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October 25, 1999

U.S. Nuclear Regulatory Commission
Document Control Desk
Washington, D.C. 20555

Subject: Oconee Nuclear Station
Docket Nos. 50-269, -270, -287
Licensee Event Report 50/269/1999-07, Revision 0
Problem Investigation Process No.: O99-3123
O99-3702
O99-3703
O99-3863

Gentlemen:

Pursuant to 10 CFR 50.73 Sections (a) (1) and (d), attached is Licensee Event Report 269/1999-07, concerning guidance in the Emergency Operations Procedure (EOP) and associated Abnormal Procedures (APs) which may not be adequate to effectively mitigate specific single failures in the LPI and HPI systems. The inadequacies involve the expected time of failure discovery and the available time to take directed compensatory actions.

This report is being submitted in accordance with 10 CFR 50.73 (a)(2)(ii). This event is considered to be of no significance with respect to the health and safety of the public.

Very truly yours,

W. R. McCollum, Jr.

Attachment

IE22

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NRC FORM 366 U.S. NUCLEAR REGULATORY COMMISSION (4-95)

APPROVED OMD NO. 3150-0104
EXPIRES: 04/30/98
ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (MNBB 7714), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Oconee Nuclear Station, Unit 1	05000 269	1 of 17

TITLE (4) Emergency Operating Procedure Inadequacies Due to Deficient Review-Validation

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER(S)
									Unit 2	05000 270
09	23	99	1999	- 07	- 00	10	25	99	Unit 3	05000 287

OPERATING MODE (9)	1	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR (Check one or more of the following) (11)					
POWER LEVEL (10)	100 %	20.402(b)	20.405(c)	50.73(a)(2)(iv)	73.71(b)		
		20.405(a)(1)(i)	50.36(c)(1)	50.73(a)(2)(v)	73.71(c)		
		20.405(a)(1)(ii)	50.36(c)(2)	50.73(a)(2)(vii)	OTHER (Specify in Abstract below and in Text, NRC Form 366A)		
		20.405(a)(1)(iii)	50.73(a)(2)(i)	50.73(a)(2)(viii)(A)			
		20.405(a)(1)(iv)	X 50.73(a)(2)(ii)	50.73(a)(2)(viii)(B)			
		20.405(a)(1)(v)	50.73(a)(2)(iii)	50.73(a)(2)(x)			

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER	
	AREA CODE	
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COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS	

SUPPLEMENTAL REPORT EXPECTED (14)		EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
	YES (If yes, complete EXPECTED SUBMISSION DATE)	X NO			

ABSTRACT (Limit to 1400 spaces, i.e. approximately fifteen single-space typewritten lines) (16)

On September 23, 1999, Oconee Units 1, 2, and 3 were at 100% power. An ongoing review and validation of the Emergency Operations Procedure (EOP) and associated Abnormal Procedures (APs) identified three scenarios where guidance may not be adequate to effectively mitigate specific single failures in the LPI and HPI systems. The inadequacies involve the expected time of failure discovery and the available time to take mitigating actions directed by the EOP.

Because the LPI and HPI systems must perform their safety function with a single failure, management concluded at 1536 hours on September 23, 1999, that this EOP inadequacy placed Oconee in a condition outside its design basis. Oconee notified the NRC at 1605 hours. No Technical Specification action statements were entered.

The root cause of this event was an inadequate review and validation process. Corrective actions include providing interim guidance to the operators, completing the EOP review, revising the EOP and AP, and revising the EOP change process to enhance cross-disciplinary review and change validation.

This event did not adversely impact the health and safety of the public.

EVALUATION:

BACKGROUND

This event is reportable under 10CFR50.73(a)(2)(ii), "Any condition … that resulted in the nuclear power plant being (B) in a condition outside the design basis of the plant."

The Oconee Emergency Core Cooling System (ECCS) includes the following systems:

High Pressure Injection (HPI) [EIIS:BG]
Low Pressure Injection (LPI) [EIIS:BP]
Core Flood (CF) [EIIS:BP]

See Attachment 1 for a simplified diagram of the applicable portions of these systems. This diagram omits branch lines, vents, drains, check valves, and other valves not needed to understand the function of these systems as described in this report.

The HPI and LPI systems were designed to meet single failure criteria. The original Oconee FSAR contained single failure evaluations which tended to be simplistic, i.e. if one train or component failed, the redundant train would perform the safety function. The failure analyses from that time period appear to assume that failures both occur and are discovered at the initiation of the event (time = zero).

The Oconee HPI system is an Engineered Safeguards (ES) [EIIS:JE] system designed to maintain core cooling for Small Break Loss Of Coolant Accidents (SB LOCAs). The HPI system includes three pumps and two trains. The suction header is required to be cross-connected, and the discharge piping is required to have cross-connection capability. The HPI system also provides Reactor Coolant System (RCS) [EIIS:AB] make-up, letdown, and Reactor Coolant Pump seal injection functions during normal operation.

The LPI system is an ES system designed to maintain core cooling for Large Break Loss Of Coolant Accidents (LB LOCAs). The LPI

system includes two trains, each with one pump, and a third pump, which can be manually started and aligned to either header in the event of a single failure of the pump in that header. The connection piping and valves for the third pump can be used to cross-connect the suction or discharge of the two trains.

The ES system actuates HPI when RCS pressure decreases to 1600 psig and LPI when RCS pressure decreases to 500 psig. Upon actuation by the ES system, both systems are initially aligned to take suction from the Borated Water Storage Tank (BWST). The HPI pumps inject into the RCS immediately. While RCS pressure is still above the maximum LPI pump discharge pressure, LPI flow to the reactor vessel is zero, and LPI pump flow is limited to a minimum recirculation path. When RCS pressure is low enough (approximately 600 psig) pressurized nitrogen in two Core Flood (CF) tanks will inject water from the tanks into the core. As RCS pressure drops lower, LPI flow to the RCS increases. By procedure, when LPI flow to the RCS exceeds 1000 gpm in both LPI headers, the HPI pumps may be secured. When the water inventory in the BWST nears depletion, it is necessary to realign the LPI system suction to the Reactor Building Emergency Sump (RBES). This transfer is a manual action which requires the Operator to open the RBES isolation motor operated valves (MOVs) [EIIS:20] (LP-19 and LP-20) and close BWST isolation MOVs (LP-21 and LP-22) electrically from the control room.

For some SB LOCAs, RCS pressure is still above the capability of the LPI pumps when the BWST inventory is depleted. In these scenarios, the HPI pump suctions must be realigned to take suction from the LPI system in what is called "piggyback" mode. One specific step in the realignment is to open manual valve HP-363, which diverts the HPI pump minimum flow from it's normal path to the Letdown Storage Tank (LDST) to the LPI pump suction.

One special case of the SB LOCA is a Core Flood Line Break. LPI and CF both inject into the RCS through the core flood nozzles. Therefore, a core flood line break can potentially prevent flow from one CF tank and one LPI train from reaching the core.

This potential event was addressed by Supplement 14, dated January 29, 1973, to the original Oconee Final Safety Analysis Report (FSAR). Following a Core Flood line break LOCA with a single failure in the LPI train associated with the intact CF line, one CF Tank and one HPI pump would provide adequate core cooling. To increase the long term safety margin, the discharge headers of the two LPI pumps could be cross-connected to align either LPI Pump A through LPI Header B or LPI Pump B through LPI Header A.

Because the LPI train single failure could potentially be an electrical failure affecting several valves in the flow path, Oconee stated that the appropriate valves would be capable of operation within fifteen minutes of the Core Flood Line Break. This commitment was clarified in 1975 to include local manual operation. The discharge header cross-connect isolation MOVs (LP-9 and LP-10) do not receive safety grade power, and were included in this commitment. A surveillance to periodically verify local manual operability of the committed valves was included in Technical Specifications. As a result of LER 269/1999-02, the fifteen minute commitment has been revised. The commitment is now Selected Licensee Commitment 16.13.7, and states that "Procedures shall include provision for remote or local operation of system components necessary to establish low pressure injection prior to switchover to sump recirculation following a Core Flood Tank line break."

EVENT DESCRIPTION

Oconee is currently conducting an initiative to review and validate the Oconee Emergency Operating Procedures (EOP) and associated Abnormal Procedures (APs). Part of this initiative includes an assessment of procedural guidance to address design basis single failure scenarios. This assessment has identified three scenarios where the direction provided by the EOP or referenced APs may not be adequate to effectively mitigate specific single failures associated with the LPI and HPI systems.

Each identified inadequacy has been documented in a Problem Investigation Process (PIP) report. Each inadequacy is summarized below and described in detail in the safety evaluation section of this report. For clarity, these are referred to as Cases A, B, and C.

Case A involves the single failure of one of the BWST suction isolation valves to close when ECCS suction is transferred from the BWST to the RBES. The EOP guidance is to close valve LP-28. If LP-28 could not be closed in time, pump damage could occur.

Case B involves failure of HP-363 to open, which potentially results in RBES inventory loss outside containment. EOP guidance does not assure that actions to open HP-363 or recovery actions if HP-363 fails to open are completed before projected dose levels limit access to the area.

Case C involves failure of one of the RBES isolation valves to open. The AP for Loss of LPI stops the affected LPI pump, which may be the only source of core cooling, without branching to additional guidance to take appropriate action. Also, when the failure is discovered, the valves needed for the mitigating action may be inaccessible due to projected dose levels in the area.

It is noted that the EOP issues being reported include previously identified failures with mitigating actions that are inherently appropriate, but the procedural guidance was not adequate with respect to the expected time of discovery and the available time to take those mitigating actions.

Because the LPI and HPI systems are required to perform their intended safety function with a single failure, Oconee management concluded at 1536 hours on September 23, 1999, that this EOP inadequacy placed Oconee in a condition outside its design basis. Oconee notified the NRC using the Emergency Notification System at 1605 hours that the Oconee EOP did not adequately address all potential single failures.

This procedural adequacy issue did not affect operability of the involved systems. The subject systems were capable of performing their specified safety functions. No physical event had occurred, no equipment was declared inoperable, and no Technical Specification action statements were entered due to this issue.

The immediate corrective action was to provide interim guidance to the operators for the deficiency identified as Case A. This guidance was provided prior to shift turnover at 1900 hours on September 23, 1999. Evaluations by Engineering and Operations concluded that additional interim guidance was not needed for Cases B and C.

Corrective actions are underway to implement formal procedural changes. The proposed changes to the EOP are undergoing an extensive and rigorous review and validation process prior to approval and implementation.

CAUSAL FACTORS

The root cause of this event is that, prior to the current assessment of EOP and associated AP guidance to address design basis single failure scenarios, there has been no comprehensive, integrated assessment of the EOP and AP guidance. Although individual changes have been validated on a case by case basis, the overall process did not reveal the issues found in the current assessment. The review and validation process for the EOP and associated APs is being strengthened as part of this EOP project.

For example, Operations Management Procedure (OMP) 4-02, "Verification And Validation Process For APs, EOP, And Support Procedures" was written to provide guidance for the verification and validation portion of the project. Use of this guidance helped to identify the problems being reported.

The EOP was developed from a Technical Bases Document using a Generic Emergency Operating Guideline (GEOG) that is generic to all

B&W Owners Group plants. The GEOG philosophy is to provide symptom based, "defense in depth" guidance to use the available equipment, in order of preference. Part of the GEOG philosophy is an assumption that other processes diagnose failures and restore failed components.

As a result, there was no attempt within the Owners Group guidance or the site to address all potential failures within the EOP. In general at Oconee, the EOP directs the Operator to an AP if a failure occurs. This was done to maintain an appropriate level of detail in the EOP and to take advantage of guidance that was already present in the APs.

The issue of EOP adequacy is a recurring problem. LER 269/1999-02, submitted April 15, 1999, addressed a finding from the same EOP review that is similar to Case C in this report. The root cause of that LER was also that an adequate procedure validation process had not existed when the EOP was originated.

LER 269/1998-04 addressed another issue partially related to EOP adequacy. That report described a historical process deficiency related to weak communication among various Engineering groups, Safety Analysis, Operations, and Maintenance on topics such as calculation revisions, station modifications, procedure revisions, etc. One corrective action from that event was to implement a process to provide two-way communication and review of changes to calculation input/output data.

The historical group interface issues between Operations, the Safety Analysis Group, and other Engineering groups appear to have contributed to the issues in this report. Historically, most technical changes to the EOP received review from the Safety Analysis Group, but were not typically reviewed by other Engineering groups. Additionally, APs generally did not receive engineering review prior to 1991. Administrative processes have been strengthened to require technical changes to APs to be reviewed by the appropriate site engineering groups.

Because the problems discussed in this report are of a historical nature, they could not have been prevented by corrective actions from LER 269/1998-04 or LER 269/1999-02. As stated earlier, the issues in this report were discovered as part of the continuation of the EOP review and validation project that discovered the problem reported in LER 269/1999-02.

SAFETY ANALYSIS

There are three cases to evaluate.

Case A

Case A involves the single failure of one of the BWST isolation valves (LP-21 or LP-22) to close when ECCS suction is transferred from the Borated Water Storage Tank (BWST) to the Reactor Building Emergency Sump (RBES). This failure allows the BWST to gravity flow to the sump with subsequent air entrainment reaching the LPI. Although there would be a potential for air entrainment during any realignment to the RBES if one of the BWST isolation valves remained open, the potential is minimized in LB LOCAs with containment pressure high enough to prevent or minimize BWST gravity flow. In addition, most LB LOCAs are mitigated using the LPI pumps, which are less sensitive to damage from air entrainment. Air entrainment is more significant during a sub-set of Small Break LOCAs where the HPI System must be aligned for the piggyback mode of operation and where Reactor Building pressure is less than approximately 12 PSIG when ECCS suction is transferred. Draining of the BWST with subsequent failure of a BWST isolation valve to close potentially leads to air entrainment into the LPI pumps and postulated failure of the operating HPI pumps.

The EOP guidance for the assumed failure of the BWST isolation valve is to locally close a manual valve (LP-28). However, this required action is time sensitive. The engineering evaluation concluded that LP-28 could not be closed prior to air entrainment if discovery of the failure did not occur until the BWST isolation valves were challenged to close.

Two specific single failure scenarios are evaluated:

Case A-1

In this scenario, the single failure considered is simply the failure of a BWST isolation valve to close. Initially, two trains of LPI operate aligned to supply the HPI suction header in piggyback mode with three HPI pumps running. Prior to initiating transfer from the BWST to the RBES, the EOP secures one of the operating LPI and HPI pumps. The BWST will drain to the RBES, with air entrainment and void formation resulting in failure of the operating pumps (two HPI and one LPI). After completing the closure of LP-28, recovery is accomplished using the LPI and HPI pumps that had previously been stopped per procedure and the spare LPI-C pump. The LPI pumps are less sensitive to damage from the air entrainment, so the operating LPI pump may not be damaged during the transient.

The PRA core damage sequence frequency is estimated to be approximately 3E-09/yr. Such a low frequency is not risk significant for a sequence that does not bypass containment.

Case A-2

In this scenario, the single failure is a loss of power on one 4KV switchgear bus, either TC or TD. This will fail an LPI pump, an HPI pump, an RB sump isolation valve, and a BWST isolation valve. In such a situation the remaining ES actuated LPI pump (A or B) and two HPI pumps would respond to the event. The procedures then align LPI pump "C" to replace the failed LPI pump. The instructions include cross-connecting the LPI suction trains. Later in the scenario, prior to initiating transfer from the BWST to the RBES, the EOP secures one of the operating LPI pumps, but does not separate the suction trains. Therefore, one LPI pump and two HPI pumps are subjected to the air entrainment. After completing the closure of LP-28, recovery depends on the potential to depressurize the RCS, using the Steam Generators (SGs), to below the LPI shutoff head and to restore injection using LPI. At least

one LPI pump is expected to remain available. The LPI pumps are less sensitive to damage from the air entrainment, and may not be damaged during the transient.

The swap to recirculation is expected to occur in less than 3 hours, and this time period is assumed for the exposure time for failure of the bus.

The PRA core damage sequence frequency is estimated to be approximately 1E-09/yr. This does not include the potential to recover by depressurizing the RCS, using the SGs, to below the LPI shutoff head and restoring injection using LPI. Such a low frequency is not risk significant for a sequence that does not bypass containment.

Case B

Case B also involves a Small Break LOCA where the HPI System must be aligned for the piggyback mode of operation. Following a Small Break LOCA, HP-363 must be opened locally to redirect the HPI pump minimum flow to the suction of the LPI pumps and not to the LDST. Failure to open HP-363 results in continued recirculation to the LDST and eventual pressurization and relief from the tank. The EOP directs the operator to open HP-363, yet does not provide guidance on how to address the scenario should HP-363 fail to open.

If HP-363 fails to open, the mitigating action would be for the operators to close the HPI Pumps' minimum flow isolation valves. This action would prevent the LDST from overflowing with water recirculated from the RBES. If the LDST were to overflow, RBES inventory would be lost outside containment.

In addition, EOP guidance to locally open HP-363 does not assure that this action is sequenced prior to the steps for the control room operator to open the RBES isolation valves. If the RBES isolation valves are opened first, RBES water would be recirculated and delivered to the area near HP-363. Using assumptions given in the Updated Final Safety Analysis Report (UFSAR) for failed fuel and gap releases following a LOCA, dose rates are projected to

render the areas near HP-363 and the minimum flow isolation valves inaccessible after sump recirculation begins. However, HP-363 is only required to be opened if HPI pumps are operating in piggyback, i.e. after a Small Break LOCA. Gap releases are not expected to occur so more realistic dose projections indicate that the valves would be accessible. While the mitigating action is not proceduralized, the time available would permit the Emergency Response Organization to identify the appropriate valves and generate guidance for accomplishing this relatively simple action.

The PRA core damage sequence frequency is estimated to be approximately 5E-09/RY. Such a low frequency is not risk significant.

Case C

Case C involves a Small Break LOCA in a core flood line. The scenario also involves the potential single failure of one of the sump isolation valves, LP-19 or LP-20. Case C involves only one scenario, but there are three issues discussed below that contribute to that scenario.

Following a postulated Core Flood Line Break, analyses show that RCS pressure eventually drops to allow LPI flow to inject into the core and HPI flow to be terminated. When the BWST approaches empty, suction is swapped to the emergency sump.

If one of the RBES isolation valves, LP-19 or LP-20, failed to open, the EOP directs operators to go to the AP for Loss of LPI. This AP stops the LPI pump whose suction is being supplied by the line with the failed valve. If the train with the failed valve is the opposite train from the train serving the broken core flood line, this guidance would result in only one LPI Pump running and all flow spilling out of the break.

Issue C-1: Lack of specific guidance

The EOP review concluded that there is no specific procedural guidance at this point in the AP to assure adequate core cooling.

One guideline of the EOP is that symptoms are treated when they occur. This precludes the need for repeated status check steps and excessive branch points. Thus, operators should "backtrack" within the procedure to reach a section that described the existing condition. A specific branch point, although desirable, would not necessarily be required, and might only be used in one specific scenario.

In relation to Scenario C, the authors of the Loss of LPI AP would expect operators to discover that LP-19 or LP-20 failed to open, take the directed action to stop an LPI pump, then recognize that the resulting condition (only one LPI pump in operation) required re-entry into the AP. Also, core exit thermocouples would indicate to the operators that injection was not adequate with the single operating train and that core heatup was occurring.

There are several possible system re-alignments available to ensure flow is re-established to the core. Guidance for some of these alignments is provided in other sections of the procedure.

For example, one option would be to return to HPI Piggyback mode.

Another option would be to use the section of the AP that addresses a condition with only one LPI pump operating. That section would provide guidance to cross-connect the LPI discharge headers using isolation valves LP-9 and LP-10 to reestablish flow.

The Emergency Response Organization may provide guidance for other potential alignments.

Therefore, although the AP does not branch directly to a preferred mitigating strategy, guidance does exist within the AP that, combined with operator training, would allow the operator to mitigate the event.

Issue C-2: Potential failure of LP-9 and LP-10 to operate electrically

According to FSAR Supplement 14, the above option to cross-connect the LPI discharge headers using LP-9 and LP-10 is the preferred option because it yields "abundant" core cooling. These valves (LP-9 and LP-10) are normally operated electrically from the control room, but there has been no requirement or surveillance for electrical operability.

LP-9 and LP-10 are routinely operated in association with pump tests, but historically, failure to operate electrically has not been considered to make the valves inoperable.

Although the power sources are not safety related, these valves are supplied from two non-load shed power sources with the capability for automatic switching if the primary source is lost. However, past operating practices may not have assured that the switching circuits were in automatic mode on the infrequent occasions that they were aligned to the back-up source.

Evaluations, calculations, and/or test data have shown that LP-9 and LP-10 could perform an active design function to open from the control room, even though the valves do not fully conform to the Environmentally Qualified (EQ), UFSAR Section 3.1.1.1 (Quality Assurance classification), Generic Letter (GL) 89-10, and GL 95-07 requirements and are not included in these programs.

In short, these valves are expected to operate electrically, and have done so during routine tests. However, programmatic controls have not been in place to assure their electrical operability in the past. Therefore, the mitigation strategy for Case C has not relied on their electrical operation. This was recognized in the 1975 and a Technical Specification requirement was established that LP-9 and LP-10 have to be manually operable, with an allowed action time of 72 hours to restore a manually inoperable valve. A manual stroke surveillance was also required.

Issue C-3 Timing of Failure Discovery

Oconee committed that LP-9 and LP-10, and other LP valves required for long term cooling, could be manually operated locally within 15

minutes of an event, as described in Supplement 14 to the Oconee FSAR. This time was considered acceptable because swapover to the RBES would not occur until approximately 30 minutes into the event. It is apparent from the wording of the commitment that the original analysis assumed that both failure and discovery occurred at the initiation of the event.

However, the EOP review has revealed the single failure of LP-19 or LP-20 to open will likely not be detected until operators attempt to open the valves. At that time, water from the RBES would begin circulating through the LPI train with the operable valve. If either LP-9 or LP-10 failed to operate electrically, local manual operation would be required. As in Case B above, realistic dose assumptions indicate that the valves would remain accessible for a period of time. However, there would be inadequate core cooling until mitigating action was completed. Response time would be limited and doses could increase. Using UFSAR assumptions, postulated dose rates in the LPI pump rooms could potentially preclude the local manual operation of both LP-9 and LP-10.

Therefore, the existing guidance would not assure that LPI would remain a viable source of core cooling. As a result, Oconee has reassessed the Supplement 14 commitment, and has concluded that there needs to be a greater assurance that LP-9 and LP-10 would be able to open electrically from the control room. This will require a change to the existing licensing basis for these valves.

If LP-9 and/or LP-10 fail to operate, EOP guidance exists to allow use of HPI in piggyback, which provides adequate core cooling. Other options exist that might require guidance and/or approval from the Emergency Response Organization.

The PRA core damage sequence frequency for Case C is estimated to be approximately 2E-09/RY. Such a low frequency is not risk significant for a sequence that does not bypass containment.

In conclusion, this report has discussed three cases where the direction provided by the EOP or referenced APs may not be adequate to effectively mitigate specific single failures. These procedural

issues apply only to a limited set of Small Break LOCA scenarios. In each case, an appropriate mitigation strategy exists, but was not fully implemented within the procedure guidance. No physical event or system inoperability has resulted due to any of these issues. PRA evaluation has concluded that none of these cases are risk significant.

Therefore, there was no impact on the health and safety of the public as a result of these procedural adequacy issues.

CORRECTIVE ACTIONS

Previous:

1. Operations Management Procedure (OMP) 4-02, "Verification And Validation Process For APs, EOP, And Support Procedures" was written to provide guidance for the verification and validation portion of the project. Use of this guidance helped to identify the problems being reported.

Immediate:

1. Engineering provided interim guidance to operators on the Case A single failure scenario. Evaluations by Engineering and Operations concluded that additional interim guidance was not needed for Cases B and C.

Subsequent

1. Oconee has continued the EOP review and validation project.

Planned

1. Oconee will complete the EOP review and validation project.

2. Oconee will revise the EOP and Loss of LPI AP to address the issue of timeliness of action for potential failures of HP-363, LP-19, LP-20, LP-21, and LP-22.

3. Oconee will modify the design and licensing basis to establish that electrical operability of LP-9 and 10 is required.

Planned corrective actions 1, 2, and 3 are considered to be NRC Commitment Items. These are the only NRC Commitment items contained in this LER.

ADDITIONAL INFORMATION

There were no releases of radioactive materials, no personnel injuries, no reportable equipment failures associated with this event.

The PRA estimates used in this report include consideration of human error.

ATTACHMENT 1

SIMPLIFIED DIAGRAM OF LPI-HPI PIGGYBACK ALIGNMENT