



SNM-00696  
070-00734 (JW)

February 2, 2006  
696-3956

Mr. Leonard D. Wert, Jr., Director  
Division of Nuclear Materials Safety  
U.S. Nuclear Regulatory Commission - Region IV  
611 Ryan Plaza Drive, Suite 400  
Arlington, TX 76011

Subject: **Transmittal of Semiannual Effluent Report (2 copies)**  
Docket Nos. 50-89, 50-163 and 70-734; License Nos. R-38, R-67 and  
SNM-696, Respectively

Dear Mr. Wert:

In accordance with 10 CFR 70.59, General Atomics (GA) herewith transmits the required semiannual effluent report for the period July 1, 2005 through December 31, 2005. By copy of this letter, one copy of this report is being forwarded to the Director, Office of Nuclear Material Safety and Safeguards, U. S. Nuclear Regulatory Commission. Additional copies are being sent to the State of California, Department of Health Services, Radiologic Health Branch.

Table 1 of the report lists data on the radiological gaseous and particulate effluent released to unrestricted areas from our facilities handling radioactive material. The release point descriptions are keyed to the facility names whose relative locations are shown on Figure 1 in the report, a plan view of GA's Main Site and Sorrento Valley sites. Attachment A provides detailed information concerning airborne effluent stack sample results over this reporting period. All airborne releases were well within the allowable State of California and NRC (10CFR20) limits. There was no radiological liquid effluent released during this report period.

We trust the information provided is satisfactory to meet the requirements for this submission. If you should have any questions regarding this information, please contact Ms. Laura Q. Gonzales at (858) 455-2758, or me at (858) 455-2823.

Very truly yours,

*Keith E. Asmussen*

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

Enclosure: Semiannual Effluent Report for the period July 1, 2005 through December 31, 2005

cc:

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**SEMIANNUAL EFFLUENT REPORT**

**FOR THE PERIOD**

**July 1, 2005 through December 31, 2005**

**Prepared By Edward Rudgers  
Reviewed by Laura Gonzales**

**February 2, 2006**

### **Semiannual Effluent Report Summary**

In accordance with 10 CFR 70.59, GA has prepared the semiannual effluent report for the period July 1, 2005 through December 31, 2005.

Table 1 lists data on the radiological gaseous and particulate effluent released to unrestricted areas from our facilities handling radioactive material. The release point descriptions are keyed to the facility names whose relative locations are shown on Figure 1, a plan view of GA's main site and GA's Sorrento Valley site. Attachment A of the report provides detailed information concerning airborne effluent stack sample results over this reporting period. All airborne releases were well within the allowable State of California and NRC 10CFR20 limits.

Table 2 provides the radiological liquid effluent which was released into a 100 million gallon/day regional sewerage treatment plant. Note: *There were no releases during this report period.*

**Table 1**  
**Gas and Particulate Effluents - July 1, 2005 through December 31, 2005**

Release Point (ID)	Effluent	Flow Rate (ft/min)	Stack Area (ft <sup>2</sup> )	m <sup>3</sup> /min <sup>(4)</sup>	Average pCi/m <sup>3</sup>	Total Ci Released <sup>(3)</sup>
<i>TRIGA Reactor Facility (Building 21)</i>						
TM1	MFP	1339	1.46	55.3	0.007 <sup>(1)</sup>	1.02e-07
TMF	MFP	517	1.5	21.9	0.004 <sup>(1)</sup>	2.31e-08
					Total	1.25e-07
TMF	Iodines	517	1.5	21.9	0.039 <sup>(1)</sup>	2.25e-07
<i>Other Facilities</i>						
<i>Building 10 Room 702 (HP Lab)</i>	Radionuclides Z 3-83	2290	1.1	71.3	0.005 <sup>(1)</sup>	9.40e-08
<i>Fusion (Bldg 34)</i>	H-3					0.000 <sup>(5)</sup>
<i>Sorrento Electronics</i>	Kr-85 Xe-133	2300	0.52	33.8	---	0 <sup>(2)</sup> 0 <sup>(2)</sup>
<i>Building 21 Room 104</i>	H-3					0.63 estimated

<sup>(1)</sup> Measured - Airborne effluents from selected facilities are monitored. The samples are collected weekly and analyzed using low-level alpha/beta counting systems. The average concentration (pCi/m<sup>3</sup>) over the six month period is obtained for each release point (alpha and beta concentrations are added). See Attachment A

<sup>(2)</sup> There were no releases during this report period.

<sup>(3)</sup> Ci Released = (183 operating days) (24 hr/day)(60 min/hr) (1e-6 µCi/pCi) (1e-6 Ci/µCi) (# m<sup>3</sup>/min)(average pCi/m<sup>3</sup>) Note: Operating days may be different based on dates the ventilation system was shut down.

<sup>(4)</sup> Flow rate x stack area (Note: 0.0283 m<sup>3</sup> = 1 ft<sup>3</sup>).

<sup>(5)</sup> Calculated based on operating time of the fusion device.

<p><b>Table 2</b></p>
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<p><b>Liquid Effluents</b> <b>July 1, 2005 through December 31, 2005</b></p>
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<p><b>There were no liquid effluent releases during this report period.</b></p>
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Site Code: TM1 Group I.D. 12

Month	Year	Highest Value		Weighted Average			Lowest Value		
		Alpha	** Beta	Alpha	** Beta	Beta	Alpha	** Beta	Beta
JUL	2005	0.001	0.004	0.001	0.003		0.000		0.002
AUG	2005	0.004	0.016	0.001	0.004		0.000		0.002
SEP	2005	0.002	0.010	0.002	0.006		0.001		0.004
OCT	2005	0.002	0.010	0.001	0.006		0.000		0.004
NOV	2005	0.006	0.032	0.001	0.008		0.000		0.004
DEC	2005	0.006	0.032	0.002	0.009		0.000		0.002

Site Average:  
Average Of  
Site Data For:

6 Months	0.004	0.017	0.001	0.006	0.000	0.003
Last 3 Months Only	0.005	0.025	0.001	0.008	0.000	0.003

\*\* Printed data values are monthly calculated values.

Site Code: TMF      Group I.D. 12

Month	Year	Highest Value		Weighted Average			Lowest Value		
		Alpha	** Beta	Alpha	** Beta	Beta	Alpha	** Beta	Beta
JUL	2005	0.001	0.003	0.001	0.002		0.000		0.001
AUG	2005	0.002	0.006	0.001	0.003		0.000		0.001
SEP	2005	0.001	0.006	0.001	0.003		0.000		0.002
OCT	2005	0.001	0.004	0.001	0.003		0.000		0.002
NOV	2005	0.002	0.017	0.001	0.004		0.000		0.002
DEC	2005	0.002	0.017	0.001	0.004		0.000		0.001

Site Average:  
Average Of  
Site Data For:

6 Months	0.002	0.009	0.001	0.003	0.000	0.002
Last 3 Months Only	0.002	0.013	0.001	0.004	0.000	0.002

\*\* Printed data values are monthly calculated values.



Running Average Report  
Summary By Group  
Units = pCi/m3

## Group I.D. 12

Site Code	Begin Mo	Begin Yr	End Mo	End Yr	#	Average Highest Value			Average Weighted Average			Average Lowest Value		
						Alpha	**	Beta	Alpha	**	Beta	Alpha	**	Beta
TM1	07	**	12	**	6	0.004		0.017	0.001		0.006	0.000		0.003
TMF	07	**	12	**	6	0.002		0.009	0.001		0.003	0.000		0.002

Group Average:  
Average Of Site  
Averages For:

6 Months	0.003	0.013	0.001	0.005	0.000	0.002
Last 3 Months Only	0.003	0.019	0.001	0.006	0.000	0.003

\*\* Printed data values are averages of data processed.

Site Code: HLAB Group I.D. 23

Month	Year	Highest Value Alpha ** Beta	Weighted Average Alpha ** Beta	Lowest Value Alpha ** Beta
JUL	2005	0.001 0.003	0.000 0.002	0.000 0.002
AUG	2005	0.001 0.004	0.001 0.003	0.000 0.002
SEP	2005	0.002 0.008	0.001 0.003	0.001 0.001
OCT	2005	0.002 0.008	0.001 0.003	0.000 0.002
NOV	2005	0.007 0.034	0.001 0.006	0.000 0.002
DEC	2005	0.007 0.034	0.002 0.009	0.000 0.001

Site Average:  
Average Of  
Site Data For:

6 Months	0.003	0.015	0.001	0.004	0.000	0.002
Last 3 Months Only	0.005	0.025	0.001	0.006	0.000	0.002

\*\* Printed data values are monthly calculated values.

Running Average Report  
Summary By Group  
Units = pCi/m3

Attachment A

Group I.D. 23

Site Code	Begin Mo	End Yr	# Mo	Average Highest Value Alpha	Average Highest Value Beta	Average Weighted Average Alpha	Average Weighted Average Beta	Average Lowest Value Alpha	Average Lowest Value Beta		
HLAB	07	**	12	**	6	0.003	0.015	0.001	0.004	0.000	0.002

Group Average:  
Average Of Site  
Averages For:

6 Months	0.003	0.015	0.001	0.004	0.000	0.002
Last 3 Months Only	0.005	0.025	0.001	0.006	0.000	0.002

\*\* Printed data values are averages of data processed.

Site Code: TMFI Group I.D. 22

Month	Year	Highest Value ** Gamma	Weighted Average ** Gamma	Lowest Value ** Gamma
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JUL	2005	0.048	0.033	0.020
AUG	2005	0.043	0.036	0.020
SEP	2005	0.043	0.023	0.004
OCT	2005	0.047	0.038	0.032
NOV	2005	0.037	0.035	0.033
DEC	2005	0.182	0.067	0.024
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Site Average:  
Average Of  
Site Data For:

6 Months	0.067	0.039	0.022
Last 3 Months Only	0.089	0.047	0.030

\*\* Printed data values are monthly calculated values.

Running Average Report  
Summary By Group  
Units = pCi/m3

Group I.D. 22

Site Begin	End	#	Average	Average	Average
Code	Mo	Yr	Mo	Yr	Mo
TMFI	07	**	12	**	6
			Highest Value	Weighted Average	Lowest Value
			** Gamma	** Gamma	** Gamma
			0.067	0.039	0.022
			-----	-----	-----
Group Average:					
Average Of Site					
Averages For:					
6 Months			0.067	0.039	0.022
Last 3 Months					
Only			0.089	0.047	0.030

\*\* Printed data values are averages of data processed.