U. S. NUCLEAR REGULATORY COMMISSION
REGION I

Report No. 99990001/90-014

Docket No. 040-00772

License No. STB-424 (expired)

Licensee: Allied-Signal Bendix Aerospace
Teterboro, New Jersey 07608

Facility Name: Allied-Signal Bendix Aerospace

Inspection At: Allied-Signal Bendix Aerospace,
and MetPath, Incorporated,
Teterboro, New Jersey 07608

Inspection Conducted: November 30 and December 5, 1990

Inspector: Betsy Ullrich, Senior Health Physicist — date: 1/9/91

Approved by: John D. Kinneman, Chief
Nuclear Material Safety Section B — date: 1/10/91

Inspection Summary: Routine, announced safety inspection, conducted November 30 and December 5, 1990. (Inspection Report No. 99990001/90-014)

Areas Inspected: Organization and scope of activities; remediation of the West Drainage Ditch Bank; site surveys and analysis of samples; packaging of waste and transfer for disposal.

Results: No violations were identified.

DETAILS

1. Persons Contacted

*Mark Schwind, Allied Signal Bendix Aerospace
Matt Watson, Allied Signal Bendix Aerospace
Virginia Barnett, EBASCO
Lee Hagmon, EBASCO
Jim Mayberry, EBASCO
Les Skoski, EBASCO
Julian Entebbe, ERES
James Heeney, ERES
Steve Boykewich, State of New Jersey

2. Organization and Scope of Activities

In January, 1988, drums containing thorium material were discovered buried in the bank of a ditch along a 100 acre property where Bendix Aerospace Company formerly owned and operated a magnesium thorium foundry. Radioactive contamination was also identified in several areas across the site. Approximately 70 acres of the site is currently owned by Allied-Signal Bendix Aerospace (Bendix).

Part of the remaining site, including the location of the buried drums, is currently owned by Metpath, Inc. and the remainder is owned by Sumitoma Machinery Corporation. Representatives of Bendix agreed to coordinate the activities required to characterize and remediate the contamination on the site. Sumitoma declined to work with Bendix, and pursued remediation independently.

Bendix hired EBASCO Services Incorporated to develop and implement a decommissioning plan for the site. The "West Drainage Channel Bank Stabilization Plan" was approved by the NRC Region I office in September, 1989. A retaining wall surrounding the drums in the bank was completed in April 1990. The Bendix "Field Sampling and Analysis Plan" was approved in February, 1990. Sampling of the site was completed in March, 1990, and the "Final Radiological Characterization Report" was submitted to Region I for review in August 1990. Except for the thorium in the drums, the characterization identified only radium-226 contamination on the site. Based on the results of this report, a "Final Radiological Clean-Up Plan" was submitted in October 1990, which described plans for the removal of the drums and thorium-contaminated soil along the ditch bank, and the removal of radium-226 contaminated soil identified on site. The plan for removal of the drums was approved by the Region I Office in November, 1990. Removal of drums along the ditch began on November 28, 1990 and was completed by December 6, 1990.

Remediation activities were performed by representatives of EBASCO Environmental Division of EBASCO Services, Incorporated and ERES (Eastern Remedial Environmental Services, Inc.) The activities on site were observed by representatives of Bendix, the State of New Jersey, and Region I.

3. Remediation of the West Drainage Ditch Bank

Drums and contaminated soil were removed from the ditch bank by backhoe. Material removed from below the waterline of the ditch was dewatered prior to packaging for disposal. Water from the process was contained in tanks until sample analysis could be performed to determine the disposal method required. Approximately seventy 55-gallon drums were removed from the ditch bank. In some areas two layers of drums were identified and one area contained a triple layer of drums. The drums had deteriorated so that no complete container was identifiable, although the contents of some drums had maintained the shape of the original container. Soil was removed from around and under the drums until virgin clay was identified by a geologist, to be certain that no drums were missed. Soil was excavated from the ditch until samples measured less than 5 pCi/g total activity.

A photographic history of the ditch and drum removal was made, using both still photographs and videotape.

A permeable membrane was placed at the surface level of the ditch when it was determined that no more soil needed to be removed. Certified soil was placed over the membrane to backfill the ditch.

No violations were identified.

4. Site Surveys and Analysis of Samples

Radiation level surveys were performed in and around the ditch by the EBASCO representatives using an ESP-2 survey meter with a SPA-3 probe. Radiation level surveys were used as a first-level identification of areas in the ditch requiring additional removal of contaminated soil. When virgin clay was reached, or if radiation levels were sufficiently low, soil samples were taken to determine if further remedial action was needed.

The EBASCO representatives planned to take 280 samples from the ditch for screening in their on-site counting system. Screening was performed on-site to identify areas requiring further excavation to meet the limits for release for unrestricted use. Duplicate samples were taken for analysis at the off-site laboratory. One-fourth of all samples will be sent for gamma spectroscopy analysis at an outside laboratory.

The on-site counting system was located in a trailer on the site in a low-background area. It consisted of an Eberline ESP-2 counting meter connected to a SPA-3 detector housed in a lead brick cave. Samples were placed in the cave chamber for counting. Records reviewed indicated that the system was calibrated and operated as described in the Final Clean-Up Plan.

Six confirmatory samples were split by EBASCO representatives for comparative analysis in the Region I Laboratory. These samples were identified as SL-302, SL-303, SL-304, SL-309, SL-314, and SL-321. Results of the analysis will be forwarded to Bendix at a later date.

No violations were identified.

5. Packaging of Waste and Transfer for Disposal

Contaminated soil and thorium was placed in B-25 boxes for shipment for disposal. The boxes were lined with plastic prior to filling, and marked with a number after filled. The volume of each B-25 box is 90 cubic feet. Bendix representatives estimated that each filled box weighed between 3 and 3.5 tons.

Ten samples of thorium material were taken from the drums and ten samples of contaminated soil were taken from the ditch, prior to packaging the material in the B-25 boxes. Results of the analyses of the samples were used to determine the average concentration of thorium in the B-25 boxes. EBASCO representatives determined the averaged concentrations of thorium-232 to be 3.3 pCi/g. They also stated that the maximum thorium concentration measured in any sample was 14 pCi/g. This is below the minimum concentration of 2000 pCi/g which requires packaging and labeling in accordance with the transportation regulations of Title 49 of The Code of Federal Regulations.

Approximately 45 B-25 boxes were filled with material from the ditch bank between November 28 and December 5. Boxes were shipped to the Envirocare facility in Utah for disposal beginning on December 5. Shipping was expected to be completed by December 12, 1990.

Each truck held four B-25 boxes. The manifests were reviewed for two shipments on the afternoon of December 5, 1990. Each manifest listed a total activity per box of 0.012 mCi of thorium-232 and 0.001 mCi of radium-226. Radiation level measurements were made by The State of New Jersey inspector using a Ludlum micro-R survey meter. Readings at the surface ranged from 13 microroentgen per hour (uR/h) to 425 uR/h. Measurements at approximately one meter from the boxes ranged from 11 uR/h to 85 uR/h. These measurements were also recorded on the manifests.

6. Exit Interview

The results of the inspection were discussed with the individual identified in Paragraph I at the end of the inspection. The Bendix representative expected to complete packaging and shipping of thorium-contaminated soil by December 12. A report of the results of analyses will be sent to Region I with a request to release the site for unrestricted use.