UNITED STATES DEPARTMENT OF COMMERCE
National Institute of Standards and Technology
Gaithersburg, Maryland 20899-

November 1, 2010

William B. Kennedy
Project Manager
NRR/DPR/PRLB (MS 12 D3)
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Subject: Requested Amendment to Indemnity Agreement D-9 and TR-5 Licensed Area

Ref: Docket 50-184

Mr. Kennedy,

The NIST Center for Neutron Research (NCNR) has recently completed construction of an extension to the existing Guide Hall (GH). The two areas are currently separated by a wall that was previously the west exterior wall of the old GH. A portion of this wall will be removed during a scheduled eleven month outage starting in April 2011 to create a single GH. Cold neutron beams and radioactive materials will be used in the new GH areas when the NCNR returns to operation in early 2012 and some byproduct materials will be transferred into the new area during the outage for long term storage. This GH area will continue to be referred to as the NCNR Guide Hall but will consist of a larger area than described in the previous Indemnity Agreement amendment request dated February 9, 1990 (Amendment 13).

The expansion of the NCNR provides an opportunity to better define the extent of the TR-5 license boundary and the tracking of reactor produced byproduct materials within the confines of the NCNR (Building 235). Materials irradiated within the NCNR Test Reactor (NBSR) or in a thermal or cold neutron beam may be used or stored in various areas within the NCNR. Currently, byproduct material is transferred to the NIST materials license (19-23545-01E) when the material is processed and analyzed in the B-wing (radiochemistry and counting) area of the NCNR. Movement of the materials between the two licenses requires internal NIST material transfer documentation which is administratively burdensome and does not markedly change the physical location. Byproduct materials stored and handled in various NCNR-controlled areas inside and outside of the NCNR building for storage or processing prior to waste disposal also require a license transfer.

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The Facility Operating License for the NBSR (TR-5) applies to "the National Bureau of Standards test reactor (the reactor)...located on NIST's campus one mile southwest of Gaithersburg, Maryland, and described in the licensee's application, as supplemented." The specific license condition considering byproduct materials states:

> Pursuant to the Act and 10 CFR Part 30 to possess, use, and transfer but not to separate, except for byproduct material produced in non-fuel experiments, such byproduct material as may be produced by operation of the reactor. (TR-5, 2.B.4)

Item 3 of the Attachment to Indemnity Agreement D-9 between the U.S. Nuclear Regulatory Commission (NRC) and the Department of Commerce (DOC) as amended defines the D-9 indemnified location as:

Item 3 – Location

> The Reactor Building and the Operations and Assembly Room (No. B-128), the Vault Room (No. B-133), the the [sic] Basement (No. B-2) in Building 235, at the licensee's site near Gaithersburg, Maryland (Amendment 9). The Guide Hall, vestibule, and hallway area connecting the Reactor Building and Guide Hall are included (Amendment 13).

It appears that Item 3 from Amendment 9 (March 19, 1976) was specifically written to include only areas where reactor fuel materials were stored, used and handled and did not address the production or usage of radioactive material due to the operation of the reactor. This location description is no longer accurate as several of the areas defined are now used for other purposes and reactor fuel and byproduct materials are no longer stored or handled in these areas. Security concerns dictate that the location of fuel storage within the NCNR should not be clearly defined in any public document. Currently, fuel storage and handling areas for reactor fuel are only described in the NCNR Physical Security Plan which is controlled as Reactor Safeguards material.

Section 2.1.1.2 of the NBSR Final Safety Analysis Report (FSAR) defines the portion of the facility directly under the TR-5 license to be:

> "... within the Confinement Building in C-Wing, the Guide Hall and its auxiliary building in G-Wing, the Ventilation Stack east of the Pump House (not shown), the Emergency Control Station (ECS) and the Fuel Storage Area (FSA) located in the A-wing basement area, the HVAC and electrical service equipment in the B-Wing basement, and also the high-bay area located on the main level of the B-wing immediately adjacent to the east side of the Confinement Building."

This location definition does not fully describe where NBSR byproduct materials may be used or stored. Further, in the unlikely event of a "nuclear incident" as defined in Article I of Indemnity

Agreement D-9, it is conceivable that byproduct materials from the NBSR may be dispersed or discharged within and outside the boundary of the NCNR building and the licensed area defined in Section 2.1.1.2 of the FSAR.

Safety analysis performed and described in the NBSR FSAR considers the 400 meter radius Emergency Planning Zone (EPZ) as the distance at which, in the unlikely case of the Maximum Hypothetical Accident (MHA), public doses would be acceptable and at unrestricted levels. The EPZ is fully contained within the NIST perimeter fence and may be controlled as an exclusion area if necessary. This is consistent with the Site Description provided in the TR-5 Technical Specifications:

5.1 Site Description

Specifications

(1) The NBSR complex is located within the National Institute for [sic] Standards and Technology grounds and access to the reactor shall be controlled.

(2) The reactor shall have a minimum exclusion radius of 400 meters, as measured from the reactor stack.

Requested Amendment to Indemnity Agreement D-9

Based on the above discussion, the NCNR requests that Item 3 of the Attachment to Indemnity Agreement D-9 be amended to read:

Item 3 – Location

The 400 meter radius area centered on the reactor stack for the NBSR located at the licensee's site near Gaithersburg, Maryland.

This amendment would provide a consistent definition of the licensed area for all conditions of NBSR operation and permit the movement and storage of licensed materials within this boundary as allowed by NCNR approved procedures. This amendment does not require a change to the Facility Operating License (TR-5) or the Technical Specifications because radioactive materials may only be stored or used in areas specifically approved by NCNR Management and in all cases these materials would be stored and used within the 400 meter area already defined in the Technical Specifications.

Thank you for your consideration of this amendment request. This minor change to the Indemnity Agreement will improve the management of radioactive materials at the NCNR. Please contact me if you require additional information at 301-975-6260.

Sincerely,

Sean O'Kelly
Chief, Reactor Operations and Engineering
NIST Center for Neutron Research

I declare under penalty of perjury that the foregoing is true and correct.

Executed on 11/1/2010

cc: R. Dimeo, NCNR Director
G. Downing, SEC Chair
NBSR Docket File