March 19, 1990

Dockets Nos. 50-269, 50-270
and 50-287

LICENSEE: Duke Power Company

FACILITY: OCONEE NUCLEAR STATION, UNITS 1, 2 AND 3

SUBJECT: SUMMARY OF FEBRUARY 23, 1990 MEETING WITH DUKE POWER CONCERNING GENERIC LETTER 89-19

On February 23, 1990, representatives of Duke Power Company (DPC) made a presentation to the NRC concerning the DPC response to Generic Letter (GL) 89-19 for the Oconee Nuclear Station (ONS). The meeting was held at DPC's request with an objective of informing the NRC staff of planned modifications at ONS to enhance protection from steam generator (S/G) dryout and overfill. Comments from the NRC staff on the adequacy of the planned modifications in meeting GL 89-19 requirements were also requested.

The DPC presentation began with an overview of the main and emergency feedwater systems, including the current initiation logic for the emergency feedwater (EFW) pumps. A description of the proposed modification to provide additional protection against S/G dryout was then provided. This modification consisted of an addition to the existing steam generator level control system (SGLCS) to start the two motor driven EFW pumps on low S/G level. This was followed with a description of a proposed modification to provide additional S/G overfill protection. As described, this modification would provide an additional trip of the main feedwater pump (MFW) turbines on high S/G level.

After the presentations, a discussion of the proposed modifications was held. Of primary concern to the NRC staff was whether a fire could occur that would disable both the MFW control system and the MFW pump trip on high S/G water level. DPC responded that they could not rule out any possible fire from disabling both circuits, although it would be extremely unlikely. If such a situation occurred, DPC felt that operators had adequate guidance to take the correct action. The NRC staff closed by indicating that the DPC submittal should indicate that a credible fire scenario would not result in disabling both overfill protection and S/G water level control.

Meeting attendees are listed in Enclosure 1. Handouts distributed by DPC during the presentation are provided in Enclosure 2.

Leonard A. Wiens, Project Manager
Project Directorate II-3
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Enclosures:
As stated

cc w/enclosures:
See next page

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Facility: Oconee Nuclear Station, Units 1, 2 and 3*

Docket File
NRC & Local PDRs
J. Sniezek, 12/G/18
PDII-3 Reading
S. Varga
D. Matthews
L. Wiens
R. Ingram
OGC
E. Jordan, MNBB-3302
ACRS (10)
R. Borchardt, 17/G/21
S. Newberry
S. Rhow
J. Mauck
OCONEE PLANT File

*Copies sent to persons on facility service list

Oconee Nuclear Station
Units Nos. 1, 2 and 3

cc:
Mr. A. V. Carr, Esq.
Duke Power Company
P. O. Box 33189
422 South Church Street
Charlotte, North Carolina 28242

J. Michael McGarry, III, Esq.
Bishop, Cook, Purcell & Reynolds
1400 L Street, N.W.
Washington, D.C. 20005

Mr. Robert B. Borsum
Babcock & Wilcox
Nuclear Power Division
Suite 525
1700 Rockville Pike
Rockville, Maryland 20852

Manager, LIS
NUS Corporation
2536 Countryside Boulevard
Clearwater, Florida 34623-1693

Senior Resident Inspector
U.S. Nuclear Regulatory Commission
Route 2, Box 610
Seneca, South Carolina 29678

Regional Administrator, Region II
U.S. Nuclear Regulatory Commission
101 Marietta Street, N.W., Suite 2900
Atlanta, Georgia 30323

Mr. Heyward G. Shealy, Chief
Bureau of Radiological Health
South Carolina Department of Health
and Environmental Control
2600 Bull Street
Columbia, South Carolina 29201

Office of Intergovernmental Relations
116 West Jones Street
Raleigh, North Carolina 27603

County Supervisor of Oconee County
Walhalla, South Carolina 29621

Mr. Paul Guill
Duke Power Company
Post Office Box 33189
422 South Church Street
Charlotte, North Carolina 28242

Mr. Alan R. Herdt, Chief
Project Branch #3
U.S. Nuclear Regulatory Commission
101 Marietta Street, NW, Suite 2900
Atlanta, Georgia 30323

Ms. Karen E. Long
Assistant Attorney General
N. C. Department of Justice
P.O. Box 629
Raleigh, North Carolina 27602

Mr. H. B. Tucker, Vice President
Nuclear Production Department
Duke Power Company
422 South Church Street
Charlotte, North Carolina 28242

GL 89-19 MEETING ATTENDEES

FEBRUARY 23, 1990

NAMES	ORGANIZATION
Len Wiens	NRR/DRP
Scott Newberry	NRR/SICB
Sang Rhow	NRR/SICB
Jerry Mauck	NRR/SICB
Angelo Mercado	BW Nuclear Service
Tom Coutu	Duke/ONS
Bill Rostron	Duke/ONS
Phil North	Duke/NPD-GO
Mike Miller	Duke/Des Engr-GO

OCONEE NUCLEAR STATION

PLANNED SYSTEM CHANGES

FOR

GENERIC LETTER 89-19

FEBRUARY 23, 1990

NRC - DUKE MEETING ON GENERIC LETTER 89-19

FEBRUARY 23, 1990

DUKE POWER COMPANY

ATTENDEES

NAME	TITLE	LOCATION
TOM COUTU	UNIT 1 OPERATIONS MANAGER	OCONEE
TOM CURTIS	OCONEE COMPLIANCE MANAGER	OCONEE
BILL ROSTRON	NUCLEAR PRODUCTION SPECIALIST	OCONEE
MIKE MILLER	SENIOR ENGINEER - PROCESS I&C SYSTEMS	DESIGN ENGR. - G.O.
PHIL NORTH	ASSOCIATE ENGINEER - REGULATORY COMPLIANCE	NUCLEAR PROD. - G.O.

GENERIC LETTER 89-19

AGENDA

INTRODUCTION	PHIL NORTH
EMERGENCY FEEDWATER SYSTEM OVERVIEW	TOM COUTU
SG DRYOUT PROTECTION	MIKE MILLER
SG OVERFILL PROTECTION	MIKE MILLER
DISCUSSION	DUKE & NRC

OBJECTIVE OF MEETING

ASSURE DUKE AND THE NRC STAFF
HAVE A COMMON UNDERSTANDING
OF OCONEE'S PLANNED MODIFICATIONS
TO ENHANCE STEAM GENERATOR PROTECTION
FROM DRYOUT AND OVERFILL

OCONEE EMERGENCY FEEDWATER SYSTEM OVERVIEW

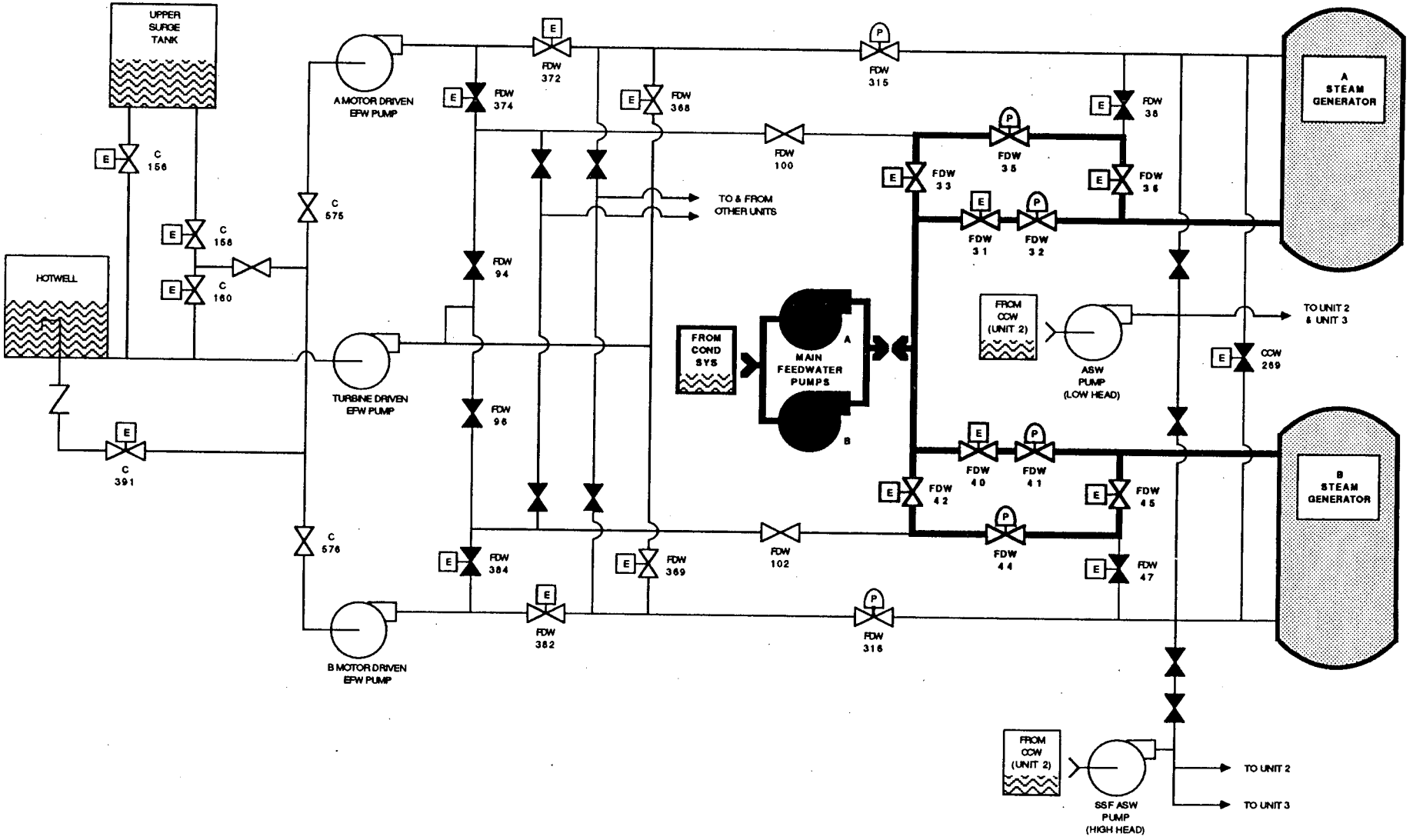
FLOW PATHS

* PRIMARY
* ALTERNATE
* OTHER SOURCES

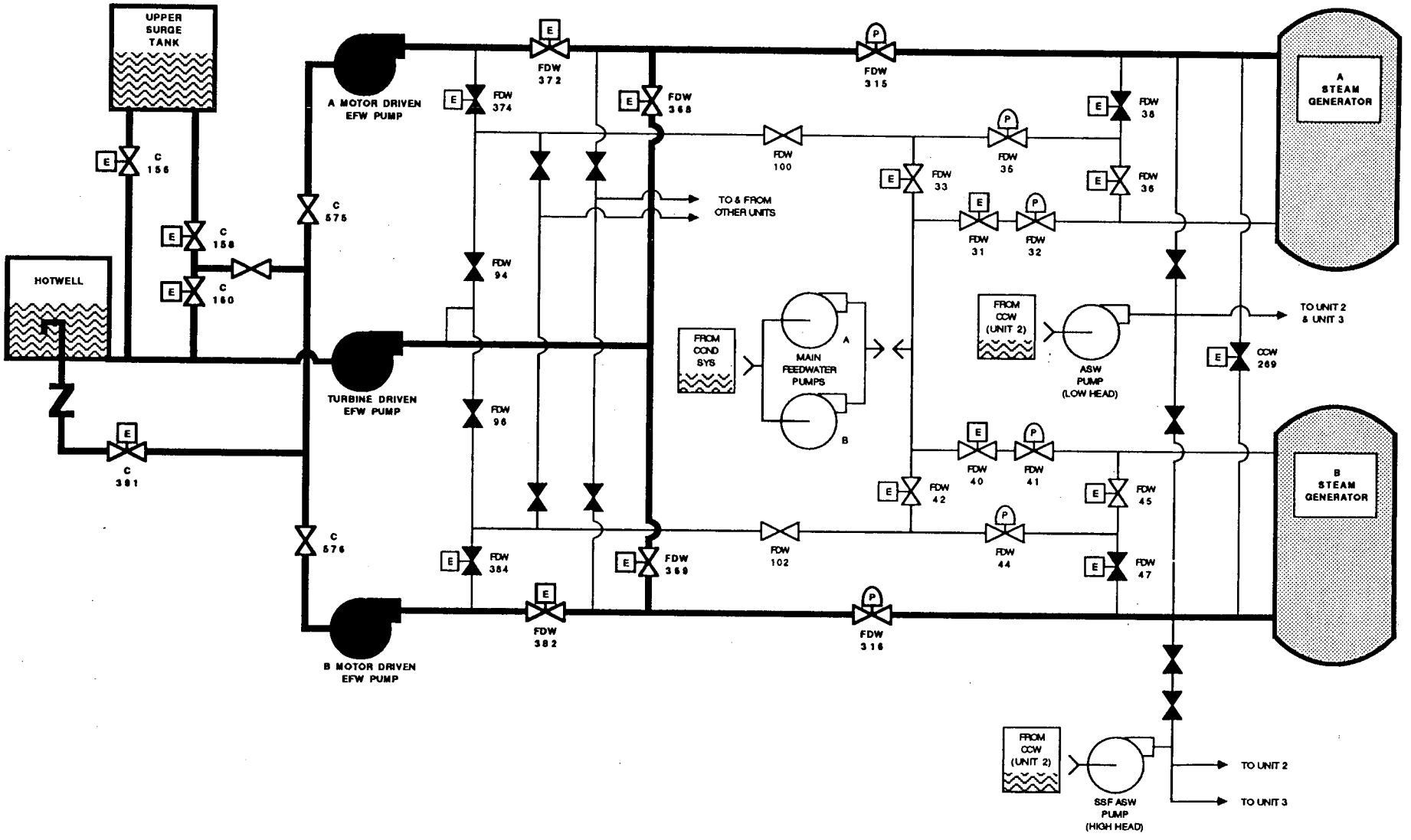
INITIATION - CONTROL

* MOTOR DRIVEN PUMP INITIATION
* TURBINE DRIVEN PUMP INITIATION
* INITIATION ON LOSS OF ICS POWER

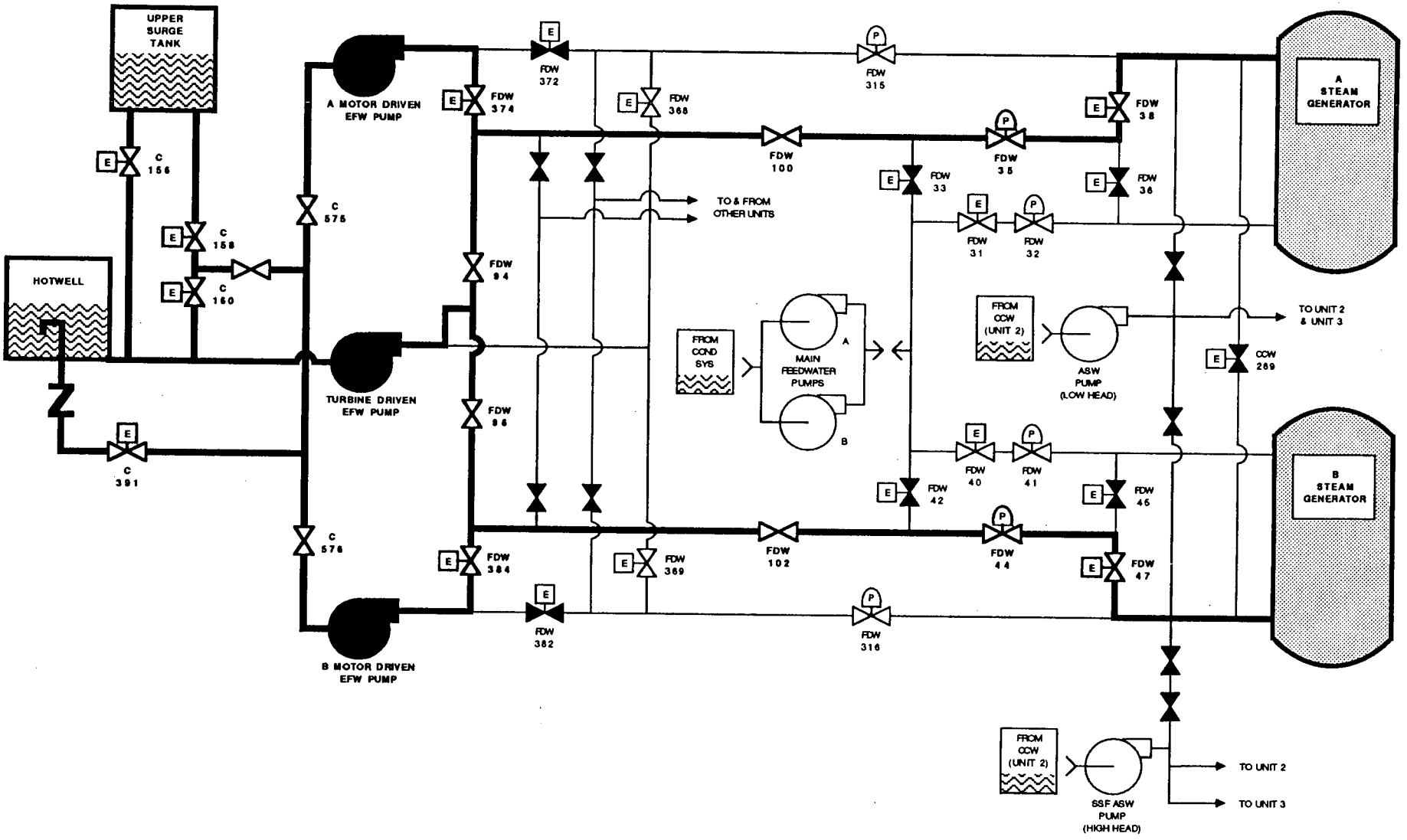
MAIN FEEDWATER FLOWPATH



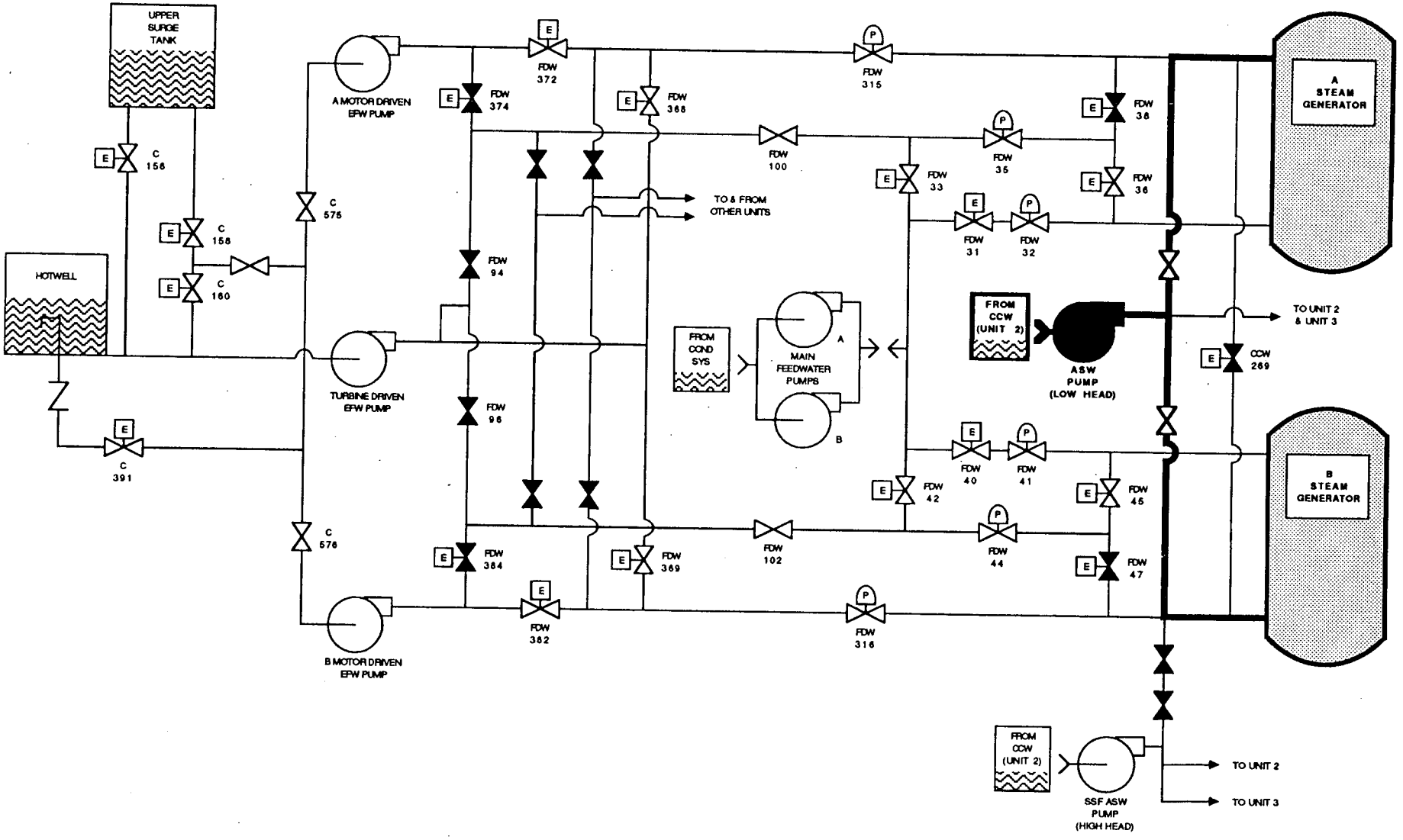
NORMAL EMERGENCY FEEDWATER FLOWPATH



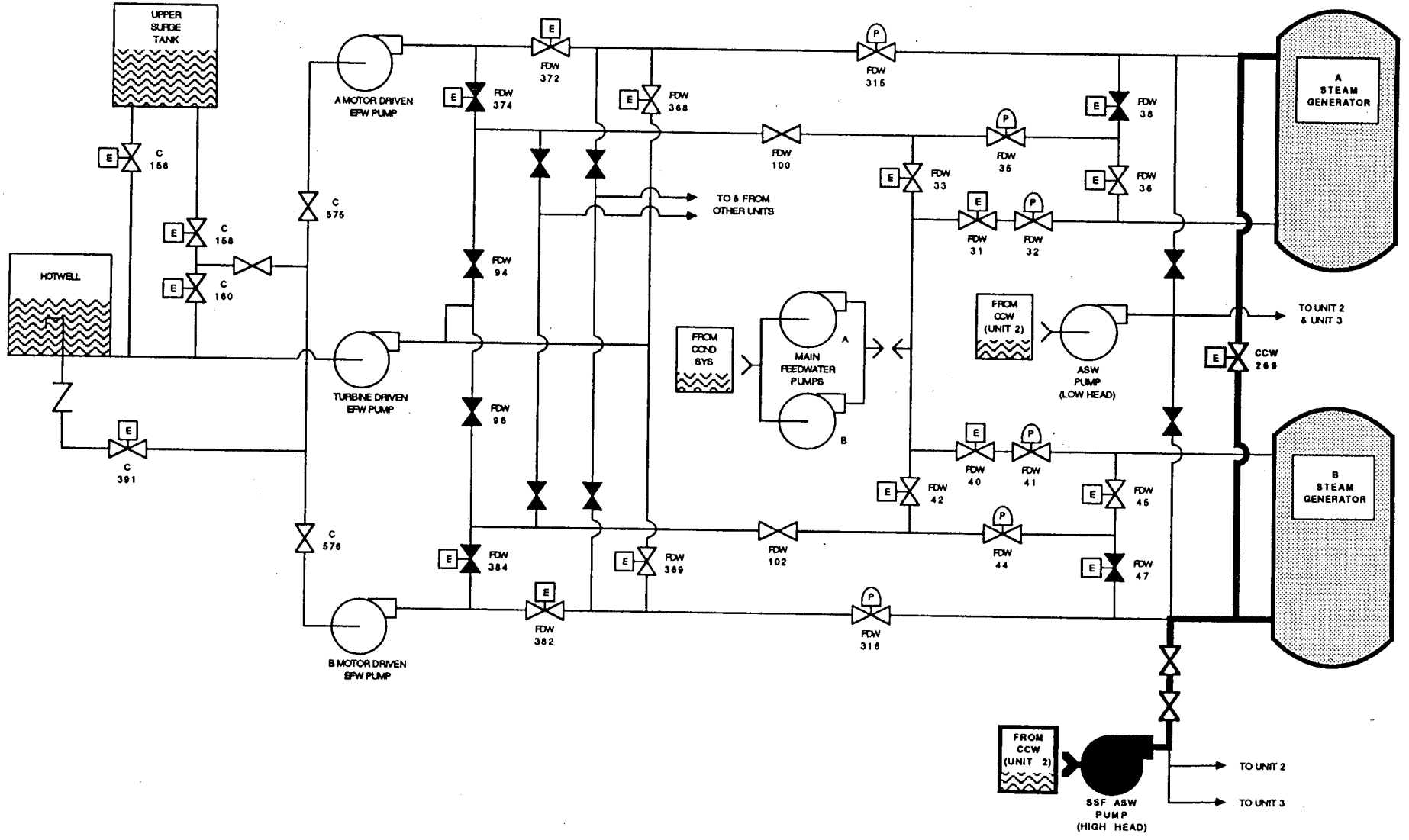
ALTERNATE EMERGENCY FEEDWATER FLOWPATH



AUXILIARY SERVICE WATER (LOW HEAD) FLOWPATH

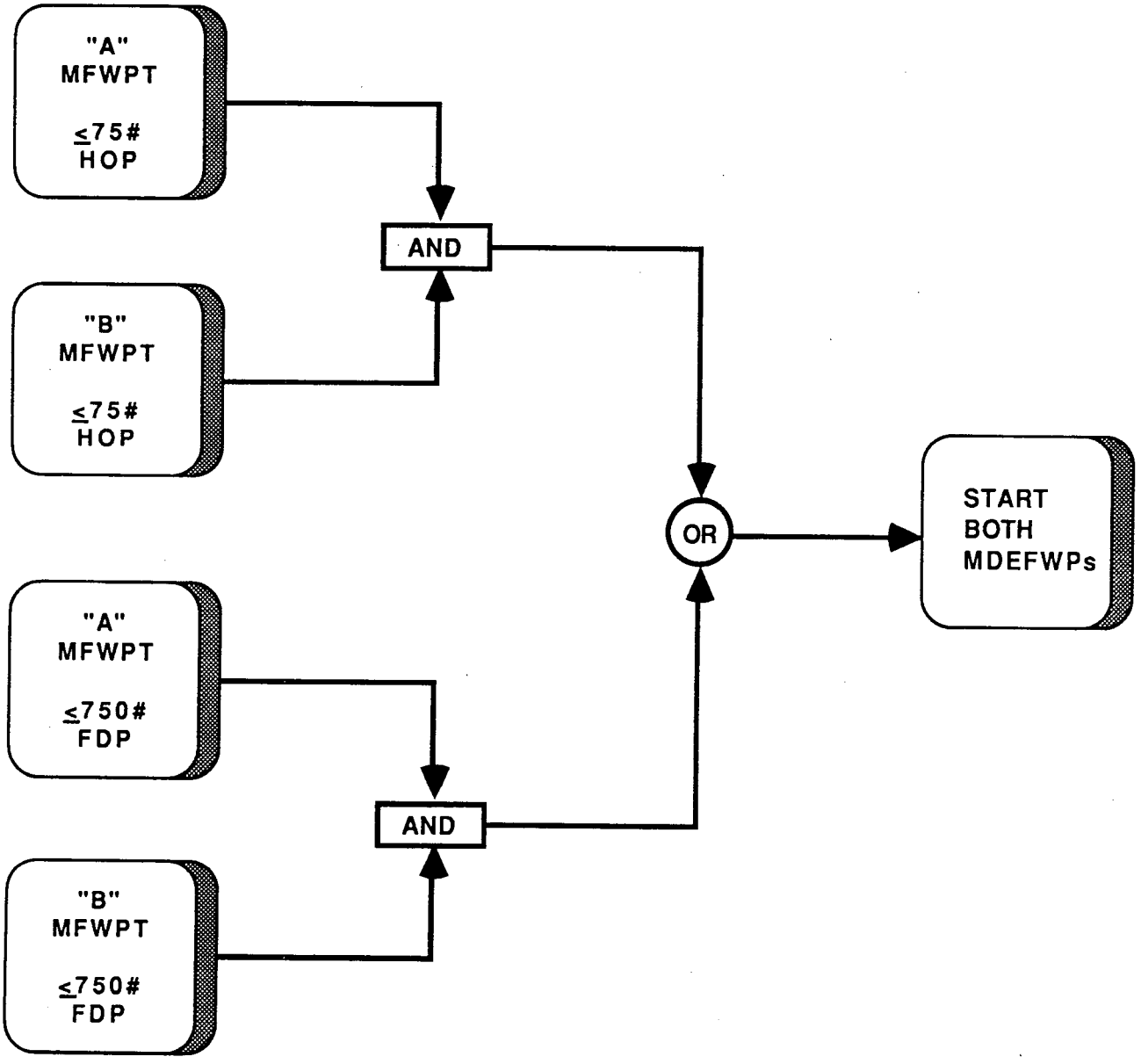


SSF AUXILIARY SERVICE WATER (HIGH HEAD) FLOWPATH



OCONEE NUCLEAR STATION

MOTOR DRIVEN EMERGENCY FEEDWATER PUMP AUTO START LOGIC

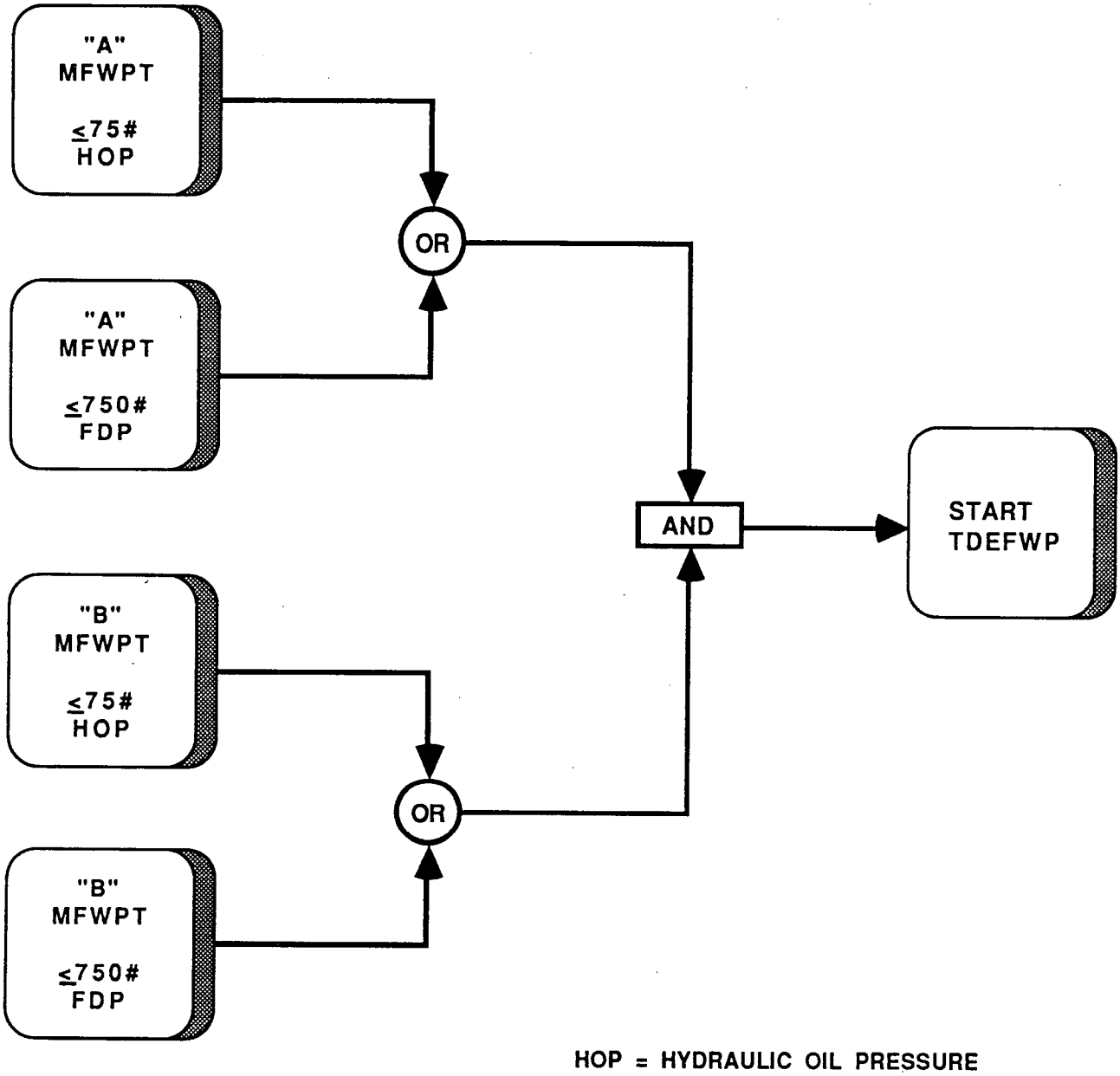


HOP = HYDRAULIC OIL PRESSURE

FDP = FEEDWATER DISCHARGE PRESSURE

OCONEE NUCLEAR STATION

TURBINE DRIVEN
EMERGENCY FEEDWATER PUMP
AUTO START LOGIC

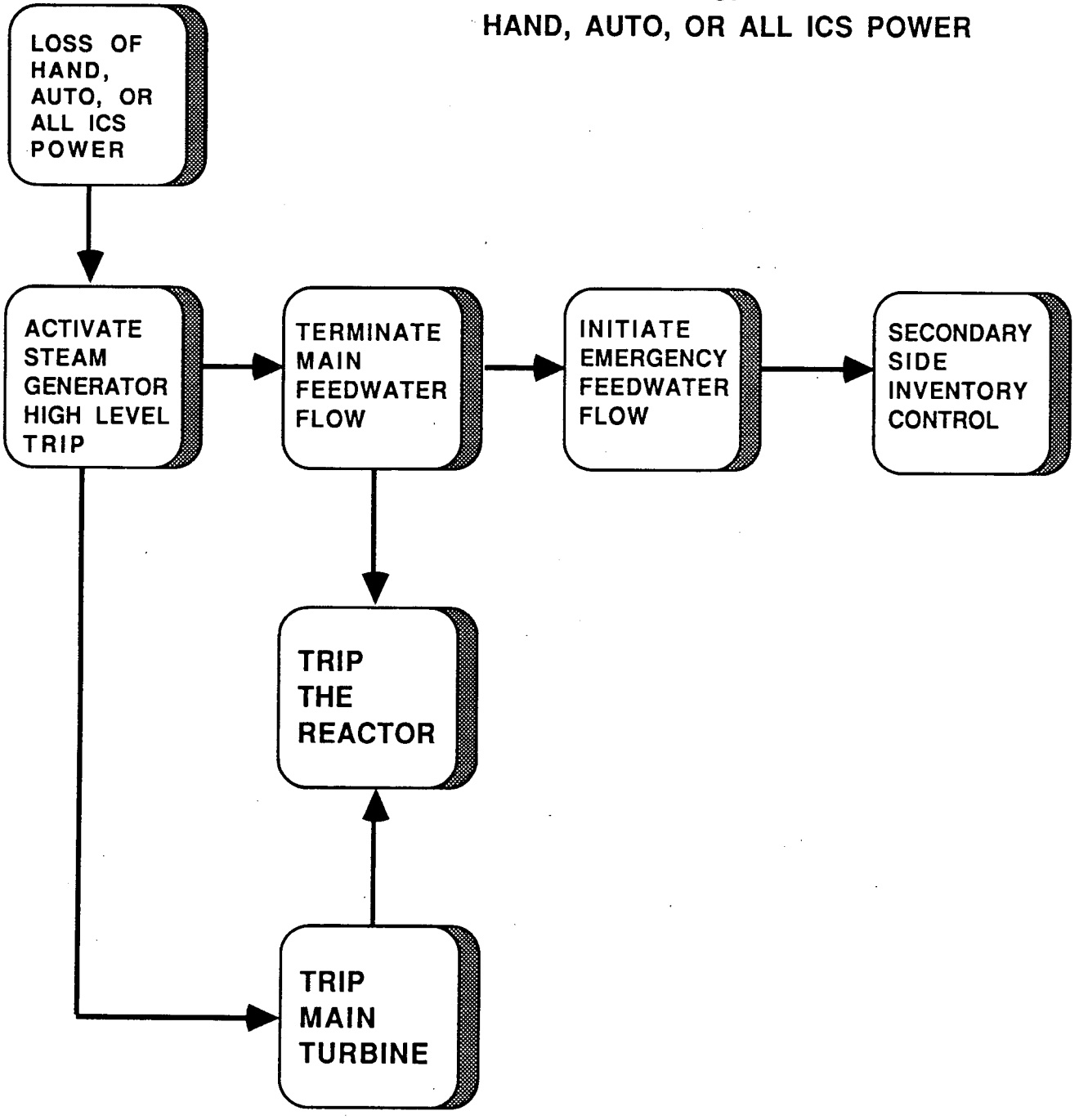


HOP = HYDRAULIC OIL PRESSURE

FDP = FEEDWATER DISCHARGE PRESSURE

OCONEE NUCLEAR STATION

EFW INITIATION ON LOSS
OF
HAND, AUTO, OR ALL ICS POWER



OCONEE NUCLEAR STATION

STEAM GENERATOR DRYOUT PROTECTION

CURRENT STATUS

* EMERGENCY FEEDWATER INITIATED UPON LOSS OF BOTH MAIN FEEDWATER PUMPS SENSED BY:

  LOSS OF HYDRAULIC CONTROL OIL PRESSURE TO STOP VALVES

  OR

  LOSS OF FEEDWATER PUMP DISCHARGE PRESSURE

* EMERGENCY FEEDWATER SYSTEM MEETS REQUIREMENTS OF NUREG 0737

OCONEE NUCLEAR STATION

STEAM GENERATOR DRYOUT PROTECTION

PROPOSED MODIFICATIONS

* MODIFY EXISTING STEAM GENERATOR LEVEL CONTROL SYSTEM (SGLCS) TO START THE MOTOR DRIVEN EMERGENCY FEEDWATER PUMPS (MDEFWP) ON LOW STEAM GENERATOR LEVEL USING EXISTING SYSTEM TRANSMITTERS AFTER A SHORT TIME DELAY (APPROX. 30 SECONDS).

* START OF EFW WILL BE ON A 2 OUT OF 2 LOW LEVEL IN EITHER S/G. BOTH MDEFWP A AND MDEFWP B WILL START AND BE AUTOMATICALLY CONTROLLED BY THE SGLCS.

* TIME DELAY REQUIRED TO OVERCOME POST TRIP LEVEL BOUNCES.

* DUKE EFW INITIATION AND SGLCS IS NOT AN EFIC SYSTEM AS INSTALLED ON CRYSTAL RIVER 3 OR ARKANSAS NUCLEAR 1.

OCONEE NUCLEAR STATION

STEAM GENERATOR DRYOUT PROTECTION

DESIGN CONSIDERATIONS FOR PROPOSED MODIFICATIONS

* INTERNAL MODIFICATIONS TO THE SGLCS. DIRECT CABLING TO THE MDEFWP'S TO START ON LOW LEVEL.

* THE POWER SOURCES ARE THE EXISTING SUPPLIES TO THE SGLCS WHICH ARE FROM THE TWO VITAL BATTERIES FOR EACH UNIT.

* THE SGLCS IS LOCATED IN THE CABLE ROOM WHILE THE ICS IS LOCATED IN THE CONTROL ROOM. DIFFERENT ELEVATIONS IN THE AUXILIARY BUILDING.

OCONEE NUCLEAR STATION

STEAM GENERATOR OVERFILL PROTECTION

CURRENT STATUS

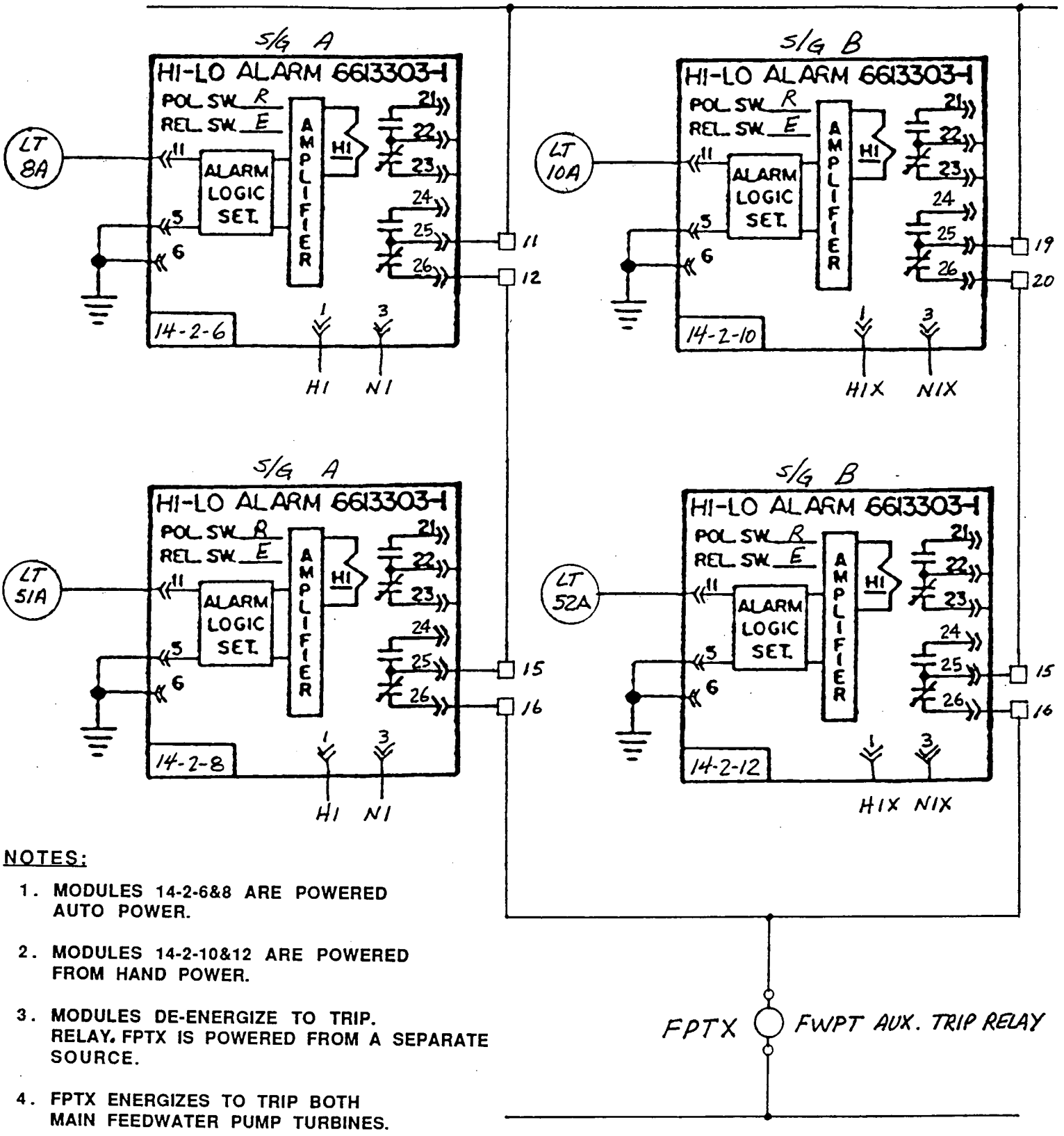
* OVERFILL PROTECTION CURRENTLY PROVIDED THROUGH ICS
  + 2 OUT OF 2 LOGIC TAKEN TWICE (2 TRANSMITTERS PER SG)
  + RELIABLE NON-SAFETY GRADE COMPONENTS

* EXISTING ICS FUNCTIONS DESIGNED TO LIMIT OVERFILL
  + ICS CONTROLS PUMP SPEED AND VALVE D/P
  + SG LEVEL USED AS INPUT TO FEEDWATER CONTROL

* LOSS OF EITHER HAND AND/OR AUTO POWER TO THE EXISTING SG OVERFILL PROTECTION CIRCUIT MODULES CAUSES TRIP OF THE MAIN FEEDWATER PUMPS. REACTOR THEN TRIPS VIA ANTICIPATORY REACTOR TRIP SYSTEM (ARTS) CIRCUIT AND EFW INITIATED.

* ICS/OPERATOR INTERFACE IMPROVEMENTS AS PART OF SPIP
  + ADDITIONAL ALARMS IN THE CONTROL ROOM TO ALERT THE OPERATOR TO ICS POWER FAILURES
  + ADDITIONAL TRAINING IN THE RECOGNITION AND RESPONSE TO ICS POWER LOSS EVENTS

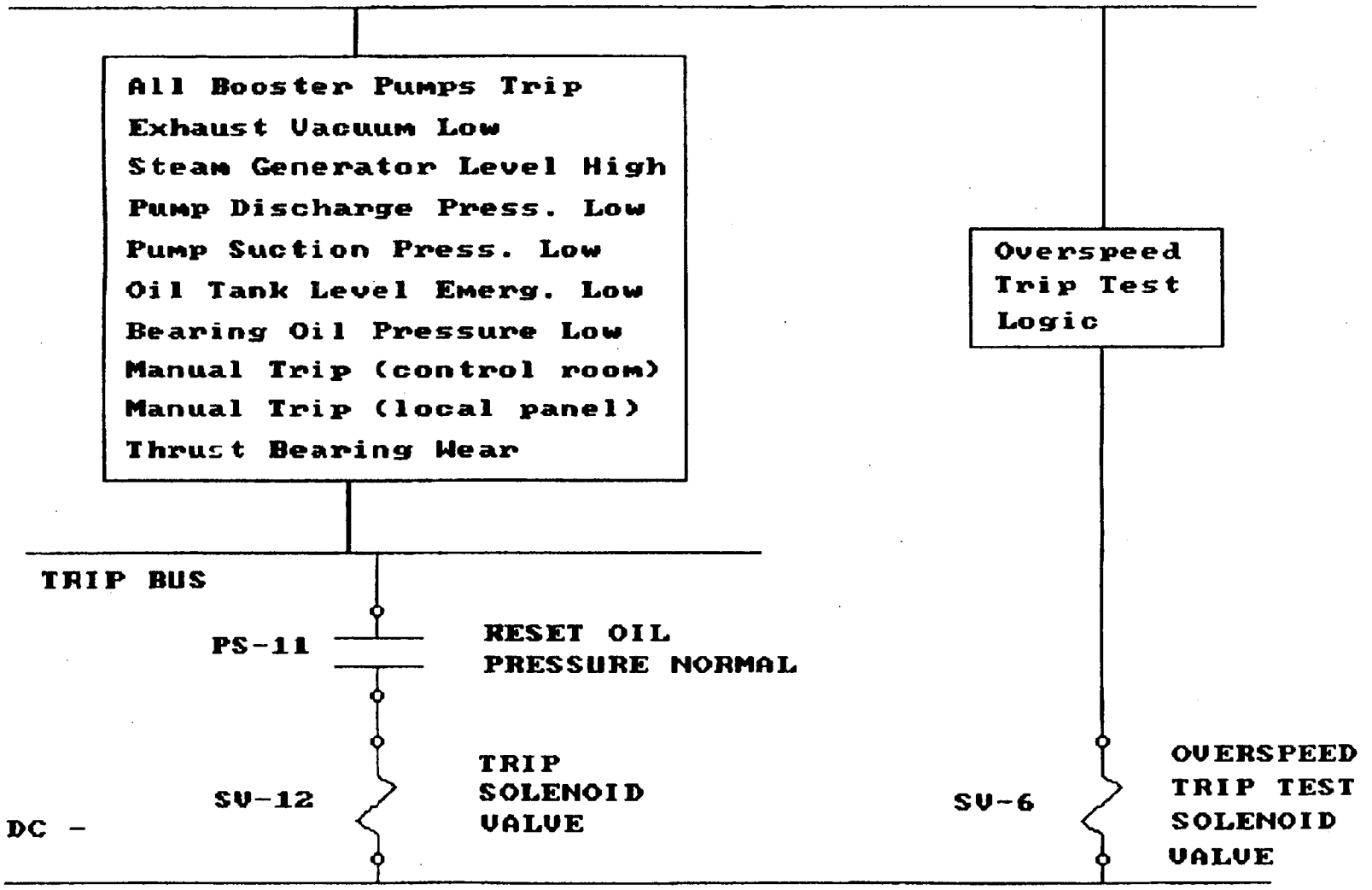
OCONEE NUCLEAR STATION
STEAM GENERATOR OVERFILL PROTECTION
PRESENT TRIP LOGIC AND POWER SOURCE ARRANGEMENT



NOTES:

1. MODULES 14-2-6&8 ARE POWERED AUTO POWER.
2. MODULES 14-2-10&12 ARE POWERED FROM HAND POWER.
3. MODULES DE-ENERGIZE TO TRIP. RELAY. FPTX IS POWERED FROM A SEPARATE SOURCE.
4. FPTX ENERGIZES TO TRIP BOTH MAIN FEEDWATER PUMP TURBINES.

FEEDWATER PUMP TURBINE TRIP CIRCUIT



OCONEE NUCLEAR STATION

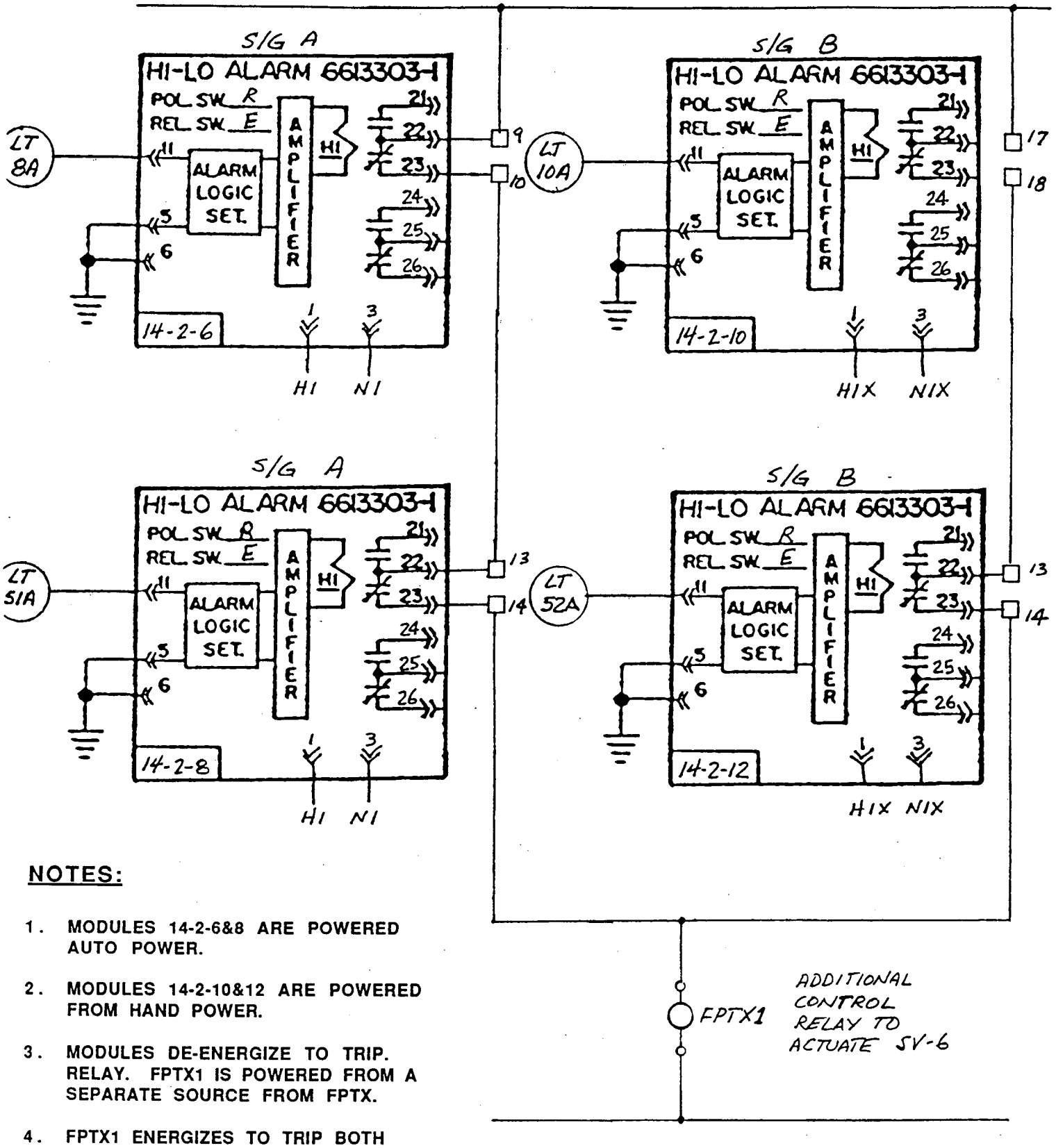
STEAM GENERATOR OVERFILL PROTECTION

PROPOSED MODIFICATIONS

* UTILIZE AN ADDITIONAL EXISTING NON-SAFETY GRADE TRIP DEVICE ON MAIN FEEDWATER PUMP TURBINE TO ASSURE TRIP AND TERMINATION OF FORWARD FEEDWATER FLOW

OCONEE NUCLEAR STATION
STEAM GENERATOR OVERFILL PROTECTION

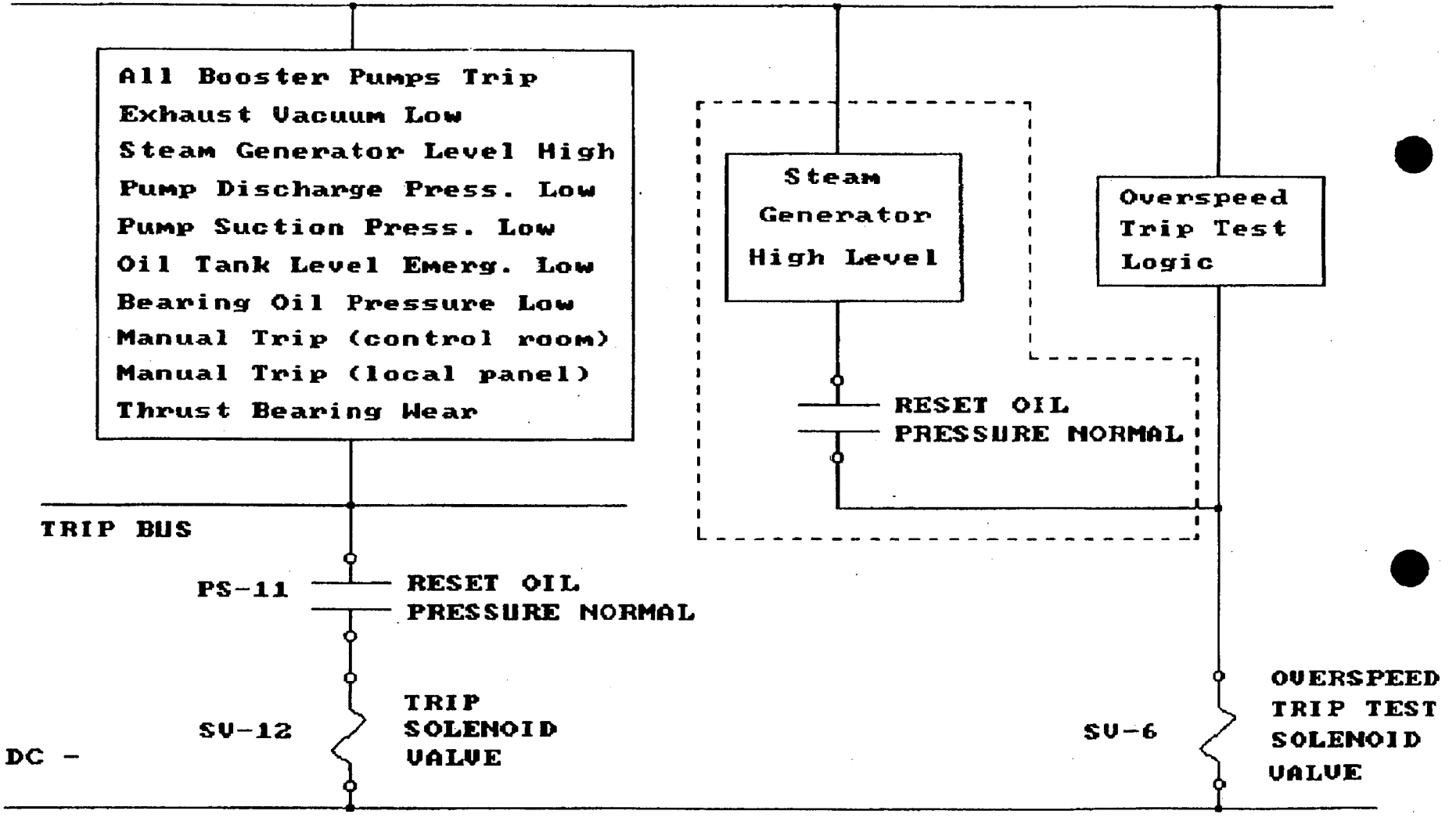
PROPOSED MODIFICATIONS SHOWING LOGIC AND POWER SOURCE ARRANGEMENT



NOTES:

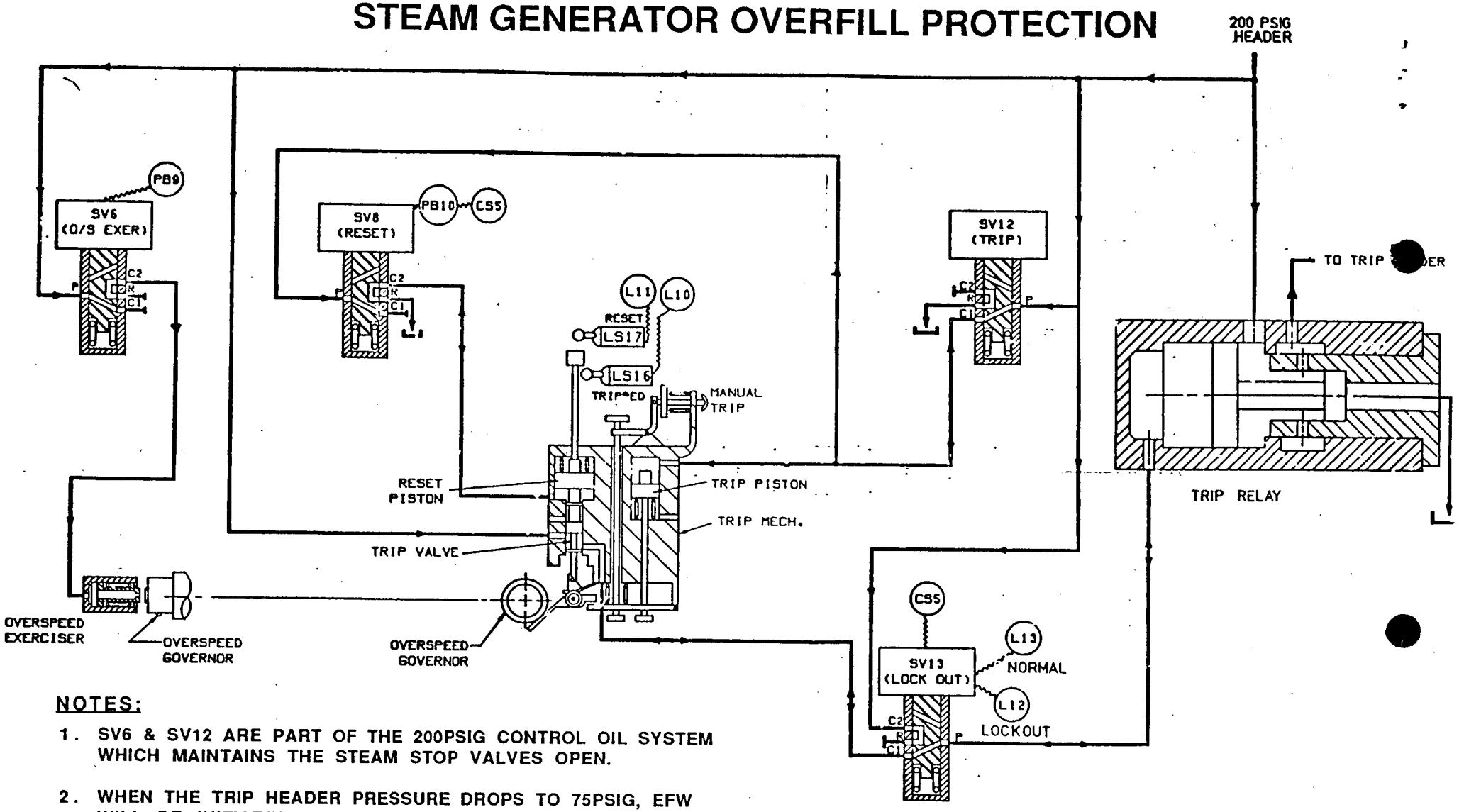
1. MODULES 14-2-6&8 ARE POWERED AUTO POWER.
2. MODULES 14-2-10&12 ARE POWERED FROM HAND POWER.
3. MODULES DE-ENERGIZE TO TRIP. RELAY. FPTX1 IS POWERED FROM A SEPARATE SOURCE FROM FPTX.
4. FPTX1 ENERGIZES TO TRIP BOTH MAIN FEEDWATER PUMP TURBINES THE MAIN TURBINE.

FEEDWATER PUMP TURBINE TRIP CIRCUIT



OCONEE NUCLEAR STATION

STEAM GENERATOR OVERFILL PROTECTION



NOTES:

1. SV6 & SV12 ARE PART OF THE 200PSIG CONTROL OIL SYSTEM WHICH MAINTAINS THE STEAM STOP VALVES OPEN.
2. WHEN THE TRIP HEADER PRESSURE DROPS TO 75PSIG, EFW WILL BE INITIATED.
3. THE OVERSPEED EXERCISER IS TESTED WEEKLY AS PART OF NORMAL FEEDWATER PUMP TURBINE MAINTENANCE.
4. SV13 IS INTERLOCKED THRU SV12 VIA INTEGRAL N.C. CONTACTS SO THAT SV13 CAN'T PREVENT A TRIP. THE ADDITION OF SV6 FOR GL 89-19 ASSURES PUMP TRIP.

MAIN FEEDWATER PUMP TURBINE

CONTROL OIL DIAGRAM