

NUCLEAR REGULATORY COMMISSION

[Docket No. 50-274; NRC-2015-0284]

United States Department of the Interior

United States Geological Survey TRIGA Research Reactor

AGENCY: Nuclear Regulatory Commission.

ACTION: Environmental assessment and finding of no significant impact; issuance.

SUMMARY: The U.S. Nuclear Regulatory Commission (NRC) is considering renewal of Facility Operating License No. R-113, held by the United States Geological Survey (USGS or the licensee), for the continued operation of its USGS Training, Research, Isotope Production, General Atomics (TRIGA) research reactor (GSTR or the reactor). The NRC is issuing an environmental assessment (EA) and finding of no significant impact (FONSI) associated with the renewal of the license.

DATES: The EA and FONSI are available as of **June 14, 2016**.

ADDRESSES: Please refer to Docket ID **NRC-2015-0284** when contacting the NRC about the availability of information regarding this document. You may obtain publicly-available information related to this document using any of the following methods:

- **Federal Rulemaking Web Site:** Go to <http://www.regulations.gov> and search for Docket ID **NRC-2015-0284**. Address questions about NRC dockets to Carol Gallagher;

telephone: 301-415-3463; e-mail: Carol.Gallagher@nrc.gov. For technical questions, contact the individual listed in the FOR FURTHER INFORMATION CONTACT section of this document

- **NRC's Agencywide Documents Access and Management System (ADAMS):**

You may obtain publicly-available documents online in the ADAMS Public Documents collection at <http://www.nrc.gov/reading-rm/adams.html>. To begin the search, select "[ADAMS Public Documents](#)" and then select "[Begin Web-based ADAMS Search](#)." For problems with ADAMS, please contact the NRC's Public Document Room (PDR) reference staff at 1-800-397-4209, 301-415-4737, or by e-mail to pdr.resource@nrc.gov. For the convenience of the reader, the ADAMS accession numbers are provided in a table in the "Availability of Documents" section of this document.

- **NRC's PDR:** You may examine and purchase copies of public documents at the NRC's PDR, Room O1-F21, One White Flint North, 11555 Rockville Pike, Rockville, Maryland 20852.

FOR FURTHER INFORMATION CONTACT: Geoffrey A. Wertz, Office of Nuclear Reactor Regulation, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001; telephone: 301-415-0893; e-mail: Geoffrey.Wertz@nrc.gov.

SUPPLEMENTARY INFORMATION:

I. Introduction

The NRC is considering renewal of Facility Operating License No. R-113, held by the USGS, which would authorize continued operation of its reactor, located in the Denver Federal Center, Lakewood, Colorado. Therefore, as required by section 51.21 of title 10 of the *Code of Federal Regulations* (10 CFR), "Criteria for and identification of licensing and regulatory actions

requiring environmental assessments,” the NRC performed an EA. Based on the results of the EA that follows, the NRC has determined not to prepare an environmental impact statement for the renewed license, and is issuing a FONSI.

II. Environmental Assessment

Identification of the Proposed Action

The proposed action would renew Facility Operating License No. R-113 for an additional 20 years from the date of issuance of the renewal license. The proposed action is in accordance with the licensee’s application dated January 5, 2009, as supplemented by letters dated November 24, 2010; February 11, March 28, May 12, June 29, July 27, August 30, September 26, October 31, and November 30, 2011; January 3, January 27 (two letters), March 28, April 27, May 18, May 31, June 29, July 31, August 30, and November 16, 2012; February 8, May 17, and October 31, 2013; November 3, and November 24, 2014; September 8, 2015; and January 22, and April 1, 2016, (the renewal application). In accordance with 10 CFR 2.109, the existing license remains in effect until the NRC takes final action on the renewal application.

Need for the Proposed Action

The proposed action is needed to allow the continued operation of the GSTR to routinely provide teaching, research, and services to numerous institutions for a period of 20 years.

Environmental Impacts of the Proposed Action

The NRC has completed its safety evaluation (SE) of the proposed action to issue a renewed Facility Operating License No. R-113 to allow continued operation of the GSTR for a period of 20 years and concludes there is reasonable assurance that the GSTR will continue to operate safely for the additional period of time. The details of the NRC staff’s SE will be

provided with the renewed license that will be issued as part of the letter to the licensee approving its license renewal application. This document contains the EA of the proposed action.

The GSTR is located within the Nuclear Science Building, Building 15, located on the Denver Federal Center, northwest of downtown Lakewood, Colorado, approximately 4 miles (6.4 kilometers) south of Interstate 70 and 10 miles (16 kilometers) west of downtown Denver, Colorado. The initial construction of Building 15 was completed in 1966 and the initial operating license was issued in February 1969. There are no permanent residences on the Denver Federal Center property, and the nearest residence is 2,100 feet (640 meters) from the GSTR.

The GSTR is a pool-type, light-water cooled, graphite-reflected research reactor licensed to operate at a maximum steady-state power level of 1.0 megawatt thermal power (MW) and has the capability to pulse to a peak power of approximately 1,600 MW. The fuel is located at the bottom of the inner aluminum tank with a diameter of approximately 7.5 feet (2.3 meters) and a depth of 25 feet (7.6 meters). The reactor is fueled with uranium-zirconium hydride TRIGA fuel elements with a uranium-235 enrichment of less than 20 percent. A detailed description of the reactor can be found in the GSTR Safety Analysis Report (SAR). There have been no major modifications to the GSTR or the Facility Operating License since issuing the operating license in February 1966.

A. Radiological Impacts

Environmental Effects of Reactor Operations:

Gaseous radioactive effluents are discharged by the ventilation exhaust located on the roof of the building, at a volumetric flow rate of approximately 1000 cubic feet per minute (cfm) (28.3 cubic meters per minute). The reactor bay is maintained at a negative pressure relative to the outside environment, which helps ensure that any release pathways are through the

ventilation exhaust that provides an elevated release point for dispersion of the effluent. This release pathway is monitored by GSTR staff. The only significant nuclide found in the gaseous effluent stream is Argon-41. The licensee has a current technical specification (TS) which limits the release of Argon-41 to an average annual concentration of $4.8\text{E-}6$ microcuries/milliliter ($\mu\text{Ci/ml}$). Argon-41 is released from the GSTR through a roof stack at an elevation of 21 feet (6.4 meters) above grade as specified in the GSTR TSs. The concentration of Argon-41 will be reduced by dispersion and dilution before it reaches the unrestricted area. The purpose of the TS is to help ensure that doses from Argon-41 released from the facility are within NRC regulatory requirements. Assuming continuous operation of the GSTR in order to continuously produce and release Argon-41 at the TS limit of $4.8\text{E-}6$ $\mu\text{Ci/ml}$, and a volumetric flow rate of 1,000 cfm from the exhaust stack, the total release of Argon-41 to the environment would be approximately 71.44 curies in a year.

The licensee performed calculations, assuming a continuous release of Argon-41 at the TS limit ($4.8\text{E-}6$ $\mu\text{Ci/ml}$), and determined that the potential radiation dose to a member of the public, who could be continuously exposed for an entire year at the nearest publicly-available location, 1,558 feet (475 meters) from the GSTR, was approximately 0.3 millirem (mrem) (0.003 milliSieverts (mSv)) per year. The licensee also performed calculations for various locations within the Denver Federal Center, using occupancy factors to account for the duration that persons could be exposed. The maximum exposure was at the Building 15 south door. Using a conservative occupancy factor of 5 percent (1.75 hours per work day or 437 hours per year) to account for the time that an individual may be at the door, the maximum radiation exposure was 6.75 mrem (0.0675 mSv). Using an occupancy factor of 22.8 percent (40 hours per week for 50 weeks per year), the licensee calculated that the annual dose to a

person at the entrance to the nearest building (Building 21 – 161 feet (49 meters) away) was 2.37 mrem (0.024mSv).

A review of the licensee's annual reports for the previous 5 years of operation shows that the maximum annual release of Argon-41 for the five year time period was approximately 13 curies in 2013. Using reactor operation as provided in the 2013 annual report, which was 1,118 hours, the approximate average concentration released from the roof stack during reactor operation was calculated to be $6.8\text{E-}12$ curies per milliliter (Ci/ml), which is well below the limit of $1.0\text{E-}8$ Ci/ml as specified in 10 CFR part 20, appendix B for air effluent releases.

The licensee also considered the radiological effect of Nitrogen-16, which is produced from neutron activation of Oxygen-16 in the reactor pool coolant water. Nitrogen-16 decays with a very short half-life of 7 seconds, and given that the GSTR has a nitrogen diffuser, which provides a delay in the time it takes for the Nitrogen-16 to transit from the reactor core to the pool surface, most of the Nitrogen-16 has been removed through decay prior to reaching the pool surface. Other radioactive gaseous effluents released were reported to the NRC in the licensees' annual reports and were approximately 5 percent or less of the air effluent concentration limits set by 10 CFR part 20, appendix B. The NRC staff reviewed the radiological dose calculations provided by the licensee, the assumptions used, and the results of several years effluent releases from the licensee's annual reports, as well as toured the facility, and finds that the results of the licensee's dose estimates to be reasonable.

Since the potential radiation dose resulting from the effluent release from the normal operation of the GSTR to a person in the unrestricted area outside the Denver Federal Center, is less than 1 mrem (0.01 mSv), and to the maximum exposed person on the Denver Federal Center is less than 7 mrem (0.07mSv), the licensee demonstrates compliance with the dose limit of 100 mrem (1 mSv) set by 10 CFR 20.1301. Additionally, this potential radiation dose

also demonstrates compliance with the air emissions dose constraint of 10 mrem (0.1 mSv) specified in 10 CFR 20.1101(d).

The licensee does not routinely dispose of liquid radioactive wastes. Normal operations of the GSTR do not generate liquid radioactive waste, and the licensee's policy is not to dispose of any liquid radioactive waste directly to the environment or to the sanitary sewer. The occasional liquid radioactive waste generated at the GSTR includes irradiated samples, liquid standards, decontamination waste water, and reactor tank pool water. Primary coolant water is purified by a mixed-bed demineralizer which maintains the conductivity levels low in order to minimize the corrosion potential of the reactor components. Radioactive liquid generated during the resin exchange process or minor amounts collected in the reactor tank or from other uses are evaporated and disposed of as solid radioactive waste. A review of the GSTR annual reports submitted to the NRC for the past 5 years, through 2014, indicated that the licensee reported no routine releases of liquid radioactive waste.

The licensee's health physics staff oversees the handling of solid low-level radioactive waste generated at the GSTR. The bulk of the waste consists of ion exchange resin, irradiated samples, lab-ware, and anti-contamination clothing. The resins used in the demineralizer are replaced every 2 to 3 years, and any radioactive material captured in the resins are disposed with the resins as solid radioactive waste. The resin is aggregated for disposal as solid radioactive waste, until a quantity sufficient for disposal can be collected, which allows significant radioactive decay to further reduce the amount of solid radioactive waste. The licensee disposes of the waste by transferring it to a low-level waste broker in accordance with all applicable regulations for transportation of radioactive materials.

To comply with the Nuclear Waste Policy Act of 1982, the USGS has entered into a contract with the U.S. Department of Energy (DOE) that provides that DOE retains title to the

fuel utilized at the GSTR and that DOE is obligated to take the fuel from the site for final disposition.

As described in Chapter 11 of the GSTR SAR, personnel exposures are well within the limits set by 10 CFR 20.1201, "Occupational dose limits for adults," and are as low as is reasonably achievable. The licensee health physics staff monitors personnel exposures, which are documented in the licensee's annual reports, and which are consistently less than 10 percent of the occupational limit of 5,000 mrem (50 mSv) per year. The TSs require a continuous air monitor and an area radiation monitor to be operable during reactor operation, in order to provide an indication of any change in the radiation levels. The NRC staff reviewed the operating experience from the GSTR, which is documented in both the licensee's annual reports and the NRC staff's inspection reports, and found that radiation exposures to personnel working in the GSTR from both direct and airborne radiation during normal operation, were within the limits of 10 CFR 20.1201. No changes in reactor operation that would lead to an increase in occupational dose are expected as a result of the proposed action.

The licensee conducts an environmental monitoring program to record and track the radiological impact of GSTR operation on the surrounding unrestricted area. The program consists of quarterly exposure measurements at six locations. Biennially, soil and water samples are taken around the facility and analyzed for contamination. The licensee health physics staff administers the program and maintains the appropriate records. The NRC staff review of the environmental survey program indicated that radiation exposures at the monitoring locations did not significantly change, and no correlation appeared to exist between total annual reactor operations and annual exposures measured at the monitoring locations. Based on the NRC staff's review of the past 5 years of data, the NRC staff concludes that operation of the GSTR does not have any significant radiological impact on the surrounding environment. No

changes in reactor operation that would affect radiation levels in the environment are expected as a result of the proposed action. Therefore, the NRC staff concludes that the proposed action would not have a significant radiological impact.

Environmental Effects of Accidents:

Accident scenarios are provided in the guidance in NUREG-1537, "Guidance for Preparing and Reviewing Applications for the Licensing of Non-Power Reactors," issued February 1996, and the results of the licensee's analysis was provided in Chapter 13 of the GSTR SAR. Typically, the most significant radiological fission product release accident considered at a research reactor is the maximum hypothetical accident (MHA) which for this reactor design is the rupture of one highly irradiated fuel element and the instantaneous release of the contained noble gases and halogen fission products into the air. The dose calculations conservatively assume no radioactive decay of the fission products prior to release. The licensee conservatively calculated doses to facility personnel and the maximum potential doses to members of the public at various locations around the GSTR. The NRC staff performed independent calculations to verify that the licensee's calculated doses represented conservative estimates for the MHA. The details of these calculations are provided in the NRC staff's SE report that will be issued with the renewed license. The occupational radiation doses resulting from this postulated accident would be well below the 10 CFR 20.1201 limit of 5,000 mrem (50 mSv). The maximum calculated radiation doses for members of the public resulting from this postulated accident would be well below the 10 CFR 20.1301 limit of 100 mrem (1 mSv).

The licensee has not requested changes to the facility design or operating conditions as part of the license renewal. No changes are being made in the types or quantities of effluents that may be released offsite. The licensee has systems in place for controlling the release of radiological effluents and implements a radiation protection program to monitor personnel

exposures and calculates releases of radioactive effluents. As discussed in the NRC staff's SE, the systems and radiation protection program are appropriate for the types and quantities of effluents expected to be generated by continued operation of the reactor. Accordingly, license renewal should not result in an increase in routine occupational or public radiation exposure. As discussed in detail in the NRC staff's SE, the proposed action will not significantly increase the probability or consequences of accidents. Therefore, license renewal would not change the environmental impact of facility operations. The NRC staff evaluated information contained in the licensee's application, as supplemented, and data reported to the NRC by the licensee for the last 5e years of operation to determine the projected radiological impact of the facility on the environment during the period of the renewed license. The NRC staff found that releases of radioactive material and personnel exposures were all well within applicable regulatory limits. Based on this evaluation, the NRC staff concluded that continued operation of the reactor for an additional 20 years should not have a significant environmental impact.

B. Non-Radiological Impacts

The GSTR core is cooled by natural convection of demineralized light-water in the primary cooling system consisting of the reactor tank and heat removal system. Cooling of the reactor core occurs by natural convection of coolant through the core, with the heated coolant rising out of the core and into the bulk pool water. The heat removal system transfers heat to the secondary system by pumping primary coolant through the tube-side of a 1000 kilowatt rated shell and tube heat exchanger. The secondary system circulates water through the shell-side of the heat exchanger and a forced-air cooling tower. Forced air is directed perpendicular to the water flow in the cooling tower to cool the water. During operation, the secondary system is maintained at a higher pressure than the primary system to minimize the likelihood of primary system contamination entering the secondary system, and ultimately the

environment in the unlikely event of a heat exchanger failure. Secondary coolant make-up water to the cooling tower is provided by city water and is automatically added as needed by a float-type control valve. The addition of secondary coolant make-up water is based on the evaporative loss through the cooling tower, and, thus, is minimal with respect to the total capacity of city water. Release of thermal effluents from the GSTR cooling tower will not have a significant effect on the environment. No chemicals are used in the treatment of the primary or secondary coolant. No highly hazardous chemicals, toxins or reactives are present at the facility. No strong acids or bases are used or stored by the licensee. The facility does use small amounts (typically less than 50 milliliter) of chemicals for experiments, but these chemicals are of low toxicity, reactivity and corrosivity characteristics, and are transferred as licensed byproduct material as part of the experiment to the user. As such, the licensee generally maintains less than 1 gallon (3.8 liters) of any chemical at the facility.

Given that the proposed action does not involve any changes in the design or operation of the reactor, and the heat load is dissipated to the environment by evaporative loss through a forced-air cooling tower, the NRC staff concludes that the proposed action will not have a significant impact on the local water supply.

National Environmental Policy Act Considerations:

The NRC has responsibilities that are derived from the National Environmental Policy Act and from other environmental laws, which include the Endangered Species Act (ESA), Coastal Zone Management Act (CZMA), National Historic Preservation Act (NHPA), Fish and Wildlife Coordination Act (FWCA), and Executive Order 12898 - Environmental Justice. The following presents a brief discussion of impacts associated with these laws and other requirements.

1. Endangered Species Act

The NRC staff conducted a search of Federally-listed species and critical habitats that have the potential to occur in the vicinity of the GSTR facility using the U.S. Fish and Wildlife Service (FWS) Environmental Conservation Online System Information for Planning and Conservation (IPaC) system. The IPaC system report identified 10 Federally endangered or threatened species that may occur or could potentially be affected by the proposed action (ADAMS Accession No. ML16120A471). However, none of these species are likely to occur near the GSTR facility because the facility is located within the Denver Federal Center, a U.S. General Services Administration-operated property that houses office buildings, warehouses, laboratories, and special use space. The area was developed for Federal government operations in the 1940s and has remained in use since that time. Because the area enclosed by the Denver Federal Center was developed for government buildings, it does not provide suitable habitat for any Federally-listed species. Further, the IPaC report determined that no critical habitat is within the vicinity of the GSTR facility. Accordingly, the NRC concludes that the proposed license renewal of the GSTR facility would have no effect on Federally-listed species or critical habitats. Federal agencies are not required to consult with the FWS if they determine that an action will not have an effect on listed species or critical habitat (ADAMS Accession No. ML16120A505). Thus, the Endangered Species Act (ESA) does not require consultation for the proposed GSTR facility license renewal, and the NRC considers its obligations under ESA Section 7 to be fulfilled for the proposed action.

2. Coastal Zone Management Act

The GSTR is not located within any managed coastal zones, nor would GSTR effluents and emissions impact any managed coastal zones. Therefore, the NRC does not have obligations under CZMA for this proposed action.

3. National Historic Preservation Act

The NHPA requires Federal agencies to consider the effects of their undertakings on historic properties. As stated in the Act, historic properties are any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in the National Register of Historic Places (NRHP). The NRHP lists eleven historical sites in the Lakewood, Colorado area. None of the sites are closer than 0.5 miles (0.8 kilometers) to the GSTR. Given the distance between the GSTR facility and these historical properties, continued operation of GSTR within the Nuclear Science Building would not impact any historical sites. The State Historic Preservation Office (SHPO) was contacted and the SHPO determined that license renewal would have no adverse effect on historic properties in the vicinity of the GSTR. Based on this information, the NRC finds that the potential impacts of license renewal would have no adverse effect on historic properties located in the vicinity of Building 15 of the Denver Federal Center and the GSTR.

4. Fish and Wildlife Coordination Act

With regard to the GSTR, the licensee is not planning any water resource development projects, including any of the modifications relating to impounding a body of water, damming, diverting a stream or river, deepening a channel, irrigation, or altering a body of water for navigation or drainage. Therefore, this action has no significant impact related to the FWCA.

5. Executive Order 12898 – Environmental Justice

The environmental justice impact analysis evaluates the potential for disproportionately high and adverse human health and environmental effects on minority and low-income populations that could result from the relicensing and the continued operation of the GSTR. Such effects may include human health, biological, cultural, economic, or social impacts.

Minority Populations in the Vicinity of the GSTR – According to the 2010 Census, about 34 percent of the total population (approximately 930,000 individuals) residing within a 10-mile radius of the GSTR identified themselves as a minority. The largest minority population were people of Hispanic, Latino, or Spanish origin of any race (approximately 241,000 persons or 26 percent), followed by Black or African American (approximately 271,000 or 3 percent). According to the U.S. Census Bureau's 2010 census data, about 20 percent of the Jefferson County population identified themselves as minorities, with persons of Hispanic, Latino, or Spanish origin of any race comprising the largest minority (14.3 percent), followed by Asian (2.6 percent). According to the U.S. Census Bureau's 2014 American Community Survey 1- Year Estimates, the minority population of Jefferson County, as a percent of the total population, had increased to about 21.3 percent.

Low-income Populations in the Vicinity of the GSTR – According to the U.S. Census Bureau's 2009–2013 American Community Survey 5-Year Estimates, approximately 140,000 individuals (15.1 percent) residing within a 10-mile radius of the GSTR, were identified as living below the Federal poverty threshold. The 2013 Federal poverty threshold was \$28,834 for a family of four.

According to the U.S. Census Bureau's 2014 American Community Survey 1-Year Estimates, median household income for Colorado was \$61,303, while 8.0 percent of families and 12.0 percent of the state population were found to be living below the Federal poverty

threshold. Jefferson County had a higher median household income average (\$70,714) and lower percentages of families (4.5 percent) and individuals (8.1 percent) living below the poverty level, respectively.

Impact Analysis – Potential impacts to minority and low-income populations would mostly consist of radiological effects, however radiation doses from continued operations associated with the license renewal are expected to continue at current levels, and would be well below regulatory limits.

Based on this information and the analysis of human health and environmental impacts presented in this environmental assessment, the proposed relicensing would not have disproportionately high and adverse human health and environmental effects on minority and low-income populations residing in the vicinity of the GSTR.

Environmental Impacts of the Alternatives to the Proposed Action

As an alternative to license renewal, the NRC considered denying the proposed action (i.e., the “no-action” alternative). If the NRC denied the request for license renewal, reactor operations would cease and decommissioning would be required. The NRC notes that, even with a renewed license, the GSTR will eventually be decommissioned, at which time the environmental effects of decommissioning would occur. Decommissioning would be conducted in accordance with an NRC-approved decommissioning plan which would require a separate environmental review under 10 CFR 51.21. Cessation of facility operations would reduce or eliminate radioactive effluents and emissions. However, as previously discussed in this environmental assessment, radioactive effluents and emissions from reactor operations constitute a small fraction of the applicable regulatory limits. Therefore, the environmental impacts of license renewal and the denial of the request for license renewal would be similar. In

addition, denying the request for license renewal would eliminate the benefits of teaching, research, and services provided by the GSTR.

Alternative Use of Resources

The proposed action does not involve the use of any different resources or significant quantities of resources beyond those previously considered in the issuance of Amendment No. 10 to Facility Operating License No. R-113 for the GSTR, dated June 16, 2005, which extended the license expiration date from October 10, 2007, to February 24, 2009, by removing the construction time, from the issuance date of Construction Permit No. CPRR-102 on October 10, 1967, to the issuance of Operating License No. R-113 on February 24, 1969.

Agencies and Persons Consulted

In accordance with the agency's stated policy, on May 25, 2016, the staff consulted with the Colorado State Liaison Officer regarding the environmental impact of the proposed action. The consultation involved a telephone voice message with an explanation of the environmental review, and an electronic mail message with a copy of the details of this environmental assessment, and the NRC staff's findings. On May 27, 2016, the State Liaison Officer responded, via electronic mail, that they understood the NRC staff review, and had no comments regarding the proposed action (ADAMS Accession No. ML16153A207).

The NRC staff provided information about the proposed activity to the Colorado State Historic Preservation Officer for review in a letter dated January 26, 2011 (ADAMS Accession No. ML110310614). The staff requested a review concerning the historical assessment of the proposed action. On February 16, 2011, the Colorado Historic Preservation Office responded by letter (ADAMS Accession No. ML110600304) and concurred with the conclusions that no historical properties were affected by the proposed action.

The NRC staff provided information about the proposed activity to the City of Lakewood, Department of Planning and Public Works for review in a letter dated September 9, 2011 (ADAMS Accession No. ML112560231). The staff requested a review concerning the historical assessment of the proposed action. On November 16, 2011, the Manager, Planning Development Assistance responded by electronic mail (ADAMS Accession No. ML113210158) and concurred with the conclusions that no historical properties were affected by the proposed action.

III. Finding of No Significant Impact

The NRC staff has prepared this EA as part of its review of the proposed action. On the basis of the EA included in Section II above and incorporated by reference in this finding, the NRC finds that there are no significant environmental impacts from the proposed action, and the proposed action will not have a significant effect on the quality of the human environment. The NRC staff has determined that a FONSI is appropriate, and decided not to prepare an environmental impact statement for the proposed action.

IV. Availability of Documents

The following table identifies the environmental and other documents cited in this document and related to the NRC's FONSI. These documents are available for public inspection online through ADAMS at <http://www.nrc.gov/reading-rm/adams.html> or in person at the NRC's PDR as described previously.

Document	ADAMS Accession No.
United States Geological Survey – Safety Analysis Report, Technical Specifications, and Environmental Report to Support License Renewal (redacted version), January 5, 2009	ML092120136
U.S Geological Survey TRIGA Reactor Response to the RAI Concerning R 113 License Renewal, November 24, 2010	ML103340090
Letter dated 01/26/11; Subject: Request for a Section 106 Review Under the National Historic Preservation Act for the U.S. Geological Survey TRIGA Reactor in Lakewood, Colorado, January 26, 2011	ML110310614
Colorado Historical Society, Letter dated 2/16/11, RE: Request for a Section 106 Review under NHPA for USGS TRIGA Reactor, Lakewood, CO, February 16, 2011	ML110600304
Letter dated 09/09/11; Subject: Request for a Section 106 Review Under the National Historic Preservation Act for the U.S. Geological Survey TRIGA Reactor in Lakewood, Colorado; from T. Jackson, NRC, to W. Clayton, City of Lakewood, CO, September 9, 2011	ML112560231
City of Lakewood E-mail dated 11/16/11, Subject: Section 106 Review of USGS TRIGA Reactor in Lakewood, November 16, 2011	ML113210158
Response to Letter of February 1, 2011 Concerning R-113 License Renewal, February 11, 2011	ML110480046
Response to Questions 23.1, 23.2, and 23.3 of the Referenced RAI, March 28, 2011	ML110950059
U.S. Geological Survey – Response to Questions 22.1, 22.2, 25.1, 25.2, 25.3, 25.4, and 25.6 of the Referenced RAI, May 12, 2011	ML11138A027
U.S. Geological Survey, Response to Request for Additional Information for Questions 17.1 and 17.2, June 29, 2011	ML11181A305
Response to Question 2 of the Referenced RAI, July 27, 2011	ML11214A091
Response to Question 1 of the Referenced RAI, August 30, 2011	ML112500522
Response to Request for Additional Information to Question 20, September 26, 2011	ML11277A013
U.S. Geological Survey TRIGA Reactor (GSTR) Response to Question 6 of the Referenced RAI, October 31, 2011	ML11314A106

U.S. Geological Survey – Redacted – Licensee Response to NRC Request for Additional Information Questions 7 and 8, License Renewal, November 30, 2011	ML113460014
U.S. Geological Survey – Redacted – Licensee Response to NRC Request for Additional Information Question 15.3, January 3, 2012	ML120240003
U.S. Geological Survey TRIGA Reactor – Response to Question 15.2 of the Request for Additional Information dated September 29, 2010, January 27, 2012	ML12068A138
U.S. Geological Survey TRIGA Reactor (GSTR) – Response to Question 18 of a Request for Additional Information dated September 29, 2010, January 27, 2012	ML12039A173
U.S. Geological Survey TRIGA Reactor, Response to Request for Additional Information to Question 14, March 28, 2012	ML12100A097
U.S. Geological Survey TRIGA Reactor (GSTR) – Response to Question 16 of the Referenced RAI, April 27, 2012	ML12128A429
U.S. Geological Survey, Responses to Questions 26 and 27 of the Referenced RAI, May 18, 2012	ML12151A407
U.S. Geological Survey – Response to Request for Additional Information (RAI) Question 14, May 31, 2012	ML12160A064
U.S. Geological Survey TRIGA Reactor (GSTR) – Response to Question 3 of the Referenced RAI, June 29, 2012	ML12200A055
U.S. Geological Survey TRIGA Reactor Response to Question 21 of the Referenced RAI dated September 29, 2010, July 31, 2012	ML12220A525
Responses to Questions 9, 10, 11, 12, 15.1, 23.4, 24, and 25.5; Along with a Corrected Copy of the Proposed Technical Specifications (Chapter 14) of the SAR, August 30, 2012	ML12251A231
U.S. Geological Survey – Redacted - Response to NRC Request for Additional Information dated October 2, 2012, November 16, 2012	ML12334A001
U.S. Geological Survey – Redacted – Responses to NRC Request for Additional Information dated October 2, 2012 and Telephone Conference dated December 20, 2012, February 8, 2013	ML13052A179
Redacted USGS RAI Clarification Information Needed to Support the USGS License Renewal SAR (ME1593), May 17, 2013	ML13162A662
Follow-up Safety Analysis Responses from letter dated July 15, 2013, October 31, 2013	ML13311A047

Submission of Revised Technical Specifications, Chapter 14, November 3, 2014	ML14325A646
Redacted Version – U.S. Geological Survey TRIGA Reactor Request for Additional Information Responses to RAI Questions 15.3 and 28, November 24, 2014	ML14338A196
Revision of Proposed Technical Specifications, September 8, 2015	ML15261A042
US Geological Survey, Responses to RAI Questions 1a, 1b, and 1c, January 22, 2016	ML16042A575
US Geological Survey RAI letter Redacted, April 1, 2016	ML16110A008
U.S. Fish and Wildlife Service, UGSG Training, Research, Isotope Production, General Atomics Research Reactor License Renewal, IPaC Trust Resources Report, April 29, 2016	ML16120A471
U.S. Fish and Wildlife Service, Endangered Species Consultations Frequently Asked Questions, July 15, 2013	ML16120A505
Colorado State Liaison Officer E-mail, RE: Review of the draft Environmental Assessment Supporting License Renewal of the USGS Research Reactor, May 27, 2016	ML16153A207

Dated at Rockville, Maryland, this 6th day of June 2016.

For the Nuclear Regulatory Commission.

/RA/

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