UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
101 MARIETTA STREET, N.W.
ATLANTA, GEORGIA 30323

DEC 12 1989

Report No.: 70-1151/89-08

Licensee: Westinghouse Electric Corporation
Commercial Nuclear Fuel Division
Columbia, SC 29250

Docket No.: 70-1151 (Fuel Division) License No.: SNM-1107

Facility Name: Westinghouse Electric Corporation

Inspection Conducted: November 13-17, 1989

Inspector: _____ 12/11/89
W. B. Gloersen Date Signed

Accompanying Personnel: B. B. Kuzo

Approved by: _____ 12/11/89
J. P. Potter, Chief Date Signed
Facilities Radiation Protection Section
Emergency Preparedness and Radiological
Protection Branch
Division of Radiation Safety and Safeguards

SUMMARY

Scope:

This routine, unannounced inspection was conducted in the areas of radiation protection program, solid waste management, transportation of radioactive materials, and followup on previous enforcement issues and inspector followup items (IFIs).

Results:

In the areas inspected, one non-cited violation (NCV) was identified (Paragraph 2.c.). The licensee's radiation protection program appeared adequate to accomplish its objectives regarding the health of occupational workers and the safe use of radioactive materials. Management appeared knowledgeable and involved in activities to reduce personnel exposure. Mechanisms existed to identify and trend data used to target areas needing improvement to meet as low as reasonably achievable (ALARA) goals. Licensee actions have resulted in an overall trend of reduced radioactive airborne concentrations at work areas, and thus lower potential for personnel exposure.

REPORT DETAILS

1. Persons Contacted

Licensee Employees

R. Brock, Chemical Engineering Technician
*R. Burklin, Senior Engineer, Regulatory Engineering (RE)
*L. Davis, Supervisor, Regulatory Operations
R. Dortch, Shipping Clerk
H. Foster, Senior Engineer, RE
*W. Goodwin, Manager, Regulatory Affairs
T. Gunter, Materials Control Specialist
*J. Heath, Manager, Regulatory Operations
*J. Hubich, Manager, Chemical Manufacturing
*E. Keelon, Manager, Manufacturing
*R. Koga, Columbia Plant Manager
R. Montgomery, Nuclear Safety Engineer
*R. Procopio, Manager, Materials, Planning and Control
*J. Purcell, Manager, Traffic
*E. Reitler, Manager, Regulatory Engineering
T. Shannon, RE Technician

Other licensee employees contacted during this inspection included engineers, operators, technicians, and administrative personnel.

*Attended exit interview

2. Radiation Protection (83822)

a. Organization and Management

Through discussions with licensee management, the inspector determined that no significant staff changes had occurred since the last inspection, IR No. 70-1151/89-01. The licensee's radiation protection section was adequately staffed to perform routine daily and backshift radiation protection activities.

The daily documentation and data review processes appeared adequate to allow Health Physics (HP) management to identify anomalies in routine radiation protection parameters, such as elevated air sample results and abnormal instrument calibration checks.

No violations or deviations were identified.

b. Radiation Protection Procedures

Selected radiation protection procedures were reviewed to verify that the guidance provided was consistent with regulatory and license

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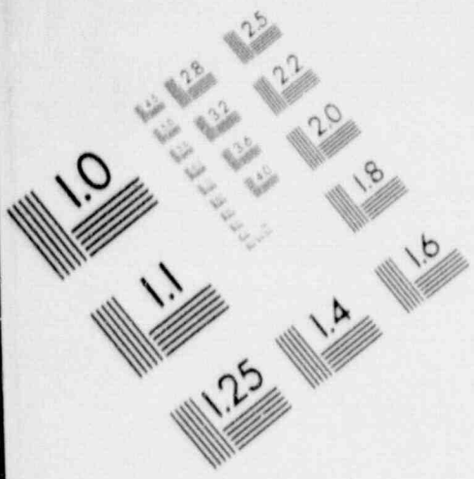
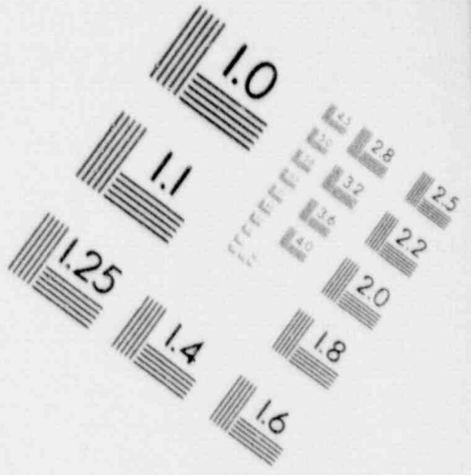
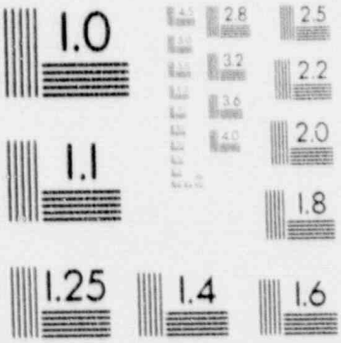
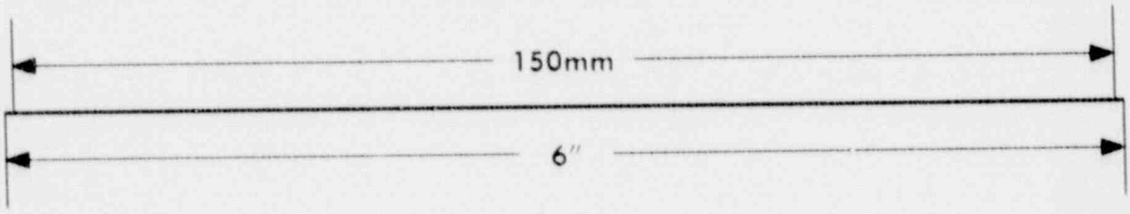
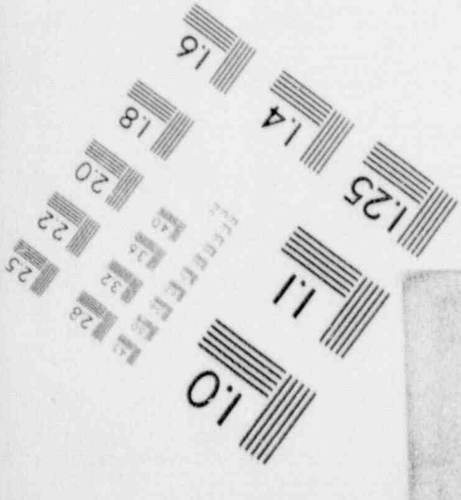
IMAGE EVALUATION TEST TARGET (MT-3)

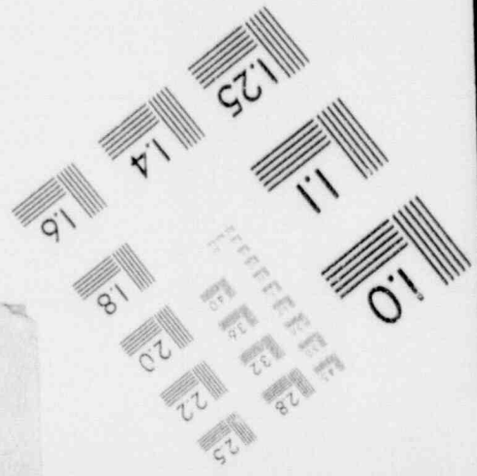


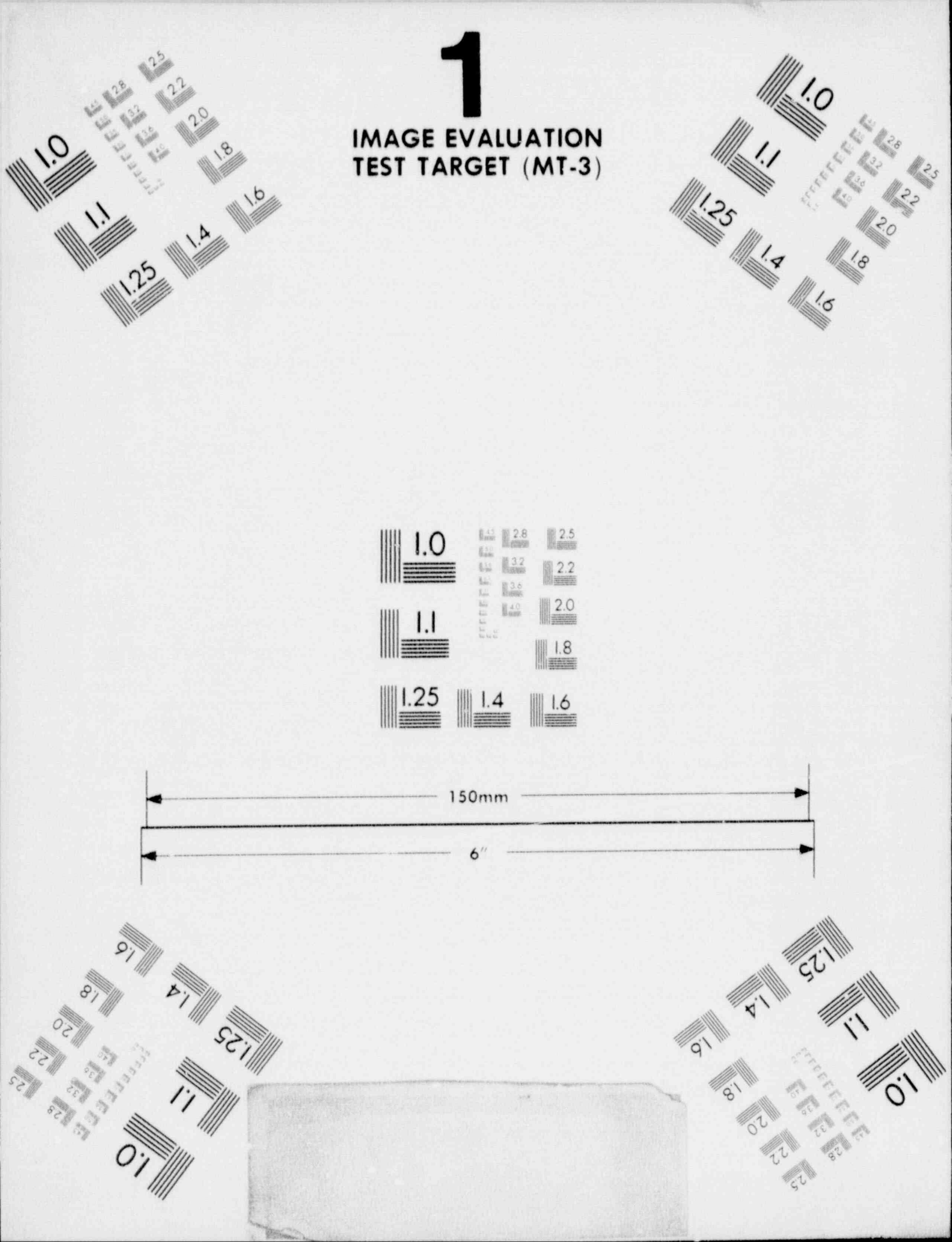








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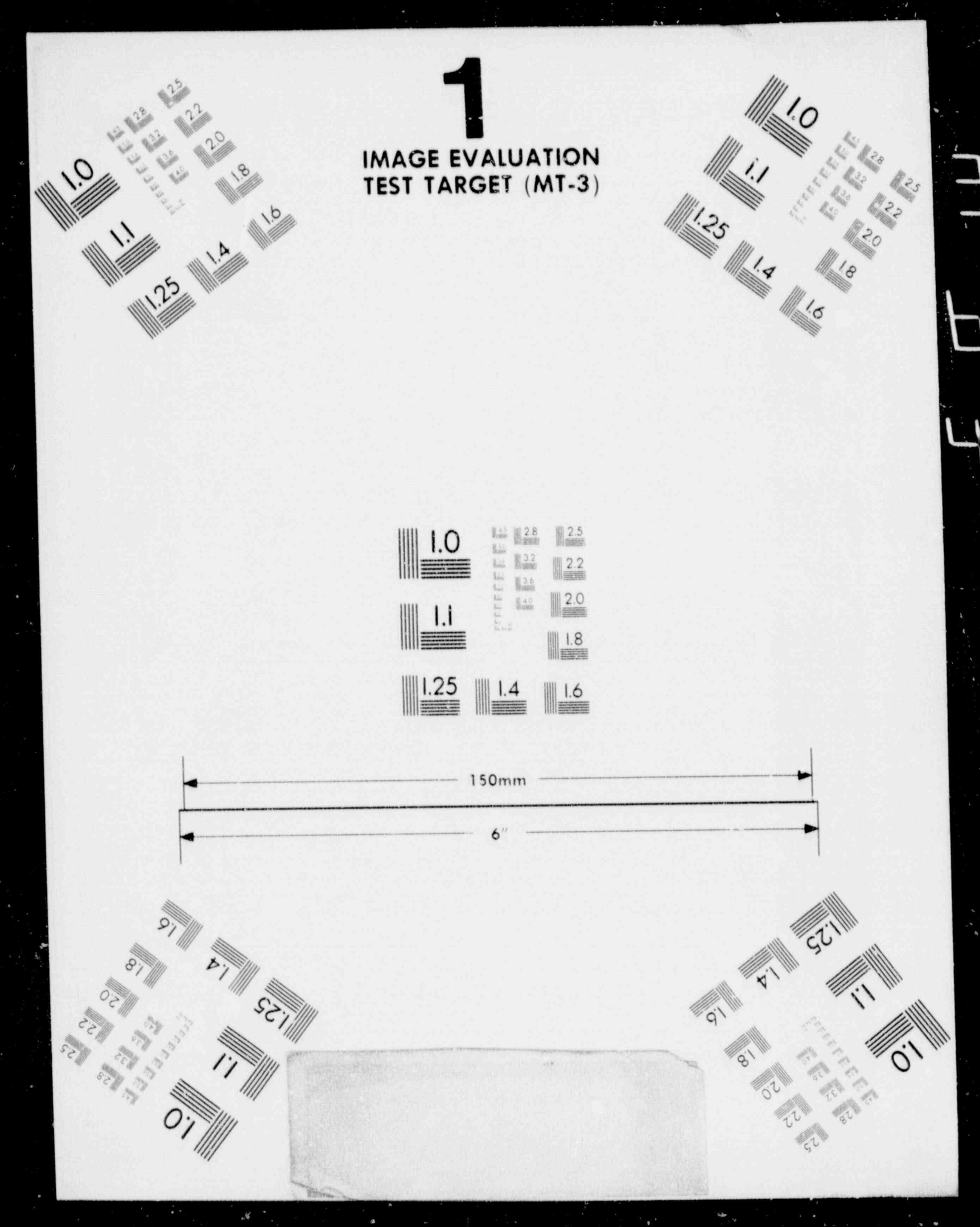
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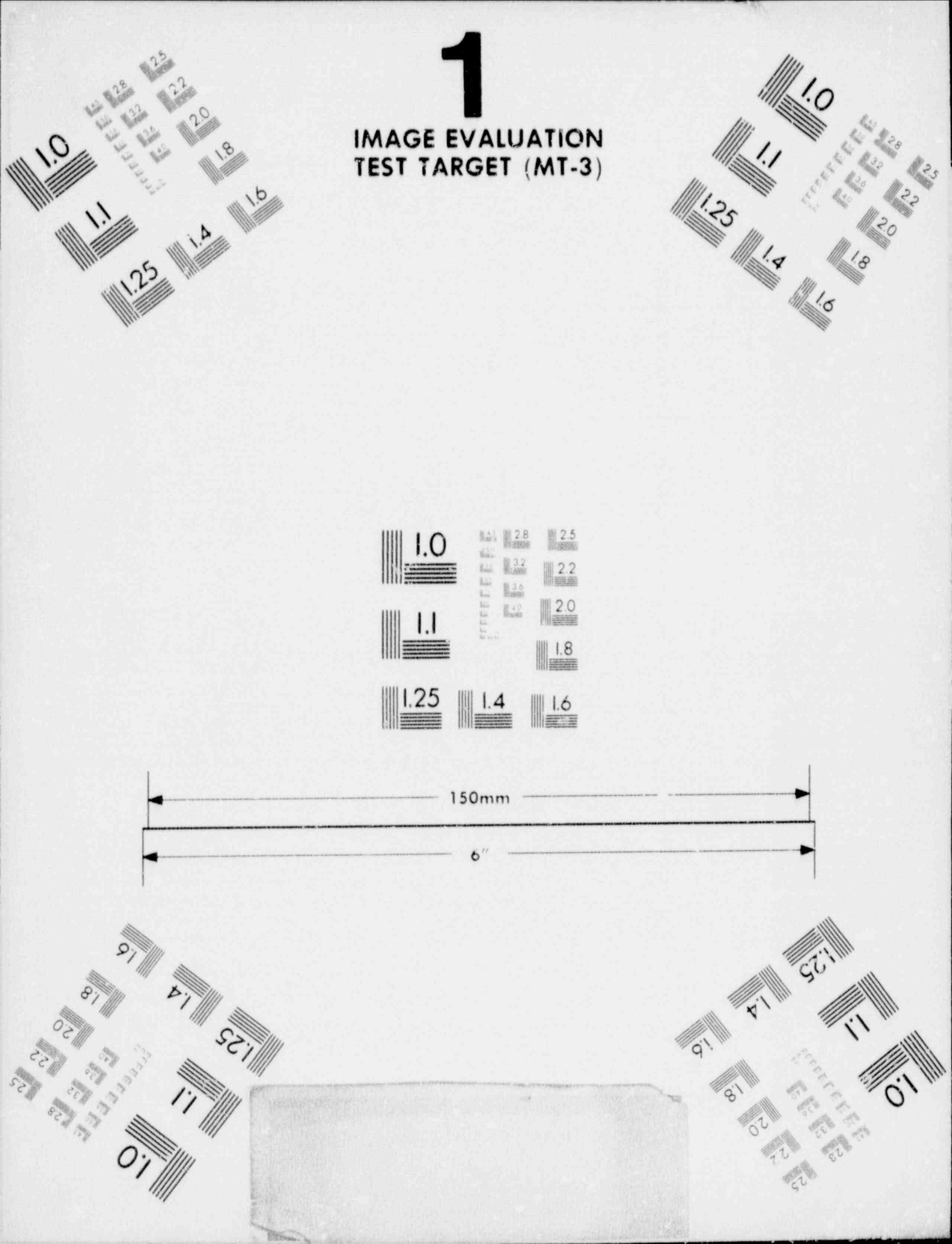
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requirements. Comments on specific procedures are documented in this report in the paragraphs covering the associated program area.

Section 2.6.2 of the Licensee Application for License No. SNM-1107, requires that Regulatory Affairs procedures and HP Operating Procedures be reviewed on an annual frequency. For selected procedures, the inspector verified that the procedure review process had been completed within the required frequency.

No violations or deviations were identified.

c. Respiratory Protection

10 CFR 20.103(c) specifies the program requirements for using respiratory protection equipment to limit the inhalation of airborne radioactive materials. Section 2.2.6 of the License Application requires the establishment of an air sampling program to detect and evaluate the concentration of airborne radioactive particulates at work stations.

The inspector reviewed selected operations procedures and Radiation Work Permits (RWPs) which required the use of respirators and verified that selected individuals who were using the respirators had been trained in the use of respirators and had current medical qualifications.

The inspector noted that approximately 260 air samples were collected during each shift and a preliminary analysis was performed on each sample prior to the arrival of the next shift. A more accurate analysis was performed at a later time. The inspector reviewed selected air sample results through October 1989.

The inspector also reviewed Excessive Exposure Reports which occurred in 1989, and in particular, reviewed an incident which involved a Manufacturing Automated Process (MAP) area employee. On April 11, 1989, a MAP area employee removed a respiratory protection barrier, after contacting Regulatory Affairs personnel, but before the area was released by the Regulatory Affairs group. The individual reassembled some MAP area equipment without wearing respiratory protection equipment. Regulatory Affairs personnel placed this individual on diagnostic bioassay restriction after evaluating a combination of fixed air sample results, impactor results, and an elevated nasal smear. Based upon fecal sample results, an acute exposure of 50 maximum permissible concentration-hours (MPC-hrs) was calculated. The inspector reviewed Operations Procedure MAP GE-003, "General Health Physics Requirements, " Revision (Rev.) 2, April 7, 1989, and noted that Step 14 required the use of full face respiratory protection equipment while working at a MAP work station until Regulatory Affairs can verify that the airborne activity was with in normal limits. After the licensee identified this procedural violation, the following corrective actions were implemented:

- Operating Procedure MAP GE-003 was revised (Rev. 3, June 23, 1989) to assure that operators do not remove respirator barriers, except when an area is released by Regulatory Affairs.

- The operator was counseled on proper adherence to the procedure.

- MAP area Supervision reviewed and discussed proper procedure adherence with all other MAP workers.

- The inspector observed that the licensee was technically in violation of Section 3.2.1.1 of the License Application which requires that written procedures describing general radiation protection requirements be maintained and followed.

The inspector discussed this licensee-identified violation with licensee representatives and determined that it was not being cited because the criteria specified in Section V.G.1 of the NRC Enforcement Policy were satisfied (NCV: 70-1151/89-08-01).

One NCV was identified.

d. Internal Exposure Controls

Section 3.2.4.1 of the License Application requires that routine urine sampling frequencies be established for operators and maintenance personnel assigned to work areas where transportable uranium compounds are processed. Section 3.2.4.2 requires that routine in-vivo counting frequencies be established for personnel who normally work in areas where nontransportable uranium compounds are processed. Section 3.2.4.3 requires that diagnostic bioassays be performed to evaluate the extent of actual exposure whenever personnel exposure is likely to exceed 20 MPC-hours or in the event that unusual occurrences cause personnel exposures in excess of 40 MPC-hrs in a seven consecutive day period.

The inspector verified by reviewing Unusual Incident Reports as required by HP Operating Procedure 05-025, "Bioassay Program - Unusual Events," Revision 10, December 6, 1988, that individuals who were assigned an exposure of greater than 20 MPC-hrs in one day had a urinalysis performed and were restricted from working in airborne areas. During the review of Unusual Incident Reports, the inspector observed that five individuals who were involved with a UF_6 gas release during September 1989 had their urinalysis data incorrectly entered in the "In-vivo and Urine Exception Report," dated October 30, 1989. This Exception Report was basically a listing of individuals' in-vivo and in-vitro analysis results who had exceeded the action limits specified in HP Operating Procedure 05-025. The inspector discussed these data omissions with licensee representatives and observed that there was a need to improve the quality control process when reviewing the urinalysis data entered into the "In-vivo and Urine Exception Report" data base. The

licensee agreed that the data review process should be improved. This item will be reviewed during a subsequent inspection and tracked by the NRC as an IFI (70-1151/89-08-02).

The inspector also reviewed the licensee's urinalysis program for contractors and inquired as to the decision criteria or basis used to establish sampling frequencies. It was observed in Inspection Report No. 70-1151/88-13 that the licensee staggered the collection of urine samples from licensee employees for each work area, with a minimum of one sample collected per week for each area during the initial three weeks of each month. Rather than obtaining urine samples on a given day, this staggered schedule was utilized to provide a more thorough evaluation for the potential uptake of uranium compounds by workers during the month. The inspector observed that Regulatory Operations Procedure 04-001, "Routine Urine Sampling Program," provided guidance to collect urine samples each week during the first three weeks of the month for individuals working in areas requiring monthly samples. However, this guidance did not necessarily apply to contractors who were working in areas requiring monthly samples. The licensee agreed to evaluate the staggering of urine samples for contractors so that better representation of the ongoing potential uptake of the work group could be obtained. The staggering of urinalysis samples of contractors will be reviewed during a subsequent inspection and tracked by the NRC as an IFI (70-1151/89-08-03).

No violations or deviations were identified.

e. Posting, Labeling, and Control and Radioactive Material

Section 3.2.2.4 of the License Application states that each entrance or access point to the Controlled Access Area shall be posted in accordance with 10 CFR 20.203 except for 10 CFR 20.203(f). In lieu therefore, a sign bearing the legend, "Every container or vessel in this area may contain radioactive material," shall be posted at entrances to each area in which radioactive materials are processed, used or stored.

During tours of the facility, the inspector observed the licensee's posting and control of radiation areas, airborne radioactivity areas, contaminated areas, and radioactive materials areas. For the areas observed, the posting and labeling was adequate to meet licensee conditions and 10 CFR 20 requirements.

The inspector observed several individuals exiting the control point. In all cases, the individuals performed adequate surveys of their person and personal items. The inspector also observed proper use and placement of step-off pads to control the spread of contamination to uncontrolled areas. In addition, the inspector reviewed selected records of personnel overchecks as required by HP-05-065, "Contamination Personnel Overchecks," Rev. 0, April 8, 1987. The records review covered the period between January 1989 and

November 15, 1989. The inspector did not observe any trends in personnel contamination events.

No violations or deviations were identified.

f. ALARA Report

Section 3.1.2.5.1 of the License Application requires that a formal report be made by the Regulatory Compliance Committee to the Plant Manager once per six months reviewing personnel exposures and effluent release data.

The inspector reviewed the ALARA Report covering the period January 1 to June 30, 1989. The licensee identified the following trends in the data:

- The average airborne concentrations in the conversion area decreased at a rate of 1.0 percent MPC/quarter over the past two years while the Waste Recovery and Disposal (WRD) area decreased at a rate of 0.7 percent MPC/quarter over the past 1.5 years.

- Compared to the last reporting period, the recorded whole body collective dose decreased by 12.8 percent or 8,325 mrem and the average recorded whole body external dose decreased by 10.6 percent or 5.4 mrem/quarter.

- Compared to the last reporting period, the MPC-hours decreased by 13.8 percent or approximately 3,000 MPC-hours.

The licensee did not identify any significant trends in in-vivo analysis results or urinalysis results. All quarterly departmental whole body dose averages during the reporting period were below 25 percent of the NRC maximum permissible dose limit of 1,250 mrem. The departmental skin dose averages were also less than 25% of the NRC maximum permissible dose limit of 7,500 mrem/quarter.

The inspector concluded after review of the first semester 1989 ALARA Report that the licensee adequately addressed the requirements specified in the license application.

No violations or deviations were identified.

3. Transportation Activities (86740)

a. Quality Assurance Program

10 CFR 71.12 provides a general license to transport, or to deliver to a carrier for transport, licensed materials in packages for which a license or certificate of compliance has been issued, provided the licensee has an approved quality assurance program in accordance with 10 CFR 71, Subpart H.

The inspector reviewed the licensee's Quality Assurance (QA) Plan, dated December 1988, which had been approved by the NRC as documented in a letter from the Office of Nuclear Reactor Regulation (NRR) to the licensee dated December 28, 1988. This plan satisfied the applicable criteria of Appendix B of 10 CFR 50. 10 CFR 71.101(f) allows licensees to use a Commission-approved quality assurance program which satisfies the applicable criteria of Appendix B of 10 CFR 50 and which is established, maintained and executed with regard to transport packages. The inspector used Regulatory Guide 7.10, "Establishing Quality Assurance Programs for Packaging Used in the Transport of Radioactive Material," Rev. 1, June 1986, to review the licensee's QA Program. Although the licensee's QA plan did not address the applicable elements of Regulatory Guide 7.10, some of the guidance contained in Regulatory Guide 7.10, such as audits, shipping specifications, and quality control (QC) procedures, had been implemented. The licensee agreed to evaluate the applicable portions of Regulatory Guide 7.10 and consider incorporating those applicable elements into the QA program. This item will be reviewed during a subsequent inspection and tracked by the NRC as an IFI (70-1151/89-08-04).

No violations or deviations were identified.

b. Audit Program

10 CFR 71.137 (10 CFR 50, Appendix B) requires a comprehensive system of planned and periodic audits to verify compliance with all aspects of the quality assurance program and to determine the effectiveness of the program. Audited results must be documented and reviewed by management having responsibility in the area audited. The inspector reviewed the following two most recent audit reports of transport activities:

- Program Audit - Shipping and Receiving, November 3, 1988
- Audit of Fuel Shipment Documentation, January 24, 1989

The licensee identified several findings and recommendations which were resolved, closed and adequately reviewed by management. The findings were predominately related to shipping paper documentation. The inspector also discussed the audit program, with a licensee representative responsible for performing the audits and determined that an adequate audit program had been conducted.

No violations or deviations were identified.

c. Procurement and Selection of Packagings

10 CFR 71.2(c)(1) requires the licensee to maintain a copy of the certificate of compliance or other approval of the package, along with drawings and other documents referenced in the approval relating

to the use and maintenance of the packaging and to the actions to be taken prior to shipment.

The inspector determined that the licensee maintained a copy of the NRC Certificate of Compliance (COC) for the following packagings:

- UF_6 Shipping Container Overpack (March 4, 1988); NRC Certificate No. 4909; Model Nos.: GE-21PF1 and W-21PF1.

- Rod Cluster Control (RCC) Shipping Containers; NRC Certificate No. 5450 (Rev. 27, July 18, 1989); Model Nos.: RCC-1, 2, 3, and 4.

The documents referenced above described the use and maintenance of the packaging and actions to be taken before shipment.

No violations or deviations were identified.

d. Training Program

The inspector discussed the training program with three licensee representatives involved in the facility's transport of radioactive materials activities. Two specialists directly involved with transportation had attended a seminar in January 1989 in Pittsburgh, Pennsylvania entitled, "Radioactive Transportation Seminar." The licensee ensured that individuals were knowledgeable of changes to procedures and regulations by requiring the individuals to read the appropriate documents. However, the training program lacked definition with regard to schedules and performance of training, and methods used to assure qualification of competence. The licensee agreed to review and evaluate the qualification process and improve the system for maintaining training records.

No violations or deviations were identified.

e. Management Controls

The inspector reviewed selected portions of the following management-approved "Criticality and H.P. Shipping Specifications:"

- UF_6 Heel Shipments Without Overpacks, Rev. 7, January 6, 1989

- Westinghouse Specification 21 PF-1 Low Enriched UF_6 Shipments, Rev. 5, January 6, 1989

- Model Numbers RCC-1, 2, 3, 4 Shipping Containers: Fuel Assemblies and Fuel Rods, Rev. 5, March 6, 1989

- Model Number DOT-6M Shipping Container (Powder and Pellets), Rev. 0, February 7, 1989

- Limited Quantity Shipment, Rev. 2, January 10, 1989
- LSA Shipments (Other than Waste) Rev. 2, February 24, 1989
- Waste Shipments, Rev. 4, February 24, 1989
- Model Number UNC-2901 Shipping Containers (USA/6294/AF) - Powder and Pellets, Rev. 1, October 23, 1989

The shipping specifications listed above were predominantly used for quality control checks. The inspector observed that individuals involved in transportation activities had a copy of the shipping specifications. Based on a review of selected portions of the procedures listed above, no problems were noted.

No violations or deviations were identified.

f. Shipping Paper Documentation

The inspector reviewed log books of shipments of radioactive material made from the site and reviewed the following shipping paper documents to verify that the licensee included all of the applicable required elements of information:

- CAO-5276; June 27, 1989; Fuel Shipment
- CAO-4654; January 31, 1989; UF_6 Heel Shipment

The inspector determined that the applicable Department of Transportation (DOT) shipping name and hazard class; "UN" identification number; radionuclide identification; description of the physical and chemical form of the material; total activity in each package; package labeling; transport index; and signed shipper's certification were accurately documented. The inspector observed that vehicle survey documentation included only the maximum dose rate measurement and contamination survey as discussed further in Paragraph 4 below.

- No violations or deviations were identified.

4. Radioactive Waste Management (84850, 88035)

The inspector reviewed the licensee's radioactive waste management program to assure compliance with the requirements specified in 10 CFR 20.311, 10 CFR 61.55 and 61.56 applicable to shipment manifests/tracking, low-level radwaste form, classification, and stabilization. Low specific activity (LSA) Waste Shipment CAO-7077 (October 5, 1989) was reviewed and the inspector determined that the manifest had been completed as required. Additionally, the inspector reviewed the isotopic survey results for the above referenced shipment and determined that the waste classification shown on the manifest was in agreement with 10 CFR 61.55.

The radioactive material shipment procedures and checklists included provisions for determining the estimated date of arrival of the shipment, and written and telephone notification of the receiver. The licensee's procedures included a seven day receipt requirement by the receiver and provisions for tracing the shipment if notification of receipt was not received.

During review of the shipment paper documentation, the inspector noted that the vehicle survey documentation was lacking in detail. For example, the survey form in Procedure HP-05-054, "Contamination Surveys and Packaging Overchecks for LSA Drummed Waste Bound for the Chem Nuclear Facility," Rev. 1, September 26, 1983, only allowed for the documentation of the maximum dose rate and surface contamination measurements. There were no vehicle survey diagrams in the procedure for recording locations and measurements at those locations. The licensee concluded that more guidance should be provided in HP-05-054 to better document vehicle and package surveys. This item will be reviewed during a subsequent inspection and tracked by the NRC as an IFI (70-1151/89-08-05).

During tours of the facility, the inspector observed the storage of 55-gallon drums containing radioactive waste in the Low-Level Radwaste (LLRW) Storage Building. Periodically, the licensee procured the services of a waste compactor to perform onsite waste compaction for ultimate disposal at a land disposal facility. The inspector also noted that the licensee stored various pieces of equipment and components in the LLRW Storage Building. The licensee stated that all material stored in the LLRW Building was considered potentially contaminated and would require contamination surveys before its removal. The LLRW Building was adequately barricaded and posted in accordance with Section 3.2.2.4 of the License Application.

No violations or deviations were identified.

5. Inspector Followup on Previous-Identified Enforcement Actions and Inspector Followup Items (92701, 92702)

   a. (Closed) VIO 70-1151/88-13-01: Failure to post properly a radioactive materials area. The inspector reviewed the licensee's response to this violation in a letter to the NRC dated November 8, 1988. The inspector verified that the corrective action, including the various procedure revisions, were completed and implemented. This item is considered closed.

   b. (Closed) VIO 70-1151/88-13-02: Failure to follow procedures for contamination limits for equipment in storage outside the contamination controlled area. The inspector reviewed the licensee's response to this violation in a letter to the NRC dated November 8, 1988. The inspector verified that the corrective actions, including the various procedure revisions, were completed and implemented. This item is considered closed.

c. (Closed) VIO 70-1151/88-13-03: Failure to perform continuous, adequate contamination surveys of areas within the new expansion area. The inspector reviewed the licensee's response to this violation in a letter to the NRC, dated November 8, 1988. The inspector verified that the corrective actions, including the various procedure revisions were completed and implemented. This item is considered closed.

d. (Closed) VIO 70-1151/89-01-04: Failure to make adequate breathing zone surveys of particulate airborne radioactive containments for personnel working near and/or cleaning non-routine sources of uranium contamination in the MAP area. The inspector reviewed the licensee's response to this violation in a letter to the NRC, dated May 4, 1989. The inspector verified that the corrective actions were completed and implemented. This item is considered closed.

e. (Closed) IFI 70-1151/89-01-03: In-vivo investigations were poorly documented on the investigation form and were general and lacked detail. The inspector reviewed three In-vivo Investigation Forms covering the period June 1989, in which these individuals exceeded 200 ugm U-235 licensee action level based on in-vivo counts. The investigation reports appeared to provide adequate detail with regard to corrective action (when applicable) and an adequate summary of individual location and MPC-hr calculations based on air sample results. This item is considered closed.

f. (Closed) IFI 70-1151/89-01-02: Add procedural guidance on respirator usage. The inspector reviewed Procedure RA-205, "Respiratory Protection," Rev. 14, October 2, 1989, which included the following guidance: A minimum of a full face respirator should be worn when it is known or suspected that airborne concentrations exceed 80 percent of MPC.

g. (Open) IFI 70-1151/89-01-01: Evaluation and documentation of ALARA program indicators. The inspector reviewed RA-219, ALARA Program Statistical Analyses, Rev. 0, July 11, 1989, and noted that the licensee performed an evaluation and established additional parameters for incorporation into the ALARA program to assure that "non-routine" situations are identified in a timely manner and that root causes can be ascertained and promptly corrected. The procedure provided guidance on the use of control charts for new operations and trend analyses for established operations. The areas targeted for evaluation included the following: (1) Airborne control; (2) Maximum permissible concentration-hours control; (3) In-vivo controls; (4) Contamination control; (5) External exposure control; and (6) Radioactive gas or liquid effluent control. The identified parameters and control limits were in place by July 1, 1989, the beginning of the second half of 1989 ALARA reporting period. Since the licensee's evaluation of these indicators will be included in the second half 1989 ALARA Report, this item will remain open until the ALARA Report can be reviewed.

6. Exit Meeting

The inspector met with licensee representatives (denoted in Paragraph 1) at the conclusion of the inspection on November 17, 1989. The inspector summarized the scope and findings of the inspection, including the NCV and IFIs. The inspector also discussed the likely informational content of the inspection report with regard to documents or processes reviewed by the inspector during the inspection. The licensee did not identify any such documents or processes as proprietary. Dissenting comments were not received from the licensee.

Item Number	Description and Reference
70-1151/89-08-01	NCV: Failure to follow Operations Procedures MAP GE-003, "General Health Physics Requirements," (Paragraph 2.c.).
70-1151/89-08-02	IFI: Review the quality control of urinalysis data entered into the "In-vivo and Urine Exception Report" data base (Paragraph 2.d.).
70-1151/89-08-03	IFI: Evaluate the staggering of urine samples for contractors (Paragraph 2.d.).
70-1151/89-08-04	IFI: Evaluate the applicable portions of Regulatory Guide 7.10 and consider incorporating those applicable elements into the QA Program (Paragraph 3.a.).
70-1151/89-08-05	IFI: Provide guidance in HP-05-054 to better document vehicle and package surveys (Paragraph 4).

Licensee management was informed that the four violations and two IFIs discussed in Paragraph 5 were considered closed.