

November 8, 2000

Mr. G. A. Kuehn, Jr.
Program Director SNEC Facility
GPU Nuclear
TMI Nuclear Generating Station
South Office Building
P.O. Box 480
Middletown, PA 17057

SUBJECT: SAXTON NUCLEAR EXPERIMENTAL FACILITY - REQUEST FOR
ADDITIONAL INFORMATION, RE: LICENSE TERMINATION PLAN
(TAC NO. MA8076)

Dear Mr. Kuehn:

We are continuing our review of your amendment request for Amended Facility License No. DPR-4 for the Saxton Nuclear Experimental Corporation (SNEC) SNEC Facility which you submitted on February 2, 2000, as supplemented. During our review of your amendment request, questions have arisen for which we require additional information and clarification. Please provide responses to the enclosed request for additional information as soon as possible but no later than 60 days from the date of this letter. In accordance with 10 CFR 50.30(b), your response must be executed in a signed original under oath or affirmation. Following receipt of the additional information, we will continue our evaluation of your amendment request.

If you have any questions regarding this review, please contact me at (301) 415-1127.

Sincerely,

/RA/

Alexander Adams, Jr., Senior Project Manager
Events Assessment, Generic Communications and
Non-Power Reactors Branch
Division of Regulatory Improvement Programs
Office of Nuclear Reactor Regulation

Docket No. 50-146

Enclosure: Request for Additional Information

cc w/enclosure:
Please see next page

Saxton Nuclear
Experimental Corporation

Docket No. 50-146

cc:

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Mr. James H. Elder, Chairman
Concerned Citizens for SNEC Safety
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Saxton, PA 16679

Mr. Ernest Fuller
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Six Mile Run, PA 16679

Saxton Borough Council
ATTN: Peggy Whited, Secretary
9th and Spring Streets
Saxton, PA 16678

Mr. David J. Thompson, Chair
Bedford County Commissioners
County Court House
203 South Juliana Street
Bedford, PA 15522

Mr. Larry Sather, Chairman
Huntingdon County Commissioners
County Court House
Huntingdon, PA 16652

Saxton Community Library
Front Street
Saxton, PA 16678

Carbon Township Supervisors
ATTN: Penny Brode, Secretary
R. D. #1, Box 222-C
Saxton, PA 16678

Hopewell Township Supervisors
ATTN: Sally Giornesto, Secretary
RR 1 Box 95
James Creek, PA 16657-9512

Mr. D. Bud McIntyre, Chairman
Broad Top Township Supervisors
Broad Top Municipal Building
Defiance, PA 16633

Mr. Don Weaver, Chairman
Liberty Township Supervisors
R. D. #1
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U.S. Army Corps of Engineers
Baltimore District
ATTN: S. Snarski/P. Juhle
P.O. Box 1715
Baltimore, MD 21203

The Honorable Robert C. Jubelirer
President Pro-Temp Senate of
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REQUEST FOR ADDITIONAL INFORMATION

SAXTON NUCLEAR EXPERIMENTAL CORPORATION GPU NUCLEAR LICENSE TERMINATION PLAN, SAXTON, PENNSYLVANIA DOCKET NO. 50-146, LICENSE NO. DPR-4

1. Environmental Assessment - NRC is preparing an environmental assessment (EA) to evaluate any potential environmental impacts of the proposed action. The EA requires consultations with the Pennsylvania State Historic Preservation Office (SHPO), Game Commission, Fish and Boat Commission, and Department of Conservation and Natural Resources. The following information is required to complete the EA.
 - A. In a letter dated August 11, 2000, the State of Pennsylvania Bureau of Historic Preservation (the SHPO), informed GPU Nuclear that no evaluation of historic structures will be necessary for this project area. However, the same letter indicates that a Phase I archaeological survey of the project area is required to locate potentially significant archaeological resources. It is our understanding that if the only areas to be disturbed during decommissioning are those that had been previously disturbed during construction activities at the site, then no further investigation would be necessary. However, if previously undisturbed areas are to be disturbed during decommissioning (e.g., remediation of a plume beyond the original construction footprint), then a Phase I survey will most likely be necessary. Please consult directly with the SHPO, take appropriate action to meet State requirements, and inform NRC of the results.
 - B. Although the U.S. Fish and Wildlife Service (US FWS) has been contacted regarding endangered species and it responded with no concerns, there are several State listed species, independent of the US FWS (two endangered birds, one endangered plant, and several threatened species). Please consult with the Pennsylvania Game Commission, Fish and Boat Commission, and Department of Conservation and Natural Resources to verify that there would be no impact to these species, and inform NRC of the results.
2. Radionuclide Suite - Please provide either a justification as to why Derived Concentration Guideline Levels (DCGLs) were not included for Np-237 or provide DCGLs for Np-237.

[LTP references: Tables 2.1, 2.7, 2.8, 2.12, and 5.1; Sections 5.2.3.2, 5.2.3.2.1 and 5.2.3.2.2]
3. Building Occupancy Assumptions used to Demonstrate Compliance -
 - A. Use of the default building occupancy scenario will be acceptable for developing DCGLs for structures provided the following assumptions are met: (1) residual radioactivity has been reduced to levels that are as low as is reasonably achievable; (2) the residual radioactivity is contained in the top layer of the building surface (i.e., there is no volumetric contamination); and (3) the fraction of removable surface contamination does not exceed 0.1 (for cases when the fraction of removable contamination is undetermined or higher than 0.1, you may

assume, for screening purposes, that 100 percent of the surface contamination is removable, and therefore the screening values should be decreased by a factor of 10.) [See 65 FR 37186 dated June 13, 2000.]. All assumptions used in developing the DCGLs should be clearly stated. It should be noted that the default building occupancy scenario may not apply to surfaces such as buried structures (e.g., drainage or sewer pipes), or mobile equipment within the building. Please verify that your assumptions for using screening DCGLs are consistent with the above assumptions.

For buildings or structures where the screening assumptions do not apply, please either demonstrate that the DandD 1.0, building occupancy scenario (Wernig et al., 1999) models the correct critical group of receptors, or use an alternate conceptual model that considers the potential additional pathways.

- B. The LTP identifies area factors that will be used in developing DCGL_{EMC} values for volumetric residual radioactivity. However, no area factors are provided for developing DCGL_{EMC} values for residual radioactivity on building surfaces. Because area factors are needed to determine the required Scan MDC, and DCGL_{EMC} values are needed to identify small areas that may need further investigation, area factors that will be used for developing DCGL_{EMC} values for the building and structures should be provided. Information should be provided showing the basis for the derived area factors. Because screening DCGL values are proposed, which are based on use of the DandD computer code, which does not allow derivation of area factors for building surfaces, it may be necessary to develop these area factors using another computer code (e.g., RESRAD-Build). However, if an alternate code is used, it must be demonstrated that the dose from using an alternate code is either consistent with, or not likely to be an underestimation of, that which would be obtained from using DandD.

[LTP Reference: Appendix 6.1.]

4. Resident Farmer Assumptions and Justifications used to Demonstrate Compliance - Please describe the assumptions and provide justifications for the parameters used in the RESRAD calculation of site-specific DCGLs for contaminated soil. Specifically, provide justification for the parameters listed in the attached Table 1. Guidance on sources of information for providing acceptable justification for parameters used in dose assessments can be found in the "Draft Technical Basis Document to the Standard Review Plan for Decommissioning," which is located at <http://www.nrc.gov/NMSS/DWM/DECOM/dosemodel.htm>.

[LTP References: Appendix 6.1; Section 6.2.2.; Haley and Aldrich Letter, March 31, 1999, appended to chapter 6.]

5. Criteria for Distinguishing Between "Contaminated" and "Uncontaminated Debris" - The LTP does not specifically identify what DCGLs or criteria will be used to distinguish between contaminated and uncontaminated debris. Considering that some of the debris will be used as fill material, please specifically identify the DCGLs, or criteria that will be used for distinguishing between contaminated and uncontaminated debris. In addition,

provide an appropriate basis for the selected DCGLs. It should be noted that DCGLs developed for contaminated soil may not be acceptable for contaminated debris (e.g., concrete). Therefore, an appropriate basis needs to be provided for use of these DCGLs for other contaminated media.

[LTP References: Section 6.2.2; Decommissioning Cost Update, SNEF, Document G01-1308-002, Rev 0, Section 3.2.1 which is appended to LTP Chapter 7.]

6. Gross Activity DCGLs - Please develop gross activity DCGLs for surface contamination. If these DCGLs cannot be provided at this time, explain when and how gross activity DCGLs will be provided. If you do not plan to use gross activity DCGLs, explain in more detail.

[LTP References: Sections 5.2.3.2.3 and 5.2.3.2.4.]

7. Stream Sediment as a Potential Exposure Pathway - Please either: (a) describe remediation plans for sediment in the stream bed and demonstrate that radionuclide concentrations in stream sediments do not exceed background; or (b) include *stream sediment, aquatic species, man* as an exposure pathway in the derivation of DCGLs.

[LTP References: Table 2-19; Section 6.2.2.2, 6.2.2.6; Appendix 6.1 Section 4.]

8. Resident Farmer Source Term Configuration - Please revise the LTP to clarify if the configuration of contaminated material proposed for the resident farmer dose analysis takes into account any radioactive material that will be associated with buried debris and if contaminated material will be buried in the saturated zone. If contaminated material will be buried in the saturated zone, information must be provided on the effect this would have on soil DCGLs.

[LTP References: Table 2-19; Section 6.2.2.]

9. Water Resources - Surface Water and Sediments - Please provide additional information (i.e. sample data from outfall sediments) regarding the potential presence of alpha emitters at historical outfalls.

[LTP References: Chapter 8 of the LTP--See section 5.5, pages 5-3 through 5-5 of the "SNEC Facility Decommissioning Environmental Report, Revision 1, February 2000." Also Chapter 5.0 of the LTP, section 5.2.1. Alpha emitters are also indirectly referenced in the LTP when transuranic (TRU) nuclides are listed in Table 2-1, page 2-24; mentioned in section 5.2.1; page 5-2; Table 5-1, page 5-6; and Table 5-4, page 5-19. Furthermore, sections 2.2.4.5, Groundwater, through Section 2.3.1, Summary of Soil Results, focus the discussion of gamma emitting radionuclides. However, the TRU nuclides are not discussed. Finally, section 5.5.3.6, Hard-to-Detect Radionuclides, discusses gamma detection but does not discuss either alpha and beta detection.]

10. Update of the Site-Specific Decommissioning Costs

- A. The update of the decommissioning cost estimate should only address the cost to decommission the remaining part of the facility. Based on the information provided in Section 7.1 of the LTP, it is not clear if the total initial cost to decommission the facility was \$35.5 million or if the \$35.5 million is the estimated cost to complete decommissioning of the facility as required by the regulation. Please clarify the scope of the cost estimate.
- B. Section 7.1 refers to a cost estimate prepared by TLG Services which is included in Appendix 7.1. The cost estimate does not include the cost to remediate the Saxton Steam Generating Station Discharge Tunnel which has been estimated to cost an additional \$4.0 million. To evaluate the validity of this estimate, please provide the bases for the estimate and include this additional cost in the total cost estimate. Also, the cost estimate does not include the cost to remediate the Saxton Steam Generating Station basement. Please provide a cost estimate and bases for the basement remediation.
- C. To provide a consistent basis for analysis, please adjust the remaining decommissioning costs to current year (2000) dollars.
- D. You have committed to fund the additional shortfall for the cost to remediate the Discharge Tunnel. The LTP states that the basis for this commitment is documented in GPU letter 1920-99-20304. Please describe the mechanism for increasing the Trust Fund if the Tunnel remediation exceeds the estimate, or if additional areas (such as the Steam Generating Station basement) are discovered during decommissioning that were not included in the revised cost estimate.
- E. The TLG cost estimate summary table entitled "4.0 Cost Estimate" summarizes the estimate cost to decommission the Saxton facility. Included in the 1998 Cost Estimate is a contingency factor of approximately \$2.0 million. Based on the resulting cost increase to remediate the Tunnel (or any other discovered additional areas not included in this cost estimate) at a cost of \$4.0 million, the contingency factor should be increased to the same percentage of the new total cost expressed in 2000 dollars.
- F. Although you have committed to cover the additional cost to complete decommissioning of the Tunnel from the general revenue of the Saxton owners, it is not clear that you have committed to cover all additional shortfalls from the Saxton general revenue. If you commit in the LTP to fund any additional increases in decommissioning cost from the Saxton general revenue, this approach may be acceptable to assure sufficient funds are available because the completion of the decommissioning effort is near-term. Please clarify.

[LTP Reference: Chapter 7 and Appendix 7.1]

References

- AEC, 1974. *Draft Generic Environmental Statement Mixed Oxide Fuel Recycle Plutonium in Light Water-Cooled Reactors*, Volume 3, Chapter IV, "Environmental Impact due to the Implementation of Plutonium Recycle." WASH-1327, Atomic Energy Commission, Washington, D.C.
- FR, 1998. Supplemental Information on the Implementation of the Final Rule on Radiological Criteria for License Termination, *Federal Register*, 63, 64132, November 18, 1998, Nuclear Regulatory Commission, Washington, D.C.
- GPU, 2000. *Saxton Nuclear Experimental Corporation License Termination Plan, Revision 0*, GPU Nuclear, Middletown, PA.
- NCRP, 1979. *Tritium in the Environment*. NCRP Report 62, National Council and Radiation Protection and Measurements, Washington, D.C.
- NRC, 2000. *Standard Review Plan for Evaluating Nuclear Power Reactor License Termination Plans, Final Report*. NUREG-1700, Nuclear Regulatory Commission, Washington, D.C.
- NRC, 1998. *Demonstrating Compliance with the Radiological Criteria for License Termination*. Draft Reg Guide 4006, Nuclear Regulatory Commission, Washington, D.C.
- NRC, 1998a. *Decision Methods for Dose Assessment To Comply With Radiological Criteria for License Termination*. Draft NUREG-1549, Nuclear Regulatory Commission, Washington, D.C.
- NRC, 1988. *Final Generic Environmental Impact Statement on Decommissioning of Nuclear Facilities*. NUREG-0586, Nuclear Regulatory Commission, Washington, D.C.
- NRC, 1997. *Multi-agency Radiation Survey and Site Investigation Manual (MARSSIM)*. NUREG1575, Nuclear Regulatory Commission, Washington, D.C.
- Wernig, M. A., A. M. Tomasi, F. A. Duran and C. D. Updegraff. 1999. *Residual Radioactive Contamination from Decommissioning*. NUREG/CR-5512, Volume 2. Sandia National Laboratories, Albuquerque, NM. Prepared for NRC.
- Yu, C., D.J. LePoire, L.G. Jones, and S.Y. Chen, 1994. *RESRAD-Build: A Computer Model for Analyzing the Radiological Doses Resulting from the Remediation and Occupancy of Buildings Contaminated with Radioactive Material*, ANL/EAD/LD-3, Argonne National Laboratory, Argonne, IL. Prepared for U.S. DOE.

Table 1. RESRAD 5.82 Parameters Requiring Justification.

RESRAD Menu Item	Description	Comments
D-34	Food transfer factors:	
D-34	Plant/soil concentration ratios, dimensionless	
D-34	Beef/livestock-intake ratios, (pCi/kg)/(pCi/d)	
D-34	Milk/livestock-intake ratios, (pCi/L)/(pCi/d)	
D-5	Bioaccumulation factors, fresh water, L/kg:	
D-5	Fish	
D-5	Crustacea and mollusks	
R013	Cover depth (m)	If used
R013	Density of cover material (g/cm**3)	If used
R013	Cover depth erosion rate (m/yr)	If used
R013	Density of contaminated zone (g/cm**3)	If used
R013	Contaminated zone erosion rate (m/yr)	If used
R013	Contaminated zone total porosity	
R013	Contaminated zone effective porosity	
R013	Contaminated zone hydraulic conductivity (m/yr)	
R013	Contaminated zone b parameter	
R013	Average annual wind speed (m/sec)	
R013	Humidity in air (g/m**3)	
R013	Evapotranspiration coefficient	
R013	Precipitation (m/yr)	
R013	Irrigation (m/yr)	
R013	Irrigation mode	
R013	Runoff coefficient	
R013	Watershed area for nearby stream or pond (m**2)	

Table 1. RESRAD 5.82 Parameters Requiring Justification (continued).

RESRAD Menu Item	Description	Comments
R014	Density of saturated zone (g/cm**3)	
R014	Saturated zone total porosity	
R014	Saturated zone effective porosity	
R014	Saturated zone hydraulic conductivity (m/yr)	
R014	Saturated zone hydraulic gradient	If non-dispersion model used
R014	Saturated zone b parameter	
R014	Water table drop rate (m/yr)	
R014	Well pump intake depth (m below water table)	If non-dispersion model used
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	If non-dispersion model used
R014	Well pumping rate (m**3/yr)	
R015	Number of unsaturated zone strata	
R015	Unsat. zone thickness (m)	
R015	Unsat. zone soil density (g/cm**3)	
R015	Unsat. zone total porosity	
R015	Unsat. zone effective porosity	
R015	Unsat. zone soil-specific b parameter	
R015	Unsat. zone hydraulic conductivity (m/yr)	
R016	Distribution coefficients for all isotopes	
R016	Contaminated zone (cm**3/g)	If > 0
R016	Unsat. zone 1 (cm**3/g)	If > 0
R016	Saturated zone (cm**3/g)	If > 0
R016	Leach rate (/yr)	If used
R016	Solubility constant	If used

Table 1. RESRAD 5.82 Parameters Requiring Justification (continued).

RESRAD Menu Item	Description	Comments
R018	Fruits, vegetables and grain consumption (kg/yr)	
R018	Leafy vegetable consumption (kg/yr)	
R018	Milk consumption (L/yr)	
R018	Meat and poultry consumption (kg/yr)	
R018	Fish consumption (kg/yr)	
R018	Other seafood consumption (kg/yr)	
R018	Soil ingestion rate (g/yr)	
R018	Drinking water intake (L/yr)	
R018	Contamination fraction of drinking water	
R018	Contamination fraction of household water	
R018	Contamination fraction of livestock water	
R018	Contamination fraction of irrigation water	
R018	Contamination fraction of aquatic food	
R018	Contamination fraction of plant food	
R018	Contamination fraction of meat	
R018	Contamination fraction of milk	
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	
R19B	Wet weight crop yield for Leafy (kg/m**2)	
R19B	Wet weight crop yield for Fodder (kg/m**2)	