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**SOFTWARE FOR AN EXPERIMENTAL
AIR-GROUND DATA LINK
Volume III: Program Listings**

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FINAL REPORT

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16. Abstract <p>The listings manual contained in Volume III is intended for the use of programmer personnel to serve as a reference source for the Data-Link programs. It is intended as a complement to the Functional Description and Flowcharts (Volume I) and to the System Operation Manual (Volume II). The following ten programs are contained in this manual:</p> <ol style="list-style-type: none"> 1) Ground Station Communications Supervisor Modules, 2) Airborne Station Communications Supervisor Modules, 3) System Interrupt and I/O Processing Modules, 4) Ground Station Dialogue and Initialization Module, 5) Data Reduction and Analysis Modules, 6) Graph Data Reduction and Analysis Modules, 7) Load Map of Ground Station System, 8) Load Map of Airborne Station System, 9) Load Map of Data Reduction and Analysis System, and 10) Load Map of Graph Data Reduction and Analysis System. 					
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PREFACE

The listings manual contained in Volume III is intended for the use of programmer personnel to serve as a reference source for the Data-Link programs. It is intended as a complement to the Functional Description and Flowcharts (Volume I) and to the System Operation Manual (Volume II). The three manuals were prepared under Department of Transportation Contract: DOT-TSC-887. Contained in this manual are the following programs:

- 1) Ground Station Communications Supervisor Modules
 - a) GSUPR
 - b) GSUPRA
 - c) GU
 - d) DLFS-DLDS
- 2) Airborne Station Communications Supervisor Modules
 - a) ASUPR
 - b) ASUPRA
 - c) AU
 - d) ABF-ABD
- 3) System Interrupt and I/O Processing Modules
 - a) SIHI
 - b) INS
 - c) SIH
 - d) SIHB
 - e) SIHA
 - f) SIHO
 - g) SIHK
 - h) SDRP
 - i) SIHD-DSB
 - j) SDRF-SDRD
- 4) Ground Station Dialogue and Initialization Module
 - a) DATALP-DATALF-DATALD
- 5) Data Reduction and Analysis Modules
 - a) PRINRE
 - b) UTIL
 - c) VTIL
 - d) MTR-GREC-AREC-MAIN
 - e) FIN
- 6) Graph Data Reduction and Analysis Modules
 - a) MATH07
 - b) GRAD03-GRFL
 - c) GRAP35

- 7) Load Map of Ground Station System.
- 8) Load Map of Airborne Station System.
- 9) Load Map of Data Reduction and Analysis System.
- 10) Load Map of Graph Data Reduction and Analysis System.

GROUND STATION COMMUNICATIONS
SUPERVISOR MODULES

GSUPR

GSUPRA

GU

DLFS-DLDS


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0001          TITLE  GROUND SUPERVISOR/V3 -- DATA-LINK.
0002          *      'GSUPR' -- JUNE 12, 1975.
0003          *      THIS ASSEMBLY IS LABELED (ON THE CASSETTE
0004          *      SOURCE TAPE) AS: 'GSUPR'.
0005          *
0006 0000      GSUPR  PSEG
0007 0000          MODE
0008          *
0009          REF    DSROFF,USCEN,SENDM,MRI,QUIT,RCM,ACOPIN
0010 0000          REF    OPRINT,TSUBW,IMNMI,MD,TSOMO,TSOM,IMNM
0011 0000          REF    TCO,ERMF,ICF,MSOUT0,KBDM,CKBB,KBDMIP
0012 0000          REF    CM,GP,CB,BCSE,EREC,ENR,EBCSF,NAKE,DLDS
0013 0000          REF    ENAKS,SMSTEP,CPRINT,GPF,RCVMB,MTIME,TF
0014 0000          REF    SEP,NEAK,NEBC,ECHOAK,FAN,QF,RIM,NPRINT
0015 0000          REF    MANB,FCLASS,BCOME,CLASSC,LSTCC,ECHOTC
0016 0000          REF    EFT,MLFS,ECHONK,NENK,ECHONR,NENR,ECHOB
0017 0000          REF    TIMEP,ACAF,MLFL,TODHRA,TODHRB,TODMNA
0018 0000          REF    TC,TODMNB,TODSCA,TODSCB,TODMSA,TODMSB
0019 0000          REF    TODMSC
0020          *
0021 000A      GT     EQU    X'A'
0022 000B      EQ     EQU    GT+1
0023 000C      LT     EQU    EQ+1
0024          *
0025 0000      SEPO   EQU    GSUPR
0026          *
0027 0000 44850000  LA     5,SEPO
0028 0002 44800000  LA     0,SEP
0029 0004 48800000  ST     0,CB
0030 0006 74800000  BL     0,OPRINT
0031 0008 0201      DATA  NEWX
0032 0009 70820006  B     3
0033 000B 74800000  SSEP  BL     0,IMNMI
0034 000D 0000      DATA  SEP
0035          *
0036 000E 88000C00  SETF  #ACOPIN,1
0037 0010 74800000  BL     0,SENDM
0038 0012 0000      DATA  SEP
0039 0013 84000013  BFNE  MD,0,3
0040 0015 74800000  BL     0,MRI
0041          *
0042 0017 8400081D  WSOM  BFNE  TSOMO,1,SSEP2
0043 0019 8400018E  SSEP1 BFNE  QF,0,QUITS
0044 001B 7082000B  B     SSEP
0045          *
0046          *
0047 001D 84000017  SSEP2 BFNE  TSOM,0,WSOM
0048 001F 84000019  WCHAR BFNE  TCO,0,SSEP1
0049          *
0050          *

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FORCE "K" TYPE TRANSACTION RECORD.
 PRINT HEADER ON AUXILIARY TERMINAL.
 NEXT MESSAGE # (WITH BLANK) TO 'SEP' AREA. SET 'START' TIME INTO MSOUT2.
 ALLOW OPR. INIT. MSGS. SEND SYSTEM ENTRY POLL.
 WAIT FOR COMPLETION OF XMSN. INIT. RECEIVER LOGIC.
 ST.-OF-MSG. TMR. TIMED OUT?
 DO IT AGAIN.
 IF TSOM = 1. MSG. NOT STARTED.
 SAW AT LEAST ONE CHAR. WAS THERE A SUBSEQUENT CHAR-ACTER TIME-OUT?

0051	0021	84000027		BFNE	ERMF,0,\$+6	NO: MESSAGE COMPLETE?
0052	0023	8400001F		BFNE	TC,0,WCHAR	NO: IF TIMING CHARS., WAIT.
0053	0025	70820017		B	WSOM	ELSE, WAIT FOR TRUE MSG.
0054	0027	74800222		BL	0,VCL	VALIDITY CHECKING LOGIC.
0055	0029	70820019		B	SSEP1	NOT VALID!
0056	002B	88000800		SETF	ICF,1	VALID, SET IN-COMM. FLAG.
0057	002D	88000000		SETF	FAN,0	ACKNOWLEDGE.
0058	002F	74800000		BL	0,RCM	REC. SUCCESSFUL MSG. ENTRY.
0059	0031	4481002E		LA	1,PERIOD	ACKNOWLEDGE!
0060	0033	74800000		BL	0,CPRINT	ON SECONDARY TERMINAL.
0061	0035	70820033		B	\$-2	
0062	0037	44800000	TIMER	LA	0,TIMEP	GET TIME POLL.
0063	0039	4C80000D		AA	0,13	SET TO TIME F.W.A.
0064	003B	4880003F		ST	0,\$+4	
0065	003D	74800000		BL	0,MTIME	SET TIME INTO POLL.
0066	003F			RES	1	
0067	0040	44800000		LA	0,TIMEP	RE-SYNCHRONIZE THE
0068	0042	88000800		SETF	TF,1	AIRBORNE CLOCK.
0069	0044	7082005C		B	SETCB	
0070			*			
0071	0046	8400018E	NM	BFNE	QF,0,QUITS	MANUAL QUIT?
0072	0048	8400084E		BFNE	GPF,1,NOTGP	NO. GENERAL POLL?
	73	004A		LA	0,GP	YUP.
0074	004C	7082005C		B	SETCB	
0075	004E	84000037	NOTGP	BFNE	TF,0,TIMER	TIME POLL?
0076	0050	8400085A		BFNE	KBDM,1,SCNMSG	NO. KEYB. MSG.?
0077	0052	44000000		L	0,CKBB	YES. GET POINTER.
0078	0054	88000800		SETF	KBDMIP,1	SHOW IN PROGRESS.
0079	0056	88000000		SETF	KBDM,0	SHOW RECOGNITION.
0080	0058	7082005C		B	SETCB	
0081	005A	44800000	SCNMSG	LA	0,USCEN	GET CURRENT SCENARIO.
0082	005C	48800000	SETCB	ST	0,CB	SET CURRENT BUFFER.
0083	005E	48800067		ST	0,M+2	
0084	0060	48800064		ST	0,\$+4	SET CALLING PARAMETER.
0085	0062	74800000		BL	0,IMNMI	SET ALPHA TO BLANK, STEP
0086			*			MESSAGE NUMBER, MOVE TO
0087	0064			RES	1	BUFFER AREA, SET 'START'
0088			*			TIME.
0089	0065	74800000	M	BL	0,SENDM	SEND MESSAGE.
0090	0067			RES	1	
0091	0068	8400018E		BFNE	QF,0,QUITS	MANUAL QUIT?
0092	006A	84000068		BFNE	MD,0,\$-2	WAIT FOR TRANS. COMPLETION.
0093	006C	4481002D		LA	1,X'2D'	PRINT THE TRANSMIT
0094	006E	74800000		BL	0,CPRINT	SENTINAL ON THE SEC-
0095	0070	7082006E		B	\$-2	ONDARY PRINTER.
0096	0072	74800000		BL	0,MRI	INIT. RECEIVE LOGIC.
0097	0074	840000FF	SSOMC	BFNE	TSOMO,0,NR	NO RESPONSE, IF TIME OUT.
0098	0076	84000074		BFNE	TSOM,0,\$-2	NO 1ST CHAR., IF TSOM = 1.
0099	0078	840000FF	WAITC	BFNE	TCO,0,NR	NO CHAR., IF TCO = 1.
0100	007A	84000080		BFNE	ERMF,0,\$+6	MESSAGE COMPLETE?

0101	007C	84000078		BFNE	TC,0,WAITC	NO: WAIT FOR NEXT CHARACTER ONLY IF TIMING CHARS.
0102			*			ELSE, WAIT FOR TRUE MSG.
0103	007E	70820074		B	SSOMC	FORCE 'ACK'.
0104	0080	88000000		SETF	FAN,0	IF NON-ECHO, IGNORE UPDATE.
0105	0082	840000894		BFNE	EFT,1,BLVCL	GET CLASSIFICATION.
0106	0084	74800000		BL	0,FCLASS	DOUBLE IT.
0107	0086	4C030000		A	3,CLASSC	SET-UP DOUBLE PREC. VALUE
0108	0088	44800000		LA	0,0	OF CUR. TEXT 'SENT' COUNT.
0109	008A	44010000		L	1,LSTCC	TALLY.
0110	008C	EA300000		DAD	0,ECHOTC,3	SAVE M.S.W.
0111	008E	4AB00000		ST	0,ECHOTC,3	STEP TO L.S.W.
0112	0090	4C830001		AA	3,1	SAVE L.S.W.
0113	0092	4AB10000		ST	1,ECHOTC,3	VALIDITY CHECKING LOGIC.
0114	0094	74800222	BLVCL	BL	0,VCL	
0115	0096	7082009A		B	\$+4	
0116	0098	708200DF		B	CNAK	NO BCS ERROR.
0117	009A	88000800		SETF	FAN,1	FORCE 'NAK'.
0118						*THERE ARE A VARIETY OF REASONS FOR THE CLASS OF
0119						*ERROR KNOWN AS BCS-ERRORS. FLAG BCSE IS SET WHEN-
0120						*EVER THERE IS A 'TRUE' BCS FAILURE, AND/OR WHENEVER
0121						*THE AIRCRAFT ADDRESS IS IN ERROR, OR THE MESSAGE
0122						*IS OUT OF LENGTH LIMITS, OR THERE ARE BIT COM-
0123						*PARE ERRORS DURING ECHO-TYPE MESSAGES. EACH TYPE
0124						*OF "BCS" ERROR IS FLAGGED WITH ITS OWN SPECIAL
0125						*SENTINAL. THE SAME SENTINAL IS USED FOR LOGGING
0126						*ERROR RECORDS, LOGGING MESSAGE INCOMPLETION REC-
0127						*ORDS, AND FOR PRINTING ON THE STATUS TERMINAL.
0128	009C	840000A8		BFNE	ACAF,0,RIMA	
0129	009E	840000AC		BFNE	MLFL,0,RIML	
0130	00A0	840000B0		BFNE	MLFS,0,RIMS	
0131	00A2	840000B4		BFNE	BCOME,0,RIMI	
0132	00A4	44810042		LA	1,ERRORB	'PURE' BCS ERROR -- 'B'.
0133	00A6	708200B6		B	STC	
0134	00A8	44810057	RIMA	LA	1,ERRORW	AIRCRAFT ADDRESS
0135	00AA	708200B6		B	STC	ERROR -- 'W'.
0136	00AC	4481004C	RIML	LA	1,ERRORL	MESSAGE TOO
0137	00AE	708200B6		B	STC	LONG -- 'L'.
0138	00B0	44810053	RIMS	LA	1,ERRORS	MESSAGE TOO
0139	00B2	708200B6		B	STC	SHORT -- 'S'.
0140	00B4	44810049	RIMI	LA	1,ERRORI	BIT COMPARE -- 'I'
0141	00B6	48810000	STC	ST	1,MSOUT0	SAVE CODE.
0142	00B8	74800000		BL	0,EREC	
0143	00BA	44010000		L	1,MSOUT0	SET-UP TO PRINT CODE.
0144	00BC	8400008C0		BFNE	NAKE,1,\$+4	IF 'NAK' SEEN, PRINT LOWER.
0145	00BE	4C810020		AA	1,X'20'	IF 'ACK' SEEN, PRINT UPPER.
0146	00C0	74800000		BL	0,CPRINT	ON SECONDARY TERMINAL.
0147	00C2	708200C0		B	\$-2	
0148	00C4	74800000		BL	0,FCLASS	FIND CLASSIFICATION.
0149	00C6	4C830000		AA	3,DLDS	ADD DATA BASE ADDRESS.
0150	00C8	8400008CE		BFNE	EFT,1,\$+6	ECHO TYPE SENT?

0151	00CA	20006001	AMI	(ECHOBC,3),1	YES!
0152	00CC	708200D0	B	S+4	
0153	00CE	20006001	AMI	(NEBC,3),1	NO!
0154	00D0	88000000	SETF	BCSE,0	CLEAR INDICATOR.
0155	00D2	20009FFF	AMI	(EBCSF,4),-1	DECR. BCS ERRORS ALLOWED.
0156	00D4	E08B0154	BC	EQ,RIM0	RECORD 'BCS' ERROR: BCS.
0157	00D6	44000000 M0	L	0,CB	
0158	00D8	488000DC	ST	0,S+4	
0159	00DA	74800000	BL	0,IMNM	STEP MSG. # (INC. ALPHA).
0160	00DC		RES	1	
0161	00DD	70820065	B	M	SEND IT AGAIN.
0162			PAGE		

0163	00DF	84000934	CNAK	BFNE	NAKE,1,NSCN0	NAK ERROR?
0164	00E1	4481004E		LA	1,ERRORN	RECORD MESSAGE.
0165	00E3	74800000		BL	0,EREC	
0166	00E5	4481004E		LA	1,ERRORN	PRINT 'N' TO SHOW NAK.
0167	00E7	74800000		BL	0,CPRINT	ON SECONDARY TERMINAL.
0168	00E9	708200E7		B	\$-2	
0169	00EB	74800000		BL	0,FCLASS	GET CLASSIFICATION.
0170	00ED	4C830000		AA	3,DLDS	ADD DATA BASE ADDRESS.
0171	00EF	840008F5		BFNE	EFT,1,\$+6	ECHO TYPE SENT?
0172	00F1	20006001		AMI	(ECHONK,3),1	YES!
0173	00F3	708200F7		B	\$+4	
0174	00F5	20006001		AMI	(NENK,3),1	NO!
0175	00F7	88000000		SETF	NAKE,0	CLEAR INDICATOR.
0176	00F9	20009FFF		AMI	(ENAKS,4),-1	DECREMENT RUNNING VALUE.
0177	00FB	E08B014C		BC	EQ,RIMN	RECORD 'N' ERROR: NAK.
0178	00FD	708200D6		B	M0	
0179			*			
0180	00FF	88000800	NR	SETF	ERMF,1	STOP RECEIVING.
0181	0101	88000000		SETF	TC,0	
0182	0103	88000000		SETF	TSOM,0	NO MORE TIMING!
0183	0105	78820131		SSB	NR9	TAKE CARE OF RECEIVER!
0184	0107	44810052		LA	1,ERRORR	
0185	0109	74800000		BL	0,EREC	
0186	010B	44810052		LA	1,ERRORR	PRINT 'R'.
0187	010D	74800000		BL	0,CPRINT	ON SECONDARY TERMINAL.
0188	010F	7082010D		B	\$-2	
0189	0111	88000800		SETF	FAN,1	FORCE 'NAK'.
0190	0113	74800000		BL	0,FCLASS	FIND CLASSIFICATION.
0191	0115	4C830000		AA	3,DLDS	ADD DATA BASE ADDRESS.
0192	0117	8400091D		BFNE	EFT,1,\$+6	ECHO TYPE SENT?
0193	0119	20006001		AMI	(ECHONR,3),1	YES!
0194	011B	7082011F		B	\$+4	
0195	011D	20006001		AMI	(NENR,3),1	NO!
0196	011F	20009FFF		AMI	(ENR,4),-1	DECREMENT RUNNING VALUE.
0197	0121	E08B0150		BC	EQ,RIMR	REC. 'R' ERROR: NON-RESP.
0198	0123	708200D6		B	M0	
0199			*			
0200	0125	7C00012F	NR6	LDS	NR8	KILL INTERRUPTS.
0201	0127	70810129	NR7	XWB	\$+2	ENTER WORKER MODE.
0202	0129	74800000		BL	0,DSROFF	KILL RECEIVER!
0203	012B	7080012D		XSB	\$+2	ENTER SUPERVISOR MODE.
0204	012D	7C000131		LDS	NR9	RETURN WITH INTERRUPTS EN.
0205			*			
0206	012F	0127	NR8	DATA	NR7,X'C0'	
	0130	00C0				
0207	0131		NR9	RES	2	
0208	0133	0125		DATA	NR6	
0209				PAGE		

0210	0134	74800000	NSCNØ	BL	Ø,RCM	RECORD 'COMPLETE' MSG.
0211	0136	4481002E		LA	1,PERIOD	PRINT '.' TO SHOW ACK.
0212	0138	74800000		BL	Ø,CPRINT	ON SECONDARY TERMINAL.
0213	013A	70820138		B	\$-2	WAIT FOR NOT BUSY.
0214	013C	74800000		BL	Ø,FCLASS	GET CLASSIFICATION.
0215	013E	4C830000		AA	3,DLDS	ADD DATA BASE ADDRESS.
0216	0140	84000946		BFNE	EFT,1,\$+6	ECHO TYPE SENT.
0217	0142	20006001		AMI	(ECHOAK,3),1	YES!
0218	0144	70820148		B	\$+4	
0219	0146	20006001		AMI	(NEAK,3),1	NO!
0220	0148	88000000		SETF	TF,Ø	KILL TMG. FLAG (IN CASE ON).
0221	014A	70820156		B	NS	
0222			*			
0223	014C	4480004E	RIMN	LA	Ø,ERRORN	'N'.
0224	014E	70820152		B	RIMR+2	
0225	0150	44800052	RIMR	LA	Ø,ERRRR	'R'.
0226	0152	48800000		ST	Ø,MSOUTØ	MSOUTØ GETS INDICATOR.
0227	0154	74800000	RIMØ	BL	Ø,RIM	RECORD 'INCOMPLETE' MSG.
0228				PAGE		

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0229 0156 8400095D NS      BFNE      KBFMIP,1,NS0
0230 0158 7480016F      BI         0,SBA
0231 015A 0000          DATA     MAND
0232 015B 70820046      B         NM
0233 015D 84000046 NS0     BFNE      TF,0,NM
0234 015F 84000046      BFNE      CPF,0,NM
0235 0161 44800000      LA        0,USCFM
0236 0163 04000000      CRT       0,CP
0237 0165 04000169      BC        EQ,NS1
0238 0167 7082016B      B         NS2
0239 0169 74800000 NS1     BL        0,SHSTEP
0240 016B 88000000 NS2     SETF     FAN,0
0241 016D 70820046      B         NM
0242 *
0243 016F 4C800002 SBA     AA        0,2
0244 0171 4880018D      ST       0,SBA0
0245 0173 4482FFFD      LA        2,-3
0246 0175 4001018D      L         1,*SBA0
0247 0177 4081018D      ST       1,SBA0
0248 0179 4501018D SBA1    L         1,*SBA0
0249 017B C0010000      CR       1,CB
0250 017D 00800185      BC        EQ,SBAQ
0251 017F 2180A001      AMT      SBA0,1
0252 0181 0C210179      ARB      1,SBA1,2
0253 0183 70820183      B         $
0254 0185 4C818000 SBAQ    AA        1,X'8000'
0255 0187 4981018D      ST       1,*SBA0
0256 0189 88000000      SETF     KBFMIP,0
0257 018B 72820001      B         1,0
0258 *
0259 018D          SBA0    RFS      1
0260 *
0261 0041          ERRORA  EQU      X'41'
0262 004C          ERRORI  EQU      X'4C'
0263 0053          ERRORS  EQU      X'53'
0264 0049          ERRORI  EQU      X'49'
0265 0042          ERRORF  EQU      X'42'
0266 004E          ERRORN  EQU      X'4E'
0267 0052          ERRORR  EQU      X'52'
0268 0057          ERRORW  EQU      X'57'
0269 002E          PERIOD  EQU      X'2F'
0270 *
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0271	018E	88000400	QUITS	SFFF	#ACOPIN,0	NO MORE KEYB. ENTRY!
0272	0190	44800032		LA	0,50	TRY FIFTY TIMES ONLY.
0273	0192	488001CB		ST	0,QTRRY	
0274	0194	74800000		BL	0,1MNMI	INCREMENT MSG. #,
0275	0196	01CC		DATA	QUITM	WITH BLANK FOLLOWER.
0276	0197	88000000	QUITS0	SETF	FAN,0	FORCE 'ACK'.
0277	0199	74800000		BL	0,SENDM	SEND TO AIRBORNE SECONDARY
0278	019B	01CC		DATA	QUITM	PRINTER (AS IF KEYED).
0279	019C	8400019C		BFNE	MD,0,\$	WAIT FOR XMSN. END.
0280	019E	74800000		BL	0,MRI	INIT. RCV. LOGIC.
0281	01A0	840001B8	QCKM	BFNE	TSOMO,0,QAGAIN	
0282	01A2	840001A0		BFNE	TSOM,0,\$-2	STILL TIMING.
0283	01A4	840001B8	QCKC	BFNE	TCO,0,QAGAIN	CHARS. STOPPED?
0284	01A6	840001AC		BFNE	ERMF,0,\$+6	WAIT FOR END OF MSG.
0285	01A8	840001A4		BFNE	TC,0,QCKC	
0286	01AA	708201A0		B	QCKM	
0287	01AC	74800222		BI	0,VCL	CHECK RESPONSE.
0288	01AE	708201B8		B	QAGAIN	NOT PURE ACKNOWLEDGE.
0289	01B0	44810051		LA	1,ABORTQ	PRINT 'Q' TO SHOW THAT
0290	01B2	74800000		BL	0,CPRINT	A/C SENT A CLEAN RESP.
0291	01B4	708201B2		B	\$-2	
0292	01B6	70820000		B	QUIT	NOW, FINALLY DO THE QUIT.
93			*			
0294	01B8	21CPBFFF	QAGAIN	AMI	QTRRY,-1	TRY COUNTER.
0295	01BA	F08C0000		BC	LT,QUIT	DONE TRYING! GOOD LUCK!
0296	01BC	88000800		SETF	ERMF,1	FORCE END OF MSG. FLAG.
0297	01BE	70820131		SSB	NR9	STOP RECEIVING.
0298	01C0	44810055		LA	1,ABORTU	PRINT 'U' TO SHOW THAT
0299	01C2	74800000		BL	0,CPRINT	ABORT MSG. NOT ACKNOWLEDGED.
0300	01C4	708201C2		B	\$-2	
0301	01C6	74800000		BL	0,1NMN	INCR. MSG. # AND ALPHA.
0302	01C8	01CC		DATA	QUITM	
0303	01C9	70820197		B	QUITS0	
0304			*			
0305	000D		RTC	EQU	X'D'	
0306	000A		LFC	EQU	X'A'	
0307	0051		ABORTQ	EQU	X'51'	
0308	0055		ABORTU	EQU	X'55'	
0309	01CB		QTRRY	RES	1	
0310			*			
0311	01CC	0032	QUITM	DATA	QUITMM-QUITM	MSG. LENGTH.
0312	01CD	0032		DATA	X'32'	MODE = 2.
0313	01CE			RES	5	MSG. # COES HERE.
0314	01D3	0030		DATA	X'30',X'31'	A/C I.D.
	01D4	0031				
0315	01D5	0006		DATA	X'6'	'ACK'.
0316	01D6	0045		DATA	X'45',X'51'	L.C. 1 = E, L.C. 2 = Q.
	01D7	0051				
7	01D8	0002		DATA	X'2'	'STX'.
0518	01D9	2E2A2F2A		DATA	C'*.*.*.*.*. *.	*P.L.E.A.S.E.*


```

01DB 2E2A2E2A
01DD 2E2A2E20
01DF 2E502F4C
01F1 2E452F41
01F3 2E532F45
01F5 2E20
0319 01F6 2E412F42 DATA C'.A.P.O.R.T. (.C.O.N.T.R.O.L./A.).. '
01F8 2E4F2F52
01FA 2E542F20
01FC 2E202F43
01FE 2C4F2F4E
01F0 2E542E52
01F2 2E4F2F4C
01F4 2E2F2E41
01F6 2E292E2F
0320 01F8 2E202F2A DATA C'. *.*.*.*.* '
01FA 2E2A2F2A
01FC 2E2A2E2A
0321 01FE 0003 QUITMM DATA X'3'
0322 01FF RES 2 FOR BCS'S.
0323 *
0324 0201 0020 NEWX DATA NEWX-NEWX,RTC,LFC,LFC,LFC,LFC,LFC,LFC
0202 0000
0203 000A
0204 000A
0205 000A
0206 000A
0207 000A
0208 000A
0325 0209 2E532F54 DATA C'.S.T.A.R.T. .O.F. '
020B 2E412E52
020D 2E542F20
020F 2E4F2F46
0211 2E20
0326 0212 2E452E58 DATA C'.E.X.P.E.R.I.M.E.N.T. --- '
0214 2E502E45
0216 2E522E49
0218 2E4D2E45
021A 2E4C2E54
021C 2E202F2D
021E 2121
0327 021F 0000 DATA RTC,LFC,LFC
0220 000A
0221 000A
0328 0221 NEWXE EQU $-1
0329 PAGE
    
```

```

0330 *VALIDITY CHECKING LOGIC. CALLED AFTER 'RECEIVED'
0331 *MESSAGE IS COMPLETELY ASSEMBLED IN MEMORY, AT
0332 *'RCVMB'. SOME PRELIMINARY CHECKING HAS ALREADY
0333 *BEEN ACCOMPLISHED (NAMELY, 'PURE' BCS ERRORS).
0334 *
0335 *ENTRY:          BL 0,VCL
0336 *RETURN:         B 2,0 (BCS ERROR)
0337 *RETURN:         B 4,0 (NO BCS ERROR)
0338 *
0339 *'RCVMB' -- RECEIVE MESSAGE BUFFER.
0340 *
0341 *(FIRST 17 LOCATIONS).
0342 *
0343 *          EQU      0          COUNT.
0344 *          EQU      1          +.
0345 *          EQU      2          *.
0346 *          EQU      3          SYN.
0347 *          EQU      4          SYN.
0348 *          EQU      5          SOH.
0349 0006 *          EQU      6          MODF.
0350 *          EQU      7          MSG. NUM. 1.
0351 *          EQU      8          MSG. NUM. 2.
0352 52 *          EQU      9          MSG. NUM. 3.
0353 *          EQU     10          MSG. NUM. 4.
0354 *          EQU     11          MSG. ALPHA.
0355 *          EQU     12          A/C ADDRESS 1.
0356 *          EQU     13          A/C ADDRESS 2.
0357 000E *          TAN     EQU     14          ACK/NAK.
0358 000F *          LC1    EQU     15          LABEL CHAR. 1.
0359 0010 *          LC2    EQU     16          LABEL CHAR. 2.
0360 *
0361 0222 4C800002 VCL  AA      0,2
0362 0224 48800289 ST      0,V
0363 0226 44830001 LA      3,RCVMB
0364 0228 80000000 SETF   BCOME,0
0365 022A 8400025C BFNE   BCST,0,VCL0
0366 022C 84000232 BINE   ACAI,0,VCL2
0367 022E 84000232 BINE   MLFL,0,VCL2
0368 0230 84000A36 BFNE   MLFS,1,VCL1
0369 0232 88000800 VCL2 SETF   BCST,1
0370 0234 7082025C B      VCL0
0371 0236 4030000F VCL1 L      0,LC1,3
0372 0238 C0800045 CRA   0,X'45'
0373 023A 1080023E BC     10,$+4
0374 023C 7082025C B      VCL0
0375 023E 44010000 L      1,RCVMB
0376 0240 50810014 SA     1,20
0377 0242 E08A0246 BC     0T,$+4
0378 0244 7082025C B      VCL0
0379 0246 7480028E BI     0,SCRLF

```

PCS ERROR RETURN ADDRESS.
RECEIVE AREA F.W.A.
NO BIT ERROR.
'PURE' BCS NEEDS MORE CHECK.
IF ANY OF THE LENGTH OR
ADDRESS ERRORS, TREAT
EXACTLY AS BCS ERROR.
LABEL CHAR. 1.
CHECK FOR 'E'.
IF 'E', QUIET IT TO PRINTER.
CHECK RESPONSE.
GET MESSAGE CHAR. COUNT.
SET COUNT OF PURE TX.
ONLY PRINT IF THERE IS
AT LEAST ONE TO PRINT!

0380	024B	78820299		SSB	KMT0	MOVE TIME TO PRINT AREA.
0381	024A	74800000		BL	0,OPRINT	
0382	024C	02B4		DATA	KMT	
0383	024D	7082024A		B	\$-3	
0384	024F	44800000		LA	0,RCVMB	GET ADDRESS OF PURE TEXT.
0385	0251	4C800012		AA	0,LC2+2	
0386	0253	48800257		ST	0,QPT	
0387	0255	74800000		BL	0,NPRINT	QUEUE PURE TEXT.
0388	0257		QPT	RES	1	ON SECONDARY TERMINAL.
0389	0258	70820255		B	\$-3	
0390	025A	7480028E		BL	0,SCRLF	
0391	025C	46300006	VCL0	L	0,MOD,3	
0392	025E	74810000		BL	1,TSUBW	LOOK FOR TRANSPARENT.
0393	0260	88000800		SETF	NAKE,1	ASSUME 'ACK' NOT SEEN.
0394	0262	1C0E6006		CMJ	(TAN,3),6	WAS 'ACK' SEFN?
0395	0264	70070000		NOP		NO.
0396	0266	7082027C		B	L4T	NO. LOOK FOR TIME POLL.
0397	0268	80000000		SETF	NAKE,0	YES.
0398	026A	88000800	VV	SETF	GPF,1	ASSUME GENERAL POLL ROST'D.
0399	026C	1C0F6052		CMJ	(LC1,3),X'52'	IS THIS TRUE?
0400	026E	70070000		NOP		NO.
0401	0270	88000000	VVV	SETF	GPF,0	NO.
0402	0272	84000A76		BFNE	BCOME,1,\$+4	IF BIT COMPARE ERRORS,
0403	0274	88000800		SETF	BCSE,1	TREAT AS BCS ERRORS.
0404	0276	8400027A		BFNE	BCSE,0,\$+4	DO WE HAVE
0405	0278	2289A002		AMI	V,2	A BCS ERROR?
0406			*			IF THIS 'AMI' INSTRUCTION IS EXECUTED, IT
0407			*			MEANS THAT THE 'NO-BCS' RETURN IS TAKEN!
0408	027A	70020289		*B	V	
0409			*			
0410	027C	84000A6A	L4T	BFNE	TF,1,VV	SAW A 'NAK'. IF TIME
0411	027E	44000000		L	0,CB	POLL SENT LAST TRANS..
0412	0280	4C800000		AA	0,13	MUST SEND TIME AGAIN.
0413	0282	48800286		ST	0,\$+4	
0414	0284	74800000		BL	0,MTIME	
0415	0286			RES	1	
0416	0287	70820270		B	VVV	CONTINUE INSPECTION.
0417			*			
0418	0289		V	RES	1	
0419			*			
0420	028A	0002	LBFR	DATA	2,X'D',X'A',0	
	028B	000D				
	028C	000A				
	028D	0000				
0421			*			
0422	028E	4C800002	SCRLF	AA	0,2	SET RETURN ADDRESS.
0423	0290	4880028D		ST	0,LBFR+3	
0424	0292	74800000		BL	0,OPRINT	ON SECONDARY TERMINAL.
0425	0294	028A		DATA	LBFR	
0426	0295	70820292		B	\$-3	

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0427 0297 7002028D      *B      LBFR+3
0428                                     *
0429 0020      SPACE EQU      X'20'
0430 003A      COLON EQU      X'3A'
0431 0299      KMT0 RES      2
0432 029B 029E      DATA      KMT2
0433 029C 02A0      KMT1 DATA      KMT3,X'C0'
      029D 00C0
0434                                     *
0435 029E 7C00029C KMT2 LDS      KMT1          STOP CLOCK MOMENTARILY.
0436 02A0 140096B5 KMT3 MOV      (TODHRA,4),KMTHRA
0437 02A2 140096B6      MOV      (TODHRB,4),KMTHRB
0438 02A4 140096B8      MOV      (TODMNA,4),KMTMNA
0439 02A6 140096B9      MOV      (TODMNB,4),KMTMNB
0440 02A8 140096BB      MOV      (TODSCA,4),KMTSCA
0441 02AA 140096BC      MOV      (TODSCB,4),KMTSCB
0442 02AC 140096BE      MOV      (TODMSA,4),KMTMSA
0443 02AE 140096BF      MOV      (TODMSB,4),KMTMSB
0444 02B0 140096C0      MOV      (TODMSC,4),KMTMSC
0445 02B2 7C000299      LDS      KMT0          RE-CLOCK AND OUT.
0446                                     *
0447 02B4 000F      KMT DATA      KMT0-KMT
0448 02B5      KMTHRA RES      1
0449 02B6      KMTHRB RES      1
0450 02B7 003A      DATA      COLON
0451 02B8      KMTMNA RES      1
0452 02B9      KMTMNB RES      1
0453 02BA 003A      DATA      COLON
0454 02BB      KMTSCA RES      1
0455 02BC      KMTSCB RES      1
0456 02BD 002F      DATA      PERIOD
0457 02BE      KMTMSA RES      1
0458 02BF      KMTMSB RES      1
0459 02C0      KMTMSC RES      1
0460 02C1 0020      DATA      SPACE,SPACE
      02C2 0020
0461 02C2      KMT0 EQU      $-1
0462                                     *
0463 02C3      END
0000 ERRORS : LENGTH = 02C3

```

```

0001          TITLE    GROUND SUPERVISOR (A)/V1 -- DATA-LINK.
0002          *
0003          *      'CSUPRA' -- MAY 13, 1975.
0004          *      THIS ASSEMBLY IS LABELED (ON THE CASSETTE
0005          *      SOURCE TAPE) AS: 'GSUPRA'.
0006 0000      GSUPRA PSEG
0007 0000      MODE
0008          *
0009 0001      REF    RECEND,KNPK,CRTCC,DSROFF,BCSE,CM,DLDS
0010 0001      REF    BCSIE,BCSFE,BCSN,CCNT,ECNT,CHART,STXF,SOHF
0011 0001      RFF    ECPUT,MANB,TCO,TC,ERMF,DSOUT,TT,SOMTR
0012 0000      RFF    ISCENS,RCVMB,MTIME,TSOM,MD,SEP,GP,PRINT
0013 0000      RFF    RECORD,PUTC,ERBUF,PUTP,NEBC,ECHOAK,DATALP
0014 0000      REF    OMSG,LPCSW,RPCSW,EMSCR,SC,DLFS,ACAF,MLFL
0015 0000      REF    BAUDC,TIMEP,FAN,OMSG0,OMSG3,OMSG2,OMSG1
0016 0000      REF    BCSEEN,OPRINT,LSTCC,TSOMO,EFT,MLFS,KNKAS
0017          *
0018 0000      DEF    SENDM
0019          *
0020 0001 4881007A SENDM ST    1,S+1      SAVE REGS. 1 THRU 3.
0021 0002 4882007B      ST    2,S+2
0022 0004 4883007C      ST    3,S+3
0023 0006 48850080      ST    5,S+7
0024 0008 44850000      LA    5,GSUPRA
0025 000A 4C800003      AA    0,3          SET RETURN ADDR.
0026 000C 48800079      ST    0,S
0027 000E 4681FFFF      LA    1,-1,0      GET CALLING ADDR.
0028 0011 4881007D      ST    1,S+4
0029 0012 4503007D      L    3,*S+4      SEND BFR. ADDR. TO REG. 3.
0030 0014 41800006      LA    0,6
0031 0016 8400081A      BFNE  FAN,1,S+4   SET TECH. ACK/NAK.
0032 0018 4C80000F      AA    0,15      NAK = X'15'.
0033 001A 4AB00009      ST    0,9,3
0034 001C 88000000      SETF  EFT,0      SHOW NON-ECHO.
0035 001E 1C016032      CMI   (1,3),X'32' MODF = 2?
0036 0020 71821026      B    C13        NO.
0037 0022 70821026      B    C13        NO.
0038 0024 7082102E      B    GBS        YES.
0039 0026 18017481 C13  CML   (1,3),L1H3  MODE = 1 OR 3?
0040 0028 7082102E      B    GBS        NO.
0041 002A 7082102E      B    GBS        NO.
0042 002C 88000800      SETF  EFT,1      YES.
0043 002E 46300000 GBS  L    0,0,3     GET BUFFER SIZE.
0044 0030 5180100D      SA    0,13      DEDUCT PRE/POST COUNT
0045 0032 E08A0036      BC    GT,S+4
0046 0034 44800000      LA    0,0
0047 0036 48800000      ST    0,LSTCC   (NOT COUNTING BCS'5).
0048 0038 46300000      L    0,0,3     GET BFR. SZ.
0049 003A 4E800000      AA    0,0,3     ADD BFR. F.W.A.
0050 003C 4880007F      ST    0,S+6     SAVE AS ETX/ETB SWITCH.

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0051	003E	46020001		LA	2,1,3	MOVE MODE ADDR. TO REG. 2.
0052	004	7480000		BI	0,PCSTF	STAP: BCS + AIF. (AS IF SOUT).
0053	0042	46210000	NBCS	L	1,0,2	GET CHARACTER.
0054	0043	7800000		BI	0,BCSN	DO CHAR. (NON-ETX/ETB).
0055	0046	40820001		AA	2,1	
0056	0048	000207F		CP	2,S+6	
0057	004A	080042		BC	IT,NBCS	
0058	004C	46210000		L	1,0,2	
0059	004E	7480000		BI	0,PCSN	DO ETX/ETB.
006	005	7480000		BI	0,PCSTF	DO BCS'S.
0061	0052	4400000		L	0,RPCSW	
0062	0054	008000FF		NA	0,X'FF'	
0063	0056	4AA00001		ST	0,1,2	
0064	0058	60080000		MRR	8,RPCSW	GET 2ND BCS.
0065	005A	4400000		L	0,RPCSW	
0066	005C	008000FF		NA	0,X'FF'	
0067	005E	4AA00002		ST	0,2,2	
0068	006	14017000		MOV	(1,3),(C1,4)	SAVE SINT MOFF.
0069	0062	1400747E		MOV	(0,3),S+5	SAVE BFR. SIZE W/O BCS'S.
007	0064	20006002		ANI	(0,3),2	UPDATE PF. SZ. CNT. BY 2.
0071	0066	4883006C		ST	3,BSOUTP	
0072	0068	8000800		STIF	MD,1	SHOW SFNDING TO A/C.
	73	006A	7480000	BI	0,ISOUT	
0074	006C		BSOUTP	RES	1	SEND IT!
0075	006D	147EAC00		MOV	S+5,(0,3)	PFR. SIZE W/O BCS'S, IT AL.
0076	006F	4403007C		L	3,S+3	
0077	0071	4402007B		L	2,S+2	
0078	0073	4401007A		L	1,S+1	
0079	0075	44050080		L	5,S+7	RESTORE CALLING PSIC.
0080	0077	0002079		SB	S	HONI!
0081			*			
0082	0079		S	RES	8	
0083	0081	0031	L113	DATA	X'31',X 33	
	0082	0033				
0084				PAGE		

0085	0079	QUIT1	EQU	S	
0086	007A	QUIT2	EQU	S+1	
0087		*			
0088	0083		DEF	QUIT	
0089		*			
0090	0083	88000800	QUIT	SETF	ERMF,1
0091	0085	44850000		LA	5,GSUPRA
0092	0087	74800000		BL	0,RECORD
0093	0089	00E7		DATA	ZERO0
0094	008A	70820087		B	\$-3
0095	008C	44800000		LA	0,ERBUF
0096	008E	4C800001		AA	0,1
0097	0090	48800094		ST	0,\$+4
0098	0092	74800000		BL	0,MTIME
0099	0094			RES	1
0100	0095	44800009		LA	0,9
0101	0097	48800000		ST	0,PUTC
0102	0099	4C800001		AA	0,1
0103	009B	4C800000		AA	0,ERBUF
0104	009D	48800000		ST	0,PUTP
0105	009F	44800000		LA	0,NEBC
0106	00A1	4C800004		AA	0,4
	07	00A3	50800000	SA	0,ECHOAK
0108	00A5	48800079		ST	0,QUIT1
0109	00A7	44800000		LA	0,ECHOAK
0110	00A9	4880007A		ST	0,QUIT2
0111	00AB	4501007A	QUIT0	L	1,*QUIT2
0112	00AD	68080081		MRR	B,X'81'
0113	00AF	588100FF		NA	1,X'FF'
0114	00B1	74800000		BL	0,ECPUT
0115	00B3	4501007A		L	1,*QUIT2
0116	00B5	588100FF		NA	1,X'FF'
0117	00B7	74800000		BL	0,ECPUT
0118	00B9	207AA001		AMI	QUIT2,1
0119	00BB	2079BFFF		AMI	QUIT1,-1
0120	00BD	E08A00AB		BC	GT,QUIT0
0121	00BF	44000000		L	0,PUTC
0122	00C1	48800000		ST	0,ERBUF
0123	00C3	74800000		BL	0,RECORD
0124	00C5	0000		DATA	ERBUF
0125	00C6	708200C3		B	\$-3
0126	00C8	74800000		BL	0,RECORD
0127	00CA	0000		DATA	ERBUF
0128	00CB	708200C8		B	\$-3
0129	00CD	74800000		BL	0,RECORD
0130	00CF	00E7		DATA	ZERO0
0131	00D0	708200CD		B	\$-3
0132	00D2	74800000		BL	0,RECORD
33	00D4	00F7		DATA	ZERO0
0134	00D5	708200D2		B	\$-3

IGNORE MODEM RCVR.

RECORD A BLANK RECORD.

WAIT FOR UNBUSY!
MOVE TIME TO ERBUF+1
THROUGH ERBUF+9.

SET 'PUT' COUNTER TO
ACCOUNT FOR TIME CHARS.
INIT. 'PUT' POINTER
TO ERBUF+10.

CALCULATE NUMBER OF
ITERATIONS.

SET FIRST ITERATION
POINTER FOR 'FETCH'.

GET HIGH BYTE.

ENCODE AND 'PUT'.
GET LOW BYTE.

ENCODE AND 'PUT'.
NEXT 'FETCH'.

ITERATE?
NO, ALL DONE.
SET RECORD LENGTH.

STATISTICS AGAIN.

BLANK.

BLANK AGAIN.

0135	00D7	74800000	BL	0,RECFND	FLUSH ALL BFRS.
0136	00D9	74800000	BL	0,OPRINT	
0137	00DB	00E8	DATA	SFIN	ABORT MESSAGE.
0138	00DC	708200D9	B	\$-3	
0139	00DE	74800000	BL	0,PRINT	ABORT MESSAGE.
0140	00E0	00F8	DATA	SFIN	
0141	00E1	708200DE	B	\$-3	
0142	00E3	74800000	BL	0,RECFND	FLUSH CASSETTE/PRINT BFRS.
0143	00E5	70820000	B	DATALP	START ALL OVER AGAIN.
0144			*		
0145	000D		RTC	EQU	X'D'
0146	000A		LFC	EQU	X'A'
0147	00F7	0000	ZERO0	DATA	0
0148	00E8	0013	SFIN	DATA	SFINE-SFIN,RTC,RTC,LFC,LFC
	00E9	000D			
	00EA	000D			
	00EB	000A			
	00EC	000A			
0149	00ED	2E532F59	DATA		C'.S.Y.S.T.E.M. .A.B.O.R.T.E.D.!'
	00EF	2E532F54			
	00F1	2E452F4D			
	00F3	2E202F41			
	00F5	2E422F4F			
	00F7	2E522F54			
	00F9	2E452E44			
	00FB	2E21			
0150	00FB		SFINE	EQU	\$-1
0151				PAGE	


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0152          *INITIALIZE THE PERTINENT VARIABLES
0153          *OF THE GROUND SUPERVISOR.
0154          *
0155          *ENTRY:          BL          0,ICS
0156          *              REC. 1 = 0, 2400 BAUD
0157          *              REC. 1 .NE. 0, 4800 BAUD
0158          *RETURN:       B          2,0
0159          *
0160          *0FC          DFF          IGS
0161          *
0162          00FC 4C800002 IGS AA      0,2          SET RETURN ADDRESS.
0163          00FE 4880018F ST      0,MRPUT
0164          0100 44840000 LA      4,DLDS          SET DATA BASE REG.
0165          0102 44850000 LA      5,GSUPRA        SET PROC. BASE REG.
0166          0104 44860000 LA      6,DLFS          SET FLAG BASE REG.
0167          0106 4881007A ST      1,QUIT2        SAVE RATE INDICATOR.
0168          0108 44810000 LA      1,0          CLEAR REG. 1.
0169          010A 78820174 SSR     SIGS3          SET-UP FLAGS.
0170          010C 48810190 ST      1,CLIVL        CLEAR 'LONG' INDICATOR.
0171          010E 48810191 ST      1,CSIVL        CLEAR 'SHORT' INDICATOR.
0172          0110 48810192 ST      1,C1IVL        CLEAR INVALID INDICATOR.
0173          0112 48810193 ST      1,C2IVL        COUNTERS FOR THE FIRST
0174          74 0114 48810194 ST      1,C3IVL        SIX SEEN CHARS. OF A
0175          0116 48810195 ST      1,C4IVL        MESSAGE.
0176          0118 48810196 ST      1,C5IVL
0177          011A 48810197 ST      1,C6IVL
0178          011C 4400007A L       0,QUIT2        GET RATE INDICATOR.
0179          011E E0800122 BC      EQ,$+4
0180          0120 88000800 SETF     BAUDC,1        SHOW 4800 BAUD.
0181          0122 44800000 LA      0,NEBC          CLEAR ALL EVENT COUNTERS.
0182          0124 4C800004 AA      0,4
0183          0126 50800000 SA      0,FCHOAK
0184          0128 48800079 ST      0,QUIT1        INDEXER COUNT.
0185          012A 44800000 LA      0,FCHOAK        F.W.A.
0186          012C 4880007A ST      0,QUIT2
0187          012E 4981007A ST      1,#QUIT2        CLEAR.
0188          0130 207AA001 AMI     QUIT2,1        NEXT LOCATION.
0189          0132 2079BFFF AMI     QUIT1,-1        INDEX!
0190          0134 E08A012E BC      GT,$-6        DONE?
0191          0136 48810000 ST      1,OMSC          YES -- CLEAR SOME
0192          0138 48810000 ST      1,LBCSW        SCATTERED LOCATIONS.
0193          013A 48810000 ST      1,RBCSW
0194          013C 48810000 ST      1,EMSGR
0195          013E 44810030 LA      1,X'30'        INITIALIZE
0196          0140 48810000 ST      1,OMSG3        OUTPUT MESSAGE
0197          0142 48810000 ST      1,OMSG2        NUMBER TO 0000
0198          0144 48810000 ST      1,OMSG1        (SEE OMSG, ABOVE).
0199          0146 48810000 ST      1,OMSG0        ENCODE '# OF NAK(S)'
0200          0148 4C010000 A       1,KNAKS        INTO TIME POLL.
0201          014A 44800000 LA      0,TIMFP        SO AIRBOKNE SYSTEM CAN

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0202	014C	4A810016		ST	1.22.0	USE THE PARAMETER.
0203	014E	44810030		LA	1.X'30'	ENCODE # PRE-KEYS
0204	0150	4C010000		A	1.KNPK	FOR AIRBORNE SYSTEM.
0205	0152	4A810017		ST	1.23.0	
0206	0154	44800000		LA	0.MANB	SET 'AVAILABLE' BITS FOR
0207	0156	4880007A		ST	0.QUIT2	KEYBOARD BUFFER AREAS.
0208	0158	4481FFFD		LA	1.-3	
0209	015A	4500007A		L	0.*QUIT2	
0210	015C	58807FFF		NA	0.X'7FFF'	
0211	015E	4C808000		AA	0.X'8000'	
0212	0160	4980007A		ST	0.*QUIT2	
0213	0162	207AA001		AMI	QUIT2.1	
0214	0164	0C11015A		ARB	1.\$-10.1	
0215	0166	74800000		BL	0.ISCENS	INIT. SCENS. AND SOME VARS.
0216	0168	4480000C		LA	0.12	INIT. BFR. SZ. COUNTS
0217	016A	48800000		ST	0.SEP	FOR FIXED BUFFERS.
0218	016C	48800000		ST	0.GP	
0219	016E	44800018		LA	0.24	
0220	0170	48800000		ST	0.TIMEP	
0221	0172	7002018F		*B	MRPUT	INITIALIZATION COMPLETE!
0222			*			
0223	0174		SIGS3	RES	2	
24	0176	0179		DATA	SIGS1	
0225	0177	0178	SIGS2	DATA	SIGS0.X'C0'	
	0178	00C0				
0226			*			
0227	0179	7C000177	SIGS1	LDS	SIGS2	KILL INTERRUPTS.
0228	017B	4AE10000	SIGS0	ST	1.0.6	CLEAR ALL FLAGS TO 0.
0229	017D	4AE10001		ST	1.1.6	
0230	017F	88000800		SETF	ERMF.1	IGNORE ANY RCV. CHAR.
0231	0181	7C000174		LDS	SIGS3	RETURN TO CALLER.
0232				PAGE		

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*THIS LOGIC RUNS IN W-O-R-K-E-R M-O-D-E!
0233
0234
0235 0183
0236
0237 0183
0238 0184 0001
      0185 00EC
      MR RES 9
      MRPUT RES 1
      CLIVL RES 1
      CSIVL RES 1
      C1IVL RES 1
      C2IVL RES 1
      C3IVL RES 1
      C4IVL RES 1
      C5IVL RES 1
      C6IVL RES 1
      *
0249
0250 0198 4885018B MSGREC ST 5,MR+5
0251 019A 488E018C ST #6,MR+6
0252 019C 448E0000 LA #6,DLFS
0253 019E 44850000 LA 5,GSUPRA
      AA 0.2
      ST 0,MR
      BFNE #ERMF,0,MR5E
      ST 1,MR+1
      ST 2,MR+2
      ST 3,MR+3
      LA 0.5
      ST 0,CHART
      SETF #TSOM,0
      SETF #TC,1
      L 3,MRPUT
      CRA 3.2
      BC LT,CKPLUS
      BC EQ,CKSTAR
      CRA 3.4
      BC EQ,CKSYNC
      BC LT,CKSYNC
      CRA 3.6
      BC LT,CKSOH
      BC EQ,CKMODE
      LA 3,DLDS
      L 0,CCNT
      BC EQ,MR0
      BC GT,MR1
      *
0278
0279 01D0 20006001
      01D2 70820258
      *
0281

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GFT FLAG BASE REG.

SET RETURN ADDRESS AND
SAVE REGISTERS.
IF END-MSG. FLAG SET. OUT.

STOP TIMING ST.-OF-MSG.
SET TIMING CHAR. FLAG AND COUNT.
SET-UP CHAR. CHECK.
FIRST CHAR. MUST
BE A +. SECOND CHAR.
MUST BE A *.
THIRD/FOURTH CHARS.
MUST BE X'16'.

FIFTH CHAR. MUST
BE X'1'. SIXTH CHAR.
MUST BE A MODE.
GET DATA BASE ADDRESS.
IF CCNT = 0. EXPECT ETX/ETB
BECAUSE TRANS. TEXT JUST COUNTED
OUT. IF CCNT > 0. CHAR. ISN'T
TRANS. TEXT. NOR BCS. IF CCNT <
0. CHAR. IS ONE OF THE TRANS.
LAST TRANS.. IF CCNT NOW = 0.

0282	01D4	C0810003	MR0	CRA	1.ETXM	ETX?
0283	01D6	E08B01F0		BC	EQ,MRSEC	IF SO. SET ECNT.
0284	01D8	C0810017		CRA	1.ETBM	ETB?
0285	01DA	E08B01E0		BC	EQ,MRSEC	
0286	01DC	88000C00		SETF	#MLFL,1	SHOW MSG. TOO LONG.
0287	01DE	2190A001		AMI	CLIVL,1	TALLY INDICATOR.
0288	01E0	4480FFFE	MRSEC	LA	0,-2	SET ECNT TO -2, TO WAIT
0289	01E2	48800000		ST	0,ECNT	FOR TWO BCS'S.
0290	01E4	20006001		AMI	(CCNT,3),1	FORCE MRI PROC. NEXT TIME.
0291	01E6	88000400	MRSTX	SETF	#STXF,0	CLEAR STX-FLAG.
0292	01E8	70820258		B	MR4	NORMAL BCS ENTRY.
0293			*			
0294	01EA	44000000	MR1	L	0,ECNT	
0295	01EC	E08C01F0		BC	LT,\$+4	IN BCS'S?
0296	01EE	7082021C		B	MR1A	
0297	01F0	4C800001		AA	0,1	IF THIS IS THE FIRST BCS
0298	01F2	E08B01F6		BC	EQ,\$+4	CHAR., THEN SAVE RBCSW,
0299			*			WHICH IS THE CALC. BCS.
0300	01F4	14006C00		MOV	(RBCSW,3),(BCSFEN,3)	
0301	01F6	74800000		BL	0,BCSN	
0302	01F8	20006001		AMI	(ECNT,3),1	LAST ONF?
0303	01FA	E08C025A		BC	LT,MR4+2	IF NOT, STORE AWAY.
0304	01FC	88000400		SFTF	#TC,0	STOP TIMING CHARACTERS.
0305	01FE	74800000		BL	0,DSROFF	KILL RECEIVER!
0306	0200	44000000		L	0,RBCSW	YES, BCS ERROR?
0307	0202	E08B0206		BC	EQ,\$+4	
0308	0204	88000C00		SETF	#BCSE,1	
0309	0206	88000C00		SETF	#ERMF,1	
0310	0208	4400018F		L	0,MRPUT	SFT BUFFER SZ. COUNT.
0311	020A	48800000		ST	0,RCVMB	
0312	020C	44820000		LA	2,RCVMB	FETCH CHAR. AFTER LC2.
0313	020E	46210011		L	1,17,2	IF IT IS AN STX, DEDUCT 20.
0314	0210	C0810002		CRA	1,STXM	IF IT ISN'T AN STX, DEDUCT
0315	0212	E08B0216		BC	EQ,\$+4	19.
0316	0214	4C800001		AA	0,1	
0317	0216	50800014		SA	0,20	
0318	0218	48800000		ST	0,CRTCC	
0319	021A	7082028C		B	MRA2	
0320			*			
0321	021C	C0810003	MR1A	CRA	1.ETXM	IF HERE, NOT TRANS., NOR
0322	021E	E08B01E0		BC	EQ,MRSEC	BCS CHAR.
0323	0220	C0810017		CRA	1.ETBM	IF ETX/ETB, NORMAL ETX/ETB
0324	0222	E08B01E0		BC	EQ,MRSEC	PROCESSING.
0325	0224	84000E4A		BFNE	#STXF,1,MR3	IF STX-FLAG SET, THIS IS
0326	0226	44800000		LA	0,RCVMB	A COUNT CHARACTER IF THE MODE
0327	0228	4C800006		AA	0,6	IS TRANSPARENT, ELSE, JUST
0328	022A	4880018A		ST	0,MR+4	ANOTHER CHARACTER.
0329	022C	4500018A		L	0,*MR+4	FETCH MODE CHAR.
0330	022E	C0800048		CRA	0,MODEH	H?
0331	0230	E08B0238		BC	EQ,MR2	

0332	0232	C0800031		CRA	0,MODE1	1?
0333	0234	E08B0238		BC	EQ,MR2	
0334	0236	708201F6		B	MRSTX	NEITHER.
0335			*			
0336	0238	48810183	MR2	ST	1,MRCHL	THIS IS A COUNT CHAR.
0337	023A	1983B584		CML	MRCHL,MRCHL+1	
0338	023C	708201E6		B	MRSTX	IF BETWEEN 1 AND 220, IT IS
0339	023E	708201F6		B	MRSTX	ALL RIGHT.
0340	0240	50810002		SA	1,2	ELSE, NOT GOOD.
0341	0242	4081FFFF		XORA	1,-1	SET CCNT ACCORDING TO CHAR.
0342	0244	48810000		ST	1,CCNT	
0343	0246	44010183		L	1,MRCHL	RECOVER CHAR.
0344	0248	708201E6		B	MRSTX	
0345			*			
0346	024A	C0810001	MR3	CRA	1,SOHM	STX-FLAG NOT SET, IS THIS
0347	024C	E08B0286		BC	EQ,MR5OH	AN SOH?
0348	024E	84000E6E		BFNE	#SOHF,1,MA3A	IF SOH-FLAG SET, IS THIS
0349	0250	1D87A002		CMI	MR+1,STXM	AN STX?
0350	0252	70820258		B	MR4	
0351	0254	70820258		B	MR4	NO.
0352	0256	88000C00		SETF	#STXF,1	YES!
0353			*			
54	0258	74800000	MR4	BL	0,BCSN	DO NORMAL BCS CALL.
0355	025A	44010187		L	1,MR+1	GET CHAR. BACK.
0356	025C	4400018F		L	0,MRPUT	PUT IN BUFFER.
0357	025E	4A810000		ST	1,RCVMB,0	
0358	0260	1D8FA101		CMI	MRPUT,257	BUFFER EXHAUSTED?
0359	0262	70820278		B	MR5	NO.
0360	0264	70070000		NOP		YES.
0361	0266	44800001		LA	0,1	YES.
0362	0268	4880018F		ST	0,MRPUT	START BUFFER FROM TOP!
0363	026A	2190A001		AMI	CLIVL,1	TALLY INDICATOR.
0364	026C	88000C00		SETF	#MLFL,1	YES.
0365			*			
0366	026E	44800000	MA3A	LA	0,0	
0367	0270	48800000		ST	0,FCNT	
0368	0272	44800001		LA	0,1	START BUFFER FROM TOP.
0369	0274	48800000		ST	0,CCNT	
0370	0276	7082025A		B	MR4+2	
0371			*			
0372	0278	218FA001	MR5	AMI	MRPUT,1	NEXT LOCN.
0373	027A	44030189		L	3,MR+3	
0374	027C	44020188		L	2,MR+2	
0375	027E	44010187		L	1,MR+1	
0376	0280	4405018B	MR5E	L	5,MR+5	
0377	0282	440E018C		L	#6,MR+6	
0378	0284	70020186		*B	MR	
0379			*			
0380	0286	88000C00	MR5OH	SETF	#SOHF,1	SET SOH-FLAG.
0381	0288	74800000		BL	0,BCSIE	SOH ENTRY TO BCS CALC.

0382	028A	7082025A		B	MR4+2	
0383			*			
0384	028C	4400018F	MRA2	L	0.MRPUT	
0385	028E	C0800012		CRA	0.18	
0386	0290	E08A0298		BC	GT.MRA2A	
0387	0292	2191A001		AMI	CSIVL.1	
0388	0294	88000C00		SETF	#MLFS.1	MESSAGE TOO SHORT.
0389	0296	7082025A		B	MR4+2	
0390			*			
0391	0298	44800000	MRA2A	LA	0.RCVMB	
0392	029A	4601000C		L	1.AC1.0	
0393	029C	C0810030		CRA	1.X'30'	
0394	029E	E08B02A4		BC	EQ,\$+6	
0395	02A0	88000C00	MRA2B	SETF	#ACAF.1	INCORRECT AIRCRAFT ADDRESS!
0396	02A2	7082025A		B	MR4+2	
0397	02A4	4601000D		L	1.AC2.0	
0398	02A6	C0810031		CRA	1.X'31'	
0399	02A8	E08B025A		BC	EQ.MR4+2	
0400	02AA	708202A0		B	MRA2B	
0401			*			
0402	02AC	C081002B	CKPLUS	CRA	1.XPLUS	IF EXPECTED CHAR. IS
0403	02AE	E08B024A		BC	EQ.MR3	SEEN, GO TO MR3;
04	02B0	2192A001		AMI	C1IVL.1	
0405	02B2	708202DE		B	IGNORE	ELSE GO TO IGNORE.
0406	02B4	C081002A	CKSTAR	CRA	1.XSTAR	
0407	02B6	E08B024A		BC	EQ.MR3	
0408	02B8	2193A001		AMI	C2IVL.1	
0409	02BA	708202DE		B	IGNORE	
0410	02BC	C0810016	CKSYNC	CRA	1.XSYNC	
0411	02BE	E08B024A		BC	EQ.MR3	
0412	02C0	C0830003		CRA	3.3	
0413	02C2	E08B02C8		BC	EQ,\$+6	
0414	02C4	2195A001		AMI	C4IVL.1	
0415	02C6	708202DE		B	IGNORE	
0416	02C8	2194A001		AMI	C3IVL.1	
0417	02CA	708202DE		B	IGNORE	
0418	02CC	C0810001	CKSOH	CRA	1.SOHM	
0419	02CE	E08B024A		BC	EQ.MR3	
0420	02D0	2196A001		AMI	C5IVL.1	
0421	02D2	708202DE		B	IGNORE	
0422	02D4	C0810032	CKMODE	CRA	1.MODE1+1	
0423	02D6	E08B024A		BC	EQ.MR3	
0424	02D8	C0810048		CRA	1.MODEH	
0425	02DA	E08B024A		BC	EQ.MR3	
0426	02DC	2197A001		AMI	C6IVL.1	
0427	02DE	44030000	IGNOREF	L	3.SOMTR	PARTIAL EXPIRED COUNT.
0428	02E0	4884018D		ST	4.MR+7	KEEP WORKER REG. 4.
0429	02E2	4886018E		ST	6.MR+8	KEEP WORKER REG. 6.
0430	02E4	74800000		BL	0.DSROFF	KILL RECEIVER.
0431	02E6	70070000		NOP		

0432	02E8	44840000	LA	4.DLDS	GET DATA-BASE REG.
0433	02EA	44860000	LA	6.DLFS	GET DATA-BASE FLAG REG.
0434	02EC	748002F7	BL	0.MRI	INIT. MSGREC LOGIC.
0435	02EE	48830000	ST	3.SOMTR	PUT IN PARTIAL COUNI.
0436	02F0	4404018D	L	4.MR+7	
0437	02F2	4406018E	L	6.MR+8	FIX UP WORKER REGS.
0438	02F4	7082027A	B	MR5+2	
0439					
0440	000A		GT	EQU X'A'	
0441	000B		EQ	EQU GT+1	
0442	000C		LT	EQU EQ+1	
0443	0048		MODEH	EQU X'48'	
0444	0031		MODF1	EQU X'31'	
0445	0002		STXM	EQU X'2'	
0446	0001		SOHM	EQU X'1'	
0447	0003		ETXM	EQU X'3'	
0448	000C		AC1	EQU 12	
0449	000D		AC2	EQU AC1+1	
0450	0017		ETBM	EQU X'17'	
0451	002B		XPLUS	EQU X'2B'	
0452	002A		XSTAR	EQU XPLUS-1	
0453	0016		XSYNC	EQU X'16'	
54				PAGE	

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0455      *THIS LOGIC RUNS IN BOTH MODES!
0456      *
0457 02F6      DEF MRI
0458      *
0459 02F6      MRI0 RES 1
0460      *
0461 02F7 4C800002 MRI AA 0.2      INIT. MSGREC.
0462 02F9 488002F6 ST 0,MRI0
0463 02FB 44800001 LA 0.1
0464 02FD 4880018F ST 0,MRPUT      PUT COUNTER.
0465 02FF 48800000 ST 0,CCNT
0466 0301 48800000 ST 0,ECNT
0467 0303 44800103 LA 0.259      CLEAR THE RECEIVE AREA.
0468 0305 44810000 LA 1.0
0469 0307 4A810000 ST 1,RCVMB.0
0470 0309 0C0F0307 ARB -1.0-2.0
0471 030B 88000000 SETF TC.0
0472 030D 88000000 SETF BCSE.0
0473 030F 88000000 SETF MLFL.0
0474 0311 88000000 SETF MLFS.0
0475 0313 88000000 SETF STXF.0
0476 0315 88000000 SETF SOHF.0
0477 0317 88000000 SETF ERMF.0
0478 0319 88000000 SETF ACAF.0
0479 031B 88000000 SETF TCO.0
0480 031D 88000000 SETF TSOMO.0
0481 031F 14009000 MOV (TT,4).(SOMTR.4)
0482 0321 88000800 SETF TSOM.1      START TIMING ST.-OF-MSG.
0483 0323 700202F6 *B MRI0
0484      *
0485 0325      END
0000 ERRORS : LENGTH = 0325

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0001          TITLE  GROUND UTILITIES/V2 -- DATA-LINK.
0002          *      'GU' -- JUNE 12, 1975.
0003          *      THIS ASSEMBLY IS LABELED (ON THE CASSETTE
0004          *      SOURCE TAPE) AS: 'GU'.
0005          *
0006 0000      GU      PSEG
0007 0000          MODE
0008          *
0009          REF      BCSEEN,NUMBER
0010 0000      REF      CTIME,STXF,RCVMB,RBCSW,LBCSW,BCSCNT,SBLKS
0011 0000      REF      MSOUT6,CHART,T5OM,SOMTR,T5OMO,RIDC,ERS
0012 0000      REF      TODHRA,TODHRB,TODMNA,TODMNB,GETABF,DLDS
0013 0000      REF      RECORD,TODSCA,TODSCB,TODMSA,TODMSB,TODMSC
0014 0000      REF      OMSG0,OMSG1,OMSG2,OMSG3,OMSG4,BCOME,CB,TC
0015 0000      REF      DLFS,USCEN,CSB,OMSG,EMSCR,KMSGR,SLAST,TCO
0016 0000      REF      SFIRST,CLASSC,KNAKS,KBCSF,KNR,ENAKS,EBCSF
0017 0000      REF      ENR,SC,MSOUT0,MSOUT1,MSOUT2,MSOUT3,MSOUT4
0018 0000      REF      ERPUF,MSOUT5,ECHOBE,MSOUT7,CM,LSTCC,MSOUT
0019          *
0020          *INTERRUPT HANDLER FOR ONE-MILLISECOND REAL-
0021          *TIME CLOCK. THE TIME OF DAY IS MAINTAINED
0022          *IN ASCII (FOR EASE OF RECORDING). HOURS
0023          *ARE STORED AT 'TODHRA,TODHRB', MINUTES AT
0024          *'TODMNA,TODMNB', SECONDS AT 'TODSCA,TODSCB',
0025          *AND MILLI-SECONDS AT 'TODMSA,TODMSB,TODMSC'.
0026          *THE TOTAL TIME IS MAINTAINED MODULO ONE DAY
0027          *(ONLY!). THE STATUS REGISTER IS FORCED
0028          *SET FOR PRE-INDEXING!
0029          *
0030 0000      DEF      RTCIH
0031          *
0032 0000      RTCIH EQU  GU
0033          *
0034          *      THE CLOCK LOGIC RUNS IN W-O-R-K-E-R M-O-D-E!
0035          *
0036 0000 7C000090  LDS      RTCIH5      SET-UP FOR PRE-INDEXING!
0037 0002 4885008A  RTCIH0 ST        5,ISSR5      HOLD ONTO REG. 5.
0038 0004 48810089  ST        1,ISSR1      HOLD ONTO REG. 1.
0039 0006 4886008B  ST        6,ISSR6      SAVE WORKER REG. 6.
0040 0008 44860000  LA        6,DLFS       WORKER REG. 6 SUPR. FSEG.
0041 000A 44850000  LA        5,RTCIH      SET PROG. SEG. REG.
0042 000C 48800088  ST        0,ISSR0      SAVE REG. 0 (FOR RETURN).
0043 000E 74800076  BL        0,INCM       TALLY L.S. M-SEC. DIGIT.
0044          DATA  TODMSC,X'39'
0045          0011 0039          BL        0,INCM       TALLY MIDDLE M-SEC. DIGIT.
0046          0012 74800076  DATA  TODMSB,X'39'
0047          0014 0000          DATA
0048          0015 0039          BL        0,INCM       TALLY M.S. M-SEC. DIGIT.
0049          0016 74800076  DATA  TODMSA,X'39'
0050          0018 0000          DATA

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0049	0019 0039				
0050	001A 74800076	BL	0,INCM	TALLY L.S. SECOND DIGIT.	
	001C 0000	DATA	TODSCE,X'39'		
	001D 0039				
0051	001E 74800076	BL	0,INCM	TALLY M.S. SECOND DIGIT.	
0052	0020 0000	DATA	TODSCA,X'35'		
	0021 0035				
0053	0022 74800076	BL	0,INCM	TALLY I.S. MINUTE DIGIT.	
0054	0024 0000	DATA	TODMNP,X'39'		
	0025 0039				
0055	0026 74800076	BL	0,INCM	TALLY M.S. MINUTE DIGIT.	
0056	0028 0000	DATA	TODMNA,X'35'		
	0029 0035				
0057	002A 44000000	L	0,TODHRB	L.S. HOUR DIGIT.	
0058	002C 44010000	L	1,TODHRA	M.S. HOUR DIGIT.	
0059	002E 4C800001	AA	0,1	STEP L.S. HOUR DIGIT.	
0060	0030 48800000	ST	0,TODHRB		
0061	0032 C0800034	CRA	0,X'34'	IS IT NOW A 4?	
0062	0034 E08B0038	BC	EQ,\$+4		
0063	0036 70820046	B	L9	NO.	
0064	0038 C0810032	CRA	1,X'32'	YES, IS M.S. A 2?	
0065	003A E08D003E	BC	FQ,\$+4		
66	003C 70820054	B	CI1	NO.	
0067	003E 44830030	LA	3,X'30'	SET 24 HOURS TO 00 HOURS.	
0068	0040 48830000	ST	3,TODHRB		
0069	0042 48830000	ST	3,TODHRA		
0070	0044 70820054	B	CI1		
0071	0046 C0800039	CRA	0,X'39'	MORE THAN 9?	
0072	0048 E08A004C	BC	GT,\$+4		
0073	004A 70820054	B	CI1	NO.	
0074	004C 44800030	LA	0,X'30'	YES, L.S. TO ZERO.	
0075	004E 48800000	ST	0,TODHRB		
0076	0050 4C810001	AA	1,1	STEP M.S. HOUR DIGIT.	
0077	0052 48810000	ST	1,TODHRA		
0078	0054 44800000	LA	0,DLDS	DATA SCMNT. BASE ADDRESS.	
0079	0056 84000862	BFNE	TC,1,CI1Z	DECREMENT CHART?	
0080	0058 20001FFF	AMI	(CHART,0),-1	YES.	
0081	005A E08A0062	BC	GT,CI1Z	DECREMENTED THRU ZERO?	
0082	005C 88000800	SETF	TC0,1	YES.	
0083	005E 70070000	NOP		WAS 'SETF TC,0'.	
0084	0060 7082006C	B	CIRR		
0085	0062 8400086C	BFNE	TSOM,1,CIRR	DECREMENT SOMTR?	
0086	0064 20001FFF	AMI	(SOMTR,0),-1	YES.	
0087	0066 E08A006C	BC	GT,CIRR	DECREMENTED THRU ZERO?	
0088	0068 88000800	SETF	TSOMO,1	YES.	
0089	006A 70070000	NOP		WAS 'SETF TSOM,0'.	
0090	006C 44000088	CIRR	L	RE-STORE REG. 0.	
0091	006E 44010089	L	1,ISSR1	RE-STORE REG. 1.	
0092	0070 4405008A	L	5,ISSR5	RE-STORE REG. 5.	
0093	0072 4406008B	L	6,ISSR6	RE-SET WORKER REG. 6.	

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0094 0074 72820002      B      2.0      GET OUT!
0095                    *
0096                    *CALL: BL      0. INCM
0097                    *      DATA  'LOCATION FOR INCREMENTING'
0098                    *      DATA  'OVERFLOW VALUE'
0099                    *
0100                    *RETURN:    4.0 (IF OVERFLOW)
0101                    *          C11 (NO OVERFLOW)
0102                    *
0103 0076 47030002 INCM  L      3.*2.0      PRE-INDEX TO GET VALUE!
0104 0078 4C830001      AA     3.1        INCREMENT VALUE.
0105 007A C2030003      CR     3.3.0      COMPARE WITH LIMIT.
0106 007C E08A0082      BC     GT.$+6     IF GREATER THAN, RE-SET
0107 007E 4B830002      ST     3.*2.0      VALUE. ELSE PUT INCRE-
0108 0080 70820054      B      C11        MENTED VALUE BACK.
0109 0082 44830030      LA     3.X'30'
0110 0084 4B830002      ST     3.*2.0
0111 0086 72820004      B      4.0
0112                    *
0113 0088      ISSR0 RES      1          CLOCK-HANDLER SAVERS.
0114 0089      ISSR1 RES      1
0115 008A      ISSR5 RES      1
0116 16 008B      ISSR6 RES      1          OTHER SAVERS.
0117 008C      SSR0 RES      1
0118 008D      SSR1 RES      1
0119 008E      SSR2 RES      1
0120 008F      SSR5 RES      1
0121 0090 0002      RTCIHS DATA  RTCIH0,X'80C0'
0121 0091 80C0
0122                    PAGE
    
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0123      *BCS SUBROUTINE -- THREE ENTRIES.
0124      *
0125      *ENTRY 1:      BL 0,BCSIE (INITIAL ENTRY).
0126      *ENTRY 2:      BL 0,BCSN (NORMAL ENTRY).
0127      *ENTRY 3:      BL 0,ECSFE (FINAL ENTRY).
0128      *
0129      *EXIT:          B 2,0 (REGISTER ONE CLEARED).
0130      *
0131      *ENTRY 1 IS USED FOR THE TRANSMISSION/RECEPTION
0132      *OF THE 'SOH' CHARACTER.
0133      *
0134      *ENTRY 2 IS FOR ALL OTHER CHARACTERS TO
0135      *BE PROCESSED.
0136      *
0137      *ENTRY 3 IS TO CALCULATE THE BCS CHARACTERS
0138      *TO BE TRANSMITTED. THEY WILL BE IN RBCSW,
0139      *FIRST CHARACTER IN THE LOWER BYTE.
0140      *
0141      *ENTRY 2 REQUIRES THAT THE CURRENT
0142      *CHARACTER BE IN THE LOWER BYTE OF REG. 1.
0143      *
0144      0092      DEF      BCSIE,BCSN,BCSFE
0145      45
0146      0092 4880008C BCSFE ST      0,SSR0      SAVE REG. 0.
0147      0094 748000C6      BL      0,BCSI      INITIATE THIS LOGIC.
0148      0096 60010000      MLA     1,BCSCNT    -B GOES TO -16.
0149      0098 48820000      ST      2,LBCSW     CLEAR LBCSW.
0150      009A 708200AA      B       BCSH
0151      *
0152      009C 44810000 BCSIE LA      1,0
0153      009E 48810000      ST      1,RBCSW     CLEAR RBCSW ON 'SOH'.
0154      00A0 72820002      B       2,0
0155      *
0156      00A2 4880008C BCSN  ST      0,SSR0      SAVE REG. 0.
0157      00A4 748000C6      BL      0,BCSI      INITIATE THIS LOGIC.
0158      *
0159      00A6 588100FF      NA      1,X'FF'     STRIP TO 8 BITS.
0160      00A8 48810000      ST      1,LBCSW     PUT IN LBCSW.
0161      00AA DC010000 BCSH  DRR     1,LBCSW     DB. PREC. SHIFT 1 PLACE.
0162      00AC E08C00B0      BC      LT,$+4     IF NEG., EXCLUSIVE OR
0163      00AE 708200B6      B       $+8       RBCSW WITH X'8408'.
0164      00B0 44010000      L       1,RBCSW
0165      00B2 40818408      XORA    1,X'8408'
0166      00B4 48810000      ST      1,RBCSW
0167      00B6 44810001      LA      1,1
0168      00B8 4C010000      A       1,BCSCNT    STEP LOOP COUNTER.
0169      00BA 48810000      ST      1,BCSCNT
0170      00BC E08C00AA      BC      LT,BCSH
0171      00BE 4400008C      L       0,SSR0
0172      00C0 44810000      LA      1,0
RETURN WITH REG. 1 CLEARED.

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0173	00C2	4402008E	L	2,SSR2	RE-STORE REG. 2.
0174	00C4	72820002	B	2.0	
0175					
0176	00C6	4882008E	BCSI	2,SSR2	HOLD ONTO REG. 2.
0177	00C8	4482FFF8	ST	2,-8	
0178	00CA	48820000	ST	2,BCSCNT	BCSCNT GETS -8.
0179	00CC	44820000	LA	2.0	CLEAR REG. 2.
0180	00CE	72820002	B	2.0	
0181			PAGE		

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0182          *GET AVAILABLE BUFFER --
0183          *
0184          *ENTRY:          BL   0,GETAB
0185          *                  DATA MANB
0186          *                  RETURN, IF NO BUFFER AVAIL.
0187          *                  RETURN, IF BUFFER AVAIL.
0188          *
0189          *RETURN:         CALL+3, REG. 0 MEANINGLESS.
0190          *                  CALL+5, REG. 0 HAS BUFFER F.W.A.
0191          *                  ALL RECS. INTACT (EXCEPT REG. 0).
0192          *
0193          00D0          DEF      GETAB
0194          *
0195          *              THE 'GETAB' LOGIC RUNS IN W-O-R-K-E-R M-O-D-E!
0196          *
0197          00D0 48850109 GETAB  ST      5,Z+3
0198          00D2 44850000          LA      5,RTCIH
0199          00D4 84000CDA          BFNE   #GETABF.1,$+6 BUSY?
0200          00D6 44050109          L      5,Z+3
0201          00D8 72820003          B      3,0          YES!
0202          00DA 88000C00          SFTF  #GETABF.1          SHOW 'GETAB' IS BUSY.
0203          00DC 4C800002          AA     0,2          STEP TO BUFFER ADDR.
0204          00DE 48800106          ST     0,Z
0205          00E0 4C800001          AA     0,1          STEP TO 'BAD' RETURN.
0206          00E2 48800107          ST     0,Z+1
0207          00E4 48810108          ST     1,Z+2          SAVE REG. 1.
0208          00E6 4480FFFD          LA     0,-3          COUNTER.
0209          00E8 45010106          L      1,*Z          GET ADDR. OF BUFFER ADDRS.
0210          00EA 48810106          ST     1,Z
0211          00EC 45010106          L      1,*Z          GET BUFFER ADDR.
0212          00EE E08C00FC          BC     LT,GB          IN USE?
0213          00F0 2106A001          AMI   Z,1          YES, TRY NEXT ONE.
0214          00F2 0C0100EC          ARB   1,$-6,0       DONE?
0215          00F4 44010108          GX    L      1,Z+2          YES, RE-STORE REG. 1 AND 5.
0216          00F6 44050109          L      5,Z+3
0217          00F8 88000400          SETF  #GETABF.0     SHOW COMPLETION.
0218          00FA 71820107          B     *Z+1          GET OUT.
0219          *
0220          00FC 40818000          GB    XORA  1,X'8000'  CLEAR AVAILABLE BIT.
0221          00FE 49810106          ST     1,*Z
0222          0100 45000106          L      0,*Z          GIVE BFR. ADDR. TO CALLER.
0223          0102 2107A002          AMI   Z+1,2         STEP TO 'GOOD' RETURN.
0224          0104 708200F4          B     GX
0225          *
0226          0106          Z      RES     4
0227          010A          G      RES     9
0228          010A          I      EQU     G
0229          *
          PAGE

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0230 000A      GT      EQU      X'A'
0231 000B      EQ      EQU      GT+1
0232 000C      LT      EQU      EQ+1
0233          *
0234          *GENERAL MOVE SUBROUTINE --
0235          *
0236          *CALL:          BL          0,GMOV
0237          *RETURN:       B          2.0
0238          *
0239          *EXPECTS LOCATION 'G' TO HAVE THE COUNT OF THE WORDS
0240          *TO BE MOVED, LOCATION 'G+1' TO HAVE THE 'SENDING'
0241          *AREA F.W.A., LOCATION 'G+2' TO HAVE THE 'RECEIVING'
0242          *AREA F.W.A.
0243          *
0244 0113 48850110 GMOV    ST      5,G+6
0245 0115 44850000      LA      5,RTCIH
0246 0117 210ABFFF      AMI     G,-1
0247 0119 4882010D      ST      2,G+3
0248 011B 4502010B GMOV0   L      2,*G+1
0249 011D 4982010C      ST      2,*G+2
0250 011F 210ABFFF      AMI     G,-1
0251 0121 E08C0129      BC      LT,$+8
      52 0123 210CA001      AMI     G+2.1
0253 0125 210BA001      AMI     G+1.1
0254 0127 7082011B      B      GMOV0
0255 0129 4402010D      L      2,G+3
0256 012B 44050110      L      5,G+6
0257 012D 72820002      B      2.0
0258          PAGE
    
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0259      *MOVE CURRENT TIME SUBROUTINE --
0260      *
0261      *CALL:      RL      0,MTIME
0262      *          DATA  RECEIVING AREA F.W.A.
0263      *RETURN:   B       3,0
0264      *
0265      012F      DEF      MTIME
0266      *
0267      012F 4881010E MTIME ST 1,G+4      SAVE REG. 1.
0268      0131 4880010F      ST 0,G+5      SAVE REG. 0.
0269      0133 46010002      L 1,2,0      GET 'RECEIVING' POINTER.
0270      0135 4881010C      ST 1,G+2
0271      0137 44800000      LA 0,TODHRA  GET 'SENDING' POINTER.
0272      0139 4880010B      ST 0,G+1
0273      013B 44800009      LA 0,9      NINE MOVES.
0274      013D 4880010A      ST 0,G
0275      013F 78860111      SS G+7      SAVE CURRENT STATUS.
0276      0141 7C000151      LDS MTIME2  KILL INTERRUPTS, SO TIME
0277      0143 74800113 MTIME0 BL 0,GMOV  WON'T CHANGE DURING MOVE.
0278      0145 4480014B      LA 0,MTIME1 SET 'CONTINUE' ADDRESS.
0279      0147 48800111      ST 0,G+7
0280      0149 7C000111      LDS G+7      RE-EN. INTERRUPTS -- GO ON.
      81 014B 4401010E MTIME1 L 1,G+4
0282      014D 4400010F      L 0,G+5
0283      014F 72820003      B 3,0
0284      *
0285      0151 0143      MTIME2 DATA MTIME0,X'C0'
      0152 00C0
0286      PAGE

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0287          *MOVE MESSAGE I.D. SUBROUTINE --
0288          *
0289          *CALL:          BL          0.MMID
0290          *              DATA      RECEIVING AREA F.W.A.
0291          *RETURN:       B          3.0
0292          *
0293          0153          DEF          MMID
0294          *
0295          0153 4881010E MMID  ST      1,G+4          SAVE REG. 1.
0296          0155 4880010F      ST      0,G+5          SAVE REG. 0.
0297          0157 46010002      L        1,2,0          GET 'RECEIVING' POINTER.
0298          0159 4881010C      ST      1,G+2
0299          015B 44810000      LA      1,OMSG0          GET 'SENDING' POINTER.
0300          015D 4881010B      ST      1,G+1
0301          015F 44800005      LA      0,5           FIVE MOVES.
0302          0161 4880010A      ST      0,G
0303          0163 74800113      BL      0,GMOV
0304          0165 7082014B      B        MTIME1
0305          PAGE

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0306 *STEP MESSAGE #/MOVE MESSAGE # -- TWO ENTRIES.
0307 *
0308 *ENTRY 1: BL 0,IMNM STEP ALPHA (MOD. A-Z)
0309 DATA 'BUFFER TO RECEIVE MESSAGE #'
0310 *
0311 *ENTRY 2: BL 0,IMNMI SET ALPHA BLANK
0312 DATA 'AS ABOVE' AND SET 'START' TIME.
0313 *
0314 *RETURN: ALL REGS. PRESERVED, BRANCH CALL+3.
0315 *
0316 0167 DEF IMNMI,IMNM
0317 *
0318 0167 488000BC IMNMI ST 0,SSR0 SAVE REG. 0.
0319 0169 7480012F BL 0,MTIME MOVE 'START' TIME TO MSOUT2!
0320 016B 0000 DATA MSOUT2
0321 016C 4480001F LA 0,X'1F' INITIATE OMSG4 TO
0322 016E 48800000 ST 0,OMSG4 'BLANK' - 1.
0323 0170 70820174 B IMNM+2
0324 *
0325 0172 488000BC IMNM ST 0,SSR0 SAVE REG. 0.
0326 0174 748001A9 BL 0,IMNMIN
0327 0176 44000000 L 0,OMSG4 ALPHA TO REG. 0.
0328 0178 C0800020 CRA 0,X'20' BLANK?
0329 017A E08B0182 BC EQ,$+8 YES, ON BRANCH (OBTIOUSLY!).
0330 017C 4C800001 AA 0,1 NEXT ALPHA.
0331 017E C080005B CRA 0,X'5B' COMPARE WITH Z + 1.
0332 0180 E08C0184 BC LT,$+4
0333 0182 44800041 LA 0,X'41' SET TO A.
0334 0184 48800000 ST 0,OMSG4
0335 0186 748001B7 BL 0,IMNINC INCREMENT MESSAGE #.
0336 0188 0000 DATA OMSG3 (CHARACTER BY CHARACTER).
0337 0189 748001B7 BL 0,IMNINC
0338 018B 0000 DATA OMSG2
0339 018C 748001B7 BL 0,IMNINC
0340 018E 0000 DATA OMSG1
0341 018F 748001B7 BL 0,IMNINC
0342 0191 0000 DATA OMSG0
0343 0192 4480FFFF IMOVE LA 0,-1 GET ADDRESS OF STORE ADDR.
0344 0194 4C00008C A 0,SSR0
0345 0196 4880010A ST 0,I
0346 0198 4500010A L 0,#I GET STORE ADDRESS.
0347 019A 4C800002 AA 0,2 STEP TO MSG. # LOCN.
0348 019C 488001A0 ST 0,$+4
0349 019E 74800153 BL 0,MMID
0350 01A0 0000 DATA 0 FILLED!
0351 01A1 4401008D L 1,SSR1
0352 01A3 4402008E L 2,SSR2
0353 01A5 4405008F L 5,SSR5
0354 01A7 7002008C *B SSR0 GET BACK.
0355 *

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0356	01A9	4881008D	IMNMIN	ST	1,SSR1	SAVE REGS. 1, 2, AND 5.
0357	01AB	4882008E		ST	2,SSR2	
0358	01AD	4885008F		ST	5,SSR5	
0359	01AF	44850000		LA	5,RTCIH	
0360	01B1	20008001		AMI	(OMSG,4),1	SET MSG. # (BIN.).
0361	01B3	208CA003		AMI	SSR0,3	SET EXIT.
0362	01B5	72820002		B	2,0	
0363			*			
0364	01B7	46810002	IMNINC	LA	1,2,0	GET ADDR. OF VALUE'S ADDR.
0365	01B9	4881010A		ST	1,I	
0366	01BB	4501010A		L	1,*I	GET VALUE'S ADDRESS.
0367	01BD	4881010A		ST	1,I	
0368	01BF	4501010A		L	1,*I	GET VALUE.
0369	01C1	4C810001		AA	1,1	STEP.
0370	01C3	C0810039		CRA	1,X'39'	BEYOND 9?
0371	01C5	E08A01CB		BC	GT,\$+6	
0372	01C7	4981010A		ST	1,*I	NO. SAVE.
0373	01C9	70820192		B	IMOVE	CONTINUE.
0374	01CB	44810030		LA	1,X'30'	YES, SET BACK TO ZERO.
0375	01CD	4981010A		ST	1,*I	SAVE.
0376	01CF	72820003		B	3,0	
0377				PAGE		

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0378          *UNPACK AND MOVE MESSAGE TO 'USCEN' AREA.
0379          *
0380          *CALL:          BL          0,UM
0381          *RETURN:       B          2,0
0382          *
0383          *CURRENT SCENARIO MESSAGE ADDRESS IS IN CSB.
0384          *
0385          01D1          DEF          UM
0386          *
0387          01D1 488001F7 UM      ST      0,U          SAVE REGS. 0, 1, AND 5.
0388          01D3 488101F8          ST      1,U+1
0389          01D5 488501FB          ST      5,U+4
0390          01D7 44850000          LA      5,RTCIH
0391          01D9 44000000          L      0,CSB          GET CUR. MSG. BUFFER.
0392          01DB 488001F9          ST      0,U+2
0393          01DD 44800000          LA      0,USCEN          ADDRESS FOR STORE.
0394          01DF 488001FA          ST      0,U+3
0395          01E1 450001F9          L      0,*U+2
0396          01E3 68080080          MRR    8,X'80'
0397          01E5 588000FF          NA     0,X'FF'          GET COUNT CHAR.
0398          01E7 488001FC          ST      0,U+5
0399          01E9 450001F9 UM0    L      0,*U+2          GET PACKED CHARS.
0400          01EB 68080080          MRR    8,X'80'          GET M.S. CHAR.
0401          01ED 748101FF          BL     1,UM1
0402          01EF 450001F9          L      0,*U+2          GET L.S. CHAR.
0403          01F1 748101FF          BL     1,UM1
0404          01F3 21F9A001          AMI    U+2,1          STEP FETCH PTR.
0405          01F5 708201E9          B      UM0
0406          *
0407          01F7          U      RES      8
0408          *
0409          01FF 588000FF UM1    NA     0,X'FF'          STRIP.
0410          0201 498001FA          ST      0,*U+3          STORE CHAR.
0411          0203 21FCBFFF          AMI    U+5,-1          COUNTED OUT?
0412          0205 E08C020B          BC     LT,UM2          YES -- IF BRANCHES!
0413          0207 21FAA001          AMI    U+3,1          STEP STORE PTR.
0414          0209 72920002          B      2,1
0415          *
0416          020B 440001F7 UM2    L      0,U
0417          020D 440101F8          L      1,U+1
0418          020F 440501FB          L      5,U+4
0419          0211 72820002          B      2,0          GET OUT.
0420          PAGE

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0421 0213          DEF      SMSTEP,ISCENS
0422              *
0423              *SCENARIO MESSAGE STEPPING SUBROUTINE --
0424              *
0425              *EACH SCENARIO MESSAGE IS SENT 'KMSGR' TIMES. A 'TIME'
0426              *IS DEFINED AS EITHER A SUCCESSFUL ROUND-TRIP, OR THE
0427              *EXHAUSTION OF ONE OF 'ENAKS', 'ENR', OR 'EBCSF'.
0428              *
0429              *CALL:          BL          0,SMSTEP
0430              *RETURN:       B          2,0
0431              *
0432 0213 20009FFF SMSTEP AMI      (EMSGR,4),-1  DECREMENT COUNTER.
0433 0215 E08A0241 BC          GT,SADV      DONE?
0434 0217 4881010B ST          1,G+1      SAVE REG. 1.
0435 0219 44010000 L          1,SC          GET CURRENT SCEN. MSG. #.
0436 021B C0010000 CR          1,SLAST     LAST ONE TO GO?
0437 021D E08C0223 BC          LT,$+6     NO -- IF BRANCHES.
0438 021F 44010000 ISCENS L      1,SFIRST   SET FIRST ONE TO GO.
0439 0221 70820225 B          $+4
0440 0223 4C810001 AA          1,1        STEP TO NEXT ONE.
0441 0225 48810000 ST          1,SC          SAVE NEW MSG. #.
0442 0227 4C81FFFF AA          1,-1       BACK UP (FOR INDEXING).
0443 0229 4C810000 AA          1,SBLKS     FIND F.W.A. OF NEXT
0444 022B 4881010C ST          1,G+2     SCENARIO MSG.
0445 022D 4501010C L          1,*G+2
0446 022F 48810000 ST          1,CSB
0447 0231 4880010C ST          0,G+2     SAVE REG. 0.
0448 0233 748001D1 BL          0,UM        UNPACK AND MOVE MSG.
0449              *          RE-SET ALL COUNTERS TO FULL.
0450 0235 4400010C L          0,G+2
0451 0237 4401010B L          1,G+1
0452 0239 14009000 MOV         (KMSGR,4),(EMSGR,4)
0453 023B 14009000 REPAR MOV      (KNAKS,4),(ENAKS,4)
0454 023D 14009000 MOV         (KBCSF,4),(EBCSF,4)
0455 023F 14009000 MOV         (KNR,4),(ENR,4)
0456 0241 72820002 SADV      B          2,0
0457              PAGE

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0458	0243		DEF	RIM,RCM	
0459			*		
0460			*RECORD COMPLETE/INCOMPLETE	MESSAGE --	
0461			*		
0462			*CALL:	BL	0,RCM ('COMPLETE' MESSAGE)
0463			*CALL:	BL	0,RIM ('INCOMPLETE' MESSAGE)
0464			*RETURN:	B	2,0
0465			*		
0466			*'LSTCC' CONTAINS THE CHAR. COUNT OF THE MESSAGE WHICH		
0467			*IS FORCING THE 'C' OR 'OTHER' RECORD. 'START' TIME MUST		
0468			*HAVE BEEN PREVIOUSLY PUT INTO THE OUTPUT AREA!		
0469			*		
0470	0243	48800364	RIM	ST	0,EXCOM0 MSOUT0 MUST ALREADY BE
0471	0245	7082024D		B	RCM01 SET WITH 'B', 'N', 'R',
0472			*		'W', 'L', 'I', OR 'S'.
0473	0247	48800364	RCM	ST	0,EXCOM0
0474	0249	44800043		LA	0,X'43' SHOW COMPLETE -- 'C'.
0475	024B	48800000		ST	0,MSOUT0
0476	024D	74800153	RCM01	BL	0,MMID MOVE MESSAGE I.D.
0477	024F	0000		DATA	MSOUT1 INTO THE RECORD AREA.
0478	0250	7480012F		BL	0,MTIME MOVE CURRENT TIME
0479	0252	0000		DATA	MSOUT3 INTO THE RECORD AREA.
0480	0253	44000000		L	0,LSTCC GET CHAR. COUNT
0481	0255	4880010A		ST	0,G OF "SENT" POLL.
0482	0257	6804010A		MRR	4,G ENCODE M.S. DIGIT.
0483	0259	4400010A		L	0,G
0484	025B	5880000F		NA	0,X'F'
0485	025D	4C800030		AA	0,X'30'
0486	025F	48800000		ST	0,MSOUT4
0487	0261	44000000		L	0,LSTCC ENCODE L.S. DIGIT.
0488	0263	5880000F		NA	0,X'F'
0489	0265	4C800030		AA	0,X'30'
0490	0267	48800000		ST	0,MSOUT5
0491	0269	44000000		L	0,CM GET THE CURRENT MODE.
0492	026B	48800000		ST	0,MSOUT6
0493	026D	44800000		LA	0,USCEN WAS THIS A SCENARIO
0494	026F	C4000000		CRL	0,CB TYPE MESSAGE?
0495	0271	E0800277		BC	EQ,GSN YES, ON BRANCH.
0496	0273	4480004B		LA	0,X'4B' NO, SOME OTHER TYPE (SUCH AS
0497	0275	7082027B		B	SCODE KEYB., TIME, SYS. ENTRY).
0498	0277	44000000	GSN	L	0,SC GET THE CURRENT SCENARIO #.
0499	0279	4C80002F		AA	0,X'2F' ENCODE SO SCEN. (X) LOOKS
0500	027B	48800000	SCODE	ST	0,MSOUT7 LIKE SCEN. (X-1).
0501	027D	74800000		BL	0,RECORD FILE THE RECORD!
0502	027F	0000		DATA	MSOUT
0503	0280	7082027D		B	0-3 BUSY RETURN!
0504	0282	44000364		L	0,EXCOM0
0505	0284	7082023B		B	REPAR
16				PACE	

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0507          *RECORD THE MESSAGE 'AS SEEN' ON 'B',
0508          *'I', 'L', 'N', 'S', OR 'W' ERROR.
0509          *RECORD THE MESSAGE 'AS SENT' ON 'R' ERROR.
0510          *
0511 0286          DEF          EREC
0512          *
0513          *ENTRY:          BL 0,EREC (REG. 1 HAS CODE)
0514          *RETURN:         B 2,0
0515          *
0516 0286 4C800002  EREC  AA  0,2          SET AND SAVE RETURN ADDRESS.
0517 0288 488001F8          ST  0,U+1
0518 028A 48810000          ST  1,RIDC          SAVE ERROR CODE.
0519 028C 488201FB          ST  2,U+4          SAVE REG. 2.
0520 028E 488301FC          ST  3,U+5          SAVE REG. 3.
0521 0290 488501F7          ST  5,U          SAVE REG. 5.
0522 0292 4485000A          LA  5,10          INITIALIZE THE 'GET'
0523 0294 48850394          ST  5,GETC          AND 'PUT' COUNTERS.
0524 0296 48850396          ST  5,PUTC
0525 0298 44850000          LA  5,RTCIH          SET PSEG REG.
0526 029A 7480012F          BL  0,MTIME
0527 029C 0000          DATA CTIME          MOVE TIME TO ERROR BUFFER.
0528 029D 44800000          LA  0,ERBUF          SET PUT POINTER.
      29 029F 48800397          ST  0,PUTP
0530 02A1 C0810052          CRA 1,X'52'          CHECK FOR 'R' TYPE.
0531 02A3 E08B02A7          BC  EQ,$+4
0532 02A5 708202B5          B   EREC2          IF 'R', SET 'GET' POINTER
0533 02A7 44800000          LA  0,0          CLEAR OUT SEEN BCS.
0534 02A9 48800000          ST  0,BCSEEN
0535 02AB 44000000          L   0,CB          TO 'SEND' BUFFER; ELSE
0536 02AD 4C800001          AA  0,1          SET POINTER TO 'RECEIVE'
0537 02AF 48800395          ST  0,GETP          BUFFER. IF 'SEND' BUFFER,
0538 02B1 88000800          SETF ERS,1          PROC. 'SEND' BUFFER.
0539 02B3 708202C1          B   EREC1          NO +, *, SYN, SYN, SOH.
0540          *
0541 02B5 44800000  EREC2  LA  0,RCVMB
0542 02B7 4C800001          AA  0,1
0543 02B9 48800395          ST  0,GETP
0544 02BB 88000000          SETF ERS,0          PROC. 'RECEIVE' BUFFER.
0545 02BD 44810005          LA  1,5          MOVE AND CHECK
0546 02BF 74800367          BL  0,MVCMF          FIVE CHARS.
0547 02C1 74800379  EREC1  BL  0,GET          FETCH MODE CHAR.
0548 02C3 488101FA          ST  1,U+3          HOLD ONTO MODE CHAR.
0549 02C5 19FAB74A          CML U+3,L1H3          HIGH/LOW COMPARE WITH X'31'
0550 02C7 708202CD          B   $+6          AND X'33'.
0551 02C9 708202CD          B   $+4
0552 02CB 708202DF          B   EREC0          IN BOUNDS, DEFINED MODE.
0553 02CD C0810048          CRA 1,X'48'          MODE = H?
0554 02CF E08B02DF          BC  EQ,EREC0          YES, ON BRANCH.
0555 02D1 C0810044          CRA 1,X'44'          MODE = D?
0556 02D3 E08B02DF          BC  EQ,EREC0          YES, ON BRANCH.

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0557	02D5	44810055	LA	1,X'55'	MODE = U(DEFINED)!
0558	02D7	74800385	BL	0,PUT	STORE 'U'.
0559	02D9	440101FA	L	1,U+3	
0560	02DB	7480039A	BL	0,ECPUT+2	GET, ENCODE, AND STORE
0561	02DD	708202E1	B	EREC0+2	UNDEFINED MODE.
0562			*		
0563	02DF	74800385	EREC0 BL	0,PUT	STORE DEFINED MODE.
0564	02E1	4481000B	LA	1,11	MOVE RFST OF PRE-AMBLE,
0565			*		INCLUDING THE 'STX'.
0566	02E3	74800367	BL	0,MVCMP	
0567	02E5	840002ED	BFNE	ERS,0,\$+8	'SEND' BFR., IF ERS = 1.
0568	02E7	44010000	L	1,RCVMB	GET 'RECEIVED' COUNT.
0569	02E9	50810011	SA	1,17	DEDUCT PREAMBLE COUNT,
0570			*		INCLUDING 'STX'.
0571	02EB	708202F1	B	\$+6	
0572	02ED	45010000	L	1,*CB	GET 'SENT' COUNT.
0573	02EF	5081000C	SA	1,12	DEDUCT PREAMBLE COUNT,
0574			*		INCLUDING 'STX'.
0575	02F1	1DFAA033	CMI	U+3,X'33'	
0576	02F3	708202F9	B	\$+6	MODE IS 2 OR 1.
0577	02F5	70820330	B	ENC0	MODE IS D, OR H, OR U.
0578	02F7	708202FF	B	NOR0	MODE IS 3.
0579	02F9	1DFAA032	CMI	U+3,X'32'	
0580	02FB	70820330	B	ENC0	MODE IS 1.
0581	02FD	70070000	NOP		THIS IN. CAN'T BE EXECUTED!
0582			*MODE	IS NORMAL (2-3).	
0583	02FF	C0810003	NOR0	CRA	1,3
0584	0301	E08C0309	BC	LT,BCS0	AT LEAST THREE CHARS.?
0585	0303	84000307	BFNE	ERS,0,\$+4	IF NOT; DO BCS'S.
0586			*		IF SEND BFR., BCS CHARS.
0587	0305	50810002	SA	1,2	NOT INCL. IN BFR. SZ. COUNT.
0588	0307	74800367	BL	0,MVCMP	DO NON-BCS'S.
0589	0309	74800379	BCS0	BL	0,GET
0590	030B	74800398	BL	0,ECPUT	GET 1ST BCS.
0591	030D	74800379	BL	0,GET	ENCODE AND STORE.
0592	030F	74800398	BL	0,ECPUT	GET LAST BCS.
0593	0311	44010000	L	1,BCSEEN	ENCODE AND STORE.
0594	0313	508100FF	NA	1,X'FF'	ENCODE AND STORE SEEN BCS.
0595	0315	74800398	BL	0,ECPUT	
0596	0317	68080000	MRR	8,BCSEEN	RIGHT-HAND 8-BITS.
0597	0319	44010000	L	1,BCSEEN	
0598	031B	508100FF	NA	1,X'FF'	
0599	031D	74800398	BL	0,ECPUT	LEFT-HAND 8-BITS.
0600	031F	44000396	L	0,PUTC	STORAGE COUNTER.
0601	0321	48800000	ST	0,NUMBER	
0602	0323	74800000	BL	0,RECORD	FILE ERROR BUFFER.
0603	0325	0000	DATA	NUMBER	
0604	0326	70820323	B	\$-3	BUSY!! MUST FILE IT!!
0605	0328	440201FB	L	2,U+4	RE-EST. REGS.
0606	032A	440301FC	L	3,U+5	

0607	032C	440501F7		L	5,U	
0608	032E	700201F8		*B	U+1	
0609			*MODE	IS	TRANSPARENT (1-D-H-U).	
0610	0330	C0810003	ENC0	CRA	1,3	IS THE COUNT AT LEAST 3?
0611	0332	E08C0309		BC	LT,BCS0	IF NOT; DO BCS'S.
0612	0334	50810001		SA	1,1	IGNORE ETX/ETB.
0613	0336	8400033A		BFNE	ERS,0,\$+4	IF SEND BFR., BCS CHARS.
0614			*			NOT INCL. IN BFR. SZ. COUNT.
0615	0338	50810002		SA	1,2	ACCOUNT FOR BCS'S.
0616	033A	46930000		LA	3,0,1	MOVE REG. 1 TO REG. 3.
0617	033C	50830001		SA	3,1	SET UP 'ARB' INSTR.
0618	033E	74800379		BL	0,GET	FETCH, ENCODE,
0619	0340	74800398		BL	0,ECPUT	AND STORE TEXT.
0620	0342	0C3F033E		ARB	-1,\$-4,3	
0621	0344	44810001		LA	1,1	
0622	0346	74800367		BL	0,MVCMP	MOVE ONE CHAR.
0623	0348	70820309		B	BCS0	(ETX/ETB).
0624			*			
0625	034A	0031	L1H3	DATA	X'31',X'33'	
	034B	0033				
0626				PAGE		

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0627      *EXCEPTION COMPARE SUBROUTINE.
0628      *
0629      *IF THE CHARACTER IN REG. 1 IS WITHIN THE
0630      *LIMITS OF X'10' AND X'14', ADD X'51'; ELSEF
0631      *ADD NOTHING (IF M.S.B. IS NOT SET). OR
0632      *CHANGE TO X'7E' (IF M.S.B. IS SET).
0633      *
0634  034C 48810364 EXCOM ST      1,EXCOM0
0635  034E 1B64B765      CML      EXCOM0,EXCOM0+1
0636  0350 70070000      NOP
0637  0352 70820358      B          EXCOMX      OUTSIDE OF LIMITS.
0638  0354 4C810051      AA      1,X'51'
0639  0356 72820002      B          2,0
0640  0358 58810080 EXCOMX NA      1,X'80'      M.S.B. SET?
0641  035A E08A0360      BC      GT,$+6
0642  035C 44010364      L          1,EXCOM0      NO.
0643  035E 72820002      B          2,0
0644  0360 4481007E      LA      1,X'7E'      CHANGE TO A "SQUIGGLE".
0645  0362 72820002      B          2,0
0646      *
0647  0364 0000      EXCOM0 DATA 0,X'10',X'14'
0648      *
0649      *MOVE A REQUESTED (IN REG. 1) NUMBER OF
0650      *CHARACTERS FROM THE 'GET' BUFFER TO THE
0651      *'PUT' BUFFER: CHECK FOR EXCEPTIONS.
0652      *
0653  0367 488101FD MVCMP ST      1,U+6
0654  0369 488001FE      ST      0,U+7
0655  036B 74800379      BL      0,GET
0656  036D 7480034C      BL      0,EXCOM
0657  036F 74800385      BL      0,PUT
0658  0371 21FDBFFF      AMI     U+6,-1
0659  0373 E08A036B      BC      GT,$-8
0660  0375 440001FE      L          0,U+7
0661  0377 72820002      B          2,0
0662      *
0663      *GET A CHARACTER FROM THE 'GET' BUFFER.
0664      *STEP THE 'GET' INDEXER. PUT A CHARACTER
0665      *IN THE 'PUT' BUFFER. STEP THE INDEXER.
0666      *STEP COUNTERS, WHEN APPROPRIATE.
0667      *
0668  0379      DEF      PUTC,PUTP,ECPUT
0669      *
0670  0379 48850393 GET ST      5,GP5
0671  037B 44850000      LA      5,GU
0672  037D 45010395      L          1,*GETP      FETCH CHAR. TO REG. 1.
i '3 037F 2394A001      AMI     GETC,1      STEP COUNTER.
0674  0381 2395A001      AMI     GETP,1      STEP INDEXER.

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0675	0383	7082038F	B	GPEX	
0676			*		
0677	0385	48850393	PUT	ST	5,GP5
0678	0387	44850000		LA	5,GU
0679	0389	49810397		ST	1,*PUTP
0680	038B	2396A001		AMI	PUTC,1
0681	038D	2397A001		AMI	PUTP,1
0682	038F	44050393	GPEX	L	5,GP5
0683	0391	72820002		B	2,0
0684			*		
0685	0393		GP5	RES	1
0686	0394		GETC	RES	1
0687	0395		GETP	RES	1
0688	0396		PUTC	RES	1
0689	0397		PUTP	RES	1
0690			*		
0691			*ENCODE (HEX. ENCODED BINARY) AND PUT		
0692			*IN 'PUT' BUFFER. EIGHT-BIT CHAR. TO		
0693			*BE ENCODED IS IN REG. 1.		
0694			*		
0695	0398	488101FA	ECPUT	ST	1,U+3
0696	039A	4C800002		AA	0,2
97	039C	488001F9		ST	0,U+2
0698	039E	C081FFFF		CRA	1,-1
0699	03A0	E08B0312		BC	EQ,FCPUTE
0700	03A2	4482FFFE		LA	2,-2
0701	03A4	68040081		MRR	4,X'81'
0702	03A6	5881000F		NA	1,X'F'
0703	03A8	4C810030		AA	1,X'30'
0704	03AA	74800385		BL	0,PUT
0705	03AC	440101FA		L	1,U+3
0706	03AE	0C2103A6		ARB	1,\$-8,2
0707	03B0	700201F9		*B	U+2
0708			*		
0709	03B2	4481002E	ECPUTE	LA	1,X'2E'
0710	03B4	74800385		BL	0,PUT
0711	03B6	4481002E		LA	1,X'2E'
0712	03B8	74800385		BL	0,PUT
0713	03BA	700201F9		*B	U+2
0714				PAGE	

STORE REG. 1.
STEP COUNTER.
STEP INDEXER.

SAVE 8-BIT CHAR.
EXIT ADDRESS.
COMPARE SENTINEL?
YES, IF BRANCHES.
LOOP TWICE.

THIS CHAR. COMPARED
DURING AN ECHOED ("H")
MESSAGE. FORCE A
DOUBLE-PERIOD.

```

0715 *SUBROUTINE TO COMPARE 'SENT' CHARACTERS WITH
0716 *'RECEIVED' CHARACTERS. WHEN 'RECEIVED' MODE
0717 *IS 'H'. THE AIRBORNE SYSTEM ECHOES ANY MODE
0718 *1 AND MODE 3 MESSAGES IT SEES, BY SENDING A
0719 *MODE H. WITH TEXT CONTENT OF THE MODE THRU
0720 *BCS CHARACTERS THAT WERE SEEN IN THE MODES
0721 *1 AND 3 MESSAGES.
0722 *
0723 *ENTRY:          RL 1,TSUBW
0724 *              (REG. 0 HAS MODE CHAR. SENT BY AIRCRAFT)
0725 *EXIT:          B 2,1
0726 *
0727 03BC          DEF      TSUBW
0728 *
0729 03BC C0800048 TSUBW CRA 0,X'48'   IS MODE AN 'H'?
0730 03BE E08B03C2 BC      EQ,$+4
0731 03C0 72920002 B        2,1          NO!
0732 03C2 4C810002 AA      1,2          SET RETURN ADDRESS.
0733 03C4 488101F7 ST      1,U
0734 03C6 488301F8 ST      3,U+1
0735 03C8 488501FC ST      5,U+5
0736 03CA 44850000 LA      5,RTCIH
    37 03CC 7480040C BL      0,FCLASS    FIND CLASSIFICATION.
0738 03CE 4C030000 A        3,CLASSC    DOUBLE IT.
0739 03D0 45000000 L        0,*CB        COMPARE INDEXER SET-UP.
0740 03D2 4C800001 AA      0,1
0741 03D4 44820000 LA      2,RCVMB    CALCULATE ADDRESS OF 'MODE'
0742 03D6 4C820013 AA      2,19        CHAR. (IN ECHOED TEXT).
0743 03D8 488201F9 ST      2,U+2
0744 03DA 44020000 L        2,CB        GET 'SEND' POINTER.
0745 03DC 4C820001 AA      2,1
0746 03DE 488201FA ST      2,U+3
0747 03E0 450201FA TSUBW0 L      2,*U+3    'SENT' CHAR. IS EXCL. OR'ED
0748 03E2 410201F9 XOR     2,*U+2    WITH 'RECEIVED' CH. TO FIND
0749 03E4 E08B03FA BC      EQ,TSUBW1  BIT DIFFERENCES.
0750 03E6 488201FB ST      2,U+4
0751 03E8 540201FB LOT     2,U+4    COUNT BIT DIFFERENCES.
0752 03EA 44810000 LA      1,0        CLEAR M.S.W.
0753 03EC EA310000 DAD     1,ECHOBE,3  DOUBLE ADD TO RUNNING TOTAL.
0754 03EE 4AB10000 ST      1,FCHOBE,3  RE-SAVE IT.
0755 03F0 4C830001 AA      3,1        NEED NEXT CELL FOR STORAGE.
0756 03F2 4AB20000 ST      2,ECHOBE,3
0757 03F4 50830001 SA      3,1        RE-SFT INDEX!
0758 03F6 88000800 SETF   BCOME,1    SHOW BIT COMPARE ERROR.
0759 03F8 708203FE B        TSUBW2
0760 03FA 4482FFFF TSUBW1 LA      2,-1        SENTINAL FOR NO
0761 03FC 498201F9 ST      2,*U+2    BIT DIFFERENCES.
0762 03FE 0C0F0406 TSUBW2 ARB    -1,TSUBW3,0    DONE?
    3 0400 440301F8 L        3,U+1    YES!
0764 0402 440501FC L        5,U+5

```

0765	0404	700201F7		*B	U	
0766	0406	21FAA001	TSUBW3	AMI	U+3,1	NO!
0767	0408	21F9A001		AMI	U+2,1	
0768	040A	708203E0		B	TSUBW0	
0769				PAGE		

```

0770 *FIND THE CLASSIFICATION OF THE MESSAGE, IN TERMS
0771 *OF THE NUMBER OF 'TEXT' CHARACTERS. THE CLASSES
0772 *ARE ALLOCATED BY:
0773 *
0774 * CLASS1: 0 OR 1 CHARACTER
0775 * CLASS2: 2 TO 30 CHARS., INCLUSIVE
0776 * CLASS3: 31 TO 120 CHARS., INCLUSIVE
0777 * CLASS4: MORE THAN 120 CHARS.
0778 *
0779 *REGISTER 3 WILL CONTAIN THE CLASS CODE
0780 *(0 = CLASS1, 1 = CLASS2, 2 = CLASS3,
0781 *3 = CLASS4) ON RETURN. IT ALSO IS
0782 *PLACED INTO 'CLASSC'.
0783 *
0784 *ENTRY:          BL 0,FCLASS
0785 *EXIT:           B 2,0
0786 *
0787 040C            DEF      FCLASS
0788 *
0789 040C 44830000  FCLASS LA      3,0      INIT. REG. 3 TO CLASS1.
0790 040E 4881042A  ST          1,FCLSS0  SAVE REG. 1.
0791 0410 44010000  L            1,LSTCC   GET COUNT OF LAST SENT MSG.
0792 0412 C0810002  CRA         1,2      IF COUNT < 2, EXIT.
0793 0414 E08C0424  BC          LT,XFCLSS
0794 0416 5081001F  SA          1,31     CHECK FOR CLASS2.
0795 0418 E08C0422  BC          LT,XFCLSS-2
0796 041A 4C830001  AA          3,1
0797 041C 5081005A  SA          1,90
0798 041E E08C0422  BC          LT,XFCLSS-2
0799 0420 4C830001  AA          3,1
0800 0422 4C830001  AA          3,1
0801 0424 4401042A  XFCLSS L      1,FCLSS0
0802 0426 48830000  ST          3,CLASSC
0803 0428 72820002  B           2,0
0804 *
0805 042A          FCLSS0 RES    1
0806 *
0807 042B          END
0000 ERRORS : LENGTH = 042B

```

```
0001          *          TITL   GROUND DATA BASE/V2 -- DATA-LINK.
0002          *          'DLFS/DLDS' -- JUNE 11, 1975.
0003          *          THIS ASSEMBLY IS LABELED (ON THE CASSETTE
0004          *          SOURCE TAPE) AS: 'DLFS/DLDS'.
0005          *
0006 0000      *          DLFS   FSEG          DATA-LINK FLAG SEGMENT.
0007          *
0008          *
0009 0000      *          RES     2
0010          *
0011 0000      *          FLAG   NAKE,MD,TC,STXF
0012 0004      *          FLAG   SOHF,BCSE,TSOM,EFT
0013 0008      *          FLAG   TF,ERS,BAUDC,TCO
0014 000C      *          FLAG   TSOMO,ERMF,KBDM,ICF
0015 0010      *          FLAG   QF,FAN,KBDMIP,MLFL
0016 0014      *          FLAG   ACAF,GETABF,BCOME,GPF
0017 0018      *          FLAG   MLFS
0018          *
0019 0002      *          END
```

0020			*				
0021	0002		DLDS	DSEG			
0022			*				
0023			*				DATA-LINK DATA SEGMENT.
0024	0002			REF	DATALP		
0025			*				
0026	0002	000A	KNAKS	DATA	10		K.I. # OF ALLOWED NAKS.
0027	0003	0096	KNPK	DATA	150		K.I. # OF PRE-KFY CHARS.
0028	0004	000A	KNR	DATA	10		K.I. # OF NON-REPLIES.
0029	0005	000A	KBCSF	DATA	10		K.I. # OF BCS-ERRORS.
0030	0006	2710	KMSGR	DATA	10000		K.I. # OF SCENARIO RE-TRANS.
0031	0007	0001	SFIRST	DATA	1		FIRST SCENARIO MESSAGE SENT.
0032	0008	0010	SLAST	DATA	16		LAST SCENARIO MESSAGE SENT.
0033	0009	0000	STARTE	DATA	DATALP,X'C0'		
	000A	00C0					
0034	000B		CCNT	RES	1		RECEIVER LOGIC PARAMETER.
0035	000C		ECNT	RES	1		SAME.
0036	000D		CRTCC	RES	1		CUR. RCVD. TEXT CHAR. COUNT.
0037	000E		SC	RES	1		CURRENT MESSAGE SCEN. #.
0038	000F		CM	RES	1		LAST SENT MODE.
0039	0010		LSTCC	RES	1		LAST SENT TEXT CHAR. COUNT.
0040	0011		CLASSC	RES	1		CLASSIFICATION CODE.
	41	0012	TODHRA	DATA	X'30'		M.S. HOURS -- TIME-OF-DAY.
0042	0013	0030	TODHRB	DATA	X'30'		L.S. HOURS.
0043	0014	0030	TODMNA	DATA	X'30'		M.S. MINUTES.
0044	0015	0030	TODMNB	DATA	X'30'		L.S. MINUTES.
0045	0016	0030	TODSCA	DATA	X'30'		M.S. SECONDS.
0046	0017	0030	TODSCB	DATA	X'30'		L.S. SECONDS.
0047	0018	0030	TODMSA	DATA	X'30'		M.S. M-SECONDS.
0048	0019	0030	TODMSB	DATA	X'30'		MIDDLE M-SECONDS.
0049	001A	0030	TODMSC	DATA	X'30'		L.S. M-SECONDS.
0050	001B		CHART	RES	1		CHAR. TIMER.
0051	001C		SOMTR	RES	1		START-OF-MESSAGE TIMER.
0052	001D		EMSGR	RES	1		REPEATS COUNT-DOWN.
0053	001E		ENAKS	RES	1		# OF NAKS ENCOUNTERED.
0054	001F		ENR	RES	1		# OF NON-RESP. ENCOUNTERED.
0055	0020		EBCSF	RES	1		# OF BCS-ERRORS ENCOUNTERED.
0056	0021	0258	TT	DATA	600		TURN-AROUND TIME.
0057							* THIS IS A MILLI-SECOND VALUE WHICH IS USED TO CLOCK
0058							* THE TIME BETWEEN SENDING THE LAST CHARACTER OF A
0059							* POLL AND RECOGNITION OF THE FIRST CHARACTER OF THE
0060							* RESPONSE POLL. IT ALLOWS FOR THE AIRCRAFT STATION
0061							* TO USE 150 PRE-KEY CHARACTERS AT THE 2400 BAUD RATE.
0062	0022		SBLKS	RES	16		16 SCENARIO MESSAGE PTRS.
0063	0032		OMSG0	RES	1		M.S. CHAR. OUTPUT MSG. #.
0064	0033		OMSG1	RES	1		NEXT CHAR.
0065	0034		OMSG2	RES	1		NEXT CHAR.
0066	0035		OMSG3	RES	1		L.S. CHAR.
0067	0036		OMSG4	RES	1		ALPHA CHAR.
0068	0037		OMSG	RES	1		MESSAGE # (BINARY).

0069	0038	CSB	RES	1	CURRENT SCENARIO BUFFER.
0070	0039	CKBB	RES	1	CURRENT KEYBOARD BUFFER.
0071	003A	CB	RES	1	CURRENT TRANS. BUFFER.
0072	003B	LBCSW	RES	1	LEFT BCS CHAR.
0073	003C	RBCSW	RES	1	RIGHT BCS CHAR.
0074	003D	BCSEEN	RES	1	BCS OF RCVD. MSG.
0075	003E	BCSCNT	RES	1	
0076		*FOLLOWING SIX DATA TABLES ARE FOR LOGGING			
0077		*ECHO MESSAGE OCCURRANCES, BY CLASS, WITHIN			
0078		*EACH TYPE.			
0079	003F	ECHOAK	RES	4	ACKNOWLEDGMENTS.
0080	0043	ECHONK	RES	4	NON-ACKNOWLEDGEMENTS.
0081	0047	ECHONR	RES	4	NON-RESPONSES.
0082	004B	ECHOBC	RES	4	BCS FAILURES.
0083		*ECHOBE AND ECHOTC ARE ADJUSTED O-N-L-Y WHEN			
0084		*ECHO-TYPE MESSAGES ARE SEEN TO HAVE RESPONSES.			
0085		*THIS MEANS THAT NON-RESPONSES ARE DISCOUNTED			
0086		*FOR BIT-ERROR STATISTICAL PURPOSES.			
0087	004F	ECHOBE	RES	8	BIT ERRORS (DOUBLE PREC.).
0088	0057	ECHOTC	RES	8	TOT. CHARS. SENT (DB. PR.).
0089		*FOLLOWING FOUR DATA TABLES ARE FOR LOGGING			
0090		*NON-ECHO MESSAGE OCCURRANCES, BY CLASS,			
91		*WITHIN EACH TYPE.			
0092	005F	NEAK	RES	4	ANALOGOUS WITH ABOVE!
0093	0063	NENK	RES	4	
0094	0067	NENR	RES	4	
0095	006B	NERC	RES	4	
0096		* MANUAL MESSAGE (KEYBOARD) BUFFERS: AVAILABLE			
0097		* IF SIGN-BIT IN POINTER TABLE (MANB) IS SET.			
0098	006F 049F	MANB	DATA	MAN1,MAN2,MAN3	
	0070 0589				
	0071 0673				
0099	0072	USCEN	RES	1	BUFFER LENGTH COUNT.
0100	0073		RES	240	UNPACKED 'CUR.' SCEN.
0101	0163	NUMBER	RES	1	BUFFER-LENGTH COUNT.
0102	0164	CTIME	RES	9	TIME MOVED INTO HERE.
0103		* REJECT I.D. CODE.			
0104	016D	RIDC	RES	1	N, B, R, ETC.
0105	016E	ERBUF	RES	500	ERROR RECORDINGS PUT HERE.
0106	0362	RCVMB	RES	260	RECEPTION BUFFER.
0107			PAGE		

0108		*THE	COUNT	12
0109		*SYSTEM	MODE	D
0110		*ENTRY	MESSAGE #	0000
0111		*POLL --	MESSAGE ALPHA	BLANK
0112		*'SEP'	ADDRESS	01
0113		*	ACK	X'6'
0114		*	LABEL ONE	0
0115		*	LABEL TWO	0
0116		*	ETX	X'3'
0117		*		
0118	0466 000C	SEP	DATA	12,X'44',X'30',X'30',X'30',X'30',X'30',X'20'
	0467 0044			
	0468 0030			
	0469 0030			
	046A 0030			
	046B 0030			
	046C 0020			
0119	046D 0030		DATA	X'30',X'31',X'6',X'30',X'30',X'3'
	046E 0031			
	046F 0006			
	0470 0030			
	0471 0030			
	0472 0003			
0120	0473	RES	2	FOR BCS'S.
0121		PAGE		

0122		*THE TIME	COUNT	23
0123		*RE-SYNC.	MODE	2
0124		*POLL --	MESSAGE #	0000
0125		*TIMEP'	MESSAGE ALPHA	BLANK
0126		*	ADDRESS	01
0127		*	ACK	X'6'
0128		*	LABEL ONE	T
0129		*	LABEL TWO	Q
0130		*	STX	X'2'
0131		*	TIME	HHMMSSUUU
0132		*	# G.S. NAK(S)	0
0133		*	# G.S. PKYS.	0
0134		*	ETX	X'3'
0135		*		
0136	0475 0018	TIMEP DATA	24	
0137	0476 0032	DATA	X'32',X'30',X'30',X'30',X'30',X'20',X'30'	
	0477 0030			
	0478 0030			
	0479 0030			
	047A 0030			
	047B 0020			
	047C 0030			
38	047D 0031	DATA	X'31',X'6',X'54',X'51',X'2',X'30',X'30'	
	047E 0006			
	047F 0054			
	0480 0051			
	0481 0002			
	0482 0030			
	0483 0030			
0139	0484 0030	DATA	X'30',X'30',X'30',X'30',X'30',X'30'	
	0485 0030			
	0486 0030			
	0487 0030			
	0488 0030			
	0489 0030			
0140	048A 0030	DATA	X'30',0,0,X'3'	
	048B 0000			
	048C 0000			
	048D 0003			
0141	048E	RES	2	FOR BCS'S.
0142		PAGE		

0143		*THE	COUNT	12
0144		*GENERAL	MODE	2
0145		*POLL --	MESSAGE #	0000
0146		*GP'	MESSAGE ALPHA	BLANK
0147		*(NO TEXT)	ADDRESS	01
0148		*(NO ECHO)	ACK	X'6'
0149		*	LABEL ONE	Q
0150		*	LABEL TWO	Q
0151		*	ETX	X'3'
0152		*		
0153	0490 000C	GP	DATA	12,X'32',X'30',X'30',X'30',X'30',X'20'
	0491 0032			
	0492 0030			
	0493 0030			
	0494 0030			
	0495 0030			
	0496 0020			
0154	0497 0030		DATA	X'30',X'31',X'6',X'51',X'51',X'3'
	0498 0031			
	0499 0006			
	049A 0051			
	049B 0051			
	049C 0003			
0155	049D		RES	2
0156			PAGE	FOR BCS'S.

0157	049F	MAN1	RES	234	
0158	0589	MAN2	RES	234	
0159	0673	MAN3	RES	234	
0160		*			'GOOD' OR 'INCOMPLETE'
0161		*			MESSAGE CASSETTE BUFFER.
0162	075D 001C	MSOUT	DATA	28	'C', 'N', 'R', OR 'B' MES-
0163	075E	MSOUT0	RES	1	SAGE BUFFER (LENGTH = 28).
0164	075F	MSOUT1	RES	5	MESSAGE I.D.
0165	0764	MSOUT2	RES	9	START TIME.
0166	076D	MSOUT3	RES	9	END TIME.
0167	0776	MSOUT4	RES	1	FIRST CODED BINARY.
0168	0777	MSOUT5	RES	1	SECOND CODED BINARY.
0169	0778	MSOUT6	RES	1	MODE (AS SEEN).
0170	0779	MSOUT7	RES	1	SCENARIO MSG. #.
0171	077A	DLGUE	RFS	1200	KEYB. DIALOGUE BUFFER.
0172	0C2A	CSCEN	RES	1	FIRST WORD OF 16 MSGS.
0173		*			
0174	0C2B		END	STARTE	

0000 ERRORS : LENGTH = 0C2B

AIRBORNE STATION COMMUNICATIONS
SUPERVISOR MODULES

ASUPR

ASUPRA

AU

ABF-ABD


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0001          TITL AIRBORNE SUPERVISOR/V2 -- DATA-LINK.
0002          * 'ASUPR' -- MAY 28, 1975.
0003          * THIS ASSEMBLY IS LABELED (ON THE CASSETTE
0004          * SOURCE TAPE) AS: 'ASUPR'.
0005          *
0006          ASUPR PSEG
0007          300    MODE
0008          *
0009          REF  TODMNR,TODMSA,TODMSB,TODSCA,TODSCB
0010          REF  MD,PRINT,GKCHAR,PRINTC,IODHRB,TODMNA
0011          REF  MS,OMSG0,NENK,NEBC,KNPK,NEAK,MLFI,MLFS
0012          REF  ECHONK,ECHOPC,CLASSC,OMSG4,OMSG3,MANB
0013          REF  QUIT,OMSG1,KL2,EREC,NAKE,TCO,KBDMIP,KL1
0014          REF  IAN,CB,BCSE,RCVMB,CPRINT,EFT,TODHRA,KL3
0015          REF  KBDM,CIBB,DSROFF,FCLASS,INITIO,ACOPIN
0016          REF  TC,ABD,ABF,ERMF,NPRINT,QF-IAS,MRT,SENDM
0017          REF  OPRINT,TODMSC,SNDMB,OMSG2,FCHOAK,ACAF
0018          *
0019          DEF  DATALP
0020          *
0021          000 7C003097 DATALP LDS AIRSU AIRBORNE START-UP.
0022          0002 4484000 AIRFI LA 4,ABD SET DATA BASE REG.
0023          23 0004 44850000 LA 5,ASUPR SET PROC. BASE REG.
0024          0006 44860000 LA 6,ABF SET FLAG BASE REG.
0025          0008 44870F00 LA 7,X'F00' SET I/O BASE REG.
0026          000A 44800096 LA 0,150 USE 150 PREKEYS UNTIL
0027          000C 48800000 ST 0,KNPK TIME POLL IS SEEN.
0028          000E 74800000 BL 0,IAS INIT. AIRBORNE SYSTEM.
0029          0010 74800000 BL 0,INITIO SET-UP THE I/O LOGIC.
0030          003 0012 7480000 WAKEUP BL 0,PRINT GIVE 'TAPE' LOADING INFO.
0031          0014 00RA DATA TMS
0032          0015 7082 012 B WAKEUP
0033          0017 74800000 BL 0,GKCHAR GET OPR. RESPONSE.
0034          0019 40810094 ST 1,WA3 SAVE IT.
0035          001B 74800000 BL 0,PRINTC PRINT IT.
0036          001D 7082 01B B $-2
0037          001F 44010094 L 1,WA3 RECOVER IT.
0038          0021 C081 00D CRA 1,RTC IS IT A 'CR'?
0039          0023 E08B0027 BC EQ,$+4
0040          004 0025 70820012 B WAKEUP NO!!!!!!
0041          0027 74800000 BL 0,PRINT
0042          0029 030D DATA LBFR GIVE 'CR' AND 'LF'.
0043          002A 70820027 B $-3
0044          002C 74800000 BL 0,OPRINT SHOW NEXT EXPERIMENT.
0045          002E 0099 DATA NEWX ON AUXILIARY TERMINAL.
0046          002F 7082 02C B $-3
0047          0031 88000C00 SETF #ACOPIN,1 ALLOW OPR. INIT. MSGS.
0048          *
0049          0033 74800000 WR BL 0,MRI INIT. RECEIVE LOGIC.
0050          0035 8400008 WR0 BFNE TCO,0,WA IF CHARS. STOP, FORGET MSG.

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0051	0037	84000072		BFNE QF,0,AQUIT	STOP THIS HORROR SHOW?
0052	0039	84000835		BFNE ERMF,1,WR0	
0053	003B	8400007C		BFNE ACAF,0,WRW	IGNORE INCORRECT A/C ADDR.
0054	003D	84000078		BFNE MLFL,0,WRL	IGNORE MESSAGE
0055	003F	84000074		BFNE MLFS,0,WRS	LENGTH ERRORS.
0056	0041	74800000		BL 0,FCCLASS	GET CLASSIFICATION OF MSG.
0057	0043	8400084B		BFNE KBPM,1,WR1	SEE IF OPR. WANTS TO
0058	0045	88000000		SETF KBDM,0	SEND A KEYB. MSG.
0059	0047	88000800		SETF KL1,1	PROMPT A GENERAL POLL RQST.
0060	0049	88000800		SETF KBDMIP,1	SHOW THE MSG. IS IN PROGRESS.
0061	004B	748000FC	WR1	BL 0,AVCI	DECODE CURRENT MESSAGE.
0062	004D	84000857		BFNE BCSE,1,NOTBCS	
0063	004F	44810042		LA 1,ERBCS	BCS ERROR, "B".
0064	0051	8400085D		BFNE MAKE,1,GI	UPPER CASE ON "ACK".
0065	0053	4C81002D		AA 1,X'20'	LOWER CASE ON "NAK".
0066	0055	7082005D		B GI	
0067	0057	4481002E	NOTBCS	LA 1,XGOODY	NO BCS ERROR.
0068	0059	8400085D		BFNE MAKE,1,GI	"." FOR ACKNOWLEDGE.
0069	005B	4481004E		LA 1,FRNAK	'N', OTHERWISE.
0070	005D	74800000	GI	BL 0,CPRINT	ON SECONDARY TERMINAL!
0071	005F	7082 05D		B \$-2	
0072	0061	44800000		LA 0,SNDMB	DO SEND BUFFER.
73	0063	48800067		ST 0,\$+4	
0074	0065	74800000		BL 0,SENDM	TRANSMIT MSG.
0075	0067			RES 1	
0076	0068	84000068		BFNE MD,0,\$	WAIT FOR END-OF-XMSN.
0077	006A	4481002D		LA 1,XMTS	PRINT TRANSMIT SENTINAL
0078	006C	74800000	WRP	BL 0,CPRINT	ON SECONDARY PRINTER.
0079	006E	7082006C		B \$-2	
008	0070	70820033		B WR	
0081			#		
0082	0072	70820000	AQUIT	B QUIT	WRAP IT UP!
0083	0074	44810053	WRS	LA 1,ERRORS	
0084	0076	7082006C		B WRP	
0085	0078	4481004C	WRL	LA 1,ERRORL	
0086	007A	7082 06C		B WRP	
0087	007C	44810057	WRW	LA 1,ERRORW	
0088	007E	7082006C		B WRP	
0089				PAGE	

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0090 008 88000800 WA      SETF ERMF,1      FORGET MSG.
0091 0082 88000000      SETF TC,0        STOP TIMING.
0092 0084 78820094      SSB WA3
0093 0086 70820033      B WR             GET NEXT MSG.
0094                                *
0095 0088 7C000092 WA0    LDS WA2          KILL INTERRUPTS.
0096 008A 7081008C WA1    XWB $+2
0097 008C 74800000      BL 0,DSROFF     KILL RECEIVER.
0098 008E 70800090      XSB $+2
0099 0090 7C000094      LDS WA3
0100                                *
0101 0092 008A WA2      DATA WA1,X'C0'
0093 00C0
0102 0094 WA3      RES 2
0103 0096 0088      DATA WA0
0104 0097 0002 AIRSU  DATA AIRFI,X'C0'
0098 00C0
0105 0099 0020 NEWX  DATA NEWXE-NEWX,RTC,LFC,LFC,LFC,LFC,LFC,LFC
009A 0000
009B 000A
009C 000A
009D 000A
009E 000A
009F 000A
00A0 000A
0106 00A1 2E532E54      DATA C'.S.T.A.R.T. .O.F.'
00A3 2E412E52
00A5 2E542E20
00A7 2E4F2E46
00A9 2E20
0107 00AA 2E452E58      DATA C'.E.X.P.E.R.I.M.E.N.T. .--.'
00AC 2E502E45
00AE 2E522E49
00B0 2E4D2E45
00B2 2E4E2E54
00B4 2E202E2D
00B6 2E2D
0108 00B7 000D      DATA RTC,LFC,LFC
00B8 000A
00B9 000A
0109 00B9 NEWXE  EQU $-1
0110 00BA 0041 TMES  DATA TMESE-TMES,RTC,LFC,LFC,LFC,LFC,LFC,LFC
00BB 000D
00BC 000A
00BD 000A
00BE 000A
00BF 000A
00C0 000A
00C1 000A
0111 00C2 2E542E41      DATA C'.T.A.P.E. .T.O.'

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00C4	2E502F45	
00C6	2E202E54	
00C8	2E4F2F20	
0112	00CA 2E552E4E	DATA C'.U.N.I.T. .? .(.R.E.C.O.R.D.)!'
	00CC 2E492E54	
	00CE 2E202E32	
	00D0 2E202E28	
	00D2 2E522F45	
	00D4 2E432E4F	
	00D6 2E522E44	
	00D8 2E292E21	
0113	00DA 000D	DATA RTC,LFC
	00DB 000A	
0114	00DC 2E572E48	DATA C'.W.H.E.N. .R.E.A.D.Y. .-.-. '
	00DE 2E452E4E	
	00E0 2E202E52	
	00E2 2E452E41	
	00E4 2E442E59	
	00E6 2E202E2D	
	00E8 2E2D2E20	
0115	00EA 2E482E49	DATA C'.H.I.T. .R.E.T.U.R.N. .K.E.Y.! . . . '
	00EC 2E542E20	
	00EE 2E522E45	
	00F0 2E542E55	
	00F2 2E522E4E	
	00F4 2E202E4B	
	00F6 2E452E59	
	00F8 2E212E20	
	00FA 2E202E20	
0116	00FB	TMESSE EQU \$-1
0117		PAGE

```
0118          *      RECEIVE BUFFER INDICES.
0119 0006      RM      EQU  6
0120 0007      RMN     EQU  7
0121 000C      RAC1    EQU 12
0122 000D      RAC2    EQU 13
0123 000E      RTAN    EQU 14
0124 000F      RLC1    EQU 15
0125 0010      RLC2    EQU 16
0126 0011      RSTX    EQU 17
0127 0012      RMC     EQU 18
0128          *      SEND BUFFER INDICES.
0129 0001      SM      EQU  1
0130 0002      SMN     EQU  2
0131 0007      SAC1    EQU  7
0132 0008      SAC2    EQU  8
0133 0009      STAN    EQU  9
0134 000A      SLC1    EQU 10
0135 000B      SLC2    EQU 11
0136 000C      SSTX    EQU 12
0137          *      CONDITION CODES (STATUS REGISTER).
0138 000A      GT      EQU 10
0139 000B      EQ      EQU GT+1
    40 000C      LT      EQU EQ+1
0141          PAGE
```

0142	00FC	4C800002	AVCL	AA	0,2	CALC. RETURN ADDRESS.
0143	00FE	4880016D		ST	0,XAVCL+1	SFT-UP EXIT.
0144	0100	44830000		LA	3,SNDMB	SET "SEND" AREA BASE.
0145	0102	44820000		LA	2,RCVMB	SET "RECEIVE" AREA BASE.
0146	0104	88000000		SETF	EFT,0	ASSUME NON-ECHO.
0147	0106	40200006		L	0,RM,2	
0148	0108	40800000		ST	0,MS	SAVE MODE SEEN.
0149	010A	C0800031		CRA	0,MODE1	
0150	010C	E0800114		BC	EQ,SEFT	
0151	010E	C0800033		CRA	0,MODE3	
0152	0110	E0800114		BC	EQ,SEFT	
0153	0112	70820116		B	\$+4	
0154	0114	88000000	SEFT	SETF	EFT,1	ECHO TYPE!
0155	0116	44800000		LA	0,OMSG4	MOVE SEEN MSG. I.D.
0156	0118	408002C7		ST	0,AMOV1	TO OMSG0-OMSG4.
0157	011A	46A0000B		LA	0,RMN+4,2	
0158	011C	488002C8		ST	0,AMOV1	
0159	011E	4481FFFC		LA	1,-4	FIVE CHAR. MOVE.
0160	0120	788202C9		SSR	AMOVE	
0161	0122	88000000		SETF	NAK,0	ASSUME "ACK" SEEN.
0162	0124	84000252		BFNE	BCSF,0,BCS0	DO BCS ER. PROC., IF NEC.
0163	0126	88000000		SETF	FAN,0	FORCE "ACK".
64	0128	4620000F		L	0,RIC1,2	GFT SEEN L.C. 1.
0165	012A	C0800045		CRA	0,OPC	IF FOR PRINTER.
0166	012C	E08001C3		BC	EQ,MES4P	QUEUE IT.
0167	012E	C0800054		CRA	0,TMC	IF FOR CLOCK.
0168	0130	E08001E1		BC	EQ,ITSYN	SET IT.
0169	0132	171CB71E	RFRC SK	MOV	NAKGS,BCSK	RE-SET FULL BCS COUNTER.
0170	0134	1C0E4006		CMI	(RTAN,2),ACK	ACKNOWLEDGE SEEN?
0171	0136	70070000		NOP		NO.
0172	0138	70820282		B	ACKNOT	NO.
0173	013A	44800000		LA	0,ARD	TALLY ACKNOWLEDGE ONLY
0174	013C	4C000000		A	0,CLASSC	WHEN THERE WASN'T ANY
0175	013E	84000944		BFNE	EFT,1,\$+6	BCS ERROR!
0176	0140	20000001		AMI	(ECHOAK,0),1	
0177	0142	70820146		B	\$+4	
0178	0144	20000001		AMI	(NEAK,0),1	
0179	0146	88000000		SETF	KL3,0	KEYB. MSG. MADE IT.
0180	0148	44810023		LA	1,XGOODX	GOOD BCS/"ACK".
0181	014A	74800000		BL	0,FREC	RECORD "GOOD" MESSAGE.
0182	014C	171CB71D	RFNAKK	MOV	NAKGS,NAKK	RE-SET FULL NAK COUNTER.
0183	014E	171FB000		MOV	BLANK,(OMSG4,4)	
0184	0150	84000199	ECHCK	BFNE	EFT,0,SUE	IF ECHO PROC., SET-UP ECHO.
0185	0152	1720AC01		MOV	NORMT,(SM,3)	SET TO NORMAL TEXT.
0186	0154	74800234		BI	0,PRE	MOVE IN PREAMBLE.
0187	0156	8400016C		BFNE	KL3,0,XAVCL	IF KEYB. MSG. DIDN'T MAKE
0188			*			IT. SEND IT AGAIN.
0189	0158	8400016E		BFNE	KL2,0,KTEXT	KEYB. TEXT READY?
0190	015A	4480000C		LA	0,12	NO. BUFFER LENGTH
0191	015C	48800000		ST	0,SNDMB	IS TWELVE.

0192	015E	1721AC0C		MOV	ETX,(SSTX,3)	PUT IN ETX.
0193	0160	44800051	LC1S	LA	0,LC0	SET-UP A "Q".
0194	0162	8400096A		BFNE	KL1,1,SETLC1	Q, IF KEYB. MSG.; ELSE, R.
0195	0164	88000000		SETF	KL1,0	UN-PROMPT GEN. POLL.
0196	0166	88000800		SETF	KL2,1	SHOW G.P. REQUESTED.
0197	0168	4C800001		AA	0,1	
0198	016A	4AB0000A	SETLC1	ST	0,SLC1,3	
0199	016C	7082016C	XAVCL	B	\$	
0200				PAGE		

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0201 016E 45000000 KTEXT L 0,*CKBB GET TEXT COUNT OF
0202 0170 4C000000 A 0,CKBB CURRENT KEYB. BUFFER.
0203 0172 488002C8 ST 0,AMOVF ADD F.W.A. TO GET L.W.A.
0204 0174 44800000 LA 0,SNDBM GET STORE F.W.A., ADD
0205 0176 4D000000 A 0,*CKBB COUNT TO YIELD L.W.A.
0206 0178 488002C7 ST 0,AMOVF
0207 017A 14009000 MOV (CKBB,4),(CB,4)
0208 017C 45010000 L 1,*CKBB
0209 017E 5081000C SA 1,12
0210 0180 E08C0195 BC LT,NKTEXT
0211 0182 4081FFFF XORA 1,-1
0212 0184 788202C9 SSB AMOVE MOVE KEYBOARD TEXT.
0213 0186 88000800 KBREC SETF KL3,1 SHOW KEYB. MSG. BEING SENT.
0214 0188 88000000 SETF KL2,0
0215 018A 748002E7 BL 0,SBA 'AVAILABLE-IZE' THE BFR.
0216 018C 0000 DATA MANB
0217 018D 45010000 L 1,*CB FIX BFR. SZ. COUNT.
0218 018F 48810000 ST 1,SNDBM
0219 0191 44800045 LA 0,QPC 'E' TO LABEL CHAR. 1.
0220 0193 7082016A B SETLC1 CONTINUE SFT-UP.
0221 *
0222 0195 1721AC0C NKTEXT MOV ETX,(SSTX,3) MOVE IN 'ETX'.
23 0197 70820186 B KBREC
0224 PAGE

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0225	0199	1723AC01	SUF	MOV	ECHOM,(SM,3)	SET-UP ECHO MODE.
0226	019B	74800234		BL	0,PRE	MOVE IN PREAMBLE.
0227	019D	44800000		LA	0,RCVMB	SET-UP POINTER TO
0228	019F	4C000000		A	0,RCVMB	2ND BCS CHARACTER.
0229	01A1	488002C8		ST	0,AMOVF	
0230	01A3	46B00008		LA	0,SSTX-4,3	SET POINTER FOR L.W.A.
0231	01A5	4C000000		A	0,RCVMB	F.W.A. IS FOR CHAR. AFTER
0232	01A7	488002C7		ST	0,AMOVF	STX CHARACTER!
0233	01A9	44010000		L	1,RCVMB	SET COUNTER FOR
0234	01AB	50810007		SA	1,7	MOVE ROUTINE.
0235	01AD	4081FFFF		XORA	1,-1	
0236	01AF	788202C9		SSB	AMOVE	F.W.A. + 9.
0237	01B1	46B00009		LA	0,9,3	ADD COUNT.
0238	01B3	4C000000		A	0,RCVMB	FORCE ETX.
0239	01B5	1721A000		MOV	ETX,(0,0)	
0240	01B7	14004C00		MOV	(0,2),(0,3)	
0241	01B9	20006009		AMI	(0,3),9	SEND BFR. IS 9 LONGER.
0242	01BB	44000000		L	0,SNDMB	GET BFR. SIZE.
0243	01BD	5080000D		SA	0,13	TRANS. TEXT COUNT
0244	01BF	4AB0000D		ST	0,SSTX+1,3	IS 13 LESS THAN BFR. SZ.
0245	01C1	70820160		B	LC1S	
0246				PAGE		

0247	01C3	46A00012	MES4P	LA	0,RLC2+2,2	ADDRESS OF 'PURE' TEXT.
0248	01C5	488001DA		ST	0,MES4PP	
0249	01C7	44010000		L	1,RCVMB	GET COUNT OF 'PURE' TEXT.
0250	01C9	50810014		SA	1,20	
0251	01CB	E08A01CF		BC	GT,\$+4	QUEUE ONLY MSGS. OF AT LEAST
0252	01CD	70820132		B	RFBCSK	ONE PRINTABLE CHARACTER!
0253	01CF	74800311		BL	0,SCRLF	
0254	01D1	7882020A		SSB	KMT0	MOVE TIME TO
0255	01D3	74800000		BI	0,OPRINT	PRINT AREA.
0256	01D5	0225		DATA	KMT	
0257	01D6	708201D3		B	\$-3	
0258	01D8	74800000		BL	0,NPRINT	QUEUE TO PRINTER.
0259	01DA		MES4PP	RES	1	ON SECONDARY TERMINAL.
0260	01DB	7082:108		B	\$-3	
0261	01DD	74800311		BL	0,SCRLF	
0262	01DF	70820132		B	RFBCSK	CONTINUE INSPECTION.
0263			*			
0264			*			
0265	01F1	46A00012	ITSYN	LA	0,RLC2+2,2	ADDRESS OF TIME.
0266	01E3	44810000		LA	1,TODHRA	ADDRESS OF CLOCK.
0267	01E5	78820205		SSB	ITSYN2	SAVE STATUS AND BRANCH.
0268	01E7	4620001B		L	0,RLC2+11,2	GET # OF NAKS FROM G.S.
69	01E9	50800030		SA	0,X'30'	UN-ENCODE.
0270	01EB	4880031C		ST	0,NAKGS	MANUAL RESPONSE AT G.S.
0271	01ED	4620001C		L	0,RLC2+12,2	GFT # OF PRE-KEYS FROM
0272	01FF	5080003:		SA	0,X'30'	G.S. AND UN-ENCODE.
0273	01F1	48800000		ST	0,KNPK	USE SAME VALUE IN A/C.
0274	01F3	70820132		B	RFBCSK	CONTINUE INSPECTION.
0275			*			
0276	01F5	7C000208	ITSYN0	LDS	ITSYN3	STOP CLOCK MOMENTARILY.
0277	01F7	14000400	ITSYN4	MOV	(0,0),(0,1)	SET IN NEW TIME.
0278	01F9	C0810000		CRA	1,TODMSC	LAST TIME CHAR.?
0279	01FB	E08B0203		BC	EQ,ITSYN1	
0280	01FD	4C800001		AA	0,1	NO. MORE.
0281	01FF	4C810001		AA	1,1	
0282	0201	708201F7		B	ITSYN4	
0283	0203	7C000205	ITSYN1	LDS	ITSYN2	GET SAVED STATUS AND RETURN.
0284			*			
0285	0205		ITSYN2	RES	2	
0286	0207	01F5		DATA	ITSYN0	
0287	0208	01F7	ITSYN3	DATA	ITSYN4,X'C0'	
	0209	00C0				
0288	0020		SPACE	EQU	X'20'	
0289	003A		COLON	EQU	X'3A'	
0290	020A		KMT0	RES	2	
0291	020C	020F		DATA	KMT2	
0292	020D	0211	KMT1	DATA	KMT3,X'C0'	
	020E	00C0				
03			*			
0294	020F	7C000200	KMT2	LDS	KMT1	MOMENTARILY STOP CLOCK.

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0295 0211 14009626 KMT3 MOV (TODHRA,4),KMTHRA
0296 0213 14009627 MOV (TODHRB,4),KMTHRB
0297 0215 14009629 MOV (TODMNA,4),KMTMNA
0298 0217 1400962A MOV (TODMNB,4),KMTMNB
0299 0219 1400962C MOV (TODSCA,4),KMTSCA
0300 021B 1400962D MOV (TODSCB,4),KMTSCB
0301 021D 1400962F MOV (TODMSA,4),KMTMSA
0302 021F 14009630 MOV (TODMSB,4),KMTMSB
0303 0221 14009631 MOV (TODMSC,4),KMTMSC
0304 0223 7C00020A LDS KMT0 CLOCK ON AND CONTINUE.
0305 *
0306 0225 000E KMT DATA KMTF-KMT
0307 0226 KMTHRA RES 1
0308 0227 KMTHRB RES 1
0309 0228 003A DATA COLON
0310 0229 KMTMNA RES 1
0311 022A KMTMNB RES 1
0312 022B 003A DATA COLON
0313 022C KMTSCA RES 1
0314 022D KMTSCB RES 1
0315 022E 002E DATA PERIOD
0316 022F KMTMSA RES 1
0317 0230 KMTMSB RES 1
0318 0231 KMTMSC RES 1
0319 0232 0020 DATA SPACE,SPACE
0233 0020
032 0233 KMTF EQU $-1
0321 PAGE

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0322 0234 4C800002 PRE AA 0,2 SFT RETURN ADDRESS.
0323 0236 48800251 ST 0,XPRE+1
0324 0238 44800000 LA 0,OMSG4 MOVE IN MSG. #.
0325 023A 488002C0 ST 0,AMOVF
0326 023C 46B00002 LA 0,SMN,3 ADDRESS OF MSG. # FOR SEND.
0327 023E 4C800004 AA 0,4 SET L.W.A. TO BE MOVED TO.
0328 0240 488002C7 ST 0,AMOVF
0329 0242 4481FFFC LA 1,-4 FIVE CHARS.
0330 0244 788202C9 SSB AMOVE HEAD 'EM UP -- MOVE 'EM OUT.
0331 0246 1724AC07 MOV AC1,(SAC1,3) MOVE A/C I.D.
0332 0248 1725AC08 MOV AC2,(SAC2,3)
0333 024A 1722AC0C MOV ASTX,(SSTX,3)
0334 024C 44800051 LA 0,ICQ SFT-UP L.C. 2.
0335 024E 4A80000B ST 0,SLC2,3
0336 0250 70820250 XPRE B $
0337 *
0338 *
0339 0252 88000800 BCS0 SFTF FAN,1 FORCE "NAK".
0340 0254 44800000 LA 0,ABD
0341 0256 4C000000 A 0,CLASSC
0342 0258 84000A5E BFNE EFT,1,$+6
0343 025A 20000001 AMI (ECHORC,0),1 UPDATE STATS.
44 025C 70820260 B $+4
0345 025E 20000001 AMI (NFBC,0),1
0346 0260 44810042 LA 1,ERBCS
0347 0262 74800000 BL 0,EREC LOG ERROR!
0348 0264 231FBFFF AMI BCSK,-1
0349 0266 E08A0150 BC GT,ECHICK
0350 0268 74800000 BL 0,OPRINT COUNTER EXHAUSTED!
0351 026A 0273 DATA LNKF
0352 026B 70820268 B $-3
0353 026D 748002BB BL 0,KBQ KILL ANY KFYB. MSG.
0354 026F 171CB71E MOV NAKGS,BCSK
0355 0271 70820150 B ECHECK RE-SFT COUNTER.
0356 *
0357 *
0358 000D RTC EQU X'D'
0359 000A LFC EQU X'A'
0360 0273 000E LNKF DATA LNKF=LNKF,RTC,LFC
0274 000D
0275 000A
0361 0276 2E4C2F49 DATA C'L,I,N,K. .F.A.I.L.!!
0278 2E4E2E4B
027A 2E202E46
027C 2E412F49
027E 2E4C2E21
0362 0280 000D DATA RTC,LFC
0281 000A
53 0281 LNKF EQU $-1
0364 PAGE
    
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0365 0282 88000800 ACKNOT SETF NAK,1      SHOW "ACK" NOT SEEN.
0366 0284 84000150      BFNE BCSE,0,ECHECK
0367      *      BCS ERROR IS DOMINANT OVER A "NAK"!
0368 0286 44800000      LA 0,ABD
0369 0288 4C000000      A 0,CLASSC
0370 028A 84000A90      BFNE EFT,1,$+6
0371 028C 20000001      AMI (ECHKONK,0),1 UPDATE STATS.
0372 028E 70820292      B $+4
0373 0290 20000001      AMI (NENK,0),1
0374 0292 4481004E      LA 1,ERNAK      FILE ERROR.
0375 0294 74800000      BL 0,EREC
0376 0296 231DBFFF      AMI NAKK,-1      TALLY NAK COUNTER.
0377 0298 E08A02A3      BC GT,NOTEX
0378 029A 74800000      BL 0,OPRINT
0379 029C 0273      DATA LNKF
0380 029D 7082029A      B $-3
0381 029F 748002BB      BL 0,KBQ      KILL ANY KEYB. MSG.
0382 02A1 7082014C      B RFNAKK      RE-SET NAK COUNTER.
0383 02A3 1000971F      CM (OMSG4,4),BLANK
0384 02A5 70070000      NOP      NOT BLANK.
0385 02A7 708202AB      B $+4      NOT BLANK.
0386 02A9 708202B5      B NOTEXA      FORCE ALPHA 'A'.
0387 02AB 20008001      AMI (OMSG4,4),1 STEP ALPHA.
0388 02AD 1C00805A      CMI (OMSG4,4),ALPHAZ
0389 02AF 70820150      B ECHLCK      LESS THAN "Z".
0390 02B1 708202B5      B NOTEXA      MORE THAN "Z".
0391 02B3 70820150      B ECHECK      EXACTLY "Z".
0392 02B5 44800041      NOTEXA LA 0,ALPHAA
0393 02B7 48800000      ST 0,OMSG4
0394 02B9 70820150      B ECHECK
0395      *
0396      *
0397 02BB 88000000      KBQ      SETF KL1,0      KILL ANY POSSIBLE
0398 02BD 88000000      SETF KL2,0      IN-PROGRESS KEYB.
0399 02BF 88000000      SETF KL3,0      MESSAGE.
0400 02C1 88000000      SETF KBDM,0
0401 02C3 88000000      SETF KBDMIP,0
0402 02C5 72820002      B 2,0
0403      PAGE

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0404 02C7          DEF  AMOVT,AMOVF,AMOVE
0405 02C7          AMOVT RES 1
0406 02C8          AMOVF RES 1
0407 02C9 0000     AMOVE DATA 0,0,AMOV
          02CA 0000
          02CB 02CE
0408 02CC 02D8     AMOVB DATA AMOVA,0
          02CD 0000

0409
0410
0411
0412
0413
          *
          *AMOVF HAS L.W.A. OF AREA TO BE MOVED FROM.
          *AMOVT HAS L.W.A. OF AREA TO BE MOVED TO.
          *REGISTER 1 HAS -(CHAR. COUNT - 1).
          *
0414 02CE 440002CA AMOV  L 0,AMOVE+1  GET STATUS.
0415 02D0 5880FDFF  NA 0,X'FDFF'  MASK FOR POST-INDEXING.
0416 02D2 4C800207  AA 0,X'200'
0417 02D4 488002CD  ST 0,AMOVB+1
0418 02D6 7C0002CC  LPS AMOVA
0419 02D8 471002C8 AMOVA L 0,*AMOVF,1  BRANCH, WITH NEW STATUS.
          GET CHAR.
0420 02DA 4B9002C7  ST 0,*AMOVT,1  PUT CHAR.
0421 2DC 0C1102D8  ARB 1,AMOVA,1  DONE?
0422 02DE 471002C8  L 0,*AMOVF,1  ACTUALLY, THERE'S ONE MORE!
          23 02E 4B9002C7  ST 0,*AMOVT,1
0424 2E2 7C0002C9  LPS AMOVE  YES -- RETURN TO CALLER.
0425
          *
0426
          *
0427 02E4          SBA2 RES 1
0428 02E5          SBA1 RES 1
0429 02E6          SBA0 RES 1
0430
          *
0431 02E7 4C800002  SBA  AA 0,2  SET TO CALLING PARAMETER.
0432 02E9 488002E6  ST 0,SBA0
0433 02EB 488102E5  ST 1,SBA1
0434 02ED 488202E4  ST 2,SBA2
0435 02EF 4482FFFD  LA 2,-3  THREE TRIES, FOR AUID
0436 02F1 450102E6  L 1,*SBA0  LANG SYNF!
0437 02F3 488102E6  ST 1,SBA0
0438 02F5 4 0102E6  SBAGP L 1,*SBA0  GET POINTER TO A BFR.
0439 02F7 C001 00  CR 1,CP  THIS ONE?
0440 2F9 E08B 301  BC FQ,SBAQ
0441 02FB 22E6A001  AMI SBA0,1  NOPE!
0442 02FD 0C2102F5  ARB 1,SIACP 2  DO NEXT ONE.
0443 02FF 7082 2FF  B $  IT MUST BE FOUND!!!!
          'AVAILAB E-IZF' IT!
0444 0301 4C818000  SBAQ AA 1,X'8000'
0445 0303 498102E6  ST 1,*SBA0
0446 0305 88000 0  SETF KBDMIP,0  SHOW ALL TAKEN CARE OF.
0447 0307 440202E4  L 2,SBA2
0448 0309 440102E5  L 1,SBA1
          19 030B 72820001  B 1,0
045
          *

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0451 030D 0002 LBFR DATA 2,RIC,IFC,0
      030E 0000
      030F 000A
      031 0 0 0
0452 *
0453 0311 40800002 SCRLF AA 0,2 SET RETURN ADDRESS.
0454 0313 4880031 ST 0,1BFR+3 ON SECONDARY TERMINAL.
0455 0315 7480000 BI 0,OPRINT
0456 0317 0300 DATA 1BFR
0457 0318 7082 315 B 4-3
0458 31A 7002031 *B 1BFR+3 ALL DONE!
0459 *
0460 031 MOFF1 EQU X'31'
0461 0033 MODE3 EQU X'33'
0462 0045 QPC EQU X'45'
0463 0054 TMC EQU X'54'
0464 0051 LCO EQU X'51'
0465 0042 FRPCS EQU X'42'
0466 004E FRPAK EQU X'4E'
0467 0041 ALPHAA EQU X'41'
0468 005A ALPHAZ EQU X'5A'
0469 006 ACK EQU 6
      70 023 XGOODX EQU X'23'
0471 002E XGOODY EQU X'2E'
0472 002E PERIOD EQU XGOODY
0473 0057 ERRO W EQU X'57'
0474 0053 ERRORS EQU X'53'
0475 004C ERROR L EQU X'4C'
0476 0020 XMIS EQU X'20'
0477 031C 000A NAKCS DATA 10
0478 0310 NAKK RTS 1
0479 031E PCSK RTS 1
0480 031F 0 20 PLANK DATA X'20'
0481 032 0 32 NORMT DATA X'32'
0482 0321 0 03 FTX DATA 3
0483 0322 0 02 ASTX DATA 2
0484 0323 0 48 FCHOM DATA X'48'
0485 0324 0 30 AC1 DATA X'30'
0486 0325 0 31 AC2 DATA X'31'
0487 *
0488 0326 END
0000 ERRO S : LENGTH = 0326

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0051	0036	4621,00	L	1,0,2	
0052	0038	7480,000	BL	0,RCSN	DO ETX/ETB.
0053	003A	7480,00	BL	0,RCSFE	DO BCS'S.
0054	003C	4400,000	L	0,RBCSW	
0055	003E	5880,0FF	NA	0,X'FF'	
0056	004	4AA0,001	ST	0,1,2	
0057	0042	6808,000	MRR	8,RBCSW	GET 2ND BCS.
0058	0044	4,000,000	L	0,RBCSW	
0059	0046	5880,0FF	NA	0,X'FF'	
0060	0048	4AA0,002	ST	0,2,2	
0061	004A	14007466	MOV	(0,3),S15	SAVE BFR. SIZE W/O BCS'S.
0062	004C	2,006,002	AMI	(0,3),2	UPDATE BFR. SZ. CNT. BY 2.
0063	004E	4883,0054	ST	3,DSOUTP	
0064	0050	8800,0800	SETF	MD,1	SHOW TRANSMITTING.
0065	0052	7480,000	BL	0,DSOUT	
0066	0054		DSOUTP RES	1	SEND IT!
0067	0055	1466AC,00	MOV	S+5,(0,3)	BFR. SIZE W/O BCS'S. ET AL.
0068	0057	4403,0064	L	3,S+3	
0069	005	4402,0063	L	2,S+2	
0070	005B	4401,0062	L	1,S+1	
0071	005D	4405,0068	L	5,S+7	
0072	005F	7002,0061	DB	S	DONE!
73			*		
0074	0061		S	RES	8
0075	0069	0031	LH3	DATA	X'31',X'33'
	006A	0033			
0076			PAGE		

```

0077          *THIS LOGIC RUNS IN W-O-R-K-E-R M-O-D-E !
0078          *
0079      06B          DEF  MSGREC
0080          *
0081      006B 488501CF MSGREC ST  5,MR+5
0082      006D 44850000 LA  5,ASUPRA
0083      006F 84000C75 BFINE #ERMF,1,$+6 IF END-MSG. FLAG. SET.
0084      0071 440501CF L  5,MR+5 SIMPLY GET OUT.
0085      0073 72820002 B  2,0
0086      0075 4C800002 AA  0,2 SIT RETURN ADDRESS AND
0087      0077 488010CA ST  0,MR SAVE REGISTERS.
0088      0079 488101CB ST  1,MR+1
0089      007B 488201CC ST  2,MR+2
0090      007D 488301CD ST  3,MR+3
0091      007F 44800005 LA  0,5
0092      0081 48800000 ST  0,CHART
0093      0083 88000C00 SETF #TC,1 SET TIMING CHAR. FLAG AND COUNT.
0094      0085 440301D1 L  3,MRPUT FIRST CHAR. MUST
0095      0087 C0830002 CRA 3,2 BE A +. SECOND CHAR.
0096      0089 E08C017B BC  LT,CKPLUS MUST BE A *.
0097      008B E08B183 BC  EQ,CKSTAR THIRD/FOURTH CHARS.
0098      008D C0830004 CRA 3,4 MUST BE X'16 .
0099      008F E08B193 BC  EQ,CKSYNC
0100      0091 E08C193 BC  LT,CKSYNC
0101      0093 C0830006 CRA 3,6 FIFTH CHAR. MUST
0102      0095 E08C018B BC  LT,CKSOH BE X'1'. SIXTH CHAR.
0103      0097 E08B1A3 BC  EQ,CKMODF MUST BE A MODF.
0104      0099 44830000 LA  3,ABD GET DATA BASE ADDRESS.
0105      009B 44000000 L  0,CCNT IF CCNT = 0, EXPICT ETX/ETB
0106      009D E08B00A5 BC  EQ,MR0 BECAUSE TRANS. TEXT JUST COUNTED
0107      009F E08A00B0 BC  GT,MR1 OUT. IF CCNT > 0, CHAR. ISN'T
0108          * TRANS. TEXT, NOR BCS. IF CCNT <
0109      00A1 20006001 AMI (CCNT,3),1 0, CHAR. IS ONE OF THE TRANS.
0110      00A3 7082129 B  MR4 LAST TRANS., IF CCNT NOW = 0.
0111          *
0112      00A5 C0810003 MR0 CRA 1,ETXM ETX?
0113      00A7 E08B0001 BC  EQ,MRSEFC IF SO, SFT FCNT.
0114      00A9 C0810017 CRA 1,ETBM ETB?
0115      00AB E08B0001 BC  EQ,MRSEFC
0116      00AD 2103A001 AMI CLIVL,1 TALLY INDICATOR.
0117      00AF 88000C00 SFTF #MIFL,1 SHOW MSG. TOO LONG.
0118      00B1 4480FIFE MRSEC LA  0,-2 SET FCNT TO -2, TO WAIT
0119      00B3 48800000 ST  0,FCNT FOR TWO BCS'S.
0120      00B5 20006001 AMI (CCNT,3),1 FORCE MR1 PROC. NEXT TIME.
0121      00B7 88000400 MRSTX SETF #STXF,0 CLEAR STX-FLAG.
0122      00B9 7082129 B  MR4 NORMAL BCS ENTRY.
0123          *
0124      00BB 44000000 MR1 L  0,FCNT
0125      00BD E08C00C1 BC  LT,$+4 IN BCS'S?
0126      00BF 708200ED B  MR1A

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0127	001	4C80 000	AA	0,1	IF THIS IS THE FIRST
0128	003	F 80 007	BC	FQ,\$14	BCS SPEN, SAVE RBCSW
0129	005	14006001	MGV	(RBCSW,3),(PC	STEN,3)
013					AS THE CALCULATED BCS.
0131	007	7480:00	BI	0,PCSN	
0132	009	20006001	AMI	(ECNT,3),1	LAST ONE?
0133	00B	F 80 12B	BC	LT,MR4+2	IF NOT, STORE AWAY.
0134	00D	8800 40	SITF	#TC,0	STOP CHAR. TIMING.
0135	00F	7480:00	BI	0,RSROFF	KILL RECEIVER!
0136	001	4400:00	L	0,RBCSW	YES, PCS ERROR?
0137	003	F 80 007	BC	FQ,\$14	
0138	005	8800:00	SITF	#BCSE,1	
0139	007	8800:00	SITF	#ERMF,1	
0140	009	4400 101	L	0,MRPIT	SIT BUFFER SZ. COUNT.
0141	00B	4880:00	ST	0,RCVMP	
0142	00D	4482000	LA	2,RCVMP	FITCH CHAR. AFTER LC2.
0143	00F	4621 011	L	1,17 2	IF IT IS AN SIX, DEDUCT 20.
0144	001	C 81 002	CRA	1,STXM	IF IT ISN'T AN SIX, DEDUCT
0145	003	F 80 017	BC	EQ,\$14	19.
0146	005	4C800001	AA	0,1	
0147	007	5080:014	SA	0,20	
0148	009	40800000	ST	0,CRTCC	
49	00B	7082 15B	B	MRA2	
015					
0151	00D	C 81 003	CRA	1,FTXM	IF HERE, NOT TRANS., NOR
0152	00F	F 80 001	BC	FQ,MR5C	BCS CHAR.
0153	001	C 81 017	CRA	1,FTBM	IF ETX/ETB, NORMAL ETX/ETB
0154	003	F 80 001	BC	FQ,MR5C	PROCESSING.
0155	005	8400001B	BFNE	#STXF,1,MR3	IF SIX-FLAG SET, THIS IS
0156	007	4480:00	LA	0,RCVMP	A COUNT CHARACTER IF THE MODF
0157	009	4C800006	AA	0,6	IS TRANSPARENT, ILSI, JUST
0158	00B	4880:1CE	ST	0,MR14	ANOTHER CHARACTER.
0159	00D	4500:1CE	L	0,*MR+4	FITCH MODE CHAR.
016	00F	C 80 048	CRA	0,MODEH	H?
0161	010	F 80P 109	BC	FQ,MR2	
0162	013	C 80 031	CRA	0,MODE1	1?
0163	015	F 80B 109	BC	EQ,MR2	
0164	017	7 82 0B7	B	MRSTX	NEITHER.
0165					
0166	019	488101C7	ST	1,MRCHL	THIS IS A COUNT CHAR.
0167	01B	1007B5C8	CML	MRCHL,MRCHL+1	
0168	01D	7082 0B7	B	MRSTX	IF BITWEN 1 AND 220, IT IS
0169	01F	7 82 0B7	B	MRSTX	ALL RIGHT.
017	011	5081:002	SA	1,2	ELSE, NOT GOOD.
0171	013	4081FFFF	XORA	1,-1	SFT CNT ACCORDING TO CHAR.
0172	015	4881 00	ST	1,CNT	
0173	017	440101C7	L	1,MRCHL	RECOVER CHAR.
0174	019	7082 0B7	B	MRSTX	
75					
0176	011B	C 81 001	CRA	1,SOHM	SIX-FLAG NOT SET, IS THIS

0177	011D	F 8F 155	BC	FQ,MRSOH	AN SOH?	
0178	011F	84000D3F	BINE	#SOHF,1,MA3A	IF SOH-FLAG SET, IS THIS	
0179	121	1DCPA002	CMJ	MR+1,STXH	AN STX?	
0180	123	7082 129	B	MR4		
0181	125	7 82 129	B	MR4	NO.	
0182	0127	8P000C0	SETF	#STXF,1	YES!	
0183			*			
0184	129	7480000	MR4	BI	0,BCSN	DO NORMAL BCS CALL.
0185	12B	440101CB	L	1,MR11	GET CHAR. BACK.	
0186	12D	440001D1	L	0,MRPUT	PUT IN BUFFER.	
0187	12F	4A810000	ST	1,RCVMB,0		
0188	0131	1DF1A0F2	CMJ	MRPUT,242	BUFFER EXHAUSTED?	
0189	133	7082 149	B	MR5	NO.	
0190	135	7007 00	NOP		YES.	
0191	137	44800001	LA	0,1	YES.	
0192	0139	48800101	ST	0,MRPUT	START BUFFER FROM TOP!	
0193	013B	2103A000	AMI	CLIVL,1	TALLY INDICATOR.	
0194	013D	88000C0	SETF	#MIFL,1	YES.	
0195			*			
0196	013F	4480000	MA3A	LA	0,0	
0197	0141	48800000	ST	0,ECNT		
0198	143	44800001	LA	0,1	START BUFFER FROM TOP.	
0199	145	48800000	ST	0,CCNT		
0200	147	7082 12B	B	MR4+2		
0201			*			
0202	149	2101A001	MR5	AMI	MRPUT,1	NEXT LOCN.
0203	14B	440301CD	L	3,MR+3		
0204	014D	4402,1CC	L	2,MR+2		
0205	014F	440101CB	L	1,MR11		
0206	0151	440501CF	L	5,MR+5		
0207	0153	7002 1CA	B	MR		
0208			*			
0209	155	88000C00	MRSOH	SETF	#SOHF,1	SET SOH-FLAG.
0210	157	74800000	BI	0,DCSTE	SOH ENTRY TO BCS (ALC.)	
0211	0159	7 82 12B	B	MR4+2		
0212			*			
0213	015B	440001D1	MRA2	L	0,MRPUT	
0214	15D	C080,012	CRA	0,18		
0215	015F	E08A 167	BC	GT,MRA2A		
0216	161	2002A001	AMI	CSIVL,1	TALLY INDICATOR.	
0217	0163	88000C00	SETF	#MIFS,1	MESSAGE TOO SHORT.	
0218	0165	7082 12B	B	MR4+2		
0219			*			
0220	167	44800000	MRA2A	LA	0,RCVMB	
0221	169	4601000C	L	1,MAC1,0		
0222	016B	C081 03	CRA	1,X'30'		
0223	16D	E78F 173	BC	FQ,\$+6		
0224	016F	88000C00	MRA2B	SETF	#ACAF,1	INCORRECT AIRCRAFT ADDRESS!
0225	171	7 82 12B	B	MR4+2		
0226	0173	4601 00D	L	1,MAC2,0		

0227	0175	C081031	CRA	1,X'31'	
0228	0177	E08B012B	BC	EQ,MR4+2	
0229	0170	7082016F	B	MRA2B	
0230					
0231	017B	C08102B	CKPLUS	CRA	1,PLS
0232	017D	E08B011B	BC	EQ,MR3	IF EXPECTED CHAR.
0233	017F	2109A001	AMI	C11VL,1	IS SEEN, GO TO MR3;
0234	0181	708201B9	B	IGNORF	ELSE IGNORE.
0235	0183	C08102A	CKSTAR	CRA	1,STR
0236	0185	E08B011B	BC	EQ,MR3	
0237	0187	2108A001	AMI	C21VL,1	
0238	0189	708201B9	B	IGNORF	
0239	018B	C0810001	CKSOH	CRA	1,SOHM
0240	018D	E08B011B	BC	EQ,MR3	
0241	018F	2105A001	AMI	C51VL,1	
0242	0191	708201B9	B	IGNORF	
0243	0193	C081016	CKSYNC	CRA	1,SYN
0244	0195	E08B011B	BC	EQ,MR3	
0245	0197	C083003	CRA	3,3	
0246	0199	E08B019F	BC	EQ,\$+6	
0247	019B	2106A001	AMI	C41VL,1	
0248	019D	708201B9	B	IGNORF	
0249	019F	2107A001	AMI	C31VL,1	
0250	01A1	708201B9	B	IGNORF	
0251	01A3	C081031	CKMODE	CRA	1,MODE1
0252	01A5	E08B011B	BC	EQ,MR3	
0253	01A7	C081032	CRA	1,MODE1+1	
0254	01A9	E08B011B	BC	EQ,MR3	
0255	01AB	C081033	CRA	1,MODE1+2	
0256	01AD	E08B011B	BC	EQ,MR3	
0257	01AF	C081048	CRA	1,MODFH	
0258	01B1	E08B011B	BC	EQ,MR3	
0259	01B3	C081044	CRA	1,MODFH-4	
0260	01B5	E08B011B	BC	EQ,MR3	
0261	01B7	2104A001	AMI	C61VL,1	
0262	01B9	488601D	IGNORF	ST	6,MR+6
0263	01BB	7480000	BL	0,DSROFF	KILL RECEIVER.
0264	01BD	7070000	NOP		
0265	01BF	44860000	LA	6,ABF	
0266	01C1	748001DB	BL	0,MRI	
0267	01C3	440601D	L	6,MR+6	
0268	01C5	7082014B	B	MR5+2	
0269					
0270	0048		MODEH	EQU	X'48'
0271	0031		MODE1	EQU	X'31'
0272	0002		STXM	EQU	X'2'
0273	0001		SOHM	EQU	X'1'
0274	0003		FTXM	EQU	X'3'
0075	000C		MAC1	EQU	12
0276	000D		MAC2	EQU	MAC1+1

0277	0017	ETBM	EQU	X'17'
0278	01C7	MRCHL	RES	1
0279	01C8 0001		DATA	1,220
	01C9 00DC			
0280	01CA	MR	RES	7
0281	01DJ	MRPUT	RES	1
0282	01D2	CSIVL	RFS	1
0283	01D3	CLIVL	RFS	1
0284	01D4	C6IVL	RES	1
0285	01D5	C5IVL	RES	1
0286	01D6	C4IVL	RES	1
0287	01D7	C3IVL	RFS	1
0288	01D8	C2IVL	RES	1
0289	01D9	C1IVL	RES	1
0290			PAGE	

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0291          *THIS LOGIC RUNS IN EITHER MODE !
0292          *
0293      1DA          DFF  MRI
0294          *
0295      01DA      MRI0  RFS  1
0296      01BB 4C800002 MRI  AA  0.2          INIT. MSGRFC.
0297      01BD 408001DA      ST  0. MRI0
0298      01DF 44800001      LA  0.1
0299      01E1 408001E1      ST  0. MRPUT          PUT COUNTER.
0300      01E3 40800000      ST  0. CCNT
0301      01E5 40800000      ST  0. ECNT
0302      01E7 44800103      LA  0.250          CLEAR THE RECIPIE AREA.
0303      01E9 44810000      LA  1.0
0304      01EB 4A810000      ST  1. RCVMB.0
0305      01ED 0C0F01EB      ARE  -1.0-2.0
0306      01EF 80000000      SETF 1C.0
0307      01F1 80000000      SETF FCSE.0
0308      01F3 80000000      SETF MLFI.0
0309      01F5 80000000      SETF MLFS.0
0310      01F7 80000000      SETF STXF.0
0311      01F9 80000000      SETF SOIF.0
0312      01FB 80000000      SETF FRMF.0
0313      01FD 80000000      SETF ACAF.0
0314      01FF 80000000      SETF TCO.0
0315      0201 7002 1DA      MR  MRI0
0316          PAGE
    
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Address	Hex	Hex	Hex	Label	Value	Comment
0317	203			DIF	TAS	
0318			*			
0319	203	4482000	TAS	LA	2,NFBC	SET UP CLEAR COUNTER.
032	205	4C82000		AA	2,4	
0321	207	5082000		SA	2,ECHOAK	
0322	209	488201CA		ST	2,MR	
0323	20B	4482000		LA	2,ECHOAK	
0324	20D	488201CB		ST	2,MR+1	
0325	20F	48850061		ST	5,S	
0326	211	4485000		LA	5,ASUPRA	
0327	213	4481000		LA	1,0	
0328	215	408101CB		ST	1,*MR+1	
0329	217	21CBA001		AMI	MR+1,1	
033	219	21CABFFF		AMI	MR,-1	
0331	21B	F08A 215		BC	GT,-6	
0332	21D	4AF1000		ST	1,0,6	
0333	21F	4AF10001		ST	1,1,6	CLEAR FLAG WORDS.
0334	221	8800080		SETF	FRHF,1	DON'T ACCEPT RCV. CHAR.
0335	223	4881000		ST	1,OMSC	
0336	225	4881000		ST	1,RBCSW	
0337	227	4881000		ST	1,I PCSW	
0338	229	488101D4		ST	1,C6IVL	
	39	22B	488101D5	ST	1,C5IVL	
034	22D	488101D6		ST	1,C4IVL	
0341	22F	488101D7		ST	1,C3IVL	
0342	231	488101D8		ST	1,C2IVL	
0343	233	488101D9		ST	1,C1IVL	
0344	235	488101D2		ST	1,CSIVL	
0345	237	488101D3		ST	1,CLIVL	
0346	239	4481003		LA	1,X'30'	
0347	23B	4881000		ST	1,TODMSC	
0348	23D	4881000		ST	1,TODMSB	
0349	23F	4881000		ST	1,TODMSA	
035	241	4881000		ST	1,TODSCB	
0351	243	4881000		ST	1,TODSCA	
0352	245	4881000		ST	1,TODMNB	
0353	247	4881000		ST	1,TODMNA	
0354	249	4881000		ST	1,TODIRB	
0355	24B	4881000		ST	1,TODIRA	
0356	24D	4881000		ST	1,OMSG3	
0357	24F	4881000		ST	1,OMSG2	
0358	251	4881000		ST	1,OMSG1	
0359	253	4881000		ST	1,OMSG0	
036	255	4481002		LA	1,X'20'	
0361	257	4881000		ST	1,OMSG4	
0362	259	4482000		LA	2,MANE	
0363	25B	488201CA		ST	2,MR	
0364	25D	4481FFFF		LA	1,-3	
0365	25F	450201CA		L	2,*MR	
0366	261	58827FFF		NA	2,X'7FFF'	

0367	0263	4C828000	AA	2.X'8000'
0368	0265	498201CA	ST	2.*MR
0369	0267	21CAA001	AMI	MR,1
0370	0269	0C11025F	ARB	1,\$-10,1
0371	026B	44050061	L	5.S
0372	026D	72820002	B	2.0
0373			PAGE	

0374	002B		PLS	EQU	X'2B'	
0375	002A		STR	EQU	X'2A'	
0376	0016		SYN	EQU	X'16'	
0377	0036		MINC1	EQU	X'36'	
0378	0037		MINC2	EQU	MINC1+1	
0379	0038		MINC3	EQU	MINC2+1	
0380	0039		MINC4	EQU	MINC3+1	
0381	004A		MALF	EQU	MODEH+2	
0382	0030		MRAC1	EQU	X'30'	
0383	0031		MRAC2	EQU	MRAC1+1	
0384	0041		CA	EQU	X'41'	
0385	026F 02B0		MRDSB	DATA	MFIN1,X'C0'	
	0270 00C0					
0386	0271 0294		MRDWB	DATA	MRD,X'80C0'	
	0272 80C0					
0387	0273		TM0	RES	1	
0388	0274		TM1	RES	1	
0389	0275 02C0		MSGSQ	DATA	MSGE1,MSGE2,MSGE3,MSGE4,-1,0,0,0,0	
	0276 02D9					
	0277 02F1					
	0278 0309					
	0279 FFFF					
	027A 0000					
	027B 0000					
	027C 0000					
	027D 0000					
0390						*
0391	027E 44840000		LA	4,ABD		
0392	028 44850000		LA	5,ASUPRA		
0393	0282 44860000		LA	6,ARF		
0394	0284 44870F00		LA	7,X'F00'		
0395	0286 74800203		BL	0,IAS	INIT. AIR SYSTEM.	
0396	0288 7007000		NOP			
0397	028A 44800275		LA	0,MSGSQ	START MSG. SEQUENCE.	
0398	028C 48800273		ST	0,TM0		
0399	028E 7480010B	IRI	BL	0,MRI	INIT. RECEIVER LOGIC.	
0400	029 70810292		XWB	0+2	GO TO WORKER MODI.	
0401	0292 7C000271		LDS	MRDWB		
0402						*
0403	0294 45000273	MRD	L	0,*TM0	GET MESSAGE PTR.	
0404	0296 E08C 2BA		BC	LT,MRDFN0	ALL MSGS. DONE?	
0405	0298 48800274	MRD0	ST	0,TM1	NO. SAVF PTR.	
0406	029A 45010274		L	1,*TM1	GET CHARACTER.	
0407	029C E08C 2AC		BC	LT,MFIN0	THIS MESSAGE DONE?	
0408	029E 7007000		NOP			
0409	02A 7480006B		BL	0,MSGREC	NO. PROCESS CHARACTER.	
0410	02A2 7007000		NOP			
0411	02A4 7007000		NOP			
0412	02A6 44000274		L	0,TM1	ADVANCE TO NEXT CHAR.	
0413	02AB 4C800001		AA	0.1		

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0414 02AA 7082 298      B      MRD0      REPEAT PERFORMANCE.
0415                               *
0416 02AC 7080 2AE MFING XSB  $12      GO TO SUPERVISOR MODE.
0417 02AE 7C00026F      LFS  MRSB
0418 02B 44000273 MFINI  L  0, TM0      GET CURRENT MSC. PTR.
0419 02B2 4C800001      AA  0,1
042  02B4 48800273      ST  0, TM0
0421 02B6 7007 000      NOP
0422 02B8 7082 28E      B      IRL      DO THIS NEW MESSAGE.
0423                               *
0424 02BA 7007 000 MRDFN0 NOP
0425 02BC 7082 28C      B      $
0426 02BE 7007 000      NOP      WAIT FOR OPERATOR.
0427                               *
0428 02C 002B      MSGE1 DATA PLS,STR,SYN,SYN,SOHM
      02C1 002A
      02C2 0016
      02C3 0016
      02C4 0001
0429 02C5 0031      DATA MODE1,MINC1,MINC2,MINC3,MINC4,HALF
      02C6 0036
      02C7 0037
      02C8 0038
      02C9 0039
      02CA 004A
0430 02CB 0030      DATA MRAC1,MRAC2,STXM,7,CA,CA+1,CA+2,CA+3
      02CC 0031
      02CD 0002
      02CE 0007
      02CF 0041
      02D0 0042
      02D1 0043
      02D2 0044
0431 02D3 0045      DATA CA+4,CA+5,ETXM,0,0,-1
      02D4 0046
      02D5 0003
      02D6 0000
      02D7 0000
      02D8 FFF
0432 02D9 002B      MSGE2 DATA PLS,STR,SYN,SYN,SOHM
      02DA 002A
      02DB 0016
      02DC 0016
      02DD 0001
0433 02DE 0032      DATA MODE1+1,MINC1,MINC2,MINC3,MINC4,HALF
      02DF 0036
      02E0 0037
      02E1 0038
      02E2 0039
      02E3 004A

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0434	0214 0030	DATA MRAC1,MRAC2,STXM,CA,CA+1,CA+2,CA+3
	0215 0031	
	0216 0002	
	0217 0041	
	0218 0042	
	0219 0043	
	021A 0044	
0435	021B 0045	DATA CA+4,CA+5,ETBM,0,0,-1
	021C 0046	
	021D 0017	
	021E 0000	
	021F 0000	
	021 00FF	
0436	0211 002H	MSGE3 DATA PLS,STR,SYN,SYN,SOHM
	0212 002A	
	0213 0016	
	0214 0016	
	0215 0001	
0437	0216 0033	DATA MODE1+2,MINC1,MINC2,MINC3,MINC4,MALE
	0217 0036	
	0218 0037	
	0219 0038	
	021A 0039	
	021B 004A	
0438	021C 0030	DATA MRAC1,MRAC2,STXM,CA,CA+1,CA+2,CA+3
	021D 0031	
	021E 0002	
	021F 0041	
	0300 0042	
	0301 0043	
	0302 0044	
0439	0303 0045	DATA CA+4,CA+5,ETXM,0,0,-1
	0304 0046	
	0305 0003	
	0306 0000	
	0307 0000	
	0308 00FF	
044	0309 002B	MSCE4 DATA PLS,STR,SYN,SYN,SOHM
	030A 002A	
	030B 0016	
	030C 0016	
	030D 0001	
0441	030E 0048	DATA MODEH,MINC1,MINC2,MINC3,MINC4,MALE
	030F 0036	
	0310 0037	
	0311 0038	
	0312 0039	
	0313 004A	
12	0314 0030	DATA MRAC1,MRAC2,STXM,7,CA,CA+1,CA+2,CA+3
	0315 0031	

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0316 0002
0317 0007
0318 0041
0319 0042
031A 0043
031B 0044
0443 031C 0045      DATA CA+4,CA+5,ETRM,0,0,-1
031D 0046
031E 0017
031F 0000
0320 0000
0321 FF11
0444          *
0445 0322      END
0000 ERRORS : LENGTH = 0322
```

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0001          TITL AIRBORNE UTILITIES/V3 -- DATA-LINK.
0002          * 'AU' -- JUNE 5, 1975.
0003          * THIS ASSEMBLY IS LABELED (ON THE CASSETTE
0004          * SOURCE TAPE) AS: 'AU'.
0005          *
0006 0000     AU      PSEG
0007 0000     MODE
0008          *
0009          REF  ABF,TODHRA,TODHRB,TODMNA,TODMNB,TODSCA
0010          REF  TODSCB,TODMSA,TODMSB,TODMSC,TSOMO,TSOM
0011          REF  TCO,TC,ABD,PCSCNT,LBCSW,RBCSW,GETABF
0012          REF  PRINT,CTIME,ASUPR,HEIGHT,PITCH,ROLL,ENALT
0013          REF  RIDC,ERBUF,RCVMB,NUMBER,RECORD,SOMTR,ERMF
0014          REF  MS,CRTCC,CHART,CLASSC,NFBC,FCHOAK,RECEM
0015          REF  BCSEEN,OMSG4,AMOVE,AMOVF,AMOVT,OPRINT
0016          *
0017          * INTERRUPT HANDLER FOR ONE-MILLISECOND REAL-
0018          * TIME CLOCK.  THE TIME OF DAY IS MAINTAINED
0019          * IN ASCII (FOR EASE OF RECORDING).  HOURS
0020          * ARE STORED AT 'TODHRA,TODHRB', MINUTES AT
0021          * 'TODMNA,TODMNB', SECONDS AT 'TODSCA,TODSCB',
0022          * AND MILLI-SECONDS AT 'TODMSA,TODMSB,TODMSC'.
0023          * THE TOTAL TIME IS MAINTAINED MODULO ONE DAY
0024          * (ONLY!).  THE STATUS REGISTER IS CHANGED TO
0025          * BE SET FOR PRE-INDEXING!
0026          *
0027          * THE CLOCK LOGIC RUNS IN W-O-R-K-E-R M-O-D-E!
0028          *
0029 000A     GT      EQU  10
0030 000B     EQ      EQU  GT+1
0031 000C     LT      EQU  EQ+1
0032          *
0033          DEF  RTCIH
0034          *
0035 0000 7C0000B5 RTCIH LDS   RTCIHS   SET-UP FOR PRE-INDEXING!
0036 0002 488500B0 RTCIH0 ST    5,ISSR5   HOLD ONTO REG. 5.
0037 0004 488C00B1          ST    #4,ISSR4
0038 0006 448C0000          LA    #4,ABD    SET DATA-BASE REG.
0039 0008 488100AF          ST    1,ISSR1   HOLD ONTO REG. 1.
0040 000A 488600B2          ST    6,ISSR6   SAVE WORKER REG. 6.
0041 000C 44860000          LA    6,ABF    WORKER REG. 6 SUPR. FSEG.
0042 000E 44850000          LA    5,RTCIH  SET PROG. SEG. REG.
0043 0010 488000AE          ST    0,ISSR0  SAVE REG. 0 (FOR RETURN).
0044 0012 7480009C          BL    0,INCM  TALLY L.5. M-SEC. DIGIT.
0045 0014 0000          DATA TODMSC,X'39'
0046 0015 0039          BL    0,INCM  TALLY MIDDLE M-SEC. DIGIT.
0047 0016 7480009C          DATA TODMSB,X'39'
0048 0018 0000          BL    0,INCM  TALLY M.S. M-SEC. DIGIT.
0049 0019 0039          BL    0,INCM
0050 001A 7480009C          BL    0,INCM

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0049	001C 0000		DATA	TODMSA,X'39'	
	001D 0039				
0050	001E 7480009C		BL	0,INCM	TALLY I.S. SECOND DIGIT.
0051	0020 0000		DATA	TODSCB,X'39'	
	0021 0039				
0052	0022 7480009C		BL	0,INCM	TALLY M.S. SECOND DIGIT.
0053	0024 0000		DATA	TODSCA,X'35'	
	0025 0035				
0054	0026 7480009C		BL	0,INCM	TALLY I.S. MINUTE DIGIT.
0055	0028 0000		DATA	TODMNB,X'39'	
	0029 0039				
0056	002A 7480009C		BL	0,INCM	TALLY M.S. MINUTE DIGIT.
0057	002C 0000		DATA	TODMNA,X'35'	
	002D 0035				
0058	002E 44000000		L	0,TODHRB	L.S. HOUR DIGIT.
0059	0030 44010000		L	1,TODHRA	M.S. HOUR DIGIT.
0060	0032 4C800001		AA	0,1	STEP L.S. HOUR DIGIT.
0061	0034 48800000		ST	0,TODHRB	
0062	0036 C0800034		CRA	0,X'34'	IS IT NOW A 4?
0063	0038 E08P003C		BC	EQ,\$+4	
0064	003A 7082004A		B	L9	NO.
0065	003C C0810032		CRA	1,X'32'	YES, IS M.S. A 2?
0066	003E E08P0042		BC	EQ,\$+4	
67	0040 70820058		B	CI1	NO.
0068	0042 44830030		LA	3,X'30'	SET 24 HOURS TO 00 HOURS.
0069	0044 48830000		ST	3,TODHRB	
0070	0046 48830000		ST	3,TODHRA	
0071	0048 70820058		B	CI1	
0072	004A C0800039	L9	CRA	0,X'39'	MORE THAN 9?
0073	004C E08A0050		BC	GT,\$+4	
0074	004E 70820058		B	CI1	NO.
0075	0050 44800030		LA	0,X'30'	YES, L.S. TO ZERO.
0076	0052 48800000		ST	0,TODHRB	
0077	0054 4C810001		AA	1,1	STEP M.S. HOUR DIGIT.
0078	0056 48810000		ST	1,TODHRA	
0079	0058 44000000	CI1	L	0,TODMSC	GET/ASK AIRCRAFT ATTITUDE AT
0080	005A 50800039		SA	0,X'39'	THREE MILLISECOND INTERVALS.
0081	005C E08B008A		BC	EQ,GRAA	AT NINE, GET ROLL/ASK ALT.
0082	005E 4C800003		AA	0,3	
0083	0060 E08P0090		BC	EQ,GPAR	AT SIX, GET PITCH/ASK ROLL.
0084	0062 4C800003		AA	0,3	
0085	0064 E08B0096		BC	EQ,GAAP	AT 3, CFT ALT./ASK PITCH.
0086	0066 44800000	CI1A	LA	0,ABD	DATA SCMNT. BASE ADDRESS.
0087	0068 84000874		BFNE	TC,1,CI1Z	DECREMENT CHART?
0088	006A 20001FFF		AMI	(CHART,0),-1	YES.
0089	006C E08A0074		BC	GT,CI1Z	DECREMENTED THRU ZERO?
0090	006E 88000800		SETF	TC0,1	YES.
0091	0070 70070000		NOP		WAS 'SETF TC,0'.
0092	0072 7082007E		B	CIRR	
0093	0074 8400087E	CI1Z	BFNE	TSOM,1,CIRR	DECREMENT SOMTR?


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0094 0076 20001FFF AMI (SOMTR,0),-1 YES.
0095 0078 E08A007E BC GT,CIRR DECREMENTED THRU ZERO?
0096 007A 88000800 SETF TSOMO,1 YES.
0097 007C 70070000 NOP WAS 'SETF TSOM,0'.
0098 007E 440000AE CIRR L 0,ISSR0 RE-STORE REG. 0.
0099 0080 440100AF L 1,ISSR1 RE-STORE REG. 1.
0100 0082 440500B0 L 5,ISSR5 RE-STORE REG. 5.
0101 0084 440600B2 L 6,ISSR6 RE-SET WORKER REG. 6.
0102 0086 440C00B1 L #4,ISSR4 RE-SET WORKER REG.
0103 0088 72820002 B 2.0 GET OUT!
0104 *
0105 008A 2C64C400 GRAA STCR #C012V,@ROLL STORE ROLL A/D.
0106 008C 34600800 SETB C0CR,1 REQUEST ALTITUDE.
0107 008E 70820066 B CIIA
0108 0090 2C64C400 GPAR STCR #C012V,@PITCH STORE PITCH A/D.
0109 0092 34620800 SETB C2CR,1 REQUEST ROLL.
0110 0094 70820066 B CIIA
0111 0096 2C64C400 GAAP STCR #C012V,@HEIGHT
0112 0098 34610800 SETB C1CR,1 STORE ALTITUDE A/D.
0113 009A 70820066 B CIIA REQUEST PITCH.
0114 *
0115 *CALL: BL 0,INCM
0116 * DATA 'LOCATION FOR INCREMENTING'
0117 * DATA 'OVERFLOW VALUE'
0118 *
0119 *RETURN: 4.0 (IF OVERFLOW)
0120 * CII (NO OVERFLOW)
0121 *
0122 009C 47030002 INCM L 3,*2.0 PRE-INDEX TO GET VALUE!
0123 009E 4C830001 AA 3.1 INCREMENT VALUE.
0124 00A0 C2030003 CR 3.3.0 COMPARE WITH LIMIT.
0125 00A2 E08A00AB BC GT,$+6 IF GREATER THAN, RE-SET
0126 00A4 4B830002 ST 3,*2.0 VALUE, ELSE PUT INCRE-
0127 00A6 70820058 B CII MENTED VALUE BACK.
0128 00A8 44830030 LA 3,X'30'
0129 00AA 4B830002 ST 3,*2.0
0130 00AC 72820004 B 4.0
0131 *
0132 00AE ISSR0 RES 1 CLOCK-HANDLER SAVERS.
0133 00AF ISSR1 RES 1
0134 00B0 ISSR5 RES 1
0135 00B1 ISSR4 RES 1
0136 00B2 ISSR6 RES 1
0137 00B3 SSR0 RES 1
0138 00B4 SSR2 RES 1
0139 00B5 0002 RTCIHS DATA RTCIH0,X'80C0'
0140 00B6 80C0 PAGE

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0191	00E7	44020384		L	2,SSR2	RE-STORE REG. 2.
0192	00E9	72820002		B	2,0	
0193			*			
0194	00EB	488200B4	ICST	ST	2,SSR2	HOLD ONTO REG. 2.
0195	00ED	4482FF78		LA	2,-8	
0196	00FF	48820000		ST	2,BCSCNT	BCSCNT GETS -8.
0197	00F1	44820000		LA	2,0	CLEAR REG. 2.
0198	00F3	72820002		B	2,0	
0199				PAGE		

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0200      *GET AVAILABLE BUFFER --
0201      *
0202      *ENTRY:          BL   0,GETAB
0203      *                DATA MANB
0204      *                RETURN, IF NO BUFFER AVAIL.
0205      *                RETURN, IF BUFFER AVAIL.
0206      *
0207      *RETURN:         CALL+3, REG. 0 MEANINGLESS.
0208      *                CALL+5, REG. 0 HAS BUFFER F.W.A.
0209      *                ALL REGS. INTACT (EXCEPT REG. 0).
0210      *
0211      00F5          DEF   GETAB
0212      *
0213      *          THE 'GETAB' LOGIC RUNS IN W-O-R-K-E-R M-O-D-E!
0214      *
0215      00F5 4885012E GETAB ST   5,G+3
0216      00F7 44850000      LA   5,RTCIH
0217      00F9 84000CFF      BFNE #GETABF,1,$+6 BUSY?
0218      00FB 4405012E      L   5,G+3
0219      00FD 72820003      B   3,0          YES!
0220      00FF 88000C00      SETF #GETABF,1   SHOW 'GETAB' IS BUSY.
0221      0101 4C800002      AA   0,2         STEP TO BUFFER ADDR.
0222      0103 4880012B      ST   0,C
0223      0105 4C800001      AA   0,1         STEP TO 'BAD' RETURN.
0224      0107 4880012C      ST   0,G+1
0225      0109 4881012D      ST   1,G+2       SAVE REG. 1.
0226      010B 4480FFFD      LA   0,-3        COUNTER.
0227      010D 4501012B      L   1,*G        GET ADDR. OF BUFFER ADDRS.
0228      010F 4881012B      ST   1,G
0229      0111 4501012B      L   1,*G        GET BUFFER ADDR.
0230      0113 E08C0121      BC   LT,GB       IN USE?
0231      0115 212BA001      AMI  G,1         YES, TRY NEXT ONE.
0232      0117 0C010111      ARB  1,$-6,0    DONE?
0233      0119 4401012D      GX  L   1,G+2    YES, RE-STORE REG. 1 AND 5.
0234      011B 4405012E      L   5,G+3
0235      011D 88000400      SETF #GETABF,0  SHOW COMPLETION.
0236      011F 7182012C      B   *G+1        GET OUT.
0237      *
0238      0121 40818000      GB  XORA 1,X'8000' CLEAR AVAILABLE BIT.
0239      0123 4981012B      ST   1,*G
0240      0125 4500012B      L   0,*G        PUT BFR. ADDR. IN REG. 0.
0241      0127 212CA002      AMI  G+1,2      STEP TO 'GOOD' RETURN.
0242      0129 70820119      B   GX
0243      *
0244      012B          G    RES   4
0245      PAGE

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0246          *RECORD THE MESSAGE 'AS SEEN' ON 'N' OR 'B' ERROR.
0247          *RECORD 'GOOD' MESSAGE ON '#'.
0248          *
0249          *ENTRY:          BL 0,EREC (REG. 1 HAS CODE)
0250          *RETURN:       B 2,0
0251          *
0252 012F          DEF          EREC
0253          *
0254 012F 4C800002 EREC AA      0,2          SET AND SAVE RETURN ADDRESS.
0255 0131 48800275 ST        0,U+1
0256 0133 48810000 ST        1,RIDC          SAVE ERROR CODE.
0257 0135 48820278 ST        2,U+4          SAVE RFG. 2.
0258 0137 48830279 ST        3,U+5          SAVE REG. 3.
0259 0139 48850274 ST        5,U           SAVE REG. 5.
0260 013B 44850000 LA        5,RTCIH        SET PSEG REG.
0261 013D 44800000 LA        0,TODHRA        MOVE
0262 013F 44810000 LA        1,CTIME         IN
0263 0141 788202FA SSB       OOPS00          TIME.
0264 0143 44810000 LA        1,ENALT         ENCODE TO BUFFER AREA.
0265 0145 4881025D ST        1,PUTP
0266 0147 44010000 L         1,HEIGHT
0267 0149 748001E4 BL        0,ENC3S
0268 014B 44010000 L         1,PITCH
0269 014D 748001E4 BL        0,ENC3S
0270 014F 44010000 L         1,ROLL
0271 0151 748001E4 BL        0,ENC3S
0272 0153 44800013 LA        0,19           19 CHARS. ALREADY
0273 0155 4880025C ST        0,PUTC          STORED AWAY.
0274 0157 4880025A ST        0,GETC
0275 0159 44800000 LA        0,ERBUF        SET PUT POINTER.
0276 015B 4880025D ST        0,PUTP
0277 015D 44010000 L         1,RIDC          GOOD OR BAD?
0278 015F C0810023 CRA       1,X'23'
0279 0161 E08B01FA BC        EQ,RGM          GOOD. ON BRANCH.
0280 0163 44800000 LA        0,RCVMB        DO ERROR RECORDING.
0281 0165 4C800001 AA        0,1
0282 0167 4880025B ST        0,GETP
0283 0169 44810005 LA        1,5           MOVE AND CHECK
0284 016B 7480022D BL        0,MVCMPI        FIVE CHARS.
0285 016D 7480023F BL        0,GET          FETCH MODE CHAR.
0286 016F 48810277 ST        1,U+3          HOLD ONTO MODE CHAR.
0287 0171 1A77B5F8 CML       U+3,L1H3        HIGH/LOW COMPARE WITH X'31'
0288 0173 70820179 B         $+6           AND X'33'.
0289 0175 70820179 B         $+4
0290 0177 7082018B B         EREC0
0291 0179 C0810048 CRA       1,X'48'        MODE = H?
0292 017B E08B018B BC        EQ,EREC0      YES. ON BRANCH.
0293 017D C0810044 CRA       1,X'44'        MODE = D?
0294 017F E08B018B BC        EQ,EREC0      YES. ON BRANCH.
0295 0181 44810055 LA        1,X'55'        MODE = U(DEFINED)!

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0296	0183	7480024B		BL	0,PUT	STORE 'U'.
0297	0185	44010277		L	1,U+3	
0298	0187	74800260		BL	0,ECPUT+2	GET, ENCODE, AND STORE
0299	0189	7082018D		B	ERFC0+2	UNDEFINED MODE.
0300			*			
0301	018B	7480024B	EREC0	BL	0,PUT	STORE DEFINED MODE.
0302	018D	4481000B		LA	1,11	MOVE REST OF PRE-AMBLE,
0303	018F	7480022D		BL	0,MVCMP	INCLUDING 'STX'.
0304	0191	44010000		L	1,RCVMB	GET 'RECEIVED' COUNT.
0305	0193	50810011		SA	1,17	DEDUCT PREAMBLE COUNT,
0306	0195	1E77A033		CMI	U+3,X'33'	INCLUDING 'STX'.
0307	0197	7082019D		B	\$+6	MODE IS 2 OR 1.
0308	0199	708201CE		B	ENC0	MODE IS D, OR H, OR U.
0309	019B	708201A3		B	NOR0	MODE IS 3.
0310	019D	1E77A032		CMI	U+3,X'32'	
0311	019F	708201CE		B	ENC0	MODE IS 1.
0312	01A1	70070000		NOP		THIS IN. CAN'T BE EXECUTED!
0313			*MODE	IS	NORMAL (2-3).	
0314	01A3	C0810003	NOR0	CRA	1,3	IS THE COUNT AT LEAST 3?
0315	01A5	E08C01AB		BC	LT,BCS0	IF NOT; DO BCS'S.
0316	01A7	50810002		SA	1,2	
0317	01A9	7480022D		BL	0,MVCMP	NON-BCS'S.
0318	01AB	7480023F	BCS0	BL	0,GET	GET FIRST BCS.
0319	01AD	7480025E		BL	0,ECPUT	ENCODE AND STORE.
0320	01AF	7480023F		BL	0,GET	GET LAST BCS.
0321	01B1	7480025E		BL	0,ECPUT	ENCODE AND STORE.
0322	01B3	44010000		L	1,BCSEEN	CALC. BCS OF SEEN MSG.
0323	01B5	7480025E		BL	0,ECPUT	ENCODE AND STORE THE
0324			*			RIGHT-HAND 8-BITS.
0325	01B7	68080000		MRR	8,BCSFEN	
0326	01B9	44010000		L	1,BCSFEN	ENCODE AND STORE THE
0327			*			LEFT-HAND EIGHT BITS.
0328	01BB	7480025E	BCS1	BL	0,ECPUT	ENCODE AND STORE.
0329	01BD	4400025C		L	0,PUTC	STORAGE COUNTER.
0330	01BF	48800000		ST	0,NUMBER	
0331	01C1	74800000		BL	0,RECORD	FILE ERROR BUFFER.
0332	01C3	0000		DATA	NUMBER	
0333	01C4	708201C1		B	\$-3	BUSY!! MUST FILE IT!!
0334	01C6	44020278		L	2,U+4	RE-EST. REGS.
0335	01C8	44030279		L	3,U+5	
0336	01CA	44050274		L	5,U	
0337	01CC	70020275		*B	U+1	
0338			*MODE	IS	TRANSPARENT (1-D-H-U).	
0339	01CE	C0810003	ENC0	CRA	1,3	IS THE COUNT AT LEAST 3?
0340	01D0	E08C01AB		BC	LT,BCS0	IF NOT; DO BCS'S.
0341	01D2	50810003		SA	1,3	SET UP ALL BUT ETX/ETB,
0342			*			AND BCS'S.
0343	01D4	46930000		LA	3,0,1	MOVE REG. 1 TO REG. 3.
0344	01D6	50830001		SA	3,1	SET UP 'ARB' INSTR.
0345	01D8	7480023F		BL	0,GET	FETCH, ENCODE,

0346	01DA	7480025E		BL	0,ECPUT	AND STORE TEXT.
0347	01DC	0C3F01D8		ARB	-1,5-4,3	
0348	01DE	44810001		LA	1,1	
0349	01F0	7480022D		BL	0,MVCP	MOVE ONE CHAR.
0350	01F2	708201AB		B	HCS0	TERMINATE BUFFER.
0351						
0352	01C4	4C800002	ENC3S	AA	0,2	CALC. RETURN ADDR.
0353	01E6	4880022A		ST	0,EXCOM0	FREF CILL!
0354	01E8	48810277		ST	1,U+3	SAVE CHAR. FROM A/D.
0355	01FA	68080081		MRR	0,X'81'	GET M.S. 4 BITS.
0356	01EC	5881000F		NA	1,X'F'	
0357	01EE	4C810030		AA	1,X'30'	ENCODE HIGH BYTE.
0358	01F0	7480024B		BL	0,PUT	
0359	01F2	44010277		L	1,U+3	
0360	01F4	74800260		BL	0,ECPUT+2	DO LOWER TWO 4-BIT BYTES.
0361	01F6	7002022A		*B	EXCOM0	
0362						
0363	01F8	0031	L1H3	DATA	X'31',X'33'	
	01F9	0033				
0364						
0365	01FA	225CA005	RGM	AMI	PUTC,5	MOVE IN FIVE
0366	01FC	225DA005		AMI	PUTP,5	CHARACTERS.
0367	01FE	4C800004		AA	0,4	
0368	0200	48800000		ST	0,AMOV	THE MESSAGE 1.D.
0369	0202	44800000		LA	0,OMSG4	
0370	0204	48800000		ST	0,AMOV	
0371	0206	4481FFFC		LA	1,-4	
0372	0208	70820000		SSE	AMOVE	MOVE IN MODE SEFN.
0373	020A	44010000		L	1,MS	
0374	020C	7480024B		BL	0,PUT	MOVE IN TEXT COUNT.
0375	020E	44010000		L	1,CRTCC	RECORD!
0376	0210	708201BB		B	BCS1	
0377				PAGE		

```

0378      *EXCEPTION COMPARE SUBROUTINE.
0379      *
0380      *IF THE CHARACTER IN REG. 1 IS WITHIN THE
0381      *LIMITS OF X'10' AND X'14', ADD X'51'; ELSF
0382      *ADD NOTHING (IF M.S.B. IS 0), OR CHANGE
0383      *TO X'7E' (IF M.S.B. IS 1).
0384      *
0385      0212 4881022A EXCOM ST      1,EXCOM0
0386      0214 1A2AB620      CML      EXCOM0,EXCOM0+1
0387      0216 70070000      NOP
0388      0218 7082021E      B          EXCOMX      NOT IN GIVEN LIMS.
0389      021A 4C810051      AA          1,X'51'
0390      021C 72820002      B          2,0
0391      021E 58810080 EXCOMX NA      1,X'80'      M.S.B. SET TO 1?
0392      0220 E08A0226      BC          GT,$+6
0393      0222 4401022A      L          1,EXCOM0      NO!
0394      0224 72820002      B          2,0
0395      0226 4481007E      LA          1,X'7E'      CHANGE TO A "SQUIGGLE".
0396      0228 72820002      B          2,0
0397      *
0398      022A 0000      EXCOM0 DATA 0,X'10',X'14'
022B 0010
022C 0014

0399      *
0400      *MOVE A REQUESTED (IN REG. 1) NUMBER OF
0401      *CHARACTERS FROM THE 'GET' BUFFER TO THE
0402      *'PUT' BUFFER: CHECK FOR EXCEPTIONS.
0403      *
0404      022D 4881027A MVCMP ST      1,U+6
0405      022F 4880027B      ST          0,U+7
0406      0231 7480023F      BL          0,GET
0407      0233 74800212      BL          0,EXCOM
0408      0235 7480024B      BL          0,PUT
0409      0237 227ABFFF      AMI          U+6,-1
0410      0239 E08A0231      BC          GT,$-8
0411      023B 4400027B      L          0,U+7
0412      023D 72820002      B          2,0
0413      *
0414      *GET A CHARACTER FROM THE 'GET' BUFFER.
0415      *STEP THE 'GET' INDEXER. PUT A CHARACTER
0416      *IN THE 'PUT' BUFFER. STEP THE INDEXER.
0417      *STEP COUNTERS, WHEN APPROPRIATE.
0418      *
0419      023F 48850259 GET      ST          5,GP5
0420      0241 44850000      LA          5,AU
0421      0243 4501025B      L          1,*GETP      FFTCH CHAR. TO REG. 1.
0422      0245 225AA001      AMI          GETC,1      STEP COUNTER.
0423      0247 225BA001      AMI          GETP,1      STEP INDEXER.
0424      0249 70820255      B          GPEX
0425      *

```



```

0426 024B 48850259 PUT ST 5,GP5
0427 024D 44850000 LA 5,AU
0428 024F 4981025D ST 1,#PUTP
0429 0251 225CA001 AMI PUTC,1 STEP COUNTER.
0430 0253 225DA001 AMI PUTP,1 STEP INDEXER.
0431 0255 44050259 GPEX L 5,GP5
0432 0257 72820002 B 2,0
0433 *
0434 0259 GP5 RES 1
0435 025A GETC RES 1
0436 025B GETP RES 1
0437 025C PUTC RES 1
0438 025D PUTP RES 1
0439 *
0440 *ENCODE (HEX. ENCODED BINARY) AND PUT
0441 *IN 'PUT' BUFFER. EIGHT-BIT CHAR. TO
0442 *BE ENCODED IS IN REG. 1.
0443 *
0444 025E 48810277 ECPUT ST 1,U+3 SAVE 8-BIT CHAR.
0445 0260 4C800002 AA 0,2
0446 0262 48800276 ST 0,U+2 EXIT ADDRESS.
0447 0264 4482FFFE LA 2,-2 LOOP TWICE.
0448 0266 68040081 MRR 4,X'81'
0449 0268 5881000F NA 1,X'F'
0450 026A 4C810030 AA 1,X'30'
0451 026C 7480024B BL 0,PUT
0452 026E 44010277 L 1,U+3
0453 0270 0C210268 ARB 1,-8,2
0454 0272 70020276 *B U+2
0455 *
0456 0274 U RES 8
0457 *
0458 027C DEF FCLASS
0459 *
0460 027C 44830000 FCLASS LA 3,0
0461 027E 4881029A ST 1,FCLSS0
0462 0280 44010000 L 1,CRTCC
0463 0282 C0810002 CRA 1,2
0464 0284 E08C0294 BC LT,XFCLSS
0465 0286 5081001F SA 1,31
0466 0288 E08C0292 BC LT,XFCLSS-2
0467 028A 4C830001 AA 3,1
0468 028C 5081005A SA 1,90
0469 028E E08C0292 BC LT,XFCLSS-2
0470 0290 4C830001 AA 3,1
0471 0292 4C830001 AA 3,1
0472 0294 4401029A XFCLSS L 1,FCLSS0
0473 0296 48830000 ST 3,CLASSC
0474 0298 72820002 B 2,0

```

SAL960 V4L2 AIRBORNE UTILITIES/V3 -- DATA-LINK.

PAGE 0012

0476 029A
0477

FCLSS0 RES 1
PAGE

0478	029B		DEF	QUIT	
0479		*			
0480	029B	88000800	QUIT	SETF	ERMF.1
0481	029D	44850000		LA	5,AU
0482	029F	708202A6		B	QUITBL
0483		*			
0484		*			
0485		*			
0486		*			
0487	02A1	74800000		BL	0,OPRINT
0488	02A3	0300		DATA	SFIN
0489	02A4	708202A1		B	\$-3
0490	02A6	74800000	QUITBL	BL	0,RECORD
0491	02A8	02FF		DATA	ZERO0
0492	02A9	708202A6		B	\$-3
0493	02AB	44800000		LA	0,TODHRA
0494	02AD	44810000		LA	1,CTIME
0495	02AF	788202FA		SSB	OOPS00
0496	02B1	44800009		LA	0,9
0497	02B3	4880025C		ST	0,PUTC
0498	02B5	4C800001		AA	0,1
0499	02B7	4C800000		AA	0,NUMBER
0500	02B9	4880025D		ST	0,PUTP
0501	02BB	44800000		LA	0,NEBC
0502	02BD	4C800004		AA	0,4
0503	02BF	50800000		SA	0,ECHOAK
0504	02C1	488002FA		ST	0,QUIT1
0505	02C3	44800000		LA	0,ECHOAK
0506	02C5	488002FB		ST	0,QUIT2
0507		*			
0508	02C7	450102FB	QUIT0	L	1,*QUIT2
0509	02C9	68080081		MRR	8,X'81'
0510	02CB	7480025E		BL	0,ECPUT
0511	02CD	450102FB		L	1,*QUIT2
0512	02CF	7480025E		BL	0,ECPUT
0513	02D1	22FBA001		AMI	QUIT2.1
0514	02D3	22FABFFF		AMI	QUIT1,-1
0515	02D5	E08A02C7		BC	GT,QUIT0
0516	02D7	4400025C		L	0,PUTC
0517	02D9	48800000		ST	0,NUMBER
0518	02DB	74800000		BL	0,RECORD
0519	02DD	0000		DATA	NUMBER
0520	02DE	708202DB		B	\$-3
0521	02E0	74800000		BL	0,RECORD
0522	02E2	0000		DATA	NUMBER
0523	02E3	708202E0		B	\$-3
0524	02E5	74800000		BL	0,RECORD
0525	02E7	02FF		DATA	ZERO0
0526	02E8	708202E5		B	\$-3
0527	02EA	74800000		BL	0,RECORD

IGNORE MODEM RCVR.

REPLACE THIS INSTR. WITH A "NOP" WHENEVER THE SECONDARY TERMINAL IS A 1200 BAUD TERMINAL. INSTEAD OF A 300 BAUD TERMINAL. TERMINATION MESSAGE. ON AUXILIARY TERMINAL.

RECORD A BLANK RECORD!

MOVE TIME TO O/P AREA.

ENCODE STATISTICS!

ANOTHER BLANK!

```

0528 02FC 02FF          DATA ZERO0
0529 02ED 708202EA      B      $-3
0530 02EF 74800000      BL     0,RECEND      FLUSH BFRS.
0531 02F1 74800000      BL     0,PRINT      TERMINATION MESSAGE.
0532 02F3 0300          DATA SFIN          ON PRIMARY TERMINAL.
0533 02F4 708202F1      B      $-3
0534 02F6 74800000      BL     0,RECEND      FLUSH PRINT/RECORD BFRS.
0535 02F8 70820000      B      ASUPR        RETURN FOR ANOTHER CO.
0536
0537 02FA              *
0538 02FC 0314          OOPS00 RES 2
0539 02FD 0316          OOPS01 DATA OOPS02
0540 02FE 00C0          OOPS01 DATA OOPS03,X'C0!
0541 02FA              QUIT1 EQU OOPS00
0542 02FB              QUIT2 EQU OOPS00+1,
0543 02FF 0000          ZERO0 DATA 0
0544 0300 0013          SFIN  DATA SFINE-SFIN,X'D',X'D',X'A',X'A'
0545 0301 000D
0546 0302 000D
0547 0303 000A
0548 0304 000A
0549 0305 2E532E59      DATA C'.S.Y.S.T.E.M. .A.B.O.R.T.E.D.!'
0550 0307 2E532E54
0551 0309 2E452E4D
0552 030B 2E202E41
0553 030D 2E422E4F
0554 030F 2E522E54
0555 0311 2E452E44
0556 0313 2E21
0557 0313          SFINE EQU $-1
0558
0559 0314 7C0002FD      OOPS02 LDS OOPS01      MOMENTARILY STOP CLOCK.
0560 0316 14000400      OOPS03 MOV (0,0),(0,1) MOVE TIME TO RECORD AREA.
0561 0318 C0800000      CRA 0,TODMSC        TIME ALL MOVED?
0562 031A E08B0322      BC  EQ,OOPS04
0563 031C 4C810001      AA  1,1            NO.
0564 031E 4C800001      AA  0,1
0565 0320 70820316      B   OOPS03
0566 0322 7C0002FA      OOPS04 LDS OOPS00      GO BACK FOR MORE.
0567
0568 0324          *
0569
0570          END

```

0557	0000	ABB	BSEG	0	
0558		*			
0559	0601	CC	CON	X'60'	CONVERSION COMPLETE BIT.
0560	0601	C0CR	CON	X'60'	CHAN. CONVERSION REQUEST BITS.
0561	0611	C1CR	CON	X'61'	
0562	0621	C2CR	CON	X'62'	
0563	0621	NOF	CON	X'62'	NEGATIVE OVERFLOW FLAG BIT.
0564	0631	POF	CON	X'63'	POSITIVE OVERFLOW FLAG BIT.
0565	064C	C012V	CON	X'64'.12	CHANNEL VALUE FIELD.
0566		*			
0567	0324		END		
0000	0324	ERRORS : LENGTH = 0324			


```
0001          TITL AIRBORNE DATA BASE/V1 -- DATA-LINK.
0002          * 'ABF/ABD' -- MAY 13, 1975.
0003          * THIS ASSEMBLY IS LABELED (ON THE CASSETTE
0004          * SOURCE TAPE) AS: 'ABF/ABD'.
0005          *
0006 0000      * ABF FSEG AIRBORNE FLAG SEGMENT.
0007          *
0008 0000      * RES 2
0009          *
0010 0000      * FLAG BCSE,ERMF,KBDM,KBDMIP
0011 0004      * FLAG NAKE,TSOM,TC,TSOMO
0012 0008      * FLAG TCO,GETABF,FAN,QF
0013 000C      * FLAG EFT,SOHF,STXF,MLFL
0014 0010      * FLAG MLFS,MD,ACAF,KL1
0015 0014      * FLAG KL2,KL3
0016          *
0017 0002      * END
```

```

0018          *
0019 0002      ABD      DSEG          AIRBORNE DATA SEGMENT.
0020          *
0021 0002          REF  DATALP
0022          *
0023 0002 0000    ABBEG  DATA  DATALP.'X'CO'
      0003 00C0
0024 0004          ECHOAK RES  4
0025 0008          ECHONK RES  4
0026 000C          ECHONR RES  4
0027 0010          ECHOBC RES  4
0028 0014          ECHOBE RES  8
0029 001C          ECHOTC RES  8
0030 0024          NEAK   RES  4
0031 0028          NENK   RES  4
0032 002C          NENR   RES  4
0033 0030          NEBC   RES  4
0034 0034          HEIGHT RES  1
0035 0035          PITCH  RES  1
0036 0036          ROLL   RES  1
0037 0037          TODHRA RES  1
0038 0038          TODHRB RES  1
      39 0039          TODMNA RES  1
0040 003A          TODMNB RES  1
0041 003B          TODSCA RES  1
0042 003C          TODSCR RES  1
0043 003D          TODMSA RES  1
0044 003E          TODMSB RES  1
0045 003F          TODMSC RES  1
0046 0040          CHART  RES  1
0047 0041          SOMTR  RES  1
0048 0042          KNPk   RES  1
0049 0043 007D    TT     DATA 125
0050 0044          CCNT   RES  1
0051 0045          ECNT   RES  1
0052 0046          CRTCC  RES  1
0053 0047          LSTCC  RES  1
0054 0048          CLASSC RES  1
0055 0049          OMSG0   RES  1
0056 004A          OMSG1   RES  1
0057 004B          OMSG2   RES  1
0058 004C          OMSG3   RES  1
0059 004D          OMSG4   RES  1
0060 004E          OMSG    RES  1
0061 004F          LBCSW  RES  1
0062 0050          RBCSW  RES  1
0063 0051          BCSEEN RES  1
0064 0052          BCSCNT RES  1
      5 0053          CKBB   RES  1
0066 0054          CB     RES  1

```


0067	0055	MS	RES	1
0068	0056 0289	MANB	DATA	MAN1,MAN2,MAN3
	0057 0383			
	0058 047D			
0069	0059	RCVMB	RES	260
0070	015D	SNDMB	RES	300
0071	0289	MAN1	RES	250
0072	0383	MAN2	RES	250
0073	047D	MAN3	RES	250
0074	0577	NUMBER	RES	1
0075	0578	CTIME	RES	9
0076	0581	ENALT	RES	3
0077	0584	ENPTCH	RES	3
0078	0587	ENROLL	RES	3
0079	058A	RIDC	RES	1
0080	058B	ERBUF	RES	500
0081		*		
0082	077F		END	ABBEG
0000	ERRORS : LENGTH = 077F			

SYSTEM INTERRUPT AND I/O
PROCESSING MODULES

SIHI

INS

SIH

SIHB

SIHA

SIHO

SIHK

SDRP

SIHD-DSB

SDRF-SDRD


```

0001          TITL SIHI15,SYSTEM INTERRUPT CHAIN
0002 0000      SIHI  PSEG
0003 0000          MODE
0004 0000          DEF DHRDEB,DHWDFB,CHIDEB,TIMINT,BRAN0,PLAR
0005 0000          DEF INTI,INTD,INTC,RAND1,RAND2,RAND3
0006 0000          DEF PLARGO,RAND5,DSROFF
0007 0000          REF DSRI,DSWI,MTYRI,MTYWI,OPYRI
0008 0000          REF WAITKY,WAITAD,KBDM,KWRITE,OPYWI,XSTAT,PNWDS
0009 0000          REF KBDMIP,CKBB,WINT,RINT,RTCIB,MD,RCVOF,SDRD
0010 0000          REF XNEXT,XCHOUT,XCHIN,SYNCHR,CHARIN,KCHIN
0011 0000          REF XWINT,XRINT,KREAD,INTON,MASKT
0012 0000          REF LAY01,PLAERR,INPUT,DATALP,PRINT
0013          *****
0014 0000 7C000002      LDS $+2          THIS IS LOADED AT LOC 100
0015 0002 0000          DATA DATALP,X'00C0'
      0003 00C0
0016 0004 0000      INTI  DATA 0,0,$+1          INTERNAL INTERRUPTS
      0005 0000
      0006 0007
0017 0007 70820007      B $
0018          *****
0019 0009 0000      INTD  DATA 0,0,$+1          DMAC INTERRUPTS
      000A 0000
      000B 000C
0020 000C 78860014      SS  INTDS
0021 000E 70070000      NOP
0022 0010 70070000      NOP
0023 0012 7C000009      LDS  INTD          IGNORE AND RETURN
0024          *****
0025 0014 0000      INTDS DATA 0,0
      0015 0000
0026 0016 0000      INTC  DATA 0,0,$+1
      0017 0000
      0018 0019
0027          **ALL CRU INTERRUPTS SHOULD OCCUR IN SUPERVISOR MODE
0028 0019 48810020      ST   1,TEMI+1          SAVE
0029 001B 44010017      L    1,INTC+1          STATUS
0030 001D E08C001D      BC   12,$          IN WORKER MODE***STOP
0031 001F 44810000      LA   1,0          RESTORE R1
0032 0021 70810023      XWB  $+2          ALL CRU INTERRUPTS GO HERE
0033 0023 44850000      LA   5,SIHI          LOAD PSEG ADDRESS
0034 0025 301000F3      BPNE 16,0,TIMFR          CLOCK INTERRUPT
0035 0027 7082002B      B    $+4          NORMALLY
0036 0029 7082002D      B    $+4          PUT THAT LOWER IN CHAIN
0037 002B 303F0039      BPNE X'3F',0,DSI          DATA SET INT
0038 002D 300F0080      BPNE X'0F',0,MTY          MAIN TTY INT
0039 002F 305F009A      BPNE X'5F',0,OPY          OP TTY
0040 0031 70820035      B    $+4
      41 0033 303F0039      BPNE X'3F',0,DSI          DATA SET INT
0042 0035 70820035      B    $          UNDEFINED INTERRUPT
    
```

```

0043 0037 708200BA      B      RETURN      IGNORE
0044                                *
0045 0039 30380043 DSI  BBNE X'38',0,DSR      DATA SET READ
0046 003B 303E0050      BBNE X'3E',0,DSW      DATA SET WRITE
0047 003D 303D0075      BBNE X'3D',0,DST      DATA SET STATUS
0048 003F 343B0800      SETB X'3B',1          CLEAR TIMER
0049 0041 708200BA      B      RETURN
0050 0043 2C308000 DSR  STCR (X'30',8),XCHIN
0051 0045 7082004A DHRDEB B      $+5          DS HARDWARE READ
0052 0047 74800170      BL      0,SCOUNT
0053 0049 0000          DATA XCHIN
0054 004A 343D0800      SETB X'3D',1
0055 004C 88000800      SETF DSRI,1
0056 004E 708200BA      B      RETURN
0057 0050 70070000 DSW  NOP
0058 0052 70820057 DHWDEB B      $+5          DS HARDWARE WRITE
0059 0054 74800170      BL      0,SCOUNT
0060 0056 0000          DATA XNEXT
0061 0057 44010000      L      1,XNEXT
0062 0059 E08C0065      BC      12,ENDDSN      THAT'S ALL TURN OFF XMITER
0063 005B 48810000      ST      1,XCHOUT
0064 005D 08308000      LDCR (X'30',8),XCHOUT
0065 005F 34380800      SETB X'38',1
66 0061 88000800      SETF DSWI,1
0067 0063 708200BA      B      RETURN
0068 0065 343C0800 ENDDSN SETB X'3C',1          CLEAR WRITE
0069 0067 08308000      LDCR (X'30',8),INTON
0070 0069 343A0800      SETB X'3A',1          CNTRL
0071 006B 08308000      LDCR (X'30',8),SYNCHR READ SYNCH CHAR
0072 006D 34390800      SETB X'39',1
0073 006F 88000400      SETF #MD,0          END OF TRANSMISSION
0074 0071 88000000      SETF DSWI,0
0075 0073 708200BA      B      RETURN
0076 0075 343F0800 DST  SETB X'3E',1
0077 0077 2C308000      STCR (X'30',8),XSTAT
0078 0079 7082007E DHIDE B      $+5          DS HARDWARE INTERRUPT
0079 007B 74800170      BL      0,SCOUNT
0080 007D 0000          DATA XSTAT
0081 007E 708200BA      B      RETURN
0082 0080 300C0088 MTY  BBNE X'C',0,MTYR      MAIN TTY READ
0083 0082 300E0094      BBNE X'B',0,MTYW      MAIN TTY WRITE
0084 0084 340D0000      SETB X'D',0          ELSE CLEAR STATUS
0085 0086 708200BA      B      RETURN
0086 0088 340C0000 MTYR SETB X'C',0
0087 008A 2C008000      STCR (0,8),CHARIN
0088 008C 88000800      SETF MTYRI,1
0089 008E 440100F2      L      1,PLAYT          TIMEOUT
0090 0090 488100F1      ST      1,PL2CNT
0091 0092 708200BA      B      RETURN
0092 0094 340B0000 MTYW SETB X'B',0

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```

0093 0096 88000800      SETF MTYWI,1
0094 0098 708200BA      B RETURN
0095 009A 305C00A2 OPY  BBNE X'5C',0,OPYR      OP TTY READ
0096 009C 305B00B0      BBNE X'5B',0,OPYW      OP TTY WRITE
0097 009E 345D0000      SETB X'5D',0          ELSE CLEAR STSATUS
0098 00A0 708200BA      B RETURN
0099 00A2 345C0000 OPYR  SETB X'5C',0
0100 00A4 708200AE RAND3  B $+10          NORMALLY NO INPUT FOP TTY
0101 00A6 440100F2      L 1,PLAYT
0102 00A8 488100F0      ST 1,PL1CNT
0103 00AA 88000800      SETF OPYRI,1
0104 00AC 2C508000      STCR (X'50',8),KCHIN
0105 00AE 708200BA      B RETURN
0106 00B0 345B0000 OPYW  SETB X'5B',0
0107 00B2 708200B6 RAND5  B $+4          NORMAL
0108 00B4 708200B8      B $+4          SKIP
0109 00B6 88000800      SETF OPYWI,1
0110 00B8 708200BA      B RETURN
0111
0112 00BA 70070000 RETURN NOP
0113 00BC 788600CA      SS RETS
0114 00BE 440100CB      L 1,RETS+1
15 00C0 E08C00C6      BC 12,$+6
0116 00C2 74800147      BL 0,BRAN0
0117 00C4 708200C4      B $
0118 00C6 708000C8      XSB $+2
0119 00C8 7C000016      LDS INTC
0120
0121 00CA 0000 RETS DATA 0,0          RETURN STATUS
0121 00CB 0000
0122
0123 00CC 70070000 PLAR  NOP          PLAYBACK ERROR
0124 00CE 88000400      SETF #PLAERR,0
0125 00D0 44850000      LA 5,SIHI
0126 00D2 74800000      BL 0,PRINT
0127 00D4 00DF          DATA PLEM
0128 00D5 708200D2      B $-3
0129 00D7 44010000 PLARGO L 1,PNWDS          WAIT TILL I/O DONE
0130 00D9 E08A00D7      BC 10,$-2
0131 00DB 70070000      NOP
0132 00DD 70820000      B DATALP
0133 00DF 0010 PLEM DATA 16,X'A',X'D',C' P L A Y E R R '
00E0 000A
00E1 000D
00E2 2050204C
00E4 20412059
00E6 20202045
00E8 20522052
34 00EA 204F2052
00EC 000A
DATA C' O R ',X'A',X'D'

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```

00ED 000D
0135 00EE 007F          DATA X'7F',X'11'      2 PLAYBACK ON'S
      00EF 0011
0136 00F0 07D0        PL1CNT DATA 2000
0137 00F1 07D0        PL2CNT DATA 2000
0138 00F2 1000        PLAYT DATA X'1000'
0139
      *
      TIMER 2 SEC
0140 00F3 70070000    TIMER  NOP
0141 00F5 440100F2    L      1,PLAYT
0142 00F7 840008FF    BFNE LAY01,1,RS1      TIMEOUT DFLAY
0143 00F9 20F0BFFF    AMI  PL1CNT,-1        RESET IT
0144 00FB E08A00FF    BC   10,$+4          OK DECREMENT IT
0145 00FD 88000800    SETF PLAERR,1        STILL DECREMENTING
0146 00FF 488100F0    RS1  ST   1,PL1CNT    ERROR FLAG
0147 0101 84000909    BFNE INPUT,1,RS2    RESET
0148 0103 20F1BFFF    AMI  PL2CNT,-1
0149 0105 E08A0109    BC   10,$+4
0150 0107 88000800    SETF PLAERR,1
0151 0109 70070000    RS2  NOP              ERROR FLAG
0152 010B 0811E000    LDCR (17,14),MASKT
0153 010D 34100000    SETB 16,0
0154 010F 74800000    TIMINT BL 0,RTCIH
0155 0111 70070000    NOP
      ED'S CLOCK HANDLER
      56 0113 8400091F    BFNE WAITKY,1,NOWAIT NOT WAITING
0157 0115 8400051F    BFNE #KBDMIP,0,NOWAIT WAITING
0158 0117 44010000    L      1,WAITAD      BUFFER ADDRESS
0159 0119 48810000    ST   1,CKBB
0160 011B 88000C00    SETF #KBDM,1
0161 011D 88000000    SETF WAITKY,0
0162 011F 70070000    NOWAIT NOP           GIVE BUFF TO SUPR
0163 0121 84000927    BFNE DSWI,1,$+6     CLEAR WAIT
0164 0123 74800000    BL   0,XWINT
0165 0125 88000000    SETF DSWI,0         DS WRITE
0166 0127 8400092D    BFNE DSRI,1,$+6
0167 0129 74800000    BL   0,XRINT        DS READ
0168 012B 88000000    SETF DSRI,0
0169 012D 84000933    BFNE MTYRI,1,$+6
0170 012F 74800000    BL   0,RINT
0171 0131 88000000    SETF MTYRI,0       MAIN TTY READ
0172 0133 84000939    BFNE MTYWI,1,$+6
0173 0135 74800000    BL   0,WINT        MAIN TTY WRITE
0174 0137 88000000    SETF MTYWI,0
0175 0139 8400093F    BFNE OPYRI,1,$+6
0176 013B 74800000    BL   0,KREAD       OP TTY READ
0177 013D 88000000    SETF OPYRI,0
0178 013F 84000945    BFNE OPYWI,1,$+6
0179 0141 74800000    BL   0,KWRITE      OP TTY WRITE
0180 0143 88000000    SETF OPYWI,0
      81 0145 708200BA    B      RETURN
0182
      *****
      ALL DONE

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0183          #BRAN0 CALLED BY PROGRAMS IN SUP MODE THAT
0184          #WANT TO HALT
0185 0147 70070000 BRAN0  NOP
0186 0149 78860153          SS  BRANST
0187 014B 7081014D          XWB $+2
0188 014D 7C00014F          LDS $+2
0189 014F 0151          DATA $+2,X'80C0'
          0150 80C0
0190 0151 72820002          B 2,0
0191 0153 0000          BRANST DATA 0,0
          0154 0000
          RET R0+2
          STATUS BLOCK STORE

0192          *
0193          *****
0194 0155          DEF SCOUNT          DEBUG ONLY
0195 0155          DEF NIWDS,IBUFP,IPTR
0196 0155          REF IBUF,IBEND,SDRF2,SDRF3          DEBUG ONLY
0197 0155 0000          IBUFP DATA IBUF
0198 0156          IPTR RES 1
0199 0157          NIWDS RES 1
0200          *****WORKER MODE*****
0201          *
0202 0158 70070000 DSROFF NOP          WORKER MODE,SHUTS OF HARDWAR
          03 015A 70070000          NOP
          04 015C 4884016B          ST 4,DS4+1          SAVE R4,R7
          05 015E 4887016D          ST 7,DS7+1
          06 0160 44840000          LA 4,SDRD
          07 0162 44870F00          LA 7,X'0F00'
          08 0164 08308000          LDCR (X'30',8),RCVOF
          09 0166 343A0800          SETB X'3A',1          CNTRL
          10 0168 70070000          NOP
          11 016A 44840000          DS4 LA 4,0
          12 016C 44870000          DS7 LA 7,0
          13 016E 72820002          B 2,0          RETURN CALL+2
          *****
          * STORE CALLING ADDRESS,TIME,STATUS WORD,DATA WORD
          *
0216 0170 70070000 SCOUNT NOP
0217 0172 70070000          NOP
0218 0174 488101A5          ST 1,ISOR1+1
0219 0176 488501A3          ST 5,ISTOR5+1
0220 0178 44850000          LA 5,SIHI
0221 017A 1156B000          CM IPTR,(IBEND,4)
0222 017C 70820182          B $+6          NORMAL
          RESET POINTER
0223 017E 70070000          NOP
0224 0180 1555B556          MOV IBUFP,IPTR          RESET POINTER
0225 0182 49800156          ST 0,*IPTR
0226 0184 2156A001          AMI 1PTR,1
0227 0186 70070000          NOP
0228 0188 70070000          NOP
          29 018A 2157A001          AMI NIWDS.1          NO OF ENTRIES
0230 018C 70070000          NOP
    
```

0231	018E	44010000	L	1,SDRF3	
0232	0190	49810156	ST	1,*IPTR	TIMER WORD
0233	0192	2156A001	AMI	IPTR.1	
0234			*		
0235	0194	44010000	L	1,SDRF2	
0236	0196	49810156	ST	1,*IPTR	FLAG WORD
0237	0198	2156A001	AMI	IPTR.1	
0238			*		
0239	019A	47010002	L	1,*2,0	
0240	019C	588100FF	NA	1,X'FF'	
0241	019E	49810156	ST	1,*IPTR	STRIP TO LOW 8 BITS
0242	01A0	2156A001	AMI	IPTR.1	
0243	01A2	44850000	ISTORS	LA	5,0
0244	01A4	44810000	ISOR1	LA	1,0
0245	01A6	72820003	B	B	3,0
0246	01A8		END		RESTORE R5
0000	ERRORS :	LENGTH = 01A8			RETURN

```

0001          TITL  INS4.SYSTEM INITI/O
0002 0000          INS  PSEG
0003 0000          MODE
0004 0000          DEF  INITIO,RAND4
0005 0000          REF  PCHAR,PCCTR,RPTR,LFCTR,LFCTR1,SYNCHR,INTON
0006 0000          REF  INTI,INTD,INTC,NBLOCK,CHARO,MASKT
0007 0000          REF  IBUFP,IPTR,NIWDS,PCCTR2,PCHAR2,PNWDS1,C72,KOP
0008 0000          REF  SDRD,SDRF,SDRF2,SDRF3,SDRF4,RBI,PBI,KBI,PBI1
0009 0000          REF  POPTR,RNWDS,ROPTR,PNWDS,PPTR,KPTR,KNWDS
0010 0000          REF  PCHAR1,PCCTR1,PPTR1,POPTR1      FOR INIT CPRIN
0011 0089          R1A  EQU  X'89'
0012 008A          R2A  EQU  X'8A'
0013 0000 0000          ZERO  DATA 0000
0014 0001 FFC4          M60   DATA -60
0015 0002 7882          A91   DATA X'7882',INTI,X'7882',INTD
                                0003 0000
                                0004 7882
                                0005 0000
0016 0006 7882          DATA X'7882',INTC,-1
                                0007 0000
                                0008 FFFF
0017 0009 70070000  INITIO  NOP          INITIALIZATION SUBROUTINE
18 000B 7C00000D          LDS  $+2
0019 000D 000F          DATA $+2,X'00C0'
                                000E 00C0
0020 000F 70810011          XWB  $+2          *****WORKER MODE*****
0021 0011 44850000          LA   5,INS          PSEG
0022 0013 44840000          LA   4,SDRD          DATA SEG
0023 0015 44860000          LA   6,SDRF          FLAG SEG
0024 0017 44870F00          LA   7,X'0F00'      /CRU BASE ADDRESS
0025 0019 340D0000          SETB 13,0          CLEAR STATUS
0026 001B 340C0000          SETB 12,0          CLEAR READ INT
0027 001D 340B0000          SETB 11,0          CLEAR WRITE INT
0028 001F 34100000          SETB 16,0          CLEAR TIMER INT
0029 0021 341F0000          SETB 31,0          STOP INTERVAL TIMER
0030 0023 44810090          LA   1,X'90'      STOR IN
0031 0025 44820002          LA   2,A91        DATA TO STORE
0032 0027 4503008A          L    3,*R2A
0033 0029 E08C0033          BC   12,DIVD
0034 002B 49830089          ST   3,*R1A
0035 002D 4C810001          AA   1,1
0036 002F 4C820001          AA   2,1
0037 0031 70820027          B    DIV
0038 0033 70070000          NOP
0039 0035 44810640          LA   1,1600
0040 0037 48810000          ST   1,NBLOCK    1600 BLOCKS PER TAPE
0041 0039 1400B800          MOV  ZERO,(SDRF,6) CLEAR FIRST FLAG WORD
0042 003B 1400B000          MOV  ZERO,(SDRF2,4) CLEAR 2ND FLAG WORD
0043 003D 1400B000          MOV  ZERO,(SDRF3,4) CLEAR THIRD FLAG WORD
0044 003F 1400B000          MOV  ZERO,(SDRF4,4) CLEAR 4TH FLAG WORD

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0045 0041 1400B000      MOV ZERO,(PCHAR,4)
0046 0043 1401B000      MOV M60,(LFCTR,4)
0047 0045 1401B000      MOV M60,(LFCTR1,4)
0048 0047 44010000      L 1,C72
0049 0049 48810000      ST 1,PCCTR
0050 004B 44010000      L 1,PBI
0051 004D 48810000      ST 1,PPTR
0052 004F 48810000      ST 1,POPTR
0053 0051 1400B000      MOV ZERO,(PNWDS,4)
0054
0055 0053 44010000      * L 1,RBI
0056 0055 48810000      ST 1,RPTR
0057 0057 48810000      ST 1,ROPTR
0058 0059 1400B000      MOV ZERO,(RNWDS,4)
0059 005B 1400B000      MOV ZERO,(PCHAR1,4) CLEAR CPRINT INITIALIZE
0060 005D 1400B000      MOV ZERO,(PNWDS1,4)
0061 005F 14009000      MOV (C72,4),(PCCTR1,4)
0062 0061 14009000      MOV (PBI1,4),(PPTR1,4)
0063 0063 14009000      MOV (PBI1,4),(POPTR1,4)
0064
0065 0065 1400B000      * MOV ZERO,(KNWDS,4) MAIN TTY KEY INPUT INIT
0066 0067 14009000      MOV (KBI,4),(KPTR,4)
0067 0069 14009000      MOV (KBI,4),(KOPTR,4)
0068 006B 14009000      MOV (C72,4),(PCCTR2,4)
0069 006D 1400B000      MOV ZERO,(PCHAR2,4)
0070 006F 345B0000      SETB X'5B',0 OP TTY CLR WRITE
0071 0071 345C0000      SETB X'5C',0 CLR READ
0072 0073 345D0000      SETB X'5D',0 CLR STAT
0073 0075 44010000      L 1,IBUFP LOAD IBUF DEPUG
0074 0077 48810000      ST 1,IPTR
0075 0079 44810000      LA 1,0
0076 007B 48810000      ST 1,NIWDS
0077 007D 34100000      SETB 16,0 TIMFR SETUP
0078 007F 0811E000      LDCR (17,14),MASKT
0079 0081 341F0800      SETB 31,1 START CLOCK
0080 0083 70820087      RAND4 B $+4
0081 0085 708200A3      B INITA FORGET ABOUT DS
0082 0087 343F0800      SFTB X'3F',1 MCLR
0083 0089 343F0800      SFTB X'3E',1 CLEAR NDSS
0084 008B 08308000      LDCR (X'30',8),SYNCHR LOAD SYNCH
0085 008D 34390800      SETB X'39',1 LDSYN
0086 008F 70070000      NOP SEE IF ANY INTERRUPTS UP
0087 0091 30100091      BBNE 16,0,$ TIMER
0088 0093 300F0093      BBNE X'F',0,$ MAIN TTY
0089 0095 305F0095      BBNE X'5F',0,$ OP TTY
0090 0097 303F0097      BBNE X'3F',0,$ DS INT
0091 0099 70070000      NOP OK,NO INTERRUPTS
0092 009B 7C00009D      LDS $+2 MUST DO TO TURN DS INT ON
0093 009D 009F      DATA $+2,X'8080'
009E 8080

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0094 009F 08308000      LDCR (X'30'.8).INTON  TURN INT ON
0095 00A1 343A0800      SETB X'3A'.J          CNTRL
0096 00A3 70070000  INITA  NOP
0097 00A5 708000A7      XSB $+2              *****SUPERVISOR MODE*****
0098 00A7 7C0000A9      LDS $+2              OK ZERO STATUS REG
0099 00A9 00AB          DATA $+2,X'0080'
      00AA 0080 ,
0100 00AB 4C800002      AA 0.2
0101 00AD 488000B6      ST 0.INITIX+1        RETURN ADDRESS
0102 00AF 70070000      NOP
0103 00B1 70070000      NOP
0104 00B3 70070000      NOP
0105 00B5 708200B5  INITIX B  $          T RETURN AD
0106 00B7          END
0000 ERRORS : LENGTH = 00B7

```

0001 PASS ONE ERRORS

```

0001          TITL SIH22,MAIN TTY INT HANDLERS
0002 0000     SIH   PSEG
0003 0000     MODE
0004 0000     DEF   LPTR,LBNWD,NBLOCK,STARTR,RINT,WINT
0005 0000     DEF   MWDEBK,MRDEBT,MRDEBS,MRDEBK,MRDEB,MWDEB
0006 0000     REF   PCHAR,PCTR,RPTR,CHARKY,CHARST,RBEND,PBEND
0007 0000     REF   CHARIN,CHARO,RNWDS,LFCTR      MUST RECIDE IN D
0008 0000     REF   LNWDS,PNWDS,PPTR
0009 0000     REF   CAPO,RBI,PBI
0010 0000     REF   PROM,STARTK,ACOPIN,KSIZE,KBEND1,KREAD,KOUT,PA
0011 0000     REF   KNWDS,KBI,C72,KOPTR      FOR INIT
0012 0000     REF   INPUT,OUTPUT,PACT,DUMMY
0013 0000     REF   STATC,FREC,SREC
0014 0000     REF   LIDLE,LAYON,TRLH,TRRH,SCOUNT,SCEN,TRANS,QF
0015 0089     R1A   EQU   X'89'
0016          *****
0017 0000 44850000 RETURA LA 5,$          RETURN JUMP
0018 0002 70820002 RETURB B $
0019 0004 4C800002 SAVE1 AA 0,2
0020 0006 48800003 ST 0,RETURB+1
0021 0008 48850001 ST 5,RETURA+1
0022 000A 44850000 LA 5,SIH
0023 000C 72920002 B 2,1
0024 000E RCTR RES 1
0025 000F LBNWD RES 1
0026 0010 LPTR RES 1
0027 0011 NBLOCK RES 1          NO OF BLOCKS ON TAPE
0028 0012 TRCNT RES 1
0029 0013 NTCHAR RES 1
0030 0014 DCTR RES 1
0031 0015 007F DEL DATA X'7F'
0032 0016 0017 C23 DATA 23
0033 0017 0000 ZERO DATA 0
0034 0018 0003 THREE DATA 3
0035 0019 001A ADI DATA $+1,10,-X'D'
0036 001A 000A LFI DATA $+1,X'D',10,10,10,10,10,-10
0037 001B FFF3
0038 001C 001D
0039 001E 000D
0040 001F 000A
0041 0020 000A
0042 0021 000A
0043 0022 000A
0044 0023 FFF6
0045 0024 FFBE M66 DATA -66
0046 0025 0020 CAP1 DATA X'20',X'7E', PRINTABLE CHARS
0047 0026 007E *****READ INTERRUPT FROM PLAYBACK OR KEYBOARD
0048 0027 74810004 RINT BL 1,SAVE1

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0041 0029 44010000 L 1,CHARIN MASK OUT 7 BITS
0042 002B 5881007F NA 1,X'007F'
0043 002D 48810000 ST 1,CHARIN
0044 002F 70820034 MRDEB B $+5 SKIP INTERRUPT RECORDER
0045 0031 74800000 BL 0,SCOUNT RECORD INTRPT
0046 0033 0000 DATA CHARIN
0047 * IF PLAYBACK INPUT PUT IN BUFFER
0048 * IF KEYBOARD ECHHO ON OUTPUT DEVICE
0049 0034 44010000 L 1,CHARIN INPUT CHARACTER
0050 0036 840000BF BFNE STAC,0,STATIN STATUS CHAR IN
0051 0038 840008D6 BFNE INPUT,1,KEYIN
0052 *****
0053 003A 7082003F MRDEBT B $+5 *****READ IN TAPE****
0054 003C 74800000 BL 0,SCOUNT
0055 003E 0000 DATA CHARIN
0056 003F 44010000 L 1,CHARIN
0057 0041 4C81FFED AA 1,-X'13' IS CHAR PALLYBACK OFF
0058 0043 E08B00CA BC 11,XITPL /YES ALL DONE
0059 0045 4C81FF94 AA 1,X'13'-X'7F' IGNORE RUBOUTS 7F
0060 0047 E08B0000 BC 11,RETURA 7F IGNORE
0061 0049 840008B5 BFNE SCEN,1,RINT1 NO SCENARIO INPUT
0062 004B 840000A7 BFNE TRANS,0,TR THIS IS TRANSPARENT TEXT
63 004D 44010000 L 1,LNWDS IS THIS 12TH CHAR IN
0064 004F 5081000C SA 1,12
0065 0051 E08B0055 BC 11,TWELV YES,IT IS
0066 0053 708200B5 B RINT1 NOT YET
0067 0055 70070000 TWELV NOP
0068 0057 200FA001 AMI LBNWD,1
0069 0059 4501000F L 1,*LBNWD
0070 005B 200FBFFF AMI LBNWD,-1
0071 005D 70070000 NOP
0072 005F 70070000 NOP
0073 0061 50810031 SA 1,X'31'
0074 0063 E08B006B BC 11,TWOK YES,WAS 1 TRANSTEXT
0075 0065 4C81FFE9 AA 1,X'31'-X'48'
0076 0067 E08B006B BC 11,TWOK YES,WAS H TT
0077 0069 708200B5 B RINT1 NO
0078 006B 70070000 TWOK NOP
0079 006D 200FA00C AMI LBNWD,12
0080 006F 4501000F L 1,*LBNWD
0081 0071 200FBFFF AMI LBNWD,-12
0082 0073 70070000 NOP
0083 0075 70070000 NOP
0084 0077 50810002 SA 1,2
0085 0079 E08B007D BC 11,$+4 YES
0086 007B 708200B5 B RINT1 NO
0087 007D 88000800 SFTF TRANS,1 THIS IS FIRST BCH CHAR OF TR
0088 007F 70820085 B TRILA
89 *
0090 0081 88000000 TRIL SETF TRLH,0

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0091 0083 88000800 SETF TRRH.1
0092 0085 44010000 TR1LA L 1,CHARIN
0093 0087 60040089 MLA 4,RIA
0094 0089 588100F0 NA 1,X'F0'
0095 008B 48810012 ST 1,TRCNT
0096 008D 70820000 B RETURA
0097 008F 88000000 TR1R SETF TRRH.0
0098 0091 44010000 L 1,CHARIN
0099 0093 5881000F NA 1,X'F'
0100 0095 4C010012 A 1,TRCNT
0101 0097 48810000 ST 1,CHARIN
0102 0099 88000800 SETF TRLH.1
0103 009B 2013BFFF AMI NTCHAR,-1
0104 009D E08B00A1 BC 11,$+4
0105 009F 708200B5 B RINT1
0106 00A1 88000000 SETF TRANS.0
0107 00A3 88000000 SETF TRLH.0
0108 00A5 708200B5 B RINT1
0109 *
0110 00A7 84000081 TR BFNE TRLH.0,TR1L
0111 00A9 8400008F BFNE TRRH.0,TR1R
0112 00AB 44010000 L 1,CHARIN
0113 00AD 5881000F NA 1,X'F'
0114 00AF 4C010012 A 1,TRCNT
0115 00B1 48810013 ST 1,NTCHAR
0116 00B3 7082008F B TR1R
0117 *
0118 00B5 44010000 RINT1 L 1,CHARIN
0119 00B7 49810010 ST 1,*LPTR
0120 00B9 2010A001 AMI LPTR.1
0121 00BB 20008001 AMI (LNWDS,4).1
0122 00BD 70820000 B RETURA
0123 *STATUS CHAR IN FROM TAPE PUT STATUS CHAR IN
0124 00BF 14009000 STATIN MOV (CHARIN,4),(CHARST,4) *****READ IN STATUS*****
0125 00C1 708200C6 MRDEBS B $+5
0126 00C3 74800000 BL 0,SCOUNT
0127 00C5 0000 DATA CHARIN
0128 00C6 88000000 SETF STATC.0
0129 00C8 70820000 B RETURA
0130 *
0131 00CA 88000000 XITPL SETF INPUT.0 SET PLAYBACK OFF
0132 00CC 44010000 L 1,LNWDS SET UP NO OF WORDS READ
0133 00CE 4981000F ST 1,*LBNWD PUT IN BUFFER
0134 00D0 88000000 SETF LAYON.0 DONE WITH PLAYBACK
0135 00D2 70070000 NOP
0136 00D4 70820000 B RETURA
0137 *
0138 *ALLOW ACCEPTANCE OF ONLY PRINTABLE CHARACTERS FROM KEYBO
0139 00D6 70070000 KEYIN NOP *****READ FROM KEYBOARD*****
0140 00D8 708200DD MRDEBK B $+5

```

LEFT HAND IN TRCNT

ALL DONE 1 CHAR

THIS IS RIGHT HALF OF TRCNT

NO OF TRANSPARENT CHAAR

0141	00DA	74800000		BL	0,SCOUNT	
0142	00DC	0000		DATA	CHARIN	
0143	00DD	44010000		L	1,CHARIN	
0144	00DF	84000925		BFNE	ACOPIN,1,KEYINI	NO OP INPUT ALLOWED TO PRINT
0145	00E1	74800000		BL	0,KREAD	UNSCRAMBLE OPERATOR PRINT
0146	00E3	70820000		B	RETURA	IGNORE,NO PRINT
0147	00E5	70070000		NOP		OKAY,CHAR IS KOUT
0148	00E7	44010000		L	1,KNWDS	ANY ROOM FOR ANOTHER WORD?
0149	00E9	E08B0113		BC	11,KNWEQ0	KNWDS=0,SEND DUMMY
0150	00EB	4C810001		AA	1,1	
0151	00ED	50810000		SA	1,KSIZE	
0152	00EF	E08A0000		BC	10,RETURA	
0153	00F1	70070000	KNWNE0	NOP		NO ROOM,IGNORE
0154	00F3	44010000		L	1,KOUT	KNWDS NE TO ZERO
0155	00F5	49810000		ST	1,*KOPTR	CHAR TO BE PRINTED
0156	00F7	20008001		AMI	(KOPTR,4),1	PUT IN KBUF
0157	00F9	20008001		AMI	(KNWDS,4),1	INCR POINTER
0158	00FB	10009000		CM	(KOPTR,4),(KBEND1,4)	INCR NO WDS
0159	00FD	70820103		B	\$+6	
0160	00FF	708200FF		B	\$	NORMAL
0161	0101	14009000		MOV	(KBI,4),(KOPTR,4)	ILLEGAL WRAPAROUND
0162	0103	84000000		BFNE	PACT2,0,RETURA	WRAP AROUND
63	0105	84000000		BFNE	PACT,0,RETURA	ALRFADY PRINT OP MS INPUT
0164	0107	84000000		BFNE	PACT,0,RETURA	PRINTER IS WORKING
0165	0109	70070000	STARKP	NOP	OUTPUT,0,RETURA	RECORDER IS ON
0166	010B	88000800		SETF	PACT2,1	START THE KEYBOARD PRINT UP
0167	010D	74800000		BL	0,STARK	OK,WE TAKE CONTROL
0168	010F	70820000		B	RETURA	START KEYBOARD PRINT UP
0169			*			
0170	0111	70820000		B	RETURA	RETURN
0171	0113	4481007F	KNWEQ0	LA	1,X'7F'	KNWDS=0,SEND DUMMY FIRST
0172	0115	49810000		ST	1,*KOPTR	
0173	0117	20008001		AMI	(KOPTR,4),1	
0174	0119	20008001		AMI	(KNWDS,4),1	
0175	011B	10009000		CM	(KOPTR,4),(KBEND1,4)	
0176	011D	70820123		B	\$+6	OK
0177	011F	7082011F		B	\$	ILLEGAL WRAP AROUND
0178	0121	14009000		MOV	(KBI,4),(KOPTR,4)	WRAP AROUND
0179	0123	708200F1		B	KNWNE0	OK,STORE RAL ONE
0180			*			
0181	0125	4C81FFF6	KEYINI	AA	1,-X'A'	IS IT LF?
0182	0127	E08B0143		BC	11,GOODA	YES
0183	0129	4C81FFFD		AA	1,-3	IS IT CR 'D'
0184	012B	E08B0143		BC	11,GOODA	YES
0185	012D	4C810008		AA	1,X'D'-X'5'	CONTROL E 05
0186	012F	E08B0143		BC	11,GOODA	
0187	0131	4C81FFF0		AA	1,5-X'15'	CONTROL U 15
0188	0133	E08B0143		BC	11,GOODA	
89	0135	4C81FF96		AA	1,X'15'-X'7F'	RUBOUT 7F
0190	0137	E08B0143		BC	11,GOODA	

0191	0139	4C810078	AA	1,X'7F'-7	CONTROL G,BELL
0192	013B	E08B0143	BC	11,GOODA	
0193	013D	18009000	CML	(CHARIN,4).(CAPO,4)	SEE IF PRINTABLE CHARACT
0194	013F	70820000	B	RETURA	IGNORE
0195	0141	70820000	B	RETURA	IGNORE
0196	0143	44010000	L	1,CHARIN	
0197	0145	48810000	ST	1,CHARKY	KEYBOARD INPUT CHAR
0198	0147	70820000	B	RETURA	
0199			PAGE		

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0200
0201 *****WRITE INTERRUPT FROM RECORD OR PRINTER
0202 *AUTOMATICALLY DELAYS AFTER THE 81ST PRINTED
0203 *CHAR TO ALLOW FOR AUTOMATIC CR,LF
0203 0149 74810004 WINT BL 1,SAVE1
0204 014B 840001FA BFNE OUTPUT,0,RECON RECORD ON
0205 014D 70820152 MWDEBK B $+5 *****KEYBOARD WRITE
0206 014F 74800000 BL 0,SCOUNT
0207 0151 0000 DATA CHARO
0208 0152 44010000 L 1,CHARO
0209 0154 8400095A BFNE PACT2,1,$+6
0210 0156 74800000 BL 0,PROM PRINT KEYBOARD STUFF
0211 0158 70820000 B RETURN
0212 015A 840001F0 BFNE DUMMY,0,FAKE IF 1 LAST CHAR OUT WAS FAKE
0213 015C 8400019E BFNE LIDLE,0,AFTDLE LAST CHAR AFTER IDLE,NO DELA
0214 015E 44010000 L 1,CHARO LAST CHAR OUT,IT WAS REAL
0215 0160 4C81FFF3 AA 1,-X'D' WAS IT CR
0216 0162 E08B017E BC 11,CROUT YES
0217 0164 4C810003 AA 1,3 WAS IT LF 'A'
0218 0166 E08B0188 BC 11,LFOUT LF
0219 0168 4C81FFFA AA 1,X'A'-X'10' WAS IT DLE
0220 016A E08B0192 BC 11,DLEWAS YES
0221
*
22 016C 18009425 CML (CHARO,4),CAP1 IF NONPRINT,NO DUMMIES N
0223 016E 708201A0 B LDUMMY IGNORE
0224 0170 708201A0 B LDUMMY IGNORE
0225 0172 1418B414 MOV THREE,DCTR PRINTABLE,3DUMMIES
0226
*
0227 0174 20009FFF AMI (PCCTR,4),-1 CHECK FOR 81ST REAL CHAR
0228 0176 F08A0182 BC 10,SDF OK,SET DUMMY FLAG
0229 0178 14009000 MOV (C72,4),(PCCTR,4) REINIT AT 80
0230 017A 1419B000 MOV ADI,(PCHAR,4)
0231 017C 70820182 B SDF
0232 017E 1416B414 CROUT MOV C23,DCTR 23 DUMMIES FOR CR OR LF
0233 0180 14009000 MOV (C72,4),(PCCTR,4) REINIT AT 80
0234 0182 70070000 SDF NOP SET DUMMY FLAG NEXT
0235 0184 88000800 SETF DUMMY,1 NEXT DCTR CHAR ARE DUMMIES
0236 0186 708201F4 B FAKE1 SEND OUT FIRST FAKE
0237
*
0238 0188 20008001 LFOUT AMI (LFCTR,4),1
0239 018A E08C017E BC 12,CROUT
0240 018C 1424B000 MOV M66,(LFCTR,4) PAGE EJECT SETUP
0241 018E 141CB000 MOV LFI,(PCHAR,4)
0242 0190 7082017E B CROUT
0243
*
0244 0192 70070000 DLEWAS NOP
0245 0194 88000800 SFTF LIDLE,1 NEXT CHAR NO DELAY
0246 0196 45010000 L 1,*PPTR WAS IT STATUS
0247 0198 4C81FFC4 AA 1,-X'3C'
0248 019A E08B01E2 BC 11,GETST YES THIS CHAR OUT WILL SEND
0249 019C 708201A0 B $+4

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0250 019E 88000000 AFTDLE SETF LIDLE,0          CLEAR IT
0251 01A0 88000000 LDUMMY SETF DUMMY,0        LAST FAKE OUT,GET NEXT REAL CHAR
0252 01A2 44010000 L      1,PCHAR          SHOULD WE CR,LF
0253 01A4 E08B01F8 BC     11,NOCRLF
0254 01A6 45010000 L      1,*PCHAR
0255 01A8 E08C01B0 BC     12,PCHARD        THIS IS LAST ONE
0256 01AA 20008001 AMI    (PCHAR,4),1
0257 01AC 48810000 PCHX   ST     1,CHARO
0258 01AE 708201D8 B      OUTIT
0259 01B0 51010000 PCHARD S     1,*PCHAR        ZERO
0260 01B2 51010000 S     1,*PCHAR        POS CHAR
0261 01B4 1417B000 MOV    ZERO,(PCHAR,4)  RESET
0262 01B6 708201AC B      PCHX
0263 *
0264 01B8 70070000 NOCRLF NOP
0265 01BA 20009FFF AMI    (PNWDS,4),-1    FINISH PRINTING OUT BUFFER
0266 01BC E08B0275 BC     11,XITP        ALL DONE
0267 01BE E08A01C2 BC     10,$+4        POS OK
0268 01C0 708201C0 B      $            NEGATIVE PNWDS,ERROR
0269 01C2 45010000 WINT1 L      1,*PPTR
0270 01C4 48810000 ST     1,CHARO
0271 01C6 20008001 AMI    (PPTR,4),1
0272 01C8 10009000 CM     (PPTR,4),(PBEND,4)  CIRCULAR BUFFER
73 01CA 708201D0 B      $+6        NORMAL
0274 01CC 708201CC B      $            PRINT BUF STORE ILLEGAL
0275 01CE 14009000 MOV    (PBI,4),(PPTR,4)  WRAP AROUND
0276 01D0 4C81FFFF AA     1,-X'11'    CHARACTER GOING OUT PLAY ON?
0277 01D2 E08B01F8 BC     11,TPLON
0278 01D4 4C81FFFF AA     1,-1        RECORD ON
0279 01D6 E08B01FC BC     11,TRON
0280 01D8 70070000 OUTIT  NOP
0281 01DA 340A0800 SETB  10,1        REQ TO SEND
0282 01DC 70070000 OUTIT1 NOP
0283 01DE 08008000 LDCR  (0,8),CHARO    PRINT IT
0284 01E0 70820000 B      RETURA
0285 *
0286 01E2 1417B000 GETST  MOV    ZERO,(CHARST,4)  NEXT CHAR IN IS STATUS
0287 01E4 88000800 SETF  STATC,1
0288 01E6 708201A0 B      LDUMMY
0289 01E8 88000800 TPLON  SETF  INPUT,1    INPUT FROM PALBACK
0290 01FA 708201D8 B      OUTIT
0291 01EC 88000800 TRON   SETF  OUTPUT,1    OUTPUT TO RECORDER
0292 01EE 708201D8 B      OUTIT
0293 01F0 2014BFFF FAKE   AMI    DCTR,-1
0294 01F2 E08B01A0 BC     11,LDUMMY
0295 01F4 340A0000 FAKE1  SETB  10,0        NO REQ TO SEND
0296 01F6 1415B000 MOV    DEL,(CHARO,4)
0297 01F8 708201DC B      OUTIT1
98 PAGE

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0299 01FA 70070000 RECON NOP
0300 01FC 70820201 MWDEB B $+5 RECORD TO GO OUT
0301 01FE 74800000 BL 0,SCOUNT SKIP INT RECORDER
0302 0200 0000 DATA CHARO
0303 0201 44010000 L 1,CHARO
0304 0203 4C81FFEE AA 1,-X'12' LAST CHAR OUT
0305 0205 E08B0225 BC 11,RECON2 WAS RECORDER ON
0306 0207 8400024F BFNE FREQ,0,XITR1 YES IT WAS
0307 0209 20009FFF AMI (RNWDS,4),-1 AFTER SENT 14,OR 7F
0308 020B E08A0211 BC 10,$+6
0309 020D E08B0211 BC 11,$+4 POS OK
0310 020F 7082020F B $ ZERO OK
0311 0211 200EBFFF AMI RCTR,-1 MINUS RNWDS*****
0312 0213 E08B0237 BC 11,XITR DONE WITH 88 YET
0313 0215 45010000 RECON1 L 1,*RPTR READIN
0314 0217 48810000 ST 1,CHARO MORE TO GO
0315 0219 20008001 AMI (RPTR,4),1
0316 021B 10009000 CM (RPTR,4),(RBEND,4) CIRCULAR BUFFER
0317 021D 70820223 B $+6 NORMAL
0318 021F 7082021F B $ ILL STORE*****
0319 0221 14009000 MOV (RBI,4),(RPTR,4) WRAP AROUND
0320 0223 708201D8 B OUTIT
21 *
0322 0225 20009FFF RECON2 AMI (PNWDS,4),-1 THE '12' WAS FROM PRINT
0323 0227 70070000 RECON3 NOP
0324 0229 2011BFFF AMI NBLOCK,-1
0325 022B E08B022F BC 11,$+4 END OF TAPE
0326 022D 70820231 B $+4 OK
0327 022F 88000C00 SETF *QF,1 SET QUIT FLAG
0328 0231 44810056 LA 1,86 86 CHAR PER BLOCK
0329 0233 4881000E ST 1,RCTR 86 TEXT AND 14,7F
0330 0235 70820215 B RECON1 THROW OUT FIRST RECORD CHAR
0331 *
0332 *AFTER BUFFER THROW OUT '13',86DEL,'14',DEL
0333 *
0334 0237 8400024F XITR BFNE FREQ,0,XITR1 BR IF DONE WITH BUFF END STUFF
0335 0239 44010000 L 1,KNWDS IF ANY WORDS IN KBUFF STOP
0336 023B E08A0245 BC 10,XITRA YES,WIND IT UP
0337 023D 44010000 L 1,RNWDS ENOUGH FOR ANOTHER 86 WORD B
0338 023F 50810056 SA 1,86
0339 0241 E08C0245 BC 12,XITRA NO PUT OUT THE 14,7F
0340 0243 70820227 B RECON3 ANOTHER BLOCK
0341 0245 70070000 XITRA NOP
0342 0247 88000800 SETF FREQ,1 DONE WITH BUFFER,NOW APPEND END
0343 0249 44810014 LA 1,X'14' THROW OUT 14
0344 024B 48810000 ST 1,CHARO
0345 024D 708201D8 B OUTIT
0346 024F 44010000 XITR1 L 1,CHARO WAS LAST CHAR OUT 14,OR7F
 47 0251 5081007F SA 1,X'7F'
0548 0253 E08B025B BC 11,XITRB IT WAS 7F ALL DONE

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0349 0255 4481007F      LA  1,X'7F'          NO LAST WAS 14
0350 0257 48810000      ST  1,CHARO
0351 0259 708201D8      B   OUTIT
0352                    *
0353 025B 88000000 XITRB SETF FREQ,0
0354 025D 88000000      SETF OUTPUT,0      RECORD OFF
0355 025F 88000000      SETF SREC,0        NO LONGER THROWING OUT RECOR
0356 0261 44010000      L   1,KNWDS        ANY WORDS IN KBUF
0357 0263 E08B026B      BC  11,XITP1       NO
0358 0265 84000265      BFNE PACT2,0,$    KEY ECHO ON*****
0359 0267 70820109      B   STARKP        START KEYBOARD PRINT
0360                    *
0361 0269 70070000 STARTR NOP          FROM WHEN KEY PRINT FIN
0362 026B 70070000 XITP1 NOP
0363 026D 44010000      L   1,PNWDS        ANYTHING IN PRINT BUFFER
0364 026F E08B0275      BC  11,XITP        PRINT BUFFER EMPTY
0365 0271 88000800      SETF PACT,1       YES,FIRE UP PRINTER
0366 0273 708201C2      B   WINT1
0367 0275 88000000 XITP SETF PACT,0  PRINTER NOT ACTIVE
0368 0277 44010000      L   1,KNWDS
0369 0279 E08B0000      BC  11,RETURA     NONE TO GO
0370 027B 8400027B      BFNE PACT2,0,$    KEY ECHO ON*****
0371 027D 70820109      B   STARKP        FIRE IT UP
0372 027F 70820000      B   RETURA
0373 0281                    END
0000 ERRORS : LENGTH = 0281

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0001          TITL SIHB13.CASSETTE HANDLERS
0002 0000          SIHB PSEG
0003 0000          MODE
0004 0000          DEF REWIND,PLON1,PLON2,RANDIO,OCRLF
0005 0000          REF TIMINT,PNWDS,SDRD,PLARGO,BRAND,SREC
0006 0000          REF SCOUNT,PRINT,GKCHAR,CHARST
0007 0000          REF RAND1,RAND2,RAND3,RAND4,RAND5
0008 0000 70070000 RANDIO NOP          SUBROUTINE CALLED BY RANDY'S
0009 0000 48810013 ST          1,RANT1+1          SAVE IT
0010 0004 44817007 LA          1,X'7007'
0011 0006 48810000 ST          1,TIMINT          NOP'S CALL TO CLOCK HANDLER
0012 0008 48810000 ST          1,RAND1
0013 000A 48810000 ST          1,RAND2
0014 000C 48810000 ST          1,RAND3
0015 000E 48810000 ST          1,RAND4
0016 0010 48810000 ST          1,RAND5
0017 0012 44810000 RANT1 LA          1,0          RESTORE IT
0018 0014 72820002 B          2,0          RETURN CALL +2
0019          *****SAVEU AND REEATOR USED ONLY BY SUBROUTINES
0020          *WITH CALL+2 RETURNS
0021 0016 48800031 SAVEU ST          0,TEMR0
0022 0018 48830033 ST          3,TEMR3
0023 001A 48840034 ST          4,TEMR4
0024 001C 48850035 ST          5,TEMR5
0025 001E 44850000 LA          5,SIHB
0026 0020 44840000 LA          4,SDRD          COMMON DATA SEG
0027 0022 72920002 B          2,1          RETURN
0028 0024 44000031 RESTOR L          0,TEMR0
0029 0026 44010032 L          1,TEMR1
0030 0028 44030033 L          3,TEMR3
0031 002A 44040034 L          4,TEMR4
0032 002C 44050035 L          5,TEMR5
0033 002E 72820002 B          2,0          RETURN TO USER
0034 0030 0000          ZERO DATA 0000
0035 0031          TEMR0 RES 1
0036 0032          TEMR1 RES 1
0037 0033          TEMR3 RES 1
0038 0034          TEMR4 RES 1
0039 0035          TEMR5 RES 1
0040          *
0041 0036 70070000 GETST NOP          BL 3,GETST GETS STATUS
0042 0038 74800000 BI          0,PRINT          GET STATUS
0043 003A 011C          DATA STAT
0044 003B 70820038 B          $-3
0045 003D 44810000 LA          1,0
0046 003F 48810000 ST          1,CHARST
0047 0041 44010000 L          1,CHARST
0048 0043 E08B0041 BC          11,$-2
0049 0045 72B20002 B          2,3          RETURN WITH STATUS IN R1
0050          *

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```

0051 0047 70070000 DELAY3 NOP          3 SEC DELAY, SUBROUTINE
0052 0049 20FEA001          AMI CATEM,1
0053 004B E08B004F          BC 11,$+4
0054 004D 70820049          B $-4          1 SEC
0055 004F 20FEA001          AMI CATEM,1
0056 0051 E08B0055          BC 11,$+4
0057 0053 7082004F          B $-4          2 SEC
0058 0055 20FEA001          AMI CATEM,1
0059 0057 E08B005B          BC 11,$+4
0060 0059 70820055          B $-4
0061 005B 70070000          NOP
0062 005D 70070000          NOP
0063 005F 72B20002          B 2.3          RETURN
0064                                *
0065 0061 70070000 REWINE NOP          REWIND BOTH CASSETTE UNITS
0066 0063 48810032          ST 1,TEMRI
0067 0065 74810016          BL 1,SAVEU
0068                                *OK ALL TAPES MOUNTED CORRECTLY,PRINTER ENABLED
0069                                *MUST WAIT 2 SEC AFTER ISSUE REWIND TO GET STATUS
0070                                *
0071 0067 74800000 REWTR BL 0,PRINT
0072 0069 0159          DATA RW1
73 006A 70820067          B $-3
0074                                *DELAY 2 SEC
0075 006C 74830047          BL 3,DELAY3          DELAY AT LESAT 1.5 SEC
0076 006E 70070000 NOVL NOP
0077 0070 74830036          BL 3,GETST          GET STATUS
0078 0072 5881000C          NA 1,X'C'          CLEAR LEADER ON BOTH
0079 0074 5081000C          SA 1,X'C'
0080 0076 E08B007A          BC 11,$+4          OK GOT IT
0081 0078 7082006E          B NOVL          GET NEW STATUS
0082 007A 74800000          BL 0,PRINT
0083 007C 0113          DATA LOADP          GO TO LOAD POINT
0084 007D 7082007A          B $-3
0085 007F 70070000          NOP
0086 0081 74830047          BL 3,DELAY3
0087 0083 74830047          BL 3,DELAY3
0088 0085 74830047          BL 3,DELAY3          MAX 6 SEC DELAY
0089 0087 74830047          BL 3,DELAY3
0090 0089 70070000          NOP
0091 008B 74830036          BL 3,GETST
0092 008D 50010118          S 1,PLSTAT          STATUS OF 51 OR 71
0093 008F E08B0024          BC 11,RESTOR          OK 71 IS ALL RIGHT
0094 0091 44010000          L 1,CHARST
0095 0093 58810020          NA 1,X'20'
0096 0095 E08B00BB          BC 11,MPR          PRINTER NOT READY,BUT WILL N
0097 0097 44010000          L 1,CHARST
0098 0099 58810010          NA 1,X'10'
0099 009B E08B00P5          BC 11,MRU          RECORDER NOT READY
0100 009D 44010000          L 1,CHARST

```

0101	009F	58810001	NA	1,1	
0102	00A1	E08B00B8	BC	11,MPU	PLAYBACK NOT READY
0103	00A3	748000A6	BL	0,MSGO	UNKNOWN,WRITE TAB LEFT IN
0104	00A5	011F	DATA	MTU1	
0105			*		
0106	00A6	4A010002	MSGO	L 1,2,0	PRINT MESSAGE,WAIT FOR CR
0107	00A8	488100AE	ST	1,MSGO1	
0108	00AA	748000FF	BL	0,OCRLF	
0109	00AC	74800000	BL	0,PRINT	
0110	00AE	0000	MSGO1	DATA 0	
0111	00AF	708200AC	B	\$-3	
0112	00B1	748000FF	BL	0,OCRLF	
0113			*		
0114	00B3	70820000	B	PLARGO	PUT OUT MSG AND RESTART
0115			*		
0116	00B5	748000A6	MRU	BL 0,MSGO	
0117	00B7	0134	DATA	MRU1	
0118	00B8	748000A6	MPU	BL 0,MSGO	
0119	00BA	0147	DATA	MPU1	
0120	00BB	74800000	MPR	BL 0,BRAN0	PRINTER NOT ENABLED
0121	00BD	708200BD	B	\$	NO PRINTER*****
0122			*		
0123			*		
0124	00BF	70070000	PLON1	NOP	SET PLAYBACK ON UNIT 1
0125	00C1	48810032	ST	1,TEMR1	
0126	00C3	74810016	BL	1,SAVEU	
0127	00C5	74800000	BL	0,PRINT	
0128	00C7	010D	DATA	PL1	
0129	00C8	708200C5	B	\$-3	
0130	00CA	74830036	BL	3,GETST	
0131	00CC	50810071	SA	1,X'71'	IS IT OK
0132	00CE	E08B00D5	BC	11,PLONZ	YES
0133	00D0	74800000	BL	0,PRINT	
0134	00D2	0119	DATA	LDA	LOAD UNIT 1
0135	00D3	708200D0	B	\$-3	
0136	00D5	44810071	PLONZ	LA 1,X'71'	
0137	00D7	708200E6	B	PLON12	
0138			*		
0139	00D9	70070000	PLON2	NOP	SET PLAYBACK ON UNIT 2
0140	00DB	48810032	ST	1,TEMR1	
0141	00DD	74810016	BL	1,SAVEU	
0142	00DF	74800000	BL	0,PRINT	
0143	00E1	0110	DATA	PL2	
0144	00E2	708200DF	B	\$-3	
0145	00E4	44810065	LA	1,X'65'	
0146	00E6	48810118	PLON12	ST 1,PLSTAT	
0147	00E8	44010000	L	1,PNWDS	WAIT TILL PRINT BUFF EMPTY
0148	00EA	E08A00E8	BC	10,\$-2	
0149	00EC	70070000	NOP		
0150	00EE	840004EE	BFNE	#SREC,0,\$	WAIT TILL RECORD TURNED OFF

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0151 00F0 20FEA001      AMI  CATEM.1      DELAY 1 SEC TO BE SURE
0152 00F2 E08B00F6      BC   11,$+4
0153 00F4 708200F0      B    $-4
0154 00F6 70070000      NOP
0155 00F8 44000031      L    0,TEMR0
0156 00FA 70070000      NOP
0157 00FC 70820024      B    RESTOR
0158
0159 00FE                *
                        CATEM RES 1
0160
0161
0162 00FF 4C800002      OCRLF AA  0.2
0163 0101 48800109      ST   0,OCRLF+1
0164 0103 74800000      BL   0,PRINT
0165 0105 010A          DATA CRL
0166 0106 70820103      B    $-3
0167 0108 70820108      OCRLF R  $      RET CALL+2
0168 010A 0002          CRL  DATA 2,X'A',X'D'
      010B 000A
      010C 000D
0169 010D 0002          PL1  DATA 2,X'10',X'36'      PLAYBACK ON CAS 1
      010E 0010
      010F 0036
0170 0110 0002          PL2  DATA 2,X'10',X'35'      PLAYBACK ON CAS 2
      0111 0010
      0112 0035
0171 0113 0004          LOADP DATA 4,X'10',X'33',X'10',X'34'      TO LOAD POINT
      0114 0010
      0115 0033
      0116 0010
      0117 0034
0172 0118 0000          PLSTAT DATA 0
0173 0119 0002          LDA  DATA 2,X'10',X'33'      LOAD POINT ON CAS 1
      011A 0010
      011B 0033
0174 011C 0002          STAT DATA 2,X'10',X'3C'      GET STATUS CHAR
      011D 0010
      011E 003C
0175 011F 0012          MTU1 DATA 18,C' W R I T E   T A B   I N '
      0120 20572052
      0122 20492054
      0124 20452020
      0126 20542041
      0128 20422020
      012A 2049204E
      012C 2020
0176 012D 20202055          DATA C'  U N I T   1 '
      012F 204E2049
      0131 20542020
      0133 2031

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0177 0134 0010      MRU1  DATA 16,C' U N I T   2   N O T '
      0135 2055204E
      0137 20492054
      0139 20202032
      013B 2020204E
      013D 204F2054
      013F 2020
0178 0140 20202052      DATA C'  R E A D Y '
      0142 20452041
      0144 20442059
      0146 2020
0179 0147 0010      MPU1  DATA 16,C' U N I T   1   N O T '
      0148 2055204E
      014A 20492054
      014C 20202031
      014E 2020204E
      0150 204F2054
      0152 20202020
0180 0154 20522045      DATA C'  R E A D Y '
      0156 20412044
      0158 2059
0181 0159 0004      RW1   DATA 4,X'10',X'31',X'10',X'32'
      015A 0010
      015B 0031
      015C 0010
      015D 0032
0182 015E                      END
0000  ERRORS : LENGTH = 015E
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```

0001          TITL SIHA23
0002 0000      SIHA PSEG
0003 008C      ALTR4 EQU X'8C'
0004 0000      MODE
0005 0000      DEF PLAY1,RECEND,KREAD,GKCHAR
0006 0000      DEF WAITAD,KRDEB,KPDEB
0007 0000      REF GETAB,CKBB,KBDMIP,KBDM,MANB,QF ED'S STUFF
0008 0000      REF RECORD,CHARKY,CHARIN,SCOUNT,RECND,PNWDS
0009 0000      REF KCHIN,KOUT,CAPO,PLAERR,PLAR,KCHAR1
0010 0000      REF LAY01,WAITKY,SREC,GETBX FLAG REFS
0011 0000 70070000 RETURA NOP
0012 0002 44050104 L 5,TEM5
0013 0004 70820004 RETURB B $ RETURN JUMP TO CHAIN
0014          *
0015 0006 48850104 SAVE1 ST 5,TEM5
0016 0008 4C800002 AA 0.2
0017 000A 48800005 ST 0,RETURB+1
0018 000C 44850000 LA 5,SIHA
0019 000E 72920002 B 2.1 RETURN
0020          *
0021 0010 74810006 KREAD BL 1,SAVE1
0022 0012 8400083B BFNE LAY01.1,KEYIN KEYBOARD OR PLAYBACK?
    23 0014 70820019 KPDEB B $+5 PLAYBACK AUX TTY
    24 0016 74800000 BL 0,SCOUNT
0025 0018 0000 DATA KCHIN
0026          *
0027 0019 44010000 L 1,KCHIN
0028 001B 5881007F NA 1,X'7F'
0029 001D 48810000 ST 1,KCHIN
0030          *
0031 001F 4C81FFED AA 1,-X'13' PLAYBACK FROM OP TTY UNIT
0032 0021 E08B0031 BC 11,XITPL1 DONE,PLAYBACK OFF
0033 0023 4C81FF94 AA 1,X'13'-X'7F'
0034 0025 E08B0000 BC 11,RETURA IGNORE
0035          *
0036 0027 44010000 L 1,KCHIN
0037 0029 498100F9 ST 1,*LPTR1
0038 002B 20F9A001 AMI LPTR1.1
0039 002D 20FAA001 AMI LNWDS1.1
0040 002F 70820000 B RETURA
0041          *
0042 0031 70070000 XITPL1 NOP PLAYBACK ODONE
0043 0033 440100FA L 1,LNWDS1
0044 0035 498100F8 ST 1,*LBNW1
0045 0037 88000000 SETF LAY01.0
0046 0039 70820000 B RETURA
0047          **
0048 003B 70070000 KEYIN NOP KEYBOARD INPUT CHARACTERS
    49 003D 70820042 KRDEB B $+5 BEBUG INT RECORDER
0050 003F 74800000 BL 0,SCOUNT
    
```

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0051 0041 0000          DATA CHARIN
0052 0042 44010000     L 1,CHARIN          KEYBD INPUT CHAR
0053 0044 5881007F     NA 1,X'7F'
0054 0046 48810000     ST 1,KCHIN
0055 0048 4C81FFFD     AA 1,-X'3'
0056 004A E08B00EF     BC 11,KEND          ETX 03 ↑C
0057 004C 4C81FFEC     AA 1,3-X'17'
0058 004E E08B00EF     BC 11,KEND          ETB 17 ↑W
0059 0050 4C810016     AA 1,X'17'-1
0060 0052 E08B00DB     BC 11,ABORT        CONTROL A
0061 0054 4C810001     AA 1,1
0062                                     *
0063 0056 4C81FFF6     AA 1,-X'A'          LF
0064 0058 E08B0064     BC 11,GOODA
0065 005A 4C81FFFD     AA 1,X'A'-X'D'      CR
0066 005C E08B0064     BC 11,GOODA
0067 005E 18009000     CML (KCHIN,4),(CAPO,4) IS IT PRINTABLE
0068 0060 70820000     B  RETURA          NO
0069 0062 70820000     B  RETURA          NO
0070 0064 70070000     GOODA NOP
0071                                     *
0072 0066 14009000     MOV (KCHIN,4),(KOUT,4) FOR ECCHO PRINT
73                                     *AFTER GET FIRST CHAR,THEN ASK FOR BUFFER
0074 0068 70070000     KEY1 NOP
0075 006A 840000C3     BFNE KCHAR1,0,NOT1ST
0076 006C 74800000     BL 0,GETAB          GET BUFFER
0077 006E 0000          DATA MANB
0078 006F 70820000     B  RETURA          NO BUFF AVAILALABLE,IGNORE
0079 0071 88000800     SETF KCHAR1,1      GOT FIRST CHAR
0080 0073 488000FD     ST 0,KBNWD          POINTS TO CURRENT BUFFER
0081 0075 4C800001     AA 0,1
0082 0077 488000FB     ST 0,KPTR
0083 0079 1503B4FE     MOV ZERO,KNWDS
0084 007B 4481FFFF     LA 1,-1
0085 007D 498100FD     ST 1,*KBNWD
0086 007F 44810106     LA 1,KSTUF          FILL WITH HEADING
0087 0081 488100FC     ST 1,KCTR
0088 0083 70070000     K1 NOP
0089 0085 450100FC     L 1,*KCTR
0090 0087 E08C0095     BC 12,KDON          LAST WORD
0091 0089 5881007F     NA 1,X'7F'          MASK OUT
0092 008B 20FCA001     AMI KCTR,1
0093 008D 498100FB     ST 1,*KPTR
0094 008F 20FEA001     AMI KNWDS,1
0095 0091 20FBA001     AMI KPTR,1
0096 0093 70820083     B  K1              MORE STUFF
0097 0095 70070000     KDON NOP
0098 0097 840008C3     BFNE GETBX,1,NOT1ST END OF BUFFER
0099 0099 20FBBFFF     AMI KPTR,-1        FIRST CHAR IS ETB/ETX
1000 009B 44010000     L 1,KCHIN          STORE OVER STX
    
```

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0101 009D 498100FB      ST  1.*KPTR
0102                    *
0103                    *IF FIRST CHAR IS ETX03/ETB17 DONT PUT IN STX 02
0104                    *ELSE PUT IN STX02
0105                    *OK JUST GOT ↑CETX(03),OR ↑BETB(17)
0106                    *SEE IF YOU CAN GIVE SUPERVISOR GTHIS BUFFER
0107 009F 70070000  GEND  NOP
0108 00A1 88000000      SETF KCHAR1,0      SET BY FIRST CHAR,OF NEXT MS
0109 00A3 88000000      SETF GETBX,0
0110 00A5 44010000      L    1,KCHIN      OUTPUT ETX/ETB
0111 00A7 4C810060      AA  1,X'60'
0112 00A9 48810000      ST  1,KOUT
0113                    *
0114 00AB 440100FE      L    1,KNWDS      SET BUFFER WORD COUNT
0115 00AD 498100FD      ST  1.*KBNWD
0116 00AF 84000CB9      BFNE #KBDMIP,1,GEND1  NORMAL
0117 00B1 440100FD      L    1,KBNWD
0118 00B3 488100F7      ST  1,WAITAD      ADDRESS OF BUFFER
0119 00B5 88000800      SETF WAITKY,1      IN PROGRESS,SFT FLAG
0120 00B7 708200E5      B    KEYP          PRINT LAST ETX/ETB OUT
0121 00B9 70070000  GEND1  NOP          NORMAL,GIVE SUPR BUFFER
0122 00BB 440100FD      L    1,KBNWD      POINTS TO BUFF
0123 00BD 48810000      ST  1,CKBB
0124 00BF 88000C00      SETF #KBDM,1
0125 00C1 708200E5      B    KEYP          TO PRINT ETX/ETB
0126                    *
0127 00C3 70070000  NOT1ST  NOP
0128 00C5 840000CD      BFNE GETBX,0,OKSTOR  IF ETX/ETB OK STORE
0129 00C7 440100FE      L    1,KNWDS      IF ITS THE 119TH CHAR ,IGNOR
0130 00C9 508100DB      SA  1,219          THIS IS OR WILL BE THE 120TH
0131 00CB E08B0000      BC  11,RETURA     IGNORE,NO PRINT
0132 00CD 44010000  OKSTOR  L    1,KCHIN      OK STORE IT
0133 00CF 498100FB      ST  1.*KPTR
0134 00D1 20FEA001      AMI  KNWDS,1
0135 00D3 20FBA001      AMI  KPTR,1
0136 00D5 840008E5      BFNE GETBX,1,KEYP
0137 00D7 70070000      NOP
0138 00D9 7082009F      B    GEND          GOT ETX/ETB
0139                    *
0140 00DB 88000C00  ABORT  SFTF #QF,1      SET QUIT FLAG
0141 00DD 70070000      NOP
0142 00DF 44810061      LA  1,X'61'       LC A
0143 00E1 48810000      ST  1,KCHIN
0144 00E3 48810000      ST  1,KOUT
0145 00E5 70070000  KEYP   NOP          OK PRINT IT
0146 00E7 44000005      L    0,RETURB+1   RET CALL+4 FOR PRINT
0147 00E9 4C800002      AA  0,2
0148 00EB 48800005      ST  0,RETURB+1
0149 00ED 70820000      B    RETURA      RET CALL+4
0150                    *

```



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0151 00FF 7007 0000 KEND NOP
0152 00F1 84000000 BFNE WAITKY,0,RETURA IF WAITING IGNORE FTX,ITR
0153 00F3 88000800 SETF GETPX,1
0154 00F5 7082 064 B COODA
0155 00F7 WAITAD RFS 1 ADDRESS OF BUFF FOR WAITKY
0156 00F8 LBNW1 RFS 1
0157 00F9 LPTR1 RFS 1
0158 00FA INWDS1 RES 1
0159 00FB KPTR RFS 1
0160 00FC KCTR RES 1
0161 00FD KBNWD RFS 1
0162 00FE KNWDS RES 1
0163 00FF USFR0 RES 1
0164 0100 TEMR1 RES 1 TEMPORARY REC STORAGE
0165 0101 TEMR4 RES 1
0166 0102 TEMR5 RES 1
0167 0103 0000 ZERO DATA 0
0168 0104 TEM5 RES 1
0169 0105 0000 RECT DATA 0 TEMP VAR FOR RECEND
0170 0106 20322030 KSTUF DATA C' 2 0 0 0 0 0 1'
0108 20302030
010A 20302020
010C 20302031
0171 010E 0006 DATA X'06',C' F 0'
010F 20452051
0172 0111 0002 DATA 0002,-1 TO END LIST
0112 0112 FFFF

0173 *
0174 ***:RECEND RETURNS TO USER WHEN RECORD HAS BEEN WRITTEN
0175 0113 70070000 RECEND NOP THROW OUT RECORD BUFFER
0176 0115 4C80FFFF AA 0,-3 SO THAT R0+5 RETURN JUMP IS
0177 0117 48810100 ST 1,TEMP1
0178 0119 74810156 BL 1,SAVE
0179 011B 88000000 SETF #RECND,1 RECEND CALLING RECORD
0180 011D 74800000 BL 0,RECORD
0181 011F 0130 DATA C86
0182 0120 7082011D B 0-3
0183 0122 88000400 SETF #RECND,0 DONE
0184 0124 70070000 NOP
0185 0126 84000026 BFNE #SREC,1,$ WAIT TILL IT GETS TO 1
0186 0128 70070000 NOP
0187 012A 8400052A BFNE #SREC,0,$ WAIT TILL IT GOES TO ZERO
0188 012C 44010000 L 1,PNWDS WAIT TILL BUFF EMPTY
0189 012E F08A012C BC 10,$-2
0190 013 2105A001 AMI RECT,1 DELAY 1 SEC
0191 0132 E0800136 BC 11,$+4
0192 0134 70820130 B 0-4
0193 0136 7082014C B RESTOR
0194 0138 0056 C86 DATA 86,X'7F'
0139 007F

```

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0195
0196 013A 7007 00  CKCHAR NOP          GET THE NEXT KEYBOARD CHAR
0197 013C 4481000  LA 1.0
0198 013E 4481000  ST 1.CHARKY
0199 014 4401000  L 1.CHARKY
0200 0142 F080 14  BC 11.0-2
0201 0144 7282000  B 2.0          CHAR IS IN R1
0202
0203 0146 440000FF BUSY L 0.USER0
0204 0148 4C80FFFE AA 0.-2
0205 014A 7082 14E B 0+4
0206
0207          *SAVE AND RESTOR MAY ONLY BE USED BY SUPERVISOR MODE ROUT
0208 014C 440000FF RESTOR L 0.USER0          RESTOR ZERO
0209 014E 4401010  L 1.TFMR1
0210 015 44040101  L 4.TFMR4
0211 0152 44050102  L 5.TFMR5
0212 0154 72820005 B 5.0
0213
0214 0156 7007 00  SAVE NOP
0215 0158 408000FF ST 0.USER0
0216 015A 48840101  ST 4.TFMR4
0217 015C 48850102  ST 5.TFMR5
0218 015E 4485000  LA 5.SIHA          CURRENT PDEG AD
0219 016 4404008C L 4.ALTR4
0220 0162 70920002 B 2.1          RETURN R1+2
0221          *****
0222 0164 7007 00  PLAY1 NOP          PLAYBACK FROM OPERATOR CONSO
0223 0166 4881010  ST 1.TFMR1
0224 0168 74810156 BL 1.SAVE
0225
0226 016A 84000546 BFNE #LAY01.0,BUSY
0227 016C 46010002 L 1.2.0          GET ARG AT R0+2
0228 016E 488100FB ST 1.LBNW1
0229 0170 4C810001 AA 1.1
0230 0172 488100F9 ST 1.LPTR1
0231 0174 4481FFFF LA 1.-1          STUFF -1 IN BUFFCNT WORD
0232 0176 498100FB ST 1.*LBNW1
0233 0178 1503B4FA MOV ZERO,INWES1 ZERO WORDS RECEIVED
0234 017A 44810011 LA 1.'X'11'          PLAYBACK ON CHAR
0235 017C 48810000 ST 1.KOUT
0236 017E 345A0C00 SFTB #X'5A'.1
0237 0180 34590C00 SFTB #X'59'.1
0238 0182 08500400 LDCR #(X'50'.8),KOUT          SEND PLAYBACK ON
0239 0184 88000C00 SFTF #LAY01.1          PLAYBACK IN PROGRESS
0240 0186 84000D8A BFNE #PIAERR.1.0+4          NO ERROR
0241 0188 7082000  B PLAR          PLAY ERROR RETURN
0242 018A 450100FA L 1.*LBNW1
0243 018C F08C 186 BC 12.0-6
0244 018E 88000400 SFTF #LAY01.0

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0245 0190 7082014C B RESTOR
0246 0192 END
0000 ERRORS : LENGTH = 0192


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0001          TITLE SIBOR, AUX ITY RECORDS, PRINTER
0002 00          SIBO  PSIG
0003 00          MOFF
0004 00          DEF  OPRINT, CPRINT, PRINT, KWRITE, OWREP
0005 00          REF  FB11, CHAR01, P SIZE, PLEN01
0006 00          REF  POPTR1, PINWD01, PPTR1
0007 00          REF  PACT1, LUMY1, BRAN0, SCOUNT, PCHAR, LFC1R1, SIRD
0008 00          REF  MTEUS, C72, PC1TR1
0009 00          L  5, $
0010 002 4485 00  RETUR/ L  5, $
0011 002 7 82 00  RETUR/ B  $          RETURN JUMP
0012 004 7 80 00  JLIWRA BI  0, BRAN0
0013 006 7 82 006  B  $          SYSTEM FILES
0014 008 7 82 008  *
0015 008 4080 002  SAVFI  AA  0, 2
0016 00A 4880 003  SI  0, P1TURB+1
0017 00C 4885 001  SI  5, P1TURA+1
0018 00E 4485 00  LA  5, SIBO
0019 01 7292 002  B  2, 1
0020 012 0 20  CAPJ  DATA X'20', Y 7I          PRINTABLE CHARACTERS
0021 014 0 7I  PCIP  RIS  1
0022 015 0 7I  FEI  DATA X'7I
0023 016 0 17  C23  DATA 23
0024 017 0 00  ZERO  DATA 0
0025 018 0 03  THPIE DATA 3
0026 019 0 01  PINWD  RIS  1
0027 01A 0 01  PIPTR  RIS  1
0028 01B 0 01  TEMR1A RIS  1
0029 01C 0 01  TEMR4A RIS  1
0030 01D 0 01  TEMR5A RIS  1
0031 01E 0 1I  ADI  DATA $'1,10,--X'D'
0032 02 0 0A  FFI3
0033 021 0 22  IFI  DATA $'1,X'D',10,1,1,1,1,1,-10
0034 022 0 0I
0035 023 0 0A
0036 024 0 07
0037 025 0 0A
0038 026 0 0A
0039 027 0 0A
0040 028 FFI6
0041 029 FFI
0042 M66  DATA -66
0043 *HANDLES KE AUX ITY WRITE INTS
0044 02A 7481 008  KWRITE  PL  1, SAVE1
0045 02C 7482 031  OWREP  P  $15          SKIP INT RECORDER
0046 02E 7480 005  BL  0, SCOUNT
0047 03 0 00  DATA CHAR01
0048 031 8400 009D  BENE  LUMY1, 0, FAKE          TO 7007 IF 1200 PAUSE ITY
0049 033 4401 000  L  1, CHAR01          LAST CHAR OUT, II WAS REAL
    
```

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0041 0035 4C81FFF3      AA  1,-X'D'      WAS IT CR
0042 0037 E08B04F     BC  11,CROUT     YES
0043 0039 4C810003     AA  1,3          WAS IT IF 'A'
0044 003B E08B059     BC  11,LFOUT     GOT LF
0045 003D 18009412     CML (CHAR01,4),CAP1  IF NONPRINT,NO DUMMIES
0046 003F 7082063      B  1DUMMY       IGNORE
0047 0041 7082063      B  1DUMMY       IGNORE
0048 0043 1418B414     MOV  THREE,DCTR  PRINTABLE,3DUMMIES
0049
0050 0045 20009FFF      *
0051 0047 E08A053      AMI (PCCTR1,4),-1  CHECK FOR 81ST REAL CHAR
0052 0049 14009000     BC  10,SDF       OK,SET DUMMY FLAG
0053 004B 1411B000     MOV  (C72,4),(PCCTR1,4)  REINIT AT 80
0054 004D 7082053      MOV  ADI,(PCHAR1,4)
0055 004F 1416B414 (CROUT)  B  SDF
0056 0051 14009000     MOV  C23,DCTR    23 DUMMIES FOR CR OR LF
0057 0053 7007000     SDF  MOV  (C72,4),(PCCTR1,4)  REINIT AT 80
0058 0055 80000800     NOP  SET DUMMY FLAG NEXT
0059 0057 70820A1      SFTF DUMMY1,1 NEXT DCTR CHAR ARE DUMMIES
0060 0059 20008001     B  FAKE1       SEND OUT FIRST FAKE
0061 005B E08C04F     LFOUT AMI (LFCTR1,4),1
0062 005D 1429B000     BC  12,CROUT
0063 005F 1421B000     MOV  M66,(LFCTR1,4)  GEN PAGE EJECT
0064 0061 708204F     MOV  LFI,(PCHAR1,4)
0065 0063 80000000     B  CROUT
0066 0065 44010000     *
0067 0067 80000000     LDUMMY SETF DUMMY1,0  LAST FAKE OUT,GET NEXT REAL CHA
0068 0069 44010000     *
0069 0067 E08B07B     L  1,PCHAR1     SHOULD WE CR,LF
0070 0069 45010000     BC  11,NOCRLF
0071 006B E08C073     L  1,*PCHAR1
0072 006D 20008001     BC  12,PCHARD
0073 006F 48810000     AMI (PCHAR1,4),1
0074 0071 7082093      PCHX ST  1,CHAR01
0075 0073 51010000     B  OUTJF
0076 0075 51010000     PCHARD S  1,*PCHAR1  ZERO
0077 0077 1417B000     S  1,*PCHAR1  MAKE IT POS
0078 0079 708206F     MOV  ZERO,(PCHAR1,4)
0079 007B 7007000     B  PCIX
0080 007D 200091FF     *
0081 007F E08B0A7     NOCRLF NOP
0082 0081 E08A085     AMI (PNWDS1,4),-1  FINISH PRINTING OUT BUFFR
0083 0083 7082083     BC  11,XITP     ALL DONE
0084 0085 40010000     B  10,$14     POS OK
0085 0087 40010000     WINT1 L  1,*PPTR1     NEGATIVE PNWDS1,ERR
0086 0089 21008001     ST  1,CHAR01
0087 008B 10009000     AMI (PPTR1,4),1
0088 008D 7082093     CM  (PPTR1,4),(PPEND1,4)  CIRCULAR BUFFER
0089 008F 708208F     B  $16        NORMAL
0090 0091 708208F     B  $          PRINT BUF STORE ILLEGAL

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0091 0091 14300000 MOV (PRT1,4),(PPTR1,4) WRAP AROUND
0092 0093 345A080 OUTIT SITB X'5A',1 REQ TO SEND
0093 0095 3459080 SITB X'59',1
0094 0097 7007000 OUTIT1 NOP
0095 0099 00500000 L'CR (X'50',8),CHAR01 PRINT 11
0096 009B 7082000 B RETURA
0097 009D 2014B000 TAKE AMI I:CTR,-1
0098 009F 008E0000 BC 11,LDUMMY
0099 00A1 345A000 TAKE1 SITB X'5A',0 NO REQ TO SEND
0100 00A3 1415B000 MOV DEI,(CHAR01,4)
0101 00A5 7082007 B OUTIT1
0102 00A7 8B000000 XITP SITF PAC11,0 PRINTER ACTIVE OFF
0103 00A9 7082000 B RETURA
0104 ***** DRIVER ROUTINES*****
0105 *ALL DRIVER ROUTINES RUN IN SUPERVISOR MODE
0106 *NON-INTERRUPT RUNNING ROUTINES
0107 *ALL ROUTINES DO NOT DISTURB ANY REGISTERS XCEPT R0
0108 *
0109 * CALL IS FORM
0110 * B1 0,NAME
0111 * DATA ADDRESS
0112 * BUSY RETURN
0113 * NORMAL RETURN
0114 *
0115 *
0116 *ADDRESS IS LOCATION OF BUFFER WORD COUNT
0117 *PUT DATA IN CIRCULAR PRINT BUFFER
0118 *TAKE CARE OF 1CHHO CHAR
0119 *
0120 *PRINT HAS 3 ENTRY POINTS
0121 *OPRINT AS EXPLAINED ABOVE
0122 *CPRINT PRINT 1 CHAR,CHAR IS IN R1
0123 * B1 0,CPRINT R1 CONTAINS CHAR
0124 * BUSY RETURN
0125 * NORMAL RETURN
0126 *NPRINT NUMBER OF CHARACTERS IS IN R1
0127 * B1 0,NPRINTN
0128 * DATA ADDRESS
0129 * BUSY RETURN
0130 * NORMAL RETURN
0131 00AB 7007000 CPRINT CDP
0132 00AD 5080001 SA 0,1 LINE UP RETURNS
0133 00AF 4881001B SI 1,PMRIA
0134 00B1 44810001 LA 1,1
0135 00B3 4881001B SI 1,PINWF
0136 00B5 4481001B LA 1,1PMPIA
0137 00B7 4881001A SI 1,PIPIR
0138 00B9 7082000 B PMAINE
0139 *
0140 *

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0141 00BB 7007 00 NPRINT NOP
0142 00BD 4881001B ST 1,IFMR1A
0143 00BF 48810019 ST 1,PINWD
0144 00C1 46010002 L 1,2,0
0145 00C3 4881001A ST 1,PIPTR
0146 00C5 7082 009 B PMAINF
0147 00C7 7007 00 OPRINT NOP
0148 00C9 4881001B ST 1,IFMR1A
0149 00CB 46010002 L 1,2,0
0150 00CD 48810019 ST 1,PINWD
0151 00CF 4C810001 AA 1,1
0152 00D1 4881001A ST 1,PIPTR
0153 00D3 46010019 L 1,*PINWD
0154 00D5 48810019 ST 1,PINWD
0155 00D7 7007 00 NOP
0156 00D9 7007 00 PMAINF NOP
0157 00DB 4884001C ST 4,TEMR4A
0158 00DD 4885001D ST 5,TEMR5A
0159 00DF 44850000 LA 5,SIHO THIS PREG
0160 00E1 44840000 LA 4,SDRD
0161 00E3 *
0162 00E5 44010019 L 1,PINWD NO OF INCOMING WORDS
0163 00E7 108A 0019 BC 10,*+4 IF POS, NONZERO OK
0164 00E9 7082 129 B PRINTY IGNORE
0165 00EB 4C010000 A 1,PNWDS1
0166 00ED 5881 000 SA 1,PISIZE
0167 00EF 108C 001 BC 12,*+4
0168 00F1 7082 127 B BUSPR BUSY RETURN
0169 00F3 4501001A PRINT1 L 1,*PIPTR POINTS TO INPUT SPACE IN CIRC BUF
0170 00F5 5881007F NA 1,*7F ONLY ACCEPT 7 BITS****
0171 00F7 4981000 ST 1,*POPTR1
0172 00F9 20000001 AMI (PNWDS1,4),1
0173 00FB 201AA001 AMI PIPTTR,1
0174 00FD 20000001 AMI (POPTR1,4),1
0175 00FF 10090000 CH (POPTR1,4),(PBEND1,4) ROOM TO STORE
0176 0101 7082 105 B $16 NORMAL
0177 0103 7082 004 B ILLWRA NEVER
0178 0105 14000000 MOV (PB1,4),(POPTR1,4) BRING TO TOP
0179 0107 2019B11F AMI PINWD,-1
0180 0109 108A 001 BC 10,PRINT1 MORE TO GO
0181 010B 84000520 BFNE #PACT1,0,PRINTY PRINTER ACTIVE
0182 010D 88000000 STF #PACT1,1
0183 010F 7007 00 NOP
0184 0111 45010000 L 1,*PPTR1 THROW OUT FIRST CHAR
0185 0113 48810000 ST 1,CHAR01
0186 0115 20080001 AMI (PPTR1,4),1
0187 0117 10000000 CM (PPTR1,4),(PEEND1,4)
0188 0119 7082 11D B $16 NORMAL
0189 011B 7082 004 B ILLWRA ERROR
0190 011D 14000000 MOV (PB1,4),(PPTR1,4) WRAP AROUND

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0191 011D 88000400      SETF #DUMMY1,0
0192 011F 34590C00      SETB #X'59',1
0193 0121 345A0C00      SETB #X'5A',1
0194 0123 08508400      LDCR #(X'50',8),CHAR01
0195 0125 70820129      B      $+4
0196 0127 4C80FFFE BUSPR AA 0,-2      WAANT TO RET CALL+3
0197 0129 4401001B PRINTY L 1,TEMR1A      RESTORE
0198 012B 4404001C      L      4,TEMR4A
0199 012D 4405001D      L      5,TEMR5A
0200 012F 72820005      B      5,0
0201 0131      END
0000 ERRORS : LENGTH = 0131
    
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0001          TITL SIHK5,OPERATOR KEYBOARD MSG ECHO
0002 0000          SIHK PSEG
0003 0000          MODE          ALT MODE REGISTERS USED
0004 0000          DEF PROM,STARTK
0005 0000          REF KBI,CHARO,KBEND1
0006 0000          REF KNWDS,KPTR,STARTR,C72,PCCTR2,PCHAR2
0007 0000          REF PACT2,DUMMY2
0008 0000 44850000 RETURA LA 5,$
0009 0002 70820002 RETURB B $          RETURN JUMP
0010 0004 4C800002 SAVE1 AA 0,2
0011 0006 48800003          ST 0,RETURB+1
0012 0008 48850001          ST 5,RETURA+1
0013 000A 44850000          LA 5,SIHK
0014 000C 72920002          B 2,1
0015          *
0016 000E          DCTR RES 1
0017 000F 0003          THREE DATA 3
0018 0010 007F          DEL DATA X'7F'
0019 0011 0017          C23 DATA 23
0020          *****
0021 0012 70070000 STARTK NOP          ENTRY TO FIRE IT UP
0022 0014 74810004          BL 1,SAVE1
0023 0016 7082006A          B WINT1
0024          *
0025 0018 70070000 PROM NOP          PRINT OP INPUT ON MAIN TTY
0026 001A 74810004          BL 1,SAVE1
0027 001C 84000082          BFNE DUMMY2,0,FAKE          IF 1 LAST CHAR OUT WAS FAKE
0028 001E 44010000          L 1,CHARO          LAST CHAR OUT,IT WAS REAL
0029 0020 4C81FFF3          AA 1,-X'D'          WAS IT CR
0030 0022 E08B003E          BC 11,CROUT          YES
0031 0024 4C810003          AA 1,3          WAS IT LF 'A'
0032 0026 E08B003E          BC 11,CROUT          YES
0033 0028 140FB40E          MOV THREE,DCTR          PRINTABLE,3DUMMIES
0034 002A 44010000          L 1,CHARO          IF IT WAS DUMMY,NO LINE CNT
0035 002C 5081007F          SA 1,X'7F'
0036 002E E08B0042          BC 11,SDF          OK IT WAS 7F
0037 0030 20009FFF          AMI (PCCTR2,4),-1          CHECK FOR 81ST REAL CHA
0038 0032 E08A0042          BC 10,SDF          OK,SET DUMMY FLAG
0039 0034 14009000          MOV (C72,4),(PCCTR2,4)          REINIT AT 80
0040 0036 70070000          NOP
0041 0038 4481000A          LA 1,X'A'
0042 003A 48810000          ST 1,PCHAR2          AFTER 80TH CHAR,PUT OUT LF.
0043 003C 70820042          B SDF
0044 003E 1411B40E CROUT MOV C23,DCTR          23 DUMMIES FOR CP OR LF
0045 0040 14009000          MOV (C72,4),(PCCTR2,4)          REINIT AT 80
0046 0042 70070000 SDF NOP          SET DUMMY FLAG NEXT
0047 0044 88000800          SETF DUMMY2,1 NEXT DCTR CHAR ARE DUMMIES
0048 0046 70820086          B FAKE1          SEND OUT FIRST FAKE
0049          *
0050 0048 88000000 LDUMMY SETF DUMMY2,0          LAST FAKE OUT,GET NEXT REAL CHA

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0051 004A 44010000 L 1,PCHAR2 SHOULD WE CR,LF
0052 004C E0800060 BC 11,NOCRLF
0053 004E 48810000 ST 1,CHARO OUTPUT THE CHAR
0054 0050 5081000A SA 1,X'A'
0055 0052 F08B005A BC 11,$+8
0056 0054 44810000 LA 1,0 D OUT LAST,KILL IT
0057 0056 48810000 ST 1,PCHAR2
0058 0058 70820078 B OUTIT THROW OUT D
0059 005A 4481000D LA 1,X'D' MAKE NEXT PCHAR D
0060 005C 48810000 ST 1,PCHAR2
0061 005E 70820078 B OUTIT THROW OUT A
0062 *
0063 0060 70070000 NOCRLF NOP
0064 0062 200090FF AMI (KNWDS,4),-1 FINISH PRINTING OUT BUFFER
0065 0064 F08R008C BC 11,XITP ALL DONE
0066 0066 E08A006A BC 10,$+4 POS OK
0067 0068 70820068 B $ NEG KNWDS*****
0068 006A 45010000 WINT1 L 1,*KPTR
0069 006C 48810000 ST 1,CHARO
0070 006E 20008001 AMI (KPTR,4),1
0071 0070 10009000 CM (KPTR,4),(KFEND1,4) CIRCULAR BUFFER
0072 0072 70820078 B $+6 NORMAL
0073 0074 70820074 B $ STORE ILL*****
0074 0076 14009000 MOV (KBI,4),(KPTR,4) WRAP AROUND
0075 0078 340A0800 OUTIT SETB X'A',1 REQ TO SEND
0076 007A 34090800 SETB 9,1
0077 007C 70070000 OUTIT1 NOP
0078 007E 08000000 LDCR (X'0',8),CHARO PRINT IT
0079 0080 70820000 B RETURN
0080 0082 200EBFFF FAKE AMI DCTR,-1
0081 0084 E08B0048 BC 11,LDUMMY
0082 0086 340A0000 FAKE1 SETB X'A',0 NO REQ TO SEND
0083 0088 1410B000 MOV DEL,(CHARO,4)
0084 008A 7082007C B OUTIT1
0085 *
0086 008C 88000000 XITP SETF PACT2,0 PRINTER ACTIVE OFF
0087 008E 70820000 B STARTR START UP RECORDER AGAIN
0088 0090 END
0000 ERRORS : LENGTH = 0090

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0001          TITL SDRP12,SYSTEM DRIVER ROUTINES
0002 0000      SDRP  PSEG
0003 0000      MODE          ALT MODE REGISTERS USED
0004 0000      DEF   PRINT,RECORD,PLAY,PRINTC,PRINTN
0005 0000      REF   OUTPUT,PACT,DUMMY,RECND,PACT2,PLAERR,MINUS,PL
0006 0000      REF   LAYON,SCEN,PUT13,SREC,BRAN0,LPTR,LBNWD
0007 0000      REF   SDRD,RBI,PBI,RNWDS,ROPTR,CHARO,LNWDS
0008 0000      REF   PNWDS,PPTR,POPTR          FROM COMMON DSEG
0009 0000      REF   RSIZE,PBSIZE,RBEND,PBEND
0010 0000 74800005 ILLWRA BL 0,BRAN0          SYSTEM DIES
0011 0002 70820002 B $
0012          **
0013 0004      USER0 RES 1
0014 0005      PINWD RES 1
0015 0006      PIPTR RES 1
0016 0007      RIPTR RES 1
0017 0008      RINWD RES 1
0018 0009      TEMR1 RES 1          TEMPORARY REG STORAGE
0019 000A      TEMR4 RES 1
0020 000B      TEMR1A RES 1
0021 000C      TEMR4A RES 1
0022 000D      TEMR5A RES 1
0023 000E      TEMR5 RES 1
0024 000F 0000      ZERO DATA 0
0025 0010 0003      PLARG DATA 3,X'7F',X'7F',X'11'    PLAYON
0011 007F
0012 007F
0013 0011
0026 0014 0003      RARG DATA 3,X'7F',X'7F',X'12'    RECORDER ON
0015 007F
0016 007F
0017 0012

0027          *****:DRIVER ROUTINES*****
0028          *ALL DRIVER ROUTINES RUN IN SUPERVISOR MODE
0029          *NON-INTERRUPT RUNNING ROUTINES
0030          *ALL ROUTINES DO NOT DISTURB ANY REGISTERS XCEPT R0
0031          *
0032          * CALL IS FORM
0033          * BL 0,NAMF
0034          * DATA ADDRESS
0035          * BUSY RETURN
0036          * NORMAL RETURN
0037          *
0038          *
0039          *ADDRESS IS LOCATION OF BUFFER WORD COUNT
0040          *PUT DATA IN CIRCULAR PRINT BUFFER
0041          *TAKE CARE OF ECHHO CHAR
0042          *
0043          *PRINT HAS 3 ENTRY POINTS
0044          *PRINT AS EXPLAINED ABOVE

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0045      *PRINTC      PRINT 1 CHAR,CHAR IS IN R1
0046      *      BL      0,PRINTC      R1 CONTAINS CHAR
0047      *      BUSY RETURN
0048      *      NORMAL RETURN
0049      *PRINTN      NUMBER OF CHARACTERS IS IN R1
0050      *      BL      0,PRINTN
0051      *      DATA ADDRESS
0052      *      BUSY RETURN
0053      *      NORMAL RETURN
0054 0018 70070000 PRINTC NOP
0055 001A 50800001 SA      0,1      LINE UP RETURNS
0056 001C 4881000B ST      1,TEMR1A
0057 001E 44810001 LA      1,1
0058 0020 48810005 ST      1,PINWD
0059 0022 4481000B LA      1,TEMR1A
0060 0024 48810006 ST      1,PIPTR
0061 0026 70820046 B      PMAINE
0062 0028 70070000 PRINTN NOP
0063 002A 4881000B ST      1,TEMR1A
0064 002C 48810005 ST      1,PINWD
0065 002E 46010002 L      1,2,0
0066 0030 48810006 ST      1,PIPTR
0067 0032 70820046 B      PMAINE
0068 0034 70070000 PRINT  NOP
0069      *
0070 0036 4881000B ST      1,TEMR1A
0071      *
0072 0038 46010002 L      1,2,0
0073 003A 48810005 ST      1,PINWD
0074 003C 4C810001 AA      1,1
0075 003E 48810006 ST      1,PIPTR
0076 0040 45010005 L      1,*PINWD
0077 0042 48810005 ST      1,PINWD
0078 0044 70070000 NOP
0079 0046 70070000 PMAINE NOP
0080 0048 4884000C ST      4,TEMR4A
0081 004A 4885000D ST      5,TEMR5A
0082 004C 4485000B LA      5,SDRP      THIS PSEG
0083 004E 4484000B LA      4,SDRD
0084 0050 44010005 L      1,PINWD      NO OF INCOMING WORDS
0085 0052 E08A0056 BC      10,$+4      IF POS,NONZERO OK
0086 0054 70820098 B      PRINTY      IGNORE
0087 0056 4C01000D A      1,PNWDS
0088 0058 5081000B SA      1,PBSIZE
0089 005A E08C005E BC      12,$+4
0090 005C 70820096 B      BUSPR      BUSY RETURN
0091 005E 45010006 PRINT1 L      1,*PIPTR      POINTS TO INPUT SPACE IN CIRC RUF
0092 0060 5881007F NA      1,X'7F'      ONLY ACCEPT 7 BITS*****
0093 0062 4981000D ST      1,*POPTR
0094 0064 20008001 AMI      (PNWDS,4),1

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0095 0066 2006A001      AMI  PIPTR,1
0096 0068 20008001     AMI  (POPTR,4),1
0097 006A 10009000     CM   (POPTR,4),(PBEND,4) ROOM TO STORE
0098 006C 70820072     B    $+6          NORMAL
0099 006E 70820000     B    ILLWRA      NEVER
0100 0070 14009000     MOV  (PBI,4),(POPTR,4) BRING TO TOP
0101 0072 2005BFFF     AMI  PINWD,-1
0102 0074 E08A005E     BC   10,PRINT1  MORE TO GO
0103 0076 84000498     BFNE #OUTPUT,0,PRINTY RECORDER ON,FORGET IT
0104 0078 84000498     BFNE #PACT,0,PRINTY PRINTER ACTIVE
0105 007A 84000498     BFNE #PACT2,0,PRINTY KEY PRINT ON
0106 007C 88000C00     SETF #PACT,1
0107 007E 45010000     L    1,#PPTR    THROW OUT FIRST CHAR
0108 0080 48810000     ST   1,CHARO
0109 0082 20008001     AMI  (PPTR,4),1
0110 0084 10009000     CM   (PPTR,4),(PBEND,4)
0111 0086 7082008C     B    $+6          NORMAL
0112 0088 70820000     B    ILLWRA      ERROR
0113 008A 14009000     MOV  (PBI,4),(PPTR,4) WRAP AROUND
0114 008C 88000400     SETF #DUMMY,0
0115 008E 34090C00     SETB #9,1
0116 0090 340A0C00     SETB #10,1
    17 0092 08008400     LDCR # (0,8),CHARO
0118 0094 70820098     B    $+4
0119 0096 4C80FFFF     BUSPR AA 0,-2      WAANT TO RET CALL+3
0120 0098 4401000B     PRINTY L 1,TEMR1A  RESTORE
0121 009A 4404000C     L    4,TEMR4A
0122 009C 4405000D     L    5,TEMR5A
0123 009E 72820005     B    5,0
0124
0125 *****
0126 *IF ZERO LENGTH RECORD OUTPUT 13,7F
0127 *IF MINUS LENGTH RECORD,HALT
0128 00A0 70070000     RECORD NOP
0129 00A2 48810009     ST   1,TEMR1
0130 00A4 74810123     BL  1,SAVE
0131 00A6 40010002     L    1,2,0      ADDRESS
0132 00A8 48810007     ST   1,RIPTR
0133 00AA 45010007     L    1,#RIPTR
0134 00AC 48810008     ST   1,RINWD
0135 00AE 2007A001     AMI  RIPTR,1
0136 00B0 44010008     L    1,RINWD
0137 00B2 4C010000     A    1,RNWDS
0138 00B4 4C810002     AA  1,2          TWO MORE FOR 13,7F
0139 00B6 50810000     SA  1,RSIZE
0140 00B8 E08C00FC     BC  12,$+4
0141 00BA 7082010B     B    PUSYR      BUSY RETURN
0142 00BC 44010008     L    1,RINWD    SEE IF ZERO
0143 00BE E08A0000     BC  11,ZLR      ZERO LFNGTH RECORD
    43 00C0 E08A00C6     BC  10,$+6      POS OK
0144 00C2 74800000     BL  0,BRAN0     GO TO WORKER MODI

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0145 00C4 708200C4      B      $      NEG REC LENGTH*****
0146 00C6 45010007 REC1  L      1,*RIPTR  INPUT DATA
0147 00C8 5081007F      NA     1,X'7F'   ONLY ACCEPT 7 BITS*****
0148 00CA 49810000      ST     1,*ROPTR
0149 00CC 20008001      AMI   (RNWDS,4),1
0150 00CE 840004D2      BFNE  #RECND,0,$+4  IF RECEND CALL,DON'T INCR
0151 00D0 2007A001      AMI   RIPTR,1
0152 00D2 20008001      AMI   (ROPTR,4),1
0153 00D4 10009000      CM    (ROPTR,4),(RBEND,4)  CIRCULAR BUFFER
0154 00D6 708200DC      B      $+6      NORMAL
0155 00D8 70820000      B      ILLWRA   ILLEGAL
0156 00DA 14009000      MOV   (RBI,4),(ROPTR,4)
0157 00DC 2008BFFF      AMI   RINWD,-1
0158 00DE E08A00C6      BC    10,REC1
0159 00E0 70070000 ZLR  NOP          ZERO LENGTH RECORD
0160 00E2 840004F6      BFNE  #RECND,0,RECX1A  RECEND CALL,NO END OF FILE P
0161 00E4 2008A001      AMI   RINWD,1      PUT 13,7F IN BUFFER
0162 00E6 840004F6      BFNE  #PUT13,0,RECX1A  A ALL DONE,LAST 2 OUT 13
0163 00E8 50810013      SA    1,X'13'     LAST CHAR OUT 13
0164 00EA F08B00FE      BC    11,$+6     YES PUT OUT 7F,ALL DONE
0165 00EC 44810013      LA    1,X'13'     NO,PUT OUT 13
0166 00EE 708200C8      B      REC1+2
0167 00F0 4481007F      LA    1,X'7F'
0168 00F2 88000C00      SETF  #PUT13,1
0169 00F4 708200C8      B      REC1+2
0170
0171 00F6 88000400 RECX1A SETF  #PUT13,0      CLEAR
0172 00F8 84000509      BFNE  #SREC,0,RECX  WE ARE TRYING TO RECORD ALRE
0173 00FA 44010000      L      1,RNWDS
0174 00FC 50810056      SA    1,86       GOT ENOUGH TO SEND?
0175 00FE E08C0109      BC    12,RECX    NO
0176
0177 0100 74800034      *      BL      0,PRINT
0178 0102 0014      DATA RARG
0179 0103 70820100      B      $-3
0180 0105 88000C00      SETF  #SREC,1    BUSY
0181 0107 70070000      NOP          TURN ON RECORD IS IN PRINT B
0182 0109 70820119 RECX  B      RESTOR
0183
0184 010B 44000004 BUSYR  L      0,USER0   BUSY RFTURN,BUT, TURN ON REC
0185 010D 4C80FFFE      AA     0,-2
0186 010F 48800004      ST     0,USER0
0187 0111 708200F8      B      RECX1A+2  TO BFNE SREC
0188
0189 0113 44000004 BUSY  L      0,USER0
0190 0115 4C80FFFE      AA     0,-2
0191 0117 7082011B      B      $+4
0192
0193 0119 44000004 RESTOR L      0,USER0   RESTORE ZERO
0194 011B 44010009      L      1,TEMR1

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0195 011D 4404000A      L   4,TEMR4
0196 011F 4405000E      L   5,TEMR5
0197 0121 72820005      B   5,0
0198
0199 0123 70070000 SAVE  NOP
0200 0125 48800004      ST   0,USER0
0201 0127 4884000A      ST   4,TFMR4
0202 0129 4885000E      ST   5,TEMR5
0203 012B 44850000      LA   5,SDRP          CURRENT PDG AD
0204 012D 44840000      LA   4,SDRD
0205 012F 72920002      B   2,1             RETURN R1+2
0206 *****
0207 0131 70070000 PLAY  NOP
0208 0133 48810009      ST   1,TEMR1
0209 0135 74810123      BL   1,SAVE
0210 0137 84000513      BFNE #LAYON,0,BUSY
0211 0139 46010002      L   1,2,0           GET ARG AT R0+2
0212 013B 48810000      ST   1,LBNWD
0213 013D 4C810001      AA   1,1
0214 013F 48810000      ST   1,LPTR
0215 0141 4481FFFF      LA   1,-1           STUFF -1 IN BUFFCNT WORD
0216 0143 49810000      ST   1,*LBNWD
    17 0145 140FB000      MOV  ZERO,(LNWDS,4) ZERO WORDS RECIEVED
0218 0147 74800034      BL   0,PRINT
0219 0149 0010          DATA PLARG
0220 014A 70820147      B   $-3             BUSY LOOP
0221 014C 88000000      SETF #LAYON,1       PLAYBACK IN PROGRESS
0222 014E 84000058      BFNE #SCEN,1,PLY1
0223 0150 84000054      BFNE #PIAERR,1,$+4  PLAYBACK IN PROGRESS
0224 0152 74800000      BL   0,PLAR         PLAYBACK ERROR
0225 0154 45010000      L   1,*LBNWD
0226 0156 E08C0150      BC   12,$-6
0227 0158 70820119 PLY1  B   RESTOR
0228 015A          END
0000 ERRORS : LENGTH = 015A

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0001          TITL SIHD11.DATA SET HANDLERS
0002 0000      SIHD  PSIG
0003 0000      MODE
0004 0000      OFF  DSOUT,XWINT,XRINT,XRDEB,XWTFB
0005 0000      REF  SCOUNT,SPREKY,SPREAM,XNEXT,WSYNC,KNPF,D98
0006 0000      REF  XCHIN,XCHOUT,SYNCHR,INTON,MSGREC
0007 0030      DSS  EQU  X'30'          FF3,FORTH SLOT
0008 0000 0000  SCP  DATA SCOUNT
0009          *
0010 0001 70070000 RETURNA NOP
0011 0003 440500A6 L      5,XR5
0012 0005 70820005 RETURB B      $          RETURN JUMP
0013          *
0014 0007 488500A6 SAVE1 ST     5,XR5
0015 0009 4C800002 AA     0,2
0016 000B 48800006 ST     0,RETURB+1
0017 000D 44850000 LA     5,SIHD
0018 000F 72920002 B      2,1
0019          ****
0020 0011 70070000 XRINT  NOP
0021 0013 74810007 BL     1,SAVE1
0022 0015 44010000 L      1,XCHIN
0023 0017 588100FF NA     1,X'FF'
0024 0019 48810000 ST     1,XCHIN
0025 001B 70820020 XRDEB  B      $+5          DS READ
0026 001D 75800000 BI     0,*SCP          RECORD FACT
0027 001F 0000      DATA XCHIN
0028 0021 44010000 L      1,XCHIN
0029 0022 74800000 BI     0,MSGREC          CHAR IN R1
0030 0024 70070000 NOP
0031 0026 70820001 B      RETURA          *****
0032          ****
0033          *DS MUST OUTPUT PREKEY CHARACTERS
0034          *THEN 5 PREAMBLE CHARACTERS
0035          *THEN THE BUFFERED TFXI
0036          *THEN 2 BCS CHARACTERS
0037          ****
0038 0028 70070004 XWINT  NOP
0039 002A 74810007 BL     1,SAVE1
0040 002C 70820031 XWDEB  B      $+5          DS WRITE
0041 002E 75800000 BI     0,*SCP
0042 0030 0000      DATA XCHOUT
0043 0031 70070000 NOP
0044 0033 84000841 BINE  SPREKY,1,XI          P IF NOT SENDING PREKEY
0045 0035 20AABFFF AMI   PKNWDS,-1
0046 0037 108AF059 BC     10,XSFND          STILL SENDING PREKEY
0047 0039 88000000 SETF  SPREKY,0          DONE SENDING PREKEY
0048 003B 448100AF LA     1,XDATA-1
0049 003D 488100A8 ST     1,XCTR
0050 003F 88000800 SETF  SPREAM,1          PREAMBLE OF ++

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0051 0041 8400084B X1 BFNE SPREAM,1,X2 B IF NOT SENDING PREFAMBLE
0052 0043 20A8A001 AMI XCTR,1
0053 0045 450100A8 L 1,*XCTR
0054 0047 108A0057 BC 10,XSEND1 STILL SENDING PREFAMBLE
0055 0049 88000000 SFTF SPREAM,0 DONE WITH PREFAMBLE
0056 004B 70070000 X2 NOP SENDING NORMAL TEXT
0057 004D 440100A9 L 1,XNWD5 WAS LAST CHAR OUT LAST CHAR
0058 004F 108F005B BC 11,XITX YES WRAP IT UP
0059 0051 450100A7 L 1,*XPTR NO THROW NEXT ONE OUT
0060 0053 20A7A001 AMI XPTR,1
0061 0055 20A9BFFF AMI XNWD5,-1
0062 0057 48810000 XSEND1 ST 1,XNEXT
0063 0059 70820001 XSEND B RETURN
0064 *
0065 005B 70070000 XITX NOP
0066 005D 4481FFFF LA 1,-1
0067 005F 48810000 ST 1,XNEXT
0068 0061 70820001 B RETURN
0069 *****
0070 *USFR SUBROUTINES WHICH RUN IN SUPERVISOR MODE
0071 *****
0072 0063 70070000 DSOUT NOP
73 0065 488100AC ST 1,TEMR1
0074 0067 74810091 BL 1,SAVEU
0075 0069 46010002 L 1,2,0
0076 006B 488100A7 ST 1,XPTR
0077 006D 450100A7 L 1,*XPTR
0078 006F 488100A9 ST 1,XNWD5
0079 0071 20A7A001 AMI XPTR,1
0080 0073 448100FF LA 1,X'FF' PREKEY CHAR
0081 0075 48810000 ST 1,XNEXT
0082 0077 48810000 ST 1,XCHOUT
0083 0079 70070000 NOP
0084 007B 08300400 LDCR #OBR,WSYNC WRITE SYNC CHAR
0085 007D 34390C00 SFTB #LDSYN,1
0086 007F 08300400 LDCR #(CSS,8),XCHOUT
0087 0081 70070000 NOP
0088 0083 34380C00 SFTB #WRCHAR,1
0089 0085 08300400 LDCR #OBR,198 TRUN TRANSMITTER ON
0090 0087 343A0C00 SFTB #CNTRL,1
0091 0089 88000C00 SFTF #SPREKY,1 SEND PREKEY
0092 008B 44010000 L 1,KNPK
0093 008D 488100AA ST 1,PKNWD5
0094 008F 7082009B B RESTOR
0095 *
0096 0091 488000AB SAVEU ST 0,TFMR0
0097 0093 488300AD ST 3,TFMR3
0098 0095 488500AF ST 5,TFMR5
99 0097 44850000 LA 5,SIHD
0100 0099 72920002 B 2,1 RETURN

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0101
0102 009B 440000AB RESTOR L 0,TEMR0
0103 009D 440100AC L 1,TEMR1
0104 009F 440300AD L 3,TEMR3
0105 00A1 440500AF L 5,TEMR5
0106 00A3 72820003 B 3,0 RETURN
0107 00A5 0000 ZERO DATA 0000
0108 00A6 XR5 RES 1
0109 00A7 XPTR RES 1
0110 00A8 XCTR RES 1
0111 00A9 XNWDS RES 1
0112 00AA PKNWDS RES 1 NO OF PREKEYS BEING SENT
0113 00AB TEMR0 RES 1
0114 00AC TEMR1 RES 1
0115 00AD TEMR3 RES 1
0116 00AE TEMR4 RES 1
0117 00AF TEMR5 RES 1
0118 00B0 TEMR6 RES 0
0119 002B XPLUSX EQU X'2B'
0120 002A XSTARX EQU X'2A'
0121 0016 XSYNCX EQU X'16'
0122 0001 XSOHX EQU 1
0123 FFFF XENDX EQU -1
 24 00B0 002B XDATA DATA XPLUSX,XSTARX MODFM SYNCHRONIZATION!
    00B1 002A
0125 00B2 002B DATA XPLUSX,XPLUSX MODFM-BOARD SYNCHRO.'
    00B3 002B
0126
0127 * THESE ARE THE SPECIFIED FIRST FIVE
0128 * CHARACTERS OF THE PRE-AMBLE!
    00B4 002B DATA XPLUSX,XSTARX,XSYNCX,XSYNCX,XSOHX
    00B5 002A
    00B6 0016
    00B7 0016
    00B8 0001
0129 * THIS TERMINATES THE LIST (MINUS ONE)
0130 * AND LEAVES SOME FLEXIBLE PATCHING AREA.
0131 00B9 FFFF DATA XENDX,XENDX,XENDX,XENDX,XENDX
    00BA FFFF
    00BB FFFF
    00BC FFFF
    00BD FFFF
0132 00BE END

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```
0133 0000          DSB      BSEG
0134 0308          OBR      CON  X'30',8
0135 0381          WRCHAR  CON  X'38'
0136 0391          LDSYN   CON  X'39'
0137 03A1          CNTRL   CON  X'3A'
0138 001E          END
0000 ERRORS : LENGTH = 00FF
```

```

0001          TITL SDRDF15.DATA AND FLAG SEGMENTS
0002 0000      SDRF  FSFG          COMMON FLAG SEGMENT
0003 0000      FLAG INPUT      1 PLAYBACK,0 KEYBOARD
0004 0001      FLAG OUTPUT     1 RECORD, 0 PRINTER
0005 0002      FLAG PACT       1 PRINTER ACTIVE,0 NO
0006 0003      FLAG PACT1      PRINTER FOR OP TTY
0007          *
0008 0004      FLAG PACT2      FOR KBUF
0009 0005      FLAG LAYON      1 IF PLAY ON CHAR PUT IN PBU
0010 0006      FLAG LAYO1     1 IF PLAY BACK ON OP TTY
0011 0007      FLAG DSRT      DATA SET READ OCCURRED
0012          *
0013 0008      FLAG DSWI      DATA SET WRITE
0014 0009      FLAG MTYRI     MAIN TTY READ
0015 000A      FLAG MTYWI     MAIN TTY WRITE
0016 000B      FLAG OPYRI     OP TTY READ
0017          *
0018 000C      FLAG OPYWI     OP TTY WRITE
0019 000D      FLAG PLAERR     PLAYBACK ERROR
0020 000E      FLAG WAITKY     1 IF WAIT
0021 000F      FLAG STAT      1 ARE RECEIVING STATUS CHAR
0022          *****
0023 0010      FLAG RECND      1 IF RECORD CALLING RECORD T
0024 0011      FLAG SREC      1 IF TURN REC ON IN PRINT BU
0025 0012      FLAG SCOPIN
0026 0013      FLAG SCFN
0027          *
0028 0014      FLAG SPREKY     IF 1,DS SENDING PREKEY
0029 0015      FLAG SPREAM     IF 1,DS SENDING PREAMBLE
0030 0016      FLAG TRANS
0031 0017      FLAG TRRH      TRANS RIGHT HALF
0032          *
0033 0018      FLAG TRLH      TRANS LEFT HALF
0034 0019      FLAG GETBX      1 IF GOT FTB/ETX LAST CHAR
0035 001A      FLAG KCHAR1     1 IF WE ALREADY GOT 1ST CHAR
0036 001B      FLAG DUMMY      1 DUMMYS BEING PRINTED,0 REAL CH
0037          *
0038 001C      FLAG LIDLE      1,THIS CHAR WAS PRECEDED BY
0039 001D      FLAG PUT13     WHEN FINISHING BUFFER
0040 001E      FLAG FREC      1 PUTTING OUT TAIL END OF RECORD
0041 001F      FLAG DUMMY1     PRINTER FOR OP TTY
0042          *
0043 0020      FLAG DUMMY2     FOR KBUF
0044          *****
0045          *
0046 0000      RES 1
0047 0001      END
    
```

0048	0001	SDRD	DSEG		
0049	0001	SDRF2	RES	1	XTRA FLAG
0050	0002	SDRF4	RES	1	SPARE FLAG
0051	0003	SDRF3	RES	1	USED FOR TIME COUNTER
0052		*			
0053	012C	ISIZE	EQU	300	
0054	0384	RSIZE	EQU	900	
0055	01F4	PBSIZE	EQU	500	
0056	00EB	KSIZE	EQU	232	220 TEXT,12 PREAMBLE
0057	012C	PISIZE	EQU	300	
0058		*			
0059	0004	RNWDS	RES	1	
0060	0005	ROPTR	RES	1	
0061	0006	RPTR	RES	1	
0062	0007	LNWDS	RES	1	
0063		*			
0064	0008	KNWDS	RES	1	
0065	0009	KPTR	RES	1	
0066	000A	KOPTR	RES	1	
0067	000B	PNWDS	RES	1	
0068	000C	POPTR	RES	1	
0069	000D	PPTR	RES	1	
0070		*			
71	000E	PNWDS1	RES	1	FOR OP TTY PRINT
0072	000F	PPTR1	RES	1	
0073	0010	POPTR1	RES	1	
0074	0011	CHAR01	RES	1	LAST CHAR TYPED ON OP TTY
0075	0012	PCHAR1	RES	1	
0076	0013	LFCTR1	RES	1	
0077	0014	PCCTR1	RES	1	
0078	0015	PCHAR	RES	1	
0079	0016	LFCTR	RES	1	
0080	0017	PCCTR	RES	1	
0081	0018	KCHAR	RES	1	
0082	0019	PCHAR2	RES	1	
0083	001A	PCCTR2	RES	1	
0084		*			
0085	001B 0020	CAPO	DATA	X'20',X'5A'	PRINTABLE LIMITS
	001C 005A				
0086	001D 08FF	IBEND	DATA	IBUF+ISIZE-4	
0087	001E 07C5	RBEND	DATA	RBUF+RSIZE-1	
0088	001F 0441	PBEND	DATA	PBUF+PSIZE-1	
0089	0020 024D	KBEND1	DATA	KBUF+KSIZE-1	
0090	0021 0165	PBEND1	DATA	PBUF1+P1SIZE-1	
0091		*			
0092	0022 024F	PBI	DATA	PBUF	
0093	0023 0442	RBI	DATA	RBUF	
0094	0024 0166	KBI	DATA	KBUF	
0095	0025 003A	PBI1	DATA	PBUF1	
0096		*			


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0097 0026          CHARKY RES 1          KEYBOARD INPUT CHAR
0098 0027          CHARST RES 1
0099              *THESE VARIABLES MUST BE IN DSEG AS THEY ARE ASSOC
0100              *WITH STCR,LCRC INSTR
0101 0028 0001     MASKT DATA X'1'      14 BITS ALL 1'S 16.384 SEC
0102 0029 FFFF     MINUS DATA X'FFFF'
0103 002A 0048     C72 DATA 72
0104 002B          CHARIN RES 1
0105 002C          CHARO RES 1
0106 002D          KCHIN RES 1          OP TTY CHAR IN
0107 002E          KOUT RES 1          OP TTY CHAR OUT
0108 002F 00B8     SP1 DATA X'00B8'      SPARE
0109 0030 0000     SP2 DATA 0
0110 0031 0000     XNEXE DATA 0          SPARE
0111 0032 0000     XSTAT DATA 0          NEXT DS CHAR TO GO OUT
0112 0033 0000     XCHIN DATA 0          LAST STATUS CHANGE
0113 0034 0000     XCHOUT DATA 0         DS CHAR RECIEVED
0114 0035 0098     D98 DATA X'0098'      DS CHAR SENT
0115 0036 0090     INTON DATA X'0090'     INTEN.DTR,XMTON
0116 0037 002B     SYNCHR DATA X'2B'      INTEN.DTR
0117 0038 00FF     WSYNC DATA X'FF'      READ SYNCH CHAR
0118 0039 00B0     RCVOF DATA X'00B0'     WRITE SYNCH CHAR IE PREKEY
0119              *****BUFFER AREA*****
0120 003A          PBUF1 RES P1SIZE
0121 0166          KBUF RES KSIZE
0122              *
0123 024E          PBUF RES PBSIZE
0124              *
0125 0442          RBUF RES RSIZE
0126 07C6          IBUF RES ISIZE
0127 08F2          END
0000 ERRORS : LENGTH = 08F2
0000 PASS ONE ERRORS

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GROUND STATION DIALOGUE AND
INITIALIZATION MODULE

DATALP-DATALF-DATALD


```

0001          TITL   DATA-LINK DIALOGUE/V2.
0002          *     JUNE 9, 1975.   DATALP=DATALF=DATA LD.
0003          *     THIS ASSMPLY IS LABELED (ON THE CASSETTE
0004          *     SOURCE TAPE) AS : 'DIALOGUE'.
0005          *
0006 0000     DATALP  PSEG
0007          *
0008 0000     MODE
0009 0000 7C00070E  LDS   START
0010          *****
0011          *
0012 0002     REF     TODHRA,TODHRB,TODMNA,TODMNB
0013 0002     REF     TODSCA,TODSCB,ERRUF,BAUDC,DLFS
0014 0002     REF     KNAKS,KNPK,KNR,KBCSF,KMSGR
0015 0002     REF     SFIRST,SLAST,CSCEN,SBLKS,DLGUE
0016 0002     REF     PLAY,SCEN,RECORD,PRINT,INITIO
0017 0002     REF     ERMF,IGS,CSUPR,PRINTC,GKCHAR
0018 0002     REF     RECEND,PLON1,PLON2,REWINE
0019          *
0020          *
0021          *SET BASE REGISTERS
0022          *
0023 0002 4484066F BEGIN   LA     4,DATA LD
0024 0004 44850000        LA     5,DATALP
0025 0006 44860000        LA     6,DLFS
0026 0008 88000800        SETF   ERMF,1
0027 000A 4486066E        LA     6,DATALF
0028 000C 44870F00        LA     7,X'0F00'
0029          *
0030 000E 74800000        BL     0,INITIO
0031          *
0032 0010 4482FFF8        LA     2,-8
0033 0012 748305A0        BL     3,CRLF
0034 0014 0C210012        ARB    1,-2,2
0035 0016 4480066F        LA     0,HEAD
0036 0018 48800728        ST     0,STORE
0037 001A 748005EE        BL     0,MSGPRT
0038 001C 748305A0        BL     3,CRLF
0039          *
0040 001E 4480069E MSGTIM  LA     0,TIME
0041 0020 48800728        ST     0,STORE
0042 0022 748005EE        BL     0,MSGPRT
0043          *
0044          *SHOW TIME & STORE IT TO 'DLGUE'
0045          *
0046 0024 44800000        LA     0,0
0047 0026 44010000        L     1,TODHRA
0048 0028 748300A8        BL     3,CCC
0049 002A 44010000        L     1,TODHRB
0050 002C 748300A8        BL     3,CCC

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0051	002E	4401071B	L	1,COLUMN	:
0052	0030	748300A8	BL	3,CCC	
0053	0032	44010000	L	1,TODMNA	MINUTE
0054	0034	748300A8	BL	3,CCC	
0055	0036	44010000	L	1,TODMNB	
0056	0038	748300A8	BL	3,CCC	
0057	003A	4401071B	L	1,COLUMN	:
0058	003C	748300A8	BL	3,CCC	
0059	003E	44010000	L	1,TODSCA	SECOND
0060	0040	748300A8	BL	3,CCC	
0061	0042	44010000	L	1,TODSCB	
0062	0044	748300A8	BL	3,CCC	
0063	0046	44010722	L	1,SPACE	
0064	0048	4C800001	AA	0,1	
0065	004A	4A810000	ST	1,DLGUE,0	
0066	004C	48800733	ST	0,NCHL1	STORE INDEXER IN 'NCHL1
0067		*			
0068	004E	4483FFFF	LA	3,-1	
0069	0050	4883072A	ST	3,PC	
0070	0052	74830590	BL	3,PRINSP	PRINT TWO SPACES
0071		*			
0072	0054	14B59800	MOV	ZFRO,DATALF	CLEAR FLAGS
0073	0056	88000800	SETF	FTIME,1	SHOW MESSAGE TIME GIVEN
0074	0058	44820000	LA	2,0	
0075	005A	74800000	BL	0,GKCHAR	GET CHA. FROM KBD
0076		*			
0077	005C	4881072D	ST	1,CHARA	STORE THIS CHARACTER
0078	005E	5881007F	NA	1,X'007F'	MASK IT TO 7 BITS
0079		*			
0080	0060	C001071C	CR	1,CR	CR?
0081	0062	E08B00CC	BC	EQ,CRLOOP	Y
0082		*			
0083	0064	C001071E	CR	1,RUBOUT	RUBOUT?
0084	0066	E08B032A	BC	EQ,RUBLOO	Y
0085		*			
0086	0068	C0010725	CR	1,CTLG	CONTROL G?
0087	006A	E08B0576	RC	EQ,GLOOP	Y
0088		*			
0089	006C	C001071F	CR	1,CTLU	CONTROL U?
0090	006E	E08B055C	RC	EQ,ULOOP	Y
0091		*			
0092		*			
0093	0070	C0010721	CR	1,CTLE	CONTROL E?
0094	0072	E08B0550	BC	EQ,LLOOP	Y
0095		*			
0096	0074	84008888	BFNE	FRUB,1,JJJJ	ANY RUBOUT?
0097	0076	48810732	ST	1,SAVR3	
0098	0078	44010720	L	1,BACKSL	GET BACK /
0099	007A	748005C8	BL	0,PRINTQ	PRINT IT
0100	007C	88000000	SETF	FRUB,0	CLEAR RUBOUT FLAG

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0101          *
0102 007E 4401072D L      1,CHARA      GET LAST CHA.
0103 0080 748005C8 BL     0,PRINTQ      PRINT IT
0104          *
0105 0082 44020728 L      2,STORE
0106 0084 44010732 L      1,SAVR3
0107 0086 7082008A B      $+4
0108          *
0109          *
0110 0088 748005C8 JJJJ BL     0,PRINTQ      PRINT THE CHA.
0111          *
0112 008A 8400689E BFNF   FPS,1,SLOW
0113 008C 70070000 NOP
0114 008E 748300B6 FL     3,NNN
0115 0090 10D38048 CMI   TEMP,72      72 CHA. IN A LINE?
0116 0092 708200A0 B      SLOW+2      NOT YET
0117 0094 70070000 NOP
0118 0096 14B590D3 MOV   ZERO,TEMP      RESET COUNTER
0119 0098 748305A0 BL     3,CRI F
0120 009A 708200A0 B      $+6
0121 009C 70070000 NOP
0122 009E 4AA10000 SLOW ST     1,ERRUF,2      STORE
    23 00A0 4C820001 AA     2,1      SET POINTER
0124 00A2 88007800 SETF  FIN,1      SET INPUT FLAG
0125 00A4 88008000 SETF  FRUP,0     CLEAR RUBOUT FLAG
0126 00A6 7082005A B      TYPIN
0127          *
0128          *
0129          *
0130          *
0131 00A8 4C800001 CCC   AA     0,1
0132 00AA 4A810000 ST     1,DLGUF,0
0133 00AC 48800729 ST     0,REG      SAVE REG 0
0134 00AE 74800000 BL     0,PRINTC     PRINT THE CHA.
0135 00B0 708200AE R      $-2      BUSY RETURN
0136 00B2 44000729 L      0,REG      RESTORE REG 0
0137 00B4 72B20002 R      2,3
0138          *
0139          *
0140 00B6 44020733 NNN   L      2,NCHL1
0141 00B8 4C820001 AA     2,1
0142 00BA 4AA10000 ST     1,DLGUE,2
0143 00BC 48820733 ST     2,NCHL1
0144 00BE 840068C8 PFNE  FPS,1,XXX
0145 00C0 20D38001 AMI   TEMP,1      INCR. COUNTER
0146 00C2 10C48422 CMI   NCHL1,1058    1000 CHA. FOR FREE DATA
0147 00C4 708200C8 B      $+4      LESS
0148 00C6 70820550 B      ELOOP      MORE. CLOSE THE DOOR.
0149 00C8 72B20002 XXX   B      2,3
0150          *

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0151          ****
0152 00CA 7082056E NPS      B      NOTPS      NOT IN PS
0153          *
0154          *
0155 00CC 840080E4 CRLOOP  BFNE      FRUB.0,FREE  FREE?
0156 00CE 840061A0          BFNE      FPS.0,NEXTL  CHECK WHICH WAY TO GO
0157 00D0 8400798C          BFNE      FIN.1,OUT1
0158 00D2 840000FE          BFNE      FTIME.0,TIMECH
0159 00D4 8400D1D0          BFNE      FBAUD.0,BAUDCH
0160 00D6 84001204          BFNE      FNR.0,NREPCH
0161 00D8 8400220C          BFNE      FNAK.0,NAKCH
0162 00DA 84003214          BFNE      FRCS.0,RCSCH
0163 00DC 84004228          BFNE      FNPCK.0,NPKCH
0164 00DE 84005250          BFNE      FRPT.0,MSCRCH
0165 00E0 8400B2E4          BFNE      FSCEN.0,SCENCH
0166 00E2 70820000          B      DATALP  RESTART
0167          *
0168 00E4 44010720 FREE    L      1,BACKSL  GET BACK /
0169 00E6 748005C8          BL     0,PRINT0  PRINT I:
0170 00E8 88008000          SETF   FRUB.0    CLEAR RUBOUT FLAG
0171 00EA 708200CE          B      CRLOOP+2  GO BACK
0172          *
  73 00EC 44810000 RATE    LA     1.0      SET REG. 1
0174 00EE 8400C8F2          BFNE   BAUD12.1,$+4  BAUD12=0, REG.1=0(2400)
0175 00F0 4C810001          AA     1.1      BAUD12=1, REG.1=1(4800)
0176 00F2 74800000          BL     0,IGS    INIT. GROUND STATION.
0177 00F4 44000540          L      0,RATEJ  FORCE THE SKIPPING
0178 00F6 44010541          L      1,RATEJ+1 OF THE SCENARIO PLAY-
0179 00F8 488004F9          ST     0,NEXTMG BACK ON EACH SUBSE-
0180 00FA 488104FA          ST     1,NEXTMG+1 QUENT EXPERIMENT.
0181          *      A SYSTEM RELOAD WILL
0182          *      ALLOW FOR A RE-REFADING
0183          *      OF THE SCENARIO TAPE.
0184 00FC 70820000          B      GSUPR    GO TO SUPERVISOR
0185          *
0186          ****
0187          ****
0188 00FE C0820008 TIMECH  CRA    2.8      8 INPUT CHARACTERS?
0189 0100 E08C0588          BC     LT,ERRMEG
0190 0102 E08A0588          BC     GT,ERRMEG
0191          *
0192 0104 44830000          LA     3.0
0193 0106 44800001          LA     0.1
0194 0108 748205AE          BL     2,CHKNUM  CHECK #
0195 010A 44820000          LA     2,ERRUF  SET BASE ADDRESS
0196 010C 1C004032          CMI   (0.2).X'32' CHECK HOUR 00-23
0197 010E 7082011A          B      $+12
0198 0110 70820588          B      ERRMEG
0199 0112 1C014033          CMI   (1.2).X'33'
0200 0114 70820120          B      $+12

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0201	0116	70820588		B	ERRMEG	
0202	0118	70820120		B	\$+8	
0203	011A	1C014039		CMI	(1,2),X'39'	
0204	011C	7082 120		R	\$+4	
0205	011E	70820588		B	ERRMEG	
0206			*			
0207	0120	44830003		LA	3,3	
0208	0122	44800001		LA	0,1	
0209	0124	748205AE		BL	2,CHKNUM	
0210	0126	44820000		LA	2,ERRBUF	SET BASE ADDRESS
0211	0128	1C034035		CMI	(3,2),X'35'	CHECK MINUTE 00-59
0212	012A	7082 12E		B	\$+4	
0213	012C	70820588		B	ERRMEG	
0214	012E	1C044039		CMI	(4,2),X'39'	
0215	0130	70820134		B	\$+4	
0216	0132	70820588		B	ERRMEG	
0217			*			
0218	0134	44830006		LA	3,6	
0219	0136	44800001		LA	0,1	
0220	0138	748205AE		BL	2,CHKNUM	
0221	013A	44820000		LA	2,ERRBUF	SET BASE ADDRESS
0222	013C	1C064035		CMI	(6,2),X'35'	CHECK SECOND 00-59
0223	013E	70820142		B	\$+4	
0224	0140	70820588		B	ERRMEG	
0225	0142	1C074039		CMI	(7,2),X'39'	
0226	0144	70820148		B	\$+4	
0227	0146	70820588		B	ERRMEG	
0228			*			
0229	0148	44830002		LA	3,2	
0230	014A	44800001		LA	0,1	
0231	014C	46310000	NEXTCO	L	1,ERRBUF,3	CHECK :
0232	014E	C001071B		CR	1,COLUMN	
0233	0150	E08C0588		BC	1T,ERRMEG	
0234	0152	E08A0588		BC	CT,ERRMEG	
0235	0154	4C830003		AA	3,3	
0236	0156	0C0F014C		ARB	-1,NEXTCO,0	
0237			*			
0238	0158	44800000		LA	0,0	
0239	015A	74820184		BL	2,HHH	
0240	015C	48810000		ST	1,TODHRA	SAVE NEW TIME
0241	015E	74820184		BL	2,HHH	
0242	0160	48810000		ST	1,TODHRB	
0243	0162	74820184		BL	2,HHH	
0244	0164	74820184		BL	2,HHH	
0245	0166	48810000		ST	1,TODMNA	
0246	0168	74820184		BL	2,HHH	
0247	016A	48810000		ST	1,TODMNB	
0248	016C	74820184		BL	2,HHH	
0249	016E	74820184		BL	2,HHH	
0250	0170	48810000		ST	1,TODSCA	

0251	0172	74820184		BL	2,HHH	
0252	0174	48810000		ST	1,TCDFCB	
0253	0176	4C800001		AA	0,1	
0254	0178	44010722		L	1,SPACE	
0255	017A	4A810000		ST	1,DLGUE,0	
0256	017C	48800733		ST	0,NCHL1	
0257			*			
0258	017E	748305A0		BL	3,CRLF	
0259	0180	88007000		SETF	FIN,0	
0260	0182	7082057E		B	STEP	
0261			*			
0262			*****			
0263	0184	46010000	HHH	L	1,ERBUF,0	
0264	0186	4C800001		AA	0,1	
0265	0188	4A810000		ST	1,DLGUE,0	
0266	018A	72A20002		B	2,2	
0267			*****			
0268			*			
0269	018C	8400A190	OUT1	BFNE	FSNL,0,\$+4	
0270	018E	7082057E		B	STEP	
0271	0190	44010734		L	1,SAVER	
0272	0192	C0010000		CR	1,SLAST	
73	0194	E08A019A		BC	GT,\$+6	
0274	0196	48810000		ST	1,SFIRST	
0275	0198	7082057E		B	STEP	
0276	019A	20BB9FFF		AM1	PC,-1	
0277	019C	20C49FFA		AMI	NCHL1,-6	
0278	019E	70820588	ELIMIT	B	ERRMEG	
0279			*			
0280	01A0	748300B6	NEXTL	BL	3,NNN	
0281	01A2	4401071D		L	1,LF	GET LF
0282	01A4	748300B6		BL	3,NNN	STORE IT
0283	01A6	748305A0		BL	3,CRLF	
0284	01A8	14E590D3		MOV	ZERO,TEMP	RESET COUNTER
0285	01AA	7082005A		B	TYPIN	
0286			*			
0287	01AC	448006AA	BAUDM	LA	0,BAUD	GFT 'BAUD' MESSAGE
0288	01AE	48800728		ST	0,STORE	PUT IT TO STORE
0289	01B0	748305A0		BL	3,CRLF	
0290	01B2	748005EE		BL	0,MSGPRT	PRINT THIS MESSAGE
0291			*			
0292	01B4	44860000		LA	6,DIFS	CHANGR REG. 6
0293	01B6	840001CA		BFNE	BAUDC,0,DIFFR	0--2400, 1--4800
0294	01B8	4486066E		LA	6,DATALF	RESET REG. 6
0295	01BA	44010726		L	1,B2400	GET VALUE 2400
0296	01BC	74820422	GO	BL	2,THTO	FIND THD,HR,TEN,ONE
0297	01BE	74830458		BL	3,ATOM	PRINT THEM
0298	01C0	74830590		BL	3,PRINSP	PRINT TWO SPACES
79	01C2	74830634		BL	3,BUFFST	STORE IT
0300			*			

0301	01C4	88000000		SETF	FTIME,0	CLEAR FTIME
0302	01C6	8800D800		SETF	FBAUD,1	SET FBAUD
0303	01C8	70820058		B	TYPIN-2	WAITING FOR SOMETHING E
0304			*			
0305	01CA	4486066E	DIFFR	LA	6,DATALF	RESET REG. 6
0306	01CC	44010727		L	1,B4800	GET VALUE 4800
0307	01CE	708201BC		B	GO	PROCESS
0308			*			
0309	01D0	20C49FFA	BAUDCH	AMI	NCHL1,-6	SET POINTER FOR STORE
0310	01D2	C0820004		CRA	2,4	INPUT 4 CHA.?
0311	01D4	E08B01D8		BC	EQ,\$+4	YES.
0312	01D6	70820588		B	ERRMEG	NO. ERROR
0313	01D8	50820001		SA	2,1	FOR LOOP COUNTER
0314	01DA	4882072B		ST	2,PPC	STORE IT
0315	01DC	44830000		LA	3,0	SET INDEXER
0316	01DE	4400072B		L	0,PPC	
0317	01E0	748205AE		BL	2,CHKNUM	CHECK INPUT CHA.
0318	01E2	44830000		LA	3,0	
0319	01E4	4400072B		L	0,PPC	
0320	01E6	748205DA		BL	2,MASK12	MASK
0321			*			
0322	01E8	44800000		LA	0,0	RESET REG. 0
23	01EA	748202BA		BL	2,KITHTO	GET THD,HDR,TEN,ONE
0324	01EC	7482035A		BL	2,TOHEXA	CHANGE IT TO HEXA-
0325			*			
0326	01EE	C0010726		CR	1,B2400	IS IT 2400?
0327	01F0	E08C0588		BC	LT,ERRMEG	LESS
0328	01F2	E08A01FA		BC	GT,BAUD2	MORE
0329	01F4	8800C000		SETF	BAUD12,0	YES, IT IS.
0330	01F6	7480021C		BL	0,III	STORE IT
0331	01F8	7082057E		B	STEP	
0332			*			
0333	01FA	C0010727	BAUD2	CR	1,B4800	IS IT 4800?
0334	01FC	E08B0200		BC	EQ,\$+4	YES
0335	01FE	70820588		B	FRRMEG	NO. ERROR
0336	0200	8800C800		SETF	BAUD12,1	YES, IT IS.
0337	0202	708201F6		B	BAUD2-4	
0338			*			
0339			****			
0340			****			
0341	0204	7483060C	NREPCH	BL	3,CHANGE	
0342	0206	48810000		ST	1,KNR	STORE NEW VALUE TO KNR
0343			*			
0344	0208	7480021C		BL	0,III	
0345	020A	7082057E		B	STEP	
0346			****			
0347			****			
0348	020C	7483060C	NAKCH	BL	3,CHANGE	
0349	020E	48810000		ST	1,KNAKS	STORE NEW VALUE TO KNAK
0350			*			

0351	0210	7480021C		BL	0,III	
0352	0212	7082057E		B	STEP	
0353			****			
0354			****			
0355	0214	7483060C	BCSCH	BL	3,CHANGE	
0356	0216	48810000		ST	1,KBCSF	STORE NEW VALUE TO KBCS
0357			*			
0358	0218	7480021C		BL	0,III	
0359	021A	7082057E		B	STEP	
0360			****			
0361	021C	4C800002	III	AA	0,2	SFT RETURN ADDRESS
0362	021E	4880072C		ST	0,NEWN	
0363	0220	74830634		BL	3,BUFFST	STORE & RESET
0364	0222	748305A0		BL	3,CRLF	
0365	0224	88007000		SETF	FIN,0	
0366	0226	7002072C		*B	NEWN	
0367			****			
0368	0228	20C49FFA	NPKCH	AMI	NCHL1,-6	
0369	022A	C0820003		CRA	2,3	INPUT 3 CHARACTERS?
0370	022C	E08A0588		BC	GT,ERRMEG	MORE. ERROR
0371	022E	50820001		SA	2,1	
0372	0230	4882072B		ST	2,PPC	
0373	0232	44830000		LA	3,0	
0374	0234	4400072B		L	0,PPC	
0375	0236	748205AE		BL	2,CHKNUM	CHECK #
0376	0238	44830000		LA	3,0	
0377	023A	4400072B		L	0,PPC	
0378	023C	748205DA		BL	2,MASK12	NON-ASCII
0379			*			
0380	023E	44800000		LA	0,0	
0381	0240	748202BA		BL	2,KITHTO	GET THD,HDR,TEN,ONE
0382			*			
0383			*CHECK THE LENGTH OF PREKEY			
0384			*RANGE: 1-150 CHARACTERS			
0385			*			
0386	0242	7482035A		BL	2,TOHEXA	
0387			*			
0388	0244	18B990C7		CML	STORE,LIMIT1	
0389	0246	70070000		NOP		
0390	0248	70820588		B	ERRMEG	
0391			*			
0392	024A	48810000		ST	1,KNPK	NEW KNPK
0393	024C	7480021C		BL	0,III	
0394			*			
0395	024E	7082057E		B	STEP	
0396			****			
0397			****			
0398	0250	20C49FFA	MSGRCH	AMI	NCHL1,-6	
0399	0252	C0820005		CRA	2,5	INPUT 5 CHARACTERS?
0400	0254	E08A0588		BC	GT,ERRMEG	MORE. ERROR

0401	0256	50820001	SA	2.1	
0402	0258	4882072B	ST	2.PPC	
0403	025A	44830000	LA	3.0	
0404	025C	4400072B	L	0.PPC	
0405	025E	748205AE	BL	2.CHKNUM	CHECK #
0406					
0407	0260	44830000	LA	3.0	
0408	0262	4400072B	L	0.PPC	
0409	0264	748205DA	BL	2.MASK12	#
0410	0266	44800000	LA	0.0	
0411	0268	1CHC8003	CMI	PPC.3	4 DIGITS?
0412	026A	7082026E	B	\$+4	2ND CHECK
0413	026C	70820270	B	\$+4	MORE
0414	026E	708202AA	B	FROMTH	
0415					
0416	0270	46010742	L	1.TEMP.0	
0417	0272	C0810001	CRA	1.1	5 DIGITS. COMPARE IT WI
0418	0274	E08C02A8	BC	LT.SKIP	0 ON 5TH DIGIT
0419	0276	E08A0588	BC	GT.ERRMEG	MORE THAN 10000
0420	0278	4402072B	L	2.PPC	
0421	027A	50820001	SA	2.1	
0422	027C	4C800001	AA	0.1	
23	027E	46010742	L	1.TEMP.0	
0424	0280	C0810000	CRA	1.0	CHECK 4TH DIGIT
0425	0282	E08A0588	BC	GT.ERRMEG	NOT RIGHT
0426	0284	0C2F027C	ARB	-1.MORECH.2	
0427	0286	44812710	LA	1.X'2710'	THIS # IS 10000
0428	0288	48810000	ST	1.KMSGR	PUT IT TO KMSGR
0429					
0430	028A	4403072B	L	3.PPC	
0431	028C	44020733	L	2.NCHL1	
0432	028E	4C820001	AA	2.1	
0433	0290	44800000	LA	0.0	
0434	0292	46010000	L	1.ERBUF.0	
0435	0294	4AA10000	ST	1.DLGUE.2	
0436	0296	4C800001	AA	0.1	
0437	0298	4C820001	AA	2.1	
0438	029A	0C3F0292	ARB	-1.MOVE.3	
0439	029C	44010722	L	1.SPACE	
0440	029E	4AA10000	ST	1.DLGUE.2	
0441	02A0	48820733	ST	2.NCHL1	
0442	02A2	748305A0	BL	3.CRLF	
0443	02A4	88007000	SETF	FIN.0	
0444	02A6	7082057E	B	STEP	
0445					
0446					
0447					
0448	02A8	44800001	SKIP	LA	0.1
0449	02AA	748202BA	FROMTH	BL	2.KITHTO
0450					GET THD.HDR.TEN.ONE

0451	02AC	7482035A		BL	2,TOHEXA	
0452			*			
0453	02AE	18B990C9		CML	STORE,LIMIT2	
0454	02B0	70820588		B	ERRMEG	
0455	02B2	70820588		B	ERRMEG	
0456			*			
0457	02B4	48810000		ST	1,KMSGR	NEW KMSGR
0458	02B6	7480021C		BL	0,III	
0459			*			
0460	02B8	7082057E		B	STEP	
0461			*			
0462	02BA	70070000	KITHTO	NOP		
0463	02BC	1C8C8002		CMI	PPC,2	
0464	02BE	708202DC		B	SECDCH	2ND CHECK
0465	02C0	708202C4		B	\$+4	4 DIGITS
0466	02C2	708202CA		B	FROMHD	3 DIGITS
0467			*			
0468	02C4	46010742		L	1,TEMP,0	GET 1ST CHA.
0469	02C6	4881072E		ST	1,THD	THOUSANDS
0470	02C8	4C800001		AA	0,1	STEP POINTER
0471	02CA	46010742	FROMHD	L	1,TEMP,0	GET 2ND CHA.
0472	02CC	4881072F		ST	1,HDR	HUNDREDS
73	02CE	4C800001		AA	0,1	STEP
0474	02D0	46010742	FROMTN	L	1,TEMP,0	GET 3RD CHA.
0475	02D2	48810730		ST	1,TEN	TENS
0476	02D4	4C800001		AA	0,1	STEP
0477	02D6	46010742	FROMON	L	1,TEMP,0	GET 4TH CHA.
0478	02D8	48810731		ST	1,ONE	ONES
0479	02DA	72A20002		B	2,2	
0480			*			
0481	02DC	1C8C8001	SECDCH	CMI	PPC,1	
0482	02DE	708202D6		B	FROMON	1 DIGIT
0483	02E0	708202CA		B	FROMHD	3 DIGITS
0484	02E2	708202D0		B	FROMTN	2 DIGITS
0485			*			
0486			*****			
0487			*			
0488	02E4	20C49FFA	SCENCH	AMI	NCHL1,-6	
0489	02E6	C0020002		CR	2,2	
0490	02E8	E08A0588		BC	GT,ERRMEG	
0491	02EA	50820001		SA	2,1	
0492	02EC	4882072B		ST	2,PPC	
0493			*			
0494	02EE	44830000		LA	3,0	
0495	02F0	4400072B		L	0,PPC	
0496	02F2	748205AE		BL	2,CHKNUM	
0497			*			
0498	02F4	44830000		LA	3,0	
0499	02F6	4400072B		L	0,PPC	
0500	02F8	748205DA		BL	2,MASK12	

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0501
0502 02FA 44800000 * LA 0,0
0503 02FC 748202BA * BL 2,KITHTO
0504
0505 02FE 7482035A * BL 2,TOHEXA
0506 0300 18B990CD CML STORE,LIMIT4
0507 0302 70070000 NOP
0508 0304 70820588 B ERRMEG
0509 0306 84009B10 BFNE FSNF,1,FAST
0510 0308 48810734 ST 1,SAVER
0511 030A 7480021C BL 0,III
0512 030C 8800B000 SETF FSCEN,0
0513 030E 7082057E B STEP
0514
0515 0310 70070000 * FAST NOP
0516 0312 C0010734 CR 1,SAVER
0517 0314 E08C0324 BC LT,IIII
0518 0316 48810000 ST 1,SLAST
0519 0318 7480021C BL 0,III
0520 031A 44010734 L 1,SAVER
0521 031C 48810000 ST 1,SFIRST
0522 031E 70070000 NOP
23
0524 0320 8800A000 * SETF FSNL,0
0525 0322 7082057E B STEP
0526
0527 0324 20BB9FFF * IIII AMI PC,-1
0528 0326 20C49FFA AMI NCHL1,-6
0529 0328 70820588 B ERRMEG
0530
0531 *
0532 *
0533 *
0534 032A 84008336 RURL00 BFNE FRUB,0,NEXTRU
0535 032C 48820728 ST 2,STORE
0536 032E 44010720 L 1,BACKSL GET BACK /
0537 0330 74800000 BL 0,PRINTC PRINT IT
0538 0332 70820330 B $-2 BUSY RETURN
0539 0334 88008800 SETF FRUB,1
0540 0336 44020728 NEXTRU L 2,STORE
0541 0338 50820001 SA 2,1
0542 033A 48820728 ST 2,STORE
0543 033C C0820000 CRA 2,0
0544 033E E08C0350 BC LT,NONSEN TOO MANY RUBOUTS
0545
0546 0340 84006B4A * BFNE FPS,1,NONO NOT IN 'PS'. TO NONO
0547 0342 46210000 L 1,DLGUE,2
0548 0344 20C49FFF AMI NCHL1,-1 BACK
0549 0346 20D39FFF AMI TEMP,-1
0550 0348 7082034C B $+4

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0551          *
0552 034A 46210000 NONO      L      1,ERBUF,2
0553 034C 748005C8          BL      0,PRINTQ      PRINT THAT CHA.
0554 034E 7082005A          B      TYPIN
0555          *
0556 0350 4C820001 NONSEN   AA      2,1          REFUND
0557 0352 4R820728          ST      2,STORE      SAVE IT
0558 0354 20C49FFA          AMI      NCHL1,-6     NEW PLACE TO RESTORE
0559 0356 88008000          SETF   FRUB,0     CLEAR RUBOUT FLAG
0560 0358 70820588          B      ERRMEG     SHOW IT & RESTART
0561          *
0562          *****
0563 035A 44800000 TOHEXA   LA      0,0
0564 035C 48800728          ST      0,STORE
0565          *
0566 035E 4401072E          L      1,THD          GET THOUNANDS
0567          *
0568 0360 C0810000          CRA      1,0
0569 0362 E08B036A          BC      EQ,MOREH2=8
0570          *
0571 0364 50810001          SA      1,1
0572 0366 20B983E8 MORETH   AMI      STORE,X'3E8'
73 0368 0C1F0366          ARB     -1,MORETH,1
0574 036A 4401072F          L      1,HDR          GET HUNDREDS
0575          *
0576 036C C0810000          CRA      1,0
0577 036E E08B0376          BC      EQ,MORET2=8
0578          *
0579 0370 50810001          SA      1,1
0580 0372 20B98064 MOREH2   AMI      STORE,X'64'
0581 0374 0C1F0372          ARB     -1,MOREH2,1
0582 0376 44010730          L      1,TEN          GET TENS
0583          *
0584 0378 C0810000          CRA      1,0
0585 037A F08B0382          BC      EQ,MORET2+4
0586          *
0587 037C 50810001          SA      1,1
0588 037E 20B9800A MORET2   AMI      STORE,X'A'
0589 0380 0C1F037E          ARB     -1,MORET2,1
0590 0382 44010728          L      1,STORE
0591 0384 4C010731          A      1,ONE
0592 0386 4R810728          ST      1,STORE
0593 0388 72A20002          B      2,2
0594          *
0595          *****
0596 038A 448006B1 MSGNRE   LA      0,NRESP     GET 'RESP' MESSAGE
0597 038C 48800728          ST      0,STORE
0598 038E 748305A0          BL      3,CRLF
19 0390 748005EE          BL      0,MSGPRT     PRINT IT
0600          *

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0601	0392	44010000		L	1,KNR	GET THE VALUE OF KNR (B
0602	0394	74820422		BL	2,THTO	FIND THD,HDR,TEN,ONE
0603	0396	74830458		BL	3,ATOM	CHANGE TO DECIMAL
0604	0398	74830590		BL	3,PRINSP	PRINT TWO SPACES
0605			*			
0606	039A	74830634		BL	3,BUFFST	
0607			*			
0608	039C	8800D000		SETF	FBAUD,0	
0609	039E	88001800		SETF	FNR,1	
0610	03A0	70820058		B	TYPIN-2	
0611			*			
0612			*			
0613	03A2	448006BD	MSGNAK	LA	0,NAKS	
0614	03A4	48800728		ST	0,STORE	
0615	03A6	748305A0		BL	3,CRLF	
0616	03A8	748005EE		BL	0,MSGPRT	PRINT 'NAKS' MESSAGE
0617			*			
0618	03AA	44010000		L	1,KNAKS	
0619	03AC	74820422		BL	2,THTO	FIND THD,HDR,TEN,ONE
0620	03AE	74830458		BL	3,ATOM	
0621	03B0	74830590		BL	3,PRINSP	
0622			*			
23	03B2	74830634		BL	3,BUFFST	
0624			*			
0625	03B4	88001000		SETF	FNR,0	
0626	03B6	88002800		SETF	FNAK,1	
0627	03B8	70820058		B	TYPIN-2	
0628			*			
0629			*			
0630			*			
0631	03BA	448006C5	MSGBCS	LA	0,BCSER	GET 'BCSER' MESSAGE
0632	03BC	48800728		ST	0,STORE	
0633	03BE	748305A0		BL	3,CRLF	
0634	03C0	748005EE		BL	0,MSGPRT	PPRINT IT
0635			*			
0636	03C2	44010000		L	1,KBCSF	
0637	03C4	74820422		BL	2,THTO	FIND THD,HDR,TEN,ONE
0638	03C6	74830458		BL	3,ATOM	
0639	03C8	74830590		BL	3,PRINSP	
0640			*			
0641	03CA	74830634		BL	3,BUFFST	
0642			*			
0643	03CC	88002000		SETF	FNAK,0	
0644	03CE	88003800		SETF	FBCS,1	
0645	03D0	70820058		B	TYPIN-2	
0646			*			
0647			*			
0648	03D2	448006CF	MSCPRK	LA	0,PREKY	GET 'PREKY' MESSAGE
0649	03D4	48800728		ST	0,STORE	
0650	03D6	748305A0		BL	3,CRLF	

0651	03D8	748005EE		BL	0.MSGPRT	PRINT IT
0652			*			
0653	03DA	44010000		L	1.KNPK	GET THE VALUE
0654	03DC	74820422		BL	2.THTO	FIND THD,HDR,TEN,ONE
0655	03DE	74830458		RL	3.ATOM	PRINT IT
0656			*			
0657	03E0	74830590		BL	3.PRINSP	PRINT TWO SPACES
0658	03E2	74830634		BL	3.BUFFST	
0659	03E4	88003000		SETF	FRCS,0	
0660	03E6	88004800		SETF	FNPK,1	
0661	03E8	70820058		B	TYPIN-2	
0662			*			
0663			*			
0664	03EA	448006D8	MSGRPT	LA	0.MSGRP	GET 'MSGRP' MESSAGE
0665	03EC	48800728		ST	0.STORE	
0666	03EE	748305A0		BL	3.CRLF	
0667	03F0	748005EE		BL	0.MSGPRT	PRINT IT
0668			*			
0669	03F2	44010000		L	1.KMSGR	GET THE VALUE
0670	03F4	74820422		BL	2.THTO	GET THD,HDR,TEN,ONE
0671			*			
0672	03F6	4401072E		L	1.TH0	GET THOUSANDS
73	03F8	C081000A		CRA	1,10	
0674	03FA	E08B0408		RC	EQ,BIG	IT IS 10000
0675			*			
0676	03FC	74830458		BL	3.ATOM	PRINT HDR,TEN,ONE
0677			*			
0678	03FE	74830634		BL	3.BUFFST	
0679	0400	74830590		BL	3.PRINSP	PRINT TWO SPACES
0680	0402	88004000		SETF	FNPK,0	
0681	0404	88005800		SETF	FRPT,1	
0682	0406	70820058		B	TYPIN-2	
0683			*			
0684	0408	44810031	BIG	LA	1,X'31'	GET CHA. 1 (ASCII)
0685	040A	44800004		LA	0,4	SET INDEXER
0686	040C	748300B6	MOREZ	BL	3,NNN	STORE IT
0687	040E	48800729		ST	0,REG	SAVE REG 0
0688	0410	74800000		BL	0,PRINTC	PRINT TH,CHA.
0689	0412	70820410		B	\$-2	BUSY RETURN
0690	0414	44000729		L	0,REG	RESTORE REG 0
0691	0416	44810030		LA	1,X'30'	
0692	0418	0C0F040C		ARB	-1,MOREZ,0	MORE 0 ?
0693			*			
0694	041A	44010722		L	1,SPACE	
0695	041C	748300B6		BL	3,NNN	
0696	041E	74820662		BL	2,RESET	
0697	0420	70820400		B	BIG-8	
0698			*			
0699	0422	48810728	THTO	ST	1,STORE	
0700	0424	508103E8		SA	1,X'3E8'	HOW MANY 1000'S?

0701	0426	F08C042E		RC	LT,\$+8	NONE
0702	0428	48810728		ST	1,STORE	
0703			*			
0704	042A	20BF8001		AMI	THD,1	COUNT IT
0705	042C	70820424		B	\$-8	MORE?
0706	042E	44010728		L	1,STORE	
0707	0430	50810064		SA	1,X'64'	HOW MANY 100'S?
0708	0432	F08C043A		RC	LT,\$+8	NONE
0709	0434	48810728		ST	1,STORE	
0710			*			
0711	0436	20C08001		AMI	HDR,1	COUNT IT
0712	0438	70820430		B	\$-8	MORE?
0713	043A	44010728		L	1,STORE	
0714	043C	5081000A		SA	1,X'A'	HOW MANY 10'S?
0715	043E	E08C0446		BC	LT,\$+8	NONE
0716	0440	48810728		ST	1,STORE	
0717			*			
0718	0442	20C18001		AMI	TEN,1	COUNT IT
0719	0444	7082043C		B	\$-8	MORE?
0720	0446	14B990C2		MOV	STORE,ONE	
0721	0448	72A20002		B	2,2	
0722			*			
23			*			
0724	044A	5881000F	ATOM1	NA	1,X'000F'	
0725	044C	4C810030		AA	1,X'30'	ASCII
0726	044E	48800729		ST	0,REG	SAVE REG 0
0727	0450	74800000		BL	0,PRINTC	PRINT THE CHA.
0728	0452	70820450		B	\$-2	BUSY RETURN
0729	0454	44000729		L	0,REG	RFSTORE REG 0
0730	0456	72820002		B	2,0	
0731			*****			
0732			*			
0733	0458	70070000	ATOM	NOP		
0734	045A	1CBF8000		CMI	THD,0	ANY THOUSANDS?
0735	045C	70070000		NOP		
0736	045E	7082046E		B	SOME0	SOME
0737	0460	1CC08000		CMI	HDR,0	ANY HUNDREDS?
0738	0462	70070000		NOP		
0739	0464	70820472		B	SOME1	SOME
0740	0466	1CC18000		CMI	TEN,0	ANY TENS?
0741	0468	70070000		NOP		
0742	046A	70820476		B	SOME2	SOME
0743	046C	7082047A		B	SOME3	NONE
0744	046E	4401072E	SOME0	L	1,THD	GET THOUSANDS
0745	0470	7480044A		BL	0,ATOM1	PRINT IT
0746	0472	4401072F	SOME1	L	1,HDR	GET HUNDREDS
0747	0474	7480044A		BL	0,ATOM1	PRINT IT
0748	0476	44010730	SOME2	L	1,TEN	GET TENS
0749	0478	7480044A		BL	0,ATOM1	PRINT IT
0750	047A	44010731	SOME3	L	1,ONE	GET ONES

0751	047C	7480044A		BL	0.ATOM1	PRINT IT
0752	047E	72B20002		B	2.3	
0753			*			
0754			*****			
0755	0480	448006F3	MSGSF	LA	0.SNRIOF	
0756	0482	48800728		ST	0.STORE	
0757	0484	748305A0		BL	3.CRLF	
0758	0486	748005EE		BL	0.MSGPRT	
0759			*			
0760	0488	44010000		L	1.SFIRST	
0761	048A	48810734		ST	1.SAVER	
0762	048C	74820422		BL	2.THTO	
0763	048E	74830458		BL	3.ATOM	
0764	0490	74830590		BL	3.PRINSP	
0765	0492	74830634		BL	3.BUFFST	
0766	0494	8800B800		SETF	FSCEN.1	
0767	0496	88009800		SETF	FSNF.1	
0768	0498	88005000		SETF	FRPT.0	
0769	049A	70820058		B	TYPIN=2	
0770			*			
0771			*****			
0772			*			
0773	049C	44800701	MSGSL	LA	0.SNRIOI	
0774	049E	48800728		ST	0.STORE	
0775	04A0	748305A0		BL	3.CRLF	
0776	04A2	748005EE		BL	0.MSGPRT	
0777			*			
0778	04A4	44010000		L	1.SLAST	
0779	04A6	74820422		BL	2.THTO	
0780	04A8	74830458		BL	3.ATOM	
0781	04AA	74830590		BL	3.PRINSP	
0782	04AC	74830634		BL	3.BUFFST	
0783	04AE	8800B800		SETF	FSCEN.1	
0784	04B0	8800A800		SETF	FSNL.1	
0785	04B2	88009000		SETF	FSNF.0	
0786	04B4	70820058		B	TYPIN=2	
0787			*			
0788			*			
0789	04B6	448006E5	MSGPS	LA	0.PS	GET PS MESSAGE
0790	04B8	48800728		ST	0.STORE	PUT IT TO STORE
0791	04BA	748305A0		BL	3.CRLF	
0792	04BC	748005EE		BL	0.MSGPRT	PRINT IT
0793			*			
0794	04BE	748305A0		BL	3.CRLF	
0795	04C0	88006800		SETF	FPS.1	
0796	04C2	14C490C6		MOV	NCHL1.NMSG	SAVE POINTER
0797			*			
0798	04C4	4401071C		L	1.CR	GET CR
0799	04C6	748300B6		BL	3.NNN	STORE IT
0800	04C8	4401071D		L	1.LF	GET LF

0801	04CA	748300B6	BL	3,NNN	
0802	04CC	14B590D3	MOV	ZERO,TFMP	INIT. COUNTER
0803			*		
0804	04CE	70820058	B	TYPIN=2	
0805			*		
0806			*****		
0807			*		
0808	04D0	70070000	GAME	NOP	
0809	04D2	74800000	BL	0,RECORD	RECORD SYS. ENTRY
0810	04D4	0000	DATA	DLGUE	
0811	04D5	708204D2	B	\$=3	
0812			*		
0813	04D7	74800000	BL	0,RECEND	ASSURE ALL DATA IS WRIT
0814	04D9	74800000	BL	0,PLON2	PLAYBACK ON UNIT 2
0815	04DB	74800000	BL	0,REWINE	REWIND
0816	04DD	88000C00	SETF	#SCEN,1	SET FLAG
0817			*		
0818	04DF	74800000	BL	0,PLAY	PLAYBACK
0819	04E1	0000	DATA	DLGUE	
0820	04E2	708204DF	B	\$=3	
0821			*		
0822	04E4	88000400	SETF	#SCEN,0	CLEAR FLAG
23	04E6	74800000	BL	0,PLON1	PLAYBACK ON UNIT 1
0824			*		
0825			*PRINT DATA AFTER PLAYBACK		
0826			*		
0827	04E8	74800000	BL	0,PRINT	
0828	04EA	0000	DATA	DLGUE	
0829	04EB	708204E8	B	\$=3	
0830			*		
0831	04ED	7082057E	B	STEP	
0832			*		
0833			*****		
0834			*		
0835	04EF	44820000	READS	LA 2,0	
0836	04F1	4882072A	ST	2,PC	
0837	04F3	48820735	ST	2,NMSG	RESET # OF SCEN
0838	04F5	44800000	LA	0,CSCEN	
0839	04F7	48800000	ST	0,SBLKS	
0840			*		
0841	04F9	88000C00	NEXTMC	#SCEN,1	
0842	04FB	74800000	BL	0,PLAY	READ SCENARIO TAPE
0843	04FD	0000	DATA	ERBUF	
0844	04FE	708204FB	B	\$=3	
0845			*		
0846	0500	44800000	LA	0,0	
0847	0502	44010000	L	1,ERBUF	1ST CHARACTER
0848	0504	4C810001	AA	1,1	
0849	0506	4881072B	ST	1,PPC	TOTAL # OF CHA. TO BE 5
0850			*		

0851	0508	58810001	NA	1.1	
0852	050A	C0810001	CRA	1.1	
0853	050C	F08C0510	BC	LT,\$+4	
0854	050E	20BC0001	AMI	PPC,1	
0855	0510	4401072B	L	1.PPC	
0856	0512	64010081	MRA	1.R1	
0857	0514	4881072A	ST	1.PC	LOCATIONS NEEDED
0858	0516	4403072A	L	3.PC	
0859	0518	50830001	SA	3.1	
0860			*		
0861			*PACK	THE DATA FROM SCENARIO TAPE	
0862			*		
0863	051A	46010000	PACK	L	1.ERBUF,0
0864	051C	60080081	MLA	8.R1	
0865	051E	5881FF00	NA	1.X'FF00'	
0866	0520	48810742	ST	1.TEMP	
0867	0522	C0000000	CR	0.ERBUF	ALL CHAS. ARE DONE?
0868	0524	F08B052E	BC	EQ,\$+10	Y
0869	0526	4C800001	AA	0.1	
0870	0528	46010000	L	1.ERBUF,0	
0871	052A	588100FF	NA	1.X'00FF'	
0872	052C	5C010742	OR	1.TEMP	
0873			*		
0874	052E	4AA10000	ST	1.CSCEN,2	
0875	0530	4C800001	AA	0.1	
0876	0532	4C820001	AA	2.1	
0877	0534	0C3F051A	ARB	-1.PACK,3	
0878			*		
0879	0536	88000400	SETF	#SCEN,0	
0880	0538	20C68001	AMI	NMSG,1	
0881	053A	1CC68010	CMI	NMSG,16	
0882	053C	70820542	B	\$+6	
0883	053E	70070000	NOP		
0884	0540	708200EC	RATEJ	B	RATE
0885			*		GO OUT
0886	0542	44000735	L	0.NMSG	
0887	0544	50800001	SA	0.1	
0888	0546	4401072A	L	1.PC	
0889	0548	4E010000	A	1.SBLKS,0	
0890	054A	4C800001	AA	0.1	
0891	054C	4A810000	ST	1.SBLKS,0	
0892	054E	708204F9	B	NEXTMG	
0893			*		
0894			*		
0895	0550	8400699E	ELOOP	BFNE	FPS,1,ELIMIT
0896	0552	748305A0	BL	3.CRLF	
0897	0554	44010733	L	1.NCHL1	
0898	0556	48810000	ST	1.DLGUE	
0899	0558	88006000	SETF	FPS,0	
0900	055A	7082057E	B	STEP	

```

0901          *
0902          *
0903 055C 20C49FFA ULOOP   AMI     NCHL1,-6
0904 055E 748305A0      BL      3,CRLF
0905 0560 1CBB9FFF      CMI     PC,-1      CHECK POINTER
0906 0562 70820566      B       $+4
0907 0564 70820568      B       $+4
0908 0566 70820576      B       GLOOP      RESTART
0909 0568 20BB9FFF      AMI     PC,-1
0910 056A 840068CA      BFNE   FPS,1,NPS   IN PS?
0911 056C 14C690C4      MOV    NMSG,NCHL1  Y
0912          *
0913 056E 74820662 NOTPS   BL      2,RFSET
0914          *
0915 0570 88008000      SETF   FRUB,0      CLEAR TWO FLAGS
0916 0572 88007000      SETF   FIN,0
0917 0574 7082057E      B       STEP
0918          *
0919          *
0920 0576 74820662 GLOOP   BL      2,RESET
0921 0578 70070000      NOP
0922 057A 748305A0      BL      3,CRLF
      23 057C 7082001C      B       MSGTIM-2
0924          *
0925          *
0926 057E 20BB8001 STEP    AMI     PC,1      NEXT BRANCH
0927 0580 4402072A      L       2,PC
0928 0582 46210710      L       1,BRANCH,2
0929 0584 48810728      ST      1,STORE
0930 0586 71820728      B       *STORE
0931          *
0932          *
0933 0588 44010723 ERRMEG  L       1,QUEST     GET '??'
0934 058A 74800000      BL      0,PRINTC   PRINT IT
0935 058C 7082058A      B       $-2        BUSY RETURN
0936 058E 7082055E      B       ULOOP+2    START AGAIN
0937          *
0938          *
0939 0590 44800001 PRINSP  LA      0,1        SET INDFXER
0940 0592 48800729 MORE    ST      0,REG      SAVE REG 0
0941 0594 44010722      L       1,SPACE    GET SPACE
0942 0596 74800000      BL      0,PRINTC   PRINT IT
0943 0598 70820596      B       $-2        BUSY RETURN
0944 059A 44000729      L       0,REG      RSTORE REG 0
0945 059C 0C0F0592      ARB    -1,MORE,0   SPACES
0946 059E 72E20002      B       2,3
0947          *
0948          *
0949 05A0 4401071C CRLF   L       1,CR       GET CR
0950 05A2 74800000      BL      0,PRINTC   DO IT

```

0951	05A4	708205A2		B	\$-2	BUSY RETURN
0952			*			
0953	05A6	4401071D		L	1,LF	GET LF
0954	05A8	74800000		BL	0,PRINTC	DO IT
0955	05AA	708205A8		B	\$-2	
0956	05AC	72B20002		B	2,3	
0957			*			
0958			*			
0959	05AE	46310000	CHKNUM	L	1,ERBUF,3	GET 1ST CHA
0960	05B0	48810742		ST	1,TEMP	
0961	05B2	180390CF		CML	TEMP,RANGE1	#?(0-9)
0962	05B4	70820588		B	ERRMEG	ERROR
0963	05B6	708205BA		B	\$+4	
0964	05B8	708205C0		B	OUT	
0965	05BA	180390D1		CML	TEMP,RANGE2	#?(A-F)
0966	05BC	70070000		NOP		
0967	05BE	70820588		B	ERRMEG	ERROR
0968	05C0	4AB10000	OUT	ST	1,ERBUF,3	
0969	05C2	4C830001		AA	3,1	
0970	05C4	0C0F05AE		ARB	-1,CHKNUM,0	
0971	05C6	72A20002		B	2,2	
0972			*			
0973			*			
0974			*			
0975	05C8	4C800002	PRINTQ	AA	0,2	SET RETURN ADDRESS
0976	05CA	4880072C		ST	0,NEWN	
0977	05CC	44802500		LA	0,X'2500'	
0978	05CE	0C0F05CE		ARB	-1,\$,0	WAIT!!
0979	05D0	74800000		BL	0,PRINTC	SHOULD BE RIADY
0980	05D2	708205D0		B	\$-2	
0981	05D4	44802500		LA	0,X'2500'	
0982	05D6	0C0F05D6		ARB	-1,\$,0	
0983	05D8	7002072C		*B	NFWN	
0984			*			
0985			*			
0986			*			
0987	05DA	46310000	MASK12	L	1,ERBUF,3	GET THE CHARACTER
0988	05DC	C0810040		CRA	1,X'40'	COMPARE
0989	05DE	F08A05E4		BC	GT,MASK	HEXA-
0990	05E0	50810030		SA	1,X'30'	#
0991	05E2	708205E6		B	\$+4	
0992	05E4	50810037	MASK	SA	1,X'37'	HEXA= #
0993	05E6	4AB10742		ST	1,TEMP,3	
0994	05F8	4C830001		AA	3,1	
0995	05EA	0C0F05DA		ARB	-1,MASK12,0	
0996	05EC	72A20002		B	2,2	
0997			*			
0998			*			
1000	05EE	48800729	MSGPRT	ST	0,REG	SAVE REG 0

1001	05F0	45010728	L	1.*STORE	GET MESSAGE
1002	05F2	F08C0608	BC	LT,RETURN	END OF MESSAGE
1003	05F4	64080081	MRA	8.R1	
1004	05F6	588100FF	NA	1.X'00FF'	
1005	05F8	74800000	BL	0.PRINTC	PRINT THE CHA.
1006	05FA	708205F8	B	\$-2	BUSY RETURN
1007	05FC	45010728	L	1.*STORE	
1008	05FE	588100FF	NA	1.X'00FF'	
1009	0600	74800000	BL	0.PRINTC	PRINT THE CHA.
1010	0602	70820600	B	\$-2	BUSY RETURN
1011	0604	20B98001	AMI	STORE,1	
1012	0606	708205F0	B	MSGPRT+2	
1013	0608	44000729	L	0.REG	RESTORE REG. 0
1014	060A	72820002	B	2.0	
1015		*			
1016		*			
1017	060C	20C40FFA	CHANGE AMI	NCHL1.-6	
1018	060E	C0820002	CRA	2.2	INPUT 2 CHARACTERS?
1019	0610	EC8A0588	BC	GT.FRRMEG	MORE. ERROR
1020	0612	50820001	SA	2.1	
1021	0614	4882072B	ST	2.PPC	
1022	0616	48830732	ST	3.SAVR3	
23	0618	44830000	LA	3.0	
1024	061A	4400072B	L	0.PPC	
1025	061C	748205AE	BL	2.CHKNUM	CHECK #
1026	061E	44830000	LA	3.0	
1027	0620	4400072B	L	0.PPC	
1028	0622	748205DA	BL	2.MASK12	
1029	0624	44800000	LA	0.0	
1030	0626	748202BA	BL	2.KITHTO	
1031	0628	7482035A	BL	2.TOHEXA	
1032	062A	18B990CB	CML	STORE,LIMIT3	
1033	062C	70820588	B	ERRMEG	
1034	062E	70820588	R	ERRMEG	
1035		*			
1036	0630	44030732	L	3.SAVR3	
1037	0632	72B20002	B	2.3	
1038		*			
1039		*			
1040		****			
1041		*			
1042	0634	44020733	BUFFST L	2.NCHL1	
1043	0636	4C820001	AA	2.1	
1044	0638	44810030	LA	1.X'30'	
1045	063A	4AA10000	ST	1.DIALOGUE,2	
1046	063C	4C820001	AA	2.1	
1047	063E	4401072E	L	1.THD	
1048	0640	74800658	BL	0.AWAY	
9	0642	4401072F	L	1.HDR	
1050	0644	74800658	BL	0.AWAY	

1051	0646	44010730		L	1.TFN
1052	0648	74800658		BL	0.AWAY
1053	064A	44010731		L	1.ONE
1054	064C	74800658		BL	0.AWAY
1055	064E	44010722		L	1.SPACE
1056	0650	4AA10000		ST	1.DLGUE,2
1057	0652	48820733		ST	2.NCHL1
1058	0654	74820662		BL	2.RESET
1059	0656	72B20002		B	2.3
1060			*		
1061	0658	5881000F	AWAY	NA	1.X'000F'
1062	065A	4C810030		AA	1.X'30'
1063	065C	4AA10000		ST	1.DLGUE,2
1064	065E	4C820001		AA	2.1
1065	0660	72820002		B	2.0
1066			*		
1067	0662	44010724	RESET	L	1.ZERO
1068	0664	4881072E		ST	1.THD
1069	0666	4881072F		ST	1.HDR
1070	0668	48810730		ST	1.TFN
1071	066A	48810731		ST	1.ONE
1072	066C	72A20002		B	2.2
1073			*		
1074			*		
1075	066E			END	

```
1076      *
1077      *
1078      *
1079 066E   DATALF   FSIG
1080 0000   FLAG     FTIME,FNR,FNAK,FBCS,FNPK,FRPT,FPS
1081 0007   FLAG     FIN,FRUB,FSNF,FSNL,FSCFN,BAUD12,FBAUD
1082 066E   RES      1
1083      *
1084      *
1085 066F   END
```

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1086          *
1087          *
1088          *
1089 066F          DATA/D  DSEG
1090 066F 44415441 HEAD  DATA  C'DATA LINK SYSTEM -- '
      0671 204C494E
      0673 4B205359
      0675 5354454D
      0677 202D2D20
1091 0679 5343454E          DATA  C'SCENARIO TAPE TO UNIT 1'
      067B 4152494F
      067D 20544150
      067F 4520544F
      0681 20554449
      0683 54203120
1092 0685 0D0A          DATA  X'D0A'
1093 0686 28504C41          DATA  C'(PLAYBACK) AND RECORD '
      0688 59424143
      068A 4B292041
      068C 4E442052
      068E 45434F52
      0690 4420
  94 0691 54415045          DATA  C'TAPE TO UNIT 2 (RECORD). '
      0693 20544F20
      0695 554E4954
      0697 20322028
      0699 5245434F
      069B 5244292E
1095 069D FFFF          DATA  -1
1096 069E 484F5552 TIME  DATA  C'HOUR:MINUTE:SECOND = '
      06A0 3A4D494E
      06A2 5554453A
      06A4 5345434F
      06A6 4E44203D
      06A8 2020
1097 06A9 FFFF          DATA  -1
1098 06AA 4249542D BAUD  DATA  C'BIT-RATE = '
      06AC 52415445
      06AE 203D2020
1099 06B0 FFFF          DATA  -1
1100 06B1 23204F46 NRESP DATA  C'# OF NON-RESPONSES = '
      06B3 204E4F4E
      06B5 2D524553
      06B7 504F4E53
      06B9 4553203D
      06BB 2020
1101 06BC FFFF          DATA  -1
1102 06BD 23204F46 NAKS  DATA  C'# OF NAK(S) = '
      06PF 204F414B
      06C1 28532920

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	06C3	3D20			
1103	06C4	FFFF		DATA	-1
1104	06C5	23204F46	RCSER	DATA	C' # OF BCS ERRORS = '
	06C7	20424353			
	06C9	20455252			
	06CB	4F525320			
	06CD	3D20			
1105	06CE	FFFF		DATA	-1
1106	06CF	23204F46	PREKY	DATA	C' # OF PREKEYS = '
	06D1	20505245			
	06D3	4B455953			
	06D5	20312020			
1107	06D7	FFFF		DATA	-1
1108	06D8	23204F46	MSGRP	DATA	C' # OF MESSAGE REPEATS = '
	06DA	204D4553			
	06DC	53414745			
	06DE	20524550			
	06E0	45416453			
	06E2	203D2020			
1109	06E4	FFFF		DATA	-1
1110	06E5	454E5445	PS	DATA	C'ENTER DESIRED INFORMATION'
	06E7	52204445			
	06E9	53495245			
	06EB	4420494E			
	06ED	464F524D			
	06EF	4154494F			
	06F1	4E20			
1111	06F2	FFFF		DATA	-1
1112	06F3	46495253	SNRIOF	DATA	C'FIRST SCENARIO MESSAGE = '
	06F5	54205343			
	06F7	454E4152			
	06F9	494F204D			
	06FB	45535341			
	06FD	4745203D			
	06FF	2020			
1113	0700	FFFF		DATA	-1
1114	0701	4C415354	SNRIOL	DATA	C'LAST SCENARIO MESSAGE = '
	0703	20534345			
	0705	4E415249			
	0707	4F204D45			
	0709	53534147			
	070B	45203D20			
1115	070D	FFFF		DATA	-1
1116			*		
1117			*		
1118	070E	0002	START	DATA	PEGIN,X'C0'
	070F	00C0			
1119			*		
1120	0710	01AC	BRANCH	DATA	BAUDM
1121	0711	038A		DATA	MSGNRE

1122	0712	03A2		DATA	MSGNAK
1123	0713	03BA		DATA	MSGBCS
1124	0714	03D2		DATA	MSGPRK
1125	0715	03FA		DATA	MSGRPT
1126	0716	0480		DATA	MSGSF
1127	0717	049C		DATA	MSGSL
1128	0718	04B6		DATA	MSGPS
1129	0719	04D0		DATA	GAMF
1130	071A	04EF		DATA	READS
1131			*		
1132	071B	003A	COLUMN	DATA	X'3A'
1133	071C	000D	CR	DATA	X'0D'
1134	071D	000A	LF	DATA	X'0A'
1135	071E	007F	RUPOUT	DATA	X'7F'
1136	071F	0015	CTLU	DATA	X'15'
1137	0720	005C	BACKSL	DATA	X'5C'
1138	0721	0005	CTLE	DATA	X'05'
1139	0722	0020	SPACE	DATA	X'20'
1140	0723	003F	QUEST	DATA	X'3F'
1141	0724	0000	ZERO	DATA	0
1142	0725	0007	CTLG	DATA	X'07'
1143	0726	0960	B2400	DATA	2400
1144	0727	12C0	B4800	DATA	4800
1145			*		
1146	0081		R1	EQU	X'81'
1147	000A		GT	EQU	10
1148	000B		EQ	EQU	11
1149	000C		LT	EQU	12
1150			*		
1151	0728	0000	STORE	DATA	0
1152	0729	0000	REG	DATA	0
1153	072A	0000	PC	DATA	0
1154	072B	0000	PPC	DATA	0
1155	072C	0000	NEWN	DATA	0
1156	072D	0000	CHARA	DATA	0
1157	072E	0000	THD	DATA	0
1158	072F	0000	HDR	DATA	0
1159	0730	0000	TEN	DATA	0
1160	0731	0000	ONE	DATA	0
1161	0732	0000	SAVR3	DATA	0
1162	0733	0000	NCHL1	DATA	0
1163	0734	0000	SAVER	DATA	0
1164	0735	0000	NMSG	DATA	0
1165			*		
1166	0736	0001	LIMIT1	DATA	1.150
	0737	0096			
1167	0738	0001	LIMIT2	DATA	1.10000
	0739	2710			
1168	073A	0001	LIMIT3	DATA	1.10
	073B	000A			

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1169 073C 0001    LIMIT4  DATA    1.16
      073D 0010
1170 073E 0030    RANGE1  DATA    X'30',X'39'
      073F 0039
1171 0740 0041    RANGE2  DATA    X'41',X'46'
      0741 0046
1172                                     *
1173 0742          TEMP    RES    20
1174                                     *
1175 0756          END
0000 ERRORS : LENGTH = 0756
```


DATA REDUCTION AND
ANALYSIS MODULES

PRINRE

UTIL

VTIL

MTS-GREC-AREC-MAIN

FIN


```

0001 000      PRINRE  PSEG
0002 000      MODE
0003          *
0004          ** SYMBOLIC COMPARE STATUS ASSIGNMENTS
0005 00A      CT      EQU 10
0006 000B     EQ      EQU 11
0007 00C      LT      EQU 12
0008 000D     CR      EQU X'D'      CARRIAGE RETURN
0009 00A      LF      EQU X'A'      LINE FEED
0010          ** SYMBOLIC REC ASSIGNMENTS
0011 0004     RD      EQU 4
0012 0006     RE      EQU 6
0013 0007     RF      EQU 7
0014 0081     R1      EQU X'81'
0015 0082     R2      EQU X'82'
0016 0083     R3      EQU X'83'
0017 0084     R4      EQU X'84'
0018 008A     WR2     EQU X'8A'
0019 008B     WR3     EQU X'8B'
0020          ** EXTERNAL REFS & DEFS
0021 00        DLF     PMTR,PA,PG,SIOPS,STPS
0022          *
0023 00        REF     MTR,MCC,MID,MBT,MET,MMOD,MSN,MPLH
0024 00        REF     CREC,GCHK,GTME,GCC,CPRF
0025 000       REF     AREC,ACHK,ATME,APR,ACC,APRE
0026 000       REF     AUMID,AUMOD,AUTL
0027 000       REF     MMOV,DTB,JASCI,PRINT
0028 000       REF     R SAV,RRES,SNMF
0029          **
0030          *
0031          *
0032          *****
0033          *PRINT 'MSG TRANSACTION RECORD' ROUTINE
0034          *
0035 000 488000A PMTR  ST   0,PMSVR
0036 0002 7480000 BL   0,RSV   SAVE REGS
0037 0004 7082 012 B    PM1
0038 0006 7480000 PM2  BL   0,RRES  RESTORE REGS
0039 0008 7282000 B    2,0    RETURN
0040 00A    PMSVR  RES   8      REG SAVE AREA
0041          *
0042 0012 748001E2 PM1  BL   0,SINIT
0043 0014 0006     DATA PM2,1,C'.M'
0044          *
0045 0017 44860000 LA   RE,MTR      FROM
0046 0019 4487012C LA   RF,PBL      TO
0047 001B 74800000 BL   0,MMOV     TO MOVE ROUTINE
0048 001D 0005     DATA 5      5 FIELDS TO BE MOVED

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```

0049 001E 0000          DATA  0,0MCC,6
      001F 0000
      0020 0006
0050 0021 0004          DATA  4,0MID,9
      0022 0000
      0023 0009
0051 0024 FFFF          DATA  -1,0MBT,16
      0025 0000
      0026 0010
0052 0027 FFFF          DATA  -1,0MET,30
      0028 0000
      0029 001E
0053 002A 0000          DATA  0,0MMOD,49
      002B 0000
      002C 0031
0054                                     * TREAT MSH, MSN; BCH TO ASCII
0055 002D 44040000      L      RD,MSN          SCENARIO MSG NBR
0056 002F 588400FF      NA     RD,X'FF';     MASK
0057 0031 48840160      ST     RD,PBL+52     PUT IN LINE
0058 0033 C0840030      CRA   RD,X'30';     TEST IF ITS BCH
0059 0035 E08C004C      BC     LT,PM3        TOO LOW
0060 0037 C084 03F      CRA   RD,X'3F';
0061 0039 E08A004C      BC     GT,PM3        TOO HIGH
0062 003B 44840000      LA     RD,MTR          SETUP FOR DTB CALL
0063 003D 74800000      BL     0,DTB
0064 003F 0000          DATA  0,MSN,0,16
      0040 0000
      0041 0010
0065 0042 4400008B      L      0,WR3          BINARY MSN
0066 0044 46800001      LA     0,1,0          INCR BY 1
0067 0046 4880008A      ST     0,WR2          SETUP FOR JASCI
0068 0048 74800000      BL     0,JASCI
0069 004A 0001          DATA  1,PBL+52
      004B 0160
0070                                     *
0071 004C 440A0000      PM3    L      #2,MPIH     SETUP FOR JASCI CALL
0072 004E 74800000      BL     0,JASCI       MSG LGTH IN ASCII
0073 0050 0002          DATA  2,PBL+44
      0051 0158
0074                                     *
0075 0052 44800037      LA     0,55          55 CHARS TO PRINT
0076 0054 4880012C      ST     0,PBL          PUT IT TO PBUFFR
0077 0056 748003A2      BL     0,SFP          PRINT LINE
0078 0058 70820006      B      PM2           GO RETURN
0079                                     *****
0080                                     *
0081                                     *PRINT 'GROUND RECORD' ROUTINE
0082                                     *
0083 005A 48800064      PG     ST     0,PGSVR
0084 005C 74800000      BL     0,RSV         SAVE REGS

```

```

0085 005E 7182006C      B      PG1
0086 0060 74800000 PG2  BI      0,RRES      RESTORE REGS
0087 0062 71820002      B      2,0      RETURN
0088 0064      PGSVR RFS  8      REG SAVE AREA
0089      *
009  006C 748001E2 PG1  BI      0,SINIT
0091 006E 0060      DATA PG2,2,C1,C1
006F 0002
007  2E47

0092      *MOVE 2 FIELDS TO PBL
0093 0071 44860000      LA      RF,CREC      FROM
0094 0073 4487012C      TA      RF,PBL      TO
0095 0075 74800000      BL      0,MMOV      CALL MOVE ROUTINE
0096 0077 0002      DATA  2
0097 0078 FFF1      DATA  -1,0CTME,6
0079 0000
007A 0006
0098 007B 0000      DATA  0,0CCC,19
007C 0000
007D 0013

0099      *
010  007E 44800016      LA      0,22
0101 008  4880012C      ST      0,PBL      FIX LINE PNTR AFTER MOVIS
0102 0082 44800000      LA      0,CPRF
0103 0084 48800120      ST      0,ISP      SET STREAM PNTR
0104 0086 44000000      L      0,CCC
0105 0088 4080011E      ST      0,SCC      SAVE COMPL CODE
0106      * COMPUTE TEXT LNTH, CHECK FOR SHORT MSG
0107 008A 44000000      L      0,CCHK      RECORD LNTH
0108 008C 5080 025      SA      0,37      LFSS TIME,PRE,POST
0109 008E F08C 094      BC      LT,PGS      NO TEXT, BAD MSG
011  009  4880011D      ST      0,STL      SAVE TEXT LNTH
0111 0092 7182 3E      B      SHM      PRT REST OF MSG AS APPROP
0112      * HANDLE SHORT MSG
0113 0094 44000000 PG5  L      0,CCHK      RECORD LNTH
0114 0096 5080 00B      SA      0,11      LESS TIME,CC
0115 0098 F08C 09F      PS      BC      LT,PSA      NO PREFAMBLE
0116      * PRT ENTIRE MSG AS IS
0117 009A 4880009E      ST      0,PSD1      MSG LNTH
0118 009C 748002DE      BI      0,SAIT      PRINT AS IS TEXT
0119 009E 009F      PSD1  DATA $      FILED IN ABOVE
012  0000
0121 009F 748003A2 PSA  BI      0,SFP      FORCE PRT
0122 00A1 7182011C      B      *SRET      RETURN
0123      **** ** ** ** **
0124      *
0125      *PRINT 'AIR RECORD' ROUTINE
0126      *
0127 00A3 488000AD PA  ST      0,PASVR
0128 00A5 74800000      BL      0,RSAV      SAVE REGS

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```

0129 00A7 708200B5      B    PA1
0130 00A9 74800000 PA2  BI    0,RRES      RESTORE RECS
0131 00AB 72820002      B    2,0      RETURN
0132 00AD          PASVR RFS  B      REG SAVF AREA
0133          *
0134          * IS REC TYPE A OR TYPE #
0135 00B5 44000000 PA1  L    0,ACC      CODE
0136 00B7 588000FF      NA   0,X'FF'
0137 00B9 C080 023      CRA  0,X'23'      IS IT '#'
0138 00BB E080 0FE      BC   EQ,PAUTR     BRNCH IF YES
0139          * RECORD TYPE A
0140 00BD 748001E2      BL   0,SINIT      INIT FOR TYPE A REC
0141 00BF 00A9          DATA PA2,4,C',A'
00C0 0004
00C1 2E41

0142          *MOVE 3 FIELDS TO PBL
0143 00C2 44860000      LA   RE,AREC      FROM
0144 00C4 4487012C      LA   RF,PBL        TO
0145 00C6 74800000      BL   0,MMOV        CALL MOVE ROUTINE
0146 00C8 0003          DATA 3            3 FLDS TO MOVE
0147 00C9 FFF1          DATA -1,0ATME,6
00CA 0000
00CB 0006
0148 00CC 000C          DATA 12,0APR,19  ALT, PITCH, ROLL
00CD 0000
00CE 0013
0149 00CF 0000          DATA 0,0ACC,33   COMPL CODE
00D0 0 00
00D1 0021

0150          *
0151 00D2 44800024      LA   0,36
0152 00D4 4880012C      ST  0,PBL          FIX LINE PNTR AFTER MOVES
0153 00D6 44800000      LA   0,APRE
0154 00D8 48800128      ST  0,ISP          SET STREAM PNTR
0155 00DA 44000000      L   0,ACC
0156 00DC 4880011E      ST  0,SCC          SAVE COMPL CODE
0157          * COMPUTE TXT LNTH, CHECK FOR SHORT MSGS
0158 00DE 44000000      L   0,ACHK         REC LNTH
0159 00E0 5080 032      SA  0,50          LESS TIME,APR,PRE,POST
0160 00E2 108C 0F8      BC  LT,PAS         NO TEXT, BAD MSG
0161 00E4 4880011D      ST  0,STL         SAVE TXT LNTH
0162 00E6 708203E0      B   SHM           DO REST OF MSG AS APPROP
0163          * HANDLE SHORT MSC
0164 00E8 44000000 PA5  L   0,ACHK         REC LNTH
0165 00EA 5080 018      SA  0,24          LESS TIME,CC,APR
0166 00EC 7082 098      B   PS            GO PRT MSG AS IS
0167          *
0168          ** HANDLE UTR TYPE (#) RECS
0169 00EE 748001E2 PAUTR BI  0,SINIT      INIT FOR # REC
7 00E 00A9          DATA PA2,16,C',#'

```

```

00F1 0010
00F2 2E23
0171
0172 00F3 4486000 * MOVE FLD5 TO LINE BUFFER
0173 00F5 4487012C LA RE,AREC ORIGIN BASE RIC
0174 00F7 74800003 LA RF,PBI RECEIVING BASE RIC
0175 00F9 0004 BI 0,MMOV MOVE UTILITY
0176 00FA 0004 DATA 4 4 FLD5 TO MOVE
00FB 0000 DATA 4,BAUMID,6 MSG ID
00FC 0006
0177 00FD 0000 DATA 0,BAUMOD,16 MODE
00FE 0000
00FF 0010
0178 0100 FFF0 DATA -1,DATE,19 TIME
0101 0000
0102 0013
0179 0103 0000 DATA 12,APR,33 ALT. PITCH, ROLL
0104 0000
0105 0021
0180
0181 0106 4484000 * TEXT: LNCTH TO LINE BUFFER
0182 0108 7480000 LA RD,AUTL BASE REC FOR DTB
0183 010A 0000 BI 0,DTB CONVERT TO BIN
010B 0001
010C 0010
0184 010D DC00008A DRR 0,WR2 SWAP #2,#3
0185 010F 74800003 BI 0,JASCI CONVERT TO ASCII
0186 0111 0002 DATA 2,PBL+12
0112 0138
0187
0188 0113 44800030 * LA 0,48 48 CHARS TO PRNT
0189 0115 4880012C ST 0,PRL
0190 0117 748003A2 BL 0,SFP PRINT LINE
0191 0119 7082 0A9 B PA2 GO RETURN
0192
0193 *****
0194 *
0195 *SUBROUTINES
0196 *
0197 *
0198 011B ***** DATA & SCRATCH AREAS *****
0199 011C SMOB RFS 1 MODE FLG: -1 FOR TRANS, +1 FOR NORMAL
0200 011D SRIT RFS 1 QUIT ADDRESS
0201 011E STL RFS 1 TEXT LNCTH
0202 011F 0002 SCC RFS 1 TEMP HOLD COMPL CODE
0120 0000 SKP DATA 2,CR,LF,X'20'
0121 000A
0122 0020
0203 0123 0004 SKPA DATA 4,CR,CR,CR,LF SKIP LINE
0124 0000

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0125 000D
0126 000D
0127 000A
0204
0205 0128 TSP RES 1 STREAM POINTER
0206 0129 WISP RES 1 TEMP HOLD ISP
0207 012A PBLM RES 2 FOR EXTRA CR'S
0208 012C PBL RES 80 LOWER LINE
0209 017C PBUM RES 2 FOR EXTRA CR'S
0210 017E PBU RES 100 UPPER LINE
0211 *****:*****:*****:
0212 *
0213 ***** INITIALIZE (SINIT) *****
0214 * CALLING SEQ:
0215 * BL 0,SINIT
0216 * DATA QADDR QUIT ADDRESS
0217 * DATA MASK PANEL SWITCH MASK
0218 * DATA TITLET M/G/A
0219 *****:*****:*****:
0220 01E2 488001FC SINIT ST 0,SISVR
0221 01E4 74800000 BL 0,RSVA SAVE REGS
0222 01E6 708201F4 B SI1
0223 01E8 74800000 SI2 BL 0,RRES REST REGS
0224 01EA 72820005 B 5,0 RETURN
0225 01EC SISVR RES 8 REG SVE AREA
0226 *
0227 01F4 460A0002 SI1 L #2,2,0 QUIT ADDR
0228 01F6 488A011C ST #2,SRET SAVE IT
0229 * TEST PANEL SWITCHES
0230 01F8 7480021D BL 0,STPS
0231 01FA 44010268 L 1,SIOPS CURRENT SWITCHES TO R1
0232 * SEE IF CURRENT OPTNS INHIBIT PRNTNG THIS LINE
0233 01FC 440001EC L 0,SISVR RESET R0 TO ARGS
0234 01FE 5A010003 N 1,3,0 MASK
0235 0200 E18A011C BC GT,*SRET QUIT IF SW ON
0236 * TEST NEWMSG FLG
0237 0202 44030000 L 3,SNMF TEST SNMF
0238 0204 E08B020F BC EQ,SIF BRNCH IF OFF
0239 0206 74800000 BL 0,PRINT SKIP LINE BETWEEN MSGS
0240 0208 0123 DATA SKPA
0241 0209 70820206 B #-3 BUSY RET
0242 020B 448A0000 LA #2,0
0243 020D 488A0000 ST #2,SNMF RESET SNMF
0244 * SETUP INITIAL LINE
0245 020F 748002BA SIF BL 0,SBC CLEAN BUFFERS
0246 0211 440001EC L 0,SISVR RESET R0 TO ARG STRNG
0247 0213 46010004 L 1,4,0 TITLE LETTER
0248 0215 4881012F ST 1,PBL+3 PUT TITLET IN LINE
0249 0217 44810003 LA 1,3
0250 0219 4881012C ST 1,PBL FIX LINE PNTR

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0251 021B 708201E8      B      SI2      GO RETURN
0252                    *****
0253                    *
0254                    *
0255                    *
0256                    ***** TEST PANEL SWITCHES (STPS) *****
0257                    * CALLING SEQ:
0258                    *      BL      0,STPS
0259                    *****
0260 021D 48800227 STPS ST      0,STSVR
0261 021F 74800000      BL      0,RSVAV
0262 0221 7082022F      B      ST1
0263 0223 74800000 ST2  BL      0,RRES      RESTORE REGS
0264 0225 72820002      B      2,0      RETURN
0265 0227      STSVR RES 8      REG SVE AREA
0266                    *
0267 022F E4800081 ST1  STPS R1      GET PANEL SWITCHES
0268 0231 44020268      L      2,SIOPS      OLD PANEL SWITCHES
0269 0233 40020081      XOR    2,R1      HAVE THEY CHANGED
0270 0235 E0800223      BC     EQ,ST2      RETURN IF NO CHANGE
0271 0237 48810268      ST     1,SIOPS      NEW ONES BECOME OLD ONES
0272                    * LOOP TO PRT CURRENT PRINT OPTIONS
0273 0239 44800002      LA     0,2      LOOP CNTR
0274 023B 46920001 SICL  LA     2,0,1
0275 023D 58820001      NA     2,X'1'      MASK OPTION BIT
0276 023F 46260269      L      6,SPOT,2      LOOKUP OPTN IN TABLE
0277 0241 4607026B      L      7,SPOTA,0      LOOKUP POS IN PRT LINE
0278 0243 4AF60000      ST     6,0,7      PUT OPTN IN PRT LINE
0279 0245 64010081      MRA   1,R1      LOOK AT NXT OPT BIT
0280 0247 0C0F023B      ARB   -1,SICL,0      LOOP 3 TIMES
0281                    * MTR FRR/ALL
0282 0249 46920000      LA     2,0,1
0283 024B 58820001      NA     2,X'1'      MASK OPTN BIT
0284 024D 4626026E      L      6,SPMT,2      LOOKUP IN TABLE
0285 024F 448702AD      LA     7,SIOMD      POS IN LINE
0286 0251 1400DC00      MOV   (0,6),(0,7)      MOVE OPTN TO LINE
0287 0253 1401DC01      MOV   (1,6),(1,7)
0288 0255 1402DC02      MOV   (2,6),(2,7)
0289                    * UTR = Y/N
0290 0257 64010081      MRA   1,R1
0291 0259 46920000      LA     2,0,1
0292 025B 58820001      NA     2,X'1'
0293 025D 46260269      L      6,SPOT,2      LOOKUP OPTN IN TABLE
0294 025F 488602B6      ST     6,SIOMF      PUT OPTN IN LINE
0295 0261 74800000      BL     0,PRINT      PRINT CURRENT OPTIONS
0296 0263 0276      DATA SIOM
0297 0264 70820261      B      0-3
0298 0266 70820223      B      ST2      GO RETURN
0299                    ***** DATA & SCRATCH *****
0300 0268 EFF8      SIOPS DATA X'EFF8'      OLD PANEL SW SETTING

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0314 02B9          SIOME EQU $-1
0315              *****
0316              *
0317              *
0318              *
0319              ***** CLEAN BUFFERS (SBC) *****
0320              * CALLING SEQ:
0321              *      BL      0,SBC
0322              *****
0323 02BA 488002C4 SBC      ST      0,SBSVR
0324 02BC 74800000      BL      0,RSAV
0325 02BE 708202CC      B       SB1
0326 02C0 74800000 SB2     BL      0,RRES
0327 02C2 72820002      B       2,0
0328 02C4          SBSVR   RES    8
0329              *
0330 02CC 44860000 SB1     LA      RE,0
0331 02CE 44870000      LA      RF,0
0332 02D0 74800000      BL      0,MMOV
0333 02D2 0003          DATA 3          3 FLDS TO MOVE
0334 02D3 0003          DATA 3,SKP,PBL  CR,LF TO PBL
      02D4 011F
      02D5 012C
0335 02D6 00A0          DATA 160,PBL+3,PBL+4  PROPAGATE BLANK
      02D7 012F
      02D8 0130
0336 02D9 0002          DATA 2,SKP,PBU      CR,LF TO PBU
      02DA 011F
      02DB 017E
0337 02DC 708202C0      B       SB2          GO RETURN
0338              *****
0339              *
0340              *
0341              ***** AS IS TEXT (SAIT) *****
0342              * CALLING SEQ:
0343              *      BL      0,SAIT
0344              *      DATA N          LENGTH-1
0345              *****
0346 02DE 488002E8 SAIT    ST      0,SASVR
0347 02E0 74800000      BL      0,RSAV
0348 02E2 708202F0      B       SA1
0349 02E4 74800000 SA2     BL      0,RRES
0350 02E6 72820003      B       3,0
0351 02E8          SASVR   RES    8
0352              *
0353 02F0 46010002 SA1     L       1,2,0      LNTH = LOOP CNTR
0354 02F2 44020128      L       2,ISP      STREAM PNTR
0355              * FORCE PRINT IF LINES FULL
0356 02F4 4400012C SATL    L       0,PBL    LINE PNTR
0357 02F6 C0800049      CRA    0,73      TEST LINE LNTH

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0358 02F8 E08C02FC          BC  LT,SALOK          BRNCH IF OK
0359 02FA 748003A2          BL  0,SFP            TOO LONG, FORCE PRINT
0360
0361          *
          * CHECK NXT CHAR IN STREAM FOR PRTBLE/NONPRTBLE
0362 02FC 46230000 SALOK L 3,0,2          NXT CHAR IN STREAM
0363 02FE 588300FF          NA  3,X'FF'         MASK
0364 0300 C0830020          CRA 3,X'20'
0365 0302 E08C0310          BC  LT,SANP
0366 0304 C083005B          CRA 3,X'5B'
0367 0306 E08C0334          BC  LT,SAYP
0368 0308 C0830061          CRA 3,X'61'
0369 030A E08C0310          BC  LT,SANP
0370 030C C0830066          CRA 3,X'66'
0371 030E E08C0334          BC  LT,SAYP
0372          * NON PRTBLE CHAR
0373 0310 D4040083 SANP  DRA 4,R3          SPLIT CHAR INTO 2 BYTES
0374 0312 640C0084          MRA 12,R4          IN R3, R4
0375 0314 5884000F          NA  4,X'F'         MASK
0376 0316 4C830030          AA  3,X'30'        MAKE INTO ASCII
0377 0318 4C840030          AA  4,X'30'
0378 031A 46BA0000          LA  #2,0,3         SETUP FOR MAKEUP
0379 031C 46CB0000          LA  #3,0,4
0380 031E 7480036C          BL  0,MAKEUP       ADJUST ASCII IF NEEDED
0381          * PUT IN LINE
0382 0320 4400012C SAPIL L 0,PBL          LINE PNTR
0383 0322 4C800001          AA  0,1            STEP PNTR
0384 0324 4A8A017E          ST  #2,PBU,0       UPPER LINE
0385 0326 4A8B012C          ST  #3,PBL,0       LOWER LINE
0386 0328 4880017E          ST  0,PBU          FIX LINE PNTRS
0387 032A 4880012C          ST  0,PBL
0388          * CONTINUE LOOP THROUGH STREAM
0389 032C 4C820001          AA  2,1            INCR STREAM PTR
0390 032E 0C1F02F4          ARB -1,SATL,1     LOOP
0391 0330 48820128          ST  2,ISP          LOOP DONE; SAVE STRM PNTR
0392 0332 708202F4          B   SA2            & GO RETURN
0393          * PRTBLE CHAR
0394 0334 448A002E SAYP  LA #2,X'2E'        '.' IN UPPER LINE
0395 0336 46BB0000          LA  #3,0,3         PRTBLE CHAR IN LOWER
0396 0338 70820320          B   SAPIL          GO PUT IN LINES
0397          *****
0398          *
0399          *
0400          ***** CODED BIN TEXT (SCBT) *****
0401          * CALLING SEQ:
0402          * BL 0,SCBT
0403          * DATA N          LENGTH-1
0404          *****
0405 033A 48800344 SCBT  ST 0,SCSVR
0406 033C 74800000          BL  0,RSV
0407 033E 7082034C          B   SC1

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0408 0340 74800000 SC2 BL 0,RRES
0409 0342 72820003 B 3,0
0410 0344 SCSVR RES 8
0411 *
0412 034C 46010002 SC1 L 1,2,0 LNGTH=LOOP CNTR
0413 034E 44020128 L 2,ISP STREAM PNTR
0414 * FORCE PRT IF LINE FULL
0415 0350 4400012C SCTL L 0,PBL LINE PNTR
0416 0352 C0800049 CRA 0,73 TEST LINE LNGTH
0417 0354 E08C0358 BC LT,SCLOK BRNCH OF OK
0418 0356 748003A2 BL 0,SFP TOO LONG, FORCE PRNT
0419 * HANDLE NXT CHAR IN STREAM
0420 0358 462B0000 SCLOK L #3,0,2 NXT CHAR IN STRM
0421 035A 7480036C BL 0,MAKEUP ADJUST ASCII IF NEEDED
0422 035C 4400012C L 0,PPL LINE PNTR
0423 035E 4C800001 AA 0,1 STEP PNTR
0424 0360 4A8B012C ST #3,PBL,0 PUT IN LINE
0425 0362 4880012C ST 0,PBL FIX PNTR
0426 * CONTINUE LOOP THROUGH STREAM
0427 0364 4C820001 AA 2,1 INCR STRM PNTR
0428 0366 0C1F0350 ARB -1,SCTL,1 LOOP
0429 0368 48820128 ST 2,ISP LOOP DONE; SAVE STRM PNTR
0430 036A 70820340 B SC2 & RETURN
0431 *****
0432 *
0433 *
0434 ***** MAKEUP *****
0435 * CALLING SEQ:
0436 * BL 0,MAKEUP
0437 *
0438 * MAKEUP ADJUSTS THE CONTENTS OF #2 & #3 TO
0439 * PRBLE ASCII
0440 *****
0441 036C 48800376 MAKEUP ST 0,MASVR
0442 036E 74800000 BL 0,RSV
0443 0370 7082037E B MA1
0444 0372 74800000 MA2 BL 0,RRES
0445 0374 72820002 B 2,0
0446 0376 MASVR RES 8
0447 *
0448 037E 74800388 MA1 BL 0,MAIL
0449 0380 DC00008A DRR 0,WR2 SWAP #2, #2
0450 0382 74800388 BL 0,MAIL
0451 0384 DC00008A DRR 0,WR2 RE-SWAP #2, #3
0452 0386 70820372 B MA2 GO RETURN
0453 * MAKEUP CONTENTS OF #2
0454 0388 588A00FF MAIL NA #2,X'FF' MASK
0455 038A C08A002E CRA #2,X'2E' IS IT '!'
0456 038C F28B0002 BC EQ,2,0 BRNCH IF YES
0457 038E C08A0030 CRA #2,X'30' IS IT BCH

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0458 0390 E08C039E      BC   LT,MSTR      NO. TOO LOW
0459 0392 C08A003A      CRA  #2,X'3A'     DOES IT NEED MAKEUP
0460 0394 E28C0002      BC   LT,2,0       NO. RETURN
0461 0396 C08A003F      CRA  #2,X'3F'     IS IT BCH
0462 0398 E08A039E      BC   GT,MSTR      NO. TOO HIGH
0463 039A 4C8A0007      AA   #2,7         MAKEUP
0464 039C 72820002      B    2,0          RETURN
0465 039E 448A002A MSTR LA  #2,X'2A'     SHOW BAB BCH AS '*'
0466 03A0 72820002      B    2,0          RETURN
0467
*****
0468 *
0469 *
0470 ***** FORCE PRINT (SFP) *****
0471 * CALLING SEQ:
0472 *      BL  0,SFP
0473 *****
0474 03A2 488003AC SFP  ST  0,SFSVR
0475 03A4 74800000      BL  0,RSBV
0476 03A6 708203B4      B    SF1
0477 03A8 74800000 SF2  BL  0,RRES
0478 03AA 72820002      B    2,0
0479 03AC      SFSVR RES  8
0480 *
0481 03B4 44850000 SF1  LA  5,PRINRE     SET BASE REG
0482 03B6 4400017E      L    0,PBU        UPPER LINE PNTR
0483 03B8 C0800002      CRA  0,2
0484 03BA E08B03C9      BC   EQ,SFPL      DONT PRT UPPER IF EMPTY
0485 * PUT EXTRA CR AT START OF LINE
0486 03BC 157EB57C      MOV  PBU,PBUM
0487 03BE 157FB57D      MOV  PBU+1,PBUM+1
0488 03C0 157FB57E      MOV  PBU+1,PBU
0489 03C2 217CA002      AMI  PBUM,2
0490 03C4 74800000      BL  0,PRINT      PRINT UPPER LINE
0491 03C6 017C          DATA PBUM
0492 03C7 708203C4      B    $-3         BUSY RET
0493 *
0494 03C9 4400012C SFPL L    0,PBL        LOWER LINE PNTR
0495 03CB C0800002      CRA  0,2
0496 03CD E08B03DC      BC   EQ,SFPD      DONT PRT LOWER IF EMPTY
0497 * PUT EXTRA CR AT START OF LINE
0498 03CF 152CB52A      MOV  PBL,PBLM
0499 03D1 152DB52B      MOV  PBL+1,PBLM+1
0500 03D3 152DB52C      MOV  PBL+1,PBL
0501 03D5 212AA002      AMI  PBLM,2
0502 03D7 74800000      BL  0,PRINT      PRINT LOWER LINE
0503 03D9 012A          DATA PBLM
0504 03DA 708203D7      B    $-3         BUSY RET
0505 *
0506 03DC 748002BA SFPD BL  0,SBC         CLEAN BUFFERS
0507 03DE 708203A8      B    SF2         GO RETURN

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0508          *****
0509          *
0510          *
0511          ***** CODING TO OUTPUT MSG - SHARED BY PA, PG
0512 03E0 44850000 SHM LA 5,PRINRE SFT BASE RIG
0513 03E2 4400011E L 0,SCC COMPL CODE
0514 03E4 588000FF NA 0,X'FF'
0515 03E6 C0800052 CRA 0,X'52' IS IT 'R' ?
0516 03E8 F08B03F1 BC EQ,SHR BRNCH IF YES
0517          * COMPL CODE NOT R
0518 03EA 748002DE BL 0,SAIT OUTPUT SOH STUFF
0519 03EC 0004 DATA 4
0520 03FD 212CA001 AMI PBL,1 BLK IN LINE
0521 03EF 708203F3 B SHRD
0522          * COMPL CODE = R
0523 03F1 2128A005 SHR AMI ISP,5 MOVE ISP PAST 5 BLNKS
0524          * HANDLE MODE
0525 03F3 44000128 SHRD L 0,ISP STREAM PNTR
0526 03F5 46010000 L 1,0,0 MODE
0527 03F7 588100FF NA 1,X'FF' MASK
0528 03F9 C0810055 CRA 1,X'55' IS MODE = 'U' ?
0529 03FB E08B0411 BC EQ,SHMU BRNCH IF YES
0530          * MODE NOT= 'U'
0531 03FD 448A0001 LA #2,1
0532 03FF C0810032 CRA 1,X'32' IS MODE 2
0533 0401 E08B040D BC EQ,SHMMA YES, NORMAL TEXT
0534 0403 C0810033 CRA 1,X'33' IS MODE 3
0535 0405 E08B040D BC EQ,SHMMA YES, NORMAL TEXT
0536 0407 C0810044 CRA 1,X'44' IS MODE 0
0537 0409 E08B040D BC EQ,SHMMA YES, NORMAL TEST
0538 040B 448AFFFF LA #2,-1 SHOW TRANSPARENT TEXT
0539 040D 488A011B SHMMA ST #2,SMOD STORE MODE FLAG
0540 040F 7082041D B SHMMD
0541          * MODE = 'U'
0542 0411 448AFFFF SHMU LA #2,-1
0543 0413 488A011B ST #2,SMOD SHOW TRANSPARENT TEXT
0544 0415 46010001 L 1,1,0 CHAR 1 OF MODE
0545 0417 46020002 L 2,2,0 CHAR 2 OF MODE
0546 0419 600C0082 MIA 12,R2 CREATE 1 CHAR FROM 2 BYTES
0547 041B C8040081 DIA 4,R1 ORIG MODE IN R1
0548          *
0549 041D 2128A001 SHMMD AMI ISP,1 STEP STRM PNTR
0550 041F 49810128 ST 1,*ISP STORE RECONSTRUCTED MODE
0551 0421 748002DE BL 0,SAIT PUT MODE IN LINE AS IS
0552 0423 0000 DATA 0
0553 0424 2128A001 AMI ISP,1 STEP STRM PNTR
0554          *
0555 0426 212CA001 AMI PBL,1 BLK IN LINE
0556 0428 748002DE BL 0,SAIT
0557 042A 0004 DATA 4 MSG ID IN LINE

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0558
0559 042B 212CA001      *      AMI PBL.1      BLK IN LINE
0560 042D 748002DE      BL 0.SAIT      ADDRESS IN LINE
0561 042F 0001      DATA 1
0562
0563 0430 212CA001      *      AMI PBL.1      BLK IN LINE
0564 0432 748002DE      BL 0.SAIT      ACK/NAK IN LINE
0565 0434 0000      DATA 0
0566
0567 0435 212CA001      *      AMI PBL.1      BLK IN LINE
0568 0437 748002DE      BL 0.SAIT      LABEL IN LINE
0569 0439 0001      DATA 1
0570
0571 043A 4406011D      *      L 6.STL      TEXT LNTH
0572 043C 50860001      SA 6.1      SEE IF ANY STX
0573 043E E08C0447      BC LT.SHBCS      NO STX
0574
0575 0440 212CA001      * HAVE STX
0576 0442 748002DE      AMI PBL.1      BLK IN LINE
0577 0444 0000      BL 0.SAIT      STX IN LINE
0578 0445 50860001      DATA 0
0579
0580 0447 212CA003      * OUTPUT ETX/ETB & BCS
0581 0449 44000128      SHBCS AMI PBL.3      3 BLNKS IN LINE
0582 044B 48800129      L 0.ISP
0583 044D 4EF00001      ST 0.WISP      TEMP SAVE ISP
0584 044F 48800128      AA 0.1.6      ISP+TEXTLNTH
0585 0451 748002DE      ST 0.ISP      PNTS TO ETX/ETB
0586 0453 0000      BL 0.SAIT      ETX/ETB TO LINE
0587 0454 212CA001      DATA 0
0588 0456 7480033A      AMI PBL.1      BLK IN LINE
0589 0458 0003      BL 0.SCBT      OUTPUT BCS CHARS
0590 0459 212CA001      DATA 3
0591 045B 7480033A      AMI PBL.1      BLK IN LINE
0592 045D 0003      BL 0.SCBT      OUTPUT COMPUTED BCS
0593 045E 748003A2      DATA 3
0594
0595 0460 48860470      * SET UP FOR TEXT, IF ANY
0596 0462 E08C0476      BL 0.SFP      FORCE PRT
0597 0464 48860475      ST 6.SHL1      SETUP ARG
0598 0466 44000129      BC LT.SHAD      NO TEXT
0599 0468 48800128      ST 6.SHL2      SETUP ARG
0600 046A 4400011B      L 0.WISP
0601 046C E08C0473      ST 0.ISP      RESET ISP TO TEXT
0602
0603 046E 748002DE      * OUTPUT NORMAL TEXT
0604 0470 0470      L 0.SMOD      TEST MODE SW
0605 0471 70820476      BC LT.SHTT      BRNCH IF TEXT TRANSPARENT
0606
0607 0473 7480033A      * OUTPUT TRANSPARENT TEXT
SHTT BL 0.SCBT

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0001          **** UTIL ****
0002          * UTILITY ROUTINES COLLECTED IN A PSEG
0003          ****
0004 0000     UTIL  PSEG
0005 0000     MODE
0006          *
0007          ** SYMBOLIC COMPARE STATUS ASSIGNMENTS
0008 000A     GT    EQU  10
0009 000B     EQ    EQU  11
0010 000C     LT    EQU  12
0011          ** SYMBOLIC REG ASSIGNMENTS
0012 0004     RD    EQU  4
0013 0006     RE    EQU  6
0014 0007     RF    EQU  7
0015 008A     W2    EQU  X'8A'
0016 008B     W3    EQU  X'8B'
0017          **** EXTERNAL DEFS ****
0018 0000     DEF  R SAV,RRES,TC,DTB,CTME
0019 0000     DEF  MMOV,JASCI
0020 0000     DEF  HAT
0021 0000     DEF  CNT,BTOT
0022          *
0023 0000     REF  MPLH,MCC,MPET,MPBT
0024 0000     REF  XASCI
0025          **
0026          *
0027          *
0028          *
0029          **** REG SAVE/RESTORE UTILITY ****
0030          * CALLING SEQUENCE:
0031          *   ST   0,LABL
0032          *   BL   0,RSAV
0033          *   B    ****
0034          *   BL   0,RRES
0035          *   B    ****
0036          *LABL RES 8                REG SAVE AREA
0037          *
0038          * THE RSAV ENTRY SAVES R1-R7 IN LABL+1 - LABL+7. THEN
0039          * RETURNS TO THE NEXT INSTRUCTION.
0040          * NOTE THAT THE CONTENTS OF LABL ARE PUT IN R0
0041          * BEFORE RETURNING.
0042          * THE RRES ENTRY RESTORES R0-R7 FROM LABL - LABL+7.
0043          * THEN RETURNS TO THE NXT INSTR.
0044          ****
0045          * REG SAVE ENTRY
0046 0000 4A810009  RSAV  ST   1,9.0
0047 0002 4A82000A          ST   2,10.0
0048 0004 4A83000B          ST   3,11.0
0049 0006 4A84000C          ST   4,12.0
0050 0008 4A85000D          ST   5,13.0

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0051 000A 4A86000E      ST  6,14,0
0052 000C 4A87000F      ST  7,15,0
0053 000E 4C800002      AA  0,2
0054 0010 48800015      ST  0,RS1+1      COMPUTE RETURN ADDR
                                STORE IN RET INSTR
0055 0012 46000006      L   0,6,0      RESTORE R0
0056 0014 70820014  RS1  B   $      RETURN
0057
0058
0059 0016 4C800002      * REG RESTORE ENTRY
0060 0018 4880002B  RRES AA  0,2      COMPUTE RETURN ADDR
                                STORE IN RET INSTR
0061 001A 46070009      L   7,9,0
0062 001C 46060008      L   6,8,0
0063 001E 46050007      L   5,7,0
0064 0020 46040006      L   4,6,0
0065 0022 46030005      L   3,5,0
0066 0024 46020004      L   2,4,0
0067 0026 46010003      L   1,3,0
0068 0028 46000002      L   0,2,0
0069 002A 7082002A  RR1  B   $      RETURN
0070
0071 *****
0072 *
0073 *
0074 ***** TIME COMPARE ROUTINE *****
0075 * CALLING SEQUENCE
0076 *      BL  0,TC
0077 *      DATA ADDR1,ADDR2      FLDS TO BE COMPARED
0078 *      DATA ADDR1          GO TO ADDR1 IF A>B
0079 *      DATA ADDR2          A=B
0080 *      DATA ADDR3          A<B
0081 *
0082 * ADDR1 & ADDR2 ARE HIGH ORDER ADDRESSES OF 4 WORD FIELDS
0083 * OF FORM H,M,S,MS
0084 *****
0085 002C 48800036  TC   ST  0,TCSVR      SAVE REG 0
0086 002E 74800000  BL   0,RS1V      SAVE R1 - R7
0087 0030 7082003E  B    TC1
0088 0032 74800016  TC2  BL   0,RRES      RESTORE REGS
0089 0034 72820000  B    0,0          RETPN TO ADDR IN R0
0090 0036  TCSVR  RFS  B          REG SAVE AREA
0091
0092 003E 46010002  TC1  L   1,2,0      ADDR1 IN R1
0093 0040 46020003  L   2,3,0      ADDR2 IN R2
0094
0095 0042 10002800  CM   (0,1),(0,2)   COMPARE HOUR FIELDS
0096 0044 70820060  B    TALO          IF A<B
0097 0046 70820064  B    TAHI          IF A>B
0098 0048 10012801  CM   (1,1),(1,2)   COMPARE MINUTE FLDs
0099 004A 70820060  B    TALO          IF A<B
0100 004C 70820064  B    TAHI          IF A>B

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0101 004E 10022802 CM (2,1),(2,2) COMPARE SECOND FLDS
0102 0050 70820060 B TALO IF A<B
0103 0052 70820064 B TAHI IF A>B
0104 0054 10032803 CM (3,1),(3,2) COMPARE MSEC FLDS
0105 0056 70820060 B TALO IF A<B
0106 0058 70820064 B TAHI IF A>B
0107 *
0108 005A 46000005 TEQ L 0,5,0 A=B; PUT = RET ADDR IN R0
0109 005C 48800036 TRET ST 0,TCSVR SET UP FOR TRICK RETURN
0110 005E 70820032 B TC2 GO REST REGS & RETRN
0111 0060 46000006 TALO L 0,6,0 A<B; PUT <RET ADDR IN R0
0112 0062 7082005C B TRFT SET UP RETURN
0113 0064 46000004 TAHI L 0,4,0 A>B; PUT >RET ADDR IN R0
0114 0066 7082005C B TRET SET UP RETURN
0115 *****:*****:*****
0116 *
0117 *
0118 *
0119 ***** DECODE TO BINARY ROUTINE (DTB) *****
0120 * CALLING SEQUENCE:
0121 * BL 0,DTB
0122 * DATA FLD,LENGTH,BASE
0123 *
0124 * FLD IS AN OFFSET FROM REG RD OF THE HIGH ORDER END
0125 * OF THE STRING TO BE DECODED
0126 * LENGTH IS LENGTH OF THE STRING, LESS 1
0127 * BASE IS THE NUMBER BASE, TYPICALLY 10 OR 16
0128 * THE ANSWER COMES AS A DBLWRD IN REGS #2,#3
0129 *****:*****:*****
0130 0068 48800072 DTB ST 0,DSVR
0131 006A 74800000 BL 0,RSVAV SAVE REGS
0132 006C 7082007A B DTB1
0133 006E 74800016 DTB2 BL 0,RRES RESTORE REGS
0134 0070 72820005 B 5,0 RETURN
0135 0072 DSVR RFS 8 REC SAVE AREA
0136 *
0137 * INITIALIZE BASE TO CURRENT POWER; (POWER = 0)
0138 007A 44850001 DTP1 LA 5,1
0139 007C 488500A4 ST 5,DWK2 INIT BASE-TO-POWER
0140 *
0141 007E 44850000 LA 5,0
0142 0080 488500A5 ST 5,DACC ZERO DBLWRD ACCUMULATOR
0143 0082 488500A6 ST 5,DACC+1
0144 * FLD IS DECODED RIGHT TO LEFT. R1 IS THE OFFSET IN
0145 * FLD OF THE CURRENT DIGIT, USED AS A LOOP COUNTER
0146 0084 46010003 L 1,3,0 LENGTH PARAMETER
0147 * GET ADDRESS OF NEXT DIGIT
0148 0086 46020002 DNC1 L 2,2,0 FLD PARAM
0149 0088 4EC20000 AA 2,0,RD ADDR OF FLD IN R2
0150 008A 4E920000 AA 2,0,1 ADDR OF NXT DIGIT TO DECODE

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0151          * CONVERT CURRENT DIGIT
0152 008C 462A0000 L #2,0.2 CURNT DIGIT IN #2
0153 008E 588A000F NA #2,X'000F' MASK CURRENT DIGIT
0154 0090 CC0A00A4 M #2,DWK2 MULT BY BASE-TO-POWR
0155 0092 E80A00A5 DAD #2,DACC ACCUM TOTAL SO FAR
0156          * SEE IF FINISHED YET
0157 0094 0C1F0098 ARB -1,DNC.1 DECR OFFSFT OF NXT DIGIT
0158 0096 7082006E B DTB2 RETURN IF NEG OFFSET
0159          * NOT DONE. SET UP FOR NXT DIGIT
0160 0098 488A00A5 DNC ST #2,DACC SAVE CURENT CONVERTED TOTAL
0161 009A 488B00A6 ST #3,DACC+1
0162          *
0163 009C 440A00A4 L #2,DWK2 OLD BASE-TO-POWER
0164 009E CE0A0004 M #2,4,0 MULT BY BASE
0165 00A0 488B00A4 ST #3,DWK2 NEW BASE-TO-POWR
0166          *
0167 00A2 70820086 B DNC1 GO DO NXT DIGIT
0168          *
0169          **** CONSTANTS AND WORK AREAS ****
0170 00A4 DWK2 RFS 1 BASE TO CURRENT POWER
0171 00A5 DACC RES 2 DBLWRD ACCUMULATOR
0172          ****
0173          *
0174          *
0175          *
0176          **** CONVERT TIME ROUTINE (CTME) ****
0177          * CALLING SEQUENCE:
0178          * BL 0,CTME
0179          * DATA ADDRA,ADDRB
0180          *
0181          * ASCII TIME HHMMSSMMM AT ADDRA IS CONVERTED TO 4 BINARY
0182          * WORDS H.M.S.MS STORED AT ADDR8
0183          ****
0184 00A7 488000B1 CTME ST 0,CTSVR
0185 00A9 74800000 BL 0,RSV SAV SAVE REGS
0186 00AB 708200B9 B CT1
0187 00AD 74800016 CT2 BL 0,RRES RESTORE REGS
0188 00AF 72820004 B 4,0 RETURN
0189 00B1 CTSVR RES 8 REG SAVE AREA
0190          *
0191 00B9 46040002 CT1 L RD,2,0 ADDRA IN RD
0192 00BB 46010003 L 1,3,0 ADDR8 IN R1
0193          *
0194 00BD 74800068 BL 0,DTB
0195 00BF 0000 DATA 0,1,10 CONVERT HOURS TO BIN
00C0 0001
00C1 000A
0196 00C2 4A9B0000 ST #3,0.1 STORE IN ADDR8
0197 00C4 74800068 BL 0,DTB
0198 00C6 0002 DATA 2,1,10 MINS

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00C7 0001
00C8 000A
0199 00C9 4A9B0001      ST  #3,1,1      STORE IN ADDR+1
0200 00CB 74800068      BI  0,DTB
0201 00CD 0004          DATA 4,1,10     SECONDS
00CE 0001
00CF 000A
0202 00D0 4A9B0002      ST  #3,2,1      STORE IN ADDR+2
0203 00D2 74800068      BI  0,DTB
0204 00D4 0006          DATA 6,2,10     MSECS
00D5 0002
00D6 000A
0205 00D7 4A9B0003      ST  #3,3,1      STORE IN ADDR+3
0206
0207 00D9 708200AD      B   CT2          GO RETURN
0208
0209
0210
0211
0212 *****MULT FLD MOVE ROUTINE (MMOV) *****
0213 * CALLING SEQUENCE:
0214 *   BL   0,MMOV
0215 *   DATA N          NBR OF FLDS TO MOVE
0216 *   DATA LNTH1,ADDR1,ADDRF1
0217 *   .
0218 *   .
0219 *   .
0220 *   DATA LNTHN,ADDREN,ADDRFN
0221 *
0222 * LNTH IS NBR OF CHARS TO BE MOVED, LESS 1
0223 * IF LNTH=-1 A SPECIAL TIME FLD MOVE IS DONE:
0224 * FLD HHMMSSMM IS MOVED TO HH:MM:SS.MMM
0225 * ADDR1 IS THE OFFSET FROM RE OF THE LEFT END OF
0226 * THE ORIGINATING FIELD
0227 * ADDR2 IS THE OFFSET FROM RE OF THE LEFT END OF
0228 * THE RECEIVING FIELD
0229 * THE FIELDS ARE MOVED FROM 1 TO N AND FROM LEFT
0230 * TO RIGHT
0231 *****
0232 00DB 488000E5 MMOV ST  0,MSVR
0233 00DD 74800000 BL  0,RSV          SAVE RIGS
0234 00DF 708200ED B   M1
0235 00E1 74800016 M2  BI  0,RRES          RESTORE RIGS
0236 00E3 72820003 B   3,0          RETRN TO 3+ADDR STORD IN MSVR
0237 00E5          MSVR RES  8          REG SAVE AREA
0238
0239 00ED 46050002 M1   L   5,2,0          NBR OF FLDS TO MOVE
0240 00EF 46E20000 MNF  LA  2,0,RF
0241 00F1 4E020004 A   2,4,0
0242 00F3 46F30000 LA  3,0,RF

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0243 00F5 4E030005      A    3.5.0      COMPUTE ADDR#
0244                      *
0245 00F7 46010003      L    1.3.0      LNGTH PARAM
0246 00F9 E08C0111      BC   LT,MTME    NEG LNGTH IS TIME MOVE
0247 00FB 74840107      BL   4,MLOOP    MOVE HR FLD
0248 00FD 46800003      MORE LA 0.3.0    SET R0 FOR NXT FLD
0249 00FF 50850001      SA   5.1        DECR NBR OF FLDS
0250 101 E08A00EF      BC   GT,MNF     GO DO NXT FLD, IF ANY
0251                      * NO MORE FLDS
0252 0103 488000E5      ST   0,MSVR    SETUP FOR TRICK RETURN
0253 0105 708200E1      B    M2        GO RETURN
0254                      ** LOOP TO MOVE FLD
0255 0107 14004C00      MLOOP MOV (0.2),(0.3) MOVE NXT CHAR
0256 0109 4C820001      AA   2.1       INCR R2
0257 010B 4C830001      AA   3.1       INCR R3
0258 010D 0C1F0107      ARB  -1,MLOOP.1 USE R1 (LNGTH) AS LOOP CNTR
0259 010F 72C20002      B    2.4
0260                      ** SPECIAL TIME MOVE
0261 0111 448A003A      MTME LA #2,X'3A'  ' '
0262 0113 4ABA0002      ST   #2,2.3
0263 0115 4ABA0005      ST   #2,5.3
0264 0117 448A002E      LA   #2,X'2E'  ' '
0265 0119 4ABA0008      ST   #2,8.3
0266                      *
0267 011B 44810001      LA   1.1
0268 011D 74840107      BL   4,MLOOP    MOVE HR FLD
0269 011F 4C830001      AA   3.1
0270 0121 44810001      LA   1.1
0271 0123 74840107      BL   4,MLOOP    MOVE MIN FLD
0272 0125 4C830001      AA   3.1
0273 0127 44810001      LA   1.1
0274 0129 74840107      BL   4,MLOOP    MOVE SEC FLD
0275 012B 4C830001      AA   3.1
0276 012D 44810002      LA   1.2
0277 012F 74840107      BL   4,MLOOP    MOVE MSEC FLD
0278 0131 708200FD      B    MORE      DO ANY MORE FLDS
0279                      ****
0280                      *
0281                      *
0282                      *
0283                      **** CONVRT BIN TO ASCII (JASCI) ****
0284                      * CALLING SEQUENCE:
0285                      *     BL 0,JASCI
0286                      *     DATA LNCTH      LNGTH OF RESLT FLD LESS 1
0287                      *     DATA ADDR#      ADDR OF RESLT FLD
0288                      *
0289                      * ROUTINE CONVERTS THE BINARY WORD IN #2 INTO A
0290                      * BASE 10 ASCII STRING OF LENGTH LNCTH+1 WITH
0291                      * LEFT END AT ADDR#
0292                      * THIS ROUTINE IS NOW JUST AN INTERFACE TO THE

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0293          * NEWER ROUTINE 'XASCI'
0294          ****
0295 0133 4880013D JASCI ST 0,JASVR
0296 0135 74800000          BL 0,RSABV          SAVE REGS
0297 0137 70820145          B JA1
0298 0139 74800016 JA2 BL 0,RRES          RESTORE REGS
0299 013B 72820004          B 4.0          RETURN
0300 013D          JASVR RES 8          REG SAVE AREA
0301          *
0302 0145 440B008A JA1 L #3,W2          SETUP TO CALL XASCI
0303 0147 448A0000          LA #2.0
0304          *
0305 0149 46010002          L 1.2.0          ARGS FORR XASCI CALL
0306 014B 48810153          ST 1,JAFAB
0307 014D 46010003          L 1.3.0
0308 014F 48810154          ST 1,JAFB
0309          *
0310 0151 74800000          BL 0,XASCI
0311 0153 0153          JAFAB DATA $
0312 0154 0154          JAFB DATA $
0313 0155 70820139          B JA2          GO RETURN
0314          ****
0315          *
0316          *
0317          *
0318          ***** AVG TIME IN ASCII (HAT) *****
0319          * CALLING SEQUENCE:
0320          * BL 0,HAT
0321          * DATA ADDR          OFFSET FROM RE
0322          * DATA ADDR          ABSOLUTE
0323          *
0324          * ROUTINE TAKES A SIX BIN WRD FLD
0325          * (H,M,S,MS,#COMPL,#INCOMPL) AT (ADDRE,RE)
0326          * AND PLACES THE AVG TIME (H,M,S,MS)/#COMPL
0327          * AT ADDR B AS AN ASCII STRING HH:MM:SS.MMM
0328          ****
0329 0157 48800161 HAT ST 0,HASVR
0330 0159 74800000          BL 0,RSABV          SAVE REGS
0331 015B 70820169          B HA1
0332 015D 74800016 HA2 BL 0,RRES          RESTORE REGS
0333 015F 72820004          B 4.0          RETURN
0334 0161          HASVR RES 8          REG SAVE AREA
0335          *
0336 0169 46E10000 HA1 LA 1.0,RE
0337 016B 4E010002          A 1.2.0          (ADDRE,RE) IN R1
0338          *
0339 016D 46120004          L 2.4.1          # MSGS COMPLETED
0340 016F 4882018B          ST 2,HAN          NBR TO DIV BY
0341 0171 E08B01B7          BC EQ,HAZD          CAN'T DIV BY ZERO
0342          * SETUP FOR INTERNAL SUBROUTINE

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0343 0173 44840000 LA 4.0
0344 0175 46150000 L 5.0,1 HR FLD AS DBLWRD
0345 *
0346 * DIVIDE AND CONVERT TO ASCII ON TIME FLD AT
0347 * A TIME
0348 0177 748001A7 BL 0,HAS FIND AVG HOURS
0349 0179 003C DATA 60 60 MINS/HR
0350 017A 74800133 BI 0,JASCI CONVERT TO ASCII STRING
0351 017C 0001 DATA 1,HANS
017D 01CB
0352 *
0353 017E 4C810001 AA 1.1 R1 PNTS TO MIN FLD
0354 0180 748001A7 BL 0,HAS FIND AVG MINS
0355 0182 003C DATA 60 60 SECS/MIN
0356 0183 74800133 BL 0,JASCI CONVRT TO ASCII
0357 0185 0001 DATA 1,HANS+3
0186 01CE
0358 *
0359 0187 4C810001 AA 1.1 R1 PNTS TO SEC FLD
0360 0189 748001A7 BL 0,HAS FIND AVG SECS
0361 018B 03F8 DATA 1000 1000 MSECS/SEC
0362 018C 74800133 BL 0,JASCI CONVRT TO ASCII
0363 018E 0001 DATA 1,HANS+6
018F 01D1
0364 *
0365 0190 4C810001 AA 1.1 R1 PNTS TO MSEC FLD
0366 0192 748001A7 BI 0,HAS FIND AAVG MSECS
0367 0194 0000 DATA 0
0368 0195 74800133 BL 0,JASCI CONVRT TO ASCII
0369 0197 0002 DATA 2,HANS+9
0198 01D4
0370 *
0371 * MOVE ANSWER TO ADDR8
0372 0199 448601CB LA RE,HANS SET RE FOR MMOV CALL
0373 019B 44000161 HAMA L 0,HASVR RESTORE R0
0374 019D 46070003 L RF,3,0 ADDR8 IN RF FOR MMOV CALL
0375 019F 748000DB BL 0,MMOV MOVE ANSWER
0376 01A1 0001 DATA 1,11:0.0
01A2 000B
01A3 0000
01A4 0000
0377 *
0378 01A5 7082015D B HA2 GO RETURN
0379 *
0380 *** INTERNAL SUBROUTINE: SAME CODING USED FOR HR,MIN,
0381 * SEC,MSEC FLDS TO COMPUTE AVG & CONVERT REMAINDER
0382 * TO SET UP FOR NEXT FLD
0383 01A7 D00401BB HAS D 4,HAN DIV TME FLD BY NBR MSGS
0384 01A9 488501BC ST 5,HAW1 SAVE AVG OF CURNT FLD
0385 * SET UP FOR NEXT TIME FLD

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0386 01AB CE040002      M   4,2,0      MULT REMANDER BY CONV FACTOR
0387 01AD 461A0001      L   #2,1,1     NXT TME FLD
0388 01AF 488A01BF      ST  #2,HAW2+1   SET UP FOR DAD
0389 01B1 E80401FD      DAD 4,HAW2      NXT FLD + CNVRTD REMAINDER
0390 01B3 440A01BC      L   #2,HAW1     PREPARE TO CALL JASCII
0391 01B5 72820003      B   3,0        RETURN
0392
0393                    *
0394 01B7 448601RF HAZD LA RE,HA9S   RETURN ALL NINES AVG
0395 01B9 7082019B      B   HAMA
0396                    *
0397                    **** TABLES & SCRATCH ****
0398 01BB HAN RES 1 NBR TO AVG BY
0399 01BC HAW1 RES 1 SCRATCH TO HOLD AVG OF A FLD
0400 01BD 0000 HAW2 DATA 0,0 SCRATCH FOR CARRY REMANDER OVER
0401 01BF 2E202E20 HA9S DATA C'. . .!. . .! . . . . . '
0401 01C1 2E3A2E20
0401 01C3 2E202E3A
0401 01C5 2E202E20
0401 01C7 2E2E2E20
0401 01C9 2E202E20
0402 01CB 2E2F2E2F HANS DATA C'./././././././././././././././.'
0402 01CD 2E3A2E2F
0402 01CF 2E2F2E3A
0402 01D1 2E2F2F2F
0402 01D3 2E2E2E2F
0402 01D5 2E2F2E2F
0403 *****:*****:*****
0404 *
0405 *
0406 *
0407 ***** COUNT (CNT) *****
0408 * CALLING SEQUENCI:
0409 * BL 0,CNT
0410 *
0411 * CALLED ONCE FOR EACH MTR, ROUTINE ACCUMULATES
0412 * ELAPSED TIME & NBR OF MSGS SUCCESSFUL & UNSUCCESSFUL
0413 * FOR VARIOUS MSG LNCTHS IN A TABLE (BTOT) TO BE
0414 * USED FOR COMPUTATIONS AT END OF RUN
0415 *****:*****:*****
0416 01D7 488001E1 CNT ST 0,CNSVR
0417 01D9 74800000 BL 0,RSABV SAVE REFS
0418 01DB 708201E9 B CNT1
0419 01DD 74800016 CNT2 BL 0,RRES RESTORE REFS
0420 01DF 72820002 B 2,0 RETURN
0421 01E1 CNSVR RES 8 REG SAVE AREA
0422 *
0423 ** SET R0 TO PNT TO CNTRS FOR APPROPRIATE MSG
0424 * LENGTH

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0425 01E9 4480025D CNT1 LA 0,BTOT BASE OF TABLE
0426 01EB 44850000 LA 5,UTIL BASE REC
0427 *
0428 01FD 44010000 L 1,MPLH MSG LNTH
0429 01EF C0810002 CRA 1,2
0430 01F1 E08C0201 BC LT,CNML1 LNTH 0.1
0431 01F3 C081001F CRA 1,31
0432 01F5 E08C01FF BC LT,CNML2 LNTH 2-30
0433 01F7 C0810079 CRA 1,121
0434 01F9 E08C01FD BC LT,CNML3 LNTH 120-219
0435 *
0436 01FB 4C80000D AA 0,13 LNTH 121 & UP
0437 01FD 4C80000D CNML3 AA 0,13
0438 01FF 4C80000D CNML2 AA 0,13
0439 0201 70070000 CNML1 NOP
0440 *
0441 ** DOFS MTR REPRESENT COMPLETE OR INCOMPL MSG?
0442 0203 44010000 L 1,MCC COMPLETION CODE
0443 0205 588100FF NA 1,X'00FF' MASK FOR CHARACTER
0444 0207 C0810043 CRA 1,X'0043' IS IT 'C'
0445 0209 E08B020F BC EQ,CNCPL BRNCH IF 'C'
0446 * MSG INCOMPLETE
0447 020B 20050001 AMI (5,0),1 CNT INCOMPL MSGS OF THIS LNTH
0448 020D 708201DD B CNT2 GO RETURN
0449 * MSG COMPLETE
0450 020F 20040001 CNCPL AMI (4,0),1 CNT COMPL MSGS OF THIS LNTH
0451 ** ADD ELAPSED TIME FOR THIS MSG TO PREVIOUS TOTAL
0452 * ELAPSED TIME FOR THIS LNTH
0453 * LOOP 4 TIMES FOR MSEC,SEC,MINS,HR
0454 0211 44010003 LA 1,3 R1 AS LOOP CNTR
0455 0213 46130000 CNETL L 3,MPET,1 END-TME FLD
0456 0215 52130000 S 3,MPBT,1 MINUS BEG-TME FLD
0457 *
0458 0217 46820000 LA 2,0,0 ENTRY IN BTOT
0459 0219 4E920000 AA 2,0,1 OFFSET IN THIS ENTRY
0460 *
0461 021B 4E230000 A 3,0,2 ADD OLD TOTAL
0462 021D 4AA30000 ST 3,0,2 STORE NEW TOTAL
0463 021F 0C1F0213 ARB -1,CNETL,1 LOOP FOR NXT TME FLD
0464 *
0465 ** CHECK MIN,SEC,MSEC CNTRS TO BE IN PROPER RANGES
0466 * TEST MSEC CNTR FOR 0-999
0467 0221 18031659 CNTMS CML (3,0),CNL1
0468 0223 70820235 B CNMSL GO FIX NEG MSEC
0469 0225 7082023B B CNMSH GO FIX MSFCS>999
0470 * TEST SEC CNTR FOR 0-59
0471 0227 1802165B CNTS CML (2,0),CNL2
0472 0229 70820241 B CNSL GO FIX NEG SECS
0473 022B 70820247 B CNSH GO FIX SECS>59
0474 * TEST MIN CNTR FOR 0-59

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0475 022D 1801165B CNTM CML (1.0).CNL2
0476 022F 7082024D B CNML GO FIX NEG MINS
0477 0231 70820253 B CNMH GO FIX MINS>59
0478 *
0479 0233 708201DD B CNT2 GO RETURN
0480 *
0481 *** ADJUST TOTALS TO PROPER RANGES IF NECESSARY
0482 * MSECS
0483 0235 200303E8 CNMSL AMI (3.0).1000 ADD 1000 MSECS
0484 0237 20021FFF AMI (2.0).-1 SUBTRACT 1 SEC
0485 0239 70820221 B CNTMS
0486 023B 20031C18 CNMSH AMI (3.0).-1000 SUB 1000 MSECS
0487 023D 20020001 AMI (2.0).1 AD 1 SEC
0488 023F 70820221 B CNTMS
0489 * SECS
0490 0241 2002003C CNSL AMI (2.0).60 ADD 60 SECS
0491 0243 20011FFF AMI (1.0).-1 SUB 1 MIN
0492 0245 70820227 B CNTS
0493 0247 20021FC4 CNSH AMI (2.0).-60
0494 0249 20010001 AMI (1.0).1
0495 024B 70820227 B CNTS
0496 * MINS
0497 024D 2001003C CNML AMI (1.0).60 ADD 60 MINS
0498 024F 20001FFF AMI (0.0).-1 SUB 1 HR
0499 0251 7082022D B CNTM
0500 0253 20011FC4 CNMH AMI (1.0).-60
0501 0255 20000001 AMI (0.0).1
0502 0257 7082022D B CNTM
0503 *
0504 *** TABLES & SCRATCH ***
0505 0259 0000 CNL1 DATA 0.999 MSEC LIMITS
025A 03E7
0506 025B 0000 CNL2 DATA 0.59 MIN,SEC LIMITS
025C 003B
0507 * TABLE TO ACCUMULATE ELAPSED TIMES & NBR
0508 * COMPLETE/INCOMPLETE
0509 025D BTOT RES 4 H,M,S,MS FOR LNTH 0.1
0510 0261 RES 2 NBR COMPL/INCMPL FOR 0.1
0511 0263 2E302E30 DATA C'.0.0.0.-.0.0.1' CHARS FOR PRINTING
0265 2E302E2D
0267 2E302E30
0269 2E31
0512 *
0513 026A RES 6 FOR MSG LNTHS 2-30
0514 0270 2E302E30 DATA C'.0.0.2.-.0.3.0'
0272 2E322E2D
0274 2E302E33
0276 2E30
0515 *
0516 0277 RES 6 FOR LNTH 31-120

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0001          ***** VTIL *****
0002          * MORE UTILITY ROUTINES
0003          *****
0004 0004      VTIL   PSEG
0005 0000      MODE
0006          *
0007          ** SYMBOLIC STATUS ASSIGNMENTS
0008 000A      GT     EQU  10
0009 000B      EQ     EQU  11
0010 000C      LT     EQU  12
0011 0001      OV     EQU  1
0012          ** SYMBOLIC REG ASSIGNMENTS
0013 0004      RD     EQU  4
0014 0006      RE     EQU  6
0015 0007      RF     EQU  7
0016 0081      R1     EQU  X'81'
0017 0083      R3     EQU  X'83'
0018 008A      W2     EQU  X'8A'
0019 008B      W3     EQU  X'8B'
0020          ***** EXTERNALS *****
0021 0000      DEF   DDIV,DDQ,DDR
0022 0000      DFF   XASCI,WCN,LPRCT,YDPD
0023          *****
0024 0000      REF   RSAV,RRES,JASCI,MMOV
0025          *****
0026          PAGE
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0027          ***** NORMALIZE APR DATA (WCN) *****
0028          * CALLING SEQUENCE:
0029          *       BL      0,WCN
0030          *       DATA  A,B,C
0031          *       DATA  ADDR      ABS ADDR
0032          *
0033          * RETURNS WITH ABSOLUTE VALUE OF (AX/1000C)+B IN
0034          * #2 (BINARY), & ITS SIGN (ASCII) IN #3. C ALLOWS
0035          * ADDED SIGNIFICANCE IN THE LINEAR PARAMS A,B
0036          *****
0037 0000 4880000A WCN      ST      0,WCSVR
0038 0002 74800000 BL      0,RSVAV      SAVE REGS
0039 0004 70820012 B        WC1
0040 0006 74800000 WC2     BL      0,RRES      RESTORE REGS
0041 0008 72820006 B        6,0      RETURN
0042 000A          WCSVR   RES     8      REG SAVE AREA
0043          *
0044 0012 46040005 WC1     L        4,5,0
0045 0014 46440000 L        4,0,4      ARG X IN R4
0046 0016 CE040002 M        4,2,0      MULT X BY A
0047 0018 448A01F4 LA      #2,500      FIGURE PROPER DIGIT
0048 001A CE0A0004 M        #2,4,0      FOR ROUND OFF
0049 001C E804000A DAD     4,X'8A'      ROUND OFF
0050 001E 448A03E8 LA      #2,1000
0051 0020 CE0A0004 M        #2,4,0      1000*C
0052 0022 D0040008 D        4,X'8B'      AX/1000C ROUNDED OFF
0053 0024 4E050003 A        5,3,0      (AX/1000)+B
0054          *
0055 0026 448B002B LA      #3,X'002B'   ASCII PLUS SIGN
0056 0028 46DA0000 LA      #2,0,5      ANSWER IN #2
0057 002A E08C002E BC     LT,WCSM      TEST SIGN,BRCH IF NEG
0058 002C 70820006 B        WC2        SGN POS, GO RETURN
0059          * SIGN NEGATIVE
0060 002E 448B802D WCSM   LA      #3,X'802D'   MINUS SIGN
0061 0030 408AFFFF XORA   #2,X'FFFF'   ONES COMPLEMENT ANSWER
0062 0032 4C8A0001 AA      #2,1      TWOS COMPLEMENT
0063 0034 70820006 B        WC2        GO RETURN
0064          *****
0065          PAGE

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0066          ***** DBL DIV (DDIV) *****
0067          * CALLING SEQ:
0068          *      BL      0,DDIV
0069          *      DATA ADND      ADDR OF DBLWRD DIVIDEND
0070          *      DATA ADIV      ADDR OF DBLWRD DIVISOR
0071          *
0072          * DIVIDEND & DIVISOR ARE POSITIVE DBLWRDS
0073          * THE DBLWRD QUOTIENT IS LEFT IN 'DDQ'
0074          * THE DBLWRD REMAINDER IS LEFT IN 'DDR'
0075          *****
0076  0036 48800040 DDIV  ST  0,DDSVR
0077  0038 74800000      BL  0,RSBV
0078  003A 70820048      B   DD1
0079  003C 74800000 DD2  BL  0,RRES
0080  003E 72820004      B   4,0      RETURN
0081  0040      DDSVR RES  8      REG SAVE AREA
0082          *
0083  0048 46000002 DD1  L   0,2,0      ADDR OFF DIVDND
0084  004A 46010000      L   1,0,0      DIVDND IN R1,R2
0085  004C 46020001      L   2,1,0
0086          *
0087  004E 44000040      L   0,DDSVR      RESTRE R0 TO ARG STRING
0088  0050 46000003      L   0,3,0      ADDR OF DIVSOR
0089  0052 46030000      L   3,0,0      DIVSOR IN R3,R4
0090  0054 46040001      L   4,1,0
0091          *
0092  0056 44860000      LA  6,0      INIT FOR QUOT IN R6,R7
0093  0058 44870000      LA  7,0
0094          *
0095  005A 44800001      LA  0,1
0096  005C 4880008B      ST  0,DDINC+1  START INCREMENT WORD
0097  005E 4886008A      ST  6,DDINC    AS (0,1)
0098          * LOOP TO POSITION DIVISOR & INCREMENT
0099  0060 4480FFE1      LA  0,-31     LOOP CNTR
0100  0062 C8010083 DDL1 DLA 1,R3     SHIFT DIVSOR LEFT 1
0101  0064 E081006C      BC  0V,DDL10  BRNCH IF TOO FAR
0102  0066 C801008A      DLA 1,DDINC   SHIFT INCR TO MATCH DIVSOR
0103  0068 0C010062      ARB 1,DDL1,0  LOOP
0104  006A 7082006A DDZD B   DDZD     ZERO DIVIDE ERROR
0105  006C D8010083 DDL10 DRL 1,R3   CORRECT OVERSHIFT OF DIVSOR
0106  006E 4680001F      LA  0,31,0   'SUBTRACT LOOP' CNTR
0107          * SUBTRACT & SHIFT LOOP
0108  0070 EC010083 DDL2 DS 1,R3    SUB SHIFTED DVSR FROM DVDND
0109  0072 E08C0078      BC  LT,DDL2S  BRNCH IF NO DIVIDE
0110  0074 E806008A      DAD 6,DDINC   INCR QUOTNT
0111  0076 7082007A      B   DDL2T
0112          *
0113  0078 E8010083 DDL2S DAD 1,R3   CORECT XTRA SUBTRCT OF DIVSOR
0114  007A D8010083 DDL2T DRL 1,R3   SHIFT DIVSOR & INCR
0115  007C D801008A      DRL 1,DDINC   FOR NXT QUOT BIT

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0116 007E 0C0F0070      ARB  -1,DDL2,0  LOOP
0117                    * COMPUTATION FINISHED
0118 0080 4886008C      ST   6,DDQ      RETURN QUOTNT
0119 0082 4887008D      ST   7,DDQ+1    RETURN REMAINDR
0120 0084 4881008E      ST   1,DDR      RETURN REMAINDR
0121 0086 4882008F      ST   2,DDR+1    RETURN REMAINDR
0122 0088 7082003C      B    DD2        GO RETURN
0123                    *
0124                    ***** DATA & SCRATCH *****
0125 008A      DDINC RES 2      INCREMENT DBLWRD
0126 008C      DDQ  RES 2      QUOTIENT DBLWRD
0127 008E      DDR  RES 2      REMAINDER DBLWRD
0128                    *****
0129                    PAGE
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0130          ***** XASCI *****
0131          * CALLING SEQ:
0132          *      BL      0,XASCI
0133          *      DATA LNGTH      LNGTH OF RESULT FLD LESS 1
0134          *      DATA ADDR      ADDR OF RESULT FLD
0135          *
0136          *      CONVERTS THE BINARY DBLWRD IN #2,#3 INTO A BASE
0137          *      10 ASCII STRING OF LENGTH LNGTH+1 WITH LEFT END AT
0138          *      ADDR      B
0139          *****
0140 0090 4880009A XASCI ST 0,XASVR
0141 0092 74800000      BL 0,RSAB
0142 0094 708200A2      B  XA1
0143 0096 74800000 XA2  BL 0,RRES
0144 0098 72820004      B  4,0
0145 009A          XASVR RES 8
0146          *
0147 00A2 46010002 XA1  L  1,2,0      R1 IS LOOP CNTR
0148          *
0149          ** MAIN LOOP
0150 00A4 488A00DA XAL  ST #2,XDND      SAVE INPUT
0151 00A6 488B00DB      ST #3,XDND+1
0152          * GET BASE 10 TO APPROPRIATE POWER
0153 00A8 60010081      MLA 1,R1
0154 00AA 461200DE      L  2,XAPT,1
0155 00AC 461300DF      L  3,XAPT+1,1
0156 00AE 64010081      MRA 1,R1
0157 00B0 488200DC      ST 2,XABTP
0158 00B2 488300DD      ST 3,XABTP+1
0159          * COMPUTE NEXT DIGIT
0160 00B4 74800036      BL 0,DDIV      DIVIDE REMNDR OF INPUT
0161 00B6 00DA          DATA XDND,XABTP      BY CURRENT BASE-TO-POWER
0162          *
0162 00B8 440A008E      L  #2,DDR      SAVE REMAINDER
0163 00BA 440B008F      L  #3,DDR+1
0164          *
0165 00BC 4403008D      L  3,DDQ+1      QUOTNT IS NXT DIGIT
0166 00BE 4C830030      AA 3,X'30'      MAKE IT ASCII DIGIT
0167          * TEST DIGIT FOR RANGE
0168 00C0 C0830030      CRA 3,X'30'
0169 00C2 E08C00C8      BC LT,XANG      BRNCH IF NO GOOD
0170 00C4 C083003A      CRA 3,X'3A'
0171 00C6 E08C00CA      BC LT,XAYG      BRNCH IF GOOD
0172 00C8 4483002A XANG LA 3,X'2A'      SHOW '*' FOR NO GOOD
0173 00CA 70070000 XAYG NOP
0174          * COMPUTE WHERE TO PUT THIS DIGIT IN ANSWER FLD
0175 00CC 4400009A      L  0,XASVR      RESTRE R0 TO ARG STRING
0176 00CE 46020002      L  2,2,0      LNGTH
0177 00D0 52920000      SA 2,0,1      OFFSET FROM ANS FLD
0178 00D2 4E020003      A  2,3,0      + ADDR OF ANS FLD

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0179 00D4 4AA30000      ST      3,0,2      PUT DIGIT IN ANS FLD
0180                                *
0181 00D6 0C1F00A4      ARB     -1,XAL,1    LOOP FOR NXT DIGIT
0182 00D8 70820096      B       XA2        GO RETURN IF NO MORE
0183                                *
0184                                ***** DATA & TABLES *****
0185 00DA                XDND    RES 2      CURRENT REMAINDER OF INPUT
0186 00DC                XABTP   RES 2      CURRENT BASE-TO-POWER
0187 00DE 0000          XAPT    DATA 0,1    TABLE OF POWERS OF 10
                                DATA 0,10
0188 00DF 0001
                                DATA 0,100
0189 00E0 0000
                                DATA 0,1000
0190 00E1 000A
                                DATA 0,10000
0191 00E2 0000
                                DATA X'1',X'86A0'
0192 00E3 0064
                                DATA X'F',X'4240'
0193 00E4 0000
                                DATA X'98',X'9680'
0194 00E5 03E8
                                DATA X'5F5',X'E100'
0195 00E6 0000
                                DATA X'3B9A',X'CA00'
0196 00E7 2710
                                *****
0197 00E8 0001
                                PAGE
0198 00E9 86A0
0199 00EA 000F
0200 00EB 4240
0201 00EC 0098
0202 00ED 9680
0203 00EE 05F5
0204 00EF E100
0205 00F0 3B9A
0206 00F1 CA00

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0199
0200          **** COMPUTE PERCENTAGE (LPRCT) ****
0201          * CALLING SEQUENCE:
0202          *       BL 0,LPRCT
0203          *       DATA ADDR      OFFSET FROM RF
0204          *       DATA ADDR      OFFSET FROM RF
0205          *       DATA ADDR      ABSOLUTE ADDRESS
0206          *
0207          * ROUTINE TAKES BINARY WORDS AT (ADDR,RF) &
0208          * (ADDRF,RF), COMPUTES (E*10000/F), & PUTS
0209          * IT AS A PRINTABLE ASCII STRING MNN.NNN AT
0210          * ADDR.
0211          *****
0211 00F2 488000FC LPRCT ST 0,LPSVE
0212 00F4 74800000 BL 0,RSVAV          SAVE REGS
0213 00F6 70820108 B LP1
0214 00F8 74800000 LP2 BL 0,RRES          RESTORE REGS
0215 00FA 72820005 B 5.0          RETURN
0216 00FC          LPSVE RES 8          REG SAVE AREA
0217 0104          LPW RES 2          TO HOLD E*100000
0218 0106 0000     LPF DATA 0.0     TO HOLD ARG F
0219 0107 0000
0219
0220 0108 4E060002 LP1 A RE,2.0          (ADDR,RF) IN RE
0221 010A 4E070003 A RF,3.0          (ADDRF,RF) IN RF
0222          * CHECK FOR 0 DIVIDE
0223 010C 46710000 L 1.0,RF          TEST ARG F
0224 010E 48810107 ST 1,LPF+1        SAVE ARG F
0225 0110 E08A0125 BC GT,LPNZ        BRNCH IF NOT 0
0226 0112 46070004 L RF,4.0          ADDR FOR ANSWER
0227 0114 4486011E LA RE,LPBA        ADDR OF BLNK ANS
0228 0116 74800000 BL 0,MMOV         BLANKS TO ANS
0229 0118 0001     DATA 1.6.0.0
0229 0119 0006
0229 011A 0000
0229 011B 0000
0230 011C 708200F8 B LP2          GO RETURN
0231 011E 2E202E20 LPBA DATA C'. . . . . '
0231 0120 2E202E2E
0231 0122 2E202E20
0231 0124 2E20
0232
0232          *
0233 0125 448461A8 LPNZ LA 4.25000
0234 0127 CE640000 M 4.0,RE          E*25000 IN R4,R5
0235 0129 48840104 ST 4,LPW          HOLD E*25000
0236 012B 48850105 ST 5,LPW+1
0237          * MULT BY 4 TO GET E*100000
0238 012D 44800001 LA 0.1          LOOP CNTR
0239 012F C8010104 LPSL DLA 1,LPW        MULT BY 2
0240 0131 E0810137 BC OV,LPOV        BRNCH IF OVFLW
0241 0133 0C0F012F LPSL1 ARB -1,LPSL.0     LOOP

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0276          **** YDPD ****
0277          * CALLING SEQ:
0278          *      BI      0,YDPD
0279          *      DATA ADDR      LIST OF 4 BIN DBLWRDS
0280          *      DATA ADDR      LEFT END OF LINE BUFFER
0281          *
0282          * CONVERTS THE 4 BINARY DBLWRDS AT ADDR      TO 4
0283          * TEN DIGIT ASCII STRINGS AT ADDR+15, +28,
0284          * +40, +52
0285          ****
0286 0163 4880016D YDPD      ST      0,YDSVE
0287 0165 74800000 BI      0,RSVA
0288 0167 70820175 B      YD1
0289 0169 74800000 YD2      BI      0,RRES
0290 016B 72820004 B      4,0
0291 016D          YDSVE      RFS      8
0292          *
0293 0175 44810003 YD1      LA      1,3          LOOP CNTR
0294          *
0295 0177 4400016D YDL      L      0,YDSVE      BE SURE RO PNTS TO ARGS
0296 0179 46030003 L      3,3,0          ADDR      B
0297 017B 4E13018F A      3,YDLT,1      +OFFSET
0298 017D 4883018A ST      3,YDXCA      SETUP FOR XASCI CALL
0299          *
0300 017F 46020002 L      2,2,0          ADDR      A
0301 0181 4E120193 A      2,YDTT,1      +INDEX
0302 0183 462A0000 L      #2,0,2        BIN DBLWRD TO BE DISPLAYED
0303 0185 462B0001 L      #3,1,2
0304          *
0305 0187 74800090 BI      0,XASCI
0306 0189 0009      DATA      9
0307 018A 018A      YDXCA      DATA $      FILLED IN ABOVE
0308 018B 0C1F0177 ARB      -1,YDL,1      LOOP
0309 018D 70820169 B      YD2          GO RETURN
0310          *
0311          **** TABLES ****
0312 018F 0010      YDLT      DATA 16,28,40,52      TBL OF OFFSETS IN LINE
0313          0190 001C
0314          0191 0028
0315          0192 0034
0316          0193 0000      YDTT      DATA 0,2,4,6      TBL OF IINDEXES TO DBLWRD LIST
0317          0194 0002
0318          0195 0004
0319          0196 0006
0320          *****
0321          *
0322          *
0323          *
0324          *
0325          *
0326          *
0327          *
0328          *
0329          *
0330          *
0331          *
0332          *
0333          *
0334          *
0335          *
0336          *
0337          *
0338          *
0339          *
0340          *
0341          *
0342          *
0343          *
0344          *
0345          *
0346          *
0347          *
0348          *
0349          *
0350          *
0351          *
0352          *
0353          *
0354          *
0355          *
0356          *
0357          *
0358          *
0359          *
0360          *
0361          *
0362          *
0363          *
0364          *
0365          *
0366          *
0367          *
0368          *
0369          *
0370          *
0371          *
0372          *
0373          *
0374          *
0375          *
0376          *
0377          *
0378          *
0379          *
0380          *
0381          *
0382          *
0383          *
0384          *
0385          *
0386          *
0387          *
0388          *
0389          *
0390          *
0391          *
0392          *
0393          *
0394          *
0395          *
0396          *
0397          *
0398          *
0399          *
0400          *
0401          *
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0001          ***** MAIN *****
0002          ***** MSG TRANSACTION RECORD (MTR) *****
0003 0000'    MTR      DSEG
0004          *
0005 0000'    MTYPE   RES 1      =0 FOR MTR, >0 FOR ERR TYPE
0006 0001'    MCHK    RES 1      I/O CHECK CHAR, BECOMES REC LENGH
0007          ** RECORD AS READ
0008 0002'    MCC      RES 1      COMPLETION CODE: C/B/N/R
0009 0003'    MID      RES 5      MSG ID - NNNNA
0010          * BEGIN TIME
0011 0008'    MBT      RES 9      HHMMSSMMM
0012          * END TIME
0013 0011'    MET      RES 9      HHMMSSMMM
0014          *
0015 001A'    MLH      RES 2      MSG LENGH IN BCH
0016 001C'    MMOD     RES 1      MODE: ASCII 1/2/3/H
0017 001D'    MSN      RES 1      SCENARIO MSG NBR: K OR 0-15 (BCH)
0018          ** SOME MTR FIELDS CONVERTED TO BINARY
0019 001E'    MPBT     RES 4      BEG TIME, 4 BIN WRDS  H.M.S.MS
0020 0022'    MPET     RES 4      END TIME
0021 0026'    MPLH     RES 1      MSG LENGTH
0022          *****
0023 0027'    END

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0024          **** GROUND RECORD (ERR TYPE) ****
0025 0027    GREC   DSEG
0026          *
0027 0027    GTYPE  RES 1           =0 FOR MTR, >0 FOR ERR TYPE
0028 0028    GCHK   RES 1           I/O CHK CHAR, BECOMES REC LENGH
0029          *                       ALSO SET =0 FOR EOF SWITCH
0030          ** RECORD AS READ
0031 0029    GTIME  RES 9           TIME IN ASCII HHMMSSMMM
0032 0032    GCC    RES 1           COMPLETION CODE: N/B/R
0033 0033    GPRES  RES 19          PREAMBLE
0034 0037    GSOH   EQU CPRE+4     SOH CHAR IN PREAMBLE
0035 0038    GMOD   EQU GPRES+5    MODE CHAR IN PREAMBLE
0036 0046    GTXT   RES 550        TEXT
0037          ** TIME CONVERTED TO BINARY
0038 026C    GPT    RES 4           4 BIN WRDS: H.M.S.MS
0039          ****
0040 0270          END
```



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0041          ***** AIR RECORD (ERR TYPE) *****
0042 0270      AREC   DSEG
0043          *
0044 0270      ACHK   RES 1           I/O CHK CHAR, BECOMES REC LNTH
0045          *                   ALSO SET =0 FOR EOF MARKER
0046          ** RECORD AS READ
0047 0271      ATME   RES 9           TIME IN ASCII HHMMSSMM
0048 027A      APR    RES 13          ALT, PITCH, ROLL
0049 0287      ACC    RES 1           COMPLETION CODE
0050 0288      APRE   RES 19          PREAMBLE
0051 028D      AMOD   EQU APRE+5      MODE CHAR IN PREAMBLE
0052 029B      ATXT   RES 550        TEXT
0053          ** FLDS FOR # UPLNK TRANS REC
0054 0288      AUMID  EQU APRE        MSG ID FOR UTR
0055 028D      AUMOD  EQU AMOD        MODE FOR UTR
0056 028E      AUTL   EQU APRE+6      TXT LNTH FOR UTR
0057          ** TIME CONVERTED TO BINARY
0058 04C1      APT    RES 4           4 BIN WRDS: H.M.S.MS
0059          *****
0060 04C5      END
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0061 *****
0062 * ROUTINES THAT REFERENCE THE MTR GREC. & AREC
0063 * DSEGS, COLLECTED IN A PSEG
0064 *****
0065 04C5 MAIN PSEG
0066 04C5 MODE
0067 *
0068 ** SYMBOLIC COMPARE STATUS ASSIGNMENTS
0069 000A GT EQU 10
0070 000B EQ EQU 11
0071 000C LT EQU 12
0072 000D CR EQU X'D' CARRIAGE RETURN
0073 000A LF EQU X'A' LINE FEED
0074 ** SYMBOLIC REG ASSIGNMENTS
0075 0004 RD EQU 4
0076 0006 RE EQU 6
0077 0007 RF EQU 7
0078 008B W3 EQU X'8B'
0079 ***** EXTERNAL REFS & DEFS *****
0080 04C5 REF RSAVE,RRES REG SAVE/RESTORE
0081 04C5 REF TC TIME COMPARE UTIL
0082 04C5 REF DTB DECODE TO BIN UTIL
0083 04C5 REF CTME CONVERT TIME UTIL
0084 04C5 REF MMOV MULT FLD MOVE UTIL
0085 04C5 REF INITIO,RANDIO,PLAY,PLAY1,PRINT,GKCHAR
0086 04C5 REF PNWDS
0087 04C5 REF FINAL,PA,PG,PMTR,SIOPS,STPS
0088 04C5 REF CNT,JASCI,BTOT,WCN
0089 *
0090 04C5 DEF SNMF NEWMSG FLG
0091 04C5 DEF PYADR,PYIADR,START
0092 04C5 DEF DATALP
0093 *
0094 *
0095 *
0096 ***** MAIN SEQUENCE LOGIC *****
0097 *
0098 ** INITIALIZE
0099 04C5 70040000 START XS GET IN SUPER MODE
0100 04C7 7C0004C9 LDS STATUS INIT STATUS
0101 04C9 04CB STATUS DATA START1,X'01C0'
0102 04CA 01C0 DATALP EQU START
0103 *
0104 04CB 448504C5 START1 LA 5,MAIN BASE REG FOR PSEG
0105 04CD 74800000 BL 0,RANDIO INIT SYS INTRPT HANDLER
0106 04CF 74800000 BL 0,INITIO MORE INIT SIH
0107 * ZERO TABLE BTOT
0108 04D1 44820000 LA 2,0
0109 04D3 44810000 LA 1,BTOT

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0110 04D5 44830003 LA 3,3 LOOP CNTR
0111 04D7 4A920000 SIBTL ST 2,0,1
0112 04D9 4A920001 ST 2,1,1
0113 04DB 4A920002 ST 2,2,1
0114 04DD 4A920003 ST 2,3,1
0115 04DF 4A920004 ST 2,4,1
0116 04E1 4A920005 ST 2,5,1
0117 04E3 4C81000D AA 1,13 R1 TO NXT LINE OF TABLE
0118 04E5 0C3F04D7 ARB -1,SIBTL,3 LOOP 4 TIMES
0119 *
0120 04E7 44827FFF LA 2,X'7FFF'
0121 04E9 48820000 ST 2,SIOPS INIT SIOPS
0122 *
0123 04EB 74800000 BL 0,PRINT PRINT SETUP MSG TO OPER
0124 04ED 064E DATA SFM
0125 04EE 708204EB B $-3 BUSY RETURN
0126 04F0 74800000 BL 0,GKCHAR WAIT FOR OPER RESPONSE
0127 * DETERMINE WHICH PLAY ADDR IS WHICH TAPE. READ
0128 * & PRT THE RUN PARAM REC. INIT FOR OVERLAPPED
0129 * PLAY
0130 04F2 44800000 LA 0,0
0131 04F4 48800B9E ST 0,GABUF+3 IN CASE OF SHORT REC
0132 04F6 4880095F ST 0,GGBUF+3
0133 04F8 740007A6 *BL 0,PY1ADR TRY ADDR PLAY1
0134 04FA 0B9B DATA GABUF
0135 04FB 708204F8 B $-3
0136 04FD 44000B9B L 0,GABUF TEST IF PLAY DONE
0137 04FF E08C04FD BC LT,$-2 WAIT
0138 0501 44000B9E L 0,GABUF+3 TEST IF THIRD CHAR
0139 0503 588000FF NA 0,X'FF' OF RECORD IS
0140 0505 C080003A CRA 0,X'3A' A ':'
0141 0507 E08B052D BC EQ,SIW IF SO HAVE PARAM REC
0142 * DON'T HAVE PARAM REC, TRY OTHER ADDR
0143 0509 740007A5 *BL 0,PYADR TRY ADDR PLAY
0144 050B 095C DATA GGBUF
0145 050C 70820509 B $-3
0146 050E 4400095C L 0,GGBUF TEST IF PLAY DONE
0147 0510 E08C050E BC LT,$-2 WAIT
0148 * IS THIS PARAMS REC ?
0149 0512 4400095F L 0,GGBUF+3
0150 0514 588000FF NA 0,X'FF'
0151 0516 C080003A CRA 0,X'3A'
0152 0518 E08A0563 BC GT,SIE BRNCH IF NO
0153 051A E08C0563 BC LT,SIE BRNCH IF NO
0154 051C 74800000 SIPP BL 0,PRINT PRT PARAMS HEADING
0155 051E 0632 DATA S2M
0156 051F 7082051C B $-3
0157 0521 74800000 BL 0,PRINT PRINT PARAMS REC
0158 0523 095C DATA GGBUF
0159 0524 70820521 B $-3

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0160 0526 740007A5      *BL 0,PYADR      READ FIRST GRD DATA
0161 0528 095D         DATA GGBUF+1    REC TO INIT OVERLAPPED
0162 0529 70820526      B      $-3        PLAYING
0163                    *
0164 0528 70820550      * ** NOTE FIRST AIR DATA REC WAS READ ALREADY **
0165                    B      SINMF
0166 052D DC0007A5      * DO HAVE PARAM REC, MUST SWAP ADDRESSES
0167 052F 44860000      SIAW  DRR 0,PYADR  SWAP ADDRESSES
0168 0531 44870000      LA  RE,0        SETUP FOR MMOV
0169 0533 74800000      LA  RF,0
0170 0535 0001          BL  0,MMOV      MOVE PARAM REC TO GGBUF
0170 0536 023A          DATA 1,570,GARUF,GGBUF
0170 0537 0B9B
0170 0538 095C

0171                    * MAKE SURE OTHER TAPE DOESNT HAVE A PARAM REC
0172 0539 44800000      LA  0,0
0173 053B 48800B9E      ST  0,GABUF+3   IN CASE OF SHORT REC
0174 053D 740007A6      *BL 0,PY1ADR     PLAY OTHER TAPE
0175 053F 0B9B         DATA GABUF
0176 0540 7082053D      B      $-3
0177 0542 44000B9B      L      0,GABUF
0178 0544 E08C0542      BC  LT,$-2      WAIT FOR PLAY
0179 0546 44000B9E      L      0,GABUF+3
0180 0548 588000FF      NA  0,X'FF'
0181 054A C080003A      CRA 0,X'3A'
0182 054C E08B0563      BC  EQ,SIE      BRNCH IF PARAM REC
0183 054E 7082051C      B      SIPP      EXACTLY ONE PARAM REC
0184                    * INIT NEW MSG FLAG (NMF) & EOF FLG
0185 0550 448A0001      SINMF LA #2,1
0186 0552 488A07A2      ST  #2,SNMF     SET NMF ON
0187 0554 44800000      LA  0,0
0188 0556 488007A3      ST  0,SETF     INIT ERR TRANS FLG
0189 0558 4480FFFF      LA  0,-1
0190 055A 488007A4      ST  0,SEOFF    INIT EOF FLG
0191 055C 74800000      BL  0,PRINT    SKIP A FEW LINES
0192 055E 079B         DATA S3M
0193 055F 7082055C      B      $-3
0194 0561 708205BE      B      SAAA

0195                    *
0196                    *
0197                    ***** ERROR ROUTINES *****
0198                    ** 0 OR 2 CASSETTES WITH PARAMS RECS
0199 0563 74800000      SIF  BL  0,PRINT
0200 0565 056F         DATA SIEM
0201 0566 70820563      B      $-3
0202 0568 44000000      L      0,PNWDS
0203 056A E08A0568      BC  GT,$-2     WAIT TILL PRT BUFFER EMPTY
0204 056C 708204C5      B      START
0205 056E 0023          SIEM DATA SIEMA-SIEM,CR,CR,LF,LF
0205 056F 000D

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0570 000D
0571 000D
0572 000A
0573 000A
0206 0574 2E572E52      DATA C'.W.R.O.N.G. .C.A.S.S.E.T.T.E.S.;. '
      0576 2E4F2E4E
      0578 2E472E20
      057A 2E432E41
      057C 2E532E53
      057E 2E452E54
      0580 2E542E45
      0582 2E532E3B
      0584 2E20
0207 0585 2E542E52      DATA C'.T.R.Y. .A.G.A.I.N',CR,CR,LF,LF
      0587 2E592E20
      0589 2E412E47
      058B 2E412E49
      058D 2E4E
      058E 000D
      058F 000D
      0590 000A
      0591 000A
0208 0591              SIEMA EQU $-1
0209                      ** LONG RECORD DESTROYS PROGRAM
0210 0592 748000000 SGE   BL 0,PRINT
0211 0594 059D        DATA SGM
0212 0595 70820592    B     $-3
0213 0597 448004C5    LA 0,START
0214 0599 488004C9    ST 0,STATUS      BE SURE IT'S DESTROYED
0215 059B 7082059B SGE1  B     SGE1
0216 059D 0020        SGM   DATA SGMA=SGM,CR,CR,CR,LF,LF
      059E 000D
      059F 000D
      05A0 000D
      05A1 000A
      05A2 000A
0217 05A3 2E4C2E4F    DATA C'.L.O.N.G. .R.E.C. .D.E.S.T.R.O'
      05A5 2E4E2E47
      05A7 2E202E52
      05A9 2E452E43
      05AB 2E202F44
      05AD 2E452E53
      05AF 2E542E52
      05B1 2E4F
0218 05B2 2E592E45    DATA C'.Y.E.D. .P.R.O.G',CR,CR,LF,LF
      05B4 2E442E20
      05B6 2E502E52
      05B8 2E4F2E47
      05BA 000D
      05BB 000D

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05BC 000A
05BD 000A
0219 05BD SGMA EQU $-1
0220 *****
0221 *
0222 *
0223 **** MAIN LOGIC FOR READING AIR & GRND TAPES
0224 05BE 7480087D SAAA BL 0,GAIR GET A NORMALIZED AREC
0225 05C0 748007A7 SA BL 0,GCRD GET NORMLZD GREC OR MTR
0226 * DECIDE TYPE OF GRND RECORD
0227 05C2 440A0027 L #2,GTYPE
0228 05C4 E08A060A BC GT,SERR BRANCH IF ERR TYPE REC
0229 * CRD REC IS AN MTR
0230 05C6 74800000 SMTR BL 0,TC COMP ATME WITH MTR END TME
0231 05C8 04C1 DATA APT,MPET
05C9 0022
0232 05CA 05CD DATA SM1 APT>
0233 05CB 05ED DATA SM2 APT=
0234 05CC 05FD DATA SM2 APT<
0235 *
0236 * AIR TME > MTR END TIME. DO WE WANT TO PRINT
0237 * THIS MTR REC?
0238 05CD 74800000 SM1 BL 0,STPS GET PANEL SWITCHES
0239 05CF 44000000 L 0,SIOPS IN R0
0240 05D1 58800000 NA 0,X'8' MASK
0241 05D3 E08A05E1 BC GT,SM1A ALL MTR SW IS ON
0242 05D5 440A07A3 L #2,SETF TEST SETF
0243 05D7 E08A05F1 BC GT,SM1A BRNCH IF FLC ON
0244 05D9 440A0002 L #2,MCC
0245 05DB 588A00FF NA #2,X'00FF' MASK
0246 05DD C08A0043 CRA #2,X'0043' IS COMPL CODE = 'C' ?
0247 05DF E08B05E3 BC EQ,SM1B NO ERR IN MSG: DON'T PRINT
0248 *
0249 * NEW MSG FLG IS OFF OR COMPL CODE NOT 'C', SO THERE MUST
0250 * HAVE BIEN AN ERROR IN THIS MSG. PRINT MTR & RESET
0251 * NMF ON
0252 05E1 74800000 SM1A BL 0,PMTR GO PRINT MTR
0253 05E3 44800001 SM1B LA 0,1
0254 05E5 488007A2 ST 0,SNMF SET NMF ON
0255 05E7 44800000 LA 0,0
0256 05E9 488007A3 ST 0,SETF SHOW NO ERR RECS
0257 05EB 708205C0 B SA GO GET NXT GRD REC
0258 *
0259 * AIR TME <= MTR END TIME
0260 05ED 74800000 SM2 BL 0,TC COMP ATME W MTR BEG TME
0261 05EF 04C1 DATA APT,MPBT
05F0 001E
0262 05F1 0602 DATA SM3 APT>
0263 05F2 0602 DATA SM3 APT=
0264 05F3 05F4 DATA SM4 APT<

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0265          *
0266          * AIR TME < MTR BEG TME. THIS SHOULD NEVER HAPPEN
0267          * IF IT DOES. PRINT THE AREC & GO ON
0268 05F4 22DDA001 SM4   AMI  SNMF.1   SET NMF ON
0269 05F6 74800000      BL   0.PA     GO PRNT AREC
0270 05F8 22DDA001      AMI  SNMF.1   SET NMF ON
0271 05FA 44800000      LA   0.0
0272 05FC 488007A3      ST   0.SETF   SHOW NO ERR RECS
0273 05FE 7480087D      BL   0.GAIR   GET A NEW AREC
0274 0600 708205C6      B    SMTR    GRD REC IS STILL AN MTR
0275          *
0276          * BEGTME <= AIRTME <= ENDTME: PRINT AREC
0277 0602 74800000 SM3   BL   0.PA     GO PRT AREC
0278 0604 74800626      BL   0.SSRA   SET SETF IF NECESS
0279 0606 7480087D      BL   0.GAIR   GET A NEW AREC
0280 0608 708205C6      B    SMTR    GRDREC IS STILL MTR
0281          *
0282          *
0283          *
0284          *
0285          ** GREC IS AN ERR TYPE
0286 060A 74800000 SERR  BL   0.TC     COMP AIRTME TO GRDTME
0287 060C 04C1          DATA APT.GPT
0288 060E 0611          DATA SER1   APT>
0289 060F 0611          DATA SER1   APT=
0290 0610 0617          DATA SER2   APT<
0291          *
0292          * AIRTME > GRDTME SO GREC OCCURRED FIRST
0293 0611 74800000 SER1  BL   0.PG     GO PRT GREC
0294 0613 22DEA001      AMI  SETF.1   SHOW ERR REC
0295 0615 708205C0      B    SA       GO GET NEW GREC & GO ON
0296          *
0297          * AIRTME < GRDTME, SO AREC OCCURRED FIRST
0298 0617 74800000 SER2  BL   0.PA     GO PRT AREC
0299 0619 74800626      BL   0.SSRA   SET SETF IF NECESS
0300 061B 7480087D      BL   0.GAIR   GET A NEW AREC
0301 061D 7082060A      B    SERR    GREC IS STILL ERR TYPE
0302          *
0303          **** END OF LOGIC FOR READING TAPES ****
0304 061F 74800000 STERM BL   0.PRINT  SKIP A FEW LINES
0305 0621 079B          DATA S3M
0306 0622 7082061F      B    $-3
0307 0624 74800000      BL   0.FINAL  GO DO PERCENTAGES
0308          ****
0309          *
0310          *
0311          **** INTERNAL SUBRTNS ****
0312 0626 440A0287 SSRA  L    #2,ACC  IS CURRENT AIR REC AN
0313 0628 588A00FF      NA   #2,X'FF'  ERR REC

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0314	062A	C08A0023	CRA	#2,X'23'	
0315	062C	E28B0002	BC	EQ,2,0	RETURN IF NOT
0316	062E	22DEA001	AMI	SETF,1	SHOW ERR REC HIT
0317	0630	72820002	B	2,0	

*

*

***** DATA & CONSTANTS FOR MAIN LOGIC *****
 S2M DATA S2MA-S2M,CR,CR,CR,LF,LF,LF

0322 0632 001B
 0633 000D
 0634 000D
 0635 000D
 0636 000A
 0637 000A
 0638 000A

DATA C'.P.A.R.A.M.E.T.E.R.S.'

0323 0639 2E502E41
 063B 2E522E41
 063D 2E4D2E45
 063F 2E542E45
 0641 2E522E53
 0643 2E20

DATA C'.O.F. .T.E.S.T.:',CR,LF

0324 0644 2E4F2E46
 0646 2E202E54
 0648 2E452E53
 064A 2E542E3A
 064C 000D
 064D 000A

S2MA EQU #-1
 SFM DATA SFMA-SFM,CR,CR,CR,LF,LF

0325 064D
 0326 064E 014C
 064F 000D
 0650 000D
 0651 000D
 0652 000A
 0653 000A

DATA C'.R.E.A.D.Y. .A.I.R. .& .G.R.D.'

0327 0654 2E522E45
 0656 2E412E44
 0658 2E592E20
 065A 2E412E49
 065C 2E522E20
 065E 2E262E20
 0660 2E472E52
 0662 2E44

DATA C'. .T.A.P.E.S. .F.O.R.'

0328 0663 2E202E54
 0665 2E412E50
 0667 2E452E53
 0669 2E202E46
 066B 2E4F2E52
 066D 2E20

0329 066E 2E202E50
 0670 2E4C2E41

DATA C'. .P.L.A.Y.B.A.C.K'

	0672 2E592E42	
	0674 2E412E43	
	0676 2E4B	
0330	0677 000D	DATA CR,LF,C'.S.E.T. .P.A.N.E.L. '
	0678 000A	
	0679 2E532E45	
	067B 2E542E20	
	067D 2E502E41	
	067F 2E4E2E45	
	0681 2E4C2E20	
0331	0683 2E532E57	DATA C'.S.W.I.T.C.H.E.S. .F.O.R. '
	0685 2E492E54	
	0687 2E432E48	
	0689 2E452E53	
	068B 2E202E46	
	068D 2E4F2E52	
	068F 2E20	
0332	0690 2E502E52	DATA C'.P.R.I.N.T. .O.P.T.I.O.N.:'
	0692 2E492E4E	
	0694 2E542E20	
	0696 2E4F2E50	
	0698 2E542E49	
	069A 2E4F2E4E	
	069C 2E3A	
0333	069D 000D	DATA CR,LF,C'. .S.W.1.5. .U.P. .='
	069E 000A	
	069F 2E202E20	
	06A1 2E532E57	
	06A3 2E312E35	
	06A5 2E202E55	
	06A7 2E502E20	
	06A9 2E3D	
0334	06AA 2E202E49	DATA C'. .I.N.H.I.B.I.T. .P.R.I.N.T.I.N.G'
	06AC 2E4E2E48	
	06AE 2E492E42	
	06B0 2E492E54	
	06B2 2E202E50	
	06B4 2E522E49	
	06B6 2E4E2E54	
	06B8 2E492E4E	
	06BA 2E47	
0335	06BB 2E202E4D	DATA C'. .M.S.G. .T.R.A.N.S. .R.E.C.S'
	06BD 2E532E47	
	06BF 2E202E54	
	06C1 2E522E41	
	06C3 2E4E2E53	
	06C5 2E202E52	
	06C7 2E452E43	
	06C9 2E53	
0336	06CA 000D	DATA CR,LF,C'. .S.W.1.4. .U.P. .='

	06CB	000A	
	06CC	2E202E20	
	06CE	2E532E57	
	06D0	2E312E34	
	06D2	2E202E55	
	06D4	2E502E20	
	06D6	2E3D	
0337	06D7	2E202E49	DATA C'. .I.N.H.I.B.I.T. .P.R.I.N.T.I.N.G'
	06D9	2E4E2E48	
	06DB	2E492E42	
	06DD	2E492E54	
	06DF	2E202E50	
	06E1	2E522E49	
	06E3	2E4E2E54	
	06E5	2E492E4E	
	06E7	2E47	
0338	06E8	2E202E47	DATA C'. .G.R.D. .E.R.R. .R.E.C.S'
	06EA	2E522E44	
	06EC	2E202E45	
	06EE	2E522E52	
	06F0	2E202E52	
	06F2	2E452E43	
	06F4	2E53	
0339	06F5	000D	DATA CR,LF,C'. .S.W.1.3. .U.P. .='
	06F6	000A	
	06F7	2E202E20	
	06F9	2E532E57	
	06FB	2E312E33	
	06FD	2E202E55	
	06FF	2E502E20	
	0701	2E3D	
0340	0702	2E202E49	DATA C'. .I.N.H.I.B.I.T. .P.R.I.N.T.I.N.G'
	0704	2E4E2E48	
	0706	2E492E42	
	0708	2E492E54	
	070A	2E202E50	
	070C	2E522E49	
	070E	2E4E2E54	
	0710	2E492E4E	
	0712	2E47	
0341	0713	2E202E41	DATA C'. .A.I.R. .E.R.R. .R.E.C.S'
	0715	2E492E52	
	0717	2E202E45	
	0719	2E522E52	
	071B	2E202E52	
	071D	2E452E43	
	071F	2E53	
0342	0720	000D	DATA CR,LF,C'. .S.W.1.2. .U.P. .='
	0721	000A	
	0722	2E202E20	

	0724	2E532E57	
	0726	2E312E32	
	0728	2E202E55	
	072A	2E502E20	
	072C	2E3D2E20	
0343	072E	2E412E4C	DATA C'.A.L.L. .M.T.R'.X'27'.C'.S'
	0730	2E4C2E20	
	0732	2E4D2E54	
	0734	2E52	
	0735	0027	
	0736	2E53	
0344	0737	000D	DATA CR,LF,C'. .S.W.1.2. .D.O.W.N. .='
	0738	000A	
	0739	2E202E20	
	073B	2E532E57	
	073D	2E312E32	
	073F	2E202E44	
	0741	2E4F2E57	
	0743	2E4E2E20	
	0745	2E3D	
0345	0746	2E202E45	DATA C'. .E.R.R. .M.T.R'.X'27'.C'.S'
	0748	2E522E52	
	074A	2E202E4D	
	074C	2E542E52	
	074E	0027	
	074F	2E53	
0346	0750	000D	DATA CR,LF,C'. .S.W.1.1. .U.P. .='
	0751	000A	
	0752	2E202E20	
	0754	2E532E57	
	0756	2E312E31	
	0758	2E202E55	
	075A	2E502E20	
	075C	2E3D2E20	
0347	075E	2E492E4E	DATA C'.I.N.H.I.B.I.T. .P.R.I.N.T.I.N.G. '
	0760	2E482E49	
	0762	2E422E49	
	0764	2E542E20	
	0766	2E502E52	
	0768	2E492E4E	
	076A	2E542E49	
	076C	2E4E2E47	
	076E	2E20	
0348	076F	2E552E50	DATA C'.U.P.L.N.K. .T.R.A.N.S. .R.E.C.S'
	0771	2E4C2E4E	
	0773	2E4B2E20	
	0775	2E542E52	
	0777	2E412E4E	
	0779	2E532E20	
	077B	2E522E45	

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0349 077D 2E432E53
077F 000D DATA CR,LF,C',C.A.R.R.I.A.G.E. .R.E.T.U.R.N. '
0780 000A
0781 2E432E41
0783 2E522E52
0785 2E492E41
0787 2E472E45
0789 2E202E52
078B 2E452E54
078D 2E552E52
078F 2E4E2E20
0350 0791 2E572E48 DATA C'.W.H.E.N. .R.E.A.D.Y'
0793 2E452E4E
0795 2E202E52
0797 2E452E41
0799 2E442E59
0351 079A SFMA EQU $-1
0352 079B 0004 S3M DATA 4,CR,CR,CR,LF,LF,LF SKIP 3 LINES
079C 000D
079D 000D
079E 000D
079F 000A
07A0 000A
07A1 000A
0353 *
0354 07A2 SNMF RES 1 NEWMSG FLG; 0 IS OFF, >0 IS ON
0355 07A3 SETF RES 1 ERR TRANS FLG; >0 IF ERR HIT, =0 IF NOT
0356 07A4 SEOFF RES 1 EOF FLG; -1 = NO EOF, 0 = ONE EOF
0357 *
0358 07A5 0000 PYADR DATA PLAY ** INDIRECT PLAY ADDRESSES
0359 07A6 0000 PY1ADR DATA PLAY1 ** MUST BE CONSECUTIVE
0360 *****
0361 *
0362 *
0363 *
0364 ***** GET GROUND RECORD ROUTINE (GGRD) *****
0365 * CALLING SEQUENCE:
0366 * BL 0,GGRD
0367 *
0368 * RETURNS WITH AN MTR OR A NORMALIZED FROR
0369 * TYPE REC FROM THE GROUND TAPE. GGRD RECORDS
0370 * STATISTICAL INFO FROM AN MTR.
0371 *****
0372 07A7 488007B1 GGRD ST 0,GGSVR
0373 07A9 74800000 BL 0,RSAB SAVE REGS
0374 07AB 708207B9 B GG1
0375 07AD 74800000 GG2 BL 0,RRES RESTORE REGS
0376 07AF 72820002 B 2.0 RETURN
0377 07B1 GGSVR RES 8 REG SAVE AREA
0378 *

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0379 07B9 4486095C GG1 LA RE,GGBUF BAS REG FOR MMOV: ORIGIN
0380 07B8 4401095D L 1,GGBUF+1 TEST I/O CHK CHAR
0381 07BD F08C07BB BC LT,3-2 WAIT IF I/O NOT DONE
0382 07BF E08B0847 BC EQ,GGEOF 0-LNGH REC IS EOF MARK
0383 07C1 C0810226 CRA 1,550
0384 07C3 E08A0592 BC GT,SGE RECORD TOO LONG, ABORT
0385 * MTR OR ERR TYPE GREC?
0386 07C5 46630002 L 3,0GTME,RF FIRST CHAR OF REC
0387 07C7 58830040 NA 3,X'0040' TEST BIT POS 9
0388 07C9 40830040 XORA 3,X'0040' COMPLEMENT
0389 07CB 48830027 ST 3,GTYPE =0 FOR MTR, >0 FOR ERR TYPE
0390 07CD 48830000 ST 3,MTYPE
0391 07CF E08A07F6 BC GT,GGERR GO TREAT ERR TYPE
0392 *
0393 ** TYPE IS MTR
0394 07D1 44870000 LA RF,MTR BAS REG FOR MMOV: RECIEVING
0395 07D3 74800000 BL 0,MMOV MOVE MTR RECORD
0396 07D5 0001 DATA 1 1 FLD TO MOVE
0397 07D6 001C DATA 0MSN-0MCHK,0MCHK,0MCHK
07D7 0001
07D8 0001
0398 *
0399 07D9 74800000 BL 0,CTME BEGIN TIME IN BINARY
0400 07DB 0008 DATA MBT,MPBT
07DC 001E
0401 07DD 74800000 BL 0,CTME END TIME IN BINARY
0402 07DF 0011 DATA MET,MPET
07E0 0022
0403 *
0404 07E1 44840000 LA RD,0 SET UP FOR DTB CALL
0405 07E3 74800000 BL 0,DTB GET MSG LNGTH IN BINARY
0406 07E5 001A DATA MLH,1,16
07E6 0001
07E7 0010
0407 07E8 488B0026 ST #3,MPLH STORE IN MTR
0408 * IF MSG IS KEYBRD ORIGINATED, DONT CNT IN STATISTICS
0409 07EA 4403001D L 3,MSN SCENARIO MSG NBR
0410 07EC 588300FF NA 3,X'00FF' MASK
0411 07EE C083004B CRA 3,X'004B' IS IT K
0412 07F0 E08B0840 BC EQ,GPLAY YES, GO INIT NXT READ
0413 * KEEP STATISTICAL INFO
0414 07F2 74800000 BL 0,CNT
0415 07F4 70820840 B GPLAY GO INIT NXT READ
0416 *
0417 ** TYPE IS ERR GREC
0418 07F6 44870027 GGERR LA RF,GREC BAS REG FOR MMOV: RECIEVING
0419 ** MOVE REC TO PROPER POSITIONS IN GREC DSEG
0420 07F8 74800000 BL 0,MMOV MOVE THRU SOH
0421 07FA 0001 DATA 1
0422 07FB 000F DATA 0GSOH-0GCHK,0GCHK,0GCHK

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07FC 0001
07FD 0001

0423          * IF COMPL COD = R , PREFAMBLE IS 5 CHARS SHORT
0424 07FE 44030032 L 3.GCC COMPL CODE
0425 0800 588300FF NA 3.X'00FF' MASK
0426 0802 C0830052 CRA 3.X'0052' IS IT 'R'
0427 0804 E08B0808 BC EQ.GG3A BRNCH IF YES
0428 0806 70820818 B GG3 BRNCH IF NO
0429          * CC IS 'R'
0430 0808 50860005 GG3A SA RE,5 RECAPTURE 5 CHARS: BITSYN-SOH
0431 080A 44830020 LA 3.X'0020' BLANK CHAR
0432 080C 48830033 ST 3.GPRE BLANK OUT UNUSED PART
0433 080E 48830034 ST 3.GPRE+1 OF PREFAMBLE
0434 0810 48830035 ST 3.GPRE+2
0435 0812 48830036 ST 3.GPRE+3
0436 0814 48830037 ST 3.GPRE+4
0437 0816 4C810005 AA 1.5 CORECT REC LENGTH: 5 MORE CHARS
0438          * IF MODE = 'U' THERE ARE 2 EXTRA CHARS
0439 0818 74800000 GG3 BL 0.MMOV MOVE THRU GMOD+2
0440 081A 0001 DATA 1
0441 081B 0002 DATA 2.0GMOD.0GMOD
081C 0011
081D 0011
0442 081E 44030038 L 3.GMOD MODE
0443 0820 588300FF NA 3.X'00FF' MASK
0444 0822 C0830055 CRA 3.X'0055' IS IT 'U'
0445 0824 E08B0830 BC EQ.GG4 BRANCH IF MODE='U'
0446          * MODE NOT 'U'
0447 0826 50860002 SA RE,2 RECAPTURE 2 CHARS AFTER MODE
0448 0828 44830020 LA 3.X'0020'
0449 082A 48830039 ST 3.GMOD+1 BLK OUT UNUSED MODE CHARS
0450 082C 4883003A ST 3.GMOD+2
0451 082E 4C810002 AA 1.2 CORRECT RECORD LENGTH
0452          *
0453 0830 48810028 GG4 ST 1.GCHK STORE CORECTED REC LENGTH
0454          * MOVE THE REST OF THE RECORD
0455 0832 50810012 SA 1.0GMOD+2-0GCHK LENGTH OF REST OF REC
0456 0834 48810839 ST 1.GGML SET UP FOR MOVE
0457 0836 74800000 BL 0.MMOV MOVE REST OF REC
0458 0838 0001 DATA 1
0459 0839 0000 GGML DATA 0.0GMOD+3.0GMOD+3
083A 0014
083B 0014
0460          *
0461 083C 74800000 BL 0.CTME GET TIME IN BINARY
0462 083E 0029 DATA GTME.GPT
083F 026C
0463          *
0464          ** INITIATE READING OF NXT RECORD FOR OVERLAP
0465 0840 740007A5 GPLAY *BL 0.PYADR READ A REC

```



```

0501
0502
0503
0504
0505 087D 48800887
0506 087F 74800000
0507 0881 7082088F
0508 0883 74800000
0509 0885 72820002
0510 0887
0511
0512 088F 44010B9B
0513 0891 E08C088F
0514 0893 E08B092B
0515 0895 C0810226
0516 0897 E08A0592
0517
0518
0519
0520
0521 0899 44820002
0522 089B 44840B9B
0523 089D 74800000
0524 089F 0010
    08A0 0002
    08A1 0010
0525 08A2 4AAB0959
0526 08A4 588B0800
0527 08A6 E08B08AC
0528 08A8 44800000
0529 08AA 4AA00959
0530 08AC 50840003
0531 08AE 0C2F089D
0532
0533 08B0 74800000
0534 08B2 5505
    08B3 FAEF
    08B4 0001
    08B5 0959
0535 08B6 4402008B
0536 08B8 74800000
0537 08BA 0004
    08BB 027A
0538 08BC 46A20000
0539 08BE E08A08C2
0540 08C0 4882027A
0541
0542 08C2 74800000
0543 08C4 024A
    08C5 FFC4

* RETURNS WITH AREC DSEG CONTAINING A NEW
* NORMALIZED AIR-REC WITH A 3 CHAR MODE &
* BINARY TIME APPENDED
*****
GAIR ST 0,GASVR
BL 0,RSABV SAVE REGS
B GA1
GA2 BL 0,RRES RESTORE REGS
B 2,0 RETURN
GASVR RES 8 REG SAVE AREA
*
GA1 L 1,GABUF TEST I/O CHK CHAR
BC LT,3-2 WAIT IF NOT DONE
BC EQ,GAEOF 0-LNGH REC IS EOF MARK
CRA 1,550
BC GT,SGE RECORD TOO LONG, ABORT
*
** CONVERT & NORMALIZE ALTIT, PITCH, ROLL DATA
*
* LOOP 3 TIMES, CONVRT A, P, R, TO BINARY
LA 2,2 LOOP CNTR
LA RD,GABUF SETUP FOR DTB CALL
GACN1 BL 0,DTB CONVERT TO BINARY
DATA 0APR+6,2,16
,
ST #3,GABA,2 STORE BINARY
NA #3,X'0800' TEST SIGN BIT OF ANSWER
BC EQ,GACN2 BRNCH IF POS
LA 0,0 IF SGN NEG, SET
ST 0,GABA,2 ANSWER TO ZERO
GACN2 SA RD,3 FOR NEXT ASCII FLD
ARB -1,GACN1,2 LOOP
* NORMALIZE ALT, PITCH, ROLL DATA
BL 0,WCN NORMALIZE ALT
DATA 21765,-1297,1,GABA
,
L 2,W3 SAVE #3
BL 0,JASCI CONVRT TO ASCII
DATA 4,GAAA
,
LA 2,0,2 TEST SGN IN R2
BC GT,GACN3 DONT PRNT SGN IF POS
ST 2,GAAA PRT SGN IF NEG
*
GACN3 BL 0,WCN NORMALIZE PITCH
DATA 586,-60,10,GABP
    
```


0544	08C6 000A			
	08C7 095A			
0545	08C8 4402008B	L	2.W3	SAVE #3
0546	08CA 74800000	BL	0.JASCI	CONVRT TO ASCII
	08CC 0001	DATA	1.GAAP+2	
	08CD 0281			
0547	08CE 48820280	ST	2.GAAP+1	PUT IN SIGN
0548				
0549	08D0 74800000	BL	0.WCN	NORMALIZE ROLL
0550	08D2 02AC	DATA	684.-70.10.GABR	
	08D3 FFBA			
	08D4 000A			
	08D5 095B			
0551	08D6 4402008B	L	2.W3	SAVE SGN.
0552	08D8 74800000	BL	0.JASCI	CONVERT TO ASCII
0553	08DA 0001	DATA	1.GAAR+2	
	08DB 0285			
0554	08DC 48820284	ST	2.GAAR+1	PUT IN SIGN
0555				
0556	08DE 44800020	LA	0.X'20'	
0557	08E0 4880027F	ST	0.GAAP	
0558	08E2 48800283	ST	0.GAAR	
0559		** MOVE REC	FROM GABUF TO AREC	
0560	08E4 44860B9B	LA	RE,GABUF	BAS REG FOR MMOV: ORIGIN
0561	08E6 44870270	LA	RF,AREC	BAS REG FOR MMOV: RECIEVING
0562	08E8 74800000	BL	0.MMOV	MOVE THRU ATME
0563	08EA 0001	DATA	1.@APR-1-@ACHK.@ACHK.@ACHK	
	08EB 0009			
	08EC 0000			
	08ED 0000			
0564	08EE 50860004	SA	RE.4	FIX RE FOR EXPANDED APR
0565	08F0 4C810004	AA	1.4	FIX REC LNTH
0566	08F2 48810270	ST	1.ACHK	SAVE REC LNTH
0567				
0568	08F4 74800000	BL	0.MMOV	MOVE THRU AMOD+2
0569	08F6 0001	DATA	1	1 FLD
0570	08F7 0008	DATA	@AMOD+2-@ACC.@ACC.@ACC	
	08F8 0017			
	08F9 0017			
0571		* IS IT A UTR TYPE (*) REC		
0572	08FA 44030287	L	3.ACC	CODE
0573	08FC 588300FF	NA	3.X'FF'	MASK IT
0574	08FE C0830023	CRA	3.X'23'	IS IT '*'
0575	0900 E08B0920	BC	EQ,GAUTR	BRNCH IF YES
0576		* IS MODE='U'		
0577	0902 44030280	L	3.AMOD	MODE CHAR
0578	0904 588300FF	NA	3.X'00FF'	MASK IT
0579	0906 C0830055	CRA	3.X'0055'	COMPARE WTH 'U'
0580	0908 E08B0914	BC	EQ,GA3	BRNCH IF MOD IS U
0581		* MODE NOT 'U'		


```

094C 2E492E4E
094E 2E202E41
0950 2E492E52
0952 2E202E54
0954 2E412E50
0956 2E45
0621 0957 000D          DATA CR,LF
0958 000A

0622 0958          GAEMA EQU $-1
0623              *
0624 0959          GABA RES 1          ALTITUDE IN BINARY
0625 095A          GABP RES 1          PITCH IN BIN
0626 095B          GARR RES 1          ROLL IN BIN
0627              *
0628 027A          GAAA EQU APR          NORM ALT IN AREC
0629 027F          GAAP EQU APR+5        NORM PITCH IN AREC
0630 0283          GAAR EQU APR+9        NORM ROLL IN AREC
0631              *****
0632              *
0633              *
0634              *****
0635 095C          GGBUF RES 575          GRD TAPE INPUT BUFFER
0636 0B9B          GABUF RES 575          AIR TAPE INPUT BUFFER
0637              *****
0638 0DDA          END
0000 ERRORS : LENGTH = 0DDA

```

```

0001          ***** FIN *****
0002          * MAIN LOGIC & UTILITIES FOR CALCULAING
0003          * AND PRINTING FINAL PERCENTAGES
0004          *****
0005 0000     FIN      PSEG
0006 0000     MODE
0007          *
0008          ** SYMBOLIC COMPARE STATUS SSIGNMENTS
0009          GT      EQU 10
0010 000B     EQ      EQU 11
0011 000C     LT      EQU 12
0012 0001     OV      EQU 1
0013          ** SYMBOLIC REG ASSIGNMENTS
0014 0006     RE      EQU 6
0015 0004     RD      EQU 4
0016 0007     RF      EQU 7
0017 0001     R1      EQU X'81'
0018 0002     R2      EQU X'82'
0019          **
0020 000D     CR      EQU X'D'
0021 000A     LF      EQU X'A'
0022          **** EXTERNAL REFS & DEFS ****
0023 0000     REF     R$AV,R$RES,DTB
0024 0000     REF     MMOV,JASCI,HAT
0025 0000     REF     GKCHAR,PRINT
0026 0000     REF     PYADR,PY1ADR,START
0027 0000     REF     BTOT          TABLE CREATED IN MAIN
0028 0000     REF     LPRCT,YDPD
0029          *
0030 0000     DEF     FINAL          ENTRY POINT
0031          ****
0032          *
0033          *
0034          *
0035          *****
0036          * MAIN LOGIC TO COMPUTE FINAL PCNTS
0037          *****
0038 0000 70070000 FINAL NOP          ENTRY PNT
0039          *** PRINT AVG EL TME LINES USING INFO
0040          * FROM BTOT
0041 0002 44810003 LA      1,3          LOOP CNTR
0042 0004 44860000 LA      RE,BTOT        PNT TO DATA FOR FRST LINE
0043          * LOOP 4 TIMES FOR 4 MSG LNTHS
0044 0006 748003A6 FL1     BL      0,KATL      DO LNE FOR ONE MSG LNTH
0045 0008 4C86000D AA      RE,13        PNT TO NXT MSG LNTH
0046 000A 0C1F0006 ARB     -1,FL1,1      LOOP
0047          **
0048          *** READ FINAL GRD SYST REC; PRINT FINAL PERCNTS.
0049          * BIT ERROR RATES
0050 000C 74000000 *BL     0,PYADR        READ FINAL GRD SYS REC

```

```

0051 000E 0161          DATA FTAC
0052 000F 7082000C     B      4-3          BUSY RETURN
0053 0011 74800000     BI      0,PRINT     START GRD HDR
0054 0013 0000          DATA FADHD
0055 0014 70820011     B      4-3
0056 0016 7483000A     BI      3,FLSFT     CALL INTERNAL SUBRTN
0057                      * PRINT FINAL % LINES FOR ECHO: ACK,NAK,NR,BCS
0058 0018 74800000     BI      0,PRINT     MSG LGTH HDR
0059 001A 052A          DATA VFHL
0060 001B 70820018     B      4-3
0061 001D 7484009C     BL      4,PRECHO     PRINT ECHO HDR
0062 001F 4486026B     LA      RE,FTBE     SETUP FOR VEPL CALL
0063 0021 4487039E     LA      RF,FTBET
0064 0023 748004C3     BL      0,VFPI       DO ECHO LINES
0065 0025 0000          DATA 0.1,2,3
      0026 0001
      0027 0002
      0028 0003

0066                      * COMPUTE TOTAL NBR BITS ECHOED FOR EACH MSG LGTHH
0067 0029 44810003     LA      1,3          LOOP CNTR
0068 002B 4616039E     FCBL   L      6,FTBET,1  NBR ECHO MSCS THIS LGTH
0069 002D 52160273     S      6,FTBE+8,1  IGNORE NO-RFSP MSCS
0070 002F CC860016     MA      6,FTCF      XTRA CHARS/MSG
0071 0031 60010081     MLA     1,R1         OBLWRD INDEX
0072 0033 CA160293     DAD     6,FTBCC,1  NBR TXT CHARS THIS LGTH
0073 0035 4A960293     ST      6,FTBCC,1
0074 0037 4A970294     ST      7,FTBCC+1,1
0075 0039 CA130293     DLA     3,FTBCC,1  MULT BY 8 FOR NBR BITS
0076 003B E081005E     BC      0V,FPNEL    ON OVFL SKIP ALL BIT ERR STATS
0077 003D 64010081     MRA     1,R1         RESTORE INDEX
0078 003F 0C1F002B     ARB     -1,FCPL,1  LOOP
0079                      * PRINT ECHO BIT ERR STATISTICS
0080 0041 74800000     BL      0,YDPD      TOTAL NBR BITS
0081 0043 0293          DATA FTBCC,FBNL
      0044 02DB

0082 0045 74800000     BL      0,YDPD      NBR BIT FRRS
0083 0047 028B          DATA FTBC,FBEL
      0048 031D

0084                      * BIT ERR PERCENTAGES
0085 0049 748005F7     BL      0,BPRCT     FOR MSG LGTH 1
0086 004B 0000          DATA 0,FTBL+19
      004C 0372

0087 004D 748005F7     BL      0,BPRCT     MSG LGTH 30
0088 004F 0001          DATA 1,FTBL+31
      0050 037E

0089 0051 748005F7     BL      0,BPRCT     MSG LGTH 120
0090 0053 0002          DATA 2,FTBL+43
      0054 038A

0091 0055 748005F7     BL      0,BPRCT     MSG LGTH 220
0092 0057 0003          DATA 3,FTBL+55

```

```

0058 0396
0093 0059 74800000      BL  0,PRINT
0094 005B 0206          DATA FTBLL
0095 005C 70820059      B    3-3          BUSY RETURN
0096                                * PRINT FINAL % LINES FOR NON-ECHO
0097 005E 748400AF  FPNEL BL  4,PRNCHO      PRT NON-ECHO HDR
0098 0060 4486027B      LA  RE,FTBN      SETUP FOR VFPL CALL
0099 0062 448703A2      LA  RF,FTBNT
0100 0064 748004C3      BL  0,VFPL        DO NON-ECHO LINES
0101 0066 0000          DATA 0,1,2,3
      0067 0001
      0068 0002
      0069 0003

0102                                **
0103                                *
0104                                *** READ FINAL AIR SYSTEM REC; PRNT FINAL PRCTS
0105 006A 74000000      *BL  0,PY1ADR      READ FINAL AIR SYS REC
0106 006C 0161          DATA FTAC
0107 006D 7082006A      B    3-3          BUSY RETURN
0108 006F 74800000      BL  0,PRINT      START AIR HDR
0109 0071 00F9          DATA FAUHD
0110 0072 7082006F      B    3-3
0111 0074 748300C6      BL  3,FLSFT      CALL INTRNL SUBRTN
0112                                * PRINT FINAL % LINES: ACK,NAK,BCS
0113 0076 74800000      BL  0,PRINT      MSG LNGTH HDR
0114 0078 052A          DATA VFHL
0115 0079 70820076      B    3-3
0116 007B 7484009C      BL  4,PRECHO      PRINT ECHO HDR
0117 007D 4486026B      LA  RE,FTBE      SETUP FOR VFPL CALL
0118 007F 4487039E      LA  RF,FTBET
0119 0081 748004C3      BL  0,VFPL        DO ECHO LINES
0120 0083 0000          DATA 0,1,3,-1
      0084 0001
      0085 0003
      0086 FFFF

0121                                *
0122 0087 748400AF      BL  4,PRNCHO      PRINT NON-ECHO HDR
0123 0089 4486027B      LA  RE,FTBN      SETUP FOR VFPL CALL
0124 008B 448703A2      LA  RF,FTBNT
0125 008D 748004C3      BL  0,VFPL        DO NON-ECHO LINES
0126 008F 0000          DATA 0,1,3,-1
      0090 0001
      0091 0003
      0092 FFFF

0127                                ***** JOB DONE *****
0128 0093 74800000      BL  0,PRINT      PRT END MSG
0129 0095 011F          DATA FJDM
0130 0096 70820093      B    3-3
0131 0098 74800000      BL  0,GKCHAR      WAIT FOR OPER RESP
0132 009A 70820000      B    START        REINIT PGM

```

```

0133      *****
0134      *
0135      *
0136      *
0137      ** INTERNAL SUBRTNS TO PRINT ECHO/NON-ECHO HDRS
0138  009C 74800000 PRECHO BL 0.PRINT
0139  009E 00A3          DATA PRFM          ECHO HDR
0140  009F 7082009C          B 3-3
0141  00A1 72C20002          B 2,4
0142  00A3 000B          PREM DATA 11.CR,CR,CR,LF,LF
      00A4 000D
      00A5 000D
      00A6 000D
      00A7 000A
      00A8 000A
0143  00A9 2E202E20          DATA C'. . .E.C.H.O'
      00AB 2E452E43
      00AD 2E482E4F
0144      *
0145  00AF 74800000 PRNCHO BL 0.PRINT          NON-ECHO HDR
0146  00B1 00B6          DATA PRNM
0147  00B2 708200AF          B 3-3
0148  00B4 72C20002          B 2,4
0149  00B6 000F          PRNM DATA 15.CR,CR,CR,LF,LF
      00B7 000D
      00B8 000D
      00B9 000D
      00BA 000A
      00BB 000A
0150  00BC 2E202E20          DATA C'. . .N.O.N.-.E.C.H.O'
      00BE 2E4E2E4F
      00C0 2E4E2E2D
      00C2 2E452E43
      00C4 2E482E4F
0151      **
0152      *
0153      *
0154      ** INTERNAL SUBRTN TO CONVERT FINAL TABLE, SET UP
0155      * & PRINT FINAL SYSTEM HEADER LINE
0156  00C6 44000161 FLSFT L 0.FTAC          CHK I/O DONE
0157  00C8 E08C00C6          BC LT,3-2          WAIT IF NOT DONE
0158      * CONVRT TABLE TO BIN & ACCUM TOTALS FOR %'S
0159  00CA 7480046D          BL 0.QCFT
0160      * SET UP END TIME LINE
0161  00CC 44860000          LA RE,0          SET UP FOR MMOV CALL
0162  00CE 44870000          LA RF,0
0163  00D0 74800000          BL 0.MMOV
0164  00D2 0001          DATA 1
0165  00D3 FFFF          DATA -1,FTAT,FLHL1A MOVE TIME
      00D4 0162

```

```

0005 0110
0166
0167 00D6 74800000 *
0168 00D8 00F3 BL 0,PRINT PRINT GRD STAT HEADING
0169 00D9 708200D6 DATA FLHL1
0170 00DB 72B20002 B 3-3 BUSY RETURN
0171 ** B 2.3 RETUURN
0172 *
0173 *
0174 ***** DATA 8 SCRATCH FOR FINAL MAIN LOGIC *****
0175 FTCT EQU 22 NBR XTRA CHARS/MSG=PRE+POST
0176 FADHD DATA 11,CR,CR,LF,LF,LF,LF,LF,C'.D.O.W.N'
0016
00DD 000B
00DE 000D
00DF 000D
00E0 000A
00E1 000A
00E2 000A
00E3 000A
00E4 000A
00E5 2E442E4F
00E7 2E572E4E
0177 00E9 0009 FAUHD DATA 9,CR,CR,LF,LF,LF,LF,LF,C'.U.P'
00EA 000D
00EB 000D
00EC 000A
00ED 000A
00EE 000A
00EF 000A
00F0 000A
00F1 2E552E50
0178 00F3 002F FLHL1 DATA FLHL1E-FLHL1,C'.L.I.N.K.'
00F4 2E4C2E49
00F6 2E4E2E4B
00F8 2E20
0179 00F9 2E532E54 DATA C'.S.T.A.T.I.S.T.I.C.S.: '
00FB 2E412E54
00FD 2E492E53
00FF 2E542E49
0101 2E432E53
0103 2E3A
0180 0104 0000 DATA 13,0,C'.E.N.D. .T.I.M.E. . . '
0105 000A
0106 2E452E4E
0108 2E442E20
010A 2E542E49
010C 2E4D2E45
010E 2E202E20
0181 0110 2E302E30 FLHL1A DATA C'.0.0.:.0.0.:.0.0...0.0.0. . . '
0112 2E3A2E30
0114 2E302E3A

```



```

0116 2E302E30
0118 2E2E2E30
011A 2E302E30
011C 2E202E20
011E 2E20
0182 011E FLHL1E EQU $-1
0183 011F 0041 FJDM DATA FJDMA=FJDM,13,13,13,10,10,10
0120 000D
0121 000D
0122 000D
0123 000A
0124 000A
0125 000A
0184 0126 2E452E4E DATA C'.E.N.D. .O.F. .R.U.N',13,10
0128 2E442E20
012A 2E4F2E46
012C 2E202E52
012E 2E552E4E
0130 000D
0131 000A
0185 0132 2E542E4F DATA C'.T.O. .R.E.I.N,I.T.I.A.L.I.Z.E. .T.H.I.S'
0134 2E202E52
0136 2E452E49
0138 2E4E2E49
013A 2E542E49
013C 2E412E4C
013E 2E492E5A
0140 2E452E20
0142 2E542E48
0144 2E492E53
0186 0146 2E202E50 DATA C'. .P.R.O.G. .H.I.T. .C.A.R.R.I.A.G.E'
0148 2E522E4F
014A 2E472E20
014C 2E482E49
014E 2E542E20
0150 2E432E41
0152 2E522E52
0154 2E492E41
0156 2E472E45
0187 0158 2E202E52 DATA C'. .R.E.T.U.R.N',13,10
015A 2E452E54
015C 2E552E52
015E 2E4E
015F 000D
0160 000A
0188 0160 FJDMA EQU $-1
0189 * INPUT AREA FOR AIR/GRD FINAL RECS
0190 0161 FTAC RES 1 I/O CHK CHAR
0191 0162 FTAT RES 9 END TME IN ASCII
0192 016B FTA RES 64 ECHO:AK,NK,NR,BC

```

```

0193 01AB          FTA1  RES  64          ECHOBE,ECHOTC
0194 01EB          FTA2  RES  64          NE:AK,NK,NR,BC
0195 022B          FTA3  RES  64          SCRATCH
0196              * TABLE FOR FINAL REC IN BINARY FORM
0197 026B          FTBE  RES  4           ECHOAK
0198 026F          RES  4           ECHONK
0199 0273          RES  4           ECHONR
0200 0277          RES  4           ECHOBC
0201 027B          FTBN  RES  4           NEAK
0202 027F          RES  4           NENK
0203 0283          RES  4           NENR
0204 0287          RES  4           NEBC
0205 028B          FTBC  RES  8           DBLEWRD BIT ERR CNTS
0206 0293          FTBCC RES  8           DBLEWRD CHAR CNTS
0207 029B          FTBT  EQU  $           TABLE OF LINE NAMES
0208 029B 2E412E43  DATA C'.A.C.K.N.O.W.L.E.D.G.E.'
      029D 2E4B2E4E
      029F 2E4F2E57
      02A1 2E4C2E45
      02A3 2E442E47
      02A5 2E45
0209 02A6          RES  5
0210 02AB 2E4E2E4F  DATA C'.N.O.N.-.A.C.K.N.O.W.
      02AD 2E4E2E2D
      02AF 2E412E43
      02B1 2E4B2E4E
      02B3 2E4F2E57
      02B5 2E20
0211 02B6          RES  5
0212 02BB 2E4E2E4F  DATA C'.N.O.N.-.R.E.S.P. . .
      02BD 2E4E2E2D
      02BF 2E522E45
      02C1 2E532E50
      02C3 2E202E20
      02C5 2E20
0213 02C6          RES  5
0214 02CB 2E422E43  DATA C'.B.C.S. .F.R.R.O.R. .
      02CD 2E532E20
      02CF 2E452E52
      02D1 2E522E4F
      02D3 2E522E20
      02D5 2E20
0215              * BIT ERR STATISTICS LINES
0216 02D6 00C7      FTBLL DATA FTBLX-FTBLL,CR,CR,CR,LF
      02D7 000D
      02D8 000D
      02D9 000D
      02DA 000A
0217 02DB 2E542E4F  FBNL  DATA C'.T.O.T.A.L. .B.I.T.S. . .#. .
      02DD 2E542E41

```

	02DF	2E4C2E20	
	02E1	2E422F49	
	02E3	2E542E53	
	02E5	2E202E20	
	02E7	2E232F20	
	02E9	2E20	
0218	02EA	20202020	DATA C'
	02EC	20202020	
	02EE	20202020	
	02F0	20202020	
	02F2	20202020	
	02F4	20202020	
	02F6	20202020	
	02F8	2020	
0219	02F9	20202020	DATA C'
	02FB	20202020	
	02FD	20202020	
	02FF	20202020	
	0301	20202020	
	0303	20202020	
	0305	20202020	
	0307	2020	
0220	0308	20202020	DATA C'
	030A	20202020	
	030C	20202020	
	030E	20202020	
	0310	20202020	
	0312	20202020	
	0314	20202020	
	0316	2020	
0221	0317	20202020	DATA C'
	0319	2020	
0222	031A	000D	DATA CR,CR,LF
	031B	000D	
	031C	000A	
0223	031D	2E422E49	FBEL DATA C'.B.I.T. .E.R.R.O.R.S. . .# . .
	031F	2E542E20	
	0321	2E452E52	
	0323	2E522E4F	
	0325	2E522E53	
	0327	2E202E20	
	0329	2E232F20	
	032B	2E20	
0224	032C	20202020	DATA C'
	032E	20202020	
	0330	20202020	
	0332	20202020	
	0334	20202020	
	0336	20202020	
	0338	20202020	

```

0225 033A 2020
      033B 20202020 DATA C'
      033D 20202020
      033F 20202020
      0341 20202020
      0343 20202020
      0345 20202020
      0347 20202020
      0349 2020
0226 034A 20202020 DATA C'
      034C 20202020
      034E 20202020
      0350 20202020
      0352 20202020
      0354 20202020
      0356 20202020
      0358 2020
0227 0359 20202020 DATA C'
      035B 2020
0228 035C 000D DATA CR,CR,LF
      035D 000D
      035E 000A
0229 035F 2E202F20 FTBL DATA C' . . . . .% .
      0361 2E202F20
      0363 2E202F20
      0365 2E202E20
      0367 2E202E20
      0369 2E202E20
      036B 2E252F20
      036D 2E20
0230 036E 20202020 DATA C'
      0370 20202020
      0372 20202020
      0374 20202020
      0376 20202020
      0378 20202020
      037A 20202020
      037C 2020
0231 037D 20202020 DATA C'
      037F 20202020
      0381 20202020
      0383 20202020
      0385 20202020
      0387 20202020
      0389 20202020
      038B 2020
0232 038C 20202020 DATA C'
      038E 20202020
      0390 20202020
      0392 20202020

```

```

0394 20202020
0396 20202020
0398 20202020
039A 2020
0233 039B 20202020      DATA C+
039D 2020
0234 039D      FTBLX EQU $-1
0235      * TOTAL NBRS OF MSGS
0236 039E      FTBET RES 4      ECHO TOTS = 4 REC LENGHS
0237 03A2      FTBNT RES 4      NONECHO = 4 REC LENGHS
0238      *
0239      *****
0240      *
0241      *
0242      *
0243      ***** DO AVG ELAPSED TME LINE (KATL) *****
0244      * CALLING SEQUENCF:
0245      *      BL 0,KATL
0246      *
0247      *      WHEN THIS ROUTINE IS CALLED RF SHOULD POINT
0248      * TO AN ENTRY IN BTOT. KATL CREATES & PRINTS
0249      * AN AVG FLAPSED TIME/%SUCCESSFUL LINE FROM
0250      * THE BTOT ENTRY
0251      *****
0252 03A6 488003B0 KATL ST 0,KASVR
0253 03A8 74800000      BL 0,RSAB      SAVE REGS
0254 03AA 708203B8      B KA1
0255 03AC 74800000 KA2 BL 0,RRES      RESTORE REGS
0256 03AE 72820002      B 2,0      RETURN
0257 03B0      KASVR RES 8      REG SAVE AREA
0258      * IF THIS IS THE FIRST TIME KATL HAS BEEN
0259      * CALLED, PRINT THE HEADING LINF
0260 03B8 C0810003 KA1 CRA 1,3      FIRST TIME KATL CALLED?
0261 03BA E08C03C1      BC LT,KADL      BRNCH IF NO
0262 03BC 74800000      BL 0,PRINT
0263 03BE 03EC      DATA KATLHD
0264 03BF 708203BC      B $-3      BUSY RETURN
0265      *
0266 03C1 44870000 KADL LA RF,0      RF FOR CALLING MMOV,LPRCT
0267 03C3 74800000      BL 0,HAT      PUT AVG TME IN LINE
0268 03C5 0000      DATA 0,KAL+13
03C6 043F
0269      *
0270 03C7 74800000      BL 0,MMOV      PUT MSG LNGH IN LNE
0271 03C9 0001      DATA 1
0272 03CA 0006      DATA 6,6,KAL+1
03CB 0006
03CC 0432
0273      *
0274 03CD 466A0004      L #2,4,RE      NBR SUCCESSFUL

```

```

0275 03CF 74800000 BL 0,JASCI PUT #SUCC IN LINE
0276 03D1 0003 DATA 3,KAL+30
      03D2 044F
0277 *
0278 03D3 466A0005 L #2,5,RE NBR UNSUCCESSFUL
0279 03D5 74800000 BL 0,JASCI PUT #UNSUCC IN LINE
0280 03D7 0003 DATA 3,KAL+39
      03D8 0458
0281 *
0282 03D9 46600004 L 0,4,RE
0283 03DB 4E600005 A 0,5,RE TOTAL NBR MSGS
0284 03DD 488003EB ST 0,KAWK
0285 03DF 74800000 BL 0,LPRCT PUT %SUCC IN LINE
0286 03E1 0004 DATA 4,KAWK,KAL+47
      03E2 03EB
      03E3 0460
0287 * PRINT LINE
0288 03E4 74800000 BL 0,PRINT
0289 03E6 042C DATA KALP
0290 03E7 708203E4 B #3 BUSY RETURN
0291 *
0292 03E9 708203AC B KA2 GO RETURN
0293 **** DATA # SCRATCH AREAS ****
0294 03EB KAWK RES 1 FOR TOTAL NBR MSGS
0295 03EC 003B KATLHD DATA 59,13,13,13,10,10,10
      03ED 000D
      03EE 000D
      03EF 000D
      03F0 000A
      03F1 000A
      03F2 000A
0296 03F3 2E4D2F53 DATA C'.M.S.G. .L.N.G.T.H. . . .
      03F5 2E472F20
      03F7 2E4C2E4E
      03F9 2E472E54
      03FB 2E482E20
      03FD 2E202E20
0297 03FF 2E412E56 DATA C'.A.V.G. .T.R.A.N.S. .T.I.M.E.'
      0401 2E472E20
      0403 2E542E52
      0405 2E412E4E
      0407 2E532F20
      0409 2E542E49
      040B 2E4D2F45
0298 040D 2E202E20 DATA C'. . . .S.U.C.C. . . .
      040F 2E202E23
      0411 2E532E55
      0413 2E432E43
      0415 2E202E20
      0417 2E20

```

0299 0418 2E232E55 DATA C'.P.U.N.S.U.C.C. . . . '
 041A 2E4E2E53
 041C 2E552E43
 041E 2E432E20
 0420 2E202E20

0422 2E20
 0300 0423 2E252E53 DATA C'.X.S.U.C.C. . . . '
 0425 2E552E43
 0427 2E432E20
 0429 2E202E20
 042B 2E20

0301 042C 003A KALP DATA 58.13.13.13.10
 042D 000D
 042E 000D
 042F 000D
 0430 000A

0302 0431 2E202E20 KAL DATA C'. '
 0433 2E202E20
 0435 2E202E20
 0437 2E202E20
 0439 2E202E20
 043B 2E202E20
 043D 2E202E20
 043F 2E20

0303 0440 2E202E20 DATA C'. '
 0442 2E202E20
 0444 2E202E20
 0446 2E202E20
 0448 2E202E20
 044A 2E202E20
 044C 2E202E20
 044E 2E20

0304 044F 2E202E20 DATA C'. '
 0451 2E202E20
 0453 2E202E20
 0455 2E202E20
 0457 2E202E20
 0459 2E202E20
 045B 2E202E20
 045D 2E20

0305 045E 2E202E20 DATA C'. '
 0460 2E202E20
 0462 2E202E20
 0464 2E202E20
 0466 2E202E20
 0468 2E202E20
 046A 2E202E20
 046C 2E20

0306 *****
 0307 *

```

0308 *
0309 *
0310 ***** CONVRT FINAL REC TO BINARY (QCFT) *****
0311 * CALLING SEQUFNCE:
0312 *     BL     0,QCFT
0313 *
0314 *     ROUTINE TAKES FINAL REC FTA & CONVERTS
0315 *     ALL THE FIELDS TO BINARY, CREATING A BINARY
0316 *     TABLE FTB. IT ALSO ACCUMULATES TOTAL NBR OF
0317 *     ECHO/NONECHO MSGS FOR EACH OF 4 MSG LNTHS
0318 *****
0319 046D 48800477 QCFT ST 0,QCSVR
0320 046F 74800000 BL 0,RSVAV SAVE REGS
0321 0471 7082047F B QC1
0322 0473 74800000 QC2 BL 0,RRES RESTORE RECS
0323 0475 72820002 B 2.0 RETURN
0324 0477 QCSVR RES 8 REG SAVE AREA
0325 *
0326 * REARRANGE TABLE FOR CONVENIENCE
0327 047F 44860000 QC1 LA RE,0 SETUP FOR MMOV CALL
0328 0481 44870000 LA RF,0
0329 0483 74800000 BL 0,MMOV
0330 0485 0002 DATA 2 2 FIELDS TO MOVE
0331 0486 003F DATA 63,FTA1,FTA3
0331 0487 01AB
0331 0488 022B
0332 0489 007F DATA 127,FTA2,FTA1
0332 048A 01EB
0332 048B 01AB
0333 * STEP THROUGH FTA CONVERTING BCH TO BINARY:
0334 048C 4483002F LA 3,47 LOOP 48 TIMES
0335 048E 4484016B LA RD,FTA INDEX IN FTA
0336 0490 4482026B LA 2,FTBE INDEX IN FTB
0337 *
0338 0492 74800000 QCL1 BL 0,DTB FOUR CHARS AT (0,RD)
0339 0494 0000 DATA 0,3,16 CONVRT TO ONE BIN
0339 0495 0003
0339 0496 0010
0340 0497 4AAB0000 ST *3,0,2 WORD AT (0,2)
0341 *
0342 0499 4C840004 AA RD,4 MOVE PNTR THRU FTA
0343 049B 4C820001 AA 2,1 MOVE PNTR THRU FTB
0344 049D 0C3F0492 ARB -1,QCL1,3 LOOP
0345 *
0346 ** ACCUMULATE NBR OF ECHO/NECHO MSGS FOR 4
0347 * MSG LNTHS
0348 049F 44800000 LA 0,0 FIRST LOOP TO ZERO CNTRS
0349 04A1 44810007 LA 1,7
0350 04A3 4A90039E ST 0,FTBET,1
0351 04A5 0C1F04A3 ARB -1,$-2,1 LOOP TO ZERO CNTRS

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```

0352 *
0353 04A7 44810003 LA 1,3 OUTER LOOP CNTR
0354 04A9 44820003 QCMO LA 2,3 INNER LOOP CNTR
0355 04AB 44860004 QCMD LA 6,4 COMPUTE ADDR OF ENTRY
0356 04AD CE960000 MA 6,0,1 (R1,R2) IN FTA MATRIX
0357 04AF 4EA70000 AA 7,0,2
0358 * ADD FTB ENTRY TO ECHO CNTR FOR APPROPRIATE LENGH
0359 04B1 4620039E L 0,FTBET,2 OLD MSG CNT
0360 04B3 4E70026B A 0,FTBF,7 ADD FTB ENTRY
0361 04B5 4AA0039E ST 0,FTBET,2 NEW MSG CNT
0362 * ADD FTB ENTRY TO NONECHO CNTR FOR APPROP LENGH
0363 04B7 462003A2 L 0,FTBNT,2
0364 04B9 4E70027B A 0,FTBN,7
0365 04BB 4AA003A2 ST 0,FTBNT,2
0366 *
0367 04BD 0C2F04AB ARB -1,QCMD,2 STEP THRU INNER LOOP
0368 04BF 0C1F04A9 ARB -1,QCMO,1 OUTER LOOP
0369 *
0370 04C1 70820473 B QC2 GO RETURN
0371 *****
0372 *
0373 *
0374 *
0375 ***** PRT FINAL PERCENTAGE LINE (VFPL) *****
0376 * CALLING SEQUENCE:
0377 * BI 0,VFPL
0378 * DATA N1,N2,N3,N4
0379 *
0380 * RE POINTS TO FTBE & RF POINTS TO FTBET, OR RE
0381 * POINTS TO FTBN & RF POINTS TO FTBNT. ROUTINE CREATES
0382 * & PRINTS A FINAL PERCENTAGE LINE FROM EACH OF ROWS
0383 * N1,N2,N3,N4 OF THE TABLE POINTED TO BY RE.
0384 * IF ANY N IS NEGATIVE, IT IS SKIPPED.
0385 *****
0386 04C3 488004CD VFPL ST 0,VFSVE
0387 04C5 74800000 BL 0,RSABV SAVE REGS
0388 04C7 708204D5 B VF1
0389 04C9 74800000 VF2 BL 0,RRES RESTORE REGS
0390 04CB 72820006 B 6,0 RETURN
0391 04CD VFSVE RES 8 REG SAVE AREA
0392 *
0393 04D5 46810002 VF1 LA 1,2,0 PNTR TO FIRST ARG
0394 * GET PNTR TO ROW IN TABLE
0395 04D7 46120000 VF1A L 2,0,1 CURRENT ARG
0396 04D9 E08C051C BC LT,VFNXT SKIP IT IF NEG
0397 04DB 60020082 MLA 2,R2 MULT ARG BY 4
0398 04DD 4EA60000 AA RE,0,2 PNTR TO ROW IN TBLE
0399 * SET UP NUMBER LINE
0400 04DF 466A0000 L #2,0,RE FOR LENGH 0-1
0401 04E1 74800000 BL 0,JASCI

```

```

0402 04E3 0004          DATA 4,VFNL+21
      04E4 058A
0403 04E5 466A0001     L    *2,1,RE          FOR LGTH 2-30
0404 04E7 74800000     BL   0,JASCI
0405 04E9 0004          DATA 4,VFNL+33
      04EA 0596
0406 04EB 466A0002     L    *2,2,RE          FOR LGTH 31-120
0407 04ED 74800000     BL   0,JASCI
0408 04EF 0004          DATA 4,VFNL+45
      04F0 05A2
0409 04F1 466A0003     L    *2,3,RE          FOR LGTH 121-999
0410 04F3 74800000     BL   0,JASCI
0411 04F5 0004          DATA 4,VFNL+57
      04F6 05AE
0412                                * SET UP PERCENT LINE
0413 04F7 74800000     BL   0,LPRCT          % FOR MSG LGTHS 0.1
0414 04F9 0000          DATA 0,0,VFL+19
      04FA 0000
      04FB 05CB
0415 04FC 74800000     BL   0,LPRCT          % FOR LGTHS 2-30
0416 04FE 0001          DATA 1,1,VFL+31
      04FF 0001
      0500 05D7
0417 0501 74800000     BL   0,LPRCT          % FOR LGTHS 31-120
0418 0503 0002          DATA 2,2,VFL+43
      0504 0002
      0505 05E3
0419 0506 74800000     BL   0,LPRCT          % FOR LGTHS 121-999
0420 0508 0003          DATA 3,3,VFL+55
      0509 0003
      050A 05EF
0421                                * MOVE IN NAME OF LINE
0422 050B 60020082     MLA  2,R2          MULT ROW OFFSET BY 4
0423 050D 46A6029B     LA   RE,FTBT,2     SETUP FOR MMOV CALL
0424 050F 44870000     LA   RF,0
0425 0511 74800000     BL   0,MMOV          MOVE IN NAME OF LINE
0426 0513 0001          DATA 1,10,0,VFNL
      0514 000A
      0515 0000
      0516 0575
0427                                * PRINT LINE
0428 0517 74800000     BL   0,PRINT
0429 0519 0570          DATA VFLL
0430 051A 70820517     B    $-3
0431                                * SETUP FOR NXT ARG. IF ANY
0432 051C 4C810001     VFNXT AA  1,1          INCR ARG PNTR
0433 051E 440004CD     L    0,VFSVE        RESET R0 TO ARGS
0434 0520 C2810006     CRA  1,6,0          IS ARG PNTR TOO HIGH
0435 0522 E08B04C9     BC   EQ,VF2          GO RETURN IF YES
0436 0524 440604D3     L    RE,VFSVE+6     RESET RE

```

```

0437 0526 440704D4      L   RF,VFSVE+7   RESET RF
0438 0528 708204D7      B   VF1A         GO DO NXT LINE
0439
0440
0441 052A 0045          *
      052B 000D          **** DATA & SCRATCH ****
      052C 000D          VFHL  DATA 69,CR,CR,CR,LF,LF
      052D 000D
      052E 000A
      052F 000A
0442 0530 2E202E4D      DATA C'. .M.S.G. .L.E.N.G.T.H'
      0532 2E532E47
      0534 2E202E4C
      0536 2E452E4E
      0538 2E472E54
      053A 2E48
0443 053B 2E2E2E2E      DATA C'.....'
      053D 2E2E2E2E
      053F 2E2E2E2E
      0541 2E2E2E2E
0444 0543 2E302E30      DATA C'.0.0.0..0.0.1.....'
      0545 2E302E2C
      0547 2E302E30
      0549 2E312E2E
      054B 2E2E2E2E
      054D 2E2E2E2E
0445 054F 2E302E30      DATA C'.0.0.2.-.0.3.0.....'
      0551 2E322E2D
      0553 2E302E33
      0555 2E302E2E
      0557 2E2E2E2E
      0559 2E2E2E2E
0446 055B 2E302E33      DATA C'.0.3.1.-.1.2.0.....'
      055D 2E312E2D
      055F 2E312E32
      0561 2E302E2E
      0563 2E2E2E2E
      0565 2E2E2E2E
0447 0567 2E312E32      DATA C'.1.2.1.-.9.9.9. . '
      0569 2E312E2D
      056B 2E392E39
      056D 2E392E20
      056F 2E20
0448
0449 0570 0086          * AREA TO BUILD #/% LINES
      0571 000D          VFLL  DATA VFLX-VFLL,CR,CR,CR,LF
      0572 000D
      0573 000D
      0574 000A
0450 0575 20202020      VFNL  DATA C'

```

	0577	20202020	
	0579	20202020	
	057B	20202020	
	057D	20202020	
	057F	20202020	
	0581	2E232020	
	0583	2020	
0451	0584	20202020	DATA C'
	0586	20202020	
	0588	20202020	
	058A	20202020	
	058C	20202020	
	058E	20202020	
	0590	20202020	
	0592	2020	
0452	0593	20202020	DATA C'
	0595	20202020	
	0597	20202020	
	0599	20202020	
	059B	20202020	
	059D	20202020	
	059F	20202020	
	05A1	2020	
0453	05A2	20202020	DATA C'
	05A4	20202020	
	05A6	20202020	
	05A8	20202020	
	05AA	20202020	
	05AC	20202020	
	05AE	20202020	
	05B0	2020	
0454	05B1	20202020	DATA C'
	05B3	2020	
0455	05B4	0000	DATA CR,CR,CR,LF
	05B5	0000	
	05B6	0000	
	05B7	000A	
0456	05B8	20202020 VFL	DATA C' .%
	05BA	20202020	
	05BC	20202020	
	05BE	20202020	
	05C0	20202020	
	05C2	20202020	
	05C4	2E252020	
	05C6	2020	
0457	05C7	20202020	DATA C'
	05C9	20202020	
	05CB	20202020	
	05CD	20202020	
	05CF	20202020	

```

05D1 20202020
05D3 20202020
05D5 2020
0458 05D6 20202020 DATA C
05D8 20202020
05DA 20202020
05DC 20202020
05DE 20202020
05E0 20202020
05E2 20202020
05F4 2020
0459 05E5 20202020 DATA C
05E7 20202020
05E9 20202020
05EB 20202020
05ED 20202020
05EF 20202020
05F1 20202020
05F3 2020
0460 05F4 20202020 DATA C
05F6 2020
0461 05F6 VFLX EQU $-1
0462 *****
0463 *
0464 *
0465 *
0466 ***** COMPUT BIT ERR PRCTS (BPRCT) *****
0467 * CALLING SEQUENCE:
0468 * BL 0,BPRCT
0469 * DATA N N=0/1/2/3
0470 * DATA ADDRA ABS ADDR OF ANSWER
0471 *
0472 * USES FTBC & FTBCC (NOW CONTAINING TOTAL NBR OF
0473 * ECHOED BITS) TO COMPUTE % OF ECHOED BITS IN ERR FOR
0474 * MSG LGTH N (N=0/1/2/3 FOR MSG LGTH 1/30/120/220).
0475 * THE % IS PLACED AT ADDRA AS AN ASCII STRING
0476 *****
0477 05F7 48800601 BPRCT ST 0,BPSVR
0478 05F9 74800000 BL 0,RSVAV SAVE REGS
0479 05FB 70820609 B BP1
0480 05FD 74800000 BP2 BL 0,RRES RESTORE REGS
0481 05FF 72820004 B 4,0 RETURN
0482 0601 BPSVR RFS 8 REG SAVE AREA
0483 *
0484 0609 46010002 BP1 L 1,2,0 ARG N
0485 060B 60010081 MLA 1,X'81' N#2 FOR DBLWRD INDEX
0486 060D 46160293 L 6,FTBCC,1 DBLWRD ECHOED BIT CNT
0487 060F 46170294 L 7,FTBCC+1,1
0488 0611 4886063C ST 6,BPW1 DBL STR TOTAL NBR BITS
0489 0613 4887063D ST 7,BPW1+1 ECHOED THIS LGTH

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0490
0491 0615 4616028B *
0492 0617 4617028C L 6,FTBC,1 DBLWRD BIT ERR CNT FOR
0493 0619 4886063E L 7,FTBC+1,1 THIS MSG LNTH
0494 061B 4887063F ST 6,BPW2 DBL STORE
0495 ST 7,BPW2+1
0496 * KEEP AS MUCH SIGNIFICANCE AS POSSIBLE IN
0497 061D 44820020 * SINGLE WORDS BPW1,BPW2
0498 061F C801063E LA 2,32 < 32 LEADING ZEROS
0499 0621 E08C062B BPS5 DLA 1,BPW2 - SHIFT LEFT 1
0500 0623 C801063C BC LT,BPSFA IF NEG HAVE FND SIGNIF
0501 0625 E08C0629 DLA 1,BPW1 SHIFT LEFT 1
0502 0627 0C2F061F BC LT,BPSF IF NEG HAVE FND SIGNIF
0503 ARB -1,BPSS,2 LOOP UPTO 32 TIMES
0504 0629 D801063C * SIGNIF FND, REPOSITION AS NECESSARY
0505 062B D801063E BPSF DRL 1,BPW1 LOG SHIFT RIGHT 1
0506 BPSFA DRL 1,BPW2 LOG SHIFT RIGHT 1
0507 062D 46010003 * USE LPRCT TO GET % AS ASCII STRING
0508 062F 48810639 L 1,3,0 ARG ADDRA
0509 0631 44860000 ST 1,BPCPL+2 SET UP TO CALL LPRCT
0510 0633 44870000 LA RE,0 SET UP FOR LPRCT CALL
0511 0635 74800000 LA RF,0
0512 0637 063E BPCPL DATA BPW2,BPW1,%
0638 063C
0639 0639
0513 *
0514 063A 708205FD B BP2 GO RETURN
0515 *
0516 ***** DATA & SCRATCH *****
0517 063C BPW1 RES 2 DBLWRD SCRATCH FOR NBR CHARS
0518 063E BPW2 RES 2 DBLWRD SCRATCH FOR BIT ERR CNT
0519 *****
0520 *
0521 *
0522 ***** TRANSFER VECTOR *****
0523 0640 0000 FTV DATA START,X'01C0'
0641 01C0
0524 0642 END FTV
0000 ERRORS : LENGTH = 0642

```

GRAPH DATA REDUCTION
AND ANALYSIS MODULES

MATH07

GRAD03-GRFL

GRAP35


```

0001          TITL MATH07,CONVERSION ROUTINES
0002 0000      MATH07 PSEG
0003 0000      MATH EQU $
0004 0081      R1 EQU X'81'
0005 0082      R2 EQU X'82'
0006 0083      R3 EQU X'83'
0007 0080      R0 EQU X'80'
0008 0000      DEF CAD,ADD,CONA,BIN2
0009 0000      DEF CRLF,MOVT,MOVAS,MOVN
0010 0000      DEF PRIN4,CATB
0011 0000      REF PRINTP
0012          *
0013 0000      REF DATALP
0014 0000 70070000 CAD NOP COMPARE ASCII DIFFERENCE
0015 0002 48810028 ST 1,CAD1+1
0016 0004 48800026 ST 0,CADX+1
0017 0006 4885002C ST 5,CAD5+1
0018 0008 44850000 LA 5,MATH
0019          *
0020 000A 46010002 L 1,2,0 LARGER ASCII
0021 000C 4482002F LA 2,BIN
0022 000E 7480003B BL 0,CONB
0023          *
0024 0010 44000026 L 0,CADX+1
0025 0012 46010003 L 1,3,0 SMALLER ASCII
0026 0014 44820033 LA 2,BIN1
0027 0016 7480003B BL 0,CONB
0028          *
0029 0018 748000A5 BL 0,DIFF
0030 001A 002F DATA BIN,BIN1,BIN2 BIN-BIN1=BIN2
001B 0033
001C 0037
0031 0010 44000026 L 0,CADX+1
0032 001F 46010004 L 1,4,0 RESULT LOC FOR ASCII
0033 0021 44820037 LA 2,BIN2
0034 0023 74800078 BL 0,CONA
0035 0025 44800025 CADX LA 0,$
0036 0027 44810027 CAD1 LA 1,$
0037 0029 44840029 CAD4 LA 4,$
0038 002B 4485002B CAD5 LA 5,$
0039 002D 72820005 B 5,0 RET CALL+5
0040          *
0041 002F 0000 BIN DATA 0,0,0,0
0030 0000
0031 0000
0032 0000
0042 0033 0000 BIN1 DATA 0,0,0,0
0034 0000
0035 0000
0036 0000

```

0043	0037 0000	BIN2	DATA	0,0,0,0	
	0038 0000				
	0039 0000				
	003A 0000				
0044		*			
0045	003B 4880006E	CONB	ST	0,CONBX+1	CONVERT TO BINARY
0046	003D 48850074		ST	5,CONB5+1	
0047	003F 44850000		LA	5,MATH	
0048	0041 48810070		ST	1,CONB1+1	
0049	0043 48820072		ST	2,CONB2+1	
0050	0045 74800134		BL	0,CATB	HR
0051	0047 74800134		BL	0,CATB	MIN
0052	0049 74800134		BL	0,CATB	SEC
0053	004B 45030081		L	3,*R1	HUNDREDS MS CONVERT
0054	004D 5883003F		NA	3,X'3F'	
0055	004F 4C83FFD0		AA	3,-X'30'	
0056	0051 48830178		ST	3,TEM1	
0057	0053 48830179		ST	3,TEM2	
0058	0055 60060178		MLA	6,TEM1	*64
0059	0057 60050083		MLA	5,R3	*32
0060	0059 60020179		MLA	2,TEM2	*4
0061	005B 4C030179		A	3,TEM2	
0062	005D 4C030178		A	3,TEM1	
0063	005F 48830077		ST	3,HMSB	HUND MS BIN
0064	0061 4C810001		AA	1,1	
0065	0063 74800134		BL	0,CATB	MS
0066	0065 4C82FFFF		AA	2,-1	
0067	0067 44030077		L	3,HMSB	
0068	0069 4D030082		A	3,*R2	
0069	006B 49830082		ST	3,*R2	
0070	006D 4480006D	CONBX	LA	0,\$	
0071	006F 4481006F	CONB1	LA	1,\$	
0072	0071 44820071	CONB2	LA	2,\$	
0073		*			
0074	0073 44850073	CONB5	LA	5,\$	
0075	0075 72820002		B	2,0	
0076	0077	HMSB	RES	1	HUNDRED MS BIN
0077		*			
0078	0078 4880009B	CONA	ST	0,CONAX+1	CONVERT TO ASCII
0079	007A 488500A1		ST	5,CONA5+1	
0080	007C 44850000		LA	5,MATH	
0081	007E 7480015A		BL	0,CBTA	
0082	0080 7480015A		BL	0,CBTA	MIN
0083	0082 7480015A		BL	0,CBTA	SFC
0084	0084 157BA400		MOV	ZEROA,(0,1)	
0085	0086 45030082		L	3,*R2	
0086	0088 488300A4		ST	3,CONAT	TEM R2 PLACE,RESTORE LATER
0087	008A 50830064		SA	3,100	
0088	008C E08C0092		BC	12,\$+6	MINUS,TOO MUCH
0089	008E 20002001		AMI	(0,1),.1	

0090	0090	7082008A	B	\$-6	
0091	0092	4C830064	AA	3.100	
0092	0094	49830082	ST	3.*R2	
0093	0096	4C810001	AA	1,1	POINTS TO TENS MS ASC PLACE
0094	0098	7480015A	BL	0,CBTA	MS
0095	009A	4480009A	CONAX	LA	0,\$
0096	009C	4C82FFFF	AA	2,-1	RESTORE MS
0097	009E	14A4A800	MOV	CONAT,(0,2)	
0098	00A0	448500A0	CONA5	LA	5,\$
0099	00A2	72820002	B	2.0	
0100	00A4		CONAT	RES	1
0101			*		
0102			*R1-R2	DIFF	PUT IN R2
0103	00A5	488000DC	DIFF	ST	0,DIFX+1
0104	00A7	46010002	L	1,2,0	COMPUTE BIN DIFF
0105	00A9	46020003	L	2,3,0	ARG+2 IS FIRST BIN
0106	00AB	140414EC	MOV	(4,0),DIFPT	ARG+3 IS SMALLER BIN
0107	00AD	14FDB4EF	MOV	M4,DIFCTR	ARG + 4 IS WHERE RESULT GOES
0108	00AF	4C810003	AA	1,3	
0109	00B1	4C820003	AA	2,3	LOOK AT MS FIRST
0110	00B3	20ECA003	AMI	DIFPT,3	
0111	00B5	448000E7	LA	0,BORROW	
0112	00B7	157CB4EA	MOV	ZERO,BOR	
0113	00B9	45030081	DIF1	L	3,*R1
0114	00BB	4C0300EA	A	3,BOR	
0115	00BD	E08C00C1	BC	12,\$+4	BORROWED LAST TIME
0116	00BF	708200C7	B	NBA	NO BORROW
0117	00C1	4D030080	A	3,*R0	
0118	00C3	14FBB4EA	MOV	M1,BOR	BORROW -1
0119	00C5	708200C9	B	\$+4	
0120	00C7	157CB4EA	NBA	MOV	ZERO,BOR
0121	00C9	51030082	S	3,*R2	
0122	00CB	E08C00DF	BC	12,DIFC	CARRY OVER
0123	00CD	498300EC	ST	3,*DIFPT	
0124	00CF	4C82FFFF	DIF2	AA	2,-1
0125	00D1	4C81FFFF	AA	1,-1	
0126	00D3	20ECBFFF	AMI	DIFPT,-1	
0127	00D5	4C800001	AA	0,1	
0128	00D7	20EFA001	AMI	DIFCTR,1	
0129	00D9	E08C00B9	BC	12,DIF1	MORE TO GO
0130	00DB	448000DB	DIFX	LA	0,\$
0131	00DD	72820005	B	5,0	RET CALL+5
0132			*		
0133	00DF	4D030080	DIFC	A	3,*R0
0134	00E1	498300EC	ST	3,*DIFPT	BORROW
0135	00E3	14FBB4EA	MOV	M1,BOR	BORROW -1
0136	00E5	708200CF	B	DIF2	
0137	00E7	0318	BORROW	DATA	1000.60.60
	00E8	003C			
	00E9	003C			

0138	00EA		BOR	RES	1	
0139	00EB	FFFF	M1	DATA	-1	
0140	00EC		DIFPT	RES	1	
0141	00ED	FFFC	M4	DATA	-4	
0142	00EE	FFFD	M3	DATA	-3	
0143	00EF		DIFCTR	RES	1	
0144			*			
0145	00F0	4880012D	ADD	ST	0,ADDX+1	
0146	00F2	4885012F		ST	5,ADD5+1	
0147	00F4	44850000		LA	5,MATH	
0148	00F6	46010002		L	1,2,0	FIRST BIN
0149	00F8	46020003		L	2,3,0	2ND BIN
0150	00FA	14041532		MOV	(4,0),ADPTR	ADD OF RESULTING BIN
0151	00FC	2132A003		AMI	ADPTR,3	
0152	00FE	14EEB533		MOV	M3,ADCTR	
0153	0100	4C810003		AA	1,3	
0154	0102	4C820003		AA	2,3	
0155	0104	448000E7		LA	0,BORROW	
0156	0106	45030082	ADD3	L	3,*R2	
0157	0108	4D030081		A	3,*R1	
0158	010A	51030080	ADD1	S	3,*R0	
0159	010C	E08C0116		BC	12,ADD2	
0160	010E	4C82FFFF		AA	2,-1	
0161	0110	20004001		AMI	(0,2),1	
0162	0112	4C820001		AA	2,1	
0163	0114	7082010A		B	ADD1	
0164	0116	4D030080	ADD2	A	3,*R0	
0165	0118	49830132		ST	3,*ADPTR	
0166	011A	2132BFFF		AMI	ADPTR,-1	
0167	011C	4C81FFFF		AA	1,-1	
0168	011E	4C82FFFF		AA	2,-1	
0169	0120	4C800001		AA	0,1	
0170	0122	2133A001		AMI	ADCTR,+1	
0171	0124	E08C0106		BC	12,ADD3	
0172	0126	45030082		L	3,*R2	NO CARRYOVER FOR HOURS
0173	0128	4D030081		A	3,*R1	
0174	012A	49830132		ST	3,*ADPTR	
0175	012C	4480012C	ADDX	LA	0,\$	
0176	012E	4485012E	ADD5	LA	5,\$	
0177	0130	72820005		B	5,0	RET CALL+5
0178	0132		ADPTR	RES	1	
0179	0133		ADCTR	RES	1	
0180	0134	48800157	CATB	ST	0,CATBX+1	CONVERT ASC TO BIN
0181	0136	45030081		L	3,*R1	
0182	0138	5883003F		NA	3,X'3F'	
0183	013A	4C83FFD0		AA	3,-X'30'	
0184	013C	4883017A		ST	3,TEM3	
0185	013E	6003017A		MLA	3,TEM3	*8
0186	0140	60010083		MLA	1,R3	*2
0187	0142	4C03017A		A	3,TEM3	*10

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0188 0144 4C810001      AA  1,1
0189 0146 49830082      ST  3,*R2      TENS PART
0190 0148 45030081      L   3,*R1
0191 014A 5883003F      NA  3,X'3F'
0192 014C 4C83FFD0      AA  3,-X'30'
0193 014E 4D030082      A   3,*R2
0194 0150 49830082      ST  3,*R2
0195 0152 4C810002      AA  1,2
0196 0154 4C820001      AA  2,1
0197 0156 44800156      CATBX LA 0,$
0198 0158 72820002      B   2,0
0199
0200 015A 48800175      *      CBTA  ST 0,CBTAX+1      CONV BIN TO ASCII
0201 015C 157BA400      MOV  ZEROA,(0,1)
0202 015E 45030082      L   3,*R2
0203 0160 5083000A      SA  3,10
0204 0162 F08C0168      BC  12,$+6      DONE
0205 0164 20002001      AMI (0,1),1
0206 0166 70820160      B   $-6
0207 0168 4C83000A      AA  3,10
0208 016A 4C810001      AA  1,1
0209 016C 4C830030      AA  3,X'30'
0210 016E 49830081      ST  3,*R1
0211 0170 4C810002      AA  1,2      PAST XX:
0212 0172 4C820001      AA  2,1
0213 0174 44800174      CBTAX LA 0,$
0214 0176 72820002      B   2,0
0215
0216 0178      TEM1  RES 1
0217 0179      TEM2  RES 1
0218 017A      TEM3  RES 1
0219 017B 2030      ZEROA DATA C'0'
0220 017C 0000      ZERO  DATA 0
0221 017D 0000      TV    DATA DATALP,X'1C0'
017E 01C0
0222
0223 017F 48800187      *      CRLF  ST 0,CRLFX+1
0224 0181 75800000      BL   0,*PRINTP
0225 0183 018A      DATA CRLFM
0226 0184 70820181      B   $-3
0227 0186 44800186      CRLFX LA 0,$
0228 0188 72820002      B   2,0
0229 018A 0002      CRLFM DATA 2,X'A',X'D'
018B 000A
018C 000D
0230
0231 018D 70070000      *      MOV  T   NOP      MOV TIME,MOVE R1 TO R2
0232 018F 140F2800      MOV  (15,1),(0,2)
0233 0191 14102801      MOV  (16,1),(1,2)
0234 0193 14112803      MOV  (17,1),(3,2)

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0235 0195 14122804      MOV  (18.1),(4.2)
0236 0197 14132806      MOV  (19.1),(6.2)
0237 0199 14142807      MOV  (20.1),(7.2)
0238 019B 14152809      MOV  (21.1),(9.2)
0239 019D 1416280A      MOV  (22.1),(10.2)
0240 019F 1417280B      MOV  (23.1),(11.2)
0241 01A1 72820002      B    2.0          RETURN
0242                                     *
0243 01A3 488101C6      MOVAS ST  1,MOVA1+1
0244 01A5 46020002      L    2,2.0          FIRST ARG R1
0245 01A7 E08B01AB      BC   11,$+4        DON'T CHANGE R1
0246 01A9 46010002      L    1,2.0
0247 01AB 46020003      L    2,3.0
0248 01AD 14002800      MOV  (0.1),(0.2)
0249 01AF 14012801      MOV  (1.1),(1.2)
0250 01B1 14022802      MOV  (2.1),(2.2)
0251 01B3 14032803      MOV  (3.1),(3.2)
0252 01B5 14042804      MOV  (4.1),(4.2)
0253 01B7 14052805      MOV  (5.1),(5.2)
0254 01B9 14062806      MOV  (6.1),(6.2)
0255 01BB 14072807      MOV  (7.1),(7.2)
0256 01BD 14082808      MOV  (8.1),(8.2)
0257 01BF 14092809      MOV  (9.1),(9.2)
0258 01C1 140A280A      MOV  (10.1),(10.2)
0259 01C3 140B280B      MOV  (11.1),(11.2)
0260 01C5 448101C5      MOVA1 LA  1,$
0261 01C7 72820004      B    4.0
0262                                     *
0263 01C9 14052804      MOVN MOV  (5.1),(4.2)      MOVE MSG NUMBER AND ASCII
0264 01CB 14012800      MOV  (1.1),(0.2)
0265 01CD 14022801      MOV  (2.1),(1.2)
0266 01CF 14032802      MOV  (3.1),(2.2)
0267 01D1 14042803      MOV  (4.1),(3.2)
0268 01D3 72820002      B    2.0
0269                                     *
0270                                     *PRINT 4 ASCII DIGITS FOR BIN VALUE IN R1
0271 01D5 70070000      PRIN4 NOP
0272 01D7 488001F5      ST   0,PRIN40+1
0273 01D9 488301FB      ST   3,PRIN43+1
0274 01DB 44830212      LA   3,NUMBER+2
0275 01DD 488101F7      ST   1,PRIN41+1
0276 01DF 488201F9      ST   2,PRIN42+1
0277 01E1 680C0081      MRR  12,R1
0278 01F3 748201FE      BL   2,PRIN4A
0279 01E5 68080081      MRR  8,R1
0280 01E7 748201FE      BL   2,PRIN4A
0281 01E9 68040081      MRR  4,R1
0282 01EB 748201FE      BL   2,PRIN4A
0283 01ED 748201FE      BL   2,PRIN4A
0284 01EF 75800000      BL   0,*PRINTP      PRINT NO

```



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0001          TITL GRAD03.DATA SEGMENT
0002 0000      GRAD03 DSEG
0003 0000      GRAPD EQU $-
0004          ***** **DATA STATEMENTS*****
0005          *
0006 0000 000F      GOUPC DATA 15,C'. . . . . *
0001 2E202E20
0003 2E202E20
0005 2E202E20
0007 2E202E20
0009 2E202E20
000B 2E202E20
000D 2E202E20
000F 2E2A
0007 0010 000E      GOUPD DATA 14,C'. . . . . *
0011 2E202E20
0013 2E202E20
0015 2E202E20
0017 2E202E20
0019 2E202E20
001B 2E202E20
001D 2E202E20
0008 001F 0055      GRMI DATA X'55'
0009 0020 20522045      DATA C'R E A D Y . I N P U T . T A P E . A N D . '
0022 20412044
0024 20592E20
0026 2E49204E
0028 20502055
002A 20542E20
002C 2E542041
002E 20502045
0030 2E202E41
0032 204E2044
0034 2E20
0010 0035 000A      DATA X'A',X'D',C'. . T Y P E . .',X'27'
0036 000D
0037 2E202E54
0039 20592050
003B 20452E20
003D 2E20
003E 0027
0011 003F 2E522045      DATA C'R E T U R N',X'27'
0041 20542055
0043 2052204E
0045 0027
0012 0046 2E202E4F      DATA C'. . O R . .',X'A',X'D'
0048 20522E20
004A 2E20
004B 000A
004C 000D

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0013 004D 2E202E54      DATA C'. .T Y P E. .'X'27',C' S',X'27'
      004F 20592050
      0051 20452E20
      0053 2E20
      0054 0027
      0055 2053
      0056 0027
0014 0057 2E202E28      DATA C'. .( S T A T I S T I C S. .O N L Y )'
      0059 20532054
      005B 20412054
      005D 20492053
      005F 20542049
      0061 20432053
      0063 2E202E4F
      0065 204E204C
      0067 20592029
0015 0069 000A          DATA X'A',X'D',C'.W H E N. .R E A D Y'
      006A 0000
      006B 2E572048
      006D 2045204E
      006F 2E202E52
      0071 20452041
      0073 20442059
0016 0075 0028          CGUM  DATA X'28'
0017 0076 2E232E47      DATA C'.#.G I V E. .U P S. '
      0078 20492056
      007A 20452E20
      007C 2E552050
      007E 20532E20
0018 0080 20302030      TGU  DATA C' 0 0 0 0. . . . '
      0082 20302030
      0084 2E202E20
      0086 2E202E20
0019 0088 2E202E30      PCGU DATA C'. .0 0 . 0 0 0 %. . . . '
      008A 2030202E
      008C 20302030
      008E 20302025
      0090 2E202E20
      0092 2E202E20
0020 0094 20302030      PGU  DATA C' 0 0 0 0. . . . '
      0096 20302030
      0098 2E202E20
      009A 2E202E20
0021 009C 000A          DATA X'A',X'D'
      009D 0000
0022 009E 000C          GUMSG DATA 12,C'. . .'C' G I V E .U P. .'
      009F 2E202E20
      00A1 20472049
      00A3 20562045
      00A5 20202E55

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00A7 20502E20
00A9 2E20
0023 00AA 2E20      GUMSGA DATA C'. '      GUMSG+10
0024 00AB 000F      GOUPA  DATA 15,C' * * * * * * * * * * * * * * * *
00AC 202A202A
00AE 202A202A
00B0 202A202A
00B2 202A202A
00B4 202A202A
00B6 202A202A
00B8 202A202A
00BA 202A2020
0025 00BC 0019      GOUPB  DATA 25      NUMBER
0026 00BD 0000      LCMNA  DATA 0,0,0,0,0      MSG NO XXXX,ALPHA
00BE 0000
00BF 0000
00C0 0000
00C1 0000
0027 00C2 2E20      LCMNA6 DATA C'. 'X'20'
00C3 0020
0028 00C4 2020      LCMNA8 DATA C' 'C'. . 'X'20'
00C5 2E202E20
00C7 0020
029
0030 00C8 0000      *
LALTDP DATA 0,0,0,X'20',0,0,0,X'20',0,0,0,X'20'
00C9 0000
00CA 0000
00CB 0020
00CC 0000
00CD 0000
00CE 0000
00CF 0020
00D0 0000
00D1 0000
00D2 0000
00D3 0020
0031 00D4 000A      DATA X'A',X'D'
00D5 0000
0032 00D6 000C      PLCMTA DATA 12      LASTA CM TIME
0033 00D7 58305830 LCMTA  DATA C'X0X0X:X0X0X:X0X0X.X0X0X0'
00D9 583A5830
00DB 5830583A
00DD 58305830
00DF 582E5830
00E1 58305830
0034 00E3 000C      LASTPA DATA 12      LAST TIME PRINTED
0035 00E4 20302030 LASTA  DATA C' 0 0 : 0 0 : 0 0 . 0 0 0 '
00E6 203A2030
00E8 2030203A
00EA 20302030

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00EC 202E2030
 00EE 20302030
 0036 00F0 20302030 M1TA DATA C' 0 0 : 0 0 : 0 0 . 0 0 0 ' FIRST MSG
 00F2 203A2030
 00F4 2030203A
 00F6 20302030
 00F8 202E2030
 00FA 20302030
 0037 00FC 0029 GM2 DATA 41
 0038 00FD 20542049 DATA C' T I M E . O F . D A Y . . . '
 00FF 204D2045
 0101 20202E4F
 0103 20462E20
 0105 2E442041
 0107 20592E20
 0109 2E202F20
 0039 010B 2045204C DATA C' E L A P S E D T I M E . . . '
 010D 20412050
 010F 20532045
 0111 20442020
 0113 20542049
 0115 204D2045
 0117 2E202E20
 0119 2E20
 0040 011A 2E202E20 DATA C' '
 011C 2E202E20
 011E 2E202E20
 0120 2E202E20
 0122 2E20
 0041 0123 2E202E20 DATA C' ' 3 SPACES
 0125 2E20
 0042 0126 0011 GM2G DATA 17
 0043 0127 204D2053 DATA C' M S G # M O D E S C E N # , X ' A ' , X ' D '
 0129 20472023
 012B 2020204D
 012D 204F2044
 012F 20452020
 0131 20532043
 0133 2045204E
 0135 2023
 0136 000A
 0137 000D
 0044 0138 0018 GM2A DATA 24
 0045 0139 204D2053 DATA C' M S G # . M O D E . . N A K . . A T T I T U D
 013B 20472023
 013D 2E202E4D
 013F 204F2044
 0141 20452E20
 0143 2E4E2041
 0145 204B2E20

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0147 2E412054
0149 20542049
014B 20542055
014D 20442045
0046 014F 000A          DATA X'A',X'D'
0150 000D
0047 0151 000A          LERNP DATA 10,C' *'
0152 202A
0048 0153 20302030      LERN  DATA C' 0 0 0 0 0 . . '
0155 20302030
0157 20302020
0159 20202E20
015B 2E20
0049 015C 000C          LERNPA DATA 12,C' *'
015D 202A
0050 015E 20302030      LERNA DATA C' 0 0 0 0 0 . '
0160 20302030
0162 20302E20
0051 0164 2E202E20      LERNA6 DATA C' . . '
0052 0166 2E202E20      LERNA8 DATA C' . . . . '
0168 2E202E20
0053 016A 000C          ALTDP1 DATA 12          ATTITUDE INFO
0054 016B 0000          ALTDP  DATA 0,0,0,X'20',0,0,0,X'20',0,0,0,X'20'
016C 0000
016D 0000
016E 0020
016F 0000
0170 0000
0171 0000
0172 0020
0173 0000
0174 0000
0175 0000
0176 0020
0055 0177 000E          DIFP1  DATA 14,C' ('
0178 2028
0056 0179 2E302E30      DIFP   DATA C',0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0)'
017B 2E3A2E30
017D 2E302E3A
017F 2E302E30
0181 2E2E2E30
0183 2E302E30
0185 2E29
0057 0186 001A          GOUP   DATA 26,C' * * * * * * * * * * * * * * * * '
0187 202A202A
0189 202A202A
018B 202A202A
018D 202A202A
018F 202A202A
0191 202A202A

```

```

0193 202A202A
0195 202A2020
0058 0197 0000 LCMN DATA 0,0,0,0,0 MSG NO XXXX,ALPHA
      0198 0000
      0199 0000
      019A 0000
      019B 0000
0059 019C 2020 DATA C' ',0,C' ',0,0,X'A',X'D'
      019D 0000
      019E 2020
      019F 0000
      01A0 0000
      01A1 000A
      01A2 000D
0060 01A3 002B FIRUP DATA X'2B'
0061 01A4 2E202E20 DATA C'. . . . . '
      01A6 2E202E20
      01A8 2E202E20
      01AA 2E202E20
      01AC 2E202E20
0062 01AE 2E202E20 DATA C'. . . . . '
      01B0 2E202E20
      01B2 2E202E20
      01B4 2E202E20
      01B6 2E202E20
0063 01B8 2E202E20 DATA C'. . . . . '
      01BA 2E202E20
      01BC 2E202E20
      01BE 2E202E20
      01C0 2E202E20
0064 01C2 2E202E20 DATA C'. . . . . '
      01C4 2E202E20
      01C6 2E202E20
      01C8 2E202E20
      01CA 2E202E20
0065 01CC 002A DATA X'2A',X'A',X'D'
      01CD 000A
      01CE 000D
0066 01CF 000C PLCMT DATA 12 LAST CM TIME
0067 01D0 58305830 LCMT DATA C'X0X0X:X0X0X:X0X0X.X0X0X0'
      01D2 583A5830
      01D4 5830583A
      01D6 58305830
      01D8 582E5830
      01DA 58305830
0068 01DC 0006 GM1G DATA 6,C' G R O U N D '
      01DD 20472052
      01DF 204F2055
      01E1 204E2044
0069 01F3 0006 GM1A DATA 6,C' A I R '

```

```

01E4 20202020
01E6 20412049
01F8 20522020
0070 01EA 0016 GM1 DATA 22,C'0 0T0R0A0N0S0A0C0T0I000N'
01EB 30203054
01ED 30523041
01EF 304E3053
01F1 30413043
01F3 30543049
01F5 304F304E
0071 01F7 30203047 DATA C'0 0G0R0A0P0H',X'A',X'D',X'A',X'A'
01F9 30523041
01FB 30503048
01FD 000A
01FE 000D
01FF 000A
0200 000A
0072 0201 0015 GMC1 DATA 21
0073 0202 3A503A41 DATA C':P:A:R:A:M:E:T:E:R:S: :O:F: :T:E:S:T'
0204 3A523A41
0206 3A4D3A45
0208 3A543A45
020A 3A523A53
020C 3A203A4F
020E 3A463A20
0210 3A543A45
0212 3A533A54
0074 0214 203A DATA C':',X'A',X'D'
0215 000A
0216 000D
0075 0217 0015 GMA1 DATA 21
0076 0218 2E462049 DATA C'.F I R S T. .A I R. .R E C O R D. . .:'
021A 20522053
021C 20542E20
021E 2E412049
0220 20522E20
0222 2E522045
0224 2043204F
0226 20522044
0228 2E202E20
022A 2E3A
0077 022B 000A DATA X'A',X'D'
022C 000D
0078 022D 000C LASTP DATA 12 LAST TIME PRINTED
0079 022E 20302030 LAST DATA C' 0 0 : 0 0 : 0 0 . 0 0 0'
0230 203A2030
0232 2030203A
0234 20302030
0236 202E2030
0238 20302030

```

```

0080 023A 0062 ENDM DATA X'62'
0081 023B 20202041 DATA C' .A B O R T E D',X'A',X'D'
      023D 2042204F
      023F 20522054
      0241 20452044
      0243 000A
      0244 000D
0082 0245 000A DATA X'A',X'D'
      0246 000D
0083 0247 20532054 DATA C' S T A T I S T I C S',C' :',X'A',X'D'
      0249 20412054
      024B 20492053
      024D 20542049
      024F 20432053
      0251 203A
      0252 000A
      0253 000D
0084 0254 20442055 DATA C' D U R A T I O N . . '
      0256 20522041
      0258 20542049
      025A 204F204E
      025C 20202E20
      025E 2E20
0085 025F 20302030 DURT DATA C' 0 0 : 0 0 : 0 0 . 0 0 0',X'A',X'D'
      0261 203A2030
      0263 2030203A
      0265 20302030
      0267 202E2030
      0269 20302030
      026B 000A
      026C 000D
0086 026D 204F2055 DATA C' O U T O F C O M '
      026F 20542020
      0271 204F2046
      0273 20202043
      0275 204F204D
      0277 2020
0087 0278 20302030 OUTCM DATA C' 0 0 : 0 0 : 0 0 . 0 0 0',X'A',X'D'
      027A 203A2030
      027C 2030203A
      027E 20302030
      0280 202E2030
      0282 20302030
      0284 000A
      0285 000D
0088 0286 2049204E DATA C' I N C O M
      0288 20202043
      028A 204F204D
      028C 20202020
      028E 20202020

```



```

0089 0290 2E20
0089 0291 20302030 INCM DATA C' 0 0 : 0 0 : 0 0 . 0 0 0 '
0293 203A2030
0295 2030203A
0297 20302030
0299 202E2030
029B 20302030
0090 029D 20302030 MIT DATA C' 0 0 : 0 0 : 0 0 . 0 0 0 ' FIRST MSG
029F 203A2030
02A1 2030203A
02A3 20302030
02A5 202E2030
02A7 20302030
0091 02A9 0094 ASUM DATA X'94',C'. . . . . '
02AA 2E202E20
02AC 2E202E20
02AE 2E202E20
02B0 2E202E20
02B2 2E202E20
0092 02B4 2054204F DATA C' T O T A L . . . '
02B6 20542041
02B8 204C2E20
02BA 2E202E20
0093 02BC 20252E41 DATA C' %,A L L . M S G S '
02BE 204C204C
02C0 2E202E40
02C2 20532047
02C4 2053
0094 02C5 2E202E20 DATA C'. . . M S G S / H O U R '
02C7 2E4D2053
02C9 20472053
02CB 202F2048
02CD 204F2055
02CF 2052
0095 02D0 000A DATA X'A',X'D',C' # M C . . M S G S . '
02D1 000D
02D2 2023204D
02D4 20432E20
02D6 2E202E40
02D8 20532047
02DA 20532F20
0096 02DC 20302030 TMC DATA C' 0 0 0 0 . . . . '
02DE 20302030
02E0 2E202E20
02E2 2E202E20
0097 02E4 2E202E30 PCMC DATA C'. . 0 0 . 0 0 0 %. . . . '
02E6 2030202E
02E8 20302030
02EA 20302025
02EC 2E202E20

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0098 02FE 2E202E20
02F0 20302030 PMC DATA C' 0 0 0 0',X'A',X'D'
02F2 20302030
02F4 000A
02F5 000D
0099 02F6 2023204E DATA C' # N A K, .M S G S. '
02F8 2041204B
02FA 2E202E4D
02FC 20532047
02FE 20532E20
0100 0300 20302030 TN DATA C' 0 0 0 0. . . . '
0302 20302030
0304 2E202E20
0306 2E202E20
0101 0308 2E202F30 PCN DATA C'. .0 0 . 0 0 0 %. . . . '
030A 2030202E
030C 20302030
030E 20302025
0310 2E202E20
0312 2E202E20
0102 0314 20302030 PN DATA C' 0 0 0 0',X'A',X'D'
0316 20302030
0318 000A
0319 000C
0103 031A 20232042 DATA C' # B A D, .M S G S. '
031C 20412044
031E 2E202E4D
0320 20532047
0322 20532E20
0104 0324 20302030 TBM DATA C' 0 0 0 0. . . . '
0326 20302030
0328 2E202E20
032A 2E202E20
0105 032C 2E202F30 PCBM DATA C'. .0 0 . 0 0 0 %. . . . '
032E 2030202E
0330 20302030
0332 20302025
0334 2E202E20
0336 2E202E20
0106 0338 20302030 PBM DATA C' 0 0 0 0',X'A',X'D'
033A 20302030
033C 000A
033D 000D
0107 033E 0024 ASUM1 DATA X'24'
0108 033F 2041204C DATA C' A L L, .M S G S. '
0341 204C2E20
0343 2E202E4D
0345 20532047
0347 20532E20
0109 0349 20302030 TTM DATA C' 0 0 0 0. . . . '

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```

034B 20302030
034D 2E202E20
034F 2E202F20
0110 0351 20312030      DATA C' 1 0 0 . 0 0 0 % . . . '
      0353 2030202E
      0355 20302030
      0357 20302025
      0359 2E202E20
      035B 2E202E20
0111 035D 20302030 PTM  DATA C' 0 0 0 0',X'A',X'D'
      035F 20302030
      0361 000A
      0362 000D
0112                                     *
0113 0363 0000      OUTCB DATA 0,0,0,0
      0364 0000
      0365 0000
      0366 0000
0114 0367 0000      OUTCBA DATA 0,0,0,0
      0368 0000
      0369 0000
      036A 0000
0115 036B      FLWORD RES 1      FLAG WORD
0116 036C      BUF RES 1
0117 036D      BUF1 RES 510      ADD IS BUF+1
0118 056B      END

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0119 056B      CRFL  FSEG
0120 0000      FLAG COTMX      1 IF GOT MR. #L. MR GIVE UP RE
0121 0001      FLAG GRERR      1 IF LAST REC WAS IN ERRO
0122 0002      FLAG GRMN1     1 IF NEXT MSG IS NO 0001
0123 0003      FLAG GRSTAT     1 IF NEXT MSG IS STATISTICS
0124          *
0125 0004      FLAG FIRE      1 IF PRINT OUT *** BEFORE BA
0126 0005      FLAG UNITMA     1 IF UNIT MAIN TTY IS AIR TA
0127 0006      FLAG GRERR      1 IF LAST REC WAS ERROR
0128 0007      FLAG GRMN1     1 IF NEXT MSG IS NO 0001
0129          *
0130 0008      FLAG ARSTAT     1 IF NEXT MSG IS STATISTICS
0131 0009      FLAG FIRE
0132 000A      FLAG AIRN
0133 000B      FLAG STATO
0134          *
0135 056B      END
0000 ERRORS : LENGTH = 056B

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0001          TITL GRAP35,GRAPHIC TRANSACTION
0002 0000     GRAP35 PSIG
0003 0000     MODE
0004 0000     GRAPH EQU $
0005 0000     DEF GRAPHT,DATALP,PRINTP
0006 0080     R0 EQU X'80'
0007 0081     R1 EQU X'81'
0008 0082     R2 EQU X'82'
0009 0083     R3 EQU X'83'
0010 0000     REF INITIO,RECEND,PLAY,PRINT,GKCHAR,RANDIO
0011 0000     REF CAD,ADD,CONA,MOVN,MOVAS,MOVT,CRLF,BIN2
0012 0000     REF CATP,GRAPD,PRINTC
0013 0000     REF SCEN,ASUM1
0014 0000     REF COUPC,GOUPD,CRMI,GCUM,TCU,PCGU,PGU,GUMSG
0015 0000     REF GOUPA,COUPB,LCMNA,LALTDP,PLCMTA,LCMTA
0016 0000     REF LASTPA,LASTA,MLTA,GM2,GM2G,GM2A,LERNP
0017 0000     REF LERN,LERNPA,LERNA,ALTDPI,ALTD,DIFF1
0018 0000     REF DIFP,GOUP,LCMN,FIRUP,PLCMT,LCMT,GM1G
0019 0000     REF GM1A,GM1,GMC1,CMA1,LASTP,LAST,ENDM,BURT
0020 0000     REF OUTCM,INCM,MIT,ASUM,TRC,PCMC,PMC,TN,PCN,PN,TB
0021 0000     REF PCBM,PRM,TTM,PTM,OUTCB,OUTCBA,FLWORD,BUF
0022 0000     REF GOTMX,CRERR,CRMN1,CRSTAT,FIRE,UNITMA,ARERR
0023 0000     REF ARMN1,ARSTAT,AFIRE,AIRN,STATO
0024          *THESE ARE IN SINCE XTERNAL REF CAN'T BE ADDED TO
0025 0000     REF BUF1,GUMSGA,LERNA6,LERNA8,LCMNA6
0026          *FOR SIH CURRENT 5/2/75
0027          *INITIO DBB,RECEND 116A,PLAY C89,PRINT C8C,GKCHAR 1191
0028          *RANDIO FF9,
0029          *****
0030 0000 70070000 DATALP NOP          START
0031 0002 74800000 BL 0,RANDIO
0032 0004 74800000 BL 0,INITIO
0033 0006 88000000 SETF #SCEN,1          FOR PLAYBACK ERR TIMEOUTS
0034 0008 44840000 LA 4,GRAPD
0035 000A 44850000 LA 5,GRAPH
0036 000C 44860000 LA 6,FLWORD          FLAG WORD
0037 000E 44810147 LA 1,ZERO-1
0038 0010 44820000 LA 2,OUTCB
0039 0012 74800000 BL 0,MOVN          ZERO,OUTCB,OUTCBA
0040 0014 4C820004 AA 2,4
0041 0016 74800000 BL 0,MOVN          ZERO FLAG WORD
0042 0018 154FB553 MOV PRTYES,PRINTP          INITIALLY PRINT IT
0043 001A 74800000 BL 0,CRLF
0044 001C 74800484 DALP1 BL 0,NDPRIN
0045 001E 0000     DATA CRMI
0046 001F 74800000 DALP2 BL 0,GKCHAR
0047 0021 C0810000 CRA 1,X'D'
0048 0023 E08B0033 BC 11,GGCR          GOT CR
0049 0025 C0810053 CRA 1,X'53'          S FOR STAT ONLY
0050 0027 E08B002B BC 11,$+4          YES

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0051	0029	7082001F	B	DALP2	NO,LOOK AGAIN
0052	002B	88000800	SETF	STATO,1	STATISTICS ONLY
0053	002D	74800000	BL	0,CRLF	
0054	002F	74800000	BL	0,PRINTC	PRINT THE S
0055	0031	7082002F	B	\$-2	
0056	0033	74800000	GGCR	BL 0,CRLF	
0057	0035	1548B535	MOV	ZERO,GNGU	
0058	0037	1548B536	MOV	ZERO,ANNAK	
0059	0039	1548B538	MOV	ZERO,ANMC	
0060	003B	1548B539	MOV	ZERO,ANBM	
0061	003D	75800155	BL	0,*PLAYP	
0062	003F	0000	DATA	BUF	
0063	0040	7082003D	B	\$-3	
0064	0042	44010000	L	1,BUF	WHAT KIND OF TAPE G/A
0065	0044	E08C0042	BC	12,\$-2	
0066	0046	C081001E	CRA	1,30	
0067	0048	E08A0052	BC	10,GNDT	GND TAPE
0068	004A	88000800	SETF	UNITMA,1	AIR TAPE
0069	004C	88000800	SETF	ARMN1,1	NEXT REC IS MSG0002
0070	004E	7482009F	BL	2,GRINIT	
0071	0050	7082006C	B	DB1	IGNORE FIRST REEC ON AIR
0072	0052	88000000	GNDT	SETF UNITMA,0	GROUND TAPE
0073	0054	88000800	SETF	GRMN1,1	NEXT MSG IS NO 1
J74	0056	7482009F	BL	2,GRINIT	
0075	0058	74800000	BL	0,MOVAS	MOVE TIME
0076	005A	0000	DATA	BUF1,LCMT	R1 IS GOOD
	005B	0000			
0077	005C	1542A80B	MOV	DECPT,(8,2)	MOV DEC PT
0078	005E	1543A809	MOV	ZERA,(9,2)	MAKE .000
0079	0060	1543A80A	MOV	ZERA,(10,2)	
0080	0062	1543A80B	MOV	ZERA,(11,2)	
0081	0064	74800000	BL	0,MOVAS	MOVE TIME TO LAST
0082	0066	0000	DATA	LCMT,LAST	
	0067	0000			
0083	0068	7480022C	BL	0,TIMP	PRINT TIME
0084	006A	75800154	BL	0,*CRLFP	
0085	006C	7482007A	DB1	BL 2,GETREC	
0086	006E	44010000	L	1,BUF	
0087	0070	E08B0074	BC	11,\$+4	
0088	0072	7082006C	B	DB1	
0089	0074	7482007A	BL	2,GETREC	STAT REC
0090	0076	74800000	BL	0,CRLF	
0091	0078	7082001C	B	DALP1	
0092			*		
0093	007A	48820092	GETREC	ST 2,GETRX+1	
0094	007C	75800155	BL	0,*PLAYP	
0095	007E	0000	DATA	BUF	
0096	007F	7082007C	B	\$-3	
197	0081	44010000	L	1,BUF	
0098	0083	E08C0081	BC	12,\$-2	WAIT TIL DONE

0099	0085	F08B0095	BC	11,ZLR	ZERO LENGTH RECORD
0100	0087	8400008E	BFNE	UNITMA,0,GETRA	
0101	0089	74800159	BL	0,GRAPHT	
0102	008B	0000	DATA	BUF	
0103	008C	70820091	B	GETRX	
0104	008E	7480024E	GETRA	BL 0,GRAPHA	AIR RECORD
0105	0090	0000	DATA	BUF	
0106	0091	44820091	GETRX	LA 2,\$	
0107	0093	72A20002	B	2,2	
0108	0095	8400089B	ZLR	BFNE UNITMA,1,\$+6	AIR
0109	0097	88000800	SETF	ARSTAT,1	
0110	0099	7082009D	B	\$+4	GND
0111	009B	88000800	SETF	GRSTAT,1	
0112	009D	70820091	B	GETRX	
0113			*		
0114	009F	70070000	GRINIT	NOP	
0115	00A1	75800154	BL	0,*CRLFP	
0116	00A3	840008AA	BFNE	UNITMA,1,\$+7	AIR
0117	00A5	74800484	BL	0,NDPRIN	
0118	00A7	0000	DATA	GM1A	
0119	00A8	708200AD	B	\$+5	
0120	00AA	74800484	BL	0,NDPRIN	GROUND
0121	00AC	0000	DATA	GM1C	HEADING
0122	00AD	74800484	BL	0,NDPRIN	
0123	00AF	0000	DATA	GM1	
0124	00B0	840008B7	BFNE	UNITMA,1,\$+7	AIR
0125	00B2	74800484	BL	0,NDPRIN	
0126	00B4	0000	DATA	GMA1	
0127	00B5	708200BA	B	\$+5	GND
0128	00B7	74800484	BL	0,NDPRIN	
0129	00B9	0000	DATA	GMC1	
0130	00BA	74800484	BL	0,NDPRIN	
0131	00BC	0000	DATA	BUF	
0132	00BD	75800154	BL	0,*CRLFP	REGULAR
0133	00BF	840008C3	BFNE	STATO,1,\$+4	ONLY STAT PRINT
0134	00C1	1550B553	MOV	PRINO,PRINTP	
0135	00C3	75800154	BL	0,*CRLFP	
0136	00C5	74800484	BL	0,NDPRIN	
0137	00C7	0000	DATA	GM2	
0138	00C8	840008CF	BFNE	UNITMA,1,\$+7	AIR
0139	00CA	74800484	BL	0,NDPRIN	
0140	00CC	0000	DATA	GM2A	
0141	00CD	708200D2	B	\$+5	GROUND
0142	00CF	74800484	BL	0,NDPRIN	
0143	00D1	0000	DATA	GM2C	RETURN
0144	00D2	72A20002	B	2,2	
0145			*		
0146	00D4	48800131	CALST	ST 0,CALSTX+1	CALCULATE,PRINT STATS
0147	00D6	154FB553	MOV	PRTYES,PRINTP	ENABLES PRINT
0148	00D8	75800158	BL	0,*CONAP	CONVERT OUT COM TIME

0149	00DA 75800156	BL 0,*CADP	
0150	00DC 0000	DATA DURT,OUTCM,INCM	INCOMM TIME
	00DD 0000		
	00DE 0000		
0151	00DF 74800484	BL 0,NDPRIN	
0152	00E1 0000	DATA ENDM	
0153	00E2 44010136	L 1,ANNAK	
0154	00E4 4C010138	A 1,ANMC	
0155	00E6 4C010139	A 1,ANBM	
0156	00E8 48810137	ST 1,ANTM	
0157	00FA 74800000	BL 0,CRLF	
0158	00EC 748003BD	BL 0,DIV	
0159	00EE 0138	DATA ANMC,ANTM,PCMC	CAL % TOTALS
	00EF 0137		
	00F0 0000		
0160	00F1 0139	DATA ANBM,ANTM,PCBM	
	00F2 0137		
	00F3 0000		
0161	00F4 0136	DATA ANNAK,ANTM,PCN	
	00F5 0137		
	00F6 0000		
0162	00F7 0135	DATA GNGU,ANTM,PCGU	
	00F8 0137		
	00F9 0000		
0163	00FA FFFF	DATA -1	END OF LIST
0164	00FB 74800000	BL 0,CRLF	
0165	00FD 7480041F	BL 0,PHOUR	CALC PER HOUR
0166	00FF 0138	DATA ANMC,ANMCP	
	0100 013C		
0167	0101 0139	DATA ANBM,ANBMP	
	0102 013F		
0168	0103 0136	DATA ANNAK,ANNAKP	
	0104 013A		
0169	0105 0137	DATA ANTM,ANTMP	
	0106 013D		
0170	0107 0135	DATA GNGU,CNGUP	GIVE UPS,CROUND ONLY
	0108 0134		
0171	0109 FFFF	DATA -1	END OF LIST
0172	010A 7480043B	BL 0,BINDEC	CONV BIN TO DEC ASCII
0173	010C 0138	DATA ANMC,TMC	
	010D 0000		
0174	010E 013C	DATA ANMCP,PMC	
	010F 0000		
0175	0110 0136	DATA ANNAK,TN	
	0111 0000		
0176	0112 013A	DATA ANNAKP,PN	
	0113 0000		
0177	0114 0139	DATA ANBM,TBM	
	0115 0000		
0178	0116 013B	DATA ANBMP,PBM	

0179	0117 0000		DATA ANTM,ITM	
	0118 0137			
	0119 0000			
0180	011A 013D		DATA ANTMP,PTM	
	011B 0000			
0181	011C 0135		DATA GNCU,TCU	TOTAL GIVE UPS
	011D 0000			
0182	011E 0134		DATA GNGUP,PGU	PER HR GIVE UPS
	011F 0000			END OF LIST
0183	0120 FFFF		DATA -1	
0184	0121 74800484		BL 0,NDPRIN	SUMMARY PRINTOUT
0185	0123 0000		DATA ASUM	
0186	0124 74800000		BL 0,CRLF	TOTALS
0187	0126 74800484		BL 0,NDPRIN	
0188	0128 0000		DATA ASUM1	AIR
0189	0129 8400012E		BFNE UNITMA,0,\$+5	GROUND PRINT GIVE UPS
0190	012B 74800484		BL 0,NDPRIN	
0191	012D 0000		DATA GGUM	
0192	012E 74800000		BL 0,CRLF	
0193	0130 44800130	CALSTX	LA 0,\$	
0194	0132 72820002		B 2.0	
0195		*		GIVE UPS/HOUR
0196	0134	GNGUP	RES 1	GND NO OF GIVE UPS
0197	0135	GNGU	RES 1	AIR NO OF NAKS SEEN
0198	0136	ANNAK	RES 1	
0199	0136	GNNAK	EQU ANNAK	AIR NO OF TOTAL MSCS
0200	0137	ANTM	RES 1	AIR NO OF MC'S,INCLUDES NAKS
0201	0138	ANMC	RFS 1	
0202	0138	GNMC	EQU ANMC	AIR NO OF BAD MSGS,B,L,ECT
0203	0139	ANEM	RES 1	
0204	0139	GNEM	EQU ANEM	PER HOUR
0205	013A	ANNAKP	RES 1	"
0206	013B	ANBMP	RES 1	PER HOUR
0207	013C	ANMCP	RFS 1	PER HOUR
0208	013D	ANTMP	RES 1	
0209	013E	ALC1	RES 1	
0210	013F	ALC2	RES 1	
0211	0140	DCTR	RES 1	TEMP FOR DIV
0212	0141 FFFD	M3	DATA -3	
0213	0142 202E	DECPT	DATA C' .'	
0214	0143 0030	ZERA	DATA X'30'	
0215	0144 FFFF	M2	DATA -2	
0216	0145 FFFC	M4	DATA -4	
0217	0146 FFFB	M5	DATA -5	
0218	0147	DCTR1	RES 1	
0219	0148 0000	ZERO	DATA 0	ZERO USE ONLY
0220	0149 0000		DATA 0,0,0,0	
	014A 0000			
	014B 0000			
	014C 0000			

0221	014D	0020	ZERP	DATA	X'20'
0222	014E	0031	ONEA	DATA	X'31'
0223	014F	0000	PRIYES	DATA	PRINT
0224	0150	0151	PRTNO	DATA	NOPRT
0225	0151	72820005	NOPRT	B	5.0
0226	0153	0000	PRINTP	DATA	PRINT
0227	0154	0000	CRIFP	DATA	CRIF
0228	0155	0000	PLAYP	DATA	PLAY
0229	0156	0000	CADP	DATA	CAD
0230	0157	0000	ADCP	DATA	ADD
0231	0158	0000	CONAP	DATA	CONA
0232					PAGE

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GUMMY PRINT ROUTINE

0233	0159	7007000	GRAPHT	NOP		TAKES PLACE OF PLAY
0234	015B	48800219		ST	0,CR0+1	
0235	015D	46010002		L	1,2,0	GET ARGUMENT
0236	015F	4C810001		AA	1,1	POINT TO FIRST CHAR
0237	0161	45020081		L	2,*R1	
0238	0163	C0820043		CRA	2,X'43'	
0239	0165	E08F0108		BC	11,GOTC	ITS MC RECORD
0240	0167	C0820030		CRA	2,X'30'	IF ASCII 0-9 ERR MSG
0241	0169	E08C01AD		BC	12,NERM	IF NOT MR,ML,MB GIVE UP
0242	016B	C0820039		CRA	2,X'39'	
0243	016D	C08A017D		BC	10,NERM	
0244	016F	840001B7		BFNE	GRSTAT,0,STATM	THIS IS STATISTICS RECORD
0245	0171	84000179		BFNE	GRERR,0,ERN02	2ND ERROR IN ROW
0246	0173	88000080		SETF	GRERR,1	FIRST ERR ENCOUNTERED
0247	0175	88000080		SETF	FIRE,1	FIREUP PRINT
0248	0177	7483021C		BL	3,TIMPG	TIME PRINT,GROUP
0249	0179	70070000	ERN02	NOP		2 OR MORE ERR IN ROW
0250	017B	44820000		LA	2,LCMT	
0251	017D	4C81FFFF		AA	1,-15	LINE UP WITH MOVF
0252	017F	74800000		BL	0,MOVF	MOVF ERROR TIME TO LCMT
0253	0181	44820000		LA	2,LFER	
0254	0183	14182806		MOV	(24,1),(6,2)	REASON FOR ERROR
0255	0185	46230006		L	3,6,2	
0256	0187	C083004E		CRA	3,X'4E'	IS IT N
0257	0189	E080018F		BC	11,\$+6	YES
0258	018B	2139A001		AMI	GNEB,1	NO BAD MSG INCR
0259	018D	70820191		B	\$+4	
0260	018F	2136A001		AMI	CNNAK,1	INCR NO NAKS
0261	0191	46230006		L	3,6,2	
0262	0193	C0830052		CRA	3,X'52'	IS IT AN R
0263	0195	E08F019B		BC	11,FERGOTR	YES,MSG NO IN DIF PLACE
0264	0197	4C81001E		AA	1,13+15,2	LINE MOVN UP
0265	0199	7082019D		B	\$+4	
0266	019B	4C810019	FERGOTR	AA	1,13+15-3	MSG NO
0267	019D	74800000		BL	0,MOVN	MOV ERROR NO
0268	019F	7480022C		BL	0,TIMP	TIME OF ERROR
0269	01A1	7480048A		BL	0,NDPRIN	
0270	01A3	0000		DATA	LERNP	ERROR NO
0271	01A4	75800154		BI	0,*CRLEP	
0272	01A6	75800157		BL	0,*ADDP	CUMULATIVE PIN OUT COMM
0273	01A8	0000		DATA	BIN2	
0274	01A9	0000		DATA	OUTCB,OUTCE	
0275	01AB	70820216		B	GRAPHX	
0276			*			
0277	01AD	88000080	NERM	SETF	GOTMX,1	NOT MC
0278	01AF	46130000		L	3,0,1	REASON FOR GIVE UP
0279	01B1	48830000		ST	3,GUMSCA	
0280	01B3	2135A001		AMI	GNGU,1	INCR # GIVE UPS
0281	01B5	708201DA		B	GOTC1	

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0282          *
0283          *
0284 01B7 70070000 STATM NOP          WIND IT UP
0285 01B9 75800156      BL 0,*CADP
0286 01RB 0000          DATA LCMT,MIT,DURT
      01BC 0000
      01BD 0000
0287 01BE 7480049A      BL 0,EHMS          CAL DURATION IN SECS
0288 01C0 88000800      SETF FIRE,1          PRINT**
0289 01C2 88000000      SFTF GRSTAT,0
0290 01C4 7483021C      BL 3,TIMPG          TIME PRINT,GOUP
0291 01C6 44820000      LA 2,LCMT
0292 01C8 4C81FFF1      AA 1,-15          LINE UP
0293 01CA 74800000      BL 0,MOVT
0294 01CC 75800154      BL 0,*CRLFP
0295 01CE 7480022C      BL 0,TIMP
0296 01D0 44810000      LA 1,OUTCM
0297 01D2 44820000      LA 2,OUTCB
0298 01D4 748000D4      BL 0,CALST          CALC,PRINT OUT STATS
0299 01D6 70820216      B GRAPHX
0300          *
0301 01D8 2138A001 GOTC AMI GNMC,1          GOOD MSG INCR
~302 01DA 44820000 GOTC1 LA 2,LCMN          MOVE MFSSAGE NO
 303 01DC 88000000      SETF GRERR,0          NO ERROR
0304 01DE 74800000      BL 0,MOVN          MOVE THE NUMBER
0305 01E0 141A2806      MOV (26,1),(6,2)          MODE
0306 01E2 141B2809      MOV (27,1),(9,2)          SCEN MSG NO
0307 01E4 46230009      L 3,9,2          CONVERT MSG NO
0308 01E6 C0830039      CRA 3,X'39'          30-38 TO 31-39
0309 01E8 E08C01F8      BC 12,TEAB          THIRTY EIGHT AND BELOW
0310 01EA C0830040      CRA 3,X'40'
0311 01EC E08C01F0      BC 12,$+4          3F AND BELOW
0312 01EE 708201FA      B DMN          MUST BE K
0313 01F0 154EA808      MOV ONEA,(8,2)          TEN'S PLACE
0314 01F2 50830009      SA 3,X'9'
0315 01F4 4AA30009      ST 3,9,2
0316 01F6 708201FC      B $+6
0317 01F8 20094001 TEAB AMI (9,2),1          INCR IT
0318 01FA 154DA808 DMN MOV ZERB,(8,2)          BLANK IT
0319 01FC 44820000      LA 2,LCMT
0320 01FE 74800000      BL 0,MOVT          MOVE COMPLETION TIME
0321 0200 84000210      BFNE GRMN1,0,GOTM1          IS THIS MSG#0001
0322 0202 46120005      L 2,5,1          IS IT ALPHA MSG?
0323 0204 C0820020      CRA 2,X'20'
0324 0206 E08B0216      BC 11,GRAPHX          NO NORMAL,IGNORE
0325 0208 70070000 GOTF NOP
0326 020A 7483021C      BL 3,TIMPG
0327 020C 88000000      SETF GRMN1,0
 328 020E 70820216      B GRAPHX
~329          *

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0330	0210	74800000	COTM1	BL	0,MOVAS	
0331	0212	0000		DATA	LCMT,MIT	MSG0001 TRANS TIME
	0213	0000				
0332	0214	70820208		B	GOTF	
0333	0216	70070000	GRAPHX	NOP		
0334	0218	44800218	CR0	LA	0,\$	
0335	021A	72820003		B	3,0	
0336			*			
0337	021C	7480022C	TIMPG	BL	0,TIMP	PRINT TIME
0338	021E	74800484		BL	0,NDPRIN	
0339	0220	0000		DATA	COUP	
0340	0221	84000A28		BFNE	GOTMX,1,NOGX	
0341	0223	74800484		BL	0,NDPRIN	
0342	0225	0000		DATA	GUMSG	
0343	0226	88000000		SETF	GOTMX,0	
0344	0228	74800000	NOGX	BL	0,CRLF	RFT R3+2
0345	022A	72820002		B	2,3	
0346			*			
0347	022C	48800248	TIMP	ST	0,TIMPX+1	TIME PRINTOUT
0348	022E	4883024A		ST	3,TIMPX+3	
0349	0230	75800156		BL	0,*CADP	COMP ASCII DIFF
0350	0232	0000		DATA	LCMT,LAST,DIFP	DIFP=LCMT-LAST
	0233	0000				
	0234	0000				
0351	0235	74800000		BL	0,MOVAS	
0352	0237	0000		DATA	LCMT,LAST	
	0238	0000				
0353	0239	84000A3F		BFNE	FIRE,1,NOFIRE	
0354	023B	88000000		SETF	FIRE,0	
0355	023D	748003FC		BL	0,CHMTB	CHANGE HR,MIN TO BIN
0356	023F	70070000	NOFIRE	NOP		
0357	0241	74800484		BL	0,NDPRIN	REAL TIME
0358	0243	0000		DATA	PLCMT	
0359	0244	74800484		BL	0,NOPRIN	DIFFERENCI
0360	0246	0000		DATA	DIFP1	
0361	0247	44800247	TIMPX	LA	0,\$	
0362	0249	44830249		LA	3,\$	
0363	024B	72820002		B	2,0	
0364					PAGE	

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0365 024D      DIVP   RES   1
0366          *
0367          *FROM THIS POINT ON
0368          *ANY REF TO GRND FLAG GOTMX, IS ACTUALLY REF TO
0369          *AIR FLAG A2ERR=1 IFF 2 ERRS IN ROW
0370          *AIRN=1 IF THIS ERROR IS A N/AK
0371          *ARERR=1 IF LAST ERROR WAS A N/AK
0372 024E 70070000 GRAPH/ NOP          TAKES PLACE OF PLAY
0373 0250 48800373      ST   0,GRAPA0+1
0374 0252 46010002      L    1,2,0          SET UP R1
0375          *
0376 0254 44820000      LA   2,ALTRP          DECODE,SET UP ALT READINGS
0377 0256 1541B53F      MOV  M3,ALC2
0378 0258 1541B53E AL2  MOV  M3,ALC1
0379 025A 4613000A AL1  L    3,10,1
0380 025C C083003A      CRA  3,X'3A'
0381 025E E08C0262      BC   12,$+4
0382 0260 4C830007      AA   3,7          3A-3F TO 41-48
0383 0262 49830082      ST   3,*R2
0384 0264 4C820001      AA   2,1
0385 0266 4C810001      AA   1,1
0386 0268 213FA001      AMI  ALC1,1
0387 026A E08C025A      BC   12,AL1
0388 026C 4C820001      AA   2,1          OK PAST SPACE
0389 026E 213FA001      AMI  ALC2,1
0390 0270 E08C0258      BC   12,AL2
0391          *
0392 0272 46010002      L    1,2,0          GET ARGUMENT
0393 0274 46120013      L    2,19,1        R1+19
0394 0276 C0820023      CRA  2,X'23'       IS IT #
0395 0278 F08B0322      BC   11,GOTCA     NORMAL
0396 027A 840002FF      BFNE ARSTAT,0,ASTATM THIS IS STATISTICS RECORD
0397 027C 46130019      L    3,X'19',1    GET MODE
0398 027E 48830000      ST   3,LFERNA6
0399 0280 48820000      ST   2,LFERNA8    STORE REASON
0400          *OK THIS IS AN ERROR MSG
0401 0282 84000A86      BFNE CRERR,1,$+4
0402 0284 88000800      SETF GOTMX,1      THIS IS 2ND ERR IN ROW
0403 0286 88000800      SETF GRERR,1      FIRST ERR IN ROW
0404 0288 C082004E      CRA  2,X'4F'       IS IT N
0405 028A F08B02ED      BC   11,AIRNP
0406 028C 88000000      SETF AIRN,0       THIS ERR IS NOT N
0407 028E 84000294      BFNE GOTMX,0,ERNA2 2ND LEVEL 0 ERR IN ROW
0408 0290 88000800      SETF AFIRE,1      FIREUP PRINT
0409 0292 74830376      BL   3,TIMPGA     TIME PRINT,GROUP
0410 0294 2139A001 ERNA2 AMI  ANBM,1      BAD MSG COUNT
0411 0296 70070000 ERNA3 NOP
0412 0298 84000AA9      BFNE GOTMX,1,NOTNB MUST BE 2 ERRORS
0413 029A 840002A9      BFNE AIRN,0,NOTNB THIS ERR IS
0414 029C 84000AA9      BFNE ARERR,1,NOTNB
    
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0415	029E	74800484		BL	0,NDPRIN	ERRORS N,B
0416	02A0	0000		DATA	GOUPD	14 SPACES
0417	02A1	74800484		BL	0,NDPRIN	
0418	02A3	03A1		DATA	GOUPE	12 SPACES
0419	02A4	74800484		BL	0,NDPRIN	
0420	02A6	0000		DATA	GOUPA	15 *'S
0421	02A7	74800000		BL	0,CRLF	
0422	02A9	70070000	NOTNB	NOP		
0423	02AB	44820000		LA	2,LCMTA	
0424	02AD	4C81FFF2		AA	1,-14	LINE UP WITH MOV'T
0425	02AF	74800000		BL	0,MOV'T	MOVE ERROR TIME TO LCMTA
0426	02B1	44820000		LA	2,LERNA	
0427	02B3	4C810027		AA	1,X'27'	
0428	02B5	74800000		BL	0,MOVN	MOVE ERROR NO
0429	02B7	74800380		BI	0,TIMPA	TIME OF ERROR
0430	02B9	84000AC3		BFNE	GOTMX,1,FIRFR	
0431	02BB	84000AC1		BFNE	AIRN,1,*+6	2 ERRORS
0432	02BD	840002C5		BFNE	ARFR,0,ERRNN	NN ERROR
0433	02BF	708202CA		B	ERRBN	BN ERROR
0434	02C1	708202CD		B	FRRBB	
0435	02C3	84000ACD	FIRFR	BFNE	AIRN,1,ERRBN	ONLY 1 ERR,NON-N
0436	02C5	74800484	ERRNN	BL	0,NDPRIN	LAST ERR WAS NAK
0437	02C7	0000		DATA	GOUPD	GO UP WITH SPACES
0438	02C8	708202CD		B	*+5	
0439	02CA	74800484	ERRBN	BI	0,NDPRIN	LAST ERR WAS B,LEV 0
0440	02CC	03AF		DATA	GOUPF	GO UP WITH *'S
0441	02CD	70070000	FRRBB	NOP		PRINT ERROR NUMBER
0442	02CF	74800484		BL	0,NDPRIN	
0443	02F1	0000		DATA	LERNPA	ERROR NO
0444	02F2	840002B7		BFNE	AIRN,0,*+5	
0445	02F4	74800484		BL	0,NDPRIN	N ERROR,LINE UP ATTITUDE INF
0446	02F6	0000		DATA	GOUPD	
0447	02F7	74800484		BL	0,NDPRIN	ATTITUDE INFO
0448	02D9	0000		DATA	ALTDPI	
0449	02DA	75800154		BL	0,*CRLF	
0450	02DC	840002F3		BFNE	AIRN,0,GRAPEX	N ERR,NO INCLUDE IN DOWN TIM
0451	02DE	75800157		BL	0,*ADDP	CUMULATIVE PIN OUT COMM
0452	02E0	0000		DATA	RIN2	
0453	02E1	0000		DATA	OUTCBA,OUTCBA	
		02F2	0000			
0454	02E3	84000A19	GRAPEX	BFNE	AIRN,1,*+6	LAST ERR=THIS ERROR
0455	02E5	88000800		SETF	ARFR,1	THIS WAS N ERR
0456	02E7	7082036C		B	GRAPAX	
0457	02E9	88000000		SETF	ARFR,0	THIS WAS ERR
0458	02EB	7082036C		B	GRAPAX	
0459			*			
0460	02ED	88000800	AIRNP	SETF	AIRN,1	YES AN N
0461	02EF	2136A001		AMI	ANNAK,1	NAK COUNT
0462	02F1	84000296		BFNE	GOTMX,0,FRNA3	
0463	02F3	88000800		SETF	AIRN,1	

0464	02F5	74800380	BL	0,TIMPA	TIME
0465	02F7	74800484	BL	0,NDPRIN	
0466	02F9	0000	DATA	GOUPC	
0467	02FA	74800484	BL	0,NDPRIN	
0468	02FC	0000	DATA	GOUPB	NUMBER
0469	02FD	70820296	B	ERNA3	
0470					
0471	02FF	70070000	* ASTATM	NOP	WIND IT UP
0472	0301	75800156	BL	0,*CADP	
0473	0303	0000	DATA	LCMTA,MITA,DURT	
		0304		0000	
		0305		0000	
0474	0306	7480049A	BL	0,BHMS	CONV DUR TO NUMSEC
0475	0308	80000800	SETF	AFIRE,1	PRINT***
0476	030A	88000000	SETF	ARSTAT,0	
0477	030C	74830376	BL	3,TIMPCA	TIME PRINT,GOUP
0478	030E	44820000	LA	2,LCMTA	
0479	0310	4C810001	AA	1,1	LINE UP
0480	0312	4C81FFF1	AA	1,-15	LINE UP
0481	0314	74800000	BL	0,MOVT	
0482	0316	75800154	BL	0,*CRLFP	
0483	0318	74800380	BL	0,TIMPA	
0484	031A	44810000	LA	1,OUTCM	
0485	031C	44820000	LA	2,OUTCBA	
0486	031E	74800004	BL	0,CALST	CALC STAT,PRINT IF
0487	0320	7082036C	B	GRAPAX	
0488					
0489	0322	44820000	* GOTCA	LA 2,LCMNA	MOVE MESSAGE NO
0490	0324	4C810013	AA	1,19	
0491	0326	74800000	BL	0,MOVN	MOVE THE NUMBER
0492	0328	2138A001	AMI	ANMC,1	COMPLET INCR
0493	032A	14062806	MOV	(06,1),(6,2)	MODE
0494	032C	154DA808	MOV	ZERR,(8,2)	NO ERROR CAUSE
0495	032E	154DA809	MOV	ZERR,(9,2)	SCEN MSG NO
0496	0330	44820000	LA	2,LCMTA	
0497	0332	4C81FFDF	AA	1,-18-15	
0498	0334	74800000	BL	0,MOVT	MOVE COMPLETION TIME
0499	0336	84000356	BFNE	ARMN1,0,GOTIA	GOT 2ND MSG
0500	0338	84000P6C	BFNE	GRERR,1,CRAPAX	NO LAST ERR
0501	033A	88000000	SETF	GRERR,0	NO ERROR
0502	033C	88000000	SETF	GOTMX,0	NO TWO ERRS EITHER
0503	033E	84000P4E	BFNE	AIRN,1,GOTFA	
0504	0340	74800380	BL	0,TIMPA	TIME
0505	0342	74800484	BL	0,NDPRIN	BLANKS UP
0506	0344	0000	DATA	GOUPC	
0507	0345	74800000	BL	0,MOVAS	
0508	0347	0000	DATA	ALTDP,LALTDP	ATTITUDE MOVF FOR PRINT
		0348		0000	
0509	0349	74800484	BL	0,NDPRIN	
0510	034B	0000	DATA	GOUPB	NUMBER


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0511 034C 7082136C      B      CRAPAX
0512 034E 70071000  COTFA NOP
0513 0350 74830376      BL     3,TIMPGA
0514 0352 88000000      SETF  ARMN1,0
0515 0354 7082136C      B      CRAPAX
0516 0356 44030000  COTIA L      3,LCMNA6      IS MODE 1:
0517 0358 C0831044      CRA   3,X'44'
0518 035A F08B136C      BC    11,CRAPAX      YES,IGNORE,NO TIME SYNC
0519 035C 74800000      BL     0,MOVAS
0520 035E 0000      DATA LCMTA,LASTA
0521 0360 74800000      BL     0,MOVAS
0522 0362 0000      DATA LASTA,MITA
0523 0364 74800000      BL     0,MOVAS
0524 0366 0000      DATA ALTDP,LALTDP
0525 0368 75800154      BL     0,*CRLF
0526 036A 7082134E      B      GOTFA
0527 *
0528 036C 70071000  CRAPAX NOP
0529 036E 74800000      BL     0,MOVAS
0530 0370 0000      DATA ALTDP,LALTDP
0531 0372 44800372  CRAPA0 LA     0,$
0532 0374 72820003      B      3,0
0533 *
0534 0376 74800380  TIMPGA BL     0,TIMPA      PRINT TIME
0535 0378 74800484      BL     0,NDPRIN
0536 037A 0000      DATA GOUPA
0537 037B 74800484      BL     0,NDPRIN
0538 037D 0000      DATA GOUPB      PRINT NUMBER
0539 037E 72B20002      B      2,3      RET R3+2
0540 *
0541 0380 4880039C  TIMPA  ST     0,TIMPAX+1
0542 0382 4883039E      ST     3,TIMPAX+3
0543 0384 75800156      BL     0,*CADP      COMP ASCII DIFF
0544 0386 0000      DATA LCMTA,LASTA,DIFF  DIFF=LCMT-LAST
0545 0388 0000
0546 0389 74800000      BL     0,MOVAS
0547 038B 0000      DATA LCMTA,LASTA
0548 038C 0000
0549 038D 84000E93      BFNE  AFIRE,1,NAFIRE
0550 038F 88000000      SETF  AFIRE,0
0551 0391 748003FC      BL     0,CHMTB
0552 0393 70071000  NAFIRE NOP
0553 0395 74800484      BL     0,NDPRIN
0554 0397 0000      DATA PLCMTA      REAL TIME
0555 0398 74800484      BL     0,NDPRIN

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0554	039A	0000		DATA	BIFP1		DIFFERENCI
0555	039B	4480039B	TIMPAX	IA	0,\$		
0556	039D	4483039D		LA	3,\$		
0557	039F	72820002		B	2,0		
0558			*				
0559	03A1	000C	GOUPE	DATA	12,C'	
	03A2	2E202E20					
	03A4	2E202E20					
	03A6	2E202E20					
	03A8	2E202E20					
	03AA	2E202E20					
	03AC	2E202E20					
0560	03AE	000E	COUPE	DATA	14,C'	* * * * *	
	03AF	202A202A					
	03B1	202A202A					
	03B3	202A202A					
	03B5	202A202A					
	03B7	202A202A					
	03B9	202A202A					
	03BB	202A202A					
0561				PAGE			

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0562          *SERVICE ROUTINES
0563          *****
0564          *IF R1 GT OR EQ R2 100.00% IS CALCULATED
0565          *ASSUME R2 IS CT R1
0566          *DIVIDE R1/R2 PRINT AA,A%
0567 03BD 4C80FFFF DIV AA 0,-1
0568 03BF 4C800003 DIV11 AA 0.3
0569 03C1 45030080 L 3,*R0
0570 03C3 F08C03F9 BC 12,DIVX OK,RETURN R0+1
0571 03C5 45010083 L 1,*R3 NUMERATOR
0572 03C7 46030001 L 3.1,0
0573 03C9 45020083 L 2,*R3 DENOMINATOR
0574 03CB 46030002 L 3.2,0 POINTS TO STORE ADD
0575 03CD 1546B540 MOV M5,DCTR
0576 03CF 1544B547 MOV M2,DCTR1 2 PLACFS BEFORE DEC PT
0577 03D1 C0010082 CR 1,R2
0578 03D3 F08C03DD BC 12,D5 OK,DO DIV R1 LT R2
0579 03D5 17FBAC00 MOV ASC1,(0.3) R1 GT OR EQ R2 100.00%
0580 03D7 44810000 LA 1,0
0581 03D9 44820000 LA 2,0 MAKE 00.000 PRINT
0582 03DB 708203DF B $+4
0583 03DD 154DAC00 D5 MOV ZERB,(0.3) BLANK OUT 1
0584 03DF 488203E4 D4 ST 2,DIVSOR+1 DIVISOR,DENOMINATOR
0585 03E1 CC81000A D3 MA 1,10 *10
0586 03E3 D08103F3 DIVSOR DA 1,$
0587 03E5 4C820030 AA 2,X'30' MAKE ASCII 0-9
0588 03E7 4C830001 AA 3,1 OUTPUT PIR
0589 03E9 49820083 ST 2,*R3
0590 03EB 2147A001 AMI DCTR1,1
0591 03ED F08B03F1 BC 11,$+4
0592 03EF 708203F3 B $+4
0593 03F1 4C830001 AA 3,1 GO PAST DEC PT
0594 03F3 2140A001 AMI DCTR,+1
0595 03F5 F08C03E1 BC 12,D3
0596 03F7 708203BF B DIV11
0597 03F9 72820001 DIVX B 1,0 DO NEXT DIVIDE
0598          * RET R0+1
0599          *
0600 03FB 2031 ASC1 DATA C' 1' ASCII 1
0601 03FC 4881041A CHMTB ST 1,CHMTB1+1 CONV HRS,MIN TO BIN MINUTES
0602 03FE 4880041C ST 0,CHMTB1+3
0603 0400 44800000 LA 0,BIN2
0604 0402 4C800001 AA 0,1 COMP BIN2+1
0605 0404 48800411 ST 0,CH3+1
0606 0406 44010000 CH1 L 1,BIN2 ADD OF DATA FIN
0607 0408 60020081 MLA 2,R1
0608 040A 4881040F ST 1,CH2+1 HR#4
0609 040C 60040081 MLA 4,R1 HR#64
0610 040E 5081040E CH2 SA 1,$ HR#60
0611 0410 4C010410 CH3 A 1,$ PLUS MINUTES
    
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0612 0412 74800484      BL  0,NDPRIN
0613 0414 0000          DATA FIRUP
0614 0415 4C81FFFF      AA  1,-1
0615 0417 E08A0412      BC  10,$-5
0616 0419 44810419 CHMTB1 LA  1,$
0617 041B 4480041B      LA  0,$
0618 041D 72820002      B   2,0
0619
0620
0621 041F 70070000 PHOUR  NOP
0622 0421 4C800002      AA  0,2
0623 0423 45030080      L   3,*R0
0624 0425 E08C0431      BC  12,PHOURX
0625 0427 45010083      L   1,*R3
0626 0429 CC010498      M   1,C3600
0627 042B D0010497      D   1,NUMS
0628 042D 48820001      ST  2,*1,0
0629 042F 7082041F      B   PHOUR
0630 0431 72820001 PHOURX B   1,0
0631
0632 0433 4C800002 BINDEC AA  0,2
0633 0435 44810457      LA  1,BDP
0634 0437 4881024D      ST  1,DIVP
0635 0439 45030080      L   3,*R0
0636 043B E08C0453      BC  12,BINDX
0637 043D 45010083      L   1,*R3
0638 043F 46030001      L   3,1,0
0639 0441 CC01045A RDI   M   1,C1
0640 0443 D101024D      D   1,*DIVP
0641 0445 224DA001      AMI DIVP,1
0642 0447 4C820030      AA  2,X'30'
0643 0449 49820083      ST  2,*R3
0644 044B 4C830001      AA  3,1
0645 044D 4502024D      L   2,*DIVP
0646 044F E08C0433      BC  12,BINDEC
0647 0451 70820441      B   BDI
0648 0453 70070000 BINDX  NOP
0649 0455 72820001      B   1,0
0650
0651 0457      BDP   EQU  $
0652 0457 03F8      C1000 DATA 1000
0653 0458 0064      C100  DATA 100
0654 0459 000A      C10   DATA 10
0655 045A 0001      C1    DATA 1
0656 045B 1FF1      DATA -1
0657
0658
0659
0660
0661 045C 4880047F C4ATB ST  0,C4ATR0+1

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END OF LIST
 NUMERATOR
 3600 SFC/HOUR*3#MSCS
 NUM SEC DURATION
 STORE IT
 NEXT ARG
 RETURN

 SET UP DIVISOR PTR

 END OF LIST
 NUMBER
 POINTS TO STORE ADD
 SETS UP R1,R2 AS NUMBER

 MAKE ASCII 0-9

 DONE,CIT NEXT NO
 FINISH THIS ONE

 END OF LIST

 *DECODE ASCII TRANS NO AAA INTO BINARY
 *R1 POINTS TO ASCII AAAA
 *COMPARE MSC NO'S AND MAKE SURE THEY ASCEND
 R1 CONT ASCII ADD

0662	045E	44820483	LA	2,COUNTB	LAST BIN NUMBER
0663	0460	74800000	BL	0,CATB	CON R2 TO BIN 100'S
0664	0462	4C81FFFF	AA	1,-1	
0665	0464	44820479	LA	2,COUNTC+1	CON R2 TO BIN 1'S
0666	0466	74800000	BL	0,CATB	
0667	0468	44020483	L	2,COUNTB	
0668	046A	60020082	MLA	2,R2	*4
0669	046C	48820475	ST	2,COUNTC+1	
0670	046E	60030082	MLA	3,R2	*32
0671	0470	48820477	ST	2,COUNTD+1	
0672	0472	60010082	MLA	1,R2	*64
0673	0474	4C820474	COUNTC	AA 2,\$	*68
0674	0476	4C820476	COUNTD	AA 2,\$	*100
0675	0478	4C820478	COUNTF	AA 2,\$	
0676	047A	48820482	ST	2,COUNTT	CONVERTED TO BIN
0677	047C	44010482	L	1,COUNTT	
0678	047E	4480047E	C4ATB0	LA 0,\$	
0679	0480	72820002	B	2,0	
0680	0482		COUNTT	RES 1	TOTAL
0681	0483		COUNTB	RES 1	LAST BIN NUMBER
0682			*		
0683	0484	48800492	NDPRIN	ST 0,NDPX+1	
0684	0486	48810494	ST	1,NDPX+3	
0685	0488	46010002	L	1,2,0	
0686	048A	4881048E	ST	1,\$+4	
0687	048C	75800153	BL	0,*PRINTP	
0688	048E	048F	DATA	\$	
0689	048F	7082048C	B	\$-3	
0690	0491	44800491	NDPX	LA 0,\$	
0691	0493	44810493	LA	1,\$	
0692	0495	72820003	B	3,0	RFT CALL+3
0693			*		
0694	0497		NUMS	RES 1	NUMBER OF SEC TOTAL
0695	0498	0E10	C3600	DATA 3600	
0696	0499	003C	C60	DATA 60	
0697			*		
0698	049A	488004B5	HMS	ST 0,BH0+1	CONV BIN HR,MIN,SEC TO SEC
0699	049C	488104B7	ST	1,BH0+3	
0700	049E	488204B9	ST	2,BH0+5	RESULT IN NUMS
0701	04A0	488304BB	ST	3,BH0+7	
0702	04A2	44810000	LA	1,PIN2	POINT
0703	04A4	46120000	L	2,0,1	HRS
0704	04A6	CC020498	M	2,C3600	HR#3600=SEC
0705	04A8	48830497	ST	3,NUMS	
0706	04AA	46120001	L	2,1,1	IN
0707	04AC	CC020499	M	2,C60	MIN#60=SEC
0708	04AE	4C030497	A	3,NUMS	
0709	04B0	4E130002	A	3,2,1	NO SECS
0710	04B2	48830497	ST	3,NUMS	
0711	04B4	448004B4	BH0	LA 0,\$	

0712 04B6 448104B6 LA 1,\$
0713 04B8 448204B8 LA 2,\$
0714 04BA 448304BA LA 3,\$
0715 04BC 72820002 B 2,0
0716 04BE 0000 TV DATA DATA LP,X'1C0' TR VECTOR
04BF 01C0
0717 04C0 END TV
0000 ERRORS : LENGTH = 04C0

LOAD MAPS

GROUND STATION SYSTEM

AIRBORNE STATION SYSTEM

DATA REDUCTION AND ANALYSIS SYSTEM

GRAPH DATA REDUCTION AND ANALYSIS SYSTEM

LOAD MAP
 IDENT TYPE RELOCATION CONSTANT
 EXTERNAL SYMBOLS

SIHI --PSEG--0000

DSRI	0007	DSWI	0008	MTYRI	0009	MTYMI	000A	OPYRI	000B
WAITKY	000E	WAITAD	00F7	KBDM	000E	KWRITE	002A	OPYWI	000C
XSTAT	0032	PNWDS	000B	KBDMIP	0012	CKBB	0039	WINT	0149
RINT	0027	RTCIH	0000	MD	0001	RCVDF	0039	SDRD	0001
XNEXT	0031	XCHOUT	0034	XCHIN	0033	SYNCHR	0037	CHARIN	002B
KCHIN	002D	XWINT	0028	XPRINT	0011	KREAD	0010	INTON	0036
MASKT	0028	LAYD1	0006	PLAERR	000D	INPUT	0000	DATALP	0000
PRINT	0034	IBUF	07C6	IBEND	001D	SDRF2	0001	SDRF3	0003

SIHD --PSEG--01A8

SCOUNT	0170	SPREKY	0014	SPREAM	0015	XNEXT	0031	WSYNC	0038
KNPK	0003	D98	0035	XCHIN	0033	XCHOUT	0034	SYNCHR	0037
INTON	0036	MSGREC	0198						

DSB --BSEG--01A8

SCOUNT	0170	SPREKY	0014	SPREAM	0015	XNEXT	0031	WSYNC	0038
KNPK	0003	D98	0035	XCHIN	0033	XCHOUT	0034	SYNCHR	0037
INTON	0036	MSGREC	0198						

SDRF --FSEG--0266

SDRD --DSEG--0266

SDRP --PSEG--0B58

OUTPUT	0001	PACT	0002	DUMMY	001B	RECND	0010	PACT2	0004
PLAERR	000D	MINUS	0029	PLAR	000C	LAYDN	0005	SCEN	0013
PUT13	001D	SREC	0011	BRAND	0147	LPTR	0010	LBNWD	000F
SDRD	0001	RBI	0023	PBI	0022	RNWDS	0004	ROPTR	0005
CHARD	002C	LNWDS	0007	PNWDS	000B	PPTR	000D	POPTR	000C
RSIZE	0384	PBSIZE	01F4	RBEND	001E	PBEND	001F		

INS --PSEG--0CB2

PCHAR	0015	PCCTR	0017	RPTR	0006	LFCTR	0016	LFCTR1	0013
SYNCHR	0037	INTON	0036	INTI	0004	INTD	0009	INTC	0016
NBLOCK	0011	CHARD	002C	MASKT	0028	IBUFP	0155	IPTR	0156
NIWDS	0157	PCCTR2	001A	PCHAR2	0019	PNWDS1	000E	C72	002A
KOPTR	000A	SDRD	0001	SDRF	0000	SDRF2	0001	SDRF3	0003
SDRF4	0002	RBI	0023	PBI	0022	KBI	0024	PBI1	0025
POPTR	000C	RNWDS	0004	ROPTR	0005	PNWDS	000B	PPTR	000D
KPTR	0009	KNWDS	0008	PCHAR1	0012	PCCTR1	0014	PPTR1	000F
POPTR1	0010								

SIHK --PSEG--0D69

KBI	0024	CHARD	002C	KBEND1	0020	KNWDS	0008	KPTR	0009
STARTR	0269	C72	002A	PCCTR2	001A	PCHAR2	0019	PACT2	0004
DUMMY2	0020								

SIHB --PSEG--0DF9

TIMINT	010F	PNWDS	000B	SDRD	0001	PLARGD	00D7	BRAND	0147
SREC	0011	SCOUNT	0170	PRINT	0034	GKCHAR	013A	CHARST	0027
RAND1	0027	RAND2	0031	RAND3	00A4	RAND4	0083	RAND5	00B2

SIHA --PSE6--0F57

GETAB	00D0	CKBB	0039	KBDMIP	0012	KBDM	000E	MANB	006F
QF	0010	RECORD	00A0	CHARKY	0026	CHARIN	002B	SCDUNT	0170
RECND	0010	PNWDS	000B	KCHIN	002D	KDUT	002E	CAPO	001B
PLAERR	000D	PLAR	00CC	KCHAR1	001A	LAYD1	0006	WAITKY	000E
SREC	0011	GETBX	0019						

SIH --PSE6--10E9

PCHAR	0015	PCCTR	0017	RPTR	0006	CHARKY	0026	CHARST	0027
RBEND	001E	PBEND	001F	CHARIN	002B	CHARD	002C	RNWDS	0004
LFCTR	0016	LNWDS	0007	PNWDS	000B	PPTR	000D	CAPO	001B
RBI	0023	PBI	0022	PROM	0018	STARTK	0012	ACOPIN	0012
KSIZE	00E9	KBEND1	0020	KREAD	0010	KDUT	002E	PACT2	0004
KNWDS	0008	KBI	0024	C72	002A	KOPTR	000A	INPUT	0000
OUTPUT	0001	PACT	0002	DUMMY	001B	STATC	000F	FREC	001E
SREC	0011	LIDLE	001C	LAYDM	0005	TRLH	0018	TRRH	0017
SCDUNT	0170	SCEN	0013	TRANS	0016	QF	0010		

SIHO --PSE6--136A

PBI1	0025	CHARD1	0011	P1SIZE	012C	PBEND1	0021	POPTR1	0010
PNWDS1	000E	PPTR1	000F	PACT1	0003	DUMMY1	001F	BRAND	0147
SCDUNT	0170	PCHAR1	0012	LFCTR1	0013	SDRD	0001	MINUS	0029
C72	002A	PCCTR1	0014						

GSUPR --PSE6--149B

DSROFF	0158	USCEN	0072	SENDM	0000	MRI	02F7	QUIT	0083
RCM	0247	ACOPIN	0012	OPRINT	0007	TSUBW	03BC	IMNMI	0167
MD	0001	TSQMO	000C	TSQM	0006	IMNM	0172	TCO	000B
ERMF	000D	ICF	000F	MSDOUT0	075E	KBDM	000E	CKBB	0039
KBDMIP	0012	CM	000F	GP	0490	CB	003A	BCSE	0005
EREC	0286	ENR	001F	EBCSF	0020	NAKE	0000	DLDS	0002
ENAKS	001E	SMSTEP	0213	CPRINT	00AB	GPF	0017	RCVMB	0362
MTIME	012F	TF	0008	SEP	0466	NEAK	005F	NEBC	006B
ECHOAK	003F	FAH	0011	QF	0010	RIM	0243	NPRINT	00BB
MANB	006F	FCLASS	040C	BCOME	0016	CLASSC	0011	LSTCC	0010
ECHOTC	0057	EFT	0007	MLFS	0018	ECHONK	0043	NENK	0063
ECHONR	0047	NENR	0067	ECHOBC	004B	TIMEP	0475	ACAF	0014
MLFL	0013	TODHRA	0012	TODHRB	0013	TODMNA	0014	TC	0002
TODMNB	0015	TODSCA	0016	TODSCB	0017	TODMSA	0018	TODMSB	0019
TODMSC	001A								

GU --PSE6--175E

BCSEEN	003D	NUMBER	0163	CTIME	0164	STXF	0003	RCVMB	0362
RBCSW	003C	LBCSW	003B	BCSCNT	003E	SBLKS	0022	MSDOUT6	0778
CHART	001B	TSQM	0006	SDMTR	001C	TSQMO	000C	RIDC	016D
ERS	0009	TODHRA	0012	TODHRB	0013	TODMNA	0014	TODMNB	0015
GETABF	0015	DLDS	0002	RECORD	00A0	TODSCA	0016	TODSCB	0017
TODMSA	0018	TODMSB	0019	TODMSC	001A	DMSG0	0032	DMSG1	0033
DMSG2	0034	DMSG3	0035	DMSG4	0036	BCOME	0016	CB	003A
TC	0002	DLFS	0000	USCEN	0072	CSB	0038	DMSG	0037
EMSGR	001D	KMSGR	0006	SLAST	0008	TCO	000B	SFIRST	0007
CLASSC	0011	KNAKS	0002	KBCSF	0005	KNR	0004	ENAKS	001E
EBCSF	0020	ENR	001F	SC	000E	MSDOUT0	075E	MSDOUT1	075F
MSDOUT2	0764	MSDOUT3	076D	MSDOUT4	0776	ERBUF	016E	MSDOUT5	0777
ECHOBE	004F	MSDOUT7	0779	CM	000F	LSTCC	0010	MSDOUT	075D

ODTCAL--PSE6--1B89

OUTLP 0001U

DFLAG --FSEG--1889

OUTLP 0001U

GSUPRA--PSEG--1EA7

RESEND	0113	KNPK	0003	CRTOC	0000	DSROFF	0158	BCSE	0005
CM	000F	DLDS	0002	BCSIE	009C	BCSFE	0092	BCSN	00A2
CCNT	000B	ECNT	000C	CHART	001B	STXF	0003	SDHF	0004
ECPUT	0398	MANB	006F	TCO	000B	TC	0002	ERMF	000D
DSDUT	0063	TT	0021	SOMTR	001C	ISCENS	021F	RCVMB	0362
MTIME	012F	TSDM	0006	MD	0001	SEP	0466	GP	0490
PRINT	0034	RECORD	00A0	PUTC	0396	ERBUF	016E	PUTP	0397
NEBC	006B	ECHOAK	003F	DATALP	0000	DMSG	0037	LBCSW	003B
RBCSW	003C	EMSGR	001D	SC	000E	DLFS	0000	ACAF	0014
MLFL	0013	BAUDC	000A	TIMEP	0475	FAN	0011	DMSG0	0032
DMSG3	0035	DMSG2	0034	DMSG1	0033	BCSEEN	003D	DPRINT	00C7
LSTCC	0010	TSDMD	000C	EFT	0007	MLFS	0018	KNAKS	0002

DATALP--PSEG--21CC

TODHRA	0012	TODHRB	0013	TODMNA	0014	TODMNB	0015	TODSCA	0016
TODSCB	0017	ERBUF	016E	BAUDC	000A	DLFS	0000	KNAKS	0002
KNPK	0003	KNR	0004	KBCSF	0005	KMSGR	0006	SFIRST	0007
SLAST	0008	CSCEN	0C2A	SBLKS	0022	DLGUE	077A	PLAY	0131
SCEN	0013	RECORD	00A0	PRINT	0034	INITID	0009	ERMF	000D
IGS	00FC	GSUPR	0000	PRINTC	0018	GKCHAR	013A	RESEND	0113
PLDN1	00BF	PLDN2	00D9	REWINE	0061				

DATALF--FSEG--21CC

TODHRA	0012	TODHRB	0013	TODMNA	0014	TODMNB	0015	TODSCA	0016
TODSCB	0017	ERBUF	016E	BAUDC	000A	DLFS	0000	KNAKS	0002
KNPK	0003	KNR	0004	KBCSF	0005	KMSGR	0006	SFIRST	0007
SLAST	0008	CSCEN	0C2A	SBLKS	0022	DLGUE	077A	PLAY	0131
SCEN	0013	RECORD	00A0	PRINT	0034	INITID	0009	ERMF	000D
IGS	00FC	GSUPR	0000	PRINTC	0018	GKCHAR	013A	RESEND	0113
PLDN1	00BF	PLDN2	00D9	REWINE	0061				

DATALD--DSEG--21CC

TODHRA	0012	TODHRB	0013	TODMNA	0014	TODMNB	0015	TODSCA	0016
TODSCB	0017	ERBUF	016E	BAUDC	000A	DLFS	0000	KNAKS	0002
KNPK	0003	KNR	0004	KBCSF	0005	KMSGR	0006	SFIRST	0007
SLAST	0008	CSCEN	0C2A	SBLKS	0022	DLGUE	077A	PLAY	0131
SCEN	0013	RECORD	00A0	PRINT	0034	INITID	0009	ERMF	000D
IGS	00FC	GSUPR	0000	PRINTC	0018	GKCHAR	013A	RESEND	0113
PLDN1	00BF	PLDN2	00D9	REWINE	0061				

DLFS --FSEG--2922

DLDS --DSEG--2922

DATALP 0000

LOAD MAP
 IDENT TYPE RELOCATION CONSTANT
 EXTERNAL SYMBOLS

SIHI --PSEG--0000

DSRI	0007	DSWI	0008	MTYRI	0009	MTYWI	000A	OPYRI	000B
WAITKY	000E	WAITAD	00F7	KBDM	0002	KWRITE	002A	OPYWI	000C
XSTAT	0032	PNWDS	000B	KBDMIP	0003	CKBB	0053	WINT	0149
RINT	0027	RTCIH	0000	MD	0011	RCVDF	0039	SDRD	0001
XNEXT	0031	XCHOUT	0034	XCHIN	0033	SYNCHR	0037	CHARIN	002B
KCHIN	002D	XWINT	0028	XPRINT	0011	KREAD	0010	INTON	0036
MASKT	0028	LAYD1	0006	PLAERR	000D	INPUT	0000	DATALP	0000
PRINT	0034	IBUF	07C6	IBEND	001D	SDRF2	0001	SDRF3	0003

SIHD --PSEG--01A8

SCOUNT	0170	SPREKY	0014	SPREAM	0015	XNEXT	0031	WSYNC	0038
KNPK	0042	D98	0035	XCHIN	0033	XCHOUT	0034	SYNCHR	0037
INTON	0036	MSGREC	006B						

DSB --BSEG--01A8

SCOUNT	0170	SPREKY	0014	SPREAM	0015	XNEXT	0031	WSYNC	0038
KNPK	0042	D98	0035	XCHIN	0033	XCHOUT	0034	SYNCHR	0037
INTON	0036	MSGREC	006B						

SDRF --FSEG--0266

SDRD --DSEG--0266

SDRP --PSEG--0B58

OUTPUT	0001	PACT	0002	DUMMY	001B	RECND	0010	PACT2	0004
PLAERR	000D	MINDS	0029	PLAR	000C	LAYDN	0005	SCEN	0013
PUT13	001D	SREC	0011	BRAND	0147	LPTR	0010	LBNWD	000F
SDRD	0001	RBI	0023	PBI	0022	RNWDS	0004	POPTR	0005
CHARD	002C	LNWDS	0007	PNWDS	000B	PPTR	000D	POPTR	000C
RSIZE	0384	PBSIZE	01F4	RBEND	001E	PBEND	001F		

INS --PSEG--0CB2

PCHAR	0015	PCCTR	0017	RPTR	0006	LFCTR	0016	LFCTR1	0013
SYNCHR	0037	INTON	0036	INTI	0004	INTD	0009	INTC	0016
NBLOCK	0011	CHARD	002C	MASKT	0028	IBUFF	0155	IPTR	0156
NIWDS	0157	PCCTR2	001A	PCHAR2	0019	PNWDS1	000E	C72	002A
KOPTR	000A	SDRD	0001	SDRF	0000	SDRF2	0001	SDRF3	0003
SDRF4	0002	RBI	0023	PBI	0022	KBI	0024	PBI1	0025
POPTR	000C	RNWDS	0004	ROPTR	0005	PNWDS	000B	PPTR	000D
KPTR	0009	KNWDS	0008	PCHAR1	0012	PCCTR1	0014	PPTR1	000F
POPTR1	0010								

SIHK --PSEG--0D69

KBI	0024	CHARD	002C	KBEND1	0020	KNWDS	0008	KPTR	0009
STARTR	0269	C72	002A	PCCTR2	001A	PCHAR2	0019	PACT2	0004
DUMMY2	0020								

SIHB --PSEG--0DF9

TIMINT	010F	PNWDS	000B	SDRD	0001	PLARGD	0007	BRAND	0147
SREC	0011	SCOUNT	0170	PRINT	0034	GKCHAR	013A	CHARST	0027
RAND1	0027	RAND2	0031	RAND3	00A4	RAND4	0083	RAND5	00B2

SIHA --PSEG--0F57

GETAB	00F5	CKBB	0053	KBDMIP	0003	KBDM	0002	MANB	0056
QF	000B	RECORD	00A0	CHARKY	0026	CHARIN	002B	SCOUNT	0170
RECND	0010	PNWDS	000B	KCHIN	002D	KOUT	002E	CAFD	001B
PLAERR	000D	PLAR	00CC	KCHAR1	001A	LAYD1	0006	WAITKY	000E
SREC	0011	GETBX	0019						

SIH --PSEG--10E9

PCHAR	0015	PCCTR	0017	RPTR	0006	CHARKY	0026	CHARST	0027
RBEND	001E	PBEND	001F	CHARIN	002B	CHARD	002C	RNWDS	0004
LFCTR	0016	LNWDS	0007	PNWDS	000B	PPTR	000D	CAFD	001B
RBI	0023	PBI	0022	PROM	0018	STARTK	0012	ACDPIN	0012
KSIZE	00E8	KBEND1	0020	KREAD	0010	KOUT	002E	PACT2	0004
KNWDS	0008	KBI	0024	C72	002A	KOPTR	000A	INPUT	0000
OUTPUT	0001	PACT	0002	DUMMY	001B	STATC	000F	FREC	001E
SREC	0011	LIDLE	001C	LAYDN	0005	TRLH	0018	TRRH	0017
SCOUNT	0170	SCEN	0013	TRANS	0016	OF	000B		

SIHD --PSEG--136A

PBI1	0025	CHARD1	0011	P1SIZE	012C	PBEND1	0021	POPTR1	0010
PNWDS1	000E	PPTR1	000F	PACT1	0003	DUMMY1	001F	BRAM0	0147
SCOUNT	0170	PCHAR1	0012	LFCTR1	0013	SIRD	0001	MINUS	0029
C72	002A	PCCTR1	0014						

AU --PSEG--149B

ABF	0000	TODHRA	0037	TODHRB	0038	TODMNA	0039	TODMNB	003A
TODSCA	003B	TODSCB	003C	TODMSA	003D	TODMSB	003E	TODMSC	003F
TSDMO	0007	TSOM	0005	TCO	0008	TC	0006	ABD	0002
BCSCNT	0052	LBCSW	004F	RBCSW	0050	GETABF	0009	PRINT	0034
CTIME	0578	ASUPR	0000	HEIGHT	0034	PITCH	0035	ROLL	0036
ENALT	0581	RIDC	058A	ERBUF	058B	RCVMB	0059	NUMBER	0577
RECORD	00A0	SOMTR	0041	ERMF	0001	MS	0055	CRTCC	0046
CHART	0040	CLASSC	0048	NEBC	0030	ECHDRAK	0004	RECEND	0113
BCSEEN	0051	DMSG4	004D	AMOVE	02C9	AMOVF	02C8	AMOVT	02C7
OPRINT	00C7								

ABB --BSEG--149B

ABF	0000	TODHRA	0037	TODHRB	0038	TODMNA	0039	TODMNB	003A
TODSCA	003B	TODSCB	003C	TODMSA	003D	TODMSB	003E	TODMSC	003F
TSDMO	0007	TSOM	0005	TCO	0008	TC	0006	ABD	0002
BCSCNT	0052	LBCSW	004F	RBCSW	0050	GETABF	0009	PRINT	0034
CTIME	0578	ASUPR	0000	HEIGHT	0034	PITCH	0035	ROLL	0036
ENALT	0581	RIDC	058A	ERBUF	058B	RCVMB	0059	NUMBER	0577
RECORD	00A0	SOMTR	0041	ERMF	0001	MS	0055	CRTCC	0046
CHART	0040	CLASSC	0048	NEBC	0030	ECHDRAK	0004	RECEND	0113
BCSEEN	0051	DMSG4	004D	AMOVE	02C9	AMOVF	02C8	AMOVT	02C7
OPRINT	00C7								

DDTCAL--PSEG--17BF

OUTLP 0001U

DFLAG --FSEG--17BF

OUTLP 0001U

ASUPR --PSEG--1ADD

TODMNB	003A	TODMSA	003D	TODMSB	003E	TODSCA	003B	TODSCB	003C
MD	0011	PRINT	0034	GKCHAR	013A	PRINTC	0018	TODHRB	0038

TODMNA	0039	MS	0055	DMSG0	0049	NENK	0028	NEBC	0030
KNPK	0042	NEAK	0024	MLFL	000F	MLFS	0010	ECHONK	0008
ECHQBC	0010	CLASSC	0048	DMSG4	004D	DMSG3	004C	MANB	0056
QUIT	029B	DMSG1	004A	KL2	0014	EREC	012F	NAKE	0004
TCO	0008	KBDMIP	0003	KL1	0013	FAN	000A	CB	0054
BCSE	0000	RCVMB	0059	CPRINT	00AB	EFT	000C	TODHRA	0037
KL3	0015	KBDM	0002	CKBB	0053	DSROFF	0158	FCLASS	027C
INITIO	0009	ACQPIN	0012	TC	0006	ABD	0002	ABF	0000
ERMF	0001	NPRINT	00BB	QF	000B	IAS	0203	MRI	010B
SENDM	0000	DPRINT	00C7	TODMSC	003F	SNDMB	015D	DMSG2	004B
ECHOAK	0004	ACAF	0012						

ASUPRA--PSEG--1E03

DSOUT	0063	ABD	0002	ABF	0000	ERMF	0001	LBCSW	004F
DMSG2	004B	MD	0011	STXF	000E	SDHF	000D	ACAF	0012
DMSG0	0049	NEBC	0030	DMSG4	004D	DMSG1	004A	BCSIE	00C1
LSTCC	0047	BCSN	00C7	TCO	0008	DMSG3	004C	BCSFE	00B7
RBCSW	0050	CHART	0040	TC	0006	CCNT	0044	CRTCC	0046
MLFL	000F	MLFS	0010	ECNT	0045	ECHOAK	0004	DMSG	004E
TODMSC	003F	BCSEEN	0051	FAN	000A	BCSE	0000	RCVMB	0059
MANB	0056	DSROFF	0158	TODHRA	0037	TODHRB	0038	TODMNA	0039
TODMNB	003A	TODSCA	003B	TODSCB	003C	TODMSA	003D	TODMSB	003E

ABF --FSEG--2125

ABD --DSEG--2125

DATALP 0000

LOAD MAP
 IDENT TYPE RELOCATION CONSTANT
 EXTERNAL SYMBOLS

STII --PSEG--000F

DSRI	0007	DSWT	0008	MTYRI	0009	MTYWI	000A	OPYRI	000B
WAITRY	000E	WAITAL	00F7	KPDM	000RU	KWRITE	002A	OPYWI	000C
XSIAT	0032	PNWDS	000B	KPDMIP	002DU	CRPB	000EU	WINT	0149
RINT	0027	RTCIH	0011U	MD	0012U	RCVOF	0039	SDRD	0001
XNEXT	0031	XCHOUT	0034	XCHIN	0033	SYNCHR	0037	CHARIN	002B
KCIIN	0020	XWINT	0028	XRINT	0011	KREAD	0010	INTON	0036
MASKI	0028	LAYO1	0006	PIAERR	000D	INPUT	0000	DATALP	04C5
PRINT	0034	IBUF	07C6	IBEND	001D	SDRF2	0001	SDRF3	0003

STID --PSEG--01A8

SCOUNT	0170	SPREKY	0014	SPRFAM	0015	XNEXT	0031	WSYNC	0038
KNPK	0006U	D98	0035	XCHIN	0033	XCHOUT	0034	SYNCHR	0037
INTOF	0036	MSCREC	000CU						

DSB --PSEG--01A8

SCOUNT	0170	SPREKY	0014	SPRFAM	0015	XNEXT	0031	WSYNC	0038
KNPK	0006U	D98	0035	XCHIN	0033	XCHOUT	0034	SYNCHR	0037
INTOF	0036	MSCREC	000CU						

SDRF --PSEG--0266

SDRD --PSEG--0266

SDRP --PSEG--0B58

OUTP	0001	PACT	0002	GUMMY	001B	RECND	0010	PACT2	0004
PLAYER	000D	MINUS	0029	PLAP	00CC	LAYON	0005	SCIN	0013
PUI3	0010	SRFC	0011	BRAND	0147	LPTR	0010	IBNWD	000F
SDRD	0001	RBI	0023	PBI	0022	RNWDS	0004	ROPTR	0005
CHARO	0020	LNWDS	0027	PNWDS	000B	PPTR	000D	POPTR	000C
RSIZE	0384	PBSIZE	01F4	REND	001E	PBEND	001F		

INS --PSEG--0CB2

PCHAR	0015	PCTR	0017	RPT	0006	LECTR	0016	IFCTR1	0013
SYNCHR	0037	INTON	0036	INT1	0004	INTD	0009	INTC	0016
NBLOCK	0011	CHARO	0020	MASKI	0029	IPUPP	0155	IPTP	0156
NIWDS	0157	PCTR2	001A	PCHAP2	0019	PNWDS1	0001	C72	002A
KPTR	000A	SDRD	0001	SDRF	0000	SDRF2	0001	SDRF3	0003
SDRF4	0002	RBI	0023	PBI	0022	KBI	0024	PBI1	0025
POPTR	000C	RNWDS	0024	ROPTR	0005	PNWDS	000D	PPTR	000D
KPTR	0009	KNWDS	0028	PCHAR1	0012	PCTR1	0014	PPTR1	000F
POPTR1	0010								

STPK --PSEG--0D69

KBI	0024	CHARO	0020	KREND1	0020	KNWDS	0008	KPTR	0009
STARIP	0269	C72	002A	PCTR2	001A	PCHAR2	0019	PACT2	0004
DUMMY2	0020								

STHB --PSEC--0DF9

TIMINT	010F	PNWDS	000B	SDRD	0001	PLARCO	0007	BRAN0	0147
SRIC	0011	SCOUNT	0170	PRINT	0034	GKCHAR	013A	CHARST	0027
RAND1	0027	RAND2	0031	RAND3	00A4	RAND4	0083	RAND5	00B2

SIHA --PSEG--0F57

GETAB	0001U	CKBB	000EU	KPDMIP	000DU	KBDM	0008U	MANB	0005U
QF	0006U	RECORD	00A0	CHARKY	0026	CHARIN	002B	SCOUNT	0170
RFCND	0010	PNWDS	000B	KCHIN	002D	KOUT	002F	CAPO	001B
PIAERR	000D	PLAR	00CC	KCHAR1	001A	LAY01	0006	WAITKY	000F
SRIC	0011	GETBX	0019						

SIH --PSEG--10E9

PCHAR	0015	PCCTR	0017	RPTC	0006	CHARKY	0026	CHARST	0027
REIND	001F	PBEND	001F	CHARIN	002B	CHARO	002C	RNWD5	0004
LFCTR	0016	LNWDS	0007	PNWDS	000B	PPTR	000D	CAPO	001B
RBI	0023	PBT	0022	PROM	0018	STARTK	0012	ACOPIN	0012
KSIZE	00F8	KBIND1	0020	KREAD	0010	KOUT	002F	PACT2	0004
KNWDS	0008	KBI	0024	C72	002A	KOPTR	000A	INPUT	0000
OUTPUT	0001	PACT	0002	DUMMY	001B	STATC	000F	IFRC	001E
SRIC	0011	IDI E	001C	LAYON	0005	TRLH	0018	TRRH	0017
SCOUNT	0170	SCEN	0013	TRANS	0016	QF	0006U		

SIHO --PSEC--136A

PBT1	0025	CHAR01	0011	F1SIZE	012C	PBEND1	0021	POPTR1	0010
PNWDS1	000F	PPTR1	000F	PACT1	0003	DUMMY1	001F	BRAN0	0147
SCOUNT	0170	PCHAR1	0012	LFCTR1	0013	SDRD	0001	MINUS	0029
C72	002A	PCCTR1	0014						

PRINT --PSEC--149B

MIR	0000	MCC	0002	MID	0003	MBT	0008	MET	0011
MMOD	0010	MSN	001D	MPLH	0026	GREC	0027	GCHK	0028
TIME	0029	CCC	0032	CPRE	0033	AREC	0270	ACHK	0270
ATPE	0271	APR	027A	ACC	0287	APRE	0288	AUMID	0288
AUMOD	028D	AUTL	020E	MMOV	000B	DTP	0068	JASCI	0133
PRINT	0034	RSV	0000	RRES	0016	SNMF	07A2		

UTIL --PSEC--1915

MPH	0026	MCC	0002	MPET	0022	MPBT	001E	XASCI	0090
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VTIL --PSEC--1BA6

RSV	0000	RRES	0016	JASCI	0133	MMOV	000B		
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MTR --PSEC--1D3D

GRIC --PSEC--1D3E

APIC --PSEC--1D3F

MAIN --PSEG--1D3D

RSAV	000F	RRES	0016	TC	002C	DTR	0068	CTMF	00A7
MMOV	00DB	INITIO	0009	RANDIO	0000	PLAY	0131	PLAY1	0164
PRINT	0034	GKCHAR	013A	PNWDS	000B	FINAL	0000	PA	00A3
PG	005A	PMTR	0000	STOPS	0268	STPS	021D	CNT	01D7
JASCI	0133	BTOT	025D	WCN	0000				

FIN --PSEG--2B17

RSAV	0000	RRES	0016	DTB	0068	MMOV	00DB	JASCI	0133
HAT	0157	GKCHAR	013A	PRINT	0034	PYADR	07A5	PY1ADR	07A6
START	04C5	BTOT	025D	IPRCT	00F2	YCPD	0163		

SIHI --PSEG--0000

UNDEF	MD	006F
UNDEF	MD	007A
UNDEF	CKBB	011A
UNDEF	KBDMIP	0115
UNDEF	KBDMIP	0116
UNDEF	RTC1H	0110
UNDEF	KBDM	011B
UNDEF	KBDM	011C

SIHD --PSEG--01A8

UNDEF	MSGREC	0023
UNDEF	KNPK	008C

SIHA --PSEG--0F57

UNDEF	GETAB	006D
UNDEF	MANB	006F
UNDEF	CKBB	00BE
UNDEF	KBDMIP	00AF
UNDEF	KBDMIP	00B0
UNDEF	KBDM	00BF
UNDEF	KBDM	00C0
UNDEF	QF	00DB
UNDEF	OF	00DC

SIH --PSEG--10F9

UNDEF	QF	022F
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LOAD MAP
 IDENT TYPE RELOCATION CONSTANT
 EXTERNAL SYMBOLS

SIHI --PSEC--0000

DSRI	0007	DSWI	0008	MTYRI	0009	MTYWI	000A	OPYRI	000B
WAITKY	000F	WAITAD	00F7	KBDM	0008U	KWRITE	002A	OPYWI	000C
XSTAT	0032	PNWDS	000E	KBDMIP	000DU	CKEB	000EU	WINT	0149
RINT	0027	RTCIH	0011U	MD	0012U	RCVOF	0039	SDRD	0001
XNEXT	0031	XCHOUT	0034	XCHIN	0033	SYNCHR	0037	CHARIN	002P
KCHIN	002D	XWINT	0028	XRINT	0011	KREAD	0010	INTON	0036
MASKT	0028	LAYO1	0006	PLAERR	000D	INPUT	0000	DATALP	0000
PRINT	0034	IBUF	07C6	IBEND	001D	SDRF2	0001	SDRF3	0003

SIHD --PSEC--01A8

SCOUNT	0170	SPREKY	0014	SPREAM	0015	XNEXT	0031	WSYNC	0038
KNPK	0006U	D98	0035	XCHIN	0033	XCHOUT	0034	SYNCHR	0037
INTON	0036	MSGREC	000CU						

DSB --BSEC--01A8

SCOUNT	0170	SPRFKY	0014	SPREAM	0015	XNEXT	0031	WSYNC	0038
KNPK	0006U	D98	0035	XCHIN	0033	XCHOUT	0034	SYNCHR	0037
INTON	0036	MSGREC	000CU						

SDRF --FSEC--0266

SDRD --DSEG--0266

SDRP --PSEC--0B58

OUTPUT	0001	PACT	0002	DUMMY	001B	RECND	0010	PACT2	0004
PLAERR	000D	MINUS	0029	PLAR	00CC	LAYON	0005	SCEN	0013
PUT13	001D	SREC	0011	BRAN0	0147	LPTR	0010	LBNWD	000F
SDRD	0001	RBI	0023	PBI	0022	RNWDS	0004	ROPTR	0005
CHARO	002C	LNWDS	0007	PNWDS	000B	PPTR	000D	POPTR	000C
RSIZE	0384	PBSIZE	01F4	RBEND	001E	PBEND	001F		

INS --PSEC--0CB2

PCHAR	0015	PCCTR	0017	RPTR	0006	LFCTR	0016	LFCTR1	0013
SYNCHR	0037	INTON	0036	INTI	0004	INTD	0009	INTC	0016
NBLOCK	0011	CHARO	002C	MASKT	0028	IBUFP	0155	IPTR	0156
NIWDS	0157	PCCTR2	001A	PCHAR2	0019	PNWDS1	000E	C72	002A
KOPTR	000A	SDRD	0001	SDRF	0000	SDRF2	0001	SDRF3	0003
SDRF4	0002	RBI	0023	PBI	0022	KBI	0024	PBI1	0025
POPTR	000C	RNWDS	0004	ROPTR	0005	PNWDS	000B	PPTR	000D
KPTR	0009	KNWDS	0008	PCHAR1	0012	PCCTR1	0014	PPTR1	000F
POPTR1	0010								

HK --PSEC--0D69

KBI	0024	CHARO	002C	KBEND1	0020	KNWDS	0008	KPTR	0009
STARTR	0269	C72	002A	PCCTR2	001A	PCHAR2	0019	PACT2	0004
DUMMY2	0020								

SIHB --PSEG--0DF9

TJMINT	010F	PNWDS	000B	SDRD	0001	PLARGO	00D7	BRAN0	0147
EC	0011	SCOUNT	0170	PRINT	0034	GKCHAR	013A	CHARST	0027
KAND1	0027	RAND2	0031	RAND3	00A4	RAND4	0083	RAND5	00B2

SIHA --PSEC--0F57

GETAB	0001U	CKBB	000EU	KBDMIP	000DU	KBDM	0008U	MANB	0005U
QF	0006U	RECORD	00A3	CHARKY	0026	CHARIN	002B	SCOUNT	0170
RECND	0010	PNWDS	000E	KCHIN	002D	KOUT	002F	CAPO	001B
PLAERR	000D	PLAR	00CC	KCHAR1	001A	LAY01	0006	WAITKY	000E
SREC	0011	GETBX	0019						

SIH --PSEG--10E9

PCHAR	0015	PCCTR	0017	RPTR	0006	CHARKY	0026	CHARST	0027
RBEND	001E	PBEND	001F	CHARIN	002B	CHARO	002C	RNWDS	0004
LFCTR	0016	LNWDS	0007	PNWDS	000B	PPTR	000D	CAPO	001B
RBI	0023	PBI	0022	PROM	0018	STARTK	0012	ACOPIN	0012
KSIZE	00E8	KBEND1	0020	KREAD	0010	KOUT	002E	PACT2	0004
KNWDS	0008	KBI	0024	C72	002A	KOPTR	000A	INPUT	0000
OUTPUT	0001	PACT	0002	DUMMY	001B	STATC	000F	IREC	001F
SREC	0011	LIDLE	001C	LAYON	0005	TRLH	0018	TRRH	0017
SCOUNT	0170	SCEN	0013	TRANS	0016	QF	0006U		

SIHO --PSEC--136A

R11	0025	CHAR01	0011	P1SIZE	012C	PBEND1	0021	POPTR1	0010
RNWDS1	000E	PPTR1	000F	PACT1	0003	DUMMY1	001F	BRAN0	0147
SCOUNT	0170	PCHAR1	0012	LFCTR1	0013	SDRD	0001	MINUS	0029
C72	002A	PCCTR1	0014						

ODTCAL--PSEG--149B

OUTLP 0001U

OFLAG --FSEC--149B

OUTLP 0001U

MATH07--PSEG--17B9

PRINTP 0153 DATA LP 0000

GRAD03--DSEC--19D0

GRFL --FSEC--19D0

GRAP35--PSEC--1F3B

INITIO	0009	RECEND	0113	PLAY	0131	PRINT	0034	GKCHAR	013A
NDIO	0000	CAD	0000	ADD	00F0	CONA	0078	MOVN	01C9
MOVAS	01A3	MOVT	018D	CRLF	017F	BIN2	0037	CATR	013A
GRAPD	0000	PRINTC	0018	SCEN	0013	ASUM1	033E	COUPC	0000
GOUPD	0010	CRMI	001F	GCUM	0075	TCU	0080	PCCU	0088
PGU	0094	GUMSG	009F	GOUPA	00AB	GOUPB	00BC	LCMNA	00BD

LALDTP	00C8	PLCMTA	00D6	LCMTA	00D7	LASTPA	00F3	LASTA	00E4
MITA	00F0	GM2	00FC	GM2C	0126	GM2A	0138	LERNP	0151
LERN	0153	LERNPA	015C	LERNA	015E	ALDTP1	016A	ALDTP	016B
DIFP1	0177	DIFP	0179	GOUP	0186	LCMN	0197	FIRUP	01A3
CMT	01CF	LCMT	01D0	GM1C	01DC	GM1A	01F3	GM1	01EA
GMG1	020J	GMA1	0217	LASTP	022D	LAST	022F	INDM	023A
DURT	025F	OUTCM	0278	INCM	0291	MIT	029D	ASUM	02A9
TMC	02DC	PCMC	02E4	PMC	02F0	TN	0300	PCN	0308
PN	0314	TBM	0324	PCBM	032C	PBM	0338	TTM	0349
PTM	035D	OUTCB	0363	OUTCBA	0367	FLWORD	036B	PUF	036C
GOTMX	0000	CRERR	0001	GRMN1	0002	GRSTAT	0003	FIRE	0004
UNITMA	0005	ARERR	0006	ARMN1	0007	ARSTAT	0008	AFIRE	0009
AIRN	000A	STATO	000B	PUF1	0007	GUMSCA	000A	LERNA6	0164
LERNAB	0166	LCMNA6	00C2						

SIHI --PSEG--0000

UNDEF	MD	006F
UNDEF	MD	0070
UNDEF	CKPB	011A
UNDEF	KBDMIP	0115
UNDEF	KBDMIP	0116
UNDEF	RTC1H	0110
UNDEF	KBDM	011B
UNDEF	KBDM	011C

SIHD --PSEC--01A8

UNDEF	MSCREC	0023
UNDEF	KNPF	008C

SIHA --PSEG--0F57

UNDEF	CETAB	006D
UNDEF	MANE	006E
UNDEF	CKBB	00BE
UNDEF	KBDMIP	00AF
UNDEF	KBDMIP	00B0
UNDEF	KBDM	00BF
UNDEF	KBDM	00C0
UNDEF	QF	00DB
UNDEF	QF	00DC

SIH --PSEC--1019

UNDEF	QF	022F
UNDEF	QF	0230

ODTCAI --PSEG--149B

UNDEF	OUTLP	00AF
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