

MAY 04 1988

MEMORANDUM FOR: Charles E. Rossi, Director
Division of Operational Events Assessment
Office of Nuclear Reactor Regulation

FROM: Wayne Lanning, Chief
Events Assessment Branch
Division of Operational Events Assessment
Office of Nuclear Reactor Regulation

SUBJECT: THE OPERATING REACTORS EVENTS MEETING
May 3, 1988 - MEETING 88-18

On May 3, 1988 an Operating Reactors Events meeting (88-18) was held to brief senior managers from NRR, RES, AEOD and Regional Offices on events which occurred since our last meeting on April 26, 1988. The list of attendees is included as Enclosure 1.

The events discussed and the significant elements of these events are presented in Enclosure 2. Enclosure 3 presents a report-to-date of long-term followup assignments and a summary of reactor scrams. Two significant events were identified for input to NRC's performance indicator program. One event was suggested for long-term followup.

Original Signed by
Wayne D. Lanning

Wayne Lanning, Chief
Events Assessment Branch
Division of Operational Events Assessment
Office of Nuclear Reactor Regulation

Enclosures:
As stated

cc w/Enclo.:
See Next Page

DISTRIBUTION

Central File
EAB Reading File
Circulating Copy EAB Staff
MLReardon, EAB
DOudinot, EAB
LKilgore, SECY, PDR

*TDR-5-1
OPERATING
EXPERIENCE*

OFC	:EAB:NRR	:C:EAB:NRR	:	:	:	:	:
NAME	:MLReardon	:WLanning	:	:	:	:	:
DATE	:05/03/88	:05/3/88	:	:	:	:	:

OFFICIAL RECORD COPY

8805160228 880504
PDR ORG NRRB
PDR

cc:

T. Murley, 12G-18
F. Miraglia, 12G-18
E. Jordan, AEOD
E. Beckford, NL-007
W. Russell, PI
B. Davis, RIII
J. Nelson Grace, PII
R. D. Martin, RIV
J. B. Martin, PV
W. Kane, RI
L. Reyes, RII
E. Greenman, RIII
J. Callan, RIV
D. Kirsch, RV
S. Varga, 14E-4
D. Crutchfield, 13A-2
B. Boger, 14A-2
G. Lainas, 14H-3
G. Holahan, 13E-4
L. Shao, 8E-2
J. Partlow, 9A-2
B. Grimes, 9A-2
F. Congel, 10E-4
E. Weiss, AEOD
S. Black, 12E-4
T. Martin, 12G-18
J. Stone, 9D-4
R. Hernan, 13H-3
H. Bailey, AEOD
J. Guttmann, SECY
A. Thadani, 7E-4
S. Rubin, AEOD

J. Sniezek, 12G-18
J. Forsyth, INPO
M. Harper, EWS-263
H. Pastis, 14H-25
T. Colburn, 13E-21
K. Perkins, 13E-21
D. DiIanni, 13H-15
M. Virgilio, 13H-15
T. Wambach, 13H-15



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

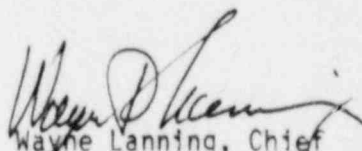
MEMORANDUM FOR: Charles E. Rossi, Director
Division of Operational Events Assessment
Office of Nuclear Reactor Regulation

FROM: Wayne Lanning, Chief
Events Assessment Branch
Division of Operational Events Assessment
Office of Nuclear Reactor Regulation

SUBJECT: THE OPERATING REACTORS EVENTS MEETING
May 3, 1988 - MEETING 88-18

On May 3, 1988 an Operating Reactors Events meeting (88-18) was held to brief senior managers from NRR, RES, AEOD and Regional Offices on events which occurred since our last meeting on April 26, 1988. The list of attendees is included as Enclosure 1.

The events discussed and the significant elements of these events are presented in Enclosure 2. Enclosure 3 presents a report-to-date of long-term followup assignments and a summary of reactor scrams. Two significant events were identified for input to NRC's performance indicator program. One event was suggested for long-term followup.


Wayne Lanning, Chief
Events Assessment Branch
Division of Operational Events Assessment
Office of Nuclear Reactor Regulation

Enclosures:
As stated

cc w/Enclo.:
See Next Page

LIST OF ATTENDEES

OPERATING REACTORS EVENTS BRIEFING (88-18)

May 3, 1988

<u>NAME</u>	<u>ORGANIZATION</u>	<u>NAME</u>	<u>ORGANIZATION</u>
W. Lanning	NRR/DOEA	P. Baranowsky	NRR/DOEA
M.L. Reardon	NRR/DOEA	R. Lobel	NRR/DOEA
C. Schulten	NRR/DOEA	C. Miller	OCM/FB
K. Perkins	NRR/PD3-3	E. Jordan	AEOD
B. Boger	NRR/ADRI	F. Miraglia	NRR/PD2-3
V. Benaroya	AEOD/DSP	H. Pastis	NRR/PD2-3
G. Klingler	NRR/PMAS	D. Muller	NRR/PD3-1
J. Clifford	EDO	D. DiIanni	NRR/PD3-1
J. Roe	NRR/DLPQ	M. Callahan	GPA/CA
B. Grimes	NRR/DRIS	T. Wambach	NRR/DRSP
J. Zwolinski	NRR/DLPQ	C. Ader	OCM/TR
F. Rosa	NRR/SELB	J.P. Gwynn	OMC/LZ
C. Berlinger	NRR/DOEA	T.C. Elsasser	OCM/KC
C.E. Rossi	NRR/DOEA	T. Silko	NRR/DOEA

OPERATING REACTORS EVENTS BRIEFING 88-18

EVENTS ASSESSMENT BRANCH

LOCATION: 12-B-11 WHITE FLINT

TUESDAY, MAY 03, 1988, 11:00 A.M.

THIS INFORMATION MAY ALSO BE OBTAINED BY DIALING EXTENSION 21449.

OCONEE 2

POWER CIRCUIT BREAKER PROBLEM

PERRY 1

LOSS OF FEEDWATER/HPCS OUT OF
SERVICE

PRAIRIE ISLAND 1 & 2

ESF BUS DEGRADATION WITH DG OUT

PALISADES 1

FAILURE OF UNDERVOLTAGE TRIP BREAKER
AND OTHER UNRELATED EVENTS

OCONEE UNIT 2
POWER CIRCUIT BREAKER PROBLEMS
APRIL 26, 1988

PROBLEM

NEW SWITCHYARD POWER CIRCUIT BREAKERS ENABLED THE EMERGENCY POWER SWITCHING LOGIC TO BE DEFEATED

CAUSE

OVERSIZED CIRCUIT BREAKER (COGENEL) CAPACITORS SET UP INDUCTIVE AND CAPACITIVE RESONANCE RESULTING IN A HIGH VOLTAGE ON THE SECONDARY SIDE OF THE STARTUP TRANSFORMER

SIGNIFICANCE

A FALSE FAULT INDICATION IN THE STARTUP TRANSFORMER COINCIDENT WITH A REACTOR TRIP WILL PREVENT THE EMERGENCY POWER SWITCHING LOGIC (EPSL) FROM PICKING UP ITS EMERGENCY POWER SOURCES.

DISCUSSION

- o OCONEE SYSTEM PLANNING DEPARTMENT CHANGED OUT A NUMBER OF POWER CIRCUIT BREAKERS (PCB) IN FAVOR OF PCB'S WITH HIGHER FAULT INTERRUPTING DUTIES IN ANTICIPATION OF INCREASED GRID GENERATION CAPABILITY.
- o APRIL 4, 1988 UNIT 2 STARTUP WITH COGENEL PCB'S. UNIT 3 IN SHUTDOWN, ITS" PCB"S ARE ITE PCBs. UNIT 1 IS OPERATING, HALF ITS' PCB'S ARE COGENEL'S.
- o APRIL 26, 1988 WORKERS IN THE SWITCHYARD QUESTION THE LOUD HUMMING NOISE COMING FROM THE UNIT 2 (CT2) STARTUP TRANSFORMER WHEN THEY KNOW IT'S POWER CIRCUIT BREAKERS ARE LOCKED OUT.
- o OCONEE DETERMINES THAT A HIGH VOLTAGE EXIST ON THE SECONDARY SIDE OF THE STARTUP TRANSFORMER.
- o ENGINEERING EVALUATION DETERMINES THAT THE CAPACITOR ACROSS THE COGENEL PCB ARE PASSING ENOUGH CURRENT TO SET UP A C & L RESONANCE WITH THE STARTUP TRANSFORMER WHICH ESTABLISH A LARGE VOLTAGE ON THE SECONDARY SIDE OF THE TRANSFORMER.

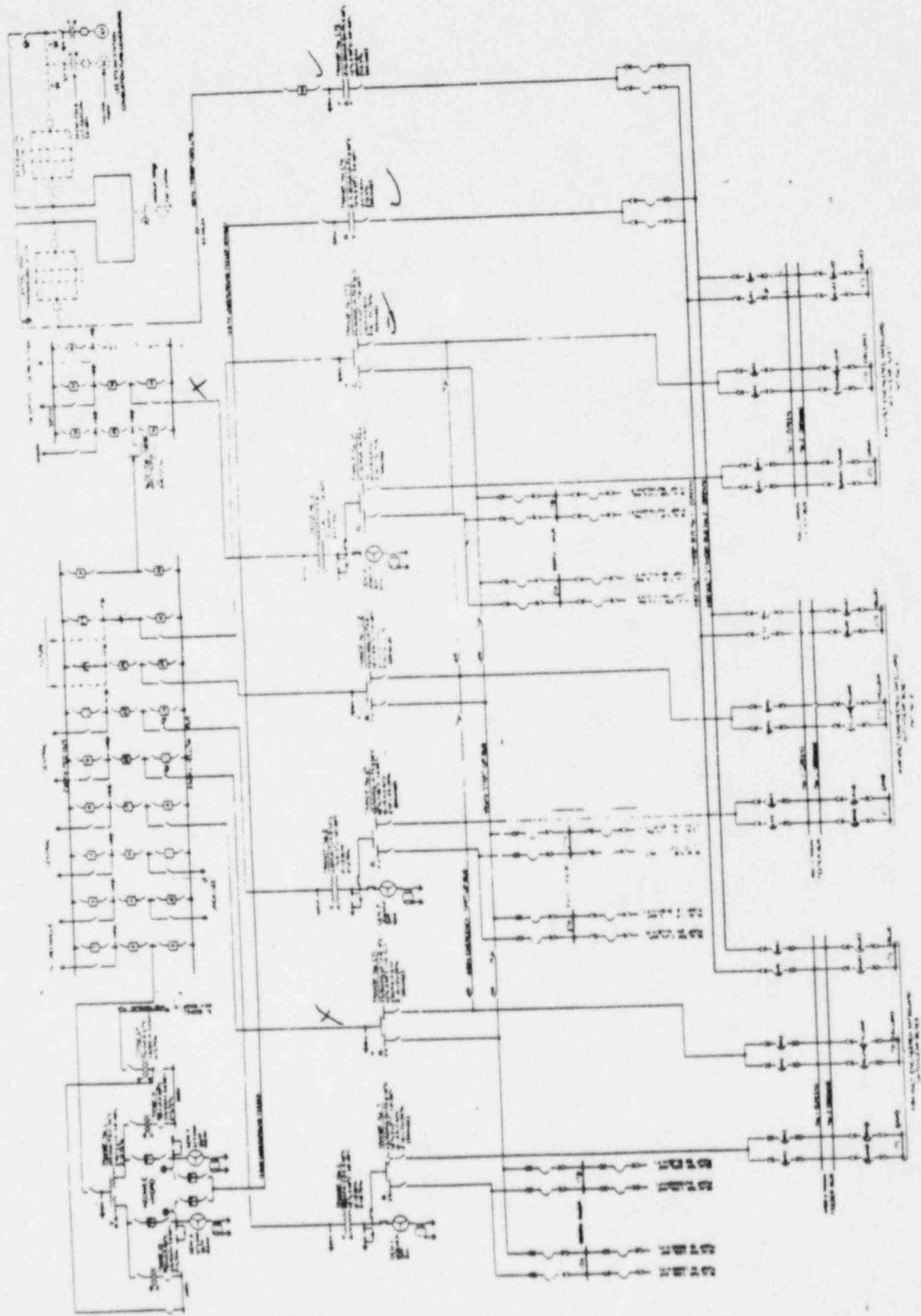
CONTACT: R. SCHOLL

REFERENCE: 50.72 # 12124

- o IMMEDIATE CORRECTIVE ACTION TAKEN BY LICENSEE TO LINE UP THE UNIT 3 STARTUP TRANSFORMER TO UNIT 2.
- o LICENSEE STATED THAT UNIT 3 WILL NOT BE RESTARTED UNTIL THE UNIT 2 PCB ARE AVAILABLE TO BE RETURNED TO SERVICE.
- o POST-INSTALLATION SYSTEM TESTING DID NOT IDENTIFY THE DESIGN PROBLEM.

FOLLOWUP

SELB HAS THE LEAD FOR FOLLOWUP.



STATION MAIN BUSES
 SINGLE LINE DIAGRAM
 OCONEE NUCLEAR S
 Figure 8.1-1



PERRY 1
LOSS OF FEEDWATER/HPCS OUT OF SERVICE
APRIL 27, 1988

PROBLEM

LOSS OF FEEDWATER WITH HPCS OUT OF SERVICE FOR MAINTENANCE.

CAUSE

HUMAN ERROR WHILE RESTORING NORMAL ELECTRICAL SUPPLY TO BUS.

SIGNIFICANCE

PRECURSOR TO SERIOUS EVENT. LOSS OF FEEDWATER AND SCRAM WITH REDUCED MITIGATING CAPABILITY.

DISCUSSION

- o PLANT OPERATING AT 100% POWER.
- o HPCS OUT OF SERVICE FOR MAINTENANCE.
- o OPERATOR MADE SEQUENCING ERROR WHEN TRYING TO RESTORE NORMAL ELECTRICAL SUPPLY TO BUS.
- o HOT SURGE TANK LEVEL CONTROLLER OUTPUT DROPPED TO ZERO AND TANK LEVEL CONTROL VALVE WENT FULLY CLOSED.
- o FEEDWATER BOOSTER PUMPS TRIPPED ON LOW HOT SURGE TANK LEVEL.
- o MAIN FEEDWATER PUMPS TRIPPED BECAUSE INTERLOCKED WITH FEEDWATER BOOSTER PUMPS.
- o IN ABOUT 20 SECONDS WATER LEVEL DECREASED TO 88 INCH. SCRAM INITIATED AT LEVEL 3. RCIC INITIATED AT LEVEL 2. HPCS WOULD HAVE BEEN INITIATED AT LEVEL 2 BUT WAS OUT OF SERVICE FOR MAINTENANCE.
- o RCIC SYSTEM RESTORED REACTOR WATER LEVEL TO NORMAL LEVEL IN APPROXIMATELY 25 MINUTES. RCIC SYSTEM FLOW RATE ABOUT 700 GPM.

FOLLOWUP

REGION WILL REVIEW THE LICENSEE'S POST SCRAM EVALUATION AND CORRECTIVE ACTION.

CONTACT: T. GREENE

REFERENCE: 50.72 # 12136

PRAIRIE ISLAND 1 & 2
ESF BUS DEGRADATION WITH DG OUT
APRIL 26, 1988

PROBLEM

SINGLE FAILURE (FUSE) RENDERS ONE ESF BUS INOPERABLE.

CAUSE

IMPROPER MAINTENANCE ACTION BLOWS D.C. CONTROL POWER FUSE.

SIGNIFICANCE

THE AFFECTED BUS COULD NOT BE ENERGIZED BY EITHER THE EMERGENCY DIESEL OR OFFSITE POWER.

DISCUSSION

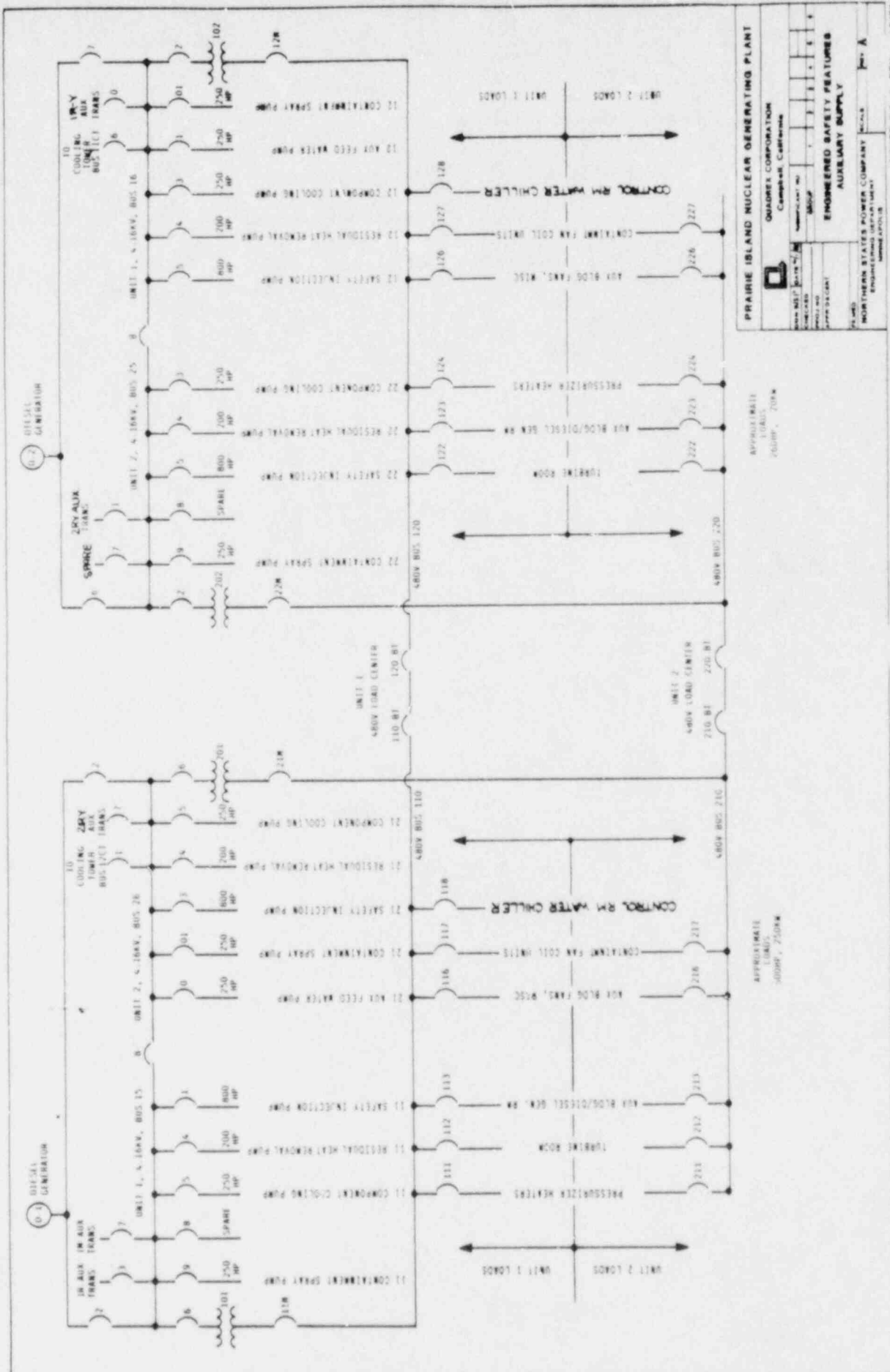
- o ON APRIL 26, 1988 PRAIRIE ISLAND UNITS 1 & 2 AT 100% POWER.
- o SITE HAS TWO EMERGENCY DIESELS WHICH ARE SHARED BETWEEN BOTH UNITS.
- o NUMBER 2 DIESEL OFF LINE FOR ANNUAL PREVENTIVE MAINTENANCE.
- o TECHNICIAN BLEW A D.C. CONTROL CIRCUIT FUSE RENDERING AUTO SEQUENCING OF DIESEL #2'S LOADS TO THE ESF BUS OR AN ALTERNATE BUS INOPERABLE.
- o THIS FAILURE COULD ALSO DISABLE FAST TRANSFER OF THE ESF BUS TO OFFSITE POWER. MANUAL CONTROL WAS STILL AVAILABLE.
- o D.C. CONTROL POWER RESTORED IN 20 MINUTES.
- o SIMILAR EVENT OCCURRED LAST OCTOBER DURING P.M. ON #1 DIESEL.
- o THIS PLANT IS SIMILAR IN EQUIPMENT CONFIGURATION TO OTHERS OF ITS VINTAGE, E.G., TURKEY POINT AND POINT BEACH.
- o CONDUCT OF DIESEL PM WITH BOTH UNITS AT POWER IS LEAST RISK SCENARIO.
- o 2 ADDITIONAL SAFETY GRADE DIESELS WILL BE INSTALLED TO COMPLY WITH THE BLACKOUT RULE. 2 NON-SAFETY GRADE DIESELS ARE BEING INSTALLED NOW.

FOLLOWUP

NONE

CONTACT: R. KARSCH

REFERENCE: 50.72 # 12123, MORNING REPORT 04/28/88



**ENGINEERED SAFETY FEATURES
AUXILIARY SUPPLY**

QUADREX CORPORATION
Campbell, California

DESIGNED BY: []
CHECKED BY: []
APPROVED BY: []

PLANT: []
ENGINEERING DEPARTMENT: []
DRAWING NO.: []

REVISIONS: []

APPROXIMATE
LOADS:
500HP, 750KW

APPROXIMATE
LOADS:
500HP, 750KW

PALISADES 1
FAILURE OF REACTOR TRIP BREAKER
APRIL 28, 1988

PROBLEM

- o AN UNRECOVERABLE DROPPED ROD FORCED A PLANT SHUTDOWN FROM 100% POWER.
- o DURING PLANT SHUTDOWN, EQUIPMENT FAILURE ERROR RESULTED IN THE OPENING OF THE #6 HP FEEDWATER HEATER SAFETY RELIEF AND OPERATOR ERROR RESULTED IN THE OVER FLOWING OF COOLING TOWER BASIN.
- o IN PREPARATION FOR STARTUP, A TEST OF ONE OF THE MANUAL RX TRIP PUSH BUTTONS FAILED TO OPEN THE UNDERVOLTAGE TRIP BREAKER.

CAUSE

- o CAUSE OF THE DROPPED ROD HAS NOT BEEN DETERMINED.
- o ROOT CAUSE FAILURE OF THE UNDERVOLTAGE TRIP ATTACHMENT IS STILL UNDER INVESTIGATION.

SIGNIFICANCE

- o DROPPED ROD IS AN ANALYZED EVENT WITH MINIMAL SAFETY SIGNIFICANCE.
- o THE OPERATOR ERRORS, ALTHOUGH DISCONCERTING, DID NOT RESULT IN ANY PERSONAL INJURIES OR CONTAMINATION.
- o THE FAILURE OF THE UNDERVOLTAGE RELAY IS A FAILURE OF THE BACKUP REACTOR TRIP SYSTEM.

DISCUSSION

- o ON APRIL 27, 1988 THE #6 CONTROL ROD DROPPED DUE TO AN UNDETERMINED CAUSE; PLANT RESPONSE NORMAL (DROPPED ROD AND FLUX TILT ALARMS RECEIVED) AND OPERATOR ACTION WAS PROMPT AND CORRECT.
- o WHILE SHUTTING DOWN (TURBINE OFF-LINE) THE MSR DRAIN LINE VALVES FAILED TO PROPERLY CLOSE RESULTING IN THE OVERPRESSURIZATION OF THE #6 HP FEEDWATER HEATER. THIS FAILURE WAS DUE TO AN IMPROPERLY CALIBRATED E-P CONVERTER.
- o OVERFILLING OF THE COOLING TOWER BASIN DUE TO OPERATOR ACTION RESULTED IN WATER BEING INTRODUCED TO THE RADWASTE BLDG (THIS IS A RECURRING PROBLEM).

CONTACT: T. SILKO

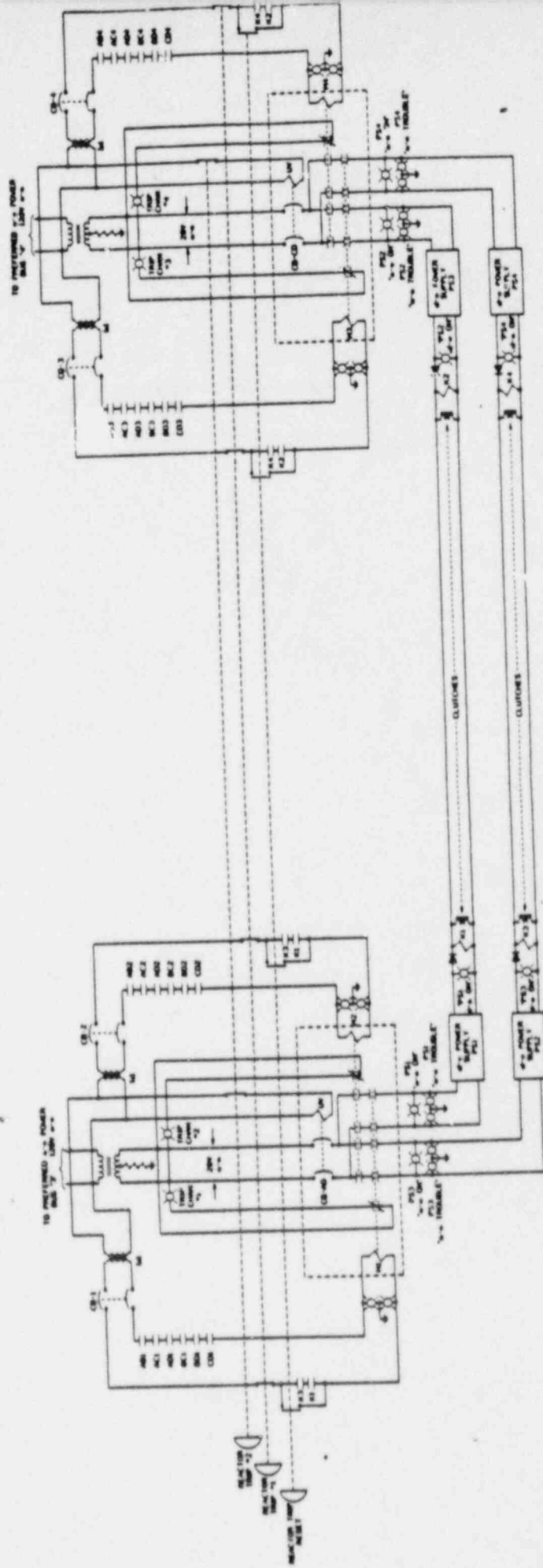
REFERENCE: 50.72s # 12133, 12137, AND MORNING REPORT 04/28/88

- o LICENSEE REPLACED BOTH UV BREAKERS.
- o UV BREAKER FAILED DUE TO THE UV COIL BEING IMPROPERLY MOUNTED ALLOWING COIL TO ROTATE RATHER THAN TO GENERATE A TRIP. ROOT CAUSE UNDETERMINED.
- o SECOND UV BREAKER ANALYZED AND NO DEFICIENCIES WERE IDENTIFIED.
- o LICENSEE REPLACED THE CRD PACKAGE AND ALL CRD CABLING/CONNECTIONS WITHIN CONTAINMENT.
- o LICENSEE INITIATED CLEANUP OF RADWASTE BLDG AND FW HEATER AREA.

FOLLOWUP

EAB DISCUSSING EVENT WITH FORT CALHOUN TO SEE IF SIMILAR PROBLEM EXISTS.

PALISADES 1



PERFORMANCE INDICATORS SIGNIFICANT EVENTS

PLANT NAME	EVENT DATE	EVENT DESCRIPTION	QTR SIGNIFICANCE
DCONEE 2	04/26/88	SWITCHYARD MODIFICATION RESULTED IN THE POTENTIAL FOR A SINGLE FAILURE TO PREVENT AUTOMATIC BUS TRANSFER TO EMERGENCY POWER SOURCES.	1 POTENTIAL FOR OR ACTUAL DEGRADATION OF SAFETY-RELATED EQUIPMENT
POINT BEACH 1	04/28/88	AUTOMATIC ISOLATION OF CONTAINMENT PURGE SUPPLY AND EXHAUST VALVES INADVERTENTLY TAGGED OUT DURING REFUELING.	1 POTENTIAL FOR OR ACTUAL DEGRADATION OF CONTAINMENT OR SAFETY-RELATED STRUCTURES

MAY 3, 1988
STATUS REPORT ON LONGTERM FOLLOWUPS ASSIGNED

ORGANIZATION	BACKLOG OVERVIEW (LAPSED TIME IN MONTHS)			MONTHLY ACTIVITIES	
	LONGTERM FOLLOWUPS GREATER THAN 6 MO.	LONGTERM FOLLOWUPS 3 TO 6 MO.	LONGTERM FOLLOWUPS LESS THAN 3 MO.	ACTIONS ADDED MAY 1988	ACTIONS COMPLETED MAY 1988
AECID	0	0	1	0	0
EAB	0	0	1	0	0
ECEB	0	0	1	0	0
EMTB	0	1	1	0	0
HLFB	0	0	1	0	0
IOSB	0	2	0	0	0
OTSB	0	1	0	0	0
FD2-2	1	0	0	0	0
FD2-3	1	0	0	0	0
FD2-2	1	0	0	0	0
FD5	0	2	0	0	0
R111	0	0	1	0	0
RV1B	1	4	1	0	0
SELB	1	3	2	0	0
SICB	0	0	1	0	0
SPLB	3	0	1	0	0
SRXB	1	2	2	0	0
TOTAL	9	15	13	0	0

NOTE: An event assigned for longterm followup may have been assigned to multiple branches and a single TAC may have been assigned to similar events at multiple plants, i.e., TAC #67344 was assigned to HFAB and SICB for events at Beaver Valley 2, Calvert Cliffs 2, and Rancho Seco 1.

SUGGESTED LONGTERM FOLLOWUP

DATE OF EVENT	PLANT NAME AND UNIT	SIGNIFICANT EVENT	INITIAL FOLLOWUP ASSIGNMENT	SUGGESTED RESOLUTION	SUGGEST TRANSFER TO:	EXPECTED COMPLETION DATE
06/29/87	BEAVER VALLEY 2	F.	DIESEL GENERATORS INOPERABLE DUE TO LUBE STRAINER FOU:ING	FOLLOWUP OF LUBE OIL STRAINER AT BEAVER VALLEY 2 & ASSESS THE POTENTIAL GENERIC SAFETY IMPLICATIONS AND DETERMINE THE NEED FOR GENERIC COMMUNICATION ISSUANCE.	NRR/SPLB	

REACTOR SCRAM SUMMARY
WEEK ENDING 05/01/88

1. PLANT SPECIFIC DATA

DATE	SITE	UNIT	POWER	SIGNAL	CAUSE	COMPLI- CATIONS	YTD	YTD	YTD
							ABOVE	BELOW	TOTAL
							15%	15%	
04/27/88	CALVERT CLIFFS	2	100	A	UNKNOWN	NO	2	0	2
04/28/88	PERRY	3	100	A	PERSONNEL	NO	1	0	1
04/30/88	HOPE CREEK	1	55	M	EQUIPMENT	NO	1	1	2
04/30/88	HADDAM NECK	1	60	A	UNKNOWN	NO	1	2	3
04/30/88	PERRY	1	2	A	PERSONNEL	NO	0	2	2

NOTES

1. PLANT SPECIFIC DATA BASED ON INITIAL REVIEW OF SC.72 REPORTS FOR THE WEEK OF INTEREST. PERIOD IS MIDNIGHT SUNDAY THROUGH MIDNIGHT: SUNDAY SCRAMS ARE DEFINED AS REACTOR PROTECTIVE ACTUATIONS WHICH RESULT IN ROD MOTION, AND EXCLUDE PLANNED TESTS OR SCRAMS AS PART OF PLANNED SHUTDOWN IN ACCORDANCE WITH A PLANT PROCEDURE. THERE ARE 109 REACTORS HOLDING AN OPERATING LICENSE.

2. COMPLICATIONS: RECOVERY COMPLICATED BY EQUIPMENT FAILURES OR PERSONNEL ERRORS UNRELATED TO CAUSE OF SCRAM.

3. PERSONNEL RELATED PROBLEMS INCLUDE HUMAN ERROR, PROCEDURAL DEFICIENCIES, AND MANUAL STEAM GENERATOR LEVEL CONTROL PROBLEMS.

4. "OTHER" INCLUDES AUTOMATIC SCRAMS ATTRIBUTED TO ENVIRONMENTAL CAUSES (LIGHTNING), SYSTEM DESIGN, OR UNKNOWN CAUSE.