3400 SCOPE OPERATING GUIDE VERSION 2.0

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INTRODUCTION TO SYSTEM

The Control Data® 3400 Computing System consists of the 3400 computer and peripheral equipment under control of SCOPE, a comprehensive supervisory system. Through SCOPE, the operator receives information concerning system operations and requests to which he replies via the 3400 console typewriter.

CONSOLE

The basic 3400 computing system includes a 3401 console. The console, connected to a 3406 data channel, contains switches for operating and maintaining the system, and an electric typewriter for input and output operations.

DISPLAYS

By means of lights, the operator's section of the console displays a variety of fault conditions, and the activity of input/output operations. All displays on the operator section of the console are active when the condition arises, whether the computer is running or stopped. For descriptions of fault conditions, refer to the appendix on Interruptable Conditions and Faults in the 3400 Reference Manual.

TEMPERATURE AND CIRCUIT BREAKER LIGHTS

The system is equipped with temperature sensing devices and circuit breakers to insure operations proceed without harm to the equipments. Light indicators on the operator section of the console monitor these conditions. If the temperature in a given cabinet exceeds the normal range, an amber light comes on. If the temperature reaches a point which might harm the equipment, a red light comes on and the computer halts. When a circuit breaker in a particular cabinet trips, light indicators for cabinet breakers are illuminated red and the computer halts. If any of these lights come on, either amber or red, call the customer engineer immediately.

JUMP SWITCHES

For initial AUTOLOAD, all jump switches must be off.

For AUTOLOAD Recovery, jump switch 2 is used (2 ON, 1, and 3 OFF).

After the system is autoloaded and all initial hardware assignments are made, the jump switches are interrogated. Jump switches 1, 2, and 3 are interrogated for the Card-to-Tape procedure. All other jump switch configurations have no meaning to SCOPE.

INTERRUPT MODE INDICATOR

The 3400 interrupt system provides tests for certain internal and external conditions. If one of these conditions has been encountered, the Interrupt Mode indicator is turned on. Some of the conditions which cause interrupts are machine malfunctions, programming faults, and input/output transmission terminations.

TYPEWRITER MESSAGES

When the TYPE IN indicator lights, the operator can type an operator control statement followed by a carriage return. SCOPE processes the statement, performs all necessary tasks, and returns to the typewriter with the TYPE IN indicator turned on again for another operator control statement and carriage return. The operator types <OK> <carriage return> to terminate the requests for additional statements and to return control to SCOPE; or a period can be included at the end of the last typed statement.

MANUAL INTERRUPT

The Manual Interrupt button allows the operator to initiate communication with SCOPE. When this button is pressed, SCOPE interrupts processing of the current job and activates the typewriter. At this point the TYPE-IN light is on.

PHYSICAL TAPE UNITS

The selector dial at the top of each tape unit determines the physical unit number of the tape. Each dial has nine positions, 0 through 7 and STAND BY. When the dial is set to STAND BY, the tape unit is disconnected from the system. Tapes in bank 0 are referred to as 01, 02,..., 07, depending on the setting. The tapes on bank 1 are referred to as 10, 11,..., 17.

Changing the selector dial value changes the AHT ordinal (refer to description of AHT Statement, page 7) that describes the physical unit.

PROGRAMMER UNITS

Logical unit numbers 1-49 can be referenced within a program running under the SCOPE system. SCOPE assigns the logical unit references to physical units and maintains a record of the assignments for the duration of the particular job. Whenever a programmer unit is assigned, the logical unit number and the physical unit to which it is assigned are written on OCM (usually the typewriter). When the job is completed, and the programmer does not want the unit saved, the units are available for other assignments by SCOPE for the next job.

SCRATCH UNITS

SCOPE assigns logical unit numbers 50-59 to available magnetic tapes for job processing. Scratch units which have been assigned for a job are released and available for reassignment at the end of the job.

SCOPE LOGICAL UNITS

SCOPE requires at least four magnetic tapes, a comment medium, and units for OUT, PUN, ACC and INP. SCOPE will assign logical units to physical units and report the action taken to the operator. EQUIP statements can be used to assign specific units. SCOPE may transmit messages requesting the operator to assign a particular unit.

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SCOPE Logical Units

Logical Unit Number	Mnemonic	Mode	Standard Unit
51	SO1	-	Scratch Unit (Tape)
60	INP	Binary	Input
61	OUT	BCD	Output
62	PUN	Binary	Punch
63	ICM	BCD	Input Comment Medium (usually a Console Typewriter)
64	OCM	BCD	Output Comment Medium (usually the Console Typewriter)
65	ACC	BCD	Accounting
66-68			Not Used
69	LGO	Binary	Load and Go (Tape)
70	LIB	Binary	System Library (Tape)
71-79			Auxiliary Libraries
80	SCR	Binary	System Scratch Record (Tape)

AUTOLOAD SWITCHES

A set of rotary switches on the 3400 Maintenance Panel selects the autoload unit. This is usually magnetic tape unit 0 on channel 0. However, the unit number may be changed if the library tape is assigned to a unit other than 0.

OPERATOR CONTROL STATEMENTS

Operator statements can be entered by the typewriter and by cards inserted in the job stack. Statements other than end-of-file cards must begin with a 7-9 punch in column 1 followed by the statement beginning in column 2. Typewriter statements do not use 7-9.

END-OF-FILE   An end-of-file card must be inserted at the end of every job in a stack of jobs. For on-line card reader, the end-of-file statement is a 7-8 punch in column 1. Other peripheral processing programs may require a different end-of-file representation.

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$^7_9$ENDSCOPE

An ENDSCOPE is placed after the last end-of-file in job stack on INP to terminate a SCOPE run and unload standard tapes. ENDSCOPE can be entered on ICM to terminate a SCOPE run at any time.

$^7_9$ENDREEL

Terminates INP but does not unload standard magnetic tapes. SCOPE types out U60 = MTxx. At the next request for 60, SCOPE types out A60 = MTxx. It is up to the operator to ensure that a new input tape is loaded on MTxx. ENDREEL can be entered on ICM.

$^7_9$SEQUENCE, n

The optional SEQUENCE statement can be inserted before each job. SCOPE uses n for positioning INP when the NEXT, n statement is used.

$^7_9$COMMENT,

The COMMENT statement writes on OCM in BCD the information punched on the comment card in columns 2 to 80.

NEXT, n

NEXT transfers processing to the job preceded by SEQUENCE, n on INP if both n's are identical, including leading zeros. If ,n is omitted, processing resumes with the next job on INP. n may be a sequence number or a sequence number modified by a decimal constant (i.e., NEXT, 036 + 14.).

REPEAT

REPEAT restarts the current job. This statement is entered via ICM only. (For tape INP only).

PAUSE, n

When a PAUSE statement is entered via ICM, processing halts when SCOPE encounters a SEQUENCE statement on INP containing the same n, allowing operator to type in control statement. If ,n is omitted, processing will halt at completion of current job.

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EQUIP, $u = d_1, d_2, \ldots, d_n$

EQUIP can be used by the programmer and operator to assign a logical unit number to a specified equipment. For example:

u   logical unit number

d_i declaration

Hardware Declarations: n is the AHT ordinal (see Appendix III) of hardware type; if omitted, the next available unit is assigned, as follows:

CRn	card reader
PTn	paper tape station
CPn	card punch
DFn	disc file
LPn	line printer
DRn	drum
TYn	typewriter
TVn	display unit (Cathode Ray Tube)
PLn	plotter
MTn	magnetic tape
DPn	disc pack

Usage Declarations

RW	read/write
BY	bypass
RO	read only

Density Declarations

LO	low density magnetic tape, 200 bpi
HI	high density magnetic tape, 556 bpi
HY	hyper density magnetic tape, 800 bpi

Release Declarations with message to operator

SV	save tape at end of job, tape unloaded automatically.

All tapes are assumed to be unlabeled so no special convention to indicate this is needed.

Equivalence Declaration

u'   unit equivalent to u; units are restricted to no more than one per statement.

$$62 = 61$$
$$65 = 61$$
$$65 = 62$$

$^7_9$AHT, e, m   This form of the AHT statement lists Available Hardware Table entries (see Appendix III).

e   AHT entry ordinal; if blank, entire table is listed

m = blank   output comment unit
m = OUT   listable output unit

$^7_9$AHT, e, a   This form of the AHT statement alters status of a unit.

e   AHT entry ordinal

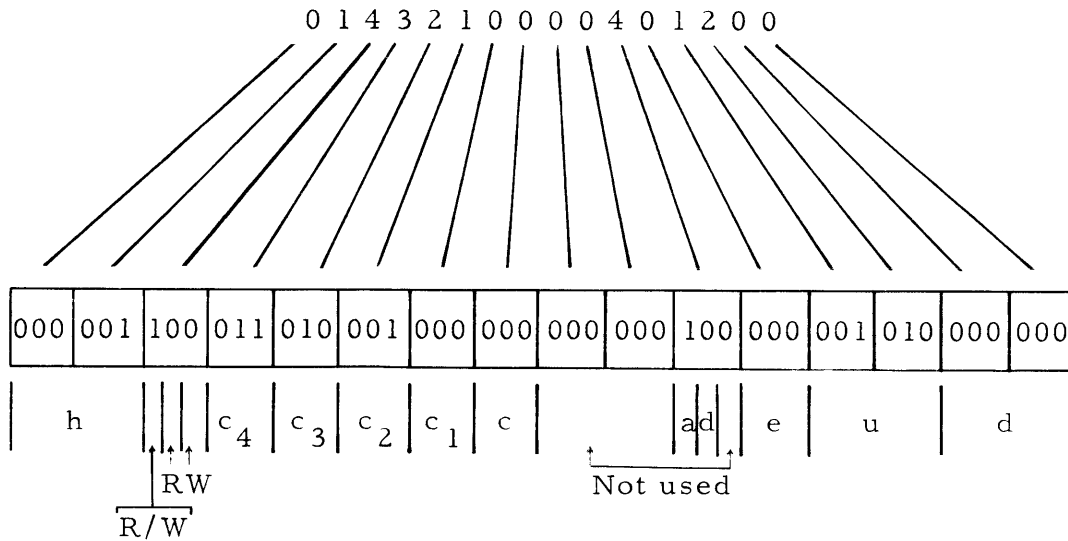a = DOWN   unit unavailable
a = UP   unit available

$^7_9$AHT, e, oooooooooooooooo

This form of AHT alters entire entry.

e   AHT entry ordinal
oooooooooooooooo   AHT replacement in octal

0 1 4 3 2 1 0 0 0 0 4 0 1 2 0 0

000	001	100	011	010	001	000	000	000	000	100	000	001	010	000	000

| h | | c_4 | c_3 | c_2 | c_1 | c | | | a d | e | u | d |

RW

R/W

Not used

h	signifies magnetic tape
R/W	indicates tape may be used for both input and output
R	indicates tape may be used for input only
W	indicates tape may be used for output only
c_4	indicates unit may be connected on channel 3
c_3	indicates unit may be connected on channel 2
c_2	indicates unit may be connected on channel 1
c_1*	indicates unit may be connected on channel 0
c	indicates unit may be connected on channel 0
a	unit is assigned
d	driver required
e	equipment number on controller
u	unit number of equipment
d	driver ordinal

* if channel number "0" is in any position other than c_1, it must be inserted as "4".

To indicate that the unit is to be used for input only would require that R/W=0 and R=1. The statement:

$^7_9$AET, 12, 0123210000401200

would make the necessary change in the AET.

SENSE SWITCHES

There are six sense switches (1 through 6) that may be interrogated by a running program. The switches are not physical switches but are bits (0 through 5) of a word labeled Q8QSSWT which resides in SCOPE. The switches may be set (=1) or reset (=0) only through the console.

The following steps are used to modify the status of the sense switches:

1. Obtain type-in through the use of MANUAL (see Manual Interrupt).

2. Type in:

    a. SSON, x. where x is the number of the sense switch (1 through 6), to set a switch.

    b. SSOFF, x. to reset a switch.

    c. SSON, ALL. to set all sense switches.

    d. SSOFF, ALL. to reset all sense switches.

SCOPE AUTOLOAD PROCEDURE

Mount magnetic tapes as follows:

1. Library tape with write ring removed on the autoload unit.
2. Standard input tapes with write ring removed.
3. Any other input tapes with write ring removed unless otherwise instructed.
4. As many blank tapes as required by the installation - normally at least two are required.
5. Clear all JUMP switches.
6. Press AUTOLOAD.

SCOPE will type out the initial assignment of system units. SCOPE now requests the current date and time by typing out the following:

ENTER DATE AND TIME

The operator types in the date: carriage return (optional)
month, 2 digits followed by a slash (/)
day, 2 digits followed by a slash (/)
year, 2 digits followed by carriage return
hour, 2 digits followed by a slash (/)
minute, 2 digits followed by a slash (/)
second, 2 digits followed by a slash (/)

SCOPE now begins to process the first job on INP.

CARD TO MAGNETIC TAPE PROCEDURE

1. Mount library tape on Autoload unit.
2. Mount a blank tape and select the physical unit.
3. For Autoload, place card deck in reader, 9 edge down and facing into the reader.
4. To initiate feeding cards into a Control Data 3447 or 3649 card reader with main power on, press

       MOTOR POWER
       RELOAD MEMORY
       AUTO
       READY

5. When SCOPE requests time and date, set Jump Switches 1, 2, and 3 on the 3400 console. Enter date and time.
6. When the card to tape is finished, the operator will be requested to reset the jump switches, and SCOPE initiates job processing.

MANUAL INTERRUPT

If the computer is running and it is necessary to terminate or halt the job in process for any reason, the operator may interrupt SCOPE and choose a new course of action. The reason for so doing might be to process a higher priority job, alter the equipment assignments, and so forth.

1. Press MANUAL INTERRUPT.
2. Wait for TYPE IN indicator to light. If TYPE IN indicator does not light, press MANUAL INTERRUPT again.
3. When the TYPE IN indicator lights, type the SCOPE operator control statement required followed by carriage return. Wait after each carriage return for the TYPE IN indicator to light before beginning a new statement.

> NOTE: The last operator control statement may be followed by a period and a carriage return, after which SCOPE will resume normal operation; or, when all statements have been processed and the TYPE IN indicator lights, type <period> <carriage return>.

4. Type one of the following:
   a. REPEAT <carriage return>
      This will terminate the current job and position the input tape at the beginning of the same job by backspacing to the beginning of the file.
   b. NEXT. <carriage return>
      This will terminate the current job and position the input tape at the beginning of the job following the current job on the input tape.
   c. NEXT, nnn <carriage return>
      This will terminate the current job and position the input tape at the beginning of the job with sequence number nnn.
   d. ENDREEL <carriage return>
      This statement will terminate the current job, and release and unload INP. SCOPE will continue by assigning INP; however, the operator should mount a new input reel for processing to continue.
   e. ENDSCOPE <carriage return>
      This statement always terminates a SCOPE run.
   f. OK <carriage return>
      To return to processing where interrupted.

TERMINATION BY RESTART

The operator may terminate a run in process by pressing the RESTART button on the console. This will cause the current program being executed to terminate abnormally. If RESTART does not work, the Autoload Recovery should be used.

AUTOLOAD RECOVERY PROCEDURE

Autoload Recovery Procedure is used to terminate the current job
abnormally. A full core dump is taken and SCOPE is completely
reloaded.   The procedure is (see Appendix I for example):

1.   Set Jump Switch 2 to ON
2.   Set Jump Switches 1 and 3 to OFF
3.   Press AUTOLOAD
     The following message will then be printed on the console:

   TYPE IN EQUIPMENT AND UNIT NUMBER FOR CORE DUMP

4.   Type in the equipment and number of the tape dump (logical unit 80)
     followed by END OF RECORD
     A core dump will be taken.
     The following message will then be printed on the console:

   WHERE OH WHERE IS THE LIBRARY AT?

5.   Type the equipment and unit number of the library tape followed
     by END OF RECORD. For autoload recovery, the library unit
     and the dump unit must be on Channel 0.   Assign system units
     according to the following format:

   nll=hhaa

   where: n may be

                   A   denotes assigned
                   R   denotes released
                   U   denotes released and unloaded (saved)

         ll is the master logical unit number
         hh is the hardware type
         aa is the AHT ordinal of the hardware type

   Example: If logical unit 50 is to be assigned to a magnetic
             tape designated by AHT ordinal 1, it would be
             specified as:

                A50=MT01

             Resident SCOPE will be loaded.
             The following message will then be typed on the console:

                RECOVERY OK   ENTER DATE AND TIME

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6. Type the date and time in the following format:

dd/mm/yy
hh/mm/ss

The core dump previously taken is interpreted and the result is printed on OUT.

The following message will then be typed on the console:

AUTO-LOAD RECOVERY COMPLETED.
-NEXT-STATEMENT REQUIRED TO CONTINUE.

7. Type NEXT.

CONSOLE MESSAGES

During the processing of a job, various messages may appear on OCM. The messages are described in groups. The groups are 3400 SCOPE, 3400 COMPASS, 3400 FORTRAN, 3400 COBOL, 3400 SORT, and 3400 GPIO.

3400 SCOPE

SEQ. NO. xxx	This is written on OCM when a 7/9 SEQUENCE control card is encountered on INP before a 7/9 JOB card. xxx is the number found on the SEQUENCE card.
, dddddd, hhmmss	This is written on OCM when a job is signed on. dddddd is the first six characters of the Job ID on the JOB card and hhmmss is the current time of day at sign on.
END , dddddd, hhmmss	This is written on OCM when a job is signed off. dddddd has the same meaning as in sign-on and hhmmss is the time of day at sign-off.
ABN. xx	This is written on OCM when a job has been terminated abnormally. xx is a number designating a message written on OUT that explains why the job was terminated. The numbers typed on OCM and the messages printed on OUT are listed on the following pages.

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Typed on OCM	Printed on OUT
xx=1	ILLEGAL SCOPE STATEMENT.
2	LOADING INITIATED, BUT NO EXECUTION, EOF OR INVALID STATEMENT PRECEEDED RUN CARD.
3	PRINT LIMIT ON RUN CARD ZERO. EXECUTION DELETED.
4	TIME LIMIT ON RUN CARD ZERO. EXECUTION DELETED.
5	EXCESSIVE NUMBER OF DRIVERS CAUSED PRESET ENTRY TABLE OVERFLOW. JOB ABANDONED.
6	BINARY TO HOLL. CONVERSION ERROR ON ABOVE STATEMENT. STATEMENT IGNORED.
8	SYSTEM LIBRARY REQUEST REJECTED. END SCOPE CONDITION INITIATED.
9	I/O EQUIPMENT FAILURE.
10	ILLEGAL PARAMETERS IN SCOPE I/O REQUEST.
11	OPERAND OR INSTRUCTION PARITY. RUN TERMINATED.
12	TIME LIMIT EXCEEDED. RUN TERMINATED.
13	ILLEGAL INSTRUCTION. RUN TERMINATED.
14	ILLEGAL BOUNDS INTERRUPT.
15	SIXTH LEVEL INTERRUPT DETECTED. RUN TERMINATED.
16	ILLEGAL CODE ON SELECT/REMOVE. RUN TERMINATED.
17	ILLEGAL REQUEST FOR A SYSTEM UNIT. RUN TERMINATED.
18	INVALID UNIT ON THE ABOVE STATEMENT. EXECUTION DELETED.
19	2 TRA CARDS ENCOUNTERED...NOT FOLLOWED BY A RUN CARD. EXECUTION DELETED.
20	ERRORS IN LOADING.

Typed on OCM	Printed on OUT
21	PRINT LIMIT EXCEEDED. RUN TERMINATED.
22	DRIVER MISSING. RUN TERMINATED.
23	TRANSLATOR ERRORS. EXECUTION DELETED.
24	REPEAT, NEXT OR ENDSCOPE STATEMENT INITIATED RUN TERMINATION.
25	ILLEGAL END-OF-FILE ON SYSTEM UNIT. RUN TERMINATED.
26	UNREADABLE CONTROL STATEMENT ON INP. JOB TERMINATED.
27	TAPE READ REQUEST FOR A LABEL UNKNOWN TO SYSTEM. RUN TERMINATED.
28	ERROR IN THE ABOVE EQUIP STATEMENT. RUN TERMINATED.
29	ERROR IN THE EQUIPMENT TABLES. RUN TERMINATED.
31	NON-EXISTENT PHYSICAL UNIT REQUESTED. RUN TERMINATED.
32	MANUAL RESTART INITIATED, RUN TERMINATED.
33	ERROR ON AHT STATEMENT.
34	END-OF-TAPE ON INP. ENDSCOPE CONDITION INITIATED.
35	UNRECOVERABLE ERROR ON INP. ENDSCOPE CONDITION INITIATED.
36	UTILITY ERRORS. RUN TERMINATED.
37	DRIVERS REQUESTED NOT ON LIBRARY OR REQUESTED AFTER LOADING INITIATED. RUN TERMINATED.
38	ABNORMAL EXIT TAKEN. RUN TERMINATED.

nll=hhaa   This message will appear on OCM when an equipment assignment is made, an assignment is relinquished, and when a tape is to be saved.
n may be:

         A   denotes assigned
         R   denotes released
         U   denotes released and unloaded (saved)

ll is the master logical unit number
hh is the hardware type
aa is the AHT ordinal of the hardware type

For example: R42=MT06

Logical unit 42 has been released, rewound, but not unloaded.
Logical 42 was assigned to tape unit described by AHT ordinal 6.

WHERE IS xx   This appears on OCM when the user program requested an I/O operation on an unassigned unit.
xx is the logical unit number in the request.

The operator must type in an EQUIP statement followed by carriage return (see OPERATOR CONTROL STATEMENTS). When responding to a WHERE IS the operator need not type the EQUIP, . No other type of control statement may be entered at this time. If desired, the operator may terminate the run by RESTART or autoload recovery.

ERROR ON EQUIP STATEMENT. TRY AGAIN
         This will appear on OCM if the response to statement WHERE IS xx is in error due to non-existant AHT entry.

NOTE: The computer will hang in a tight one cell loop with zero in A if the JOB PROCESSOR or LOADER cannot be loaded from the system library. The program counter will be under 15000. This condition indicates a bad library tape. It should be replaced and the system re-initialized via an autoload or autoload recovery.

BAD LIBRARY TAPE

This message is written on OCM when an irrecoverable parity error is found when SCOPE is attempting to retrieve a program from the library tape.

PAUSE

This message is written on OCM when a 7/9 PAUSE statement has been encountered on INP, (see rules for placement of PAUSE card in SCOPE 3400 Reference Manual) or a PAUSE, n statement was typed in on a previous job. The operator must press MANUAL INTERRUPT on the 3400 console. Type in will be enabled. A SCOPE statement followed by a period or OK. must be typed in for further processing to be done.

PROCESSING-NEXT-

Self explanatory.

-NEXT-STATEMENT REQUIRED TO CONTINUE

This is written on OCM when conditions are such that there is an option in regard to continuance of processing. The options are: initialize system units (rewind INP, OUT, SCR) or commence processing from current positions of INP, OUT, SCR. The operator must press MANUAL INTERRUPT, wait for type-in to be enabled, then type in NEXT. or NEXT, n. NEXT. reinitializes INP, OUT, SCR while NEXT, n will search for sequence n before continuing processing.

IDLE.   hhmmss

This is written on OCM when an ENDSCOPE condition is reached. hhmmss is the time of day. To resume processing, the operator must press MANUAL INTERRUPT, wait for type-in to be enabled, and then respond with OK. <carriage return>. Any valid SCOPE control statement may also be given at this time.

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COMPASS ERROR MESSAGES

1. PARITY ON LIBRARY TAPE WHILE READING IN THE MACRO LIBRARY. DEPRESS JUMP SWITCH 1 TWICE TO GO TO NEXT JOB OR ELSE MOUNT NEW TAPE.
2. PARITY bbb (logical unit).
3. BAD CONTROL UNIT - STANDARD SUBSTITUTED (on 7/9 COMPASS card).
4. PUNCH ERROR. REMOVE 2 CARDS FROM PUNCH STACKER. SET AND RELEASE JUMP SWITCH 1. (For on-line system only.)

FORTRAN MESSAGE

ERROR IN I/O PACK   WRITECK
UNIT NO xx
MEANING: FORTRAN COULD NOT WRITE ON UNIT xx BECAUSE OF PARITY.

ERROR MESSAGE OUTPUTS FROM S.IO PACK

1. TAPE (logical unit no. in decimal)   UNREADABLE
                                          UNWRITABLE
2. COMPARE ERROR WHILE PUNCHING CARDS. REMOVE 2 TOP CARDS FROM HOPPER. RESUME OPERATION BY TURNING SELECTIVE JUMP SWITCH 1 ON AND THEN OFF...
3. ERROR WHILE READING CARD. JOB ABANDONED............

3400 SORT MESSAGES

1. *BEGIN SORT*
2. *BEGIN FINAL PASS*
3. *BEGIN SORT*
4. *BEGIN MERGE*
5. *END MERGE*
   dddddddd RECORDS dddddddd INSERTS dddddddd DELETES dddddddd RPLACED
6. *SEQER*

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UTILITY CONTROLLER
1. TOO MANY PARAMETERS
2. NO PARAMETERS
3. ERROR IN CONTINUATION CARD
4. TOO MANY DIGITS IN OCTAL FIELD
5. A NON-DIGIT IN DECIMAL FIELD
6. DECIMAL NUMBER TOO LARGE
7. A NON-OCTAL CHAR IN OCTAL FIELD
8. READ PARITY ON INP
9. READ PARITY ON ICM

All above mentioned type-outs will precede an abnormal termination of a given UTILITY job.

TAPECOPY

1. READ PARITY ERROR

   Action of Operator:

   1. Type in: OK   - the job is continued despite the parity error.
   2. Press RESTART - the job is terminated abnormally.

2. WRITE PARITY ERROR

   Action of Operator:

   1. Type: OK   - the routine will try up to 3 more times erase tape and rewrite the same record.
   2. Press RESTART to terminate job.

CARDTAPE

1. WRITE PARITY ERROR

   Action of Operator:

   Same as in number 2 of TAPECOPY.

3400 GPIO MESSAGES

EOT RECORD COUNTS BAD ******* TYPE C TO CONT.
READF PARITY TYPE-IN R OR S TO REPEAT OR STOP
UNIT NOT READY. TYPE-IN C TO CONTINUE
WRONG DENSITY. TYPE-IN C TO CONTINUE OR S
    TO STOP
WRITEF PARITY TYPE-IN R OR S TO REPEAT OR
    STOP
UNIT NOT READY. TYPE-IN C TO CONTINUE
WRONG DENSITY. TYPE-IN C TO CONTINUE OR
    S TO STOP
NO WRITE RING. TYPE-IN C TO CONTINUE OR
    S TO STOP

The following messages will appear if a job is
terminated abnormally:

LABEL DOES NOT HAVE FOLLOWING EOF MARK
TWO CONSECUTIVE FILE MARKS
OPENF ATTEMPTED ON OPEN FILE
OPENF ATTEMPTED ON SHARED BUFFER
CLOSEF ATTEMPTED ON CLOSED FILE
CLOSEF ATTEMPTED ON SHARED BUFFER
CLOSEF CALL SEQ, EOR CONFLICTS WITH
    LABEL EOF
READF ATTEMPTED ON CLOSED FILE
READF ATTEMPTED ON OUTPUT FILE
READF ERROR-CHECK UNIT STATUS *******
READF ATTEMPTED AFTER END OF FILE READ
WRITEF ATTEMPTED ON CLOSED FILE
WRITEF ATTEMPTED ON INPUT FILE
WRITEF ERROR-CHECK UNIT STATUS *******

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APPENDIX I

Example of Normal Autoload and Autoload Recovery

Description of Type Out	Console Type Out
NORMAL AUTOLOAD	A64=TY01
	A70=MT06
	A60=MT10
	A61=MT01
	A69=MT03
	A80=MT04
	A51=MT05
	ENTER DATE AND TIME
	03/09/65
	14/18/00
	R51=MT05
Job Sign-on	SEQ, NO. 447
	, RASOR , 141810
PAUSE Card on INP	*** PAUSE *** OK
Processing of Job	R69=MT03
AUTOLOAD RECOVERY	TYPE IN EQUIPMENT AND UNIT NUMBER
	FOR CORE DUMP
	0004 <END OF RECORD> (leading zeros
	not required)
	WHERE OH WHERE IS THE LIBRARY AT?
	0006 <END OF RECORD> (leading zeros
	not required)
	A64=TY01
	A70=MT06
	A60=MT10
	A61=MT01
	A69=MT03
	A80=MT04
	A51=MT05
	RECOVERY OK ENTER DATE AND TIME
	03/09/65
	14/19/00
	R51=MT05
	AUTO-LOAD RECOVERY COMPLETED.
	-NEXT- STATEMENT REQUIRED TO CONTINUE.
Next Statement With-	NEXT.
out a Sequence Number	
Will Cause the Input	
Tape to be Rewound	
	END (******)141930
	R69=MT03

Example of Console Output Listing

1st Job Processed	SEQ. NO. 447
	, RASOR , 141933
	*** PAUSE *** NEXT, 696.
	PROCESSING -NEXT-
Job Sign-off	END , RASOR, 142006
2nd Job Processed	SEQ. NO. 696
	, CDC , 142008
	A20=MT11
	A69=MT03
	R69=MT03
Comment Card on INP	COMMENT, OPERATOR-PUT REEL 15 ON
	LOGICAL TAPE 1.
	WHERE IS 01 01=MTR
	ERROR ON EQUIP STATEMENT. TRY AGAIN
	01=MT7, RO, SV
	A01=MT07 THIS IS A USER PROGRAM TYPEOUT
	TYPE IN MY PARAMETER 4F69T2U
	ABN. 13
	R01=MT07
	R20=MT11
	END , CDC , 142133
ENDSCOPE	R60=MT10
	U61=MT01
	IDLE. 142136

Available Hardware Table Format

The Available Hardware Table is a directory of all peripheral devices that may be driven under the control of SCOPE. The table is contained in SCOPE. The table is ordered by hardware type. Each peripheral device such as a magnetic tape is represented by an entry in AHT. The format of the entry is as follows:

47	41 40 39 38	35	32	29	26	23	19 18 17	14	5	0
	$\frac{R}{W}$ R W	c_4	c_3	c_2	c_1	c	a d	unit number		

↑ Hardware type   ↑ equip no.   ↑ DNT ordinal
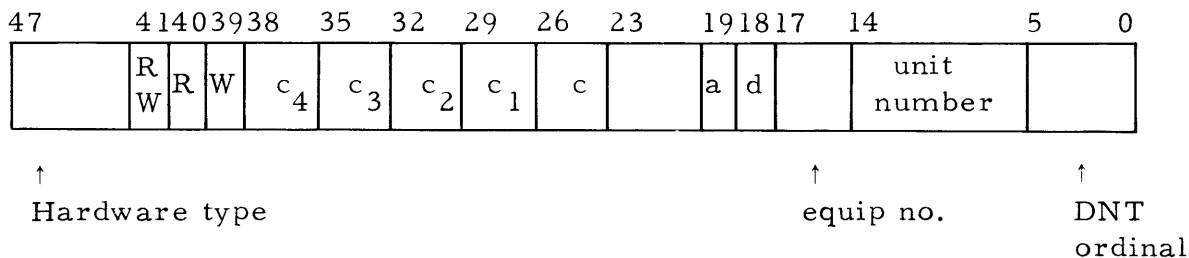
where bits

0-5	Driver name table ordinal - This is used by SCOPE to locate driver for peripheral device. Tapes do not require a special driver (blank).
5-14	The physical unit number of the device (number on unit dial).
15-17	The equipment or controller number.
18	if set means the unit is down.
19	if set means the unit is assigned.
20-23	not used
24-26	last channel to which equipment was connected.
27-29	a channel to which this equipment may be connected.
30-32	same as above
33-35	same as above
36-38	same as above
39	if set, this unit is an output only unit
40	if set, this unit is an input only unit
41	if set, this unit is capable of output and input.
42-47	hardware - Each type of peripheral device is identified by a code. The codes are:

01 = magnetic tape	10 = typewriter
02-03 = not used	11 = disc file
04 = card reader	12 = drum
05 = card punch	13 = display unit
06 = line printer	14 = plotter
07 = paper tape	15 = disc pack