





General Products Division  
Development Laboratory  
Endicott, New York

Pioneer 8-2211

International Business Machines Corporation

July 16, 1963

MEMORANDUM TO: Users of 1401 Tape to Card Utility Program

SUBJECT: 1401 Tape to Card Utility Program, #1401-UT-028,  
Version 1, Modification Level 2

This letter announces the availability of Version 1, Modification Level 2 of the 1401 Tape to Card Utility Program, #1401-UT-028. This modification, which is in the form of one patch card as well as a corrected listing, corrects all reported errors in the subject system. The patch card, enclosed, listed, and identified below (attachment #1) is to be inserted in the system deck as follows:

Remove Card (cc 78-80)

And replace with card (cc 77-80)

029

C 029

This patch corrects a loop encountered when punching ten or more cards per record.

The following corrections should be made to the library documentation:

Location

Change

Page 8, paragraph 2a	I-address is 1469
Page 8, paragraph 2b	I-address is 1502
Page 8, paragraph 2e	I-address is 1879
Page 8, paragraph 2f	I-address is 1846
Page 8, paragraph E, line 9	instruction address 1366
Page 9, Example #1, number 4 under Given	columns 1 - 8
Page 9, Example #1, paragraph B under Procedure	card columns 1 - 8
Page 9, Example #2, number 4 under Given	columns 1 - 20

We appreciate your cooperation in making these changes. A list of the material distributed with this letter follows:

<u>Item No.</u>	<u>Contents</u>
1	One patch card
2	System listing of version 1, Modification Level 2
3	Listing of patch card

Initial requests for this system, which we filled after the release of this letter, will not include the card itemized above as the system deck will already reflect these changes.

The Optional Program Material, available upon request, consists of the source symbolic program deck for Version 1, Modification Level 1.

An Authorized Programming Analysis Report (APAR) should be submitted through the IBM Systems Engineer to report any difficulties encountered in the use of this system.

Any discrepancy between the material you receive and the items listed above should be directed to the attention of the Manager of the Program Information Department, IBM, 112 East Post Road, White Plains, New York.

GP PROGRAMMING SYSTEMS

Enclosures

BE93SAJ971878E51ML28,R778054A187173 ,E81,E85,E89,E931L035E99,E70,E778039 C029

CLEAR STORAGE 1 ,008015,022026,030034,041,045,053,0570731026  
 CLEAR STORAGE 2 L072116,110106,1051178101/199,027A0740280027800102708026/0991,001/00111710  
 BOOTSTRAP CARD ,008015,022029,056063/056029 ,0240671056

PAGE 1

PG	LIN	CT	LABEL	OP	A OPERAND	B OPERAND	D	LOC	INSTRUCTION	COMMENTS
1	010			CTL	631					
1	020			ORG	2701					
1	030	4	START	CS	0080			2701	/ 080	CLEAR READ AREA
1	040	7		SW	0001	0201		2705	, 001 201	SET WD MKS RD PT
1	050	4		SW	0101			2712	, 101	PCH AREAS
1	060	7		LCA	GPMK78	3998		2716	L L24 198	MOVE GPMK TO 199
1	070	1		R				2723	1	RD CONTL CDS
1	080	7		MCW	0080	0180		2724	M 080 180	MV CTL CD INFO
1	090	7		A	0110	ENDTYP		2731	A 110 K03	STR EOF OPTION
1	100	1		MCW				2738	M	STR NUM OF FILES
1	110	1		A				2739	A	STR REC PER BLK
1	120	1		A				2740	A	STR REC LNCH
1	130	8		B	AUTST	0112		2741	B P65 112	TEST FILE SELTN
1	140	7		A	0116	SLFIL3		2749	A 116 J88	STORE FILE 3
1	150	1		A				2756	A	STORE FILE 2
1	160	1		A				2757	A	STORE FILE 1
1	170	7		MCW	NOP	SW1		2758	M L25 899	
1	180	8	AUTST	B	AUTNOP	0135		2765	B A23 135	TEST AUTO SEQ
1	190	7		SW	0135	0133		2773	, 135 133	
1	200	7		A	19 - 1	0135		2780	A 178 135	SET PUNCH COLS
1	210	7		A	0135	0134		2787	A 135 134	
1	220	7		MCW	0134	AUTTOTE 6		2794	M 134 *46	
1	230	4		SW	CNTLNCH 1			2801	, Q31	SET NUM OF COLS
1	240	7		S	PUNCH	0135		2805	S *84 135	TO BE PUNCHED
1	250	7		MZ	BLANKS- 1	0135		2812	Y J89 135	
1	260	7		A	0135	CNTLNCH 3		2819	A 135 Q33	
1	270	4		CW	CNTLNCH 1			2826	Q31	
1	280	4	CNTLNCH	SW	CDCNT - 4			2830	, L12	
1	290	7		CW	0133	0135		2834	133 135	
1	300	4		B	AUTNOP 7			2841	B A30	
1	310	8	FIXTST	B	FIXNOP	0141		2845	B A86 141	TST FIXED INFO
1	320	7		SW	0136	0138		2853	, 136 138	
1	330	4		SW	0140			2860	, 140	
1	340	8		B	LDFIXB	0143	1	2864	B E04 143 1	BR BINARY OUTPUT
1	350	7		MCW	0141	LDFIX 3		2872	M 141 R04	SET NO OF COLS
1	360	7		A	19	0141		2879	A 179 141	AND PUNCH K10CTN
1	370	7		A	0141	0139		2886	A 141 139	
1	380	7		MCW	0139	GPFIX 6		2893	M 139 *99	
1	390	1		R				2900	1	RD ADDTL INFO CD
1	400	7	LDFIX	LCA	0000	FIXED		2901	L 000 K92	
1	410	1		NOP				2908	N	
1	420	4		CS	0080			2909	/ 080	
1	430	4		SW	0001			2913	, 001	
1	440	8		B	ALCDOFX	0156		2917	B R39 156	BR NO CHG ON EOF
1	450	7		MCW	LDFIX 6	RDADTL 6		2925	M R07 Z79	SET EOF TO READ

1401-UT-028

Symbolic Listing

Version 1 Modification Level 2

PG	LIN	CT	LABEL	OP	A OPERAND	B OPERAND	D	LOC	INSTRUCTION	COMMENTS	0046
1	460	7		MCW	NOP	NEWFIX & 8		2932	M L25 Z67	NEW CARD	
1	470	8	ALCDFX	B	FIXALL	0137	A	2939	B B04 137	BR ON ALL CARDS	
1	480	7		MCW	0137	FXCDNO		2947	M 137 K05	SET CARD NUM	
1	490	8	MLTTST	B	MPLNOP	0132		2954	B B15 132	TEST INTRA NUM	
1	500	4		SW	0131			2962	, 131	SET PCH LOCTN	
1	510	7		C	RECLNG	MPCTST		2966	C J97 I91		
1	520	5		B	MPLOC		T	2973	B R93 T	BR 2 POS NUM	
1	530	4		SW	MPLCOS			2978	, L28		
1	540	7		MCW	0132	MOVNCT & 6		2982	M 132 #73		
1	550	4		B	JOBEND			2989	B B22		
1	560	7	MPLOC	A	ONE80 - 2	0132		2993	A K06 132		
1	570	4		B	MPLOC - 11			3000	B R82		
1	580	7	LDFIXB	MCW	0139	* & 4		3004	M 139 &14	SET FIXED RTNE	
1	590	4		SW	0400			3011	, 400	TO BINARY MODE	
1	600	7		MCW	FIVE	GPFIX & 4		3015	M A22 #97		
1	610	4		CM	GPFIX & 7			3022	□ /00		
1	620	7		MCW	B	GPFIX & 7		3026	M L26 /00		
1	630	7		MCW	NOP	LDFIX - 1		3033	M L25 R00		
1	640	7		MCW	FIVE	LDFIX & 1		3040	M A22 R02		
1	650	4		CS	0580			3047	/ 580		
1	660	1		CS				3051	/		
1	670	4		SW	0401			3052	, 401		
1	680	2		R			C	3056	1 C	RD FIX INFO BINA	
1	690	7		LCA	* - 7	ROADTL- 1		3058	L &57 Z72	SET EOF TO RD FX	
1	700	4		CM	LDFIX & 7			3065	□ R08	IN BINARY MODE	
1	710	7		MCW	MPLOC	LDFIX & 7		3069	M R93 R08		
1	720	7		SW	ALCDFX-010	ALCDFX- 13		3076	, R29 R26		
1	730	7		A	ONE80 - 2	ALCDFX- 8		3083	A K06 R31		
1	740	7		A	ONE80 - 2	ALCDFX- 11		3090	A K06 R28		
1	750	7		MCW	LDFIX	ALCDFX- 14		3097	M R01 R25		
1	760	7		MCW	* - 6	LDFIX		3104	M A04 R01		
1	770	7		CM	ALCDFX-010	ALCDFX- 13		3111	□ R29 R26		
1	780	4		B	FIXTST & 27			3118	B Q72		
1	790	1	FIVE	DCW	*		5	3122			
1	800	7	AUTNOP	MCW	NOP	AUTTOT		3123	M L25 #40	NOP MAIN SEQ NUM	
1	810	8		B	TSTSEQ	0160		3130	B A49 160	BR NO SELTN	
1	820	7		MCW	LCSELT	SW5 & 3		3138	M 144 #08	SET SW5 TO SELTN	
1	830	4		B	SELECT			3145	B C95		
1	840	7	TSTSEQ	MCW	SQADD	BLARGR & 14		3149	M 381 482	SET SEQ ADD RCLG	
1	850	8		B	NOSEQ	0148		3156	B A68 148	BR ON NO SEQNCE	
1	860	4		B	SELECT			3164	B C95		
1	870	7	NOSEQ	MCW	NOP	SW4		3168	M L25 #01	NOP SW4	
1	880	7		MCW	NOP	CVTTST- 8		3175	M L25 V73	NOP STR LST SQ	
1	890	4		B	FIXTST			3182	B Q45		
1	900	7	FIXNOP	MCW	NOP	MOVNCT- 5		3186	M L25 #62	NOP ADTL FIX MOV	
1	910	7		MCW	NOP	MOVNCT- 12		3193	M L25 #55		
1	920	4		B	MLTTST			3200	B R54		
1	930	7	FIXALL	MCW	BLANKS- 1	MOVNCT- 1		3204	M J89 #66	PCH FIX ALL CDS	
1	940	4		B	FIXNOPE 7			3211	B A93		
1	950	7	MPLNOP	MCW	NOP	MOVNCT		3215	M L25 #67	NOP INTRA CD CNT	

PG	LIN	CT	LABEL	OP	A OPERAND	B OPERAND	D	LOC	INSTRUCTION	COMMENTS	0096
1	960	8	JOBEND	B	ENDJOB	0158		3222	B 872 158		
1	970	7		MCW	MOVTAP	BDBLCK		3230	M 953 T91	SET TAPE ERROR	
1	980	7		MCW	MOVTAP	BDBLCK 14		3237	M 953 U05		
1	981	7		MCW	NOP	BBLKND- 8		3244	M L25 U26		
1	990	7		MCW	LCSELT	BBLKND- 5		3251	M I44 U29		
2	000	7		MCW	NOP	FXBBLK- 4		3258	M L25 U64		
2	010	7		MCW	NOP	BINBBK		3265	M L25 829		
2	020	8	ENDJOB	B	HDRLGH	0147	4	3272	B 892 147 4	TST HDR CMPRE	
2	030	8		B	STORTR	ENDTYP	1	3280	B C28 K03 1		
2	040	4		B	GPMTST			3288	B C36		
2	050	1	HDRLGH	R				3292	1	RD & STR LABEL	
2	060	7		LCA	0080	3880		3293	L 080 H80		
2	070	7		C	0146	ZERO80		3300	C 146 K11		
2	080	5		B	MORE		T	3307	B C16 T		
2	090	4		B	ENDJOB & 8			3312	B B80		
2	100	1	MORE	R				3316	1		
2	110	7		MCW	0080	3960		3317	M 080 I60		
2	120	4		B	ENDJOB & 8			3324	B B80		
2	130	1	STORTR	R				3328	1	STR TRAIL LABEL	
2	140	7		LCA	0080	TRALOC		3329	L 080 040	TST 705 GP MK	
2	150	8	GPMTST	B	XCEPTN- 7	0155		3336	B C70 155	NOP PCH REL	
2	160	7		MCW	NOP	PUNCH & 2		3344	M L25 #86		
2	170	4		SW	0155			3351	, 155		
2	180	7		NOP	0155	0595		3355	M 155 595		
2	190	4		CW	0155			3362	0 155		
2	200	4		B	XCEPTN			3366	B C77		
2	210	7		MCW	NOP	CONGMK		3370	M L25 #75		
2	220	7	XCEPTN	SW	0024	0056		3377	, 024 056	SET WD MKS TO	
2	230	7		SW	0063	0067		3384	, 063 067	READ EXCPT	
2	240	4		R	0056			3391	1 056	ROUTINE	
2	250	4	SELECT	SW	0048			3395	, 048	SELECTION TEST	
2	260	7		MCW	BRFIX	NOSEQ - 1		3399	M I94 A67		
2	270	7		MCW	0048	SEQTOT		3406	M 048 N46	STR SEQ FLD TOT	
2	280	4		MCW	0060			3413	M 060	STR SEL FLD TOT	
2	290	4		MCW	0060			3417	M 060		
2	300	7		A	SEQTOT	FULTOT		3421	A N46 N45	STR CMB TOTAL	
2	310	4		CW	0048			3428	0 048		
2	320	7	ENTHLD	MCW	0070	HOLD		3432	M 070 I77	MOV 1ST FIELD	
2	330	1		MCW				3439	M	TO HOLD AREA	
2	340	1		MCW				3440	M		
2	350	4		MCW	HOLD - 8			3441	M I69		
2	360	1		MCW				3445	M		
2	370	8		B	TWMULT	HOLD - 1	1	3446	B E81 I76 1		
2	380	8		B	TSTSEQ & 07	HOLD - 2		3454	B A56 I75	BR ALL FLDs STRD	
2	390	7		A	I9	HOLD - 12		3462	A I79 I65		
2	400	8		BWZ	INSERT	HOLD	K	3469	V G32 I77 K	BR ON FLD INSERT	
2	410	8		B	LNCH M	HOLD - 7	1	3477	B G21 I70 1	BR REC LGH 1000	
2	420	7	ADNTRY	A	CONST1	HOLD - 4		3485	A J93 I73	SET FLD TP LOC	
2	430	4		MCW	HOLD - 4			3492	M I73		
2	440	7		A	HOLD - 12	HOLD - 2		3496	A I65 I75		

PG	LIN	CT	LABEL	OP	A OPERAND	B OPERAND	D	LOC	INSTRUCTION	COMMENTS	0146
2	450	7		A	HOLD - 12	HOLD - 7		3503	A I65 I70		
2	460	7		C	HOLD	CDSQNO		3510	C I77 I63	TST CD PCH SEQ	
2	470	5		B	CSQERR		U	3517	B I20 U		
2	480	7	FLOMOV	MCW	HOLD	FLD 1		3522	M I77 L44	STR FLD PARAM	
2	490	1		MCW				3529	M		
2	500	1		MCW				3530	M		
2	510	1		MCW				3531	M		
2	520	7		A	ONE80 - 2	FLDCNT		3532	A K06 I81		
2	530	8		B	MODTST- 12	0150		3539	B F50 I50	BR ON NO SEQ	
2	540	4		NOP	SETLST			3547	N E93		
2	550	7	LSTREC	A	ONE80 - 2	ADCNTR		3551	A K06 I84	FIND STORE LOCTN	
2	560	7		C	ADCNTR	RECBK		3558	C I84 K00	OF LAST RECORD	
2	570	5		B	SETLST		S	3565	B E93 S	OF BLOCK	
2	580	7		A	RECLNG	LTHCTR		3570	A J97 I87		
2	590	4		B	LSTREC			3577	B E51		
2	600	4	TWMULT	CM	MPLCOS			3581	□ L28		
2	610	4		SW	MLTTST& 23			3585	, R77		
2	620	4		B	ENTHLD&022			3589	B 054		
2	630	7	SETLST	A	LTHCTR	HOLD - 4		3593	A I87 I73	SET LAST RECORD	
2	640	7		A	LTHCTR	HOLD - 7		3600	A I87 I70	IN HOLD POSITION	
2	650	7		MCW	B	LSTREC- 4		3607	M L26 E47		
2	660	7		C	0150	FLDCNT		3614	C I50 I81	BR WHEN SEL FLD	
2	670	5		B	SEQ1		S	3621	B G61 S	EQUALS SEQ FLD	
2	680	7		C	0152	FLDCNT		3626	C I52 I81		
2	690	5		B	SEQ2		S	3633	B H07 S		
2	700	7		C	0154	FLDCNT		3638	C I54 I81		
2	710	5		B	SEQ3		S	3645	B H67 S		
2	720	7		C	FLDCNT	FULTOT		3650	C I81 N45		
2	730	5		B	TSTSEQ& 07		S	3657	B A56 S		
2	740	8	MODTST	B	MODIFY	FLDCNT	2	3662	B G03 I81	2 BR AFT 2 FLDS	
2	750	7		A	ONE80 - 2	ENTHLD& 2		3670	A K06 D34		
2	760	4	SELWMK	SW	FLDMOVE& 4			3677	, E26	UPDATE FLD STOR	
2	770	7		A	TWELVE	FLDMOVE& 6		3681	A N48 E28	INSTRUCTION AND	
2	780	4		CM	FLDMOVE& 4			3688	□ E26	BRANCH	
2	790	7		MCW	HOLD	CDSQNO		3692	M I77 I63		
2	800	4		B	ENTHLD			3699	B D32		
2	810	7	MODIFY	MCW	ONE80 - 2	ENTHLD& 2		3703	M K06 D34	MODIFY INST	
2	820	7		MCW	ZZZERO- 2	MODTST& 7		3710	M L04 F69	TO STORE FLD IN	
2	830	4		R	SELWMK			3717	I F77	HOLD AND RD CC2	
2	840	7	LNGH M	MZ	LNGH M	HOLD - 6		3721	Y G21 I71	SET 1000 POS REC	
2	850	4		B	ADNTRY			3728	B D85		
2	860	7	INSERT	MZ	HOLD	HOLD - 7		3732	Y I77 I70	SET FIELD FOR	
2	870	4		MCW	HOLD - 2			3739	M I75	INSERTION OF	
2	880	7		MZ	BLANKS- 1	HOLD		3743	Y J89 I77	CHARCTERS	
2	890	7		A	HOLD - 12	HOLD - 2		3750	A I65 I75		
2	900	4		B	FLOMOV- 12			3757	B E10		
2	910	7	SEQ1	MCW	FLDMOVE& 6	SQFLD1		3761	M E28 050	SET INSTRUCTIONS	
2	920	7		MCW	HOLD - 7	LDREAD& 7		3768	M I70 556	TO LOAD READ	
2	930	7		MCW	HOLD - 4	LDREAD& 3		3775	M I73 552	AREA WITH LAST	
2	940	7		MCW	HOLD - 4	CONMOVE 14		3782	M I73 W60		



PG	LIN	CT	LABEL	OP	A OPERAND	B OPERAND	D	LOC	INSTRUCTION	COMMENTS	0196
2	950	7		MCW	HOLD - 10	LDREAD& 10		3789	M 167 559		
2	960	7		MCW	HOLD - 10	LDCTR		3796	M 167 141		
2	970	4		B	MODTST- 12			3803	B F50		
2	980	7	SEQ2	MCW	FLDMOV& 6	SQFLD2		3807	M E28 053		
2	990	7		MCW	HOLD - 7	LDREAD& 18		3814	M 170 567		
3	000	7		MCW	HOLD - 4	CONMOV& 18		3821	M 173 W64		
3	010	7		MCW	HOLD - 4	LDREAD& 14		3828	M 173 563		
3	020	7		A	HOLD - 10	LDCTR		3835	A 167 141		
3	030	7		MCW	LDCTR	HOLD - 10		3842	M 141 167		
3	040	7		MCW	LDCTR	LDREAD& 21		3849	M 141 570		
3	050	7		MCW	TWO	CLSQWM& 21		3856	M 129 448		
3	060	4		B	MODTST- 12			3863	B F50		
3	070	7	SEQ3	MCW	FLDMOV& 6	SQFLD3		3867	M E28 056		
3	080	7		MCW	THREE	CLSQWM& 21		3874	M 044 448		
3	090	7		MCW	HOLD - 7	LDREAD& 29		3881	M 170 578		
3	100	7		MCW	HOLD - 4	LDREAD& 25		3888	M 173 574		
3	110	7		MCW	HOLD - 4	CONMOV& 22		3895	M 173 W68		
3	120	7		A	HOLD - 10	LDCTR		3902	A 167 141		
3	140	7		MCW	LDCTR	LDREAD& 32		3909	M 141 581		
3	150	4		B	MODTST- 12			3916	B F50		
3	160	7	CSQERR	MCW	SELCON	0280		3920	M 161 280	PRINT MESSAGE	
3	170	1		W				3927	2	CARD NUM FOR	
3	180	4		CS	0280			3928	/ 280	FLD SEL PCMG	
3	190	4		SW	0201			3932	/ 201	OUT OF SEQUENCE	
3	200	4		H	* - 3			3936	. 136		
3	210	2	LDCTR	DCW	*			3941			
3	220	3	LCSELT	DSA	*	FLDSEL	600	3944			
3	230	17	SELCON	DCW	*	FLD CD NO SEQ ERR		3961			
3	240	2	CDSQNO	DCW	*			3963			
3	250	2		DCW	*			3965			
3	260	2		DCW	*			3967			
3	270	3		DCW	*			3970			
3	280	3		DCW	*			3973			
3	290	4	HOLD	DCW	*			3977			
3	300	2	I9	DCW	*		19	3979			
3	310	2	FLDCNT	DCW	*			3981			
3	320	3	ADCNTR	DCW	*			3984			
3	330	3	LTHCTR	DCW	*			3987			
3	340	4	MPCTST	DCW	*		0720	3991			
3	350	3	BRFIX	DSA	*	FIXTST	Q45	3994			
3	360			ORG	0333						
3	370	4	FLDSEQ	NOP	ERESTR			0333	N 526	RESTORE AFT SQER	
3	380	7	SEQFLD	MCW	SQFLD1	SEQMOV& 3		0337	M 050 347	SET SEQ FIELD	
3	390	7	SEQMOV	MCW	0000	TEST		0344	M 000 198	FOR COMPARE	
3	400	1		MCW				0351	M		
3	410	1		MCW				0352	M		
3	420	1		MCW				0353	M		
3	430	1		MCW				0354	M		
3	440	7		A	ONE80 - 2	SEQCNT		0355	A K06 057		
3	450	7		C	ZZZERO	RCOUNT		0362	C L06 L12	TEST FOR FIRST	

PG	LIN	CT	LABEL	OP	A OPERAND	B OPERAND	D	LOC	INSTRUCTION	COMMENTS	0246
3	460	5		B	DNCE		S	0369	B 493 S	RECORD OF BLOCK	
3	470	7		MCW	TEST - 7	SQINST& 3		0374	M 191 423		
3	480	7	SQADD	A	ADLNHG	TEST - 4		0381	A L09 194	UPDATE TAPE	
3	490	7		A	ADLNHG	TEST - 7		0388	A L09 191	LOCATION BY ONE	
3	500	7		MCW	TEST - 4	SEQWMK& 3		0395	M 194 419	RECORD LENGTH	
3	510	7		MCW	TEST - 4	CLSQWM& 3		0402	M 194 430	AND COMPARE	
3	520	7		MCW	TEST - 7	SQINST& 6		0409	M 191 426	INSTRUCTIONS	
3	530	4	SEQWMK	SW	0000			0416	, 000		
3	540	7	SQINST	C	0000	0000		0420	C 000 000		
3	550	4	CLSQWM	CH	0000			0427	□ 000		
3	560	5		B	BLARGR		U	0431	B 468 U	BR SEQ OK	
3	570	5		B	ERROR1		T	0436	B 504 T	BR SEQ ERR	
3	580	8		B	BLARGR	SEQCNT	1	0441	B 468 057 1	BR ALL FLOS CHKD	
3	590	4		SW	SEQFLD& 1			0449	, 338	SET INSTRUCTIONS	
3	600	7		A	THREE	SEQFLD& 3		0453	A 044 340	FOR NEXT FIELD	
3	610	4		CH	SEQFLD& 1			0460	□ 338	TO BE SEQUENCED	
3	620	4		B	FLODSEQ& 4			0464	B 337		
3	630	7	BLARGR	MCW	SQBASE	SEQFLD& 3		0468	M 047 340	RESET COMPARE	
3	640	7		MCW	ZZZERO- 2	SEQCNT		0475	M L04 057	TO CHECK MAJOR	
3	650	7		NOP	RECLNG	ADLNHG		0482	N J97 L09	SEQ FIELD	
3	660	4		B	SW5			0489	B #05	BR TO MAIN RTNE	
3	670	7	ONCE	A	TEST - 10	SQINST& 3		0493	A 188 423		
3	680	4		B	SQADD			0500	B 381		
3	690	4	ERROR1	SW	SSD & 4			0504	, #83	SET INST TO PRIN	
3	700	7		MCW	SEQERR	0290		0508	M 591 290	COMPLETE RECORD	
3	710	7		MCW	B	FLODSEQ		0515	M L26 333	AND ERROR MSGE	
3	720	4		B	BLARGR			0522	B 468		
3	730	4	ERESTR	CS	0290			0526	/ 290	RESTORE FROM	
3	740	4		SW	0201			0530	, 201	SEQ ERR RTNE	
3	750	4		CH	SSD & 4			0534	□ #83		
3	760	4		B	SEQFLD			0538	B 337		
3	770	7		MCW	ZZZERO	SQINST& 3		0542	M L06 423		
3	780	4	LDREAD	SW	0001			0549	, 001	LOAD LAST REC	
3	790	7		MCW	0001	0001		0553	M 001 001	SEQ FIELDS TO	
3	800	4		SW	0001			0560	, 001	READ AREA	
3	810	7		MCW	0001	0001		0564	M 001 001		
3	820	4		SW	0001			0571	, 001		
3	830	7		MCW	0001	0001		0575	M 001 001		
3	840	4		B	CONMOV& 11			0582	B W57		
3	850	6	SEQERR	DCW	*		SEQERR	0591			
3	860	3	BRSEQ	DSA	*	FLODSEQ	333	0594			
3	870			ORG	0600						
3	880	7	FLOSEL	MCW	ONE01	CONTRL		0600	M L23 N50	FIELD SELECTION	
3	890	7		MCW	FLODORG	ORG & 3		0607	M 186 617		
3	900	7	ORG	MCW	0000	TEST		0614	M 000 198	MOVE FIELD	
3	910	1		MCW				0621	M	PARAMETERS	
3	920	1		MCW				0622	M	TO HOLD AREA	
3	930	1		MCW				0623	M		
3	940	1		MCW				0624	M		
3	950	7		C	SELCTR	SELTOT		0625	C 096 N43		

PG	LIN	CT	LABEL	OP	A OPERAND	B OPERAND	D	LOC	INSTRUCTION	COMMENTS	0296
3	960	5		B	PCHBR1		S	0632	B 740 S		
3	970	7		A	ONE80 - 2	SELCTR		0637	A K06 096		
3	980	7	CTLCMP	C	TEST	CONTRL		0644	C 198 N50		
3	990	5		B	PCHBR2		/	0651	B 784 /	BR FLDS IN PCH	
4	000	8		BWZ	CHRADD	TEST - 7	K	0656	V 814 191 K	TST CHAR INSERT	
4	010	7		A	ADLNHG	TEST - 4		0664	A L09 194	UPDATE INST	
4	020	7		A	ADLNHG	TEST - 7		0671	A L09 191	BY RECORD LENGTH	
4	030	7		MCW	TEST - 7	INST & 3		0678	M 191 713		
4	040	7		MCW	TEST - 4	CWMINSE 3		0685	M 194 720		
4	050	7		MCW	TEST - 4	WMINSTE 3		0692	M 194 702		
4	060	4	WMINST	SW	0000			0699	, 000		
4	070	7		MCW	TEST - 2	INST & 6		0703	M 196 716		
4	080	7	INST	MCW	0000	0100		0710	M 000 100	MOVE TAPE TO PCH	
4	090	4	CWMINSE	CW	0000			0717	000		
4	100	4	TRNFLD	SW	ORG & 1			0721	, 615	UPDATE INST TO	
4	110	7		A	TWELVE	ORG & 3		0725	A N48 617	PICK UP NEXT FLD	
4	120	4		CW	ORG & 1			0732	615		
4	130	4		B	ORG			0736	B 614		
4	140	7	PCHBR1	MCW	BCLP1	SW8 & 3		0740	M N57 +92		
4	150	4		B	NUMCDS			0747	B #33	BR TO PUNCH	
4	160	4	CLPCH1	CS	0180			0751	/ 180	CLEAR PUNCH	
4	170	4		SW	0101			0755	, 101	AREA	
4	180	7		MCW	ZZZERO- 1	CONTRL		0759	M L05 N50	RESET COUNT	
4	190	7		MCW	ZZZERO- 1	SELCTR		0766	M L05 096		
4	200	7		A	RECLNG	ADLNHG		0773	A J97 L09	UPDATE REC CTR	
4	210	4		B	BLKTST- 14			0780	B V25		
4	220	7	PCHBR2	MCW	BCLP2	SW8 & 3		0784	M N60 +92	BR TO PUNCH	
4	230	7		A	ONE80 - 2	CONTRL		0791	A K06 N50		
4	240	4		B	NUMCDS			0798	B #33		
4	250	4	CLPCH2	CS	0180			0802	/ 180	CLEAR PUNCH	
4	260	4		SW	0101			0806	, 101	AREA	
4	270	4		B	CTLCMP			0810	B 644		
4	280	7	CHRADD	MCW	TEST - 8	ZWMINSE 3		0814	M 190 838	INSERT CHAR	
4	290	7		MCW	TEST - 8	ZINST & 14		0821	M 190 879	FIELD IN	
4	300	7		MCW	TEST - 2	ZINST & 6		0828	M 196 871	PUNCH LOCATION	
4	310	4	ZWMINSE	SW	0100			0835	, 100		
4	320	7		MCW	TEST - 2	ZINST & 10		0839	M 196 875		
4	330	7		C	ONE01	TEST - 10		0846	C L23 188		
4	340	5		B	ZINST		U	0853	B 865 U		
4	350	7		MCW	NOP	ZINST & 7		0858	M L25 872		
4	360	7	ZINST	MCW	TEST - 6	0100		0865	M 192 100		
4	370	4		MCW	0100			0872	M 100		
4	380	4		CW	0100			0876	100		
4	390	7		MCW	CHRADD	ZINST & 7		0880	M 814 872		
4	400	4		B	TRNFLD			0887	B 721		
4	410	4		CS	0180			0891	/ 180		
4	420	4		SW	0101			0895	, 101		
4	430	4	SW1	B	SW2			0899	B 949	SWITCH 1	
4	440	7	SELFIL	A	ONE80 - 2	FILNUM		0903	A K06 J82	SELECT FILE	
4	450	7	FILCMP	C	FILNUM	SLFIL1		0910	C J82 J84	TO BE PCHED	

PG	LIN	CT	LABEL	OP	A OPERAND	B OPERAND	D	LOC	INSTRUCTION	COMMENTS	0346
4	460	5		B	SW2		S	0917	B 949 S		
4	470	5		B	ENDFIL		T	0922	B Y57 T	BR EOF ON UNEQUA	
4	480	8	TAPMOV	MCW	ZU1	TPNTRY	R	0927	M ZU1 P01 R		
4	490	4		MCW	BLANK			0935	M L03		
4	500	1		CW				0939	□		
4	510	5		B	SELFIL		K	0940	B 903 K		
4	520	4		B	TAPMOV			0945	B 927		
4	530	4	SW2	NOP	COLBIN			0949	N 699	BR ON COLBIN	
4	540	8	MOVTAP	MCW	ZU1	TPNTRY	R	0953	M ZU1 P01 R	READ TAPE	
4	550	4		MCW	BLANK			0961	M L03		
4	560	1		CW				0965	□		
4	570	5		B	TAPERR		L	0966	B S88 L	BR ON TRAN ERR	
4	580	4	SW3	NOP	ERESSET			0971	N T66		
4	590	5	EOF	B	FILEND		K	0975	B W73 K	BR EOF	
4	600	5		B	XTRPCH		C	0980	B #20 C		
4	610	7		MCW	CONST1	RECORD		0985	M J93 183		
4	620	5		B	NO SPF		F	0992	B #09 F		
4	630	4	TSTXCP	NOP	EXCPTN			0997	N /28	BR EXCEPT RTNE	
4	640	4	SW4	B	FLDSEQ			1001	B 333	BR SEQ RTNE	
4	650	4	SW5	B	CREG			1005	B 600	BR FX VAR FLD SL	
4	660	7	NO SPF	MCW	NOP	PUNCH & 2		1009	M L25 #86	NOP PCH RL ON F	
4	670	4		B	TSTXCP			1016	B 997		
4	680	1	XTRPCH	P				1020	4	BYPASS RECORDS	
4	690	1		NOP				1021	N	ON SENSE SWITCH	
4	700	7		MCW	NOP	XTRPCH		1022	M L25 #20	C CONTROL	
4	710	4		B	MOVTAP			1029	B 953		
4	720	7	NUMCDS	A	ONE80 - 2	CDCNT		1033	A K06 L16	UPDATE CD CNT	
4	730	7	AUTTOT	MCW	CDCNT	0100		1040	M L16 100	MOVE CD CNT	
4	740	1		NOP				1047	N	TO PUNCH	
4	750	7		A	ONE80 - 2	MPLCDS		1048	A K06 L28	UPDATE INTRA CNT	
4	760	7		C	FXCDNO	MPLCDS		1055	C K05 L28	TEST CD NUM FOR	
4	770	5		B	GPFIX		S	1062	B #93 S	ADDTL INFO	
4	780	7	MOVMTCT	MCW	MPLCDS	0100		1067	M L28 100	MOVE INTRA TO PC	
4	790	1		NOP				1074	N		
4	800	4	CONGMK	B	CVTTST			1075	B V81	BR CVT 705 GM	
4	810	5	SSD	B	PRTPCH		D	1079	B /05 D	BR PRTPCH ON D	
4	820	1	PUNCH	P				1084	4	PUNCH CARD	
4	830	1		NOP				1085	N		
4	840	1		SPF				1086	9	PUNCH RELEASE	
4	850	2		SS			4	1087	K 4	STACKER SELECT	
4	860	4	SW8	B	CMP			1089	B 607	BR TO REC SEG	
4	870	7	GPFIX	MCW	FIXED	0100		1093	M K92 100	MOVE ADDTL INFO	
4	880	1		NOP				1100	N	TO PUNCH	
4	890	4		B	MOVMTCT			1101	B #67		
4	900	7	PRTPCH	MCW	0180	0280		1105	M 180 280	MOVE PUNCH INFO	
4	910	1		P				1112	4	TO PRINT AREA	
4	920	1		W				1113	2	PRINT AND PUNCH	
4	930	5		B	FRMCTL		2	1114	B /23 2		
4	940	4		B	SW8 - 3			1119	B #86	BR TO NEXT SEG	
4	950	5	FRMCTL	CC	SW8 - 3		1	1123	F #86 1		

PG	LIN	CT	LABEL	OP	A OPERAND	B OPERAND	D	LOC	INSTRUCTION	COMMENTS	0397
4	970	7	EXCPTN	LCA	RECORD	TSTCH1& 3		1128	L 183 /73	TEST TAPE REC	
4	980	7		LCA	RECORD	TSTCH2& 3		1135	L 183 /96	LOCATION FOR	
4	981	7	EXCEPT	A	RECLNG	RECORD		1142	A J97 183		
4	990	7		A	ADDEX1	TSTCH1& 3		1149	A 083 /73	EXCEPTION CODES	
5	000	7		A	ADDEX2	TSTCH2& 3		1156	A 087 /96		
5	010	7		CM	TSTCH1& 1	TSTCH2& 1		1163	B /71 /94		
5	020	7	TSTCH1	MCW	0000	FIRSTX		1170	M 000 072		
5	030	7		C	FIRSTX	XCHAR1		1177	C 072 080	COMPARE FIRST	
5	040	5		B	TSTCH2		/	1184	B /93 /	CHARACTER	
5	050	4		B	XCPFND			1189	B 512		
5	060	7	TSTCH2	MCW	0000	SECNDX		1193	M 000 073		
5	070	7		C	SECNDX	XCHAR2		1200	C 073 084	COMPARE SECOND	
5	080	5		B	SW4		/	1207	B #01 /	CHARACTER	
5	090	4	XCPFND	SW	NUMCDS& 4			1212	, #37	SET INST TO	
5	100	7		MCW	LCPTPN	NUMCDS& 3		1216	M 076 #36	PROCESS EXCEPT	
5	110	4		MCW	B			1223	M L26	RECORD	
5	120	4		SW	BLKTST& 11			1227	, V50		
5	130	7		MCW	BRXEND	BLKTST& 10		1231	M 079 V49		
5	140	7	OPTION	MCW	NOP	PRTPCHE& 7		1238	M L25 /12		
5	150	7		MCW	NOP	PRTPCHE& 8		1245	M L25 /13		
5	160	4		B	SW5			1252	B #05		
5	170	7	XCPEND	LCA	NMDCWE& 6	NUMCDS& 6		1256	L 091 #39	RESET INST FOR	
5	180	7		LCA	BLKDCWE& 4	BLKTST& 11		1263	L 096 V50	NORMAL PROCESS	
5	190	7		LCA	FOUR	PRTPCHE& 7		1270	L 094 /12		
5	200	7		LCA	TWO	PRTPCHE& 8		1277	L L29 /13		
5	210	4		B	BLKTST& 7			1284	B V46		
5	220	4	TAPERR	NOP	TPECNT			1288	N T10	TAPE ERROR	
5	230	1		P				1292	4	DUMMY PUNCH	
5	240	8		B	ERRSTK	SW8 - 2	N	1293	B T55 #87 N	FOR PCH REL	
5	250	7		MCW	NOP	* & 1		1301	M L25 T08		
5	260	2		SS			4	1308	K 4		
5	270	5	TPECNT	B	1673		K	1310	B W73 K		
5	271	2		NOP			0	1315	N 0		
5	272	7		MCW	B	TAPERR		1317	M L26 S88		
5	280	7		A	ONE80 - 2	ERRCNT		1324	A K06 V03		
5	290	8		B	BDBLCK	ERRCNT- 1	1	1331	B T91 V02 1		
5	291	5		CU	2U1		B	1339	U 2U1 B		
5	300	7		MCW	B	SW3		1344	M L26 971		
5	310	4		B	MOVTAP			1351	B 953		
5	320	7	ERRSTK	MCW	KEIGHT- 1	TPECNT- 2		1355	M 070 T08		
5	330	4		B	TPECNT- 2			1362	B T08		
5	340	7	ERESET	MCW	ZZZERO	ERRCNT		1366	M L06 V03	RESET FOR NORMAL	
5	350	7		MCW	NOP	TAPERR		1373	M L25 S88	TAPE TRANS	
5	360	7		MCW	NOP	SW3		1380	M L25 971		
5	370	4		B	EOF			1387	B 975		
5	380	7	BDBLCK	NOP	NOP	PRTPCHE& 7		1391	N L25 /12		
5	390	7		NOP	NOP	PRTPCHE& 8		1398	N L25 /13	BLOCK OPTION	
5	400	7		NOP	CD CNT	BBLKCT		1405	N L16 V07		
5	410	7		SW	SSD & 4	BLKTST& 11		1412	, #83 V50		
5	420	7		MCW	LOCBND	BLKTST& 10		1419	M V10 V49		

PG	LIN	CT	LABEL	OP	A OPERAND	B OPERAND	D	LOC	INSTRUCTION	COMMENTS	0445
5	430	4		B	ERES			1426	B T66	RESET INST	
5	431	4		B	FXBBLK			1430	B U68		
5	435	5	BBLKND	B	FLOSEL		T	1434	B 600 T		
5	440	7		MCW	TWO	PRTPCHE 8		1439	M L29 /13	FOR NORMAL	
5	450	4		MCW	FOUR			1446	M 094	PROCESSING	
5	460	7		CW	SSD & 4	BLKTST& 11		1450	□ #83 V50		
5	470	7		MCW	BLKDCW& 4	BLKTST& 11		1457	M 096 V50		
5	480	4		B	BLKTST			1464	B V39	CORRECT TAPE	
5	490	1	FXBBLK	H				1468	.	READ AREA	
5	491	7		MCW	ZZZERO	RCOUNT		1469	M L06 L12		
5	500	7		MCW	BBLKCT	CDCNT		1476	M V07 L16	BY HAND	
5	510	5		CU	XU1		B	1483	U XU1 B		
5	520	8		MCW	XU1	TPNTRY	R	1488	M XU1 P01 R		
5	530	5		B	ERES		G	1496	B T66 G		
5	540	1		H				1501	.		
5	550	2	ERRCNT	DCW	*			1503			
5	560	4	BBLKCT	DCW	*			1507			
5	570	3	LOCBND	DSA	*	BBLKND	U34	1510			
5	580	7	UPCNT	MCW	ONE80	PCHMOV& 6		1511	M K08 693	UPDATE RECORD	
5	590	7		MCW	BRCMP	SW8 & 3		1518	M K95 #92	COUNT	
5	600	7		A	ONE80 - 2	RCOUNT		1525	A K06 L12		
5	610	7		MCW	ZZZERO	MPLCDS		1532	M L06 L28		
5	620	7	BLKTST	C	RECBK	RCOUNT		1539	C K00 L12	TEST FOR END	
5	630	5		B	TSTXCP		T	1546	B 997 T	OF BLOCK	
5	640	7		A	RECBK	RECTOT		1551	A K00 L20	UPDATE REC TOT	
5	650	7		MCW	ZZZERO	RCOUNT		1558	M L06 L12	COUNT	
5	660	4		MCW	ZZZERO			1565	M L06	RESET RECORD	
5	670	4		MCW	ZZZERO			1569	M L06	COUNTER AND	
5	680	4		B	LDREAD- 7			1573	B 542	ADD COUNTER	
5	690	4		B	MOVTAP- 4			1577	B 949		
5	700	8	CVTTST	B	CONVRT	0101		1581	B W31 101		
5	710	4		SW	CVTTST& 4			1589	, V85	FOR CONVERSION	
5	720	7		A	ONE80 - 2	CVTTST& 6		1593	A K06 V87	OF 705 GPMK	
5	730	4		CW	CVTTST& 4			1600	□ V85	TO 1401 GPMK	
5	740	7		C	CVTTST& 6	ONE80		1604	C V87 K08		
5	750	5		B	* & 5		T	1611	B W20 T		
5	760	4		B	CVTTST			1616	B V81		
5	770	7		MCW	ONE01	CVTTST& 6		1620	M L23 V87		
5	780	4		B	SSD			1627	B #79		
5	790	4	CONVRT	SW	CVTTST& 4			1631	, V85		
5	800	7		MCW	CVTTST& 6	CONMOV& 6		1635	M V87 W52		
5	810	4		CW	CVTTST& 4			1642	□ V85		
5	820	7	CONMOV	MCW	0595	0000		1646	M 595 000		
5	830	4		B	CVTTST& 8			1653	B V89		
5	840	4		CW	0001			1657	□ 001		
5	850	4		CW	0001			1661	□ 001		
5	860	4		CW	0001			1665	□ 001		
5	870	4		B	MOVTAP- 4			1669	B 949		
5	880	4	FILEND	CS	0299			1673	/ 299	CLEAR PRINT	
5	890	4		CS	0180			1677	/ 180	PUNCH AND	

PG	LIN	CT	LABEL	OP	A OPERAND	B OPERAND	D	LOC	INSTRUCTION	COMMENTS	0495
5	900	4		CS	0080			1681	/ 080	READ AREAS	
5	910	1		P				1685	4	DUMMY PUNCH	
5	920	7		MCW	CONST3	0225		1686	M N41 225	MOVE REC TOT	
5	930	4		MCW	RECTOT			1693	M L20	AND CD CNT TO	
5	940	4		MCW	CONST2			1697	M N32	PRINT AREA	
5	950	4		MCW	CDCNT			1701	M L16		
5	960	1		W				1705	2	PRINT	
5	970	2		CC			1	1706	F 1	CLEAR PRINT AREA	
5	980	4		CS	0225			1708	/ 225		
5	990	4		SW	0201			1712	, 201		
6	000	7		SW	0101	0001		1716	, 101 001		
6	010	7		MCW	0225	RECTOT		1723	M 225 L20	RESET REC TOT	
6	020	1		MCW				1730	M	AND CD CNT CNTRS	
6	030	1		MCW				1731	M		
6	040	7		MCW	PRTPCH& 7	XTRPCH		1732	M /12 #20		
6	050	8		B	ALTSTK	PUNCH & 3	N	1739	B Y46 #87	N ALTERNATE STACKR	
6	060	7		MCW	NOP	PUNCH & 3		1747	M L25 #87		
6	070	5		B	SWB ON		B	1754	B Y75 B	BR HALT ON B	
6	080	8	TSTALL	B	ALLTAP	NUMFIL		1759	B Y79 K02	BR TRAIL EOR	
6	090	4		B	TYPFIL			1767	B Z93		
6	100	4	TSTNUM	B	MLTFIL			1771	B X94	BR TO SPEC FILES	
6	110	4		SW	FILCMP& 4			1775	, 914	UPDATE SELECT	
6	120	7		A	TWO	FILCMP& 6		1779	A L29 916	FILE COUNT	
6	130	4		CM	FILCMP& 4			1786	□ 914		
6	140	4		B	NEWFIX			1790	B Z59	BR NEW FIX INFO	
6	150	7	MLTFIL	A	ONE80 - 2	FILTOT		1794	A K06 L32	UPDATE SPECIFIED	
6	160	7		C	NUMFIL	FILTOT		1801	C K02 L32	FILE COUNT	
6	170	5		B	NEWFIX		/	1808	B Z59 /	BR ON MORE FILES	
6	180	4	PROSND	CS	0299			1813	/ 299		
6	190	7		MCW	ZZZERO- 1	FILTOT		1817	M L05 L32	RESET FILE COUNT	
6	200	4		SW	0201			1824	, 201		
6	210	4		CS	TPNTRY& 98			1828	/ P99		
6	220	5		B	FILE		E	1832	B Y42 E	NO REWIND	
6	230	5	REEL	CU	ZU1		R	1837	U ZU1 R	REWIND TAPE	
6	240	4	FILE	H	NEWFIX			1842	. Z59	HALT BR NEW FIX	
6	250	7	ALTSTK	MCW	LETR K	PUNCH & 3		1846	M L30 #87		
6	260	4		B	TSTALL- 5			1853	B X54		
6	270	7	ENDFIL	MCW	ZZZERO- 1	FILNUM		1857	M L05 J82	RESET SELECT	
6	280	7		MCW	LOCSLF	FILCMP& 6		1864	M 099 916	FILE COUNTER	
6	290	4		B	PROSND			1871	B Y13		
6	300	4	SWB ON	H	TSTALL			1875	. X59		
6	310	7	ALLTAP	LCA	GPMK78	TPNTRY& 80		1879	L L24 P81		
6	320	8		LCA	ZU1	TPNTRY	R	1886	L ZU1 P01 R		
6	330	4		MCW	BLANKS			1894	M J90		
6	340	4		B	TRAILR			1898	B Z16	BR TO TRAILER	
6	350	5		B	PROSND		K	1902	B Y13 K	BR ON 2 TPMKS	
6	360	5	BKSPSE	CU	ZU1		B	1907	U ZU1 B		
6	370	4		B	TYPFIL			1912	B Z93		
6	380	8	TRAILR	B	TRALOK	TPNTRY& 80		1916	B Z40 P81	TEST TRAILER LAB	
6	390	7		C	TPNTRY& 79	TRALOC		1924	C P80 040	ON TAPE TO LABEL	

PG	LIN	CT	LABEL	OP	A OPERAND	B OPERAND	D	LOC	INSTRUCTION	COMMENTS	0545
6	400	5	TRALRT	B	BKSPSE		/	1931	B Z07 /	STORED FROM CARD	
6	410	4		B	PROSND			1936	B Y13		
6	420	7	TRALOK	C	TWO	TWO		1940	C L29 L29		
6	430	7		MCW	TPNTRY& 79	TRALOC		1947	M P80 040		
6	440	1		C				1954	C		
6	450	4		B	TRALRT			1955	B Z31		
6	460	4	NEWFIX	CS	TPNTRY& 80			1959	/ P81		
6	470	4		NOP	TPNTRY			1963	N P01		
6	480	4		B	HDRPRO			1967	B -83		
6	490	1		R				1971	1	INSERT NEW	
6	500	1		NOP				1972	N	INFORMATION IN	
6	510	7	ROADTL	NOP	0000	0000		1973	N 000 000	FIXED INFO AREA	
6	520	1		NOP				1980	N		
6	530	4		CS	0080			1981	/ 080		
6	540	4		SW	0001			1985	, 001		
6	550	4		B	HDRPRO			1989	B -83		
6	560	4	TYPFIL	B	TSTNUM			1993	B X71		
6	570	7		LCA	GPMK78	TPNTRY& 80		1997	L L24 P81	PROCESS TRAILER	
6	580	8		MCW	XU1	TPNTRY	R	2004	M XU1 P01 R	LABELS	
6	590	4		MCW	BLANKS			2012	M J90	BETWEEN FILES	
6	600	4		CS	0180			2016	/ 180		
6	610	4		SW	0101			2020	, 101		
6	620	5		B	TSTNUM		K	2024	B X71 K		
6	630	8		B	TRALES	TPNTRY& 80		2029	B -71 P81		
6	640	7		MCW	TPNTRY& 79	0280		2037	M P80 280		
6	650	7	TRANRC	MCW	0280	0180		2044	M 280 180		
6	660	1		W				2051	2		
6	670	4		CS	0280			2052	/ 280		
6	680	4		CS	TPNTRY& 81			2056	/ P82		
6	690	7		SW	0201	TPNTRY		2060	, 201 P01		
6	700	4		B	TYPFIL& 11			2067	B -04		
6	710	7	TRALES	MCW	TPNTRY& 79	0280		2071	M P80 280		
6	720	1		MCW				2078	M		
6	730	4		B	TRANRC			2079	B -44		
6	740	4	HDRPRO	B	SW1 - 8			2083	B 891	PROCESS HEADER	
6	750	8		MCW	XU1	TPNTRY	R	2087	M XU1 P01 R	LABELS BETWEEN	
6	760	4		MCW	BLANK			2095	M L03	FILES	
6	770	1		CH				2099	□		
6	780	5		B	SW1 - 8		K	2100	B 891 K		
6	790	4		NOP	INITL			2105	N J65		
6	800	7	PART1	NOP	TPNTRY& 79	0280		2109	N P80 280	FIRST 80 CHAR	
6	810	7		NOP	0280	0180		2116	N 280 180		
6	820	1		NOP				2123	N		
6	830	4		NOP	0280			2124	N 280		
6	840	7	PART2	MCW	TPNTRY& 79	0200		2128	M P80 200	SECOND 80 CHAR	
6	850	7		NOP	0280	0180		2135	N 280 180		
6	860	1		W				2142	2		
6	870	4		CS	0280			2143	/ 280		
6	880	7		SW	0201	0200		2147	, 201 200		
6	890	7		MCW	B	PART1 - 4		2154	M L26 J05		



PG	LIN	CT	LABEL	OP	A OPERAND	B OPERAND	D	LOC	INSTRUCTION	COMMENTS	0595
6	900	4		B	HDRPROG 4			2161	B -87		
6	910	7	INITL	MCW	NOP	PART1 - 4		2165	M L25 J05		
6	920	5		CU	%U1		B	2172	U %U1 B		
6	930	4		B	SW1 - 8			2177	B 891		
6	940	2	FILNUM	DCW	*			2182			
6	950	2	SLFIL1	DCW	*			2184			
6	960	2	SLFIL2	DCW	*			2186			
6	970	2	SLFIL3	DCW	*			2188			
6	980	2	BLANKS	DCW	*			2190			
6	990	3	TPNTRY	DS	2701			2701			
7	000	3	CONST1	DCW	*		P00	2193			
7	010	4	RECLNG	DCW	*			2197			
7	020	3	RECLBK	DCW	*			2200			
7	030	2	NUMFIL	DCW	*			2202			
7	040	1	ENDTYP	DCW	*			2203			
7	050	2	FXCDNO	DCW	*			2205			
7	060	3	ONE80	DCW	*		180	2208			
7	070	3	ZERO80	DCW	*		080	2211			
7	080	1	SIX	DCW	*		6	2212			
7	090	80	FIXED	DS	*			2292			
7	100	3	BRCMP	DSA	*	CMP	607	2295			
7	110	3	BRUPCT	DSA	*	UPCNT	V11	2298			
7	120	1	UNITNO	DCW	*		1	2299			
7	130	3	SXTEEN	DCW	*		016	2302			
7	140	1	BLANK	DCW	*			2303			
7	150	3	ZZZERO	DCW	*		000	2306			
7	160	3	ADLNCH	DCW	*			2309			
7	170	3	RCOUNT	DCW	*			2312			
7	180	4	CDCNT	DCW	*			2316			
7	190	4	RECTOT	DCW	*			2320			
7	200	3	ONE01	DCW	*		101	2323			
7	210	1	GPMK78	DCW	*			2324			
7	220	1	NOP	DCW	*		N	2325			
7	230	1	B	DCW	*		8	2326			
7	240	2	MPLCDS	DCW	*			2328			
7	250	1	TWO	DCW	*		2	2329			
7	260	1	LETR K	DCW	*		K	2330			
7	270	2	FILTOT	DCW	*			2332			
7	280	12	FLO 1	DCW	*			2344			
7	290	12		DCW	*			2356			
7	300	12		DCW	*			2368			
7	310	12		DCW	*			2380			
7	320	12		DCW	*			2392			
7	330	12		DCW	*			2404			
7	340	12		DCW	*			2416			
7	350	12		DCW	*			2428			
7	360	12		DCW	*			2440			
7	370	12		DCW	*			2452			
7	380	12		DCW	*			2464			
7	390	12		DCW	*			2476			

PG	LIN	CT	LABEL	OP	A OPERAND	B OPERAND	D	LOC	INSTRUCTION	COMMENTS	0645
7	400	12		DCW	*			2488			
7	410	12		DCW	*			2500			
7	420	12		DCW	*			2512			
7	430	12		DCW	*			2524			
7	440	8	CONST2	DCW	*		CDCNT	2532			
7	450	9	CONST3	DCW	*		NUM REC	2541			
7	460	2	SELTOT	DCW	*			2543			
7	470	2	FULTOT	DCW	*			2545			
7	480	1	SEQTOT	DCW	*			2546			
7	490	2	TWELVE	DCW	*		12	2548			
7	500	2	CONTRL	DCW	*			2550			
7	510	4	ZZ80	DCW	*		0080	2554			
7	520	3	BCLP1	DSA	*	CLPCH1	751	2557			
7	530	3	BCLP2	DSA	*	CLPCH2	802	2560			
7	540	80	TRALOC	DS	*			2640			
7	550	3	BRFILE	DSA	*	FILE	Y42	2643			
7	560	1	THREE	DCW	*		3	2644			
7	570	3	SQBASE	DSA	*	SQFLD1	050	2647			
7	580	3	SQFLD1	DCW	*			2650			
7	590	3	SQFLD2	DCW	*			2653			
7	600	3	SQFLD3	DCW	*			2656			
7	610	1	SEQCNT	DCW	*			2657			
7	620	1	LETR F	DCW	*		F	2658			
7	630	3	ONE00	DCW	*		100	2661			
7	640	3	BRUP	DSA	*	UPCNT & 14	V25	2664			
7	650	3	BRVAR	DSA	*	VNDTST- 7	649	2667			
7	660	2	STKHLD	DCW	*			2669			
7	670	2	KEIGHT	DCW	*		K8	2671			
7	680	1	FIRSTX	DCW	*			2672			
7	690	1	SECNDX	DCW	*			2673			
7	700	3	LCPTPN	DSA	*	PRTPCH	/05	2676			
7	710	3	BRXEND	DSA	*	XCPEND	S56	2679			
7	720	1	XCHAR1	DCW	*			2680			
7	730	3	ADDEX1	DCW	*			2683			
7	740	1	XCHAR2	DCW	*			2684			
7	750	3	ADDEX2	DCW	*			2687			
7	760	1	MVDIGT	DCW	*		D	2688			
7	770	1	LETR S	DCW	*		S	2689			
7	780	3	LOCW4	DSA	*	SW4	*01	2692			
7	790	1	LETR Y	DCW	*		Y	2693			
7	800	1	FOUR	DCW	*		4	2694			
7	810	2	SELCTR	DCW	*			2696			
7	820			EX	START						
7	830			ORG	2701				B P01		
7	840	8		B	TPUNIT	0117		2701	B A50 117	BR NO EXCEPTIONS	
7	850	7		MCW	B	TSTXCP		2709	M L26 997	SET INSTRUCTIONS	
7	860	8		B	FIXCPT	0160		2716	B P77 160	FOR EXCEPTION	
7	870	8	OPTST	B	PRINTX	0117	2	2724	B P59 117 2	OPTION DESIRED	
7	880	8		B	PTPCHX	0117	3	2732	B P92 117 3		
7	890	8		B	STKSLX	0117	4	2740	B Q03 117 4		

PG	LIN	CT	LABEL	OP	A OPERAND	B OPERAND	D	LOC	INSTRUCTION	COMMENTS	0695
7	900	7		MCW	NOP	PUNCH & 2		2748	M L25 #86		
7	910	4		B	SETXCP			2755	B Q31		
7	920	7	PRINTX	MCW	NOP	PUNCH & 2		2759	M L25 #86		
7	930	7		MCW	NOP	OPTION& 7		2766	M L25 S45		
7	940	4		B	SETXCP			2773	B Q31		
7	950	7	FIXCPT	MCW	NOP	EXCEPT		2777	M L25 /42		
7	960	4		B	OPTST			2784	B P24		
7	970	4	ERROR	H	* - 3			2788	. P88		
7	980	7	PTPCHX	MCW	NOP	OPTION		2792	M L25 S38		
7	990	4		B	PRINTX& 7			2799	B P66		
8	000	7	STKSLX	MCW	STKX & 6	OPTION& 6		2803	M A35 S44		
8	010	7		MCW	XCPSTK& 6	OPTION& 13		2810	M A42 S51		
8	020	7		MCW	RETSTK& 6	XCPEND& 20		2817	M A49 S76		
8	030	7		MCW	NOP	XCPEND& 21		2824	M L25 S77		
8	040	7	SETXCP	C	0117	FOUR		2831	C 117 094	PICK UP PARAMTRS	
8	050	5		B	ERROR		T	2838	B P88 T	FOR EXCEPT OPTS	
8	060	7		MCW	0118	XCHAR1		2843	M 118 080	ANALYZE AND	
8	070	8		B	XLOC1M	0121	1	2850	B A07 121 1	MODIFY INST	
8	080	7		A	0124	ADDEX1		2858	A 124 083	TO PROCESS	
8	090	8		B	NOCHR2	0126		2865	B 663 126	EXCEPTION RECORD	
8	100	7	STORE2	MCW	0125	XCHAR2		2873	M 125 084		
8	110	8		B	XLOC2M	0127	1	2880	B A18 127 1		
8	120	7		A	0130	ADDEX2		2888	A 130 087		
8	130	8		BWZ	ZNCHR1	0120	B	2895	V 685 120 B		
8	140	8		BWZ	DGCHR1	0120	2	2903	V R26 120 2		
8	150	8		BWZ	ERROR	0120	S	2911	V P88 120 S		
8	160	7		MCW	MVDIGT	TSTCH1		2919	M 088 /70		
8	170	7	DGCHR1	MZ	BLANK	0120		2926	Y L03 120		
8	180	8		B	ANDOR	0120	1	2933	B R60 120 1		
8	190	8		B	* & 5	0120	2	2941	B R53 120 2		
8	200	4		B	ERROR			2949	B P88		
8	210	7		MCW	LETR S	TSTCH1& 18		2953	M 089 /88		
8	220	8	ANDOR	B	OR	0119	2	2960	B R94 119 2		
8	230	8		B	* & 5	0119	1	2968	B R80 119 1		
8	240	4		NOP	ERROR			2976	M P88		
8	250	7		MCW	NOP	TSTCH1& 19		2980	M L25 /89		
8	260	7		MCW	LOC5W4	TSTCH1& 17		2987	M 092 /87		
8	270	8	OR	BWZ	ZNCHR2	0126	2	2994	V 696 126 2		
8	280	8		BWZ	DGCHR2	0126	2	3002	V 625 126 2		
8	290	8		BWZ	ERROR	0126	S	3010	V P88 126 S		
8	300	7		MCW	MVDIGT	TSTCH2		3018	M 088 /93		
8	310	7	DGCHR2	MZ	BLANK	0126		3025	Y L03 126		
8	320	8		B	TPUNIT	0126	1	3032	B A50 126 1		
8	330	8		B	* & 5	0126	2	3040	B 652 126 2		
8	340	4		B	ERROR			3048	B P88		
8	350	7		MCW	LETR S	TSTCH2& 18		3052	M 089 S11		
8	360	4		B	TPUNIT			3059	B A50		
8	370	4	NOCHR2	SW	0125			3063	, 125		
8	380	7		MCW	0124	0130		3067	M 124 130		
8	390	7		MCW	0118	0125		3074	M 118 125		

PG	LIN	CT	LABEL	OP	A OPERAND	B OPERAND	D	LOC	INSTRUCTION	COMMENTS	0745
8	400	4		B	STORE2			3081	B Q73		
8	410	7	ZNCHR1	MCW	LETR Y	TSTCH1		3085	M 093	/70	
8	420	4		B	DGCHR1			3092	B R26		
8	430	7	ZNCHR2	MCW	LETR Y	TSTCH2		3096	M 093	/93	
8	440	4		B	DGCHR2			3103	B 625		
8	450	7	XLOC1M	MZ	LETR Y	0122		3107	Y 093	122	
8	460	4		B	STORE2-	15		3114	B Q58		
8	470	7	XLOC2M	MZ	LETR Y	0128		3118	Y 093	128	
8	480	4		B	STORE2&	15		3125	B Q88		
8	490	7	STKX	MCW	SW8 -	1		3129	M #88	069	
8	500	7	XCPSTK	MCW	KEIGHT	SW8 -	1	3136	M 071	#88	
8	510	7	RETSTK	MCW	STKHLD	SW8 -	1	3143	M 069	#88	
8	520	8	TPUNIT	B	PGMSEL	0142		3150	B 846	142	BR NO SPEC TUNIT
8	530	4		SW	0142			3158	, 142		
8	540	7		MCW	0142	UNITNO		3162	M 142	K99	MOVE SPECIFIED
8	550	7		MCW	UNITNO	ALLTAP& 10		3169	M K99	Y89	TAPE UNIT NUM
8	551	7		MCW	UNITNO	TPECNT& 32		3176	M K99	T42	
8	560	7		MCW	UNITNO	TYPFIL& 14		3183	M K99	-07	INTO ALL TAPE
8	570	7		MCW	UNITNO	REEL & 3		3190	M K99	Y40	INSTRUCTIONS
8	580	7		MCW	UNITNO	BKSPSE& 3		3197	M K99	Z10	
8	590	7		MCW	UNITNO	MOVTAP& 3		3204	M K99	956	
8	600	7		MCW	UNITNO	TAPHOV& 3		3211	M K99	930	
8	610	7		MCW	UNITNO	FXBBLK& 18		3218	M K99	U86	
8	620	7		MCW	UNITNO	FXBBLK& 23		3225	M K99	U91	
8	630	7		MCW	UNITNO	HDRPRO& 7		3232	M K99	-90	
8	640	7		MCW	UNITNO	INITL & 10		3239	M K99	J75	
8	650	4	PGMSEL	CS	0080			3246	/ 080		SELECT PROPER
8	660	7		SW	0024	0056		3250	, 024	056	ROUTINE FOR
8	670	7		SW	0063	0067		3257	, 063	067	MAIN PROGRAM
8	680	1		R				3264	1		
8	690	8		B	SELPGM	0160		3265	B 877	160	
8	700	4		B	RUNOUT			3273	B 897		
8	710	8	SELPGM	B	0056	RECLNG- 3	V	3277	B 056	J94	V READ VARIABLE
8	720	8		B	0056	0076	2	3285	B 056	076 2	READ FIXED
8	730	4		R	SELPGM& 8			3293	1 885		
8	740	8	RUNOUT	B	0056	0076		3297	B 056	076	RD ANAL
8	750	4		R	RUNOUT			3305	1 897		
8	760	1		NOP				3309	N		
8	770			EX	OPTST - 23				B P01		
8	780			ORG	0600						
8	790	7	VARECD	MCW	CONST1	VARINS& 10		0600	M J93	690	SET INSTRUCTIONS
8	800	7		MCW	VCONST	VNDTST& 6		0607	M 737	662	TO PROCESS
8	810	7		MCW	ONE00	VARINS& 13		0614	M 061	693	VARIABLE LENGTH
8	820	7		SW	VARINS& 8	VNDTST& 4		0621	, 688	660	
8	830	7		A	ONE80 - 2	VARINS& 13		0628	A K06	693	
8	840	7		A	ONE80 - 2	VARINS& 10		0635	A K06	690	
8	850	7		A	ONE80 - 2	VNDTST& 6		0642	A K06	662	
8	860	7		CW	VARINS& 8	VNDTST& 4		0649	□ 688	660	
8	870	8	VNDTST	BWZ	VAREND	0000	1	0656	V 698	000 1	
8	880	7		C	VARINS& 13	ONE80		0664	C 693	K08	
8	890	5		B	VARINS		S	0671	B 680	S	

PG	LIN	CT	LABEL	OP	A OPERAND	B OPERAND	D	LOC	INSTRUCTION	COMMENTS
8	900	4		B	VARECD& 21			0676	B 621	
8	910	7	VARINS	MCW	BRVAR	SW8 & 3		0680	M 067 #92	
8	920	7		MCW	0000	0000		0687	M 000 000	
8	930	4		B	NUMCDS			0694	B #33	
8	940	7	VAREND	MCW	BRUP	SW8 & 3		0698	M 064 #92	
8	950	4		CS	0180			0705	/ 180	
8	960	7		SW	VNDTST& 4	0101		0709	, 660 101	
8	970	7		MCW	VNDTST& 6	VARCWM& 3		0716	M 662 730	
8	980	4		CW	VNDTST& 4			0723	□ 660	
8	990	4	VARCWM	CW	0000			0727	□ 000	
9	000	4		B	VARINS& 7			0731	B 687	
9	010	3	VCONST	DCW	*		P01	0737		
9	020			EX	RUNOUT				B 897	
9	030			ORG	0600					
9	040	7	CREG	MCW	RECLNG	CHAREG		0600	M J97 084	SET CHAR CNT
9	050	7	CMP	C	ZZ80	CHAREG		0607	C N54 084	FOR FIX LNG REC
9	060	5		B	ADD80		U	0614	B 659 U	BR OVER 80 CHAR
9	070	4		CS	0180			0619	/ 180	
9	080	7		SW	0101	PCHMOV& 5		0623	, 101 692	
9	090	7		MCW	BRUPCT	SW8 & 3		0630	M K98 #92	SET SW8 TO REC E
9	100	7	SETPCH	MCW	CHAREG	PCHMOV& 6		0637	M 084 693	SET MOVE INST
9	110	7		A	CHAREG	RECORD		0644	A 084 183	
9	120	4		CW	PCHMOV& 5			0651	□ 692	
9	130	4		B	RECMOV			0655	B 680	
9	140	7	ADD80	A	ZZ80	RECORD		0659	A N54 183	UPDATE RECORD CT
9	150	7		S	ZZ80	CHAREG		0666	S N54 084	UPDATE CHAR CTR
9	160	7		NZ	BLANKS- 1	CHAREG		0673	Y J89 084	
9	170	7	RECMOV	MCW	RECORD	PCHMOV& 3		0680	M 183 690	
9	180	7	PCHMOV	MCW	0000	0180		0687	M 000 180	MOVE REC PART
9	190	1		NOP				0694	N	TO PUNCH AREA
9	200	4		B	NUMCDS			0695	B #33	
9	210	8	COLBIN	MCW	%B1	TPNTRY	R	0699	M %B1 P01 R	PROCESS MIXED
9	220	5		B	TAPERB		L	0707	B 793 L	BINARY AND BCD
9	230	7		MCW	ZZZERO	BERCNT		0712	M L06 854	RECORDS
9	240	5		B	FILWMK		K	0719	B 773 K	
9	250	8		MCW	TPNTRY&159	0580	B	0724	M Q60 580 B	
9	260	7		A	ONE80 - 2	CDCNT		0732	A K06 L16	UPDATE CD CNT
9	270	7		A	ONE80 - 2	RECTOT		0739	A K06 L20	AND REC TOT
9	280	7		MCW	SW8 - 2	* & 3		0746	M #87 755	
9	290	2		P			C	0753	4 C	
9	300	2		NOP			4	0755	N 4	
9	310	4		CW	TPNTRY&168			0757	□ Q69	
9	320	8		B	COLBIN	TPNTRY&161	5	0761	B 699 Q62 5	TEST LOOK
9	330	4		B	MOVTAP			0769	B 953	AHEAD
9	340	4	FILWMK	CW	TPNTRY& 1			0773	□ P02	
9	350	4		B	FILEND			0777	B W73	
9	360	8	TSTBIN	B	MOVTAP	TPNTRY& 80		0781	B 953 P81	
9	370	4		B	COLBIN			0789	B 699	AHEAD
9	38	8	TAPERB	B	BINBBK	BERCNT- 1	1	0793	B 829 853 1	
9	39	5		CU	%U1		B	0801	U %U1 B	

PG	LIN	CT	LABEL	OP	A OPERAND	B OPERAND	D	LOC	INSTRUCTION	COMMENTS	20846
9	391	8		BWZ	BNTPER	TPNTRY&168	1	0806	V 818 Q69 1		
9	400	4		B	MOVTAP			0814	B 953		
9	410	7	BNTPER	A	ONE80 - 2	BERCNT		0818	A K06 854	SET FOR	
9	430	4		B	COLBIN			0825	B 699		
9	440	4	BINBBK	B	COLBIN& 13			0829	B 712	SET INST	
9	450	1		H				0833	.	FOR BIN	
9	460	5		CU	%U1		B	0834	U %U1 B		
9	470	8		MCW	%B1	TPNTRY	R	0839	M %B1 P01 R	PROCEDURE	
9	480	5		B	COLBIN& 13		G	0847	B 712 G		
9	490	1		H				0852	.		
9	500	2	BERCNT	DCW	*			0854			
9	510			EX	RUNOUT				B 897		
9	520			ORG	2701						
9	530	8	VARTST	B	VRANAL	RECLNG- 3	V	2701	B F05 J94 V	BR VAR LNG ANAL	
9	540	8		B	FINISH	0143		2709	B R22 143	BR ON NO BINARY	
9	550	4		CS	0599			2717	/ 599		
9	560	1		CS				2721	/		
9	570	4		SW	0401			2722	, 401		
9	580	8		B	MIXED	0143	2	2726	B D43 143 2	BR MIXED BINARY	
9	590	7		MCW	B	MOVTAP& 2		2734	M L26 955		
9	591	7		MCW	* & 1	BDBLCK& 7		2741	M P48 T98		
9	600	7		MCW	B	TAPMOV& 2		2748	M L26 929	SET BCD FIXED	
9	610	7		MN	NOP	AUTTOTE& 4		2755	D L25 #44	LENGTH ROUTINE	
9	620	7		MN	NOP	GPPIX & 4		2762	D L25 #97	TO OPERATE IN	
9	630	7		CW	GPPIX & 7	AUTTOTE& 7		2769	D /00 #47	BINARY MODE	
9	640	7		MCW	B	AUTTOTE& 7		2776	M L26 #47		
9	650	7		MCW	B	GPPIX & 7		2783	M L26 /00		
9	660	7		LCA	BINPCH	PUNCH & 1		2790	L G04 #85		
9	670	7		LCA	BINPCH	XTRPCH& 1		2797	L G04 #21		
9	671	7		LCA	BINPCH	PRTPCH& 8		2804	L G04 /13		
9	672	7		MCW	NOP	BBLKND& 5		2811	M L25 U39		
9	673	7		MCW	NOP	BBLKND& 12		2818	M L25 U46		
9	674	7		MCW	NOP	BDBLCK		2825	M L25 T91		
9	675	7		MCW	NOP	BDBLCK& 7		2832	M L25 T98		
9	680	7		MCW	NOP	CMP		2839	M L25 607		
9	690	7		MCW	NOP	CMP & 7		2846	M L25 614		
9	700	7		C	RECLNG	ONE68		2853	C J97 F91		
9	710	5		B	FULLCD		S	2860	B E73 S		
9	720	7		MCW	RECLNG	CVTPCH		2865	M J97 G02		
9	730	4		A	CVTPCH			2872	A G02		
9	740	4		A	CVTPCH			2876	A G02		
9	750	7		A	RECLNG	CVTPCH		2880	A J97 G02		
9	760	7		MCW	CVTPCH- 1	BPCHMV- 1		2887	M G01 F98		
9	770	7	PCHSET	MCW	NOP	SETPCH		2894	M L25 637		
9	780	7		LCA	BPCHMV	PCHMOV& 7		2901	L F99 694		
9	790	7		MCW	NOP	UPCNT		2908	M L25 V11		
9	800	7		MCW	NOP	UPCNT & 7		2915	M L25 V18		
9	810	7	FINISH	MCW	UNITNO	CLRTPE& 19		2922	M K99 633		
9	820	7		MCW	UNITNO	BACKUP& 3		2929	M K99 667		
9	830	8		B	NOSEL	SLFIL1		2936	B R62 J84	BR NO FILE SEL	

PG	LIN	CT	LABEL	OP	A OPERAND	B OPERAND	D	LOC	INSTRUCTION	COMMENTS	0896
9	840	7		MCW	NOP	TSTALL		2944	M L25 X59	SET INSTRUCTIONS	
9	850	7		MCW	VOP	TSTNUM		2951	M L25 X71	FOR SEL EOR	
9	860	4		B	HEADR			2958	B 606		
9	870	8	NOSEL	B	REELND	NUMFIL		2962	B R77 K02	SET INST FOR	
9	880	4		B	HEADR			2970	B 606	SPECIFIC FILE NU	
9	890	3	LCNMFX	DSA	*	NEWFIX	259	2976			
9	900	7	REELND	MCW	LCNMFX	TYPFIL & 3		2977	M R76 Z96	SET INST FOR	
9	910	7		MCW	LCNMFX	TRANRC- 17		2984	M R76 -27	TRAIL OR 2 TP	
9	920	8		B	HEADR	ENDTYP	1	2991	B 606 K03 1	MKS EOR	
9	930	7		MCW	NOP	BKSPSE- 9		2999	M L25 Y98		
9	940	8	HEADR	B	NOHDR	0147		3006	B E84 147		
9	950	7	CLRTPE	LCA	GPMK78	TPNTRY&199		3014	L L24 R00		
9	960	4		CS	TPNTRY&198			3021	/ Q99		
9	970	1		CS				3025	/		
9	980	4		SW	TPNTRY			3026	, P01		
9	990	8		MCW	ZUI	TPNTRY	R	3030	M ZUI P01 R		
10	000	4		MCW	BLANK			3038	M L03		
10	010	1		CW				3042	□		
10	020	5		B	LDCLER		K	3043	B F50 K		
10	030	4		NOP	BACKUP			3048	M E64		
10	040	4		SW	0144			3052	, 144		
10	050	7		LCA	0157	0097		3056	L 157 097		
10	060	8		B	PRTHDR	0087	1	3063	B A44 087 1		
10	070	8		B	PCHDR	0087	2	3071	B C00 087 2		
10	080	8		B	HDCMP	0087	4	3079	B C89 087 4		
10	090	4		B	SETEND			3087	B 005		
10	100	7	AFT1ST	MCW	B	CLRTPE & 34		3091	M L26 648	SET INSTRUCTIONS	
10	110	8		B	CLRTPE & 16	0097		3098	B 630 097	FOR HEADER AND	
10	120	8		B	HDPTR	0097	2	3106	B A29 097 2	TRAILER LABEL	
10	130	7		MCW	NOP	HDRPRO		3114	M L25 -83	PROCESSING	
10	140	8		B	CLRTPE & 16	0097	1	3121	B 630 097 1	BETWEEN FILES	
10	150	7	HDPTR	MCW	NOP	TYPFIL		3129	M L25 Z93		
10	160	4		B	CLRTPE & 16			3136	B 630		
10	170	4		B	CLRTPE & 16			3140	B 630		
10	180	7	PRTHDR	C	0086	ZERO80		3144	C 086 K11	PRINT HEADER	
10	190	5		B	DBLINE		T	3151	B 820 T	AND TRAILER	
10	200	7		SW	PRTINSE & 1	PRTINSE & 5		3156	, A85 A89		
10	210	7		MCW	0086	PRTINSE & 6		3163	M 086 A90		
10	220	7		A	0086	PRTINSE & 3		3170	A 086 A87		
10	230	7		CW	PRTINSE & 1	PRTINSE & 5		3177	□ A85 A89		
10	240	7	PRTINS	MCW	TPNTRY- 1	0200		3184	M P00 200		
10	250	7		MCW	PRTINSE & 6	PART2 & 6		3191	M A90 J34		
10	260	7		NOP	0280	0180		3198	N 280 180		
10	270	1		W				3205	2		
10	280	2		CC			1	3206	F 1		
10	290	4		CS	0280			3208	/ 280		
10	300	4		SW	0201			3212	, 201		
10	310	4		B	AFT1ST			3216	B 691		
10	320	7	DBLINE	MCW	PRTINSE & 21	PART1 & 14		3220	M 805 J23		
10	330	7		MCW	DBLINE	PART1		3227	M 820 J09		

PG	LIN	CT	LABEL	OP	A OPERAND	B OPERAND	D	LOC	INSTRUCTION	COMMENTS	0946
10	340	7		MCW	DBLINE- 12	PART1 & 15		3234	M B08 J24		
10	350	4		CS	0280			3241	/ 280		
10	360	7		MCW	TPNTRY& 79	0280		3245	M P80 280		
10	370	7		NOP	0280	0180		3252	N 280 180		
10	380	1		W				3259	2		
10	390	4		CS	0280			3260	/ 280		
10	400	4		SW	0201			3264	, 201		
10	410	7		S	ZERO80	0086		3268	S K11 086		
10	420	7		MZ	BLANKS- 1	0086		3275	Y J89 086		
10	430	7		MCW	DBLINE& 28	PRTINSE 3		3282	M B48 A87		
10	440	7		MCW	DBLINE	PART1 & 7		3289	M B20 J16		
10	450	4		B	PRTHDR& 12			3296	B A56		
10	460	7	PCHHDR	MCW	PCHHDR	DBLINE& 32		3300	M C00 B52	PUNCH HEADER	
10	470	7		MCW	SIX	DBLINE& 39		3307	M K12 B59	AND TRAILER	
10	480	7		MCW	PCHHDR	PRTINSE 14		3314	M C00 A98		
10	490	7		MCW	SIX	PRTINSE 21		3321	M K12 B05		
10	500	7		MCW	PCHHDR	PART2 & 7		3328	M C00 J35		
10	510	7		MCW	SIX	PART2 & 14		3335	M K12 J42		
10	520	7		MCW	SIX	TRANRC		3342	M K12 -44		
10	530	4		CS	0180			3349	/ 180		
10	540	4		SW	0101			3353	, 101		
10	550	4		B	PRTHDR			3357	B A44		
10	560	7		SW	HDCMP & 1	HDCMP & 4		3361	, C90 C93	COMPARE HEADER	
10	570	7		A	0086	HDCMP & 6		3368	A 086 C95		
10	580	7		A	0086	HDCMP & 3		3375	A 086 C92		
10	590	7		CW	HDCMP & 1	HDCMP & 4		3382	□ C90 C93		
10	600	7	HDCMP	C	3801	TPNTRY		3389	C H01 P01		
10	610	5		B	SETEND		S	3396	B D05 S		
10	620	4		B	HDRMSG			3401	B D23		
10	630	7	SETEND	MCW	NOP	PART2 & 14		3405	M L25 J42		
10	640	7		MCW	NOP	TRANRC& 7		3412	M L25 -51		
10	650	4		B	AFT1ST			3419	B E91		
10	660	7	HDRMSG	MCW	HDERR	0220		3423	M F85 220		
10	670	1		W				3430	2		
10	680	4		CS	0220			3431	/ 220		
10	690	4		SW	0201			3435	, 201		
10	700	4		H	SETEND			3439	. D05		
10	710	7	MIXED	MCW	B	SW2		3443	M L26 949	SET MAIN ROUTINE	
10	720	7		MCW	NOP	UPCNT & 7		3450	M L25 V18		
10	730	7		MCW	UNITNO	BINBBK& 13		3457	M K99 842		
10	740	8		B	* & 8	0158		3464	B D79 158		
10	750	7		MCW	NOP	BINBBK		3472	M L25 829		
10	760	7		MCW	UNITNO	BINBBK& 8		3479	M K99 837		
10	770	7		MCW	UNITNO	TAPERB& 11		3486	M K99 804		
10	780	7		MCW	UNITNO	COLBINE 3		3493	M K99 702		
10	790	7		MCW	NOP	PUNCH & 2		3500	M L25 #86		
10	800	7		MCW	BINBR	SW8 & 3		3507	M F88 #92		
10	810	7		MCW	BINBR	NUMCDS- 1		3514	M F88 #32		
10	820	7		MCW	BINBR	CVTTST- 1		3521	M F88 V80		
10	830	7		MCW	NOP	XTRPCH		3528	M L25 #20		



PG	LIN	CT	LABEL	OP	A OPERAND	B OPERAND	D	LOC	INSTRUCTION	COMMENTS	0996
10	840	7		MCW	ZZ80	RECLNG		3535	M N54 J97		
10	841	8		B	FINISH	0158		3542	B R22 158		
10	842	7		MCW	NOP	BIN8BK		3550	M L25 829		
10	850	4		B	FINISH			3557	B R22		
10	860	3	BRPCH	DSA	*	PUNCH	#84	3563			
10	870	5	BACKUP	CU	ZU1		B	3564	U ZU1 B		
10	880	4		B	LDCLER			3569	B F50		
10	890	7	FULLCD	MCW	BNCNST	CONST1		3573	M G07 J93		
10	900	4		B	PCHSET			3580	B Q94		
10	910	7	NOHDER	MCW	LCLDCL	AFTIST& 10		3584	M F04 A01		
10	920	7		LCA	0157	0097		3591	L 157 097		
10	930	4		B	AFTIST			3598	B 891		
10	940	3	LCLDCL	DSA	*	LDCLER	F50	3604			
10	950	7	VRANAL	MCW	ALLTAP& 7	MOVTAP		3605	M Y86 953	SET MAIN PROGRAM	
10	960	7		MCW	LCVRCD	SW5 & 3		3612	M F46 #08	FOR VARIABLE	
10	970	7		MCW	NOP	PUNCH & 2		3619	M L25 #86	LENGTH RECORDS	
10	980	7		MCW	NOHDER& 7	MOVTAP& 8		3626	M E91 961		
10	990	7		MCW	LBLNKS	MOVTAP& 11		3633	M F49 964		
11	000	4		B	FINISH			3640	B R22		
11	010	3	LCVRCD	DSA	*	VARECD	600	3646			
11	020	3	LBLNKS	DSA	*	BLANKS	J90	3649			
11	030	4	LDCLER	CS	0080			3650	/ 080		
11	040	7		SW	0024	0056		3654	, 024 056		
11	050	7		SW	0063	0067		3661	, 063 067		
11	060	4		R	0056			3668	1 056		
11	070	14	HDERR	DCW	*	HEAD COMP UNEQ		3685			
11	080	3	BINBR	DSA	*	TSTBIN	781	3688			
11	090	3	ONE68	DCW	*		168	3691			
11	100	8	BPCHMV	DCW	*		M0005808	3699			
11	110	3	CVTPCH	DCW	*			3702			
11	120	2	BINPCH	DCW	*		4C	3704			
11	130	3	BNCNST	DCW	*		092	3707			
11	140	3	BRHOPR	DSA	*	HDRPRD	-83	3710			
11	150			EX	VARTST				B P01		
11	160			ORG	0181						
11	170	3	RECORD	DCW	*			0183			
11	180	3	FLDORG	DSA	*	FLD 1	L44	0186			
11	190	2	CHTEST	DCW	*			0188			
11	200	3	HITEST	DCW	*			0191			
11	210	3	LOTEST	DCW	*			0194			
11	220	2	PNTTEST	DCW	*			0196			
11	230	2	TEST	DCW	*			0198			
11	240			ORG	0081						
11	250	4	CHAREG	DCW	*			0084			
11	260	7	NMCDGW	A	ONE80 - 2	CDCNT		0085	A K06 L16		
11	270	5	BLKDCW	B	TSTXCP		T	0092	B 997 T		
11	280	3	LOCSLF	DSA	*	SLFILL	J84	0099			
11	290			ORG	2901						
11	300	4	CLEAR	CS	3997			2901	/ 197	CLEAR TAPE	
11	310	1		CS				2905	/	READ-IN AREA	

PG	LIN	CT	LABEL	OP	A OPERAND	B OPERAND	D	LOC	INSTRUCTION	COMMENTS	1046
11	320	1		CS				2906	/	OF ANALYZE	
11	330	1		CS				2907	/	INSTRUCTIONS	
11	340	1		CS				2908	/		
11	350	1		CS				2909	/		
11	360	1		CS				2910	/		
11	370	1		CS				2911	/		
11	380	1		CS				2912	/		
11	390	1		CS				2913	/		
11	400	4		CS	TPNTRY&198			2914	/	Q99	
11	410	1		CS				2918	/		
11	420	4		NOP	TPNTRY			2919	N	P01	
11	430	4		CS	0080			2923	/	080	
11	440	4		SW	0001			2927	,	001	
11	450	7		CS	SW1 - 8	TPNTRY&298		2931	/	891 R99	
11	460			END	CLEAR				/	R01 080	

1066 CARDS



General Products Division  
Development Laboratory  
Endicott, New York

International Business Machines Corporation

Pioneer 8-2211

December 17, 1962

MEMORANDUM TO: Users of 1401 Tape-to-Card Utility Program

SUBJECT: 1401 Tape-to-Card Utility Program, #1401-UT-028,  
Version 1, Modification Level 1

This letter announces the availability of Version 1, Modification Level 1 of the 1401 Tape-to-Card Utility Program, #1401-UT-028. This modification, which is in the form of three (3) patch cards as well as complete documentation, corrects all reported errors in the subject system. These patch cards, enclosed, listed, and identified below (Attachment #1) are to be inserted in the system decks as follows:

Remove cards (cc 78-80)

and replace with cards (cc 77-80)

067  
068  
119

C067  
C068  
C119

Cards C067, C068 and C119 correct an error regarding the checking of blocked records in the exception routine.

We appreciate your cooperation in making these changes. A list of the material distributed with this letter follows:

<u>Item No.</u>	<u>Contents</u>
1	Three patch cards
2	System listing of Version <u>1</u> , Modification Level <u>1</u> , heretofore known as the Initial Availability Version with its addendums

- 3 New documentation for the 1401 Tape-To-Card system replacing all previous documentation.
- 4 List of three corrections to Preliminary Specifications Bulletin, #J24-1411-1

Initial requests for this system, which are filled after the release of this letter, will not include the cards itemized above as the system deck will already reflect these changes.

The Optional Program Material, available upon request, consists of the source symbolic program deck.

An Applied Programming Analysis Report (APAR) should be submitted through the IBM Systems Engineer to report any difficulties encountered in the use of this system. The APAR should be addressed to:

APAR Processing  
IBM Programming Systems  
Department 302, Building 647  
Endicott, New York

Any discrepancy between the material you receive and the items above should be directed to the attention of the Manager of the Program Information Department, IBM, 112 East Post Road, White Plains, New York.

GP Programming Systems  
Attachment

cc: Branch Office

## Version 1 Modification Level 1 - Patch Cards

M18028042B/23@B+86F+861L183/73 ,/14,/19,/23,/281L030/34,/12,/13B039 C067

L183/96AJ97183A083/73A087/96□/71/94 ,/56,/631056 L035/69,/42,/49B039 C068

ML25S45BQ31ML25/42BP24.P88ML25S38BP66 ,P84,P88,P92,P991L037Q02,P73,P77B039 C119

December 17, 1962

MEMORANDUM TO: Users of 1401 Tape-to-Card Utility Program

SUBJECT: 1401 Tape-to-Card Utility Program, #1401-UT-028

This letter transmits 1401-UT-028, Version 1, Modification Level 0.

Abstract for 1401 Tape-to-Card Utility Program

Purpose:

This program performs various tape-to-card operations in accordance with the users' specifications punched in a maximum of three control cards. Thus, output operations that were performed on the IBM 722 Card Punch and IBM 758 Card Punch Control can now be performed on the 1401 Card Read-Punch.

Machine Configuration

1. 4000 positions of core storage
2. High-Low-Equal Compare
3. IBM 1403 Printer, Model 2
4. One IBM 729 II, IV, V, VI or 7330 Tape Unit
5. IBM 1402 Card Read-Punch

In accordance with the program request you submitted, the Basic Program Material being forwarded is:

1. The condensed program deck which is sequentially numbered in columns 78-80.
2. The documentation of 1401 Tape-to-Card including flow charts, a symbolic listing of the program and a listing of the program deck.

The Optional Program Material being forwarded upon request is the symbolic source deck of the 1401 Tape-to-Card Program.

When corrections are to be included or substituted in the symbolic deck, caution must be observed with respect to column 76, which is used as an overlay control during loading of the program. Cards numbered 784-808 contain a one (1) and represent the variable length program. Cards numbered 809-857 contain a two (2) and represent the fixed length, no field selection program. Any inclusions or substitutions within these series of numbers must be appropriately punched in column 76. All other cards must be left blank in column 76.

The following information will be helpful in implementing this system:

IBM 1401 Data Processing System Bulletin: Utility Programs for IBM 1401 Tape Systems, Form number J24-1411-1.

NOTE: The following changes affect bulletin J24-1411-1:

Page 14 - under Control Cards, paragraph 2: Line 4 should read:

"... 300 characters per record in the input..."

Page 14 - Figure 12: Card columns 1-4 should read:

"characters per record"

Page 15 - under Record Blocking, columns 1-4: Line 2 should read:

"characters per fixed-length input record."

Page 17 - under Column 17 (4-punch):

"Select excepted records into stacker 8 after punching."

The 1401 Tape-to-Card Utility Program will be maintained through the use of modification letters. Whenever modifications are made to the program, a serially numbered letter, starting with number 1, accompanied by the appropriate change cards will be mailed to all users. When the program is requested and the modification level is other than 0, all letters will be supplied with the material, but no change cards will be forwarded since the program deck will always reflect the latest changes. Should the nature or quantity of changes make a reassembly necessary, this will be distributed as a new version and modification letters to this new version will begin at 1.

An Applied Programming Analysis Report (APAR) should be submitted through the IBM Systems Engineer to report any difficulties encountered in the use of this system. The APAR should be addressed to:

APAR Processing  
IBM Programming Systems  
Department 302, Building 646  
Endicott, New York

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#### GP PROGRAMMING SYSTEMS

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TAPE TO CARD

1401-UT-028

Version 1

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General Products Division  
Programming Systems  
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### 1401 Tape-to-Card Utility Program

#### 1. Introduction

The 1401 Tape-to-Card Utility Program will operate upon a variety of tape record arrangements to produce cards punched in a variety of output forms. The parameters of the particular tape to be processed and the output desired are specified by the user through a series of control cards, which are read into the 1401 with this program deck. The minimum 1401 system necessary to utilize this program includes:

- 1) 1401 Model C 3
- 2) High-Low-Equal Compare
- 3) 1403 Model 2 printer
- 4) One (1) 729 Model II, IV, V, VI, or 7330 Tape Unit
- 5) 1402 Card Read-Punch

#### 2. Specifications

1. Tapes may contain either fixed length records with fixed blocking, or variable length records singly blocked, in completely BCD mode. Tapes written in completely column binary mode may be fixed length records with fixed blocking; mixed binary and BCD records must be singly blocked.

2. The maximum block length allowed is 1197 characters.

3. A maximum of 99 separate, adjacent files, within one (1) reel of tape may be processed during one pass of the program; or up to three (3) files may be selected from a tape. If there are more reels of tape to be processed containing the identical input and output specifications, the user need not reload the program unless Header Label comparison is required for each reel of tape. In addition, a file may be bypassed during the running of the program under control of Sense Switch C. Sense Switch B will halt the program after each file has been processed regardless of control card specification. The program will revert back to the control card specification when Sense Switch B is in the off position.

4. Up to two (2) characters of a record may be used to detect exception records. These may either be printed; printed and punched; printed, punched, and selected to stack (8), after punching; or bypassed entirely.

5. When more than one card is to be punched per record, intra-record numbering may be punched into the cards (BCD only).

6. Sequence numbering of other than exception cards is permitted (BCD only).

7. Additional information not present on tape records may be punched into all cards or a specific card for each tape record. A maximum of 80 consecutive characters is allowed.

8. Additional information may be changed for each file provided that the length and the punch location and card number designations remain the same as has originally been specified in the control card (BCD and completely column binary).

9. Any Tape Unit Number can be specified. If none is specified, unit number one (1) will be assumed.

10. 705 group mark configuration (12-5-8) may be converted to 1401 configuration (12-7-8).

11. Fixed length records may be punched in either of two (2) modes (BCD records only).

a) Tape image - the records would be punched exactly as they appear on tape, in groupings of 80 characters per card. Where the number of characters of the last group is less than 80, punching will start in column one (1) and punch through as many columns as necessary.

b) Field Selection - up to sixteen (16) portions of the record may be punched into a maximum of 99 cards in any order. Each field may consist of 80 characters or less in length and may be punched exactly as it appears in the record, or may contain any single valid 1401 character, which will be punched, through the length of the field (i. e., a field of three (3) positions containing \*\*\*).

12. Variable length records are punched in the same manner as fixed length tape image.
13. Three (3) fields up to a combined total of 80 characters in length may be specified for sequence checking of records within a file.
14. At the end of each file, the number of records processed (including exception records) and the number of cards that have been punched (excluding exception records) will be printed.
15. If a tape contains a header label as its first record, the label may be: 1) printed, 2) punched, 3) bypassed, or 4) compared. If a header label precedes each file within the reel to be processed, all subsequent labels will be processed similarly to the first label except for label compare. Subsequent labels in this case will be bypassed. A tape mark following the header label of a file is acceptable, but not necessary.
16. The following options are allowed the user in specifying a method to halt the program when all processing has been completed:
  - a) Specifying the number of files to be punched.
  - b) Selecting up to three (3) files for punching.
  - c)
    1. Where (a) is unknown, and (b) is not used, specifying the presence of a trailer label and allowing the program to check for it.
    2. Specifying the presence of two (2) consecutive END-OF-FILE marks on the tape.
  - d) Under control of Sense Switch B, halt at the end of each file.
17. Where a trailer label is present after each file, the program will follow the same procedure specified in the handling of header labels between files. A tape mark must precede, as well as follow, a trailer label.
18. Under control of Sense Switch D, the program will print the exact image of what is being punched into cards.
19. With reference to items 5, 6, 7, and 8, when punching cards in a tape image mode, the information that is not present in the tape record, but is to be punched into cards, will replace the data normally punched from the tape record. If the entire tape record and items 5, 6, 7 are to be punched, the field selection option is suggested.

### Format of Control Cards

As has been previously noted control card punching will follow directly from the input and output parameters present on the record and required as an output result. Although punching is not required for features which are not used, there are two fields which must always be punched for proper operation:

- 1) Record Length (1-4)
- 2) Blocking (5-7)

NOTE: \*signifies columns that should be considered for the minimum job in BCD.

<u>Control Card No.</u>	<u>Columns</u>	<u>Meaning</u>
1	1-4	* <u>Record Length</u> - number of characters (including record mark if present). Enter VVVV in columns 1-4 for variable length records.
1	5-7	* <u>Records per block</u> - number of actual records constituting a physical tape record. For variable length records, or mixed binary and BCD records, this must be 001.
1	8-9	* <u>Files within one tape reel to be punched</u> - actual number of files, exclusive of Header and Trailer Labels, that are to be punched. If unknown leave blank, but entry must be made in column 10 or columns 11-12.
1	10	* <u>End of Reel designation</u> - leave blank for double tape mark, enter 1 for trailer label indication if punching entire reel. A trailer label of up to 80 columns in one card must be punched, which will be compared to the trailer label written on tape. An exact comparison will halt the program.
1	11-12	<u>Enter First selected file number</u> for punching.
1	13-14	<u>Enter Second selected file number</u> for punching.
1	15-16	<u>Enter Third selected file number</u> for punching.
1	17	<u>Exception Record Procedure</u> - a record may be processed in other than the normal manner. It may be bypassed (punch 1), printed (punch 2), printed and punched (punch 3), or printed, punched, and selected to stack (4), (punch 4). If no exception record processing is required, leave blank.
1	18	<u>First exception character</u> - character, digit, or zone.
1	19	<u>Exception code type</u> - up to 2 columns of a record may be designated to denote exceptions. If an "and" condition between the columns is desired, punch a 1. If an "or" condition is desired, punch a 2. If only one exception character is used, columns 19, 25-30 are blank.
1	20	<u>Exception disposition</u> for the presence of a character punch a (1), absence punch a (2), for the presence of a zone punch an (A), absence punch a (B), for the presence of a digit punch a (J), absence punch a (K).
1	21-24	<u>First exception character location on tape</u> , punch actual character location within a record; i. e., each record within a block could be excepted if the appropriate code applied.
1	25	<u>Second exception character</u>
1	26	<u>Second exception disposition</u> .

<u>Control Card No.</u>	<u>Columns</u>	<u>Meaning</u>
1	27-30	<u>Second</u> exception character location on tape.
1	31-32	<u>Intra record card numbering</u> - where multiple cards are produced per record, each card may be sequence numbered. This numbering will replace the corresponding information read from the actual record. Enter high order position of up to 2 columns on the card into which numbering is to be punched. Leave blank if no numbering is desired.
1	33-34	<u>Inter-record card numbering</u> - all cards punched within a file may be consecutively numbered. This numbering will replace the corresponding information read from the actual tape record. Enter high order position of up to 4 columns on the card, into which numbering is to be punched. If no numbering is desired, leave blank.
1	35	<u>Number of Columns</u> - reserved for file sequence numbering. Enter number of columns to be reserved. If numbering exceeds column allowance, high order position will contain zone overflow information.
1	36-37	<u>Insertion of Additional Information</u> - fixed information not present in the tape record may be punched into all of the cards, or into a particular card within each record (for multiple cards per record) through the use of another card accompanying the control card (s). This information will replace corresponding information read from the actual tape record. Punch actual card number within a record into which the information is to be punched. Punch an (AA) for insertion in all cards.
1	38-39	<u>High order location</u> - that fixed information is to be punched into, on card(s).
1	40-41	<u>Number of Columns</u> - to be reserved for fixed information (Maximum 80 columns).
1	42	<u>*Tape Unit Selection</u> - any tape unit may be specified, if left blank, unit (1) will be assumed.
1	43	<u>Column Binary records</u> - if all binary records are to be processed, punch (1), if mixed binary and BCD punch (2). Mixed binary and BCD records must contain "look ahead" feature (last 4 columns of 84 character BCD record, last 8 characters of 168 character binary record) indicating mode of the record following. If all records are BCD, leave blank.
1	44-46	<u>*Header label length</u> - Punch actual number of up to 160 characters contained in a header label. If no header, leave blank.
1	47	<u>*Header label processing</u> - the header label may be printed, punch (1), punched, punch (2), bypassed, punch (3), compared against up to two cards (160 characters) accompanying control card(s), punch (4). Indication will be given for lack of comparison.
1	48	<u>Field Sequence Checking</u> - up to 3 fields to a maximum of 80 characters within a record may be designated to be checked for correct sequence in a M, I, M arrangement, between records. Punch number of sequence fields to be checked, whose parameters differ from those of field selection. If all agree punch zero. If not used, leave blank.

\*Signifies columns that should be considered for the minimum job in BCD.

<u>Control Card No.</u>	<u>Columns</u>	<u>Meaning</u>
1	49-50	<u>Sequence field 1</u> - punch the actual field number which coincides with the parameters used in field selection. If other than field selection parameters are desired, fill in the control fields of the selection number directly following the last true selection field number. Enter the number of characters, high order location on tape, and a series of 9's for the remaining two fields.
1	51-52	<u>Sequence field 2</u> - same as above.
1	53-54	<u>Sequence field 3</u> - same as above.
1	55	<u>Group Mark Conversion</u> - if it is desired to change 705 group mark to a 1401 group mark punch a (1), if not desired, leave blank.
1	56	<u>Change fixed information</u> - Where parameters of columns 36-41 of the control card remain the same for all files, fixed information may be changed for each file. If desired, punch (1); if it is not wanted, leave blank.
1	57	<u>*Header or Trailer</u> - between files - if a header and/or a trailer is interposed between files, the same options allowed for the first header on a file (with the exception of header compare) will hold true for labels between succeeding files. Header label compare will take the same path as bypassed headers. Punch a (1) for a header between files, a (2) for a trailer between files, a (3) for both.
1	58	<u>If hand correcting</u> redundant tape transmission is desired, punch a (1), if not wanted, leave blank.
1	59-60	<u>Field selection</u> - up to 16 fields may be designated to be selected from an actual tape record to be selectively punched into one or more cards. The only restriction is that record field numbers must be related to output field numbers sequentially; e. g., field number 1 cannot be assigned to output card number 5, and record field number 9 assigned to output card number 1. Enter number of fields to be used for field selection.
1	61-62	<u>First field number of characters</u> - punch total number representing field.
1	63-66	<u>High order location on tape record</u> - if a repetitive single character field is desired (i. e., MMMM) overpunch with an 11 punch the units position of the card number field (69-70).
1	67-68	<u>High order output field location</u> - punch high order location on card into which selected field is to be punched.
1	69-70	<u>First Field card number</u> - punch number of the card into which the field is to be inserted.
1	71-72	<u>Second field number of characters</u>
1	73-76	<u>Second field high order location on tape record.</u>
1	77-78	<u>Second field high order punch location.</u>
1	79-80	<u>Second field card number.</u>

\*Signifies columns that should be considered for the minimum job in BCD.

<u>Control Card No.</u>	<u>Columns</u>	<u>Meaning</u>
2,3	1-2	<u>Field 3, 11</u>
2,3	3-6	
2,3	7-8	
2,3	9-10	
2,3	11-12	<u>Field 4, 12</u>
2,3	13-16	
2,3	17-18	
2,3	19-20	
2,3	21-22	<u>Field 5, 13</u>
2,3	23-26	
2,3	27-28	
2,3	29-30	
2,3	31-32	<u>Field 6, 14</u>
2,3	33-36	
2,3	37-38	
2,3	39-40	
2,3	41-42	<u>Field 7, 15</u>
2,3	43-46	
2,3	47-48	
2,3	49-50	
2,3	51-52	<u>Field 8, 16</u>
2,3	53-56	
2,3	57-58	
2,3	59-60	
2	61-62	<u>Field 9</u>
2	63-66	
2	67-68	
2	69-70	
2	71-72	<u>Field 10</u>
2	73-76	
2	77-78	
2	79-80	

### Operating Instructions

A. The most critical part of the operation is the proper punching of the set of control cards and their insertion point in the main program deck. Refer to the DECK COMPLEMENT section of this write-up for the order and insertion point of the control cards. Punch entire field of only those options that are to be used.

B. To run the program, use the following procedure:

- 1) Set proper card form in punch hopper.
- 2) Set carriage tape on printer and any paper form desired.
- 3) Ready printer.
- 4) Ready Reader-Punch.
- 5) Place control cards in deck between 114 and 115 which are the last three digits in columns 78-80 of deck.
- 6) Place tape to be punched on tape drive and set drive to unit number specified in control card. When not specified, set to (1).
- 7) Ready tape at load point.
- 8) Set mode switch to run.
- 9) Press Start Reset switch.
- 10) Set desired sense switches.
- 11) Press load button.

C. Sense Switch Operating Control

- 1) Switch B - when in the on position, program will stop after each data file has been processed, regardless of control card specification for file processing.
- 2) Switch C - when in the on position, program will bypass records continuously regardless of control card specification. To halt bypass operation at the end of a file, sense switch B must also be turned on.
- 3) Switch D - when in the on position, all cards punched, including exception records, will be printed with the punched card image.
- 4) Switch E - when in the on position, the program will not rewind the tape reel at the conclusion of all processing of a tape reel. When control card specification shows that only one file is to be processed, switch G must be turned on to prevent rewinding after processing the file.
- 5) Switch F - when in the on position, will cause the punch release feature to become inoperable for the remainder of the job run.
- 6) Switch G - when in the on position, will allow program to continue after a ten redundancy read attempts. When turned off, hand correction will be possible.

D. Program Halts

The following errors are checked for to insure correct operation of the program.

1) Assignment Phase

	<u>I-Address Displayed</u>	<u>Course of Action</u>
a) Incorrect punching columns 17-30.	2792	Repunch control cards and restart.
b) Field Selection card number designation not in correct sequence - Message printed.	3941	Repunch and Restart.
c) Header label compare is unequal - Message printed.	3443	Repunch and restart or continue if desired.



## 2) Object Phase of Program

	<u>I-Address Displayed</u>	<u>Course of Action</u>
a) Tape redundancy (BCD tape read) when control card column 58 contains a (1).	1467	Set sense switch G off and mode switch to "D", or press Start button.
b) Tape redundancy (BCD tape read) sense switch G off.	1500	After Storage Scan set mode switch to "N" and restart at 1364.
c) Tape redundancy (binary tape read and control card column 58 contains a (1).	0834	Same as BCD tape action a.
d) Tape redundancy (binary tape read) and sense switch G off.	0853	Same as BCD tape action b.
e) Sense switch B in the on position.	1877	Press Start button.
f) End of processing of data file.	1844	Press Start button.

E. Redundancy - ten tries are made to read a redundant record. If after ten tries, the record is still redundant, there are two courses of action possible, depending upon the punch in column 58 of the control card, and the setting of Sense Switch G. If the user desires, redundancies may be disregarded and a print, as well as the normal punching of other than exception cards, will occur if column 58 is left blank. On exception records, exception routine option will prevail. If column 58 contains a (1) and switch G is off, the record will be printed and the program will halt. The operator will then set the Tape Select switch to "D" and press Start. The record will then be re-read and stop due to the redundant character(s) in storage. Set mode switch to Storage Scan to find the redundant character(s) and manually correct storage. Reset the mode switch to "N" and restart the program at instruction address 1364\* If no manual correction is desired, set sense switch G to on. Press Start Reset button to restart program.

\*For col. binary tape, restart at address 0712.

During the first of the ten tries, an extra card will be punched (to eliminate a punch check due to punch release). This card will fall into the alternate file stacker ("N" or four) that is not accepting currently processed cards.

## NOTES:

1. When the sequence checking option has been taken and a sequence error occurs, the entire record will be printed and a notation of the sequence error given.
2. When the exception option is taken, the card count total will have excluded the total number of exception cards punched. The total number of records processed will include the number of exception records processed.
3. During normal processing of files, cards that are punched will be selected into pocket four on alternate files; otherwise into the "N" pocket.

ExamplesExample #1

Given:

1. Tape reel containing 16 files
2. Three records per block
3. Eighty characters per record
4. Added card with current month punched in columns 3-10
5. No header or trailer label
6. Use tape unit #1

Result desired:

1. Punch files #3, 10, 16
2. Except from punching records with an 8 in the 27th position
3. Sequence check 2 fields
4. Add current month in columns 37-44 of output card

Procedure:

Punch control and added cards as follows:

## A. Control Card

	<u>Card col.</u>	<u>Punch</u>	<u>Description</u>
1.	1-4	0080	Record length
2.	5-7	003	Records per block
3.	11-16	031016	Selected files
4.	17-24	18bJ0027	Exception coding
5.	36-41	AA3708	Added card information
6.	48-52	00212	Field sequence numbers
7.	61-70	1500646601	Sequence field #1 parameters
8.	71-80	0200457901	Sequence field #2 parameters

## B. Additional Card

3-10	JUL 1960	Current month
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Example #2

Given:

1. Tape reel containing 11 files
2. Five records per block
3. Two hundred and fifty characters per record
4. Additional card with information punched in columns 61-80
5. Header label containing 120 characters
6. Trailer label containing 60 characters
7. Use tape unit #3

Result desired:

1. Punch all files (excluding header and trailer label)
2. Except records with a zone x in position 1 or without a letter Z in the 12th position, bypass exceptions
3. Sequence check 3 fields
4. Field select 9 fields
5. Add "Remit to our address" into columns 1-20 of first card of each record
6. Sequence number each file
7. Compare Header Label to Header Card

## Procedure:

Punch Header Label, Control Cards, added card and Trailer Label as follows:

## A. Header Label

	<u>Card Col.</u>	<u>Punch</u>	<u>Description</u>
1.	1-80	First part of label	Card #1 header label
2	1-40	Second part of label	Card #2 header label

## B. Control Cards

card #1

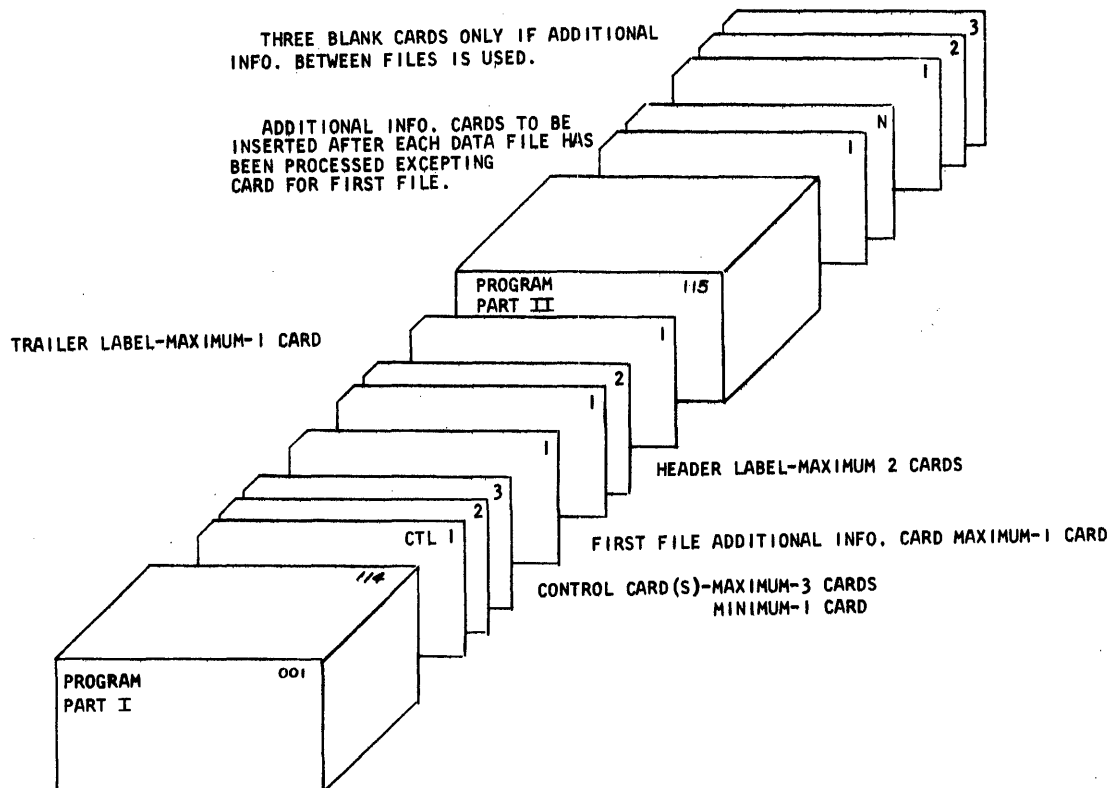
	<u>Card Col.</u>	<u>Punch</u>	<u>Description</u>
1.	1-4	0250	Record Length
2.	5-7	005	Records per block
3.	10	1	Trailer label
4.	17-24	1X2A0001	First exception coding
5.	25-30	Z20012	Second exception coding
6.	33-35	774	File sequencing numbering
7.	36-41	010120	Added card information
8.	42	3	Tape unit used
9.	44-46	120	Header label
10.	47	4	Compared
11.	48-54	3080510	Field Sequence numbers
12.	59-60	09	Field Selection number
13.	61-70	1502362101	Select Field #1
14.	71-80	1002015101	Select Field #2

card #2

15.	01-10	1500013601	Select Field #3
16.	11-20	1601016101	Select Field #4 Sequence Field #3
17.	21-30	3000164702	Select Field #5 Sequence Field #2
18.	31-40	4700460102	Select Field #6
19.	41-50	7601170103	Select Field #7
20.	51-60	0800940104	Select Field #8 Sequence Field #1
21.	61-70	2702100904	Select Field #9

## C. Trailer Label

1.	1-60	Trailer label information	Trailer Label Card
----	------	---------------------------	--------------------



1401-UT-028	XX
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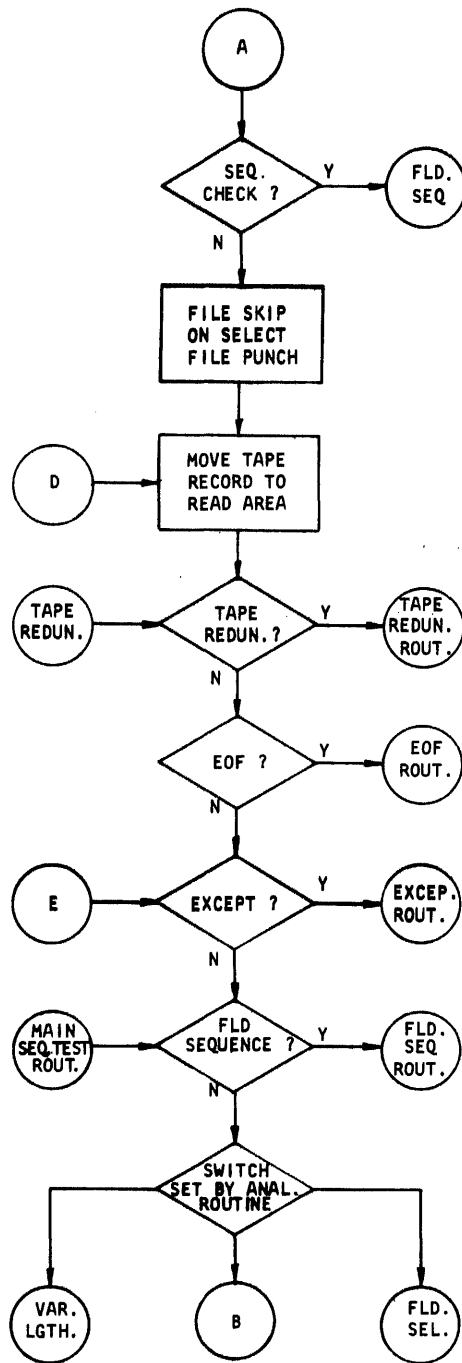
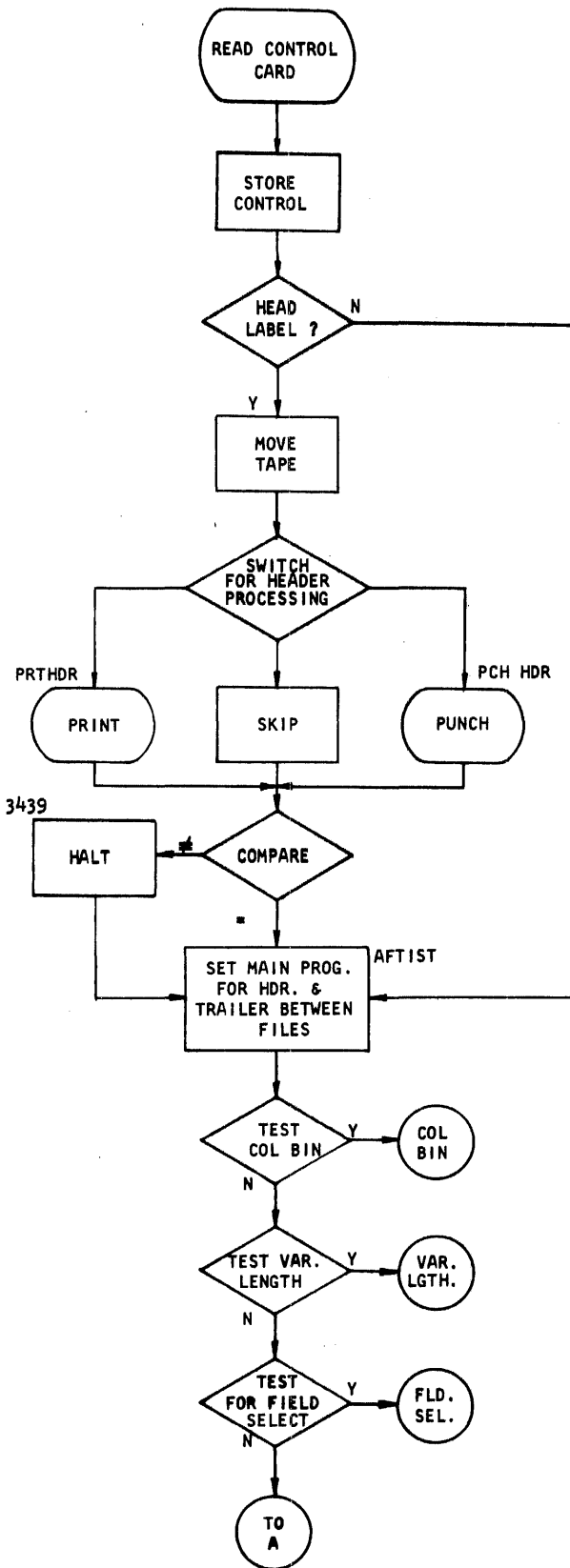
CARD FORMAT

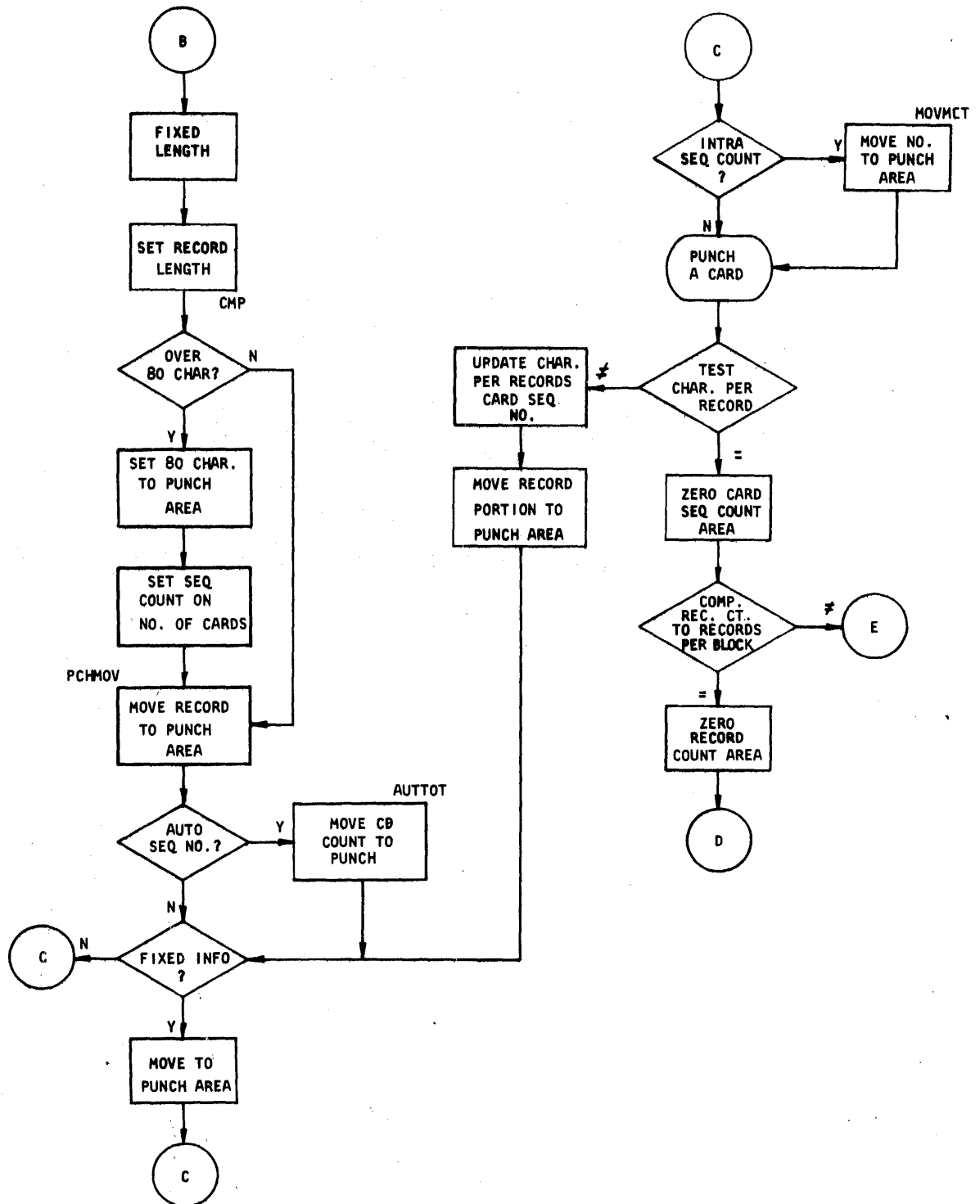
IDENTIFICATION FIELD

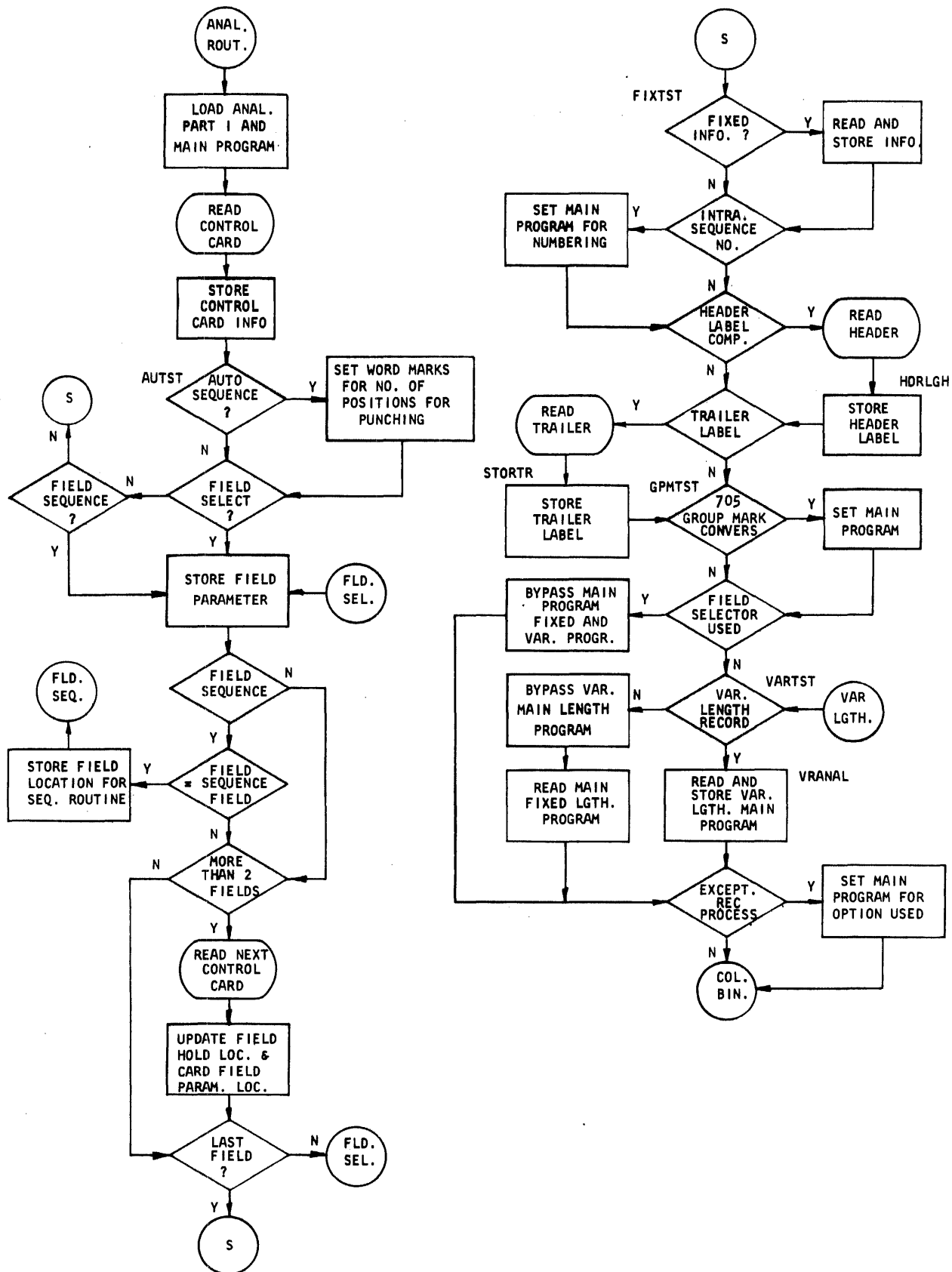
COLUMNMEANING

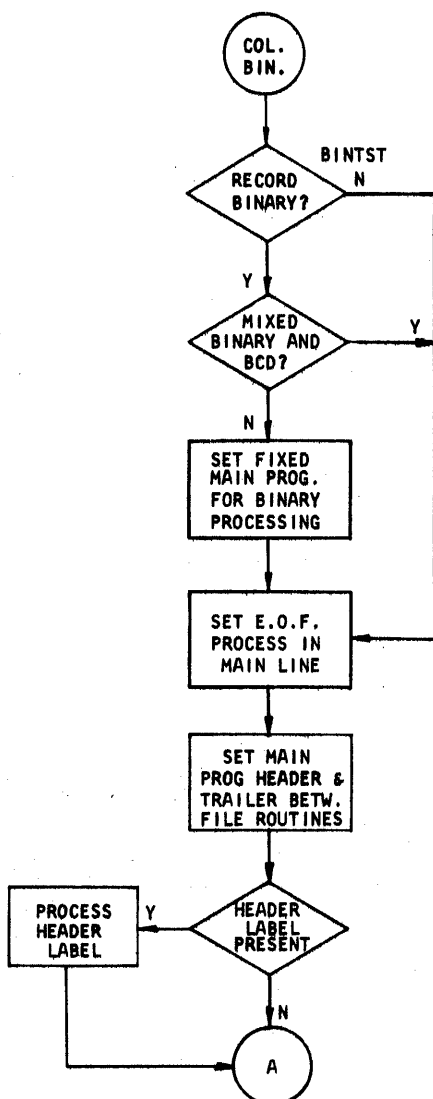
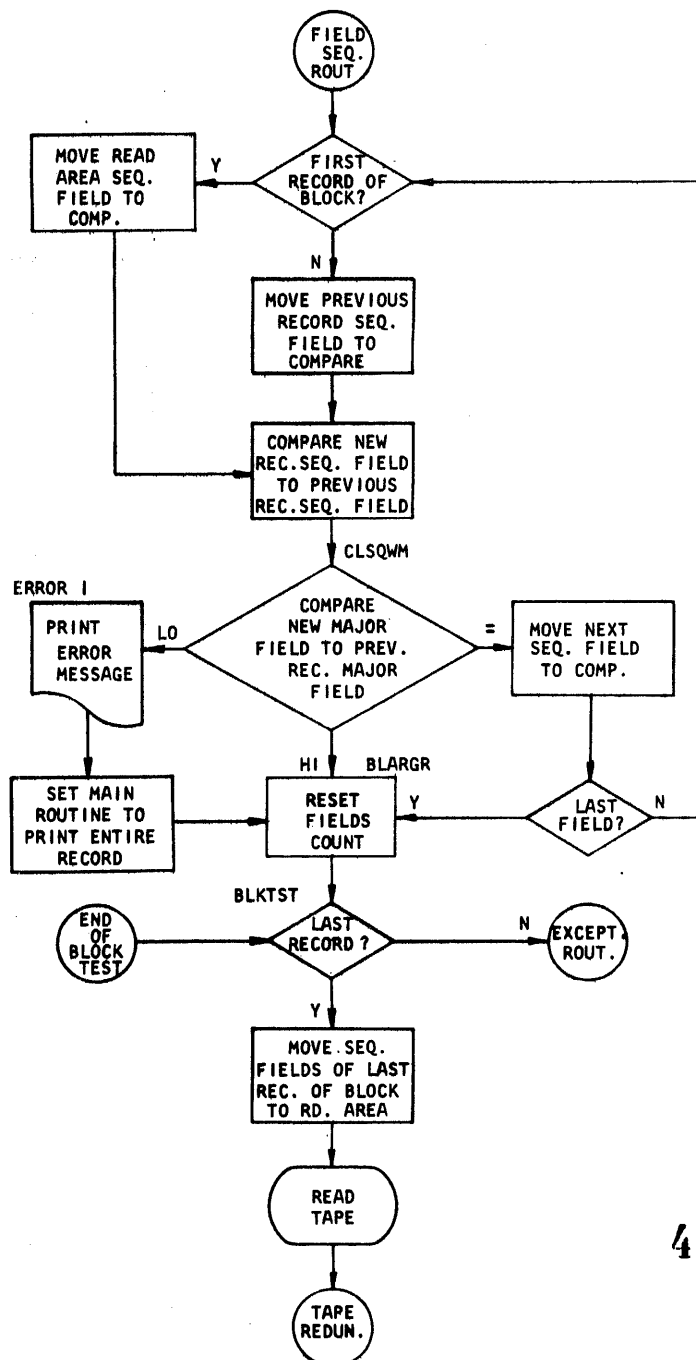
78-80

SEQUENCE NUMBER

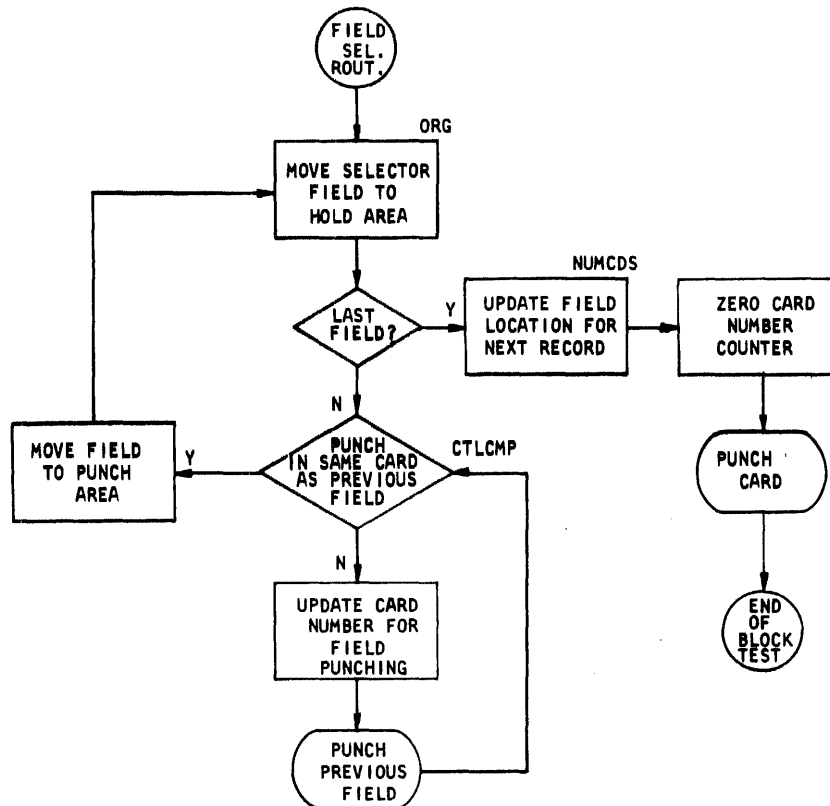




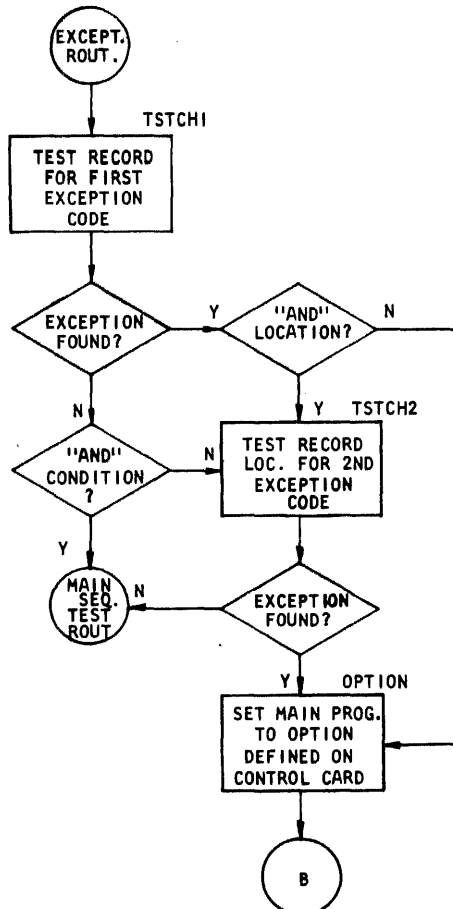


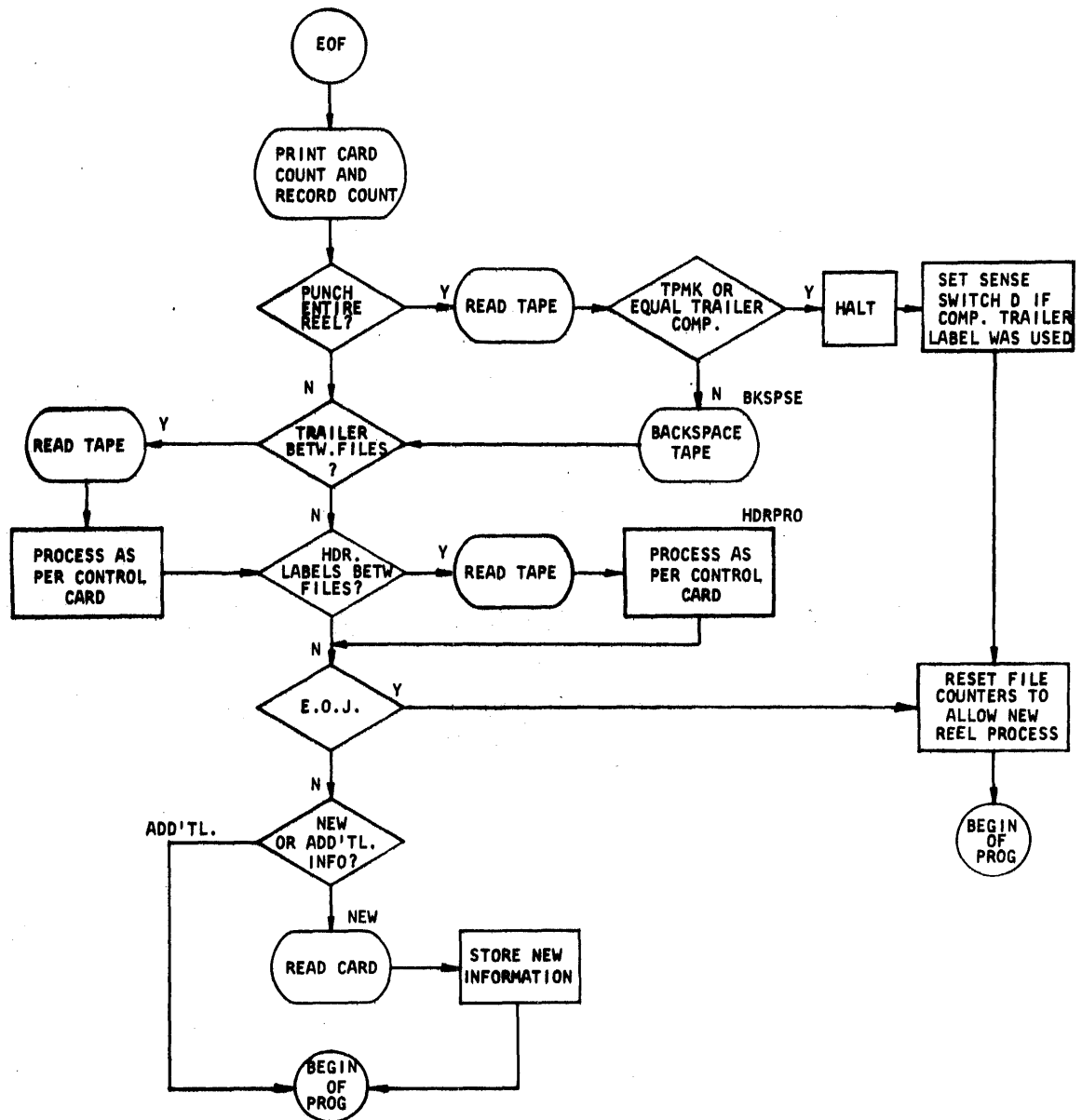
PAGE 2 ANALYZE ROUTINEFIELD SEQUENCE ROUTINE





## EXCEPTION ROUTINE





## LISTING OF PROGRAM DECK VERSION 1 MODIFICATION LEVEL 1

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LS72116,110106,105117B101/199,027A075029027B00102708026/C991,001/001117100		002
,008015,022029,036039,043047/039036	,051,055,056,063N,067071,075,0011056	003
/080,001201,1011L241981M080180A110K03	,P16,P23,P24,P311L037P37,P05,P128039	004
MAABP65112 A116J88AA	,P41,P49,P56,P571L020P57,P39,P468039	005
ML258998A23135 ,135133A178135A135134	,P80,P871056 L036P93,P65,P738039	006
M134+46,Q31S+84135YJ89135A135Q330Q31	,Q12,Q19,Q261056 L036Q29,Q01,Q058039	007
,L120133135BA30BA86141 ,136138,140	,Q45,Q53,Q601056 L034Q63,Q34,Q418039	008
R8041431M141R04A179141A141139M139+991	,R86,Q33,ROG1056 L037R00,Q72,Q798039	009
L000K92N/080,001BR39156 MK07Z79ML25Z67	,R13,R17,R25,R321L038R38,R08,R098039	010
BB04137AM137K058B15132 ,131CJ97191	,R62,R661056 L034R72,R47,R548039	011
BR93T,L28M132+73BB22AK06132BR82M139E14	,R89,R93,E0C,E041L038E10,R78,R828039	012
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/580/,4011CLE57Z720R08MR93R08	,E56,E58,E65,E691L029E75,E51,E528039	014
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