

TB-664COM TABSAGUARO IML DIAGNOSTIC COMMUNICATION TABLE
IML DISKETTE IMPLEMENTATION

The IML diskette Power on diagnostics will be executed both for normal power on IML 'Functional Code' and for 'Install Diagnostics'.

The Power on Diagnostics are selected Saguaro Support Diagnostics, modified to log the error information into a Table that resides in Control Store (COMTAB)

The diagnostics are as follows and will be executed in the sequence that they are listed:

- (a) DISKETTE LOADER - Not a support diagnostic (executed from the PROM, any error information will be placed into the COMTAB).
- (b) JIB PROCESSOR TESTS
- (c) EXTERNAL REGISTERS TESTS
- (d) BUFFER TESTS
- (e) LOOP WRITE TO READ TESTS
- (f) STATUS STORE TESTS
- (g) CHANNEL TESTS (All channels available in the Control Unit)
- (h) HARDWARE CHECKERS - Not a Support Diagnostic

The Communication Table will be built as each diagnostic is executed. The errors that are detected will be categorized into two types:

'SOFT' errors are defined as those that would not affect the operation of the remaining diagnostics, or that would not stop the customer from using the subsystem.

- (a) 'SOFT' - A entry will be made in the Communication Table and the diagnostics will continue execution.

NOTE:

The initial implementation for Release 23 will treat all errors as through they were 'SOFT' as described above.

'HARD' errors are defined as those that would affect the operation of the remaining diagnostics, or that would stop the customer from using the subsystem.

- (b) 'HARD' - A entry will be made in the Communication Table and the diagnostics will terminate. (Note: Control will be returned to the functional code from the por).

The errors that are detected will be surfaced via the Functional Code.

During the Initialization time, Functional Code will look at the 'COMPCODE' in the Communication Table. If an error occurred during Power on Reset Diagnostics, a error code of '1000' will be sent up to the system when the Control Unit goes ON LINE.

COMMUNICATION TABLE LAYOUT:

The Communication Table will reside in Control Store starting at address '0xx40'. On Release 23 this address is at '03f40' and can be located via the 'OSVDADOS' Table. This area must not be overlaid when loading either the Functional Code or the Install Diagnostics from the IML diskette.

Note: This Table must always reside in Page 0 of Control Store.

The Table will consist of 1 nibble for a Return Code, 4 nibbles of bit Flags for each Diagnostic Area that failed, 1 word of Parms to pass information between Diagnostics if necessary and 3 words for each Functional Area defined on the following pages.

Note: the 3 words reserved for each Functional Area may or may not all be used currently. The first word will always contain an Error Code and the second word will contain a Selection Code to invoke the companion diagnostic from the Support Diskette. (For the IML diskette and Hardware Checkers Functional Area, there is no Support Diagnostic Selection Code)

Note: All of the address's below are correct for Release 23 Functional Code. This could change with later releases but the Offset will always remain the same.

COMTAB ENTRIES:

LABEL	ADDRESS	LENGTH	DESCRIPTION
COMPCODE	'03F40'	1 WORD	DIAG COMPLETION CODES
PARMS	'03F41'	1 WORD	INTER-DIAGNOSTIC COMMUNICATION
JIB	'03F42'	3 WORDS	JIB TEST
EXTREG	'03F45'	3 WORDS	EXTERNAL REGISTER TEST
BUFFER	'03F48'	3 WORDS	DATA BUFFER TESTS
LOOPWR	'03F4B'	3 WORDS	LOOP WRITE TO READ TEST
STATSTOR	'03F4E'	3 WORDS	STATUS STORE TESTS
CHANNELA	'03F51'	3 WORDS	CHANNELA 'INTERNAL WRAP' TEST
CHANNELB	'03F54'	3 WORDS	CHANNELB 'INTERNAL WRAP' TEST
CHANNELC	'03F57'	3 WORDS	CHANNELC 'INTERNAL WRAP' TEST
CHANNELD	'03F5A'	3 WORDS	CHANNELD 'INTERNAL WRAP' TEST
HDWCHKR	'03F5D'	3 WORDS	HARDWARE CHECKERS TEST
SPARE	'03F60'	3 WORDS	CURRENTLY AN UNUSED ENTRY
IMLDISK	'03F63'	3 WORDS	IML DISKETTE TESTS

BIT DEFINITION OF LOCATION '03F40'

COMPCODE 0123 4567 0123 4567

TABLE ENTRY	'03F63'	(IML DISK FAILURE
TABLE ENTRY	'03F5A'	(CHANNELD FAILURE
TABLE ENTRY	'03F57'	(CHANNELC FAILURE
TABLE ENTRY	'03F54'	(CHANNELB FAILURE
TABLE ENTRY	'03F51'	(CHANNELA FAILURE
TABLE ENTRY	'03F60'	(SPARE ENTRY)
TABLE ENTRY	'03F5D'	(HDWCHKR FAILURE
TABLE ENTRY	'03F4E'	(STATSTOR FAILURE

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TABLE ENTRY '03F4B' (LOOPWR FAILURE)
TABLE ENTRY '03F48' (BUFFER FAILURE)
TABLE ENTRY '03F45' (EXT REG FAILURE)
TABLE ENTRY '03F42' (JIB FAILURE)
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These 3 bits(1-3) are encoded
with the RETURN CODE

'0' = SUCCESSFUL

'1' = CHECK 2

'2' = CHECK 1

'3' - '7' UNUSED

This Bit(0) is used by the MAINTENANCE PACKAGE to define a Hang AT '04009' - '0400B' as the INSTALL CODE loaded and waiting for the switch to go 'ONLINE'

*** It is also an indication that the
NORMAL/TEST switch is on TEST. ***

BIT DEFINITION OF LOCATION '03F41'

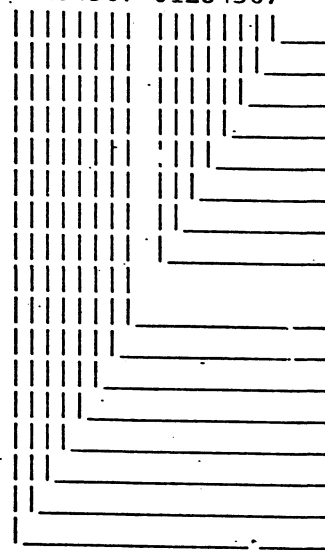
PARMS (0) 0123 4567 0123 4567

This Word is used for passing Parms between Diagnostics, where necessary. And will be defined as Input/Output in each of the Module prologues where used. (Currently unused)

BIT DEFINITION OF LOCATION '03F42'

JIB (0)

01234567 01234567

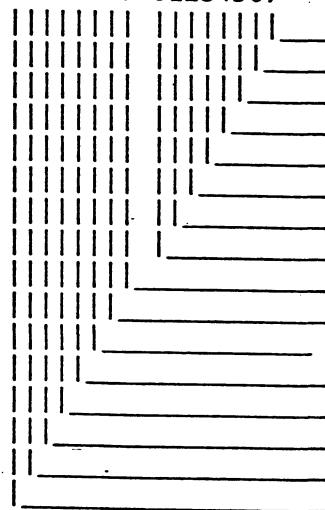


This Byte contains the second
half of the Error Code
hex '00' through '2F'

This Byte contains the
first half of the Error
Code and is always a
hex 'EC'

JIB (1)

01234567 01234567

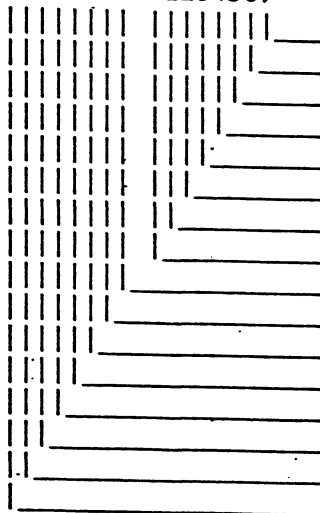


This Word contains the
Diagnostic Selection Code
for the companion Support
diagnostic.
(on Support diskette)

'EE12'
'EE13'
'EE14'

JIB (2)

01234567 01234567

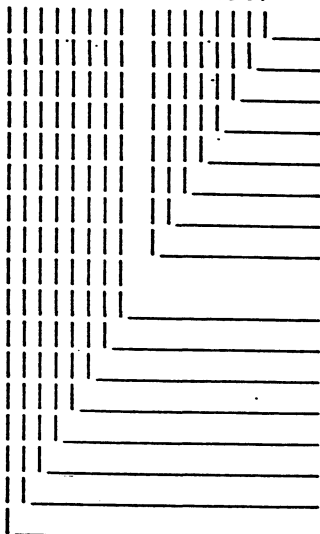


This Word is currently
unused and will be initialized
to zero at Power On time.

BIT DEFINITION OF LOCATION '03F45'

EXTREG (0)

01234567 01234567



This Byte contains the second
half of the Error Code
hex '30' through '4F'

This Byte contains the
first half of the ERROR
CODE and is always a
hex 'EC'

01234567 01234567

This Word contains the
Diagnostic Selection Code
for the companion Support
Diagnostic.
(on Support diskette)

'EE85'

EXTREG (2)

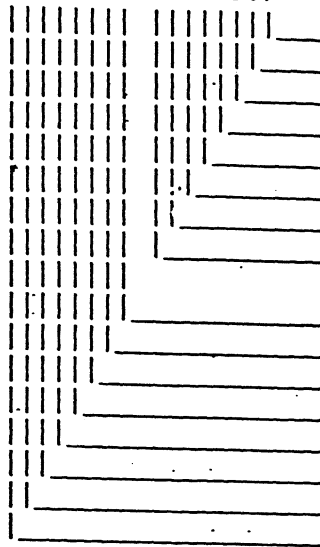
01234567 01234567

This word is currently unused and will be initialized to zero at Power On time .

BIT DEFINITION OF LOCATION '03F48'

BUFFER (0)

01234567 01234567

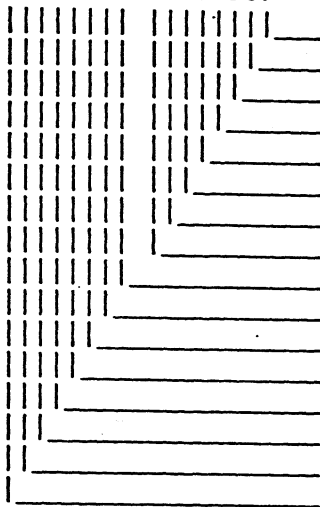


This byte contains the second
half of the Error Code
hex '50' through 'BF'

This Byte contains the
first half of the Error
Code and is always a
Hex 'EC'

BUFFER (1)

01234567 01234567

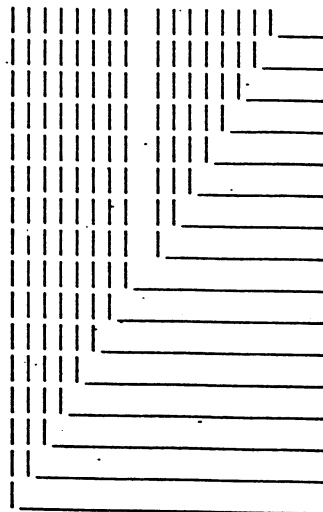


This Word contains the
Diagnostic Selection Code
for the companion Support
diagnostic.
(on Support diskette)

'EE32'
'EE33'

BUFFER (2)

01234567 01234567

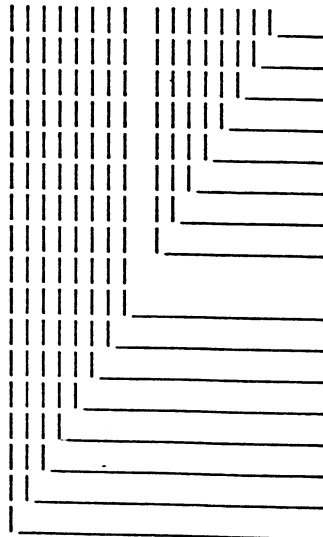


This word is currently
unused and will be initialized
to zero at Power On time.

BIT DEFINITION OF LOCATION '03F4B' —

LOOPWR (0)

01234567 01234567



This Byte contains the second
half of the Error Code
hex 'C0' through 'FF'

EC x 7

This byte contains the
first half of the Error
Code and is always a
hex 'EC'

11254587

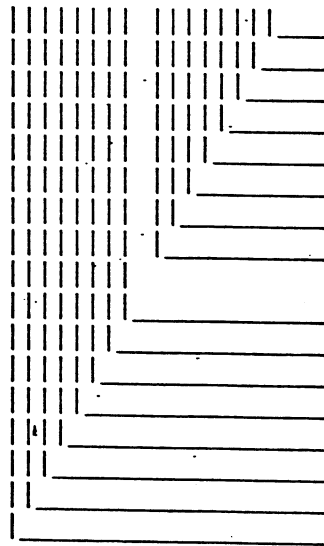
'EE54'

11-1587 81254587

This word is currently
unused and will be initialized
to zero at Power On time

BIT DEFINITION OF LOCATION '03F4E'

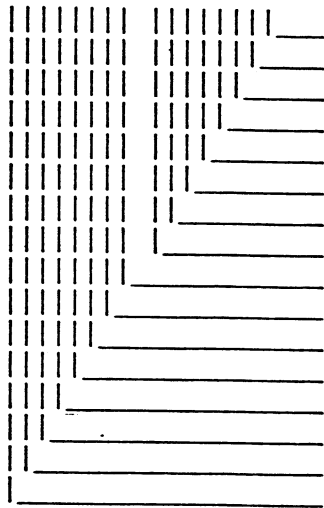
STATSTOR (0) 01234567 01234567



This byte contains the second
half of the Error Code
hex '00' through '1F'

This Byte contains the
first half of the Error
Code and is always a
hex 'ED'

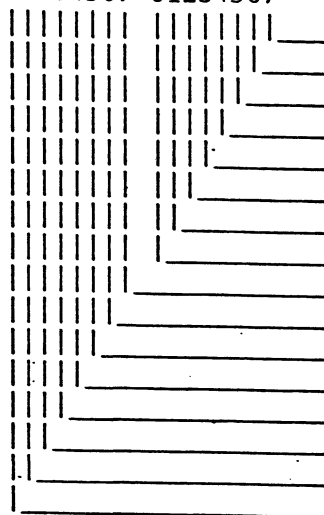
STATSTOR (1) 01234567 01234567



This word contains the
Diagnostic Selection Code
for the companion Support
diagnostic.
(on Support diskette)

'EE92'
'EE93'

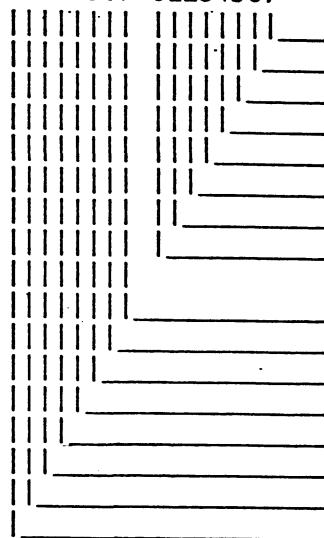
STATSTOR (2) 01234567 01234567



This word is currently
unused and will be initialized
to zero at Power on time.

BIT DEFINITION OF LOCATION '03F51'

CHANNELA (0) 01234567 01234567



This Byte contains the second
half of the Error Code
hex '20' through hex '3F'

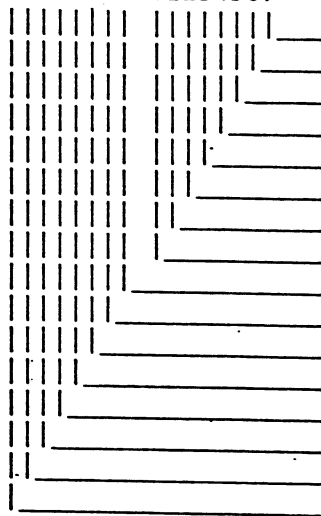
This Byte contains the
first half of the Error
Code and is always a
Hex 'ED'

[illegible]

'EE64'

12

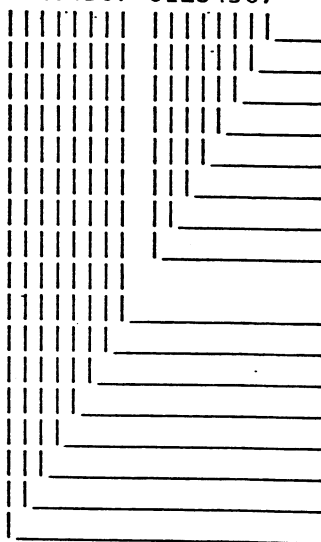
CHANNELB (2) 01234567 01234567



This word is currently
unused and will be initialized
to zero at Power On time.

BIT DEFINITION OF LOCATION '03F57'

CHANNELC (0) 01234567 01234567

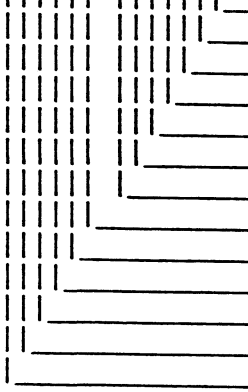


This Byte contains the second
half of the Error Code
hex '20' through hex '3F'

This Byte contains the
first half of the Error
Code and is always a
hex 'ED'

[illegible]

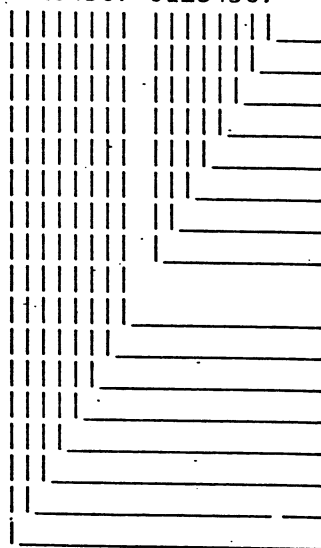
'EE64'



This word is currently unused and will be initialized to zero at Power On time.

BIT DEFINITION OF LOCATION '03F5A'

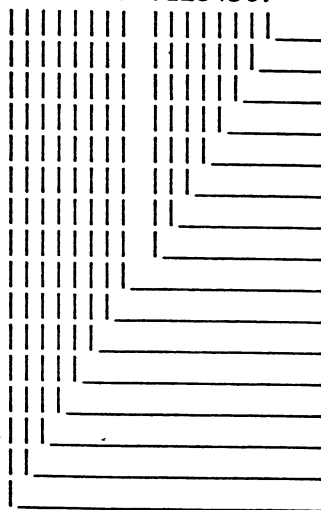
CHANNELD (0) 01234567 01234567



This byte contains the second
half of the Error Code
hex '20' through hex '3F'

This Byte contains the
first half of the Error
Code and is always a
hex 'ED'

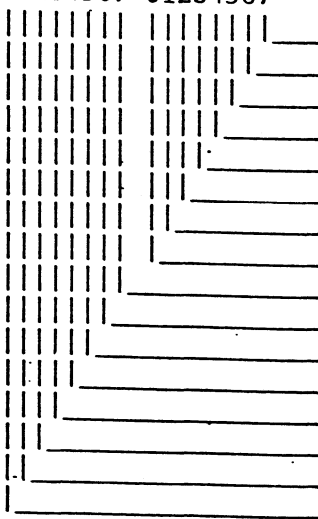
CHANNELD (1) 01234567 01234567



This word contains the
Diagnostic Selection Code
for the companion Support
diagnostic.
(on Support diskette)

'EE64'

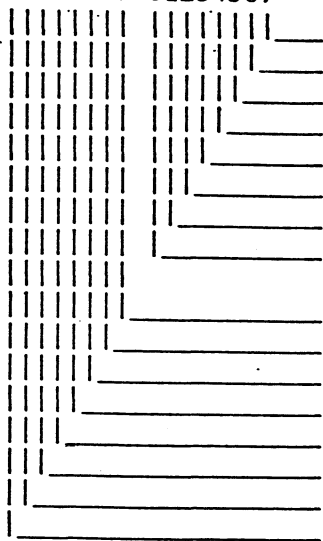
CHANNELD (2) 01234567 01234567



This word is currently
unused and will be initialized
to zero at Power On time.

BIT DEFINITION OF LOCATION '03F5D'

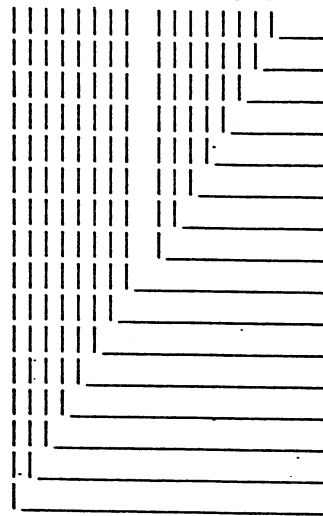
HDWCHKR (0) 01234567 01234567



This Byte contains the second
half of the Error Code
hex '40' through hex '5F'

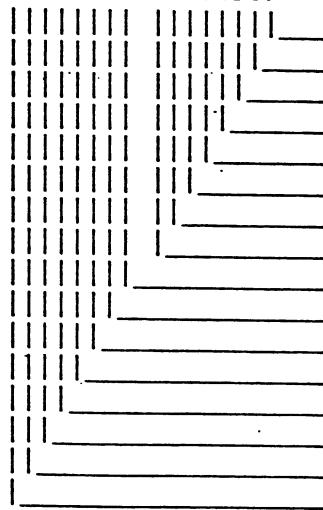
This Byte contains the first
half of the Error Code and
is always a hex 'ED'

HDWCHKER (1) 01234567 01234567



The first byte contains the expected value in the Register being tested and the second byte contains the actual value received.

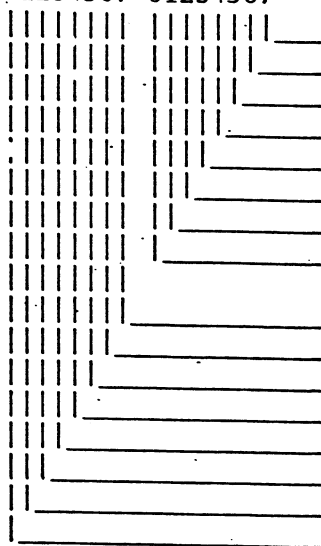
HDWCHKER (2) 01234567 01234567



This word is currently unused and will be initialized to zero at Power On time.

BIT DEFINITION OF LOCATION '03F60'

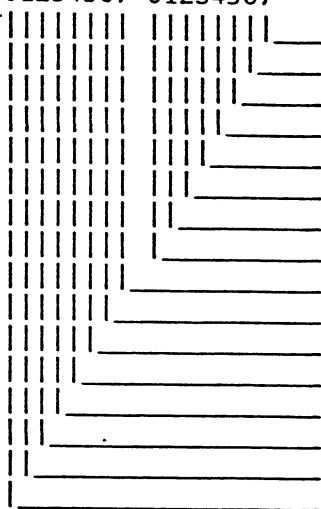
SPARE (0) 01234567 01234567



This byte contains the second
half of the Error Code
hex '60' through hex '7F'

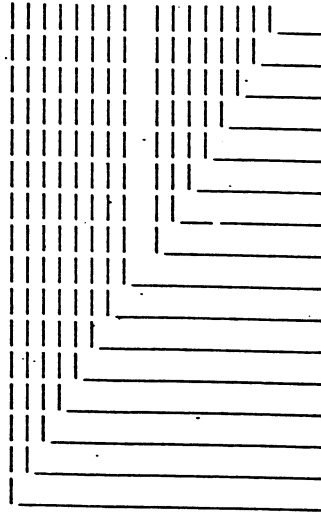
This byte contains the first
half of the Error Code and
is always a hex 'ED'

SPARE (1) 01234567 01234567



SPARE (2)

01234567 01234567

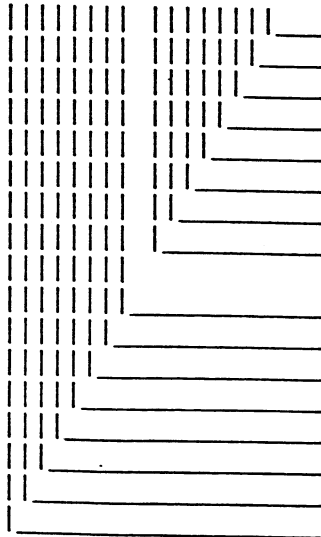


This word is currently
unused and will be initialized
to zero at Power On time.

BIT DEFINITION OF LOCATION '03F63'

IMLDISK (0)

01234567 01234567



This byte contains the second
half of the Error Code
hex '80' through hex 'D2'

This byte contains the first
half of the Error Code and
is always a hex 'ED'

This word is currently undefined.

This word is currently undefined.

ERROR CODES GENERATED FOR THE JIB DIAGNOSTICS.

'EC00' = Undefined.
'EC01' = FAILURE OCCURRED WHEN TESTING BRANCH CONDITIONS
FOR ACTIVE AND RESET CONDITIONS.
'EC02' = FAILURE OCCURRED DURING LOCAL STORAGE PAGING OR
ADDRESSING OPERATIONS.
'EC03' = LOCATE STORAGE REGISTER FAILED WHEN TESTED WITH
AA, 55, AND 01 PATTERNS.
'EC04' = EXTERNAL REGISTER IMMEDIATE OPERATION FAILED.
'EC05' = FAILURE OCCURRED DURING A REGISTER-TO-REGISTER OP.
'EC06' = LOCAL STORAGE REGISTER IMMEDIATE OPERATION FAILED.
'EC07' = FAILURE OCCURRED DURING A PROCESSOR-TO-CONTROL
STORAGE OPERATION.
'EC08' = FAILURE OCCURRED WHEN TESTING IF INTERRUPTS
CAN BE SUSPENDED.
'EC09' = INVALID SUBROUTINE RETURN CODE.
'EC0A' = INTERRUPT MASK REGISTER (IMR) HAS STUCK FAULTS.
'EC0B' = WHILE USING THE INTERRUPT MASK REGISTER (IMR)
AN XR ERROR IS DETECTED.
'EC0C' = THE LOAD STORE PAGE WAS NOT SAVED CORRECTLY OR
'EC0D' A PSW SWAP OCCURRED TO THE WRONG INTERRUPT LEVEL.
'EC0E' = CURRENT LEVEL INTERRUPT / PREVIOUS LEVEL INTERRUPT
ARE NOT CORRECT.
'EC0F' = AN XR ERROR OCCURRED WHILE EXERCISING THE
PROCESSOR EXTERNAL REGISTERS.
'EC10' = Undefined.
'EC11' = LSR='00' BAD PSW SWAP
'EC12' = PSR = EXTERNAL REGISTER ERROR
'EC13' = THE INTERRUPTS OCCURRED IN THE WRONG SEQUENCE. THE
'EC14' = PSR CURRENT AND/OR PREVIOUS VALUES ARE WRONG.
'EC15' = PSR EXTENDED BITS STUCK
'EC16' = EXTEND BITS FOR EXTERNAL REGISTER ADDRESSING WERE
'EC17' = NOT SAVED AND SET/RESET PROPERLY.
'EC18' = EXTERNAL REGISTER ERROR DURING INTERRUPT*
'EC19' = LEVEL 7 INTERRUPT WAS EARLY
'EC1A' = THE CONDITION CODE IS NOT SET PROPERLY IN THE PSW.
'EC1B' = THE INTERVAL TIMER FAILED DURING INTERRUPT HANDLING.
'EC1C' = PSR = EXTERNAL REGISTER ERROR
'EC1D' = CHECK 1 ERROR OCCURRED DURING THE INTERRUPT TEST.
'EC1E' = INTERRUPT TIMER ERROR
'EC1F' = INTERRUPT LEVEL STUCK
'EC20' = Undefined.
'EC21' = JUMP ADDRESS HIGH REGISTER FAILED
'EC22' = FORCE JUMP OPERATION FAILED
'EC23' = JUMP ADDRESS LOW REGISTER FAILED
'EC24' = INTERVAL TIMER REGISTERS A AND/OR B FAILED
'EC25' = INTERVAL TIMER A AND/OR B TIMINGS WRONG
'EC26' = PROCESSOR CONTROL REGISTER (PCR)
'EC27' = INTERRUPT MASK REGISTER (IMR)
'EC28' = PROCESSOR DIAGNOSTIC REGISTER (PDR)
'EC29' = LOCAL STORAGE PAGE REGISTER (LSP) FAILED
'EC2A' = Undefined.

'EC2B' = Undefined.
'EC2C' = Undefined.
'EC2D' = Undefined.
'EC2E' = Undefined.
'EC2F' = Undefined.

ERROR CODES GENERATED FOR THE EXTERNAL REGISTER DIAGNOSTICS.

'EC30' = Undefined.
'EC31' = XR ERROR IS ON AFTER THE HARDWARE, CHECK1, AND
USERS RESET AT THE START OF THE TEST.
'EC32' = THE XRA DID NOT COMPARE WITH THE DATE COMPARE TABLE
DURING TEST OF ALL POSSIBLE COMBINATIONS OF DATA
INTO THE XRA.
'EC33' = AN XR ERROR OCCURRED WHILE USING PROCEDURE REGISTERS
DURING THE TESTING OF THE XRA DATA.
'EC34' = USING DIAGNOSTIC MODE AND FORCING AN ERROR WHILE
WRITING TO THE JAH REGISTER (DATA = '00'), AND
USING EXTEND BITS FOR ADDRESSING EXTERNAL REGISTERS
A OR B, AN XR ERROR IS EXPECTED ALONG WITH SPECIFIC
DATA IN THE XRA.
'EC35' = XR OR CHECK 2 IS ON UNEXPECTEDLY DURING TEST OF XRA
FOLLOWING A USER RESET.
'EC36' = AN XR ERROR IS FORCED CAUSING A LEVEL 0 INTERRUPT.
THE FOLLOWING RESULTS ARE EXPECTED: XR ERROR, CHECK 2
AND USER WRITE ERROR.
(A) AN XR INTERRUPT OCCURRED, HOWEVER THE XR ERROR
OR CHECK 2 ARE NOT SET.
(B) AN AX ERROR IS FORCED WITH INTERRUPTS DISABLED
WITH XR ERRORS AND CHECK 2 IN THE PER.
(C) CURRENT OR PROCEEDING INTERRUPT LEVELS ARE NOT
CORRECT.
'EC37' = A LEVEL 0 INTERRUPT OCCURRED; HOWEVER, THE CURRENT
AND PROCEEDING INTERRUPT LEVELS DO NOT MATCH.
CURRENT = 0 AND PREVIOUS = 7.
'EC38' = A LEVEL 0 INTERRUPT OCCURRED AND THE XTA DID NOT
HAVE THE CORRECT VALUE IN IT.
(A) THE RETURN FROM LEVEL 0 INTERRUPT DID NOT
OCCUR OR THE LEVEL 0 INTERRUPT OCCURRED TOO SOON.
(B) THE JAH REGISTER DID NOT ACTIVATE 'USERS ACTIVE'
WHEN THE ERROR IS FORCED ON THE DATA BUS. (ADDRESS
IS OK)H
(C) EXTERNAL REGISTER ERROR INTERRUPT DID NOT OCCUR.
(D) CHECK RESET IS ACTIVATED AND CHECK 2 AND/OR
EXTERNAL REGISTER ERROR DID NOT RESET.
'EC39' = BOTH READ AND WRITE OPERATIONS ARE PERFORMED WHILE
FORCING AN ADDRESSING ERROR ON THE EXTERNAL REGISTER
ADDRESS.
(A) EXTERNAL REGISTER ERROR OR CHECK 2 ERROR DID NOT
OCCUR.
(B) PER EXTERNAL REGISTER ERRORS WERE NOT SET OR RESET

- 'EC59' = A BUFFER CHANNEL STATUS ERROR OCCURRED ON THE LAST PASS DURING A CHANNEL MICROPROCESSOR READ.
- 'EC5A' = DATA READ FROM THE BUFFER DID NOT MATCH THE DATA WRITTEN INTO THE BUFFER.
- 'EC5B' = SERVICE IN DID NOT COME ACTIVE OR DATA IN IS ACTIVE ON A CHANNEL OPERATION.
- 'EC5C' = DATA IN-DID NOT COME ACTIVE OR SERVICE IN IS ACTIVE ON A CHANNEL OPERATION.
- 'EC5D' = CHANNEL POINTER EQUALS STOP BIT WAS NOT ACTIVE AFTER A CHANNEL OPERATION.
- 'EC5E' = MICROPROCESSOR WRITE COMPLETE DID NOT COME ACTIVE ON A CHANNEL WRITE OPERATION.
- 'EC5F' = BUFFER CHANNEL STATUS ERROR OCCURRED DURING A CHANNEL WRITE.
- 'EC60' = BUFFER CHANNEL STATUS ERROR OCCURRED AFTER A STORE CRC COMMAND.
- 'EC61' = DATA READ FROM THE BUFFER DID NOT MATCH THE DATA WRITTEN INTO THE BUFFER.
- 'EC62' = DEVICE POINTER STOP OR DEVICE COMPLETE WAS NOT ACTIVE AFTER A DEVICE MICROPROCESSOR READ.
- 'EC63' = BUFFER DEVICE STATUS ERROR OCCURRED DURING A DEVICE READ.
- 'EC64' = BUFFER DEVICE STATUS ERROR OCCURRED DURING A DEVICE WRITE:
- 'EC65' = DEVICE READ END AND DEVICE DATA TRANSFER COMPLETE BITS TORE NOT ON AFTER A DEVICE WRITE.
- 'EC66' = SERVICE IN DID NOT COME ACTIVE OR DATA-IN IS ACTIVE ON A CHANNEL OPERATION.
- 'EC67' = DATA IN DID NOT COME ACTIVE OR SERVICE IN IS ACTIVE ON A CHANNEL OPERATION.
- 'EC68*' = DATA READ FROM THE BUFFER DID NOT MATCH THE DATA WRITTEN INTO THE BUFFER.
- 'EC69' = BUFFER CHANNEL STATUS ERROR OCCURRED DURING A CHANNEL WRITE.
- 'EC6A' = CHANNEL POINTER EQUALS STOP WAS NOT ON IN THE BUFFER CHANNEL STATUS/ERROR BCSE REGISTER AFTER A CHANNEL OPERATION.
- 'EC6B' = A FAILURE WAS DETECTED BY THE BUFFER CHANNEL STATUS/ERROR BCSE REGISTER AFTER A READ OR WRITE INTO THE BUFFER.C
- 'EC6C' = BUFFER CHANNEL REMAINDER VALUE IS INCORRECT.
- 'EC6D' = THE CRC CHARACTER GENERATED BY THE DATA TRANSFER HARDWARE AND THE EXPECTED CRC DO NOT COMPARE.
- 'EC6E' = A FAILURE WAS DETECTED BY THE BUFFER DEVICE STATUS/ERROR BDSE REGISTER AFTER A READ OR WRITE INTO THE BUFFER.
- 'EC6F' = BUFFER CHANNEL REMAINDER VALUE IS INCORRECT.
- 'EC70' = THE CRC CHARACTER GENERATED BY THE DATA TRANSFER HARDWARE AND THE EXPECTED CRC DO NOT COMPARE.
- 'EC71' = A BUFFER CHANNEL STATUS ERROR WAS RECEIVED AFTER A WRITE OF MODULO 32 ADDRESS INTO THE BUFFER.
- 'EC72' = A BUFFER DEVICE STATUS ERROR WAS RECEIVED AFTER A READ OF THE MODULO 32 ADDRESSES JUST WRITTEN INTO THE BUFFER.

- 'EC73' = THE ADDRESS READ OUT OF THE BUFFER DOES NOT COMPARE WITH THE EXPECTED ADDRESS.
- 'EC74' = BUFFER CHANNEL STATUS ERROR WAS RECEIVED AFTER A SPECIFIED DATA PATTERN WAS WRITTEN INTO THE BUFFER.
- 'EC75' = BUFFER DEVICE STATUS ERROR WAS RECEIVED AFTER A SPECIFIED DATA PATTERN WAS READ FROM THE BUFFER.
- 'EC76' = THE DATA READ OUT OF THE BUFFER DOES NOT COMPARE WITH THE EXPECTED DATA.
- 'EC77' = A BUFFER CHANNEL STATUS ERROR WAS RECEIVED AFTER AFTER A CHANNEL WRAP WRITE TEST.
- 'EC78' = THE BUFFER CHANNEL POINTER AND THE ACTUAL BUFFER ADDRESS DO NOT COMPARE AFTER A BUFFER WRAP WRITE.
- 'EC79' = A BUFFER DEVICE STATUS ERROR WAS RECEIVED AFTER A BUFFER WRAP READ TEST.
- 'EC7A' = THE BUFFER DEVICE POINTER AND THE ACTUAL BUFFER ADDRESS DID NOT COMPARE AFTER A BUFFER WRAP READ.
- 'EC7B' = BUFFER SIZE ERROR (FROM KETCHSIZ SUBRTN)
- 'EC7C' = EXTERNAL REGISTER ERROR (FROM KETCHSIZ SUBRTN)
- 'EC7D' = Undefined.
- 'EC7E' = Undefined.
- 'EC7F' = Undefined.
- 'EC80' = Undefined.
- 'EC81' = Undefined.
- 'EC82' = Undefined.
- 'EC83' = Undefined.
- 'EC84' = Undefined.
- 'EC85' = Undefined.
- 'EC86' = Undefined.
- 'EC87' = Undefined.
- 'EC88' = Undefined.
- 'EC89' = Undefined.
- 'EC8A' = Undefined.
- 'EC8B' = Undefined.
- 'EC8C' = Undefined.
- 'EC8D' = Undefined.
- 'EC8E' = Undefined.
- 'EC8F' = Undefined.
- 'EC90' = Undefined.
- 'EC91' = AFTER A CHANNEL MP WRITE OF 255 BYTES OF DATA FOLLOWED BY A CHANNEL STORE CRC, ERRORS WERE DETECTED BY THE HARDWARE.
- 'EC92' = DURING A DEVICE MP READ OF 255 BYTES OF DATA, THE DATA READ DID NOT COMPARE TO THE DATA WRITTEN THROUGH THE CHANNEL MP PORT.
- 'EC93' = AFTER A DEVICE MP READ OF 255 BYTES OF DATA TO INITIALIZE THE DEVICE SAMS, ERRORS WERE DETECTED BY THE HARDWARE.
- 'EC94' = AFTER A CHANNEL MP WRITE OF 135 BYTES OF DATA ('87' - '01') FOLLOWED BY A CHANNEL STORE CRC, ERRORS WERE DETECTED BY THE HARDWARE.
- 'EC95' = THIS ERROR IS SET WHEN EITHER SERVICE IN OR DATA IN DID NOT COME ACTIVE WHILE READING A 520 USEC DELAY IS USED TO WAIT FOR THE TAGS.
- 'EC96' = THE FIRST 45 BYTES HAVE BEEN READ, SUPPRESS OUT

- WAS RAISED AND EITHER DATA IN OR SERVICE IN ARE ACTIVE.
- 'EC97' = THIS ERROR IS SET WHEN THE BUFFER CHANNEL OPERATION IS STOPPED AND A CHECK 1, XR ERROR OR DEVICE BUFFER ERROR IS DETECTED BY THE HARDWARE.
- 'EC98' = THE BCSE ACTUAL DOES NOT EQUAL THE EXPECTED. THE EXPECTED IS AN C0000, AND CHANNEL PTR EQUAL STOP.
- 'EC99' = THIS ERROR IS SET WHEN THE BUFFER CHANNEL POINTER VALUE IS NOT = '0005', AFTER STOP OUT WAS RAISED, INDICATING THAT THE DATA XFER DID NOT END CORRECTLY.
- 'EC9A' = AFTER A CHANNEL MP WRITE OF 135 BYTES OF DATA ('87' - '01') FOLLOWED BY A CHANNEL STORE CRC, ERRORS WERE DETECTED BY THE HARDWARE.
- 'EC9B' = THIS ERROR IS SET WHEN EITHER SERVICE IN OR DATA IN DID NOT COME ACTIVE WHILE READING A 520 USEC DELAY IS USED TO WAIT FOR THE TAGS.
- 'EC9C' = THE FIRST 45 BYTES HAVE BEEN READ, SUPPRESS OUT WAS RAISED AND EITHER DATA IN OR SERVICE IN ARE ACTIVE.
- 'EC9D' = THIS ERROR IS SET WHEN THE BUFFER CHANNEL OPERATION IS STOPPED AND A CHECK 1, XR ERROR OR DEVICE BUFFER ERROR IS DETECTED BY THE HARDWARE.
- 'EC9E' = THE BCSE ACTUAL DOES NOT EQUAL THE EXPECTED. THE EXPECTED IS AN C0000, CHANNEL PTR EQUAL STOP AND CHANNEL STOP COMMAND.
- 'EC9F' = THIS ERROR IS SET WHEN THE BUFFER CHANNEL POINTER VALUE IS NOT = '0005', AFTER STOP OUT WAS RAISED, INDICATING THAT THE DATA XFER DID NOT END CORRECTLY.
- 'ECA0' = THIS ERROR IS SET WHEN THE PAD COUNTER (BCSS) REGISTER VALUE IS INCORRECT ON A READ BACKWARD COMMAND.
- 'ECA1' = AN XR ERROR OR A CHECK 1 ERROR IS DETECTED.
- 'ECA2' = THE BCSE ACTUAL DOES NOT EQUAL THE EXPECTED. THE EXPECTED IS AN 5C800, ANY CHANNEL ERROR, CHANNEL OVERRUN ERROR AND HOST/CHANNEL ADAPTER ERROR.
- 'ECA3' = THE BUFFER CHANNEL POINTER IS EXPECTED TO CONTAIN 0008 AFTER AN OVERRUN IS DETECTED AND IT DOES NOT.
- 'ECA4' = THE BDSE ACTUAL DOES NOT EQUAL THE EXPECTED. THE EXPECTED IS AN 1C100, ANY DEVICE ERROR, DEVICE OVERRUN ERROR AND READ DATA FLOW ERROR.
- 'ECA5' = THE BUFFER DEVICE POINTER IS EXPECTED TO CONTAIN 0008 AFTER AN OVERRUN IS DETECTED AND IT DOES NOT.
- 'ECA6' = AN XR ERROR OR A CHECK 1 ERROR IS DETECTED.
- 'ECA7' = THE BCSE ACTUAL DOES NOT EQUAL THE EXPECTED. THE EXPECTED IS AN 1C800, ANY CHANNEL ERROR, CHANNEL OVERRUN ERROR AND HOST/CHANNEL ADAPTER ERROR.
- 'ECA8' = THE BUFFER CHANNEL POINTER IS EXPECTED TO CONTAIN 0008 AFTER AN OVERRUN IS DETECTED AND IT DOES NOT.
- 'ECA9' = THE BDSE ACTUAL DOES NOT EQUAL THE EXPECTED. THE EXPECTED IS AN 1C100, ANY DEVICE ERROR, DEVICE OVERRUN ERROR AND READ DATA FLOW ERROR.
- 'ECAA' = THE BUFFER DEVICE POINTER IS EXPECTED TO CONTAIN 0008 AFTER AN OVERRUN IS DETECTED AND IT DOES NOT.
- 'ECAB' = THIS ERROR IS SET WHEN DATA IN, OR SERVICE IN DID

NOT BECOME ACTIVE IN 703 MICRO SECONDS.

'ECAC' = THIS ERROR IS SET WHEN THE NUMBER OF BYTES READ BY THE CHANNEL EXCEEDS 128, INDICATING THE CHANNEL IS OVERRUNNING THE DEVICE.

'ECAD' = AN XR ERROR OR A CHECK 1 ERROR IS DETECTED.

'ECAE' = THE BDSE ACTUAL DOES NOT EQUAL THE EXPECTED OF 70000 OR THE BCSE DOES NOT EQUAL THE EXPECTED OF 90000.

'ECAF' = THIS ERROR IS DETECTED WHEN THE BUFFER DEVICE REMAINDER REGISTER DOES NOT EQUAL 133 AFTER THE LAST READ OF 6 BYTES.

'ECBO' = THE BUFFER DEVICE POINTER EXPECTED IS 000C AND THE BUFFER CHANNEL POINTER EXPECTED IS 000D, ONE OR BOTH OF THE POINTERS IS WRONG.

'ECB1' = THE BCSS ACTUAL DOES NOT EQUAL THE EXPECTED. THE EXPECTED IS 86.

'ECB2' = Undefined.

'ECB3' = Undefined.

'ECB4' = Undefined.

'ECB5' = Undefined.

'ECB6' = Undefined.

'ECB7' = Undefined.

'ECB8' = Undefined.

'ECB9' = Undefined.

'ECBA' = Undefined.

'ECBB' = Undefined.

'ECBC' = Undefined.

'ECBD' = Undefined.

'ECBE' = Undefined.

'ECBF' = Undefined.

ERROR CODES GENERATED FOR THE LOOP WRITE TO READ DIAGNOSTICS.

'ECC0' = Undefined.

'ECC1' = Undefined.

'ECC2' = AN EXTERNAL REGISTER ERROR OCCURRED DURING A LOOP WRITE TO READ.

'ECC3' = A CHECK 1 ERROR HAS OCCURRED.

'ECC4' = A WSE ERROR HAS OCCURRED.

'ECC5' = BUFFER STATUS IN INCORRECT OR THE BUFFER HAS DETECTED AN ERROR.

'ECC6' = A READ DATA FLOW ERROR OCCURRED DURING A LOOP WRITE TO READ.

'ECC7' = A READ DATA FLOW ERROR OCCURRED DURING A LOOP WRITE TO READ.

'ECC8' = THE RETURN CODE WAS NOT VALID AFTER AN ERROR OCCURRED DURING A LOOP WRITE TO READ.

'ECC9' = AN EXTERNAL REGISTER ERROR OCCURRED DURING A LOOP WRITE TO READ.

'ECCA' = A CHECK 1 ERROR HAS OCCURRED.

'ECCB' = A WSE ERROR HAS OCCURRED.

'ECCC' = BUFFER STATUS IN INCORRECT OR THE BUFFER HAS DETECTED AN ERROR.
 'ECCD' = A READ DATA FLOW ERROR OCCURRED DURING A LOOP WRITE TO READ.
 'ECCE' = A READ DATA FLOW ERROR OCCURRED DURING A LOOP WRITE TO READ.
 'ECCF' = THE RETURN CODE WAS NOT VALID AFTER AN ERROR OCCURRED DURING A LOOP WRITE TO READ.
 'ECD0' = AN EXTERNAL REGISTER ERROR OCCURRED DURING A LOOP WRITE TO READ.
 'ECD1' = A CHECK 1 ERROR HAS OCCURRED.
 'ECD2' = A WSE ERROR HAS OCCURRED.
 'ECD3' = BUFFER STATUS IN INCORRECT OR THE BUFFER HAS DETECTED AN ERROR.
 'ECD4' = A READ DATA FLOW ERROR OCCURRED DURING A LOOP WRITE TO READ.
 'ECD5' = A READ DATA FLOW ERROR OCCURRED DURING A LOOP WRITE TO READ.
 'ECD6' = THE RETURN CODE WAS NOT VALID AFTER AN ERROR OCCURRED DURING A LOOP WRITE TO READ.
 'ECD7' = Undefined.
 'ECD8' = Undefined.
 'ECD9' = Undefined.
 'ECDA' = Undefined.
 'ECDB' = Undefined.
 'ECDC' = Undefined.
 'ECDD' = Undefined.
 'ECDE' = Undefined.
 'ECDF' = Undefined.
 'ECE0' = Undefined.
 'ECE1' = Undefined.
 'ECE2' = Undefined.
 'ECE3' = Undefined.
 'ECE4' = Undefined.
 'ECE5' = Undefined.
 'ECE6' = Undefined.
 'ECE7' = Undefined.
 'ECE8' = Undefined.
 'ECE9' = Undefined.
 'ECEA' = Undefined.
 'ECEB' = Undefined.
 'ECEC' = Undefined.
 'ECED' = Undefined.
 'ECEE' = Undefined.
 'ECEF' = Undefined.
 'ECF0' = Undefined.
 'ECF1' = Undefined.
 'ECF2' = Undefined.
 'ECF3' = Undefined.
 'ECF4' = Undefined.
 'ECF5' = Undefined.
 'ECF6' = Undefined.
 'ECF7' = Undefined.
 'ECF8' = Undefined.

'ECF9' = Undefined.
'ECFA' = Undefined.
'ECFB' = Undefined.
'ECFC' = Undefined.
'ECFD' = Undefined.
'ECFE' = Undefined.
'ECFF' = Undefined.

ERROR CODES GENERATED FOR THE STATUS STORE DIAGNOSTICS.

'ED00' = WRITE SS TIME OUT, NO HARDWARE CHECKS ACTIVE
'ED01' = PEAD SS TIME OUT, NO HARDWARE CHECKS ACTIVE
'ED02' = READ DATA DID NOT COMPARE WITH THE WRITE DATA,
NO HARDWARE CHECKS ARE ACTIVE.
'ED03' = SS WORKED OK BUT SOME HARDWARE CHECK IS ACTIVE
'ED04' = READ DATA DID NOT COMPARE WITH THE WRITE DATA,
AND SOME HARDWARE CHECK IS ACTIVE.
'ED05' = WRITE SS TIME OUT, SOME HARDWARE CHECK IS ACTIVE
'ED06' = READ SS TIME OUT, SOME HARDWARE CHECK IS ACTIVE
'ED07' = Undefined.
'ED08' = Undefined.
'ED09' = Undefined.
'ED0A' = Undefined.
'ED0B' = Undefined.
'ED0C' = Undefined.
'ED0D' = Undefined.
'ED0E' = Undefined.
'ED0F' = Undefined.
'ED10' = TIMEOUT OCCURRED WHILE TRYING TO READ FEATURE
'ED11' = TIMEOUT WHILE DISCONNECTING SECOND CONTROL UNIT
'ED12' = TIMEOUT OCCURRED FOR STATUS STORE ORDER BUT
NO HARDWARE CHECKS ARE ACTIVE.
'ED13' = TIMEOUT OCCURRED FOR DUAL STATUS STORE ORDER BUT
NO HARDWARE CHECKS ARE ACTIVE.
'ED14' = RECEIVED BIT NOT RESET FOR RESET READ BUF ORDER
'ED15' = RESET READ BUFFER ORDER NOT SUCCESSFUL
'ED16' = STATUS INDICATES THAT BOTH CU'S ARE CONNECTED
'ED17' = ORDER SUCCESSFUL BUT HARDWARE ERROR DETECTED
'ED18' = TIMEOUT OCCURRED FOR STATUS STORE ORDER AND
HARDWARE CHECKS ARE ACTIVE.
'ED19' = TIMEOUT OCCURRED FOR DUAL STATUS STORE ORDER AND
HARDWARE CHECKS ARE ACTIVE.
'ED1A' = Undefined.
'ED1B' = Undefined.
'ED1C' = Undefined.
'ED1D' = Undefined.
'ED1E' = Undefined.
'ED1F' = Undefined.

ERROR CODES GENERATED FOR THE CHANNEL DIAGNOSTICS.

'ED20' = Undefined.
'ED21' = Undefined.
'ED22' = Undefined.
'ED23' = Undefined.
'ED24' = Undefined.
'ED25' = Undefined.
'ED26' = Undefined.
'ED27' = Undefined.
'ED28' = Undefined.
'ED29' = Undefined.
'ED2A' = Undefined.
'ED2B' = Undefined.
'ED2C' = Undefined.
'ED2D' = Undefined.
'ED2E' = Undefined.
'ED2F' = Undefined.
'ED30' = Undefined.
'ED31' = Undefined.
'ED32' = Undefined.
'ED33' = Undefined.
'ED34' = Undefined.
'ED35' = Undefined.
'ED36' = Undefined.
'ED37' = Undefined.
'ED38' = Undefined.
'ED39' = Undefined.
'ED3A' = Undefined.
'ED3B' = Undefined.
'ED3C' = Undefined.
'ED3D' = Undefined.
'ED3E' = Undefined.
'ED3F' = Undefined.

ERROR CODES GENERATED FOR THE HARDWARE CHECKERS DIAGNOSTICS.

'ED40' = Undefined.
'ED41' = BCSE GROUP 0 ERROR
'ED42' = BCSE GROUP 1 ERROR
'ED43' = BCSE GROUP 2 ERROR
'ED44' = BCSE GROUP 3 ERROR
'ED45' = CHANNEL CRC CHECKER FAILED
'ED46' = BDSE GROUP 0 ERROR
'ED47' = BDSE GROUP 1 ERROR
'ED48' = BDSE GROUP 2 ERROR
'ED49' = BDSE GROUP 3 ERROR
'ED4A' = DEVICE CRC CHECKER FAILED
'ED4C' = BUFFER XR CHECK 2 ERROR
'ED4D' = TIMED OUT WHILE WAITING FOR SERVICE IN AFTER

SETTING CHANNEL READ FORWARD COMMAND.

'ED4E' = DEVICE CRC CHECKER FAILED (WSE ERRORS)
'ED4F' = DEVICE PARITY CHECKER FAILED (BUF TOGGLE WRITE)
'ED50' = BUFFER XR CHECK 2 ERROR (WRITE DATA FLOW)
'ED51' = DEVICE PARITY CHECKER FAILED (BUF TOGGLE READ)
'ED52' = TIMED OUT WHILE WAITING FOR BEGINNING SYNC
'ED53' = Timed Out waiting for BOB.
'ED54' = Timed Out waiting for IB
'ED55' = Undefined.
'ED56' = Undefined.
'ED57' = Undefined.
'ED58' = Undefined.
'ED59' = Undefined.
'ED5A' = Undefined.
'ED5B' = Undefined.
'ED5C' = Undefined.
'ED5D' = Undefined.
'ED5E' = Undefined.
'ED5F' = Undefined.

ERROR CODES TO BE USED FOR THE SPARE ENTRY

'ED60' = Undefined.
'ED61' = Undefined.
'ED62' = Undefined.
'ED63' = Undefined.
'ED64' = Undefined.
'ED65' = Undefined.
'ED66' = Undefined.
'ED67' = Undefined.
'ED68' = Undefined.
'ED69' = Undefined.
'ED6A' = Undefined.
'ED6B' = Undefined.
'ED6C' = Undefined.
'ED6D' = Undefined.
'ED6E' = Undefined.
'ED6F' = Undefined.
'ED70' = Undefined.
'ED71' = Undefined.
'ED72' = Undefined.
'ED73' = Undefined.
'ED74' = Undefined.
'ED75' = Undefined.
'ED76' = Undefined.
'ED77' = Undefined.
'ED78' = Undefined.
'ED79' = Undefined.
'ED7A' = Undefined.
'ED7B' = Undefined.
'ED7C' = Undefined.
'ED7D' = Undefined.
'ED7E' = Undefined.
'ED7F' = Undefined.

ERROR CODES GENERATED FOR THE IML DISKETTE LOADER ERROR DETECTION.

'ED80' = IML successful.
'ED81' = Requested file not found.
'ED82' = Incorrect file password.
'ED83' = Requested number of blocks too large.
'ED84' = Directory not open.
'ED85' = Illegal file I/O request.
'ED86' = Duplicate file name.
'ED87' = Requested directory not found.
'ED88' = Insufficient disk space.
'ED89' = Directory full.
'ED8A' = File not open.
'ED8B' = File not closed.
'ED8C' = Attempting to write a read only file.

'ED8D' = File not a directory.
 'ED8E' = File I/O busy.
 'ED90' = Diskette read error. The diskette controller status registers 0,1,2 & the cylinder number are posted in the next two words.
 'ED91' = Diskette write error. The diskette controller status registers 0,1,2 & the cylinder number are posted in the next two words.
 'ED92' = Diskette read back compare error. The diskette controller status registers 0,1,2 & the cylinder number are posted in the next two words.
 'ED93' = Diskette seek error. The diskette controller status registers 0,1,2 & the cylinder number are posted in the next two words.
 'ED94' = Diskette recalibrate error. The diskette controller status registers 0,1,2 & the cylinder number are posted in the next two words.
 'ED95' = Invalid sector number.
 'ED96' = Timeout while trying to read diskette controller data register.
 'ED97' = Timeout while trying to write diskette controller data register.
 'ED98' = Timeout while trying to do a diskette operation (read,write,readback,seek,recalibrate). Probably due to no diskette or the diskette not being loaded in correctly.
 'EDB1' = Swap to level 0 failed.
 'EDB2' = Control store read/write failure. The failing control store address and the pattern are posted in the next two words.
 'EDB3' = Check 1 during control store R/W check. The control store address and ERA & ERB are posted in the next two words.
 'EDB4' = Second Boot not loaded. The diskette controller status registers 0,1,2 & 3 are posted in the next two words.
 'EDB5' = Invalid Second Boot.
 'EDB6' = Microprocessor not reset to level 7.
 'EDB7' = Diskette controller write timeout.
 'EDB8' = Diskette controller read timeout.
 'EDB9' = Diskette data transfer timeout.
 'EDBA' = External register error.
 'EDBB' = Unidentified level 0 interrupt.
 'EDBC' = Checksum error.
 'EDBD' = Collision detect error during IML.
 'EDBE' = Hardware Check 1 Error followed by Diskette I/O Error loading 2nd Bootstrap.
 'EDBF' = Hardware Check 1 Error.
 'EDC1' = Invalid Parameter specified on CS Dump / Load Command ('8C'x).

'EDC2' = POR Diagnostics detected a hardware error during IML.

'EDD0' = This IML Disk has been configured for some Other Control Unit with Special Patches. The IML of This Control Unit with the Wrong Disk is Not Allowed.

'EDD1' = When Reading in the Control Unit Patch Table, the Check Sum did Not Compare. No Patching was done and the IML of this Control Unit will Not Continue.

'EDD2' = When Reading in the Actual Patch from the Disk, the Check Sum did Not Compare. The Patch was Not Applied. The IML of this Control Unit will Not Continue.

ERROR CODFS RESERVED FOR FUTURE EXPANSION.

'EDD3' = Undefined.

'EDD4' = Undefined.

'EDD5' = Undefined.

'EDD6' = Undefined.

'EDD7' = Undefined.

'EDD8' = Undefined.

'EDD9' = Undefined.

'EDDA' = Undefined.

'EDDB' = Undefined.

'EDDC' = Undefined.

'EDDD' = Undefined.

'EDDE' = Undefined.

'EDDF' = Undefined.

'EDE0' = Undefined.

'EDE1' = Undefined.

'EDE2' = Undefined.

'EDE3' = Undefined.

'EDE4' = Undefined.

'EDE5' = Undefined.

'EDE6' = Undefined.

'EDE7' = Undefined.

'EDE8' = Undefined.

'EDE9' = Undefined.

'EDEA' = Undefined.

'EDEB' = Undefined.

'EDEC' = Undefined.

'EDED' = Undefined.

'EDEE' = Undefined.

'EDEF' = Undefined.

'EDF0' = Undefined.

'EDF1' = Undefined.

'EDF2' = Undefined.

'EDF3' = Undefined.

'EDF4' = Undefined.

'EDF5' = Undefined.
'EDF6' = Undefined.
'EDF7' = Undefined.
'EDF8' = Undefined.
'EDF9' = Undefined.
'EDFA' = Undefined.
'EDFB' = Undefined.
'EDFC' = Undefined.
'EDFD' = Undefined.
'EDFE' = Undefined.
'EDFF' = Undefined.

