UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION I
2100 RENAISSANCE BOULEVARD, SUITE 100
KING OF PRUSSIA, PENNSYLVANIA 19406-2713

October 1, 2013

Docket No. 07000398 License No. SNM-362

Richard F. Kayser
Chief Safety Officer
U.S. Department of Commerce
National Institute of Standards and Technology
100 Bureau Drive, MS1730
Gaithersburg, MD 20889-1730

SUBJECT: NRC INSPECTION REPORT NO. 07000398/2013001, U.S. DEPARTMENT OF COMMERCE, GAITHERSBURG, MARYLAND SITE

Dear Mr. Kayser:

On August 13-14, 2013, Steven Courtemanche and Dennis Lawyer of this office conducted a safety inspection at the above address of activities authorized by the above-listed NRC license. The inspection was an examination of your licensed activities as they relate to radiation safety and to compliance with the Commission's regulations and the license conditions. The inspection consisted of observations by the inspector, interviews with personnel, and a selective examination of representative records. Additional information was provided in your correspondence dated August 27 and 30, and September 3 and 4, 2013; the telephone conversation on August 30, 2013, between Thomas McGiff, Group Leader, Radiation Facilities Group; Ron Minniti, Irradiator Operator; Michael G. Mitch, Ph.D., Leader, Dosimetry Group of your organization; and Dennis Lawyer of this office. The findings of the inspection were discussed by telephone between Thomas O'Brien, Radiation Safety Officer of your organization and Mr. Lawyer of this office on September 23, 2013, at the conclusion of the inspection.

Based on the results of this inspection, the NRC has determined that eight violations of NRC requirements occurred and are described below.

The first violation involved the National Institute of Standards and Technology (NIST) not monitoring a labeled package within three hours during normal working hours, as required by 10 CFR 20.1906(c). Specifically, on October 15, 2012, a Yellow-II labeled package was delivered at 10:48 a.m. and the receipt survey was performed at 2:50 p.m., a period greater than 3 hours during normal working hours. In response to the violation, in January 2013, NIST Mail Services commenced to deliver radioactive material packages (packages) to the Radiation Safety Division within one hour of receipt or if the packages couldn't be delivered, notifying the Radiation Safety Division of the arrival of packages on site within one hour of receipt. To prevent recurrence, NIST wrote a memorandum of understanding on February 6, 2013, that formalized the one hour delivery or notification of receipt. This violation has been assessed at Severity Level IV in accordance with the Enforcement Policy Section 6.7.

The second violation involved NIST not properly posting a Radioactive Materials Area, as required by 10 CFR 20.1902(a). Specifically, in December 2012, NIST determined that a radioactive material posting sign had fallen down that was posted on the roll-up door to the ground level floor of the Neutron Calibration Range area. In response to the violation, NIST reposted the area. During January 2013, NIST retrained personnel performing routine surveillance to check for postings' presence and conditions. The NIST environmental survey forms have been updated to include verification of the presence of signs and conditions. This violation has been assessed at Severity Level IV in accordance with the Enforcement Policy Section 6.7.

The third violation involved NIST not using the proper colors for radiation postings as required by 10 CFR 20.1901(a). Specifically, in December 2012, NIST determined that many of their postings with the radiation symbol displayed the color red on a yellow background instead of magenta, purple, or black. In response to the violation, NIST changed out the signs within a week of the discovery. To prevent further occurrences, by February 22, 2013, NIST had instructed its staff to include checking for compliance with posting color requirements during surveillance activities. This violation has been assessed at Severity Level IV in accordance with the Enforcement Policy Section 6.7.

The fourth violation involved NIST not reporting exports of neptunium and americium as required in 10 CFR 110.54(b). Specifically, NIST determined, in December 2012, that they had been exporting neptunium and americium and not filing a report. In response to the violation, NIST transmitted the required report to the NRC on January 29, 2013, as required by 10 CFR 110.54(b). To prevent reoccurrence, NIST revised the procedure on February 11, 2013. The procedure for processing Source Reference Material transfer requests establishes roles and responsibilities to maintain the necessary information for producing the required annual report and submitting the report in a timely and consistent manner. This violation has been assessed at Severity Level IV in accordance with the Enforcement Policy Section 6.15.

The fifth violation involved NIST not sending generally-licensed device transfer reports as required in 10 CFR 31.5(c)(8)(ii). Specifically, NIST determined, in February 2013, that they had transferred 48 generally-licensed devices since 2007 without sending in the required report. In response to the violation, NIST sent the required reports for the generally-licensed devices transferred since 2007 to the NRC in June 2013. To prevent reoccurrence, NIST will establish a program area and procedures for the management of generally-licensed devices and the methods to meet this requirement by September 30, 2013. This violation has been assessed at Severity Level IV in accordance with the Enforcement Policy Section 6.9.

The sixth violation involved NIST improperly storing a plutonium source as stated in their application dated June 19, 1997. Specifically, on April 26, 2013, NIST was holding a 0.25 gram, 15 mCi plutonium-239 liquid source not in compliance with the Special Process Commitments for Alpha-Emitting Nuclide Chemistry Operations, Table I.5-1 found in Section 5.2 of the application dated June 19, 1997. The note on the table only allowed 10 mCi in one location unless approved by Heath Physics. In response to the violation, NIST issued a stop work order for all plutonium sources on April 27, 2013. Authorization for the source storage was approved by NIST Form 365. To prevent reoccurrence, NIST is developing procedures and documentation to establish a program area dedicated to the management of special license conditions, including the creation of a new group dedicated to quality assurance of radiation

safety programs and services. This is to be completed by December 31, 2013. This violation has been assessed at Severity Level IV in accordance with the Enforcement Policy Section 6.3. The seventh violation involved NIST not properly reporting plutonium source inventories in material status reports as required by 10 CFR 74.13. Specifically, during the week of May 23, 2013, NIST determined that three plutonium sources were not characterized properly which caused two sources to be added and one removed from the material status report. In response to the violation, NIST provided updates to the U.S. Nuclear Materials Management and Safeguards System (NMMSS) on July 15, 2013. To prevent reoccurrence, the licensee's Radiation Safety Instructions are being revised to reflect adequate accounting and reporting requirements which are expected to be completed by October 1, 2013. This violation has been assessed at Severity Level IV in accordance with the Enforcement Policy Section 6.3

The last violation involved the failure of a heat detector to activate a remote alarm which would summon assistance in case of a fire, as required by 10 CFR 36.27(a). Specifically, on June 21, 2013, the heat detectors associated with the irradiator were tested. The test activated the local alarm, but not the remote alarm which would summon assistance in case of a fire. In response to the violation, NIST maintained an existing stop work order for all irradiators with the sources in the shielded position until corrective actions were completed. On August 1, 2013, NIST installed and tested a new heat detector which remotely alarms at the NIST fire station. This violation has been assessed at Severity Level IV in accordance with the Enforcement Policy Section 6.3

Because: (1) NIST identified the violations and either corrected or committed to correcting the violations within a reasonable period of time; and (2) the violations were neither willful nor repetitive as a result of inadequate corrective action, they have been characterized as non-cited violations (NCVs) in accordance with Section 2.3.2 of the Enforcement Policy. Therefore, you are not required to respond to this letter unless the description herein does not accurately reflect your corrective actions or your position. If you contest these NCV(s) or their significance, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington DC 20555-0001, with copies to: (1) the Regional Administrator, Region I and (2) the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001.

Current NRC regulations and guidance are included on the NRC's website at www.nrc.gov; select **Nuclear Materials; Med, Ind, & Academic Uses;** then **Regulations, Guidance and Communications.** The current Enforcement Policy is included on the NRC's website at www.nrc.gov; select **About NRC, Organizations & Functions; Office of Enforcement; Enforcement documents;** then **Enforcement Policy (Under 'Related Information').** You may also obtain these documents by contacting the Government Printing Office (GPO) toll-free at 1-866-512-1800. The GPO is open from 8:00 a.m. to 5:30 p.m. EST, Monday through Friday (except Federal holidays).

The NRC's Safety Culture Policy Statement became effective in June 2011. While a policy statement and not a regulation, it sets forth the agency's *expectations* for individuals and organizations to establish and maintain a positive safety culture. You can access the policy statement and supporting material that may benefit your organization on NRC's safety culture

Web site at http://www.nrc.gov/about-nrc/regulatory/enforcement/safety-culture.html. We strongly encourage you to review this material and adapt it to your particular needs in order to develop and maintain a positive safety culture as you engage in NRC-regulated activities.

No reply to this letter is required. Please contact Dennis Lawyer at 610-337-5366 if you have any questions regarding this matter.

Sincerely,

Original Signed by Judith A. Joustra

Judith A. Joustra, Chief
Commercial and R&D Branch
Division of Nuclear Materials Safety

cc: Thomas O'Brien, Radiation Safety Officer
State of Maryland

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State of Maryland

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