

SEP 10 1992

MEMORANDUM FOR: Charles E. Rossi, Director
 Division of Operational Events Assessment

FROM: Alfred E. Chaffee, Chief
 Events Assessment Branch
 Division of Operational Events Assessment

SUBJECT: OPERATING REACTORS EVENTS MEETING
 SEPTEMBER 2, 1992 - MEETING 92-15

On September 2, 1992, we conducted an Operating Reactors Events meeting (92-15) to inform senior managers from offices of the Commission, EDO, SECY, AEOD, OE, NRR, ACRS, and regional offices of selected events that occurred since our last briefing on August 26, 1992. Enclosure 1 lists the attendees. Enclosure 2 presents the significant elements of the discussed events.

Enclosure 3 contains reactor scram statistics for the week ending 08/30/92. No significant events were identified for input into the NRC performance indicator program.

(original signed by Robert L. Dennig
 for)

Alfred E. Chaffee, Chief
 Events Assessment Branch
 Division of Operational
 Events Assessment

Enclosures: As stated

cc w/enclosures:
 See next page

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cc:

T. Murley, NRP (12G18)
F. Miraglia, NRR (12G18)
W. Russell, NRR (12G18)
F. Gillespie, NRR (12G18)
J. Partlow, NRR (12G18)
S. Varya, NRR (14E4)
J. Calvo, NRR (14A4)
G. Lainas, NRR (14H3)
B. Boger, NRR (14A2)
J. Zwolinski, NRR (13H24)
M. Virgilio, NRR (13E4)
D. Crutchfield, NRR (11H21)
W. Travers, NRR (11B19)
J. Richardson, NRR (7D26)
A. Thadani, NRR (8E2)
B. Grimes, NRR (9A2)
F. Congel, NRR (10E2)
J. Roe, NRR (10H5)
M. Pohida, NRR (10E4)
T. Martin, RI
W. Kane, RI
C. Hehl, RI
S. Edneter, RII
E. Merschhoff, RII
B. Davis, RIII
E. Greenman, RIII
J. Milhous, RIV
B. Beach, RIV
J.B. Martin, RV
K. Perkins, RV
P. Boehnert, ACRS (P-315)
E. Jordan, AEOD (MN-3701)
T. Novak, AEOD (MN-3701)
L. Spessard, AEOD (MN-3701)
E. Weiss, AEOD (MN-3206)
S. Rubin, AEOD (MN-4106)
M. Harper, AEOD (MN-9112)
J. Grant, EDO (17G21)
R. Newlin, GPA (2G5)
E. Beckjord, RES (NLS-007)
A. Bates, SECY (16G15)
G. Rammling, OCM (16H3)

B. Siegel, PDIII-2
R. Barrett, PDIII-2
D. Dorman, PDII-1
E. Adensam, PDII-1
J. Clifford, PDV
T. Quay, PDV

bcc: INPO

ATTN: J. Cowan
1100 Circle 75, Suite 1500
Atlanta, GA 30339

ENCLOSURE 1

LIST OF ATTENDEES

OPERATING REACTORS EVENTS FULL BRIEFING (92-15)

SEPTEMBER 2, 1992

<u>NAME</u>	<u>OFFICE</u>	<u>NAME</u>	<u>OFFICE</u>
C. ROSSI	NRR	R. ASSA	NRR
A. CHAFFEE	NRR	B. SIEGEL	NRR
T. GREENE	NRR	R. BARRETT	NRR
D. GARCIA	NRR	K. KAVANAGH	NRR
J. CARTER	NRR	F. ORP	NRR
K. BAUMANN	NRR	C. BERLINGER	NRR
T. KOSHY	NRR	E. ADENSAM	NRR
K. MARCUS	NRR	J. CLIFFORD	NRR
R. DENNIG	NRR	G. ZECH	NRR
A. GAUTAM	NRR	V. BENAROYA	AEOD
G. MARCUS	NRR	D. LANGE	EDO
S. ROSENBERG	NRR	C. ABBATE	OCM/IS
J. TATUM	NRR	W. TROSKOSKI	OE
V. ORDAZ	NRR	D. COE	ACRS
A. CUBBAGE	NRR	K. HART	SECY
J. DIXON	NRR	F. ZARZEULA	AEOD

OPERATING REACTORS EVENTS BRIEFING 92-15
EVENTS ASSESSMENT BRANCH
LOCATION: 8 B11, WHITE FLINT
WEDNESDAY, SEPTEMBER 2, 1992, 11:00 A.M.

LA SALLE 2

SCRAM WITHOUT FEEDWATER
TRIP AND OTHER
EQUIPMENT FAILURES
(AIT)

WASHINGTON NUCLEAR PROJECT 2

UPDATE OF POWER
OSCILLATIONS (AIT)

ROBINSON 2

PLANT SHUTDOWN DUE TO
INOPERABLE SAFETY
INJECTION (SI) PUMPS

LA SALLE, UNIT 2
SCRAM WITHOUT FEEDWATER TRIP
AND OTHER EQUIPMENT FAILURES
AUGUST 27, 1992

PROBLEM

WHILE AT 80% POWER, REACTOR SCRAMMED. BOTH TURBINE DRIVEN MAIN FEEDWATER (FW) PUMPS FAILED TO TRIP AUTOMATICALLY. PROBLEMS WERE ENCOUNTERED WHEN FW PUMPS WERE TRIPPED MANUALLY. ALSO THERE WERE OTHER EQUIPMENT FAILURES AND OPERATOR ERROR.

CAUSE

THE REACTOR SCRAM WAS CAUSED BY A TURBINE TRIP. THE TURBINE TRIP WAS DUE TO A TRIP SIGNAL FROM THE THRUST BEARING WEAR DETECTOR. FAILURE OF FW PUMPS TO TRIP CAUSED BY CONTAMINATED OIL.

SAFETY SIGNIFICANCE

SYSTEM INTERACTION PROBLEMS CHALLENGED OPERATORS AND SAFETY SYSTEMS.

DISCUSSION

ON AUGUST 27, 1992, LA SALLE, UNIT 2, HAD A TURBINE TRIP WHICH CAUSED A REACTOR SCRAM FROM 80% POWER. TURBINE TRIP WAS DUE TO A TRIP SIGNAL FROM THE THRUST BEARING WEAR DETECTOR. FIRST OUT ANNUNCIATOR FOR SCRAM DID NOT WORK.

CONTACTS: R. WESTBERG, RIII AIT: YES
T. GREENE, NRR/DOEA SIGEVENT: YES

REFERENCES: 10 CFR 50.72 #24129,
#24130, MORNING REPORT DATED
08/27/92, AND PN-3-92043

- 0 RCIC INITIATED PRIOR TO ITS LOW LEVEL (-50") SETPOINT.
- 0 A SRV OPENED TO CONTROL PRESSURE.
- 0 OPERATOR MANUALLY STARTED MOTOR DRIVEN FW PUMP.
- 0 AS REACTOR WATER LEVEL INCREASED, THE OPERATOR COULD NOT TRIP EITHER OF THE TURBINE DRIVEN MAIN FW PUMPS REMOTELY NOR DID THE AUTOMATIC TRIP SIGNAL TRIP THEM. OPERATOR CLOSED THE DISCHARGE VALVES. DIFFICULTIES WERE ENCOUNTERED WHEN TRYING TO TRIP THE PUMPS LOCALLY.
- 0 RCIC AND MOTOR DRIVEN FW PUMP TERMINATED AT LEVEL 8. RCIC TESTABLE CHECK VALVE DID NOT CLOSE.
- 0 MSIVs WERE CLOSED MANUALLY TO TERMINATE STEAM TO THE FW PUMPS.
- 0 HIGH DRYWELL TEMPERATURE ALARM.
- 0 OPERATOR OPENED TWO SRVs TO CONTROL REACTOR PRESSURE. SRVs HAVE REPOSITION AND/OR INDICATING PROBLEMS.
- 0 OPERATOR ATTEMPTED TO RESTART RCIC FOR PRESSURE CONTROL. TWO ATTEMPTS WERE NEEDED TO START RCIC.
- 0 A GROUP 1 ISOLATION OCCURRED WHEN THE OPERATOR ATTEMPTED TO REOPEN THE MSIVs.

- 0 RCIC TURBINE TRIPPED; TESTABLE CHECK VALVE FAILED TO CLOSE AGAIN.
- 0 OPERATORS SUCCESSFULLY ESTABLISHED THE STEAM FLOW TO THE CONDENSER, AND THE PLANT WAS PLACED IN COLD SHUTDOWN.

FOLLOWUP

- 0 AIT SENT TO SITE. TEAM LEADER IS ROLF WESTBERG.
- 0 CAUSE OF TURBINE TRIP BELIEVED TO BE FAILED THRUST BEARING.
- 0 FIRST OUT ANNUNCIATION FAILED DUE TO A BURNED OUT LIGHT BULB.
- 0 ROOT CAUSE OF FW PUMPS TRIP DIFFICULTIES BEING ATTRIBUTED TO CONTAMINATED OIL.
- 0 FAILURE OF THE FW PUMPS TO TRIP CAUSED WATER TO FILL THE RCIC STEAM INLET LINE. WHEN RCIC STARTED, A SLUG OF WATER WENT THROUGH THE TURBINE, FLASHED TO STEAM, AND CAUSED A HIGH BACK PRESSURE TRIP WHICH PREVENTED THE RCIC FROM STARTING.

- 0 TWO SRVs HAD INDICATING PROBLEMS. THE FULL OPEN ALARM FAILURE WAS CAUSED BY A BAD CIRCUIT BOARD. THE POSITION INDICATION FAILURE APPEARED TO BE DUE TO THE LOAD CELL. INSPECTION OF ONE OF THE SRVs DETERMINED THAT THE ACTUATION ROD WAS BINDING.
- 0 RCIC TESTABLE CHECK FAILURE TO CLOSE DUE TO PACKING FRICTION.
- 0 GROUP 1 ISOLATION OCCURRED WHEN OPERATOR MISTAKENLY OPENED THE INBOARD MSIV WITH TOO HIGH OF A DELTA PRESSURE (760 PSID).
- 0 DURING THE EVENT, THERE WERE HIGH DRYWELL TEMPERATURE ALARMS. THE LICENSEE BELIEVES THIS WAS CAUSED BY THE CRD SCRAM DISCHARGE PIPING PASSING IN CLOSE PROXIMITY TO ONE OF THE DRYWELL TEMPERATURE ELEMENTS (AUCTIONEERED HIGH).
- 0 AIT HAS SOME CONCERNS WITH COMPLETENESS AND ACCURACY OF 10 CFR 50.72 NOTIFICATION.

TYPICAL LUBE OIL SYSTEM

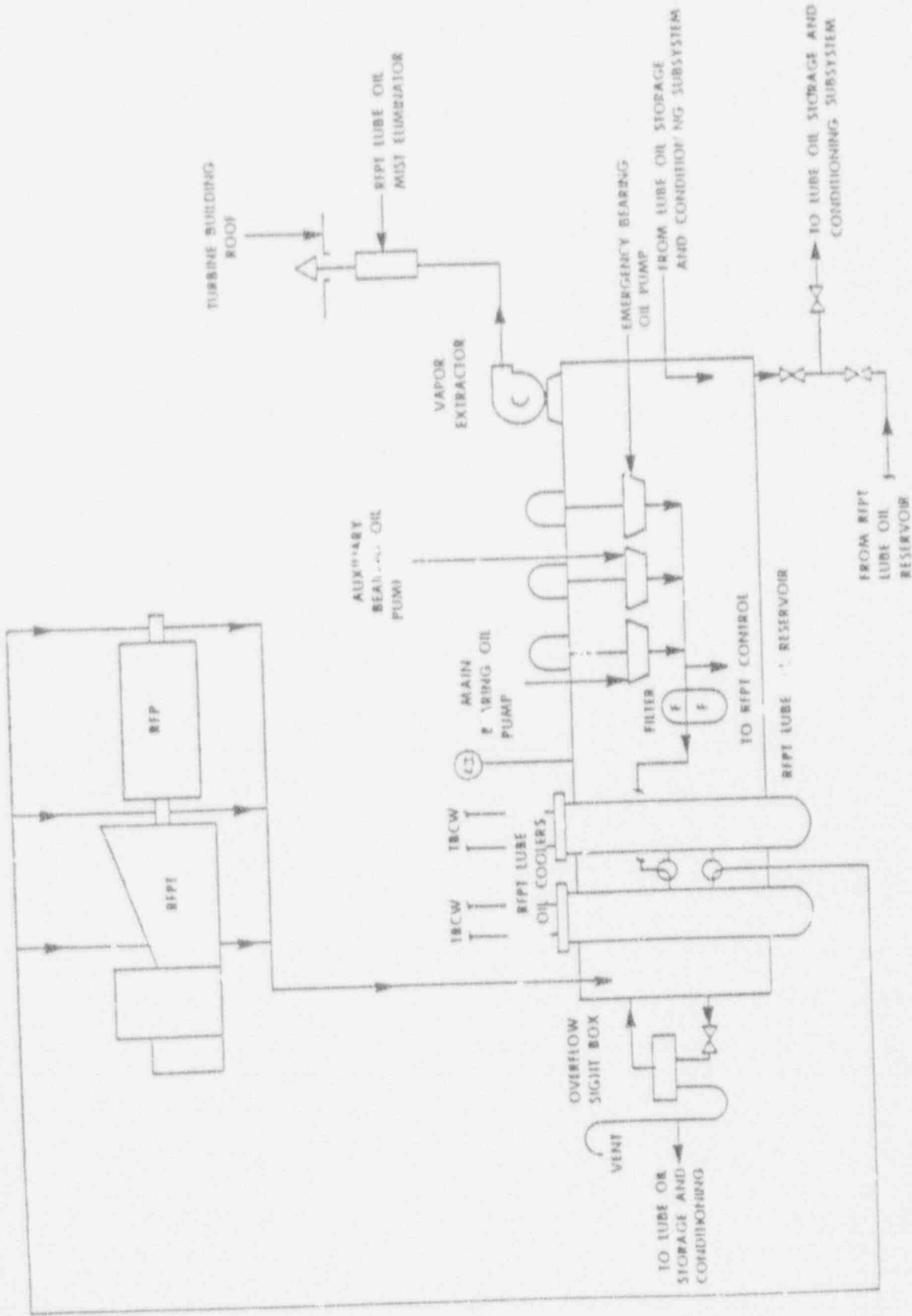


FIGURE 2.6 RFP LUBE OIL SYSTEM

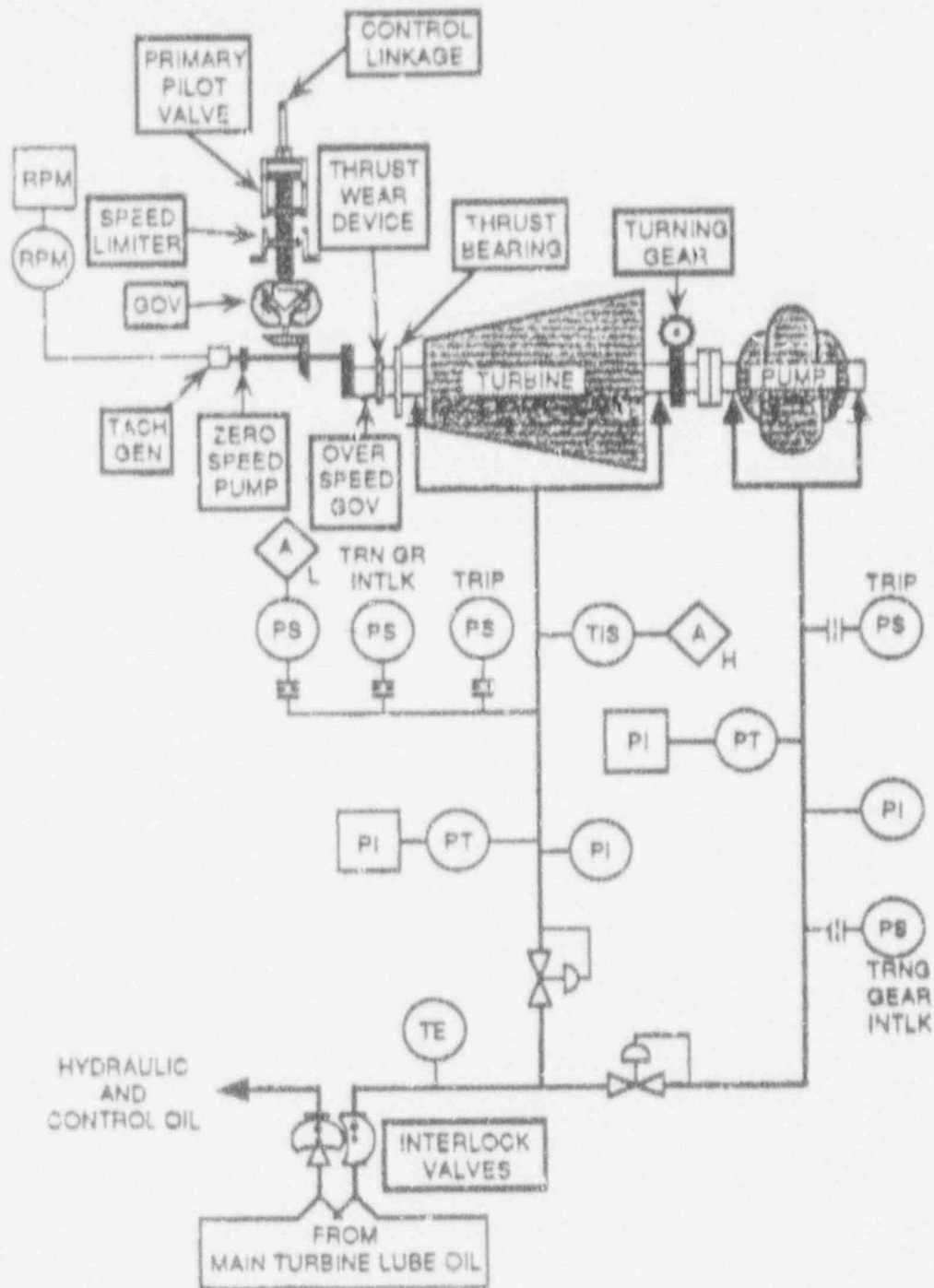


FIGURE 29-11A TDRFP LUBE OIL

WASHINGTON NUCLEAR PROJECT, UNIT 2
UPDATE OF POWER OSCILLATION EVENT
AUGUST 15, 1992

PROBLEM

CORE-WIDE POWER WAS OBSERVED TO OSCILLATE DURING REACTOR STARTUP.

IMMEDIATE CAUSES

- RADIAL AND AXIAL POWER PEAKING HIGHER THAN ASSUMED
- TRANSITION MIXTURE OF 8 X 8 WITH NEWER 9 X 9 (9X) ASSEMBLIES MORE SUSCEPTIBLE
- CONTROL ROD PATTERN SELECTED BY SHIFT NUCLEAR ENGINEER PRODUCED UNDESIRABLE PEAKING

SAFETY SIGNIFICANCE

UNEXPECTED PLANT PERFORMANCE WHILE OPERATING IN A PERMISSIBLE OPERATING REGION.

DISCUSSION

0 FACILITY WAS OPERATING AT 100% POWER PRIOR TO DETECTING AN UNIDENTIFIED LEAK OF > 5 GPM.

CONTACTS: L. MILLER, RV AIT: YES
J. CARTER, NRR/DOEA SIGEVENT: TBD

REFERENCES: 10 CFR 50.72 #24055,
PN-5-92029, PN-5-92029A,
AND PN-5-92029B

- 0 POWER REDUCED FOR CONTAINMENT ENTRY.
 - LICENSEE DETERMINED LEAK SOURCE TO PACKING ON VALVE IN THE REACTOR VESSEL HEAD DRAIN LINE.

- 0 DURING RETURN TO POWER, WHILE AT APPROXIMATELY 35% POWER, LICENSEE WAS SEQUENTIALLY CLOSING FLOW CONTROL VALVES PRIOR TO SHIFTING PUMP SPEED-PER PROCEDURES.

- 0 PRIOR TO INCREASING PUMP SPEED, OSCILLATIONS WERE OBSERVED. (CORE FLOW WAS 26%)
 - INITIALLY, RANGE (PEAK TO PEAK) WAS 3% POWER.
 - RANGE INCREASED TO 24% WITHIN A 140 SEC INTERVAL.

- 0 REACTOR WAS MANUALLY SCRAMMED WITHIN 50 SEC OF FIRST AUDIBLE ALARM.

FOLLOWUP

- 0 LICENSEE ASSEMBLED A TEAM, INCLUDING VENDOR AND BWR INDUSTRY PERSONNEL, TO DETERMINE ROOT CAUSE.

- 0 LICENSEE TAKING CORRECTIVE ACTIONS.
 - INCORPORATING ADDITIONAL CONSTRAINTS ON OPERATION
 - FORMALIZING CONSTRAINTS AND STARTUP GUIDANCE INTO PROCEDURES
 - CONSTRAINTS LIMIT PEAKING FACTORS AND PERMITTED CONTROL ROD PATTERNS PRIOR TO PUMP SHIFT
 - BEST ESTIMATE CODE USED TO ASSURE STABILITY WITHIN NEW OPERATING CONDITIONS.

- 0 A CONFIRMATIVE ACTION LETTER WAS SENT TO LICENSEE.
- 0 NRC SENT AN AIT TO SITE. AIT DEVELOPED SEQUENCE OF EVENTS, IDENTIFIED IMMEDIATE AND ROOT CAUSES, ASSESSED ADEQUACY OF CORRECTIVE ACTION AND READINESS FOR RESTART.
- 0 AIT EXITED 08/30/92.
- 0 WNP-2 RESTARTED 08/31/92 AFTER DISCUSSIONS WITH NRC, INCLUDING AIT.

H. B. ROBINSON, UNIT 2
PLANT SHUTDOWN DUE TO INOPERABLE
SAFETY INJECTION (SI) PUMPS
AUGUST 24, 1992

PROBLEM

DEBRIS FOUND IN THE RECIRCULATION FLOW ORIFICE RENDERED THE "B" SAFETY INJECTION (SI) PUMP INOPERABLE. MATERIAL SUSPECTED IN THE "A" RECIRCULATION LINE IS UNDER INVESTIGATION.

CAUSE

THE PLASTIC DISCS USED AS PURGE GAS DAMS FOR THE RHR SYSTEM PIPING MAINTENANCE WAS INADVERTENTLY INTRODUCED INTO THE REFUELING WATER STORAGE TANK (RWST) AND THE EMERGENCY CORE COOLING SYSTEMS (ECCS).

SAFETY SIGNIFICANCE

DEGRADATION OF EMERGENCY CORE COOLING SYSTEMS.

DISCUSSION

- 0 THE LICENSEE DECLARED THE "B" SI PUMP INOPERABLE DUE TO 1 GPM RECIRCULATION FLOW.
- 0 TESTING OF THE "A" SI PUMP INDICATED A 10 PERCENT REDUCTION IN RECIRCULATION FLOW. THE LICENSEE DECLARED "A" SI PUMP INOPERABLE AND PROCEEDED TO TAKE THE PLANT INTO COLD SHUTDOWN.

CONTACT:
REFERENCE:

D. GARCIA, NRR/DOEA
10 CFR 50.72 #24114

AIT: NO
SIGEVENT: YES

- 0 THE "B" SI PUMP RECIRCULATION LINE (3/4") WAS OPENED AND A SINGLE PIECE OF WHITE PLASTIC WAS REMOVED.
- 0 THE LICENSEE SENT A DIVER INTO THE RWST TO CHECK FOR DEBRIS. MATERIAL FOUND IN THE RWST:
 - 3 PIECES OF WHITE PLASTIC MATERIAL VARYING IN SIZE
 - 16" X 26" COTTON TOWEL
 - OTHER SMALL MISCELLANEOUS DEBRIS
- 0 SATISFACTORY FULL FLOW TESTING OF BOTH SI PUMPS WAS ALSO PERFORMED.

PREVIOUS EVENT ON JULY 8, 1992

- 0 THE LICENSEE DECLARED THE "B" SI PUMP INOPERABLE AFTER THE SI PUMP DID NOT MEET THE REQUIRED RECIRCULATION FLOW.
- 0 REMOVAL OF THE "B" SI PUMP RECIRCULATION LINE REVEALED SEVERAL SMALL, WHITE PLASTIC PIECES BLOCKING THE INLET ORIFICE.
- 0 IT WAS THEORIZED THAT THE PLASTIC MATERIAL CAME FROM THE PLASTIC DISKS THAT WERE USED AS PURGE GAS DAMS IN THE RHR SYSTEM, DURING THE LAST REFUELING OUTAGE.
- 0 A TEMPORARY STRAINER WAS INSTALLED IN THE "B" SI PUMP RECIRCULATION LINE AND FLUSHED THREE TIMES COLLECTING TWO PIECES OF WHITE PLASTIC (FINGERNAIL SIZE) DEBRIS.

- 0 THE SAFETY INJECTION SYSTEM INTEGRITY TEST WAS SUCCESSFULLY PERFORMED.
- 0 ON JULY 12, 1992, THE UNIT WAS RETURNED TO SERVICE.

FOLLOWUP

- 0 LICENSEE RECOVERY PLAN INCLUDES:
 - DISASSEMBLY OF "A" SI PUMP RECIRCULATION LINE
 - INSPECTIONS AND FLUSHING OF AFFECTED SYSTEMS
 - INSTALLATION OF PERMANENT SI RECIRCULATION LINE STRAINERS
 - INTERNAL INSPECTION/CLEANING OF RWST
 - TESTING BOTH SI PUMPS
- 0 MEETING BETWEEN NRC AND CP&L TO DISCUSS LICENSEE RECOVERY ACTIONS PRIOR TO UNIT RESTART.

REACTOR SCRAM SUMMARY
WEEK ENDING 08/30/92

1. PLANT SPECIFIC DATA (1)

DATE	SITE	UNIT	POWER	SIGNAL	CAUSE	COMPLI-	(3) YTD		YTD
							CATIONS	ABOVE	
							151	151	
08/24/92	OYSTER CREEK	1	1	A	PERSONNEL	NO	2	2	4
08/24/92	MCGUIRE	2	100	A	EQUIPMENT	NO	4	0	4
08/25/92	PALISADES	1	100	A	EQUIPMENT	NO	4	0	4
08/27/92	HATCH	1	100	A	PERSONNEL	NO	3	0	3
08/27/92	LASALLE	2	80	A	EQUIPMENT	YES	2	0	2

SUMMARY OF COMPLICATIONS

SITE	UNIT	COMPLICATIONS
LASALLE	2	AFTER SCRAM BOTH MAIN FW PUMPS FAILED TO AUTO TRIP AND COULD NOT BE TRIPPED MANUALLY OR LOCALLY DUE TO PARTICLES IN CONTROL OIL. OPERATOR SHUT PUMP DISCHARGE VALVES TO STOP FW FLOW.

II. COMPARISON OF WEEKLY STATISTICS WITH INDUSTRY AVERAGES

SCRAMS FOR WEEK ENDING 08/30/92

SCRAM CAUSE	NUMBER OF SCRAMS	1992 WEEKLY AVERAGE (YTD)	1991 WEEKLY AVERAGE	1990 WEEKLY AVERAGE	1989 WEEKLY AVERAGE	1988 WEEKLY AVERAGE
POWER GREATER THAN 15%						
EQUIPMENT RELATED	3	2.5	2.9	3.4	3.1	3.0
PERSONNEL RELATED (2)	1	0.9	0.6	0.5	1.0	1.0
OTHER (4)	0	0.0	0.0	0.0	0.1	0.4
Subtotal	4	3.4	3.5	3.9	4.2	4.4
POWER LESS THAN 15%						
EQUIPMENT RELATED	0	0.6	0.3	0.4	0.3	0.6
PERSONNEL RELATED (2)	1	0.2	0.2	0.1	0.3	0.4
OTHER (4)	0	0.0	0.5	0.0	0.0	0.2
Subtotal	1	0.8	0.5	0.5	0.6	1.2
TOTAL	5	4.2	4.0	4.4	4.8	5.6

MANUAL VS AUTO SCRAMS

TYPE	NO. OF SCRAMS	1992 WEEKLY AVERAGE (YTD)	1991 WEEKLY AVERAGE	1990 WEEKLY AVERAGE	1989 WEEKLY AVERAGE	1988 WEEKLY AVERAGE
MANUAL SCRAMS	0	1.0	0.7	1.2	0.9	1.1
AUTOMATIC SCRAMS	5	3.2*	3.3	3.2	3.9	4.5

*Corrected to accommodate rounding-off

NOTES

1. PLANT SPECIFIC DATA BASED ON INITIAL REVIEW OF 50.72 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 111 REACTORS HOLDING AN OPERATING LICENSE.
2. PERSONNEL RELATED PROBLEMS INCLUDE HUMAN ERROR, PROCEDURAL DEFICIENCIES, AND MANUAL STEAM GENERATOR LEVEL CONTROL PROBLEMS.
3. COMPLICATIONS: RECOVERY COMPLICATED BY EQUIPMENT FAILURES OR PERSONNEL ERRORS UNRELATED TO CAUSE OF SCRAM.
4. "OTHER" INCLUDES AUTOMATIC SCRAMS ATTRIBUTED TO ENVIRONMENTAL CAUSES (LIGHTNING), SYSTEM DESIGN, OR UNKNOWN CAUSE.

OEAB SCRAM DATA

Manual and Automatic Scrams for 1987	-----	435
Manual and Automatic Scrams for 1988	-----	291
Manual and Automatic Scrams for 1989	-----	252
Manual and Automatic Scrams for 1990	-----	226
Manual and Automatic Scrams for 1991	-----	206
Manual and Automatic Scrams for 1992	--(YTD 08/30/92)--	147