

License No. 29-08636-02
Docket No. C30-11318
MLER-RI - 96-049

Schlumberger Wireline & Testing

EMR Photoelectric
P. O. Box 44
Princeton, NJ 08542-0044
(609) 799-1000
(609) 799-2247 (fax)

NRC License #29-08636-02

November 4, 1996
RSO:96-32

NRC Administrator
U. S. Nuclear Regulatory Commission
Region 1
475 Allendale Road
King of Prussia, PA 19406

RE: Lost Instrument Containing Tritium

Dear NRC Administrator:

One of Schlumberger's DT accelerators containing tritium was lost in shipping from Mexico City, Mexico to EMR Photoelectric, Princeton Junction, New Jersey.

Description of the licensed material lost: The licensed material lost was 1.3 Curies (4.8×10^{10} Bq) of tritium in the form of hydrides of titanium and zirconium in a sealed, ceramic, DT accelerator (Minitron). The DT accelerator or Minitron is an NRC Registered device, Reg. No. NR-316-D-101-S and is made from ceramic and metal rings that are brazed or welded together. The resulting device is sufficiently rugged to withstand the temperature and shocks encountered in oil field logging and is used to generate neutrons for measurements in oil wells.

Every ceramic DT accelerator is tested to 200 C at EMR Photoelectric before original shipment to the oil field. The ceramic to metal brazing temperatures are above 750 C. The DT accelerator is about 3.2 cm in diameter and 20 cm long. The cylindrical, ceramic walls are approximately 2.5 mm thick. The Minitrons have been shock tested to 500 g without any seal rupture or breakage of the ceramic sections.

The tritium (1.3 Curies or 4.8×10^{10} Bq) is bound to an internal copper stalk as titanium hydride and to an internal tungsten filament as zirconium hydride.

Description of the circumstances under which the loss occurred: Eight Minitrons in two packages were shipped by Schlumberger Offshore Services (Mexico) to EMR Photoelectric for evaluation.

Continental Air Cargo transported the Minitrons from Mexico City to Philadelphia, Pa. (AWB 005 2669 4452, dated August 19, 1996).

A Delivery Order from Samuel Shapiro & Co.(agents for Schlumberger Technology Corp., Sugarland, Texas) dated September 5, 1996 authorized G&P Trucking to pick up the two packages and deliver them to EMR Photoelectric. The Delivery Order states the packages arrived at Continental Air Cargo, Phila Int'L A/P Cargo Unit #2 on August 29, 1996.

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In a telephone conversation on September 12, 1996, a Continental Cargo Representative said that the two packages had been released by Shapiro on September 11, 1996 and that G & P Trucking had picked up both packages.

In a telephone conversation on September 17, 1996, the G & P Dock Manager said that the two packages for EMR Photoelectric were on the shipping dock and would be delivered later that day.

G&P Trucking delivered one package to EMR Photoelectric on September 17, 1996. The EMR Shipping and Receiving Clerk noted that only one of the two packages expected was delivered. The EMR Shipping and Receiving Clerk called an EMR Tritium Technician and told him that only one package had arrived. The EMR Tritium Technician took the single package of Minitrons and placed it in a locked Radioactive Materials room.

On September 18, 1996 the single package received on September 17, 1996 was opened. Seven of the eight Minitrons shipped by Schlumberger Offshore Services were enclosed. The missing package contains a single Minitron.

Statement of the disposition, or probable disposition of the lost material: The most probable disposition of the lost material is that the package containing the single Minitron was either stolen or incorrectly delivered and the receiving party opened the package and, finding nothing of apparent value, discarded the contents into the trash.

Exposure of individuals to radiation: None. No radiation is given off by the DT accelerator unless it is connected to a complicated apparatus that can apply a voltage greater than 50,000 volts to one end of the DT accelerator while at the same time applying the correct voltages to the filament, cathode, grid and extractor. The beta radiation coming from the tritium decay cannot penetrate the 2.5 mm thick ceramic walls of the device.

As described above this device is very rugged and could only be opened by breaking the ceramic rings. If broken open, the tritium is released very slowly from the titanium and zirconium hydrides.

Actions taken to recover the material: On September 17, 1996 an EMR Tritium Technician called G&P Trucking immediately after notification by EMR's Shipping and Receiving Clerk that only one package had arrived. The G&P Dock Manager told the EMR Tritium Technician that nothing could be done until the next day when he would question the G&P Delivery Person.

On September 18, 1996 the EMR Tritium Technician again called the G&P Dock Manager and was told that two packages had been placed on the truck for delivery to EMR Photoelectric. The G&P Dock Manager said he would have the G&P Delivery Person retrace his steps and check if EMR's package had been mistakenly left at one of the other stops on the delivery route.

On September 19, 1996 the EMR Tritium Technician again called the G&P Dock Manager and was told that the G&P Delivery Person had retraced his steps but had not located EMR's missing package.

On the afternoon of September 20, 1996, the EMR Tritium Technician and I visited the warehouse of G&P Trucking where the packages were stored from the time they were picked up from Continental Air Cargo to the time they were loaded on the truck for delivery to EMR. The G&P Dock Manager assured us that both packages had been on the floor in the warehouse; he personally had seen them; he described them to us and his descriptions fit that of the box that we had received.

and was consistent with what we expected the missing package to look like. We searched the G&P warehouse for about two hours and could not locate the missing package. We were convinced that the package had arrived at G&P Trucking but was no longer there.

We asked the G&P Dock Manager if there were any stops that the Delivery Person had not been able to check for our package. He said that several packages had been delivered to a person at Princeton University, and they had not checked with the Princeton University Person to see if he had the missing EMR package. The G&P Dock Manager gave me the name and phone number of the Princeton University Person.

After many attempts, I finally reached the Princeton University Person by telephone and he assured me that he had not received any extra packages and did not have the missing EMR package.

We continued to check with the G&P Dock Manager to see if the missing package had been returned to them. Also, every day I checked with EMR Shipping and Receiving to see if the missing package had arrived.

During the week starting September 23, 1996 we called the G&P Dock Manager and offered a \$200 reward for any information leading to the discovery of the lost package. He said that he would tell the G&P Delivery Person about the reward.

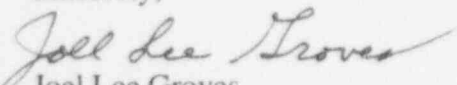
We continued to call the Dock Manager at G&P Trucking about three times per week to check if the missing package had shown up. We also monitored all incoming shipments to EMR just in case someone had found the missing package and had forwarded it to us. After a while, the G&P Dock Manager said that looking further for the missing package was a lost cause.

On October 17, 1996 I notified the NRC at 301 951-0550 that an instrument containing 1.3 Curies (4.8×10^{10} Bq) of tritium in the form of hydrides of titanium and zirconium in a sealed, ceramic tube was lost in transit from Mexico City to EMR Photoelectric.

Procedure or measures that will be adopted to ensure against a recurrence of the loss or theft of licensed material:

- (1) In the future we will not use G&P Trucking to transport Minitrons.
- (2) Improvements will be made in the tracking of Minitrons that are returned to EMR Photoelectric for evaluation. E-mail notices of shipping and receiving confirmation will be implemented.

Sincerely,


Joel Lee Groves
Radiation Safety Officer

cc: John Hunka, General Manager, EMR Photoelectric
Rebecca Millard, HS&E Manager, EMR Photoelectric
James Thornton, Chairperson, Radiation Safety Committee, EMR Photoelectric
Jean-Pierre Poyet, Manager, Generator Products Group, EMR Photoelectric
Mike O'Brien, Quality Manager, EMR Photoelectric
Ken Turner, NAM RSO-NAM Safety and Compliance (Shared Resources)
Eric Reber, Health Physicist, Nuclear Materials Safety Branch, NRC

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Joel Lee Groves
Radiation Safety Officer

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Rebecca Millard, HS&E Manager, EMR Photoelectric
James Thornton, Chairperson, Radiation Safety Committee, EMR Photoelectric
Jean-Pierre Poyet, Manager, Generator Products Group, EMR Photoelectric
Mike O'Brien, Quality Manager, EMR Photoelectric
Ken Turner, NAM RSO-NAM Safety and Compliances (Shared Resources)
Eric Reber, Health Physicist, Nuclear Materials Safety Branch, NRC

REGION I
NMSS LICENSEE EVENT REPORT

License No. 29-08636-02
Docket No. 030-11318
MLER-RI 96-049

LICENSEE EMR Photoelectric
EVENT DESCRIPTION loss tritium instrument
EVENT DATE 11/4/96 REPORT DATE 11/15/96

1. REPORTING REQUIREMENT

- | | |
|--|---|
| <input checked="" type="checkbox"/> 10 CFR 20.2201 Theft or Loss | <input type="checkbox"/> 10 CFR 35.33 Misadministration |
| <input type="checkbox"/> 10 CFR 20.2203 30 Day Report | <input type="checkbox"/> License Condition |
| <input type="checkbox"/> 10 CFR 30.50 Report | |
| <input type="checkbox"/> Other _____ | |

2. REGION I RESPONSE

- | | |
|---|---------------------------------------|
| <input type="checkbox"/> Immediate Site Inspection | Inspector/Date _____ |
| <input checked="" type="checkbox"/> Special Inspection | Inspector/Date _____ |
| <input type="checkbox"/> Telephone Inquiry | Inspector/Date _____ |
| <input type="checkbox"/> Preliminary Notification | <input type="checkbox"/> Daily Report |
| <input checked="" type="checkbox"/> Information Entered on the Region I Log | |
| <input checked="" type="checkbox"/> Review at Next Routine Inspection | |
| <input type="checkbox"/> Report Referred to _____ | |

3. REPORT EVALUATION

- | | |
|--|---|
| <input checked="" type="checkbox"/> Description of Event | <input checked="" type="checkbox"/> Corrective Actions |
| <input checked="" type="checkbox"/> Levels of RAM Involved | <input type="checkbox"/> Calculation Adequate |
| <input checked="" type="checkbox"/> Cause of Event | <input type="checkbox"/> Letter to Licensee Requesting Additional Information |

4. SPECIAL INSTRUCTIONS OR COMMENTS

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Completed by [Signature]
Reviewed by [Signature]

Date 1/7/97
Date 1/7/97

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(Revised 1/6/95) 0/1

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