U.S. NUCLEAR REGULATORY COMMISSION REGION I

Report No. 030-04576/85-01

Docket No. 030-04576

License No. 20-00277-03 Priority I Category B

Licensee: Tech/Ops, Incorporated

40 North Avenue

Burlington, MA 01803

Facility Name: Tech/Ops, Incorporated

Inspection At: Burlington, MA

Inspection Conducted: September 24-25, 1985

Inspectors:

C. T. Oberg, Health

Hea Physicist

Embr 25, 1986

Approved by:

John E. Glenn, Ph.D. Chief, Nuclear Materials Safety Section B, NMS&SB, DRSS

Inspection Summary: Routine Safety Inspection on September 24 - 25, 1985 (Report No. 030-04576/85-01).

<u>Areas Inspected</u>: Routine, unannounced safety inspection including organization; licensee audit; training and instructions to employees; radiation protection procedures; materials, facilities and equipment; receipt and transfer of material; exposure controls - external, - internal, - ALARA program; posting, labeling, and control; surveys; radioactive effluents and waste disposal; notifications and reports; quality assurance; environmental monitoring program; emergency preparedness programs; and confirmatory measurements.

Results: Of the 17 areas inspected, no violations of the regulations or license conditions and no deficiencies were identified.

8605300597 851129 REG1 LIC30 20-00277-03 PDR

DETAILS

Persons Contacted

*J. J. Munro, Technical Director and RSO
*Cathleen M. Roughan, Health Physicist

R. McNulty, Customer Service Sales Representative
V. Becker, Laboratory Production Manager
D. Brasseur, Senior Radiological Technician
R. Kelly, Radiological Technician
A. DeSimone, Assistant Radiological Technician
S. Picolo, Assistant Radiological Technician
R. Evans, Radiological Technician and Source Retriever

(The inspectors also discussed various aspects of the licensed program with other technical and administrative individuals)

*Those individuals in attendance at both the entrance and the exit interviews.

Scope of Inspection

This was a routine unannounced safety inspection of the Tech/Ops, Inc. (License No. 20-00277-03) licensed processing and distribution program and operations.

1. Organization

The licensee's organizational structure has remained the same as delineated in their letter and application dated October 13, 1983, and the subsequent revisions. The members of the Radiation Safety Committee, the management committee that oversees the radiation safety aspects of the licensed program, are as follows:

Robert S. Landauer, Jr.	President, Nuclear Products and Services Group, and Chairman of the Radiation Safety Committee
Eric T. Clark, Ph.D.	Founder Director, Tech/Ops, Inc. and Consultant
John J. Munro, III,	Secretary of the Radiation Safety Committee and Radiation Safety Officer.
Joseph Lima,	Assistant Radiation Safety Officer

The Radiation Safety Committee (RSC) has been meeting at least once each calendar quarter since the previous inspection. Minutes of these meetings have been maintained and a sampling of these minutes were reviewed by the inspectors.

No violations were identified.

2. Licensee Audit

In accordance with the license requirements, the RSO, or his designee, conducts monthly audits of the contamination control program as internal inspections of the licensed operation. Records of these audits were reviewed by the inspectors.

No violations were identified.

3. Training and Instructions to Employees

All employees receive training in accordance with 10 CFR 19.12. Radiation workers receive an initial 40 hour training program prior to beginning work with radioactive materials. As prerequisites to further advancement, individuals must participate in an on-the-job training program with qualified personnel. To receive authorization from the RSC to perform the duties required for a specific job classification, an individual radiation worker's competency must be demonstrated to the satisfaction of the RSO.

Individual radiation workers observed by the inspectors appeared to be quite knowledgeable and competent in the performance of their duties.

No violations were identified.

4. Radiation Protection Procedures

Based upon the inspection findings, the licensee is in compliance with the radiation protection and emergency procedures as implemented and required by their Radiation Safety Manual.

These procedures appeared to be adequate for the licensed program.

No violations were identified.

5. Materials, Facilities, and Equipment

Use of Licensed Material: The licensee is in compliance with possession limits in kind, form, and quantities of licensed materials. A physical inventory of sealed sources is performed every six months. A monthly inventory is maintained of radioactive material used in manufacturing and of the sealed sources distributed. This latter inventory usually runs at quantities below 50 percent of the license limits. The inspectors observed that activities and operations were in accordance with the authorized uses of licensed materials.

Facilities: The licensee's facilities complied with the requirements of the license conditions.

The licensee's security methods and systems appeared to be quite adequate to control unauthorized access to restricted areas and/or unauthorized removal of licensed material. A card-key system is employed for access to the laboratory and hot cell areas. Authorized individuals' names are tabulated on the laboratory door, all others must be escorted by radiation safety personnel.

Licensed material in storage is maintained under lock and key. When not in storage, material is maintained under constant surveillance in accordance with requirements.

All controlled area posting and warning signs were in compliance with license conditions and 10 CFR 20.203.

Emergency utilities and services, with the exception of emergency lighting, are not really a safety requirement of this license. The fire sprinkler system has been removed from the laboratory area to avoid release of water to this area if fires in other areas set off the sprinkler system. Fire extinguishers are available in the laboratory area.

Shielding and safety interlocks are adequate for, and in compliance with, the licensed program.

Equipment: Based upon the inspection findings, the licensee appeared to be in compliance with the license requirements for processing and storage, systems and equipment. Air handling and exhaust systems, air monitoring systems, and air filtering systems are operated and maintained as required. Hot cells, glove boxes, shields, shielding devices (source holders and changers), and remote handling equipment are also employed and maintained as required.

Portable survey instruments are functional and have been calibrated on a quarterly frequency as required. Fixed area monitors with audio alarms, including a hand and foot monitor, air samplers, and laboratory counting systems are employed as required for specific areas.

No violations were identified.

6. Receipt and Transfer of Material

The licensee receives and transfers licensed material in accordance with the requirements of 10 CFR 30.41 and 10 CFR 40.51 for byproduct and source materials. Records of licensed material received by the licensee are maintained in accordance with 10 CFR 30.51 and 10 CFR 40.61.

At the request of the inspectors, the licensee tracked the status of a sealed source returned to them for storage by a customer. This took an inordinate amount of time to do apparently because of a lack in clarity of the licensee's records.

The Tech/Ops, Inc. license verification program, in accordance with 10 CFR 30.41(c) and (d), appeared to be in need of some improvement and updating. The inspectors observed that some of the licensee's customers have not furnished the licensee with requested update information and thus they will have to reaffirm the customer's license status and authorization prior to filling any orders requested by these customers.

The licensee maintains a running inventory of Ir-192 in both solid metal and sealed source forms. This inventory ranges in the order of 30,000 to 35,000 curies on hand at any given time which is significantly less than the license limit for either form (45,000 curies of solid metal and 50,000 curies as sealed sources). The Ir-192 accounts for the licensee's major production of sealed sources. All other radioisotopes used in their production of sealed sources are of significantly lower quantities than authorized by their license.

During this inspection, the inspectors reviewed the circumstances surrounding an apparently missing source changer and overpack that contained two Ir-192 sealed sources totaling 201 curies as reported by telephone and letter on November 29, 1984. The changer was shipped by the licensee on October 2, 1984, and apparently had not been delivered to the consignee by October 23. The package appeared to be lost within the transportation system. The package was subsequently located on November 2, 1984, and returned to Tech/Ops, Inc. on November 19 without having been opened as was apparent by the undisturbed condition of the security seal wires on the unit. Accordingly, the shipper had attempted delivery prior to the October 23, 1984, date but for some reason the consignee apparently refused delivery at that time. The package was set aside by the carrier and apparently forgotten until located by the trace. This occurrence was within the transportation system and outside of the control of the licensee. Tech/Ops, Inc. personnel stated that missing shipments, those that are not delivered within the established timeframe, are usually located within 48 hours.

Shipments identified as lost, not located between the points of origin and destination, are usually found sometime later having gone astray in the transportation system and require tracing. Of the 2,000 shipments made each year, less than 1% are identified as missing or lost. In all cases, the packages are ultimately located and delivered to the consignee or returned to Tech/Ops, Inc.

Tech/Ops, Inc. will continue to notify NRC, Region I, of any and all incidents involving radiography sources and devices.

No violations were identified.

7. Exposure Controls - External

The entire staff at the Burlington, MA site is film badged as a general safety precaution. The annual personnel monitoring summary reports are prepared in February each year and forwarded to the NRC in accordance with 10 CFR 20.407. Individuals working in the laboratory areas wear film badges and audible dosimeters. The licensee maintains an NRC 4 record on all those working in the hot cell areas. The highest whole body exposure received for the year of 1984 was 2,060 millirems for one individual. No quarterly exposures were in excess of 1,250 millirem. All personnel dosimetry records are maintained as required in accordance with 10 CFR 20.202, 20.101, 20.102, and 20.401(a).

No violations were identified.

Exposure Control - Internal

Based upon air sampling results, breathing zone airborne concentrations of radionuclides in the hot cell areas have averaged less than $1 \in (-)11$ microcuries (uCi)/ml of air for the past year of 1984. No 40 mpc-hour control limits have been exceeded.

The licensee also conducts annual whole body counting of hot cell personnel working with unencapsulated material. This is done to verify that they have not received a body burden by inhalation or ingestion of licensed material. Records reviewed showed that no individuals had received any significant internal uptake since the previous inspection. Records of internal exposures have been maintained in accordance with the requirements of 10 CFR 20.103(a) and 20.401(a).

No violations were identified.

9. Exposure Control - AlARA

The licensee does not presently have a formal ALARA program but does plan to establish one. They do follow the ALARA concepts and attempt to minimize exposure levels as indicated by their personnel dosimetry records.

No violations were identified.

10. Posting, Labeling and Control

Based upon observations made by the inspectors, the licensee appeared to be in compliance with the posting and labeling requirements of 10 CFR 20.203. Their established and implemented controls appeared to be quite adequate for their license program.

No violations were identified.

11. Surveys

The licensee is performing routine and special surveys in accordance with the requirements of 10 CFR 201(b) and at the frequencies specified by their license conditions and procedures. Survey records are maintained in accordance with 10 CFR 20.401(b).

Leak or contamination tests are performed on sealed sources as required during manufacturing and loading into shipping casks or source changer devices. Sources/devices are also tested prior to shipment to customers.

All sources received by the licensee are leak tested upon receipt. Contaminated sources and/or devices are not always accepted by them but are returned to the shipper or the manufacturer after proper notification.

No violations were identified.

12. Radioactive Effluents and Waste Disposal

Airborne radioactive particulate concentrations in the effluents from the HEPA filters in the recirculating ventilation system of the laboratory and the cell area are continuously monitored by the licensee. Increased airborne radiation levels signal the need to replace the filters. The licensee has established control limits of $9E-10\mu$ Ci Ir-192/ml air, $3E-10\mu$ Ci Co-60/ml air, and $7E-10\mu$ Ci Ta-182/ml air for the laboratory area. Effluent airborne contamination is controlled in accordance with the requirements of 10 CFR 20.106.

Packaged radioactive waste is stored in the prescribed location in the laboratory. The packages are DOT Specification 17H, 30 and 55 gallon drums and DOT Specification 55 containers. Accumulated waste is shipped for disposal by burial at authorized sites. These shipments are usually made annually and are in accordance with NRC and DOT requirements. No radioactively contaminated liquid effluent releases to the environment or to the sanitary sewer system are made by the licensee.

No violations were identified.

13. Notifications and Reports

The licensee is in compliance with the reporting requirements of 10 CFR 20.402, 20.403, 20.405, 20.407, and 20.408. In addition, notices to workers are made in accordance with 10 CFR 19.13 as necessary and as required.

No violations were identified.

14. Quality Assurance

Quality control and quality assurance testing are integral parts of the licensee's design, fabrication and operating procedures for sealed sources and associated devices.

Appropriate testing is performed on the components received for manufacturing and assembly of the sealed sources and the devices. Contamination and/or leak testing of the sealed sources and tests of the design characteristics, operation and shielding of the various devices are performed to ensure the integrity of the finished item.

The licensee's SARs are available to their customers through the Public Document Room.

No violations were identified.

15. Environmental Monitoring Program

The licensee is considering plans to have some environmental monitoring performed for them by consultant personnel. The arrangements for this will be made at some future date.

No violations were identified.

16. Emergency Preparedness Programs

The licensee's Radiation Safety Manual has outlined their emergency and evacuation procedures for the site. Periodic drills have taken place over the past years as implementation of these procedures.

No violations were identified.

17. Confirmatory Measurements and Independent Inspection Efforts

The inspectors toured the Burlington, MA, facilities and discussed the operating licensed program with several individuals. They also took time to closely review and observe the encapsulation operations. They were given a brief outline of the operating procedures of several of their exposure devices.

The inspectors were shown some source retrieval techniques employed for incidents involving situations in which sealed sources remained in an exposed and unshielded condition. Some specific incidents were also discussed.

The inspectors discussed missing and lost radioactive shipments. The licensee stated that they will continue to keep the U.S. NRC, Region I, informed of incidents involving radioactive materials.

During the tours of the facilities, the inspectors performed direct reading radiation survey measurements. The results of these measurements were not significantly different from those obtained by the licensee.

No violations were identified.

Exit Interview

On September 25, 1985, the inspectors conducted an exit interview with those individuals identified under the <u>Persons Contacted</u> paragraph in this report.

The inspectors discussed their findings and the fact that no violations were identified during this inspection.

The inspectors expressed their concerns with regard to clarification of records of in-house storage of client licensee's sources and consideration of possibly updating and improving license verification program. The licensee stated they would attempt to upgrade these areas.

The inspectors also question the utilization of the licensee's Phoenixville, PA facilities. The licensee stated they were not using these facilities at this time. They had purchased the site for future use in case the Commonwealth of Massachusetts passed legislation prohibiting movement of radioactive material across their borders, they would have a facility from which to operate.