GENERAL ATOMICS

March 6, 2007
696/CAL-4062

VIA EXPRESS DELIVERY SERVICE

Mr. Merritt N. Baker (In Duplicate)
Fuel Cycle Licensing Branch/Section 1
U.S. Nuclear Regulatory Commission
Mail Stop T-8A33
Two White Flint North
11557 Rockville Pike
Rockville, MD 20852-2738

Subject: **Docket No. 70-734; SNM-696: Request to Release a Certain Portion of General Atomics Facility to Unrestricted Use and Delete it from License No. SNM-696: Namely, GA's "Abandoned Rabbit Tube."**

and

Dr. Ron Rogus (In Duplicate)
State of California
Department of Health Services
Radiologic Health Branch
Mail Stop 7610
1500 Capitol
Sacramento, CA 95814-0208

Subject: **Radioactive Materials License No. 0145-37: Request to Release a Certain Portion of General Atomics Facility to Unrestricted Use and Delete it from License No. 0145-37: Namely, GA's "Abandoned Rabbit Tube."**

Dear Mr. Baker and Dr. Rogus:

As you are aware, for many years, General Atomics (GA) has been in the process of decontaminating (when appropriate) and decommissioning its site a portion at a time. To assure that GA would not inadvertently overlook and fail to address any facility, land area, underground pipe or tank, or any other item associated with the use of radioactive material on its site, GA prepared a comprehensive list of such items and included it in GA's Site Decommissioning Plan. i.e., Table S-1. One such item, which has been discussed from time-to-time over the years, for example during decommissioning coordination meetings attended by the NRC, GA and the State of California, is an abandoned "rabbit tube." The rabbit tube ran from GA's TRIGA reactors facility (Building 21) to a laboratory in GA's Building 2 (aka Laboratory Building or "L" Building).

In 2002, GA conducted an investigation of the abandoned rabbit tube and concluded there was no credible scenario for contamination. This conclusion was verified by the results of actual soil sampling and analyses and measurements on portions of the tube. These results are documented in the enclosed report. They show the rabbit tube and samples of soil collected from within and around it to be radiologically clean, thereby demonstrating that the rabbit tube and associated surrounding soil meet the approved criteria for release to unrestricted use as specified in GA's NRC- and State- approved Site Decommissioning Plan.

Pursuant to discussions during decommissioning coordination meetings and an entry on Table S-1 "Underground Pipes," GA committed to officially request the release of the abandoned rabbit tube. Accordingly, GA hereby requests the NRC and the State to release the subject "rabbit tube" to unrestricted use and to delete it from GA's NRC and State special nuclear material and radioactive material licenses, respectively.

Consistent with decisions made during joint NRC, State of California and GA decommissioning coordination meetings, the NRC has the regulatory lead for the release of the rabbit tube to unrestricted use.

If you should have any questions regarding this request, or the enclosure, please don't hesitate to contact me at (858) 455-2823 or keith.asmussen@gat.com, or Ms. Laura Q. Gonzales at (858) 455-2758 or laura.gonzales@gat.com.

Very truly yours,

Keith E. Asmussen

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

Enclosure: Asmussen, K. E., memo No. KEA:02:3499 to Decommissioning File (TRIGA Reactors/Bldg 21), "Abandoned "Rabbit Tube"," dated July 22, 2002. (9 pages, including attachment)

cc: Dr. D. Blair Spitzberg, Chief, NMSS Branch 3, Region IV
Mr. Robert Evans, Fuel Cycle Inspector, NRC Region IV
Mr. Jeff Wong, State of CA, Berkeley, CA
Ms. Barbara Hamrick, State of CA, Brea, CA

GENERAL ATOMICS
Internal Correspondence

FROM K. E. Asmussen KEA **REFERTO** KEA:02:3499

TO Decommissioning File (TRIGA Reactors/Bldg 21) **DATE** July 22, 2002

SUBJECT Abandoned "Rabbit Tube"

In the late 1950s/early 1960s, a "rabbit tube" system was installed for the purpose of rapid transport of irradiated specimens from the TRIGA reactor building (Building 21) to a laboratory in Building 2 (a.k.a. the "L" Building or "Lab" Building) (Refs. 1 and 2). Rapid transport was needed because the radioisotopes being studied/analyzed were very short lived. The laboratory in Building 2 was referred to as the "chemistry" laboratory (and to some, as a "mini-hot cell"). The laboratory was more specifically identified as lab/room 307. The rabbit tube exited the TRIGA reactor building, ran along the side of the road, crossed the landscaped area north of Building 2, and ended in the chemistry lab in Building 2.

The rabbit tube system consisted of a "capsule" which was propelled pneumatically, by compressed air, through a metal (aluminum) tube running from the TRIGA reactor building to the chemistry laboratory in Building 2. Irradiated samples were placed securely inside the capsule which was then propelled pneumatically through the rabbit tube to the chemistry lab for analysis. The irradiated samples were metal foils, wires, or coupons; not liquids or powders (Refs. 1 and 2).

The rabbit tube was not buried very deep and, unfortunately, it was not watertight. As a result, water and mud soon accumulated at a low spot in the line/tube. The source of water was landscape watering. This mud and water, along with the "rabbit," were forced out by the air pressure into the laboratory. As a consequence of this "messy" occurrence, use of the "rabbit tube" was then permanently discontinued (Ref. 1).

For a number of reasons, it has been confidently concluded that there was no credible potential for contamination of the tube or surrounding soil. The basis for this conclusion includes the following: the rabbit tube did not see much use; the "rabbit" encapsulated any radioactive material in transit through the tube; the radioactive isotopes transported via the rabbit tube system were very short lived – that is why there was a need to quickly transport these isotopes to the lab for analysis; and, most importantly, the samples were not in a physical form that could spill or leak - neither liquid or powder samples were used.

The above conclusion was validated when portions of the rabbit tube were exposed and excavated at two different locations. One portion of the rabbit tube was excavated on March 28, 2002, at a location approximately 120 feet south of the TRIGA reactors building. The other portion of rabbit tube was excavated on April 23, 2002, at a location approximately 200 feet south of the TRIGA reactors building. In both instances, the portions of the tube and samples of soil collected from within and around the tube were found to be radiologically clean (Ref. 3; copy attached). It is, therefore, concluded with

certainty that abandoning the rabbit tube in place presents no risk to public health and safety or to the environment.

References: 1) Private conversations with Dr. William Whittemore, March and April, 2002
2) Private conversations with Mr. John Greenwood, April 2002
3) Gonzales, Laura, memo "Summary of Results of Survey of the Abandoned "Rabbit Tube," dated July 17, 2002

cc:
Ruben DeVelasco
Laura Gonzales
William LaBonte
Bob Noren
Mary Scanlan

Prepared by Laura Gonzales Laura Gonzales
July 17, 2002

Summary of Results of Survey of the Abandoned "Rabbit Tube"(Cont.)

Background

On two separate occasions, the rabbit tube was exposed and excavated allowing Health Physics to conduct surveys. The first time was on March 28, 2002 at a location approximately 120 feet south of the TRIGA reactors building. The second time was on April 23, 2002 at a location approximately 200 feet south of the TRIGA reactors building.

Results of March 28, 20002 Survey

Radiation Dose Rate Survey - Radiation readings (in μR/hr) were taken inside the rabbit tube using a microR Ludlum Model-3 ratemeter with a 2"x2" NaI probe. The readings (see Figure 1) ranged between 20-24 μR/hr inside the rabbit tube. Radiation readings were not discernable from normal background readings inside a trench; radiation readings taken in this trench were 24 μR/hr (see Figure 1).

Beta/Gamma Readings - The rabbit tube was checked using a geiger counter having a 15 cm^2 pancake GM tube. Readings were not discernable from normal background levels (readings were 40-60 cpm as shown in Figure 1).

Samples- A sample (silt/soil) from inside this portion of rabbit tube was collected, processed and analyzed by gamma spectroscopy. The results showed no detectable fission or activation product activity (i.e., no Cs-137, Cs-134, Co-60, etc. were detected). Only naturally occurring thorium was detected. See Table 1.

Results of the April 23, 2002 Survey

Radiation Dose Rate Survey - Radiation readings (in μR/hr) were taken inside the rabbit tube using a microR Ludlum Model-3 ratemeter with a 2"x2" NaI probe. The readings (see Figure 2) ranged between 22-26 μR/hr inside the rabbit tube. Radiation readings were at or near normal background readings inside a trench; radiation readings taken in the trench near the rabbit tube were 22 μR/hr (see Figure 2).

Beta/Gamma Readings - The rabbit tube was checked using a geiger counter having a 15 cm^2 pancake GM tube. Readings were not discernable from normal background levels (readings were ~80 cpm as shown in Figure 2).

Summary of Results of Survey of the Abandoned "Rabbit Tube"(Cont.)

Samples- A sample (silt/soil) from inside this portion of rabbit tube was collected, processed and analyzed by gamma spectroscopy. The results (see Table 2) showed no detectable fission or activation product activity (i.e., no Cs-137, Cs-134, Co-60, etc. were detected). Only naturally occurring thorium and uranium were detected.

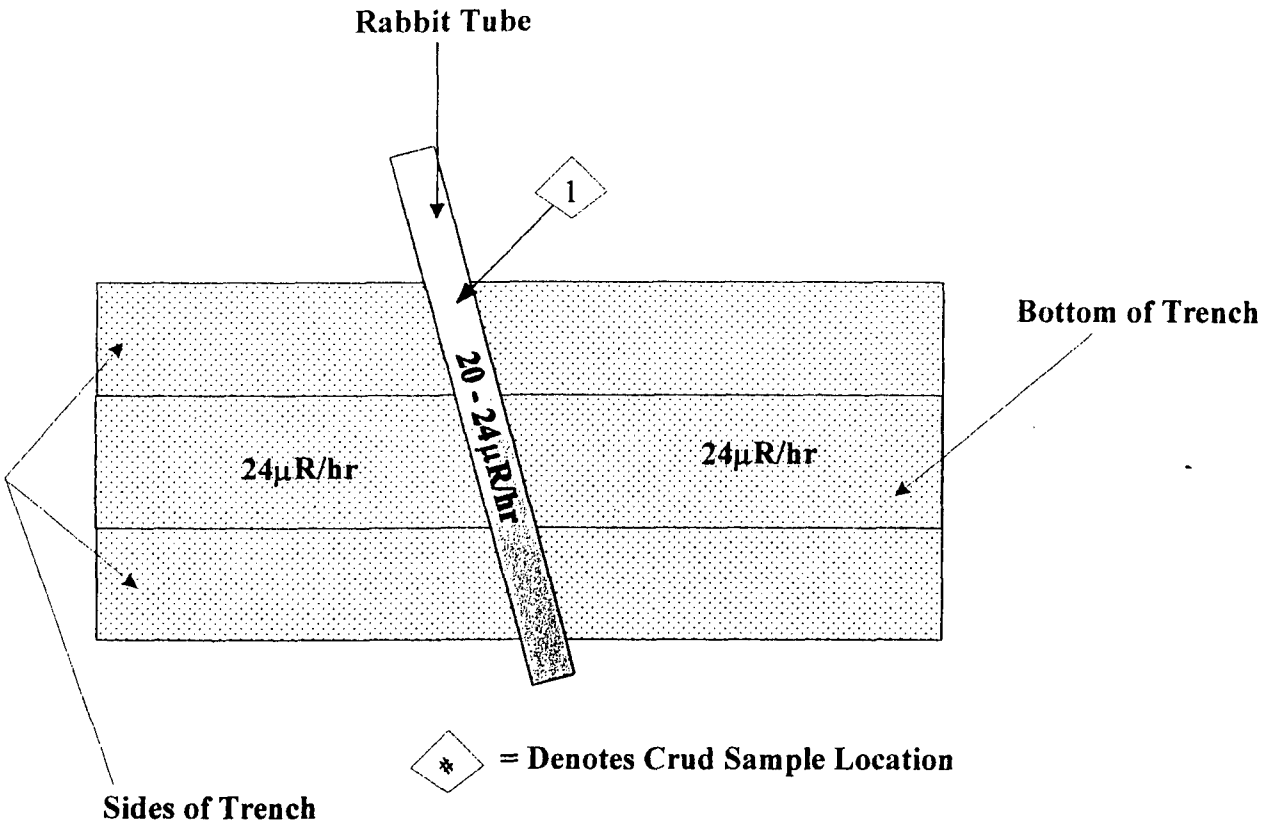
In addition, a sample of soil from around the rabbit tube was collected, processed and analyzed by gamma spectroscopy. These results (shown in Table 3) also had no detectable fission or activation product activity (i.e., no Cs-137, Cs-134, Co-60, etc. were detected). Only naturally occurring thorium and uranium were detected.

Conclusion

In both instances, the portions of the tube and samples of soil collected from within and around the tube were found to be radiologically clean.

Figure 1

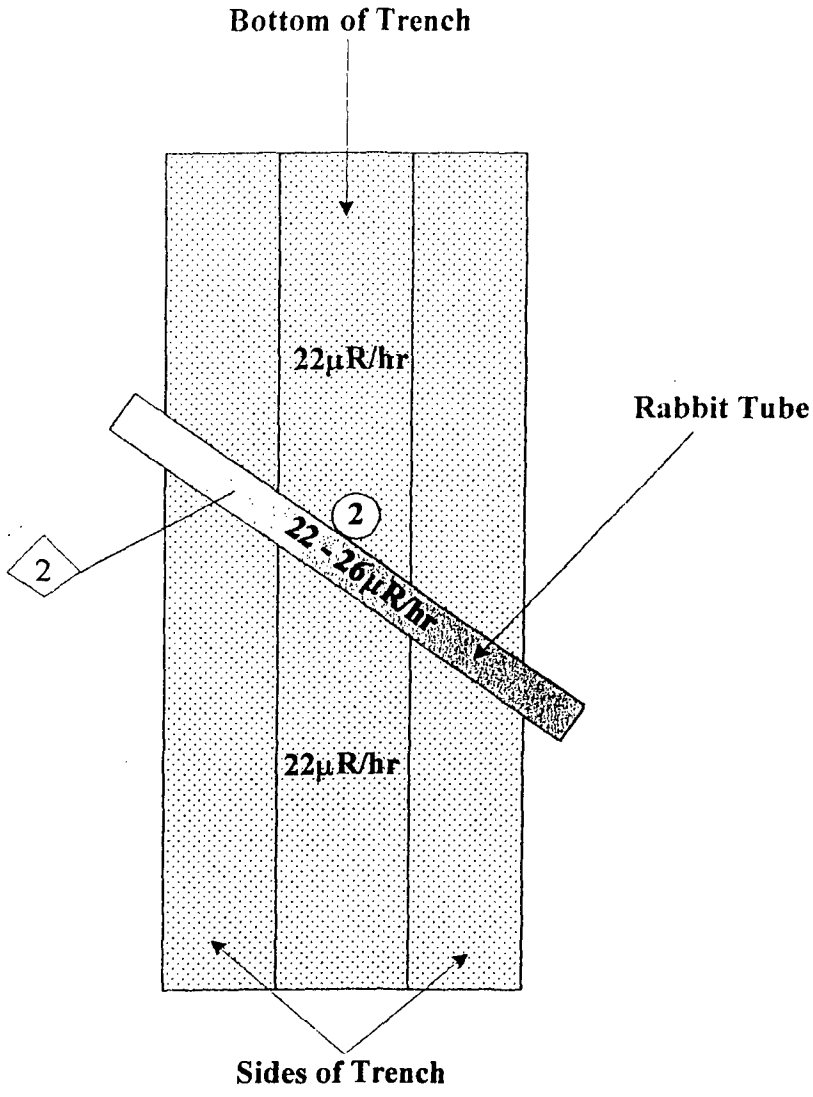
Survey of Rabbit Tube #1 03/28/2002



Location	Rabbit Tube #1			
Instruments	Model-3	Model-3	N/A	N/A
Serial Number	138880	153311	N/A	N/A
Calibration Due	07/25/2002	06/08/2002	N/A	N/A
Efficiency	23.40%	N/A	N/A	N/A
α β γ	β	γ	N/A	N/A
Probe Number	145963	155594	N/A	N/A
Probe Size	15cm²	2" x 2"	N/A	N/A
Comments: Direct frisk of Rabbit Tube found to be less than or equal to background of 40 - 60cpm.				
Signature: C. Stanley B. Lyons			Date: 03/28/2002	

Figure 2

Survey of Rabbit Tube #2 04/23/2002



(#) = Denotes Soil Sample Location

◇* = Denotes Crud Sample Location

Location	Rabbit Tube			
Instruments	Model-3	Model-3	N/A	N/A
Serial Number	138880	153311	N/A	N/A
Calibration Due	07/25/2002	06/08/2002	N/A	N/A
Efficiency	23.40%	N/A	N/A	N/A
α β γ	β	γ	N/A	N/A
Probe Number	145963	155594	N/A	N/A
Probe Size	15cm²	2" x 2"	N/A	N/A
Comments: Direct frisk of Rabbit Tube found to be less than or equal to background of 80cpm.				
Signature: C. Stanley B. Lyons			Date: 04/23/2002	

Table 1

Soil Sample Gamma Spectroscopy Analysis Review

Sample Identification Number: Rabbit Tube -1, Silt 1

Isotope	pCi/g	± pCi/g (2 σ error)	Fraction of Release Criteria
Co-60 (1170 kev)	ND		
Co-60 (1330 kev)	ND		
Total Co-60	0.00	0.00	0.00
Cs-134 (604 kev)	ND		0.00
Cs-137 (662 kev)	ND		0.00
Th-228 (Pb-212, 238 kev)	0.36	0.19	
Th-232 (Ac-228, 911 kev)	ND		
Total Th	0.36	0.19	0.04
U-235 (144 kev, or 186 kev)	ND		0.00
U-238 (Th-234, 63 kev, or 93 kev)	ND		0.00
Σfractions			0.04

Below Release Criteria X Above Release Criteria____

Reviewed By: W. T. LaBonte Date: 3/28//02

Note: Background is not subtracted from results or sum of fractions

Table 2

Soil Sample Gamma Spectroscopy Analysis Review

Sample Identification Number: Rabbit Tube -2, Silt (inside)

Isotope	pCi/g	± pCi/g (2 σ error)	Fraction of Release Criteria
Co-60 (1170 kev)	ND		
Co-60 (1330 kev)	ND		
Total Co-60	0.00	0.00	0.00
Cs-134 (604 kev)	ND		0.00
Cs-137 (662 kev)	ND		0.00
Th-228 (Pb-212, 238 kev)	0.40	0.09	
Th-232 (Ac-228, 911 kev)	0.55	0.14	
Total Th	0.95	0.23	0.10
U-235 (144 kev, or 186 kev)	0.07	0.04	0.07
U-238 (Th-234, 63 kev, or 93 kev)	0.79	0.53	0.03
Σfractions			0.19

Below Release Criteria__X__ Above Release Criteria____

Reviewed By: W. T. LaBonte Date: 4/23//02

Note: Background is not subtracted from results or sum of fractions

Table 3

Soil Sample Gamma Spectroscopy Analysis Review

Sample Identification Number: Rabbit Tube -2, Soil (outside)

Isotope	pCi/g	± pCi/g (2 σ error)	Fraction of Release Criteria
Co-60 (1170 kev)	ND		
Co-60 (1330 kev)	ND		
Total Co-60	0.00	0.00	0.00
Cs-134 (604 kev)	ND		0.00
Cs-137 (662 kev)	ND		0.00
Th-228 (Pb-212, 238 kev)	1.68	0.18	
Th-232 (Ac-228, 911 kev)	1.85	0.23	
Total Th	3.53	0.41	0.35
U-235 (144 kev, or 186 kev)	0.19	0.04	0.19
U-238 (Th-234, 63 kev, or 93 kev)	2.02	1.16	0.07
Σfractions			0.61

Below Release Criteria X Above Release Criteria____

Reviewed By: W. T. LaBonte Date: 4/24/02

Note: Background is not subtracted from results or sum of fractions