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SCIENCE RESEARCH COUNCIL

ATLAS COMPUTER LABORATORY

Chilton Multi-Access System

Control Console Operator's Manual

May 1969

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Introduction

This manual documents the facilities available to the multi-access system operator at the SDS control console situated alongside Sigma 2. It should be emphasised that this console is quite unlike the other System consoles and that the facilities described here are not available to the ordinary user of the System. Conversely, none of the System commands described in the User's Manual are available at the SDS console.

As its name implies, the control console gives the operator complete control over the running of the entire multi-access system, from starting up a new session, through taking a spot check on running conditions, to closing it down when required.

To achieve communication, the operator must 'interrupt' the System using the INTERRUPT switch on the control panel of Sigma 2 (details of how to do this are given later), and type the appropriate command.

Moreover, during the course of a session, certain messages will be output on this console by the System. These messages will 'kill' any current console activity.

2. Starting up a Session

To switch on the machine:

1. The main isolator switch should not be touched. If it is off, contact one of the System writers. This switch controls the 50HZ, 60HZ, and Interface supplies, and will cause an incident on ATLAS if switched on or off during normal conditions.
2. The two switched boxes contain switches for individual units with lamps to show which are on. To continue, the following lamps should be lit:

60HZ: P.S.U.
 RAD
 L.P.

50HZ: MAIN FRAME
 PTR/P
 CR
 TTY

If the RAD and PSU are not on, contact one of the System writers before switching on, in case the correct power off procedure has not been carried out. Otherwise, switch on units in the order stated above.

3. Press the POWER button on the control panel of the main frame.
4. Check that the paper tape reader/punch (PTR/P) POWER light is lit.
5. Turn the right-hand knob on the SDS console (TTY) to ON. Check that the left-hand knob is pointing to ON LINE and the red light is lit.
6. Press the POWER button on the lineprinter (LP). When the operational light is lit, press START.

The machine is now ready for the System to be read.

Under normal running conditions, switch on TELE E, TELE F, and MODEM at the wall box.

To load the System and start a session:

1. Check that all switches on the control panel are horizontal.
2. Load the BEGIN tape loop into the reader by lowering the guide, inserting the tape with sprocket holes inwards under the read head and raising the guide. Press the reader START button.
3. Move the INITIALIZE switch on the control panel down to RESET and up to LOAD.
4. Put the PTR device address on the DATA hand switches, select the A register with the knob, move the REGISTER switch down to CLEAR and up to ENTER.
5. Raise COMPUTE switch up to RUN.

At this point a section of the BEGIN tape will be read in, the reader will stop, and the W light on the panel will be lit.

6. Move the COMPUTE switch to IDLE and back to RUN. The rest of the tape will be read. The display lights will flash and then go steady. Lower the PTR guide. If the PARITY light illuminates during this step, move the COMPUTE switch to IDLE, and inform one of the System writers. Do not proceed until the trouble has been cleared.

When this step has been completed, the basic System will be in store.

7. Put in RECOVER command (see Section 6)
8. Put in DATE
9. Put in TIME
10. ENGAGE all consoles
11. Check with ATLAS operators that ATLAS is running and nobody has supervisor time. If ATLAS is not running user jobs, use

JOBS 0

to prevent running of jobs on ATLAS.
As soon as ATLAS is running normally, put in

JOBS 8

This completes the basic initialisation of the System.

3. Closing down a Session

1. About 5 minutes before the session is due to close, use the SIGNAL command (see section 5) to warn all users.
2. Put in STOP.
3. Put in DUMP. If this is unsuccessful, check
 - (a) no user is logged in (by STATE).
 - (b) no-one has a job in ATLAS (by DIRECTORY).

If (a), wait until the user is logged out.

If (b), check job titles from the console output and locate them in ATLAS. If the jobs are not recognised, use the CLEAR command.

Proceed until DUMP is successful.

4. Do a full PM.

The System is now closed. Collect all logging output and hand to the appropriate person.

To switch off the machine.

5. Set COMPUTE switch to IDLE.
6. Press POWER switch on LP.
7. Check PTR guide is lowered.
8. Turn OFF right-hand switch on TTY.
9. Press POWER switch on Control Panel.
10. Turn off TELE E, TELE F, MODEM. Check that DIDS display is switched off (if it is beside SIGMA 2).
11. Turn off TTY switch in 50HZ box.
12. Do NOT touch the RAD or PSU switches, and do NOT touch the main isolator switch.
13. If requested by one of the System writers, turn off all the switches in the 50HZ and 60HZ boxes except the RAD and PSU.

The machine is now completely switched off.

If the Atlas Engineers wish to service the disc (e.g. to switch controllers), close down the System before they start, and only re-start the System from scratch when they have completely finished.

Close down procedure for the RAD is as follows. This should only be done when absolutely necessary.

1. Open the front door of the RAD (not the 60HZ supply). Inside you will find some rotating disc plates in the lower half and a rack of electronics in the top half. If the disc plates are not rotating, the machine is off.
2. Open the rack of electronics by undoing two screws on the far left hand side of the rack. The whole rack should swing easily out.
3. Behind this rack is another rack. Perform the previous step (2) on this and swing this rack out as well.
4. Behind the second rack, at waist level, there is a plastic cover with the words

EMERGENCY
USE ONLY

on it, and a small switch beside it. Turn off the small switch and wait until the disc plates have stopped rotating. Then, and only then, pull back the plastic cover and switch off the large plastic switch behind it.

N.B. The switching order is very important.

5. Close and secure the racks and the door.

4. Messages output by the System

(i) JOB userid job title

This will appear each time a user initiates an Atlas job and is the first line of the job description being sent down the peripheral link. If it is followed by the message

JOB ABANDONED

then either Atlas is not operating (some 10 seconds or so delay occurs if this is the case) or else the job description is in error (a much more immediate response).

(ii) OUTPUT n

userid job title

This originates from Atlas and indicates that the appropriate job has been run to completion.

NOTE The userid may be followed by ? or *

? signifies a userid unknown to the System

* signifies that the System was unaware of the presence of a job in Atlas for this user. This is probably a result of the operator having CLEARED the input/output disc space allocated to that user.
(The CLEAR command gives more details.)

(iii) Y

followed by a message

originates from Atlas but is not associated with a console initiated job. It is probably a message from an Atlas operator but can also be due to an Atlas peripheral mis-read or by an Atlas document being read other than from its beginning.

(iv) MESSAGE FOR SYSTEM

indicates that a console user has SIGNALLED the user SYSTEM. This should be read as soon as possible.

(v) Messages beginning with one of the Atlas operator requests (e.g. Z, XHIG, etc) are jobs which have been initiated by the user SYSTEM.

(vi) POWER FAIL

indicates that a failure has occurred in the power supply to Sigma 2 and that it has now been restored. The operator should ascertain which users were active at the time (using the STATE command) and re-ENGAGE the required consoles. At the earliest opportunity thereafter, the System should be STOPped and DUMPed and a consistency check run on all files.

(vii) Messages beginning with a user identifier, followed by a/, are error messages concerning files to which output from ATLAS is being sent. The name following the / is the name of the file in question. Inform the owner of the file when convenient.

(viii) ***DISC ERROR x yyyy RESET S15

A disc error has occurred. x will indicate whether the transfer was read or write, and yyyy will give information about the type of error.

The system will loop until data switch 15 is altered, when the offending transfer is retried. If the error persists, check with the ICL engineers and inform one of the System writers.

(ix) ***LOG PAPER LOW

If the PAPER LOW light on the paper tape punch is lit, either there is not enough paper left in the punch, or the sensing arm has been left raised. Rectify either condition at once. Ignore the message if the PAPER LOW light is not lit.

5. Further Points

5.1 Requests for Lines

As there are more consoles than lines available, a user may require to use a console which is not attached to SIGMA 2. He will ring the operator, giving his room number.

1. Put in STATE. If the System is full, inform the user, note his telephone number, carry out the next steps when possible, and phone back when done.
2. If the System is not full, select a line which is not specified in the list given by the STATE command. This line may not be one of the following:

Lines 0 to 3 inclusive : these are display lines.

Lines E and F : these are permanently beside SIGMA 2

3. Remove the line from its present socket and plug it into the socket labelled

S2 / x

where x is the room number of the user requesting the line.

N.B. This step should be carried out as soon after a STATE command as possible, to minimise the possibility of another user logging in on the line which will be changed. This STATE will check that the line selected is indeed free.

4. Use STATE again to check that the user is logging in O.K.

N.B. Do not move a line twice before a user has logged in on it.

6. Detailed Description of Commands

The commands described in this section are input on the SDS console which must first be activated by pushing UP the blue INTERRUPT switch on the control panel of Sigma 2. A message may be cancelled, or output deleted, by further activation of the interrupt switch (except for FM output). Moreover, the System deactivates the SDS console (if active) when the messages described in section 4 are output.

Upon interrupting the System as described above, the time is printed. The green light then illuminates indicating that input can proceed. Only the first four characters of each command are checked, but if the command requires arguments, they must start in the position determined by one space after the full command name. Thus one may use either

ENGAGE B

or ENGA B

but not ENGA B

Each command line must be terminated by both newline and the EOM key.

When successfully completed, the final response to a command is * but incorrect arguments or an unknown command will usually invoke the response

ERROR

A detailed list of commands (in alphabetical order) and their effects follows.

Summary of Commands Available

ALLOW	permits stated user to run Atlas jobs
CLEAR	releases i/o disc space allocated to specified user's Atlas job
DATE	sets up date in Sigma 2
DIRECTORY	lists all users in master file directory, and certain information about them
DISENGAGE	disengages all consoles from System
DUMP	writes away current state of System to disc
ENGAGE	specified consoles are connected to System
ENTER	introduces new user to the System
FSPACE	allocates permanent file space to user
FULL	selects specified console in full-duplex mode
HALF	selects specified console in half-duplex mode
JOBS	sets maximum number of permissible concurrent Atlas jobs
MESSAGE	sets up 'message of the day'
PM	initiates selected post-mortem dump
PREVENT	restricts stated user from running Atlas jobs
RECOVER	restores current state of System in store from disc
REMOVE	removes stated user from System
RESET	clears stated user's password to null
SIGNAL	sets up 'urgent message' to all consoles
STATE	gives current state of active users
STOP	forces users to logout
TIME	sets up time in Sigma 2
USERS	sets maximum permissible number of active users
1900	selects specified console as 1900-type

ALLOW

Standard Format

ALLOW userid

Normal Response

The specified user is allowed to run jobs into ATLAS from a console.

Error Response

UNKNOWN USER userid not in master file directory.

CLEAR

Standard Format

CLEAR userid

Normal Response

If set, the JOB IN ATLAS marker for the specified user is cleared and any I/O space allocated to him is released back for further use. This command should not be used unless the operator is absolutely certain that the user's job is missing from the Atlas queues. The Atlas operator request, XJOB, should be used to give this information.

Error Response

ERROR	the JOB IN ATLAS marker is not set.
UNKNOWN USER	userid not in master file directory.

Standard Format

DIRECTORY

Normal Response

A full list of all user identifiers in the master directory is typed on the line printer, together with information about each. This information is

User ALLOWed or PREVENTed: letter A or P

User has job currently in ATLAS or not: letter Y or N

Directory block address as a four-digit hexadecimal number
(if the user has no directory, the word NONE is printed instead).

The user's permanent file space allocation as a four-digit
hexadecimal number.

DISENGAGE

Standard Format

DISENGAGE

Normal Response

All consoles are disengaged. The message ***DISENGAGED is output on every console where there is a user currently logged in.

Standard Format

DUMP

Normal Response

The current state of the System is dumped to disc prior to a shut down. Any user waiting to be REMOVED will be deleted from the master directory at this stage and a message output to that effect.

Error Response

ERROR

the above command may only be used if

- a) STOP has previously been used
- b) all users are logged out
- c) no jobs are still active in Atlas

Standard Format

ENGAGE a,b,c,...

Alternative Format

ENGAGE ALL

Normal Response

a, b, c etc, are hexadecimal console numbers. All those specified will be engaged. The message ***ENGAGED is output to all specified consoles where there is a user currently logged in.

If the alternative format is used, all existing lines will be engaged. However, no messages will be output. This alternative should be used at the start of a session only.

Error Response

ERROR typing error. All correct console numbers before the error will cause those consoles to be engaged.

ENTER

Standard Format

ENTER userid

Normal Response

The new user name is entered in the master directory with null password, and with ALLOW status.

Error Responses

ERROR

typing error in command line

USER ALREADY PRESENT

userid found in master directory

TOO MANY USERS

master directory full

Standard Format

FSPACE userid x

Normal Response

The specified user is allocated the stated (decimal) number (x) of disc blocks as permanent file space.

Error Responses

ERROR

typing error

UNKNOWN USER

userid not in master file directory

INSUFFICIENT FILE SPACE AVAILABLE

there are less than the stated number of blocks available on the disc for permanent files

Standard Format

FULL a,b,c,...

Normal Response

a, b, c etc., are hexadecimal console numbers. All those specified will be selected in full duplex mode.

Error Response

ERROR

typing error. All correct console numbers typed before the error will cause those consoles to be selected in full duplex mode.

Standard Format

HALF a,b,c,...

Normal Response

a, b, c etc., are hexadecimal console numbers. All those specified will be selected in half duplex mode.

Error Response

ERROR typing error. All correct console numbers typed before the error will cause those consoles to be selected in half duplex mode.

Standard Format

JOBS x

Normal Response

x is a decimal integer (≤ 8), and is set as the maximum number of jobs allowed in ATLAS at any one time.

Error Response

ERROR error in decimal number x, or $x > 8$

Standard Format

MESSAGE

Normal Response

When the end-of-message terminating the command line is pressed, the green input light remains lit. Further input (<80 characters) up to another end-of-message is assembled as a message of the day, and printed on each console as a user logs in. The second end-of-message will cause * to be typed. (CANCEL MESSAGE)

Standard Format

PM ^^

(N.B. two spaces MUST follow the command)

Normal Response

Post mortem information is printed out depending on the setting of the handkeys, as follows.

bit	0	1	print TRACE table
bit	1	1	print disc queues and small buffer table
bit	2	1	print active user work areas
bit	3	1	print all non-zero clocks

Note that all users are halted by this command which should therefore be used infrequently.

N.B. The line-printer must be STARTed before PM is used.

Error Response

ERROR two spaces after PM have not been typed

(If no post mortem information appears then check that the required handkeys have been set.)

Additional Facility

If bit 4 is set to 1, PM will allow the hexadecimal listing of blocks of store, selected by bits 9-15 of the hand switches. The 256 words selected in this manner will be printed every time bit 4 is altered.

If bit 8 is selected, and bit 4 is altered, PM listing will end.

This facility is to assist the System writers only, and should never be used in normal circumstances.

PREVENT

Standard Format

PREVENT userid

Normal Response

The specified user is prevented from running jobs in ATLAS from a console.

Error Response

UNKNOWN USER userid not in master file directory

Standard Format

RECOVER

Normal Response

The previously dumped system state is recovered from the disc at the beginning of a run.

Error Response

ERROR

this command must be the first used at the start of a session, otherwise the error message will be printed (this usage includes typing errors).

Standard Format

REMOVE userid

Normal Response

The userid is placed in a table, and, when the system is next dumped, the user is removed from the master directory.

Error Responses

ERROR	typing error
UNKNOWN USER	userid not in master directory
TOO MANY REMOVALS	removal list full

RESET

Standard Format

RESET userid

Normal Response

The password of the specified user is reset to null.

Error Response

UNKNOWN USER userid not in master file directory

Standard Format

SIGNAL

Normal Response

When end-of-message is pressed, the green input light remains lit. Subsequent input (<80 characters) up to the next end-of-message will be output on each user's console, preceded by ***, every time he returns to command state. After the second end-of-message, a * will be typed. (CANCEL SIGNAL)

Standard Format

STATE

Normal Response

A list of users currently logged in is typed, together with further information about each. This consists of

console ENGAGED or DISENGAGED:	letter E or D
user ALLOWED or PREVENTED:	letter A or P
console number:	two digit hexadecimal number
current command being obeyed:	command name

If someone is in the process of logging in, the line

LOGIN console number

only is printed.

STOP

Standard Format

STOP

Normal Response

Any output currently in progress is terminated. The command FINISH is forced on each user, but some delay may occur if a user is typing input.

TIME

Standard Format

TIME xx.yy.zz

Normal Response

xx, yy, zz are all two digit decimal numbers: xx = hours,
yy = minutes, zz = seconds.

Error Response

ERROR typing error

Standard Format

USERS x

Normal Response

x is a decimal integer, and is set as the maximum number of users allowed in the system at a given time.

Error Response

ERROR

error in decimal number x

Standard Format

1900 a,b,c,.....

Normal Response

a,b,c, etc., are hexadecimal console numbers. All those specified will be selected as 1900-type consoles.

A 1900-type console (one that has been modified to run on the 1900 series) has the following characteristics:

- (a) it is a half-duplex console
- (b) the linefeed button is geared as a combined carriage-return, linefeed. There is no separate carriage-return button.

Error Response

ERROR typing error. All correct console numbers typed before the error will cause those consoles to be selected as 1900-type.

7. Action in the event of System failure

IF YOU DO NOT UNDERSTAND THESE INSTRUCTIONS
DON'T DO ANYTHING

1. Look at SDS console output and see if a message:-

***DISC ERROR

has occurred. If so, reset data switch 15 on the Panel (cf section 4 (viii)). If the message is repeated, check with ICL Engineers that the disc is working, and, if so, proceed with step 2. If the disc is not working, leave everything until it is.

2. Contact one of the System Writers, if available. Wait till he arrives. Only continue if there is no-one around.
3. For all general errors, first get some post mortem information, then dump the system and finally restart.

3.1 Post Mortem procedure

- (a) Set COMPUTE to IDLE
- (b) Set PARITY ERROR switch to IGNORE and back to NORMAL
- (c) Write down contents of all registers by rotating the knob and copying the light patterns
- (d) Set 5 on the data switches, turn knob to S, set REGISTER switch to CLEAR and then to ENTER. Set MEMORY switch to FETCH
- (e) Set data switches for full PM, including data switch 4
- (f) Set COMPUTE to RUN

This should produce a PM listing on the Printer. If it does not, do not proceed further.

- (g) Set data switches 8-15 to 0 and reset data switch 4. This will produce further printing
- (h) Set data switches 8-15 to the top 8 bits of the previous written-down contents of the S register, obtained in step (c). Reset data switch 4. This will produce further printing.

3.2 System Dump Procedure

- (a) Set COMPUTE to IDLE
- (b) Turn knob to S
- (c) Set 1 on the data switches, set REGISTER switch to CLEAR and then to ENTER. Set MEMORY switch to FETCH

- (d) Set COMPUTE to RUN
- (e) Key-in (via INTERRUPT switch)
STOP
- (f) Key-in
DUMP

If DUMP error, CLEAR all users with jobs still in ATLAS.

If the responses to STOP and DUMP are anything other than the normal system responses, do not proceed further.

3.3 System Restart Procedure

- (a) Run the program CHECK on ATLAS. Proceed only if this has worked correctly, and shown up no errors.
 - (b) Restart the System as for start of day.
4. If all else fails, Sigma 2 may be switched off and left. If this has been done, leave a note to the effect by the control console. Under no circumstances must the System be reloaded before it has been checked by one of the System writers.

Example of Successful CHECK

USER I2102
USER I2081
USER I2006
USER I2086
USER I2011
USER I2131
USER SYSTEM
USER I2019
USER Z0246
USER I2091
USER I2168
USER I2045
USER I2128
USER I2201
USER I2122
USER I2085
USER I2027
USER I2047
USER I2114
USER I2157
USER Z0247
USER S0110
USER I2138
USER S0113
USER S0112
USER I2189
USER I2067
USER I2109
USER I2175
USER I2172
USER I2055
USER SC042
USER I2205
USER I2111
USER I2177
USER I2195
USER I2197
USER S0127
USER I2196
USER SS001
FILE CHECK COMPLETE
BUD CHECK COMPLETE. END OF TEST.