

SAFETY EVALUATION REPORT

DOCKET NO: 70-398
LICENSE NO: SNM-362

LICENSEE: U.S. DEPARTMENT OF COMMERCE
NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY

SUBJECT: AMENDMENT 11, APPROVAL OF RELOCATION OF IRRADIATOR
(ENTERPRISE PROJECT IDENTIFICATION CODE: CAC/EPID
000224/L-2021-LLA-0046)

BACKGROUND

The National Institute of Standards and Technology (NIST) is a Federal agency within the Department of Commerce, and uses licensed materials for research, development, calibration, and testing activities. Under special nuclear material (SNM) license SNM-362, the NIST develops, maintains, and disseminates national standards for ionizing radiation and radioactivity to support industry, health care, and homeland security at its Gaithersburg, Maryland site.

The principal activities of the SNM-362 materials license have been carried out in Building 245, the Health Physics Building. Planning for modernization of the building has been developing for some time and continues today. One aspect of the modernization was the addition of working space, which included a new wing of the building, named the H-Wing. Construction commenced in 2017 and adds 75,000 square feet of research and laboratory space to the Institute, as well as provide swing space to be used while the original building was renovated. Included in this planned addition was a new Irradiator Facility licensed under Title 10 of the *Code of Federal Regulations* (10 CFR) Part 36, "Licenses and Radiation Safety Requirements for Irradiators," to be in the sub-basement of the wing. Construction of the new wing to B245 commenced in coordination with the U.S. Nuclear Regulatory Commission (NRC) for regulatory matters.

For many years, the NIST has possessed and operated irradiation facilities. The NIST has operated two dry storage (teletherapy) panoramic Part 36 irradiators containing cobalt-60 (Co-60) and Cesium-137 (Cs-137) respectively to conduct research and calibration activities. By letter dated March 12, 2021, the NIST has requested to relocate the Hopewell Designs G150 Irradiator (Co-60) from the B-wing of Building 245 to a new facility within the same building.

The SNM-362 license was last renewed in September 2013. These sources and their security were reviewed during license renewal, issued on September 10, 2013, (ADAMS Accession No. ML13207A206).

REGULATORY REQUIREMENTS

Section 36.41 of 10 CFR describes the regulatory requirements that must be evaluated for the construction monitoring and acceptance testing for Part 36 irradiators.

Enclosure 1

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Subpart D, "Operation of Irradiators," of 10 CFR Part 36 provides several criteria to be evaluated, including training, operating and emergency procedures, and other radiation safety requirements.

Paragraphs 70.23(a)(3) and (4) 10 CFR provide the regulatory basis for the fire safety review. Additional regulatory requirements for fire protection at panoramic irradiators can be found in 10 CFR 36.27(a) and (b).

GUIDANCE

"Consolidated Guidance About Materials Licenses: Program-Specific Guidance about 10 CFR Part 36 Irradiator Licenses," (NUREG-1556, Volume 6, Revision 1 (ADAMS Accession No. ML13234A057)).

"Consolidated Decommissioning Guidance: Financial Assurance, Recordkeeping, and Timeliness," (NUREG-1757, Volume 3, Revision 1 (ADAMS Accession No. ML12048A683)).

PROPOSED CHANGES

Currently the NIST possesses three teletherapy style dry panoramic irradiators containing Co-60 and Cs-137 respectively. The current Part 36 irradiator facilities were installed in the early 1960's and irradiations began in 1965. The irradiators are used as a vertical beam irradiation facility, utilizing teletherapy sources. The sources are used for research and development projects, calibration of instruments, and irradiations of dosimeters and other materials. Customers include medical, commercial, Federal and State Government, and international facilities. NIST has an extensive record of experience with the safe use of Part 36 irradiators. These sources and their security are routinely reviewed by NRC Region I inspection staff and during the most recent license renewal review, concluded on September 10, 2013.

The license amendment request (LAR) (ADAMS Accession No. ML21078A041) requests that the manufacturer of the device, Hopewell Designs, be authorized to uninstall the G150 irradiator from its current location (██████) and transport the unit within the building to a new irradiation facility for installation (██████). In addition to the relocation, the LAR requests that Hopewell Designs complete acceptance testing and unit commissioning for regular use as currently authorized under the standing SNM-362 Special Nuclear Materials License. The NIST staff would provide radiation safety oversight to the move and coordinate with Region I inspection staff for observation and evaluation.

DISCUSSION

The NIST submitted an LAR (ADAMS Accession No. ML17290A363) on October 7, 2017, requesting authorization to commence construction for the building which will include the irradiator. Section 36.2 of 10 CFR defines construction as the installation of foundations, or in-place assembly, erection, fabrication, or testing for any structure, system, or component of a facility or activity subject to the regulations in this part that are related to radiological safety or security. The LAR provided a facility diagram for the Building 245 expansion and addressed details for each level, including the portion of the building to be used for the irradiator. By letter dated November 21, 2017, the NRC staff approved the amendment request for construction (ADAMS Accession No. ML17306A942). This proposed irradiator facility is built to house a teletherapy-type vertical beam unit for irradiation of materials or objects similar to another Part 36 facility already in operation under the SNM-362 license.

Advanced Technologies and Laboratories, Inc. is a subcontractor hired to provide an analysis of shielding requirements prior to construction. A shielding analysis was provided with the construction LAR submitted October 7, 2017 and addressed shielding requirements based on the following assumptions:

- 15,000 Curie (Ci) Cobalt-60 (⁶⁰Co) teletherapy-type irradiator. This approximates the maximum radioactivity of irradiators already in use at NIST. No credit is taken for radioactive decay. A dose rate of 19,800 Rads per hour at 1 centimeter (cm) from the side of the irradiator is assumed. This dose rate estimate was evaluated by staff and considered appropriate for an irradiator with this radioactivity.
- 15 hours usage per week.
- All adjacent areas, except for the Control Room and the maze passageway are treated as public areas (uncontrolled), and all walls and ceiling evaluated. The Control Room and maze are treated as controlled areas.
- The radiation dose rate goal for uncontrolled areas is 0.05 millirem per hour (mRem/hr) and 2 mRem per week. Controlled areas dose rate goal is 1 mRem/hr and 40 mRem per week.
- The use of a 1 cubic meter water tank in the beam of the irradiator. This device is used by NIST for some dosimetry work and provides the maximum amount of radiation scatter to be encountered using the irradiator.

The shielding analysis was reviewed by NIST health physics staff and approved for incorporation into the floor plans. Shielding recommendations were incorporated into the floor diagram submitted as a part of the LAR. The shielding analysis and recommendations were reviewed by NRC Headquarters and Region I technical/inspection staff and found to be acceptable.

The NRC staff previously documented the fire safety review and approval of SNM-362 (ADAMS Accession No. ML13207A206). The NRC staff reviewed NIST's fire protection program for the new location of the irradiator to assess whether it maintains an adequate level of fire protection to protect public health and safety.

FINDINGS

The NIST used Appendix C of NUREG-1556, Volume 6, Revision 1, "Suggested Format for Providing Information Requested in Items 5 through 11 of USNRC Form 313," to complete the LAR. Summary findings are identified below:

Item 5: Radioactive Material

The G150 irradiator manufactured by Hopewell Design's, Inc. (HDI) was commissioned and approved for use by the NIST Ionizing Radiation Safety Committee and Radiation Safety Officer (RSO) under the SNM-362 license in 2015 and has been in use in Room [REDACTED] in Building 245. The G150 irradiator contains two Co-60 sealed sources in one encapsulation and are approved on the U.S. NRC Registry of Sealed Sources and Devices (SS&D) and are used with the conditions specified in the registration certificate. Each sealed source is registered with the National Source Tracking System.

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Hopewell Designs, G150 Irradiator

	Manufacturer	Model	Radionuclide	Activity	SS&D Registration
Sealed Source	International Isotopes	INIS-SF-3.2-3-K	Co-60		NR-1235-S-101-S

Financial Assurance and Decommissioning

The NIST commits to continue to maintain records important to decommissioning and transfer these records to the NRC before any licensed activities are transferred or reassigned, in accordance with 10 CFR 30.34(b). The NIST commits to forward the records required by 10 CFR 30.35(g) to the appropriate NRC regional office and Headquarters prior to license termination. The last submittal, which accounted for the G150 irradiator, was in December 2019. The most recent financial assurance submission for the SNM-362 license was submitted for review by the NRC on September 23, 2019 (ADAMS Accession No. ML19269B774).

The financial instrument used by the NIST was a Statement of Intent (SOI), consistent with 10 CFR 70.25(e)(4), for a Federal Government licensee. The Decommissioning Funding Plan update includes a detailed decommissioning cost estimate for meeting the criteria of the 10 CFR 20.1402 criteria for unrestricted use. The NRC staff concluded that the SOI satisfied the requirements of 10 CFR 30.35(e)(1) and 10 CFR 70.25(e)(1) and was consistent with NUREG-1757, Vol. 3, Rev. 1, "Consolidated Decommissioning Guidance Financial Assurance, Recordkeeping, and Timeliness" (ADAMS Accession No. ML12048A683) and was found acceptable. A technical evaluation report for the analysis of the materials license and was issued on April 3, 2020 (ADAMS Accession No. ML20085G151).

Item 6: Purpose(s) for Which the Licensed Material will be used

The SNM-362 license authorizes the use of radiation sources for research and development, calibration and testing, and training activities. Authorized uses for the G150 irradiator are the irradiation of devices and dosimeters for the development and maintenance of radiation measurement standards, and the provision of radiation measurement services. The G150 irradiator has been in use under the SNM-362 license for over 5 years, and there is no request to change or modify the uses of the irradiators as stated in the standing license renewed on September 10, 2013 (ADAMS Accession No. ML13207A206).

Item 7: Individual(s) Responsible for the radiation safety program

By letter dated March 31, 2017, the NIST requested approval for the appointment of Mr. Manuel Mejias as the Radiation Safety Officer for the SNM-362 license. Prior to his appointment as RSO, Mr. Mejias worked as a health physicist at the NIST for over 5 years. Mr. Mejias's extensive experience, education, and training in the radiation safety, and supervising the NIST's radiation safety program, adequately demonstrate that he possesses the qualifications and resources to oversee the safe operation of the facility. His experience and training were reviewed, and his appointment was approved by Amendment 8 to the SNM-362 on May 12, 2017 (ADAMS Accession No. ML17109A117).

Item 8: Individuals Working in or Frequenting Restricted Areas

The standing requirement for training, identified in the NIST license renewal application (ADAMS Accession No. ML13165A109) requires that appropriate training is provided to individuals likely to receive more than 100 mRem of occupational exposure in a year. All such individuals receive training in accordance with 10 CFR Section 19.12. The extent of training is commensurate with the individual's workplace and specific duties. All individuals authorized to work independently with licensed radioactive material receive biennial refresher training, and irradiator workers receive facility specific annual refresher training. The NIST commits to the annual performance evaluation required by 10 CFR 36.51(e). The LAR submitted on March 12, 2021 commits to the continued use of Appendix E, "Training for Radiation Safety Officers and Irradiator Operators," of NUREG-1556, Volume 6, for training of irradiator operators. This is unchanged from the standing license, renewed on September 10, 2013.

Item 9: Facilities and Equipment

General Description

The G150 Irradiator will be installed in room [REDACTED], in the basement of the new H-Wing of building 245. Movement of the irradiator will be entirely within the building, from room [REDACTED] to [REDACTED]. Figure 1 of the LAR provides an overhead view of the proposed facility and adjacent spaces. The room is divided into two main areas: a control room labeled [REDACTED] and the irradiator room labeled [REDACTED]. The facility is accessed through a *Hallway Door* as shown in Figure 1 of the application. Both the control and irradiator areas are connected through a narrow maze area with one door between the control and maze area (referred to as the *Control/Maze Door*) and a second door between the maze and irradiator area (referred to as the *Experiment Door*).

The irradiator area has two cylindrical pits in the floor 2 meters deep and 1.4 meters in diameter. There are no occupiable rooms or spaces below the floor. Aluminum grates cover the pits and are placed at the finished floor level. The irradiator will be mounted from two parallel structural I-beams located near the ceiling with the bottom face of the I-beam located at a height of 3.2 meters above the floor. The inner faces of the two parallel I-beams are separated by 1 meter and are integrated with the room construction, designed to hold the weight of two irradiators of 4,500 kilograms (kg) each. The total weight of the irradiator shield and collimator assembly is 3,600 kg and will be centered approximately 2.2 meters above the pit.

Site-Specific Testing Frequency, Inspection and Maintenance

Paragraph 36.61(a) of 10 CFR identifies a generic list of criteria for the licensee to evaluate the need for inclusion in inspection and maintenance checks. The type of irradiator possessed by an applicant and planned uses dictate specific inspection and maintenance requirements. By letter dated October 31, 2013 (ADAMS Accession No. ML13316B211), the NIST submitted an LAR addressing the inclusion of

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requirements of 10 CFR 36.61(a) to the license, with further clarification submitted by letter dated December 27, 2013 (ADAMS Accession No. ML13364A067). These inspection and maintenance requirements were approved by Amendment 5 to SNM-362, issued by letter date January 27, 2014 (ADAMS Accession No. ML14016A344). The NIST commits to continue these inspection and maintenance requirements in the new facility with no modification.

Access Controls

Paragraphs 36.23 and 36.31 of 10 CFR identify access control requirements, to include diagrams, alarms, lock and key control, and site-specific access control testing. Figures 1 and 2 of the LAR, as well as diagrams submitted with the initial construction LAR submitted on October 7, 2017 (ADAMS Accession No. ML17290A363), identify alarms, locks and controls. These are addressed for clarity but are commitments in the standing license (ADAMS Accession No. ML13207A206). Commitments in the LAR include:

- The entrance to the G150 facility (*Hallway Door* in Figure 1) is equipped with a security system that is monitored 24 hours a day by the NIST police office (10 CFR 36.23 (a)). An alarm will be generated in the NIST Emergency Center in the event of unauthorized access (10 CFR 36.23(b) to rooms [REDACTED] (control area) and/or room [REDACTED] (irradiator area).
- The electrically operated *Experiment Door* in Figure 1 is integrated with an area radiation monitor (ARM) #2 whose purpose is to provide continuous radiation monitoring and secure the door closed if radiation is detected in the irradiator room (10 CFR 36.23(c)).
- An emergency button (panic button) is located in the irradiator area near the access door that, on activation returns the source to the shielded position, allowing opening of the *Experiment Door* separating the irradiator area from the maze area and preventing anyone from being trapped inside the irradiator area (10 CFR 36.23(d)).
- The facility is designed so that the key that controls the *Experiment Door* connecting the irradiator and maze area is the same key that is used to enable the control panel that operates the irradiator. This key design ensures that the irradiator can only be operated if the key used to unlock the *Experiment Door* is inserted into the irradiator control panel. As a result, the doors cannot be opened if the irradiator is being operated and it is in the unshielded position (10 CFR 36.31(a)).
- The key that is used to operate the control panel and open the shutter is designed so it remains captured (cannot be removed from the control unit) when the irradiator is in the unshielded position 10 CFR 36.31(a)).
- The *Experiment Door* and the *Control/Maze Door* are equipped with a double set of door interlocks which form part of the door interlock safety system and will immediately return the shutter to its safe condition in the event that the doors are opened while the irradiator is in the unshielded condition (radiation present in the irradiator area). If the doors are opened when there is radiation present, a visible and audible alarm is activated to make the individual entering the room aware of the hazard (10 CFR 36.23(b) and (c)).

The descriptions of alarms and placement of monitors is consistent with controls currently in use for the irradiator in its location in [REDACTED]. Alarm and monitor placement

and effectiveness will be evaluated during acceptance testing. The acceptance testing schedule will be made available to NRC staff for observation and evaluation by Region I Inspectors.

Exemptions

The LAR addresses exemptions associated with the access controls and operation of this irradiator. The NIST has been approved for several exemptions (ADAMS Accession No. ML993350644) which were re-approved by the NRC when the license was renewed on September 10, 2013 (ADAMS Accession No. ML13207A206). These are restated in the LAR for clarity and do not represent any change in the use of any exemptions already approved for any Part 36 irradiator possessed by NIST. These exemptions are also found in “Consolidated Guidance About Materials Licenses, Program-Specific Guidance About 10 CFR Part 36 Irradiators” (NUREG-1556, Volume 6, Revision 1 (ADAMS Accession No. ML13234A057) as technical justifications and commitments, which are acceptable to exempt. The NIST will continue to use the current facility in Room B034 and requests no change in granted exemptions.

Shielding Evaluation

Because the NIST has possessed and operated this irradiator for several years, much is known of the performance of the unit, to include survey data of the device. Figure 2 of the LAR shows a schematic of the G150 irradiator unit. The Co-60 radioactive source, described above in Item 6, is enclosed in a small welded encapsulated stainless-steel tube that is permanently fixed inside the irradiator body. No parts of the source or the source encapsulation can be accessed from outside the housing. The housing is fabricated of heavy shielding, made mostly of lead and tungsten, and is the main contributor to the 3,200 kg mass of the irradiator. The cylindrical housing is approximately 74 centimeter (cm) high and 70 cm in diameter.

Part 36 shielding surveys are conducted triennially in accordance with 10 CFR 36.57. Radiation dose rate measurements are performed at the door to the facility and on all contiguous areas. Currently, in the unshielded position (open and radiation present), a collimated beam of gamma radiation is directed toward the bottom of the irradiator and the bottom of the pit. The field size of the gamma-ray beam is approximately 15 cm x 15 cm at a distance of 1 meter from the center of the Co-60 radioactive source located inside the irradiator housing. The design of the G150 irradiator combined with the heavy shielding of its housing provides no measurable radiation leakage and, minimizes exposure to users when the irradiator is in its safe condition (source is unexposed). Radiation levels measured around the housing within a distance of less than 30 cm are well below 0.1 mR/hr.

Shielding testing has been conducted in the new Part 36 facility using Co-60 radiography sources (licensed by NIST) to simulate the operation of the irradiator once in place. This initial shielding testing has confirmed that all radiation levels are less than 2 mR/hr at 30 cm from the shielding walls in accordance with 10 CFR 36.25(a). The NIST commits to repeat these surveys with the G150 installed, as part of acceptance testing. The new

Part 36 facility is located on the lowest level of the H-Wing (basement level) thus having earth below the facility. Radiation surveys are not required below the facility but will be conducted in adjacent spaces.

Radiation levels in control areas and adjacent spaces to the irradiation facility will be evaluated during acceptance testing following installation. When the unit was installed in B034 in 2015, the manufacturer provided a report of acceptance testing, which was provided to the RSO on August 29, 2016 (ADAMS Accession No. ML21085A499). The NIST has committed to repeating the acceptance testing for the unit in the new location and providing a copy of the report to the NRC staff once completed. The acceptance testing schedule will be made available to NRC staff for observation and evaluation by Region I Inspectors.

The G150 irradiator was installed at NIST in July 2015 and has since been in operation in Building 245. During the time the G150 irradiator has been in Room [REDACTED], it has been routinely surveyed and inspected by the NIST Gaithersburg Radiation Safety Division staff, as well as NRC Region I inspectors during both announced and unannounced site inspections of the NIST facilities. The inspections evaluate whether all safety controls systems are working correctly and that they meet NRC requirements as described in CFR 10 Part 36, to include the conduct of surveys and the operation of the irradiator in accordance with the conditions of the license.

Fire Protection

The LAR submitted on March 12, 2021 provides a description of the fire protection program for the new location of the irradiator. The new H-Wing addition to Building 245 was designed and constructed in accordance with the codes and standards specified in the license application. The H-Wing is built of noncombustible construction and the new irradiation facility has a fire-rated separation of 2-hours with fire-rated door assemblies (90-minutes). Installed fire protection systems include smoke detection, heat detection, fire alarm with manual pull-boxes, standpipes, and sprinkler systems. Portable fire extinguishers are provided throughout the building in accordance with the industry standards. An underground fire main supplied by the municipal water system provides fire protection water to the facility. Fire hydrants are located throughout the facility in accordance with industry standards. Inspection, testing, and maintenance of fire protection systems is in accordance with the National Fire Protection Association (NFPA) standards specified in NFPA 801, "Standard for Fire Protection for Facilities Handling Radioactive Materials," (NFPA, 2020).

To satisfy the requirements of 10 CFR 36.27(a) for the new location of the irradiator, a separate heat detector and smoke detector are installed in the irradiation facility. If those units detect smoke or heat, a local audible and visible alarm is activated, the irradiator becomes fully shielded, and a notification is sent to the NIST Emergency Center that would initiate a response from the NIST Fire Department.

To satisfy the requirements of 10 CFR 36.27(b) for the new location of the irradiator, the facility is provided with a double interlock pre-action sprinkler system having a shut-off valve to control flooding into unrestricted areas. This sprinkler system is interlocked with the aforementioned smoke and heat detectors that are separately provided in the irradiation facility. To ensure a fire will be extinguished without the entry of personnel,

the system uses quick response sprinkler heads having a K-factor of 11.2, with each spaced not more than 100 square feet apart and located to avoid obstruction of water discharge. This sprinkler system is designed to the Extra Hazard Group-1 classification from NFPA 13, "Standard for the Installation of Sprinkler Systems," (NFPA, 2019) which provides a water density of at least 0.3 gallons per minute per square foot within the calculated area of water discharge.

The NIST Fire Department conducts fire drills and shelter in-place drills annually for all buildings on the NIST Gaithersburg campus and also has a mutual aid agreement with Montgomery County, Maryland. The NIST Fire Department staffs a minimum of five full-time Federal employee firefighters on site per day who are provided with professional firefighting equipment, vehicles, and apparatus. All NIST firefighters are certified Emergency Medical Technicians, Firefighter 2, Hazmat Materials Technicians, and Confine Space Technicians. Also, each NIST firefighter is a certified fire inspector which enables the monthly fire inspection of each building on the NIST campus. Additionally, all NIST firefighting staff are provided with radiation safety training.

The staff finds that for the new location of the irradiator the fire prevention, inspection, testing, and maintenance of fire protection systems, and the qualification, drills, and training of facility personnel are acceptable and in accordance with the applicable codes and standards.

Radiation Monitors

A monitor must be provided to detect the radiation level in the radiation room when the source is indicated to be in the fully shielded position. The monitor must be integrated with the personnel access door interlocks, as applicable, to prevent room access when the monitor detects an elevated radiation level for which the alarm set point is as low as practical but high enough to avoid false alarms. Room access must also be prevented if the monitor malfunctions or is turned off. Features of the NIST Part 36 facility are shown in Figure 3 of the LAR and include:

- A red light is located on top of both, the *Experiment Door* and the *Control/Maze Door* (see Figures 1 and 3). The red light turns ON when the irradiator is in the unshielded position and there is radiation present in the irradiator area.
- A total of four light towers each made of two stacked lights, one green and one red are installed in the G150 facility in the following areas:
 - one in the irradiator area
 - one in the maze area
 - two in the control area
- The red light indicates that there is radiation present in the room while green means that there is no radiation.
- A rotating beacon in the irradiator room, turns ON when the irradiator is in the unshielded position (shutter open) and there is radiation present.
- A radiation area monitor labeled ARM #1 in Figure 3, is located in the irradiator area with its readout in the *Maze Area* monitoring radiation levels in the irradiator area continuously.

- A second radiation area monitor, labeled ARM #2 in Figure 3, is in the irradiator area and monitors the radiation level continuously in this area. Both the probe and readout are part of a single unit. This second detector is electrically integrated with the access control (OPEN/CLOSE door control) of the *Experiment Door* (see Figure 3) with the sole purpose to keep the door automatically closed when the ARM#2 detects radiation in the irradiator area. This ARM is in the irradiator area near the irradiator unit.
- A Search and Evict button is in the irradiator area near the access door, serving three purposes:
 - It provides a short-preset time period of about 1 minute to allow the operator to search and evict the irradiator room prior to operating the shutter.
 - After pressing the Search and Evict button, a visible and a low intensity audible alarm are activated for a period of 1 minute to alert all occupants to leave the room.
- The console is equipped with a source position indicator that indicates when the source is in the fully shielded position, when it is in transit, and when the source is exposed.

The descriptions of alarms and placement of monitors is consistent with controls currently in use for the irradiator in its location in [REDACTED]. Alarm and monitor placement and effectiveness will be evaluated during acceptance testing. The acceptance testing schedule will be made available to NRC staff for observation and evaluation by Region I Inspectors.

Item 10: Radiation Safety Program

The NIST declares in the LAR that there are no changes or modifications to the radiation safety program fully described in the standing license, approved on September 10, 2013.

Authorized uses for the G150 irradiator are the irradiation of devices and dosimeters for the development and maintenance of radiation measurement standards, and the provision of radiation measurement services. The NIST will continue to use written procedures and retain documentation of all inspection and maintenance checks, as committed to in the standing license, renewed on September 10, 2013.

Item 11: Waste Management

The NIST declares in the LAR that there are no changes or modifications to the Waste Management Program regarding Sealed Source Disposal and Transfer, fully described in the standing license, approved on September 10, 2013.

ENVIRONMENTAL REVIEW

According to 10 CFR 51.22(c)(14)(viii), the issuance of amendments to licenses for fuel cycle plants which are administrative, organizational, or procedural in nature—or which result in a change in process operations or equipment—are eligible for categorical exclusion provided that:

- (i) There is no significant change in the types or significant increase in the amounts of any effluents that may be released offsite.
- (ii) There is no significant increase in individual or cumulative occupational radiation exposure.
- (iii) There is no significant construction impact.
- (iv) There is no significant increase in the potential for or consequences from radiological accidents.

The changes in this amendment do not affect the scope or nature of the licensed activity and will not result in a significant change in the types or amounts of effluents released offsite. There will not be any significant increase in individual or cumulative occupational radiation exposure, and there will not be any significant increase in the potential or consequences from radiological accidents. There is no construction associated with these changes, so there will not be any impact from construction.

CONCLUSION

The NRC staff reviewed the licensee's amendment request as submitted by the NIST on March 12, 2021 and concludes that the information provide provides reasonable assurance that an adequate level of safety will be maintained in the movement and installation of the Hopewell Industries G150 panoramic irradiator to the new facility in the H-Wing of building 245.

Based on the review provided above, the NRC staff concludes that the information and regulatory commitments provided by the U.S. Department of Commerce, NIST, in their license application provides reasonable assurance that an adequate safety of safety will be maintained during the movement and installation of the Hopewell Industries G150 panoramic irradiator to the new facility in the H-Wing of Building 245. The NRC staff also concludes that the proposed operations will not have an adverse impact on the public health and safety, the common defense and security, or the environment; and meet the applicable requirements in 10 CFR Parts 19, 20, 36, 51, and 70, 73.

PRINCIPAL CONTRIBUTORS

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James Downs, NMSS

REFERENCES

(NFPA, 2020) National Fire Protection Association (NFPA). NFPA 801, "Standard for Fire Protection for Facilities Handling Radioactive Materials," 2020.

(NFPA, 2019) National Fire Protection Association (NFPA). NFPA 13, "Standard for the Installation of Sprinkler Systems," 2019.