

# Duquesne Light Company

Beaver Valley Power Station  
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January 31, 1990

U. S. Nuclear Regulatory Commission  
Attn: Document Control Desk  
Washington, DC 20555

Reference: Beaver Valley Power Station, Unit No. 1  
Docket No. 50-334, License No. DPR-66  
Responses to R. G. 1.97 Evaluations

Gentlemen:

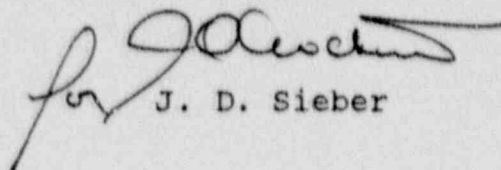
This letter provides our responses to the Regulatory Guide 1.97 (RG 1.97) variable for steam generator wide range (SGWR) level instrumentation and the RG 1.97 Safety Evaluation Report (SER) for Beaver Valley Power Station, Unit No. 1 (BVPS-1).

The NRC concern, regarding the SGWR level instrumentation, was initially identified during the Region I inspection on RG 1.97. Conference calls were held on December 14 and 21, 1989 with the NRC to discuss the NRC staff's concerns. Our letters dated December 18 and 21 documented the respective conference calls. During the conference call on the 21st, we made a commitment to provide a proposed resolution for the SGWR level instrumentation deviation. Attachment 1 provides the resolution and includes additional information relevant to this issue which supports our original evaluation.

By letter dated November 20, 1989 the NRC transmitted the SER on the BVPS-1 conformance to RG 1.97. In the letter, it was found that the BVPS-1 design is acceptable with respect to conformance with RG 1.97 except for the instrumentation associated with three variables. Our responses to these items are contained in Attachment 2.

Please contact my office if there are any questions regarding this submittal.

Very truly yours,

  
J. D. Sieber

Attachments

cc: Mr. J. Beall, Sr. Resident Inspector  
Mr. W. T. Russell, NRC Region I Administrator  
Mr. P. Tam, Sr. Project Manager  
Mr. R. Saunders (VEPCO)  
C. Anderson (Region 1)

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## ATTACHMENT 1

### Steam Generator Wide Range Level Instrumentation

#### Problem Description

The three wide range steam generator level channels are indicated and recorded on a single recorder. A failure of the power supply to the recorder would result in a loss of three wide range level indications.

The three wide range level channels are powered from separate vital busses but are routed together in neutral cable trays from the sensors to the indicating and recording device. No isolation devices are installed. Regulatory Guide 1.97 describes steam generator level as a D1 variable.

#### Response

As discussed in our letter to the NRC dated December 21, 1989, we have performed the review to resolve the SGWR level instrumentation deviation to RG 1.97. Our proposed resolution is based on the following information.

- In our letter of December 18, 1989, we provided the safety implications based on discussions in the UFSAR and with respect to the design basis events. We concluded that there are adequate diverse and independent instrumentation channels in accordance with RG 1.97 for accident diagnostics and mitigation of design basis events.
- In the same letter, we also addressed the issue of all three wide range indications appearing on a common recorder. We indicated that the wide range level indication is also provided to three separate computer systems which, although they are not 1E, are battery backed systems. We included this information on Table 1 of the letter. The Table also listed the alternate indications on the emergency shutdown panel, locally in the auxiliary feedwater pump rooms, and the control room and provided the power supply vital bus designations.
- In the same letter, we also addressed the issue of the operators knowing how to respond to a loss of wide range steam generator level. We noted that the procedures require maintaining auxiliary feedwater flow to the steam generators until level is in the narrow range, thereby providing adequate guidance. This operator action provides assurance of an adequate heat sink.

Figure 2 to this attachment provides the logic model which we developed to show that the procedures are supported by the BVPS-1 design. The figure shows that additional systems are available to mitigate conditions leading to steam generator dryout. The logic model shows several success paths for supplying 350 gpm of auxiliary feedwater to any steam generator. The system is supplemented by an additional auxiliary feedwater pump, FW-P-4, which was included to satisfy Appendix R. The 4160V electrical supply for the auxiliary feedwater system will have another power source added for Station Blackout. The model also shows the redundancy of the river water supplies.

- Finally, in reviewing the SGWR level instrumentation, we note that the configuration is similar to other three-loop plants.

Therefore, we are proposing the following resolutions to the SGWR level instrumentation deviation. Based on the above and the additional information provided in our responses of December 18 and 21, 1989, we believe that the existing configuration of the instrumentation and the design of the auxiliary feedwater system is adequate to monitor the steam generator levels and to ensure an adequate supply of auxiliary feedwater to the steam generators. Consequently, we are requesting that the NRC review this information and consider accepting the deviation on the merits of the existing design. If the review results are favorable, the SGWR level will be changed to a D2 variable for the BVPS-1.

To address the issue if the deviation is not acceptable, we will meet with you in order to come to an agreement on an acceptable resolution prior to the next refueling outage.

## Steam Generator Wide Range Level (Existing)

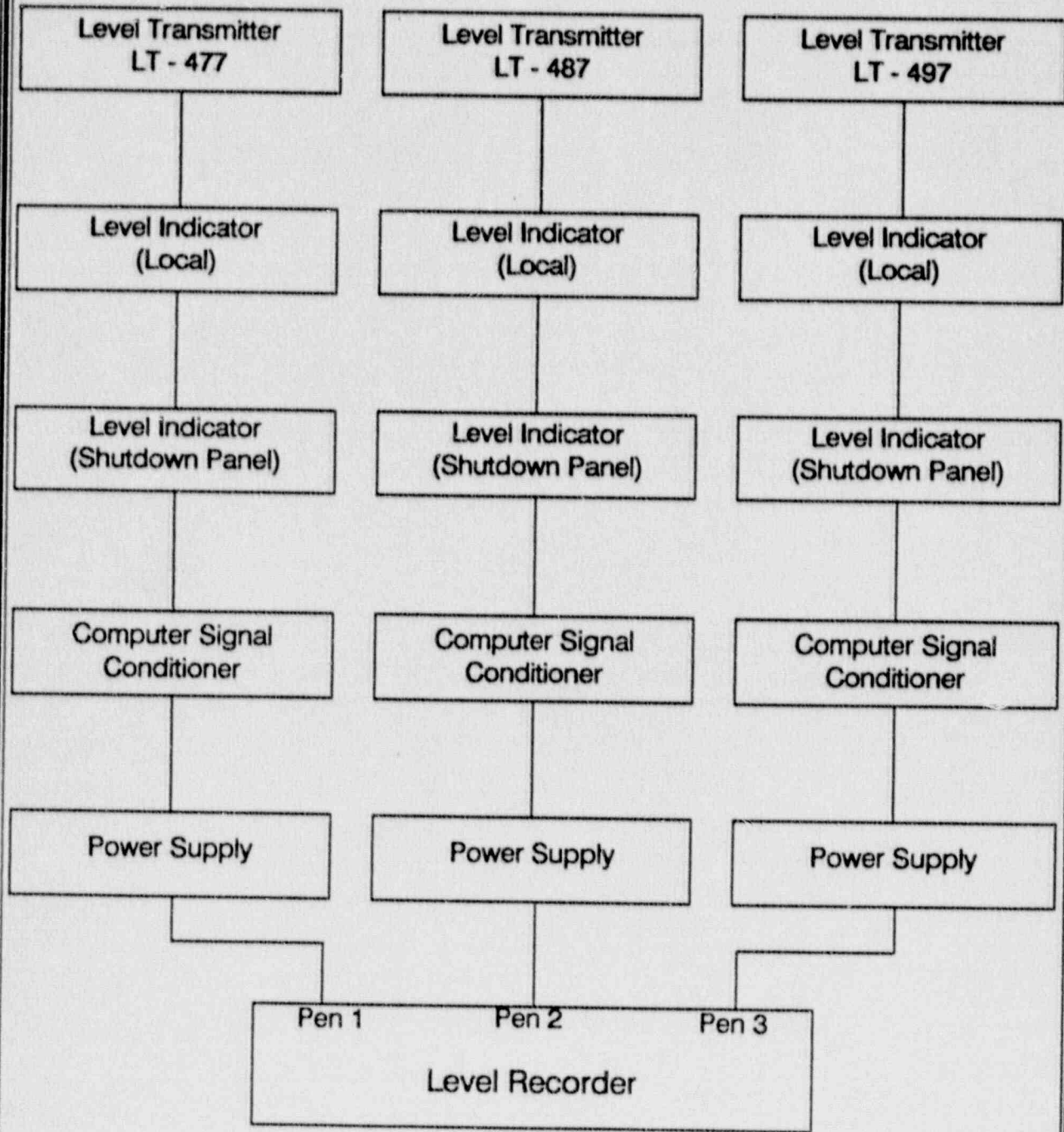


Figure 1

# SHEET A

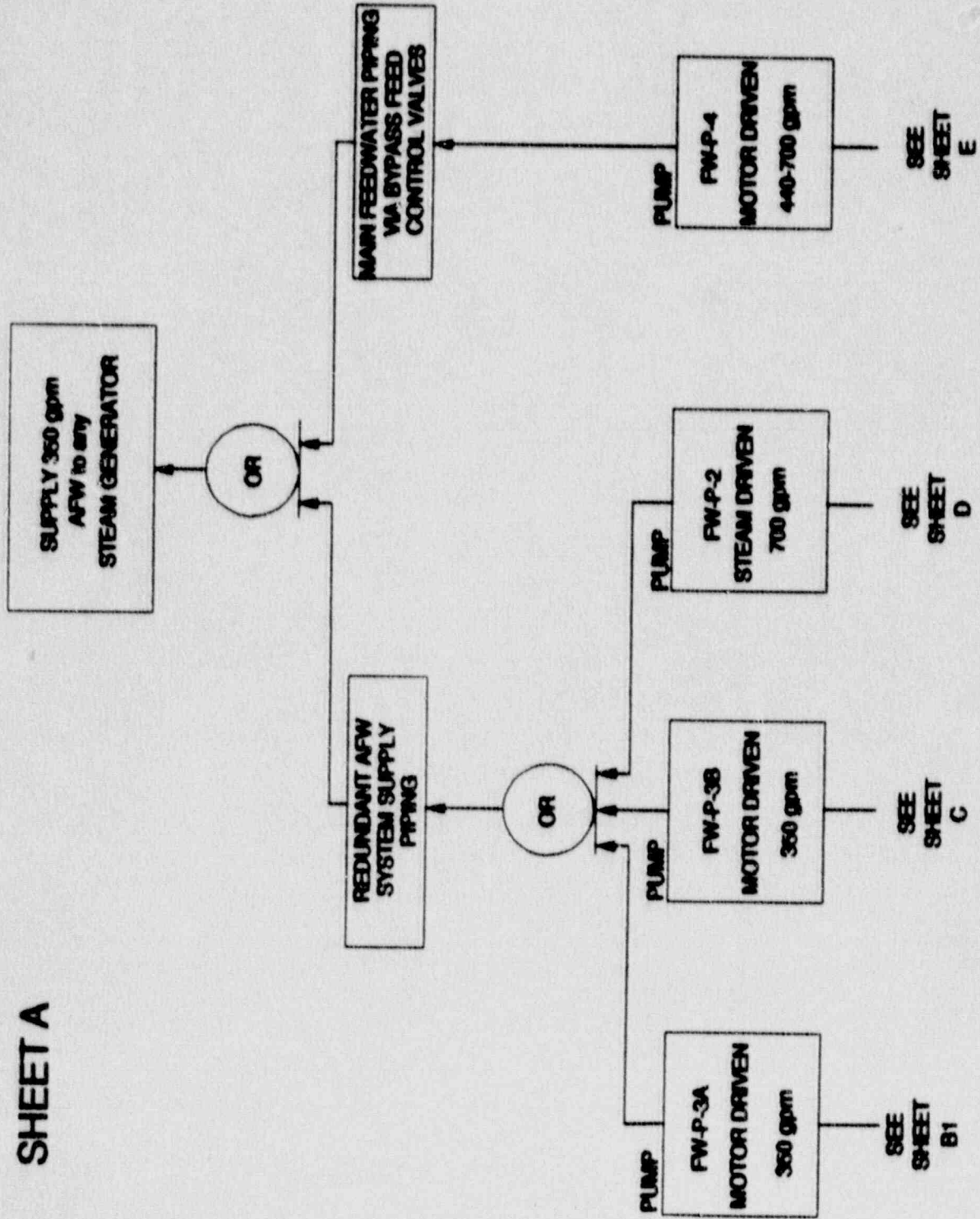
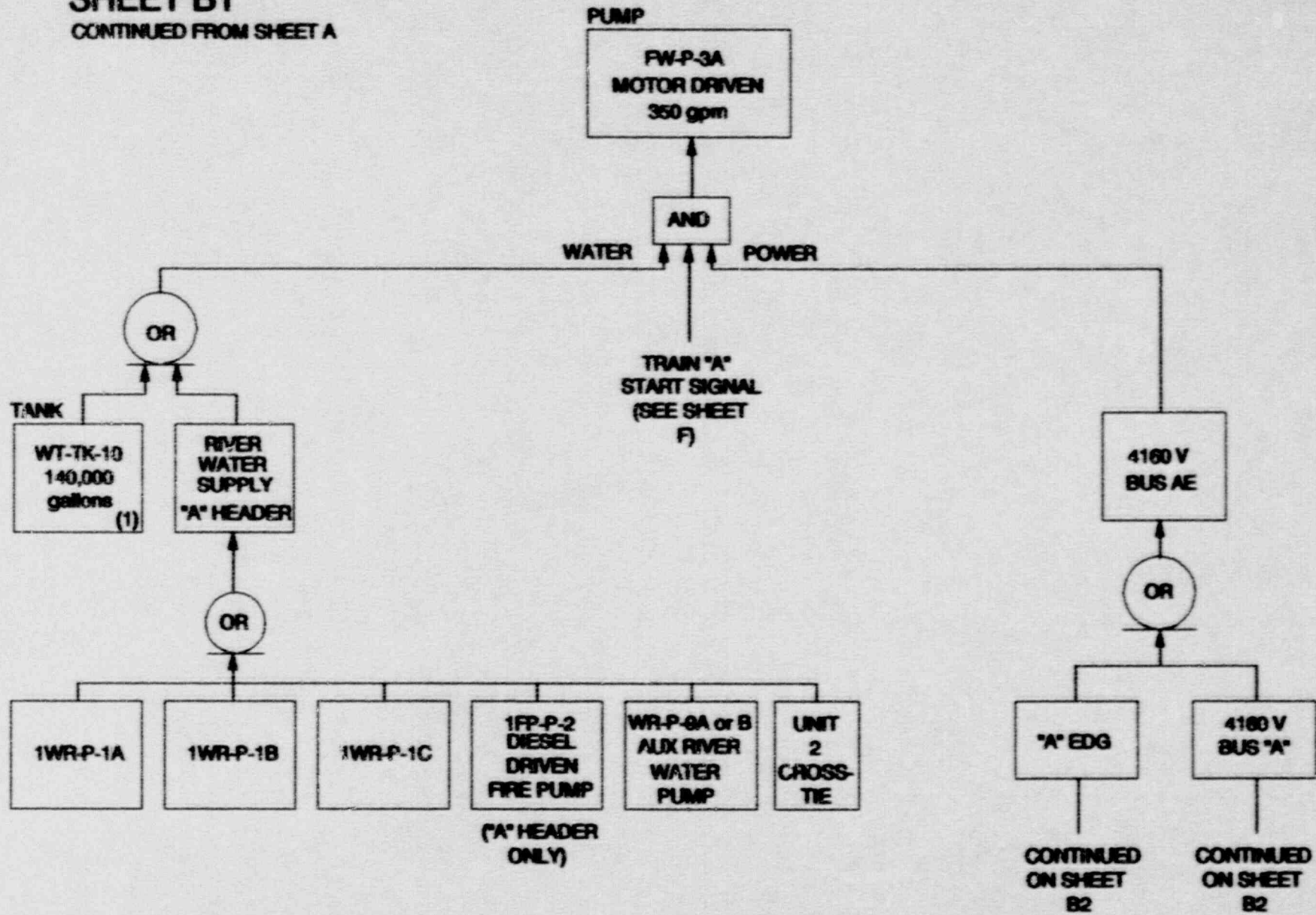


Figure 2

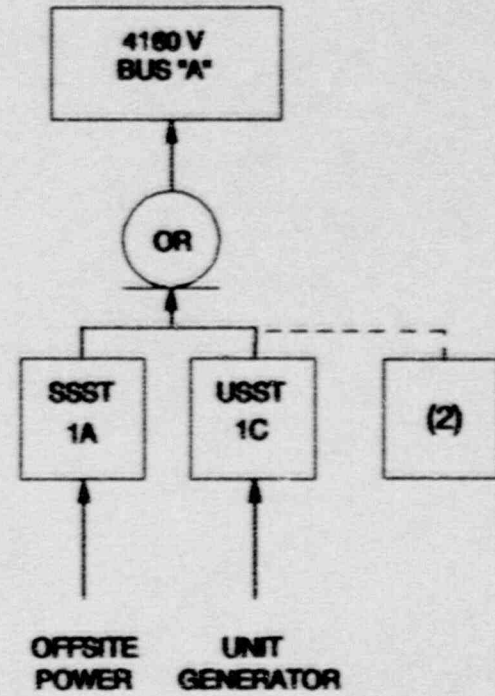
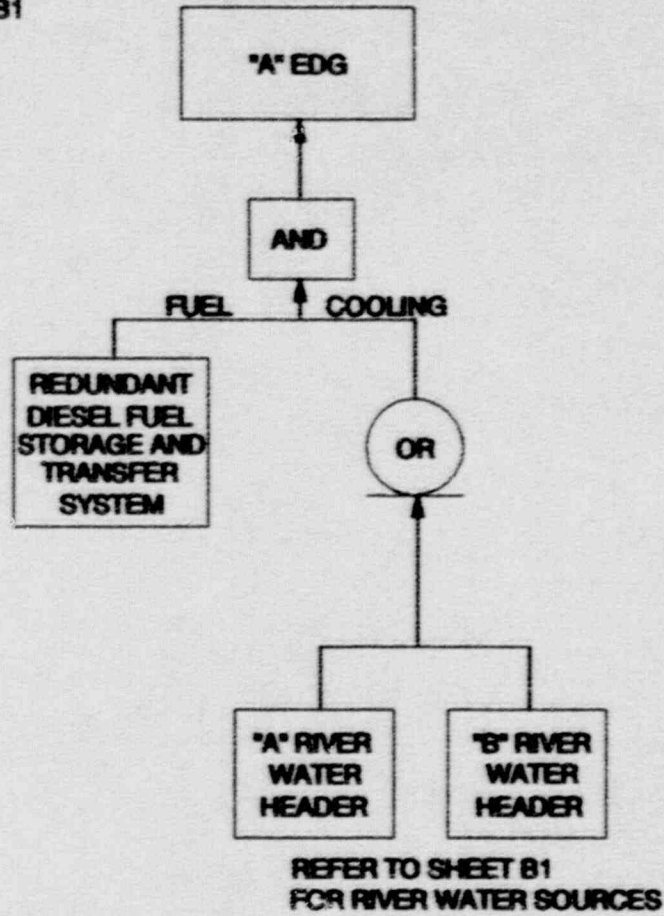
**SHEET B1**  
CONTINUED FROM SHEET A



(1) WT-TK-10 PROVIDES A COMMON SUCTION TO FW-P-3A,  
FW-P-3B AND FW-P-2

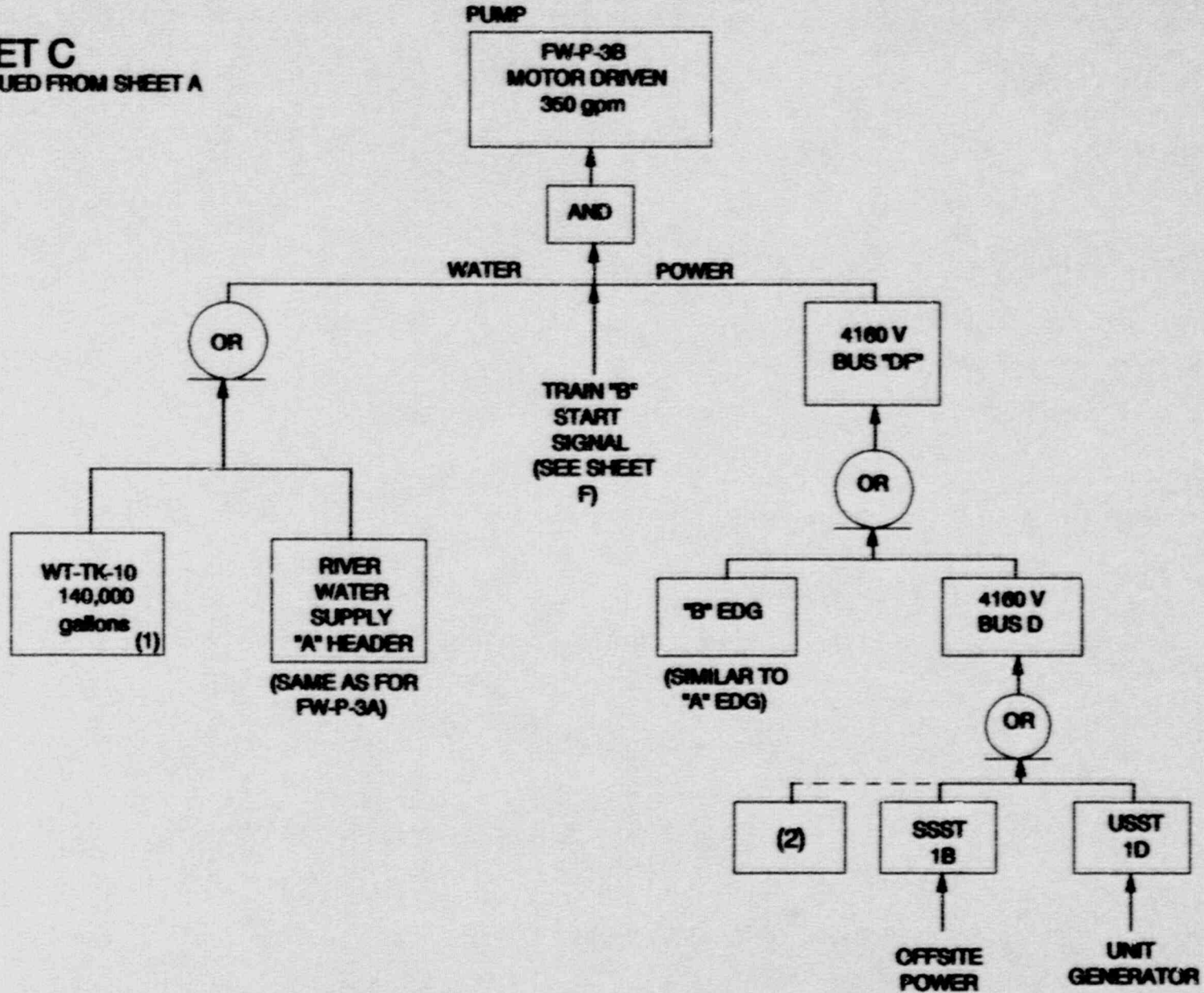
# SHEET B2

CONTINUED FROM SHEET B1



(2) FUTURE EMERGENCY SOURCE FROM BV-2 FOR STATION BLACKOUT

**SHEET C**  
CONTINUED FROM SHEET A

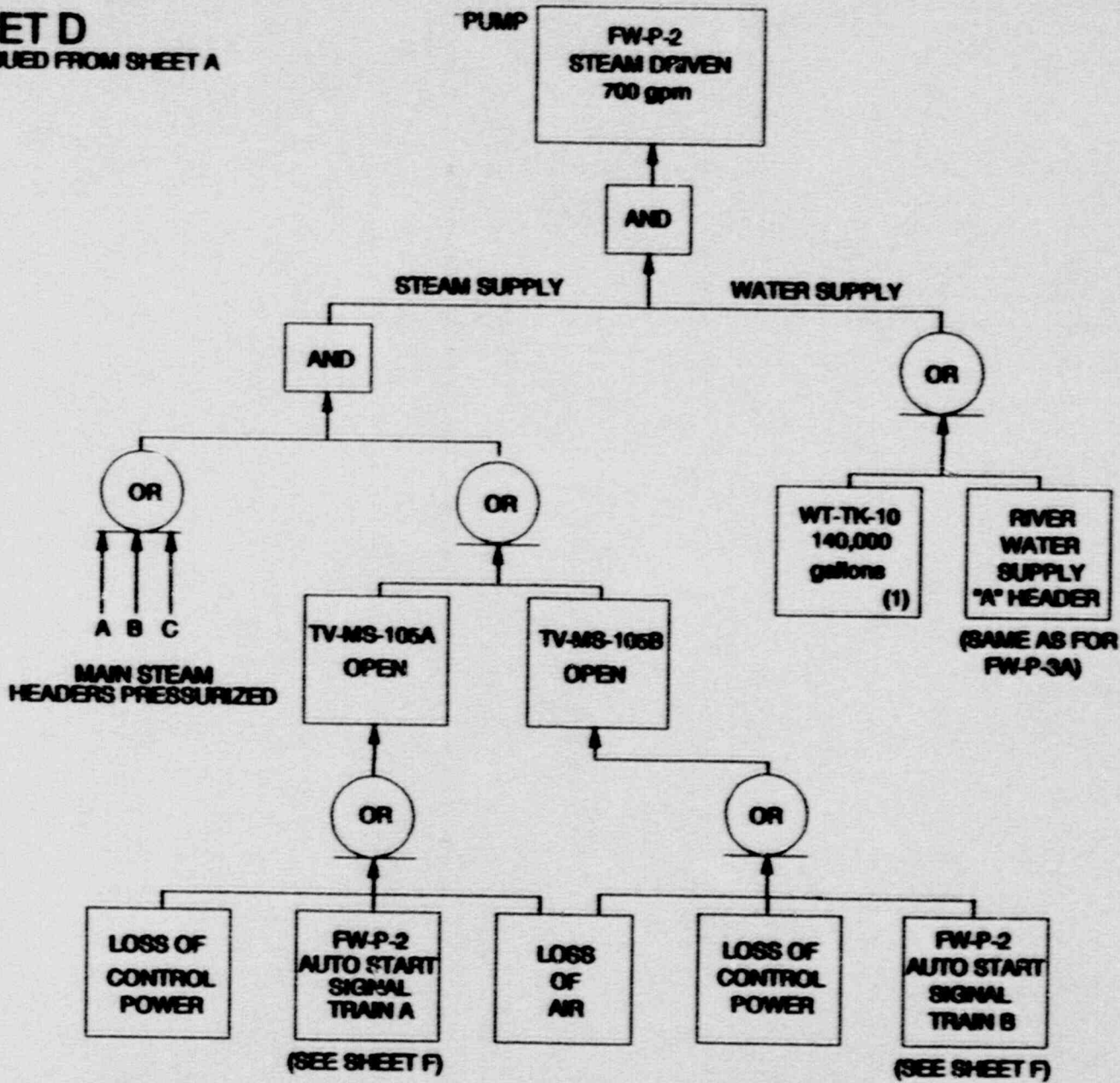


(1) WT-TK-10 PROVIDES A COMMON SUCTION TO FW-P-3A, FW-P-3B AND FW-P-2

(2) FUTURE EMERGENCY SOURCE FROM BV-2 STATION BLACKOUT

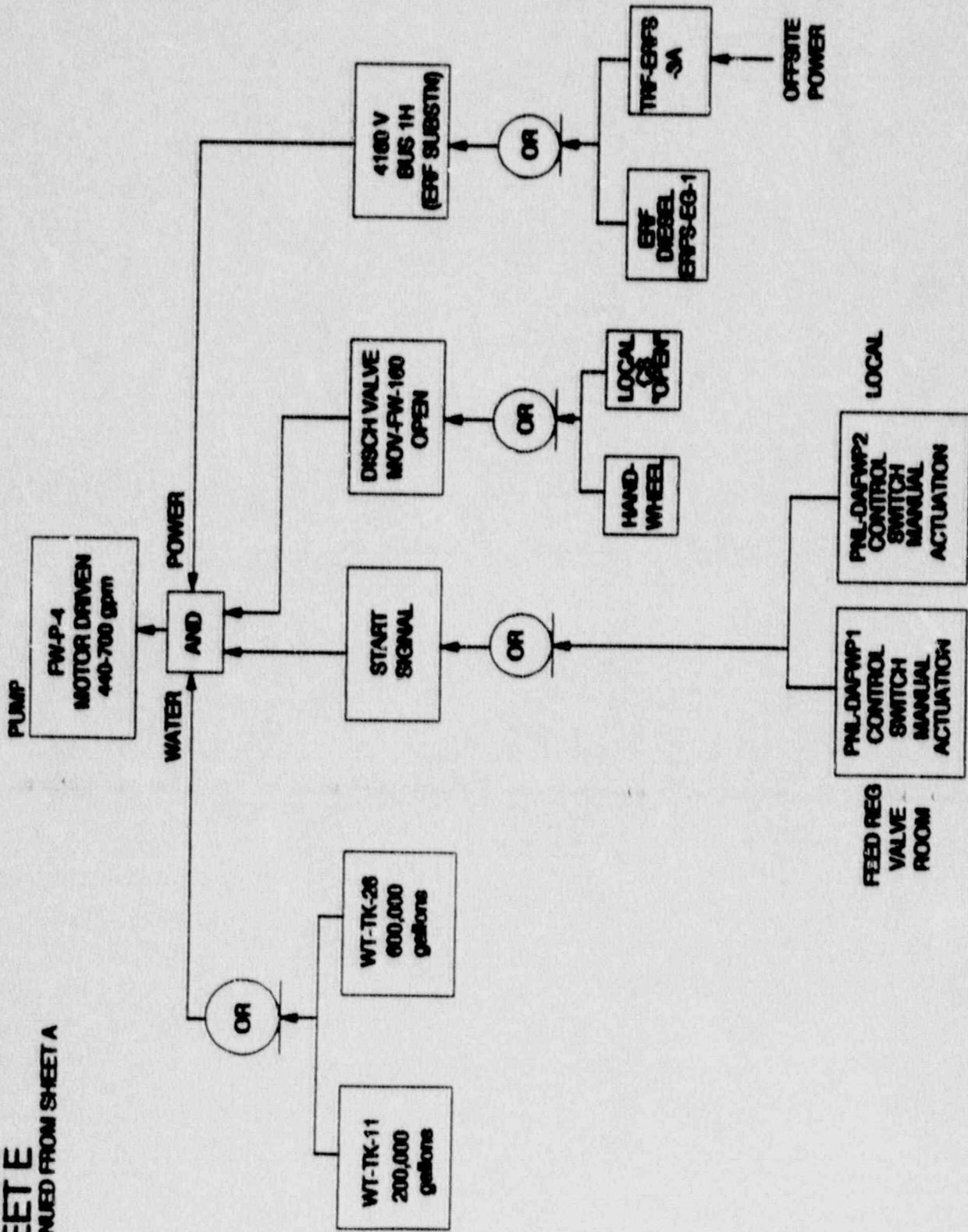


**SHEET D**  
CONTINUED FROM SHEET A

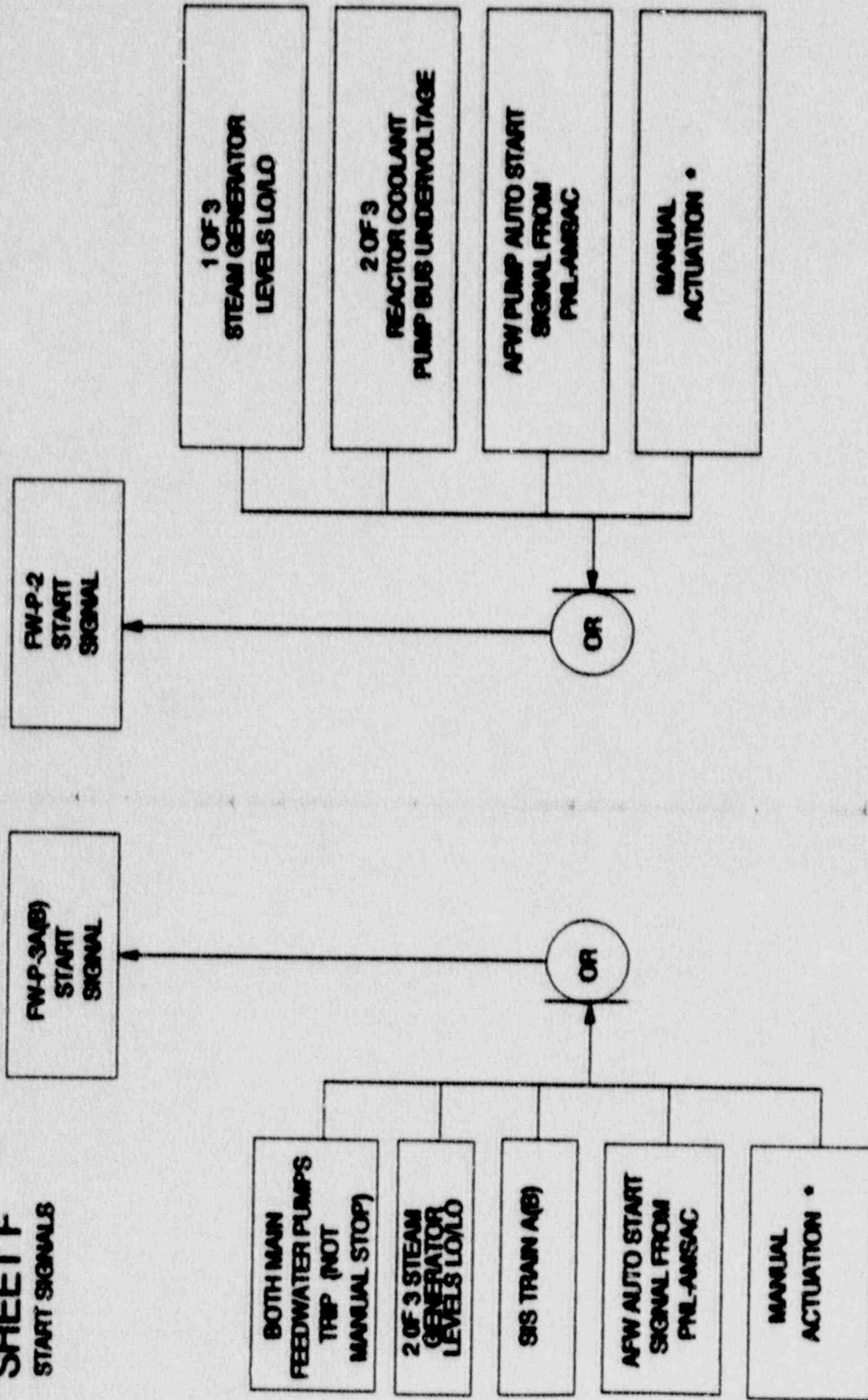


(1) WT-TK-10 PROVIDES A COMMON SUCTION TO FW-P-3A, FW-P-3B AND FW-P-2

**SHEET E**  
CONTINUED FROM SHEET A



**SHEET F**  
START SIGNALS



\* MANUAL ACTUATION CAN BE INITIATED FROM THE CONTROL ROOM BENCHBOARD OR FROM THE EMERGENCY SHUTDOWN PANEL

SER Item 4a Level and Pressure Indication for AccumulatorsNRC Position

The acceptability of instrumentation for accumulator tank level and pressure will remain open pending the outcome of our review of the need for environmentally qualified instrumentation to monitor this variable. Our conclusion will be published when the generic review is complete.

Response

We will review the generic resolution of these instruments and respond in accordance with the requested schedule.

SER Item 4b Neutron Flux Monitoring InstrumentationNRC Position

It is our position that information provided by the neutron flux monitoring instrumentation is needed by the operator in the evaluation of proper reactivity control. It is also our position that the licensee shall install neutron flux monitoring instrumentation that is environmentally qualified in accordance with 10 CFR 50.49 and R. G. 1.97.

Response

We are continuing to review the technical aspects regarding the resolution for the neutron flux monitoring issue. We believe that there are several viable options. We are pursuing a resolution of this issue with other utilities. The intent of the group would be to provide a more efficient means for resolving this issue with the NRC staff. We will provide a response by August 15, 1990 and meet with the staff, prior to this, for final resolution.

During the interim period, continued operation is justified; since the existing instrumentation, required for reactor protection, would provide the intended safety function prior to the containment environment becoming hostile, it is considered qualified for its intended function.

SER Item 4c Position Indicators for Containment Isolation ValvesNRC Position

It is our position that information provided by the containment isolation valve position indication instrumentation needs to be accurate to prevent mismanagement or improper operator action in the post-accident situation. It is also our position that the licensee should provide containment isolation valve position indication instrumentation that meets the acceptable seismic qualification requirements identified in the plant's license or Regulatory Guide 1.100. The licensee should determine which position indicator limit switches are located in a mild environment and provide environmentally qualified limit switches in accordance with 10 CFR 50.49 for those not located in a mild environment.

Response

We have completed the upgrade of the non-environmentally qualified limit switches for the containment isolation valves inside containment. The upgrade was performed during the seventh refueling outage.

We will complete the upgrade of the position indication instrumentation for the containment isolation valves outside containment. We will perform this upgrade prior to startup from the ninth refueling outage. We consider this schedule reasonable to:

1. Minimize the annual accumulated radiation dose expected for modifying these limit switches.
2. Integrate these modifications with anticipated design changes for Generic Letter 87-02 related to seismic design issues for older plants.
3. Spread the requisite engineering, procurement, construction resources and capital expenditures over two refueling outages.

The existing qualification is justified on the basis that the instrumentation is not expected to experience adverse conditions prior to the valve receiving an actuation signal to close.