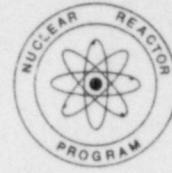




North Carolina State University  
School of Engineering



Department of Nuclear Engineering  
Nuclear Reactor Program  
Box 7909 Zip 27695-7909  
(919) 737-2321

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April 21, 1987

Dr. Luis A. Reyes, Director  
Division of Reactor Projects  
US Nuclear Regulatory Commission  
101 Marietta Street, N.W.  
Atlanta, GA 30323

Dear Dr. Reyes:

SUBJECT: Notice of Violation  
NRC Inspection Report Nos. 50-297/8701  
North Carolina State University  
PULSTAR Reactor - License No. R-120

This response is regarding your letter dated April 2, 1987 describing one class V and two class IV violations against our PULSTAR facility. These violations were identified by the recent NRC inspection conducted by Dr. B. K. Revsin on March 16-18, 1987. Please find the attached document explaining in detail the reasons for the violations and the corrective actions taken to be in full compliance with NRC regulations. For ease in presentation, I have repeated the violations.

Sincerely,

Paul J. Turinsky, Head  
Nuclear Engineering

PJT:edt  
Attachment  
cc: NRP  
RPO  
RHP  
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## Enclosure 1

### Response to violations and corrective actions taken

Violation A. 10 CFR 71.5(a) requires each licensee who transports licensed materials outside the confines of its plant or other place of use, to comply with the applicable requirements of the regulations of DOT in 49 CFR Parts 170 through 189.

49 CFR 172.200, Subpart C, requires each person who offers a hazardous material for transportation to describe the hazardous material on shipping papers as specified in Subpart C.

49 CFR 173.421(b) states that radioactive material whose activity per package does not exceed the limited quantity amounts specified in 49 CFR 173.423 are excepted from the specification packaging, shipping paper and certification marking, and labeling requirements of 49 CFR if the radiation level at any point on the external surface of the package does not exceed 0.5 millirem per hour.

49 CFR 173.421-1 states that a limited quantity radioactive material prepared for shipment under the provisions of 49 CFR 173.421 and 173.423 must be certified as being acceptable for transportation by having a notice enclosed in or on the package, included with the packing list or otherwise forwarded with the package which must include the name of the consignee or consignor and the statement, "This package conforms to the conditions and limitations specified in 49 CFR 173.421 for excepted radioactive material, limited quantity, n.o.s., UN2910."

Contrary to the above, DOT requirements for transportation of radioactive material were not met in that:

1. Shipping papers for radioactive material offered for transportation did not specify the proper shipping name, hazard class, identification number, total quantity, type of packaging or the chemical and physical form on January 11, 12, and 15, 1985; February 7, 1985; February 25, 1986; and April 7, 1986.
2. Radioactive Material Shipment No. 8 was shipped on June 6, 1986 as a limited quantity shipment but failed to meet the dose rate limit of 0.5 millirem per hour on the external surface of the package in that the measured dose rate of the package was 0.9 millirem per hour.
3. Radioactive Material Shipment No. 8 on June 6, 1986 and No. 7 on April 7, 1986 were shipped as radioactive material, limited quantity, n.o.s., UN2910 but did not contain in or on the package, included with the packing list or otherwise forwarded with the package, a notice specifying either the name of the consignor

or consignee and the statement of certification as required.

This is a Severity Level IV violation (Supplement V).

Response to Violation A(1)

1. This violation is acknowledged.
2. Reasons for violations:  
This violation resulted from the use of a locally designed form which did not include sufficient information. The carrier's form which was used did contain this information. Our practice was to assume that this internal document and the carrier's manifest was to be taken together to meet all of these requirements.
3. Corrective steps which have been taken and the results achieved:  
The Reactor Health Physicist (RHP) issued a memo dated 4/10/87 to all affected personnel and advised not to irradiate materials for transfer outside the PULSTAR facility until a Health Physics (HP) procedure has been issued. To this end, the RHP will not approve any such reactor run requests to produce isotopes in this interim period.
4. Corrective steps which will be taken to avoid further violations:  
A HP procedure and shipping form have been developed for implementation. This procedure has been issued under Section 6.3 of the Tech Specs. These procedures will be reviewed by the Radiation Protection Council (RPC) for final approval at the next meeting of the Council on April 23, 1987.

Violation A(2)

1. This violation is acknowledged.
2. Reasons for violation:  
The contact dose rate entry on the actual shipping document was below the acceptable limits. Otherwise, the carrier would not have accepted this shipment as a limited quantity shipment. The contact dose rate entry on the in-house form was apparently entered in error, as 0.9 mrem/hr.
- 3.,4.,5. As mentioned in A(1) above, the HP procedure and the use of a revised shipping form will be implemented for full compliance. A checklist will be used to ensure that HP Procedures are followed and revised shipping form is accurately completed. The entries will be independently verified by the Radiation Protection Office (RPO).

Violation A(3)

1. This violation is acknowledged.



2. Reasons for the violation:

This was a result of the incomplete in-house shipping form previously used. A copy of the in-house form was always enclosed and contained a similar certification, but did not contain the exact quotation as required by 49 CFR 173.421(b).

3.,4.,5. The corrective action described in items A(1) and A(2) ensure that this violation will not recur. The shipping form has been revised to include the exact certification statement.

Violation B. 10 CFR 30.41(c) states that before transferring byproduct material to a specific licensee of the Commission or an Agreement State or to a general licensee who is required to register with the Commission or with an Agreement State prior to receipt of the byproduct material, the licensee transferring the material shall verify that the transferee's license authorizes the receipt of the type, form and quantity of byproduct material to be transferred.

Contrary to the above, verification of the type, form, and quantity of byproduct material authorized to be received by the transferee's license was not performed in that four shipments of irradiated gemstones on October 4, 1985; February 25, 1986; April 7, 1987; and June 6, 1986 were transported to a client whose license did not authorize the receipt of byproduct material in the form of gemstones.

This is a Severity Level IV violation (Supplement V).

Response to Violation B

1. This violation is acknowledged.

2. Reasons for the violation:

This resulted from the fact that the letter from the licensee, which we had in lieu of his actual license, was assumed to be complete with respect to 10 CFR 30.41(c). We acknowledge that this letter failed to specify the form of the material.

3.,4.,5. Corrective steps which have been taken to avoid further violations and date when full compliance will be reached:

The existing reactor runsheet (NRP-OPN-3, Revision 6(1981)) has been modified to include:

- a) License verification and adequacy of the license to receive the byproduct material requested.
- b) Item #7 in the existing runsheet is expanded to include:
  - (1) use within the reactor building.
  - (2) within Burlington Engineering Lab (BEL) but outside reactor building.
  - (3) on NCSU campus but outside BEL.

(4) off the NCSU campus.

The runsheet will be first reviewed by the HP staff and those runs for radioactive material to be transferred off campus will be approved only after complete verification of the adequacy of the license. (Per instructions on the back of the runsheet - the RHP or Radiation Safety Specialist (RSS) will not sign a runsheet when the license document is not in hand). Date of implementation is April 23, 1987.

Violation C: 10 CFR 19.11 requires each licensee to conspicuously post current copies of (1) 10 CFR Parts 19 and 20, (2) the license, (3) operating procedures, and (4) Form NRC-3, in sufficient places to permit individuals engaged in licensed activity to observe them on the way to and from any licensed activity location. If posting the documents specified in (1), (2), and (3) is impracticable, the licensee may post a notice which describes the document and states where they may be examined.

Contrary to the above, on March 17, 1987 the required documents were not conspicuously posted nor was a notice posted describing the documents and stating where they may be examined.

This is a Severity Level V violation (Supplement IV).

Response to Violation C

1. This violation is acknowledged.
2. Reasons for the violation:  
The documents, along with notices referred to in the first paragraph of item c, had for a number of years been conspicuously posted at the reactor building entrances. The documents had been removed when electrical conduit installation and building painting were accomplished prior to the inspection visit. After painting and electrical work had been completed, the documents were not replaced in a timely manner.
3. All subject documents were reposted on March 17, 1987 within 30 minutes of discovery by the inspector.
4. In the future, should the documents require removal for painting or other building maintenance, the documents will be repositioned immediately to an adjacent or appropriate wall surface, within view of the original mounting position. When work necessitating initial document reposition is completed, the documents will be returned immediately to their original mounting location or as close thereto as possible. A notice has been posted with these forms: "These forms are posted in accordance with Federal Regulations. Do not remove". This item has also been added to the monthly PULSTAR Survey Form requiring monthly verification to ensure compliance.
5. Compliance has been achieved. See (3) above.