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National Institute of Standards and Technology
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December 18, 1995

Dr. Seymour H. Weiss
Director
Non-Power Reactors and Decommissioning
Project Directorate
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Dear Dr. Weiss:

This is in response to your letter of June 5, 1995 requesting information regarding features and provisions in effect at NIST to control access to neutron beams. Since your last visit, NIST has decided to install new doors to the entrances of the Cold Neutron Research Facility (CNRF), that will be kept locked, and access to which will be controlled. Accordingly, NIST will institute the following controls for accessible neutron beams greater than 30 cm in length, with a radiation level in excess of 100 mrem/hr, and when control by direct surveillance is not used. Please note that only the beams themselves would have radiation levels in excess of 100 mrem/hr.

1. The following sign will be posted on the two doors leading to the reactor confinement building experiment area (Room C100) and on the two doors leading to the CNRF (Room G100). All four doors will be kept locked.

> **CAUTION**
> **High Radiation Areas**
> in the beams in this room
> are designated by:
>
> **NEUTRON BEAM**
> No Entry
>
> Contact Health Physics for additional information.

2. Unescorted access to C100 and G100 will be limited to authorized, trained personnel.

3. Neutron beams within these two rooms will be individually posted with a yellow sign using red printing containing the words "NEUTRON BEAM" and appropriate control instructions like "No Entry".

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4. Physical features to prevent inadvertent access to a neutron beam will either be incorporated in the design of the experiment or by means of added devices such as barriers, ropes, bump bars, etc.

5. Neutron beams will be collimated to the smallest size necessary for the experiment using that beam.

6. Local indicator signs, lights, or equivalent status indicators of the local experiment shutters will display the on/off status of the beam.

7. A passive intrusion detector, typically an infrared device, will be used to alert workers if they move into the near vicinity of the beam. This device actuates both a visual warning device (a lighted sign) as well as an audible signal.

These control procedures will be incorporated into the training required of all persons having unescorted access to the rooms containing beams, with special emphasis on the nature and characteristics of these beams.

If any of the above measures becomes temporarily inoperative, comparable added temporary measures will be instituted such as additional warning signs, special barriers, or direct surveillance. If temporary measures are not possible or are inappropriate, the neutron beam will be turned off until the normal control features are reinstituted. In this regard, the shutters to the main beam for nine radial tubes and the seven guides are key-controlled and their status are indicated both locally and in the control room. Furthermore, outside doors to the facility are always locked or attended and access to the facility is controlled.

NIST believes that the above provisions not only meet regulatory requirements but will provide neutron beam users with a high level of radiation protection consistent with ALARA principles.

Sincerely,

Tawfik M. Raby
Deputy Chief
Reactor Radiation Division