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Docket Nos.: 50-269, 50-270, 50-287
50-289, 50-302, 50-312
50-313, 50-346

FACILITIES: Oconee Nuclear Station, Unit Nos. 1, 2, and 3 (Oconee)
Three Mile Island Nuclear Station, Unit No. 1 (TMI-1)
Crystal River Nuclear Generating Station, Unit No. 3 (CR-3)
Rancho Seco Nuclear Generating Station (RS)
Arkansas Nuclear One, Unit No. 1 (ANO-1)
Davis-Besse Nuclear Power Station, Unit No. 1 (DB-1)

LICENSEES: Duke Power Company (Duke)
Metropolitan Edison Company (Met-Ed)
Florida Power Corporation (FPC)
Sacramento Municipal Utility District (SMUD)
Arkansas Power & Light Company (AP&L)
Toledo Edison Company (TECO)

SUBJECT: SUMMARY OF MEETING HELD ON AUGUST 23, 1979, WITH THE BABCOCK & WILCOX (B&W) OPERATING PLANT LICENSEES TO DISCUSS RECENT (POST TMI-2) FEEDWATER TRANSIENTS

On August 23, 1979, members of the NRC staff met with representatives of the B&W operating plant licensees, and the B&W Company, to discuss feedwater transients at B&W operating plants which have occurred subsequent to the Three Mile Island Unit 2 (TMI-2) accident. Enclosure 1 is a copy of the meeting agenda. A list of attendees is provided as Enclosure 2.

BACKGROUND

Following the TMI-2 accident, an NRC staff review of the B&W designed plants' response to feedwater transients concluded that they have anuunusual sensitivity to these types of transients. The Commission issued Orders during May 1979, which confirmed that the plants would shut down and remain shutdown until several short-term action items were accomplished. These items were required to mitigate the consequences of feedwater transients in these facilities. Subsequent to the accomplishment of these items and the lifting of the Commission Orders, several feedwater transients have taken place at the B&W operating plants. This meeting was called by the NRC staff to review those transients with respect to: (1) plant response, (2) operator action, (3) ICS response, and (4) licensees' actions to preclude similar events.

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Memo

OFFICE ►	See next page	B&OTF	B&OTF			
SURNAME ►		RACapra:lk	C.J. HELTEMES			
DATE ►		9/11/79	9/13/79			

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

September 13, 1979

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50-313, 50-346

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DISCUSSION

The meeting was divided into two parts:

(1) The first part involved presentations by FPC, AP&L, Duke and SMUD. Each licensee discussed the feedwater transient events which have taken place at its facility.

(2) The second part of the meeting involved a discussion of the consequences of experiencing a loss of pressurizer level indication (LOPLI) during transient events on B&W plants.

RECENT FEEDWATER TRANSIENTS

The following is a listing of the feedwater transients which were discussed during the meeting:

FACILITY	TIME & DATE OF TRANSIENT	DESCRIPTION
CR-3	0259 8/16/79	Reactor trip on high RCS* pressure, 72% power, reactor trip when "C" RCP* was secured.
	1125 8/16/79	Reactor trip on high RCS pressure, 45% power, 3 RCPs operating, S/G* underfeed
	0706 8/17/79	Reactor trip on high RCS pressure, 48% power, 3 RCPs operating, S/G underfeed
	1825 8/17/79	Reactor trip on high RCS pressure, 26% power, 3 RCPs operating, S/G underfeed
	0202 8/2/79	Reactor trip on low level in both S/Gs, 10% power (automatic anticipatory reactor trip)
ANO-1	1749 8/13/79	Reactor trip on high RCS pressure, 75% power (Automatic reactor-trip-on-turbine-trip did not work)
Oconee 1	0333 6/11/79	Reactor trip on loss of main feedwater, 99% power, (automatic anticipatory reactor trip)
	0752 6/11/79	Reactor trip on loss of main feedwater (manual), 1% power
Oconee 2	0344 5/7/79	Reactor trip on high RCS pressure, 28% power, feedwater oscillations
	2046 6/3/79	Reactor trip on high RCS pressure, 30% power, feedwater oscillations
Rancho Seco	1714 7/12/79	Reactor trip on turbine trip, 100% power, (automatic anticipatory reactor trip)

*RCS - reactor coolant system
RCP - reactor coolant pump
S/G - steam generator

LICENSEE PRESENTATIONS

The following is a brief summary of these events. Enclosures 3 through 7 contain the slides and any supplementary material used during the meetings by the licensees.

(1) CRYSTAL RIVER - 3 (Reference - Enclosure 3)

Within a time span of about 40 hours (0259 on 8/16/79 to 1825 on 8/17/79) CR-3 experienced four reactor trips, all of which involved abnormal feedwater response. These are discussed individually below:

8/16/79 - 0259

The reactor was operating at 72% power with all four RCPs running. Due to a seal malfunction in the third stage of "C" RCP, the operator tripped "C" RCP. The decreased reactor coolant flow in the "B" loop, caused by the tripping of "C" RCP, resulted in the RCS pressure in the "B" loop to increase to the reactor high pressure trip setpoint (2300 psig). Normal operating pressure for CR-3 is 2155 psig. Following the reactor trip, the "B" startup feedwater control valve failed in the open position. This failure was due to a malfunction in the air control relay for the startup control valve. The open valve caused the "B" S/G to be overfed, which led the S/G to overfill and the RCS pressure to decrease to a minimum of 1845 psig. The minimum pressurizer level was 36" indicated (111" above the bottom of the pressurizer). The operator recognized the open startup control valve and closed it. In addition, the operator started two additional makeup pumps and opened the high pressure injection (HPI) valves. The failure of the startup control valve was not related to a failure of the integrated control system (ICS). FPC has contracted a firm to check out the operation of the MFW pump control circuits and pump characteristics. FPC has also revised its operating procedures to reduce reactor power to below 60% prior to tripping a RCP when starting from four pump operation. The reduced power should keep the pressure surge below the high pressure reactor trip setpoint.

8/16/79 - 1125

Following recovery from the reactor trip which occurred at 0259 that morning, the plant was operating at 45% reactor power with three RCPs operating (only one pump in "B" loop). While in the process of making the transition from startup control to normal operating control of the MFW system, the operator manually opened "A" main feedwater block valve. The increased feed flow caused the "A" MFW pump to reduce speed. The pump overresponded in reducing flow and the reactor tripped on high RCS pressure in "B" loop. The "A" main block valve remained open and overfed the "A" S/G. The minimum RCS pressure reached 1550 psig. The pressurizer level instrument indicated 0" (75" above the bottom of the pressurizer) and 8" on the post-trip review. The ICS responded correctly to the "A" main block valve being opened manually by decreasing feed flow to "A" S/G; however, the "A" main feedwater pump could not respond quickly enough to the rapidly changing demand. Operator actions included starting an additional makeup pump, opening the HPI valves,

isolating letdown and closing "A" main block valve. FPC has revised its procedures to allow opening of the main block valves in the automatic mode only. Operator training is being conducted on valve mode transfer and the role of ICS during both 4 and 3 RCP operation.

8/17/79 - 0706

While recovering from the reactor trip at 1125 the previous day, the reactor again tripped on high RCS pressure at 0706. The reactor was critical at 48% power with three RCPs operating (one pump in "B" loop). The "A" MFP was feeding both S/Gs with the main crosstie valve open. Feedwater was being supplied to the S/Gs in the "valve control" mode. As power increased, the operator manually opened the "A" main block valve. This action caused feed flow control for "A" S/G to shift to the "MFP speed control" mode and remain in the "valve control" mode for "B" S/G. The operator then started "B" MFP. As he brought "B" MFP up to speed, it began to supply some of the feed flow to both S/Gs. This reduced the speed of "A" MFP. When the operator shut the crosstie valve, the "A" MFP could not respond fast enough to increase feed flow to "A" S/G and the reactor tripped on high RCS pressure. The maximum RCS pressure was 2297 psig, the minimum RCS pressure was 1952, and the minimum pressurizer level was 100 inches indicated. As corrective action, FPC supplemented the operating procedures by providing a detailed sequence of steps on how the operator should make the transition from one to two MFPs when operating with only three RCPs.

8/17/79 - 1825

While recovering from the reactor trip at 0706 that morning, the reactor again tripped on high RCS pressure at 1825. The reactor was at 26% power with 3 RCPs operating (1 in "B" loop). The reactor demand and the startup feedwater control valves were in the manual mode. During the power ascension, the reactor operator shifted the reactor demand and startup feedwater control into the automatic mode without matching the automatic demand to the manual demand. The mismatch caused the startup control valves to close which underfed the S/Gs. The reactor tripped on high RCS pressure in "B" loop. Maximum RCS pressure was 2297 psig, the minimum pressure was 1924 psig, and the minimum pressurizer level was 70 inches indicated. Following this fourth reactor trip, the reactor was placed in cold shutdown and the "C" RCP seal was replaced. FPC has scheduled additional operator training for all operators which will incorporate the lessons learned from all four reactor trips and the guidelines which B&W has developed for 3 RCP operation. This training will be completed by all licensed operators prior to future 3 RCP operation.

8/2/79 - 0202

Following the completion of zero power physics testing, the reactor was being brought up in power with all four RCPs operating and the "B" MFP feeding both S/Gs. At 10% reactor power, the "B" MFP experienced a governor malfunction. This malfunction caused the "B" MFP to drop in speed to the low speed stop. As the level in the S/G decreased to 18" on the S/U range indication, the reactor tripped on low level in both S/Gs. This trip was added to the Crystal River, Unit 3 facility as part of its compliance with The Commission Order of May 16, 1979. The low level in the S/Gs caused automatic initiation of emergency feedwater to both S/Gs, recovering the level prior to S/G dryout. The operator brought "A" MFP up to speed and secured the EFW pumps. Subsequent investigation of the malfunction on "B" MFP showed dirt had clogged a control orifice in the MFP controller. The "B" MFP governor was flushed out, tested and returned to service. FPC is investigating the possibility of installing filters in all the MFP governors upstream of the control orifices.

(2) ARKANSAS NUCLEAR ONE, UNIT 1 (Reference - Enclosure 4)

8/13/79 - 1749

While operating at 75% reactor power, a switchyard relay failed causing a turbine trip. Upon turbine trip, the turbine lock-out relay should have picked-up, causing a fast transfer of electrical loads from the auxiliary transformer to the startup transformer and should also have caused a reactor trip. Due to a loose lead on the turbine lock-out relay, neither of these actions occurred. The slow transfer of electrical loads resulted in deenergizing two non-vital busses causing the "B" main feedwater block valve to fail in the open position and a trip of "A" main feedwater pump. The reactor tripped on high RCS pressure approximately 8.5 seconds following the turbine trip. The operator carried out his immediate actions for a reactor trip followed by tripping of the "B" main feedwater pump, reenergizing the two non-vital busses, starting the auxiliary feedwater pump and securing the two emergency feedwater pumps. Following the reenergizing of the non-vital busses, the "B" main feedwater block valve received a "close" signal from the ICS. Due to a built-in time delay, the valve was slow in responding to the overfeed condition in "B" S/G; therefore, the operator shut the reactor building feedwater isolation valve to "B" S/G to correct the situation in a more timely fashion. The maximum RCS pressure was 2289 psig, the minimum RCS pressure was 1800 psig, and the minimum level in the pressurizer during the transient was 18" indicated. Corrective action included replacing the lug and terminal of the failed turbine lock-out relay. The turbine lock-out and reactor-trip-on-turbine-trip interlocks were tested with satisfactory results.

OCONEE NUCLEAR STATION, UNIT 1 (Reference - Enclosure 5)

6/11/79 - 0333

While operating at 99% full power, the reactor tripped after both main feedwater pumps tripped as a result of all six low pressure turbine intercept valves going closed. Specifically, at 0329 a leaking electrolytic capacitor caused the operational amplifier on the intercept valve amplifier board to fail. When the intercept amplifier failed, all six low pressure turbine intercept valves failed, cutting off all steam to the low pressure turbines. This set up a sequence of events which led to all three condensate

booster pumps tripping on low suction pressure and subsequently tripping of both main feedwater pumps on low suction pressure. When both main feedwater (MFW) pumps tripped, the reactor tripped. Six seconds after the MFW pumps tripped, all three unit emergency feedwater (EFW) pumps started and both S/G were fed through the EFW header valves, which automatically opened to 60%. The operator took manual control of both valves and maintained S/G level at approximately 25" on the startup range indication until both MFW pumps could be brought back on the line. Both MFW pumps were reset and brought back up approximately 20 minutes later. The EFW pumps tripped when the MFW pump discharge pressure reached 750 psig. The S/G levels dropped to approximately 15" before the MFW pump discharge pressure was high enough to move water into the S/Gs. The delay in reestablishing feedwater to the S/Gs was approximately two minutes. Corrective action included repairing the malfunction in the intercept valve amplifier and returning the unit to service. In addition a change was made to the Loss of Steam Generator Feedwater Emergency Procedure, to require the operator to put the EFW pump/turbine control switch in the run position after automatic start to preclude a loss of EFW to the S/Gs when restarting the main feedwater pumps.

During this transient, the maximum RCS pressure was 2282 psig and the minimum RCS pressure was 1811 psig.

6/11/79 - 0752

At 0725 Unit 1 went critical after completing repairs to the intercept valve amplifier. The main steam header pressure was approximately 1000 psig. Feedwater flow to both S/Gs was being maintained by manual control of "B" MFW pump through the ICS controlled startup feedwater control valves. "A" MFW pump was reset but not operating. At approximately 0752, with the reactor at 1% power, "B" MFW pump tripped on high discharge pressure (1250 psig) caused by high steam header pressure. Since discharge pressure in the MFW header did not drop below 750 psig and "A" MFW pump was reset, the reactor did not automatically trip. The S/G levels decreased from 25" to 15", at which point the operator manually tripped the reactor on low S/G levels, as required by unit operating directive. The operator started "A" MFW pump, but was unable to reestablish S/G level with this pump. "B" MFW pump was restarted and the level in the S/Gs was reestablished. EFW pumps were not automatically actuated since the necessary conditions for automatic starting were not reached. Corrective action included instructing the operators to maintain the steam header pressure as low as possible during unit startup.

(3) OCONEE NUCLEAR STATION, UNIT 2 (Reference - Enclosure 6)

5/7/79 - 0344

At 0344, with the reactor operating at 28% power, the reactor tripped on high RCS pressure. Prior to the transient, the turbine was off the line and power was being held about 15% for the performance of an emergency feedwater flow test. The reactor tripped prior to the conduct of the test. The cause of the trip was the operator's inability to control feedwater flow to the steam generators which was ultimately caused by the excessive leakage of feedwater past the main feedwater control valves (MFWCV). The main feedwater block valves (MFWBVs) are designed to open and close automatically. When in automatic, the MFWBVs open or close dependent upon a signal from ICS which is based on the positions of the startup feedwater control valves

(SUFWCVs). When the SUFWCVs reach 80% open (and opening), the MFWBVs open. When the SUFWCVs get to 50% open (and closing), the MFWBVs close. If the MFWCVs (located downstream of the MFWBVs) leak past their seats, the opening and closing of the MFWBVs can cause large swings in total feedwater flow to the S/Gs. At approximately 0337, the operator manually blocked open the MFWBVs, to prevent any large oscillations in feedwater flow caused by the MFWBVs opening and closing. Reactor power was approximately 18% at this time. Because of excessive leakage past the seats on the MFWCVs, this opening of the MFWBV caused overfeeding to occur in both S/Gs. The resultant decrease in RCS temperature was sensed by the ICS and compensated by increasing reactor power. The power increased from 18% to 28% in about 7 minutes. Upon seeing the overfeed condition, the operator shut the "B" S/G MFWBV. This sudden drop in feedwater flow resulted in high RCS pressure and the reactor tripped at 2294 psig. During the transient, the level in the pressurizer remained on scale and the minimum RCS pressure experienced was 2000 psig. Corrective action included adjusting the stroke of the MFWCV to insure the valves would fully shut. The MFWCV for all three units leak past their seats, forcing the operators to take manual control of the MFWBV during startup and shutdown. Work requests to make repairs to the MFWCVs were issued.

6/3/79 - 2046

At 2046 with the reactor at 30% power, the reactor tripped on high RCS pressure caused by a feedwater transient which led to an underfeed condition on "A" S/G. At the time of the incident the main feedwater block valves (MFWBVs) were in automatic. When the "A" main feedwater startup valve (MFWSUV) reached the 80% open position, ICS sent a signal to the "A" MFWBV to open. Due to a malfunction of the "A" MFWBV, the valve did not open. Since the feedwater flow demand was not being met, the ICS continued to open the "A" MFWCV until it reached the 100% open position. The unit supervisor "cracked" the "A" MFWCV off its seat locally (turbine building). Since the "A" MFWCV was in the 100% open position, this caused the level in "A" S/G to rise rapidly and RCS pressure began to decrease. The operator in the control room took manual control of the "A" MFWCV and began to close the valve. RCS pressure dropped to 1950 psig and began to increase. The operator then manually opened the "A" MFWCV in an attempt to stabilize feedwater flow; however, the system was not able to react in time to prevent the RCS pressure from reaching 2294 psig, causing a reactor trip. During this transient, the minimum RCS pressure reached 1850 psig and pressurizer level remained on scale. Operating procedures have been modified to allow operators the option of controlling the MFWBVs in manual as required to maintain flow stability. In addition, a work request was issued to investigate the malfunction of "A" MFWBV.

(4) RANCHO SECO (Reference - Enclosure 7)

7/12/79 - 1714

With the reactor operating at 100% power, a pressure transmitter, sensing pressure in the moisture separator reheaters, malfunctioned causing the reheater stop valves to cycle approximately 6 times. The operator responded by placing the main generator in manual and decreasing the load. The cycling of the reheater stop valves caused the reheater relief valves to open. This action caused the main steam pressure to decrease, resulting in a main turbine trip. This trip caused a reactor trip. During this transient, the feedwater discharge pressure decreased below the pressure which

would also cause a reactor trip; however, since the turbine trip occurred first, the low feedwater discharge pressure signal served only as a backup. Both auxiliary feedwater pumps started; however, since the MFW pumps continued to operate, the AFW pumps were not needed to control S/G level. The ICS automatically controlled S/G levels at the low level limits (24" on startup range indication) and steam was relieved to the condenser via the ICS controlled turbine bypass valves. The RCS temperature stabilized at 555°F and pressurizer level remained on scale. Two days following this trip, a similar transient (failure of a pressure transmitter) occurred. However, in that case the operator was successful in running the turbine governor valves back fast enough to prevent a turbine trip.

OPEN DISCUSSION

Following the presentations by the licensees, a caucus was held between members of the staff to discuss staff concerns related to feedwater transients in the B&W operating plants. The following is a summary of those concerns. These items were discussed with the licensees following the caucus.

1. Based on the presentations which were made by the licensees, no unresolved safety issues were identified by members of the staff.

2. As expected, the lowering of the high pressure reactor trip setpoint from 2355 psig to 2300 psig and the raising of the PORV lift setpoint from 2255 psig to 2450 psig (except for Davis-Besse 1, whose PORV setpoint was changed to 2400 psig) has decreased the number of challenges to the PORV but increased the number of reactor trips associated with feedwater transients. Out of the 11 transients presented by the licensees, most would have lifted the PORV had the old setpoints remained, fixed.

3. Operator training and guidelines are needed on operation with only three RCPs operating.

4. The control of main feedwater during low power operation (startup and shutdown) is especially sensitive to both operator error and/or equipment malfunctions. Several instances were discussed where either operator error, equipment malfunction, or pump/valve overreaction or underreaction lead to a sequence of S/G overfeed conditions followed by underfeed conditions and vice versa.

5. Overfilling the S/Gs leads to rapid primary coolant system temperature and pressure decreases. This condition can be caused by a single failure of many components in the MFW system. This overfilling can lead to a rapid cooldown of the primary system, reactor trip, actuation of the high pressure injection system, and loss of pressurizer level indication due to shrinkage.

6. Underfilling the S/Gs leads to rapid primary coolant system temperature and pressure increases resulting in reactor trips on high RCS pressure.

7. None of the B&W operating plants has an automatic trip of the MFW or AFW pumps on a high S/G level. If a malfunction occurs to a MFW valve which would cause it to stick in the fully open position, the S/G could be filled completely in a matter of a few minutes. The resultant carryover of liquid into the main steam lines could lead to equipment damage to both the main turbine and any auxiliary turbines (i.e., AFW pump turbines) being supplied steam from the main steam system. In addition the carryover could lead to excessive waterhammer. It is also possible that the weight of the water in the

steam lines could cause excessive stresses on the piping system and pipe supports.

8. Several concerns associated with the ICS were expressed,

   a. Most of the problems associated with feedwater control occur during the transition from manual to automatic control or vice versa. There should be a clearly defined way of making this transition and all operators should be trained on this technique.

   b. The staff needs to complete its review of the failure modes and effects analysis (FMEA) submitted by B&W on 8/17/79 on a timely basis. The scope of this review will most likely result in additional analysis being required on the ICS and modifications to the present system.

   c. Concerns about the stability of the ICS were expressed. It was pointed out that stability criteria needs to be developed for control systems such as this, even though they may not be classified as "safety related".

   d. It was clear in several of the transients discussed, that the feedwater valves and main feedwater pumps cannot react fast enough in many situations to keep from tripping the reactor on either high or low reactor coolant system pressure.

   e. The need for increased operator training in the methods of controlling of the main feedwater system was emphasized.

9. The adequacy of the presently installed hard-wired, control-grade anticipatory reactor trip was questioned. As discussed earlier, this trip did not function during the 8/13/79 transient at ANO-1. Licensees were asked to review the present installation schedule for the safety-grade reactor trip to see if the schedule could be expedited. In addition, licensees were asked to look at options available to them, by which they could increase the reliability of the presently installed trip. These modifications would be used as an interim measure until the safety-grade trip could be installed.

10. The signals used and/or the parameters measured to obtain the anticipatory reactor trip should be looked at again. For example, the 0752 transient at Oconee 1 on 6/11/79 resulted in a manual trip of the reactor, even though the unit had experienced a total loss of main feedwater. This was not due to a failure of the circuitry but rather a mode of operation which occurs during every startup or shutdown for which this trip was not designed to operate. Another example, was the Crystal River 3 transient which occurred on 8/20/79. Most of the B&W plants do not have an automatic reactor trip on low S/G level. When operating at low power levels (less than 15% power) an underfeed condition can occur where the reactor can trip on high RCS pressure prior to the operator manually tripping the plant on low S/G levels. An automatic reactor trip on low S/G level should be reconsidered for all B&W plants.

LOSS OF PRESSURIZER LEVEL INDICATION (LOPLI)

The role of pressurizer level indication during feedwater transients was discussed with the licensees. It was pointed out that the subject of IE Bulletins issued subsequent to the TMI-2 accident dealt with possible erroneous level indication which could occur during a small break loss-of-coolant accident. These Bulletins did not address the problem of overcooling events which can lead to a LOPLI. Some of the concerns of Mr. James Creswell (NRC Inspector attached to I&E Region III) were discussed with the licensees. Most of Mr. Creswell's concerns were associated with the 11/77 feedwater transient at Davis-Besse 1 which led to a LOPLI for several minutes. This subject was reviewed in the past by both NRR and I&E. The conclusion of that study was that LOPLI was not desirable; however, it was not a safety concern.

It was pointed out to the licensees that the NRC staff was undertaking another look at this subject to make an assessment of its safety significance. This report will discuss the events that can result in a reduction or loss of pressurizer level indication, and a review of the operating history of the B&W plants. It will also discuss the role of operator training and procedures for a LOPLI and will present analyses of limiting faults. An outline of this staff study is included as Enclosure 8. Several considerations will be looked at if the staff concludes that the LOPLI is unacceptable. Included will be a review of the design to see if the pressurizer is too small, possibly retapping the pressurizer to extend the range of indication, higher initial operating level, increased makeup pump capacity, modifications that would automatically isolate letdown flow and start an additional makeup pump(s) upon reactor trip. In addition, it was pointed out that the staff would be reviewing the adequacy of the pressurizer level indication instrumentation, i.e., environmental qualifications, control functions, etc. The interaction of LOPLI with pressurizer heater control needs further study.

CONCLUSIONS

As a result of the meeting, the following actions will take place:

1. Anticipatory Reactor Trip

   a. Licensees will be directed to review their schedule for installing the safety-grade reactor trip for turbine trip and loss of main feedwater to see if these schedules can be expedited.

   b. Licensees will be directed to review their present control-grade trip design and submit proposed modifications to improve its reliability and testability.

   c. Licensees will be directed to rereview the desirability of installing a reactor trip on low-steam generator level (similar to the trip presently installed on Crystal River 3).

   Note: Subsequent to this meeting, a letter was sent to each B&W licensee, directing that this action be undertaken. (Reference: letter from R. Reid (NRC) to all B&W operating plants, dated September 7, 1979)

2. ICS

   a. The staff will expedite its review of the ICS FMEA submitted by B&W on August 17, 1979. This review will be done in coordination with Oak Ridge National Laboratory.

   b. The scope of the staff review of the ICS FMEA may be expanded to include a stability study of the ICS.

   c. B&W will send an additional 40 copies of the FMEA to the NRC for further distribution.

3. Loss of Pressurizer Level Indication (LOPLI)

   The staff will consider whether licensees should submit a report covering the safety significance of a LOPLI. This report would include as a minimum:

   a. events which lead to a LOPLI;

   b. FSAR analysis;

   c. interpretation of GDC-13;

   d. the desirability of upgrading the pressurizer level instrumentation to safety-grade;

   e. method(s) to insure that pressurizer heaters are secured on low level in the pressurizer;

   f. operator training and procedures;

   g. recommendations on improvements to prevent LOPLI; and,

   h. the desirability of installing a MFW/AFW pump trip on high steam generator level.

4. B&W Work Scope

   Within one week, B&W should supply a list of work items which are outstanding. The list should include a priority listing and schedule for submission. The staff will review this list and provide feedback to B&W and the operating plant licensees as to its acceptability.

Note: Subsequent to this meeting, B&W has submitted this listing and schedule. Feedback on its acceptability will be provided in a meeting with B&W and the Owners' Group on September 13, 1979.

R. A. Capra

R. A. Capra, B&W Project Manager
Bulletins & Orders Task Force
Office of Nuclear Reactor Regulation

Enclosures:
See next page

Enclosures:
1. Agenda
2. List of Attendees
3. CR-3 Transients
4. ANO-1 Transient
5. Oconee 1 Transients
6. Oconee 2 Transients
7. Rancho Seco Transient
8. Outline NRC Report on LOPLI

} see 50-269 for encl.