

## SAFETY EVALUATION REPORT

DOCKET NO: 70-7021

LICENSE NO: SNM-2018

LICENSEE: Rapiscan Laboratories, Inc.  
Sunnyvale, California

SUBJECT: RAPISCAN LABORATORIES, INC. – TERMINATION OF SPECIAL  
NUCLEAR MATERIALS LICENSE SNM-2018 (TECHNICAL  
ASSIGNMENT CONTROL NUMBER L33390)

### BACKGROUND

Rapiscan Laboratories, Inc. (Rapiscan) has been contracted by the Domestic Nuclear Detection Office (DNDO), a part of the U.S. Department of Homeland Security (DHS), to conduct a research program for the development of new technologies that are capable of detecting special nuclear material (SNM) in cargo containers. The DHS's development program includes testing that utilizes SNM placed inside of fully loaded cargo containers processed in equipment built by Rapiscan. During testing, the contents of the cargo containers included a variety of typical cargo materials seen in the United States of America ports of entry.

Rapiscan is located in California and is in possession of a license under the Agreement State Program, Radioactive Materials License No. 2484-43. Under this license, Rapiscan was authorized to possess SNM at a limit not to exceed 350 grams. Under the DNDO project, a variety of sealed SNM sources, containing differing enrichments in U<sup>235</sup>, were constructed by the Department of Energy at Oak Ridge for evaluation by multiple vendors. The amount of SNM incorporated into all of these sources exceeded the exemption limits of Title 10 of the *Code of Federal Regulations* (10 CFR) Section 150.11, thus requiring a license. Rapiscan submitted its initial application on October 22, 2010 (Agencywide Documents Access and Management System [ADAMS] Accession Number ML110970045) and a license was issued on September 24, 2012 (ADAMS ML113560071) for a variety of SNM of differing enrichment in U<sup>235</sup>. The quantity and type of SNM Rapiscan requested to possess is of low strategic significance as defined in the 10 CFR 70.4.

In acquiring a license with the U.S. Nuclear Regulatory Commission (NRC), for accountability purposes, the SNM already possessed by Rapiscan with the State of California was incorporated into their federal license. Two amendments to the license have been issued since initial licensing. The first amendment was issued on August 15, 2013 (ADAMS ML13203A208), authorizing the establishment of a temporary worksite for operations and material storage. The second amendment was issued on June 18, 2014 (ADAMS No. ML14164A407) to account for a mass difference in the material possessed from that which was requested in the original application. The sources constructed were slightly different than requested in the initial application, resulting in a total of 28 grams more U<sup>235</sup> of this enrichment than the license allows.

### REGULATORY REQUIREMENTS

Section 70.38 of 10 CFR provides the regulatory requirements relevant to expiration and termination of licenses and decommissioning of sites and separate buildings or outdoor areas.

## REGULATORY GUIDANCE

NUREG-1520, "Standard Review Plan (SRP) for Fuel Facilities License Applications" (NRC, 2015), provides guidance to staff reviewers who perform safety and environmental impact reviews of applications using SNM.

## PROPOSED CHANGES

By letter dated May 12, 2017 (ADAMS ML17136A093), Rapiscan Laboratories, Inc. submitted an amendment request to the NRC to terminate their Special Nuclear Material License, SNM-2018. The action to terminate the license was delayed, as described below, pending action with the Agreement State License Rapiscan possesses with the State of California. This Safety Evaluation Report (SER) addresses the resolution of issues in SNM-2018 to support the final termination of this license. The NRC accepted Rapiscan's request on October 12, 2017 (ADAMS ML17285A057).

## DISCUSSION

The initial license was issued on September 24, 2012 (ADAMS ML113560071) and included license conditions relative to storage and use requirements, leak test requirements, and contamination guidelines to be followed. The NRC staff reviewed the original application to determine whether Rapiscan was required to provide Integrated Safety Analysis (ISA) Summary information, pursuant to the provisions in 10 CFR Part 70, Subpart H, "Additional Requirements for Certain Licensees Authorized to Possess a Critical Mass of Special Nuclear Material." The proposed activities for which the SNM would be used did not meet the criteria in 10 CFR 70.60. While Rapiscan was authorized to possess SNM in an amount greater than critical mass, an ISA summary was not required because Rapiscan was not engaged in enriched uranium processing, fabrication of uranium fuel or fuel assemblies, uranium enrichment, enriched uranium hexafluoride conversion, plutonium processing, fabrication of mixed-oxide fuel or fuel assemblies, scrap recovery of SNM or any other activity that the Commission determines could significantly affect public health and safety. Rapiscan's proposed activities were determined to not significantly affect public health and safety. The NRC staff concluded that Rapiscan was not required to submit an ISA Summary.

In the initial application, Rapiscan requested an exemption from the criticality monitoring requirements of 10 CFR Paragraph 70.24(a) for the handling, use, and storage of the test objects containing SNM. The NRC staff evaluated the exemption request and determined that the installation of a criticality accident alarm system at the applicant's facilities would not significantly reduce the risk to the workers or the public because there was no credible criticality accident associated with the SNM test objects and their described use. Staff granted the exemption as requested in correspondence dated February 11, 2011 (ADAMS ML110890345), and in the applicant's response to requested additional information dated July 27, 2011 (ADAMS ML112150576).

The regulatory basis for financial assurance and decommissioning funding requirements are found in 10 CFR 70.22(a)(9) and 70.25. Rapiscan requested authorization to possess and use SNM in the form of sealed sources, posing less risk to the health and safety of the workers and the environment than unsealed SNM. Paragraph 70.22(a)(9) of 10 CFR and 10 CFR 70.25 require an applicant for a specific license for a uranium enrichment facility or authorizing possession and use of unsealed SNM in certain quantities to submit a Decommissioning Funding Plan or certification of financial assurance for decommissioning. The NRC staff concluded that the requirements in 10 CFR 70.22(a)(9) and 10 CFR 70.25 did not apply to the proposed activities, and that Rapiscan was not required to provide decommissioning financial assurance in support of its application.

Rapiscan's licensed activities were categorically excluded from the requirement to prepare a site specific Environmental Assessment (EA) under 10 CFR 51.22(c)(14)(v), which exempts an applicant from the requirement to prepare an EA for a materials license issued under 10 CFR Part 70 that authorizes the "use of radioactive materials for research and development and for educational purposes." Rapiscan used sealed sources of SNM for research and development of new technologies for the detection of SNM in cargo containers. Rapiscan used sealed SNM sources only for non-destructive experiments. Consistent with 10 CFR 51.22(c)(14)(v) and the criteria in NUREG-1748, "Environmental Review Guidance for Licensing Actions Associated with NMSS Programs," Section 2.2.7.5, pp. 2-9 and 2-10, this licensing action was categorically excluded from the need to prepare an EA or an Environmental Impact Statement.

On May 12, 2017, Rapiscan sent a request to terminate their license. Enclosures to the letter were five attachments: 1) NRC Form 314, Certificate of Disposition of Materials, dated May 12, 2017; 2) DOE/NRC Form 741, Nuclear Material Transaction Report, dated November 30, 2015; 3) Rapiscan request to State of California Department of Public Health, dated May 11, 2017; 4) Sealed Source Leak Test Results, dated November 16-17, 2016; and 5) Final Closeout Survey for Pittsburg, CA Test Site, dated March 3, 2016.

Rapiscan stated in their letter, that they were no longer in possession of the materials that were used for testing and evaluation under the DNDO program. Other information provided by Rapiscan included in the termination request was a record of the final sealed source inventory and leak test results of the sources used for the DNDO project prior to shipment. Also the final status survey of the Pittsburg Test Site, conducted March 3, 2016, was provided.

## FINDINGS

In their license termination request package, Rapiscan provided a copy of the letter dated May 11, 2017, and sent to the Department of Public Health, Radiologic Health Branch, requesting amending CA-2484-43 to add SNM, owned by Rapiscan, which had been added to the NRC license during the DNDO project for accountability purposes. On May 15, 2017, the NRC responded in an email to Rapiscan (ADAMS ML17136A000) that until the State of California issued a determination on that request, the NRC license could not be terminated. The approval of that amendment has held up action by the agency on the request to terminate. On October 11, 2017 (ADAMS ML17285A004), Rapiscan forwarded the response from California, amending license 2484-43 and adding the Rapiscan SNM back to the license. On October 12, 2017, the termination request was accepted (ADAMS ML17285A057). Paragraph 70.38(j) of 10 CFR describes the final steps required for decommissioning and license termination.

a. 10 CFR 70.38(j)(1) requires the certification of disposition of all licensed materials by completing NRC Form 314.

Enclosed in the request is NRC Form 314, Certificate of Disposition of Materials. The certificate identifies that all activities authorized by the license have ceased and that materials possessed under the license have been transferred to SNM-2017 and CA-2484-43. Attachment 2 to the termination package, DOE/NRC Form 741, dated November 17, 2015, is the record of Rapiscan shipping SNM on their license used in the DNDO project to Reporting Identification Symbol (RIS Code) ZNM, which is Sensor Concepts and Applications (Docket No. 0700-7020, SNM-2017).

Sensor Concepts and Application, Inc. is also licensed to possess the materials constructed under the DNDO testing and evaluation program. Sensor Concepts and Applications assisted DNDO in this program as an authorized licensee to provide site support during vendor blind testing periods. Sensor Concepts and Applications provided trained individuals to place the SNM sources in varying types of cargo, loaded into vehicles, which would then be processed

through a vendors proprietary detection equipment. Sensor Concepts and Applications was contacted for verification of receipt and provided DOE/NRC Form 741 (ADAMS ML17145A230) to the NRC, with receipt signed and dated November 30, 2015. Staff in the Material Control and Accountability Branch of the Division of Fuel Cycle Safety, Safeguards, and Environmental Review were contacted for material status report (ADAMS ML17284A015) and confirmation was received that material is accounted for as in the possession of SNM-2017. Rapiscan will retain their RIS Code for material owned by Rapiscan. Material used under the DNDO project is no longer in their possession or under their RIS Code.

California Radioactive Materials License No. 2484-43 is issued to Rapiscan for source and byproduct materials possession. Rapiscan included their SNM in its application for an SNM license, amending the California State License once the NRC license was granted. Rapiscan requested the amendment of the California license, on May 11, 2017, to add Rapiscan-owned materials back to the California license. This action was completed on October 11, 2017 (ADAMS ML17285A004) and provided to the NRC for review. The NRC staff determined that Rapiscan's license with the State of California has re-authorized the possession of U<sup>235</sup> SNM, not to exceed 350 grams. Rapiscan has no other radioactive materials license.

b. 10 CFR 70.38(j)(2) requires that a survey be conducted of the premises and the results documented as appropriate, using a calibrated, identifiable detection instrument.

Material used by Rapiscan, under this license, were all sealed sources. No work was performed or authorized under this license using unsealed materials, making a survey of premises not required. A final radiological inspection and survey of the Pittsburg, CA Test Site was performed on February 29, 2016 and forwarded to the Radiation Safety Officer on March 3, 2016. This was included as Attachment 5 to the termination request and documented the instrument used and radiation survey results. Survey results from the latest leak tests for the sources on SNM-2018 were attached and completed November 16, 2015. In addition to leak test of the sources themselves, a record of a contamination survey of the storage container (safe) used during the term of the license. These results were reviewed and signed by a supervisor on January 4, 2016.

c. While not specifically required for decommissioning and license termination, a site specific walk down and inspection of a licensee is beneficial and appropriate when possible. Rapiscan raised the issue of license termination early in 2017. In anticipation of the pending formal termination request and the information provided by the licensee, project management contacted Region IV, the authority for site inspection, to inquire of the status of the Rapiscan Program and materials under NRC purview. An inspection was already scheduled for the week of February 27, 2017. Region IV was requested to consider the pending termination while conducting what was scheduled as a routine inspection. The inspector was able to confirm that the materials used for the DNDO project had been shipped to Sensor Concepts and Applications and that Rapiscan had ceased all activities at the Pittsburg, CA site, to include conducting final status surveys (ADAMS ML17268A222). The inspection was formally documented on NRC Form 591 (ADAMS ML17087A619 and ML17095B076) and found to be satisfactory with no violations.

## ENVIRONMENTAL REVIEW

According to 10 CFR 51.22(c)(11), 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 concludes that the actions taken by Rapiscan Laboratories, Inc., as discussed herein, prior to and after the submittal of their request to terminate SNM-2018 have provided the necessary assurance to conclude that the license can be terminated. Additionally, having satisfied the final action, to provide the amendment of the California Agreement State License to add the Rapiscan-owned SNM back to the agreement state license, the license can be terminated without any further actions. The NRC staff has further determined that the actions taken by Rapiscan are adequate to provide assurance of the protection of the health and safety of the public and workers; to protect the environment; and to comply with the regulatory requirements imposed by the Commission in 10 CFR Part 70.

## PRINCIPAL CONTRIBUTOR

Tyrone D. Naquin

## REFERENCES

- (NRC, 2015) U.S. Nuclear Commission, "Standard Review Plan for Fuel Cycle Facilities and License Applications," NUREG-1520, June 2015 (ADAMS ML15176A258).
- (NRC, 2003) U.S. Nuclear Regulatory Commission, "Environmental Review Guidance for Licensing Actions Associated with NMSS Programs," NUREG-1748, August 2003 (ADAMS ML1032450279).