

# RP11C

DISK PACK FORMATTER  
MD-11-DZRPD-B

EP-DZRPD-B-DL-A  
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FICHE 1 OF 1

NOV 1976  
**digital**  
MADE IN USA

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RE: RPL11C DISK PACK FORMATTER  
11:11

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.REM %

IDENTIFICATION

PRODUCT CODE: MAINDEC-11-DZRPD-A-C  
PRODUCT NAME: RPL11C DISK PACK FORMATTER  
DATE CREATED: NOVEMBER 15, 1972  
MAINTAINER: DIAGNOSTIC GROUP  
AUTHOR: JOE STUBBLEBINE

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DIGITAL EQUIPMENT CORPORATION  
MAYNARD, MASS.

RE: RPL11C DISK PACK FORMATTER  
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1.0 ABSTRACT

THE RP11C FORMATTER CONSISTS OF THREE PARTS. PART 1 FORMATS AN RPO3 DISK IN THE NORMAL MANNER AND CHECKS ALL ADDRESSES FOR VALIDITY. PART 2 ALLOWS THE OPERATOR TO REWRITE THE HEADER OF ANY DESIRED SECTOR. PART 3 FORMATS AND VERIFIES THE DISK WITH THE SEQUENCE OF SECTOR ADDRESSES SPECIFIED BY THE OPERATOR.

2.0 REQUIREMENTS

2.1 EQUIPMENT

STANDARD PDP-11 CONFIGURATION  
RP11C DISK CONTROLLER  
ONE OR MORE RPO3 DISK DRIVES

2.2 STORAGE

PROGRAM REQUIRES 4K OF STORAGE

2.3 PRELIMINARY PROGRAMS

DZRPA DISKLESS DIAGNOSTIC  
DZRPB RP11C RELIABILITY DIAGNOSTIC

3.0 LOADING PROCEDURE

USE STANDARD PROCEDURE FOR ABS TYPES.

4.0 STARTING PROCEDURE

4.1 CONTROL SWITCH SETTING

SEE SECTION 5.1.1

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#### 4.2 STARTING ADDRESS

THE PROGRAM MAY BE STARTED AT ONE OF FOUR LOCATIONS

1. STARTING ADDRESS 200 WILL FORMAT THE ENTIRE PACK AND THEN VERIFY THAT THE HEADERS HAVE BEEN WRITTEN CORRECTLY.
2. STARTING ADDRESS 250 WILL ALLOW THE OPERATOR TO SPECIFY A PARTICULAR HEADER TO BE REWRITTEN AND VERIFIED
3. STARTING ADDRESS 300 WILL FORMAT THE ENTIRE PACK USING THE SECTOR ADDRESS SEQUENCE PROVIDED BY THE OPERATOR. AFTER FORMATTING THE PACK IS VERIFIED.
4. STARTING ADDRESS 350 ALLOWS THE OPERATOR TO VERIFY ALL THE HEADERS ON THE PACK.

#### 4.3 PROGRAM AND/OR OPERATOR ACTION

1. LOAD THE PROGRAM INTO MEMORY USING THE ABS LOADER.
2. LOAD DESIRED STARTING ADDRESS
3. SET SWITCHES (SEE SEC 5.1.1)
4. PRESS START
5. WHEN THE PROGRAM IS COMPLETE, IT TYPES OUT "TEST COMPLETE" AND HALTS.

#### 5.0 OPERATING PROCEDURE

##### 5.1 OPERATIONAL SWITCH SETTINGS

AFTER LOADING STARTING ADDRESS SELECT THE DESIRED SWITCHES.



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5.1.1 SWITCH SETTINGS ARE:

SW<15>=1.....HALT ON ERROR  
SW<14> .....NOT USED  
SW<13>=1.....INHIBIT PRINTOUT  
SW<12> .....NOT USED  
SW<11> .....NOT USED  
SW<10>=1.....BELL ON ERROR

5.2 SUBROUTINE ABSTRACTS

5.2.1 TRAPCATCHER

A ".+2" - "HALT" SEQUENCE IS REPEATED FROM 0-776 TO CATCH ANY UNEXPECTED TRAPS. THUS ANY UNEXPECTED TRAPS OR INTERRUPTS WILL HALT AT THE VECTOR +2.

5.2.2 ERROR HANDLER

THIS ROUTINE IS ENTERED UPON DETECTION OF AN ERROR. THE ERROR ADDRESS, PDP-11 STATUS, AND RELEVANT ERROR INFORMATION IS TYPED OUT. RING THE BELL, INHIBIT TYPEOUTS, AND HALT ON ERROR SWITCHES ARE TESTED.

6.0 ERRORS

6.1 ERROR PRINTOUTS

#1 ERROR MESSAGE FORMAT:

ERROR AT ADDRESS XXXX PS= PROCESSOR STATUS  
CALLED FROM SUBROUTINE AT YYY  
RPCS = CONTENTS OF RPCS  
RPCS = CONTENTS OF RPCS  
RPER = CONTENTS OF RPER  
RPDS = CONTENTS OF RPDS

XXXX = THE ADDRESS WHERE THE ERROR WAS  
ENCOUNTERED.  
YYY = IF THE ERROR WAS ENCOUNTERED IN A  
SUBROUTINE, THIS ADDRESS REFERS BACK TO THE

RF11C DISK PACK FORMATTER  
DZRPO.P11

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MAINLINE CODE WHICH CALLED THE SUBROUTINE.

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#2 ERROR AT ADDRESS XXXX PS= PROCESSOR STATUS  
CALLED FROM SUBROUTINE AT YYY

|        |          |       |        |
|--------|----------|-------|--------|
|        | CYLINDER | TRACK | SECTOR |
| GOOD = | -        | -     | -      |
| BAD =  | -        | -     | -      |

THIS MESSAGE IS GIVEN IF AN ERROR OCCURS WHILE  
VERIFYING A HEADER. GOOD EQUALS THE EXPECTED  
CONTENTS OF THE HEADER AND BAD EQUALS WHAT WAS  
ACTUALLY FOUND IN THE HEADER.

7.0 RESTRICTIONS

NONE

8.0 MISCELLANEOUS

8.1 EXECUTION TIME

AFTER PERFORMING THE SELECTED TASK, THE PROGRAM WILL  
TYPE TEST COMPLETE AND HALT.

8.2 STACK POINTER

THE STACK IS INITIALLY SET TO 600.

9.0 PROGRAM DISCRIPTION

9.1 STANDARD FORMATTER

ONCE STARTED THE PROGRAM TYPES:

UNIT

AND WAITS FOR INPUT. RESPOND WITH THE RELEVANT  
OCTAL NUMBER (0-7) AND TERMINATE WITH A CARRIAGE  
RETURN.



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DZRPO.P11

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THE TTY THEN PRINTS:

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SET THE FORMAT ENABLE SWITCH.  
SET THE RP11C WRITE ENABLE SWITCH.  
SET THE SELECTED UNIT WRITE ENABLE SWITCH.  
STRIKE ANY TELETYPE KEY WHEN READY.

STRIKING ANY KEY CAUSES THE FORMATTING OPERATION TO BEGIN. WHEN THE DISK HAS BEEN FORMATTED, THE TTY PRINTS:

RESET THE FORMAT ENABLE SWITCH TO NORMAL.  
STRIKE ANY TELETYPE KEY WHEN READY.

STRIKING ANY KEY CAUSE THE PROGRAM TO ENTER A READ/COMPARE HEADER SEQUENCE. WHEN COMPLETE THE PROGRAM TYPES TEST COMPLETE.

9.2 SINGLE HEADER FORMATTER

ONCE STARTED, THE PROGRAM QUERIES FOR THE UNIT NUMBER AS IN 9.1. THE PROGRAM THEN PRINTS:

CYLINDER TRACK SECTOR  
OLD:

AND WAITS FOR INPUT.  
TYPE THE PHYSICAL CYLINDER, TRACK, AND SECTOR OF THE DESIRED ADDRESS; TERMINATE THE FIRST TWO WITH A SPACE AND THE LAST WITH A CARRIAGE RETURN.  
THE PROGRAM THEN TYPES:

NEW

AND WAITS FOR INPUT. THE THE DESIRED ADDRESS IN THE SAME SEQUENCE AS ABOVE. THE PROGRAM WILL FIRST REWRITE AND THEN READ THE DESIRED HEADER TO DETERMINE VALIDITY. WHEN FINISHED THE PROGRAM TYPES TEST COMPLETE AND HALTS.

9.3 SPECIAL FORMATTER

ONCE STARTED, THE PROGRAM QUERIES FOR THE UNIT NUMBER AS IN 9.1. THE PROGRAM THEN PRINTS:

INPUT THE SECTOR NUMBERS (0-9) IN THE DESIRED ORDER.

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RP11C DISK PACK FORMATTER  
DZRPD.P11

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RESPOND WITH THE FIRST DESIRED SECTOR NUMBER. THE  
OTHER NINE NUMBERS ARE REQUESTED AND SPECIFIED IN

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LIKE MANNER. ONCE A SECTOR NUMBER HAS BEEN USED IT CANNOT BE SPECIFIED AGAIN.

AFTER THE LAST PARAMETER HAS BEEN PROCESSED, THE PROGRAM WRITE THE PACK TO THE DESIRED FORMAT AND THEN ENTERS A READ/COMPARE HEADER SEQUENCE TO ENSURE THE VALIDITY OF ALL ADDRESSES. WHEN THE PROGRAM IS FINISHED IT TYPES TEST COMPLETE AND HALTS.

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000400  
001000  
002000  
004000  
010000  
020000  
040000  
100000  
104000  
104400

%  
:RP11 DISK FORMATTER  
:ROBERT J. COLLINS  
:JANUARY 29, 1971  
SR=177570 :SWITCH REGISTER  
CC=177776 :CONDITION CODES  
TKS=177560  
TKB=177562  
TPS=177564  
TPB=177566  
TKV=60  
TPV=64  
CR=15  
LF=12 :STACK POINTER  
SP=%6  
R0=%0  
R1=%1  
R2=%2  
R3=%3  
R4=%4  
R5=%5  
R6=%6  
R7=%7  
PC=%7  
XX=HALT  
PS=CC  
NOP=240  
P0=0  
P1=40  
P2=100  
P3=140  
P4=200  
P5=240  
P6=300  
P7=340  
B0=1  
B1=2  
B2=4  
B3=10  
B4=20  
B5=40  
B6=100  
B7=200  
B8=400  
B9=1000  
B10=2000  
B11=4000  
B12=10000  
B13=20000  
B14=40000  
B15=100000  
ERR=EMT  
ERM=TRAP

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|-----|--------|--------------|---|
| 421 | 000001 | GB=80        |   |
| 422 | 000002 | DD=81        |   |
| 423 | 000004 | DS=82        |   |
| 424 | 000010 | ER=83        |   |
| 425 | 000020 | CS=84        |   |
| 426 | 000040 | DA=85        |   |
| 427 | 000100 | HD=86        |   |
| 428 | 005726 | POP=5726     |   |
| 429 | 022626 | POPPOP=22626 |   |
| 430 |        |              |   |
| 431 |        | .MACR        | ANDI A,B                                    |
| 432 |        | BIC          | *-A-1,B ;MASK A APPLIED TO B                |
| 433 |        | .ENDM        |   |
| 434 |        |              |   |
| 435 |        |              |   |
| 436 |        | .MACR        | PNTM A                                      |
| 437 |        | MOV          | #A,RO ;PRINT MESSAGE                        |
| 438 |        | JSR          | PC,TYPOUT ;POINTED TO BY A                  |
| 439 |        | .ENDM        |   |
| 440 |        |              |   |
| 441 |        | .MACR        | PNTOL A                                     |
| 442 |        | MOV          | A,RO ;PRINT 6 OCTAL                         |
| 443 |        | JSR          | PC,PNTOCT ;NUMBERS IN A                     |
| 444 |        | .ENDM        |   |
| 445 |        |              |   |
| 446 |        |              |   |
| 447 |        |              |   |
| 448 |        |              |   |
| 449 | 000000 | .=0          |   |
| 450 |        | .REPT        | 140   |
| 451 |        | .+2          | ;TRAPPED OR INTERRUPTED TO PREVIOUS ADDRESS |
| 452 |        | HALT         |   |
| 453 |        | .ENDR        |   |
| 454 | 000000 | .+2          | ;TRAPPED OR INTERRUPTED TO PREVIOUS ADDRESS |
| 455 | 000002 | HALT         |   |
| 456 | 000004 | .+2          | ;TRAPPED OR INTERRUPTED TO PREVIOUS ADDRESS |
| 457 | 000006 | HALT         |   |
| 458 | 000010 | .+2          | ;TRAPPED OR INTERRUPTED TO PREVIOUS ADDRESS |
| 459 | 000012 | HALT         |   |
| 460 | 000014 | .+2          | ;TRAPPED OR INTERRUPTED TO PREVIOUS ADDRESS |
| 461 | 000016 | HALT         |   |
| 462 | 000020 | .+2          | ;TRAPPED OR INTERRUPTED TO PREVIOUS ADDRESS |
| 463 | 000022 | HALT         |   |
| 464 | 000024 | .+2          | ;TRAPPED OR INTERRUPTED TO PREVIOUS ADDRESS |
| 465 | 000026 | HALT         |   |
| 466 | 000030 | .+2          | ;TRAPPED OR INTERRUPTED TO PREVIOUS ADDRESS |
| 467 | 000032 | HALT         |   |
| 468 | 000034 | .+2          | ;TRAPPED OR INTERRUPTED TO PREVIOUS ADDRESS |
| 469 | 000036 | HALT         |   |
| 470 | 000040 | .+2          | ;TRAPPED OR INTERRUPTED TO PREVIOUS ADDRESS |
| 471 | 000042 | HALT         |   |
| 472 | 000044 | .+2          | ;TRAPPED OR INTERRUPTED TO PREVIOUS ADDRESS |
| 473 | 000046 | HALT         |   |
| 474 | 000050 | .+2          | ;TRAPPED OR INTERRUPTED TO PREVIOUS ADDRESS |
| 475 | 000052 | HALT         |   |
| 476 | 000054 | .+2          | ;TRAPPED OR INTERRUPTED TO PREVIOUS ADDRESS |

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| 477 | 000056 | 000000 | HALT |  |
| 478 | 000060 | 000062 | .+2  | ; TRAPPED OR INTERRUPTED TO PREVIOUS ADDRESS |
| 479 | 000062 | 000000 | HALT |  |
| 480 | 000064 | 000066 | .+2  | ; TRAPPED OR INTERRUPTED TO PREVIOUS ADDRESS |
| 481 | 000066 | 000000 | HALT |  |
| 482 | 000070 | 000072 | .+2  | ; TRAPPED OR INTERRUPTED TO PREVIOUS ADDRESS |
| 483 | 000072 | 000000 | HALT |  |
| 484 | 000074 | 000076 | .+2  | ; TRAPPED OR INTERRUPTED TO PREVIOUS ADDRESS |
| 485 | 000076 | 000000 | HALT |  |
| 486 | 000100 | 000102 | .+2  | ; TRAPPED OR INTERRUPTED TO PREVIOUS ADDRESS |
| 487 | 000102 | 000000 | HALT |  |
| 488 | 000104 | 000106 | .+2  | ; TRAPPED OR INTERRUPTED TO PREVIOUS ADDRESS |
| 489 | 000106 | 000000 | HALT |  |
| 490 | 000110 | 000112 | .+2  | ; TRAPPED OR INTERRUPTED TO PREVIOUS ADDRESS |
| 491 | 000112 | 000000 | HALT |  |
| 492 | 000114 | 000116 | .+2  | ; TRAPPED OR INTERRUPTED TO PREVIOUS ADDRESS |
| 493 | 000116 | 000000 | HALT |  |
| 494 | 000120 | 000122 | .+2  | ; TRAPPED OR INTERRUPTED TO PREVIOUS ADDRESS |
| 495 | 000122 | 000000 | HALT |  |
| 496 | 000124 | 000126 | .+2  | ; TRAPPED OR INTERRUPTED TO PREVIOUS ADDRESS |
| 497 | 000126 | 000000 | HALT |  |
| 498 | 000130 | 000132 | .+2  | ; TRAPPED OR INTERRUPTED TO PREVIOUS ADDRESS |
| 499 | 000132 | 000000 | HALT |  |
| 500 | 000134 | 000136 | .+2  | ; TRAPPED OR INTERRUPTED TO PREVIOUS ADDRESS |
| 501 | 000136 | 000000 | HALT |  |
| 502 | 000140 | 000142 | .+2  | ; TRAPPED OR INTERRUPTED TO PREVIOUS ADDRESS |
| 503 | 000142 | 000000 | HALT |  |
| 504 | 000144 | 000146 | .+2  | ; TRAPPED OR INTERRUPTED TO PREVIOUS ADDRESS |
| 505 | 000146 | 000000 | HALT |  |
| 506 | 000150 | 000152 | .+2  | ; TRAPPED OR INTERRUPTED TO PREVIOUS ADDRESS |
| 507 | 000152 | 000000 | HALT |  |
| 508 | 000154 | 000156 | .+2  | ; TRAPPED OR INTERRUPTED TO PREVIOUS ADDRESS |
| 509 | 000156 | 000000 | HALT |  |
| 510 | 000160 | 000162 | .+2  | ; TRAPPED OR INTERRUPTED TO PREVIOUS ADDRESS |
| 511 | 000162 | 000000 | HALT |  |
| 512 | 000164 | 000166 | .+2  | ; TRAPPED OR INTERRUPTED TO PREVIOUS ADDRESS |
| 513 | 000166 | 000000 | HALT |  |
| 514 | 000170 | 000172 | .+2  | ; TRAPPED OR INTERRUPTED TO PREVIOUS ADDRESS |
| 515 | 000172 | 000000 | HALT |  |
| 516 | 000174 | 000176 | .+2  | ; TRAPPED OR INTERRUPTED TO PREVIOUS ADDRESS |
| 517 | 000176 | 000000 | HALT |  |
| 518 | 000200 | 000202 | .+2  | ; TRAPPED OR INTERRUPTED TO PREVIOUS ADDRESS |
| 519 | 000202 | 000000 | HALT |  |
| 520 | 000204 | 000206 | .+2  | ; TRAPPED OR INTERRUPTED TO PREVIOUS ADDRESS |
| 521 | 000206 | 000000 | HALT |  |
| 522 | 000210 | 000212 | .+2  | ; TRAPPED OR INTERRUPTED TO PREVIOUS ADDRESS |
| 523 | 000212 | 000000 | HALT |  |
| 524 | 000214 | 000216 | .+2  | ; TRAPPED OR INTERRUPTED TO PREVIOUS ADDRESS |
| 525 | 000216 | 000000 | HALT |  |
| 526 | 000220 | 000222 | .+2  | ; TRAPPED OR INTERRUPTED TO PREVIOUS ADDRESS |
| 527 | 000222 | 000000 | HALT |  |
| 528 | 000224 | 000226 | .+2  | ; TRAPPED OR INTERRUPTED TO PREVIOUS ADDRESS |
| 529 | 000226 | 000000 | HALT |  |
| 530 | 000230 | 000232 | .+2  | ; TRAPPED OR INTERRUPTED TO PREVIOUS ADDRESS |
| 531 | 000232 | 000000 | HALT |  |
| 532 | 000234 | 000236 | .+2  | ; TRAPPED OR INTERRUPTED TO PREVIOUS ADDRESS |



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| 533 | 000236 | 000000 | HALT |  |
| 534 | 000240 | 000242 | .+2  | ; TRAPPED OR INTERRUPTED TO PREVIOUS ADDRESS |
| 535 | 000242 | 000000 | HALT |  |
| 536 | 000244 | 000246 | .+2  | ; TRAPPED OR INTERRUPTED TO PREVIOUS ADDRESS |
| 537 | 000246 | 000000 | HALT |  |
| 538 | 000250 | 000252 | .+2  | ; TRAPPED OR INTERRUPTED TO PREVIOUS ADDRESS |
| 539 | 000252 | 000000 | HALT |  |
| 540 | 000254 | 000256 | .+2  | ; TRAPPED OR INTERRUPTED TO PREVIOUS ADDRESS |
| 541 | 000256 | 000000 | HALT |  |
| 542 | 000260 | 000262 | .+2  | ; TRAPPED OR INTERRUPTED TO PREVIOUS ADDRESS |
| 543 | 000262 | 000000 | HALT |  |
| 544 | 000264 | 000266 | .+2  | ; TRAPPED OR INTERRUPTED TO PREVIOUS ADDRESS |
| 545 | 000266 | 000000 | HALT |  |
| 546 | 000270 | 000272 | .+2  | ; TRAPPED OR INTERRUPTED TO PREVIOUS ADDRESS |
| 547 | 000272 | 000000 | HALT |  |
| 548 | 000274 | 000276 | .+2  | ; TRAPPED OR INTERRUPTED TO PREVIOUS ADDRESS |
| 549 | 000276 | 000000 | HALT |  |
| 550 | 000300 | 000302 | .+2  | ; TRAPPED OR INTERRUPTED TO PREVIOUS ADDRESS |
| 551 | 000302 | 000000 | HALT |  |
| 552 | 000304 | 000306 | .+2  | ; TRAPPED OR INTERRUPTED TO PREVIOUS ADDRESS |
| 553 | 000306 | 000000 | HALT |  |
| 554 | 000310 | 000312 | .+2  | ; TRAPPED OR INTERRUPTED TO PREVIOUS ADDRESS |
| 555 | 000312 | 000000 | HALT |  |
| 556 | 000314 | 000316 | .+2  | ; TRAPPED OR INTERRUPTED TO PREVIOUS ADDRESS |
| 557 | 000316 | 000000 | HALT |  |
| 558 | 000320 | 000322 | .+2  | ; TRAPPED OR INTERRUPTED TO PREVIOUS ADDRESS |
| 559 | 000322 | 000000 | HALT |  |
| 560 | 000324 | 000326 | .+2  | ; TRAPPED OR INTERRUPTED TO PREVIOUS ADDRESS |
| 561 | 000326 | 000000 | HALT |  |
| 562 | 000330 | 000332 | .+2  | ; TRAPPED OR INTERRUPTED TO PREVIOUS ADDRESS |
| 563 | 000332 | 000000 | HALT |  |
| 564 | 000334 | 000336 | .+2  | ; TRAPPED OR INTERRUPTED TO PREVIOUS ADDRESS |
| 565 | 000336 | 000000 | HALT |  |
| 566 | 000340 | 000342 | .+2  | ; TRAPPED OR INTERRUPTED TO PREVIOUS ADDRESS |
| 567 | 000342 | 000000 | HALT |  |
| 568 | 000344 | 000346 | .+2  | ; TRAPPED OR INTERRUPTED TO PREVIOUS ADDRESS |
| 569 | 000346 | 000000 | HALT |  |
| 570 | 000350 | 000352 | .+2  | ; TRAPPED OR INTERRUPTED TO PREVIOUS ADDRESS |
| 571 | 000352 | 000000 | HALT |  |
| 572 | 000354 | 000356 | .+2  | ; TRAPPED OR INTERRUPTED TO PREVIOUS ADDRESS |
| 573 | 000356 | 000000 | HALT |  |
| 574 | 000360 | 000362 | .+2  | ; TRAPPED OR INTERRUPTED TO PREVIOUS ADDRESS |
| 575 | 000362 | 000000 | HALT |  |
| 576 | 000364 | 000366 | .+2  | ; TRAPPED OR INTERRUPTED TO PREVIOUS ADDRESS |
| 577 | 000366 | 000000 | HALT |  |
| 578 | 000370 | 000372 | .+2  | ; TRAPPED OR INTERRUPTED TO PREVIOUS ADDRESS |
| 579 | 000372 | 000000 | HALT |  |
| 580 | 000374 | 000376 | .+2  | ; TRAPPED OR INTERRUPTED TO PREVIOUS ADDRESS |
| 581 | 000376 | 000000 | HALT |  |
| 582 | 000400 | 000402 | .+2  | ; TRAPPED OR INTERRUPTED TO PREVIOUS ADDRESS |
| 583 | 000402 | 000000 | HALT |  |
| 584 | 000404 | 000406 | .+2  | ; TRAPPED OR INTERRUPTED TO PREVIOUS ADDRESS |
| 585 | 000406 | 000000 | HALT |  |
| 586 | 000410 | 000412 | .+2  | ; TRAPPED OR INTERRUPTED TO PREVIOUS ADDRESS |
| 587 | 000412 | 000000 | HALT |  |
| 588 | 000414 | 000416 | .+2  | ; TRAPPED OR INTERRUPTED TO PREVIOUS ADDRESS |

|     |        |        |      |  |
|-----|--------|--------|------|--|
| 589 | 000416 | 000000 | HALT |  |
| 590 | 000420 | 000422 | .+2  | ; TRAPPED OR INTERRUPTED TO PREVIOUS ADDRESS |
| 591 | 000422 | 000000 | HALT |  |
| 592 | 000424 | 000426 | .+2  | ; TRAPPED OR INTERRUPTED TO PREVIOUS ADDRESS |
| 593 | 000426 | 000000 | HALT |  |
| 594 | 000430 | 000432 | .+2  | ; TRAPPED OR INTERRUPTED TO PREVIOUS ADDRESS |
| 595 | 000432 | 000000 | HALT |  |
| 596 | 000434 | 000436 | .+2  | ; TRAPPED OR INTERRUPTED TO PREVIOUS ADDRESS |
| 597 | 000436 | 000000 | HALT |  |
| 598 | 000440 | 000442 | .+2  | ; TRAPPED OR INTERRUPTED TO PREVIOUS ADDRESS |
| 599 | 000442 | 000000 | HALT |  |
| 600 | 000444 | 000446 | .+2  | ; TRAPPED OR INTERRUPTED TO PREVIOUS ADDRESS |
| 601 | 000446 | 000000 | HALT |  |
| 602 | 000450 | 000452 | .+2  | ; TRAPPED OR INTERRUPTED TO PREVIOUS ADDRESS |
| 603 | 000452 | 000000 | HALT |  |
| 604 | 000454 | 000456 | .+2  | ; TRAPPED OR INTERRUPTED TO PREVIOUS ADDRESS |
| 605 | 000456 | 000000 | HALT |  |
| 606 | 000460 | 000462 | .+2  | ; TRAPPED OR INTERRUPTED TO PREVIOUS ADDRESS |
| 607 | 000462 | 000000 | HALT |  |
| 608 | 000464 | 000466 | .+2  | ; TRAPPED OR INTERRUPTED TO PREVIOUS ADDRESS |
| 609 | 000466 | 000000 | HALT |  |
| 610 | 000470 | 000472 | .+2  | ; TRAPPED OR INTERRUPTED TO PREVIOUS ADDRESS |
| 611 | 000472 | 000000 | HALT |  |
| 612 | 000474 | 000476 | .+2  | ; TRAPPED OR INTERRUPTED TO PREVIOUS ADDRESS |
| 613 | 000476 | 000000 | HALT |  |
| 614 | 000500 | 000502 | .+2  | ; TRAPPED OR INTERRUPTED TO PREVIOUS ADDRESS |
| 615 | 000502 | 000000 | HALT |  |
| 616 | 000504 | 000506 | .+2  | ; TRAPPED OR INTERRUPTED TO PREVIOUS ADDRESS |
| 617 | 000506 | 000000 | HALT |  |
| 618 | 000510 | 000512 | .+2  | ; TRAPPED OR INTERRUPTED TO PREVIOUS ADDRESS |
| 619 | 000512 | 000000 | HALT |  |
| 620 | 000514 | 000516 | .+2  | ; TRAPPED OR INTERRUPTED TO PREVIOUS ADDRESS |
| 621 | 000516 | 000000 | HALT |  |
| 622 | 000520 | 000522 | .+2  | ; TRAPPED OR INTERRUPTED TO PREVIOUS ADDRESS |
| 623 | 000522 | 000000 | HALT |  |
| 624 | 000524 | 000526 | .+2  | ; TRAPPED OR INTERRUPTED TO PREVIOUS ADDRESS |
| 625 | 000526 | 000000 | HALT |  |
| 626 | 000530 | 000532 | .+2  | ; TRAPPED OR INTERRUPTED TO PREVIOUS ADDRESS |
| 627 | 000532 | 000000 | HALT |  |
| 628 | 000534 | 000536 | .+2  | ; TRAPPED OR INTERRUPTED TO PREVIOUS ADDRESS |
| 629 | 000536 | 000000 | HALT |  |
| 630 | 000540 | 000542 | .+2  | ; TRAPPED OR INTERRUPTED TO PREVIOUS ADDRESS |
| 631 | 000542 | 000000 | HALT |  |
| 632 | 000544 | 000546 | .+2  | ; TRAPPED OR INTERRUPTED TO PREVIOUS ADDRESS |
| 633 | 000546 | 000000 | HALT |  |
| 634 | 000550 | 000552 | .+2  | ; TRAPPED OR INTERRUPTED TO PREVIOUS ADDRESS |
| 635 | 000552 | 000000 | HALT |  |
| 636 | 000554 | 000556 | .+2  | ; TRAPPED OR INTERRUPTED TO PREVIOUS ADDRESS |
| 637 | 000556 | 000000 | HALT |  |
| 638 | 000560 | 000562 | .+2  | ; TRAPPED OR INTERRUPTED TO PREVIOUS ADDRESS |
| 639 | 000562 | 000000 | HALT |  |
| 640 | 000564 | 000566 | .+2  | ; TRAPPED OR INTERRUPTED TO PREVIOUS ADDRESS |
| 641 | 000566 | 000000 | HALT |  |
| 642 | 000570 | 000572 | .+2  | ; TRAPPED OR INTERRUPTED TO PREVIOUS ADDRESS |
| 643 | 000572 | 000000 | HALT |  |
| 644 | 000574 | 000576 | .+2  | ; TRAPPED OR INTERRUPTED TO PREVIOUS ADDRESS |

|     |        |        |        |       |            |
|-----|--------|--------|--------|-------|------------|
| 645 | 000576 | 000000 |        | HALT  |            |
| 646 |        |        |        |       |            |
| 647 |        | 000030 |        | .=30  |            |
| 648 | 000030 | 004660 |        | .WORD | ERROR      |
| 649 | 000032 | 000340 |        | .WORD | 340        |
| 650 | 000034 | 004660 |        | .WORD | ERROR      |
| 651 | 000036 | 000340 |        | .WORD | 340        |
| 652 |        |        |        |       |            |
| 653 |        |        |        |       |            |
| 654 |        |        |        |       |            |
| 655 |        | 000200 |        | .=200 |            |
| 656 | 000200 | 012707 | 000600 | MOV   | #START1,PC |
| 657 |        | 000250 |        | .=250 |            |
| 658 | 000250 | 012707 | 001342 | MOV   | #START2,PC |
| 659 |        | 000300 |        | .=300 |            |
| 660 | 000300 | 012707 | 002076 | MOV   | #START3,PC |
| 661 |        | 000350 |        | .=350 |            |
| 662 | 000350 | 012707 | 001010 | MOV   | #START4,PC |
| 663 |        | 000600 |        | .=600 |            |
| 664 |        |        |        |       |            |

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665          .TITLE  RP11C DISK PACK FORMATTER
666          .SBTTL  ** STANDARD FORMATTER **
667
668          ;THIS ROUTINE WILL FORMAT THE ENTIRE PACK AND THEN VERIFY
669          ;THE HEADERS WITHIN EACH SECTOR.  STARTING ADDRESS IS 200.
670
671 000600 012706 000600          START1: MOV      #START1,SP          ;INITIALIZE STACK POINTER
672 000604 012767 000340 177164  MOV      #P7,CC          ;LOCKOUT OTHER DEVICES
673 000612 000005                RESET          ;CLEAR THE WORLD
674 000614 004767 002310  IL1:   JSR      PC,UNIQ          ;GET UNIT#
675 000620                URDY1: PNTM     SWMES          ;PRINT MESSAGE
676 000620 012700 004175          MOV      #SWMES,RO          ;POINTED TO BY SWMES
677 000624 004767 006000          JSR      PC,TYPOUT          ;WAIT FOR KEYBOARD RESPONSE
678 000630 004767 003134          JSR      PC,RIN
679
680
681 000634 004767 002470          NS2:   JSR      PC,HOME          ;HOME SEEK
682 000640 012777 000732 006172  MOV      #RPI,ARPIV          ;RP11 PI VECTO
683 000646 012777 000340 006166  MOV      #P7,ARPSV          ;RP11 PI STATUS
684 000654 012777 000001 006112  MOV      #1,ARPC          ;ALLOW DSH BREAKS
685 000662 062777 014103 006100  ADD      #14103,ARPCS          ;WRITE IC/15 HEADER (FORMAT) WITH PI ON
686 000670 112767 000200 177100  MOV      #P4,PS          ;LOWER CPU PRIORITY
687 000676 017704 006102          IL2:   MOV      ARPDA,R4          ;SAVE ADDRESS
688 000702 012767 177770 005770  MOV      #177770,TOG1          ;SETUP TIMEOUT
689 000710 020477 006070          IL3:   CMP      R4,ARPDA          ;HAS ADDRESS CHANGED?
690 000714 001370                BNE      IL2          ;YES - RECYCLE
691 000716 005367 005756          DEC      TOG1          ;NO - HAS 100 MSEC. TIMED OUT?
692 000722 001372                BNE      IL3          ;NO - KEEP CHECKING
693 000724 104074                ERR+DS+CS+ER+DA          ;DISK ADDRESS NOT CHANGING IN TIME
694 000726 000167 177702          JMP      NS2          ;TRY AGAIN
695 000732 004567 005470          RPI:   JSR      R5,SAVOS          ;RP11 PI HANDLER - SAVE RO-5
696 000736 032777 100000 006024  BIT      #B15,ARPCS          ;ERROR?
697 000744 001406                BEQ      P1OK1          ;NO
698 000746 104034                ERR+ER+CS+DS          ;ERROR DURING FORMAT GENERATION
699 000750 004567 005466          RPIX:  JSR      R5,RESTOS          ;RESTORE RO-5
700 000754                POP          ;POP OLD PC
701          .IRP      B,(<)
702          MOV      (SP)+,B          ;;POP STACK INTO B
703          .ENDM
704 000754 012746 000634          MOV      #NS2,-(SP)          ;PUSH A NEW PC
705 000760 000002                RTI          ;EXIT
706 000762 032777 000200 006000  P1OK1: BIT      #B7,ARPCS          ;DONE?
707 000770 001002                BNE      .+6          ;YES
708 000772 104050                ERR+CS+ER+CS          ;EXTRANEIOUS PI DURING FORMAT PASS
709 000774 000765                BR      RPIX          ;TRY AGAIN
710 000776 004567 005440          JSR      R5,RESTOS          ;RESTORE RO-5
711 001002                POP          ;POP OLD PC
712          .IRP      B,(<)
713          MOV      (SP)+,B          ;;POP STACK INTO B
714          .ENDM
715 001002 012746 001030          MOV      #STR4,-(SP)          ;PUSH A NEW PC
716 001006 000002                RTI          ;EXIT TO PASS 2
717
718
719 001010 012706 000600          START4: MOV      #START1,SP
720 001014 012767 000340 176754  MOV      #P7,CC

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|     |        |        |        |        |       |                 |                |                                     |
|-----|--------|--------|--------|--------|-------|-----------------|----------------|-------------------------------------|
| 721 | 001022 | 000005 |        |        |       | RESET           |                |                                     |
| 722 | 001024 | 004767 | 002100 |        |       | JSR             | PC, UNIQ       |                                     |
| 723 | 001030 | 012767 | 000340 | 176740 | STR4: | MOV             | #P7, PS        | ; LOCKOUT PI'S                      |
| 724 | 001036 |        |        |        |       | PNTM            | NSWMES         |                                     |
| 725 | 001036 | 012700 | 004417 |        |       | MOV             | #NSWMES, RO    | ; PRINT MESSAGE                     |
| 726 | 001042 | 004767 | 005562 |        |       | JSR             | PC, TYP0UT     | ; POINTED TO BY NSWMES              |
| 727 | 001046 | 004767 | 002716 |        |       | JSR             | PC, RIN        | ; WAIT FOR OPERATOR                 |
| 728 | 001052 | 012777 | 000001 | 005710 | P2L1: | MOV             | #1, @RPCS      | ; RESET RP11                        |
| 729 | 001060 | 116777 | 005634 | 005704 |       | MOV             | UNIT, @RPCS1   | ; LOAD UNIT #                       |
| 730 | 001066 | 004767 | 002236 |        |       | JSR             | PC, HOME       | ; HOME SEEK                         |
| 731 | 001072 | 005067 | 005626 |        |       | CLR             | CYL            | ; CYL=0                             |
| 732 | 001076 | 016777 | 005622 | 005674 | P2L2: | MOV             | CYL, @RPCA     | ; START AT                          |
| 733 | 001104 | 005077 | 005674 |        |       | CLR             | @RPOA          | ; SAR & TAR = 0                     |
| 734 | 001110 | 112777 | 000011 | 005652 |       | MOV             | #11, @RPCS     | ; SEEK                              |
| 735 | 001116 | 036777 | 005600 | 005634 |       | BIT             | ATN8, @RPDS    | ; WAIT FOR                          |
| 736 | 001124 | 001774 |        |        |       | BEQ             | .-6            | ; ATTN.                             |
| 737 | 001126 | 112777 | 000377 | 005624 |       | MOV             | #377, @RPDS    | ; CLEAR ATTN                        |
| 738 | 001134 | 032777 | 004000 | 005616 |       | BIT             | #B11, @RPDS    | ; DONE?                             |
| 739 | 001142 | 001402 |        |        |       | BEQ             | .-6            | ; YES                               |
| 740 | 001144 | 104074 |        |        |       | ERR+ER+CS+DS+DA |                | ; NO- SEEK INCOMPLETE ON PASS2 SEEK |
| 741 | 001146 | 000741 |        |        |       | BR              | P2L1           | ; TRY AGAIN                         |
| 742 | 001150 | 012777 | 176650 | 005616 |       | MOV             | #-600., @RPWC  | ; READ ONE CYLINDER OF HEADERS INTO |
| 743 | 001156 | 012777 | 007244 | 005612 |       | MOV             | #INBUF, @RPBA  | ; BUFFER                            |
| 744 | 001164 | 052777 | 014000 | 005576 |       | BIS             | #14000, @RPCS  | ; 10/15 HEADER MODE                 |
| 745 | 001172 | 112777 | 000005 | 005570 |       | MOV             | #5, @RPCS      | ; READ HEADERS                      |
| 746 | 001200 | 032777 | 100200 | 005562 |       | BIT             | #B15+B7, @RPCS | ; ERROR OR DONE                     |
| 747 | 001206 | 001774 |        |        |       | BEQ             | .-6            | ; NOT YET                           |
| 748 | 001210 | 100002 |        |        |       | BPL             | P2N1           | ; DONE                              |
| 749 | 001212 | 104074 |        |        |       | ERR+ER+DS+CS+DA |                | ; ERROR ON READ HEADER OP.          |
| 750 | 001214 | 000730 |        |        |       | BR              | P2L2           | ; RECYCLE                           |
| 751 |        |        |        |        |       |                 |                |                                     |
| 752 |        |        |        |        |       |                 |                |                                     |
| 753 |        |        |        |        |       |                 |                |                                     |
| 754 | 001216 | 005067 | 005504 |        | P2N1: | CLR             | HED            | ; START ADDRESS CHECKING            |
| 755 | 001222 | 005067 | 005502 |        |       | CLR             | SEC            | ; INITIALIZE GOOD DATA              |
| 756 | 001226 | 012704 | 007244 |        |       | MOV             | #INBUF, R4     | ; POINTER TO DATA READ              |
| 757 | 001232 | 004767 | 002222 |        | P2L3: | JSR             | PC, CHKAD      | ; CHECK DATA                        |
| 758 | 001236 | 000240 |        |        |       | NOP             |                | ; NO LOOPING                        |
| 759 | 001240 | 005267 | 005464 |        |       | INC             | SEC            | ; ADVANCE SEC#                      |
| 760 | 001244 | 026727 | 005460 | 000011 |       | CMP             | SEC, #9.       | ; OVFL0?                            |
| 761 | 001252 | 101002 |        |        |       | BHI             | .-6            | ; YES                               |
| 762 | 001254 | 000167 | 177752 |        |       | JMP             | P2L3           | ; NO- CHECK NEXT ADDRESS            |
| 763 | 001260 | 005067 | 005444 |        |       | CLR             | SEC            |                                     |
| 764 | 001264 | 005267 | 005436 |        |       | INC             | HED            | ; ADVANCE HEAD#                     |
| 765 | 001270 | 026727 | 005432 | 000023 |       | CMP             | HED, #19.      | ; OVFL0?                            |
| 766 | 001276 | 101002 |        |        |       | BHI             | .-6            | ; YES                               |
| 767 | 001300 | 000167 | 177726 |        |       | JMP             | P2L3           | ; NO- CHECK NEXT ADDRESS            |
| 768 | 001304 | 005067 | 005416 |        |       | CLR             | HED            |                                     |
| 769 | 001310 | 005267 | 005410 |        |       | INC             | CYL            | ; ADVANCE CYL#                      |
| 770 | 001314 | 026727 | 005404 | 000625 |       | CMP             | CYL, #405.     | ; DONE ALL?                         |
| 771 | 001322 | 101002 |        |        |       | BHI             | 1\$            | ; YES                               |
| 772 | 001324 | 000167 | 177546 |        |       | JMP             | P2L2           | ; NO- READ ANOTHER BLOCK            |
| 773 | 001330 |        |        |        | 1\$:  | PNTM            | ENDM1          |                                     |
| 774 | 001330 | 012700 | 006405 |        |       | MOV             | #ENDM1, RO     | ; PRINT MESSAGE                     |
| 775 | 001334 | 004767 | 005270 |        |       | JSR             | PC, TYP0UT     | ; POINTED TO BY ENDM1               |
| 776 | 001340 | 000000 |        |        |       | HALT            |                |                                     |

H02

RF11C DISK PACK FORMATTER MACY11 27(732) 04-NOV-76 14:24 PAGE 21  
DZRPD.P11 \*\* STANDARD FORMATTER \*\*

777  
778  
779

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780 .SBTTL ** SINGLE HEADER FORMATTER **
781
782 ;THIS ROUTINE ALLOWS THE OPERATOR TO SPECIFY A PARTICULAR
783 ;HEADER TO BE FORMATTED AND THEN VERIFIED. THE STARTING ADDR
784 ;IS 250.
785
786 001342 012706 000600 START2: MOV #START1,SP ;SET STACK POINTER
787 001346 012767 000340 176422 MOV #P7,CC ;LOCKOUT PI
788 001354 000005 RESET ;CLEAR THE WORLD
789 001356 004767 001546 JSR PC,UNIQ ;GET UNIT
790 001362 PNTM HDMS
791 001362 012700 006116 MOV #HDMS,RO ;PRINT MESSAGE
792 001366 004767 005236 JSR PC,TYP0UT ;POINTED TO BY HDMS
793 001372 HL1: PNTM OLDMS
794 001372 012700 006207 MOV #OLDMS,RO ;PRINT MESSAGE
795 001376 004767 005226 JSR PC,TYP0UT ;POINTED TO BY OLDMS
796 001402 012705 000625 MOV #405,R5 ;HIGHEST CYLINDER
797 001406 004767 001644 JSR PC,PARIN ;FETCH PARAMETER
798 001412 000767 BR HL1 ;ERROR RECYCLE
799 001414 016767 005272 005316 MOV WORK1,CYLA ;SAVE VALUE
800 001422 012705 000023 MOV #19,R5 ;HIGHEST TRACK
801 001426 004767 001624 JSR PC,PARIN ;FETCH PARAMETER
802 001432 000757 BR HL1 ;ERROR RECYCLE
803 001434 016767 005252 005300 MOV WORK1,HEDA ;SAVE VALUE
804 001442 004767 002202 JSR PC,TTIO ;FETCH PARAMETER
805 001446 000751 BR HL1 ;ERROR RECYCLE
806 001450 020027 000011 CMP RO,#9. ;HIGHEST SECTOR
807 001454 101346 BHI HL1 ;TOO BIG
808 001456 010067 005262 HL2: MOV RO,SECA ;SAVE VALUE
809 001462 PNTM NEWSMS
810 001462 012700 006222 MOV #NEWSMS,RO ;PRINT MESSAGE
811 001466 004767 005136 JSR PC,TYP0UT ;POINTED TO BY NEWSMS
812 001472 012705 000625 MOV #405,R5 ;HIGHEST CYLINDER
813 001476 004767 001554 JSR PC,PARIN ;FETCH PARAMETER
814 001502 000767 BR HL2 ;ERROR RECYCLE
815 001504 016767 005202 005212 MOV WORK1,CYL ;SAVE VALUE
816 001512 012705 000023 MOV #19,R5 ;HIGHEST TRACK
817 001516 004767 001534 JSR PC,PARIN ;FETCH PARAMETER
818 001522 000757 BR HL2 ;ERROR RECYCLE
819 001524 016767 005162 005174 MOV WORK1,HED ;SAVE VALUE
820 001532 004767 002112 JSR PC,TTIO ;FETCH PARAMETER
821 001536 000751 BR HL2 ;ERROR RECYCLE
822 001540 020027 000011 CMP RO,#9. ;HIGHEST SECTOR
823 001544 101346 BHI HL2 ;TOO BIG
824 001546 010067 005156 MOV RO,SEC ;SAVE VALUE
825
826
827
828 001552 005067 005466 HGO: CLR INBUF ;HWRD1=0
829 001556 016767 005146 005464 MOV SEC,INBUF+4 ;HWRD3=SECTOR
830 001564 016767 005134 005454 MOV CYL,INBUF+2
831 001572 006167 005450 ROL INBUF+2
832 001576 006167 005444 ROL INBUF+2
833 001602 006167 005440 ROL INBUF+2
834 001606 006167 005434 ROL INBUF+2
835 001612 006167 005430 ROL INBUF+2
  
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|     |        |        |        |        |                 |                  |                               |
|-----|--------|--------|--------|--------|-----------------|------------------|-------------------------------|
| 836 | 001616 | 006167 | 005424 |        | RUL             | INBUF+2          |                               |
| 837 | 001622 | 006167 | 005100 |        | ROL             | HED              |                               |
| 838 | 001626 | 056767 | 005074 | 005412 | BIS             | HED, INBUF+2     |                               |
| 839 | 001634 | 006067 | 005066 |        | ROR             | HED              |                               |
| 840 | 001640 | 042767 | 100001 | 005400 | BIC             | #100001, INBUF+2 |                               |
| 841 | 001646 | 004767 | 001456 |        | HGL1: JSR       | PC, HOME         | ;HOME SEEK                    |
| 842 | 001652 | 012777 | 177775 | 005114 | MOV             | #-3, ARPWC       | ;WORD COUNT                   |
| 843 | 001660 | 012777 | 007244 | 005110 | MOV             | #INBUF, ARPBA    | ;BUFFER ADDRESS               |
| 844 | 001666 | 052777 | 014000 | 005074 | BIS             | #14000, ARPCS    | ;10/15 MODE HEADER OP         |
| 845 | 001674 | 016777 | 005040 | 005076 | MOV             | CYLA, ARPCA      | ;LOAD CYLINDER                |
| 846 | 001702 | 116777 | 005034 | 005076 | MOVB            | HEDA, ARPDA1     | ;TRACK                        |
| 847 | 001710 | 116777 | 005030 | 005066 | MOVB            | SECA, ARPDA      | ;AND SECTOR TO BE CHANGED     |
| 848 | 001716 | 112777 | 000003 | 005044 | MOVB            | #3, ARPCS        | ;REWRITE IT                   |
| 849 | 001724 | 032777 | 100200 | 005036 | BIT             | #B15+B7, ARPCS   | ;ERROR OR DONE?               |
| 850 | 001732 | 001774 |        |        | BEQ             | .-6              | ;NOT YET                      |
| 851 | 001734 | 100002 |        |        | BPL             | HG01             | ;DONE                         |
| 852 | 001736 | 104074 |        |        | ERR+ER+DS+CS+DA |                  | ;ERROR ON WRITE HEADER OP     |
| 853 | 001740 | 000742 |        |        | BR              | HGL1             | ;TRY AGAIN                    |
| 854 | 001742 | 005067 | 005276 |        | HG01: CLR       | INBUF            | ;DESTROY                      |
| 855 | 001746 | 005067 | 005274 |        | CLR             | INBUF+2          | ;OLD                          |
| 856 | 001752 | 005067 | 005272 |        | CLR             | INBUF+4          | ;DATA                         |
| 857 | 001756 | 004767 | 001346 |        | HGL2: JSR       | PC, HOME         | ;HOME SEEK                    |
| 858 | 001762 | 012777 | 177775 | 005004 | MOV             | #-3, ARPWC       | ;WORD COUNT                   |
| 859 | 001770 | 012777 | 007244 | 005000 | MOV             | #INBUF, ARPBA    | ;BUFFER                       |
| 860 | 001776 | 016777 | 004736 | 004774 | MOV             | CYLA, ARPCA      | ;DISK                         |
| 861 | 002004 | 116777 | 004732 | 004774 | MOVB            | HEDA, ARPDA1     | ;ADDRESS                      |
| 862 | 002012 | 116777 | 004726 | 004764 | MOVB            | SECA, ARPDA      | ;TO BE FOUND                  |
| 863 | 002020 | 052777 | 014000 | 004742 | BIS             | #14000, ARPCS    | ;10/15 MODE HEADER OP         |
| 864 | 002026 | 112777 | 000005 | 004734 | MOVB            | #5, ARPCS        | ;READ                         |
| 865 | 002034 | 032777 | 100200 | 004726 | BIT             | #B15+B7, ARPCS   | ;ERROR OR DONE?               |
| 866 | 002042 | 001774 |        |        | BEQ             | .-6              | ;NOT YET                      |
| 867 | 002044 | 100002 |        |        | BPL             | HG02             | ;DONE                         |
| 868 | 002046 | 104074 |        |        | ERR+ER+DS+CS+DA |                  | ;ERROR ON READING NEW HEADEF. |
| 869 | 002050 | 000742 |        |        | BR              | HGL2             | ;TRY AGAIN                    |
| 870 | 002052 | 012704 | 007244 |        | HG02: MOV       | #INBUF, R4       | ;R4=DATA POINTER              |
| 871 | 002056 | 004767 | 001376 |        | JSR             | PC, CHKAD        | ;CHECK REWRITTEN HEADER       |
| 872 | 002062 | 000735 |        |        | BR              | HGL2             | ;ERROR - TRY AGAIN            |
| 873 | 002064 |        |        |        | PNTM            | ENDM1            |                               |
| 874 | 002064 | 012700 | 006405 |        | MOV             | #ENDM1, R0       | ;PRINT MESSAGE                |
| 875 | 002070 | 004767 | 004534 |        | JSR             | PC, TYP0UT       | ;POINTED TO BY ENDM1          |
| 876 | 002074 | 000000 |        |        | HALT            |                  |                               |
| 877 |        |        |        |        |                 |                  |                               |
| 878 |        |        |        |        |                 |                  |                               |
| 879 |        |        |        |        |                 |                  |                               |
| 880 |        |        |        |        |                 |                  |                               |
| 881 |        |        |        |        |                 |                  |                               |

```

882 .SBTTL ** SPECIAL FORMATTER **
883
884 ;THIS ROUTINE WILL FORMAT THE ENTIRE PACK USING THE SECTOR
885 ;ADDRESS SEQUENCE SPECIFIED BY THE OPERATOR. THE STARTING
886 ;ADDRESS IS 300.
887
888 002076 012706 000600 START3: MOV #START1,SP ;SET STACK
889 002102 012767 000340 175666 MOV #P7,CC ;LOCKOUT PI
890 002110 000005 RESET ;CLEAR
891 002112 004767 001012 JSR PC,UNIQ ;GET UNIT#
892 002116 SFSL1: PNTM SECMES
893 002116 012700 004025 MOV #SECMES,R0 ;PRINT MESSAGE
894 002122 004767 004502 JSR PC,TYPOUT ;POINTED TO BY SECMES
895 002126 004767 000452 JSR PC,CLRS ;CLEAR FLAG STRING
896 002132 012767 177766 004540 MOV #-10.,TOG1 ;DO BELOW 10 TIMES
897 002140 012705 003046 MOV #NSTR,R5 ;POINTER TO MESSAGE POINTERS
898 002144 012704 003072 MOV #SCSLT,R4
899 002150 012500 SFSL2: MOV (R5)+,R0 ;FETCH POINTER
900 002152 004767 004452 JSR PC,TYPOUT ;FOR MESSAGE
901 002156 004767 000442 JSR PC,SIN ;GET PARAMETER
902 002162 000755 BR SFSL1 ;ERROR
903 002164 005267 004510 INC TOG1 ;DONE?
904 002170 001367 BNE SFSL2 ;NOT YET
905 002172 004767 000476 SFSL3: JSR PC,MKBUF ;GENERATE A TABLE OF ADDRESSES
906 002176 116777 004516 004566 MOVB UNIT,ARPCSI ;RESET
907 002204 004767 001120 JSR PC,H0ME ;SELECTED UNIT
908 002210 005067 004510 CLR CYL ;START AT CYL=0
909 002214 016777 004504 004556 SFSL4: MOV CYL,ARPCA ;LOAD
910 002222 005077 004556 CLR ARPDA ;DISK ADDRESS
911 002226 004767 000540 JSR PC,SEKE ;SEEK
912 002232 000757 BR SFSL3 ;ERROR RETURN
913 002234 012777 176650 004532 MOV #-600.,ARPCW ;GOOD RETURN
914 002242 012777 011544 004526 MOV #OUTBUF,ARPCB ;WC&CA
915 002250 052777 014000 004512 BIS #14000,ARPCS ;10/15 HEADER MODE
916 002256 112777 000003 004504 MOVB #3,ARPCS ;WRITE
917 002264 032777 100200 004476 BIT #B15+B7,ARPCS ;ERROR OR DONE
918 002272 001774 BEQ .-5 ;WAIT
919 002274 100002 BPL SF5N1 ;DONE
920 002276 104074 ERR+ER+DS+CS+DA ;ERROR ON WRITE HEADER OP
921 002300 000745 BR SFSL4 ;REPEAT
922 002302 012767 177470 004370 SF5N1: MOV #-200.,TOG1
923 002310 012705 011546 MOV #OUTBUF+2,R5
924 002314 062715 000100 SFSL5: ADD #100,(R5) ;ADVANCE CYLINDER ADDRESS
925 002320 062705 000006 ADD #6,R5 ;INDEX
926 002324 005267 004350 INC TOG1 ;DONE?
927 002330 001371 BNE SFSL5 ;NO
928 002332 005267 004366 INC CYL ;ADVANCE CYLINDER
929 002336 026727 004362 000625 CMP CYL,#405. ;DONE?
930 002344 101001 JHI SFCHK ;YES
931 002346 000722 BR SFSL4 ;NO
932 002350 012767 000340 175420 SFCHK: MOV #P7,PS ;LOCKOUT PI
933 002356 116777 004336 004406 MOVB UNIT,ARPCSI ;SET UNIT
934 002364 004767 000740 JSR PC,H0ME ;HOME SEEK
935 002370 005067 004330 CLR CYL ;CYL=0
936 002374 016777 004324 004376 SFCL1: MOV CYL,ARPCA ;TAR=0
937 002402 005077 004376 CLR ARPDA ;SAR=0
  
```

|     |        |        |        |        |        |                 |                |                                   |
|-----|--------|--------|--------|--------|--------|-----------------|----------------|-----------------------------------|
| 938 | 002406 | 004767 | 000300 |        |        | JSR             | PC, SEKE       | :SEEK                             |
| 939 | 002412 | 000756 |        |        |        | BR              | SFCHK          | :ERROR RETURN                     |
| 940 | 002414 | 012777 | 170650 | 004352 |        | MOV             | #-600., @RPWC  | :WC                               |
| 941 | 002422 | 012777 | 0J7244 | 004346 |        | MOV             | #INBUF, @RPBA  | :CA                               |
| 942 |        |        |        |        |        |                 |                |                                   |
| 943 | 002430 | 052777 | 014000 | 004332 |        | BIS             | #14000, @RPCS  | :10/15 HEADER OP                  |
| 944 | 002436 | 112777 | 000005 | 004324 |        | MOVB            | #5, @RPCS      | :READ                             |
| 945 | 002444 | 032777 | 100200 | 004316 |        | BIT             | #B15+B7, @RPCS | :ERROR OR DONE?                   |
| 946 | 002452 | 001774 |        |        |        | BEQ             | -6             | :NOT YET                          |
| 947 | 002454 | 100002 |        |        |        | BPL             | SFCN1          | :JUMP IF DONE                     |
| 948 | 002456 | 104074 |        |        |        | ERR+ER+DS+CS+DA |                | :READ HEADER ERROR                |
| 949 | 002460 | 0J0745 |        |        |        | BR              | SFCL1          | :LOOP                             |
| 950 | 002462 | 012705 | 003072 |        | SFCN1: | MOV             | #SCSLT, R5     | :SETUP SECTOR LIST AND            |
| 951 | 002466 | 012767 | 177766 | 004204 |        | MOV             | #-10., TOG1    | :COUNTER                          |
| 952 | 002470 | 005067 | 004226 |        |        | CLR             | HED            | :SETUP GOOD DATA                  |
| 953 | 002500 | 012704 | 007244 |        |        | MOV             | #INBUF, R4     | :SETUP BUFFER POINTER             |
| 954 | 002504 | 012567 | 004220 |        | SFCL2: | MOV             | (R5)+, SEC     | :FETCH A SECTOR                   |
| 955 | 002510 | 004767 | 000744 |        |        | JSR             | PC, CHKAD      | :CHECK ADDRESS                    |
| 956 | 002514 | 000240 |        |        |        | NOP             |                | :NO LOOPING                       |
| 957 | 002516 | 005267 | 004156 |        |        | INC             | TOG1           | :DONE ONE SURFACE?                |
| 958 | 002522 | 001370 |        |        |        | BNE             | SFCL2          | :NO                               |
| 959 | 002524 | 012705 | 003072 |        |        | MOV             | #SCSLT, R5     | :YES - RESET                      |
| 960 | 002530 | 012767 | 177766 | 004142 |        | MOV             | #-10., TOG1    | :SECTOR PARAMETERS                |
| 961 | 002536 | 005267 | 004164 |        |        | INC             | HED            | :ADVANCE TRACK                    |
| 962 | 002542 | 026727 | 004160 | 000023 |        | CMP             | HED, #19.      | :DONE?                            |
| 963 | 002550 | 101755 |        |        |        | BLOS            | SFCL2          | :NO                               |
| 964 | 002552 | 005067 | 004150 |        |        | CLR             | HED            | :YES - RESET HEAD                 |
| 965 | 002556 | 005267 | 004142 |        |        | INC             | CYL            | :ADVANCE CYLINDER                 |
| 966 | 002562 | 026727 | 004136 | 000625 |        | CMP             | CYL, #405.     | :DONE?                            |
| 967 | 002570 | 101701 |        |        |        | BLOS            | SFCL1          | :NOT YET                          |
| 968 | 002572 |        |        |        |        | PNTM            | ENDM1          |                                   |
| 969 | 002572 | 012700 | 006405 |        |        | MOV             | #ENDM1, R0     | :PRINT MESSAGE                    |
| 970 | 002576 | 004767 | 004026 |        |        | JSR             | PC, TYP0UT     | :POINTED TO BY ENDM1              |
| 971 | 002602 | 000000 |        |        |        | HALT            |                |                                   |
| 972 | 002604 | 012705 | 177742 |        | CLRS:  | MOV             | #-30., R5      | :CLEAR                            |
| 973 | 002610 | 012704 | 003072 |        |        | MOV             | #SCSLT, R4     | :THE SECTOR                       |
| 974 | 002614 | 105024 |        |        | CLRS1: | CLRB            | (R4)+          | :SLOTS AND                        |
| 975 | 002616 | 005205 |        |        |        | INC             | R5             | :FLAG POINTERS                    |
| 976 | 002620 | 001375 |        |        |        | BNE             | CLRS1          | :EXIT                             |
| 977 | 002622 | 000207 |        |        |        | RTS             | PC             | :WHEN DONE                        |
| 978 | 002624 | 004767 | 001140 |        | SIN:   | JSR             | PC, RIN        | :ASSEMBLE                         |
| 979 | 002630 | 004767 | 003662 |        |        | JSR             | PC, TTO        | :ECHO                             |
| 980 | 002634 | 162700 | 000260 |        |        | SUB             | #260, R0       | :A LIST OF                        |
| 981 | 002640 | 020027 | 000011 |        |        | CMP             | R0, #9.        | :LOGICAL SECTOR                   |
| 982 | 002644 | 101012 |        |        |        | BHI             | SIN1           | :NUMBERS                          |
| 983 | 002646 | 005700 |        |        |        | RTS             | PC             | :TOO SMALL?                       |
| 984 | 002650 | 100410 |        |        |        | BMI             | SIN1           | :0-9 ARE LEGAL                    |
| 985 | 002652 | 105760 | 003116 |        |        | TSTB            | SCFLG(R0)      | :HAS THIS NUMBER BEEN USED?       |
| 986 | 002656 | 001005 |        |        |        | BNE             | SIN1           | :ERROR - THIS NUMBER ALREADY USED |
| 987 | 002660 | 105160 | 003116 |        |        | COMB            | SCFLG(R0)      | :SET FLAG                         |
| 988 | 002664 | 010024 |        |        |        | MOV             | R0, (R4)+      | :STORE SEC#                       |
| 989 | 002666 | 062716 | 000002 |        |        | ADD             | #2, (SP)       | :ADVANCE RETURN                   |
| 990 | 002672 | 000207 |        |        | SIN1:  | RTS             | PC             | :AND EXIT                         |
| 991 | 002674 | 012767 | 177754 | 003776 | MKBUF: | MOV             | #-20., TOG1    | :TOG1=COUNTER                     |
| 992 | 002702 | 012705 | 011544 |        |        | MOV             | #OUTBUF, R5    | :R5=POINTER TO BUFFER             |
| 993 | 002706 | 012704 | 003072 |        |        | MOV             | #SCSLT, R4     | :R4=POINTER TO SECTOR LIST        |

|      |        |        |        |        |                 |              |                         |
|------|--------|--------|--------|--------|-----------------|--------------|-------------------------|
| 994  | 002712 | 012767 | 177766 | 003762 | MOV             | #-10., TOG2  | ; TOG2=SECTOR COUNT     |
| 995  | 002720 | 005067 | 003764 |        | CLR             | WORK         |                         |
| 996  | 002724 | 005025 |        | MKBL1: | CLR             | (R5)+        | ; WORD1=0               |
| 997  | 002726 | 016725 | 003756 |        | MOV             | WORK, (R5)+  | ; WORK2=CYL+HEAD        |
| 998  | 002732 | 012425 |        |        | MOV             | (R4)+, (R5)+ | ; WORD3=SECTOR          |
| 999  | 002734 | 005267 | 003742 |        | INC             | TOG2         | ; DONE 10?              |
| 1000 | 002740 | 001371 |        |        | SNE             | MKBL1        | ; NO                    |
| 1001 |        |        |        |        |                 |              |                         |
| 1002 | 002742 | 012704 | 003072 |        | MOV             | #SCSLT, R4   | ; YES - UPDATE POINTER, |
| 1003 | 002746 | 012767 | 177766 | 003726 | MOV             | #-10., TOG2  | ; COUNTER               |
| 1004 | 002754 | 062767 | 000002 | 003726 | ADD             | #2, WORK     | ; AND TRACK             |
| 1005 | 002762 | 005267 | 003712 |        | INC             | TOG1         | ; FINISHED?             |
| 1006 | 002766 | 001356 |        |        | BNE             | MKBL1        | ; NO                    |
| 1007 | 002770 | 000207 |        |        | RTS             | PC           | ; EXIT                  |
| 1008 | 002772 | 112777 | 000377 | 003760 | SEKE: MOVB      | #377, DRPDS  | ; CLEAR ATTN            |
| 1009 | 003000 | 112777 | 000011 | 003762 | MOVB            | #11, DRPCS   | ; SEEK                  |
| 1010 | 003006 | 036777 | 003710 | 003744 | BIT             | ATNB, DRPDS  | ; WAIT FOR              |
| 1011 | 003014 | 001774 |        |        | BEQ             | -6           | ; ATTN                  |
| 1012 | 003016 | 112777 | 000377 | 003734 | MOVB            | #377, DRPDS  | ; CLEAR ATTN            |
| 1013 | 003024 | 032777 | 004000 | 003726 | BIT             | #B11, DRPDS  | ; DONE?                 |
| 1014 | 003032 | 001402 |        |        | BEQ             | +6           |                         |
| 1015 | 003034 | 104474 |        |        | ERM+ER+CS+DS+DA |              | ; SEEK INCOMPLETE       |
| 1016 | 003036 | 000207 |        |        | RTS             | PC           | ; ERROR EXIT            |
| 1017 | 003040 | 062716 | 000002 |        | ADD             | #2, (SP)     | ; GOOD                  |
| 1018 | 003044 | 000207 |        |        | RTS             | PC           | ; EXIT                  |
| 1019 | 003046 | 004113 |        | NSTR:  | NO              |              |                         |
| 1020 | 003050 | 004120 |        |        | N1              |              |                         |
| 1021 | 003052 | 004125 |        |        | N2              |              |                         |
| 1022 | 003054 | 004132 |        |        | N3              |              |                         |
| 1023 | 003056 | 004137 |        |        | N4              |              |                         |
| 1024 | 003060 | 004144 |        |        | N5              |              |                         |
| 1025 | 003062 | 004151 |        |        | N6              |              |                         |
| 1026 | 003064 | 004156 |        |        | N7              |              |                         |
| 1027 | 003066 | 004163 |        |        | N8              |              |                         |
| 1028 | 003070 | 004170 |        |        | N9              |              |                         |
| 1029 | 003072 |        |        | SCSLT: | .REPT           | 12           |                         |
| 1030 |        |        |        |        | .WORD           | 0            |                         |
| 1031 |        |        |        |        | .ENDR           |              |                         |
| 1032 | 003072 | 000000 |        |        | .WORD           | 0            |                         |
| 1033 | 003074 | 000000 |        |        | .WORD           | 00           |                         |
| 1034 | 003076 | 000000 |        |        | .WORD           | 00           |                         |
| 1035 | 003100 | 000000 |        |        | .WORD           | 00           |                         |
| 1036 | 003102 | 000000 |        |        | .WORD           | 00           |                         |
| 1037 | 003104 | 000000 |        |        | .WORD           | 00           |                         |
| 1038 | 003106 | 000000 |        |        | .WORD           | 00           |                         |
| 1039 | 003110 | 000000 |        |        | .WORD           | 00           |                         |
| 1040 | 003112 | 000000 |        |        | .WORD           | 00           |                         |
| 1041 | 003114 | 000000 |        |        | .WORD           | 0            |                         |
| 1042 |        |        |        |        |                 |              |                         |
| 1043 | 003116 |        |        | SCFLG: | .REPT           | 12           |                         |
| 1044 |        |        |        |        | .BYTE           | 0            |                         |
| 1045 |        |        |        |        | .ENDR           |              |                         |
| 1046 | 003116 | 000    |        |        | .BYTE           | 0            |                         |
| 1047 | 003117 | 000    |        |        | .BYTE           | 00           |                         |
| 1048 | 003120 | 000    |        |        | .BYTE           | 00           |                         |
| 1049 | 003121 | 000    |        |        | .BYTE           | 0            |                         |

|      |        |        |        |        |        |              |              |
|------|--------|--------|--------|--------|--------|--------------|--------------|
| 1050 | 003122 | 000    |        |        | .BYTE  | 0            |              |
| 1051 | 003123 | 000    |        |        | .BYTE  | 0            |              |
| 1052 | 003124 | 000    |        |        | .BYTE  | 0            |              |
| 1053 | 003125 | 000    |        |        | .BYTE  | 0            |              |
| 1054 | 003126 | C00    |        |        | .BYTE  | 0            |              |
| 1055 | 003127 | 000    |        |        | .BYTE  | 0            |              |
| 1056 |        |        |        |        |        |              |              |
| 1057 |        |        |        |        |        |              |              |
| 1058 |        |        |        |        |        |              |              |
| 1059 | 003130 |        |        |        | UNIQ:  | PNTM         | UMES         |
| 1060 | 003130 | 012700 | 004014 |        |        | MOV          | #UMES,RO     |
| 1061 | 003134 | 004767 | 003470 |        |        | JSR          | PC,TYP0UT    |
| 1062 | 003140 | 004767 | 000504 |        |        | JSR          | PC,TTIO      |
| 1063 | 003144 | 000771 |        |        |        | BR           | UNIQ         |
| 1064 | 003146 | 020027 | 000007 |        |        | CMP          | RO,#7        |
| 1065 | 003152 | 101366 |        |        |        | BHI          | UNIQ         |
| 1066 | 003154 | 010067 | 003540 |        |        | MOV          | RO,UNIT      |
| 1067 | 003160 | 012700 | 000001 |        |        | MOV          | #1,FD        |
| 1068 | 003164 | 005767 | 003530 |        |        | TST          | UNIT         |
| 1069 | 003170 | 001406 |        |        |        | BEQ          | UNSI         |
| 1070 | 003172 | 016767 | 003522 | 000004 |        | MOV          | UNIT,DS1     |
| 1071 | 003200 | 004767 | 001426 |        |        | JSR          | PC,RTL       |
| 1072 | 003204 | 000001 |        |        | DS1:   | .WORD        | 1            |
| 1073 | 003206 | 010067 | 003510 |        | UNSI:  | MOV          | RO,ATNB      |
| 1074 | 003212 | 116777 | 003502 | 003552 |        | MOVB         | UNIT,DRPCS1  |
| 1075 | 003220 | 032777 | 100000 | 003532 |        | BIT          | #B15,DRPDS   |
| 1076 | 003226 | 001401 |        |        |        | BEQ          | .+4          |
| 1077 | 003230 | 000207 |        |        |        | RTS          | PC           |
| 1078 | 003232 | 104434 |        |        |        | ERM+DS+ER+CS |              |
| 1079 | 003234 | 000766 |        |        |        | BR           | UNSI+4       |
| 1080 | 003236 |        |        |        | SPACE: | PNTM         | S1           |
| 1081 | 003236 | 012700 | 006154 |        |        | MOV          | #S1,RO       |
| 1082 | 003242 | 004767 | 003362 |        |        | JSR          | PC,TYP0UT    |
| 1083 | 003246 | 005367 | 003474 |        |        | DEC          | TTG          |
| 1084 | 003252 | 001371 |        |        |        | BNE          | SPACE        |
| 1085 | 003254 | 000207 |        |        |        | RTS          | PC           |
| 1086 | 003256 | 004767 | 000366 |        | PARIN: | JSR          | PC,TTIO      |
| 1087 | 003262 | 000401 |        |        |        | BR           | .+4          |
| 1088 | 003264 | 000207 |        |        |        | RTS          | PC           |
| 1089 | 003266 | 020027 | 000240 |        |        | CMP          | RO,#240      |
| 1090 | 003272 | 001015 |        |        |        | BNE          | PRX          |
| 1091 | 003274 | 026705 | 003412 |        |        | CMP          | WORK1,R5     |
| 1092 | 003300 | 101012 |        |        |        | BHI          | PRX          |
| 1093 | 003302 | 005267 | 003440 |        |        | INC          | TTG          |
| 1094 | 003306 | 026727 | 003434 | 000005 |        | CMP          | TTG,#5       |
| 1095 | 003314 | 101004 |        |        |        | BHI          | PRX          |
| 1096 | 003316 | 004767 | 177714 |        |        | JSR          | PC,SPACE     |
| 1097 | 003322 | 062716 | 000002 |        |        | ADD          | #2,(SP)      |
| 1098 | 003326 | 000207 |        |        | PRX:   | RTS          | PC           |
| 1099 |        |        |        |        |        |              |              |
| 1100 | 003330 | 112777 | 000377 | 003422 | HOME:  | MOVB         | #377,DRPDS   |
| 1101 | 003336 | 112777 | 000015 | 003424 |        | MOVB         | #15,DRPCS    |
| 1102 | 003344 | 012767 | 000005 | 003666 |        | MOV          | #5,DEBUG+174 |
| 1103 | 003352 | 005367 | 003662 |        | WWW:   | DEC          | DEBUG+174    |
| 1104 | 003356 | 001375 |        |        |        | BNE          | WWW          |
| 1105 | 003360 | 032777 | 002000 | 003372 |        | BIT          | #B10,DRPDS   |

```

;PRINT MESSAGE
;POINTED TO BY UMES
;READ UNIT #
;ERROR RECYCLE
;TOO BIG
;YES
;SAVE IT
;DETERMINE ATTENTION BIT
;NO ROTATION
;IF 0
;NUMBER OF ROTATES
;TO DETERMINE ATTENTION BIT
;IS PUT HERE
;SAVE BIT
;SELECT UNIT
;IS IT READY?
;NO
;YES - EXIT
;SELECTED UNIT READY NOT UP
;LOOP UNTIL FIXED

;PRINT MESSAGE
;POINTED TO BY S1
;PRINT NUMBER OF SPACES
;IN TTG. THEN
;EXIT
;READ SOME NUMBERS
;THIS IS NOW THE GOOD RETURN
;CR IS ILLEGAL FOR THIS SEQUENCE
;IS IT A SPACE?
;NO - EXIT
;TOO BIG?
;YES - EXIT
;TTG=# OF SPACES
;TOO MANY
;YES
;JUSTIFY NEXT ENTRY
;SKIP FOR GOOD RETURN
;EXIT

;CLEAR ATTN BITS
;HOME SEEK
;WAIT FOR
;SEEK TO
;START
;IS SEEK UNDERWAY?
  
```

|      |        |        |        |        |              |              |        |                                  |
|------|--------|--------|--------|--------|--------------|--------------|--------|----------------------------------|
| 1106 | 003366 | 001002 |        |        | BNE          | +6           |        | :YES                             |
| 1107 | 003370 | 104434 |        |        | ERM+ER+DS+CS |              |        | :SEEK NOT UNDERWAY               |
| 1108 | 003372 | 000756 |        |        | BR           | HOME         |        | :FIX IT                          |
| 1109 | 003374 | 036777 | 003322 | 003356 | BIT          | ATNB,DRPDS   |        | :WAIT FOR                        |
| 1110 | 003402 | 001774 |        |        | BEJ          | -6           |        | :ATTENTION TO SET                |
| 1111 | 003404 | 032777 | 004000 | 003346 | BIT          | #811,DRPDS   |        | :SEEK INCOMPLETE?                |
| 1112 | 003412 | 001402 |        |        | SEQ          | +6           |        | :NO                              |
| 1113 | 003414 | 104434 |        |        | ERM+ER+DS+CS |              |        | :DEVICE STATUS ERROR             |
| 1114 | 003416 | 000744 |        |        | BR           | HOME         |        | :LOOP                            |
| 1115 | 003420 | 132777 | 000023 | 003334 | BITB         | #23,DRPDS1   |        | :ANY ERRORS?                     |
| 1116 | 003426 | 001402 |        |        | BEJ          | +6           |        | :NO                              |
| 1117 | 003430 | 104434 |        |        | ERM+ER+CS+DS |              |        | :DEVICE STATUS ERROR             |
| 1118 | 003432 | 000736 |        |        | SR           | HOME         |        | :LOOP                            |
| 1119 | 003434 | 112777 | 000001 | 003326 | MOVB         | #1,DRPCS     |        | :RESET THE RP11                  |
| 1120 | 003442 | 112777 | 000377 | 003310 | MOVB         | #377,DRPDS   |        | :CLEAR ATTN BITS                 |
| 1121 | 003450 | 116777 | 003244 | 003314 | MOVB         | UNIT,DRPCS1  |        | :RELOAD UNIT#                    |
| 1122 | 003456 | 000207 |        |        | RTS          | PC           |        | :EXIT                            |
| 1123 | 003460 | 062704 | 000002 |        | ADD          | #2,R4        | CHKAD: | :SKIP 1ST WORD                   |
| 1124 | 003464 | 012467 | 003244 |        | MCV          | (R4)+HEDR    |        | :FETCH HEAD AND                  |
| 1125 | 003470 | 016767 | 003240 | 003234 | MOV          | HEDR,CYLR    |        | :CYLINDER READ                   |
| 1126 | 003476 | 006067 | 003232 |        | ROR          | HEDR         |        | :JUSTIFY HEAD                    |
| 1127 | 003502 | 006067 | 003224 |        | ROR          | CYLR         |        |                                  |
| 1128 | 003506 | 006067 | 003220 |        | ROR          | CYLR         |        |                                  |
| 1129 | 003512 | 006067 | 003214 |        | ROR          | CYLR         |        |                                  |
| 1130 | 003516 | 006067 | 003210 |        | ROR          | CYLR         |        |                                  |
| 1131 | 003522 | 006067 | 003204 |        | ROR          | CYLR         |        |                                  |
| 1132 | 003526 | 006067 | 003200 |        | ROR          | CYLR         |        |                                  |
| 1133 | 003532 | 012467 | 003200 |        | MOV          | (R4)+SECR    |        | :FETCH SECTOR READ               |
| 1134 | 003536 |        |        |        | ANDI         | 17,SECR      |        |                                  |
| 1135 | 003536 | 042767 | 177760 | 003172 | BIC          | #-17-1,SECR  |        | :MASK 17 APPLIED TO SECR         |
| 1136 | 003544 |        |        |        | ANDI         | 37,HEDR      |        |                                  |
| 1137 | 003544 | 042767 | 177740 | 003162 | BIC          | #-37-1,HEDR  |        | :MASK 37 APPLIED TO HEDR         |
| 1138 | 003552 |        |        |        | ANDI         | 777,CYLR     |        |                                  |
| 1139 | 003552 | 042767 | 177000 | 003152 | BIC          | #-777-1,CYLR |        | :MASK 777 APPLIED TO CYLR        |
| 1140 | 003560 | 026767 | 003140 | 003144 | CMP          | CYL,CYLR     |        | :IS CYL# OK?                     |
| 1141 | 003566 | 001013 |        |        | BNE          | CMER         |        | :NO                              |
| 1142 | 003570 | 026767 | 003132 | 003136 | CMP          | HED,HEDR     |        | :IS TRACK# OK                    |
| 1143 | 003576 | 001007 |        |        | BNE          | CMER         |        | :NO                              |
| 1144 | 003600 | 026767 | 003124 | 003130 | CMP          | SEC,SECR     |        | :IS SECTOR# OK?                  |
| 1145 | 003606 | 001003 |        |        | BNE          | CMER         |        | :NO                              |
| 1146 | 003610 | 062716 | 000002 |        | ADD          | #2,(SP)      |        | :ALL ADDRESSES                   |
| 1147 | 003614 | 000207 |        |        | RTS          | PC           |        | :OK - EXIT                       |
| 1148 | 003616 | 104500 |        |        | ERM+HD       |              | CMER:  | :HEADER COMPARE ERROR            |
| 1149 | 003620 | 000207 |        |        | RTS          | PC           |        | :ERROR EXIT                      |
| 1150 | 003622 |        |        |        | SUBER:       | PNTM         |        |                                  |
| 1151 | 003622 | 012700 | 006235 |        | MOV          | #SUBRMS,RO   |        | :PRINT MESSAGE                   |
| 1152 | 003626 | 004767 | 002776 |        | JSR          | PC,TYP0UT    |        | :POINTED TO BY SUBRMS            |
| 1153 | 003632 | 016600 | 000022 |        | MOV          | 22(SP),RO    |        | :FETCH PC OF SUBROUTINE CALL     |
| 1154 | 003636 | 162700 | 000004 |        | SUB          | #4,RO        |        | :PC-4=ADDRESS OF SUBROUTINE CALL |
| 1155 | 003642 | 004767 | 002620 |        | JSR          | PC,OCTPNT    |        | :PRINT ADDRESS                   |
| 1156 | 003646 | 000207 |        |        | RTS          | PC           |        | :EXIT                            |
| 1157 |        |        |        |        |              |              |        |                                  |
| 1158 | 003650 | 012767 | 000005 | 003070 | TTIO:        | MOV          | #5,TTG | :INPUT UP TO 5 OCTAL DIGITS      |
| 1159 | 003656 | 005067 | 003030 |        | CLR          | WORK1        |        | :CLEAR WORK REGISTER             |
| 1160 | 003662 | 004767 | 000102 |        | TTIL:        | JSR          | PC,RIN | :READ TTY CHARACTER INTO RO      |
| 1161 | 003666 | 020027 | 000215 |        | CMP          | RO,#215      |        | :IS IT CR?                       |

|      |        |        |        |  |      |             |                         |
|------|--------|--------|--------|--|------|-------------|-------------------------|
| 1162 | 003672 | 001427 |        |  | BEQ  | TTIX        | :YES                    |
| 1163 | 003674 | 004767 | 002616 |  | JSR  | PC, TTO     | :ECHO                   |
| 1164 | 003700 | 020027 | 000267 |  | CMP  | RO, #267    | :TOO BIG?               |
| 1165 | 003704 | 101030 |        |  | BHI  | TTRX        | :YES                    |
| 1166 | 003706 | 020027 | 000257 |  | CMP  | RO, #257    | :TOO SMALL?             |
| 1167 | 003712 | 101425 |        |  | BLOS | TTRX        | :YES                    |
| 1168 | 003714 | 005367 | 003026 |  | DEC  | TTG         | :COUNT DIGIT            |
| 1169 | 003720 | 100422 |        |  | BMI  | TTRX        | :TOO MANY?              |
| 1170 | 003722 |        |        |  | ANDI | 7, RO       | :NO - MASK IT           |
| 1171 | 003722 | 042700 | 177770 |  | BIC  | #-7-1, RO   | :MASK 7 APPLIED TO RO   |
| 1172 | 003726 | 000241 |        |  | CLC  |             | :AND                    |
| 1173 | 003730 | 006167 | 002756 |  | ROL  | WORK1       | :SHIFT                  |
| 1174 | 003734 | 006167 | 002752 |  | ROL  | WORK1       | :WORK REGISTER          |
| 1175 | 003740 | 006167 | 002746 |  | ROL  | WORK1       | :3 PLACES               |
| 1176 | 003744 | 060067 | 002742 |  | ADD  | RO, WORK1   | :ADD NEW NUMBER         |
| 1177 | 003750 | 000744 |        |  | BR   | TTIL        | :GET NEXT ONE           |
| 1178 | 003752 | 004767 | 002540 |  | JSR  | PC, TTO     |                         |
| 1179 | 003756 | 062716 | 000002 |  | ADD  | #2, (SP)    | :SKIP RETURN            |
| 1180 | 003762 | 016700 | 002724 |  | MOV  | WORK1, RO   |                         |
| 1181 | 003766 | 000207 |        |  | RTS  | PC          |                         |
| 1182 | 003770 | 005267 | 173564 |  | INC  | TKS         | :FETCH A CHARACTER      |
| 1183 | 003774 | 105767 | 173560 |  | TSTB | TKS         | :WAIT                   |
| 1184 | 004000 | 100375 |        |  | BPL  | -4          | :FOR IT                 |
| 1185 | 004002 | 116700 | 173554 |  | MOVB | TKB, RO     | :READ IT INTO RO        |
| 1186 | 004006 |        |        |  | ANDI | 377, RO     |                         |
| 1187 | 004006 | 042700 | 177400 |  | BIC  | #-377-1, RO | :MASK 377 APPLIED TO RO |
| 1188 | 004012 | 000207 |        |  | RTS  | PC          | :AND EXIT               |

|      |        |        |        |        |         |        |  |
|------|--------|--------|--------|--------|---------|--------|--|
| 1192 | 004014 | 023046 | 047125 | 052111 | UMES:   | .ASCII | /&&UNIT: 2/  |
| 1193 | 004022 | 020072 | 100    |        |         |        |  |
| 1194 | 004025 | 046    | 044446 | 050116 | SECMES: | .ASCII | /&&INPUT THE SECTOR NUMBERS(0-9) IN THE ORDER DESIPED.2/ |
| 1195 | 004032 | 052125 | 052040 | 042510 |         |        |  |
| 1196 | 004040 | 051440 | 041505 | 047524 |         |        |  |
| 1197 | 004046 | 020122 | 052516 | 041115 |         |        |  |
| 1198 | 004054 | 051105 | 024123 | 026460 |         |        |  |
| 1199 | 004062 | 024471 | 044440 | 020116 |         |        |  |
| 1200 | 004070 | 044124 | 020105 | 051117 |         |        |  |
| 1201 | 004076 | 042504 | 020122 | 042504 |         |        |  |
| 1202 | 004104 | 044523 | 042522 | 027104 |         |        |  |
| 1203 | 004112 | 100    |        |        |         |        |  |
| 1204 | 004113 | 046    | 035060 | 040040 | N0:     | .ASCII | /&0: 2/  |
| 1205 | 004120 | 030446 | 020072 | 100    | N1:     | .ASCII | /&1: 2/  |
| 1206 | 004125 | 046    | 035062 | 040040 | N2:     | .ASCII | /&2: 2/  |
| 1207 | 004132 | 031446 | 020072 | 100    | N3:     | .ASCII | /&3: 2/  |
| 1208 | 004137 | 046    | 035064 | 040040 | N4:     | .ASCII | /&4: 2/  |
| 1209 | 004144 | 032446 | 020072 | 100    | N5:     | .ASCII | /&5: 2/  |
| 1210 | 004151 | 046    | 035066 | 040040 | N6:     | .ASCII | /&6: 2/  |
| 1211 | 004156 | 033446 | 020072 | 100    | N7:     | .ASCII | /&7: 2/  |
| 1212 | 004163 | 046    | 035070 | 040040 | N8:     | .ASCII | /&8: 2/  |
| 1213 | 004170 | 034446 | 020072 | 100    | N9:     | .ASCII | /&9: 2/  |
| 1214 |        |        |        |        |         |        |  |
| 1215 | 004175 | 046    | 051446 | 052105 | SWMES:  | .ASCII | /&&SET THE FORMAT ENABLE SWITCH./                        |
| 1216 | 004202 | 052040 | 042510 | 043040 |         |        |  |
| 1217 | 004210 | 051117 | 040515 | 020124 |         |        |  |



|      |        |        |        |        |         |        |   |
|------|--------|--------|--------|--------|---------|--------|---|
| 1218 | 004216 | 047105 | 041101 | 042514 |         |        |   |
| 1219 | 004224 | 051440 | 044527 | 041524 |         |        |   |
| 1220 | 004232 | 027110 |        |        |         |        |   |
| 1221 | 004234 | 051446 | 052105 | 052040 |         | .ASCII | /3SET THE RP11 WRITE ENABLE SWITCH./          |
| 1222 | 004242 | 042510 | 051040 | 030520 |         |        |   |
| 1223 | 004250 | 020061 | 051127 | 052111 |         |        |   |
| 1224 | 004256 | 020105 | 047105 | 041101 |         |        |   |
| 1225 | 004264 | 042514 | 051440 | 044527 |         |        |   |
| 1226 | 004272 | 041524 | 027110 |        |         |        |   |
| 1227 | 004276 | 051446 | 052105 | 052040 |         | .ASCII | /3SET THE SELECTED UNIT WRITE ENABLE SWITCH./ |
| 1228 | 004304 | 042510 | 051440 | 046105 |         |        |   |
| 1229 | 004312 | 041505 | 042524 | 020104 |         |        |   |
| 1230 | 004320 | 047125 | 052111 | 053440 |         |        |   |
| 1231 | 004326 | 044522 | 042524 | 042440 |         |        |   |
| 1232 | 004334 | 040516 | 046102 | 020105 |         |        |   |
| 1233 | 004342 | 053523 | 052111 | 044103 |         |        |   |
| 1234 | 004350 | 056    |        |        |         |        |   |
| 1235 | 004351 | 046    | 052123 | 044522 |         | .ASCII | /8STRIKE ANY TELETYPE KEY WHEN READY.80/      |
| 1236 | 004356 | 042513 | 040440 | 054516 |         |        |   |
| 1237 | 004364 | 052040 | 046105 | 052105 |         |        |   |
| 1238 | 004372 | 050131 | 020105 | 042513 |         |        |   |
| 1239 | 004400 | 020131 | 044127 | 047105 |         |        |   |
| 1240 | 004406 | 051040 | 040505 | 054504 |         |        |   |
| 1241 | 004414 | 023056 | 100    |        |         |        |   |
| 1242 |        |        |        |        |         |        |   |
| 1243 | 004417 | 046    | 051046 | 051505 | NSWMES: | .ASCII | /88RESET THE FORMAT ENABLE SWITCH TO NORMAL./ |
| 1244 | 004424 | 052105 | 052040 | 042510 |         |        |   |
| 1245 | 004432 | 043040 | 051117 | 040515 |         |        |   |
| 1246 | 004440 | 020124 | 047105 | 041101 |         |        |   |
| 1247 | 004446 | 042514 | 051440 | 044527 |         |        |   |
| 1248 | 004454 | 041524 | 020110 | 047524 |         |        |   |
| 1249 | 004462 | 047040 | 051117 | 040515 |         |        |   |
| 1250 | 004470 | 027114 |        |        |         |        |   |
| 1251 | 004472 | 051446 | 051124 | 045511 |         | .ASCII | /8STRIKE ANY TELETYPE KEY WHEN READY.80/      |
| 1252 | 004500 | 020105 | 047101 | 020131 |         |        |   |
| 1253 | 004506 | 042524 | 042514 | 054524 |         |        |   |
| 1254 | 004514 | 042520 | 045440 | 054505 |         |        |   |
| 1255 | 004522 | 053440 | 042510 | 020116 |         |        |   |
| 1256 | 004530 | 042522 | 042101 | 027131 |         |        |   |
| 1257 | 004536 | 040046 |        |        |         |        |   |
| 1258 |        |        |        |        |         |        |   |
| 1259 |        |        |        |        |         | .EVEN  |   |
| 1260 |        |        |        |        |         |        |   |
| 1261 | 004540 | 032777 | 040000 | 002222 | HRDR:   | BIT    | #B14,2RPCS ;TEST HARD ERROR BIT               |
| 1262 | 004546 | 001001 |        |        |         | BNE    | HRN1 ;OK IF SET                               |
| 1263 | 004550 | 104020 |        |        |         | ERR+CS | ;HARD ERROR NOT SET. C(SP) POINTS TO CAUSE    |
| 1264 | 004552 | 032777 | 100000 | 002210 | HRN1:   | BIT    | #B15,2RPCS ;TEST ERROR BIT IN RPCS            |
| 1265 | 004560 | 001401 |        |        |         | BEQ    | +4 ;OK IF SET                                 |
| 1266 | 004562 | 000207 |        |        |         | RTS    | PC ;OK- EXIT                                  |
| 1267 | 004564 | 104020 |        |        |         | ERR+CS | ;RPCS ERROR NOT SET. C(SP) POINTS TO CAUSE    |
| 1268 | 004566 | 000207 |        |        |         | RTS    | PC ;EXIT                                      |
| 1269 | 004570 | 032777 | 040000 | 002172 | SFTER:  | BIT    | #B14,2RPCS ;TEST HARD ERROR BIT               |
| 1270 | 004576 | 001765 |        |        |         | BEQ    | HRN1 ;OK IF CLEAR                             |
| 1271 | 004600 | 104020 |        |        |         | ERR+CS | ;SOFT ERROR SET HARD ERROR BIT                |
| 1272 | 004602 | 000763 |        |        |         | BR     | HRN1 ;TEST INCLUSIVE ERROR                    |
| 1273 | 004604 | 017667 | 000000 | 002142 | RTR:    | MOV    | 2(SP),ROTOG ;FETCH SHIFT COUNT                |

|      |        |        |        |        |        |      |              |                                      |
|------|--------|--------|--------|--------|--------|------|--------------|--------------------------------------|
| 1274 | 004612 | 062716 | 000002 |        |        | ADD  | #2, (SP)     | :STEP RETURN VECTOR                  |
| 1275 | 004616 | 000241 |        |        | RRLUP: | CLC  |              | :CLEAR THE LINK                      |
| 1276 | 004620 | 006000 |        |        |        | ROR  | RO           | :SHIFT RO RIGHT ONCE                 |
| 1277 | 004622 | 005367 | 002126 |        |        | DEC  | ROTOG        | :FINISHED?                           |
| 1278 | 004626 | 001373 |        |        |        | BNE  | RRLUP        | :NO                                  |
| 1279 | 004630 | 000207 |        |        |        | RTS  | PC           | :YES- EXIT                           |
| 1280 | 004632 | 017667 | 000000 | 002114 | RTL:   | MOV  | 2(SP), ROTOG | :FETCH SHIFT COUNT                   |
| 1281 | 004640 | 062716 | 000002 |        |        | ADD  | #2, (SP)     | :STEP RETURN VECTOR                  |
| 1282 | 004644 | 000241 |        |        | RLLUP: | CLC  |              | :CLEAR LINK                          |
| 1283 | 004646 | 006100 |        |        |        | ROL  | RO           | :SHIFT RO LEFT ONCE                  |
| 1284 | 004650 | 005367 | 002100 |        |        | DEC  | ROTOG        | :FINISHED?                           |
| 1285 | 004654 | 001373 |        |        |        | BNE  | RLLUP        | :NO                                  |
| 1286 | 004656 | 000207 |        |        |        | RTS  | PC           | :YES- EXIT                           |
| 1287 |        |        |        |        |        |      |              |                                      |
| 1288 |        |        |        |        |        |      |              |                                      |
| 1289 | 004660 | 032767 | 002000 | 172702 | ERROR: | BIT  | #B10, SR     | :RING THE BELL?                      |
| 1290 | 004666 | 001404 |        |        |        | BEQ  | 15           | :BRANCH IF NO                        |
| 1291 | 004670 |        |        |        |        | PNTM | BELL         |                                      |
| 1292 | 004670 | 012700 | 006424 |        |        | MOV  | #BELL, RO    | :PRINT MESSAGE                       |
| 1293 | 004674 | 004767 | 001730 |        |        | JSR  | PC, TYP0UT   | :POINTED TO BY BELL                  |
| 1294 | 004700 | 032767 | 020000 | 172662 | 15:    | BIT  | #B13, SR     | :TEST T10 DELETE SWITCH              |
| 1295 | 004706 | 001103 |        |        |        | BNE  | ERXIT1       | :EXIT NOW IF T10 DELETE SWITCH IS UP |
| 1296 | 004710 | 004567 | 001512 |        |        | JSR  | R5, SAV05    | :SAVE ACO-5                          |
| 1297 | 004714 | 012700 | 006163 |        |        | MOV  | #ERMS1, RO   | :MESSAGE POINTER TO KO               |
| 1298 | 004720 | 004767 | 001704 |        |        | JSR  | PC, TYP0UT   | :PRINT MESSAGE                       |
| 1299 | 004724 | 016600 | 000014 |        |        | MOV  | 14(SP), RO   | :FETCH SAVED PC                      |
| 1300 | 004730 | 162700 | 000002 |        |        | SUB  | #2, RO       | :FIND ADDRESS OF ERROR CALL          |
| 1301 | 004734 | 010005 |        |        |        | MOV  | RO, R5       | :PUT POINTER IN R5                   |
| 1302 | 004736 | 004767 | 001524 |        |        | JSR  | PC, OCTPNT   | :PRINT PC                            |
| 1303 | 004742 | 012700 | 006366 |        |        | MOV  | #STMS, RO    | :MESSAGE POINTER                     |
| 1304 | 004746 | 004767 | 001656 |        |        | JSR  | PC, TYP0UT   | :PRINT "PS="                         |
| 1305 | 004752 | 016600 | 000016 |        |        | MOV  | 16(SP), RO   | :FETCH SAVED STATUS                  |
| 1306 | 004756 | 004767 | 001504 |        |        | JSR  | PC, OCTPNT   | :AND PRINT IT                        |
| 1307 | 004762 | 032715 | 000400 |        |        | BIT  | #B8, (R5)    | :TRAP?                               |
| 1308 | 004766 | 001402 |        |        |        | BEQ  | GOGO         | :NO                                  |
| 1309 | 004770 | 004767 | 176626 |        |        | JSR  | PC, SUBER    | :SUBROUTINE ERROR                    |
| 1310 | 004774 | 032715 | 000020 |        | GOGO:  | BIT  | #B4, (R5)    | :RPCS?                               |
| 1311 | 005000 | 001402 |        |        |        | BEQ  | .+6          | :NO                                  |
| 1312 | 005002 | 004767 | 000230 |        |        | JSR  | PC, CSTYPE   | :YES                                 |
| 1313 | 005006 | 032715 | 000010 |        |        | BIT  | #B3, (R5)    | :RPER?                               |
| 1314 | 005012 | 001402 |        |        |        | BEQ  | .+6          | :NO                                  |
| 1315 | 005014 | 004767 | 000262 |        |        | JSR  | PC, ERTYPE   | :YES                                 |
| 1316 | 005020 | 032715 | 000004 |        |        | BIT  | #B2, (R5)    | :RPDS?                               |
| 1317 | 005024 | 001402 |        |        |        | BEQ  | .+6          | :NO                                  |
| 1318 | 005026 | 004767 | 000272 |        |        | JSR  | PC, DSTYPE   | :YES                                 |
| 1319 | 005032 | 032715 | 000040 |        |        | BIT  | #B5, (R5)    | :RPDA & RPCA?                        |
| 1320 | 005036 | 001402 |        |        |        | BEQ  | .+6          | :NO                                  |
| 1321 | 005040 | 004767 | 000302 |        |        | JSR  | PC, ADTYPE   | :YES                                 |
| 1322 | 005044 | 032715 | 000100 |        |        | BIT  | #H0, (R5)    | :HEADER MESSAGE?                     |
| 1323 | 005050 | 001402 |        |        |        | BEQ  | .+6          | :NO                                  |
| 1324 | 005052 | 004767 | 000616 |        |        | JSR  | PC, HDTYPE   | :YES                                 |
| 1325 | 005056 | 032715 | 000001 |        |        | BIT  | #B0, (R5)    | :B0(1) FOR GOOD/BAD                  |
| 1326 | 005062 | 001402 |        |        |        | BEQ  | .+6          | :SKIP IF=0                           |
| 1327 | 005064 | 004767 | 000104 |        |        | JSR  | PC, GBTYPE   | :GOOD/BAD                            |
| 1328 | 005070 | 032715 | 000002 |        |        | BIT  | #B1, (R5)    | :B1(1) FOR DATA                      |
| 1329 | 005074 | 001402 |        |        |        | BEQ  | .+6          | :SKIP IF=0                           |

|      |        |        |        |        |         |      |              |  |
|------|--------|--------|--------|--------|---------|------|--------------|--|
| 1330 | 005076 | 004767 | 000156 |        |         | JSR  | PC, DATYPE   | : DATA                                 |
| 1331 | 005102 | 004567 | 001334 |        | ERXIT:  | JSR  | RS, REST05   | : RESTORE ACO-5                        |
| 1332 | 005106 | 012700 | 000015 |        |         | MOV  | #CR, RO      | : PRINT                                |
| 1333 | 005112 | 004767 | 001400 |        |         | JSR  | PC, TTO      | : CR & LF                              |
| 1334 | 005116 | 105777 | 001646 |        | ERXIT1: | TSTB | DRPCS        | : WAIT FOR DONE                        |
| 1335 | 005122 | 100375 |        |        |         | BPL  | ERXIT1       |  |
| 1336 | 005124 | 032767 | 100000 | 172436 |         | SIT  | #B15, SR     | : HALT ON ERROR?                       |
| 1337 | 005132 | 001401 |        |        |         | BEQ  | IS           |  |
| 1338 | 005134 | 000000 |        |        |         | XX   |              | : ERROR HALT. CONTINUE                 |
| 1339 | 005136 | 000002 |        |        | IS:     | RTI  |              | : EXIT ERROR ROUTINE                   |
| 1340 |        |        |        |        |         |      |              |  |
| 1341 |        |        |        |        |         |      |              |  |
| 1342 |        |        |        |        |         |      |              |  |
| 1343 | 005140 | 032767 | 020000 | 172422 | LERCHK: | BIT  | #B13, SR     | : SR13(1)=LOOP ON ERROR                |
| 1344 | 005146 | 001002 |        |        |         | BNE  | .+E          | : EXIT IF 1                            |
| 1345 | 005150 | 062716 | 000004 |        |         | ADD  | #4, (SP)     | : ADVANCE RETURN VECTOR OVER LOOP JUMP |
| 1346 | 005154 | 000207 |        |        | LERXT:  | RTS  | PC           | : EXIT                                 |
| 1347 |        |        |        |        |         |      |              |  |
| 1348 | 005156 | 032767 | 010000 | 172404 | LUPCHK: | BIT  | #B12, SR     | : SR12(1)=LOOP ALWAYS                  |
| 1349 | 005164 | 001002 |        |        |         | BNE  | .+6          | : EXIT IF 1                            |
| 1350 | 005166 | 062716 | 000004 |        |         | ADD  | #4, (SP)     | : ADVANCE RETURN VECTOR OVER LOOP JUMP |
| 1351 | 005172 | 000207 |        |        |         | RTS  | PC           | : EXIT                                 |
| 1352 |        |        |        |        |         |      |              |  |
| 1353 | 005174 | 012700 | 006350 |        | GBTYPE: | MOV  | #GDMS, RO    | : POINTER TO "GOOD"                    |
| 1354 | 005200 | 004767 | 001424 |        |         | JSR  | PC, TYP0UT   | : PRINT MESSAGE                        |
| 1355 | 005204 | 016700 | 001460 |        |         | MOV  | GOOD, RO     | : FETCH C(GOOD)                        |
| 1356 | 005210 | 004767 | 000354 |        |         | JSR  | PC, PNT0CT   | : PRINT OCTAL NUMBER                   |
| 1357 | 005214 | 012700 | 006360 |        |         | MOV  | #BDMS, RO    | : POINTER TO "BAD"                     |
| 1358 | 005220 | 004767 | 001404 |        |         | JSR  | PC, TYP0UT   | : PRINT MESSAGE                        |
| 1359 | 005224 | 016700 | 001442 |        |         | MOV  | BAD, RO      | : FETCH C(BAD)                         |
| 1360 | 005230 | 004767 | 000334 |        |         | JSR  | PC, PNT0CT   | : PRINT OCTAL NUMBER                   |
| 1361 | 005234 | 000207 |        |        |         | RTS  | PC           | : EXIT                                 |
| 1362 |        |        |        |        |         |      |              |  |
| 1363 | 005236 | 012700 | 006271 |        | CSTYPE: | MOV  | #CSMS, RO    | : POINTER TO "STATUS"                  |
| 1364 | 005242 | 004767 | 001362 |        |         | JSR  | PC, TYP0UT   | : PRINT TEXT                           |
| 1365 | 005246 | 017700 | 001516 |        |         | MOV  | DRPCS, RO    | : FETCH C(RPCS)                        |
| 1366 | 005252 | 004767 | 000312 |        |         | JSR  | PC, PNT0CT   | : PRINT OCTAL NUMBER                   |
| 1367 | 005256 | 000207 |        |        |         | RTS  | PC           | : EXIT                                 |
| 1368 | 005260 | 012700 | 006375 |        | DATYPE: | MOV  | #DAMS, RO    | : POINTER TO "DATA"                    |
| 1369 | 005264 | 004767 | 001340 |        |         | JSR  | PC, TYP0UT   | : PRINT TEST                           |
| 1370 | 005270 | 016700 | 001400 |        |         | MOV  | DATA, RO     | : FETCH C(DATA)                        |
| 1371 | 005274 | 004767 | 000270 |        |         | JSR  | PC, PNT0CT   | : PRINT OCTAL NUMBER                   |
| 1372 | 005300 | 000207 |        |        |         | RTS  | PC           | : EXIT                                 |
| 1373 | 005302 | 012700 | 006301 |        | ERTYPE: | MOV  | #ERMS, RO    | : PRINT                                |
| 1374 | 005306 | 004767 | 001316 |        |         | JSR  | PC, TYP0UT   | : "RPER="                              |
| 1375 | 005312 | 017700 | 001446 |        |         | MOV  | DRPER, RO    | : PRINT                                |
| 1376 | 005316 | 004767 | 000246 |        |         | JSR  | PC, PNT0CT   | : RPER                                 |
| 1377 | 005322 | 000207 |        |        |         | RTS  | PC           | : EXIT                                 |
| 1378 | 005324 | 012700 | 006311 |        | DSTYPE: | MOV  | #DSMS, RO    | : PRINT                                |
| 1379 | 005330 | 004767 | 001274 |        |         | JSR  | PC, TYP0UT   | : "RPDS="                              |
| 1380 | 005334 | 017700 | 001420 |        |         | MOV  | DRPDS, RO    | : PRINT                                |
| 1381 | 005340 | 004767 | 000224 |        |         | JSR  | PC, PNT0CT   | : RPDS                                 |
| 1382 | 005344 | 000207 |        |        |         | RTS  | PC           | : EXIT                                 |
| 1383 | 005346 | 032777 | 000001 | 001410 | ADTYPE: | BIT  | #B0, DRPER   | : ADDRESS ERROR?                       |
| 1384 | 005354 | 001407 |        |        |         | BEQ  | IS           | : BRANCH IF NO                         |
| 1385 | 005356 | 017767 | 001416 | 001332 |         | MOV  | DRPCA, WORK3 | : GET THE CLYINDER ADDREEE             |

|      |        |        |        |        |         |      |               |                              |
|------|--------|--------|--------|--------|---------|------|---------------|------------------------------|
| 1386 | 005364 | 017767 | 001414 | 001322 |         | MOV  | DRPDA,WORK2   | ;GET HEAD AND SECTOR ADDRESS |
| 1387 | 005372 | 000437 |        |        |         | BR   | ADT1          |                              |
| 1388 | 005374 | 017767 | 001400 | 001314 | 1S:     | MOV  | DRPCA,WORK3   |                              |
| 1389 | 005402 | 017767 | 001376 | 001304 |         | MOV  | DRPDA,WORK2   |                              |
| 1390 | 005410 | 042767 | 160360 | 001276 |         | BIC  | #160360,WORK2 |                              |
| 1391 | 005416 | 032767 | 000017 | 001270 |         | BIT  | #17,WORK2     |                              |
| 1392 | 005424 | 001403 |        |        |         | SEQ  | DECTK         |                              |
| 1393 | 005426 | 005367 | 001262 |        |         | DEC  | WORK2         |                              |
| 1394 | 005432 | 000417 |        |        |         | BR   | ADT1          |                              |
| 1395 | 005434 | 132767 | 000037 | 001253 | DECTK:  | BITB | #37,WORK2+1   |                              |
| 1396 | 005442 | 001406 |        |        |         | SEQ  | DECCY         |                              |
| 1397 | 005444 | 105367 | 001245 |        |         | DECB | WORK2+1       |                              |
| 1398 | 005450 | 052767 | 000011 | 001236 |         | BIC  | #11,WORK2     |                              |
| 1399 | 005456 | 000405 |        |        |         | BR   | ADT1          |                              |
| 1400 | 005460 | 012767 | 011411 | 001226 | DECCY:  | MOV  | #11411,WORK2  |                              |
| 1401 | 005466 | 005367 | 001224 |        |         | DEC  | WORK3         |                              |
| 1402 | 005472 | 012700 | 005321 |        | ADT1:   | MOV  | #CYMS,RO      | ;PRINT                       |
| 1403 | 005476 | 004767 | 001126 |        |         | JSR  | PC,TYP0UT     | ; "CAR="                     |
| 1404 | 005502 | 016700 | 001210 |        |         | MOV  | WORK3,RO      | ;PRINT                       |
| 1405 | 005506 |        |        |        |         | ANDI | 777,RO        |                              |
| 1406 | 005506 | 042700 | 177000 |        |         | BIC  | #-777-1,RO    | ;MASK 777 APPLIED TO RO      |
| 1407 | 005512 | 004767 | 000750 |        |         | JSR  | PC,OCTPNT     | ;CAR                         |
| 1408 | 005516 | 012700 | 006330 |        |         | MOV  | #TAMS,RO      | ;PRINT                       |
| 1409 | 005522 | 004767 | 001102 |        |         | JSR  | PC,TYP0UT     | ; "TAR="                     |
| 1410 | 005526 | 116700 | 001163 |        |         | MOV3 | WORK2+1,RO    | ;PRINT                       |
| 1411 | 005532 |        |        |        |         | ANDI | 37,RO         |                              |
| 1412 | 005532 | 042700 | 177740 |        |         | BIC  | #-37-1,RO     | ;MASK 37 APPLIED TO RO       |
| 1413 | 005536 | 004767 | 000724 |        |         | JSR  | PC,OCTPNT     | ;TAR                         |
| 1414 | 005542 | 012700 | 006340 |        |         | MOV  | #SEMS,RO      | ;PRINT                       |
| 1415 | 005546 | 004767 | 001056 |        |         | JSR  | PC,TYP0UT     | ; "SAR="                     |
| 1416 | 005552 | 116700 | 001136 |        |         | MOV8 | WORK2,RO      | ;PRINT                       |
| 1417 | 005556 |        |        |        |         | ANDI | 17,RO         |                              |
| 1418 | 005556 | 042700 | 177760 |        |         | BIC  | #-17-1,RO     | ;MASK 17 APPLIED TO RO       |
| 1419 | 005562 | 004767 | 000700 |        |         | JSR  | PC,OCTPNT     | ;SAR                         |
| 1420 | 005566 | 000207 |        |        |         | RTS  | PC            | ;EXIT                        |
| 1421 | 005570 | 012767 | 000006 | 001110 | PNT0CT: | MOV  | #6,TOG4       |                              |
| 1422 | 005576 | 010067 | 001106 |        | OLUP:   | MOV  | RO,WORK       |                              |
| 1423 | 005602 |        |        |        |         | ANDI | 7,WORK        |                              |
| 1424 | 005602 | 042767 | 177770 | 001100 |         | BIC  | #-7-1,WORK    | ;MASK 7 APPLIED TO WORK      |
| 1425 | 005610 | 062767 | 000060 | 001072 |         | ADD  | #60,WORK      |                              |
| 1426 | 005616 | 016746 | 001066 |        |         | MOV  | WORK,-(SP)    |                              |
| 1427 | 005622 | 006000 |        |        |         | ROR  | RO            |                              |
| 1428 | 005624 | 006000 |        |        |         | ROR  | RO            |                              |
| 1429 | 005626 | 006000 |        |        |         | ROR  | RO            |                              |
| 1430 | 005630 | 005367 | 001052 |        |         | DEC  | TOG4          |                              |
| 1431 | 005634 | 003360 |        |        |         | BGT  | OLUP          |                              |
| 1432 | 005636 | 012767 | 000005 | 001042 |         | MOV  | #5,TOG4       |                              |
| 1433 | 005644 | 012600 |        |        |         | MOV  | (SP)+,RO      |                              |
| 1434 | 005646 |        |        |        |         | ANDI | 61,RO         |                              |
| 1435 | 005646 | 042700 | 177716 |        |         | BIC  | #-61-1,RO     | ;MASK 61 APPLIED TO RO       |
| 1436 | 005652 | 004767 | 000640 |        |         | JSR  | PC,TT0        |                              |
| 1437 | 005656 | 012600 |        |        | TOLUPO: | MOV  | (SP)+,RO      |                              |
| 1438 | 005660 | 004767 | 000632 |        |         | JSR  | PC,TT0        |                              |
| 1439 | 005664 | 005367 | 001016 |        |         | DEC  | TOG4          |                              |
| 1440 | 005670 | 003372 |        |        |         | BGT  | TOLUPO        |                              |
| 1441 | 005672 | 000207 |        |        |         | RTS  | PC            |                              |

|      |        |        |        |              |                                |
|------|--------|--------|--------|--------------|--------------------------------|
| 1442 |        |        |        |              |                                |
| 1443 | 005674 |        |        | HDTYPE: PNTM | HDMS                           |
| 1444 | 005674 | 012700 | 006116 | MOV          | #HDMS,RO ;PRINT MESSAGE        |
| 1445 | 005700 | 004767 | 000724 | JSR          | PC,TYP0UT ;POINTED TO BY HDMS  |
| 1446 | 005704 |        |        | PNTM         | GDMS                           |
| 1447 | 005704 | 012700 | 006350 | MOV          | #GDMS,RO ;PRINT MESSAGE        |
| 1448 | 005710 | 004767 | 000714 | JSR          | PC,TYP0UT ;POINTED TO BY GDMS  |
| 1449 | 005714 |        |        | PNTM         | S2                             |
| 1450 | 005714 | 012700 | 006156 | MOV          | #S2,RO ;PRINT MESSAGE          |
| 1451 | 005720 | 004767 | 000704 | JSR          | PC,TYP0UT ;POINTED TO BY S2    |
| 1452 | 005724 |        |        | PNTOL        | CYL                            |
| 1453 | 005724 | 016700 | 000774 | MOV          | CYL,RO ;PRINT 6 OCTAL          |
| 1454 | 005730 | 004767 | 177634 | JSR          | PC,PNT0CT ;NUMBERS IN CYL      |
| 1455 | 005734 |        |        | PNTM         | S1                             |
| 1456 | 005734 | 012700 | 006154 | MOV          | #S1,RO ;PRINT MESSAGE          |
| 1457 | 005740 | 004767 | 000664 | JSR          | PC,TYP0UT ;POINTED TO BY S1    |
| 1458 | 005744 |        |        | PNTOL        | HED                            |
| 1459 | 005744 | 016700 | 000756 | MOV          | HED,RO ;PRINT 6 OCTAL          |
| 1460 | 005750 | 004767 | 177614 | JSR          | PC,PNT0CT ;NUMBERS IN HED      |
| 1461 | 005754 |        |        | PNTM         | S1                             |
| 1462 | 005754 | 012700 | 006154 | MOV          | #S1,RO ;PRINT MESSAGE          |
| 1463 | 005760 | 004767 | 000644 | JSR          | PC,TYP0UT ;POINTED TO BY S1    |
| 1464 | 005764 |        |        | PNTOL        | SEC                            |
| 1465 | 005764 | 016700 | 000740 | MOV          | SEC,RO ;PRINT 6 OCTAL          |
| 1466 | 005770 | 004767 | 177574 | JSR          | PC,PNT0CT ;NUMBERS IN SEC      |
| 1467 | 005774 |        |        | PNTM         | CARET                          |
| 1468 | 005774 | 012700 | 006161 | MOV          | #CARET,RO ;PRINT MESSAGE       |
| 1469 | 006000 | 004767 | 000624 | JSR          | PC,TYP0UT ;POINTED TO BY CARET |
| 1470 | 006004 |        |        | PNTM         | S1                             |
| 1471 | 006004 | 012700 | 006154 | MOV          | #S1,RO ;PRINT MESSAGE          |
| 1472 | 006010 | 004767 | 000614 | JSR          | PC,TYP0UT ;POINTED TO BY S1    |
| 1473 | 006014 |        |        | PNTM         | BDMS                           |
| 1474 | 006014 | 012700 | 006360 | MOV          | #BDMS,RO ;PRINT MESSAGE        |
| 1475 | 006020 | 004767 | 000604 | JSR          | PC,TYP0UT ;POINTED TO BY BDMS  |
| 1476 | 006024 |        |        | PNTM         | S2                             |
| 1477 | 006024 | 012700 | 006156 | MOV          | #S2,RO ;PRINT MESSAGE          |
| 1478 | 006030 | 004767 | 000574 | JSR          | PC,TYP0UT ;POINTED TO BY S2    |
| 1479 | 006034 |        |        | PNTOL        | CYLR                           |
| 1480 | 006034 | 016700 | 000672 | MOV          | CYLR,RO ;PRINT 6 OCTAL         |
| 1481 | 006040 | 004767 | 177524 | JSR          | PC,PNT0CT ;NUMBERS IN CYLR     |
| 1482 | 006044 |        |        | PNTM         | S1                             |
| 1483 | 006044 | 012700 | 006154 | MOV          | #S1,RO ;PRINT MESSAGE          |
| 1484 | 006050 | 004767 | 000554 | JSR          | PC,TYP0UT ;POINTED TO BY S1    |
| 1485 | 006054 |        |        | PNTOL        | HEDR                           |
| 1486 | 006054 | 016700 | 000654 | MOV          | HEDR,RO ;PRINT 6 OCTAL         |
| 1487 | 006060 | 004767 | 177504 | JSR          | PC,PNT0CT ;NUMBERS IN HEDR     |
| 1488 | 006064 |        |        | PNTM         | S1                             |
| 1489 | 006064 | 012700 | 006154 | MOV          | #S1,RO ;PRINT MESSAGE          |
| 1490 | 006070 | 004767 | 000534 | JSR          | PC,TYP0UT ;POINTED TO BY S1    |
| 1491 | 006074 |        |        | PNTOL        | SECR                           |
| 1492 | 006074 | 016700 | 000636 | MOV          | SECR,RO ;PRINT 6 OCTAL         |
| 1493 | 006100 | 004767 | 177464 | JSR          | PC,PNT0CT ;NUMBERS IN SECR     |
| 1494 | 006104 |        |        | PNTM         | CARET                          |
| 1495 | 006104 | 012700 | 006161 | MOV          | #CARET,RO ;PRINT MESSAGE       |
| 1496 | 006110 | 004767 | 000514 | JSR          | PC,TYP0UT ;POINTED TO BY CARET |
| 1497 | 006114 | 000207 |        | RTS          | PC                             |



|      |        |        |        |        |         |        |                   |   |
|------|--------|--------|--------|--------|---------|--------|-------------------|---|
| 1554 | 006375 | 046    | 040504 | 040524 | DAMS:   | .ASCII | /&DATA= 2/        |   |
| 1555 | 006402 | 020075 | 100    |        |         |        |                   |   |
| 1556 |        |        |        |        |         |        |                   |   |
| 1557 | 006405 | 046    | 042524 | 052123 | ENDM1:  | .ASCII | /&TEST COMPLETED/ |   |
| 1558 | 006412 | 041440 | 046517 | 046120 |         |        |                   |   |
| 1559 | 006420 | 052105 | 040105 |        |         |        |                   |   |
| 1560 |        |        |        |        |         |        |                   |   |
| 1561 | 006424 | 040007 |        |        | BELL:   | .ASCII | <7>/2/            |   |
| 1562 |        |        |        |        |         |        |                   |   |
| 1563 |        |        |        |        |         | .EVEN  |                   |   |
| 1564 |        |        |        |        |         |        |                   |   |
| 1565 | 006426 | 010446 |        |        | SAV05:  | MOV    | R4,-(SP)          | ;SAVE R0-R5 ON THE STACK                  |
| 1566 | 006430 | 010346 |        |        |         | MOV    | R3,-(SP)          | ;R5 WAS STACKED BY THE JSR                |
| 1567 | 006432 | 010246 |        |        |         | MOV    | R2,-(SP)          | ;R4-R3 ARE STACKED ABOVE IT               |
| 1568 | 006434 | 010146 |        |        |         | MOV    | R1,-(SP)          | ;WITH R0 ON TOP                           |
| 1569 | 006436 | 010046 |        |        |         | MOV    | R0,-(SP)          | ;R5 HOLDS THE RETURN PC, BUT AN           |
| 1570 | 006440 | 000115 |        |        |         | JMP    | (R5)              | ;RTS WOULD POP THE STACK-SO JUMP OUT      |
| 1571 |        |        |        |        |         |        |                   |   |
| 1572 | 006442 | 005726 |        |        | REST05: | TST    | (SP)+             | ;MOVE SP OVER WORD SAVED BY JSR           |
| 1573 | 006444 | 012600 |        |        |         | MOV    | (SP)+,R0          | ;R0-4                                     |
| 1574 | 006446 | 012601 |        |        |         | MOV    | (SP)+,R1          | ;ARE POPPED                               |
| 1575 | 006450 | 012602 |        |        |         | MOV    | (SP)+,R2          | ;IN LIFO                                  |
| 1576 | 006452 | 012603 |        |        |         | MOV    | (SP)+,R3          | ;SEQUENCE                                 |
| 1577 | 006454 | 012604 |        |        |         | MOV    | (SP)+,R4          | ;R5 IS POPPED BY THE RTS AND              |
| 1578 | 006456 | 000205 |        |        |         | RTS    | R5                | ;THE PC IS TAKEN FROM R5                  |
| 1579 |        |        |        |        |         |        |                   |   |
| 1580 | 006460 | 012702 | 000012 |        | DECPNT: | MOV    | #10,R2            | ;DIVISOR OF 10 FOR DECIMAL PRINT          |
| 1581 | 006464 | 000402 |        |        |         | BR     | DECREM            | ;PROCESS AND PRINT NUMBER                 |
| 1582 | 006466 | 012702 | 000010 |        | OCTPNT: | MOV    | #8,R2             | ;DIVISOR OF 8 FOR OCTAL PRINT             |
| 1583 | 006472 | 004767 | 000060 |        | DECREM: | JSR    | PC, IDIVR         | ;DIVIDE (R0) BY (R2) WITH REMAINDER IN R1 |
| 1584 | 006476 | 010146 |        |        |         | MOV    | R1,-(SP)          | ;STACK REMAINDER                          |
| 1585 | 006500 | 005700 |        |        |         | TST    | R0                | ;HAS NUMBER DEFLATED BELOW RADIX?         |
| 1586 | 006502 | 001402 |        |        |         | BEQ    | POPTT             | ;YES - POP AND PRINT                      |
| 1587 | 006504 | 004767 | 177762 |        |         | JSR    | PC, DECREM        | ;NO - DIVIDE NUMBER BY RADIX              |
| 1588 | 006510 | 012600 |        |        | POPTT:  | MOV    | (SP)+,R0          | ;POP NUMBER FROM STACK                    |
| 1589 | 006512 | 062700 | 000060 |        |         | ADD    | #60,R0            | ;MAKE ASCII                               |
| 1590 | 006516 | 032767 | 040000 | 171044 | TTO:    | BIT    | #B14,SR           | ;IF SR14=1,DELETE TYPEOUT                 |
| 1591 | 006524 | 001010 |        |        |         | BNE    | TTOLF-2           | ;EXIT                                     |
| 1592 | 006526 | 010067 | 171034 |        |         | MOV    | R0,TPB            | ;PRINT CONTENTS OF R0                     |
| 1593 | 006532 | 105767 | 171026 |        | TTOLP:  | TSTB   | TPS               | ;DONE YET?                                |
| 1594 | 006536 | 100375 |        |        |         | BPL    | TTOLP             | ;NO - KEEP LOOPING                        |
| 1595 | 006540 | 022700 | 000015 |        |         | CMP    | #CR,R0            | ;WAS CHARACTER A CR!                      |
| 1596 | 006544 | 001401 |        |        |         | BEQ    | TTOLF             | ;YES - PRINT LINE FEED                    |
| 1597 | 006546 | 000207 |        |        |         | RTS    | PC                | ;RETURN TO POPTT OR MAIN PROGRAM          |
| 1598 | 006550 | 012700 | 000012 |        | TTOLF:  | MOV    | #LF,R0            | ;PRINT LF                                 |
| 1599 | 006554 | 000750 |        |        |         | BR     | TTO               | ;EXECUTE PRINT                            |
| 1600 |        |        |        |        |         |        |                   |   |
| 1601 | 006556 | 010067 | 000114 |        | IDIVR:  | MOV    | R0,DIVID          | ;SAVE DIVIDEND                            |
| 1602 | 006562 | 005000 |        |        |         | CLR    | R0                | ;CLEAR QUOTIENT AREA                      |
| 1603 | 006564 | 005001 |        |        |         | CLR    | R1                | ;CLEAR ACCUM.                             |
| 1604 | 006566 | 060201 |        |        | DIVLP:  | ADD    | R2,R1             | ;ADD DIVISOR TO ACCUM.                    |
| 1605 | 006570 | 020167 | 000102 |        |         | CMP    | R1,DIVID          | ;COMPARE TO DIVIDEND                      |
| 1606 | 006574 | 100002 |        |        |         | BPL    | DVEND             | ;WHEN ACCUM PASSES DIVIDEND - EXIT        |
| 1607 | 006576 | 005200 |        |        |         | INC    | R0                | ;INCREMENT QUOTIENT THEN                  |
| 1608 | 006600 | 000772 |        |        |         | BR     | DIVLP             | ;ADD AGAIN                                |
| 1609 | 006602 | 001003 |        |        | DVEND:  | BNE    | DIVN1             | ;JUMP TO GET REMAINDER                    |



|      |        |        |        |              |           |                                    |
|------|--------|--------|--------|--------------|-----------|------------------------------------|
| 1610 | 006604 | 005200 |        | INC          | RO        | ;NO REMAINDER - INCREMENT QUOTIENT |
| 1611 | 006606 | 005001 |        | CLR          | R1        | ;REMAINDER OF 0                    |
| 1612 | 006610 | 000207 |        | RTS          | PC        | ;EXIT                              |
| 1613 | 006612 | 160167 | 000060 | DIVN1: SUB   | R1, DIVID | ;FANCY FINAGLING TO                |
| 1614 | 006616 | 060267 | 000054 | ADD          | R2, DIVID | ;DETERMINE THE REMAINDER           |
| 1615 | 006622 | 016701 | 000050 | MOV          | DIVID, R1 | ;REMAINDER TO R1                   |
| 1616 | 006626 | 000207 |        | RTS          | PC        | ;EXIT WITH QUOTIENT IN RO          |
| 1617 |        |        |        |              |           |                                    |
| 1618 | 006630 | 010046 |        | TYP0UT: MOV  | RO, -(SP) | ;STACK ADDRESS POINTER FOR MESSAGE |
| 1619 | 006632 | 117600 | 000000 | TPOFCH: MOVB | @(SP), RO | ;FETCH ASCII BYTE                  |
| 1620 | 006636 | 022700 | 000100 | CMP          | #100, RO  | ;IS IT @(TERMINATOR)?              |
| 1621 | 006642 | 001411 |        | BEQ          | TPOUTX    | ;YES - EXIT                        |
| 1622 | 006644 | 022700 | 000046 | CMP          | #46, RO   | ;IS IT CRLF FLAG?                  |
| 1623 | 006650 | 001002 |        | BNE          | .+6       | ;NO                                |
| 1624 | 006652 | 012700 | 000015 | MOV          | #CR, RO   | ;YES- CHANGE DATA TO CRLF          |
| 1625 | 006656 | 004767 | 177634 | JSR          | PC, TPO   | ;PRINT                             |
| 1626 | 006662 | 005216 |        | INC          | (SP)      | ;MOVE POINTER TO NEXT BYTE         |
| 1627 | 006664 | 000762 |        | BR           | TPOFCH    | ;FETCH NEXT CHARACTER              |
| 1628 | 006666 |        |        | TPOUTX: POP  |           | ;POP STACK TO REACH RETURN VECTOR  |
| 1629 |        |        |        | .IRP         | B, (<)    |                                    |
| 1630 |        |        |        | MOV          | (SP)+, B  | ;POP STACK INTO B                  |
| 1631 |        |        |        | .ENDM        |           |                                    |
| 1632 | 006666 | 000207 |        | RTS          | PC        | ;EXIT                              |
| 1633 |        |        |        |              |           |                                    |
| 1634 | 006670 | 000000 |        | GOOD:        | XX        |                                    |
| 1635 | 006672 | 000000 |        | BAD:         | XX        |                                    |
| 1636 | 006674 | 000000 |        | DATA:        | XX        |                                    |
| 1637 | 006676 | 000000 |        | DIVID:       | XX        |                                    |
| 1638 | 006700 | 000000 |        | TOG1:        | XX        |                                    |
| 1639 | 006702 | 000000 |        | TOG2:        | XX        |                                    |
| 1640 | 006704 | 000000 |        | TOG3:        | XX        |                                    |
| 1641 | 006706 | 000000 |        | TOG4:        | XX        |                                    |
| 1642 | 006710 | 000000 |        | WORK:        | XX        |                                    |
| 1643 | 006712 | 000000 |        | WORK1:       | XX        |                                    |
| 1644 | 006714 | 000000 |        | WORK2:       | XX        |                                    |
| 1645 | 006716 | 000000 |        | WORK3:       | XX        |                                    |
| 1646 | 006720 | 000000 |        | UNIT:        | XX        |                                    |
| 1647 | 006722 | 000000 |        | ATNB:        | XX        |                                    |
| 1648 | 006724 | 000000 |        | CYL:         | XX        |                                    |
| 1649 | 006726 | 000000 |        | HED:         | XX        |                                    |
| 1650 | 006730 | 000000 |        | SEC:         | XX        |                                    |
| 1651 | 006732 | 000000 |        | CYLR:        | XX        |                                    |
| 1652 | 006734 | 000000 |        | HEDR:        | XX        |                                    |
| 1653 | 006736 | 000000 |        | SECR:        | XX        |                                    |
| 1654 | 006740 | 000000 |        | CYLA:        | XX        |                                    |
| 1655 | 006742 | 000000 |        | HEDA:        | XX        |                                    |
| 1656 | 006744 | 000000 |        | SECA:        | XX        |                                    |
| 1657 | 006746 | 000000 |        | TIG:         | XX        |                                    |
| 1658 | 006750 | 000000 |        | TEMP1:       | XX        |                                    |
| 1659 | 006752 | 000000 |        | MASK:        | XX        |                                    |
| 1660 | 006754 | 000000 |        | ROTOG:       | XX        |                                    |
| 1661 | 006756 | 000000 |        | LERR:        | XX        |                                    |
| 1662 | 006760 | 176710 |        | RPDS:        | 176710    |                                    |
| 1663 | 006762 | 176711 |        | RPDS1:       | 176711    |                                    |
| 1664 | 006764 | 176712 |        | RPER:        | 176712    |                                    |
| 1665 | 006766 | 176713 |        | RPER1:       | 176713    |                                    |

|      |        |        |         |            |
|------|--------|--------|---------|------------|
| 1666 | 006770 | 176714 | RPCS:   | 176714     |
| 1667 | 006772 | 176715 | RPCS1:  | 176715     |
| 1668 | 006774 | 176716 | RPWC:   | 176716     |
| 1669 | 006776 | 176720 | RPBA:   | 176720     |
| 1670 | 007000 | 176722 | RPCA:   | 176722     |
| 1671 | 007002 | 176723 | RPSQ1:  | 176723     |
| 1672 | 007004 | 176724 | RPDA:   | 176724     |
| 1673 | 007006 | 176725 | RPDA1:  | 176725     |
| 1674 | 007010 | 176726 | RPM1:   | 176726     |
| 1675 | 007012 | 176727 | RPM11:  | 176727     |
| 1676 | 007014 | 176730 | RPM2:   | 176730     |
| 1677 | 007016 | 176731 | RPM21:  | 176731     |
| 1678 | 007020 | 176732 | RPM3:   | 176732     |
| 1679 | 007022 | 176733 | RPM31:  | 176733     |
| 1680 | 007024 | 176734 | RPB1:   | 176734     |
| 1681 | 007026 | 176735 | RPB11:  | 176735     |
| 1682 | 007030 | 176736 | RPB2:   | 176736     |
| 1683 | 007032 | 176737 | RPB21:  | 176737     |
| 1684 | 007034 | 176740 | RPS3:   | 176740     |
| 1685 | 007036 | 176741 | RPB31:  | 176741     |
| 1686 | 007040 | 000254 | RPIV:   | .WORD 254  |
| 1687 | 007042 | 000256 | RPSV:   | .WORD 256  |
| 1688 | 007044 | 000000 | DEBUG:  | XX         |
| 1689 |        | 007244 | INBUF=  | DEBUG+200  |
| 1690 |        | 011544 | OUTBUF= | INBUF+2300 |
| 1691 |        |        |         |            |
| 1692 |        |        |         |            |
| 1693 |        |        |         |            |

000001

.END

;THAT'S ALL FOLKS!





|        |         |      |      |      |      |      |      |      |      |      |      |      |      |      |  |  |  |  |  |  |
|--------|---------|------|------|------|------|------|------|------|------|------|------|------|------|------|--|--|--|--|--|--|
| POP    | 0004132 | 1022 | 1207 |      |      |      |      |      |      |      |      |      |      |      |  |  |  |  |  |  |
| POP    | 0004137 | 1023 | 1209 |      |      |      |      |      |      |      |      |      |      |      |  |  |  |  |  |  |
| POP    | 0004144 | 1024 | 1209 |      |      |      |      |      |      |      |      |      |      |      |  |  |  |  |  |  |
| POP    | 0004151 | 1025 | 1210 |      |      |      |      |      |      |      |      |      |      |      |  |  |  |  |  |  |
| POP    | 0004156 | 1026 | 1211 |      |      |      |      |      |      |      |      |      |      |      |  |  |  |  |  |  |
| POP    | 0004163 | 1027 | 1212 |      |      |      |      |      |      |      |      |      |      |      |  |  |  |  |  |  |
| POP    | 0004170 | 1028 | 1213 |      |      |      |      |      |      |      |      |      |      |      |  |  |  |  |  |  |
| PCTPNT | 006456  | 1155 | 1302 | 1306 | 1407 | 1413 | 1419 | 1582 |      |      |      |      |      |      |  |  |  |  |  |  |
| POP    | 006207  | 1194 | 1519 |      |      |      |      |      |      |      |      |      |      |      |  |  |  |  |  |  |
| POP    | 005576  | 1422 | 1431 |      |      |      |      |      |      |      |      |      |      |      |  |  |  |  |  |  |
| POP    | 011544  | 914  | 923  | 992  | 1690 |      |      |      |      |      |      |      |      |      |  |  |  |  |  |  |
| POP    | 003256  | 797  | 801  | 813  | 817  | 1086 |      |      |      |      |      |      |      |      |  |  |  |  |  |  |
| POP    | 000007  | 391  | 656  | 658  | 660  | 662  | 674  | 677  | 678  | 681  | 722  | 726  | 727  | 730  |  |  |  |  |  |  |
|        |         | 757  | 775  | 789  | 792  | 795  | 797  | 801  | 804  | 811  | 813  | 817  | 820  | 841  |  |  |  |  |  |  |
|        |         | 857  | 871  | 875  | 891  | 894  | 895  | 900  | 901  | 905  | 907  | 911  | 934  | 938  |  |  |  |  |  |  |
|        |         | 955  | 970  | 977  | 978  | 979  | 990  | 1007 | 1016 | 1018 | 1061 | 1062 | 1071 | 1077 |  |  |  |  |  |  |
|        |         | 1082 | 1085 | 1086 | 1088 | 1096 | 1098 | 1122 | 1147 | 1149 | 1152 | 1155 | 1156 | 1160 |  |  |  |  |  |  |
|        |         | 1163 | 1178 | 1181 | 1188 | 1266 | 1268 | 1279 | 1286 | 1293 | 1298 | 1302 | 1304 | 1306 |  |  |  |  |  |  |
|        |         | 1309 | 1312 | 1315 | 1318 | 1321 | 1324 | 1327 | 1330 | 1333 | 1346 | 1351 | 1354 | 1356 |  |  |  |  |  |  |
|        |         | 1358 | 1360 | 1361 | 1364 | 1366 | 1367 | 1369 | 1371 | 1372 | 1374 | 1376 | 1377 | 1379 |  |  |  |  |  |  |
|        |         | 1381 | 1382 | 1403 | 1407 | 1409 | 1413 | 1415 | 1419 | 1420 | 1436 | 1438 | 1441 | 1445 |  |  |  |  |  |  |
|        |         | 1448 | 1451 | 1454 | 1457 | 1460 | 1463 | 1466 | 1469 | 1472 | 1475 | 1478 | 1481 | 1484 |  |  |  |  |  |  |
|        |         | 1487 | 1490 | 1493 | 1496 | 1497 | 1583 | 1587 | 1597 | 1612 | 1616 | 1625 | 1632 |      |  |  |  |  |  |  |
|        |         | 697  | 706  |      |      |      |      |      |      |      |      |      |      |      |  |  |  |  |  |  |
| POP    | 000762  | 1356 | 1360 | 1366 | 1371 | 1376 | 1381 | 1421 | 1454 | 1460 | 1466 | 1481 | 1487 | 1493 |  |  |  |  |  |  |
| POP    | 005570  | 428  |      |      |      |      |      |      |      |      |      |      |      |      |  |  |  |  |  |  |
| POP    | 005726  | 429  |      |      |      |      |      |      |      |      |      |      |      |      |  |  |  |  |  |  |
| POP    | 022626  |      |      |      |      |      |      |      |      |      |      |      |      |      |  |  |  |  |  |  |
| POP    | 006510  | 1586 | 1588 |      |      |      |      |      |      |      |      |      |      |      |  |  |  |  |  |  |
| POP    | 003326  | 1090 | 1092 | 1095 | 1098 |      |      |      |      |      |      |      |      |      |  |  |  |  |  |  |
| POP    | 177776  | 393  | 686  | 723  | 932  |      |      |      |      |      |      |      |      |      |  |  |  |  |  |  |
| POP    | 000000  | 395  |      |      |      |      |      |      |      |      |      |      |      |      |  |  |  |  |  |  |
| POP    | 000040  | 396  |      |      |      |      |      |      |      |      |      |      |      |      |  |  |  |  |  |  |
| POP    | 000100  | 397  |      |      |      |      |      |      |      |      |      |      |      |      |  |  |  |  |  |  |
| POP    | 001052  | 728  | 741  |      |      |      |      |      |      |      |      |      |      |      |  |  |  |  |  |  |
| POP    | 001076  | 732  | 750  | 772  |      |      |      |      |      |      |      |      |      |      |  |  |  |  |  |  |
| POP    | 001232  | 757  | 762  | 767  |      |      |      |      |      |      |      |      |      |      |  |  |  |  |  |  |
| POP    | 001216  | 748  | 754  |      |      |      |      |      |      |      |      |      |      |      |  |  |  |  |  |  |
| POP    | 000140  | 398  |      |      |      |      |      |      |      |      |      |      |      |      |  |  |  |  |  |  |
| POP    | 000200  | 399  | 686  |      |      |      |      |      |      |      |      |      |      |      |  |  |  |  |  |  |
| POP    | 000240  | 400  |      |      |      |      |      |      |      |      |      |      |      |      |  |  |  |  |  |  |
| POP    | 000300  | 401  |      |      |      |      |      |      |      |      |      |      |      |      |  |  |  |  |  |  |
| POP    | 000340  | 402  | 672  | 683  | 720  | 723  | 787  | 889  | 932  |      |      |      |      |      |  |  |  |  |  |  |
| RESTOS | 006442  | 699  | 710  | 1331 | 1572 |      |      |      |      |      |      |      |      |      |  |  |  |  |  |  |
| RIN    | 003770  | 678  | 727  | 978  | 1160 | 1182 |      |      |      |      |      |      |      |      |  |  |  |  |  |  |
| RLUP   | 004644  | 1282 | 1285 |      |      |      |      |      |      |      |      |      |      |      |  |  |  |  |  |  |
| ROTOG  | 006754  | 1273 | 1277 | 1280 | 1284 | 1660 |      |      |      |      |      |      |      |      |  |  |  |  |  |  |
| RPBA   | 006776  | 743  | 843  | 859  | 914  | 941  | 1669 |      |      |      |      |      |      |      |  |  |  |  |  |  |
| RPB1   | 007024  | 1680 |      |      |      |      |      |      |      |      |      |      |      |      |  |  |  |  |  |  |
| RPB11  | 007026  | 1681 |      |      |      |      |      |      |      |      |      |      |      |      |  |  |  |  |  |  |
| RPB2   | 007030  | 1682 |      |      |      |      |      |      |      |      |      |      |      |      |  |  |  |  |  |  |
| RPB21  | 007032  | 1683 |      |      |      |      |      |      |      |      |      |      |      |      |  |  |  |  |  |  |
| RPB3   | 007034  | 1684 |      |      |      |      |      |      |      |      |      |      |      |      |  |  |  |  |  |  |
| RPB31  | 007036  | 1685 |      |      |      |      |      |      |      |      |      |      |      |      |  |  |  |  |  |  |
| RPCA   | 007000  | 732  | 845  | 860  | 909  | 936  | 1385 | 1388 | 1670 |      |      |      |      |      |  |  |  |  |  |  |
| RPCS   | 006770  | 685  | 696  | 706  | 728  | 734  | 744  | 745  | 746  | 844  | 848  | 849  | 863  | 864  |  |  |  |  |  |  |
|        |         | 865  | 915  | 916  | 917  | 943  | 944  | 945  | 1009 | 1101 | 1119 | 1261 | 1264 | 1269 |  |  |  |  |  |  |











|        |    |
|--------|----|
| .SSB20 | 18 |
| .SSB20 | 18 |
| .SSCOP | 18 |
| .SSIZE | 18 |
| .SSUPR | 18 |
| .S RAP | 18 |
| .STYPB | 18 |
| .STYPD | 18 |
| .STYPE | 18 |
| .STYPD | 18 |
| .S40CA | 18 |
| .1170  | 18 |

|      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| ADD  | 685  | 924  | 925  | 989  | 1004 | 1017 | 1097 | 1123 | 1146 | 1176 | 1179 | 1274 | 1281 | 1345 | 1350 |
| BEQ  | 1425 | 1589 | 1604 | 1614 |      |      |      |      |      |      |      |      |      |      |      |
|      | 697  | 736  | 739  | 747  | 850  | 866  | 918  | 946  | 1011 | 1014 | 1069 | 1076 | 1110 | 1112 | 1116 |
|      | 1162 | 1265 | 1270 | 1290 | 1308 | 1311 | 1314 | 1317 | 1320 | 1323 | 1326 | 1329 | 1337 | 1384 | 1392 |
|      | 1396 | 1586 | 1596 | 1621 |      |      |      |      |      |      |      |      |      |      |      |
| BGT  | 1431 | 1440 |      |      |      |      |      |      |      |      |      |      |      |      |      |
| BHI  | 761  | 766  | 771  | 807  | 823  | 930  | 982  | 1065 | 1092 | 1095 | 1165 |      |      |      |      |
| BIC  | 840  | 1135 | 1137 | 1139 | 1171 | 1187 | 1390 | 1406 | 1412 | 1418 | 1424 | 1435 |      |      |      |
| BIS  | 744  | 838  | 844  | 863  | 915  | 943  | 1398 |      |      |      |      |      |      |      |      |
| BIT  | 696  | 706  | 735  | 738  | 746  | 849  | 865  | 917  | 945  | 1010 | 1013 | 1075 | 1105 | 1109 | 1111 |
|      | 1261 | 1264 | 1269 | 1289 | 1294 | 1307 | 1310 | 1313 | 1316 | 1319 | 1322 | 1325 | 1328 | 1336 | 1343 |
|      | 1348 | 1383 | 1391 | 1590 |      |      |      |      |      |      |      |      |      |      |      |
| BITB | 1115 | 1395 |      |      |      |      |      |      |      |      |      |      |      |      |      |
| BLOS | 963  | 967  | 1167 |      |      |      |      |      |      |      |      |      |      |      |      |
| BMI  | 984  | 1169 |      |      |      |      |      |      |      |      |      |      |      |      |      |
| BNE  | 690  | 692  | 707  | 904  | 927  | 958  | 976  | 986  | 1000 | 1006 | 1084 | 1090 | 1104 | 1106 | 1141 |
|      | 1143 | 1145 | 1262 | 1278 | 1285 | 1295 | 1344 | 1349 | 1591 | 1609 | 1623 |      |      |      |      |
| BPL  | 748  | 851  | 867  | 919  | 947  | 1184 | 1335 | 1594 | 1606 |      |      |      |      |      |      |
| BR   | 709  | 741  | 750  | 798  | 802  | 805  | 814  | 818  | 821  | 853  | 869  | 872  | 902  | 912  | 921  |
|      | 931  | 939  | 949  | 1063 | 1079 | 1087 | 1106 | 1114 | 1118 | 1177 | 1272 | 1387 | 1394 | 1399 | 1581 |
|      | 1599 | 1608 | 1627 |      |      |      |      |      |      |      |      |      |      |      |      |
| CLC  | 1172 | 1275 | 1282 |      |      |      |      |      |      |      |      |      |      |      |      |
| CLR  | 731  | 733  | 754  | 755  | 763  | 768  | 828  | 854  | 855  | 856  | 908  | 910  | 935  | 937  | 952  |
|      | 964  | 995  | 996  | 1159 | 1602 | 1603 | 1611 |      |      |      |      |      |      |      |      |
| CLRB | 974  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| CMP  | 689  | 760  | 765  | 770  | 806  | 822  | 929  | 962  | 966  | 981  | 1064 | 1089 | 1091 | 1094 | 1140 |
|      | 1142 | 1144 | 1161 | 1164 | 1166 | 1595 | 1605 | 1620 | 1622 |      |      |      |      |      |      |
| COMB | 987  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| DEC  | 691  | 1083 | 1103 | 1168 | 1277 | 1284 | 1393 | 1401 | 1430 | 1439 |      |      |      |      |      |
| DECB | 1397 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| EMT  | 419  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| HALT | 392  | 455  | 457  | 459  | 461  | 463  | 465  | 467  | 469  | 471  | 473  | 475  | 477  | 479  | 481  |
|      | 483  | 485  | 487  | 489  | 491  | 493  | 495  | 497  | 499  | 501  | 503  | 505  | 507  | 509  | 511  |
|      | 513  | 515  | 517  | 519  | 521  | 523  | 525  | 527  | 529  | 531  | 533  | 535  | 537  | 539  | 541  |
|      | 543  | 545  | 547  | 549  | 551  | 553  | 555  | 557  | 559  | 561  | 563  | 565  | 567  | 569  | 571  |
|      | 573  | 575  | 577  | 579  | 581  | 583  | 585  | 587  | 589  | 591  | 593  | 595  | 597  | 599  | 601  |
|      | 603  | 605  | 607  | 609  | 611  | 613  | 615  | 617  | 619  | 621  | 623  | 625  | 627  | 629  | 631  |
|      | 633  | 635  | 637  | 639  | 641  | 643  | 645  | 776  | 876  | 971  |      |      |      |      |      |
| INC  | 759  | 764  | 769  | 903  | 926  | 928  | 957  | 961  | 965  | 975  | 999  | 1005 | 1093 | 1182 | 1607 |
|      | 1610 | 1626 |      |      |      |      |      |      |      |      |      |      |      |      |      |
| JMP  | 694  | 762  | 767  | 772  | 1570 |      |      |      |      |      |      |      |      |      |      |
| JSR  | 674  | 677  | 678  | 681  | 695  | 699  | 710  | 722  | 726  | 727  | 730  | 757  | 775  | 789  | 792  |
|      | 795  | 797  | 801  | 804  | 811  | 813  | 817  | 820  | 841  | 857  | 871  | 875  | 891  | 894  | 895  |
|      | 900  | 901  | 905  | 907  | 911  | 934  | 938  | 955  | 970  | 978  | 979  | 1061 | 1062 | 1071 | 1082 |
|      | 1086 | 1096 | 1152 | 1155 | 1160 | 1163 | 1178 | 1293 | 1296 | 1298 | 1302 | 1304 | 1306 | 1309 | 1312 |
|      | 1315 | 1318 | 1321 | 1324 | 1327 | 1330 | 1331 | 1333 | 1354 | 1356 | 1358 | 1360 | 1364 | 1366 | 1369 |
|      | 1371 | 1374 | 1376 | 1379 | 1381 | 1403 | 1407 | 1409 | 1413 | 1415 | 1419 | 1436 | 1438 | 1445 | 1448 |
|      | 1451 | 1454 | 1457 | 1460 | 1463 | 1466 | 1469 | 1472 | 1475 | 1478 | 1481 | 1484 | 1487 | 1490 | 1493 |
|      | 1496 | 1583 | 1587 | 1625 |      |      |      |      |      |      |      |      |      |      |      |
| MOV  | 656  | 658  | 660  | 662  | 671  | 672  | 676  | 682  | 683  | 684  | 687  | 688  | 704  | 715  | 719  |
|      | 720  | 723  | 725  | 728  | 732  | 742  | 743  | 756  | 774  | 786  | 787  | 791  | 794  | 796  | 799  |
|      | 800  | 803  | 808  | 810  | 812  | 815  | 816  | 819  | 824  | 829  | 830  | 842  | 843  | 845  | 858  |
|      | 859  | 860  | 870  | 874  | 888  | 889  | 893  | 896  | 897  | 898  | 899  | 909  | 913  | 914  | 922  |
|      | 923  | 932  | 936  | 940  | 941  | 950  | 951  | 953  | 954  | 959  | 960  | 969  | 972  | 973  | 988  |
|      | 991  | 992  | 993  | 994  | 997  | 998  | 1002 | 1003 | 1060 | 1066 | 1067 | 1070 | 1073 | 1081 | 1102 |
|      | 1124 | 1125 | 1133 | 1151 | 1153 | 1158 | 1180 | 1273 | 1280 | 1292 | 1297 | 1299 | 1301 | 1303 | 1305 |

|        |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|--------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
|        | 1332 | 1353 | 1355 | 1357 | 1359 | 1363 | 1365 | 1368 | 1370 | 1373 | 1375 | 1378 | 1380 | 1385 | 1386 |
|        | 1398 | 1389 | 1400 | 1402 | 1404 | 1408 | 1414 | 1421 | 1422 | 1426 | 1432 | 1433 | 1437 | 1444 | 1447 |
|        | 1450 | 1453 | 1456 | 1459 | 1462 | 1465 | 1468 | 1471 | 1474 | 1477 | 1480 | 1483 | 1486 | 1489 | 1492 |
|        | 1495 | 1565 | 1566 | 1567 | 1568 | 1569 | 1573 | 1574 | 1575 | 1576 | 1577 | 1580 | 1582 | 1584 | 1588 |
|        | 1592 | 1598 | 1601 | 1615 | 1618 | 1624 |      |      |      |      |      |      |      |      |      |
| MOV8   | 686  | 729  | 734  | 737  | 745  | 846  | 847  | 848  | 861  | 862  | 864  | 506  | 916  | 933  | 944  |
|        | 1008 | 1009 | 1012 | 1074 | 1100 | 1101 | 1119 | 1120 | 1121 | 1185 | 1410 | 1416 | 1619 |      |      |
| NOP    | 758  | 956  |      |      |      |      |      |      |      |      |      |      |      |      |      |
| RESET  | 673  | 721  | 788  | 890  |      |      |      |      |      |      |      |      |      |      |      |
| ROL    | 831  | 832  | 833  | 834  | 835  | 836  | 837  | 1173 | 1174 | 1175 | 1283 |      |      |      |      |
| ROR    | 839  | 1126 | 1127 | 1128 | 1129 | 1130 | 1131 | 1132 | 1276 | 1427 | 1428 | 1429 |      |      |      |
| RTI    | 705  | 716  | 1339 |      |      |      |      |      |      |      |      |      |      |      |      |
| RTS    | 977  | 990  | 1007 | 1016 | 1018 | 1077 | 1085 | 1088 | 1098 | 1122 | 1147 | 1149 | 1156 | 1181 | 1188 |
|        | 1266 | 1268 | 1279 | 1286 | 1346 | 1351 | 1361 | 1367 | 1372 | 1377 | 1382 | 1420 | 1441 | 1497 | 1578 |
|        | 1597 | 1612 | 1616 | 1632 |      |      |      |      |      |      |      |      |      |      |      |
| SUB    | 980  | 1154 | 1300 | 1613 |      |      |      |      |      |      |      |      |      |      |      |
| TRAP   | 420  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| TST    | 983  | 1068 | 1572 | 1585 |      |      |      |      |      |      |      |      |      |      |      |
| TSTB   | 985  | 1183 | 1334 | 1593 |      |      |      |      |      |      |      |      |      |      |      |
| .ASCII | 1192 | 1194 | 1204 | 1205 | 1206 | 1207 | 1208 | 1209 | 1210 | 1211 | 1212 | 1213 | 1215 | 1221 | 1227 |
|        | 1235 | 1243 | 1251 | 1500 | 1506 | 1508 | 1510 | 1513 | 1519 | 1521 | 1523 | 1528 | 1531 | 1534 | 1537 |
|        | 1540 | 1543 | 1546 | 1549 | 1551 | 1554 | 1557 | 1561 |      |      |      |      |      |      |      |
| .BYTE  | 1046 | 1047 | 1048 | 1049 | 1050 | 1051 | 1052 | 1053 | 1054 | 1055 |      |      |      |      |      |
| .ENABL | 1    | 370  |      |      |      |      |      |      |      |      |      |      |      |      |      |
| .END   | 1693 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| .EVEN  | 1259 | 1563 |      |      |      |      |      |      |      |      |      |      |      |      |      |
| .IRP   | 701  | 712  | 1629 |      |      |      |      |      |      |      |      |      |      |      |      |
| .LIST  | 1    | 370  |      |      |      |      |      |      |      |      |      |      |      |      |      |
| .MACR  | 431  | 436  | 441  |      |      |      |      |      |      |      |      |      |      |      |      |
| .MACRO | 1    |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| .MLIST | 1    | 370  |      |      |      |      |      |      |      |      |      |      |      |      |      |
| .PAGE  | 665  | 780  | 882  |      |      |      |      |      |      |      |      |      |      |      |      |
| .REM   | 1    |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| .REPT  | 450  | 1029 | 1043 |      |      |      |      |      |      |      |      |      |      |      |      |
| .SBTTL | 666  | 780  | 882  |      |      |      |      |      |      |      |      |      |      |      |      |
| .TITLE | 665  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| .WORD  | 648  | 649  | 650  | 651  | 1032 | 1033 | 1034 | 1035 | 1036 | 1037 | 1038 | 1039 | 1040 | 1041 | 1072 |
|        | 1686 | 1687 |      |      |      |      |      |      |      |      |      |      |      |      |      |

ERRORS DETECTED: 0  
 DEFAULT GLOBALS GENERATED: 0

\* DZRPD.SEG/SOL/CRF/PAGNUM/NL:TOC=SYSMAC.CO,DZRPD.P11  
 RUN-TIME: 25 31 3 SECONDS  
 RUN-TIME RATIO: 130/59=2.1  
 CORE USED: 33K (65 PAGES)

