

U. S. NUCLEAR REGULATORY COMMISSION

REGION V

Report No. 70-734/85-16

Docket No. 70-734

License No. SNM-696

Licensee: GA Technologies, Inc.  
P. O. Box 85608  
San Diego, CA 92138

Facility Name: Torrey Pines Mesa and Sorrento Valley Sites

Inspection at: San Diego, California

Inspection conducted: December 9-13, 1985 and January 2, 1986

Inspectors: B. L. Brock  
B. L. Brock, Fuel Facilities Inspector

1/17/86  
Date Signed

R. D. Thomas  
R. D. Thomas, Chief  
Nuclear Materials Safety Section

1/17/86  
Date Signed

Approved By: R. D. Thomas  
R. D. Thomas, Chief  
Nuclear Materials Safety Section

1/17/86  
Date Signed

Summary:

Inspection on December 9-13, 1985 and January 2, 1986 (Report No. 70-734/85-16)

Areas Inspected: A routine unannounced safety inspection was conducted of management organization and controls, operator training, criticality safety, operations review, radiation protection, radioactive waste management/10 CFR Parts 20 and 61, transportation, emergency preparedness, deactivation and decommissioning activities and noncompliance followup.

The inspection involved a total of 37 man-hours onsite by two NRC inspectors. During this inspection, Inspection Procedures 88005, 88010, 88015, 88020, 83822, 88035/84850, 86740, 88050, and 83890 were covered.

Results: No violations or deviations were identified in the ten areas inspected.

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## DETAILS

### 1. Persons Contacted

\*R. A. Wolf, Secretary  
R. A. Rucker, Manager, Statistics and Measurement Control  
T. R. Colandrea, Director, Quality Assurance and Compliance  
\*F. O. Bold, Manager, Compliance Control Department  
\*K. E. Asmussen, License Administrator  
\*R. C. Noren, Director, Fuel Operations Division  
J. J. Saurwein, Manager, Fuel Manufacturing Quality Control  
\*R. P. Vanek, Manager, Fuel Fabrication Department  
R. K. Krueger, Supervisor, Triga Fuel Productions  
\*L. R. Quintana, Supervisor, Health Physics  
D. W. Hill, Senior Scientist  
\*R. DeValasco, Staff Engineer  
R. J. Cockle, Health Physics Technician  
J. Keith, Health Physics Technician  
J. C. Narvaez, Supervisor, Nuclear Material Processing Center  
C. Wisham, Accountant, Nuclear Materials Management  
S. W. Aiken, Manager, Security Systems and Material Control  
\*M. H. Merrill, Manager, Nuclear Safety  
O. Chawla, Staff Quality Engineer  
V. Krueger, Nuclear Material Controller  
J. M. Brock, Supervisor Emergency Services

\*Denotes those attending the exit interview.

### 2. Management Organization and Control

License Condition 9 of SNM-696 incorporates the statements, representations and conditions specified in Part II - License Specifications as part of the license.

#### A. Organizational Structure

Section 3.1 of Part II - License Specifications permits the licensee to change organizational responsibilities, reporting locations and names, providing such changes do not adversely affect the implementation of license conditions and are reported to the NRC within sixty days after the change.

The licensee's proposed changes to the organizational structure were approved as Amendment No. 3 dated January 8, 1986.

#### B. Procedure Controls

Section 3.7.2 of Part II - License Specifications requires procedures for all activities in which materials subject to this license are physically handled, stored, and chemically or physically changed.

The inspector reviewed the status of the procedure revisions the licensee had undertaken in response to the Notice of Violation issued with inspection report 70-734/85-09. The inspector found the revised procedures had been appropriately reviewed and approved. Training in the use of the procedures has been completed. Subsequent waste shipments have been without incident.

This matter is considered closed.

C. Internal Review and Audit

Section 3.6 of Part II - License Specifications requires that health physics inspections be conducted quarterly and nuclear safety inspections (see Section 4.B(1)) be conducted at least annually for all areas possessing SNM and at least quarterly for areas possessing more than 500 grams of SNM.

The inspector reviewed the licensee's health physics and nuclear safety inspections. The licensee's inspections were conducted as required and appropriately documented. The licensee identified poor health physics practices in one laboratory and took appropriate corrective action.

No violations were identified.

3. Operator Training

Section 3.2.2.1 of Part II - License Specification states that on-site radiological safety training will be conducted.

The inspector reviewed the status of training as it related to use of new procedures developed for shipments of radioactive waste. The inspector found operator training in the new procedures was well documented. The operator and his supervisor by signature attested to the effectiveness of the training.

No violations were identified.

4. Criticality Safety

Section 3.2.2.2 of Part II - License Specification requires assurance of nuclear criticality safety through review of proposed SNM activities and review of proposed changes in processing equipment and procedures. It also requires frequent inspection and monitoring to assure adequate nuclear safety control. Independent verification of all determinations of criticality limits are also required.

A. Nuclear Criticality Safety Analysis

- (1) The NRC inspector found no violations associated with the review of the licensee's nuclear criticality safety analysis for the small fuel production operation scheduled to occur in SV-B. The operation involves processing twenty percent enriched uranium in an area that had not previously processed

enriched uranium. The licensee conducted the required criticality safety evaluation of the planned production operation.

- (2) Station neutron interactions were analyzed using the SOLNEW computer program. Suggestions arising from the independent review were incorporated in a subsequent analysis necessitated by equipment location changes. The solid angle recalculations were approved.
- (3) The memo addressing SOLNEW limitations, as discussed with the NRC, was completed by the previous Manager of Nuclear Safety. It identifies three additional requirements to assure proper application of SOLNEW. The licensee reanalyzed arrays adjacent to reflectors. Stations with the largest calculated solid angles in the array were selected for reanalysis. All recalculated solid angles were still less than the allowable angle.

#### B. Criticality Calibrations and Monitoring System

The Criticality Warning Alarm System (CWAS) detector interaction evaluation has been completed. The planned addition of a trouble light to identify a detector which experiences a self-correcting failure has been completed.

No violations were identified.

### 5. Operations Review

Section 3.2.1 of Part II - License Specification requires that the licensee's organization conduct their respective activities within federal, state, and local rules and regulations, license criteria, and company policy, criteria and established practices.

#### A. Conduct of Operations

- (1) The SV-B fuel production scheduled for the fourth quarter of 1985 may begin in the first quarter of 1986. The inspector pointed out that additional attention needed to be given to (a) control of non-safe geometry containers, plastic lined waste baskets, before processing enriched uranium (85-16-01), (b) checking of valves on inert containers scheduled for use with pyrophoric intermediate product (85-16-02), (c) plugging of a floor drain, (d) repairing flexible connectors between exhaust stacks and exhaust fans (85-16-03), (e) replacing plastic exhaust stack air sampler lines (85-16-04), and (f) replacing HEPA filters in the SV-B East filter bank (85-16-05). These items will be reviewed during the next inspection. The magnahelic gauge cover glasses were acceptable; therefore, item 84-07-01 is closed.
- (2) The Triga fuel production continues at a low level. The housekeeping was good. SNM in process was properly stored on

carts, in equipment, or in approved containers in authorized storage locations. The licensee experienced a loss in the integrity of the cooling coil in the vacuum furnace. The licensee's system for reporting such events for internal evaluation will be reviewed during the next inspection (85-16-06).

- (3) The Nuclear Waste Processing Center (NWPC), now under the Nuclear Fuel Fabrication Division has shipped most of the accumulated waste. The shipments were made without incident.
- (4) The deactivation and cleanup of the Nuclear Material Waste Processing Center is continuing. The volume of soil that must be transported to an approved radioactive waste disposal site has increased to 85,000 ft<sup>3</sup> from the 50,000 ft<sup>3</sup> reported previously. The shipments will not start before the spring of 1986, under present plans, and may take about a year and a half to complete. The licensee's independent contractor completed the cleanup of the Phase I area.
- (5) The Oakridge Associated Universities (ORAU) team was onsite during this inspection to conduct the independent overcheck of Phase I under contract to the NRC. ORAU indicated preliminarily that their findings detected no major problems. They expect to provide a preliminary report in January of 1986 that will include the findings from the measurements (gamma scans) of about 400 ORAU samples. The overcheck of the Phase II areas will occur after the completion of the shipment of the contaminated soil which may take until late 1987.

No violations were identified.

## 6. Radiation Protection

Protection against radiation hazards associated with licensed activities is required by 10 CFR Part 20.

### A. Internal and External Exposures

The inspector reviewed the health physics monthly reports for the second and third quarters of 1985. No internal or external exposures exceeded Part 20 limits. The highest external exposure of 7200 mrem was experienced in a source fabrication program that is licensed by the State of California.

### B. Lung Counts

One of the semi-annual lung count measurements exceeded forty percent of the maximum permissible lung burden (MPLB) which is the review and investigation level. Remeasurement yielded a value of thirty-four percent of MPLB and the associated bioassay was negative.

### C. Bioassay Results



Urinalysis results for the third quarter were all negative.

D. Portable Monitoring Instruments

Survey instruments were checked by the inspector for current calibration during the tour of the facilities. The inspector found that the calibrations checked were current. The inspector identified that the step off pad and monitoring instrument locations in the SV-B should be reviewed for relocation because of the planned enriched uranium processing. The licensee's reevaluation will be reviewed during the next inspection (85-16-07).

No violations were identified.

7. Radioactive Waste Management/10 CFR Parts 20 and 61

Annex "C" of the current license incorporates guidelines for release of equipment and facilities for unrestricted use. 10 CFR Part 20.301 to Part 20.401 regulates the disposal of waste. 10 CFR Part 61 requires that all radioactive waste prepared for disposal is classified in accordance with Section 61.55 and meets the waste requirements in Section 61.56.

- A. The licensee's experience with the Quality Assurance Program for waste shipments has been good. Seventeen shipments have been made by the licensee without incident.
- B. One of the two drums in the Hot Cell storage yard which is identified with open item 85-09-01 contains historical samples. This drum will remain onsite for a relatively long time, and is therefore deleted from the open item. The other drum contains radioactive waste, and will be kept as the open item until its' nuclide contents, yet to be established for shipping purposes, have been reviewed.
- C. The inspector reviewed the procedure prepared for changing pre-filters and HEPA filters in the NWPC waste compactor. Operators have by signature attested that they have read and understand the procedure. Additionally, their supervisor has by signature indicated his satisfaction with their preparedness. This closes item 85-09-02.
- D. The inspector reviewed the licensee's control on the accuracy of waste container labels. The label accuracy has improved as a result of the health physics supervisor's evaluation of the correlation between the health physics technician's survey of each package and the contents listed on the label. Occasionally, corrective action including sampling (if necessary), repackaging and relabeling has been undertaken to assure all packages shipped were properly labeled and met regulatory requirements.
- E. A detailed procedure addressing waste classification is being reviewed for approval. The extensive procedure also includes a Waste Characterization Checklist as Attachment 1.

No violations were identified.

8. Transportation

Licensee transportation activities are regulated by 49 CFR 100-177, 10 CFR 71, and 20.311. In addition, an NRC issued Certificate of Compliance regulates the use of shipping casks used to transport fuel and components to and from Fort Saint Vrain (FSVR).

Plans are being developed for shipment of 85,000 ft<sup>3</sup> of contaminated soil to a radioactive waste burial site. The increase from 50,000 ft<sup>3</sup> resulted from additional cleanup. The shipments are expected to begin in the first quarter of 1986 and continue through the second quarter of 1987. The shipment period estimate is based on two shipments per week at about 600 ft<sup>3</sup> of soil per truck. The second phase of the independent NRC overcheck (by ORAU) will be undertaken after the contaminated soil has been removed and the area decontaminated to NRC release levels.

No violations were identified.

9. Emergency Preparedness

License Condition 23 of SNM-696 requires the licensee to implement, maintain and execute the response measures of the Radiological Contingency Plan submitted to the Commission on May 25, 1984 and supplemented on August 22, 1984. It also requires that the licensee shall maintain implementing procedures for the Radiological Contingency Plan.

The inspector checked emergency equipment in the licensee's emergency van. The portable survey instrument calibration stickers were current. The bottled air containers were up to pressure. Fire extinguishers on the emergency van had apparently been missed during the November 1985 fire extinguisher inspections. The emergency van fire extinguishers will be checked again during the next inspection (85-16-08).

No violations were identified.

10. Deactivation and Decommissioning

License Condition 24 requires that at the end of plant life, the licensee shall decontaminate the site and facilities authorized as a place of use for special nuclear materials.

The licensee completed the cleanup and survey of Phase I which comprises most of the area planned for release to unrestricted use. The Phase I area consists of about seventy-eight acres surrounding two acres requiring a significant decontamination effort. The licensee's survey and sample measurement results were reported to the NRC. The NRC contracted with Oak Ridge Associated Universities (ORAU) to do the independent overcheck. The ORAU team (5 members) conducted the independent overcheck of Phase I during the second week of December, 1985. The NRC Region V Section Chief of the Nuclear Materials Safety Section met with the ORAU team onsite on December 11, 1985 and discussed

their plans. He also observed their calibration method and survey practices. The ORAU preliminary report covering the Phase I overcheck will be issued after they complete the sample analyses and evaluation of the analytical results.

The Phase II overcheck will be undertaken after completion of the shipment of the contaminated soil. The current shipping schedule (tentative) would delay the Phase II overcheck until the summer of 1987.

No violations were identified.

#### 11. Exit Meeting

The results of the inspection were discussed with the licensee's staff identified in Section 1. The topics included:

- ° The areas inspected
- ° No violations were identified
- ° The closure of open items involving the magnehelic gauge cover condition in the SV-B north yard, 84-07-01, and the NMWPC compactor HEPA filter change procedure, 85-09-02.
- ° The continuing open items included the grinder holdup evaluation, 84-04-08, and the waste classification of a hot cell waste drum, 85-09-01.
- ° The new open items involved control of non-safe geometry containers in SV-B (Room-142) before processing enriched uranium, 85-16-01, procedure and equipment for testing valves on inert containers before their use with pyrophoric intermediate product, 85-16-02, repair of flexible connectors on the air exhaust system, 85-16-03, replacement of the plastic tubing on the influent side of the exhaust gas sampler, 85-16-04, replacing HEPA filters in the SV-B East filter bank, 85-16-05, reevaluation of the location of the SV-B stepoff pads and monitoring instruments, 85-16-07, assuring routine inspection of the emergency van fire extinguishers, 85-16-08, and review of the licensee's system for investigating incidents, 85-16-06.
- ° Completion of the criticality analysis and independent reviews for the enriched uranium fuel production scheduled for SV-B.
- ° The reduction in the waste shipment backlog
- ° Deactivation and Decontamination related topics included:
  - the completion of Phase I of the NRC independent overcheck,
  - the successful protection of stored contaminated soil and the areas from which it was removed,



- recognition of the need to clarify the plans for dealing with the contaminated asphalt buried onsite,
  - recognition that the Phase II independent NRC overcheck will be delayed until completion of the contaminated soil shipments,
  - clarifying that the soil shipments could take about a year and a half.
- ° Completion of the response to the Notice of Violation issued with inspection report 70-734/85-09.
- the incident free shipments made since the Notice of Violation attest to the effectiveness of the corrective actions.

On January 2, 1984 the inspector learned that the work authorization prepared for processing enriched uranium in SV-B (Room 142) had been approved by the CRSC. Additionally, the replacement of the plastic tubing on the intake side of the exhaust air samplers had been completed.