	0	0	
TS1A	0	161	298	24		TS1B	0	27	35	8		TS1C	0	3	368	8	
TS1W	0	0	0	0		TS1X	0	0	0	0		TS1Y	0	0	0	0	
TS1Z	0	0	0	0		WA01	0	428	845	0							
TOTAL	5,858	1,922	21,846	57	1												

Transactions

ODISTRAK V1.8B		HISTORICAL TRANSACTION DATA										FROM 08/02/98 22:07:36		REPORT PRODUCED 01/08/99 22:14:23		PAGE 1
		CICSPROD										TO 08/09/98 21:26:22		BASED UPON 44 INTERVALS		
TRAN	USED	RE START	STALL PURGE	STG VIO	TRAN	USED	RE START	STALL PURGE	STG VIO	TRAN	USED	RE START	STALL PURGE	STG VIO		
\$ATT	0				\$BIM	0				PF10	0					
PF11	0				PF12	0				BCST	0					
BIMC	0				BIMP	0				BMGM	62					
.																
.																
LOG2	0				MNTR	31				MSG	1					
ODIS	42				POWC	33				POWM	0					
RXLS	0				SERV	2				SPOL	5,068			2		
SWAP	0				SWAX	3				TEST	0					
VCMD	342				XDIS	0				XENA	0					
PF1	0				PF4	0				PF5	0					
PF6	12				PF7	0				PF8	0					
PF9	0															
TOTALS	12,879	0	0	2												

Watchdog

ODISTRAK V1.8B		HISTORICAL WATCHDOG DATA										REPORT PRODUCED 01/08/99 14:24:07		PAGE 1
STARTUP 01/07/99 09:41:48		CICSPROD												
	DATE	TIME	PROBLEM NUMBER	IMPACTS	DESCRIPTION OF PROBLEM									
	01/07/99	10:02:15	18	SYSTEM	TRAN CEMT AT TERM LL0B USING TOO MUCH (39K) STORAGE									
	01/07/99	11:25:00	61	SYSTEM	***** STORAGE VIOLATION HAS OCCURRED *****									
												DATA FROM 01/07/99 19:44:28 TO 01/08/99 14:22:28	BASED UPON 36 INTERVALS	

This report shows all Watchdog messages which have not been suppressed by the WATSUPR parameter of the ODISOPT macro. It is unaffected by the LOGWAT and WATTERM parameters.

Resetting Statistics

ODISTRAK attempts to detect the resetting of statistics which occurs when the CSTT AOC transaction is executed. Whenever this occurs, there will probably be some activity which cannot be recorded by ODISTRAK.

Time-Initiated Mode

When running on a 3270 terminal, any of the ODIS displays may be automatically redisplayed by ODIS at regular time intervals, without requiring any action by the operator. To do this, first display the desired screen. Then, modify either the table name or the entry name to one of the following:

T=mmss
T=mss
T=ss
T=s

to specify the time interval in minutes and seconds. To indicate that ODIS is automatically refreshing the display, the top line of the screen will have the time interval added.

The minimum time interval can be controlled using the TIMMIN parameter of the ODISOPT customization macro. Refer to page 12 for more information.

During time-initiated mode the 3270 entry keys may be used as follows:

1. The enter key redisplay the screen immediately and remains in time-initiated mode.
2. The clear key terminates ODIS.
3. Any other key terminates time-initiated mode but leaves ODIS running at the terminal.

In Multi-Region Operation (MRO) environment, time-initiated mode is not possible if the ODIS transaction is being routed by CRTE, but is possible if the ODIS transaction is explicitly routed by its own entry in the Transaction Table.

Watchdog Mode

Watchdog mode is a method of operation where ODIS is periodically invoked to examine the CICS system and look for potential problems. If any problems are detected they will be reported at a CICS terminal; if no problems are detected there will be no messages. Thus, Watchdog mode reports on an exception basis. The Watchdog is capable of writing its messages to one or two locations according to the specifications in the ODISOPT macro:

1. A CICS terminal, such as the operator's console as specified by the WATTERM parameter.
2. The operator's console (LOGWAT=YES) or a Transient Data destination (LOGWAT=XXXX).

The preferred, and default method of operation is to run as a nonterminal-oriented transaction with the output directed to the operator's console. If a terminal is selected by the WATTERM parameter, The Watchdog will be made subject to the availability of that terminal.

The Watchdog runs just like any other CICS transaction. However, its operation is restricted in two ways:

1. It never issues a read to the terminal. This allows The Watchdog to run on a printer.
2. It may not issue any I/O to the terminal, that is, it will only do I/O if an exception condition occurs.

The potential problems which are reported are those detected by the PROB display except for those with a severity of NOTE (which are generally historical messages that do not indicate a current problem). The Watchdog transaction is a standard CICS transaction; therefore it is subject to all of the restrictions imposed upon CICS transactions including the following:

- The AMAX and MAXT limits must not be reached.
- The system must not be short on storage.

If a terminal is specified by the WATTERM parameter, the following additional restrictions apply:

- The terminal must be in service.
- The terminal's control unit (if any) must be in service.
- The terminal's line (non-VTAM) must be in service.
- A transaction must not be running at the terminal.
- The terminal's security key must match the transaction security key (if any) defined in the Transaction Table for ODIS.

In addition to the problems detected by the PROB feature, The Watchdog is able to detect the occurrence of some of the above problems during the interval between executions of The Watchdog. In this case the message will indicate the time The Watchdog detected the problem, which is not necessarily the time the problem occurred.

The time interval selected determines how often The Watchdog is invoked. A low interval allows The Watchdog to detect more transient problems but increases the overhead associated with The Watchdog. Since this overhead is relatively small a low time interval may be selected at times when problems are expected. For general use a time interval of approximately two minutes is recommended.

It is highly recommended that The Watchdog be automatically initiated when CICS is started. This may be done in one of two ways:

1. in a CRLP terminal as documented in the section "Miscellaneous Considerations" on page 124.
2. by including ODIS in a Program List Table during program initialization. This requires the following CICS table entries:

```
DFHPLT TYPE=ENTRY, PROGRAM=ODIS
DFHPPT TYPE=ENTRY, PROGRAM=DFHPLTxx
DFHSIT PLTPI=xx
```

In this case the default time interval (two minutes) will be used. This may be changed later, if desired, by issuing the WATCH command with the desired time interval.

Use of this feature may be restricted by specifying a SECTRAN in the ODISOPT macro.

Message Suppression

The Watchdog normally issues messages for all problems with a severity of LOW, MED, or HIGH (but not those with a severity of NOTE). However, at some installations certain conditions which ODIS considers to be potential problems may be considered by the installation to be normal. The Watchdog may be directed to suppress the messages for such conditions, either permanently or temporarily, as follows:

1. To permanently suppress a message specify the message number in the WATSUPR parameter of the ODISOPT macro.
2. To temporarily suppress a message execute an ODIS transaction using the "table" name of DISABL and the "entry" name as the number of the problem to be suppressed, for example:

```
ODIS DISABL 17
```

At a future point in time the message may be allowed by entering:

```
ODIS ENABLE 17
```

The ENABLE and DISABL functions may also be used to override the specifications of the WATSUPR parameter of the ODISOPT macro.

Watchdog User Exits

In order to allow the installation to customize the operation of The Watchdog two user exits are provided. These are standard CICS Command Level assembler programs. If used, they must be included in the Program Table in the same manner as all other CICS programs. The parameters of the RDO Program Definition may be chosen in any manner desired by the installation, although RES(YES) is recommended.

ODIS LINKs to the first user exit at the start of each execution of The Watchdog. This exit may perform any of its own checks for special conditions and may issue its own messages to the terminal. This exit is selected by specifying WATXIT1=xxxxxxx in the ODISOPT macro.

ODIS LINKs to the second user exit prior to writing each message issued by The Watchdog. This exit may examine the message, change the text of the message or suppress writing of the message entirely. If a message has been suppressed by the WATSUPR parameter of the ODISOPT macro it will not be presented to this user exit. This exit is selected by specifying WATXIT2=xxxxxxx in the ODISOPT macro.

ODIS follows standard CICS linkage conventions. If The Watchdog is running at a terminal, the exit program may issue output to the terminal via any of the standard CICS methods (e.g. EXEC CICS SEND). Return to ODIS is via the standard RETURN command. WATXIT1 is entered without a COMMAREA. WATXIT2 is entered with a COMMAREA which contains:

0	message number (a one byte binary field)
1-2	message number (a two byte character field)
5-10	“impacts” field: SYSTEM or TASKS
13-16	“severity” field: HIGH, MED or LOW
19-71	text of message

The message number is the number described with the PROB display. The message may be suppressed by changing the binary message number to X'00'.

Some possible uses for user exits are as follows:

- performing CICS checks beyond those performed by ODIS
- checking user application systems
- conditionally suppressing certain messages
- conditionally changing message texts
- recording statistics
- monitoring non-IBM software

correcting some problems, for example placing a terminal in service

A sample user exit is provided during installation in source format under the name ODISEXIT.A. This program may be assembled by running a job step similar to:

```
// LIBDEF SOURCE,SEARCH=lib.sublib
// EXEC ASSEMBLY
        COPY ODISEXIT
        END
/*
```

Using ODIS for Problem Determination

One area where ODIS can be particularly valuable is in problem determination. Generally speaking, the better an understanding the user has of CICS (and VSE) processing the more useful ODIS will prove to be. At the same time a careful examination of the tables provided by ODIS can help supply some of this understanding. At all times a familiarity with IBM manuals will prove to be valuable. While the number of user-related problems is obviously very large and impossible to document completely, this section illustrates some of the ways that ODIS can help in problem determination.

1. **PROBLEM:** A terminal is “stuck”; other terminals are able to operate normally.

PROCEDURE: Begin with the TERM display. Look for OUT OF SERVICE, CU OUT SERVICE, LINE OUT SERVICE or NOT CONNECT VTAM; if one of these is displayed this is probably the source of the problem. A task should be running; if so, the third column on the screen will be in use. In the TASK display look at the MOD, LAST REQ, DISPATCH CNTL, and RESOURCE to find the current state of the transaction. For example, if the task is running in KCP and WAIT FOR ENQ the task is waiting for an enqueued resource; look at the ENQ display to see which task owns the resource. If the task is running in FCP and waiting for I/O, VSAM strings or buffers, the name of the file should be shown. If the task is one of the ACTIVE TASKS it may be in a loop requesting the same CICS service repeatedly; for example, if the task is running in TSP check the TS and TSCOM displays to see if the I/O count is increasing rapidly.

2. **PROBLEM:** The screen displayed by a transaction is partially scrambled. There seems to be a problem with attribute bytes, SBA sequences, non-display fields, etc.

PROCEDURE: If this is a pseudo-conversational transaction it will probably be necessary to use the storage alteration facility to modify an instruction so the program will abend at a potential error location in the program. If this is a true conversational transaction it will stop when it issues a READ to the terminal. At this point any of the TIOAs on the TIOA chain may be examined. Begin with the TERM display. Either look at the CURRENT TIOA or chase the TIOA chain which begins at FIRST TIOA using the hexadecimal and character display. If the transaction has issued a FREEMAIN for any TIOAs they cannot be displayed since they no longer exist. The storage freeze function of the CSFE transaction will cause CICS to ignore all FREEMAIN requests, thus making it possible to view all TIOAs with ODIS. This transaction is documented in the CICS Operator's Guide.

3. **PROBLEM:** A transaction is behaving strangely; the programmer would like to look at WORKING-STORAGE.

PROCEDURE: The only practical time to examine a running transaction is while it is in a long term wait such as a ter terminal read. During this wait, begin with the TERM display. To view the transaction's WORKING-STORAGE change the entry name at the top of the screen (which now contains the terminal ID) to "WS". The Data Division map produced by the COBOL compiler will describe the contents of this area. In a similar manner the EIB, TIOAs, TCA and other task-related fields may be displayed. If desired the contents of WORKING - STORAGE may be altered by using the storage alteration facility.

4. **PROBLEM:** A whole room full of terminals, all running the same transaction, is "stuck"; terminals running different transactions are operating normally.

PROCEDURE: One task is probably holding a resource required by the other tasks. This is most likely an ENQ or an ECB which represents VSAM strings or buffers. The PROB display will probably indicate that there are tasks waiting for enqueued resources or that some tasks are waiting for a particular file. For more detail look at the appropriate ODIS display mentioned on the right hand side of the screen. For this example, assume that the problem lies with an enqueued resource. Use the ENQ display to see which terminal owns the resource; all other terminals should be listed as waiting for the same resource. Use the TERM display to determine the status of the terminal which owns the resource. In a manner similar to that for problem 1 above, determine what must be done to cause this transaction to continue processing, end, and/or DEQ the resource. In some cases it may be necessary to cancel the task. Once the resource is freed the other tasks at the other terminals should continue normally.

5. **PROBLEM:** Response time for a particular transaction is erratic. This does not seem to be related to any significant variation in work being performed, but seems to depend on the number of terminal operators using this transaction simultaneously.

PROCEDURE: This is may be caused by insufficient VSAM strings or buffers. Another alternative would be an enqueued resource; this is described as problem 4 above. Begin with the PROB display (while the problem is occurring). If ODIS does not detect any potential problems hit the enter key periodically. If this is a problem with VSAM strings or buffers the PROB display will indicate which file is causing the problem. Using the FILE display for the particular file will provide more detail such as the number of strings available, number in use and number of tasks waiting. If this is the problem the number of strings or buffers should probably (but not necessarily) be increased.

6. **PROBLEM:** Users are complaining about poor response time.

PROCEDURE: This can be one of the more difficult problems to address because of the many potential causes of poor response time. If only some transactions are affected some of the other problems described in this section

should be investigated. If all transactions are affected the first course of action should be to examine those factors which affect the entire system. These include the CPU usage, paging rate, disk channel utilization and CICS partition/region priority. A batch performance monitor may be useful in performing this analysis. Assuming that the problem seems to lie within CICS and is not caused by an overall system degradation there are a number of possible approaches. The PROB display will simultaneously check for many potential problems. The various limits (maximum tasks, maximum active tasks, time intervals, etc.) may be examined with the CSA display. The storage-related items (such as short on storage) may be examined with the DSA display. A list of all active and suspended tasks may be displayed with the TASK display. With a knowledge of the transactions running it may be possible to detect a high priority transaction that is consuming a disproportionate share of the system's resources. It may be CPU bound or performing a very long file browse. In this case lowering the transaction's priority may be a satisfactory way to deal with the situation.

7. **PROBLEM:** A pseudo-conversational transaction will not stop executing. No matter what the terminal operator enters the transaction is reinvoked thus preventing any other transaction from using the terminal. Furthermore, since it is pseudo-conversational, it runs so quickly that there isn't enough time to cancel it.

PROCEDURE: This problem can easily occur when a program that is designed to run on a 3270 terminal is run on another terminal. Lacking a clear key, there may be no alternate way of ending the transaction. Begin with the TERM display for the affected terminal. The NEXT TRANS ID field will contain something other than spaces. Using the displacement for this field (currently X'7C') locate it in the hexadecimal and character display produced by hitting the PF6 key. Using the storage alteration facility change it to spaces. The terminal will then be free.

8. **PROBLEM:** A minor mistake was made in one of the CICS tables. While it is possible to bring CICS down and up in order to fix the problem it would be better to avoid this.

PROCEDURE: Before considering any changes to any tables the risks must be assessed. Certain changes, such as changing a transaction's TWA size, may be made very safely. Other changes, such as changing a program's language, may be more difficult and entail some risk. Other changes, such as completely replacing a PCT entry, are very difficult and perhaps impossible. Furthermore, anyone modifying internal CICS control blocks should understand all related factors and must be willing to assume responsibility for the consequences. Also, before making any changes, the appropriate CICS documentation should be consulted. After the above precautions have been taken the mechanics of making the change becomes relatively simple. First, display the desired table entry. The displacement displayed with the field is then used to find the exact location of the field in the associated hexadecimal and character display (which is most easily displayed by using the PF6 key). The change should then be double checked by repeating the formatted display; the PA2 (toggle) key may be used for this purpose.

9. **PROBLEM:** A batch partition seems to be “stuck”.

PROCEDURE: The partition may be waiting for access to a locked resource; if so, the partition will be included in the WAITING portion of the LOCK WAIT display. If this is not the cause of the problem, examine the PART display for a period of time. If it is executing I/O commands its STARTIO count will keep increasing. If it is executing CPU instructions its CPU TIME will keep increasing. (Note that this field is accurate to the nearest second). Examining bytes 8-15 at the start of the partition will show the PSW, which should probably change frequently. The RUN CODE in the PART or COMREG display will show the dispatching status of the partition. These codes are documented in the Supervisor listing and in the Supervisor Diagnosis Reference manual. A value other than 83 indicates that the partition is waiting for something. For example, 81 indicates that the partition is waiting for the LTA; 82 indicates that the program is waiting for I/O to complete. If the RUN CODE is consistently 82 and the CPU TIME and STARTIO fields remain constant a lost interrupt may be the cause. To determine this look at the PUB display, especially for disk devices. Except for TP devices the CHQ field should not remain constant for any length of time. If this field remains constant for a disk device, it is probably due to a lost interrupt. Unfortunately, there is no satisfactory way to resolve this problem. Cancelling the affected partition should allow the rest of the system to continue normally without the need for an IPL. The CHANQ display for the appropriate entry will show which partition is affected. It is likely that other partitions have requested the use of this device (if it is a disk) and are also waiting for the first partition's I/O to complete. They may be identified by following the CHAIN field. An alternative to cancelling the partition may be to ready the device by turning it off and on, hitting the attention button, “popping the plug”, etc., but if this doesn't work it will probably be necessary to cancel the partition.

10. **PROBLEM:** A batch partition is running much longer than expected. The PART display shows that the CPU TIME and STARTIO counts are increasing, so the program is executing. It is just running too long.

PROCEDURE: Most programs contain some field(s) in WORKING - STORAGE which indicate the progress of the program. This may be a record counter, a key, a page number or some similar field. Using a listing of the program with a Data Division may and a hexadecimal and character display of the partition these fields may be located. They may indicate that the program is in a loop, is processing more data than expected, or some other situation. It might also be useful to examine the COMREG display for the partition and look at the LINES SPOOLED to see if the job is producing too much or too little printed output.

- 11 **PROBLEM:** The operator has cancelled a batch partition, but it won't come to end of job.

PROCEDURE: If the system is producing a core dump the partition's COMREG display will show that the LINES SPOOLED count is increasing rapidly. If so, the dump should finish eventually. In order to produce a core dump and come to end of job the partition must be able to use the LTA. If

another partition is occupying the LTA this could be the cause of the delay. In this case the RUN CODE field for this partition in the PART and COMREG display will be set to 81. The SYSCOM display will show the TASK OWNING LTA and the name of the transient last running in the LTA. The partition which owns the LTA is probably waiting for an operator response. Answering the message should allow the affected partition to continue with the cancellation. Failure to cancel could also be caused by a lost interrupt for this or another partition. Follow the procedure for problem 7 above.

Using ODIS to Analyze Storage Utilization

One of the more important, yet difficult, system-wide CICS facilities to be managed is virtual storage. (CICS does not directly manage real storage.) ODIS provides the tools to experimentally determine how CICS is utilizing storage and how storage should be allocated.

Before discussing how to use ODIS for this purpose it is necessary to discuss the manner in which CICS uses storage. Within the VSE partition CICS is given an amount of storage equal to:

1. the size specified on the EXEC DFHSIP,SIZE=nnnnK statement if CICS is not run under ICCF
2. the size of interactive partition number zero if CICS is run under ICCF.

During initialization CICS uses most of its storage as a static area for its programs and tables plus resident application programs; the rest of the storage forms the Dynamic Storage Area (DSA), which is allocated dynamically as needed. It is used to hold working storage, nonresident programs, Temporary Storage data and other miscellaneous items. It is this DSA which is a potential source of problems.

Dynamic Storage Area

When the unused storage remaining in the DSA drops to a limit, called the storage cushion, CICS takes steps to increase the amount of available storage in the DSA. It does this by reusing all storage allocated to all non-resident programs which are not currently in use. This action does not have immediate, negative impact on the operation of the CICS system. However, if CICS is unable to increase the amount of unused storage above the size of the storage cushion the system is said to be short on storage, or SOS (an appropriate acronym). Message:

DFH0506 CICS/VS IS UNDER STRESS - SHORT-ON-STORAGE

will be displayed on the operator console. At this point CICS will not start any new transactions. If this condition exists for a period of time, called the stall interval, and if no activity takes place in the CICS system during this period, CICS takes drastic steps to correct the situation. This involves cancelling transactions defined in the PCT as stall purgeable (SPURGE=YES) until the SOS condition no longer exists. Each time a transaction is cancelled message:

DFH2011 - SYSTEM STRESS, TRANS ID=xxxx, TERM ID=xxxx, ABEND=AKCP

is displayed on the operator console. (A stall condition will also occur if the system is at the maximum task limit and no activity takes place during the stall interval.) When the storage cushion is reestablished, message:

DFH0507 CICS/VS IS NO LONGER SHORT-ON-STORAGE

will be displayed on the operator console.

In addition, the PROB display tells how many tasks were stall purged. (If no tasks were stall purged the PROB display does not mention this count.) The TRAN display tells how many times a particular transaction has been stall purged. The PROB display (and The Watchdog) will tell if the size of the largest contiguous area of free storage drops below the limit defined by the THFREE parameter in the ODISOPT macro.

Using the above displays the size of the DSA should be maintained at a size large enough so that:

1. CICS is never forced to stall purge any transactions because the system is short on storage. If necessary, the cushion size should be increased. A value in the 20K to 50K range should be sufficient for most installations.
2. The storage cushion should rarely, if ever, be released.
3. The PROB display does not detect problem number 29.

In addition, the following factors should be considered:

1. The system should be able to handle peak loads imposed by circumstances such as high activity periods during the day, end of month processing and unexpected workload increases.
2. If a CEMT SET PROGRAM(xxxxxxx) NEWCOPY or CSMT NEWCOPY is issued and the new version of the program is larger than the old version, the program will become nonresident, thus requiring space in the DSA. The static storage formerly used for the program will be unused; it will never be reclaimed.
3. An extra amount of storage should be allocated to the DSA to allow for future growth.

The simplest way to increase (or decrease) the size of the DSA is to increase (or decrease) the amount of storage allocated to CICS. However, if this size is increased, the amount of storage allocated to the partition GETVIS area is simultaneously decreased (see below). It is also possible to reduce the usage of the DSA by lowering the maximum task and class maximum task limits (but not the active task limit) but this is not recommended because it restricts the number of transactions that can be processed.

Partition GETVIS Area

The partition GETVIS area is that part of the partition which is allocated but not included within the SIZE parameter on the EXEC card (for either CICS or ICCF). This area is available for use by any program in the partition which requests it. In the CICS environment it is used almost exclusively by the access methods, especially VSAM. The size of the GETVIS area, the amount of GETVIS storage currently in use and the size of the largest contiguous unused area are shown on the COMREG display (for the CICS partition). The best time to examine these figures is when the CICS system is heavily used and all files are open.

If there is insufficient contiguous free space in the GETVIS area it will probably be evidenced by a VSAM open error (such as X'B4') when attempting to open a VSAM file. There is no facility for the GETVIS area which is analogous to the storage cushion used by CICS for the DSA. Thus it is important to insure that this area never becomes full or too fragmented because there is no way for CICS to detect and remedy this type of situation. The size of the GETVIS area may be increased (or decreased) by increasing (or decreasing) the size of the VSE partition or by decreasing (or increasing) the amount of storage within the partition that is allocated to CICS by the SIZE parameter of the EXEC statement. Many installations will find that their GETVIS area for the CICS partition has been made too large. If this is the case it may be reduced, allowing more storage for CICS, other partitions, or the SVA.

Resident Programs

Storage for resident programs is allocated at static locations within the partition during CICS initialization. This storage is used exclusively for this purpose and is never overlaid. Nonresident programs are loaded into the DSA as needed and remain there, effectively becoming resident programs, until the storage is needed when the storage cushion is reached. If needed again it will be necessary for CICS to load the programs again. In general, programs should be defined as resident in the Program Table [RES(YES)] for the following reasons:

1. It is more efficient to load the program once at initialization time and allow the program to be paged out and then paged in as needed, than it is to load the program many times.
2. The amount of storage required for the DSA is reduced, thus making it more manageable, more consistent in size and less likely to be a source of problems as described above.
3. The exact program size will be used instead of a number of full pages; this makes a slightly more efficient use of virtual storage.

If almost all programs are defined as resident, the size of the CICS partition may become relatively large. In some installations with the maximum 16M bytes of virtual storage in use it will not be possible to fully implement this suggestion because it may be impossible to increase the size of the CICS partition. In this case a compromise will be necessary. ODIS can help deal with this situation in a

number of ways. The PROG display gives the following information for each program:

1. length
2. residence attribute (Note that any program shown with RES equal to YES, ALIGN, PGOUT or PFIX is resident. A nonresident program will be shown as NO if it is not resident and TEMP if it is temporarily resident.)
3. the number of times the program has been used
4. the number of times the program has been fetched

The DSA display gives the following information for the overall CICS system:

1. the amount of storage in each DSA Sub-Pool.
2. the number of times the system has been Short on Storage. (Total Cushion Releases.)

If any non-resident program has been fetched more than a few times (as reported by problem 29 on the PROB display) or if the system has been SOS at least once, it is advisable to increase the size of the DSA by either allocating more storage to CICS or by making some resident programs non-resident.

Resident Programs vs. Non-resident Programs

Because non-resident programs remain in virtual storage until the storage cushion is reached the distinction between resident and non-resident programs is not as significant as it might appear to be. When determining which programs should be resident and which should be non-resident the following guidelines may be used:

1. Programs which are used most frequently should be made resident. Thus, if the storage cushion is reached and all non-resident programs are removed, the DSA will fill slowly as the infrequently used programs are needed.
2. Programs must be loaded into contiguous storage. If sufficient contiguous storage is not available in the DSA to load a non-resident program, CICS must go through the process of removing the non-resident programs which are not in use. Since large programs are more likely to cause this condition it may be better to make them resident.
3. The exact program size will be used instead of a number of full pages; this makes a slightly more efficient use of virtual storage.

Note that the PROG display shows all of the important statistics for making these decisions.

Transaction Storage

All transactions require that some storage be allocated to them. Such storage is taken from the DSA and is returned to the DSA when the task either terminates or issues a FREEMAIN. This includes the TWA, TIOA and User Storage. It also includes such less obvious areas as the TCA, file I/O areas, temporary storage I/O areas and register storage areas. Most transactions use a modest (1K to 10K) amount of storage. Consequently, even if there are a number of true conversational transactions in the system there is likely to be adequate storage in the DSA. However, unlike program storage (discussed above) there is no harmless way for CICS to release transaction storage that is in use by an active transaction (unless the transaction issues a FREEMAIN). This is the reason why the Short on Storage condition should be avoided.

Generally speaking, the absolute size of these numbers is not particularly important. As long as the system is never SOS this should not be a source of problems. The above fields may be used to examine the relative size of the various subpools and as a rough indicator of future needs. For example, if the number of terminals on the system is to be doubled without adding any new transactions it is likely that these sizes for transaction storage will also be doubled.

While a transaction is active at a terminal the TERM display will show the amount of storage in use by the transaction. The USER STORAGE field indicates how much storage is chained from the TCA, and the TIOA STORAGE field indicates how much is chained from the TCTTE. If the total of these two numbers exceeds the threshold specified by the THSTOR parameter of the ODISOPT macro for any transaction in the system the PROB display (or The Watchdog) will indicate the condition. One possible cause for this condition is a true conversational program which fails to FREEMAIN requests for unused storage. The hexadecimal display facility of ODIS may be used to chase the storage chains anchored in the TCA and TCTTE to see the exact type and size of each area of storage allocated for the transaction.

Temporary Storage

One way the DSA can become too full is by improper use of main Temporary Storage. Main storage can and should be used to store data which is small or likely to be used within a few seconds. For data which is large or likely to be used minutes or hours later auxiliary Temporary Storage should be used. Placing too much inappropriate data in main Temporary Storage may cause the DSA to become too full. When the storage cushion is reached CICS can reclaim program storage and transaction storage (by canceling transactions) but data in Temporary Storage can only be deleted by an explicit request from a program.

The TSCOM display contains the following fields to show the use of main Temporary Storage:

MAX STG USED	shows the highest amount of storage in the DSA which has been used for main Temporary Storage
--------------	---

CUR STG USED	shows the amount of storage in the DSA which is currently in use for main Temporary Storage
PUT(Q) MAIN	shows the number of PUT and PUTQ requests (including Command Level WRITEQ TS requests) to main Temporary Storage

For a detailed display of the data in Temporary Storage the TS display will show, for each item:

LENGTH	shows the size of the data. If this is a queue it will be the size of the first (and, presumably, the subsequent) records.
FAC	shows whether the data is in MAIN or AUXiliary (VSAM) storage

Storage Violations

A storage violation is a condition where Storage Control Program detects that storage has been corrupted. Since this can potentially occur anywhere in the CICS partition and can be done by any transaction the consequences are potentially severe. Therefore, storage violations should be diagnosed and resolved as quickly as possible. A storage violation may be detected by one of the following:

1. CICS abends
2. The dump data set includes one or more large dumps identified on the first page as being produced due to a storage violation
3. The CICS shutdown statistics record the event
4. The DSA, PROB, TERM and TRAN displays of ODIS show the event
5. The Watchdog issues an informative message

Fortunately, CICS is able to recover from most storage violations. In this case a transaction may be cancelled or some storage may be lost from the DSA, but CICS will continue to run. Also, most storage violations are caused by a transaction corrupting its own storage, thus leaving other transactions unaffected. The main concern with storage violations is that they can potentially affect any part of the CICS system and that the effect may not be known until a later point in time at which point debugging may be extremely difficult. Until a particular storage violation is diagnosed and resolved it is possible to minimize its impact upon the system by defining the transaction in the PCT as CLASS=LONG or ANTICPG=n. This will cause the transaction's storage to be kept separate from the storage for other transactions. The TRAN display may be used to show these parameters. It may also be advantageous to place some of the CICS management modules in the SVA where they cannot be altered by errant transactions; for information on how to implement this see the CICS Installation and Operations Guide.

A storage violation is recorded in the PCT for a transaction if it is detected while a transaction is active. It is recorded for the transaction whose storage was corrupted which may or may not be the transaction which caused the corruption. A storage violation is recorded in the TCT for a terminal if it is detected in a TIOA after a transaction has ended; at this time a transaction is not active, so CICS cannot charge it to any particular transaction.

The selection of Storage Control Recovery is done by specifying SVD=nn in the SIT. A value of SVD=NO should not normally be used since this will cause any storage violation to bring CICS down.

Using ODIS as a Debugging Tool

Most of the displays will prove useful for debugging purposes. Some techniques, however, will prove especially useful for debugging CICS programs.

To monitor the execution of a transaction at one terminal run ODIS at a second terminal. The TERM display provides the focus for information about the terminal and the transaction running at the terminal. In addition to the fields displayed directly on the TERM display it is often useful to examine the storage in use by the transaction. The TIOAs associated with the transaction may be viewed by chasing the chain beginning with FIRST TIOA. One TIOA is chained to the next by the pointer at TIOA+4. All user storage may be viewed by chasing the chain beginning with the system area of the TCA. (Use the special entry name STCA to find the system area of the TCA.) One area of storage is chained to the next by the pointer at a displacement of +4. This chain includes not only user storage but other areas of storage such as FIOA, FWAs, and Temporary Storage records. The class of storage may be determined by examining the first byte of the area.

If some areas of storage cannot be displayed because of the transaction releases the storage too quickly it is possible to prevent all FREEMAINS by using storage freeze as documented in the CICS Operator's Guide.

The status of the transaction can be determined by the fields DC, LAST REQ, and SERVICE MODULE. The user program being executed is labeled PROGRAM. The address in the program where the last CICS macro level instruction was issued may often be determined from the REG 14 field.

The storage alteration feature may be used to make changes to a program without reassembly. It can also be used to put "traps" into a program causing it to abend at a particular instruction. This can be a convenient way to produce a transaction dump or to determine if a particular instruction is being executed.

Whenever a transaction abends due to a program check (such as a "trap" mentioned above) or to an error detected by VSE, CICS records information about the transaction, including the PSW and registers, in an area called the Program Check/Abend Trace Table. This area may be displayed by entering table name "PC". It is quicker and often more convenient to examine this area for simple abends than it is to print a transaction dump. The table contains a fixed number of entries, and when the last entry is used the first entry is overlaid. Each entry in this table begins with the characters "PC" for a program check or "AB" for a VSE abend followed by a sequential number for each type of entry. The most recent entry is the one with the highest number. At a displacement of X'30' into each entry is a constant "REGS&PSW". The registers (0-15) and PSW at the time of the abend may be examined immediately following this constant.

Using ODIS to Tune VSAM Files

One of the major purposes of an online system such as CICS is to provide access to files, and in most installations VSAM files tend to be among the most heavily used files. VSAM provides a number of parameters which can influence the performance of VSAM files. Some of these parameters, such as the number of buffers, affect only one particular job; these may be easily adjusted to achieve optimum performance in the CICS environment. Other parameters, such as the Control Interval size affect all jobs which access the file; in many cases a change made to improve performance under CICS will produce a performance degradation for batch jobs. In this case some sort of compromise must be made. In addition, as the processing environment changes, a well tuned system may become less well tuned. For this reason it is advisable to occasionally review the performance of the VSAM environment, making changes as needed.

Control Interval Size

Generally, the CI size for the data component should be in the range from 1K to 4K. The CI SIZE field on the FILE display for an open VSAM file shows the CI size. Some factors which influence the optimum CI size are:

1. If most accesses are random select a small CI size to reduce the data transfer time and the storage needed for buffers. If most accesses are sequential select a large CI size to minimize the number of physical I/Os required. To determine whether most accesses are random or sequential compare the BROWSE REQSTS (sequential) and READ REQUESTS (random) on the FILE display.
2. If the file has a large number of updates (ADD REQSTS, UPDT REQUESTS and DELETES on the FILE display) select a small CI size to minimize lockouts caused by the exclusive control ENQs performed by CICS if it is likely that a number of transactions will be updating the file simultaneously.
3. If the file contains relatively large logical records (RECORD LENGTH on the FILE display) a larger CI size is advisable.
4. If a file is accessed and updated mostly randomly under CICS but is accessed mostly sequentially in batch, a small CI size can be selected for best CICS performance with a large number of buffers used for batch processing.
5. On devices with large track capacities, such as the 3390, larger CI sizes may be used.
6. For all but the smallest files a CI size which is a reasonably good "blocking factor" should be chosen, allowing for the extra control bytes in each CI. For

example, if a file has 600 byte records, 1024 bytes would be a poor CI size while 2048 would be better.

Generally speaking, the CI size for the index component should be either 512 or 1024 bytes.

Strings

A string is a software entity used to maintain position in a file. It uses a rather modest amount of virtual storage, about 500 bytes. A file with five strings may be accessed simultaneously at five different locations. Generally, each transaction accessing a file will use one string per file although some transactions may, correctly or incorrectly, use more than one string. During a browse operation the string is acquired when the initial STARTBR (or DFHFC TYPE=SETL) is issued and held until an ENDBR (or DFHFC TYPE=ESETL) or UNLOCK (or DFHFC TYPE=RELEASE) is issued (or the transaction ends).

If a transaction requires the use of a string but one is not available, the transaction must wait (on the active chain where it participates in the AMXT limit) until another transaction releases a string. Depending upon the environment this delay could last from a fraction of a second to many minutes. Since strings are relatively inexpensive resources, enough strings should be allocated so transactions never wait for strings. The number of strings initially allocated should be based upon an understanding of the application. For example, if an Accounts Payable system has four terminal operators and the files are used exclusively by Accounts Payable, four strings should be allocated for each file. (There is one more complication: CICS will reserve 20% of a file's strings for read-only access. So, in this example, if all transactions will require write access to the file, 5 strings should be allocated.) On the FILE display the MAX STRINGS field shows the number of strings allocated, and the TOTL WAIT STR shows the number of times transactions have waited for strings. If the TOTL WAIT STR field is not zero the number of strings (DFHFCT TYPE=DATASET,STRNO=n) should be increased. While strings are relatively inexpensive, care must be taken to avoid allocating too many unused strings because this can unnecessarily increase the default amount of storage allocated to buffers.

Buffers

The default number of buffers is as follows:

index	(BUFNI):	number of strings (STRNO)
data	(BUFND):	number of strings (STRNO) plus 1

The above values are almost always too low and should not be used. For random processing the following values are recommended:

index: If the INDEX LEVELS field in the FILE display is 1 or 2 specify the number of strings plus one. If the INDEX LEVELS field is 3 or greater specify the number of strings plus 5-10. (Technically, this is the

number of records in the index set, but this can be difficult to calculate).

data: Specify the number of strings plus 1.

For sequential processing the following values are recommended:

index: Specify the number of strings plus 1.

data: Specify at least five. The number of strings is not particularly important although it is advisable to allocate at least as many buffers as there are strings.

Note that for random processing the number of index buffers is increased from the default and for sequential processing the number of data buffers is increased from the default.

The BUFFERS field (for both DATA and INDEX) on the FILE display shows the number of buffers allocated. The TOTL WAIT BUFF field shows the number of times transactions have waited for buffers. If this field is not zero additional buffers should be allocated.

Physical I/Os

The reason for allocating more than the minimum number of buffers is to minimize the number of physical I/Os (EXCPs) without causing a significant increase in the paging rate. The EXCP's field on the FILE display shows the number of physical I/Os that VSAM has issued since the file was opened. Ideally, this value should be significantly less than the TOTAL I/O field, especially for sequential processing. Without changing the application programs, the number of physical I/Os can probably be decreased by:

1. increasing the number of buffers
2. increasing the Control Interval size
3. implementing VSAM Shared Resources (see below)

Of the first two options it is probably easier to increase the number of buffers. If this does not produce an appreciable decrease in the number of physical I/Os (assuming the transaction activity is unchanged) the number of buffers should be reduced to its original value; this will avoid allocating storage for unprofitable buffers.

Shared Resources

VSAM Shared Resources is an optional facility which allows different files to share a pool of resources which includes, strings, buffers, I/O control blocks and channel programs. This will result in a significant savings of virtual and real storage, thus reducing the paging rate. In addition, due to the nature of pooling buffers, the more active files may effectively have more buffers, thus significantly reducing the number of physical I/Os. The cost of this feature is an increase in CPU time to process those files which use Shared Resources. Thus, Shared

Resources should not generally be used in systems with high CPU utilization, and its effect on CPU usage should be watched.

To implement Shared Resources the FCT should be updated as follows:

1. For each file which is to use Shared Resources specify `SERVREQ=SHARE`
2. Add a `DFHFCT TYPE=SHRCTL` macro. Initially, specify `RSCLMT=25` and use default values for the other parameters. These may be adjusted later as appropriate.

The FCT will then contain a Shared Resources Control Block which may be viewed with the SR display. Since there are fewer strings (and fewer buffers) allocated it is possible for transactions to be required to wait for the shared strings. (This is in addition to the value specified by `DFHFCT TYPE=DATASET, DATASET=xxxxxxx,STRNO=n.`) If the SR display shows `TOTAL STR WAIT` to be zero (and `HIGH ACTIVE STR` to be less than `TOTAL STRINGS`) the number of strings allocated is not too small. After implementing Shared Resources compare the new and old `EXCP'S` values from the FILE display to see if this has been reduced.

GETVIS Usage

All of the storage used by VSAM within a partition is allocated from the GETVIS area. Storage is allocated for VSAM'S I/O routines, buffers, strings, control blocks, channel programs, etc. The GETVIS ALLOC and GETVIS IN USE fields on the COMREG display (for the CICS partition) can be used to tell how much of the GETVIS area is in use. From this it is possible to determine if there is sufficient free space to add additional buffers or files. Conversely, if virtual storage constraints force a reduction in the size of the CICS partition's GETVIS area, this display can help determine how VSAM buffers, etc. will be affected, if at all. Generally speaking, the GETVIS area should never be full; there should always be some unused space and some reserved for future expansion. For more information on the GETVIS area see the section "Using ODIS to Analyze Storage Utilization" starting on page 107.

Control Interval Splits

Control Interval splits are possible when records are inserted into a file. They cause a significant, but mostly temporary, loss of performance. A CI split may also cause a Control Area split or a secondary allocation, which cause an even longer delay. A certain number of CI splits is tolerable. The CI SPLITS field on the FILE display shows how many CI splits have occurred since the file was opened. This should be much smaller than the UPDAT RECS field. To reduce the number of CI splits, the CI free space percentage (show on the FILE display as % FREE SPACE CI) may be increased. But this is a tradeoff; it will increase the disk storage required for the file and will cause each Control Interval to contain less useful information which will likely increase the number of physical I/Os used to sequentially read from and write to the file. An alternative would be to periodically reorganize the file (using IDCAMS REPRO or another program); this

will distribute the free space evenly across the file and increase the likelihood that a CI will contain enough free space to hold the record(s) to be inserted.

The above considerations also apply to Control Area splits. The FILE display contains CA SPLITS and % FREE SPACE CA fields to examine CA splits.

When all of the Control Areas in an extent are in use and a CA split occurs, VSAM allocates a secondary extent. Generally, a file should be defined so the primary extent can contain all of the records when the file is initially loaded. Then, if additional records are added additional extents may be allocated. It should not be necessary to allocate more than a few secondary extents. The EXTENTS field on the FILE display shows how many extents (primary and secondary) are allocated. If this number is too high it indicates a large number of CA/CI splits or poor primary/secondary allocations.

Miscellaneous Considerations

CICS is affected by all of the factors which affect batch partitions such as CPU load, paging rate, channel utilization and contention for disk devices. While ODIS is not a batch performance monitor the PUB display can be useful for balancing I/O load across disk volumes. The STARTIO column on the PUB display may be examined to compare the activity of all disk drives on the system. Ideally, all drives should be approximately equally used. VSAM is relatively economical in its use of disk I/Os; thus, it is normal for a volume consisting mainly of VSAM space to have a lower STARTIO count than other volumes.

ODIS can also be of some use in measuring the paging rate. The SYSCOM display shows the number of pageins and pageouts for the entire VSE system since the most recent IPL.

Application Programming Considerations

There are a number of things which an application programmer can do to affect the performance of transactions which use VSAM files. One thing to avoid, if at all possible, is long browses. A transaction which browses a small number - say 100 or less - records should perform adequately; however, longer browses may produce excessive response time. While certain things can be done to make long browses less inefficient, such as using large CI sizes and many data buffers, transactions using long browses must expect long response times. In those cases where long browses are really necessary, these transactions should be given low priority in order to minimize their effect upon other transactions.

Transactions which perform browses should end each browse as soon as possible to avoid holding a string unnecessarily. For pseudo-conversational transactions this will generally be done automatically when the transaction ends. For true conversational transactions this is generally done by the programmer, who must be careful to avoid the use of too many strings.

Transactions which read a record and update it should either perform the update or release the record as soon as possible. This is important because it not only ties

up a string but prevents other transactions from updating any record in the same Control Interval. For the same reasons a transaction should not request update access to a record unless it might actually be updated.

Ease of Use Features

ODIS has been designed to be not only useful but easy to use. This section summarizes those features which are designed to achieve this objective.

1. If an entry name is omitted, the first entry in the table will be displayed.
2. PF keys are defined as follows:

<u>Keys</u>	<u>Alternate</u>	<u>Meaning</u>
PF1 and PF13	+	next table entry
PF2 and PF14	spaces or nulls	first table entry
PF3 and PF15	manual	differs for each table
PF4 and PF16	manual	CSA (unless changed in
PF5 and PF17	manual	TASK the ODISOPT macro)
PF6 and PF18	manual	hexadecimal + character
PF7 thru PF12	manual	differs for each terminal
PF19 thru PF24	manual	differs for each terminal

3. ODIS may be initiated, if desired by merely hitting a variable key.
4. A display may be repeated by hitting the enter key.
5. The previous display may be repeated by hitting the PA2 key. This “toggle” feature may also be performed by setting the first character of either the table name or entry name to a period.
6. A display may be automatically refreshed by ODIS by using the time-indicated (T=MMSS) mode.
7. Various parameters, such as PA/PF keys may be customized for an installation by the ODISOPT macro.
8. Hexadecimal + character displays may be selected by several methods including:
 - a specific address
 - a displacement
 - PF keys
 - cursor positioning
 - symbolically

Features You May Have Missed

ODIS contains a number of features which even experienced users may not have noticed. This section lists many of these features in one location. It is recommended that you first acquaint yourself with ODIS and then return to this section at a later date. For a full description of each feature, see the appropriate section of this manual.

1. When a hexadecimal and character display is on the screen, two methods of cursor positioning may be used to easily select another hexadecimal and character display. The cursor can either be placed underneath a 4-byte address value currently shown in the hexadecimal storage display, or it can be positioned to column one of a screen display row. Hit enter in either case to reposition the display beginning at the indicated storage address.
2. After a formatted display has been selected the same area of storage may be displayed in hexadecimal and character format by hitting the PF6 or PF18 key. (The display will begin at the address shown in the upper left hand corner of the formatted display.)
3. The PA2 (“toggle”) key may be used to alternate between two different displays or to back up one screen if you've gone past it too quickly.
4. The variable PF keys (PF7-PF12 and PF19-PF24) may be set dynamically by each terminal operator.
5. In order to support terminals with either 12 or 24 PF keys:
 - a. PF1-PF6 are exactly equal to PF13-PF18.
 - b. PF7-PF12 and PF19-PF24 may be used for variable PF keys.
6. The TERM display includes a number of “special” entry names which can be used to easily select a display of control blocks related to the terminal in question.
7. For some installations which do not need all the “bells and whistles” of NCCF, the VTAM feature of ODIS may be a suitable alternative (at no additional cost).
8. The Watchdog feature can be very useful, in general. It is definitely worth the effort involved to automate the start of the Watchdog in the CICS startup.
9. The COMREG display shows how much of the selected partition's GETVIS area is in use. This is especially useful for CICS and VTAM partitions.
10. CICS sends a number of informative messages to the Transient Data destinations CSCS, CSML, CSMT, CSSN, and CSTL. These are usually

assigned to SYSLST, in which case they cannot normally be seen until CICS is shut down. The SEG function of ODIS can be used to segment the CICS listing so that it is available in the POWER LST queue where it may be printed while CICS is still up.

Miscellaneous Considerations

1. ODIS performs no disk I/O, uses little CPU time and uses only a minimum number of calls to CICS. And except for those displays which examine large areas of storage, such as PROB and TERM **, will cause few page faults. Therefore, it may be assumed that its response time is as good as possible. Thus, ODIS may be used as a point of reference for analyzing the response time of other transactions.
2. The most recent hexadecimal and character display may be repeated at any point by entering "+0". (Of course, any other displacement may also be used.) This is in addition to the "toggle" feature.
3. ODIS runs in true conversational mode. Among other advantages this insures that once started, ODIS will remain in the CICS system. Thus, when problems are encountered the chances are maximized that ODIS will be dispatched by CICS to assist in problem determination.
4. One useful application for ODIS is as part of a CRLP terminal. A CRLP terminal is a "terminal" where input comes from a card reader, such as SYSIPT, and the output goes to a line printer such as SYSLST. This allows a predefined list of transactions to be executed automatically at CICS startup and/or shutdown. The output will be permanently recorded on SYSLST. One sample use would be as follows:

```

SIT=P1,
TRT=500,
$END
ODIS WATCH 0200\           Startup transactions
ODIS DSA\                  "          "
ODIS TABLES\              "          "
CEMT GOODNIGHT\           "          "
ODIS DSA\                  Shutdown transactions
ODIS PROB\                 "          "
CEMT GOODNIGHT\           "          "
    
```

The "\ " character above is required; it defines the end of the input for the transaction. Its value is defined by the EODI= parameter of the SIT; the default is the 0-2-8 punch (X'E0'). In order for the second group of transactions to be executed it is necessary to place the CRLP terminal into transceive status prior to shutdown. The operator would then enter:

```

CEMT SET TERMINAL(termid) TTI
CEMT PERFORM SHUT
    
```

When the CRLP terminal is defined it should be given a screen width of 80 bytes (not 132) to match the format of the screens produced by ODIS.

5. ODIS does not use the CWA, TWA or TCTUA.
6. The layout of CICS control blocks is documented in the CICS/VS Data Areas (VSE) manual (LY33-6033). Additional information that is useful for debugging is documented in the CICS/VS Diagnosis Reference manual (LC33-0105).

In addition an assembly listing of nearly all CICS control blocks may be produced by running the following job:

```
// JOB DSECTS
// DLBL PRD2      (VSE/SP Generation Feature Library)
// EXTENT ...
// LIBDEF SOURCE,SEARCH=PRD2.GEN1
// OPTION XREF
// EXEC ASSEMBLY
//             COPY DFHDSCTS
//             END
/*
/ &
```

7. ODIS will ignore any excess characters at the end of a valid table name. This can make it a little bit easier when changing table names. For example, if the TSCOM is displayed and the DSA is desired it is possible to change the "TSC" to "DSA" resulting in "DSAOM". ODIS will ignore the extraneous characters.
8. It is possible to implement a new version of the ODISOPT macro while CICS is running. To do so, first assemble and catalog the ODISOPT phase. Then issue a "CEMT SET PROG(pgmid) NEW" for ODISOPT and then for ODIS.
9. Since ODIS does not modify CICS in any way, it should not affect the operation of any other IBM or non-IBM software.
- 10 For some parts of certain displays ODIS must use storage protect key zero. The normal storage protect key is returned as soon as possible. In case ODIS cancels for any reason SETXIT linkage is invoked to guarantee that ODIS does not cause any other transactions to run under storage protect key zero.

Suspected Problems with ODIS

ODIS, like all other software products, can make no claim to infallibility. Given the vast amount of data displayed by ODIS there is an equally vast number of possibilities for error. Although every attempt is made to see that this does not occur it obviously must be anticipated. Before reporting a suspected problem please review the following procedures:

1. Insure that the release level of ODIS matches the release levels of CICS and VSE.
2. ODIS displays exactly what it sees. Therefore, it must be determined if the problem lies with the original data or with the manner in which ODIS displays the data. To do this display the field with the normal formatted display. Then display the same field in hexadecimal and character to see if ODIS has displayed the field correctly. The appropriate IBM documentation should be consulted at this point.
3. Review the detailed descriptions in the section "Formatted Screen Descriptions" starting on page 22. There may be special circumstances for the field in question.
4. Certain fields may be accurately displayed by ODIS but give incorrect or misleading information. If doubt exists that ODIS is displaying a value correctly, in most cases the source of the information may be determined and displayed using the hexadecimal and character display function.
5. To insure the integrity of ODIS a number of internal checks are performed. If an unusual condition occurs ODIS willabend (producing a transaction dump). Contact your supplier of BIM-ODIS for assistance.

MESSAGES

ODIS001 - 3270 terminals must have 80 column screen size

ODIS requires that 3270 terminals have either a default or alternate screen width of 80 bytes. The only IBM-defined 3270 terminal not supported by ODIS is the 3277 model 1 which has a screen width of 40 bytes.

ODIS002 - ODISOPT disabled or not defined in PPT - default options used

This message also appears on the operator's console. It indicates that the ODISOPT phase does not exist in the PPT or that it exists but is disabled. ODIS has used the default values described in this manual.

ODIS003 - Invalid ODISOPT phase - default options used

This message also appears on the operator's console. It indicates that some part of the ODISOPT phase cannot be recognized by ODIS. Instead of using an invalid set of options ODIS has used the default values described in this manual.

ODIS004 - Incorrect version of ODISOPT - default options used

This message also appears on the operator's console. The ODISOPT phase contains a version number. This message indicates that the version of ODIS being executed does not support the version of the ODISOPT phase. The ODISOPT phase should be reassembled with a current ODISOPT macro. ODIS has used the default valued described in this manual.

ODIS005 - 3270 terminals must have 24, 32 or 43 row screen size

ODIS requires that 3270 terminals have either a default or alternate screen length of 24, 32 or 43 rows. (The 27 row 3278-5 will always be used in its 24 row default mode.) The only 3270 terminal not supported by ODIS is the 3277 model 1 which has a screen length of 12 rows.

ODIS006 - SCAN is permitted only on 3270 terminals

The hexadecimal and character scan facility may only be utilized on 3270 terminals.

ODIS007 - Feature requires a security specification

The text of this message has been intentionally been made somewhat vague in order to avoid giving clues to potential security risks. It indicates that the ODISOPT phase has specified the SECTRAN parameter which requires users of certain features to initiate ODIS with a particular transaction ID. The user receiving this message has used a different transaction ID and, thus, is prevented from using these features.

ODIS010 - Last entry in table has been processed

After the last entry in a table has been displayed the operator requested the next entry by hitting the PF1 key.

ODIS011 - Invalid PA or PF key

The operator has hit a PA key, PF key or other attention indicator (such as a magnetic stripe reader) which is not currently allowed. With the default ODISOPT values the PF4, PF5, PF6, PF16, PF17, PF18, PA2, enter and clear keys are always valid. PF1, PF2, PF3, PF13, PF14 and PF15 are often, but not always valid. The prompting line at the bottom of the screen should be consulted for PF1, PF2 and PF3. The installation may have changed the PA and PF key specifications in the ODISOPT macro. This message will also occur if a variable PF key (PF7-PF12 and PF19-PF24) is used at a terminal where it has not been previously given a value.

ODIS012 - PF3 is permitted only for PCT TYPE=ENTRY

The transaction being displayed on the TRAN display is not defined as TYPE=ENTRY. The PF3 key may not be used for such PCT entries.

ODIS013 - There is no data in Temp Storage

The operator has requested a TS display, but there is no data in Temporary Storage at the present time.

ODIS014 - All data ids are below XXXXXXXX

The operator has requested a Temporary Storage (TS) display beginning at xxxxxxxx. There is data in Temporary Storage, but all data IDs are below the specified value.

ODIS015 - There are no AIDs at this time

The operator has requested an AID display, but there are no AIDs to be displayed.

ODIS016 - There are no ICEs at this time

The operator has requested an ICE display, but there are no ICEs to be displayed.

ODIS017 - CICS was initiated without a DCT

The operator has requested a DEST display, but the Destination Control Table does not exist because CICS was started with DCT=NO.

ODIS018 - No resources are currently enqueued

The operator has requested an ENQ display, but there are no resources that are currently enqueued.

ODIS019 - Invalid table name specified - For a list of valid tables enter "MENU"

The table name (first parameter) specified is invalid. To obtain a list of all of the formatted displays which are not security sensitive specify a table name of "MENU".

ODIS020 - File not found in FCT: XXXXXXXX**ODIS021 - Program not found in PCT: xxxxxxxx****ODIS022 - Terminal not found in TCT: xxxx****ODIS023 - Trans id not found in PCT: XXXX****ODIS024 - Device address not found in PUB: XXX****ODIS025 - Channel queue contains only XXX entries****ODIS026 - System contains only X'xx' task id's****ODIS027 - Supervisor contains only XXX entries in Lock Table****ODIS028 - Destination not found in DCT: xxxx**

The operator has requested a FILE, PROG, TERM, TRAN, PUB, CHANQ, TID, LOCK or DEST display. The entry specified does not exist.

ODIS030 - Address specified is not a valid virtual address

The operator has specified an address for a hexadecimal and character display, but the address does not currently exist. A valid address must be located in one of the following areas:

1. The Supervisor
2. A virtual partition in the same address space as CICS when the partition is running in virtual mode
3. A real partition in the same address space as CICS when the partition is running in real mode
4. The Shared Virtual Area (SVA)
5. A partition in the Shared address space

ODIS031 - Data was deleted from screen - Storage alteration has been suppressed

The operator has modified the lower portion of a hexadecimal character screen, presumably while using the storage alteration facility. But one or more characters were deleted using the 3270 DEL, ERASE EOF or ERASE INPUT keys. To prevent unintended storage alteration ODIS has performed no alterations and has redisplayed the data.

ODIS032 - Address on screen is no longer valid - storage alteration

The operator has requested storage alteration, but the data originally displayed is no longer valid. See message ODIS030 for more information.

ODIS033 - Address XXXXXX on screen was modified - Storage alteration terminated

While performing a storage alteration the operator has modified one of the addresses on the left hand side of the screen. Since these addresses do not play an active role in storage alteration, ODIS assumes that the operator has done something incorrectly and stops any further storage alteration.

ODIS034 - Invalid hex data at address XXXXXX - Storage alteration terminated

While performing a storage alteration the operator has entered data into the hexadecimal portion of the display which is not valid hexadecimal digits (0 through 9 or A through F). ODIS stops any further storage alteration.

ODIS035 - No scan data was entered

The operator has requested a SCAN of storage, and ODIS has responded by providing a screen for entering the scan type and data, but the operator did not enter any scan data.

ODIS036 - Scan data contains non-hexadecimal digit(s)

While entering SCAN parameters the operator has specified a hexadecimal (H) scan, but the data contains one or more characters which are not valid hexadecimal digits (0 through 9 or A through F).

ODIS037 - Hexadecimal scan data must contain an even number of digits

While entering SCAN parameters the operator has specified a hexadecimal (H) scan, but the data contains an odd number of otherwise valid digits. Since the scan data must represent a number of full bytes there must be an even number of digits.

ODIS038 - Scan format must be C (char) or H (hexadecimal)

While entering SCAN parameters the operator has either failed to enter the scan format or entered a value other than C or H.

ODIS039 - Scan case must be U (upper), M (mixed) or I (ignore)

While entering SCAN parameters the operator has entered an invalid case specification.

ODIS040 - Invalid time interval

The operator has requested time-initiated mode or Watchdog mode but has specified a time interval that is zero, non-numeric or less than the value specified by the TIMEMIN parameter of the ODISOPT macro.

ODIS044 - Invalid partition id: XX

The operator has entered a partition ID which is not valid (BG or Fn) or does not exist for the Supervisor being used (e.g. F9 in an 8 partition system).

ODIS045 - Invalid decimal number: XXX

The operator has entered the specified data, but it contains nondecimal digits.

ODIS046 - Toggle is not valid until there have been two different displays

The operator has attempted to use the toggle (PA2) feature before two different screens have been displayed.

ODIS048 - Unable to locate console buffer in Supervisor

This is probably caused by a conflict in release levels of CICS and VSE or by unusual Supervisor generation parameters.

ODIS049 - POWER command was omitted

An operator on a non-3270 terminal has requested a POWER function but has neglected to supply the POWER command.

ODIS050 - Unable to define SPMXECB after 30 seconds - Hit enter to continue

ODIS uses the standard CTLSPPOOL interface to POWER. This facility is currently being used by another user. This may be another CICS transaction, ICCF or a batch partition.

ODIS051 - CTLSPPOOL error X'xx'

POWER has rejected the command submitted by ODIS. See the appropriate POWER documentation for an explanation of the return code.

ODIS052 - Unable to delete SPMXECB - RC=X'xx'

This is probably caused by an error in ODIS or by some unusual occurrence in the CICS partition.

ODIS053 - SYSxxx is not defined in the CICS partition

The operator has requested a SEG function but has specified a SYS number greater than the maximum defined in the Supervisor for the CICS partition.

ODIS054 - SYSxxx is not assigned to a printer

The operator has requested a SEG function but the SYS number specified is not ASSGNed to a printer.

ODIS056 - XXXXXX does not exist for this terminal

The operator has requested one of the special hexadecimal and character displays for a particular terminal; however, the desired control block does not currently exist for the specified terminal. For example, the EIB does not exist for macro level programs, the NIB does not exist for BTAM terminals, and the TCA does not exist if a task is not running at the terminal.

ODIS057 - XXXXXX does not exist in this system

The operator has symbolically requested a hexadecimal and character display, but the control block does not currently exist. For example, the JCT exists only if Journalling is generated.

ODIS058 - VTAM is not active

The operator has requested a VBUF display, but VTAM is not currently active.

ODIS059 - DL/I is not active in the CICS partition

The operator has requested a DLI display, but DL/I is not supported in the CICS partition, i.e. DLI=NO in the SIT. Operation of DL/I in batch partitions does not affect this message.

ODIS060 - VM is not active

The operator has attempted to issue a CP command, but VSE is not running under the control of VM.

ODIS062 - CP command was omitted

An operator on a non-3270 terminal has requested a CP function but has neglected to supply the CP command(s).

ODIS063 - WATCHDOG is not active

The operator has attempted to turn The Watchdog facility off, but it is not currently active.

ODIS064 - Previous WATCHDOG has been turned off

The operator has requested that The Watchdog facility be turned on, but a previous Watchdog was active. It has been turned off. The new command will take place as if this situation had not occurred.

ODIS065 - Invalid terminal id for The Watchdog: xxxx

The operator has requested that The Watchdog facility be turned on, but the terminal ID specified by the WATTERM parameter of the ODISOPT macro does not exist in the CICS system. After reassembling ODISOPT it will be necessary to issue a "CEMT SET PROG(pgmid) NEW" on both ODISOPT and ODIS.

ODIS066-xx - hh:mm:ss problem description

This message is produced by The Watchdog facility at the terminal specified by the WATTERM parameter of the ODISOPT macro. It describes a potential problem that may need corrective action. xx is a two digit number that uniquely describes the potential problem as discussed in the description of the PROB display. This number may be used in the WATSUPR parameter of the ODISOPT macro or with the DISABL function to suppress certain messages.

ODIS067 - Terminal is neither local BTAM 3277 nor defined in ODISOPT

The operator has requested that a VM RESET command be issued for the terminal, but the terminal is not a local BTAM 3277 terminal. Furthermore, the ODISOPT macro has not been generated to include this terminal. All other terminals, such as local VTAM terminals, may be RESET by specifying ODISOPT macros with the TERMID and CUU parameters.

ODIS068 - Unsupported VTAM release (XXXX)

The release levels of ODIS and ACF/VTAM do not match. The field (xxxx) is taken from the first four bytes of the ATCVT and indicates the release level of VTAM. Please order a matching release of ODIS.

ODIS069 - Security key at terminal XXXX will not allow YYYY to run

The operator has issued a WATCH request to turn The Watchdog on which will use transaction ID yyyy, which is secured (DFHPCT TYPE=ENTRY,TRANSEC=n). However, the security key of the terminal ID, xxxx, specified in the WATTERM parameter of the ODISOPT macro is such that it will not allow transaction yyyy to be initiated. One of the following actions must be performed before a retry of the WATCH request can be performed at terminal xxxx:

1. Assemble a new TCT specifying the required OPERSEC parameter for the terminal
2. Sign on to the terminal with the CSSN transaction
3. Remove or alter the transaction security key of yyyy to match the security key of the terminal
4. Use the storage alteration facility of ODIS to change the security key of the terminal

ODIS070 - Screen image has been lost - reenter

The operator has cleared the data on a 3270 screen without hitting the clear key. This can be caused by turning the power to the terminal off and on or by switching the test/normal switch. In VM environments this can be caused by DETACHing and ATTACHing the virtual terminal. In VTAM environments this can be caused by hitting the SYS REQ key while ODIS is active at a terminal. This message will usually occur as the terminal operator attempts to enter what is believed to be a new transaction (which is not necessarily an ODIS transaction).

ODIS072 - Invalid PF key - only PF7-PF12 and PF19-PF24 are allowed

The operator has requested that the current table and entry name be assigned to a PF key but has specified something besides PF7-PF12 or PF19-PF24.

ODIS073 - Error in VSAM control blocks: X XXXXXXX XXXXXXX XXXXXXX

While examining VSAM control blocks for a FILE display ODIS has detected an apparent error. All unaffected fields are displayed normally.

ODIS074 - No file uses VSAM shared resources

The operator has requested an SR display, but this is not possible because none of the files in the FCT uses VSAM Shared Resources (which is defined by DFHFCT TYPE=DATASET,SERVREQ=(SHARE,...))

ODIS075 - WRITEQ TD error X'xx' for function yyyyy destination zzzz

While writing to Transient Data ODIS received return code X'xx'. yyyyy will be CP, POWER, STGALT, VTAM or WATCH to indicate which function is being performed. zzzz is the Transient Data destination from the LOGCP, LOGPOW, LOGSA, LOGVTAM or LOGWAT parameter of the ODISOPT macro.

ODIS076 - Watchdog exit routine #1 disabled or not defined in PPT

The Watchdog has attempted to link to the user exit program defined by the WATXIT1 parameter in the ODISOPT macro, but this program does not exist in the PPT or it exists but is disabled. ODIS will not attempt to invoke this user exit again until a CEMT NEWCOPY is issued for ODIS. This message appears on the operator's console.

ODIS077 - Watchdog exit routine #2 disabled or not defined in PPT

Same as ODIS076, for WATXIT2.

ODIS078 - Unable to locate SDAIDS save area

ODIS cannot locate the SDAIDS SAVE AREA table in the Supervisor and is, therefore unable to produce the LOCK or TID display. This may be due to a nonstandard Supervisor modification or to a software product modifying the field in the SYSCOM (IJBASVSD) which points to the SDAIDS save area.

ODIS079 - Invalid hexadecimal number: XX

The operator has entered the specified data, but it contains nonhexadecimal digits.

ODIS080 - Invalid cursor position - cursor ignored

The operator has attempted to select a hex+character display based on cursor positioning but has placed the cursor at an invalid location. The cursor has been ignored, and the original data has been redisplayed.

ODIS081 - hh:mm:ss termid operid messagetext

This message appears on the VSE console if LOGCP=YES, LOGPOW=YES, LOGSA=YES or LOGVTAM=YES was specified in the ODISOPT macro. The time, terminal ID and

operator ID are added to the text of the CP command, POWER command, storage alteration request or VTAM command.

ODIS082 - Invalid problem number: XX

The operator has attempted to ENABLE or DISABL a Watchdog message, but the problem number is either non-numeric or outside the range 1-64.

ODIS083 - Time-initiated mode has been terminated

The terminal had been running in time-initiated mode, and the terminal is now returning to normal operation. This may be due to the operator hitting a PA or PF key or by the TIMEIT parameter of the ODISOPT macro being exceeded.

ODIS084 - Unable to locate lock table - Reason=n

ODIS cannot locate the lock table in the Supervisor and is, therefore, unable to display the locks in the LOCK display.

ODIS085 - Mismatch in time-initiated data

This is almost certainly caused during the installation of a new release of ODIS and is caused by issuing a CEMT SET PROG(ODIS) NEW while a transaction is running in time-initiated or Watchdog mode.

ODIS086 - VTAM command was omitted

An operator on a non-3270 terminal has requested a VTAM function but has neglected to supply the VTAM command.

ODIS087 - This CICS system does not support VTAM

The operator has requested a VTAM function, but it cannot be executed because the CICS system does not use VTAM.

ODIS088 - The CICS VTAM ACB is closed

The operator has requested a VTAM function, but it cannot be executed because CICS's ACB is currently closed.

ODIS089 - CICS was not defined to VTAM with AUTH=SPO

The operator has requested a VTAM function, but it cannot be executed because the APPL statement defining CICS to VTAM does not include AUTH=SPO.

ODIS090 - GENCB error X'nn'

ODIS has issued a GENCB macro and has received the specified return code. This is probably caused by running ODIS under an unsupported release of VSE or VTAM.

ODIS091 - SENDCMD error X'nn'

ODIS has issued a SENDCMD macro and has received the specified return code. This is probably caused by an error in ODIS.

ODIS092 - RVCMD error X'nnnn'

ODIS has issued a RVCMD macro and has received the specified return code. This is probably caused by an error in ODIS.

ODIS096 - Program is not currently in storage

The operator has requested that the start of a program be displayed by using the PF3 key on the PROG display, but the program is not currently in storage. Therefore, it cannot be displayed.

ODIS097 - Attempt to start ODIS by an invalid method

The operator has attempted to start ODIS by a method not described in this manual, for example executing an EXEC CICS START with the CECI transaction.

ODIS100 - Abend xxxx has been detected in The Watchdog - Recovered

Abend XXXX has been detected during execution of the Watchdog. In order to prevent this from terminating The Watchdog, the actual abend has been intercepted and will not occur, although a transaction dump with the abend code of WDOG will be taken. If XXXX is AICA, this represents a runaway task and is probably the result of some environmental factor, such as hitting STOP on the CPU, and is probably not due to a programming error in The Watchdog. If XXXX is any other value, it probably represents a programming error in The Watchdog or in a Watchdog user exit. This message appears on the operator's console. Although some potential problems may go unreported this time, The Watchdog will continue to run.

ODIS101 - No TCTSEs in system

The operator has requested a SYSTEM display, but the CICS system contains no TCTSEs. This should not occur.

ODIS102 - PF1 is not allowed for this surrogate TCTTE

The operator has displayed a surrogate TCTTE (one representing a terminal attached to another CICS system) which does not have a corresponding surrogate TCTTE. The PF1 key function is not available for this terminal.

ODIS103 - Time-initiated mode is not allowed when using CRTE

The operator has requested that time-initiated be started; however, due to the technique used by CRTE, this cannot be performed.

ODIS104 - Error N in low storage

An integrity check has shown that a pointer in the low storage area of the Supervisor is not set as expected. The requested action cannot be performed.

ODIS105 - Cross-space display is not permitted

The operator has entered a table name which is a valid partition ID, but the partition's storage cannot be displayed because it resides in a different space than CICS.

ODIS106 - Only NNNNN entries currently exist

The operator has requested that a number of entries be skipped on an AID, ENQ or ICE display, but there are fewer entries in existence than the number specified.

ODIS107 - Invalid trans id for Watchdog: XXXX

The operator has requested that The Watchdog facility be turned on, but the transaction ID specified by the WATTRAN parameter of the ODISOPT macro does not exist in the CICS system. After reassembling ODISOPT it will be necessary to issue a CEMT or CSMT NEWCOPY for both ODIS and ODISOPT.

ODIS108 - Invalid TRAK function: XXX

The operator has requested a TRAK function, but the entry name is not one of the valid ones.

ODIS109 - ODISTRAK is already on

The operator has requested that ODISTRAK be turned on, but ODISTRAK is already on.

ODIS110 - ODISTRK is not currently on

The operator has requested that ODISTRK be turned off, but ODISTRK does not need to be turned off because it is not currently on.

ODIS111 - ODISTRK is now active

The ODISTRK feature has been turned on by either PLTPI processing or by entering TRAK ON. This message is written to the operator console.

ODIS112 - ODISTRK not in FCT or not usable

The ODISTRK feature cannot be turned on because the FCT does not contain an entry for ODISTRK or the file is disabled or closed.

ODIS113 - message

An unusual error has occurred during ODISTRK processing. This message is written to the operator console.

ODIS114 - ODISTRK WRITE error X'xxxxxxxx' RC=yy EC=zz

The ODISTRK feature has encountered the indicated error while trying to write to the ODISTRK file. 'yy' and 'zz' are the VSAM return code and error code; under some circumstances these will not appear.

ODIS115 - ODISTRK file is full

The ODISTRK file has become full including the primary and secondary allocations, if any. The file should be archived to preserve the data already written and/or reDEFINED.

ODIS116 - ODISTRK file has been closed - ODISTRK continues

The ODISTRK file has been closed (probably by using CEMT) during normal processing. Unless ODISTRK is explicitly turned off, writing will automatically resume when the file is opened.

ODIS118 - Final ODISTRK records have been written

This message is written to the console after the final set of ODISTRK records have been written during CICS shutdown, or when TRAK OFF is issued.

ODIS120 - Shared Resource pool #X does not exist

The operator has requested the display of a shared resource pool which is not used by any of the currently defined files.

ODIS121 - CICS was started with FCT=NO

The operator has requested an SR display, which is meaningless in a CICS system with no files.

ODIS123 - ODISTRK has been turned on STATUS: XXXXXXXXXXXX

ODISTRK has been successfully initiated. It will write data periodically to the ODISTRK file unless the status of the file is such that it is not possible to do so. The status value may be:
RECORDING DATA The first set of records has been written successfully.

UNKNOWN At this point in time it is not known if records have been written successfully.

OTHER An error message which also appears on the console.

If an error has occurred which prevents writing of records at this time, ODISTRK will continue to attempt to write its records at the expiration of its time interval.

ODIS124 - Final ODISTRK records could not be written

ODISTRK has been turned off successfully. However, the status of the ODISTRK file is such that the final set of records could not be written. For example, the file may be disabled.

ODIS125 - Unexpected return code XXXXXXXXXXXX to YYYYYYYYYYYY

ODIS has issued a CICS command and has received an unexpected response. This should not occur.

ODIS126 - Watchdog initiation error XXXXXXXXXXXX - Unable to continue The Watchdog

The Watchdog has been running successfully for a period of time, but an error has occurred which prevents subsequent invocations.

ODIS127 - ODISTRK Temp Storage contains XXX items - Attempting to continue

An internal error has been detected in ODISTRK's usage of Temporary Storage.

(ODIS7nn messages are produced by ODISTRK batch program)

ODIS701 - INVALID KEYWORD: xxxxxxxx

The first "word" on the card is not one of the valid keywords such as Range, Report, ect.

ODIS703 - INVALID PARAMETER NAME: xxxxxxxx

The specified parameter name is not valid for the keyword with which it appears.

ODIS704 - INVALID TYPE OF xxxxxxxx PARAMETER

The specified parameter name, while valid, is used improperly. For example, it is not followed by an equal sign.

ODIS705 - INVALID xxxxxxxx VALUE: yyyyyyyy

The value assigned to the xxxxxxxx parameter is invalid. For example, MAYBE is not a valid value for the CLEAR parameter of the ARCHIVE statement.

ODIS707 - xxxxxxxx yyyyyyy APPEARS MORE THAN ONCE

The yyyyyyy parameter on the xxxxxxxx statement has been specified more than once.

ODIS708 - INVALID xxxxxxxx PARAMETER value: yyyyyyyy

The xxxxxxxx statement contains an invalid parameter

ODIS709 - INVALID RANGE START END DATE TIME

The specified parameter contains nonnumeric characters or is not in the proper format.

ODIS710 - SYNTAX ERROR IN xxxxxxxx PARAMETER NEAR COLUMN yy

The rules for coding parameter values have been violated. For example, two commas appear in succession..

ODIS721 - INPUT FILE IS EMPTY

A REPORT has been attempted, but the input file (either ODISTRK or an archive tape) contains no records.

ODIS722 - THE SPECIFIED RANGE DOES NOT ENCOMPASS AT LEAST TWO INTERVALS

In order to report activity within a given range, at least two intervals (or a startup followed by one interval) must exist, but either zero or one interval has been observed. Rerun the report with a wider range.

ODIS723 - VSAM I/O ERROR rc-ec-xx-yy IN ODISTRK AT RECORD #zzzzzz

VSAM has rejected an I/O operation on the indicated relative record number in the ODISTRN FILE. The VSAM return code (in hexadecimal) is re, and the VSAM error code (in hexadecimal) is ec.

These codes are documented in Appendix A of the VSE/VSAM Messages and codes manual.

ODIS724 - STATISTICS APPARENTLY RESET AT yyddd hhmmss

Some of the statistics maintained by CICS have been observed by ODISTRK to have been decremented or reset to zero. ODISTRK assumes that this has been done using the CSTT AOC transaction. Other than the loss of data, this should not cause any problems.

ODIS725 - START/END DATE/TIME SPECIFIED ON RANGE CARD IS INVALID

The specified parameter is invalid, for example a time of 25:00:00 or a date of 12/32/87.

ODIS726 - START OF RANGE MUST BE BEFORE END OF RANGE

The RANGE card must specify a START date and time which precedes the END date and time.

ODIS727 - STARTUP TABLE OVERFLOW

A table used by ODISTRK has been filled. Specify a smaller range.

ODIS729 - ODISTRK DATA AT mm/dd/yy hh:mm:ss OVERLAPS ARCHIVE INPUT DATA AT mm/dd/yy hh:mm:ss

When performing an archive, ODISTRK encountered records from the input tape. This may be caused by archiving the same data twice, failure to clear ODISTRK after an archive function, ect. The output tape does not contain the overlapping records from disk.

ODIS790 - ODISTRK INTERNAL ERROR #1**ODIS791 - ODISTRK INTERNAL ERROR #200**

These conditions should never occur.

ODIS998 - ODIS will expire at the end of the month

Every version of ODIS is distributed with a built in expiration date. ODIS will continue to run normally until this date but will then refuse to run.

ODIS999 - Expiration date has been reached

Every version of ODIS is distributed with a built in expiration date. After that date ODIS will not run. It will be necessary to order a current release of ODIS or obtain a temporary patch to extend the expiration date.

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