

20.2201(a)(ii) DHP
unreportable - courtesy
report to incident



January 3, 1997

US Nuclear Regulatory Commission
Region III
801 Warrenville Road
Lisle, Illinois 60532-4351
Attention: Administrator

Subject: Written Report to the Nuclear Regulatory Commission in Accordance with
10CFR20.2201(b)

Refer to: Telephone Reports in Accordance with 10CFR20.2201(a) to:

US NRC Operations Center (Report No. 31408) at ~ 1900ET December 4 with fax
transmissions at 1930ET December 4 and at ~ 0900 December 5, 1996;

NRC Region III at 1715ET December 4, 1996 with fax transmission at 0835ET
December 5.

LICENSED MATERIAL

	Source 1	Source 2
Radionuclide	Sr-90.	Kr-85.
Activity	70 mCi.	250 mCi.
Chemical Form	Ceramic bead on ceramic substrate.	Noble gas.
Physical Form	Sealed source. ABB Model S-18. Serial Number S-1435-T. Double stainless steel capsule, each with a 0.001-in SS window.	Sealed source. ABB Model S-11. Serial Number K-1292-P. Single Ti capsule with a 0.001-in Ti window.
Appendix C Activity	0.1 μ Ci.	1,000 μ Ci.

CIRCUMSTANCES

9702100033 970131
PDR ADOCK 03005610
C PDR

General

At 1530 ET on Dec 2, 96, the ABBIS Radiological Operations Center (ROC) became aware that two sealed sources intended for two clients in China had not arrived at their destinations in China. The two shipments were traced, and the ABBIS Shipping Department provided details of the traces to the ROC at 1542 on Dec 4, 96. (Please refer to the "Chronology of two radionuclide sources shipped from ABB Industrial Systems Inc., Columbus OH". The

ABB Industrial Systems Inc.

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chronology is attached. It was also faxed to NRC Operations Center on Dec 4 and to Region III on Dec 5.) Upon review of the chronology, the Corporate Radiation Safety Officer and the Manager - ROC concluded that the sources could not be accounted for after their receipts at AC Express, Motor Carrier, at JFK airport on Nov 1 and Nov 4, 96. The chronology shows that documentation for the Sr-90 source was lost twice by carriers, and once for the Kr-85 source.

Sr-90 Source

The Sr-90 source was given to a common carrier by ABBIS on Sep 17, 96 for shipment to its ultimate destination in Guang Dong, China.

The source was fixed in a source holder and health shield, inside a 4.5-gal Type A steel shipping container, for intercontinental air transport, with a Yellow II transport label. The maximum surface radiation rate was 3 mR/h; the transport index was 0.1.

Kr-85 Source

The Kr-85 source was given to a common carrier by ABBIS on Oct 22, 96 for shipment to an ultimate destination in Dalian, China.

The source was fixed in a source holder and health shield, inside a 4.5-gal Type A steel shipping container, for intercontinental air transport, with a White I transport label. The maximum surface radiation rate was 0.2 mR/h.

Reports

Since both sources had been given to common carriers and freight forwarders, ABBIS probably did not need to report either source as missing. Also, neither source was considered lost "under such circumstances that it appears to the licensee that an exposure could result to persons in unrestricted areas". (10CFR20.2201(a)(1)(i).) Still, immediate telephone reports of the Sr-90 source were made as referred to at the start of this report because it was considered prudent to do so and because:

The Sr-90 activity exceeded 1000 times the Appendix C activity as specified in 10CFR20.2201(a)(1)(i), and

The general circumstances of both sources met the definition of *lost or missing licensed material* in 10CFR20.1003.

Information was provided about the Kr-85 source at the same time, for completeness and to comply with 10CFR20.2201(a)(1)(ii).

DISPOSITION

- ✓ The Sr-90 source arrived at the client / final destination in China on or before Dec 10, 96, with no reports to ROC of damage. This information was given by voice mail to NRC Region III at 0900 ET Dec 10, 96.
- ✓ The Kr-85 source arrived at the client / final destination in China on or about Jan 3, 97, with no reports to ROC of damage. This information was given by voice mail to NRC Region III at 0945 ET Jan 3, 97. (It had been reported by telephone to NRC Region III on Jan 2 that the source was still unaccounted for at that time.)

EXPOSURES

It is very unlikely that any discernible radiation exposures occurred to anyone in unrestricted areas. A reasonable scenario is that a person might have held the Sr-90 Type A package

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against the body for less than 20 minutes. This would have caused a local dose of less than one mrem.

ACTIONS TO RECOVER MATERIAL

Both stray sealed sources have been recovered (ie arrived at their ultimate destinations).

MEASURES TO ENSURE AGAINST RECURRENCE

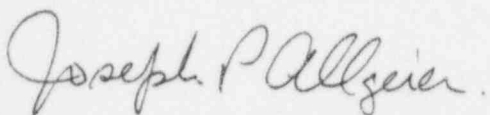
It is believed that no changes to shipping procedures are needed.

This has been a very rare event. ABBIS has shipped 3,866 sealed sources during the last 11 years without loss. Approximately one source in 1,000 has been a "stray", ie temporarily unaccounted for in transportation; all have been recovered.

The root cause of this event was difficulty in arranging shipment to China. This resulted in multiple handlings and cross-country transfers of the freight, with (inexcusable) losses of shipping documents by the carriers.

Please let me know if any additional information is needed.

Sincerely,

A handwritten signature in cursive script that reads "Joseph P. Allgeier".

Joseph P. Allgeier, MS/CHP
Manager - Radiological Operations Center

enc: Chronology

cc: D. Stephens
M. Leonhart
P. Gulash
C. Rowland
R. Pfeifer