

October 16, 1990

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: THE OPERATING REACTORS EVENTS MEETING  
 OCTOBER 10, 1990 - MEETING 90-25

On October 10, 1990, we conducted an Operating Reactors Events meeting (90-25) to inform senior managers from NRR, ACRS, AEOD, RES, Commission staff, and regional offices of selected events that occurred since our last briefing on October 3, 1990. 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 10/07/90. Enclosure 4 tabulates two significant events which were identified for input into the NRC performance indicator program.

Original signed by

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

Enclosures:  
 As stated

cc w/Encl.:  
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 "IDHR-5-1  
 OPERATING  
 EXPERIENCE

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ATE	:10/10/90	:10/12/90	:10/14/90	:	:	:	:

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CC:

T. Murley, NRR  
F. Miraglia, NRR  
W. Russell, NRR  
F. Gillespie, NRR  
J. Partlow, NRR  
S. Varga, NRR  
R. Wessman, NRR  
G. Lainas, NRR  
D. Crutchfield, NRR  
J. Zwolinski, NRR  
B. Boger, NRR  
W. Travers, NRR  
J. Richardson, NRR  
A. Thadani, NRR  
F. Rosa, NRR  
B. Grimes, NRR  
F. Congel, NRR  
J. Roe, NRR  
T. Martin, RI  
W. Kane, RI  
C. Hehl, RI  
S. Ebnetter, RII  
L. Reyes, RII  
B. Davis, RIII  
E. Greenman, RIII  
S. Collins, RIV  
R.D. Martin, RIV  
J.B. Martin, RV  
R. Zimmerman, RV  
P. Boehnert, ACRS  
E. Jordan, AEOD  
T. Novak, AEOD  
L. Spessard, AEOD  
E. Weiss, AEOD  
S. Rubin, AEOD  
M. Harper, AEOD  
W. Bateman, EDO  
R. Newlin, GPA  
J. Cowan, INPO  
E. Beckjord, RES  
A. Bates, SECY

S. Sands, NRR  
R. Dudley, NRR  
D. Neighbors, NRR  
R. Capra, NRR  
J. Donohew, NRR  
F. Hebdon, NRR

LIST OF ATTENDEESOPERATING REACTORS EVENTS BRIEFING (90-25)

October 10, 1990

<u>NAME</u>	<u>ORGANIZATION</u>	<u>NAME</u>	<u>ORGANIZATION</u>
T. Murley	NRR/DONRR	W. Russell	NRR/ADT
P. Boehnert	ACRS	A. Chaffee	NRR/DOEA
M. Cullingford	NRR/DONRR	L. Olshan	NRR/PD3-2
D. Fischer	NRR/DOEA	D. Neighbors	NRR/PD1-1
C. Rossi	NRR/DOEA	J. Chesley	ACRS
L. Norrholm	OCM/KC	F. Hebdon	NRR/PD2-4
M. Reardon	NRR/DOEA	H. Bailey	NRR/DOEA
K. Hart	SECY	V. Benaroya	AEOD/DSP
R. Pedersen	OE	F. Talbot	NRR/DRIS
W. Brach	NRR/DRIS	G. Lainas	NRR/DRP
A. Fitzgerald	NRR/DRIS	C. Carpenter	NRR/DRIS
G. Marcus	OCM/JC	R. Pierson	NRR/DRSP
D. Trimble	OCM/JC	S. Diab	NRR/DRSP
R. Gallo	OEDO	R. Capra	NRR/PD1-1
S. Varga	NRR/DRP	W. Jensen	NRR/DOEA
J. Thompson	NRR/DOEA	N. Wagner	NRR/DST
W. Minners	RES/DSIR	D. Brinkman	NRR/PD1-1
R. Jones	NRR/SRXB	D. Ray	NRR/DLPQ
J. Birmingham	NRR/DOEA	J. Guttmann	OCM/FR
C. Thompson	OEDO		

OPERATING REACTORS EVENTS BRIEFING 90-25  
EVENTS ASSESSMENT BRANCH

LOCATION: 10B-11, WHITE FLINT  
WEDNESDAY, OCTOBER 10, 1990, 11:00 A.M.

BRAIDWOOD UNIT 1

REACTOR COOLANT LEAK OUTSIDE  
CONTAINMENT (AIT)

INDIAN POINT UNIT 3

SPENT FUEL ASSEMBLIES REMAIN  
ATTACHED TO UPPER INTERNALS

SEQUOYAH UNIT 1

MAIN STEAM LINE CHECK VALVES  
DISC NUT PIN FAILURES (AIT)

BRAIDWOOD UNIT 1  
REACTOR COOLANT LEAK OUTSIDE CONTAINMENT (AIT)  
 OCTOBER 4, 1990

PROBLEM

REACTOR COOLANT LEAK INTO AUX BUILDING CONTAMINATED THREE INDIVIDUALS.

CAUSE

PREMATURE OPENING OF 1RH8702B HOT LEG ISOLATION VALVE WITH THE VENT VALVE IN THE SAME LINE STILL OPEN.

SAFETY SIGNIFICANCE

- o HAZARD TO PERSONNEL FROM BURNS AND CONTAMINATION.
- o POTENTIAL FOR AN INTERSYSTEM LOSS OF COOLANT.

DISCUSSION

- o PLANT IN MAINTENANCE OUTAGE SINCE 09/29/90 TO INVESTIGATE SPURIOUS SAFETY INJECTION SIGNALS.
- o REQUIRED SURVEILLANCES BEING PERFORMED ON THE RHR SUCTION ISOLATION VALVES.
  - INDIVIDUAL VALVE LEAK TESTING.
  - STROKE TIME TESTING.
- o REACTOR SYSTEM AT 360 PSIG AND 180 F.
- o THE REDUNDANT RHR TRAINS HAVE INDEPENDENT SUCTION LINES FROM THE HOT LEGS.
- o ON THE B-RHR TRAIN WITH SUCTION VALVE 1RH8702A OPEN, LEAKAGE THROUGH CLOSED 1RH8702B BEING COLLECTED AND MEASURED THROUGH VENT VALVE 1RH028B.
- o LEAKAGE TEST REPORTED TO BE COMPLETED.
- o VENT VALVE 1RH028B REQUESTED TO BE CLOSED.
- o ISOLATION VALVE 1RH8702B OPENED FROM THE CONTROL ROOM FOR STROKE TIME TESTING.
- o VENT VALVE 1RH028B NOT YET CLOSED.

CONTACT: W. SHAFER/W. JENSEN

AIT: YES

SIGEVENT: YES

REFERENCES: 10 CFR 50.72 #19523 AND MORNING REPORT 10/04/90

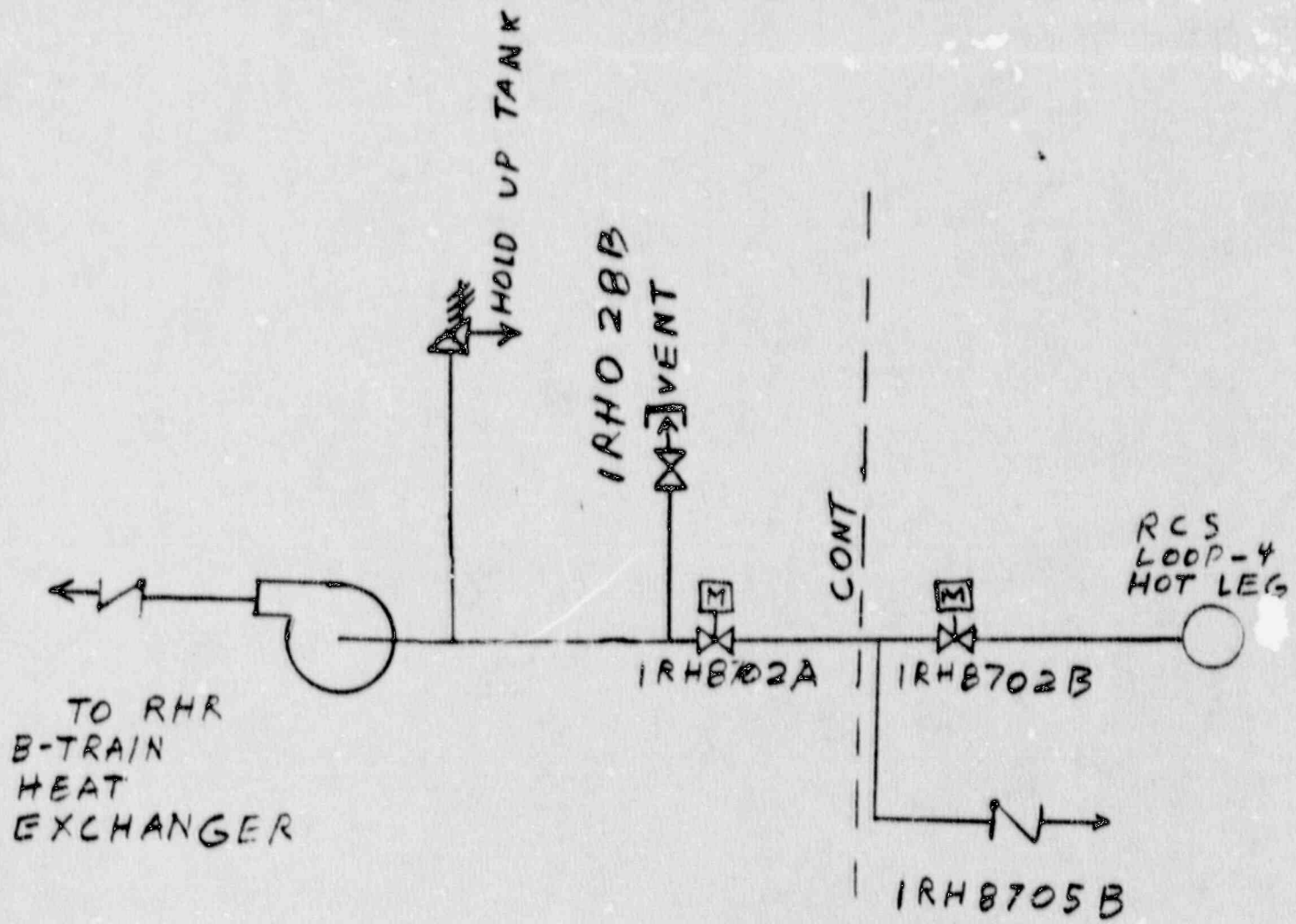
- o TYGON MEASURING TUBE BROKE LOOSE.
- o TWO TEST ENGINEERS SPRAYED WITH COOLANT, ONE EQUIPMENT ATTENDANT WAS BURNED (ALL THREE WERE CONTAMINATED).
- o 620 GALLONS OF COOLANT LEAKED INTO AUX BUILDING.
- o 5% LOSS IN PZR LEVEL.

SIMILAR EVENTS (BRAIDWOOD)

- o ON 12/01/89 60,000 GALLONS OF COOLANT LEAKED THROUGH B-TRAIN RHR SUCTION RELIEF VALVE AT BRAIDWOOD UNIT 1.
- o ON 3/18/90 INADVERTENT OPENING OF AN RHR SUCTION VALVE ON UNIT 2 CAUSED COOLANT LOSS TO THE RWST AND LOSS OF PZR LEVEL INDICATION.

FOLLOWUP

- o AIT SENT TO THE SITE TO INVESTIGATE EVENT INCLUDING ROOT CAUSE; ADEQUACY OF OPERATOR PERFORMANCE, PROCEDURES AND ADMINISTRATIVE CONTROLS.
- o CONFIRMATORY ACTION LETTER ISSUED TO LICENSEE BY REGION III.



BRAIDWOOD UNIT 1  
RHR B-TRAIN



INDIAN POINT UNIT 3  
SPENT FUEL ASSEMBLIES REMAIN ATTACHED TO UPPER INTERNALS  
OCTOBER 4, 1990

PROBLEM

ON OCTOBER 4, 1990, THE LICENSEE DISCOVERED, WHILE LIFTING THE UPPER CORE INTERNALS, TWO FUEL ASSEMBLIES HAD BEEN INADVERTENTLY LIFTED FROM THE CORE AND REMAINED ATTACHED TO THE BOTTOM OF THE UPPER CORE INTERNALS.

CAUSE

EXACT CAUSE FOR FUEL ASSEMBLIES REMAINING ATTACHED TO THE UPPER CORE INTERNALS IS UNKNOWN AT PRESENT.

SAFETY SIGNIFICANCE

DROPPED FUEL BUNDLE ONTO CORE COULD RESULT IN DAMAGE TO FUEL CLADDING AND DAMAGE TO OTHER FUEL ASSEMBLIES.

DISCUSSION

- o ON OCTOBER 4, 1990, WHILE IN REFUELING (MODE 6), TWO FUEL BUNDLES WERE DISCOVERED HANGING FROM THE BOTTOM OF UPPER CORE PLATE DURING REMOVAL OF THE UPPER INTERNALS PACKAGE.
- o THE BOTTOM OF THE FUEL ASSEMBLIES ARE APPROXIMATELY 3'11" OVER THE TOP OF THE CORE AND THE UPPER INTERNALS HAVE BEEN DISPLACED 66" EAST FROM THE INSTALLED POSITION.
- o THE TWO ASSEMBLIES ARE B-13 (CONTAINS A BURNABLE POISON ASSEMBLY) AND A-5 (CONTAINS A THIMBLE PLUG ASSEMBLY).
- o THE CRANE (LOAD CELL) DID NOT DETECT THE ADDED WEIGHT TO THE UPPER INTERNALS (128,000 LBS) FROM THE TWO ASSEMBLIES (1500 LBS, EACH). THIS WAS DUE TO THE WEIGHT OF THE ASSEMBLIES WITHIN THE NOISE BAND FOR WEIGHT ACCURACY OF THE LOAD CELL.

CONTACT: J. THOMPSON  
REFERENCE: 10 CFR 50.72 #19526

SIGEVENT: YES

DISCUSSION (CONTINUED)

- o USING A REMOTE VIDEO SUBMERSIBLE, THE LICENSEE DETERMINED THAT ONE-OF-TWO GUIDE PINS (ON BOTH ASSEMBLY) IS BENT (AND NOT TOUCHING THE ASSEMBLY), WITH THE OTHER GUIDE PIN WEDGED INTO THE ASSEMBLY, SUCH THAT THE ASSEMBLY IS COCKED AT ABOUT A 7 DEGREE ANGLE TO THE UPPER CORE PLATE.
- o THE LICENSEE'S FUTURE PLAN OF ACTION INCLUDES:
  1. PERFORMING A STATIC LIFT OF THE UPPER INTERNALS ANOTHER 8 FT.
  2. MANUALLY ROTATING THE UPPER INTERNALS SUCH THAT THE ASSEMBLIES WILL BE POSITIONED OUTSIDE OF THE VESSEL AND CAVITY SEAL.
  3. MOVING THE UPPER INTERNALS TO THE DEEP-END OF THE REFUELING CAVITY AND LOWERING THE ASSEMBLIES INTO TWO FABRICATED STEEL BASKETS (16" DIAMETER PIPING) WITH HOLES DRILLED INTO THE BASKETS FOR WATER SEEPAGE. THE BASKETS WILL REST ON A TABLE CONSTRUCTED FOR THIS PURPOSE.
  4. ATTEMPT TO FREE THE ASSEMBLIES.
- o A CONFIRMATORY ACTION LETTER (CAL) HAS BEEN ISSUED TO THE LICENSEE AND REQUESTS THE LICENSEE TO PROVIDE A PLAN OF ACTION AND NRC AGREEMENT BEFORE TAKING FURTHER ACTION.

SIMILAR EVENTS

- o PALISADES (9-3-88)
  - DURING REMOVAL OF REACTOR VESSEL UPPER GUIDE STRUCTURE (CE), ONE FUEL ASSEMBLY WAS FOUND ATTACHED TO BOTTOM OF UPPER GUIDE STRUCTURE. ASSEMBLY WAS FREED USING SPECIAL TOOLS, CABLES, AND A JIB CRANE.
- o FOREIGN REACTOR EVENT (5-5-87)
  - DURING REFUELING OPERATIONS, A FUEL ASSEMBLY WAS FOUND ATTACHED TO THE UPPER INTERNALS UPON REMOVAL OF THE UPPER INTERNALS PACKAGE. ATTEMPTS TO FREE THE ASSEMBLY RESULTED IN DROPPING THE ASSEMBLY TO THE BOTTOM OF THE REFUELING CAVITY.
- o HADDAM NECK
  - INFORMATION NOTICE 86-58

FOLLOWUP

- o THE REGION AND NRR HAVE PROVIDED 24 HOUR SITE COVERAGE AND WILL CONTINUE TO PROVIDE ASSISTANCE TO THE SITE INSPECTORS UNTIL THE EVENT IS TERMINATED.
- o NRR AND THE REGION HAVE SENT A SPECIAL INSPECTION TEAM TO THE SITE TO REVIEW THE LICENSEE'S PROCEDURES AND FUTURE ACTIONS.
- o EAB WILL FOLLOW THIS EVENT AND DETERMINE IF ANY GENERIC COMMUNICATIONS ARE WARRANTED.

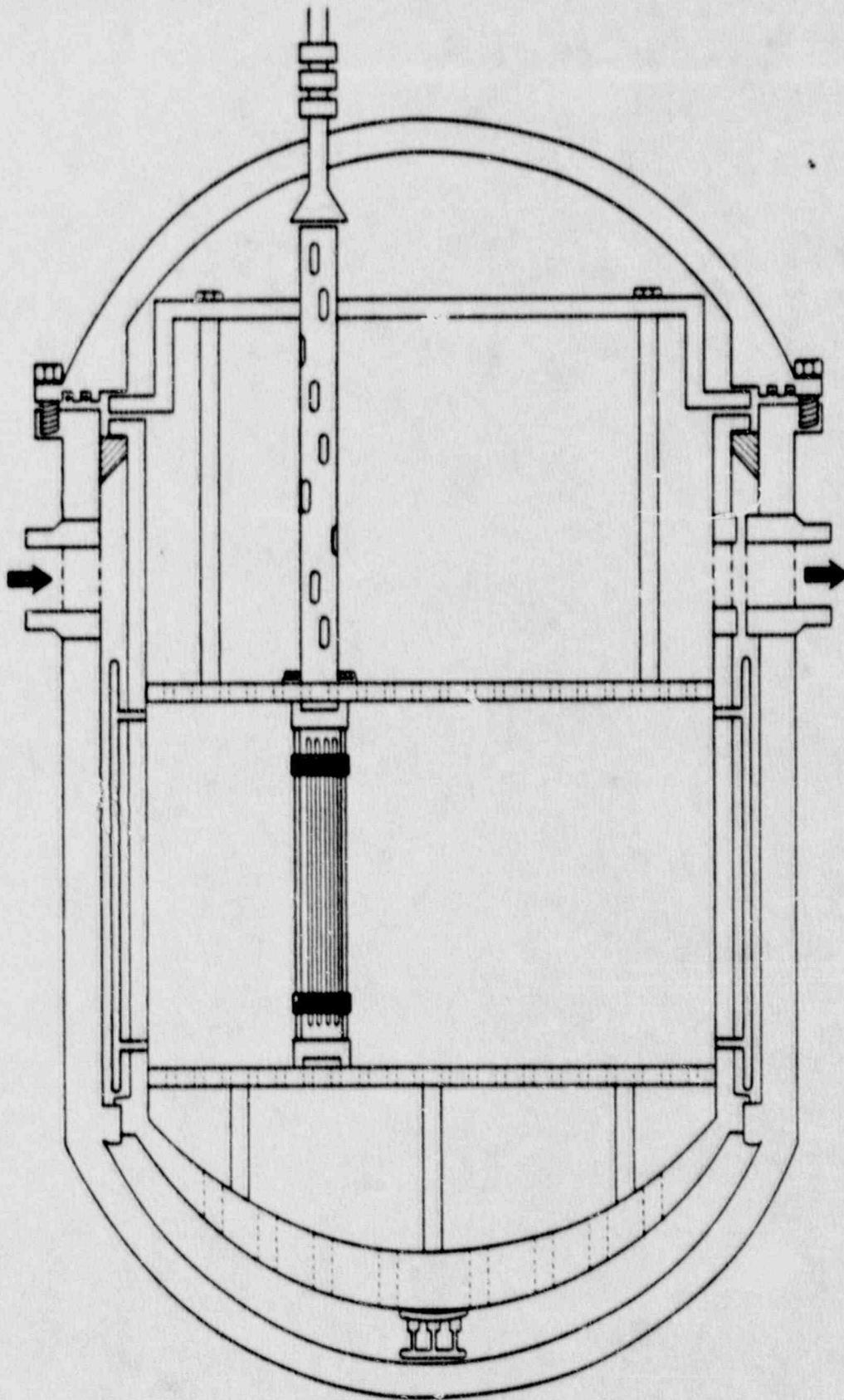


Figure 3.1-1 Reactor Vessel Cutaway

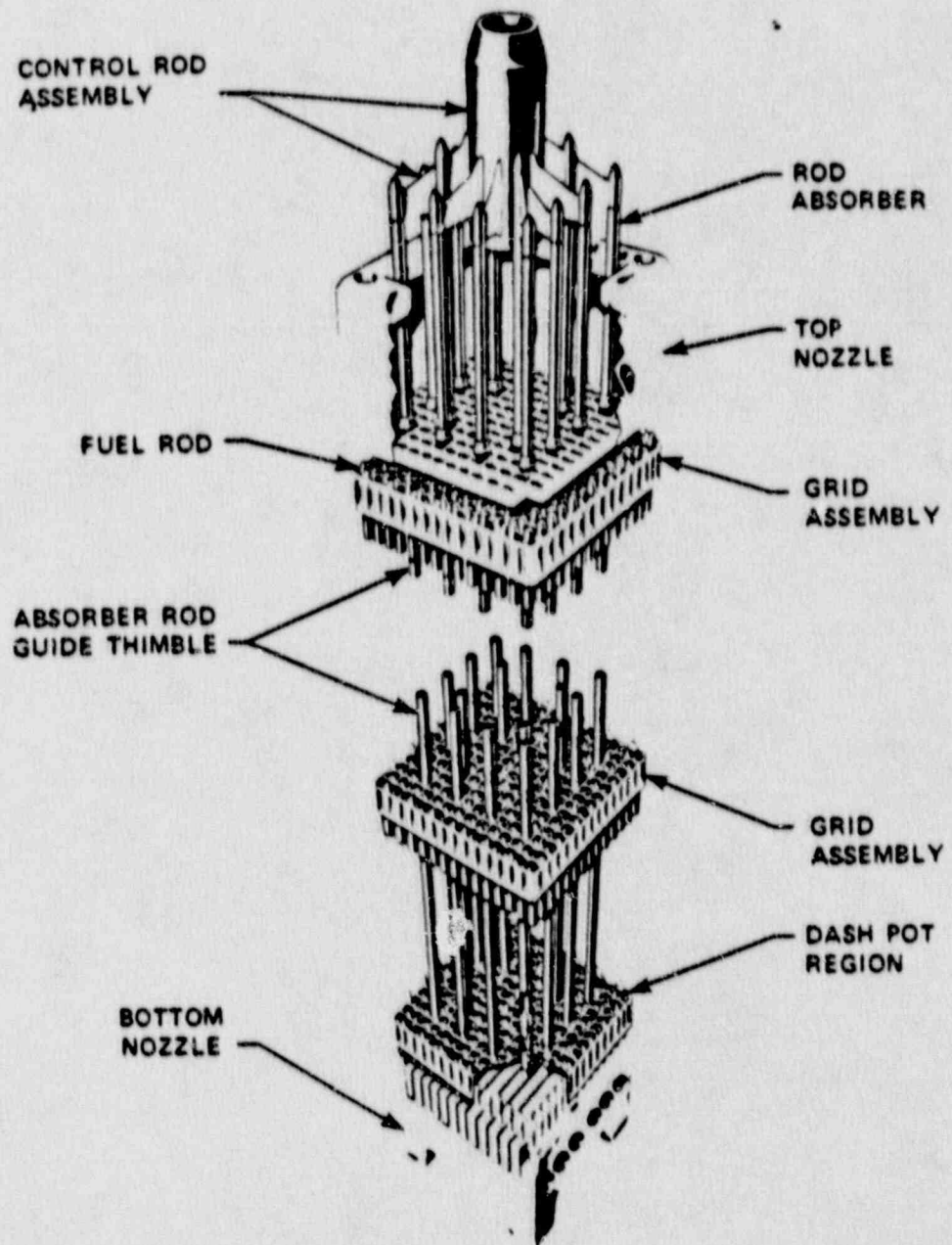
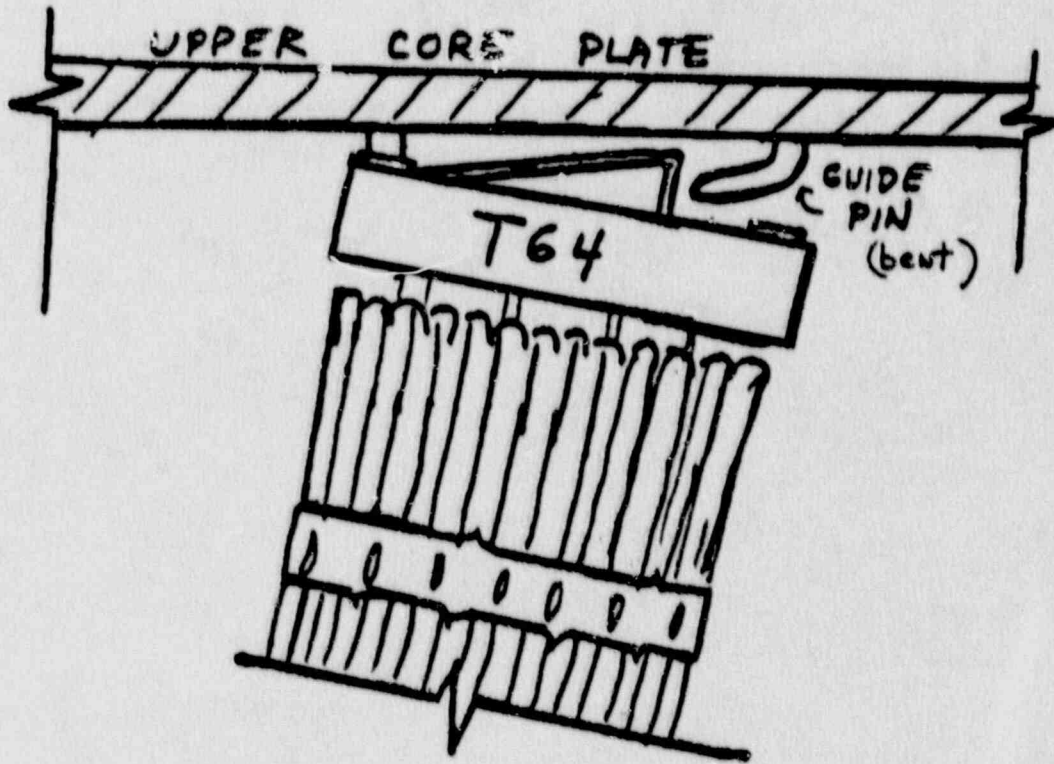


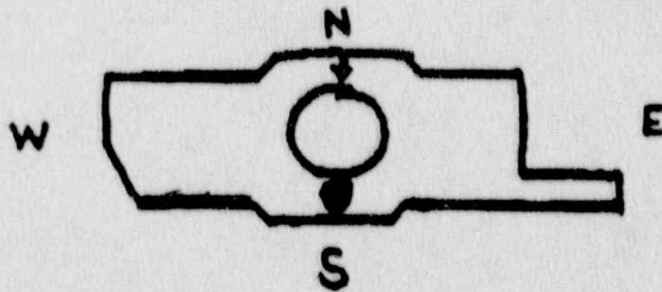
Figure 3.1-20 Rod Cluster Control Assembly Cutaway

INDIAN POINT UNIT 3

ASSEMBLY B-13



NORTH SOUTH  
SIDE, LOOKING



SEQUOYAH UNIT 1  
MAIN STEAM LINE CHECK VALVES DISC NUT PIN FAILURES (AIT)  
 OCTOBER 8, 1990

PROBLEM

THE LICENSEE FOR UNIT 1 DISCOVERED THAT 3 OF 4 MAIN STEAM LINE CHECK VALVES HAD DISC NUT PIN FAILURES WITH ONE OF THE VALVE DISCS LOCATED DOWNSTREAM OF THE VALVE BODY.

CAUSE

EXACT CAUSE IS UNKNOWN AT PRESENT.

SAFETY SIGNIFICANCE

FAILURE OF A CHECK VALVE COULD PREVENT CLOSURE OF THE ASSOCIATED MSIV DUE TO REVERSE FLOW CONDITIONS DURING A MSLB.

BACKGROUND

- o IN 1982, A MS CHECK VALVE FAILED AT THE SEAL WELD ON THE CHAMFERED-SIDE OF THE DISC.
- o EARLY 1990, THE LICENSEE (WITH THE VALVE VENDOR) MADE REPAIRS AND MODIFICATIONS AT THE REQUEST OF ATWOOD AND MORRILL TO 3 OF 4 UNIT 1 MS CHECK VALVES BECAUSE OF TURBULENCE-INDUCED FLOW VIBRATIONS CAUSING THE VALVES TO CHATTER EXCESSIVELY.
- o THE MODIFICATION WAS TO UPGRADE THE VALVES AT UNITS 1/2 TO CURRENT VENDOR DESIGN, WHICH INCLUDED A RETAINING PIN THROUGH THE DISC NUT.
- o THE VENDOR HAD BEEN MAKING THESE UPGRADED VALVES SINCE 1982 TIMEFRAME.
- o THE VALVES AT SEQUOYAH WERE PURCHASED IN EARLY 1970'S.

DISCUSSION

- o IN LATE SEPTEMBER 1990, AFTER HEARING LOUD NOISES COMING FROM MS CHECK VALVE 1-CK-1-624 (ON S/G 2), THE LICENSEE ATTEMPTED TO MANUALLY MOVE THE VALVE FLAPPER/DISC. DISC MOVEMENT EXHIBITED RESISTANCE AFTER A FEW INCHES OF TRAVEL. THE VALVE VENDOR WAS CONSULTED.

CONTACT: J. THOMPSON  
 REFERENCE: 10 CFR 50.72 #19549

AIT: YES  
 SIGEVENT: YES

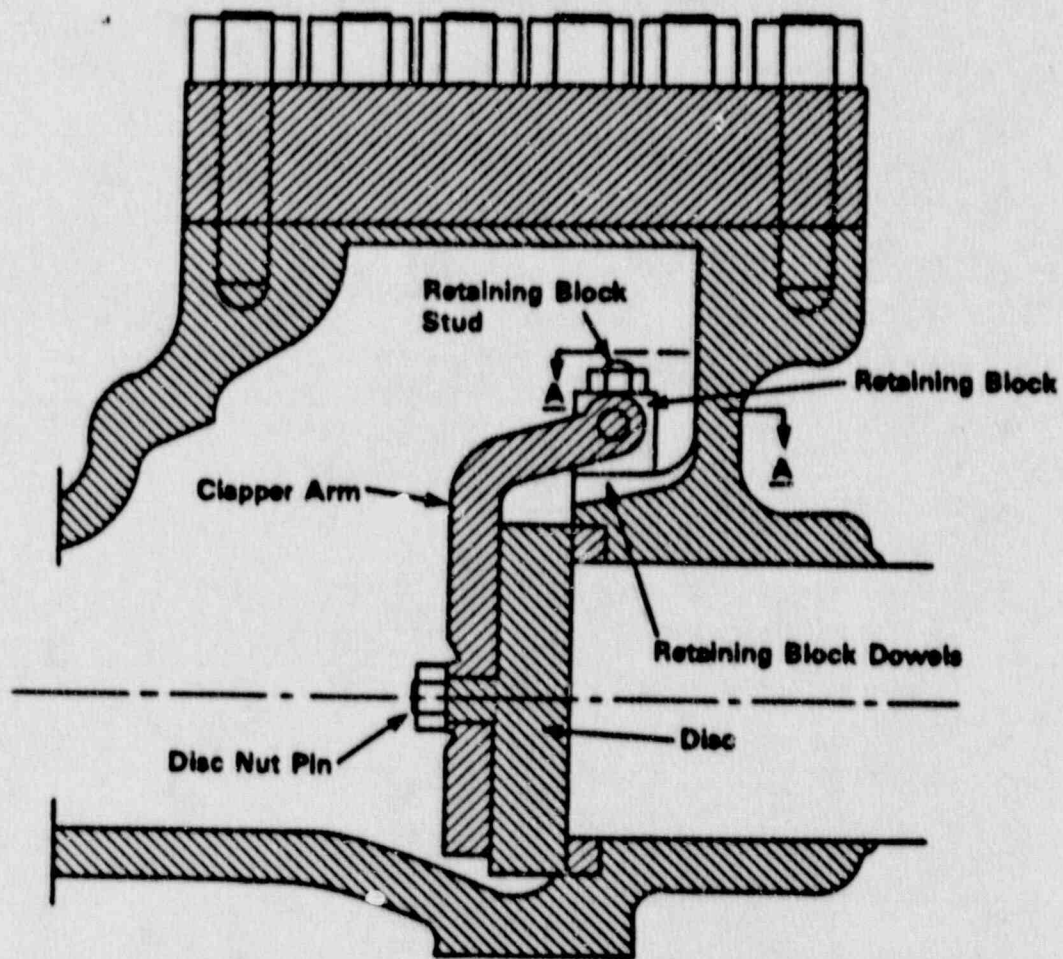
DISCUSSION (CONTINUED)

- o RESULTS FROM THE SURVEILLANCE INDICATED THAT ALL VALVE DISCS WERE IN PLACE.
- o APPROX TWO WEEK LATER, THE LICENSEE PERFORMED X-RAY SURVEILLANCE ON MS CHECK VALVE 1-CK-1-624.
- o THE X-RAY SHOWED THAT THE CHECK VALVE DISC HAD SEPARATED.
- o FURTHER SURVEILLANCE BY THE LICENSEE DISCOVERED THAT 3 OF 4 CHECK VALVES HAD FAILED DISC PINS.
- o THE PINS WERE SHEARED WHERE THE VALVE DISC MEETS THE FLAPPER ARM.
- o ONE VALVE (UPON DISASSEMBLY) REVEALED THAT THE DISC HAD TRAVELLED SOME DISTANCE IN THE MAIN STEAM PIPING AFTER ITS DISC PIN FAILED.
- o UNIT 2 (UPON DISASSEMBLY) SHOWED NO DISC PIN FAILURES.
- o THE CHECK VALVES ARE MANUFACTURED BY ATWOOD & MORRILL AND ARE DESCRIBED AS A 32" VALVE, 26" ID, WITH THE FLAPPER & DISC WEIGHING APPROX 700 LBS.
- o THREE OF THE FOUR VALVES ON UNIT 1 HAD BEEN MODIFIED. THE MODIFIED VALVES FAILED. NO FAILURES INDICATED ON THE UN-MODIFIED VALVES.
- o THE MODIFICATION WAS TO PUT A RETAINING PIN THROUGH THE DISC NUT TO PREVENT THE NUT FROM LOOSENING.

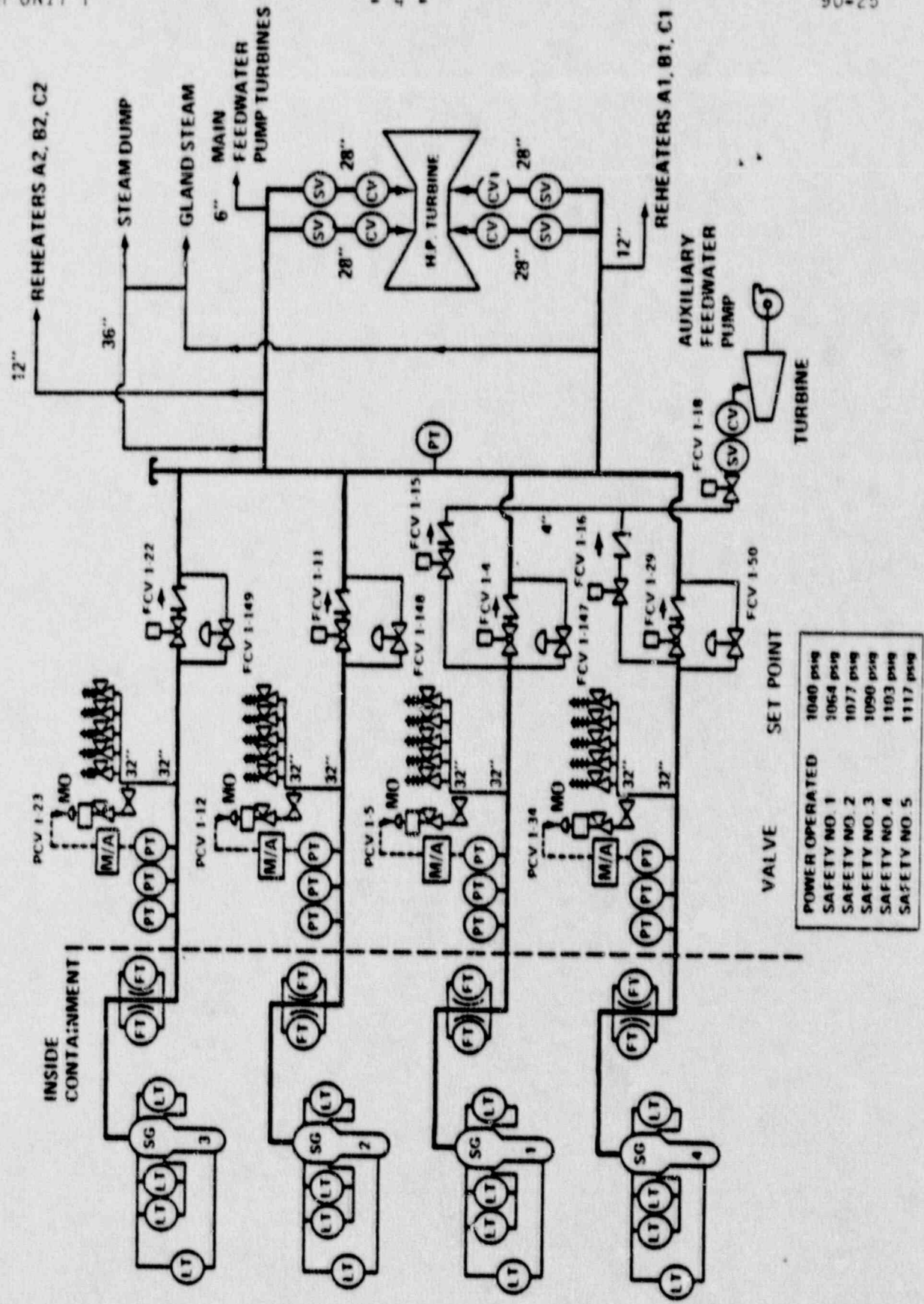
FOLLOWUP

- o AIT SENT TO THE SITE ON 10-09-90.
- o EAB WILL FOLLOW THIS EVENT TO DETERMINE GENERIC SIGNIFICANCE AND FURTHER ACTION.





SEQUOYAH UNIT 1



POWER OPERATED	1000 psig
SAFETY NO. 1	1064 psig
SAFETY NO. 2	1077 psig
SAFETY NO. 3	1090 psig
SAFETY NO. 4	1103 psig
SAFETY NO. 5	1117 psig

Main Steam - High Pressure

REACTOR SCRAM SUMMARY  
WEEK ENDING 10/07/90

ENCLOSURE 3

I. PLANT SPECIFIC DATA

DATE	SITE	UNIT	POWER	SIGNAL	CAUSE	COMPLI- CATIONS	YTD	YTD	YTD
							ABOVE 15%	BELOW 15%	TOTAL
10/04/90	MILLS'DONE	1	100	M	EQUIPMENT	NO	2	0	2
10/06/90	HATCH	1	22	A	EQUIPMENT	NO	3	0	3
10/06/90	FERMI	2	1	A	EQUIPMENT	NO	1	1	2
10/07/90	CATAWBA	2	98	A	EQUIPMENT	NO	1	0	1
10/07/90	PRAIRIE ISLAND	2	0	A	PERSONNEL	NO	2	2	4

1. COMPARISON OF WEEKLY STATISTICS WITH INDUSTRY AVERAGES

SCRAMS FOR WEEK ENDING  
10/07/90

SCRAM CAUSE	POWER	NUMBER OF SCRAMS(5)	1990 WEEKLY AVERAGE YTD	1989 WEEKLY AVERAGE	1988 WEEKLY AVERAGE	1987 WEEKLY AVERAGE	1986 WEEKLY AVERAGE (3)(4)
** POWER >15%							
EQUIP. RELATED	>15%	3	3.4	2.9	3.1	3.9	4.3
PERS. RELATED(6)	>15%	0	0.7	1.0	1.0	1.3	1.8
OTHER(7)	>15%	0	0.0	0.1	0.5	1.2	0.0
** Subtotal **		3	4.1	4.0	4.6	6.4	6.5
** POWER <15%							
EQUIP. RELATED	<15%	1	0.4	0.4	0.5	1.2	1.4
PERS. RELATED	<15%	1	0.1	0.3	0.3	0.6	0.8
OTHER	<15%	0	0.0	0.7	0.1	0.3	0.2
** Subtotal **		2	0.5	1.4	0.9	2.1	2.4
*** Total ***		5	4.6	5.4	5.5	8.5	8.9

MANUAL VS AUTO SCRAMS

TYPE	NUMBER OF SCRAMS	1990 WEEKLY AVERAGE YTD	1989 WEEKLY AVERAGE	1988 WEEKLY AVERAGE	1987 WEEKLY AVERAGE	1986 WEEKLY AVERAGE
MANUAL SCRAMS	1	1.3	0.9	1.0	1.4	1.0
AUTOMATIC SCRAMS	4	3.3	3.8	4.5	7.0	7.9

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. 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.

OEAB SCRAM DATA

Manual and Automatic Scrams for 1986	-----	461
Manual and Automatic Scrams for 1987	-----	439
Manual and Automatic Scrams for 1988	-----	287
Manual and Automatic Scrams for 1989	-----	244
Manual and Automatic Scrams for 1990 (YTD 10/07/90)	---	174

PERFORMANCE INDICATORS SIGNIFICANT EVENTS

PLANT NAME	EVENT DATE	OIR SIGNIFICANCE	EVENT DESCRIPTION
FORT CALHOUN 1	06/25/90	O POTENTIAL FOR OR ACTUAL DEGRADATION OF SAFETY-RELATED EQUIPMENT.	ELEVATED AMBIENT TEMPERATURES CAUSE HEAT BUILDUP IN INSTRUMENT CABINETS RESULTING IN EMERGENCY DIESEL GENERATOR PROBLEMS.
HADDAM NECK	08/20/90	O POTENTIAL FOR OR ACTUAL DEGRADATION OF SAFETY-RELATED EQUIPMENT.	TURBINE DRIVEN AFW PUMP STEAM ADMISSION VALVES OPEN TOO FAST CAUSING PUMP TRIP ON OVERSPEED. FLOW CONTROLLER SETTING NECESSARY TO ACHIEVE MINIMUM REQUIRED FLOWRATE RESULTS IN TRIP OF AFW PUMP TURBINES ON OVERSPEED.