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VIA OVERNIGHT DELIVERY SERVICE

Document Control Desk
ATTN: Ms. Marlayna Vaaler, Project Manager
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Subject: Docket No. 50-89, Facility License R-38, and
Docket No. 50-163, Facility License R-67;
Submission of General Atomics TRIGA[®] Mark I and Mark F Annual
Reports for Calendar Year 2014 (3 Copies each)

Dear Ms. Vaaler:

Enclosed are the annual reports required by the applicable Technical Specifications of General Atomics' (GA's) Mark I (License R-38) and Mark F (License R-67) TRIGA[®] research reactors. These reports cover operations for the calendar year 2014. The sections of these reports are numbered consistent with the items of information referred to in Section 7.6d of the Technical Specifications for the Mark I TRIGA[®] reactor and in 8.6d of the Technical Specifications for the Mark F TRIGA[®] reactor.

Should you need additional information concerning the above, please contact me at (858) 455-2823 or by email keith.asmussen@ga.com, or Mr. John Greenwood at (858) 455-4526 or at john.greenwood@ga.com.

Very truly yours,

A handwritten signature in black ink that reads "Keith E. Asmussen".

Keith E. Asmussen, Ph.D., Director
Licensing, Safety and Nuclear Compliance

Encl: TRIGA[®]Mark I Reactor/Annual Report/Calendar Year 2014, dated March, 2015 (3 Copies)
TRIGA[®]Mark F Reactor/Annual Report/Calendar Year 2014, dated March, 2015 (3 Copies)

cc: Mr. Alexander Adams, Jr. (NRC)



TRIGA[®] Mark F Reactor

ANNUAL REPORT

CALENDAR YEAR 2014

Prepared to satisfy the requirements of
U.S. Nuclear Regulatory Commission
Facility License R-67
Docket No. 50-163

MARCH 2015

**GENERAL ATOMICS TRIGA REACTORS FACILITY
TRIGA Mark F Reactor
ANNUAL REPORT
Calendar Year 2014**

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1. INTRODUCTION

This report documents operation of the General Atomics (GA) TRIGA^{®1} Mark F non-power reactor for the period January 1, 2014 through December 31, 2014. The TRIGA Mark F Reactor possessed by GA under License No. R-67 (Amendment No. 45) granted by the U.S. Nuclear Regulatory Commission (Docket No. 50-163), at its San Diego, California facilities, was not operated for the duration of the reporting period.

This report is being prepared and submitted to satisfy the requirements of Section 8.6(d) of the R-67 Technical Specifications, as amended. This report is presented in six parts, consistent with the information required by the applicable Technical Specifications.

2. SUMMARY OF FACILITY ACTIVITIES

2.1 Decommissioning Status

During Calendar Year (CY) 2014, the TRIGA Mark F Reactor was in a Decommissioning status. The major tasks accomplished during this reporting period were:

- Finalization of the assessment of hazardous material contaminants (Pb and Cd) on the walls and floor of the pit.
- Release of a Request for Proposal to vendors to remove the hazardous material.
- Removal of all extraneous struts, ladders, and studs from the walls and floor of the pit.
- A signing of a contract to start work on the removal of hazardous material.

2.2 Facility Status

On March 4, 2014, GA submitted the license-required TRIGA Mk F Annual report to the NRC.

2.3 Decommissioning Schedule

A Statement of Work was issued in 2014 for the purpose of removal of the Epocast coating and about ¼ -inch of gunite from the walls and floor of the pit and fuel storage canal. In December of 2014 a contract was issued and the work will be performed in the 2015 calendar year. This task is expected to commence in March of 2015 and take about 4 months to complete. Following removal of the hazardous materials, borings will be made through the walls of the biological shield and the floor of the reactor pit in order to access the soil and ascertain whether it has been impacted by any contamination and/or activation products. The plan and schedule for the completion of the Decommissioning of the Mk F is dependent on the results of the soil characterization.

2.4 Radioactive Material Shipments

During 2014 three (3) separate radioactive shipments or transfers were made from the Mk F facility to different facilities.

On May 23, 2014, one DOT Type A Package 7 five (5) gallon drum was shipped from the GA site to NSSI. The package contained 37 MBq (1 mCi) of solid oxide Cm-244.

On August 8, 2014, one DOT Type A Package 7 five (5) gallon drum was transferred from the GA site to Philotechnics. The package contained 573.5 MBq (15.5 mCi) of solid sulfate of Pu-239.

¹ ®TRIGA is a registered trademark of General Atomics

On November 24, 2014, one (1) fiber drum of contaminated lead bricks was transferred from the GA site to Philotechnics. The package contained 0.01443 MBq (.0004 mCi) of Cs-137.

3. MAINTENANCE OPERATIONS

All maintenance activities, performed during the reporting period, generally fall into three categories: (i) routine preventive maintenance, (ii) routine calibration activities, and (iii) activities associated with replacement of older components and systems due to age. All maintenance activities are recorded in the TRF Decommissioning Logbook. Facility Maintenance Checklists are completed on a regular schedule at weekly, quarterly, and annual frequencies. All maintenance operations performed on the TRIGA Mark F Reactor Facility were minor in nature. There were no major maintenance operations performed during the reporting period.

4. 10CFR50.59 FACILITY MODIFICATIONS AND SPECIAL EXPERIMENTS

No applications for Facility Modification under the provisions of 10CFR50.59 were submitted for the R-67 facility during the CY2014 reporting period.

There were no Special Experiments submitted for the R-67 facility during CY2014.

5. RADIOACTIVE EFFLUENTS RELEASE TO THE ENVIRONS

During CY2014, 0.00 millicuries of Argon-41 were discharged from the TRIGA Mark F Reactor Facility ventilation stack to the atmosphere.

6. ENVIRONMENTAL SURVEYS

During CY2014, the Environmental Monitoring Program (EMP) for the TRF remained essentially unchanged from the prior year. The applicable EMP includes the following monitoring equipment and actions:

- o Five (5) emergency air samplers, situated on the Facility roof and around the TRIGA Reactor Facility perimeter.
- o Six (6) environmental air samplers, situated adjacent to, and near the GA site perimeter, in accordance with the GA Special Nuclear Material License (SNM-696).
- o Daily liquid effluent monitoring from the GA Main Sewerage Outfall Pump House, for gross alpha and beta radioactivity concentrations.
- o External radiation monitoring of the TRIGA Reactor Facility using five (5) passive area dosimeters, as well as radiation meter surveys conducted periodically.
- o A Continuous Air Monitor (CAM), situated in the Mark F Reactor Room (21/107), continuously samples room air for airborne radioactivity. CAM air filters are collected each week and analyzed for radioactivity.

7. SUMMARY OF RADIATION EXPOSURES AND RADIOLOGICAL SURVEYS

The following data summarizes measured personnel occupational radiation exposures and radiological surveys of the TRIGA Reactors Facility during CY 2014. Personnel who are listed on the TRIGA Reactors Facility Work Authorization (WA #600-13 and as of July 10, 2014 WA #600-14) and specific Radiological Work Permits (RWPs) were monitored for radiation exposure; these individuals included 32 General Atomics Staff and 21 Non-General Atomics Staff employees. The following exposures were primarily as a result of the inspection of the Mk F pit and Mk F radioactive shipment activities.

7.1 General Atomics Staff Whole Body Exposures ²

Number of individuals monitored:	32
High Exposure:	0.008 REM
Low Exposure:	0.000 REM
Average Exposure:	<0.001 REM

7.2 Non-General Atomics Staff Whole Body Exposures ³

Number of individuals monitored:	21
High Exposure:	0.004 REM
Low Exposure:	0.000 REM
Average Exposure:	<0.001 REM

7.3 Routine Wipe Surveys Of Mark F Reactor Facility

High Wipe:	176.0	dpm/100 cm ²
Low Wipe:	< 1.0	dpm/100 cm ²
Average Wipe:	18.9	dpm/100 cm ²

7.4 Routine Radiation Measurements Of Mark F Reactor Facility

High Measurement:	1.2	mR/hr
Low Measurement:	< 0.2	mR/hr
Average Level:	< 0.2	mR/hr

² Includes reactor facility staff and facility support staff authorized to work at the TRIGA Reactor Facility. These personnel may also work routinely at other GA radiation facilities; therefore, this dose represents *cumulative* exposure at all GA facilities.

³ Includes non-GA personnel who were granted periodic access to the facility for the performance of work. These personnel may also work routinely at other GA radiation facilities; therefore, this dose represents *cumulative* exposure at all GA facilities.



TRIGA[®] Mark I Reactor

ANNUAL REPORT

CALENDAR YEAR 2014

Prepared to satisfy the requirements of
U.S. Nuclear Regulatory Commission
Facility License R-38
Docket No. 50-89

MARCH 2015



GENERAL ATOMICS TRIGA REACTORS FACILITY
TRIGA Mark I Reactor
ANNUAL REPORT
Calendar Year 2014

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1. INTRODUCTION

This report documents operation of the General Atomics (GA) TRIGA®¹ Mark I Non-Power Reactor for the period January 1, 2014 through December 31, 2014. The TRIGA Mark I Reactor, possessed by GA at its San Diego, California facilities as authorized under License No. R-38 (Amendment No. 36) granted by the U.S. Nuclear Regulatory Commission (Docket No. 50-89) was not operated during the reporting period.

This report is being prepared and submitted to satisfy the requirements of Section 7.6(d) of the R-38 Technical Specifications, as amended. This report is presented in six parts, consistent with the information required by the applicable Technical Specifications.

2. SUMMARY OF FACILITY ACTIVITIES

2.1 Decommissioning Activities

During Calendar Year (CY) 2014, the TRIGA Mark I Reactor was in Decommissioning Status. There were no decommissioning activities performed during this period specifically in the Mark I Reactor.

2.2 Facility Status

On March 4, 2014, GA submitted the license-required TRIGA Mk I Annual report to the NRC. The Mark I reactor consists of simply an empty concrete pit. The fuel was shipped off site in 2010. All reactor components have also been shipped off site.

2.3 Decommissioning Schedule

Decommissioning of the Mark I Reactor will continue upon completion of the Characterization of the Mark F Reactor liner, biological shield, and soil behind the shield and beneath the floor of the reactor pit. In this way, efforts between the two reactors can be coordinated to better utilize personnel, equipment, and material.

2.4 Radioactive Material Shipments

No radioactive material shipments occurred from the TRIGA Mark I Reactor Facility during this reporting period.

3. MAINTENANCE OPERATIONS

All maintenance activities, performed during the reporting period, generally fall into three categories: (i) routine preventive maintenance, (ii) routine calibration activities, and (iii) activities associated with replacement of older components and systems due to age. All maintenance activities are recorded in the TRIGA Reactor Facility Decommissioning Logbook. Facility Maintenance Checklists are completed on a regular schedule, at weekly, quarterly, and annual frequencies. All maintenance operations performed on the TRIGA Mark I Reactor Facility were minor in nature. There were no major maintenance operations performed during the reporting period.

4. 10CFR50.59 FACILITY MODIFICATIONS AND SPECIAL EXPERIMENTS

No applications for Facility Modification under the provisions of 10CFR50.59 were submitted for the R-67 facility during the CY2014 reporting period.

There were no Special Experiments submitted for the R-38 facility during CY2014.

¹ ® TRIGA is a registered trademark of General Atomics



5. RADIOACTIVE EFFLUENTS RELEASED TO THE ENVIRONS

During CY2014, 0.00 millicuries of Argon-41 were discharged from the TRIGA Mark I Reactor Facility ventilation stack to the atmosphere.

6. ENVIRONMENTAL SURVEYS

During CY2014, the Environmental Monitoring Program (EMP) for the TRIGA Reactors Facility remained essentially unchanged from the prior year. The applicable EMP includes the following monitoring equipment and actions:

- o Five (5) emergency air samplers, situated on the Facility roof and around the TRIGA Reactor Facility perimeter.
- o Six (6) environmental air samplers, situated adjacent to, and near the GA site perimeter, in accordance with the GA Special Nuclear Material License (SNM-696).
- o Daily liquid effluent monitoring from the GA Main Sewerage Outfall Pump House, for gross alpha and beta radioactivity concentrations.
- o External radiation monitoring of the TRIGA Reactor Facility using five (5) passive area dosimeters, as well as radiation meter surveys conducted periodically.
- o Since there were no planned decommissioning activities the use of the Continuous Air Monitor (CAM) was still discontinued. It will be placed in use any time in the future when there are aggressive decommissioning activities with a potential for generating airborne contamination.

7. SUMMARY OF RADIATION EXPOSURES AND RADIOLOGICAL SURVEYS

The following data summarizes measured personnel occupational radiation exposures and radiological surveys of the TRIGA Reactors Facility during CY 2014. Personnel who are listed on the TRIGA Reactors Facility Work Authorization (WA #600-13 and as of July 10, 2014 WA #600-14) and specific Radiological Work Permits (RWPs) were monitored for radiation exposure; these individuals included 32 General Atomics Staff and 21 Non-General Atomics Staff employees. The following exposures were primarily as a result of the inspection of the Mk F pit and Mk F shipment activities.

7.1 General Atomics Staff Whole Body Exposures ¹

Number of individuals monitored:	32
High Exposure:	0.008 REM
Low Exposure:	0.000 REM
Average Exposure:	<0.001 REM

² Includes reactor facility staff and facility support staff authorized to work at the TRIGA Reactor Facility. These personnel may also work routinely at other GA radiation facilities; therefore, this dose represents cumulative exposure at all GA facilities.



7.2 Non-General Atomics Staff Whole Body Exposures 2³

Number of individuals monitored:	21
High Exposure:	0.004 REM
Low Exposure:	0.000 REM
Average Exposure:	<0.001 REM

7.3 Routine Wipe Surveys of Mark I Reactor Facility

High Wipe:	22.3	dpm/100 cm ² :
Low Wipe:	< 1.	dpm/100 cm ² :
Average Wipe:	5.2	dpm/100 cm ²

7.4 Routine Radiation Measurements of Mark I Reactor Facility

High Measurement:	1.6	mR/hr
Low Measurement:	< 0.2	mR/hr
Average Level:	0.14	mR/hr

³ Includes non-GA sub-contractor personnel who were granted periodic access to the TRIGA Reactor Facility for the performance of work. These personnel may also work routinely at other GA radiation facilities; therefore, this dose represents *cumulative* exposure at all GA facilities