



UNIVERSITY OF MISSOURI-COLUMBIA

December 7, 1990

Research Reactor Facility

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Columbia, Missouri 65211  
Telephone (314) 882-4211  
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U.S Nuclear Regulatory Commission  
Washington, DC 20555

ATTENTION: Document Control Desk

REFERENCE: Docket 50-186  
University of Missouri Research Reactor  
License R-103

SUBJECT: Reply to Notice of Violation, as per 10 CFR 2.201.

Dear Sir:

This is the written statement required by the provisions of 10 CFR 2.201 in response to the Notice of Violation in your letter dated October 10, 1990 concerning the August 15 through October 1, 1990 inspection of the University of Missouri Research Reactor (MURR). NRC Region III granted a 30-day extension in the required filing deadline. The violations were identified as the following:

1. 10 CFR 71.87(j) requires that prior to each shipment of licensed material, the licensee determine that external radiation levels around the package will not exceed the limits specified in 10 CFR 71.47 at any time during transportation.

10 CFR 71.47 requires, in part, that radiation levels not exceed certain limits at any point on the external surface of the package.

Contrary to the above, on August 8, 1990, prior to a shipment of licensed material containing 9.72 curies of antimony-124, the licensee did not determine that external radiation levels around the package would not exceed the limits specified in 10 CFR 71.47 at any time during transportation. Specifically, the licensee did not perform a radiation survey of the bottom of the package prior to shipment.

The licensee acknowledges a failure to perform a radiation survey of the bottom of the package prior to shipment occurred on August 8, 1990. This failure was caused by a combination of training and communication errors which have subsequently been corrected.

Radioactive shipments are packaged in accordance with detailed QA check sheets that are part of an approved 10 CFR 71 Subpart H Quality Assurance program. Completion of the check sheet for each shipment is used to document compliance with 10 CFR part 71, and 49 CFR parts 172 and 173 for packaging, marking, labeling, placarding, monitoring and shipping papers by certified shippers. Shipping personnel at MURR are in training for six to nine months prior to being certified to sign the release papers for MURR shipments. Surveys of shipments are performed in accordance with Health Physics procedure HP-16 Rev. 12. Technicians are qualified to perform HP-16 before they are certified to sign release papers for MURR shipments.



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The shipment in question was properly packaged in accordance with the appropriate QA check sheet. The shipment in question was surveyed by a technician who was approved to perform HP-16, but not certified to sign for release of shipments. The certified shipper reviewed all paperwork and discussed the radiation survey with the technician prior to signing the release for the shipment, but failed to question the technician about the dose rate on the bottom of the cask. A Health Physics Technician also discussed the radiation survey with the technician prior to surveying the exclusive use vehicle. The vehicle was surveyed directly under the cask by a Health Physics Technician and was found to read less than 200 millirem per hour on contact with the vehicle.

The following corrective action was taken to prevent future violations:

Immediate

- Shipping personnel were instructed to record on the QA check sheet readings taken on the top, bottom and sides of the package. This was in effect for the next type B shipment on August 13, 1990.
- Surveying requirements were reviewed with all health physics and shipping personnel, including trainees.

Long Term

- A revised survey check sheet was implemented on October 1, 1990. The form includes spaces to record the survey readings taken on the top, bottom and sides of the package. This form is included with the shipping documents.
- Future training will stress the importance of surveying all surfaces including the bottom of shipping containers.

The University of Missouri has been in full compliance since August 13, 1990 and has completed all stated corrective action.

11. *10 CFR 71.47 requires that a package be prepared for shipment so that the radiation level does not exceed 200 millirem per hour at any point on the external surface of the package and the transport index does not exceed 10 unless it is shipped as exclusive use by highway. Exclusive use, as defined in 10 CFR 71.4, means the sole use of a conveyance by a single consignor and for which all initial, intermediate, and final loading and unloading are carried out in accordance with the direction of the consignor or consignee.*

*Contrary to the above, on August 8, 1990, a package containing 9.72 curies of antimony-124 was prepared by the licensee for shipment and shipped by highway, and the radiation level exceeded 200 millirem per hour on the external surface of the package and the transport index exceeded 10. Specifically, radiation levels of 340 and 1000 millirem per hour were measured on the external surface of the package and the transport index was 17.8. Because the vehicle contained packages from another consignor, the shipment was not exclusive use.*

The licensee acknowledges the fact that the vehicle contained packages from another consignor.

It was known in advance that this shipment would exceed 200 millirem on the external surface of the package and an exclusive use shipment was scheduled. Associated Couriers informed us that the vehicle would contain a consignment of computer paper, but assured us that we would be the sole user from the time it left our loading dock until it was unloaded by our consignee. At this point, reference was made to 10 CFR 71.47 to determine if it was acceptable for the conveyance to contain another package.

The measured radiation levels and the transport index of 17.8 met the 10 CFR 71.47 requirements for exclusive use. With the understanding that the conveyance would be under our exclusive control during all initial, intermediate and final loading and unloading, we determined that this shipment met the requirements for exclusive use. The vehicle was sealed prior to leaving our loading dock to insure no intermediate stops were made. The seals were intact when the vehicle arrived at its destination.

As noted on page 12 of NRC Report No. 50-186/90-01(DPR) dated October 5, 1990, "The root cause of this violation is personnel error through a misinterpretation of the regulations."

The following corrective action was taken to prevent future violations:

Immediate

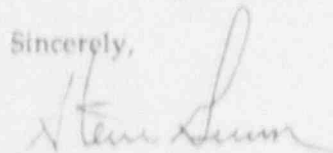
- Shipping personnel were instructed to ensure that no other consignments are in a vehicle used for exclusive use.
- The 10 CFR 71.4 definition of exclusive use was reviewed with all shipping personnel.
- Shipping personnel were cautioned to always check the definitions for phrases that modify or add to instructions in the regulations.
- All the above actions were completed by August 16, 1990 when the last shipper returned from vacation and prior to any further exclusive use shipments.

Long Term

- The importance of definitions will be stressed in future training.

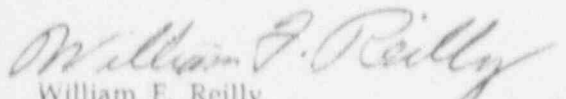
The University of Missouri is now in full compliance and has completed all stated corrective action.

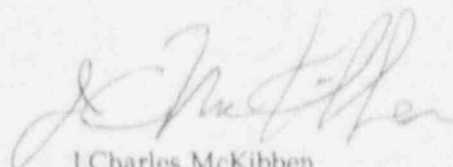
Sincerely,



Stephen L. Gunn  
Reactor Service Engineer

Endorsement:

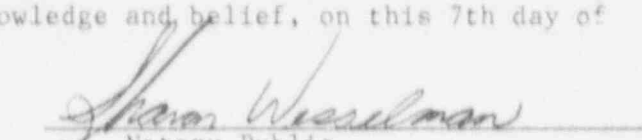
  
 William F. Reilly  
 Assistant Director, Fiscal/Reactor Services

  
 J. Charles McKibben  
 Associate Director

cc: Reactor Advisory Committee  
Reactor Safety Subcommittee  
NRC Region III

STATE OF MISSOURI )  
  ) ss,  
COUNTY OF BOONE )

I hereby certify that J. Charles McKibben, Associate Director, signed the foregoing to the best of his knowledge and belief, on this 7th day of December, 1990.

  
 Notary Public  
 Sharon Wesselman, Notary Public, State of Missouri  
 My commission expires February 21, 1991  
 Boone County, Missouri

My Commission expires: 2-21-90