GRAND GULF NUCLEAR STATION UNIT 1
CHANGES, TESTS OR EXPERIMENTS SAFETY AND ENVIRONMENTAL EVALUATION

I. SAFETY EVALUATION OVERVIEW

A. REFERENCE DATA

Originator: B. A. BURKE Dept./Sect.: NS&RA Eval. No: SE-93-0088-R00

Document Evaluated: 06-OP-T48-R-0002 and 06-OP-T48-R-0003

References: GGNS TS 4.6.6.1.b; TS Position Statement No. 124, Rev. 1; GGNS FSAR Sections 6.2.3, 6.5, and 15.7.4; GGNS Safety Evaluation Report and supplements; MAEC-87/0276; MAEC-89/0175; MAEC-88/0038; AECM-88/0222; LCTS 15722; USNRC Inspection Report Nos. 50-416/89-16 and 50-416/90-02; USNRC Generic Letter 88-17; NUREG-1449; Regulatory Guide 1.52; GGNS SE-029-92, SE-93-0022 Rev. 01; IPC-87/3327; IPC-89/2508; GGNS Safety Evaluation 132/86; GGNS Conduct of Operations Policy; 06-OP-T48-R-0002 and 06-OP-T48-R-0003 surveillance histories.

FSAR Changes Required? [ ] Yes [X] No CR # N/A

FSAR Sections to be Revised: N/A

TRM Change Required? [ ] Yes [X] No

Technical Specification Change Required [ ] Yes [X] No CR # N/A

B. EXECUTIVE SUMMARY (Also serves as input to the NRC annual report)

Brief Description of Change, Test, or Experiment:

The containment equipment hatch has been removed routinely as part of previous refueling outages. This effectively increases the volume subjected to drawdown by standby gas treatment system (SGTS) in case SGTS safety function was actuated.

The present surveillances for drawdown of secondary containment by SGTS includes the primary containment and drywell volumes. This present surveillance configuration to evacuate (i.e., draw down) secondary and primary containment volumes to the design basis negative pressure of -0.25" water gauge (wg) was in response to an NRC concern (Ref. MAEC-89/0175) regarding PLS-86-136. PLS-86-136 dealt with GGNS Safety Evaluation 132/86 which reviewed the handling of fuel assemblies in the

primary containment with the containment hatch open. The concern was that SGTS may not be capable of evacuating the secondary containment to -0.25" wg within the design basis time duration due to the added volume of the primary containment. Design analyses are based on evacuation of secondary containment to -0.25" wg within 120 seconds after actuation in order to mitigate release of radioactive constituents from a fuel handling accident. MAEC-89/0175 requested that performance of all future SGTS surveillances to determine drawdown times be performed with the containment equipment hatch open.

Reason for Change, Test, or Experiment:

Performance of the secondary containment drawdown surveillance via SGTS is technically achievable with or without primary containment integrity. That is, SGTS drawdown tests can be performed either for only the secondary containment volume or for the primary containment and drywell volumes in addition to the secondary containment volume. This evaluation is intended to provide the justification necessary to maintain the design basis assumption for the SGTS safety function of secondary containment drawdown. This evaluation will also provide justification that primary containment integrity is not a prerequisite to determine SGTS performance for the drawdown criterion.

Safety Evaluation Summary and Conclusions:

This safety evaluation considers the SGTS performance criterion for secondary containment drawdown time with and without the added volumes of primary containment and drywell. The volume of free air space in the primary containment and drywell is known and was used to calculate the increased time duration of SGTS operation to reduce pressure to -0.25" wg. The additional time required to evacuate to this design basis pressure is approximately 16 seconds with one SGTS fan in service. Therefore, the primary containment equipment hatchway can be open or closed while performing the secondary containment drawdown surveillance to verify SGTS safety function performance.

This evaluation does not involve an unreviewed safety question. In addition, a no significant hazards consideration results from this evaluation. Fuel handling accidents have been evaluated in the UFSAR for two different scenarios. One fuel handling accident scenario was postulated to occur inside primary containment and a second scenario was postulated to occur in the spent fuel pool area of the auxiliary building. The consequences of a postulated fuel handling accident inside primary containment without containment integrity established was previously determined to be bounded by calculated consequences of a fuel handling accident within the secondary containment (Ref. MAEC-89/0175).

II. **SAFETY EVALUATION**

[ ] Not Applicable per Safety Evaluation Applicability Review

A. **TECHNICAL SPECIFICATIONS**

[ ] YES [X] NO 1. Implementation or performance of the action described in the evaluated document will require a change to the GGNS Unit 1 Technical Specifications.

Basis: GGNS Technical Specifications (TS) 3/4.6.6.3 contain general testing requirements and will not require revision due to this change. TS 4.6.6.3.b.1 and TS 4.6.6.3.d.1 specify in-place testing and functional testing of SGTS. A TS change was not required when the testing configuration was revised to include the additional volume. This evaluation considers a safety function requirement for SGTS that is contained in design basis safety analyses and the GGNS Safety Analysis Report (NUREG-0831).

B. **UNREVIEWED SAFETY QUESTION**

Implementation or performance of the action described in the evaluated document:

[ ] YES [X] NO 1. May increase the probability of occurrence of an accident previously evaluated in the SAR.

Basis: SGTS performance has proven its capability to evacuate the secondary containment volume, both with and without primary containment integrity having been established, in multiple SGTS functional tests.

Performance of the SGTS test on only the secondary containment volume would not cause an adverse condition to be created. The original SGTS drawdown test configuration enveloped only the secondary containment volume. Performance of the SGTS drawdown test on the combined volumes of primary and secondary containments will not have an adverse effect on the SGTS system nor on any structure or other systems or components. Plant structures, systems, and components have been subjected to this SGTS surveillance configuration previously. Some sensitive instrumentation for level and pressure parameters inside the primary containment can be affected during the test due to the

pressure condition of -0.25" water gauge; however, no adverse consequences or automatic initiations of any safety related systems or safety features are anticipated to occur.

[ ] YES [X] NO 2. May increase the consequences of an accident previously evaluated in the SAR.

Basis: Previous analyses included the postulated fuel handling accident scenarios. These analyses have been reviewed previously by the USNRC as a result of removing the primary containment hatch (1QM23Y007) during refueling outages (Ref. MAEC-89/0175).

A concern was expressed by the USNRC that SGTS may not be capable of evacuating the resultant increased volume in the time duration assumed in design basis analyses, thereby affecting potential radioactive releases and offsite doses. The consequence of negating that design basis assumption could result in an uncontrolled release of radiactive materials to the environs and/or variance to the calculated offsite radiological consequences. However, recorded drawdown times for both divisions of SGTS with the primary equipment hatchway open and calculation of the additional time required for evacuating the increased volume support the position that the configuration for this SGTS surveillance is not critical to assure this SGTS safety function. The acceptable time duration for secondary containment drawdown was maintained at less than 120 seconds as assumed previously in design analyses.

Determination of offsite radiological consequences for the postulated LOCA assumed that bypass of the secondary containment occurs during the entire 120 seconds after onset of the LOCA (Ref. SER 6.2.2). Design basis assumptions used 120 seconds (Ref. UFSAR 6.2.2) as the time duration following secondary containment isolation signals for the spent fuel handling accident or LOCA. The time duration to drawdown the secondary containment volume was originally predicted to be 82 seconds as specified in UFSAR Table 6.2-43. This also supports the position that the increased time required to evacuate secondary containment to the design pressure with the primary containment hatchway open will not negate design basis assumptions for SGTS.

Therefore, the change to permit the performance of the SGTS secondary containment drawdown test with or without containment integrity established does not increase the

consequences of an accident previously evaluated in the SAR.

[ ] YES [X] NO 3. may increase the probability of occurrence of a malfunction of equipment important to safety previously evaluated in the SAR.

Basis: SGTS components are designed to provide reliable performance of SGTS safety function for an extended period of time. SGTS satisfies GDC 41 single failure criterion in that two redundant, 100% capacity systems are available for service. The surveillance program for SGTS was developed to prove reliable performance of the system and its components in case of an accident.

The additional volumes will not diminish reliability nor performance of the SGTS fans except that drawdown time will be increased, but within the time duration assumed in design bases. The SGTS filtration subsystem capability is not adversely affected by the additional volume for the fuel handling accident postulated to occur inside or outside of the primary containment. The fuel handling accident in the secondary containment was evaluated to be more severe with respect to potential releases than the fuel handling accident in the primary containment.

Thus, a condition is not created by this change which will impose more safety function demand on SGTS than previously analysed. Therefore, the proposal to perform the surveillance in either configuration would not increase the likelihood of a malfunction of equipment important to safety previously evaluated in the SAR.

[ ] YES [X] NO 4. may increase the consequences of a malfunction of equipment important to safety previously evaluated in the SAR.

Basis: Primary containment integrity could provide additional time for radioactive materials to plate out or decay before entering the secondary containment in case of a fuel handling accident within primary containment. However, SGTS is designed to process all such constituents in magnitudes at least equal to that predicted for this accident scenario.

The postulated fuel handling accident in the secondary containment was determined to be the limiting fault for SGTS safety function. If the fuel handling accident in the secondary containment were to occur, primary containment integrity would provide a barrier against infiltration of radioactive

airborne contaminants into the primary containment volume. Primary containment ventilation makeup air is supplied from outside air, so airborne contamination should not infiltrate primary containment if its integrity has been established.

If the primary containment equipment hatchway was open and a fuel handling accident occurred in the secondary containment, then area radiation alarms would sound and announcements would be made on the public address system for personnel to evacuate the areas. The open equipment hatchway could provide a better means for personnel evacuation of the primary containment than the containment personnel airlock .

Additional consequences due to the increased time duration to draw down the secondary containment with primary containment integrity not being established are not anticipated to occur because the design basis assumption of 120 seconds drawdown time is maintained. Both divisions of SGTS have consistently performed the drawdown test within the design limit, even with the increased volume.

Surveillances since mid-1983 for secondary containment SGTS drawdown time have included a 16 second time duration for the onsite power supply system (standby diesel generator) to supply electrical power to SGTS in case of a station blackout concurrent with a LOCA. The Division 1 SGTS had recorded time durations of 66.1 seconds and 76 seconds in two separate tests with the containment equipment hatch open during RFO5. Similar surveillance tests performed during RFO4 via the Division 2 SGTS had recorded time durations of 59.1 and 104.3 seconds. These results include the 16 second time delay mentioned above. Previous drawdown tests on the secondary containment only have ranged in the 64 to 96 second time period. This data confirms that the increased volume has no significant impact on SBGT capabilities. Therefore, no adverse consequences of a malfunction of equipment important to safety previously evaluated in the SAR are anticipated to occur as a result of the drawdown test configuration.

[ ] YES [X] NO 5. may create the possibility for an accident of a different type than any previously evaluated in the SAR.

Basis: The primary containment is a fixed volume when its integrity is established. Systems which breach primary containment are closed systems or have isolation features including redundant isolation valves or equal. Containment isolation would occur automatically in case radiation monitoring systems detected their pre-set levels. No direct release path to the environment is created by the configuration proposed by this change.

The secondary containment drawdown test requires a calculated additional time duration of 16 seconds of SGTS operation to evacuate the primary containment to -0.25" wg. The fuel handling accident in the secondary containment bounds the fuel handling accident in the primary containment even when primary containment integrity has not been established. This is due to the damage projected to spent fuel in the spent fuel pool. In addition, the probability of a design basis accident to occur coincident to the performance of the secondary containment drawdown test is very low.

Therefore, no credible new accident scenario is known to be created as a result of the secondary containment drawdown test configuration.

[ ] YES [X] NO 6. may create the possibility for a malfunction of equipment important to safety of a different type than any previously evaluated in the SAR.

Basis: The operating mode of the SGTS fans is not affected by the test configuration. The additional volumes will not diminish the reliability and performance of the SGTS fans. The SGTS filtration subsystem capability is not adversely affected by the additional volume for the fuel handling accident postulated to occur inside or outside of the primary containment. Failure mechanisms for these SGTS safety functions are not changed due to the test configuration. The primary containment and drywell volumes are internal to the secondary containment. Systems which emanate from primary containment and transit to outside of the secondary containment are equipped with isolation valves or equal. The isolation system features redundant trains to ensure safety function. Therefore, the drawdown test configuration is not known to create the possibility for a malfunction of equipment important to safety of a different type than any previously evaluated in the SAR.

[ ] YES [X] NO 7. will reduce the margin of safety as defined in the basis for any technical specification.

Basis: The margin of safety is not reduced since the time duration required to evacuate the secondary containment does not exceed the time duration assumed in design bases.

III. **ENVIRONMENTAL EVALUATION** [X] Not Applicable per Environmental Evaluation Applicability Review

A. **ENVIRONMENTAL PROTECTION PLAN**

[ ] YES [ ] NO 1. will require a change in the Environmental Protection Plan.

B. **UNREVIEWED ENVIRONMENTAL QUESTION**

[ ] YES [ ] NO 1. concerns a matter which may result in a significant increase in any adverse environmental impact previously evaluated in the Final Environmental Statement (FES) as modified by the NRC staff's testimony to the Atomic Safety and Licensing Board (ASLB), supplements to the FES, environmental impact appraisal, or in any decisions of the ASLB.

[ ] YES [ ] NO 2. concerns a significant change in effluents or power level.

[ ] YES [ ] NO 3. concerns a matter not previously reviewed and evaluated in the documents specified in II.B.1. above, which may have a significant adverse environmental impact.

Evaluated: T Bell Burke 8/20/93
Originator/Date

Reviewed/Approved: S M Daughtry 8/24/93
Reviewer/Date

PLANT SAFETY REVIEW COMMITTEE REVIEW
(For Safety and/or Environmental Evaluations only)

Reviewed/Approved: W Ray Butler 8/31/93
Chairman, PSRC/Date

MANAGER, R&ES
(For Environmental Evaluations only)

Reviewed/Approved: N/A
Manager, R&ES/Date

CALCULATION FOR
SECONDARY CONTAINMENT DRAWDOWN TIME
WITH PRIMARY CONTAINMENT HATCHWAY OPEN

ASSUMPTIONS

Time required for secondary containment drawdown (t_{sc}) = 82 seconds per FSAR Table 6.2-43;

Time required for onsite electrical power system to supply SGTS during station blackout (t_{sbo}) = 16 seconds per Step 2.1.0 of 06-OP-1T48-R-0002 and 06-OP-1T48-R-0003;

8/24/93

Time required for SGTS fan startup (t_{su}) = 3 seconds per FSAR 6.2.3.3;

Initial condition of all volumes are standard atmospheric;

Standard atmospheric pressure = 14.69 psia = 406.8 inches water gauge;

SGTS performance for single train operation = 4000 cfm;

Primary containment free air volume = 1.4E6 cubic feet;

Drywell free air volume = 2.7E5 cubic feet;

Original assumption of secondary inleakage not exceeded;

Ideal gas law is applicable.

Using partial volumes to determine the time duration required to draw down the additional volumes:

$$t_{pc+dw} = \frac{(1.4E6\ ft^3 + 2.7E5\ ft^3) * (60\ sec/min) * (0.25"\ H_2O\ /\ 406.8"\ H_2O)}{(4000\ ft^3/\ min)}$$

t_{pc+dw} = 15.4 sec = ~~16~~ sec

Calculating the total time for drawdown of primary and secondary containment and the drywell volumes concurrent with a station blackout:

$t_{total} = t_{sc} + t_{sbo} + t_{su} + t_{pc+dw}$ = 82 sec + 16 sec + 3 sec + 16 sec = 117 sec

Therefore, design basis assumptions are maintained for establishing the negative pressure within secondary containment within 120 seconds with the primary containment equipment hatchway open.

Calculation performed by: T. M. Tuke Date: 8/24/93

Calculation reviewed by: Robert W. Fuller Date: 8/24/93

Attachment 2
GNRO-93/00123

MAEC-89/0175

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

May 22, 1989

RECEIVED

MAY 26 1989

BY SERI NUCLEAR

Docket No. 50-416

LICENSEE: System Energy Resoures, Inc. (SERI)

FACILITY: Grand Gulf Nuclear Station, Unit 1

SUBJECT: SUPPLEMENT TO JANUARY 25, 1989 MEETING SUMMARY REGARDING 10 CFR 50.59 SAFETY EVALUATION

The NRR Project Manager conducted an audit April 25-29, 1988 to determine the adequacy of Grand Gulf Nuclear Station, Unit 1 (GGNS-1) Safety Evaluations performed pursuant to 10 CFR 50.59. An audit summary was issued July 11, 1988. Corrective actions to the licensee's procedures for making 10 CFR 50.59 determinations were discussed in a September 28, 1988 meeting with the licensee and summarized in a January 25, 1989 meeting summary. This supplement provides the results of an evaluation of five SERI safety evaluations selected in the audit for further review by NRR technical staff and recommends followup action by the licensee. Potential deficiencies in the five safety evaluations were identified in the exit meeting for the audit and discussed with the licensee in the September 28, 1988 meeting. Additional information concerning these deficiencies was provided by the licensee in the September 28, 1988 meeting and a November 9, 1988 letter. This additional information was considered in the staff's safety evaluation (enclosed).

We conclude that two of the five safety evaluations (NPE-86-241 and NLS-87-003) contained adequate bases to support the licensee's 10 CFR 50.59 determination that the change did not involve an unreviewed safety question. Two other safety evaluations (NPE-86-279 and PLS-86-123) did not contain adequate bases; however, subsequent information provided by the licensee provided adequate bases. For one safety evaluation (PLS-86-136) regarding the handling of fuel assemblies in the primary containment with the containment hatchway open to secondary containment, we conclude that the change in procedure would increase the calculated consequences of a dropped fuel assembly inside containment, but the consequences would be bounded by calculated consequences of a dropped fuel assembly inside secondary containment.

By telephone call to the liensee on May 11, 1989, we provided the results of our evaluation and recommended licensee corrective actions in three areas:

1. Revision of the SERI safety evaluations NPE-86-279 and PLS-86-123 to include adequate bases to support a determination that the changes do not involve unreviewed safety questions.

2. Revision of the UFSAR to include information to show how safety significant cranes meet NUREG-0612, as discussed in our evaluation of NPE-86-279.

3. Revision of the surveillance procedure for Technical Specification 4.6.6.1.b to require that drawdown tests of secondary containment be run with the primary containment hatch open as discussed in our evaluation of PLS-86-136.

See LCTS 15722

L L Kintner

Lester L. Kintner, Senior Project Manager
Project Directorate II-1
Division of Reactor Projects I/II

Enclosure: NRR Safety Evaluation

cc: w/enclosures

Mr. W. T. Cottle
System Energy Resources, Inc.

Grand Gulf Nuclear Station (GGNS)

cc:
Mr. T. H. Cloninger
Vice President, Nuclear Engineering and Support
System Energy Resources, Inc.
P. O. Box 23054
Jackson, Mississippi 39205

Robert B. McGehee, Esquire
Wise, Carter, Child, Steen and Caraway
P. O. Box 651
Jackson, Mississippi 39205

Nicholas S. Reynolds, Esquire
Bishop, Liberman, Cook, Purcell and Reynolds
1400 L Street, N.W.
Washington, D.C. 20005-3502

Mr. Ralph T. Lally
Manager of Quality Assurance
Middle South Utilities System Services, Inc.
639 Loyola Avenue, 3rd Floor
New Orleans, Louisiana 70113

Mr. John G. Cesare
Director, Nuclear Licensing
System Energy Resources, Inc.
P. O. Box 23054
Jackson, Mississippi 39205

Mr. C. B. Hogg, Project Manager
Bechtel Power Corporation
P. O. Box 2166
Houston, Texas 77252-2166

Mr. H. O. Christensen
Senior Resident Inspector
U.S. Nuclear Regulatory Commission
Route 2, Box 399
Port Gibson, Mississippi 39150

Mr. C. R. Hutchinson
GGNS General Manager
System Energy Resources, Inc.
P. O. Box 756
Port Gibson, Mississippi 39150

The Honorable William J. Guste, Jr.
Attorney General
Department of Justice
State of Louisiana
Baton Rouge, Louisiana 70804

Office of the Governor
State of Mississippi
Jackson, Mississippi 39201

Attorney General
Gartin Building
Jackson, Mississippi 39205

Mr. Jack McMillan, Director
Division of Solid Waste Management
Mississippi Department of Natural Resources
P. O. Box 10385
Jackson, Mississippi 39209

Alton B. Cobb, M.D.
State Health Officer
State Board of Health
P. O. Box 1700
Jackson, Mississippi 39205

President
Claiborne County Board of Supervisors
Port Gibson, Mississippi 39150

Regional Administrator, Region II
U. S. Nuclear Regulatory Commission
101 Marietta Street
Suite 2900
Atlanta, Georgia 30323

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

REGARDING 10 CFR 50.59 SAFETY EVALUATIONS

GRAND GULF NUCLEAR STATION, UNIT 1

DOCKET NO. 50-416

1.0 INTRODUCTION

The NRC Project Manager for Grand Gulf Nuclear Station, Unit 1 (GGNS-1) conducted an audit of safety evaluations performed by System Energy Resources, Inc., (the licensee for GGNS-1) pursuant to 10 CFR 50.59. The summary of the audit was issued on July 11, 1988.

On September 28, 1988, the staff met with the licensee to discuss, among other things, the correction of problem areas identified in the staff's July 11, 1988 audit summary. The summary of the September 28, 1988 meeting issued on January 25, 1989, summarizes the corrective measures for the licensee's 10 CFR 50.59 program and procedures. This evaluation summarizes the NRR staff's evaluation of GGNS-1 safety evaluations selected in the audit as possibly involving an unreviewed safety question, including an evaluation of information received in the September 28, 1988 meeting and by letter dated November 9, 1988.

2.0 EVALUATION

The staff's audit of the GGNS-1 10 CFR 50.59 program identified five changes made in facility equipment or procedures as possibly involving an unreviewed safety question and stated the NRC technical staff would review the safety evaluations prepared by the licensee for these changes. The staff's evaluation of these five changes is summarized below:

1. NPE-86-241 The cooler for the spent fuel pool cooling and clean-up pump room was found, by the licensee, to be incapable of maintaining the design temperature of 104°F if the normal auxiliary building HVAC failed. The calculated room temperature was 107°F. Class 1E electrical equipment in the room is designed and tested to operate in room temperatures up to 104°F with a 10% margin. The limiting temperature for operation of Class 1E equipment in the room is 104°F plus 10.4°F or 114.4°F. Because the equipment in this room will not be subjected to a temperature which is greater than the temperature for which it was designed and tested, the staff concurs in the licensee's determination that this degraded cooler performance does not involve an unreviewed safety question.

2. NLS-87-003 The UFSAR was revised to delete "water level below the top of the active fuel," as an emergency procedure action to manually start hydrogen recombiners. A 3.5% hydrogen concentration, as

measured by the hydrogen analyzers, is now the only measurement used to manually start recombiners. Igniters are manually initiated based on both parameters. A previous change to the UFSAR added this requirement to start recombiners if the water level reached the top of the active fuel. The use of the hydrogen concentration measurement only to start hydrogen recombiners is acceptable to the staff because a small LOCA may temporarily decrease water level below the top to the active fuel without significant generation of hydrogen. This revised procedure is consistent with other plants. Because this change in procedures merely restored the emergency procedure to an acceptable licensing basis in the FSAR, the staff agrees with the licensee that this change does not involve an unreviewed safety question.

3. PLS 86-136 This safety evaluation was prepared to delete a statement in the UFSAR that during fuel handling operations within the containment the equipment hatch and one door in the personnel locks will be closed at all times. The licensee's offsite radiological dose analysis in the UFSAR is based on the equipment hatch being open for a fuel assembly dropped inside containment. However, the staff's dose analysis in its Safety Evaluation Report (SER) for this accident is based on the equipment hatch and personnel lock door being closed. The licensee's basis for finding this change to not involve an unreviewed safety question was that its FSAR analysis was based on the assumption that the hatch was open; and, therefore, the change was simply correcting an inconsistency in the FSAR. The staff said that the Safety Evaluation Report (SER) of the operating license application should be considered a part of the licensing basis documents because, as in this case, the staff may rely on the more conservative of the two statements in the FSAR. For offsite dose consequences, the staff relied on independent calculations based on the FSAR statement that the hatch would be closed during fuel handling operations within containment. With regard to the conduct of fuel handling operations inside primary containment and other operations with a potential for release of fission products, the staff notes that, for its independent evaluation of a fuel handling accident in the auxiliary building, the secondary containment provides adequate mitigation to keep offsite radiological doses within 10 CFR Part 100 limits and that a fuel handing accident inside primary containment with the equipment hatch open would likely be bounded by this analysis. The TS require secondary containment integrity when handling fuel inside primary containment. The surveillance test for drawdown time of secondary containment was run with the primary containment closed and calculations were made to demonstrate that TS 4.6.6.1.b could be met with the primary containment open.

Because a dropped fuel assembly inside the primary containment is the most severe design basis accident considered in the primary containment during refueling and because the consequences of this accident when primary containment is open are bounded by a dropped

fuel assembly inside secondary containment, the staff concludes that the present method of operation is acceptable. However, all future surveillance tests to determine drawdown times should be run with the equipment hatch open to demonstrate by test that the drawdown time can be met with the larger volume.

4. NPE-86-279 A containment hatchway crane was installed inside containment to be used only during outages to supplement the polar crane in the handling of heavy loads. The handling of heavy loads using only the polar crane has become a critical path for outages. The UFSAR references the licensee's response to NUREG-0612 only briefly and generally in UFSAR Section 9.1.4.3. This is a deficiency in the initial updating of the FSAR. The response showing how the safety significant cranes meet NUREG-0612 should have been included because it was a substantial part of the staff's OL review (See Supplement No. 5 to the staff's Safety Evaluation Report, Appendix L). When the new crane was added, the licensee should have included the criteria for design and operation of the containment hatchway crane in the UFSAR. During the September 28, 1988, meeting the licensee described how the hatchway crane meets NUREG-0612 guidelines and the criteria for crane design and operation. Based on its review of the SERI safety evaluation and information presented in the meeting, the staff agrees with the licensee's conclusion that this change does not involve an unreviewed safety question, However, the UFSAR and the 10 CFR 50.59 safety evaluation do not adequately document bases for this conclusion.

5. PLS 86-123 The standby gas treatment system (SGTS) automatic control circuit for stopping the fans if a high charcoal temperature is reached was modified to delete the automatic trip feature because the relays were not environmentally qualified. The licensee's concern was that a trip of the fans because of relay failure would result in failure of the SGTS. Alarm response instructions were modified to require manual fan shutdown in the event a high temperature alarm was received. The licensee's bases for concluding that this change would not involve an unreviewed safety question are that the licensing basis should not consider a simultaneous LOCA and a fire in the charcoal and that post-LOCA heating is not large enough to reach the auto-ignition temperature. The staff said that the licensing basis for the automatic trip was that conditions in the SGTS due to heating of charcoal by decay of fission products may lead to higher charcoal temperatures with possible combustion and release of fission products. By tripping the fan, the buildup of fission products would cease and the release of fission products would be prevented. Substitution of a manual trip of the fans could increase

offsite dose consequences because of the longer time required for shutting off fans. By letter dated November 9, 1988, the licensee made a submittal of additional information for this change, including a calculation of charcoal temperature, considering heatup of the charcoal following a LOCA. The licensee concluded, and staff agrees, that, for the LOCA, the buildup of fission products would not cause combustion of the charcoal and release of fission products from the charcoal. Based on its review of the SERI 10 CFR 50.59 safety evaluation and the additional information provided in the November 9, 1988 letter, the staff concurs in the licensee's conclusion that this change does not involve an unreviewed safety question. However, the 10 CFR 50.59 safety evaluation does not adequately document bases for this conclusion.

4. CONCLUSION

1. Based on its review of the five 10 CFR 50.59 safety evaluations and information provided by the licensee in the September 28, 1988 meeting, the staff concludes that for two of the five changes in procedures and equipment (NPE-86-241 and NLS-87-003) the licensee's determination that no unreviewed safety question existed appears reasonable.

2. Based on its review of PLS-86-279 and PLS-86-123, and supplemental information provided by the licensee, the staff agrees that the changes do not involve unreviewed safety questions. However, the licensee should revise its 10 CFR 50.59 safety evaluations to adequately document the bases for these determinations. In addition, with regard to safety evaluation NPE-86-279, the licensee should include a summary of its response to NUREG-0612 for safety related cranes, including the containment hatchway crane in an update of the UFSAR.

3. Based on its review of safety evaluation PLS-86-136, the staff concludes that the change to the procedure for handling fuel assemblies inside primary containment would increase the calculated offsite doses of a dropped fuel assembly inside primary containment. Based on its present evaluation, the staff concludes that the increased calculated offsite doses are within the bounds of the calculated offsite doses for a dropped fuel assembly inside secondary containment and are, therefore, acceptable. However, the licensee should run future surveillance tests for drawdown time of the secondary containment (TS 4.6.6.1.b) with the containment equipment hatch open.

Principal Contributors: J. Kudrick, Plant Systems Branch
J. Lee, Radiation Protection Branch
J. Craig, Plant Systems Branch
L. Kintner, Project Directorate II-1

Dated: May 22. 1989

/MTITLE/ SAFETY ENVIRONMENTAL EVALUATION FORM*

PART I /MXREF/ DOC. EVALUATED 07-S-14-262, 07-S-14-220 /MDOCNO/ EVALUATION NO. SE-132/86

/MXREF/ REFERENCES PMT 86/5536 See Attachment II /MSYSNO/ SYSTEM EFFECTED M23

Requires a change to the FSAR ✓ Yes __ No If Yes, C/R No. 86-24

DESCRIPTION In section 15.7.6.1.1 of the FSAR a statement is made that during fuel handling operations within the containment, procedures are taken so that the equipment hatch and atleast one door in the personnel locks are closed at all times. This is not a procedural requirement and the FSAR analysis assumes the equipment hatch is open. (continued on Att. I)

	QA RECORD
	RT -B14.33
	NON-QA RECORD
	INITIALS
	NO. OF PAGES
	DATE

PART II SAFETY EVALUATION

YES	NO	IMPLEMENTATION OR PERFORMANCE OF THE ACTIVITY DESCRIBED ABOVE:
__	✓	(a) Requires a change to the GGNS Technical Specifications. BASIS See Attachment IV
__	✓	(b) Increases the probability of occurrence of an accident previously evaluated in the FSAR. BASIS See Att. IV
__	✓	(c) Increase the consequences of an accident previously evaluated in the FSAR. BASIS See Att IV
__	✓	(d) Creates the possibility of an accident of a different type than any evaluated in the FSAR. BASIS See Att IV
__	✓	(e) Increases the probability of occurence of a malfunction of equipment important to safety previously evaluated in the FSAR. BASIS See Att IV
__	✓	(f) Increases the consequences of a malfunction of equipment important to safety previously evaluated in the FSAR. BASIS See Att IV
__	✓	(g) Create the possibility of a malfunction on a different type than any evaluated previously in the FSAR. BASIS See Att IV
__	✓	(h) Reduces the margin of safety as defined in the basis for any technical specifications. BASIS See Att. IV

Mike Hattwill / 9-17-86 — [signature] for A.S. McCurdy (Telecon) / 9/14/86

/MORIG/ ORIGINATOR DATE PSRC DATE

[signature] / 9-14-86 — /

APPROVED DATE SRC DATE

*Additional sheets may be used and attached as necessary.

Evaluation No. SE-132/86

Attachment 3
GNRO-93/00123

SAFETY EVALUATION APPLICABILITY REVIEW	Yes	No
(1) Change to Facility as Desc. in FSAR	✓	
(2) Change to Procedure as Desc. in FSAR		✓
(3) Test or Experiment not Desc. in FSAR		✓
(4) Change to Tech. Specs.		✓
(If Yes, perform 10CFR50.59 Safety Eval.)		

ENVIRONMENTAL EVALUATION APPLICABILITY REVIEW		
(1) Change to Environmental Protection Plan		✓
(2) Will or may effect Environment		✓
(If Yes, perform Environmental Eval.)		

Signature Mike Harrigill Date 9/13/86

ATTACHMENT I

Description Continued This safety evaluation is for support of our present practices of removing the equipment hatch and opening both doors of personnel air locks during the movement of ~~irradiated~~ fuel inside the containment.

Attachment 3
GNRO-93/00123

References

Attachment II

1) PMI-3/5536 Subject Secondary Containment Integrity (Att III)

2) 07-5-14-262, Containment Equipment Hatch Removal

3) 07-5-14330, Door Interlock Defeat Personnel Airlock

4) 03-1-01-5, Refueling

5) Technical Specifications, 3.6.1.1

~~3.6.1.2~~

3.6.1.3

3.6.6.3

6) Final Safety Analysis Report, 15.7.6, Fuel Handling Accident Inside Containment

SEP 13 '86 10:00 MPOL NUCLEAR ... TO: [illegible] 2 PAGES

Attachment 3
GNRO-93/00123 Att. III of Evaluation 86-[illegible]

DATE: August 28, 1986

MEMO TO: Mr. C. R. Hutchinson

FROM: S. H. Hobbs

SUBJECT: Secondary Containment Integrity

PMI-86/5536

Numerous calls have been held with the Nuclear Reactor Regulations branch and Region II of the NRC concerning the issue of secondary containment integrity. The calls were held to determine if performance of the Standby Gas Treatment system drawdown test, as required by Technical Specification 4.6.6.1b to prove secondary containment integrity, is an adequate test to allow credit for secondary containment with the containment equipment hatch removed during Cold Shutdown or Refueling modes. The drawdown test is presently performed with the equipment hatch in place.

In these calls, the Technical Specification Bases 3/4.6.6 "Secondary Containment" was discussed. The bases states "When the reactor is in COLD SHUTDOWN or REFUELING, the containment may be open and the Auxiliary Building and Enclosure Building then become the only containment." It also states "The OPERABILITY of the standby gas treatment systems ensures that sufficient iodine removal capability will be available in the event of a LOCA." The relevant points drawn from the bases were that 1) the bases recognize that the containment may be open, i.e., the equipment hatch removed, during Cold Shutdown or Refueling modes, whereby secondary containment becomes the only containment; and 2) the bases recognize that Standby Gas Treatment is required for a LOCA.

Further discussions pointed out that during Refueling mode, the limiting case is a fuel handling accident. (FSAR ~~15.7.4.2.2.1~~ 15.26.2.2.1 [initials] 9/13/86 addresses a fuel handling accident inside containment with the release being completely pulled through the opened equipment hatch.) Regulatory Position C(1) of Reg. Guide 1.25 "Assumptions Used for Evaluating the Potential Radiological Consequences of a Fuel Handling Accident in the Fuel Handling and Storage Facility for Boiling and Pressurized Water Reactors" assumes that "The radioactive material that escapes from the pool to the building is released from the building over a two hour time period." By performing the Standby Gas Treatment drawdown test, secondary containment integrity is demonstrated. The NRC agreed that by meeting the two-minute time period requirement of the drawdown test with the containment equipment hatch in place, adequate integrity of secondary containment was demonstrated for fuel handling activities with the hatch removed during Refueling mode. The two-minute requirement is based upon DBA LOCA conditions.

This position/interpretation was finalized on August 12, 1986, in a telephone conversation held between myself and Mr. Hugh Dance of NRC Region II. In that conversation, Mr. Dance stated that the Standby Gas Treatment drawdown test as defined in Technical Specification 4.6.6.1b performed with the containment equipment hatch in place is a proper test to determine secondary containment integrity. Mr. Dance also said that a formal letter to the NRC documenting this interpretation was not required.

Attachment 3
GNRO-93/00123

Based upon the interpretation given by Mr. Dance and the previous telephone conversations with the NRC, it is our opinion that no further Standby Gas Treatment drawdown testing need be performed for RF01 since secondary containment integrity has been proven by a previous Standby Gas Treatment drawdown test within the last 18 months.

SHH

SHH

GHD:bms

cc: Mr. O. D. Kingsley, Jr.
File (Central) (2)

Attachment 3
GNRO-93/00123

ATTACHMENT IV
Safety Evaluation

(a) In operational condition 5 primary containment integrity is not required per technical specification 3.6.1.1. However, when performing core alterations, secondary containment is a requirement per technical specification 3.6.6.1. As stated in the attached referenced document, DMI-86/5536, no additional Standby Gas Treatment (SBGT) drawdown testing need be performed, since secondary containment integrity has been proven by a previous SBGT drawdown test within the last 18 months. Therefore, since in operational condition 5 the primary containment integrity is not applicable and additional SBGT drawdown test are not required for the assurance of secondary containment, then there is no need for any changes to the technical specifications.

(b) The accident of concern in this situation is a fuel handling accident inside containment. This accident is assumed to occur as a consequence of a failure of the refueling platform, resulting in the dropping of a raised fuel bundle onto the reactor core when the vessel head is off. The removal of the containment equipment hatch and the opening of both doors on personnel air locks does not in any way affect the structural integrity of the refueling platform. Therefore these actions do not increase the probability of an occurrence of a fuel handling accident inside the containment. The accident is classified as a limiting fault (postulated accident) and the frequency of occurrence is not affected.

ATTACHMENT - IV
(Continued)

(c) The radiological consequences of the fuel handling accident is analysed in section 15.7.6.2 of the FSAR. The analyses does consider the equipment hatch being removed. The analysis assumed that all the activity is pulled from the containment into the auxiliary building through the equipment hatch. Then due to the slightly more negative pressure of the spent fuel pool area maintained during refueling in the auxiliary building the net air flow is ~~toward the~~ spent fuel pool area. Since the analyses assumes that all activity reaches the auxiliary building and is directed toward the spent fuel pool area, then having both doors of the personnel hatches open does not allow more activity to reach the auxiliary building then that already assumed in the analysis. Therefore, it is concluded that having both doors of the personnel hatches open and the equipment hatch open does not increase the consequences of the accident.

ATTACHMENT II
(Continued)

(d) The fuel handling accident inside the containment without primary containment integrity has been evaluated in the FSAR.

(e) The opening of both doors on personnel air locks and the removal of equipment hatch does not degrade any equipment important to safety previously evaluated in the FSAR. Since no equipment is degraded the probability of a ~~mal~~function of equipment is not increased.

(f) The consequences of a malfunction of equipment during operational condition 5 that is important to safety previously evaluated in the FSAR is not effected. The removal of the equipment hatch and the opening of both doors in the personnel air locks remove the integrity of primary containment and the FSAR analysis already assumes the loss of primary integrity.

ATTACHMENT IV
(Continued)

(g) The removal of the containment equipment hatch (07-5-14-262) and the opening of both doors of the personnel hatches (07-5-14-330) during operational condition 5 does not require any plant design changes or changes in normal practices. These are approved procedures and the possibility of a new malfunction being created does not exist.

(h) The basis of technical specification 3/4.6.6, Secondary Containment states that during Cold Shutdown and Refueling the containment may be opened and the Auxiliary Building and Enclosure Building then become the only containment. Therefore, the margin of safety is not reduced.