



December 17, 1996  
38-2659

Document Control Desk  
ATTN: Dr. Seymour H. Weiss, Director  
Non-Power Reactors, Decommissioning and  
Environmental Project Directorate  
Division of Advanced Reactors & Special Projects  
Office of Nuclear Reactor Regulation  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

**Subject: Facility License R-38; Docket 50-89: Request for License Amendment to Withdraw Authorization to Operate General Atomics' TRIGA Mark I Non-power Reactor**

- References:
- 1) General Atomics' NRC-approved plan titled, "Fixed Site and Transportation Plan for the Protection of Special Nuclear Material of Moderate and Low Strategic Significance"
  - 2) General Atomics' NRC-approved plan titled, "Radiological Contingency Plan"

Dear Dr. Weiss:

General Atomics (GA) has concluded that there is not sufficient foreseeable future utilization of its TRIGA Mark I reactor to warrant the costs (e.g. annual fee) associated with maintaining the reactor's operating license (Facility License R-38). Therefore, whereas GA does not intend to continue operating its TRIGA Mark I reactor, GA hereby requests that its License Number R-38 be amended so as to withdraw U.S. Nuclear Regulatory Commission (NRC) authorization to operate the subject reactor.

Accordingly, GA requests that the R-38 License and associated Technical Specifications be amended as described in the enclosed attachment to this letter. The attachment also includes a description of measures that will be taken to ensure the continued safety of the facility.

In order to provide a window of time in which to implement changes to the facility so as to be in a permanently shutdown configuration when the possession only license amendment becomes effective, GA requests that the subject amendment become effective 30 days after the date of issuance by the NRC.

GA appreciates your assistance in considering this request and is hopeful of an expeditious approval. If you have any questions or require additional information, please do not hesitate to contact me, or Dr. Junaid Razvi, at (619) 455-2823, or (619) 457-8850, respectively.

Very truly yours,

Dr. Keith E. Asmussen, Director  
Licensing, Safety and Nuclear Compliance

Attachment: as stated in text above

cc: Mr. Alexander Adams, Jr., U. S. Nuclear Regulatory Commission Headquarters  
Regional Administrator, U. S. Nuclear Regulatory Commission, Region IV

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# CALIFORNIA ALL-PURPOSE ACKNOWLEDGMENT

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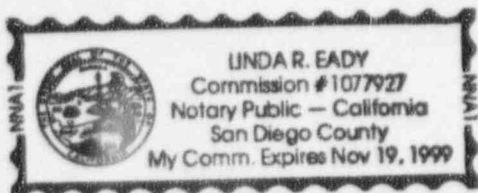
State of California

County of San Diego

On 12/17/96 before me, Linda R. Eady, Notary Public  
DATE NAME, TITLE OF OFFICER - E.G., "JANE DOE, NOTARY PUBLIC"

personally appeared Keith E. Asmussen  
NAME(S) OF SIGNER(S)

☒ personally known to me - OR ☐ ~~proved to me on the basis of satisfactory evidence~~  
to be the person(s) whose name(s) ~~is/are~~ subscribed to the within instrument and acknowledged to me that ~~he/she/they~~ executed the same in ~~his/her/their~~ authorized capacity(ies), and that by ~~his/her/their~~ signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.



WITNESS my hand and official seal.

Linda R. Eady  
SIGNATURE OF NOTARY

## OPTIONAL

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- ☐ ATTORNEY-IN-FACT  
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### DESCRIPTION OF ATTACHED DOCUMENT

Letter # 38-2659 to NRC  
TITLE OR TYPE OF DOCUMENT

13 (including attachments)  
NUMBER OF PAGES

12/17/96  
DATE OF DOCUMENT

### SIGNER IS REPRESENTING:

NAME OF PERSON(S) OR ENTITY(IES)

General Atomics

SIGNER(S) OTHER THAN NAMED ABOVE

This attachment contains the following information submitted in support of General Atomics' (GA's) request for a possession only license amendment for its non-power reactor License R-38:

- I) REQUESTED AMENDMENTS TO GENERAL ATOMICS' (GA'S) NON-POWER REACTOR LICENSE R-38;
- II) REQUESTED AMENDMENTS TO THE TECHNICAL SPECIFICATIONS ASSOCIATED WITH LICENSE R-38; AND
- III) A DESCRIPTION OF ADDITIONAL MEASURES THAT WILL BE TAKEN TO ENSURE SAFETY.

I) REQUESTED AMENDMENTS TO LICENSE R-38

In support of GA's request to have NRC withdraw authorization to operate GA's TRIGA Mark I research reactor, GA hereby requests: 1) that License Condition 2.C. (1) "Maximum Power Level," be deleted in its entirety, and 2) that Commission findings C. through 1.E and License Conditions 2.B (1), 2.B (2), 2.B (3), 2.C (2) and 2.C (3) of License No. R-38 (Docket No.50-89) be amended to read as follows:

- 1. The Atomic Energy Commission (hereinafter "the Commission") has found that:
  - C. The facility will be possessed in conformity with the application as amended, the provisions of the Act, and the rules and regulations of the Commission;
  - D. There is reasonable assurance that the reactor facility can be possessed (i) without endangering the health and safety of the public and (ii) in compliance with the regulations in this chapter;
  - E. General Atomics is technically and financially qualified to possess the facility in accordance with the regulations in this chapter;"
- 2. Facility License No. R-67, as amended, is hereby amended in its entirety to read as follows:

B. Subject to the conditions and requirements incorporated herein, the Commission hereby licenses General Atomics:

- (1) Pursuant to Section 104c of the Act and 10 CFR Chapter 1, Part 50 - "Licensing of Production and Utilization Facilities", to possess, but not operate, the reactor at the designated location at San Diego, California, in accordance with the procedures and limitations described in the application and in this license.
- (2) Pursuant to the Act and 10 CFR Chapter 1, Part 70 - "Domestic Licensing of Special Nuclear Material", to receive and possess up to 5.0 kilograms of contained uranium-235 in connection with possession of the facility.
- (3) Pursuant to the Act and 10 CFR Chapter 1, Part 30 - "Rules of General Applicability to Domestic Licensing of Byproduct Material", to possess but not to separate such byproduct and special nuclear material as may have been produced by past operation of the reactor.

C. This license shall be deemed to contain ... or incorporated below:

- (1) Maximum Power Level (paragraph 2. C. (1) is to be deleted in its entirety)
- (2) Technical Specifications

The TRIGA Mark I Technical Specifications (TS) contained in Appendix A to this license (hereinafter "the Technical Specifications") are hereby incorporated into this license. General Atomics shall possess the reactor in accordance with the Technical Specifications as amended.

- (3) Physical Security Plan

General Atomics shall maintain and fully implement all provisions of the Commission approved physical security plan as amended, including changes made pursuant to the authority of 10 CFR 50.54 (p).

[General Atomics requests that the following paragraphs (a) through (d) be added following the above paragraph (2) in order to allow GA to make changes, while the facility is in a possession-only status, in a manner similar to that provided for by 10CFR50.59:]

- (a) The licensee may (i) make changes in the facility or procedures as described in the Hazards Summary Report, and (ii) conduct tests or experiments not described in the Hazards Summary Report, without prior commission approval, unless the proposed changes, tests, or experiments involve a change in the TS incorporated in the license or an unreviewed safety question.
- (b) A proposed change, test or experiment shall be deemed to involve an unreviewed safety question if (i) the probability of occurrence or the consequences of an accident or malfunction of equipment important to safety previously evaluated in the Hazards Summary Report may be increased, or (ii) a possibility for an accident or malfunction of a different type than evaluated previously in the Hazards Summary Report may be created, or (iii) if the margin of safety as defined for any technical specification is reduced.
- (c) The licensee shall maintain records of changes in the facility and of changes in procedures made pursuant to this license condition, to the extent that these changes constitute changes in the facility as described in the Hazards Summary Report or to the extent that they constitute changes in procedures as described in the Hazards Summary Report. The licensee shall also maintain records of tests and experiments performed according to paragraph (a) of this license condition. These records must include a written safety evaluation which provides the basis for the determination that the changes, tests or experiments do not involve an unreviewed safety question.
  - (i) The licensee shall submit annually, in accordance with 10CFR50.4, a report containing a brief description of any changes, tests and experiments, including a summary of the safety evaluation of each.



- (ii) The licensee shall maintain the records of changes in the facility until the date of termination of the license and shall maintain the records of changes in procedures and records of tests and experiments for five years.
- (d) If the licensee desires to: (i) make a change in the TS, or (ii) make a change in the facility or procedures described in the Hazards Summary Report, or (iii) conduct tests or experiments not described in the Hazards Summary Report which involve an unreviewed safety question or requires a change in the TS, it shall submit an application for amendment of its license pursuant to 10CFR50.90.

In support of the above request, GA hereby commits to cease operation of its TRIGA Mark I reactor effective **30 days** after the date of issuance of the requested license amendment. In furtherance of this commitment, GA will, during this 30 day period following issuance of the license amendment, remove enough fuel from the reactor's core so as to render it incapable of achieving criticality. The fuel elements removed from the core will be stored in a safe geometry in the facility's fuel storage racks. The 30-day period requested above will allow GA to ensure that the facility will be in a possession-only configuration when the possession-only amendment to license R-38 becomes effective.

As a minimum, GA intends to remove a sufficient number of fuel elements from the inner rings of the reactor core so as to assure that the reactor is subcritical by at least one dollar of reactivity in the absence of any control rods. The fuel removed from the reactor core will be placed in safe storage in the reactor's pool storage racks, or other approved storage areas.

GA will perform measurements to determine the minimum number of fuel elements required to be removed from the present core configuration to prevent the reactor from achieving criticality under any circumstances. Based on these measurements, a sufficient number of fuel elements will be removed from the inner ring(s) of the Mark I core to make the reactor subcritical by at least \$1.00, even with the core poisons removed from the core. Removal of these fuel elements presently in use from the core and their placement in secure storage will assure that the Mark I reactor will not be capable of operating and that the fuel associated with the reactor is stored safely.

GA will continue to safely store all of the Mark I reactor fuel until such time as arrangements can be made for shipping it off site for ultimate disposition.

## II) REQUESTED AMENDMENTS TO THE TECHNICAL SPECIFICATIONS FOR R-38

In view of the above request to withdraw GA's authorization to operate its TRIGA Mark I Reactor (R-38), there are technical specifications which, as a result of placing the reactor in a possession-only configuration/status, need to be amended by their modification or deletion.

The technical specifications which GA wishes to amend involve (a) definitions which define conditions for operating the reactor, (b) calibration of reactor power measurement channels, (c) calibration and inspection requirements for fuel elements and control rods, and (d) administrative controls that address and/or refer to operation of the reactor. Specifically, the technical specifications for which GA is requesting amendments are listed and described below:

### Section 1.1: Reactor Shutdown:

Amend this definition to read as follows:

"Reactor shutdown shall mean that the reactor is subcritical at all times by at least one dollar of reactivity."

### Section 1.2: Reactor Secured:

Amend this definition to read as follows:

"Reactor secured shall mean that condition wherein:

- (a) The reactor is shutdown, and
- (b) no work is in progress involving handling of fuel, experiments or reactor core related maintenance operations."

### Section 1.3: Reactor Operation:

**Note:** In the possession only mode, the reactor will not be capable of achieving criticality. Further, Section 5.1.2, as amended below,

requires that the reactor be always shutdown by at least one dollar of reactivity. Under the following proposed revision of Section 1.3, fuel handling does not constitute "reactor operation." Thus, the effect of this proposed revision to Section 1.3 is to allow fuel handling to occur while always maintaining the reactor shutdown by at least one dollar of reactivity without having the reactor meet the definition of "reactor operation." This will allow necessary fuel handling, in instances such as defueling and/or decommissioning, without unnecessary Technical Specifications (such as those of Sections 5.2.1, 5.2.2 and 5.2.4) invoking no longer needed requirements associated with "reactor operation."

Therefore, Amend "Section 1.3: Reactor Operation" to read as follows:

"Reactor operation shall mean any condition wherein the reactor is not shutdown."

Section 5.1.2: 5.0 CONTROL AND SAFETY SYSTEMS

5.1 Control Systems

Amend Section 5.1.2 to read as follows:

"The number and configuration of fuel elements and control rods in the reactor shall be such as to maintain the reactor shut down by at least one dollar of reactivity at all times, even if **all control rods were** removed."

Section 5.2.3 5.2 Safety Systems

Amend Section 5.2.3 to read as follows:

"Radiation monitoring systems shall be operable as follows:

- (a) An area radiation monitoring system capable of activating an evacuation alarm.
- (b) When the reactor is not secured, a continuous monitoring system for airborne activity having a readout and audible alarm which can be heard in the reactor and control rooms.



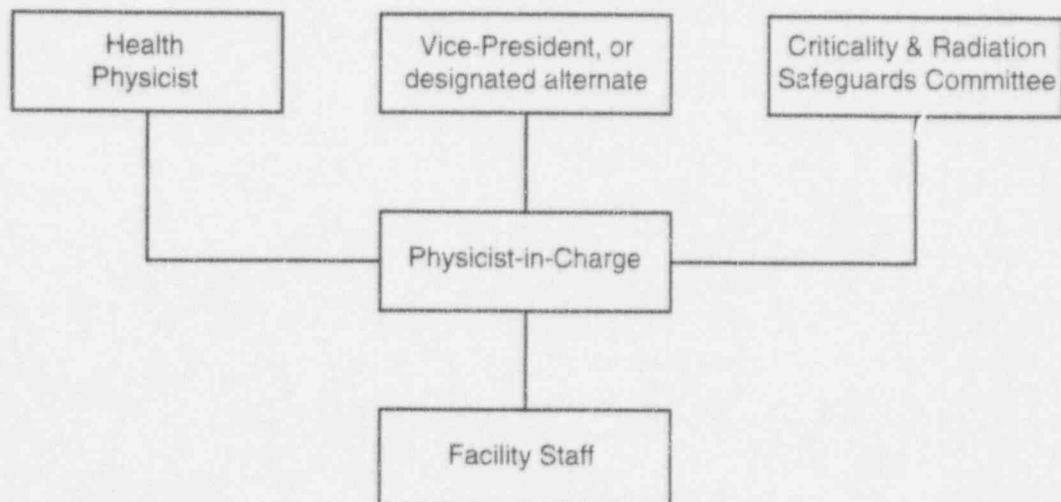
These systems shall be calibrated annually and their set points verified monthly. For periods of time for maintenance or repair to the above systems, or during periods of other forced outages, the intent of this specification shall be satisfied if the installed system(s) is replaced with appropriate alternate or portable radiation monitoring system(s)."

#### Section 9.1

#### Organization:

*Amend* this section to delete reference to the Physicist-in-Charge being a licensed senior operator, and to delete reference to safe operation of the reactor. The amended Section 9.1 is to read:

"The facility shall be under the supervision of the Physicist-in-Charge or his designated alternate. The minimum qualification for the Physicists-in-Charge shall include a Bachelor's degree or equivalent academic education and three years experience in activities related to reactor operations. He shall be responsible to a Vice President whose duties include responsibility for research and development, or his designated alternate, for limiting exposure of personnel and dispersal of radioactive material. The reactor shall be related to the corporate structure as shown in the following chart:"



Section 9.2      Review Committee:

*Amend* this section to replace reference to "Criticality Safeguards Committee" with "Criticality and Radiation Safety Committee (CRSC)," and to delete references to reactor operation.

The amended Section 9.2 is to be titled "Criticality and Radiation Safety Committee (CRSC)."

Paragraph 9.2 a. is to read as follows:

- a. "There shall be a Criticality and Radiation Safety Committee (CRSC) which shall review activities of the facility to assure criticality and radiation safety. The Committee shall be composed of at least four members selected by the cognizant Vice President, or a designee, considering their experience and education with regard to the various aspects of nuclear physics, chemistry, radiological health and statistics, as well as appropriate experience in other disciplines such as metallurgy and engineering. Subcommittees shall be appointed by the Chairman of the CRSC. The subcommittee assigned the responsibility for reviewing facility operations shall not have thereon person(s) who are directly involved with that facility."

Paragraph 9.2 b. is to read as follows:

- b. "The Criticality and Radiation Safety Committee shall be in accordance with a written charter including provisions for:
  1. Hold meetings or audits at least annually; special meetings may be called by subcommittees of the CRSC or by the Chairman of the CRSC at times when such meetings are deemed appropriate.
  2. Have a quorum when a majority of the members attend.

3. Prepare minutes or audit findings of the CRSC meetings by the Chairmen or his designee. Evidence of approval of the participating members of the CRSC shall be obtained before distribution.

Paragraph 9.2 c. is to read as follows:

- c. "The Criticality and Radiation Safety Committee, or subcommittee, shall review and approve safety standards associated with possession of the Facility. The CRSC or a subcommittee thereof shall audit the Facility annually but at intervals not to exceed fifteen (15) months."

Paragraph 9.2 d., item 4 is to read as follows:

4. "Review of facility records."

Paragraph 9.2 d., item 5 is to read as follows:

5. "Review of abnormal performance of plant equipment and other anomalies; and"

### Section 9.3

#### Written Procedures:

*Amend* paragraph 9.3 a. as follows:

- a. "Testing and calibration of instrumentation and controls necessary to meet the requirements of the Technical Specifications."

*Delete* paragraphs 9.3 b, e, and f.

Amend the paragraph of text following 9.3 g to read as follows:

"Changes which alter the original intent of the above procedures shall be made only with the approval of the Criticality and Radiation Safety Committee (CRSC). Changes to the procedures that do not change their original intent may be made by the Physicist-in-Charge; all such changes shall be documented and subsequently reviewed by the CRSC."

Section 9.4      Action to be Taken in the Event of a Reportable Occurrence

*Amend paragraphs b. and c. of Section 9.4 to read as follows (replaces reference to Criticality Safeguards Committee with CRSC):*

- b.    "The Physicist-in-Charge or other person notified under Section 9.4a shall notify the Chairman of the CRSC and the Vice President, or his designated alternate, identified in Section 9.1."
- c.    "A report shall be made to the CRSC which shall include an analysis of the cause of the occurrence, efficacy of corrective action,, and recommendations for measures to prevent or reduce the probability of recurrence."

Inasmuch as GA will not be authorized to operate the reactor and the reactor will not contain enough fuel to be capable of achieving criticality, it will be unequivocally unnecessary and/or impossible to meet the requirements in Sections 4.4, 5.1.3, 5.1.4, 5.1.5, 5.2.5, 9.3 b, 9.3 e, 9.3 f and 9.6 e of the TRIGA Mark I Reactor's (R-38) Technical Specifications. GA therefore requests that these technical specifications be amended by deleting them in their entirety, i. e., GA requests that the following Technical Specifications be amended by deleting them:

Section 4.4:      Delete this section which establishes requirements for periodic inspections of fuel elements in accordance with criteria specified in the technical specifications. By requesting the deletion of this technical specification requirement, GA hereby relinquishes the exemption granted in Section 4.5 from the requirements of 10CFR70.51(d), and GA will return to the requirements for physical inventory of Special Nuclear Material in accordance with 10CFR70.51(d).

Section 5.1.3:    Delete this section which places requirements for periodic verification of control rod scram times.

Section 5.1.4:    Delete this section which requires periodic visual inspection of control rods.

Section 5.1.5:    Delete this section which requires periodic inspection of transient rod drive cylinder and the associated air supply system.

- Section 5.2.5: Delete this section which requires periodic calibration of the reactor power measuring channels.
- Section 9.3 b Delete this item which refers to procedures for reactor operation.
- Section 9.3 e Delete this item which refers to procedures for control rod replacement.
- Section 9.3 f Delete this item which refers to procedures for maintenance of control rod drives.
- Section 9.6 e Delete this section which requires an annual report summarizing reactor operating experience.

### III) ADDITIONAL MEASURES TO ENSURE SAFETY

Measures that will be taken, in addition to the above described steps, to ensure the safety of the above proposed action will include the following:

- All fuel will be stored in accordance with existing technical specification requirements for safe fuel storage.
- Pool water quality will be maintained and ensured in accordance with existing technical specifications and following existing procedures, this in turn will ensure the safety and physical integrity of the fuel.
- All stored fuel will be secure in its storage location.
- All fuel movements required to achieve the safe and secure storage of the fuel will be conducted following existing fuel handling and storage practices and procedures.
- GA will continue to maintain the facility to assure that the fuel is always stored in a safe and secure manner prior to it being shipped off site for ultimate disposition.
- Physical security of the stored fuel will be assured by the continued implementation of

applicable measures specified in GA's NRC-approved fixed site physical protection plan (Ref. 1), which shall remain in effect.

- The applicable requirements of GA's NRC-approved radiological contingency plan (Ref. 2) will continue to apply to the facility.
- All existing pertinent safety related technical specifications applicable and relevant to the reactor in a shutdown mode and/or to safe handling and storage of fuel will remain in effect. The requirements of these technical specifications will continue to be met until the fuel is removed from the facility and/or shipped off site for ultimate disposition. In particular, the requirements of the following Mark I (R-38) Technical Specifications are relevant, directly applicable and will continue to be met:

Sections 3.2, 3.3, and 3.4: Requirements on reactor pool water conditions.

Section 5.2.3: Requirements for area radiation and continuous monitoring systems and alarms. Note the above requested revision to Section 5.2.3.

Sections 6.1, 6.2 and 6.3: Requirements on safe fuel storage.

Clearly, with the reactor being incapable of achieving criticality, the fuel being stored in approved safe and secure locations, and in view of all of the above described measures to ensure continued safety and security, GA submits that there are no safety considerations affected by the requested amendments to GA's TRIGA Mark I (R-38) License and Technical Specifications.