

U.S. NUCLEAR REGULATORY COMMISSION
REGION I

Report No. 030-13089/89-001

Docket No. 030-13089

License No. 17-16109-01 Priority 4 Category K

Licensee: The GNI Group
First City Tower
1001 Fannin Street
Suite 4656
Houston, Texas 77002

Facility Name: Gamma Industries

Inspection At: 1 Gamma Drive
Port Norris, New Jersey

Inspection Conducted: April 27, 1989

Inspectors: John T. Jensen
John T. Jensen, Health Physicist

12/27/89
date

John D. Kinneman
John D. Kinneman, Health Physicist

12/27/89
date

Approved by: John D. Kinneman
John D. Kinneman, Chief
Nuclear Materials Safety Section B

12/27/89
date

Inspection Summary: Closeout safety inspection conducted April 27, 1989
(Report No. 030-13089/89-001)

Areas Inspected: A safety closeout inspection was conducted to confirm the licensee's survey of their facility in Port Norris, New Jersey. Areas of the facility and the adjacent property were surveyed to identify removable and non-removable contamination and any remaining radioactive materials.

Results: No apparent violations were identified.

The licensee's survey does not accurately reflect the condition of the property adjacent to their facility. The survey did not detect radiation levels which were above the natural background in three areas approximately 35 feet from the rear of the building. In addition, the licensee's survey does not accurately reflect the condition of the areas surveyed within the building. Their survey did not detect non-removable contamination levels within the building which were in excess of the limits in the NRC, "Guidelines for Decontamination of Facilities and Equipment Prior to Release for Unrestricted Use or Termination of Licenses for Byproduct, Source or Special Nuclear Material". Areas of removable contamination were not identified.

DETAILS

1. Persons Contacted

*Carl V. Rush, Jr., President, The GNI Group
**Roy Parker, Ph.D., Consultant

*contacted by telephone on February 2, 1989
**contacted by telephone on February 17, 1989

2. Instrumentation in Surveys and Sample Analysis

Radiation level measurements were made with a Ludlum Model 19 Geiger-Mueller (GM) detector (NRC No. 9499, calibrated on January 4, 1989), a Ludlum Model 16 GM detector (NRC No. 884, calibrated on April 18, 1988) and an Eberline Model ESP-2 meter with a Model SPA-3 gamma scintillation probe (NRC No. 21945, calibrated on September 14, 1988). Soil samples and removable contamination samples (filter paper wipes) were analyzed using a germanium-lithium detector and multi-channel analyzer.

3. Use of Materials

Approximately 12 years ago, Gamma Industries ceased encapsulating cobalt-60 teletherapy sources at the Port Norris, New Jersey facility. The facility remained unoccupied until June, 1984 when Gulf Nuclear, which later became a subsidiary of the GNI Group, purchased Gamma Industries' assets. Areas of radioactive contamination within the facility and buried radioactive material on the property adjacent to the facility were identified. Site excavations removed 19, 55-gallon drums containing a total of 62 millicuries of cobalt-60. Decontamination of the facility and removal of buried drums was completed in February, 1985. The licensee performed a final survey of the facility and adjacent areas in December, 1985.

4. Facility Contamination Surveys

The inspectors performed surveys for removable and non-removable contamination throughout the facility. The results of the removable contamination surveys using filter papers indicated that there is no removable radioactive contamination in the 18 areas surveyed.

Radiation level surveys of the hot cell floor indicated average levels of non-removable contamination of approximately 58k dpm over an area greater than one square meter. The highest radiation level, 784k dpm, was measured over a 50 square centimeter area on the hot cell floor. The average and maximum non-removable contamination levels measured in the hot cell are in excess of the limits in the NRC "Guidelines for Decontamination of Facilities and Equipment Prior to Release for Unrestricted Use or Termination of Licenses for Byproduct, Source or Special Nuclear Material" ("Decontamination Guidelines"). The results of the inspectors' survey of

the hot cell do not agree with the licensee's survey results. The licensee measured contamination average levels of approximately 3k dpm per 100 square centimeters and a maximum of 14k dpm per 100 square centimeters in the hot cell.

Radiation level surveys indicated one area on the loading bay floor that measured up to 58k dpm over an area of less than 100 square centimeters. Areas on the floors in other rooms within the building measured up to 8k dpm. Although the results of the inspectors survey indicate greater levels of contamination than those detected by the licensee, no areas in excess of the limits in the U.S. NRC "Decontamination Guidelines" were identified outside of the hot cell.

5. Contamination Surveys of the Adjacent Property

The inspectors performed radiation surveys within a radius of approximately 200 feet from the licensee's building. The inspectors took soil samples from three areas behind the licensee's building and a background soil sample from the road approaching the building. The surveys identified three areas with radiation levels greater than background. The contaminated areas are approximately 100 square centimeters; they measured 45, 50, and 75 microrem per hour at contact with the soil; they are approximately 35 feet from the rear of the building's southeast corner; they are on a line parallel to the building's back wall; and they are approximately 10 feet apart. Measurement of a soil sample taken from the area with a contact reading of 75 microrem per hour indicated a concentration of approximately 1,600 picocuries of cobalt-60 per gram of soil. After removal of about one inch of soil from the location reading 75 microrem per hour, the radiation level of the sub-surface soil did not appreciably change. The depth of the soil contamination was not determined.

Soil samples taken adjacent to the outside wall of the hot cell and from approximately 60 feet to the rear of the buildings southeast corner did not indicate any radioactive contamination significantly greater than background levels.

The licensee's survey did not identify any areas of radioactive contamination in excess of normal background on the property adjacent to their facility.

6. Exit Interview

The inspectors discussed the results of the inspection during telephone conversations with Carl V. Rush, Jr. and Roy Parker, Ph.D., on April 28, 1989 and May 3, 1989, respectively.