IBM POUGHKEEPSIE

Diagnostic Engineering Publications

1410/7010 March 31, 1964

Subject: Diagnostic Program CU01C

Sequence Number #051
Replaces CU01B

1. CU01C is applicable to all 1410/7010 machines with a minimum memory size of 40000 addresses. (Arithmetic errors will occur if EC#253480 is not yet installed.)

2. This program is a reliability test for the proper operation of all CPU instructions. It uses random data and random addresses. It also checks (where applicable) for the proper interrupt of all the various types of CPU instructions if overlap and priority are present.

3. Revision to CU01B to create CU01C.

   (a) Program modified to prevent the interrupt check routine from operating if overlap is not available.
   (b) Program modified so that PASS typeouts accumulate total number of passes and successful passes up to 100,000 instead of being reset at the end of each 1000passes.

Enclosures: Pages
Card Deck for CARD ONLY SYSTEM (as punched by UP51)
8 cards - card loader (1-7) and 1 core clear
559 cards no. 001 - 559 data cards
1 card execute card

Distribution: X 1410 With 40K memory or larger
X 7010
Other

CU01 C

RELIABILITY TEST OF THE 7010 CPU AND ANY 1410 CPU

WITH A MEMORY SIZE OF AT LEAST 40000 ADDRESSES

CONTENTS OF CU01 WRITEUP AND LISTING

2.01.00 TEST DESCRIPTION

2.01.00.1 MODIFICATIONS

See Release Sheet

2.01.00.2 Description

This program is designed to completely test and prove the reliability of the central processing unit of the 7010 computer and of any 1410 computer with a memory size of 40K or larger.

This program is written in a sequential routine format. See section 2.01.06.1 for an overal flow diagram of the program and section 2.01.06.2 for a flow diagram of a typical routine.

Routine zero is a basic test of a few basic instructions. An error in this routine should always result in an error halt with no programmed typeouts. Routine one sets up initial conditions for cycling the program. These two routines operate on the first pass only.

Routines 2 through 45 generate six constants that normally vary on each succeeding pass of the program. These constants are as follows:

Constants AA and BB	Signed numeric numbers from 1 to 10 characters long.
Constants CC and DD	Alphanumeric constants from 1 to 10 characters long. CC and DD are derived from AA and BB respectively by adding zones and eliminating any "8 bit" special characters. As a result CC and DD will be the same length, and be the numeric equal, of AA and BB respectively.

Constant EE	A five digit address derived from constant AA. EE will always be at least 150 higher than the last address of the program and at least 23 lower than the last address of your memory.
Constant FF	A five digit address derived from constant BB. FF will always be at least 50 higher than the last address of this program and at least 350 lower than the last address of your memory. It will also be at least 100 addresses away from address EE.

These six constants are used by routines 46 and up, to check each and every CPU instruction for proper operation.

If overlap and priority alert modes are available on your system, the program will also check for the proper interruption of all types of CPU instructions. To accomplish this, it types one character at the end of every 50 successful program passes and checks to see that the interrupt does not occur during a non-interruptable instruction, and that it does occur at the proper time of the interruptible instruction being checked. It also checks to ensure that BA1 and BXPA instructions will not be interrupted and that they will turn off the interrupt request. The character typed is the op code of the instruction that is currently being checked for proper interrupt, except in the cases of BA 1 and BXPA. It is then an R or Y respectively, indicating the instruction being checked should not be interrupted at all, and the interrupt request should be turned off.
These Interrupts will occur at a different address in memory on each successive check.

When CU01 runs in the RELIABILITY MODE from your System Diagnostic Tape, it will make only 100 passes. Interrupts will be checked every 5 passes of the program. This quick pass represents a compromise between thoroughness and speed.

The program will normally make 1000 passes before returning to the load routine. If TAD3 is set to request repeating of the program, the constants will vary indefinitely, and never actually "repeat" themselves as TAD3 might seem to indicate.

2.01.00.3 Equipment Required

CPU, CONSOLE PRINTER, Memory Of At Least 40K.

2.01.00.4 Card Deck

7 Cards ----------Load Program
1 Card ---------- Core Clear Card
Cards numbered 001-559 Program
Card numbered 006 contains all TADS
Card numbered 001 is STANDARD SYSTEM CONTROL CARD
1 Card---------- Execute Card (Branch to 2000)

2.01.00.5 Machine E.C. Level

253480

2.01.00.6 Pass Length

1410	4 1/2 minutes
1410 ACC	3 3/4 minutes
7010	1 1/2 minutes

These times represent the approximate times required to run 1000 passes. 1000 passes should provide a satisfactory reliability check of the CPU.

2.01.01 LOADING PROCEDURES

2.01.01.1 FROM CARDS

1. Ready CU01 deck in the card reader.

2. (a) If reader is on a 7010 E channel:

   Depress the CARD LOAD SWITCH

   (b) Otherwise:

   Display and alter memory location 00000 to:

```
v v          v
RL%11C0011$.        For E channel reader
v v          v
XL□1100011$.        For F channel reader
```

Set to RUN, COMPUTER RESET, START

2.01.01.2 FROM TAPE (This procedure will load the current diagnostic tape control program. Refer to the tape control writeup for methods of selecting CU01.)

1. Ready your diagnostic tape on tape drive 0.

2. (a) If your diagnostic tape is on a 7010 E channel:

   Depress the TAPE LOAD SWITCH

   (b) Otherwise:

   Display and alter memory location 00000 to:

```
v v          v
RL%B000011$.        For E channel tape
v v          v
XL□B000011$.        For F channel tape
v v          v
3L ? B000011$.      For G channel tape
v v          v
1L ! B000011$.      For H channel tape
```

Set to RUN, COMPUTER RESET, START

2.01 .02.0 OPERATING PROCEDURES

Load Program

Program will normally type its identity, run for 1000 passes, type success or failure indications and return to the load routine.

Normal program operations may be altered at any time by using the "Program Alter Routine" to set one or several of the following TAD locations to "1".

TAD	ADDRESS	IF NOT 1 (NORMAL)	IF SET TO ONE
0	01000	Normal typeouts	Bypass all typeouts for scoping
1	01001	No loops	Loop on present routine
2	01002	No halts	Halt on error
3	01003	1000 passes only	Cycle program indefinitely
4	01004	No error loops	On error, program will set TAD1 to cause looping of error routine.
5	01005	No extra typeouts	On error, program will print pass number, contents of applicable index registers, and the six constants now being used.
6	01006	Normal constants	Program will request the operator to enter his own six constants. Program will then clear TAD6 and set TAD7 to a one. (Caution: constants CC and DD must be the same length as AA and BB respectively. Constants EE and FF must be 5 digit addresses within the same limits used by the program. See section 2.XX.00.2.)

TAD	ADDRESS	IF NOT 1 (NORMAL)	IF SET TO ONE
7	01007	Normal constants	Program will maintain its present six constants and bypass routines 2-45.
8	01008	Check interrupt	Program will bypass the interrupt check.

2.01.03.0 OPERATING HINTS AND COMMENTS

This program was designed to be a rigorous test of the entire Central Processing Unit. Due to the varying constants used, no two program passes are the same. Therefore, the longer the test is run, the more complete is the check of the CPU.

This program is meant to be used for two purposes:

1. To test the reliability of the Central Processing Unit.

2. As an aid in isolating intermittent CPU failures that the current "Error Detection" program cannot find.

The following paragraphs may be of assistance in the diagnoses of failures:

1. Intermittent CPU failures - where cycling this program in an attempt to isolate intermittent failures, setting TADS 2, 3, 4 and 5 should provide the most information when the error occurs. If a malfunction causes the machine to stop on an alarm condition, placing the check control switch to RESTART may provide more information by allowing a typeout.

2. Loss of Program Control - If a CPU malfunction causes the program to lose control so that no logical error indications can be provided, try reloading and cycling the program with TADS 0 and 2 set. If the failure is solid enough that variable constants are not needed to induce an error, also set TAD 7. The setting of these TADS will cause only the essential portions of the test to run, thereby decreasing the chances of loss of control.

3. Erroneous Error Indications - Generally speaking, the first error indication to occur in the program should provide the most accurate information. However, when more than one routine provides error indications and these indications conflict with each other, discretion should be used in deciding which routine should be used to diagnose the error. The comments about TADS made in the last paragraph may apply here also.

4. Appendix I - This appendix contains a list of the constants used on the first 150 passes. Constants EE and FF, are listed for a 100K memory. If your memory is smaller, many of the EE and FF constants will be smaller than those listed.

2.01..04.0 PROGRAM STOPS AND RESTARTS

2.01..04.1 Program Stops

All programmed stops are error halts. When a halt occurrs, refer to the IAR stop address in the program listing. Directly following the halt in the listing will be a statement indicating the reason for the halt.

2.01.04.2 Program Restarts

00001	The program may be restarted from location one at any time. The result of restarting at 00001 is the same as if the program were reloaded, as far as program operation is concerned.
00008	Starting at location eight will cause the console printer to type: Present pass number, applicable index register contents, and the six constants as now contained in memory.
FIRST ADDRESS OF ANY ROUTINE	You may start at the first address of any routine at any time providing all previous routines have been cycled at least once. (Caution: If any routines are skipped in this manner, or cycled more than once in any one pass in this manner, Routine 142 will indicate a sequence error.)

2.01.05.0 TYPEOUTS

2.01.05.1 Non Error Typeouts:

CU01C

Program identity-typed when program is loaded and whenever program is restarted from location 00001.

XXXXX PASSES, XXXXX OK

Typeout indicating the completion of the number of passes specified by XX's. Number of passes represented by YY's indicate how many of these passes were completed without error. Count is reset to zero at 100,000 passes.

Single character typeout. (i.e., R A)

At the end of every 50 successful passes, the interrupt check routine operates (unless bypassed by TAD8). In order to cause an interrupt, the program types out the single character op code of the instruction being checked for proper interrupt.

Pass number, index register and constant typeout.

You may request, by starting at address 00008, the typeing of the present pass number, present applicable index register contents, and present constants in memory. For typeout format, see "Extra error data" typeout in section 2.01.05.2

2.01.05.2 Error Typeouts

XXXXX PASSES, YYYYY OK

This typeout is typed at the end of every 1000 passes. XXXXX indicates total number of passes completed. YYYYY indicates how many of these passes were completed without error.

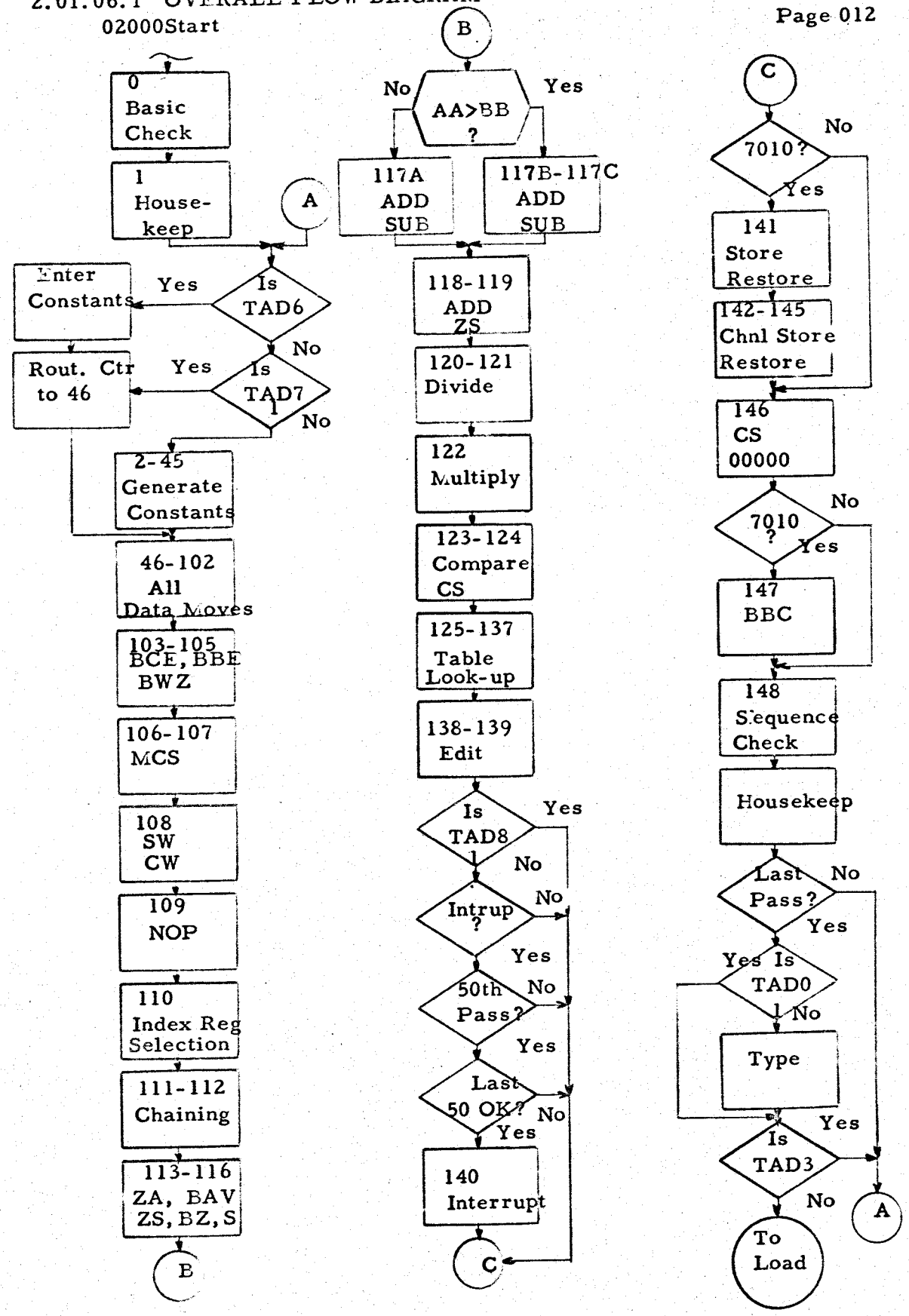
*RT XXX, ADDR YYYYY, ERR

This typeout will normally occur whenever an error is encountered. "XXX" will be the number of the routine that found the error. "YYYYY" will be the address of the error halt within the routine. (Directly following this error halt address in the listing will be a brief paragraph indicating the reason for the error indication.)

PASS ZZZZZ
X1-IIIII, X2-IIIII, X5-IIIII, X6-IIIII, X7-IIIII, X8-IIIII, X9-IIIII, X-IIIII
AA-KKK, BB-KKKK, CC-KKK, DD-KKKK, EE-KKKKK, FF-KKKKK

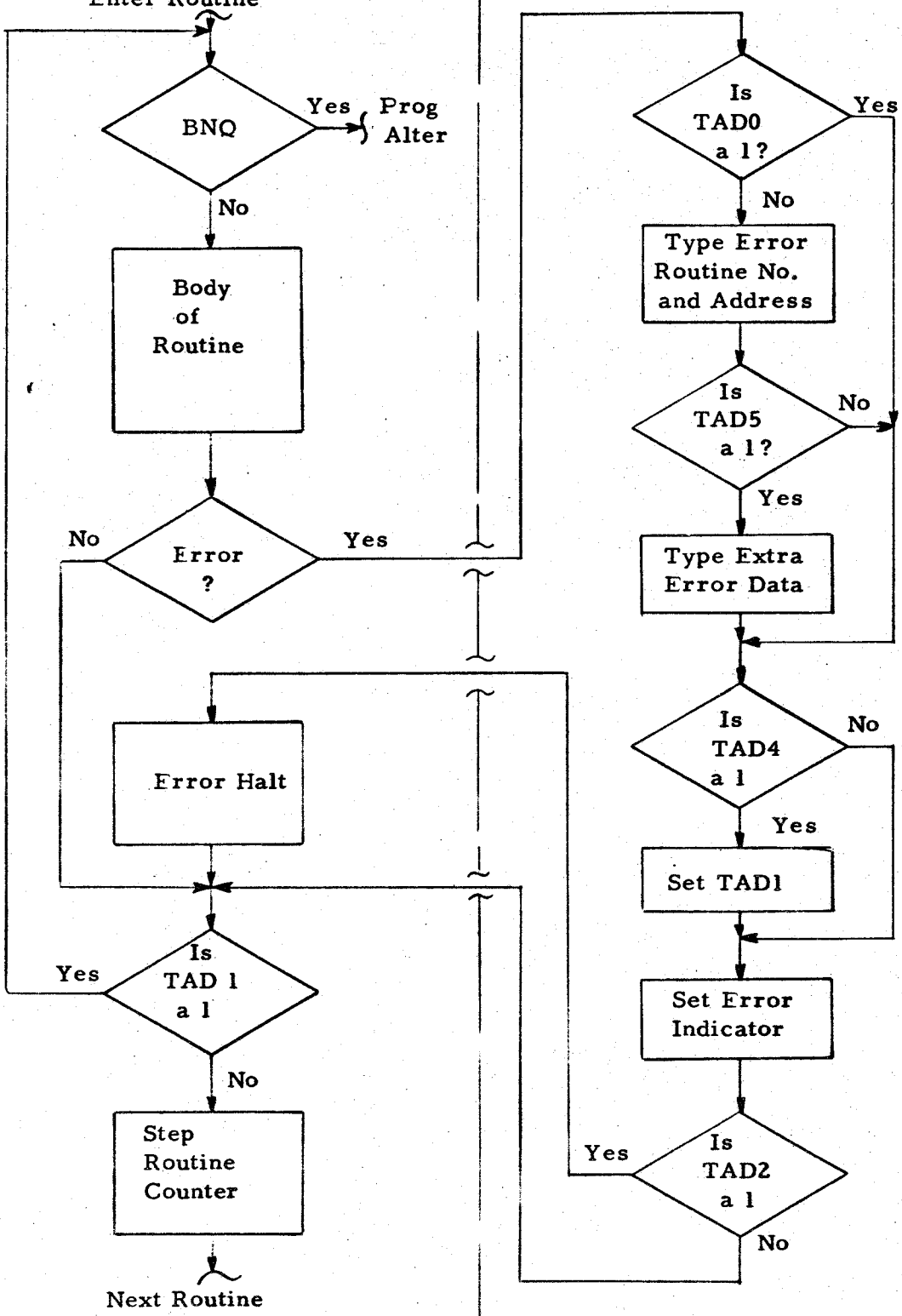
Extra error data typeout will be typed in addition to the normal error typeout if TAD5 is a "1". ZZZZ will be the number of the present pass (this pass number is reset every 100,000 passes) The IIIII's will be the contents of the specified index registers. The K's will be the actual specified constants. The lengths of AA, BB, CC and DD are variable, but EE and FF will always be 5 digits.

2.01.06.1 OVERALL FLOW DIAGRAM



TYPICAL PROGRAM ROUTINE
(Varies from routine to routine)

CLOSED ERROR SUBROUTINE
(Common to all routines)



Constants generated by and used by CU01 on the first 150 passes of the program. Constants EE and FF are listed for a 100K machine. EE and FF will vary on machines with smaller memories.

PASS	CONSTANT AA	CONSTANT BB	CONSTANT CC	CONSTANT DD	ADR EE	ADR FF
ØØØ1	ØØØØØØØØØJ	ØØØØØØØØØM	Ø?!‡Ø?!Ø‡A	?‡Ø!?‡!Ø?4	27281	27381
ØØØ2	ØØØØØØØØØC	ØØØØØØØØØC	Ø?!Ø?!‡Ø?L	Ø‡?‡Ø!?‡L	27281	27381
ØØØ3	ØØØØØØØØØM	ØØØØØØØØD	‡!‡Ø?!Ø?!U	?!Ø‡?‡ØM	27281	27381
ØØØ4	ØØØØØØØØØC	ØØØØØ1J	Ø‡!‡!‡Ø?!7	‡Ø?!Ø/A	27281	27381
ØØØ5	ØØØØØØØØ1J	ØØØØ1?	Ø?!Ø÷!÷!/1	?!÷ØA!	27281	27381
ØØØ6	ØØØØØØØØ1M	ØØØØT	??‡Ø?!Ø‡JY	!Ø?!V	27282	27181
ØØØ7	ØØØØØØØØ2R	ØØ2C	!!???‡Ø?K9	Ø?K6	27282	27181
ØØØ8	ØØØØØØØØ6G	Ø3A	‡ØØ!!???%7	!T1	27283	27181
ØØØ9	ØØØØØØØØ7O	ØØ	?!‡‡ØØ!!GF	!‡	27285	27181
ØØ1Ø	ØØØØØØØ12C	P	Ø!Ø?!‡‡12L	7	27286	27181
ØØ11	Ø7ØØØØ19R	ØØØØØØØØ8M	!‡Ø!Ø?JZZ	‡ØØ!!???Y8	27293	27181
ØØ12	ØØØØØØ32O	ØØØØØØØ3J	?Ø!!‡ØL2P	!‡‡Ø,!!CA	27385	27183
ØØ13	ØØØØØØ52J	ØØØØØ11M	‡?!?Ø!NS1	Ø?!÷÷11M	27313	27181
ØØ14	ØØØØØØ84C	ØØØØ23C	Ø‡?‡?!H4L	Ø!Ø?KTT	27333	27181
ØØ15	ØØØØØ136M	ØØØ15!	‡Ø!Ø‡ATFM	!‡ØJ5?	27365	27181
ØØ16	ØØØØØ22ØC	Ø!Ø19P	?Ø‡‡ØK2‡C	Ø!JZ7	27417	27181
ØØ17	ØØØØØ357J	Ø5 ?	!?Ø?ØTV7J	!P !	27351	27181
ØØ18	ØØØØØ577M	5≠L	!?Ø!?5G7Y	V.L	27488	27181
ØØ19	ØØØØØ9#4R	4M	‡!‡!?9$D9	UD	277Ø8	27181
ØØ2Ø	ØØØØ1512C	C	!‡Ø‡JVJB7	P	28Ø65	27182
ØØ21	ØØØ24Ø7O	ØØØØØØ1GØC	?Ø!S4ØPW	‡!?Ø!?1F@W	28643	27183
ØØ22	ØØØ#96ØC	ØØØØØØØ4E	??!.9O‡3	‡!‡!?Ø!D5	29578	27184
ØØ23	ØØØ6@Ø7R	ØØØØ29:M	!!‡FM!G9	‡Ø‡!SR[8	31Ø91	27187
ØØ24	ØØ1Ø368B	ØØØ464R	Ø‡A!LWHB	Ø!‡4WMZ	33538	27191
ØØ25	ØØ1677>J	ØØ173F	!?1GXG;J	!?1PTG	37499	27197
ØØ26	ØØ27144C	Ø58√A	!ØSPA44T	?EQ≠1	439Ø7	272Ø8
ØØ27	ØØ4392ØM	2250	!!4L9S!D	KSEF	27294	27424
ØØ28	ØØ71Ø64G	12A	?!XJ!GM7	AKJ	4392Ø	27252
ØØ29	Ø114985J	ØF	‡A1DRYNJ	ØW	71Ø84	27295
ØØ3Ø	Ø186Ø49M	L	ØJMW?4IQ	C	42116	27367
ØØ31	3Ø1Ø34R	ØØØØØ2849M	T‡1!CUI	?Ø?!‡KQ4R8	86Ø49	27482
ØØ32	487Ø84G	ØØØØ 189A	48X‡Y4P	?‡?Ø$JYRJ	28165	27668
ØØ33	78 1190	ØØØ7Ø77K	7881IZW	Ø!?X?7GK	87Ø84	27769
ØØ34	2752ØØC	ØØ8737I	SGN2ØM3	‡‡8PCXI	88119	28456
ØØ35	ØG#323R	ØØ@71O	ØF$TBL9	Ø‡9X1O	752Ø4	29244
ØØ36	##8528B	5343M	#$Y5BQS	E34TV	63323	3Ø519
ØØ37	4Ø18:2J	::3?	D‡J8]S1	::CØ	38528	32582
ØØ38	7ØØ38ØC	81J	PE!CY!3	!NJ1	28983	35921
ØØ39	142232M	5M	/DSKCKD	NU	4Ø38Ø	41323
ØØ4Ø	882>12G	E	HQD\ASP	5	42232	5ØØ63
ØØ41	24845J	ØØØ43915K	24HME/	‡?‡!DI I/N?	82612	37Ø24
ØØ42	Ø√457H	ØØØ5Ø√49P	!=457H	!?‡E‡ΔDRG	51976	599Ø7
ØØ43	323Ø2R	Ø1591 4D	L2L!S9	ØANI/&UM	34588	96932
ØØ44	3 76ØG	152279R	LEPOØP	152ØPIZ	323Ø2	5Ø839
ØØ45	72Ø6&O	57584K	C2?O,O	NX584B	3976Ø	53772
ØØ46	182EC	978F	BAQE@C	RPY5	72Ø63	37792
ØØ47	#887R	G7(K	,YYGR	OP'K	38955	64383
ØØ48	957128	11T	Z571SS	J/N	83Ø07	74995
ØØ49	796,,J	1T	SJG‡Ø1	1P	95712	93879
ØØ5Ø	75312C	R	PETA23	R	796,Ø	41556

PASS	CONSTANT AA	CONSTANT BB	CONSTANT CC	CONSTANT DD	ADR EE	ADR FF
ØØ51	4912M	ØØØ537897B	D9JBU	‡?Ø5T789XS	75312	53754
ØØ52	Ø224G	Ø15:397ØI	!2KD7	!AV[39XØ9	54912	6813Ø
ØØ53	513√J	3388195!	VATΔ1	C3QH/I5Ø	3Ø224	49Ø66
ØØ54	5361H	372121C	ELO/H	3PB1KAT	85137	9ØØ15
ØØ55	Ø4 8R	7ØØ44F	?U-HR	X!ØMD6	42492	39Ø81
ØØ56	586ØC	Ø36ØR	NHW?X	‡CW!9	27629	29Ø96
ØØ57	63590	437F	63ERF	MLXF	42991	4Ø997
ØØ58	222ØC	67I	KK2Ø3	OGR	4349Ø	42913
ØØ59	579R	6M	-NXRR	FU	3222Ø	29548
ØØ6Ø	ØØØØB	A	!HØ!K	A	48579	4528Ø
ØØ61	38ØJ	ØØ25965Ø1Q	LY!A	?ØKNZONØ18	8ØØØØ	74829
ØØ62	18ØC	412295ØØP	/8?L	UJB2RN‡!P	2938Ø	47291
ØØ63	:6ØM	8421238F	:F‡U	HMSJB3QO	37311	94939
ØØ64	74ØG	788239P	7UØ7	X8HKTRG	3956Ø	4223Ø
ØØ65	3Ø1J	624990	TØ/1	FSU9IO	4974Ø	3717Ø
ØØ66	Ø41H	19√√I	Ø4AY	19‡⁻Z	893Ø1	5222Ø
ØØ67	342R	√18!	3DK9	√/8Ø	39Ø41	35Ø28
ØØ68	384G	59N	CHM7	5Z5	28342	6ØØ67
ØØ69	7270	5D	PKXF	EU	67384	95Ø95
ØØ7Ø	12C	R	Ь/KL	9	95727	55163
ØØ71	#9R	131875 Ø1!	.RZ	/TJQPV8?JØ	63112	5Ø258
ØØ72	52B	Ø1 4967ØC	ESB	?JЬUROP‡C	58839	326Ø2
ØØ73	92J	4 41283K	RB1	U8DJSYLK	49Ø83	5568Ø
ØØ74	@4C	315811I	@4L	3AVHAJZ	8Ø792	611Ø2
ØØ75	36M	75141F	LWM	PE1D/F	29875	43964
ØØ76	8ØG	223>P	QØG	2KL<7	83536	77886
ØØ77	17J	9Ø7?	JXJ	RØ7!	8628Ø	94669
ØØ78	9√H	71C	I√Y	P/L	69817	72556
ØØ79	14R	5!	/D9	5?	56Ø97	67225
ØØ8Ø	12G	G	1S7	P	53Ø45	39782
ØØ81	70	@423Ø3964M	7W	%4S3‡C9F4U	82Ø12	34188
ØØ82	ØC	13713Ø1L	Ø3	/3X1T7‡A3	35Ø58	46789
ØØ83	7R	5√95716D	G9	5√Z5X1W4	8994Ø	53797
ØØ84	8B	614Ø2ØE	HB	6A4ØSØV	97867	27768
ØØ85	6J	234#8K	OJ	KC4.82	878Ø8	54385
ØØ86	@C	513@A	%T	EALE1	85676	54973
ØØ87	ØM	324F	?D	LKDF	73484	3654Ø
ØØ88	4G	96R	D7	ZOR	5916Ø	64332
ØØ89	5J	>D	NJ	\U	32644	73691
ØØ9Ø	9H	A	9Q	A	9185	38Ø24
ØØ91	R	4471:4118M	I	D47J[MJ/H4	5158Ø	38897
ØØ92	G	573283Ø9G	P	VPC28L?RP	43385	4974Ø
ØØ93	O	:385323H	W	]LYNC23Q	4Ø7Ø4	61456
ØØ94	C	8>√√5 R	3	Y>ΔΔV-I	56959	38378
ØØ95	R	1Ø737H	9	/!X3PQ	97664	72654
ØØ96	B	2337I	S	B3TPZ	54623	83852
ØØ97	J	270	1	2G6	52288	5650
ØØ98	C	27E	3	BX5	34Ø43	4Ø359
ØØ99	M	8?	D	8‡	592ØØ	96866
Ø1ØØ	G	J	P	1	66112	37225

PASS	CONSTANT AA	CONSTANT BB	CONSTANT CC	CONSTANT DD	ADR EE	ADR FF
*******	**********	**********	**********	**********	********	********
Ø1Ø1	234Ø91Ø2:J	142Ø99282F	KCMØZJDKm/	/DK!IRØØBG	52443	34Ø91
Ø1Ø2	Ø71#16737H	26Ø58648E	!C/$AO7TDH	KWWEQØDQE	91425	71316
Ø1Ø3	3Ø5ØØ81>2R	2ØØ1924K	C!E*?YJ<K9	KK*/ZBMK	43868	32589
Ø1Ø4	#767249ØØG	117441P	$7ØGKDR?‡P	1/PBM/X	35293	76724
Ø1Ø5	682133Ø63O	18Ø14D	WQSJ33?OCC	AQ$/MD	52Ø31	82133
Ø1ØG	Ø58857964C	249GR	ØN8YNXR64C	SMIO9	33Ø63	58857
Ø1Ø7	74Ø991Ø27R	959K	7M‡9R1‡KXR	REZK	57964	4Ø991
Ø1Ø8	799848 92B	7ØF	XI98MY R2S	F?N	91Ø27	94848
Ø1Ø9	:4Ø84ØØ2ØJ	8K	:U?YDØØK‡1	8B	48992	4Ø84Ø
Ø11Ø	34ØG89Ø12C	N	34‡6YI‡A23	N	4ØØ2Ø	4ØG89
Ø111	81529Ø#2M	82Ø8999ØØØ	Y152ZØ,BU	YPØ8RZ9!ØS	89Ø12	81529
Ø112	22218Ø@@G	Ø3 59486R	D2B/8Ø@&7	‡CBE94QW9	29Ø32	49399
Ø113	Ø3747Ø77J	978#834Q	!CPD7?X71	Z7Y.YC48	45175	3Ø928
Ø114	25965121H	8432211	KEZOEJD1H	84T2SAZ	47Ø77	53146
Ø115	29712198R	18874!	SRGJB/RHR	/887UØ	65121	29712
Ø116	5567732ØG	8182P	NVGXPCK?X	8AY27	39329	55677
Ø117	853895190	278F	QELQZ5/RF	KG8F	7732Ø	85389
Ø118	@1Ø6>84ØC	3ØA	%A!O<QM‡3	L?J	89519	41Ø66
Ø119	2645>35 R	1M	BODV<LN&R	AU	6684Ø	53637
Ø12Ø	675232ØØB	I	67NDLB‡?K	I	56359	67523
Ø121	39√956ØJ	Ø:4Ø322 M	LZ√9NF!A	?mD!LBK-64	5Ø331	93979
Ø122	15Ø276ØC	22914Ø12R	J5‡KX6ØL	BK1/D!JBR	7956Ø	615Ø2
Ø123	548232ØM	82 4971B	N48K3S!U	8K&MIXAK	29891	55482
Ø124	6 85Ø8ØG	4 3176P	FBYNØ8!7	U 3JGOG	8232Ø	44166
Ø125	24674Ø1J	958Ø7M	S46GU‡J1	ZNY57M	85Ø8Ø	72467
Ø126	9452@81H	#95:C	94ES@8AY	$9V]T	674Ø1	89452
Ø127	1919882R	3240	/1/98HS9	32M6	52481	61919
Ø128	1#723646	38J	A$7SCW47	TQ1	47Ø13	51372
Ø129	#2922470	8?	$S9BK4XF	M‡	72364	4Ø473
Ø13Ø	@664>12C	N	*FFM\1BL	5	92247	64664
Ø131	9:>859R	#Ø12355510	9[;HERZ	,ØAK3VEV16	64612	77956
Ø132	6214√2B	6:7858√4A	OK/4#KB	F]X8EQ√UA	56859	42621
Ø133	578332J	8296927!	NXQLLS1	QBIOZ2G!	486Ø3	47759
Ø134	1998Ø4C	72449 P	AIRQ‡ML	7BMDI-X	78332	63199
Ø135	√√8 3GM	Ø7299H	A#Y&COM	!X2IRH	998Ø4	83778
Ø136	97794ØG	Ø2711	ZPGRD‡G	!KP/9	78136	46977
Ø137	756Ø77J	Ø7ØM	756‡PGJ	!X!M	7794Ø	3Ø756
Ø138	734Ø17H	98C	7LUØ17Y	IQL	56Ø77	77734
Ø139	49ØØ94R	4?	URØØRU9	U?	34Ø17	35671
Ø14Ø	22@112G	P	2K%/J27	P	9Ø994	86224
Ø141	102Ø7O	Ø783Ø267?	A62!XW	6!78L‡267‡	51243	94714
Ø142	3832ØC	5Ø5273896	TH3ØØ3	N‡VK73QZ7	41338	8Ø938
Ø143	:252√R	@282Ø>9M	:SFS‡9	@2QS‡;94	3832Ø	75652
Ø144	9Ø848B	415Ø53L	ZØQ4YB	4A5ØNTT	52527	56592
Ø145	433√6J	24512D	D3T=6J	SD5A24	9Ø848	32243
Ø146	34224C	1528N	LDBB4T	/ESH5	43376	88834
Ø147	√√6Ø9M	Ø37K	A‡6!?D	!3X3	34224	48258
Ø148	11824G	78A	/JQKD7	XBJ	776Ø9	37Ø92
Ø149	89425J	ØF	QZMSNJ	ØW	38955	3Ø989
Ø15Ø	Ø1249H	R	!ABMZQ	I	89425	4Ø9Ø1

```
PGLIN     LABEL      OPCOD  OPERAND                                                    CT  ADDRS  INSTRUCTION
AA01                 LINES  37                  MAXIMUM LINES PER PAGE
AA02                 CTL    3
AA03                 LOAD
AA04                 ORG    1000                                                        01000
AA05      *STANDARD TADS.                 NOT 1                    1
AA06      TAD0       DC     @ @         PRINTED OUTPUT           BYPASS ALL PRINTING     1  01000
AA07      TAD1       DC     @ @         NO LOOPS                 LOOP ROUTINE            1  01001
AA08      TAD2       DC     @ @         NO ERROR HALTS           HALT ON ERROR           1  01002
AA09      TAD3       DC     @ @         1000 PASSES ONLY         CONTINUE CYCLING        1  01003
AA10      *SPECIAL TADS.                    NOT 1                    1
AA11      TAD4       DC     @ @         NO LOOP ON ERROR         LOOP ON ERROR           1  01004
AA12      *                                                       PROGRAM SETS TAD1
AA13      TAD5       DC     @ @         NO PRINT EXTRA           PRINT EXTRA             1  01005
AA14      *                              ERROR DATA               ERROR DATA
AA15      TAD6       DC     @ @         USE PROGRAMMED           ENTER YOUR CONSTANTS    1  01006
AA16      *                              CONSTANTS                PROG. CLEARS TAD6
AA17      *                                                       PROG. SETS TAD7
AA18      TAD7       DC     @ @         USE PROGRAMMED           MAINTAIN PRESENT        1  01007
AA19      *                              CONSTANTS                CONSTANTS & BYPASS
AA20      *                                                       ROUTINES 2-45
AA21      TAD8       DC     @ @         CHECK INTERRUPT          BYPASS INTERRUPT CHK    1  01008
AA22                 DCW    @G@                                                         1  01009
AA23      *
AA24      *
AA25      *
AA26                 ORG    1010                                                        01010
AA27      *       *** THIS AREA WILL BE RELOCATED TO ADDRESSES 00101-00157 ***
AA28      R00101 *   SBR    X1                  STORE INTERRUPT ADDRESS      *         7  01010  G 00029 B
AA29      R00108 *   MLZWA  @     @,X1          CLEAR ZONES                  *        12  01017  D 29155 00029 W
AA30      R00120 *   BCE    LC14,LC12&1,#       BRANCH-ERROR-SHOULDNT INTRUPT*        12  01029  B 25201 25109 #
AA31      R00132 *   C      X1,X2               IS INTERRUPT ADDRESS CORRECT             11  01041  C 00029 00034
AA32      R00143 *   BE     RUPTOK              BRANCH-OK                    *         7  01052  J 25259 S
AA33      R00150 *   B      RUPBAD              INCORRECT INTERRUPT ADDRESS  *         7  01059  J 25230
AA34      R00157 *   DCW    @G@                                              *         1  01065
AA35      *       **********************************************************
```

PGLIN	LABEL	OPCOD	OPERAND			CT	ADDRS	INSTRUCTION
AA37	*DEFINE CONTROL CONSTANTS.							
AA38	NEX1	EQU	400	EQUATE LOAD PROGRAM TO ADDR 400				
AA39		ORG	01239				01239	
AA40		DCW	@0#11#1@	NOT APPLICABLE TO 10K OR 20K		6	01244	
AA41		DC	@05J@	SEQ.NO.051,RELIABILITY MODE PROG.		3	01247	
AA42		DC	@3#@	30 IS LAST 1000S,USE SYS1 ONLY		2	01249	
AA43	*TEST NUMBER AND SUFFIX							
AA44	NUMBR	DCW	@CU01@			4	01250	
AA45	SUFFIX C	DC	@C@,G			1	01254	
AA46	*STANDARD SYSTEM CONTROL CARD.							
AA47		ORG	1256				01256	
AA48	SYS1	DC	@ @	MACHINE TYPE 0-1410, 1-1410I, K-7010	13	1	01255	
AA49		DC	@ @	0-10K,1-20K,3-40K,5-50K,7-80K,9-100K.	14	1	01257	
AA50		DC	@ @	SPARE	15	1	01258	
AA51		DC	@ @	CHANNEL ONE PRINTER--1-100,2-132 CHAR	16	1	01259	
AA52		DC	@ @	CHANNEL TWO PRINTER--1-100, 2-132 CHAR	17	1	01260	
AA53		DC	@ @	1 BIT--EUROPEAN EDIT	18	1	01261	
AA54	*			2 BIT--50 CYCLE POWER				
AA55		DC	@ @	SPARE	19	1	01262	
AA56		DC	@ @	OVERLAP IF 1	20	1	01263	
AA57		DC	@ @	PRIORITY ALERT IF 1	21	1	01264	
AA58			@ @	SPARES	22-24	3	01267	
AA59			@ @	CHANNEL ONE PRESENT IF 1	25	1	01268	
AA60			@ @	CHANNEL TWO PRESENT IF 1	26	1	01269	
AA61		DC	@ @	SPARES	27-28	2	01271	
AA62			@ @	SPARES	29-31	3	01274	
AA63		DC	@ @	SPARE	32	1	01275	
AA64			@ @	REAL TIME CLOCK IF 1	33	1	01275	
AA65		DC	@ @	SPARES	34-35	2	01278	
AA66			@ @	SPARES	36-45	10	01288	

```
PGLIN  LABEL     OPCOD  OPERAND                                  CT  ADDRS  INSTRUCTION
AA68   *STANDARD TYPE ROUTINE 2.
AA69             ORG    1289                                         01289
AA70   TYP1      SBR    TYP2&8          ENTER ROUTINE HERE        7  01289  G 01304 B
AA71   TYP2      WCP    0               TYPE MESSAGE             10  01296  M %TO 00000 W
AA72             SBR    TYP3&5          SET RETURN ADDRESS        7  01306  G 01332 B
AA73             BCB1   *-23            BRANCH BUSY               7  01313  R 01296 2
AA74             BA1    *&1             BRANCH ANY                7  01320  R 01327 MG
AA75   TYP3      B      0               RETURN TO PROGRAM         7  01327  J 00000
AA76   *PROGRAM ALTER ROUTINE.
AA77   ITR       SBR    ITREXT&5        STORE BAR FOR RETURN      7  01334  G 01394 B
AA78   ITR1      RCP    ITR2&4          ENTER LOCATION TO BE ALTERED 10 01341  M %TO 01369 R
AA79             BEX1   ITR1,MS         RETURN TO REQUEST ON ANY BUT WLR 7 01351 R 01341 SMG
AA80             BA1    ITR2            RESET I/O INTERLOCK       7  01358  R 01365 M
AA81   ITR2      RCPW   0               ENTER DATA               10  01365  L %TO 00000 R
AA82             BEX1   ITR2,MS         RETURN TO REQUEST ON ANY BUT WLR 7 01375 R 01365 SMG
AA83             BA1    *&1             BRANCH ANY                7  01382  R 01389 M
AA84   ITREXT    B      0               RETURN TO PROGRAM         7  01389  J 00000
AA85             H                      DEFINE BRANCH INSTRUCTION 1  01396  .
AA86   *CONSTANTS AND STORAGE.
AA87   CN3       DCW    @    7@         ROUTINE COUNTER           5  01401
AA88   CN4             @0@              ERROR INDICATOR           1  01402
AA89   CN6             00000            BASIC ADD CHECK STORAGE   5  01407
AA90   CN8             &00000000001     INITIAL CONSTANTS        11  01418
AA91   CN9             &00000000002                              11  01429
AA92   CNO             &00000000003                              11  01440
AA93   CA1             &00000000000     TEMPORARY CONSTANT STORAGE 11 01451
AA94   CA2       DCW   &00000000000     DITTO                    11  01462
AA95   CO2       DCW   00010            LENGTH OF CONSTANTS AA AND CC 5 01467
AA96   CO25      DCW   00010            LENGTH OF CONSTANTS BB AND DD 5 01472
AA97   CO26      DCW   0                CONSTANT LENGTH INDICATOR 1  01473
```

PGLIN	LABEL	OPCOD	OPERAND		CT	ADDRS	INSTRUCTION
AA99	CO4	DCW	0000	COUNT OF SUCCESSFUL PASSES	4	01477	
AB00	CO8	DCW	00000	TEMPORARY STORAGE	5	01482	
AB01	CO9		00000	TEMPORARY STORAGE	5	01487	
AB02	CO95	DCW	00000	TEMPORARY STORAGE	5	01492	
AB03	CO96	DCW	00000	TEMPORARY STORAGE	5	01497	
AB04	CO97	DCW	00000	TEMPORARY STORAGE	5	01502	
AB05	CO98	DCW	00000	TEMPORARY STORAGE	5	01507	
AB06	CP1	DCW	@£-B £- B£B -£B- & B-£ -BB-- ££- B£ -£B-B B- -£@,G		47	01508	
AB07	CP2	DCW	@00000000000000@,G		13	01556	
AB08	CP3	DCW	@ @		10	01579	
AB09	CP5	DCW	@ @		4	01580	
AB10	CP6	DCW	@ @		3	01586	
AB11	CP8	DCW	BT2&9		5	01591	07220
AB12	CP9	DCW	09999	LAST MEMORY ADDRESS	5	01596	
AB13	CQ1	DCW	00000	LEFT ADDRESS-1 OF EE WITH CC INIT	5	01601	
AB14	CQ2	DCW	00000	LEFT ADDRESS-1 OF FF WITH DD INIT	5	01606	
AB15	CQ4	DCW	@ @		11	01617	
AB16	XLAST	DCW	00000	LAST ADDRESS OF THIS PROGRAM	5	01622	
AB17	CQ5	DCW	@J02000 @		7	01629	
AB18	CQ6	DCW	@ @,G	ENTER CONSTANT AA,BB,CC,DD STOR.	10	01639	
AB19	CQ65	DCW	@ @,G		11	01641	
AB20	CQ7	DCW	@ @,G	ENTER CONSTANT EE,FF STOR.	5	01657	
AB21	CQ8	DCW	@18334455667790	SPECIAL CHARACTER CONSTANT	13	01671	
AB22	CQ9	DCW	@ ##@@..GGTT..TTMM @	SPECIAL CHARACTERS	13	01684	
AB23	CR1	DCW	@ @,G	SPECIAL CHAR CONSTANT STORAGE	14	01685	
AB24	CR2	DCW	@ @,G	SPECIAL CHAR STORAGE	14	01700	
AB25	CR3	DCW	@ @,G		1	01715	
AB26	CR4	DCW	@£-B £- B£B -£B- & B-£ -BB-- ££- B£ -£B-B B- -£@		47	01717	
AB27	CR5	DCW	@.-@		2	01765	
AB28		DCW	@,0 -.@		5	01770	
AB29	CR6	DCW	@1234567890	SIGNIFICANT DIGITS	9	01779	
AB30	A	DCW	@ @		11	01790	
AB31	B	DCW	@ @		11	01801	
AB32	E	DCW	@ @		11	01812	
AB33	F	DCW	@ @		11	01823	
AB34	G	DCW	@ @		11	01834	

PGLIN	LABEL	OPCOD	OPERAND		CT	ADDRS	INSTRUCTION
AB36	X	DCW	@ @		11	01845	
AB37	Y	DCW	@ @		11	01856	
AB38	Z	DCW	@ @		11	01867	
AB39		DCW	@ @	CONSTANT AA	1	01868	
AB40	AA	DCW	@000000000J@		10	01878	
AB41		DCW	@ @	CONSTANT BB	1	01879	
AB42	BB	DCW	@000000000M@		10	01889	
AB43		DCW	@ @	CONSTANT CC	1	01890	
AB44	CC	DCW	@'0‡M‡M.MOJ@		10	01900	
AB45		DCW	@ @	CONSTANT DD	1	01901	
AB46	DD	DCW	@''‡0'0M.‡U@		10	01911	
AB47	EE	DCW	39000	CONSTANT EE	5	01916	
AB48	FF	DCW	39500	CONSTANT FF	5	01921	
AB49	C19	DCW	00001		5	01922	
AB50		DCW	00002		5	01931	
AB51		DCW	00003		5	01936	
AB52		DCW	00004		5	01941	
AB53		DCW	00005		5	01946	
AB54		DCW	00006		5	01951	
AB55		DCW	00007		5	01956	
AB56		DCW	00008		5	01961	
AB57		DCW	00009		5	01966	
AB58		DCW	00010		5	01971	
AB59		DCW	00011		5	01976	
AB60		DCW	00012		5	01981	
AB61		DCW	00013		5	01986	
AB62		DCW	00014		5	01991	
AB63	C20	DCW	00015		5	01996	
AB64		DCW	@M@		1	01997	
AB65		ORG	2000			02000	
AB66	START	WCP	1250	TYPE PROGRAM IDENTITY	10	02000	M %TO 01250 W
AB67		BCB1	*-16		7	02010	R 02000 2
AB68		BA1	*&1		7	02017	R 02024 M

```
PGLIN  LABEL     OPCOD  OPERAND                                                  CT  ADDRS  INSTRUCTION
AB70   *ROUTINE  0-PRELIMINARY BASIC TESTS.
AB71   AA1       B      AA2                                                       7  02024  J 02032
AB72             H                                              ROUTINE  0 ERROR  1  02031  .
AB73   *             UNCONDITIONAL BRANCH AT AA1 DID NOT BRANCH
AB74   AA2       BCE    AA4,@0@,1          SHOULD NOT BRANCH                     12  02032  B 02056 29166 1
AB75   AA3       BCE    AA5,@1@,1          SHOULD BRANCH                         12  02044  B 02057 29167 1
AB76   AA4       H                                              ROUTINE  0 ERROR  1  02056  .
AB77   *             BRANCH CHARACTER EQUAL AT AA2 BRANCHED OR BCE AT AA3
AB78   *             DID NOT BRANCH
AB79   AA5       SBR    AA6&10                                                    7  02057  G 02074 B
AB80   AA6       BCE    AA7,0,.                                                  12  02064  B 02077 00000 .
AB81             H                                              ROUTINE  0 ERROR  1  02076  .
AB82   *             STORE B REG AT AA5 FAILED
AB83   AA7       MLNWA  @    0@,CN3          CLEAR ROUTINE COUNTER                 12  02077  D 29172 01401 V
AB84             BCE    AA8,CN3,0                                                12  02089  B 02102 01401 0
AB85             H                                              ROUTINE  0 ERROR  1  02101  .
AB86   *             MOVE INSTRUCTION AT AA7 FAILED
AB87   AA8       MLCWA  &99993,CN6                                               12  02102  D 29177 01407 X
AB88   AA9       A      &00006,CN6          CHECK BASIC ADD                      11  02114  A 29182 01407
AB89             BCE    AA0,CN6,I                                                12  02125  B 02138 01407 I
AB90             H                                              ROUTINE  0 ERROR  1  02137  .
AB91   *             ADD INSTRUCTION AT AA9 FAILED
AB92   AA0       MLCS   @0@,CN4             CLEAR ERROR INDICATOR                12  02138  D 29166 01402 3
AB93             MLCWA  @0000@,C01          CLEAR PASS COUNTER                   12  02150  D 29186 28538 X
AB94             MLCWA  @0000@,C04          CLEAR SUCCESS PASS COUNTER           12  02162  D 29186 01477 X
AB95             MLCWA  CQ8,CR1&13          STORE INITIAL SPEC. CHAR. CONSTS.    12  02174  D 01671 01698 X
AB96             MLCWA  CQ9,CR2&13          STORE INITIAL SPEC. CHARACTERS       12  02186  D 01684 01713 X
AB97             MLCWA  CR4&46,CP1&46       RESTORE ZONES                        12  02198  D 01763 01554 X
AB98             MLCA   &RUPBOT,CT4         RESET INTERRUPT OP SELECTION ADDR    12  02210  D 29191 28726 T
AB99             MLCWA  @00000@,X10         CLEAR INDEX REGISTERS                12  02222  D 29196 00074 X
AC00             MLCWA  @00000@             CLEAR INDEX REGISTERS                 6  02234  D 29196
AC01             MLCWA  @00000@             CLEAR INDEX REGISTERS                 6  02240  D 29196
AC02             MLCWA  @00000@             CLEAR INDEX REGISTERS                 6  02246  D 29196
AC03             MLCWA  @00000@             CLEAR INDEX REGISTERS                 6  02252  D 29196
AC04             MLCWA  @00000@             CLEAR INDEX REGISTERS                 6  02258  D 29196
AC05             MLCWA  @00000@             CLEAR INDEX REGISTERS                 6  02264  D 29196
```

```
PGLIN   LABEL     OPCOD  OPERAND                                          CT  ADDRS  INSTRUCTION
AC07              MLCWA  @00000@          CLEAR INDEX REGISTERS           6  02270  D 29196
AC08              MLCWA  @00000@          CLEAR INDEX REGISTERS           6  02276  D 29196
AC09              MLCWA  @00000@          CLEAR INDEX REGISTERS           6  02282  D 29196
AC10              MLCWA  LOC21,21         SET LOC 8 FOR EXTRA PRINT      12  02288  D 28713 00021 X
AC11              MLCWA                                                   1  02300  D
AC12              MLCWA                                                   1  02301  D
AC13              MLCWA  CQ5,7            SET LOCATION 1 FOR RESTART     12  02302  D 01629 00007 X
AC14              B      SC1              STEP ROUTINE COUNTER TO  1      7  02314  J 27380
AC15    *ROUTINE  1-SET INITIAL CONSTANTS,FIRST PASS ONLY.
AC16    AB1       MLCWA  CN8,A            SET A TO &00000000001          12  02321  D 01418 01790 X
AC17              MLCWA  CN8,E            SET E TO &00000000001          12  02333  D 01418 01812 X
AC18              MLCWA  CN9,B            SET B TO &00000000002          12  02345  D 01429 01801 X
AC19              MLCWA  CN9,F            SET F TO &00000000002          12  02357  D 01429 01823 X
AC20              MLCWA  CN0,G            SET G TO &00000000003          12  02369  D 01440 01834 X
AC21              BNQ    ITR              BRANCH INQUIRY                  7  02381  J 01334 Q
AC22    AB2       C      CN8,A            VERIFY CORRECT MOVE TO A       11  02388  C 01418 01790
AC23              BU     AB3                                             7  02399  J 02485 /
AC24              C      E,CN8            VERIFY CORRECT MOVE TO E       11  02406  C 01812 01418
AC25              BU     AB3                                             7  02417  J 02485 /
AC26              C      B,CN9            VERIFY CORRECT MOVE TO B       11  02424  C 01801 01429
AC27              BU     AB3                                             7  02435  J 02485 /
AC28              C      CN9,F            VERIFY CORRECT MOVE TO F       11  02442  C 01429 01823
AC29              BU     AB3                                             7  02453  J 02485 /
AC30              C      G,CN0            VERIFY CORRECT MOVE TO G       11  02460  C 01834 01440
AC31              BU     AB3                                             7  02471  J 02485 /
AC32              B      AB4                                             7  02478  J 02493
AC33    AB3       B      SE1              BRANCH TO ERROR ROUTINE         7  02485  J 27220
AC34              H                                    ROUTINE  1 ERROR   1  02492  .
AC35    *              THE PROPER DATA WAS NOT MOVED TO A,E,B,F OR G, OR
AC36    *              ONE OF THE COMPARE OR BRANCH UNEQUAL INSTRUCTIONS
AC37    *              DID NOT OPERATE PROPERLY
AC38    AB4       BCE    AB1,TAD1,1       LOOP ROUTINE  1                12  02493  B 02321 01001 1
AC39              B      SC1              STEP ROUTINE COUNTER TO  2      7  02505  J 27380
```

```
PGLIN  LABEL     OPCOD  OPERAND                                          CT  ADDRS  INSTRUCTION
AC41   *ROUTINE  2-SET HIGH ORDER DIGITS OF CONSTANTS A,E,B,F, AND G TO
AC42   *             ZERO-THIS IS START OF PROGRAM ON REPETITIVE PASSES
AC43   AC1       BCE    SD1,TAD6,1        BRANCH-ENTER CONSTANTS MANUALLY  12  02512  B 27405 01006 1
AC44             BCE    SD8,TAD7,1        BYPASS CONSTANT GENERATION ROUTS.12  02524  B 28032 01007 1
AC45   AC9       MLCWS  @0@,A-10                                           12  02536  D 29166 01780 7
AC46             MLCWS  @0@,E-10                                           12  02548  D 29166 01802 7
AC47             MLCWS  @0@,B-10                                           12  02560  D 29166 01791 7
AC48             MLCWS  @0@,F-10                                           12  02572  D 29166 01813 7
AC49             MLCWS  @0@,G-10                                           12  02584  D 29166 01824 7
AC50   AC2       BCE    AC3,A-10,0        VERIFY CORRECT MOVES             12  02596  B 02615 01780 0
AC51             B      AC7                                                7  02608  J 02684
AC52   AC3       BCE    AC4,E-10,0                                        12  02615  B 02634 01802 0
AC53             B      AC7                                                7  02627  J 02684
AC54   AC4       BCE    AC5,B-10,0                                        12  02634  B 02653 01791 0
AC55             B      AC7                                                7  02646  J 02684
AC56   AC5       BCE    AC6,F-10,0                                        12  02653  B 02672 01813 0
AC57             B      AC7                                                7  02665  J 02684
AC58   AC6       BCE    AC8,G-10,0                                        12  02672  B 02711 01824 0
AC59   AC7       BNQ    ITR               BRANCH INQUIRY                   7  02684  J 01334 Q
AC60             B      SE1               BRANCH TO ERROR ROUTINE          7  02691  J 27220
AC61             H                                      ROUTINE  2 ERROR   1  02698  .
AC62   *             THIS ERROR HALT INDICATES THAT THE HIGH O"DER DIGIT
AC63   *             OF ONE OF THE FIVE CONSTANTS IS NOT NOW SET TO ZERO
AC64   *             -ONE OF THE MLCWS, BCE, OR B INSTRUCTIONS FAILED
AC65             BCE    AC9,TAD1,1        LOOP ROUTINE  2                  12  02699  B 02536 01001 1
AC66   AC8       B      SC1               STEP ROUTINE COUNTER TO  3        7  02711  J 27380
```

```
PGLIN   LABEL      OPCOD  OPERAND                                          CT  ADDRS  INSTRUCTION
AC68    *ROUTINE   3-SAVE CONSTANTS A AND B.
AC69    AD1        BNQ    ITR                 BRANCH INQUIRY                7  02718  J 01334 Q
AC70               MLCWA  A,X                                               12  02725  D 01790 01845 X
AC71               MLCWA  B,Y                                               12  02737  D 01801 01856 X
AC72               C      A,X                 VERIFY CORRECT MOVES          11  02749  C 01790 01845
AC73               BU     AD3                                               7  02760  J 02792 /
AC74               C      Y,B                                               11  02767  C 01856 01801
AC75               BU     AD3                                               7  02778  J 02792 /
AC76               B      AD4                                               7  02785  J 02812
AC77    AD3        B      SE1                 BRANCH TO ERROR ROUTINE       7  02792  J 27220
AC78               H                                        ROUTINE  3 ERROR  1  02799  .
AC79    *               THIS ERROR HALT INDICATES THAT A DOES NOT EQUAL X OR
AC80    *               B DOES NOT EQUAL Y-MLCWA,C, OR BU INSTRUCTION FAILED
AC81               BCE    AD1,TAD1,1          LOOP ROUTINE  3               12  02800  B 02718 01001 1
AC82    AD4        B      SC1                 STEP ROUTINE COUNTER TO  4    7  02812  J 27380
AC83    *ROUTINE   4-SUBTRACT CONSTANT B FROM CONSTANT A.
AC84    AE1        BNQ    ITR                 BRANCH INQUIRY                7  02819  J 01334 Q
AC85               MLCWA  X,A                 RESTORE A                     12  02826  D 01845 01790 X
AC86               S      B,A                                               11  02838  S 01801 01790
AC87               MLCWA  A,CA1               STORE DIFFERENCE IN CA1       12  02849  D 01790 01451 X
AC88               A      B,CA1               CHECK S AND MLCWA OPERATION   11  02861  A 01801 01451
AC89               S      X,CA1               COMPARE SUM AND ORIGINAL A    11  02872  S 01845 01451
AC90               BZ     AE2                 BRANCH-ROUTINE 4 SUCCESSFUL   7  02883  J 02898 V
AC91               B      SE1                 BRANCH TO ERROR ROUTINE       7  02890  J 27220
AC92               H                                        ROUTINE  4 ERROR  1  02897  .
AC93    *               THE DIFFERENCE OF A MINUS B WHEN ADDED TO B, DID NOT
AC94    *               RESULT IN A SUM EQUAL TO THE ORIGINAL CONSTANT A
AC95    AE2        BCE    AE1,TAD1,1          LOOP ROUTINE  4               12  02898  B 02819 01001 1
AC96               B      SC1                 STEP ROUTINE COUNTER TO  5    7  02910  J 27380
```

```
PGLIN   LABEL      OPCOD  OPERAND                                          CT  ADDRS  INSTRUCTION
AC98    *ROUTINE   5-SET CONSTANT B TO NEW VALUE.
AC99    AF1        BNQ    ITR                BRANCH INQUIRY                 7  02917  J 01334 Q
AD00               MLCWA  A,B                                               12  02924  D 01790 01801 X
AD01               C      B,A                CHECK MOVE                    11  02936  C 01801 01790
AD02               BE     AF2                BRANCH-ROUTINE 5 SUCCESSFUL    7  02947  J 02962 S
AD03               B      SE1                BRANCH TO ERROR ROUTINE        7  02954  J 27220
AD04               H                                      ROUTINE  5 ERROR   1  02961  .
AD05    *              AFTER MOVING A TO B, A COMPARISON OF A AND B DID NOT
AD06    *              RESULT IN A BRANCH ON EQUAL
AD07    AF2        BCE    AF1,TAD1,1         LOOP ROUTINE  5               12  02962  B 02917 01001 1
AD08               B      SC1                STEP ROUTINE COUNTER TO  6     7  02974  J 27380
AD09    *ROUTINE   6-SET CONSTANT A TO FORMER VALUE OF CONSTANT B.
AD10    AG1        BNQ    ITR                BRANCH INQUIRY                 7  02981  J 01334 Q
AD11               MLCWA  Y,A                                               12  02988  D 01856 01790 X
AD12               C      Y,A                CHECK MOVE                    11  03000  C 01856 01790
AD13               BE     AG2                BRANCH-ROUTINE 6 SUCCESSFUL    7  03011  J 03026 S
AD14               B      SE1                BRANCH TO ERROR ROUTINE        7  03018  J 27220
AD15               H                                      ROUTINE  6 ERROR   1  03025  .
AD16    *              AFTER MOVING Y TO A, A COMPARE OF Y AND A DID NOT
AD17    *              RESULT IN A BRANCH EQUAL
AD18    AG2        BCE    AG1,TAD1,1         LOOP ROUTINE  6               12  03026  B 02981 01001 1
AD19               B      SC1                STEP ROUTINE COUNTER TO  7     7  03038  J 27380
AD20    *ROUTINE   7-MOVE CONSTANT B TO CONSTANT AA STORAGE.
AD21    AH1        BNQ    ITR                BRANCH INQUIRY                 7  03045  J 01334 Q
AD22               MLCWA  B,AA                                              12  03052  D 01801 01878 X
AD23               C      B,AA               CHECK MOVE                    11  03064  C 01801 01878
AD24               BE     AH2                BRANCH-ROUTINE 7 SUCCESSFUL    7  03075  J 03090 S
AD25               B      SE1                BRANCH TO ERROR ROUTINE        7  03082  J 27220
AD26               H                                      ROUTINE  7 ERROR   1  03089  .
AD27    AH2        BCE    AH1,TAD1,1         LOOP ROUTINE  7               12  03090  B 03045 01001 1
AD28               B      SC1                STEP ROUTINE COUNTER TO  8     7  03102  J 27380
```

```
PGLIN  LABEL     OPCOD  OPERAND                                          CT  ADDRS  INSTRUCTION
AD30   *ROUTINE  8-LOAD INDEX REGISTER ONE TO 11.
AD31   AI1       BNQ    ITR                 BRANCH INQUIRY                7  03109  J 01334 Q
AD32             MLCWA  @00011@,X1                                      12  03116  D 29201 00029 X
AD33             C      @00011@,X1          CHECK MOVE                11  03128  C 29201 00029
AD34             BE     AI2                 BRANCH-MOVE OK                7  03139  J 03154 S
AD35             B      SE1                 BRANCH TO ERROR ROUTINE       7  03146  J 27220
AD36             H                                        ROUTINE  8 ERROR  1  03153  .
AD37   *             AFTER LOADING INDEX REGISTER ONE WITH THE CONSTANT
AD38   *             11, INDEX REGISTER ONE DID NOT COMPARE WITH THE
AD39   *             CONSTANT 11.
AD40   AI2       BCE    AI1,TAD1,1          LOOP ROUTINE  8              12  03154  B 03109 01001 1
AD41             B      SC1                 STEP ROUTINE COUNTER TO  9    7  03166  J 27380
AD42   *ROUTINE  9-CYCLE SPECIAL CHARACTERS AND CONSTANT ONE POSITION.
AD43   AI3       BNQ    ITR                 BRANCH INQUIRY                7  03173  J 01334 Q
AD44             SW     CR1&1                                             6  03180  , 01686
AD45             SW     CR2&1                                             6  03186  , 01701
AD46             MRCWG  CR1&1,CR1           CYCLE SPEC CHAR CONST ONE POSIT. 12  03192  D 01686 01685 D
AD47             MRCWG  CR2&1,CR2           CYCLE SPEC CHAR ONE POSITION  12  03204  D 01701 01700 D
AD48             BCE    AI4,CR1&13,M G      BRANCH-MOVE OK                12  03216  B 03235 01698 GM
AD49             B      AI5                                               7  03228  J 03247
AD50   AI4       BCE    AI6,CR2&13,M G      BRANCH-MOVE OK                12  03235  B 03279 01713 GM
AD51   AI5       B      SE1                 BRANCH TO ERROR ROUTINE       7  03247  J 27220
AD52             H                                        ROUTINE  9 ERROR  1  03254  .
AD53   *             IF THE TWO MRCWG  MOVES OPERATED PROPERLY, CR1&13
AD54   *             AND CR2&13 SHOULD CONTAIN GROUP MARKS. THEY DO NOT.
AD55             MLCS   CR1,CR1&13          CORRECT FOR LOOPING           12  03255  D 01685 01698 3
AD56             MLCS   CR2,CR2&13          CORRECT FOR LOOPING           12  03267  D 01700 01713 3
AD57   AI6       MLCS   CR1,CR1&13          MOVE LEFT CR1 CHAR TO RIGHT   12  03279  D 01685 01698 3
AD58             MLCS   CR2,CR2&13          MOVE LEFT CR2 CHAR TO RIGHT   12  03291  D 01700 01713 3
AD59             C      CR1,CR1&13          CHECK FIRST MLCS              11  03303  C 01685 01698
AD60             BE     AI7                 BRANCH-FIRST MLCS OK          7  03314  J 03328 S
AD61             B      AI8                 BRANCH-ERROR                  7  03321  J 03346
AD62   AI7       C      CR2,CR2&13          CHECK SECOND MLCS OK          11  03328  C 01700 01713
AD63             BE     AI9                 BRANCH-SECOND MLCS OK         7  03339  J 03354 S
```

```
PGLIN   LABEL   OPCOD  OPERAND                                          CT  ADDRS  INSTRUCTION
AD65    AI8     B      SE1                BRANCH TO ERROR ROUTINE       7  03346  J 27220
AD66            H                                          ROUTINE  9 ERROR  1  03353  .
AD67    *           AFTER THE OPERATION OF THE ABOVE TWO MLCS
AD68    *           INSTRUCTIONS, THE LOCATION MOVED TO DID NOT COMPARE
AD69    *           WITH THE DATA MOVED.
AD70    AI9     BCE    AI3,TAD1,1         LOOP ROUTINE  9              12  03354  B 03173 01001 1
AD71    *           NOTE-IF THIS ROUTINE IS LOOPED, THE DATA WILL VARY.
AD72            B      SC1                STEP ROUTINE COUNTER TO 10    7  03366  J 27380
AD73    *ROUTINE 10-DEPOSIT OCCASIONAL SPECIAL CHARACTERS IN CONSTANT AA.
AD74    AI11    BNQ    ITR                BRANCH INQUIRY                7  03373  J 01334 Q
AD75            C      AA-10&X1,CR1&2&X1  COMPARE SPEC CONST WITH AA CHAR 11  03380  C 018W8 016Y7
AD76            BU     AI12               BRANCH-NO DEPOSIT             7  03391  J 03436 /
AD77            MLCS   CR2&2&X1,AA-10&X1  DEPOSIT SPECIAL CHARACTER IN AA 12  03398  D 017#2 018W8 3
AD78            C      AA-10&X1,CR2&2&X1  CHECK MOVE                   11  03410  C 018W8 017#2
AD79            BE     AI12               BRANCH-MOVE OK                7  03421  J 03436 S
AD80            B      SE1                BRANCH TO ERROR ROUTINE       7  03428  J 27220
AD81            H                                          ROUTINE 10 ERROR  1  03435  .
AD82    *           AFTER OPERATION OF THE MLCS INSTRUCTION, THE
AD83    *           LOCATION MOVED TO DID NOT COMPARE WITH THE DATA
AD84    *           MOVED.
AD85    AI12    MLCWA  X1,C08             STORE INDEX 1 FOR CHECK      12  03436  D 00029 01482 X
AD86            S      &1,X1              REDUCE INDEX REG 1           11  03448  S 29202 00029
AD87            BZ     AI13               BRANCH-ROUTINE COMPLETE       7  03459  J 03503 V
AD88            A      -1,C08             CHECK SUBTRACTION            11  03466  A 29203 01482
AD89            C      X1,C08                                          11  03477  C 00029 01482
AD90            BE     AI11               BRANCH-ADD,SUBTRACT OK        7  03488  J 03373 S
AD91            B      SE1                BRANCH TO ERROR ROUTINE       7  03495  J 27220
AD92            H                                          ROUTINE 10 ERROR  1  03502  .
AD93    *           AFTER SUBTRACTING A &1 FROM INDEX REG ONE, AND
AD94    *           ADDING A -1 TO THE SAME NUMBER IN C08, INDEX REG ONE
AD95    *           AND C08 DID NOT COMPARE.
AD96    AI13    MLCWA  @00011@,X1         LOAD INDEX REG 1 FOR LOOPING 12  03503  D 29201 00029 X
AD97            BCE    AI11,TAD1,1        LOOP ROUTINE 10              12  03515  B 03373 01001 1
AD98            B      SC1                STEP ROUTINE COUNTER TO 11    7  03527  J 27380
```

```
PGLIN   LABEL   OPCOD  OPERAND                                          CT  ADDRS  INSTRUCTION
AE00    *ROUTINE 11-CLEAR INDEX REGISTER ONE.
AE01    AJ1     BNQ    ITR                 BRANCH INQUIRY               7  03534  J 01334 Q
AE02            MLCWA  @00000@,X1         CLEAR INDEX REG ONE         12  03541  D 29196 00029 X
AE03            C      @00000@,X1         CHECK MOVE                  11  03553  C 29196 00029
AE04            BE     AJ2                BRANCH-INDEX REG ONE CLEARED  7  03564  J 03579 S
AE05            B      SE1                BRANCH TO ERROR ROUTINE       7  03571  J 27220
AE06            H                                    ROUTINE 11 ERROR    1  03578  .
AE07    *           COULD NOT CLEAR INDEX REG ONE.
AE08    AJ2     BCE    AJ1,TAD1,1         LOOP ROUTINE 11              12  03579  B 03534 01001 1
AE09            B      SC1                STEP ROUTINE COUNTER TO 12    7  03591  J 27380
AE10    *ROUTINE 12-SET INDEX REG ONE FROM THE PROGRAM PASS COUNTER.
AE11    AK1     BNQ    ITR                BRANCH INQUIRY                7  03598  J 01334 Q
AE12            MLCS   CO1-1,X1           SET INDEX REG ONE            12  03605  D 28537 00029 3
AE13            MLNS   CO1-1,AK2&11       SET CHECK INSTRUCTION        12  03617  D 28537 03640 1
AE14    AK2     BCE    AK3,X1,0           BRANCH-INDEX REG ONE IS SET   12  03629  B 03649 00029 0
AE15            B      SE1                BRANCH TO ERROR ROUTINE       7  03641  J 27220
AE16            H                                    ROUTINE 12 ERROR    1  03648  .
AE17    *           COULD NOT SET INDEX REG ONE WITH AN MLCS INSTRUCTION
AE18    AK3     BCE    AK1,TAD1,1         LOOP ROUTINE 12              12  03649  B 03598 01001 1
AE19            B      SC1                STEP ROUTINE COUNTER TO 13    7  03661  J 27380
```

```
PGLIN   LABEL   OPCOD  OPERAND                                                  CT  ADDRS  INSTRUCTION
AE21            *ROUTINE 13-REDUCE FIELD LENGTH OF CONSTANT AA BY ONE CHARACTER
AE22            *          EVERY TENTH PROGRAM PASS BY PLACEMENT OF WORD MARK
AE23    AL1     BNQ    ITR                BRANCH INQUIRY                        7  03668  J 01334 Q
AE24           SW     AA-9&X1                                                  6  03675  , 018W9
AE25           SCNLA  AA,1011            COUNT NUMBER OF CHARACTERS IN AA     12  03681  D 01878 01011 S
                                                                                                        B
AE26           SBR    CO2                STORE LENGTH OF AA FIELD & 1000       7  03693  G 01467 B
AE27           A      -1011,CO2          CALCULATE RESULT                     11  03700  A 29207 01467
AE28           MLZS   @ @,CO2            CLEAR SIGN POSITION ZONE             12  03711  D 29208 01467 2
AE29           C      CO2,@00010@        CO2 SHOULD BE NUMBER 1 THRU 10       11  03723  C 01467 29213
AE30           BL     AL2                BRANCH-CO2 IS LARGER THAN 10          7  03734  J 03766 T
AE31           C      CO2,@00001@        CO2 SHOULD BE NUMBER 1 THRU 10       11  03741  C 01467 29218
AE32           BH     AL2                BRANCH-CO2 IS LESS THAN 1             7  03752  J 03766 U
AE33           B      AL3                                                      7  03759  J 03774
AE34    AL2    B      SE1                BRANCH TO ERROR ROUTINE               7  03766  J 27220
AE35           H                                                 ROUTINE 13 ERROR  1  03773  .
AE36            *          WORD MARK WAS NOT SET WITHIN THE FIELD OF CONSTANT
AE37            *          AA OR THE SCNLA INSTRUCTION DID NOT OPERATE
AE38            *          PROPERLY-IF WORD MARK DID NOT SET, ERRONEOUS ERROR
AE39            *          INDICATIONS OR LOSS OF CONTROL MAY RESULT IN LATER
AE40            *          ROUTINES
AE41    AL3    BCE    AL1,TAD1,1         LOOP ROUTINE 13                      12  03774  B 03668 01001 1
AE42           B      SC1                STEP ROUTINE COUNTER TO 14            7  03786  J 27380
```

```
PGLIN   LABEL   OPCOD  OPERAND                                          CT  ADDRS  INSTRUCTION
AE44    *ROUTINE 14-SET HIGH ORDER DIGITS OF E,F AND G TO ZERO
AE45    AN1     BNQ    ITR                 BRANCH INQUIRY               7  03793  J 01334 Q
AE46            MLCS   @0@,E-10            SET ZERO                    12  03800  D 29166 01802 3
AE47            MLCS   @0@,F-10                                        12  03812  D 29166 01813 3
AE48            MLCS   @0@,G-10                                        12  03824  D 29166 01824 3
AE49            BCE    AN3,E-10,0          BRANCH-E OK                 12  03836  B 03855 01802 0
AE50            B      AN5                 ERROR-E                      7  03848  J 03886
AE51    AN3     BCE    AN4,F-10,0          BRANCH-F OK                 12  03855  B 03874 01813 0
AE52            B      AN5                 ERROR-F                      7  03867  J 03886
AE53    AN4     BCE    AN6,G-10,0          BRANCH-G OK                 12  03874  B 03894 01824 0
AE54    AN5     B      SE1                 BRANCH TO ERROR ROUTINE      7  03886  J 27220
AE55            H                                        ROUTINE 14 ERROR  1  03893  .
AE56    *           THE HIGH ORDER DIGIT OF E,F,OR G DID NOT SET TO ZERO
AE57    *           OR A BCE INSTRUCTION FAILED.
AE58    AN6     BCE    AN1,TAD1,1          LOOP ROUTINE 14             12  03894  B 03793 01001 1
AE59            B      SC1                 STEP ROUTINE COUNTER TO 15   7  03906  J 27380
AE60    *ROUTINE 15-SAVE E,F AND G INX,Y AND Z
AE61    AO1     BNQ    ITR                 BRANCH INQUIRY               7  03913  J 01334 Q
AE62            MLCA   E,X                 MAKE MOVES                  12  03920  D 01812 01845 T
AE63            MLCA   F,Y                                             12  03932  D 01823 01856 T
AE64            MLCA   G,Z                                             12  03944  D 01834 01867 T
AE65            C      E,X                 CHECK FOR PROPER MOVES      11  03956  C 01812 01845
AE66            BU     AO3                 BRANCH-X BAD                 7  03967  J 04017 /
AE67            C      F,Y                                            11  03974  C 01823 01856
AE68            BU     AO3                 BRANCH-Y BAD                 7  03985  J 04017 /
AE69            C      Z,G                                            11  03992  C 01867 01834
AE70            BU     AO3                 BRANCH-Z BAD                 7  04003  J 04017 /
AE71            B      AO4                                             7  04010  J 04025
AE72    AO3     B      SE1                 BRANCH TO ERROR ROUTINE      7  04017  J 27220
AE73            H                                        ROUTINE 15 ERROR  1  04024  .
AE74    *           E AND X, F AND Y, OR G AND Z DID NOT COMPARE AFTER
AE75    *           MLCA INSTRUCTIONS.
AE76    AO4     BCE    AO1,TAD1,1          LOOP ROUTINE 15             12  04025  B 03913 01001 1
AE77            B      SC1                 STEP ROUTINE COUNTER TO 16   7  04037  J 27380
```

```
PGLIN   LABEL    OPCOD  OPERAND                                                  CT  ADDRS  INSTRUCTION
AE79    *ROUTINE 16-ADD F TO G
AE80    AP1      BNQ    ITR                 BRANCH INQUIRY                        7  04044  J 01334 Q
AE81             MLCA   Z,G                 RESTORE G                            12  04051  D 01867 01834 T
AE82             A      F,G                 ADD                                  11  04063  A 01823 01834
AE83    AP2      MLCA   G,CA1               SAVE G IN CA1                        12  04074  D 01834 01451 T
AE84             S      F,CA1               CHECK ADDITION                       11  04086  S 01823 01451
AE85             S      Z,CA1               Z IS EQUAL TO FORMER G               11  04097  S 01867 01451
AE86             BZ     AP3                 BRANCH-ADD AND SUB OK                 7  04108  J 04123 V
AE87             B      SE1                 BRANCH TO ERROR ROUTINE               7  04115  J 27220
AE88             H                                          ROUTINE 16 ERROR      1  04122  .
AE89    *            SUBTRACTING CONSTANT F FROM THE SUM OF F PLUS G DID
AE90    *            NOT RESULT IN A DIFFERENCE THAT COMPARED WITH G.
AE91    AP3      BCE    AP1,TAD1,1          LOOP ROUTINE 16                      12  04123  B 04044 01001 1
AE92             B      SC1                 STEP ROUTINE COUNTER TO 17            7  04135  J 27380
AE93    *ROUTINE 17-SET HIGH ORDER DIGIT OF G TO ZERO
AE94    AQ1      BNQ    ITR                 BRANCH INQUIRY                        7  04142  J 01334 Q
AE95             MLCS   @0@,G-10            SET ZERO                             12  04149  D 29166 01824 3
AE96             BCE    AQ2,G-10,0          BRANCH-MOVE OK                       12  04161  B 04181 01824 0
AE97             B      SE1                 BRANCH TO ERROR ROUTINE               7  04173  J 27220
AE98             H                                          ROUTINE 17 ERROR      1  04180  .
AE99    *            MLCS INSTRUCTION DID NOT OPERATE PROPERLY OR BCE
AF00    *            INSTRUCTION FAILED.
AF01    AQ2      BCE    AQ1,TAD1,1          LOOP ROUTINE 17                      12  04181  B 04142 01001 1
AF02             B      SC1                 STEP ROUTINE COUNTER TO 18            7  04193  J 27380
```

```
PGLIN    LABEL      OPCOD  OPERAND                                          CT  ADDRS  INSTRUCTION
AF04     *ROUTINE 18-SUBTRACT CONSTANT G FROM CONSTANT E
AF05     AR1        BNQ    ITR                 BRANCH INQUIRY                7  04200  J 01334 Q
AF06                MLCA   X,E                 RESTORE E                    12  04207  D 01845 01812 T
AF07                S      G,E                 SUBTRACT G FROM E            11  04219  S 01834 01812
AF08                MLCA   E,CA1               SAVE E                       12  04230  D 01812 01451 T
AF09                A      G,CA1               CHECK SUBTRACTION            11  04242  A 01834 01451
AF10                S      X,CA1               DOES -G&E&G-E EQUAL ZERO     11  04253  S 01845 01451
AF11                BZ     AR2                 BRANCH-YES                    7  04264  J 04279 V
AF12                B      SE1                 BRANCH TO ERROR ROUTINE       7  04271  J 27220
AF13                H                                    ROUTINE 18 ERROR    1  04278  .
AF14     *              THE DIFFERENCE OF E MINUS G WHEN ADDED TO G DID NOT
AF15     *              COMPARE WITH THE ORIGINAL E.
AF16     AR2        BCE    AR1,TAD1,1          LOOP ROUTINE 18              12  04279  B 04200 01001 1
AF17                B      SC1                 STEP ROUTINE COUNTER TO 19    7  04291  J 27380
AF18     *ROUTINE 19-SAVE CONSTANT E
AF19     AS1        BNQ    ITR                 BRANCH INQUIRY                7  04298  J 01334 Q
AF20                MLCA   E,CA1                                            12  04305  D 01812 01451 T
AF21                C      E,CA1                                            11  04317  C 01812 01451
AF22                BE     AS2                 BRANCH-MOVE OK                7  04328  J 04343 S
AF23                B      SE1                 BRANCH TO ERROR ROUTINE       7  04335  J 27220
AF24                H                                    ROUTINE 19 ERROR    1  04342  .
AF25     *              AFTER MOVING E TO CA1, E AND CA1 DO NOT COMPARE.
AF26     AS2        BCE    AS1,TAD1,1          LOOP ROUTINE 19              12  04343  B 04298 01001 1
AF27                B      SC1                 STEP ROUTINE COUNTER TO 20    7  04355  J 27380
AF28     *ROUTINE 20-SET E TO FORMER F, F TO FORMER G, AND G TO RESULT OF
AF29     *               THE SUBTRACTION IN THE ROUTINE BEFORE THE LAST.
AF30     AT1        BNQ    ITR                 BRANCH INQUIRY                7  04362  J 01334 Q
AF31                MLCA   Y,E                 Y EQUALS FORMER F            12  04369  D 01856 01812 T
AF32                MLCA   Z,F                 Z EQUALS FORMER G            12  04381  D 01867 01823 T
AF33                MLCA   CA1,G               CA1 IS RESULT OF THE SUBTRACTION 12  04393  D 01451 01834 T
```

```
PGLIN     LABEL     OPCOD  OPERAND                                          CT  ADDRS  INSTRUCTION
AF35                C      E,Y                                              11  04405  C 01812 01856
AF36                BU     AT3                                               7  04416  J 04466 /
AF37                C      F,Z                                              11  04423  C 01823 01867
AF38                BU     AT3                                               7  04434  J 04466 /
AF39                C      CA1,G                                            11  04441  C 01451 01834
AF40                BU     AT3                                               7  04452  J 04466 /
AF41                B      AT4              BRANCH-ROUTINE 18 OK             7  04459  J 04474
AF42      AT3       B      SE1              BRANCH TO ERROR ROUTINE          7  04466  J 27220
AF43                H                                      ROUTINE 20 ERROR  1  04473  .
AF44      *              AN MLCA OR COMPARE INSTRUCTION FAILED.
AF45      AT4       BCE    AT1,TAD1,1       LOOP ROUTINE 20                 12  04474  B 04362 01001 1
AF46                B      SC1              STEP ROUTINE COUNTER TO 21       7  04486  J 27380
AF47      *ROUTINE 21-MOVE CONSTANT G TO LOCATION BB
AF48      AU1       BNQ    ITR              BRANCH INQUIRY                   7  04493  J 01334 Q
AF49                MLCWA  G,BB                                            12  04500  D 01834 01889 X
AF50                C      G,BB             CHECK MOVE                      11  04512  C 01834 01889
AF51                BE     AU2              BRANCH-MOVE OK                   7  04523  J 04538 S
AF52                B      SE1              BRANCH TO ERROR ROUTINE          7  04530  J 27220
AF53                H                                      ROUTINE 21 ERROR  1  04537  .
AF54      *              AFTER MOVING G TO BB, G AND BB DID NOT COMPARE.
AF55      AU2       BCE    AU1,TAD1,1       LOOP ROUTINE 21                 12  04538  B 04493 01001 1
AF56                B      SC1              STEP ROUTINE COUNTER TO 22       7  04550  J 27380
AF57      *ROUTINE 22-LOAD INDEX REGISTER ONE TO 11.
AF58      AUU1      BNQ    ITR              BRANCH INQUIRY                   7  04557  J 01334 Q
AF59                MLCWA  @00011@,X1                                      12  04564  D 29201 00029 X
AF60                C      @00011@,X1       CHECK MOVE                      11  04576  C 29201 00029
AF61                BE     AUU2             BRANCH-MOVE OK                   7  04587  J 04602 S
AF62                B      SE1              BRANCH TO ERROR ROUTINE          7  04594  J 27220
AF63                H                                      ROUTINE 22 ERROR  1  04601  .
AF64      *              AFTER LOADING INDEX REGISTER ONE WITH THE CONSTANT
AF65      *              11, INDEX REGISTER ONE DID NOT COMPARE WITH THE
AF66      *              CONSTANT 11.
AF67      AUU2      BCE    AUU1,TAD1,1      LOOP ROUTINE 22                 12  04602  B 04557 01001 1
AF68                B      SC1              STEP ROUTINE COUNTER TO 23       7  04614  J 27380
```

```
PGLIN   LABEL   OPCOD  OPERAND                                              CT  ADDRS  INSTRUCTION
AF70    *ROUTINE 23-DEPOSIT OCCASIONAL SPECIAL CHARACTERS IN CONSTANT BB.
AF71    AUU3    BNQ    ITR                  BRANCH INQUIRY                   7  04621  J 01334 Q
AF72            C      BB-10&X1,CR1&2&X1    COMPARE SPEC CONST WITH BB CHAR 11  04628  C 018X9 016Y7
AF73            BU     AUU4                 BRANCH-NO DEPOSIT                7  04639  J 04684 /
AF74    AUU6    MLCS   CR2&2&X1,BB-10&X1   DEPOSIT SPECIAL CHARACTER IN BB  12  04646  D 017‡2 018X9 3
AF75            C      BB-10&X1,CR2&2&X1    CHECK MOVE                      11  04658  C 018X9 017‡2
AF76            BE     AUU4                 BRANCH-MOVE OK                   7  04669  J 04684 S
AF77            B      SE1                  BRANCH TO ERROR ROUTINE          7  04676  J 27220
AF78            H                                          ROUTINE 23 ERROR  1  04683  .
AF79    *           AFTER OPERATION OF THE MLCS INSTRUCTION, THE
AF80    *           LOCATION MOVED TO DID NOT COMPARE WITH THE DATA
AF81    *           MOVED.
AF82    AUU4    MLCWA  X1,C08               STORE INDEX 1 FOR CHECK         12  04684  D 00029 01482 X
AF83            S      &1,X1                REDUCE INDEX REG 1              11  04696  S 29202 00029
AF84            BZ     AUU5                 BRANCH-ROUTINE COMPLETE          7  04707  J 04751 V
AF85            A      -1,C08               CHECK SUBTRACTION               11  04714  A 29203 01482
AF86            C      X1,C08                                               11  04725  C 00029 01482
AF87            BE     AUU3                 BRANCH-ADD,SUBTRACT OK           7  04736  J 04621 S
AF88            B      SE1                  BRANCH TO ERROR ROUTINE          7  04743  J 27220
AF89            H                                          ROUTINE 23 ERROR  1  04750  .
AF90    *           AFTER SUBTRACTING A &1 FROM INDEX REG ONE, AND
AF91    *           ADDING A -1 TO THE SAME NUMBER IN C08, INDEX REG ONE
AF92    *           AND C08 DID NOT COMPARE.
AF93    AUU5    MLCWA  @00011@,X1           LOAD INDEX REG 1 FOR LOOPING    12  04751  D 29201 00029 X
AF94            BCE    AUU3,TAD1,1          LOOP ROUTINE 23                 12  04763  B 04621 01001 1
AF95            B      SC1                  STEP ROUTINE COUNTER TO 24       7  04775  J 27380
AF96    *ROUTINE 24-CLEAR INDEX REGISTER 2
AF97    AV1     BNQ    ITR                  BRANCH INQUIRY                   7  04782  J 01334 Q
AF98            MLCWA  @00000@,X2           MOVE ZEROS TO INDEX REG TWO     12  04789  D 29196 00034 X
AF99            C      X2,@00000@           CHECK MOVE                      11  04801  C 00034 29196
AG00            BE     AV2                  BRANCH-INDEX 2 CLEARED OK        7  04812  J 04827 S
AG01            B      SE1                  BRANCH TO ERROR ROUTINE          7  04819  J 27220
AG02            H                                          ROUTINE 24 ERROR  1  04826  .
AG03    *           AFTER MOVING ZEROS INTO INDEX REG. ONE, INDEX REG.
AG04    *           ONE DID NOT COMPARE WITH AN ALL ZERO CONSTANT.
```

```
PGLIN   LABEL   OPCOD  OPERAND                                          CT  ADDRS  INSTRUCTION
AG06    AV2     BCE    AV1,TAD1,1          LOOP ROUTINE 24              12  04827  B 04782 01001 1
AG07            B      SC1                 STEP ROUTINE COUNTER TO 25    7  04839  J 27380
AG08    *ROUTINE 25-SET INDEX REG. 2 EQUAL TO LOW ORDER DIGIT OF PASS COUNT
AG09    AW1     BNQ    ITR                 BRANCH INQUIRY                7  04846  J 01334 Q
AG10            MLNS   CO1,X2                                           12  04853  D 28538 00034 1
AG11            MLCS   CO1,AW2&11          SET DIGIT FOR CHECKING MOVE   12  04865  D 28538 04888 3
AG12    AW2     BCE    AW3,X2,0            BRANCH-MOVES OK               12  04877  B 04897 00034 0
AG13            B      SE1                 BRANCH TO ERROR ROUTINE       7  04889  J 27220
AG14            H                                        ROUTINE 25 ERROR  1  04896  .
AG15    *           INDEX REG. 2 FAILED TO SET TO PROPER NUMBER.
AG16    AW3     BCE    AW1,TAD1,1          LOOP ROUTINE 25               12  04897  B 04846 01001 1
AG17            B      SC1                 STEP ROUTINE COUNTER TO 26    7  04909  J 27380
AG18    *ROUTINE 26-SET LENGTH OF BB TO 1 TO 10 DIGITS WITH A WORD MARK.
AG19    *            THE LENGTH OF BB WILL DECREASE ONE DIGIT EACH PASS.
AG20    AX1     BNQ    ITR                 BRANCH INQUIRY                7  04916  J 01334 Q
AG21            SW     BB-9&X2                                          6  04923  , 01800
AG22            SCNLA  BB,1011             COUNT NUMBER OF CHARACTERS IN BB 12  04929  D 01889 01011 S
                                                                                          B
AG23            SBR    CO25                STORE LENGTH OF BB FIELD & 1000  7  04941  G 01472 B
AG24            A      -1011,CO25          CALCULATE RESULT             11  04948  A 29207 01472
AG25            MLZS   @ @,CO25            CLEAR SIGN POSITION ZONE     12  04959  D 29208 01472 2
AG26            C      CO25,@00010@        CO25 SHOULD BE NUMBER 1 THRU 10  11  04971  C 01472 29213
AG27            BL     AX2                 BRANCH-CO25 IS MORE THAN 10   7  04982  J 05014 T
AG28            C      CO25,@00001@        CO25 SHOULD BE NUMBER 1 THRU 10  11  04989  C 01472 29218
AG29            BH     AX2                 BRANCH-CO25 IS LESS THAN 1    7  05000  J 05014 U
AG30            B      AX3                                               7  05007  J 05022
AG31    AX2     B      SE1                 BRANCH TO ERROR ROUTINE       7  05014  J 27220
AG32            H                                        ROUTINE 26 ERROR  1  05021  .
AG33    *           WORD MARK WAS NOT SET PROPERLY OR SCNLA INSTRUCTION
AG34    *           FAILED. IF THIS IS A WORD MARK FAILURE, FOLLOWING
AG35    *           ROUTINES MAY GIVE ERRONEOUS ERROR INDICATIONS OR
AG36    *           LOSE CONTROL.
AG37    AX3     BCE    AX1,TAD1,1          LOOP ROUTINE 26              12  05022  B 04916 01001 1
AG38            B      SC1                 STEP ROUTINE COUNTER TO 27    7  05034  J 27380
```

```
PGLIN    LABEL     OPCOD  OPERAND                                          CT  ADDRS  INSTRUCTION
AG40     *ROUTINE 27-MOVE CONSTANT AA TO LOCATION CC.
AG41     BA1       BNQ    ITR              BRANCH INQUIRY                   7  05041  J 01334 Q
AG42               MLCWA  AA,CC                                           12  05048  D 01878 01900 X
AG43               C      AA,CC            CHECK MOVE                      11  05060  C 01878 01900
AG44               BE     BA2              BRANCH-MOVE OK                   7  05071  J 05086 S
AG45               B      SE1              BRANCH TO ERROR ROUTINE          7  05078  J 27220
AG46               H                                   ROUTINE 27 ERROR    1  05085  .
AG47     *              AFTER MOVING CONSTANT AA TO LOCATION CC, AA AND CC
AG48     *              DID NOT COMPARE.
AG49     BA2       BCE    BA1,TAD1,1       LOOP ROUTINE 27                 12  05086  B 05041 01001 1
AG50               B      SC1              STEP ROUTINE COUNTER TO 28       7  05098  J 27380
AG51     *ROUTINE 28-MOVE CONSTANT BB TO LOCATION DD.
AG52     BB1       BNQ    ITR              BRANCH INQUIRY                   7  05105  J 01334 Q
AG53               MLCWA  BB,DD                                           12  05112  D 01889 01911 X
AG54               C      BB,DD            CHECK MOVE                      11  05124  C 01889 01911
AG55               BE     BB2              BRANCH-MOVE OK                   7  05135  J 05150 S
AG56               B      SE1              BRANCH TO ERROR ROUTINE          7  05142  J 27220
AG57               H                                   ROUTINE 28 ERROR    1  05149  .
AG58     *              AFTER MOVING CONSTANT BB TO LOCATION DD, BB AND DD
AG59     *              DID NOT COMPARE.
AG60     BB2       BCE    BB1,TAD1,1       LOOP ROUTINE 28                 12  05150  B 05105 01001 1
AG61               B      SC1              STEP ROUTINE COUNTER TO 29       7  05162  J 27380
AG62     *ROUTINE 29-STORE THREE CHARACTERS OF ZONE CONSTANT.
AG63     BC1       BNQ    ITR              BRANCH INQUIRY                   7  05169  J 01334 Q
AG64               MRZG   CP1&44,CP5                                       12  05176  D 01552 01580 .
AG65               MLZB   CP1&46,CP6                                       12  05188  D 01554 01586 K
AG66               C      CP5&2,CP6        CHECK MOVES                     11  05200  C 01582 01586
AG67               BE     BC2              BRANCH-OK                        7  05211  J 05226 S
AG68               B      SE1              BRANCH TO ERROR ROUTINE          7  05218  J 27220
AG69               H                                   ROUTINE 29 ERROR    1  05225  .
AG70     *              AFTER USING TWO DIFFERENT MOVE INSTRUCTIONS TO MOVE
AG71     *              THE SAME THREE CHARACTER FIELD TO TWO DIFFERENT
AG72     *              LOCATIONS, THE TWO LOCATIONS DID NOT COMPARE.
AG73     BC2       BCE    BC1,TAD1,1       LOOP ROUTINE 29                 12  05226  B 05169 01001 1
AG74               B      SC1              STEP ROUTINE COUNTER TO 30       7  05238  J 27380
```

```
PGLIN   LABEL   OPCOD  OPERAND                                          CT  ADDRS  INSTRUCTION
AG76    *ROUTINE 30-CYCLE REMAINDER OF ZONE CONSTANT THREE POSITIONS.
AG77    BD1     BNQ    ITR                BRANCH INQUIRY                 7  05245  J 01334 Q
AG78            MLZA   CP1&43,CP1&46                                    12  05252  D 01551 01554 S
AG79            MLZS   CP1,BD2&11         MOVE HIGH ORDER CHAR. FOR CHECK 12  05264  D 01508 05287 2
AG80    BD2     BCE    BD3,CP1&3,         BRANCH-HIGH ORDER CHAR. MOVED OK 12  05276  B 05296 01511
AG81            B      SE1                BRANCH TO ERROR ROUTINE        7  05288  J 27220
AG82            H                                        ROUTINE 30 ERROR  1  05295  .
AG83    *           AFTER MAKING THE RIGHT TO LEFT MOVE, THE FAILURE OF
AG84    *           THE BCE INSTRUCTION TO BRANCH INDICATES THAT THE
AG85    *           HIGH ORDER CHARACTER WAS NOT PROPERLY MOVED.
AG86    *           NOTE-IF THIS ROUTINE IS LOOPED, THE DATA WILL VARY
AG87    *           EVERY PASS OF THE ROUTINE.
AG88    BD3     BCE    BD1,TAD1,1         LOOP ROUTINE 30 SEE NOTE ABOVE 12  05296  B 05245 01001 1
AG89            B      SC1                STEP ROUTINE COUNTER TO 31     7  05308  J 27380
AG90    *ROUTINE 31-RELOCATE THREE CHARACTERS OF ZONE CONSTANT.
AG91    BE1     BNQ    ITR                BRANCH INQUIRY                 7  05315  J 01334 Q
AG92            MLZS   CP5&2,CP1          MOVE FIRST CHARACTER           12  05322  D 01582 01508 2
AG93            MLZS   CP5&2,BE2&11       MOVE FIRST CHAR. TO BCE INSTRUCT. 12  05334  D 01582 05405 2
AG94            MLZS   CP5&1,CP1&1        MOVE SECOND CHARACTER          12  05346  D 01581 01509 2
AG95            MLZS   CP5&1,BE3&11       MOVE SECOND CHAR. TO BCE INST. 12  05358  D 01581 05424 2
AG96            MLZS   CP5,CP1&2          MOVE THIRD CHARACTER           12  05370  D 01580 01510 2
AG97            MLZS   CP5,BE4&11         MOVE THIRD CHAR. TO BCE INSTRUCT. 12  05382  D 01580 05443 2
AG98    BE2     BCE    BE3,CP1,           BRANCH-FIRST CHAR. MOVED OK    12  05394  B 05413 01508
AG99            B      BE5                                               7  05406  J 05444
AH00    BE3     BCE    BE4,CP1&1,         BRANCH-SECOND CHAR. MOVED OK   12  05413  B 05432 01509
AH01            B      BE5                                               7  05425  J 05444
AH02    BE4     BCE    BE6,CP1&2,         BRANCH-THIRD CHAR. MOVED OK    12  05432  B 05452 01510
AH03    BE5     B      SE1                BRANCH TO ERROR ROUTINE        7  05444  J 27220
AH04            H                                        ROUTINE 31 ERROR  1  05451  .
AH05    *           THE FAILURE OF ONE OF THE BCE INSTRUCTIONS TO BRANCH
AH06    *           INDICATES THAT AT LEAST ONE OF THE MOVE INSTRUCTIONS
AH07    *           FAILED.
AH08    BE6     BCE    BE1,TAD1,1         LOOP ROUTINE 31                12  05452  B 05315 01001 1
AH09            B      SC1                STEP ROUTINE COUNTER TO 32     7  05464  J 27380
```

```
PGLIN   LABEL    OPCOD  OPERAND                                          CT  ADDRS  INSTRUCTION
AH11    *ROUTINE 32-MOVE ZONE CONSTANT TO LOCATION CC TO FORM CONSTANT CC.
AH12    BF1      BNQ    ITR                  BRANCH INQUIRY               7  05471  J 01334 Q
AH13             MLNWA  CC,CA1               STORE CC FOR CHECK          12  05478  D 01900 01451 V
AH14             MLZB   CP1&11,CC           MAKE MOVE                   12  05490  D 01519 01900 K
AH15             MLZB   CP1&11,CA1          MOVE SAME ZONE FOR CHECKING 12  05502  D 01519 01451 K
AH16             C      CC,CA1               CHECK MOVES                 11  05514  C 01900 01451
AH17             BE     BF2                  BRANCH-MOVES OK              7  05525  J 05540 S
AH18             B      SE1                  BRANCH TO ERROR ROUTINE      7  05532  J 27220
AH19             H                                        ROUTINE 32 ERROR 1  05539  .
AH20    *            AFTER MOVING THE SAME DATA TO LOCATION CA1 THAT WAS
AH21    *            MOVED TO LOCATION CC, CA1 AND CC DID NOT COMPARE.
AH22    BF2      BCE    BF1,TAD1,1           LOOP ROUTINE 32             12  05540  B 05471 01001 1
AH23             B      SC1                  STEP ROUTINE COUNTER TO 33   7  05552  J 27380
AH24    *ROUTINE 33-MOVE ZONE CONSTANT TO LOCATION DD TO FORM CONSTANT DD.
AH25    BG1      BNQ    ITR                  BRANCH INQUIRY               7  05559  J 01334 Q
AH26             MLNWA  DD,CA1               STORE DD FOR CHECK          12  05566  D 01911 01451 V
AH27             MLZB   CP1&20,DD           MAKE MOVE                   12  05578  D 01528 01911 K
AH28             MLZB   CP1&20,CA1          MOVE SAME ZONE FOR CHECKING 12  05590  D 01528 01451 K
AH29             C      DD,CA1               CHECK MOVES                 11  05602  C 01911 01451
AH30             BE     BG2                  BRANCH-MOVES OK              7  05613  J 05628 S
AH31             B      SE1                  BRANCH TO ERROR ROUTINE      7  05620  J 27220
AH32             H                                        ROUTINE 33 ERROR 1  05627  .
AH33    *            AFTER MOVING THE SAME DATA TO LOCATION CA1 THAT WAS
AH34    *            MOVED TO LOCATION DD, CA1 AND DD DID NOT COMPARE.
AH35    BG2      BCE    BG1,TAD1,1           LOOP ROUTINE 33             12  05628  B 05559 01001 1
AH36             B      SC1                  STEP ROUTINE COUNTER TO 34   7  05640  J 27380
```

```
PGLIN   LABEL    OPCOD  OPERAND                                          CT  ADDRS  INSTRUCTION
AH38     *ROUTINE 34-EXTRACT ADDRESS FROM CONSTANT A FOR FORMATION OF
AH39     *         CONSTANT EE.
AH40     BH1      BNQ    ITR              BRANCH INQUIRY                  7  05647  J 01334 Q
AH41              MLCB   A-1,CO8          EXTRACT ADDRESS TWICE          12  05654  D 01789 01482 L
AH42              MLCB   A-1,CO9                                         12  05666  D 01789 01487 L
AH43              C      CO8,CO9          CHECK                          11  05678  C 01482 01487
AH44              BE     BH2              BRANCH-MOVES OK                 7  05689  J 05704 S
AH45              B      SE1              BRANCH TO ERROR ROUTINE         7  05696  J 27220
AH46              H                                   ROUTINE 34 ERROR   1  05703  .
AH47     *             AFTER MOVING THE SAME DATA TO LOCATIONS CO8 AND CO9,
AH48     *             CO8 AND CO9 DID NOT COMPARE.
AH49     BH2      BCE    BH1,TAD1,1       LOOP ROUTINE 34                12  05704  B 05647 01001 1
AH50              B      SC1              STEP ROUTINE COUNTER TO 35      7  05716  J 27380
AH51     *ROUTINE 35-ADD THE LAST ADDRESS OF THIS PROGRAM TO THE CONSTANT IF
AH52     *         THE CONSTANT IS LOWER THAN THE LAST ADDRESS.
AH53     BI1      BNQ    ITR              BRANCH INQUIRY                  7  05723  J 01334 Q
AH54     BI2      MLCA   CO8,CO9          SAVE CONSTANT IN CO8           12  05730  D 01482 01487 T
AH55              MLCA   CO9,CO95         SAVE CONSTANT IN CO95          12  05742  D 01487 01492 T
AH56              MLCB   ALAST&5,XLAST    STORE LAST ADDR OF PROG IN XLAST 12 05754  D 29160 01622 L
AH57              C      CO9,XLAST        IS CONSTANT LARGER             11  05766  C 01487 01622
AH58              BL     BI5              BRANCH-YES CONSTANT IS LARGER   7  05777  J 05818 T
AH59     BI3      A      XLAST,CO9        ADD LAST ADDRESS OF PROGRAM    11  05784  A 01622 01487
AH60              MLCA   CO9,CO95         SAVE RESULT IN CO9             12  05795  D 01487 01492 T
AH61     BI4      S      XLAST,CO95                                      11  05807  S 01622 01492
AH62     BI5      C      CO95,CO8        *CHECK ADD AND SUB AT BI3 AND BI4,11  05818  C 01492 01482
AH63              BE     BI6             *AND/OR MOVES AT BI2.           7  05829  J 05844 S
AH64              B      SE1              BRANCH TO ERROR ROUTINE         7  05836  J 27220
AH65              H                                   ROUTINE 35 ERROR   1  05843  .
AH66     *             CO95 AND CO8 DID NOT COMPARE AFTER MOVING CO8 TO
AH67     *             CO95 AT BI2 AND/OR AFTER ADDING AND SUBTRACTING
AH68     *             THE SAME NUMBER FROM CO95 AT BI3 AND BI4.
AH69     BI6      BCE    BI1,TAD1,1       LOOP ROUTINE 35                12  05844  B 05723 01001 1
AH70              B      SC1              STEP ROUTINE COUNTER TO 36      7  05856  J 27380
```

```
PGLIN   LABEL   OPCOD  OPERAND                                          CT  ADDRS  INSTRUCTION
AH72    *ROUTINE 36-REDUCE CONSTANT 5000 AT A TIME UNTIL CONSTANT IS LOWER
AH73    *        THAN THE LAST ADDRESS OF THIS MACHINES MEMORY.
AH74            MLCS   SYS1&1,CP9-4        STORE LAST ADDRESS OF MEMORY     12  05863  D 01257 01592 3
AH75    BJ1     BNQ    ITR                 BRANCH INQUIRY                    7  05875  J 01334 Q
AH76            MLCA   CO9,CO8             SAVE CONSTANT IN CO9             12  05882  D 01487 01482 T
AH77    BJ2     C      CO8,CP9             IS CONSTANT LOWER THAN LAST ADDR. 11  05894  C 01482 01596
AH78    BJ3     BH     BJ5                 BRANCH-YES-ROUTINE COMPLETE       7  05905  J 06011 U
AH79            MLCA   CO8,CO95            SAVE CO8 IN CO95                 12  05912  D 01482 01492 T
AH80            S      &5000,CO8           REDUCE CONSTANT                  11  05924  S 29222 01482
AH81            MLCA   CO8,CO96            SAVE RESULT IN CO8               12  05935  D 01482 01497 T
AH82            A      &5000,CO96          CHECK SUBTRACTION                11  05947  A 29222 01497
AH83            C      CO96,CO95                                            11  05958  C 01497 01492
AH84            BE     BJ2                                                   7  05969  J 05894 S
AH85            BZN    BJ4,CO96,                                            12  05976  V 06003 01497 2
AH86            B      SE1                 BRANCH TO ERROR ROUTINE           7  05988  J 27220
AH87            H                                          ROUTINE 36 ERROR  1  05995  .
AH88    *           THE ZONE IN THE SIGN POSITION OF CO96 SHOULD REMAIN
AH89    *           BLANK. THE BZN INSTRUCTION FAILED, OR CO96 BECAME
AH90    *           SIGNED. CO96 COULD BECOME NEGATIVELY SIGNED IF THE
AH91    *           BRANCH AT BJ3 DID NOT OCCUR AFTER THE CONSTANT WAS
AH92    *           REDUCED TO A NUMBER SMALLER THAN MEMORY. NOTE-THIS
AH93    *           ERROR MAY CAUSE LOSS OF CONTROL OR ERRONEOUS ERROR
AH94    *           INDICATIONS IN LATER ROUTINES.
AH95            B      BJ5                                                   7  05996  J 06011
AH96    BJ4     B      SE1                 BRANCH TO ERROR ROUTINE           7  06003  J 27220
AH97            H                                          ROUTINE 36 ERROR  1  06010  .
AH98    *           THE RESULT OF ADDING 5000 TO THE CONSTANT AND
AH99    *           SUBTRACTING 5000 FROM THE SUM, DID NOT COMPARE WITH
AI00    *           THE ORIGINAL CONSTANT. NOTE-THIS ERROR MAY CAUSE
AI01    *           LOSS OF CONTROL OR ERRONEOUS ERROR INDICATIONS IN
AI02    *           LATER ROUTINES.
AI03    BJ5     BCE    BJ1,TAD1,1          LOOP ROUTINE 36                  12  06011  B 05875 01001 1
AI04            B      SC1                 STEP ROUTINE COUNTER TO 37        7  06023  J 27380
```

```
PGLIN  LABEL  OPCOD  OPERAND                                                  CT  ADDRS  INSTRUCTION
AI06   *ROUTINE 37-ENSURE THAT CONSTANT IS A LEAST 150 HIGHER THAN LAST
AI07   *               ADDRESS OF PROGRAM.
AI08   BK1    BNQ    ITR                 BRANCH INQUIRY                        7  06030  J 01334 Q
AI09          MLCA   @00150@,CO9         SET UP CHECK                         12  06037  D 29227 01487 T
AI10          A      XLAST,CO9                                                11  06049  A 01622 01487
AI11          MLCA   CO8,CO95            SAVE CONSTANT IN CO8                 12  06060  D 01482 01492 T
AI12          C      CO95,CO9            IS CONSTANT 150 HIGHER               11  06072  C 01492 01487
AI13          BL     BK2                 BRANCH-YES IT IS                      7  06083  J 06150 T
AI14          A      &150,CO95           INCREASE CONSTANT                    11  06090  A 29230 01492
AI15          MLCA   CO95,CO96           SAVE SUM IN CO95                     12  06101  D 01492 01497 T
AI16          S      &150,CO96           CHECK ADDITION                       11  06113  S 29230 01497
AI17          C      CO96,CO8                                                 11  06124  C 01497 01482
AI18          BE     BK2                 BRANCH-ADD, SUB. OK                   7  06135  J 06150 S
AI19          B      SE1                 BRANCH TO ERROR ROUTINE               7  06142  J 27220
AI20          H                                                 ROUTINE 37 ERROR  1  06149  .
AI21   *                   THE RESULT OF ADDING 150 TO THE CONSTANT AND
AI22   *                   SUBTRACTING 150 FROM THE SUM DID NOT COMPARE WITH
AI23   *                   THE ORIGINAL CONSTANT.
AI24   BK2    BCE    BK1,TAD1,1          LOOP ROUTINE 37                      12  06150  B 06030 01001 1
AI25          B      SC1                 STEP ROUTINE COUNTER TO 38            7  06162  J 27380
AI26   *ROUTINE 38-ENSURE THAT CONSTANT IS AT LEAST 23 LOWER THAN LAST
AI27   *               ADDRESS OF MEMORY.
AI28   BL1    BNQ    ITR                 BRANCH INQUIRY                        7  06169  J 01334 Q
AI29          MLCA   -00023,CO9          SET UP CHECK                         12  06176  D 29235 01487 T
AI30          A      CP9,CO9             ADD LAST ADDRESS OF MEMORY           11  06188  A 01596 01487
AI31          MLCA   CO95,CO8            SAVE CONSTANT IN CO95                12  06199  D 01492 01482 T
AI32          C      CO9,CO8             IS CONSTANT 23 LOWER                 11  06211  C 01487 01482
AI33          BL     BL2                 BRANCH-YES IT IS                      7  06222  J 06289 T
AI34          S      @00023@,CO8         REDUCE                               11  06229  S 29240 01482
AI35          MLCA   CO8,CO96            SAVE RESULT IN CO8                   12  06240  D 01482 01497 T
```

```
PGLIN  LABEL    OPCOD  OPERAND                                                CT  ADDRS  INSTRUCTION
AI37            A      @00023@,CO96      CHECK SUBTRACTION                    11  06252  A 29240 01497
AI38            C      CO96,CO95                                              11  06263  C 01497 01492
AI39            BE     BL2               BRANCH-ADD,SUBTRACT OK               7   06274  J 06289 S
AI40            B      SE1               BRANCH TO ERROR ROUTINE              7   06281  J 27220
AI41            H                                          ROUTINE 38 ERROR  1   06288  .
AI42    *           THE RESULT OF SUBTRACTING 23 FROM THE CONSTANT AND
AI43    *           ADDING 23 TO THE DIFFERENCE DID NOT COMPARE WITH THE
AI44    *           ORIGINAL CONSTANT.
AI45    BL2     BCE    BL1,TAD1,1        LOOP ROUTINE 38                      12  06289  B 06169 01001 1
AI46            B      SC1               STEP ROUTINE COUNTER TO 39           7   06301  J 27380
AI47    *ROUTINE 39-STORE CONSTANT EE.
AI48    BM1     BNQ    ITR               BRANCH INQUIRY                       7   06308  J 01334 Q
AI49            MLCA   CO8,EE            STORE                                12  06315  D 01482 01916 I
AI50            C      CO8,EE            CHECK MOVE                           11  06327  C 01482 01916
AI51            BE     BM2               BRANCH-MOVE OK                       7   06338  J 06353 S
AI52            B      SE1               BRANCH TO ERROR ROUTINE              7   06345  J 27220
AI53            H                                          ROUTINE 39 ERROR  1   06352  .
AI54    *           AFTER MOVING CO8 TO EE, CO8 AND EE DID NOT COMPARE.
AI55    BM2     BCE    BM1,TAD1,1        LOOP ROUTINE 39                      12  06353  B 06308 01001 1
AI56            B      SC1               STEP ROUTINE COUNTER TO 40           7   06365  J 27380
AI57    *ROUTINE 40-EXTRACT 5 DIGIT CONSTANT FROM CONSTANT B FOR FORMING
AI58    *           CONSTANT FF.
AI59    BN1     BNQ    ITR               BRANCH INQUIRY                       7   06372  J 01334 Q
AI60            MLCB   B-4,CO8           EXTRACT NUMBER TWICE                 12  06379  D 01797 01482 L
AI61            MLCB   B-4,CO9                                                12  06391  D 01797 01487 L
AI62            C      CO8,CO9           CHECK MOVES                          11  06403  C 01482 01487
AI63            BE     BN2               BRANCH-OK                            7   06414  J 06429 S
AI64            B      SE1               BRANCH TO ERROR ROUTINE              7   06421  J 27220
AI65            H                                          ROUTINE 40 ERROR  1   06428  .
AI66    *           AFTER USING TWO MOVE INSTRUCTIONS TO MOVE THE SAME
AI67    *           DATA TO LOCATIONS CO8 AND CO9, CO8 AND CO9 DID NOT
AI68    *           COMPARE.
AI69    BN2     BCE    BN1,TAD1,1        LOOP ROUTINE 40                      12  06429  B 06372 01001 1
AI70            B      SC1               STEP ROUTINE COUNTER TO 41           7   06441  J 27380
```

```
PGLIN   LABEL   OPCOD  OPERAND                                          CT  ADDRS  INSTRUCTION
AI72    *ROUTINE 41-IF THE CONSTANT IS EQUAL TO OR LOWER THAN THE LAST
AI73    *        ADDRESS OF THIS PROGRAM PLUS 50, ADD THE LAST ADDRESS
AI74    *        PLUS 50 TO THE CONSTANT.
AI75    B01     BNQ    ITR              BRANCH INQUIRY                    7  06448  J 01334 Q
AI76            MLCA   XLAST,C096       SAVE LAST ADDRESS OF PROGRAM     12  06455  D 01622 01497 T
AI77            A      &50,C096         INCREASE LAST ADDRESS            11  06467  A 29242 01497
AI78            MLCA   C096,C097        SAVE SUM IN C096                 12  06478  D 01497 01502 T
AI79            S      &50,C097         CHECK ADDITION                   11  06490  S 29242 01502
AI80            C      C097,XLAST                                        11  06501  C 01502 01622
AI81            BE     B02              BRANCH-ADDITION,SUBTRACTION OK    7  06512  J 06527 S
AI82            B      SE1              BRANCH TO ERROR ROUTINE           7  06519  J 27220
AI83            H                                      ROUTINE 41 ERROR  1  06526  .
AI84    *           THE RESULT OF ADDING 50 TO A CONSTANT AND
AI85    *           SUBTRACTING 50 FROM THE SUM DID NOT COMPARE WITH THE
AI86    *           ORIGINAL CONSTANT. NOTE-THIS ERROR MAY CAUSE LOSS OF
AI87    *           CONTROL OR ERRONEOUS ERROR INDICATIONS IN LATER
AI88    *           ROUTINES.
AI89    B02     MLCA   C08,C09          SAVE CONSTANT IN C08             12  06527  D 01482 01487 T
AI90            C      C096,C09                                          11  06539  C 01497 01487
AI91            BH     B03              BRANCH-CONSTANT IS LARGE ENOUGH   7  06550  J 06617 U
AI92            A      C096,C09         INCREASE CONSTANT                11  06557  A 01497 01487
AI93            MLCA   C09,C095         SAVE SUM IN C09                  12  06568  D 01487 01492 T
AI94            S      C096,C095        CHECK ADDITION                   11  06580  S 01497 01492
AI95            C      C095,C08                                          11  06591  C 01492 01482
AI96            BE     B03              BRANCH-ADDITION,SUBTRACTION OK    7  06602  J 06617 S
AI97            B      SE1              BRANCH TO ERROR ROUTINE           7  06609  J 27220
AI98            H                                      ROUTINE 41 ERROR  1  06616  .
AI99    *           THE RESULT OF ADDING CONSTANT 1 TO CONSTANT 2 AND
AJ00    *           SUBTRACTING CONSTANT 1 FROM THE SUM DID NOT COMPARE
AJ01    *           WITH THE ORIGINAL CONSTANT 2. NOTE-THIS ERROR MAY
AJ02    *           CAUSE LOSS OF CONTROL IN LATER ROUTINES.
AJ03    B03     BCE    B01,TAD1,1       LOOP ROUTINE 41                  12  06617  B 06448 01001 1
AJ04            B      SC1              STEP ROUTINE COUNTER TO 42        7  06629  J 27380
```

```
PGLIN   LABEL   OPCOD  OPERAND                                          CT  ADDRS  INSTRUCTION
AJ06    *ROUTINE 42-CALCULATE HIGHEST ADDRESS OF MEMORY MINUS 350.
AJ07    BP1     BNQ    ITR                 BRANCH INQUIRY                7  06636  J 01334 Q
AJ08            MLCA   CP9,C08             SAVE LAST ADDRESS OF MEMORY  12  06643  D 01596 01482 I
AJ09            S      &350,C08                                         11  06655  S 29245 01482
AJ10            MLCA   C08,C095            SAVE RESULT IN C08           12  06666  D 01482 01492 I
AJ11            A      &350,C095           CHECK SUBTRACTION            11  06678  A 29245 01492
AJ12            C      C095,CP9                                         11  06689  C 01492 01596
AJ13            BE     BP2                 BRANCH-ADD,SUBTRACT OK        7  06700  J 06715 S
AJ14            B      SE1                 BRANCH TO ERROR ROUTINE       7  06707  J 27220
AJ15            H                                        ROUTINE 42 ERROR  1  06714  .
AJ16    *           AFTER SUBTRACTING 350 FROM A CONSTANT AND ADDING 350
AJ17    *           TO THE DIFFERENCE, THE RESULT DID NOT COMPARE WITH
AJ18    *           THE ORIGINAL CONSTANT.
AJ19    BP2     BCE    BP1,TAD1,1          LOOP ROUTINE 42              12  06715  B 06636 01001 1
AJ20            B      SC1                 STEP ROUTINE COUNTER TO 43    7  06727  J 27380
```

```
PGLIN   LABEL   OPCOD  OPERAND                                          CT  ADDRS  INSTRUCTION
AJ22    *ROUTINE 43-REPEATEDLY SUBTRACT 5000 FROM CONSTANT UNTIL IT IS
AJ23    *         LOWER THAN THE LAST ADDRESS OF MEMORY MINUS 350
AJ24    BQ1     BNQ    ITR              BRANCH INQUIRY                    7  06734  J 01334 Q
AJ25            MLCA   CO9,CO95         SAVE CONSTANT IN CO9             12  06741  D 01487 01492 T
AJ26    BQ2     MLCA   CO95,CO96        SAVE CONSTANT IN CO95            12  06753  D 01492 01497 T
AJ27            C      CO8,CO95         IS CONSTANT NOW LOWER            11  06765  C 01482 01492
AJ28    BQ3     BL     BQ5              BRANCH-YES IT IS LOWER            7  06776  J 06870 T
AJ29            S      &5000,CO95                                        11  06783  S 29222 01492
AJ30            MLCA   CO95,CO97        SAVE RESULT IN CO95              12  06794  D 01492 01502 T
AJ31            A      &5000,CO97       CHECK SUBTRACTION                11  06806  A 29222 01502
AJ32            C      CO97,CO96                                         11  06817  C 01502 01497
AJ33            BE     BQ2              BRANCH-ADD,SUBTRACTION OK         7  06828  J 06753 S
AJ34            BZN    BQ4,CO95,        BRANCH-ROUTINE NOT HUNG          12  06835  V 06862 01492 2
AJ35            B      SE1              BRANCH TO ERROR ROUTINE           7  06847  J 27220
AJ36            H                                      ROUTINE 43 ERROR   1  06854  .
AJ37    *           CONSTANT CO95 SHOULD REMAIN UNSIGNED. THE FAILURE OF
AJ38    *           THE BZN INSTRUCTION TO BRANCH INDICATES THAT THE BZN
AJ39    *           INSTRUCTION FAILED, OR CO95 IS NOW SIGNED. CO95
AJ40    *           COULD BECOME NEGATIVELY SIGNED IF THIS ROUTINE HUNG
AJ41    *           IN A LOOP DUE TO THE BL INSTRUCTION AT BQ3 NOT
AJ42    *           BRANCHING WHEN IT SHOULD. NOTE-THIS ERROR COULD
AJ43    *           CAUSE ERRONEOUS ERROR INDICATIONS OR LOSS OF CONTROL
AJ44    *           IN LATER ROUTINES.
AJ45            B      BQ5                                               7  06855  J 06870
AJ46    BQ4     B      SE1              BRANCH TO ERROR ROUTINE           7  06862  J 27220
AJ47            H                                      ROUTINE 43 ERROR   1  06869  .
AJ48    *           THE RESULT OF SUBTRACTING 5000 FROM A CONSTANT AND
AJ49    *           ADDING 5000 TO THE DIFFERENCE DID NOT COMPARE WITH-
AJ50    *           THE ORIGINAL CONSTANT.
AJ51    BQ5     BCE    BQ1,TAD1,1       LOOP ROUTINE 43                  12  06870  B 06734 01001 1
AJ52            B      SC1              STEP ROUTINE COUNTER TO 44        7  06882  J 27380
```

```
PGLIN   LABEL   OPCOD  OPERAND                                          CT  ADDRS  INSTRUCTION
AJ54            *ROUTINE 44-IF CONSTANT IS WITHIN 100 OF CONSTANT EE, ADD 200 TO
AJ55            *          THE NEW CONSTANT.
AJ56    BR1     BNQ    ITR              BRANCH INQUIRY                   7  06889  J 01334 Q
AJ57            MLCA   CO95,CO8         SAVE CONSTANT IN CO95           12  06896  D 01492 01482 I
AJ58            S      EE,CO8                                           11  06908  S 01916 01482
AJ59            MLCA   CO8,CO9          SAVE RESULT IN CO8              12  06919  D 01482 01487 I
AJ60            A      EE,CO9           CHECK SUBTRACTION               11  06931  A 01916 01487
AJ61            MLZS   @ @,CO9          CLEAR SIGN POSITION ZONE        12  06942  D 29208 01487 2
AJ62            C      CO9,CO95                                         11  06954  C 01487 01492
AJ63            BE     BR2              BRANCH-ADD,SUBTRACTION OK        7  06965  J 06980 S
AJ64            B      SE1              BRANCH TO ERROR ROUTINE          7  06972  J 27220
AJ65            H                                      ROUTINE 44 ERROR  1  06979  .
AJ66            *          THE RESULT OF SUBTRACTING EE FROM THE CONSTANT AND
AJ67            *          ADDING EE TO THE DIFFERENCE DID NOT COMPARE WITH THE
AJ68            *          ORIGINAL CONSTANT.
AJ69    BR2     MLZS   @ @,CO8          CLEAR SIGN POSITION ZONE        12  06980  D 29208 01482 2
AJ70    BR3     BBE    BR6,CO8,&        BRANCH-ZONE NOT CLEAR           12  06992  W 07101 01482 &
AJ71            C      @00100@,CO8                                      11  07004  C 29250 01482
AJ72            BH     BR7              BRANCH-CONSTANT OK-EXIT ROUTINE  7  07015  J 07109 U
AJ73            MLCA   CO95,CO9         SAVE CONSTANT IN CO95           12  07022  D 01492 01487 I
AJ74    BR4     A      &200,CO9         INCREASE CONSTANT BY 200        11  07034  A 29253 01487
AJ75            MLCA   CO9,CO8          SAVE RESULT IN CO9              12  07045  D 01487 01482 I
AJ76    BR5     S      &200,CO8         CHECK ADDITION                  11  07057  S 29253 01482
AJ77            C      CO8,CO95                                         11  07068  C 01482 01492
AJ78            BE     BR7              ADDITION,SUB. OK-EXIT ROUTINE    7  07079  J 07109 S
AJ79            B      SE1              BRANCH TO ERROR ROUTINE          7  07086  J 27220
AJ80            H                                      ROUTINE 44 ERROR  1  07093  .
AJ81            *          THE RESULT OF ADDING 200 TO THE CONSTANT AT BR4 AND
AJ82            *          SUBTRACTING 200 FROM THE SUM AT BR5 DID NOT COMPARE
AJ83            *          WITH THE ORIGINAL CONSTANT.
AJ84            B      BR7              BRANCH TO ROUTINE EXIT           7  07094  J 07109
```

```
PGLIN   LABEL    OPCOD  OPERAND                                                CT  ADDRS  INSTRUCTION
AJ86    BR6      B      SE1                BRANCH TO ERROR ROUTINE              7  07101  J 27220
AJ87             H                                                 ROUTINE 44 ERROR  1  07108  .
AJ88    *                THE BRANCH BIT EQUAL INSTRUCTION AT BR3 BRANCHED TO
AJ89    *                THIS ERROR HALT. THIS INDICATES THAT THE MOVE
AJ90    *                INSTRUCTION AT BR2 DID NOT CLEAR THE ZONE OF
AJ91    *                CONSTANT C08. NOTE-THIS ERROR MAY CAUSE ERRONEOUS
AJ92    *                ERROR INDICATIONS IN LATER ROUTINES.
AJ93    BR7      BCE    BR1,TAD1,1         LOOP ROUTINE 44                     12  07109  B 06889 01001 1
AJ94             B      SC1                STEP ROUTINE COUNTER TO 45           7  07121  J 27380
AJ95    *ROUTINE 45-STORE CONSTANT FF.
AJ96    BS1      BNQ    ITR                BRANCH INQUIRY                       7  07128  J 01334 Q
AJ97             MLCA   C09,FF                                                 12  07135  D 01487 01921 T
AJ98             C      C09,FF             CHECK MOVE                          11  07147  C 01487 01921
AJ99             BE     BS2                BRANCH-MOVE OK                       7  07158  J 07173 S
AK00             B      SE1                BRANCH TO ERROR ROUTINE              7  07165  J 27220
AK01             H                                                 ROUTINE 45 ERROR  1  07172  .
AK02    *                AFTER MOVING CONSTANT C09 TO LOCATION FF, C09 AND
AK03    *                FF DID NOT COMPARE.
AK04    BS2      BCE    BS1,TAD1,1         LOOP ROUTINE 45                     12  07173  B 07128 01001 1
AK05             B      SC1                STEP ROUTINE COUNTER TO 46           7  07185  J 27380
```

```
PGLIN   LABEL    OPCOD  OPERAND                                          CT  ADDRS  INSTRUCTION
AK07     *ROUTINE 46-CHECK SCNLS, SAR, SBR INSTRUCTIONS.
AK08     BT1     BNQ    ITR                BRANCH INQUIRY                 7  07192  J 01334 Q
AK09             MLCA   EE,BT2&10          STORE EE FOR WORKING ADDRESS  12  07199  D 01916 07221 T
AK10     BT2     SCNLS  AA,0                                            12  07211  D 01878 00000
AK11             SAR    BT3-1              SAVE AAR FOR CHECKING          7  07223  G 07270 A
AK12             SBR    CO9                SAVE BAR FOR CHECKING          7  07230  G 01487 B
AK13             MLZS   @ @,CO9            CLEAR SIGN POSITION ZONE      12  07237  D 29208 01487 2
AK14             A      &1,CO9             INCREASE STORED BAR FOR CHECKING 11 07249  A 29202 01487
AK15             C      AA-1,0             CHECK STORED AAR              11  07260  C 01877 00000
AK16     BT3     BE     BT4                BRANCH-OK                      7  07271  J 07286 S
AK17             B      SE1                BRANCH TO ERROR ROUTINE        7  07278  J 27220
AK18             H                                        ROUTINE 46 ERROR 1 07285  .
AK19     *           IF THE SCNLS INSTRUCTION AT BT2 REDUCED THE AAR BY
AK20     *           ONE AS IT SHOULD, THE BE INSTRUCTION AT BT3 SHOULD
AK21     *           HAVE BRANCHED.
AK22     BT4     C      CO9,EE             CHECK STORED BAR              11  07286  C 01487 01916
AK23     BT5     BE     BT6                BRANCH-OK                      7  07297  J 07312 S
AK24             B      SE1                BRANCH TO ERROR ROUTINE        7  07304  J 27220
AK25             H                                        ROUTINE 46 ERROR 1 07311  .
AK26     *           IF THE SCNLS INSTRUCTION AT BT2 REDUCED THE BAR BY
AK27     *           ONE AS IT SHOULD, THE BE INSTRUCTION AT BT5 SHOULD
AK28     *           HAVE BRANCHED.
AK29     BT6     BCE    BT1,TAD1,1         LOOP ROUTINE 46               12  07312  B 07192 01001 1
AK30             B      SC1                STEP ROUTINE COUNTER TO 47     7  07324  J 27380
```

```
PGLIN    LABEL     OPCOD  OPERAND                                          CT  ADDRS  INSTRUCTION
AK32     *ROUTINE 47-LOAD INDEX REG 5 WITH CONSTANT EE AND INDEX REG 6 WITH
AK33     *          CONSTANT FF.
AK34     BU1       BNQ    ITR                BRANCH INQUIRY                 7  07331  J 01334 Q
AK35               MLCWA  EE,X5              SET INDEX 5 TO CONSTANT EE    12  07338  D 01916 00049 X
AK36               MLCWA  FF,X6              SET INDEX 6 TO CONSTANT FF    12  07350  D 01921 00054 X
AK37               C      EE,X5              CHECK MOVE TO INDEX 5         11  07362  C 01916 00049
AK38               BE     BU2                BRANCH-MOVE OK                 7  07373  J 07388 S
AK39               B      SE1                BRANCH TO ERROR ROUTINE        7  07380  J 27220
AK40               H                                      ROUTINE 47 ERROR  1  07387  .
AK41     *              AFTER USING AN MLCWA INSTRUCTION TO MOVE CONSTANT EE
AK42     *              TO INDEX REG. 5, EE AND INDEX REG. 5 DID NOT COMPARE
AK43     BU2       C      FF,X6              CHECK MOVE TO INDEX 6         11  07388  C 01921 00054
AK44               BE     BU3                BRANCH-MOVE OK                 7  07399  J 07414 S
AK45               B      SE1                BRANCH TO ERROR ROUTINE        7  07406  J 27220
AK46               H                                      ROUTINE 47 ERROR  1  07413  .
AK47     *              AFTER USING AN MLCWA INSTRUCTION TO MOVE CONSTANT FF
AK48     *              TO INDEX REG. 6, FF AND INDEX REG. 6 DID NOT COMPARE
AK49     BU3       BCE    BU1,TAD1,1         LOOP ROUTINE 47               12  07414  B 07331 01001 1
AK50               B      SC1                STEP ROUTINE COUNTER TO 48     7  07426  J 27380
```

```
PGLIN  LABEL   OPCOD  OPERAND                                          CT  ADDRS  INSTRUCTION
AK52   *ROUTINE 48-CHECK MLWA, MLZA, MLNA, MLCWA INSTRUCTIONS USING
AK53   *         INDEXING FOR B ADDRESSES.
AK54   BV1     BNQ    ITR              BRANCH INQUIRY                   7  07433  J 01334 Q
AK55           MLWA   CC,0&X5          INDEX REG FIVE EQUALS CONSTANT EE 12 07440  D 01900 00**0 U
AK56           MLZA   CC,0&X5                                           12 07452  D 01900 00**0 S
AK57           MLNA   CC,0&X5                                           12 07464  D 01900 00**0 /
AK58           MLCWA  CC,0&X6          INDEX REG SIX EQUALS CONSTANT FF 12 07476  D 01900 00*.0 X
AK59           MLCA   EE,BV2&5         MOVE CONSTANT EE FO" CHECKING    12 07488  D 01916 07517 T
AK60           MLCA   FF,BV2&10        MOVE CONSTANT FF FOR CHECKING    12 07500  D 01921 07522 T
AK61   BV2     C      0,0              COMPARE LOCATION EE WITH LOC. FF 11 07512  C 00000 00000
AK62           BE     BV3              BRANCH-ALL MOVES OK               7 07523  J 07538 S
AK63           B      SE1              BRANCH TO ERROR ROUTINE           7 07530  J 27220
AK64           H                                      ROUTINE 48 ERROR  1 07537  .
AK65   *           USING INDEXING, CONSTANT CC WAS MOVED TO LOCATION EE
AK66   *           BY THREE DIFFERENT MOVE INSTRUCTIONS.-MLWA,MLZA, AND
AK67   *           MLNA. USING INDEXING, CONSTANT CC WAS MOVED TO
AK68   *           LOCATION FF BY AN MLCWA INSTRUCTION. AFTER
AK69   *           COMPLETION OF THESE MOVES, LOCATION EE AND LOCATION
AK70   *           FF DID NOT COMPARE.
AK71   BV3     BCE    BV1,TAD1,1       LOOP ROUTINE 48                  12 07538  B 07433 01001 1
AK72           B      SC1              STEP ROUTINE COUNTER TO 49        7 07550  J 27380
AK73   *ROUTINE 49-CHECK MLNWA, MLZB INSTRUCTIONS USING INDEXING FOR B
AK74   *         MOVE ADDRESSES AND A COMPARE ADDRESS.
AK75   BW1     BNQ    ITR              BRANCH INQUIRY                   7  07557  J 01334 Q
AK76           MLNWA  DD,0&X5          INDEX REG FIVE EQUALS CONSTANT EE 12 07564  D 01911 00**0 V
AK77           MLZB   DD,0&X5                                           12 07576  D 01911 00**0 K
AK78           C      0&X5,DD          CHECK MOVES                      11 07588  C 00**0 01911
AK79           BE     BW2              BRANCH-MOVES AND INDEXING OK      7 07599  J 07614 S
AK80           B      SE1              BRANCH TO ERROR ROUTINE           7 07606  J 27220
AK81           H                                      ROUTINE 49 ERROR  1 07613  .
AK82   *           CONSTANT DD WAS MOVED TO LOCATION EE BY MLNWA AND
AK83   *           MLZB INSTRUCTIONS.DD AND EE DO NOT COMPARE.
AK84   BW2     BCE    BW1,TAD1,1       LOOP ROUTINE 49                  12 07614  B 07557 01001 1
AK85           B      SC1              STEP ROUTINE COUNTER TO 50        7 07626  J 27380
```

```
PGLIN  LABEL   OPCOD  OPERAND          COMMENTS                          CT  ADDRS  INSTRUCTION
AK87   *ROUTINE 50-CHECK MLZWA INSTRUCTION.
AK88   BX1     BNQ    ITR              BRANCH INQUIRY                     7  07633  J 01334 Q
AK89           MLZWA  0&X5,0&X6        INDEX 5 EQUALS EE,IX 6 EQUALS FF  12  07640  D 00##0 00#.0 W
AK90           MLNA   DD,0&X6                                            12  07652  D 01911 00#.0 /
AK91           C      0&X6,0&X5        CHECK LOC. EE AGAINST LOC. FF     11  07664  C 00#.0 00##0
AK92           BE     BX2              BRANCH-MOVES OK                    7  07675  J 07690 S
AK93           B      SE1              BRANCH TO ERROR ROUTINE            7  07682  J 27220
AK94           H                                      ROUTINE 50 ERROR   1  07689  .
AK95   *           THE ZONE AND WORD MARK OF CONSTANT DD WAS MOVED FROM
AK96   *           LOCATION EE TO LOCATION FF. THE NUMERIC OF CONSTANT
AK97   *           DD WAS MOVED FROM LOCATION EE TO LOCATION FF.
AK98   *           LOCATION FF DID NOT COMPARE WITH LOCATION EE.
AK99   BX2     BCE    BX1,TAD1,1       LOOP ROUTINE 50                   12  07690  B 07633 01001 1
AL00           B      SC1              STEP ROUTINE COUNTER TO 51         7  07702  J 27380
AL01   *ROUTINE 51-CHECK MLNS, MLZS MLCS INSTRUCTIONS. CHECK BCE
AL02   *            INSTRUCTION FOR BRANCHING WHEN CHARACTER IS EQUAL.
AL03   BY1     BNQ    ITR              BRANCH INQUIRY                     7  07709  J 01334 Q
AL04           MLNS   CC,0&X6          INDEX REG 6 EQUALS CONSTANT FF    12  07716  D 01900 00#.0 1
AL05           MLZS   CC,0&X6                                            12  07728  D 01900 00#.0 2
AL06           MLCS   CC,BY2&11        MOVE 1 CHAR. CC TO BCE INSTRUCT.  12  07740  D 01900 07763 3
AL07   BY2     BCE    BY3,0&X6,0       CHECK ALL MOVES-SHOULD BRANCH     12  07752  B 07772 00#.0 0
AL08           B      SE1              BRANCH TO ERROR ROUTINE            7  07764  J 27220
AL09           H                                      ROUTINE 51 ERROR   1  07771  .
AL10   *           MLNS AND MLZS INSTRUCTIONS WERE USED TO MOVE ONE
AL11   *           CHARACTER OF CONSTANT CC TO LOCATION FF. AN MLCS
AL12   *           INSTRUCTION WAS USED TO MOVE THE SAME CHARACTER TO
AL13   *           THE D MODIFIER POSITION OF THE BCE INSTRUCTION. THE
AL14   *           BCE INSTRUCTION DID NOT BRANCH.
AL15   BY3     BCE    BY1,TAD1,1       LOOP ROUTINE 51                   12  07772  B 07709 01001 1
AL16           B      SC1              STEP ROUTINE COUNTER TO 52         7  07784  J 27380
```

```
PGLIN   LABEL    OPCOD  OPERAND                                          CT  ADDRS  INSTRUCTION
AL18    *ROUTINE 52-CHECK SCNLA, MLWS, BW  INSTRUCTIONS.
AL19    BZ1      BNQ    ITR                BRANCH INQUIRY                 7  07791  J 01334 Q
AL20             SCNLA  0&X5,DD            INDEX REG 5 EQUALS CONSTANT EE 12  07798  D 00**0 01911 S B
AL21             SAR    C08                STORE W/M ADDRESS MINUS ONE    7  07810  G 01482 A
AL22             A      &1,C08             SET ADDRESS OF WORD MARK       11  07817  A 29202 01482
AL23             MLNA   C08,BZ2&5          MOVE ADDRESS OF WORD MARK      12  07828  D 01482 07845 /
AL24    BZ2      MLWS   0,0&X6             INDEX REG 6 EQUALS CONSTANT FF 12  07840  D 00000 00*.0 4
AL25    BZ3      BW     BZ4,0&X6           BRANCH ON WORD MARK            12  07852  V 07872 00*.0 1
AL26             B      SE1                BRANCH TO ERROR ROUTINE        7  07864  J 27220
AL27             H                                        ROUTINE 52 ERROR 1  07871  .
AL28    *            AN SCNLA INSTRUCTION WAS USED TO FIND THE ADDRESS OF
AL29    *            THE WORD MARK IN LOCATION EE. THIS ADDRESS WAS
AL30    *            STORED IN THE A FIELD OF THE MLWS INSTRUCTION. THE
AL31    *            MLWS INSTRUCTION SHOULD HAVE MOVED THE WORD MARK TO
AL32    *            LOCATION FF. THE BRANCH ON WORD MARK INSTRUCTION AT
AL33    *            BZ3 DID NOT BRANCH.
AL34    BZ4      BCE    BZ1,TAD1,1         LOOP ROUTINE 52                12  07872  B 07791 01001 1
AL35             B      SC1                STEP ROUTINE COUNTER TO 53     7  07884  J 27380
AL36    *ROUTINE 53-CHECK MLCWS, MLNWS INSTRUCTIONS.
AL37    DA1      BNQ    ITR                BRANCH INQUIRY                 7  07891  J 01334 Q
AL38             MLNA   C08,DA2&5          STORE ADDRESS OF WORD MARK     12  07898  D 01482 07939 /
AL39             MLNA   C08,DA3&5                                        12  07910  D 01482 07951 /
AL40             MLNA   C08,DA4&5                                        12  07922  D 01482 07963 /
AL41    DA2      MLCWS  0,1&X6             INDEX REG 6 EQUALS CONSTANT FF 12  07934  D 00000 00*.1 7
AL42    DA3      MLNWS  0,2&X6                                           12  07946  D 00000 00*.2 5
AL43    DA4      MLZS   0,2&X6                                           12  07958  D 00000 00*.2 2
AL44             C      1&X6,2&X6          CHECK MOVES                    11  07970  C 00*.1 00*.2
AL45             BE     DA5                BRANCH-MOVES OK                7  07981  J 07996 S
AL46             B      SE1                BRANCH TO ERROR ROUTINE        7  07988  J 27220
AL47             H                                        ROUTINE 53 ERROR 1  07995  .
AL48    *            AFTER USING AN MLCWS INSTRUCTION TO MOVE A CHARACTER
AL49    *            AND WORD MARK TO ONE LOCATION AND MLNWS AND MLZS
AL50    *            INSTRUCTIONS TO MOVE THE SAME CHARACTER TO A
AL51    *            DIFFERENT LOCATION, THE LOCATIONS DO NOT COMPARE
AL52    DA5      BCE    DA1,TAD1,1         LOOP ROUTINE 53                12  07996  B 07891 01001 1
AL53             B      SC1                STEP ROUTINE COUNTER TO 54     7  08008  J 27380
```

```
PGLIN   LABEL    OPCOD  OPERAND                                    CT  ADDRS  INSTRUCTION
AL55    *ROUTINE 54-CHECK MLZWS, BZN INSTRUCTIONS.
AL56    DB1      BNQ    ITR              BRANCH INQUIRY             7  08015  J 01334 Q
AL57             MLNA   CO8,DB2&5        STORE ADDRESS OF WORD MARK 12  08022  D 01482 08051 /
AL58             MLNA   CO8,DB4&10              DITTO               12  08034  D 01482 08100 /
AL59    DB2      MLZWS  0,3&X6           INDEX REG 6 EQUALS CONSTANT FF 12  08046  D 00000 00‡.3 6
AL60             BW     DB3,3&X6         BRANCH ON WORD MARK        12  08058  V 08078 00‡.3 1
AL61             B      SE1              BRANCH TO ERROR ROUTINE     7  08070  J 27220
AL62             H                                    ROUTINE 54 ERROR  1  08077  .
AL63    *            THE MLZWS INSTRUCTION SHOULD HAVE MOVED A WORD MARK
AL64    *            TO FF PLUS 3. HOWEVER, THE BW INSTRUCTION DID NOT
AL65    *            BRANCH ON WORD MARK AT FF PLUS 3.
AL66    DB3      MLZS   3&X6,DB4&11      MOVE STORED ZONE TO BZN INSTRUCT. 12  08078  D 00‡.3 08101 2
AL67    DB4      BZN    DB5,0,2                                    12  08090  V 08110 00000 2
AL68             B      SE1              BRANCH TO ERROR ROUTINE     7  08102  J 27220
AL69             H                                    ROUTINE 54 ERROR  1  08109  .
AL70    *            THE MLZWS INSTRUCTION AT DB2 SHOULD HAVE MOVED A
AL71    *            ZONE TO FF PLUS 3. THE MLZS INSTRUCTION AT DB3
AL72    *            SHOULD HAVE MOVED THE ZONE FROM FF PLUS 3 TO THE D
AL73    *            MODIFIER POSITION OF THE BZN INSTRUCTION. HOWEVER,
AL74    *            THE BZN INSTRUCTION DID NOT BRANCH.
AL75    DB5      BCE    DB1,TAD1,1       LOOP ROUTINE 54            12  08110  B 08015 01001 1
AL76             B      SC1              STEP ROUTINE COUNTER TO 55  7  08122  J 27380
AL77    *ROUTINE 55-CHECK SW INSTRUCTION.
AL78    DC1      BNQ    ITR              BRANCH INQUIRY             7  08129  J 01334 Q
AL79             MLNA   EE,DC2&5         STORE EE ADDRESS IN SW INSTRUCT. 12  08136  D 01916 08153 /
AL80    DC2      SW     0                SET W/M IN EE              6  08148  , 00000
AL81             MLNA   EE,DC3&10        STORE EE ADDRESS IN BW INSTRUCT. 12  08154  D 01916 08176 /
AL82    DC3      BW     DC4,0            BRANCH-W/M SET OK          12  08166  V 08186 00000 1
AL83             B      SE1              BRANCH TO ERROR ROUTINE     7  08178  J 27220
AL84             H                                    ROUTINE 55 ERROR  1  08185  .
AL85    *            THE BW INSTRUCTION FAILED TO BRANCH ON A WORD MARK
AL86    *            SET BY THE SW INSTRUCTION.
AL87    DC4      BCE    DC1,TAD1,1       LOOP ROUTINE 55            12  08186  B 08129 01001 1
AL88             B      SC1              STEP ROUTINE COUNTER TO 56  7  08198  J 27380
```

```
PGLIN   LABEL   OPCOD  OPERAND                                  CT  ADDRS  INSTRUCTION
AL90    *ROUTINE 56-CHECK MLNB, MLCB INSTRUCTIONS.
AL91    DD1     BNQ    ITR              BRANCH INQUIRY          7  08205  J 01334 Q
AL92            MLNA   EE,DD2&10        STORE EE ADDRESS       12  08212  D 01916 08246 /
AL93            MLNA   FF,DD3&10        STORE FF ADDRESS       12  08224  D 01921 08282 /
AL94    DD2     MLWA   CC,0             SET WORD MARK IN EE    12  08236  D 01900 00000 U
AL95            MLNB   CC,0&X5          INDEX REG FIVE EQUALS CONSTANT EE 12 08248 D 01900 00##0 J
AL96            MLZB   CC,0&X5                                 12  08260  D 01900 00##0 K
AL97    DD3     MLWA   CC,0             SET WORD MARK IN FF    12  08272  D 01900 00000 U
AL98            MLCB   CC,0&X6          INDEX REG SIX EQUALS CONSTANT FF 12 08284 D 01900 00#.0 L
AL99            C      0&X6,0&X5        CHECK MOVES            11  08296  C 00#.0 00##0
AM00            BE     DD4              BRANCH-MOVES OK         7  08307  J 08322 S
AM01            B      SE1              BRANCH TO ERROR ROUTINE 7  08314  J 27220
AM02            H                                  ROUTINE 56 ERROR  1  08321  .
AM03    *           MLWA, MLNB AND MLZB INSTRUCTIONS WERE USED TO MOVE
AM04    *           CONSTANT CC TO LOCATION EE. MLWA AND MLCB
AM05    *           INSTRUCTIONS WERE USED TO MOVE CONSTANT CC TO
AM06    *           LOCATION FF. EE AND FF FAILED TO COMPARE.
AM07    DD4     BCE    DD1,TAD1,1       LOOP ROUTINE 56        12  08322  B 08205 01001 1
AM08            B      SC1              STEP ROUTINE COUNTER TO 57  7  08334  J 27380
```

```
PGLIN     LABEL     OPCOD  OPERAND                                          CT  ADDRS  INSTRUCTION
AM10      *ROUTINE 57-CHECK SW, MLWB, CW, BW INSTRUCTIONS.
AM11      DE1       BNQ    ITR                                               7  08341  J 01334 Q
AM12                MLWA   BB,0&X5              BB W/M TO EE FIELD          12  08348  D 01889 00##0 U
AM13                SW     1&X5                 INDEX REG 5 EQUALS CONSTANT EE  6  08360  , 00##1
AM14                MLWB   1&X5,0&X5            FILL ADDRESS EE WITH WORD MARKS 12  08366  D 00##1 00##0 M
AM15                SBR    X1                   STORE LOW ADDR-1 OF FIELD EE    7  08378  G 00029 B
AM16                CW     1&X5                 CLEAR W/M TO RIGHT OF FIELD EE  6  08385  ¤ 00##1
AM17      DE2       A      &1,X1                INCREASE FOR CHECKING NEXT ADDR 11  08391  A 29202 00029
AM18                BW     DE2,0&X1             CHECK FOR WORD MARK            12  08402  V 08391 000#0 1
AM19                S      &1,X1                IX 1 EQUALS CONST EE LENGTH    11  08414  S 29202 00029
AM20                C      X1,EE                COMPARE WITH CONSTANT EE       11  08425  C 00029 01916
AM21                BE     DE3                  BRANCH-ROUTINE SUCCESSFUL       7  08436  J 08451 S
AM22                B      SE1                  BRANCH TO ERROR ROUTINE         7  08443  J 27220
AM23                H                                        ROUTINE 57 ERROR   1  08450  .
AM24      *              THE SW AND MLWB INSTRUCTIONS SHOULD HAVE FILLED THE
AM25      *              FIELD OF ADDRESS EE WITH WORD MARKS. THE CW INSTRUCT
AM26      *              SHOULD HAVE CLEARED THE WORD MARK IN THE ADDRESS TO
AM27      *              THE RIGHT OF ADDRESS EE. THE A AND BW INSTRUCTIONS
AM28      *              ARE USED TO COUNT THE NUMBER OF SEQUENTIAL WORD
AM29      *              MARKS FROM LEFT TO RIGHT IN THE EE FIELD. THE RESULT
AM30      *              SHOULD EQUAL THE CONSTANT EE.
AM31      DE3       BCE    DE1,TAD1,1           LOOP ROUTINE 57                12  08451  B 08341 01001 1
AM32                B      SC1                  STEP ROUTINE COUNTER TO 58      7  08463  J 27380
```

```
PGLIN  LABEL  OPCOD  OPERAND                                    CT  ADDRS  INSTRUCTION
AM34          *ROUTINE 58-CHECK MLNB, MLZWB INSTRUCTIONS.
AM35   DF1    BNQ    ITR              BRANCH INQUIRY            7  08470  J 01334 Q
AM36          MLCWA  CQ4,0&X5         CLEAR ADDR EE FIELD      12  08477  D 01617 00‡‡0 X
AM37          MLCWA  CQ4,0&X6         CLEAR ADDR FF FIELD      12  08489  D 01617 00‡.0 X
AM38          MLCWA  CC,0&X6          STORE CC IN ADDRESS FF   12  08501  D 01900 00‡.0 X
AM39          MLWA   CC,0&X5          SET CC W/M IN EE FIELD   12  08513  D 01900 00‡‡0 U
AM40          SW     0&X6             SET W/M IN ADDRESS FF     6  08525  , 00‡.0
AM41          MLNB   0&X6,0&X5        MOVE CC NUMERIC TO EE    12  08531  D 00‡.0 00‡‡0 J
AM42          MLZWB  0&X6,0&X5        CC ZONE,W/M,EXTRA W/M TO EE 12 08543 D 00‡.0 00‡‡0 O
AM43          C      0&X5,0&X6        CHECK HIGH ORDER POSITIONS 11  08555  C 00‡‡0 00‡.0
AM44          SAR    DF2&5            STORE ADDRESS OF NEXT A POSITION 7 08566 G 08607 A
AM45          SBR    DF2&10           STORE ADDRESS OF NEXT B POSITION 7 08573 G 08612 B
AM46          BE     DF2              BRANCH-HIGH ORDER POSITION OK 7 08580 J 08602 S
AM47          B      SE1              BRANCH TO ERROR ROUTINE   7  08587  J 27220
AM48          H                                  ROUTINE 58 ERROR  1  08594  .
AM49   *          FIELD EE AND FIELD FF SHOULD BE EQUAL WITH A WORD
AM50   *          MARK IN THE RIGHT HAND POSITIONS. THIS HALT
AM51   *          INDICATES ADDRESSES EE AND FF NUMERIC OR ZONE WERE
AM52   *          NOT EQUAL, OR A WORD MARK IS NOT PRESENT AT EE OR FF
AM53          B      DF3                                       7  08595  J 08628
AM54   DF2    C      0,0              CHECK REMAINDER OF EE FIELD 11 08602 C 00000 00000
AM55          BE     DF3              BRANCH-OK                 7  08613  J 08628 S
AM56          B      SE1              BRANCH TO ERROR ROUTINE   7  08620  J 27220
AM57          H                                  ROUTINE 58 ERROR  1  08627  .
AM58   *          FIELD EE AND FIELD FF SHOULD BE EQUAL WITH A WORD
AM59   *          MARK IN THE RIGHT HAND POSITIONS. THIS HALT
AM60   *          INDICATES EE-1 DID NOT COMPARE WITH FF-1.
AM61   DF3    BCE    DF1,TAD1,1       LOOP ROUTINE 58          12  08628  B 08470 01001 1
AM62          B      SC1              STEP ROUTINE COUNTER TO 59 7 08640  J 27380
```

```
PGLIN  LABEL  OPCOD  OPERAND                                  CT  ADDRS  INSTRUCTION
AM64          *ROUTINE 59-CHECK MLZB, MLNWB INSTRUCTIONS.
AM65   DG1    BNQ    ITR              BRANCH INQUIRY          7  08647  J 01334 Q
AM66          MLCWA  CQ4,0&X5         CLEAR ADDR EE FIELD    12  08654  D 01617 00‡‡0 X
AM67          MLCWA  CQ4,0&X6         CLEAR ADDR FF FIELD    12  08666  D 01617 00‡.0 X
AM68          MLCWA  CC,0&X6          STORE CC IN ADDRESS FF 12  08678  D 01900 00‡.0 X
AM69          MLWA   CC,0&X5          SET CC W/M IN EE FIELD 12  08690  D 01900 00‡‡0 U
AM70          SW     0&X6             SET W/M IN ADDRESS FF   6  08702  , 00‡.0
AM71          MLZB   0&X6,0&X5        CC ZONE TO EE FIELD    12  08708  D 00‡.0 00‡‡0 K
AM72          MLNWB  0&X6,0&X5        CC NUMERIC,W/M,EXTRA W/M TO EE 12  08720  D 00‡.0 00‡‡0 N
AM73          C      0&X5,0&X6        CHECK RIGHT HAND POSITION 11  08732  C 00‡‡0 00‡.0
AM74          SAR    DG2&5            STORE ADDRESS OF NEXT A POSITION 7  08743  G 08784 A
AM75          SBR    DG2&10           STORE ADDRESS OF NEXT B POSITION 7  08750  G 08789 B
AM76          BE     DG2              BRANCH-RIGHT HAND POSITION OK 7  08757  J 08779 S
AM77          B      SE1              BRANCH TO ERROR ROUTINE    7  08764  J 27220
AM78          H                                  ROUTINE 59 ERROR 1  08771  .
AM79   *          FIELD EE AND FIELD FF SHOULD BE EQUAL WITH A WORD
AM80   *          MARK IN THE RIGHT HAND POSITIONS. THIS HALT
AM81   *          INDICATES ADDRESSES EE AND FF NUMERIC OR ZONE WERE
AM82   *          NOT EQUAL, OR A WORD MARK IS NOT PRESENT AT EE OR FF
AM83          B      DG3                                      7  08772  J 08805
AM84   DG2    C      0,0              CHECK REMAINDER OF EE FIELD 11  08779  C 00000 00000
AM85          BE     DG3              BRANCH-OK              7  08790  J 08805 S
AM86          B      SE1              BRANCH TO ERROR ROUTINE 7  08797  J 27220
AM87          H                                  ROUTINE 59 ERROR 1  08804  .
AM88   *          FIELD EE AND FIELD FF SHOULD BE EQUAL WITH A WORD
AM89   *          MARK IN THE RIGHT HAND POSITIONS. THIS HALT
AM90   *          INDICATES EE-1 DID NOT COMPARE WITH FF-1.
AM91   DG3    BCE    DG1,TAD1,1       LOOP ROUTINE 59        12  08805  B 08647 01001 1
AM92          B      SC1              STEP ROUTINE COUNTER TO 60 7  08817  J 27380
```

```
PGLIN     LABEL      OPCOD  OPERAND                                          CT  ADDRS  INSTRUCTION
AM94      *ROUTINE 60-CHECK MLCWB INSTRUCTION.
AM95      DH1        BNQ    ITR                BRANCH INQUIRY                 7  08824  J 01334 Q
AM96                 MLCWA  CQ4,0&X5           CLEAR ADDR EE FIELD           12  08831  D 01617 00‡‡0 X
AM97                 MLCWA  CQ4,0&X6           CLEAR ADDR FF FIELD           12  08843  D 01617 00‡:0 X
AM98                 MLCWA  CC,0&X6            STORE CONSTANT CC IN ADDRESS FF 12  08855  D 01900 00‡:0 X
AM99                 MLWA   CC,0&X5            SET CC W/M IN ADDRESS EE FIELD 12  08867  D 01900 00‡‡0 U
AN00                 SW     0&X6               SET W/M IN ADDRESS FF          6  08879  , 00‡:0
AN01                 MLCWB  0&X6,0&X5          CC CHARACTER,W/M,EXTRA W/M TO EE 12  08885  D 00‡:0 00‡‡0 P
AN02                 C      0&X6,0&X5          CHECK RIGHT HAND POSITION      11  08897  C 00‡:0 00‡‡0
AN03                 SAR    DH2&5              STORE ADDRESS OF NEXT A POSITION 7  08908  G 08949 A
AN04                 SBR    DH2&10             STORE ADDRESS OF NEXT B POSITION 7  08915  G 08954 B
AN05                 BE     DH2                BRANCH-RIGHT HAND POSITION OK  7  08922  J 08944 S
AN06                 B      SE1                BRANCH TO ERROR ROUTINE        7  08929  J 27220
AN07                 H                                    ROUTINE 60 ERROR   1  08936  .
AN08      *               FIELD EE AND FIELD FF SHOULD BE EQUAL WITH WORD
AN09      *               MARKS IN THE RIGHT HAND POSITIONS. THIS HALT
AN10      *               INDICATES LOCATIONS EE AND FF WERE NOT EQUAL, OR A
AN11      *               WORD MARK IS NOT PRESENT AT EE OR FF.
AN12                 B      DH3                                            7  08937  J 08970
AN13      DH2        C      0,0                CHECK REMAINDER OF EE FIELD   11  08944  C 00000 00000
AN14                 BE     DH3                BRANCH-OK                     7  08955  J 08970 S
AN15                 B      SE1                BRANCH TO ERROR ROUTINE       7  08962  J 27220
AN16                 H                                    ROUTINE 60 ERROR   1  08969  .
AN17      *               FIELD EE AND FIELD FF SHOULD BE EQUAL WITH WORD
AN18      *               MARKS IN THE RIGHT HAND POSITIONS. THIS HALT
AN19      *               INDICATES EE-1 DID NOT COMPARE WITH FF-1.
AN20      DH3        BCE    DH1,TAD1,1         LOOP ROUTINE 60               12  08970  B 08824 01001 1
AN21                 B      SC1                STEP ROUTINE COUNTER TO 61     7  08982  J 27380
```

```
PGLIN   LABEL    OPCOD  OPERAND                                          CT  ADDRS  INSTRUCTION
AN23    *ROUTINE 61-CHECK SCNLB INSTRUCTION.
AN24    DI1      BNQ    ITR              BRANCH INQUIRY                   7  08989  J 01334 Q
AN25             MLCWA  CC,0&X5          INDEX 5 EQUALS CONSTANT EE      12  08996  D 01900 00##0 X
AN26             SBR    C08              STORE ADDRESS EE-FIELD LENGTH    7  09008  G 01482 B
AN27             MLZS   @ @,C08          CLEAR SIGN POSITION ZONE        12  09015  D 29208 01482 2
AN28             SCNLB  0&X6,0&X5        SCAN ADDRESS EE FOR B FIELD W/M  12  09027  D 00#.0 00##0 -
AN29             SBR    C09              STORE ADDRESS EE-FIELD LENGTH    7  09039  G 01487 B
AN30             MLZS   @ @,C09          CLEAR SIGN POSITION ZONE        12  09046  D 29208 01487 2
AN31             C      C08,C09          CHECK SCAN OPERATION            11  09058  C 01482 01487
AN32             BE     DI2              BRANCH-BAR OK                    7  09069  J 09091 S
AN33             B      SE1              BRANCH TO ERROR ROUTINE          7  09076  J 27220
AN34             H                                        ROUTINE 61 ERROR 1  09083  .
AN35    *            THE B ADDRESS REGISTER AT THE END OF THE SCNLB
AN36    *            INSTRUCTION DID NOT COMPARE WITH THE B ADDRESS
AN37    *            REGISTER AT THE END OF THE MLCWA INSTRUCTION.
AN38             B      DI3                                              7  09084  J 09117
AN39    DI2      C      0&X5,CC          CHECK DATA                      11  09091  C 00##0 01900
AN40             BE     DI3              BRANCH-SCNLB OK                  7  09102  J 09117 S
AN41             B      SE1              BRANCH TO ERROR ROUTINE          7  09109  J 27220
AN42             H                                        ROUTINE 61 ERROR 1  09116  .
AN43    *            AFTER THE OPERATION OF THE SCNLB INSTRUCTION, THE
AN44    *            CONTENTS OF ADDRESS EE DID NOT COMPARE WITH THE
AN45    *            CONSTANT CC THAT WAS MOVED TO ADDRESS EE.
AN46    DI3      BCE    DI1,TAD1,1       LOOP ROUTINE 61                 12  09117  B 08989 01001 1
AN47             B      SC1              STEP ROUTINE COUNTER TO 62       7  09129  J 27380
AN48    *ROUTINE 62-CALCULATE LEFT HAND ADDRESS -1 OF EE AND FF FIELDS
AN49    *            CONTAINING CONSTANTS CC AND DD RESPECTIVELY.
AN50    DJ1      BNQ    ITR              BRANCH INQUIRY                   7  09136  J 01334 Q
AN51             MLCWA  CC,0&X5          INDEX 5 EQUALS CONSTANT EE      12  09143  D 01900 00##0 X
AN52             SBR    CQ1              STORE LEFT ADDRESS-1             7  09155  G 01601 B
AN53             MLCWA  DD,0&X6          INDEX 6 EQUALS CONSTANT FF      12  09162  D 01911 00#.0 X
AN54             SBR    CQ2              STORE LEFT ADDRESS-1             7  09174  G 01606 B
AN55    DJ2      BCE    DJ1,TAD1,1       LOOP ROUTINE 62                 12  09181  B 09136 01001 1
AN56             B      SC1              STEP ROUTINE COUNTER TO 63       7  09193  J 27380
```

```
PGLIN  LABEL    OPCOD  OPERAND                                                CT  ADDRS  INSTRUCTION
AN58   *ROUTINE 63-CHECK SCNL INSTRUCTION.
AN59   DK1      BNQ    ITR                 BRANCH INQUIRY                      7  09200  J 01334 Q
AN60            SCNL   0&X5,0&X6           SCAN LOCATIONS EE AND FF           12  09207  D 00**0 00*.0 &
AN61            SAR    C08                 STORE LEFT ADDR-1 OF EE FIELD       7  09219  G 01482 A
AN62            SBR    C09                 STORE LEFT ADDR-1 OF FF FIELD       7  09226  G 01487 B
AN63            C      C02,C025            IS EE OR FF FIELD LONGER IN LNGTH  11  09233  C 01467 01472
AN64            BL     DK2                 BRANCH-EE FIELD IS LARGER THAN FF   7  09244  J 09284 T
AN65            C      C01,C08             EE IS SHORTEST FIELD,SO CHECK      11  09251  C 01601 01482
AN66            BE     DK3                 BRANCH-OK                           7  09262  J 09310 S
AN67            B      SE1                 BRANCH TO ERROR ROUTINE             7  09269  J 27220
AN68            H                                          ROUTINE 63 ERROR    1  09276  .
AN69   *                  AFTER THE OPERATION OF THE SCNL INSTRUCTION, THE
AN70   *                  CONTENTS OF THE A ADDRESS REG DID NOT COMPARE WITH
AN71   *                  THE LEFT ADDRESS -1 OF THE EE FIELD AS CALCULATED IN
AN72   *                  THE LAST ROUTINE.
AN73            B      DK3                                                     7  09277  J 09310
AN74   DK2      C      C02,C09             FF FIELD IS SHORTER/EQUALS EE FLD  11  09284  C 01606 01487
AN75            BE     DK3                 BRANCH-OK                           7  09295  J 09310 S
AN76            B      SE1                 BRANCH TO ERROR ROUTINE             7  09302  J 27220
AN77            H                                          ROUTINE 63 ERROR    1  09309  .
AN78   *                  AFTER THE OPERATION OF THE SCNL INSTRUCTION, THE
AN79   *                  CONTENTS OF THE B ADDRESS REG DID NOT COMPARE WITH
AN80   *                  THE LEFT ADDRESS -1 OF THE FF FIELD AS CALCULATED IN
AN81   *                  THE LAST ROUTINE.
AN82   DK3      BCE    DK1,TAD1,1          LOOP ROUTINE 63                    12  09310  B 09200 01001 1
AN83            B      SC1                 STEP ROUTINE COUNTER TO 64          7  09322  J 27380
```

```
PGLIN   LABEL     OPCOD  OPERAND                                        CT  ADDRS  INSTRUCTION
AN85    *ROUTINE 64-CHECK MLZ, MLNW INSTRUCTIONS WHEN ENDING ON A FIELD W/M
AN86    DL1       BNQ    ITR                BRANCH INQUIRY              7  09329  J 01334 Q
AN87              MLCWA  CQ4,0&X5           CLEAR ADDR EE FIELD        12  09336  D 01617 00##0 X
AN88              MLZ    0&X6,0&X5          MOVE CONSTANT DD ZONE TO EE FIELD 12  09348  D 00#.0 00##0 B
AN89              MLNW   0&X6,0&X5          MOVE CONST DD NUM AND W/M TO EE 12  09360  D 00#.0 00##0 E
AN90              C      0&X6,0&X5          CHECK MOVES                11  09372  C 00#.0 00##0
AN91              BE     DL2                BRANCH-OK                   7  09383  J 09398 S
AN92              B      SE1                BRANCH TO ERROR ROUTINE     7  09390  J 27220
AN93              H                                    ROUTINE 64 ERROR  1  09397  .
AN94    *              AFTER USING MLZ AND MLNW INSTRUCTIONS TO MOVE
AN95    *              CONSTANT DD FROM ADDRESS FF TO ADDRESS EE, THE
AN96    *              CONTENTS OF ADDRESS EE AND DD DID NOT COMPARE.
AN97    DL2       BCE    DL1,TAD1,1         LOOP ROUTINE 64            12  09398  B 09329 01001 1
AN98              B      SC1                STEP ROUTINE COUNTER TO 65  7  09410  J 27380
AN99    *ROUTINE 65-CHECK MLN, MLZW INSTRUCTIONS WHEN ENDING ON A FIELD W/M
A000    DM1       BNQ    ITR                BRANCH INQUIRY              7  09417  J 01334 Q
A001              MLCWA  CQ4,0&X5           CLEAR ADDR EE FIELD        12  09424  D 01617 00##0 X
A002              MLN    0&X6,0&X5          MOVE CONSTANT DD NUM TO ADDR EE 12  09436  D 00#.0 00##0 A
A003              MLZW   0&X6,0&X5          MOVE CON DD ZONE,WORD MARK TO EE 12  09448  D 00#.0 00##0 F
A004              C      0&X6,0&X5          CHECK MOVES                11  09460  C 00#.0 00##0
A005              BE     DM2                BRANCH-OK                   7  09471  J 09486 S
A006              B      SE1                BRANCH TO ERROR ROUTINE     7  09478  J 27220
A007              H                                    ROUTINE 65 ERROR  1  09485  .
A008    *              AFTER USING MLN AND MLZW INSTRUCTIONS TO MOVE
A009    *              CONSTANT DD FROM ADDRESS FF TO ADDRESS EE, THE
A010    *              CONTENTS OF ADDRESS EE DID NOT COMPARE WITH THE
A011    *              CONSTANT DD.
A012    DM2       BCE    DM1,TAD1,1         LOOP ROUTINE 65            12  09486  B 09417 01001 1
A013              B      SC1                STEP ROUTINE COUNTER TO 66  7  09498  J 27380
```

```
PGLIN     LABEL     OPCOD  OPERAND                                          CT  ADDRS  INSTRUCTION
A015      *ROUTINE 66-CHECK MLC, MLW INSTRUCTIONS WHEN ENDING ON A FIELD W/M.
A016      DN1       BNQ    ITR                BRANCH INQUIRY                 7  09505  J 01334 Q
A017                MLCWA  CQ4,0&X5           CLEAR ADDR EE FIELD           12  09512  D 01617 00##0 X
A018                MLC    0&X6,0&X5          MOVE CONSTANT DD TO ADDRESS EE 12  09524  D 00#.0 00##0 C
A019                MLW    0&X6,0&X5          MOVE CONS DD W/M TO ADDRESS EE 12  09536  D 00#.0 00##0 D
A020                C      0&X6,0&X5          CHECK MOVES                   11  09548  C 00#.0 00##0
A021                BE     DN2                BRANCH-OK                      7  09559  J 09574 S
A022                B      SE1                BRANCH TO ERROR ROUTINE        7  09566  J 27220
A023                H                                      ROUTINE 66 ERROR  1  09573  .
A024      *              AFTER USING MLC AND MLW INSTRUCTIONS TO MOVE
A025      *              CONSTANT DD FROM ADDRESS FF TO ADDRESS EE, THE
A026      *              CONTENTS OF ADDRESS EE DID NOT COMPARE WITH THE
A027      *              CONSTANT DD.
A028      DN2       BCE    DN1,TAD1,1         LOOP ROUTINE 66               12  09574  B 09505 01001 1
A029                B      SC1                STEP ROUTINE COUNTER TO 67     7  09586  J 27380
A030      *ROUTINE 67-CHECK MLCW INSTRUCTION WHEN ENDING ON A FIELD WORD MARK
A031      DO1       BNQ    ITR                BRANCH INQUIRY                 7  09593  J 01334 Q
A032                MLCWA  CQ4,0&X5           CLEAR ADDR EE FIELD           12  09600  D 01617 00##0 X
A033                MLCW   0&X6,0&X5          MOVE CONSTANT DD TO ADDRESS EE 12  09612  D 00#.0 00##0 G
A034                C      0&X6,0&X5          CHECK MOVE                    11  09624  C 00#.0 00##0
A035                BE     DO2                BRANCH-OK                      7  09635  J 09650 S
A036                B      SE1                BRANCH TO ERROR ROUTINE        7  09642  J 27220
A037                H                                      ROUTINE 67 ERROR  1  09649  .
A038      *              AFTER USING AN MLCW INSTRUCTION TO MOVE CONSTANT DD
A039      *              FROM ADDRESS FF TO ADDRESS EE, THE CONTENTS OF
A040      *              ADDRESS EE DID NOT COMPARE WITH THE CONSTANT DD.
A041      DO2       BCE    DO1,TAD1,1         LOOP ROUTINE 67               12  09650  B 09593 01001 1
A042                B      SC1                STEP ROUTINE COUNTER TO 68     7  09662  J 27380
```

```
PGLIN  LABEL  OPCOD  OPERAND                                          CT  ADDRS  INSTRUCTION
A044   *ROUTINE 68-CHECK MLZ, MLNW INSTRUCTIONS WHEN ENDING ON B FIELD W/M
A045   DP1    BNQ    ITR              BRANCH INQUIRY                   7  09669  J 01334 Q
A046          MLWA   CQ4,0&X6          CLR W/M IN CONST DD AT ADDR FF  12  09676  D 01617 00‡.0 U
A047          MLCWA  CQ4,0&X5          CLR CHARACTERS AT ADDRESS EE    12  09688  D 01617 00‡‡0 X
A048          MLWA   DD,0&X5           SET CONST DD W/M IN ADDR EE FIELD 12 09700  D 01911 00‡‡0 U
A049          MLZ    0&X6,0&X5        MOVE CONST DD ZONE TO ADDRESS EE 12  09712  D 00‡.0 00‡‡0 B
A050          MLNW   0&X6,0&X5        MOVE CONST DD NUM,W/M TO ADDR EE 12  09724  D 00‡.0 00‡‡0 E
A051          C      0&X5,DD          CHECK MOVES                     11  09736  C 00‡‡0 01911
A052          BE     DP2              BRANCH-OK                        7  09747  J 09762 S
A053          B      SE1              BRANCH TO ERROR ROUTINE          7  09754  J 27220
A054          H                                    ROUTINE 68 ERROR   1  09761  .
A055   *             AFTER USING MLZ AND MLNW INSTRUCTIONS TO MOVE
A056   *             CONSTANT DD FROM ADDRESS FF TO ADDRESS EE, THE
A057   *             CONTENTS OF ADDRESS EE DID NOT COMPARE WITH THE
A058   *             CONSTANT DD.
A059   DP2    BCE    DP1,TAD1,1       LOOP ROUTINE 68                 12  09762  B 09669 01001 1
A060          B      SC1              STEP ROUTINE COUNTER TO 69       7  09774  J 27380
A061   *ROUTINE 69-CHECK MLN, MLZW INSTRUCTIONS WHEN ENDING ON B FIELD W/M
A062   DQ1    BNQ    ITR              BRANCH INQUIRY                   7  09781  J 01334 Q
A063          MLCWA  CQ4,0&X5          CLEAR CHARACTERS AT ADDRESS EE  12  09788  D 01617 00‡‡0 X
A064          MLWA   DD,0&X5           SET CONST DD W/M IN ADDR EE FIELD 12 09800  D 01911 00‡‡0 U
A065          MLN    0&X6,0&X5        MOVE CONST DD NUMERIC TO ADDR EE 12  09812  D 00‡.0 00‡‡0 A
A066          MLZW   0&X6,0&X5        MOVE CONST DD ZONE TO ADDRESS EE 12  09824  D 00‡.0 00‡‡0 F
A067          C      0&X5,DD          CHECK MOVES                     11  09836  C 00‡‡0 01911
A068          BE     DQ2              BRANCH-OK                        7  09847  J 09862 S
A069          B      SE1              BRANCH TO ERROR ROUTINE          7  09854  J 27220
A070          H                                    ROUTINE 69 ERROR   1  09861  .
A071   *             AFTER USING MLN AND MLZW INSTRUCTIONS TO MOVE
A072   *             CONSTANT DD FROM ADDRESS FF TO ADDRESS EE, THE
A073   *             CONTENTS OF ADDRESS EE DID NOT COMPARE WITH THE
A074   *             CONSTANT DD.
A075   DQ2    BCE    DQ1,TAD1,1       LOOP ROUTINE 69                 12  09862  B 09781 01001 1
A076          B      SC1              STEP ROUTINE COUNTER TO 70       7  09874  J 27380
```

```
PGLIN  LABEL   OPCOD  OPERAND                                          CT  ADDRS  INSTRUCTION
A078   *ROUTINE 70-CHECK MLC, MLW INSTRUCTIONS WHEN ENDING ON B FIELD W/M.
A079   DR1     BNQ    ITR                 BRANCH INQUIRY               7  09881  J 01334 Q
A080           MLCWA  CQ4,0&X5             CLEAR CHARACTERS AT ADDRESS EE  12  09888  D 01617 00##0 X
A081           MLWA   DD,0&X5             SET CONST DD W/M IN ADDR EE FIELD  12  09900  D 01911 00##0 U
A082           MLC    0&X6,0&X5           MOVE CONST DD CHARACTER TO EE  12  09912  D 00#.0 00##0 C
A083           MLW    0&X6,0&X5           MOVE NO W/M TO ADDRESS EE    12  09924  D 00#.0 00##0 D
A084           C      0&X5,DD             CHECK MOVES                  11  09936  C 00##0 01911
A085           BE     DR2                 BRANCH-OK                    7  09947  J 09962 S
A086           B      SE1                 BRANCH TO ERROR ROUTINE      7  09954  J 27220
A087           H                                        ROUTINE 70 ERROR  1  09961  .
A088   *           AFTER USING MLC AND MLW INSTRUCTIONS TO MOVE
A089   *           CONSTANT DD FROM ADDRESS FF TO ADDRESS EE, THE
A090   *           CONTENTS OF ADDRESS EE DID NOT COMPARE WITH THE
A091   *           CONSTANT DD.
A092   DR2     BCE    DR1,TAD1,1          LOOP ROUTINE 70              12  09962  B 09881 01001 1
A093           B      SC1                 STEP ROUTINE COUNTER TO 71   7  09974  J 27380
A094   *ROUTINE 71-CHECK MLCW INSTRUCTION WHEN ENDING ON B FIELD WORD MARK
A095   DS1     BNQ    ITR                 BRANCH INQUIRY               7  09981  J 01334 Q
A096           MLCWA  CQ4,0&X5             CLEAR CHARACTERS AT ADDRESS EE  12  09988  D 01617 00##0 X
A097           MLWA   DD,0&X5             SET CONST DD W/M IN ADDR EE FIELD  12  10000  D 01911 00##0 U
A098           MLCW   0&X6,0&X5           MOVE CONST DD TO ADDRESS EE  12  10012  D 00#.0 00##0 G
A099           C      0&X5,DD             CHECK MOVE                   11  10024  C 00##0 01911
AP00           BE     DS2                 BRANCH-OK                    7  10035  J 10050 S
AP01           B      SE1                 BRANCH TO ERROR ROUTINE      7  10042  J 27220
AP02           H                                        ROUTINE 71 ERROR  1  10049  .
AP03   *           AFTER USING AN MLCW INSTRUCTION TO MOVE CONSTANT DD
AP04   *           FROM ADDRESS FF TO ADDRESS EE, THE CONTENTS OF
AP05   *           ADDRESS EE DID NOT COMPARE WITH THE CONSTANT DD.
AP06   DS2     BCE    DS1,TAD1,1          LOOP ROUTINE 71              12  10050  B 09981 01001 1
AP07           B      SC1                 STEP ROUTINE COUNTER TO 72   7  10062  J 27380
```

```
PGLIN   LABEL    OPCOD  OPERAND                                  CT  ADDRS  INSTRUCTION
AP09     *ROUTINE 72-CALCULATE RIGHT ADDRESSES PLUS 1 OF EE AND FF FIELDS
AP10     *         CONTAINING CONSTANTS CC AND DD RESPECTIVELY.
AP11     DT1      BNQ    ITR              BRANCH INQUIRY          7  10069  J 01334 Q
AP12              MLCWA  EE,X7            STORE CONSTANT EE      12  10076  D 01916 00059 X
AP13              MLCWA  FF,X8            STORE CONSTANT FF      12  10088  D 01921 00064 X
AP14              A      CO2,X7           ADD LENGTH OF CONSTANT CC  11  10100  A 01467 00059
AP15              A      CO25,X8          ADD LENGTH OF CONSTANT DD  11  10111  A 01472 00064
AP16              MLCWA  X7,CO8           SAVE SUM IN INDEX REG 7 12  10122  D 00059 01482 X
AP17              MLCWA  X8,CO9           SAVE SUM IN INDEX REG 8 12  10134  D 00064 01487 X
AP18              S      CO2,CO8          CHECK FIRST ADD        11  10146  S 01467 01482
AP19              S      CO25,CO9         CHECK SECOND ADD       11  10157  S 01472 01487
AP20              C      CO8,EE                                  11  10168  C 01482 01916
AP21              BU     DT2              BRANCH-FIRST ADD OR SUB FAILED  7  10179  J 10211 /
AP22              C      CO9,FF                                  11  10186  C 01487 01921
AP23              BU     DT2              BRANCH-SECOND ADD OR SUB FAILED  7  10197  J 10211 /
AP24              B      DT3                                     7  10204  J 10219
AP25     DT2      B      SE1              BRANCH TO ERROR ROUTINE  7  10211  J 27220
AP26              H                                  ROUTINE 72 ERROR  1  10218  .
AP27     *              AFTER ADDING CONSTANT 1 TO CONSTANT 2, AND
AP28     *              SUBTRACTING CONSTANT 1 FROM THE SUM, THE RESULT DID
AP29     *              NOT COMPARE WITH THE ORIGINAL CONSTANT 2. NOTE-THIS
AP30     *              FAILURE MAY CAUSE ERRONEOUS ERROR INDICATIONS IN
AP31     *              LATER ROUTINES
AP32     DT3      BCE    DT1,TAD1,1       LOOP ROUTINE 72        12  10219  B 10069 01001 1
AP33              B      SC1              STEP ROUTINE COUNTER TO 73  7  10231  J 27380
```

```
PGLIN  LABEL  OPCOD  OPERAND                                          CT  ADDRS  INSTRUCTION
AP35          *ROUTINE 73 CALCULATE RIGHT ADDRESSES OF EE AND FF FIELDS
AP36          *            CONTAINING CONSTANTS CC AND DD RESPECTIVELY.
AP37   DU1    BNQ    ITR                BRANCH INQUIRY                 7  10238  J 01334 Q
AP38          MLCWA  X7,X9              SAVE INDEX REG 7-EE FIELD &1  12  10245  D 00059 00069 X
AP39          MLCWA  X8,X10             SAVE INDEX REG 8-FF FIELD &1  12  10257  D 00064 00074 X
AP40          S      &1,X9              CALCULATE ANSWER ONE          11  10269  S 29202 00069
AP41          S      &1,X10             CALCULATE ANSWER TWO          11  10280  S 29202 00074
AP42          MLCWA  X9,C08             SAVE DIFFERENCE ONE           12  10291  D 00069 01482 X
AP43          MLCWA  X10,C09            SAVE DIFFERENCE TWO           12  10303  D 00074 01487 X
AP44          A      &1,C08             CHECK FIRST ADD               11  10315  A 29202 01482
AP45          A      &1,C09             CHECK SECOND ADD              11  10326  A 29202 01487
AP46          C      X7,C08                                           11  10337  C 00059 01482
AP47          BU     DU2                BRANCH-FIRST ADD OR SUB FAILED 7  10348  J 10380 /
AP48          C      X8,C09                                           11  10355  C 00064 01487
AP49          BU     DU2                BRANCH-SECOND ADD OR SUB FAILED 7 10366  J 10380 /
AP50          B      DU3                                              7  10373  J 10388
AP51   DU2    B      SE1                BRANCH TO ERROR ROUTINE        7  10380  J 27220
AP52          H                                        ROUTINE 73 ERROR 1  10387  .
AP53          *          AFTER SUBTRACTING 1 FROM A CONSTANT AND ADDING 1 TO
AP54          *          THE DIFFERENCE, THE RESULT DID NOT COMPARE WITH THE
AP55          *          ORIGINAL CONSTANT. NOTE-THIS FAILURE MAY CAUSE
AP56          *          ERRONEOUS ERROR INDICATIONS IN LATER ROUTINES.
AP57   DU3    BCE    DU1,TAD1,1         LOOP ROUTINE 73               12  10388  B 10238 01001 1
AP58          B      SC1                STEP ROUTINE COUNTER TO 74     7  10400  J 27380
```

```
PGLIN   LABEL    OPCOD  OPERAND                                  CT  ADDRS  INSTRUCTION
AP60     *ROUTINE 74-CHECK SCNR INSTRUCTION.
AP61     DV1     BNQ    ITR              BRANCH INQUIRY           7  10407  J 01334 Q
AP62             MLCWA  CC,0&X9           MOVE CONST CC TO EE FIELD RIGHT 12  10414  D 01900 00.#0 X
AP63             MLCWA  DD,0&X10          MOVE CONST DD TO FF FIELD RIGHT 12  10426  D 01911 00:.0 X
AP64             CW     0&X5,0&X6         MOVE WORD MARKS FROM LEFT TO    11  10438  ¤ 00##0 00#.0
AP65             SW     0&X9,0&X10         RIGHT END OF EE AND FF FIELDS  11  10449  , 00.#0 00:.0
AP66             SCNR   0&X5,0&X6         SCAN EE AND FF FIELDS           12  10460  D 00##0 00#.0 8
AP67             SAR    DV2&10            STORE ADDR EE & FIELD LENGTH     7  10472  G 10514 A
AP68             SBR    DV3&10            STORE ADDR FF & FIELD LENGTH     7  10479  G 10539 B
AP69             C      C02,C025          IS EE OR FF FIELD LONGER IN LNGTH 11 10486  C 01467 01472
AP70             BL     DV3               BRANCH-EE FIELD IS LARGER THAN FF 7  10497  J 10529 T
AP71     DV2     C      0&X7,0            CHECK A ADDR REG SETTING        11  10504  C 00#Q0 00000
AP72             BE     DV5               BRANCH-OK                        7  10515  J 10555 S
AP73             B      DV4                                                7  10522  J 10547
AP74     DV3     C      0&X8,0            CHECK B ADDR REG SETTING        11  10529  C 00.00 00000
AP75             BE     DV5               BRANCH-OK                        7  10540  J 10555 S
AP76     DV4     B      SE1               BRANCH TO ERROR ROUTINE          7  10547  J 27220
AP77             H                                          ROUTINE 74 ERROR 1 10554  .
AP78     *           AFTER SCANNING THE EE AND FF FIELDS, THE CONTENTS OF
AP79     *           THE ADDRESS REG CORRESPONDING TO THE SHORTEST FIELD
AP80     *           DID NOT COMPARE WITH THE CORRECT RESULT AS
AP81     *           CALCULATED AND STORED BY A PREVIOUS ROUTINE.
AP82     DV5     BCE    DV1,TAD1,1        LOOP ROUTINE 74                 12  10555  B 10407 01001 1
AP83             B      SC1               STEP ROUTINE COUNTER TO 75       7  10567  J 27380
```

```
PGLIN    LABEL    OPCOD  OPERAND                                                CT  ADDRS  INSTRUCTION
AP85     *ROUTINE 75-CHECK SCNRR INSTRUCTION.
AP86     DW1      BNQ    ITR                 BRANCH INQUIRY                      7  10574  J 01334 Q
AP87              MLCS   @*@,0&X7            R/M TO EE & CC FIELD LENGTH        12  10581  D 29254 00*M0 3
AP88              MLZA   CQ4,0&X10           ELIMINATE ANY R/MS IN FF FIELD     12  10593  D 01617 00:.0 S
AP89              MLCS   @*@,0&X10           R/M TO FF & DD FIELD LENGTH -1     12  10605  D 29254 00:.0 3
AP90              SCNRR  0&X6,0&X5           SCAN FF AND EE FIELDS              12  10617  D 00*.0 00**0 Y
AP91              SAR    C08                 STORE AAR                           7  10629  G 01482 A
AP92              C      C08,X8              CHECK SCAN OPERATION               11  10636  C 01482 00064
AP93              BE     DW2                 BRANCH-OK                           7  10647  J 10662 S
AP94              B      SE1                 BRANCH TO ERROR ROUTINE             7  10654  J 27220
AP95              H                                          ROUTINE 75 ERROR    1  10661  .
AP96     *             AFTER SCANNING THE FF AND EE FIELDS, THE CONTENTS OF
AP97     *             THE A ADDRESS REG DID NOT COMPARE WITH THE CORRECT
AP98     *             RESULT AS CALCULATED AND STORED IN INDEX REG 8 BY
AP99     *             A PREVIOUS ROUTINE.
AQ00     DW2      BCE    DW1,TAD1,1          LOOP ROUTINE 75                    12  10662  B 10574 01001 1
AQ01              B      SC1                 STEP ROUTINE COUNTER TO 76          7  10674  J 27380
AQ02     *ROUTINE 76-CHECK SCNRM INSTRUCTION FOR STOPPING ON RECORD MARK
AQ03     DX1      BNQ    ITR                 BRANCH INQUIRY                      7  10681  J 01334 Q
AQ04              SCNRM  0&X6,0&X5           SCAN FF AND EE FIELDS              12  10688  D 00*.0 00**0 H
AQ05              SAR    C08                 STORE AAR                           7  10700  G 01482 A
AQ06              C      C08,X8              CHECK SCAN OPERATION               11  10707  C 01482 00064
AQ07              BE     DX2                 BRANCH-OK                           7  10718  J 10733 S
AQ08              B      SE1                 BRANCH TO ERROR ROUTINE             7  10725  J 27220
AQ09              H                                          ROUTINE 76 ERROR    1  10732  .
AQ10     *             AFTER SCANNING THE FF AND EE FIELDS, THE CONTENTS OF
AQ11     *             THE A ADDRESS REG DID NOT COMPARE WITH THE CORRECT
AQ12     *             RESULT AS CALCULATED AND STORED IN INDEX REG 8 BY
AQ13     *             A PREVIOUS ROUTINE.
AQ14     DX2      BCE    DX1,TAD1,1          LOOP ROUTINE 76                    12  10733  B 10681 01001 1
AQ15              B      SC1                 STEP ROUTINE COUNTER TO 77          7  10745  J 27380
```

```
PGLIN   LABEL    OPCOD  OPERAND                                                CT  ADDRS  INSTRUCTION
AQ17    *ROUTINE 77-CHECK SCNRM INSTRUCTION FOR STOPPING ON G/M-W/M.
AQ18    DY1      BNQ    ITR                    BRANCH INQUIRY                   7  10752  J 01334 Q
AQ19             MLCWS  @M@,0&X7               G/M-W/M TO EE & CC FIELD LENGTH  12  10759  D 29255 00#M0 7
AQ20             MLCWS  @M@,0&X10              G/M-W/M TO FF &DD FIELD LENGTH -1 12  10771  D 29255 00..0 7
AQ21             SCNRM  0&X6,0&X5              SCAN FF AND EE FIELDS            12  10783  D 00#.0 00##0 H
AQ22             SAR    C08                    STORE AAR                        7  10795  G 01482 A
AQ23             C      C08,X8                 CHECK SCAN OPERATION            11  10802  C 01482 00064
AQ24             BE     DY2                    BRANCH-OK                        7  10813  J 10828 S
AQ25             B      SE1                    BRANCH TO ERROR ROUTINE          7  10820  J 27220
AQ26             H                                                 ROUTINE 77 ERROR  1  10827  .
AQ27    *            AFTER SCANNING THE FF AND EE FIELDS, THE CONTENTS OF
AQ28    *            THE A ADDRESS REG DID NOT COMPARE WITH THE CORRECT
AQ29    *            RESULT AS CALCULATED AND STORED IN INDEX REG 8 BY
AQ30    *            A PREVIOUS ROUTINE.
AQ31    DY2      BCE    DY1,TAD1,1             LOOP ROUTINE 77                 12  10828  B 10752 01001 1
AQ32             B      SC1                    STEP ROUTINE COUNTER TO 78       7  10840  J 27380
AQ33    *ROUTINE 78-CHECK SCNRG INSTRUCTION FOR STOPPING ON G/M-W/M
AQ34    DZ1      BNQ    ITR                    BRANCH INQUIRY                   7  10847  J 01334 Q
AQ35             MLZA   DD-1,99999&X10         REPLACE DD ZONE INTO FF FIELD   12  10854  D 01910 99RR9 S
AQ36             SCNRG  0&X6,0&X5              SCAN FF AND EE FIELDS           12  10866  D 00#.0 00##0 Q
AQ37             SAR    C08                    STORE AAR                        7  10878  G 01482 A
AQ38             C      C08,X8                 CHECK SCAN OPERATION            11  10885  C 01482 00064
AQ39             BE     DZ2                    BRANCH-OK                        7  10896  J 10911 S
AQ40             B      SE1                    BRANCH TO ERROR ROUTINE          7  10903  J 27220
AQ41             H                                                 ROUTINE 78 ERROR  1  10910  .
AQ42    *            AFTER SCANNING THE FF AND EE FIELDS, THE CONTENTS OF
AQ43    *            THE A ADDRESS REG DID NOT COMPARE WITH THE CORRECT
AQ44    *            RESULT AS CALCULATED AND STORED IN INDEX REG 8 BY
AQ45    *            ROUTINE 72.
AQ46    DZ2      BCE    DZ1,TAD1,1             LOOP ROUTINE 78                 12  10911  B 10847 01001 1
AQ47             B      SC1                    STEP ROUTINE COUNTER TO 79       7  10923  J 27380
```

```
PGLIN   LABEL    OPCOD  OPERAND                                          CT  ADDRS  INSTRUCTION
AQ49     *ROUTINE 79-CHECK EE AND FF FIELDS FOR CORRECT CONTENTS.
AQ50     EA1     BNQ    ITR              BRANCH INQUIRY                   7  10930  J 01334 Q
AQ51             CW     0&X9             CLEAR RIGHT END W/M IN EE FIELD  6  10937  ¤ 00.*0
AQ52             SW     0&X5,0&X6        SET W/MS AT LEFT OF FIELDS EE-FF 11  10943  , 00**0 00*.0
AQ53             C      0&X9,CC          CHECK CONTENTS OF ADDR EE FIELD  11  10954  C 00.*0 01900
AQ54             BE     EA2              BRANCH-EE FIELD OK               7  10965  J 10980 S
AQ55             B      SE1              BRANCH TO EROR ROUTINE           7  10972  J 27220
AQ56             H                                        ROUTINE 79 ERROR 1  10979  .
AQ57     *                THE SCAN OPERATIONS IN THE LAST FIVE ROUTINES SHOULD
AQ58     *                NOT HAVE DISTURBED CONSTANT CC IN THE EE FIELD.
AQ59     *                HOWEVER, THE EE FIELD AND CONSTANT CC DO NOT COMPARE
AQ60     EA2     MLCWS  DD,0&X10         REPLACE RIGHT END CHARACTER      12  10980  D 01911 00..0 7
AQ61             C      0&X10,DD         CHECK CONTENTS OF ADDR FF FIELD  11  10992  C 00..0 01911
AQ62             BE     EA3              BRANCH-FF FIELD OK               7  11003  J 11018 S
AQ63             B      SE1              BRANCH TO ERROR ROUTINE          7  11010  J 27220
AQ64             H                                        ROUTINE 79 ERROR 1  11017  .
AQ65     *                THE SCAN OPERATIONS IN THE LAST FIVE ROUTINES SHOULD
AQ66     *                NOT HAVE DISTURBED CONSTANT DD IN THE FF FIELD.
AQ67     *                HOWEVER, THE FF FIELD AND CONSTANT DD DO NOT COMPARE
AQ68     EA3     BCE    EA1,TAD1,1       LOOP ROUTINE 79                  12  11018  B 10930 01001 1
AQ69             B      SC1              STEP ROUTINE COUNTER TO 80       7  11030  J 27380
```

```
PGLIN   LABEL   OPCOD  OPERAND                                          CT  ADDRS  INSTRUCTION
AQ71    *ROUTINE 80-CHECK MRN, MRZW INSTRUCTIONS WHEN ENDING ON A FIELD W/M
AQ72    EB1     BNQ    ITR              BRANCH INQUIRY                   7  11037  J 01334 Q
AQ73            MLCWA  CP2&12,11&X5     CLEAR ADDR EE-1 THRU EE&11      12  11044  D 01568 00#/1 X
AQ74            MLCWA  CP2&12,11&X6     CLEAR ADDR FF-1 THRU FF&11      12  11056  D 01568 00#J1 X
AQ75            MLCWA  CC,0&X9          CONSTANT CC TO ADDRESS EE RIGHT  12  11068  D 01900 00.#0 X
AQ76            CW     0&X5             CLEAR W/M AT ADDRESS EE          6  11080  ¤ 00##0
AQ77            SW     0&X9             SET W/M AT RIGHT OF ADDR EE FIELD 6 11086  , 00.#0
AQ78            MRN    0&X5,0&X6        CC NUMERIC FROM ADDRESS EE TO FF 12  11092  D 00##0 00#.0 9
AQ79            MRZW   0&X5,0&X6        CC ZONE,W/M FROM ADDRESS EE TO FF 12  11104  D 00##0 00#.0 GT
AQ80            SBR    EB2&10           STORE ADDRESS FF &LENGTH OF CC   7  11116  G 11133 B
AQ81    EB2     C      0&X7,0           CHECK MOVE OF W/M,RIGHT CHAR    11  11123  C 00#MO 00000
AQ82            SBR    EB3&10           STORE ADDRESS FF&LENGTH OF CC-2   7  11134  G 11166 B
AQ83            BE     EB3              BRANCH-OK                        7  11141  J 11156 S
AQ84            B      SE1              BRANCH TO ERROR ROUTINE          7  11148  J 27220
AQH5            H                                        ROUTINE 80 ERROR 1  11155  .
AQ86    *           AFTER USING MRN AND MRZW INSTRUCTIONS TO MOVE
AQ87    *           CONSTANT CC,CONTAINING A WORD MARK AT THE RIGHT,FROM
AQ88    *           ADDRESS EE TO ADDRESS FF, THE CONTENTS OF THE EE
AQ89    *           FIELD PLUS ONE DID NOT COMPARE WITH THE CONTENTS OF
AQ90    *           THE FF FIELD PLUS ONE. THE WORD MARK OR THE LAST
AQ91    *           CHARACTER WAS NOT PROPERLY MOVED.
AQ92    EB3     C      99999&X9,0       CHECK REMAINDER OF MOVED FIELD  11  11156  C 99RZ9 00000
AQ93            BE     EB4              BRANCH-MOVES OK                  7  11167  J 11182 S
AQ94            B      SE1              BRANCH TO ERROR ROUTINE          7  11174  J 27220
AQ95            H                                        ROUTINE 80 ERROR 1  11181  .
AQ96    *           AFTER USING MRN AND MRZW INSTRUCTIONS TO MOVE
AQ97    *           CONSTANT CC FROM ADDRESS EE TO ADDRESS FF, THE
AQ98    *           CONTENTS OF THE EE FIELD DID NOT COMPARE WITH THE
AQ99    *           CONTENTS OF THE FF FIELD.
AR00    EB4     BCE    EB1,TAD1,1       LOOP ROUTINE 80                 12  11182  B 11037 01001 1
AR01            B      SC1              STEP ROUTINE COUNTER TO 81       7  11194  J 27380
```

```
PGLIN   LABEL   OPCOD  OPERAND                                          CT  ADDRS  INSTRUCTION
AR03    *ROUTINE 81-CHECK MRZ, MRNW INSTRUCTIONS WHEN ENDING ON A FIELD W/M
AR04    EC1     BNQ    ITR                BRANCH INQUIRY                 7  11201  J 01334 Q
AR05            MLCWA  CP2&12,11&X6       CLEAR ADDR FF-1 THRU FF&11     12  11208  D 01568 00*J1 X
AR06            MRZ    0&X5,0&X6          CC ZONE FROM ADDRESS EE TO FF  12  11220  D 00**0 00*.0 0
AR07            MRNW   0&X5,0&X6          CC NUM,W/M FROM ADDRESS EE TO FF 12 11232  D 00**0 00*.0 :
AR08            SBR    EC2&10             STORE ADDRESS FF &LENGTH OF CC  7  11244  G 11261 B
AR09    EC2     C      0&X7,0             CHECK MOVE OF W/M,RIGHT CHAR   11  11251  C 00*M0 00000
AR10            SBR    EC3&10             STORE ADDRESS FF&LENGTH OF CC-2  7  11262  G 11294 B
AR11            BE     EC3                BRANCH-OK                      7  11269  J 11284 S
AR12            B      SE1                BRANCH TO ERROR ROUTINE        7  11276  J 27220
AR13            H                                        ROUTINE 81 ERROR  1  11283  .
AR14    *           AFTER USING MRZ AND MRNW INSTRUCTIONS TO MOVE
AR15    *           CONSTANT CC,CONTAINING A WORD MARK AT THE RIGHT,FROM
AR16    *           ADDRESS EE TO ADDRESS FF, THE CONTENTS OF THE EE
AR17    *           FIELD PLUS ONE DID NOT COMPARE WITH THE CONTENTS OF
AR18    *           THE FF FIELD PLUS ONE. THE WORD MARK OR THE LAST
AR19    *           CHARACTER WAS NOT PROPERLY MOVED.
AR20    EC3     C      99999&X9,0         CHECK REMAINDER OF MOVED FIELD 11  11284  C 99RZ9 00000
AR21            BE     EC4                BRANCH-MOVES OK                7  11295  J 11310 S
AR22            B      SE1                BRANCH TO ERROR ROUTINE        7  11302  J 27220
AR23            H                                        ROUTINE 81 ERROR  1  11309  .
AR24    *           AFTER USING MRZ AND MRNW INSTRUCTIONS TO MOVE
AR25    *           CONSTANT CC FROM ADDRESS EE TO ADDRESS FF, THE
AR26    *           CONTENTS OF THE EE FIELD DID NOT COMPARE WITH THE
AR27    *           CONTENTS OF THE FF FIELD.
AR28    EC4     BCE    EC1,TAD1,1         LOOP ROUTINE 81                12  11310  B 11201 01001 1
AR29            B      SC1                STEP ROUTINE COUNTER TO 82     7  11322  J 27380
```

```
PGLIN   LABEL   OPCOD  OPERAND                                              CT  ADDRS  INSTRUCTION
AR31    *ROUTINE 82-CHECK MRC, MRW INSTRUCTIONS WHEN ENDING ON A FIELD W/M.
AR32    ED1     BNQ    ITR                  BRANCH INQUIRY                   7  11329  J 01334 Q
AR33            MLCWA  CP2&12,11&X6        CLEAR ADDR FF-1 THRU FF&11       12  11336  D 01568 00*J1 X
AR34            MRC    0&X5,0&X6            CONSTANT CC FROM ADDRESS EE TO FF 12  11348  D 00**0 00*.0 #
AR35            MRW    0&X5,0&X6            CC W/M FROM ADDRESS EE TO FF     12  11360  D 00**0 00*.0 @
AR36            SBR    ED2&10               STORE ADDRESS FF &LENGTH OF CC    7  11372  G 11389 B
AR37    ED2     C      0&X7,0               CHECK MOVE OF W/M,RIGHT CHAR     11  11379  C 00*M0 00000
AR38            SBR    ED3&10               STORE ADDRESS FF&LENGTH OF CC-2    7  11390  G 11422 B
AR39            BE     ED3                  BRANCH-OK                         7  11397  J 11412 S
AR40            B      SE1                  BRANCH TO ERROR ROUTINE           7  11404  J 27220
AR41            H                                          ROUTINE 82 ERROR   1  11411  .
AR42    *           AFTER USING MRC AND MRW INSTRUCTIONS TO MOVE
AR43    *           CONSTANT CC,CONTAINING A WORD MARK AT THE RIGHT,FROM
AR44    *           ADDRESS EE TO ADDRESS FF, THE CONTENTS OF THE EE
AR45    *           FIELD PLUS ONE DID NOT COMPARE WITH THE CONTENTS OF
AR46    *           THE FF FIELD PLUS ONE. THE WORD MARK OR THE LAST
AR47    *           CHARACTER WAS NOT PROPERLY MOVED.
AR48    ED3     C      99999&X9,0           CHECK REMAINDER OF MOVED FIELD   11  11412  C 99RZ9 00000
AR49            BE     ED4                  BRANCH-MOVES OK                   7  11423  J 11438 S
AR50            B      SE1                  BRANCH TO ERROR ROUTINE           7  11430  J 27220
AR51            H                                          ROUTINE 82 ERROR   1  11437  .
AR52    *           AFTER USING MRC AND MRW INSTRUCTIONS TO MOVE
AR53    *           CONSTANT CC FROM ADDRESS EE TO ADDRESS FF, THE
AR54    *           CONTENTS OF THE EE FIELD DID NOT COMPARE WITH THE
AR55    *           CONTENTS OF THE FF FIELD.
AR56    ED4     BCE    ED1,TAD1,1           LOOP ROUTINE 82                  12  11438  B 11329 01001 1
AR57            B      SC1                  STEP ROUTINE COUNTER TO 83        7  11450  J 27380
```

```
PGLIN    LABEL    OPCOD  OPERAND                                          CT  ADDRS  INSTRUCTION
AR59     *ROUTINE 83-CHECK MRCW INSTRUCTION WHEN ENDING ON A FIELD WORD MARK
AR60     EE1      BNQ    ITR                BRANCH INQUIRY                 7  11457  J 01334 Q
AR61              MLCWA  CP2&12,11&X6       CLEAR ADDR FF-1 THRU FF&11     12  11464  D 01568 00*J1 X
AR62              MRCW   0&X5,0&X6          CONST CC FROM ADDRESS EE TO FF 12  11476  D 00**0 00*.0 M
AR63              SBR    EE2&10             STORE ADDRESS FF &LENGTH OF CC  7  11488  G 11505 8
AR64     EE2      C      0&X7,0             CHECK MOVE OF W/M,RIGHT CHAR   11  11495  C 00*M0 00000
AR65              SBR    EE3&10             STORE ADDRESS FF&LENGTH OF CC-2  7  11506  G 11538 8
AR66              BE     EE3                BRANCH-OK                      7  11513  J 11528 S
AR67              B      SE1                BRANCH TO ERROR ROUTINE        7  11520  J 27220
AR68              H                                        ROUTINE 83 ERROR 1  11527  .
AR69     *             AFTER USING AN MRCW INSTRUCTION TO MOVE CONSTANT CC,
AR70     *             CONTAING A WORD MARK AT THE RIGHT,FROM ADDRESS EE TO
AR71     *             ADDRESS FF, THE CONTENTS OF THE EE FIELD PLUS ONE
AR72     *             DID NOT COMPARE WITH CONTENTS OF THE FF FIELD PLUS
AR73     *             ONE. THE WORD MARK OR THE LAST CHARACTER WAS NOT
AR74     *             PROPERLY MOVED.
AR75     EE3      C      99999&X9,0         CHECK REMAINDER OF MOVED FIELD 11  11528  C 99RZ9 00000
AR76              BE     EE4                BRANCH-MOVES OK                7  11539  J 11554 S
AR77              B      SE1                BRANCH TO ERROR ROUTINE        7  11546  J 27220
AR78              H                                        ROUTINE 83 ERROR 1  11553  .
AR79     *             AFTER USING AN MRCW INSTRUCTION TO MOVE CONSTANT CC
AR80     *             FROM ADDRESS EE TO ADDRESS FF, THE CONTENTS OF THE
AR81     *             EE FIELD DID NOT COMPARE WITH THE CONTENTS OF THE FF
AR82     *             FIELD.
AR83     EE4      BCE    EE1,TAD1,1         LOOP ROUTINE 83                12  11554  B 11457 01001 1
AR84              B      SC1                STEP ROUTINE COUNTER TO 84     7  11566  J 27380
```

```
PGLIN  LABEL   OPCOD  OPERAND                                          CT  ADDRS  INSTRUCTION
AR86           *ROUTINE 84-CHECK MRN, MRZW INSTRUCTIONS WHEN ENDING ON B FIELD W/M
AR87   EF1     BNQ    ITR                BRANCH INQUIRY                 7  11573  J 01334 Q
AR88           MLCWA  CP2&12,11&X5       CLEAR ADDRESS EE-1 THRU EE&11 12  11580  D 01568 00*/1 X
AR89           MLCWA  CP2&12,11&X6       CLEAR ADDRESS FF-1 THRU FF&11 12  11592  D 01568 00*J1 X
AR90           MLCA   CC,0&X9            CONSTANT CC TO ADDRESS EE RIGHT 12  11604  D 01900 00.*0 T
AR91           SW     0&X9               SET W/M TO RIGHT OF EE FIELD    6  11616  , 00.*0
AR92           MRW    0&X5,0&X6          SET RIGHT CC W/M IN FF FIELD   12  11622  D 00**0 00*.0 a
AR93           CW     0&X9               CLEAR W/M TO RIGHT OF EE FIELD  6  11634  ¤ 00.*0
AR94           MRN    0&X5,0&X6          CC NUMERIC FROM EE FIELD TO FF 12  11640  D 00**0 00*.0 9
AR95           MRZW   0&X5,0&X6          CC ZONE,W/M FROM EE FIELD TO FF 12  11652  D 00**0 00*.0 G T
AR96           SBR    EF2&10             STORE ADDR FF&LENGTH OF CC      7  11664  G 11693 B
AR97           MRW    CP2&1,0&X6         CLEAR CC WORD MARK FROM ADDR FF 12  11671  D 01557 00*.0 a
AR98   EF2     C      0&X7,0             CHECK MOVES                    11  11683  C 00*M0 00000
AR99           BE     EF3                BRANCH-MOVES OK                 7  11694  J 11709 S
AS00           B      SE1                BRANCH TO ERROR ROUTINE         7  11701  J 27220
AS01           H                                                         1  11708  .
AS02   *                                                ROUTINE 84 ERROR
AS03   *           AFTER MOVING CONSTANT CC FROM ADDRESS EE TO ADDRESS
AS04   *           FF, THE CONTENTS OF THE EE FIELD DID NOT COMPARE
AS05   *           WITH THE CONTENTS OF THE FF FIELD. THIS ERROR HALT
AS06   *           WILL OCCURR IF THE DATA AT EE AND FF ARE DIFFERENT,
AS07   EF3         OR IF MRZW FAILED TO STOP ON THE B FIELD WORD MARK.
AS07   EF3     BCE    EF1,TA01,1         LOOP ROUTINE 84               12  11709  B 11573 01001 1
AS08           B      SC1                STEP ROUTINE COUNTER TO 85     7  11721  J 27380
```

```
PGLIN   LABEL   OPCOD  OPERAND                                          CT  ADDRS  INSTRUCTION
AS10    *ROUTINE 85-CHECK MRZ, MRNW INSTRUCTIONS WHEN ENDING ON B FIELD W/M
AS11    EG1     BNQ    ITR              BRANCH INQUIRY                   7  11728  J 01334 Q
AS12            MLCWA  CP2&12,11&X6     CLEAR ADDRESS FF-1 THRU FF&11   12  11735  D 01568 00#J1 X
AS13            SW     0&X9             SET W/M TO RIGHT OF EE FIELD     6  11747  , 00.#0
AS14            MRW    0&X5,0&X6        SET RIGHT CC W/M IN FF FIELD    12  11753  D 00##0 00#.0 @
AS15            CW     0&X9             CLEAR W/M TO RIGHT OF EE FIELD   6  11765  ¤ 00.#0
AS16            MRZ    0&X5,0&X6        CC ZONE FROM EE FIELD TO FF FIELD 12 11771  D 00##0 00#.0 0
AS17            MRNW   0&X5,0&X6        CC NUM,W/M FROM EE TO FF FIELD  12  11783  D 00##0 00#.0 :
AS18            SBR    EG2&10           STORE ADDRESS FF&LENGTH OF CC    7  11795  G 11824 B
AS19            MRW    CP2&1,0&X6       CLEAR CC WORD MARK FROM ADDR FF 12  11802  D 01557 00#.0 @
AS20    EG2     C      0&X7,0           CHECK MOVES                     11  11814  C 00#Q0 00000
AS21            BE     EG3              BRANCH-MOVES OK                  7  11825  J 11840 S
AS22            B      SE1              BRANCH TO ERROR ROUTINE          7  11832  J 27220
AS23            H                                    ROUTINE 85 ERROR    1  11839  .
AS24    *           AFTER MOVING CONSTANT CC FROM ADDRESS EE TO ADDRESS
AS25    *           FF, THE CONTENTS OF THE EE FIELD DID NOT COMPARE
AS26    *           WITH THE CONTENTS OF THE FF FIELD. THIS ERROR HALT
AS27    *           WILL OCCURR IF THE DATA AT EE AND FF ARE DIFFERENT,
AS28    *           OR IF MRNW FAILED TO STOP ON THE B FIELD WORD MARK.
AS29    EG3     BCE    EG1,TAD1,1       LOOP ROUTINE 85                 12  11840  B 11728 01001 1
AS30            B      SC1              STEP ROUTINE COUNTER TO 86       7  11852  J 27380
```

```
PGLIN   LABEL   OPCOD  OPERAND                                          CT  ADDRS  INSTRUCTION
AS32            *ROUTINE 86-CHECK MRC, MRW INSTRUCTIONS WHEN ENDING ON B FIELD W/M.
AS33    EH1     BNQ    ITR                BRANCH INQUIRY                 7  11859  J 01334 Q
AS34            MLCWA  CP2&12,11&X6       CLEAR ADDRESS FF-1 THRU FF&11 12  11866  D 01568 00#J1 X
AS35            SW     0&X9               SET W/M TO RIGHT OF EE FIELD   6  11878  , 00'#0
AS36            MRW    0&X5,0&X6          SET RIGHT CC W/M IN FF FIELD  12  11884  D 00##0 00#'0 @
AS37            CW     0&X9               CLEAR W/M TO RIGHT OF EE FIELD 6  11896  ¤ 00'#0
AS38            MRC    0&X5,0&X6          CC FROM EE FIELD TO FF FIELD  12  11902  D 00##0 00#'0 #
AS39            MRW    0&X5,0&X6          CHECK STOPPING ON B FIELD W/M  12  11914  D 00##0 00#'0 @
AS40            SBR    EH2&10             STORE ADDRESS FF&LENGTH OF CC  7  11926  G 11955 B
AS41            MRW    CP2&1,0&X6         CLEAR CC WORD MARK FROM ADDR FF 12 11933  D 01557 00#'0 @
AS42    EH2     C      0&X7,0             CHECK MOVES                   11  11945  C 00#Q0 00000
AS43            BE     EH3                BRANCH-MOVES OK                7  11956  J 11971 S
AS44            B      SE1                BRANCH TO ERROR ROUTINE        7  11963  J 27220
AS45            H                                        ROUTINE 86 ERROR  1  11970  .
AS46    *           AFTER MOVING CONSTANT CC FROM ADDRESS EE TO ADDRESS
AS47    *           FF, THE CONTENTS OF THE EE FIELD DID NOT COMPARE
AS48    *           WITH THE CONTENTS OF THE FF FIELD. THIS ERROR HALT
AS49    *           WILL OCCURR IF THE DATA AT EE AND FF ARE DIFFERENT,
AS50    *           OR IF MRW FAILED TO STOP ON THE B FIELD WORD MARK.
AS51    EH3     BCE    EH1,TAD1,1         LOOP ROUTINE 86               12  11971  B 11859 01001 1
AS52            B      SC1                STEP ROUTINE COUNTER TO 87     7  11983  J 27380
```

```
PGLIN   LABEL   OPCOD  OPERAND                                          CT  ADDRS  INSTRUCTION
AS54    *ROUTINE 87-CHECK MRCW INSTRUCTION WHEN ENDING ON B FIELD WORD MARK
AS55    EI1     BNQ    ITR                BRANCH INQUIRY                 7  11990  J 01334 Q
AS56            MLCWA  CP2&12,11&X6       CLEAR ADDRESS FF-1 THRU FF&11 12  11997  D 01568 00*J1 X
AS57            SW     0&X9               SET W/M TO RIGHT OF EE FIELD   6  12009  , 00.*0
AS58            MRW    0&X5,0&X6          SET RIGHT CC W/M IN FF FIELD  12  12015  D 00**0 00*.0 @
AS59            CW     0&X9               CLEAR W/M TO RIGHT OF EE FIELD 6  12027  ¤ 00.*0
AS60            MRCW   0&X5,0&X6          CONSTANT CC FROM EE TO FF FIELD 12 12033  D 00**0 00*.0 M
AS61            SBR    EI2&10             STORE ADDRESS FF&LENGTH OF CC  7  12045  G 12074 B
AS62            MRW    CP2&1,0&X6         CLEAR CC WORD MARK FROM ADDR FF 12 12052  D 01557 00*.0 @
AS63    EI2     C      0&X7,0             CHECK MOVE                    11  12064  C 00*M0 00000
AS64            BE     EI3                BRANCH-MOVE OK                 7  12075  J 12090 S
AS65            B      SE1                BRANCH TO ERROR ROUTINE        7  12082  J 27220
AS66            H                                          ROUTINE 87 ERROR 1 12089  .
AS67    *           AFTER MOVING CONSTANT CC FROM ADDRESS EE TO ADDRESS
AS68    *           FF, THE CONTENTS OF THE EE FIELD DID NOT COMPARE
AS69    *           WITH THE CONTENTS OF THE FF FIELD. THIS ERROR HALT
AS70    *           WILL OCCURR IF THE DATA AT EE AND FF ARE DIFFERENT,
AS71    *           OR IF MRCW FAILED TO STOP ON THE B FIELD WORD MARK.
AS72    EI3     BCE    EI1,TAD1,1         LOOP ROUTINE 87               12  12090  B 11990 01001 1
AS73            B      SC1                STEP ROUTINE COUNTER TO 88     7  12102  J 27380
AS74    *ROUTINE 88-SET UP WORKING AREA FOR CHECKING LEFT TO RIGHT MOVES TO
AS75    *           RECORD MARKS.
AS76    EJ1     BNQ    ITR                BRANCH INQUIRY                 7  12109  J 01334 Q
AS77            MLCW   CC,0&X9            CONSTANT CC TO EE FIELD RIGHT 12  12116  D 01900 00.*0 G
AS78            CW     0&X5               CLEAR CC WORD MARK IN EE FIELD 6  12128  ¤ 00**0
AS79            MLCWS  @ *@,0&X7          RECORD MARK TO EE FIELD RIGHT &1 12 12134 D 29257 00*M0 7
AS80            MLCWS  @ @,0&X5-1         BLANK,W/M TO LEFT OF EE FIELD 12  12146  D 29208 99ZZ9 7
AS81            MLCWS  @ @,0&X6-1         BLANK,W/M TO LEFT OF FF FIELD 12  12158  D 29208 99ZR9 7
AS82            BCE    EJ1,TAD1,1         LOOP ROUTINE 88               12  12170  B 12109 01001 1
AS83            B      SC1                STEP ROUTINE COUNTER TO 89     7  12182  J 27380
```

```
PGLIN  LABEL  OPCOD  OPERAND                                          CT  ADDRS  INSTRUCTION
AS85          *ROUTINE 89-CHECK MRNR, MRZWR INSTRUCTIONS.
AS86   EK1    BNQ    ITR                BRANCH INQUIRY                 7  12189  J 01334 Q
AS87          MLCWA  DD,0&X10           CONSTANT DD TO FF FIELD RIGHT 12  12196  D 01911 00..0 X
AS88          MRNR   0&X5,0&X6          CC NUMERIC FROM EE TO FF FIELD 12  12208  D 00**0 00*.0 Z
AS89          SAR    EK2&5              STORE AAR IN SCAN INSTRUCTION  7  12220  G 12251 A
AS90          MRZWR  0&X5,0&X6          CC ZONE FROM EE TO FF FIELD   12  12227  D 00**0 00*.0 B S
AS91          SBR    EK2&10             STORE BAR IN SCAN INSTRUCTION  7  12239  G 12256 B
AS92   EK2    SCNLS  0,0                CALCULATE LAST ADDRESS MOVED  12  12246  D 00000 00000
AS93          SAR    EK3&10             SAVE FOR PROPER STOP CHECK     7  12258  G 12289 A
AS94          SAR    EK4&10             SAVE FOR DATA COMPARE CHECK    7  12265  G 12309 A
AS95          SBR    EK4&5              SAVE FOR DATA COMPARE CHECK    7  12272  G 12304 B
AS96   EK3    BCE    EK4,0,*            BRANCH-MOVE STOPPED ON R/M-OK 12  12279  B 12299 00000 *
AS97          B      SE1                BRANCH TO ERROR ROUTINE        7  12291  J 27220
AS98          H                                    ROUTINE 89 ERROR    1  12298  .
AS99   *                 AFTER OPERATION OF THE MRNR INSTRUCTION, THE ADDRESS
AT00   *                 IN THE A ADDRESS REG MINUS ONE WAS SAVED IN THE B
AT01   *                 FIELD OF THE BCE INSTRUCTION. THE FAILURE OF THE BCE
AT02   *                 INSTRUCTION TO BRANCH INDICATES THE LAST ADDRESS
AT03   *                 MOVED DID NOT CONTAIN A RECORD MARK AS IT SHOULD.
AT04   EK4    C      0,0                CHECK DATA MOVED              11  12299  C 00000 00000
AT05          BE     EK5                BRANCH-MOVES OK                7  12310  J 12325 S
AT06          B      SE1                BRANCH TO ERROR ROUTINE        7  12317  J 27220
AT07          H                                    ROUTINE 89 ERROR    1  12324  .
AT08   *                 AFTER USING MRNR AND MRZWR INSTRUCTIONS TO MOVE
AT09   *                 CONSTANT CC, OR A PORTION OF CONSTANT CC, FROM THE
AT10   *                 EE FIELD TO THE FF FIELD, THE TWO FIELDS DIT NOT
AT11   *                 COMPARE.
AT12   EK5    BCE    EK1,TAD1,1         LOOP ROUTINE 89               12  12325  B 12189 01001 1
AT13          B      SC1                STEP ROUTINE COUNTER TO 90     7  12337  J 27380
```

```
PGLIN   LABEL   OPCOD  OPERAND                                          CT  ADDRS  INSTRUCTION
AT15    *ROUTINE 90-CHECK MRZR, MRNWR INSTRUCTIONS.
AT16    EL1     BNQ    ITR                BRANCH INQUIRY                 7  12344  J 01334 Q
AT17            MLCWA  DD,0&X10           CONSTANT DD TO FF FIELD RIGHT 12  12351  D 01911 00..0 X
AT18            MRZR   0&X5,0&X6          CC ZONE FROM EE TO FF FIELD   12  12363  D 00##0 00#.0 #
AT19            SAR    EL2&5              STORE AAR IN SCAN INSTRUCTION  7  12375  G 12406 A
AT20            MRNWR  0&X5,0&X6          CC NUMERIC FROM EE TO FF FIELD 12  12382  D 00##0 00#.0 W S
AT21            SBR    EL2&10             STORE BAR IN SCAN INSTRUCTION  7  12394  G 12411 B
AT22    EL2     SCNLS  0,0                CALCULATE LAST ADDRESS MOVED   12  12401  D 00000 00000
AT23            SAR    EL3&10             SAVE FOR PROPER STOP CHECK     7  12413  G 12444 A
AT24            SAR    EL4&10             SAVE FOR DATA COMPARE CHECK    7  12420  G 12464 A
AT25            SBR    EL4&5              SAVE FOR DATA COMPARE CHECK    7  12427  G 12459 B
AT26    EL3     BCE    EL4,0,#            BRANCH-MOVE STOPPED ON R/M-OK 12  12434  B 12454 00000 #
AT27            B      SE1                BRANCH TO ERROR ROUTINE        7  12446  J 27220
AT28            H                                    ROUTINE 90 ERROR   1  12453  .
AT29    *           AFTER OPERATION OF THE MRZR INSTRUCTION, THE ADDRESS
AT30    *           IN THE A ADDRESS REG MINUS ONE WAS SAVED IN THE B
AT31    *           FIELD OF THE BCE INSTRUCTION. THE FAILURE OF THE BCE
AT32    *           INSTRUCTION TO BRANCH INDICATES THE LAST ADDRESS
AT33    *           MOVED DID NOT CONTAIN A RECORD MARK AS IT SHOULD.
AT34    EL4     C      0,0                CHECK DATA MOVED              11  12454  C 00000 00000
AT35            BE     EL5                BRANCH-MOVES OK                7  12465  J 12480 S
AT36            B      SE1                BRANCH TO ERROR ROUTINE        7  12472  J 27220
AT37            H                                    ROUTINE 90 ERROR   1  12479  .
AT38    *           AFTER USING MRZR AND MRNWR INSTRUCTIONS TO MOVE
AT39    *           CONSTANT CC, OR A PORTION OF CONSTANT CC, FROM THE
AT40    *           EE FIELD TO THE FF FIELD, THE TWO FIELDS DID NOT
AT41    *           COMPARE.
AT42    EL5     BCE    EL1,TAD1,1         LOOP ROUTINE 90               12  12480  B 12344 01001 1
AT43            B      SC1                STEP ROUTINE COUNTER TO 91     7  12492  J 27380
```

```
PGLIN   LABEL   OPCOD  OPERAND                                          CT  ADDRS  INSTRUCTION
AT45    *ROUTINE 91-CHECK MRCR, MRWR INSTRUCTIONS.
AT46    EM1     BNQ    ITR                BRANCH INQUIRY                 7  12499  J 01334 Q
AT47            MLCWA  DD,0&X10           CONSTANT DD TO FF FIELD RIGHT 12  12506  D 01911 00:.:0 X
AT48            MRCR   0&X5,0&X6          CONSTANT CC FROM EE TO FF FIELD 12 12518 D 00‡‡0 00‡.:0 ,
AT49            SAR    EM2&5              STORE AAR IN SCAN INSTRUCTION  7  12530  G 12561 A
AT50            MRWR   0&X5,0&X6          CC WORD MARKS FROM EE TO FF FIELD 12 12537 D 00‡‡0 00‡.:0 %
AT51            SBR    EM2&10             STORE BAR IN SCAN INSTRUCTION  7  12549  G 12566 B
AT52    EM2     SCNLS  0,0                CALCULATE LAST ADDRESS MOVED   12  12556  D 00000 00000
AT53            SAR    EM3&10             SAVE FOR PROPER STOP CHECK     7  12568  G 12599 A
AT54            SAR    EM4&10             SAVE FOR DATA COMPARE CHECK    7  12575  G 12619 A
AT55            SBR    EM4&5              SAVE FOR DATA COMPARE CHECCK   7  12582  G 12614 B
AT56    EM3     BCE    EM4,0,‡            BRANCH-MOVE STOPPED ON R/M-OK 12  12589  B 12609 00000 ‡
AT57            B      SE1                BRANCH TO ERROR ROUTINE        7  12601  J 27220
AT58            H                                    ROUTINE 91 ERROR     1  12608  .
AT59    *           AFTER OPERATION OF THE MRCR INSTRUCTION, THE ADDRESS
AT60    *           IN THE A ADDRESS REG MINUS ONE WAS SAVED IN THE B
AT61    *           FIELD OF THE BCE INSTRUCTION. THE FAILURE OF THE BCE
AT62    *           INSTRUCTION TO BRANCH INDICATES THE LAST ADDRESS
AT63    *           MOVED DID NOT CONTAIN A RECORD MARK AS IT SHOULD.
AT64    EM4     C      0,0                CHECK DATA MOVED              11  12609  C 00000 00000
AT65            BE     EM5                BRANCH-MOVES OK                7  12620  J 12635 S
AT66            B      SE1                BRANCH TO ERROR ROUTINE        7  12627  J 27220
AT67            H                                    ROUTINE 91 ERROR     1  12634  .
AT68    *           AFTER USING MRCR AND MRWR INSTRUCTIONS TO MOVE
AT69    *           CONSTANT CC, OR A PORTION OF CONSTANT CC, FROM THE
AT70    *           EE FIELD TO THE FF FIELD, THE TWO FIELDS DID NOT
AT71    *           COMPARE.
AT72    EM5     BCE    EM1,TAD1,1         LOOP ROUTINE 91               12  12635  B 12499 01001 1
AT73            B      SC1                STEP ROUTINE COUNTER TO 92     7  12647  J 27380
```

```
PGLIN  LABEL  OPCOD  OPERAND                                                CT  ADDRS  INSTRUCTION
AT75          *ROUTINE 92-CHECK MRCWR INSTRUCTION.
AT76   EN1    BNQ    ITR                 BRANCH INQUIRY                      7  12654  J 01334 Q
AT77          MLCWA  DD,0&X10            CONSTANT DD TO FF FIELD RIGHT      12  12661  D 01911 00::0 X
AT78          MRCWR  0&X5,0&X6           CONSTANT CC FROM EE TO FF FIELD    12  12673  D 00##0 00#:0 SM
AT79          SAR    EN2&5               STORE AAR IN SCAN INSTRUCTION       7  12685  G 12704 A
AT80          SBR    EN2&10              STORE BAR IN SCAN INSTRUCTION       7  12692  G 12709 B
AT81   EN2    SCNLS  0,0                 CALCULATE LAST ADDRESS MOVED       12  12699  D 00000 00000
AT82          SAR    EN3&10              SAVE FOR PROPER STOP CHECK          7  12711  G 12742 A
AT83          SAR    EN4&10              SAVE FOR DATA COMPARE CHECK         7  12718  G 12762 A
AT84          SBR    EN4&5               SAVE FOR DATA COMPARE CHECK         7  12725  G 12757 B
AT85   EN3    BCE    EN4,0,*             BRANCH-MOVE STOPPED ON RI/-OK      12  12732  B 12752 00000 *
AT86          B      SE1                 BRANCH TO ERROR ROUTINE             7  12744  J 27220
AT87          H                                          ROUTINE 92 ERROR    1  12751  .
AT88   *          AFTER OPERATION OF THE MRCWR INSTRUCTION, THE
AT89   *          ADDRESS IN THE A ADDRESS REG MINUS ONE WAS SAVED IN
AT90   *          THE B FIELD OF THE BCE INSTRUCTION. THE FAILURE OF
AT91   *          THE BCE INSTRUCTION TO BRANCH INDICATES THE LAST
AT92   *          ADDRESS MOVED DID NOT CONTAIN A RECORD MARK AS IT
AT93   *          SHOULD.
AT94   EN4    C      0,0                 CHECK DATA MOVED                   11  12752  C 00000 00000
AT95          BE     EN5                 BRANCH-MOVE OK                      7  12763  J 12778 S
AT96          B      SE1                 BRANCH TO ERROR ROUTINE             7  12770  J 27220
AT97          H                                          ROUTINE 92 ERROR    1  12777  .
AT98   *          AFTER USING AN MRCWR INSTRUCTION TO MOVE CONSTANT
AT99   *          CC, OR A PORTION OF CONSTANT CC, FROM THE EE FIELD
AU00   *          TO THE FF FIELD, THE TWO FIELDS DID NOT COMPARE.
AU01   EN5    BCE    EN1,TAD1,1          LOOP ROUTINE 92                    12  12778  B 12654 01001 1
AU02          B      SC1                 STEP ROUTINE COUNTER TO 93          7  12790  J 27380
```

```
PGLIN   LABEL   OPCOD  OPERAND                                          CT  ADDRS  INSTRUCTION
AU04            *ROUTINE 93-CHECK MRNM, MRZWM INSTRUCTIONS.
AU05    E01     BNQ    ITR                 BRANCH INQUIRY               7  12797  J 01334 Q
AU06            MLCWA  @M@,0&X7            G/M,W/M TO EE FIELD RIGHT &1 12 12804  D 29255 00*M0 X
AU07            MLCWA  DD,0&X10            CONSTANT DD TO FF FIELD RIGHT 12 12816  D 01911 00..0 X
AU08            MRNM   0&X5,0&X6           CC NUMERIC FROM EE TO FF FIELD 12 12828  D 00**0 00*.0 I
AU09            SAR    E02&5               STORE AAR IN SCAN INSTRUCTION 7  12840  G 12871 A
AU10            MRZWM  0&X5,0&X6           CC ZONE FROM EE TO FF FIELD  12 12847  D 00**0 00*.0 T
AU11            SBR    E02&10              STORE BAR IN SCAN INSTRUCTION 7  12859  G 12876 B
AU12    E02     SCNLS  0,0                 CALCULATE ADDRESS MOVE STOPPED ON 12 12866 D 00000 00000
AU13            SAR    E05&10              SAVE FOR DATA CHECK IF R/M END 7  12878  G 12955 A
AU14            SBR    E05&5               SAVE FOR DATA CHECK IF R/M END 7  12885  G 12950 B
AU15            SBR    E06&5               SAVE FOR DATA CHECK IF GM,WM END 7 12892  G 12968 B
AU16            SBR    E03&10              SAVE FOR PROPER R/M END CHECK 7  12899  G 12923 B
AU17            SBR    E04&10              SAVE FOR PROPER G/M,W/M END CHECK 7 12906 G 12935 B
AU18    E03     BCE    E05,0,*             BRANCH-STOPPED ON RECORD MARK-OK 12 12913 B 12945 00000 *
AU19    E04     BCE    E06,0,M             BRANCH-STOPPED ON GM/WM-OK   12  12925  B 12963 00000 M
AU20            B      SE1                 BRANCH TO ERROR ROUTINE      7  12937  J 27220
AU21            H                                          ROUTINE 93 ERROR 1 12944 .
AU22    *           AFTER OPERATION OF THE MRZWM, THE ADDRESS IN BAR
AU23    *           MINUS ONE WAS SAVED IN THE TWO BCE INSTRUCTIONS. THE
AU24    *           FAILURE OF BOTH BCE INSTRUCTIONS TO BRANCH INDICATES
AU25    *           THE MRZWM DID NOT STOP ON A RECORD MARK OR GM/WM
AU26    E05     C      0,0                 CHECK MOVES IF ENDED ON R/M  11  12945  C 00000 00000
AU27            BE     E09                 BRANCH-DATA MOVED OK TO FIRST R/M 7 12956 J 13008 S
AU28    E06     SCNLS  0,100               CALCULATE ADDR MOVES STOPPED ON-1 12 12963 D 00000 00100
AU29            SAR    E07&5               STORE FOR DATA COMPARE CHECK 7  12975  G 12987 A
AU30    E07     C      0,0&X9              COMPARE FF FIELD WITH EE FIELD 11 12982  C 00000 00.*0
AU31            BE     E09                 BRANCH-DATA MOVED OK TO G/M,W/M 7 12993 J 13008 S
AU32    E08     B      SE1                 BRANCH TO ERROR ROUTINE      7  13000  J 27220
AU33            H                                          ROUTINE 93 ERROR 1 13007 .
AU34    *           MRNM AND MRZWM INSTRUCTIONS SHOULD HAVE MOVED CC, OR
AU35    *           A PORTION OF CC, FROM THE EE FIELD TO THE FF FIELD.
AU36    *           THE TWO FIELDS SHOULD HAVE COMPARED EQUAL.
AU37    E09     BCE    E01,TAD1,1          LOOP ROUTINE 93              12  13008  B 12797 01001 1
AU38            B      SC1                 STEP ROUTINE COUNTER TO 94   7  13020  J 27380
```

```
PGLIN   LABEL    OPCOD  OPERAND                                          CT  ADDRS  INSTRUCTION
AU40     *ROUTINE 94-CHECK MRZM, MRNWM INSTRUCTIONS.
AU41     EP1     BNQ    ITR                    BRANCH INQUIRY             7  13027  J 01334 Q
AU42             MLCWA  @M@,0&X7               G/M,W/M TO EE FIELD RIGHT &1  12  13034  D 29255 00#M0 X
AU43             MLCWA  DD,0&X10                CONSTANT DD TO FF FIELD RIGHT  12  13046  D 01911 00.:0 X
AU44             MRZM   0&X5,0&X6              CONST CC ZONE FROM EE TO FF FIELD  12  13058  D 00##0 00#.0 M
AU45             SAR    EP2&5                  STORE AAR IN SCAN INSTRUCTION  7  13070  G 13101 A
AU46             MRNWM  0&X5,0&X6              CC NUMERIC FROM EE TO FF FIELD  12  13077  D 00##0 00#.0 B
AU47             SBR    EP2&10                 STORE BAR IN SCAN INSTRUCTION  7  13089  G 13106 B
AU48     EP2     SCNLS  0,0                    CALCULATE ADDRESS MOVE STOPPED ON  12  13096  D 00000 00000
AU49             SAR    EP5&10                 SAVE FOR DATA CHECK IF R/M END  7  13108  G 13185 A
AU50             SBR    EP5&5                  SAVE FOR DATA CHECK IF R/M END  7  13115  G 13180 B
AU51             SBR    EP6&5                  SAVE FOR DATA CHECK IF GM,WM END  7  13122  G 13198 B
AU52             SBR    EP3&10                 SAVE FOR PROPER R/M END CHECK  7  13129  G 13153 B
AU53             SBR    EP4&10                 SAVE FOR PROPER G/M,W/M END CHECK  7  13136  G 13165 B
AU54     EP3     BCE    EP5,0,#                BRANCH-STOPPED ON RECORD MARK-OK  12  13143  B 13175 00000 #
AU55     EP4     BCE    EP6,0,M                BRANCH-STOPPED ON G/M,W/M-OK  12  13155  B 13193 00000 M
AU56             B      SE1                    BRANCH TO ERROR ROUTINE    7  13167  J 27220
AU57             H                                                ROUTINE 94 ERROR  1  13174  .
AU58     *           AFTER OPERATION OF THE MRNWM, THE ADDRESS IN BAR
AU59     *           MINUS ONE WAS SAVED IN THE TWO BCE INSTRUCTIONS. THE
AU60     *           FAILURE OF BOTH BCE INSTRUCTIONS TO BRANCH INDICATES
AU61     *           THE MRNWM DID NOT STOP ON A RECORD MARK OR GM/WM.
AU62     EP5     C      0,0                    CHECK MOVES IF ENDED ON R/M  11  13175  C 00000 00000
AU63             BE     EP9                    BRANCH-DATA MOVED OK TO FIRST R/M  7  13186  J 13238 S
AU64     EP6     SCNLS  0,100                  CALCULATE ADDR MOVES STOPPED ON-1  12  13193  D 00000 00100
AU65             SAR    EP7&5                  STORE FOR DATA COMPARE CHECK  7  13205  G 13217 A
AU66     EP7     C      0,0&X9                 COMPARE FF FIELD WITH EE FIELD  11  13212  C 00000 00.#0
AU67             BE     EP9                    BRANCH-DATA MOVED OK TO G/M,W/M  7  13223  J 13238 S
AU68     EP8     B      SE1                    BRANCH TO ERROR ROUTINE    7  13230  J 27220
AU69             H                                                ROUTINE 94 ERROR  1  13237  .
AU70     *           MRZM AND MRNWM INSTRUCTIONS SHOULD HAVE MOVED CC, OR
AU71     *           A PORTION OF CC, FROM THE EE FIELD TO THE FF FIELD.
AU72     *           THE TWO FIELDS SHOULD HAVE COMPARED EQUAL.
AU73     EP9     BCE    EP1,TAD1,1             LOOP ROUTINE 94            12  13238  B 13027 01001 1
AU74             B      SC1                    STEP ROUTINE COUNTER TO 95  7  13250  J 27380
```

```
PGLIN   LABEL   OPCOD  OPERAND                                          CT  ADDRS  INSTRUCTION
AU76            *ROUTINE 95-CHECK MRCM, MRWM INSTRUCTIONS.
AU77    EQ1     BNQ    ITR                  BRANCH INQUIRY               7  13257  J 01334 Q
AU78            MLCWA  @M@,0&X7             G/M,W/M TO EE FIELD RIGHT &1 12  13264  D 29255 00*M0 X
AU79            MLCWA  DD,0&X10             CONSTANT DD TO FF FIELD RIGHT 12  13276  D 01911 00!!0 X
AU80            MRCM   0&X5,0&X6            CONSTANT CC FROM EE TO FF FIELD 12  13288  D 00**0 00*!0 .
AU81            SAR    EQ2&5                STORE AAR IN SCAN INSTRUCTION  7  13300  G 13331 A
AU82            MRWM   0&X5,0&X6            CLEAR CC W/M FROM FF FIELD   12  13307  D 00**0 00*!0 @
AU83            SBR    EQ2&10               STORE BAR IN SCAN INSTRUCTION 7  13319  G 13336 B
AU84    EQ2     SCNLS  0,0                  CALCULATE ADDRESS MOVE STOPPED ON 12 13326 D 00000 00000
AU85            SAR    EQ5&10               SAVE FOR DATA CHECK IF R/M END 7  13338  G 13415 A
AU86            SBR    EQ5&5                SAVE FOR DATA CHECK IF R/M END 7  13345  G 13410 B
AU87            SBR    EQ6&5                SAVE FOR DATA CHECK IF GM,WM END 7 13352  G 13428 B
AU88            SBR    EQ3&10               SAVE FOR PROPER R/M END CHECK 7  13359  G 13383 B
AU89            SBR    EQ4&10               SAVE FOR PROPER G/M,W/M END CHECK 7 13366 G 13395 B
AU90    EQ3     BCE    EQ5,0,*              BRANCH-STOPPED ON RECORD MARK-OK 12 13373 B 13405 00000 *
AU91    EQ4     BCE    EQ6,0,M              BRANCH-STOPPED ON G/M,W/M-OK 12  13385  B 13423 00000 M
AU92            B      SE1                  BRANCH TO ERROR ROUTINE      7  13397  J 27220
AU93            H                                                ROUTINE 95 ERROR 1 13404 .
AU94    *           AFTER OPERATION OF THE MRWM, THE ADDRESS IN BAR
AU95    *           MINUS ONE WAS SAVED IN THE TWO BCE INSTRUCTIONS. THE
AU96    *           FAILURE OF BOTH BCE INSTRUCTIONS TO BRANCH INDICATES
AU97    *           THE MRWM DID NOT STOP ON A RECORD MARK OR GM/WM.
AU98    EQ5     C      0,0                  CHECK MOVES IF ENDED ON R/M  11  13405  C 00000 00000
AU99            BE     EQ9                  BRANCH-DATA MOVED OK TO FIRST R/M 7 13416 J 13468 S
AV00    EQ6     SCNLS  0,100                CALCULATE ADDR MOVES STOPPED ON-1 12 13423 D 00000 00100
AV01            SAR    EQ7&5                STORE FOR DATA COMPARE CHECK  7  13435  G 13447 A
AV02    EQ7     C      0,0&X9               COMPARE FF FIELD WITH EE FIELD 11 13442 C 00000 00!*0
AV03            BE     EQ9                  BRANCH-DATA MOVED OK TO G/M,W/M 7 13453 J 13468 S
AV04    EQ8     B      SE1                  BRANCH TO ERROR ROUTINE      7  13460  J 27220
AV05            H                                                ROUTINE 95 ERROR 1 13467 .
AV06    *           MRCM AND MRWM INSTRUCTIONS SHOULD HAVE MOVED CC, OR
AV07    *           A PORTION OF CC, FROM THE EE FIELD TO THE FF FIELD.
AV08    *           THE TWO FIELDS SHOULD HAVE COMPARED EQUAL.
AV09    EQ9     BCE    EQ1,TAD1,1           LOOP ROUTINE 95              12  13468  B 13257 01001 1
AV10            B      SC1                  STEP ROUTINE COUNTER TO 96   7  13480  J 27380
```

```
PGLIN  LABEL    OPCOD  OPERAND                                          CT  ADDRS  INSTRUCTION
AV12   *ROUTINE 96-CHECK MRCWM INSTRUCTION.
AV13   ER1      BNQ    ITR                BRANCH INQUIRY                 7  13487  J 01334 Q
AV14            MLCWA  @M@,0&X7           G/M,W/M TO EE FIELD RIGHT &1  12  13494  D 29255 00‡M0 X
AV15            MLCWA  DD,0&X10           CONSTANT DD TO FF FIELD RIGHT  12  13506  D 01911 00:.0 X
AV16            MRCWM  0&X5,0&X6          CONSTANT CC FROM EE TO FF FIELD 12 13518  D 00‡‡0 00‡.0 M
AV17            SAR    ER2&5              STORE AAR IN SCAN INSTRUCTION  7  13530  G 13549 A
AV18            SBR    ER2&10             STORE BAR IN SCAN INSTRUCTION  7  13537  G 13554 B
AV19   ER2      SCNLS  0,0                CALCULATE ADDRESS MOVE STOPPED ON 12 13544  D 00000 00000
AV20            SAR    ER5&10             SAVE FOR DATA CHECK IF R/M END  7  13556  G 13633 A
AV21            SBR    ER5&5              SAVE FOR DATA CHECK IF R/M END  7  13563  G 13628 B
AV22            SBR    ER6&5              SAVE FOR DATA CHECK IF GM,WM END 7  13570  G 13646 B
AV23            SBR    ER3&10             SAVE FOR PROPER R/M END CHECK  7  13577  G 13601 B
AV24            SBR    ER4&10             SAVE FOR PROPER G/M,W/M END CHECK 7 13584  G 13613 B
AV25   ER3      BCE    ER5,0,‡            BRANCH-STOPPED ON RECORD MARK-OK 12 13591  B 13623 00000 ‡
AV26   ER4      BCE    ER6,0,M            BRANCH-STOPPED ON G/M,W/M-OK   12  13603  B 13641 00000 M
AV27            B      SE1                BRANCH TO ERROR ROUTINE        7  13615  J 27220
AV28            H                                    ROUTINE 96 ERROR   1  13622  .
AV29   *            AFTER OPERATION OF THE MRCWM INSTRUCTION, THE
AV30   *            ADDRESS IN THE B ADDRESS REG MINUS ONE WAS SAVED IN
AV31   *            THE TWO BCE INSTRUCTIONS. THE FAILURE OF BOTH BCE
AV32   *            INSTRUCTIONS TO BRANCH INDICATES THE MOVE DID NOT
AV33   *            STOP ON EITHER A RECORD MARK OR GROUP MARK,WORD MARK
AV34   ER5      C      0,0                CHECK MOVES IF ENDED ON R/M    11  13623  C 00000 00000
AV35            BE     ER9                BRANCH-DATA MOVED OK TO FIRST R/M 7 13634  J 13686 S
AV36   ER6      SCNLS  0,100              CALCULATE ADDR MOVES STOPPED ON-1 12 13641  D 00000 00100
AV37            SAR    ER7&5              STORE FOR DATA COMPARE CHECK   7  13653  G 13665 A
AV38   ER7      C      0,0&X9             COMPARE FF FIELD WITH EE FIELD 11  13660  C 00000 00.‡0
AV39            BE     ER9                BRANCH-DATA MOVED OK TO G/M,W/M 7 13671  J 13686 S
AV40   ER8      B      SE1                BRANCH TO ERROR ROUTINE        7  13678  J 27220
AV41            H                                    ROUTINE 96 ERROR   1  13685  .
AV42   *            AFTER USING AN MRCWM INSTRUCTION TO MOVE CONSTANT
AV43   *            CC, OR A PORTION OF CONSTANT CC, FROM THE EE FIELD
AV44   *            TO THE FF FIELD, THE TWO FIELDS DID NOT COMPARE.
AV45   ER9      BCE    ER1,TAD1,1         LOOP ROUTINE 96                12  13686  B 13487 01001 1
AV46            B      SC1                STEP ROUTINE COUNTER TO 97     7  13698  J 27380
```

PGLIN	LABEL	OPCOD	OPERAND		CT	ADDRS	INSTRUCTION
AV48	*ROUTINE 97-CHECK MRNG, MRZWG INSTRUCTIONS.						
AV49	ES1	BNQ	ITR	BRANCH INQUIRY	7	13705	J 01334 Q
AV50		MLCWS	@M@,0&X9	G/M,W/M TO EE FIELD RIGHT	12	13712	D 29255 00.*0 7
AV51		MLCWA	DD,0&X10	CONSTANT DD TO FF FIELD RIGHT	12	13724	D 01911 00.:0 X
AV52		MLCWS	@M@,0&X6	G/M,W/M TO ADDRESS FF	12	13736	D 29255 00*.0 7
AV53		MRNG	0&X5,0&X6	CC NUMERIC FROM EE TO FF FIELD	12	13748	D 00**0 00*.0 R
AV54		SBR	ES2&5	STORE BAR IN SCAN INSTRUCTION	7	13760	G 13784 B
AV55		MRZWG	0&X5,0&X6	CC ZONE FROM EE TO FF FIELD	12	13767	D 00**0 00*.0 ;
AV56	ES2	SCNLS	0,100	CALCULATE ADDR MOVE STOPPED ON	12	13779	D 00000 00100
AV57		SAR	ES3&10	STORE FOR CLEARING WORD MARK	7	13791	G 13815 A
AV58		SAR	ES4&5	STORE FOR COMPARE CHECK	7	13798	G 13821 A
AV59	ES3	CW	0&X9,0	CLEAR W/MS OVER G/MS TO ALLOW COM	11	13805	¤ 00.*0 00000
AV60	ES4	C	0,0&X9	COMPARE FF AND EE FIELDS	11	13816	C 00000 00.*0
AV61		BE	ES5	BRANCH-MOVES OK	7	13827	J 13842 S
AV62		B	SE1	BRANCH TO ERROR ROUTINE	7	13834	J 27220
AV63		H		ROUTINE 97 ERROR	1	13841	.
AV64	*		AFTER USING MRNG AND MRZWG INSTRUCTIONS TO MOVE				
AV65	*		CONSTANT CC FROM THE EE FIELD TO THE FF FIELD, THE				
AV66	*		TWO FIELDS DID NOT COMPARE.				
AV67	ES5	BCE	ES1,TAD1,1	LOOP ROUTINE 97	12	13842	B 13705 01001 1
AV68		B	SC1	STEP ROUTINE COUNTER TO 98	7	13854	J 27380

```
PGLIN   LABEL   OPCOD  OPERAND                                          CT  ADDRS  INSTRUCTION
AV70            *ROUTINE 98-CHECK MRZG, MRNWG INSTRUCTIONS.
AV71    ET1     BNQ    ITR                 BRANCH INQUIRY               7  13861  J 01334 Q
AV72            MLCWS  @M@,0&X9            G/M,W/M TO EE FIELD RIGHT   12  13868  D 29255 00.#0 7
AV73            MLCWA  DD,0&X10            CONSTANT DD TO FF FIELD RIGHT 12 13880  D 01911 00..0 X
AV74            MLCWS  @M@,0&X6            G/M,W/M TO ADDRESS FF       12  13892  D 29255 00#.0 7
AV75            MRZG   0&X5,0&X6           CC ZONE FROM EE TO FF FIELD 12  13904  D 00##0 00#.0 .
AV76            SBR    ET2&5               STORE BAR IN SCAN INSTRUCTION 7 13916  G 13940 B
AV77            MRNWG  0&X5,0&X6           CC NUMERIC FROM EE TO FF FIELD 12 13923 D 00##0 00#.0 B
AV78    ET2     SCNLS  0,100               CALCULATE ADDR MOVE STOPPED ON 12 13935 D 00000 00100
AV79            SAR    ET3&10              STORE FOR CLEARING WORD MARK 7  13947  G 13971 A
AV80            SAR    ET4&5               STORE FOR COMPARE CHECK      7  13954  G 13977 A
AV81    ET3     CW     0&X9,0              CLEAR W/MS OVER G/MS TO ALLOW COM 11 13961 ¤ 00.#0 00000
AV82    ET4     C      0,0&X9              COMPARE FF AND EE FIELDS    11  13972  C 00000 00.#0
AV83            BE     ET5                 BRANCH-MOVES OK              7  13983  J 13998 S
AV84            B      SE1                 BRANCH TO ERROR ROUTINES     7  13990  J 27220
AV85            H                                        ROUTINE 98 ERROR 1 13997 .
AV86    *           AFTER USING MRZG AND MRNWG INSTRUCTIONS TO MOVE
AV87    *           CONSTANT CC FROM THE EE FIELD TO THE FF FIELD, THE
AV88    *           TWO FIELDS DID NOT COMPARE.
AV89    ET5     BCE    ET1,TAD1,1          LOOP ROUTINE 98             12  13998  B 13861 01001 1
AV90            B      SC1                 STEP ROUTINE COUNTER TO 99   7  14010  J 27380
```

```
PGLIN   LABEL   OPCOD  OPERAND                                          CT  ADDRS  INSTRUCTION
AV92            *ROUTINE 99-CHECK MRCG, MRWG INSTRUCTIONS.
AV93    EU1     BNQ    ITR                  BRANCH INQUIRY               7  14017  J 01334 Q
AV94            MLCWS  @M@,0&X9             G/M,W/M TO EE FIELD RIGHT   12  14024  D 29255 00.*0 7
AV95            MLCWA  DD,0&X10             CONSTANT DD TO FF FIELD RIGHT 12 14036  D 01911 00..0 X
AV96            MLCWS  @M@,0&X6             G/M,W/M TO ADDRESS FF       12  14048  D 29255 00*.0 7
AV97            MRCG   0&X5,0&X6            CONSTANT CC FROM EE TO FF FIELD 12 14060 D 00**0 00*.0 $
AV98            SBR    EU2&5                STORE BAR IN SCAN INSTRUCTION  7  14072  G 14096 B
AV99            MRWG   0&X5,0&X6            CC W/M FROM EE TO FF FIELD   12  14079  D 00**0 00*.0 *
AW00    EU2     SCNLS  0,100                CALCULATE ADDR MOVE STOPPED ON 12  14091  D 00000 00100
AW01            SAR    EU3&10               STORE FOR CLEARING WORD MARK   7  14103  G 14127 A
AW02            SAR    EU4&5                STORE FOR COMPARE CHECK        7  14110  G 14133 A
AW03    EU3     CW     0&X9,0               CLEAR W/MS OVER G/MS TO ALLOW COM 11 14117 ¤ 00.*0 00000
AW04    EU4     C      0,0&X9               COMPARE EE AND FF FIELDS      11  14128  C 00000 00.*0
AW05            BE     EU5                  BRANCH-MOVES OK               7  14139  J 14154 S
AW06            B      SE1                  BRANCH TO ERROR ROUTINE       7  14146  J 27220
AW07            H                                          ROUTINE 99 ERROR  1 14153  *
AW08    *           AFTER USING MRCG AND MRWG INSTRUCTIONS TO MOVE
AW09    *           CONSTANT CC FROM THE EE FIELD TO THE FF FIELD, THE
AW10    *           TWO FIELDS DID NOT COMPARE.
AW11    EU5     BCE    EU1,TAD1,1           LOOP ROUTINE 99              12  14154  B 14017 01001 1
AW12            B      SC1                  STEP ROUTINE COUNTER TO100    7  14166  J 27380
```

```
PGLIN   LABEL     OPCOD  OPERAND                                  CT  ADDRS  INSTRUCTION
AW14    *ROUTINE100-CHECK MRCWG INSTRUCTION.
AW15    EV1       BNQ    ITR                BRANCH INQUIRY        7  14173  J 01334 Q
AW16              MLCWS  @M@,0&X9           G/M,W/M TO EE FIELD RIGHT  12  14180  D 29255 00.'#0 7
AW17              MLCWA  DD,0&X10           CONSTANT DD TO FF FIELD RIGHT  12  14192  D 01911 00.''0 X
AW18              MLCWS  @M@,0&X6           G/M,W/M TO ADDRESS FF  12  14204  D 29255 00#.'0 7
AW19              MRCWG  0&X5,0&X6          CONSTANT CC FROM EE TO FF FIELD  12  14216  D 00##0 00#.'0 L
AW20              SBR    EV2&5              STORE BAR IN SCAN INSTRUCTION  7  14228  G 14240 B
AW21    EV2       SCNLS  0,100              CALCULATE ADDRESS MOVE STOPPED ON  12  14235  D 00000 00100
AW22              SAR    EV3&10             STORE FOR CLEARING WORD MARK  7  14247  G 14271 A
AW23              SAR    EV4&5              STORE FOR COMPARE CHECK  7  14254  G 14277 A
AW24    EV3       CW     0&X9,0             CLEAR W/MS OVER G/MS TO ALLOW COM  11  14261  ¤ 00.'#0 00000
AW25    EV4       C      0,0&X9             COMPARE FF AND EE FIELDS  11  14272  C 00000 00.'#0
AW26              BE     EV5                BRANCH-MOVES OK       7  14283  J 14298 S
AW27              B      SE1                BRANCH TO ERROR ROUTINE  7  14290  J 27220
AW28              H                                    ROUTINE100 ERROR  1  14297  .
AW29    *              AFTER USING AN MRCWG INSTRUCTION TO MOVE CONSTANT CC
AW30    *              FROM THE EE FIELD TO THE FF FIELD, THE TWO FIELDS
AW31    *              DID NOT COMPARE.
AW32    EV5       BCE    EV1,TAD1,1         LOOP ROUTINE100       12  14298  B 14173 01001 1
AW33              B      SC1                STEP ROUTINE COUNTER TO101  7  14310  J 27380
```

```
PGLIN   LABEL     OPCOD  OPERAND                                          CT  ADDRS  INSTRUCTION
AW35    *ROUTINE101-CHECK SERIAL MOVE LEFT.
AW36              MLCWA  @00000@,C09                                      12  14317  D 29196 01487 X
AW37              MLCWA  @00000@,C08                                      12  14329  D 29196 01482 X
AW38    EV6       BNQ    ITR              BRANCH INQUIRY                  7  14341  J 01334 Q
AW39              MLCWA  CC,0&X5          CC TO ADDRESS EE                12  14348  D 01900 00##0 X
AW40              MLWA   CC,1&X5          CC WORD MARK TO EE FIELD &1     12  14360  D 01900 00##1 U
AW41              SBR    C08              SAVE BAR AS ADDR EE&1 -CC LENGTH  7  14372  G 01482 B
AW42              SCNLA  1&X5,2&X5        FIND ADDR EE &2 -CC LENGTH      12  14379  D 00##1 00##2 B S
AW43              SBR    C09              STORE IN C09                    7  14391  G 01487 B
AW44              CW     2&X5             CW IN EE &2                     6  14398  ¤ 00##2
AW45              MLWB   2&X5,1&X5        *SERIALLY MOVE CC WM TO EE FIELD 12  14404  D 00##2 00##1 M
AW46              SAR    X1               AAR SHOULD EQUAL EE&2 -CC LENGTH  7  14416  G 00029 A
AW47              SBR    X2               BAR SHOULD EQUAL EE&1 -CC LENGTH  7  14423  G 00034 B
AW48              C      X1,C09           CMP AAR WITH EE&2 -CC LENGTH    11  14430  C 00029 01487
AW49              BE     EV7                                               7  14441  J 14456 S
AW50              B      SE1              BRANCH TO ERROR ROUTINE          7  14448  J 27220
AW51              H                                        ROUTINE101 ERROR  1  14455  .
AW52    *              AFTER SERIAL MLWB, AAR DID NOT CONTAIN ADDRESS EE &2
AW53    *              MINUS THE LENGTH OF CC. X1 CONTAINS AAR CONTENTS.
AW54    EV7       C      X2,C08           CMP BAR WITH EE&1 -CC LENGTH    11  14456  C 00034 01482
AW55              BE     EV8                                               7  14467  J 14508 S
AW56              B      SE1              BRANCH TO ERROR ROUTINE          7  14474  J 27220
AW57              H                                        ROUTINE101 ERROR  1  14481  .
AW58    *              AFTER SERIAL MLWB, BAR DID NOT CONTAIN ADDRESS EE &1
AW59    *              MINUS THE LENGTH OF CC. X2 CONTAINS BAR CONTENTS.
AW60    EV9       C      CC,0&X5          CHECK CC AT EE AFTER MLWB       11  14482  C 01900 00##0
AW61              BE     EV8                                               7  14493  J 14508 S
AW62              B      SE1              BRANCH TO ERROR ROUTINE          7  14500  J 27220
AW63              H                                        ROUTINE101 ERROR  1  14507  .
AW64    *              AFTER SERIAL MLWB , CONSTANT CC DID NOT COMPARE
AW65    *              WITH DATA AT ADDRESS EE.
AW66    EV8       BCE    EV6,TAD1,1       LOOP ROUTINE1011                12  14508  B 14341 01001 1
AW67              B      SC1              STEP ROUTINE COUNTER TO102       7  14520  J 27380
```

```
PGLIN   LABEL     OPCOD  OPERAND                                  CT  ADDRS  INSTRUCTION
AW69    *ROUTINE102-CHECK SERIAL MOVE RIGHT.
AW70    EW6       BNQ    ITR                                      7  14527  J 01334 Q
AW71              CW     2&X5,3&X5          FIND ADDRESSES EE&1 & EE&2   11  14534  ¤ 00##2 00##3
AW72              SAR    C08                SAVE ADDRESS EE &1 IN C08    7  14545  G 01482 A
AW73              SBR    C09                SAVE ADDRESS EE &2 IN C09    7  14552  G 01487 B
AW74              SCNLA  DD,2&X5            FIND ADDR EE &2 -DD LENGTH  12  14559  D 01911 00##2 S
                                                                                                  B
AW75              SBR    EW8&10             SAVE FOR USE AS MRCW B FIELD ADDR  7  14571  G 14657 B
AW76              SCNLA  DD,1&X5            FIND ADDRESS EE&1 MINUS DD LENGHT  12  14578  D 01911 00##1 S
                                                                                                  B
AW77              SBR    EW7&5              SAVE TO CLEAR DD W/M         7  14590  G 14628 B
AW78              SBR    EW8&5              SAVE FOR USE AS WRCW A FIELD ADDR  7  14597  G 14652 B
AW79              SBR    EW12&5             SAVE TO MOVE HI ORDER POSITION  7  14604  G 14640 B
AW80              MLCWA  DD,0&X5            STORE DD IN ADDRESS EE      12  14611  D 01911 00##0 X
AW81    EW7       CW     0                  CW OVER CONSTANT DD          6  14623  ¤ 00000
AW82              SW     1&X5               SW AT EE &1 TO STOP SERIAL MOVE  6  14629  , 00##1
AW83    EW12      MLCS   0,EW10&11          DD HI ORDER TO BCE ¤ MOD FOR CHK  12  14635  D 00000 14736 3
AW84    EW8       MRCW   0,0               *SERIAL MOVE RIGHT           12  14647  D 00000 00000 I
                                                                                                  M
AW85              SAR    X1                 AAR SHOULD EQUAL EE&1        7  14659  G 00029 A
AW86              SBR    X2                 BAR SHOULD EQUAL EE&2        7  14666  G 00034 B
AW87              C      X1,C08             CHECK AAR RESULT            11  14673  C 00029 01482
AW88              BE     EW9                                             7  14684  J 14699 S
AW89              B      SE1                BRANCH TO ERROR ROUTINE      7  14691  J 27220
AW90              H                                    ROUTINE102 ERROR  1  14698  .
AW91    *              CONTENTS OF AAR AFTER MRCW DID NOT EQUAL ADDR EE &1.
AW92    *              AAR CONTENTS ARE STORED IN INDEX REG ONE.00025-00029
AW93    EW9       C      X2,C09             CHECK BAR RESULT            11  14699  C 00034 01487
AW94              BE     EW10                                            7  14710  J 14725 S
AW95              B      SE1                BRANCH TO ERROR ROUTINE      7  14717  J 27220
AW96              H                                    ROUTINE102 ERROR  1  14724  .
AW97    *              CONTENTS OF BAR AFTER MRCW DID NOT EQUAL ADDR EE &2.
AW98    *              BAR CONTENTS ARE STORED IN INDEX REG TWO.00030-00034
AW99    EW10      BCE    EW11,1&X5,         BRANCH IF CHAR MOVED SERIALLY OK  12  14725  B 14745 00##1
AX00              B      SE1                BRANCH TO ERROR ROUTINE      7  14737  J 27220
AX01              H                                    ROUTINE102 ERROR  1  14744  .
AX02    *              THE SERIAL MRCW SHOULD HAVE MOVED THE HIGH ORDER
AX03    *              CHARACTER OF CONSTANT DD TO ADDRESS EE PLUS ONE.
AX04    *              THIS SHOULD HAVE CAUSED THE BCE TO BRANCH.
AX05    EW11      BCE    EW6,TAD1,1         LOOP ROUTINE102             12  14745  B 14527 01001 1
```

```
PGLIN   LABEL     OPCOD  OPERAND                                          CT  ADDRS  INSTRUCTION
AX06              B      SC1                STEP ROUTINE COUNTER TO103    7  14757  J 27380
AX07    *ROUTINE103-CHECK BCE INSTRUCTION.
AX08    EW1       BNQ    ITR                BRANCH INQUIRY                7  14764  J 01334 Q
AX09              MLCS   CC,0&X5            RANDOM CHARACTER TO ADDRESS EE 12 14771  D 01900 00**0 3
AX10              SW     0&X5               SET W/M FOR COMPARE CHECK     6  14783  , 00**0
AX11              MLCS   DD,EW2&11          OBTAIN RANDOM D MODIFIER      12 14789  D 01911 14812 3
AX12    EW2       BCE    EW3,0&X5,          CHECK BCE                     12 14801  B 14846 00**0
AX13              C      DD,0&X5            SHOULD BCE HAVE BRANCHED      11 14813  C 01911 00**0
AX14              BU     EW4                BRANCH-NO-INSTRUCTION OK      7  14824  J 14872 /
AX15              B      SE1                BRANCH TO ERROR ROUTINE       7  14831  J 27220
AX16              H                                    ROUTINE103 ERROR    1  14838  .
AX17    *              THE BCE INSTRUCTION DID NOT BRANCH ALTHOUGH THE
AX18    *              COMPARE INSTRUCTION INDICATED THE CHARACTERS WERE
AX19    *              EQUAL.
AX20              B      EW4                ROUTINE COMPLETE WITH ERROR   7  14839  J 14872
AX21    EW3       C      DD,0&X5            WAS IT OK FOR THE BCE TO BRANCH 11 14846  C 01911 00**0
AX22              BE     EW4                BRANCH-YES-INSTRUCTION OK     7  14857  J 14872 S
AX23              B      SE1                BRANCH TO ERROR ROUTINE       7  14864  J 27220
AX24              H                                    ROUTINE103 ERROR    1  14871  .
AX25    *              THE BCE INSTRUCTION BRANCHED ALTHOUGH THE COMPARE
AX26    *              INSTRUCTION INDICATED THE CHARACTERS WERE NOT EQUAL.
AX27    EW4       BCE    EW1,TAD1,1         LOOP ROUTINE103               12 14872  B 14764 01001 1
AX28              H      SC1                STEP ROUTINE COUNTER TO104    7  14884  J 27380
AX29    *ROUTINE104-CHECK BBE INSTRUCTION.
AX30    EX1       BNQ    ITR                BRANCH INQUIRY                7  14891  J 01334 Q
AX31              MLCS   CC,0&X5            RANDOM CHARACTER TO ADDRESS EE 12 14898  D 01900 00**0 3
AX32              BBE    EX3,0&X5,M         CHECK BBE                     12 14910  W 14949 00**0 M
                         G                                                                        G
AX33              BCE    EX4,0&X5,          BRANCH-BBE INSTRUCTION OK     12 14922  B 14961 00**0
AX34    EX2       B      SE1                BRANCH TO ERROR ROUTINE       7  14934  J 27220
AX35              H                                    ROUTINE104 ERROR    1  14941  .
AX36    *              THE BBE INSTRUCTION FAILED TO BRANCH WHEN IT SHOULD,
AX37    *              OR BRANCHED WHEN IT SHOULD NOT HAVE.
AX38              B      EX4                ROUTINE COMPLETE WITH ERROR   7  14942  J 14961
AX39    EX3       BCE    EX2,0&X5,          BRANCH-BBE INSTRUCTION FAILED 12 14949  B 14934 00**0
AX40    EX4       BCE    EX1,TAD1,1         LOOP ROUTINE104               12 14961  B 14891 01001 1
AX41              B      SC1                STEP ROUTINE COUNTER TO105    7  14973  J 27380
```

```
PGLIN    LABEL    OPCOD  OPERAND                                                  CT  ADDRS  INSTRUCTION
AX43     *ROUTINE105-CHECK BRANCH ON WORD MARK OR ZONE EQUAL INSTRUCTION.
AX44     EY1      BNQ    ITR                 BRANCH INQUIRY                        7  14980  J 01334 Q
AX45              MLCWS  DD,0&X5              RANDOM CHARACTER TO ADDRESS EE       12  14987  D 01911 00##0 7
AX46              MLCS   CC,EY5&11           RANDOM CHARACTER TO D MODIFIER       12  14999  D 01900 15245 3
                                                                                                 S
AX47              SCNLA  0&X5,101            DOES RANDOM CHARACTER HAVE W/M       12  15011  D 00##0 00101 B
AX48              SBR    C08                                                      7  15023  G 01482 B
AX49              MLCS   @1@,C09             SET W/M INDICATOR                    12  15030  D 29167 01487 3
AX50              C      C08,@001000@                                            11  15042  C 01482 29250
AX51              BE     EY2                 BRANCH-YES THERE IS A WORD MARK       7  15053  J 15072 S
AX52              MLCS   @ @,C09             CLEAR W/M INDICATOR                  12  15060  D 29208 01487 3
AX53     EY2      MLZS   DD,EY0              ARE THE 2 RANDOM ZONES EQUAL         12  15072  D 01911 15274 2
AX54              MLZS   CC,EY8                                                   12  15084  D 01900 15275 2
AX55              MLCS   @1@,C09-1           SET ZONE EQUAL INDICATOR             12  15096  D 29167 01486 3
AX56              C      EY0,EY8                                                 11  15108  C 15274 15275
AX57              BE     EY3                 BRANCH-YES THE ZONES ARE EQUAL        7  15119  J 15138 S
AX58              MLCS   @ @,C09-1           CLEAR ZONE EQUAL INDICATOR           12  15126  D 29208 01486 3
AX59     EY3      BCE    EY4,C09,            SHOULD INSTRUCTION BRANCH ON W/M     12  15138  B 15174 01487
AX60              MLCS   @1@,EY9             SET YES INDICATOR                    12  15150  D 29167 15273 3
AX61              BBE    EY5,CC,1            BRANCH-YES SHOULD BRANCH ON W/M      12  15162  W 15234 01900 1
AX62     EY4      MLCS   @ @,EY9             CLEAR YES INDICATOR                  12  15174  D 29208 15273 3
AX63              BCE    EY5,C09-1,          SHOULD IT BRANCH ON ZONE EQUAL       12  15186  B 15234 01486
AX64              MLCS   @1@,EY9             SET YES INDICATOR                    12  15198  D 29167 15273 3
AX65              BBE    EY5,CC,2            BRANCH-YES SHOULD BRANCH ZONE EQL    12  15210  W 15234 01900 2
AX66              MLCS   @ @,EY9             CLEAR YES INDICATOR                  12  15222  D 29208 15273 3
AX67     EY5      BWZ    EY6,0&X5,                                                12  15234  V 15276 00##0 3
AX68              BCE    EY7,EY9,            BRANCH-INSTRUCTION OK                12  15246  B 15288 15273
AX69     EYY1     B      SE1                 BRANCH TO ERROR ROUTINE               7  15258  J 27220
AX70              H                                          ROUTINE105 ERROR     1  15265  .
AX71     *              THE RIGHTMOST CHARACTER OF CONSTANT CC WAS USED FOR
AX72     *              THE D MODIFIER OF THE INSTRUCTION. THE RIGHTMOST
AX73     *              CHARACTER OF CONSTANT DD WAS USED AS THE CHARACTER
AX74     *              BEING CHECKED. IF EY9 IS A 1 THE INSTRUCTION FAILED
AX75     *              TO BRANCH WHEN IT SHOULD. IF EY9 IS BLANK, THE
AX76     *              INSTRUCTION BRANCHED WHEN IT SHOULD NOT HAVE.
AX77              B      EY7                 ROUTINE ENDED WITH ERROR              7  15266  J 15288
```

```
PGLIN  LABEL  OPCOD  OPERAND                                  CT  ADDRS  INSTRUCTION
AX79   EY9    DCW    @ @              YES/NO INDICATOR         1  15273
AX80   EY0    DCW    @ @              ZONE STORAGE FOR COMPARISON  1  15274
AX81   EY8    DCW    @ @                                       1  15275
AX82   EY6    BCE    EYY1,EY9,        BRANCH-ERROR-INSTRUCTION BRANCHED  12  15276  B 15258 15273
AX83   EY7    BCE    EY1,TAD1,1       LOOP ROUTINE105          12  15288  B 14980 01001 1
AX84          B      SC1              STEP ROUTINE COUNTER TO106  7  15300  J 27380
AX85   *ROUTINE106-RECONSTRUCT CONSTANT DD AS THE MCS INSTRUCTION IN THE
AX86   *        NEXT ROUTINE SHOULD DO.
AX87          NOP                                             1  15307  N
AX88   ERPA   BBE    *&8,SYS1&5,1     GO MODIFY FOR EUROPEAN EDIT  12  15308  W 15327 01261 1
AX89          B      EZ1              GO-NORMAL EDIT OR ALREADY MODIFIE  7  15320  J 15407
AX90          CW     ERPA             CLEAR ONE TIME ONLY SWITCH  6  15327  ¤ 15308
AX91          MLCWA  ERPW,CR5&5                               12  15333  D 28733 01770 X
AX92          MLCWA                                           1  15345  D
AX93          MLCS   ERPW-4,ERPB&11                          12  15346  D 28729 23048 3
AX94          CW     ERPW-5                                   6  15358  ¤ 28728
AX95          SAR    ERPC&5                                   7  15364  G 23207 A
AX96          MLCWA  ERPX,@,0 .-@                             12  15371  D 28738 29262 X
AX97          MLCWA  ERPY,@.0 @                               12  15383  D 28741 29265 X
AX98          MLCS   @,@,GG22&11                              12  15395  D 29266 24267 3
AX99   EZ1    BNQ    ITR              BRANCH INQUIRY           7  15407  J 01334 Q
AY00          MLCWA  DD,EZ9                                   12  15414  D 01911 15673 X
AY01          SBR    EZ3&10           SBR FOR FIRST ADDRESS    7  15426  G 15467 B
AY02          MLZS   @ @,EZ9          CLEAR UNITS ZONE         12  15433  D 29208 15673 2
AY03   EZ2    MLCS   @1@,C08          SET SUPPRESS INDICATOR   12  15445  D 29167 01482 3
AY04   EZ3    SCNR   @1@,0            SCAN TO NEXT CHARACTER   12  15457  D 29167 00000 8
AY05          SBR    EZ3&10           SBR FOR NEXT ADDRESS     7  15469  G 15467 B
AY06          SBR    EZ4&5            SBR TO CHECK FOR SIG DIG,0-.BLANK  7  15476  G 15520 B
AY07          SBR    EZ6&5            SBR TO CHECK FOR . OR -  7  15483  G 15589 B
AY08          SBR    EZ8&10           SBR FOR BLANKING CHARACTER  7  15490  G 15636 B
AY09          C      EZ3&10,&EZ12     ARE ALL CHARACTERS CHECKED  11  15497  C 15467 29271
AY10          BE     EZ12             BRANCH-YES               7  15508  J 15674 S
AY11   EZ4    MLCS   0,EZ5&11         SET BCE D MODIFIER       12  15515  D 00000 15538 3
AY12   EZ5    BCE    EZ11,CR6,0       BRANCH-CHAR IS SIG DIGIT 1-9  12  15527  B 15645 01779 0
AY13          BCE                     DITTO                    1  15539  B
AY14          BCE                     DITTO                    1  15540  B
AY15          BCE                     DITTO                    1  15541  B
```

```
PGLIN     LABEL      OPCOD  OPERAND                                                CT  ADDRS  INSTRUCTION
AY16                 BCE                    DITTO                                   1  15542  B
AY17                 BCE                    DITTO                                   1  15543  B
AY18                 BCE                    DITTO                                   1  15544  B
AY19                 BCE                    DITTO                                   1  15545  B
AY20                 BCE                    DITTO                                   1  15546  B
AY21                 BCE    EZ6             BRANCH-CHAR IS ,0-. OR BLANK            6  15547  B 15584
AY22                 BCE    EZ6             DITTO                                   6  15553  B 15584
AY23                 BCE    EZ6             DITTO                                   6  15559  B 15584
AY24                 BCE    EZ6             DITTO                                   6  15565  B 15584
AY25                 BCE    EZ6             DITTO                                   6  15571  B 15584
AY26                 B      EZ2             START SUPPRESSING                       7  15577  J 15445
AY27      EZ6        MLCS   0,EZ7&11        SET BCE D MODIFIER                     12  15584  D 00000 15607 3
AY28      EZ7        BCE    EZ3,CR5,0       BRANCH-CHAR IS . OR -                  12  15596  B 15457 01765 0
AY29                 BCE    EZ3             DITTO                                   6  15608  B 15457
AY30                 BCE    EZ3,C08,        BRANCH-SUPPRESS INDICATOR OFF          12  15614  B 15457 01482
AY31      EZ8        MLCS   @ @,0           BLANK CHARACTER                        12  15626  D 29208 00000 3
AY32                 B      EZ3             TO CHECK NEXT CHARACTER                 7  15638  J 15457
AY33      EZ11       MLCS   @ @,C08         TURN OFF SUPPRESS INDICATOR            12  15645  D 29208 01482 3
AY34                 B      EZ3             TO CHECK NEXT CHARACTER                 7  15657  J 15457
AY35      EZ9        DCW    @         @     CONSTRUCTED CONSTANT STORAGE           10  15673
AY36      EZ12       BCE    EZ1,TAD1,1      LOOP ROUTINE106                        12  15674  B 15407 01001 1
AY37                 B      SC1             STEP ROUTINE COUNTER TO107              7  15686  J 27380
AY38      *ROUTINE107-CHECK MCS INSTRUCTION.
AY39      FA1        BNQ    ITR             BRANCH INQUIRY                          7  15693  J 01334 Q
AY40                 MCS    DD,0&X6         MOVE&SUPPRESS DD TO ADDRESS FF         11  15700  Z 01911 00#.0
AY41                 C      0&X6,EZ9        CHK AGAINST LAST ROUTINE RESULT        11  15711  C 00#.0 15673
AY42                 BE     FA2             BRANCH-DATA OK                          7  15722  J 15737 S
AY43                 B      SE1             BRANCH TO ERROR ROUTINE                 7  15729  J 27220
AY44                 H                                        ROUTINE107 ERROR      1  15736  .
AY45      *              THE RESULT OF THE MCS INSTRUCTION DID NOT COMPARE
AY46      *              WITH THE RESULT CALCULATED BY THE LAST ROUTINE.
AY47      FA2        C      EZ9,0&X6        CHECK FOR LACK OF WORD MARK            11  15737  C 15673 00#.0
AY48                 BH     FA3             BRANCH-OK-WORD MARK NOT THERE           7  15748  J 15763 U
AY49                 B      SE1             BRANCH TO ERROR ROUTINE                 7  15755  J 27220
AY50                 H                                        ROUTINE107 ERROR      1  15762  .
AY51      *              THE FAILURE OF THE COMPARE TO CAUSE A BRANCH HIGH
AY52      *              INDICATES THE MCS RESULT IN THE FF FIELD HAD A WORD
```

```
PGLIN   LABEL     OPCOD  OPERAND                                          CT  ADDRS  INSTRUCTION
AY53    *                MARK. IT SHOULD NOT.
AY54    FA3       BCE    FA1,TAD1,1          LOOP ROUTINE107              12  15763  B 15693 01001 1
AY55              B      SC1                 STEP ROUTINE COUNTER TO108    7  15775  J 27380
AY56    *ROUTINE108-CHECK SW AND CW INSTRUCTIONS.
AY57    FB1       BNQ    ITR                 BRANCH INQUIRY                7  15782  J 01334 Q
AY58              MLCWA  @     @,X1                                       12  15789  D 29165 00029 X
AY59              MLWA   CN8,0&X5            CLEAR ANY W/MS AT ADDR EE    12  15801  D 01418 00**0 U
AY60              MLWA   CN8,0&X6            CLEAR ANY W/MS AT ADDR FF    12  15813  D 01418 00*.0 U
AY61              SW     0&X5                SW AT EE                      6  15825  , 00**0
AY62              SW                         SW AT EE-1                    1  15831  ,
AY63              SW     0&X6                SW AT FF                      6  15832  , 00*.0
AY64              SW     0&X6-1,0&X5-2       SW AT FF-1 AND EE-2          11  15838  , 99ZR9 99ZZ8
AY65              SW                         SET W/M AT FF-2 AND EE-3      1  15849  ,
AY66              BW     *&8,0&X5            IS THERE A W/M AT ADDR EE     12  15850  V 15869 00**0 1
AY67              B      FB3                 NO                            7  15862  J 15983
AY68              BW     *&8,0&X5-1          IS THERE A W/M AT ADDR EE-1   12  15869  V 15888 99ZZ9 1
AY69              B      FB3                 NO                            7  15881  J 15983
AY70              BW     *&8,0&X5-2          IS THERE A W/M AT ADDR EE-2   12  15888  V 15907 99ZZ8 1
AY71              B      FB3                 NO                            7  15900  J 15983
AY72              BW     *&8,0&X5-3          IS THERE A W/M AT ADDR EE-3   12  15907  V 15926 99ZZ7 1
AY73              B      FB3                 NO                            7  15919  J 15983
AY74              BW     *&8,0&X6            IS THERE A W/M AT ADDR FF     12  15926  V 15945 00*.0 1
AY75              B      FB3                 NO                            7  15938  J 15983
AY76              BW     *&8,0&X6-1          IS THERE A W/M AT FF-1        12  15945  V 15964 99ZR9 1
AY77              B      FB3                 NO                            7  15957  J 15983
AY78              BW     FB4,0&X6-2          IS THERE A W/M AT ADDR FF-2   12  15964  V 15998 99ZR8 1
AY79              B      *&1                 NO                            7  15976  J 15983
AY80    FB3       SBR    X1                  SAVE ERROR BRANCH ADDRESS IN X1  7  15983  G 00029 B
AY81              B      SE1                 BRANCH TO ERROR ROUTINE       7  15990  J 27220
AY82              H                                        ROUTINE108 ERROR  1  15997  .
AY83    *              AT LEAST ONE OF THE SW INSTRUCTIONS FAILED. INDEX
AY84    *              REG. 1 CONTAINS ERROR BRANCH ADDRESS.
```

```
PGLIN   LABEL   OPCOD  OPERAND                                  CT  ADDRS  INSTRUCTION
AY86    FB4     CW     0&X5                 CW AT EE             6  15998  ¤ 00**0
AY87            CW                          CW AT EE-1           1  16004  ¤
AY88            CW     0&X6                 CW AT FF             6  16005  ¤ 00*.0
AY89            CW     0&X6-1,0&X5-2        CW AT FF-1 AND EE-2 11  16011  ¤ 99ZR9 99ZZ8
AY90            CW                          CW AT FF-2 AND EE-3  1  16022  ¤
AY91            BW     FB5,0&X5             CHECK EE            12  16023  V 16114 00**0 1
AY92            BW     FB5,0&X5-1           CHECK EE-1          12  16035  V 16114 99ZZ9 1
AY93            BW     FB5,0&X5-2           CHECK EE-2          12  16047  V 16114 99ZZ8 1
AY94            BW     FB5,0&X5-3           CHECK EE-3          12  16059  V 16114 99ZZ7 1
AY95            BW     FB5,0&X6             CHECK FF            12  16071  V 16114 00*.0 1
AY96            BW     FB5,0&X6-1           CHECK FF-1          12  16083  V 16114 99ZR9 1
AY97            BW     FB5,0&X6-2           CHECK FF-2          12  16095  V 16114 99ZR8 1
AY98            B      FB6                  ALL W/MS CLEARED OK  7  16107  J 16129
AY99    FB5     SBR    X1                   SAVE ERROR BRANCH ADDRESS IN X1  7  16114  G 00029 B
AZ00            B      SE1                  BRANCH TO ERROR ROUTINE  7  16121  J 27220
AZ01            H                                   ROUTINE108 ERROR  1  16128  .
AZ02    *           AT LEAST ONE OF THE CW INSTRUCTIONS FAILED. INDEX
AZ03    *           REG. 1 CONTAINS ERROR BRANCH ADDRESS.
AZ04    FB6     BCE    FB1,TAD1,1           LOOP ROUTINE108     12  16129  B 15782 01001 1
AZ05            B      SC1                  STEP ROUTINE COUNTER TO109  7  16141  J 27380
AZ06    *ROUTINE109-CHECK NOP INSTRUCTION. THE ONLY ERROR INDICATIONS FOR
AZ07    *           THIS ROUTINE WILL BE PRODUCED BY CPU ALARM CIRCUITS.
AZ08    FC1     BNQ    ITR                  BRANCH INQUIRY       7  16148  J 01334 Q
AZ09            NOP                                              1  16155  N
AZ10            DC     @ &-/STUVWXYZ0S8@                        14  16169
AZ11            NOP                                              1  16170  N
AZ12            DC     @#@.*GTG TMM*.123456789@                 17  16187
AZ13            BCE    FC1,TAD1,1           LOOP ROUTINE109     12  16188  B 16148 01001 1
AZ14            B      SC1                  STEP ROUTINE COUNTER TO110  7  16200  J 27380
```

PGLIN	LABEL	OPCOD	OPERAND		CT	ADDRS	INSTRUCTION
AZ16	*ROUTINE110-CHECK INDEX REGISTER SELECTION.						
AZ17	FD1	BNQ	ITR	BRANCH INQUIRY	7	16207	J 01334 Q
AZ18		MLCWS	@M@,X15&1		12	16214	D 29255 00100 7
AZ19		MRCWG	X1-4,C21	SAVE ALL INDEX REG CONTENTS	12	16226	D 00025 28550 DLDL
AZ20	FD5	MRCWG	C19,X1-4	LOAD IX REGS WITH RFG NUMBERS	12	16238	D 01922 00025 L
AZ21		C	84&X15,C20		11	16250	C 00MH4 01996
AZ22		BU	FD2	BRANCH-REG 15 FAILED	7	16261	J 16527 /
AZ23		C	80&X14,C20-5		11	16268	C 00MQ0 01991
AZ24		BU	FD2	BRANCH-REG 14 FAILED	7	16279	J 16527 /
AZ25		C	76&X13,C20-10		11	16286	C 00MX6 01986
AZ26		BU	FD2	BRANCH-REG 13 FAILED	7	16297	J 16527 /
AZ27		C	72&X12,C20-15		11	16304	C 00M72 01981
AZ28		BU	FD2	BRANCH-REG 12 FAILED	7	16315	J 16527 /
AZ29		C	68&X11,C20-20		11	16322	C 00.F8 01976
AZ30		BU	FD2	BRANCH-REG 11 FAILED	7	16333	J 16527 /
AZ31		C	64&X10,C20-25		11	16340	C 00.04 01971
AZ32		BU	FD2	BRANCH-REG 10 FAILED	7	16351	J 16527 /
AZ33		C	60&X9,C20-30		11	16358	C 00.W0 01966
AZ34		BU	FD2	BRANCH-REG 9 FAILED	7	16369	J 16527 /
AZ35		C	56&X8,C20-35		11	16376	C 00.56 01961
AZ36		BU	FD2	BRANCH-REG 8 FAILED	7	16387	J 16527 /
AZ37		C	52&X7,C20-40		11	16394	C 00‡E2 01956
AZ38		BU	FD2	BRANCH-REG 7 FAILED	7	16405	J 16527 /
AZ39		C	48&X6,C20-45		11	16412	C 00‡M8 01951
AZ40		BU	FD2	BRANCH-REG 6 FAILED	7	16423	J 16527 /
AZ41		C	44&X5,C20-50		11	16430	C 00‡U4 01946
AZ42		BU	FD2	BRANCH-REG 5 FAILED	7	16441	J 16527 /
AZ43		C	40&X4,C20-55		11	16448	C 00‡40 01941
AZ44		BU	FD2	BRANCH-REG 4 FAILED	7	16459	J 16527 /
AZ45		C	36&X3,C20-60		11	16466	C 000C6 01936
AZ46		BU	FD2	BRANCH-REG 3 FAILED	7	16477	J 16527 /
AZ47		C	32&X2,C20-65		11	16484	C 000L2 01931
AZ48		BU	FD2	BRANCH-REG 2 FAILED	7	16495	J 16527 /
AZ49		C	28&X1,C20-70		11	16502	C 000S8 01926
AZ50		BU	FD2	BRANCH-REG 1 FAILED	7	16513	J 16527 /

```
PGLIN   LABEL   OPCOD  OPERAND                                                CT  ADDRS  INSTRUCTION
AZ52            B      FD4                 BRANCH-ALL IX REG SELECTION OK      7  16520  J 16548
AZ53    FD2     SBR    FD3&4               SAVE BAR FOR FAILURE INDICATION     7  16527  G 16539 B
AZ54            NOP                                                            1  16534  N
AZ55    FD3     DC     00000               ERROR BRANCH LOCATION STORAGE       5  16535
AZ56            B      SE1                 BRANCH TO ERROR ROUTINE             7  16540  J 27220
AZ57            H                                          ROUTINE110 ERROR    1  16547  .
AZ58    *           INDEX REGISTER SELECTION FAILURE. THE ERROR BRANCH
AZ59    *           LOCATION STORED IN FD3 INDICATES THE HIGHEST INDEX
AZ60    *           REG SELECTION THAT FAILS.
AZ61    FD4     MRCWG  C21,X1-4            RESTORE INDEX REG CONTENTS         12  16548  D 28550 00025 D L
AZ62            BCE    FD1,TAD1,1          LOOP ROUTINE110                    12  16560  B 16207 01001 1
AZ63            B      SC1                 STEP ROUTINE COUNTER TO111          7  16572  J 27380
AZ64    *ROUTINE111-CHECK CHAINING OF 1 ADDR PLUS MOD OP CODES.
AZ65    QQ1     BNQ    ITR                 BRANCH INQUIRY                      7  16579  J 01334 Q
AZ66            SCNLS  30000,30000         SET D MODIFIER BLANK               12  16586  D 30000 30000
AZ67            CW     QQ4&1,QQ3&1         SET A AND B ADDRESS REGISTERS      11  16598  ¤ 16641 16626
AZ68    QQ2     DCW    @J@                 PERFORM CHAINED BRANCH TO QQ4       1  16609
AZ69    QQ5     B      SE1                 BRANCH TO ERROR ROUTINE             7  16610  J 27220
AZ70            H                                          ROUTINE111 ERROR    1  16617  .
AZ71    *       THE CHAINED BRANCH AT QQ2 FAILED TO BRANCH.
AZ72            B      QQ6                                                     7  16618  J 16673
AZ73    QQ3     B      SE1                 BRANCH TO ERROR ROUTINE             7  16625  J 27220
AZ74            H                                          ROUTINE111 ERROR    1  16632  .
AZ75    *           THE CHAINED BRANCH AT QQ2 BRANCHED TO THE CONTENTS
AZ76    *           OF THE BAR INSTEAD OF THE AAR.
AZ77            B      QQ6                                                     7  16633  J 16673
AZ78    QQ4     SBR    C08                                                     7  16640  G 01482 B
AZ79            C      C08,&QQ5            CHECK FOR PROPER BAR CONTENTS      11  16647  C 01482 29276
AZ80            BE     QQ6                 BRANCH-ROUTINE OK                   7  16658  J 16673 S
AZ81            B      SE1                 BRANCH TO ERROR ROUTINE             7  16665  J 27220
AZ82            H                                          ROUTINE111 ERROR    1  16672  .
AZ83    *       AFTER PERFORMING THE CHAINED BRANCH AT QQ2, THE
AZ84    *       BAR CONTENTS WERE NOT EQUAL TO THE ADDRESS OF QQ5.
AZ85    QQ6     BCE    QQ1,TAD1,1          LOOP RCUTINE111                    12  16673  B 16579 01001 1
AZ86            B      SC1                 STEP ROUTINE COUNTER TO112          7  16685  J 27380
```

```
PGLIN  LABEL   OPCOD  OPERAND                                              CT  ADDRS  INSTRUCTION
AZ88   *ROUTINE112-CHECK CHAINING OF MOVES.
AZ89   QQ7     BNQ    ITR                  BRANCH INQUIRY                    7  16692  J 01334 Q
AZ90           MLCWA  CC,0&X5             CC TO ADDRESS EE                 12  16699  D 01900 00**0 X
AZ91           MLCWA  0&X5,0&X6           CC FROM EE TO FF                 12  16711  D 00**0 00*.0 X
AZ92           SAR    QQ12&5               SAVE NEXT LEFT A ADDRESS          7  16723  G 16774 A
AZ93           SBR    QQ12&10              SAVE NEXT LEFT B ADDRESS          7  16730  G 16779 B
AZ94   QQ9     MLCWA  0&X5,0&X6           REPEAT MOVE TO SET D MOD TO X    12  16737  D 00**0 00*.0 X
AZ95           SW                          STEP AAR & BAR-LEAVE D MOD ALONE  1  16749  .
AZ96           CW                          STEP AAR & BAR-LEAVE D MOD ALONE  1  16750  ¤
AZ97   QQ10    MLCWA  CC                  CC TO NEXT ADDRESS LEFT           6  16751  D 01900
AZ98   QQ11    MLCWA  0&X5,0&X6           REPLACE CC AT FF WITH CC         12  16757  D 00**0 00*.0 X
AZ99   QQ12    C      0,0                 STEP AAR & BAR 1-BLANK D MODIFIER 11  16769  C 00000 00000
BA00   QQ13    DCW    @D@                 THIS SCNLS SHOULD STEP AAR&BAR 1  1  16780
BA01   QQ14    C      CC                  CHECK COMPLETE CHAIN              6  16781  C 01900
BA02           BE     QQ8                 BRANCH-OK                         7  16787  J 16802 S
BA03           B      SE1                 BRANCH TO ERROR ROUTINE           7  16794  J 27220
BA04           H                                  ROUTINE112 ERROR          1  16801  .
BA05   *           CHAIN FROM QQ9 THROUGH QQ10 SHOULD HAVE PLACED CC
BA06   *           AT FF, STEPPED BAR TWICE AND PLACED CC AGAIN. CHAIN
BA07   *           FROM QQ11 THROUGH QQ14 SHOULD HAVE MOVED CC TO FF,
BA08   *           STEPPED BAR TWICE AND COMPARED EQUAL.
BA09   QQ8     BCE    QQ7,TAD1,1          LOOP ROUTINE112                  12  16802  B 16692 01001 1
BA10           B      SC1                 STEP ROUTINE COUNTER TO113        7  16814  J 27380
BA11   *ROUTINE113-FIND OUT IF CONSTANT AA OR CONSTANT BB HAS A LONGER
BA12   *            FIELD LENGTH.
BA13   FE1     BNQ    ITR                 BRANCH INQUIRY                    7  16821  J 01334 Q
BA14           MLCS   @1@,CO26            SET CONSTANT LENGTH INDICATOR    12  16828  D 29167 01473 3
BA15           C      CO2,CO25                                             11  16840  C 01467 01472
BA16           BL     FE2                 BRANCH-BB IS SHORTER THAN AA      7  16851  J 16870 T
BA17           MLCS   @0@,CO26            CLEAR CONSTANT LENGTH INDICATOR  12  16858  D 29166 01473 3
BA18   FE2     BCE    FE1,TAD1,1          LOOP ROUTINE113                  12  16870  B 16821 01001 1
BA19           B      SC1                 STEP ROUTINE COUNTER TO1140       7  16882  J 27380
```

```
PGLIN  LABEL   OPCOD  OPERAND                                          CT  ADDRS  INSTRUCTION
BA21           *ROUTINE114-CHECK ZA, BAV INSTRUCTIONS AND ARITH. OVFLO INDICATOR.
BA22   FF1     BNQ    ITR                BRANCH INQUIRY                 7  16889  J 01334 Q
BA23           MLCWA  @     @,X4         ENSURE NO ZONES IN INDEX REGS 12  16896  D 29165 00044 X
BA24           MLCWA  @     @                                          6  16908  D 29165
BA25           MLCWA  @     @                                          6  16914  D 29165
BA26           MLCWA  @     @                                          6  16920  D 29165
BA27           MLWA   AA,0&X5            CONSTANT AA W/M TO ADDRESS EE 12  16926  D 01878 00**0 U
BA28           BAV    *&1                RESET ARITH. OVFLO INDICATOR   7  16938  J 16945 Z
BA29           MLZS   @-@,FF3&11         SET BZN D MODIFIER NEGATIVE   12  16945  D 29277 17010 2
BA30           BZN    FF2,CC,-           BRANCH-CONSTANT CC IS NEGATIVE 12  16957  V 16981 01900 K
BA31           MLZS   @&@,FF3&11         SET BZN D MODIFIER POSITIVE   12  16969  D 29278 17010 2
BA32   FF2     ZA     CC,0&X5            ZA CONSTANT CC TO ADDRESS EE  11  16981  M 01900 00**0
BA33           BAV    FF6                BRANCH-ERROR,ARITH OVFLO ON    7  16992  J 17166 Z
BA34   FF3     BZN    FF4,0&X5,          BRANCH-RESULTING SIGN IS OK   12  16999  V 17019 00**0 2
BA35           B      SE1                BRANCH TO ERROR ROUTINE        7  17011  J 27220
BA36           H                                  ROUTINE114 ERROR       1  17018  .
BA37   *           AFTER OPERATION OF THE ZA INSTRUCTION, THE RESULTANT
BA38   *           SIGN DID NOT HAVE THE SAME POLARITY AS THE SIGN OF
BA39   *           CONSTANT CC.
BA40   FF4     MLZS   AA,0&X5            CONSTANT AA SIGN TO RESULT AT EE 12  17019  D 01878 00**0 2
BA41           MLCWA  AA,0&X6            CONSTANT AA TO ADDRESS FF     12  17031  D 01878 00*.0 X
BA42           SBR    X3                 SAVE ADDRESS FOR CHECKING      7  17043  G 00039 B
BA43   FF5     ZA     0&X6               ZA CONSTANT AA AT ADDRESS FF   6  17050  M 00*.0
BA44           SAR    X1                 SAVE ADDRESSES FOR CHECKING    7  17056  G 00029 A
BA45           SBR    X2                                                7  17063  G 00034 B
BA46           BAV    FF6                BRANCH-ERROR,ARITH OVFLO ON    7  17070  J 17166 Z
BA47           C      X1,X3              WAS AAR OK AFTER ZA 0&X6      11  17077  C 00029 00039
BA48           BU     *&12               GO IF ERROR                    7  17088  J 17106 /
BA49           C      X2,X3              WAS BAR OK AFTER ZA 0&X6      11  17095  C 00034 00039
BA50           BE     *&9                GO IF OK                       7  17106  J 17121 S
BA51           B      SE1                BRANCH TO ERROR ROUTINE        7  17113  J 27220
```

```
PGLIN   LABEL   OPCOD  OPERAND                                                  CT  ADDRS  INSTRUCTION
BA53            H                                          ROUTINE114 ERROR      1  17120  .
BA54    *       THE CONTENTS OF THE AAR AND/OR BAR WERE INCORRECT AFTER
BA55    *       THE ZA INSTRUCTION AT FF5. AAR IS IN X1, BAR IS IN X2,
BA56    *       CORRECT AAR-BAR CONTENTS IS IN X3.
BA57            MLCWA  0&X6,AANUM          STORE AA MINUS ALL 8 BITS        12  17121  D 00#.0 28636 X
BA58            C      0&X5,AANUM          CHECK ZA,A,B RESULT AGAINST ZA,A 11  17133  C 00##0 28636
BA59            BE     FF9                 BRANCH-BOTH ZA RESULTS OK         7  17144  J 17188 S
BA60            B      SE1                 BRANCH TO ERROR ROUTINE           7  17151  J 27220
BA61            H                                          ROUTINE114 ERROR      1  17158  .
BA62    *           AT FF2, A ZA,A,B INSTRUCTION WAS PERFORMED ON
BA63    *           CONSTANT CC. AT FF5, A ZA,A INSTRUCTION WAS
BA64    *           PERFORMED ON CONSTANT AA. THE TWO RESULTS SHOULD
BA65    *           HAVE BEEN EXACTLY THE SAME. THEY DID NOT COMPARE.
BA66    *           THIS ERROR WILL CAUSE FAILURE INDICATIONS IN SOME
BA67    *           FOLLOWING ARITHMETIC CHECK ROUTINES.
BA68            B      FF9                 ROUTINE ENDED WITH ERROR          7  17159  J 17188
BA69    FF6     SBR    FF7&5               SET RETURN ADDRESS                7  17166  G 17186 B
BA70            B      SE1                 BRANCH TO ERROR ROUTINE           7  17173  J 27220
BA71            H                                          ROUTINE114 ERROR      1  17180  .
BA72    *           A BAV INSTRUCTION BRANCHED TO THIS ERROR HALT AFTER
BA73    *           THE OPERATION OF ONE OF THE TWO ZA INSTRUCTIONS. THE
BA74    *           ARITHMETIC OVERFLOW INDICATOR SHOULD NOT BE ON.
BA75    FF7     B      0                   RETURN TO CHECK ROUTINE           7  17181  J 00000
BA76    FF9     BCE    FF1,TAD1,1          LOOP ROUTINE114                  12  17188  B 16889 01001 1
BA77            B      SC1                 STEP ROUTINE COUNTER TO115        7  17200  J 27380
```

```
PGLIN  LABEL  OPCOD  OPERAND                                                  CT  ADDRS  INSTRUCTION
BA79          *ROUTINE115-CHECK ZS INSTRUCTION.
BA80   FG1    BNQ    ITR                BRANCH INQUIRY                        7  17207  J 01334 Q
BA81          MLWA   BB,0&X5            CONSTANT BB W/M TO ADDRESS EE        12  17214  D 01889 00‡‡0 U
BA82          MLZS   @&@,FG3&11         SET BZN D MODIFIER POSITIVE          12  17226  D 29278 17284 2
BA83          BZN    FG2,DD,-           BRANCH-CONSTANT DD IS NEGATIVE       12  17238  V 17262 01911 K
BA84          MLZS   @-@,FG3&11         SET BZN D MODIFIER NEGATIVE          12  17250  D 29277 17284 2
BA85   FG2    ZS     DD,0&X5            ZS CONSTANT DD TO ADDRESS EE         11  17262  ' 01911 00‡‡0
BA86   FG3    BZN    FG4,0&X5,          BRANCH-RESULTING SIGN IS OK          12  17273  V 17293 00‡‡0 2
BA87          B      SE1                BRANCH TO ERROR ROUTINE               7  17285  J 27220
BA88          H                                          ROUTINE115 ERROR     1  17292  .
BA89   *          AFTER OPERATION OF THE ZS INSTRUCTION, THE RESULTANT
BA90   *          SIGN DID NOT HAVE THE OPPOSITE POLARITY OF THE SIGN
BA91   *          OF CONSTANT DD.
BA92   FG4    MLZS   @-@,0&X5           - SIGN TO RESULT AT ADDRESS EE       12  17293  D 29277 00‡‡0 2
BA93          BZN    FG5,BB,&                                                12  17305  V 17329 01889 B
BA94          MLZS   @&@,0&X5           & SIGN TO RESULT AT ADDRESS EE       12  17317  D 29278 00‡‡0 2
BA95   FG5    MLCWA  BB,0&X6            CONSTANT BB TO ADDRESS FF            12  17329  D 01889 00‡'0 X
BA96   FG6    ZS     0&X6               ZS CONSTANT BB AT ADDRESS FF          6  17341  ' 00‡'0
BA97          C      0&X5,0&X6          CHECK ZS,A,B RESULT AGAINST ZS,A     11  17347  C 00‡‡0 00‡'0
BA98          BE     FG7                BRANCH-BOTH ZS RESULTS OK             7  17358  J 17380 S
BA99          B      SE1                BRANCH TO ERROR ROUTINE               7  17365  J 27220
BB00          H                                          ROUTINE115 ERROR     1  17372  .
BB01   *          AT FG2, A ZS,A,B INSTRUCTION WAS PERFORMED ON
BB02   *          CONSTANT DD. AT FG6, A ZS,A INSTRUCTION WAS
BB03   *          PERFORMED ON CONSTANT BB. THE TWO RESULTS SHOULD
BB04   *          HAVE BEEN EXACTLY THE SAME. THEY DID NOT COMPARE.
BB05   *          THIS ERROR WILL CAUSE FAILURE INDICATIONS IN SOME
BB06   *          FOLLOWING ARITHMETIC CHECK ROUTINES.
BB07          B      FG8                                                      7  17373  J 17404
BB08   FG7    MLZS   BB,0&X6            BB SIGN TO RESULT                    12  17380  D 01889 00‡'0 2
BB09          MLCWA  0&X6,BBNUM         STORE BB MINUS ALL B BITS            12  17392  D 00‡'0 28647 X
BB10   FG8    BCE    FG1,TAD1,1         LOOP ROUTINE115                      12  17404  B 17207 01001 1
BB11          B      SC1                STEP ROUTINE COUNTER TO116            7  17416  J 27380
```

```
PGLIN   LABEL   OPCOD  OPERAND                                          CT  ADDRS  INSTRUCTION
8813    *ROUTINE116-CHECK ONE FIELD SUBTRACT AND BZ INSTRUCTION.
8814    FH1     BNQ    ITR                 BRANCH INQUIRY                7  17423  J 01334 Q
8815            MLCWA  BB,0&X5             CONSTANT BB TO ADDRESS EE    12  17430  D 01889 00**0 X
8816            SBR    X3                  SAVE ADDRESS FOR CHECK        7  17442  G 00039 B
8817            S      0&X5                                              6  17449  S 00**0
8818            SAR    X1                  SAVE ADDRESSES FOR CHECKING   7  17455  G 00029 A
8819            SBR    X2                                                7  17462  G 00034 B
8820            BZ     FH2                 BRANCH-NUMERIC RESULT OK      7  17469  J 17484 V
8821            B      SE1                 BRANCH TO ERROR ROUTINE       7  17476  J 27220
8822            H                                        ROUTINE116 ERROR  1  17483  .
8823    *           THE ONE FIELD SUBTRACT OPERATION FAILED TO CAUSE A
8824    *           BRANCH ON ZERO BALANCE.
8825    FH2     C      X1,X3               WAS AAR CORRECT AFTER S 0&X5 11  17484  C 00029 00039
8826            BU     *&12                GO FI WRONG                   7  17495  J 17513 /
8827            C      X2,X3               WAS BAR CORRECT AFTER S 0&X5 11  17502  C 00034 00039
8828            BE     *&9                 GO IF OK                      7  17513  J 17528 S
8829            B      SE1                 BRANCH TO ERROR ROUTINE       7  17520  J 27220
8830            H                                        ROUTINE116 ERROR  1  17527  .
8831    *       THE CONTENTS OF AAR AND/OR BAR WERE INCORRECT AFTER THE
8832    *       S 0&X5 INSTRUCTION.AAR IS IN X1, BAR IS IN X2, CORRECT
8833    *       AAR-BAR CONTENTS IS IN X3.
8834            MLNWA  BB,0&X5             REPLACE BB NUMERIC IN ADDRESS EE 12  17528  D 01889 00**0 V
8835            SW     0&X5                SW OVER SIGN POSITION         6  17540  , 00**0
8836            C      BB,0&X5             IS SIGN CONFIGURATION OK     11  17546  C 01889 00**0
8837            BE     FH3                 BRANCH-YES                    7  17557  J 17572 S
8838            B      SE1                 BRANCH TO ERROR ROUTINE       7  17564  J 27220
8839            H                                        ROUTINE116 ERROR  1  17571  .
8840    *           THE SIGN BIT CONFIGURATION IS NOT THE SAME AS IT WAS
8841    *           BEFORE THE SUBTRACT OPERATION.
8842    FH3     BCE    FH1,TAD1,1          LOOP ROUTINE116              12  17572  B 17423 01001 1
8843            B      SC1                 STEP ROUTINE COUNTER TO117    7  17584  J 27380
```

```
PGLIN     LABEL     OPCOD  OPERAND                                                  CT  ADDRS  INSTRUCTION
BB45      *ROUTINE117A-CHECK 2 FIELD ADD AND SUBTRACT OPERATIONS WHEN THE A
BB46      *           FIELD IS SHORTER THAN, OR EQUAL TO, THE B FIELD.
BB47      F11       BCE    FJ1,C026,1          BRANCH-B FIELD IS SHORTER THAN A     12  17591  B 17963 01473 1
BB48      F12       BNQ    ITR                 BRANCH INQUIRY                        7  17603  J 01334 Q
BB49                MLCWA  AA,0&X5             CONSTANT AA TO ADDRESS EE            12  17610  D 01878 00**0 X
BB50                SBR    X2                  SAVE TO CHECK A ADDRESS               7  17622  G 00034 B
BB51                MLCWA  BB,0&X6             CONSTANT BB TO ADDRESS FF            12  17629  D 01889 00*.0 X
BB52                SBR    F13&10              SAVE BAR IN MRCW INSTRUCTION          7  17641  G 17658 B
BB53      F13       MRCW   @ @,0               PROVIDE SPACE TO PREVENT OVERFLOW    12  17648  D 29208 00000 M
BB54                SBR    F14&5               SAVE BAR IN CW INSTRUCTION            7  17660  G 17672 B
BB55      F14       CW     0                   ALLOW EXPANSION TO PREVENT OVFLO      6  17667  ¤ 00000
BB56                SAR    *&11                                                      7  17673  G 17690 A
BB57                SCNLS  *,00000             CALCULATE B ADDRESS                  12  17680  D 17691 00000
BB58                SBR    X4                  SAVE TO CORRECT B ADDRESS             7  17692  G 00044 B
BB59                A      0&X5,0&X6           ADD CONSTANT AA TO CONSTANT BB       11  17699  A 00**0 00*.0
BB60                SAR    X1                  SAVE ADDRESSES FOR CHECKING           7  17710  G 00029 A
BB61                SBR    X3                                                        7  17717  G 00039 B
BB62                BAV    F15                 BRANCH-ERROR-OVFLO INDICATOR ON       7  17724  J 17845 Z
BB63                C      X1,X2               CHECK AAR CONTENTS                   11  17731  C 00029 00034
BB64                BU     *&12                GO IF BAD                             7  17742  J 17760 /
BB65                C      X3,X4               CHECK BAR CONTENTS                   11  17749  C 00039 00044
BB66                BE     *&9                 GO IF OK                              7  17760  J 17775 S
BB67                B      SE1                 BRANCH TO ERROR ROUTINE               7  17767  J 27220
BB68                H                                          ROUTINE117AERROR      1  17774  .
BB69      *         THE CONTENTS OF THE AAR AND/OR BAR WERE INCORRECT
BB70      *         FOLLOWING THE ABOVE A 0&X5,0&X6 INSTRUCTION.X1 CONTAINS
BB71      *         ACTUAL AAR CONTENTS-X2 CONTAINS CORRECT CONTENTS.X3
BB72      *         CONTAINS ACTUAL BAR CONTENTS-X4 CONTAINS CORRECT CONTENTS
```

```
PGLIN   LABEL  OPCOD  OPERAND                                          CT  ADDRS  INSTRUCTION
BB74           MLCWA  0&X6,CA1          SAVE ADD RESULT               12  17775  D 00#.0 01451 X
BB75           S      0&X5,0&X6          SUBTRACT AA FROM AA&BB        11  17787  S 00##0 00#.0
BB76           BAV    FI5                BRANCH-ERROR-OVFLO INDICATOR ON  7  17798  J 17845 Z
BB77           BZ     FI9                BRANCH-DIFFERENCE IS ZERO      7  17805  J 17867 V
BB78    FI12   C      0&X6,BBNUM         IS RESULT CORRECT             11  17812  C 00#.0 28647
BB79           BE     FI7                BRANCH-YES                     7  17823  J 17918 S
BB80           B      SE1                BRANCH TO ERROR ROUTINE        7  17830  J 27220
BB81           H                                    ROUTINE117AERROR     1  17837  .
BB82    *          AA PLUS BB MINUS AA DID NOT EQUAL BB. SUM IS STORED
BB83    *          AT CA1, DIFFERENCE IS STORED AT ADDRESS FF.
BB84           B      FI7                ROUTINE ENDED WITH ERROR       7  17838  J 17918
BB85    FI5    SBR    FI6                SET RETURN ADDRESS             7  17845  G 17860 B
BB86           B      SE1                BRANCH TO ERROR ROUTINE        7  17852  J 27220
BB87           H                                    ROUTINE117AERROR     1  17859  .
BB88    *          BRANCH ON OVERFLOW OCCURRED FOLLOWING THE ADD OR
BB89    *          SUBTRACT OPERATION. THE B FIELD WAS LONG ENOUGH.
BB90    FI6    B      0                  RETURN TO ROUTINE              7  17860  J 00000
BB91    FI9    MLZS   CA1,FI10&11        STORE SIGN OF B FIELD OF SUBTRACT 12  17867  D 01451 17890 2
BB92    FI10   BZN    FI11,0&X6,0        BRANCH-ZERO RESULT SIGN OK    12  17879  V 17899 00#.0 2
BB93           B      SE1                BRANCH TO ERROR ROUTINE        7  17891  J 27220
BB94           H                                    ROUTINE117 ERROR     1  17898  .
BB95    *          THE CONFIGURATION OF THE B FIELD SIGN CHANGED DURING
BB96    *          THE SUBTRACT OPERATION ALTHOUGH THE ZERO RESULT
BB97    *          INDICATOR WAS SET.
BB98    FI11   MLZS   BBNUM,0&X6         BBNUM SIGN TO SUBTRACT DIFFERENCE 12  17899  D 28647 00#.0 2
BB99           B      FI12               RETURN TO CHECK RESULTS        7  17911  J 17812
BC00    FI7    C      AA,0&X5            CHECK A FIELD                 11  17918  C 01878 00##0
BC01           BE     FI8                BRANCH-OK                      7  17929  J 17944 S
BC02           B      SE1                BRANCH TO ERROR ROUTINE        7  17936  J 27220
BC03           H                                    ROUTINE117AERROR     1  17943  .
BC04    *          THE ADD OR SUBTRACT OPERATION CHANGED THE CONTENTS
BC05    *          OF THE A FIELD.
BC06    FI8    BCE    FI2,TAD1,1         LOOP ROUTINE117A              12  17944  B 17603 01001 1
BC07           B      FK7                                               7  17956  J 18503
```

```
PGLIN   LABEL   OPCOD  OPERAND                                                  CT  ADDRS  INSTRUCTION
BC09            *ROUTINE117B-CHECK 2 FIELD ADD OPERATION WHEN THE A FIELD IS LONGER
BC10            *          THAN THE B FIELD.
BC11    FJ1     BNQ    ITR                 BRANCH INQUIRY                        7  17963  J 01334 Q
BC12            MLCWA  AA,0&X5             CONSTANT AA TO ADDRESS EE            12  17970  D 01878 00*'0 X
BC13            MLCWA  BB,0&X6             CONSTANT BB TO ADDRESS FF            12  17982  D 01889 00*'0 X
BC14            A      0&X5,0&X6           ADD AA TO BB                         11  17994  A 00**0 00*'0
BC15            BAV    FJ2                 BRANCH-OVFLO INDICATOR TURNED ON      7  18005  J 18094 Z
BC16    FJ5     MLCWA  0&X6,CA1            SAVE SUM IN CA1                      12  18012  D 00*'0 01451 X
BC17            S      0&X5,0&X6           CHECK ADDITION                       11  18024  S 00**0 00*'0
BC18            BZ     FJ7                 BRANCH ON ZERO RESULT                 7  18035  J 18075 V
BC19    FJ8     C      0&X6,BBNUM                                               11  18042  C 00*'0 28647
BC20            BE     FJ6                 BRANCH-ADDITION,SUBTRACTION OK        7  18053  J 18157 S
BC21            B      SE1                 BRANCH TO ERROR ROUTINE               7  18060  J 27220
BC22            H                                        ROUTINE117BERROR         1  18067  .
BC23    *           RESULT OF ADD OPERATION WAS INCORRECT. RESULT IS
BC24    *           STORED IN LOCATION CA1.
BC25            B      FJ6                 ROUTINE ENDED WITH ERROR              7  18068  J 18157
BC26    FJ7     MLZS   BBNUM,0&X6          CORRECT ZERO RESULT SIGN             12  18075  D 28647 00*'0 2
BC27            B      FJ8                                                       7  18087  J 18042
BC28    FJ2     SCNLA  0&X6,1&X6           INSERT 1 BECAUSE OF OVERFLOW         12  18094  D 00*'0 00*'1 S B
BC29            SAR    FJ4&10                                                    7  18106  G 18136 A
BC30            SBR    FJ3&5                                                     7  18113  G 18125 B
BC31    FJ3     CW     0                                                         6  18120  ¤ 00000
BC32    FJ4     MLCWS  @1@,0                                                    12  18126  D 29167 00000 7
BC33            MLWA   BB,0&X5             CORRECT AA W/M FOR OVFLO              12  18138  D 01889 00**0 U
BC34            B      FJ5                 RETURN TO CHECK SUM                   7  18150  J 18012
BC35    FJ6     BCE    FJ1,TAD1,1          LOOP ROUTINE117B                     12  18157  B 17963 01001 1
```

PGLIN	LABEL	OPCOD	OPERAND		CT	ADDRS	INSTRUCTION
BC37		*ROUTINE117C-CHECK 2 FIELD SUBTRACT OPERATION WHEN THE A FIELD IS					
BC38	*	LONGER THAN THE B FIELD.					
BC39	FK1	BNQ	ITR	BRANCH INQUIRY	7	18169	J 01334 Q
BC40		MLCWA	AA,0&X5	CONSTANT AA TO ADDRESS EE	12	18176	D 01878 00**0 X
BC41		MLCWA	BB,0&X6	CONSTANT BB TO ADDRESS FF	12	18188	D 01889 00*.0 X
BC42		SBR	X4	SAVE TO CHECK BAR	7	18200	G 00044 B
BC43		SCNLA	0&X6,0&X5		12	18207	D 00*.0 00**0 S B
BC44		SBR	X2	SAVE TO CHECK AAR	7	18219	G 00034 B
BC45		S	0&X5,0&X6	SUBTRACT AA FROM BB	11	18226	S 00**0 00*.0
BC46		SAR	X1	SAVE ADDRESSES FOR CHECKING	7	18237	G 00029 A
BC47		SBR	X3		7	18244	G 00039 B
BC48		BAV	FK2	BRANCH-OVFLO INDICATOR TURNED ON	7	18251	J 18384 Z
BC49		C	X1,X2	CHECK AAR CONTENTS	11	18258	C 00029 00034
BC50		BU	*&19	GO IF BAD	7	18269	J 18294 /
BC51		C	X3,X4	CHECK BAR CONTENTS	11	18276	C 00039 00044
BC52		BE	*&9	GO IF OK	7	18287	J 18302 S
BC53		B	SE1	BRANCH TO ERROR ROUTINE	7	18294	J 27220
BC54		H		ROUTINE117BERROR	1	18301	.
BC55	*	THE CONTENTS OF THE AAR AND/OR BAR WERE INCORRECT					
BC56	*	FOLLOWING THE ABOVE S 0&X5,0&X6 INSTRUCTION.X1 CONTAINS					
BC57	*	ACTUAL AAR CONTENTS-X2 CONTAINS CORRECT CONTENTS. X3					
BC58	*	CONTAINS ACTUAL BAR CONTENTS-X4 CONTAINS CORRECT CONTENTS					

```
PGLIN   LABEL   OPCOD  OPERAND                                                CT  ADDRS  INSTRUCTION
BC60    FK5     MLCWA  0&X6,CA1        SAVE DIFFERENCE IN CA1                12  18302  D 00*.0 01451 X
BC61            A      0&X5,0&X6        CHECK SUBTRACTION                     11  18314  A 00**0 00*.0
BC62            BZ     FK10             BR-SUM ZERO,GO TO CORRECT 0 SIGN       7  18325  J 18447 V
BC63    FK9     C      0&X6,BBNUM                                             11  18332  C 00*.0 28647
BC64            BE     FK6              BRANCH-SUBTRACTION,ADDITION OK         7  18343  J 18491 S
BC65            B      SE1              BRANCH TO ERROR ROUTINE                7  18350  J 27220
BC66            H                                  ROUTINE117CERROR           1  18357  .
BC67    *           RESULT OF SUBTRACT OPERATION WAS INCORRECT. RESULT
BC68    *           IS STORED IN LOCATION CA1.
BC69            B      FK6              ROUTINE ENDED WITH ERROR               7  18358  J 18491
BC70    FK8     MLZS   BBNUM,0&X6       CORRECT ZERO RESULT SIGN              12  18365  D 28647 00*.0 2
BC71            B      FK9                                                    7  18377  J 18332
BC72    FK2     SCNLA  0&X6,1&X6        INSERT 1 BECAUSE OF OVERFLOW          12  18384  D 00*.0 00*.1 S
BC73            SAR    FK4&10                                                 7  18396  G 18426 A                    B
BC74            SBR    FK3&5                                                  7  18403  G 18415 B
BC75    FK3     CW     0                                                      6  18410  ¤ 00000
BC76    FK4     MLCWS  @1@,0                                                 12  18416  D 29167 00000 7
BC77            MLWA   BB,0&X5          CORRECT AA W/M FOR OVFLO              12  18428  D 01889 00**0 U
BC78            B      FK5              RETURN TO CHECK DIFFERENCE             7  18440  J 18302
BC79    FK10    ZA     BB,CA2           IS BB ZERO                            11  18447  M 01889 01462                O
BC80            BZ     FK11             BRANCH-YES-CORRECT SIGN OF SUM         7  18458  J 18472 V
BC81            B      FK9                                                    7  18465  J 18332
BC82    FK11    MLZS   CA2,0&X6                                              12  18472  D 01462 00*.0 2
BC83            B      FK9                                                    7  18484  J 18332
BC84    FK6     BCE    FK1,TAD1,1       LOOP ROUTINE117C                      12  18491  B 18169 01001 1
BC85    FK7     B      SC1              STEP ROUTINE COUNTER TO118             7  18503  J 27380
```

PGLIN	LABEL	OPCOD	OPERAND		CT	ADDRS	INSTRUCTION		
BC87	*ROUTINE118-CHECK 1 FIELD ADD OPERATION.								
BC88	FL1	BNQ	ITR	BRANCH INQUIRY	7	18510	J 01334 Q		
BC89		MLCWA	AA,0&X5	CONSTANT AA TO ADDRESS EE	12	18517	D 01878 00##0	X	
BC90		A	0&X5		6	18529	A 00##0		
BC91		BAV	FL2	BRANCH-OVFLO INDICATOR TURNED ON	7	18535	J 18598 Z		
BC92	FL7	MLCWA	0&X5,CA1	SAVE SUM IN CA1	12	18542	D 00##0 01451	X	
BC93		S	AA,0&X5	CHECK ADDITION	11	18554	S 01878 00##0		
BC94		C	0&X5,AANUM		11	18565	C 00##0 28636		
BC95		BE	FL8	BRANCH-ADDITION,SUBTRACTION OK	7	18576	J 18649 S		
BC96		B	SE1	BRANCH TO ERROR ROUTINE	7	18583	J 27220		
BC97		H		ROUTINE118 ERROR	1	18590	.		
BC98	*		RESULT OF ADDITION INCORRECT. SUM STORED IN CA1.						
BC99		B	FL8	ROUTINE ENDED WITH ERROR	7	18591	J 18649		
BD00	FL2	SCNLA	0&X5,1&X5	INSERT 1 BECAUSE OF OVERFLOW	12	18598	D 00##0 00##1	S B	
BD01		SAR	FL4&10		7	18610	G 18640 A		
BD02		SBR	FL3&5		7	18617	G 18629 B		
BD03	FL3	CW	0		6	18624	¤ 00000		
BD04	FL4	MLCWS	@1@,0		12	18630	D 29167 00000	7	
BD05		B	FL7	RETURN TO ROUTINE	7	18642	J 18542		
BD06	FL8	BCE	FL1,TAD1,1	LOOP ROUTINE118	12	18649	B 18510 01001	1	
BD07		B	SC1	STEP ROUTINE COUNTER TO119	7	18661	J 27380		

```
PGLIN     LABEL     OPCOD  OPERAND                                                  CT  ADDRS  INSTRUCTION
BD09      *ROUTINE119-CHECK 1 FIELD ZS OPERATION.
BD10      FN1       BNQ    ITR                BRANCH INQUIRY                         7  18668  J 01334 Q
BD11                MLCWA  BB,0&X5            CONSTANT BB TO ADDRESS EE             12  18675  D 01889 00**0 X
BD12                MLNS   BB,FN6&11                                                 12  18687  D 01889 18734 1
BD13                MLCS   BB,FN3&11          INSERT BB UNITS IN BCE CHK INST       12  18699  D 01889 18764 3
BD14                MLZS   @&@,FN3&11         INSERT PLUS IN BCE CHECK INSTRUCT     12  18711  D 29278 18764 2
BD15      FN6       BCE    FN2,BB,-           BRANCH-BB IS NEGATIVE                 12  18723  B 18747 01889 -
BD16                MLZS   @-@,FN3&11         INSERT MINUS IN BCE CHK INSTRUCT      12  18735  D 29277 18764 2
BD17      FN2       ZS     0&X5               ZS CONSTANT BB IN ADDR EE              6  18747  . 00**0
BD18      FN3       BCE    FN4,0&X5,0         BRANCH-RESULTANT SIGN CORRECT         12  18753  B 18773 00**0 0
BD19                B      SE1                BRANCH TO ERROR ROUTINE                7  18765  J 27220
BD20                H                                        ROUTINE119 ERROR       1  18772  .
BD21      *              THE RESULT OF THE ZS INSTRUCTION HAD AN INCORRECT
BD22      *              SIGN.
BD23      FN4       MLZS   BB,0&X5            BB SIGN TO ZS RESULT                  12  18773  D 01889 00**0 2
BD24                C      BBNUM,0&X5         CHECK RESULTANT NUMERICS              11  18785  C 28647 00**0
BD25                BE     FN5                BRANCH-NUMERICS OK                     7  18796  J 18811 S
BD26                B      SE1                BRANCH TO ERROR ROUTINE                7  18803  J 27220
BD27                H                                        ROUTINE119 ERROR       1  18810  .
BD28      *              THE RESULT OF THE ZS INSTRUCTION WAS INCORRECT.
BD29      FN5       BCE    FN1,TAD1,1         LOOP ROUTINE119                       12  18811  B 18668 01001 1
BD30                B      SC1                STEP ROUTINE COUNTER TO120             7  18823  J 27380
```

```
PGLIN     LABEL     OPCOD  OPERAND                                  CT  ADDRS  INSTRUCTION
BD32      *ROUTINE120-CALCULATE RESULT OF CONSTANT BB DIVIDED BY CONSTANT AA.
BD33      FQ1       BNQ    ITR                 BRANCH INQUIRY        7  18830  J 01334 Q
BD34                MLNWA  AANUM,DIVISR       AA TO DIVISOR STORAGE MINUS SIGN  12  18837  D 28636 19354 V
BD35                MLCWA  CS1,SIMDVD          CLEAR ENTIRE DIVIDEND AREA  12  18849  D 28668 19375 X
BD36                MLNA   BBNUM,SIMDVD        BB TO DIVIDEND AREA  12  18861  D 28647 19375 /
BD37                SBR    FQ3&10              STORE UNITS ADDR OF SHIFTED DIVND  7  18873  G 19003 B
BD38                SBR    FQ14&10             DITTO                 7  18880  G 19014 B
BD39                SBR    FQ5&5               DITTO                 7  18887  G 19118 B
BD40                SBR    FQ7&10              DITTO                 7  18894  G 19026 B
BD41                SBR    FQ8&10              DITTO                 7  18901  G 19212 B
BD42                SBR    FQ13&5                                    7  18908  G 19219 B
BD43                A      &1,FQ7&10           SET SHIFTED DIVND UNITS ADDR&1  11  18915  A 29202 19026
BD44                MLCWA  CS1-10,LSTTRL       LAST OK TRIAL DIVISOR AREA  12  18926  D 28658 19398 X
BD45                MLCWA  LSTTRL              CLEAR TRIAL DIVISOR AREA  6  18938  D 19398
BD46                MLCWA  CS1,QUOREM          CLEAR QUOTIENT REMAINDER AREA  12  18944  D 28668 19420 X
BD47                SCNLA  AA,QUOREM           FIND HI ORDER ADDR OF QUOTIENT  12  18956  D 01878 19420 S
BD48                SCNLA  BB                                        6  18968  D 01889                    B
BD49                SBR    FQ6&10              STORE HI ORDER ADDR OF QUOTIENT  7  18974  G 19182 B
BD50                MLZS   BB,QUOREM          SET REMAINDER SIGN EQUAL TO DIVND  12  18981  D 01889 19420 2
BD51      FQ3       S      LSTTRL,0            SUB LST TRL DIVSR FRM SHIFTD DIVD  11  18993  S 19398 00000
BD52      FQ14      MLZS   @ @,0               CLEAR SIGN           12  19004  D 29208 00000 2
BD53      FQ7       BCE    FQ8,0,*             BRANCH-DIVISION COMPLETE  12  19016  B 19202 00000 *
BD54                MRCR   SIMDVD-18,SIMDVD-19  SHIFT ENTIRE DIVIDEND LEFT ONE  12  19028  D 19357 19356 .
BD55                MLCWA  CS1-10,LSTTRL       CLEAR LAST OK TRIAL DIVISOR AREA  12  19040  D 28658 19398 X
BD56                MLNWA  DIVISR,TRLDVS       DIVISOR TO TRIAL DIVISOR AREA  12  19052  D 19354 19387 V
BD57                SBR    FQ4&10              EXTEND LEFT ONE CHARACTER  7  19064  G 19099 B
BD58                CW     TRLDVS                                    6  19071  ¤ 19387
BD59                MLWB   CS1,TRLDVS                               12  19077  D 28668 19387 M
```

PGLIN	LABEL	OPCOD	OPERAND		CT	ADDRS	INSTRUCTION
BD61	FQ4	MLCWS	@0@,0		12	19089	D 29166 00000 7
BD62		MLCS	@0@,TRLDIG	CLEAR TRIAL DIGIT	12	19101	D 29166 19399 3
BD63	FQ5	C	0,TRLDVS	COM SHIFTD DIVDND TO TRIAL DVSOR	11	19113	C 00000 19387
BD64		BH	FQ6	BRANCH-THIS DIGIT FOUND	7	19124	J 19172 U
BD65		A	&1,TRLDIG	ADD ONE TO TRIAL DIGIT	11	19131	A 29202 19399
BD66		MLCA	TRLDVS,LSTTRL	TRIAL DIVSOR TO LAST OK TRL DIVSR	12	19142	D 19387 19398 T
BD67		A	DIVISR,TRLDVS	ADD DIVISOR TO TRIAL DIVSOR	11	19154	A 19354 19387
BD68		B	FQ5		7	19165	J 19113
BD69	FQ6	MLCS	TRLDIG,0	TRIAL DIGIT TO QUOTIENT	12	19172	D 19399 00000 3
BD70		A	&1,FQ6&10	STEP QUOTIENT ADDRESS RIGHT ONE	11	19184	A 29202 19182
BD71		B	FQ3	FIND NEXT DIGIT OF QUOTIENT	7	19195	J 18993
BD72	FQ8	MLWA	AA,0	DIVISOR W/M TO SHIFTED DIVND	12	19202	D 01878 00000 U
BD73	FQ13	MLNA	0,QUOREM	REMAINDER TO REMAINDER AREA	12	19214	D 00000 19420 /
BD74		SBR	*&11		7	19226	G 19243 B
BD75		SCNLS	100,0	STEP BAR LEFT ONE	12	19233	D 00100 00000
BD76		SBR	FQ9&10	STORE UNITS ADDRESS OF QUOTIENT	7	19245	G 19269 B
BD77		SBR	FQ11&10	DITTO	7	19252	G 19317 B
BD78	FQ9	MLZS	@&@,0	SET PROPER SIGN IN QUOTIENT	12	19259	D 29278 00000 2
BD79		MLZS	AA,FQ10&11		12	19271	D 01878 19306 2
BD80		MLNS	BB,FQ10&11		12	19283	D 01889 19306 1
BD81	FQ10	BCE	FQ12,BB,0		12	19295	B 19319 01889 0
BD82	FQ11	MLZS	@-@,0		12	19307	D 29277 00000 2
BD83	FQ12	BCE	FQ1,TAD1,1	LOOP ROUTINE120	12	19319	B 18830 01001 1
BD84		B	SC1	STEP ROUTINE COUNTER TO121	7	19331	J 27380
BD85		B	FR1	TO NEXT ROUTINE	7	19338	J 19421
BD86	DIVISR	DCW	@ @	DIVISOR-CONST AA MINUS SIGN	10	19354	
BD87	SIMDVD	DCW	@	@ SIMULATED DIVIDEND	21	19375	
BD88		DCW	@*@	STOP INDICATOR	1	19376	
BD89	TRLDVS	DCW	@ @	TRIAL DIVISOR	11	19387	
BD90	LSTTRL	DCW	@ @	LAST OK TRIAL DIVISOR	11	19398	
BD91	TRLDIG	DCW	@ @	TRIAL DIGIT	1	19399	
BD92	QUOREM	DCW	@	@ QUOTIENT-REMAINDER SIM AREA	21	19420	

```
PGLIN   LABEL     OPCOD  OPERAND                                          CT  ADDRS  INSTRUCTION
BD94    *ROUTINE121-CHECK DIVIDE INSTRUCTION.
BD95    FR1       BNQ    ITR                BRANCH INQUIRY                 7  19421  J 01334 Q
BD96              MLCWA  CS1,0&X5           CLEAR EE FOR QUOTIENT-DIVIDEND 12  19428  D 28668 00**0 X
BD97              SCNLA  AA,0&X5                                          12  19440  D 01878 00**0 B
BD98              SCNLA  BB                                               6  19452  D 01889
BD99              SBR    FR2&5                                            7  19458  G 19470 B
BE00    FR2       SW     0                  DEFINE QUOTIENT-DIVIDEND FIELD 6  19465  . 00000
BE01              ZA     BB,0&X5            BB DIVIDEND TO ADDRESS EE      11  19471  M 01889 00**0
BE02              SCNLA  BB,1&X5            FIND DIVIDEND ADDRESS          12  19482  D 01889 00**1 B
BE03              SBR    FR3&10             STORE IN B FIELD OF DIVIDE      7  19494  G 19530 B
BE04              MLCWA  AA,0&X6            AA DIVISOR TO ADDRESS FF       12  19501  D 01878 00*.0 X
BE05              BDV    *&1                CLEAR DIVIDE OVERFLOW INDICATOR 7  19513  J 19520 W
BE06    FR3       D      0&X6,0             DIVIDE BB BY AA                11  19520  % 00*.0 00000
BE07              BDV    FR5                BRANCH-DIVIDE OVERFLOW ON       7  19531  J 19571 W
BE08    FR6       C      QUOREM,0&X5        CHECK RESULT                   11  19538  C 19420 00**0
BE09              BE     FR7                BRANCH-DIVISION OK              7  19549  J 19626 S
BE10              B      SE1                BRANCH TO ERROR ROUTINE         7  19556  J 27220
BE11              H                                    ROUTINE121 ERROR     1  19563  .
BE12    *              THE QUOTIENT-REMAINDER FIELD DID NOT COMP*RE WITH
BE13    *              THE ANSWER CALCULATED, AND STORED AT ADDRESS LABELED
BE14    *              QUOREM, BY THE LAST ROUTINE.
BE15    FR4       B      FR7                ROUTINE ENDED                  7  19564  J 19626
BE16    FR5       BDV    FR8                BRANCH-ERROR-DIVD OVFLOW STAYS ON 7  19571  J 19611 W
BE17    FR9       ZA     AA,0&X6            SHOULD OVERFLOW BE ON          11  19578  M 01878 00*.0
BE18              BZ     FR4                BRANCH-DIVIDED BY ZERO-OK       7  19589  J 19564 V
BE19              B      SE1                BRANCH TO ERROR ROUTINE         7  19596  J 27220
BE20              H                                    ROUTINE121 ERROR     1  19603  .
BE21    *              THE DIVIDE OPERATION TURNED ON THE DIVIDE OVERFLOW
BE22    *              INDICATOR WHEN IT SHOULD NOT HAVE.
BE23              B      FR6                RETURN TO CHECK RESULT         7  19604  J 19538
BE24    FR8       B      SE1                BRANCH TO ERROR ROUTINE         7  19611  J 27220
BE25              H                                    ROUTINE121 ERROR     1  19618  .
BE26    *              THE BDV FAILS TO TURN OFF DIVIDE OVERFLOW.
BE27              B      FR9                                                7  19619  J 19578
BE28    FR7       BCE    FR1,TAD1,1         LOOP RCUTINE121                12  19626  B 19421 01001 1
BE29              B      SC1                STEP ROUTINE COUNTER TO122      7  19638  J 27380
```

```
PGLIN   LABEL    OPCOD  OPERAND                                          CT  ADDRS  INSTRUCTION
BE31     *ROUTINE122-CHECK MULTIPLY INSTRUCTION.
BE32     F01     BNQ    ITR                 BRANCH INQUIRY               7  19645  J 01334 Q
BE33             MLCWA  CS1,F04&20          CLEAR PRODUCT STORAGE       12  19652  D 28668 19872 X
BE34             MLCWA  CS1,0&X5            CLEAR PRODUCT FIELD AT ADDRESS EE  12  19664  D 28668 00##0 X
BE35             MLCWA  CS1-8                                           6  19676  D 28660
BE36             SCNLA  AA,0&X5-1           FIND MULTIPLIER ADDRESS     12  19682  D 01878 99ZZ9 S B
BE37             SBR    F02&10              STORE MULTIPLIER ADDRESS     7  19694  G 19725 B
BE38             SBR    F03&5               STORE AS QUOTIENT ADDR FOR CHECK  7  19701  G 19824 B
BE39             SBR    F05&10              STORE FOR DIVIDE REMAINDER CHECK  7  19708  G 19909 B
BE40     F02     MLCWA  BB,0                STORE CONST BB AS MULTIPLIER  12  19715  D 01889 00000 X
BE41             MLCWA  AA,0&X6             STORE AA AT FF AS MULTIPLICAND  12  19727  D 01878 00#.0 X
BE42             M      0&X6,0&X5           MULTIPLY AA BY BB           11  19739  @ 00#.0 00##0
BE43             MLCWA  0&X5,F04&20         STORE PRODUCT               12  19750  D 00##0 19872 X
BE44             SCNLA  0&X5,1&X5           LEGTHEN FIELD FOR DIVIDE CHECK  12  19762  D 00##0 00##1 S B
BE45             SBR    F08&10              STORE DIVIDEND ADDRESS       7  19774  G 19811 B
BE46             CW                                                     1  19781  ¤
BE47             SAR    *&11                                            7  19782  G 19799 A
BE48             MLWA   AA,0                                           12  19789  D 01878 00000 U
BE49     F08     D      0&X6,0              CHECK PRODUCT BY DIVIDING BY AA  11  19801  % 00#.0 00000
BE50             BDV    F07                 MULTIPLICAND/DIVISOR AA IS ZERO  7  19812  J 19873 W
BE51     F03     C      0,BBNUM             CHECK MULTIPLIER AGAINST QUOTIENT  11  19819  C 00000 28647
BE52             BE     F05                 BRANCH-QUOTIENT OK           7  19830  J 19899 S
BE53             B      SE1                 BRANCH TO ERROR ROUTINE      7  19837  J 27220
BE54             H                                    ROUTINE122 ERROR   1  19844  .
BE55     *           THE PRODUCT OF AA AND BB DIVIDED BY AA DID NOT EQUAL
BE56     *           BB. THE PRODUCT IS STORED IN ADDRESS LABELED F04.
BE57             B      F05                                             7  19845  J 19899
BE58      F04    DCW    @                      @  PRODUCT STORAGE      21  19852
BE59     F07     ZA     F04&20,0&X6         IS PRODUCT ZERO             11  19873  Q M 19872 00#.0
BE60             BZ     F05                 BRANCH-YES,MULTIPLICATION BY 0 OK  7  19884  J 19899 V
BE61             B      SE1                 BRANCH TO ERROR ROUTINE      7  19891  J 27220
BE62             H                                    ROUTINE122 ERROR   1  19898  .
BE63     *           DIVIDING THE PRODUCT BY THE MULTIPLICAND AA, CAUSED
BE64     *           A DIVIDE OVERFLOW. THIS INDICATES AA IS ZERO AND THE
BE65     *           PRODUCT SHOULD BE ZERO. THE PRODUCT IS NOT ZERO.
```

```
PGLIN   LABEL    OPCOD  OPERAND                                          CT  ADDRS  INSTRUCTION
BE67    FO5      MRW    CS1,0              SET W/M OVER REMAINDER AREA   12  19899  D 28668 00000 @
BE68             MLZS   CS1,0&X5           CLEAR REMAINDER SIGN          12  19911  D 28668 00##0 2
BE69             C      CS1,0&X5           WAS REMAINDER ZERO            11  19923  C 28668 00##0
BE70             BE     FO6                BRANCH-YES-OK                  7  19934  J 19949 S
BE71             B      SE1                BRANCH TO ERROR ROUTINE        7  19941  J 27220
BE72             H                                    ROUTINE122 ERROR   1  19948  .
BE73    *            THE RESULT OF DIVIDING THE PRODUCT OF AA AND BB BY
BE74    *            AA HAD A REMAINDER OTHER THAN ZERO.
BE75    FO6      BCE    FO1,TAD1,1         LOOP ROUTINE122               12  19949  B 19645 01001 1
BE76             B      SC1                STEP ROUTINE COUNTER TO123     7  19961  J 27380
BE77    *ROUTINE123-CHECK COMPARE INSTRUCTION.
BE78    FP1      BNQ    ITR                BRANCH INQUIRY                 7  19968  J 01334 Q
BE79             MLCWA  DD,0&X5            DD TO ADDRESS EE              12  19975  D 01911 00##0 X
BE80             MLCWA  0&X5,0&X6          DD TO ADDRESS FF              12  19987  D 00##0 00#.0 X
BE81             CW     0&X6                                              6  19999  ¤ 00#.0
BE82             MLWA   DD,0&X6-1          LENGTHEN DD AT ADDRESS FF     12  20005  D 01911 99ZR9 U
BE83             C      0&X6,0&X5          COMPARE LONG DD WITH DD       11  20017  C 00#.0 00##0
BE84             BE     FP2                BRANCH-OK                      7  20028  J 20050 S
BE85             B      SE1                BRANCH TO ERROR ROUTINE        7  20035  J 27220
BE86             H                                    ROUTINE123 ERROR   1  20042  .
BE87    *            ADDRESS FF DID NOT COMPARE WITH ADDRESS EE. ADDR EE
BE88    *        CONTAINS CONSTANT DD. ADDR FF CONTAINS CONST DD
BE89    *            WITH THE WORD MARK MOVED ONE POSITION LEFT.
BE90             B      FP4                                            7  20043  J 20086
BE91    FP2      BH     FP3                                            7  20050  J 20078 U
BE92             BL     FP3                                            7  20057  J 20078 T
BE93             BU     FP3                                            7  20064  J 20078 /
BE94             B      FP4                                            7  20071  J 20086
BE95    FP3      B      SE1                BRANCH TO ERROR ROUTINE        7  20078  J 27220
BE96             H                                    ROUTINE123 ERROR   1  20085  .
BE97    *            THE ABOVE COMPARE SET THE HIGH AND/OR LOW AND/OR
BE98    *            UNEQUAL INDICATOR.
BE99    *            IT SHOULD HAVE SET ONLY THE EQUAL INDICATOR.
BF00    FP4      C      0&X5,0&X6          COMPARE DD AND LONG DD        11  20086  C 00##0 00#.0
BF01             BH     FP5                BRANCH-OK                      7  20097  J 20119 U
```

```
PGLIN  LABEL  OPCOD  OPERAND                                          CT  ADDRS  INSTRUCTION
BF03          B      SE1                 BRANCH TO ERROR ROUTINE      7  20104  J 27220
BF04          H                                        ROUTINE123 ERROR  1  20111  .
BF05    *          COMPARING ADDRESS EE WITH ADDRESS FF DID NOT SET THE
BF06    *          COMPARE HIGH INDICATOR. THE FIELD AT ADDR FF IS ONE
BF07    *          CHARACTER LONGER THAN THE FIELD AT ADDRESS EE.
BF08          B      FP7                                              7  20112  J 20148
BF09    FP5   BE     FP6                                              7  20119  J 20140 S
BF10          BL     FP6                                              7  20126  J 20140 T
BF11          BU     FP7                 BRANCH-OK                    7  20133  J 20148 /
BF12    FP6   B      SE1                 BRANCH TO ERROR ROUTINE      7  20140  J 27220
BF13          H                                        ROUTINE123 ERROR  1  20147  .
BF14    *          THE ABOVE COMPARE SET THE EQUAL AND/OR LOW
BF15    *          INDICATOR OR FAILED TO SET THE HIGH AND/OR UNEQUAL
BF16    *          INDICATOR.
BF17    FP7   MLCWA  DD,0&X6             DD TO ADDRESS FF            12  20148  D 01911 00*.0 X
BF18          MLCS   @9@,0&X5           MAKE DD AT EE HIGH          12  20160  D 29279 00**0 3
BF19          MLCS   @ @,0&X6           MAKE DD AT FF LOW           12  20172  D 29208 00*.0 3
BF20          C      0&X5,0&X6                                        11  20184  C 00**0 00*.0
BF21          BL     FP8                 BRANCH-OK                    7  20195  J 20217 T
BF22          B      SE1                 BRANCH TO ERROR ROUTINE      7  20202  J 27220
BF23          H                                        ROUTINE123 ERROR  1  20209  .
BF24    *          THE LOW INDICATOR SHOULD HAVE BEEN SET BY THE ABOVE
BF25    *          COMPARE OPERATION.
BF26          B      FP10                                             7  20210  J 20246
BF27    FP8   BH     FP9                                              7  20217  J 20238 U
BF28          BE     FP9                                              7  20224  J 20238 S
BF29          BU     FP10                BRANCH-OK                    7  20231  J 20246 /
BF30    FP9   B      SE1                 BRANCH TO ERROR ROUTINE      7  20238  J 27220
BF31          H                                        ROUTINE123 ERROR  1  20245  .
BF32    *          THE ABOVE COMPARE SET THE HIGH AND/OR EQUAL
BF33    *          INDICATOR OR FAILED TO SET THE LOW AND/OR UNEQUAL
BF34    *          INDICATOR.
BF35    FP10  BCE    FP1,TAD1,1          LOOP ROUTINE123             12  20246  B 19968 01001 1
BF36          B      SC1                 STEP ROUTINE COUNTER TO124   7  20258  J 27380
```

```
PGLIN   LABEL     OPCOD  OPERAND                                          CT  ADDRS  INSTRUCTION
BF38    *ROUTINE124-CHECK CS INSTRUCTION.
BF39    FS1       BNQ    ITR              BRANCH INQUIRY                  7  20265  J 01334 Q
BF40              CS     0&X5             START CLEAR AT ADDRESS EE       6  20272  / 00**0
BF41              SBR    X1               SAVE BAR                        7  20278  G 00029 B
BF42              C      X1,@99@          CHECK FOR PROPER STOP          11  20285  C 00029 29281
BF43              BE     FS2              BRANCH-OK                       7  20296  J 20311 S
BF44              B      SE1              BRANCH TO ERROR ROUTINE         7  20303  J 27220
BF45              H                                    ROUTINE124 ERROR   1  20310  .
BF46    *              CLEAR STORAGE INSTRUCTION STOPPED ON WRONG ADDRESS.
BF47    *              THE LAST ADDRESS CLEARED MINUS ONE IS STORED IN X1.
BF48    FS2       MLNA   EE,FS3&10        STORE ADDR EE IN BBF INSTRUCTION 12  20311  D 01916 20333 /
BF49    FS3       BBE    FS5,0,M          CHECK CLEARING                  12  20323  W 20393 00000 M
BF50              SBR    FS3&10                                           7  20335  G 20333 B
BF51              SBR    X1                                               7  20342  G 00029 B
BF52              C      X1,@99@          ARE ALL LOCATIONS CHECKED YET   11  20349  C 00029 29281
BF53              BU     FS3              BRANCH-NO                       7  20360  J 20323 /
BF54    FS4       CS     FS6,0&X5         CHECK CS BRANCH                11  20367  / 20408 00**0
BF55              B      SE1              BRANCH TO ERROR ROUTINE         7  20378  J 27220
BF56              H                                    ROUTINE124 ERROR   1  20385  .
BF57    *              THE CLEAR STORAGE AND BRANCH INSTRUCTION FAILED TO
BF58    *              BRANCH.
BF59              B      FS6              ROUTINE ENDED WITH ERROR        7  20386  J 20408
BF60    FS5       B      SE1              BRANCH TO ERROR ROUTINE         7  20393  J 27220
BF61              H                                    ROUTINE124 ERROR   1  20400  .
BF62    *              THE FIRST CLEAR STORAGE INSTRUCTION FAILED TO CLEAR
BF63    *              STORAGE. THE HIGHEST ADDRESS NOT CLEARED IS STORED
BF64    *              IN INDEX REG 1.
BF65              B      FS4                                              7  20401  J 20367
BF66    FS6       BCE    FS1,TAD1,1       LOOP ROUTINE124                12  20408  B 20265 01001 1
BF67              B      SC1              STEP ROUTINE COUNTER TO125      7  20420  J 27380
```

```
PGLIN   LABEL     OPCOD  OPERAND                                  CT  ADDRS  INSTRUCTION
BF69    *ROUTINE125-FORM HIGH, LOW AND EQUAL CONSTANTS FOR TABLE LOOKUP
BF70    *          INSTRUCTION CHECK ROUTINES.
BF71    FT1       BNQ    ITR              BRANCH INQUIRY           7  20427  J 01334 Q
BF72              MLWA   CR4&16,EQUAL     CLEAR W/MS IN CONSTANTS 12  20434  D 01733 20676 U
BF73              MLWA   CR4&16                                   6  20446  D 01733
BF74              MLWA   CR4&16                                   6  20452  D 01733
BF75              MLCA   DD,HIGH          FORM HIGH CONSTANT      12  20458  D 01911 20642 T
BF76              SBR    FT2&10                                   7  20470  G 20487 B
BF77    FT2       MLCWA  HIIND,0                                  12  20477  D 20693 00000 X
BF78              MLCA   DD,LOW           FORM LOW CONSTANT       12  20489  D 01911 20659 T
BF79              SBR    FT3&10                                   7  20501  G 20518 B
BF80    FT3       MLCWA  LOIND,0                                  12  20508  D 20698 00000 X
BF81              MLCA   DD,EQUAL         FORM EQUAL CONSTANT     12  20520  D 01911 20676 T
BF82              SBR    FT4&10                                   7  20532  G 20549 B
BF83    FT4       MLCS   AA,0                                     12  20539  D 01878 00000 3
BF84              SBR    FT5&10                                   7  20551  G 20568 B
BF85    FT5       MLCWA  EQIND,0                                  12  20558  D 20704 00000 X
BF86              CW     SEARCH           FORM SEARCH ARGUMENT     6  20570  ¤ 20687
BF87              MLWA   DD,SEARCH-1                             12  20576  D 01911 20686 U
BF88              MLCB   EQUAL,SEARCH                            12  20588  D 20676 20687 L
BF89              BCE    FT1,TAD1,1       LOOP ROUTINE125         12  20600  B 20427 01001 1
BF90              B      SC1              STEP ROUTINE COUNTER TO126  7  20612  J 27380
BF91              B      FU1              BRANCH TO NEXT ROUTINE   7  20619  J 20731
BF92    *TABLE LOOKUP CHECK CONSTANTS. THE LEFT PORTION OF THE HIGH, LOW
BF93    *       AND EQUAL CONSTANTS ARE FUNCTIONS DESCRIBING THE RIGHT
BF94    *       PORTION WHICH IS THE TABLE ARGUMENT.
BF95    HIGH      DC     @HIGH            @ DD WITH CHAR 9 PLACED AT LEFT  17  20642
BF96    LOW       DC     @LOW             @ DD WITH BLANK PLACED AT LEFT   17  20659
BF97    EQUAL     DC     @EQUAL           @ DD WITH AA UNITS PLACED AT LEFT 17  20676
BF98    SEARCH    DCW    @          @       DD WITH AA UNITS PLACED AT LEFT 11  20687
BF99    HIIND     DCW    @HIGH.9@                                 6  20693
BG00    LOIND     DCW    @LOW. @                                  5  20698
BG01    EQIND     DCW    @EQUAL.@                                 6  20704
BG02    FSIND     DCW    @FIRST.&.@                               8  20712
BG03    ENIND     DCW    @END.@                                   4  20716
BG04     FOUND    DCW    @            @    FUNCTION LOOKUP STOPPED AT  14  20717
```

```
PGLIN   LABEL    OPCOD  OPERAND                                          CT  ADDRS  INSTRUCTION
BG06    *ROUTINE126-FORM TABLE OF HIGH CONSTANTS WITH A LOW FOLLOWED BY AN
BG07    *          EQUAL FOR USE BY NEXT ROUTINE.
BG08    FU1      BNQ    ITR              BRANCH INQUIRY                   7  20731  J 01334 Q
BG09             MLCWA  HIGH,39998       STORE HI AND HI INDICATOR CONST 12  20738  D 20642 39998 X
BG10             SBR    FU2&10           SAVE NEXT ADDRESS                7  20750  G 20779 B
BG11             MLWA   HIGH,39997       CLEAR WORD MARK                 12  20757  D 20642 39997 U
BG12    FU2      MLCWA  FSIND,0          ADD FIRST INDICATOR             12  20769  D 20712 00000 X
BG13             MLCWA  HIGH             STORE HI AND HI INDICATOR CONST  6  20781  D 20642
BG14             MLCWA  HIGH             STORE HI AND HI INDICATOR CONST  6  20787  D 20642
BG15             MLCWA  LOW              STORE LO AND LO INDICATOR CONST  6  20793  D 20659
BG16             MLCWA  HIGH             STORE HI AND HI INDICATOR CONST  6  20799  D 20642
BG17             MLCWA  HIGH             STORE HI AND HI INDICATOR CONST  6  20805  D 20642
BG18             MLCWA  EQUAL            STORE EQ AND EQ INDICATOR CONST  6  20811  D 20676
BG19             MLCWA  HIGH             STORE HI AND HI INDICATOR CONST  6  20817  D 20642
BG20             MLCWA  HIGH             STORE HI AND HI INDICATOR CONST  6  20823  D 20642
BG21             SW                      TERMINATE TABLE                  1  20829  .
BG22             SBR    FU3&10                                            7  20830  G 20847 B
BG23    FU3      MLCWA  ENIND,0          ADD END INDICATOR TO TABLE END  12  20837  D 20716 00000 X
BG24             BCE    FU1,TAD1,1       LOOP ROUTINE126                 12  20849  B 20731 01001 1
BG25             B      SC1              STEP ROUTINE COUNTER TO127       7  20861  J 27380
BG26    *ROUTINE127-CHECK LE, LLE, LOOKUP TO ANY, AND LOOKUP TO END
BG27    *          INSTRUCTIONS USING TABLE GENERATED BY LAST ROUTINE.
BG28    FV1      BNQ    ITR              BRANCH INQUIRY                   7  20868  J 01334 Q
BG29             LE     SEARCH,39998  *** LOOKUP EQUAL ***              12  20875  T 20687 39998 2
BG30             SBR    X1               SAVE FOR CHECK                   7  20887  G 00029 B
BG31             SBR    FV2&5                                             7  20894  G 20913 B
BG32             SBR    FV3&10                                            7  20901  G 20957 B
BG33    FV2      MLC    0,FOUND&13       STORE FUNCTION FOUND            12  20908  D 00000 20730 C
BG34             MLC    CS2              CLEAR REMAINDER OF STORAGE       6  20920  D 28678
BG35             BU     FV20             BRANCH-ERROR                     7  20926  J 20972 /
BG36             BE     FV3                                               7  20933  J 20947 S
BG37             B      FV20             BRANCH-ERROR                     7  20940  J 20972
BG38    FV3      C      EQIND,0          DID LE STOP ON EQUAL            11  20947  C 20704 00000
BG39             BE     FV4              BRANCH-YES-OK                    7  20958  J 20987 S
BG40             B      FV20             BRANCH-ERROR                     7  20965  J 20972
BG41    FV20     SBR    X2               SAVE ERROR BRANCH ADDRESS IN X2   7  20972  G 00034 B
```

```
PGLIN   LABEL   OPCOD  OPERAND                                          CT  ADDRS  INSTRUCTION
BG43            B      SE1                BRANCH TO ERROR ROUTINE       7  20979  J 27220
BG44            H                                        ROUTINE127 ERROR  1  20986  .
BG45    *           LE DID NOT STOP ON EQUAL,OR THE UNEQUAL INDICATOR
BG46    *           CAME ON,OR THE EQUAL INDICATOR STAYED OFF.
BG47    *           X1 CONTAINS BAR,X2 CONTAINS ERROR BRANCH ADDRESS.
BG48    *           DISPLAY ADDR LABELED-FOUND-TO SEE THE FUNCTION FOUND
BG49    FV4     LLE    SEARCH,39998   *** LOOKUP LOW OR EQUAL ***  12  20987  T 20687 39998 3
BG50            SBR    X1                 SAVE FOR CHECK             7  20999  G 00029 B
BG51            SBR    FV5&5                                         7  21006  G 21025 B
BG52            SBR    FV6&10                                        7  21013  G 21069 B
BG53    FV5     MLC    0,FOUND&13         STORE FUNCTION FOUND       12  21020  D 00000 20730 C
BG54            MLC    CS2                CLEAR REMAINDER OF STORAGE  6  21032  D 28678
BG55            BE     FV30               BRANCH-ERROR               7  21038  J 21084 S
BG56            BL     FV6                                           7  21045  J 21059 T
BG57            B      FV30               BRANCH-ERROR               7  21052  J 21084
BG58    FV6     C      LOIND-1,0          DID LLE STOP ON LOW       11  21059  C 20697 00000
BG59            BE     FV7                BRANCH-YES-OK              7  21070  J 21099 S
BG60            B      FV30               BRANCH-ERROR               7  21077  J 21084
BG61    FV30    SBR    X2                 SAVE ERROR BRANCH ADDRESS IN X2  7  21084  G 00034 B
BG62            B      SE1                BRANCH TO ERROR ROUTINE       7  21091  J 27220
BG63            H                                        ROUTINE127 ERROR  1  21098  .
BG64    *           LLE DID NOT STOP ON LOW AS IT SHOULD,OR THE EQUAL
BG65    *           INDICATOR CAME ON,OR THE LOW INDICATOR STAYED OFF.
BG66    *           X1 CONTAINS BAR,X2 CONTAINS ERROR BRANCH ADDRESS.
BG67    *           DISPLAY ADDR LABELED-FOUND-TO SEE THE FUNCTION FOUND
BG68    FV7     DCW    @T@            *** LOOKUP TO ANY ***      1  21099
BG69            DC     SEARCH                                    5  21104  20687
BG70            DC     399987                                    6  21110
BG71            SBR    X1                 SAVE FOR CHECK         7  21111  G 00029 B
BG72            SBR    FV8&5                                     7  21118  G 21137 B
BG73            SBR    FV9&10                                    7  21125  G 21185 B
BG74    FV8     MLC    0,FOUND&13         STORE FUNCTION FOUND   12  21132  D 00000 20730 C
BG75            MLC    CS2                CLEAR REMAINDER OF STORAGE  6  21144  D 28678
BG76            S      &5,FV9&10                                 11  21150  S 29282 21185
BG77            BH     FV9                                       7  21161  J 21175 U
BG78            B      FV40               BRANCH-ERROR           7  21168  J 21305
```

```
PGLIN   LABEL   OPCOD  OPERAND                                          CT  ADDRS  INSTRUCTION
BG80    FV9     C      FSIND,0          DID IT STOP ON FIRST ARGUMENT   11  21175  C 20712 00000
BG81            BE     FV10             BRANCH-YES-OK                    7  21186  J 21215 S
BG82            B      FV40             BRANCH-ERROR                     7  21193  J 21305
BG83            SBR    X2               SAVE ERROR BRANCH ADDRESS IN X2  7  21200  G 00034 B
BG84            B      SE1              BRANCH TO ERROR ROUTINE          7  21207  J 27220
BG85            H                                   ROUTINE127 ERROR    1  21214  .
BG86    *           THE LOOKUP TO ANY INSTRUCTION DID NOT STOP ON THE
BG87    *           FIRST ARGUMENT IN TABLE,OR THE HIGH INDICATOR STAYED
BG88    *           OFF.
BG89    *           X1 CONTAINS BAR,X2 CONTAINS ERROR BRANCH ADDRESS.
BG90    *           DISPLAY ADDR LABELED-FOUND-TO SEE THE FUNCTION FOUND
BG91    FV10    DCW    @T@              *** LOOKUP TO END ***            1  21215
BG92            DC     SEARCH                                            5  21220  20687
BG93            DC     @39998 @                                          6  21226
BG94            SBR    X1               SAVE FOR CHECK                   7  21227  G 00029 B
BG95            SBR    FV12&10                                           7  21234  G 21290 B
BG96            SBR    FV11&5                                            7  21241  G 21253 B
BG97    FV11    MLC    0,FOUND&13       STORE FUNCTION FOUND            12  21248  D 00000 20730 C
BG98            MLC    CS2              CLEAR REMAINDER OF STORAGE       6  21260  D 28678
BG99            BH     FV12                                              7  21266  J 21280 U
BH00            B      FV40             BRANCH-ERROR                     7  21273  J 21305
BH01    FV12    C      ENIND,0          DID IT STOP AT END OF TABLE     11  21280  C 20716 00000
BH02            BE     FV13             BRANCH-YES-OK                    7  21291  J 21320 S
BH03            B      FV40             BRANCH-ERROR                     7  21298  J 21305
BH04    FV40    SBR    X2               SAVE ERROR BRANCH ADDRESS IN X2  7  21305  G 00034 B
BH05            B      SE1              BRANCH TO ERROR ROUTINE          7  21312  J 27220
BH06            H                                   ROUTINE127 ERROR    1  21319  .
BH07    *           THE LOOKUP TO END INSTRUCTION DID NOT STOP ON THE
BH08    *           END OF THE TABLE,OR THE HIGH INDICATOR STAYED OFF.
BH09    *           X1 CONTAINS BAR,X2 CONTAINS ERROR BRANCH ADDRESS.
BH10    *           DISPLAY ADDR LABELED-FOUND-TO SEE THE FUNCTION FOUND
BH11    FV13    BCE    FV1,TAD1,1       LOOP ROUTINE127                 12  21320  B 20868 01001 1
BH12            B      SC1              STEP ROUTINE COUNTER TO128       7  21332  J 27380
```

```
PGLIN   LABEL     OPCOD  OPERAND                                          CT  ADDRS  INSTRUCTION
BH14    *ROUTINE128-FORM TABLE OF HIGH CONSTANTS WITH AN EQUAL FOLLOWED BY
BH15    *          A LOW FOR USE BY NEXT ROUTINE.
BH16    FW1       BNQ    ITR                BRANCH INQUIRY                 7  21339  J 01334 Q
BH17              SCNLA  39998,39998        SCAN OVER CONST LEFT FROM LAST RT 12 21346  D 39998 39998 S
BH18              SCNLA                                                    1  21358  D                  B
BH19              SCNLA                                                    1  21359  D
BH20              SAR    FW2&10                                            7  21360  G 21377 A
BH21    FW2       MLCWA  EQUAL,0           STORE EQ AND EQ INDICATOR CONST 12  21367  D 20676 00000 X
BH22              MLCWA  HIGH              STORE HI AND HI INDICATOR CONST  6  21379  D 20642
BH23              MLCWA  HIGH              STORE HI AND HI INDICATOR CONST  6  21385  D 20642
BH24              MLCWA  LOW               STORE LO AND LO INDICATOR CONST  6  21391  D 20659
BH25              BCE    FW1,TAD1,1        LOOP ROUTINE128                 12  21397  B 21339 01001 1
BH26              B      SC1               STEP ROUTINE COUNTER TO129       7  21409  J 27380
BH27    *ROUTINE129-CHECK LL, AND LLE INSTRUCTIONS USING TABLE GENERATED BY
BH28    *          LAST ROUTINE.
BH29    FX1       BNQ    ITR                BRANCH INQUIRY                 7  21416  J 01334 Q
BH30              LL     SEARCH,39998   *** LOOKUP LOW ***                12  21423  T 20687 39998 1
BH31              SBR    X1                SAVE FOR CHECK                   7  21435  G 00029 B
BH32              SBR    FX2&5                                              7  21442  G 21461 B
BH33              SBR    FX3&10                                             7  21449  G 21498 B
BH34    FX2       MLC    0,FOUND&13        STORE FUNCTION FOUND            12  21456  D 00000 20730 C
BH35              MLC    CS2               CLEAR REMAINDER OF STORAGE       6  21468  D 28678
BH36              BL     FX3                                                7  21474  J 21488 T
BH37              B      FX10              BRANCH-ERROR                     7  21481  J 21513
BH38    FX3       C      LOIND-1,0         DID LL STOP ON LOW              11  21488  C 20697 00000
BH39              BE     FX4               BRANCH-YES-OK                    7  21499  J 21528 S
BH40              B      FX10              BRANCH-ERROR                     7  21506  J 21513
BH41    FX10      SBR    X2                SAVE ERROR BRANCH ADDRESS IN X2  7  21513  G 00034 B
BH42              B      SE1               BRANCH TO ERROR ROUTINE          7  21520  J 27220
BH43              H                                          ROUTINE129 ERROR 1  21527  .
BH44    *              LL DID NOT STOP ON LOW,OR THE LOW INDICATOR STAYED
BH45    *              OFF.
BH46    *              X1 CONTAINS BAR,X2 CONTAINS ERROR BRANCH ADDRESS.
BH47    *              DISPLAY ADDR LABELED-FOUND-TO SEE THE FUNCTION FOUND
```

```
PGLIN   LABEL   OPCOD  OPERAND                                  CT  ADDRS  INSTRUCTION
BH49    FX4     LLE    SEARCH,39998   *** LOOKUP LOW OR EQUAL***  12  21528  T 20687 39998 3
BH50            SBR    X1             SAVE FOR CHECK              7  21540  G 00029 B
BH51            SBR    FX5&5                                      7  21547  G 21566 B
BH52            SBR    FX6&10                                     7  21554  G 21610 B
BH53    FX5     MLC    0,FOUND&13     STORE FUNCTION FOUND        12  21561  D 00000 20730 C
BH54            MLC    CS2            CLEAR REMAINDER OF STORAGE  6  21573  D 28678
BH55            BU     FX20           BRANCH-ERROR                7  21579  J 21625 /
BH56            BE     FX6                                        7  21586  J 21600 S
BH57            B      FX20           BRANCH-ERROR                7  21593  J 21625
BH58    FX6     C      EQIND,0        DID LLE STOP ON EQUAL      11  21600  C 20704 00000
BH59            BE     FX7            BRANCH-YES-OK               7  21611  J 21640 S
BH60            B      FX20           BRANCH-ERROR                7  21618  J 21625
BH61    FX20    SBR    X2             SAVE ERROR BRANCH ADDRESS IN X2  7  21625  G 00034 B
BH62            B      SE1            BRANCH TO ERROR ROUTINE     7  21632  J 27220
BH63            H                                  ROUTINE129 ERROR  1  21639  .
BH64    *           LLE DID NOT STOP ON EQUAL,OR THE UNEQUAL INDICATOR
BH65    *           CAME ON,OR THE EQUAL INDICATOR STAYED OFF.
BH66    *           X1 CONTAINS BAR,X2 CONTAINS ERROR BRANCH ADDRESS.
BH67    *           DISPLAY ADDR LABELED-FOUND-TO SEE THE FUNCTION FOUND
BH68    FX7     BCE    FX1,TAD1,1     LOOP ROUTINE129            12  21640  B 21416 01001 1
BH69            B      SC1            STEP ROUTINE COUNTER TO130  7  21652  J 27380
```

```
PGLIN    LABEL     OPCOD  OPERAND                                    CT  ADDRS  INSTRUCTION
BH71     *ROUTINE130-FORM TABLE OF LOW CONSTANTS WITH A HIGH FOLLOWED BY AN
BH72     *          EQUAL FOR USE BY NEXT ROUTINE.
BH73     FY1       BNQ    ITR              BRANCH INQUIRY              7  21659  J 01334 Q
BH74               MLCWA  LOW,39998        STORE LO AND LO INDICATOR CONST 12  21666  D 20659 39998 X
BH75               SBR    FY2&10           SAVE NEXT ADDRESS           7  21678  G 21707 B
BH76               MLWA   LOW,39997        CLEAR WORD MARK            12  21685  D 20659 39997 U
BH77     FY2       MLCWA  FSIND,0          ADD FIRST INDICATOR        12  21697  D 20712 00000 X
BH78               MLCWA  LOW              STORE LO AND LO INDICATOR CONST  6  21709  D 20659
BH79               MLCWA  LOW              STORE LO AND LO INDICATOR CONST  6  21715  D 20659
BH80               MLCWA  HIGH             STORE HI AND HI INDICATOR CONST  6  21721  D 20642
BH81               MLCWA  LOW              STORE LO AND LO INDICATOR CONST  6  21727  D 20659
BH82               MLCWA  LOW              STORE LO AND LO INDICATOR CONST  6  21733  D 20659
BH83               MLCWA  EQUAL            STORE EQ AND EQ INDICATOR CONST  6  21739  D 20676
BH84               MLCWA  LOW              STORE LO AND LO INDICATOR CONST  6  21745  D 20659
BH85               MLCWA  LOW              STORE LO AND LO INDICATOR CONST  6  21751  D 20659
BH86               SW                      TERMINATE TABLE             1  21757  .
BH87               SBR    FY3&10                                       7  21758  G 21775 B
BH88     FY3       MLCWA  ENIND,0          ADD END INDICATOR TO TABLE END 12  21765  D 20716 00000 X
BH89               BCE    FY1,TAD1,1       LOOP ROUTINE130            12  21777  B 21659 01001 1
BH90               B      SC1              STEP ROUTINE COUNTER TO131  7  21789  J 27380
```

```
PGLIN   LABEL    OPCOD  OPERAND                                    CT  ADDRS  INSTRUCTION

BH92     *ROUTINE131-CHECK LEH INSTRUCTION USING TABLE GENERATED BY LAST
BH93     *          ROUTINE.
BH94     FZ1      BNQ    ITR              BRANCH INQUIRY            7  21796  J 01334 Q
BH95              LEH    SEARCH,39998     ***LOOKUP EQUAL OR HIGH***  12  21803  T 20687 39998 6
BH96              SBR    X1               SAVE FOR CHECK            7  21815  G 00029 B
BH97              SBR    FZ2&5                                      7  21822  G 21841 B
BH98              SBR    FZ3&10                                     7  21829  G 21885 B
BH99     FZ2      MLC    0,FOUND&13       STORE FUNCTION FOUND      12  21836  D 00000 20730 C
BI00              MLC    CS2              CLEAR REMAINDER OF FIELD  6  21848  D 28678
BI01              BE     FZ10             BRANCH-ERROR              7  21854  J 21900 S
BI02              BH     FZ3                                        7  21861  J 21875 U
BI03              B      FZ10             BRANCH-ERROR              7  21868  J 21900
BI04     FZ3      C      HIIND-1,0        DID LEH STOP ON HIGH      11  21875  C 20692 00000
BI05              BE     FZ4              BRANCH-YES-OK             7  21886  J 21915 S
BI06              B      FZ10             BRANCH-ERROR              7  21893  J 21900
BI07     FZ10     SBR    X2               SAVE ERROR BRANCH ADDRESS  7  21900  G 00034 B
BI08              B      SE1              BRANCH TO ERROR ROUTINE   7  21907  J 27220
BI09              H                                  ROUTINE131 ERROR  1  21914  .
BI10     *              LEH DID NOT STOP ON HIGH,OR THE EQUAL INDICATOR
BI11     *              CAME ON,OR THE HIGH INDICATOR STAYED OFF.
BI12     *              X1 CONTAINS BAR,X2 CONTAINS ERROR BRANCH ADDRESS.
BI13     *              DISPLAY ADDR LABELED-FOUND-TO SEE THE FUNCTION FOUND
BI14     FZ4      BCE    FZ1,TAD1,1       LOOP ROUTINE131           12  21915  B 21796 01001 1
BI15              B      SC1              STEP ROUTINE COUNTER TO132  7  21927  J 27380
```

```
PGLIN   LABEL    OPCOD  OPERAND                                          CT  ADDRS  INSTRUCTION
B117    *ROUTINE132-FORM TABLE OF LOW CONSTANTS WITH AN EQUAL FOLLOWED BY
B118    *          A HIGH FOR USE BY NEXT ROUTINE.
B119    GA1      BNQ    ITR                BRANCH INQUIRY                 7  21934  J 01334 Q
B120             SCNLA  39998,39998        SCAN OVER CONST LEFT FROM LAST RT 12  21941  D 39998 39998 $B
B121             SCNLA                                                    1  21953  D
B122             SCNLA                                                    1  21954  D
B123             SAR    GA2&10                                            7  21955  G 21972 A
B124    GA2      MLCWA  EQUAL,0           STORE EQ AND EQ INDICATOR CONST 12  21962  D 20676 00000 X
B125             MLCWA  LOW               STORE LO AND LO INDICATOR CONST  6  21974  D 20659
B126             MLCWA  LOW               STORE LO AND LO INDICATOR CONST  6  21980  D 20659
B127             MLCWA  HIGH              STORE HI AND HI INDICATOR CONST  6  21986  D 20642
B128             BCE    GA1,TAD1,1        LOOP ROUTINE132                 12  21992  B 21934 01001 1
B129             B      SC1               STEP ROUTINE COUNTER TO133       7  22004  J 27380
B130    *ROUTINE133-CHECK LH AND LEH INSTRUCTIONS USING TABLE GENERATED BY
B131    *          LAST ROUTINE.
B132    GB1      BNQ    ITR                BRANCH INQUIRY                 7  22011  J 01334 Q
B133             LH     SEARCH,39998   *** LOOKUP HIGH ***               12  22018  T 20687 39998 4
B134             SBR    X1                SAVE FOR CHECK                   7  22030  G 00029 B
B135             SBR    GB3&10                                             7  22037  G 22093 B
B136             SBR    GB2&5                                              7  22044  G 22056 B
B137    GB2      MLC    0,FOUND&13        STORE FUNCTION FOUND            12  22051  D 00000 20730 C
B138             MLC    CS2               CLEAR REMAINDER OF STORAGE       6  22063  D 28678
B139             BH     GB3                                                7  22069  J 22083 U
B140             B      GB10              BRANCH-ERROR                     7  22076  J 22108
B141    GB3      C      HIIND-1,0         DID LH STOP ON HIGH             11  22083  C 20692 00000
B142             BE     GB4               BRANCH-YES-OK                    7  22094  J 22123 S
B143             B      GB10              BRANCH-ERROR                     7  22101  J 22108
B144    GB10     SBR    X2                SAVE ERROR BRANCH ADDRESS IN X2  7  22108  G 00034 B
B145             B      SE1               BRANCH TO ERROR ROUTINE          7  22115  J 27220
B146             H                                                ROUTINE133 ERROR  1  22122  .
B147    *              LH DID NOT STOP ON HIGH OR THE HIGH INDICATOR STAYED
B148    *              OFF.
B149    *              X1 CONTAINS BAR,X2 CONTAINS ERROR BRANCH ADDRESS.
B150    *              DISPLAY ADDR LABELED-FOUND-TO SEE THE FUNCTION FOUND
```

```
PGLIN   LABEL   OPCOD  OPERAND                                          CT  ADDRS  INSTRUCTION
BI52    GB4     LEH    SEARCH,39998    *** LOOKUP EQUAL OR HIGH ***     12  22123  T 20687 39998 6
BI53            SBR    X1                  SAVE FOR CHECK               7  22135  G 00029 B
BI54            SBR    GB5&5                                            7  22142  G 22161 B
BI55            SBR    GB6&10                                           7  22149  G 22205 B
BI56    GB5     MLC    0,FOUND&13          STORE FUNCTION FOUND        12  22156  D 00000 20730 C
BI57            MLC    CS2                 CLEAR REMAINDER OF STORAGE   6  22168  D 28678
BI58            BU     GB20                BRANCH-ERROR                 7  22174  J 22220 /
BI59            BE     GB6                                              7  22181  J 22195 S
BI60            B      GB20                BRANCH-ERROR                 7  22188  J 22220
BI61    GB6     C      EQIND,0             DID LEH STOP ON EQUAL       11  22195  C 20704 00000
BI62            BE     GB7                 BRANCH-YES-OK                7  22206  J 22235 S
BI63            B      GB20                BRANCH-ERROR                 7  22213  J 22220
BI64    GB20    SBR    X2                  SAVE ERROR BRANCH ADDRESS IN X2  7  22220  G 00034 B
BI65            B      SE1                 BRANCH TO ERROR ROUTINE      7  22227  J 27220
BI66            H                                        ROUTINE133 ERROR  1  22234  .
BI67    *           LEH DID NOT STOP ON EQUAL,OR THE UNEQUAL INDICATOR
BI68    *           CAME ON,OR THE EQUAL INDICATOR STAYED OFF.
BI69    *           X1 CONTAINS BAR,X2 CONTAINS ERROR BRANCH ADDRESS.
BI70    *           DISPLAY ADDR LABELED-FOUND-TO SEE THE FUNCTION FOUND
BI71    GB7     BCE    GB1,TAD1,1          LOOP ROUTINE133             12  22235  B 22011 01001 1
BI72            B      SC1                 STEP ROUTINE COUNTER TO134   7  22247  J 27380
```

```
PGLIN     LABEL     OPCOD  OPERAND                                          CT  ADDRS  INSTRUCTION
BI74      *ROUTINE134-FORM TABLE OF EQUAL CONSTANTS WITH A HIGH FOLLOWED BY A
BI75      *          LOW FOR USE BY NEXT ROUTINE.
BI76      GC1       BNQ    ITR              BRANCH INQUIRY                    7  22254  J 01334 Q
BI77                MLCWA  EQUAL,39998      STORE EQ AND EQ INDICATOR CONST  12  22261  D 20676 39998 X
BI78                SBR    GC2&10           SAVE NEXT ADDRESS                 7  22273  G 22302 B
BI79                MLWA   EQUAL,39997      CLEAR WORD MARK                  12  22280  D 20676 39997 U
BI80      GC2       MLCWA  FSIND,0          ADD FIRST INDICATOR              12  22292  D 20712 00000 X
BI81                MLCWA  EQUAL            STORE EQ AND EQ INDICATOR CONST   6  22304  D 20676
BI82                MLCWA  EQUAL            STORE EQ AND EQ INDICATOR CONST   6  22310  D 20676
BI83                MLCWA  HIGH             STORE HI AND HI INDICATOR CONST   6  22316  D 20642
BI84                MLCWA  EQUAL            STORE EQ AND EQ INDICATOR CONST   6  22322  D 20676
BI85                MLCWA  EQUAL            STORE EQ AND EQ INDICATOR CONST   6  22328  D 20676
BI86                MLCWA  LOW              STORE LO AND LO INDICATOR CONST   6  22334  D 20659
BI87                MLCWA  EQUAL            STORE EQ AND EQ INDICATOR CONST   6  22340  D 20676
BI88                MLCWA  EQUAL            STORE EQ AND EQ INDICATOR CONST   6  22346  D 20676
BI89                SBR    GC3&5                                             7  22352  G 22364 B
BI90      GC3       SW     0                TERMINATE TABLE                   6  22359  , 00000
BI91                SBR    GC4&10                                            7  22365  G 22382 B
BI92      GC4       MLCWA  ENIND,0          ADD END INDICATOR TO TABLE END   12  22372  D 20716 00000 X
BI93                BCE    GC1,TAD1,1       LOOP ROUTINE134                  12  22384  B 22254 01001 1
BI94                B      SC1              STEP ROUTINE COUNTER TO135        7  22396  J 27380
```

```
PGLIN   LABEL    OPCOD  OPERAND                                          CT  ADDRS  INSTRUCTION
BI96     *ROUTINE135-CHECK LLH INSTRUCTION USING TABLE GENERATED BY LAST
BI97     *          ROUTINE.
BI98     GD1      BNQ    ITR                BRANCH INQUIRY                 7  22403  J 01334 Q
BI99              LLH    SEARCH,39998  *** LOOKUP LOW OR HIGH ***        12  22410  T 20687 39998 S
BJ00              SBR    X1                 SAVE FOR CHECK                 7  22422  G 00029 B
BJ01              SBR    GD2&5                                             7  22429  G 22448 B
BJ02              SBR    GD3&10                                            7  22436  G 22492 B
BJ03     GD2      MLC    0,FOUND&13         STORE FUNCTION FOUND          12  22443  D 00000 20730 C
BJ04              MLC    CS2                CLEAR REMAINDER OF STORAGE     6  22455  D 28678
BJ05              BL     GD10               BRANCH-ERROR                   7  22461  J 22507 T
BJ06              BH     GD3                                               7  22468  J 22482 U
BJ07              B      GD10               BRANCH-ERROR                   7  22475  J 22507
BJ08     GD3      C      HIIND-1,0          DID LLH STOP ON HIGH          11  22482  C 20692 00000
BJ09              BE     GD4                BRANCH-YES-OK                  7  22493  J 22515 S
BJ10              B      GD10               BRANCH-ERROR                   7  22500  J 22507
BJ11     GD10     SBR    X2                 SAVE ERROR BRANCH ADDRESS IN X2 7  22507  G 00034 B
BJ12              H                                    ROUTINE135 ERROR    1  22514  .
BJ13     *             LLH DID NOT STOP ON HIGH,OR THE LOW INDICATOR CAME
BJ14     *             ON,OR THE HIGH INDICATOR STAYED OFF.
BJ15     *             X1 CONTAINS BAR,X2 CONTAINS ERROR BRANCH ADDRESS.
BJ16     *             DISPLAY ADDR LABELED-FOUND-TO SEE THE FUNCTION FOUND
BJ17     GD4      BCE    GD1,TAD1,1         LOOP ROUTINE135               12  22515  B 22403 01001 1
BJ18              B      SC1                STEP RCUTINE COUNTER TO136     7  22527  J 27380
BJ19     *ROUTINE136-FORM TABLE OF EQUAL CONSTANTS WITH A LOW FOLLOWED BY A
BJ20     *          HIGH FOR USE BY THE NEXT ROUTINE.
BJ21     GE1      BNQ    ITR                BRANCH INQUIRY                 7  22534  J 01334 Q
BJ22              SCNLA  39998,39998        SCAN OVER CONST LEFT FROM LAST RT 12 22541  D 39998 39998 S
BJ23              SCNLA                                                    1  22553  D                  B
BJ24              SCNLA                                                    1  22554  D
BJ25              SAR    GE2&10                                            7  22555  G 22572 A
BJ26     GE2      MLCWA  LOW,0              STORE LO AND LO INDICATOR CONST 12  22562  D 20659 00000 X
BJ27              MLCWA  EQUAL              STORE EQ AND EQ INDICATOR CONST  6  22574  D 20676
BJ28              MLCWA  EQUAL              STORE EQ AND EQ INDICATOR CONST  6  22580  D 20676
BJ29              MLCWA  HIGH               STORE HI AND HI INDICATOR CONST  6  22586  D 20642
BJ30              BCE    GE1,TAD1,1         LOOP ROUTINE136               12  22592  B 22534 01001 1
BJ31              B      SC1                STEP ROUTINE COUNTER TO137     7  22604  J 27380
```

```
PGLIN   LABEL    OPCOD  OPERAND                                          CT  ADDRS  INSTRUCTION
BJ33    *ROUTINE137-CHECK LLH INSTRUCTION USING TABLE GENERATED BY LAST
BJ34    *          ROUTINE.
BJ35    GF1      BNQ    ITR              BRANCH INQUIRY                  7  22611  J 01334 Q
BJ36             LLH    SEARCH,39998  *** LOOKUP LOW OR HIGH ***        12  22618  T 20687 39998 5
BJ37             SBR    X1               SAVE FOR CHECK                  7  22630  G 00029 B
BJ38             SBR    GF2&5                                            7  22637  G 22656 B
BJ39             SBR    GF3&10                                           7  22644  G 22700 B
BJ40    GF2      MLC    0,FOUND&13       STORE FUNCTION FOUND           12  22651  D 00000 20730 C
BJ41             MLC    CS2              CLEAR REMAINDER OF STORAGE      6  22663  D 28678
BJ42             BH     GF10             BRANCH-ERROR                    7  22669  J 22715 U
BJ43             BL     GF3                                              7  22676  J 22690 T
BJ44             B      GF10             BRANCH-ERROR                    7  22683  J 22715
BJ45    GF3      C      LOIND-1,0        DID LLH STOP ON LOW            11  22690  C 20697 00000
BJ46             BE     GF4              BRANCH-YES-OK                   7  22701  J 22730 S
BJ47             B      GF10             BRANCH-ERROR                    7  22708  J 22715
BJ48    GF10     SBR    X2               SAVE ERROR BRANCH ADDRESS IN X2 7  22715  G 00034 B
BJ49             B      SE1              BRANCH TO ERROR ROUTINE         7  22722  J 27220
BJ50             H                                   ROUTINE137 ERROR    1  22729  .
BJ51    *            LLH DID NOT STOP ON LOW,OR THE HIGH INDICATOR CAME
BJ52    *            ON&OR THE LOW INDICATOR STAYED OFF.
BJ53    *            X1 CONTAINS BAR,X2 CONTAINS ERROR BRANCH ADDRESS.
BJ54    *            DISPLAY ADDR LABELED-FOUND-TO SEE THE FUNCTION FOUND
BJ55    GF4      BCE    GF1,TAD1,1       LOOP ROUTINE137                12  22730  B 22611 01001 1
BJ56             B      SC1              STEP ROUTINE COUNTER TO138      7  22742  J 27380
```

```
PGLIN   LABEL    OPCOD  OPERAND          CT  ADDRS  INSTRUCTION
BJ58     *ROUTINE138-SIMULATE EDIT OPERATION OF NEXT ROUTINE WITHOUT USING
BJ59     *          EDIT INSTRUCTION.
BJ60     GG1      BNQ    ITR              7  22749  J 01334 Q
BJ61              MLCWA  CS1-9,EDTDA     12  22756  D 28659 24489 X
BJ62              MLCWA  BB,EDTDA        12  22768  D 01889 24489 X
BJ63              MLNWA  AA,EDTCTL       12  22780  D 01878 24457 V
BJ64              MLZB   CC,EDTCTL       12  22792  D 01900 24457 K
BJ65              BZN    GG24,DD,-       12  22804  V 23092 01911 K
BJ66     GG25     BZN    GG26,DD-1,*     12  22816  V 23135 01910 S
BJ67     GG28     BZN    GG27,DD-2,&     12  22828  V 23178 01909 B
BJ68              MLCWA  CS3,EDTSM       12  22840  D 28699 24478 X
BJ69              MLCWA  EDTCTL,EDTSM    12  22852  D 24457 24478 X
BJ70              MLCWA  CS1-12,BCHAR    12  22864  D 28656 28549 X
BJ71              MLCWA  &EDTDA,X1       12  22876  D 29287 00029 X
BJ72              MLCWA  &EDTSM,X2       12  22888  D 29292 00034 X
BJ73              MLCS   @0@,NOTZS       12  22900  D 29166 28539 3
```

```
PGLIN   LABEL   OPCOD  OPERAND                  CT  ADDRS  INSTRUCTION
BJ75    ***      START FIRST SCAN-LEFT
BJ76            MLNS   @1@,UNITS      SET UNITS LATCH          12  22912  D 29167 28547 1
BJ77            BZN    GG2,EDTDA,-                              12  22924  V 22948 24489 K
BJ78            MLNS   @1@,PLUS       SET PLUS LATCH           12  22936  D 29167 28546 1
BJ79    GG2     S      &1,X2          SET X2 FOR NEXT B CHAR   11  22948  S 29202 00034
BJ80            MLCWS  1&X2,BCHAR     STORE THIS B CHARACTER   12  22959  D 000.1 28549 7
BJ81            MLCWS  0&X1,ACHAR     STORE THIS A CHARACTER   12  22971  D 000#0 28548 7
BJ82            CW     FIRSTO         CLEAR FIRST ZERO INDICATOR  6  22983  ¤ 28540
BJ83            BCE    GG3,1&X2,0     BRANCH-THIS B CHAR IS ZERO  12  22989  B 23362 000.1 0
BJ84            BCE    TWO1,1&X2,&    BRANCH-THIS B CHAR IS &  12  23001  B 23500 000.1 &
BJ85    GG5     BCE    GG4,UNITS,1    BRANCH-UNITS LATCHSET    12  23013  B 23399 28547 1
BJ86            BCE    GG6,BODY,1     BRANCH-BODY LATCH SET    12  23025  B 23240 28544 1
BJ87    ERP8    BCE    TWO1,1&X2,,    GO IF THIS B CHAR IS A COMMA  12  23037  B 23500 000.1 ,
BJ88            BCE    GG7,1&X2,-     BRANCH-THIS B CHAR IS A -  12  23049  B 23221 000.1 -
BJ89            BCE    GG7,1&X2,C     BRANCH-THIS B CHAR IS A C  12  23061  B 23221 000.1 C
BJ90            BCE    GG7,1&X2,R     BRANCH-THIS B CHAR IS AN R  12  23073  B 23221 000.1 R
BJ91            B      ONE1           BRANCH-THIS B CHAR NOT -,C,R OR,  7  23085  J 23432
BJ92    GG24    MLCWA  @0000.@,X1     NEGATIVE ZERO TO INDEX REG ONE  12  23092  D 29297 00029 X
BJ93            MLNS   FF,X1          SET INDEX REG ONE FROM FF  12  23104  D 01921 00029 1
BJ94            MLCS   @$@,EDTCTL&X1  INSERT DOLLAR IN CONTROL CONSTANT  12  23116  D 29298 244V7 3
BJ95            B      GG25                                     7  23128  J 22816
BJ96    GG26    MLCWA  @0000.@,X1     NEGATIVE ZERO TO INDEX REG ONE  12  23135  D 29297 00029 X
BJ97            MLNS   EE,X1          SET INDEX REG ONE FROM EE  12  23147  D 01916 00029 1
BJ98            MLCS   @*@,EDTCTL&X1  INSERT ASTERISK IN CTL CONSTANT  12  23159  D 29299 244V7 3
BJ99            B      GG25&12                                  7  23171  J 22828
```

PGLIN	LABEL	OPCOD	OPERAND		CT	ADDRS	INSTRUCTION
BK01	GG27	MLCWA	@0000.@,X1	NEGATIVE ZERO TO INDEX REG ONE	12	23178	D 29297 00029 X
BK02		MLNS	EE-1,X1	SET INDEX REG ONE FROM EE	12	23190	D 01915 00029 1
BK03	ERPC	MLCS	@.@,EDTCTL&X1	INSERT DECIMAL IN CTL CONSTANT	12	23202	D 29300 244V7 3
BK04		B	GG28&12		7	23214	J 22840
BK05	GG7	BCE	TWO1,PLUS,1	BRANCH-PLUS LATCH SET	12	23221	B 23500 28546 1
BK06		B	ONE1	A FIELD NEGATIVE	7	23233	J 23432
BK07	GG6	BCE	THREE1,1&X2,0	BRANCH-THIS B CHAR IS A ZERO	12	23240	B 23633 000.1 0
BK08		BCE	THREE1,1&X2,	BRANCH-THIS B CHAR IS A BLANK	12	23252	B 23633 000.1
BK09		BCE	GG8,1&X2,*	BRANCH-THIS B CHAR IS AN ASTERISK	12	23264	B 23295 000.1 *
BK10		BCE	GG8,1&X2,$	BRANCH-THIS B CHAR IS A DOLLAR	12	23276	B 23295 000.1 $
BK11		B	ONE1		7	23288	J 23432
BK12	GG8	BCE	THREE1,SUPPR,0	BRANCH-0 SUPPRESS IS NOT ON	12	23295	B 23633 28545 0
BK13		BBE	THREE1,ASTDOL,5	BRANCH-AST FILL OR FL DOLLAR ON	12	23307	W 23633 28543 5
BK14		MLCS	@1@,ASTDOL	SET AST FILL LATCH	12	23319	D 29167 28543 3
BK15		BCE	THREE1,1&X2,*	BRANCH-B CHAR IS AN ASTERISK	12	23331	B 23633 000.1 *
BK16		MLCS	@4@,ASTDOL	CLR AST FILL,SET FLOATING DOLLAR	12	23343	D 29301 28543 3
BK17		B	THREE1		7	23355	J 23633
BK18	GG3	BCE	GG5,SUPPR,1	BRANCH-0 SUPPRESS IS ON	12	23362	B 23013 28545 1
BK19		MLCS	@1@,SUPPR	SET 0 SUPPRESS	12	23374	D 29167 28545 3
BK20		SW	FIRST0	SET FIRST ZERO INDICATOR	6	23386	, 28540
BK21		B	GG5		7	23392	J 23013
BK22	GG4	MLCS	BCHAR,GG9&11	B CHAR TO D MOD OF BCE	12	23399	D 28549 23422 3
BK23	GG9	BCE	FOUR1,@-CR 0@,	BRANCH-THIS B CHAR IS A ZERO	12	23411	B 23519 29306
BK24		BCE		BRANCH-THIS B CHAR IS A BLANK	1	23423	B
BK25		BCE	GG7	BRANCH-THIS B CHAR IS AN R	6	23424	B 23221
BK26		BCE		BRANCH-THIS B CHAR IS A C	1	23430	B
BK27		BCE		BRANCH-THIS B CHAR IS A MINUS	1	23431	B
BK28	ONE1	CW	1&X2	CLEAR W/M THIS CHAR	6	23432	¤ 000.1
BK29		MLWS	FIRST0,1&X2	STORE FIRST ZERO INDICATOR	12	23438	D 28540 000.1 4
BK30		BW	GG11,BCHAR	BRANCH-B CHAR HAD A WORD MARK	12	23450	V 23469 28549 1
BK31		B	GG2	CHECK NEXT B CHARACTER	7	23462	J 22948
BK32	GG11	BCE	SCAN2,SUPPR,1	BRANCH-0 SUPPRESS ON	12	23469	B 23652 28545 1
BK33		BCE	SCAN2,BCHAR,0	BRANCH-B CHAR WAS A ZERO	12	23481	B 23652 28549 0
BK34		B	EDTEND	EDIT COMPLETE	7	23493	J 24330

```
PGLIN   LABEL    OPCOD  OPERAND                        CT  ADDRS  INSTRUCTION
BK36    TWO1     MLCS   @ @,1&X2        BLANK THIS B CHAR          12  23500  D 29208 000.1 3
BK37             B      ONE1                                        7  23512  J 23432
BK38    FOUR1    MLNS   0&X1,1&X2        STORE A CHAR NUMERIC IN B CHAR 12  23519  D 000#0 000.1 1
BK39             MLZS   @ @,1&X2                                   12  23531  D 29208 000.1 2
BK40    GG12     MLWS   FIRSTO,1&X2       STORE FIRST ZERO INDICATOR 12  23543  D 28540 000.1 4
BK41             S      &1,X1             STEP X1 FOR NEXT A CHAR    11  23555  S 29202 00029
BK42             MLCS   @0@,UNITS         CLEAR UNITS LATCH          12  23566  D 29166 28547 3
BK43             BW     GG11,BCHAR        BRANCH-B CHAR HAD A W/M    12  23578  V 23469 28549 1
BK44             MLCS   @0@,BODY          CLEAR BODY LATCH           12  23590  D 29166 28544 3
BK45             BW     GG2,ACHAR         BRANCH-A CHAR HAD A W/M    12  23602  V 22948 28548 1
BK46             MLCS   @1@,BODY          SET BODY LATCH             12  23614  D 29167 28544 3
BK47             B      GG2               A CHAR HAD NO W/M           7  23626  J 22948
BK48    THREE1   MLCS   0&X1,1&X2        A CHAR TO B CHAR POSITION  12  23633  D 000#0 000.1 3
BK49             B      GG12                                        7  23645  J 23543
BK50    ***       START SECOND SCAN-RIGHT
BK51    SCAN2    A      &1,X2             STEP IX2 FOR NEXT B CHAR RIGHT 11  23652  A 29202 00034
BK52             MLCWS  0&X2,BCHAR        STORE THIS B CHARACTER     12  23663  D 000.0 28549 7
BK53             MLCS   0&X2,GG13&11      B CHAR TO D MOD OF BCE INSTRUCT 12  23675  D 000.0 23710 3
BK54             MLCS   @1@,SIGDIG        SET SIGNIFICANT DIGIT INDICATOR 12  23687  D 29167 28541 3
BK55    GG13     BCE    GG14,CR6,0        BRANCH-THIS B CHAR IS SIG DIG 1-9 12  23699  B 23800 01779 0
BK56             BCE                        DITTO                     1  23711  B
BK57             BCE                        DITTO                     1  23712  B
BK58             BCE                        DITTO                     1  23713  B
BK59             BCE                        DITTO                     1  23714  B
BK60             BCE                        DITTO                     1  23715  B
BK61             BCE                        DITTO                     1  23716  B
BK62             BCE                        DITTO                     1  23717  B
BK63             BCE                        DITTO                     1  23718  B
BK64             MLCS   @0@,SIGDIG        CLEAR SIGNIFICANT DIGIT INDICATOR 12  23719  D 29166 28541 3
BK65             MLCS   0&X2,GG17&11        B CHAR TO BCE D MODIFIER   12  23731  D 000.0 23754 3
BK66    GG17     BCE    ONE2,@,0 .-@        BRANCH-B CHAR IS A MINUS   12  23743  B 23893 29262
BK67             BCE    GG15                BRANCH-B CHAR IS A PERIOD   6  23755  B 23819
BK68             BCE    GG16                BRANCH-B CHAR IS A BLANK    6  23761  B 23850
BK69             BCE                        BRANCH-B CHAR IS A ZERO     1  23767  B
BK70             BCE                      BRANCH-B CHAR IS A COMMA      1  23768  B
```

```
PGLIN   LABEL   OPCOD  OPERAND                  CT  ADDRS  INSTRUCTION
BK72            BCE    CKNZS,DECCTL,1           12  23769  B 23956 28542 1
BK73            MLCS   @1@,SUPPR                12  23781  D 29167 28545 3
BK74            B      ONE2                      7  23793  J 23893
BK75    GG14    MLCS   @0@,SUPPR                12  23800  D 29166 28545 3
BK76            B      ONE2                      7  23812  J 23893
BK77    GG15    BCE    ONE2,SUPPR,0             12  23819  B 23893 28545 0
BK78            MLCS   @1@,DECCTL                12  23831  D 29167 28542 3
BK79            B      ONE2                      7  23843  J 23893
BK80    GG16    BCE    ONE2,SUPPR,0             12  23850  B 23893 28545 0
BK81            BCE    ONE2,DECCTL,1            12  23862  B 23893 28542 1
BK82            BCE    THREE2,ASTDOL,1          12  23874  B 23937 28543 1
BK83            B      TWO2                      7  23886  J 23918
BK84    ONE2    CW     0&X2                      6  23893  ¤ 000.0
BK85    GG18    BW     GG19,BCHAR               12  23899  V 23987 28549 1
BK86            B      SCAN2                     7  23911  J 23652
BK87    TWO2    MLCWS  @  @,0&X2                12  23918  D 29308 000.0 7
BK88            B      GG18                      7  23930  J 23899
BK89    THREE2  MLCWS  @ *@,0&X2                12  23937  D 29310 000.0 7
BK90            B      GG18                      7  23949  J 23899
BK91    CKNZS   BCE    ONE2,SUPPR,1             12  23956  B 23893 28545 1
BK92            MLCS   @1@,NOTZS                12  23968  D 29167 28539 3
BK93            B      ONE2                      7  23980  J 23893
BK94    GG19    BCE    SCAN3,ASTDOL,4           12  23987  B 24073 28543 4
BK95            BCE    EDTEND,DECCTL,0          12  23999  B 24330 28542 0
BK96            BCE    ICHKAA,SUPPR,1           12  24011  B 24061 28545 1
BK97            BCE    EDTEND,NOTZS,0           12  24023  B 24330 28539 0
BK98            BCE    EDTEND,SIGDIG,1          12  24035  B 24330 28541 1
BK99            B      SC1                       7  24047  J 27380
BL00            B      SKPEDT                    7  24054  J 24528
BL01    ICHKAA  BCE    EDTEND,SIGDIG,1          12  24061  B 24330 28541 1
```

```
PGLIN     LABEL     OPCOD  OPERAND                                                CT  ADDRS  INSTRUCTION
BL03      ***        START THIRD SCAN-LEFT
BL04      SCAN3     S      &1,X2              STEP X2 TO NEXT B CHAR LEFT         11  24073  S 29202 00034
BL05                MLCWS  1&X2,BCHAR         STORE B CHAR                        12  24084  D 000.1 28549 7
BL06                MLCS   1&X2,*&12          B CHAR TO BCE D MODIFIER            12  24096  D 000.1 24119 3
BL07                BCE    GG20,@.0 @,        BRANCH-THIS B CHAR IS BLANK         12  24108  B 24275 29265
BL08                BCE    GG21               BRANCH-THIS B CHAR IS A ZERO         6  24120  B 24208
BL09                BCE    GG21               BRANCH-THIS B CHAR IS A PERIOD       6  24126  B 24208
BL10                B      SCAN3                                                   7  24132  J 24073
BL11      GG29      BCE    NOTDEC,BCHAR,0     GO IF THIS CHAR IS ZERO             12  24139  B 24189 28549 0
BL12                BCE    SCAN3,DECCTL,0     BRANCH-DECIMAL CONTROL OFF          12  24151  B 24073 28542 0
BL13                BCE    EDTEND,NOTZS,0     END EDIT IF NOT ZS ON               12  24163  B 24330 28539 0
BL14      SCN3X     B      SC1                INCREASE RTN COUNT &                 7  24175  J 27380
BL15                B      SKPEDT               SKIP EDIT THIS PASS                7  24182  J 24528
BL16      NOTDEC    BCE    SCAN3,NOTZS,0      GO IF NOT ZS IS ON                  12  24189  B 24073 28539 0
BL17                B      SCN3X                                                  7  24201  J 24175
BL18      GG21      BCE    GG29,SUPPR,0       BRANCH-0 SUPPRESS OFF               12  24208  B 24139 28545 0
BL19                MLCS   @*@,1&X2           STORE ASTERISK AS B CHAR            12  24220  D 29299 000.1 3
BL20                BCE    GG22,ASTDOL,1      BRANCH-ASTERISK FILL ON              12  24232  B 24256 28543 1
BL21                MLCS   @ @,1&X2           STORE BLANK AS B CHAR               12  24244  D 29208 000.1 3
BL22      GG22      BCE    EDTEND,BCHAR,.     BRANCH-B CHAR IS A PERIOD           12  24256  B 24330 28549 .
BL23                B      SCAN3                                                  7  24268  J 24073
BL24      GG20      BBE    GG23,ASTDOL,5      BRANCH-AST FILL OR FL DOLLAR ON     12  24275  W 24294 28543 5
BL25                B      SCAN3                                                  7  24287  J 24073
BL26      GG23      MLCS   @*@,1&X2                                              12  24294  D 29299 000.1 3
BL27                BCE    EDTEND,ASTDOL,1    BRANCH-FLOATING DOLLAR OFF          12  24306  B 24330 28543 1
BL28                MLCS   @$@,1&X2                                              12  24318  D 29298 000.1 3
BL29      EDTEND    MLWA   CS1,EDTSM          CLEAR EDIT SIM WORD MARKS           12  24330  D 28668 24478 U
BL30                BCE    GG1,TAD1,1         LOOP ROUTINE138                     12  24342  B 22749 01001 1
BL31                B      SC1                STEP ROUTINE COUNTER TO139           7  24354  J 27380
```

```
PGLIN   LABEL    OPCOD  OPERAND                                          CT  ADDRS  INSTRUCTION
BL33    *ROUTINE139-CHECK EDIT INSTRUCTION AGAINST RESULT OF EDIT
BL34    *          PERFORMED BY LAST ROUTINE.
BL35    GH1      BNQ    ITR                BRANCH INQUIRY                 7  24361  J 01334 Q
BL36             MLCWA  CS3,0&X5           CLEAR ADDRESS EE FIELD LEFT   12  24368  D 28699 00##0 X
BL37             MLCWA  EDTCTL,0&X5       EDIT CONTROL CONSTANT TO ADDR EE 12 24380 D 24457 00##0 X
BL38             MLCWA  EDTDA,0&X6         BB TO ADDR FF AS DATA FOR EDIT 12  24392  D 24489 00#.0 X
BL39             MCE    0&X6,0&X5          EDIT                          11  24404  E 00#.0 00##0
BL40    GH4      C      0&X5,EDTSM         CHECK RESULT AGAINST LAST ROUTINE 11 24415 C 00##0 24478
BL41             BE     GH2                BRANCH-RESULT OK               7  24426  J 24490 S
BL42             B      SE1                BRANCH TO ERROR ROUTINE        7  24433  J 27220
BL43             H                                          ROUTINE139 ERROR  1  24440  .
BL44    *            THE RESULT OF THE EDIT INSTRUCTION, AT ADDRESS EE
BL45    *            LEFT, DID NOT COMPARE WITH THE RESULT OF THE
BL46    *            SIMULATED EDIT PERFORMED BY THE LAST ROUTINE.
BL47             B      GH2                                               7  24441  J 24490
BL48    EDTCTL   DCW    @          @       CONT CONSTANT FOR EDIT CHECKS  10  24457
BL49    EDTSM    DCW    @                    @  SIMULATED EDIT AREA       21  24478
BL50    EDTDA    DCW    @          @       EDIT DATA STORAGE-CONST BB     11  24489
BL51    GH2      C      EDTDA,0&X6         CHECK A FIELD OF EDIT          11  24490  C 24489 00#.0
BL52             BE     GH3                BRANCH-OK                      7  24501  J 24516 S
BL53             B      SE1                BRANCH TO ERROR ROUTINE        7  24508  J 27220
BL54             H                                          ROUTINE139 ERROR  1  24515  .
BL55    *            THE DATA IN THE A FIELD, ADDRESS FF LEFT, OF THE
BL56    *            EDIT INSTRUCTION WAS CHANGED BY THE OPERATION OF THE
BL57    *            EDIT INSTRUCTION.
BL58    GH3      BCE    GH1,TAD1,1         LOOP ROUTINE139               12  24516  B 24361 01001 1
BL59    SKPEDT   B      SC1                STEP ROUTINE COUNTER TO140     7  24528  J 27380
```

```
PGLIN     LABEL      OPCOD  OPERAND                                  CT  ADDRS  INSTRUCTION
BL61      *ROUTINE140-IF PRESENT IN THIS SYSTEM, CHECK FOR PROPER INTERRUPT
BL62      *           OF CPU INSTRUCTIONS.
BL63                 BCE    LE4,TAD8,1          BRANCH-BYPASS PRIORITY ALERT CHK  12  24535  B 25285 01008 1
BL64                 BCE    LA1,SYS1&8,1        BRANCH-PRIORITY MODE PRESENT      12  24547  B 24566 01264 1
BL65                 B      LE4                 THIS SYSTEM MINUS PRIORITY MODE    7  24559  J 25285
BL66      LA1    C  BCE    *&8,SYS1&7,1        BRANCH IF OVERLAP PRESENT         12  24566  B 24585 01263 1
BL67             C  B      LE4                 THIS SYSTEM MINUS OVERLAP MODE     7  24578  J 25285
BL68             C  BCE    LA2,CN4,0           BRANCH -PASS SUCCESSFUL SO FAR    12  24585  B 24609 01402 0
BL69                MLCS   @1@,CT2             SET 50 PASS ERROR INDICATOR       12  24597  D 29167 28721 3
BL70      LA2       BW     FASTA,00997         GO IF RELIABILITY MODE            12  24609  V 24738 00997 1
BL71                C      CO1,@49@            IS THIS PASS MULTIPLE OF 50       11  24621  C 28538 29312
BL72                BE     LA5                 BRANCH-YES                         7  24632  J 24681 S
BL73                C      CO1,@99@                                              11  24639  C 28538 29281
BL74                BE     LA5                 YES                                7  24650  J 24681 S
BL75                B      LE4                 NO                                 7  24657  J 25285
BL76             C  DCW    @N          @       UNNECESSARY-REMOVE LATER          11  24674
BL77             C  SW     @2474@              UNNECESSARY-REMOVE LATER           6  24675  , 29316
BL78      LA5       NOPWM                                                         1  24681  N
BL79                B      LA3                                                    7  24682  J 24707
BL80                SW     *-12                                                   6  24689  , 24682
BL81                MRCWG  R00101,101          MOVE INTERRUPT ROUTINE            12  24695  D 01010 00101 D L
BL82      LA3       BCE    LA4,CT2,0           BRANCH-CPU OK-CHECK INTERRUPT     12  24707  B 24769 28721 0
BL83                MLCS   @0@,CT2             CLEAR 50 PASS ERROR INDICATOR     12  24719  D 29166 28721 3
BL84                B      LE4                 CPU FAILING-BYPASS INTERRUPT CHK   7  24731  J 25285
BL85      FASTA     BCE    LA5,CO1,9           GO CHECK INTERRUPT EVERY 5 PASSES 12  24738  B 24681 28538 9
BL86                BCE    LA5,CO1,4                                             12  24750  B 24681 28538 4
BL87                B      LE4                 NOT THIS TIME                      7  24762  J 25285
BL88      LA4       BCE    *&13,TAD7,1         BRANCH-MAINTAIN PRESENT CONSTANTS 12  24769  B 24793 01007 1
BL89                MLNA   CT4,LB3&5           STORE FIRST INTRUP OP ADDRESS     12  24781  D 28726 24976 /
BL90                BDV    *&1                 TURN OFF DIVIDE OVERFLOW           7  24793  J 24800 W
BL91                C      CT4,&RUPTOP         ARE ALL PRIORITY OPS CHECKED      11  24800  C 28726 29321
BL92                BH     LB1                 BRANCH-NO                          7  24811  J 24830 U
BL93                MLNA   &RUPBOT,LB3&5       RESET OP SELECTION                12  24818  D 29191 24976 /
```

PGLIN	LABEL	OPCOD	OPERAND		CT	ADDRS	INSTRUCTION
BL95	LB1	BNQ	ITR	BRANCH INQUIRY	7	24830	J 01334 Q
BL96		MLCWA	CP2&8,4&X6	CLEAR ADDRESS FF	12	24837	D 01564 00‡.4 X
BL97		MLCWS	@M@,1&X6		12	24849	D 29255 00‡.1 7
BL98		SW	0&X6,3&X6		11	24861	, 00‡.0 00‡.3
BL99		SW			1	24872	,
BM00		SW			1	24873	,
BM01		MLCWA	CP2&8,4&X5	CLEAR ADDRESS EE	12	24874	D 01564 00‡‡4 X
BM02		SW	0&X5,3&X5		11	24886	, 00‡‡0 00‡‡3
BM03		SW			1	24897	,
BM04		SW			1	24898	,
BM05		SW			1	24899	,
BM06		CW	58&X6		6	24900	¤ 00‡N8
BM07		SAR	LCC1&5	SET BOL1 ADDRESS	7	24906	G 25091 A
BM08		CW	66&X6		6	24913	¤ 00‡06
BM09		SAR	LCC2&5	SET BBE ADDRESS	7	24919	G 28995 A
BM10		SAR	LCC3&5	SET BZN ADDRESS	7	24926	G 29016 A
BM11		CW	67&X6		6	24933	¤ 00‡J7
BM12		SAR	LCC5&5	SET CW ADDRESS	7	24939	G 29100 A
BM13		MLCWA	@ @,X2	CLEAR X2	12	24946	D 29165 00034 X
BM14		CW	72&X6	CALCULATE INTERRUPT ADDRESS	6	24958	¤ 00‡P2
BM15		SAR	X2	STORE FOR CHECK	7	24964	G 00034 A

```
PGLIN   LABEL     OPCOD  OPERAND                                          CT  ADDRS  INSTRUCTION
BM17    LB3       MRCWG  0,LC10          STORE NEXT SET OF TEST INSTRUCTNS 12  24971  D 00000 25094 DL
BM18              SAR    CT4              SET OP SELECTION FOR NEXT PASS    7  24983  G 28726 A
BM19              SBR    *&11                                               7  24990  G 25007 B
BM20              MLWB   *,0              CLEAR W/M OVER G/M                12  24997  D 25008 00000 M
BM21              SCNLA  INTRUP,INTRUP&1   FIND OP CODE OF THIS INTRUP CHK  12  25009  D 25107 25108 SB
BM22              SBR    *&6              STORE ADDRESS OF OP CODE          7  25021  G 25033 B
BM23              MLCS   0,0&X6           OP TO FF FOR INTERRUPT TYPEOUT    12  25028  D 00000 00*.0 3
BM24              BEPA   *&1              TURN ON PRIORITY ALERT MODE       7  25040  Y 25047 E
BM25    LC5       MRCWG  LC6,30&X6                                         12  25047  D 25066 00*LO DL
BM26              B      30&X6                                             7  25059  J 00*LO
BM27    *       ***THIS WILL BE LOCATED AT FF&30 THRU FF&87*****************
BM28    LC6     *  WCPO   0&X6           TYPE ADDR FF FOR INTERRUPT     *  10  25066  M @TO 00*.0 W
BM29            *  DCW    @N0000@                                     *   5  25080
BM30            *  DCW    @N0000@                                     *   5  25085
BM31    LCC1    *  BOL1   *&1            SET UP DELAY                  *   7  25086  J 25093 1
BM32    LC7     *  DCW    @J@           NON INTERRUPTABLE DELAY       *   1  25093
BM33     LC10   *  DCW    @      @      NON INTERRUPTABLE OP          *   7  25094
BM34     LC11   *  DC     @      @      INTERRUPTABLE OP-USUALLY      *   6  25101
BM35    INTRUP  *  DC     @.@      FF&71--INTERRUPT ADDRESS            *   1  25107
BM36     LC12   *  DC     @      @      REST OF INTERRUPTABLE OP      *   8  25108
BM37            *  B      *&2           RETURN TO ROUTINE             *   7  25116  J 25124
BM38            *  DCW    @M@           STOP MOVE TO FF&30            *   1  25123
                                        G
BM39    *       **********************************************************
BM40    LC13      BCB1   LC5             BRANCH BUSY TO TRY AGAIN          7  25124  R 25047 2
BM41              BXPA   *&1             TURN OFF PRIORITY ALERT MODE      7  25131  Y 25138 X
BM42              BA1    LD1             BRANCH-TYPING ERROR               7  25138  R 25172 GM
BM43              BCE    RUPTOK,LC12&1,# BRANCH-OK-SHOULD NOT INTERRUPT    12  25145  B 25259 25109 #
BM44              B      SE1             BRANCH TO ERROR ROUTINE           7  25157  J 27220
BM45              H                                    ROUTINE140 ERROR    1  25164  .
BM46    *             INTERRUPT FAILED TO OCCURR FOLLOWING AN OVERLAPPED
BM47    *           WCP OPERATION IN PRIORITY ALERT MODE. INTERRUPT SHOULD
BM48    *           HAVE OCCURRED AT ADDRESS FF PLUS 71. THIS ADDRESS IS
BM49    *           STORED IN INDEX REGISTER 2.
BM50              B      LD8             ROUTINE ENDED WITH ERROR          7  25165  J 25252
```

```
PGLIN   LABEL    OPCOD  OPERAND                                          CT  ADDRS  INSTRUCTION
BM52    LD1      SBR    LD2&5          SET RETURN ADDRESS                7  25172  G 25199 B
BM53             SBR    X2             STORE FOR ERROR TYPEOUT           7  25179  G 00034 B
BM54             B      SE1            BRANCH TO ERROR ROUTINE           7  25186  J 27220
BM55             H                                    ROUTINE140 ERROR    1  25193  .
BM56    *            WCPO INSTRUCTION CAUSED BA1 TO BRANCH.
BM57    LD2      B      0              RETURN TO COMPLETE CHECK          7  25194  J 00000
BM58    LC14     BA1    LD1            BRANCH-CONSOLE PRINT ERR ALSO     7  25201  R 25172  G M
BM59             BXPA   *&1           TURN OFF PRIORITY ALERT MODE      7  25208  Y 25215  X
BM60             B      SE1            BRANCH TO ERROR ROUTINE           7  25215  J 27220
BM61             H                                    ROUTINE140 ERROR    1  25222  .
BM62    *        THE OP CODE BEING TESTED FOR INTERRUPTING ON THIS PASS
BM63    *        IS EITHER A BA1 OR BXPA INSTRUCTION. NO INTERRUPT SHOULD
BM64    *        HAVE OCCURRED. HOWEVER, AN INTERRUPT DID OCCUR AT THE
BM65    *        ADDRESS NOW STORED IN INDEX REGISTER 1.
BM66             B      LD8            ROUTINE ENDED WITH ERROR          7  25223  J 25252
BM67    RUPBAD   BXPA   *&1           TURN OFF PRIORITY ALERT MODE      7  25230  Y 25237  X G
BM68             BA1    LD1            BRANCH-TYPING ERROR               7  25237  R 25172  M
BM69             B      SE1            BRANCH TO ERROR ROUTINE           7  25244  J 27220
BM70             H                                    ROUTINE140 ERROR    1  25251  .
BM71    *        THE OVERLAPPED WCP INSTRUCTION AT ADDRESS FF PLUS 30
BM72    *        SHOULD HAVE CAUSED AN INTERRUPT AT ADDRESS FF PLUS 71.
BM73    *        THE INTERRUPT OCCURRED INSTEAD AT THE ADDRESS NOW STORED
BM74    *        IN INDEX REGISTER 1. ADDRESS FF &71 IS IN INDEX REG. 2.
BM75    LD8      B      LE3            ROUTINE ENDED WITH ERROR          7  25252  J 25273
BM76    RUPTOK   BXPA   *&1           TURN OFF PRIORITY ALERT MODE      7  25259  Y 25266  X G
BM77             BA1    LD1            BRANCH-TYPING ERROR               7  25266  R 25172  M
BM78    LE3      BCE    LB1,TAD1,1     LOOP ROUTINE140                  12  25273  B 24830 01001 1
BM79    LE4      B      SC1            STEP ROUTINE COUNTER TO141        7  25285  J 27380
```

```
PGLIN   LABEL   OPCOD  OPERAND                                          CT  ADDRS  INSTRUCTION
BM81    *ROUTINE141-CHECK RESTORE AND STORE INTERNAL STATUS INDICATORS
BM82    *         INSTRUCTIONS.
BM83    LG1     BCE    LG2,SYS1,X       BRANCH-7010 SYSTEM-OPERATE ROUT.  12  25292  B 25311 01256 X
BM84            B      LG5              BYPASS ROUTINE-NOT 7010 SYSTEM     7  25304  J 25450
BM85    LG2     BNQ    ITR              BRANCH INQUIRY                     7  25311  J 01334 Q
BM86            MLCWA  @     @,X1       CLEAR INDEX REG ONE               12  25318  D 29165 00029 X
BM87            MLCS   DD,X1-2          RANDOM CHARACTER TO X1-2          12  25330  D 01911 00027 3
BM88            RSCPU  X1-2             RESTORE INDICATORS                 7  25342  $ 00027 R
BM89            MLNS   BB,X1            FORM CHAR FROM BB AND CC UNITS    12  25349  D 01889 00029 1
BM90            MLZWS  CC,X1                                              12  25361  D 01900 00029 6
BM91            MLCS   X1,LG3&11        STORE CHARACTER AS BCE D MODIFIER  12  25373  D 00029 25417 3
BM92            DCW    @$@              RESTORE INDICATORS FROM X1         1  25385
BM93            DC     X1                                                  5  25390  00029
BM94            DC     @R@                                                 1  25391
BM95            B      *&1              SPACER                             7  25392  J 25399
BM96            DCW    @$@              STORE INDICATORS IN X1-1           1  25399
BM97            DC     X1-1                                                5  25404  00028
BM98            DC     @S@                                                 1  25405
BM99    LG3     BCE    LG4,X1-1,        BRANCH-RESTORE AND STORE OK       12  25406  B 25426 00028
BN00            B      SE1              BRANCH TO ERROR ROUTINE            7  25418  J 27220
BN01            H                                        ROUTINE141 ERROR   1  25425  .
BN02    *           THE CHARACTER IN ADDRESS 29 OF X1 WAS USED TO
BN03    *           RESTORE THE INTERNAL STATUS INDICATORS. THE CONTENTS
BN04    *           OF THE INDICATORS WERE THEN STORED IN ADDRESS 28 OF
BN05    *           X1. THE TWO CHARACTERS ARE NOT EQUAL.
BN06    LG4     BCE    LG2,TAD1,1       LOOP ROUTINE141                   12  25426  B 25311 01001 1
BN07            MLCWA  @     @,X1       CLEAR INDEX REG ONE               12  25438  D 29165 00029 X
BN08    LG5     B      SC1              STEP ROUTINE COUNTER TO142         7  25450  J 27380
```

```
PGLIN   LABEL    OPCOD  OPERAND                                          CT  ADDRS  INSTRUCTION
BN10    *ROUTINE142-CHECK RESTORE AND STORE CHANNEL 1 STATUS INDICATORS IF
BN11    *7010 MACHINE.
BN12    WXE1     BCE    *&8,SYS1,X        GO IF 7010 SYSTEM              12  25457  B 25476 01256 X
BN13             B      WXE8              GO-NOT 7010 SYSTEM              7  25469  J 25712
BN14             BCE    WXE2,SYS1&12,1    GO OPERATE ROUTINE IF CHNL PRESNT 12 25476  B 25495 01268 1
BN15             B      WXE8              GO-CHANNEL MISSING              7  25488  J 25712
BN16    WXE2     BNQ    ITR1              BRANCH INQUIRY                  7  25495  J 01341 Q
BN17             MLCWA  @     @,X1        CLEAR INDEX REG 1              12  25502  D 29165 00029 X
BN18             MLCS   DD,X1-2           RANDOM CHARACTER TO X1-2       12  25514  D 01911 00027 3
BN19             BAI    *&1               RESET INTERLOCK                 7  25526  R 25533 M
                                                                                      G
BN20             REC    X1-2              RESTORE CHANNEL STATUS RANDOMLY  7  25533  $ 00027 1
BN21             MLZWS  CC-1,X1           RANDOM CHAR. & WM TO X1 UNITS  12  25540  D 01899 00029 6
BN22             MLNS   BB,X1             RANDOM CHAR. & WM TO X1 UNITS  12  25552  D 01889 00029 1
BN23             REC    X1                RESTORE CHANNEL STATUS RANDOMLY  7  25564  $ 00029 1
BN24             B      *&1               FILLER                          7  25571  J 25578
BN25             SEC    X1-1              STORE CHANNEL STATUS IN X1-1     7  25578  $ 00028 E
BN26             MLCS   X1,WXE3&11        SET BCE D MOD                  12  25585  D 00029 25608 3
BN27    WXE3     BCE    WXE4,X1-1,        GO IF ZONE-NUMERICS OK         12  25597  B 25617 00028
BN28             B      SE1               BRANCH TO ERROR ROUTINE         7  25609  J 27220
BN29             H                                      ROUTINE142 ERROR  1  25616  .
BN30    *        THE CHARACTER IN X1 WAS RESTORED TO CHANNEL 1 INDICATORS.
BN31    *        THE CHANNEL 1 INDICATORS WERE THEN STORED IN X1-1. THE
BN32    *        CHARACTER IN X1-1 DOES NOT EQUAL THE CHARACTER IN X1.
BN33    WXE4     MLWS   X1,WXE6           SET FOR CHECKING WM/IO INTRLK  12  25617  D 00029 25630 4
BN34             NOP                                                    1  25629  N
BN35    WXE6     BW     WXE5,X1-1         GO IF X1 & X1-1 HAVE WMS,OK    12  25630  V 25681 00028 1
BN36             BW     WXE7,X1           GO IF EITHER HAS WM-ERROR      12  25642  V 25673 00029 1
BN37             BW     WXE7,X1-1                                        12  25654  V 25673 00028 1
BN38             B      WXE5              GO-NIETHER X1 OR X1-1 HAS WM-OK 7  25666  J 25681
BN39    WXE7     B      SE1               BRANCH TO ERROR ROUTINE         7  25673  J 27220
BN40             H                                      ROUTINE142 ERROR  1  25680  .
BN41    *        THE CHARACTER IN X1 WAS RESTORED TO CHANNEL 1 INDICATORS.
BN42    *        THE CHANNEL 1 INDICATORS WERE THEN STORED IN X1-1. X1 AND
BN43    *        X1-1 DO NOT BOTH HAVE A WORD MARK, OR DO NOT BOTH NOT
BN44    *        HAVE A WORD MARK.
```

```
PGLIN   LABEL    OPCOD  OPERAND                                                CT  ADDRS  INSTRUCTION
BN46    WXE5     BA1    *&1                RESET IO INTERLOCK                   7  25681  R 25688 GM
BN47             BCE    WXE2,TAD1,1        LOOP ROUTINE142                     12  25688  B 25495 01001 1
BN48             MLCWA  @     @,X1         CLEAR INDEX REG ONE                 12  25700  D 29165 00029 X
BN49    WXE8     B      SC1                STEP ROUTINE COUNTER TO143           7  25712  J 27380
BN50    *ROUTINE143-CHECK RESTORE AND STORE CHANNEL 2 STATUS INDICATORS IF
BN51    *7010 MACHINE.
BN52    WXF1     BCE    *&8,SYS1,X         GO IF 7010 SYSTEM                   12  25719  B 25738 01256 X
BN53             B      WXF8               GO-NOT 7010 SYSTEM                   7  25731  J 25974
BN54             BCE    WXF2,SYS1&13,1     GO OPERATE ROUTINE IF CHNL PRESNT    12  25738  B 25757 01269 1
BN55             B      WXF8               GO-CHANNEL MISSING                   7  25750  J 25974
BN56    WXF2     BNQ    ITR1               BRANCH INQUIRY                       7  25757  J 01341 Q
BN57             MLCWA  @     @,X1         CLEAR INDEX REG 1                   12  25764  D 29165 00029 X
BN58             MLCS   DD,X1-2            RANDOM CHARACTER TO X1-2            12  25776  D 01911 00027 3
BN59             BA2    *&1                RESET INTERLOCK                      7  25788  X 25795 GM
BN60             RFC    X1-2               RESTORE CHANNEL STATUS RANDOMLY      7  25795  $ 00027 2
BN61             MLZWS  CC-2,X1            RANDOM CHAR. & WM TO X1 UNITS       12  25802  D 01898 00029 6
BN62             MLNS   BB-1,X1            RANDOM CHAR. & WM TO X1 UNITS       12  25814  D 01888 00029 1
BN63             RFC    X1                 RESTORE CHANNEL STATUS RANDOMLY      7  25826  $ 00029 2
BN64             B      *&1                FILLER                               7  25833  J 25840
BN65             SFC    X1-1               STORE CHANNEL STATUS IN X1-1         7  25840  $ 00028 F
BN66             MLCS   X1,WXF3&11         SET BCE D MOD                       12  25847  D 00029 25870 3
BN67    WXF3     BCE    WXF4,X1-1,         GO IF ZONE-NUMERICS OK              12  25859  B 25879 00028
BN68             B      SE1                BRANCH TO ERROR ROUTINE              7  25871  J 27220
BN69             H                                        ROUTINE143 ERROR     1  25878  .
BN70    *        THE CHARACTER IN X1 WAS RESTORED TO CHANNEL 2 INDICATORS.
BN71    *        THE CHANNEL 2 INDICATORS WERE THEN STORED IN X1-1. THE
BN72    *        CHARACTER IN X1-1 DOES NOT EQUAL THE CHARACTER IN X1.
```

```
PGLIN   LABEL   OPCOD  OPERAND                                          CT  ADDRS  INSTRUCTION
BN74    WXF4    MLWS   X1,WXF6          SET FOR CHECKING WM/IO INTRLK   12  25879  D 00029 25892 4
BN75            NOP                                                     1  25891  N
BN76    WXF6    BW     WXF5,X1-1        GO IF X1 & X1-1 HAVE WMS,OK    12  25892  V 25943 00028 1
BN77            BW     WXF7,X1          GO IF EITHER HAS WM-ERROR      12  25904  V 25935 00029 1
BN78            BW     WXF7,X1-1                                       12  25916  V 25935 00028 1
BN79            B      WXF5             GO-NIETHER X1 OR X1-1 HAS WM-OK 7  25928  J 25943
BN80    WXF7    B      SE1              BRANCH TO ERROR ROUTINE         7  25935  J 27220
BN81            H                                        ROUTINE143 ERROR 1  25942  .
BN82    *       THE CHARACTER IN X1 WAS RESTORED TO CHANNEL 2 INDICATORS.
BN83    *       THE CHANNEL 2 INDICATORS WERE THEN STORED IN X1-1. X1 AND
BN84    *       X1-1 DO NOT BOTH HAVE A WORD MARK, OR DO NOT BOTH NOT
BN85    *       HAVE A WORD MARK.
BN86    WXF5    BA2    *&1              RESET IO INTERLOCK              7  25943  X 25950 GM
BN87            BCE    WXF2,TAD1,1      LOOP ROUTINE143                12  25950  B 25757 01001 1
BN88            MLCWA  @     @,X1       CLEAR INDEX REG ONE            12  25962  D 29165 00029 X
BN89    WXF8    B      SC1              STEP ROUTINE COUNTER TO144      7  25974  J 27380
```

```
PGLIN     LABEL     OPCOD  OPERAND                                                CT  ADDRS  INSTRUCTION
BN91      *ROUTINE144-CHECK RESTORE AND STORE CHANNEL 3 STATUS INDICATORS IF
BN92      *7010 MACHINE.
BN93      WXG1      BCE    *&8,SYS1,X          GO IF 7010 SYSTEM                  12  25981  B 26000 01256 X
BN94                B      WXG8                GO-NOT 7010 SYSTEM                  7  25993  J 26236
BN95                BCE    WXG2,SYS1&14,1      GO OPERATE ROUTINE IF CHNL PRESNT   12  26000  B 26019 01270 1
BN96                B      WXG8                GO-CHANNEL MISSING                  7  26012  J 26236
BN97      WXG2      BNQ    ITR1                BRANCH INQUIRY                      7  26019  J 01341 Q
BN98                MLCWA  @     @,X1          CLEAR INDEX REG 1                  12  26026  D 29165 00029 X
BN99                MLCS   DD,X1-2             RANDOM CHARACTER TO X1-2           12  26038  D 01911 00027 3
B000                BA3    *&1                 RESET INTERLOCK                     7  26050  3 26057 GM
B001                RGC    X1-2                RESTORE CHANNEL STATUS RANDOMLY     7  26057  $ 00027 3
B002                MLZWS  CC-3,X1             RANDOM CHAR. & WM TO X1 UNITS      12  26064  D 01897 00029 6
B003                MLNS   BB-2,X1             RANDOM CHAR. & WM TO X1 UNITS      12  26076  D 01887 00029 1
B004                RGC    X1                  RESTORE CHANNEL STATUS RANDOMLY     7  26088  $ 00029 3
B005                B      *&1                 FILLER                              7  26095  J 26102
B006                SGC    X1-1                STORE CHANNEL STATUS IN X1-1        7  26102  $ 00028 G
B007                MLCS   X1,WXG3&11          SET BCE D MOD                      12  26109  D 00029 26132 3
B008      WXG3      BCE    WXG4,X1-1,          GO IF ZONE-NUMERICS OK             12  26121  B 26141 00028
B009                B      SE1                 BRANCH TO ERROR ROUTINE             7  26133  J 27220
B010                H                                          ROUTINE144 ERROR    1  26140  .
B011      *         THE CHARACTER IN X1 WAS RESTORED TO CHANNEL 3 INDICATORS.
B012      *         THE CHANNEL 3 INDICATORS WERE THEN STORED IN X1-1. THE
B013      *         CHARACTER IN X1-1 DOES NOT EQUAL THE CHARACTER IN X1.
```

```
PGLIN     LABEL     OPCOD  OPERAND                                          CT  ADDRS  INSTRUCTION
B015      WXG4      MLWS   X1,WXG6          SET FOR CHECKING WM/IO INTRLK   12  26141  D 00029 26154 4
B016                NOP                                                     1  26153  N
B017      WXG6      BW     WXG5,X1-1        GO IF X1 & X1-1 HAVE WMS,OK     12  26154  V 26205 00028 1
B018                BW     WXG7,X1          GO IF EITHER HAS WM-ERROR       12  26166  V 26197 00029 1
B019                BW     WXG7,X1-1                                        12  26178  V 26197 00028 1
B020                B      WXG5             GO-NIETHER X1 OR X1-1 HAS WM-OK  7  26190  J 26205
B021      WXG7      B      SE1              BRANCH TO ERROR ROUTINE          7  26197  J 27220
B022                H                                  ROUTINE144 ERROR      1  26204  .
B023      *         THE CHARACTER IN X1 WAS RESTORED TO CHANNEL 3 INDICATORS.
B024      *         THE CHANNEL 3 INDICATORS WERE THEN STORED IN X1-1. X1 AND
B025      *         X1-1 DO NOT BOTH HAVE A WORD MARK, OR DO NOT BOTH NOT
B026      *         HAVE A WORD MARK.
B027      WXG5      BA3    *&1              RESET IO INTERLOCK               7  26205  3 26212 G M
B028                BCE    WXG2,TAD1,1      LOOP ROUTINE144                 12  26212  B 26019 01001 1
B029                MLCWA  @      @,X1      CLEAR INDEX REG ONE             12  26224  D 29165 00029 X
B030      WXG8      B      SC1              STEP ROUTINE COUNTER TO145       7  26236  J 27380
```

```
PGLIN   LABEL    OPCOD  OPERAND                                                CT  ADDRS  INSTRUCTION
8032    *ROUTINE145-CHECK RESTORE AND STORE CHANNEL 4 STATUS INDICATORS IF
8033    *7010 MACHINE.
8034    WXH1     BCE    *&8,SYS1,X          GO IF 7010 SYSTEM                  12  26243  B 26262 01256 X
8035             B      WXH8                GO-NOT 7010 SYSTEM                  7  26255  J 26498
8036             BCE    WXH2,SYS1&15,1      GO OPERATE ROUTINE IF CHNL PRSNT    12  26262  B 26281 01271 1
8037             B      WXH8                SKIP ROUTINE-CHANNEL MISSING        7  26274  J 26498
8038    WXH2     BNQ    ITR1                BRANCH INQUIRY                      7  26281  J 01341 Q
8039             MLCWA  @     @,X1          CLEAR INDEX REG 1                  12  26288  D 29165 00029 X
8040             MLCS   DD,X1-2             RANDOM CHARACTER TO X1-2           12  26300  D 01911 00027 3
8041             BA4    *&1                 RESET INTERLOCK                     7  26312  1 26319 M
                                                                                                G
8042             RHC    X1-2                RESTORE CHANNEL STATUS RANDOMLY     7  26319  $ 00027 4
8043             MLZWS  CC-4,X1             RANDOM CHAR. & WM TO X1 UNITS      12  26326  D 01896 00029 6
8044             MLNS   BB-3,X1             RANDOM CHAR. & WM TO X1 UNITS      12  26338  D 01886 00029 1
8045             RHC    X1                  RESTORE CHANNEL STATUS RANDOMLY     7  26350  $ 00029 4
8046             B      *&1                 FILLER                              7  26357  J 26364
8047             SHC    X1-1                STORE CHANNEL STATUS IN X1-1        7  26364  $ 00028 H
8048             MLCS   X1,WXH3&11          SET BCE D MOD                      12  26371  D 00029 26394 3
8049    WXH3     BCE    WXH4,X1-1,          GO IF ZONE-NUMERICS OK             12  26383  B 26403 00028
8050             B      SE1                 BRANCH TO ERROR ROUTINE             7  26395  J 27220
8051             H                                          ROUTINE145 ERROR    1  26402  .
8052    *        THE CHARACTER IN X1 WAS RESTORED TO CHANNEL 4 INDICATORS.
8053    *        THE CHANNEL 4 INDICATORS WERE THEN STORED IN X1-1. THE
8054    *        CHARACTER IN X1-1 DOES NOT EQUAL THE CHARACTER IN X1.
```

```
PGLIN   LABEL   OPCOD  OPERAND                                              CT  ADDRS  INSTRUCTION
8056    WXH4    MLWS   X1,WXH6          SET FOR CHECKING WM/IO INTRLK       12  26403  D 00029 26416 4
8057            NOP                                                         1  26415  N
8058    WXH6    BW     WXH5,X1-1         GO IF X1 & X1-1 HAVE WMS,OK        12  26416  V 26467 00028 1
8059            BW     WXH7,X1           GO IF EITHER HAS WM-ERROR          12  26428  V 26459 00029 1
8060            BW     WXH7,X1-1                                            12  26440  V 26459 00028 1
8061            B      WXH5              GO-NIETHER X1 OR X1-1 HAS WM-OK     7  26452  J 26467
8062    WXH7    B      SE1               BRANCH TO ERROR ROUTINE             7  26459  J 27220
8063            H                                        ROUTINE145 ERROR    1  26466  .
8064    *       THE CHARACTER IN X1 WAS RESTORED TO CHANNEL 4 INDICATORS.
8065    *       THE CHANNEL 4 INDICATORS WERE THEN STORED IN X1-1. X1 AND
8066    *       X1-1 DO NOT BOTH HAVE A WORD MARK, OR DO NOT BOTH NOT
8067    *       HAVE A WORD MARK.
8068    WXH5    BA4    *&1               RESET IO INTERLOCK                  7  26467  1 26474 G
8069            BCE    WXH2,TAD1,1       LOOP RCUTINE145                    12  26474  B 26281 01001 1
8070            MLCWA  @      @,X1       CLEAR INDEX REG ONE                12  26486  D 29165 00029 X
8071    WXH8    B      SC1               STEP ROUTINE COUNTER TO146          7  26498  J 27380
```

```
PGLIN     LABEL     OPCOD  OPERAND                                                CT  ADDRS  INSTRUCTION
B073      *ROUTINE146-CHECK CLEAR STORAGE AT LOCATION 00000.
B074      CSZERO    BNQ    ITR                BRANCH INQUIRY                       7  26505  J 01334 Q
B075                CS     00000              TRY FOR SYSTEM CHECK                 6  26512  / 00000
B076                B      *&1                                                     7  26518  J 26525
B077                CS     CC OOP,00000       ENSURE ABILITY TO CLEAR & BRANCH     11  26525  / 26544 00000
B078                B      SE1                BRANCH TO ERROR ROUTINE              7  26536  J 27220
B079                H                                          ROUTINE146 ERROR     1  26543  .
B080      *         THE CS INSTRUCTION SHOULD HAVE BRANCHED AND DID NOT.
B081      CSLOOP    BCE    CSZERO,TAD1,1      LOOP ROUTINE146                      12  26544  B 26505 01001 1
B082                B      SC1                STEP ROUTINE COUNTER TO147           7  26556  J 27380
B083      *ROUTINE147-CHECK BRANCH ON C BIT OP IF THIS IS A 7010 MACHINE.
B084                BCE    CBIAA,SYS1,X                                            12  26563  B 26614 01256 X
B085                B      CBTEND             GO IF NOT 7010                       7  26575  J 26888
B086                DCW    @12478#.TABDGH.BT@  ODD PARITY CHARACTERS               16  26597
B087                DC     @LNOR.*L-BTVWZ*%M@                                      16  26613
B088      CBTAA     MLCWA  @     @,X1          CLEAR X1                             12  26614  D 29165 00029 X
B089                MLZWS  CC,X1               SET RANDOM CHAR IN X1 UNITS          12  26626  D 01900 00029 6
B090                MLNS   BB,X1                                                    12  26638  D 01889 00029 1
B091      CBTRP     BNQ    ITR1                                                     7  26650  J 01341 Q
B092                CW     CBTEVN&1,CBTODD&1  SET ROUTINE FOR WM OR NOT WM         11  26657  ¤ 26802 26783
B093                SAR    CBTCHK&5                                                7  26668  G 26756 A
B094                SBR    CBTCHK&17                                               7  26675  G 26768 B
B095                BW     CBTAC,X1           GO IF RANDOM CHAR HAS WM             12  26682  V 26719 00029 1
B096                CW     CBTODD&1,CBTEVN&1                                       11  26694  ¤ 26783 26802
B097                SAR    CBTCHK&5                                                7  26705  G 26756 A
B098                SBR    CBTCHK&17                                               7  26712  G 26768 B
B099      CBTAC     SW     CBTAA                                                   6  26719  , 26614
BP00                SAR    *&6                                                     7  26725  G 26737 A
BP01      CBTAB     MLCS   00000,CBTCHK&11     MOVE AN ODD BIT CHARACTER            12  26732  D 00000 26762 3
BP02                SAR    *-13                                                    7  26744  G 26737 A
BP03      CBTCHK    BCE    00000,X1,          GO IF RANDOM CHAR IS ODD             12  26751  B 00000 00029
BP04                BCE    00000,CBTCHK&11,1  GO IF RANDOM CHARACTER IS NOT ODD    12  26763  B 00000 26762 1
BP05                B      CBTAB              GO CHK NEXT ONE                      7  26775  J 26732
BP06      CBTODD    CW     CBTYES&1                                                6  26782  ¤ 26849
BP07                SW     CBTNO&1                                                 6  26788  , 26826
BP08                B      CBITXX                                                  7  26794  J 26813
BP09      CBTEVN    CW     CBTNO&1                                                 6  26801  ¤ 26826
```

```
PGLIN    LABEL     OPCOD  OPERAND                                          CT  ADDRS  INSTRUCTION
BP10               SW     CBTYES&1                                          6  26807  , 26849
BP11     CBITXX    BBC    CBTYES,X1     BRANCH IF X1 UNITS HAS A C BIT     12  26813  ≠ 26848 00029 4
BP12     CBTNO     NOP                                                      1  26825  N
BP13               B      CBTOK               GO IF X1 ACTUALLY HAS NO C BIT 7  26826  J 26864
BP14               B      SE1                 BRANCH TO ERROR ROUTINE      7  26833  J 27220
BP15               H                                        ROUTINE147 ERROR 1  26840  .
BP16     *         THE BRANCH ON C BIT OP AT LABEL CBITXX SHOULD HAVE
BP17     *         BRANCHED SINCE X1 UNITS POSITION HAS A CHECK BIT.
BP18     *         HOWEVER,THE BBC INSTRUCTION DID NOT BRANCH
BP19               B      CBTOK                                             7  26841  J 26864
BP20     CBTYES    NOP                                                      1  26848  N
BP21               B      CBTOK               GO IF X1 ACTUALLY HAS A C BIT 7  26849  J 26864
BP22               B      SE1                 BRANCH TO ERROR ROUTINE      7  26856  J 27220
BP23               H                                        ROUTINE147 ERROR 1  26863  .
BP24     *         THE BRANCH ON C BIT OP AT LABEL CBITXX SHOULD NOT HAVE
BP25     *         BRANCHED SINCE X1 UNITS POSITION HAS NO CHECK BIT.
BP26     *         HOWEVER,THE BBC OP DID BRANCH.
BP27     CBTOK     BCE    CBTRP,TAD1,1        LOOP ROUTINE147              12  26864  B 26650 01001 1
BP28               MLCWA  @      @,X1         LEAVE WITH X1 CLEARED        12  26876  D 29165 00029 X
BP29     CBTEND    B      SC1                 STEP ROUTINE COUNTER TO148    7  26888  J 27380
BP30     *ROUTINE148-CHECK FOR PROPER PROGRAM SEQUENCING.
BP31     KA1       BNQ    ITR                 BRANCH INQUIRY               7  26895  J 01334 Q
BP32               C      CN3,PASCHK          IS ROUTINE COUNTER SET RIGHT 11  26902  C 01401 26962
BP33               BE     KA2                 BRANCH-YES-EQUALS NO.THIS ROUTINE 7 26913 J 26940 S
BP34               MLCB   CN3,X1              SAVE ROUT COUNTER FOR ERR TYPEOUT 12 26920 D 01401 00029 L
BP35               B      SE1                 BRANCH TO ERROR ROUTINE      7  26932  J 27220
BP36               H                                        ROUTINE148 ERROR 1  26939  .
BP37     *              THE ROUTINE COUNT AT CN3 IS STEPPED AT THE END OF
BP38     *              EACH ROUTINE. CN3 SHOULD NOW CONTAIN THE NUMBER OF
BP39     *              THIS ROUTINE. IT DOES NOT.
BP40     KA2       BCE    KA1,TAD1,1          LOOP ROUTINE148              12  26940  B 26895 01001 1
BP41               B      *+5                                              7  26952  J 26963
BP42     PASCHK    DCW    @01480              THIS ROUTINES NUMBER         4  26962
```

PGLIN	LABEL		OPCOD	OPERAND		CT	ADDRS	INSTRUCTION
BP44	*END OF ONE PROGRAM PASS.							
BP45	ZA1		BNQ	ITR	BRANCH INQUIRY	7	26963	J 01334 Q
BP46			A	&1,C01	STEP PASS COUNTER	11	26970	A 29202 28538
BP47	T2		BCE	ZA2,CN4,1	BRANCH IF ERROR PASS	12	26981	B 27004 01402 1
BP48			A	&1,C04	STEP SUCCESSFUL PASS COUNTER	11	26993	A 29202 01477
BP49	ZA2	C	C	C01,FASTE	IS RELIABILITY RUN COMPLETE	11	27004	C 28538 28749
BP50		C	BW	*&12,00997	BRANCH IF IN RELIABILITY MODE	12	27015	V 27038 00997 1
BP51		C	C	C01,FASTF	IS NORMAL RUN COMPLETE	11	27027	C 28538 28745
BP52		C	BU	ZA5	BRANCH-NO RUN IS COMPLETE	7	27038	J 27189 /
BP53		C	A	C01,CCTYPA&4	ADD # OF COMPLTD PASSES TO TYPOUT	11	27045	A 28538 27098
BP54		C	A	C04,CCTYPB&4	ADD # OF SUCSFUL PASSES TO TYPOUT	11	27056	A 01477 27111
BP55		C	BCE	CCNOTP,TAD0,1	BRANCH TO BYPASS ALL PRINTING	12	27067	B 27116 01000 1
BP56		C	DCW	@N @	UNNECESSARY NOP	8	27086	
BP57		C	B	TYP1		7	27087	J 01289
BP58	CCTYPA	C	DCW	@00000 PASSES,@		13	27094	
BP59	CCTYPB	C	DCW	@00000 OK@,G		8	27107	
BP60	CCNOTP	C	MLCWA	@0000@,C01	CLEAR PASS COUNTER	12	27116	D 29186 28538 X
BP61		C	MLCWB	@0000@,C04	CLEAR SUCCESS PASS COUNTER	12	27128	D 29186 01477 P
BP62		C	C	CCTYPA&3,@0000@	100,000 PASSES YET	11	27140	C 27097 29186
BP63		C	BU	*&13	BRANCH IF NOT	7	27151	J 27170 /
BP64		C	MLCA	CCTYPA&4,CCTYPB&4	ZERO OK TYPOUT	12	27158	D 27098 27111 T
BP65		C	BCE	ZA5,TAD3,1	BRANCH-DO NOT END PROGRAM	12	27170	B 27189 01003 1
BP66		C	B	NEX1	TO LOAD ROUTINE	7	27182	J 00400
BP67	ZA5		MLCS	@0@,CN4	CLEAR ERROR INDICATOR	12	27189	D 29166 01402 3
BP68			MLCWA	@ 2@,CN3	SET ROUTINE COUNTER TO TWO	12	27201	D 29326 01401 X
BP69			B	AC1	REPEAT PROGRAM	7	27213	J 02512

```
PGLIN    LABEL     OPCOD  OPERAND                                                CT  ADDRS  INSTRUCTION
BP71     *CLOSED ERROR SUBROUTINE
BP72     SE1       SBR    SE2&13                                                  7  27220  G 27289 B
BP73               SBR    SE5&5                                                   7  27227  G 27336 B
BP74               SBR    SE4&5                                                   7  27234  G 27359 B
BP75               BCE    SE6,TAD0,1          BRANCH-BYPASS ALL TYPING           12  27241  B 27307 01000 1
BP76               MLNB   CN3,SE2&2           MOVE ROUTINE NUMBER FOR ERROR PRT  12  27253  D 01401 27278 J
BP77               B      TYP1                PRINT ERROR MESSAGE                 7  27265  J 01289
BP78               DCW    @*RT @                                                  4  27275
BP79      SE2      DCW    @   ,ADDR      ,ERR@,G                                 18  27276
BP80     SE3       BCE    DATA,TAD5,1         BRANCH-PRINT ADDITIONAL ERR DATA   12  27295  B 28051 01005 1
BP81     SE6       BCE    SE7,TAD4,1          BRANCH-SET TAD 1                   12  27307  B 27361 01004 1
BP82               MLCS   @1@,CN4             SET ERROR INDICATOR                12  27319  D 29167 01402 3
BP83     SE5       BCE    0,TAD2,1            BRANCH-TO ERROR HALT               12  27331  B 00000 01002 1
BP84               A      &1,SE4&5            MODIFY RETURN ADDRESS              11  27343  A 29202 27359
BP85     SE4       B      0                   BRANCH TO NEXT ROUTINE              7  27354  J 00000
BP86     SE7       MLCS   @1@,TAD1            SET TAD 1                          12  27361  D 29167 01001 3
BP87               B      SE5                                                     7  27373  J 27331
BP88     *CLOSED STEP ROUTINE COUNTER SUBROUTINE
BP89     SC1       SBR    SC2&5                                                   7  27380  G 27403 B
BP90               A      &1,CN3                                                 11  27387  A 29202 01401
BP91     SC2       B      0                   RETURN TO PROGRAM                   7  27398  J 00000
```

```
PGLIN    LABEL    OPCOD  OPERAND                          CT  ADDRS  INSTRUCTION
BP93     *SUBROUTINE TO RECEIVE CONSTANTS ON REQUEST.
BP94     SD1      B      TYP1                              7  27405  J 01289
BP95              DCW    @ENTER CONSTANT.@,G              15  27426
BP96     SD2      B      TYP1                              7  27428  J 01289
BP97              DCW    @AA@,G                            2  27436
BP98              MRCWG  CQ65&1,CQ6-9     CLEAR STORAGE AREA  12  27438  D 01642 01630 DL
BP99              SW     CQ6-9                             6  27450  , 01630
BQ00     SD20     RCP    CQ6-9            READ CONSTANT AA  10  27456  M %TO 01630 R
BQ01              SBR    SD3&10                            7  27466  G 27497 BSMG
BQ02              BEX1   SD20,MS          BRANCH ANY BUT WLR  7  27473  R 27456 SMG
BQ03              BA1    *&1                               7  27480  R 27487 M
BQ04     SD3      MLCWA  @M @,0G           TERMINATE AA      12  27487  D 29328 00000 X
BQ05              SBR    SD4&5                             7  27499  G 27518 B
BQ06              SBR    SD6&5                             7  27506  G 27611 B
BQ07     SD4      MLCWA  0,AA              STORE AA          12  27513  D 00000 01878 X
BQ08     SD5      B      TYP1                              7  27525  J 01289
BQ09              DCW    @CC@,G                            2  27533
BQ10              MLCWS  @ @,CQ6-9         CLEAR POSSIBLE G/M,W/M  12  27535  D 29208 01630 7
BQ11     SD15     RCP    CQ6-9            READ CONSTANT CC  10  27547  M %TO 01630 R
BQ12              BEX1   *-16,MS                           7  27557  R 27547 SMG
BQ13              BA1    SD5               BRANCH ANY        7  27564  R 27525 M
BQ14              MLWA   AA,CC             AA W/M TO CC      12  27571  D 01878 01900 UQ
BQ15              ZA     AA,CC             AA NUMERIC TO CC  11  27583  M 01878 01900
BQ16              MLZA   CC,AA             SET AA SIGN       12  27594  D 01900 01878 S
BQ17     SD6      MLZB   0,CC              STORE CC ZONE     12  27606  D 00000 01900 K
BQ18     SD7      B      TYP1                              7  27618  J 01289
BQ19              DCW    @BB@,G                            2  27626
BQ20              MRCWG  CQ65&1,CQ6-9     CLEAR STORAGE AREA  12  27628  D 01642 01630 DL
BQ21              SW     CQ6-9                             6  27640  , 01630
BQ22     SD16     RCP    CQ6-9            READ CONSTANT BB  10  27646  M %TO 01630 R
BQ23              SBR    SD14&10                           7  27656  G 27687 BSMG
BQ24              BEX1   SD16,MS          BRANCH ANY BUT WLR  7  27663  R 27646 SMG
BQ25              BA1    *&1                               7  27670  R 27677 M
BQ26     SD14     MLCWA  @M @,0G           TERMINATE BB      12  27677  D 29328 00000 X
BQ27              SBR    SD9&5                             7  27689  G 27708 B
BQ28              SBR    SD11&5                            7  27696  G 27801 B
```

PGLIN	LABEL	OPCOD	OPERAND		CT	ADDRS	INSTRUCTION
BQ30	SD9	MLCWA	0,BB	STORE BB	12	27703	D 00000 01889 X
BQ31	SD10	B	TYP1		7	27715	J 01289
BQ32		DCW	@DD@,G		2	27723	
BQ33		MLCWS	@ @,CQ6-9	CLEAR POSSIBLE G/M,W/M	12	27725	D 29208 01630 7
BQ34	SD17	RCP	CQ6-9	READ CONSTANT DD	10	27737	M %TO 01630 R
BQ35		BEX1	*-16,M S		7	27747	R 27737 M S
BQ36		BA1	SD10	BRANCH ANY	7	27754	R 27715 M G
BQ37		MLWA	BB,DD	BB W/M TO DD	12	27761	D 01889 01911 U
BQ38		ZA	BB,DD	BB NUMERIC TO DD	11	27773	M 01889 01911 Q
BQ39		MLZA	DD,BB	SET BB SIGN	12	27784	D 01911 01889 S
BQ40	SD11	MLZB	0,DD	STORE DD ZONE	12	27796	D 00000 01911 K
BQ41	SD12	B	TYP1		7	27808	J 01289
BQ42		DCW	@EE@,G		2	27816	
BQ43		MLCWA	@00000@,CQ7	CLEAR ADDRESS STORAGE	12	27818	D 29196 01657 X
BQ44	SD18	RCP	CQ7-4	READ CONSTANT EE	10	27830	M %TO 01653 R
BQ45		BEX1	*-16,M S		7	27840	R 27830 M S
BQ46		BA1	SD12	BRANCH ANY	7	27847	R 27808 M G
BQ47		MLNWA	CQ7,EE	STORE CONST ANT EE	12	27854	D 01657 01916 V
BQ48	SD13	B	TYP1		7	27866	J 01289
BQ49		DCW	@FF@,G		2	27874	
BQ50		MLCWA	@00000@,CQ7	CLEAR ADDRESS STORAGE	12	27876	D 29196 01657 X
BQ51	SD19	RCP	CQ7-4	READ CONSTANT FF	10	27888	M %TO 01653 R
BQ52		BEX1	*-16,M S		7	27898	R 27888 M S
BQ53		BA1	SD13	BRANCH ANY	7	27905	R 27866 M G
BQ54		MLNWA	CQ7,FF	STORE CONSTANT FF	12	27912	D 01657 01921 V
BQ55		SCNLA	AA,1011	COUNT CHARACTERS IN AA,CC	12	27924	D 01878 01011 B S
BQ56		SBR	CO2	STORE LENGTH & 1000	7	27936	G 01467 B
BQ57		A	-1011,CO2	CALCULATE RESULT	11	27943	A 29207 01467
BQ58		MLZS	@ @,CO2	CLEAR SIGN ZONE	12	27954	D 29208 01467 2
BQ59		SCNLA	BB,1011	COUNT CHARACTERS IN BB,DD	12	27966	D 01889 01011 B S
BQ60		SBR	CO25	STORE LENGTH & 1000	7	27978	G 01472 B
BQ61		A	-1011,CO25	CALCULATE RESULT	11	27985	A 29207 01472
BQ62		MLZS	@ @,CO25	CLEAR SIGN ZONE	12	27996	D 29208 01472 2
BQ63		MLCS	@ @,TAD6	CLEAR TAD 6	12	28008	D 29208 01006 3
BQ64		MLCS	@1@,TAD7	SET TAD 7	12	28020	D 29167 01007 3

```
PGLIN     LABEL     OPCOD  OPERAND                                  CT  ADDRS  INSTRUCTION
BQ66      *SETUP FOR SKIPPING CONSTANT GENERATION ROUTINES.
BQ67      SD8       MLCA   @000046@,CN3      SET ROUTINE COUNTER TO NEXT ROUT.  12  28032  D 29333 01401 T
BQ68                B      BT1                                                 7  28044  J 07192
BQ69      *SUB-SUBROUTINE TO PRINT ADDITIONAL ERROR DATA.
BQ70      DATA      SBR    DATA7&5           SET RETURN ADDRESS                7  28051  G 28532 B
BQ71                MLC    C01,DATA1         PASS COUNT TO PRINT STATEMENT    12  28058  D 28538 28098 C
BQ72                A      &1,DATA1          STEP COUNT FOR THIS PASS         11  28070  A 29202 28098
BQ73                B      TYP1              PRINT PASS COUNT                  7  28081  J 01289
BQ74                DCW    @  PASS @                                           7  28094
BQ75      DATA1     DCW    @    @,G                                            4  28098
BQ76                MLCB   X10,DATA2                                         12  28100  D 00074 28276 L
BQ77                MLCB   X9,DATA2-10                                       12  28112  D 00069 28266 L
BQ78                MLCB   X8,DATA2-19                                       12  28124  D 00064 28257 L
BQ79                MLCB   X7,DATA2-28                                       12  28136  D 00059 28248 L
BQ80                MLCB   X6,DATA2-37                                       12  28148  D 00054 28239 L
BQ81                MLCB   X5,DATA2-46                                       12  28160  D 00049 28230 L
BQ82                MLCB   X2,DATA2-55                                       12  28172  D 00034 28221 L
BQ83                MLCB   X1,DATA2-64                                       12  28184  D 00029 28212 L
BQ84                B      TYP1              PRINT INDEX REGISTERS             7  28196  J 01289
BQ85                DCW    @  X1-@                                             5  28207
BQ86                DCW    @     ,X2-@                                         9  28216
BQ87                DCW    @     ,X5-@                                         9  28225
BQ88                DCW    @     ,X6-@                                         9  28234
BQ89                DCW    @     ,X7-@                                         9  28243
BQ90                DCW    @     ,X8-@                                         9  28252
BQ91                DCW    @     ,X9-@                                         9  28261
BQ92                DCW    @     ,X10-@                                       10  28271
```

```
PGLIN     LABEL     OPCOD  OPERAND                          CT  ADDRS  INSTRUCTION
BQ94      DATA2     DCW    @      @,G                        5  28276
BQ95                SW     DATA5,DATA5&1   CLEAR W/MS IN PRINT AREA  11  28278  , 28442 28443
BQ96                CW     DATA6                              6  28289  ¤ 28516
BQ97                MLW    DATA6,DATA6-1                     12  28295  D 28516 28515 D
BQ98                MLW                                       1  28307  D
BQ99                MLCWS  @M@,DATA6&1                       12  28308  D 29255 28517 7
BR00                MLCA   FF,DATA6        SET UP CONSTANT STATEMENT  12  28320  D 01921 28516 T
BR01                MLCA   @,FF-@                            6  28332  D 29337
BR02                MLCA   EE                                6  28338  D 01916
BR03                MLCA   @,EE-@                            6  28344  D 29341
BR04                MLCA   DD                                6  28350  D 01911
BR05                MLCA   @,DD-@                            6  28356  D 29345
BR06                MLCA   CC                                6  28362  D 01900
BR07                MLCA   @,CC-@                            6  28368  D 29349
BR08                MLCA   BB                                6  28374  D 01889
BR09                MLCA   @,BB-@                            6  28380  D 29353
BR10                MLCA   AA                                6  28386  D 01878
BR11                MLCA   @ AA-@                            6  28392  D 29357
BR12                SBR    DATA3&5                           7  28398  G 28410 B
BR13      DATA3     MRCWG  0,DATA5                          12  28405  D 00000 28442 L
BR14                MRCWG  DATA7                             6  28417  D 28527
BR15                MLCWS  @ @,DATA5                        12  28423  D 29208 28442 7
BR16                B      TYP1             PRINT CONSTANTS   7  28435  J 01289
BR17      DATA5     DCW    @                          @     50  28442
BR18      DATA6     DC     @                    @,G          25  28516
BR19                DC     @          @                      9  28526
BR20      DATA7     B      SE6                               7  28527  J 27307
BR21                DCW    @M@                               1  28534
```

```
PGLIN     LABEL      OPCOD  OPERAND                                          CT  ADDRS  INSTRUCTION
BR23      *CONSTANTS AND STORAGE.
BR24      CO1        DCW    0000          PASS COUNTER                        4  28538
BR25      NOTZS      DCW    @ @           1-NOT ZS & NOT NOT ZS  0-OK        1  28539
BR26      FIRSTO     DC     @ @           SIMULATED EDIT LATCHES              1  28540
BR27      SIGDIG     DC     @ @                                               1  28541
BR28      CECCTL     DC     @ @                                               1  28542
BR29      ASTDOL     DC     @ @           0-NOTHING,1-ASTERISK FILL,4-FL $    1  28543
BR30      BODY       DC     @ @                                               1  28544
BR31      SUPPR      DC     @ @                                               1  28545
BR32      PLUS       DC     @ @                                               1  28546
BR33      UNITS      DC     @ @                                               1  28547
BR34      ACHAR      DCW    @ @                                               1  28548
BR35      BCHAR      DCW    @ @                                               1  28549
BR36       C21       DCW    @                                          @     50  28550
BR37      C22        DC     @                    @,G                         25  28624
BR38      AANUM      DCW    @000000000000@      CONSTANT AA MINUS ALL 8 BITS  11  28636
BR39      BBNUM      DCW    @000000000000@      CONSTANT BB MINUS ALL 8 BITS  11  28647
BR40      CS1        DCW    @00000000000000000000@                           21  28668
BR41      CS2        DCW    @..........@                                     10  28678
BR42      CS3        DCW    @                 @                              21  28699
BR43      LOC8       B      DATA                                              7  28700  J 28051
BR44      LOC15      H      *-12                                              6  28707  . 28700
BR45      LOC21      H                                                        1  28713  .
BR46      CT1        BOL1   LC7                                               7  28714  J 25093 1
BR47      CT2        DCW    @0@           50 PASS ERROR INDICATOR             1  28721
BR48      CT4        DCW    @     @       NEXT INTERRUPT OP ADDRESS           5  28726
BR49                 DCW    @,-@                                              2  28728
BR50      ERPW       DCW    @.0 -,@                                           5  28733
BR51      ERPX       DCW    @.0 ,-@                                           5  28738
BR52      ERPY       DCW    @,0 @                                             3  28741
BR53      FASTF      DCW    @1000@        NORMAL NUMBER OF PASSES/RUN         4  28745
BR54      FASTE      DCW    @0100@        RELIABILITY MODE PASSES/RUN         4  28749
```

```
PGLIN     LABEL     OPCOD  OPERAND                                  CT  ADDRS  INSTRUCTION
BR56      *TABLE OF INTERRUPTABLE AND NON INTERRUPTABLE INSTRUCTIONS.
BR57       RUPBOT   ZA     0&X5              * NO                    6  28750  QM 00**0
BR58                ZA                       * NO                    1  28756  QM
BR59                ZA     0&X5,0&X6         * YES                  11  28757  QM 00**0 00*.0
BR60                DCW    @N@,G             * NO                    1  28768
BR61                ZS     0&X5                NO  *                 6  28770  . 00**0
BR62                ZS                         NO  *                 1  28776  .
BR63                ZS     0&X5,0&X6           YES *                11  28777  . 00**0 00*.0
BR64                DCW    @N@,G               NO  *                 1  28788
BR65                A      0&X5              * NO                    6  28790  A 00**0
BR66                A                        * NO                    1  28796  A
BR67                A      0&X5,0&X6         * YES                  11  28797  A 00**0 00*.0
BR68                DCW    @N@,G             * NO                    1  28808
BR69                S      0&X5                NO  *                 6  28810  S 00**0
BR70                S                          NO  *                 1  28816  S
BR71                S      0&X5,0&X6           YES *                11  28817  S 00**0 00*.0
BR72                DCW    @N@,G               NO  *                 1  28828
BR73                M      0&X5              * NO                    6  28830  @ 00**0
BR74                M                        * NO                    1  28836  @
BR75                M      0&X5,0&X6         * YES                  11  28837  @ 00**0 00*.0
BR76                DCW    @N@,G             * NO                    1  28848
BR77                D      0&X5                NO  *                 6  28850  % 00**0
BR78                D                          NO  *                 1  28856  %
BR79                D      0&X5,0&X6           YES *                11  28857  % 00**0 00*.0
BR80                DCW    @N@,G               NO  *                 1  28868
```

PGLIN	LABEL	OPCOD	OPERAND		CT	ADDRS	INSTRUCTION
BR82		MCE	0&X5	* NO	6	28870	E 00**0
BR83		MCE		* NO	1	28876	E
BR84		MCE	0&X5,0&X6	* YES	11	28877	E 00**0 00*.0
BR85		DCW	@N@,G	* NO	1	28888	
BR86		MCS	0&X5	NO *	6	28890	Z 00**0
BR87		MCS		NO *	1	28896	Z
BR88		MCS	0&X5,0&X6	YES *	11	28897	Z 00**0 00*.0
BR89		DCW	@N@,G	NO *	1	28908	
BR90		C	0&X5	* NO	6	28910	C 00**0
BR91		C		* NO	1	28916	C
BR92		C	0&X5,0&X6	* YES	11	28917	C 00**0 00*.0
BR93		DCW	@N@,G	* NO	1	28928	
BR94		CS	39999	NO *	6	28930	/ 39999
BR95		CS		NO *	1	28936	/
BR96		CS	LC13,0&X5	YES *	11	28937	/ 25124 00**0
BR97		DCW	@N@,G	NO *	1	28948	
BR98		SW	0&X5	* NO	6	28950	, 00**0
BR99		SW		* NO	1	28956	,
BS00		SW	0&X5,0&X6	* YES	11	28957	, 00**0 00*.0
BS01		DCW	@N@,G	* NO	1	28968	
BS02		CW	0&X5	NO *	6	28970	¤ 00**0
BS03		CW		NO *	1	28976	¤
BS04		CW	0&X5,0&X6	YES *	11	28977	¤ 00**0 00*.0
BS05		DCW	@N@,G	NO *	1	28988	
BS06	LCC2	BBE	00000	* NO	6	28990	W 00000
BS07		BBE		* NO	1	28996	W
BS08		BBE	LC13,0&X5	* YES	12	28997	W 25124 00**0
BS09		DCW	@N@,G	* NO	1	29009	

```
PGLIN   LABEL    OPCOD  OPERAND                    CT  ADDRS  INSTRUCTION
BS11    LCC3     BZN    00000            NO *       6  29011  V 00000
BS12             BZN                     NO *       1  29017  V
BS13             BZN    LC13,0&X5,-      YES *     12  29018  V 25124 00**0 K
BS14             DCW    @N@,G            NO *       1  29030
BS15             MLCWS  0&X5           * NO         6  29032  D 00**0
BS16             MLCWS                 * NO         1  29038  D
BS17             MLCWA  0&X5,0&X6      * YES       12  29039  D 00**0 00*.0 X
BS18             DCW    @N@,G          * NO         1  29051
BS19    LCC4     BCE    00000            NO *       6  29053  B 00000
BS20             BCE                     NO *       1  29059  B
BS21             BCE    LC13,0&X5,X      YES *     12  29060  B 25124 00**0 X
BS22             DCW    @N@,G            NO *       1  29072
BS23             LLH    0&X5          * NO         6  29074  T 00**0
BS24             LLH                   * NO         1  29080  T
BS25             LLE    0&X5,0&X6      * YES       12  29081  T 00**0 00*.0 3
BS26             DCW    @N@,G          * NO         1  29093
BS27    LCC5     CW     00000            NO *       6  29095  ¤ 00000
BS28             DCW    @Y@              NO *       1  29101
BS29             BDV    LC13             YES *      7  29102  J 25124 W
BS30             DCW    @N    @,G        NO *       5  29113
BS31             SBR    39999          * NO         7  29115  G 39999 BG
BS32             BAI    LC13           * NO-TURN OFF INTERRUPT REQUEST
                                                     7  29122  R 25124 M
BS33             DCW    @N#   @,G       * NO        5  29133
BS34             DCW    @N      @        NO *       7  29141
BS35             BXPA   LC13             NO * TURN OFF PRIORITY MODE
                                                     7  29142  Y 25124 X
BS36    RUPTOP   DCW    @N#   @,G        NO *       5  29153
BS37    ALAST    C      @Z@              LAST INSTRUCTION OF PROGRAM
                                                     6  29155  C 29358
```

PGLIN	LABEL	OPCOD	OPERAND	CT	ADDRS	INSTRUCTION
BS39	*LITERAL CONSTANTS.					
BS40		LTORG	*		29161	
BS40			@ @	5	29165	
BS40			@0@	1	29166	
BS40			@1@	1	29167	
BS40			@ 0@	5	29172	
BS40			£99993	5	29177	
BS40			£00006	5	29182	
BS40			@0000@	4	29186	
BS40			RUPBOT	5	29191	28750
BS40			@00000@	5	29196	
BS40			@00011@	5	29201	
BS40			£1	1	29202	
BS40			-1	1	29203	
BS40			-1011	4	29207	
BS40			@ @	1	29208	
BS40			@00010@	5	29213	
BS40			@00001@	5	29218	
BS40			£5000	4	29222	
BS40			@00150@	5	29227	
BS40			£150	3	29230	
BS40			-00023	5	29235	
BS40			@00023@	5	29240	
BS40			£50	2	29242	
BS40			£350	3	29245	
BS40			@00100@	5	29250	
BS40			£200	3	29253	
BS40			@‡@	1	29254	
BS40			@M@	1	29255	
BS40			@ ‡@	2	29257	
BS40			@,0 .-@	5	29262	
BS40			@.0 @	3	29265	
BS40			@,@	1	29266	
BS40			EZ12	5	29271	15674
BS40			QQ5	5	29276	16610
BS40			@-@	1	29277	
BS40			@£@	1	29278	

```
PGLIN     LABEL     OPCOD  OPERAND                                  CT  ADDRS  INSTRUCTION
BS40                       @9@                                      1  29279
BS40                       @99@                                     2  29281
BS40                       &5                                       1  29282
BS40                       EDTDA                                    5  29287  24489
BS40                       EDTSM                                    5  29292  24478
BS40                       @0000.@                                  5  29297
BS40                       @$@                                      1  29298
BS40                       @*@                                      1  29299
BS40                       @.@                                      1  29300
BS40                       @4@                                      1  29301
BS40                       @-CR 0@                                  5  29306
BS40                       @ @                                      2  29308
BS40                       @ *@                                     2  29310
BS40                       @49@                                     2  29312
BS40                       @24@                                     2  29314
BS40                       @74@                                     2  29316
BS40                       RUPTOP                                   5  29321  29153
BS40                       @   2@                                   5  29326
BS40                       @M @                                     2  29328
BS40                       @00046@                                  5  29333
BS40                       @,FF-@                                   4  29337
BS40                       @,EE-@                                   4  29341
BS40                       @,DD-@                                   4  29345
BS40                       @,CC-@                                   4  29349
BS40                       @,BB-@                                   4  29353
BS40                       @ AA-@                                   4  29357
BS40                       @Z@                                      1  29358
BS41           END         START        D.E.B.                             J02000

                                  END OF ASSEMBLY
```