Hirschfeld

BASIC CYBER 18 MAINTENANCE

STUDENT MANUAL

ENGINEERING SERVICES EDUCATION

CONTROL DATA

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REVISION RECORD

REVISION	DESCRIPTION
07/15/78	Preliminary edition
A	Manual Released
8/21/78	
	Printing, 11/7/78
	Printing, 1/2/79
	Printing, 2/22/79

Publication No.
75443560

This manual contains all necessary Student Materials for the subject course and is to be retained by the student.

The following sections will normally be included in this manual. However, if they are not included, it is because they have not been developed at this time.

- Course and Learning Objectives - The Course Objectives identify student performance, and the Learning Objectives identify the steps needed to accomplish the Course Objectives.
- Course Chart - This is a layout of the course on a daily basis, and can be used by the student in planning his time in the course.

  Handouts - These are normally drawings that are used for clarification or to provide supplementary information.
- Workbook - This is assigned by the instructor either as homework or work to be done in the lab while waiting for machine time. The workbook is not assigned as "Busy Work," but is an integral part of the course.
- Student Lab Manual - This is used by the student as a guide in the lab. There may be projects to perform, questions to answer or reading assignments to complete, and like the workbook this is another important element of the course and should be completed in a timely manner.

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[redacted]

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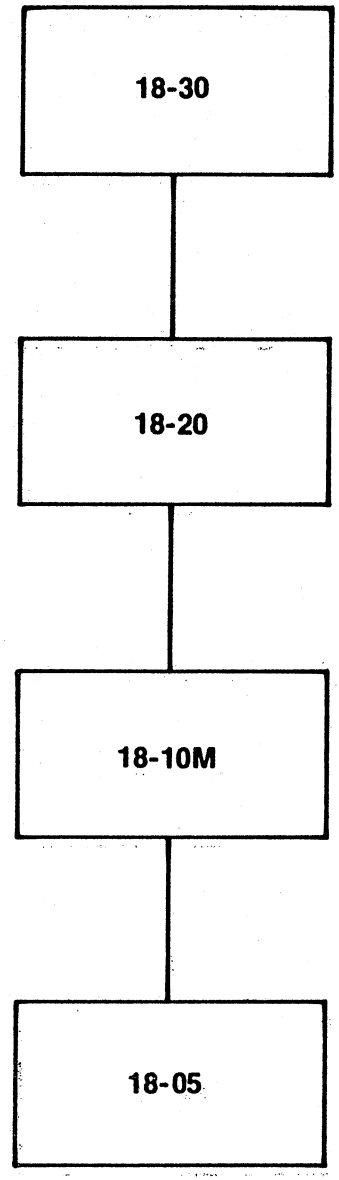
BASIC CYBER 18 MAINTENANCE
Handout/transparency Index

CYBER 18 SYSTEMS



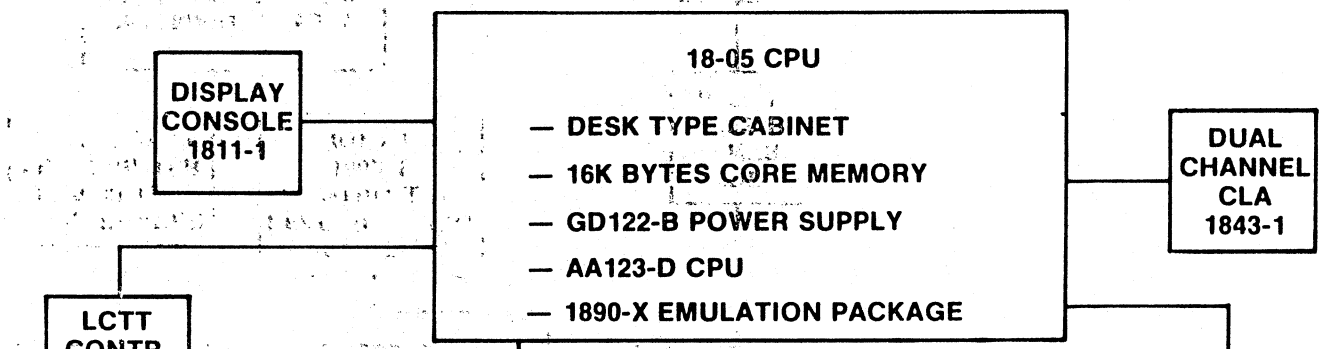
- DUAL PROCESSOR SYSTEM
- 64K TO 512K BYTES MOS MEMORY
- FULL PERIPHERAL CAPABILITY
- TIMESHARE EXECUTIVE
- TYPICAL APPLICATION:
  - EDUCATIONAL TIMESHARE
  - CYBERCOLL

- 32K TO 256K BYTES MOS MEMORY
- FULL PERIPHERAL CAPABILITY
- ENHANCED 1700 MSOS SOFTWARE
- MICROPROGRAMMABLE CAPABILITY
- RPG II/COBOL/FORTRAN
- TYPICAL APPLICATION:
  - ACCOUNTING AND MANAGEMENT CONTROL

- 32K - 128K BYTES MOS MEMORY
- MEDIUM SCALE PERIPHERAL CAPABILITY
- 1700 MSOS/ITOS SOFTWARE
- RPG II/COBOL/FORTRAN
- TYPICAL APPLICATION:
  - ENTRY BUSINESS SYSTEM

- 16K/32K BYTES CORE MEMORY
- CARD READER/LINE PRINTER/CRT
- 200UT, 2780, AND 3780 CONTROLWARE
- TYPICAL APPLICATION:
  - BATCH TERMINAL

CYBER 18-05 SYSTEM CONFIGURATION



AVAILABLE OPTIONS:

— 1882-8 CORE MEMORY

— 1868-1 220V TO 120 VAC

SOFTWARE:

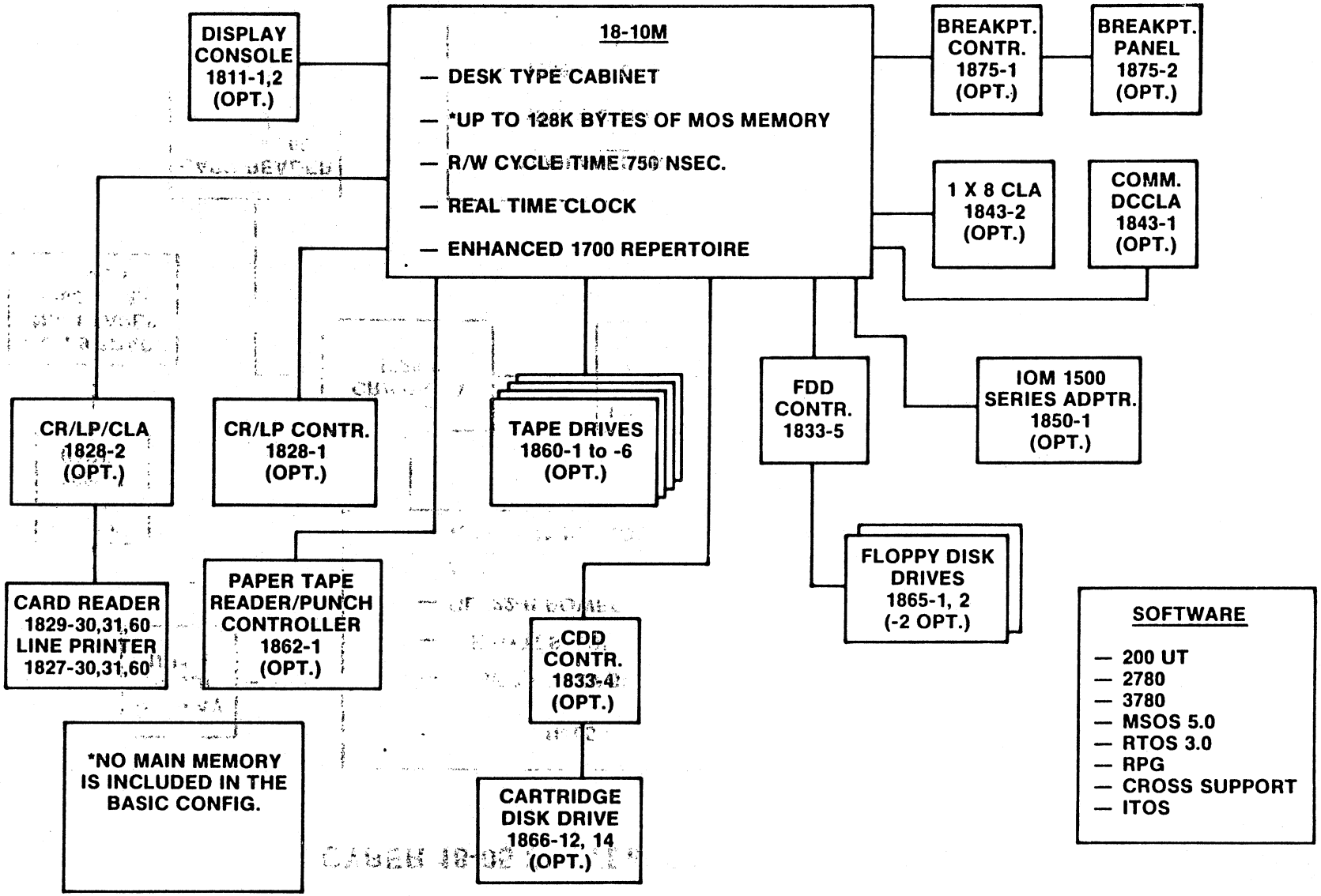
— 1890-2, 200 UT EMUL.

— 1890-2, 2780 EMUL.

— 1890-3, 3780 EMUL.

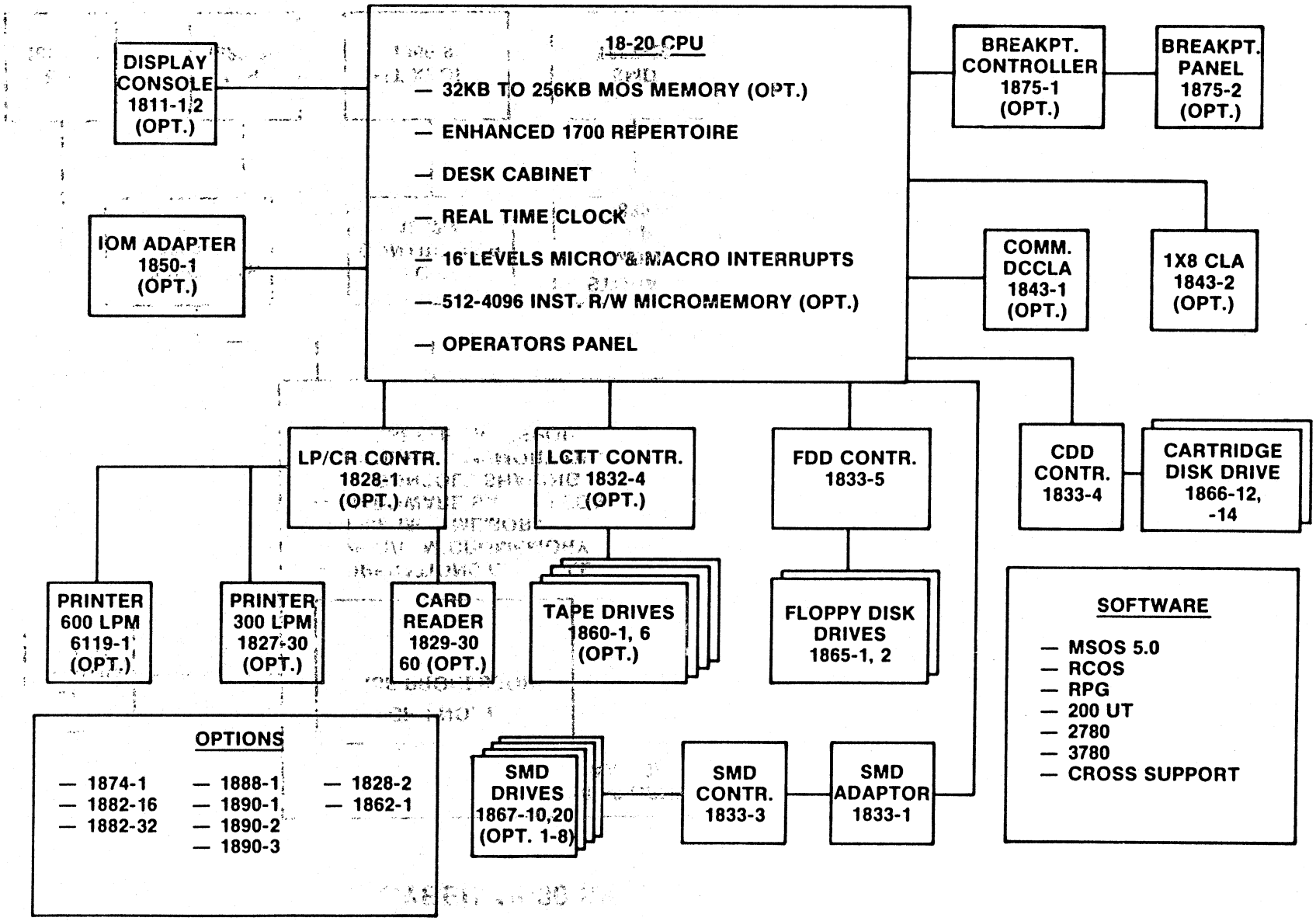
T8055

CYBER 18-10M SYSTEM CONFIGURATION



HO/TR-3

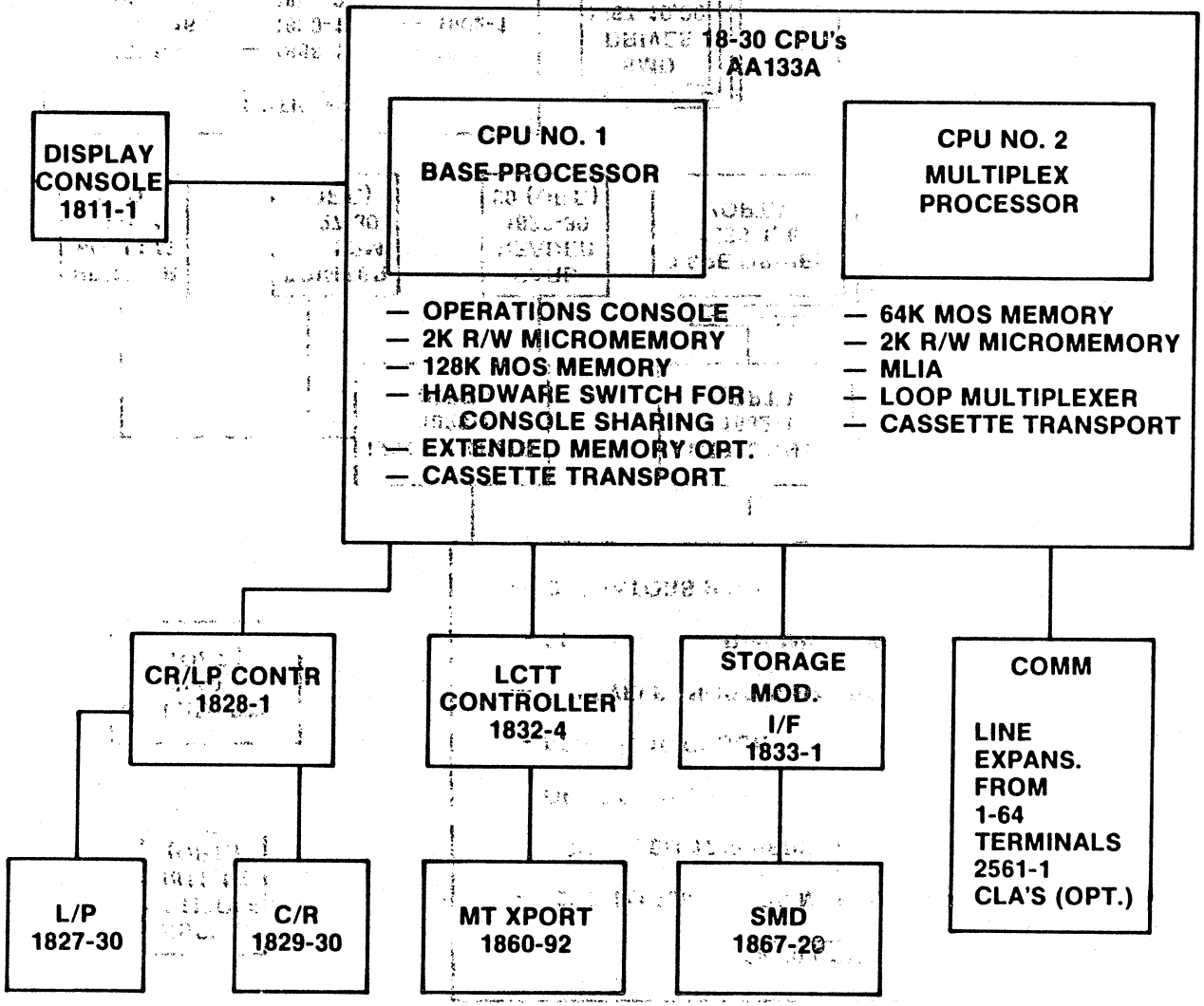
CYBER 18-20 SYSTEM CONFIGURATION



T8055

HO/TR-5

CYBER 18-30 SYSTEM CONFIGURATION



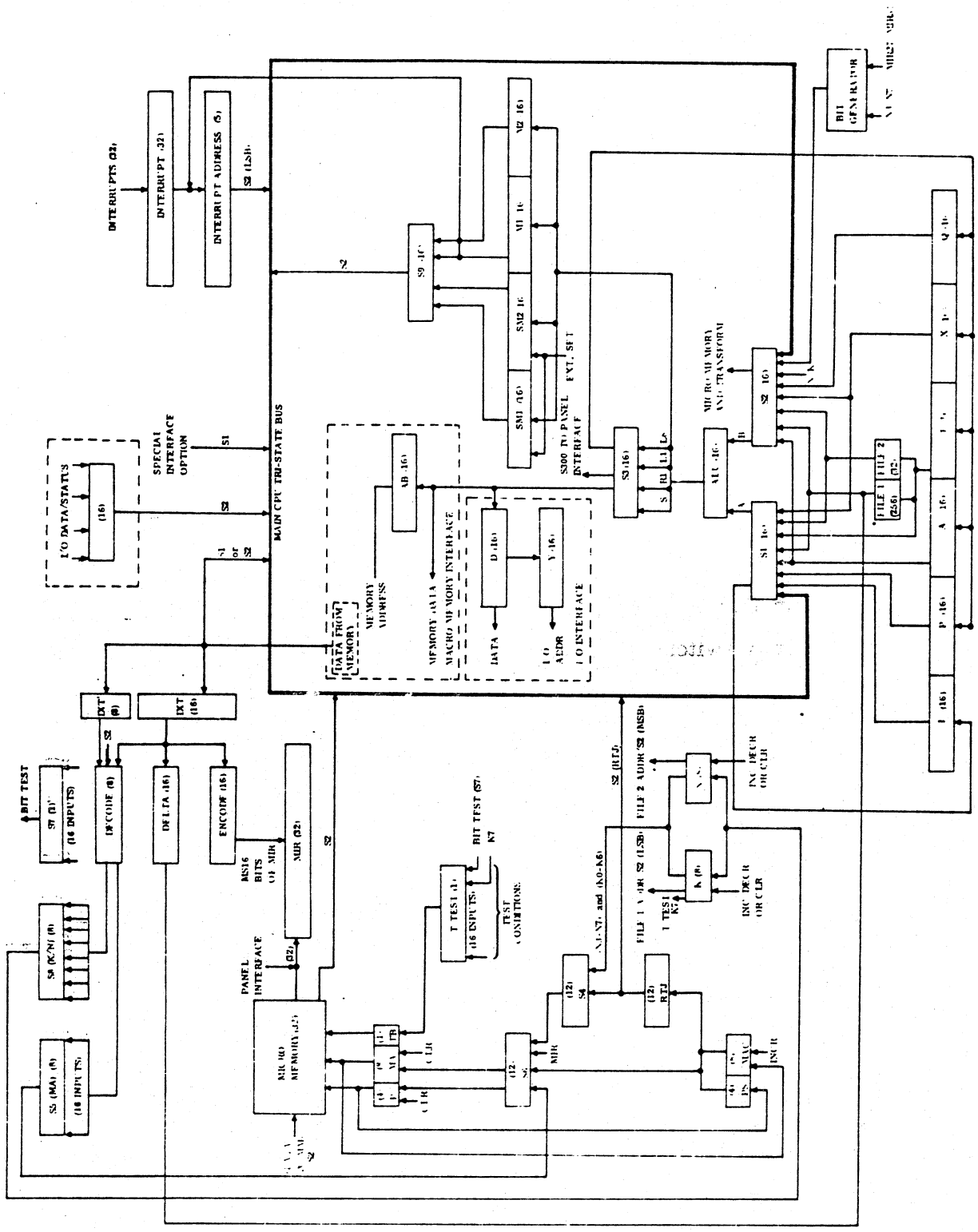
SOFTWARE

- MSOS
- TIMESHARE
- BASIC
- RPG
- RPG APPLICATION
- BUSINESS BASIC
- CROSS SUPPORT

OPTIONS

- 1874-1
- 1882-16
- 1882-32
- 1888-1
- 1890-1
- 1890-2
- 1890-3
- 1828-2
- 1833-2
- 1833-5
- 1843-1
- 1870-1, 2
- 1875-1
- 1811-2
- 1833-4
- 1843-2
- 1850-1
- 1860-1,6
- 1862-1

Detailed Block Diagram of 1700 Enhanced Processor



STUDENT LAB MANUAL

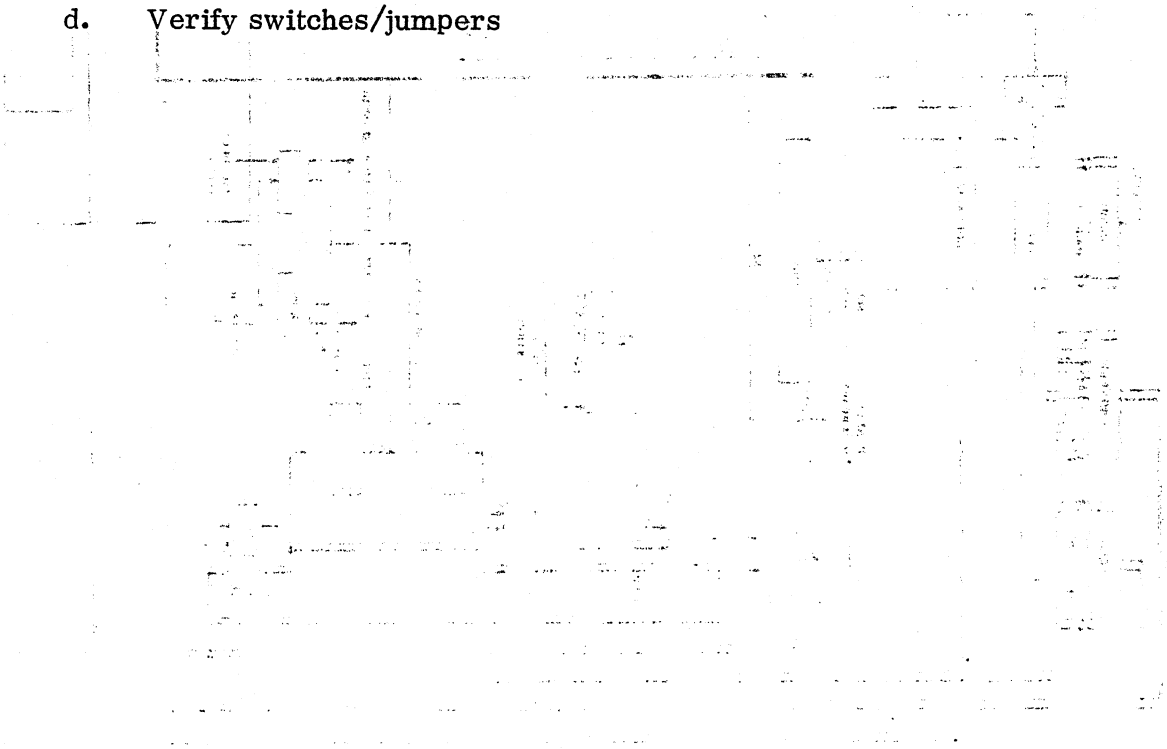
Day: 1

Subject: Card Placement and Switch Verification Lab

Purpose: The purpose of this lab is to familiarize you with the various cards in the CYBER 18 and their location in the machine. On those cards that contain switches and jumpers, you will be asked to verify that the switches are in the correct position and the jumpers are installed properly. Switch and jumper information can be found in Volume 1 of the Hardware Maintenance Manual.

Procedure:

1. Power down the system by removing power from all peripherals and then the micro-processor.
2. Remove one card at a time and determine the following:
   a. Board type (memory, magnetic tape, controller, and so on)
   b. Locate any switches/jumpers
   c. Function of switches/jumpers
   d. Verify switches/jumpers



DAY 1

SLOT	BOARD TYPE	SWITCH/ JUMPERS	SWITCH/JUMPER FUNCTION	VERIFY
AB	LCT Control. MB only	Ø	Ø	
AA				
A	Floppy Control. 4,5 on.	#4 protect sw 50 7,		
B				
C				
D				

DAY 1

SLOT	BOARD TYPE	SWITCH/ JUMPERS	SWITCH/JUMPER FUNCTION	VERIFY
E				
F				
G				
H				
J	/CR Contr. LP "	E73 } unprotected E77 } approx.	CR=B LP=4	Auto Sel. All [illegible] 0 [illegible] - 9
K	I/O TTY	off [illegible]	sel. Deadsta. [illegible] Speed " [illegible] Speed	

DAY 1

SLOT	BOARD TYPE	SWITCH/ JUMPERS	SWITCH/JUMPER FUNCTION	VERIFY
L				
M	ACU.			
N				
P				
R				
S				

DAY 1

SLOT	BOARD TYPE	SWITCH/ JUMPERS	SWITCH/JUMPER FUNCTION	VERIFY
T				
U				
V				
W				
X				
Y				

DAY 1

SLOT	BOARD TYPE	SWITCH/ JUMPERS	SWITCH/JUMPER FUNCTION	VERIFY
Z				
AC				

Day: 3

Subject: ODS Lab

Purpose: The purpose of this lab is to familiarize you with the commands used to change run parameters and control the execution of diagnostics. Your ODS Reference Manual contains the information you will need to perform the following tasks.

1. Load MPINS and change the run parameters so that the test will run five passes and then terminate.

   Which parameter did you change and what is its new value?

2. Load MPINS and change the run parameters so the test will repeat. After the test has completed several passes, make the test terminate.

   Which parameter word did you change to make the test repeat?

   What did you do to terminate the test?

3. Load MPMOS and change the run parameters so that it runs Sections 1, 2, 3, 4, 5, and 6 on memory locations 1000 through 2000.

   List the parameters you changed and their new values.

4. Load CLA2A and change the parameter to cause the test to repeat. Once the test is executing, it could be terminated with the ABRT command.

   Terminate the diagnostic without using the ABRT command. List the commands you used.

STUDENT LAB MANUAL

Day: 4

Subject: Utilities, Dumps, Editor and Multiplexing Tests

1. Load and execute the Card Reader utilities CRUT1 and CRUT2. The Hardware Maintenance Manual, Volume 3 contains the operating procedures.

2. Use ODS EDITOR to modify the run parameters of MPMOS. Change the parameters so that they will be correct for the lab system.

3. Perform a memory dump using MOSDUMP. Follow the procedure in the ODS Reference Manual, Section C-1. Your instructor will give you the first and last word addresses for the Dump.

4. Refer to Section 8 of the ODS Reference Manual. Load all of the multiplexing tests that apply to the lab system. Change the Master Control Word so the tests will repeat and start the tests executing.

SAFETY PRACTICES

All engineers are expected to follow reasonable and appropriate precautions with respect to electrical, mechanical, and personal safety hazards while working on computer system equipment. You should pay careful attention to all entries in the maintenance documentation labelled "*DANGER*" or "*WARNING*", which identify hazardous areas or procedures encountered in maintaining the system equipment. The following additional procedures should be followed when working on equipment:

PERSONAL

1. You are responsible for insuring that no action on your part causes unsafe conditions that may expose customer personnel to hazards in any device.

2. You should never work alone on equipment having exposed operating mechanical parts or exposed hazardous power components. If you MUST do so notify your EIC or manager. In any case, the following precautions must be observed:

   a. Someone familiar with the power-off controls must be in the immediate area.

   b. Personal jewelry (rings, wristwatches, bracelets, necklaces, etc.) shall be removed. A small box in the CE tool kit will make a good storage place for these items.

   c. If using one hand, keep the other one in your pocket.

   d. Avoid wearing loose articles of clothing that can be snagged and drawn into moving machinery. Wear short-sleeve shirts or roll sleeves above the elbow. Neckties, where required, should be tucked in between the second and third shirt button or fastened about 3 inches from the end with a tietack or tieclasp, preferably nonconductive. Don't use tiechains. Clipon type neckties are preferable to the regular ones; if caught they will pull free without causing injury.

   e. Before starting equipment, make sure that no other CE or customer personnel are in a position where they could get hurt.

   f. While working in equipment put red tape strips across any power controls, or use "DO NOT OPERATE" tags where available.

PERSONAL (cont'd)

3. Keep CE tool kits out of walkways; put them on or under a desk or table.

4. Put doors and covers removed from a machine in a safe, out-of-the-way location where nobody will trip over them or cause them to fall on top of someone. ALL machine covers MUST be restored in place before the machine is returned to the customer.

5. All safety covers, guards, shields, groundstraps, panels, etc. shall be properly reinstalled after maintenance is finished.

6. Maintain good housekeeping practices during and following each maintenance activity. Do not permit tools, manuals, wipers, paper trash and the like to accumulate in the work area, and CLEAN UP AFTER YOURSELF.

ELECTRICAL

1. Remove ALL AC and DC power when removing or installing major assemblies, working inside power supplies or power control enclosures, performing detailed mechanical maintenance procedures, or doing wiring and/or module changes in the machine. If possible, turn off and lock or tag the circuit breaker in the service panel on the wall; unplug the main power supply cord.

2. Use only well-insulated pliers, screwdrivers, test leads, etc. when working on or near live circuits.

3. Do not disconnect or otherwise disable safety grounding systems even if the equipment is powered off. These are installed for YOUR protection.

4. Avoid coming in contact with grounds, such as equipment frames, metal floor tile edgings, electrical conduits, and the like. If possible, locally purchase rubber or vinyl mats.

MECHANICAL

1. Do not use chemicals, greases, oils, or solvents that have not been specifically approved by the equipment manufacturer for that device. Their recommendations are usually based on extensive experience with his equipment in service.

2. Use the proper tools for the job. Improper use of tools can result in personal injury or equipment damage.

MECHANICAL (cont'd)

3. Replace worn or broken tools or test equipment as quickly as possible.

4. If the machine is running, DO NOT reach in to the works; remember, they are YOUR fingers and you only get one set per lifetime.

5. If using a strobelight on mechanical devices, DON'T TOUCH ANYTHING; it may be moving.

6. Safety glasses or goggles must be used if you are:

   a. driving pins, riveting, swaging, and similar activities.

   b. using an electric drill, grinder, reamer, etc.

   c. installing or removing springs under tension or compression.

   d. using any type of solvent, spray, or chemical for cleaning or touch-up painting.

   e. any other activity which may endanger the eyes. They are YOUR eyes, and you need them for this type of work.

7. When lifting, use a method that will not injure the spine or strain back muscles. Be realistic as to what your capacity for lifting really is.

ABOVE ALL, USE GOOD JUDGEMENT AND COMMON SENSE - A MOMENT OF THOUGHT BEFORE YOU ACT CAN SAVE HOURS OF AGONIZING AFTERTHOUGHT.

COMMENT SHEET

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