UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
101 MARIETTA ST., N.W., SUITE 3100
ATLANTA, GEORGIA 30303

MAR - 4 1980

Report No. 70-1113/80-3

Licensee: General Electric Company
Wilmington, NC 28401

Facility Name: Wilmington Manufacturing Department

License No. SNM-1097

Inspectors: P. W. Steele — Date Signed 3/3/80

E. L. Clay — Date Signed 3/3/80

J. W. Bates — Date Signed 3/3/80

Approving Section Chief: J. B. Kahle, Acting Section Chief, Safeguards Branch — Date Signed 3/3/80

Date of Inspection: January 29-30 and February 11-12, 1980

Areas Inspected: This special announced inspection involved 22 inspector-hours on site in the areas of material control and transportation.

Results: In the two areas inspected, three apparent items of noncompliance were found (Infraction - Failure to maintain current knowledge of the location of all SNM (80-03-01); Severity Level III - Failure to properly label, provide placards and describe in shipping documents a shipment of SNM (80-03-02); Infraction - Failure to monitor packages of radioactive material for surface contamination within three hours after receipt (80-03-03)).

REPORT DETAILS

1. Persons Contacted

Licensee Employees

*R. J. Alkema, General Manager
*E. A. Lees, Manager, Quality Assurance
L. J. Kuba, Manager, Materials Operations
*A. L. Kaplan, Manager, Licensing & Compliance Audits
C. M. Vaughan, Manager, Nuclear Materials Management
W. B. Smalley, Senior Engineer, Environmental Protection
R. C. Keller, Manager, Fuel Chemical Quality Control
D. W. Brown, Manager, Powder Production
V. P. Moore, Traffic Specialist

*Attended exit interview.

2. Exit Interview

The inspection scope was summarized on February 12, 1980, with those persons indicated in Paragraph 1 above. It was emphasized by the inspector that this special inspection had, to date, only gathered facts, and that findings would be announced in a formal meeting at a later date and location to be determined by Region II. The licensee acknowledged this.

3. Licensee Action on Previous Inspection Findings

Not inspected.

4. Unresolved Items

Unresolved items were not identified during this inspection.

5. Followup on Significant Event That Occurs During Inspection

On January 24, 1980, the licensee released for shipment from his Wilmington, North Carolina facility a trailer (number 340217) which was believed to hold only five empty shipping casks (overpacks). All documentation, shipping papers, labels and placards for this shipment were proper for a trailer carrying only empty overpacks. In fact, however, three of the overpacks contained Model 30B UF_6 cylinders holding approximately 3500 pounds each of 1.55% enriched uranium hexafluoride. The licensee's investigation and the Nuclear Regulatory Commission's inspection of this incident and subsequent licensee actions are discussed in this report.

The licensee became aware of the inadvertent shipment of special nuclear material at about 8:30 on the morning of January 28. The Fuel Support (also called Shop Support) Foreman on duty intended to unload trailer number 340217 that morning, but his Material Control Operator was unable to locate the trailer.

A check with the shipping clerk revealed that trailer 340217 had departed for Allied Chemical Corporation in Metropolis, Illinois on January 24.

The Shop Support Foreman passed this information to the Production Control Specialist, who, after confirmation from Allied Chemical that the tamper-safe seals on the overpacks were intact, instructed Allied Chemical to dispatch the truck back to Wilmington. Higher levels of licensee management were subsequently informed of the situation. When the General Manager learned of the event, he directed that the trailer, already enroute back to Wilmington, be diverted to the nearest carrier (Tri-State Motor Transit) terminal, which was at Goodlettsville, Tennessee. At about 5:15 p.m. on January 28, the NRC (Region II) was notified of the incident. A licensee Traffic Specialist was dispatched on the evening of January 28 from Wilmington to Goodlettsville with correct shipping papers and labels to document the radioactive cargo. On his arrival at the terminal he affixed the proper labels, provided proper shipping papers, verified the overpack seal numbers, and ascertained that the truck driver had properly placarded the trailer prior to leaving Allied Chemical.

Trailer 340217 arrived at the Wilmington facility at 8:45 p.m. on January 29. Under the observation of licensee management and two NRC inspectors (on site to perform a routine, unannounced material control inspection), the tamper-safe seals were broken, the overpacks opened, and the cylinders removed and weighed; weights agreed with those specified by the supplier of the UF_6.

On January 29, 1980, the licensee dispatched a letter to the NRC (Region II) outlining the immediate corrective actions taken to prevent a recurrence of this incident. Basically, the licensee committed to handle empty shipments identically to full shipments in that the "contents" of empty shipments would be verified and documented on a weigh sheet prior to issuance of a shipping notice.

A more detailed chronology of events is included in the licensee's investigation report (Exhibit A to this report). The NRC inspectors already on site verified the condition of the trailer, overpacks, and cylinders upon their return to the licensee on January 29. Additionally, on January 30 the inspectors acquired copies of pertinent documents, including shipping notices, bills of lading, weight records, and other such items. The inspectors informed the licensee that a special inspection would be conducted by the NRC concerning this incident. The licensee assembled a five member investigation team to determine the cause of the incident and to recommend corrective action.

6. Inspector Dispatched to Site

After the licensee's team completed its investigation, a special inspection was conducted by an NRC inspector on site on February 11 and 12. The inspector was given a presentation by the licensee's investigation team of its findings. (The written report of this team's investigation is included

as Exhibit A to this report.) Questions concerning details of the incident were satisfactorily answered by the licensee. The route followed by Tri-State shipments, both on the Wilmington site and between Wilmington and Metropolis, Illinois, was determined; states through which the shipment passed are North and South Carolina, Tennessee, Kentucky, and Illinois. Procedures associated with shipping and receiving radioactive materials and handling of UF_6 cylinders were reviewed.

Several aspects of this incident appear to have violated NRC regulations. 10 CFR 70.58(h) requires that controls be established and followed to provide current knowledge of the location of all special nuclear material in discrete containers. Contrary to this, during the period January 24-28, 1980, the licensee failed to have current knowledge of the location of the approximately 10,500 pounds of enriched UF_6 contained in the three subject cylinders (80-03-01). 10 CFR 71.5(a) requires licensees to follow regulations contained in 49 CFR 170-189. By failing to properly describe the radioactive material in the shipping papers, by failing to properly label the overpacks, and by failing to provide proper placards for the trailer, the licensee violated requirements contained in the following subparts of 49 CFR 172: 202(a), 203(d), 403, and 506 (80-03-02).

10 CFR 20.205(b)(1) requires the licensee to monitor all incoming packages of radioactive materials for external surface contamination. Contrary to this, the licensee failed to monitor the cylinder overpacks on trailer 340217 after receipt on January 23 and prior to shipment on January 24 (80-03-03).

7. Management Meeting

On February 27, 1980, the following representatives of the licensee's management met with NRC staff members in the Region office:

E. A. Lees, Manager, Quality Assurance
W. J. Hendry, Manager, Regulatory Compliance
A. L. Kaplan, Manager, Licensing and Compliance Audits

The findings of the NRC inspectors were discussed and acknowledged by the licensee.

The status of the licensee's current and future corrective actions to prevent recurrence of this or similar kinds of incidents was reviewed.

EXHIBIT A

GENERAL ELECTRIC

CASTLE HAYNE ROAD • P. O. BOX 780 • WILMINGTON, N. C. 28401 • (919) 343-5000

NUCLEAR ENERGY
PRODUCTS DIVISION

WILMINGTON MANUFACTURING
DEPARTMENT

February 15, 1980

Mr. James P. O'Reilly, Director
U. S. Nuclear Regulatory Commission, RII
101 Marietta Street, NW - Suite 3100
Atlanta, Georgia 30303

Dear Mr. O'Reilly:

Reference: NRC License SNM-1097, Docket #70-1113

With reference to activities authorized by SNM-1097 at the General Electric fuel fabrication facility in Wilmington, North Carolina, GE hereby submits a report of the recent incident involving the inadvertent shipment of three full cylinders of uranium hexafluoride to Allied Chemical Corporation in Metropolis, Illinois.

Interim actions were taken immediately pending a complete investigation to determine the causes for the incident and what corrective actions are necessary to prevent recurrence. The investigation has been completed and the necessary corrective actions have been specified. These corrective actions will be implemented by Monday, February 18, 1980.

General Electric personnel will be pleased to discuss the matter with you and your staff as you may deem necessary.

Very truly yours,

GENERAL ELECTRIC COMPANY

Arthur L. Kaplan, Manager
Licensing & Compliance Audits
M/C J26

ALK:bmw
INC-D
Attachment

Mr. J. P. O'Reilly
February 15, 1980

INCIDENT INVESTIGATION REPORT

SHIPMENT OF THREE FULL UF_6 CYLINDERS CONTAINING ENRICHED URANIUM TO ALLIED CHEMICAL CORPORATION

1) INTRODUCTION

On Thursday, January 24, 1980, a trailer with five UF_6 cylinder overpacks permanently affixed to it, was dispatched via Tri-State Motor Transport Company from General Electric's fuel fabrication facility in Wilmington, N. C., to Allied Chemical Corporation in Metropolis, Illinois, to pick up and deliver back to GE-Wilmington Manufacturing Department (WMD) five full UF_6 cylinders containing natural uranium.

At that time, the overpacks on this trailer were thought to be empty. However, on Monday morning, January 28, 1980, we discovered that three of the overpacks on the trailer still contained full UF_6 cylinders containing uranium enriched to 1.55% in U-235, which had been dispatched from Goodyear Atomic Corporation in Sargent, Ohio, and had arrived at WMD at midnight on Wednesday, January 23, 1980.

As soon as this situation was discovered, the trailer was quickly located at the Allied Chemical Corporation facility. We verified that the seals on the three overpacks containing the full cylinders were still intact and that the cylinders had not yet been removed from their overpacks by Allied.

Arrangements were made for the prompt return of the trailer to WMD.

Interim actions were immediately implemented to prevent recurrence of such an incident, pending the outcome of a complete investigation into the causes for the incident and into appropriate corrective actions which would be required.

An investigation team was constituted on January 31, 1980. This team completed its investigation on February 8, 1980.

This report contains a complete description of the incident and of the subsequent investigation, the results of the investigation and the corrective actions taken and planned to prevent recurrence of this type of incident.

EXHIBIT A

2) DESCRIPTION OF INCIDENT

The following is a synopsis of the events involved in our inadvertent shipment of the full UF_6 cylinders to Allied Chemical Corporation.

On the morning of Thursday, January 24, 1980, a trailer was sent to Allied Chemical Corporation in Metropolis, Illinois, to pick up five full cylinders of UF_6 containing natural uranium. The cylinder overpacks are permanently affixed to the trailer bed. These overpacks were assumed to be empty by the shipping personnel who dispatched the trailer on Thursday.

However, in fact, three of the five overpacks each contained a full cylinder of UF_6 with uranium enriched to 1.55% in U-235.

On Monday morning, January 28, 1980, the trailer containing the full cylinders was discovered to be gone, when shop personnel began to look for the trailer in order to remove the full cylinders from their overpacks. This discovery was not made until Monday morning, as shipping or receiving activities related to UF_6 cylinders are accomplished during Monday through Friday on the day shift and, therefore, not normally scheduled for weekends.

At the same time that the trailer was discovered to be gone from the plant site with three full cylinders still onboard, the shipment of the supposedly empty trailer to Allied Chemical Corporation was confirmed to have occurred on the previous Thursday. Thus, we realized that the trailer with the three full UF_6 cylinders was in fact at Allied.

The location of the trailer was confirmed by calling Allied. Also, we confirmed that the cylinders had not yet been removed from their overpacks and that the Goodyear Atomic Corporation (GAT) seals on the external surfaces of the three overpacks containing cylinders were still intact. Therefore, arrangements were made for prompt return of the trailer to WMD.

Following notification of the management at WMD, the NRC was promptly notified.

The truck driver hauling the trailer was provided with appropriate shipping papers and labels for his return trip, and the integrity and identity of the GAT seals on the overpacks were verified, by a WMD traffic specialist who met the truck enroute.

EXHIBIT A

On Tuesday, January 29, 1980, as soon as the trailer returned to WMD, the integrity and identity of the tampersafe seals on the cylinders within the overpacks and the gross weights of these cylinders were verified by WMD personnel, witnessed by two NRC inspectors from the NRC Region II office who happened to be on the WMD site conducting a routine, unannounced safeguards inspection.

A more detailed chronology of events is listed in Table 1. An organization chart showing the relative organizational levels of WMD personnel involved in the incident is included in Table 2.

Figure 1 shows a schematic layout of the WMD fuel manufacturing plant, with the structures and roadways, specifying the roadway and building areas involved in shipping and receiving loaded and empty UF_6 cylinder trailers.

Table 3 contains a list of highway routes between cities taken by the truck driver hauling the trailer containing the three full UF_6 cylinders. This routing description was obtained from the payroll department of Tri-State at Joplin, Missouri, from records submitted by the driver.

An investigation team was constituted on Thursday, January 31, 1980, to determine the causes for the incident, review the practices and procedures related to the handling of incoming and outgoing shipments of UF_6 cylinders (including empty trailers) and to recommend corrective actions for prevention of recurrence of such an incident.

The investigation was completed on Friday, February 8, 1980. This report contains the findings and corrective actions taken and the corrective actions planned as a result of the investigation.

3) ACTIONS TAKEN

Upon discovery on Monday morning, January 28, 1980, that the trailer with three full UF_6 cylinders had been inadvertently sent from WMD to Allied, a number of actions were taken immediately to recover the trailer and to prevent recurrence of such an incident pending the completion of the resulting investigation.

1. Location of the Cylinders

The location and condition of the trailer were verified with Allied Chemical Corporation as soon as the Allied plant opened at 8:00 AM CST on Monday morning.

EXHIBIT A

TABLE 1

CHRONOLOGY OF EVENTS

SHIPMENT OF THREE FULL UF_6 CYLINDERS TO ALLIED CHEMICAL CORPORATION

Item #	Date	Time**	Description
1	1/23/80	--	Trailer #134015 departed from Goodyear Atomic Corporation in Sargent, Ohio, for GE-Wilmington Manufacturing Department (WMD) carrying five full cylinders of UF_6 in overpacks.*
2	1/23/80	1000	Trailer #340217 departed from Goodyear for GE-WMD carrying three full cylinders of UF_6 with uranium enriched to 1.55% in U-235. (These cylinders were not filled to capacity.)
3	1/23/80	~1630	Trailer #134015 arrived at GE-WMD with five full cylinders of UF_6, and was parked outside and behind the back of the Fuel Manufacturing Building.
4	1/23/80	2337	Trailer #340217 arrived at GE-WMD. It was parked on the roadway behind and outside of the Fuel Manufacturing Building, waiting to be brought inside the building for the cylinders to be removed from their overpacks.
5	1/24/80	0730	The Production Control Specialist notified the cylinder dock Material Control Operator (MCO) for Shop Support to remove the full cylinders from trailer #134015 and trailer #340217 so that they could leave empty as scheduled. One was to leave on Saturday, 1/25/80 and the other on Monday, 1/28/80, to pick up full cylinders of UF_6 with natural uranium at Allied Chemical Corporation, Metropolis, Illinois.
6	1/24/80	0900	The dispatcher for Tri-State Motor Transit Company (in the terminal building located outside of the GE-WMD gate) called the Shipping Clerk and asked him if it would be possible for the driver to pick up a trailer on the same day (Thursday) so that the driver could get some repair work done on his tractor at Knoxville, Tennessee, enroute to Allied. The Shipping Clerk and the Production Control Specialist both discussed the matter with the Tri-State's dispatcher on the telephone and agreed to the new arrangement.
7	1/24/80	~0930	The Production Control Specialist issued two Requests for Shipping Notices for trailers #134015 and #340217 to depart from GE-WMD in an empty condition to Allied Chemical Corporation, Metropolis, Illinois (a normal shipping procedure for all fuel-related shipments). These trailers were to pick up full cylinders of UF_6 containing natural uranium.
8	1/24/80	~1000	The Shipping Clerk completed the Shipping Notices for trailers #134015 and #340217 to depart empty for Allied, indicating five empty overpacks on each trailer. The Shipping Clerk called the Tri-State dispatcher and told him that the Shipping Notice for which the dispatcher had requested an early departure was ready.

*The bottoms of overpacks for UF_6 cylinders are permanently affixed to the trailer beds by bolts. (The terminology "overpacks" and "casks" are synonymous.)

**All times indicated are Eastern Standard Time.

EXHIBIT A

Item #	Date	Time	Description
9	1/24/80	1030	The truck driver arrived to pick up the trailer. He received his shipping papers. A shipper was dispatched to trailer #340217 to affix "Empty" labels to the UF_6 cylinder overpacks. He was also instructed by the Shipping Clerk to affix "Empty" labels on the UF_6 cylinder overpacks on trailer #134015.
10	1/21/80	1055	The Tri-State's driver departed from GE-WMD for Allied with trailer #340217.
11	1/21/80	~1400	Trailer #134015 was moved inside the Fuel Manufacturing Building by Tri-State in order for the full UF_6 cylinders to be removed from their overpacks.
12	1/25/80	~1300	Trailer #134015 was unloaded and left empty for pickup by Tri-State.
13	1/25/80	1300	The Shop Support foreman attempted to contact the Tri-State's dispatcher to have the now empty trailer #134015 moved out and the trailer #340217 moved in to be unloaded.
14	1/25/80	1500	The Shop Support foreman finally reached the Tri-State's dispatcher and conveyed the above message to him. (Note: The handling of incoming or outgoing cylinders is not normally scheduled for weekends. Therefore, no such activity was ongoing on Saturday and Sunday, 1/26 and 1/27/80. Cylinder trucks already prepared for shipment could go out on weekend days.)
15	1/26/80	2035	Trailer #340217 arrived at Allied Chemical Corporation in Metropolis, Illinois. (see truck log)
16	1/28/80	0730	The Shop Support foreman checked with the MCO and was informed that trailer #134015, having been emptied, was still inside the Fuel Manufacturing Building because Tri-State had not moved it out on Friday, 1/25/80, and, therefore, had not moved trailer #340217 inside the building on Friday as had been requested.
17	1/28/80	0745	The Shop Support foreman called the Tri-State's dispatcher and told him that trailer #134015 had not been moved out and trailer #340217 had not been moved in as had been previously requested on Friday, 1/25/80.
18	1/28/80	0800	A Tri-State's driver arrived at WMD to move trailer #134015 out of the Fuel Manufacturing Building. After doing so, he and the MCO looked for trailer #340217 outside the building and could not find it. The MCO notified the Shop Support foreman that they could not find trailer #340217.
19	1/28/80	0830	The Shop Support foreman contacted the Shipping Clerk and the Production Control Specialist requesting the whereabouts of trailer #340217. The Shipping Clerk stated to the Shop Support foreman that trailer #340217 had departed for Allied Chemical Corporation on Thursday morning, 1/24/80. The Shop Support foreman notified the Shop Support Unit Manager, and the Shipping Clerk notified the Shipping foreman that trailer #340217 had been dispatched to Allied on Thursday, 1/24/80, with three full UF_6 cylinders containing uranium enriched to 1.65% in U-235.
20	1/28/80	0900	The Production Control Specialist contacted Allied Chemical Corporation and inquired as to whether the trailer had been unloaded. Allied informed Production Control that the trailer had not yet been unloaded and that the Goodyear seals on the three overpacks containing the full UF_6 cylinders were still intact. Production Control instructed Allied to dispatch the truck back to GE-WMD.

Item #	Date	Time	Description
21	1/28/80	0900 1060	The Tri State's driver was notified by Allied to take his trailer back to GE-WMD. The driver placarded his truck with appropriate "Radioactive" and "Corrosive" placards before leaving Allied.
22	1/28/80	1000	Trailer #340217 left Allied Chemical Corporation, Metropolis, Illinois.
23	1/28/80	1300	The Production Control Specialist informed the Production Control Unit Manager about the situation.
24	1/28/80	1315	The Production Control Unit Manager told the Traffic Specialist, the Manager-Licensing & Compliance Audits (L&CA), and the Manager-Traffic & Material Distribution (T&MD) about the situation.
25	1/28/80	1330	The Production Control Unit Manager, the Manager-L&CA and the Traffic Specialist told the Manager-Procurement & Material Logistics and the Manager-Nuclear Materials Management about the situation.
26	1/28/80	1400	The General Manager, GE-WMD, was informed about the inadvertent shipment of the three full cylinders to Allied Chemical Corporation. He directed that the truck be intercepted by the Tri-State's terminal manager, if necessary, and that the driver be sent to the Tri-State's terminal in Goodlettsville, Tennessee to await dispatch of proper shipping papers from GE-WMD.
27	1/28/80	1630	The Tri-State's truck with trailer #340217 calling in from Lebanon, Tennessee (25 miles east of Nashville), was directed to the Goodlettsville terminal, which is about 15 miles north of Nashville.
28	1/28/80	1715	The Manager-L&CA reported the incident to William B. Kenna, Chief of the Safeguards Branch, NRC Region II office.
29	1/28/80	1955	The Traffic Specialist departed from Wilmington by airplane to Nashville, Tennessee.
30	1/28/80	2300	The Traffic Specialist met the truck with trailer #340217 at the Goodlettsville terminal and provided the truck driver with the proper shipping papers. He affixed the proper labels and markings to the outside surfaces of the cylinder overpacks and verified that the Goodyear seals on the overpacks were still intact. He also confirmed with the truck driver that the truck had been properly placarded by the driver before it left Allied Chemical Corporation and he verified that the proper placards were still on the trailer at the Goodlettsville terminal.
31	1/29/80	0300	Trailer #340217 left the Goodlettsville terminal for GE-WMD.
32	1/29/80	2045	Trailer #340217 arrived at GE-WMD.
33	1/29/80	2200	The Manager-L&CA and two NRC inspectors (in Wilmington to perform a routine, unannounced safeguards inspection at the plant site) arrived onsite. They checked and verified that the Goodyear seals on the overpacks were still intact.

EXHIBIT A

Item #	Date	Time	Description
34	1/29/80	2220	* The overpacks were opened and the cylinders were removed.
35	1/29/80	2235	* The tampersafe seals on the cylinders were checked and found to be intact.
36	1/29/80	2300	* Two of the three cylinders were weighed, confirming the original cylinder weights specified by Goodyear on the original shipping papers for the cylinders.
37	1/29/80	2345	The hoist used to lift the cylinders broke down. Repair of the hoist began shortly afterwards but it appeared that the repairs would take some time.
38	1/30/80	0845	* The third cylinder was weighed and its original gross weight confirmed.

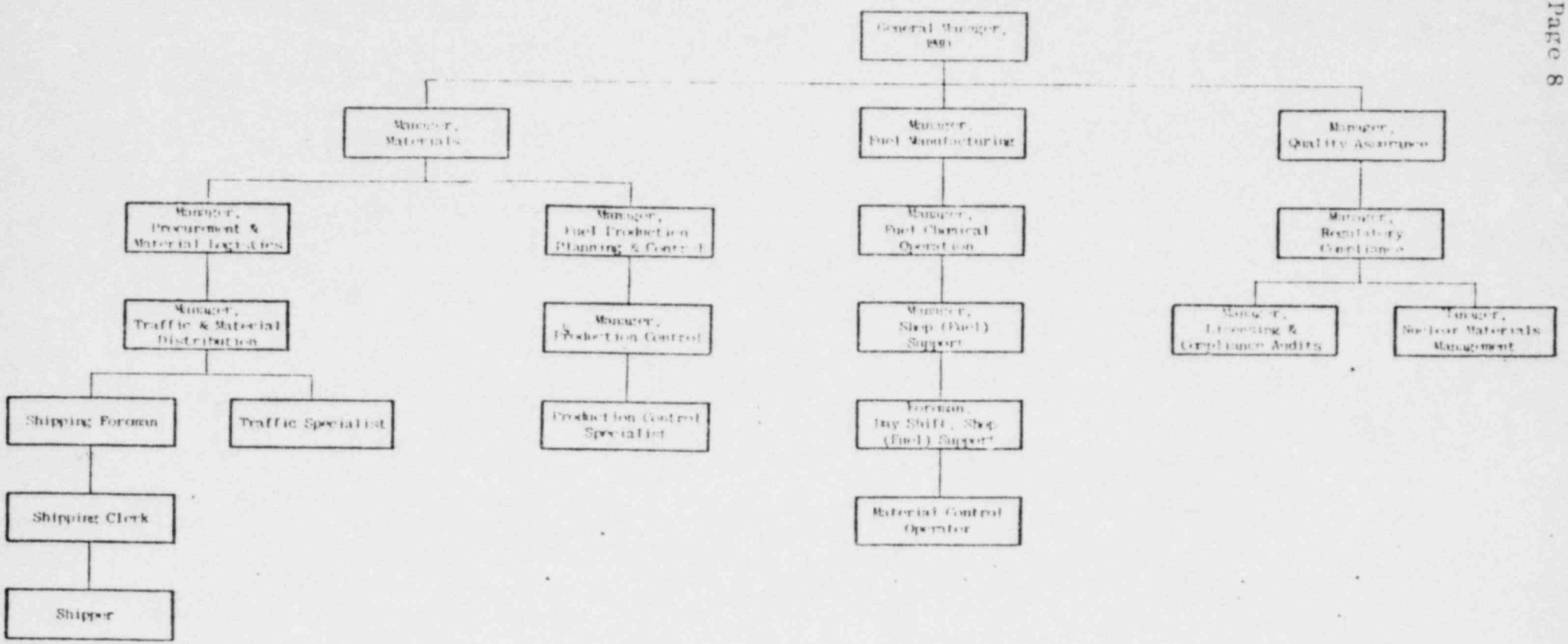
*These operations were witnessed by the two NRC inspectors.

A. L. Kaplan
2/15/80

EXHIBIT A

TABLE 2

ORGANIZATIONAL LEVELS OF GE-NMD PERSONNEL INVOLVED IN INCIDENT



A. L. Kaplan
2/15/80

EXHIBIT A

LEGEND

(A) Roadway used for parking incoming UF_6 cylinder trailers prior to unloading and for parking outgoing UF_6 cylinder trailers.

(B) Location inside the Fuel Manufacturing Building where UF_6 cylinders are removed from or placed into overpacks on trailers

(C) Gate #1 (north gate, outer fence perimeter) where incoming and outgoing UF_6 shipments are logged by guards (all incoming and outgoing fuel shipments are also logged in and out at this point)

(D) Gate at inner fence perimeter through which incoming and outgoing UF_6 shipments pass (as well as all fuel shipments)

(1) Yellow line showing route taken onsite by incoming and outgoing shipments

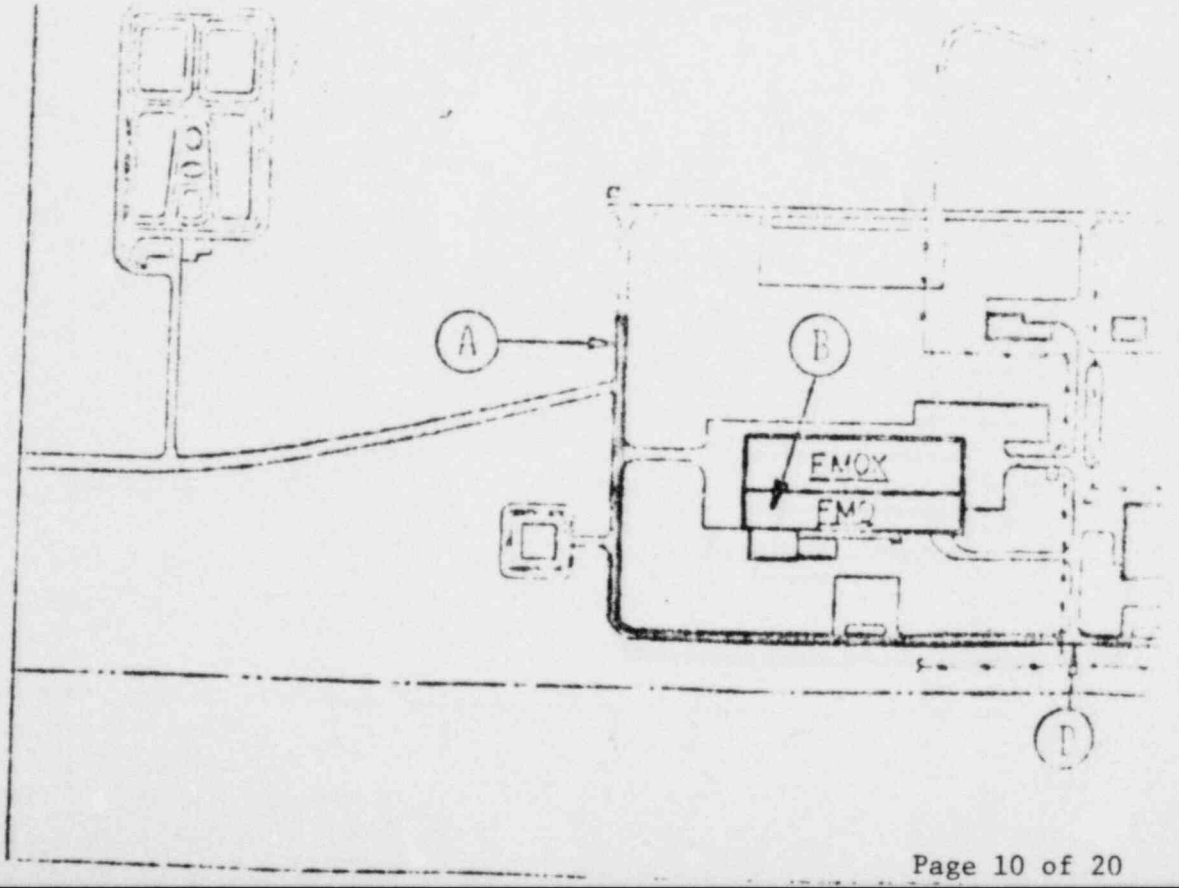


EXHIBIT A

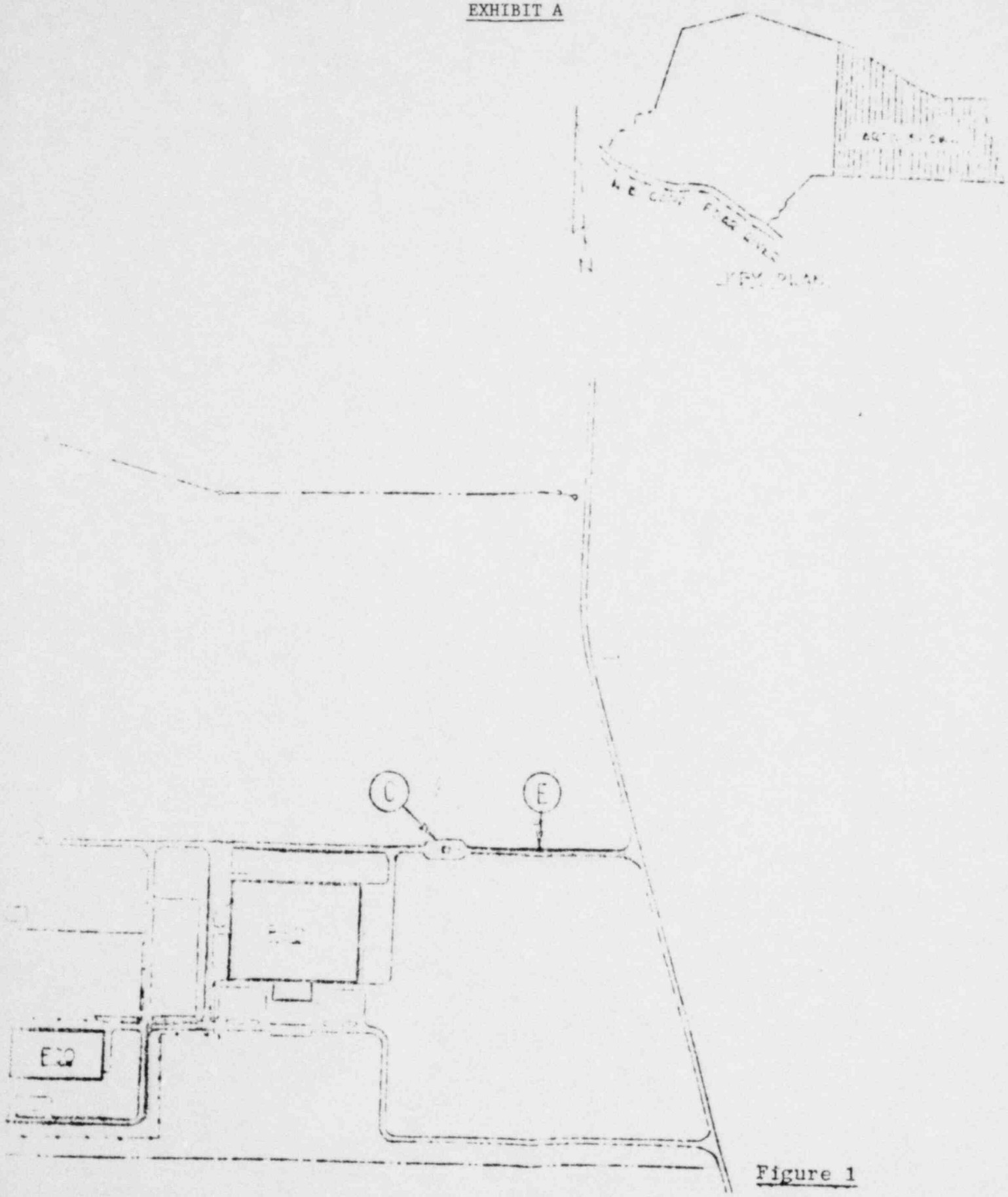


Figure 1

GENERAL ELECTRIC COMPANY
WILMINGTON MANUFACTURING DEPT.
SITE PLOT PLAN

EXHIBIT A

TABLE 3

LIST OF ROUTES BETWEEN CITIES USED IN CYLINDER SHIPPING INCIDENT

Date	Route #	Direction	From	To
1/24/80	US 117	South	Castle Hayne, NC (GE-WMD)	Wilmington, NC
	US 74	West	Wilmington, NC	Lumberton, NC
	I 95	South	Lumberton, NC	Florence, SC
	I 20	West	Florence, SC	Intersection with I-26 (SC)
	I 26	West	Intersection with I-20 (SC)	Asheville, NC
	I 40	West	Asheville, NC	Knoxville, TN
1/25/80	I 40	West	Knoxville, TN	Nashville, TN
	I 24	West	Nashville, TN	Metropolis, IL (Allied)
1/28/80	I 24	East	Metropolis, IL (Allied)	Nashville, TN
	I 40	East	Nashville, TN	Lebanon, TN*
	I 40	West	Lebanon, TN	Nashville, TN
	I 65	North	Nashville, TN	Intersection with US 31W
	US 31W	East	Intersection with I-65	Goodlettsville, TN.(Tri-State)
	US 31W	West	Goodlettsville, TN	Intersection with I-65
	I 65	South	Intersection with US 31W	Nashville, TN
1/29/80	I 40	East	Nashville, TN	Asheville, NC
	I 26	West	Asheville, NC	Intersection with I-20 (SC)
	I 20	East	Intersection with I-26 (SC)	Florence, SC
	I 95	North	Florence, SC	Lumberton, NC
	US 74	East	Lumberton, NC	Wilmington, NC
	US 117	North	Wilmington, NC	Castle Hayne, NC (GE-WMD)

*Point where driver was instructed to proceed to Tri-State terminal in Goodlettsville, TN.

A. L. Kaplan
2/15/80

EXHIBIT A

3) 1. (continued)

We were informed that Allied had not yet removed the full cylinders from their overpacks and, in fact, that the Goodyear Atomic Corporation (GAT) seals on the outside of the overpacks were still intact.

2. Arranging for Prompt Return of Cylinders

At the time that the location of the cylinders was verified, the prompt return of the trailer to WMD was arranged. Allied was requested to contact the driver of the vehicle that hauled the trailer there and to instruct him to leave as soon as possible for WMD to return the trailer.

Before the driver left Allied, he placarded his vehicle correctly with the DOT required RADIOACTIVE and CORROSIVE placards.

3. Informing WMD Management

Between 9:00 AM and 2:00 PM on Monday, January 28, 1980, various levels of WMD management were informed about the incident, as each one could be located and contacted.

4. Correct Shipping Papers for Truck Driver

At 4:30 PM on Monday, January 28, 1980, the truck driver hauling the returning trailer was contacted in Lebanon, Tennessee, twenty-five miles east of Nashville, Tennessee. He was directed to proceed directly to the nearest Tri-State's terminal located at Goodlettsville, Tennessee, fifteen miles north of Nashville.

At 11:00 PM on the same day, the traffic specialist from GE-WMD arrived at Goodlettsville and provided the truck driver with the proper shipping papers for his load.

5. Correct Labels & Markings, Integrity of Seals on Overpacks

At the same time that he delivered the correct shipping papers to the truck dirver as noted above, the traffic specialist affixed the proper labels (RADIOACTIVE, CORROSIVE) and markings (URANIUM HEXAFLUORIDE - FISSILE) to the external surfaces of the three overpacks containing the full UF_6 cylinders. He also assured that the Goodyear Atomic (GAT) seals on the three overpacks were intact. The numbers on these seals were verified by calling Goodyear the next morning.

EXHIBIT A

3) 6. Implementation of Interim Procedure

An interim procedure was implemented on Tuesday morning, January 29, 1980, to assure that a trailer being dispatched as empty from the plant is really empty prior to its dispatch.

The procedure (issued as a letter by management to the appropriate personnel involved in preparation of the empty trailer for shipment) calls for the same overchecks on an empty trailer as those which would be used for a trailer being dispatched with full cylinders or with empty cylinders (heels) to assure that the outgoing trailer contents are correct. This interim procedure will be followed until final corrective actions are implemented.

In addition, we implemented the weighing of each empty cylinder trailer leaving the plant site using our recently installed truck scales, as a final overcheck until permanent corrective actions can be implemented.

7. Investigation

A management team was constituted to investigate the causes for the incident and to determine what final corrective actions should be taken to prevent a recurrence. The team completed its investigation on Friday, February 8, 1980.

The investigation consisted of the following elements:

- Interviews with personnel involved in the incident.
- Review of events related to the incident.
- Review of shipping/receiving practices related to UF_6 cylinders.

An outline of these shipping/receiving practices is shown in Table 4. A list of the related procedures is given in Table 5.

4) CAUSES FOR INCIDENT

As a result of the investigation, the causes for the incident were established to be as follows:

1. System

The system for shipment of trailers with empty overpacks differed from that used for trailers with loaded overpacks (i.e., full cylinders or heels).

(continued on Page 16)

EXHIBIT A

TABLE 5

PRACTICES FOR SHIPPING/RECEIVING UF_6 CYLINDERS

ACTION	ACTIVITIES	WMD PROCEDURES
FULL TRUCK LEAVES VENDOR SITE	• BILL OF LADING ISSUED BY VENDOR • SNM - CYLINDERS TAMPERSAFED - OVERPACKS SEALED • SOURCE MATERIAL - NO TAMPERSAFING REQUIREMENT - NO SEALING REQUIREMENT (?) • TRUCK PLACARDED	NONE - NO WMD SHIPPING/RECEIVING ACTIVITIES (ONLY ONES RELATED TO SAFEGUARDS)
FULL TRUCK ENROUTE TO WMD	• CALLS FROM DRIVER TO DISPATCHER AT TRI-STATES' MAIN TERMINAL • CALLS FROM TRI-STATES TO WMD	• WRITTEN AGREEMENT • LETTER INSTRUCTIONS TO GUARD
FULL TRUCK ARRIVES AT WMD	• TRUCK LOGGED IN THROUGH GATE ONTO SPECIAL TRUCK LOG	• LETTER INSTRUCTIONS TO GUARD -
TRUCK AWAITS UNLOADING	• MONITORED FOR SURFACE CONTAMINATION BY RADIATION PROTECTION	• NSI'S O-6.0 & O-17.0
TRUCK IS UNLOADED	• RECEIVED BY SHOP SUPPORT • CYLINDERS REMOVED FROM OVERPACKS • CYLINDER SEALS CHECKED (IF ANY) • CYLINDERS WEIGHED AND ENTERED INTO MICS • CYLINDERS SUBJECTED TO MICS AUDITS • S/R DIFFERENCES COMPUTED AND EVALUATED	• P/P 90-1 • NMMP'S 101, 106, 109, 202, 204, 301, 501 • PROD 80.05 • MICS OP NO 5-1 • QCII 2.7.1.1 • QCOR 2.7.1.15
TRUCK IS RETURNED TO VENDOR	WITH CYLINDERS AND HEELS: • REQUEST FOR SHIPPING NOTICE ISSUED • SHIPPING NOTICE ISSUED • SHIPPING PAPERS ARE PREPARED • TRUCK SURVEYED FOR CONTAMINATION • OVERPACKS LABELLED • TRUCK PLACARDED	• P/P 90-1 & P/P 90-5 • PROD 80.05 • QCII 2.7.1.2 • QCOR 2.7.1.15 • NMMP'S 202 & 204 • NSI'S O-6.0 & O-17.0

EXHIBIT A

Table 5 (continued)

ACTION	ACTIVITIES	WMD PROCEDURES
TRUCK IS RETURNED TO VENDOR (CONTINUED)	EMPTY TRUCK: • REQUEST FOR SHIPPING NOTICE ISSUED • SHIPPING NOTICE ISSUED • SHIPPING PAPERS ARE ISSUED • TRUCK SURVEYED FOR CONTAMINATION • OVERPACKS LABELLED "EMPTY" • TRUCK PLACARDED TO REFLECT EMPTY STATUS	• P/P 90-5 • NSI'S O-6.0 & O-17.0

EXHIBIT A

4) 1. (continued from Page 12)

For a trailer being shipped out as loaded, there are positive checks in the system at each stage of preparation for shipment to assure that the right cylinders are in the overpacks on a specific trailer prior to the shipment.

For a trailer being shipped out as empty, there was no such positive check that the overpacks on this trailer were in fact empty prior to the shipment.

2. Communications

Communications between the different organizations responsible for various phases of preparing for the shipment of empty UF_6 cylinder trailers, were in many cases verbal (i.e., which trailer would be shipped at what time, when the trailer would be ready for shipment, etc.).

3. Instructions

There were no written instructions provided to shipping or production control personnel concerning the shipment of empty UF_6 cylinder trailers.

5) CORRECTIVE ACTIONS

As a result of the incident investigation, the following corrective actions were determined as required to prevent recurrence of this type of incident:

1. Items Related to Shipping Empty Trailers

The preparatory steps related to the shipping of empty overpacks (i.e., empty UF_6 cylinder trailers) will be changed to coincide with those for shipping full cylinders or heels. A flow chart depicting these activities is shown in Figure 2.

A "traveler" which, in fact, will be a modified cylinder weigh sheet, will accompany the paperwork for these shipments. No steps in the shipping activity will be without proper execution of this traveler for the previous step, thus providing verification at each step of the activity that the previous steps have been accomplished correctly.

EXHIBIT A

TABLE 6

GE-WMD INTERNAL INSTRUCTIONS

FOR RECEIPT & SHIPMENTS OF UF_6 CYLINDERS

PRACTICES & PROCEDURES

P/P 90-1	RECEIVING & SHIPPING OF RADIOACTIVE MATERIALS
90-3	FUEL SHIPPING CONTAINER CONTROL
90-5	SHIPPING NOTICES

QUALITY CONTROL INSPECTOR INSTRUCTIONS

QCII 2.7.1.1	INSPECTION OF UF_6 CYLINDERS
2.7.1.2	INSPECTION OF THE PROTECTIVE PACKAGING OF UF_6 CYLINDERS

QUALITY CONTROL OPERATOR REQUIREMENTS

QCOR 2.7.1.15	RECEIVING & SHIPPING OF UF_6 CYLINDERS

PROCESS REQUIREMENTS & OPERATOR DOCUMENTS

PROD 80.05	RECEIVING/SHIPPING UF_6 CYLINDERS

TRAFFIC & MATERIALS DISTRIBUTION INTERNAL INSTRUCTIONS

FS-2-1	PREPARATION OF REQUEST FOR SHIPPING NOTICE
3-1	PREPARATION & DISTRIBUTION OF SHIPPING NOTICE
4-1	PREPARATION OF BILL OF LADING
5-1	PRODUCT MATERIAL SHIPMENTS
6-1	HOLD ON SHIPMENT
7-2	RADIOACTIVE MATERIALS SHIPMENTS

NUCLEAR MATERIALS MANAGEMENT PROCEDURES

NMMP 101	SOURCE DATA CONTROL
106	EVALUATION OF CUMMULATIVE SHIPPER/RECEIVER DIFFERENCES
109	NUCLEAR MATERIAL RECEIPTS
202	NUCLEAR MATERIAL SHIPMENTS
204	DOE/NRC 741 FORM
301	UF_6 SURVEILLANCE BY GE
501	UF_6 SURVEILLANCE, SAMPLING & ANALYSIS

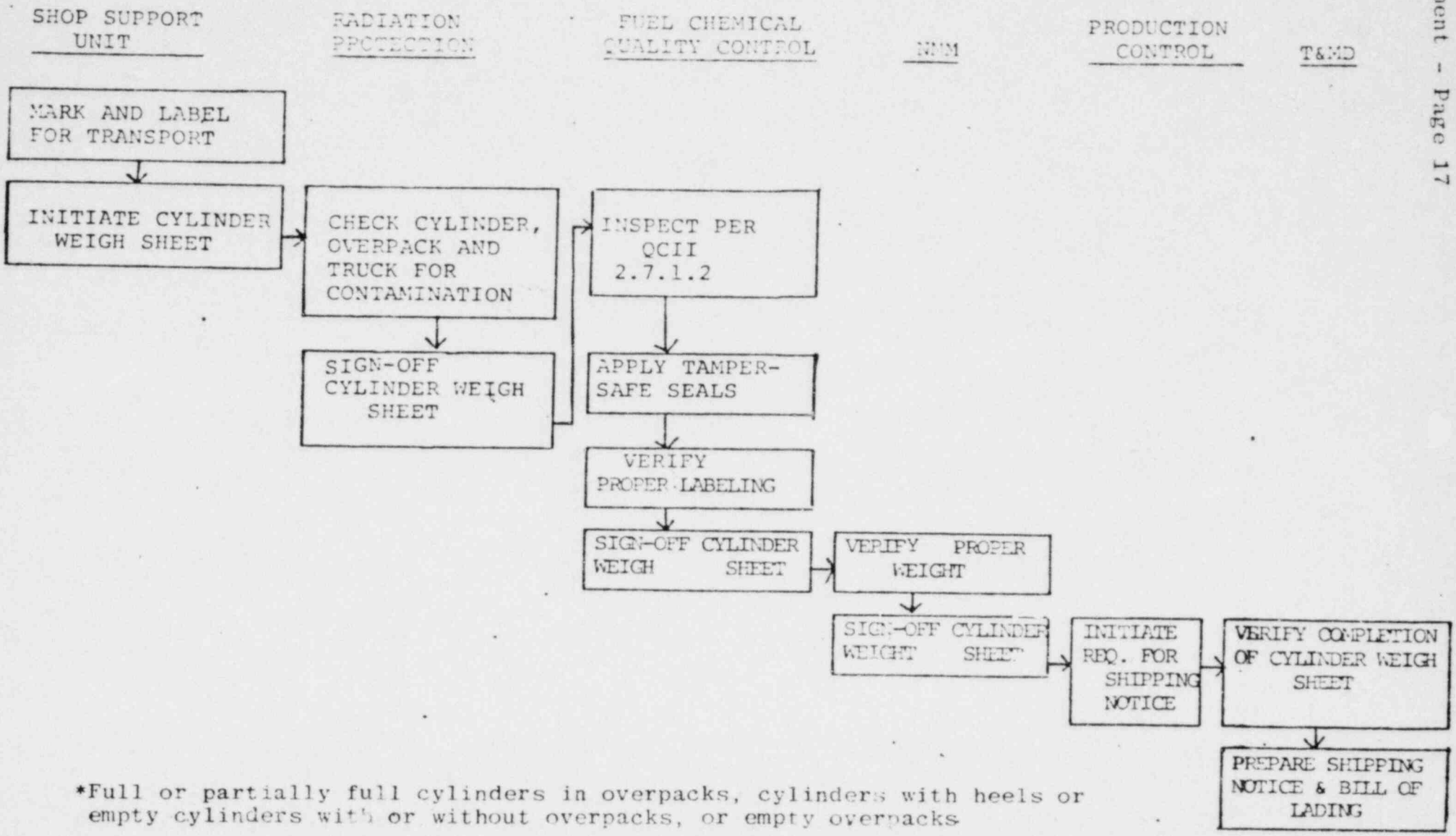
NUCLEAR SAFETY INSTRUCTIONS

NSI 0-6.0	SURFACE CONTAMINATION MEASUREMENT & CONTROL
17.0	SHIPMENT & RECEIPT OF RADIOACTIVE MATERIALS

EXHIBIT A

FIGURE 2

SHIPMENT OF UF_6 CYLINDERS & UF_6 CYLINDER OVERPACKS*



*Full or partially full cylinders in overpacks, cylinders with heels or empty cylinders with or without overpacks, or empty overpacks

EXHIBIT A

2. Procedures

In order to implement these activities, the following procedures (see Table 6) will be revised:

- P/P 90-1 Receiving & Shipping of Radioactive Materials
- P/P 90-5 Shipping Notices
- PROD 80.05 Receiving/Shipping UF_6 Cylinders
- QCII 2.7.1.2 Inspection of the Protective Packaging of UF_6 Cylinders

The production control personnel will be provided with their instructions in the revised versions of P/P 90-1 and P/P 90-5.

In addition, a new fuel shipping procedure will be prepared to provide appropriate instructions to shipping personnel.

These procedures will be revised or prepared as required and will be implemented by Monday, February 18, 1980.