GENERAL ATOMICS

January 31, 2005
SHP-3837

Via Express Delivery Service

M/-6703

ATTN: Document Control Desk
Mr. E. William Brach, Director
Spent Fuel Project Office
Office of Nuclear Material Safety and Safeguards
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Subject: **Request for Amendment to Certificate of Compliance No. 6703 for the Model No. RG-1 Package**

References: 1) Asmussen, Keith E. (General Atomics) Letter No. SHP-3704 to Mr. E. William Brach (NRC), "Request for Renewal of Certificate of Compliance No. 6703 for RG-1s."

2) Camper, Larry W., (NRC, SFPO) Letter dated April 2, 2004, "... Renewal of Certificate of Compliance No. 6703 for the Model No. RG-1 Package."

Dear Mr. Brach:

General Atomics (GA) possesses two Radioisotopic Generators rated at 1 watt. These devises are also known as radioisotopic thermoelectric generators or RTGs. The shipping package for each of these devices is an integral part of the device itself. GA built 10 of these units known as Model RG-1s. Eight were delivered to the U.S. Navy, and the remaining two were retained at GA in anticipation of an order from the Navy that never materialized. The RG-1s are Strontium-90 fueled thermoelectric power sources of robust design for military deployment. GA holds Certificate of Compliance No. 6703 for these devices, i.e., shipping package Model No. RG-1.

Because there has been no Government or commercial interest in these devises for many years, GA has been seeking to dispose of them off its site. Each of these devises contains nearly 4,000 curies of Strontium-90 and, while GA is providing secure storage for them, it is in everyone's best interest to move the devises to a more secure Government facility for final disposition.

More specifically, GA has sought the assistance of the U.S. Department of Energy (DOE) to have them moved off GA's site. In 2003, the Off-Site Source Recovery Project (OSRP) at Los Alamos National Laboratory (LANL) advised GA that these units were included in a radioactive source recovery effort requested by the U.S. Nuclear Regulatory Commission (NRC) Office of Nuclear Material Safety and Safeguards (NMSS). Furthermore, GA was

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informed that these units had been given a high priority for recovery. In July of 2003, representatives from DOE and LANL visited the GA site to inspect the storage configuration of the RG-1s and to discuss preparations to have them moved off GA's site.

In December of 2003, DOE advised GA that it was willing and prepared to accept GA's RG-1's at LANL as soon as GA requested, and NRC approved, the renewal of GA's Certificate of Compliance No. 6703 for the RG-1's. The renewal being necessary to enable compliant transportation from San Diego, California to the Los Alamos National Laboratory in Los Alamos, New Mexico for storage and final disposition.

Toward that end, by letter dated February 26, 2004, GA requested the renewal of its Certificate of Compliance No. 6703 for the RG-1's for the specific purpose of a one time shipment of GA's two packages from its site in San Diego, California to the Los Alamos National Laboratory in Los Alamos, New Mexico (Ref. 1). As discussed in that request, the most efficient and practical manner in which to safely ship the strontium contained in the RG-1's is to ship it in the RG-1s as they were designed to be used, i.e., the RG-1s are their own shipping packages. By letter dated April 2, 2004, the NRC approved GA's request (REF. 2).

Subsequently, GA came to understand that after the RG-1's are shipped to LANL, DOE anticipates the need to ship them at least twice more. Once to support relocating storage, plus a final shipment to an authorized disposal site, e.g., to the Nevada Test Site.

Thus, the viable scenario for moving the two RG-1's off GA's site for final disposition involves at least three shipments, and cannot be supported by the existing CoC which authorizes only a single specific shipment of the two RG-1's (i.e., from San Diego to LANL).

Consequently, the NRC coordinated a meeting that was held at NRC Headquarters on December 2, 2004 to discuss and resolve the issue of DOE's need to:

1) Store the units in a configuration supported by a valid CoC for a Type B package, and
2) Have a CoC valid for trans-shipment of the RG-1's at least twice after the shipment from GA to LANL supporting the eventuality of relocating storage and the need for a final shipment to an authorized disposal site.

Representatives attending the meeting were from LANL, DOE Headquarters, NRC and GA. During the meeting, all parties agreed on the following course of action to resolve the issue:

1) GA will submit a request for an amendment to CoC No. 6703 to authorize two additional shipments of the RG-1's with DOE being the shipper of record,

2) GA will request an expiration date of October 1, 2008 (to give DOE time to complete its required shipments),
3) GA's request will include a summary of information relevant to the fitness of the RG-1s for the proposed shipments, and
4) NRC agreed to expedite their review of the requested amendment and, contingent upon NRC approval of the amendment request,
4) DOE agreed to a timely authorization of GA to ship its two RG-1's to LANL.

Accordingly, GA hereby requests that CoC No. 6703 for GA's two RG-1 units with serial numbers -001 and –002 be amended for the specific purposes of authorizing: 1) the shipment of the two RG-1s from GA's site in San Diego, California to the Los Alamos National Laboratory (LANL) in Los Alamos, New Mexico and 2) two subsequent shipments of the two RG-1s wherein LANL and/or DOE is in each case the shipper of record. GA also requests that the expiration date of CoC No. 6703 be amended to read October 1, 2008.

Information provided in the attachment to this letter supports the conclusion that the requested "limited" and "defined" use of GA's two RG-1s will be done safely and will result in insignificant environmental impacts.

As mentioned above, it is in everyone's best interest to move GA's RG-1s and their contained strontium to a secure Government facility as soon as reasonably achievable. It is something that must happen eventually; there is no advantage to delaying this action. DOE presently has the resources, staff, and volition to accomplish these shipments, but the situation could change in the future. Thus, a timely favorable response to our request is needed in order for GA and DOE to take advantage of this window of opportunity.

If you should have any questions regarding this request, please do not hesitate to contact me at (858) 455-2823, or at Keith.Asmussen@gat.com.

Very truly yours,

Keith E. Asmussen

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

Attachments:
Summary of Information, 3 pages
Photos of RG-1's, 2 pages

CC: Nancy Osgood, NRC/NMSS/SFPO

Summary of Information Regarding the Fitness for Use Of GA's Two Model RG-1 Packages
(In Support of Requested Amendment to CoC No. 6703)

General Atomics (GA) is requesting that Certificate of Compliance (CoC) No. 6703 for its two Model RG-1 packages be amended to allow GA and DOE/LANL to: 1) make a total of three (3) shipments of the RG-1s and 2) to extend the expiration date of the CoC to October 1, 2008. The following information is provided in support of the conclusion that the requested "limited" and "defined" use of GA's two RG-1s will be done safely and will result in insignificant environmental impacts.

When evaluating the safety and environmental impacts resulting from this request, it should be kept in mind that this request is, as mentioned above, for the "limited" restricted use of GA's two RG-1s. The use is limited to a total of only three shipments between now and October 1, 2008. The shipper in each case is known, i.e., GA or DOE/LANL, and each shipper has demonstrated a high commitment to safety. Furthermore, the destinations of the shipments are known or limited, i.e., from San Diego to LANL and from LANL to within the DOE complex.

Please note that prior to preparing the following, GA made an extensive search for documents, reports, memoranda, etc. related to GA's model RG-1 Radioisotopic Thermoelectric Generators (aka RTGs). This effort included a search for, and when found, a review of: QA/QC records, GA Contracts records, GA's Document Control records, and internal GA memoranda. In addition, it included discussions with certain persons knowledgeable of the RTG project including the Project Manager, Project Engineer, and two Project Technicians.

Unfortunately, no actual fabrication records were located for GA's two RG-1s. However, pertinent useful information was learned and the following documents were located:

1) four drawings for the RG-1s "released to fabrication" on May 17, 1973,
2) a copy of the contract for fabrication (between GA and the U.S. Navy),
3) a copy of the Licensing Topical Report (GA-LTR-11, dated May 1974) describing GA's nuclear QA Program,
4) a copy of a QA Plan (GA document No. QA Plan 1699-184) delineating the QA program requirements required by the U.S. Navy for the RG-1s, and
5) miscellaneous internal GA memos contemporary with the design and fabrication of the two RG-1s.

The following is a summary of information from these various sources.

The RG-1s are Strontium-90 fueled thermoelectric power sources of robust design for military deployment. The shipping package for each of these devices is an integral part of the device itself. The above-mentioned search for information indicates that the two RG-1s were fabricated in 1975 (circa June). This supports the GA consensus that they were fabricated in compliance with GA's NRC-approved nuclear QA program that was described in GA's Licensing Topical Report (GA-LTR-11) titled "General Atomics Quality Assurance Program," dated May 1974. GA document No. "QA plan 1699-184," dated May 14, 1971, describes the QA requirements specifically imposed by the U.S. Navy on the RG-1s.

The RG-1s were designed for safe extended deployment in a harsh environment. GA's two RG-1s were never deployed. They have never been off GA's site. Rather, they have always been stored inside a facility on GA's site located in the mild climate of southern California. Thus, the packages have been well maintained and are in excellent physical condition. (See attached photographs of GA's RG-1s).

Little maintenance of GA's two RG-1s has been required because they have never been shipped, have never been opened after final assembly, and they have been continuously stored inside a GA facility. They were designed to be assembled and then deployed in a remote harsh environment for years (e.g. under the sea) with no maintenance required. They have been, and continue to be, leak checked, i.e., swiped, on a semiannual basis. The results of the swipe tests consistently show no indication of a leak. The last swipe was taken on December 15, 2004.

The RG-1s were designed to safely contain 8,000 curies of Strotium-90. GA's RG-1s initially contained ~ 8,000 curies each, but as a result of natural radioactive decay while the packages have been stored at GA, the packages currently (January 2005) contain only about half of that amount, i.e., less than 4,000 curies each. (As of June 30, 2004, one contained 3757 Ci and the other contained 3860 Ci.)

The initial design of the Model RG-1 package included a 16-bolt and a 10-bolt closure configuration. GA's initial request for a Certificate of Compliance was for these two configurations. The initial safety review by the Atomic Energy Commission (AEC) concluded that the 16-bolt configuration met the requirements of 10 CFR 71 but that the 10-bolt configuration did not (AEC letter dated November 28, 1972). Consequently, the 10-bolt configuration was modified to a 20-bolt configuration. Subsequently, the Atomic Energy Commission concluded that the 20-bolt closure configuration met the requirements of 10CFR71 (AEC letter dated June 26, 1973) and issued CoC No. 6703 which specifically called out the 16- and 20-bolt configurations. There have been no subsequent design changes to the structure of the Model RG-1 package.

GA is not aware of any concerns regarding the performance or maintenance of any of the RG-1 packages supplied to the U.S. Navy. The only customer (U.S. Navy) feedback regarding the performance of the RG-1s was with regard to the reliability of their electrical output. This lead to a decision (circa 1975), to enhance the electrical reliability of the RG-1s by replacing a ten-pin electrical feed-through with an eight-pin feed-through design. This change was not related to, and had no impact on, the RG-1 package's structural design.

Routine maintenance of RG-1s is relatively simple and includes inspection of the packages, removal of any rust and repainting as appropriate, lubrication and replacement of closure bolts as needed, verification of proper torque on the closure bolts, and semi-annual leak (wipe) testing.

Note that although there are o-rings/gaskets inside the RG-1 packages, they are not part of the containment system for the solid doubly encapsulated (in stainless steel) source. Rather, the function of the o-rings was to create a seal to protect internal electrical components from intrusion of seawater during underwater deployment, not to retain the source material. The key elements of the Strontium containment system are the housing flange (i.e., lid cover plate), the housing, and closure bolts, which fasten the lid cover plate to the housing.

GA's RG-1s are in excellent condition, and there are no known outstanding safety or maintenance issues associated with the fitness of the RG-1s for use. Prior to shipment, GA will perform routine maintenance on each of the RG-1 packages, including leak/wipe tests, ensuring that all closure bolts have been tightened with proper torque, and that the RG-1s and their contents satisfy the applicable requirements of 10 CFR 71.87.

Attachment to General Atomics
Letter No. SHP-3837

One of GA's Two RG-1's

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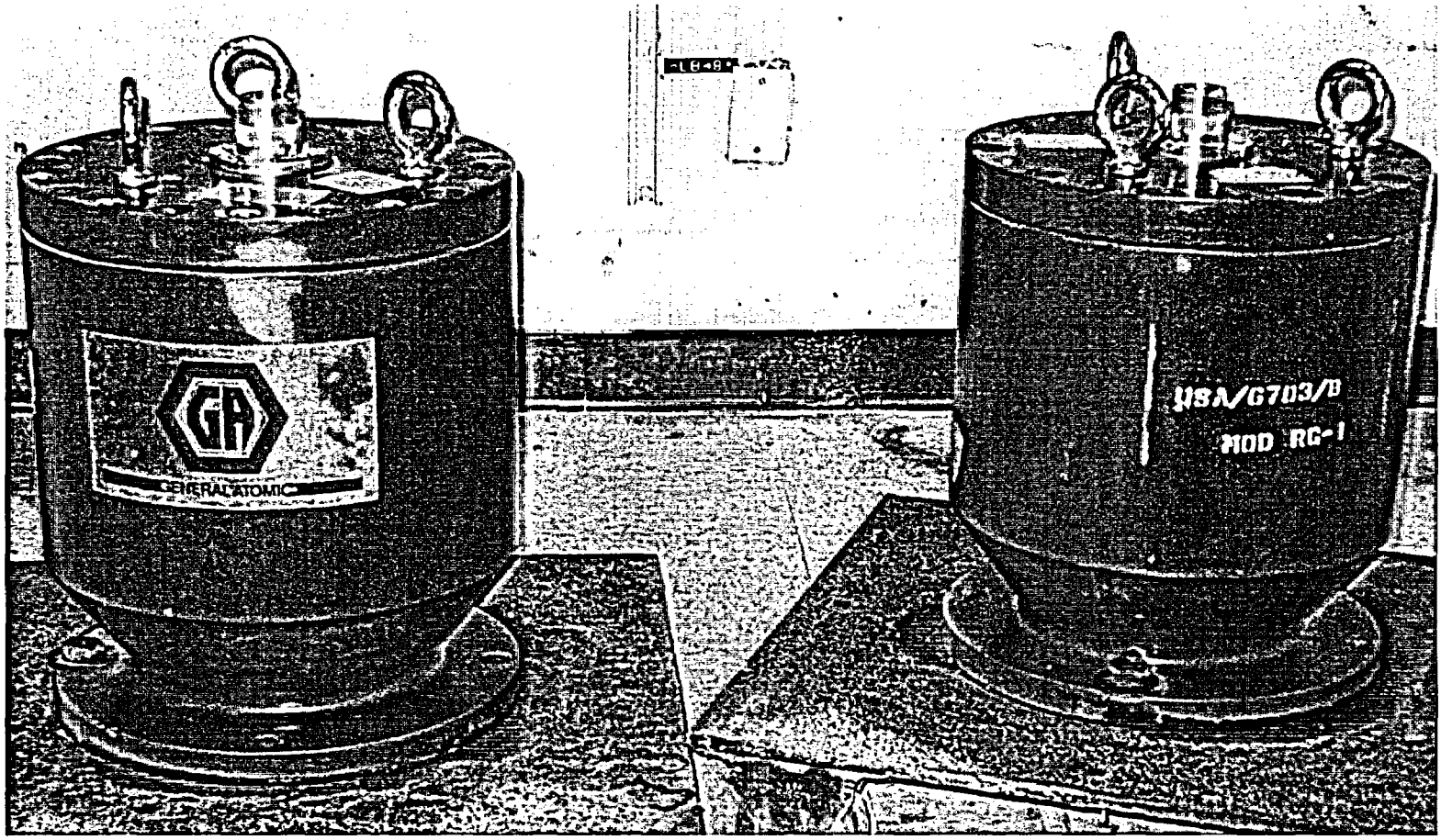

GA's Two RG-1's