Nuclear Operating Company

South Texas Project Electric Generating Station P.O. Box 289 Wadsworth, Texas 77483

October 22, 2001
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10CFR50.90
STI: 31320926

U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, DC 20555-0001

South Texas Project
Units 1 and 2
Docket Nos. STN 50-498, STN 50-499
License Amendment Request
Proposed Change to Technical Specification 3.9.4, Containment Building Penetrations

Pursuant to 10CFR50.90, STP Nuclear Operating Company (STPNOC) submits the attached proposed amendment to Operating Licenses NPF-76 and NPF-80. This license amendment request proposes to revise Technical Specification Limiting Condition for Operation (LCO) 3.9.4, 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.

STPNOC requests approval of the proposed amendment by May 1, 2002 to allow sufficient time for planning and implementation for the Unit 2 refueling and steam generator replacement outage scheduled for September 2002 (2RE09). Once approved, the amendment shall be implemented within 60 days.

The STPNOC Plant Operations Review Committee and the Nuclear Safety Review Board have reviewed this amendment application. Attachments 1 through 5 provide the description and assessment of proposed license changes, existing marked-up Technical Specification (TS) pages, revised TS pages, proposed TS Bases changes (provided for information only), and summary of regulatory commitments made in this submittal.

STPNOC has determined that this proposed amendment involves no significant hazards consideration in accordance with 10 CFR 50.92. Pursuant to 10 CFR 51.22(b), an environmental assessment is not required in connection with the issuance of this amendment because the action is included in the list of categorical exclusions.

STPNOC is submitting this license amendment application in conjunction with the industry consortium of five plants known as Strategic Teaming and Resource Sharing (STARS). The STARS group consists of the five plants operated by TXU Electric, AmerenUE, Wolf Creek

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Nuclear Operating Corporation (WCNOC), Pacific Gas and Electric, and STP Nuclear Operating Company. WCNOC is the lead utility for this license amendment request and has already submitted a similar request.

In accordance with 10 CFR 50.91(b), STPNOC is notifying the State of Texas of this request for a license amendment by providing a copy of this letter and its attachments.

If there are any questions regarding the proposed amendment, please contact Mr. W. E. Mookhoek at (361) 972-7274 or me at (361) 972-8757.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on : 10/22/01

J. J. Sheppard
Vice President
Engineering & Technical Services

WEM/

Attachments:
1. Licensee's Evaluation
2. Markup of Technical Specification Page
3. Retyped Technical Specification Page
4. Technical Specification Basis Change (information only)
5. List of Commitments

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ATTACHMENT 1

LICENSEE'S EVALUATION

1.0 Introduction

The proposed amendment will revise Technical Specification 3.9.4 to allow the equipment hatch to be open during core alterations and/or during movement of irradiated fuel assemblies within containment, provided that the equipment hatch is capable of being closed. The proposed change is similar to the amendment approved for Vogtle Electric Generating Plant in September 2000 and addresses the additional questions posed by the NRC staff during review of the Vogtle application.

Benefits of the change include allowing the equipment hatch to remain open for material passage during fuel movement which is expected to facilitate containment off-load of outage related material. STPNOC expects to save from 1 to 3 shifts of outage duration during a typical refueling outage.

2.0 Description of Proposed Amendment

The proposed change would revise LCO 3.9.4 to allow the equipment hatch to be open during core alterations and/or during movement of irradiated fuel assemblies within containment, provided that the equipment hatch is capable of being closed. Additionally this request would change the terminology used in referring to the "equipment door" to the "equipment hatch" to reflect the normal terminology used at STP. A new surveillance requirement would be added to verify the capability to close the equipment hatch, if the hatch is open, at intervals of seven days. Appropriate Bases changes are included for information to reflect the proposed changes.

3.0 Background

Section 3.8.2.1.1 of the STP UFSAR describes the STP equipment hatch. This section is provided below with pertinent parts in bold.

> 3.8.2.1.1 Equipment Access Hatch: The equipment hatch consists of a removable flanged head, matching body ring, swing bolts, and seals. The body ring has a 24-ft inside diameter and is stiffened on its exterior surface by a welding collar, designed for attachment by welding to a thickened insert plate in the RCB liner. The body ring is anchored into the concrete Containment wall.
>
> **The swing bolts are provided and installed on the body ring. These are to be used with matching brackets on the head to draw the head tight and to provide an effective seal.** Two concentric grooves are machined in the flanged head to accept two separate 0-ring seals.
>
> The head is flanged to match the body ring and is of a dished shape that is convex to the pressure. Brackets for accepting the body ring swing bolts are provided on the outside diameter of the flange. A test connection is provided between the two concentric seal grooves in the head for shop leak-testing between the two 0-ring seals and for future field testing.

The dished head is fully removable by a vertical lifting device. The head runs in guides throughout the extent of its vertical movement. The guides are securely fixed through the liner plates at sufficient positions to ensure the rigidity of the assembly. A locking device on each guide is provided to support the head in its raised position.

The equipment hatch is raised and lowered by two dedicated electric hoists. Each hoist is electrically powered from the normal non-class electrical distribution system that is diesel backed if offsite power is lost for any reason. Both hoists are needed to close the equipment hatch.

Conditions and Circumstances for Proposing the Amendment

In considering possible process improvements for refueling outages, STPNOC determined that a revision to the current Technical Specification requirements on the equipment hatch would contribute to outage scheduling improvements. The proposed changes will permit the optimization of outages to achieve an overall risk reduction while also reducing outage time and cost. A significant contributor to this risk reduction is the ability to postpone operations early in the outage that, from a practical standpoint to achieve a short outage time, must be performed soon after shutdown when there is no Technical Specification requirement for a closed containment. The proposed changes will allow some of these operations to be accomplished later, when the reactor vessel is open and covered by 23 feet of water and the risk of a severe core damage accident is very low.

Outage management personnel have estimated that the proposed change could save from 1 to 3 shifts of outage duration.

4.0 Regulatory Requirements and Guidance

The regulatory basis for Technical Specification 3.9.4, "Containment Penetrations," is to ensure that the primary containment is capable of retaining radioactive fission products that may be released following a fuel handling accident inside containment. This ensures that offsite radiation exposures are maintained well within the requirements of 10 CFR 100.

10 CFR Part 50, Appendix A, General Design Criterion (GDC) 16, "Containment Design," requires that reactor containment and associated systems be provided to establish an essentially leak-tight barrier against the uncontrolled release of radioactivity to the environment and to assure that the containment design conditions important to safety are not exceeded for as long as the postulated accident conditions require.

GDC 56, "Primary Containment Isolation," describes the isolation provisions that must be provided for lines that connect directly to the containment atmosphere and which

penetrate primary reactor containment unless it can be demonstrated that the isolation provisions for a specific class of lines are acceptable on some other defined basis.

GDC 61, "Fuel Storage and Handling and Radioactivity Control," requires that the fuel storage and handling, radioactive waste, and other systems which may contain radioactivity shall be designed to assure adequate safety under normal and postulated accident conditions.

GDC 64, "Monitoring Radioactivity Releases," requires monitoring the reactor containment atmosphere, spaces containing components for recirculation of loss-of-coolant accident fluids, effluent discharge paths, and the plant environs for radioactivity that may be released from normal operations, including anticipated operational occurrences, and from postulated accidents.

U. S. NRC Regulatory 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," describes a method acceptable to the NRC staff for licensee evaluation of the potential radiological consequences of a fuel handling accident.

NUREG/CR-5009, "Assessment of the Use of Extended Burnup Fuel in Light Water Power Reactors," relates to the expected release fraction for radioactive iodine. According to this report, the calculated release fraction for extended burnup fuel may be up to 20% higher than that assumed in Regulatory Guide 1.25 for iodine-131.

NUREG-0800, "U. S. NRC Standard Review Plan," Section 15.7.4, provides guidance to the NRC staff for the review and evaluation of system design features and plant procedures provided for the mitigation of the radiological consequences of postulated fuel handling accidents.

The parameters of concern and the acceptance criteria applied are based on the requirements of 10 CFR 100 with respect to the calculated radiological consequences of a Fuel Handling Accident and GDC 61 with respect to appropriate containment, confinement, and filtering systems.

Standard generic guidance regarding containment penetrations during core alterations is provided in NUREG-1431, Revision 2 "Standard Technical Specifications for Westinghouse Plants." Pertinent portions of this guidance are provided below.

> BACKROUND
> 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 movement of [recently] 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.

SAFETY ANALYSES

During CORE ALTERATIONS or movement of irradiated fuel assemblies within containment, the most severe radiological consequences result from a fuel handling accident [involving handling recently irradiated fuel]. The fuel handling accident is a postulated event that involves damage to irradiated fuel (Ref. 2). Fuel handling accidents, analyzed in Reference 3, include dropping a single irradiated fuel assembly and handling tool or a heavy object onto other irradiated fuel assemblies. The requirements of LCO 3.9.7, "Refueling Cavity Water Level," in conjunction with a minimum decay time of 100 hours prior to [irradiated fuel movement with containment closure capability or a minimum decay time of [X] days without containment closure capability], ensures 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 or the NRC staff approved licensing basis (e.g., a specified fraction of 10 CFR 100 limits).

LCO

REVIEWER'S NOTE –

The allowance to have containment personnel air lock doors open and penetration flow paths with direct access from the containment atmosphere to the outside atmosphere to be unisolated during fuel movement and CORE ALTERATIONS is based on (1) confirmatory dose calculations of a fuel handling accident as approved by the NRC staff which indicate acceptable radiological consequences and (2) commitments from the licensee to implement acceptable administrative procedures that ensure in the event of a refueling accident (even though the containment fission product control function is not required to meet acceptable dose consequences) that the open airlock can and will be promptly closed following containment evacuation and that the open penetration(s) can and will be promptly closed. The time to close such penetrations or combination of penetrations shall be included in the confirmatory dose calculations.

This LCO limits the consequences of a fuel handling accident [involving handling recently irradiated fuel] 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 containment personnel air locks]. 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 this LCO 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. The LCO is modified by a Note allowing penetration flow paths with direct access from the containment atmosphere to the outside atmosphere to be unisolated under administrative controls. Administrative controls ensure that 1) appropriate personnel are aware of the open status of the penetration flow path during CORE ALTERATIONS or movement of irradiated fuel assemblies within containment, and 2) specified individuals are designated and readily available to isolate the flow path in the event of a fuel handling accident. The containment personnel air lock doors many be

open during movement of irradiated fuel in the containment and during CORE ALTERATIONS provided that one door is capable of being closed in the event of a fuel handling accident. Should a fuel handling accident occur inside containment, one personnel air lock door will be closed following an evacuation of containment.

5.0 Technical Analysis

The proposed changes would allow the equipment hatch to be open under administrative controls during core alterations or during movement of irradiated fuel assemblies within containment, provided that the equipment hatch is capable of being closed. Allowing the equipment hatch to be open during core alterations or movement of irradiated fuel raises the concern that radioactive materials could potentially be released through the open hatch and vented to the outside environment if an accident involving fission product releases were to occur. Postulated accidents that could result in a release of radioactive material through the open hatch include a fuel handling accident that results in breaching of the fuel rod cladding and a loss of residual heat removal (RHR) cooling event that leads to core boiling and uncovery. To provide the basis for justifying the proposed change, the concerns with the potential radiological consequences of these two accidents are discussed below.

Fuel Handling Accident

During movement of irradiated fuel assemblies within containment, the most severe radiological consequences would result from a fuel handling accident. The fuel handling accident is a postulated event that involves damage to irradiated fuel. Fuel handling accidents include dropping a single irradiated fuel assembly, or a handling tool or heavy object, onto other irradiated fuel assemblies.

The radiological consequences of a design basis fuel handling accident in containment were previously evaluated by STPNOC in Reference 6 and assumed that the containment is open to the outside atmosphere. The calculated offsite and control room operator doses are within the acceptance criteria of Standard Review Plan 15.7.4 (Reference 10) and General Design Criteria (GDC) 19. On the basis of this evaluation, a previous revision to Technical Specification Section 3.9.4, "Containment Penetrations," was accepted by the NRC (References 6 and 7) and is discussed in more detail later in this section.

During refueling operations, the potential for containment pressurization as a result of a fuel handling accident is not likely. Therefore, the majority of the radioactive material releases from the accident would be held up inside containment with only a minimal amount of radioactive material released through the open equipment hatch. The dose consequences of this potential release combined with the release through the open personnel airlock doors, are bounded by the current licensing basis fuel handling accident analysis. The current design basis fuel handling analysis does not credit the containment

building barriers. In addition, no credit is taken for removal of any iodine by the atmosphere filtration system filters.

In Reference 7 the NRC issued Amendments 69 (Unit 1) and 58 (Unit 2) to the STP Technical Specifications to allow both the inner and outer personnel airlock doors to be open during core alterations and movement of irradiated fuel assemblies inside containment. The STPNOC dose analyses supporting these amendments were provided in Reference 6.

Given a fuel handling accident inside containment, the resulting offsite dose consequences with both personnel airlock doors open were calculated. These results were within 25% of the 10 CFR 100 limits (75 rem to the thyroid and 6 rem to the whole body). As documented by NRC review and independent analysis (Reference 7), a fuel handling accident in the containment building with the personnel airlock door open would result in doses at the exclusion area boundary of 36 rem to the thyroid and 0.2 rem to the whole body. This calculation is bounding for the condition of a fuel handling accident in the containment building with the equipment hatch open.

The control room dose associated with a fuel handling accident inside containment with the personnel airlock doors open was within the guidelines of GDC 19 of Appendix A to 10 CFR 50 as defined by Standard Review Plan (SRP) Section 6.4. Automatic actuation of the control room ventilation system on intake of radioactive gas will continue to be required per LCO 3.3.2, Table 3.3-3 in all Modes. In addition, LCO 3.3.3, Table 3.3-6 would continue to require the radiation monitors (gaseous, particulate, iodine, and area low range) to be operable to the extent that they would provide alarms in the control room in the event of a fuel handling accident inside containment.

It is normal practice during periods when the equipment hatch is open to operate the containment purge exhaust system to prevent an unmonitored release through the open equipment hatch. Operation of the containment purge system results in airflow into the containment building through the open equipment hatch. Specification 3.3.2 and Specification 3.9.4 require the containment purge exhaust radiation monitors to be in service during core alterations or movement of irradiated fuel in the containment building if the containment purge system is in operation. This system would isolate the containment purge system and provide alarms in the control room in the event of a fuel handling accident inside containment.

With respect to Amendments 69 and 58, the NRC staff performed an independent analysis (Reference 7) to determine conformance with the requirements of 10 CFR 100 and GDC 19. The staff's analysis used the accident source term given in Regulatory Guide 1.4, the assumptions contained in Regulatory Guide 1.25, and the review procedures specified in SRP Sections 6.4 and 15.7.4. The staff assumed an instantaneous puff release of noble gases and radioiodines from the gap and plenum of the broken fuel rods. These gas bubbles would 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 2 hours. The gap activity was assumed to have decayed for a period of 95 hours. The staff computed the offsite doses for STP using the above assumptions and NRC computer code ACTCODE. Control room operator doses were determined using the methodology in SRP Section 6.4. The computed offsite doses and control room operator doses are well within the acceptance criteria given in SRP Section 15.7.4 and GDC 19.

The results of this calculation also bound the scenario in which the equipment hatch remains open during fuel movement, under the same restrictions as the Personnel Air Lock (PAL) doors remaining open.

The determination of the volume in which to dilute the released radionuclides remains reasonable for the case in which the equipment hatch is open. Since the normal purge is assumed to be in service, airflow would be in through the equipment hatch, across the south end of the reactor cavity and into the purge exhaust intake. This is the same scenario as analyzed for Amendments 69 and 58. The release is into the subject volume and then into the purge exhaust intake until the purge is secured on high radiation. After that, airflow out of the volume is assumed to occur at a rate that removes the volume of the cylinder within 2 hours. This 2-hour time limit is consistent with Regulatory Guide 1.25.

In addition, the analysis assumes the release is from the unit vent. Use of the unit vent to control room HVAC intake atmospheric dispersion factor bounds the case of a release from the equipment hatch. A dispersion factor calculated for the equipment hatch-to-control room intake path would be less than that used in the analysis.

Based on the above, the analysis performed for the PAL doors remaining open during fuel movement bounds the case with the PAL doors and/or the equipment hatch being open during fuel movement.

Loss of RHR Cooling

Release of radioactive materials as a result of core boiling due to a loss of RHR cooling is anticipated to be insignificant if the event does not continue for an extended period of time resulting in core uncovery and subsequent core damage. The radioactive release due to coolant boil-off, without core uncovery and core damage, is expected to be significantly less than the radiological release arising from a postulated fuel handling accident (a 1% fuel defect versus the total gap activities in the damaged fuel rods at 95 hours after shutdown).

While performing core alterations, the reactor cavity water level must be maintained $\geq$ 23 feet above the reactor vessel flange. Thus, more than 325,000 gallons of coolant would need to boil off before core uncovery began. Technical Specification 3.9.8 requires that

corrective actions be taken immediately to restore the RHR cooling as soon as possible if RHR loop requirements are not met (by having one RHR loop operable and in operation). In addition, operators are required to close all containment penetrations providing direct access from the containment atmosphere to the outside environment within 4 hours. These actions would reasonably be performed long before core uncovery could occur.

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. The following guidance is provided in the draft NUMARC 93-01 guideline, Section 11, under the subheading of "Containment – Primary (PWR)/Secondary (BWR).

> ... 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 should be assessed, with respect to filtration and monitoring of releases from the fuel. Following shutdown, radioactivity in the RCS decays away 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 makeup and cleanup filtration system and the containment radiation monitors are required to be operable by the Technical Specifications. The only affected containment penetration that provides direct access to the outside atmosphere is the equipment hatch. Existing Technical Specification requirements on other penetrations that provide direct access are not affected.

Containment ventilation is accomplished via the Normal Containment Purge System or the Supplementary Containment Purge System. These systems are not credited in any of the dose analyses. There are no Technical Specification accident mitigation operability requirements associated with them other than to isolate during an accident. The normal purge system is only used for high flowrate purge during refueling and is required by the Technical Specifications to be sealed closed during normal power operation. The

supplementary containment purge system is used for low flowrate purge during power operation but there are no operational or Technical Specifications constraints that would prevent its use during Modes 5 or 6 as well. Section 9.4.5 of the UFSAR describes the normal and supplementary purge systems.

Each valve and fan in both containment purge systems is equipped with its own handswitch located on the main control boards. The panels are easily accessible for an operator. Therefore, in the event of a fuel handling accident inside containment with the equipment hatch open, the containment purge systems can be easily controlled from the control room.

Containment radiation is monitored via the purge exhaust radiation detectors, which monitor particulate, iodine and noble gases. In addition, two individual channels of containment area low range gamma monitors are provided adjacent to the refueling cavity. Technical Specification 3.3.3.1 requires that the containment atmosphere radioactivity instrumentation to be operable in all Modes. 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.

During core alterations, plant procedures require 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 in accordance with off-normal procedures to mitigate the consequences. In order to minimize the potential for an unmonitored and untreated release, the operators would be instructed to ensure that normal or supplementary purge exhaust was running, or if not, to start an available unit. The supply unit, if running, would be shut down so that all of the airflow into the containment would be through the open hatch and/or airlocks. The containment purge system would automatically isolate if activity levels in the exhaust air reach the setpoint of the radiation monitors. Operation of the normal purge system exhaust unit would provide airflow into containment at a rate of approximately 40,000 ft^3/min. Operation of the supplementary purge system exhaust unit would provide airflow into containment at a rate of approximately 4,500 ft^3/min. In the case of supplementary purge, the airflow would be exhausted through a filtration unit, and the HEPA filters (which are not credited in the dose analysis) would help to reduce the particulate content of the release.

In addition, STP is already committed to having a designated individual for closing a PAL door if open during core alterations or movement of irradiated fuel assemblies inside containment. Existing STP Technical Specification 3.9.4 specifies requirements for maintaining the airlocks in an isolable condition and the Bases provide additional information. If open, the equipment hatch will also be maintained in an isolable condition, and the Technical Specifications and Bases will contain similar requirements.

Specifically, 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 practical, and the necessary hardware, tools and equipment will be available for moving the hatch from its storage location and installing it in the opening. The removable runway may extend through the hatch opening during this period, but only if prompt removal capability is maintained. Under the proposed change to allow the equipment hatch to be open during core alterations and movement of irradiated fuel assemblies inside containment, STP will require the reactor to be shutdown for at least 165 hours.

The following administrative requirements will apply whenever the equipment hatch is open during core alterations or the movement of irradiated fuel in containment:

1. Appropriate personnel are aware of the open status of the containment during movement of irradiated fuel or core alterations
2. Specified individuals are designated and readily available to close the equipment hatch following an evacuation that would occur in the event of a fuel handling accident
3. Obstructions (e.g., cables, hoses, and runway) that would prevent closure of the equipment hatch can be quickly removed.

These administrative controls provide protection equivalent to that afforded by the administrative controls used to establish containment closure for a containment personnel air lock. Operations shift supervision and containment supervision are responsible for coordinating the equipment hatch closure activities. Personnel responsible for hatch closure are designated for each shift during which core alterations and/or movement of irradiated fuel (with the equipment hatch open) will take place. While these personnel will have normal outage related duties, these duties will not interfere with their availability to respond to the closure of the equipment hatch. Personnel responsible for closure of the equipment hatch receive training associated with equipment hatch operation.

An assessment of the radiological consequences, as described above for the proposed changes, concludes that site boundary doses remain well within the 10 CFR 100 limits and control room doses meet GDC 19 criteria without taking credit for closure of the equipment hatch. The administrative controls provide reasonable assurance that containment hatch closure as a defense-in-depth measure can be reestablished quickly to limit releases to a level lower than assumed in the dose calculation.

Risk Significance

Based on the results of conservative dose calculations, 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 shows 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. The requirement for at least 165 hours of decay prior to opening the equipment hatch during fuel movement will be maintained in the Technical Specifications. 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 water level will be maintained in the Technical Specifications. In addition, the requirement for an isolable equipment hatch and containment radiation monitors will be maintained in the Technical Specifications. A containment purge exhaust system will be available in accordance with the 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.

6.0 Regulatory Analysis

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

The method of analysis used for evaluating the potential radiological consequences of the postulated fuel handling accident is in compliance with Regulatory Guide 1.25, and the guidance in NUREG-0800, Section 15.7.4 and NUREG/CR-5009. The analysis presented in Section 15.7.4 of the UFSAR, demonstrating the adequacy of the system design features and plant procedures provided for the mitigation of the radiological consequences of postulated fuel handling accidents, assumes no credit is taken for iodine removal by the atmosphere filtration system filters. The volume of the containment atmosphere containing all the radioactivity released to the containment is assumed to be released to the environment through the unit vent over a two hour period.

The technical analysis performed by STPNOC demonstrates that the consequent doses at the site boundary remain less than 25% of 10 CFR 100. Therefore, the proposed License amendment is in compliance with GDC 16, 56, 61, and 64, as well as Regulatory Guide 1.25, NUREG/CR-5009, and the criteria contained in NUREG-0800, Section 15.7.4. Very conservative dose calculations show that the control room radiological consequences are within the acceptance criteria given in SRP section 15.7.4 and GDC 19.

In conclusion, based on the considerations discussed above: 1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner; 2) such activities will be conducted in compliance with the Commission's regulations; and 3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

7.0 No Significant Hazards Consideration

STPNOC has evaluated whether the proposed amendment involves a significant hazards consideration by focusing on the three standards set forth in 10CFR50.92 as discussed below.

1) Will operation of the facility in accordance with the proposed amendment involve a significant increase in the probability or consequences of an accident previously evaluated?

Response: No

The proposed changes will allow the equipment hatch to be open during core alterations and movement of irradiated fuel assemblies inside containment. The status of the equipment hatch during refueling operations has no affect on the probability of the occurrence of any accident previously evaluated. The proposed revision does not alter any plant equipment or operating practices in such a manner that the probability of an accident is increased. Since the consequences of a fuel handling accident inside containment with an open equipment hatch are bounded by the current analysis described in the UFSAR and the probability of an accident is not affected by the status of the equipment hatch, the proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2) Will operation of the facility in accordance with the proposed amendment create the possibility of a new or different kind of accident from any accident previously evaluated?

Response: 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. The plant will continue to be operated within the envelope of the existing safety analyses. Therefore, the proposed changes do not create the possibility of a new or different kind of accident previously evaluated.

3) Will operation of the facility in accordance with the proposed amendment involve a significant reduction in a margin of safety?

Response: No

The previously determined radiological dose consequences for a fuel handling accident inside containment with the personnel airlock doors open remain bounding for the proposed changes. These previously determined dose consequences were determined to be well within the limits of 10 CFR 100 and they meet the acceptance criteria of SRP section 15.7.4 and GDC 19. Therefore, the proposed changes do not involve a significant reduction in a margin of safety.

Conclusion

Based on the above evaluations, STPNOC has determined that the proposed amendment to the operating licenses involves no significant hazards consideration under the standards set forth in 10 CFR 50.92 and accordingly, a finding by the NRC of no significant hazards consideration is justified.

8.0 Environmental Consideration

STPNOC has determined that the proposed amendment would change requirements with respect to the use of a facility component located within the restricted area, as defined in 10 CFR 20. STPNOC has evaluated the proposed amendment and has determined that i) the amendment involves no significant hazards consideration, (ii) there is no significant change in the types of or significant increase in the amounts of any effluents that may be released offsite, and (iii) there is no significant increase in individual or cumulative occupational radiation exposure. As discussed above, the proposed changes do not involve a significant hazards consideration and the analysis demonstrates that the consequences from a fuel handling accident inside containment are well within the 10 CFR 100 limits. The implementation of administrative controls precludes a significant increase in occupational radiation exposure. Accordingly, the proposed change meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), an environmental assessment of the proposed change is not required.

9.0 Precedent

There are precedents for allowing the equipment hatch to be open during core alterations and/or during movement of irradiated fuel assemblies within containment. The Southern Nuclear Operating Company operating licenses for the Vogtle Electric Generating Plant Units 1 and 2 have been amended to allow the equipment hatch to be open during core alterations and/or during movement of irradiated fuel assemblies within containment. These amendments, Nos. 115 and 93, were issued on September 11, 2000.

10.0 References

1. NUREG-1431, "Standard Technical Specifications, Westinghouse Plants"
2. NRC letter dated September 11, 2000, "Vogtle Electric Generating Plant, Units 1 and 2 RE: Issuance of Amendments (TAC Nos. MA8501 and MA8502)"
3. Vogtle Electric Generating Plant letter LCV-1149-D dated March 6, 2000, "Request to Revise Technical Specifications Containment Equipment Hatch"
4. Vogtle Electric Generating Plant letter LCV-1149-E dated July 7, 2000, "Response to Discussion Topics Regarding Request to Revise Technical Specifications Containment Equipment Hatch"
5. South Texas Project Updated Final Safety Analysis Report, Revision 7
6. South Texas Project letter ST-HL-AE-4923 dated November 7, 1994, "Unit 1 and Unit 2 Technical Specification 3.9.4"
7. NRC letter dated February 9, 1995, "South Texas Project, Units 1 and 2 – Amendment Nos. 69 and 58 to Facility Operating License Nos. NPF-76 and NPF-80"
8. NUMARC 93-01, Revision 3, "Industry Guideline for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," July 2000
9. UFSAR Section 15.7.4, "Fuel Handling Accidents"
10. NUREG-0800, Standard Review Plan, Section 15.7.4, Rev. 1, July 1981
11. UFSAR Section 9.1.4.2.2, "Refueling Procedure"

ATTACHMENT 2

MARKUP OF TECHNICAL SPECIFICATION CHANGES

REFUELING OPERATIONS
3/4.9.4 CONTAINMENT BUILDING PENETRATIONS
LIMITING CONDITION FOR OPERATION

3.9.4 The containment building penetrations shall be in the following status:

a. The equipment ~~door~~ **hatch** closed and held in place by a minimum of four bolts
OR
1) The Reactor has been subcritical for ≥ 165 hours, AND
2) If open, the equipment hatch is capable of being closed.

b. 1) A minimum of one door in the containment Auxiliary Airlock (AAL) is closed.
AND
2) A minimum of one door in the containment Personnel Airlock (PAL) is closed.
OR
The water level is ≥ 23 feet above the reactor vessel flange
AND
The Reactor has been subcritical for ≥ 95 hours
AND
An Individual is available to close a PAL door when directed (after the initiation of a fuel handling accident inside containment) within;

a. 30 minutes, if the reactor has been subcritical <165 hours.
OR
b. As soon as possible but within 2 hours, if the reactor has been subcritical ≥ 165 hours.

c. ~~Each penetration~~ **All other penetrations** providing direct access from the containment atmosphere to the outside atmosphere shall be either:

1) Closed by an isolation valve, blind flange, or manual valve, or

2) Be capable of being closed by an OPERABLE automatic containment purge and exhaust isolation valve.

APPLICABILITY: During CORE ALTERATIONS or movement of irradiated fuel within the containment.

ACTION:

With the requirements of the above specification not satisfied, immediately suspend all operations involving CORE ALTERATIONS or movement of irradiated fuel in the containment building.

SURVEILLANCE REQUIREMENTS

4.9.4 Each of the above required containment building penetrations shall be determined to be either in its required condition or capable of being closed **as required by specification 3.9.4** ~~by an OPERABLE automatic containment purge and exhaust isolation valve~~ within 100 hours prior to the start of and at least once per 7 days during CORE ALTERATIONS or movement of irradiated fuel in the containment building by **(as applicable)**:

a. Verifying the penetrations are in their required condition, ~~or~~

b. Testing the containment purge and exhaust isolation valves per the applicable portions of Specification 4.6.3.2.

c. **Proper tools are staged and trained personnel are designated to close the equipment hatch, if open.**

ATTACHMENT 3

RETYPED TECHNICAL SPECIFICATION PAGE

REFUELING OPERATIONS
3/4.9.4 CONTAINMENT BUILDING PENETRATIONS
LIMITING CONDITION FOR OPERATION

3.9.4 The containment building penetrations shall be in the following status:

a. The equipment hatch closed and held in place by a minimum of four bolts
OR
1) The Reactor has been subcritical for ≥ 165 hours, AND
2) If open, the equipment hatch is capable of being closed.

b. 1) A minimum of one door in the containment Auxiliary Airlock (AAL) is closed.
AND
2) A minimum of one door in the containment Personnel Airlock (PAL) is closed.
OR
The water level is ≥ 23 feet above the reactor vessel flange.
AND
The Reactor has been subcritical for ≥ 95 hours.
AND
An individual is available to close a PAL door when directed (after the initiation of a fuel handling accident inside containment) within;
a. 30 minutes, if the reactor has been subcritical <165 hours.
OR
b. As soon as possible but within 2 hours, if the reactor has been subcritical ≥ 165 hours.

c. All other penetrations providing direct access from the containment atmosphere to the outside atmosphere shall be either:

1) Closed by an isolation valve, blind flange, or manual valve, or

2) Be capable of being closed by an OPERABLE automatic containment purge and exhaust isolation valve.

APPLICABILITY: During CORE ALTERATIONS or movement of irradiated fuel within the containment.

ACTION:

With the requirements of the above specification not satisfied, immediately suspend all operations involving CORE ALTERATIONS or movement of irradiated fuel in the containment building.

SURVEILLANCE REQUIREMENTS

4.9.4 Each of the above required containment building penetrations shall be determined to be either in its required condition or capable of being closed as required in specification 3.9.4 within 100 hours prior to the start of and at least once per 7 days during CORE ALTERATIONS or movement of irradiated fuel in the containment building by (as applicable):

a. Verifying the penetrations are in their required condition

b. Testing the containment purge and exhaust isolation valves per the applicable portions of Specification 4.6.3.2.

c. Proper tools are staged and trained personnel are designated to close the equipment hatch, if open.

ATTACHMENT 4

TECHNICAL SPECIFICATION BASIS CHANGE
(Information Only)

REFUELING OPERATIONS

BASES

3/4.9.4 CONTAINMENT BUILDING PENETRATIONS

The requirements on containment building penetration closure and OPERABILITY ensure that a release of radioactive material within containment will be restricted from leakage to the environment. The containment personnel airlock and auxiliary airlock, which are part of the containment pressure boundary, provide a means for personnel access during MODES 1, 2, 3, and 4 operation. The equipment hatch is required to be closed and sealed during MODES 1, 2, 3, and 4. During periods of shutdown, when containment closure is not required, the equipment hatch may be opened to allow passage of material needed to support activities in the containment building. The personnel and auxiliary airlock door interlock mechanisms may be disabled during shutdown, allowing both airlock doors to remain open for extended periods when frequent containment entry is necessary. Both containment personnel airlock doors may be open during CORE ALTERATIONS when specific limitations are satisfied. The specification requires: (1) there is 23 feet of water above the reactor vessel flange, (2) the reactor has been subcritical for $\geq$95 hours, (3) one airlock door is OPERABLE and, (4) an individual is available to close one personnel airlock door (if open) following a fuel handling accident inside containment.

The requirement to have 23 feet of water above the reactor vessel flange is consistent with the fuel handling accident analysis assumptions, Regulatory Guide 1.25, and Technical Specification 3.9.10, Water Level - Refueling Cavity.

Operability of a containment personnel airlock door requires that the door is capable of being closed, i.e., that the door is unblocked, no cables or hoses run through the personnel airlock, and at least one door seal is capable of being inflated. Containment personnel airlock door closure is required to take place within 30 minutes of initiation of a fuel handling accident inside containment if the reactor has been subcritical for less than 165 hours. Fuel movement is not permitted with personnel airlock doors open, if the reactor has not been subcritical for $\geq$95 hours. If the reactor has been subcritical for 165 hours or more, containment personnel airlock door closure is to occur as soon as practicable, but is assumed to occur within 2 hours to be consistent with the accident analysis

The equipment hatch may also be open during CORE ALTERATIONS when specific limitations are satisfied. The specification requires: (1) there is 23 feet of water above the reactor vessel flange, (2) the reactor has been subcritical for $\geq$165 hours and, (3) the equipment hatch (if open) is capable of being closed following a fuel handling accident inside containment. The following administrative requirements will apply whenever the equipment hatch is open during core alterations or the movement of irradiated fuel in containment:

1. Appropriate personnel are aware of the open status of the containment during movement of irradiated fuel or CORE ALTERATIONS
2. Specified individuals are designated and readily available to close the equipment hatch following an evacuation that would occur in the event of a fuel handling accident
3. Obstructions (e.g., cables, hoses, and runway) that would prevent closure of the equipment hatch can be quickly removed.

The containment equipment hatch closure is required to take place upon the occurrence of a fuel handling accident inside containment if the hatch is open. Fuel movement is not permitted with equipment hatch open, if the reactor has not been subcritical for $\geq$165 hours. Equipment hatch closure should occur as soon as practicable, and is normally assumed to occur, absent complications, in 2 hours. Unlike the airlock, the equipment hatch may be blocked by an obstruction (e.g. the removable equipment hatch runway). Fuel movement is not allowed with the runway installed unless the capability to remove all obstructions and close the hatch within the required time is maintained.

A surveillance requirement verifies that the proper tools are staged at the equipment hatch location and qualified personnel assigned to close the equipment hatch on a seven day frequency. These requirements assure that the associated doses are limited to within acceptable levels.

ATTACHMENT 5

LIST OF COMMITMENTS

LIST OF COMMITMENTS

The following table identifies those actions committed to by STP Nuclear Operating Company (STPNOC) in this document. Any other statements in this submittal are provided for information purposes and are not considered to be commitments. Please direct questions regarding these commitments to Mr. W.E. Mookhoek, Nuclear Licensing at (361) 972-7274.

COMMITMENT	Due Date/Event
The amendment for allowing the equipment hatch to be open during CORE ALTERATIONS and/or during movement of irradiated fuel assemblies will be implemented within 60 days of approval.	Within 60 days of approval by the NRC
Administrative controls consisting of written procedures will be established prior to the implementation of the proposed change. These procedural controls would require: 1) appropriate personnel are aware of the open status of the containment during movement of irradiated fuel or CORE ALTERATIONS, 2) specified individuals are designated and readily available to close the equipment hatch following an evacuation that would occur in the event of a fuel handling accident, and 3) any obstructions (e.g., cables, hoses, and runway) that would prevent closure of an open equipment hatch can be quickly removed.	Within 60 days of approval by the NRC