



# DECUS

## PROGRAM LIBRARY

DECUS NO.	8-490
TITLE	TAPE ALTERATION PROGRAM
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COMPANY	University of Edinburgh Edinburgh, Scotland
DATE	October 12, 1971
SOURCE LANGUAGE	PAL-8



## TAPE ALTERATION PROGRAM

ABSTRACT

The program is used to examine and change the contents of any location on a Dectape. One block of Dectape is called down into core, its contents examined and changed if necessary, one location at a time. The block is then written back onto the tape.

Loading

The program is supplied in Binary format and is loaded using the Binary Loader. The Start Address is 0200.

Operating Instructions

When the program is started, the heading is outputted. Note DTAl must be used. Type in the block number to be found, terminating with a period. When the block is found, a CR/LF is outputted, and the program waits for the user to ask a location to open. This is done by typing a 3 figure octal digit 0.-200. and ending with a backslash (/). The contents are then outputted. If a Return is then typed, the location is closed, with no change to the contents and the program waits for the next location to be opened. The contents can be changed by typing the new 4 digit contents after the original contents are typed out. The program will output a CR/LF after 4 digits are typed, and the location is closed. When all alterations are complete, CTRL/F will write the amended block back onto the tape, and another block number can then be typed in. At this point a return to any Master program starting at 7600 is possible by typing CTRL/C. Any read, write or select

error is typed out with a Retry option. Correct the error, type 'Y' and continue.

Storage and Equipment

The program uses locations 0-1641 and was written for a TC08-TU56 or TC01-TU55 Dectape.

/TAPE ALTERATION  
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/

/

/ PAGE 0 CONSTANTS.

```

*0020
0020 000 TYPE, TYPSTG /TYPSTRING ROUTINE
0021 0467 ECHO, TTY /DOES WHAT IT SAYS
0022 0475 CRLF, TYCR / THIS ONE TOO
0023 0506 TTYQ1, TTYQ /YES OR NO ROUTINE
0024 0553 BLNO, BLNO1 /ADDR OF "BLOCK NUMBER ? "
0025 0302 TITLE, TITLE1 /ADD OF TITLE STRING
0026 0564 WHAT, WHAT1 /ADDR OF WHAT PRINT ROUTINE
0027 0571 WHAT2, WHAT3 /ADDR OF "WHAT ? "
0030 0000 ANS1, 0 / TAPE BLOCK NO.
0031 1400 CONT2, CONT22 / ROUTINE TO GET LOCN. & TYPE OUNT CONTENTS
0032 0000 LOC2, 0 /FULL REQUESTED LOCATION
0033 0000 CORE, 0 / CONTENTS OF REQUESTED LOCATION
0034 0601 TAPE, IDTAPE / ADDR OR SUBROUTINE
0035 0270 ERROR, ERROR1 / ADDR OF ERROR ROUTINE
0036 0327 ERR, ERR1 / ADDR OF ERROR PRINTOUT
0037 0336 SPACE, SPACE1 / ADDR OF SPACING STRING
0040 0000 NEW, 0 /KEEPS NEW CONTENTS AS ITS MADE
0041 0000 NEW1, 0 /STORES COMPLETED NEW CONTENTS
0042 0000 LOC, 0 /KEEPS NEW LOCATION AS ITS MADE
0043 0000 LOC1, 0 /COMPLETED LOCATION
0044 1000 LOCDMP, 1000 / ADDS STORE ADDRESS
0045 0000 ALT, 0 / PARTS OF LOCATIONS
0046 7563 CARET, -215 / CIA OF RETURN
0047 7774 FOUR, -4 / HOW MANY NUMBERS?
0050 7774 FOUR1, -4 / HOLD RESET VALUE
0051 0007 MASK1, 7 / MASKS OUT ASCII CODE
0052 7774 COUNT2, -4 / HOW MANY NUMBERS
0053 7774 COUNT3, -4 / HOLD RESET VALUE
0054 7521 SLASH, -257 / CIA OF BACKSLASH
0055 0260 ASCII, 260 / REST OF ASCII CODE FOR TYPEOUT
0056 0770 CHECK, 770 / MASKS OUT FOR LEGALITY CHECK
0057 7520 ASCODE, -260 / CIA OF ASCII FOR LEGALITY CHECK
0060 7572 CTRLF, -206 / CIA OF CONTROL F.
0061 1600 CONT4, CONT44 / ROUTINE TO WRITE BACK
0062 0206 BLOCK, BLOCK1 / GET BACK TO ASK BLOCK NO.
0063 1613 RETRY1, RETRY2 / ASK RETRY?
0064 1603 GO2, GO22 /WRITE RETRY
0065 0260 GO1, GO11 / READ RETRY
0066 0355 WTKLP, WTKLP1 / WRITE LOCKED TYPEOUT
0067 0341 SEL, SEL1 / SELECT ERROR TYPEOUT
0070 0374 QUEST2, QUEST3 / ADDR OF QUESTION MARK
0071 7600 OUT, 7600 / GO HOME TO PS8
0072 7575 PS8, -203 / CIA OF CTRL/C

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/CHARACTER STRING TYPEOUT (DIGITAL 8-20-U-ASCII)

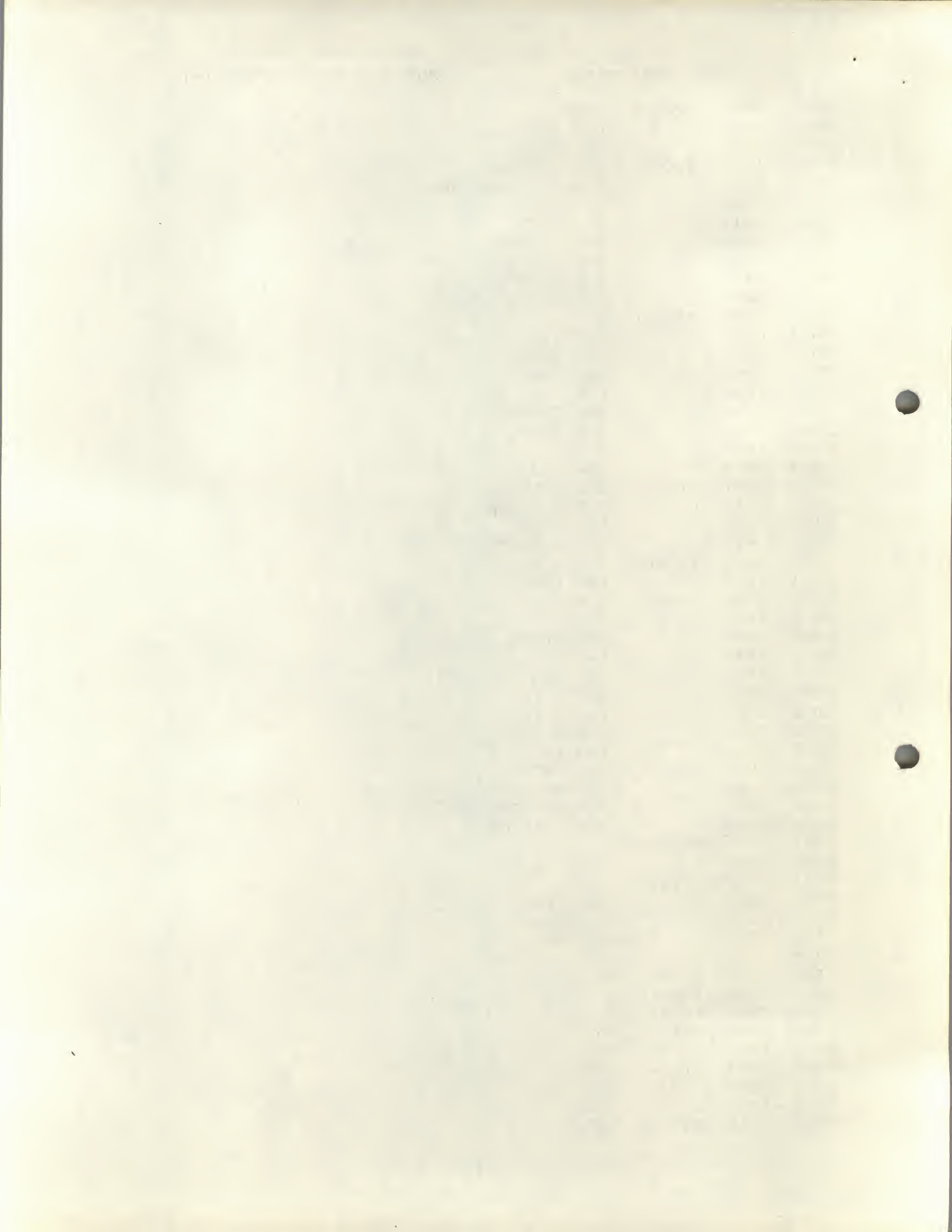
/ECHO AND CR,LF ROUTINES

/YES , NO , ROUTINE REPEATS QUESTION IF STUPID ANSWER

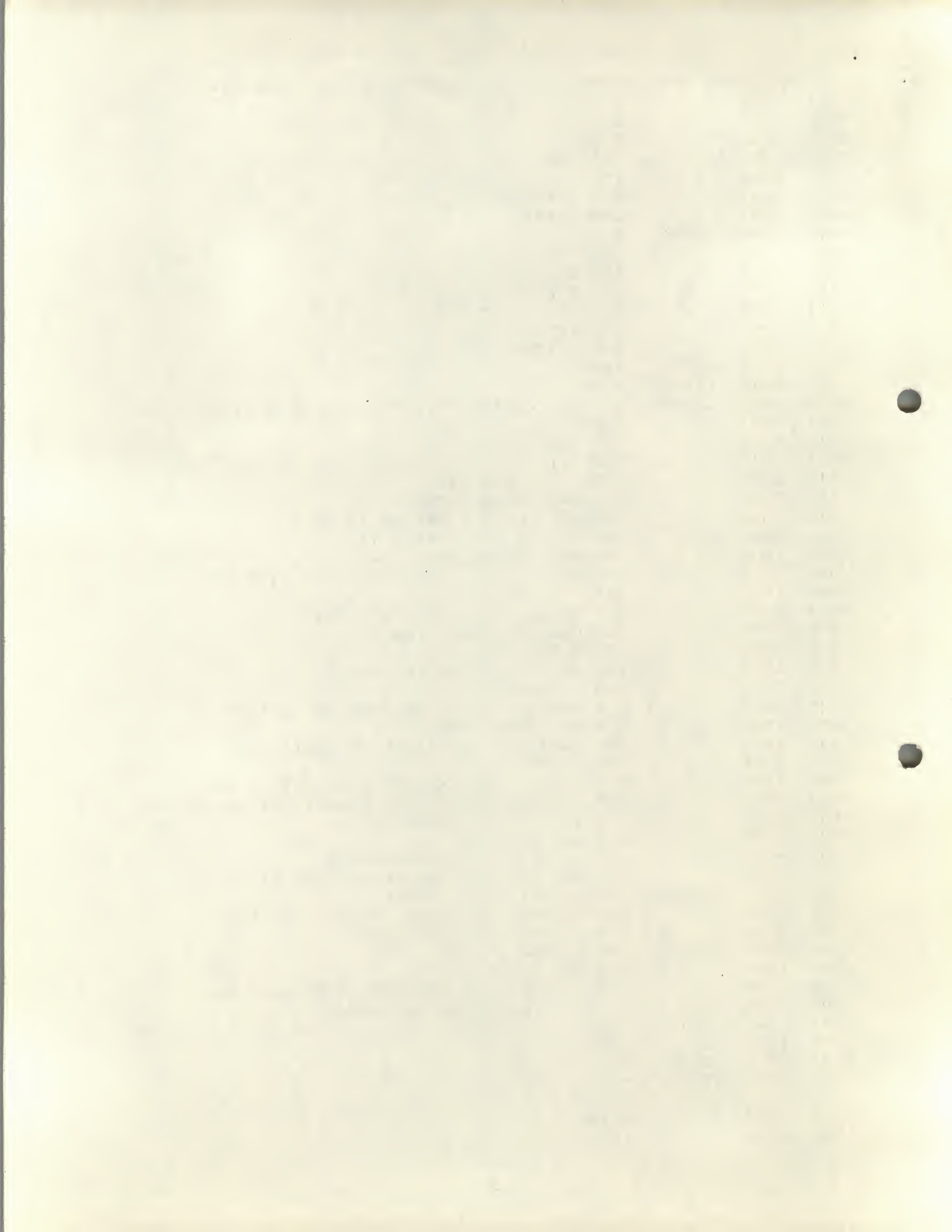
\*0400



0400	0000	TYPSTG,	0000
0401	3256		DCA TEMQ
0402	3260		DCA FLAG
0403	1656	TSCC1,	TAD I TEMQ
0404	7433		7433 /MQL SHL
0405	0005		5
0406	4213		JMS TSCC2
0407	1656		TAD I TEMQ
0410	4213		JMS TSCC2
0411	2256		ISZ TEMQ
0412	5203		JMP TSCC1
0413	0000	TSCC2,	0
0414	0261		AND K77
0415	3257		DCA TEMR
0416	1260		TAD FLAG
0417	7640		SZA CLA
0420	5230		JMP TYPSP
0421	1257		TAD TEMR
0422	7450		SNA
0423	5226		JMP .+3
0424	4247	TYPAT,	JMS PRINT
0425	5613		JMP I TSCC2
0426	2260		ISZ FLAG
0427	5613		JMP I TSCC2
0430	3260	TYPSP,	DCA FLAG
0431	1257		TAD TEMR
0432	7041		CIA
0433	7450		SNA
0434	5224		JMP TYPAT
0435	7001		IAC
0436	7650		SNA CLA
0437	5600		JMP I TYPSTG
0440	1265		TAD SKIPMA
0441	3251		DCA SWITCH
0442	1257		TAD TEMR
0443	4247		JMS PRINT
0444	1266		TAD SKIPPA
0445	3251		DCA SWITCH
0446	5613		JMP I TSCC2
0447	0000	PRINT,0	
0450	1262		TAD M40
0451	7510	SWITCH,	SPA
0452	1263		TAD C100
0453	1264		TAD C240
0454	4267		JMS TTY
0455	5647		JMP I PRINT
0456	0000	TEMQ,	0
0457	0000	TEMR,	0
0460	0000	FLAG,	0
0461	0077	K77,	77
0462	7740	M40,	-40
0463	0100	C100,	100
0464	0240	C240,	240
0465	7500	SKIPMA,	SMA
0466	7510	SKIPPA,	SPA



0467	0000	TTY,	0	
0470	6046		CLS	
0471	7300		CLA CLL	
0472	6041		TSF	
0473	5272		JMP .-1	
0474	5667		JMP I TTY	
0475	0000	TYCR,	0	
0476	30		CLA CLL	
0477	1304		TAD CR	
0500	4267		JMS TTY	
0501	1305		TAD LF	
0502	4267		JMS TTY	
0503	5675		JMP I TYCR	
0504	0215	CR,	0215	
0505	0212	LF,	0212	
0506	0000	TTYQ,	0	/START OF Y OR N CHECK ROUTINE
0507	6034		KRS	
0510	6031		KSF	
0511	5310		JMP .-1	
0512	6036		KRB	/READ TTY
0513	3346		DCA ANS	/SAVE REPLY
0514	1346		TAD ANS	/BRING IT BACK
0515	4421		JMS I ECHO	/ECHO TTY
0516	1346		TAD ANS	/BRING REPLY BACK
0517	1347		TAD YES	/CIA OF Y WAS IT A Y?
0520	7450		SNA	
0521	5340		JMP YESE	/GO TO Y EXIT
0522	7300		CLA CLL	/NO CHECK FOR N
0523	1346		TAD ANS	
0524	1350		TAD NO	/CIA OF N
0525	7450		SNA	/N?
0526	5343		JMP NOE	/WAS N GO TO NO EXIT
0527	7300		CLA CLL	/NOT EITHER
0530	1351		TAD QUES	/BRING UP ASCII FOR?
0531	4421		JMS I ECHO	
0532	1306		TAD TTYQ	/BRING DOWN RETURN ADD
0533	1352		TAD THREE	/-3 TO ADJUST THE RETURN ADD
0534	3306		DCA TTYQ	/PUT IT UP.
0535	7300		CLA CLL	
0536	4422		JMS I CRLF	/RETURN TTY
0537	5706		JMP I TTYQ	/GO BACK & TRY AGAIN
0540	4422	YESE,	JMS I CRLF	/CRLF!
0541	1352		TAD THREE	/PUT THREE(-) IN AC
0542	5706		JMP I TTYQ	/GO BACK
0543	4422	NOE,	JMS I CRLF	
0544	7300		CLA CLL	
0545	5706		JMP I TTYQ	/GO BACK WITH AC CLEAR
0546	0000	ANS,	0	/LOCATION FOR REPLY
0547	7447	YES,	-331	
0550	7462	NO,	-316	
0551	0277	QUES,	277	
0552	7775	THREE,	-3	
0553	0214	BLNO1,	0214	
0554	1703		1703	



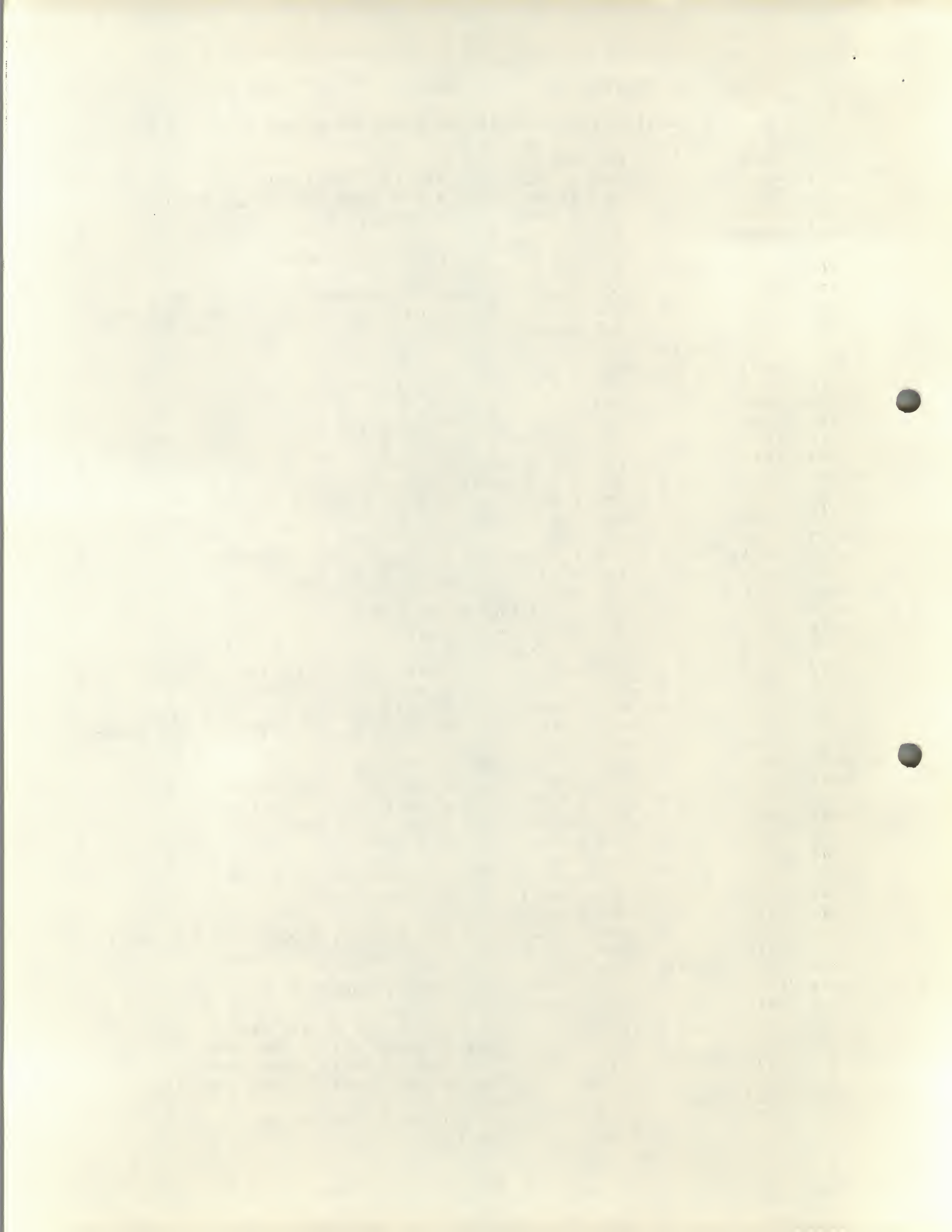
0555	1340		1340	
0556	1625		1625	
0557	1502		1502	
0560	0522		0522	
0561	4077		4077	
0562	4040		4040	
0563	0001		0001	/ EOS OF BLOCK NUMBER ?
0564	0000	WHAT1,	CLA CLL	
0565	1027		TAD WHAT2	/ ADD OF WHAT ?
0566	4420		JMS I TYPE	/TYPE IT
0567	4422		JMS I CRLF	/ TYPE IT AND CRLF
0570	5431		JMP I CONT2	
0571	4040	WHAT3,	4040	
0572	2710		2710	
0573	0124		0124	
0574	4077		4077	
0575	0001		0001	/ EOS OF WHAT ?



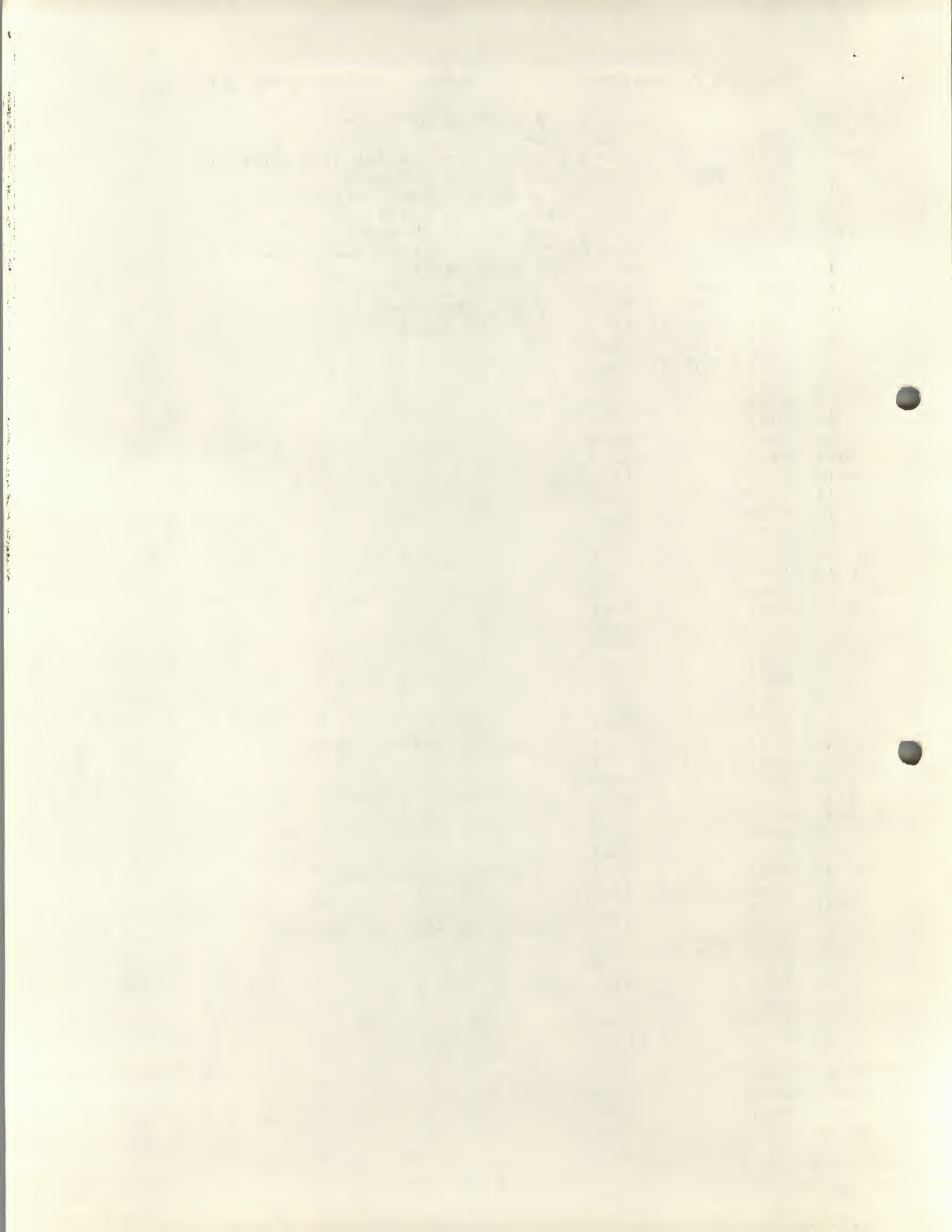
/ PRINTS TITLE , ASKS AND GETS BLOCK NO.

\*0200

0200	7300		CLA CLL	
0201	4422		JMS I CRLF	/CR,LF REALLY!!
0202	1025		TAD TITLE	/ GET ADDR FOR TITLE PRINT
0203	4420		JMS I TYPE	/ REALLY!
0204	4422		JMS I CRLF	
0205	22		JMS I CRLF	/ UP SPACE AGAIN
0206	7300	BLOCK1,	CLA CLL	
0207	3030		DCA ANS1	/ CLEAR PREVIOUS BLOCK NO
0210	1024		TAD BLNO	/ GET ADD OF BLOCK NO. QUESTION
0211	4420		JMS I TYPE	
0212	6034	CONT,	KRS	
0213	6031		KSF	
0214	5213		JMP .-1	/ WAIT FOR ANSWER
0215	6036		KRB	
0216	3275		DCA ANS2	/ SAVE IT
0217	1275		TAD ANS2	/GET IT
0220	1072		TAD PS8 / CIA OF CTRL/C	
0221	7450		SNA / WAS IT CTRL/C	
0222	5471		JMP I OUT	/ YES. GO HOME TO PS8.
0223	7300		CLA CLL	
0224	1275		TAD ANS2	/ GET IT
0225	4421		JMS I ECHO	/ REPEAT THE CHARACTER
0226	1275		TAD ANS2	/ BRING IT BACK
0227	1301		TAD STOP	/ CIA OF PERIOD
0230	7450		SNA / WAS IT A PERIOD	
0231	5253		JMP CONT1	/ YES
0232	7300		CLA CLL /NO	
0233	1275		TAD ANS2	/ GET IT YET AGAIN
0234	0276		AND MASK	/ REMOVE THE RUBBISH
0235	3275		DCA ANS2	/ BETTER KEEP THE GOOD BITS
0236	1030		TAD ANS1	/ WHER ALL GOOD THINGS ARE STORED
0237	7004		RAL	
0240	7006		RTL / GIVE IT A WHIRL	
0241	1275		TAD ANS2	/ ADD THE GOOD BITS
0242	3030		DCA ANS1	/ GIVE THEM A REST
0243	2277		ISZ COUNT	/ HOW MANY TIMES -4
0244	5212		JMP CONT	/ GO BACK
0245	7300		CLA CLL	
0246	3030		DCA ANS1	/ CLEAR THE MUCK OUT
0247	1300		TAD COUNT1	/ RESET COUNT
0250	3277		DCA COUNT	
0251	4422		JMS I CRLF	/UP SPACE . MAKES IT LOOK NICE!
0252	5210		JMP CONT-2	/ ASK BLOCK NO. AGAIN
0253	7300	CONT1,	CLA CLL	
0254	1300		TAD COUNT1	/RESET COUNT1
0255	3277		DCA COUNT	
0256	1030		TAD ANS1	/ GET THE BLOCK NO.
0257	3262		DCA W2A / DEPOSIT BLOCK NO. TO BE READ	
0260	4434	GO11,	JMS I TAPE	/ GO TO READ SUBROUTINE
0261	1402		1402 / CODE TO READ DTA1. SEARCH. REVERSE.	
0262	0000	W2A,	0 / BLOCK NO.	
0263	7577		7577 / WORD COUNT FOR ONE BLOCK	
0264	0777		777 / DUMP ADDR -1	



0265	0035		ERROR	/ IN CASE OF COCK-UP
0266	4422		JMS I CRLF	
0267	5431		JMP I CONT2	/ ASK AND TYPE CONTENTS
0270	4422	ERROR1,	JMS I CRLF	/ UP SPACE
0271	1036		TAD ERR	/ ADD OF ERROR PRINT
0272	4420		JMS I TYPE	/ PRINT IT
0273	4422		JMS I CRLF	/ UP AGAIN
0274	010		JMP CONT-2	/ REASK BLOCK NO.
0275	0000	ANS2,	0	/ SAVE REPLY
0276	0007	MASK,	7	
0277	7773	COUNT,	-5	/ HOW MANY NO.S
0300	7773	COUNT1,	-5	/RESETS ABOVE
0301	7522	STOP,	-256	
0302	2401	TITLE1,	2401	
0303	2005		2005	
0304	4001		4001	
0305	1424		1424	
0306	0522		0522	
0307	0124		0124	
0310	1117		1117	
0311	1640		1640	
0312	2022		2022	
0313	1707		1707	
0314	2201		2201	
0315	1540		1540	
0316	5040		5040	
0317	2401		2401	
0320	2005		2005	
0321	4004		4004	
0322	2211		2211	
0323	2605		2605	
0324	4061		4061	
0325	4051		4051	
0326	0001		0001	/ EOS OF TITLE STRING
0327	2401	ERR1,	2401	
0330	2005		2005	
0331	4005		4005	
0332	2222		2222	
0333	1722		1722	
0334	4041		4041	
0335	0001		0001	/ EOS OF TAPE ERROR !
0336	4040	SPACE1,	4040	
0337	4040		4040	
0340	0001		0001	/ EOS OF SPACING ROUTINE
0341	2305	SEL1,	2305	
0342	1405		1405	
0343	0324		0324	
0344	4005		4005	
0345	2222		2222	
0346	1722		1722	
0347	4041		4041	
0350	4022		4022	
0351	0524		0524	
0352	2231		2231	
0353	4077		4077	



0354	0001		0001	/ EOS OF SELECT ERROR
0355	2516	WTKLP1,	2516	
0356	1124		1124	
0357	4027		4027	
0360	2211		2211	
0361	2405		2405	
0362	4014		4014	
0363	1703		1703	
0364	1305		1305	
0365	0440		0440	
0366	4140		4140	
0367	2205		2205	
0370	2422		2422	
0371	3140		3140	
0372	7740		7740	
0373	0001		0001	/ EOS OF "UNIT WRITE LOCKED ! RETRY ?
0374	4077	QUEST3,	4077	
0375	0001		0001	/ EOS ?

Faint header text at the top of the page, possibly including a date or page number.

Main body of faint text, likely the beginning of a letter or document, containing several lines of illegible characters.

Continuation of faint text in the middle section of the page.

Lower section of faint text, possibly a closing or signature area.

Faint text at the bottom of the page, possibly a footer or reference.

Faint text on the right side of the page, possibly a list or a separate column of information.

Continuation of faint text on the right side of the page.

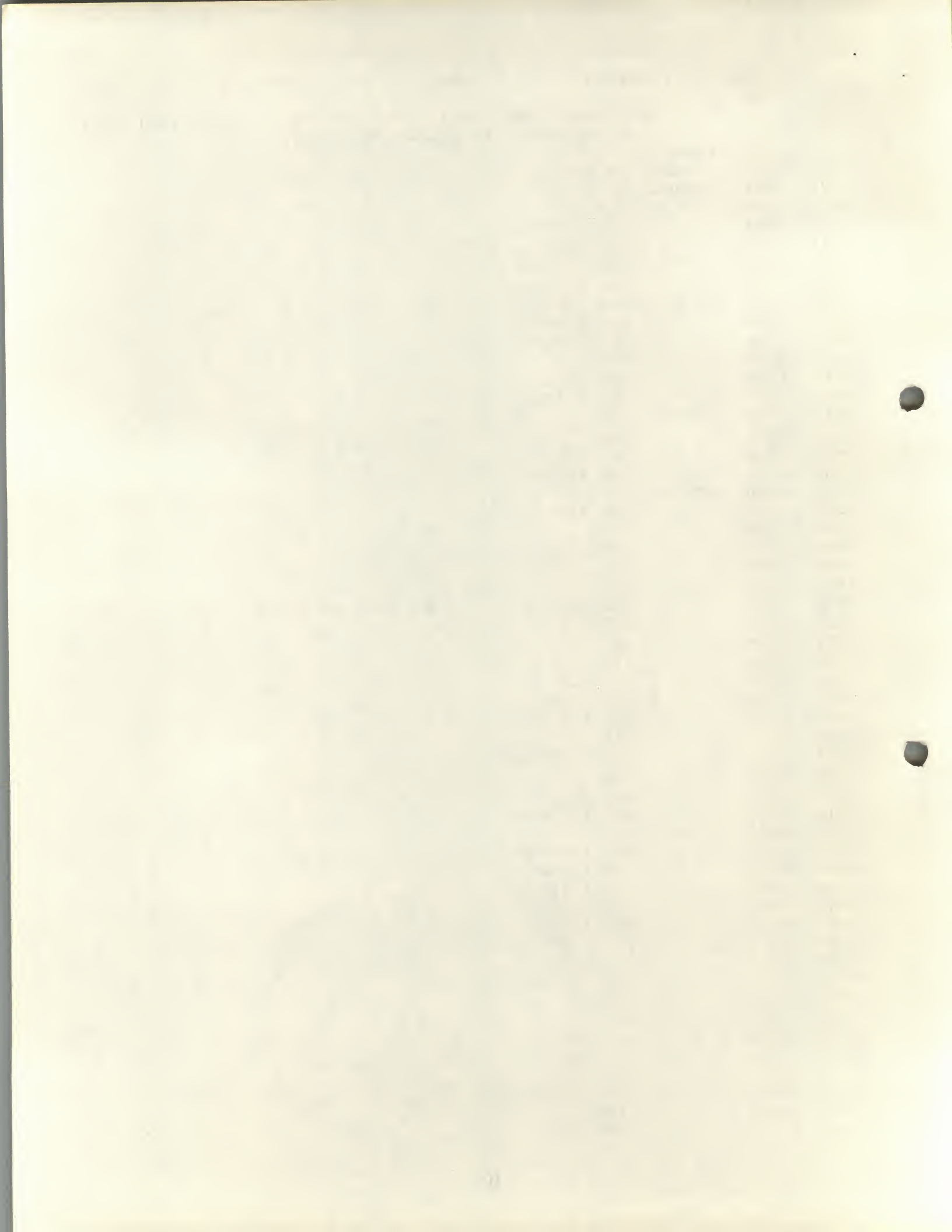
Lower section of faint text on the right side of the page.

/IDTAPE SUB-ROUTINE AS IN INTRO TO PROGRAMMING 1971 VOL.1  
/ MODIFIED FOR ERRORS AS BELOW.

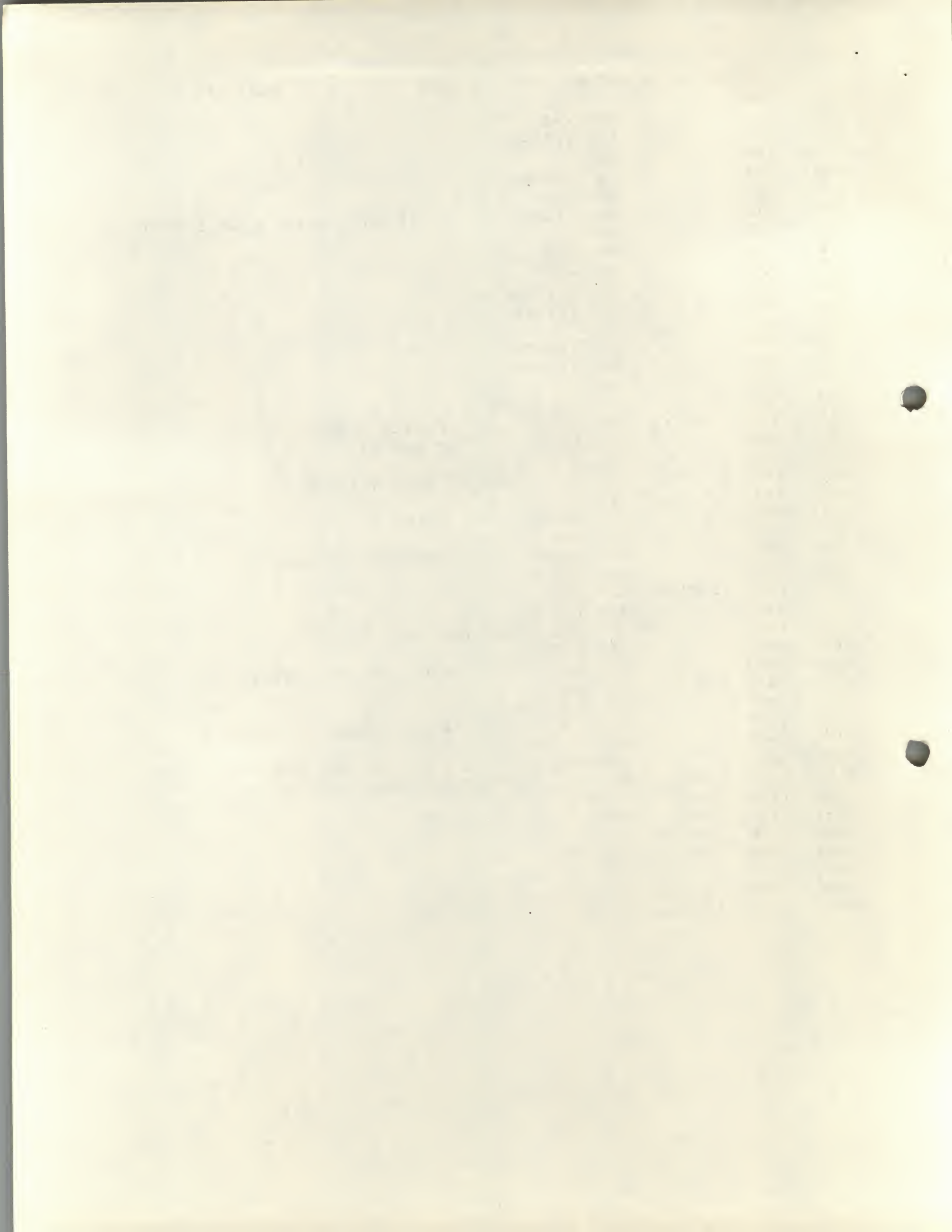
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*0600
0600 7400 ID7400, 7400
0601 0000 IDTAPE, 0
0602 7200 CLA
0603 1601 TAD I IDTAPE
0604 036 DCA IDCODE
0605 2201 ISZ IDTAPE
0606 1336 TAD IDCODE
0607 0200 ID0200, AND ID7400
0610 1332 TAD ID0010
0611 6766 DTCA DTXA
0612 6774 DTLB
0613 1330 TAD IDWC
0614 3731 DCA I IDCA
0615 7006 IDSERR, RTL
0616 7004 RAL
0617 7220 CLA CML
0620 1207 TAD ID0200
0621 7420 IDCONT, SNL
0622 1333 TAD ID0400
0623 6764 DTXA
0624 6773 DTSF DTRB
0625 5224 JMP .-1
0626 7510 SPA
0627 5304 JMP OOPS / WE HAVE AN ERROR
0630 6761 DTRA
0631 7006 RTL
0632 7006 RTL
0633 7630 SZL CLA
0634 1335 TAD ID0002
0635 1730 TAD I IDWC
0636 7040 CMA
0637 1601 TAD I IDTAPE
0640 7040 CMA
0641 7640 SZA CLA
0642 5221 JMP IDCONT
0643 7430 SZL
0644 5222 JMP IDCONT+1
0645 2201 ISZ IDTAPE
0646 1601 TAD I IDTAPE
0647 3730 DCA I IDWC
0650 2201 ISZ IDTAPE
0651 1601 TAD I IDTAPE
0652 3731 DCA I IDCA
0653 1336 TAD IDCODE
0654 6774 DTLB
0655 7001 IAC
0656 0336 AND IDCODE
0657 7106 RTL CLL
0660 7006 RTL
0661 1334 TAD ID0130
0662 6764 DTXA
0663 6773 DTSF DTRB

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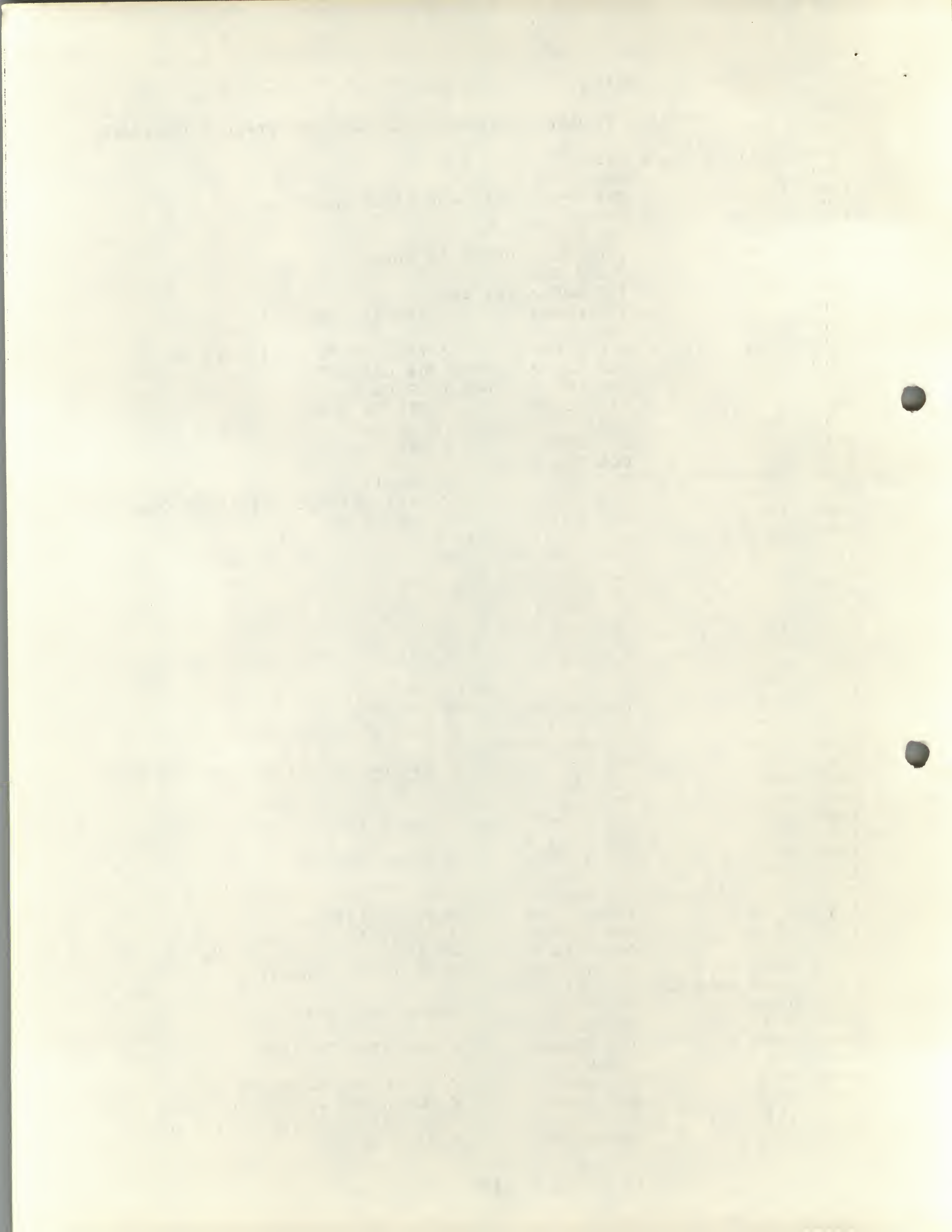


0664	5263		JMP --1	
0665	2201		ISZ IDTAPE	
0666	7500		SMA	
0667	2201		ISZ IDTAPE	
0670	7710		SPA CLA	
0671	5322		JMP WTLK	/ WE HAVE WRITE LOCK ERROR!
0672	7012		RTR	
0673	220		SNL CLA	
0674	5277		JMP ++3	
0675	1601		TAD I IDTAPE	
0676	3201		DCA IDTAPE	
0677	6761		DTRA	
0700	0207		AND ID0200	
0701	1335		TAD ID0002	
0702	6764		DTXA	
0703	5601		JMP I IDTAPE	
0704	3327	OOPS,	DCA FAUPA	/ KEEP THE AC
0705	1327		TAD FAUPA	/ USE IT
0706	7006		RTL	
0707	7004		RAL	/ WAS IT SELECT ERROR
0710	7510		SPA	
0711	5315		JMP SELER	/ YES
0712	7300		CLA CLL	
0713	1327		TAD FAUPA	/PUT THE AC BACK
0714	5215		JMP IDSERR	
0715	7300	SELER,	CLA CLL	
0716	4422		JMS I CRLF	
0717	1067		TAD SEL / GET THE ADDR OF ERROR	
0720	4420		JMS I TYPE	
0721	5463		JMP I RETRY1	/ GO AND ASK RETRY?
0722	7300	WTLK,	CLA CLL	
0723	4422		JMS I CRLF	
0724	1066		TAD WTKLP	/ GET ADDR OF PRINT
0725	4420		JMS I TYPE	
0726	5463		JMP I RETRY1	/ GO AND ASK RETRY
0727	0000	FAUPA,	0	/ STORE THE ERROR REG B
0730	7754	IDWC,	7754	
0731	7755	IDCA,	7755	
0732	0010	ID0010,	10	
0733	0400	ID0400,	400	
0734	0130	ID0130,	130	
0735	0002	ID0002,	2	
0736	0000	IDCODE,	0	

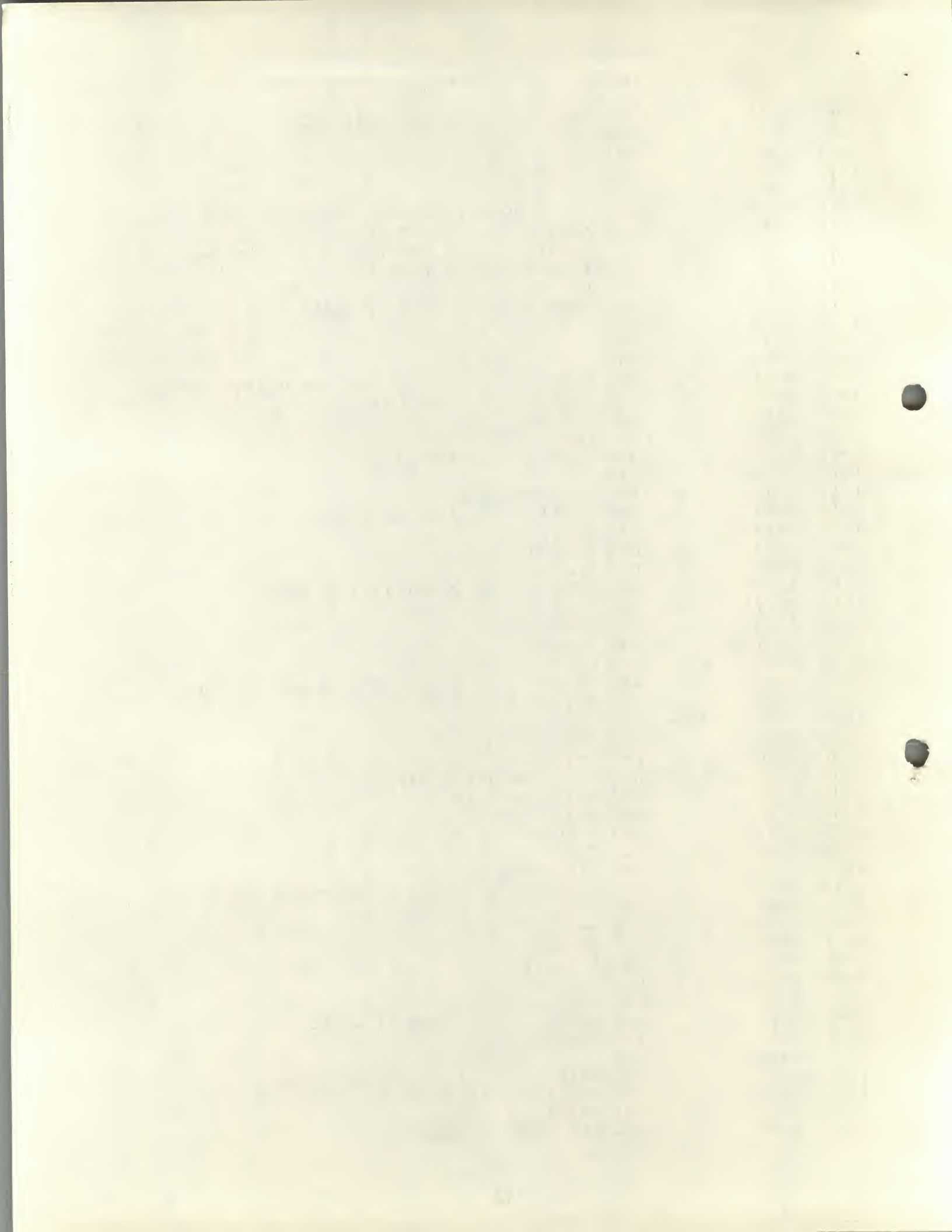


/ROUTINE TO GET LOCATIONS REQUIRED AND TYPEOUT CONTENTS  
\*1400

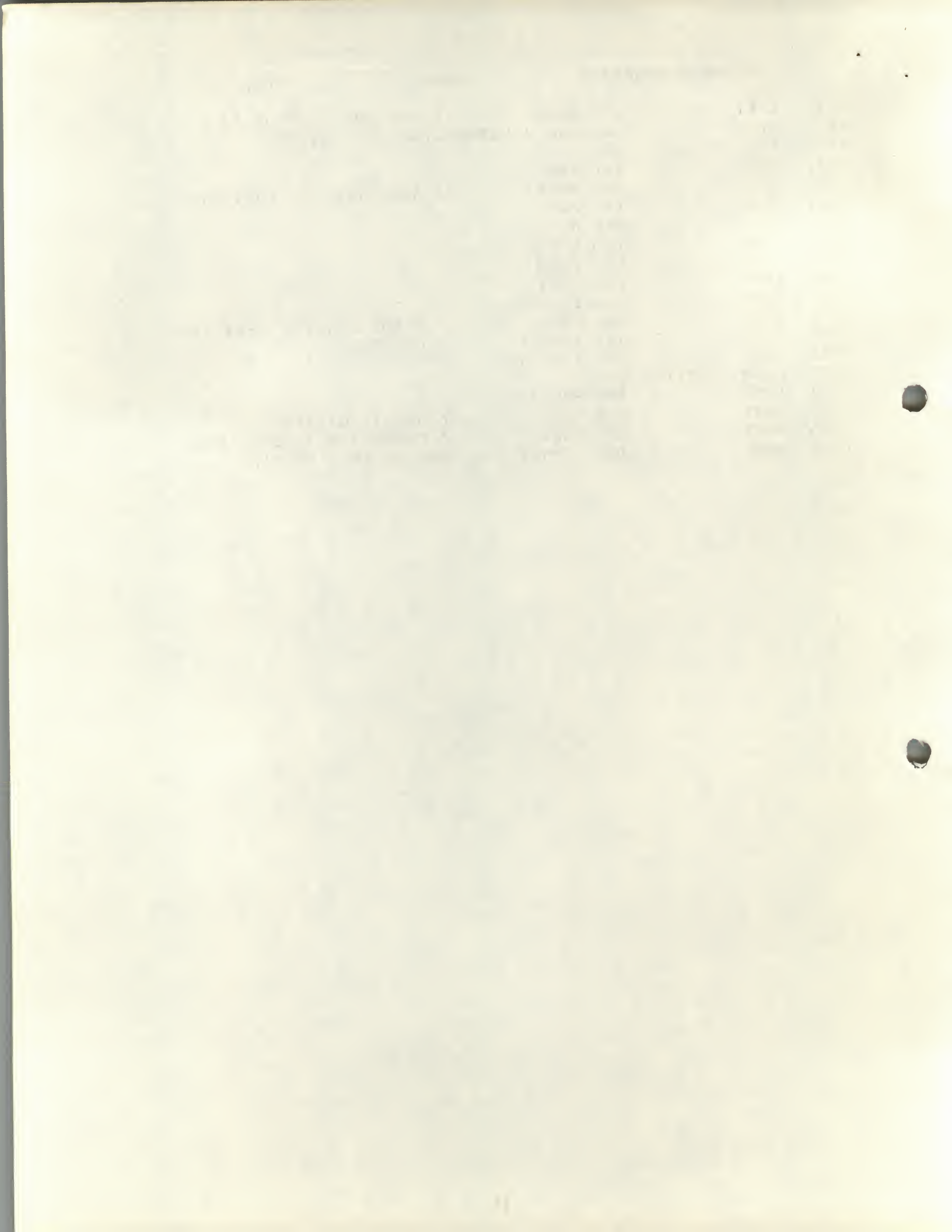
1400	6034	CONT22,	KRS	
1401	6031		KSF	
1402	5201		JMP --1 / WAIT FOR FIRST NUMBER	
1403	6036		KRB	
1404	3042		DCA LOC	
1405	7042		TAD LOC / BRING IT BACK	
1406	4421		JMS I ECHO	
1407	1042		TAD LOC / GET IT	
1410	1060		TAD CTRLF / WAS IT CTRL/F ?	
1411	7450		SNA	
1412	5461		JMP I CONT4 / YES GO AND WRITE IT UP	
1413	7300		CLA CLL / REMOVE THE LEFTOVERS	
1414	1042		TAD LOC / BRING IT BACK AGAIN	
1415	1054		TAD SLASH / CIA OF SLASH	
1416	7450		SNA / WAS IT A SLASH	
1417	5254		JMP CONT3 / YES	
1420	7300		CLA CLL / NO	
1421	1042		TAD LOC / GET IT	
1422	0056		AND CHECK / MASK OUT ALL BUT ASCII CODE 0770	
1423	1057		TAD ASCODE / CIA OF 260	
1424	7440		SZA / WAS IT LEGAL	
1425	5247		JMP SETWAT / NO GO AND RESET COUNT	
1426	7300		CLA CLL / YES	
1427	1042		TAD LOC / GET IT AGAIN	
1428	0051		AND MASK1 / REMOVE THE RUBISH	
1431	3042		DCA LOC / STORE IT	
1432	1043		TAD LOC1 / BRING UP THE REST	
1433	7004		RAL	
1434	7006		RTL / MOVE IT ABOUT	
1435	1042		TAD LOC / ADD THE NEW BITS	
1436	3043		DCA LOC1 / PUT IT AWAY AGAIN	
1437	2053		ISZ COUNT3	
1440	5200		JMP CONT22 / NOT ALL IN YET GO BACK FOR MORE	
1441	7300		CLA CLL	
1442	3042		DCA LOC	
1443	1052		TAD COUNT2 / RESET COUNT	
1444	3053		DCA COUNT3	
1445	4422		JMS I CRLF / MOVE UP PAPER	
1446	5200		JMP CONT22	
1447	7300	SETWAT,	CLA CLL	
1450	1052		TAD COUNT2 / GET POINTER	
1451	3053		DCA COUNT3 / RESET IT	
1452	3043		DCA LOC1 / CLEAR THE STORAGE OUT	
1453	5426		JMP I WHAT / GO TO WHAT ROUTINE	
1454	7300	CONT3,	CLA CLL	
1455	1052		TAD COUNT2 / RESETS COUNTER	
1456	3053		DCA COUNT3	
1457	1044		TAD LOC DMP / ADD 1000 TO ADDR	
1460	1043		TAD LOC1	
1461	3032		DCA LOC2 / STORE THE COMPLETE ADDR	
1462	3043		DCA LOC1 / CLEAR OUT ,READY FOR NEXT TIME	
1463	1432		TAD I LOC2 / GET THE CONTENTS OF THE ADDR	
1464	3033		DCA CORE / STORE IT	



1465	1033	TAD CORE	/ BRING IT BACK
1466	7012	RTR	
1467	7012	RTR	
1470	7012	RTR	
1471	7012	RTR	
1472	7010	RAR	/ MOVE IT TO GET THE FIRST PART
1473	0051	AND MASK1	/ GET RID OF THE REST
1474	1055	TAD ASCII	/ ADD THE ASCII CODE 260
1475	4421	JMS I ECHO	/ TYPE IT
1476	7300	CLA CLL	
1477	1033	TAD CORE	/ GET IT AGAIN
1500	7012	RTR	
1501	7012	RTR	
1502	7012	RTR	
1503	0051	AND MASK1	/ MOVE IT, REMOVE THE RUBBISH
1504	1055	TAD ASCII	/ ADD TH CODE
1505	4421	JMS I ECHO	
1506	7300	CLA CLL	
1507	1033	TAD CORE	/GET IT
1510	7012	RTR	
1511	7010	RAR	/ ROTATE.
1512	0051	AND MASK1	/ DO AS ABOVE
1513	1055	TAD ASCII	
1514	4421	JMS I ECHO	
1515	7300	CLA CLL	
1516	1033	TAD CORE	/ GET IT YET AGAIN
1517	0777	AND MASK	
1520	1055	TAD ASCII	
1521	4421	JMS I ECHO	
1522	7300	CLA CLL	
1523	1037	TAD SPACE	/ GET ADDR OF SPACE TYPE
1524	4420	JMS I TYPE	/ DO IT
1525	6034	ALTER, KRS	
1526	6031	KSF	
1527	5326	JMP .-1	
1530	6036	KRB	/ WAIT FOR INPUT
1531	3045	DCA ALT	/ SAVE IT
1532	1045	TAD ALT	/ GET IT
1533	4421	JMS I ECHO	/ ECHO IT
1534	7300	CLA CLL	
1535	1045	TAD ALT	/ GET IT
1536	1046	TAD CARET	/ WAS IT CARRIAGE RETURN
1537	7440	SZA	
1540	5343	JMP .+3	
1541	4422	JMS I CRLF	
1542	5431	JMP I CONT2	
1543	7300	CLA CLL	
1544	1045	TAD ALT	
1545	0056	AND CHECK	/ WAS IT LEGAL
1546	1057	TAD ASCODE	
1547	7440	SZA	
1550	5372	JMP SET1	/ NO GO AND RESET
1551	1045	TAD ALT	/ GET IT AGAIN
1552	0051	AND MASK1	
1553	3040	DCA NEW	/ PUT IT AWAY



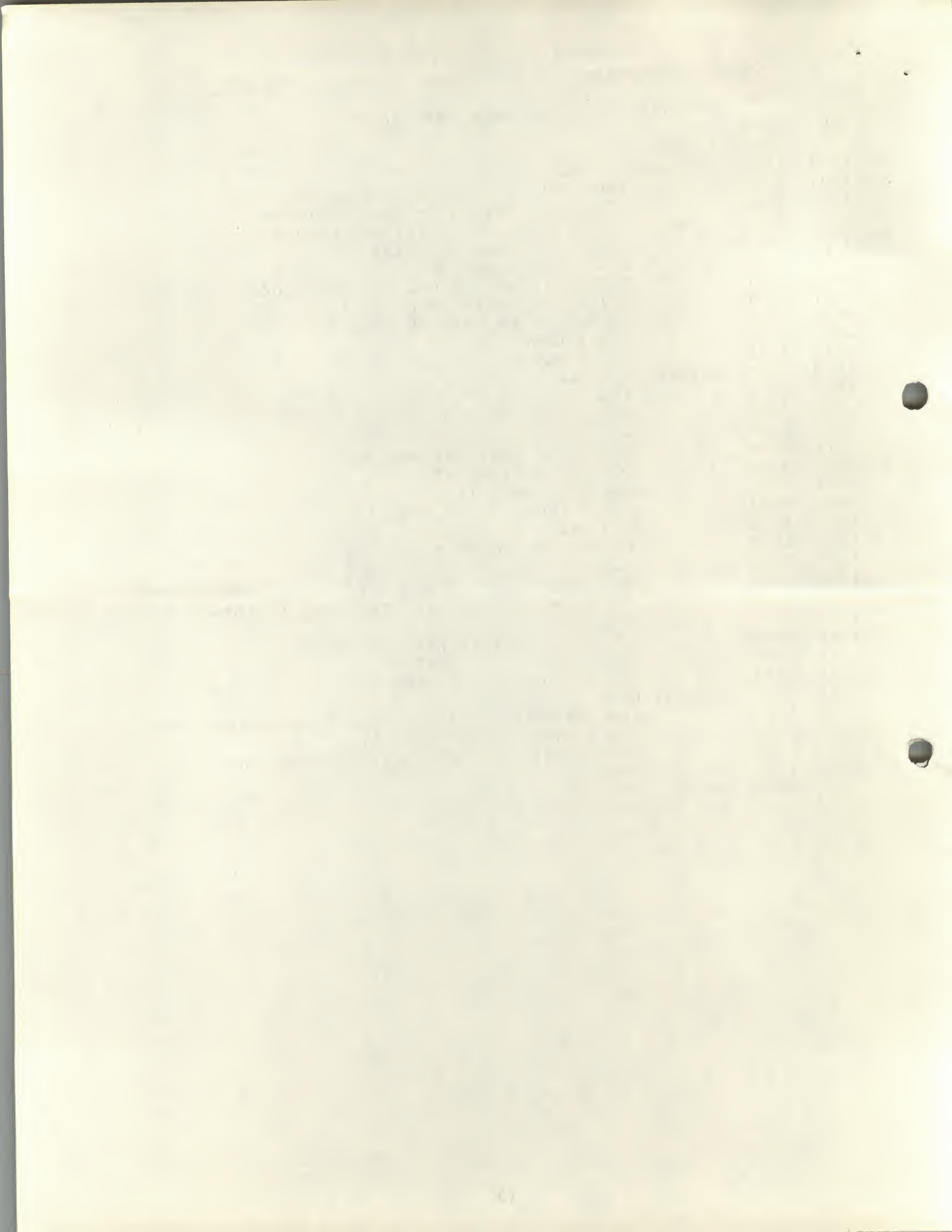
1554	1041	TAD NEW1	/ GET THE REST OF IT
1555	7106	CLL RTL / CLEAR LINK AND ROTATE	
1556	7004	RAL	
1557	1040	TAD NEW	
1560	3041	DCA NEW1	/ KEEP THE NEW CONTENTS
1561	2047	ISZ FOUR	
1562	5325	JMP ALTER	
1563	1050	TAD FOUR1	
1564	3047	DCA FOUR	
1565	1041	TAD NEW1	
1566	3432	DCA I LOC2	
1567	3041	DCA NEW1	/ CLEAR OUT FOR NEXT TIME
1570	4422	JMS I CRLF	/ UPSPACE
1571	5431	JMP I CONT2	
1572	7200	SET1, CLA	
1573	1050	TAD FOUR1	
1574	3047	DCA FOUR	/ RESET POINTER
1575	3041	DCA NEW1	/ CLEAR THE STORAGE OUT
1576	5426	JMP I WHAT	/GO TO WHAT ROUTINE



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/ROUTINE TO WRITE BACK ONTO TAPE
1577 0276
*1600
1600 7300 CONT44, CLA CLL
1601 1030 TAD ANS1 / GET BLOCK NO
1602 3205 DCA W2B / PUT IT IN WRITE ROUTINE
1603 4434 G022, JMS I TAPE / IDTAPE ROUTINE
1604 1403 1403 / CODE TO WRITE DTA1
1605 0000 W2B, 0 / BLOCK NO.
1606 7577 7577 / WORD COUNT FOR ONE BLOCK
1607 0777 777 / WRITE ADDRESS -1
1610 0035 ERROR / IN CASE OF COCK UP
1611 4422 JMS I CRLF
1612 5462 JMP I BLOCK
1613 7300 RETRY2, CLA CLL
1614 6034 KRS
1615 6031 KSF
1616 5215 JMP .-1
1617 6036 KRB / WAIT FOR ANSWER
1620 3241 DCA RET / STORE IT
1621 1241 TAD RET / GET IT
1622 4421 JMS I ECHO / ECHO IT
1623 1241 TAD RET
1624 1240 TAD OK / CIA OF Y
1625 7440 SZA
1626 5234 JMP QUEST1 / NOT A Y
1627 1434 TAD I TAPE / GET THE ADDR IN IDTAPE
1630 7006 RTL
1631 7510 SPA / WAS IT READ OR WRITE
1632 5464 JMP I G02 /WRITE
1633 5465 JMP I G01 / READ
1634 7200 QUEST1, CLA
1635 1070 TAD QUEST2 / GET ADDR OF QUESTION MARK
1636 4420 JMS I TYPE / TYPE IT
1637 5213 JMP RETRY2 / GO AND GET MORE INPUT
1640 7447 OK, -331
1641 0000 RET, 0
$

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ALT	0045	ALTER	1525	ANS	0546	ANS1	0030	ANS2	0275
ASCII	0055	ASCODE	0057	BLNO	0024	BLNO1	0553	BLOCK	0062
BLOCK1	0206	CARET	0046	CHECK	0056	CONT	0212	CONT1	0253
CONT2	0031	CONT22	1400	CONT3	1454	CONT4	0061	CONT44	1600
CORE	0033	COUNT	0277	COUNT1	0300	COUNT2	0052	COUNT3	0053
CR	0504	CRLF	0022	CTRLF	0060	C100	0463	C240	0464
ECHO	0021	ERR	0036	ERROR	0035	ERROR1	0270	ERR1	0327
FAUPA	0727	FLAG	0460	FOUR	0047	FOUR1	0050	GO1	0065
GO11	0260	GO2	0064	GO22	1603	IDCA	0731	IDCODE	0736
IDCONT	0621	IDSERR	0615	IDTAPE	0601	IDWC	0730	ID0002	0735
ID0010	0732	ID0130	0734	ID0200	0607	ID0400	0733	ID7400	0600
K77	0461	LF	0505	LOC	0042	LOCMP	0044	LOC1	0043
LOC2	0032	MASK	0276	MASK1	0051	M40	0462	NEW	0040
NEW1	0041	NO	0550	NOE	0543	OK	1640	OOPS	0704
OUT	0071	PRINT	0447	PS8	0072	QUES	0551	QUEST1	1634
QUEST2	0070	QUEST3	0374	RET	1641	RETRY1	0063	RETRY2	1613
SEL	0067	SELER	0715	SEL1	0341	SETWAT	1447	SET1	1572
SKIPMA	0465	SKIPPA	0466	SLASH	0054	SPACE	0037	SPACE1	0336
STOP	0301	SWITCH	0451	TAPE	0034	TEMQ	0456	TEMR	0457
THREE	0552	TITLE	0025	TITLE1	0302	TSCC1	0403	TSCC2	0413
TTY	0467	TTYQ	0506	TTYQ1	0023	TYCR	0475	TYPAT	0424
TYPE	0020	TYPSP	0430	TYPSTG	0400	WHAT	0026	WHAT1	0564
WHAT2	0027	WHAT3	0571	WTKLP	0066	WTKLP1	0355	WTLK	0722
W2A	0262	W2B	1605	YES	0547	YESE	0540		

