

SYSTEMS ENGINEERING LABORATORIES PROGRAM LIBRARY

PROGRAM DESCRIPTION

Page 1 of 4

Catalog Number 300011C

IDENTIFICATION: SEL 810A/B ASR-33 Source Update Program

AUTHOR: Systems Engineering Laboratories

ACCEPTED: July 10, 1968

PURPOSE: To provide an easy method for correction of errors in symbolic source programs punched on paper tape. All Communications are handled by the ASR-33 or any standard SEL 810A or SEL 810B Computer with an ASR-33.

SUBROUTINES
REQUIRED: None

STORAGE: 1347₈ locations + keyword buffer.

TIMING: N/A

LOADING
PROCEDURE: Load with the Standard Paper Tape Load/Dump Program, Catalog No. 300001.

USE: NOTE

This Revision replaces Catalog No. 300011B. The sense switch settings are different, and capabilities have been increased.

The ASR-33 is the only I/O device used.

1.0 Keywords and corrections may be input through the keyboard or punched offline and then read by the ASR-33 reader.

- a. An upward arrow (↑) in the line being punched deletes that respective line. This also applies to the source tape.

USE: (Cont'd)

NOTE

Arrow must appear before a carriage return and a carriage return must appear after the upward arrow.

2.0 Sense Switch Settings

Sense Switch 0

Set Keywords and corrections are input through the ASR-33 Reader.

Reset Keywords and corrections are input through the ASR-33 Keyboard.

3.0 Keywords and Their Meaning

a. End

Keyword: ED cr

Definition: Tells the Update Program that this is the end of the Keywords and corrections.

b. Copy

Keyword: CP cr

Definition: Copy the remainder of the tape up to and including the "end" statement, then copy the next four punches.

c. Delete

Keyword: DEXXXXΔΔYYYY cr

Definition: Delete line XXXX up to and including line YYYY. To delete one line, put the line number in XXXX immediately followed by a carriage return (cr).

Line Numbers, XXXX and YYYY must have four decimal digits, leading zeroes are required. There must be two spaces between the number in XXXX and the beginning of the number in YYYY.

USE: (Cont'd)

d. Insert

Keyword: INXXXX cr

Loc.	Oper.	Address, Index	Comments	cr
"	"	" "	"	"
"	"	" "	"	"
"	"	" "	"	"

Definition: Insert the following lines after line number XXXX. The lines to be inserted may contain almost anything; exceptions are:

- (1) An upward arrow (↑) signals a mistake in the line and the line is not outputted. The upward arrow must appear before a carriage return and a carriage return must appear after the upward arrow.
- (2) A "FORM" character (= '334) signals the end of the insertions. This character must appear in column one, followed by a carriage return.

A carriage return terminates a line and the line will be outputted.

The line number, XXXX, must have FOUR decimal digits, leading zeroes are required.

After a "Form" character and a carriage return, control reverts back to the keywords.

A line that is to be inserted may have 80 characters plus a carriage return.

4.0 The following messages are typed out when running the program.

- a. The first message is: "Turn off paper tape punch. Input Keywords and corrections from the _____. " The blank (_____) depends on the setting of sense switch zero. If this switch is "RESET" the blank will read "KEYBOARD". If the switch is "SET" the blank will read "READER AND PRESS START."

If the message ends with "Keyboard", begin inputting keyword instructions.

If the message ends with "Reader and Press Start", mount the keyword and correction tape that was punched offline and press start.

- b. If there is an incorrect keyword typed or read the following message will be typed out: "NOT A KEYWORD". The next two characters must be a keyword, if not the same message will be typed out again.
- c. After the Keyword "ED cr" has been typed the following message will be typed:

"Turn on Paper Tape Punch
Mount Source Tape and Press Start"

- d. When the processing of the source tape is complete the following message is typed out:

"To Restart Program Adjust SSWO and Press Start."

The next message to be typed out will be the one described in paragraph 4a.

Restrictions and Functions

- a. Zero punches within the source tape are ignored and taken out of the new tape.
- b. If the number in a Delete or Insert instruction is less than the number of lines already read on the source tape, that instruction will be skipped.
- c. The END card must have a blank in column 1. The letters END may start in columns 6 or 7 only.
- d. At the end of a line a carriage return and a line feed punch are automatically punched.
- e. Delete code (1377) punches within the source tape are ignored and taken out of the new tape.
- f. All source tape lines must end with a carriage return.

0002 00000 00000000 *

CATALOG NO. 3000110

0003 00000 00000000 *

DATE JULY 10, 1968

0004 00000 00000000 *

M. LARSON, SEL

0005 00000 00000000 *

0006 00000 00000000 *****

SENSE SWITCH ZERO OPTIONS *

0007 00000 00000000 *

SET - KEYWORDS AND CORRECTIONS *

0008 00000 00000000 *

FROM ASR-33 READER *

0009 00000 00000000 *

RESET - KEYWORDS AND CORRECTIONS *

0010 00000 00000000 *

FROM ASR-33 KEYBOARD *

0011 00000 00000000 *

0012 00000 00000000 *****

DEFINITIONS

0013 00000 00000000 *

KWCT KWCT IS A COUNTER FOR THE

0014 00000 00000000 *

NUMBER OF KEYWORDS AND

0015 00000 00000000 *

CORRECTIONS MADE. A WORD

0016 00000 00000000 *

CONSISTS OF TWO CHARACTERS

0017 00000 00000000 *

PER WORD.

0018 00000 00000000 *

WORD WORD CONTAINS ALL THE

0019 00000 00000000 *

KEYWORDS AND CORRECTIONS

0020 00000 00000000 *

PACKED TWO CHARACTERS PER

0021 00000 00000000 *

WORD.

0022 00000 00000000 *

LINE LINE IS A COUNTER THAT IS

0023 00000 00000000 *

SUBTRACTED FROM KWCT WHEN

0024 00000 00000000 *

AN UPWARD ARROW IS REACHED.

0025 00000 00000000 *

X1 X1 IS A COUNTER COMPARED

0026 00000 00000000 *

WITH KWCT WHEN SOURCE TAPE

0027 00000 00000000 *

IS INPUT

0028 00000 00000000 *

AROW AN UPWARD ARROW = '157000

0029 00000 00000000 *

LFF LINE FEED = '105000

0030 00000 00000000 *

CAR CARRIAGE RETURN = '106400

0031 00000 00000000 *

SLAS SLASH = '156000

0032 00000 00000000 *

A FORM CHARACTER, USED TO

0033 00000 00000000 *

TERMINATE THE INSERT ROUTINE

0034 00000 00000000 *

UP1 UP1 KEEPS TRACK OF THE

0035 00000 00000000 *

SIZE OF THE I/O BUFFER

0036 00000 00000000 *

NAMES BUFF. USED IN INPUT

0037 00000 00000000 *

PR6 PR6 IS COMPARED WITH UP1

0038 00000 00000000 *

FOR OUTPUT OF BUFF.

0039 00000 00000000 *

0040	00000	00000000	*	LCT	LCT IS A COUNTER FOR THE
0041	00000	00000000	*		NUMBER OF SOURCE TAPE LINES
0042	00000	00000000	*		THAT HAVE BEEN READ INTO
0043	00000	00000000	*		BUFF.
0044	00000	00000000	*	DE1	USED IN NUMBER CONVERSION
0045	00000	00000000	*	DE2	USED IN NUMBER CONVERSION
0046	00000	00000000	*	I/O	USED BY DELETE ROUTINE
0047	00000	00000000	*	FROM	USED BY DELETE ROUTINE
0048	00000	00000000	*		AND THE INSERT ROUTINE.
0049	00000	00000000	*	BUFF	I/O BUFFER FOR SOURCE TAPE
0050	00000	00000000	*		
0051	00000	00000000	*		
0052	00000	00000000		REL	
0053	00000	00000003		STRT CLA	
0054	00001	03101213		STA KWCT	
0055	00002	03101212		STA LINE	
0056	00003	12100347		SPB CLBF	
0057	00004	01000001		LAA =1	
0058	00005	03101217		STA LCT	
0059	00006	01101176		LAA FF	
0060	00007	03101075		STA MESS+3	
0061	00010	00130400		SNS 0	TEST SENSE SWITCH ZERO
0062	00011	11100026		BRU AA1	PAPER TAPE READER
0063	00012	01101177		LAA KE	KEYBOARD
0064	00013	03101134		STA MESS+34	
0065	00014	01101200		LAA YB	
0066	00015	03101135		STA MESS+35	
0067	00016	01101201		LAA ZA	
0068	00017	03101136		STA MESS+36	
0069	00020	01101202		LAA RU	
0070	00021	03101137		STA MESS+37	
0071	00022	12100134		SPB OUT	OUTPUT MESSAGE
0072	00023	00130101		CEU 1,W	
0073	00024	00002000		DATA *2000	ENABLE KEYBOARD
0074	00025	11100053		BRU KEY	READ IN KEYWORDS
0075	00026	01101203	AA1	LAA RE	
0076	00027	03101134		STA MESS+34	
0077	00030	01101204		LAA AU	
0078	00031	03101135		STA MESS+35	

. UU

1	PAGE	0003	ASR-33	SOURCE UPDATE PROGRAM
0079	00032	01101205	LAA	BR
0080	00033	03101136	STA	MESS+36
0081	00034	01101206	LAA	BRK
0082	00035	03101137	STA	MESS+37
0083	00036	12100134	SPB	OUT OUTPUT MESSAGE
0084	00037	02077767	LBA	=177767
0085	00040	01501072	LAA	AA7+18,1
0086	00041	12100145	SPB	OUT2
0087	00042	00000026	IBS	
0088	00043	11100040	BRU	*-3
0089	00044	00000000	HLI	
0090	00045	00130101	CEU	1,W
0091	00046	00004000	DATA	*4000 ENABLE READER
0092	00047	12100104	SPB	INPI
0093	00050	00000022	SAZ	
0094	00051	11100054	BRU	*+3
0095	00052	11100047	BRU	*-3
0096	00053	12100104	KEY SPB	INPI READ KEYWORD CHARACTER
0097	00054	12100117	SPB	CHK ARROW CHECK
0098	00055	00000005	TAB	
0099	00056	12100104	SPB	INPI
0100	00057	12100117	SPB	CHK
0101	00060	00001015	RSL	8
0102	00061	00000030	ØBA	
0103	00062	15101172	CMA	CP
0104	00063	11100076	BRU	AA3 NOT A KEYWORD
0105	00064	11100206	BRU	CPDE COPY ROUTINE FOR INPUT OF KEYWORD
0106	00065	15101173	CMA	DE
0107	00066	11100076	BRU	AA3
0108	00067	11100206	BRU	CPDE DELETE ROUTINE FOR INPUT
0109	00070	15101174	CMA	ED OF KEYWORDS
0110	00071	11100076	BRU	AA3
0111	00072	11100152	BRU	LOAD END OF KEYWORDS
0112	00073	15101175	CMA	IN
0113	00074	11100076	BRU	AA3
0114	00075	11100246	BRU	SERI INSERT ROUTINE FOR INPUT
0115	00076	02077770	AA3 LBA	=-8 OF KEYWORDS
0116	00077	01501050	AA4 LAA	AA5+8,1 NOT A KEYWORD
0117	00100	12100145	SPB	OUT2

HH

0118	00101	00000026		IBS		
0119	00102	11100077		BRU	AA4	
0120	00103	11100053		BRU	KEY	
0121	00104	00000000	INPI	ZZZ	**	INPUT + OUTPUT CHAR.
0122	00105	00170301		AIP	1,W	
0123	00106	00001016		LSL	8	
0124	00107	00170101		AOP	1,W	
0125	00110	15101210		CMA	LFF	LFF = '105000
0126	00111	11300104		BRU*	INPI	
0127	00112	11100105		BRU	*-5	
0128	00113	15077400		CMA	= '177400	
0129	00114	11300104		BRU*	INPT	
0130	00115	11100105		BRU	INPI+1	
0131	00116	11300104		BRU*	INPT	
0132	00117	00000000	CKK	ZZZ	**	
0133	00120	15101207		CMA	AR0W	AR0W CHECK ()
0134	00121	11300117		BRU*	CKK	FOR KEYWORDS
0135	00122	11100124		BRU	**2	
0136	00123	11300117		BRU*	CKK	
0137	00124	01101213		LAA	KWCI	INDEX FOR WORD
0138	00125	06101212		SMA	LINE	
0139	00126	03101213		STA	KWCI	
0140	00127	00000003		CLA		
0141	00130	03101212		STA	LINE	
0142	00131	00000005		TAB		
0143	00132	12100200		SPB	CR	
0144	00133	11100053		BRU	KEY	
0145	00134	00000000	OUT	ZZZ	**	OUTPUT MESSAGE
0146	00135	01101107		LAA	MESS+13	
0147	00136	12100145		SPB	OUT2	
0148	00137	02077731		LBA	=-39	
0149	00140	01501141	AA2	LAA	MESS+39,1	
0150	00141	12100145		SPB	OUT2	
0151	00142	00000026		IBS		
0152	00143	11100140		BRU	AA2	
0153	00144	11300134		BRU*	OUT	
0154	00145	00000000	OUT2	ZZZ	**	OUTPUT TWO CHAR. FROM A REGISTER
0155	00146	00170101		AOP	1,W	
0156	00147	00001016		LSL	8	

1 PAGE 0005 ASR-33 SOURCE UPDATE PROGRAM

0157	00150	00170101		ADP	1,W	
0158	00151	11300145		BRU*	OUT2	
0159	00152	12100104	LOAD	SPB	INPI	
0160	00153	12100117		SPB	CKK	ARROW CHECK
0161	00154	15101211		CMA	CAR	CARRIAGE RETURN
0162	00155	11100152		BRU	*-3	
0163	00156	11100160		BRU	*+2	
0164	00157	11100152		BRU	*-5	
0165	00160	00170501		MOP	1,W	
0166	00161	00105000		DATA	'105000	LINE FEED
0167	00162	02077762		LBA	=-14	
0168	00163	01047240		LAA	= '147240	N
0169	00164	03101075		STA	MESS+S	
0170	00165	01501110	AA9	LAA	MESS+14,1	TURN ON PAPER TAPE PUNCH
0171	00166	12100145		SPB	OUT2	
0172	00167	00000026		IBS		
0173	00170	11100165		BRU	AA9	
0174	00171	02077756		LBA	=-18	
0175	00172	01501072	AA8	LAA	AA7+18,1	MOUNT SOURCE TAPE AND
0176	00173	12100145		SPB	OUT2	PRESS START
0177	00174	00000026		IBS		
0178	00175	11100172		BRU	AA8	
0179	00176	00000000		HLT		
0180	00177	11100356		BRU	PR0C	PROCESS SOURCE TAPE
0181	00200	00000000	CR	ZZZ	**	
0182	00201	12100104		SPB	INPI	
0183	00202	15101211		CMA	CAR	CAR = '106400
0184	00203	11100201		BRU	*-2	CARRIAGE RETURN
0185	00204	11300200		BRU*	CR	
0186	00205	11100201		BRU	*-4	
0187	00206	12100224	CPDE	SPB	STOR	STORE KEYWORD CODE
0188	00207	12100211		SPB	READ	
0189	00210	11100206		BRU	*-2	
0190	00211	00000000	READ	ZZZ	**	
0191	00212	12100104		SPB	INPI	
0192	00213	12100117		SPB	CKK	
0193	00214	12100234		SPB	CR1	
0194	00215	00000005		TAB		
0195	00216	12100104		SPB	INPI	

0196	00217	12100117	SPB	CHK	
0197	00220	12100234	SPB	CR1	
0198	00221	00001015	RSL	8	
0199	00222	00000030	ØBA		
0200	00223	11300211	BRU*	READ	
0201	00224	00000000	STØR	ZZZ	**
0202	00225	02101213	LBA	KWCI	
0203	00226	03501346	STA	WORD,1	
0204	00227	14101213	IMS	KWCI	
0205	00230	14101212	IMS	LINE	
0206	00231	00000003	CLA		
0207	00232	00000005	TAB		
0208	00233	11300224	BRU*	STØR	
0209	00234	00000000	CR1	ZZZ	**
0210	00235	15101211	CMA	CAR	CARRIAGE RETURN CHECK
0211	00236	11300234	BRU*	CR1	NØ
0212	00237	11100241	BRU	**+2	YES
0213	00240	11300234	BRU*	CR1	NØ
0214	00241	00001015	RSL	8	
0215	00242	00000030	ØBA		
0216	00243	12100224	SPB	STØR	
0217	00244	03101212	STA	LINE	LINE = ZERO
0218	00245	11100053	BRU	KEY	
0219	00246	12100224	SERT	SPB	STØR
0220	00247	12100104	SPB	INPT	
0221	00250	12100117	SPB	CHK	
0222	00251	12100313	SPB	CR2	C.R.
0223	00252	00000005	TAB		
0224	00253	12100104	SPB	INPT	
0225	00254	12100117	SPB	CHK	
0226	00255	12100313	SPB	CR2	C.R.
0227	00256	00001015	RSL	8	
0228	00257	00000030	ØBA		
0229	00260	11100246	BRU	SERI	
0230	00261	12100104	LWC	SPB	INPT
0231	00262	12100276	SPB	CKAR	
0232	00263	12100325	SPB	SLAS	CHECK FOR SLASH 'FORM'
0233	00264	12100313	SPB	CR2	C.R.
0234	00265	00000005	TAB		

0235	00266	12100104	SPB	INPI	
0236	00267	12100276	SPB	CKAR	
0237	00270	12100325	SPB	SLAS	
0238	00271	12100313	SPB	CR2	C.R.
0239	00272	00001015	RSL	B	
0240	00273	00000030	ØBA		
0241	00274	12100224	SPB	STØR	
0242	00275	11100261	BRU	LØC	
0243	00276	00000000	CKAR	ZZZ **	CHECK INSERT ROUTINE FOR
0244	00277	15101207	CMA	ARØW	AN ARROW ()
0245	00300	11300276	BRU*	CKAR	
0246	00301	11100303	BRU	**+2	
0247	00302	11300276	BRU*	CKAR	
0248	00303	01101213	LAA	KWGT	
0249	00304	06101212	SMA	LINE	
0250	00305	03101213	STA	KWGT	
0251	00306	00000003	CLA		
0252	00307	03101212	STA	LINE	
0253	00310	00000005	TAB		
0254	00311	12100200	SPB	CR	
0255	00312	11100261	BRU	LØC	
0256	00313	00000000	CR2	ZZZ **	CHECK INSERT ROUTINE FOR
0257	00314	15006400	CMA	'106400	A CARRIAGE RETURN
0258	00315	11300313	BRU*	CR2	
0259	00316	11100320	BRU	**+2	
0260	00317	11300313	BRU*	CR2	
0261	00320	00001015	RSL	B	
0262	00321	00000030	ØBA		
0263	00322	12100224	SPB	STØR	
0264	00323	03101212	STA	LINE	
0265	00324	11100261	BRU	LØC	
0266	00325	00000000	SLAS	ZZZ **	CHECK INSERT ROUTINE FOR
0267	00326	15056000	CMA	'156000	A SLASH 'FORM'
0268	00327	11300325	BRU*	SLAS	
0269	00330	11100332	BRU	**+2	
0270	00331	11300325	BRU*	SLAS	
0271	00332	12100224	SPB	STØR	
0272	00333	03101212	STA	LINE	SET LINE = 0
0273	00334	12100200	SPB	CR	

0274	00335	11100053	BRU	KEY	
0275	00336	00000000	LDR	ZZZ	** OUTPUT A LEADER OR TRAILER
0276	00337	00130101	CEU	1,W	
0277	00340	00004000	DATA	'4000	
0278	00341	00000003	CLA		
0279	00342	02077470	LBA	=-200	
0280	00343	00170101	AMP	1,W	
0281	00344	00000026	IBS		
0282	00345	11100343	BRU	*-2	
0283	00346	11300336	BRU*	LDR	
0284	00347	00000000	CLBF	ZZZ	** CLEAR BUFFER ROUTINE
0285	00350	02077766	LBA	=-10	ONLY NEED THE FIRST TEN
0286	00351	00000003	CLA		LOCATIONS CLEARED TO ERASE
0287	00352	03501236	STA	BUFF+10,1	AN END CODE
0288	00353	00000026	IBS		
0289	00354	11100352	BRU	*-2	
0290	00355	11300347	BRU*	CLBF	
0291	00356	12100336	PR0C	SPB	LDR
0292	00357	00000003	CLA		
0293	00360	03101214	STA	X1	INDEX 1 COMPARE TO KWCT
0294	00361	01101214	PR4	LAA	X1 INDEX
0295	00362	15101213	CMA	KWCT	KEYWORD COUNT
0296	00363	11100366	BRU	*+3	
0297	00364	11100402	BRU	RED0	RERUN PROGRAM
0298	00365	11100402	BRU	RED0	
0299	00366	00000005	TAB		
0300	00367	01501346	LAA	WORD,1	
0301	00370	15101172	CMA	CP	
0302	00371	00000000	HLT		
0303	00372	11100411	BRU	PR1	COPY TAPE ROUTINE
0304	00373	15101173	CMA	DE	
0305	00374	00000000	HLT		
0306	00375	11100564	BRU	PR2	DELETE ROUTINE
0307	00376	15101175	CMA	IN	
0308	00377	00000000	HLT		
0309	00400	11100754	BRU	PR3	INSERT ROUTINE
0310	00401	00000000	HLT		
0311	00402	02077747	RED0	LBA	=-25
0312	00403	01501172	LAA	RED+25,1	

-100

1	PAGE	0009	ASR-33	SOURCE UPDATE PROGRAM
0313	00404	12100145	SPB	OUT2 OUTPUT TWO CHARACTERS
0314	00405	00000026	IBS	
0315	00406	11100403	BRU	*-3
0316	00407	00000000	HLT	
0317	00410	11100000	BRU	STR1
0318	00411	01100514	PR1 LAA	CP12 COPY ROUTINE
0319	00412	03100513	STA	CP10
0320	00413	00000003	CLA	
0321	00414	03101216	STA	UP1
0322	00415	03101215	STA	PR6
0323	00416	12100552	PR5 SPB	CP2 INPUT A CHARACTER
0324	00417	00000022	SAZ	
0325	00420	11100422	BRU	*+2
0326	00421	11100416	BRU	*-3
0327	00422	15101207	CMA	AR0W ARROW CHECK
0328	00423	11100435	BRU	CP3
0329	00424	11100426	BRU	*+2
0330	00425	11100435	BRU	CP3
0331	00426	00000003	CLA	
0332	00427	03101216	STA	UP1
0333	00430	12100552	SPB	CP2
0334	00431	15101211	CMA	CAR
0335	00432	11100430	BRU	*-2
0336	00433	11100416	BRU	PR5
0337	00434	11100430	BRU	*-4
0338	00435	15101211	CP3 CMA	CAR CARRIAGE RETURN CHECK
0339	00436	11100440	BRU	*+2 BUFFER STORAGE
0340	00437	11100444	BRU	CP5
0341	00440	02101216	LBA	UP1
0342	00441	03501224	STA	BUFF,1
0343	00442	14101216	IMS	UP1
0344	00443	11100416	BRU	PR5
0345	00444	01101224	CP5 LAA	BUFF
0346	00445	15020000	CMA	= '120000
0347	00446	11100532	BRU	CP4
0348	00447	11100451	BRU	*+2
0349	00450	11100532	BRU	CP4
0350	00451	01101231	LAA	BUFF+5
0351	00452	15042400	CMA	= '142400 F

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1	PAGE	0010	ASK-53	SOURCE	UPDATE	PROGRAM
0352	00453	11100470	BRU	CP7		
0353	00454	11100456	BRU	**2		
0354	00455	11100470	BRU	CP7		
0355	00456	01101232	LAA	BUFF+6		
0356	00457	15047000	CMA	= '147000	N	
0357	00460	11100532	BRU	CP4		
0358	00461	11100463	BRU	**2		
0359	00462	11100532	BRU	CP4		
0360	00463	01101233	LAA	BUFF+7		
0361	00464	15042000	CMA	= '142000	D	
0362	00465	11100532	BRU	CP4		
0363	00466	11100507	BRU	CP8		
0364	00467	11100532	BRU	CP4		
0365	00470	01101232	CP7 LAA	BUFF+6		
0366	00471	15042400	CMA	= '142400	E	
0367	00472	11100532	BRU	CP4		
0368	00473	11100475	BRU	**2		
0369	00474	11100532	BRU	CP4		
0370	00475	01101233	LAA	BUFF+7		
0371	00476	15047000	CMA	= '147000	N	
0372	00477	11100532	BRU	CP4		
0373	00500	11100502	BRU	**2		
0374	00501	11100532	BRU	CP4		
0375	00502	01101234	LAA	BUFF+8		
0376	00503	15042000	CMA	= '142000	N	
0377	00504	11100532	BRU	CP4		
0378	00505	11100507	BRU	CP8		
0379	00506	11100532	BRU	CP4		
0380	00507	01100512	CP8 LAA	CP9		
0381	00510	03100513	STA	CP10		
0382	00511	11100532	BRU	CP4		
0383	00512	35400515	CP9 DAC	CP11		
0384	00513	00000033	CP10 N&P			
0385	00514	35400416	CP12 DAC	PR5		
0386	00515	02077774	CP11 LBA	= -4		
0387	00516	12100552	SPB	CP2		
0388	00517	11100525	BRU	**6		
0389	00520	00170301	AIP	1, N		
0390	00521	00001016	LSL	8		

--MM

0391	00522	15077400		CMA	= '1/7400	
0392	00523	11100525		BRU	*+2	
0393	00524	11100520		BRU	*-4	
0394	00525	00170101		AOP	1,W	
0395	00526	00000026		IBS		
0396	00527	11100520		BRU	*-7	
0397	00530	12100336		SPB	LDR	TRAILER
0398	00531	11100402		BRU	RED0	
0399	00532	02101215	CP4	LBA	PR6	INDEX COUNTER
0400	00533	00172501		MOP*	1,W	
0401	00534	35601224		DAC	BUFF,1	BUFFER FOR I/O
0402	00535	14101215		IMS	PR6	
0403	00536	01101215		LAA	PR6	
0404	00537	15101216		CMA	UP1	WORD LENGTH CHECK
0405	00540	11100532		BRU	*-6	
0406	00541	00172501		MOP*	1,W	
0407	00542	35401211		DAC	CAR	CARRIAGE RETURN
0408	00543	00172501		MOP*	1,W	
0409	00544	35401210		DAC	LFF	LINE FEED
0410	00545	12100347		SPB	CLBF	
0411	00546	00000003		CLA		
0412	00547	03101215		STA	PR6	
0413	00550	03101216		STA	UP1	
0414	00551	11300513		BRU*	CP10	
0415	00552	00000000	CP2	ZZZ	**	INPUT A CHARACTER FROM THE SOURCE TAPE LEFT ADJUSTED.
0416	00553	00170301		AIP	1,W	
0417	00554	00001016		LSL	8	
0418	00555	15101210		CMA	LFF	IGNORE LINE FEED CHARACTERS
0419	00556	11300552		BRU*	CP2	
0420	00557	11100553		BRU	*-4	
0421	00560	15077400		CMA	= '1/7400	
0422	00561	11300552		BRU*	CP2	
0423	00562	11100553		BRU	CP2+1	
0424	00563	11300552		BRU*	CP2	
0425	00564	12100606	PR2	SPB	NUMB	NUMBER CONVERSION
0426	00565	03101222		STA	FR0M	
0427	00566	12100646		SPB	C0P	
0428	00567	14101214	DELE	IMS	X1	DELETE LINES
0429	00570	02101214		LBA	X1	

0430	00571	01501346	LAA	WORD,1	
0431	00572	00001016	LSL	8	
0432	00573	15101211	CMA	CAR	
0433	00574	11100721	BRU	DE5	
0434	00575	11100577	BRU	*+2	
0435	00576	11100721	BRU	DE5	
0436	00577	01101222	LAA	FROM	
0437	00600	15101217	CMA	LCT	
0438	00601	11100604	BRU	*+3	
0439	00602	12100746	SPB	DE8	DELETE A LINE OF SOURCE
0440	00603	14101217	IMS	LCT	SOURCE TAPE LINE COUNT
0441	00604	14101214	IMS	X1	
0442	00605	11100361	BRU	PR4	
0443	00606	00000000	NUMB	ZZZ **	THIS ROUTINE CONVERTS
0444	00607	14101214	IMS	X1	FOUR DECIMAL INTEGERS
0445	00610	02101214	LBA	X1	TO BINARY.
0446	00611	02501346	LBA	WORD,1	INTEGERS ARE PACKED -
0447	00612	01007417	LAA	'007417	TWO ASCII CHARACTERS
0448	00613	00000027	ABA		PER WORD.
0449	00614	02000000	LBA	=0	THE BINARY NUMBER IS
0450	00615	00001014	FRL	8	LEFT IN THE A-REGISTER.
0451	00616	03101220	STA	DE1	
0452	00617	07001750	MPY	=1000	
0453	00620	04101221	STB	DE2	
0454	00621	01101220	LAA	DE1	
0455	00622	00001015	RSL	8	
0456	00623	00000005	TAB		
0457	00624	07000144	MPY	=100	
0458	00625	16101221	AMB	DE2	
0459	00626	04101221	STB	DE2	
0460	00627	14101214	IMS	X1	
0461	00630	02101214	LBA	X1	
0462	00631	02501346	LBA	WORD,1	
0463	00632	01007417	LAA	'007417	
0464	00633	00000027	ABA		
0465	00634	02000000	LBA	=0	
0466	00635	00001014	FRL	8	
0467	00636	03101220	STA	DE1	
0468	00637	07000012	MPY	=10	

WU

1 PAGE 0016 ASR-33 SOURCE UPDATE PROGRAM

0469	00640	16101221	AMB	DE2	
0470	00641	04101221	STB	DE2	
0471	00642	01101220	LAA	DE1	
0472	00643	00001015	RSL	B	
0473	00644	05101221	AMA	DE2	
0474	00645	11300606	BRU*	NUMB	
0475	00646	00000000	COP	ZZZ	** COPIES UP TO BUT NOT
0476	00647	00000003	CLA		INCLUDING NUMBER IN 'FROM'
0477	00650	03101216	STA	UP1	COUNTER
0478	00651	03101215	STA	PR6	COUNTER
0479	00652	01101217	LAA	LCT	LINE COUNTER (SOURCE)
0480	00653	15101222	CMA	FROM	
0481	00654	11100657	BRU	*+3	
0482	00655	11300646	BRU*	COP	
0483	00656	11300646	BRU*	COP	
0484	00657	14101217	IMS	LCT	
0485	00660	12100552	SPB	CP2	
0486	00661	00000022	SAZ		
0487	00662	11100664	BRU	*+2	
0488	00663	11100660	BRU	*-3	
0489	00664	15101207	CMA	AR04	ARR04 CHECK
0490	00665	11100675	BRU	DE3	CARRIAGE RETURN
0491	00666	11100670	BRU	*+2	
0492	00667	11100675	BRU	DE3	
0493	00670	12100552	SPB	CP2	
0494	00671	15101211	CMA	CAR	
0495	00672	11100670	BRU	*-2	
0496	00673	11100647	BRU	COP+1	
0497	00674	11100670	BRU	*-4	
0498	00675	15101211	DE3	CMA	CAR
0499	00676	11100700	BRU	*+2	SIZE CHARACTER
0500	00677	11100704	BRU	DE4	OUTPUT LINE
0501	00700	02101216	LBA	UP1	
0502	00701	03501224	STA	SUFF,1	
0503	00702	14101216	IMS	UP1	
0504	00703	11100660	BRU	COP+10	
0505	00704	02101215	DE4	LBA	PR6 OUTPUT A LINE
0506	00705	00172501	MOP*	1,4	
0507	00706	35601224	DAC	SUFF,1	

1	PAGE	0014	ASR-33	SOURCE UPDATE PROGRAM
0508	00707	14101215	IMS	PR6
0509	00710	01101215	LAA	PR6
0510	00711	15101216	CMA	UP1
0511	00712	11100704	BRU	DE4
0512	00713	00172501	MOP*	1,W CARRIAGE RETURN
0513	00714	35401211	DAC	CAR
0514	00715	00172501	MOP*	1,W
0515	00716	35401210	DAC	LEF LINE FEED
0516	00717	12100347	SPB	CLBF
0517	00720	11100647	BRU	COP+1
0518	00721	12100606	DE5 SPB	NUM6
0519	00722	03101223	STA	T00
0520	00723	15101217	CMA	LCT
0521	00724	11100734	BRU	DE7+2
0522	00725	11100732	BRU	DE7
0523	00726	12100746	DE6 SPB	DE8 DELETE A LINE
0524	00727	14101217	IMS	LCT
0525	00730	01101223	LAA	T00
0526	00731	11100723	BRU	DE5+2
0527	00732	12100746	DE7 SPB	DE8
0528	00733	14101217	IMS	LCT
0529	00734	14101214	IMS	X1
0530	00735	02101214	LBA	X1
0531	00736	01501346	LAA	WORD,1
0532	00737	00001016	LSL	8
0533	00740	15101211	CMA	CAR
0534	00741	11100734	BRU	*-5
0535	00742	11100744	BRU	*+2
0536	00743	11100734	BRU	*-7
0537	00744	14101214	IMS	X1
0538	00745	11100361	BRU	PR4
0539	00746	00000000	DE8 ZZZ	** DELETES A LINE
0540	00747	00170301	AIP	1,W
0541	00750	15000215	CMA	=215 CARRIAGE RETURN CHECK
0542	00751	11100747	BRU	*-2
0543	00752	11300746	BRU*	DE8
0544	00753	11100747	BRU	*-4
0545	00754	12100606	PR3 SPB	NUM6
0546	00755	05000001	AMA	=1

uu

1 PAGE 0015 ASR-33 SOURCE UPDATE PROGRAM

0547	00756	03101222	STA	FROM	
0548	00757	12100648	SPB	COP	
0549	00760	01101222	LAA	FROM	
0550	00761	15101217	CMA	LCT	
0551	00762	11101030	BRU	IN7	
0552	00763	14101214	IMS	X1	
0553	00764	02101214	LBA	X1	
0554	00765	01501346	LAA	WORD,1	
0555	00766	00001016	LSL	8	
0556	00767	15101211	CMA	CAR	
0557	00770	11100763	BRU	*-5	
0558	00771	11100773	BRU	*+2	
0559	00772	11100763	BRU	*-7	
0560	00773	14101214	IN3 IMS	X1	
0561	00774	02101214	LBA	X1	
0562	00775	01501346	LAA	WORD,1	
0563	00776	00001015	RSL	8	
0564	00777	15000334	CMA	'000334	'FORM' CHARACTER
0565	01000	11101002	BRU	*+2	
0566	01001	11101026	BRU	IN6	
0567	01002	01501346	IN4 LAA	WORD,1	
0568	01003	00001015	RSL	8	
0569	01004	00000021	SAS		
0570	01005	00000033	NOP		
0571	01006	11101021	BRU	IN5	
0572	01007	01501346	LAA	WORD,1	
0573	01010	00170101	AOP	1,W	
0574	01011	00001016	LSL	8	
0575	01012	15101211	CMA	CAR	
0576	01013	11101015	BRU	*+2	
0577	01014	11101021	BRU	IN5	
0578	01015	00170101	AOP	1,W	
0579	01016	14101214	IMS	X1	
0580	01017	02101214	LBA	X1	
0581	01020	11101002	BRU	IN4	
0582	01021	00172501	IN5 MOP*	1,W	
0583	01022	35401211	DAC	CAR	
0584	01023	00172501	MOP*	1,W	
0585	01024	35401210	DAC	LEF	

1	PAGE	0016	ASR-33	SOURCE UPDATE PROGRAM
0586	01025	11100773	BRU	INS
0587	01026	14101214	IN6	IMS X1
0588	01027	11100361	BRU	PR4
0589	01030	14101214	IN7	IMS X1
0590	01031	02101214	LBA	X1
0591	01032	01501346	LAA	WORD,1
0592	01033	00001015	RSL	5
0593	01034	15000334	CMA	= '334 FORM CHARACTER
0594	01035	11101030	BRU	IN7
0595	01036	11101026	BRU	IN6
0596	01037	11101030	BRU	IN7
0597	01040	00120316	AA5	DATA ' ' NOT A KEYWORD ' '
0597	01041	00147724		
0597	01042	00120301		
0597	01043	00120313		
0597	01044	00142731		
0597	01045	00153717		
0597	01046	00151304		
0598	01047	00106612	DATA	'106612
0599	01050	00120315	AA7	DATA ' ' MOUNT SOURCE TAPE AND PRESS START ' '
0599	01051	00147725		
0599	01052	00147324		
0599	01053	00120323		
0599	01054	00147725		
0599	01055	00151303		
0599	01056	00142640		
0599	01057	00152301		
0599	01060	00150305		
0599	01061	00120301		
0599	01062	00147304		
0599	01063	00120320		
0599	01064	00151305		
0599	01065	00151723		
0599	01066	00120323		
0599	01067	00152301		
0599	01070	00151324		
0600	01071	00106612	DATA	'106612
0601	01072	00152325	MESS DATA	' ' TURN OFF PAPER TAPE PUNCH ' '
0601	01073	00151316		

DU

0601 01074 00120317
0601 01075 00143306
0601 01076 00120320
0601 01077 00140720
0601 01100 00142722
0601 01101 00120324

0601 01102 00140720
0601 01103 00142640
0601 01104 00150325
0601 01105 00147303

0601 01106 00144240

0602 01107 00106612

DATA *106612

0603 01110 00144716

DATA **INPUT KEYWORDS AND CORRECTIONS FROM THE KEYBOARD**

0603 01111 00150325

0603 01112 00152240

0603 01113 00145705

0603 01114 00154727

0603 01115 00147722

0603 01116 00142323

0603 01117 00120301

0603 01120 00147304

0603 01121 00120303

0603 01122 00147722

0603 01123 00151305

0603 01124 00141724

0603 01125 00144717

0603 01126 00147323

0603 01127 00120306

0603 01130 00151317

0603 01131 00146640

0603 01132 00152310

0603 01133 00142640

0603 01134 00145705

0603 01135 00154702

0603 01136 00147701

0603 01137 00151304

0604 01140 00106612

DATA *106612

0605 01141 00152317

RED DATA **TO RESTART PROGRAM ADJUST SSW 0 AND PRESS START**

0605 01142 00120322

0605	01143	00142723		
0605	01144	00152301		
0605	01145	00151324		
0605	01146	00120320		
0605	01147	00151317		
0605	01150	00143722		
0605	01151	00140715		
0605	01152	00120301		
0605	01153	00142312		
0605	01154	00152723		
0605	01155	00152240		
0605	01156	00151723		
0605	01157	00153640		
0605	01160	00130240		
0605	01161	00140716		
0605	01162	00142240		
0605	01163	00150322		
0605	01164	00142723		
0605	01165	00151640		
0605	01166	00151724		
0605	01167	00140722		
0605	01170	00152240		
0606	01171	00106612	DATA	'106612'
0607	01172	00141720	CP	DATA '141720'
0608	01173	00142305	DE	DATA '142305'
0609	01174	00142704	ED	DATA '142704'
0610	01175	00144716	IN	DATA '144716'
0611	01176	00143306	FF	DATA ''FF''
0612	01177	00145705	KE	DATA ''KE''
0613	01200	00154702	YB	DATA ''YB''
0614	01201	00147701	GA	DATA ''GA''
0615	01202	00151304	RD	DATA ''RD''
0616	01203	00151305	RE	DATA ''RE''
0617	01204	00140704	AD	DATA ''AD''
0618	01205	00142722	ER	DATA ''ER''
0619	01206	00120240	BNK	DATA '' ''
0620	01207	00157000	ARON	DATA '157000'
0621	01210	00105000	LFF	DATA '105000'
0622	01211	00106400	CAR	DATA '106400'

1 PAGE 0019 ASK-33 SOURCE UPDATE PROGRAM
0623 01212 00000000 LINE DATA 0
0624 01213 00000000 KWCT DATA 0
0625 01214 00000000 X1 DATA 0
0626 01215 00000000 PR6 DATA 0
0627 01216 00000000 UP1 DATA 0
0628 01217 00000000 LCT DATA 0
0629 01220 00000000 DE1 DATA 0
0630 01221 00000000 DE2 DATA 0
0631 01222 00000000 FROM DATA 0
0632 01223 00000000 T00 DATA 0
0633 01224 00000122 BUFF BSS 82
0634 01346 00000000 WORD HLT
0635 01347 70400000 END
ERRORS 0000 0000