

BEFORE THE  
UNITED STATES NUCLEAR REGULATORY COMMISSION

In the Matter of

PENNSYLVANIA POWER &  
LIGHT COMPANY

Docket No. 50-387

PROPOSED AMENDMENT NO. 201  
FACILITY OPERATING LICENSE NO. NPF-14  
SUSQUEHANNA STEAM ELECTRIC STATION  
UNIT NO. 1


Licensee, Pennsylvania Power & Light Company, hereby files proposed Amendment No. 201 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 1<sup>st</sup> of October, 1996.

  
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

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In the Matter of :  
PENNSYLVANIA POWER & : Docket No. 50-388  
LIGHT COMPANY :

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PROPOSED AMENDMENT NO. 159  
FACILITY OPERATING LICENSE NO. NPF-22  
SUSQUEHANNA STEAM ELECTRIC STATION  
UNIT NO. 2

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Licensee, Pennsylvania Power & Light Company, hereby files proposed Amendment No. 159 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 7th of October 1996.

  
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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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## SAFETY ASSESSMENT

### SECONDARY CONTAINMENT RADIATION MONITOR ISOLATION SETPOINTS

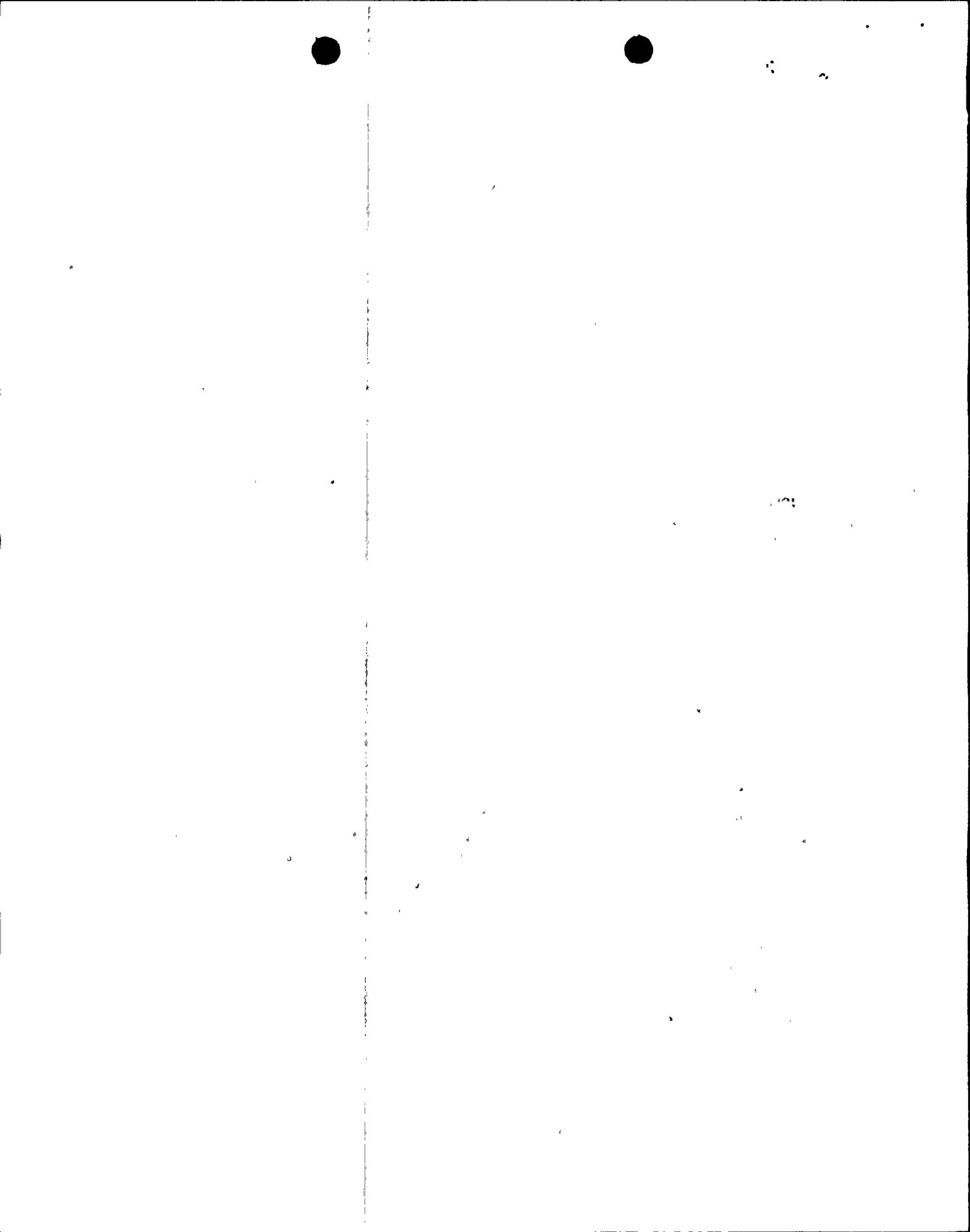
#### BACKGROUND

The Susquehanna SES Technical Specification Table 3.3.2-2 currently contains secondary containment radiation monitor isolation trip setpoints and allowable values for the "Refuel Floor High Exhaust Duct Radiation - High" monitor, the "Railroad Access Shaft Exhaust Duct Radiation - High" monitor, and the "Refuel Floor Wall Exhaust Duct Radiation - High" monitor that were derived from radiation levels that slightly exceeded normal operational radiation levels. Since fuel damage events are the design basis for these monitors, the use of radiation levels that slightly exceed normal operational radiation levels to develop the existing trip setpoints and allowable values is extremely conservative and results in bypassing the monitors for certain plant refueling evolutions in order to avoid spurious actuations. Additionally, PP&L is installing hydrogen water chemistry (HWC) in the Susquehanna units to enhance protection of the lower vessel internals from the effects of IGSCC. HWC results in increased normal operational radiation doses which, for the Refuel Floor Wall Exhaust Duct Radiation - High monitor, are expected to exceed the monitor's existing trip setpoint. To allow for plant operation with HWC, and to reduce activities that unnecessarily challenge plant safety systems (spurious actuations), increasing the trip setpoints and allowable values is an enhancement that does not reduce the level of safety established by the design basis for these monitors.

The safety analysis provided below shows that the proposed change to these radiation monitors can be safely applied at Susquehanna SES.

#### DESCRIPTION OF CHANGE

The proposed Technical Specification change revises the trip setpoints and allowable values for the secondary containment isolation "Refuel Floor High Exhaust Duct Radiation - High" monitor, the "Railroad Access Shaft Exhaust Duct Radiation - High" monitor, and the "Refuel Floor Wall Exhaust Duct Radiation - High" monitor in Table 3.3.2-2. The change is being proposed to enhance the operational efficiency of plant operations by eliminating the use of compensatory measures that are necessary to prevent spurious secondary containment isolations and initiations of the Standby Gas Treatment System (SGTS) and Recirculation System during certain plant refueling evolutions, and also allow for plant operation utilizing hydrogen water chemistry (HWC).



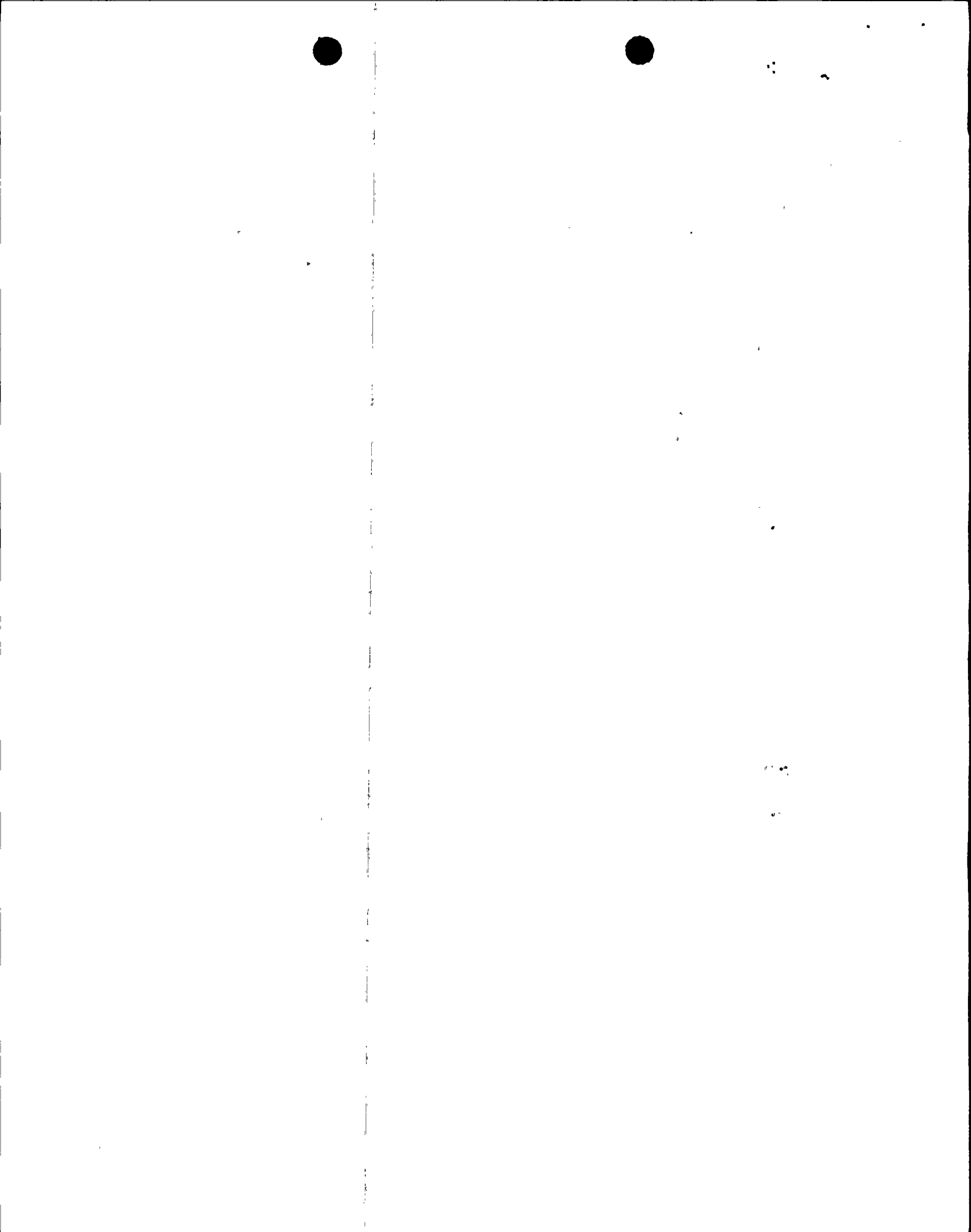
## ASSESSMENT

**Safety Analysis for the "Refuel Floor High Exhaust Duct Radiation - High" monitor, the "Railroad Access Shaft Exhaust Duct Radiation - High" monitor, and the "Refuel Floor Wall Exhaust Duct Radiation - High" monitor**

The "Refuel Floor High Exhaust Duct Radiation - High" monitor, the "Railroad Access Shaft Exhaust Duct Radiation - High" monitor, and the "Refuel Floor Wall Exhaust Duct Radiation - High" monitor initiate isolation of secondary containment, start the SGTS, and start the Recirculation System (Zone III) in response to a high radiation condition, to limit fission product release during and following certain postulated accidents. The monitors are designed to limit the release of airborne radioactivity in the secondary containment Zone III exhaust system by isolating Zone III, initiating SGTS and initiating the Recirculation System on high radiation resulting from fuel damage events. Therefore, the design basis for these monitors is to monitor radiation in the unfiltered air from the Zone III exhaust system, and provide signals to limit offsite doses to maintain regulatory requirements. Zone III includes the Refueling Floor and can include the Railroad Access Shaft during certain alignments. These radiation monitors are not provided for occupational protection associated with operational radiation doses.

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

The proposed Technical Specification change revises the trip setpoints and allowable values for the secondary containment isolation "Refuel Floor High Exhaust Duct Radiation - High" monitor, the "Railroad Access Shaft Exhaust Duct Radiation - High" monitor, and the "Refuel Floor Wall Exhaust Duct Radiation - High" monitor in Table 3.3.2-2. The original setpoints for these monitors were conservatively based upon normal radiological operating conditions and were set at a value to preclude spurious design actuations by these monitors during normal plant operations. However, the monitors are designed to detect radiation associated with certain postulated accident conditions. As required by the Technical Specifications the monitors are operable when conditions exist that may result in fuel damage events, and therefore, will perform their design basis function. Consequently, an increase to the trip setpoints and allowable values is warranted since the existing setpoints, which are conservatively based on normal radiological operating conditions, are not related to the design basis of the monitors. Therefore, based upon the design basis of the monitors, an increase to the trip setpoints and allowable values will not result in a decrease of the safety function of the monitors but will make the trip setpoints and allowable values consistent with design basis.





Based on the design basis of these monitors, revised analytical limits were derived reflecting the accident function of the monitors. The analytical limit calculations utilized FSAR realistic source terms, instead of the worst case source terms utilized for 10CFR100 compliance. Use of the realistic source terms results in conservative analytical limits.

Currently, certain refueling operations require the subject monitors to be bypassed (made inoperable when they are not required to be operable) to prevent spurious actuations that would isolate secondary containment and initiate SGTS and the Recirculation System. PP&L, therefore, believes that the proposed revision to the trip setpoints and allowable values will increase the efficiency of our refueling operations. PP&L is also implementing the use of hydrogen water chemistry (HWC) as a method to inhibit IGSCC crack growth in the reactor vessel's lower internals. The implementation of HWC will increase the radiation doses associated with plant operations. PP&L calculations have concluded that the existing trip setpoints and allowable values for these monitors may be affected by normal plant operation with HWC. Therefore, the trip setpoints and allowable values for these monitors have to be revised to support plant operation with HWC. The changes are according to the attached "marked up" Technical Specifications pages for Units 1 and 2.

### CONCLUSION

The "Refuel Floor High Exhaust Duct Radiation - High" monitor, the "Railroad Access Shaft Exhaust Duct Radiation - High" monitor, and the "Refuel Floor Wall Exhaust Duct Radiation - High" monitor are intended to monitor for airborne radioactivity concentrations in the unfiltered air from the Zone III exhaust system, under certain accident conditions, to maintain offsite doses within regulatory limits. The existing setpoints, which are based on normal plant operations, require that certain mitigative steps be taken to prevent spurious actuations of plant equipment during refueling operations. To reduce the need for mitigative steps to avoid spurious actuations to plant equipment, and to allow for plant operation utilizing HWC, revisions to the trip setpoints and allowable values are necessary. These revisions do not change the design basis or safety function of the monitors, nor will they cause the regulatory accident dose limits to be exceeded.

## NO SIGNIFICANT HAZARDS CONSIDERATION

This analysis addresses the proposed revision to the trip setpoints and allowable values for the "Refuel Floor High Exhaust Duct Radiation - High" monitor, the "Railroad Access Shaft Exhaust Duct Radiation - High" monitor, and the "Refuel Floor Wall Exhaust Duct Radiation - High" monitor identified in Technical Specification Table 3.3.2-2, for Units 1 and 2.

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

The proposed change to the trip setpoints and allowable values to the "Refuel Floor High Exhaust Duct Radiation - High" monitor, the "Railroad Access Shaft Exhaust Duct Radiation - High" monitor, and the "Refuel Floor Wall Exhaust Duct Radiation - High" monitor does not involve a significant increase in the probability or consequences of an accident previously evaluated. The design basis for the monitors is to monitor radiation in the unfiltered air from the Zone III exhaust system to provide signals which isolate the Zone III of the secondary containment on a high radiation condition, and to initiate SGTS and the Recirculation System to limit offsite doses to maintain regulatory requirements.

The original setpoints for these monitors were based upon normal radiological operating conditions and were set at a value to preclude spurious design actuations by these monitors during normal plant operations. However, the monitors are designed to detect radiation associated with certain postulated accident conditions. As required by the Technical Specifications the monitors are operable when conditions exist that may result in fuel damage events, and therefore, will perform their design basis function. Consequently, an increase to the trip setpoints and allowable values is warranted since the existing setpoints, which are conservatively based on normal radiological operating conditions, are not related to the design basis of the monitors. Therefore, based upon the design basis of the monitors, an increase to the trip setpoints and allowable values will not result in a decrease of the safety function of the monitors but will make the trip setpoints and allowable values consistent with design basis.

Based on the design basis of these monitors, revised analytical limits were derived reflecting the accident function of the monitors. The analytical limit calculations utilized FSAR realistic source terms, instead of the worst case source terms utilized for 10CFR100 compliance. Use of the realistic source terms results in conservative analytical limits.

The "Refuel Floor High Exhaust Duct Radiation - High" monitor, and the "Refuel Floor Wall Exhaust Duct Radiation - High" are required to be OPERABLE during CORE ALTERATIONS (except for single control rod movements unless performing TS 3.10.3), operations with the potential for draining the reactor vessel, and handling of irradiated

fuel in the secondary containment. The "Railroad Access Shaft Exhaust Duct Radiation - High" monitor is required to be operable during handling of irradiated fuel. These Technical Specification applicable operational conditions for the monitors are not affected since this proposed revision only revises the trip setpoints and allowable values to be consistent with the design bases of the monitors.

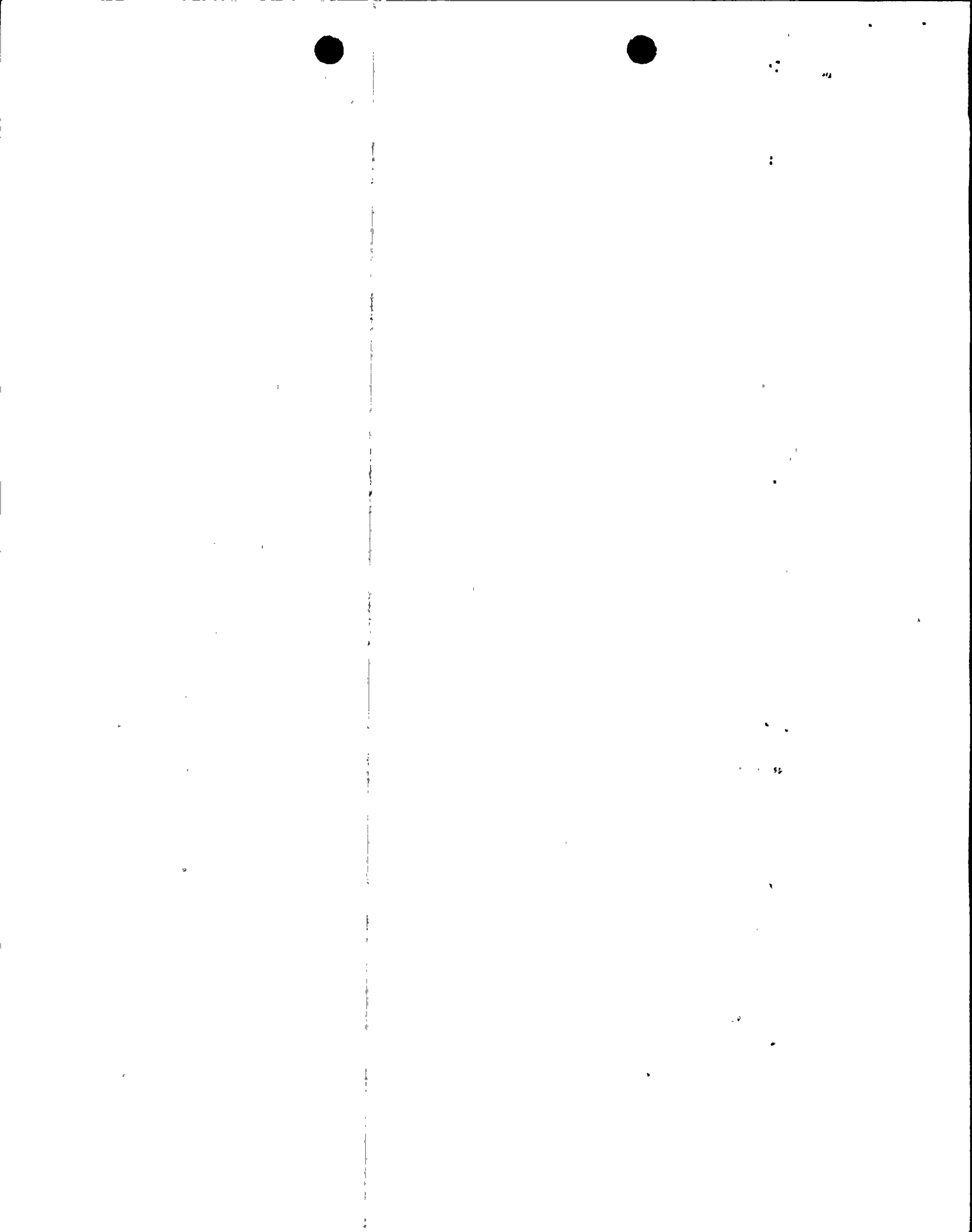
For the reasons stated above the revisions to the trip setpoints and allowable values to the "Refuel Floor High Exhaust Duct Radiation - High" monitor, the "Railroad Access Shaft Exhaust Duct Radiation - High" monitor, and the "Refuel Floor Wall Exhaust Duct Radiation - High" monitor in Technical Specification Table 3.3.2-2 can be implemented without a significant increase in the probability or consequence 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 proposed change to the trip setpoints and allowable values for the "Refuel Floor High Exhaust Duct Radiation - High" monitor, the "Railroad Access Shaft Exhaust Duct Radiation - High" monitor, and the "Refuel Floor Wall Exhaust Duct Radiation - High" monitor does not create the possibility of a new or different kind of accident from any accident previously evaluated.

The monitors are designed to limit the release of airborne radioactivity in the secondary containment Zone III exhaust system by isolating Zone III, initiating SGTS and initiating the Recirculation System on high radiation resulting from fuel handling accidents. Therefore, the design basis for these monitors is to monitor radiation in the unfiltered air from the Zone III exhaust system, and provide signals to limit offsite doses to maintain regulatory requirements. Zone III includes the Refueling Floor and can include the Railroad Access Shaft during certain alignments. These radiation monitors are not provided for occupational protection associated with operational radiation doses. The proposed revision does not affect the design basis of the monitors nor the kind of accident associated with the basis; therefore, no potential to create a new or different accident exists.

For the reasons stated above the revisions to the trip setpoints and allowable values to the "Refuel Floor High Exhaust Duct Radiation - High" monitor, the "Railroad Access Shaft Exhaust Duct Radiation - High" monitor, and the "Refuel Floor Wall Exhaust Duct Radiation - High" monitor in Technical Specification Table 3.3.2-2 can be implemented without creating the possibility of a new or different kind of accident from any accident previously evaluated.



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

The proposed change to the trip setpoints and allowable values for the "Refuel Floor High Exhaust Duct Radiation - High" monitor, the "Railroad Access Shaft Exhaust Duct Radiation - High" monitor, and the "Refuel Floor Wall Exhaust Duct Radiation - High" monitor does not involve a significant reduction in a margin of safety.

The monitors are designed to limit the release of airborne radioactivity in the secondary containment Zone III exhaust system by isolating Zone III, initiating SGTS and initiating the Recirculation System on high radiation resulting from fuel handling accidents. Therefore, the design basis for these monitors is to monitor radiation in the unfiltered air from the Zone III exhaust system, and provide signals to limit offsite doses to maintain regulatory requirements. Zone III includes the Refueling Floor and can include the Railroad Access Shaft during certain alignments. These radiation monitors are not provided for occupational protection associated with operational radiation doses. However, the original setpoints for these monitors were conservatively based upon normal radiological operating conditions and were set at a value to preclude spurious design actuation by these monitors during normal plant operations. The calculations performed to support the trip setpoint and allowable value revisions concluded that the change will maintain offsite doses within the 10CFR100 limits. The "Refuel Floor High Exhaust Duct Radiation - High" monitor, and the "Refuel Floor Wall Exhaust Duct Radiation - High" are required to be OPERABLE during CORE ALTERATIONS (except for single control rod movements unless performing TS 3.10.3), operations with the potential for draining the reactor vessel, and handling of irradiated fuel in the secondary containment. The "Railroad Access Shaft Exhaust Duct Radiation - High" monitor is required to be operable during handling of irradiated fuel. These Technical Specification applicable operational conditions for the monitors are not affected since this proposed revision only revises the trip setpoints and allowable values to be consistent with the design bases of the monitors.

The proposed revisions to the trip setpoints and allowable values, in addition to being based on the appropriate accident conditions, were also developed utilizing standard setpoint change methodologies that consider instrument and calibration accuracies and instrument drift tolerances. This provides added conservatism to assure that the revised trip setpoints and allowable values are not exceeded.

For the reasons stated above the revisions to the trip setpoints and allowable values to the "Refuel Floor High Exhaust Duct Radiation - High" monitor, the "Railroad Access Shaft Exhaust Duct Radiation - High" monitor, and the "Refuel Floor Wall Exhaust Duct Radiation - High" monitor in Technical Specification Table 3.3.2-2 can be implemented without involving a significant reduction in a margin of safety.



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### ENVIRONMENTAL CONSEQUENCES

An environmental assessment is not required for the proposed revision because it conforms to the criteria for actions eligible for categorical exclusion specified in 10CFR51.22(c)(9). The proposed revision will have no impact on the environment. The proposed revision does not involve a significant hazards consideration as presented in the preceding section. The proposed revision does not involved a significant change in the type or significant increase in the amounts of any effluents that may be released offsite. In addition, the proposed revision does 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 February 28, 1997, with implementation within 30 days of the date of issuance.