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7TH DISTRICT, MASSACHUSETTS

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ENERGY AND COMMERCE
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FINANCE
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Congress of the United States
House of Representatives
Washington, DC 20515

October 31, 1989

The Honorable Kenneth M. Carr
Chairman
Nuclear Regulatory Commission
1717 H Street, N.W.
Washington, D.C. 20555

Dear Chairman Carr:

Thank you for your letter of October 30, 1989, which responded to my questions regarding tritium shipper-receiver discrepancies.

In your letter you state that "the measures currently in place provide adequate controls over tritium" to protect against loss or diversion, and that establishment of tritium safeguards or other controls on tritium exports are not needed. You further indicate that when the Department of Energy completes its ongoing investigation of the tritium losses, NRC will consider whether further action was warranted.

Frankly, I am disturbed that NRC has chosen to take an essentially passive stance towards the risk of tritium losses or diversions involving NRC licensees. When I asked the NRC last winter whether any U.S.-origin tritium had ever been diverted for nuclear weapons, NRC informed me that it "has not received any indication that any U.S.-origin tritium has been diverted for nuclear weapons purposes, or used in any fashion which may be 'inimical to the common defense and security.'"

It is now evident that at the time NRC made that statement DOE officials were aware of tritium losses that represented a possible diversion. Apparently, DOE never bothered to inform NRC about these losses until last summer. NRC then briefly assisted DOE in investigating the losses, but did not participate in the follow-up investigations because "we were not asked to be a member of the follow-up investigation team."

Given the risks that a diversion of tritium could pose for U.S. national security, I find it shocking that NRC has not adopted a more aggressive response to these tritium losses. As you acknowledged in your letter of August 29, 1989, the NRC "has no proof that the claimed shortfall of tritium...has not been retransferred without U.S. authorization or possibly diverted."

I have recently obtained a copy of a report by the Department of Energy's Inspector General which concludes that the possibility of a diversion has yet to be adequately addressed or investigated. This report raises very serious questions about whether DOE and NRC have properly fulfilled their

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The Honorable Kenneth M. Carr
October 31, 1989
Page 2

responsibilities to assure that U.S. produced tritium sold on the commercial market is not being diverted from its intended peaceful purposes.

The DOE IG report states that the results of the investigation that NRC participated in last summer "were based more on speculation than fact." The IG notes that "there was a tendency to use overages in certain shipments to explain shortages in others, human error to account for the four major discrepancies, and measurement errors, process losses, decay and residuals in shipping containers to explain smaller discrepancies." The report states that "few facts were provided in support of these findings" and that "basic questions concerning the tritium shipper-receiver discrepancies remain unresolved." In addition, the IG report states that the follow-on DOE report "did not adequately address questions regarding possible diversion of tritium."

The DOE IG report specifically recommends that NRC re-evaluate its position on tritium safeguards and that NRC include a determination of tritium use in NRC inspections of licensees.

I am enclosing a copy of the aforementioned DOE IG report. I request that NRC respond to the three specific recommendations made in this report, indicating whether NRC:

1. Will join with DOE in conducting an investigation specifically aimed at determining if tritium was diverted from its intended use.
2. Will reevaluate its position regarding the level of safeguards required for possession and shipment of tritium, regardless of whether tritium is reclassified as Special Nuclear Material.
3. Will explore the feasibility of including a determination of tritium use in NRC inspections of licensees to help alleviate concerns that tritium was not being used as intended.

Thank you for your assistance and cooperation in this matter. I request that you provide a response to this inquiry within 15 working days, or by November 22, 1989. If this is not possible, I ask that you provide an interim response indicating when a full and complete response will be provided.

Sincerely,

Edward J. Markey
Edward J. Markey
Member of Congress

Enclosure
EJM/jd

MEMO

NO :

United States Government

Department of Energy

Memorandum

DATE September 7, 1959

OFFICE OF THE ASSISTANT INSPECTOR GENERAL FOR INSPECTION AND ANALYSIS

SUBJECT Tritium Shipper-Receiver Discrepancies

TO: Thomas E. Hiltner
Office of Nuclear Energy

Since July 1959, a member of my staff has monitored efforts by your office to determine the basis of discrepancies in shipments of tritium from the Department's Oak Ridge National Laboratory to commercial customers. The attached memorandum contains some of his observations and concerns.

At present we are not conducting an inspection in regard to this matter. However, I am providing you with a copy of this memorandum, since I believe that your office may wish to consider whether additional actions may be appropriate. Please call me if you wish to discuss this matter further. Also, please let me know if you decide to take additional actions based on the attached memorandum.



Michael W. Conley
Assistant Inspector General
for Inspection and Analysis

Attachment

cc: John G. Layton

Memorandum

DATE September 7, 1989

OFFICE OF INSPECTION
20-43

SUBJECT Tritium Shipper-Receiver Discrepancies

TO Assistant Inspector General
for Inspections and Analysis

For your request, I have been monitoring attempts by the Department's Office of Nuclear Energy (DOE-NE) to determine the basis of discrepancies claimed by commercial customers in shipments of tritium from the Department's Oak Ridge National Laboratory (ORNL). DOE-NE appears to be making progress in identifying and correcting process and procedural deficiencies associated with the measurement, loading and shipment of tritium by ORNL. However, it does not appear that DOE-NE has adequately addressed the possible diversion of tritium, which is a concern that has been raised by, among others, Congress and the news media.

Several reports were prepared concerning tritium shipper-receiver discrepancies. After reviewing the reports, I have the following concerns:

• Four major discrepancies involving tritium shipments in July and August 1988 were reported by customers to the Department. However, serious attempts by the Department to address the discrepancies were not initiated until June 1989, almost one year later.

• An investigative committee appointed in June 1989 by Martin Marietta Energy Systems, Inc., the Department's contractor at ORNL, focused primarily on a tritium inventory discrepancy at the ORNL Chemical Technology Division's tritium handling facilities. In my view, the Committee's conclusions were speculative and inconclusive. Their effort contributed little resolution of questions concerning the four major discrepancies.

• A DOE-NE review of the tritium shipment discrepancies also initiated in June 1989. The review addressed discrepancies which occurred in FY 1987, FY 1988 and early FY 1989. It appeared the results of the review were based more on speculation than fact. For example, there was a tendency to use averages for certain shipments to explain shortages in others, human error account for two of the four major discrepancies, and measure errors, process losses, decay and residuals in shipping containers to explain smaller discrepancies. Few facts were provided in support of these findings. Although several acci-

were recommended to improve the tritium measurement, loading and shipping procedures, basic questions concerning the tritium shipper-receiver discrepancies remained unanswered.

• From this review, a DOE-WF staff member postulated several scenarios concerning possible diversion of the tritium associated with the reported discrepancies. However, the scenarios appeared highly speculative and difficult to support with the facts at hand.

• A second DOE-WF review was initiated in late July 1988. This effort appeared to be a more thorough technical review of the ORNL tritium operations than previous reviews, but did not adequately address questions regarding possible diversion of tritium. The review identified deficiencies in the tritium loading and shipping operations, the quality assurance program and physical security practices. A number of actions were recommended to ensure that discrepancies in future shipments would be quickly identified and kept to a minimum. However, the review was unable to determine with certainty the reasons for the four major discrepancies. Audits were conducted, and are planned at companies that reported major discrepancies. However, the objective of the audits appears more to determine if customers received tritium in excess of amounts recorded in ORNL records, than ensuring the tritium was being used as intended.

• Although tritium is not a necessary component of a nuclear weapon, it can be combined with other weapons material to enhance weapon capabilities. Presently, tritium is not considered special nuclear material (SNM) and is not subject to strict controls and extensive protection measures. Tritium sold to domestic companies is subject to licenses issued by the Nuclear Regulatory Commission (NRC) or by Agreement States of the NRC. Applications for export licenses are reviewed by NRC as to proposed destination and end use. Although the licenses include provisions for inspection of records kept pursuant to the license, the objectives of inspections by NRC or Agreement State are primarily health and safety of operations. There are apparently no requirements for inspections by NRC for safeguards or end use of the tritium.

I believe that DOE-WF has taken appropriate steps to identify and resolve technical deficiencies related to the measurement, loading and shipment of tritium from ORNL to its commercial customers and to minimize and quickly identify shipper-receiver discrepancies. However, it appears that neither DOE-WF nor the Department has taken adequate steps to ensure that tritium provided to commercial customers is used for its stated purpose.

Possible actions by the Department include:

1. Initiate an investigation specifically aimed at determining if tritium was diverted from its intended use.
2. Request that NRC reevaluate its position regarding the level of safeguards required for possession and shipment of tritium. Although there may not be a technical basis for tritium to be considered SNM, tritium may warrant similar safeguards.
3. Discuss with NRC the feasibility of including a determination of tritium use in NRC inspections of licensees. This would help alleviate concerns that tritium was not being used as intended.

A. K. Walter
A.K. Walter
Special Operations Division

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United States Government

Department of Energy

Memorandum

DATE October 14, 1959

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SUBJECT Tritium Shipper-Receiver Discrepancies

TO Acting Assistant Secretary for Nuclear Energy

We provided Tom Holtman of your staff our observations and conclusions regarding efforts by your office to determine the basis of discrepancies in shipments of tritium from the Department's Oak Ridge National Laboratory to commercial customers (Attachment 1). We recommended several actions to ensure that tritium provided to commercial customers was being used for its stated purpose.

In view of the recent report of another discrepancy in a shipment of tritium to a commercial customer, I feel it is imperative that the Department ensure that tritium is not being diverted from its intended use. Therefore, please advise us what actions you have taken regarding generally strengthening internal controls and our recommendations.

John C. Layton
John C. Layton
Inspector General

Attachment

cc: Nancy Wollatz