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SOUTHERN COMPANY
Energy to Serve Your World℠

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Docket Nos. 50-348
50-364

NL-03-1740

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D. C. 20555-0001

Joseph M. Farley Nuclear Plant Units 1 and 2
Request to Revise Technical Specifications
Containment Equipment Hatch

Ladies and Gentlemen:

In accordance with the requirements of 10 CFR 50.90, Southern Nuclear Operating Company (SNC) proposes to revise the Farley Nuclear Plant (FNP) Unit 1 and Unit 2 Technical Specifications (TS) Limiting Condition for Operation (LCO) 3.9.3, Containment Penetrations. The proposed changes would allow the equipment hatch to be open during core alterations and/or during movement of irradiated fuel assemblies within containment. Appropriate Bases changes are included to reflect the proposed changes.

The basis for the proposed changes is provided in Enclosure 1. Pursuant to 10 CFR 50.92, an evaluation that demonstrates that the proposed changes do not involve a significant hazard consideration is provided in Enclosure 2. The proposed changes are marked on the affected TS and Bases pages and provided in Enclosure 3. In addition, clean typed TS and Bases pages are provided in Enclosure 4.

The radiological consequences of a fuel handling accident inside containment with the equipment hatch open were analyzed in accordance with Regulatory Guide 1.195, "Methods and Assumptions for Evaluating Radiological Consequences of Design Basis Accidents at Light-Water Nuclear Power Reactors," dated May 2003. The basis for the proposed change is that the radiological consequences of a fuel handling accident inside containment would be less than 25% of 10 CFR 100 at the site boundary, and the control room radiological consequences would be within the acceptance criteria given in General Design Criterion (GDC) 19.

SNC notes that, with respect to loss of decay heat removal (DHR), the capability to close the equipment hatch was addressed in our responses to Generic Letter 88-17, "Loss of Decay Heat Removal." Furthermore, Generic Letter 88-17 was concerned with operation during reduced inventory conditions, i.e., when reactor vessel water level is below the reactor vessel flange. Core alterations and movement of irradiated fuel cannot take place unless refueling cavity water level is maintained ≥ 23 feet above the reactor vessel flange. Therefore, the consequences of a loss of DHR under these conditions are much less

A034

severe than during a condition of reduced inventory, and the time allowed for closing the equipment hatch would be much longer. Finally, SNC notes that there is no requirement to postulate a loss of DHR in conjunction with a fuel handling accident. Hence, the environmental conditions inside containment associated with a loss of DHR (conditions such as steaming that could hinder personnel in their efforts to close the hatch) would not apply to the fuel handling accident.

As part of the proposed change to allow the equipment hatch to be open during core alterations and movement of irradiated fuel inside containment, the TS will require that SNC personnel be able to close the equipment hatch in the event of a fuel handling accident inside containment. This closure can be completed within 2 hours of the fuel handling accident. The dose analysis supporting the proposed change, analyzed in accordance with Regulatory Guide 1.195, assumed that the entire volume of the containment atmosphere containing all the radioactivity released to the containment is released to the environment through the equipment hatch over a two hour period. This dose analysis concludes that site boundary doses remain less than 25% of 10 CFR 100 and control room doses meet GDC 19 without credit for closure of the equipment hatch. In reality, the actual release rate would be much slower with a corresponding decrease in the total amount of radioactivity released. Therefore, conservative analysis assumptions and the requirement to be able to close the hatch maintains defense in depth.

The proposed changes will permit the optimization of refueling outages to achieve an overall risk reduction while also reducing outage time and cost. Many of the containment load-in / load-out activities would be performed while the reactor is defueled or the reactor vessel is fueled, open and covered by 23 feet of water (risk of a severe core damage accident is very low at this time). The containment equipment hatch would be opened and closed one time, instead of three times as required based on the existing TS. This would permit containment load-in / load-out activities to be performed in one continuous duration.

SNC has reviewed the proposed amendment pursuant to 10 CFR 50.92 and determined that it does not involve a significant hazards consideration. In addition, there is no significant increase in the amounts of effluents that may be released offsite, and there is no significant increase in individual or cumulative occupational radiation exposure. Consequently, the proposed amendment satisfies the criteria of 10 CFR 51.22 for categorical exclusion from the requirements for an environmental assessment and the human environment is not affected by this amendment.

A copy of the proposed changes has been sent to Dr. D. E. Williamson, the Alabama State Designee, in accordance with 10 CFR 50.91(b)(1).

SNC requests approval of the proposed changes by July 31, 2004, so that the proposed changes can be utilized for the Unit 1 refueling outage scheduled for Fall of the year 2004.

This letter contains no NRC commitments. If you have any questions, please advise.

Respectfully submitted,

SOUTHERN NUCLEAR OPERATING COMPANY

J. B. Beasley, Jr.

Sworn to and subscribed before me this 29th *day of* August, *2003.*

Notary Public

My commission expires: 06-07-05

JBB/WAS/sdl

Enclosures:
1. Basis for Proposed Changes
2. Significant Hazards Consideration Evaluation
3. Marked-up TS and Bases Pages
4. Clean Typed TS and Bases Pages

cc: Southern Nuclear Operating Company
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Mr. D. E. Grissette, General Manager – Plant Farley
Document Services RTYPE: CFA04.054; LC# 13832

U. S. Nuclear Regulatory Commission
Mr. L. A. Reyes, Regional Administrator
Mr. F. Rinaldi, NRR Project Manager – Farley
Mr. T. P. Johnson, Senior Resident Inspector – Farley

Alabama Department of Public Health
Dr. D. E. Williamson, State Health Officer

Enclosure 1

Farley Nuclear Plant
Request to Revise Technical Specifications
Containment Equipment Hatch

Basis for Proposed Changes

Proposed Changes

The proposed change would revise LCO 3.9.3 to allow the equipment hatch to be open during core alterations and/or during movement of irradiated fuel assemblies within containment, provided that it is capable of being closed. A new surveillance requirement would be added to verify the capability to install the equipment hatch, if the hatch is open, at a frequency of seven days. Appropriate Bases changes are included to reflect the proposed changes.

The proposed changes will permit the optimization of refueling outages to achieve an overall risk reduction while also reducing outage time and cost. Many of the containment load-in / load-out activities would be performed while the reactor is defueled or the reactor vessel is fueled, open and covered by 23 feet of water (risk of a severe core damage accident is very low at this time). The containment equipment hatch would be opened and closed one time, instead of three times as required based on the existing TS. This would permit containment load-in / load-out activities to be performed in one continuous duration.

Basis

The following is the basis for the Technical Specification change. This basis addresses the four areas of potential concern. These four areas are dose calculations, administrative controls, risk significance, and shutdown operations.

Dose Calculations - Given a fuel handling accident inside containment, the resulting offsite dose consequences with the equipment hatch open, analyzed in accordance with Regulatory Guide 1.195, were calculated to be 68.2 rem thyroid and 0.2 rem whole body. This result is less than 25% of the 10 CFR 100 limits.

The control room dose associated with a fuel handling accident inside containment with the equipment hatch open was found to remain below 50 rem thyroid assuming one of the two emergency control room filtration trains is operating within ten minutes of the accident. These results are within the guidelines of General Design Criterion (GDC) 19 of Appendix A to 10 CFR 50 as clarified by Regulatory Guide 1.195. Automatic isolation with manual actuation of the control room emergency filtration system on intake radiogas will continue to be required with either or both units in Modes 1, 2, 3, or 4 and/or during movement of irradiated fuel and core alterations. In addition, LCO 3.3.6, Table 3.3.6-1 would continue to require the containment radiation monitors to be operable for purge isolation and to provide alarms in the control room in the event of a fuel handling accident inside containment.

Analysis was performed to determine conformance with the requirements of 10 CFR 100 and GDC 19. The analysis used the accident source term and assumptions contained in Regulatory Guide 1.195. The analysis assumed an instantaneous puff release of noble gases and radioiodines from the gap and plenum of the broken fuel rods. These gas bubbles will then pass through at least 23 feet of water covering the fuel prior to reaching the containment atmosphere. All airborne activity reaching the containment atmosphere is assumed to exhaust to the environment within two hours. The gap activity was assumed to have decayed for a period of 100 hours. The offsite doses calculated were 68.2 rem to the thyroid and 0.2 rem whole body. The control room operator doses were 5.6 rem to the thyroid and < 0.1 rem to the whole body. The analysis confirmed that the consequences of a fuel handling accident inside containment with the equipment hatch open are within the acceptance criteria given in Regulatory Guide 1.195 and GDC 19. See Table 1 for parameters used in the fuel handling accident analysis.

Administrative Controls - Shutdown safety controls must address 1) procedures to assess the impact of removing systems from service during shutdown conditions, 2) the ability to implement prompt methods to close the primary containment in the event of a fuel handling accident, and 3) controls to avoid unmonitored releases. In the NUMARC 93-01 guideline, Section 11, under the subheading of "Containment – Primary (PWR)/Secondary (BWR)," the following guidance is provided.

> "..... for plants which obtain license amendments to utilize shutdown safety administrative controls in lieu of Technical Specification requirements on primary or secondary containment operability and ventilation system operability during fuel handling or core alterations, the following guidelines should be included in the assessment of systems removed from service:
>
> - During fuel handling/core alterations, ventilation system and radiation monitor availability (as defined in NUMARC 91-06) should be assessed, with respect to filtration and monitoring of releases from the fuel. Following shutdown, radioactivity in the RCS decays fairly rapidly. The basis of the Technical Specification operability amendment is the reduction in doses due to such decay. The goal of maintaining ventilation system and radiation monitor availability is to reduce doses even further below that provided by the natural decay, and to avoid unmonitored releases.
>
> - A single normal or contingency method to promptly close primary or secondary containment penetrations should be developed. Such prompt methods need not completely block the penetration or be capable of resisting pressure. The purpose is to enable ventilation systems to draw the release from a postulated fuel handling accident in the proper direction such that it can be treated and monitored."

The proposed change does not affect the operability requirements for any ventilation system or radiation monitors, nor does it affect their availability. The control room emergency filtration (CREFS) will be required to be operable by the TS as well as containment radiation monitors. The only affected containment penetration that provides direct access to the outside atmosphere is the equipment hatch. Existing TS requirements on other penetrations that provide direct access are not affected.

Containment ventilation at FNP is accomplished via a containment purge and exhaust system consisting of a normal purge subsystem and a minipurge subsystem. This system is not credited in any of the dose analyses, so there are no TS operability requirements associated with them. The normal purge subsystem is only used for high flowrate purge during refueling and is required by the TS to be sealed closed during normal power operation. The minipurge subsystem is used for low flowrate purge during power operation, and there are no operational or TS constraints that would prevent its use during Modes 5 and 6 as well. The supply portion of the system includes an inlet supply damper, the containment purge air handling unit (AHU) which includes a high-efficiency particulate air (HEPA) filter, heating coil, and the main purge supply fan, five isolation butterfly valves, and the minipurge supply fan. The exhaust portion of the system includes five isolation butterfly valves, the minipurge exhaust fan, the containment purge filtration unit containing a PAC (particulate, absolute, charcoal) filter and cooling valves, the main purge exhaust fan, and an outlet exhaust damper. Both subsystems share purge supply and exhaust containment penetrations. The valves are arranged as follows: Each penetration is equipped with two valves in parallel inside containment and two valves in parallel outside containment (for the normal purge or minipurge flowpaths). In addition, there is a supply isolation valve and an exhaust isolation valve common to both subsystems. The flowpath arrangement provides each penetration with both a 48-inch flowpath (normal purge) that can be used in Modes 5 and 6 in parallel with an 8-inch flowpath (minipurge) that can be used for containment purge during Modes 1 through 4, as well as during Modes 5 and 6. The valves are controlled by handswitches located in the control room. These handswitches are easily accessible for an operator at the main control boards.

The purge supply penetration is equipped with two supply fans (for the normal and minipurge subsystems). One fan is a two speed fan rated at 48,500 scfm (fast) and 24,250 scfm (slow) and is used for normal purge during refueling. The other fan is rated at 5,000 scfm and is used for minipurge. The exhaust penetration is equipped with two exhaust fans (for the normal and minipurge subsystems). One fan is a two speed fan rated at 50,000 scfm (fast) and 25,000 scfm (slow) and is used for normal purge during refueling. The other fan is rated at 5,000 scfm and is used for minipurge. The containment normal purge subsystem is used to supply outside air into the containment for ventilation and cooling or heating and also to reduce the concentration of noble gases within containment prior to and during personnel access during refueling. The minipurge subsystem is designed to maintain radioactivity levels in the containment consistent with occupancy requirements and to equalize internal and external pressures with continuous operation during reactor power operation. The exhaust from these systems is ducted through the auxiliary building main exhaust plenum to the plant vent stack. The handswitches for starting and stopping the fan units (normal purge and minipurge) are located adjacent to the handswitches for the purge valves. Therefore, in the event of a fuel handling accident inside containment with the equipment hatch open, the containment purge can be easily controlled from the control room.

There is also a preaccess filter system which consists of two 50 percent capacity filtering units located in containment. The two containment pre-access filtration units can be used to reduce activity levels in the containment atmosphere prior to routine personnel access at power in advance of a reactor shutdown. Each pre-access filtration fan draws contaminated air from the containment across a filter unit and then discharges the air locally into the containment atmosphere. The filter unit consists of a prefilter, HEPA filter, and an impregnated activated charcoal filter for absorption of radioiodine on the charcoal surface. The pre-access filtration fans may be operated from their respective Motor Control Center (MCC) auxiliary relay cabinet located in the auxiliary building.

Containment radiation is monitored via the purge exhaust radiation detectors (RE-24A and B) which monitor noble gases. The TS (LCO 3.6.6) require both channels of containment radiation instrumentation to be operable during core alterations or movement of irradiated fuel assemblies within containment. In the event of a fuel handling accident inside containment, the control room alarm function of the required containment radiation monitors will be in service, and the radiation monitors will help to provide indication of the magnitude of the release, thereby minimizing the potential for an unmonitored release.

Basis for Proposed Changes

During core alterations, the Technical Requirements Manual (TRM), TR 13.9.2, requires that direct communications be maintained between the control room and personnel at the refueling station. Therefore, if a fuel handling accident were to occur inside containment, the control room would be immediately informed, and action would be promptly initiated to mitigate the consequences. Containment work activities that could preclude closure of the equipment hatch or the operation of the containment purge exhaust system would be administratively controlled while core alterations were in progress. During core offload and reload, the containment purge exhaust system may be utilized to provide an inward flow of air into containment. In the event of a fuel handling accident inside containment, the containment purge exhaust system could be momentarily secured to support placement and initial bolting of the containment equipment hatch. Once initial bolting was complete, the containment purge exhaust and supply systems and containment preaccess filtration system could be operated as appropriate to minimize radiological releases while providing containment habitability to respond to the fuel handling accident.

If open, the equipment hatch will be maintained in an isolable condition, and the TS and Bases will contain the following requirements: The equipment hatch will be considered to be isolable when 1) the necessary equipment required to close the hatch is available, 2) at least 23 feet of water is maintained over the top of the reactor vessel flange, and 3) a designated trained hatch closure crew is available. The equipment hatch will be capable of being cleared of obstructions so that closure can be achieved as soon as possible, and the necessary hardware, tools and equipment will be available for moving the hatch from its storage location and installing it in the opening.

In the event of a fuel handling accident inside containment, FNP will pursue timely closure of the equipment hatch. This closure can be completed within 2 hours of the fuel handling accident. Once the hatch is closed, the hatch closure crew will be able to exit containment by opening one air lock door at a time, further minimizing the extent of an unmonitored, untreated release. Best estimate thyroid doses to the containment closure crew were calculated to be 46.1 rem based on their being inside containment for an hour while installing the hatch. The "best estimate" thyroid doses to the containment closure crew were evaluated using more realistic assumptions shown in Table 2.

Risk Significance – Based on the results of conservative dose calculations provided in this submittal, the risk to the health and safety of the public as a result of a fuel handling accident inside containment with the equipment hatch open is minimal. Actual fuel handling accidents which have occurred in the past have resulted in minimal or no releases, which show that the assumptions and methodology utilized in the radiological dose calculations are very conservative. Radioactive decay is a natural phenomenon. It has a reliability of 100 percent in reducing the radiological release from fuel bundles. In addition, the water level that covers the fuel bundles is another natural method that provides an adequate barrier to a significant radiological release. The requirement for at least 100 hours of decay prior to fuel movement will be maintained in the TRM, and the requirement for water level will be maintained in the TS. In addition, the requirements for an isolable equipment hatch and containment radiation monitors will be maintained in the TS. The containment purge system will be available in accordance with the aforementioned NUMARC 93-01 guidelines to further reduce a radiological release. Therefore, the risk to the health and safety of the public as a result of allowing the equipment hatch to be open during fuel movement is minimal.

Basis for Proposed Changes

Shutdown Operations – The above referenced NUMARC 93-01 words will be utilized at FNP with respect to core alterations or movement of irradiated fuel assemblies inside containment with the equipment hatch open. Operators will be provided with the necessary procedural guidance and training to implement the aforementioned administrative controls.

Conclusions

Fuel handling accidents are not sufficiently risk-significant to warrant the restrictive containment closure requirements that presently exist in the TS.

Adequate defense in depth is maintained by the requirements for water level and radioactive decay.

Very conservative dose calculations show that site boundary doses remain less than 25% of 10 CFR 100, and control room radiological consequences are within the acceptance criteria given in GDC 19 without requirements for containment closure.

Administrative controls over shutdown safety will be in effect to control monitoring and filtration in order to minimize the potential for unmonitored, untreated releases resulting from a fuel handling accident.

Basis for Proposed Changes

Table 1
(sheet 1 of 2)

PARAMETERS USED IN FUEL HANDLING ACCIDENT ANALYSIS
(Accident in Containment with Equipment Hatch Open)

Core thermal power	2831 MWt
Time between plant shutdown and accident	100 h
Minimum water depth between tops of Damaged fuel rods and water surface	23 ft
Damage to fuel assembly	All rods ruptured
Fuel assembly activity	Highest powered fuel assembly in core region discharged
Activity release from assembly	Gap activity in ruptured rods per RG 1.195, Table 2
Radial peaking factor	1.7
Decontamination factor in water	
Elemental iodine (99.75%)	400
Organic iodine (0.25%)	1
Noble gases	1
Amount of mixing in building	6.6×10^5 ft^3 (1)
Exhaust flow rate	53,500 cfm (2)
Isolation time	N/A
Iodine filtration system	Containment purge system (not credited)
Filter efficiency (all species)	N/A
Atmospheric dilution factors	Accident Offsite, FSAR Table15B-2 Control Room, see sheet 2

Table 1
(sheet 2 of 2)

CONTROL ROOM PARAMETERS USED IN FUEL HANDLING ACCIDENT ANALYSIS

Filtered pressurization rate (ft^3/min)	375
Filtered recirculation rate (ft^3/min)	2700
Unfiltered inleakage rate (ft^3/min)	10
Filter efficiencies (all forms of iodine) (%)	
Pressurization air	98.5[(3)]
Recirculation air	94.5[(3)]
Volume (ft^3)	114,000
Operator breathing rate (m^3/s)	3.47×10^{-4}
Percent of time operator is in control room following LOCA	
0-1 day	100
1-4 days	60
4-30 days	40
Atmospheric dilution estimates (s/m^3)[(4)]	
0-2 h	8.42×10^{-4}
2-8 h	6.43×10^{-4}

Notes

(1) 90% of the volume above the operating deck and below the containment fan cooler registers.
(2) This flow discharges 9.7 times the mixing volume, resulting in complete release, within 2 hours.
(3) Filter efficiencies have been reduced by 0.5% for all forms of iodine to account for bypass leakage.
(4) Most limiting equipment hatch-control room intake values recalculated with ARCON96.

Table 2

REALISTIC PARAMETERS USED IN FUEL HANDLING ACCIDENT ANALYSIS
(For Operators Designated to Close the Equipment Hatch)

Core thermal power	2775 MWt
Time between plant shutdown and accident	120 h
Minimum water depth between tops of Damaged fuel rods and water surface	23 ft
Damage to fuel assembly	17 rods ruptured
Fuel assembly activity	Average fuel assembly in core region discharged
Activity release from assembly	Gap activity in ruptured rods, 2.2% per FSAR Table 15.1-4
Radial peaking factor	1
Decontamination factor in water	
Elemental iodine (99.75%)	500
Organic iodine (0.25%)	1
Noble gases	1
Amount of mixing in building	$2.0x10^6$ ft^3 (1)
Exhaust flow rate	0 cfm (2)
Isolation time (sec)	~ 0
Iodine filtration system	Containment pre-access system (not credited)
Filter efficiency (all species)	N/A

Notes
(1) Containment cooling fans will quickly mix activity throughout the containment.
(2) On high radiation, the containment exhaust will rapidly isolate.

Enclosure 2

Farley Nuclear Plant
Request to Revise Technical Specifications
Containment Equipment Hatch

Significant Hazards Consideration Evaluation

The proposed changes have been evaluated against the criteria of 10 CFR 50.92 as follows:

1. Do the proposed changes involve a significant increase in the probability or consequences of an accident previously evaluated?

   No. The proposed changes will allow the equipment hatch to be open during core alterations and movement of irradiated fuel assemblies inside containment. The proposed changes will not alter the manner in which fuel is handled or core alterations are performed. The equipment hatch is not an initiator of any accident. The status of the equipment hatch during refueling operations has no effect on the probability of the occurrence of any accident previously evaluated. The radiological consequences of a fuel handling accident inside containment have been determined to be well within the limits of 10 CFR 100 and they meet the acceptance criteria of General Design Criterion (GDC) 19. Therefore the proposed changes do not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. Do the proposed changes create the possibility of a new or different kind of accident from any previously evaluated?

   No. The proposed changes do not create any new failure modes for any system or component, nor do they adversely affect plant operation. No new equipment will be added and no new limiting single failures will be created. Therefore, the proposed changes do not create the possibility of a new or different kind of accident previously evaluated.

3. Do the proposed changes involve a significant reduction in a margin of safety?

   No. The dose consequences were determined to be well within the limits of 10 CFR 100 and they meet the acceptance criteria of GDC 19. Therefore, the proposed changes do not involve a significant reduction in a margin of safety.

Based on the preceding evaluations, the proposed changes do not involve a significant increase in the probability or consequences of an accident previously evaluated, do not create the possibility of a new or different kind of accident from any previously evaluated, and do not involve a significant reduction in a margin of safety. Therefore, the proposed change does not involve a significant hazards consideration as defined in 10 CFR 50.92.

Enclosure 3

Farley Nuclear Plant
Request to Revise Technical Specifications
Containment Equipment Hatch

Marked-Up TS and Bases Pages

3.9 REFUELING OPERATIONS

3.9.3 Containment Penetrations

LCO 3.9.3 The containment penetrations shall be in the following status:

is capable of being

a. The equipment hatch closed and held in place by four bolts;

b. One door in each air lock closed; and

c. Each penetration providing direct access from the containment atmosphere to the outside atmosphere either:

1. closed by a manual or automatic isolation valve, blind flange, or equivalent, or

2. capable of being closed by an OPERABLE Containment Purge and Exhaust Isolation System.

APPLICABILITY: During CORE ALTERATIONS,
During movement of irradiated fuel assemblies within containment.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One or more containment penetrations not in required status.	A.1	Suspend CORE ALTERATIONS.	Immediately
	AND		
	A.2	Suspend movement of irradiated fuel assemblies within containment.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.9.3.1	Verify each required containment penetration is in the required status.	7 days
SR 3.9.3.2	Verify each required containment purge and exhaust valve actuates to the isolation position on an actual or simulated actuation signal.	18 months
SR 3.9.3.3	--------------------------NOTE---------------------------- Only required for an open equipment hatch. -- Verify the capability to install the equipment hatch.	7 days

B 3.9 REFUELING OPERATIONS

B 3.9.3 Containment Penetrations

BASES

BACKGROUND

During CORE ALTERATIONS or movement of irradiated fuel assemblies within containment, a release of fission product radioactivity within containment will be restricted from escaping to the environment when the LCO requirements are met. In MODES 1, 2, 3, and 4, this is accomplished by maintaining containment OPERABLE as described in LCO 3.6.1, "Containment." In MODE 6, the potential for containment pressurization as a result of an accident is not likely; therefore, requirements to isolate the containment from the outside atmosphere can be less stringent. The LCO requirements are referred to as "refueling integrity" rather than "containment OPERABILITY." Refueling integrity means that all potential escape paths are closed or capable of being closed. Since there is no potential for containment pressurization, the 10 CFR 50, Appendix J leakage criteria and tests are not required.

The containment serves to contain fission product radioactivity that may be released from the reactor core following an accident, such that offsite radiation exposures are maintained well within the requirements of 10 CFR 100. Additionally, the containment provides radiation shielding from the fission products that may be present in the containment atmosphere following accident conditions.

The containment equipment hatch, which is part of the containment pressure boundary, provides a means for moving large equipment and components into and out of containment. ~~During CORE ALTERATIONS or movement of irradiated fuel assemblies within containment, the equipment hatch must be held in place by at least four bolts. Good engineering practice dictates that the bolts required by this LCO be approximately equally spaced.~~

If closed, the equipment hatch must be held in place by at least four bolts. Good engineering practice dictates that the bolts required by this LCO be approximately equally spaced. Alternatively, the equipment hatch can be open provided it can be installed with a minimum of four bolts holding it in place.

The containment air locks, which are also part of the containment pressure boundary, provide a means for personnel access during MODES 1, 2, 3, and 4 unit operation in accordance with LCO 3.6.2, "Containment Air Locks." Each air lock has a door at both ends. The doors are normally interlocked to prevent simultaneous opening when containment OPERABILITY is required. During periods of unit shutdown

(continued)

BASES

BACKGROUND (continued)	isolation valve, a manual isolation valve, blind flange, or equivalent. Equivalent isolation methods allowed under the provisions of 10 CFR 50.59 may include use of a material that can provide a temporary, atmospheric pressure, ventilation barrier for the other containment penetrations during CORE ALTERATIONS or movement of irradiated fuel assemblies within containment (Ref. 1).
APPLICABLE SAFETY ANALYSES	During CORE ALTERATIONS or movement of irradiated fuel assemblies within containment, the most severe radiological consequences result from a fuel handling accident. The fuel handling accident is a postulated event that involves damage to irradiated fuel (Ref. 2). The fuel handling accident analyzed includes dropping a single irradiated fuel assembly. The requirements of LCO 3.9.6, "Refueling Cavity Water Level," and the minimum decay time of 100 hours prior to CORE ALTERATIONS ensure that the release of fission product radioactivity, subsequent to a fuel handling accident, results in doses that are well within the guideline values specified in 10 CFR 100. Standard Review Plan, Section 15.7.4, Rev. 1 (Ref. 3), defines "well within" 10 CFR 100 to be 25% or less of the 10 CFR 100 values. The acceptance limits for offsite radiation exposure will be 25% of 10 CFR 100 values. Containment penetrations satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii).
LCO	This LCO limits the consequences of a fuel handling accident in containment by limiting the potential escape paths for fission product radioactivity released within containment. The LCO requires any penetration providing direct access from the containment atmosphere to the outside atmosphere to be closed except for the OPERABLE containment purge and exhaust penetrations. For the OPERABLE containment purge and ~~exhaust penetrations~~, this LCO ensures that these ~~penetrations~~ are isolable by the Containment Purge and Exhaust Isolation System. The OPERABILITY requirements for

and the equipment hatch.

For the equipment hatch, closure capability is provided by a designated trained hatch closure crew and the necessary equipment.

(continued)

INSERT A

BASES

LCO (continued)

LCO 3.3.6, "Containment Purge and Exhaust Isolation Instrumentation," ensure that the automatic purge and exhaust valve closure times specified in the FSAR can be achieved and, therefore, meet the assumptions used in the safety analysis to ensure that releases through the valves are terminated, such that radiological doses are within the acceptance limit.

APPLICABILITY

The containment penetration requirements are applicable during CORE ALTERATIONS or movement of irradiated fuel assemblies within containment because this is when there is a potential for a fuel handling accident. In MODES 1, 2, 3, and 4, containment penetration requirements are addressed by LCO 3.6.1. In MODES 5 and 6, when CORE ALTERATIONS or movement of irradiated fuel assemblies within containment are not being conducted, the potential for a fuel handling accident does not exist. Therefore, under these conditions no requirements are placed on containment penetration status.

ACTIONS

A.1 and A.2

If the containment equipment hatch, air locks, or any containment penetration that provides direct access from the containment atmosphere to the outside atmosphere is not in the required status, including the Containment Purge and Exhaust Isolation System not capable of automatic actuation when the purge and exhaust valves are open, the unit must be placed in a condition where the isolation function is not needed. This is accomplished by immediately suspending CORE ALTERATIONS and movement of irradiated fuel assemblies within containment. Performance of these actions shall not preclude completion of movement of a component to a safe position.

SURVEILLANCE REQUIREMENTS

SR 3.9.3.1

This Surveillance demonstrates that each of the containment penetrations required to be in its closed position is in that position. The Surveillance on the open purge and exhaust valves will demonstrate that the valves are not blocked from closing. Also, the Surveillance will demonstrate that each valve operator has motive power, which will ensure that each valve is capable of being closed by an OPERABLE automatic containment purge and exhaust isolation signal.

(continued)

INSERT A

The equipment hatch is considered isolable when the following criteria are satisfied:

1. the necessary equipment required to close the hatch is available,
2. at least 23 feet of water is maintained over the top of the reactor vessel flange in accordance with Specification 3.9.6,
3. a designated trained hatch closure crew is available.

The equipment hatch opening must be capable of being cleared of any obstruction so that closure can be achieved as soon as possible.

BASES (continued)

SURVEILLANCE REQUIREMENTS

SR 3.9.3.1 (continued)

The Surveillance is performed every 7 days during CORE ALTERATIONS or movement of irradiated fuel assemblies within containment. The Surveillance interval is selected to be commensurate with the normal duration of time to complete fuel handling operations. A surveillance before the start of refueling operations will provide two or three surveillance verifications during the applicable period for this LCO. As such, this Surveillance ensures that a postulated fuel handling accident that releases fission product radioactivity within the containment will not result in a release of fission product radioactivity to the environment.

SR 3.9.3.2

This Surveillance demonstrates that each containment purge and exhaust valve actuates to its isolation position on manual initiation or on an actual or simulated high radiation signal from each of the containment purge radiation monitoring instrumentation channels. The 18 month Frequency maintains consistency with other similar ESFAS instrumentation and valve testing requirements. In LCO 3.3.6, the Containment Purge and Exhaust Isolation instrumentation requires a CHANNEL CHECK every 12 hours and a COT every 92 days to ensure the channel OPERABILITY during refueling operations. Every 18 months a CHANNEL CALIBRATION is performed. The system actuation response time is demonstrated every 18 months, during refueling, on a STAGGERED TEST BASIS. SR 3.6.3.4 demonstrates that the isolation time of each valve is in accordance with the Inservice Testing Program requirements. These Surveillances performed during MODE 6 will ensure that the valves are capable of closing after a postulated fuel handling accident to limit a release of fission product radioactivity from the containment.

INSERT B

REFERENCES

1. GPU Nuclear Safety Evaluation SE-0002000-001, Rev. 0, May 20, 1988.
2. FSAR, Section 15.4.5.
3. NUREG-0800, Section 15.7.4, Rev. 1, July 1981.

INSERT B

SR 3.9.3.3

The equipment hatch is provided with a set of hardware, tools, and equipment for moving the hatch from its storage location and installing it in the opening. The required set of hardware, tools, and equipment shall be inspected to ensure that they can perform the required functions.

The 7 day frequency is adequate considering that the hardware, tools, and equipment are dedicated to the equipment hatch and not used for any other functions.

The SR is modified by a Note which only requires that the surveillance be met for an open equipment hatch. If the equipment hatch is installed in its opening, the availability of the means to install the hatch is not required.

Enclosure 4

Farley Nuclear Plant
Request to Revise Technical Specifications
Containment Equipment Hatch

Clean Typed TS and Bases Pages

3.9 REFUELING OPERATIONS

3.9.3 Containment Penetrations

LCO 3.9.3 The containment penetrations shall be in the following status:

a. The equipment hatch is capable of being closed and held in place by four bolts;

b. One door in each air lock closed; and

c. Each penetration providing direct access from the containment atmosphere to the outside atmosphere either:

   1. closed by a manual or automatic isolation valve, blind flange, or equivalent, or

   2. capable of being closed by an OPERABLE Containment Purge and Exhaust Isolation System.

APPLICABILITY: During CORE ALTERATIONS,
During movement of irradiated fuel assemblies within containment.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more containment penetrations not in required status.	A.1 Suspend CORE ALTERATIONS.	Immediately
	AND	
	A.2 Suspend movement of irradiated fuel assemblies within containment.	Immediately

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.9.3.1	Verify each required containment penetration is in the required status.	7 days
SR 3.9.3.2	Verify each required containment purge and exhaust valve actuates to the isolation position on an actual or simulated actuation signal.	18 months
SR 3.9.3.3	-------------------------NOTE--------------------------- Only required for an open equipment hatch. --- Verify the capability to install the equipment hatch.	7 days

B 3.9 REFUELING OPERATIONS

B 3.9.3 Containment Penetrations

BASES

BACKGROUND

During CORE ALTERATIONS or movement of irradiated fuel assemblies within containment, a release of fission product radioactivity within containment will be restricted from escaping to the environment when the LCO requirements are met. In MODES 1, 2, 3, and 4, this is accomplished by maintaining containment OPERABLE as described in LCO 3.6.1, "Containment." In MODE 6, the potential for containment pressurization as a result of an accident is not likely; therefore, requirements to isolate the containment from the outside atmosphere can be less stringent. The LCO requirements are referred to as "refueling integrity" rather than "containment OPERABILITY." Refueling integrity means that all potential escape paths are closed or capable of being closed. Since there is no potential for containment pressurization, the 10 CFR 50, Appendix J leakage criteria and tests are not required.

The containment serves to contain fission product radioactivity that may be released from the reactor core following an accident, such that offsite radiation exposures are maintained well within the requirements of 10 CFR 100. Additionally, the containment provides radiation shielding from the fission products that may be present in the containment atmosphere following accident conditions.

The containment equipment hatch, which is part of the containment pressure boundary, provides a means for moving large equipment and components into and out of containment. If closed, the equipment hatch must be held in place by at least four bolts. Good engineering practice dictates that the bolts required by this LCO be approximately equally spaced. Alternatively, the equipment hatch can be open provided it can be installed with a minimum of four bolts holding it in place.

The containment air locks, which are also part of the containment pressure boundary, provide a means for personnel access during MODES 1, 2, 3, and 4 unit operation in accordance with LCO 3.6.2, "Containment Air Locks." Each air lock has a door at both ends. The doors are normally interlocked to prevent simultaneous opening when containment OPERABILITY is required. During periods of unit shutdown

(continued)

BASES

BACKGROUND (continued)	isolation valve, a manual isolation valve, blind flange, or equivalent. Equivalent isolation methods allowed under the provisions of 10 CFR 50.59 may include use of a material that can provide a temporary, atmospheric pressure, ventilation barrier for the other containment penetrations during CORE ALTERATIONS or movement of irradiated fuel assemblies within containment (Ref. 1).
APPLICABLE SAFETY ANALYSES	During CORE ALTERATIONS or movement of irradiated fuel assemblies within containment, the most severe radiological consequences result from a fuel handling accident. The fuel handling accident is a postulated event that involves damage to irradiated fuel (Ref. 2). The fuel handling accident analyzed includes dropping a single irradiated fuel assembly. The requirements of LCO 3.9.6, "Refueling Cavity Water Level," and the minimum decay time of 100 hours prior to CORE ALTERATIONS ensure that the release of fission product radioactivity, subsequent to a fuel handling accident, results in doses that are well within the guideline values specified in 10 CFR 100. Standard Review Plan, Section 15.7.4, Rev. 1 (Ref. 3), defines "well within" 10 CFR 100 to be 25% or less of the 10 CFR 100 values. The acceptance limits for offsite radiation exposure will be 25% of 10 CFR 100 values. Containment penetrations satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii).
LCO	This LCO limits the consequences of a fuel handling accident in containment by limiting the potential escape paths for fission product radioactivity released within containment. The LCO requires any penetration providing direct access from the containment atmosphere to the outside atmosphere to be closed except for the OPERABLE containment purge and exhaust penetrations and the equipment hatch. For the OPERABLE containment purge and exhaust penetrations, this LCO ensures that these penetrations are isolable by the Containment Purge and Exhaust Isolation System. For the equipment hatch, closure capability is provided by a designated trained hatch closure crew and the necessary equipment. The OPERABILITY requirements for LCO 3.3.6, "Containment Purge and Exhaust Isolation Instrumentation," ensure that the automatic purge and exhaust valve closure times specified in the FSAR can be

(continued)

BASES

LCO (continued)

achieved and, therefore, meet the assumptions used in the safety analysis to ensure that releases through the valves are terminated, such that radiological doses are within the acceptance limit.

The equipment hatch is considered isolable when the following criteria are satisfied:

1. the necessary equipment required to close the hatch is available,

2. at least 23 feet of water is maintained over the top of the reactor vessel flange in accordance with Specification 3.9.6,

3. a designated trained hatch closure crew is available.

The equipment hatch opening must be capable of being cleared of any obstruction so that closure can be achieved as soon as possible.

APPLICABILITY

The containment penetration requirements are applicable during CORE ALTERATIONS or movement of irradiated fuel assemblies within containment because this is when there is a potential for a fuel handling accident. In MODES 1, 2, 3, and 4, containment penetration requirements are addressed by LCO 3.6.1. In MODES 5 and 6, when CORE ALTERATIONS or movement of irradiated fuel assemblies within containment are not being conducted, the potential for a fuel handling accident does not exist. Therefore, under these conditions no requirements are placed on containment penetration status.

ACTIONS

A.1 and A.2

If the containment equipment hatch, air locks, or any containment penetration that provides direct access from the containment atmosphere to the outside atmosphere is not in the required status, including the Containment Purge and Exhaust Isolation System not capable of automatic actuation when the purge and exhaust valves are open, the unit must be placed in a condition where the isolation function is not needed. This is accomplished by immediately suspending CORE ALTERATIONS and movement of irradiated fuel assemblies within containment. Performance of these actions shall not preclude completion of movement of a component to a safe position.

BASES

SURVEILLANCE REQUIREMENTS

SR 3.9.3.1

This Surveillance demonstrates that each of the containment penetrations required to be in its closed position is in that position. The Surveillance on the open purge and exhaust valves will demonstrate that the valves are not blocked from closing. Also, the Surveillance will demonstrate that each valve operator has motive power, which will ensure that each valve is capable of being closed by an OPERABLE automatic containment purge and exhaust isolation signal.

The Surveillance is performed every 7 days during CORE ALTERATIONS or movement of irradiated fuel assemblies within containment. The Surveillance interval is selected to be commensurate with the normal duration of time to complete fuel handling operations. A surveillance before the start of refueling operations will provide two or three surveillance verifications during the applicable period for this LCO. As such, this Surveillance ensures that a postulated fuel handling accident that releases fission product radioactivity within the containment will not result in a release of fission product radioactivity to the environment.

SR 3.9.3.2

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BASES

SURVEILLANCE REQUIREMENTS

SR 3.9.3.3

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The 7 day frequency is adequate considering that the hardware, tools, and equipment are dedicated to the equipment hatch and not used for any other functions.

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