ORISE
OAK RIDGE INSTITUTE FOR SCIENCE AND EDUCATION

April 11, 2007

Mr. Craig Bassett
Mail Stop 12G-13
Office of Nuclear Reactor Regulation
Division of Policy and Rulemaking
U.S. Nuclear Regulatory Commission
Washington, DC 20555

SUBJECT: FINAL SITE-SPECIFIC DECOMMISSIONING INSPECTION PLAN FOR THE UNIVERSITY OF WASHINGTON RESEARCH AND TEST REACTOR, SEATTLE, WASHINGTON (DOCKET NO. 50-139)

Dear Mr. Bassett:

Enclosed is the Final Site-Specific Decommissioning Inspection Plan for the University of Washington Research and Test Reactor (Technical Proposal J-3036, Task Order No. 9). Given that no comments were received prior to implementation, this final document includes all of the same requirements as the draft version of the plan (issued on August 17, 2006). Although all independent verification activities have been completed at the University of Washington, ORISE is issuing this final plan as a formality given that the draft plan was not issued as a final version prior to its implementation.

If you have any questions, please direct them to me at 865.241.8893 or Scott Kirk at 865.574.0685.

Sincerely,

Sarah Roberts

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Health Physicist/Project Leader
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SJR:km

Enclosure

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FINAL
SITE-SPECIFIC DECOMMISSIONING INSPECTION PLAN FOR THE UNIVERSITY OF WASHINGTON RESEARCH AND TEST REACTOR SEATTLE, WASHINGTON

At the request of the Nuclear Regulatory Commission's Office of Nuclear Reactor Regulation, the Oak Ridge Institute for Science and Education has prepared this site-specific decommissioning inspection plan below for the University of Washington Research and Test Reactor in Seattle, Washington. This plan should be used as a checklist. The major elements of this site-specific inspection plan include the following eight areas:

1.0 GENERAL

2.0 IDENTIFICATION OF CONTAMINANTS AND RELEASE CRITERIA

3.0 AREA CLASSIFICATION

4.0 FINAL STATUS SURVEY PROCEDURES AND INSTRUMENTATION

5.0 ANALYTICAL PROCEDURES

6.0 IN-PROCESS AUDIT OF RADIOLOGICAL SURVEY TECHNICIANS

7.0 CONFIRMATORY SURVEY MEASUREMENTS

8.0 QA/QC AND DATA MANAGEMENT PROCEDURES

The following Nuclear Regulatory Commission (NRC) Inspection Procedures may be used for guidance, in part, during this inspection:

- Inspection Procedure 83801 – Inspection of Final Surveys at Permanently Shutdown Reactors
- NRC Inspection Manual, Chapter 2561 "Decommissioning Power Reactor Inspection Program"

Portions of the following documents and computer software applications will be used as appropriate for guidance during this inspection:

- Draft NUREG/CR-5849, "Manual for Conducting Radiological Surveys in Support of License Termination"
- Final Status Survey Plan for the University of Washington More Hall Annex D&D Project
- "Quality Assurance Manual for Office of Nuclear Material Safety and Safeguards"
- ASME-NQA-1, the "Quality Assurance Program Requirements for Nuclear Facilities," Quality Assurance Manual for the Office of Nuclear Material Safety and Safeguards

- Independent Environmental Assessment and Verification Program, "Survey Procedures Manual"
- Independent Environmental Assessment and Verification Program, "Quality Assurance Manual"
- COMPASS v1.0
- Other guidance as directed by the NRC/NRR Project Manager

1.0 GENERAL

1.1 Review past records of spills or other releases of radioactive material and documentation of cleanup.

1.2 Tour plant areas to obtain familiarity with the facility, surrounding areas, and decommissioning work completed. Review the licensee's plans and schedule for completing further decontamination work and surveying of the facility.

2.0 IDENTIFICATION OF CONTAMINANTS AND RELEASE CRITERIA

2.1 Review previous measurement and analytical results to confirm the nature of the site information and contaminants at the site. In particular, review the data that relate to the licensee's determination of radionuclide ratios, fractional contributions to total activity and variability.

2.2 Review the Release Criteria that the licensee will use for structure surfaces and embedded piping. Verify that the licensee has accounted for all media for which final status surveys will be designed.

2.3 Evaluate how the Release Criteria will be implemented—e.g., use of surrogate measurements and modified Release Criteria, Elevated Measurement Comparison—to determine how samples/measurements will be compared, and implementation of the unity rule.

3.0 AREA CLASSIFICATION

3.1 Based on plant area tours and review of characterization and other survey results, evaluate the licensee's technical basis for site classification as Affected versus Unaffected areas.

3.2 For Affected Areas, review the available information and data used for initially classifying the areas.

4.0 FINAL STATUS SURVEY PROCEDURES AND INSTRUMENTATION

4.1 Building Surface Survey Instrumentation

4.1.1 Review the calibration and performance check procedures. Ensure calibrations will account for any environmental or other factors that could potentially impact performance. Evaluate the appropriateness of the calibration source energies in determining instrument efficiencies and any applied weighting factors relative to the radionuclides of concern. Evaluate the licensee's selection of surface efficiency value(s). Review the survey instrumentation operational checkout procedures and acceptance parameters.

4.1.2 Review both the scanning and static measurement minimum detectable concentration (MDC) determinations.

4.1.3 Review the procedures for field use of instrumentation and evaluate that any *a priori* factors that may impact use in the field have been accounted for, such as scan speed and background variability. Review training records of personnel who will operate survey instrumentation.

4.2 Final Status Survey Procedures

Review final status survey procedures and planning documents for the following:

4.2.1 Verify the adequacy of reference areas selected by the licensee for assessing background contributions to surface activity levels and other volumetric media (if applicable).

4.2.2 Review procedures for establishing survey unit boundaries. Review maps showing preliminary survey unit designations.

4.2.3 Review procedures for determining the required number of measurements.

4.2.4 Review procedures for required scan coverage based on survey unit classification.

4.2.5 Review methods for evaluating areas of elevated activity detected during scans.

4.2.6 Review proposed investigation levels and adequacy relative to the required and actual scan MDCs.

4.2.7 Review selection process for measurement locations in survey units.

4.2.8 Review proposed procedures and any associated factors for surveying embedded piping or other difficult to access or inaccessible areas.

4.2.9 Review methods for determining when media sampling is required for structural surfaces.

4.2.10 Review sampling and chain-of-custody procedures.

5.0 ANALYTICAL PROCEDURES AND COMPARISON ACTIVITIES

5.1 Review the laboratory instrumentation and analytical methods that will be used for sample analysis. Determine appropriateness and sensitivity of the selected equipment for the radionuclides of concern.

5.2 Review the licensee's procedures for sample collection, packaging, chain-of-custody (COC), and shipping.

6.0 IN-PROCESS AUDIT OF RADIOLOGICAL SURVEY TECHNICIANS

Review the licensee's radiological survey technician's implementation of the final status survey. Specifically:

6.1 Understanding of the concepts of the Final Status Survey Plan and associated documents and procedures as outlined in the Final Status Survey Training Manual.

6.2 Adherence to the specifications of the survey instructions generated by the licensee for final status survey field implementation.

6.3 Performance of surface scans—evaluate the procedures/protocols for identifying areas of elevated direct radioactivity for investigation. Compare the procedures/protocols for adequacy relative to the *a priori* scan MDC determination.

7.0 CONFIRMATORY SURVEY MEASUREMENTS

Select survey units for confirmatory surveys. Survey unit selection should be chosen randomly and/or judgmentally based on data reviews and in-process audits of radiological survey technicians.

Perform alpha+beta surface scans using gas proportional detectors coupled to ratemeter-scalers with audible indicators. Scans should be performed over 50 to 100% of selected survey units. Mark areas of elevated direct radioactivity for further investigation. Perform direct and exposure rate measurements in each survey unit—the selected number of measurements will be dependent on the licensee's modified guideline levels and surface scan results. Direct measurements will also be performed at locations corresponding to licensee measurements for direct data comparison. The licensee will also be requested to perform direct measurements at five to ten judgmental confirmatory survey locations.

8.0 QA/QC AND DATA MANAGEMENT PROCEDURES

Review the licensee's Quality Assurance/Quality Control (QA/QC) and data management procedures for the final status survey. Specifically:

8.1 Review the licensee's QA/QC procedures as they relate to final status survey personnel training requirements and final status survey data acceptance criteria.

8.2 Review the licensee's data management system that will be used to track field and analytical results.