BEFORE THE
UNITED STATES NUCLEAR REGULATORY COMMISSION

In the Matter of :

PENNSYLVANIA POWER & :
LIGHT COMPANY

Docket No. 50-387

PROPOSED AMENDMENT No. 180
FACILITY OPERATING LICENSE NO. NPF-14
SUSQUEHANNA STEAM ELECTRIC STATION
UNIT NO. 1

Licensee, Pennsylvania Power & Light Company, hereby files proposed Amendment No. 180 to its Facility Operating License No. NPF-14 dated July 17, 1982.

This amendment contains a revision to the Susquehanna SES Unit 1 Technical Specifications.

PENNSYLVANIA POWER & LIGHT COMPANY
BY:

R. G. Byram
Sr. Vice President - Nuclear

Sworn to and subscribed before me
this 1st of January 1995.

Notary Public

Notarial Seal
Martha C. Sedora, Notary Public
Allentown, Lehigh County
My Commission Expires Jan. 15, 1998
Member, Pennsylvania Association of Notaries

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BEFORE THE
UNITED STATES NUCLEAR REGULATORY COMMISSION

In the Matter of :

PENNSYLVANIA POWER & :
LIGHT COMPANY

Docket No. 50-388

PROPOSED AMENDMENT No. 134
FACILITY OPERATING LICENSE NO. NPF-22
SUSQUEHANNA STEAM ELECTRIC STATION
UNIT NO. 2

Licensee, Pennsylvania Power & Light Company, hereby files proposed Amendment No. 134 to its Facility Operating License No. NPF-22 dated March 23, 1984.

This amendment contains a revision to the Susquehanna SES Unit 2 Technical Specifications.

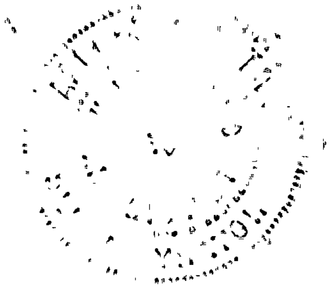
PENNSYLVANIA POWER & LIGHT COMPANY
BY:

R. G. Byram
Sr. Vice President - Nuclear

Sworn to and subscribed before me
this 1st of February 1995.

~~Notary Public~~

Notarial Seal
Martha C. Sedora, Notary Public
Allentown, Lehigh County
My Commission Expires Jan. 15, 1999
Member, Pennsylvania Association of Notaries



SAFETY ASSESSMENT

RADIATION MONITOR OPERABILITY REQUIREMENTS

BACKGROUND

Susquehanna Technical Specification 3/4.3.2 currently requires that Secondary Containment Isolation Radiation Monitors be OPERABLE any time when handling irradiated fuel in the secondary containment, and during CORE ALTERATIONS, and operations with a potential for draining the reactor vessel. This operability requirement applies to process radiation monitor subsystems located on the refueling floor and the railroad access shaft which provide secondary containment isolation signals. The operability requirement unnecessarily delays certain control rod testing activities during a refueling outage, causes unnecessary personnel radiation exposure, and requires the performance of surveillances as necessary to maintain monitor operability. In addition, unintended ESF actuations have resulted from the monitors being required OPERABLE during periods when their function is not needed.

There are two primary reasons for modifying the operability requirement for the monitors. The first is to reduce critical path refueling outage time by eliminating the need to run Reactor Water Clean Up and/or Fuel Pool Clean Up prior to placing the monitors in service. Radioactive debris is dislodged within the reactor vessel during shutdown cooling operation (crud burst). The crud burst causes the monitors located on the refueling floor to falsely initiate secondary containment isolation even though airborne radioactive concentrations have not changed, due to the position of the monitors with respect to the open reactor vessel or fuel pool (gamma shine). The second reason is to reduce personnel radiation exposure and manpower associated with preventing the monitor located in the Railroad Access Shaft Exhaust Duct from initiating false isolation signals. The Railroad Access Shaft Exhaust Duct monitor is susceptible to gamma shine from the adjacent CRD Rebuild Room during CRD transfer. Damper manipulations and the installation of lead shielding have been used to prevent a false secondary containment isolation signal via the Railroad Access Shaft monitor. The proposed change will also reduce the need for surveillance testing associated with the operability of the monitors.

The safety analysis provided here will show that the proposed change to process radiation monitor operability requirements can be safely applied at Susquehanna SES.

DESCRIPTION OF CHANGE

The proposed Technical Specification change separates and modifies the applicable operational conditions for the Secondary Containment Isolation Radiation Monitors located on the refueling floor from those of the monitor located in the railroad access shaft.

Refueling Floor Exhaust Duct High Radiation & Wall Exhaust Duct Radiation Monitors

The proposed Technical Specification change modifies the applicable operational condition for Secondary Containment Isolation Refueling Floor Exhaust Duct High Radiation & Wall Exhaust Duct Radiation Monitors during specific control rod testing evolutions which are CORE ALTERATIONS. However, the change does not apply to the requirement for the monitors to be OPERABLE during shutdown margin demonstrations (TS 3.10.3). Therefore, the following notation (#) in tables 3.3.2-1 and 4.3.2.1-1 regarding required Refueling Floor Exhaust Duct High Radiation & Wall Exhaust Duct Radiation Monitor operability is proposed; "When handling irradiated fuel in the secondary containment and during CORE ALTERATIONS and operations with a potential for draining the reactor vessel. Single Control Rod movement and/or testing, except for the purpose of SDM demonstration (TS 3.10.3), is excluded."

Railroad Access Shaft Exhaust Duct Radiation Monitor

The proposed Technical Specification change modifies the applicable operational condition for the Secondary Containment Isolation Railroad Access Shaft Radiation Monitor to address plant evolutions involving irradiated fuel transfer within the railroad access shaft, and above the access shaft with the equipment hatch open. Therefore, the following notation (##) in tables 3.3.2-1 and 4.3.2.1-1 regarding required Railroad Access Shaft Exhaust Duct Radiation Monitor operability is proposed; "When handling irradiated fuel within the Railroad Access Shaft, and above the Railroad Access Shaft with the Railroad Access Shaft Equipment Hatch Cover open."

Technical Specification Table 3.3.2-1 concerns, "Isolation Actuation Instrumentation". Technical Specification Table 4.3.2.1-1 concerns, "Isolation Actuation Instrumentation Surveillance Requirements".

Mark-ups of Technical Specification sections affected by the proposed changes are attached to this analysis.

ASSESSMENT

The Secondary Containment Isolation Radiation Monitors are comprised of three process radiation monitor subsystems:

- o Refueling Floor Exhaust Duct High Radiation Monitor (Unit 1 & 2)
- o Refueling Floor Wall Exhaust Duct Radiation Monitor (Unit 1 & 2)
- o Railroad Access Shaft Exhaust Duct Radiation Monitor (Unit 1 only)

These monitors generate signals which automatically initiate isolation of secondary containment, start the Standby Gas Treatment System, and start the Recirculation System (Zone III), in response to a high radiation condition. The function of these systems, in combination with other accident mitigation systems, is to limit fission product release during and following postulated Design Basis Accidents. The Design Basis Accidents for which the process radiation monitors contribute to mitigation are in the categories; Decreases in Reactor Coolant Inventory, and Radioactive Releases from a Subsystem or Component. Within these categories, the monitors are designed to address limiting faults that can result in secondary containment Zone III airborne radioactive concentrations. Zone III includes the Refueling

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Floor and can include the Railroad Access Shaft during certain alignments. Thus the design basis for the process radiation monitors is to monitor radiation in the unfiltered air from the Zone III exhaust system, and provide signals which isolate the Zone III portion of the secondary containment on a high radiation condition to limit offsite doses to within regulatory limits. The process radiation monitors are not provided for onsite personnel protection. Area Radiation Monitors (ARMs) and Airborne Radioactivity Monitoring is provided in Zone III to alert plant personnel of changing radioactivity conditions which could result in inadvertent exposures. ARMs also supplement the process radiation monitors in detecting abnormal migrations of radioactive material in or from the process streams.

Each monitor subsystem is comprised of two redundant detector assemblies feeding independent instrument channels. The instrument channels are powered separately from reactor protection system power bus A & B. Signals generated from the detectors supply trip circuits and control room monitoring circuits.

Safety Analysis for the Refueling Floor Exhaust Duct High Radiation & Wall Exhaust Duct Radiation Monitors:

The proposed Technical Specification change modifies the applicable operational condition for Refueling Floor Exhaust Duct High Radiation & Wall Exhaust Duct Radiation Monitors (refueling floor process radiation monitors) during specific control rod testing evolutions which are CORE ALTERATIONS. However, the change does not apply to the requirement for the refueling floor process radiation monitors to be OPERABLE during a shutdown margin demonstration (TS 3.10.3). To assess the impact on safety and the design bases accidents of the proposed change, a review of the design objectives for the refueling floor process radiation monitors and the postulated effects of control rod movement has been performed. This analysis shows that the current radiation monitor operability requirement can be modified without significantly affecting plant safety margins.

Currently the refueling floor process radiation monitors are required to be OPERABLE;"When handling irradiated fuel in the secondary containment and during CORE ALTERATIONS and operations with a potential for draining the reactor vessel". This operability requirement is intended to ensure that actions which could lead to a high radiation condition in the unfiltered air from the Zone III exhaust system are not performed unless the refueling floor process radiation monitors are OPERABLE. The proposed change only concerns non Shutdown Margin Demonstration related control rod manipulations which are defined as CORE ALTERATIONS, and thus this analysis will focus on the relationship between these CORE ALTERATIONS and the design basis for the refueling floor process radiation monitors. Radiation monitor operability requirements associated with handling irradiated fuel, and operations with a potential for draining the reactor vessel will not be changed. Control rod related CORE ALTERATIONS do not involve the handling of irradiated fuel, and do not constitute operating with the potential for draining the reactor vessel.

The postulated event associated with control rod related CORE ALTERATIONS which could result in increased Zone III airborne radioactivity concentrations is criticality resulting from a single control rod withdrawal. This postulated event creates the potential for release of airborne radioactivity in two ways:

1. Release of fission products from a previously failed assembly, and
2. Fuel failure and subsequent release of fission products as a result of criticality.

There are multiple barriers to protect against the postulated event of criticality from a single rod withdrawal. Technical Specifications, plant operating procedures, and plant design control the withdrawal of control rods to minimize the potential for an inadvertent criticality event during shutdown. In addition, a fuel loading verification is performed, per procedure, on the as loaded core configuration to ensure that the fuel is loaded correctly. Each reload core is designed such that there is at least a 99.9% probability with a 95% confidence that the core <u>will not</u> be critical as a result of a single control rod withdrawal. Therefore, given that the core loading has been verified, criticality as a result of a single control rod withdrawal would require a multiple failure scenario.

In the unlikely event that control rod manipulations resulted in reactor criticality, adequate protective measures are provided by core monitoring instrumentation required to be operable in OPCON 5. Under this scenario, assuming the inadvertent control rod withdrawal resulted in a significant reactivity addition, the Reactor Protection System (RPS) would respond by inserting all control rods via the Scram function. The RPS monitors for recriticality during OPCON 5 with SRMs (per Technical Specification Section 3.9.2), and IRMs.

The SRM subsystem is composed of four detectors that are inserted into the core during shutdown conditions. Although the subsystem is a non-safety subsystem, it is important to overall plant safety. The SRMs are required by Technical Specifications to be OPERABLE in OPCON 5. During refueling operations, plant operators use the SRMs to ensure that neutron flux remains within an acceptable range. Also, plant operators can monitor the SRMs for increases in neutron flux which may indicate that the reactor is approaching criticality. SRMs indicate reactor criticality and generate a control rod block signal on high neutron flux levels. Prior to and during the time any control rod is withdrawn (except via Technical Specification 3.9.10.1 & 3.9.10.2) and Shutdown Margin demonstrations are in progress, Technical Specification Section 3.9.2 requires the shorting links be removed so that the SRMs will operate in the non-coincident scram mode to cause a reactor scram as necessary. The IRM subsystem is composed of eight incore detectors that are inserted into the core. The IRMs are designed to monitor neutron flux levels at a local core location and provide protection against local criticality events caused by control rod withdrawal errors. The IRMs provide trip signals to the RPS when preset downscale or upscale levels are reached.

Assuming that a criticality did occur as a result of a single control rod withdrawal, any increase in Zone III airborne radioactivity from a previously failed assembly located in the vicinity of the withdrawn control rod or a fuel rod failure associated with the control rod withdrawal would not result in an offsite dose exceeding regulatory limits. If criticality occurs following core loading and verification (i.e. >20 days after shutdown), the offsite dose as a result of the release of fission products from a single failed fuel rod would be much less than 1% of the applicable site boundary limits. In addition, as many as four complete fuel assemblies (i.e. ≈300 fuel rods) could fail with the subsequent offsite dose remaining below the applicable regulatory limits. Failure of more than four complete fuel assemblies due to the withdrawal of a single control rod in OPCON 5 is not considered credible. In fact, due to the initial conditions of this event (i.e. cold, zero power, subcritical) and the reactivity characteristics of the fuel (i.e. negative fuel temperature reactivity coefficient) it is very unlikely that a criticality of this nature would result in failure of any fuel rods.

Although the refueling floor process radiation monitors would not be OPERABLE, Zone III airborne radioactivity concentrations can be independently detected with Area Radiation Monitors (ARMs) which are located on the refueling floor. These monitors provide control room indication, and would alert operators to changing radiological conditions on the refueling floor. In addition to providing personnel notification, the ARMs are credited in the FSAR as a supplement to the process radiation monitors in detecting abnormal migrations of radioactive material in or from the process streams. Operators can manually initiate secondary containment isolation based on ARM input. The Emergency Operating Procedures require the operators to take appropriate actions on higher than normal radiation readings. Moreover, any airborne radioactivity leakage from Zone III would be monitored via instrumentation in the Reactor Building vent stack required to be OPERABLE at all times. The Reactor Building Vent Stack Exhaust Sampler provides an exhaust sample to a panel for monitoring and filtering of particulates, iodine, and noble gases, prior to the samples return to the exhaust vent. Local panel indication is provided for either sample counts per minute or micro-curies per cubic centimeter, and local alarms are provided. Remote recording and alarms are provided in the main control room, and in the Technical Support Center. As a result, operator actions would be prompted by the local and/or remote indication. Operators can manually initiate secondary containment isolation based on exhaust sample readings. In addition, the sampling function allows the amount of any potential leakage to be readily verified to be within regulatory limits.

CONCLUSION

The refueling floor process radiation monitors are intended to monitor for airborne radioactivity concentrations in the unfiltered air from the Zone III exhaust system and provide isolation signals which limit offsite doses to within regulatory limits. This design basis is maintained under the proposed operability change.

The proposed change would allow for the movement of a single control rod for the purpose of control rod testing without the refueling floor process radiation monitors being operable. Withdrawal of a single control rod is an analyzed evolution during which time adequate design and operating controls exist to preclude criticality. However, in the unlikely event criticality should occur, the potential offsite affects would not be significant. Localized criticality involving a leaking rod, or criticality induced fuel failure, are the postulated mechanisms by which an increase in Zone III airborne radioactivity could be attained. Neither of these postulated, but very unlikely events, will result in radioactive release in excess of regulatory limits. Any release would be monitored by instrumentation in the Reactor Building vent stack required to be OPERABLE at all times. In addition, Area Radiation Monitors are available on the refueling floor to supplement the refueling floor process radiation monitors by providing radiological information to plant operators. Operators can use the vent stack and/or ARM information to manually initiate secondary containment isolation if radiological conditions warrant this action. Emergency Operating Procedures prompt operator action in response to higher than normal radiation readings. Therefore, the current refueling floor process radiation monitor operability requirement can be modified without significantly affecting plant safety margins.

Safety Analysis for the Railroad Access Shaft Exhaust Duct Radiation Monitor:

The proposed Technical Specification change modifies the applicable operational condition for Secondary Containment Isolation Railroad Access Shaft Exhaust Duct Radiation Monitor (railroad access shaft process radiation monitor) to plant evolutions involving irradiated fuel transfer within the railroad access shaft, and above the access shaft with the equipment hatch open. To assess the impact on safety and the design bases accidents of the proposed change, a review of the design objectives for the railroad access shaft process radiation monitor has been performed. This analysis shows that the current radiation monitor operability requirement can be modified without affecting plant safety margins.

As discussed in the opening section, the secondary containment isolation instrumentation automatically initiates isolation of secondary containment, starts the Standby Gas Treatment System, and starts the Recirculation System (Zone III) on a high radiation condition. The railroad access shaft process radiation monitor is one of three secondary containment isolation instrumentation subsystems. Thus the overall design basis for the railroad access shaft process radiation monitor is to monitor radiation in the unfiltered air from the Zone III exhaust system, and provide signals which isolate the Zone III portion of the secondary containment on a high radiation condition. While the configuration and overall design basis is the same for the railroad access shaft process radiation monitor as for the refueling floor process radiation monitors, the design intent is somewhat different. The monitor subsystems are located in three areas within which postulated accidents could lead to Zone III airborne radioactivity concentrations.

The refueling floor process radiation monitors are located in duct work which receive air flow from the reactor cavity and spent fuel pool. These locations provide optimum coverage in the event of irradiated fuel handling accidents, heavy loads accidents, or operations with the potential to drain the reactor vessel. The railroad access shaft process radiation monitor is positioned in duct work on elevation 719' and receives air flow from the railroad access shaft. The position of the railroad access shaft process radiation monitor is ideal to detect potential airborne radioactivity concentrations present in the railroad access shaft due to irradiated fuel handling within the shaft. The positioning of the three monitor subsystems on the refueling floor and the railroad access shaft allows full coverage for all postulated irradiated fuel movements that could occur in secondary containment Zone III.

Therefore, the design intent of the railroad access shaft process radiation monitor can be specifically stated as;

> *monitoring radiation in the unfiltered air from the Zone III railroad access shaft exhaust system, and providing signals which automatically isolate the Zone III portion of the secondary containment, start the Standby Gas Treatment System, and start the Recirculation System (Zone III) on a high radiation condition within the access shaft.*

While the design intent of the railroad access shaft process radiation monitor allows the monitor to quickly respond to airborne radioactive concentrations caused by irradiated fuel transfer within the railroad access shaft, the monitor can also act as a back-up to the refueling floor process radiation monitors during periods when the railroad access shaft is aligned to Zone III. The railroad access shaft process radiation monitor performs the back-up function by initiating secondary containment isolation after airborne radioactivity concentrations migrate to the detector as a result of air mixing from normal

Zone III ventilation. Although this back-up capability exists, it is redundant to the back-up capability built into each monitor subsystem (redundant detectors with independent instrument channels) and the back-up capability provided by the two refueling floor process radiation monitor subsystems. As a result of the monitor subsystem design, there are as many as four independent detectors monitoring the refueling floor area per unit. In addition, manual initiation of secondary containment isolation is available. The marginal utility of the railroad access shaft process radiation monitor as an additional level of back-up protection is negligible from a safety perspective.

CONCLUSION

The railroad access shaft process radiation monitor is intended to monitor for airborne radioactivity concentrations in the unfiltered air from the Zone III railroad access shaft exhaust system and provide isolation signals which limit offsite doses to within regulatory limits. This design intent is maintained under the proposed operability change. The capability of the railroad access shaft process radiation monitor as a back-up to the refueling floor process radiation monitors is unnecessary due to the design and redundancy already available in the refueling floor monitors. Therefore, the current railroad access shaft process radiation monitor operability requirement can be modified without affecting plant safety margins.

NO SIGNIFICANT HAZARDS CONSIDERATIONS

This analysis addresses the following two proposed changes to Susquehanna SES Technical Specification 3/4.3.2:

a. The proposed Technical Specification change modifies the applicable operational condition for Refueling Floor Exhaust Duct High Radiation & Wall Exhaust Duct Radiation Monitors (refueling floor process radiation monitors) during specific control rod testing evolutions which are CORE ALTERATIONS. However, the change does not apply to the requirement for the refueling floor process radiation monitors to be OPERABLE during a shutdown margin demonstration.

b. The proposed Technical Specification change modifies the applicable operational condition for Secondary Containment Isolation Railroad Access Shaft Exhaust Duct Radiation Monitor (railroad access shaft process radiation monitor) to plant evolutions involving irradiated fuel transfer within the railroad access shaft, and above the access shaft with the equipment hatch open.

I. This proposal does not involve a significant increase in the probability or consequences of an accident previously evaluated.

a. The proposed change to the applicable operational condition for the refueling floor process radiation monitors does not affect the probability of the design basis accidents. The monitors function in response to an airborne radioactivity concentration in the unfiltered air from the Zone III exhaust system and provide isolation signals which limit offsite doses to within regulatory limits. As such, there is no correlation between monitor operability and accident probability. The monitors act to mitigate the offsite effects of airborne contamination producing accidents, they are not potential accident initiators.

The proposed change does not result in a significant increase in the consequence of the design basis accidents. The postulated event associated with control rod related CORE ALTERATIONS which could result in increased Zone III airborne radioactivity concentrations is criticality resulting from a single control rod withdrawal, resulting in release of fission products. The probability of an unintended criticality from a single control rod withdrawal is low, and the potential for this criticality to result in fuel failure under shutdown conditions is even more remote. Withdrawal of a single control rod is an analyzed evolution during which time adequate design and operating controls exist to preclude criticality. However, in the unlikely event criticality should occur, the potential offsite effects would not be significant. Localized criticality involving a leaking rod, or criticality induced fuel failure, are the postulated mechanisms by which an increase in Zone III airborne radioactivity could be attained. Neither of these postulated, but very unlikely events, will result in radioactive release in excess of 10CFR100 limits. Any release would be monitored by instrumentation in the Reactor Building vent stack required to be OPERABLE at all times. In addition, Area Radiation Monitors are installed on the refueling floor to supplement the refueling floor process radiation monitors by providing radiological information to plant operators. Operators can use the vent stack and/or ARM information to manually initiate secondary containment isolation if radiological conditions warrant this action. Emergency Operating Procedures direct operator action in the event of higher than normal radiation readings.

b. The proposed change to the applicable operational condition for the railroad access shaft process radiation monitor does not affect the probability of the design basis accidents. The monitor functions in response to an airborne radioactivity concentration in the unfiltered air from the Zone III exhaust system and provides isolation signals which limit offsite doses to within regulatory limits. As such, there is no correlation between monitor operability and accident probability. The monitor acts to mitigate the offsite effects of airborne contamination producing accidents, it is not a potential accident initiator.

The proposed change does not result in a significant increase in the consequence of the design basis accidents. The design intent of the railroad access shaft process radiation monitor is to monitor radiation in the unfiltered air from the Zone III railroad access shaft exhaust system, and provide signals which automatically isolate the Zone III portion of the secondary containment, start the Standby Gas Treatment System, and start the Recirculation System (Zone III) on a high radiation condition within the access shaft. This function is intended to limit the consequences of a fuel handling accident in the railroad access shaft. The monitor has no significant capability to react to a CORE ALTERATION related transient, or one resulting from operations with the potential to drain the reactor vessel. The design intent of the monitor is maintained under the proposed change, as the proposed change focuses monitor operability on conditions when irradiated fuel is in the railroad access shaft or above it with the railroad access shaft cover open.

For the above stated reasons, the applicable operational condition for Refueling Floor Exhaust Duct High Radiation Monitors, Wall Exhaust Duct Radiation Monitors, and the Railroad Access Shaft Exhaust Duct Radiation Monitor can be modified without significantly increasing the probability or consequences of an accident previously evaluated.

II. This proposal does not create the possibility of a new or different kind of accident from any accident previously evaluated.

The Refueling Floor Exhaust Duct High Radiation Monitors, Wall Exhaust Duct Radiation Monitors, and the Railroad Access Shaft Exhaust Duct Radiation Monitor function in response to an airborne radioactivity concentration in the unfiltered air from the Zone III exhaust system and provide isolation signals which limit offsite doses to within regulatory limits. As such, there is no correlation between monitor operability and the potential for creating new or different accident scenarios. The monitors act to mitigate the offsite effects of airborne contamination producing accidents, they are not potential accident initiators.

For the above stated reasons, the applicable operational condition for Refueling Floor Exhaust Duct High Radiation Monitors, Wall Exhaust Duct Radiation Monitors, and the Railroad Access Shaft Exhaust Duct Radiation Monitor can be modified without creating the possibility of a new or different kind of accident from any accident previously evaluated.

III. This change does not involve a significant reduction in a margin of safety.

a. The proposed change to the applicable operational condition for the refueling floor process radiation monitors does not involve a significant reduction in the margin of safety. The postulated event associated with control rod related CORE ALTERATIONS which could result in increased Zone III airborne radioactivity concentrations is criticality resulting from a single control rod withdrawal under shutdown conditions. There are multiple barriers to protect against the postulated event of criticality from a single rod withdrawal. Technical Specifications, plant operating procedures, and plant design control the withdrawal of control rods to minimize the potential for an inadvertent criticality event during shutdown. In addition, a fuel loading verification is performed, per procedure, on the as loaded core configuration to ensure that the fuel is loaded correctly. Each reload core is designed such that there is at least a 99.9% probability with a 95% confidence that the core <u>will not</u> be critical as a result of a single control rod withdrawal. The safety margin associated with a potential criticality event from a single control rod withdrawal, under shutdown conditions, is not impacted by the proposed change.

In the unlikely event that control rod manipulations resulted in reactor criticality, adequate protective measures are provided by core monitoring instrumentation required to be operable in OPCON 5. Under this scenario, assuming the inadvertent control rod withdrawal resulted in a significant reactivity addition, the Reactor Protection System (RPS) would respond by inserting all control rods via the Scram function. The RPS monitors for recriticality during OPCON 5 with SRMs (per Technical Specification Section 3.9.2), and IRMs. The safety margin associated with RPS response to a criticality event, under shutdown conditions, is not impacted by the proposed change.

Assuming that a criticality did occur as a result of a single control rod withdrawal, any increase in Zone III airborne radioactivity from a previously failed assembly located in the vicinity of the withdrawn control rod or a fuel rod failure associated with the control rod withdrawal would not result in an offsite dose exceeding regulatory limits. Assuming that criticality occurs following core loading and verification (i.e. >20 days after shutdown), the offsite dose as a result of the release of fission products from a single failed fuel rod would be much less than 1% of the applicable site boundary limits. In addition, the failure of four complete fuel assemblies (i.e.≈300 fuel rods in the bundles surrounding the withdrawn control rod) would not result in offsite dose exceeding the applicable regulatory limits. Failure of more than four complete fuel assemblies due to the withdrawal of a single control rod in OPCON 5 is not considered credible. In fact, given the initial conditions of this event (i.e. cold, zero power, subcritical) and the reactivity characteristics of the fuel (i.e. negative fuel temperature reactivity coefficient) it is very unlikely that a criticality of this nature would result in failure of any fuel rods.

Although the refueling floor process radiation monitors would not be OPERABLE, Zone III airborne radioactivity concentrations can be independently detected with Area Radiation Monitors (ARMs) which are located on the refueling floor. These monitors provide control room indication, and would alert operators to changing radiological conditions on the refueling floor. In addition to providing personnel notification, the ARMs act as a supplement to the process radiation monitors in detecting abnormal migrations of radioactive material in or from the process streams. Operators can manually initiate secondary containment isolation based on ARM input. The Emergency Operating Procedures require the operators to take appropriate actions on higher than normal radiation readings. Moreover, any airborne radioactivity leakage from Zone III would be monitored via instrumentation in the Reactor Building vent stack required to be OPERABLE at all times; local alarms, remote recording, and main control room and Technical Support Center alarms are provided. Operators can manually initiate secondary containment isolation based on exhaust sample readings. Due to the bounding regulatory limits and the redundant monitoring and operator response capabilities, the safety margin associated with the potential for offsite airborne radioactive release, under shutdown conditions, is not significantly impacted by the proposed change.

b. The elimination of operability requirements associated with CORE ALTERATIONS, operations with the potential to drain the reactor vessel, and other irradiated fuel moves not associated with the railroad access shaft, do not affect the ability of the railroad access shaft process radiation monitor to implement its design function. As such, the current operability requirements for the monitor which involve evolutions in areas other than the railroad access shaft do not contribute to the margin of plant safety; thus eliminating these operability requirements will not reduce the margin of plant safety.

For the above stated reasons, the applicable operational condition for Refueling Floor Exhaust Duct High Radiation Monitors, Wall Exhaust Duct Radiation Monitors, and the Railroad Access Shaft Exhaust Duct Radiation Monitor can be modified without a significant reduction in a margin of safety.

ENVIRONMENTAL CONSEQUENCES

An environmental assessment is not required for the proposed changes because the requested changes conform to the criteria for actions eligible for categorical exclusion as specified in 10 CFR 51.22(c)(9). The requested changes will have no impact on the environment. The proposed changes do not involve a significant hazards consideration as discussed in the preceding section. The proposed changes do not involve a significant change in the types or significant increase in the amounts of any effluents that may be released offsite. In addition, the proposed changes do not involve a significant increase in individual or cumulative occupational radiation exposure.

IMPLEMENTATION

It is requested that this change be approved as soon as possible but no later than August 9, 1995 with implementation within 30 days of the date of issuance.