



*Read Bill  
12/11/07*

070-00734  
SNM-696

August 24, 2007  
696-4123

Mr. Leonard Wert, Jr., Director  
Division of Nuclear Material 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

and

Dr. Ron Rogus (in Duplicate)  
State of California  
Department of Health Services  
Radiological Health Branch, M/S 7610  
1500 Capital Avenue  
Sacramento, CA 95814-5006

Subject: **Transmittal of Semiannual Effluent Report (2 copies); License 0145-37**

Dear Mr. Wert and Dr. Rogus:

In accordance with 10 CFR 70.59, General Atomics (GA) herewith transmits the required semiannual effluent report for the period January 1, 2007 through June 30, 2007. 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.

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. Table 2 provides the liquid effluent released into the sanitary sewerage system 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 Compliance

**Mr. Leonard Wert and Dr. Ron Rogus**  
**696/CAL- 4123**

**August 24, 2007**  
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Enclosure: Semiannual Effluent Report for the period January 1, 2007 through June 30, 2007

cc:

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**SEMIANNUAL EFFLUENT REPORT**

**FOR THE PERIOD**

**January 1, 2007 through June 30, 2007**

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

**August 24, 2007**

## Semiannual Effluent Report Summary

In accordance with 10 CFR 70.59, GA has prepared the semiannual effluent report for the period January 1, 2007 through June 30, 2007.

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: The only release during this report period was from a tenant (Ferring Research) occupying laboratory space in GA's Building 2.*

**Table 1**  
**Gas and Particulate Effluents – January 1, 2007 through June 30, 2007**

| 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> |
|--|-------------------------|--------------------|-------------------------------|------------------------------------|----------------------------|----------------------------------|
| <b>TRIGA Reactor Facility (Building 21)</b>                    |                         |                    |                               |                                    |                            |                                  |
| TM1  | MFP                     | 1294               | 1.46                          | 53.5                               | 0.008 <sup>(1)</sup>       | 1.12e-07                         |
| TMF  | MFP                     | 489                | 1.5                           | 20.8                               | 0.008 <sup>(1)</sup>       | 4.34e-08                         |
|  |                         |                    |                               |                                    | Total                      | 1.55e-07                         |
| TMF  | Iodines                 | 489                | 1.5                           | 20.8                               | 0.042 <sup>(1)</sup>       | 2.28e-07                         |
| <b>Other Facilities</b>  |                         |                    |                               |                                    |                            |                                  |
| Bldg 10<br>HP lab<br>Room 702                                  | Radionuclides<br>Z 3-83 | 2030               | 1.1                           | 63.2                               | 0.008 <sup>(1)</sup>       | 1.32e-07                         |
| <i>Fusion<br/>(Bldg 34)</i>                                    | H-3                     |                    |                               |                                    |                            | 0.088 <sup>(5)</sup>             |
| <i>General<br/>atomics<br/>Electronic<br/>systems<br/>Inc.</i> | Kr-85<br>Xe-133         | 2300               | 1.5                           | 97.6                               | ---                        | 0 <sup>(2)</sup><br>3.679        |
| Building<br>21   | H-3                     |                    |                               |                                    |                            | 0.20<br>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 = (181 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.

**Table 2**

**Liquid Effluents  
January 1, 2007 through June 30, 2007**

Tenant (Ferring Research) located within GA's Building 2  
Released H-3 0.2052 mCi on 5/3/07 into GA's Main Site Sewerage System

Running Average Report  
 Detail By Sampling Site  
 Units = pCi/m<sup>3</sup>

ATTACHMENT A

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Site Code: TMF      Group I.D. 12

| Month | Year | Highest Value |       | Weighted Average |       | Lowest Value |       |
|-------|------|---------------|-------|------------------|-------|--------------|-------|
|       |      | Alpha         | Beta  | Alpha            | Beta  | Alpha        | Beta  |
| JAN   | 2007 | 0.001         | 0.011 | 0.001            | 0.005 | 0.001        | 0.003 |
| FEB   | 2007 | 0.002         | 0.008 | 0.001            | 0.005 | 0.000        | 0.003 |
| MAR   | 2007 | 0.002         | 0.019 | 0.001            | 0.011 | 0.001        | 0.004 |
| APR   | 2007 | 0.002         | 0.019 | 0.001            | 0.011 | 0.000        | 0.004 |
| MAY   | 2007 | 0.001         | 0.008 | 0.001            | 0.005 | 0.000        | 0.003 |
| JUN   | 2007 | 0.001         | 0.009 | 0.001            | 0.005 | 0.001        | 0.003 |

Site Average:  
 Average Of  
 Site Data For:

|                       |       |       |       |       |       |       |
|-----------------------|-------|-------|-------|-------|-------|-------|
| 6 Months              | 0.002 | 0.012 | 0.001 | 0.007 | 0.001 | 0.003 |
| Last 3 Months<br>Only | 0.001 | 0.012 | 0.001 | 0.007 | 0.000 | 0.003 |

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

Running Average Report  
 Detail By Sampling Site  
 Units = pCi/m<sup>3</sup>

ATTACHMENT A  
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Site Code: TM1      Group I.D. 12

| Month | Year | Highest Value |       | Weighted Average |       | Lowest Value |       |
|-------|------|---------------|-------|------------------|-------|--------------|-------|
|       |      | Alpha         | Beta  | Alpha            | Beta  | Alpha        | Beta  |
| JAN   | 2007 | 0.002         | 0.011 | 0.001            | 0.006 | 0.000        | 0.002 |
| FEB   | 2007 | 0.001         | 0.008 | 0.001            | 0.005 | 0.000        | 0.002 |
| MAR   | 2007 | 0.001         | 0.011 | 0.001            | 0.008 | 0.001        | 0.005 |
| APR   | 2007 | 0.001         | 0.009 | 0.001            | 0.007 | 0.001        | 0.005 |
| MAY   | 2007 | 0.002         | 0.010 | 0.001            | 0.006 | 0.000        | 0.003 |
| JUN   | 2007 | 0.002         | 0.011 | 0.001            | 0.007 | 0.001        | 0.004 |

Site Average:  
 Average Of  
 Site Data For:

|                       |       |       |       |       |       |       |
|-----------------------|-------|-------|-------|-------|-------|-------|
| 6 Months              | 0.002 | 0.010 | 0.001 | 0.007 | 0.001 | 0.004 |
| Last 3 Months<br>Only | 0.002 | 0.010 | 0.001 | 0.007 | 0.001 | 0.004 |

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



Running Average Report  
 Summary By Group  
 Units = pCi/m3

ATTACHMENT A

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Group I.D. 12

| Site Code  | Begin Mo | Begin Yr | End Mo | End Yr | # Mo | Average Highest Value |       | Average Weighted Average |       |       | Average Lowest Value |  |
|--|----------|----------|--------|--------|------|-----------------------|-------|--------------------------|-------|-------|----------------------|--|
|  |          |          |        |        |      | Alpha                 | Beta  | Alpha                    | Beta  | Alpha | Beta                 |  |
| TM1  | 01       | **       | 06     | **     | 6    | 0.002                 | 0.010 | 0.001                    | 0.007 | 0.001 | 0.004                |  |
| TMF  | 01       | **       | 06     | **     | 6    | 0.002                 | 0.012 | 0.001                    | 0.007 | 0.001 | 0.003                |  |
| Group Average:<br>Average Of Site<br>Averages For: |          |          |        |        |      |                       |       |                          |       |       |                      |  |
| 6 Months   |          |          |        |        |      | 0.002                 | 0.011 | 0.001                    | 0.007 | 0.001 | 0.003                |  |
| Last 3 Months<br>Only                              |          |          |        |        |      | 0.002                 | 0.011 | 0.001                    | 0.007 | 0.001 | 0.004                |  |

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

Running Average Report  
 Summary By Group  
 Units = pCi/m3

ATTACHMENT A

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Group I.D. 23

| Site Code  | Begin Mo | End Yr | # Mo | Average Highest Value |       | Average Weighted Average |       | Average Lowest Value |       |
|--|----------|--------|------|-----------------------|-------|--------------------------|-------|----------------------|-------|
|  |          |        |      | Alpha                 | Beta  | Alpha                    | Beta  | Alpha                | Beta  |
| HLAB   | 01       | ** 06  | ** 6 | 0.003                 | 0.016 | 0.001                    | 0.007 | 0.000                | 0.003 |
| Group Average:<br>Average Of Site<br>Averages For: |          |        |      |                       |       |                          |       |                      |       |
| 6 Months   |          |        |      | 0.003                 | 0.016 | 0.001                    | 0.007 | 0.000                | 0.003 |
| Last 3 Months<br>Only                              |          |        |      | 0.003                 | 0.015 | 0.001                    | 0.006 | 0.000                | 0.004 |

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

Running Average Report  
 Detail By Sampling Site  
 Units = pCi/m<sup>3</sup>

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Site Code: HLAB Group I.D. 23

| Month | Year | Highest Value |       | Weighted Average |       |       | Lowest Value |  |
|-------|------|---------------|-------|------------------|-------|-------|--------------|--|
|       |      | Alpha         | Beta  | Alpha            | Beta  | Alpha | Beta         |  |
| JAN   | 2007 | 0.004         | 0.032 | 0.002            | 0.011 | 0.000 | 0.002        |  |
| FEB   | 2007 | 0.001         | 0.006 | 0.000            | 0.004 | 0.000 | 0.002        |  |
| MAR   | 2007 | 0.002         | 0.015 | 0.001            | 0.008 | 0.000 | 0.003        |  |
| APR   | 2007 | 0.002         | 0.015 | 0.001            | 0.006 | 0.000 | 0.005        |  |
| MAY   | 2007 | 0.003         | 0.015 | 0.001            | 0.006 | 0.000 | 0.003        |  |
| JUN   | 2007 | 0.003         | 0.015 | 0.001            | 0.005 | 0.000 | 0.003        |  |

Site Average:  
 Average Of  
 Site Data For:

|                       |       |       |       |       |       |       |
|-----------------------|-------|-------|-------|-------|-------|-------|
| 6 Months              | 0.003 | 0.016 | 0.001 | 0.007 | 0.000 | 0.003 |
| Last 3 Months<br>Only | 0.003 | 0.015 | 0.001 | 0.006 | 0.000 | 0.004 |

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

Running Average Report  
 Detail By Sampling Site  
 Units = pCi/m3

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Site Code: TMFI      Group I.D. 22

| Month Year         | Highest Value |       | Weighted Average |       | Lowest Value |       |
|--------------------|---------------|-------|------------------|-------|--------------|-------|
|                    | **            | Gamma | **               | Gamma | **           | Gamma |
| JAN 2007           |               | 0.047 |                  | 0.038 |              | 0.017 |
| FEB 2007           |               | 0.071 |                  | 0.048 |              | 0.027 |
| MAR 2007           |               | 0.046 |                  | 0.037 |              | 0.020 |
| APR 2007           |               | 0.045 |                  | 0.041 |              | 0.035 |
| MAY 2007           |               | 0.065 |                  | 0.047 |              | 0.038 |
| JUN 2007           |               | 0.042 |                  | 0.038 |              | 0.034 |
| Site Average:      |               |       |                  |       |              |       |
| Average Of         |               |       |                  |       |              |       |
| Site Data For:     |               |       |                  |       |              |       |
| 6 Months           |               | 0.053 |                  | 0.042 |              | 0.029 |
| Last 3 Months Only |               | 0.051 |                  | 0.042 |              | 0.036 |

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

Running Average Report  
 Summary By Group  
 Units = pCi/m3

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Group I.D. 22

| Site Code  | Begin Mo | Begin Yr | End Mo | End Yr | # Mo | Average Highest Value<br>** Gamma | Average Weighted Average<br>** Gamma | Average Lowest Value<br>** Gamma |
|--|----------|----------|--------|--------|------|-----------------------------------|--------------------------------------|----------------------------------|
| TMFI   | 01       | **       | 06     | **     | 6    | 0.053                             | 0.042                                | 0.029                            |
| Group Average:<br>Average Of Site<br>Averages For: |          |          |        |        |      |                                   |                                      |                                  |
| 6 Months   |          |          |        |        |      | 0.053                             | 0.042                                | 0.029                            |
| Last 3 Months<br>Only                              |          |          |        |        |      | 0.051                             | 0.042                                | 0.036                            |

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