



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D. C. 20555

June 19, 1980

DOCKET NO.: 70-1319  
APPLICANT: U.S. Nuclear, Inc. (USN)  
FACILITY: Oak Ridge, Tennessee  
SUBJECT: REVIEW OF USN'S REQUEST FOR TERMINATION OF SPECIAL NUCLEAR  
MATERIAL LICENSE NO. SNM-1315 AND RELEASE OF THE FACILITY  
FOR UNRESTRICTED USE  
REVIEWER: A. L. Soong

Background

U.S. Nuclear, Incorporated of Oak Ridge, Tennessee ("the licensee") is the holder of Special Nuclear Material License No. SNM-1315 issued by the Commission. The license authorized the possession and use of up to 300 kilograms of U-235 as contained in uranium enriched to greater than 90% in the U-235 isotope. The licensee fabricated high-enriched uranium-aluminum fuel elements for research reactors in the United States and abroad. The license was issued November 6, 1973, and was due to expire on August 31, 1978; however, by letter dated March 2, 1977, USN informed the Commission that they were phasing down their operations for financial reasons and were planning to decontaminate the facility and equipment so they could be released for unrestricted use.

On April 27, 1977, the Commission issued an order to retake possession of SNM with the exception of that SNM remaining as contamination. Simultaneously, the order reduced the USN possession limit to less than 700 grams U-235 in the form of contaminated facilities, equipment, materials and cleanup solutions. The authorized use was restricted to possession<sup>+</sup>for the purpose of decontaminating the facility.  
only

By letter dated January 29, 1979, USN formally requested the termination of the Special Nuclear Material License and the release of the facility for unrestricted use. In supporting its request, USN also submitted a final radiological survey report of the facility and equipment (Enclosure 1) to show that the measured contamination levels at the facility were below the

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Commission's "Guidelines for Decontamination of Facilities and Equipment Prior to Release for Unrestricted Use or Termination of Licenses for Byproduct, Source or Special Nuclear Material," dated November 1976 (Enclosure 2). After reviewing USN's survey report, the FCUF staff requested IE, Region II, to conduct a confirmatory survey to verify that the contamination levels in the facility are in fact below the Commission guidelines. The confirmatory survey was conducted by Oak Ridge Associated Universities (ORAU) under Commission contract. The ORAU survey was made in accordance with the statement of work issued by the Commission and documented in a report dated January 10, 1980 (Enclosure 3). On March 27, 1980, the Region II inspector conducted a final inspection of the USN facility and concluded that the contamination levels in the facility met the Commission guidelines for releasing the facility for unrestricted use (Enclosure 4, letters from IE office dated May 30, 1980; May 5, 1980 and April 29, 1980) and recommended termination of the Special Nuclear Material License.

### Discussion

The results of the radiological survey reported by the licensee and ORAU and the final facility inspection made by IE have shown that residual contamination levels in the facility are below the guidelines for releasing the facility for unrestricted use. This is indicated in the Table I below.

Table I

Average Contamination Level in the USN Facility  
(data measured by ORAU)  
Alpha Activity Level dpm/100 cm<sup>2</sup>

<u>By Direct Reading</u>		<u>Removable</u>	
<u>USN</u>	<u>NRC Guidelines</u>	<u>USN</u>	<u>NRC</u>
<u>Average</u>	<u>Range</u>	<u>Average</u>	<u>Range</u>
180	48-3672	12	6-1129*
			1000

\*Only 1 out of 1200 measurements exceed 1000 dpm/100 cm<sup>2</sup>

Beta-Gamma Levels dpm/100 cm<sup>2</sup>

Removable Level

<u>USN Level</u>		<u>NRC Guideline</u>
<u>Average</u>	<u>Range</u>	<u>--</u>
62	62-900	1000

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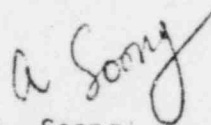
Table I is a summary of the confirmatory survey performed by NRC's contractor, ORAU. This summary indicates that the average and maximum total alpha activity are well below NRC guidelines. The average removable alpha contamination was also well below NRC guidelines (12 vs. 1000 dpm/100 cm<sup>2</sup>); however, one sample slightly exceeded the guidelines; it measured 1129 dpm/100 cm<sup>2</sup>. The staff has agreed that this deviation is insignificant. The removable Beta-Gamma contamination, as indicated, was also within NRC guidelines.

All contaminated equipment at USN has either been removed and delivered to Department of Energy facilities, decontaminated to the acceptable levels or disposed of as radioactive waste to a licensed burial ground.

Environmental samples including water, soil, groundwater and sediment were taken from the area surrounding the facility. The analytical results of these samples have shown that except for two soil samples, the contamination levels were no greater than background level. The two soil samples (one was taken from the rear of the main building near the loading dock, the other taken from the rear of the same building near the S.W. exit) were found to have a contamination level of U-235 of 597 pCi/gm and 891 pCi/gm, respectively. The soil in these two areas was removed by the licensee reducing the levels essentially to background. The licensee indicated that the soil was probably contaminated during the removal of the contaminated equipment by the Department of Energy.

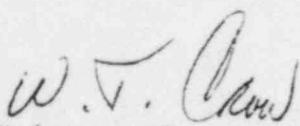
#### Conclusion

Based on the findings in the current assessment, the release of the USN facility for unrestricted use represents an insignificant risk to the public health and safety and to the environment. Therefore, it is recommended that USN's Special Nuclear Material License No. SNM-1315 be terminated and the facility released for unrestricted use.



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Approved by



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Enclosures: As stated