GPU NUCLEAR

GPU Nuclear, Inc.
Route 441 South
Post Office Box 480
Middletown, PA 17057-0480
Tel 717-944-7621

E910-00-008
717-948-8720

June 8, 2000

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk – Roland Wood
Washington, DC 20555

Subject: Saxton Nuclear Experimental Corporation
Operating License No. DPR-4
Docket No. 50-146
Updated Safety Analysis Report

Gentlemen,

Please find attached the two missing pages from the submittal made previously of the SNEC Facility Updated Safety Analysis Report.

If there are any questions about the report, please contact Jim Byrne at 717-948-8461.

Sincerely,

G. A. Kuehn
Vice President SNEC

RDH/rdh

Attachment: Page 3-9 and 3-10 - SNEC USAR

cc: Alexander Adams
Thomas Dragoun

A053

NRR-091

3.7 LIQUID WASTE STORAGE VESSEL FAILURE

For a bounding estimate of the contents of a radioactive liquid waste storage tank, it is assumed that the floors and walls of the spent fuel pool (Area 6) were completely decontaminated using 500 gallons of water. The surface areas and mean smearable activity for these areas were take from the SNEC Site Characterization Report, Section 4.1.5 and Table 4-44 respectively. A smear efficiency of 10% was also assumed so the activity available for removal by decontamination was 10 times the smearable activity found. The total calculated activity is 103,685µCi.

Assuming this activity is contained in 500 gallons of water, the resulting nuclide concentrations using the Area 6 distribution are primarily composed of Co-60 (43.6%), N-63 (0.8%) and Cs-137 (54.9%), along with small fractions of Sr-90, Pu-238, Pu-239, Pu-241, and Am-241.

The tank is assumed to develop a leak and all of the liquid is released. It is assumed that a release fraction of 5E-5 of the activity in the tank goes airborne. This is a highly conservative assumption, as DOE-HDBK-3010-94 lists this as the bounding release fraction for a tank pressurized up to 50 psig. A tank used to store this type of liquid would be at atmospheric pressure so the release fraction should be substantially less than this value.

An atmospheric dispersion factor (X/Q) of 4.14X10-3 sec/m3 is used to calculate the airborne activity concentration at the site boundary (200 meters). This conservative value is calculated for a 1 m/s wind speed and a G stability category. Off-site doses are calculated using the parameters and methodology of EPA 400. The whole body dose to an individual standing at the site boundary for the duration of the release is calculated to be less than 5X10-3 mrem. This is a small fraction of the EPA PAG of 1000 mrem for the whole body. The liquid waste storage vessel failure accident poses no serious risk to the general public and has no significant environmental impact.

No liquid pathway evaluation was made, since the low volumes of liquid radwaste and their distance from the river would preclude direct entry into the river. Any entry into the river would be through the groundwater system. Any dose from this pathway would be insignificant since virtually all of the activity in the water would be bound up in the soil, and the release rate to the river via groundwater would be very slow.

3.8 IN SITU DECONTAMINATION OF SYSTEMS

Large-scale chemical decontamination of systems is not anticipated as part of the SNEC facility decommissioning. However, limited application may be used on systems or tanks to reduce radiation dose rates prior to dismantlement or general area decontamination. This type of decontamination employs the use of liquid decontamination agents that do not readily become airborne. Even during a spray release, droplets tend to readily plateout on building surfaces and equipment. Those droplets that remain airborne are readily captured by ventilation filtration systems prior to release to the environment. In addition, they are not instantaneous releases as would be the case with the dropped HEPA vacuum or explosion events. The nature of this type of event allows for mitigation of the release upon detection by airborne radioactivity monitors, whereas the explosion events previously analyzed do not permit mitigating actions until after the release has already occurred. As a result, radiological releases from accidents involving in situ decontamination of systems are considered bounded by the dropped vacuum and explosion events analyzed in Sections 3.3, 3.5 and 3.6.

3.9 LOSS OF SUPPORT SYSTEMS

Electric power, cooling water, and compressed air systems provide support to decommissioning activities. Loss of these systems could potentially affect many other systems and plant areas simultaneously. Each of these events is evaluated below.

A. Loss of Off-site Power

Offsite power is used to energize tools, cranes, lighting and air filtering equipment used during decommissioning operations. A loss of power to tools and lighting being used for decommissioning will result in an interruption of work activities, but does not result in the release of radioactivity. A loss of power to plant ventilation and filtering systems could result in the disruption of airflow paths and effective utilization of HEPA filters. In the event of loss of offsite power, work activities with the potential for airborne contamination will be suspended.

A loss of offsite power could result in loss of power to material handling equipment. Occupational Safety and Health Administration (OSHA) regulations require that crane hoisting units be equipped with a holding brake. A holding brake is a brake that