

U.S. NUCLEAR REGULATORY COMMISSION  
Office of Nuclear Material Safety and Safeguards  
Spent Fuel Project Office

Inspection Report

Docket No.: 71-0708

Report No.: 71-0708/98-201

Licensee: Westinghouse Commercial Nuclear Fuels Division  
Columbia, South Carolina

Dates: September 28 - October 2, 1998

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Spent Fuel Project Office, NMSS

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Enclosure

## EXECUTIVE SUMMARY

### NRC Inspection Report 71-0708/98-201

On September 28-October 2, 1998, the U.S. Nuclear Regulatory Commission (NRC) performed an announced inspection of Westinghouse Commercial Nuclear Fuels Division (CNFD) at its facility in Columbia, South Carolina. The team inspected Westinghouse's management, design, and maintenance controls to determine whether they were implemented in accordance with the requirements of 10 CFR Parts 21 and 71, applicable Certificates of Compliance (COCs) and the NRC-approved Quality Assurance (QA) program. Additionally, the team reviewed Westinghouse's progress in addressing the potential Year 2000 computer problem and corrective actions for deficiencies noted during an earlier NRC inspection in 1992 (see NRC Inspection Report No. 71-0708/92-03 for details). The team reviewed documentation, interviewed personnel, and observed field activities, both at Westinghouse's fuel fabrication facility and its contractor for packaging maintenance, Molten Metals Technology (MMT), Inc. (formerly Vectra, Inc.), also located in Columbia, South Carolina. On October 8 and 19, 1998, Westinghouse provided additional information concerning the oversight of contractors and audit results from an inspection performed by Westinghouse at MMT on October 5, 1998. This additional information is reflected in this inspection report.

Overall, Westinghouse had implemented an acceptable quality assurance program which was in accordance with the requirements of 10 CFR Part 71, Subpart H.

#### Management Controls

The team concluded that Westinghouse's management controls were well documented and implemented. Westinghouse's nonconformance controls, documentation controls, and the audit program were well understood by its personnel. The computerized document control system was considered a strength.

#### Design Controls

The inspectors found that Westinghouse had had very little activity in the area of design development and modifications regarding transportation packaging. However, the procedures implemented in these areas appeared to be generally comprehensive and included the necessary controls to assure that designs for transportation packaging met the requirements of 10 CFR Part 71. Deficiencies in several process procedures were promptly addressed and corrected; the inspectors concluded that the corrective actions taken were acceptable.

#### Fabrication Controls

This area was not evaluated as Westinghouse had not performed any fabrication-related activities since the mid-1980s.

Maintenance Controls

Maintenance controls were adequate. Quality work was properly controlled by procedures. However, the inspectors identified isolated instances where incorrect revisions of routing checklists were used and some data not entered properly. The use of a generic fabrication certification (FC) to substitute for missing specific FCs for some Model MCC shipping containers was acceptable. Westinghouse did not always assure that maintenance and refurbishment services regarding the Model UX-30 overpacks were performed in accordance with requirements. Westinghouse's corrective actions for these deficiencies were prompt and comprehensive, and found to be acceptable.



### PERSONS CONTACTED

The team held an entrance meeting with Westinghouse Commercial Nuclear Fuels Division (CNFD) on September 28, 1998, to present the scope and objectives of the NRC inspection. On October 2, 1998, the team held an exit meeting with Westinghouse to present the preliminary findings of the inspection. The individuals, in addition to the inspection team, present at the entrance and exit meetings are listed in Table 2.

Table 2  
Persons Contacted

J. Allen***	Columbia Plant Manager
J. Berry**	Manager, Product Assurance Engineering
G. Corley**	Product Assurance Engineer
P. Covington***	Product Assurance Engineer
T. DeCristofaro**	Product Assurance Engineer
J. Galloway***	Manufacturing Engineer
S. Gantt**	Senior Engineer, Regulatory Affairs
W. Garvin**	Team Manager, Packing and Refurbishment
W. Goodwin***	Manager, Regulatory Affairs
H. Hinson**	Manager, Customer Support
E. Keelen**	Manager, Product Assurance
N. Kent***	Senior Engineer, Regulatory Affairs
G. LaBruyere***	Manager, Mechanical Manufacturing
R. Maurer**	Design Engineer
K. McDill**	Principal Engineer, Technical Services
S. McDonald**	Manager, Technical Services
F. Moorer***	Transportation Specialist
D. Piecht***	Manager, Materials, Planning, and Services
R. Pollard*	Manager, Manufacturing and Industrial Engineering
W. Ratcliff**	Senior Supply Management Specialist
W. Rawlings**	Project Engineer, Customer Support
T. Ross**	Manager, Transportation
D. Rowland***	Manager, Product Design 2
M. Ruhl	Maintenance Supervisor
C. Shuman***	Manufacturing Engineer
R. Talbert**	Team Manager, Product Assurance
H. Vinay**	Senior Engineer, Quality Assurance
A. Williams**	Product Records/Customer Support
R. Williams*	Advisory Engineer, Regulatory Affairs

\* Present at entrance meeting only

\*\* Present at both entrance and exit meetings

\*\*\* Present at exit meeting only



### LIST OF ACRONYMS USED

CFR	Code of Federal Regulations
CNFD	Commercial Nuclear Fuels Division (Westinghouse)
CRC	Container Research Corporation
CAP	Corrective Action Program
CAR	Corrective Action Report
ESBU	Energy Systems Business Unit
FC	Fabrication Certification
MMT	Molten Metals Technology, Inc.
NON	Notice of Nonconformance
NRC	Nuclear Regulatory Commission
PO	Purchase Order
QA	Quality Assurance
SFPO	Spent Fuel Project Office

### DOCUMENTS REFERENCED

"Quality Management System," Revision 2

Regulatory Affairs Procedure (Admin) RA-107, "Internal Reporting and NRC Notification of Unusual Occurrences," Revision 8, 12/11/97

Chemical Operating Procedure (General Area) COP-843003, "The Red Book System," Revision 1, 9/24/98

Product Assurance Administrative Procedure QA-617, "Quality Control Deviation or Notification," Revision 2, 1/08/98

Regulatory Affairs Procedure (Admin), RA-110, "Identification and Reporting of Substantial Safety Hazards (10 CFR 21)," Revision 4, 6/18/98

Product Assurance Administrative Procedure QA-619, "Quality Assurance Records", Revision 2, 1/08/98

Transportation and Logistics Operating Procedure (Refurb./Packing Area), "Refurbishing Shipping Containers", Revision 34, 9/03/98

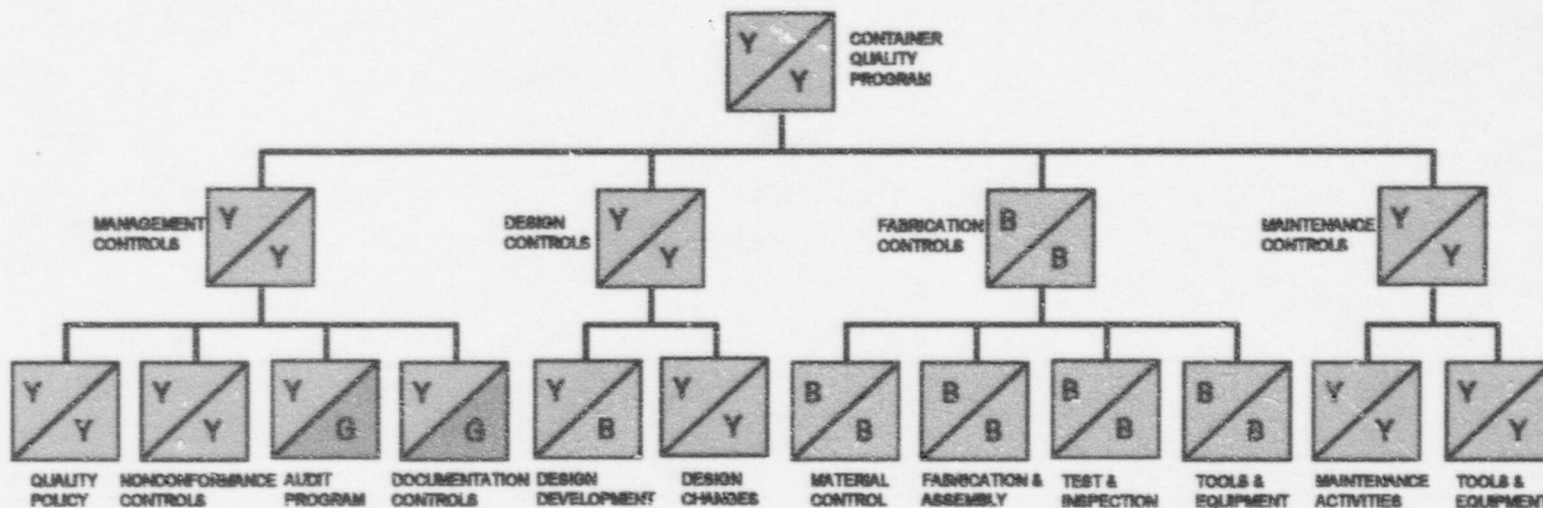
Regulatory Affairs Procedure (Admin) RA-107, "Internal Reporting and NRC Notification of Unusual Occurrences," Revision 8, 12/16/97

Columbia Plant Administrative Procedure CA-001, "Columbia Plant Organization Chart," Revision 3, 8/15/96

### INSPECTION PROCEDURE USED

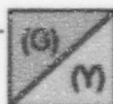
86001, "Design, Fabrication, Testing, and Maintenance of Transportation Packaging"

# INSPECTION RESULTS SUMMARY



## PERFORMANCE ELEMENT LEGEND

PROCEDURAL ADEQUACY



PROCEDURAL IMPLEMENTATION

## PERFORMANCE CODES

- G (GREEN) - SURPASSES REGULATORY REQUIREMENTS AND APPLICATION COMMITMENTS
- Y (YELLOW) - MEETS REGULATORY REQUIREMENTS AND APPLICATION COMMITMENTS
- R (RED) - DOES NOT MEET REGULATORY REQUIREMENTS AND APPLICATION COMMITMENTS
- B (BLUE) - NOT APPLICABLE, OR INSUFFICIENT DATA

## REPORT DETAILS

### 1. Inspection Scope

The team inspected Westinghouse's management, design, and maintenance controls to determine whether they were implemented in accordance with the requirements of 10 CFR Parts 21 and 71, applicable NRC Certificates of Compliance and the NRC-approved Quality Assurance (QA) program. The fabrication area was not reviewed as there had been no activity regarding package fabrication for a number of years. Additionally, the team reviewed Westinghouse's progress in addressing the potential Year 2000 computer problem and Westinghouse's corrective actions for deficiencies noted during an earlier NRC inspection in 1992 (see NRC Inspection Report No. 71-0708/92-03 for details). The team reviewed documentation, interviewed personnel, and observed field activities at Westinghouse's fuel fabrication facility and its package maintenance contractor, Molten Metals Technology (MMT), also located in Columbia, South Carolina.

### 2. Management Controls

#### 2.1 General

The inspectors reviewed Westinghouse's practices and procedures, and their implementation, to determine the effectiveness of management controls. The inspectors assessed the adequacy of management controls on the basis of requirements in Westinghouse's NRC-approved QA program. The inspectors verified implementation of corrective actions for noncompliances identified by the NRC in a previous inspection at Westinghouse. The inspectors focused on Westinghouse's QA program implementation, including nonconformance controls, documentation controls, and audit program. In addition, the inspectors reviewed Westinghouse's actions to prevent computer software problems associated with reaching the year 2000.

#### 2.2 Quality Assurance Program

##### 2.2.1 Scope

The inspectors reviewed Westinghouse's QA program to determine the effectiveness of the implementing plans and procedures. The inspectors focused on QA program goals, objectives and practices, personnel responsibilities and training, QA organizational independence, delegations of authority, management involvement, and staffing levels. The inspectors also reviewed Westinghouse's process for classifying transportation packaging components according to their importance to safety.



## 2.2.2 Observations and Findings

Westinghouse's QA program is described in the Energy Systems Business Unit (ESBU) procedure "Quality Management System" (QMS), Revision 2, approved and issued in 1997, and implemented with procedures addressing all aspects of the QA program. The team found that both the QMS and implementing procedures were clearly and comprehensively written, with an appropriate level of detail and assignment of responsibilities. Organization charts were current and demonstrated QA functional independence. Westinghouse used a graded approach to quality assurance, as evidenced by their classification of components and packagings into safety and non-safety categories. The team noted that the classifications were consistent between design, procurement, and field documentation.

## 2.3 Nonconformance Control

### 2.3.1 Scope

The inspectors reviewed Westinghouse's nonconformance control program to assess the effectiveness of measures established to control materials, parts, or components that did not conform to requirements. The inspection of nonconformance controls focused on how Westinghouse identified, segregated, tracked, and controlled nonconforming items and any program deficiencies. The inspectors reviewed nonconformance reports, nonconforming items, and measures used to keep track of the status of nonconforming items.

### 2.3.2 Observations and Findings

The inspectors observed Westinghouse's implementation of 10 CFR Part 21, "Reporting of Defects and Noncompliance." Postings of the Part 21 notifications were adequate and in accordance with requirements. Appropriate training in 10 CFR Part 21 requirements had been given to all personnel whose activities could affect quality. Refresher training was also provided every two years. The inspectors noted, however, that the 10 CFR Part 21 refresher discussion was contained in the ALARA section of the training manual, where it could be construed to be applicable to health physics related defects only (although the wording of the discussion closely followed the wording of 10 CFR 21.2). Westinghouse indicated that they would clarify the discussion of 10 CFR Part 21 in the next revision to the refresher training manual.

Westinghouse procedure RA-110, "Identification and Reporting of Substantial Safety Hazards (10 CFR 21)," Revision 4, adequately addressed most 10 CFR Part 21 reporting requirements. However, the procedure was silent on the use of an interim report should an analysis of a potentially reportable condition require more than the allowed 60 days [10 CFR 21(a)(2)]. Westinghouse indicated that procedure RA-110 would be revised to address the use of an interim report.

Westinghouse had implemented multiple corrective action programs (CAP), with each department administering its own unique CAP. Each CAP was procedurally controlled, and some tracking and trending of deficiencies was being performed within each CAP. However, the inspectors noted that the individual CAPs did not review deficiencies for generic implication outside of their own department. Westinghouse explained that this function was performed by the Regulatory Compliance Committee (RCC), a group chaired by the plant manager, utilizing information from a site-wide data base into which each CAP's identified safety significant deficiencies and subsequent corrective actions were entered. The inspectors reviewed a sampling of minutes from recent RCC meetings and noted that the committee had conducted thorough discussions of issues with potential generic implications across departments. The inspectors also reviewed a sampling of deficiency reports submitted in several CAPs and found that problems were being identified and corrected in a timely manner and in accordance with the particular procedure implementing that CAP. The team concluded that while implementing multiple CAPs by department was unusual, Westinghouse's implementation was effective and therefore acceptable.

## 2.4 Documentation Controls

### 2.4.1 Scope

The inspectors reviewed Westinghouse's documentation control program to determine the effectiveness of the QA program in controlling quality-related documentation. The inspectors reviewed instructions, procedures, and drawings, including revisions, for adequacy, approval signatures, release by authorized personnel, and availability to personnel. The inspectors reviewed inspection and test procedures, maintenance and test results, nonconformance reports, QA procedures, and packaging drawings.

### 2.4.2 Observations and Findings

The inspectors found that the Westinghouse records management system was effective for the tracking and control of quality records. Westinghouse staff were well trained in the use of the system and all documents were readily retrievable. Westinghouse had implemented a computer software program (called "PRONET") which provided strong control over procedure review, issuance, and use. Westinghouse demonstrated to the inspectors that it would be extremely difficult for field/shop personnel to use any procedure other than the properly approved and current revision. Procedures were available to technicians and engineering personnel at all computer stations, but such personnel did not have access approval to alter a document. Only four Westinghouse employees with appropriate responsibility for procedure changes and issuance had such access. Review and approval of procedures was completed electronically. When a revised procedure was approved, the list of current revisions was automatically updated. The inspectors considered the use of this computerized document control system to be a strength.

## 2.5 Audit Program

### 2.5.1 Scope

The inspectors reviewed Westinghouse's audit program to determine whether plans, procedures, and records were available. The inspection of the audit program focused on determining whether Westinghouse scheduled and performed internal QA audits and vendor audits in accordance with approved procedures or checklists; whether qualified, independent, personnel performed the audits; whether Westinghouse management reviewed audit results; and whether Westinghouse took appropriate follow up actions in those areas found to be deficient.

### 2.5.2 Observations and Findings

The inspectors found that the Westinghouse's internal audit program was well documented and implemented. The inspectors noted that Westinghouse scheduled and performed annual comprehensive internal audits to assess the implementation of the NRC-approved QA program. The team reviewed the last two annual audits (Internal Assessments ESBU-97-08, dated 11/17/97, and ESBU-98-03, dated 6/4/98) and found them to be detailed and comprehensive, with the results properly recorded. The inspectors found that Westinghouse performed the audits as scheduled using qualified auditors who had received training on 10 CFR Part 71. The inspectors also noted that Westinghouse documented and closed out deficiencies identified during audits in a timely manner.

## 2.6 Y2K Software Evaluation Program

### 2.6.1 Scope

The inspectors reviewed the Westinghouse software evaluation program to determine whether the year 2000 problem was being addressed. The inspection of the software evaluation program focused on determining whether Westinghouse was aware of the NRC generic communications regarding the year 2000 issue and whether Westinghouse was reviewing its software applications for potential problems.

### 2.6.2 Observations and Findings

The team found that Westinghouse was actively researching the potential impacts of the year 2000 software issue on its operations. Westinghouse was aware of the need to be year 2000 compliant by mid-1999, and had a coordinated management plan to accomplish this goal. Westinghouse was aware of Generic Letter 98-03, "NMSS Licensees' and Certificate Holders' Year 2000 Readiness Programs," dated June 22, 1998, and Information Notices 96-70, "Year 2000 Effect on Computer System Software," dated December 24, 1996, and 97-61, "U.S. Department of Health and



Human Services Letter to Medical Device Manufacturers, on the Year 2000 Problem," dated August 6, 1997.

## 2.7 Conclusions on Management Controls

The team concluded that Westinghouse's management controls were well documented and implemented. Westinghouse's nonconformance controls, documentation controls, and the audit program were well understood by its personnel. The computerized document control system was considered a strength.

## 3.0 Design Controls

### 3.1 General

The inspectors reviewed the design process to determine whether design controls; requirements in accordance with the pertinent CoCs and QA program commitments; organizational interfaces; and independent design verifications were properly documented and implemented. The inspectors verified implementation of controls by reviewing design records, and by interviewing personnel responsible for technical analysis, QA, and oversight of the design process.

### 3.2 Design Development

#### 3.2.1 Scope

The inspectors reviewed the design development and modification process to determine if measures were established to ensure that high standards of design control were implemented and effective. The inspectors focused on how Westinghouse had documented, reviewed, and incorporated the applicable CoC and regulatory requirements in appropriate specifications, drawings, and procedures.

#### 3.2.2 Observations and Findings

The inspectors found that Westinghouse had no activity in design development regarding transportation packagings in the past several years. However, the inspectors found that, in general, Westinghouse's procedures pertaining to design development were comprehensive, well documented, and current. However, the team found several instances where deficiencies were noted:

- A. Westinghouse procedure MOP-755707, "Refurbishing Shipping Containers," Revision 34, did not contain criteria for maintaining the T-bolt configuration on Model MCC packagings as originally tested. A checklist used during refurbishment of Model MCC containers did not require verifying that accelerometers inside the containers were in calibration, as was required by the procedure. Also, the T-bolts were listed as safety category B components,

whereas NUREG/CR-6407 indicated that these closure bolts should be listed as safety category A.

Once notified by the team, Westinghouse immediately implemented changes to procedure MOP-755707 to correct these deficiencies. Additionally, an evaluation was begun to resolve the apparent inconsistency in how Westinghouse characterized the T-bolts and the requirements of NUREG/CR-6407. Westinghouse anticipated completing the evaluation in three to four months.

- B. On April 24, 1997, Westinghouse identified that the weld configurations on 81 Model MCC-3 containers did not meet the fabricator's certificate of compliance (FCoC). The certified drawings required 16 skip welds on the rollover angles. Only 12 skip welds were made during manufacture of the containers. The defective containers (serial numbers 160 through 244), were in the second of three orders. Westinghouse informed the NRC, as required by 10 CFR 71.95(a). However, Westinghouse did not make a report pursuant to the requirements of 10 CFR Part 21. When questioned by the inspectors, Westinghouse could not provide documentation demonstrating that a safety evaluation had been performed which concluded that a report was not required. Procedure RA-110, "Identification and Reporting of Substantial Safety Hazards (10 CFR 21)," provided guidance on the types of issues to be considered for reporting. However, it was not clear that a mechanism existed that linked potential reportable issues to this procedure so that required assessments for reportability would be performed.

Prior to the completion of the inspection, Westinghouse produced a series of documents which, when taken together, supported the fact that a safety evaluation had been performed, although not formally documented as such. Using criteria specified in procedure RA-110, Westinghouse demonstrated how the T-bolt issue would not rise to a level of significance where it would be reportable to the NRC under 10 CFR Part 21 requirements. Westinghouse management indicated that procedure RA-110 would be revised to ensure that evaluations of safety issues for reportability would be required, documented, and approved by management.

- C. During a review of welder qualification records for the weld repairs performed to correct the deficiencies noted in paragraph 3.2.2.B above, the inspectors noted that the welders were qualified to a specification different from that required by the record (MIL-STD-780 vice MIL-STD-248C). The change from 248C to 780 had been made by a contractor, although the welders themselves were Westinghouse employees. Westinghouse could not provide documentation indicating that the welders were qualified to 248C.

In documentation supplied to the NRC on October 9, 1998, Westinghouse demonstrated that MIL-STD-780 was a more restrictive specification than MIL-STD-248C, and indicated that the contractor had been appropriately counseled regarding Westinghouse's expectations on procedure change control. The inspectors concluded that these corrective measures were acceptable and that the application of a more restrictive specification met the intent of the welding requirements.

### 3.3 Design Modifications

#### 3.3.1 Scope

The inspectors reviewed design modification controls to determine whether measures established to evaluate and control design modifications were effectively implemented. Specifically, the inspectors reviewed engineering changes, design reviews, and drawing and document changes to ensure that the design modification process was controlled and effective.

#### 3.3.2 Observations and Findings

The inspectors found that Westinghouse had performed very little design modification activity in the past several years. However, the inspectors found that Westinghouse's procedures provided detailed guidance on the design change request process, including reviews, verifications, and required approvals.

### 3.4 Conclusions of Design Controls

The inspectors found that Westinghouse had very little activity in the area of design development and modifications regarding transportation packaging. However, the procedures implemented in these areas appeared to be generally comprehensive and included the necessary controls to assure that designs for transportation packaging met the requirements of 10 CFR Part 71. Deficiencies in several process procedures were promptly addressed and corrected; the inspectors concluded that the corrective actions taken were acceptable.

## 4.0 Fabrication Controls

The team determined that there had been no activity regarding shipping container fabrication since the mid-1980s. Consequently, this area was not reviewed.



## 5.0 Maintenance Controls

### 5.1 General

The inspectors reviewed Westinghouse's maintenance controls to determine whether required maintenance was identified and performed, appropriate materials were used, maintenance personnel were trained and qualified, appropriate tools and equipment were used, failure trending analysis was performed, and hold points were appropriately established.

### 5.2 Maintenance Activities

#### 5.2.1 Scope

The inspectors reviewed Westinghouse's maintenance requirements, procedures, records, and materials regarding the maintenance and refurbishment of Models MCC-3, MCC-4, MCC-5, and UX-30 shipping containers. The team inspected records regarding implementation of certificates of compliance and QA program requirements; operating, handling, test, maintenance and inspection; personnel training and qualification; purchase orders (PO) for maintenance materials and services; material storage and shelf life; and vendor maintenance activities.

#### 5.2.2 Observations and Findings

The inspectors found that Westinghouse maintenance staff were occasionally using refurbishment routing checklists that were not current. Specifically, Step 2.2 of Westinghouse Procedure No. MOP-755707, Revision 34, September 3, 1998, requires the use of Westinghouse Form No. CF-75B-003, "Fuel Assembly Shipping Container Refurbishing Routing." These routing checklists prescribe the steps for maintaining and refurbishing the Model MCC shipping containers. Westinghouse maintenance personnel initiate a routing checklist when an empty Model MCC shipping container is received from a utility receiving the new fuel assemblies. The current revision for the routing is Revision 6; however, the team found Revision 4 routing checklists in the pending maintenance files for Container Nos. TCOM 008, TCOM 009, and TCOO 160. Revision 4 of the routing does not contain Step 8, "Adjust Clamping Frame Assemblies." Therefore, Step 8 may not be performed when performing maintenance on the containers having Revision 4 routing checklists. The inspectors did not identify any instances where the adjustment was not performed.

Additionally, Westinghouse maintenance staff were using refurbishment inspection checklists that did not contain all inspection steps. Specifically, Step 2.2 of Westinghouse Procedure No. MOP-755708, Revision 4, September 3, 1998, requires the use of Westinghouse Form No. CF-75B-002, "Fuel Assembly Shipping Container Inspection Checklist." This checklist prescribes the steps for inspecting Model MCC shipping containers following the maintenance and refurbishing steps specified in

Westinghouse Procedure No. MOP-755707. However, the inspection checklist does not contain all of the maintenance and refurbishing steps performed such as assuring that the shipping container is clean, welds are inspected for damage, and water leaks are repaired.

After being told of these deficiencies by the team, Westinghouse took immediate action to modify the inspection checklist to include the missing steps. Westinghouse stated that they would review the procedures and checklist to assure that all maintenance and refurbishing steps are listed on the checklist.

The team found that Westinghouse did not have fabrication certifications (FCs) for all Model MCC shipping containers. Specifically, Westinghouse POs for the fabrication of Model MCC shipping containers require the fabricator, Container Research Corporation (CRC), to provide FCs upon delivery of new shipping containers to Westinghouse. The FCs specify that CRC fabricate the shipping containers in accordance with the requirements specified in the POs. The team found inconsistencies in the following FCs for MCC shipping containers:

- A. The fabrication records for MCC Container Nos. 134 and 178 contained FCs referring to Container Nos. 192 through 199.
- B. The fabrication records for MCC Container Nos. 140, 175, 220, and 225 contained a generic FC that did not refer to any container by number. This generic FC stated that all shipping containers were fabricated in accordance with the requirements of the POs. Westinghouse stated that it had been unsuccessful in finding some of the FCs for its MCC shipping containers; consequently, the MCC fabricator (CRC) issued this generic FC as a replacement for the missing FCs.

The inspectors concluded that Westinghouse had taken appropriate actions to locate the missing FCs for their MCC shipping containers, and that the use of a generic FC was a reasonable substitute for the missing FCs.

The team observed that Westinghouse did not always assure that maintenance and refurbishment activities regarding the Model UX-30 were performed in accordance with requirements of the PO and NRC Certificate of Compliance No. 9196. Specifically, Westinghouse performed an audit of Vectra Technologies, Inc. (Vectra), [a.k.a. Molten Metals Technology, Inc. (MMT)], on November 28-29, 1995, to verify the adequacy of Vectra's QA program. Westinghouse issued its audit report on November 30, 1995, stating that Vectra's QA Program, as written and implemented, complied with the applicable requirements. As a result of the audit, Westinghouse added Vectra to its Qualified Supplier List for maintenance of UF6 overpacks.

Westinghouse issued PO Nos. FD-21335-U-WK and FD-11329-B-IT-0-000 to MMT on February 23, 1996, and March 12, 1998, respectively, for Model UX-30 overpack

refurbishment. On October 1, 1998, the team, accompanied by Westinghouse QA, inspected MMTs QA program implementation regarding Model UX-30 overpack refurbishment activities and found:

- A. Westinghouse PO Nos. FD-2'1335-U-WK and FD-11329-B-IT-0-000 required the use of Drawing No. 612F02EQ01, NRC Certificate of Compliance 9196, and Chapter 8 of the License Application. MMT staff stated that they did not have these documents and that they were not aware of them.
- B. MMT staff stated that they use only the Westinghouse Checklist No. 12588 to perform the maintenance and refurbishment of the Model UX-30 overpacks and that they did not have any maintenance or refurbishment procedures.
- C. MMT staff stated that they were not aware of any QA inspections that were performed regarding the maintenance and refurbishment of the Model UX-30 overpacks and could not provide any inspection procedures or records.

During questioning by the inspectors, MMT personnel stated that their QA inspector was off-site and therefore not available to respond to the team's questions regarding testing, inspection, and documentation.

On October 5, 1998, following the NRC inspection, Westinghouse performed an audit of quality related activities at MMT. Westinghouse provided its report for the MMT inspection to the NRC on October 19, 1998. The audit results validated the NRC's observations and identified several additional issues. Corrective actions had already been initiated by Westinghouse based on the NRC team's preliminary findings, including the transmittal of a full set of the required purchase order documents to MMT in Columbia, South Carolina. Additional corrective actions which have been or will be taken included requiring a source surveillance of dust seals prior to Model UX-30 container shipment, revising routing documentation to include inspection requirements, and performing future refurbishments at Westinghouse's Columbia facility, using MMT only as a backup. Additionally, Westinghouse stated that they had interviewed the MMT QA inspector who had stated that the required inspections of the Model UX-30 overpacks had been performed. The inspectors reviewed Westinghouse's actions taken with regard to MMT and, given Westinghouse's prompt and comprehensive response, found them acceptable.

#### 5.2.4 Conclusions on Maintenance Controls

Maintenance controls were adequate. Quality work was properly controlled by procedures. However, the inspectors identified isolated instances where incorrect revisions of routing checklists were used and some data not entered properly. The use of a generic FC to substitute for missing specific FCs for some Model MCC shipping containers was acceptable. Westinghouse did not always assure that maintenance and refurbishment services regarding the Model UX-30 overpacks were performed in



accordance with requirements. Westinghouse's corrective actions for these deficiencies were prompt and comprehensive, and found to be acceptable.

## 6.0 Overall Conclusion

Westinghouse had implemented an acceptable quality assurance program which was in accordance with the requirements of 10 CFR Part 71, as implemented through their 10 CFR Part 50, Appendix B, program.

### 6.1 Management Controls

The team concluded that Westinghouse's management controls were well documented and implemented. Westinghouse's nonconformance controls, documentation controls, and the audit program were well understood by its personnel. The computerized document control system was considered a strength.

### 6.2 Design Controls

The inspectors found that Westinghouse had had very little activity in the area of design development and modifications regarding transportation packaging. However, the procedures implemented in these areas appeared to be generally comprehensive and included the necessary controls to assure that designs for transportation packaging met the requirements of 10 CFR Part 71. Deficiencies in several process procedures were promptly addressed and corrected; the inspectors concluded that the corrective actions taken were acceptable.

### 6.3 Fabrication Controls

This area was not evaluated.

### 6.4 Maintenance Controls

Maintenance controls were adequate. Quality work was properly controlled by procedures. However, the inspectors identified isolated instances where incorrect revisions of routing checklists were used and some data not entered properly. The use of a generic FC to substitute for missing specific FCs for some Model MCC shipping containers was acceptable. Westinghouse did not always assure that maintenance and refurbishment services regarding the Model UX-30 overpacks were performed in accordance with requirements. Westinghouse's corrective actions for these deficiencies were prompt and comprehensive, and found to be acceptable.

**7.0 Exit Meeting**

On October 2, 1998, at the conclusion of the inspection, the team held an exit meeting with Westinghouse's management to present the preliminary inspection results. Westinghouse's management acknowledged the inspection results presented by the team.