

ESD ACCESSION LIST

ESTI Call No. 65519

Copy No. 1 of 3 cys.

ESD-TR-69-123

ESD RECORD COPY

RETURN TO
SCIENTIFIC & TECHNICAL INFORMATION DIVISION
(ESTI), BUILDING 1211
MTR-814

ESD-TR-69-123
ESTI FILE COPY

CLASSIFICATION OF CONSOLE DISPLAYS
AND THEIR FUNCTIONAL APPLICATIONS

MAY 1969

Thomas A. Mackey

Prepared for

DIRECTORATE OF PLANNING AND TECHNOLOGY

ELECTRONIC SYSTEMS DIVISION
AIR FORCE SYSTEMS COMMAND
UNITED STATES AIR FORCE
L. G. Hanscom Field, Bedford, Massachusetts



This document has been approved for public release and sale; its distribution is unlimited.

Project 512A
Prepared by
THE MITRE CORPORATION
Bedford, Massachusetts
Contract F19(628)-68-C-0365

AD0689551

When U.S. Government drawings, specifications, or other data are used for any purpose other than a definitely related government procurement operation, the government thereby incurs no responsibility nor any obligation whatsoever; and the fact that the government may have formulated, furnished, or in any way supplied the said drawings, specifications, or other data is not to be regarded by implication or otherwise, as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.

Do not return this copy. Retain or destroy.

CLASSIFICATION OF CONSOLE DISPLAYS
AND THEIR FUNCTIONAL APPLICATIONS

MAY 1969

Thomas A. Mackey

Prepared for

DIRECTORATE OF PLANNING AND TECHNOLOGY

ELECTRONIC SYSTEMS DIVISION
AIR FORCE SYSTEMS COMMAND
UNITED STATES AIR FORCE
L. G. Hanscom Field, Bedford, Massachusetts



This document has been approved for public release and sale; its distribution is unlimited.

Project 512A
Prepared by
THE MITRE CORPORATION
Bedford, Massachusetts
Contract F19(628)-68-C-0365

FOREWORD

Contractor: The MITRE Corporation
Bedford, Massachusetts 01730

Contract Number: F19(628)-68-C-0365

Air Force Contract Monitor: Charles L. Bruce, ESLFA

This report presents the results of a survey of console display devices and their functional applications for the USAF command and control environment.

This report was published on 1 February 1969.

REVIEW AND APPROVAL

Publication of this technical report does not constitute Air Force approval of the report's findings or conclusions. It is published only for the exchange and stimulation of ideas.

WILLIAM F. HEISLER, COL, USAF
Chief, Command Systems Division
Directorate of Planning & Technology

ABSTRACT

This document presents a survey of console display devices and their functional applications for the USAF command and control environment. In particular, console display devices which enhance man/machine interaction have been emphasized.

TABLE OF CONTENTS

	Page	
SECTION I	INTRODUCTION	1
SECTION II	DISPLAY APPLICATIONS	2
	A. Background	2
	B. Functional Characteristics	2
	C. Query	3
	D. Monitor	3
	(1) Problem Analysis	3
	(2) Data Base	4
	(3) Interaction	4
	(4) Examples	4
	E. Dialogue	4
	(1) Problem Analysis	4
	(2) Data Base	4
	(3) Interaction	4
	(4) Examples	4
	F. Summary	5
SECTION III	CLASSIFICATION OF CONSOLE DISPLAY DEVICES	6
	A. Background	6
	B. Categories	6
	(1) Alphanumeric Static Displays	7
	(2) Alphanumeric Dynamic Displays	7
	(3) Graphic Static Display	7
	(4) Graphic Dynamic Displays	7
	C. Summary	7
SECTION IV	CONCLUSIONS AND RECOMMENDATIONS	8
	(1) Functional	8
	(2) Operational	8
	(3) Software	8

TABLE OF CONTENTS (Concluded)

	Page
APPENDIX A -- ORGANIZATION OF APPENDICES	11
APPENDIX B -- ALPHANUMERIC INTERACTIVE DISPLAY DEVICES	15
APPENDIX C -- GRAPHIC INTERACTIVE DISPLAY DEVICES	79
APPENDIX D -- NON-INTERACTIVE GRAPHIC DISPLAY DEVICES	147
APPENDIX E -- COMPANY INDEX	153
 BIBLIOGRAPHY	 160

SECTION I
INTRODUCTION

This document presents a survey of console display devices and their functional applications for the USAF command and control environment. Effective employment of displays in a command and control situation requires an integrated display system. This type of display system consists of two main components: console display devices, and displays which permit group participation. This paper will deal with the console display devices which permit man/machine interaction.

Four sections and six appendices comprise this document. Section II presents a discussion of the major application areas to which displays can be addressed.

Section III classifies console display devices by two inherent characteristics: first, the type of data image that is produced on the display screen; and, second, the type of user participation that is permissible.

Section IV concludes the main portion of this paper with a number of recommendations for employment of console display devices in USAF command and control systems.

The Appendices represent tabular information about particular display models. Appendix A is a glossary of terms used in this document. Appendices B, C, and D outline the fundamental characteristics of the display devices. Appendix E is a general index for the previous Appendices.

This paper presents sufficient information regarding display devices without encumbering the user with an avalanche of exhausting particulars. Further information about a certain display device can be obtained by referencing the Bibliography; in particular, Adam's Associates Computer Displays Review.

SECTION II

DISPLAY APPLICATIONS

A. BACKGROUND

Console display devices provide a medium for the exchange of information between the data base of a machine and the man who must either act upon retrieved data or enter new data base information. The evolution of console display devices has enhanced the man/machine information exchange over conventional I/O devices. The following two components comprise the basic combination which separates display devices from the general I/O devices:

- (1) Rapid man/machine interaction; and
- (2) Rapid presentation of data in various formats.

Display devices which fulfill only one of these two components are mentioned in this paper with reference to more detailed information; however, devices which meet these fundamental criteria are presented in detail. Organization of the major application areas by the degree of necessary functional (problem) analysis is complemented by the consideration of the basic man/machine interrelationship. The following three functions are described in terms of the man/machine interactivity:

- (1) Query - man requests specific information from the data base;
- (2) Monitor - the machine evaluates a specific process against man's parametric criteria; and
- (3) Dialogue - man and machine exchange information which determines the immediate follow-on action.

B. FUNCTIONAL CHARACTERISTICS

The above three functions (Query, Monitor, Dialogue) will be considered in light of the following four characteristics:

- (1) Problem Analysis - the analysis that is necessary for the solution of a problem;
- (2) Data Base - the status of data base elements;
- (3) Interaction - the amount of operator action required during processing; and
- (4) Examples - the correlation of general applications with functions.

C. QUERY

This function requires minimal problem analysis by the machine. Man performs the problem analysis by determining the type of data he requires and requests the particular information from the data base. At the time of operation the data base is invariant and the retrieved data is presented to the man for viewing. The display functions basically as an I/O device and man's next action in regard to the machine does not necessarily depend on the results that the machine produced. Though man's next action may be contingent upon the machine's results, it must be emphasized that the machine performs no problem analysis other than retrieving and presenting the data. In summary, this technique can be described as follows:

- (1) Problem Analysis - man more than machine;
- (2) Data Base - unchanged;
- (3) Interaction - input request by man; and
- (4) Examples -
 - (a) Airline reservation systems;
 - (b) Stock quotations;
 - (c) Bank account information; and
 - (d) AFICCS Query capability.

D. MONITOR

This function reverses the role of problem analysis by requiring the machine to evaluate data base information against man's parametric criteria. Man determines the constraints of each element in the data base prior to operation. At operation time, man is passive while the machine analyzes the data against the constraints. If the data is within the parametric constraints, the machine proceeds to the next set of data elements; however, if the data violates man's constraints, the machine informs the man via the display of the unacceptable data. Man, then, takes the required action to correct the situation. This function is similar to exception reporting/ updating. In summary, this technique can be described as follows:

- (1) Problem Analysis - machine more than man;

- (2) Data Base - variable after passing parametric criteria;
- (3) Interaction - dependent on a data element violating criteria;
and
- (4) Examples -
 - (a) Satellite system checkout prior to and during launch phase of a rocket;
 - (b) Process control in the oil and steel industries; and
 - (c) Following patient's progress during surgical operations.

E. DIALOGUE

This function distributes the problem analysis between both the man and the machine. This function provides the highest degree of man/machine interaction and thereby requires display devices that permit rapid man/machine interaction. The man commands the machine on the basis of empirical data developed from the previous command in a 'give-and-take' manner. The data base and pre-stored parametric criteria can be altered by the man at any time during the operation. The machine responds to the commands by evaluating the altered data base against the parametric constraints. In summary, this technique can be described as follows:

- (1) Problem Analysis - shared by man and machine;
- (2) Data Base - variant;
- (3) Interaction - continuous; and
- (4) Examples -
 - (a) Computer-aided design;
 - (b) On-line programming;
 - (c) War-gaming; and
 - (d) Planning via simulation.

F. SUMMARY

Three uses of displays in a man/machine environment have been described, which basically focus on the amount of required problem analysis. The first two, Query and Monitor, require minimal interaction, while the third, Dialogue, is dependent on maximal interaction. In a command and control environment, all three functions must be available and capable of being selectively combined.

SECTION III
CLASSIFICATION OF CONSOLE DISPLAY DEVICES

A. BACKGROUND

This section classifies console display devices into two basic design characteristics. This classification is only one of many that could be considered but from a user point of view, it is the most practical. Correlated examples with general I/O devices are presented for identification purposes only. Console display devices are categorized by the following:

- (1) The type of data that can be produced on the screen; i.e., alphanumeric or graphic;
 - (a) Alphanumeric displays permit the viewing of symbolic data in a pre-formatted, fixed manner similar to a typewriter; and
 - (b) Graphic displays permit the viewing of both symbolic data and line (vector) data randomly positioned on the face of the screen.
- (2) The amount of user participation that is possible; i.e., static or dynamic;
 - (a) Static displays are those which permit only data entry OR only data viewing;
 - (i) Data entry devices provide only for entering data into a machine; e.g., an I/O card reader; and
 - (ii) Data viewing devices provide only for obtaining information from a machine; e.g., an I/O line printer.
 - (b) Dynamic displays are those which permit man/machine interaction.

B. CATEGORIES

Hence, the following four categories classify console display devices:

- (1) Alphanumeric Static Displays - these displays present only symbolic data and permit no man/machine interaction. A line printer and a card reader are proper general I/O correlations. An example of this type of display is the readout indicators in the APOLLO space craft. Further information for displays within this category are presented in Appendix D;
- (2) Alphanumeric Dynamic Displays - these displays present only symbolic data but permit man/machine interaction. A typewriter is a general I/O correlation. An example of this type of display is the IBM 2260. Further information for displays within this category are presented in Appendix B;
- (3) Graphic Static Display - these displays present both symbolic data and line data but permit no man/machine interaction. An example of this type of display is the CALCOMP Plotter. Further information for displays within this category are presented in Appendix D; and
- (4) Graphic Dynamic Displays - these displays present both symbolic data and line data and permit man/machine interaction. An example of this type of display is the BR-90. Further information for displays within this category are presented in Appendix C.

C. SUMMARY

Console display devices have been categorized into four non-overlapping areas based on two design characteristics. The four areas each correspond to a particular Appendix in which detailed information about appropriate display models is presented. This categorization with referenced material will permit an organized consideration for the future acquisition of display devices.

Devices that do not permit man/machine interaction have received less attention in this document than those which permit man/machine interaction.

SECTION IV
CONCLUSIONS AND RECOMMENDATIONS

The conclusions concerning current display usage center in three areas:

(1) Functional

Displays have rarely been used efficiently. Most of the time, they are used as just another I/O device. If a display device has graphic capability, it is seldom exploited. In view of the price differential between an I/O device and a display device, requirements for a display device must be present before obtaining such a device. Likewise, the price differential between alphanumeric and graphic displays warrants a thorough analysis of possible graphic applications prior to obtaining a graphic display;

(2) Operational

In the past, displays were not an integral part in the design of data processing systems. The addition of displays caused either undue strain on the existing system, or the lack of operational use of the displays. Hence, it is necessary to plan the display system as an integral component of the data processing system;

(3) Software

The use of displays requires programming in varying degrees. Specifications for these programs must be planned prior to the acquisition of any display device. Programming considerations must include three basic aspects:

- (a) CPU programs;
- (b) Display programs; and
- (c) Interface programs.

In view of WWMCCS, USAF command and control systems have an opportunity to avoid procedures that hinder proper and efficient use of displays. Hence, the following three recommendations are presented:

- (1) Plan the display system as an integral component of the data processing system;
- (2) Utilize the inherent characteristics of the display devices to their maximum, commensurate with their role as components of the data processing system; and
- (3) Prepare for the necessary programming functions that must be accomplished for any use of the display system.

APPENDIX A ORGANIZATION OF APPENDICES

SECTION I INTRODUCTION

THE SUBSEQUENT APPENDICES PRESENT TABULAR INFORMATION ABOUT PARTICULAR CONSOLE DISPLAY DEVICES. EACH APPENDIX LISTS INDIVIDUAL COMPANIES IN ALPHABETICAL ORDER WITH REFERENCE TO THE DISPLAY MODELS THAT THE COMPANY PRODUCES AND/OR MARKETS.

APPENDICES B AND C DEAL WITH MODELS THAT PERMIT RAPID MAN/MACHINE INTERACTION. ORGANIZATION OF THESE TWO APPENDICES IS GIVEN IN THE NEXT SECTION OF THIS APPENDIX.

APPENDIX D DEALS WITH DISPLAY MODELS THAT DO NOT ALLOW MAN/MACHINE INTERACTION.

APPENDIX E IS A LIST OF COMPANIES (AND ADDRESSES) WITH AN INDEX TO ONE OR MORE OF THE PRECEDING APPENDICES.

SECTION II INTERACTIVE MODELS

- A. APPENDICES B AND C PRESENT TABULAR INFORMATION OF DISPLAYS THAT PERMIT MAN/MACHINE INTERACTION. APPENDIX B DEALS WITH ALPHANUMERIC DISPLAYS AND APPENDIX C DEALS WITH GRAPHIC DISPLAYS.
- B. COMMON CHARACTERISTICS
THERE ARE SEVEN FEATURES WHICH HAVE BEEN USED TO DESCRIBE BOTH ALPHANUMERIC AND GRAPHIC DISPLAYS.
 - (1) CONSOLE INPUT DEVICES - THOSE DEVICES WHICH PROVIDE FOR MAN/MACHINE INTERACTION AT THE DISPLAY.
 - (2) AUXILIARY EQUIPMENT - OUTPUT DEVICES, WHICH ARE CONTROLLED BY THE DISPLAY UNIT OR THE DISPLAY CONTROLLER.
 - (3) CONTROLLER DESIGN - THE CHARACTERISTICS OF THE DISPLAY CONTROLLER, INCLUDING
 - (A) MEMORY TYPE,

- (B) MEMORY CYCLE TIME,
- (C) MEMORY SIZE,
- (D) REFRESH RATE,
- (E) MAXIMUM DISPLAYS,
- (F) PROCESSORS - THE NUMBER OF OPERATING PROCESSORS IN THE CONTROLLER DESCRIBED AS...
 - (I) SINGLE - DECODES DISPLAY COMMANDS,
 - (II) DUAL - DECODES DISPLAY COMMANDS IN ONE PROCESSOR AND COMPUTER COMMANDS IN THE OTHER PROCESSOR, OR
 - (III) MULTIPLE - ONE PROCESSOR FOR COMPUTER COMMANDS AND TWO OR MORE PROCESSORS FOR DISPLAY COMMANDS.
- (G) SUBROUTINING - THE FEATURE WHICH ALLOWS DISPLAY PICTURES TO BE STORED NON-CONTIGUOUSLY.
- (H) POINTER TRACKING - THE FEATURE WHICH PERMITS LIGHT PEN OR POINT TRACKING WITHOUT CPU REFERRAL,
- (I) LINE AND CHARACTER GENERATORS - THE AVAILABILITY OF THESE FEATURES WITHIN THE CONTROLLER,
- (J) FUNCTION SWITCH AND KEYBOARD INTERPRET - INDICATES IF CONTROLLER CAN PROCESS CODE FROM THE PARTICULAR INPUT DEVICE,
- (K) SCISSORING - THE FEATURE WHICH PERMITS OFF-SCREEN DATA TO BE STORED WITHIN THE DISPLAY DATA, AND IGNORED WHEN THE PICTURE IS DISPLAYED (THE OFF-SCREEN DATA COORDINATES ARE GREATER THAN THE SCREEN'S RASTER), AND

- (L) ITEM IDENTIFICATION - THE FEATURE BY WHICH THE CONTROLLER CAN DETECT A TAGGED (EITHER BY LIGHT PEN OR BY POINTER) SYMBOL, AND TRANSMIT THIS TAGGED INFORMATION TO THE CPU.

NOTE... FEATURES F THROUGH L ARE INCLUDED FOR GRAPHIC DISPLAYS ONLY.

- (4) CHARACTER GENERATION AND DISPLAY - THE FOLLOWING FEATURES WHICH DESCRIBE THE DISPLAY OF ALPHANUMERIC SYMBOLS...
 - (A) CHARACTER CODE,
 - (B) NUMBER OF FONTS,
 - (C) CHARACTERS PER LINE, AND
 - (D) LINES PER FRAME.
- (5) SCREEN CHARACTERISTICS - THE FEATURES OF THE DEVICE ON WHICH A FRAME IS PORTRAYED, TO INCLUDE...
 - (A) DISPLAY SIZE (WIDTH BY HEIGHT),
 - (B) DISPLAY AREA,
 - (C) DISPLAY SHAPE,
 - (D) BRIGHTNESS (EXPRESSED IN FOOT-LAMBERTS, AND
 - (E) CONTRAST (BRIGHTNESS RATIO OF THE DISPLAYED DATA TO THE SCREEN UNDER AMBIVALENT CONDITIONS).

NOTE... FOR GRAPHIC DISPLAYS ONLY, THE SCREEN'S RASTER COUNT HAS BEEN INCLUDED.

- (6) CONTROLLER INTERFACE - A LIST OF THE COMPUTER AND DATA LINES TO WHICH DISPLAY CONTROLLER CAN BE ATTACHED.
- (7) PRICES - BOTH THE PURCHASE AND LEASE PER MONTH COSTS HAVE BEEN LISTED. IN MANY CASES PRICES WILL BE QUOTED BY THE MANUFACTURER ONLY UPON

REQUEST AND THEN, ONLY FOR A SPECIFIC
CONFIGURATION AND/OR SYSTEM.

C. UNIQUE CHARACTERISTICS

THERE IS ONE ADDITIONAL FEATURE FOR EACH THE ALPHANUMERIC DISPLAY AND GRAPHIC DISPLAYS THAT HAS BEEN USED IN DESCRIBING THE DISPLAYS. FOR ALPHANUMERIC DISPLAY, EDIT FEATURES WERE LISTED. FOR GRAPHIC DISPLAYS, THE LINE GENERATOR CHARACTERISTICS WERE INCLUDED.

APPENDIX B ALPHANUMERIC INTERACTIVE DISPLAY DEVICES

SECTION I. INTRODUCTION

THIS APPENDIX WILL PRESENT TABULAR INFORMATION ON DISPLAY DEVICES THAT PERMIT MAN/MACHINE INTERACTION AND DISPLAY ALPHANUMERIC CHARACTERS ONLY. THE INFORMATION WILL BE ORGANIZED BY COMPANY. WITHIN EACH COMPANY, THE PARTICULAR MODELS THEY PRODUCE WILL BE DISCUSSED.

SECTION II. COMPANIES

- A. A.B. DICK COMPANY PRODUCES THE VIDEOGRAPH 990 INFORMATION DISPLAY CONTROL UNIT WHICH ACCEPTS COMPUTER OUTPUT DATA FOR DISPLAY ON CLOSED CIRCUIT TV EQUIPMENT.

- B. BOLT, BERANEK, AND NEWMAN, INC. PRODUCES THE TELEPUTER WHICH IS A STORAGE TYPE CRT. ON AN AREA OF 9.61 SQUARE INCHES 20 LINES OF 25 CHARACTERS EACH CAN BE DISPLAYED.

- C. BUNKER-RAMO CORPORATION HAS THE FOLLOWING FOUR DISTINCT SERIES...
 - (1) BR-200 SERIES (REF. PP 20-25) WHICH REQUIRES EITHER THE BR-222 CONTROL UNIT (PURCHASE \$8,950/LEASE \$193) OR THE BR-223 CONTROL UNIT (PURCHASE \$10,800/LEASE \$217),
 - (2) BR-400 SERIES (REF. PP 26-31),
 - (3) BR-700 INFORMATION SYSTEM (REF. PP 32-33), AND
 - (4) BR-2200 DATA DISPLAY SYSTEM WHICH HAS A MAXIMUM OF 36 REMOTE DISPLAYS ATTACHED TO A CONTROL UNIT AND A MAXIMUM OF 31 CONTROL UNITS DRIVEN BY THE CENTRAL PROCESSOR.

- D. BURROUGHS CORPORATION HAS PRODUCED A VARIETY OF ALPHANUMERIC DISPLAY UNITS DEALING WITH COMMAND AND CONTROL SYSTEMS AND OTHER INFORMATION PROCESSING SYSTEMS. THEY HAVE PRODUCED A REMOTABLE DISPLAY DEVICE, THE B9351-2. IN ADDITION, THEY HAVE THE AGENT SET BUT CURRENTLY THIS IS BEING MARKETED AS PART OF BURROUGHS' AUTOMATED AIRLINE MANAGEMENT SYSTEM. ALSO, BIDS (REF. PP 34-35) HAS BEEN MANUFACTURED AND CAN BE DRIVEN BY THE B5500.

- E. COMPUTER COMMUNICATIONS, INC. PROVIDES THE CC-30 (REF. PP 36-37) WHICH USES AN ORDINARY TV SET AND HAS LIMITED GRAPHIC CAPABILITIES. THE CC-301 TV DISPLAY CONTROLLER IS THE CONTROLLING UNIT OF THE PORTABLE CC-30 COMMUNICATIONS STATION.

- F. CONRAC CORPORATION PRODUCES THE MODEL 201 WHICH HAS A MAXIMUM OF 960 CHARACTERS AND HAS THE PRICE RANGE OF \$7,000 TO \$8,000 (REF. PP 38-39).

- G. CONTROL DATA CORPORATION HAS PRODUCED THE CDC 211/212 MODEL (REF. PP 40-41). IN ADDITION, THE CDC 216/217 MODELS ARE AVAILABLE AND THEY EXTEND THE MAXIMUM NUMBER OF DISPLAYED CHARACTERS TO 1,040.

- H. FERRANTI, LIMITED HAS TWO MODELS, THE M.D.5 (REF. PP 42-43) AND THE M.D.6 (REF. PP 44-45).

- I. GENERAL ELECTRIC COMPANY PRODUCES THE DATA NET 760 (REF. PP 46-47). A MAXIMUM OF 32 REMOTE 760 SYSTEMS CAN BE ATTACHED TO A CENTRAL CONTROLLER.

- J. HONEYWELL CORPORATION PRODUCES REMOTE MODELS 303 AND 311/2, WHICH BASICALLY DIFFER ON THE MAXIMUM NUMBER OF CHARACTER POSITIONS.

- K. INTERNATIONAL BUSINESS MACHINE CORPORATION PRODUCES THE FOLLOWING THREE MODELS IN THE ALPHANUMERIC CATEGORY...
 - 2260 MODEL 1, 2260 MODEL 2, AND 2265 (REF. PP 48-53).

- L. THE LABORATORY FOR ELECTRONICS, INC. MANUFACTURERS THE SM-2A DISPLAY DEVICE WHICH HAS ONLY LOCAL CAPABILITY (REF. PP 54-55).
- M. LEAR SIEGLER, INC. MANUFACTURES THE 810 MODEL WHICH IS DRIVEN BY THE SDS SIGMA 2 (REF. PP 56-57).
- N. NATIONAL CASH REGISTER COMPANY PROVIDES THE NCR 795 WHICH CAN BE REMOTED. A MAXIMUM OF 12 DISPLAYS CAN BE ATTACHED TO ONE CONTROLLER.
- O. PHILCO-FORD CORPORATION MANUFACTURERS THE FOLLOWING FOUR SERIES...
 - (1) THE CUE (REF. PP 58-59) WHICH CAN BE DRIVEN BY THE IBM 360/50,
 - (2) THE 518 (REF. PP 60-61) WHICH IS DRIVEN EITHER LOCALLY BY THE PHILCO 102 OR REMOTELY,
 - (3) THE D-20/21 WHICH IS BASICALLY A REMOTE TERMINAL, AND
 - (4) THE D-22 WHICH USES CORE MEMORY FOR REFRESH RATHER THAN THE DELAY LINES OF D-20/21 AND CAN ALSO BE REMOTED.
- P. PLESSEY COMPANY LIMITED PRODUCES THE 100 SERIES WHICH IS A TV MONITOR SYSTEM OF A DIGITAL DISPLAY MODULE (REF. PP 62-63).
- Q. RADIATION, INC. PRODUCES TWO 'COMMAND AND CONTROL' DISPLAY DEVICES. THE MODELS ARE 6601 AND 6603 WHICH HAVE LIMITED GRAPHIC CAPABILITY IN THE SENSE THAT SHORT LINE SEGMENTS CAN BE GENERATED BUT ONLY IN A PRE-FORMATTED MANNER.
- R. RADIO CORPORATION OF AMERICA PRODUCES THE 70/750 VIDEO DATA FAMILY FOR THE SPECTRA 70 COMPUTER. THE 70/750 IS THE ACTUAL DISPLAY DEVICE, CONTROLLED BY THE 70/751 CONTROL UNIT WHICH CAN CONTROL A MAXIMUM OF 48 REMOTE DISPLAY UNITS. THE 70/752 IS

A REMOTE STAND ALONE TERMINAL (REF. PP 64-65).

S. RAYTHEON COMPANY PRODUCES THE FOLLOWING THREE DIGITAL INFORMATION DISPLAY MODELS...

(1) MODEL 401 HAS A COMMON CONTROLLER WITH A MAXIMUM OF 64 REMOTE DISPLAY STATIONS,

(2) MODEL 402 IS A SINGLE SELF-CONTAINED VERSION OF THE 401 (REF. PP 66-67), AND

(3) MODEL 500 USES A CORE REFRESH MEMORY RATHER THAN THE DELAY LINES OF THE PREVIOUS MODELS (REF. PP 68-69).

T. SANDERS ASSOCIATES, INC. PRODUCES THE 620 MODEL AND THE 720 MODEL (REF. PP 70-71). THE 620 (REMOVABLE) IS AVAILABLE AS A STAND-ALONE TERMINAL SELLING FOR \$5,400 AND RENTING FOR \$180 A MONTH. THE CHARACTERISTICS OF THE 620 ARE SIMILAR TO THE 720 WHICH PERMITS A MAXIMUM OF 12 DISPLAY CONSOLES PER CONTROLLER.

U. SCIENTIFIC DATA SYSTEMS, INC. PRODUCES MODELS 7550/7555 FOR BOTH REMOTE USE VIA DATA SETS OR LOCAL USE FOR THEIR SIGMA COMPUTERS (REF. PP 72-73). THE FUNDAMENTAL DIFFERENCE BETWEEN THE MODELS IS THE TRANSMISSION RATES. THE 7550 HAS A TRANSMISSION RATE OF 150 BITS PER SECOND WHILE THE 7555 HAS A RATE OF 1800 BITS PER SECOND.

V. STROMBERG CARLSON, INC. PRODUCES THE SC-1110 CHARACTERON DISPLAY SYSTEM (REF. PP 74-75).

W. TRANSISTOR ELECTRONICS CORPORATION MANUFACTURERS THE MODELS S-128, S-200, AND S-512 ALL OF WHICH CAN BE REMOTED.

X. UNIVAC PRODUCES THE UNISCOPE 300 COMMUNICATION TERMINAL WHICH CAN BE REMOTED (REF. PP 76-77).

- Y. VIATRON COMPUTER SYSTEMS CORPORATION PRODUCES THE SYSTEM 21 WHICH PERMITS REMOTE DATA ENTRY FOR VIEWING, EDITING AND STORAGE ON VIATAPE CARTRIDGES. THE DATA CAN BE VIEWED ON ANY COMMERCIAL TV SET.

- Z. WYLE LABORATORIES PRODUCES THE MODEL 600 WHICH CAN BE DRIVEN LOCALLY BY THE IBM SYSTEM/360 AND REMOTELY BY DATA SETS.

SECTION III. MODELS

MANUFACTURER..... BUNKER-RAMO CORPORATION
MODEL NUMBER..... 203 AND 204 (DISPLAY STATIONS)

CONSOLE INPUT DEVICES

FOUR ROW COMMUNICATION KEYBOARD, NINE EDIT KEYS, AND FIFTEEN FUNCTION KEYS.

AUXILIARY EQUIPMENT

TELETYPE 35RO, PAPER TAPE PUNCH, PAPER TAPE READER, AND KSR35.

CONTROLLER DESIGN

1. MEMORY TYPE..... DELAY LINE
2. MEMORY CYCLE TIME..... N/A
3. MEMORY SIZE..... 768 CHARACTERS
4. REFRESH RATE..... 46 FPS
5. MAXIMUM DISPLAYS..... 24

CHARACTER GENERATION AND DISPLAY

1. CHARACTER CODE..... ASCII
2. NUMBER OF FONTS..... 1
3. CHARACTERS PER LINE..... 64
4. LINES PER DISPLAY..... 12

SCREEN CHARACTERISTICS

1. DISPLAY SIZE (W X H)..... 5-1/2 IN. X 7-3/4 IN.
2. DISPLAY AREA..... 42.63 SQ. IN.
3. DISPLAY SHAPE..... RECTANGULAR
4. BRIGHTNESS..... ADJUSTABLE
5. CONTRAST..... 10 TO 1

MANUFACTURER..... BUNKER-RAMO CORPORATION
MODEL NUMBER..... 211 (DISPLAY STATION)

CONSOLE INPUT DEVICES

INTEGRAL KEYBOARD CONSISTING OF FOUR PUNCTUATION OR
SYMBOL KEYS, ELEVEN NUMERIC, AND FOURTEEN FUNCTION KEYS.

AUXILIARY EQUIPMENT

NONE

CONTROLLER DESIGN

1. MEMORY TYPE..... DELAY LINE
2. MEMORY CYCLE TIME..... N/A
3. MEMORY SIZE..... 768 CHARACTERS
4. REFRESH RATE..... 40 FPS
5. MAXIMUM DISPLAYS..... 24

CHARACTER GENERATION AND DISPLAY

1. CHARACTER CODE..... ASCII
2. NUMBER OF FONTS..... 1
3. CHARACTERS PER LINE..... 64
4. LINES PER DISPLAY..... 12

SCREEN CHARACTERISTICS

1. DISPLAY SIZE (W X H)..... 4-3/4 IN. X 3-3/4 IN.
2. DISPLAY AREA..... 17.81 SQ. IN.
3. DISPLAY SHAPE..... RECTANGULAR
4. BRIGHTNESS..... UNKNOWN
5. CONTRAST..... UNKNOWN

CONTROLLER INTERFACE

- 1. COMPUTERS.... IBM SYSTEM/360 AND OTHER MODELS,
HONEYWELL, AND UNIVAC.
- 2. DATA LINES... DATA SETS 201, 202

EDIT FEATURES

ONE EDIT LEVEL, INSERT CHARACTER OR LINE, DELETE CHARACTER OR LINE, TABULATION, NONDESTRUCTIVE CURSOR, BLINK CAPABILITY, AND OPTIONAL HARDCOPY.

PRICES	PURCHASE	LEASE
1. SINGLE DISPLAY TO LOCAL COMPUTER.....	\$ 15,630 ...	\$ 439
2. SINGLE DISPLAY TO DATA LINE AND REMOTE COMPUTER.....	14,040 ...	389
3. ONE EXTRA DISPLAY TO CONTROLLER.....	1,300 ...	35

MANUFACTURER..... BUNKER-RAMO CORPORATION
MODEL NUMBER..... 212 (DISPLAY STATION)

CONSOLE INPUT DEVICES

INTEGRAL KEYBOARD OF THIRTY-TWO ALPHABETIC AND PUNCTUATION OR SYMBOL KEYS, ELEVEN NUMERIC, AND FOURTEEN FUNCTION KEYS.

AUXILIARY EQUIPMENT

NONE

CONTROLLER DESIGN

- 1. MEMORY TYPE..... DELAY LINE
- 2. MEMORY CYCLE TIME..... N/A
- 3. MEMORY SIZE..... 768 CHARACTERS
- 4. REFRESH RATE..... 46 FPS
- 5. MAXIMUM DISPLAYS..... 24

CHARACTER GENERATION AND DISPLAY

- 1. CHARACTER CODE..... ASCII
- 2. NUMBER OF FONTS..... 1
- 3. CHARACTERS PER LINE..... 42
- 4. LINES PER DISPLAY..... 12

SCREEN CHARACTERISTICS

- 1. DISPLAY SIZE (W X H)..... 4-3/4 IN. X 3-1/4 IN.
- 2. DISPLAY AREA..... 15.44 SQ. IN.
- 3. DISPLAY SHAPE..... RECTANGULAR
- 4. BRIGHTNESS..... ADJUSTABLE
- 5. CONTRAST..... 10 TO 1

CONTROLLER INTERFACE

1. COMPUTERS.... IBM SYSTEM/360 AND OTHER MODELS,
HONEYWELL, AND UNIVAC.
2. DATA LINES... DATA SETS 201, 202

EDIT FEATURES

ONE EDIT LEVEL, CHARACTER OR LINE DELETE, TABULATION,
NONDESTRUCTIVE CURSOR, BLINK CAPABILITY, OPTIONAL
HARDCOPY, AND PARTIAL TRANSMIT CAPABILITY.

<u>PRICES</u>	<u>PURCHASE</u>	<u>LEASE</u>
1. SINGLE DISPLAY TO LOCAL COMPUTER.....	\$ 15,630 ...	\$ 439
2. SINGLE DISPLAY TO DATA LINE AND REMOTE COMPUTER.....	14,040 ...	389
3. ONE EXTRA DISPLAY TO CONTROLLER.....	1,370 ...	37

MANUFACTURER..... BUNKER-RAMO CORPORATION
MODEL NUMBER..... 403

CONSOLE INPUT DEVICES

STANDARD (SEPARATE PACKAGE) KEYBOARD, TEN EDIT KEYS,
EIGHT FUNCTION KEYS, CHANNEL SELECTOR, PROCEDURE-
SEQUENCING OR PROGRAM IDENTIFIER KEYS.

AUXILIARY EQUIPMENT

TELETYPE 35R0

CONTROLLER DESIGN

1. MEMORY TYPE..... DELAY LINE
2. MEMORY CYCLE TIME..... N/A
3. MEMORY SIZE..... 384 7-BIT WORDS
4. REFRESH RATE..... 48 FPS
5. MAXIMUM DISPLAYS..... 16

CHARACTER GENERATION AND DISPLAY

1. CHARACTER CODE..... ASCII
2. NUMBER OF FONTS..... 1
3. CHARACTERS PER LINE..... 32
4. LINES PER DISPLAY..... 12

SCREEN CHARACTERISTICS

1. DISPLAY SIZE (W X H)..... 5 IN. X 7 IN.
2. DISPLAY AREA..... 35 SQ. IN.
3. DISPLAY SHAPE..... RECTANGULAR
4. BRIGHTNESS..... UNKNOWN
5. CONTRAST..... UNKNOWN

CONTROLLER INTERFACE

1. COMPUTERS.... INDEPENDENT OF ANY COMMUNICATION AND/OR
COMPUTER SYSTEM.
2. DATA LINES... 201 AND 202 MODEM

EDIT FEATURE

ONE EDIT LEVEL, INSERT AND DELETE CAPABILITY,
NONDESTRUCTIVE CURSOR, AND BLINK CAPABILITY.

PRICES

ON REQUEST FROM MANUFACTURER.

MANUFACTURER..... BUNKER-RAMO CORPORATION
MODEL NUMBER..... 411

CONSOLE INPUT DEVICES

STANDARD (SEPARATE PACKAGE) KEYBOARD, TEN EDIT KEYS,
EIGHT FUNCTION KEYS, CHANNEL SELECTOR, PROCEDURE-
SEQUENCING OR PROGRAM IDENTIFIER KEYS.

AUXILIARY EQUIPMENT

TELETYPE 35R0

CONTROLLER DESIGN

1.	MEMORY TYPE.....	DELAY LINE
2.	MEMORY CYCLE TIME.....	N/A
3.	MEMORY SIZE.....	384 7-BIT WORDS
4.	REFRESH RATE.....	48 FPS
5.	MAXIMUM DISPLAYS.....	16

CHARACTER GENERATION AND DISPLAY

1.	CHARACTER CODE.....	ASCII
2.	NUMBER OF FONTS.....	1
3.	CHARACTERS PER LINE.....	32
4.	LINES PER DISPLAY.....	12

SCREEN CHARACTERISTICS

1.	DISPLAY SIZE (W X H).....	5 IN. X 7 IN.
2.	DISPLAY AREA.....	35 SQ. IN.
3.	DISPLAY SHAPE.....	RECTANGULAR
4.	BRIGHTNESS.....	UNKNOWN
5.	CONTRAST.....	UNKNOWN

CONTROLLER INTERFACE

1. COMPUTERS.... INDEPENDENT OR CONNECTED TO ANY COMMUNICATION AND/OR COMPUTER SYSTEM.
2. DATA LINES... 201 AND 202 MODEM

EDIT FEATURES

ONE EDIT LEVEL, INSERT AND DELETE CAPABILITY,
NONDESTRUCTIVE CURSOR AND BLINK CAPABILITY.

PRICES

ON REQUEST FROM MANUFACTURER.

MANUFACTURER..... BUNKER-RAMO CORPORATION
MODEL NUMBER..... 414 AND 415

CONSOLE INPUT DEVICES

STANDARD (SEPARATE PACKAGE) KEYBOARD, TEN EDIT KEYS,
EIGHT FUNCTION KEYS, CHANNEL SELECTOR, PROCEDURE-
SEQUENCING OR PROGRAM IDENTIFIER KEYS.

AUXILIARY EQUIPMENT

TELETYPE 35RO AND DISPLAY MONITORS

CONTROLLER DESIGN

1. MEMORY TYPE..... DELAY LINE
2. MEMORY CYCLE TIME..... N/A
3. MEMORY SIZE..... 384 7-BIT WORDS
4. REFRESH RATE..... 48 FPS
5. MAXIMUM DISPLAYS..... 16

CHARACTER GENERATION AND DISPLAY

1. CHARACTER CODE..... ASCII
2. NUMBER OF FONTS..... 1
3. CHARACTERS PER LINE..... 32
4. LINES PER DISPLAY..... 12

SCREEN CHARACTERISTICS

1. DISPLAY SIZE (W X H)..... 5 IN. X 7 IN.
2. DISPLAY AREA..... 35 SQ. IN.
3. DISPLAY SHAPE..... RECTANGULAR
4. BRIGHTNESS..... UNKNOWN
5. CONTRAST..... UNKNOWN

CONTROLLER INTERFACE

-
1. COMPUTERS.... INDEPENDENT OR ANY COMMUNICATION AND/OR
COMPUTER SYSTEM
 2. DATA LINES... 201 AND 202 MODEM

EDIT FEATURES

ONE EDIT LEVEL, INSET AND DELETE CAPABILITY,
NONDESTRUCTIVE CURSOR, AND BLINK FEATURE.

PRICES

ON REQUEST FROM MANUFACTURER.

MANUFACTURER..... BUNKER-RAMO CORPORATION
MODEL NUMBER..... BR-700

CONSOLE INPUT DEVICES

KEYBOARD AND FUNCTION KEYS.

AUXILIARY EQUIPMENT

PRINTER, READER, AND PUNCH.

CONTROLLER DESIGN

1. MEMORY TYPE..... DRUM
2. MEMORY CYCLE TIME..... N/A
3. MEMORY SIZE..... 384,000 CHARACTERS
4. REFRESH RATE..... 60 FPS
5. MAXIMUM DISPLAYS..... 16

CHARACTER GENERATION AND DISPLAY

1. CHARACTER CODE..... ASCII
2. NUMBER OF FONTS..... 1
3. CHARACTERS PER LINE..... 64
4. LINES PER DISPLAY..... 15

SCREEN CHARACTERISTICS

1. DISPLAY SIZE (W X H)..... 7-3/4 IN. X 5-1/2 IN.
2. DISPLAY AREA..... 42.63 SQ. IN.
3. DISPLAY SHAPE..... RECTANGULAR
4. BRIGHTNESS..... UNKNOWN
5. CONTRAST..... UNKNOWN

CONTROLLER INTERFACE

1. COMPUTERS.... NONE
2. DATA LINES... TELETYPE OR DATAPHONE

EDIT FEATURES

LINE INSERT, CHARACTER AND LINE DELETE, BLINK, SPLIT SCREEN, PARTIAL TRANSMIT, TABULATION, EDIT, AND FORMATTING.

PRICES

ON REQUEST FROM MANUFACTURER.

MANUFACTURER..... BURROUGHS CORPORATION
MODEL NUMBER..... BIDS (BURROUGHS INPUT AND DISPLAY SYSTEMS)

CONSOLE INPUT DEVICES

STANDARD KEYBOARD AND FUNCTION KEYS.

AUXILIARY EQUIPMENT

OPTIONAL HARDCOPY

CONTROLLER DESIGN

1. MEMORY TYPE..... CORE
2. MEMORY CYCLE TIME..... UNKNOWN
3. MEMORY SIZE..... 1024 CHARACTERS
4. REFRESH RATE..... 60 FPS
5. MAXIMUM DISPLAYS..... 4

CHARACTER GENERATION AND DISPLAY

1. CHARACTER CODE..... ASCII
2. NUMBER OF FONTS..... 1
3. CHARACTERS PER LINE..... 80
4. LINES PER DISPLAY..... 25

SCREEN CHARACTERISTICS

1. DISPLAY SIZE (W X H)..... 12 IN. X 9 IN.
2. DISPLAY AREA..... 108 SQ. IN.
3. DISPLAY SHAPE..... RECTANGULAR
4. BRIGHTNESS..... 50 FT-LAMBERTS
5. CONTRAST..... 10 TO 1

CONTROLLER INTERFACE

- 1. COMPUTERS.... BURROUGHS 5500
- 2. DATA LINES... NONE

EDIT FEATURES

CHARACTER AND LINE INSERT AND DELETE, TABULATION,
NONDESTRUCTIVE CURSOR, AND OPTIONAL HARDCOPY.

PRICES

PURCHASE PRICES ON REQUEST FROM MANUFACTURER.
MONTHLY LEASES RANGE FROM \$124 TO \$295.

MANUFACTURER..... COMPUTER COMMUNICATIONS, INC
MODEL NUMBER..... CC-30

CONSOLE INPUT DEVICES

LIGHT GUN AND ALPHANUMERIC KEYBOARD.

AUXILIARY EQUIPMENT

PAPER TAPE, TYPEWRITER, AND LINE PRINTER.

CONTROLLER DESIGN

1. MEMORY TYPE..... CORE
2. MEMOYRY CYCLE TIME..... 8 USEC.
3. MEMORY SIZE..... 1024 CHARACTERS
4. REFRESH RATE..... 60 FPS
5. MAXIMUM DISPLAYS..... 32

CHARACTER GENERATION AND DISPLAY

1. CHARACTER CODE..... ASCII 7-BIT
2. NUMBER OF FONTS..... 1
3. CHARACTERS REP LINE..... 40
4. LINES PER DISPLAY..... 20 AND 24

SCREEN CHARACTERISTICS

1. DISPLAY SIZE (W X H)..... ANY TV RECEIVER
2. DISPLAY AREA..... ANY TV RECEIVER
3. DISPLAY SHAPE..... ANY TV RECEIVER
4. BRIGHTNESS..... ADJUSTABLE
5. CONTRAST..... ADJUSTABLE

CONTROLLER INTERFACE

1. COMPUTERS.... NONE
2. DATA LINES... SERIES 100, 200, AND 300 DATAPHONES

EDIT FEATURES

NONDESTRUCTIVE CURSOR, SPLIT SCREEN, PARTIAL
TRANSMIT, AND TABULATION.

PRICES

ON REQUEST FROM MANUFACTURER.

MANUFACTURER..... CONRAC CORPORATION
MODEL NUMBER..... 201

CONSOLE INPUT DEVICES

STANDARD KEYBOARD, THREE EDIT KEYS, AND SEVEN FUNCTION KEYS.

AUXILIARY EQUIPMENT

NONE

CONTROLLER DESIGN

1. MEMORY TYPE..... DELAY LINE
2. MEMORY CYCLE TIME..... N/A
3. MEMORY SIZE..... 1,000 CHARACTERS
4. REFRESH RATE..... 60 FPS
5. MAXIMUM DISPLAYS..... 1

CHARACTER GENERATION AND DISPLAY

1. CHARACTER CODE..... ASCII
2. NUMBER OF FONTS..... OPTIONAL
3. CHARACTERS PER LINE..... 80
4. LINES PER DISPLAY..... 24

SCREEN CHARACTERISTICS

1. DISPLAY SIZE (W X H)..... 8-1/2 IN. X 7-1/2 IN.
2. DISPLAY AREA..... 61.63 SQ. IN.
3. DISPLAY SHAPE..... RECTANGULAR
4. BRIGHTNESS..... 50 FT-LAMBERTS (NOMINAL)
5. CONTRAST..... UNKNOWN

CONTROLLER INTERFACE

1. COMPUTERS.... NONE
2. DATA LINES... DATAPHONE 202

EDIT FEATURES

ONE EDIT LEVEL AND NONDESTRUCTIVE CURSOR, OPTIONAL TABULATION, CHARACTER AND LINE DELETE AND INSERT, BLINK, AND PARTIAL TRANSMIT CAPABILITY.

PRICES

A SINGLE DISPLAY TO DATA LINE CAN BE PURCHASED FOR \$8,000.

MANUFACTURER..... CONTROL DATA CORPORATION
MODEL NUMBER..... 211/212

CONSOLE INPUT DEVICES

STANDARD KEYBOARD WITH SUPERSCRIP, LIMITED EDIT KEYS
WITH CURSOR, AND FUNCTION KEYS.

AUXILIARY EQUIPMENT

MODEL 218 PRINTER STATION (SELECTRIC TYPEWRITER)

CONTROLLER DESIGN

1. MEMORY TYPE..... DELAY LINE
2. MEMORY CYCLE TIME..... N/A
3. MEMORY SIZE..... 1,000 6-BIT WORDS
4. REFRESH RATE..... 50 FPS
5. MAXIMUM DISPLAYS..... 12

CHARACTER GENERATION AND DISPLAY

1. CHARACTER CODE..... BCD
2. NUMBER OF FONTS..... 1
3. CHARACTERS PER LINE..... 50
4. LINES PER DISPLAY..... 20

SCREEN CHARACTERISTICS

1. DISPLAY SIZE (W X H)..... 8 IN. X 6 IN.
2. DISPLAY AREA..... 48 SQ. IN.
3. DISPLAY SHAPE..... RECTANGULAR
4. BRIGHTNESS..... 75 FT-LAMBERTS
5. CONTRAST..... 8 TO 1

CONTROLLER INTERFACE

- 1. COMPUTERS.... CDC 3000 SERIES, 160A, OR 8090,
IBM 7010, SYSTEM/360, SDS-930
- 2. DATA LINES... DATAPHONE 201A OR 201B

EDIT FEATURES

ONE EDIT LEVEL, CHARACTER INSERT AND DELETE, AND
NONDESTRUCTIVE CURSOR.

PRICES	PURCHASE	LEASE
1. SINGLE DISPLAY TO LOCAL COMPUTER.....	\$ 28,650 ...	\$ 850
2. SINGLE DISPLAY TO DATA LINE AND REMOTE COMPUTER.....	28,850 ...	860
3. ONE EXTRA DISPLAY TO CONTROLLER.....	4,000 ...	125

MANUFACTURER..... FERRANTI, LIMITED
MODEL NUMBER..... 50/60 (M.D.5 - NO STORAGE)

CONSOLE INPUT DEVICES

FIFTY EIGHT KEYBOARD PLUS SPACEBAR (INCLUDING EDIT KEYS),
AND FUNCTION KEYS TO ORDER.

AUXILIARY EQUIPMENT

NONE

CONTROLLER DESIGN

1. MEMORY TYPE..... NONE
2. MEMORY CYCLE TIME..... NONE
3. MEMORY SIZE..... NONE
4. REFRESH RATE..... 20 FPS
5. MAXIMUM DISPLAYS..... 4

CHARACTER GENERATION AND DISPLAY

1. CHARACTER CODE..... ISO 7, ASCII
2. NUMBER OF FONTS..... TO ORDER
3. CHARACTERS PER LINE..... 64
4. LINES PER DISPLAY..... 13

SCREEN CHARACTERISTICS

1. DISPLAY SIZE (W X H)..... 8 IN. X 6 IN.
2. DISPLAY AREA..... 48 SQ. IN.
3. DISPLAY SHAPE..... RECTANGULAR
4. BRIGHTNESS..... 50 FT-LAMBERTS
5. CONTRAST..... UNKNOWN

CONTROLLER INTERFACE

1. COMPUTERS.... FERRANTI ARGUS 300, 400, AND 500,
OR TO ORDER.
2. DATA LINES... UNKNOWN

EDIT FEATURES

NO OVERLAY EXCEPT CURSOR SYMBOL, CHARACTER INSERT AND
DELETE, SPLIT SCREEN, AND DESTRUCTIVE OR NONDESTRUCTIVE
CURSOR.

PRICES

THE PURCHASE PRICE OF A DISPLAY IS \$20,888.

MANUFACTURER..... FERRANTI, LIMITED
MODEL NUMBER..... 50/60 (M.D.6 - BUFFER STORAGE)

CONSOLE INPUT DEVICES

FIFTY EIGHT KEYBOARD PLUS SPACEBAR (INCLUDING EDIT KEYS),
AND FUNCTION KEYS TO ORDER.

AUXILIARY EQUIPMENT

NONE

CONTROLLER DESIGN

1. MEMORY TYPE..... CORE
2. MEMORY CYCLE TIME..... 2 USEC.
3. MEMORY SIZE..... 4,000 24-BIT WORDS
4. REFRESH RATE..... 20 FPS
5. MAXIMUM DISPLAYS..... 16

CHARACTER GENERATION AND DISPLAY

1. CHARACTER CODE..... ISO 7, ASCII
2. NUMBER OF FONTS..... TO ORDER
3. CHARACTERS PER LINE..... 64
4. LINES PER DISPLAY..... 13

SCREEN CHARACTERISTICS

1. DISPLAY SIZE (W X H)..... 8 IN. X 6 IN.
2. DISPLAY AREA..... 48 SQ. IN.
3. DISPLAY SHAPE..... RECTANGULAR
4. BRIGHTNESS..... 50 FT-LAMBERTS
5. CONTRAST..... UNKNOWN

CONTROLLER INTERFACE

1. COMPUTERS.... FERRANTI ARGUS 300, 400, AND 500,
OR TO ORDER.
2. DATA LINES... NONE

EDIT FEATURES

NO OVERLAY EXCEPT CURSOR SYMBOL, CHARACTER INSERT AND DELETE, SPLIT SCREEN, AND DESTRUCTIVE OR NONDESTRUCTIVE CURSOR.

PRICES

THE PURCHASE PRICE OF A DISPLAY IS \$41,608.

MANUFACTURER..... GENERAL ELECTRIC COMPANY
MODEL NUMBER..... 760

CONSOLE INPUT DEVICES

MODIFIED KEYBOARD, EDIT KEYS, AND SIXTEEN READABLE
FUNCTION KEYS.

AUXILIARY EQUIPMENT

TELETYPE MODELS 33RD AND 35ASR, AND OPTIONAL FUNCTION
KEYS.

CONTROLLER DESIGN

1. MEMORY TYPE..... CORE
2. MEMORY CYCLE TIME..... 2.100 USEC.
3. MEMORY SIZE..... 1,472 8-BIT WORDS
4. REFRESH RATE..... 30 FPS
5. MAXIMUM DISPLAYS..... 32

CHARACTER GENERATION AND DISPLAY

1. CHARACTER CODE..... ASCII WITH PARITY
2. NUMBER OF FONTS..... 1
3. CHARACTERS PER LINE..... 46
4. LINES PER DISPLAY..... 26, 16, 8, OR 4

SCREEN CHARACTERISTICS

1. DISPLAY SIZE (W X H)..... 9.3 IN. X 4 IN.
2. DISPLAY AREA..... 37.2 SQ. IN.
3. DISPLAY SHAPE..... RECTANGULAR
4. BRIGHTNESS..... UNKNOWN
5. CONTRAST..... UNKNOWN

CONTROLLER INTERFACE

- 1. COMPUTERS.... SPECIFICALLY CONFIGURED FOR INTERFACE
- 2. DATA LINES... DATAPHONE 201A, 201B, 202C, AND 202D.

EDIT FEATURES

HORIZONTAL AND VERTICAL TABULATION, OPTIONAL NONDESTRUCTIVE CURSOR, CHARACTER DELETE, BLINK, SPLIT SCREEN, FORMATTING CAPABILITIES, AND OPTIONAL HARDCOPY. FORMATTING CAPABILITIES.

PRICES	PURCHASE	LEASE
1. SINGLE DISPLAY TO LOCAL COMPUTER.....	\$ 27,200 ...	\$ 655
2. SINGLE DISPLAY TO DATA LINE AND REMOTE COMPUTER.....	27,200 ...	655
3. ONE EXTRA DISPLAY TO CONTROLLER.....	3,160 ...	83

MANUFACTURER..... INTERNATIONAL BUSINESS MACHINES CORP.
MODEL NUMBER..... 2260, MODEL 1

CONSOLE INPUT DEVICES

OPTIONAL KEYBOARD (ALPHANUMERIC OR NUMERIC ONLY)

AUXILIARY EQUIPMENT

OPTIONAL IBM MODEL 4 PRINTER (1 PER CONTROLLER)

CONTROLLER DESIGN

1. MEMORY TYPE..... DELAY LINE
2. MEMORY CYCLE TIME..... N/A
3. MEMORY SIZE..... 240, 480, 960 6-BIT WORDS
4. REFRESH RATE..... 30 FPS
5. MAXIMUM DISPLAYS..... 24

CHARACTER GENERATION AND DISPLAY

1. CHARACTER CODE..... ASCII, EBCDIC
2. NUMBER OF FONTS..... 1
3. CHARACTERS PER LINE..... 40
4. LINES PER DISPLAY..... 6

SCREEN CHARACTERISTICS

1. DISPLAY SIZE (W X H)..... 9 IN. X 4 IN. (NOMINAL)
2. DISPLAY AREA..... 36 SQ. IN.
3. DISPLAY SHAPE..... RECTANGULAR
4. BRIGHTNESS..... 16 FT-LAMBERTS
5. CONTRAST..... 2.63 TO 1

CONTROLLER INTERFACE

- 1. COMPUTERS.... IBM SYSTEM/360
- 2. DATA LINES... DATAPHONE 20201 AND 20181

EDIT FEATURES

ONE EDIT LEVEL, AND OPTIONAL DESTRUCTIVE OR NONDESTRUCTIVE CURSOR.

PRICES	PURCHASE	LEASE
1. SINGLE DISPLAY TO LOCAL COMPUTER.....	\$ 18,720 ...	\$ 442
2. SINGLE DISPLAY TO DATA LINE AND REMOTE COMPUTER.....	18,720 ...	442
3. ONE EXTRA DISPLAY TO CONTROLLER.....	4,270 ...	91

MANUFACTURER..... INTERNATIONAL BUSINESS MACHINES CORP.
MODEL NUMBER..... 2260, MODEL 2

CONSOLE INPUT DEVICES

OPTIONAL KEYBOARD (ALPHANUMERIC OR NUMERIC ONLY).

AUXILIARY EQUIPMENT

OPTIONAL IBM MODEL 4 PRINTER (1 PER CONTROLLER)

CONTROLLER DESIGN

-
1. MEMORY TYPE..... DELAY LINE
 2. MEMORY CYCLE TIME..... N/A
 3. MEMORY SIZE..... 240, 480, 960 6-BIT WORDS
 4. REFRESH RATE..... 60 FPS
 5. MAXIMUM DISPLAYS..... 16

CHARACTER GENERATION AND DISPLAY

-
1. CHARACTER CODE..... ASCII, EBCDIC
 2. NUMBER OF FONTS..... 1
 3. CHARACTERS PER LINE..... 40
 4. LINES PER DISPLAY..... 12

SCREEN CHARACTERISTICS

-
1. DISPLAY SIZE (W X H)..... 6-1/2 IN. X 4-1/2 IN. (NOMINAL)
 2. DISPLAY AREA..... 29-1/4 SQ. IN.
 3. DISPLAY SHAPE..... RECTANGULAR
 4. BRIGHTNESS..... 64 FT-LAMBERTS
 5. CONTRAST..... 7.05 TO 1

CONTROLLER INTERFACE

- 1. COMPUTERS.... IBM SYSTEM/360
- 2. DATA LINES... DATA SET

EDIT FEATURES

ONE EDIT LEVEL, AND OPTIONAL DESTRUCTIVE OR
NONDESTRUCTIVE CURSOR.

PRICES	PURCHASE	LEASE
1. SINGLE DISPLAY TO LOCAL COMPUTER.....	\$ 18,720 ...	\$ 442
2. SINGLE DISPLAY TO DATA LINE AND REMOTE COMPUTER.....	18,720 ...	442
3. ONE EXTRA DISPLAY TO CONTROLLER.....	2,000 ...	50

MANUFACTURER..... INTERNATIONAL BUSINESS MACHINES CORP.
MODEL NUMBER..... 2265

CONSOLE INPUT DEVICES

ALPHANUMERIC KEYBOARD WITH EDIT KEYS IS OPTIONAL, AND
FUNCTION KEYS.

AUXILIARY EQUIPMENT

OPTIONAL IBM 1053 MODEL 4 PRINTER (1 PER CONTROLLER).

CONTROLLER DESIGN

1. MEMORY TYPE..... DELAY LINE
2. MEMORY CYCLE TIME..... N/A
3. MEMORY SIZE..... 960 6-BIT WORDS
4. REFRESH RATE..... 54 FPS
5. MAXIMUM DISPLAYS..... 24

CHARACTER GENERATION AND DISPLAY

1. CHARACTER CODE..... ASCII
2. NUMBER OF FONTS..... 1
3. CHARACTERS PER LINE..... 80 OR 64
4. LINES PER DISPLAY..... 12 OR 15

SCREEN CHARACTERISTICS

1. DISPLAY SIZE (W X H)..... 10.4 IN. X 4.8 IN.
2. DISPLAY AREA..... 49.9 SQ. IN.
3. DISPLAY SHAPE..... RECTANGULAR
4. BRIGHTNESS..... 50 FT-LAMBERTS
5. CONTRAST..... 6.35 TO 1

CONTROLLER INTERFACE

1. COMPUTERS.... IBM SYSTEM/360
2. DATA LINES... DATAPHONE 202D1 AND 201B1

EDIT FEATURES

ONE EDIT LEVEL, OPTIONAL DESTRUCTIVE OR NONDESTRUCTIVE CURSOR, ERASE KEYS, FULL SCREEN, CURSOR TO END-OF-LINE, AND CURSOR TO END-OF-SCREEN.

PRICES

	PURCHASE		LEASE
	-----		-----
1. SINGLE DISPLAY TO LOCAL COMPUTER.....	\$ 15,050	...	\$ 380
2. SINGLE DISPLAY TO DATA LINE AND REMOTE COMPUTER.....	14,150	...	350
3. ONE EXTRA DISPLAY TO CONTROLLER.....	5,600	...	175

MANUFACTURER..... LABORATORY FOR ELECTRONICS, INC.
MODEL NUMBER..... SM-2A

CONSOLE INPUT DEVICES

STANDARD KEYBOARD, LIMITED EDIT KEYS, FOURTEEN FUNCTION
KEYS, AND OPTIONAL LIGHT PEN.

AUXILIARY EQUIPMENT

NONE

CONTROLLER DESIGN

-
1. MEMORY TYPE..... CORE
 2. MEMORY CYCLE TIME..... 2 USEC.
 3. MEMORY SIZE..... 8,192 7-BIT WORDS
 4. REFRESH RATE..... 60 FPS
 5. MAXIMUM DISPLAYS..... 10

CHARACTER GENERATION AND DISPLAY

-
1. CHARACTER CODE..... ASCII
 2. NUMBER OF FONTS..... 1
 3. CHARACTERS PER LINE..... 125
 4. LINES PER DISPLAY..... 64

SCREEN CHARACTERISTICS

-
1. DISPLAY SIZE (W X H)..... 14 IN. X 10 IN.
 2. DISPLAY AREA..... 140 SQ. IN.
 3. DISPLAY SHAPE..... RECTANGULAR
 4. BRIGHTNESS..... 50 FT-LAMBERTS
 5. CONTRAST..... UNKNOWN

CONTROLLER INTERFACE

- 1. COMPUTERS.... TO ORDER
- 2. DATA LINES... NONE

EDIT FEATURES

OVERLAY, ONE EDIT LEVEL, CHARACTER INSERT AND DELETE, SPLIT SCREEN, OPTIONAL TABULATION, NONDESTRUCTIVE CURSOR, OPTIONAL BLINK, OPTIONAL VECTOR GENERATION, AND RANDOM POINT PLOTTING.

PRICES

PRICES VARY ACCORDING TO FEATURES ORDERED.
SYSTEMS ARE MOSTLY CUSTOM DESIGNED.

MANUFACTURER..... LEAR SIEGLER, INC.
MODEL NUMBER..... 810

CONSOLE INPUT DEVICES

TYPEWRITER FORMAT KEYBOARD, ERASE AND NEW LINE EDIT KEYS,
AND TRANSMIT END-OF-MESSAGE POWER TAB FUNCTION KEY.

AUXILIARY EQUIPMENT

NONE

CONTROLLER DESIGN

1. MEMORY TYPE..... CORE
2. MEMORY CYCLE TIME..... 8 USEC.
3. MEMORY SIZE..... 1,024 8-BIT WORDS
4. REFRESH RATE..... 60 FPS
5. MAXIMUM DISPLAYS..... 1

CHARACTER GENERATION AND DISPLAY

1. CHARACTER CODE..... BCD
2. NUMBER OF FONTS..... 1
3. CHARACTERS PER LINE..... 32
4. LINES PER DISPLAY..... 20

SCREEN CHARACTERISTICS

1. DISPLAY SIZE (W X H)..... 12-5/16 IN. X 9-1/4 IN.
2. DISPLAY AREA..... 114 SQ. IN.
3. DISPLAY SHAPE..... RECTANGULAR
4. BRIGHTNESS..... UNKNOWN
5. CONTRAST..... UNKNOWN

CONTROLLER INTERFACE

-
1. COMPUTERS.... SDS SIGMA 2
 2. DATA LINES... NONE

EDIT FEATURES

ONE EDIT LEVEL AND BLINK CAPABILITY.

PRICES

ON REQUEST FROM MANUFACTURER.

MANUFACTURER..... PHILCO-FORD CORPORATION
MODEL NUMBER..... CUE (COMPUTER UPDATE EQUIPMENT)

CONSOLE INPUT DEVICES

STANDARD KEYBOARD, LIMITED EDIT KEYS WITH CURSOR, AND
TEN LIMITED FUNCTION KEYS.

AUXILIARY EQUIPMENT

NONE

CONTROLLER DESIGN

1. MEMORY TYPE..... DELAY LINE
2. MEMORY CYCLE TIME..... N/A
3. MEMORY SIZE..... UNKNOWN
4. REFRESH RATE..... 60 FPS
5. MAXIMUM DISPLAYS..... 36

CHARACTER GENERATION AND DISPLAY

1. CHARACTER CODE..... EBCDIC
2. NUMBER OF FONTS..... 1
3. CHARACTERS PER LINE..... 25
4. LINES PER DISPLAY..... 20

SCREEN CHARACTERISTICS

1. DISPLAY SIZE (W X H)..... 9 IN. X 7 IN.
2. DISPLAY AREA..... 63 SQ. IN.
3. DISPLAY SHAPE..... RECTANGULAR
4. BRIGHTNESS..... 50 FT-LAMBERTS
5. CONTRAST..... 10 TO 1

CONTROLLER INTERFACE

- 1. COMPUTERS.... IBM SYSTEM/360-50, PHILCO 102
- 2. DATA LINES... DATAPHONE 204 OR EQUIVALENT

EDIT FEATURES

ONE EDIT LEVEL, SPLIT SCREEN, NONDESTRUCTIVE CURSOR,
AND CHARACTER DELETE.

PRICES

ON REQUEST FROM MANUFACTURER.

MANUFACTURER..... PHILCO-FORD CORPORATION
MODEL NUMBER..... 518

CONSOLE INPUT DEVICES

STANDARD KEYBOARD, LIMITED EDIT KEYS WITH CURSOR, 4-WAY
CURSOR CONTROL FUNCTION KEYS, AND LIGHT PEN.

AUXILIARY EQUIPMENT

NONE

CONTROLLER DESIGN

1. MEMORY TYPE..... DELAY LINE
2. MEMORY CYCLE TIME..... 16,667 USEC.
3. MEMORY SIZE..... 1,600 8-BIT WORDS
4. REFRESH RATE..... 60 FT-LAMBERTS
5. MAXIMUM DISPLAYS..... 1

CHARACTER GENERATION AND DISPLAY

1. CHARACTER CODE..... ASCII
2. NUMBER OF FONTS..... 1
3. CHARACTERS PER LINE..... 40 OR 80
4. LINES PER DISPLAY..... 20

SCREEN CHARACTERISTICS

1. DISPLAY SIZE (W X H)..... 10 IN. X 7 IN.
2. DISPLAY AREA..... 70 SQ. IN.
3. DISPLAY SHAPE..... RECTANGULAR
4. BRIGHTNESS..... 50 FT-LAMBERTS
5. CONTRAST..... 10 TO 1

CONTROLLER INTERFACE

1. COMPUTERS.... PHILCO 102
2. DATA LINES... DATAPHONE 202 OR EQUIVALENT

EDIT FEATURES

ONE EDIT LEVEL, OPTIONAL INSERT AND DELTE CAPABILITY,
PAGE MEMORY, AND PAPER ROLL.

PRICES

ON REQUEST FROM MANUFACTURER.

MANUFACTURER..... PLESSEY COMPANY LIMITED
MODEL NUMBER..... 100 SERIES (625 LINE TV MONITOR)

CONSOLE INPUT DEVICES

STANDARD OR MODIFIED KEYBOARD, EDIT KEYS, FUNCTION KEYS
TO CUSTOMER REQUIREMENTS, ROLLING BALL, AND TOUCHWIRES.

AUXILIARY EQUIPMENT

EXTENSION (SLAVE) MONITORS, VIDEO DISTRIBUTION AND CABLE
COMPENSATING AMPLIFIERS.

CONTROLLER DESIGN

1. MEMORY TYPE..... CORE
2. MEMORY CYCLE TIME..... 2 USEC.
3. MEMORY SIZE..... 12,072 8-BIT WORDS
4. REFRESH RATE..... 50 FPS
5. MAXIMUM DISPLAYS..... 32

CHARACTER GENERATION AND DISPLAYS.

1. CHARACTER CODE..... ANY
2. NUMBER OF FONTS..... 1
3. CHARACTERS PER LINE..... 72
4. LINES PER DISPLAY..... 32 MAXIMUM (TYPICALLY 21)

SCREEN CHARACTERISTICS

1. DISPLAY SIZE (W X H)..... DEPENDS ON MONITOR TYPE
2. DISPLAY AREA..... DEPENDS ON MONITOR TYPE
3. DISPLAY SHAPE..... RECTANGULAR
4. BRIGHTNESS..... DEPENDS ON MONITOR TYPE
5. CONTRAST..... DEPENDS ON MONITOR TYPE

CONTROLLER INTERFACE

1. COMPUTERS.... PLESSEY XL SERIES AND OTHERS
2. DATA LINES...

EDIT FEATURES

EDIT LEVELS, INSERT, DELETE, TABULATION AND SPLIT SCREEN ARE UNDER PROGRAM CONTROL. BLINK OPTIONAL AND NONDESTRUCTIVE CURSOR. PARITY CHECKING AND COLOUR DISPLAYS.

PRICES

ON REQUEST FROM MANUFACTURER.

MANUFACTURER..... RADIO CORPORATION OF AMERICA
MODEL NUMBER..... 70/752

CONSOLE INPUT DEVICES

STANDARD KEYBOARD, EIGHT EDIT KEYS (WITH FOUR CURSORS),
ALSO WRITE, TRANSMIT, RECEIVE OR (OPTIONALLY) PRINT
MODE KEYS.

AUXILIARY EQUIPMENT

OPTIONAL 33 OR 35 PRINTER AND KEYBOARD PRINT FUNCTION.

CONTROLLER DESIGN

1. MEMORY TYPE..... DELAY LINE
2. MEMORY CYCLE TIME..... 14.8 USEC.
3. MEMORY SIZE..... 1,080 8-BIT WORDS
4. REFRESH RATE..... 60 FPS
5. MAXIMUM DISPLAYS..... 1

CHARACTER GENERATION AND DISPLAY

1. CHARACTER CODE..... ASCII
2. NUMBER OF FONTS..... 1
3. CHARACTERS PER LINE..... 54
4. LINES PER DISPLAY..... 20

SCREEN CHARACTERISTICS

1. DISPLAY SIZE (W X H)..... 8 IN. X 5-1/2 IN.
2. DISPLAY AREA..... 44 SQ. IN.
3. DISPLAY SHAPE..... RECTANGULAR
4. BRIGHTNESS..... 20 FT-LAMBERTS
5. CONTRAST..... 6 TO 1

CONTROLLER INTERFACE

- 1. COMPUTERS.... SPECTRA 70 SERIES
- 2. DATA LINES... DATAPHONE 202C AND 202D

EDIT FEATURES

OVERLAY, TWO EDIT LEVELS, CHARACTER AND LINE INSERT AND DELETE, SPLIT SCREEN, NONDESTRUCTIVE CURSOR, SEGMENTED ADDRESSING, STATION SELECTOR OR VIDEO DATA SWITCH, AND STORED FORMAT TABULATION.

PRICES	PURCHASE	LEASE
1. SINGLE DISPLAY TO LOCAL COMPUTER.....	\$ 8,325 ...	\$ 190
2. SINGLE DISPLAY TO DATA LINE AND REMOTE COMPUTER.....	8,325 ...	190
3. ONE EXTRA DISPLAY TO CONTROLLER.....	8,325 ...	190

MANUFACTURER..... RAYTHEON COMPANY
MODEL NUMBER..... DIDS-401 AND 402
(DIGITAL INFORMATION DISPLAY SYSTEMS)

CONSOLE INPUT DEVICES

OPTIONAL STANDARD KEYBOARD, EDIT KEYS, AND OPTIONAL
FUNCTION KEYS.

AUXILIARY EQUIPMENT

TELETYPE 33RO OR 35RO PRINTER ADAPTER.

CONTROLLER DESIGN

-
1. MEMORY TYPE..... DELAY LINE
 2. MEMORY CYCLE TIME..... N/A
 3. MEMORY SIZE..... 520 OR 1,040 6-BIT WORDS
 4. REFRESH RATE..... 67 FPS
 5. MAXIMUM DISPLAYS..... 64

CHARACTER GENERATION AND DISPLAY

-
1. CHARACTER CODE..... ASCII
 2. NUMBER OF FONTS..... 1
 3. CHARACTERS PER LINE..... 40 OR 80
 4. LINES PER DISPLAY..... 16

SCREEN CHARACTERISTICS

-
1. DISPLAY SIZE (W X H)..... 8.5 IN. X 6.5 IN.
 2. DISPLAY AREA..... 55.25 SQ. IN.
 3. DISPLAY SHAPE..... RECTANGULAR
 4. BRIGHTNESS..... 50 FT-LAMBERTS
 5. CONTRAST..... UNKNOWN

CONTROLLER INTERFACE

- 1. COMPUTERS.... AS REQUIRED
- 2. DATA LINES... DATAPHONE 201 AND 202 SERIES

EDIT FEATURES

CHARACTER AND LINE INSERT AND DELETE, OPTIONAL
TABULATION, NONDESTRUCTIVE CURSOR, END-OF-MESSAGE KEY,
TRANSMISSION KEY, AND POLLING OPTION.

PRICES	PURCHASE	LEASE
1. SINGLE DISPLAY TO LOCAL COMPUTER.....	\$ 6,000 ...	\$ 167
2. SINGLE DISPLAY TO DATA LINE AND REMOTE COMPUTER.....	6,000 ...	167
3. ONE EXTRA DISPLAY TO CONTROLLER.....	4,800 ...	134

MANUFACTURER..... RAYTHEON COMPANY
MODEL NUMBER..... DIDS-500
(DIGITAL INFORMATION DISPLAY SYSTEM)

CONSOLE INPUT DEVICES

STANDARD KEYBOARD, ELEVEN EDIT KEYS, FUNCTION KEYS,
CLEAR PAPER FEED, AND JOYSTICK-CONTROLLED CURSOR.

AUXILIARY EQUIPMENT

HARDCOPY GENERATOR (MODIFIED IBM SELECTRIC)

CONTROLLER DESIGN

1. MEMORY TYPE..... CORE
2. MEMORY CYCLE TIME..... 4 USEC
3. MEMORY SIZE..... 4,096 9-BIT WORDS
4. REFRESH RATE..... 60 FPS
5. MAXIMUM DISPLAYS..... 1

CHARACTER GENERATION AND DISPLAY

1. CHARACTER CODE..... TO ORDER
2. NUMBER OF FONTS..... 2
3. CHARACTERS PER LINE..... 80
4. LINES PER DISPLAY..... 34

SCREEN CHARACTERISTICS

1. DISPLAY SIZE (W X H)..... 15 IN. X 15 IN.
2. DISPLAY AREA..... 225 SQ. IN.
3. DISPLAY SHAPE..... RECTANGULAR
4. BRIGHTNESS..... 50 FT-LAMBERTS
5. CONTRAST..... UNKNOWN

CONTROLLER INTERFACE

1. COMPUTERS.... TO ORDER
2. DATA LINES... TO ORDER

EDIT FEATURES

NONDESTRUCTIVE CURSOR, SPLIT SCREEN, AND HORIZONTAL
TABULATION ONLY.

PRICES

ON REQUEST FROM MANUFACTURER.

MANUFACTURER..... SANDERS ASSOCIATES, INC.
MODEL NUMBER..... 720

CONSOLE INPUT DEVICES

OPTIONAL KEYBOARD, OPTIONAL EDIT KEYS, FIVE FUNCTION KEYS, AND LIGHT PEN.

AUXILIARY EQUIPMENT

PRINTER, PAPER TAPE READER, PAPER TAPE PUNCH, AND LIGHT PEN CURSOR CONTROL.

CONTROLLER DESIGN

1. MEMORY TYPE..... DELAY LINE
2. MEMORY CYCLE TIME..... N/A
3. MEMORY SIZE..... 1,024 7-BIT WORDS
4. REFRESH RATE..... 46.5 FPS
5. MAXIMUM DISPLAYS..... 12

CHARACTER GENERATION AND DISPLAY

1. CHARACTER CODE..... ASCII
2. NUMBER OF FONTS..... 1
3. CHARACTERS PER LINE..... 64
4. LINES PER DISPLAY..... 40

SCREEN CHARACTERISTICS

1. DISPLAY SIZE (W X H)..... 9-1/2 IN. X 7-1/2 IN.
2. DISPLAY AREA..... 71-1/4 SQ. IN.
3. DISPLAY SHAPE..... RECTANGULAR
4. BRIGHTNESS..... 30 FT-LAMBERTS MINIMUM
5. CONTRAST..... UNKNOWN

CONTROLLER INTERFACE

- 1. COMPUTERS.... IBM 360 (ALL MODELS), 1410, GE DATANET 30, BURROUGHS 5500, UNIVAC 418/1108, AND NCR 315.
- 2. DATA LINES... DATAPHONE 103, 201A, 201B, OR EQUIVALENT

EDIT FEATURES

OVERLAY, 2 EDIT LEVELS, CHARACTER INSERT, TABULATION, SPLIT SCREEN, SELECTABLE CURSOR, CHARACTER OR LINE OR BLOCK DELETE, BLINK, AND FORMAT STRUCTURE CONTROL.

PRICES	PURCHASE	LEASE
1. SINGLE DISPLAY TO LOCAL COMPUTER.....	\$ 9,675 ...	\$ 379
2. SINGLE DISPLAY TO DATA LINE AND REMOTE COMPUTER.....	9,375 ...	367
3. ONE EXTRA DISPLAY TO CONTROLLER.....	3,800 ...	120

MANUFACTURER..... SCIENTIFIC DATA SYSTEMS, INC.
MODEL NUMBER..... 7550/7555

CONSOLE INPUT DEVICES

STANDARD KEYBOARD, SIX AND EIGHT CURSOR EDIT KEYS, AND
FUNCTION KEYS.

AUXILIARY EQUIPMENT

OFF-LINE COMPOSITION AND TRANSMISSION OF FULL MESSAGE,
AND HARDCOPY OUTPUT.

CONTROLLER DESIGN

1.	MEMORY TYPE.....	DELAY LINE
2.	MEMORY CYCLE TIME.....	N/A
3.	MEMORY SIZE.....	2,752 (CHARACTER-ORIENTED)
4.	REFRESH RATE.....	50 FPS
5.	MAXIMUM DISPLAYS.....	1

CHARACTER GENERATION AND DISPLAY

1.	CHARACTER CODE.....	ASCII
2.	NUMBER OF FONTS.....	1
3.	CHARACTERS PER LINE.....	86
4.	LINES PER DISPLAY.....	32

SCREEN CHARACTERISTICS

1.	DISPLAY SIZE (W X H).....	7 IN. X 10 IN.
2.	DISPLAY AREA.....	70 SQ. IN.
3.	DISPLAY SHAPE.....	RECTANGULAR
4.	BRIGHTNESS.....	UNKNOWN
5.	CONTRAST.....	UNKNOWN

CONTROLLER INTERFACE

- 1. COMPUTERS.... SIGMA COMPUTERS
- 2. DATA LINES... DATA SETS 202 OR 103

EDIT FEATURES

ONE EDIT LEVEL, OVERLAY, CHARACTER AND LINE INSERT AND DELETE, NONDESTRUCTIVE CURSOR, BLINK, ROLL FORWARD AND BACKWARD, AND REPEAT.

PRICES		PURCHASE		LEASE
-----		-----		-----
1. SINGLE DISPLAY TO LOCAL COMPUTER.....	(7550)	\$ 10,000 ...	\$	225
	(7555)	12,500 ...		285
2. SINGLE DISPLAY TO DATA LINE AND REMOTE COMPUTER.....	(7550)	10,000 ...		225
	(7555)	12,500 ...		285
3. ONE EXTRA DISPLAY TO CONTROLLER.....	(7550)	10,000 ...		225
	(7555)	12,500 ...		285

MANUFACTURER..... STROMBERG-CARLSON CORPORATION
MODEL NUMBER..... S-C 1110

CONSOLE INPUT DEVICES

STANDARD KEYBOARD, EDIT KEYS OPTIONS AVAILABLE, AND
FUNCTION KEYS AS REQUIRED.

AUXILIARY EQUIPMENT

OFF-LINE FULLY BUFFERED PRINTER (SPECIAL ORDER)

CONTROLLER DESIGN

1. MEMORY TYPE..... DELAY LINE
2. MEMORY CYCLE TIME..... N/A
3. MEMORY SIZE..... 1,103 10-BIT WORDS
4. REFRESH RATE..... 50 FPS
5. MAXIMUM DISPLAYS..... 24

CHARACTER GENERATION AND DISPLAY

1. CHARACTER CODE..... ASCII
2. NUMBER OF FONTS..... 1
3. CHARACTERS PER LINE..... 72
4. LINES PER DISPLAY..... 35

SCREEN CHARACTERISTICS

1. DISPLAY SIZE (W X H)..... 9 IN. X 7 IN.
2. DISPLAY AREA..... 63 SQ. IN.
3. DISPLAY SHAPE..... SQUARE
4. BRIGHTNESS..... 44 FT-LAMBERTS
5. CONTRAST..... 50 TO 1 THROUGH FILTER

CONTROLLER INTERFACE

- 1. COMPUTERS.... IBM SYSTEM/360, CONTROL DATA, AND HONEYWELL
- 2. DATA LINES... DATAPHONE 201A, 201B, 202, 103

EDIT FEATURES

OVERLAY, ONE EDIT LEVEL, CHARACTER AND LINE INSERT AND DELETE, TABULATION, SPLIT SCREEN, BLINK, NONDESTRUCTIVE CURSOR, VARIABLE CLEAR, AND CLOSED FORMAT WITH PROTECTED AREAS.

PRICES

ON REQUEST FROM MANUFACTURER.

MANUFACTURER..... UNIVAC
MODEL NUMBER..... UNISCOPE 300

CONSOLE INPUT DEVICES

STANDARD KEYBOARD, FIVE EDIT KEYS, AND OPTIONAL FORTY
FUNCTION KEYS.

AUXILIARY EQUIPMENT

INTERFACE FOR TTY 35/37 ASR/KSR MULTIPOINT SUBSYSTEM
ON SPECIAL ORDER.

CONTROLLER DESIGN

1. MEMORY TYPE..... CORE
2. MEMORY CYCLE TIME..... 7.2 MICROSECONDS
3. MEMORY SIZE..... 1,024 7-BIT WORDS (8,192
16,384 OR 24,576 CHARS)
4. REFRESH RATE..... 60 FPS
5. MAXIMUM DISPLAYS..... 48

CHARACTER GENERATION AND DISPLAY

1. CHARACTER CODE..... MODIFIED ASCII 7-BIT
2. NUMBER OF FONTS..... 1
3. CHARACTERS PER LINE..... 64
4. LINES PER DISPLAY..... 8 OF 16

SCREEN CHARACTERISTICS

1. DISPLAY SIZE (W X H)..... 10 IN. X 5 IN.
2. DISPLAY AREA..... 50 SQ. IN.
3. DISPLAY SHAPE..... RECTANGULAR
4. BRIGHTNESS..... 50 FT-LAMBERTS
5. CONTRAST..... 10 TO 1

CONTROLLER INTERFACE

- 1. COMPUTERS.... UNIVAC 1108 AND 494
- 2. DATA LINES... DATAPHONE 201A OR 201B

EDIT FEATURES

ONE EDIT LEVEL, CHARACTER AND LINE INSERT AND DELETE, TABULATION, SPLIT SCREEN, BLINK, NONDESTRUCTIVE CURSOR, ROLL AND SCROLL CONTROL KEYS, AND INDICATORS.

PRICES	PURCHASE	LEASE
1. SINGLE DISPLAY TO LOCAL COMPUTER.....	\$ 15,140 ...	\$ 410
2. SINGLE DISPLAY TO DATA LINE AND REMOTE COMPUTER.....	15,140 ...	410
3. ONE EXTRA DISPLAY TO CONTROLLER.....	5,600 ...	173

APPENDIX C GRAPHIC INTERACTIVE DISPLAY DEVICES

SECTION I. INTRODUCTION

THIS APPENDIX WILL PRESENT TABULAR INFORMATION ON DISPLAY DEVICES THAT PERMIT MAN/MACHINE INTERACTION AND GRAPHIC REPRESENTATION OF DISPLAY DATA. THE TABULAR INFORMATION WILL BE ORGANIZED BY COMPANY. WITHIN EACH COMPANY, THE PARTICULAR MODELS THEY MARKET WILL BE DISCUSSED.

SECTION II. COMPANIES

- A. ADAGE, INC. PRODUCTS A GENERAL PURPOSE, INTERNALLY BUFFERED CRT DISPLAY SYSTEM FOR BOTH LOCAL AND REMOTE USE. THE THREE MODELS DIFFER IN CORE MEMORY SIZE AND OPTIONAL FUNCTIONS SUCH AS AUTOMATIC WINDOWING (REF. PP 84-85).
- B. BUNKER-RAMO CORPORATION HAS THE BR-90 AS ITS ENTRY IN THE GRAPHICS FIELD. THE BR-90 IS THE DISPLAY UNIT OF THE AFICCS DISPLAY SYSTEM (REF. PP 86-87).
- C. BURROUGHS CORPORATION PRODUCES A GRAPHIC DISPLAY DEVICE FOR BUIC. THIS DEVICE IS DRIVEN BY THE B825 DATA PROCESSING SYSTEM. THE DISPLAY UNIT HAS A REPERTOIRE OF 64 SYMBOLS, A VIEWING AREA OF 12-1/2 INCHES BY 12-1/2 INCHES, AND A MAXIMUM NUMBER OF RANDOMLY POSITIONED SYMBOLS OF 6,144. THIS DEVICE WAS DESIGNED SPECIFICALLY FOR A REAL-TIME COMMAND AND CONTROL SITUATION.
- D. COMPUTEK, INC. OFFERS A STORAGE-TYPE CRT FOR REMOTE OPERATION. IN ADDITION, THIS DEVICE HAS BOTH A CURVE GENERATOR, AND A LINE GENERATOR. THIS TYPE OF DISPLAY HAS NO SELECTIVE ERASE (REF. PP 88-89).
- E. COMPUTER DISPLAYS, INC. MARKETS THE ADVANCED REMOTE DISPLAY STATION (ARDS). THIS DEVICE IS A STORAGE-

TYPE CRT, AND HENCE REQUIRES REFRESH ONCE EVERY 15 MINUTES (REF. PP 90-91).

- F. CONTROL DATA CORPORATION HAS THE FOLLOWING FOUR GRAPHIC DEVICES...
- (1) CDC 250 (REF. PP 92-93),
 - (2) CDC 270 (REF. PP 94-95),
 - (3) CDC 274 (REF. PP 96-97), AND
 - (4) VID (VARIABLE INTENSITY DISPLAY) WHICH IS BASICALLY A SCIENTIFIC DEVICE FOR PLOTTING THREE DIMENSIONAL FIGURES (REF. PP 98-99).
- G. DATA DISC, INC. PRODUCES MODEL TDS-1 WHICH IS A TELEVISION DISPLAY SYSTEM. THIS DEVICE USES A DISK AS PART OF THE CONTROL UNIT AND CAN BE PURCHASED
- H. DIGITAL EQUIPMENT CORPORATION PRODUCES THE REMOTABLE DEC 338/9 (REF. PP 100-101) FOR USE WITH THE PDP-8/9 RESPECTIVELY. THE DEC 340 IS A DISPLAY DEVICE WHICH CAN BE INTERFACED WITH ANY COMPUTER, (REF. PP 102-103). THE VID 8/I IS A STORAGE-TYPE CRT WHICH IS
- I. ELLIOTT AUTOMATION COMPUTERS, LIMITED PRODUCES THE 4280 FOR USE WITH THE ELLIOTT 4100 COMPUTERS. (REF. PP 104-105).
- J. FERRANTI, LIMITED HAS THREE GRAPHIC MODELS, M.D.14, 17, AND 21, ALL OF WHICH ARE DRIVEN BY THE ARGUS LINE OF COMPUTERS. INTERFACES WITH OTHER CPU'S ARE MADE TO ORDER (REF. PP 106-107).
- K. INFORMATION DISPLAYS, INC. PRODUCES THE IDIOM WHICH CAN BE REMOTED (REF. PP 108-109).
- L. INFORMATION INTERNATIONAL, INC. PRODUCES THE MODEL

1050 WHICH CAN DRIVE A MAXIMUM OF 12 CONSOLES FROM A COMMON PROCESSOR (REF. PP 110-111).

- M. INTERNATIONAL BUSINESS MACHINES CORPORATION HAS THE IBM 2250 WHICH HAS THE FOLLOWING THREE MODELS...
- (1) MODEL I IS A SELF-CONTAINED DISPLAY AND CONTROLLER WHICH IS INTERFACED TO THE IBM SYSTEM/360 (REF. PP 112-113),
 - (2) MODEL III CAN HAVE UP TO FOUR DISPLAY CONSOLES FOR EACH OF SEVEN POSSIBLE CONTROLLERS (IBM 2840) WHICH ARE INTERFACED WITH THE IBM SYSTEM/360 (REF. PP 114-115), AND
 - (3) MODEL IV WHICH INTERFACES LOCALLY WITH AN IBM 1130, THEREBY PERMITTING REMOTE OPERATION FROM A MAIN CPU WHICH DIRECTS THE IBM 1130 (REF. PP 116-117).
- N. INTERNATIONAL TELEPHONE AND TELEGRAPH CORPORATION PRODUCES THE MACC MODEL WHICH PERMITS PROJECTION OF 35MM SLIDES UNDER PROGRAM OR OPERATOR CONTROL (REF. PP 118-119). ITT HAS DEVELOPED FOR SAC THE SACOPS SYSTEM WHICH IS AN INTEGRATED DISPLAY SYSTEM WITH A CPU.
- O. PHILCO-FORD CORPORATION PRODUCES THE REAL-TIME ELECTRONIC ACCESS AND DISPLAY SYSTEM (READS) AS A GENERAL PURPOSE ON-LINE INFORMATION AND RETRIEVAL SYSTEM (REF. PP 120-121).
- P. RADIO CORPORATION OF AMERICA PRODUCES MODEL 6320 WHICH CAN BE REMOTELY OR LOCALLY OPERATED (REF. PP 122-123).
- Q. RAYTHEON COMPANY PRODUCES THE DIDS-1500 (REF. PP 124-125).
- R. SANDERS ASSOCIATES, INC. PRODUCES THE 960 DISPLAY SYSTEM FOR EITHER REMOTE OR LOCAL USE (REF. PP 126-127).

- S. SCIENTIFIC DATA SYSTEMS, INC. PRODUCES MODELS 9185 AND 7580 FOR LOCAL USE BY THEIR OWN CPU'S (REF. PP 128-131).
- T. SOCIETE INDUSTRIELLE DES NORVELLES TECHNIQUES RADIOELECTRIQUES (SINTRA) PRODUCES THE VU2000 FOR EITHER REMOTE OR LOCAL USE (REF. PP 132-133).
- U. STROMBERG-CARLSON, INC. PRODUCES THE SC-1090 (REF. PP 134-135).
- V. SYSTEMS ENGINEERING LABORATORIES PRODUCES THE SEL-816A (REF. PP 136-137).
- W. TASKER INDUSTRIES PRODUCES THE MODELS 9100/10 AND 9200/10. THE LATTER MODEL WAS DEVELOPED SPECIFICALLY FOR COMPUTER-AIDED DESIGN APPLICATIONS (REF. PP 138-141).
- X. TELEFUNKEN CORPORATION OF GERMANY PRODUCES TWO GRAPHIC MODELS, SAP 200 AND 300, WHICH CAN BE REMOTED (REF. PP 142-145). IN ADDITION, THE COMPANY PRODUCES THE SIG 100 BUT THIS MODEL CAN ONLY BE OPERATED LOCALLY.
- Y. UNIVAC CORPORATION PRODUCES THE 1557/1558 GRAPHIC DISPLAY SYSTEM. THE 1557 CAN CONTROL THREE INDEPENDENTLY 1558 CONSOLES. THE 1557 CAN OPERATE REMOTELY FROM A CPU.

SECTION III. MODELS

MANUFACTURER..... ADAGE, INC.
MODEL NUMBER..... AGT/10, AGT/30, AND AGT/50

CONSOLE INPUT DEVICES

KEYBOARD, FUNCTION KEYS, LIGHT PEN, OPTIONAL JOYSTICK,
OPTIONAL TABLETS, DIALS, TRACKBALL, OPTIONAL 3D ON
AGT/30 AND AGT/50 ONLY, AND IMAGE MANIPULATION.

AUXILIARY EQUIPMENT

HARDCOPY RECORDER, LINE PRINTER, CARD READER, MAGNETIC
TAPE AND DISK.

CONTROLLER INTERFACE

1. COMPUTERS..... CONTROL DATA 6600, IBM SYSTEM/360, AND
UNIVAC 1108
2. DATA LINES... DATAPHONE 201, 202, 301

LINE GENERATION

1. LINE TYPES..... NORMAL, DASHED
2. INTENSITY LEVELS..... 2

CHARACTER GENERATION AND DISPLAY

1. CHARACTER CODE..... ASCII
2. NUMBER OF FONTS..... 1
3. CHARACTERS PER LINE..... 84
4. LINES PER DISPLAY..... 50

SCREEN CHARACTERISTICS

1. DISPLAY SIZE (W X H)..... 12 IN. X 12 IN.
2. DISPLAY AREA..... 144 SQ. IN.
3. DISPLAY SHAPE..... RECTANGULAR
4. RASTER COUNT..... 1024 X 1024
5. BRIGHTNESS..... UNKNOWN
6. CONTRAST..... UNKNOWN

CONTROLLER DESIGN

- 1. PROCESSORS..... DUAL
- 2. MEMORY TYPE..... CORE
- 3. MEMORY CYCLE TIME..... 2 USEC.
- 4. MEMORY SIZE..... 4,096 TO 32,768 30-BIT WORDS
- 5. SUBROUTINING..... YES
- 6. POINTER TRACKING..... YES
- 7. LINE GENERATOR..... STANDARD
- 8. CHARACTER GENERATOR..... OPTIONAL HARDWARE
- 9. REFRESH RATE..... 40 FPS PROGRAMMABLE
- 10. KEYBOARD INTERPRET..... YES
- 11. SCISSORING..... YES
- 12. FUNCTION SWITCH INTERPRET... YES
- 13. ITEM IDENTIFICATION..... YES
- 14. MAXIMUM DISPLAYS..... 3

PRICES

	PURCHASE	LEASE
1. SINGLE DISPLAY TO LOCAL COMPUTER.....	\$ 60,000 ...	\$1,940
2. SINGLE DISPLAY TO DATA LINE AND REMOTE COMPUTER.....	66,700 ...	2,160
3. ONE EXTRA DISPLAY TO CONTROLLER.....	(AGT/10) 60,000 ...	1,940
	(AGT/30) 125,000 ...	4,050
	(AGT/50) 175,000 ...	5,650

MANUFACTURER..... BUNKER-RAMO CORPORATION
MODEL NUMBER..... BR-90

CONSOLE INPUT DEVICES

STANDARD KEYBOARD, THIRTY FUNCTION KEYS, LIGHT PEN,
TRACKBALL, AND PROJECTION SYSTEM.

AUXILIARY EQUIPMENT

PAPER TAPE READER (PERMITS DIRECT INPUT OF STORED
DISPLAY PROGRAMS).

CONTROLLER INTERFACE

1. COMPUTERS.... IBM 1410, SYSTEM/360, UNIVAC 1219,
OR TO ORDER.
2. DATA LINES... TO ORDER

LINE GENERATION

1. LINE TYPES..... NORMAL, WIDE
2. INTENSITY LEVELS..... 1

CHARACTER GENERATION AND DISPLAY

1. CHARACTER CODE..... BCD OR TO ORDER
2. NUMBER OF FONTS..... 1 (63 SYMBOLS)
3. CHARACTERS PER LINE..... 64
4. LINES PER DISPLAY..... 44

SCREEN CHARACTERISTICS

1. DISPLAY SIZE (W X H)..... 13.2 IN. X 13.2 IN.
2. DISPLAY AREA..... 174.24 SQ. IN.
3. DISPLAY SHAPE..... ROUND
4. RASTER COUNT..... 1024 X 1024
5. BRIGHTNESS..... 50 FT-LAMBERTS
6. CONTRAST..... 20 TO 1

CONTROLLER DESIGN

-
- 1. PROCESSORS..... DUAL
 - 2. MEMORY TYPE..... CORE
 - 3. MEMORY CYCLE TIME..... 2 USEC.
 - 4. MEMORY SIZE..... 8,192 12-BIT WORDS
 - 5. SUBROUTINING..... YES
 - 6. POINTER TRACKING..... YES
 - 7. LINE GENERATOR..... STANDARD
 - 8. CHARACTER GENERATOR..... STANDARD
 - 9. REFRESH RATE..... 60 FPS MAXIMUM
 - 10. KEYBOARD INTERPRET..... YES
 - 11. SCISSORING..... YES
 - 12. FUNCTION SWITCH INTERPRET... YES
 - 13. ITEM IDENTIFICATION..... YES
 - 14. MAXIMUM DISPLAYS..... 1

PRICES

-----	PURCHASE	LEASE
-----	-----	-----
1. SINGLE DISPLAY TO LOCAL COMPUTER.....	\$181,000 ...	\$ NONE
2. SINGLE DISPLAY TO DATA LINE AND REMOTE COMPUTER.....	UNKNOWN ...	NONE
3. ONE EXTRA DISPLAY TO CONTROLLER.....	181,000 ...	NONE

MANUFACTURER..... COMPUTEK, INC.
MODEL NUMBER..... 400/20

CONSOLE INPUT DEVICES

KEYBOARD

AUXILIARY EQUIPMENT

SELF-CONTAINED.

CONTROLLER INTERFACE

- 1. COMPUTERS.... NONE
2. DATA LINES... STANDARD DATA SETS

LINE GENERATION

- 1. LINE TYPES..... SOLID, DASHED
2. INTENSITY LEVELS..... 1

CHARACTER GENERATION AND DISPLAY

- 1. CHARACTER CODE..... ASCII
2. NUMBER OF FONTS..... 4
3. CHARACTERS PER LINE..... 72
4. LINES PER DISPLAY..... 55

SCREEN CHARACTERISTICS

- 1. DISPLAY SIZE (W X H)..... 6-1/2 IN. X 8-1/4 IN.
2. DISPLAY AREA..... 53.63 SQ. IN.
3. DISPLAY SHAPE..... RECTANGULAR
4. RASTER COUNT..... 1024 X 1024
5. BRIGHTNESS..... 3 FT-LAMBERTS MINIMUM
6. CONTRAST..... 3 TO 1 MINIMUM

CONTROLLER DESIGN

- 1. PROCESSORS..... NONE
- 2. MEMORY TYPE..... STORAGE-TYPE CRT
- 3. MEMORY CYCLE TIME..... NONE
- 4. MEMORY SIZE..... 1,000,000 BITS
- 5. SUBROUTINING..... YES
- 6. POINTER TRACKING..... YES
- 7. LINE GENERATOR..... YES
- 8. CHARACTER GENERATOR..... YES
- 9. REFRESH RATE..... ONCE EVERY 15 SECONDS
- 10. KEYBOARD INTERPRET..... YES
- 11. SCISSORING..... NO
- 12. FUNCTION SWITCH INTERPRET... NO
- 13. ITEM IDENTIFICATION..... YES
- 14. MAXIMUM DISPLAYS..... 1

PRICES

SINGLE DISPLAY TO LOCAL OR REMOTE COMPUTER IS \$12,000.

MANUFACTURER..... COMPUTER DISPLAYS, INC.
MODEL NUMBER..... ARDS (ADVANCED REMOTE DISPLAY STATION)

CONSOLE INPUT DEVICES

ERASE, TRANSMIT DATA TO COMPUTER SIMULTANEOUSLY DRAWS
PICTURES WITH THIS DATA, NON-STORING CURSOR, POINT
PLOTING, VECTOR PLOTING, AND SYMBOL GENERATOR.

AUXILIARY EQUIPMENT

CONTROLLER INTERFACE

1. COMPUTERS.... TO ORDER
2. DATA LINES... DATA SETS 103 AND 202

LINE GENERATION

1. LINE TYPES..... SOLID, DASHED
2. INTENSITY LEVELS..... 2

CHARACTER GENERATION AND DISPLAY

1. CHARACTER CODE..... ASCII
2. NUMBER OF FONTS..... 1
3. CHARACTERS PER LINE..... 80
4. LINES PER DISPLAY..... 50

SCREEN CHARACTERISTICS

1. DISPLAY SIZE (W X H)..... 6-1/2 IN. X 8-1/4 IN.
2. DISPLAY AREA..... 53.63 SQ. IN.
3. DISPLAY SHAPE..... RECTANGULAR
4. RASTER COUNT..... 1081 X 1415
5. BRIGHTNESS..... 3 FT-LAMBERTS
6. CONTRAST..... UNKNOWN

CONTROLLER DESIGN

-
- 1. PROCESSORS..... NONE
 - 2. MEMORY TYPE..... STORAGE TUBE
 - 3. MEMORY CYCLE TIME..... NONE
 - 4. MEMORY SIZE..... 1081 X 1415
 - 5. SUBROUTINING..... YES
 - 6. POINTER TRACKING..... YES
 - 7. LINE GENERATOR..... YES
 - 8. CHARACTER GENERATOR..... YES
 - 9. REFRESH RATE..... ONCE EVERY 15 MINUTES
 - 10. KEYBOARD INTERPRET..... YES
 - 11. SCISSORING..... NO
 - 12. FUNCTION SWITCH INTERPRET... NO
 - 13. ITEM IDENTIFICATION..... YES
 - 14. MAXIMUM DISPLAYS..... 1

PRICES

SINGLE DISPLAY TO LOCAL OR REMOTE COMPUTER IS \$14,500.

MANUFACTURER..... CONTROL DATA CORPORATION
MODEL NUMBER..... 250

CONSOLE INPUT DEVICES

STANDARD KEYBOARD, FUNCTION KEYS, AND LIGHT PEN.

AUXILIARY EQUIPMENT

MOTOR GENERATOR

CONTROLLER INTERFACE

1. COMPUTERS..... CONTROL DATA 3100, 3200, 3300, 3400,
3600, 3800, 6400, 6600, OR TO ORDER.
2. DATA LINES... NONE

LINE GENERATION

1. LINE TYPES..... 1
2. INTENSITY LEVELS..... 2

CHARACTER GENERATION AND DISPLAY

1. CHARACTER CODE..... BCD
2. NUMBER OF FONTS..... 2
3. CHARACTERS PER LINE..... 128
4. LINES PER DISPLAY..... 64

SCREEN CHARACTERISTICS

1. DISPLAY SIZE (W X H)..... 12 IN. X 12 IN.
2. DISPLAY AREA..... 144 SQ. IN.
3. DISPLAY SHAPE..... RECTANGULAR
4. RASTER COUNT..... 1024 X 1024
5. BRIGHTNESS..... UNKNOWN
6. CONTRAST..... UNKNOWN

CONTROLLER DESIGN

- 1. PROCESSORS..... SINGLE
- 2. MEMORY TYPE..... CORE
- 3. MEMORY CYCLE TIME..... 1.25 USEC.
- 4. MEMORY SIZE..... 4,096 OR 8,192 24-BIT WORDS
- 5. SUBROUTINING..... YES
- 6. POINTER TRACKING..... NO
- 7. LINE GENERATOR..... STANDARD
- 8. CHARACTER GENERATOR..... STANDARD
- 9. REFRESH RATE..... 40 FPS PROGRAMMABLE
- 10. KEYBOARD INTERPRET..... NO
- 11. SCISSORING..... NONE
- 12. FUNCTION SWITCH INTERPRET... NO
- 13. ITEM IDENTIFICATION..... NO
- 14. MAXIMUM DISPLAYS..... 6

PRICES

	PURCHASE	LEASE
1. SINGLE DISPLAY TO LOCAL COMPUTER.....	\$142,500 ...	\$3,870
2. SINGLE DISPLAY TO DATA LINE AND REMOTE COMPUTER.....	N/A ...	N/A
3. ONE EXTRA DISPLAY TO CONTROLLER.....	99,000 ...	2,465

MANUFACTURER..... CONTROL DATA CORPORATION
MODEL NUMBER..... 270

CONSOLE INPUT DEVICES

OPTIONAL KEYBOARD, TWENTY FOUR FUNCTION KEYS, AND
LIGHT PEN.

AUXILIARY EQUIPMENT

NONE

CONTROLLER INTERFACE

1. COMPUTERS..... CONTROL DATA 3200, 3300, 3500
2. DATA LINES... N/A

LINE GENERATION

1. LINE TYPES..... 1
2. INTENSITY LEVELS..... 3

CHARACTER GENERATION AND DISPLAY

1. CHARACTER CODE..... BCD
2. NUMBER OF FONTS..... 2
3. CHARACTERS PER LINE..... 146
4. LINES PER DISPLAY..... 102

SCREEN CHARACTERISTICS

1. DISPLAY SIZE..... 20 IN. DIAMETER
2. DISPLAY AREA..... 314 SQ. IN.
3. DISPLAY SHAPE..... ROUND
4. RASTER COUNT..... 4096 X 4096
5. BRIGHTNESS..... UNKNOWN
6. CONTRAST..... UNKNOWN

CONTROLLER DESIGN

- 1. PROCESSORS..... MULTIPLE
- 2. MEMORY TYPE..... DRUM
- 3. MEMORY CYCLE TIME..... 1.67 USEC.
- 4. MEMORY SIZE..... 120,000 12-BIT WORDS
- 5. SUBROUTINING..... NONE
- 6. POINTER TRACKING..... NO
- 7. LINE GENERATOR..... STANDARD
- 8. CHARACTER GENERATOR..... NONE
- 9. REFRESH RATE..... 30 FPS FIXED
- 10. KEYBOARD INTERPRET..... NONE
- 11. SCISSORING..... NONE
- 12. FUNCTION SWITCH INTERPRET... NONE
- 13. ITEM IDENTIFICATION..... NO
- 14. MAXIMUM DISPLAYS..... 3

PRICES

	PURCHASE	LEASE
1. SINGLE DISPLAY TO LOCAL COMPUTER.....	\$183,000 ...	\$5,000
2. SINGLE DISPLAY TO DATA LINE AND REMOTE COMPUTER.....	N/A ...	N/A
3. ONE EXTRA DISPLAY TO CONTROLLER.....	47,500 ...	1,500

MANUFACTURER..... CONTROL DATA CORPORATION
MODEL NUMBER..... 274

CONSOLE INPUT DEVICES

OPTIONAL KEYBOARD, SIXTEEN OPTIONAL FUNCTION KEYS, AND
LIGHT PEN.

AUXILIARY EQUIPMENT

NONE

CONTROLLER INTERFACE

1. COMPUTERS..... CONTROL DATA 1700
2. DATA LINES... NONE

LINE GENERATION

1. LINE TYPES..... 1
2. INTENSITY LEVELS..... 3

CHARACTER GENERATION AND DISPLAY

1. CHARACTER CODE..... BCD
2. NUMBER OF FONTS..... 1
3. CHARACTERS PER LINE..... 146
4. LINES PER DISPLAY..... 102

SCREEN CHARACTERISTICS

1. DISPLAY SIZE..... 20 IN. DIAMETER
2. DISPLAY AREA..... 314 SQ. IN.
3. DISPLAY SHAPE..... ROUND
4. RASTER COUNT..... 4096 X 4096
5. BRIGHTNESS..... UNKNOWN
6. CONTRAST..... UNKNOWN

CONTROLLER DESIGN

-
- 1. PROCESSORS..... SINGLE
 - 2. MEMORY TYPE..... CORE
 - 3. MEMORY CYCLE TIME..... 1.67 USEC.
 - 4. MEMORY SIZE..... 4,096 OR 8,192 18-BIT WORDS
 - 5. SUBROUTINING..... YES
 - 6. POINTER TRACKING..... NO
 - 7. LINE GENERATOR..... STANDARD
 - 8. CHARACTER GENERATOR..... NONE
 - 9. REFRESH RATE..... 40 FPS MAXIMUM
 - 10. KEYBOARD INTERPRET..... NONE
 - 11. SCISSORING..... NONE
 - 12. FUNCTION SWITCH INTERPRET... NONE
 - 13. ITEM IDENTIFICATION..... NO
 - 14. MAXIMUM DISPLAYS..... 1

PRICES

-----	PURCHASE	LEASE
-----	-----	-----
1. SINGLE DISPLAY TO LOCAL COMPUTER.....	\$ 86,000 ...	\$2,225
2. SINGLE DISPLAY TO DATA LINE AND REMOTE COMPUTER.....	N/A ...	N/A
3. ONE EXTRA DISPLAY TO CONTROLLER.....	44,000 ...	1,125

MANUFACTURER..... CONTROL DATA CORPORATION
MODEL NUMBER..... VID (VARIABLE INTENSITY DISPLAY)

CONSOLE INPUT DEVICES

OPTIONAL KEYBOARD, TWENTY FOUR FUNCTION KEYS, AND LIGHT
PEN.

AUXILIARY EQUIPMENT

NONE

CONTROLLER INTERFACE

1. COMPUTERS..... CONTROL DATA 3200 AND 3300
2. DATA LINES... N/A

LINE GENERATION

1. LINE TYPES..... 1
2. INTENSITY LEVELS..... 3 OR 32

CHARACTER GENERATION AND DISPLAY

1. CHARACTER CODE..... BCD
2. NUMBER OF FONTS..... 1
3. CHARACTERS PER LINE..... 146
4. LINES PER DISPLAY..... 102

SCREEN CHARACTERISTICS

1. DISPLAY SIZE (W X H)..... 20 IN. DIAMETER
2. DISPLAY AREA..... 314 SQ. IN.
3. DISPLAY SHAPE..... ROUND
4. RASTER COUNT..... 4096 X 4096
5. BRIGHTNESS..... UNKNOWN
6. CONTRAST..... UNKNOWN

CONTROLLER DESIGN

1.	PROCESSORS.....	DUAL
2.	MEMORY TYPE.....	DRUM
3.	MEMORY CYCLE TIME.....	1.67 USEC.
4.	MEMORY SIZE.....	20,000 AND 240,000 5 AND 12-BIT WORDS
5.	SUBROUTINING.....	NONE
6.	POINTER TRACKING.....	NONE
7.	LINE GENERATOR.....	STANDARD
8.	CHARACTER GENERATOR.....	NONE
9.	REFRESH RATE.....	30 FPS FIXED
10.	KEYBOARD INTERPRET.....	NONE
11.	SCISSORING.....	NONE
12.	FUNCTION SWITCH INTERPRET...	NONE
13.	ITEM IDENTIFICATION.....	NONE
14.	MAXIMUM DISPLAYS.....	2

PRICES

ON REQUEST FROM MANUFACTURER.

MANUFACTURER..... DIGITAL EQUIPMENT CORPORATION
MODEL NUMBER..... DEC 338 AND DEC 339

CONSOLE INPUT DEVICES

TELETYPE 33ASR KEYBOARD, TWELVE PUSHBUTTON FUNCTION KEYS,
LIGHT PEN, OPTIONAL TRACKBALL, JOYSTICK, AND TABLET.

AUXILIARY EQUIPMENT

TELETYPE 33ASR PRINTER, 10 CPS PAPER TAPE READER AND
PUNCH ARE STANDARD. ANY PDP-8 OPTION MAY BE ATTACHED
TO THE 338.

CONTROLLER INTERFACE

1. COMPUTERS.... CDC 3000 AND 600 SERIES, PDP-6, PDP-7,
PDP-8, PDP-9, PDP-10, IBM 7090, 7094,
SYSTEM/360, UNIVAC 1107, AND 1108.
2. DATA LINES... DATAPHONE 103 OR 201A

LINE GENERATION

1. LINE TYPES..... 1
2. INTENSITY LEVELS..... 8

CHARACTER GENERATION AND DISPLAY

1. CHARACTER CODE..... PROGRAMMED
2. NUMBER OF FONTS..... PROGRAMMED
3. CHARACTERS PER LINE..... 85
4. LINES PER DISPLAY..... 51

SCREEN CHARACTERISTICS

1. DISPLAY SIZE (W X H)..... 9-3/8 IN. X 9-3/8 IN.
2. DISPLAY AREA..... 87.9 SQ. IN.
3. DISPLAY SHAPE..... ROUND
4. RASTER COUNT..... 1024 X 1024
5. BRIGHTNESS..... UNKNOWN
6. CONTRAST..... UNKNOWN

CONTROLLER DESIGN

-
- 1. PROCESSORS..... DUAL
 - 2. MEMORY TYPE..... CORE
 - 3. MEMORY CYCLE TIME..... 1.5 USEC.
 - 4. MEMORY SIZE..... 4,096 TO 32,768 12-BIT WORDS
 - 5. SUBROUTINING..... YES
 - 6. POINTER TRACKING..... YES
 - 7. LINE GENERATOR..... STANDARD
 - 8. CHARACTER GENERATOR..... OPTIONAL
 - 9. REFRESH RATE..... 30 FPS PROGRAMMABLE
 - 10. KEYBOARD INTERPRET..... YES
 - 11. SCISSORING..... YES
 - 12. FUNCTION SWITCH INTERPRET... YES
 - 13. ITEM IDENTIFICATION..... YES
 - 14. MAXIMUM DISPLAYS..... 8

PRICES

-----	PURCHASE	LEASE
-----	-----	-----
1. SINGLE DISPLAY TO LOCAL COMPUTER.....	\$ 55,000 ...	\$ NONE
2. SINGLE DISPLAY TO DATA LINE AND REMOTE COMPUTER.....	61,000 ...	NONE
3. ONE EXTRA DISPLAY TO CONTROLLER.....	55,000 ...	NONE

MANUFACTURER..... DIGITAL EQUIPMENT CORPORATION
MODEL NUMBER..... DEC 340

CONSOLE INPUT DEVICES

OPTIONAL LIGHT PEN

AUXILIARY EQUIPMENT

NONE

CONTROLLER INTERFACE

1. COMPUTERS..... ANY
2. DATA LINES... NONE

LINE GENERATION

1. LINE TYPES..... 1
2. INTENSITY LEVELS..... 8

CHARACTER GENERATION AND DISPLAY

1. CHARACTER CODE..... ASCII 6-BIT
2. NUMBER OF FONTS..... 1
3. CHARACTERS PER LINE..... 85
4. LINES PER DISPLAY..... 51

SCREEN CHARACTERISTICS

1. DISPLAY SIZE (W X H)..... 9-3/8 IN. X 9-3/8 IN.
2. DISPLAY AREA..... 87.9 SQ. IN.
3. DISPLAY SHAPE..... ROUND
4. RASTER COUNT..... 1024 X 1024
5. BRIGHTNESS..... UNKNOWN
6. CONTRAST..... UNKNOWN

CONTROLLER DESIGN

1.	PROCESSORS.....	SINGLE
2.	MEMORY TYPE.....	COMPUTER
3.	MEMORY CYCLE TIME.....	N/A
4.	MEMORY SIZE.....	COMPUTER
5.	SUBROUTINING.....	OPTIONAL
6.	POINTER TRACKING.....	NO
7.	LINE GENERATOR.....	STANDARD
8.	CHARACTER GENERATOR.....	OPTIONAL
9.	REFRESH RATE.....	30 FPS
10.	KEYBOARD INTERPRET.....	N/A
11.	SCISSORING.....	NONE
12.	FUNCTION SWITCH INTERPRET...	N/A
13.	ITEM IDENTIFICATION.....	NO
14.	MAXIMUM DISPLAYS.....	5

PRICES

	PURCHASE	LEASE
	-----	-----
1. SINGLE DISPLAY TO LOCAL COMPUTER.....	\$ 39,383 ...	\$ NONE
2. SINGLE DISPLAY TO DATA LINE AND REMOTE COMPUTER.....	N/A ...	N/A
3. ONE EXTRA DISPLAY TO CONTROLLER.....	25,800 ...	NONE

MANUFACTURER..... ELLIOTT AUTOMATION COMPUTERS, LIMITED
(NATIONAL CASH REGISTER)
MODEL NUMBER..... 4280

CONSOLE INPUT DEVICES

STANDARD KEYBOARD, EIGHT FUNCTION KEYS, AND LIGHT PEN.

AUXILIARY EQUIPMENT

SLAVE DISPLAY, WITH SAME CHARACTERISTICS AS ABOVE.
ALSO AVAILABLE IS A 5-INCH SLAVE OSCILLOSCOPE WITH
CAMERA MOUNT.

CONTROLLER INTERFACE

1. COMPUTERS.... NCR ELLIOTT 4120 AND 4130, OR TO ORDER.
2. DATA LINES... N/A

LINE GENERATION

1. LINE TYPES..... 1
2. INTENSITY LEVELS..... 3

CHARACTER GENERATION AND DISPLAY

1. CHARACTER CODE..... ELLIOTT 4100
2. NUMBER OF FONTS..... 2
3. CHARACTERS PER LINE..... 128
4. LINES PER DISPLAY..... 64

SCREEN CHARACTERISTICS

1. DISPLAY SIZE (W X H)..... 10 IN. X 10 IN.
2. DISPLAY AREA..... 100 SQ. IN.
3. DISPLAY SHAPE..... RECTANGULAR
4. RASTER COUNT..... 1024 X 1024
5. BRIGHTNESS..... 20 FT-LAMBERTS
6. CONTRAST..... 30 TO 1

CONTROLLER DESIGN

- 1. PROCESSORS..... SINGLE
- 2. MEMORY TYPE..... COMPUTER CORE
- 3. MEMORY CYCLE TIME..... 2 OR 6 USEC.
- 4. MEMORY SIZE..... 8,192 TO 262,144 24-BIT WORDS
- 5. SUBROUTINING..... YES
- 6. POINTER TRACKING..... NO
- 7. LINE GENERATOR..... STANDARD
- 8. CHARACTER GENERATOR..... STANDARD
- 9. REFRESH RATE..... 10 FPS PROGRAMMABLE
- 10. KEYBOARD INTERPRET..... NO
- 11. SCISSORING..... YES
- 12. FUNCTION SWITCH INTERPRET... NO
- 13. ITEM IDENTIFICATION..... YES
- 14. MAXIMUM DISPLAYS..... 4

PRICES

THE PURCHASE PRICE OF THE DISPLAY ALONE IS \$12,000.

MANUFACTURER..... FERRANTI ARGUS
MODEL NUMBER..... M.D.14, M.D.17, AND M.D.21

CONSOLE INPUT DEVICES

STANDARD KEYBOARD, FUNCTION KEYS TO ORDER, JOYSTICK,
AND TRACKBALL.

AUXILIARY EQUIPMENT

CAMERA UNIT

CONTROLLER INTERFACE

1. COMPUTERS.... ARGUS 300, 400, 500, OR TO ORDER
2. DATA LINES... NONE

LINE GENERATION

1. LINE TYPES..... SOLID, DASHED
2. INTENSITY LEVELS..... 1

CHARACTER GENERATION AND DISPLAY

1. CHARACTER CODE..... PROGRAMMED OR ASCII
2. NUMBER OF FONTS..... PROGRAMMED
3. CHARACTERS PER LINE..... 64
4. LINES PER DISPLAY..... 24

SCREEN CHARACTERISTICS

1. DISPLAY SIZE (W X H)..... 10 IN. X 7.5 IN. (M.D.14)
12 IN. X 9 IN. (M.D.17)
16 IN. X 12 IN. (M.D.21)
2. DISPLAY AREA..... 75 SQ. IN. (M.D.14)
108 SQ. IN. (M.D.17)
192 SQ. IN. (M.D.21)
3. DISPLAY SHAPE..... RECTANGULAR
4. RASTER COUNT..... 1024 X 768
5. BRIGHTNESS..... 20 FT-LAMBERTS
6. CONTRAST..... 4 TO 1

CONTROLLER DESIGN

-
- 1. PROCESSORS..... SINGLE
 - 2. MEMORY TYPE..... CORE
 - 3. MEMORY CYCLE TIME..... 2 USEC.
 - 4. MEMORY SIZE..... 4,096 24-BIT WORDS
 - 5. SUBROUTINING..... NONE
 - 6. POINTER TRACKING..... HARDWARE
 - 7. LINE GENERATOR..... STANDARD
 - 8. CHARACTER GENERATOR..... STANDARD
 - 9. REFRESH RATE..... 16-2/3 FPS MANIMUM
 - 10. KEYBOARD INTERPRET..... NONE
 - 11. SCISSORING..... NONE
 - 12. FUNCTION SWITCH INTERPRET... NONE
 - 13. ITEM IDENTIFICATION..... NONE
 - 14. MAXIMUM DISPLAYS..... 12

PRICES

-----	PURCHASE	LEASE
-----	-----	-----
1. SINGLE DISPLAY TO LOCAL COMPUTER.....	\$ 51,509 ...	UNKNOWN
2. SINGLE DISPLAY TO DATA LINE AND REMOTE COMPUTER.....	N/A ...	N/A
3. ONE EXTRA DISPLAY TO CONTROLLER.....(M.D.14)	3,288 ...	UNKNOWN
(M.D.17)	3,372 ...	UNKNOWN
(M.D.21)	3,936 ...	UNKNOWN

MANUFACTURER..... INFORMATION DISPLAYS, INC.
MODEL NUMBER..... IDIIOM (INPUT OUTPUT MACHINE)

CONSOLE INPUT DEVICES

ASR33 TELETYPE KEYBOARD, THIRTY TWO MODULE FUNCTION KEYS, LIGHT PEN, OPTIONAL TABLET, OPTIONAL JOYSTICK, AND OPTIONAL TRACKBALL.

AUXILIARY EQUIPMENT

ASR33 PRINTER, PAPER TAPE READER AND PUNCH ARE STANDARD. OPTIONAL PROJECTED DISPLAY, HARDCOPY RECORDERS, OTHER TELETYPES AND BLINK CAPABILITY.

CONTROLLER INTERFACE

1. COMPUTERS.... TO ORDER
2. DATA LINES... DATAPHONE, OR TO ORDER.

LINE GENERATION

1. LINE TYPES..... 4
2. INTENSITY LEVELS..... 4

CHARACTER GENERATION AND DISPLAY

1. CHARACTER CODE..... ASCII
2. NUMBER OF FONTS..... 1
3. CHARACTERS PER LINE..... 128
4. LINES PER DISPLAY..... 64

SCREEN CHARACTERISTICS

1. DISPLAY SIZE (W X H)..... 13 IN. X 13 IN.
2. DISPLAY AREA..... 169 SQ. IN.
3. DISPLAY SHAPE..... RECTANGULAR
4. RASTER COUNT..... 1024 X 1024
5. BRIGHTNESS..... 40 FT-LAMBERTS
6. CONTRAST..... 5 TO 1

CONTROLLER DESIGN

- 1. PROCESSORS..... DUAL
- 2. MEMORY TYPE..... CORE
- 3. MEMORY CYCLE TIME..... 1.8 USEC.
- 4. MEMORY SIZE..... 4,096 TO 32,768 16-BIT WORDS
- 5. SUBROUTINING..... YES
- 6. POINTER TRACKING..... YES
- 7. LINE GENERATOR..... STANDARD
- 8. CHARACTER GENERATOR..... STANDARD
- 9. REFRESH RATE..... 30 FPS SELECTABLE
- 10. KEYBOARD INTERPRET..... YES
- 11. SCISSORING..... YES
- 12. FUNCTION SWITCH INTERPRET... YES
- 13. ITEM IDENTIFICATION..... YES
- 14. MAXIMUM DISPLAYS..... 6

PRICES

	PURCHASE	LEASE
1. SINGLE DISPLAY TO LOCAL COMPUTER.....	\$ 79,000 ...	\$ *
2. SINGLE DISPLAY TO DATA LINE AND REMOTE COMPUTER.....	85,000 ...	*
3. ONE EXTRA DISPLAY TO CONTROLLER.....	79,000 ...	*

* PRICES ON REQUEST FROM MANUFACTURER.

MANUFACTURER..... INFORMATION INTERNATIONAL, INC.
MODEL NUMBER..... 1050

CONSOLE INPUT DEVICES

128 4-ROW KEYBOARD, FUNCTION KEYS AS DESIRED, LIGHT PEN,
TABLET, MOUSE, AND OPTIONAL ROTARY SHAFTS.

AUXILIARY EQUIPMENT

NONE

CONTROLLER INTERFACE

- 1. COMPUTERS.... PDP-6, PDP-10, SDS 940, SIGMA 2,
SIGMA 7, OR TO ORDER.
2. DATA LINES... NONE

LINE GENERATION

- 1. LINE TYPES..... 1
2. INTENSITY LEVELS..... 8

CHARACTER GENERATION AND DISPLAY

- 1. CHARACTER CODE..... ASCII
2. NUMBER OF FONTS..... 1
3. CHARACTERS PER LINE..... 128
4. LINES PER DISPLAY..... 64

SCREEN CHARACTERISTICS

- 1. DISPLAY SIZE (W X H)..... 10 IN. X 10 IN.
2. DISPLAY AREA..... 100 SQ. IN.
3. DISPLAY SHAPE..... RECTANGULAR
4. RASTER COUNT..... 1024 X 1024
5. BRIGHTNESS..... UNKNOWN
6. CONTRAST..... UNKNOWN

CONTROLLER DESIGN

- 1. PROCESSORS..... SINGLE
- 2. MEMORY TYPE..... DELAY LINE
- 3. MEMORY CYCLE TIME..... N/A
- 4. MEMORY SIZE..... 4,096 8-BIT WORDS
- 5. SUBROUTINING..... YES
- 6. POINTER TRACKING..... NO
- 7. LINE GENERATOR..... STANDARD
- 8. CHARACTER GENERATOR..... STANDARD
- 9. REFRESH RATE..... 30 FPS
- 10. KEYBOARD INTERPRET..... NO
- 11. SCISSORING..... YES
- 12. FUNCTION SWITCH INTERPRET... NO
- 13. ITEM IDENTIFICATION..... NO
- 14. MAXIMUM DISPLAYS..... 12

PRICES

	PURCHASE	LEASE
1. SINGLE DISPLAY TO LOCAL COMPUTER.....	\$116,875 ...	\$ NONE
2. SINGLE DISPLAY TO DATA LINE AND REMOTE COMPUTER.....	N/A ...	N/A
3. ONE EXTRA DISPLAY TO CONTROLLER.....	39,500 ...	NONE

MANUFACTURER..... INTERNATIONAL BUSINESS MACHINES CORP.
MODEL NUMBER..... 2250 MODEL 1

CONSOLE INPUT DEVICES

OPTIONAL KEYBOARD, THIRTY TWO OPTIONAL FUNCTION KEYS, AND
OPTIONAL LIGHT PEN.

AUXILIARY EQUIPMENT

NONE

CONTROLLER INTERFACE

1. COMPUTERS.... IBM SYSTEM/360
2. DATA LINES... NONE

LINE GENERATION

1. LINE TYPES..... 1
2. INTENSITY LEVELS..... 1

CHARACTER GENERATION AND DISPLAY

1. CHARACTER CODE..... EBCDIC
2. NUMBER OF FONTS..... 1
3. CHARACTERS PER LINE..... 74
4. LINES PER DISPLAY..... 52

SCREEN CHARACTERISTICS

1. DISPLAY SIZE (W X H)..... 12 IN. X 12 IN.
2. DISPLAY AREA..... 144 SQ. IN.
3. DISPLAY SHAPE..... RECTANGULAR
4. RASTER COUNT..... 1024 X 1024
5. BRIGHTNESS..... UNKNOWN
6. CONTRAST..... UNKNOWN

CONTROLLER DESIGN

- 1. PROCESSORS..... SINGLE
- 2. MEMORY TYPE..... CORE
- 3. MEMORY CYCLE TIME..... 4 USEC.
- 4. MEMORY SIZE..... 4,096 OR 8,192 8-BIT WORDS
- 5. SUBROUTINING..... NONE
- 6. POINTER TRACKING..... NO
- 7. LINE GENERATOR..... OPTIONAL
- 8. CHARACTER GENERATOR..... OPTIONAL
- 9. REFRESH RATE..... 30 FPS PROGRAMMABLE
- 10. KEYBOARD INTERPRET..... YES
- 11. SCISSORING..... NONE
- 12. FUNCTION SWITCH INTERPRET... NO
- 13. ITEM IDENTIFICATION..... NO
- 14. MAXIMUM DISPLAYS..... 1

PRICES

	PURCHASE	LEASE
1. SINGLE DISPLAY TO LOCAL COMPUTER.....	\$119,200 ...	\$2,550
2. SINGLE DISPLAY TO DATA LINE AND REMOTE COMPUTER.....	N/A ...	N/A
3. ONE EXTRA DISPLAY TO CONTROLLER.....	52,800 ...	1,100

MANUFACTURER..... INTERNATIONAL BUSINESS MACHINES CORP.
MODEL NUMBER..... 2250 MODEL III

CONSOLE INPUT DEVICES

OPTIONAL KEYBOARD, THIRTY TWO OPTIONAL FUNCTION KEYS, AND
STANDARD LIGHT PEN.

AUXILIARY EQUIPMENT

NONE

CONTROLLER INTERFACE

1. COMPUTERS.... IBM SYSTEM/360
2. DATA LINES... NONE

LINE GENERATION

1. LINE TYPES..... 1
2. INTENSITY LEVELS..... 1

CHARACTER GENERATION AND DISPLAY

1. CHARACTER CODE..... EBCDIC
2. NUMBER OF FONTS..... 1
3. CHARACTERS PER LINE..... 74
4. LINES PER DISPLAY..... 52

SCREEN CHARACTERISTICS

1. DISPLAY SIZE (W X H)..... 12 IN. X 12 IN.
2. DISPLAY AREA..... 144 SQ. IN.
3. DISPLAY SHAPE..... RECTANGULAR
4. RASTER COUNT..... 1024 X 1024
5. BRIGHTNESS..... UNKNOWN
6. CONTRAST..... UNKNOWN

CONTROLLER DESIGN

-
- 1. PROCESSORS..... SINGLE
 - 2. MEMORY TYPE..... CORE
 - 3. MEMORY CYCLE TIME..... 2 USEC.
 - 4. MEMORY SIZE..... 16,384 18-BIT WORDS
 - 5. SUBROUTINING..... YES
 - 6. POINTER TRACKING..... YES
 - 7. LINE GENERATOR..... STANDARD
 - 8. CHARACTER GENERATOR..... STANDARD
 - 9. REFRESH RATE..... 40 FPS PROGRAMMABLE
 - 10. KEYBOARD INTERPRET..... YES
 - 11. SCISSORING..... YES
 - 12. FUNCTION SWITCH INTERPRET... PEN ONLY
 - 13. ITEM IDENTIFICATION..... YES
 - 14. MAXIMUM DISPLAYS..... 4

PRICES

-----	PURCHASE -----	LEASE -----
1. SINGLE DISPLAY TO LOCAL COMPUTER.....	\$279,000 ...	\$5,825
2. SINGLE DISPLAY TO DATA LINE AND REMOTE COMPUTER.....	N/A ...	N/A
3. ONE EXTRA DISPLAY TO CONTROLLER.....	76,800 ...	1,600

MANUFACTURER..... INTERNATIONAL BUSINESS MACHINES CORP.
MODEL NUMBER..... 2250 MODEL IV

CONSOLE INPUT DEVICES

OPTIONAL KEYBOARD, OPTIONAL FUNCTION KEYS, AND LIGHT
PEN.

AUXILIARY EQUIPMENT

NONE

CONTROLLER INTERFACE

1. COMPUTERS..... IBM 1130
2. DATA LINES... NONE

LINE GENERATION

1. LINE TYPES..... 1
2. INTENSITY LEVELS..... 1

CHARACTER GENERATION AND DISPLAY

1. CHARACTER CODE..... PROGRAMMED
2. NUMBER OF FONTS..... PROGRAMMED
3. CHARACTERS PER LINE..... 74
4. LINES PER DISPLAY..... 52

SCREEN CHARACTERISTICS

1. DISPLAY SIZE (W X H)..... 12 IN. X 12 IN.
2. DISPLAY AREA..... 144 SQ. IN.
3. DISPLAY SHAPE..... RECTANGULAR
4. RASTER COUNT..... 1024 X 1024
5. BRIGHTNESS..... UNKNOWN
6. CONTRAST..... UNKNOWN

CONTROLLER DESIGN

-
- 1. PROCESSORS..... SINGLE
 - 2. MEMORY TYPE..... NONE
 - 3. MEMORY CYCLE TIME..... N/A
 - 4. MEMORY SIZE..... N/A
 - 5. SUBROUTINING..... YES
 - 6. POINTER TRACKING..... NO
 - 7. LINE GENERATOR..... STANDARD
 - 8. CHARACTER GENERATOR..... STANDARD (STROKE MODE)
 - 9. REFRESH RATE..... 40 FPS PROGRAMMABLE
 - 10. KEYBOARD INTERPRET..... NONE
 - 11. SCISSORING..... YES
 - 12. FUNCTION SWITCH INTERPRET... NONE
 - 13. ITEM IDENTIFICATION..... NO
 - 14. MAXIMUM DISPLAYS..... 1

PRICES

-----	PURCHASE	LEASE
-----	-----	-----
1. SINGLE DISPLAY TO LOCAL COMPUTER.....	\$126,000 ...	\$2,625
2. SINGLE DISPLAY TO DATA LINE AND REMOTE COMPUTER.....	N/A ...	N/A
3. ONE EXTRA DISPLAY TO CONTROLLER.....	115,200 ...	2,400

MANUFACTURER..... INTERNATIONAL TELEPHONE AND TELEGRAPH CORP.
MODEL NUMBER..... MACC

CONSOLE INPUT DEVICES

STANDARD KEYBOARD, FUNCTION KEYS, LIGHT PEN, TRACKBALL,
AND 35MM SLIDES (2 SECOND ACCESS).

AUXILIARY EQUIPMENT

NONE

CONTROLLER INTERFACE

- 1. COMPUTERS.... CONTROL DATA 160, 160A, IBM 729,
SYSTEM/360, UNIVAC USQ-20A, 1218,
OR TO ORDER.
2. DATA LINES... TO ORDER

LINE GENERATION

- 1. LINE TYPES..... 1
2. INTENSITY LEVELS..... 1

CHARACTER GENERATION AND DISPLAY

- 1. CHARACTER CODE..... BCD 6-BIT
2. NUMBER OF FONTS..... 1
3. CHARACTERS PER LINE..... 64
4. LINES PER DISPLAY..... 48

SCREEN CHARACTERISTICS

- 1. DISPLAY SIZES (W X H)..... 12 IN. X 12 IN.
2. DISPLAY AREA..... 144 SQ. IN.
3. DISPLAY SHAPE..... ROUND
4. RASTER COUNT..... 1024 X 1024
5. BRIGHTNESS..... 40 FT-LAMBERTS
6. CONTRAST..... 5 TO 1

CONTROLLER DESIGN

-
- 1. PROCESSORS..... SINGLE
 - 2. MEMORY TYPE..... CORE
 - 3. MEMORY CYCLE TIME..... 1 USEC.
 - 4. MEMORY SIZE..... 9,216 7-BIT WORDS
 - 5. SUBROUTINING..... NONE
 - 6. POINTER TRACKING..... TRACKBALL
 - 7. LINE GENERATOR..... STANDARD
 - 8. CHARACTER GENERATOR..... STANDARD
 - 9. REFRESH RATE..... 40 FPS MAXIMUM
 - 10. KEYBOARD INTERPRET..... EDIT ONLY
 - 11. SCISSORING..... NONE
 - 12. FUNCTION SWITCH INTERPRET... NO
 - 13. ITEM IDENTIFICATION..... NO
 - 14. MAXIMUM DISPLAYS..... 1

PRICES

ON REQUEST FROM MANUFACTURER.

MANUFACTURER..... PHILCO-FORD CORPORATION
MODEL NUMBER..... READ
(REAL-TIME ELECTRONIC ACCESS AND DISPLAY
SYSTEM)

CONSOLE INPUT DEVICES

STANDARD KEYBOARD, FUNCTION KEYS, AND LIGHT PEN.

AUXILIARY EQUIPMENT

16MM OR 35MM MICROFILM RECORDER.

CONTROLLER INTERFACE

1. COMPUTERS.... DEC PDP-1, CONTROL DATA G-21,
OR TO ORDER.
2. DATA LINES... NONE

LINE GENERATION

1. LINE TYPES..... 1
2. INTENSITY LEVELS..... 2

CHARACTER GENERATION AND DISPLAY

1. CHARACTER CODE..... TO ORDER
2. NUMBER OF FONTS..... TO ORDER
3. CHARACTERS PER LINE..... 128
4. LINES PER DISPLAY..... 64

SCREEN CHARACTERISTICS

1. DISPLAY SIZE (W X H)..... 9 IN. X 9 IN.
2. DISPLAY AREA..... 81 SQ. IN.
3. DISPLAY SHAPE..... ROUND
4. RASTER COUNT..... 1024 X 1024
5. BRIGHTNESS..... 100 FT-LAMBERTS
6. CONTRAST..... 20 TO 1

CONTROLLER DESIGN

- 1. PROCESSORS..... SINGLE
- 2. MEMORY TYPE..... OPTIONAL CORE
- 3. MEMORY CYCLE TIME..... 8 USEC.
- 4. MEMORY SIZE..... 1,024 TO 16,192 32-BIT WORDS
- 5. SUBROUTINING..... NONE
- 6. POINTER TRACKING..... HARDWARE
- 7. LINE GENERATOR..... YES
- 8. CHARACTER GENERATOR..... YES
- 9. REFRESH RATE..... 60 FPS MAXIMUM
- 10. KEYBOARD INTERPRET..... HARDWARE
- 11. SCISSORING..... NONE
- 12. FUNCTION SWITCH INTERPRET... HARDWARE
- 13. ITEM IDENTIFICATION..... HARDWARE
- 14. MAXIMUM DISPLAYS..... 16

PRICES

ON REQUEST FROM MANUFACTURER.

MANUFACTURER..... RADIO CORPORATION OF AMERICA
MODEL NUMBER..... 6320

CONSOLE INPUT DEVICES

STANDARD KEYBOARD, FUNCTION KEYS, OPTIONAL LIGHT PEN,
AND JOYSTICK.

AUXILIARY EQUIPMENT

IBM SELECTRIC TYPEWRITER PRINTER, FIFTEEN CHARACTERS PER
SECOND. MAGNETIC DRUM STORAGE, UP TO 43,520 6-BIT WORDS.

CONTROLLER INTERFACE

1. COMPUTERS.... CONTROL DATA 160A, USQ20, CP667,
OR TO ORDER
2. DATA LINES... TO ORDER

LINE GENERATION

1. LINE TYPES..... 1
2. INTENSITY LEVELS..... 1

CHARACTER GENERATION AND DISPLAY

1. CHARACTER CODE..... ASCII
2. NUMBER OF FONTS..... 1
3. CHARACTERS PER LINE..... 80
4. LINES PER DISPLAY..... 34

SCREEN CHARACTERISTICS

1. DISPLAY SIZE (W X H)..... 12 IN. X 12 IN.
2. DISPLAY AREA..... 144 SQ. IN.
3. DISPLAY SHAPE..... RECTANGULAR
4. RASTER COUNT..... 1024 X 1024
5. BRIGHTNESS..... 50 FT-LAMBERTS
6. CONTRAST..... 6 TO 1

CONTROLLER DESIGN

1.	PROCESSORS.....	SINGLE
2.	MEMORY TYPE.....	CORE
3.	MEMORY CYCLE TIME.....	5 USEC.
4.	MEMORY SIZE.....	2,048 TO 8,192 12-BIT WORDS
5.	SUBROUTINING.....	NONE
6.	POINTER TRACKING.....	YES
7.	LINE GENERATOR.....	OPTIONAL
8.	CHARACTER GENERATOR.....	STANDARD
9.	REFRESH RATE.....	60 FPS FIXED
10.	KEYBOARD INTERPRET.....	CURSOR
11.	SCISSORING.....	NONE
12.	FUNCTION SWITCH INTERPRET...	NO
13.	ITEM IDENTIFICATION.....	NO
14.	MAXIMUM DISPLAYS.....	1

PRICES

ON REQUEST FROM MANUFACTURER.

MANUFACTURER..... RAYTHEON COMPANY
MODEL NUMBER..... DIDS-1500

CONSOLE INPUT DEVICES

FORTY EIGHT KEY STANDARD KEYBOARD AND SIXTEEN FUNCTION KEYS.

AUXILIARY EQUIPMENT

NONE

CONTROLLER INTERFACE

1. COMPUTERS.... RCA 110A, OR TO ORDER
2. DATA LINES... NONE

LINE GENERATION

1. LINE TYPES..... 1
2. INTENSITY LEVELS..... 2

CHARACTER GENERATION AND DISPLAY

1. CHARACTER CODE..... BCD
2. NUMBER OF FONTS..... 2 (GREEK)
3. CHARACTERS PER LINE..... 64
4. LINES PER DISPLAY..... 64

SCREEN CHARACTERISTICS

1. DISPLAY SIZE (W X H)..... 12 IN. X 12 IN.
2. DISPLAY AREA..... 144 SQ. IN.
3. DISPLAY SHAPE..... RECTANGULAR
4. RASTER COUNT..... 512 X 512
5. BRIGHTNESS..... 30 FT-LAMBERTS
6. CONTRAST..... 30 TO 1

CONTROLLER DESIGN

-
- | | | |
|-----|------------------------------|--------------------|
| 1. | PROCESSORS..... | SINGLE |
| 2. | MEMORY TYPE..... | CORE |
| 3. | MEMORY CYCLE TIME..... | 4.7 USEC. |
| 4. | MEMORY SIZE..... | 4,096 18-BIT WORDS |
| 5. | SUBROUTINUNG..... | NONE |
| 6. | POINTER TRACKING..... | N/A |
| 7. | LINE GENERATOR..... | STANDARD |
| 8. | CHARACTER GENERATOR..... | STANDARD |
| 9. | REFRESH RATE..... | 48 FPS FIXED |
| 10. | KEYBOARD INTERPRET..... | YES |
| 11. | SCISSORING..... | NONE |
| 12. | FUNCTION SWITCH INTERPRET... | NO |
| 13. | ITEM IDENTIFICATION..... | NO |
| 14. | MAXIMUM DISPLAYS..... | 1 |

PRICES

ON REQUEST FROM MANUFACTURER.

MANUFACTURER..... SANDERS ASSOCIATES, INC.
MODEL NUMBER..... 960

CONSOLE INPUT DEVICES

OPTIONAL TO ORDER KEYBOARD, OPTIONAL FUNCTION KEYS,
OPTIONAL LIGHT PEN, OPTIONAL TABLET, OPTIONAL JOYSTICK,
AND OPTIONAL TRACKBALL.

AUXILIARY EQUIPMENT

DELETE, COPY, TRANSFER, ERASE, ENTER, FORMAT, RETRIEVE,
UPDATE, INTERROGATE, REAR SCREEN PROJECTION, AND
TV/DIGITAL INTERLACE.

CONTROLLER INTERFACE

1. COMPUTERS..... SDS 940, SIGMA 2, IBM 1130, SYSTEM/360,
OR TO ORDER.
2. DATA LINES... TO ORDER

LINE GENERATION

1. LINE TYPES..... NORMAL, BROKEN
2. INTENSITY LEVELS..... 4

CHARACTER GENERATION AND DISPLAY

1. CHARACTER CODE..... ASCII
2. NUMBER OF FONTS..... 1
3. CHARACTERS PER LINES..... 112
4. LINES PER DISPLAY..... 74

SCREEN CHARACTERISTICS

1. DISPLAY SIZE (W X H)..... 14 IN. X 14 IN.
2. DISPLAY AREA..... 196 SQ. IN.
3. DISPLAY SHAPE..... ROUND
4. RASTER COUNT..... 1024 X 1024
5. BRIGHTNESS..... 25 FT-LAMBERTS
6. CONTRAST..... 4 TO 1

CONTROLLER DESIGN

-
- 1. PROCESSORS..... SINGLE
 - 2. MEMORY TYPE..... OPTIONAL CORE
 - 3. MEMORY CYCLE TIME..... 2 USEC.
 - 4. MEMORY SIZE..... 2,048 TO 8,192 32-BIT WORDS
 - 5. SUBROUTINING..... OPTIONAL
 - 6. POINTER TRACKING..... NO
 - 7. STANDARD GENERATOR..... STANDARD
 - 8. CHARACTER GENERATOR..... STANDARD
 - 9. REFRESH RATE..... 60 FPS PROGRAMMABLE
 - 10. KEYBOARD INTERPRET..... NONE
 - 11. SCISSORING..... NONE
 - 12. FUNCTION SWITCH INTERPRET... NONE
 - 13. ITEM IDENTIFICATION..... NO
 - 14. MAXIMUM DISPLAYS..... 4

PRICES

ON REQUEST FROM MANUFACTURER.

MANUFACTURER..... SCIENTIFIC DATA SYSTEMS, INC.
MODEL NUMBER..... 9185

CONSOLE INPUT DEVICES

OPTIONAL LIGHT PEN

AUXILIARY EQUIPMENT

DISPLAY EQUIPMENT RACK.

CONTROLLER INTERFACE

1. COMPUTERS..... SDS 92, 920, 925, 930, AND 9300.
2. DATA LINES... NONE

LINE GENERATION

1. LINE TYPES..... 1
2. INTENSITY LEVELS..... 2

CHARACTER GENERATION AND DISPLAY

1. CHARACTER CODE..... TO ORDER
2. NUMBER OF FONTS..... 2
3. CHARACTERS PER LINE..... 80
4. LINES PER DISPLAY..... 50

SCREEN CHARACTERISTICS

1. DISPLAY SIZE (W X H)..... 10 IN. X 10 IN.
2. DISPLAY AREA..... 100 SQ. IN.
3. DISPLAY SHAPE..... SQUARE
4. RASTER COUNT..... 1024 X 1024
5. BRIGHTNESS..... UNKNOWN
6. CONTRAST..... UNKNOWN

CONTROLLER DESIGN

- 1. PROCESSORS..... SINGLE
- 2. MEMORY TYPE..... DELAY LINE
- 3. MEMORY CYCLE TIME..... 128 USEC.
- 4. MEMORY SIZE..... 625 32-BIT WORDS
- 5. SUBROUTINING..... NONE
- 6. POINTER TRACKING..... HARDWARE
- 7. LINE GENERATOR..... OPTIONAL
- 8. CHARACTER GENERATOR..... OPTIONAL
- 9. REFRESH RATE..... 30 FPS (12.5FIXED)
- 10. KEYBOARD INTERPRET..... N/A
- 11. SCISSORING..... NONE
- 12. FUNCTION SWITCH INTERPRET... N/A
- 13. ITEN IDENTIFICATION..... NO
- 14. MAXIMUM DISPLAYS..... 1

PRICES	PURCHASE	LEASE
-----	-----	-----
1. SINGLE DISPLAY TO LOCAL COMPUTER.....	\$ 24,595 ...	\$ 555
2. SINGLE DISPLAY TO DATA LINE AND REMOTE COMPUTER.....	N/A ...	N/A
3. ONE EXTRA DISPLAY TO CONTROLLER.....	3,675 ...	90

MANUFACTURER..... SCIENTIFIC DATA SYSTEMS, INC.
MODEL NUMBER..... 7580

CONSOLE INPUT DEVICES

STANDARD KEYBOARD, SIXTEEN FUNCTION KEYS, AND LIGHT PEN.

AUXILIARY EQUIPMENT

NONE

CONTROLLER INTERFACE

1. COMPUTERS.... SDS SIGMA 5, SIGMA 7
2. DATA LINES... NONE

LIME GENERATION

1. LINE TYPES..... 1
2. INTENSITY LEVELS..... 2

CHARACTER GENERATION AND DISPLAY

1. CHARACTER CODE..... EBCDIC
2. NUMBER FONTS..... 1
3. CHARACTERS PER LINE..... 56
4. LINES PER DISPLAY..... 37

SCREEN CHARACTERISTICS

1. DISPLAY SIZE (W X H)..... 10 IN. X 10 IN.
2. DISPLAY AREA..... 100 SQ. IN.
3. DISPLAY SHAPE..... SQUARE
4. RASTER COUNT..... 1024 X 1024
5. BRIGHTNESS..... UNKNOWN
6. CONTRAST..... UNKNOWN

CONTROLLER DESIGN

-
- 1. PROCESSORS..... SINGLE
 - 2. MEMORY TYPE..... COMPUTER CORE
 - 3. MEMORY CYCLE TIME..... 850 NSEC.
 - 4. MEMORY SIZE..... 4,096 TO 131,072 32-BIT WORDS
 - 5. SUBROUTINING..... YES
 - 6. POINTER TRACKING..... YES
 - 7. LINE GENERATOR..... STANDARD
 - 8. CHARACTER GENERATOR..... STANDARD
 - 9. REFRESH RATE..... 30 FPS OR LESS
 - 10. KEYBOARD INTERPRET..... N/A
 - 11. SCISSORING..... NONE
 - 12. FUNCTION SWITCH INTERPRET... N/A
 - 13. ITEM IDENTIFICATION..... YES
 - 14. MAXIMUM DISPLAYS..... 1

PRICES	PURCHASE	LEASE
-----	-----	-----
1. SINGLE DISPLAY TO LOCAL COMPUTER.....	\$ 58,000 ...	\$1,300
2. SINGLE DISPLAY TO DATA LINE AND REMOTE COMPUTER.....	N/A ...	N/A
3. ONE EXTRA DISPLAY TO CONTROLLER.....	58,000 ...	1,300

MANUFACTURER..... SOCIETE INDUSTRIELLE DES NOUVELLES TECHNIQUES
RADIOELECTRIQUES (SINTRA)
MODEL NUMBER..... VU2000

CONSOLE INPUT DEVICES

STANDARD KEYBOARD, FUNCTION KEYS, LIGHT PEN, AND
TRACKBALL.

AUXILIARY EQUIPMENT

HARDCOPY AND FILM RECORDER, AND MAGNETIC TAPE RECORDER.

CONTROLLER INTERFACE

1. COMPUTERS..... SDS 92, 930, 9030, CONTROL DATA 3000
SERIES, OR TO ORDER.
2. DATA LINES... TO ORDER

LINE GENERATION

1. LINE TYPES..... SOLID, DASH, DPT
2. INTENSITY LEVELS..... 2

CHARACTER GENERATION AND DISPLAY

1. CHARACTER CODE..... ASCII
2. NUMBER OF FONTS..... 1
3. CHARACTERS PER LINE..... 56
4. LINES PER DISPLAY..... 42

SCREEN CHARACTERISTICS

1. DISPLAY SIZE (W X H)..... 10 IN. X 10 IN.
2. DISPLAY AREA..... 100 SQ. IN.
3. DISPLAY SHAPE..... ROUND
4. RASTER COUNT..... 2048 X 2048
5. BRIGHTNESS..... UNKNOWN
6. CONTRAST..... UNKNOWN

CONTROLLER DESIGN

-
- 1. PROCESSORS..... SINGLE
 - 2. MEMORY TYPE..... OPTIONAL CORE
 - 3. MEMORY CYCLE TIME..... 1.5 USEC
 - 4. MEMORY SIZE..... 4,096 TO 32,768 16-BIT WORDS
 - 5. SUBROUTINING..... YES
 - 6. POINTER TRACKING..... TRACKBALL
 - 7. LINE GENERATOR..... STANDARD
 - 8. CHARACTER GENERATOR..... STANDARD
 - 9. REFRESH RATE..... 40 FPS PROGRAMMABLE
 - 10. KEYBOARD INTERPRET..... NO
 - 11. SCISSORING..... NO
 - 12. FUNCTION SWITCH INTERPRET... NO
 - 13. ITEM IDENTIFICATION..... YES
 - 14. MAXIMUM DISPLAYS..... 4

PRICES

ON REQUEST FROM MANUFACTURER.

MANUFACTURER..... STROMBERG-CARLSON CORPORATION
MODEL NUMBER..... SC-1090

CONSOLE INPUT DEVICES

OPTIONAL KEYBOARD, OPTIONAL LIGHT PEN, AND OPTIONAL
FUNCTION KEYS.

AUXILIARY EQUIPMENT

KLEINSMIDT PRINTER

CONTROLLER INTERFACE

1. COMPUTERS..... B-5000, B-5500, D-885, CDC 160A, 1604,
3100, 3200, 3600, 6600, COLLINS 8401,
PDP-1, PDP-7, GE 225, GE 235, GE 635,
IBM 650, 704, 705, 709, 1401, 1460,
1620, 7030, 7040, 7044, 7070, 7074,
7080, 7090, 7094, SYSTEM/360, UNIVAC
490, 1107, 1218, OR TO ORDER.
2. DATA LINES... NONE

LINE GENERATION

1. LINE TYPES..... 1
2. INTENSITY LEVELS..... 2

CHARACTER GENERATION AND DISPLAY

1. CHARACTER CODE..... BCD
2. NUMBER OF FONTS..... 1
3. CHARACTERS PER LINE..... 64
4. LINES PER DISPLAY..... 32

SCREEN CHARACTERISTICS

1. DISPLAY SIZE (W X H)..... 12.6 IN X 12.6 IN.
2. DISPLAY AREA..... 158.76 SQ. IN.
3. DISPLAY SHAPE..... ROUND
4. RASTER COUNT..... 512 X 512
5. BRIGHTNESS..... 20 FT-LAMBERTS
6. CONTRAST..... 100 TO 1

CONTROLLER DESIGN

-
- 1. PROCESSORS..... SINGLE
 - 2. MEMORY TYPE..... CORE
 - 3. MEMORY CYCLE TIME..... TO ORDER
 - 4. MEMORY SIZE..... TO ORDER
 - 5. SUBROUTINING..... NONE
 - 6. POINTER TRACKING..... NONE
 - 7. LINE GENERATOR..... STANDARD
 - 8. CHARACTER GENERATOR..... STANDARD
 - 9. REFRESH RATE..... 30 FPS PROGRAMMABLE
 - 10. KEYBOARD INTERPRET..... NONE
 - 11. SCISSORING..... NONE
 - 12. FUNCTION SWITCH INTERPRET... NONE
 - 13. ITEM IDENTIFICATION..... NONE
 - 14. MAXIMUM DISPLAYS..... 1

PRICES

ON REQUEST FROM MANUFACTURER.

MANUFACTURER..... SYSTEMS ENGINEERING LABORATORIES, INC.
MODEL NUMBER..... 816A

CONSOLE INPUT DEVICES

STANDARD ASR33 KEYBOARD, OPTIONAL FUNCTION KEYS, AND
OPTIONAL LIGHT PEN.

AUXILIARY EQUIPMENT

THE OPTIONAL COMPUTER GRAPHICS PROCESSOR PERMITS TRANSFER
OF DATA DIRECTLY FROM 810A MEMORY TO THE DISPLAY, AND
ALSO PROVIDES DISPLAY SUBROUTINING.

CONTROLLER INTERFACE

1. COMPUTERS..... SEL 810, 810B, 840B, 840MP,
OR TO ORDER
2. DATA LINES... TO ORDER

LINE GENERATION

1. LINE TYPES..... NORMAL, DASH, CENTER
2. INTENSITY LEVELS..... 4

CHARACTER GENERATION AND DISPLAY

1. CHARACTER CODE..... ASCII
2. NUMBER OF FONTS..... 1
3. CHARACTERS PER LINE..... 85
4. LINES PER DISPLAY..... 64

SCREEN CHARACTERISTICS

1. DISPLAY SIZE (W X H)..... 10.24 IN. X 10.24 IN.
2. DISPLAY AREA..... 104.86 SQ. IN.
3. DISPLAY SHAPE..... ROUND
4. RASTER COUNT..... 1024 X 1024
5. BRIGHTNESS..... 50 FT-LAMBERTS
6. CONTRAST..... 10 TO 1

CONTROLLER DESIGN

-
- 1. PROCESSORS..... MULTIPLE
 - 2. MEMORY TYPE..... CORE
 - 3. MEMORY CYCLE TIME..... 1.75 USEC.
 - 4. MEMORY SIZE..... 4,096 TO 32,768 16-BIT WORDS
 - 5. SUBROUTINING..... OPTIONAL
 - 6. POINTER TRACKING..... YES
 - 7. LINE GENERATOR..... STANDARD
 - 8. CHARACTER GENERATOR..... OPTIONAL
 - 9. REFRESH RATE..... 60 FPS PROGRAMMABLE
 - 10. KEYBOARD INTERPRET..... YES
 - 11. SCISSORING..... NONE
 - 12. FUNCTION SWITCH INTERPRET... YES
 - 13. ITEM IDENTIFICATION..... YES
 - 14. MAXIMUM DISPLAYS..... 4

PRICES

-----	PURCHASE	LEASE
-----	-----	-----
1. SINGLE DISPLAY TO LOCAL COMPUTER.....	\$ 62,150 ...	\$ NONE
2. SINGLE DISPLAY TO DATA LINE AND REMOTE COMPUTER.....	UNKNOWN ...	NONE
3. ONE EXTRA DISPLAY TO CONTROLLER.....	43,950 ...	NONE

MANUFACTURER..... TASKER INDUSTRIES, INC.
MODEL NUMBER..... 9100 AND 9110

CONSOLE INPUT DEVICES

STANDARD KEYBOARD, THIRTY TWO PUSHBUTTON FUNCTION KEYS,
LIGHT PEN, TRACKBALL, JOYSTICK, AND MOUSE.

AUXILIARY EQUIPMENT

NONE

CONTROLLER INTERFACE

- 1. COMPUTERS.... TO ORDER
2. DATA LINES... TO ORDER

LINE GENERATION

- 1. LINE TYPES..... SOLID
2. INTENSITY LEVELS..... 4

CHARACTER GENERATION AND DISPLAY

- 1. CHARACTER CODE..... ASCII 6-BIT
2. NUMBER OF FONTS..... 1
3. CHARACTERS PER LINE..... 100
4. LINES PER DISPLAY..... 50

SCREEN CHARACTERISTICS

- 1. DISPLAY SIZE (W X H)..... 17.5 IN. X 12 IN.
2. DISPLAY AREA..... 210 SQ. IN.
3. DISPLAY SHAPE..... RECTANGULAR
4. RASTER COUNT..... 2048 X 1404
5. BRIGHTNESS..... 75 FT-LAMBERTS
6. CONTRAST..... 5 TO 1

CONTROLLER DESIGN

1.	PROCESSORS.....	SINGLE
2.	MEMORY TYPE.....	OPTIONAL CORE
3.	MEMORY CYCLE TIME.....	1.75 USEC.
4.	MEMORY SIZE.....	4,096 24-BIT WORDS
5.	SUBROUTINING.....	NONE
6.	POINTER TRACKING.....	HARDWARE
7.	LINE GENERATOR.....	STANDARD
8.	CHARACTER GENERATOR.....	STANDARD
9.	REFRESH RATE.....	50 FPS PROGRAMMABLE
10.	KEYBOARD INTERPRET.....	NONE
11.	SCISSORING.....	NONE
12.	FUNCTION SWITCH INTERPRET...	NONE
13.	ITEM IDENTIFICATION.....	NO
14.	MAXIMUM DISPLAYS.....	1

PRICES

ON REQUEST FROM MANUFACTURER.

MANUFACTURER..... TASKER INDUSTRIES, INC.
MODEL NUMBER..... 9200 AND 9210

CONSOLE INPUT DEVICES

STANDARD KEYBOARD, TWENTY FOUR PUSHBUTTON FUNCTION KEYS,
AND LIGHT PEN.

AUXILIARY EQUIPMENT

NONE

CONTROLLER INTERFACE

1. COMPUTERS.... TO ORDER
2. DATA LINES... TO ORDER

LINE GENERATION

1. LINE TYPES..... SOLID, DASHED
2. INTENSITY LEVELS..... 4

CHARACTER GENERATION AND DISPLAY

1. CHARACTER CODE..... EXTENDED BCD
2. NUMBER OF FONTS..... 1
3. CHARACTERS PER LINE..... 100
4. LINES PER DISPLAY..... 50

SCREEN CHARACTERISTICS

1. DISPLAY SIZE (W X H)..... 14 IN. X 14 IN.
2. DISPLAY AREA..... 196 SQ. IN.
3. DISPLAY SHAPE..... ROUND
4. RASTER COUNT..... 2048 X 2048
5. BRIGHTNESS..... 75 FT-LAMBERTS
6. CONTRAST..... 5 TO 1

CONTROLLER DESIGN

1.	PROCESSORS.....	SINGLE
2.	MEMORY TYPE.....	OPTIONAL CORE
3.	MEMORY CYCLE TIME.....	1.75 USEC.
4.	MEMORY SIZE.....	4,096 24-BIT WORDS
5.	SUBROUTINING.....	NONE
6.	POINTER TRACKING.....	NO
7.	LINE GENERATOR.....	STANDARD
8.	CHARACTER GENERATOR.....	STANDARD
9.	REFRESH RATE.....	50 FPS PROGRAMMABLE
10.	KEYBOARD INTERPRET.....	NONE
11.	SCISSORING.....	NONE
12.	FUNCTION SWITCH INTERPRET...	NONE
13.	ITEM IDENTIFICATION.....	NO
14.	MAXIMUM DISPLAYS.....	1

PRICES

ON REQUEST FROM MANUFACTURER.

MANUFACTURER..... AEG-TELEFUNKEN
MODEL NUMBER..... SAP 200

CONSOLE INPUT DEVICES

STANDARD KEYBOARD, 7 X 5 FUNCTION KEYS, TRACKBALL, AND
POTENTIOMETERS.

AUXILIARY EQUIPMENT

SECOND KEYBOARD FOR REMOTE INPUT.

CONTROLLER INTERFACE

1. COMPUTERS..... TR4
2. DATA LINES... DUE 300

LINE GENERATION

1. LINE TYPES..... 1
2. INTENSITY LEVELS..... 4

CHARACTER GENERATION AND DISPLAY

1. CHARACTER CODE..... TR4 HEXADENCODE
2. NUMBER OF FONTS..... 2 (ITALICS)
3. CHARACTERS PER LINE..... 190 (OVER DIA.)
4. LINES PER DISPLAY..... 125 (OVER DIA.)

SCREEN CHARACTERISTICS

1. DISPLAY SIZE (W X H)..... 20 IN. DIAMETER
2. DISPLAY AREA..... 314 SQ. IN.
3. DISPLAY SHAPE..... ROUND
4. RASTER COUNT..... 512 X 512
5. BRIGHTNESS..... 50 FT-LAMBERTS
6. CONTRAST..... 6 TO 1

CONTROLLER DESIGN

-
- 1. PROCESSORS..... SINGLE
 - 2. MEMORY TYPES..... CORE
 - 3. MEMORY CYCLE TIME..... 6.2 USEC
 - 4. MEMORY SIZE..... 1,024 24-BIT WORDW
 - 5. SUBROUTINING..... NONE
 - 6. POINTER TRACKING..... HARDWARE
 - 7. LINE GENERATOR..... STANDARD
 - 8. CHARACTER GENERATOR..... STANDARD
 - 9. REFRESH RATE..... 60 FPS MAXIMUM
 - 10. KEYBOARD INTERPRET..... NONE
 - 11. SCISSORING..... YES (HARDWARE)
 - 12. FUNCTION SWITCH INTERPRET... NONE
 - 13. ITEM IDENTIFICATION..... NONE
 - 14. MAXIMUM DISPLAYS..... 2

PRICES

THE PURCHASE PRICE OF THE DISPLAY IS \$30,170.

MANUFACTURER..... AEG-TELEFUNKEN
MODEL NUMBER..... SAP 300

CONSOLE INPUT DEVICES

STANDARD KEYBOARD, 7 X 5 FUNCTION KEYS, TRACKBALL, AND
POTENTIOMETERS.

AUXILIARY EQUIPMENT

SECOND KEYBOARD FOR REMOTE INPUT.

CONTROLLER INTERFACE

1. COMPUTERS.... TR 86, TR 4, TR 440
2. DATA LINES... DUE SERIES

LINE GENERATION

1. LINE TYPES..... 1
2. INTENSITY LEVELS..... 4

CHARACTER GENERATION AND DISPLAY

1. CHARACTER CODE..... HEXADENCODE
2. NUMBER OF FONTS..... 1
3. CHARACTERS PER LINE..... 190
4. LINES PER DISPLAY..... 125

SCREEN CHARACTERISTICS

1. DISPLAY SIZE (W X H)..... 20 IN. DIAMETER
2. DISPLAY AREA..... 314 SQ. IN.
3. DISPLAY SHAPE..... ROUND
4. RASTER COUNT..... 1024 X 1024
5. BRIGHTNESS..... 50 FT-LAMBERTS
6. CONTRAST..... 8 TO 1

CONTROLLER DESIGN

- 1. PROCESSORS..... MULTIPLE
- 2. MEMORY TYPES..... CORE
- 3. MEMORY CYCLE TIME..... .9 USEC
- 4. MEMORY SIZE..... 8,192 TO 65,536 24-BIT WORDS
- 5. SUBROUTINING..... BY SOFTWARE
- 6. POINTER TRACKING..... HARDWARE
- 7. LINE GENERATOR..... STANDARD
- 8. CHARACTER GENERATOR..... STANDARD
- 9. REFRESH RATE..... 60 FPS MAXIMUM
- 10. KEYBOARD INTERPRET..... YES
- 11. SCISSORING..... BY SOFTWARE
- 12. FUNCTION SWITCH INTERPRET... YES
- 13. ITEM IDENTIFICATION..... YES
- 14. MAXIMUM DISPLAYS..... 24

PRICES

THE PURCHASE PRICE OF THE DISPLAY IS \$38,450.

APPENDIX D
NON-INTERACTIVE GRAPHIC DISPLAY DEVICES

I. INTRODUCTION

This Appendix presents a discussion of display devices which, when functioning alone, do not permit man/machine interaction. These devices are categorized into either Data Entry devices or Data Viewing devices. Two types of Data Entry devices and two types of Data Viewing devices will be reviewed.

II. DATA ENTRY DEVICES

The two kinds of Data Entry devices are document scanners and graphic recorders. Document scanners are primarily used for business applications, while graphic recorders are used in scientific data acquisition, such as cartography.

A. Document Scanners

These devices "read" printed (or marked) information and translate this data into computer form. Specific type fonts are normally designed for certain types of documents. The hieroglyphics at the bottom of our personal checks are examples of type fonts. The following companies produce document scanners:

- (1) Burroughs Corp., a model that reads a typed page at a rate of 75 char/sec. This device uses the standard type font of letters, numbers, and punctuation.
- (2) Farrington, a page reader which operates at a rate of 400 char/sec. on letters, numerals, and special marks.
- (3) IBM, an optical reader that operates at a rate of 500 char/sec. on alphanumeric symbols.
- (4) Recognition Equipment, Inc., a page reader that operates at a rate of 2400 char/sec. on alphanumeric and special symbols.
- (5) NCR, UNIVAC, Philco, and RCA also have document scanning models.

B. Graphic Recorders

These devices extract information from previously recorded images and convert it into digital form. There are three basic types

APPENDIX D. (Continued)

of graphic recorders: manual curve followers, automatic curve followers, and film scanners.

(1) Manual Curve Followers

This device consists of a movable arm connected to location indicators with a recording mechanism. A man directs the "movable arm" over the data source. The location positions are recorded in digital notation. The following companies produce these devices:

- (a) Aristo Unitech Corp., Model 8840/8850;
- (b) Auto-Trol, Inc., Models 3400, 3929, and 3700 series;
- (c) Benson-Lehner, Models 099D, Larr-VH, and LARR-D;
- (d) Calma Corp., Model 302;
- (e) Concord Control, Inc., Floating Arm Recorder;
- (f) Data Equipment Co. and Bolt, Beranek & Newman, Inc., Grafacon 1010 (the RAND tablet); and
- (g) Edwin Industries, Pencil Follower.

(2) Automatic Curve Followers

This device performs similarly to its manual counterpart. At the end of the arm is a photosensitive head which follows the source line being recorded. CALCOMP, Inc. of California, produces a Model 471 which searches for and automatically traces continuous lines.

(3) Film Scanners

This type of device scans a frame of previously developed film. The pattern on the film is converted to digital notation and recorded for subsequent pattern analysis by a general purpose computer. Companies manufacturing these devices are:

- (a) Information International, Inc., three models (PFR-1, 2, and 3) which record scanned data on magnetic tape;
- (b) General Precision, Inc's., LINK Group, a model that is on-line to an IBM 7040; and
- (c) IBM, Model 2281 is on-line to the System 360, production of this particular model has been halted.

APPENDIX D. (Continued)

III. DATA VIEWING DEVICES

The two kinds of data viewing devices are plotters and certain kinds of CRT displays. Plotters are used for producing charts, graphs, printed reports, and design specifications. Data viewing displays are used for tabular or graphic reports, and monitoring processes.

A. Plotters

The following two kinds of plotters will be discussed: pen, and film. Pen plotters are basically drafting machines which can be driven by a computer in which the "images-to-be-drawn" are developed. Film plotters photographically record the image of a small cathode ray tube. This small film image requires projection for viewing.

(1) Pen Plotters

Four basic items are necessary for these devices: storage media for the plotting commands, a recording instrument for plotting in two dimensions, a surface flat-bed or drum on which the plot is recorded, and a mechanism for translating plotting commands into the proper sequence for the recording instrument. Companies producing these devices are:

- (a) Airborne Instruments, Inc. has the Orthomat Model which can use a teletype as its basic input, hence can be remotely driven from a CPU;
- (b) Arvin Systems, Inc., and Aristo Unitech Corp. have pen plotting models;
- (c) Auto-Trol Corp. produces the Model 6000 Series which can be driven by the IBM 1620;
- (d) Benson-Lehner Corp. has the following basic models:
 - (i) The Draftomatic, a drum plotter which can be driven directly by an on-line computer or driven by computer data stored on magnetic tape;
 - (ii) The Delta Systems, a drum plotter which can be driven by punch card or magnetic tape data;

APPENDIX D. (Continued)

- (iii) The DDS, a drafting plotter which has its own stored-program in a 4K core memory and can use an ASR 33 teletype as an input mechanism;
 - (e) California Computer Products, Inc., CALCOMP, has three models all of which can be driven either by an on-line computer or by magnetic tape data:
 - (i) The 500 Series, a drum plotter;
 - (ii) The 502 Model, a flat-bed plotter; and
 - (iii) The 700 Series, a drum plotter;
 - (f) DISCON, Inc. produces the Model 2073 Plotter which is driven by paper tape or cards but cannot be on-line to a CPU;
 - (g) Electronic Associates produces the Model 3000 Plotter which can be driven by analog input devices and magnetic tape data;
 - (h) The Gerber Scientific Instrument Co. has the following models, both of which can be on-line to a CPU or driven by magnetic tape data, paper tape data, and card data:
 - (i) The 600/800 Series, which can function up to 750 inches/second; and
 - (ii) The 1000/2000 Series, which has a maximum of 32K core available as an option;
 - (i) Milgo Electronic Corp. has two models, one of which functions with digital data equipment and the other with analog data equipment;
 - (j) Systems Engineering Labs., Inc. has models which function on-line with a CPU and can be a maximum of 50 feet removed from a CPU in a local environment.
- (2) Film Plotters

Four basic items are necessary for these devices: storage for the 'data-to-be-plotted', a small cathode

APPENDIX D. (Concluded)

ray tube for generating data images, a film development process, and a slide projector for viewing both the plotted images and any superimposed format data. Companies producing these devices are:

- (a) Benson-Lehner produces the BL-120 model which is driven by magnetic tape data but cannot be on-line with a CPU;
- (b) The CALCOMP 835 has an incremental film plotter which can be driven either on-line by a CPU or off-line by magnetic tape data;
- (c) The Control Data 283/284, a film recorder model;
- (d) The Geo Space Corp., DP-203, a film plotter which functions on-line with a CPU and uses point plotting as the recording mode;
- (e) The IBM 2280/2, a film recorder which functions on-line with the 360/System, either locally or remotely; and
- (f) Stromberg Carlson, Inc. has four models, all of which operate on-line with a CPU and provide hardcopy; one of the models, the 4360, also provides microfiche output.

B. One-Way CRT Displays

These devices are similar to the usual television sets in the sense that one can only view the images on the screen. An oscilloscope is a good example of this kind of display device. The Marconi 2000X model without the optional keyboard is such a device and is currently being used in a manufacturing environment as a monitoring device. Another example of one-way CRT displays is the IBM 2260 without any of its input devices. Normal closed-circuit television systems perform the data viewing functions and must be considered in the classification of display devices in general.

IV. SUMMARY

This appendix has presented a survey of the various graphic display devices that permit either data entry only or data viewing only. Therefore, these devices cannot augment man/machine interaction. A combination of these devices can facilitate man/machine interaction but consideration of the possible combinations is beyond the scope of this paper. Knowledge of these devices is necessary in the planning stage of any integrated display system. For further information on these display devices, the reader should reference the Bibliography.

APPENDIX E. COMPANY INDEX

THIS APPENDIX IDENTIFIES A COMPANY WITH ONE OR MORE PRECEDING APPENDICES IN WHICH THEIR DISPLAY DEVICES ARE DESCRIBED. IN ADDITION, THE ADDRESS OF THE CORPORATE HEADQUARTERS IS PROVIDED.

<u>COMPANY NAME</u>	<u>APPENDICES</u>
A.B. DICK COMPANY 5700 WEST TOUHY AVENUE CHICAGO, ILLINOIS 60648	B
ADAGE, INC. 1079 COMMONWEALTH AVENUE BOSTON, MASSACHUSETTS 02215	C
AIRBORNE INSTRUMENTS, INC. DALLAS, TEXAS	D
ARVIN SYSTEMS, INC. DAYTON, OHIO	D
AUTO-TROL, INC. ARVADA, COLORADO 80002	D
BENSON-LEHNER CORPORATION VAN NUYS, CALIFORNIA	D
BOLT, BERANEK AND NEWMAN, INC. DATA EQUIPMENT DIVISION 15808 WYANDOTTE STREET VAN NUYS, CALIFORNIA 91406	B, D

COMPANY NAME

APPENDICES

BUNKER-RAMO CORPORATION
DEFENSE SYSTEMS DIVISION
8433 FALLBROOK AVENUE
CANOGA PARK, CALIFORNIA 91304

B,C

BURROUGHS CORPORATION
SECOND AVENUE
DETROIT, MICHIGAN 48232

B,C,D

CALIFORNIA COMPUTER PRODUCTS, INC.
ANAHEIM, CALIFORNIA 92803

D

CALMA COMPANY
SANTA CLARA, CALIFORNIA 95050

D

COMPUTEK, INC.
143 ALBANY STREET
CAMBRIDGE, MASSACHUSETTS 02139

C

COMPUTER COMMUNICATIONS, INC.
701 W. MANCHESTER BOULEVARD
INGLEWOOD, CALIFORNIA 90301

B

COMPUTER DISPLAYS, INC.
223 CRESCENT STREET
WALTHAM, MASSACHUSETTS 02154

C

CONCORD CONTROL, INC.
BOSTON, MASSACHUSETTS 02135

D

CONRAC CORPORATION
COVINA, CALIFORNIA

B

COMPANY NAME

APPENDICES

CONTROL DATA CORPORATION
DATA DISPLAY DIVISION
2401 NORTH FAIRVIEW AVENUE
ST. PAUL, MINNESOTA 55113

B,C,D

DATA DISC, INC.
1275 CALIFORNIA AVENUE
PALO ALTO, CALIFORNIA 94304

C

DIGITAL EQUIPMENT CORPORATION
NAYNARD, MASSACHUSETTS 01754

C

EDWIN INDUSTRIES CORPORATION
SYRACUSE, NEW YORK 13211

D

ELECTRONIC ASSOCIATES
WEST LONG BRANCH, NEW JERSEY

D

ELLIOTT AUTOMATION COMPUTERS, LIMITED
SCIENTIFIC COMPUTING DIVISION
ELSTREE WAY
BOREHAMWOOD, HERTFORDSHIRE
ENGLAND

C

FARRINGTON ELECTRONICS
SPRINGFIELD, VIRGINIA 22150

D

FERRANTI, LIMITED
AUTOMATION SYSTEMS DIVISION
SIMONSWAY, WYTHENSHAW
MANCHESTER 22
ENGLAND

B,C

COMPANY NAME -----	APPENDICES -----
GENERAL ELECTRIC COMPANY OKLAHOMA CITY COMPUTER OPERATION POST OFFICE BOX 129 400 N.W. 39TH STREET OKLAHOMA CITY, OKLAHOMA 73101	B
GENERAL PRECISION INC. LINK GROUP SUNNYVALE, CALIFORNIA 94086	D
GEO SPACE CORPORATION HOUSTON, TEXAS 77027	D
GERBER SCIENTIFIC INSTRUMENT COMPANY HARTFORD, CONNECTICUT 06101	D
HONEYWELL EDP 60 WALNUT STREET WELLESLEY HILLS, MASSACHUSETTS 02181	B
INFORMATION DISPLAYS, INC. 333 NORTH BEDFORD ROAD MOUNT KISCO, NEW YORK 10549	C
INFORMATION INTERNATIONAL, INC. 200 SIXTH STREET CAMBRIDGE, MASSACHUSETTS 02142	C,D
INTERNATIONAL BUSINESS MACHINES CORPORATION DATA PROCESSING DIVISION 425 PARK AVENUE NEW YORK, NEW YORK 10022	B,C,D

COMPANY NAME

APPENDICES

INTERNATIONAL COMPUTERS AND TABULATORS,
LIMITED
I.C.T. HOUSE
PUTNEY, LONDON S.W. 15
ENGLAND

C

INTERNATIONAL TELEPHONE AND TELEGRAPH
CORPORATION
FEDERAL LABORATORIES
3700 EAST PONTIAC STREET
FORT WAYNE, INDIANA 46803

C

LABORATORY FOR ELECTRONICS, INC.
ELECTRONICS DIVISION
1075 COMMONWEALTH AVENUE
BOSTON, MASSACHUSETTS 02215

B

LEAR SIEGLER, INC.
ELECTRONIC INSTRUMENTS DIVISION
714 NORTH BROOKHURST STREET
ANAHEIM, CALIFORNIA 92803

B

MARCONI COMPANY, LIMITED
AUTOMATION DIVISION
CHELMSFORD, ESSEX
ENGLAND

C

MILGO ELECTRONIC CORPORATION
MIAMI, FLORIDA 33147

D

D

NATIONAL CASH REGISTER COMPANY
MAIN AND 'K' STREETS
DAYTON, OHIO 45409

C,D

PHILCO-FORD CORPORATION
3900 WELSH ROAD
WILLOW GROVE, PENNSYLVANIA 19090

B,C,D

COMPANY NAME

APPENDICES

THE PLESSEY COMPANY LIMITED
DATA PROCESSING DIVISION
SOPERS LAND
POOLE, DORSET
ENGLAND

B

RADIATION, INC.
MELBOURNE, FLORIDA

B

RADIO CORPORATION OF AMERICA
ELECTRONIC DATA PROCESSING DIVISION
CHERRY HILL
CAMDEN, NEW JERSEY 08101

B,C,D

RAYTHEON COMPANY
DISPLAYS BUILDING
60 FIRST AVENUE
WALTHAM, MASSACHUSETTS 02154

B,C

RECOGNITION EQUIPMENT, INC.
DALLAS, TEXAS

D

SANDERS ASSOCIATES, INC.
95 CANAL STREET
NASHUA, NEW HAMPSHIRE 03060

B,C

SCIENTIFIC DATA SYSTEMS, INC.
1649 SEVENTEENTH STREET
SANTA MONICA, CALIFORNIA 90404

B,C

SOCIETE INDUSTRIELLE DES NOUVELLES
TECHNIQUES RADIOELECTRIQUES
26, RUE MALAKOFF
92 ASNIERES
FRANCE

C

COMPANY NAME

APPENDICES

STROMBERG-CARLSON CORPORATION
DATA PRODUCTS DIVISION
POST OFFICE BOX 2449
SAN DIEGO, CALIFORNIA 92122

B,C,D

SYSTEMS ENGINEERING LABORATORIES, INC.
POST OFFICE BOX 9148
FORT LAUDERDALE, FLORIDA 33310

C

TASKER INDUSTRIES, INC.
7838 ORION AVENUE
VAN NUYS, CALIFORNIA 91409

C

AEG-TELEFUNKEN
BUCKLESTRASSE 3
775 KONSTANZ
GERMANY

C

TRANSISTOR ELECTRONICS CORPORATION
POST OFFICE BOX 6191
MINNEAPOLIS, MINNESOTA 55424

B

UNIVAC DATA PROCESSING DIVISION
COMPUTER GRAPHICS GROUP
2276 HIGHCREST DRIVE
ROSEVILLE, MINNESOTA 55113

B,C,D

VIATRON COMPUTER SYSTEMS CORPORATION
105 TERRANCE HALL AVENUE
BURLINGTON, MASSACHUSETTS 01803

B

WYLE LABORATORIES
SCIENTIFIC SERVICE AND SYSTEMS GROUP
128 MARYLAND STREET
EL SEGUNDO, CALIFORNIA 90245

B

BIBLIOGRAPHY

- Adams Associates, Inc., Computer Displays Review, 1968.
- Beatty, C.G., Graphic Approach to Numerical Information Processing, Proc. of the Society for Information Display Symposium, 1967.
- Bushan, A.L. and Stotz, P.J., Procedures and Standards Inter-computer Communications, AFIPS Conf., Proc., Vol. 32, SJCC 1968, pp. 95-104.
- Christensen, C. and Pinson, E.N., Multi-function Graphics for a Large Computer System, Proc. of Nat. Conf. of ACM, 1967, pp. 355-365.
- Comfort, W.T., A Computing System Design for User Service, AFIPS Conf. Proc., Vol. 27, FJCC 1965, pp. 619-626.
- Computer Design Publishing Corp., Computer Industry Annual, 1967.
- Corbin, H. and Frank, W., Display Oriented Computer Usage System, Thompson Book Co., 1966.
- Gruenberger, F., ed., Computer Graphics, Thompson Book Co., Washington, D.C., 1967.
- Hobbes Associates, Inc., Technology Applications for Tactical Data Systems, December 1966.
- Hobbs, L.C. and Theis, D.J., Low-cost Remote Terminals, Datamation, June 1968, pp. 26-32.
- Jacks, E.L., A Laboratory for the Study of Graphical Man-machine Communication, AFIPS Conf. Proc., Vol. 26, FJCC 1964, pp. 343-350.
- Levin, M.H., An Introduction to Computer Graphic Terminals, IEEE Proc., Vol. 55, September 1967, pp. 1544-1552.
- The MITRE Corp., Alternatives For Achieving A Large Panel Display Capability Within AFICCS, ESD-TR-68-131, April 1968.
- The MITRE Corp., Display Software Techniques for AFICCS, ESD-TR-68-379, August 1968.
- Newman, W.M., A System for Interactive Graphical Programming, AFIPS Conf. Proc., Vol. 32, SJCC 1968, pp. 47-54.

BIBLIOGRAPHY (Concluded)

- Sutherland, I.E., SKETCHPAD - A Man-machine Graphical Communication System, AFIPS Conf. Proc., Vol. 23, SJCC 1963, pp. 329-346.
- Sutherland, I.E., Computer Graphics, Datamation, May 1966, pp. 22-27.
- Thomas, E.M., GRASP - A Graphic Service Program, Proc. of Nat. Conf. of ACM, 1967, pp. 395-402.
- Vorhaus, A.H., General Purpose Display System, Datamation, July 1966, pp. 59-64.

DOCUMENT CONTROL DATA - R & D

(Security classification of title, body of abstract and indexing annotation must be entered when the overall report is classified)

1. ORIGINATING ACTIVITY (Corporate author) The MITRE Corporation Bedford, Massachusetts		2a. REPORT SECURITY CLASSIFICATION UNCLASSIFIED	
		2b. GROUP	
3. REPORT TITLE CLASSIFICATION OF CONSOLE DISPLAYS AND THEIR FUNCTIONAL APPLICATIONS			
4. DESCRIPTIVE NOTES (Type of report and inclusive dates) N/A			
5. AUTHOR(S) (First name, middle initial, last name) Thomas A. Mackey			
6. REPORT DATE May 1969	7a. TOTAL NO. OF PAGES 166	7b. NO. OF REFS 19	
6a. CONTRACT OR GRANT NO. F19(628)-68-C-0365	9a. ORIGINATOR'S REPORT NUMBER(S) ESD-TR-69-123		
b. PROJECT NO. 512A			
c.	9b. OTHER REPORT NO(S) (Any other numbers that may be assigned this report) MTR-814		
d.			
10. DISTRIBUTION STATEMENT This document has been approved for public release and sale; its distribution is unlimited.			
11. SUPPLEMENTARY NOTES N/A		12. SPONSORING MILITARY ACTIVITY Directorate of Planning and Technology, Electronic Systems Division, Air Force Systems Command, L. G. Hanscom Field, Bedford, Massachusetts	
13. ABSTRACT This document presents a survey of console display devices and their functional applications for the USAF command and control environment. In particular, console display devices which enhance man/machine interaction have been emphasized.			

14. KEY WORDS	LINK A		LINK B		LINK C	
	ROLE	WT	ROLE	WT	ROLE	WT
DISPLAY DEVICES CONSOLE MAN/MACHINE INTERACTION						