UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
1600 EAST LAMAR BOULEVARD
ARLINGTON, TEXAS 76011-4511

November 19, 2018

Ms. Charlotte Engstrom, Vice President
and General Counsel
General Atomics
P.O. Box 85608
San Diego, CA 92186-9784

SUBJECT: NRC INSPECTION REPORT 050-00089/18-001, 050-00163/18-001, AND 070-00734/18-001

Dear Ms. Engstrom:

This letter refers to the U.S. Nuclear Regulatory Commission's (NRC's) inspection conducted from October 23-25, 2018, at your General Atomics facility in San Diego, California. This inspection examined activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your license. Within these areas, the inspection consisted of selected examination of procedures and representative records, observations of activities, independent radiation measurements, and interviews with personnel.

The inspection included a review of decommissioning activities being conducted at the Mark I and F reactor facilities. An exit briefing was held at the conclusion of the onsite inspection with Dr. Keith Asmussen, Director, Licensing, Safety and Nuclear Compliance, and other members of your staff. The enclosed report presents the results of this inspection. In summary, the inspector determined that General Atomics was conducting site activities in accordance with license and regulatory requirements. No violations were identified, and no response to this letter is required.

In accordance with 10 CFR 2.390 of the NRC's "Agency Rules of Practice and Procedure," a copy of this letter, its enclosure, and your response, if you choose to provide one, will be made available electronically for public inspection in the NRC Public Document Room or from the NRC's Agencywide Documents Access and Management System (ADAMS), accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html. To the extent possible, your response should not include any personal privacy or proprietary, information so that it can be made available to the Public without redaction.

Should you have any questions concerning this inspection, please contact Dr. Robert Evans, Senior Health Physicist, at 817-200-1234 or the undersigned at 817-200-1151.

Sincerely,

/RA/

Janine F. Katanic, PhD, CHP, Chief
Fuel Cycle and Decommissioning Branch
Division of Nuclear Materials Safety

Docket Nos.: 050-00089, 050-00163,
070-00734
License Nos.: R-38, R-67, SNM-696

Enclosure:
NRC Inspection Report 050-00089/18-001,
050-00163/18-001, and 070-00734/18-001

cc w/encl:
K. Asmussen, General Atomics
R. Weisenmiller, California Energy Commission
G. Perez, California Department of Public Health

U.S. NUCLEAR REGULATORY COMMISSION
Region IV

Docket Nos.:	050-00089, 050-00163, and 070-00734
License Nos.:	R-38, R-67, and SNM-696
Report Nos.:	050-00089/18-001, 050-00163/18-001, and 070-00734/18-001
Licensee:	General Atomics
Facility:	Torrey Pines Mesa Site
Location:	3550 General Atomics Court San Diego, California 92121
Inspection Dates:	October 23-25, 2018
Inspector:	Robert J. Evans, PhD, PE, CHP, Senior Health Physicist Fuel Cycle and Decommissioning Branch Division of Nuclear Materials Safety
Accompanied by:	Marlayna G. Vaaler, Project Manager Reactor Decommissioning Branch Division of Decommissioning, Uranium Recovery, and Waste Programs Office of Nuclear Material Safety and Safeguards
Approved By:	Janine F. Katanic, PhD, CHP, Chief Fuel Cycle and Decommissioning Branch Division of Nuclear Materials Safety
Attachment:	Supplemental Inspection Information

Enclosure

EXECUTIVE SUMMARY

General Atomics
NRC Inspection Report 050-00089/18-001, 050-00163/18-001, 070-00734/18-001

This U.S. Nuclear Regulatory Commission's (NRC's) inspection was a routine, announced inspection of licensed activities being conducted at the General Atomics facility in San Diego, California. In summary, the licensee conducted decommissioning activities in accordance with license and regulatory requirements.

Research and Test Reactor Decommissioning

- The licensee maintained site staffing in accordance with license, quality assurance, and decommissioning plan requirements, and sufficient staff was available for the work in progress. (Section 1.2.a)

- The licensee conducted site decommissioning in accordance with the NRC-approved decommissioning plan. The licensee and its contractors developed comprehensive work instructions. The work was conducted safely and in accordance with procedural requirements. (Section 1.2.b)

- The licensee implemented its radiation protection program in accordance with license and regulatory requirements. The licensee monitored workers for occupational exposures, and no individual exceeded the regulatory limit. (Section 1.2.c)

- The licensee implemented its effluent control and environmental monitoring programs in accordance with license and regulatory requirements. The licensee collected all required samples, reported the results as required by the license, and no sample result exceeded any procedural action level or regulatory limit. (Section 1.2.d)

- Since the last inspection, the licensee requested, and the NRC approved, volumetric release criteria to supplement the surface release criteria that was provided in the NRC-approved decommissioning plan. (Section 1.2.e)

- The licensee implemented its audit and review programs in accordance with license requirements. The licensee continued to submit annual reports to the NRC that included the information required by the two reactor licenses. (Section 1.2.f)

- The licensee developed and implemented an emergency plan as required by the decommissioning plan. (Section 1.2.g)

- The licensee conducted transportation activities in accordance with U.S. Department of Transportation regulations. (Section 1.2.h)

Decommissioning Inspection Procedure For Materials Licensees

- The licensee has not possessed special nuclear material under NRC Materials License SNM-696 since 2010, and the licensee plans to submit a license termination request to the NRC in the near future. (Section 2.2)

Report Details

Site Status

The licensee constructed the Mark I reactor in 1957 and began operating the reactor in May 1958. This reactor was originally licensed to operate at a power level of 10 kilowatts thermal power, but was later upgraded to 250 kilowatts. The Mark I reactor was permanently shut down in 1997. The NRC amended the Mark I License R-38 in October 1997 to a possession-only license.

The licensee constructed and began operating the Mark F reactor in 1960. This reactor was rated at 1,500 kilowatts of steady state thermal power. This reactor was permanently shut down in early 1995. In March 1995, the NRC revised the Mark F reactor License R-67 to a possession-only license. All Mark I and F reactor fuel was shipped offsite in 1980-1981 and 2010 to a storage facility in Idaho.

A third reactor, the Mark III reactor, was previously decommissioned and the license was terminated in 1975.

The NRC revised the Mark I and F licenses in August 1999, authorizing the licensee to decommission the reactor facility in accordance with instructions provided in the General Atomics TRIGA Reactor Facility Decommissioning Plan dated July 1999. At the time of this inspection, the licensee continued to decommission the reactor facility in accordance with the NRC-approved decommissioning plan.

Since the previous NRC inspection, conducted in September 2015 (Agencywide Documents Access and Management System [ADAMS] Accession ML15328A527), the licensee's contractor collected additional samples from the Mark I pit, to further delineate the volumetric profile of the activated portions of the pit wall and floor. This information was needed to determine how much material will have to be remediated. The radionuclides of concern included cobalt-60, cesium-137, europium-152, and europium-154. The licensee's contractor also collected soil samples west of the Mark I pit to help determine a method to stabilize the pit during the excavation process. In addition, the licensee analyzed previously collected wall, floor, and soil samples to develop three dimensional views of the contamination within the two reactor pits. This information was needed to support future decommissioning work.

At the time of the inspection, the licensee had installed 24 micropiles around the Mark I pit. The micropiles will be used to stabilize the upper pit wall during remediation of the lower pit wall. In addition, the licensee's contractor was actively removing the lower wall and floor of the Mark F pit. Further discussion of these activities are provided in Section 1.2.b of this inspection report.

After the two pits have been remediated, the licensee plans to conduct additional radiological surveys to verify that all pit wall and soil materials above the release criteria have been removed. The licensee also plans to finish decommissioning the control room, remainder of the reactor facility, and the storage yard. After completion of decommissioning, the licensee will conduct a final status survey of the building and storage yard in accordance with decommissioning plan requirements. After completion of the final status survey, the licensee plans to submit a request to the NRC for termination of the two reactor licenses.

1 Research and Test Reactor Decommissioning (69013)

1.1 Inspection Scope

The purpose of the inspection was to determine if dismantlement and decontamination activities were being conducted safely and in accordance with regulatory requirements, licensee commitments, and the NRC-approved decommissioning plan.

1.2 Observations and Findings

a. Organization and Staffing

The staffing requirements are presented in the technical specifications for the two reactor licenses (ADAMS Accessions ML13312A797 and ML14063A627), the licensee's quality assurance program document, and the NRC-approved decommissioning plan. The inspector reviewed the licensee's organizational structure and staffing levels and compared the current organization to license requirements. In summary, the licensee's organizational structure was staffed with qualified individuals in accordance with license, quality assurance, and decommissioning plan requirements, and the licensee had sufficient staff for the work in progress.

b. Work Controls

The licensee is authorized to conduct decommissioning in accordance with the NRC-approved decommissioning plan dated July 1999. The inspector discussed the status of decommissioning with licensee representatives and toured the Mark I and Mark F reactor areas to observe work in progress.

The Mark I reactor pit is approximately 6.5 feet wide and 20 feet deep. The pit walls are approximately 8-9 inches thick. The licensee collected 9 core samples from the walls and floor of the pit in 2000. In 2017, 10 additional samples were collected from the pit. These samples were analyzed, in part, to estimate the volume of material in the Mark I structure that will require removal. Soil samples were also collected in an area adjacent to the Mark I pit, up to a depth of 23 feet, to help determine a method to stabilize the pit during remediation.

During August-September 2018, the licensee's contractor installed 24 micropiles in a circular pattern around the Mark I pit. The micropiles were approximately 26 feet long and were installed at an angle relative to the pit walls. The inspector observed the installed micropiles during the inspection. After completion of the 5-week cure time, the contractor will install hooks in the pit walls. Chains will be used to attach the micropiles to the hooks in the wall, to provide support for the upper portion of the pit during removal of the lower portion of the pit.

The licensee plans to start decommissioning the lower wall and floor of the Mark I pit in a few weeks. The licensee's contractor will remove the concrete floor, remove any activated soil below the floor, install a temporary floor, remove the activated portion of the lower wall, and remove any activated soil behind the wall. As part of the work, the contractor will have to manage slurry water and containerize the radioactive wastes for shipment to an offsite disposal site. This work is scheduled to end in February 2019.

The Mark F reactor pit is approximately 10 feet wide and 26 feet deep. The pit is connected to an "L" shaped fuel storage canal that is 4 feet wide and 17 feet long. During May 2013, the licensee collected 19 samples from five locations within the Mark F pit and adjacent fuel storage canal. The licensee sampled the surface material, in an effort to determine the hazardous and radioactive material content of the walls at different locations. The sample results indicated that the epoxy and gunite layers contained non-radioactive lead and cadmium, as well as radioactive cobalt-60, cesium-137, europium-152, and europium-154 contamination. In November 2013, the contractor collected more samples from the Mark F reactor pit area to further delineate the lead and cadmium contamination.

In September 2015, the contractor removed the epoxy and gunite material from the walls and floor of the Mark F reactor pit and collected 20 additional core samples. The core samples were collected, in part, to determine how much concrete material needed to be removed from the walls and floor during future decommissioning work. The contractor subsequently removed the steel liner from the pit in September 2018. At the time of the inspection, the contractor was core drilling the concrete wall and floor, in an effort to remove the activated concrete. As needed, the contractor will also remove any subsurface soil containing radioactive material. This work is expected to be completed in late November 2018.

The licensee developed a work plan for the remediation of the two pits. Radiological Work Authorization W/A 600-18 was developed and approved by the licensee in June 2018. This document included work instructions, radiological controls, as low as is reasonably achievable (ALARA) goals, and emergency plan. The primary hazard was accidental falls, and the licensee and its contractor implemented stringent fall protection requirements.

The inspector reviewed the licensee's radiation protection and sampling program that was being used to support the decommissioning work. The sampling program included air sampling, ambient radiation monitoring, and respiratory protection. Air sampling included fixed and portable air samplers, as well as routine and non-routine air sampling. The licensee's results were less than the procedural action levels, and most results were at background levels. Ambient radiation monitoring indicated that the area exposure rates within the Mark F pit continued to decrease as the work was being completed. Finally, respiratory protection was being used by the workers in the Mark F pit; although, the primary airborne hazard was non-radioactive silica from concrete cutting operations.

The licensee issued optically-stimulated luminescence dosimeters to site workers to monitor for external exposures during decommissioning. The dosimeter results for calendar year 2018 were unavailable for the inspector to review during the inspection. The licensee did not issue individual lapel air samplers and did not conduct bioassay sampling, in part, because the use of water during cutting operations limited the potential for airborne contamination.

Section 3 of each of the two technical specifications require the licensee to operate negative-pressure ventilation systems in the reactor building during decommissioning activities. The inspector confirmed during site tours that the ventilation systems were in service and maintaining a negative pressure within the building.

The inspector conducted an independent ambient gamma radiation survey during site tours. The inspector measured the ambient gamma radiation levels using a Ludlum Model 2401-S survey meter calibrated to cesium-137 (NRC 079971, serial number 181513, calibration due date of April 2, 2019). With a background of 7 microRoentgen per hour (μR/hr), the Mark I operating deck measured approximately 10 μR/hr. The Mark F operating deck measured approximately 7-10 μR/hr. The steel liner, in storage in an adjacent room in the reactor building, measured 10-100 μR/hr. The boxed debris, staged in the yard adjacent to the reactor building, measured between 7-25 μR/hr. The only area that met the definition of a radiation area (greater than 5,000 μR/hr) was the reactor building room that contained a small quantity of activated metal. The licensee plans to dispose of this material concurrently with the disposal of the waste material removed from the reactor pits. In summary, the work areas were essentially at background levels, and the single area that met the definition of a radiation area was properly posted and was situated in a secured location that was not normally visited by site workers.

In conclusion, the inspector confirmed that the licensee conducted site decommissioning in accordance with the decommissioning plan dated July 1999. The licensee and its contractors conducted the work safely and in accordance with procedural and work instruction requirements.

c. Health Physics/Radiation Protection

The inspector reviewed the licensee's radiation protection program to verify compliance with Title 10 of the *Code of Federal Regulations* (10 CFR) Part 20 and license requirements.

The inspector reviewed the licensee's occupational exposure records for 2015-2017 to ensure that no individual exceeded the limits specified in 10 CFR 20.1201. As noted above, the occupational exposure records for 2018 were incomplete at the time of the inspection. The licensee monitored workers for external exposures only. Based on the type of work being conducted and the results of air sampling, the licensee suspended internal exposure monitoring and bioassay sampling as allowed by 10 CFR 20.1502.

The licensee monitored 40 workers for external radiation exposure who were authorized to work at the reactor facility in 2015. The licensee also monitored 20 workers in 2016 and 27 workers in 2017. During 2015-2017, the highest recorded annual total effective dose equivalent for an employee was 0.129 rem with a regulatory limit of 5 rem as specified in 10 CFR 20.1201. The personnel dose (0.129 rem) in 2016 was attributed to work associated with shipment of radioactive material.

Section 6.2 of technical specifications for each reactor license requires the licensee to implement a radiation monitoring system including area radiation monitoring, airborne radiation monitoring, and annual calibration of equipment. The inspector reviewed representative records for 2015-2018 and interviewed the staff responsible for maintaining the radiation monitoring system in service. The records indicate that the licensee continued to operate and maintain the system. No air sample result exceeded the procedural action levels, and no valid high radiation monitoring alarm was received during the inspection period. The licensee maintained records demonstrating that the radiation monitoring system components were functionally checked and calibrated on a routine basis, as required by technical specifications.

As noted in Section 1.2.b. of this inspection report, the licensee collected routine and non-routine air samples to support decommissioning work in progress. The inspector reviewed a representative number of records and confirmed that airborne contamination levels were maintained below the respective procedural action levels.

In addition to non-routine radiological sampling to support decommissioning, the licensee's staff conducted routine sampling of areas containing radioactive material. The routine sampling included monthly swipe surveys for removable contamination and measurement of ambient gamma radiation levels. The inspector reviewed representative records of sampling conducted since the last inspection. No area within the building exceeded the procedural action levels for removable contamination or ambient gamma radiation levels. The licensee also measured the gamma radiation levels at the building fence line, and no location at the fence line exceeded the 2 millirem per hour limit specified in 10 CFR 20.1301(a)(2).

The inspector reviewed the licensee's maintenance and calibration program for radiation detection instrumentation. The inspector noted that instruments in use were calibrated and had been source checked as required. Also, instruments in use were capable of detecting radiation of the type and at the levels expected for the location of usage. In summary, the licensee's instrument calibration program was found to be in compliance with license requirements.

The inspector conducted site tours to observe the radiation protection controls in place at the time of the inspection. Specifically, the inspector observed that:

- The radiation work permit process provided appropriate information including recent dose and contamination survey data.
- Restricted areas and radioactive materials were posted and labeled in accordance with 10 CFR Part 20, Subpart J, requirements.
- Access to radioactive materials and contaminated areas was controlled in accordance with 10 CFR Part 20, Subpart I, requirements.
- Individuals followed requirements of the applicable radiation work permit and surveyed hands and feet after completion of work within the building.

The training requirements are provided in Section 2.5 of the decommissioning plan. The inspector verified that the licensee had established and implemented a training and qualification program for all personnel involved in decommissioning activities. Specifically, the licensee maintained a decommissioning training matrix which tracked employee training. The licensee's training program included annual refresher training, work authorization and work permit review, and procedure or guidance update reviews as necessary. The licensee conducted quarterly audits to identify training that was overdue or about to become overdue.

d. Effluent Control and Environmental Monitoring

The inspector reviewed the licensee's effluent control and environmental monitoring programs to verify compliance with regulatory and license requirements. In accordance

with the NRC-approved decommissioning plan, the licensee is required to sample reactor building ventilation system exhausts, environmental airborne effluents, and potentially contaminated liquids. The two technical specifications require the licensee to maintain records of gaseous and liquid radioactive effluents and offsite environmental monitoring surveys. The two technical specifications also require the licensee to summarize the radioactive effluents released and describe any environmental surveys performed outside of the facility in the annual reports.

The licensee described the effluent and environmental programs in the annual reports. The inspector reviewed the reports for 2015-2017 during the inspection (ADAMS Accessions ML18303A151, ML18303A172, and ML18303A124, respectively). The licensee discontinued voluntary reporting of the effluent and environmental sample results in semi-annual reports in 2015. The licensee sampled the reactor facility gaseous effluents for mixed fission products and iodine. No sample result exceeded the action levels specified in the applicable health physics procedure. The licensee's records indicate that it did not release radionuclides to the main site sanitary sewer system in 2015-2017; thus, no sewer samples were collected during this time frame.

The licensee voluntarily monitored the ambient gamma radiation levels within and around the reactor facility using environmental dosimeters, and the licensee voluntarily conducted air sampling at six perimeter stations. The licensee did not present these voluntary sample results in the annual reports.

The inspector reviewed the results of the licensee's ambient gamma radiation monitoring program. The licensee monitored ambient gamma radiation levels using 33 passive area dosimeters located inside and outside the reactor building. The inspector reviewed selected records for 2016-2017. The highest dosimetry measurement for 2017 was 40 millirem/year with a background of 7 millirem/year. This measurement was recorded in the Mark I reactor room which is located within the radiologically restricted area. The highest measurement for 2016 was 759 millirem/year in the eastern yard area. The licensee indicated that this elevated measurement was a result of radioactive wastes in storage at that time. As described in Section 1.2.h of this inspection report, these wastes were shipped offsite in 2016.

The licensee also conducted monthly ambient gamma radiation surveys along the reactor building fence. The inspector reviewed selected records for 2015-2018. The most recent survey results ranged from 12-35 µR/hr, with the highest measurements being recorded in the vicinity of the boxed waste material stored in the restricted area yard. All measurements were well below the regulatory limit for posting as a radiation area (5,000 µR/hr) and the regulatory limit specified in 10 CFR 20.1301 (2,000 µR/hr). The inspector noted that the perimeter fence line measurements in one particular area decreased in 2016 after the licensee shipped the americium-beryllium sealed source to an offsite location (see Section 1.2.h of this inspection report). This source had been stored in a room adjacent to the fence.

The licensee discussed public dose assessments in its annual Compliance and Radiation Safety Working Group audit report and ALARA review. The inspector reviewed the Working Group audit and ALARA report for 2016-2017 dated July 23, 2018. The report for 2017-2018 was incomplete at the time of the inspection and was not reviewed. The Working Group concluded that the maximum exposure to members of the public in 2016 from licensed activities was estimated to be less than 10 millirem

for the year. This calculated dose was less than the 100 millirem annual limit specified in 10 CFR 20.1301(a)(1).

e. Change Control

The inspector reviewed recent changes to the decommissioning program. The most significant change involved a change in the building release criteria. As noted in the September 2015 NRC inspection report (ADAMS Accession ML15328A527), the 1999 decommissioning plan did not include release criteria for volumetric contamination. The NRC-approved decommissioning plan only provided surface contamination limits.

By letter dated December 18, 2015 (ADAMS Accession ML15362A506), as supplemented by letter dated August 15, 2016 (ADAMS Accession ML16242A319), the licensee requested approval of volumetric release criteria for the reactor facility. The licensee requested release criteria similar to the criteria that the NRC had previously approved for the SNM license. By letter dated February 1, 2017 (ADAMS Accession ML16285A300), the NRC approved the licensee's request. The licensee subsequently used this new criteria to estimate the amount of material that will have to be removed during future decommissioning of the reactor pits. The licensee will also use the recently approved release criteria during the final status survey of the reactor building, after the building and adjacent yard have been remediated as necessary.

f. Audits and Reviews

The inspector reviewed the licensee's programs and procedures for audits and reviews to verify compliance with license requirements.

Sections 8.2 of each of the two license technical specifications require the licensee to implement a Criticality and Radiation Safety Committee. The committee is required to meet at least annually to review facility changes, records, performance, occurrences, and incidents. The licensee subsequently renamed this committee as the Compliance and Radiation Safety Working Group. The inspector reviewed the Working Group's annual audit summaries for 2016-2017 and 2017-2018. The Working Group's annual audits included ALARA reviews.

The Working Group reviewed all radioactive material and radiation-producing activities onsite, including reactor decommissioning activities. In summary, the reactor decommissioning activities were found to be well managed, and no findings or corrective actions were identified. The Working Group specifically noted that the licensee's monthly reports were found to be comprehensive summaries that provided useful information to the Working Group members.

The licensee is also required by the decommissioning plan to implement a quality assurance program. The quality assurance program requires the licensee to conduct annual audits. The inspector reviewed the annual quality assurance audits for 2016-2018. The three audits identified one finding, five observations, and three recommendations. The finding involved the auditor's discovery of obsolete and inaccurate organizational charts in the quality assurance program document, a repeat audit finding. The licensee issued a corrective action report, implemented corrective actions, and closed the item prior to the end of the audit. In summary, the audits

provided an independent and comprehensive review of the licensee's decommissioning program.

Finally, the inspector reviewed the licensee's annual reactor reports. Technical specifications, Section 8.6, for each license require the licensee to submit annual reports to the NRC. The reports are supposed to summarize decommissioning activities, radiation safety results, and environmental monitoring results during the previous year. The inspector reviewed the annual reports for 2015-2017, submitted to the NRC by letters dated April 4, 2016, March 17, 2017, and March 19, 2018 (ADAMS Accessions ML18303A151, ML18303A172, and ML18303A124, respectively). The inspector confirmed that the licensee submitted the reports to the NRC in a timely manner, and the reports included the information required by the licenses.

g. Emergency Planning

Section 7 of the NRC-approved decommissioning plan requires the licensee to have an emergency plan in place during decommissioning activities. The inspector conducted a review of the licensee's emergency planning program for the work in progress. The licensee developed an emergency procedure for the reactor facility. The 2016 procedure was included in Radiological Work Authorization W/A 600-18. The licensee also conducted and documented monthly emergency equipment inspections. The inspected equipment included fire extinguishers, first aid kits, and emergency lights. The licensee is required to train site staff for responding in emergencies; although, the inspector did not review these records during the inspection. In summary, the licensee developed and implemented an emergency plan as required by the decommissioning plan.

h. Solid Radioactive Waste Management and Transportation

The licensee continued to maintain a Low Level Waste Certification Plan for shipment of wastes to the U.S. Department of Energy (DOE) disposal site in Nevada. The DOE conducted annual audits to confirm whether the licensee's waste certification program continues to be effective and in compliance with program requirements. The inspector noted that the DOE audits for the last few years concluded that the licensee's program was in compliance with program requirements; therefore, the licensee could continue to ship wastes to the Nevada disposal site.

The licensee last shipped radioactive material in 2016. The inspector reviewed the four shipments that were completed in 2016:

- Shipment of an americium-beryllium sealed source (April 2016)
- Shipment of lead cask for recycling containing small quantities of cesium-137 and cobalt-60 (July 2016)
- Shipment of mixed waste containing cadmium and lead through a broker to a facility in Texas for processing (October 2016)
- Shipment of low specific activity material in three IP-1 steel boxes for disposal in Nevada (November 2016)

The inspector reviewed the shipment documentation and interviewed staff responsible for the shipments. The inspector concluded that the licensee conducted the shipments in accordance with U.S. Department of Transportation regulations. The inspector also confirmed that the licensee had implemented a training program to ensure that applicable employees attended function specific-training as required by U.S. Department of Transportation regulations.

1.3 Conclusions

The licensee maintained site staffing in accordance with license, quality assurance, and decommissioning plan requirements, and sufficient staff was available for the work in progress.

The licensee conducted site decommissioning in accordance with the NRC-approved decommissioning plan. The licensee and its contractors developed comprehensive work instructions. The work was conducted safely and in accordance with procedural requirements.

The licensee implemented its radiation protection program in accordance with license and regulatory requirements. The licensee monitored workers for occupational exposures, and no individual exceeded the regulatory limit.

The licensee implemented its effluent control and environmental monitoring programs in accordance with license and regulatory requirements. The licensee collected all required samples, reported the results as required by the license, and no sample result exceeded any procedural action level or regulatory limit.

Since the last inspection, the licensee requested, and the NRC approved, volumetric release criteria to supplement the surface release criteria that was provided in the NRC-approved decommissioning plan.

The licensee implemented its audit and review programs in accordance with license requirements. The licensee continued to submit annual reports to the NRC that included the information required by the two reactor licenses.

The licensee developed and implemented an emergency plan as required by the decommissioning plan.

The licensee conducted transportation activities in accordance with U.S. Department of Transportation regulations.

2 Decommissioning Inspection Procedure for Materials Licensees (87104)

2.1 Inspection Scope

The scope of this portion of the inspection was to determine if licensed decommissioning activities were being conducted under the SNM license in a manner that was protective of the health and safety of workers and the general public.

2.2 Observations and Findings

Materials License SNM-696 allows the licensee to possess enriched uranium and plutonium. The SNM license was converted to a possession-only license in 1994 with the intention that the site would be decommissioned and released for unrestricted use. In September 1996, the NRC amended the license to authorize decommissioning activities only. In March 1997, the NRC notified the licensee that it did not have to renew the SNM license since all licensed activities were associated with decommissioning, and ultimately, site release. In 2003, the licensed possession limit was lowered to less than critical mass quantities. License SNM-696 continues to be a possession-only license.

Since 1994, the licensee has remediated, surveyed, and released approximately 45 buildings and areas from the SNM license. The licensee transferred all remaining SNM to its State of California license CAL 0145-037 in 2010. During the October 2013 inspection, documented in NRC Inspection Report 050-00089/13-001, 050-00163/13-001, and 070-00734/13-001 dated December 2, 2013 (ADAMS Accession ML13338A864), the inspectors reviewed the licensee's material transaction reports and confirmed the transfer of the remaining SNM from the NRC license to the State license. At the time of the October 2013 inspection, the licensee had not requested termination of the SNM license, but was considering its options for future work that may be conducted under the license.

The licensee informally notified the NRC by email in November 2017 that it had decided to terminate the SNM license. The licensee noted that all land and facilities that had previously been under the jurisdiction of the SNM license had been released for unrestricted use. During this inspection, the licensee's staff indicated that the license termination request will be submitted to the NRC in the near future.

2.3 Conclusions

The licensee has not possessed radioactive material under NRC Materials License SNM-696 since 2010, and the licensee plans to submit a license termination request to the NRC in the near future.

3 Exit Meeting Summary

The inspector presented the inspection results to the licensee's representatives at the conclusion of the onsite inspection on October 25, 2018. During the inspection, the licensee did not identify any information reviewed by the inspector as proprietary.

SUPPLEMENTAL INSPECTION INFORMATION

PARTIAL LIST OF PERSONS CONTACTED

Licensee

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INSPECTION PROCEDURES (IPs) USED

IP 69013	Research and Test Reactor Decommissioning
IP 87104	Decommissioning Inspection Procedure for Materials Licensees

ITEMS OPENED, CLOSED AND DISCUSSED

Opened

None

Closed

None

Discussed

None

LIST OF ACRONYMS USED

ADAMS	Agencywide Documents Access & Management System
ALARA	As Low As is Reasonably Achievable
CFR	*Code of Federal Regulations*
DOE	U.S. Department of Energy
IP	Inspection procedure
µR/hr	microRoentgen per hour
NRC	U.S. Nuclear Regulatory Commission
SNM	special nuclear material

GENERAL ATOMICS INSPECTION REPORT 050-00089/18-001, 050-00163/18-001, and 070-00734/18-001, DATED NOVEMBER 19, 2018

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ADAMS ACCESSION NUMBER: **ML18319A137**

■ SUNSI Review By: RJE | ADAMS: ■ Yes ☐ No | ☐ Non-Publicly Available ■ Publicly Available | ■ Non-Sensitive ☐ Sensitive | Keyword: NRC-002

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