

December 10, 2002

MEMORANDUM TO: Biweekly Notice Coordinator

FROM: Alexander Adams, Jr., Senior Project Manager /RA/  
Research and Test Reactors Section  
Operating Reactor Improvements Program  
Division of Regulatory Improvement Programs  
Office of Nuclear Reactor Regulation

SUBJECT: REQUEST FOR PUBLICATION IN BIWEEKLY FR NOTICE -  
NOTICE OF CONSIDERATION OF ISSUANCE OF  
AMENDMENT TO FACILITY LICENSE, PROPOSED NO  
SIGNIFICANT HAZARDS CONSIDERATION  
DETERMINATION, AND OPPORTUNITY FOR A HEARING  
(TAC NO. MB5029)

GPU Nuclear Corporation and Saxton Nuclear Experimental Corporation (SNEC),

Docket No. 50-146, Saxton Nuclear Experimental Facility (SNEF), Bedford County,

Pennsylvania

Date of amendment request: April 22, 2002, as supplemented on December 5, 2002.

Description of amendment request: The proposed amendment would allow removal of the upper half of the SNEF containment vessel and make a change to the organization to add the position of Vice-President GPU Nuclear Oversight to reflect the merger of GPU Inc. and FirstEnergy Corp.

Basis for proposed no significant hazards consideration determination: As required by 10 CFR 50.91(a), the licensees have provided their analysis of the issue of no significant hazards consideration, which is presented below:

GPU Nuclear has determined that Technical Specification Change Request No. 62 involves no significant hazard consideration as defined in 10 CFR 50.92.



1. The proposed changes to the SNEC Technical Specifications do not involve a significant increase in the probability of occurrence or consequences of an accident or malfunction of equipment important to safety previously analyzed in the safety analysis report.

As described in the change to delete Technical Specification 1.1.2, radiation levels inside the Containment Vessel will be below that necessary to maintain the Containment Vessel as an Exclusion Area. Further as required by modified Technical Specification 2.1.1 ventilation controls will be established to monitor and control any potential releases of airborne radioactivity during activities involving removal of the upper dome. Finally an analysis has been performed to determine the dose to a maximally exposed individual due to an accidental release while cutting the Containment Vessel. In developing a source term for the event it was assumed that following the concrete removal process the interior surfaces of the upper Containment Vessel dome was homogeneously coated with concrete dust. NUREG 1507 "Minimum Detectable Concentrations with Typical Radiation Survey Instruments for Various Contaminants and Field Conditions" describes an experiment to determine the attenuation effects due to dusty conditions. The maximum dust loading presented was  $9.99 \text{ mg/cm}^2$  for soil. This value was converted to concrete dust by comparing the relative densities of the material ( $1.5 \text{ g/cm}^3$  for soil and  $2.3 \text{ g/cm}^3$  for concrete) or  $15.3 \text{ mg/cm}^2$ . This amount of dust coating the internal surfaces of the Containment Vessel dome ( $9.05\text{E}6 \text{ cm}^2$ ) results in 299 pounds of dust being left in the Containment Vessel.

Table 1 provides the mix of isotopes remaining at the SNEC Facility based on the most recent survey results and isotope decay. During the removal operation a resuspension factor of  $1.9\text{E-}2/\text{m}$  (as described in NUREG/CR 0130 “Technology, Safety and Costs of Decommissioning a Reference Pressurized Water Reactor Power Station”, Volume 2, page J-27) was selected to represent the amount of concrete dust going airborne. This parameter is about one order of magnitude larger than that used in any other accident analyses described in the NUREG. This entire volume of dust was assumed to be released, unfiltered, directly to the environment.

An accident dispersion factor ( $\chi/Q$ ) of  $3.41\text{E-}3 \text{ sec}/\text{m}^3$ , was also selected as it is the highest, thus most conservative, value used in the SNEC Facility Offsite Dose Calculation Manual (ODCM). Additionally composite dose conversion factors were selected from Table 5-1 of EPA 400-R-92-001 “Manual of Protective Action Guides and Protective Guides for Nuclear Incidents” (US EPA, May 1992).

Based on the above a calculated dose of  $3.23\text{E-}4$  mrem to the maximally exposed individual represents a conservative estimate for an accidental release. For comparison Section 3.1 of the SNEC Facility USAR estimated the dose from an unfiltered release due to a material handling event of 1.5 mrem to the maximally exposed individual.

Thus this proposed change does not involve a significant increase in the probability of occurrence or consequences of an accident or malfunction of equipment important to safety previously analyzed in the SNEC Facility USAR.

For the portions of the amendment that would make a change to the organization to add the position of Vice-President GPU Nuclear Oversight to reflect the merger of GPU Inc. and FirstEnergy Corp, these changes are administrative in nature. As such they have no effect on the probability of occurrence or consequences of an accident or malfunction of equipment important to safety.

2. The proposed changes to the SNEC Technical Specifications will not create the possibility for an accident or malfunction of a different type than any previously evaluated in the safety analysis report.

As described in the response to item 1 above, the limiting accidental release during segmentation of the Containment Vessel dome involves the direct release of radioactive material to the environment. This event is similar to both a material handling event as described in Section 3.1 of the SNEC Facility USAR, and loss of engineering controls during segmentation as described in Section 3.4 of the SNEC Facility USAR. Thus the possibility of a new accident is not created.

For the portions of the amendment that would make a change to the organization to add the position of Vice-President GPU Nuclear Oversight to reflect the

merger of GPU Inc. and FirstEnergy Corp, these changes are administrative in nature. As such they have no effect on the possibility of an accident or malfunction of a different type.

3. The changes will not involve a significant reduction in the margin of safety as defined in the basis for any technical specification for SNEC. The SNEC Facility Technical Specifications do not contain a defined margin of safety. However the implied margin of safety is to protect members of the public from exposure to radioactive material.

At the point in time that these Technical Specifications would take affect general radiation levels in the SNEC Facility Containment Vessel would be such that the Containment Vessel could be opened for unrestricted use as defined in 10 CFR 20.1301. Additionally the dose to a maximally exposed individual from an accidental release during removal of the Containment Vessel dome is several orders of magnitude below that from the limiting accidents defined in the SNEC Facility USAR. Thus the margin of safety is not reduced.

For the portions of the amendment that would make a change to the organization to add the position of Vice-President GPU Nuclear Oversight to reflect the merger of GPU Inc. and FirstEnergy Corp, these changes are administrative in nature. As such they have no effect on the margin of safety as defined in the basis for any technical specification for SNEC.

The NRC staff has reviewed the analysis of the licensees and, based on this review, it appears that the three standards of 50.92(c) are satisfied. Therefore, the NRC staff proposes to determine that the amendment request involves no significant hazards consideration.

Attorney for the Licensee: Ernest L. Blake, Jr., Esquire, Shaw, Pittman, Potts, and Trowbridge, 2300 N Street, N.W., Washington, D.C. 20037

NRC Program Director: William D. Beckner

Table 1 Maximum Exposed Individual Dose from Cutting the CV

Isotope	CV Concrete Activity (Ci) per Table 4.13 SNEC Char. Report	Fraction Remaining as Dust (uCi)	CV Wall Area Concentration (uCi/m <sup>2</sup> )	CV Air Concentration (uCi/m <sup>3</sup> )	Instantaneous Release Rate (uCi/sec) <sup>4</sup>	Concentration (uCi/cm <sup>3</sup> )	DCF <sup>7</sup>	Offsite Dose (mrem)
Am-241	8.24e-05	4.68e-03	5.17e-06	9.83e-08	2.93e-04	9.99e-13	1.47e+05	1.47e-04
Co-60	4.60e-02	2.61e+00	2.89e-03	5.49e-05	1.63e-01	5.57e-10	7.50e+01	4.18e-05
Cs-137	2.38e-01	1.35e+01	1.49e-02	2.84e-04	8.46e-01	2.88e-09	1.14e+01	3.28e-05
C-14	5.74e-03	3.26e-01	3.60e-04	6.84e-06	2.04e-02	6.96e-11	6.94e-01	4.83e-08
Eu-152	1.42e-03	8.07e-02	8.91e-05	1.69e-06	5.05e-03	1.72e-11	7.50e+01	1.29e-06
H-3	1.29e-01	7.33e+00	8.10e-03	1.54e-04	4.58e-01	1.56e-09	2.14e-02	3.34e-08
Ni-63	3.93e-02	2.23e+00	2.47e-03	4.69e-05	1.40e-01	4.76e-10	2.11e+00	1.01e-06
Pu-239	5.24e-05	2.98e-03	3.29e-06	6.25e-08	1.86e-04	6.35e-13	1.44e+05	9.17e-05
Pu-241	1.84e-04	1.05e-02	1.15e-05	2.19e-07	6.54e-04	2.23e-12	2.75e+03	6.13e-06
Sr-90	1.59e-04	9.03e-03	9.98e-06	1.90e-07	5.65e-04	1.93e-12	4.44e+02	8.56e-07
<b>Total</b>	<b>4.60e-01</b>	<b>2.61e+01</b>			<b>1.63e+00</b>			<b>3.23e-04</b>

Footnotes:

1. Fraction remaining determined by: (299 lbs dust/5.26E6 lbs total concrete in CV) x 1E6 uCi/Ci x CV concrete activity.
2. Area concentration determined by dividing dust fraction remaining by 9.05E2 m<sup>2</sup>(surface of CV shell being removed).
3. Air concentration determined by multiplying CV wall area activity by 1.9E-2/m (NUREG 0130 resuspension factor for dust sweeping)
4. Calculated by multiplying CV air specific activity by CV volume (2.98E3 m<sup>3</sup>) instantaneously released in one second.
5. Maximum atmospheric dispersion factor (X/Q) is 3.41E-3 sec/m<sup>3</sup> at the site boundary (200 meters) and in Sector N per SNEC ODCM Revision 5.
6. Calculated by multiplying X/Q x activity released in uCi/sec x 1e-6 m<sup>3</sup>/cm<sup>3</sup>.
7. Per EPA 400-R-92-001, Table 5-1

Technical Specifications do not contain a defined margin of safety. However the implied margin of safety is to protect members of the public from exposure to radioactive material.

At the point in time that these Technical Specifications would take affect general radiation levels in the SNEC Facility Containment Vessel would be such that the Containment Vessel could be opened for unrestricted use as defined in 10 CFR 20.1301. Additionally the dose to a maximally exposed individual from an accidental release during removal of the Containment Vessel dome is several orders of magnitude below that from the limiting accidents defined in the SNEC Facility USAR. Thus the margin of safety is not reduced.

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