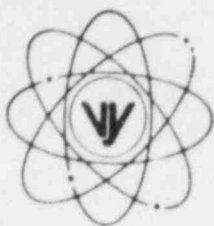


VERMONT YANKEE NUCLEAR POWER CORPORATION



RD 5, Box 169, Ferry Road, Brattleboro, VT 05301

2.C.2.1
FVY 82-119

REPLY TO:

ENGINEERING OFFICE

1671 WORCESTER ROAD
FRAMINGHAM, MASSACHUSETTS 01701
TELEPHONE 617-872-8100

November 12, 1982

United States Nuclear Regulatory Commission
Washington, D. C. 20555

Attention: Office of Nuclear Reactor Regulation
Mr. Domenic B. Vassallo, Chief
Operating Reactors Branch No. 2
Division of Licensing

References: (a) License No. DPR-28 (Docket No. 50-271)
(b) Letter, VYNPC to USNRC, FVY 82-110, dated October 12, 1982
(c) Letter, VYNPC to USNRC, FVY 81-109, dated July 31, 1981

Subject: Alternate Shutdown System

Dear Sir:

Vermont Yankee submitted additional information with regard to our proposed Alternate Shutdown System in Reference (b). During a subsequent telecon on October 29, 1982, between NRC Staff and Vermont Yankee, we agreed to provide you with our engineering solution to assure that the control cable separation between valves V10-17 and V10-18 is maintained such that a single fire would not cause both valves to fail open.

To accomplish this task, Vermont Yankee will install an isolation switch in the portion of the circuit used to open valve V10-17. This switch will be normally open such that the valve opening circuit will be inoperable whenever the valve itself is not required to be open. The isolation switch will be located outside of the Cable Spreading Room and the Control Room. This will assure that a fire-induced fault in either the Cable Spreading Room or the Control Room will not cause spurious opening of the valve.

Although we have agreed to install this isolation switch, we still maintain that it is unrealistic to assume that, in the event of a fire, both the inboard and outboard valves will open during the time it takes the operators to isolate the circuits in the Reactor Building.

In Attachment I to Reference (c), Vermont Yankee addressed three areas of the plant where the potential for the loss of normal hot and cold shutdown methods due to a single fire is high enough to necessitate the development of an alternative safe shutdown method. Two of these areas are the Cable Spreading Room and the Switchgear Room. Enclosure 1 provides additional clarification of our original design for these areas.

A001

U.S. Nuclear Regulatory Commission
Attention: Mr. Domenic B. Vassallo, Chief

November 12, 1982
Page 2

We trust that this information is satisfactory; however, should you desire additional information, please contact us.

Very truly yours,

VERMONT YANKEE NUCLEAR POWER CORPORATION

A handwritten signature in cursive script, appearing to read "R. L. Smith".

R. L. Smith
Project Engineer

JBS/dd

ADDITIONAL CLARIFICATION

During the detailed design of the Alternate Shutdown System at Vermont Yankee, refinements to our original proposed scheme for the Cable Spreading Room were necessary. The following changes should be incorporated into our submittal of July 31, 1981, FVY 81-109.

1. Attachment I, Response to Generic Letter 81-12, dated February 20, 1981

Items 3 and 5 of our response for the Cable Spreading Room and Item 5 of our response for the Switchgear Room have been clarified. Replace the original Page 2 with the attached Page 2, Revision 1.

2. Attachment III

Figures 1, 3, 5, 6, and 8 have been revised. They now show that the station battery is the normal power supply for RCIC MOV-13-16, 4 kV Switchgear Bus 4 control power, and 480 V Switchgear Bus 9 control power. In the event of a fire, these loads will be manually transferred to the new dc power supply. These revised figures are attached and should be inserted in place of those originally submitted.

3. Attachment III

Figures 2 and 7 have been revised to show changes to equipment locations. These should also be inserted in place of those originally submitted.

4. a diesel generator to provide power for the systems in Items 2 and 3,
5. the CRD system.

The modifications necessary to achieve this shutdown capability are listed below:

Switchgear Room Fire

1. A one-hour fire wall will be installed in the Switchgear Room to separate 4160 V Bus 3 and 480 V Bus 8 from 4160 V Bus 4 and 480 V Bus 9.
2. The present Switchgear Room CO₂ Fire Protection System will be converted into two systems to cover the separate areas.
3. A local RCIC control panel will be provided in the RCIC Room with the necessary controls and instrumentation to allow prompt operation of the system with the available operating crew. A separate dc supply independent of the fire areas will be provided for the RCIC System. The RCIC panel and any circuit which could be affected by the fire will be isolated from the Cable Spreading Room, Control Room, and Switchgear room.
4. A one-hour fire barrier will be installed around the feed cables to MCC9B as they pass through the fire areas containing 4160 V Buses 1 and 3.
5. Affected control cables for the reactor feed pumps and condensate pumps will be protected with a one-hour fire barrier.

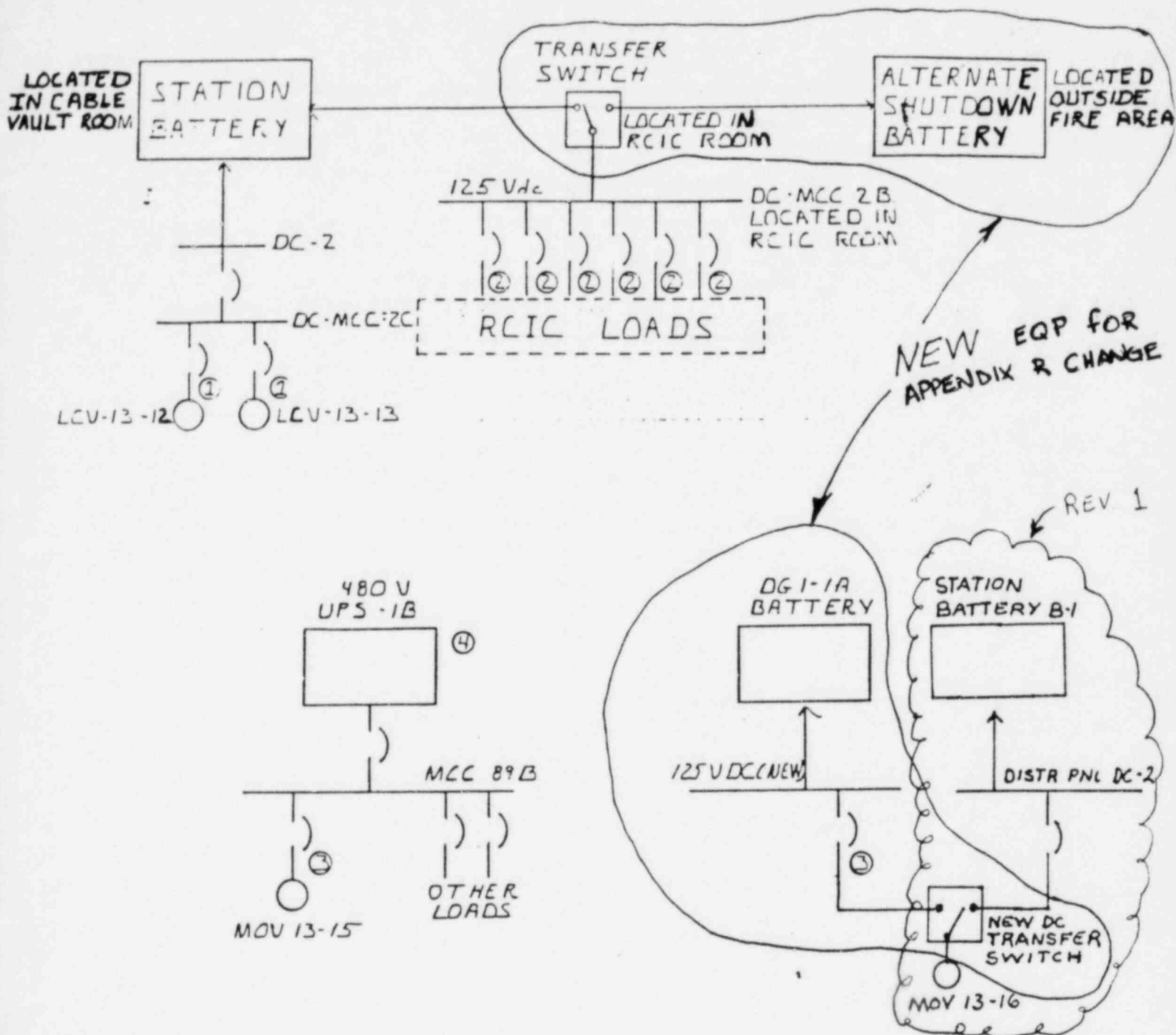
Cable Spreading Room Fire

1. Installation of a local RCIC control panel and dc power supply as described above.
2. Modifications to the RCIC governor to allow control from the local RCIC control panel and to isolate the governor from the Control Room, Cable Spreading Room, and Switchgear Room.
3. A dc power supply independent of the fire area to provide field flashing and control for the designated diesel generator and 4160 V and 480 V buses.

In the event of a fire, control power for 4160 V Bus 4 and 480 V Bus 9 will be manually transferred from the station battery to this dc power supply. Field flashing and control for the designated diesel generator will be normally supplied from the new dc power supply, so no transfer will be necessary.

4. Installation of a panel with suitable isolation devices for all electrical cables which have the potential for causing undesirable "hot short" equipment response.
5. Installation of a one-hour barrier around affected control cables for the reactor feed pumps and condensate pumps and a one-hour barrier around the power cables to MCC 9B.

RCIC ELECTRICAL MODIFICATIONS



- ① CONTROL CIRCUITS ENTERING FIRE ZONES CAN BE ISOLATED BY SWITCHING AT THE RCIC PANEL
- ② CONTROL CIRCUITS ENTERING FIRE ZONES CAN BE ISOLATED BY SWITCHING AT THE RCIC PANEL. ALTERNATE CONTROL AND INDICATION IS PROVIDED AT THE RCIC PANEL.
- ③ CONTROL CIRCUITS ENTERING FIRE ZONES CAN BE ISOLATED BY SWITCHING LOCALLY AT A PANEL OUTSIDE THE FIRE ZONES. ALTERNATE CONTROL AND INDICATION IS PROVIDED AT THE SAME PANEL
- ④ CONTROL CIRCUITS AFFECTING OPERATION OF THE UPS WILL BE ISOLATED BY SWITCHING.

FIGURE 1

REV. 1

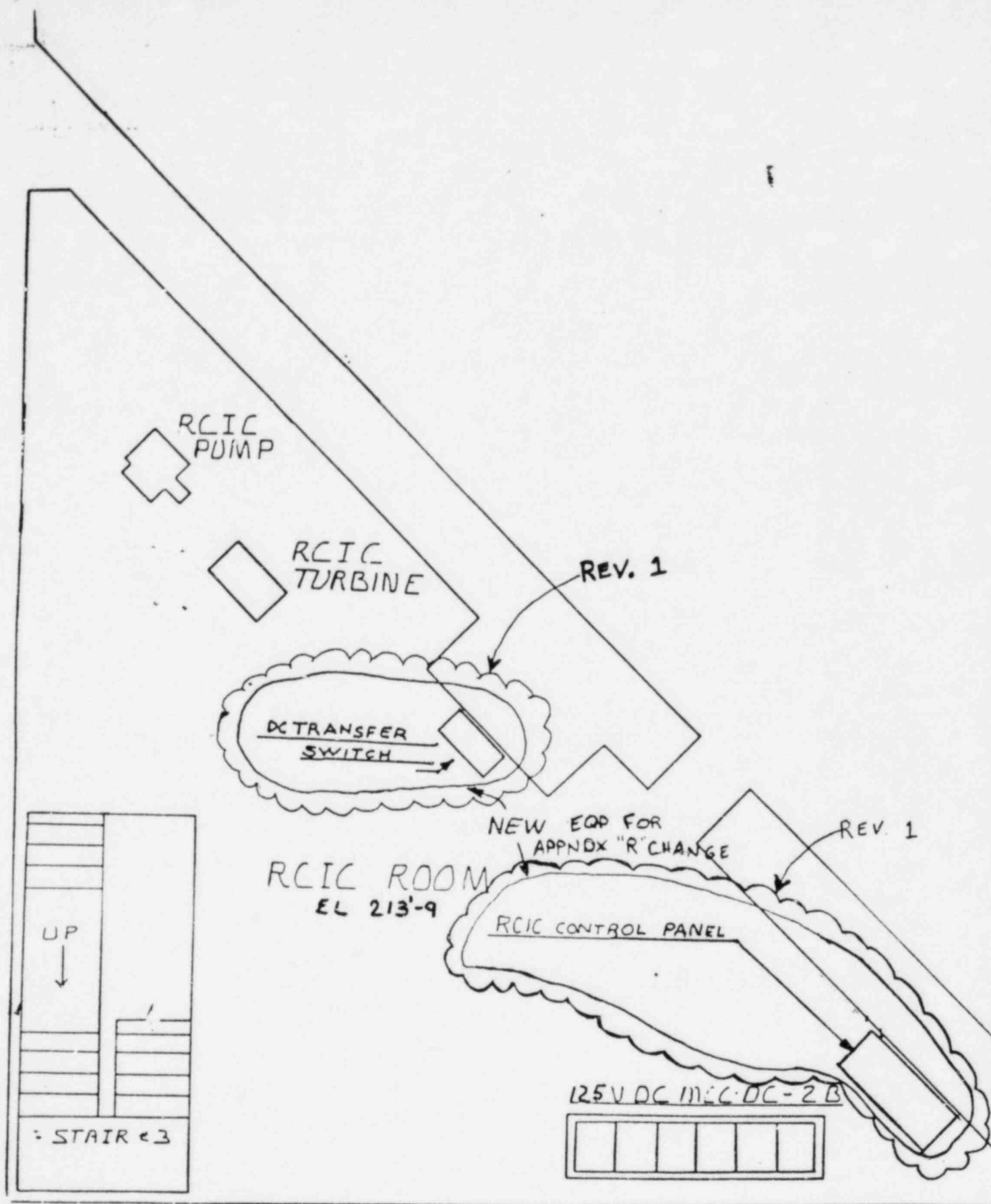
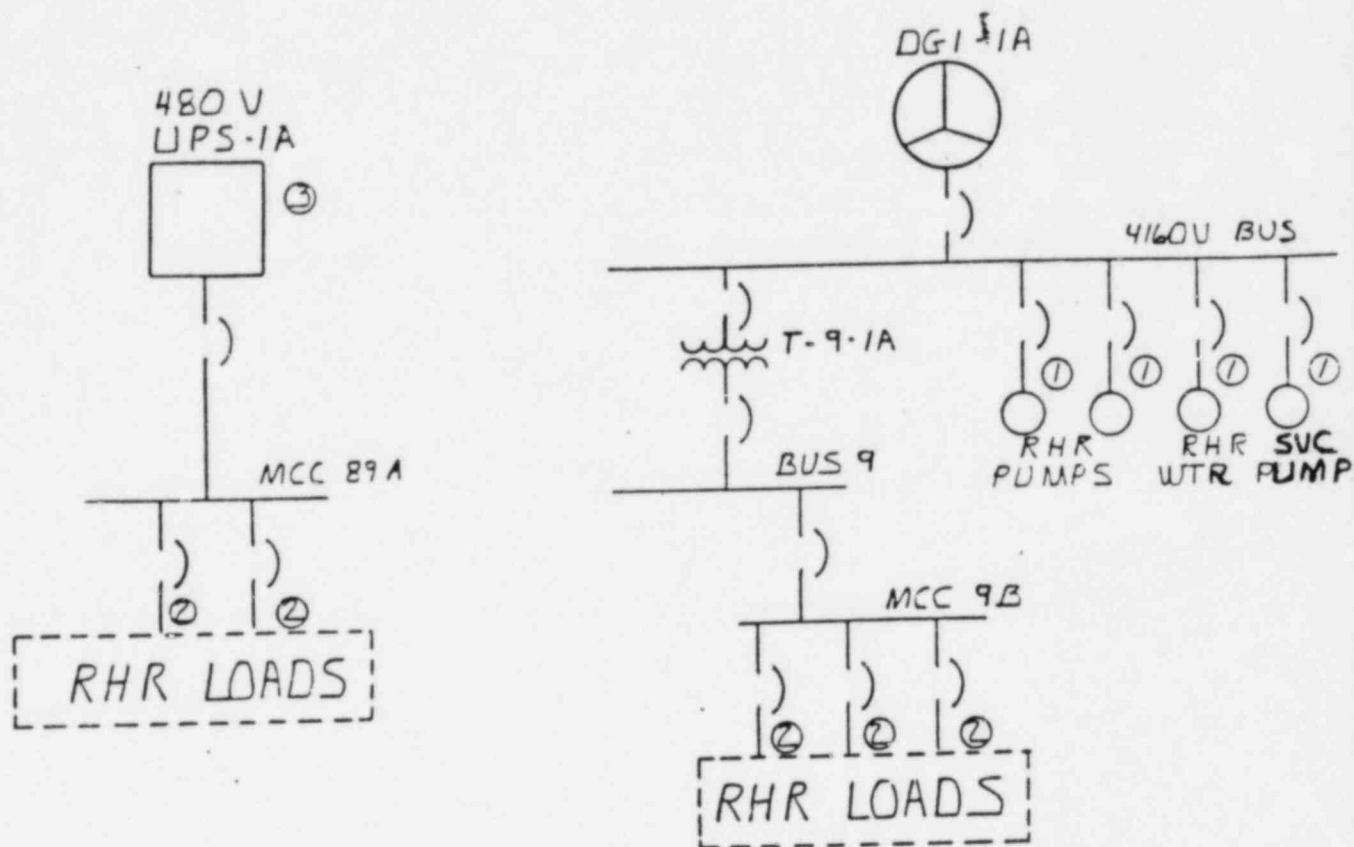


FIGURE 2

RHR



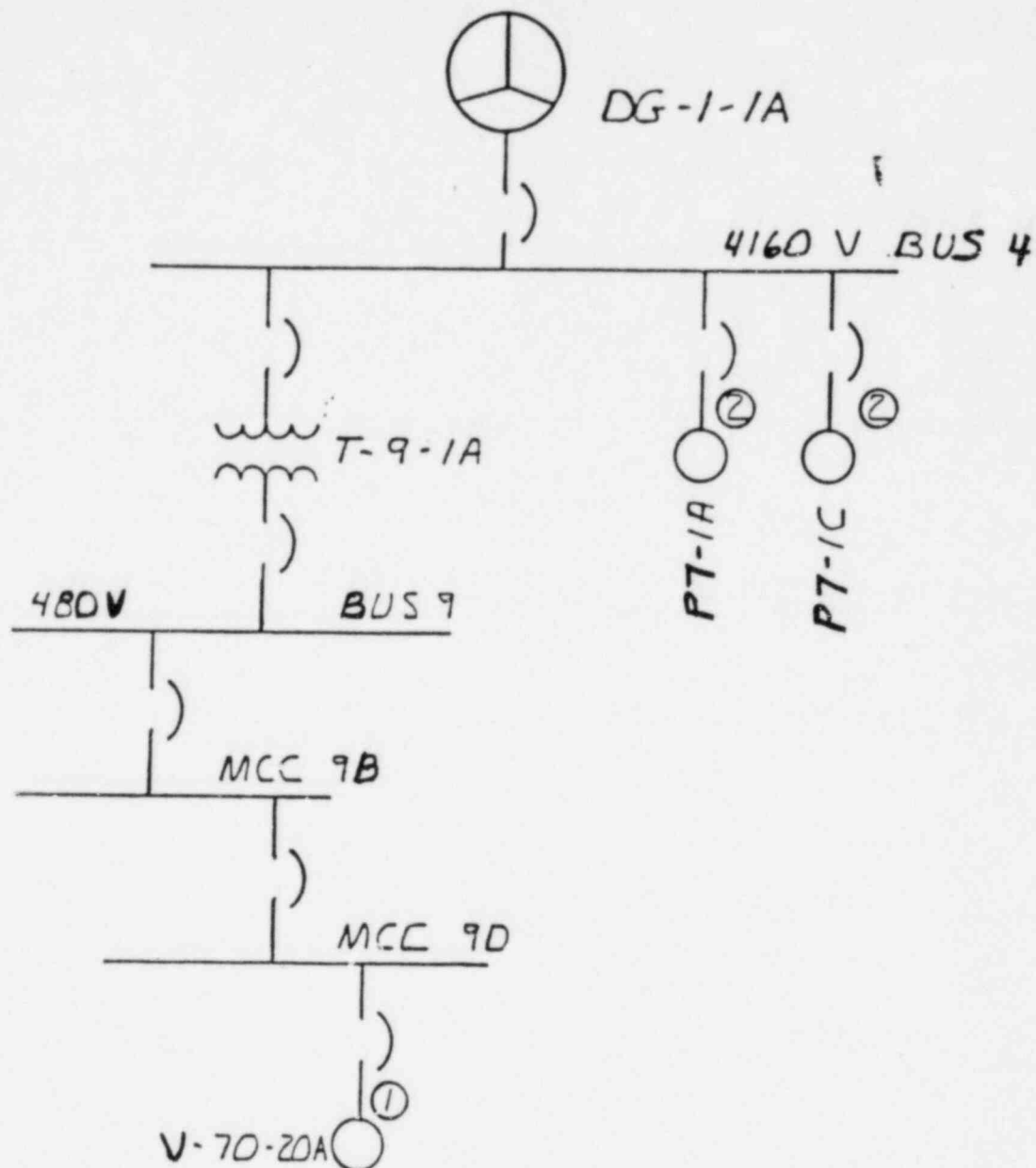
REV. 1

- ① 125 VDC CONTROL POWER INDEPENDENT OF THE FIRE ZONES WILL BE PROVIDED BY MANUALLY OPERATED TRANSFER SWITCHES CONNECTED TO THE NEW BATTERY. CONTROL CIRCUITS ENTERING FIRE ZONES WILL BE ISOLATED BY SWITCHES LOCATED IN THE INDIVIDUAL COMPARTMENTS OF THE SWITCHGEAR.
- ② CONTROL CIRCUITS ENTERING FIRE ZONES CAN BE ISOLATED LOCALLY BY SWITCHING AT THE RHR PANEL WHICH IS OUTSIDE FIRE ZONES. ALTERNATE CONTROL AND INDICATION IS PROVIDED AT THE RHR PANEL.
- ③ CONTROL CIRCUITS AFFECTING OPERATION OF THE UPS WILL BE ISOLATED BY SWITCHING.

FIGURE 3

REV. 1

SERVICE WATER

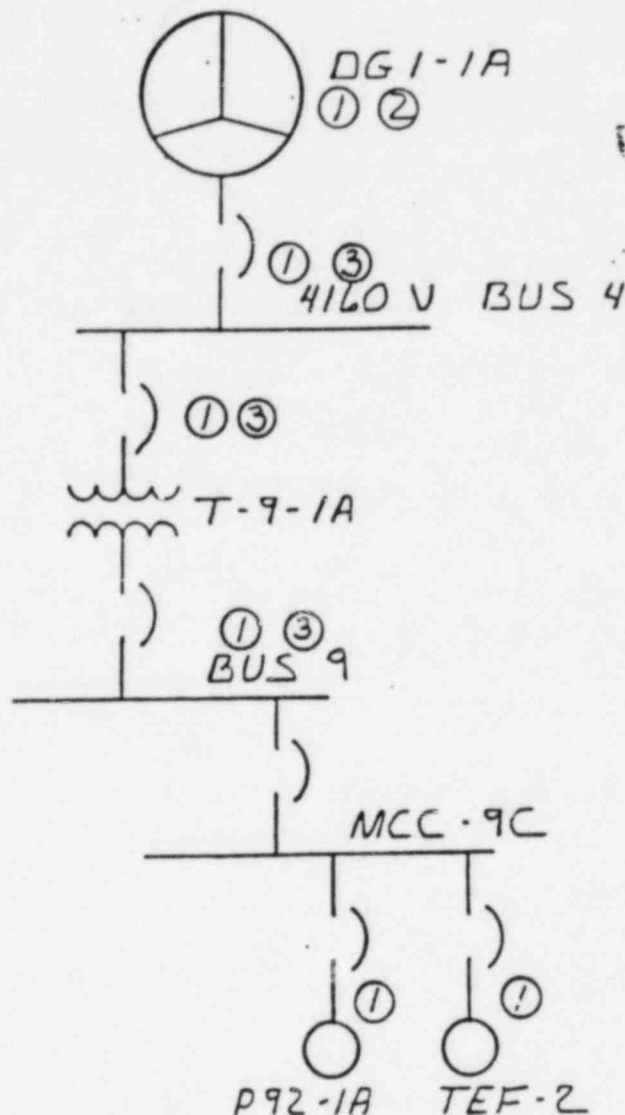


① CONTROL CIRCUITS ENTERING FIRE ZONES CAN BE ISOLATED LOCALLY BY SWITCHING AT THE RHR PANEL WHICH IS OUTSIDE THE FIRE ZONES. ALTERNATE CONTROL AND INDICATION IS PROVIDED AT THE RHR PANEL

② 125 V DC CONTROL POWER INDEPENDENT OF THE FIRE ZONES WILL BE PROVIDED BY MANUALLY OPERATED TRANSFER SWITCHES CONNECTED TO THE NEW DIESEL GENERATOR 1-1A BATTERY. CONTROL CIRCUITS ENTERING FIRE ZONES WILL BE ISOLATED BY SWITCHES LOCATED IN THE INDIVIDUAL COMPARTMENT OF THE SWITCHGEAR.

FIGURE 5

DG 1-1A



- ① CONTROL CIRCUITS ENTERING FIRE ZONES AND AFFECTING DIESEL OPERATION WILL BE ISOLATED BY SWITCHING OUTSIDE THE FIRE ZONES. LOCAL CONTROLS WILL BE PROVIDED FOR OPERATION OF DIESEL AND AUXILIARIES.
- ② 125 V DC CONTROL POWER INDEPENDENT OF THE FIRE ZONES WILL BE PROVIDED BY NEW CLASS 1E BATTERY.
- ③ 125 V DC CONTROL POWER INDEPENDENT OF THE FIRE ZONES WILL BE PROVIDED BY MANUALLY OPERATED TRANSFER SWITCHES CONNECTED TO A NEW BATTERY

REV. 1

FIGURE 6

REV. 1

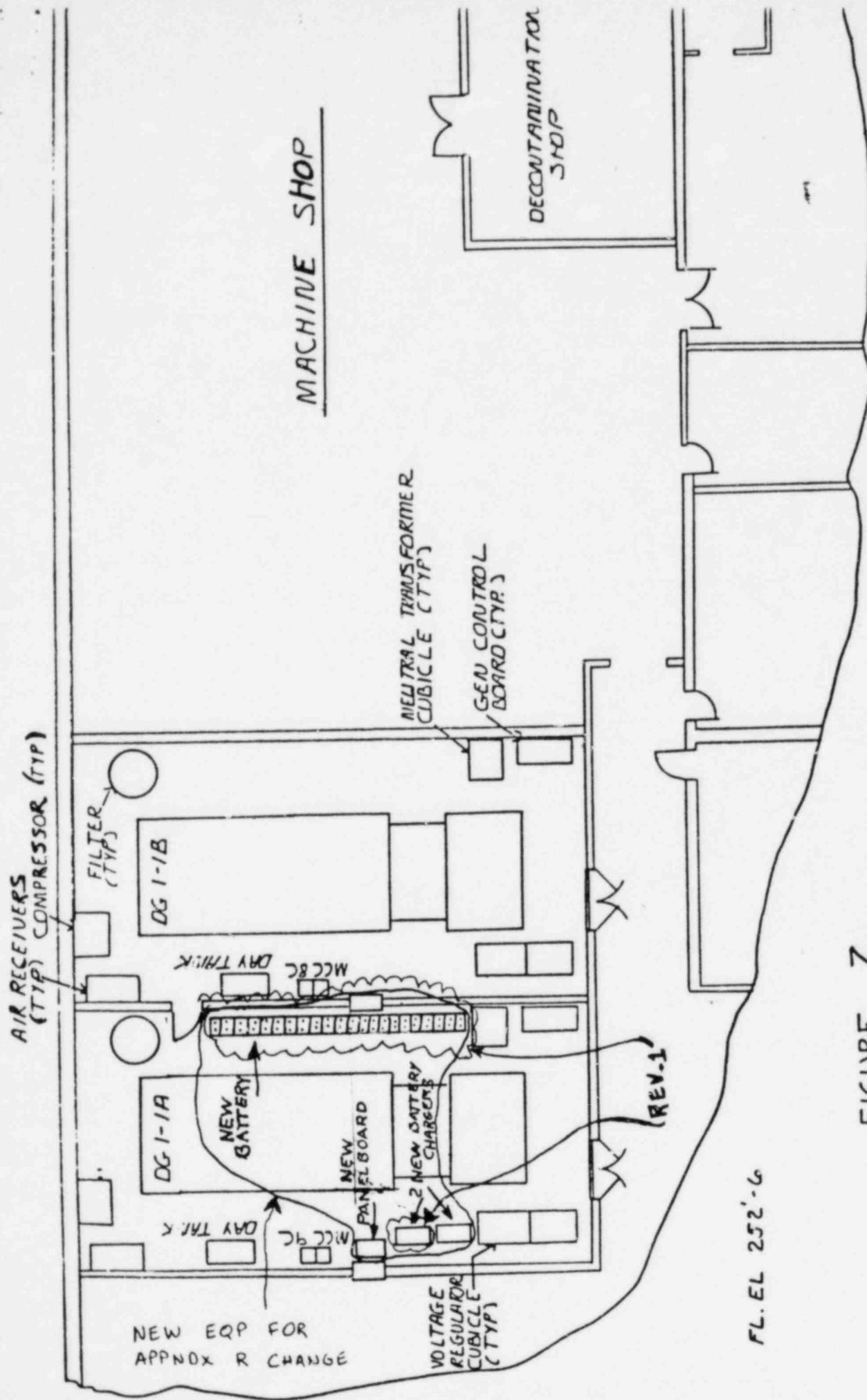


FIGURE 7

ALTERNATE SHUTDOWN DC DISTRIBUTION

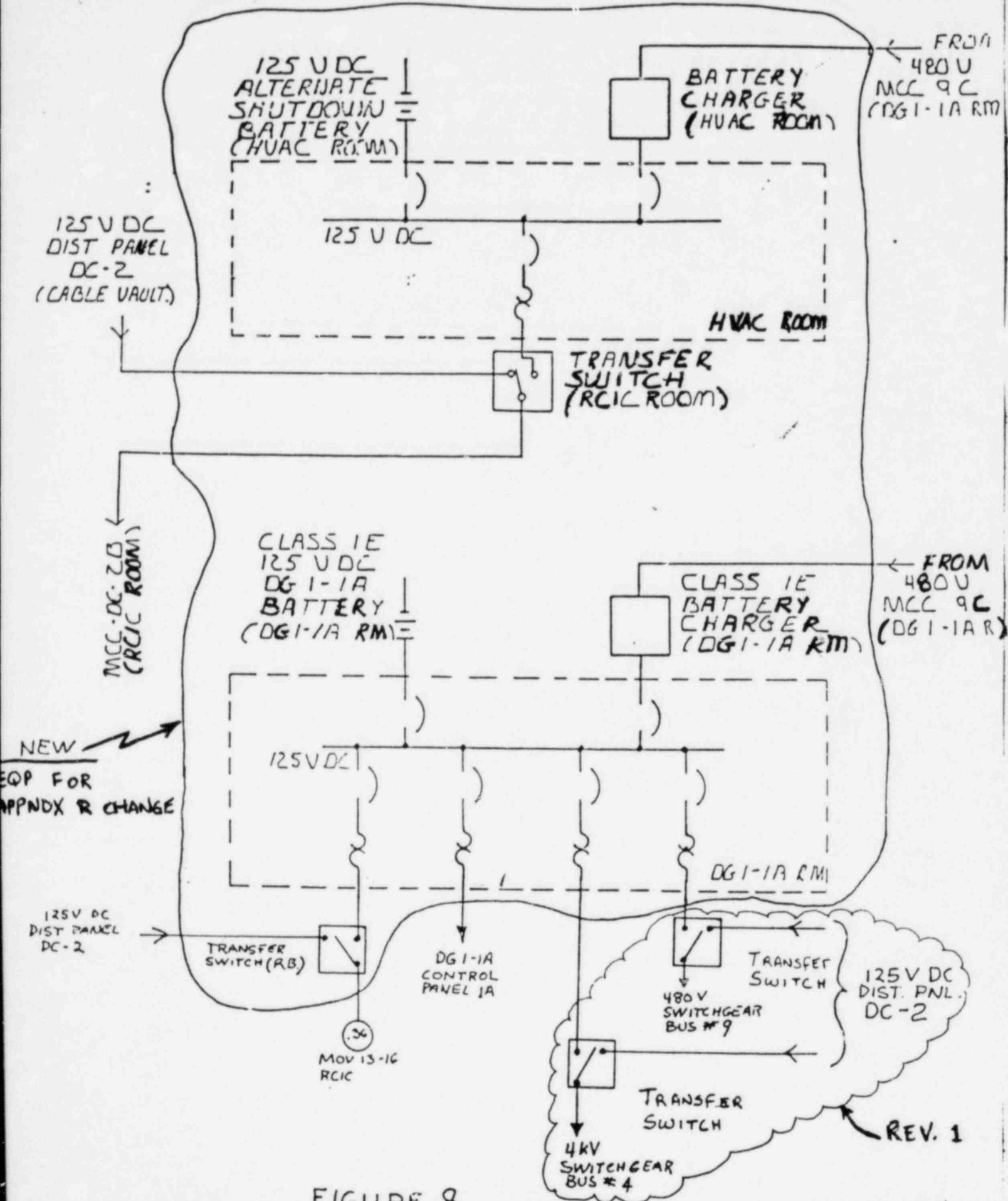


FIGURE 8

REV. 1