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Davis-Besse Nuclear Power Station

Unit No. 1

System Procedure SP 1105.11

Safety Parameter Display System Operating Procedure

NUCLEAR SAFETY RELATED

Record of Approval and Changes

Prepared By Stan Batch — Date 1/21/85

Submitted By _____ Section Head — Date 2/22/85

Recommended By _____ SRB Chairman — Date MAR 27 1985

QA Approved N/A Quality Assurance Director — Date _____

Approved By _____ Plant Manager — Date MAR 27 1985

Revision No.	SRB Recommendation	Date	QA Approved	Date	Plant Manager Approval	Date

1.0 PURPOSE

This procedure's main purpose is to describe how to use the Safety Parameter Display System (SPDS). This procedure does not discuss the historical basis for SPDS or go into an extended discussion of the design basis. This information is available in the Davis-Besse SPDS Safety Analysis Report (to be completed by May 1, 1985).

The principal purpose of the SPDS is to aid the Control Room personnel during abnormal and emergency conditions to determine the safety status of the plant. The SPDS displays available in the Control Room are also available in the Technical Support Center (TSC) and Emergency Control Center (ECC) to aid in the assessment of plant conditions both during normal and emergency operation. Information from plant process instrumentation provides input to both the plant process computer (MODCOMP) and a separate multiplexer (Validyne) which is used as the primary source of data to the SPDS. Information from the plant process computer via the multiplexer is then transmitted to the Davis-Besse Administration Building. The computer system located in the Technical Support Center receives the information, stores the information, and generates the displays necessary for the SPDS displays. The information received from the Station is stored in a circular file for a period of 24 hours.

Two different types of display devices are available in both the Control Room and Technical Support Center. The Ramtek units are the primary SPDS display devices. These units have complete historic capability and contain all the required SPDS displays. The Chromatics unit is also provided in the Control Room and Technical Support Center to provide increased graphics capabilities and a quicker display capability. Although the Chromatics units have all the required SPDS displays, the Chromatics units cannot be used to review historic data.

Alarm boxes are displayed on the bottom of all displays associated with the SPDS. These alarms are activated by parameters reaching specified setpoints. Associated with each of the alarm boxes is another lower level display showing an historical trend of parameters selected to assist the operator in determining the status of the associated safety function. These six lower level displays and the top level alarm box display constitute the minimum SPDS display format.

Also associated with each of the alarm boxes is an upper level display which can provide the operator with additional information in various formats that may be useful in establishing the status of a given safety function. These upper level displays are not considered a part of the minimum SPDS.

If any alarm logic is satisfied, the appropriate critical safety function box will be lit and flash. Once the operator has called up the upper or lower level display for the alarm, the critical safety function box will no longer flash, but will remain lit for as long as the alarm condition exists. The critical safety function

box will return to normal (unlit status) automatically after an acknowledged alarm clears its alarm setpoint. If any new alarm occurred while a critical safety function box is lit, the new alarm will cause the critical safety function box to again flash until the appropriate upper or lower level display is called up. Space is available on each upper and lower level display to indicate which alarm condition has caused the critical safety function to be lit. For example, if a low pressurizer level occurs (less than ten inches), the Primary critical safety function box will be lit and flash until a primary display is selected by the operator. On the primary display there will be a (PRESSURIZER LEVEL LOW) alarm printed near the bottom of the screen.

The lower level trend displays of the Davis-Besse SPDS are designed to provide the operator with historical information useful in determining the status of the critical safety functions. Each lower level display features trends and instantaneous values of plant parameters that are primary indicators of the status of the associated critical safety function. Current values of each trend parameter are provided at the right hand margin of each display, along with the parameter point identification number. This instantaneous data, the graphically trended data, and the corresponding scale information are color coded to allow simple identification of each parameter. The trend display provides a minimum of 25 minutes of historical data plotted from left to right, up to the zero time scale indication. As current data is displayed, it is added to the trend until the screen is filled. At that point, the trends are scrolled to the left in one five minute increment to return to the end of the trends to the zero time scale. If the computer point is identified as being invalid, that information is being provided to the user by displaying an instantaneous value of -99.0 printed in white in the right hand margin of the display.

Additional information on the display parameters and the alarms for each of these displays is available in the Davis-Besse SPDS Safety Analysis Report. Operation of the unit will be discussed in Section 4 of this procedure.

2.0 PRECAUTIONS AND LIMITATIONS

None

3.0 REFERENCES

3.1 Toledo Edison submittal letter, Serial Number 1011, dated November 30, 1983

3.2 Davis-Besse Unit 1 SPDS Safety Analyis Report

4.0 NORMAL OPERATION

4.1 Access From the RAMTEK Terminal

4.1.1 Turn terminal on by depressing the upper half of the black power switch (also see Figure 3 for RAMTEK layout).

4.1.2 Type LOGIN TSC | RETURN |

1. This message will then appear on the screen:

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- PLEASE BE PATIENT -
- LOADING FUNCTION KEYS -
- THIS WILL TAKE APPROXIMATELY 1 MINUTE --
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2. After approximately one minute, the TSC MENU will be displayed:

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                TSC MENU

        f1 - SPDS
        f2 - CRT DISPLAYS
        f3 - HARDCOPY
        f4 - GROUP ASSIGNMENTS
        f5 - DOSE CALCULATIONS
        f6 - ENGINEERING AIDS
        f7 - OPERATOR AIDS
        f8 - SPDS TEST VERSION
        f9 - SPARE
        fa - TSC MENU
        fb - LOGIN ON SYSTEM B
        fc - LOGOUT
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NOTE: The color scheme is as follows:

Blue - Currently Available
Yellow - Proposed - Currently Unavailable
Green - Special Purpose

3. By depressing | f1 | the SPDS Menu will be displayed:

SPDS MENU

f1 - PRESSURE VS TEMPERATURE (LP 1)	cf1 - P/T TRENDS
f2 - SPARE	cf2 - PRIMARY TRENDS
f3 - STEAM GENERATOR	cf3 - SECONDARY TRENDS
f4 - SPARE	cf4 - RADIATION TRENDS
f5 - SPARE	cf5 - CONTAINMENT TRENDS
f6 - SPARE	cf6 - REACTIVITY TRENDS
f7 - PRESSURE VS TEMPERATURE (LP 2)	cf7 - SPARE
f8 - SPARE	cf8 - SPARE
f9 - SPARE	cf9 - SPARE
fa - SPDS MENU	cfa - TSC MENU
fb - REAL-TIME MODE	cfb - HISTORICAL MODE
fc - SPARE	cfc - LOGOFF SYSTEM

4. To get into a specific display, hit the corresponding function key.

5. If you are not sure where you are at some particular time:

   a) Depress the function key | fa | to bring you back to the specific menu.

   (OR)

   b) Depress the function key | CTRL | | fa | to bring you back to the TSC MENU.

6. To Log Off:

   a) Go back to the TSC MENU (depress | CTRL | | fa | TSC MENU) and log off by depressing the | fc |- LOGOUT function key.

   (OR)

   b) Hit the | BREAK | key on the keyboard.

   Type Q | RETURN |.

   Type LO | RETURN |.

   (OR)

   c) When the program is finished running, after the OK, prompt, type LO | RETURN |.

7. Once the logged off display comes up, turn terminal off.

4.1.3 If problems are experienced, attempt to clear the system and start over by:

1. Making sure all console switches in the right hand corner of the keyboard are in the UP position (see diagram of keyboard).

2. Clearing the system

a) Press | VIEW ALPHA |

b) Press the | RESET | button on the back of the keyboard (see diagram of keyboard).

c) Press | BREAK |.

d) Type Q | RETURN |.

e) Look for the OK, on the screen, then type LQ | RETURN |,

f) Wait for another OK, on the screen, then type LOGIN TSC | RETURN |.

The function keys should be reloaded, and the TSC MENU should appear.

4.1.4 Helpful Hints

1. The | BACKSPACE | key is used to delete characters.

2. The | BREAK | key halts execution of the current updating program. When executing the CRT display program, the "break" key sends the user back to Level 1 of the display options.

3. The | VIEW ALPHA | key displays on the screen all alpha communication between terminal and the computer.

4. The | VIEW GRAPH | key displays on the screen the most recent graphic output.

5. The | VIEW BOTH | key allows the user to view both the graphic and alpha modes simultaneously.

4.2 Access From the Chromatics Terminal

4.2.1 Turn terminal on by depressing the square switch on the front of the unit. (located above the keyboard on the right side)

4.2.2 This menu will appear:

TSC MENU	
f1 - SPDS DISPLAYS	f7 - OPERATOR AIDS
f2 - SPARE	f8 - SPARE
f3 - SPARE	f9 - SPARE
f4 - SPARE	f10 - SPARE
f5 - SPARE	f11 - SPARE
f6 - SPARE	f12 - TSC MENU

NOTE: The color scheme is as follows:

Blue - Currently Available
Yellow - Proposed - Currently Unavailable
Green - Special Purpose

4.2.3 To get into a specific program, hit the corresponding function key.

4.2.4 If you are not sure where you are at some particular time:

1) Depress the function key | f12 | to bring you back to the specific menu.

(OR)

2) Depress the function key | s*f12 | to bring you back to the TSC MENU.

4.2.5 To Log Off:

1. Go back to the TSC MENU (depress | s*f12 | - TSC MENU) and depress the on/off switch.

4.2.6 If problems exist, or the system is not responding as expected, attempt to clear the system and start over by depressing the orange RESET key (top row of keyboard - far left).

*s = Shift Key

FIGURE 1

SPDS BASIC CONFIGURATION

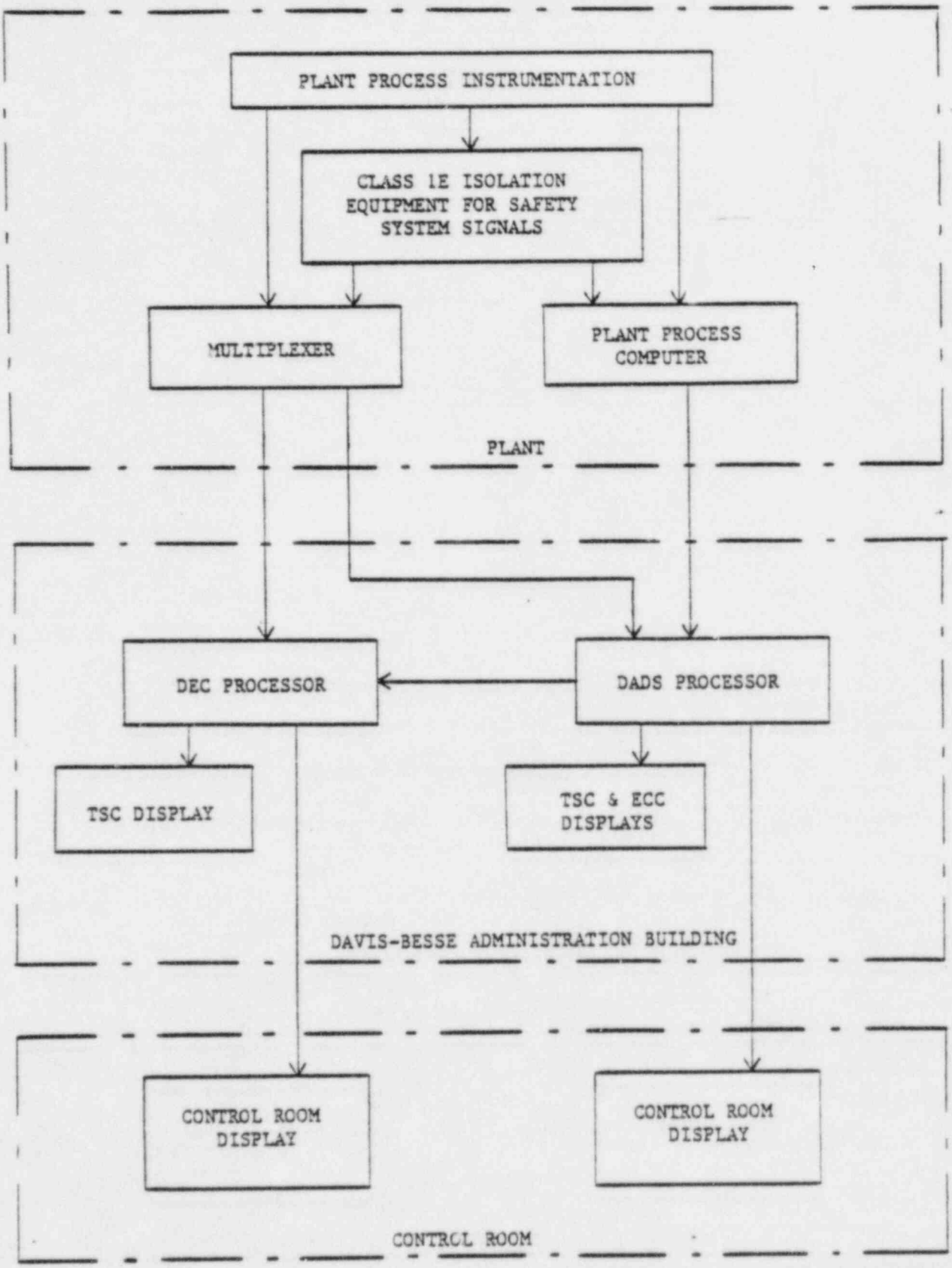


FIGURE 2

SPDS HARDWARE CONFIGURATION

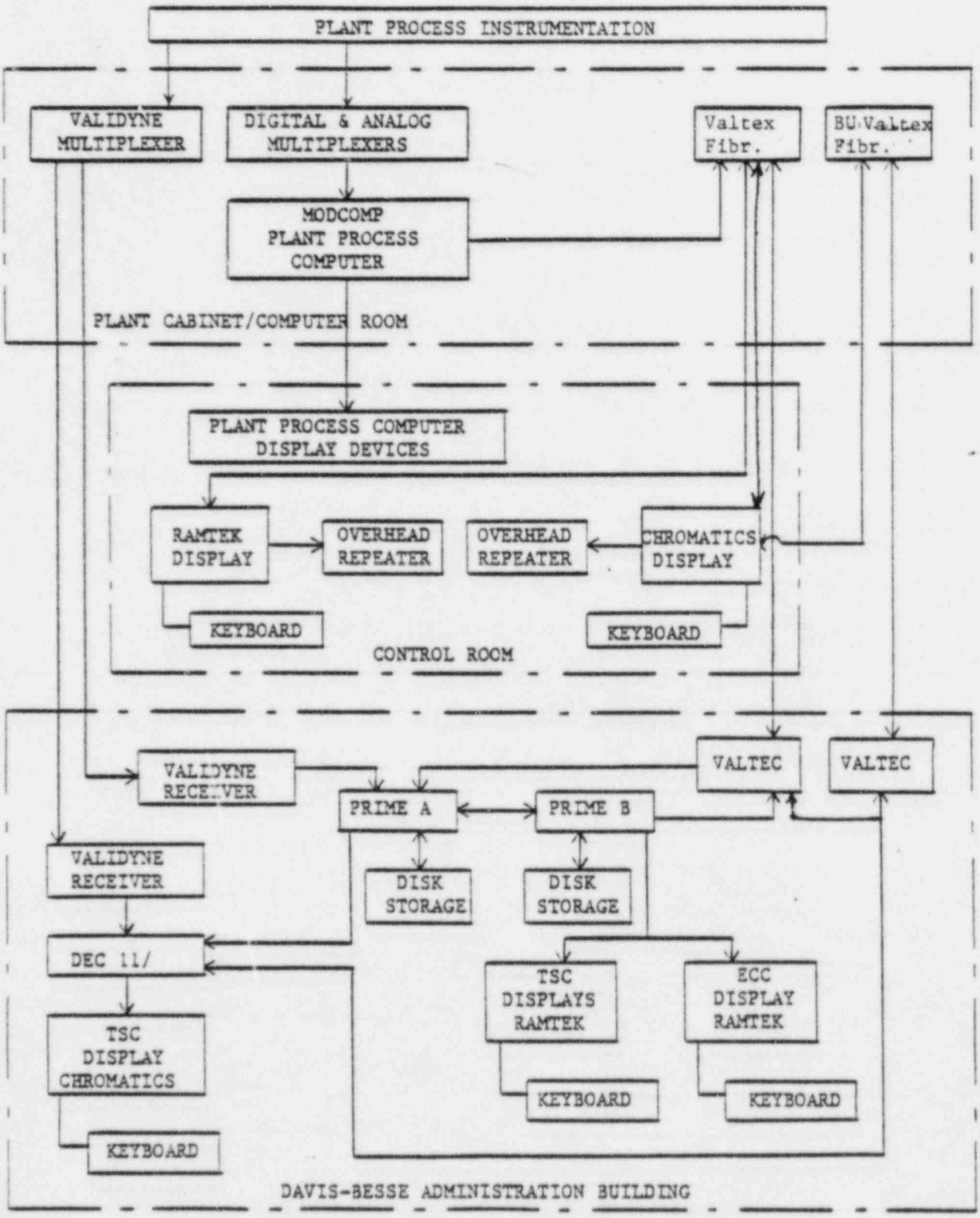
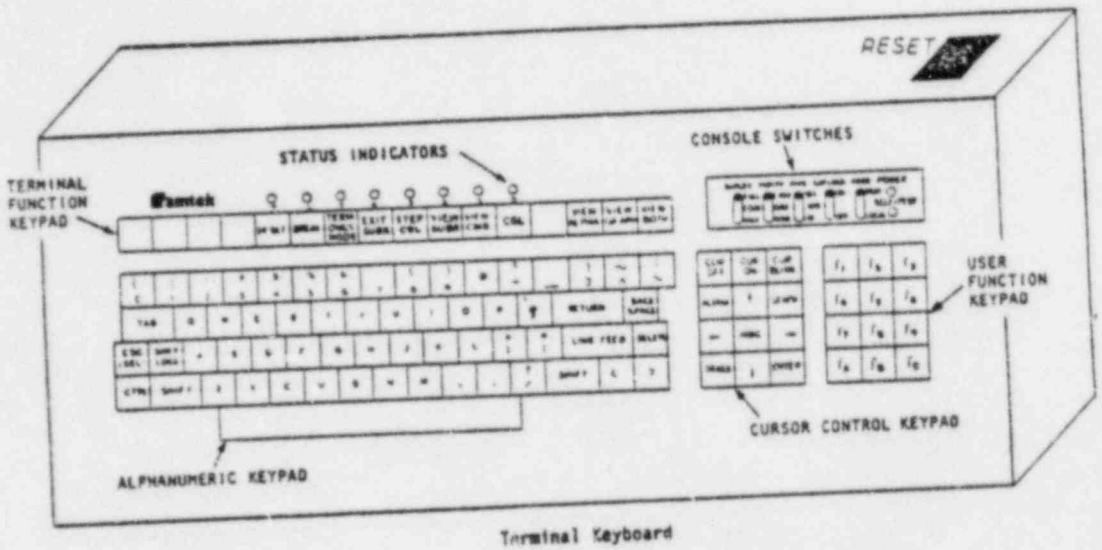


FIGURE 3

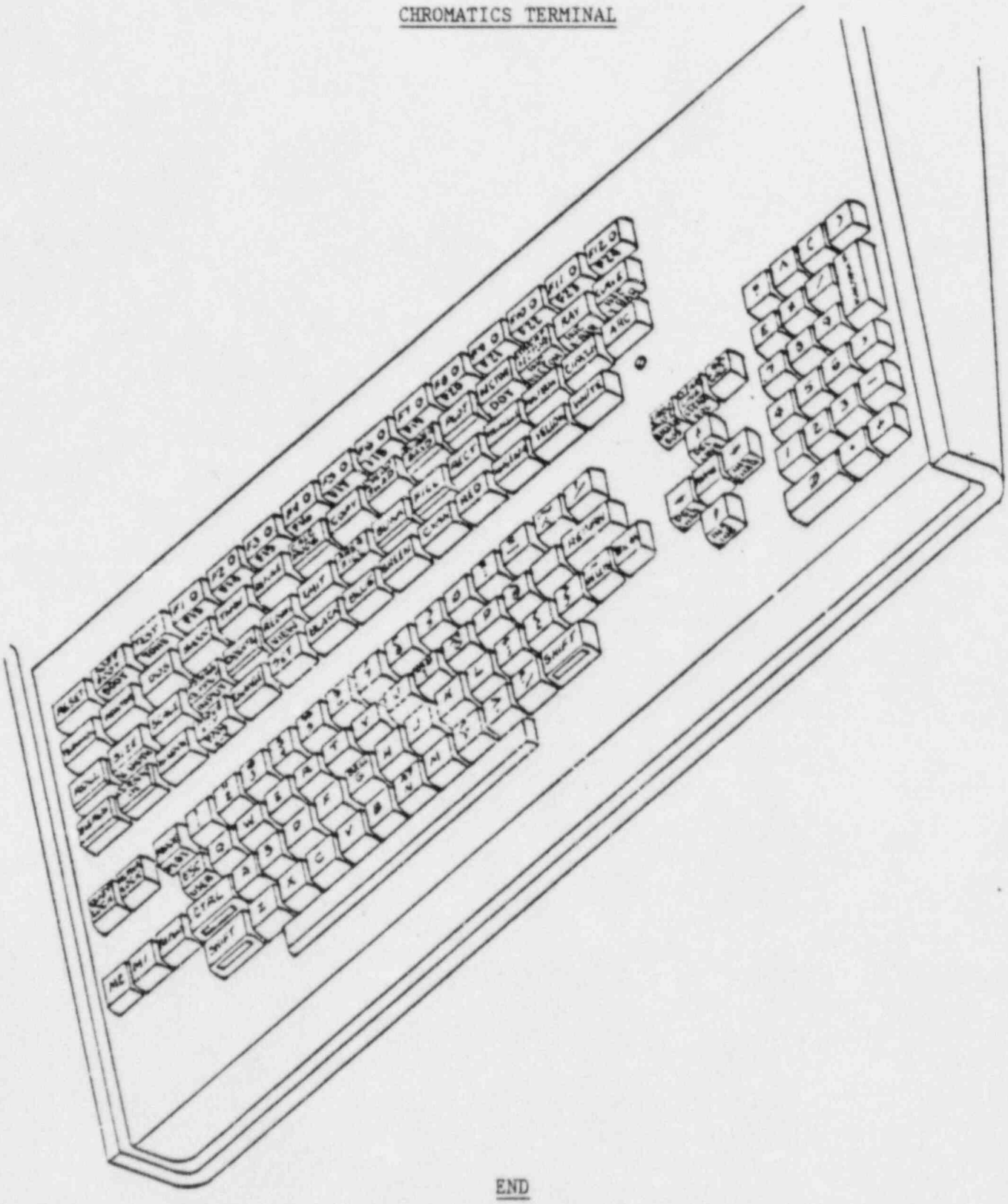
RAMTEK TERMINAL



Terminal Keyboard

FIGURE 4

CHROMATICS TERMINAL



END