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DIAGNOSTIC PROGRAM MANUAL

SIGMA 5 AND 7  
KEYBOARD-PRINTER  
(KSR-ASR) TEST

September 1967

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## LIST OF RELATED PUBLICATIONS

<u>Publication Title</u>	<u>Publication No.</u>
Diagnostic Control Program for Sigma 5 and 7 Computer Peripheral Devices, Diagnostic Program Manual	900712
Sigma 5 and 7 Relocatable Diagnostic Program Loader, Diagnostic Program Manual	900972
Sigma 7 Computer, Technical Manual	901060
Sigma 7 Computer, Reference Manual	900950
Sigma Keyboard-Printer Model 7010, Technical Manual	901065
Sigma Keyboard-Printer Model 7020, Technical Manual	901066

SECTION I  
INTRODUCTION

1-1 SCOPE OF MANUAL

1-2 This manual provides a description of the keyboard-printer (KSR-ASR) test program catalog number 704059B. The operating instructions are explained in detail in section II. Section III contains a description of the sub-routines of the program. The program listing is in section IV, with a sample printout of a line and an explanation of what is contained in each column.

1-3 Figure 1-1 is a flow diagram of the manual mode operation.

1-4 PROGRAM OBJECTIVES

1-5 The Sigma 5 and 7 Keyboard-Printer (KSR-ASR), Models 7010, 7012, and 7020 test program provides a comprehensive diagnostic checkout and test of the keyboard-printer device.

1-6 The keyboard-printer test program operates in either manual mode or auto mode. The initial mode of operation must be specified by the operator prior to loading the program. However, dynamic mode transition is possible.

1-7 MANUAL MODE

1-8 In the manual mode program parameters are entered directly at the control console. Status and error information is displayed in specific machine registers. A limited test of the device independent of its environment is thereby obtained.

1-9 AUTO MODE

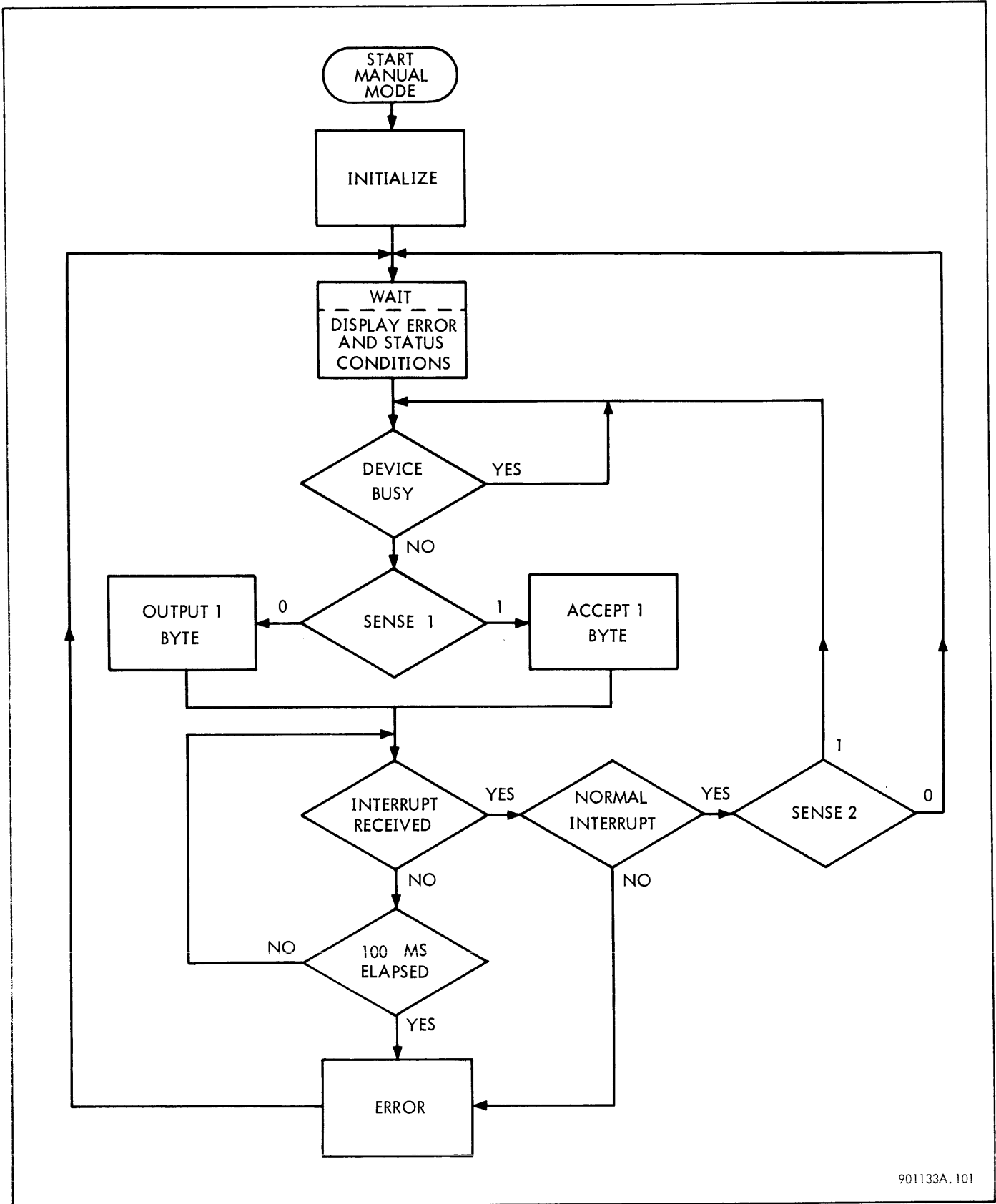
1-10 In the auto mode the test program operates in the environment of the Diagnostic Control Program (DCP) model number 704070-A00. Operator control of the test program is provided through the input of a syntax test language interpreted by the DCP as well as sense switch interrogation. With proper usage of the diagnostic test language the operator has full control over the sequence and activation of various keyboard-printer tests.

1-11 GENERAL SPECIFICATIONS

1-12 Table 1-1 lists the general specifications.

Table 1-1. General Specifications

Computer Configuration	Sigma 5 or 7 with a minimum 4K memory
Required Equipment	Keyboard-Printer, Models 7010, 7012, or 7020
Optional Equipment	Card reader, line printer
Prerequisites	The object keyboard-printer device must conform to equipment design specification drawing number 123383 or 131017.
Program Media	Self-loading paper tape or cards



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Figure 1-1. Magnetic Tape Test Program Flow Chart

SECTION II  
OPERATING INSTRUCTIONS

2-1 PROGRAM LOADING PROCEDURE

2-2 This program uses the standard Sigma 5/7 Diagnostic Program Loader, Model Number 704356-A00. The user should acquaint himself with operation of this loader before loading the keyboard-printer test program (refer to SDS 900972).

2-3 PROGRAM OPERATING PROCEDURE

2-4 MANUAL MODE

2-5 This mode is selected by setting SENSE switch 4 to ON before loading, or setting SENSE switch 4 to ON and executing the mode directive when the program is in the auto mode of operation.

2-6 All data transfer operations in the manual mode use a byte count of 1 and request interrupts at channel end and unusual end. Pressing the console INTERRUPT switch causes the program to interrogate SENSE switch 4 and continue in the manual mode if on, or select the auto mode if off. Figure 1-1 illustrates the program flow in this mode.

2-7 CONSOLE SENSE SWITCH OPTIONS (Manual Mode)

2-8 Table 2-1 lists the sense switch options.

Table 2-1. Sense Switch Options

Switch	Status	Function
SS 1	Off	Output to the printer section
	On	Input from the keyboard section
SS 2	Off	Single-step operation
	On	Repetitive operation
SS 4	Off	Select auto mode
	On	Continue in manual mode
INTERRUPT	On	Interrogate SENSE switch 4

2-9 PROGRAM CONTROL (Manual Mode)

2-10 In the manual mode the program will halt at location 005FD for control information to be enter into general

registers 0 and 1. This information has the following format:

a. Register 0

Bits 21-23 IOP number

Bits 24-31 Device number

b. Register 1

Bits 24-31 Last byte input or next byte for output (EBCDIC CODE).

2-11 Once the above control information is entered the operation may be started by clearing the wait condition (RUN-IDLE-RUN). Program execution will proceed as specified by console switch options (see table 2-1).

2-12 SUCCESS/ERROR INDICATIONS (Manual Mode)

2-13 Program Halts

2-14 The program halt is listed in table 2-2.

Table 2-2. Program Halt

Location	Indication	Description
005FD	See paragraph 2-15	Operation complete. Examine Condition Codes 1 thru 4 and general registers 0 thru 6 for results. Enter new control information and/or clear WAIT to repeat

2-15 Condition Codes

2-16 Condition Codes 1 through 4, with status and error information, are as follows:

<u>CC</u>				<u>Status and Error Information</u>
<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	
0	0	0	0	Normal operation, no errors
0	0	0	1	Interrupt signal was not received within 100 milliseconds after operation was started
0	0	1	0	Status error, SIO was not accepted
0	1	0	0	Unusual condition interrupt occurred
1	0	0	0	Watchdog timer trap occurred



2-17 General Registers

2-18 General registers 0 through 6 with status indicated are as follows:

<u>Register</u>	<u>Status</u>
0	IOP and device number
1	Last byte input or next byte for output (EBCDIC CODE)
2 } 3 }	Last TIO status
4	Last AIO status
6	Trap error address

2-19 AUTO MODE

2-20 The auto mode is selected by setting SENSE switch 4 to OFF before loading the program, or when operating in the manual mode by setting SENSE switch 4 OFF and pressing the console INTERRUPT switch. Either method places the test program under the executive control of the DCP.

2-21 CONSOLE SWITCH OPTIONS (Auto Mode)

2-22 Table 2-3 lists the sense switch options.

Table 2-3. Sense Switch Options

Switch	Status	Function
SS 1	Off	Continue to cycle thru the current test language control line
	On	Terminate execution of the current control line and return to the input media for new test language inputs
SS 4	Off	Display error messages
	On	Suppress error message display
INTERRUPT	On	Abort execution and return to DCP for input

2-23 TEST LANGUAGE OPTIONS (Auto Mode)

2-24 Functional directives to the program are entered at the keyboard-printer or card reader. The basic function or operation is named by a unique mnemonic directive which identifies the operation. Most directives have optional or required parameters that follow the mnemonic call and optional iteration count or place mark parameters that precede the mnemonic directive.

2-25 Definition of Terms and Symbols

2-26 In table 2-4 and the test descriptions, trailing parameters are referred to as "x1, f1," etc. Leading parameters are shown as "i" or "m" representing iteration count or place mark, respectively. The phrase "the typewriter" refers to the keyboard-printer device named by the UNIT directive (refer to section III).

2-27 Table 2-4 defines the abbreviated terms and symbols used in describing the test language.

Table 2-4. Symbols and Definitions

Symbols	Definitions
i	Iteration count (1-99)
m	Place marker (1-99)
d	Decimal value (number 0-9)
x	Hexadecimal value (numeric 0-9, alpha A-F)
f	Flag ("Off" = 0, "On" = 1)
Opt'l	Optional (mode, immediate or control line; parameter is not required)
Req'd	Required (parameter is required)
\$	Immediate mode only

2-28 Directives

2-29 Table 2-5 is a summary of all the test language directives recognized by this program.

Table 2-5. Test Language Directives

Name	Format	Execution	ID	Definition	Minimum	Maximum	Req'mnt	Standard	Ref.
Echo Test	iECHO	Opt'l	i	Iteration count	1	99	Opt'l	1	3-3
Issue HIO	iHIO	Opt'l	i	Iteration count	1	99	Opt'l	1	3-11
Change Mode	MODE	\$		None					3-18
Query Device Status	mQ, x1	Opt'l	m	Placemark	1	99	Opt'l		3-25
			x1	Flag mark	000	FFF	Opt'l	0	
Read Keyboard to EOM	iRK	Opt'l	i	Iteration count	1	99	Opt'l	1	3-34
Read Keyboard to Control Character	iRKC	Opt'l	i	Iteration count	1	99	Opt'l	1	3-42
Issue SIO	iSIO, x1	Opt'l	i	Iteration count	1	99	Opt'l	1	3-48
			x1	Device order byte	00	FF	Opt'l	0	
Issue TDV	iTDV, f1	Opt'l	i	Iteration count	1	99	Opt'l	1	3-56
			f1	Display status flag	0	>0	Opt'l	0	
Issue TIO	iTIO, f1	Opt'l	i	Iteration count	1	99	Opt'l	1	3-63
			f1	Display status flag	0	>0	Opt'l	0	
Type to Count or Break	iTYPE	Opt'l	i	Iteration count	1	99	Opt'l	1	3-70
Declare Device Address	UNIT, x1, x2	\$	x1	IOP number	0	7	Req'd	0	3-79
			x2	Device number	0	FF	Req'd	1	
Command Chain Test	iCOMC	Opt'l	i	Iteration count	1	99	Opt'l	1	3-84

(Continued)

Table 2-5. Test Language Directives (Cont.)

Name	Format	Execution	ID	Definition	Mini- mum	Maxi- mum	Req'mnt	Standard	Ref
ASR Compatibility Test	iASR, d1, x2, x3, x4, x5	Opt'l	i	Iteration count	1	99	Opt'l	1	3-92
			d1	Byte count	1	255	Opt'l	1	
			x2	1st device order	1	FF	Opt'l	0	
			x3	2nd device order	1	FF	Opt'l	0	
			x4	3rd device order	1	FF	Opt'l	0	
			x5	4th device order	1	FF	Opt'l	0	

SECTION III  
PROGRAM DESCRIPTION

3-1 GENERAL

3-2 The program tests are described in detail in 13 sub-routines. The significance of each parameter is listed and defined. A complete description of the action taken when the subroutine is activated is provided. Success and error indications are outlined to describe the results of each test.

3-3 ECHO TEST (iECHO)

3-4 PARAMETERS

3-5 The parameter i = Iteration count.

3-6 DESCRIPTION

3-7 This directive causes one byte of information to be accepted from the typewriter. This byte is then immediately output to the typewriter.

3-8 SUCCESS/ERROR INDICATIONS

3-9 Returned status information is not checked for error conditions. However, if the SIO is not accepted, the following message is typed:

SIO UNSUCCESSFUL - HIO ISSUED

HIO STATUS - SSSS CC = X

where SSSS is the status returned during the HIO operation, and X is the condition code settings immediately after the HIO operation.

3-10 If an unusual condition interrupt occurs during the echo test, the following message is typed:

UNUSUAL CONDITION INTERRUPT

AIO STATUS - SSSS CC = X

where SSSS and X are the status and condition code settings returned from the AIO operation.

3-11 ISSUE HIO (iHIO)  
 3-12 PARAMETERS  
 3-13 The parameter i = Iteration count.  
 3-14 DESCRIPTION  
 3-15 This directive causes an HIO instruction to be executed.

3-16 SUCCESS/ERROR INDICATIONS  
 3-17 If the device is not operating at the time the HIO is given, no timeout occurs. If the device is operating, the following message is typed:

HIO STATUS SSSS CC = X

where SSSS and X are the status and condition code information returned from the HIO operation.

3-18 CHANGE MODE (MODE)  
 3-19 PARAMETERS  
 3-20 Parameters are not allowed.  
 3-21 DESCRIPTION  
 3-22 This directive causes the program mode to be changed in response to the setting of SENSE switch 4 as follows:

SENSE 4 OFF – Auto mode  
 ON – Manual mode

3-23 SUCCESS/ERROR INDICATIONS  
 3-24 If SENSE switch 4 is set at 1, the program will wait in the manual mode at location 005FD.

3-25 QUERY DEVICE STATUS (mQ, x1)  
 3-26 PARAMETERS  
 3-27 Parameters – x1 = Hex – 0 ≤ x1 ≤ FFF  
 m = Place marker

3-28 DESCRIPTION  
 3-29 This directive causes a TIO and TDV instruction to be executed and the returned status to be tested.  
 3-30 Tests may be requested by using the following values for parameter x1:

<u>x1</u>	<u>Test</u>
01	Device interrupt pending
02	Transmission data error
04	No I/O address recognition

(Continued)

<u>x1</u>	<u>Test</u>
08	SIO not possible
10	Device unusual end
20	Device controller busy
40	Device busy
80	Device rate error

3-31 Parameter x1 indicates which status information is to be tested. If any of the test results are true, the place mark branch is taken. If a not true condition prevails on all tests requested, the branch does not occur, and the next directive in the control line sequence is executed.

3-32 Combinations of tests may be requested by merging their respective call parameters (for example, x1 = 82 would test for transmission data error and device rate error).

3-33 READ KEYBOARD TO EOM (iRK)

3-34 PARAMETERS

3-35 Parameter i = Iteration count.

3-36 DESCRIPTION

3-37 This directive causes information to be accepted from the typewriter until an EOM character is sent or until 255 bytes are received. The information received is stored for subsequent output by the TYPE directive.

3-38 SUCCESS/ERROR INDICATIONS

3-39 Status information is not checked. However, if the SIO is not accepted, the following message is typed:

SIO UNSUCCESSFUL – HIO ISSUED

HIO STATUS = SSSS CC = X

where SSSS and X are the status and condition code settings returned by the AIO instruction.

3-40 If an unusual condition interrupt occurs, the following message is typed:

UNUSUAL CONDITION INTERRUPT

AIO STATUS = SSSS CC = X

where SSSS and X are the status and condition code settings returned by the AIO instruction.

3-41 READ KEYBOARD TO CONTROL CHARACTER (iRKC)

3-42 PARAMETERS

3-43 The parameter i = Iteration count.

## 3-44 DESCRIPTION

3-45 This directive is the same as read keyboard to EOM (paragraph 3-33), except that if the device is equipped with the read to control character function, the control characters NEW LINE (NL) and TAB (HT) in addition to EOM will terminate input.

## 3-46 SUCCESS/ERROR INDICATIONS

3-47 See paragraph 3-38.

3-48 ISSUE SIO (iSIO, x1)

## 3-49 PARAMETERS

3-50 Parameters – i = Iteration count  
x1 = Hex - 0≤P1≤FF

## 3-51 DESCRIPTION

3-52 This directive causes an SIO instruction to be issued. The two hex digits input in x1 will be used in the order field of the SIO command pair with a byte count of one and ICE and IUE interrupt flags coded.

## 3-53 SUCCESS/ERROR INDICATIONS

3-54 If the SIO is not accepted, the following message is typed:

SIO UNSUCCESSFUL – HIO ISSUED

HIO STATUS = SSSS CC = X

where SSSS and X are the status and condition code settings returned by the HIO instruction.

3-55 If an unusual condition interrupt occurs, the following message is typed:

UNUSUAL CONDITION INTERRUPT

AIO STATUS = SSSS CC = X

where SSSS and X are the status and condition code settings returned by the AIO instruction.

3-56 ISSUE TDV (iTDV, f1)

## 3-57 PARAMETERS

3-58 Parameters – i = Iteration count

f1 = Hex - 0≤P1≤F

## 3-59 DESCRIPTION

3-60 This directive causes a TDV instruction to be executed.

## 3-61 SUCCESS/ERROR INDICATIONS

3-62 If parameter f1 is nonzero, the returned status is typed on the typewriter in the following format:

TDV STATUS = SSSS CC = X

where SSSS and X are the returned status and condition code settings.

3-63 ISSUE TIO (iTIO, f1)

## 3-64 PARAMETERS

3-65 Parameters – i = Iteration count  
f1 = Hex - 0≤P1≤F

## 3-66 DESCRIPTION

3-67 This directive causes a TIO instruction to be executed.

## 3-68 SUCCESS/ERROR INDICATIONS

3-69 If parameter P1 is nonzero, the returned status is typed in the following format:

TIO STATUS = SSSS CC = X

where SSSS and X are the returned status and condition code settings.

3-70 TYPE TO COUNT OR BREAK (iTYPE)

## 3-71 PARAMETERS

3-72 The parameter i = Iteration count.

## 3-73 DESCRIPTION

3-74 This directive causes the last N bytes of information input by the RK (paragraph 3-33) or RKC (paragraph 3-41) directives to be typed on the typewriter. N is equal to the number of bytes input including the terminating control byte.

## 3-75 SUCCESS/ERROR INDICATIONS

3-76 Returned status is not checked for errors. However, if the SIO is not accepted, the following message is typed:

SIO UNSUCCESSFUL – HIO ISSUED

HIO STATUS = SSSS CC = X

where SSSS and X are the returned status and condition code settings after HIO operation.

3-77 If the program detects an unusual condition interrupt, the following message is typed:

UNUSUAL CONDITION INTERRUPT

AIO STATUS = SSSS CC = X

where SSSS and X are the returned status and condition code settings after the AIO operation.

3-78 If the BREAK key at the typewriter is actuated during output, transmission is terminated, and an unusual condition interrupt should be reported.

3-79 DECLARE DEVICE ADDRESS (UNIT, x1, x2)

3-80 PARAMETERS

3-81 Parameter - x1 = Octal - 0 ≤ P1 ≤ 7

x2 = Hex - 0 ≤ P2 ≤ FF

no leading parameter allowed

3-82 DESCRIPTION

3-83 This directive assigns the unit address to be used for subsequent communication with the keyboard-printer device. Parameter x1 specifies to which IOP the device is connected. Parameter x2 specifies the device I/O address. The program is initialized with IOP "0" and I/O address of "1" (IOP number 0, Device number 1).

3-84 COMMAND CHAIN TEST (iCOMC)

3-85 PARAMETERS

3-86 Parameter i = Iteration count.

3-87 DESCRIPTION

3-88 This directive is included to test the response of the device controller to command chain operations. When executed, an SIO instruction is issued which will cause one byte to be typed on the keyboard-printer. In addition, command chaining is specified which causes the same byte to be output again.

3-89 SUCCESS/ERROR INDICATIONS

3-90 Returned status is not checked for errors. However, if the SIO is not accepted the following message is typed:

SIO UNSUCCESSFUL - HIO ISSUED

HIO STATUS - SSSS CC = X

where SSSS and X are the returned status and condition code settings after the HIO operation.

3-91 If the program detects an unusual condition interrupt, the following message is typed:

UNUSUAL CONDITION INTERRUPT

AIO STATUS = SSSS CC = X

where SSSS and X are the returned status and condition code settings after the AIO operation.

3-92 ASR COMPATIBILITY TEST (iASR, d1, x2, x3, x4, x5)

3-93 PARAMETERS

3-94 Parameters - i = Iteration count (1-99)

d1 = Byte count (numeric 0-9, 1 ≤ d1 ≤ 256). A decimal value specifying the maximum number of bytes to be transmitted during compatible IO operations (optional - standard value d1 = 1 if omitted).

x2, x3, x4, x5 device orders 1 through 4, respectively (numeric 0-9, alpha A-F, 1 ≤ x n ≤ FF). Hexadecimal values to be issued to the ASR device as ordered bytes. Orders are issued in the order of appearance (optional - "no operation" if omitted).

<u>xn</u>	<u>Function</u>
01	Punch paper tape
02	Read paper tape with leader
05	Type out
06	Read keyboard
82	Read paper tape immediate
86	Read keyboard to control character

3-95 DESCRIPTION

3-96 This directive tests for interaction between the keyboard-printer and paper tape reader-punch sections of

the ASR teletype. A common storage buffer is addressed for all operations. The size of the storage buffer is determined by the byte count parameter d1. A chain of commands is generated containing (a) the sequence of device order bytes specified in parameters x2 through x5, (b) the byte count specified in parameters d1, and (c) the word address of the common storage buffer. An SIO is then executed using the device IO address specified by the address assignment directive to start the chain of commands (refer to paragraph 3-79). The specified byte count is not adjusted in the event of device-initiated premature termination such as BREAK, EOM, NL or HT. The complete operation is monitored by the program until the ASR indicates "Ready".

3-97 SUCCESS/ERROR INDICATIONS

3-98 Upon completion of all operations the ASR status is examined and error conditions are reported in the following message format:

```
ASR COMPAT ERROR TIO = XXXXXXXX
TDV = YYYYYYYY
ORDER = ZZ
```

where X and Y are the status flags returned by the device in response to a TIO and TDV instruction, respectively, and ZZ is the last device order issued to the ASR.

SECTION IV  
PROGRAM LISTING

4-1 GENERAL

4-2 The program listing that follows details the content of this program. It contains a list of memory locations and the contents of each location.

4-3 A sample printout of a line from a program listing, with an explanation of what is contained in each column is shown in figure 4-1. (There may be as many as nine columns in the program listing, but not every column will appear in every listing.)

1301	1	00482	B2C00588		ZDMP20	LW, R12	*P1	DUPLICATE	
a	b	c	d	e	f	g	h	i	
a.	Line number				f.	Field label			
b.	Indication of memory protection key				g.	Operation			
c.	Memory address				h.	Operand			
d.	Routine instruction and data				i.	Comments			
e.	Indication whether of absolute origin or not								

Figure 4-1. Example of Program Printout

1 SYSTEM SIG7FDP  
2 \*  
3 \*  
4 \*  
5 \*  
6 \*

7 PAGE  
8 \* RELEASED VERSION NO. 01A (01-1A) AUG 1, 1966  
9 1 00040 BRG 64  
10 1 00040  
11 \* SIGMA 5/7 DIAGNOSTIC CONTROL PROGRAM  
12 \*  
13 \* ASSIGN MNEMONIC NAMES TO INDEX REGISTERS  
14 \*  
15 00000001 X1 EQU 1  
16 00000002 X2 EQU 2  
17 00000003 X3 EQU 3  
18 00000004 X4 EQU 4  
19 00000005 X5 EQU 5  
20 00000006 X6 EQU 6  
21 00000007 X7 EQU 7  
22 \*  
23 \* ASSIGN MNEMONIC NAMES TO GENERAL REGISTERS  
24 \*  
25 00000000 R0 EQU 0  
26 00000001 R1 EQU 1  
27 00000002 R2 EQU 2  
28 00000003 R3 EQU 3  
29 00000004 R4 EQU 4  
30 00000005 R5 EQU 5  
31 00000006 R6 EQU 6  
32 00000007 R7 EQU 7  
33 00000008 R8 EQU 8  
34 00000009 R9 EQU 9  
35 0000000A R10 EQU X'A'  
36 0000000B R11 EQU X'B'  
37 0000000C R12 EQU X'C'  
38 0000000D R13 EQU X'D'  
39 0000000E R14 EQU X'E'  
0000000F R15 EQU X'F'



```

40                                     PAGE
41 *
42 * EQUATE STATEMENTS TO UTILIZE UNASSIGNED MEMORY LOCATIONS
43 *
44 00000010 ZML10 EQU X'10' LOCATIONS 10-IF UTILIZED
45 00000014 ZML14 EQU X'14' BY COMMON TYPE/PRINT ROUTINE
46 0000001E ZML1E EQU X'1E'
47 0000001F ZML1F EQU X'1F'
48 00000022 ZCLLNK EQU X'22' TEMPORARY
49 00000023 ZEQLNK EQU X'23' LINK STORAGE
50 00000024 ZMSLNK EQU X'24' FOR TRANSLATOR
51 00000025 ZLPLNK EQU X'25' SUBROUTINES
52 00000026 ZRPLNK EQU X'26'
53 * CPU RESET RECOVERY LOCATION
54 00000027 ZPDLNK EQU X'27'
55 00000028 ZASLNK EQU X'28'
56 00000029 ZPMLNK EQU X'29'
57 0000002A ZCBLNK EQU X'2A'
58 0000002B ZFSLNK EQU X'2B'
59 0000002C ZPLLNK EQU X'2C'
60 0000002D ZUDFPM EQU X'2D'
61 0000002E ZPTY EQU X'2E'
62 0000002F ZPCNT EQU X'2F'
63 00000030 ZPCHK EQU X'30'
64 00000031 ZPCHK1 EQU X'31'
65 00000032 ZDSLNK EQU X'32'
66 00000033 ZDSPTR EQU X'33'
67 00000034 ZCFRLNK EQU X'34'
68 00000035 ZCFRCA EQU X'35'
69 00000036 ZPC7LNK EQU X'36'
70 00000037 ZMFRLNK EQU X'37'
71 00000038 ZTSTLNK EQU X'38'
72 00000039 ZCHAR EQU X'39'
73 0000003A ZLSTCH EQU X'3A'
74 0000003C ZFTF EQU X'3C'
75 0000003D ZDSFLG EQU X'3D'
    
```

```

76                                     PAGE
77 *
78 * FORM DIRECTIVES FOR FORMATTED WORDS
79 *
80 ZFCP FORM 8,24 ORDER, BYTE ADDRESS/COUNT
81 ZFOT FORM 8,7,17 OPERATOR, UNASSIGNED, ADDRESS
82 *
83 * PROCEDURE FOR GENERATION OF FORMATTED MESSAGE WORDS
84 *
85 00000000 ZFMW CNAME
86 PRBC
87 LF GEN,4,4,8,16 ABSVAL(AF(1)),ABSVAL(AF(2)),ABSVAL(AF(3)),;
88 ABSVAL(AF(4))
89 PEND
90 *
91 * PROCEDURE FOR GENERATION OF FORMATTED SUBROUTINE CONTROL TABLE
92 *
93 00000000 ZFST2 CNAME
94 PRBC
95 LF GEN,4,2,9,17 ABSVAL(AF(1)),ABSVAL(AF(2)),ABSVAL(AF(3)),;
96 ABSVAL(AF(4))
97 PEND
98 *
99 * PROCEDURE FOR GENERATION OF FORMATTED PARAMETER WORDS
100 *
101 00000000 ZFSAT CNAME
102 PRBC
103 LF GEN,4,2,2,7,17 ABSVAL(AF(1)),ABSVAL(AF(2)),;
104 ABSVAL(AF(3)),ABSVAL(AF(4)),ABSVAL(AF(5))
105 PEND
106 *
107 * PROCEDURE FOR GENERATION OF FORMATTED HALF-WORDS
108 *
109 00000000 ZAP1 CNAME
110 PRBC
111 LF GEN,16,16 ABSVAL(AF(1)),ABSVAL(AF(2))
112 PEND
    
```

113 PAGE  
 114 \*  
 115 \* SYNTAX ERROR CODE MESSAGES  
 116 \* N6. MEANING  
 117 \* --- -----  
 118 \* 001 UNDEFINED SPECIAL CHARACTER  
 119 \* 010 COMMENTS LINE INITIATOR (ASTERISK) NOT PRECEDED  
 120 \* BY NEW LINE CHARACTER  
 121 \* 020 DECIMAL RE-ITERATION COUNT AND/OR PLACE MARKER  
 122 \* IDENTIFIER SUB-FIELD GREATER OR LESS THAN AND/OR  
 123 \* NOT PERMITTED BY DIRECTIVE  
 124 \* 021 ALPHABETIC CHARACTERS ENCOUNTERED IN DECIMAL SUB-  
 125 \* FIELD OR ABSENCE OF FIELD SEPARATOR  
 126 \* 030 PLACE MARKER IDENTIFIER TABLE OVERFLOW  
 127 \* 031 DOUBLY DEFINED PLACE MARKER IDENTIFIERS  
 128 \* 032 UNDEFINED PLACE MARKER IDENTIFIERS AT EXECUTE TIME  
 129 \* 040 CLOSE LOOP OPERATION WITHOUT PRIOR OPEN LOOP OPER.  
 130 \* 041 OPEN LOOP OPERATIONS EXIST AT EXECUTE TIME  
 131 \* 050 UNDEFINED MNEMONIC DIRECTIVE  
 132 \* 051 DIRECTIVE NON-EXECUTABLE IN CONTROL LINE MODE  
 133 \* 052 DIRECTIVE NON-EXECUTABLE IN IMMEDIATE MODE  
 134 \* 053 UNDEFINED AND/OR DOUBLY DEFINED MNEMONIC DIRECTIVE  
 135 \* NAME FOR MNEMONIC NAME RE-DEFINITION  
 136 \* 054 ILLEGAL FIELD SEPARATOR FOLLOWING DIRECTIVE  
 137 \* 055 FIELD SEPARATOR ENTERED PRIOR TO REQUIRED PARAMETER  
 138 \* 100 EXECUTE TABLE OVERFLOW-UNCONDITIONAL ABORT  
 139 \* 101 EXECUTE TABLE UNDERFLOW-UNCONDITIONAL ABORT  
 140 \* 105 GO ERROR UNCONDITIONAL ABORT  
 141 \* 110 LINK TABLE OVERFLOW-UNCONDITIONAL ABORT  
 142 \* 111 LINK TABLE UNDERFLOW-UNCONDITIONAL ABORT  
 143 \* 120 SYMBOLIC INPUT OVERFLOW-UNCONDITIONAL ABORT

144 PAGE  
 145 \*  
 146 \* PRE-INITIALIZATION OF CPU TRAP LOCATIONS  
 147 \*  
 148 1 00040 0F0005AA XPSD,0 ZCMST40 40 NON-ALLOWED OPERATION  
 149 1 00041 0F000144 XPSD,0 ZT41 41 UNIMPLEMENTED INSTRUCTION  
 150 1 00042 0F00015E XPSD,0 ZCTL 42 PUSHDOWN STACK LIMIT  
 151 1 00043 0F000148 XPSD,0 ZT43 43 FIXED POINT OVERFLOW  
 152 1 00044 0F000158 XPSD,0 ZCTL 44 FLOATING POINT FAULT  
 153 1 00045 0F000158 XPSD,0 ZCTL 45 DECIMAL ARITHMETIC FAULT  
 154 1 00046 0F00014C XPSD,0 ZT46 46 WATCHDOG TIMER RUNOUT  
 155 1 00047 0F000158 XPSD,0 ZCTL 47 UNASSIGNED  
 156 1 00048 0F000158 XPSD,0 ZCTL 48 CALL 1  
 157 1 00049 0F000158 XPSD,0 ZCTL 49 CALL 2  
 158 1 0004A 0F000158 XPSD,0 ZCTL 4A CALL 3  
 159 1 0004B 0F000158 XPSD,0 ZCTL 4B CALL 4  
 160 1 0004C 0F000158 XPSD,0 ZCTL 4C CURRENT  
 161 1 0004D 0F000158 XPSD,0 ZCTL 4D UNASSIGNED  
 162 1 0004E 0F000158 XPSD,0 ZCTL 4E TRAP  
 163 1 0004F 0F000158 XPSD,0 ZCTL 4F LOCATIONS

```

164                                     PAGE
165                                     *
166                                     * PRE-INITIALIZATION OF INTERRUPT LOCATIONS
167                                     *
168 1 00050 0F0C0158 XPSD,0 ZCTL 50 OPTIONAL POWER ON
169 1 00051 0F0C0158 XPSD,0 ZCTL 51 POWER OFF INTERRUPTS
170 1 00052 0F0C0158 XPSD,0 ZCTL 52 OPTIONAL COUNTER
171 1 00053 0F0C0158 XPSD,0 ZCTL 53 1-3 COUNT
172 1 00054 0F000158 XPSD,0 ZCTL 54 PULSES
173 1 00055 0F0C0158 XPSD,0 ZCTL 55 STANDARD COUNTER 4 PULSE
174 1 00056 0F000150 XPSD,0 ZI56 56 MEMORY PARITY
175 1 00057 0F0C0158 XPSD,C ZCTL 57 UNASSIGNED
176 1 00058 0F0C0158 XPSD,0 ZCTL 58 OPTIONAL COUNTER
177 1 00059 0F0C0158 XPSD,0 ZCTL 59 1-3 INTERRUPT
178 1 0006A 0F0C0158 XPSD,0 ZCTL 5A LOCATIONS
179 1 0006B 0F0C0158 XPSD,0 ZCTL 5B STANDARD COUNTER 4 INT.
180 1 0006C 0F0C0158 XPSD,0 ZCTL 5C INPUT/OUTPUT INTERRUPT
181 1 0006D 0F0C0154 XPSD,C ZI5D 5D CONSOLE INTERRUPT
182 1 0006E 0F0C0158 XPSD,0 ZCTL 5E CURRENTLY
183 1 0006F 0F0C0158 ZIL5F XPSD,0 ZCTL 5F UNASSIGNED
184                                     * INTERRUPT LOCATIONS INITIALIZED 60 OPTIONAL EXTERNAL GROUPS
185                                     * AT LOAD TIME TO XPSD,0 ZCTL 61 2-15 LOCATIONS 60-13F
    
```

```

186                                     PAGE
187                                     *
188                                     * PRE-INITIALIZED CPU TRAP RECOVERY
189                                     *
190 1 00140 ØRG X'140'
191 1 00140
192 1 00141 00000000 A ZT40 DATA 0
193 1 00142 0000015C DATA ZTL40
194 1 00143 00000000 A ZT41 DATA 0
195 1 00144 00000000 A DATA 0
196 1 00145 00000000 A DATA 0
197 1 00146 0000016E DATA ZTL41
198 1 00147 00000000 A DATA 0
199 1 00148 00000000 A ZT43 DATA 0
200 1 00149 00000000 A DATA 0
201 1 0014A 00000170 DATA ZTL43
202 1 0014B 00000000 A DATA 0
203 1 0014C 00000000 A ZT46 DATA 0
204 1 0014D 00000000 A DATA 0
205 1 0014E 00000175 DATA ZTL46
206 1 0014F 00000000 A DATA 0
207 1 00150 00000000 A ZI56 DATA 0
208 1 00151 00000000 A DATA 0
209 1 00152 0000017C DATA ZIL56
210 1 00153 00000000 A DATA 0
211 1 00154 00000000 A ZI5D DATA 0
212 1 00155 00000000 A DATA 0
213 1 00156 00000542 DATA ZCØNINT
214 1 00157 00000000 A DATA 0
215 1 00158 00000000 A ZCTL DATA 0
216 1 00159 00000000 A DATA 0
217 1 0015A 00000182 DATA ZTLHLT
218 1 0015B 00000000 A DATA 0
219 1 0015C 740C0007 A ZTL40 STCF R7
220 1 0015D 72700007 A LB,R7 R7
221 1 0015E 257C047C A SAS,R7 -4
    
```

222	1	0015F	3P0E0162		LW,R0	ZTL40M,X7
223	1	00160	32C0016E		LW,R12	ZTL40M+3
224	1	00161	6800017E		B	ZTLMSG
225	1	00162	C9E2C640 A	ZTL40M	TEXT	'ISF'
226	1	00163	D407E540 A		TEXT	'MPV'
227	1	00164	D7C9E204 A		TEXT	'PISM'
228	1	00165	40E3F4F0 A		TEXT	'T40'
229	1	00166	D5C5D4C1 A		TEXT	'NEMA'
230	1	00167	C7D6D6C6 A	ZTL40M1	TEXT	'G80F'
231	1	00168	40D6C6C6 A		TEXT	'8FF'
232	1	00169	2008089C A		ZFMW	2,0,8,BA(ZTL40M1)
233	1	0016A	D5C5C940 A		TEXT	'NEI'
234	1	0016B	3200016E	ZTL41	LW,R0	ZTL41M
235	1	0016C	32C0016F		LW,R12	ZTL41M+1
236	1	0016D	6800017E		B	ZTLMSG
237	1	0016E	E4C9C940 A	ZTL41M	TEXT	'UII'
238	1	0016F	40E3F4F1 A		TEXT	'T41'
239	1	00170	32000173	ZTL43	LW,R0	ZTL43M
240	1	00171	32C00174		LW,R12	ZTL43M+1
241	1	00172	6800017E		B	ZTLMSG
242	1	00173	C6D7D640 A	ZTL43M	TEXT	'FP8'
243	1	00174	40E3F4F3 A		TEXT	'T43'
244	1	00175	32000178	ZTL46	LW,R0	ZTL46M
245	1	00176	32C00179		LW,R12	ZTL46M+1
246	1	00177	6800017E		B	ZTLMSG
247	1	00178	E6C4E340 A	ZTL46M	TEXT	'WDT'
248	1	00179	40E3F4F6 A		TEXT	'T46'
249	1	0017A	D4D7C640 A	ZIL56M	TEXT	'MPF'
250	1	0017B	40C9F5F6 A		TEXT	'I56'
251	1	0017C	3200017A	ZIL56	LW,R0	ZIL56M
252	1	0017D	32C0017B		LW,R12	ZIL56M+1
253	1	0017E	35000167	ZTLM5G	STW,R0	ZTL40M+5
254	1	0017F	35C00168		STW,R12	ZTL40M+6
255	1	00180	32C00169		LW,R12	ZTL40M+7
256	1	00181	6AF004BF		BAL,R15	ZSML40
257	1	00182	2E000000 A	ZTLHLT	WAIT	

258						PAGE	
259						*	
260						* INITIALIZATION FOR MAIN-LINE TRANSLATOR	
261						*	
262	1	00183	6AF0041C	ZPC010	BAL,R15	ZSCIR	
263	1	00184	32F00199		LW,R15	ZRECBV	
264	1	00185	35F00026 A		STW,R15	X'26'	
265	1	00186	22F00800 A		LI,R15	X'800'	
266	1	00187	6DF01200 A		WD,R15	X'1200'	
267	1	00188	32F00580		LW,R15	ZMFR16AD	
268	1	00189	25F00402 A		SAS,R15	2	
269	1	0018A	55F20354		STH,R15	ZMFRX7,X1	
270	1	0018B	55F20355		STH,R15	ZMFRNBA,X1	
271	1	0018C	52F20424		LH,R15	ZDKB+1,X1	
272	1	0018D	55F20369		STH,R15	ZMFRDA,X1	
273	1	0018E	32C00198	ZPC020	LW,R12	ZPC050	
274	1	0018F	6AF004BC		BAL,R15	ZTMNCR	
275	1	00190	229C0000 A		LI,R9	0	
276	1	00191	6AF001DB		BAL,R15	ZDSTRN	
277	1	00192	68000193		B	*+1	
278	1	00193	22F00196		LI,R15	ZPC030	
279	1	00194	55F201C2		STH,R15	ZTRN60,X1	
280	1	00195	680001A8		B	ZPC210	
281	1	00196	6AF001E8	ZPC030	BAL,R15	ZDSSET	
282	1	00197	6800018E		B	ZPC020	
283	1	00198	10010730 A	ZPC050	ZFMW	1,0,1,BA(ZDS)	
284	1	00199	68000183	ZRECBV	B	ZPC010	

```

285                                     PAGE
286                                     *
287                                     * CLEAR EXISTENT EXECUTE TABLE AND CONSTRUCT NEW TABLE
288                                     *
289 1 0019A 6AF0041C ZPC200 BAL,R15 ZSC1R
290 1 0019B 3500002D A STW,R0 ZUDFPM
291 1 0019C 3500003C A STW,R0 ZDSFLG
292 1 0019D 22B001AD LI,R11 ZTRN10
293 1 0019E 55B201C2 STH,R11 ZTRN60,X1
294 1 0019F 32B0057E LW,R11 ZPMADR
295 1 001AC 35B0057F STW,R11 ZPMPTR
296 1 001A1 32B0057C LW,R11 ZLKADR
297 1 001A2 35B0057D STW,R11 ZLKPTR
298 1 001A3 32B0083A LW,R11 ZEXADR
299 1 001A4 6AF0039C BAL,R15 ZSTPTR
300 1 001A5 32B0057A LW,R11 ZLBADR
301 1 001A6 35B0057B STW,R11 ZLBPTR
302 1 001A7 22B00556 LI,R11 ZG6ERR
303 1 001A8 55B20555 STH,R11 ZG6PR0,X1
304 1 001A9 32C001C4 LW,R12 ZTRN100
305 1 001AA 6AF004BC BAL,R15 ZTMNCR
306 1 001AB 72A001C8 ZPC210 LB,R10 ZNL
307 1 001AC 35A00039 A STW,R10 ZCHAR
    
```

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308                                     PAGE
309                                     *
310                                     * MAIN-LINE TRANSLATOR
311                                     *
312 1 001AD 22800000 A ZTRN10 LI,R8 0
313 1 001AE 6AF0032E BAL,R15 ZFNDRB
314 1 001AF 227FFFEA A LI,X7 -Z8PLEN
315 1 001B0 32BE01CB LW,R11 Z8PTBL,X7
316 1 001B1 71A0000B A CB,R10 R11
317 1 001B2 683001C1 BCR,3 ZTRN50
318 1 001B3 657001B0 BIR,X7 *-3
319 1 001B4 21A000C1 A CI,R10 X'C1'
320 1 001B5 691001BF BCS,1 ZTRN40
321 1 001B6 21A000E9 A CI,R10 X'E9'
322 1 001B7 692001BF BCS,2 ZTRN40
323 1 001B8 3280000A A LW,R8 R10
324 1 001B9 6AF0033E BAL,R15 ZFA+1
325 1 001BA 227FFFEA A LI,X7 -Z8PLEN
326 1 001BB 32BE01CB LW,R11 Z8PTBL,X7
327 1 001BC 71A0000B A CB,R10 R11
328 1 001BD 683001C1 BCR,3 ZTRN50
329 1 001BE 657001B0 BIR,X7 *-3
330 1 001BF 22C00001 A ZTRN40 LI,R12 X'101'
331 1 001C0 68000377 B ZSNER
332 1 001C1 6AF0000B A ZTRN50 BAL,R15 *R11
333 1 001C2 6AF001AD ZTRN6C BAL,R15 ZTRN1C
334 1 001C3 680001AD B ZTRN10
335 1 001C4 00010720 A ZTRN100 ZFMW 0,0,1,BA(ZNL)
    
```

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336                                     PAGE
337                                     *
338 * SYNTAX TEST LANGUAGE TABLE CONTAINING ALL SPECIAL CHARACTERS
339 * ONE WORD PER SYNTAX OR SPECIAL CHARACTER
340 * BITS 0-7 SYNTAX OR SPECIAL CHARACTER
341 * BITS 8-14 RESERVED
342 * BITS 15-31 SYNTAX PROCESSOR SUBROUTINE ADDRESS
343
344                                     *
345 1 001C5 50000228 Z0PBEG EQU $
346 1 001C6 610002EE ZRP ZF0T X'5D',0,ZRPTRN ) CLOSE LOOP
347 1 001C7 41000281 ZFS ZF0T X'61',0,ZFSTRN / RELEASE TO EXECUTE
348 1 001C8 15000281 ZSP ZF0T X'40',0,ZPLTRN FIELD SEPARATORS
349 1 001C9 4E000281 ZNL ZF0T X'15',0,ZPLTRN NL
350 1 001CA 57000281 ZPL ZF0T X'4E',0,ZPLTRN +
351 1 001CB 66000292 ZMS ZF0T X'50',0,ZPLTRN +
352 1 001CC 00000007 Z0PTR2 EQU $
353 1 001CC 00000007 Z0PLN2 EQU $-Z0PBEG
354 1 001CC 5E00010B ZDS ZF0T X'5B',0,ZDSTRN $ IMMEDIATE EXECUTION
355 1 001CD 4000021E ZLP ZF0T X'4D',0,ZLPTRN ( OPEN LOOP
356 1 001CE 7000023B ZAS ZF0T X'7C',0,ZASTRN / TRANSFER OR LINK
357 1 001CF 65000281 ZCB ZF0T X'6B',0,ZPLTRN , PARAMETER SEPARATOR
358 1 001D0 4B000236 ZPD ZF0T X'4B',0,ZPPTRN * PLACE MARKER
359 1 001D1 500001F9 ZCL ZF0T X'5C',0,ZCLTRN * COMMENTS LINE
360 1 001D2 7E00020A ZEQ ZF0T X'7E',0,ZECTRN = MNEMONIC REDEFINITION
361 1 001D3 7A0001BF ZF0T X'7A',0,ZTRN40 ) CURRENTLY
362 1 001D4 7B0001BF ZF0T X'7B',0,ZTRN40 = UNDEFINED
363 1 001D5 4C0001BF ZF0T X'4C',0,ZTRN40 < SPECIAL
364 1 001D6 600001BF ZF0T X'6C',0,ZTRN40 ( CHARACTERS
365 1 001D7 5E0001BF ZF0T X'5E',0,ZTRN40 ;
366 1 001D8 6E00013F ZF0T X'6E',0,ZTRN40 >
367 1 001D9 4F0001BF ZF0T X'4F',0,ZTRN40 |
368 1 001DA 700001BF ZF0T X'7D',0,ZTRN40 '
369 1 001D3 Z0PTRL EQU $
370 0000014 Z0PLEN EQU $-Z0PBEG
    
```

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371                                     PAGE
372                                     *
373 * DOLLAR SIGN TRANSLATOR PROCESSOR TO INITIALIZE TRANSLATOR
374
375 1 001D5 35F00032 A ZDSTRN STW,R15 ZDSLNK
376 1 001DC 64F003C5 BAL,R15 ZTST3
377 1 001DD 35900587 STW,R9 PO
378 1 001DE 3300003D A MTW,C ZDSFLG
379 1 001DF 623001E2 BCS,3 $+3
380 1 001E0 37F00583 LW,R15 ZEXPTO
381 1 001E1 35F00033 A STW,R15 ZDSPTR
382 1 001E2 22B00587 LI,R11 PO
383 1 001E3 64F00390 BAL,R15 ZSTPTR
384 1 001E4 3550003D A STW,R11 ZDSFLG
385 1 001E5 22B001E8 LI,R11 ZDSSET
386 1 001E6 55B201C2 STH,R11 ZTRN60,X1
387 1 001E7 64020032 A B *ZDSLNK,X1
388
389 * IMMEDIATE EXECUTION OF DIRECTIVE
390
391 1 001E8 35F00032 A ZDSSET STW,R15 ZDSLNK
392 1 001E9 64F0041C BAL,R15 ZSCIR
393 1 001EA 33000587 MTW,C PO
394 1 001EB 633001F3 BCR,3 ZDSSET10
395 1 001EC 22B00587 LI,R11 PO
396 1 001ED 64F00390 BAL,R15 ZSTPTR
397 1 001EE 64F00318 BAL,R15 ZMPTWA
398 1 001EF 02300583 LW,R11 *ZFXPTO
399 1 001F0 64F0030B A BAL,R15 *R11
400 1 001F1 6E0001F2 B $+1
401 1 001F2 64F0041C BAL,R15 ZSCIR
402 1 001F3 3500003D A ZDSSET10 STW,R0 ZDSFLG
403 1 001F4 22B001AD LI,R11 ZTRN10
404 1 001F5 55B201C2 STH,R11 ZTRN60,X1
405 1 001F6 32B00033 A LW,R11 ZDSPTR
406 1 001F7 64F00390 BAL,R15 ZSTPTR
407 1 001F8 6E000032 A B *ZDSLNK
    
```

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408                                     PAGE
409                                     *
410                                     * ASTERISK TRANSLATOR PROCESSOR, VERIFIES LEGAL COMMENTS LINE
411                                     * OR AN ERRONEOUS ENTRY, IF LEGAL WAIT FOR NL TO TERMINATE
412                                     * COMMENTS LINE AND RETURN TO MAIN-LINE TRANSLATOR, IF ILLEGAL
413                                     * DELETE CURRENT FIELD AND OUTPUT ERROR MESSAGE AND RETURN TO
414                                     * MAIN-LINE TRANSLATOR FOR RE-ENTRY OF SAME FIELD
415                                     *
416                                     * NO EXECUTE TABLE ENTRY
417                                     *
418 1 001F9 35F00022 A ZCLTRN STW,R15 ZCLLNK
419 1 001FA 22C00010 A LI,R12 X'10'
420 1 001FB 32F0003A A LW,R15 ZLSTCH
421 1 001FC 71F001C8 CB,R15 ZNL
422 1 001FD 69300377 BCS,3 ZSNER
423 1 001FE 6AF00351 BAL,R15 ZF0C
424 1 001FF 71A001C8 CB,R10 ZNL
425 1 00200 693001FE BCS,3 *-2
426 1 00201 E8000022 A B *ZCLLNK
427                                     *
428                                     * MINUS SIGN TRANSLATOR PROCESSOR
429                                     * DELETES CURRENT FIELD FOR RE-ENTRY
430                                     * NO EXECUTE TABLE ENTRY
431                                     *
432 1 00202 35F00024 A ZMSTRN STW,R15 ZMSLNK
433 1 00203 32B00583 LW,R11 ZEXPT0
434 1 00204 6AF00390 BAL,R15 ZSTPTR
435 1 00205 22C00000 A LI,R12 0
436 1 00206 B5C00583 STW,R12 *ZEXPT0
437 1 00207 32C001C4 LW,R12 ZTRN100
438 1 00208 6AF004BC BAL,R15 ZTMNCR
439 1 00209 E8000024 A B *ZMSLNK
    
```

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439                                     PAGE
440                                     *
441                                     * EQUAL TRANSLATOR PROCESSOR, NO EXECUTE TABLE ENTRY
442                                     * RE-ASSIGN MNEMONIC SUB-ROUTINE, ALPHA CHARACTERS ONLY
443                                     * VERIFIES MNEMONIC EXISTS AND RE-ASSIGN MNEMONIC NON-EXISTENT
444                                     * REPLACES (DELETES) CURRENT MNEMONIC NAME
445                                     * INSERTS NEW MNEMONIC INTO SUBROUTINE DICTIONARY
446                                     *
447 1 0020A 35F00023 A ZEGTRN STW,R15 ZEGLNK
448 1 0020B 6AF003C5 BAL,R15 ZTST3
449 1 0020C 32900008 A LW,R9 R8
450 1 0020D 6AF0033D BAL,R15 ZFA
451 1 0020E 33C00008 A MTW,0 R8
452 1 0020F 68300217 BCR,3 ZEGTRN10
453 1 00210 227FFFEB A LI,X7 *ZSRLEN
454 1 00211 35700006 A STW,X7 X6
455 1 00212 318E05D0 CW,R8 ZSRTEL,X7
456 1 00213 68300217 BCR,3 ZEGTRN10
457 1 00214 319E05D0 CW,R9 ZSRTEL,X7
458 1 00215 6830021B BCR,3 ZEGTRN20
459 1 00216 65700211 BIR,X7 *-5
460 1 00217 22C00053 A ZEGTRN10 LI,R12 X'53'
461 1 00218 68C00377 B ZSNER
462 1 00219 319E05D0 CW,R9 ZSRTEL,X7
463 1 0021A 68300217 BCR,3 ZEGTRN10
464 1 0021B 65700219 ZEGTRN20 BIR,X7 *-2
465 1 0021C 358C05D0 STW,R8 ZSRTEL,X6
466 1 0021D E8000023 A B *ZEGLNK
    
```

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467                                     PAGE
468
469                                     *
470                                     * LEFT PARAM TRANSLATOR PROCESSOR FOR OPEN LOOP
471                                     * EXECUTE TABLE ENTRY EQUALS ONE WORD FOR RE-ITERATION
472                                     * COUNT LESS THAN TWO, TWO WORDS FOR RE-ITERATION GREATER
473                                     * THAN ONE, SECOND WORD IS RE-ITERATION COUNT FIELD
474                                     *
475 1 0021E 3BF00025 A ZLPTRN STW,R15 ZLPLNK
476 1 0021F 6AF0030C BAL,R15 ZTST7
477 1 00220 32F00547 LW,R15 ZLPPR0
478 1 00221 B5F00583 STW,R15 *ZEXPT0
479 1 00222 6AF003A5 BAL,R15 ZTST1
480 1 00223 32F00583 LW,R15 ZEXPT0
481 1 00224 B5F0057B STW,R15 *ZLBPTR
482 1 00225 3310057B MTW,1 ZLBPTR
483 1 00227 6AF0038C BAL,R15 ZADPTR
484                                     B *ZLPLNK
485                                     *
486                                     * RIGHT PARAM TRANSLATOR PROCESSOR FOR CLOSE LOOP
487                                     * EXECUTE TABLE ENTRY EQUALS TWO WORDS
488                                     * SECOND WORD CONTAINS ADDRESS OF BASE WORD FOR START OF LOOP
489                                     *
489 1 0022F 35F00025 A ZRPTRN STW,R15 ZRPLNK
490 1 00229 6AF00081 BAL,R15 ZPLTRN
491 1 0022A 6AF0030C BAL,R15 ZTST7
492 1 0022B 22C00040 A LI,R12 X'40'
493 1 0022C 32F0007B LW,R15 ZLBPTR
494 1 0022D 31F0057A CW,R15 ZLBADR
495 1 0022E 64300077 BCR,3 ZSNR
496 1 0022F 32F00546 LW,R15 ZRPTR0-1
497 1 00230 B5F0054R STW,R15 *ZEXPT0
498 1 00231 33F0057B MTW,X'F' ZLBPTR
499 1 00232 B2F0057B LW,R15 *ZLBPTR
500 1 00233 B5F00584 STW,R15 *ZEXPT1
501 1 00234 6AF0038C BAL,R15 ZADPTR
502 1 00235 E8C00025 A B *ZRPLNK
    
```

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503                                     PAGE
504
505                                     *
506                                     * PERIOD , PLACE MARKER, TRANSLATOR PROCESSOR
507                                     * LEGAL IF NON-ZERO PLACE MARKER, MARK PLACE IN CONTROL LINE
508                                     * ILLEGAL IF ZERO PLACE MARKER AND/OR PREVIOUSLY DEFINED
509                                     * NO EXECUTE TABLE ENTRY, ENTRY TO PLACE MARKER TABLE
510                                     *
510 1 00236 35F00027 A ZPDTRN STW,R15 ZPDLNK
511 1 00237 6AF0030C BAL,R15 ZTST7
512 1 00238 6AF0036F BAL,R15 ZTST2
513 1 00239 6AF0024E BAL,R15 ZPMEN
514 1 0023A E8C00027 A B *ZPDLNK
515                                     *
516                                     * DELTA TRANSLATOR PROCESSOR
517                                     * ABSOLUTE TRANSFER REFERENCE TO NON-ZERO PLACE MARKER
518                                     * LINK RETURN TRANSFER REFERENCE TO ZERO PLACE MARKER
519                                     * ABSOLUTE TRANSFER EQUALS TWO WORD ENTRY TO EXECUTE TABLE.
520                                     * LINK TRANSFER EQUALS ONE WORD ENTRY TO EXECUTE TABLE.
521                                     *
522 1 0023B 35F00028 A ZASTRN STW,R15 ZASLNK
523 1 0023C 6AF0030C BAL,R15 ZTST7
524 1 0023D 22F00560 LI,R15 ZLKAS
525 1 0023E B5F00583 STW,R15 *ZEXPT0
526 1 0023F 33C00009 A MTW,0 R9
527 1 00240 68300045 BCR,3 $+5
528 1 00241 32F0055E LW,R15 ZASPR0-1
529 1 00242 B5F00083 STW,R15 *ZEXPT0
530 1 00243 6AF0036F BAL,R15 ZTST2
531 1 00244 6AF00247 BAL,R15 ZPMR0
532 1 00245 6AF0038C BAL,R15 ZADPTR
533 1 00246 E8C00028 A B *ZASLNK
    
```



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534                                     PAGE
535                                     *
536                                     * PLACE MARKER PROCESSOR FOR PLACE MARKER TABLE
537                                     * PROCESSES PLACE MARKER ENTRIES AND REQUESTS
538                                     * ASSUMES R9 CONTAINS BINARY VALUE FOR PLACE MARKER
539                                     *
540 1 00247 20900300 A ZPMR0 AI,R9 X'800'
541 1 00248 35F00029 A ZPMEN STW,R15 ZPMLNK
542 1 00249 3270007E LW,X7 ZPMADR
543 1 0024A 3870007F SW,X7 ZPMPTR
544 1 0024B 63300070 BCR,3 ZPMEN40
545 1 0024C B23F007F ZPMEN10 LW,R11 *ZPMPTR,X7
546 1 0024D 25800046F A SAS,R11 -17
547 1 0024E 21900030 A CI,R9 X'800'
548 1 0024F 67400056 BCS,4 ZPMEN20
549 1 00250 21B00030 A CI,R11 X'800'
550 1 00251 69400060 BCS,4 ZPMEN30
551 1 00252 31900008 A CW,R9 R11
552 1 00253 6930006F HCS,3 ZPMEN40-1
553 1 00254 22000031 A LI,R12 X'31'
554 1 00255 64000077 B ZSNR
555 1 00256 21000000 A ZPMEN20 CI,R11 X'800'
556 1 00257 6940006F BCS,4 ZPMEN40-1
557 1 00258 20800000 A AI,R11 X'800'
558 1 00259 31500008 A CW,R9 R11
559 1 0025A 6930006F BCS,3 ZPMEN40-1
560 1 0025B 22B1FFFF A LI,R11 X'1FFFF'
561 1 0025C C23E007F AND,R11 *ZPMPTR,X7
562 1 0025D 65300054 STW,R11 *ZEXPT1
563 1 0025E 6AF00032 BAL,R15 ZTST4
564 1 0025F E2000029 A B *ZPMLNK
565 1 00260 22F0003F A ZPMEN30 LI,R15 X'3FF'
566 1 00261 4800000F A AND,R11 R15
567 1 00262 31900008 A CW,R9 R11
568 1 00263 6930006F BCS,3 ZPMEN40-1
569 1 00264 33F0002D A MTW,X'F' ZUDFPM
570 1 00265 B2FE007F LW,R15 *ZPMPTR,X7
    
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571 1 00266 32E00583 LW,R11 ZEXPT0
572 1 00267 B5B0000F A STW,R11 *R15
573 1 00268 32F00037F LW,R15 ZPMPTR
574 1 00269 3310000F A MTW,1 R15
575 1 0026A B2BE000F A LW,R11 *R15,X7
576 1 0026B B5BE0057F STW,R11 *ZPMPTR,X7
577 1 0026C 65700026A BIR,X7 *-2
578 1 0026D 33F00037F MTW,X'F' ZPMPTR
579 1 0026E 68000049 B ZPMEN+1
580 1 0026F 65700024C BIR,X7 ZPMEN10
581 1 00270 21900030 A ZPMEN40 CI,R9 X'800'
582 1 00271 69400075 BCS,4 **4
583 1 00272 259000411 A SAS,R9 17
584 1 00273 499000583 BR,R9 ZEXPT0
585 1 00274 680000279 B *-5
586 1 00275 3310002D A MTW,1 ZUDFPM
587 1 00276 259000411 A SAS,R9 17
588 1 00277 499000584 BR,R9 ZEXPT1
589 1 00278 6AF00032 PAL,R15 ZTST4
590 1 00279 B5900057F STW,R9 *ZPMPTR
591 1 0027A 22C00030 A LI,R12 X'130'
592 1 0027B 32B00037F LW,R11 ZPMPTR
593 1 0027C 33100003 A MTW,1 R11
594 1 0027D 31R000580 CW,R11 ZMFR10AD
595 1 0027E 683000377 BCR,3 ZSNR
596 1 0027F 35800057F STW,R11 ZPMPTR
597 1 00280 E4000029 A B *ZPMLNK
    
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598
599
600
601
602
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605 1 00281 33000004 A
606 1 00282 68300303
607 1 00283 35F00020 A
608 1 00284 227FFFE3 A
609 1 00285 318F05D0
610 1 00286 6830028A
611 1 00287 65700235
612 1 00288 22000150 A
613 1 00289 68000377
614 1 0028A 320F0528
615 1 0028B 55F00283
616 1 0028C F2000583
617 1 0028D 48C00003 A
618 1 0028E 68300101
619 1 0028F 33000030 A
620 1 00290 69300245
621 1 00291 22000151 A
622 1 00292 71100005 A
623 1 00293 68400377
624 1 00294 25800204 A
625 1 00295 25800402 A
626 1 00296 F5300583
627 1 00297 6AF003A5
628 1 00298 6AF00281
629 1 00299 22F00100
630 1 0029A 71A0010A
631 1 0029B E830010B
632 1 0029C 6AF0038C
633 1 0029D 22800000 A
634 1 0029E 22900000 A

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PAGE

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*
* FIELD SEPARATORS,SPACE,PLUS,NEW LINE,ETC.
* PROCESSES LEADING DECIMAL RE-ITERATION COUNT OR PLACE MARKER
* IDENTIFIER FIELD FOR CALLED SUB-ROUTINE
* PROCESSES TRAILING PARAMETERS FOR SUB-ROUTINES
*
ZPLTRN MTW,0 R8
BCR,3 ZTST3
STW,R15 ZPLLNK
LI,X7 -ZSRLEN
CW,R8 ZSRTBL,X7
BCR,3 ZPLTRN20
BIR,X7 $-2
LI,R12 X'150'
R ZSNER
ZPLTRN20 LW,R11 ZSRADR,X7
STW,R11 *ZEXPT0
LB,R12 *ZEXPT0
AND,R12 R3
BCR,3 ZTRN50
MTW,0 ZDSPLG
BCS,3 ZPLTRN30
LI,R12 X'151'
CB,R1 R11
BCR,4 ZSNER
SCS,R11 6
SAS,R11 2
STB,R11 *ZEXPT0
BAL,R15 ZTST1
BAL,R15 ZCBTRN
LI,R15 ZTRN60
CB,R10 ZMS
BCR,3 *ZMS
BAL,R15 ZADPTR
LI,R8 0
LI,R9 0

```

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635 1 0029F 32F00020 A
636 1 002A0 71A0010A
637 1 002A1 E830010B
638 1 002A2 71A0010A
639 1 002A3 E830010B
640 1 002A4 E8C00020 A
641 1 002A5 22C00052 A
642 1 002A6 7120000B A
643 1 002A7 68400377
644 1 002A8 25800204 A
645 1 002A9 25800404 A
646 1 002AA F5300583
647 1 002AB 6AF003C5
648 1 002AC 6AF002B1
649 1 002AD 22F00102
650 1 002AE 71A0010B
651 1 002AF E830010B
652 1 002B0 68000102

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PAGE

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ZPLTRN30
LI,R12 X'152'
CB,R2 R11
BCR,4 ZSNER
SCS,R11 4
SAS,R11 4
STB,R11 *ZEXPT0
BAL,R15 ZTST3
BAL,R15 ZCBTRN
LI,R15 ZTRN60
CB,R10 ZMS
BCR,3 *ZMS
B ZTRN60

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PAGE
*
* COMMA TRANSLATOR PROCESSOR
* CALLED ONLY BY FIELD SEPARATOR TRANSLATOR PROCESSOR
* PROCESSES ALL SUB-ROUTINE TRAILING PARAMETERS
*
653
654
655
656
657
658
659 1 002E1 35F0002A A ZC0TRN STW,R15 ZC0LNK
660 1 002E2 30B0005A+ LW,R11 ZEXPT1
661 1 002E3 35B00030 A STW,R11 ZPCHK
662 1 002E4 30B00031 A STW,R11 ZPCHK1
663 1 002E5 F2H00053 LB,R11 *ZEXPT0
664 1 002E6 25B00047C A SAS,R11 +4
665 1 002E7 35B0001F A STW,R11 ZPCNT
666 1 002E8 75B00034F STB,R11 ZPC7M,X3
667 1 002E9 C7B00053 LH,R11 *ZEXPT0,X1
668 1 002EA 35B0002F A SW,R11 ZPCNT
669 1 002EB 35B0002E A STW,R11 ZPTY
670 1 002EC 22800000 A ZC0TRN10 LI,R8 0
671 1 002ED 27900000 A LI,R9 0
672 1 002EE B5B000584 STW,R8 *ZEXPT1
673 1 002EF F0700002E A LB,R7 *ZPTY
674 1 002F0 33F0000F A MTW,X'F' ZPCNT
675 1 002F1 69100003 BCS,1 ZC0TRN50
676 1 002F2 71A001CF CB,R10 ZCB
677 1 002F3 6830002CA BCR,3 ZC0TRN30
678 1 002F4 71A6034D CB,R10 ZPC7M,X3
679 1 002F5 6830002CA BCR,3 ZC0TRN30
680 1 002F6 71700008 A CI,R7 8
681 1 002F7 6340002CD BCR,4 ZC0TRN40
682 1 002F8 2FC00005 A LI,R12 X'155'
683 1 002F9 683000377 B ZSNR
684 1 002FA 25700047C A ZC0TRN30 SAS,R7 +4
685 1 002FB 670E00E6 EXU ZPNTYP,X7
686 1 002FC B59000534 STW,R9 *ZEXPT1
687 1 002FD 33100002E A ZC0TRN40 MTW,1 ZPTY
688 1 002FE 6AF000392 BAL,R15 ZTST4
689 1 002FF 34000009 A MTW,0 R9
    
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690 1 002D0 683002BC BCR,3 ZC0TRN10
691 1 002D1 35B00031 A STW,R11 ZPCHK1
692 1 002D2 680002BC B ZC0TRN10
693 1 002D3 71A6034D ZC0TRN50 CB,R10 ZPC7M,X3
694 1 002D4 6930002D6 BCS,3 $+2
695 1 002D5 22A00040 A LI,R10 X'140'
696 1 002D6 227FFFF9 A LI,X7 +Z0PLN2
697 1 002D7 32BE01CC LW,R11 Z0PTB2,X7
698 1 002D8 71A0000B A CB,R10 R11
699 1 002D9 6830002D0 BCR,3 ZC0TRN60
700 1 002DA 6570002D7 BIR,X7 $-3
701 1 002DB 22C000254 A LI,R12 X'154'
702 1 002DC 683000377 B ZSNR
703 1 002DD 32400031 A ZC0TRN60 LW,R11 ZPCHK1
704 1 002DE 38B00030 A SW,R11 ZPCHK
705 1 002DF 25B00404 A SAS,R11 4
706 1 002E0 22F0000F A LI,R15 X'F'
707 1 002E1 F27000583 LB,R7 *ZEXPT0
708 1 002E2 4R70000F A AND,R7 R15
709 1 002E3 49B00007 A BR,R11 R7
710 1 002E4 F0300583 STB,R11 *ZEXPT0
711 1 002E5 E800002A A B ZC0LNK
    
```

712 PAGE  
 713 \*  
 714 \* VARIABLE ENTRY TABLE TO PARAMETER PROCESSORS  
 715 \*  
 716 1 002E6 6AF00328 ZPRTYP BAL,R15 ZFNUP  
 717 1 002E7 6AF00329 BAL,R15 ZFN  
 718 1 002E8 6AF0032F BAL,R15 ZFNDS  
 719 1 002E9 6AF00334 BAL,R15 ZF0CT  
 720 1 002EA 6AF00337 BAL,R15 ZFH  
 721 1 002EB 6AF0033A BAL,R15 ZPC5  
 722 1 002EC 6AF00340 BAL,R15 ZPC6  
 723 1 002ED 6AF00346 BAL,R15 ZPC7  
 724 \*  
 725 \* PARAMETER INFORMATION  
 726 \* PARAMETER DECODE WORD FORMAT  
 727 \* BIT 0-3 CODE TYPE  
 728 \* 4 0N-PARAMETER REQUIRED  
 729 \* 0FF-PARAMETER NOT REQUIRED  
 730 \*  
 731 \* CODE TYPE  
 732 \* 0 NUMERIC 0-9 ONLY; STORE WITH ZONE BITS  
 733 \* 1 NUMERIC 0-9 ONLY; STORE WITHOUT ZONE BITS  
 734 \* 2 NUMERIC 0-9 ONLY; CONVERT TO BINARY  
 735 \* 3 NUMERIC 0-7 ONLY; BCTAL  
 736 \* 4 HEXADFCIMAL 0-9 A-F; STORE AS BINARY VALUE  
 737 \* 5 ALPHABETIC ONLY A-Z  
 738 \* 6 ALPHA-NUMERIC ONLY A-Z 0-9  
 739 \* 7 ANY CHARACTER; FIRST CHARACTER REPRESENTS  
 740 \* TERMINATOR, BOTH NOT PUTAWAY  
 741 \*

742 PAGE  
 743 \*  
 744 \* FORWARD SLASH TRANSLATOR PROCESSOR, TERMINATE CONTROL  
 745 \* EXECUTE TABLE ENTRY EQUALS TWO WORDS  
 746 \* VERIFIES LAST LOOPS AND PLACE MARKER REQUESTS PROCESSED  
 747 \* VERIFIES LAST DIRECTIVE PROCESSED  
 748 \* SAVES THIS ENTRY LOCATION FOR POSSIBLE EXTEND OR PATCH  
 749 \*  
 750 1 002FE 35F0002B A ZFSTRN STW,R15 ZFSLNK  
 751 1 002FF 6AF002A1 BAL,R15 ZFLTRN  
 752 1 00300 3300003D A MTW,C ZDSFLG  
 753 1 00301 E930002B A BCS,3 \*ZFSLNK  
 754 1 00302 32B0005A LW,R11 ZFSR0-1  
 755 1 00303 B5B0005B STW,R11 \*ZEXPT0  
 756 1 00304 22C00101 A LI,R12 X'101'  
 757 1 00305 32B0003A LW,R11 ZEXADR  
 758 1 00306 31B0005B CW,R11 ZEXPT0  
 759 1 00307 68300037 BCR,3 ZSNR  
 760 1 00308 B5B0005A STW,R11 \*ZEXPT1  
 761 1 00309 22C00041 A LI,R12 X'141'  
 762 1 0030A 32B0005B LW,R11 ZLBPTR  
 763 1 0030B 31B0005A CW,R11 ZLADR  
 764 1 0030C 69200037 BCS,2 ZSNR  
 765 1 0030D 33000009 A MTW,C R9  
 766 1 0030E 68300031 HCR,3 \*\*3  
 767 1 0030F 6AF0038F BAL,R15 ZTST2  
 768 1 00310 6AF00247 BAL,R15 ZFMPG  
 769 1 00301 22C0003E A LI,R12 X'32'  
 770 1 00302 3300002D A MTW,C ZCDFPM  
 771 1 00303 69200037 BCS,2 ZSNR  
 772 1 00304 32B0005B LW,R11 ZEXPT0  
 773 1 00305 6AF0039C BAL,R15 ZSTRTR  
 774 1 00306 B2B0000E A LW,R11 \*R11  
 775 1 00307 5B200058 STW,R11 ZG0PTR,X1  
 776 1 00308 22F0005E LI,R15 ZG0PTR  
 777 1 00309 5BF20055 STW,R15 ZG0PR0,X1  
 778 1 0030A 52C20054 LW,R12 ZMFRX7,X1

779	1	0030B	55C2035E	STW,R12	ZYFRNBA,X1
780	1	0030C	32C001C4	LW,R12	ZTRN100
781	1	0030D	64F0048C	BAL,R15	ZTMNCR
782	1	0030F	6800050A	B	ZEX00

783					
784					
785					
786					
787					
788					
789	1	0030F	35E00035 A	ZCFR	STW,R14 ZCFRCA
790	1	00310	35F00034 A		STW,R15 ZCFRLNK
791	1	00311	64F00351		BAL,R15 ZFRC
792	1	00312	F1A20035 A		CB,R10 *ZCFRCA,X1
793	1	00313	E9100034 A		BCS,1 *ZCFRLNK
794	1	00314	F1440035 A		CB,R10 *ZCFRCA,X2
795	1	00315	E9200034 A		BCS,2 *ZCFRLNK
796	1	00316	22F00359		LI,R15 ZFH+2
797	1	00317	31F00035 A		CW,R15 ZCFRCA
798	1	00318	6930031E		BCS,3 *+6
799	1	00319	21A000E9 A		CI,R10 X'E9'
800	1	0031A	6920031F		BCS,2 *+4
801	1	0031B	21A000C6 A		CI,R10 X'C6'
802	1	0031C	E9200034 A		BCS,2 *ZCFRLNK
803	1	0031D	20A00009 A		AI,R10 X'9'
804	1	0031E	32F0000A A		LW,R15 R10
805	1	0031F	BA700035 A		LCW,X7 *ZCFRCA
806	1	00320	F8E00035 A		LB,R14 *ZCFRCA
807	1	00321	B2E0000F A		LW,R14 *R14
808	1	00322	23FE0200 A		SCS,R15 O,X7
809	1	00323	B2700035 A		LW,X7 *ZCFRCA
810	1	00324	28E00500		SAD,R14 O,X7
811	1	00325	F2F00035 A		LB,R15 *ZCFRCA
812	1	00326	B5E0000F A		STW,R14 *R15
813	1	00327	64000311		B ZCFR+2

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814                                     PAGE
815                                     *
816                                     * FETCH NUMERIC 0-9 UNPACKED ZONE BITS PRESENT
817                                     *
818 1 00328 22900000 A ZFNUP LI,R9 0
819 1 00329 6AE0030F BAL,R14 ZCFR
820 1 0032A 09F0F908 A DATA X'09F0F908'
821                                     *
822                                     * FETCH NUMERIC 0-9 PACKED ZONE BITS NOT PRESENT
823                                     *
824 1 0032B 22900000 A ZFN LI,R9 0
825 1 0032C 6AE0030F BAL,R14 ZCFR
826 1 0032D 09F0F904 A DATA X'09F0F904'
827                                     *
828                                     * FETCH NUMERIC 0-9 CONVERTED TO BINARY
829                                     *
830 1 0032E 35F00421 ZFNDB STW,R15 ZCSRL
831 1 0032F 6AF0032B BAL,R15 ZFN
832 1 00330 45C00009 A XW,R12 R9
833 1 00331 6AF00300 BAL,R15 ZDTB
834 1 00332 45C00009 A XW,R12 R9
835 1 00333 E4000421 B *ZCSRL
836                                     *
837                                     * FETCH OCTAL 0-7 BINARY VALUE
838                                     *
839 1 00334 22900000 A ZFOCT LI,R9 0
840 1 00335 6AE0030F BAL,R14 ZCFR
841 1 00336 09F0F703 A DATA X'09F0F703'
842                                     *
843                                     * FETCH HEXADECEMAL 0-F BINARY VALUE
844                                     *
845 1 00337 22900000 A ZFH LI,R9 0
846 1 00338 6AE0030F BAL,R14 ZCFR
847 1 00339 09C1F904 A DATA X'09C1F904'
    
```

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848                                     PAGE
849                                     *
850                                     * FETCH ALPHABETIC A-Z UNPACKED ZONE BITS PRESENT
851                                     *
852 1 0033A 22900000 A ZPC5 LI,R9 0
853 1 0033B 6AE0030F BAL,R14 ZCFR
854 1 0033C 09C1E908 A DATA X'09C1E908'
855 1 0033D 22800000 A ZFA LI,R8 0
856 1 0033E 6AE0030F BAL,R14 ZCFR
857 1 0033F 08C1E908 A DATA X'08C1E908'
858                                     *
859                                     * FETCH ALPHA-NUMERIC 0-9 A-Z UNPACKED ZONE BITS PRESENT
860                                     *
861 1 00340 22900000 A ZPC6 LI,R9 0
862 1 00341 6AE0030F BAL,R14 ZCFR
863 1 00342 09C1F908 A DATA X'09C1F908'
864 1 00343 22800000 A ZFAN LI,R8 0
865 1 00344 6AE0030F BAL,R14 ZCFR
866 1 00345 08C1F908 A DATA X'08C1F908'
867                                     *
868                                     * FETCH ANY CHARACTER *SPECIAL APPLICATIONS*
869                                     * FIRST CHARACTER REPRESENTS TERMINATOR WITH FIRST AND
870                                     * LAST CHARACTER NOT INCLUDED IN BYTE COUNT
871                                     *
872 1 00346 36F00036 A ZPC7 STW,R15 ZPC7LNK
873 1 00347 6AF00351 BAL,R15 ZF0C
874 1 00348 75A60340 STB,R10 ZPC7M,x3
875 1 00349 52F20354 LH,R15 ZMFRX7,x1
876 1 0034A 85F00084 STW,R15 *ZEXPT1
877 1 0034B 6AF00351 BAL,R15 ZF0C
878 1 0034C 82900084 LW,R9 *ZEXPT1
879 1 0034D 21A00000 A ZPC7M CI,R10 0
880 1 0034E E9300036 A RCR,3 *ZPC7LNK
881 1 0034F F3100084 MTB,1 *ZEXPT1
882 1 00350 6500034B B 5-5
    
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883                                     PAGE
884
885                                     *
886                                     * MAINLINE FETCH ROUTINE VIA TYPEWRITER OR CARD READER
887                                     * INPUT CONTRBL LINE SYNTAX TO INPUT/OUTPUT AREA
888                                     *
888 1 00351 35F00037 A ZF0C STW,R15 ZMFRLNK
889 1 00352 35A00039 A LW,R10 ZCHAR
890 1 00353 35A0003A A STW,R10 ZLSTCH
891 1 00354 22700000 A ZMFRX7 LI,R7 0
892 1 00355 21700000 A ZMFRNBA CI,R7 0
893 1 00356 6010036F BCS,1 ZMFRTCBA
894 1 00357 50720374 STH,R7 ZMFRCW0,X1
895 1 00358 35A00061 LW,R10 ZIHADR
896 1 00359 25A00402 A SAS,R10 2
897 1 0035A 50A2035B SH,R10 ZMFRNBA,X1
898 1 0035B 60300376 BCR,3 ZMFRIBF
899 1 0035C 21A00050 A CI,R10 80
900 1 0035D 6010035F BCS,1 *-2
901 1 0035E 25A00050 A LI,R10 80
902 1 0035F 50F20424 LH,R15 ZDKB+1,X1
903 1 00360 51F00360 CH,R15 ZMFRDA,X1
904 1 00361 60300360 BCS,3 *-2
905 1 00362 25A00001 A LI,R10 1
906 1 00363 50A20370 STH,R10 ZMFRCW1,X1
907 1 00364 50A20354 AH,R10 ZMFRX7,X1
908 1 00365 50A2035E STH,R10 ZMFRNBA,X1
909 1 00366 C0C00360 TIO,R12 *ZMFRDA
910 1 00367 60C00366 BCS,12 *-1
911 1 0036A 2000018A LI,R0 DA(ZMFRCW0)
912 1 00369 40C00001 A ZMFRDA TIO,R12 1
913 1 0036A 60C00369 BCS,12 *-1
914 1 0036B C0C00369 TIO,R12 *ZMFRDA
915 1 0036C 7000000D A LB,R13 R13
916 1 0036D 21000060 A CI,R13 X'60'
917 1 0036E 6040036B BCS,4 *-3
918 1 0036F 70A00060 A ZMFRTCBA LB,R10 0,X7
919 1 00370 35A00039 A STW,R10 ZCHAR
    
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920 1 00371 30100354 MTW,1 ZMFRX7
921 1 00372 E0000037 A B *ZMFRLNK
922 1 00374 00000000 ZMFRCW0 ZFCP 8
923 1 00374 00000000 ZMFRCW1 ZFCP X'0',BA(*)
924 1 00375 00000001 A ZMFRCW1 ZFCP 0,1
    
```

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925                                     PAGE
926
927                                     * SYNTAX ERROR REPORTER
928                                     *
929 1 00376 22C00120 A ZMFR10F LI,R12 X'120'
930 1 00377 64F003F6 ZSNER BAL,R15 ZBTH
931 1 00378 25D00208 SCS,R13 8
932 1 00379 35D00388 STW,R13 ZSNMSG+2
933 1 0037A 22F00018 LI,R15 X'115'
934 1 0037B 74F60388 STB,R15 ZSNMSG+2,X3
935 1 0037C 32C2035+ LH,R12 ZMFRX7,X1
936 1 0037D 56C0035F STH,R12 ZMFRNBA,X1
937 1 0037E 32C0038+ LW,R12 ZSNERMW
938 1 0037F 64F00046F BAL,R15 ZSML40
939 1 00380 72F00388 LB,R15 ZSNMSG+2
940 1 00381 21F000F0 CI,R15 X'1F0'
941 1 00382 69D00183 BCS,2 ZPC010
942 1 00383 59F20427 LH,R15 ZDCR+1,X1
943 1 00384 51F00369 CH,R15 ZMFRDA,X1
944 1 00385 65300183 DCR,3 ZPC010
945 1 00386 22F001C2 LI,R15 ZTRN60
946 1 00387 F40001C8 B +ZMS
947 1 00388 10C00224 A ZSNERMW ZFMX 1,0,12,BA(ZSNMSG)
948 1 00389 E2F80540 A ZSNMSG TEXT 'SYN ERR '
1 0038A C5C00940 A
1 0038B 40404040 A
    
```

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949                                     PAGE
950
951                                     * UPDATE EXECUTE TABLE POINTERS TO NEXT ENTRY
952                                     * BASED UPON PARAMETER COUNT AND/OR RE-ITERATION COUNT OR
953                                     * IDENTIFIER FIELD
954                                     *
955 1 0038C F2B00583 ZADPTR LB,R11 *ZEXPT0
956 1 0038D 20B0001C A AI,R11 X'11C'
957 1 0038E 25B0047C A SAS,R11 -4
958 1 0038F 30B00583 AW,R11 ZEXPT0
959
960                                     * SET EXECUTE TABLE POINTERS FOR BASE WORD AND POSSIBLE
961                                     * RE-ITERATION COUNT OR PLACE MARKER ADDRESS FIELD
962                                     *
963 1 00390 35B00583 ZSTPTR STW,R11 ZEXPT0
964 1 00391 35B00584 STW,R11 ZEXPT1
965
966                                     * VERIFY EXECUTE TABLE NON-OVERFLOW
967                                     *
968 1 00392 33100584 ZTST+ MTW,1 ZEXPT1
969 1 00393 32B00584 LW,R11 ZEXPT1
970 1 00394 31B0057C CW,R11 ZLKADR
971 1 00395 E91000CF A BCS,1 *R15
972 1 00396 22C001CC A LI,R12 X'100'
973 1 00397 65C00377 B ZSNER
    
```



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974                                     PAGE
975                                     *
976                                     * ADVANCE POINTERS AND CLEAR RE-ITERATION COUNT FIELD
977                                     * IF EXISTENT IN EXECUTE TABLE ENTRY
978                                     *
979 1 00398 35F000CE A ZADCRC STW,R15 R14
980 1 00399 6AF0038C BAL,R15 ZADPTR
981 1 0039A 6R00039D B B *+3
982                                     *
983                                     * SET POINTERS AND CLEAR RE-ITERATION COUNT FIELD
984                                     * (R11) CONTAINS BASE WORD VALUE
985                                     *
986 1 0039B 35F000CE A ZSTCRC STW,R15 R14
987 1 0039C 6AF0039D BAL,R15 ZSTPTR
988 1 0039D 32F000CE A LW,R15 R14
989                                     *
990                                     * CLEAR OR RESET RE-ITERATION COUNT FIELD IN EXECUTE TABLE
991                                     * ONLY IF RC FIELD IS EXISTENT
992                                     *
993 1 0039E F2B00583 ZCRC LB,R11 *ZEXPT0
994 1 0039F 21B00008 A CI,R11 8
995 1 003A0 E840000F A BCR,4 *R15
996 1 003A1 D2B00584 LH,R11 *ZEXPT1
997 1 003A2 25B00410 A SAS,R11 16
998 1 003A3 B5B00584 STW,R11 *ZEXPT1
999 1 003A4 E800000F A B *R15
    
```

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1000                                     PAGE
1001                                     *
1002                                     * PROCESS LEADING DECIMAL SUB-FIELD ASSUMED BINARY IN R9
1003                                     * RE-ITERATION COUNT LESS THAN 10K AND GREATER THAN 1
1004                                     * PLACE MARKER IDENTIFIER LESS THAN 512
1005                                     *
1006 1 003A5 35F00038 A ZTST1 STW,R15 ZTSTLNK
1007 1 003A6 F2B00583 LB,R11 *ZEXPT0
1008 1 003A7 21B00008 A CI,R11 X'0'
1009 1 003A8 68400305 BCR,4 ZTST3
1010 1 003A9 21B00008 A CI,R11 8
1011 1 003AA 69400381 BCS,4 ZTST1A
1012 1 003AB 22C00000 A LI,R12 0
1013 1 003AC 33000009 A MTW,0 R9
1014 1 003AD 6830030C BCR,3 ZTST1C
1015 1 003AE 6AF0035F BAL,R15 ZTST2
1016 1 003AF 6AF00247 BAL,R15 ZPMRG
1017 1 003B0 E3000038 A B *ZTSTLNK
1018 1 003B1 33F00009 A ZTST1A MTW,X'F' R9
1019 1 003B2 69200388 BCS,2 ZTST1B
1020 1 003B3 22C000F3 A LI,R12 X'F3'
1021 1 003B4 F2B00583 LB,R11 *ZEXPT0
1022 1 003B5 48B0000C A AND,R11 R12
1023 1 003B6 F5B00583 STB,R11 *ZEXPT0
1024 1 003B7 E8000038 A B *ZTSTLNK
1025 1 003B8 2190270F A ZTST1B CI,R9 9999
1026 1 003B9 692003C3 RCS,2 ZTST2A
1027 1 003BA 32C00009 A LW,R12 R9
1028 1 003BB 25C00410 A SAS,R12 16
1029 1 003BC B5C00584 STW,R12 *ZEXPT1
1030 1 003BD 6AF00392 ZTST1C BAL,R15 ZTST4
1031 1 003BE E3000038 A B *ZTSTLNK
    
```

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1032                                     PAGE
1033                                     *
1034                                     * VERIFIES PLACE MARKER VALUE GREATER THAN ONE
1035                                     * AND LESS THAN 512 DECIMAL
1036                                     *
1037 1 003BF 33000009 A ZTST2 MTW,0 R9
1038 1 003C0 68300303 BCR,3 ZTST2A
1039 1 003C1 21900200 A CI,R9 X'200'
1040 1 003C2 E910000F A BCS,1 *R15
1041 1 003C3 22C00020 A ZTST2A LI,R12 X'20'
1042 1 003C4 68000377 B ZSNER
1043
1044                                     *
1045                                     * VERIFY NUMERIC ACCUMULATOR IS EMPTY (ZERO)
1046                                     *
1046 1 003C5 33000009 A ZTST3 MTW,0 R9
1047 1 003C6 E830000F A BCR,3 *R15
1048 1 003C7 68000303 B ZTST2A
1049
1050                                     *
1051                                     * VERIFY ALPHA ACCUMULATOR EMPTY (ZERO)
1052                                     *
1052 1 003C9 33000008 A ZTST6 MTW,0 R8
1053 1 003C9 E830000F A BCR,3 *R15
1054 1 003CA 22C00021 A LI,R12 X'21'
1055 1 003CB 68000377 B ZSNER
1056
1057                                     *
1058                                     * VERIFY TRANSLATOR NOT IN IMMEDIATE MODE
1059                                     *
1059 1 003CC 33000000 A ZTST7 MTW,0 ZDSFLG
1060 1 003CD E830000F A BCR,3 *R15
1061 1 003CE 22C00022 A LI,R12 X'52'
1062 1 003CF 68000377 B ZSNER

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1063                                     PAGE
1064                                     *
1065                                     * DECIMAL TO BINARY CONVERTER FOUR BITS PER DIGIT
1066                                     * (R12) VALUE TO CONVERT TO R12 AND ZTEMP
1067                                     * (R15) LINK RETURN VALUE
1068                                     *
1069 1 003D0 46C0000F A ZDTB XW,R12 R15
1070 1 003D1 35F00585 STW,R15 ZTEMP
1071 1 003D2 48F0083B AND,R15 L(X'F0F0F0F0')
1072 1 003D3 25F0027C A SCS,R15 -4
1073 1 003D4 23FFFFFFA A MI,R15 -6
1074 1 003D5 30F00585 AW,R15 ZTEMP
1075 1 003D6 35F00585 STW,R15 ZTEMP
1076 1 003D7 48F0083C AND,R15 L(X'FF00FF00')
1077 1 003D8 25F00278 A SCS,R15 -8
1078 1 003D9 23FFF64 A MI,R15 -156
1079 1 003DA 30F00585 AW,R15 ZTEMP
1080 1 003DB 35F00585 STW,R15 ZTEMP
1081 1 003DC 52F0000F A LH,R15 R15
1082 1 003DD 23FF2710 A MI,R15 -55536
1083 1 003DE 30F00585 AW,R15 ZTEMP
1084 1 003DF 35F00585 STW,R15 ZTEMP
1085 1 003E0 46C0000F A XW,R12 R15
1086 1 003E1 E8C0000F A B *R15

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1087
1088
1089
1090
1091
1092
1093 1 003E2 35D00421 ZBTD STW,R13 ZCSRL
1094 1 003E3 22D00400 A LI,R13 X'14C0'
1095 1 003E4 46C00000 A XW,R12 R13
1096 1 003E5 35C00597 STW,R12 PX
1097 1 003E6 22C00000 A LI,R12 0
1098 1 003E7 35C00585 STW,R12 ZTEMP
1099 1 003E8 22C00000 A ZBTD10 LI,R12 0
1100 1 003E9 21D0000A A CI,R13 10
1101 1 003EA 691003F0 BCS,1 ZBTD20
1102 1 003EB 36C0083D DW,R12 L(X'A')
1103 1 003EC A9C00597 S,R12 *PX
1104 1 003ED 33400597 MTW,4 PX
1105 1 003EE 66C00585 ANM,R12 ZTEMP
1106 1 003EF 68C003E8 B ZBTD10
1107 1 003F0 32C00421 ZBTD20 LW,R12 ZCSRL
1108 1 003F1 46C00000 A XW,R12 R13
1109 1 003F2 A9C00597 S,R12 *PX
1110 1 003F3 43C00585 BR,R12 ZTEMP
1111 1 003F4 35C00585 STW,R12 ZTEMP
1112 1 003F5 E9C0000F A B *R15
    
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1113
1114
1115
1116
1117
1118
1119 1 003F6 35100421 ZBTH STW,R1 ZCSRL
1120 1 003F7 221FFFF8 A LI,X1 -8
1121 1 003F8 22D0000F A LI,R13 X'F'
1122 1 003F9 25C00304 A SCD,R12 4
1123 1 003FA 21C000FA A CI,R13 X'FA'
1124 1 003FB 691003F0 BCS,1 $+2
1125 1 003FC 22D0000C A AI,R13 X'C7'
1126 1 003FD 75D20587 STB,R13 ZTEMP1+1,X1
1127 1 003FE 681003F8 BIR,X1 ZBTH+2
1128 1 003FF 32C00535 LW,R12 ZTEMP
1129 1 00400 32C00586 LW,R13 ZTEMP1
1130 1 00401 32100421 LW,R1 ZCSRL
1131 1 00402 E9C0000F A B *R15
1132
1133
1134
1135
1136
1137 1 00403 35F00421 ZSUP STW,R15 ZCSRL
1138 1 00404 35100585 STW,X1 ZTEMP
1139 1 00405 221FFFFC A LI,X1 -X'14'
1140 1 00406 22F000F0 A LI,R15 X'F0'
1141 1 00407 71F2000D A CB,R15 R12+1,X1
1142 1 00408 6930040C BCS,3 $+4
1143 1 00409 22F00040 A LI,R15 X'40'
1144 1 0040A 75F2000D A STB,R15 R12+1,X1
1145 1 0040B 65100406 BIR,X1 ZSUP+3
1146 1 0040C 37100585 LW,R1 ZTEMP
1147 1 0040D 35C00585 STW,R12 ZTEMP
1148 1 0040E E9C00421 B *ZCSRL
    
```

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1149                                     PAGE
1150                                     *
1151                                     * DECIMAL ADDER FOUR BITS PER DIGIT
1152                                     * (R12) CURRENT DECIMAL ADDER VALUE
1153                                     * (R15) LINK RETURN VALUE
1154                                     *
1155 1 0040F 35100585 ZDECADER STW,R1 ZTEMP
1156 1 00410 221FFFF8 A LI,X1 -8
1157 1 00411 33100000 A MTW,1 R12
1158 1 00412 21000008 A CI,R12 X'8'
1159 1 00413 68400417 BCR,4 $+4
1160 1 00414 21000032 A CI,R12 X'2'
1161 1 00415 68400417 BCR,4 $+2
1162 1 00416 33600000 A MTW,6 R12
1163 1 00417 2500027C A SCS,R12 -4
1164 1 00418 55100412 BIR,X1 $-6
1165 1 00419 32100000 A LW,R1 R12
1166 1 0041A 46100485 XW,R1 ZTEMP
1167 1 0041B E800000F A B *R15
1168                                     *
1169                                     * INITIALIZE COMMON INDEX REGISTERS
1170                                     *
1171 1 0041C 22000000 A ZSCIR LI,R0 0
1172 1 0041D 22100001 A LI,X1 1
1173 1 0041E 22200002 A LI,X2 2
1174 1 0041F 22300003 A LI,X3 3
1175 1 00420 E800000F A B *R15
1176 1 00421 00000000 A ZCSRL PZE
    
```

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1177                                     PAGE
1178                                     *
1179                                     * DKB DIRECTIVE ASSIGNING DIRECTIVE INPUT VIA TYPEWRITER
1180                                     *
1181 1 00422 40000000 A DATA X'40000000'
1182 1 00423 6AE00428 ZDKB BAL,R14 ZKBCRI9A
1183 1 00424 00000001 A DATA 1
1184                                     *
1185                                     * DCR DIRECTIVE ASSIGNING DIRECTIVE INPUT VIA CARD READER
1186                                     *
1187 1 00425 40000000 A DATA X'40000000'
1188 1 00426 6AE00428 ZDCR BAL,R14 ZKBCRI9A
1189 1 00427 00000003 A DATA 3
1190                                     *
1191                                     * PRESERVE TYPEWRITER/CARD READER INPUT/OUTPUT ADDRESS
1192                                     *
1193 1 00428 220007FF A ZKBCRI8A LI,R0 X'7FF'
1194 1 00429 4E000588 AND,R0 P1
1195 1 0042A B500000E A STW,R0 *R14
1196 1 0042F 55020369 STH,R0 ZMFRCA,X1
1197 1 0042C 52020354 LH,R0 ZMFRX7,X1
1198 1 0042D 55020355 STH,R0 ZMFRN8A,X1
1199 1 0042E E500000F A B *R15
    
```

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1200
1201
1202
1203
1204 1 0042F 10000000 A
1205 1 00430 30000588 ZSML DATA X'10000000'
1206 1 00431 40000303 A Lw,R0 P1
1207 1 00432 500204CA AND,R0 R3
1208 1 00433 E000000F A STW,R0 ZMSGKEY,X1
B *R15
1209
1210
1211
1212 1 00434 40000000 A
1213 1 00435 2000077F A ZSMD LI,R0 X'77F'
1214 1 00436 40000588 AND,R0 P1
1215 1 00437 500204E0 STW,R0 ZTWLP9,X1
1216 1 00433 E000000F A B *R15
    
```

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1217
1218
1219
1220
1221 1 00439 10000000 A
1222 1 0043A 35F00996 ZHLT DATA X'10000000' P1 DECIMAL IDENTIFIER
1223 1 0043B 30000588 Lw,R12 P1
1224 1 0043C 6AF003F6 BAL,R15 ZBTH
1225 1 0043D 30000448 STW,R13 ZHLTMS3+1
1226 1 0043E 32000446 Lw,R12 ZHLTMSi-1
1227 1 0043F 02300670 A LCFI 7
1228 1 00440 6AF004CC BAL,R15 ZTXLP
1229 1 00441 22F00001 A LI,R15 1
1230 1 00442 40F00588 AND,R15 P1
1231 1 00443 E8220596 BCR,2 *P15,X1
1232 1 00444 2E000000 A WAIT
1233 1 00445 E8000596 B *P15,X1
1234 1 00446 1008111C A ZFMw 1,0,8,3A(ZHLTMSG)
1235 1 00447 C03E340 A ZHLTMSG TEXT 'HLT XXXX'
1 00448 E7E7E7E7 A
    
```

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1236
1237
1238
1239
1240 1 00449 35FC0421 ZALT STW,R15 ZCSRL
1241 1 0044A 6AFC0458 BAL,R15 ZALT10
1242 1 0044B 6AFC0337 BAL,R15 ZFH
1243 1 0044C 6AFC0458 BAL,R15 ZALT10
1244 1 0044D 22F1FFFF A LI,R15 X'1FFFFF'
1245 1 0044E 4B90000F A AND,R9 R15
1246 1 0044F 31900578 ZALT05 CW,R9 ZEMS
1247 1 00450 E9200421 BCS,2 *ZCSRL
1248 1 00451 35900585 STW,R9 ZTEMP
1249 1 00452 6AFC0337 BAL,R15 ZFH
1250 1 00453 6AFC0458 BAL,R15 ZALT10
1251 1 00454 B5900585 STW,R9 *ZTEMP
1252 1 00455 33100585 MTW,1 ZTEMP
1253 1 00456 32900585 LW,R9 ZTEMP
1254 1 00457 6A00044F B ZALT05
1255 1 00458 21AC006B A ZALT10 CI,R10 X'16B'
1256 1 00459 E830000F A BCR,3 *R15
1257 1 0045A E8000421 B *ZCSRL
    
```

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1258
1259
1260
1261
1262 1 0045B 40000000 A DATA X'40000000'
1263 1 0045C 40000000 A DATA X'40000000'
1264 1 0045D 40000000 A DATA X'40000000'
1265 1 0045E 02300070 A ZTYP LCFI 7
1266 1 0045F 64000464 B ZDMP+1
1267 1 00460 40000000 A DATA X'40000000' P1 FIRST
1268 1 00461 40000000 A DATA X'40000000' P2 LAST
1269 1 00462 40000000 A DATA X'40000000' P3 RELATIVE
1270 1 00463 023000F0 A ZDMP LCFI X'F'
1271 1 00464 74000499 STCF ZDMP24+2,X3
1272 1 00465 35F00596 STW,R15 P15
1273 1 00466 227FFFF0 A LI,X7 -3 TRUNCATE
1274 1 00467 32C0058B LW,R12 P3+1,X7
1275 1 00468 48C00578 AND,R12 ZEMS
1276 1 00469 35CE058B STW,R12 P3+1,X7 ADDRESSES
1277 1 0046A 65700467 BIR,X7 *-3
1278 1 0046B 6AFC001C BAL,R15 ZSCIR
1279 1 0046C 3P000589 LW,R13 P2
1280 1 0046D 33100000 A MTW,1 R13
1281 1 0046E 31000573 CW,R13 ZEMS
1282 1 0046F 68200471 BCR,2 *-2
1283 1 00470 33F00589 MTW,-1 P2
1284 1 00471 32C0058A LW,R12 P3
1285 1 00472 68300475 BCR,3 *-3
1286 1 00473 32000583 LW,R0 P1
1287 1 00474 3400058A SW,R0 P3
1288 1 00475 3500058A STW,R0 P3
1289 1 00476 32000583 ZDMP10 LW,R12 P1
1290 1 00477 38C0058A SW,R12 P3
1291 1 00478 6AFC03F6 BAL,R15 ZBTH
1292 1 00479 22F04040 A LI,R15 X'4040'
1293 1 0047A 53F0000C A STH,R15 R12
1294 1 0047B 25C00310 A SCD,R12 16
    
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1295	1 0047C	35C00598		STW,R12	ZDMPA	
1296	1 0047D	35C00599		STW,R13	ZDMPA+1	
1297	1 0047E	75F00598		STB,R15	ZDMPA	
1298	1 0047F	22700007 A		LI,X7	7	RESET INDEX
1299	1 00480	22F00000 A		LI,R15	0	DUPLICATE
1300	1 00481	35C00595		STW,R15	P14	COUNTER
1301	1 00482	B2C00588	ZDMP20	LW,R12	*P1	DUPLICATE
1302	1 00483	B1C00588		CW,R12	*P1,X1	WORDS
1303	1 00484	64300+9E		BCR,3	ZDMP30	
1304	1 00485	33C00595		MTW,0	P14	DUPLICATE
1305	1 00486	64300+9E		BCR,3	ZDMP40	BLACK
1306	1 00487	22C00060 A		LI,R12	X'60'	
1307	1 00488	75CE0098		STB,R12	ZDMPA,X7	
1308	1 00489	32C00588	ZDMP22	LW,R12	P1	
1309	1 0048A	38C0058A		SW,R12	P3	
1310	1 0048B	6AF003F6		BAL,R15	ZBTH	
1311	1 0048C	22F00+940 A		LI,R15	X'4040'	
1312	1 0048D	55F00000 A		STH,R15	R12	
1313	1 0048E	25C00010 A		SCD,R12	16	
1314	1 0048F	35C0059A		STW,R12	ZDMPA+2	
1315	1 00490	35C0059B		STW,R13	ZDMPA+3	
1316	1 00491	75F0059A		STB,R15	ZDMPA+2	
1317	1 00492	B2C00588		LW,R12	*P1	SET DUPLICATE
1318	1 00493	6AF003F6		BAL,R15	ZBTH	KEY FOR OUTPUT
1319	1 00494	35C0059C		STW,R12	ZDMPA+4	
1320	1 00495	35C0059D		STW,R13	ZDMPA+5	
1321	1 00496	22700018 A		LI,R7	24	
1322	1 00497	75700+6B	ZDMP24	STB,R7	ZDMP70,X1	
1323	1 00498	32C00+8E		LW,R12	ZDMP70	
1324	1 00499	023000FD A		LCFI	X'F'	
1325	1 0049A	6AF004C0		BAL,R15	ZTWLP	
1326	1 0049B	6AF004E7		BAL,R15	ZDMP50	
1327	1 0049C	69100+76		BCS,1	ZDMP10	DUMP
1328	1 0049D	E8000+96		B	*P15	COMPLETE
1329	1 0049E	21700007 A	ZDMP30	CI,X7	7	
1330	1 0049F	642004A2		BCR,2	\$+3	
1331	1 004A0	33F00588		MTW,-1	P1	

1332	1 004A1	68C00497		B	ZDMP24	
1333	1 004A2	33100595		MTW,1	P14	
1334	1 004A3	6AF004B7		BAL,R15	ZDMP50	
1335	1 004A4	69100482		BCS,1	ZDMP20	
1336	1 004A5	33F00588		MTW,-1	P1	
1337	1 004A6	33F00595		MTW,X'F'	P14	
1338	1 004A7	69200489		BCS,2	ZDMP22	
1339	1 004A8	B2C00588		LW,R12	*P1	
1340	1 004A9	6AF003F6	ZDMP40	BAL,R15	ZBTH	SET NON-DUPLICATE
1341	1 004AA	33100007 A		MTW,1	X7	WORD FOR OUTPUT
1342	1 004AB	226FFFF8 A		LI,X6	-8	
1343	1 004AC	25C00308 A		SCD,R12	8	
1344	1 004AD	75DF0598		STB,R13	ZDMPA,X7	
1345	1 004AE	33100007 A		MTW,1	X7	
1346	1 004AF	65600+AC		BIR,X6	\$+3	
1347	1 004B0	22F00040 A		LI,R15	X'40'	
1348	1 004B1	75FE0598		STB,R15	ZDMPA,X7	
1349	1 004B2	2170004E A		CI,X7	78	
1350	1 004B3	69200+97		BCS,2	ZDMP24	
1351	1 004B4	6AF004B7		BAL,R15	ZDMP50	
1352	1 004B5	69100482		BCS,1	ZDMP20	
1353	1 004B6	68C00497		B	ZDMP24	
1354	1 004B7	32C00588	ZDMP50	LW,R12	P1	
1355	1 004B8	33100588		MTW,1	P1	
1356	1 004B9	31C00589		CW,R12	P2	
1357	1 004BA	E800000F A		B	*R15	
1358	1 004BB	10001660 A	ZDMP70	ZFMW	1,0,C,BAL(ZDMPA)	
1359				*		
1360				*		TRANSMIT MESSAGE ONLY IF KEYBOARD INPUT DEVICE
1361				*		
1362	1 004BC	52C00427	ZTMNCR	LH,R13	ZDCR+1,X1	
1363	1 004BD	51C00369		CH,R13	ZMFRDA,X1	
1364	1 004BE	E830000F A		BCR,3	*R15	
1365				*		
1366				*		LOAD CONDITIONS FOR TYPEWRITER ONLY MESSAGE LEVEL 0
1367				*		
1368	1 004BF	02300040 A	ZSML40	LCFI	4	

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1369                                     PAGE
1370
1371                                     *
1372                                     * COMMON TYPEWRITER/LINE PRINTER OUTPUT ROUTINE
1373                                     *
1373 1 004C0 E8C0000F A ZTWLP BCR,12 *R15
1374 1 004C1 7400001E A STCF ZML1E
1375 1 004C2 35F00421 STW,R15 ZCSRL
1376 1 004C3 6AF0041C BAL,R15 ZSCIR
1377 1 004C4 72F0001E A LB,R15 ZML1E
1378 1 004C5 25F0047C A SAS,R15 -4
1379 1 004C6 4BF00003 A AND,R15 R3
1380 1 004C7 683004CC BCR,3 ZTWLP01
1381 1 004C8 6C000010 A RD,0 X'10'
1382 1 004C9 E9100421 BCS,1 *ZCSRL
1383 1 004CA 21F00004 A ZMSGKEY CI,R15 4
1384 1 004CB E9200421 BCS,2 *ZCSRL SUPPRESSED
1385 1 004CC 35C0001F A ZTWLP01 STW,R12 ZML1F
1386 1 004CD 55C00008 STH,R12 ZTWLP10+2,X1
1387 1 004CE 52C0000C A LH,R12 R12
1388 1 004CF 75C00009 STB,R12 ZTWLP10+3,X3
1389 1 004D0 25C00478 A SAS,R12 -8
1390 1 004D1 75C00007 STB,R12 ZTWLP10+1,X3
1391 1 004D2 201FFFF8 A LI,X1 -8
1392 1 004D3 22C04040 A LI,R12 X'4040'
1393 1 004D4 55C0000C A STH,R12 R12
1394 1 004D5 35C00018 A STW,R12 ZML14+4,X1
1395 1 004D6 63100405 RIR,X1 *-1
1396 1 004D7 22100001 A LI,R1 1
1397 1 004D8 32F00424 LW,R15 ZDKB+1
1398 1 004D9 72C0001E A LB,R12 ZML1E
1399 1 004DA 25C0047A A SAS,R12 -6
1400 1 004DB 33F0000C A MTW,X'F' R12
1401 1 004DC 653004EC BCR,3 ZTW
1402 1 004DD 22F00002 A LI,R15 2
1403 1 004DE 33F0000C A MTW,X'F' R12
1404 1 004DF 643004E3 BCR,3 ZLPD
1405 1 004E0 22F00002 A ZTWLP0 LI,R15 2
    
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1406 1 004E1 31F00424 CW,R15 ZDKB+1
1407 1 004E2 683004EC BCR,3 ZTW
1408 1 004E3 55F2050C ZLPD STH,R15 ZTWLPA,X1
1409 1 004E4 72C60007 LB,R12 ZTWLP10+1,X3
1410 1 004E5 25C0047C A SAS,R12 -4
1411 1 004E6 20C0000C A AI,R12 X'CO'
1412 1 004E7 75C00010 A STB,R12 ZML10
1413 1 004E8 22C0000F A LI,R12 X'F'
1414 1 004E9 46C00007 AND,R12 ZTWLP10+1
1415 1 004EA 3310000C A MTW,1 R12
1416 1 004EB 583004FD B ZTWLP06
1417 1 004EC 55F20500 ZTW STH,R15 ZTWLPA,X1
1418 1 004ED 22C000FC A LI,R12 X'FO'
1419 1 004EE 46C00007 AND,R12 ZTWLP10+1
1420 1 004EF 683004F6 BCR,3 *-7
1421 1 004F0 25C0047C A SAS,R12 -4
1422 1 004F1 22F00015 A LI,R15 X'15'
1423 1 004F2 22100000 A LI,R1 0
1424 1 004F3 75F20010 A STB,R15 ZML10,X1
1425 1 004F4 33100001 A MTW,1 R1
1426 1 004F5 64C004F3 BDR,R12 *-2
1427 1 004F6 22C00028 A LI,R0 DA(ZTWLP11)
1428 1 004F7 72C60007 LB,R12 ZTWLP10+1,X3
1429 1 004F8 25C0057C A SAD,R12 -4
1430 1 004F9 72C0000D A LB,R13 R13
1431 1 004FA 25D0047C A SAS,R13 -4
1432 1 004FB 30C0000D A AW,R12 R13
1433 1 004FC 683004FF BCR,3 *-3
1434 1 004FD 75C60007 ZTWLP08 STB,R12 ZTWLP10+1,X3
1435 1 004FE 22000283 LI,R0 DA(ZTWLP10)
1436 1 004FF 22100001 A LI,R1 1
1437 1 00500 40C00001 A ZTWLPA SIB,R12 1
1438 1 00501 69C00000 BCS,12 *-1
1439 1 00502 C0C0000C TIB,R12 *ZTWLPA
1440 1 00503 69C00002 ECS,12 *-1
1441 1 00504 E8C00421 B *-ZCSRL
1442 1 00506 BRUND 8
    
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1443	1 00500	05000040 A	ZTWLP10	ZFCP	5,X'140'
1444	1 00507	82000000 A		ZFCP	X'82',0
1445	1 00504	05000000 A	ZTWLP11	ZFCP	5,0
1446	1 00509	02000000 A		ZFCP	2,0

1447					PAGE	52
1448						
1449						
1450						
1451						
1452	1 0050A	82B00584	ZEX00	LW,R11	*ZEXPT1	
1453	1 0050B	6AF0039B		BAL,R15	ZSTCR	
1454	1 0050C	6AF0041C	ZEX01	BAL,R15	ZSCIR	
1455	1 0050D	6AF00518		BAL,R15	ZMPTWA	
1456	1 0050E	22F00020 A		LI,R15	X'20'	
1457	1 0050F	6DF01100 A		WD,R15	X'1100'	
1458	1 00510	6DF01500 A		WD,R15	X'1500'	
1459	1 00511	22F00010 A		LI,R15	X'10'	
1460	1 00512	6DF01200 A		WD,R15	X'1200'	
1461	1 00513	60C00022 A		WD,C	X'22'	
1462	1 00514	B2F00583		LW,R15	*ZEXPT0	
1463	1 00515	EAF0000F A		BAL,R15	*R15	
1464						
1465						
1466						
1467	1 00516	6800052C		B	ZRETNI	NORMAL
1468	1 00517	68000537		R	ZRETNI	ABORT/CONDITIONAL

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1469                                     PAGE
1470                                     *
1471                                     * MOVE PARAMETERS TO LABELED WORK AREA P1-P15
1472                                     *
1473 1 00518 F2B00583 ZMPTWA LB,R11 *ZEXPT0
1474 1 00519 22C00000 A LI,R12 0
1475 1 0051A 21B00008 A CI,R11 8
1476 1 0051B 6840051D BCR,4 $+2
1477 1 0051C D2C20584 LH,R12 *ZEXPT1,X1
1478 1 0051D 35C0003C A STW,R12 ZFTF
1479 1 0051E 32E00584 LW,R14 ZEXPT1
1480 1 0051F 21B0000C A CI,R11 X'C'
1481 1 00520 68400522 BCR,4 $+2
1482 1 00521 3310000E A MTW,1 R14
1483 1 00522 25B0047C A SAS,R11 -4
1484 1 00523 227FFFF1 A LI,X7 -15
1485 1 00524 22C00000 A LI,R12 0
1486 1 00525 33F0000B A MTW,X'F' R11
1487 1 00526 69100529 BCS,1 $+3
1488 1 00527 B2C0000E A LW,R12 *R14
1489 1 00528 3310000E A MTW,1 R14
1490 1 00529 35CE0597 STW,R12 P15+1,X7
1491 1 0052A 65700524 BIR,X7 $-6
1492 1 0052B E200000F A B *R15
    
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1493                                     PAGE
1494                                     *
1495                                     * NORMAL RETURN ONE
1496                                     *
1497 1 0052C 6AF0041C ZRETN1 BAL,R15 ZSCIR
1498 1 0052D 6AF00540 BAL,R15 ZBPT1
1499 1 0052E F2B00583 LB,R11 *ZEXPT0
1500 1 0052F 21B00008 A CI,R11 8
1501 1 00530 68400525 BCR,4 $+5
1502 1 00531 B3100584 MTW,1 *ZEXPT1
1503 1 00532 D2B20584 LH,R11 *ZEXPT1,X1
1504 1 00533 D1B00584 CH,R11 *ZEXPT1
1505 1 00534 6820050C BCR,2 ZEX01
1506 1 00535 6AF00398 ZRETN1A BAL,R15 ZADCRC
1507 1 00536 6800050C B ZEX01
1508
1509                                     *
1510                                     * ABORT AND/OR CONDITIONAL RETURN
1511                                     *
1511 1 00537 6AF0041C ZRETN2 BAL,R15 ZSCIR
1512 1 00538 6AF00540 BAL,R15 ZBPT1
1513 1 00539 F2B00583 LB,R11 *ZEXPT0
1514 1 0053A 21B00004 A CI,R11 4
1515 1 0053B 68400525 BCR,4 ZRETN1A
1516 1 0053C B2B00584 LW,R11 *ZEXPT1
1517 1 0053D 68300525 BCR,3 ZRETN1A
1518 1 0053E 6AF00568 BAL,R15 ZLKSET
1519 1 0053F 6800050A B ZEX01
    
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1520                                     PAGE
1521                                     *
1522                                     * CHECK BREAKPOINT NO. 1
1523                                     * RESET CONTINUE EXECUTION OF DIRECTIVES IN CONTROL LINE
1524                                     * SET STOP EXECUTION OF DIRECTIVES RETURN FOR DIRECTIVE INPUT
1525                                     *
1526 1 00540 6000010 A ZBPT1 RD,0 X'10'
1527 1 00541 E280000F A BCR,8 *R15
1528
1529                                     * CONSOLE INTERRUPT INITIATED BY OPERATOR
1530                                     * STOP EXECUTION OF DIRECTIVES RETURN FOR DIRECTIVE INPUT
1531                                     *
1532 1 00542 22F00030 A ZCENINT LI,R15 X'30'
1533 1 00543 60F01300 A WD,R15 X'1300'
1534 1 00544 60F01100 A WD,R15 X'1100'
1535 1 00545 CF000500 HI0,R0 *ZTWLPA
1536 1 00546 6A000183 B ZPC010
    
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1537                                     PAGE
1538                                     *
1539                                     * OPEN LOOP PROCESSOR
1540                                     * CLEARS CURRENT LOOP RE-ITERATION COUNT
1541                                     * ADVANCES TO NEXT OPERATION
1542                                     *
1543 1 00547 08000535 A ZLPPR0 ZFST2 0,2,0,ZRETN1A
1544                                     *
1545                                     * CLOSE LOOP PROCESSOR
1546                                     * CHECKS IF OPEN LOOP RE-ITERATION COUNT COMPLETE
1547                                     * IF COMPLETE ADVANCE TO NEXT OPERATION
1548                                     * IF NOT UPDATE COUNT AND RESTART LOOP
1549                                     *
1550 1 00548 04000549 A ZRPPR0 ZFST2 0,1,0,ZRPPR0
1551 1 00549 B2CC0584 LW,R12 *ZEXPT1
1552 1 0054A F2BC000C A LB,R11 *R12
1553 1 0054B 21BC0008 A CI,R11 8
1554 1 0054C 68400535 BCR,4 ZRETN1A
1555 1 0054D 3310000C A MTW,1 R12
1556 1 0054E B310000C A MTW,1 *R12
1557 1 0054F D2B2000C A LH,R11 *R12,X1
1558 1 00550 D1BC000C A CH,R11 *R12
1559 1 00551 6920053F BCS,2 ZRETN1A
1560 1 00552 B2800584 LW,R11 *ZEXPT1
1561 1 00553 35BC0583 STW,R11 ZEXPT0
1562 1 00554 68000535 B ZRETN1A
    
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1563                                     PAGE
1564
1565                                     *
1566                                     * GO DIRECTIVE PROCESSOR TO CONTINUE EXECUTION OF DIRECTIVES
1567                                     *
1567 1 00565 62000566 ZG0PR0 B ZG0ERR
1568 1 00566 22000108 A ZG0ERR LI,R12 X'105'
1569 1 00567 68000377 B ZSNER
1570 1 00568 22000000 A ZG0PTR LI,R11 0
1571 1 00569 68000508 B ZEX00+1
1572
1573                                     *
1574                                     * END OF LINE PROCESSOR FOR FORWARD SLASH
1575                                     *
1575 1 0056A 04000558 A ZFST2 0,1,0,ZFSPR0
1576 1 0056F 64F00540 ZFSPR0 BAL,R15 ZBPT1
1577 1 0056C 64F00568 BAL,R15 ZLKSET
1578 1 0056F 68000507 B ZEX00
1579
1580                                     *
1581                                     * ABSOLUTE TRANSFER PROCESSOR
1582                                     * SAVES CURRENT EXECUTE TABLE POINTER VALUE AS LINK
1583                                     * RESETS POINTERS TO TRANSFER LOCATION
1584                                     *
1584 1 0056F 0400055F A ZFST2 0,1,0,ZASPR0
1585 1 0056F 6800035C ZASPR0 B ZFSPR0+1
1586
1587                                     *
1588                                     * LINK RETURN TRANSFER PROCESSOR
1589                                     * CHECK IF LINK TABLE EMPTY; IF SO ABORT WITH ERROR MESSAGE
1590                                     * IF NOT REMOVE LAST LINK ENTRY, REDUCE LINK POINTER BY ONE
1591                                     * TRANSFER TO NEW OPERATION
1592                                     *
1592 1 00560 22000111 A ZLKAS LI,R12 X'111'
1593 1 00561 32300570 LW,R11 ZLKPTR
1594 1 00562 3180057C CW,R11 ZLKADR
1595 1 00563 68200377 BCR,2 ZSNER
1596 1 00564 33F00570 MTW,X'F' ZLKPTR
1597 1 00565 82E00570 LW,R11 *ZLKPTR
1598 1 00566 35B00583 STW,R11 ZEXPT0
1599 1 00567 6AC00535 B ZRETN1A
    
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1600                                     PAGE
1601
1602                                     *
1603                                     * PURGE AND/OR INSERT EXECUTE TABLE POINTER AS LINK ADDRESS TO
1604                                     * LINK TABLE, CHECK IF TABLE FULL; IF SO ABORT WITH ERROR MSG
1605                                     *
1605 1 00568 32000570 ZLKSET LW,R12 ZLKPTR
1606 1 00569 32800583 LW,R11 ZEXPT0
1607 1 0056A 33F00J0C A MTW,X'F' R12
1608 1 0056B 31C0057C CW,R12 ZLKADR
1609 1 0056C 69100570 BCS,1 *+4
1610 1 0056D B180000C A CW,R11 *R12
1611 1 0056F 6730056A BCS,3 *+4
1612 1 0056F 35C00570 STW,R12 ZLKPTR
1613 1 00570 B5800570 STW,R11 *ZLKPTR
1614 1 00571 2700011C A LI,R12 X'110'
1615 1 00572 32800570 LW,R11 ZLKPTR
1616 1 00573 37100J0C A MTW,1 R11
1617 1 00574 3180057E CW,R11 ZPMADR
1618 1 00575 64300377 BCR,3 ZSNER
1619 1 00576 33E00570 STW,R11 ZLKPTR
1620 1 00577 E300000F A B *R15
    
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1621                                     PAGE
1622                                     *
1623                                     * COMPUTE MEMORY SIZE AND ASSIGN TABLE LENGTHS AND I/O ADDRESS
1624                                     * EXECUTE TABLE LENGTH = MS/4.96
1625                                     * LINK TABLE LENGTH = MS/4.16
1626                                     * PLACE MARKER TABLE LENGTH = MS/4.16
1627                                     * THIS CODE IS THEN OVERLAYED BY TRANSLATOR
1628                                     * REMAINDER OF AREA AVAILABLE AS INPUT/OUTPUT AREA
1629                                     *
1630 1 00575 00020FFF A ZEMS DATA X'20FFF' LAST MEMORY LOCATION
1631 1 0057A BBUND 8
1632 1 0057A 0E0008AC ZCMS LPSD,0 ZCMST40+2
1633 1 00573 32A0007F LW,R10 ZEMS
1634 1 0057C 38A008A8 SW,R10 ZCMS6
1635 1 0057D 35A0077F STW,R10 ZEMS
1636 1 0057E B5A000CA A STW,R10 *R10
1637 1 0057F 331000CA A MTW,1 R10
1638 1 00580 25A00478 A GAS,R10 =8
1639 1 00581 35A00008 A STW,R10 R11
1640 1 00582 25A00408 A SAS,R10 3
1641 1 00583 35A00181 STW,R10 ZI0ADR
1642 1 00584 30A0008A AAW,R10 ZEXADR
1643 1 00585 35A00080 STW,R10 ZMFRIBAD
1644 1 00586 66A00081 AAW,R10 ZI0ADR
1645 1 00587 38A00008 A SW,R10 R11
1646 1 00588 35A0007E STW,R10 ZPMADR
1647 1 00589 35A0007F STW,R10 ZPMPTR
1648 1 0058A 38A00008 A SW,R10 R11
1649 1 0058B 35A0007C STW,R10 ZLKADR
1650 1 0058C 35A0007D STW,R10 ZLKPTR
1651 1 0058D 32A00075 LW,R10 ZEMS
1652 1 0058E 38A00081 A SW,R10 ZI0ADR
1653 1 0058F 35A00082 STW,R10 ZI0WDS
1654 1 00590 22E00040 A LI,R11 X'40'
1655 1 00591 32A00078 LW,R10 ZEMS
1656 1 00592 38A00008 A SW,R10 R11
1657 1 00593 35A0007A STW,R10 ZLBADR
    
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1658 1 00594 35A00073 STW,R10 ZLBPTR
1659 1 00595 32A000A7 LW,R10 ZCMS5
1660 1 00596 35A0004C A STW,R10 64
1661 1 00597 227FFF2C A LI,X7 -224
1662 1 00598 32A0005F LW,R10 ZIL5F
1663 1 00599 331000CA A MTW,1 R10
1664 1 0059A 35A00140 STW,R10 ZIL5F+225,X7
1665 1 0059B 65700599 BIR,X7 8+2
1666 1 0059C 6AF0041C BAL,R15 ZSCIR
1667 1 0059D 32B0083A LW,R11 ZEXADR
1668 1 0059E 6AF00390 BAL,R15 ZSTPTR
1669 1 0059F 68C000E8 B BEGINKSR
1670 1 005A0 32C000A3 LW,R12 ZCMS2
1671 1 005A1 6AF004BF BAL,R15 ZSML40
1672 1 005A2 68000183 B ZPC010
1673 1 005A3 200C1690 A ZCMS2 ZFMW 2,0,12,BA(ZCMS3)
1674 1 005A4 70C4C3D7 A ZCMS3 DATA X'70C4C3D7'
1675 1 005A5 40E50540 A DATA X'40E50540'
1676 1 005A6 F0F1C17D A DATA X'F0F1C17D'
1677 1 005A7 0F000140 ZCMS5 XPSD,0 ZT40
1678 1 005A8 00001000 A ZCMS6 DATA X'1000'
1679 1 005AA BBUND 8
1680 1 005AA 00000000 A ZCMST40 DATA 0
1681 1 005AB 07000000 A DATA 0
1682 1 005AC 00000078 DATA ZCMS+1
1683 1 005AD 00000000 A DATA 0
    
```

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1684
1685
1686
1687
1688
1689 1 0057A ZLBADR EQU ZCMS OPEN LOOP ADDRESS
1690 1 0057B ZLBPTR EQU ZLBADR+1 AND POINTER
1691 1 0057C ZLKADR EQU ZLBPTR+1 LINK TABLE ADDRESS
1692 1 0057D ZLKPTR EQU ZLKADR+1 AND POINTER
1693 1 0057E ZPMADR EQU ZLKPTR+1 PLACE MARKER ADDRESS
1694 1 0057F ZPMPTR EQU ZPMADR+1 AND POINTER
1695 1 00580 ZMFRI0AD EQU ZPMPTR+1 MAIN FETCH INPUT/OUTPUT ADDRESS
1696 1 00581 ZI0ADR EQU ZMFRI0AD+1 INPUT/OUTPUT BASE ADDRESS
1697 1 00582 ZI0WDS EQU ZI0ADR+1 AND NUMBER OF WORDS
1698 1 00583 ZEXPT0 EQU ZI0WDS+1 EXECUTE TABLE BASE
1699 1 00584 ZEXPT1 EQU ZEXPT0+1 AND VARIABLE POINTERS
1700 1 00585 ZTEMP EQU ZEXPT1+1 TEMPORARY
1701 1 00586 ZTEMP1 EQU ZTEMP+1 LOCATIONS
1702 1 00587 P0 EQU ZTEMP1+1
1703 1 00588 P1 EQU P0+1 LABELED
1704 1 00589 P2 EQU P1+1 PARAMETER
1705 1 0058A P3 EQU P2+1 AREA FOR
1706 1 0058B P4 EQU P3+1 SUBROUTINES
1707 1 0058C P5 EQU P4+1
1708 1 0058D P6 EQU P5+1
1709 1 0058E P7 EQU P6+1
1710 1 0058F P8 EQU P7+1
1711 1 00590 P9 EQU P8+1
1712 1 00591 P10 EQU P9+1
1713 1 00592 P11 EQU P10+1
1714 1 00593 P12 EQU P11+1
1715 1 00594 P13 EQU P12+1
1716 1 00595 P14 EQU P13+1
1717 1 00596 P15 EQU P14+1
1718 1 00597 PX EQU P15+1
1719 1 00598 ZDMPA EQU PX+1
1720 1 005AE RES 10 DUMP
AREA
    
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1721
1722
1723
1724
1725
1726
1727
1728
1729 1 00588 ZSRBEG EQU $
1730 1 00589 00C3D3D9 A DATA X'C3D3D9' CLR
1731 1 0058A 09C5E3D5 A DATA X'D9C5E3D5' RETN
1732 1 0058B 0000C7D6 A DATA X'C7D6' 3B
1733 1 0058C 00C4D2C2 A DATA X'C4D2C2' DKB
1734 1 0058D 00C4C3D9 A DATA X'C4C3D9' DCR
1735 1 0058E 00E2D4D3 A DATA X'E2D4D3' SML
1736 1 0058F 00E2D4C4 A DATA X'E2D4C4' SMD
1737 1 00590 00C1D3E3 A DATA X'C1D3E3' ALT
1738 1 00591 00C4D4C7 A DATA X'C4D4C7' DMP
1739 1 00592 00E3E8D7 A DATA C'TYP'
1740 1 00593 00C3D3E3 A DATA X'C3D3E3' HLT
1741 1 00594 00C8C9D6 A DATA C'H10'
1742 1 00595 000D9D2 A DATA C'RK'
1743 1 00596 00D9D2C3 A DATA C'RK'
1744 1 00597 E3E8D7C5 A DATA C'TYPE'
1745 1 00598 00E2C9D6 A DATA C'S10'
1746 1 00599 00E3C9D6 A DATA C'T10'
1747 1 0059A 00E3C4E5 A DATA C'TD1'
1748 1 0059B 00000D8 A DATA C'G'
1749 1 0059C E4D5C9E3 A DATA C'UNIT'
1750 1 0059D C5C3C8D6 A DATA C'ECH0'
1751 1 0059E D4D6C4C5 A DATA C'M8DE'
1752 1 0059F C3D6D4C3 A DATA C'8MC'
1753 1 005D0 00C1E2D9 A DATA C'ASR'
1754 1 005D1 C0000C18 ZSRTBL EQU $
ZSRLEN EQU $-ZSRBEG
    
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1755                                     PAGE
1756                                     *
1757                                     * SUBROUTINE ADDRESS TABLE WITH CONTRBL INFORMATION
1758                                     *
1759                                     * BITS 0-3      PARAMETER COUNT
1760                                     * BITS 4-5      RE-ITERATION/IDENTIFIER CODE
1761                                     *                00 NO LEADING DECIMAL SUBFIELD PERMITTED
1762                                     *                01 PLACE MARKER IDENTIFIER REQUEST
1763                                     *                10 REITERATION COUNT
1764                                     *                11 ILLEGAL
1765                                     * BITS 6-7      EXECUTION MODE KEYS
1766                                     *                00 UNCONDITIONAL
1767                                     *                01 CONTRBL LINE MODE ONLY
1768                                     *                10 IMMEDIATE MODE ONLY
1769                                     *                11 OPTI0NAL CONTRBL OR IMMEDIATE MODE
1770                                     * BITS 8-14     RESERVED
1771                                     * BITS 15-31    SUBROUTINE ADDRESS
1772                                     *
1773 1 00500 0000019A A ZFSAT 0,0,0,0,ZPC200 CLR
1774 1 00501 01000542 A ZFSAT 0,0,1,0,ZC0NINT RETN
1775 1 00502 02000553 A ZFSAT 0,0,2,0,ZG0PR0 38
1776 1 00503 12000423 A ZFSAT 1,0,2,0,ZDKB DKB
1777 1 00504 12000426 A ZFSAT 1,0,2,0,ZDCR DCR
1778 1 00505 13000430 A ZFSAT 1,0,3,0,ZSML SML
1779 1 00506 13000435 A ZFSAT 1,0,3,0,ZSYD SMD
1780 1 00507 00000449 A ZFSAT 0,0,0,0,ZALT ALT
1781 1 00508 33000463 A ZFSAT 3,0,3,0,ZDMP DMP
1782 1 00509 3300045E A ZFSAT 3,0,3,0,ZTYP TYP
1783 1 0050A 1700043A A ZFSAT 1,1,3,0,ZHLT HLT
1784 1 0050B 080006E1 A ZFSAT 0,2,3,0,HALTI0 HI0
1785 1 0050C 0800067E A ZFSAT 0,2,3,0,READKEY
1786 1 0050D 08000685 A ZFSAT 0,2,3,0,READKEYC
1787 1 0050E 04000687 A ZFSAT 0,2,3,0,TYPE
1788 1 0050F 1800068E A ZFSAT 1,2,3,0,SI0
1789 1 00510 18000699 A ZFSAT 1,2,3,0,TI0
1790 1 00511 180006A4 A ZFSAT 1,2,3,0,TDV
1791 1 00512 17000649 A ZFSAT 1,1,3,0,Q000
    
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1792 1 005E3 22000676 A ZFSAT 2,0,2,0,UNIT00
1793 1 005E4 0300071A A ZFSAT 0,0,3,0,ECH0
1794 1 005E5 020005E8 A ZFSAT 0,0,2,0,BEGINKSR
1795 1 005E6 08000730 A ZFSAT 0,2,3,0,C0MCHAIN
1796 1 005E7 5800073B A ZFSAT 5,2,3,0,ASR35 ASR ROUTINE
1797 1 005E8 ZSRADR EQU $
    
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1798                                     PAGE
1799                                     *
1800                                     * SIGMA 7/5 K S R BASIC DECODING DIAGNOSTIC
1801                                     *
1802                                     * DAN STÖTTLEMYRE
1803                                     *
1804                                     *
1805 1 005E8 0E000704 BEGINKSR LPSD,0 PSDW01
1806 1 005E9 22100010 A LI,1 X'10'
1807 1 005EA 60101200 A WD,1 (1,1**9)
1808 1 005EB 32100702 LW,1 XPSD06
1809 1 005EC 35100046 A STW,1 70 WATCH DOG TIMER TRAP
1810 1 005ED 32100703 LW,1 XPSD08 I/O INTERRUPT
1811 1 005EE 35100050 A STW,1 92
1812 1 005EF 32100704 LW,1 XPSD09 CONSOLE INTERRUPT
1813 1 005F0 35100050 A STW,1 93
1814 1 005F1 32100707 LW,1 MTWI
1815 1 005F2 35100055 A STW,1 85
1816 1 005F3 32100708 LW,1 XPSD13
1817 1 005F4 35100058 A STW,1 91
1818 1 005F5 60000000 A RESTART RD,0 0 RETURN
1819 1 005F6 68100724 BCR,1 KSRAUT0 SENSE SWITCH 4 SET
1820 1 005F7 02200000 A LCI 0 YES
1821 1 005F8 240007E2 LM,0 ZERES
    
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1822                                     PAGE
1823 1 005F9 320007F3 RETURN LW,0 I0PDC
1824 1 005FA 721007F9 LB,1 BYTEIN
1825 1 005FB 002007F3 TI0,2 *I0PDC
1826 1 005FC 702007F4 LC CCSET
1827 1 005FD 2E000000 A WAIT WAIT FOR I0P AND D/C ID
1828 1 005FE 350007F3 STW,0 I0PDC
1829 1 005FF 751007F2 STB,1 BYTEOUT
1830 1 00600 751007F9 STB,1 BYTEIN
1831 1 00601 02200000 A LCI 0
1832 1 00602 240007E2 LM,0 ZERES
1833 1 00603 350007F4 STW,0 CCSET
1834 1 00604 22900000 A LI,0 X'130'
1835 1 00605 60901200 A WD,0 (1,1**9)
1836 1 00606 60000007 A WD,0 (0,X'137')
1837 1 00607 60000002 A WD,0 (0,X'122')
1838 1 00608 22000000 A RETURN1 LI,0 0
1839 1 00609 350007F8 STW,0 INRUPFLG
1840 1 0060A 350007F4 STW,0 CCSET
1841 1 0060B 000007F3 TI0,13 *I0PDC
1842 1 0060C 31000000 A CW,13 L(6**28)
1843 1 0060D 6940060B BCS,4 *-2
1844 1 0060E 60000000 A RD,0 0
1845 1 0060F 69800612 BCS,6 *-3
1846 1 00610 6AF00626 FAL,15 BUTPUT
1847 1 00611 68000613 E *-2
1848 1 00612 6AF0062F BAL,15 INPUT
1849 1 00613 328007F5 LW,8 DELAY
1850 1 00614 358007F6 STW,8 COUNTER
1851 1 00615 22801040 A LI,8 X'1040'
1852 1 00616 60801200 A WD,8 (1,X'1200')
1853 1 00617 60800024 A WD,8 (0,X'1024')
1854 1 00618 328007F6 LW,8 COUNTER
1855 1 00619 69300618 BCS,3 *-1
1856 1 0061A 22801040 A LI,8 X'1040'
1857 1 0061B 60801100 A WD,8 (1,X'1100')
1858 1 0061C 328007F8 LW,8 INRUPFLG
    
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1859	1 0061D	68300621	BCR,3	TIMERR	
1860	1 0061E	6CC00000 A	RD,C	0	SENSE SWITCH 2
1861	1 0061F	69400608	BCS,4	RETURN1	
1862	1 00620	680005F9	B	RETURN	STEP OPERATION

1863				PAGE	
1864	1 00621	3290083F	TIMERR	LW,9	L(1**28)
1865	1 00622	479007F4		STS,9	CCSET
1866	1 00623	32900840		LW,9	L(X'20')
1867	1 00624	6D901100 A		WD,9	(1,1**8)
1868	1 00625	680005F9		B	RETURN
1869			*		
1870	1 00626	220003E1	OUTPUT	LI,0	DA(C9MPR05)
1871	1 00627	CC2007F3		SI0,2	*I0PDC
1872	1 00628	69C0062A		BCS,12	*+2
1873	1 00629	E800000F A		B	*15
1874			*		
1875	1 0062A	32900841	STATER	LW,9	L(1**29)
1876	1 0062B	479007F4		STS,9	CCSET
1877	1 0062C	32900840		LW,9	L(X'20')
1878	1 0062D	6D901100 A		WD,9	(1,1**8)
1879	1 0062E	680005F9		B	RETURN
1880			*		
1881	1 0062F	220003E2	INPUT	LI,0	DA(C9MPR06)
1882	1 00630	CC2007F3		SI0,2	*I0PDC
1883	1 00631	69C0062A		BCS,12	STATER
1884	1 00632	2E000000 A		WAIT	
1885	1 00633	E800000F A		B	*15
1886			*		

BRANCH FOR ERROR

1887				PAGE	
1888	1 0063+	32900342	WATCHDOG	LW,9	L(8**28)
1889	1 00635	479007F4		STS,9	CCSET
1890	1 00636	32600796		LW,6	PSDW07
1891	1 00637	22900320 A	DISABLE	LI,9	X'20'
1892	1 00638	60901100 A		WD,9	(1,1**8)
1893	1 00639	680003F9		B	RETURN
1894			*		
1895	1 0063A	22900001 A	IBINT	LI,9	1
1896	1 0063B	350007F8		STW,9	INRUPFLG
1897	1 0063C	65400100 A		AI8,4	0
1898	1 0063D	32900843		LW,9	L(1**19)
1899	1 0063E	31900004 A		CW,9	4
1900	1 0063F	67400641		BCS,4	\$+2
1901	1 00640	0E30079A		LPSD,3	PSDW09
1902	1 00641	32900844		LW,9	L(4**28)
1903	1 00642	479007F4		STS,9	CCSET
1904	1 00643	0E20079A		LPSD,2	PSDW09
1905			*		
1906	1 00644	0E3007A4	CONSOLE	LPSD,3	PSDW11+2
1907			*		
1908	1 00645	22900100 A	CTRINT	LI,9	0
1909	1 00646	359007F6		STW,9	COUNTER
1910	1 00647	0E2007AE		LPSD,2	PSDW15

1911				PAGE	
1912			*		
1913	1 00648		BRUND	4	
1914			*		
1915			*		
1916	1 00648	40000000 A	DATA	4**28	
1917			*		
1918			*		
1919	1 00649	22000000 A	GG00	LI,0	0
1920	1 0064A	C00007F3		TI0,13	*10PDC
1921	1 0064B	74000002 A		STCF	2
1922	1 0064C	C16007F3		TDV,11	*10PDC
1923	1 0064D	25800061 A		SLS,11	-31
1924	1 0064E	2730000F A		LI,3	X'F'
1925	1 0064F	25200204 A		SCS,2	4
1926	1 00650	25200002 A		SLS,2	2
1927	1 00651	47B00002 A		STS,11	2
1928	1 00652	47200000 A		STS,2	13
1929	1 00653	32A00588		LW,10	F1
1930	1 00654	2270000F A		LI,7	15
1931	1 00655	21A00001 A	GG01	CI,10	1
1932	1 00656	6040065E		BCS,4	GG03
1933	1 00657	25A0007F A	GG02	SLS,10	-1
1934	1 00658	33E00007 A		MTW,14	7
1935	1 00659	68100655		BCR,1	GG01
1936	1 0065A	33000000 A		MTW,0	0
1937	1 0065B	E830000F A		BCR,3	*15
1938	1 0065C	20F00001 A		AI,15	1
1939	1 0065D	E800000F A		B	*15
1940	1 0065E	323E0664	GG03	LW,3	BITAFLE,7
1941	1 0065F	322E0663		LW,2	BITAFLE-1,7
1942	1 00660	45200000 A		CS,2	13
1943	1 00661	68300657		BCR,3	GG02
1944	1 00662	280FFFFF A		LI,0	-1
1945	1 00663	68000657		B	GG02

TAKE PLACEMARKER BRANCH  
CHECK BITS  
MASK BITS

1946				PAGE	
1947	1 00664	00000000 A	RITABLE	DATA	0
1948	1 00665	00000001 A		DATA	1
1949	1 00666	00000000 A		DATA	0
1950	1 00667	60000000 A		DATA	6**28
1951	1 00668	00000000 A		DATA	0
1952	1 00669	06000000 A		DATA	6**24
1953	1 0066A	00000000 A		DATA	0
1954	1 0066B	08000000 A		DATA	1**27
1955	1 0066C	00000000 A		DATA	0
1956	1 0066D	00000004 A		DATA	1**2
1957	1 0066E	00000000 A		DATA	0
1958	1 0066F	00000008 A		DATA	1**3
1959	1 00670	00000000 A		DATA	0
1960	1 00671	00400000 A		DATA	1**22
1961	1 00672	00000000 A		DATA	0
1962	1 00673	80000000 A		DATA	8**28
1963			*		

1964				PAGE	
1965	1 00674			BEUND	4
1966			*		
1967	1 00674	30000000 A		DATA	3**28
1968	1 00675	40000000 A		DATA	4**28
1969			*		
1970			*		
1971			*		
1972			*		
1973	1 00676	22300007 A	UNIT00	LI,3	7
1974	1 00677	4A300588		LS,3	P1
1975	1 00678	25300008 A		SLS,3	8
1976	1 00679	225000FF A		LI,5	X'FF'
1977	1 0067A	4A400589		LS,4	P2
1978	1 0067B	47400003 A		STS,4	3
1979	1 0067C	3B3007F3		STW,3	I9PDC
1980	1 0067D	E800000F A		B	*15
1981			*		
1982			*		
1983	1 0067E	220003DD	READKEY	LI,0	DA(C0MPRO1)
1984	1 0067F	6AE0072B		BAL,14	I0IARM
1985	1 00680	CC0007F3		SI0,0	*I9PDC
1986	1 00681	69C006E1		BCS,12	HALTI9
1987	1 00682	2FC00000 A		WAIT	
1988	1 00683	6AE006DB		BAL,14	SETLGTH
1989	1 00684	EAC0000F A		B	*15
1990			*		
1991	1 00685	220003DE	READKEYC	LI,0	DA(C0MPRO2)
1992	1 00686	5800067F		B	READKEY+1
1993			*		
1994	1 00687	220003DF	TYPE	LI,0	DA(C0MPRO3)
1995	1 00688	6AE0072B		BAL,14	I0IARM
1996	1 00689	CC0007F3		SI0,0	*I9PDC
1997	1 0068A	69C006E1		BCS,12	HALTI9
1998	1 0068B	2FC00000 A		WAIT	
1999	1 0068C	EAC0000F A		B	*15
2000			*		

P1-OCTAL-I0P N0.  
P2-HEX-D/C N0.

2001	1 0068D	40000000 A		DATA	***28
2002			*		
2003	1 0068E	220003E0	SIB	LI,0	DA(C0MPRO4)
2004	1 0068F	32300245		LW,3	L(X'FF'***24)
2005	1 00690	32200588		LW,2	P1
2006	1 00691	25200018 A		SLS,2	24
2007	1 00692	472007C0		STS,2	C0MPRO+
2008	1 00693	6AE0072B		BAL,14	I0IARM
2009	1 00694	CC0007F3		SIS,0	*I0PDC
2010	1 00695	69C005E1		BCS,12	HALTI0
2011	1 00696	2E000300 A		WAIT	
2012	1 00697	E800000F A		B	*15
2013			*		
2014	1 00698	40000000 A		DATA	***28
2015			*		
2016	1 00699	C07007F3	TIB	TIS,7	*I0PDC
2017	1 0069A	74000717		STCF	CCSAV
2018	1 0069B	33000588		MTW,0	P1
2019	1 0069C	E830000F A		BCR,3	*15
2020	1 0069D	35700008 A		STW,7	8
2021	1 0069E	27700004 A		LI,7	4
2022	1 0069F	6AE006CD		BAL,14	HEXALF
2023	1 006A0	6AE006FC		BAL,14	STATUSTY
2024	1 006A1	E3C9D640 A		TEXT	'TIB '
2025	1 006A2	E800000F A		B	*15
2026			*		
2027	1 006A3	40000000 A		DATA	***28
2028			*		
2029	1 006A4	CE7007F3	TDV	TDV,7	*I0PDC
2030	1 006A5	74000717		STCF	CCSAV
2031	1 006A6	33000588		MTW,0	P1
2032	1 006A7	E830000F A		BCR,3	*15
2033	1 006A8	35700008 A		STW,7	8
2034	1 006A9	27700004 A		LI,7	4
2035	1 006AA	6AE006CD		BAL,14	HEXALF
2036	1 006AB	6AE006FC		BAL,14	STATUSTY
2037	1 006AC	E3C4E640 A		TEXT	'TDV '

2038	1 006AD	E800000F A		B	*15
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				PAGE	
2039					
2040					
2041	1 006AE	02200000 A	* I0INTRPT	LCI	0
2042	1 006AF	220007CE		STM,0	TEMPSAV
2043	1 006AC	6E800000 A		AIB,8	0
2044	1 006B1	74000717		STCF	CCSAV
2045	1 006B2	32500843		LW,5	L(1**19)
2046	1 006B3	31500008 A		CW,5	8
2047	1 006B4	694006B8		BCS,4	*++
2048	1 006B5	02200000 A		LCI	0
2049	1 006B6	2AC007CE		LM,0	TEMPSAV
2050	1 006B7	0F3007A6		LPSD,3	PSDW12
2051	1 006B8	2F000020 A		LI,5	X'20'
2052	1 006B9	6F001100 A		WD,5	(1,1***)
2053	1 006EA	0F3007AC		LPSD,3	PSDW14
2054	1 006EB	E405E4E2 A	TEXT01	TEXT	'UNUSUAL CONDITION INTERRUPT '
	1 006EC	E4C10340 A			
	1 006ED	C5C6D1C4 A			
	1 006EE	C9E3C9D6 A			
	1 006EF	154CC9D5 A			
	1 006F0	E7C5B4D9 A			
	1 006F1	E4C7E340 A			
2055	1 006F2	101C1AEC A	TYPEWD02	ZFM*	1,0,28,BA(TEXT01)
2056	1 006F3	37C004C2	I0ICLEAR	LW,12	TYPEWD02
2057	1 006F4	02200000 A		LCI	5
2058	1 006F5	6AF004C0		BAL,15	TYPE0
2059	1 006F6	22700004 A		LI,7	4
2060	1 006F7	6AE006CD		BAL,14	HEXALF
2061	1 006F8	6AE006FC		BAL,14	STATUSTY
2062	1 006F9	C1C9D640 A		TEXT	'AIB '
2063	1 006FA	02200000 A		LCI	0
2064	1 006FB	2AC007CE		LM,0	TEMPSAV
2065	1 006FC	0E0007A6		LPSD,0	PSDW12

				PAGE	
2066					
2067					
2068	1 006CD	32900846	* HEXALF	LW,9	L(X'F')
2069	1 006CE	32300847		LW,11	L(X'40404040')
2070	1 006CF	32A00847		LW,10	L(X'40404040')
2071	1 006D0	47800008 A	NXTH2A	STS,8	11
2072	1 006D1	25A00378 A		SCD,10	-8
2073	1 006D2	45800848		CS,8	L(X'9')
2074	1 006D3	692006D8		BGS,2	GRTH9
2075	1 006D4	49A00849		BR,10	L(X'F'**28)
2076	1 006D5	2560007C A	STNXTH	SLS,8	-4
2077	1 006D6	64700600		BDR,7	NXTH2A
2078	1 006D7	E800000E A		B	*14
2079	1 006D8	38A0094A	GRTH9	SW,10	L(X'9'**24)
2080	1 006D9	49A0084B		RR,1C	L(0)
2081	1 006DA	680006D5		B	STNXTH
2082			*		
2083			*		
2084	1 006DB	003007F3	SETLGTH	TIB,3	*19PDC
2085	1 006DC	4830084C		EOR,3	L(X'FF')
2086	1 006DD	35300002 A		STW,3	2
2087	1 006DE	223000FF A		LI,3	X'FF'
2088	1 006DF	472007BF		STS,2	CBMPRO3+1
2089	1 006E0	E900000E A		B	*14
2090			*		

2091				PAGE	
2092	1 006E1	3310000F A	HALT10	MTW,1	15
2093	1 006E2	02200000 A		LCI	0
2094	1 006E3	280007CE		STM,0	TEMPSAV
2095	1 006E4	CF7007F3		H10,7	*10PDC
2096	1 006E5	74000717		STCF	CCSAV
2097	1 006E6	E840000F A		BCR,4	*15
2098	1 006E7	22900020 A		LI,9	X'20'
2099	1 006E8	60901100 A		WD,9	(1,1**8)
2100	1 006E9	32C006F4		LW,12	TYPEWDC3
2101	1 006EA	02200050 A		LCI	5
2102	1 006EB	6AF004C0		BAL,15	TYPE0
2103	1 006EC	35700008 A		STW,7	8
2104	1 006ED	22700004 A		LI,7	4
2105	1 006EE	6AE006CD		BAL,14	HEXALF
2106	1 006EF	6AE006FC		BAL,14	STATUSTY
2107	1 006F0	C8C90640 A		TEXT	'H10 '
2108	1 006F1	02200000 A		LCI	0
2109	1 006F2	2A0007CE		LM,0	TEMPSAV
2110	1 006F3	E8C0000F A		R	*15
2111	1 006F4	101C1B04 A	TYPEW03	ZFMW	1,0,28,BA(TEXT02)
2112	1 006F5	E2C90640 A	TEXT02	TEXT	'S10 UNSUCCESSFUL-H10 ISSUED '
	1 006F6	E4D5E2E4 A			
	1 006F7	C3C3C5E2 A			
	1 006F8	E2C6E4D3 A			
	1 006F9	60C8C9D6 A			
	1 006FA	43C9E2E2 A			
	1 006FB	E4C5C440 A			

2113				PAGE	
2114			RETURNX	EQU	RETSAV+1
2115	1 006FC	35F007DE	STATUSTY	STW,15	RETSAV
2116	1 006FD	35E007DF		STW,14	RETSAV+1
2117	1 006FE	331007DF		MTW,1	RETSAV+1
2118	1 006FF	B2D0000E A		LW,13	*14
2119	1 00700	35D0058A		STW,13	P3
2120	1 00701	02200020 A		LCI	2
2121	1 00702	2AC007E0		LM,12	STATMSG
2122	1 00703	28C0058B		STM,12	P4
2123	1 00704	35A0058D		STW,10	P6
2124	1 00705	35B0058E		STW,11	P7
2125	1 00706	72800717		LB,8	CCSAV
2126	1 00707	2580007C A		SLS,8	*4
2127	1 00708	22700001 A		LI,7	1
2128	1 00709	6AE006CD		BAL,14	HEXALF
2129	1 0070A	25AC0068 A		SLS,10	*24
2130	1 0070B	49A00716		BR,10	TEXT03
2131	1 0070C	35A0058F		STW,10	P8
2132	1 0070D	32C00715		LW,12	TYPEWDC1
2133	1 0070E	02200050 A		LCI	5
2134	1 0070F	6AF004C0		BAL,15	TYPE0
2135	1 00710	32C00718		LW,12	TYPEWDC4
2136	1 00711	02200050 A		LCI	5
2137	1 00712	6AF004C0		BAL,15	TYPE0
2138	1 00713	32F007DE		LW,15	RETSAV
2139	1 00714	E8C007DF		B	*RETURNX
2140	1 004C0		TYPE0	EQU	ZTWLP
2141	1 00715	10181628 A	TYPEW01	ZFMW	1,0,24,BA(P3)
2142	1 00716	C3C37E00 A	TEXT03	DATA	C'CC=']'
2143	1 00717	00000000 A	CCSAV	DATA	0
2144	1 00718	00041C64 A	TYPEW04	ZFMW	0,0,4,BA(SPCR)
2145	1 00719	40404015 A	SPCR	DATA	C' ]'

2146				PAGE	
2147	1 0071A	64E0072B	ECHO	BAL,14	I0IARM
2148	1 0071B	220003E3		LI,0	DA(C0MPR07)
2149	1 0071C	CC0007F3		SI0,0	*I0PDC
2150	1 0071D	69C006E1		BCS,12	HALTI0
2151	1 0071E	2F000000 A		WAIT	
2152	1 0071F	220003E4		LI,0	DA(C0MPR08)
2153	1 00720	CC0007F3		SI0,0	*I0PDC
2154	1 00721	69C006E1		BCS,12	HALTI0
2155	1 00722	2E000000 A		WAIT	
2156	1 00723	E800000F A		B	*15
2157			*		
2158	1 00724	32A007B5	KSRALT0	LW,10	XPSD10
2159	1 00725	35A0005D A		STW,10	X'5D'
2160	1 00726	32A007B6		LW,10	XPSD11
2161	1 00727	35A00046 A		STW,10	X'46'
2162	1 00728	32A007B7		LW,10	XPSD12
2163	1 00729	35A0005C A		STW,10	X'5C'
2164	1 0072A	680001B3		B	ZPC010
2165			*		
2166	1 0072B	22D00020 A	I0IARM	LI,13	X'20'
2167	1 0072C	60D01200 A		WD,13	(1,1**3)
2168	1 0072D	60D00037 A		WD,0	(0,X'37')
2169	1 0072E	60D00022 A		WD,0	(0,X'22')
2170	1 0072F	E800000E A		B	*14
2171			*		
2172	1 00730	6AE0072B	COMCHAIN	BAL,14	I0IARM
2173	1 00731	220003E5		LI,0	DA(C0MPR09)
2174	1 00732	CC0007F3		SI0,0	*I0PDC
2175	1 00733	69C006E1		BCS,12	HALTI0
2176	1 00734	2E000000 A		WAIT	
2177	1 00735	E800000F A		B	*15
2178			*		

2179				PAGE		
2180			*	SIGMA ASR COMPATIBILITY TEST ROUTINE		
2181	1 00736	20000000 A	DATA	X'20000000',X'40000000',X'40000000'		
	1 00737	40000000 A				
	1 00738	40000000 A				
2182	1 00739	40000000 A	DATA	X'40000000',X'40000000'		
	1 0073A	40000000 A				
2183	1 0073B	5E20779	ASR35	STH,15	ASRLINK,1	SAVE DCP LINK
2184	1 0073C	22B000FF A		LI,11	X'FF'	TRUNCATE BYTE COUNT
2185	1 0073D	48B00588		AND,11	P1	AT 255
2186	1 0073E	69200740		BCS,2	*+2	IF BYTE COUNT NOT POSITIVE
2187	1 0073F	22B00001 A		LI,11	1	MAKE IT 1
2188	1 00740	35B007B8		STW,11	LIST+1	SET BYTE COUNT IN CP
2189	1 00741	35B007B0		STW,11	LIST+3	
2190	1 00742	35B007BF		STW,11	LIST+5	
2191	1 00743	35B00791		STW,11	LIST+7	
2192	1 00744	22D00008 A		LI,13	X'08'	
2193	1 00745	75D00791		STB,13	LIST+7	SET HTE IN LAST CP
2194	1 00746	22900028 A		LI,9	X'28'	
2195	1 00747	32800589		LW,8	P2	
2196	1 00748	7580078A		STB,8	LIST	SET 1ST ORDER
2197	1 00749	3280058A		LW,8	P3	LOAD 2ND ORDER
2198	1 0074A	68300756		BCR,3	ASRG01	IF 2ND ORDER IS 0,BRANCH
2199	1 0074B	7590078B		STB,9	LIST+1	SET CC AND HTE IN 1ST CP
2200	1 0074C	7580078C		STB,8	LIST+2	SET 2ND ORDER
2201	1 0074D	3280058B		LW,8	P4	LOAD 3RD ORDER
2202	1 0074E	68300758		BCR,3	ASRG02	IF 3RD ORDER IS 0,BRANCH
2203	1 0074F	7590078D		STB,9	LIST+3	SET CC AND HTE IN 2ND CP
2204	1 00750	7580078E		STB,8	LIST+4	SET 3RD ORDER
2205	1 00751	3280058C		LW,8	P5	LOAD 4TH ORDER
2206	1 00752	6830075A		BCR,3	ASRG03	IF 4TH ORDER IS 0,BRANCH
2207	1 00753	7590078F		STB,9	LIST+5	SET CC AND HTE IN 3RD CP
2208	1 00754	75800790		STB,8	LIST+6	SET 4TH ORDER
2209	1 00755	68000758		B	ASRTEST	
2210	1 00756	75D0078B	ASRG01	STB,13	LIST+1	SET HTE IN 1ST CP
2211	1 00757	68000758		B	ASRTEST	
2212	1 00758	75D0078D	ASRG02	STB,13	LIST+3	SET HTE IN 2ND CP

2213	1 00759	6800073B		B	ASRTEST	
2214	1 0075A	7500073F	ASRG03	STB,13	LIST*5	SET HTE IN 3RD CP
2215	1 0075B	220003C5	ASRTEST	LI,0	DA(LIST)	
2216	1 0075C	080007F3		TIO,8	*UNIT	
2217	1 0075D	6900075C		BCS,12	*-1	
2218	1 0075E	CC0007F3		SIO,8	*UNIT	
2219	1 0075F	6900075E		BCS,12	*-1	
2220	1 00760	008007F3		TIO,8	*UNIT	
2221	1 00761	69000760		BCS,12	*-1	
2222	1 00762	CEA007F3		TDV,10	*UNIT	
2223	1 00763	31900792		CW,9	MASK1	
2224	1 00764	52400768		BCS,4	ASRERR0R	ERR0R
2225	1 00765	31900793		CW,11	MASK2	
2226	1 00766	69400768		BCS,4	ASRERR0R	ERR0R
2227	1 00767	E8000779	ASRSUCC	B	*ASRLINK	SUCCESS RETURN TO DCP
2228	1 00768	32C00009 A	ASRERR0R	LW,12	9	
2229	1 00769	6AF003F6		BAL,15	ZBTH	CONVERT TIO RESPONSE FOR PRINT
2230	1 0076A	35000781		STW,12	ASRMSG+6	
2231	1 0076B	35000782		STW,13	ASRMSG+7	
2232	1 0076C	32C0000B A		LW,12	11	
2233	1 0076D	6AF003F6		BAL,15	ZBTH	CONVERT TDV RESPONSE FOR PRINT
2234	1 0076E	35000785		STW,12	ASRMSG+10	
2235	1 0076F	35000786		STW,13	ASRMSG+11	
2236	1 00770	25800001 A		SLS,8	1	SET DEVICE ORDER
2237	1 00771	B2C00008 A		LW,12	*8	
2238	1 00772	25C00008 A		SCS,12	8	
2239	1 00773	6AF003F6		BAL,15	ZBTH	CONVERT ORDER FOR PRINT
2240	1 00774	85000789		STH,13	ASRMSG+14	
2241	1 00775	32C0077A		LW,12	ASRMGCT	
2242	1 00776	02200000 A		LCI	13	
2243	1 00777	6AF004C0		BAL,15	ZTWLP	PRINTOUT ERROR MESSAGE
2244	1 00778	E8000779		B	*ASRLINK	RETURN TO DCP
2245	1 00779	00000000 A	ASRLINK	DATA	0	
2246	1 0077A	103C10EC A	ASRMGCT	ZFMW	1,0,60,BA(ASRMSG)	
2247	1 0077B	C1E2D940 A	ASRMSG	TEXT	*ASR C9MPAT ERR0R	TIO=XXXXXXXX TDV=XXXXXXXX'
	1 0077C	C306D407 A				
	1 0077D	C1E340C5 A				

	1 0077E	0909D609 A				
	1 0077F	40404040 A				
	1 00780	E3C9D57E A				
	1 00781	E7E7E7E7 A				
	1 00782	E7E7E7E7 A				
	1 00783	40404040 A				
	1 00784	E3C4E57E A				
	1 00785	F7E7E7E7 A				
	1 00786	E7E7E7E7 A				
2248	1 00787	4040D609 A		TEXT	' ORDER=XX '	
	1 00788	C4C5D97E A				
	1 00789	E7E74040 A				
2249	1 0078A			B0UND	8	
2250	1 0078A	00001FE4	LIST	DATA	BA(BUFFER)	1ST CP
2251	1 0078B	00000000 A		DATA	0	
2252	1 0078C	00001FE4		DATA	BA(BUFFER)	2ND CP
2253	1 0078D	00000000 A		DATA	0	
2254	1 0078E	00001FE4		DATA	BA(BUFFER)	3RD CP
2255	1 0078F	00000000 A		DATA	0	
2256	1 00790	00001FE4		DATA	BA(BUFFER)	4TH CP
2257	1 00791	00000000 A		DATA	0	
2258	1 00792	6EFE0000 A	MASK1	DATA	X'6EFE0000'	FOR TESTING SIO STATUS
2259	1 00793	18000000 A	MASK2	DATA	X'18000000'	FOR TESTING TDV STATUS
2260			BUFFFFR	EGU	I8BUFF	
2261			UNIT	EGU	I9PDC	



			PAGE		
2262			BBUND	8	
2263	1 00794		PSDW01	DATA	BEGINKSR+1
2264	1 00795	00000000 A		DATA	5**24
2265	1 00796	00000000 A	PSDW07	DATA	0,0,WATCHDOG,5**24
2266	1 00797	00000000 A			
	1 00798	00000000 A			
	1 00799	00000000 A			
2267	1 0079A	00000000 A	PSDW09	DATA	0,0,I0INT,5**24
	1 0079B	00000000 A			
	1 0079C	00000000 A			
	1 0079D	00000000 A			
2268	1 0079E	00000000 A	PSDW10	DATA	0,0,C0NSOLE,5**24
	1 0079F	00000000 A			
	1 007A0	00000000 A			
	1 007A1	00000000 A			
2269	1 007A2	00000000 A	PSDW11	DATA	0,0,RESTART,5**24
	1 007A3	00000000 A			
	1 007A4	00000000 A			
	1 007A5	00000000 A			
2270	1 007A6	00000000 A	PSDW12	DATA	0,0,I0INTRPT,5**24
	1 007A7	00000000 A			
	1 007A8	00000000 A			
	1 007A9	00000000 A			
2271	1 007AA	00000000 A	PSDW13	DATA	RETURN,5**24
	1 007AB	00000000 A			
2272	1 007AC	00000000 A	PSDW14	DATA	I0ICLEAR,5**24
	1 007AD	00000000 A			
2273	1 007AE	00000000 A	PSDW15	DATA	0,0,CTRINT,0
	1 007AF	00000000 A			
	1 007E0	00000000 A			
	1 007E1	00000000 A			
2274	1 007E2	0F000756	XPSD06	XPSD,0	PSDW07 WATCHDOG TIMER
2275	1 007E3	0F00079A	XPSD08	XPSD,0	PSDW09 I/O INTERRUPT
2276	1 007E4	0F00079F	XPSD09	XPSD,0	PSDW10 CONSOLE INTERRUPT
2277	1 007E5	0F000154	XPSD10	XPSD,0	ZISC
2278	1 007E6	0F00014C	XPSD11	XPSD,0	ZT46

2279	1 007E7	0F0007A6	XPSD12	XPSD,0	PSDW12
2280	1 007E8	0F0007AE	XPSD13	XPSD,0	PSDW15

2281				PAGE	
2282	1 007BA			BOUND	8
2283	1 007BA	06001FE4	COMPR01	GEN,8,24	X'06',BA(I0BUFF)
2284	1 007EB	140000FF A		GEN,8,24	X'14',255
2285	1 007BC	86001FE4	COMPR02	GEN,8,24	X'86',BA(I0BUFF)
2286	1 007BD	140000FF A		GEN,8,24	X'14',255
2287	1 007BE	05001FE4	COMPR03	GEN,8,24	X'05',BA(I0BUFF)
2288	1 007BF	140000FF A		GEN,8,24	X'14',255
2289	1 007C0	05001FE4	COMPR04	GEN,8,24	0,BA(I0BUFF)
2290	1 007C1	14000001 A		GEN,8,24	X'14',1
2291	1 007C2	05001FC5	COMPR05	GEN,8,24	X'05',BA(BYTE0UT)
2292	1 007C3	14000001 A		GEN,8,24	X'14',1
2293	1 007C4	05001FE4	COMPR06	GEN,8,24	X'06',BA(BYTEIN)
2294	1 007C5	14000001 A		GEN,8,24	X'14',1
2295	1 007C6	06001FE4	COMPR07	GEN,8,24	X'06',BA(BYTEIN)
2296	1 007C7	14000001 A		GEN,8,24	X'14',1
2297	1 007C8	05001FE4	COMPR08	GEN,8,24	X'05',BA(BYTEIN)
2298	1 007C9	14000001 A		GEN,8,24	X'14',1
2299	1 007CA	05001FE4	COMPR09	GEN,8,24	X'05',BA(BYTEIN)
2300	1 007CB	20000001 A		GEN,8,24	X'20',1
2301	1 007CC	05001FE4	COMPR10	GEN,8,24	X'05',BA(BYTEIN)
2302	1 007CD	14000001 A		GEN,8,24	X'14',1

2303				PAGE	
2304	1 007CF			BOUND	8
2305	1 007CE	00000000 A	TEMPSAV	DATA	0,0,0,0,0,0,0,0
	1 007CF	00000000 A			
	1 007D0	00000000 A			
	1 007E1	00000000 A			
	1 007D2	00000000 A			
	1 007D3	00000000 A			
	1 007D4	00000000 A			
	1 007D5	00000000 A			
2306	1 007D6	00000000 A		DATA	0,0,0,0,0,0,0,0
	1 007D7	00000000 A			
	1 007D8	00000000 A			
	1 007D9	00000000 A			
	1 007DA	00000000 A			
	1 007DB	00000000 A			
	1 007DC	00000000 A			
	1 007DD	00000000 A			
2307	1 007DE	00000000 A	RETSAV	DATA	0,0
	1 007DF	00000000 A			
2308	1 007E0	EPE3C1E3 A	STATMSG	TEXT	'STATUS #'
	1 007E1	E4E2407E A			
2309	1 007E2			BOUND	8
2310	1 007E2	00000000 A	ZER0S	DATA	0,0,0,0,0,0,0,0
	1 007E3	00000000 A			
	1 007E4	00000000 A			
	1 007E5	00000000 A			
	1 007E6	00000000 A			
	1 007E7	00000000 A			
	1 007E8	00000000 A			
	1 007E9	00000000 A			
2311	1 007EA	00000000 A		DATA	0,0,0,0,0,0,0,0
	1 007EB	00000000 A			
	1 007EC	00000000 A			
	1 007ED	00000000 A			
	1 007EE	00000000 A			
	1 007EF	00000000 A			

	1 007F0	00000000	A			
	1 007F1	00000000	A			
2312	1 007F2	00000000	A	HYTEPUT	DATA	0
2313				HYTEIN	EQU	10RUFF
2314	1 007F3	00000001	A	ISPDC	DATA	1
2315	1 007F4	00000000	A	CCSET	DATA	0
2316	1 007F5	00000032	A	DELAY	DATA	50
2317	1 007F6	00000000	A	CBUNTER	DATA	0
2318	1 007F7	33F007F6	A	MTWI	MTW,15	*-1
2319	1 007F8	00000000	A	INRUFFLG	DATA	0
2320	1 007F9			BBUND		4
2321	1 007F9			I0BUFF	EQU	*
2322	00000000			DB		8
2323	1 007F9	00000000	A	DATA		0,0,0,0,0,0,0,0
	1 007FA	00000000	A			
	1 007FB	00000000	A			
	1 007FC	00000000	A			
	1 007FD	00000000	A			
	1 007FE	00000000	A			
	1 007FF	00000000	A			
	1 00800	00000000	A			
2324				FIN		
2323	1 00801	00000000	A	DATA		0,0,0,0,0,0,0,0
	1 00802	00000000	A			
	1 00803	00000000	A			
	1 00804	00000000	A			
	1 00805	00000000	A			
	1 00806	00000000	A			
	1 00807	00000000	A			
	1 00808	00000000	A			
2324				FIN		
2323	1 00809	00000000	A	DATA		0,0,0,0,0,0,0,0
	1 0080A	00000000	A			
	1 0080B	00000000	A			
	1 0080C	00000000	A			
	1 0080D	00000000	A			
	1 0080E	00000000	A			

	1 0080F	00000000	A			
	1 00810	00000000	A			
2324				FIN		
2323	1 00811	00000000	A	DATA		0,0,0,0,0,0,0,0
	1 00812	00000000	A			
	1 00813	00000000	A			
	1 00814	00000000	A			
	1 00815	00000000	A			
	1 00816	00000000	A			
	1 00817	00000000	A			
	1 00818	00000000	A			
2324				FIN		
2323	1 00819	00000000	A	DATA		0,0,0,0,0,0,0,0
	1 0081A	00000000	A			
	1 0081B	00000000	A			
	1 0081C	00000000	A			
	1 0081D	00000000	A			
	1 0081E	00000000	A			
	1 0081F	00000000	A			
	1 00820	00000000	A			
2324				FIN		
2323	1 00821	00000000	A	DATA		0,0,0,0,0,0,0,0
	1 00822	00000000	A			
	1 00823	00000000	A			
	1 00824	00000000	A			
	1 00825	00000000	A			
	1 00826	00000000	A			
	1 00827	00000000	A			
	1 00828	00000000	A			
2324				FIN		
2323	1 00829	00000000	A	DATA		0,0,0,0,0,0,0,0
	1 0082A	00000000	A			
	1 0082B	00000000	A			
	1 0082C	00000000	A			
	1 0082D	00000000	A			
	1 0082E	00000000	A			
	1 0082F	00000000	A			

```

1 00830 00000000 A
2324
2323 1 00831 00000000 A
      1 00832 00000000 A
      1 00833 00000000 A
      1 00834 00000000 A
      1 00835 00000000 A
      1 00836 00000000 A
      1 00837 00000000 A
      1 00838 00000000 A

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FIN
DATA 0,0,0,0,0,0,0,0

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```

2324
2325 1 0083A
2326 1 0083A 0000089E
2327 1 0057A
      1 0083B F0F0F0F0 A
      1 0083C FF00FF00 A
      1 0083D 0000000A A
      1 0083E 60000000 A
      1 0083F 10000000 A
      1 00840 00000020 A
      1 00841 20000000 A
      1 00842 80000000 A
      1 00843 00080000 A
      1 00844 40000000 A
      1 00845 FF000000 A
      1 00846 000000FF A
      1 00847 40404040 A
      1 00848 00000000 A
      1 00849 F0000000 A
      1 0084A 09000000 A
      1 0084B 00000000 A
      1 0084C 000000FF A

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ZEXADR
FIN BOUND 8
DATA $+100
END ZCMS

```



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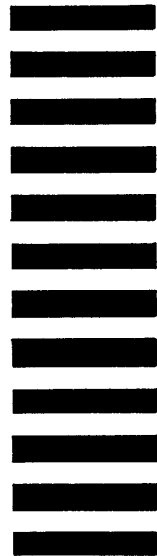
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