



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION II  
101 MARIETTA ST., N.W., SUITE 3100  
ATLANTA, GEORGIA 30303

AUG 24 1979

MEMORANDUM FOR: Samuel E. Bryan, A/D for Field Coordination, DROI, IE  
FROM: R. C. Lewis, Acting Chief, Reactor Operations and Nuclear  
Support Branch, RII  
SUBJECT: INFORMATION FOR NRC/TMI SPECIAL INQUIRY GROUP (H10-000113-H07)

Enclosed please find the information on Oconee as requested in paragraph 3 of the enclosure to the memo dated August 1, 1979, from S. E. Bryan. It is our understanding that paragraphs 1 and 2 will be provided by other Offices.

R. C. Lewis, Acting Chief  
Reactor Operations and Nuclear  
Support Branch

Enclosure:  
Oconee 1, 2, 3

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ENCLOSURE

OCONEE 1, 2, 3

The following list of significant operational events, incidents, occurrences and transients is provided in response to the July 24, 1979 request. The list was developed by reviewing inspection reports, enforcement history, LER files and the licensee's log of incidents.

## Reactor Trips

The licensee's records on reactor trips were examined and operational problems are summarized below.

<u>Cause</u>	<u>Unit 1</u>	<u>Unit 2</u>	<u>Unit 3</u>
Low Reactor Coolant Flow	4	4	0
Integrated Control System inability to handle transient resulting in high RC outlet temp, RC Pressure or Reactor Power.	15	6	8
High RC Pressure due to loss of feedwater	18	9	3
Manual Trips*	38	28	22
Total	75	47	33

\*Intentional Manual Trips when performing tests and other manual trips as required by procedures

## Main Feedwater System

The operational problems experienced with the main feedwater system have been a loss of one or both main feedwater pumps. Each pump has approximately a 60 percent capacity and with reactor power at or greater than 60 percent, a high pressure reactor trip or manual trip results upon loss of one main feed pump. The pump loss problem has generally been traced to a ICS malfunction.

Other problems with the main feedwater system have included mechanical failures and loss of main feed pump condenser vacuum.

Feedwater system problems investigated by the licensee to date are listed below:

### MAIN FEEDWATER SYSTEM

<u>Date</u>	<u>Incident</u>	<u>Unit No.</u>	<u>Reportable</u>
10/11/79	Reactor Manually Tripped When "B" Feedwater Pump Tripped	1	No

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 MAIN FEEDWATER SYSTEM
 

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<u>Date</u>	<u>Incident</u>	<u>Unit No.</u>	<u>Reportable</u>
10/30/78	Reactor Trip Following Loss of FDW Valve Differential Pressure Control	2	No
10/03/78	Reactor Trip on High Pressure Due to FDW Pump B Trip	2	No
10/17/78	Reactor Trip on High Pressure FDW Pump B Tripped	2	No
10/18/78	Reactor Trip Due to FDW Swing when put in Auto	1	No
08/21/77	Reactor Trip Following Problem With Feedwater Block Valves	3	No
10/12/76	Feedwater Pump B Trip During Turbine Trip Test	2	No
01/02/76	Manual Trip Due to Loss of Both FW Pumps	3	No
09/19/75	Manual Trip Due to Loss of FWP on Low Vacuum	2	No
08/23/75	Trip Due to Loss of Feedwater	2	No
08/05/75	Trip Due to FDW Pump A Trip During Thrust Bearing Wear Trip Test	2	No
08/27/75	Manual Reactor Trip Following FW Pump Turbine Trip on Vacuum	2	No
11/18/74	Runback to 15% Due to Decrease in FDW Flow	2	No
11/09/74	Reactor Trip on Reactor Protection System High Flux Feedwater Demand	3	No

MAIN FEEDWATER SYSTEM

<u>Date</u>	<u>Incident</u>	<u>Unit No.</u>	<u>Reportable</u>
10/17/74	Unit 3 Tripped from 16% Full Power Due to Loss of Feedwater	3	No
10/13/74	Trip Due to Loss of FDW Reactor Protection System Ch. A, B, and C Tripped	3	No
04/26/74	Manual Trip From 5% Full Power on Loss of FDW Pump Turbine		

3. Emergency Feedwater System

The problems with the emergency feedwater system have been associated with periodic surveillance testing of the turbine driven pump. The turbine trip mechanism would become out-of-adjustment, due to vibrations, and when a test start was initiated, the turbine would trip and the stop valve would close. This has been corrected through the preventive maintenance program.

On one occasion insufficient lube oil system pressure caused the turbine to fail to start on test. Adjustments to the oil pressure switch were made and system operability restored.

To date, the number of recorded incidents related to emergency feedwater systems are one for Unit 1, two for Unit 2, and five for Unit 3.

EMERGENCY FEEDWATER SYSTEM

<u>Date</u>	<u>Incident</u>	<u>Unit No.</u>	<u>Reportable</u>
07/25/79	Emergency Feedwater Pump Was Declared Inoperable (Seal Leak)	2	No
08/21/79	Emergency FDW Pump Turbine Rendered Inoperable	2	No
08/16/79	Emergency FDW Pump Would Not Start	3	No
11/01/78	Emergency FDW Pump Failed to Start During PT/1/A/600/11	1	No

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 EMERGENCY FEEDWATER SYSTEM
 

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<u>Date</u>	<u>Incident</u>	<u>Unit No.</u>	<u>Reportable</u>
04/27/78	Emergency FDW Pump Turbine Failed to Start	3	No
11/13/76	Emergency FDW Pump Line From Hotwell Bent by Secondary Side Water Hammer	3	No
04/30/75	Emergency FDW Pump Discovered to Be Inoperable	3	UE-287/75-5
01/21/75	Emergency FDW Pump Recirc. Line Leak While Feeding Unit 2 OTSG's	3	No

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 - - Safety Related Instrumentation

Operational problems involving safety related instrumentation are divided into two main categories. These are failure of the control rod drive (CRD) breakers to instantaneously trip and required safeguards pressure transmitters to drift out of calibration.

The CRD events are summarized below and were partially responsible for issuance of IEB 79-09; the problem has been corrected at Oconee. Regulatory followup on these events is documented in IE Inspection Reports 50-269/79-5, 50-270/79-5, 50-287/79-5, 50-269/79-7, 50-270/79-7, 50-287/79-7 and the routine followup on each reportable event.

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 CONTROL ROD DRIVE.
 

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<u>Date</u>	<u>Incident</u>	<u>Unit No.</u>	<u>Reportable</u>
01/08/79	CRD Breaker CB-1 Failed to Open During On-Line Test	1	RO-269/79-5
01/22/79	CRD Breaker CB-1 Failed to Open During On-Line Test	1	RO-269/79-5
01/18/79	CRD Breaker #10 Did Not Trip During On-Line Test, IP/O/E/305/3A	3	RO-287/79-2

## CONTROL ROD DRIVE

<u>Date</u>	<u>Incident</u>	<u>Unit No.</u>	<u>Reportable</u>
12/17/78	CRD Breaker #11 Failed to Open During Startup	3	No
08/07/75	CRD Breaker Failed in Untripped Condition	3	AO-287/75-11
01/20/74	Failure of CRD Breaker CB-4 to Close on Unit Startup	2	No
04/23/73	Evaluation of CRD Breaker Unit to Trip When 1 X 3 Transformer Failed on April 23, 1973	1	No

The problem of engineered safeguards pressure transmitters drifting out of calibration has not been completely corrected. Adjustments were made to the surveillance program related to this instrumentation as a temporary fix. The licensee is continuing its investigation and inspector followup continues. When the instrument calibration drifts beyond the technical specification setpoint limit, the licensee reports the event as an LER. The temporary corrective action taken has been to adjust the setpoint conservatively and to perform surveillance often enough so that the drift is caught before the IS setpoint is exceeded. Subsequently, there have been no reportable events.

The long term corrective action being pursued by the licensee is to test a spare transmitter in an environment similar to that where the instrumentation is in use. This work is underway. Casual factors and final results of the test program are expected within several months.

This item is carried as an inspection followup item and will be closed in a future inspection report.

The events related to this problem are listed below.

## ENGINEERED SAFEGUARDS PRESSURE TRANSMITTERS

<u>Date</u>	<u>Incident</u>	<u>Unit No.</u>	<u>Reportable</u>
10/23/78	ES Channel 3 RB Narrow Range Pressure Transmitter Out of Calibration	2	RO-270/78-11
09/14/78	Reactor Building Pressure Transmitters Out of Calibration	1	RO-169/78-21



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 ENGINEERED SAFEGUARDS PRESSURE TRANSMITTERS
 

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<u>Date</u>	<u>Incident</u>	<u>Unit No.</u>	<u>Reportable</u>
08/08/78	Reactor Building Pressure Transmitter Less than Technical Specification Value	1	RO-269/78-17
04/04/78	Analog Channel 12 Reactor Building Narrow Range Pressure Transmitter Found Out of Technical Specification Value	2	RO-270/78-5
12/08/77	Found ES Reactor Building Pressure Transmitter Valued Out of Service	2	RO-270/77-16
11/28/77	Inoperable Pressure and Flow in Reactor Protection System Channel A	3	RO-287/77-16
06/19/75	ES Pressure Transmitter Found Out of Calibration	3	AO-287/75-8

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 OTHER SAFETY RELATED INSTRUMENTATION
 

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<u>Date</u>	<u>Incident</u>	<u>Unit No.</u>	<u>Reportable</u>
07/24/79	Feed Breaker to CT1 (Transformer) Would Not Close - Isolated Main Feed Bus	1	Not Issued
05/22/79	PS-68 (Pressure Switch) Discovered with a Setting in Excess of 4 psig	2	RO-270/79-3
12/14/78	Reactor Trip on Pressure/Temp. (Short in Coil of T <sub>avg.</sub> Recorder)	1	RO-269/78-27
11/29/78	Engineered Safeguards Analog Channel B Tripped on Reactor Building High Pressure	3	RO-287/78-18
11/28/78	ES Channel A Tripped (Degraded Mode)	3	RO-287/78-16

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 OTHER SAFETY RELATED INSTRUMENTATION
 

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<u>Date</u>	<u>Incident</u>	<u>Unit No.</u>	<u>Reportable</u>
04/03/77	Reactor Trip on High Reactor Coolant Pressure Due to Failed ICS Module	1	No
05/28/75	Reactor Building High Pressure Trip. Pressure Switch Set Over Limit	1	AO-269/75-6

5. Safety Related Ventilation

The penetration room ventilation system has been declared inoperable on a number of occasions. A leak in the main feedwater line that passes through the penetration room will increase the humidity to saturation condition within the room and if the ventilation system was placed into operation, the high humidity would affect the charcoal filters rendering them ineffective. The licensee uses a humidity limit of <70% to declare the ventilation system operable. Above 70% relative humidity, the system is inoperable and Technical Specification gives required action. To correct this problem, the licensee is considering alternate means for providing proper ventilation. In addition, a seal weld around the feedwater check valve hinge pin has been tried to eliminate the source of humidity. Final resolution for this problem has not been determined. The events are listed below:

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 SAFETY RELATED VENTILATION
 

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<u>Date</u>	<u>Incident</u>	<u>Unit No.</u>	<u>Reportable</u>
07/18/79	Penetration Room Ventilation System Declared Inoperative	1	Not Issued
12/07/78	Penetration Room Ventilation Trains A&B Inoperative	3	RO-287/78-19
06/29/77	Both Trains of Penetration Room Ventilation System Inoperable	1	RO-269/77-21
10/20/73	Penetration Room Integrity Breached	1	No

### 6. LPI System

The operational problems on the low pressure injection system have been primarily valve failures and borated water storage tank level instrumentation problems. The most recent problem has been the discovery of a tube leak on 1A LPI cooler.

On two occasions, 2-LP-21 failed to open during a surveillance test. The problem was determined to be electrical and has been repaired. Also, LP 12 and 14 on Units 1 and 2 experienced a broken guide stem. These four valves have been replaced and no problems have been encountered since replacement. (The LP 12 and 14 on Unit 3 are of a different design and did not require replacement.)

#### LOW PRESSURE INJECTION SYSTEM - VALVES

<u>Date</u>	<u>Incident</u>	<u>Unit No.</u>	<u>Reportable</u>
04/05/77	2LP-21 Failed to Open During Reactor Building Spray Logic Test	2	RO-270/77-6
10/31/75	2LP-21 Failed to Open During Checkout	2	UE-270/75-19
01/25/75	Guide Pin Discovered Missing From 2LP-12	2	AO-270/75-10
07/02/74	Piece Missing From 2LP-12, Piece Missing From 2LP-14	2	UE-270/74-3

The level instrumentation on the borated water storage tank failed on a number of occasions due to purging of the sensing lens. Additional heat tracing and insulation has been added to the sensing lines to correct this problem. In addition, operators check the sensing line daily during freezing weather to verify that the insulation is present and that the heat tracing is energized. The events are listed below. Regulatory followup is documented in Inspection Report 50-269/77-3, 50-270/77-3, and 50-287/77-3, during routine review and followup of the LER's listed below.

#### BORATED WATER STORAGE TANK

<u>Date</u>	<u>Incident</u>	<u>Unit No.</u>	<u>Reportable</u>
09/19/78	Borated Water Storage Tank Level 1 Trans- mitter Found Out of Calibration	1	RO-269/78-23
05/06/77	Channel 1 of BWST Level Instrumentation Inoperable	1	RO-269/77-15

**POOR ORIGINAL**

## BORATED WATER STORAGE TANK

<u>Date</u>	<u>Incident</u>	<u>Unit No.</u>	<u>Reportable</u>
04/16/77	BWST Level Instrument Channel Inoperable	1	RO-269/77-13
04/12/77	BWST Level Instr. Channel Inoperable	1	RO-269/77-13
04/09/77	BWST Level Instrument Inoperable Due to Plugged Impulse Line	1	RO-269/77-13
01/11/77	Lost One Channel of BWST Level Instr. Due to Frozen Impulse Line	2	RO-270/77-1
12/21/76	One Channel of BWST Level Instr.: Frozen Impulse Line	3	RO-287/76-21
12/19/75	Both BWST Level Channels Inoperable Due to Frozen Impulse Lines	1	AO-269/75-15
07/14/75	BWST Level Instruments Out of Calibration - Level in Tank Low	3	AO-287/75-10
12/22/75	Loss of Both BWST Level Channels	1	AO-269/75-8

7. HFI System

An error in the ECCS small break analysis was reported by B&W and DPC in April 1978. The licensee has submitted a design change to NRR. The change was approved and has been installed at Unit 3. Followup is documented in IE Inspection Report 50-287/79-15 and 50-287/79-18. The LER, RO-269/78-11, was given the routine followup.

8. RC System

The problems with RCS involved the reactor coolant and the specimen sample holder. Problems with RC pumps have been: 1) motor oil fires; 2) seal water leakage; and 3) high RC flow.

Modifications have been completed to the pump motor oil system and the fire problem has been resolved. Modifications for the Bingham RC pump seals have been installed and this problem appears to be resolved.

**POOR ORIGINAL**

The high reactor coolant flow problem was identified on Oconee 1 during initial power escalation testing. It was also identified on Oconee Units 2 and 3. Investigation and followup on this item resulted in a change to the fuel assembly holddown spring constant. Discussions with NRR and the licensee resolved the matter.

Inspection Reports discussing the high RC flow issue are as follows:

0 - 1	0 - 2	0 - 3
<u>50-269/73-4</u>	<u>50-270/75-7</u>	<u>50-287/74-13</u>
50-269/76-12	50-270/76-12	50-287/75-2
		50-287/75-7
		50-270/76-12

REACTOR COOLANT SYSTEM

<u>Date</u>	<u>Incident</u>	<u>Unit No.</u>	<u>Reportable</u>
06/19/77	Motor 3B1 Reactor Coolant Pump Overheated	3	No
11/08/76	Explosion/Fire on 1A2 RC Pump While Adding Oil	1	No
04/02/75	Indicated RC Flow 113.67% of Design	2	UE-270/75-7
01/31/75	Small Oil Fire on 2B1 RC Pump	2	No
08/19/74	Leak From 2B1 RC Pump During Heatup	2	No
01/22/74	Unit 2 Trip From Approximately 20% FP - Seal Leak on 2B2 RCP caused Loss of RC Water to Reactor Building	2	No
07/29/73	RC Flow Greater than 100%	1	Yes
05/09/73	Rapid Loss of Oil to Reactor Coolant Pump 2A1	1	No

**POOR ORIGINAL**

REACTOR COOLANT SYSTEM

<u>Date</u>	<u>Incident</u>	<u>Unit No.</u>	<u>Reportable</u>
03/27/73	Oil Spill on Reactor Pump 1B1	1	No
03/06/73	Reactor Coolant Pump 1A1 Fire	1	No

9. Keowee Hydro (Emergency Power System)

There have been two kinds of problems with Keowee. One was administrative and the second was problems with a field flashing breaker. Both are considered resolved.

The administrative controls weaknesses led to events that resulted in not having the Keowee unit available as required by Technical Specifications. Regulatory efforts resulted in higher controls and more formal procedures for maintaining the status of the units. Since 1977, no major problems have been identified with administrative control.

In December '77, a problem with the field flashing breaker on Keowee Unit 2 was identified. This event and subsequent events were reported as LER's. The faulty breaker was replaced and the problem was resolved.

A problem with Cutler-Hammer relays was reported to NRC and IEB 78-04 was issued. The problem dealt with the emergency power switching logic system. All Cutler-Hammer relays involved were replaced by November 1978. The problem has been resolved.

The events involving Keowee are summarized below. IE followup is discussed briefly in Inspection Reports 50-269/78-13, 50-270/78-12, 50-287/78-12, 50-269/76-6, 50-270/76-6, 50-287/76-6, and 50-269/76-4.

KEOWEE HYDRO (EMERGENCY POWER SOURCE)

<u>Date</u>	<u>Incident</u>	<u>Unit No.</u>	<u>Reportable</u>
05/15/78	Keowee #2 Field Flashing Breaker Failed to Close	1, 2, 3	RO-269/78-14
05/10/78	Keowee #2 Field Flashing Breaker Failed to Close	1, 2, 3	RO-269/78-14
04/17/78	Emergency Startup of Keowee Inhibited	1, 2, 3	RO-269/78-12

**POOR ORIGINAL**

KEOWEE HYDRO (EMERGENCY POWER SOURCE)

<u>Date</u>	<u>Incident</u>	<u>Unit No.</u>	<u>Reportable</u>
03/22/78	Keowee #2 Failed to Start - General Field Flashing Breaker	1, 2, 3	RO-269/78-9
03/14/78	(Cutler Hammer Relays Rep.) Keowee #2 Failed to Start - General Field Flashing Breaker Problem	1, 2, 3	RO-269/78-7
03/10/78	Keowee #2 Field Flashing Breaker Failed to Close	1, 2, 3	RO-269/78-6
02/22/78	Keowee Unit 2 Failed to Start Due to General Field Flashing Breaker	1, 2, 3	RO-269/78-3
01/05/78	Keowee Unit 2 Failed to Start Due to Problem With Generator Field	1, 2, 3	RO-269/78-1
12/09/77	Keowee Unit 2 Failed to Start Due to Problem with Generator Field	1, 2, 3	RO-269/77-29
03/17/77	Emergency Lockout of Keowee Units During Test	1, 2, 3	RO-269/77-17
10/04/76	ES (Engineered Safeguards) Start of Both Keowee Units During Test	3	No
09/30/76	Keowee Unit Not Available to Supply 230 KV Yellow Bus	1, 2, 3	RO-269/76-15
08/16/76	Emergency Start on Keowee Ch. A by Button Somehow Pushed	1	No
07/09/76	Keowee Unit 1 Tripped From Underground During Unit 2 Maintenance	1, 2	No

**POOR ORIGINAL**

## KEOWEE HYDRO (EMERGENCY POWER SOURCE)

<u>Date</u>	<u>Incident</u>	<u>Unit No.</u>	<u>Reportable</u>
07/01/76	Keowee Unit 2 Wouldn't Operate 22 MWE Because of Air Circuit Breaker #2 Problem	1, 3	No
06/10/76	Partial Failure to Keowee Unit 2	1, 3	RO-269/76-10
06/08/76	Keowee Isolated From Both Overhead and Underground Feeders	1, 3	RO-269/76-9
06/07/76	Keowee ACB #1 Failure - Not Available to Overhead Line	1, 3	RO-269/76-8
05/26/76	Keowee Unit 1 Removed From Service Without Connecting Unit 2 to Underground	1, 2, 3	RO-287/76-7
11/08/75	Keowee Unit 2 Failed to Start Due to Excitation Breaker Problem	1, 2, 3	AO-269/75-13
07/28/75	One String of Keowee and One Switching Station Batteries Out of Service	2, 3	AO-270/75-13
07/03/75	Keowee Unit 2 Became Inoperable As Did Lee Gas Turbine	N/A	AO-269/75-8
06/13/75	Keowee Unit 1 Tripped on ES (Engineered Safeguards) & Didn't Restart	3	No
04/30/75	Keowee Unit 2 Tripped After Emergency Start	1	AO-269/75-4
03/17/75	Keowee Unit 1 Locked Out While Connected to Underground During Emergency Start Test	3	AO-267/75-6

**POOR ORIGINAL**



KEOWEE HYDRO (EMERGENCY POWER SOURCE)

<u>Date</u>	<u>Incident</u>	<u>Unit No.</u>	<u>Reportable</u>
02/11/75	Keowee Emergency Start Button in Unit 3 Control Room Not Operable	3	UE-287/75-1
01/23/74	Trip of Keowee During Emergency Start Tests	1	UE-269/70-1
01/29/74	Keowee Unit 1 Removed From Service	N/A	AO-269/74-1
09/21/73	Unit 1 Keowee Not Available for Emergency	1	No
06/27/73	Keowee Unit 1 Failure to Start (Normal Start)	1	UE-269/73-5

11. Quadrant Tilt and Power Oscillation

A quadrant power tilt problem was first observed at 40% power following startup after refueling on Unit 1, cycle 4. DPC and B&W investigated and meetings were held with I&E, NRR, B&W, and DPC. The problem has been resolved. Reference reports are listed below.

- B&W - 1447, Oconee Unit 1, Cycle 4 - Reload Report, March 1977
- Letter, W. O. Parker to E. G. Case, 10-4-77
- Letter, W. O. Parker to E. G. Case, 11/9/77
- Letter, W. O. Parker to E. G. Case, 1-33-78
- Letter, W. O. Parker to E. G. Case, 12-14-77
- Meeting in Bethesda, Maryland, NRC, DPC, and B&W

A power oscillation and a oscillating quadrant power tilt was identified on Oconee Unit 3. These subjects are discussed in IE Inspectic Reports 50-287/78-1, 50-287/78-20, 50-287/78-26, and 50-287/78-31.

These problems have been extensively investigated by the licensee and by his consultants using experiments and analysis. The results and conclusions are published in a report available from DPC:

"Investigation of Low Anomalies at Oconee 3" (R-8010), by F. E. Moff and J. C. Robinson, Technology for Energy Corp.

The IER's related to these problems are listed below.

QUADRANT TILT AND POWER OSCILLATION

<u>Date</u>	<u>Incident</u>	<u>Unit No.</u>	<u>Reportable</u>
12/08/79	Quadrant Power Tilt Above Steady State Limit	3	RO-287/78-20
06/17/79	Reactor Quadrant Power Tilt Above Steady State Limit	1	RO-269/79-19
05/07/79	Quadrant Power Tilt Beyond Error Adjust Limit	1	RO-269/79-13
08/18/78	Quadrant Tilt Above Steady State Positive	1	RO-269/78-18
08/06/78	Quadrant Power Tilt Beyond Limit (Greater than 4 hours)	1	RO-269/78-16
12/05/77	Uncoupled Axial Power Shaping Rod	3	No
02/28/77	Rod/6 Group Dropped Causing Runback & Quadrant Power Tilt	1	RO-269/77-7
02/26/76	Dropped Rod 5 Group 2 - Tilt Exceeded Limit	2	RO-270/76-3

11. Condenser Circulating Water System

Normally the CCW System circulates water from Lake Keowee through the condenser and back to Keowee. Upon loss of power to the CCW pumps, an emergency line opens and the CCW continues to operate as an unassisted siphon for decay heat removal and emergency cooling requirements. The valves that must operate to convert the system have failed, on test a number of times. The problem is thought to be caused due to environmental conditions at the valve location. The valves are located in a valve pit outside and dampness causes electrical failure. The item is currently being reviewed by IE.

Summary of events are listed below.

CONDENSER CIRCULATING WATER SYSTEM

<u>Date</u>	<u>Incident</u>	<u>Unit No.</u>	<u>Reportable</u>
06/30/79	5 of 6 Condenser Circulating Water Emergency Discharge Valves Found Closed	2	No
07/21/77	CCW-8 Found Electrically Inoperable (Emergency Condition Valve)	1, 2, 3	No
09/22/76	CCW-8 Failed to Operate During PT	3	No
04/10/76	CCW-8 Failed During Test	2	No
02/10/76	CCW-8 Failed to Operate Electrically During Test	1	No
04/19/75	3CCW-93 and CCW-8 Didn't Open During CCW Test	3	UE-287/75-4
04/27/73	Inoperability of Valve CCW-8	1	

11. Turbine Building Flooding

On October 10, 1976, an incident occurred that resulted in flooding of the turbine building to a depth of about one foot. Lead responsibility for evaluation and resolution was transferred to NRR on October 29, 1976.

The licensee's corrective action is described in RO-287/76-18. In addition, a standby shutdown facility is currently under construction to provide a reliable ultimate heat sink in case a flood occurs that results in severe damage to the turbine building. This action is discussed in a letter from W. O. Parker to E. G. Case, dated February 1, 1978.