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PROGRAM LIBRARY

DECUS NO.	12-13
TITLE	RDPEC: PEC SYNCHRONOUS TAPE READ PROGRAM
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SOURCE LANGUAGE	LAP6-DIAL

RDPEC: PEC SYNCHRONOUS TAPE READ PROGRAM

DECUS Program Library Write-up

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Description

RDPEC is a PDP-12 program designed to read and interpret a 9-channel, digital tape from a Peripheral Equipment Corporation (PEC) synchronous tape transport. The Computer Special Systems TRO4A interface is assumed to be the tape controller. Odd parity, high density tapes are assumed but this restriction can be modified by changing one memory location (see below). The program is written with the LINC and PDP-8 instruction sets and operates under the LAP6-DIAL system.

The QANDA display routine lets the user select among several options in determining the contents of the tape: N records can be read and printed in alphanumeric (EBCDIC), binary, or Fortran-compatible binary format; N records can be skipped, backspaced, or read only for the word count; or the tape may be rewound. A tape (EOF) mark is always identified when encountered during a forward read and reinitializes the QANDA display.

Usage

The program can be loaded and started by giving the DIAL command:

```
→LO RDPEC,u←
```

where u is the number of the LINCtape unit where RDPEC resides.

The initial QANDA display on the CRT appears as follows:

```
PEC DRIVE _
```

Enter the unit number (0 or 1) on the Teletype and terminate by hitting "line feed."

The second QANDA display is:

```
READ _ _ _ RECORDS IN _
```

```
A - ALPHA  
F - F-BINARY  
B - BINARY  
W - WORD COUNT ONLY  
S - SKIP  
V - REVERSE  
R - REWIND
```

The first field of up to three digits applies to all options except "rewind", and is terminated by hitting "return"; leading zeroes or blanks are not necessary. The second field of one character is terminated

with "line feed". Use "rubout" or "<" to delete or replace a digit or character already entered on the display.

Options:

- A - alphanumeric. The contents of the record are read in EBCDIC and printed in ASCII on the Teletype, 50 characters/line.
- F - Fortran binary. Two 8-bit characters on tape are combined to form one 12-bit integer; the second word on tape forms the high-order four bits of the number.
- B - regular binary. Each 8-bit word on tape is printed as a separate number.
- F and B options - An additional QANDA display determines the number conversion to be used in printing the contents of the record. It appears as follows:

FORMAT _

- O - OCTAL
- D - DECIMAL

Terminate the response with "line feed."
Ten integers are printed per line.

- A, F, and B options - The number of words in each record, not including the CRC character, is automatically printed ahead of the record.
- W - word count only. This option provides the record word count without a print-out of the record contents.
- S - skip. Neither the word count nor the record contents is printed.
- V - reverse, or backspace. The tape does a read reverse, but the record contents and word count are not recorded. If load point is reached, it is so indicated on the Teletype.
- R - rewind. The first field can be left blank by hitting "return" only.

A tape (EOF) mark is always indicated on the Teletype when it is encountered on a read forward operation, and reinitializes the QANDA display for the read options. If the first field (number of records) is left blank and any of the five forward read options is selected, the program will read until an EOF mark is reached.

If the "return" key is struck while the

contents of a record are being typed, the print-out for that record will terminate at the end of the line.

Restrictions

The program allows for a maximum record length of 2000 (octal) words. A record longer than this will cause a program stop a memory location 2055. If necessary, the maximum record length can be increased by changing the constant K2000 at location 2143.

The program assumes that the digital tapes are odd parity, high density, 9-track tapes. The parity and density specifications of the program are determined by bits 6 and 7 in the command word. These bits are set at memory location 2141 with the statement, TAD K20. Modifying the program from 9-track to 7-track would require changing the mask K377 to K77 at memory location 444, in order to eliminate the parity bit read in with each word. In addition, the A and F options would not be applicable for 7-channel tapes. Since the program has not been used with tape drives designed for even parity, low density, or 7-channel tapes, further changes in the program might also be necessary.

Upon loading the program the tape is rewound if it is not at load point. If desired, this can be omitted by deleting the statement JMS PRWIND at memory location 2155.

Tape Errors

If a record is not read successfully the first time, four more attempts are made to read the record. If it still cannot be read, the message "tape error" is printed on the Teletype and the program halts with the active status word displayed in the accumulator on the console. The cause of the tape error can be determined from which bits in the status word are set:

- bit 1 - parity error
- 2 - longitudinal parity error
- 6 - tape not tensioned
- 7 - end-of-tape mark passed
- 9 - transport is rewinding

All of the five forward read options check for possible tape errors.

The program can be resumed by pressing "continue" on the console.

```

0000          *20
0001          /RDPEC... 10/1/70
0002          /PEC SYNCHRONOUS TAPE READ PROGRAM.
0003          / JOYCE L. KERR
0004          / UNIVERSITY OF PITTSBURGH SCHOOL OF MEDICINE
0005          / AND PITTSBURGH CHILD GUIDANCE CENTER.
0006          /

```

```

0007          0020  0600          LIF 0
0010          0021  0643          LDF 3
0011          0022  6200          JMP 200
0012          SEGMENT 0
0013          *20

```

```

0014          0020  0000  PWC,    0
0015          0021  0000  PCA,    0
0016          0022  0000  PLOC,   0
0017          0023  0000  PWORDS, 0
0020          0024  0000  PTEST,  0
0021          0025  0000  STATUS, 0
0022          0026  0000  TCHAR,  0
0023          0027  0000  FSWTCH, 0
0024          0030  0000  WC,     0
0025          0031  0000  MODE,   0
0026          0032  0000  TEMP,   0
0027          0033  0000  COMWD,  0
0030          0034  0000  ANSW,   0
0031          0035  0000          0
0032          0036  0000          0
0033          0037  0000          0
0034          0040  0000  TP,     0
0035          0041  0000          0
0036          0042  0000          0
0037          0043  0000          0
0040          0044  0000          0
0041          0045  2250  CRL,    CRLF
0042          0046  2242  TYP,    TYPE
0043          0047  2135  PINIT,  INIT
0044          0050  4077  PBUF,   BUF-1
0045          0051  2200  PERME,  PERMES
0046          0052  2126  PERR,   PERROR
0047          0053  2016  PREA,   PREAD
0050          0054  2000  PRWIN,  PRWIND
0051          0055  2073  PRDREV, PRDRV
0052          0056  0001  K1,    1
0053          0057  0002  K2,    2
0054          0060  0007  K7,    7
0055          0061  0015  K15,   15
0056          0062  0020  K20,   20
0057          0063  0050  K50,   50
0060          0064  0060  K60,   60
0061          0065  0077  K77,   77
0062          0066  0100  K100,  100
0063          0067  0104  K104,  104
0064          0070  0200  K200,  200
0065          0071  0212  K212,  212
0066          0072  0215  K215,  215
0067          0073  0237  K237,  237
0070          0074  0240  K240,  240
0071          0075  0257  K257,  257
0072          0076  0260  K260,  260
0073          0077  0300  K300,  300
0074          0100  0377  K377,  377
0075          0101  1773  K1773, 1773

```

0076	0102	1776	K1776,	1776	
0077	0103	2000	K2000,	2000	
0100	0104	3064	K3064,	3064	
0101	0105	5010	K5010,	5010	
0102	0106	6000	K6000,	6000	
0103	0107	7400	K7400,	7400	
0104	0110	7436	K7436,	7436	
0105	0111	7457	K7457,	7457	
0106	0112	7477	K7477,	7477	
0107	0113	7700	K7700,	7700	
0110	0114	7716	K7716,	7716	
0111	0115	7720	K7720,	7720	
0112	0116	7727	K7727,	7727	
0113	0117	7741	K7741,	7741	
0114	0120	7744	K7744,	7744	
0115	0121	7760	K7760,	7760	
0116	0122	7766	K7766,	7766	
0117	0123	7770	K7770,	7770	
0120	0124	7773	K7773,	7773	
0121	0125	7774	K7774,	7774	
0122	0126	7776	K7776,	7776	
0123	0127	4000	TBL,	4000	
0124	0130	4132		4132	
0125	0131	4277		4277	
0126	0132	4373		4373	
0127	0133	4433		4433	
0130	0134	4554		4554	
0131	0135	4620		4620	
0132	0136	4775		4775	
0133	0137	5015		5015	
0134	0140	5135		5135	
0135	0141	5234		5234	
0136	0142	5316		5316	
0137	0143	5453		5453	
0140	0144	5540		5540	
0141	0145	5613		5613	
0142	0146	5741		5741	
0143	0147	7272		7272	
0144	0150	7336		7336	
0145	0151	7414		7414	
0146	0152	7576		7576	
0147	0153	7656		7656	
0150	0154	7757		7757	
0151			/		
0152				*200	
0153	0200	7000	JMP QAINIT		/GET PEC DRIVE
0154	0201	2716	DRIVE-4000		
0155	0202	0034	ANSW		
0156	0203	7053	JMP QARFSH		
0157	0204	0002	PDP		
0160			Pmode		
0161	0205	4447	JMS I PINIT		
0162	0206	6141	LINC		
0163			Lmode		

0164	0207	6361	LP,	JMP DISPL	/MAIN DISPLAY
0165	0210	0061		SET I 1	
0166	0211	0033		ANSW-1	
0167	0212	6620		JMP DECBIN	
0170	0213	6207		JMP LP	/ERROR RET
0171	0214	0017		COM	
0172	0215	4010		STC 10	/-NRECS
0173	0216	1000		LDA	
0174	0217	0026		TCHAR	

0175	0220	1420		SHD I	
0176	0221	2600		2600	/V
0177	0222	6307		JMP RDBK	
0200	0223	0002	RREC,	PDP	
0201				Pmode	
0202	0224	4453		JMS I PREA	/READ A RECORD
0203	0225	6141		LINC	
0204				Lmode	
0205	0226	1000		LDA	
0206	0227	0026		TCHAR	
0207	0230	1420		SHD I	
0210	0231	2300		2300	/S
0211	0232	6304		JMP CKN	
0212	0233	1000		LDA	
0213	0234	0030		WC	
0214	0235	6712		JMP BINDEC	
0215	0236	0004		4	
0216	0237	0040		TP	
0217	0240	0062		SET I 2	
0220	0241	7772		-5	
0221	0242	0061		SET I 1	
0222	0243	4037		TP-4000	
0223	0244	1321	CT,	LDH I 1	/TYPE WORD COUNT
0224	0245	2070		ADD K200	
0225	0246	0002		PDP	
0226				Pmode	
0227	0247	4446		JMS I TYP	
0230	0250	6141		LINC	
0231				Lmode	
0232	0251	0222		XSK I 2	
0233	0252	6244		JMP CT	
0234	0253	0002		PDP	
0235				Pmode	
0236	0254	4451		JMS I PERME	
0237	0255	6742		WCM-1	
0240	0256	4445		JMS I CRL	
0241	0257	6141		LINC	
0242				Lmode	

0243	0260	1000	WCHAR,	LDA	
0244	0261	0026		TCHAR	
0245	0262	1420		SHD I	
0246	0263	2700		2700	/W
0247	0264	6304		JMP CKN	
0250	0265	1420		SHD I	
0251	0266	0100		0100	/A
0252	0267	6320		JMP ALP	
0253	0270	1420		SHD I	
0254	0271	0200		0200	/B
0255	0272	6376		JMP BINRY	
0256	0273	1420		SHD I	
0257	0274	0600		0600	/F
0260	0275	6377		JMP BINRY+1	
0261	0276	0002		PDP	
0262				PMODE	
0263	0277	4451		JMS I PERME	
0264	0300	6746		ILCH-1	/ILLEGAL CHAR
0265	0301	4455		JMS I PRDREV	
0266	0302	4445	ERET,	JMS I CRL	
0267	0303	5206		JMP LP-1	
0270				LMODE	
0271	0304	0230	CKN,	XSK I 10	
0272	0305	6223		JMP RREC	
0273	0306	6207		JMP LP	
-					
0274	0307	0002	RDBK,	PDP	
0275				PMODE	
0276	0310	4455		JMS I PRDREV	
0277	0311	6141		LINC	
0300				LMODE	
0301	0312	0230		XSK I 10	
0302	0313	6307		JMP RDBK	
0303	0314	6207		JMP LP	
0304	0315	0002	RROUT,	PDP	
0305				PMODE	
0306	0316	4454		JMS I PRWIN	
0307	0317	5206		JMP LP-1	
0310			/		
0311				LMODE	
0312	0320	0057	ALP,	SET 17	/TYPE ALPHA RECORD
0313	0321	0000		0	
0314	0322	0002		PDP	
0315				PMODE	
0316	0323	7300		CLA CLL	
0317	0324	1050		TAD PBUF	
0320	0325	3016		DCA 16	
0321	0326	1030		TAD WC	
0322	0327	7041		CIA	
0323	0330	3012		DCA 12	
0324	0331	1114	NLIN,	TAD K7716	/-50
0325	0332	3004		DCA 4	

0326	0333	1416	LETR,	TAD I 16	
0327	0334	0100		AND K377	
0330	0335	6141		LINC	
0331				LMODE	
0332	0336	7666		JMP CASC	/CONVERT TO ASCII
0333	0337	0002		PDP	
0334				PMODE	
0335	0340	4446		JMS I TYP	
0336	0341	2012		ISZ 12	
0337	0342	5346		JMP ARND	
0340	0343	4445	RTN,	JMS I CRL	
0341	0344	6141		LINC	
0342				LMODE	
0343	0345	6304		JMP CKN	
0344				PMODE	
0345	0346	2004	ARND,	ISZ 4	
0346	0347	5333		JMP LETR	
0347	0350	4445		JMS I CRL	
0350	0351	6031		KSF	
0351	0352	5331		JMP NLIN	
0352	0353	6036		KRB	
0353	0354	7041		CIA	
0354	0355	1072		TAD K215	
0355	0356	7650		SNA CLA	
0356	0357	5343		JMP RTN	
0357	0360	5331		JMP NLIN	
0360			/		
0361				LMODE	
0362	0361	0057	DISPL,	SET 17	
0363	0362	0000		0	
0364	0363	7000		JMP QAINIT	
0365	0364	2600		STRNG-4000	
0366	0365	0034		ANSW	
0367	0366	7053		JMP QARFSH	
0370	0367	1300		LDH	
0371	0370	4036		ANSW+4002	
0372	0371	1420		SHD I	
-					
0373	0372	2200		2200	/R
0374	0373	6315		JMP RROUT	
0375	0374	4026		STC TCHAR	
0376	0375	6017		JMP 17	
0377			/		
0400	0376	0011	BINRY,	CLR	/TYPE NUMERIC REC
0401	0377	4027		STC FSWTCH	
0402	0400	1300		LDH	
0403	0401	0035		ANSW+1	
0404	0402	1420		SHD I	
0405	0403	3400		3400	
0406	0404	6411		JMP N1	
0407	0405	7000		JMP QAINIT	
0410	0406	2673		WHCH-4000	
0411	0407	0034		ANSW	
0412	0410	7053		JMP QARFSH	

0413	0411	0002	N1,	PDP
0414				Pmode
0415	0412	7300		CLA CLL
0416	0413	1050		TAD PBUF
0417	0414	3012		DCA 12
0420	0415	1034		TAD ANSW
0421	0416	0065		AND K77
0422	0417	1101		TAD K1773
0423	0420	3011		DCA 11
0424	0421	1030		TAD WC
0425	0422	7041		CIA
0426	0423	3017		DCA 17
0427	0424	1122	NXTL,	TAD K7766
0430	0425	3004		DCA 4
0431	0426	7300	AGN,	CLA CLL
0432	0427	3032		DCA TEMP
0433	0430	1027		TAD FSWTCH
0434	0431	7650		SNA CLA
0435	0432	5243		JMP BIN
0436	0433	1412		TAD I 12
0437	0434	0100		AND K377
0440	0435	7006		RTL
0441	0436	7006		RTL
0442	0437	7006		RTL
0443	0440	7006		RTL
0444	0441	0107		AND K7400
0445	0442	3032		DCA TEMP
0446	0443	1412	BIN,	TAD I 12
0447	0444	0100		AND K377
0450	0445	1032		TAD TEMP
0451	0446	6141		LINC
0452				Lmode
0453	0447	0211		XSK 11
0454	0450	6515		JMP OCT
0455	0451	6712		JMP BINDEC
0456	0452	0004		4
0457	0453	0040		TP
0460	0454	0062		SET I 2
0461	0455	7772		-5
0462	0456	0061		SET I 1
0463	0457	4037		TP-4000
0464	0460	1321	CTP,	LDH I 1
0465	0461	2070		ADD K200
0466	0462	0002		PDP
0467				Pmode
0470	0463	4446		JMS I TYP
0471	0464	6141		LINC
-				
0472				Lmode
0473	0465	0222		XSK I 2
0474	0466	6460		JMP CTP

0475	0467	0002	BOTH,	PDP	
0476				PMODE	
0477	0470	1074		TAD K240	
0500	0471	4446		JMS I TYP	
0501	0472	1027		TAD FSWTCH	
0502	0473	7640		SZA CLA	
0503	0474	2017		ISZ 17	
0504	0475	2017		ISZ 17	
0505	0476	5302		JMP .+4	
0506	0477	4445	R5,	JMS I CRL	
0507	0500	6141		LINC	
0510				LMODE	
0511	0501	6304		JMP CKN	
0512				PMODE	
0513	0502	2004		ISZ 4	
0514	0503	5226		JMP AGN	
0515	0504	4445		JMS I CRL	
0516	0505	6031		KSF	
0517	0506	5224		JMP NXTL	
0520	0507	6036		KRB	
0521	0510	7041		CIA	
0522	0511	1072		TAD K215	
0523	0512	7650		SNA CLA	
0524	0513	5277		JMP R5	
0525	0514	5224		JMP NXTL	
0526				LMODE	
0527	0515	0002	OCT,	PDP	
0530				PMODE	
0531	0516	3032		DCA TEMP	
0532	0517	1032		TAD TEMP	
0533	0520	7710		SPA CLA	
0534	0521	1061		TAD K15	
0535	0522	1074		TAD K240	
0536	0523	4446		JMS I TYP	
0537	0524	1125		TAD K7774	
0540	0525	3003		DCA 3	
0541	0526	1032		TAD TEMP	
0542	0527	7510		SPA	
0543	0530	7040		CMA	
0544	0531	7104		CLL RAL	
0545	0532	3032		DCA TEMP	
0546	0533	1032	JK,	TAD TEMP	
0547	0534	7006		RTL	
0550	0535	7004		RAL	
0551	0536	3032		DCA TEMP	
0552	0537	1032		TAD TEMP	
0553	0540	0060		AND K7	
0554	0541	1076		TAD K260	
0555	0542	4446		JMS I TYP	
0556	0543	2003		ISZ 3	
0557	0544	5333		JMP JK	
0560	0545	5270		JMP BOTH+1	
0561			/		
0562				LMODE	
0563	0546	0011	DVD,	CLR	/DIVIDE ROUTINE
0564	0547	2017		ADD 17	
0565	0550	4025		STC STATUS	
0566	0551	2000		ADD 0	
0567	0552	1560		BCL I	
0570	0553	6000		JMP	

0571	0554	1040		STA	
0572	0555	0016		16	
0573	0556	2056		ADD K1	
0574	0557	4017		STC 17	
0575	0560	2000		ADD 0	
0576	0561	2057		ADD K2	
0577	0562	4617		STC RET	
0600	0563	1117		ADA 17	
0601	0564	0017		COM	
0602	0565	4032		STC TEMP	
0603	0566	4015		STC 15	
0604	0567	1016		LDA 16	
0605	0570	2032	SUBT,	ADD TEMP	
0606	0571	0470		AZE I	
0607	0572	6577		JMP ZRO	
0610	0573	0451		APO	
0611	0574	6603		JMP NEG	
0612	0575	0235		XSK I 15	
0613	0576	6570		JMP SUBT	
0614	0577	0235	ZRO,	XSK I 15	
0615	0600	0011		CLR	
0616	0601	4017		STC 17	
0617	0602	6610		JMP QUOT	
0620	0603	4017	NEG,	STC 17	
0621	0604	2032		ADD TEMP	
0622	0605	0017		COM	
0623	0606	1140		ADM	
0624	0607	0017		17	
0625	0610	1000	QUOT,	LDA	
0626	0611	0015		15	
0627	0612	1056		STA 16	
0630	0613	1000		LDA	
0631	0614	0017		17	
0632	0615	0057		SET 17	
0633	0616	0025		STATUS	
0634	0617	0000	RET,	0	
0635			/		
0636	0620	0043	DECBIN,	SET 3	/DECBIN 2
0637	0621	0000		0	
0640	0622	0062		SET I 2	
0641	0623	1777		1777	
0642	0624	1321		LDH I 1	
0643	0625	1460		SAE I	
0644	0626	0074	B9,	74	/DELIMITER
0645	0627	6624		JMP .-3	
0646	0630	0011		CLR	
0647	0631	4640	C9,	STC D9	
0650	0632	1321		LDH I 1	
0651	0633	1440		SAE	
0652	0634	0626		B9	
0653	0635	6644		JMP E9	
0654	0636	1023		LDA I 3	
0655	0637	1020		LDA I	
0656	0640	0000	D9,	0	
0657	0641	0202		XSK 2	
0660	0642	0017		COM	
0661	0643	6003		JMP 3	

0662	0644	1420	E9,	SHD I	
0663	0645	0040		40	/BLANK
0664	0646	6632		JMP C9+1	
0665	0647	1420		SHD I	
0666	0650	0053		53	/PLUS
0667	0651	6632		JMP C9+1	
-					
0670	0652	1420		SHD I	
0671	0653	0055		55	/MINUS
0672	0654	6710		JMP H9	
0673	0655	1560		BCL I	
0674	0656	0060		60	
0675	0657	0017		COM	
0676	0660	2706		ADD G9	
0677	0661	0451		AP0	
0700	0662	6003		JMP 3	
0701	0663	1301		LDH 1	
0702	0664	1560		BCL I	
0703	0665	0060		60	
0704	0666	4702		STC F9	
0705	0667	2640		ADD D9	
0706	0670	1240		MUL	
0707	0671	4706		4000+G9	
0710	0672	0341		SCR 1	
0711	0673	0450		AZE	
0712	0674	6003		JMP 3	
0713	0675	0005		QAC	
0714	0676	0241		ROL 1	
0715	0677	0455		QLZ	
0716	0700	2707		ADD G9+1	
0717	0701	1220		LAM I	
0720	0702	0000	F9,	0	
0721	0703	0452		LZE	
0722	0704	6003		JMP 3	
0723	0705	6631		JMP C9	
0724	0706	0012	G9,	12	
0725	0707	0001		1	
0726	0710	0222	H9,	XSK I 2	
0727	0711	6632		JMP C9+1	
0730			/		
0731	0712	1040	BINDEC,	STA	/CONVERT TO DECIMAL
0732	0713	0745		BWD	
0733	0714	0261		ROL I 1	
0734	0715	1020		LDA I	
0735	0716	0040		40	
0736	0717	0452		LZE	
0737	0720	2061		ADD K15	
0740	0721	4760		STC SIGN	
0741	0722	2745		ADD BWD	
0742	0723	0452		LZE	
0743	0724	0017		COM	
0744	0725	4745		STC BWD	
0745	0726	2000		ADD 0	
0746	0727	1560		BCL I	
0747	0730	6000		6000	
0750	0731	4013		STC 13	

0751	0732	2000		ADD 0
0752	0733	2057		ADD K2
0753	0734	4762		STC RETN
0754	0735	1013		LDA 13
0755	0736	0017		COM
0756	0737	4014		STC 14
0757	0740	1013		LDA 13
0760	0741	0301		ROR 1
0761	0742	1133		ADA I 13
0762	0743	4013		STC 13
0763	0744	6546	LOOP,	JMP DVD
0764	0745	0000	BWD,	0
0765	0746	0012		12
0766	0747	2064		ADD K60

0767	0750	1353		STH 13
0770	0751	1020		LDA I
0771	0752	3777		-4000
0772	0753	1140		ADM
0773	0754	0013		13
0774	0755	0234		XSK I 14
0775	0756	6744		JMP LOOP
0776	0757	1020		LDA I
0777	0760	0000	SIGN,	0
1000	0761	1353		STH 13
1001	0762	0000	RETN,	0
1002			/	
1003			/QANDA	
1004				*1000
1005	1000	1020	QAINIT,	LDA I
1006	1001	0002		2
1007	1002	2000		ADD 0
1010	1003	1060		STA I
1011	1004	0000	QAB,	0
1012	1005	3200		ADD QAL+3
1013	1006	4001		STC 1
1014	1007	1001		LDA 1
1015	1010	3264		ADD QAG+1
1016	1011	5057		STC QAG-3
1017	1012	1021		LDA I 1
1020	1013	5052		STC QARFSH-1
1021	1014	4006		STC 6
1022	1015	0043	QACA,	SET 3
1023	1016	1052		QARFSH-1
1024	1017	0044		SET 4
1025	1020	1057		QAG-3
1026	1021	0041		SET 1
1027	1022	0004		4
1030	1023	7270		JMP QAT
1031	1024	0016		NOP
1032	1025	1324		LDH I 4

1033	1026	7231	QAD,	JMP	QAO
1034	1027	7035		JMP	•+6
1035	1030	7050		JMP	QAE
1036	1031	1460		SAE	I
1037	1032	0043			43
1040	1033	7026		JMP	QAD
1041	1034	7021		JMP	QACA+4
1042	1035	1343		STH	3
1043	1036	1324		LDH	I 4
1044	1037	1120		ADA	I
1045	1040	7717			-60
1046	1041	0017		COM	
1047	1042	4006		STC	6
1050	1043	1363		STH	I 3
1051	1044	0226		XSK	I 6
1052	1045	7043		JMP	•-2
1053	1046	1323		LDH	I 3
1054	1047	7026		JMP	QAD
1055	1050	1343	QAE,	STH	3
1056	1051	0064		SET	I 4
1057	1052	0000			0
1060	1053	1020	QARFSH,	LDA	I
1061	1054	0277			277
1062	1055	5113		STC	QAH-1
1063	1056	0063		SET	I 3
1064	1057	0000			0
1065	1060	0045		SET	5

1066	1061	1052		QARFSH-1	
1067	1062	0041	QAG,	SET	1
1070	1063	0003			3
1071	1064	7270		JMP	QAT
1072	1065	7074		JMP	•+7
1073	1066	1323		LDH	I 3
1074	1067	1020		LDA	I
1075	1070	1560		BCL	I
1076	1071	5103		STC	QAM+2
1077	1072	3512		ADD	QAW
1100	1073	7101		JMP	QAM
1101	1074	1323		LDH	I 3
1102	1075	1020		LDA	I
1103	1076	1620		BSE	I
1104	1077	5103		STC	QAM+2
1105	1100	3513		ADD	QAW+1
1106	1101	5245	QAM,	STC	QAP+3
1107	1102	0024		MSC	I 4
1110	1103	1620		BSE	I
1111	1104	0200			200
1112	1105	0004		MSC	4
1113	1106	0061		SET	I 1
1114	1107	0100			100
1115	1110	1020		LDA	I
1116	1111	7737			-40
1117	1112	1160		ADM	I
1120	1113	0000			0

1121	1114	1323	QAH,	LDH I 3
1122	1115	7232		JMP QAO+1
1123	1116	7301		JMP QAZ
1124	1117	7136		JMP QAJ
1125	1120	1420		SHD I
1126	1121	4300		4300
1127	1122	7062		JMP QAG
1130	1123	7242		JMP QAP
1131	1124	7114		JMP QAH
1132	1125	7242		JMP QAP
1133	1126	1520		SRO I
1134	1127	0000		0
1135	1130	7516		JMP QAF
1136	1131	1325	QAI,	LDH I 5
1137	1132	7232		JMP QAO+1
1140	1133	7114		JMP QAH
1141	1134	7114		JMP QAH
1142	1135	7125		JMP QAI-4
1143	1136	7521	QAJ,	JMP GETKBD
1144	1137	0470		AZE I
1145	1140	7004		JMP QAB
1146	1141	0062		SET I 2
1147	1142	1412		QAY
1150	1143	1402		SHD 2
1151	1144	7311		JMP QAK+4
1152	1145	1422		SHD I 2
1153	1146	7223		JMP QAN
1154	1147	0206		XSK 6
1155	1150	7053		JMP QARFSH
1156	1151	1422		SHD I 2
1157	1152	7175		JMP QAL
1160	1153	1422		SHD I 2
1161	1154	7305		JMP QAK
1162	1155	1422		SHD I 2
1163	1156	7015		JMP QACA
1164	1157	1422		SHD I 2

1165	1160	7053		JMP QARFSH
1166	1161	1422		SHD I 2
1167	1162	7175		JMP QAL
1170	1163	1422		SHD I 2
1171	1164	7053		JMP QARFSH
1172	1165	5172		STC .+5
1173	1166	7231		JMP QAO
1174	1167	7263		JMP QAO
1175	1170	7263		JMP QAO
1176	1171	1020		LDA I
1177	1172	0000		0
1200	1173	1344		STH 4
1201	1174	7053		JMP QARFSH

1202	1175	1304	QAL,	LDH 4
1203	1176	7232		JMP QAO+1
1204	1177	7053		JMP QARFSH
1205	1200	1775		-6002
1206	1201	1302		LDH 2
1207	1202	1460		SAE I
1210	1203	0037		37
1211	1204	7263		JMP QAO
1212	1205	0045		SET 5
1213	1206	0004		4
1214	1207	0043		SET 3
1215	1210	0004		4
1216	1211	7213		JMP .+2
1217	1212	1325		LDH I 5
1220	1213	1323		LDH I 3
1221	1214	7232		JMP QAO+1
1222	1215	0016		NOP
1223	1216	0011		CLR
1224	1217	1345		STH 5
1225	1220	0450		AZE
1226	1221	7212		JMP .-7
1227	1222	7263		JMP QAO
1230	1223	0206	QAN,	XSK 6
1231	1224	7311		JMP QAK+4
1232	1225	7231		JMP QAO
1233	1226	7053		JMP QARFSH
1234	1227	7051		JMP QAE+1
1235	1230	7225		JMP QAN+2
1236	1231	1324	QAO,	LDH I 4
1237	1232	1420		SHD I
1240	1233	7400		7400
1241	1234	6000		JMP 0
1242	1235	1460		SAE I
1243	1236	0034		34
1244	1237	0220		XSK I 0
1245	1240	0220		XSK I 0
1246	1241	6000		JMP 0
1247	1242	0241	QAP,	ROL 1
1250	1243	3430		ADD QAX+4
1251	1244	4002		STC 2
1252	1245	3506		ADD QAU
1253	1246	3506		ADD QAU
1254	1247	2001		ADD 1
1255	1250	4001		STC 1
1256	1251	2005		ADD 5
1257	1252	0017		COM
1260	1253	2004		ADD 4
1261	1254	0450		AZE
1262	1255	0011		CLR
1263	1256	5127		STC QAI-2
1264	1257	3113		ADD QAH-1
1265	1260	1742		DSC 2
1266	1261	1762		DSC I 2
1267	1262	6000		JMP 0

1270	1263	1020	QAQ,	LDA I
1271	1264	3777		-4000
1272	1265	1140		ADM
1273	1266	0004		4
1274	1267	7053		JMP QARFSH
1275	1270	1321	QAT,	LDH I 1
1276	1271	1420		SHD I
1277	1272	0600		0600
1300	1273	6000		JMP 0
1301	1274	1460		SAE I
1302	1275	0010		10
1303	1276	0220		XSK I 0
1304	1277	0220		XSK I 0
1305	1300	6000		JMP 0
1306	1301	1323	QAZ,	LDH I 3
1307	1302	1020		LDA I
1310	1303	0040		40
1311	1304	7125		JMP QAI-4
1312	1305	1324	QAK,	LDH I 4
1313	1306	0470		AZE I
1314	1307	7263		JMP QAQ
1315	1310	7424		JMP QAX
1316	1311	1020		LDA I
1317	1312	0001		1
1320	1313	1140		ADM
1321	1314	1004		QAB
1322	1315	7004		JMP QAB
1323	1316	0101	QAV,	0101
1324	1317	0101		0101
1325	1320	4477		4477
1326	1321	7744		7744
1327	1322	5177		5177
1330	1323	2651		2651
1331	1324	4136		4136
1332	1325	2241		2241
1333	1326	4177		4177
1334	1327	3641		3641
1335	1330	4577		4577
1336	1331	4145		4145
1337	1332	4477		4477
1340	1333	4044		4044
1341	1334	4136		4136
1342	1335	2645		2645
1343	1336	1077		1077
1344	1337	7710		7710
1345	1340	7741		7741
1346	1341	0041		0041
1347	1342	4142		4142
1350	1343	4076		4076
1351	1344	1077		1077
1352	1345	4324		4324
1353	1346	0177		0177
1354	1347	0301		0301
1355	1350	3077		3077
1356	1351	7730		7730
1357	1352	3077		3077
1360	1353	7706		7706
1361	1354	4177		4177
1362	1355	7741		7741

1363	1356	4477		4477
1364	1357	3044		3044
1365	1360	4276		4276
1366	1361	0376		0376
1367	1362	4477		4477
1370	1363	3146		3146
1371	1364	5121		5121
1372	1365	4651		4651
1373	1366	4040		4040
1374	1367	4077		4077
1375	1370	0177		0177
1376	1371	7701		7701
1377	1372	0176		0176
1400	1373	7402		7402
1401	1374	0677		0677
1402	1375	7701		7701
1403	1376	1463		1463
1404	1377	6314		6314
1405	1400	0770		0770
1406	1401	7007		7007
1407	1402	4543		4543
1410	1403	6151		6151
1411	1404	4177		4177
1412	1405	0000		0000
1413	1406	0000		0
1414	1407	0000		0
1415	1410	0000		0000
1416	1411	7741		7741
1417	1412	4543	QAY,	4543
1420	1413	7476		7476
1421	1414	3634		3634
1422	1415	3747		3747
1423	1416	0000		0000
1424	1417	0000		0000
1425	1420	7500		7500
1426	1421	0000		0000
1427	1422	7000		7000
1430	1423	0070		0070
1431	1424	7232	QAX,	JMP QAO+1
1432	1425	7263		JMP QAO
1433	1426	7263		JMP QAO
1434	1427	7053		JMP QARFSH
1435	1430	1316		QAV
1436	1431	0000		0
1437	1432	5166		5166
1440	1433	0526		0526
1441	1434	0000		0
1442	1435	0000		0

1443	1436	3600	3600
1444	1437	0041	0041
1445	1440	4100	4100
1446	1441	0036	0036
1447	1442	2050	2050
1450	1443	0050	0050
1451	1444	0404	0404
1452	1445	0437	0437
1453	1446	0500	0500
1454	1447	0006	0006
1455	1450	0404	0404
1456	1451	0404	0404
1457	1452	0001	0001
1460	1453	0000	0000
1461	1454	0601	0601

1462	1455	4030	4030
1463	1456	4536	4536
1464	1457	3651	3651
1465	1460	2101	2101
1466	1461	0177	0177
1467	1462	4523	4523
1470	1463	2151	2151
1471	1464	4122	4122
1472	1465	2651	2651
1473	1466	2414	2414
1474	1467	0477	0477
1475	1470	5172	5172
1476	1471	0651	0651
1477	1472	1506	1506
1500	1473	4225	4225
1501	1474	4443	4443
1502	1475	6050	6050
1503	1476	5126	5126
1504	1477	2651	2651
1505	1500	5122	5122
1506	1501	3651	3651
1507	1502	2200	2200
1510	1503	0000	0000
1511	1504	4601	4601
1512	1505	0000	0000

1513	1506	0002	QAU,	2
1514	1507	0000		0
1515	1510	1212		1212
1516	1511	1212		1212
1517	1512	0016	QAW,	NOP
1520	1513	3506		ADD QAU
1521	1514	4020		4020
1522	1515	2055		2055
1523	1516	1760	QAF,	DSC I
1524	1517	6000		6000
1525	1520	7131		JMP QAI

1526		QAKRB=6036	/PDP-8 IOT KBD
1527		QATSF=6041	/TSF
1530		QATLS=6046	/TLS

1531	1521	1000	GETKBD, LDA
1532	1522	0000	Ø
1533	1523	5643	STC QAEXIT+6
1534	1524	2001	ADD 1
1535	1525	5640	STC QAEXIT+3
1536	1526	2002	ADD 2
1537	1527	5642	STC QAEXIT+5
1540	1530	5636	STC QAEXIT+1
1541	1531	0415	KST
1542	1532	6000	JMP Ø
1543	1533	0500	IOB
1544	1534	6036	QAKRB
1545	1535	1060	STA I
1546	1536	0000	QATY, Ø
1547	1537	1120	ADA I
1550	1540	7540	-237
1551	1541	0451	APO
1552	1542	7604	JMP QACNTR
1553	1543	0061	SET I 1
1554	1544	1654	QACHAR-1
1555	1545	0062	SET I 2
1556	1546	7770	-7
1557	1547	1000	LDA
1560	1550	1536	QATY

1561	1551	1461	SAE I 1
1562	1552	7554	JMP .+2
1563	1553	7635	JMP QAEXIT
1564	1554	0222	XSK I 2
1565	1555	7551	JMP .-4
1566	1556	1120	ADA I
1567	1557	7440	-337
1570	1560	0451	APO
1571	1561	7575	JMP QALEGL
1572	1562	1461	SAE I 1
1573	1563	7572	JMP .+7
1574	1564	1020	LDA I
1575	1565	0334	334
1576	1566	7644	JMP QATPE
1577	1567	1020	LDA I
1600	1570	0037	37
1601	1571	7637	JMP QAEXIT+2
1602	1572	1461	SAE I 1
1603	1573	7635	JMP QAEXIT
1604	1574	7637	JMP QAEXIT+2
1605	1575	1000	QALEGL, LDA
1606	1576	1536	QATY
1607	1577	7644	JMP QATPE
1610	1600	3536	ADD QATY
1611	1601	1560	BCL I
1612	1602	7700	7700
1613	1603	7637	JMP QAEXIT+2

1614	1604	1460	QACNTR,	SAE I	
1615	1605	7755		7755	
1616	1606	7621		JMP QACKLF	
1617	1607	1020		LDA I	/CR
1620	1610	0043		43	
1621	1611	5636		STC QAEXIT+1	
1622	1612	1020		LDA I	
1623	1613	0215		215	
1624	1614	7644		JMP QATPE	
1625	1615	1020		LDA I	
1626	1616	0212		212	
1627	1617	7644		JMP QATPE	
1630	1620	7635		JMP QAEXIT	
1631	1621	1460	QACKLF,	SAE I	
1632	1622	7752		7752	
1633	1623	7627		JMP .+4	
1634	1624	1020		LDA I	
1635	1625	0045		45	
1636	1626	7611		JMP QACNTR+5	
1637	1627	1460		SAE I	
1640	1630	7751		7751	
1641	1631	7635		JMP QAEXIT	
1642	1632	1020		LDA I	
1643	1633	0047		47	
1644	1634	7637		JMP QAEXIT+2	
1645	1635	1020	QAEXIT,	LDA I	
1646	1636	0000		0	
1647	1637	0061		SET I 1	
1650	1640	0000		0	
1651	1641	0062		SET I 2	
1652	1642	0000		0	
1653	1643	6000		JMP	
1654	1644	0500	QATPE,	IOB	
1655	1645	6046		QATLS	
1656	1646	1000		LDA	
1657	1647	0000		0	
1660	1650	5654		STC .+4	
1661	1651	0500		IOB	
1662	1652	6041		QATSF	
1663	1653	7651		JMP .-2	
1664	1654	6000		JMP	
1665	1655	0243	QACHAR,	243	
1666	1656	0244		244	
1667	1657	0245		245	
1670	1660	0247		247	
1671	1661	0300		300	
1672	1662	0336		336	
1673	1663	0337		337	
1674	1664	0040		40	
1675	1665	0036		36	
1676					

1677	1666	0055	CASC,	SET 15	/EBCDIC TO ASCII
1700	1667	0000		0	
1701	1670	1040		STA	
1702	1671	0032		TEMP	
1703	1672	0062		SET I 2	
1704	1673	0032		TEMP	
1705	1674	2112		ADD K7477	
1706	1675	0451		APO	
1707	1676	7724		JMP LKUP	
1710	1677	2115		ADD K7720	
1711	1700	0451		APO	
1712	1701	7704		JMP ALPHA	
1713	1702	2075		ADD K257	
1714	1703	7752		JMP OFF	
1715	1704	1002	ALPHA,	LDA 2	
1716	1705	2110		ADD K7436	
1717	1706	0451		APO	
1720	1707	7713		JMP JR	
1721	1710	1002		LDA 2	
1722	1711	2121		ADD K7760	
1723	1712	7752		JMP OFF	
1724	1713	1002	JR,	LDA 2	
1725	1714	2111		ADD K7457	
1726	1715	0451		APO	
1727	1716	7722		JMP AI	
1730	1717	1002		LDA 2	
1731	1720	2123		ADD K7770	
1732	1721	7752		JMP OFF	
1733	1722	1002	AI,	LDA 2	
1734	1723	7752		JMP OFF	
1735	1724	1002	LKUP,	LDA 2	
1736	1725	0074		SET I 14	
1737	1726	4127		TBL+4000	
1740	1727	0065		SET I 5	
1741	1730	7751		-26	
1742	1731	1414	AGAIN,	SHD 14	
1743	1732	7741		JMP MATCH	
1744	1733	0234		XSK I 14	
1745	1734	0016		NOP	
1746	1735	0225		XSK I 5	
1747	1736	7731		JMP AGAIN	
1750	1737	0011		CLR	
1751	1740	7752		JMP OFF	
1752	1741	1000	MATCH,	LDA	
1753	1742	0014		14	
1754	1743	1560		BCL I	
1755	1744	4000		4000	
1756	1745	1040		STA	
1757	1746	0014		14	
1760	1747	1314		LDH 14	
1761	1750	1620		BSE I	
1762	1751	0200		200	
1763	1752	6015	OFF,	JMP 15	
1764			/		

1765			/PEC ROUTINES		
1766				PMODE	
1767				PSDF=6371	
1770				PCDF=6372	
1771				PSRF=6373	
1772				PCRF=6374	
1773				PLSW=6375	
1774				PSGB=6376	
1775				PRAS=6377	
1776			/		
1777				PAGE	
2000	2000	0000	PRWIND,	0	/REWIND
2001	2001	7300		CLA CLL	
2002	2002	6377		PRAS	
2003	2003	0066		AND K100	
2004	2004	7640		SZA CLA	
2005	2005	5600		JMP I PRWIND	
2006	2006	1033		TAD COMWD	
2007	2007	1103		TAD K2000	
2010	2010	6375		PLSW	
2011	2011	6376		PSGB	
2012	2012	6373		PSRF	
2013	2013	5212		JMP .-1	
2014	2014	6374		PCRF	
2015	2015	5201		JMP PRWIND+1	
2016	2016	0000	PREAD,	0	/READ
2017	2017	7300		CLA CLL	
2020	2020	1124		TAD K7773	
2021	2021	3032		DCA TEMP	
2022	2022	1023		TAD PWORDS	
2023	2023	1056		TAD K1	
2024	2024	7041		CIA	
2025	2025	3020		DCA PWC	
2026	2026	1022		TAD PLOC	
2027	2027	3021		DCA PCA	
2030	2030	1033		TAD COMWD	
2031	2031	1106		TAD K6000	
2032	2032	6375		PLSW	
2033	2033	6376		PSGB	
2034	2034	6371		PSDF	
2035	2035	5234		JMP .-1	
2036	2036	6372		PCDF	
2037	2037	7300		CLA CLL	
2040	2040	6377		PRAS	
2041	2041	3025		DCA STATUS	
2042	2042	1025		TAD STATUS	
2043	2043	0104		AND K3064	
2044	2044	7650		SNA CLA	
2045	2045	5253		JMP OK	
2046	2046	2032		ISZ TEMP	
2047	2047	7410		SKP	
2050	2050	5452		JMP I PERR	
2051	2051	4273		JMS PRDRV	/BACKSPACE
2052	2052	5222		JMP PREAD+4	/AND READ AGAIN
2053	2053	1020	OK,	TAD 20	/COMPUTE WORD COUNT
2054	2054	7700		SMA CLA	
2055	2055	7402		HLT	

2056	2056	1022		TAD PLOC	
2057	2057	1056		TAD K1	
2060	2060	7041		CIA	
2061	2061	1021		TAD 21	
2062	2062	3030		DCA WC	
2063	2063	1030		TAD WC	
2064	2064	7041		CIA	
2065	2065	1056		TAD K1	
2066	2066	7640		SZA CLA	
2067	2067	5616		JMP I PREAD	
2070	2070	4451		JMS I PERME	
2071	2071	6740		EOFM-1	
2072	2072	5734		JMP I ERRET	
2073	2073	0000	PRDRV,	Ø	/BACKSPACE ROUTINE
2074	2074	7300		CLA CLL	
2075	2075	1106		TAD K6000	
2076	2076	3020		DCA PWC	
2077	2077	1033		TAD COMWD	
2100	2100	1105		TAD K5010	
2101	2101	6375		PLSW	
2102	2102	6376		PSGB	
2103	2103	7300		CLA CLL	
2104	2104	6373		PSRF	
2105	2105	7410		SKP	
2106	2106	5316		JMP BOT	
2107	2107	6371		PSDF	
2110	2110	5307		JMP .-1	
2111	2111	6372		PCDF	
2112	2112	6377		PRAS	
2113	2113	0067		AND K104	
2114	2114	7650		SNA CLA	
2115	2115	5673		JMP I PRDRV	
2116	2116	6374	BOT,	PCRF	/LOAD POINT
2117	2117	6377		PRAS	
2120	2120	7300		CLA CLL	
2121	2121	4451		JMS I PERME	
2122	2122	6724		LDPT-1	
2123	2123	1102		TAD K1776	
2124	2124	3010		DCA 10	
2125	2125	5673		JMP I PRDRV	
2126	2126	4445	PERROR,	JMS I CRL	/BAD RECORD
2127	2127	4451		JMS I PERME	
2130	2130	6732		TE-1	
2131	2131	1025		TAD STATUS	
2132	2132	7402		HLT	
2133	2133	5734		JMP I ERRET	
2134	2134	0302	ERRET,	ERET	

2135	2135	0000	INIT,	0	
2136	2136	7300		CLA CLL	
2137	2137	1034		TAD ANSW	/PEC DRIVE NO.
2140	2140	0056		AND K1	
2141	2141	1062		TAD K20	
2142	2142	3033		DCA COMWD	
2143	2143	1103		TAD K2000	
2144	2144	3023		DCA PWORDS	
2145	2145	1050		TAD PBUF	
2146	2146	3022		DCA PLOC	
2147	2147	6374		PCRF	
2150	2150	6372		PCDF	
2151	2151	1033		TAD COMWD	/TRY TO SET
2152	2152	6375		PLSW	/INTERFACE
2153	2153	6377		PRAS	/FOR CORRECT UNIT
2154	2154	7300		CLA CLL	

2155	2155	4200		JMS PRWIND	
2156	2156	5735		JMP I INIT	
2157			/		
2160				PAGE	
2161	2200	0000	PERMES,	0	/PRINT MESSAGE
2162	2201	7300		CLA CLL	
2163	2202	1600		TAD I PERMES	
2164	2203	2200		ISZ PERMES	
2165	2204	3011		DCA 11	
2166	2205	1411	PLOOP,	TAD I 11	
2167	2206	3032		DCA TEMP	
2170	2207	1032		TAD TEMP	
2171	2210	0113		AND K7700	
2172	2211	7112		CLL RTR	
2173	2212	7012		RTR	
2174	2213	7012		RTR	
2175	2214	4221		JMS PTYOUT	
2176	2215	1032		TAD TEMP	
2177	2216	0065		AND K77	
2200	2217	4221		JMS PTYOUT	
2201	2220	5205		JMP PLOOP	
2202	2221	0000	PTYOUT,	0	
2203	2222	3013		DCA 13	
2204	2223	1013		TAD 13	
2205	2224	1120		TAD K7744	
2206	2225	7650		SNA CLA	
2207	2226	5600		JMP I PERMES	
2210	2227	1013		TAD 13	
2211	2230	1117		TAD K7741	
2212	2231	7540		SZA SMA	
2213	2232	5240		JMP .+6	
2214	2233	7300		CLA CLL	
2215	2234	1013		TAD 13	
2216	2235	1077		TAD K300	
2217	2236	4242		JMS TYPE	
2220	2237	5621		JMP I PTYOUT	
2221	2240	1073		TAD K237	
2222	2241	5236		JMP .-3	
2223			/		

2224	2242	0000	TYPE,	0
2225	2243	6041		TSF
2226	2244	5243		JMP .-1
2227	2245	6046		TLS
2230	2246	7200		CLA
2231	2247	5642		JMP I TYPE
2232			/	
2233	2250	0000	CRLF,	0
2234	2251	7200		CLA
2235	2252	1072		TAD K215
2236	2253	4242		JMS TYPE
2237	2254	1071		TAD K212
2240	2255	4242		JMS TYPE
2241	2256	5650		JMP I CRLF
2242			/	
2243				*4100
2244	4100	0000	BUF,	0
2245				*6600
2246	6600	0622		
2246	6601	0501		
2246	6602	0474		
2246	6603	6340		
2246	6604	2205		
2246	6605	0317		
-				
2246	6606	2204		
2246	6607	2340		
2246	6610	1116		
2246			STRNG,	TEXT ZFREAD<3 RECORDS IN<1
2247	6611	7461		
2247	6612	4347		
2247				
2250	6613	4043		
2250	6614	1001		
2250	6615	4075		
2250	6616	4001		
2250	6617	1420		
2250			HA =	ALPHA
2251	6620	1001		
2251	6621	4310		
2251	6622	0640		
2251	6623	7540		
2251	6624	0655		
2251	6625	0211		
2251	6626	1601		
2251			HF =	F-BINARY
2252	6627	2231		
2252	6630	4310		
2252	6631	0240		
2252	6632	7540		
2252	6633	0211		
2252	6634	1601		

2252			HB = BINARY
2253	6635	2231	
2253	6636	4310	
2253	6637	2740	
2253	6640	7540	
2253	6641	2717	
2253	6642	2204	
2253	6643	4003	
2253	6644	1725	
2253	6645	1624	
2253	6646	4017	
2253	6647	1614	
2253			HW = WORD COUNT ONLY
2254	6650	3143	
2254	6651	1023	
2254	6652	4075	
2254	6653	4023	
2254	6654	1311	
2254			HS = SKIP
2255	6655	2043	
2255	6656	1026	
2255	6657	4075	
2255	6660	4022	
2255	6661	0526	
2255	6662	0522	
2255			HV = REVERSE
2256	6663	2305	
2256	6664	4310	
2256	6665	2240	
2256	6666	7540	
2256	6667	2205	
2256	6670	2711	
2256	6671	1604	
2256	6672	3400	
2256			HR = REWIND\Z
2257	6673	0606	
-			
2257	6674	1722	
2257	6675	1501	
2257	6676	2474	
2257			WHCH, TEXT ZFFORMAT<1
2260	6677	6143	
2260			
2261	6700	4740	
2261	6701	4310	
2261	6702	1740	
2261	6703	7540	
2261	6704	1703	
2261	6705	2401	
2261			HO = OCTAL
2262	6706	1443	
2262	6707	1004	
2262	6710	4075	
2262	6711	4004	
2262	6712	0503	
2262	6713	1115	
2262	6714	0114	
2262	6715	3400	

2262			HD = DECIMAL\Z
2263	6716	0620	
2263	6717	0503	
2263	6720	4004	
2263	6721	2211	
2263	6722	2605	
2263	6723	7461	
2263	6724	3400	
2263			DRIVE, TEXT ZFPEC DRIVE<1\Z
2264	6725	1417	
2264	6726	0104	
2264	6727	4020	
2264	6730	1711	
2264	6731	1624	
2264	6732	3400	
2264			LDPT, TEXT ZLOAD POINT\Z
2265	6733	2401	
2265	6734	2005	
2265	6735	4005	
2265	6736	2222	
2265	6737	1722	
2265	6740	3400	
2265			TE, TEXT ZTAPE ERROR\Z
2266	6741	0517	
2266	6742	0634	
2266			EOFM, TEXT ZEOF\Z
2267	6743	4027	
2267	6744	1722	
2267	6745	0423	
2267	6746	3400	
2267			WCM, TEXT Z WORDS\Z
2270	6747	1114	
2270	6750	1405	
2270	6751	0701	
2270	6752	1440	
2270	6753	0310	
2270	6754	0122	
2270	6755	0103	
2270	6756	2405	
2270	6757	2256	
2270	6760	4024	
2270	6761	0120	
-			
2270	6762	0540	
2270	6763	0201	
2270	6764	0313	
2270	6765	2320	
2270	6766	0103	
2270	6767	0523	
2270	6770	3400	
2270			ILCH, TEXT ZILLEGAL CHARACTER. TAPE BACKSPACE S\Z
2271			/
0000	ERRORS		

AGAIN 1731
AGN 0426
AI 1722
ALP 0320
ALPHA 1704
ANSW 0034
ARND 0346
BIN 0443
BINDEC 0712
BINRY 0376
BOT 2116
BOTH 0467
BUF 4100
BWD 0745
B9 0626
CASC 1666
CKN 0304
COMWD 0033
CRL 0045
CRLF 2250
CT 0244
CTP 0460
C9 0631
DECBIN 0620
DISPL 0361
DRIVE 6716
DVD 0546
D9 0640
EOFM 6741
ERET 0302
ERRET 2134
E9 0644
FSWTCH 0027
F9 0702
GETKBD 1521
G9 0706
H9 0710
ILCH 6747
INIT 2135
JK 0533
JR 1713
K1 0056
K100 0066
K104 0067
K15 0061
K1773 0101
K1776 0102
K2 0057
K20 0062
K200 0070

-

K2000 0103
K212 0071
K215 0072
K237 0073
K240 0074
K257 0075
K260 0076

K300	0077
K3064	0104
K377	0100
K50	0063
K5010	0105
K60	0064
K6000	0106
K7	0060
K7400	0107
K7436	0110
K7457	0111
K7477	0112
K77	0065
K7700	0113
K7716	0114
K7720	0115
K7727	0116
K7741	0117
K7744	0120
K7760	0121
K7766	0122
K7770	0123
K7773	0124
K7774	0125
K7776	0126
LDPT	6725
LETR	0333
LKUP	1724
LOOP	0744
LP	0207
MATCH	1741
MODE	0031
NEG	0603
NLIN	0331
NXTL	0424
N1	0411
OCT	0515
OFF	1752
OK	2053
PBUF	0050
PCA	0021
PCDF	6372
PCRF	6374
PERME	0051
PERMES	2200
PERR	0052
PERROR	2126
PINIT	0047
PLOC	0022
FLOOP	2205
PLSW	6375
PRAS	6377
PRDREV	0055
PRDRV	2073
PREA	0053
PREAD	2016

PRWIN 0054
PRWIND 2000
PSDF 6371
PSGB 6376
PSRF 6373
PTEST 0024
PTYOUT 2221
PWC 0020
PWORDS 0023
QAB 1004
QACA 1015
QACHAR 1655
QACKLF 1621
QACNTR 1604
QAD 1026
QAE 1050
QAEXIT 1635
QAF 1516
QAG 1062
QAH 1114
QAI 1131
QAINIT 1000
QAJ 1136
QAK 1305
QAKRB 6036
QAL 1175
QALEGL 1575
QAM 1101
QAN 1223
QAO 1231
QAP 1242
QAQ 1263
QARFSH 1053
QAT 1270
QATLS 6046
QATPE 1644
QATSF 6041
QATY 1536
QAU 1506
QAV 1316
QAW 1512
QAX 1424
QAY 1412
QAZ 1301
QUOT 0610
RDBK 0307
RET 0617
RETN 0762
RREC 0223
RROUT 0315
RTN 0343
R5 0477
SIGN 0760
STATUS 0025
STRNG 6600
SUBT 0570

TBL	0127
TCHAR	0026
TE	6733
TEMP	0032
TP	0040
TYP	0046
TYPE	2242

WC	0030
WCHAR	0260
WCM	6743
WHCH	6673
ZRO	0577