U.S. NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT

Region I

Report No. 70-33/80-06

Docket No. 70-33

License No. SNM-23 Priority 1 Category UR

Licensee: Texas Instruments Incorporated
34 Forest Street
Attleboro, Massachusetts

Facility Name: HFIR Project

Inspection at: Attleboro, Massachusetts

Inspection conducted: April 21-25, 1980

Inspectors: W. W. Kinney — 5/20/80
W. W. Kinney, Project Inspector — date signed

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Approved by: J. Roth for — 5/22/80
H. W. Crocker, Chief, Fuel Facilities — date signed
Project Section, FF&MS Branch

Inspection Summary:

Inspection on April 21-25, 1980 (Report No. 70-33/80-06)
Areas Inspected: Routine, unannounced inspection by a region-based inspector of organization; nuclear safety; and the licensee's program for packaging of low-level radioactive waste for transport and burial. The inspector also participated in a meeting between NRC Licensing and the licensee concerning the licensee's license renewal application. The inspection involved 35 inspector-hours onsite by one NRC region-based inspector.
Results: Of the three areas inspected, no items of noncompliance or deviations were noted in two areas; one apparent item of noncompliance was identified in nuclear safety (infraction - failure to follow posted MSQ at a work station - paragraph 3.a).

Region I Form 12
(Rev. April 77)

DETAILS

1. Persons Contacted

*W. K. Goetz, Metal Systems Department Manufacturing Manager
*F. L. Sherman, HFIR Project Manager
*R. J. Schwensfeir Jr., Nuclear Safety Manager

The inspector also contacted an engineer during the course of the inspection.

*denotes those present at the exit interview.

2. Organization

The organizations concerned with the licensed activities have been changed and now include HFIR Project, Metal Systems Department (MSD) Parts Manufacturing (new), and Quality Assurance. Organizationally, the first level of organization to which both the responsible manufacturing manager and the responsible quality assurance manager report is a vice president as shown below.

Vice President, Material and Electrical Projects Group - W. Sick
  Assistant Vice President, Metallurgical Materials Division - W. George
    Manager, Metal Systems Department (MSD) - W. Quimby
      Manufacturing Manager, MSD - W. Goetz
  Assistant Vice President, Operating Services Division - T. Snyder
    Manager, Quality Assurance - D. Conroy
      Manager Quality, MSD - G. Nilsson

The Metals Systems Department Manufacturing Manager has both the HFIR Project Manager and the Metals Systems Department Parts Manufacturing Superintendent reporting to him as shown below. (Previously the Manufacturing Foreman reported to the HFIR Project Manager).

Manufacturing Manager, MSD - W. Goetz
  HFIR Project Manager - F. Sherman
    Manager, Nuclear Safety - R. Schwensfeir, Jr.
      Nuclear Materials and Safety Officer - Vacant
    Manager, Nuclear Materials - R. Schwensfeir, Jr.
    Engineering Group - D. Collins
                      - W. Daft
                      - A. Robl
  MSD Parts Manufacturing Superintendent - S. Hartley
    Manufacturing Foreman - F. Campbell
      15 Manufacturing Operators

The quality assurance organization reporting to the MSD Quality Manager is shown below.

Manager Quality, MSD - G. Nilsson
HFIR Quality Engineer - G. Woodbine
QA Technician - H. Vickers
Product Acceptance Supervisor - G. Gesner
HFIR Inspection Group Leader - C. Wallace
5 HFIR Inspectors

The above organization shows that the HFIR Project Manager has the safety and engineering personnel reporting to him. However, the HFIR Project Manager does not have direct authority over either the Manufacturing or Quality Assurance functions and associated personnel.

The licensee has hired a person who will graduate from college in June as the nuclear materials and safety officer. The former encumbent of that position left Texas Instruments at the end of March 1980. Until this person is in the position and trained, Mr. Schwensfeir, the Nuclear Safety Manager and Nuclear Materials Manager has a heavy work load; especially because of the effort required in making the final revisions to their license application.

3. Nuclear Safety

a. Conformance with Posted MSQ's (Maximum Safe Quality)

The initial part of the inspection was the inspection of the work area. The inspector noted that each work station and storage array had a MSQ posting. These postings listed the nuclear safety limits for the work station or storage area. The inspector noted that the items in location 13, waste drum press in the furnace room, exceeded the posted MSQ. There were two drums at the work station and each of the drums could contain 24 grams of U-235, according to the route cards with the drums. The MSQ posting allowed $\leq$ 24 grams U-235 and $\leq$ one drum. This is an item of noncompliance (80-06-01).

b. Criticality Monitors

The inspector noted the location of the criticality monitors. The monitors were located as shown on Attachment A in the approved license application. The green light on each monitor was lighted indicating the monitor was receiving power. Each monitor was pre-set to alarm at 15 mR/hr.

The inspector reviewed the records of the testing and calibration of the monitors. During the period of January 1979 - March 1980, the weekly source checks of the operability of the monitors were performed except for two weeks in July 1979 and two weeks in December 1980, when the HFIR facility was down for vacation and holiday time. According to the record, on October 2, 1979, a monitor was found to be inoperable. The licensee replaced the unit with a spare unit, and sent the inoperable unit out for repair. The sirens were tested for operability each quarter. The monitors were calibrated quarterly.

c. Nuclear Safety Evaluations

The inspector reviewed the Requests for Criticality Safety Analysis and the resulting Criticality Safety Analyses and Approvals prepared by the Nuclear Safety Manager which were done since Inspection 70-33/79-03. There were 17 requests, Request Nos. 14-30, which were considered. All of the requests were considered promptly. Changes in MSQ postings or equipment changes with accompanying criticality safety evaluations were authorized by the Nuclear Safety Manager and approved by the HFIR Project Manager. All changes were within the constraints of the license.

d. Monthly Criticality Safety Audits

The inspector reviewed the reports of audits made for the months of March 1979 - March 1980. During the March 1979, September 1979, and October 1979 audits, the auditor found either the material at a work station did not conform to the MSQ posting or the MSQ postings were inadequate. Appropriate action was taken immediately, according to the licensee records. During the other months, the auditor found that the work stations, storage areas, and transfer devices were properly posted with the MSQ postings, the MSQ postings were proper, and the postings were being followed.

4. Packaging of Low-Level Radioactive Waste

The inspector inspected the licensee's program for the packaging of low-level radioactive waste for transport and burial.

a. Regulations and Licenses

The licensee had copies of the pertinent Department of Transportation and Nuclear Regulatory Commission Regulations.

Texas Instruments was shipping low-level radioactive waste containing special nuclear material (SNM) to the Nuclear Engineering Company (NECO) burial site near Richland, Washington. However, NECO has not been accepting waste bearing SNM at the Richland burial site for burial since early December 1979. Burial of SNM-bearing waste at the Richland burial site is authorized by an NRC license. The Washington State license, License No. WN-I019-2, does not authorize the burial of waste containing SNM. The NRC issued License NO. 16-19204-01 on December 4, 1979, to NECO authorizing the receipt and disposal of special nuclear material at the Richland burial site. Up to the time of this inspection, NECO has not received and disposed of any SNM-bearing waste under NRC License No. 16-19204-01. Should NECO resume receiving and disposing of SNM-bearing wastes at the Richland burial site, Texas Instruments should take care to obtain copies of all pertinent licenses and requirements for the packaging of waste for burial at the Richland burial site from NECO.

The licensee had copies of the following documents for the NECO burial site at Beatty, Nevada.

-- Nevada State License No. 13-11-0043-02, and Amendments 1, 2 and 4

-- Excerpts from NECO's Site Operation Manual

-- Executive Order from Governor of Nevada

-- Requirements for Nevada State User Permit Filed with NECO

-- Radioactive Material Checklist

b. Operating Procedures

The licensee has two route cards which provide instructions to personnel involved in the packing of low-level radioactive waste for transport and burial. These route cards are:

-- Process Waste or Measured Discard Drums with Assay, and

-- Process Waste Drums with Metal Only.

These documents are prepared by an engineer in the HFIR Project Engineering Group and are approved by Quality Assurance. Each page of the route card bears the typed name of the engineer and quality

assurance representative involved. The effective date and revision letter of the page are also typed on each page. The documents are not formally reviewed and approved by any member manufacturing management to demonstrate: (1) the operability of the procedures, and (2) the requirement of manufacturing personnel to follow the Manufacturing - authorized procedures.

The procedures call for all waste to be dry. The procedures call for inspection of the shipping drums. The procedures appear to be adequate to provide for proper packaging of the waste material.

c. Training

The licensee has a "Standard Operation", SO 115, entitled, "Waste or MD Transfer (Loading) and Packaging Regulatory Requirements Training". The licensee requires that operators read this Standard Operation as they perform the work outlined by the route card entitled, "Process Waste or Measured Discard Drums with Assay".

In this document the licensee indicated that Nuclear Engineering Company (NECO) transport the waste drums within an exlusive use vehicle. It was also stated that NECO is responsible for compliance with paragraphs (5), (7) and (9) of 49 CFR 173.392(c). The inspector pointed out to the licensee that: (1) an "exclusive use" vehicle must be under the control of a single consignor; (2) all loading and unloading of the exclusive use vehicle must be carried out by or under the direction of the consignor, consignee, or his designated agent. The shipping papers made out by Texas Instruments show that Texas Instruments is the consignor for the shipment of waste from their facility. As the consignor, they are required to meet all the conditions of 49 CFR 173.392(c), when an exclusive use vehicle is being used. If NECO were to be the single consignor for the exclusive use vehicle, NECO would have to be the single consignor of record on the shipping papers for all the material on the exclusive use vehicle and NECO would have to provide direction of all loading activities. Of course, Texas Instruments could package the LSA radioactive material in accordance with 49 CFR 173.392(a) requirements instead of 173.392(b) and (c) requirements.

The "Standard Operation" for training contained mainly information concerning DOT regulations. This Standard Operation document did not appear to be readily comprehensible. The document should either be rewritten for comprehensiveness or training discussions with the operators to assure comprehension of the pertinent parts of the document to operations should be performed.

d. Audit Program

The licensee's audit program of the packaging of low-level radioactive waste is performed by Quality Assurance. The inspector reviewed the report for the latest audit, Audit No. 159, which was performed on April 3, 1980. The audit was of the operations described in the route card entitled, "Process Waste or Measured Discard Drums with Assay." The audit assessed whether or not operators performed the packaging in accordance with the sequences given on the route card. The audit report did not indicate that the audit was a management type audit which assesses the adequacy of the entire waste packaging program. For instance, the audit did not include assessing conformance to NRC and DOT regulations; preparation of shipping papers, and the performance of radiation surveys of packages and transport vehicles.

The situation of the audit not assessing the adequacy of the entire waste packaging and transport program was discussed with the HFIR Quality Engineer. This individual has been recently assigned to the HFIR Project activities. He indicated they would look into enlarging the scope of the audit of the program for packaging and transporting low-level radioactive waste.

e. Examination of Packages

The inspector examined the outsides of the loaded 55 gallon specification 17H drums which the licensee filled with low-level radioactive waste. The drums were labeled as containing Radioactive-LSA waste, as required by 49 CFR 173.392(c)(8) for package of low specific activity waste to be transported in an"exclusive use" vehicle. The inspector requested that drum #238 be opened. The drum contained miscellaneous pieces of equipment. There was no liquid in the drum. The gasket of the drum was good and was in place. The licensee reclosed the drum satisfactorily, resurveyed the outside of the drum, and applied new tamper-safe seals to the drum.

f. Shipping Papers and Records

The inspector examined the records maintained for the packaging and shipment of the low-level radioactive waste. The licensee had a copy of the completed route card for each of the packaged drums. For each shipment the licensee had the following completed forms.

-- 741 Form

-- SS Material Shipping List

-- Radioactive Material Shipment Approval

-- Shipping Order to NECO

-- Straight Bill of Lading

-- Radioactive Waste Shipment and Disposal Form

The bill of lading form used by the licensee was a form used by another group of Texas Instruments. This form had a certificate that the fiber boxes used in the shipment met DOT requirements. The shipping containers were actually specification 17H steel drums. The other forms appeared to be filled out satisfactorily.

5. Meeting of NRC Licensing and Licensee

The inspector participated in a two day meeting of HFIR Project management, a consultant from Oak Ridge National Laboratory, and the licensing project manager for the Texas Instruments license from the NRC Division of Fuel Cycle and Material Safety. The informal NRC comments on the Texas Instruments license renewal application, which were based on the initial safety review of the application, were discussed in detail. As a result of this meeting: (1) the licensing project manager will formally submit the NRC comments on the license application to the licensee; and (2) the licensee will modify their license application to satisfy the NRC comments.

6. Exit Interview

The inspector and the licensing project manager met with the licensee representatives (denoted in Paragraph 1) at the conclusion of the inspection on April 25, 1980. The licensing project manager discussed the schedule for the licensee to submit their modified license renewal application with the licensee. The inspector presented the scope and findings of the inspection.

The item of noncompliance which involved the failure of the manufacturing group to follow the MSQ posting at the waste compactor work location was discussed. The licensee indicated that they would probably change the MSQ for the process waste drums with metal only to indicate that special nuclear material is not allowed to be placed in the drum. This approach is questionable because this would tend to indicate that the metal waste was completely

clean with absolutely no residual uranium present on the waste. The inspector pointed out during the discussion that the operating procedures for the waste compactor called for having a waste drum at the compactor work location only when the waste was being compacted in the drum. Otherwise, the drum was to be located at a storage location. (Paragraph 3)

The inspector pointed out to the licensee that, if they wish to ship their low specific activity (LSA) radioactive waste using an exclusive use vehicle under the requirements of DOT regulation 49 CFR 173.392(b) and (c) and be the consignor for the shipment, they must meet all the requirements of 49 CFR 173.392(c). The inspector noted that they could ship their waste under the conditions of 49 CFR 173.392(a) and the vehicle they used would not have to be an exclusive use vehicle. Of course, they would have to meet the more vigorous packaging requirements under this circumstance. (Paragraph 4.c)

The inspector noted that the new organization structure with the manufacturing foreman reporting to the MSD Parts Manufacturing Superintendent instead of the HFIR Project Manager gave rise to the point that Manufacturing might also review and approve the route cards and standard operations from an operability standpoint. The licensee indicated they would consider this point. (Paragraph 4.b)

The inspector noted that Standard Operation 115 did not appear to be readily comprehensible to operating people. (Paragraph 4.c)