ATTACHMENT

ORISE

OAK RIDGE INSTITUTE FOR SCIENCE AND EDUCATION

March 1, 1993

Mr. Ken Lambert
Region III
Nuclear Regulatory Commission
799 Roosevelt Road
Glen Ellyn, IL 60137

SUBJECT: FINAL RADIOLOGICAL STATUS REPORT, OLD VIC, INC.

Dear Mr. Lambert:

The Environmental Survey and Site Assessment Program (ESSAP) of the Oak Ridge Institute for Science and Education (ORISE) has reviewed the subject document, the decontamination and decommissioning plan, and the associated comment letters from the NRC and the licensee, and offers the attached comments for your consideration.

If there are any questions regarding these comments, please direct them to Michele Landis at 615-576-2908 or to me at 615-576-0065.

Sincerely,

Wade C. Adams

Wade C. Adams
Project Leader/Health Physicist
Environmental Survey and
Site Assessment Program

WCA:ttc

Attachment

cc: T. Mo, NRC/NMSS, 6H3
D. Tiktinsky, NRC/NMSS, 6E6
J. Hickey, NRC, 6H3
J. Swift/F. Brown, NRC, 6H3
NRC/PMDA, 6E6
J. Berger, ORISE/ESSAP
M. Landis, ORISE/ESSAP
File/208

GENERAL (All documentation)

1. Appropriate formulas and example calculations for direct measurements and MDAs should be provided.

2. Further details should be provided to evaluate the adequacy of the following (particularly for rooftop and outdoor survey activities):

   (a) Survey methodologies and equipment used for:

   (1) surface scans
   (2) direct measurements
   (3) sample collection
   (4) duplicate samples

   (b) QA/QC methodologies field survey and laboratories performing analyses on samples.

3. The results of the Oak Ridge Associated Universities (ORAU) survey indicated Cs-137 contamination in a concrete sample in the northwest corner of the second floor near the radioactive materials storage area. Based on these preliminary results, ESSAP feels that these sampling activities should be included within the scope of the final-status survey.

4. In outdoor areas where surface contamination was found, ESSAP suggests that data be provided to the NRC which addresses the radiological status of the subsurface soil.

5. A discussion of the levels or ranges of activity and sample analyses results should be included in section 5.0 (Survey Findings and Results). The intent of this section in NUREG/CR-5849 was to describe the results of surface scans, surface activity measurements, sampling, exposure rate measurements and to compare those results with guidelines. Also provide unambiguous statement as to whether guidelines have been met.

6. The dose rate should be listed in units of microrad/hr. The NRC guideline for exposure rates is 5 µR/h above background. The exposure rate guideline for this site and the site background should be provided since it is not possible to compare exposure rate conditions with guidelines without a site background level.

7. The data provided appears to satisfy guidelines, but additional information is suggested to enable others to independently evaluate the report and site status.

8. The "Decontamination and Decommissioning Plan for Old Vic, Inc." (May 1992) states that the design of the site assessment would be in accordance with NUREG-2082. The subject document states that the final-status survey will follow NUREG/CR-5849. Were these changes documented and approved by the NRC? Were there any deviations from NUREG/CR-5849 and, if so, did the NRC agree to the deviations? For specific examples see General comments 5 and 6 and Specific comments 1, 2, 3, and 4.

9. Different parts of the ORAU report mention soil sampling at the fence boundaries and soil guidelines for the site. As stated in a letter to Ken Lambert (US NRC Region III) from Bradley Jones (Counsel for "21" International Holdings, Inc.) data on June 29, 1992, "soil samples will be collected and analyzed from areas which produce net gamma radiation levels which exceed two times the average background radiation....". It has been ESSAP's experience that typical instrumentation used to determine exposure rates is unable to determine elevated activity within soil at soil guideline levels. Were beta activity (Ni-63) concentrations addressed? A representative number of soil samples should be collected to determine if there is possible soil contamination.

10. It is not clear if surface scans of exterior surfaces were performed with instruments other than a micro-R meter.

11. As per the decommissioning plan (page 18, paragraph 3), a Ludlum Model 43-20 gas proportional detector was used for the detection of low-energy beta activity. The efficiencies, active area, and window thickness listed differ from the Ludlum catalog. Please provide an explanation for the differences.

12. Were all issues raised by the NRC and the State of Ohio, Department of Health, addressed by the licensee or its contractor?

13. As per the "Interim Report of Radiological Characterization Survey," dated October 1992, spot surveys performed on the roof detected contamination above the criteria. Were these areas reclassified and were survey activities adjusted accordingly?

SPECIFIC (Final Radiological Status Report)

1. Page 4, paragraph 2—All possible contaminants listed in the 1991 ORAU report, i.e., C-14, Co-57, Sr-90, Tc-99, Pb-210, U-238, and Am-241 should be addressed.

2. Page 13, Table 4:

   2.1 The MDA for alpha scintillation detectors should be stated in units comparable to the guideline values.

   2.2 The MDA for the 43-68 gas proportional detector calibrated with a Ni-63 source was 500 to 1000 dpm/100 cm^2. Based on previous ESSAP experience, these MDAs appear to be low. Provide data to show how MDA was determined (See General Comment #1).

   2.3 The background level (or range) should be stated for the micro-R meter, GM detector, and alpha scintillation detector.

3. Page 15, paragraph 2—Unaffected areas were defined as "areas not suspected of having detectable contamination based on 1990 Oak Ridge survey report." The 1990 (sic. 1991) Oak Ridge Survey Report, which the referenced report describes, was not intended as a characterization survey and was conducted for the sole purpose of generally assessing the

levels and extent of residual activity in the facility. As per NUREG/CR-5849, unaffected areas should also be classified by knowledge of site history. Were areas previously identified as unaffected areas that exceeded 25% of the site and/or NRC guideline levels reclassified as affected areas?

4. Page 16, paragraph 3—It is unclear whether the 1 m^2 average guideline level was met by this procedure. Were there multiple elevated areas within a grid square that exceeded the 5,000 dpm/100 cm^2 NRC guideline (or 2,500 dpm/100 cm^2 site guideline) and if so, were all such area measurements considered in the calculation for the grid square average? Were the areas of contamination less than or greater than the probe size? The locations and surface areas of elevated activity should be provided in figures and/or tables.

5. Page 17, paragraph 2—Were any survey activities or analyses performed on drain lines above the first floor? If so, sampling locations should be indicated in figures.

6. Page 18, paragraph 1—What is the efficiency for low-energy beta activity for the smear counting system? Since the identified contaminants contained gamma emitters, it would be prudent to perform gamma spectrometry on certain miscellaneous (concrete, paint, residue, etc.) samples.

7. Page 24, section 5.7—Provide an explanation as to why direct measurements and surface scans were not performed on overhead structures. Figures, should be provided that indicate smear sampling locations on overhead structures.

8. Page 27, paragraph 1—See specific comment #4.

9. Appendix C, "Figures"—There is only one figure in this appendix and it relates "man-hours" to "project duration". Figures indicating affected areas and which areas required remediation (to include outdoor areas, the catwalk, etc.) should be provided. Figures should also indicate where miscellaneous (drain, residue, paint, etc.) sample and outdoor sampling was performed.

10. Appendix D, "Laboratory Reports of Sample Analyses"—What criteria were used to determine which drains had to be decontaminated? Describe procedures for collecting and analyzing drain samples.