

SYSTEMS ENGINEERING LABORATORIES PROGRAM LIBRARY

SOFTWARE DESCRIPTION

CATALOG NO. 300000E

DOCUMENTATION REV* N/A

DATE 1 September 1970

PROGRAM TITLE: SYSTEMS 810A/B STANDARD BOOTSTRAP
PACKAGE

PURPOSE: (1) To provide an absolute version of the Standard
Load/Dump Package for SYSTEMS 810A/B with 4K
memory;
(2) To provide loading capability for a relocatable
version of the Standard Load/Dump Package for
SYSTEMS 810A/B with memory greater than 4K.

CONFIGURATION: SYSTEMS 810A/B Computer with ASR-33, High
Speed Paper Tape, and/or 7-track magnetic tape
with BTC.

SOFTWARE ENVIRONMENT: Stand-Alone

PROGRAM LANGUAGE: SYSTEMS 810A/B Assembly Language

SIZE: 2000₈

TIMING: N/A



REASON FOR CHANGE:

To provide for proper loading of programs containing "BLOCK DATA" statements.

USE:

(1) Manually enter the BINARY BOOTSTRAP LOADER (below) at locations 0-17g:

SYM. LOC.	OPER.	ADDRESS-INDEX	OCTAL LOC.	CODING
STRT	CEU	U,W	0	13010U
	DATA	'00X000	1	00X000
	AIP	U,W	2	17030U
	SAZ		3	000022
	BRU	* +2	4	111008
	BRU	* -3	5	111002
READ	AIP	U,W	6	17030U
	LSL	8	7	001018
	AIP	U,W,R	10	17430U
	STA*	DAC 1	11	033018
	SAZ		12	000022
	IBS		13	000028
	BRU*	DAC 2	14	113017
	BRU	READ	15	111008
DAC 1	DAC	CHAN-2, 1	16	107871
DAC 2	DAC	CHAN-	17	007873

U - 1 FOR ASR-33
U - 2 FOR H.S. PAPER TAPE

X - 4 FOR ASR-33
X - 1 FOR H.S. PAPER TAPE

(2) Position the STANDARD BOOTSTRAP PACKAGE in the desired input device.

(3) If input device is the ASR-33, sense switch 0 should be reset; if input device is High-Speed Paper Tape Reader, sense switch 0 should be set.

(4) Start execution at location 0, with A-Acc = 0 and B-Acc = 0.

(5) The STANDARD BOOTSTRAP PACKAGE will be loaded. This package provides a Standard Load/Dump Package for a 4K computer, with capabilities for loading relocatable binary object tapes, dumping memory to paper tape in absolute binary format, and loading absolute binary tapes. Starting locations for these procedures are:

Relocatable Loader	6060g
Absolute Dump	7561g
Absolute Loader	7673g

(Refer to Catalog No. 300001 for listings and detailed descriptions of these procedures.)

(6) If using a computer with memory greater than 4K, this package will provide the capability for loading the STANDARD LOAD/DUMP PACKAGE into higher memory areas. (Refer to Catalog No. 300001).

SYSTEMS ENGINEERING LABORATORIES PROGRAM LIBRARY

SOFTWARE DESCRIPTION

CATALOG NO. 300001E

DOCUMENTATION REV* N/A

DATE 1 September 1970

PROGRAM TITLE: SYSTEMS 810A/B STANDARD LOAD/DUMP PACKAGE

PURPOSE: To provide capability for:
(1) loading relocatable object programs generated by the SYSTEMS 810A/B Macro-Assembler or SYSTEMS 810A/B FORTRAN IV Compiler;
(2) dumping selected areas of memory in absolute binary format;
(3) loading object modules generated by the absolute dump function.

CONFIGURATION: SYSTEMS 810A/B with ASR-33, High Speed Paper Tape Reader/Punch, and/or 7-track Magnetic Tape with BTC.

SOFTWARE ENVIRONMENT: Stand-Alone

PROGRAM LANGUAGE: SYSTEMS 810A/B Assembly Language

SIZE: 2000₈

TIMING: N/A

LOADING PROCEDURE:

Use of this package assumes a memory configuration of greater than 4K; otherwise, the SYSTEMS STANDARD BOOTSTRAP PACKAGE (Catalog No. 300000E) will provide similar Load/Dump capabilities.

The procedure required to load this package includes:

- (1) MASTER CLEAR the computer;
- (2) Load the SYSTEMS 810A/B STANDARD BOOTSTRAP PACKAGE (Catalog No. 300000) as specified in the program description;
- (3) Position the SYSTEMS 810A/B STANDARD LOAD/DUMP PACKAGE (Catalog No. 300001) in the desired input device;
- (4) If the input device is ASR-33 reader, control switch 0 (zero) should be reset; if the input device is High Speed Paper Tape Reader, control switch 0 (zero) should be set;
- (5) Enter 006060_g into the P-Counter;
- (6) Enter the relocation base for the STANDARD LOAD/DUMP PACKAGE into the A-Accumulator; this is the load address for the package;
- (7) Depress START twice - the STANDARD LOAD/DUMP PACKAGE will be loaded as specified;
- (8) The following will be printed on the ASR-33 teletypewriter:

```
LC
EJ
XXXXX    00001
```

indicating loading complete, end-of-job code processed, the memory high load address, and the next available map zero location.

USE:

The SYSTEMS 810A/B STANDARD LOAD/DUMP PACKAGE may be used to load object programs in relocatable binary format; to dump selected areas of memory in absolute binary format; and to load object modules in absolute binary format.

I - RELOCATABLE LOADER

The procedure required to use the relocatable loader portion of the STANDARD LOAD/DUMP PACKAGE includes:

- (1) Position the relocatable binary object program to be loaded in the desired input device;
- (2) Make the following manual entries:
 - A-Accumulator = Relocation Base for program
 - B-Accumulator = Map Zero Starting Location
 - P-Counter = Relocatable Loader Starting Location (000060g + Relocation Base)
- (3) Set the appropriate control switches as follows:
 - Control Switch 0 Set = Input from High Speed Paper Tape Reader
 - Control Switch 0 Reset = Input from ASR-33 Reader
 - Control Switch 1 Set = List all subroutines referenced by program
 - Control Switch 2 Set = List all unloaded subroutines referenced by program
 - Control Switch 3 Set = Input from magnetic tape
 - Control Switch 4 Set = List all intermap references
 - Control Switch 5 Set = Insert map bit on map zero references

NOTE

In loading SYSTEMS 810A/B FORTRAN IV Compiler generated object programs, the map zero starting location (B-Accumulator) must be greater than 10g if any library subroutines have been called by the source program.

NOTE

For input from 7-track magnetic tape, the loader assumes that the unit is assigned to BTC1 and is designated logical unit number 6.

- (4) Depress START twice - the program will be loaded;
- (5) If "EJ" only is printed on the ASR-33 teletypewriter, the relocatable loader is awaiting further input to satisfy external subroutines referenced by the loaded program. In this instance, position the unloaded external program(s) in the proper input device and repeat step (4) above;

NOTE

Do not MASTER CLEAR the computer prior to loading external subroutines.

- (6) When loading is complete, the following will be printed on the ASR-33 teletypewriter:

LC
EJ
XXXXX YYYYY , where

XXXXX - indicates the highest memory location used by the program;
YYYYY - indicates the next available map zero location

- (7) To execute the loaded program:
- (a) MASTER CLEAR the computer;
 - (b) Enter the starting location of the program into the P-Counter;
 - (c) Depress START twice to begin program execution.

II - ABSOLUTE DUMP

The procedure required to use the Absolute Dump portion of the STANDARD LOAD/DUMP PACKAGE includes:

- (1) Set the appropriate control switches as follows:
- Control Switch 0 Set = Dump to High Speed Paper Tape Punch
 - Control Switch 0 Reset = Dump to ASR-33 Paper Tape Punch
 - Control Switch 1 Set = Dump Intermap References after dumping program

- (2) Make the following manual entries:

<u>Location</u>	<u>Entry</u>
001776 ₈ + Loader Relocation Base	End of Dump Address
001777 ₈ + Loader Relocation Base	Start of Dump Address

- (3) Enter (001561₈ + Loader Relocation Base) into the P-Counter. This is the start address for the Absolute Dump portion of the STANDARD LOAD/DUMP PACKAGE;
- (4) Depress START once - a dump of the specified memory locations will be generated in absolute binary format acceptable to the Absolute Loader portion of this package (below).

III - ABSOLUTE LOADER

The procedure required to use the Absolute Loader portion of the STANDARD LOAD/DUMP PACKAGE includes:

- (1) Position the absolute binary object module to be loaded in the desired input device;
- (2) Set the appropriate control switches as follows:
 - Control Switch 0 Set = Input from High Speed Paper Tape Reader
 - Control Switch 0 Reset = Input from ASR-33 Reader
 - Control Switch 1 Set = Load intermap references after loading program
- (3) Enter $(001673_8 + \text{Loader Relocation Base})$ into the P-Counter. This is the start address for the Absolute Loader portion of the STANDARD LOAD/DUMP PACKAGE;
- (4) Depress START twice - the core-image contents of the absolute binary input module will be loaded into the same portion of memory from which originally dumped.

METHOD:

(1) RELOCATABLE LOADER

- (a) Tape format consists of blocks of 111 frames. Each block contains a start code, thirty-six 24-bit words, and a 16-bit check sum. A complete block is read by the loader before the first word in the block is processed;
- (b) If loader input is from magnetic tape, the loader assumes a Tape Control Unit assigned Logical Unit Number 6 and connected to BTC1. Tape is read from Tape Transport Number 2 in binary format (3 characters per word at 556 bpi).

If a parity error occurs during input, five attempts are made to read the record before the loader message "R" is printed on the ASR-33 teletypewriter, and the computer HALTS. Clearing the HALT will cause the record to be accepted.

- (c) The following messages are output by the relocatable loader:

- CK - Check Sum Error
- MO - Memory Overflow into Area of Core Used by Loader
- CM - Common Request prior to Common Definition
- LC - Loading Process Complete
- EJ - End of Job

(2) ABSOLUTE DUMP

Tape format consists of a start code, a 16-bit starting address, and a 16-bit negative word count followed by blocks of 66 frames each. The last block may have less than 66 frames. Each block is terminated with a 16-bit check sum.

(3) ABSOLUTE LOADER

- (a) Tape format consists of a start code, a 16-bit starting address, and a 16-bit negative word count followed by blocks of 66 frames each. The last block may have less than 66 frames. Each block is terminated with a 16-bit check sum. Words are stored into core as they are read.
- (b) If a check sum error is encountered during the loading process, the loader message "K" will be printed on the ASR-33 teletypewriter, and the computer will HALT. Clearing the HALT will cause the record to be accepted.


```

0001      *      300001E      810A/R STANDARD LOAD/DUMP PACKAGE
0002      *
0003      *
0004      * * * * *
0005      *      SW 0- 0N - INPUT FROM H.S. READER      *      00700080
0006      *      OFF- INPUT FROM TELETYPE TAPE READER      *      00700090
0007      *      SW 1- 0N - LIST ALL SUBS      *      00700100
0008      *      SW 2- 0N - LIST ALL UNLOADED SUBS      *      00700130
0009      *      SW 3- 0N - INPUT FROM MAGNETIC TAPE      *      00700160
0010      *      SW 4- 0N - LIST INTERMAP SOURCES      *
0011      *      SW 5- 0N - INSERT MAP BIT 0N (MAP ZERO)-(MAP ZERO) REFERENCES
0012      * * * * *
0013      * * * * *
0014      * *****NOTE-----
0015      * * * * *
0016      * -----TO LOAD COMPILER/ASSEMBLER OUTPUT-----
0017      *      SET A=0 OR RELOCATION BASE
0018      *      SET R= MAP 0 STARTING LOCATION <MUST
0019      *      BE GREATER THAN 10 IF LIBRARY
0020      *      ROUTINES HAVE BEEN CALLED
0021      * * * * *
0022      00000 00000006 MTU EQU 6
0023      00000 00001060 BTC EQU '1060      BTC 1 - 810A      10/70 RLD *F
0024      00000 00000000 REL
0025      00060 70000060 ORG '60      CHOOSE EASILY REMEMBERED START      DPC 8/69
0026      *
0027      00060 00000033 LOAD MAP      'MAP' (FOR 810-B)      DPC 8/69
0028      00061 03100734 STA BASE
0029      00062 03300712 STA* TLH      00700430
0030      00063 03100754 STA RPL      * * * * *
0031      00064 12100166 SPB MPZR      DPC 8/69
0032      00065 03100737 STA NFLG      SET NAME FLAG OFF <NON ZERO>      00700530
0033      *
0034      * ESTABLISH START OF COMMON POOL
0035      *
0036      00066 01100754 LAA RPL      DPC 8/69
0037      00067 00000214 FRL 2      ISOLATE BANK BIT      DPC 8/69
0038      00070 00001613 FLL 14      REPOSITION      DPC 8/69
0039      00071 16100212 AMB 5374      CONVERT TO UPPERMOST COMMON POSSIBILITY DPC 8/69
0040      00072 14400000 STB 0.1      STORE TO TEST MEMORIES EXISTANCE      DPC 8/69

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0041	00073	01400000	LAA	0,1	RELOAD IT	DPC 8/69
0042	00074	00000022	SAZ		TEST	DPC 8/69
0043	00075	11100100	BRU	**3	G000	DPC 8/69
0044	00076	16100214	AMB	SM1	N0-G000, TRY 4K LOWER	
0045	00077	11100072	BRU	**5		DPC 8/69
0046			*			DPC 8/69
0047	00100	04100727	STB	C0MN	SAVE IN FINAL DESTINATION (TEMP, MAYBE)	DPC 8/69
0048	00101	01100725	LAA	K25	NORMAL COMMON START	DPC 8/69
0049	00102	15100754	CMA	RPL	CHECK FOR LOADING ABOVE LOADER	DPC 8/69
0050	00103	11100110	BRU	**5	LOADING ABOVE LOADER, C0MN OK	DPC 8/69
0051	00104	00000033	N0P			DPC 8/69
0052			*			
0053	00105	15100727	CMA	C0MN		DPC 8/69
0054	00106	03100727	STA	C0MN	LOADING BELOW LOADER AND C0MN	DPC 8/69
0055	00107	00000033	N0P			DPC 8/69
0056	00110	01100727	LAA	C0MN		
0057	00111	03100730	STA	C0M1	SET INITIAL COMMON TO PRESENT COMMON	
0058			*			
0059	00112	02100726	LBA	BEGN	START OF NAME TABLE	00000560
0060	00113	04100731	STB	END	SET END OF NAME TABLE	00000570
0061	00114	00000003	CLA			00000610
0062	00115	03100732	STA	L0DF	LOAD FLAG ON	00000620
0063	00116	03100733	STA	CALS	N0. OF UNDEFINED SUBR. CALLS = 0	00000640
0064	00117	03400001	STA	1,1	INIT. FRST NAME TBL ENTRY	00000670
0065	00120	01100722	LX10 LAA	K17	-1	00000680
0066	00121	03100736	STA	WCNT	INPUT WORD COUNT = -1	00000690
0067	00122	03100735	STA	FFSW	FLIP FL0P SWITCH <READ INPUT0	00000700
0068	00123	01100701	L10 LAA	A10		00000710
0069	00124	03100740	STA	J	SET SWITCH J TO ADDRESS L10	00000720
0070	00125	12300703	SPB*	I1	READ 24-BIT WORD	00000730
0071	00126	03100741	STA	T1	UPPER 8 BITS	00000740
0072	00127	04100742	STB	T2	LOWER 16 BITS	00000750
0073	00130	02100714	LBA	K2	=136	00000760
0074	00131	00000027	ABA			00000770
0075	00132	03100747	STA	0P	OPERATOR <BITS 12-150	00000780
0076	00133	02100742	LBA	T2	ADDRESS <BITS 2-160	00000790
0077	00134	00001717	FLA	15	F.E.C. 8-30-66	00000800
0078	00135	03100750	STA	ADDR	ADDRESS <BITS 1-160	00000810
0079	00136	01100741	LAA	T1		00000820
0080	00137	00001713	FLL	15		00000830
0081	00140	00001615	RSL	14		00000850

0082	00141	03100751	STA	XI	INDEX, INDIRECT BITS <15-160	00700860
0083	00142	12100421	SPB	XIDC	CONSTRUCT XIAD DPC 3/18/69	
0084	00143	03100752	STA	XIAD	INDEX, INDIRECT, 14-BIT ADR	00700890
0085	00144	01100741	LAA	T1		00700900
0086	00145	00000610	RSA	6		00700910
0087	00146	00000005	TAB		SET CODE BITS INTO INDEX	00700920
0088	00147	11500150	BRU	++1.1	BRANCH TO CODE PROCESSOR	00700930
0089	00150	11100217	BRU	L20	....ABSOLUTE DATA	00700940
0090	00151	11100254	BRU	L40	....MEMORY REFERENCE	00700950
0091	00152	11100437	BRU	L80	....SUBROUTINE/COMMON	00700960
0092	00153	01100752	L60 LAA	XIAD	IF X = 1, THIS ENTRY IS A	00700970
0093	00154	00000023	SAN		LITERAL AND IS PROCESSED	00700980
0094	00155	11100202	BRU	L62	AS A MEMORY REF INST	00700990
0095	00156	00000003	CLA			00701000
0096	00157	03100745	STA	T5		00701010
0097	00160	01100742	LAA	T2	USE UNMODIFIED ADDR DPC 4/4/69	
0098	00161	03100750	STA	ADDR	DPC 4/4/69	
0099	00162	12300704	SPB*	I2	ADD BASE TO ADDR IF RELATIVE	00701050
0100	00163	12300705	SPB*	I3	CHECK LOAD FLAG DPC 4/4/69	
0101	00164	01100750	LAA	ADDR	DPC 4/4/69	
0102	00165	11100316	BRU	L43B	DPC 4/4/69	
0103			*			DPC 8/69
0104			*		INITIALIZE BASE MAP	DPC 8/69
0105			*			DPC 8/69
0106	00166	25400000	MP7R DAC	**		DPC 8/69
0107	00167	04100764	STB	LZ		DPC 8/69
0108	00170	04100765	STB	LZR		DPC 8/69
0109	00171	01100716	LAA	K5		DPC 8/69
0110	00172	00000027	ABA			DPC 8/69
0111	00173	03100700	STA	KCML	LOWER END OF NEW MAP ZERO	DPC 8/69
0112	00174	05100713	AMA	K1	MAP LENGTH = 1000	DPC 8/69
0113	00175	03100677	STA	KCMH	UPPER END OF NEW MAP ZERO	DPC 8/69
0114	00176	01100717	LAA	K7		DPC 8/69
0115	00177	03400000	STA	0,1	ESTABLISH FIRST MAP ZERO ENTRY	DPC 8/69
0116	00200	14100764	IMS	LZ		DPC 8/69
0117	00201	11300166	BRU*	MP7R	RETURN	DPC 8/69
0118			*			
0119	00202	01100747	L62 LAA	XP		00701070
0120	00203	00000115	RSL	1		00701080
0121	00204	00000005	TAB			00701090
0122	00205	11500206	BRU	++1.1	BRANCH ON CODE BITS IN OP	00701100

0123	00206	11100553	BRU	L100	....<000	LOAD POINT	00001110
0124	00207	11100625	BRU	L110	....<010	END JUMP	00001120
0125	00210	11100766	BRU	L120	....<020	9-BIT STRING	00001130
0126	00211	35401260	I6	DAC	TYPE		DPC 8/69
0127	00212	00037774	S374	DATA	'37774		DPC 8/69
0128	00213	11100243	BRU	L170	NEW MAP	ZWR0	DPC 8/69
0129	00214	00170000	SM1	DATA	-'10000	4K	DPC 8/69
0130	00215	11100657	BRU	L190	....<070	SET LOAD FLAG ON	00001180
0131	00216	11300710	BRU*	I9	....<100	END-OF-JOB	00001190
0132			*****	STORE	ABSOLUTE DATA	<000	00001210
0133	00217	01100742	L20	LAA	T2		00001220
0134	00220	02100754	L21	LBA	RPL		
0135	00221	03400000		STA	0,1	*****	
0136	00222	12300705	L22	SPB*	I3	CHECK LOAD FLAG	00001290
0137	00223	14100754		LMS	RPL	*****	
0138	00224	01100754		LAA	RPL	*****	
0139	00225	15300712		CMA*	ILH	IS THIS GREATER THAN CURRENT HIGH	00001350
0140	00226	00000033		NOP			00001360
0141	00227	11100231		BRU	**2	NO	00001370
0142	00230	03300712		STA*	ILH		00001380
0143	00231	15100730		CMA	C0MI	CHECK FOR OVERFLOW INTO COMMON	
0144	00232	15100727		CMA	C0MN		
0145	00233	11100236		BRU	**3	OK	
0146	00234	11100236		BRU	**2		
0147	00235	11100350		BRU	LM0	STORAGE INTO COMMON	
0148	00236	15100763		CMA	IE41	FAC ENDJ	DPC 3/28/69
0149	00237	15100731		CMA	END	START OF NAME TABLE	00001410
0150	00240	11300740		BRU*	J		00001420
0151	00241	11300740		BRU*	J		00001430
0152	00242	11100350		BRU	LM0	M0 TYPE OUT	MDL 1/10/69 *C
0153			*				
0154			*	MAP	ZERO PROCESSOR		DPC 8/69
0155			*				DPC 8/69
0156	00243	12300705	L170	SPB*	I3	CHECK LOAD FLAG	DPC 8/69
0157	00244	12300706		SPB*	I4		
0158	00245	00146732		DATA	'MZ''		
0159	00246	01100764		LAA	LZ		
0160	00247	12300211		SPB*	I6		
0161	00250	12300704		SPB*	I2	RELLOCATEAD FLAG	DPC 8/69
0162	00251	00000005		TAB		SETUP FOR MPZR	DPC 8/69
0163	00252	12100166		SPB	MPZR		

0164	00253	11100123		BRU	L10			DPC 8/69
0165			*					00001520
0166			*****	MEMORY REFERENCE PROCESSOR	<010			00001530
0167	00254	01100747	L40	LAA	OP	EXTEND SIGN TO SIGN BIT		00001540
0168	00255	06100715		SMA	K4	IF DAC <'130		00001550
0169	00256	00000022		SAZ				00001560
0170	00257	11300761		BRU*	L40I			00001570
0171	00260	01100750	L40Z	LAA	ADDR			00001580
0172	00261	00000116		LSL	1			00001590
0173	00262	00000110		RSA	1			
0174	00263	03100750	L40B	STA	ADDR			00001610
0175	00264	12300704	L40A	SPB*	I2	ADD BASE TO ADDR, IF RELATIVE		00001620
0176	00265	01100747	L41	LAA	OP			00001630
0177	00266	15100714		UMA	K2	= '36		00001640
0178	00267	11100271		BRU	**2			00001650
0179	00270	11100430		BRU	L50	BRANCH IF A 15-BIT DAC		00001660
0180	00271	15100715		UMA	K4	= '26		00001670
0181	00272	11100274		BRU	**2			00001680
0182	00273	11100417		BRU	L48	BRANCH IF A 14-BIT DAC		00001690
0183	00274	01100750		LAA	ADDR			00001700
0184	00275	12100662		SPB	MZCM	TEST TO SEE IF IN MAP ZERO		00001710
0185	00276	11100365		BRU	L46	REFERENCE TO MAP ZERO		00001720
0186	00277	01100750	L42	LAA	ADDR			DPC 8/69
0187	00300	12100353		SPB	SMMP	SEE IF IN SAME MAP AS RPL	DPC 3/14/69	
0188	00301	01100717		LAA	K7	=1		00001880
0189	00302	03100745		STA	T5			00001890
0190	00303	12300705	L43	SPB*	I3	CHECK LOAD FLAG		00001900
0191			*					
0192	00304	00130404		SNS	4	SENSE SWITCH 4 (LIST INTERRUPT REF SOURCES)	DPC 8/69	
0193	00305	11100307		BRU	**2	LIST		DPC 8/69
0194	00306	11100315		BRU	**7	BYPASS LIST	DPC 8/69	
0195	00307	12300706		SPB*	I4	CARRIAGE RETURN, LINE FEED		DPC 8/69
0196	00310	00144715		DATA	'IM'			
0197	00311	01100754		LAA	RPL	LIST LOCATION REQUIRING INTERMAP		DPC 8/69
0198	00312	12300211		SPB*	I6			DPC 8/69
0199	00313	01100750		LAA	ADDR			DPC 8/69
0200	00314	12300211		SPB*	I6	LIST LOCATION REFERED TO		DPC 8/69
0201			*					
0202	00315	12100421		SPB	XI0C	CONSTRUCT XIAD	DPC 3/18/69	
0203	00316	03100752	L43B	STA	XIAD	LITERAL ENTRY INTO MAP ZERO ENTRY		DPC 4/4/69
0204	00317	02100764	L43A	LBA	LZ			DPC 3/14/69

0205	00320	03400000		STA	0,1	DPC 3/14/69	
0206	00321	02100765		LBA	LZ3	FIRST ZERO MAP LOC.	00002020
0207	00322	01100752	L44	LAA	XIAD		00002030
0208	00323	15400000		CMA	0,1	TEST FOR = ENTRY MAP ZERO	00002040
0209	00324	11100326		BRU	**2	NO MATCH	00002050
0210	00325	11100330		BRU	L45	MATCH FOUND	00002060
0211	00326	16100717		AMB	K7	=1	00002070
0212	00327	11100322		BRU	L44	TEST NEXT ENTRY	00002080
0213	00330	00000004	L45	TBA			00002090
0214	00331	03100743		STA	T3	T3 = ZERO MAP ENTRY	00002100
0215	00332	15100764		CMA	LZ		00002110
0216	00333	11100335		BRU	**2		00002120
0217	00334	14100764	L45A	IMS	LZ	LZ = L7 + 1	00002130
0218	00335	03100750		STA	ADDR		00002140
0219	00336	03100742		STA	T2		00002150
0220	00337	01100721		LAA	K10		
0221	00340	02100741		LBA	T1		
0222	00341	00000030		ØBA		SET RELOCATABLE	
0223	00342	03100741		STA	T1		
0224	00343	02100745		LBA	T5		00002160
0225	00344	04100751		STØ	XI		00002170
0226	00345	01100764		LAA	LZ	CHECK FOR LZ OVERFLOW	00002180
0227	00346	12100662		SPØ	MZCM	TEST TO SEE IF IN MAP ZERO	00002190
0228	00347	11100265		BRU	L41		00002200
0229	00350	12300706	LMØ	SPØ*	I4	<TYPEØ	00002210
0230	00351	00146717		DATA	'MØ''		00002220
0231	00352	11300711		BRU*	I10	TO HALT	00002230
0232				*			
0233				*	CHECK FOR RPL SAME AZ ADDR	DPC 3/14/69	
0234				*			
0235	00353	25400000	SMMP	DAC	**	DPC	
0236	00354	02100716		LBA	K5	DPC	
0237	00355	00000027		ABA		DPC	
0238	00356	03100743		STA	T3	DPC	
0239	00357	01100754		LAA	RPL	*****	
0240	00360	00000027		ABA			
0241	00361	15100743		CMA	T3	DPC	
0242	00362	11300353		BRU*	SMMP	DPC	
0243	00363	11100435		BRU	L52	DPC	
0244	00364	11300353		BRU*	SMMP	DPC	
0245				*			

0246					*****REFERENCE TO MAP ZERO		00002250
0247					*		
0248	00365	02100716	L46	LBA	K5	=177000	
0249	00366	00000027		ABA		MASK FOR REAL MAP ZERO TEST	
0250	00367	00000022		SAZ			
0251	00370	11100376		BRU	L46B	NOT REAL MAP ZERO	
0252						REAL MAP ZERO	
0253	00371	01100717		LAA	K7	=1	
0254	00372	15100751		CMA	XI	TEST FOR INDEXED	
0255	00373	11100403		BRU	L47A	INDEXED MAP ZERO, NO MAP BIT	
0256	00374	00000033		NOP			
0257	00375	00130405		SNS	5	TEST INTER MAP ZERO MAP BIT OPTION	
0258							
0259	00376	12100353	L46B	SPB	SMMP	TEST FOR SAME MAP (NEED FOR MAP BIT)	
0260	00377	01100717		LAA	K7	=1	
0261	00400	15100751		CMA	XI	TEST FOR INDEXED	
0262	00401	11100302		BRU	L42+3		DPC 8/69
0263	00402	00000033		NOP			
0264							
0265	00403	00000003	L47A	CLA		RESET MAP BIT D.P.C. 3/5/69	
0266	00404	02100750	L47	LBA	ADDR	ADDR	00002270
0267	00405	00000613		FLL	6		00002280
0268	00406	00000615		RSL	6	MAP	00002290
0269	00407	00000112		FRA	1		00002300
0270	00410	01100751		LAA	XI	INDIRECT	00002310
0271	00411	00000212		FRA	2		00002320
0272	00412	00000113		FLL	1		
0273	00413	01100747		LAA	OP	OP-INDEX BITS	00002340
0274	00414	00000115		RSL	1		00002350
0275	00415	00001413		FLL	12		00002360
0276	00416	11100220		BRU	L21		00002370
0277							00002380
0278						*****14 BIT DAC	00002390
0279	00417	12100421	L48	SPB	XIDC	CONSTRUCT XIAD DPC 3/18/69	
0280	00420	11100220		BRU	L21	STARE INTO RPL	00002440
0281							
0282						CONSTRUCT XIAD FROM ADDR AND XI	
0283							
0284	00421	25400000	XIDC	DAC	**	DPC 3/18/69	
0285	00422	01100750		LAA	ADDR	DPC 3/18/69	
0286	00423	02100751		LBA	XI	DPC 3/18/69	

0287	00424	00000216	LSL	2	DPC	3/18/69		
0288	00425	00001614	FRL	14	DPC	3/18/69		
0289	00426	00000004	TBA		DPC	3/18/69		
0290	00427	11300421	BRU*	XIDC	DPC	3/18/69		
0291			*					
0292	00430	02100750	L50	LBA	ADDR		00002470	
0293	00431	01100741		LAA	T1		00002480	
0294	00432	00001716		LSL	15		00002490	
0295	00433	00000030		WBA				
0296	00434	11100220	BRU	L21	STORE INTO RPL		00002510	
0297			*				00002520	
0298			*****REFERENCE TO CURRENT MAP					00002530
0299	00435	01100717	L52	LAA	K7	=1 <SET MAP BIT = 010	00002540	
0300	00436	11100404	BRU	L47	MERGE WITH XI,OP,ADDR AND STORE		00002550	
0301			*				00002560	
0302			*****SUBROUTINE/COMMON REFERENCE					00002570
0303	00437	12300703	L80	SPB*	I1	READ 24-BIT WORD	00002580	
0304	00440	03100753		STA	CD	COMMON FLAG, DEFINITION FLAG	00002590	
0305	00441	01100750		LAA	ADDR		00002610	
0306	00442	00000002		NEG			00002620	
0307	00443	00000006		IAB		RIT 0 OF A = N	00002630	
0308	00444	00000024		SAP			00002640	
0309	00445	04100750		STB	ADDR	ADDR=- ADDR IF N = 1	00002650	
0310	00446	12300703		SPB*	I1	READ 24-BIT WORD	00002660	
0311	00447	00001013		FLL	8		00002670	
0312	00450	03100756		STA	S1S2	FIRST 2 CHAR. OF NAME	00002680	
0313	00451	04100757		STB	S3S4		00002690	
0314	00452	12300703		SPB*	I1	READ 24-BIT WORD	00002700	
0315	00453	05100757		AMA	S3S4		00002710	
0316	00454	03100757		STA	S3S4	SECOND 2 CHAR. OF NAME	00002720	
0317	00455	04100760		STB	S5S6	LAST 2 CHAR. OF NAME	00002730	
0318	00456	02100726		LBA	BEGV	INDEX=START OF SUBR. NAME TABLE	00002740	
0319	00457	00000004	L83	TBA			00002750	
0320	00460	15100731		UMA	END	DPC	4/7/69	
0321	00461	11100463		BRU	*+2	DPC	4/7/69	
0322	00462	11100561		BRU	LJ1		00002790	
0323	00463	01400001		LAA	1,1	FIRST 2 CHAR OF NAME	00002800	
0324	00464	06100756		SMA	S1S2		00002810	
0325	00465	00000022		SAZ			00002820	
0326	00466	11100557		BRU	L83A	NO MATCH	DPC 8/69	
0327	00467	01400002		LAA	2,1	SECOND 2 CHAR OF NAME	00002840	

0328	00470	06100757		SMA	S3S4			00002850
0329	00471	00000022		SAZ				00002860
0330	00472	11100557		BRU	L83A	NO MATCH		DPC 8/69
0331	00473	01400003		LAA	3,1	LAST 2 CHAR OF NAME		00002880
0332	00474	06100760		SMA	S5S6			00002890
0333	00475	00000022		SAZ				00002900
0334	00476	11100557		BRU	L83A	NO MATCH		DPC 8/69
0335	00477	01100753	L95	LAA	CD	COMMON FLAG, DEFINITION FLAG		00002920
0336	00500	00000022		SAZ				00002930
0337	00501	11100536		BRU	L98			00002940
0338				*				00002950
0339				*****	SUBROUTINE DEFINITION	<CD=000		00002960
0340	00502	03100737		STA	NFLG	SET NAME FLAG ON		
0341	00503	03100732		STA	L0DF			00002980
0342	00504	01400000	L97	LAA	0,1	CHECK DEFINITION FLAG		00002990
0343	00505	00000023		SAN				00003000
0344	00506	11100533		BRU	LL1	SUBROUTINE ALREADY LOADED		00003010
0345	00507	03100746		STA	TPY			00003020
0346	00510	01100750		LAA	ADDR			00003030
0347	00511	06100724		SMA	K24	'077777		00003040
0348	00512	00000022		SAZ				00003050
0349	00513	11100515		BRU	*+2			00003060
0350	00514	11100530		BRU	L97A			00003070
0351	00515	01100746		LAA	TPY			00003080
0352	00516	00000020		ASC				00003090
0353	00517	03400000		STA	0,1			00003100
0354	00520	00001712		FRA	15	INDEX=ZERO MAP POINTER ADDR.		00003110
0355	00521	12300704		SPB*	I2	ADDR=RELATIVE ENTRY POINT		00003120
0356	00522	00000216		LSL	2			
0357	00523	00000215		RSL	2	DPC 3/20/69		
0358	00524	03400000		STA	0,1	SFT RPL INTO ZERO MAP POINTER		00003130
0359	00525	01100733		LAA	CALS			00003140
0360	00526	06100717		SMA	K7	=1		00003150
0361	00527	03100733		STA	CALS	CALS = CALS-1		00003160
0362	00530	00000003	L97A	CLA				00003170
0363	00531	03100732		STA	L0DF	SFT LOAD FLAG ON		00003180
0364	00532	11100123		BRU	L10	READ NEXT CODE WORD		00003190
0365	00533	01100533	LL1	LAA	*			00003200
0366	00534	03100732		STA	L0DF			00003210
0367	00535	11100123		BRU	L10			00003220
0368				*				00003230

0369	00536	15100720	L98	CMA	K9	=1200 <BRANCH ON COO	00703240
0370	00537	11100544		BRU	L99	<010 SUBR, CALL/ EXT. VAR. CALL	00703250
0371	00540	11100123		BRU	L10	<100 COMMON DEFINITION <IGNORED	00703260
0372	00541	01400000		LAA	0,1	<110 COMMON REQUEST	00703270
0373	00542	05100750		AMA	ADDR	ADD ANY DEFLECTION	00703280
0374	00543	11100545		BRU	**2		00703290
0375	00544	01400000	L99	LAA	0,1	L00. OF ZERO MAP POINTER	00703300
0376	00545	00000116		LSL	1	EXTRACT OFF SIGN BIT	00703310
0377	00546	00000115		RSL	1		00703320
0378	00547	03100750	L99A	STA	ADDR		00703330
0379	00550	01100747		LAA	OP		00703340
0380	00551	00000022		SAZ			00703350
0381	00552	11100265		BRU	L41	STORE INTO MEMORY	00703360
0382							00703370
0383	00553	12300705	L10U	SPB*	I3	CHECK LOAD FLAG	00703380
0384	00554	12300704		SPB*	I2	ADD BASE TO ADDR, IF REQUESTED	00703390
0385	00555	03100754		STA	RPL		
0386	00556	11100123		BRU	L10	***** DON'T UPDATE RPLH (DUE TO EQU S)	
0387				*			00703430
0388	00557	16100721	L83A	AMB	K10		00703440
0389	00560	11100457		BRU	L83		00703450
0390				*			00703460
0391	00561	01100753	LJ1	LAA	CD		00703510
0392	00562	00000022		SAZ			00703520
0393	00563	11100574		BRU	LLF1		00703530
0394						***** PROCESS SUBR, NAME NOT PREVIOUSLY CALLED	00703540
0395	00564	01100737		LAA	NFLG		00703550
0396	00565	00000022		SAZ			00703560
0397	00566	11100570		BRU	**2		00703570
0398	00567	11100123		BRU	L10		00703580
0399	00570	03100732		STA	L0DF	SET LOAD FLAG NON ZERO	00703590
0400	00571	00000003		CLA			00703600
0401	00572	03100737		STA	NFLG	SET NAME FLAG ON	00703610
0402	00573	11100123		BRU	L10		00703620
0403	00574	12300705	LLF1	SPB*	I3	CHECK LOAD FLAG	
0404	00575	01100753		LAA	CD		00703640
0405	00576	15100720		CMA	K9	=1200	00703650
0406	00577	11100613		BRU	L90	<010 INITIAL SUBROUTINE CALL	00703660
0407	00600	11100605		BRU	L86	<100 INITIAL COMMON DEFINITION	00703670
0408	00601	12300706		SPB*	I4	<110 INITIAL COMMON REQUEST	00703680
0409	00602	00141715		DATA	'ICM'	COMMON REQUEST BEFORE BEING DEFINED	00703690

0451	00644	12300706	SPB* I4	<TYPE0	00004080
0452	00645	00146303	DATA 'LC''		00004090
0453	00646	11100120	BRU LX10		00004100
0454	00647	12300704	L114 SPB* I2	REL0CATE	00004110
0455	00650	01100737	LAA NFLG		00004120
0456	00651	00000022	SAZ		00004130
0457	00652	11100654	BRU **2	SET ENDJ	00004140
0458	00653	11100633	BRU L112	DO NOT SET ENDJ FOR SUBROUTINES	00004150
0459	00654	01100750	LAA ADDR		00004160
0460	00655	03300762	STA* I141	ENDJ	00004170
0461	00656	11100633	BRU L112		00004180
0462			*		
0463			*	9-BIT ADD-T0 REM0VED MDL 1/10/69 *C	
0464			*	14-BIT ADD-T0 REM0VED MDL 1/10/69 *C	
0465			*	15-BIT ADD-T0 REM0VED MDL 1/10/69 *C	
0466			*		
0467			*		00004190
0468			*		00005040
0469			*****SET LOAD FLAG		00005050
0470	00657	00000003	L190 CLA		00005060
0471	00660	03100732	STA L0DF	SET LOAD FLAG FOR LOADING <=00	00005070
0472	00661	11100123	BRU L10		00005080
0473			*		00005090
0474	00662	00000000	MZCM HLT	TEST ADDRESS IN A ACCUM, F.E.C. 8-30-66	00005100
0475	00663	15100700	CMA KCML	T0 SEE IF IN MAP ZERO F.E.C. 8-30-66	00005110
0476	00664	11100673	BRU ZCHK	REL0W VIRTUAL MAP ZERO, CHECK REAL MAP ZERO D.P.C. 3/6	
0477	00665	11300662	BRU* MZCM	F.E.C. 8-30-66	00005130
0478	00666	15100677	CMA KCMH	F.E.C. 8-30-66	00005140
0479	00667	11300662	BRU* MZCM	F.E.C. 8-30-66	00005150
0480	00670	00000033	N0P	F.E.C. 8-30-66	00005160
0481	00671	14100662	SKIP IMS MZCM	F.E.C. 8-30-66	00005170
0482	00672	11300662	BRU* MZCM	F.E.C. 8-30-66	00005180
0483	00673	15100713	ZCHK CMA K1	CHECH FOR REAL MAP ZERO DPC 3/6/69	
0484	00674	11300662	BRU* MZCM	YES, IMMEDIATE RETURN DPC 3/6/69	
0485	00675	11100671	BRU SKIP	N0, SKIP IMMEDIATE RETURN DPC 3/6/69	
0486	00676	11100671	BRU SKIP	N0, SKIP IMMEDIATE RETURN DPC 3/6/69	
0487	00677	00000000	KCMH HLT	F.E.C. 8-30-66	00005190
0488	00700	00000000	KCML HLT	F.E.C. 8-30-66	00005200
0489			***** ADDRESS CONSTANTS		00005210
0490	00701	35400123	A10 DAC L10		00005220
0491	00702	35401063	A11 DAC L130		00005230

0492	00703	35401271	I1	DAC	READ		00005240
0493	00704	35401221	I2	DAC	RELF		00005250
0494	00705	35401201	I3	DAC	CHEC		00005260
0495	00706	35401234	I4	DAC	TYPE		00005270
0496	00707	35401206	I5	DAC	FLNT		00005280
0497	00710	35401101	I9	DAC	L200		00005320
0498	00711	35401103	I10	DAC	L300		00005330
0499	00712	35401776	ILH	DAC	RPLH		00005340
0500			*				00005350
0501			*****	DATA	CONSTANTS		00005360
0502	00713	00001000	K1	DATA	'1000		00005370
0503	00714	00000036	K2	DATA	'36	DPC 3/29/69	
0504	00715	00000026	K4	DATA	'26		00005390
0505	00716	00077000	K5	DATA	'77000	D.P.C. 3/6/69	
0506	00717	00000001	K7	DATA	1		00005410
0507	00720	00000200	K9	DATA	'200		00005420
0508	00721	00177774	K10	DATA	-4		00005430
0509	00722	00177777	K17	DATA	-1		00005450
0510	00723	00001777	K21	DATA	'1777		00005460
0511	00724	00077777	K24	DATA	'077777		00005470
0512	00725	37400054	K25	EAC	LOAD-4	R	DPC 8/69
0513	00726	37400051	REGN	EAC	LOAD-7		DPC 3/2R/69
0514			*				00005490
0515			*****	VARIABLES			00005500
0516	00727	25400000	COMN	DAC	0		00005520
0517	00730	27400000	COMI	EAC	**		
0518	00731	25400000	END	DAC	**	LOC. OF LAST SUBR. NAME ENTRY	00005530
0519	00732	25400000	LOAD	DAC	**	LOAD FLAG <0=LOAD0	00005550
0520	00733	25400000	CALS	DAC	**	NUMBER OF UNDEFINED CALLS LEFT	00005570
0521	00734	25400000	BASE	DAC	**	PROGRAM BASE	00005580
0522	00735	25400000	FFSW	DAC	**	UNPACK FLIP FLOP SW	00005590
0523	00736	25400000	WCNT	DAC	**	POINTER <INPUT BUFFER0	00005600
0524	00737	25400000	NFLG	DAC	**	NAME FLAG	00005650
0525	00740	25400000	J	DAC	**	ADDRESS SWITCH	00005660
0526	00741	25400000	T1	DAC	**	TEMP. CELLS	00005680
0527	00742	25400000	T2	DAC	**		00005690
0528	00743	25400000	T3	DAC	**		00005700
0529	00744	25400000	T4	DAC	**		00005710
0530	00745	25400000	T5	DAC	**		00005720
0531	00746	25400000	TPY	DAC	**		00005730
0532	00747	25400000	OP	DAC	**	OPERATOR <BITS 12-150	00005740

0533	00750	25400000	ADDR	DAC	**	ADDRESS <BITS 2-160	00005750
0534	00751	25400000	XI	DAC	**	INDEX, INDIRECT <BITS 15,160	00005760
0535	00752	25400000	XIAD	DAC	**	INDEX, INDIRECT, 14 BIT ADDR.	00005770
0536	00753	25400000	CD	DAC	**	COMMON/DEFINED FLAG	00005780
0537	00754	27400000	RPL	EAC	**	*****	
0538	00755	25400000	SIZE	DAC	**	COMMON BLOCK SIZE	00005790
0539	00756	25400000	S1S2	DAC	**	SUBROUTINE NAME	00005800
0540	00757	25400000	S3S4	DAC	**	SUBROUTINE NAME	00005810
0541	00760	25400000	S5S6	DAC	**	SUBROUTINE NAME	00005820
0542	00761	35401071	L401	DAC	L40J		00005830
0543	00762	35401777	I141	DAC	ENDJ		00000350
0544	00763	37401777	IE41	EAC	ENDJ		
0545	00764	27400000	LZ	EAC	**	MAP ZERO POINTER	
0546	00765	27400000	LZR	EAC	**	PERM MAP ZERO START	
0547			*****		9-BIT STRING		00004210
0548	00766	12300705	L120	SPB*	I3	CHECK LOAD FLAG	00004220
0549	00767	01100702		LAA	A11	SET SWITCH J TO L130	00004250
0550	00770	03100740		STA	J		00004260
0551	00771	01100754		LAA	RPL		
0552	00772	03100755		STA	SIZE		DPC 1969
0553	00773	12300704		SPB*	I2	RELJ	DPC 1969
0554	00774	03100754	L132	STA	RPL		DPC 1969
0555	00775	00000005		TAB		*****	
0556	00776	01400000		LAA	0,1	*****	
0557	00777	02100723		LBA	K21		
0558	01000	70001000		WRG	W1000		
0559	01000	00000027		ABA			00004770
0560	01001	03301540		STA*	I117		
0561	01002	02301557		LBA*	S17F		
0562	01003	04301532		STB*	I110		
0563	01004	00000022		SAL			00004810
0564	01005	11101007		BRU	L122		DPC 1969
0565	01006	11101023		BRU	L123		00004830
0566	01007	01301540	L122	LAA*	I117	IF T4 .GT, W1000	
0567	01010	15301535		CMA*	I115		
0568	01011	11101044		BRU	L126		
0569	01012	00000033		NOP			00004330
0570	01013	01301540	L124	LAA*	I117	T4 = RPL<3-70, T4<8-160	00004340
0571	01014	00000716		LSL	7		00004350
0572	01015	00000005		TAB			00004360
0573	01016	01301551		LAA*	IRPL	*****	

0574	01017	00000116	LSL	1			
0575	01020	00001215	RSL	10			DPC 8/69
0576	01021	00001113	FLL	9			DPC 8/69
0577	01022	03301540	STA*	II17			00004400
0578	01023	02301551	L12>	LBA*	IRPL	*****	
0579	01024	01400000	LAA	0,1		*****	
0580	01025	00000416	LSL	4			00004430
0581	01026	00001615	RSL	14			00004440
0582	01027	03301534	STA*	II14			
0583	01030	02301551	L12>	LBA*	IRPL	*****	
0584	01031	01400000	LAA	0,1		*****	
0585	01032	00001415	RSL	12			00004470
0586	01033	00000116	LSL	1			00004480
0587	01034	03301533	STA*	II13			
0588	01035	00000022	SAZ				00004500
0589	01036	11101040	BRU	**2			00004510
0590	01037	11301555	BRU*	L48A			
0591	01040	06101616	SMA	K4A			
0592	01041	00000022	SAZ				00004540
0593	01042	11301556	BRU*	L42B			
0594	01043	11301555	BRU*	L48A			
0595	01044	01301551	L120	LAA*	IRPL	*****	
0596	01045	06301535	SMA*	II15			
0597	01046	00000024	SAP				00004590
0598	01047	11101013	BRU	L124			00004600
0599	01050	02301540	LBA*	II17			DPC 1969
0600	01051	16301554	AMB*	ICML	KCML		DPC 1969
0601	01052	02400000	LBA	0,1			UPC 1969
0602	01053	00000003	CLA				DPC 1969
0603	01054	00000213	FLL	2			DPC 1969
0604	01055	03301534	STA*	II14	XI		DPC 1969
0605	01056	01301551	LAA*	IRPL			UPC 1969
0606	01057	00001615	RSL	14	RANK BIT		DPC 1969
0607	01060	00001613	FLL	14			UPC 1969
0608	01061	03301540	STA*	II17	T4		DPC 1969
0609	01062	11101030	BRU	L125			
0610	01063	01301540	L130	LAA*	II17		
0611	01064	00000022	SAZ				00004690
0612	01065	11301767	BRU*	II32			DPC 1969
0613	01066	01301557	LAA*	SI2F	SI7E		
0614	01067	03301551	STA*	IRPL	*****		

0615	01070	11301531	BRU*	I18			
0616			*				
0617			*****	TEST FOR FAC OPERATOR			
0618			*				
0619	01071	06101427	L40J	SMA	X010		00708830
0620	01072	00000022		SAZ			00708840
0621	01073	11101075	BRU	**2			00708850
0622	01074	11301537	BRU*	L40L			00708860
0623	01075	01301532	LAA*	I110			00708870
0624	01076	00000111	LSA	1			00708880
0625	01077	00000115	RSL	1			00708890
0626	01100	11301536	BRU*	L40K			00708900
0627			*				
0628			*****	END OF JOB CODE			00705900
0629	01101	12101234	L200	SPB	TYPE		DPC 8/69
0630	01102	00142712		DATA	'FEJ'		00705920
0631	01103	01301524	L300	LAA*	I12		00705930
0632	01104	15301527		CMA*	I139		
0633	01105	11101107	BRU	**2		PRINT MAP IF SENSE SWITCH 1 ON	00705960
0634	01106	11101146	BRU	XRRR			00705970
0635	01107	02301524	LBA*	I12		SET INDEX = REGN	00705980
0636	01110	04301525	L310	STB*	I13	T3	00705990
0637	01111	01400000	LAA	0,1			00706000
0638	01112	00000023	SAN			SKIP IF NOT LOADED	00706010
0639	01113	11101116	BRU	**3		LOADED ALREADY	00706020
0640	01114	00130402	SNS	2		SKIP IF NOT SET	00706030
0641	01115	11101121	BRU	L315-1		PRINT NAME OF MISSING SUB	00706040
0642	01116	00130401	SNS	1			00706050
0643	01117	11101121	BRU	**2			00706060
0644	01120	11101141	BRU	N0			00706070
0645	01121	12101234	SPB	TYPE		TYPE=OUT	00706080
0646	01122	00040000	L310	DATA	'40000	NULL	
0647	01123	01400000	LAA	0,1			00706100
0648	01124	00000021	SAS			MDL 1/10/69 *C	
0649	01125	00000003	CLA			MDL 1/10/69 *C	
0650	01126	11101131	BRU	L318			
0651	01127	02400000	LBA	0,1			
0652	01130	01400000	LAA	0,1			
0653	01131	12101260	L310	SPB	TYPE	TYPE IN OCTAL NO IN A REG	00706180
0654	01132	02301525	LBA*	I13		T3	00706190
0655	01133	01400001	LAA	1,1		TYPE NAME	00706200

0656	01134	12101166	SPB	FIX				00006210
0657	01135	01400002	LAA	2,1				00006220
0658	01136	12101166	SPB	FIX				00006230
0659	01137	01400003	LAA	3,1				00006240
0660	01140	12101166	SPB	FIX				00006250
0661	01141	16301526	NO	AMB*	115	--4		00006260
0662	01142	00000004	TBA			CHECK FOR END OF TABLE		00006270
0663	01143	06301527	SMA*	116		END		00006280
0664	01144	00000022	SAZ					00006290
0665	01145	11101110	BRU	L310		MORE NAMES REMAINING		00006300
0666	01146	01101425	ØRRK	LAA	CRLF			
0667	01147	12101253	SPB	TYP*				00006320
0668	01150	01101776	LAA	RPLH		HIGHEST CORE LOCATION USED		00006330
0669	01151	12101260	SPB	TYP*				00006340
0670	01152	01301552	LAA*	ILZ		HIGHEST IN MAP ZERO		00006350
0671	01153	12101260	SPB	TYP*				00006360
0672	01154	00000000	HLT					00006370
0673	01155	01301530	L32U	LAA*	117	CHECK IF SUBROUTINES REQUIRED		00006380
0674	01156	02101777	LBA	ENDJ		SET INDEX TO START	DPC 3/28/69	
0675	01157	00000021	SAS				DPC 3/28/69	
0676	01160	00020000	IK1	DATA	'20000			00006580
0677	01161	11400000	BRU	0,1		BRANCH TO LOADED PROGRAM	UPC 3/28/69	
0678	01162	01101772	LAA	IKM1				00006420
0679	01163	03301547	STA*	1129		-1 TO WCNT		00006430
0680	01164	03301550	STA*	1133				00006440
0681	01165	11301531	BRU*	118				00006450
0682	01166	25400000	FIX	DAC	0	CONVERT TO FULL ASCII AND OUTPUT		00006460
0683	01167	12101173	SPB	FIX1		DO LEFT CHAR		00006470
0684	01170	00001016	LSL	8				00006480
0685	01171	12101173	SPB	FIX1		DO RIGHT CHAR		00006490
0686	01172	11301166	BRU*	FIX				00006500
0687	01173	25400000	FIX1	DAC	0			00006510
0688	01174	15101160	CMA	IK1		= '20000		00006520
0689	01175	05101122	AMA	IK2		= '40000		00006530
0690	01176	00000033	NØP					00006540
0691	01177	00170101	AØP	1,4				00006560
0692	01200	11301173	BRU*	FIX1				00006570
0693	01201	00001122	IK2	EQU	L315			
0694			*****	CHECK	LOAD	FLAG		00007210
0695	01201	25400000	CHFC	DAC	**			00007220
0696	01202	01301541	LAA*	1121		LOAD FLAG	LOADF	00007230

0697	01203	00000022	SAZ				00007240
0698	01204	11301531	BRU* II22	FLAG IS OFF	L10		00007250
0699	01205	11301201	BRU* CHEC	FLAG IS ON KEXITO			00007260
0700			*				00007270
0701			*				00007280
0702			*****	SUBR, TO MAKE A NAME TABLE ENTRY			00007290
0703	01206	25400000	FLNT DAC **				00007300
0704	01207	03400000	STA 0,1				00007310
0705	01210	01301542	LAA* II23		S1S2		00007320
0706	01211	03400001	STA 1,1				00007330
0707	01212	01301543	LAA* II24		S3S4		00007340
0708	01213	03400002	STA 2,1				00007350
0709	01214	01301544	LAA* II25		S5S6		00007360
0710	01215	03400003	STA 3,1				00007370
0711	01216	16301526	AMB* II5	--4			00007380
0712	01217	04301527	STB* II6				00007390
0713	01220	11301206	BRU* FLNT	EXIT			00007400
0714			*				00007410
0715			*****	RELATIVISE SUBROUTINE			00007420
0716	01221	25400000	RELF DAC **				00007430
0717	01222	01301545	LAA* II26	CHECK R BIT	T1		00007440
0718	01223	00001216	LSL 10				00007450
0719	01224	00000024	SAP		MDL 1/10/69	*C	
0720	01225	11101230	BRU **3		MDL 1/10/69	*C	
0721	01226	01301532	LAA* II10		MDL 1/10/69	*C	
0722	01227	11301221	BRU* RELF		MDL 1/10/69	*C	
0723	01230	01301532	LAA* II10	ADD BASE TO OPERAND	ADDR,	ADDR	00007480
0724	01231	05301546	AMA* II27		BASE		00007490
0725	01232	03301532	STA* II10		ADDR		00007500
0726	01233	11301221	BRU* RELF	EXIT			00007510
0727			*				00007520
0728			*****	SUBROUTINE TO TYPE THE NEXT WORD			00007530
0729	01234	25400000	TYPE DAC **				00007540
0730	01235	01101425	LAA CRLF				
0731	01236	12101253	SPB TYPA				
0732	01237	01301234	LAA* TYPE				00007550
0733	01240	12101253	SPB TYPA				00007560
0734	01241	14101234	IMS TYPE	INCREMENT RETURN			00007570
0735	01242	11301234	BRU* TYPE	EXIT			00007580
0736			*				00007590
0737			*****	SUBROUTINE TO SHIFT AND TYPE B REGISTER			00007600

0738	01243	25400000	TYPB	DAC	**			00007610
0739	01244	00000003		CLA				00007620
0740	01245	00000317		FLA	3			00007630
0741	01246	00000516		LSL	5			00007640
0742	01247	00000317		FLA	3			00007650
0743	01250	05101430		AMA	K15	'000'		00007660
0744	01251	12101253	SPB	TYPB		TYPE ACCUMULATOR		00007670
0745	01252	11301243	BRU*	TYPB		EXIT		00007680
0746			*					00007690
0747			*****	SUBROUTINE TO	TYPE	CONTENTS OF ACC. REGISTER		00007700
0748	01253	25400000	TYPB	DAC	**			00007710
0749	01254	00170101		AOP	1,W		CKA	00007720
0750	01255	00001016		LSL	8		WES	00007730
0751	01256	00170101		AOP	1,W		CKA	00007740
0752	01257	11301253	BRU*	TYPB		EXIT		00007750
0753			*					00007760
0754			*	SUBROUTINE	TYPES	A REG IN OCTAL		00007770
0755			*					00007780
0756	01260	00000000	TYPB	***	**			00007790
0757	01261	00000116		LSL	1			00007800
0758	01262	00000115		RSL	1			00007810
0759	01263	00001412		FRA	12			00007820
0760	01264	05101426		AMA	K12			00007830
0761	01265	12101253	SPB	TYPB				00007840
0762	01266	12101243	SPB	TYPB				00007850
0763	01267	12101243	SPB	TYPB				00007860
0764	01270	11301260	BRU*	TYPB				00007870
0765			*					00007880
0766			*****	READ	24	BIT LOADER INPUT WORD		00007900
0767			*					00007890
0768	01271	25400000	READ	DAC	**			00007910
0769	01272	14301547	IMS*	I129			WCNT	00007920
0770	01273	11101331	BRU	RD20				00007930
0771	01274	00130403		SNS	3		FEC	00007940
0772	01275	11101351	BRU	MAGT		MAG TAPE INPUT	FEC	00007950
0773	01276	01101771	LAA	AIP1		AIP 1,W		00007960
0774	01277	00130400		SNS	0	TEST FOR H.S. INPUT		00007970
0775	01300	11101304	BRU	**4				00007980
0776	01301	00130101	CEU	1,W		SELECT ASR-33 FOR READER		00007990
0777	01302	00004000	DATA	*4000		MODE		00008000
0778	01303	11101307	BRU	**4				00008010

0779	01304	06101772	SMA	IKM1	INCREMENT UNIT NUMBER		00008020
0780	01305	00130102	CEU	2,W	SELECT HIGH SPEED READER		00008030
0781	01306	00001000	DATA	11000			00008040
0782	01307	03101313	STA	AA3			00008050
0783	01310	03101763	STA	A4			00008060
0784	01311	05101677	AMA	D1	ADD IN MERGE BIT		00008070
0785	01312	03101765	STA	A5			00008080
0786	01313	00000033	AA3	NOP	AIP UNIT, W		00008090
0787	01314	06101672	SMA	2377	SKIP TO START		00008100
0788	01315	00000022	SAZ				00008110
0789	01316	11101313	BRU	*-3	NOT START CODE		00008120
0790	01317	02101431	LBA	K16			00008140
0791	01320	12101762	AA4	SPB	INWD	READ ONE WORD FROM UNIT	00008150
0792	01321	03501524	STA	IBUF+55,1			00008160
0793	01322	00000026	IBS		TEST FOR 1 BLOCK READ		00008190
0794	01323	11101320	BRU	AA4	NOT FINISHED		00008200
0795	01324	11101406	BRU	MAG1	GO COMPUTE CHECKSUM		
0796	01325	00000022	TEL1	SAZ	CHECKSUM OK		00008210
0797	01326	11101417	BRU	TPCK	CHECKSUM BAD		00008220
0798	01327	02101432	LBA	K22	==54		00008230
0799	01330	04301547	STB*	I129		WCNT	00008240
0800	01331	02301547	RD20	LBA*	I129	WCNT	00008250
0801	01332	14301550	IMS*	I133	IF FFSW GOES ZERO, FETCH FFSW		00008260
0802	01333	11101342	BRU	RD30	WORD FROM LEFT POSITION		00008270
0803	01334	01501524	LAA	IBUF+55,1			00008280
0804	01335	02501523	LBA	IBUF+54,1			00008290
0805	01336	00001014	FRL	8			00008300
0806	01337	00001016	RD22	LSL	8		00008310
0807	01340	00001015	RSL	8			00008320
0808	01341	11301271	BRU*	READ	RETURN EXIT		00008330
0809	01342	01101772	RD30	LAA	IKM1		
0810	01343	03301550	STA*	I133	RESET FFSW	FFSW	00008350
0811	01344	01501523	LAA	IBUF+54,1			00008360
0812	01345	02501524	LBA	IBUF+55,1			00008370
0813	01346	14301547	IMS*	I129		WCNT	00008380
0814	01347	00000033	NOP				00008390
0815	01350	11101337	BRU	RD25			00008400
0816	01351	01101414	MAG1	LAA	IND1	FEC	00008410
0817	01352	02101416	LBA	FWA	LOAD INDEX TO CURRENT ADDRESS REGISTER	DPC 3/28/69	
0818	01353	03400000	STA	0,1		DPC 3/28/69	
0819	01354	01101415	LAA	IND2		FEC	00008430

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0820 01355 03400001 STA 1,1                                DPC 3/28/69
0821 01356 00130106 CEU MTU,W
0822 01357 00000123 DATA '123'                                00008470
0823 01360 00130206 TRY3 TEU MTU
0824 01361 00100000 DATA '100000'
0825 01362 11101360 BRU *-2
0826 01363 00130106 CEU MTU,W
0827 01364 00104400 DATA '104400'                                00008490
0828 01365 00130206 TEU MTU
0829 01366 00100000 DATA '100000'                                00008510
0830 01367 11101365 BRU *-2                                00008520
0831 01370 00130206 TEU MTU                                MDL 1/10/69 *C
0832 01371 00002000 DATA '2000'                                00008540
0833 01372 11101374 BRU **2                                00008550
0834 01373 11101406 BRU MAG1                                00008560
0835 01374 02301526 LBA* I15
0836 01375 00000026 IBS                                00008570
0837 01376 11101403 BRU BSPC                                00008580
0838 01377 00170501 MOP 1,W                                00008590
0839 01400 00151240 DATA '1512'                                00008600
0840 01401 00000000 HLT                                00008610
0841 01402 11101406 BRU MAG1                                00008620
0842 01403 00130106 HSPC CEU MTU,W                                00008630
0843 01404 00004040 DATA '4040'                                00008640
0844 01405 11101360 BRU TRY3                                00008650
0845 01406 02101432 MAG1 LBA K22                                00008660
0846 01407 01101435 LAA IBUF                                FEC 00008670
0847 01410 05501524 AMA IBUF+55,1                                FEC 00008680
0848 01411 00000026 IBS                                FEC 00008690
0849 01412 11101410 BRU *-2                                FEC 00008700
0850 01413 11101325 BRU TELI                                FEC 00008710
0851 01414 37401435 IND1 EAC IBUF INPUT BUFFER POINTER 10/70 RLD *F
0852 01415 00100067 IND2 DATA '100067' 55 WORDS 10/70 RLD *F
0853 01416 27401060 FWA EAC BTC
0854 *
0855 *****TYPE CHECK CKD ON BAD CHECK SUM 00008770
0856 01417 12101234 TPCK SPB TYPE 00008780
0857 01420 00141713 DATA '1417' 00008790
0858 01421 00000000 HLT 00008800
0859 01422 00130403 SNS 3 00008810
0860 01423 11101327 BRU TELI+2

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0861 01424 11101274 BRU READ+S RETRY READ EXCEPT ON MTJ
0862 *
0863 01425 00106612 CRLF DATA '106612 00008940
0864 01426 00120260 K12 DATA '120260 'KSP00'' 00008970
0865 01427 00000010 DC10 DATA '10 00008930
0866 01430 00130260 K15 DATA '130260 00008980
0867 01431 00177711 K16 DATA -55 00008990
0868 01432 00177712 K22 DATA -54 00009000
0869 01433 00000002 BSS 2 FOR START CODE ON MAG TAPE
0870 01435 00000067 IBUF BSS 55 INPUT BUFFER 00009010
0871 *
0872 ***** ADDRESS CONSTANTS 00009020
0873 01524 35400726 I12 DAC BEGN 00009030
0874 01525 35400743 I13 DAC T3 00009050
0875 01526 35400721 I15 DAC K10 00009060
0876 01527 35400731 I16 DAC END 00009070
0877 01530 35400733 I17 DAC CALS 00009080
0878 01531 35400123 I18 DAC L10 00009090
0879 01532 35400750 I110 DAC ADDR 00009100
0880 01533 35400747 I113 DAC OP 00009110
0881 01534 35400751 I114 DAC XI 00009140
0882 01535 35400713 I115 DAC K1 00009150
0883 01536 35400263 L40K DAC L40B 00009160
0884 01537 35400260 L40L DAC L40Z 00008910
0885 01540 35400744 I117 DAC T4 00008920
0886 01541 35400732 I121 DAC L0DF 00009170
0887 01542 00001531 I122 EQU I18 00009200
0888 01542 35400756 I125 DAC S1S2 00009210
0889 01543 35400757 I124 DAC S3S4 00009220
0890 01544 35400760 I125 DAC S5S6 00009230
0891 01545 35400741 I126 DAC T1 00009240
0892 01546 35400734 I127 DAC BASE 00009250
0893 01547 35400736 I129 DAC WCNT 00009260
0894 01550 35400735 I135 DAC FFSW 00009270
0895 01551 35400754 IRPL DAC ***** 00009280
0896 01552 00001527 I139 EQU I16 00009330
0897 01552 35400764 ILZ DAC LZ 00009340
0898 01553 35400765 ILZB DAC LZB 00009350
0899 01554 35400700 ICML DAC KCML
0900 01555 35400417 L48A DAC L48
0901 01556 35400277 L42B DAC L42

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Address	Op Code	Operand 1	Operand 2	Instruction	Comment	Hex Value
0902	01557	35400755	SIZE	DAC	SIZE	
0903	01560	35400723	K21A	DAC	K21	
0904	01561	70001561		ORG	'1561	
0905	01561	01101671	G01	LAA	A0P1	
0906	01562	00130400		SNS	0	00009390
0907	01563	11101565		BRU	**2	00009400
0908	01564	11101570		BRU	**4	00009410
0909	01565	06101772		SMA	IKM1	00009420
0910	01566	00130102		CEU	2,N	00009430
0911	01567	00004000		DATA	'4000	00009440
0912	01570	03101655		STA	A1	00009450
0913	01571	03101657		STA	A2	00009460
0914	01572	01101772		LAA	IKM1	00009470
0915	01573	03101770		STA	TIME	00009480
0916	01574	12101662		SPB	LDR	00009490
0917	01575	01101672	LAAW	LAA	0377	00009500
0918	01576	12101653		SPB	WD0T	00009510
0919	01577	01101777		LAA	ENDJ	00009520
0920	01600	12101653		SPB	WD0T	00009530
0921	01601	00000005		TAB		00009540
0922	01602	06101776		SMA	RPLH	00009550
0923	01603	05101772		AMA	IKM1	00009560
0924	01604	03101773		STA	NWCT	00009570
0925	01605	12101653		SPB	WD0T	00009580
0926	01606	01101732	0NIT	LAA	M100	00009590
0927	01607	03101774		STA	WDCT	00009600
0928	01610	00000003		CLA		00009610
0929	01611	03101775		STA	MYCS	00009620
0930	01612	01400000	0PUT	LAA	0,1	00009630
0931	01613	12101653		SPB	WD0T	00009640
0932	01614	05101775		AMA	MYCS	00009650
0933	01615	03101775		STA	MYCS	00009660
0934	01616	00000026	K4A	JBS		
0935	01617	00000000	ZZ71	HLT		00009680
0936	01620	14101773		JMS	NWCT	00009690
0937	01621	11101623		BRU	**2	00009700
0938	01622	11101625		BRU	CSUM	00009710
0939	01623	14101774		JMS	WDCT	00009720
0940	01624	11101612		BRU	0PUT	00009730
0941	01625	01101775	CSUM	LAA	MYCS	00009740
0942	01626	12101653		SPB	WD0T	00009750

BASE ADDRESS

OUTPUT NEG WORD COUNT

INITIALIZE CHECK SUM

OUTPUT CHECK SUM

0943	01627	01101773		LAA	NWCT		00709760
0944	01630	00000024		SAP			00709770
0945	01631	11101606		BRU	ANIT		00709780
0946	01632	12101662	ENDU	SPB	LDR		00709790
0947	01633	14101770		IMS	TIME		00709800
0948	01634	11101637		BRU	**3		00709810
0949	01635	00130401		SNS	1		00709820
0950	01636	11101646		BRU	DMP0		00709830
0951	01637	00130400		SNS	0		00709840
0952	01640	11101642		BRU	**2		00709850
0953	01641	11101644		BRU	**3		00709860
0954	01642	00130102		CEU	2,W		00709870
0955	01643	00002000		DATA	12000		00709880
0956	01644	00000000		HLT			00709890
0957	01645	11101561		BRU	G01		
0958	01646	01301553	DMP0	LAA*	IL7B		00709910
0959	01647	03101777		STA	ENDJ		00709920
0960	01650	01301552		LAA*	ILZ		00709930
0961	01651	03101776		STA	RPLH		00709940
0962	01652	11101575		BRU	LAA0		00709950
0963	01653	00000000	WD0T	ZZZ	**		00709960
0964	01654	03101617		STA	ZZZ1		00709970
0965	01655	00000033	A1	N0P			00709980
0966	01656	00001016		LSL	8		00709990
0967	01657	00000033	A2	N0P			00710000
0968	01660	01101617		LAA	ZZZ1		00710010
0969	01661	11301653		BRU*	WD0T		00710020
0970	01662	00000000	LDR	ZZZ	**		00710030
0971	01663	02101732		LBA	M100		00710040
0972	01664	00000003		CLA			00710050
0973	01665	12101653		SPB	WD0T		00710060
0974	01666	00000026		IBS			00710070
0975	01667	11101665		BRU	**2		00710080
0976	01670	11301662		BRU*	LDR		00710090
0977	01671	00170101	A0P1	A0P	1,W		00710100
0978	01672	00000377	0377	DATA	1377		00710110
0979	01673	01101771	CHAN	LAA	A1P1		00710120
0980	01674	00130400		SNS	0		00710130
0981	01675	11101701		BRU	**4		00710140
0982	01676	00130101		CEU	1,W		00710150
0983	01677	00004000	D1	DATA	14000		00710160

MDL 1/10/69 *C

0984	01700	11101704		BRU	**4		00010170
0985	01701	06101772		SMA	IKM1		00010180
0986	01702	00130102		CEU	2,W		00010190
0987	01703	00001000	IK8	DATA	'1000		00010200
0988	01704	03101712		STA	A3		00010210
0989	01705	03101763		STA	A4		00010220
0990	01706	05101677		AMA	D1		00010230
0991	01707	03101765		STA	A5		00010240
0992	01710	01101772		LAA	IKM1		00010250
0993	01711	03101770		STA	TIME		
0994	01712	00000033	A3	NOP			00010270
0995	01713	00000022		SAZ			00010280
0996	01714	11101716		BRU	**2		00010290
0997	01715	11101712		BRU	**3		00010300
0998	01716	12101762		SPB	INWD		00010310
0999	01717	03101777		STA	ENDJ		00010320
1000	01720	00000005		IAB			00010330
1001	01721	12101762		SPB	INWD		00010340
1002	01722	03101773		STA	NWCT		00010350
1003	01723	01101732	INIT	LAA	M100		00010360
1004	01724	03101774		STA	WDCT		00010370
1005	01725	00000003		CLA			00010380
1006	01726	03101775		STA	MYCS		00010390
1007	01727	12101762	INPT	SPB	INWD		00010400
1008	01730	03400000		STA	0,1		00010410
1009	01731	00000026		IBS			00010420
1010	01732	00177700	M10U	DATA	-64		00010430
1011	01733	05101775		AMA	MYCS		00010440
1012	01734	03101775		STA	MYCS		00010450
1013	01735	14101773		IMS	NWCT		00010460
1014	01736	11101740		BRU	**2		00010470
1015	01737	11101742		BRU	CSML		00010480
1016	01740	14101774		IMS	WDCT		00010490
1017	01741	11101727		BRU	INPT		00010500
1018	01742	12101762	CSML	SPB	INWD		00010510
1019	01743	15101775		UMA	MYCS		00010520
1020	01744	11101746		BRU	CK		00010530
1021	01745	11101751		BRU	JK		00010540
1022	01746	00170501	CK	NOP	1,W		00010550
1023	01747	00145640		DATA	'K'K'		00010560
1024	01750	00004000		DATA	'004000		00010570

HLT INDEX FOR DUMP

1025	01751	01101773	OK	LAA	NWCT		00010580
1026	01752	00000024		SAP			00010590
1027	01753	11101723		BRU	INIT		00010600
1028	01754	14101770		IMS	TIME		00010610
1029	01755	11101760		BRU	*+3		00010620
1030	01756	00130401		SNS	1		00010630
1031	01757	11101712		BRU	A3		00010640
1032	01760	00004000		DATA	'4000	HLT	
1033	01761	11101673		BRU	CHAN		00010730
1034	01762	00004000	INWD	DATA	'004000		00010670
1035	01763	00000033	A4	NOP			00010680
1036	01764	00001016		LSL	8		00010690
1037	01765	00000033	A5	NOP			00010700
1038	01766	11301762		BRU*	INWD		00010710
1039	01767	35400774	I132	DAC	L132		DPC 1969
1040	01770	00004000	TIME	DATA	'004000		00010720
1041	01771	00170301	AIP1	AIP	1,W		00010740
1042	01772	00177777	IKM1	DATA	-1		00010750
1043	01773	25400000	NWCT	DAC	0		00010760
1044	01774	25400000	WDCT	DAC	0		00010770
1045	01775	25400000	MYCS	DAC	0		00010780
1046	01776	25400000	RPLM	DAC	0		00010790
1047	01777	25400000	ENDJ	DAC	0		00010800
1048	02000	70400060		END	LOAD		
ERRORS	0000	00000					

PAGE 27 SYSTEMS 8104/B STANDARD LOAD/DUMP PACKAGE - CATALOG NO. 300001F - (9/1/70)

...EXTERNALS...

...SYMBOLICS...

A1	912	*	965								
A10	* 490										
A11	* 491										
A2	913	*	967								
A3	988	*	994	1031							
A4	783		989	* 1035							
A5	785		991	* 1037							
AA3	782	*	786								
AA4	* 791		794								
ADDR	98		101	171	174	186	199	218	266	285	
	292		305	309	346	416	437	459	* 533	879	
AIP1	773		979	* 1041							
AOP1	905	*	977								
BASE	28		447	* 521	892						
BEGR	59	*	213	873							
BSPC	837	*	842								
RTC	* 23		853								
CALS	359		361	448	* 520	877					
CD	391	*	536								
CHAN	* 979		1033								
CHEC	494	*	695								
CK	1020	*	1022								
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COMN	47		53	54	56	144	415	417	* 516		
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CSML	1015	*	1018								
CSUM	938	*	941								
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ENDD	* 946										
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G01	* 905		957								
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L22	*	136				
L300		498	*	031		
L310	*	636				
L315		641	*	040	693	
L318		650	*	053		
L320	*	673				
L40	*	167				
L40A	*	175				
L40B	*	174		083		
L40I		170	*	042		
L40J		542	*	019		
L40K		626	*	083		
L40L		622	*	084		
L40Z	*	171		084		
L41	*	176		220	431	
L42	*	186		262	901	
L42B		593	*	901		
L43	*	190				
L43A	*	204				
L43B		102	*	203		
L44	*	207		212		
L45		210	*	213		
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L46	*	248				
L46B		251	*	259		
L47	*	266				
L47A		255	*	262		
L48		182	*	279	900	
L48A		590		294	* 900	
L50	*	292				
L52		243	*	299		
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L62		94	*	119		
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L90	*	422				

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L98	*	369																		
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LLF1		393	*	403																
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L0DF		341		366		399		445	*	519		886								
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		897																		
LZB		108		206	*	546		898												
M100		926		971		1003	*	1010												
MAG1		795		834		841	*	845												
MAGT		772	*	816																
MPZR		31	*	106		117		163												
MTU	*	22		821		823		826		828		831		842						
MYCS		929		932		933		941		1006		1011		1012		1019	*	1045		
MZCM		184		227	*	474		477		479		481		482		484				
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N0		644	*	661																
NWCT		924		936		943		1002		1013		1025	*	1043						
0377		787		917	*	978														
0C10		619	*	865																
0K		1021	*	1025																
0NIT	*	926		945																
0P		119		167		273		379	*	532		880								
0PUT	*	930		940																
0RRR		634	*	866																
RD20		770	*	800																
RD25	*	806		815																
RD30		802	*	809																
READ		492	*	768		808		861												
RELF		493	*	716		722														
RPL		30		36		49		134		137		138		197		239			385	

	446	*	537	551	554	895				
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S374		*	127							
S3S4	* 540		889							
S5S6	* 541		890							
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SIZF	561		813	* 902						
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T2	72		76	97	219	* 527				
T3	214		238	241	* 228	874				
T4	* 529		885							
T5	96		189	224	* 230					
TELI	* 796		850	860						
TIME	915		947	993	1028	* 1040				
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TPY	345		351	* 531						
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TYPA	667		731	733	* 748	761				
TYPB	* 738		762	763						
TYPE	495		629	* 729	856					
TYPØ	126		653	669	671	* 756	764			
W	691		749	751	776	780	821	826	838	842
	910		954	977	982	986	1022	1041		
WCNT	66	*	223	893						
WDCT	927		939	1004	1016	* 1044				
WDØT	918		920	925	931	942	* 963	969	973	
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XIAD	84		92	203	207	* 535				
XIDC	83		202	279	* 284	290	412			
ZCHK	476	*	483							
ZZZ1	* 935		964	968						



EJ
13241 00676

EJ
14062 00744

0001		*		
0002	00000	00000000	REL	
0003	00000	00000000	NXT HLT	
0004	00001	01077766	LAA	==10
0005	00002	03100053	STA	LIN
0006	00003A	000000031	LCS	
0007	00004	00000516	LSL	5
0008	00005	05030000	AMA	='130000
0009	00006	00170101	AOP	1,W
0010	00007	00001016	LSL	8
0011	00010	00000515	RSL	5
0012	00011	05030000	AMA	='130000
0013	00012	00170101	AOP	1,W
0014	00013	00170501	MOP	1,W
0015	00014	00120000	DATA	'120000
0016	00015	01077774	AGN LAA	==4
0017	00016	03100054	STA	FP
0018	00017A	000000031	LCS	
0019	00020	00170115	AOP	13,W
0020	00021	00170315	AIP	13,W
0021	00022A	000000024	SAP	
0022	00023	11100047	BRU	NG
0023	00024A	000000005	CON TAB	
0024	00025A	000000003	CLA	
0025	00026	10001463	ND DIV	=819
0026	00027	05000260	AMA	='260
0027	00030	00001016	LSL	8
0028	00031	00170101	AOP	1,W
0029	00032A	000000003	CLA	
0030	00033	07000012	MPY	=10
0031	00034	14100054	IMS	FP
0032	00035	11100026	BRU	ND
0033	00036	00170501	MOP	1,W
0034	00037	00120000	DATA	'120000
0035	00040	14100053	IMS	LIN
0036	00041	11100015	BRU	AGN
0037	00042	00170501	MOP	1,W
0038	00043	00106400	DATA	'106400
0039	00044	00170501	MOP	1,W
0040	00045	00105000	DATA	'105000
0041	00046	11100000	BRU	NXT
0042	00047A	000000002	NG NEG	
0043	00050	00170501	MOP	1,W
0044	00051	00126400	DATA	'126400
0045	00052	11100024	BRU	CON
0046	00053	00000001	LIN BSS	1
0047	00054	00000001	FP BSS	1

MOP 1,W A-D TEST MF
DATA 106400
MOP 1,W
DATA 105000

MOP 1,W
DATA 1120000

w/ 2001
sd

0048 00055 70400000 END NXT
CVF+NKOPAMKOPAQA CF,PMPMR'Q3KOPA0
QA X,RQA X+R
QA
RQA-R@,@-B>.
PO

