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October 8, 1998

Document Control Desk
ATTN: Heather Astwood
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U.S. Nuclear Regulatory Commission
Washington, D. C. 20555-0001

Subject: CaF₂ Area Survey & Release Plan

References: (1) NRC License SNM-1097, Docket 70-1113
(2) Final Survey & Release Plan, Rev. 2, 2/28/96
(3) Letter, KK McDaniel to RJ Reda, 4/16/96
(4) Letter, CM Vaughan to MF Weber, 3/20/98
(5) Letter, MF Weber to CM Vaughan, 4/6/98
(6) "Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM)", 12/97
(7) Draft Regulatory Guide (DG 4006) "Demonstrating Compliance with Radiological Criteria for License Termination", 8/98

Dear Ms. Astwood:

As part of activities conducted by the General Electric (GE) Company at Wilmington, N.C. in accordance with Reference (1), a decommissioning plan was submitted for the former NW CaF₂ storage area (Reference (2)). The plan was approved by NRC on April 16, 1996 via Reference (3).

The original plan anticipated completion of decommissioning activities and submittal of the final report within two years of that approval, or by 4/16/98.

Unfortunately, due to unseasonably heavy rainfall in both 1996 and 1997, the area to be surveyed has remained covered by water. GE submitted a request for an extension (Reference (4)) and NRC approved that request for an additional six month time period to allow for completion of our decommissioning efforts, with the anticipation that upcoming drier summer weather conditions would permit access to this area (Reference (5)).

Our region continues to experience unusual amounts of heavy rain. Portions of the former CaF₂ storage area remain under three to four feet of water preventing implementation of our Final Status Survey and Release Plan. Rather than continue to delay the decommissioning process, a slight modification to our release plan is requested.

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The approved Final Survey and Release Plan for this area was prepared using guidance from Draft NUREG/CR-5849, NRC "Manual for Conducting Radiological Surveys in Support of License Termination", dated 6/92. The plan is intended to provide sufficient information to demonstrate residual radioactivity levels permit release of this site for unrestricted use. The approved release criteria is 30 pci/gm total uranium averaged over the affected area at the 95% confidence level (BTP Option 1). Operational soil sample results collected following remediation indicate residual radioactivity levels are acceptable. As an added measure to provide assurance that "hot spots" are not present between sample locations, open land gamma scans were included in our final survey plan based on NUREG/CR-5849 guidance.

Subsequent to approval of Reference (2), additional guidance has been developed regarding decommissioning activities (Reference (6) and (7)).

For example, the Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM) was issued in December, 1997. In addition, the NRC has made available Draft Guidance 4006, "Demonstrating Compliance with Radiological Criteria for License Termination", dated August, 1998. Reference (7) (Section 2.11.1) addresses subsurface residual radioactivity assessment using sampling and laboratory analysis in lieu of scanning. It also addresses surface water (Section 2.11.5) by indicating that sediment samples should be taken at sample locations selected by the normal method without taking the body of water into consideration.

According to the MARSSIM (Section 5.5.2.2), the proposed final status survey design would require 48 surface (0 - 6") soil samples collected upon a 7 m triangular grid based upon existing data. Our current Final Status Survey & Release Plan requires a 5 m triangular grid pattern with 264 sample locations, i.e. one sample taken from each grid intersection. We believe this higher sampling frequency is a more appropriate method of detecting a "hot spot" during the final status survey of inaccessible areas than the gamma scan required by the approved plan and is consistent with the above guidance.

Based on the above, we propose to incorporate this recent guidance into our Final Survey & Release Plan for this area. Attached is the revised wording to Sections 4.3, 4.4 and 4.5 of our current plan indicating that the gamma scan and exposure rate survey will be performed only on accessible areas (i.e. areas not covered by water).

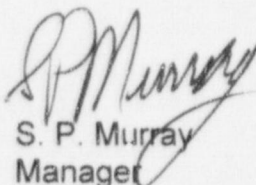
Sampling intervals consistent with our current plan (5 meter triangular grid) will be applied to subsurface sediment covered by surface water, according to the RG 4006 guidance.

We believe these modifications to the Final Survey and Release Plan will allow us to complete the decommissioning activities for this area. If approved, we intend to complete the sample collection, analyses and final reporting as soon as practical. It is anticipated that field work could be completed over the next few months. Sample analyses and final status report should be complete early next year. Therefore, we request a six month extension to our current schedule until 4/16/99.

Please contact me on (910) 675-5950 if you would like to discuss this request further.

Sincerely,

GE NUCLEAR ENERGY

A handwritten signature in black ink, appearing to read "S. P. Murray", is written over the printed name and title.

S. P. Murray
Manager
Facility Licensing

attachments

cc: SPM-98-046
DA Ayres - Region II

4.3 Gamma Radiation Scanning Survey

Open land surface scanning will be conducted using a 2" by 2" NaI detector and a scaler/ratemeter calibrated to provide a readout in counts-per-second (cps) using a Cs-137 source. The instruments will be operated in an audible mode during the scanning survey. The detector will be placed approximately six inches from the ground surface and personnel will swing the detector back and forth while advancing at a speed no greater than 0.5 meters-per-second. Personnel will follow paths in the affected area that are no greater than one meter apart. Only accessible areas within the affected area and a minimum of ten percent of the unaffected area will be covered in this manner. Survey personnel will identify and record the perimeter of any area where the alarm sounds and the maximum instrument response within each identified area. Survey personnel will also record the instrument response at any location where an audible elevation in count rate can be distinguished.

The sensitivity of this scanning technique will not be known unless soil samples from areas where measurements were recorded are analyzed. When those results become available, a statistical correlation may be made between surface soil activity and scanning measurements.

4.4 Exposure Rate Survey

The exposure rate survey will be conducted using a 2" by 2" NaI detector with a ratemeter calibrated for exposure rate ($\mu\text{R/h}$) using a Cs-137 source. The instruments will be set-up to obtain a one-minute integrated exposure rate measurement. The detector will be placed on a support approximately one meter from the ground. A systematic series of measurements will be taken across the site such that accessible areas within the affected area is covered at five-meter intervals. Approximately 30 measurements will be obtained in the unaffected area. Additional measurements may be made at locations identified during the gamma radiation scanning survey.

The Project Health Physicist will generate a survey map prescribing the locations for the exposure rate survey based on the results of the gamma radiation scanning survey. A map or other document will be used to record the survey results.

4.5 Soil Sampling

4.5.1 Sample Locations

For the affected area, sampling locations will be determined using a triangular, five meter by five meter by five meter, sampling pattern (Exhibit A-12). For surface water included in an affected area survey

unit, sediment samples will be taken using the same sampling pattern, without taking the body of water into consideration. Additional samples will be collected if warranted by the scanning survey, the exposure rate survey, or sampling results.

For the unaffected area, one surface sample will be taken from each ten by ten meter reference grid (Exhibit A-12). A judgmental approach will be used to determine the sample location within each grid. Sample locations will be determined by the Project Environmental Scientist. Unaffected areas will be reclassified as affected (and additional samples taken as specified for affected areas) if soil activity levels are determined to exceed 75 percent of the release criteria (or 22.5 pCi/g).

4.5.2 Sampling Methods

Surface (0 to 6 inches) soil samples will be obtained with a hand auger appropriate to the soil type in the sampling area. If samples cannot be collected in this manner, a scoop or shovel will be used. Samples will be homogenized. Aliquots will be removed and placed in appropriate containers for analyses.

Subsurface sediment (to a depth of approximately 36 inches) soil sampling will be accomplished using hollow stem augers with a split-spoon sampler (fitted with a sand retaining device, as necessary) appropriate to the soil type in the sampling area.

The sampling device will be driven, retrieved and emptied from the sediment surface until the desired depth is reached. Soil will be homogenized. Aliquots will be removed and placed in appropriate containers for analyses.

4.5.3 Number of Samples

Approximately 350 soil samples will be collected. Sampling in the affected area and the excavated overburden is expected to result in approximately 312 samples. Affected area sampling includes one surface sample collected at each of the 264 designated locations. Unaffected area sampling includes 34 surface samples (34 reference grids with one surface sample taken in each grid).

4.5.4 Compositing Samples

Composite samples may be generated using aliquots taken from individual samples. In general, each composite sample will be comprised of no more than two to three separate aliquots. Each aliquot will contain approximately the same volume of soil. Compositing will be performed