U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Report Nos. 50-454/89017(DRP); 50-455/89019(DRP)

Docket Nos. 50-454; 50-455 Licenses Nos. NPF-37; NPF-66

Licensee: Commonwealth Edison Company
Post Office Box 767
Chicago, IL 60690

Facility Name: Byron Station, Units 1 and 2

Inspection At: Byron Station, Byron, Illinois

Inspection Conducted: August 20 through September 30, 1989

Inspectors: W. J. Kropp
R. S. Sutphin
R. B. Holtzman
D. R. Calhoun

Approved By: J. F. Hinds, Jr., Chief
Reactor Projects Section 1A

10.19.89
Date

Inspection Summary

Inspection from August 20 through September 30,1989 (Reports Nos. 50-454/89017(DRP); 50-455/89019(DRP))
Areas Inspected: Routine, unannounced safety inspection by the resident inspectors of licensee action on previous inspection findings; operational safety; onsite event follow-up; plant material condition; fitness for duty program; maintenance/surveillance activities; backlog; LER Follow-up; evaluation of licensee quality assurance program; radiological environmental monitoring program; onsite-review; discrepancy records; and meetings.
Results: Of the 12 areas inspected, no violations or deviations were identified in 11 areas; one violation was identified in the following area; radiological environmental monitoring program, Paragraph 6.

DETAILS

1. Persons Contacted

Commonwealth Edison Company

#*R. Pleniewicz, Station Manager
G. Schwartz, Production Superintendent
R. Ward, Technical Superintendent
J. Kudalis, Service Director
D. Brindle, Operating Engineer, Administration
T. Didier, Operating Engineer Unit 0
T. Gierich, Operating Engineer, Unit 2
T. Higgins, Assistant Superintendent, Operating
J. Schrock, Operating Engineer, Unit 1
D. St. Clair, Assistant Superintendent, Work Planning
T. Tulon, Assistant Superintendent, Maintenance
D. Winchester, Quality Assurance Superintendent
D. Wozniak, ENC Project Manager
#*E. Zittle, Regulatory Assurance Staff

The inspector also contacted and interviewed other licensee and contractor personnel during the course of this inspection.

#Denotes those present during the exit interview on September 29, 1989.

*Denotes those present during a telephone discussion on September 1, 1989 with R. B. Holtzman, NRC regional inspector.

2. Action on Previous Inspection Findings (92701 and 92702)

a. NRC Region III management has reviewed open items for the Byron Station and determined that the following open items will be closed administratively due to a lack of safety significance, age of the item, and other priority work. The licensee is reminded that commitments directly related to these open items are the sole responsibility of the licensee and must be met as specified. NRC Region III will review licensee actions by periodically conducting a statistical sample of administratively closed items.

Unit 1

Open Item

454/89004-03

Unresolved Item

454/89004-01

Bulletins

454/87001-BB
454/87002-BB
454/87002-1B
454/88001-BB
454/88004-BB
454/88005-1B
454/88008-BB
454/88008-1B
454/88010-BB
454/88011-BB

Generic Letters

454/88003-HH
454/88014-HH
454/88017-HH
454/88020-HH

Unit 2

Open Items

455/86040-05
455/89007-03

Bulletins

455/87001-BB
455/87002-BB
455/87002-1B
455/88004-BB
455/88011-BB
455/88005-1B
455/88008-BB
455/88008-1B
455/88010-BB

Generic Letters

455/88003-HH
455/88014-HH
455/88017-HH
455/88020-HH

3. Plant Operations

Unit 1 operated at power levels up to 100% for the entire report period.

Unit 2 operated at power levels up to 96% for the entire report period.

a. Operational Safety (71707)

The inspectors observed control room operation, reviewed applicable logs and conducted discussions with control room operators. During these discussions and observations, the inspectors ascertained that the operators were alert, cognizant of plant conditions, attentive to changes in those conditions, and took prompt action when appropriate. The inspectors verified the operability of selected emergency systems, reviewed tagout records and verified proper return to service of affected components. Tours of the auxiliary and turbine buildings were conducted to observe plant equipment

conditions, including potential fire hazards, fluid leaks and excessive vibration and to verify that maintenance requests had been initiated for equipment in need of maintenance.

The inspectors verified by observation and direct interviews that the physical security plan was implemented in accordance with the station security plan.

The inspectors observed plant housekeeping/cleanliness conditions and verified implementation of radiation protection controls. The inspectors considered housekeeping above average except in the following two areas, the Unit 2 auxiliary electric rooms and the electrical maintenance shops. The housekeeping in these two areas were considered poor; however, the inspectors noted an improvement during subsequent walkdowns of the Unit 2 auxiliary electric rooms later in the inspection period. With regards to the electrical maintenance shops, additional management attention is needed. During the inspection period, the inspectors walked down the accessible portions of the Unit 1 and 2 auxiliary feedwater (AFW) systems and Unit 1 rod control system to verify operability.

These reviews and observations were conducted to verify that facility operations were in accordance with the requirements established under Technical Specifications, 10 CFR and administrative procedures.

One concern was identified that pertained to the auxiliary feedwater (AFW) pump suction pressure transmitter setpoint. On August 29 and 30, 1989, the AFW pump suction pressure transmitters were recalibrated by the licensee to accommodate a revised suction pressure setpoint reference. The previous reference point was the location of the pressure transmitter. The new reference point was identified as the location of the instrument tap on the AFW suction piping. A letter, dated September 5, 1989, to the Byron Project Manager from Sargent and Lundy, stated that relative to the initial reference setting, the allowable value of inches Hg vacuum specified in Technical Specification 3.3-4 was exceeded for three of the four AFW pump suction pressure transmitters (2-Unit 1, 1-Unit 2). Additionally, new information concerning another change of the setpoint reference has been introduced and discussed with the licensee. This item is considered unresolved (454/89017-01(DRP); 456/89019-01(DRP)) pending further evaluation of data by the licensee and NRC staff review upon receipt of the applicable LER.

b. Onsite Event Follow-up (93702)

The inspectors reviewed an event that involved the accidental discharge of the halon fire suppression system to the Unit 1 upper cable spreading room (UCSR) on August 31, 1989. A technician inadvertently grounded a set of contacts in the halon release system during the performance of surveillance, 1BHS FP-18. The entire

contents of seven halon bottles were discharged into the UCSR, and a fire alarm signal was generated. The station fire brigade and security forces responded. There was no fire and no personnel injuries. This event occurred just prior to the Labor Day weekend, so the replacement of halon and complete retesting of the system was slightly delayed. Fire watches were posted for the entire time that the halon system was considered out-of-service. Efforts were initiated immediately to investigate the cause and provide corrective measures to prevent recurrence.

c. Current Material Condition (71707)

The inspectors performed general plant as well as selected system and component walkdowns to assess the general and specific material condition of the plant, to verify that Nuclear Work Requests (NWRs) had been initiated for identified equipment problems, and to evaluate housekeeping.

Walkdowns included an assessment of the buildings, components, and systems for proper identification and tagging, accessibility, fire and security door integrity, scaffolding, radiological controls, and any unusual conditions. Unusual conditions included but were not limited to water, oil, or other liquids on the floor or equipment; indications of leakage through ceiling, walls or floors; loose insulation; corrosion; excessive noise; unusual temperatures; and abnormal ventilation and lighting. Results were as follows:

(1) Overall material condition of the diesel driven fire pump needs improvement.

(2) Scaffold was noted in Unit 2 6.9 kv switchgear room on September 8, 1989. The scaffold had been up since July 3, 1989, and the scaffold tag had expired July 29, 1989. This scaffold was subsequently removed later in the inspection period.

The inspectors did not identify any significant material deficiencies and the material condition of the plant was considered above average for this report period.

d. "Fitness for Duty" Program Support (71707)

During this inspection period the inspectors observed the presentation by the licensee, to the personnel at the Byron Station, of the SST Production "Intervention Theatre." This program, presented by professional actors lasted approximately one hour and was presented several times during the month of September for the benefit of the Byron Station personnel. This presentation was a highly entertaining alternative to the conventional approaches used to communicate and educate in the general area of substance abuse. The objective of the presentation was to introduce the concept of intervention which takes place when abusers come face-to-face with their problem and are

offered the means of initiating a recovery. The overall objective was to prompt and motivate those needing counseling and/or treatment to seek out the appropriate sources of help. The CECo Byron Employee Assistance Program (EAP) Coordinator was on hand during the presentations to answer any questions and to explain the company policies in this general area of fitness for duty.

No violations or deviations were identified.

4. Maintenance/Surveillance (61726 & 62703)

a. Activities

Station maintenance and surveillance activities of the safety-related systems and components listed below were observed or reviewed to determine that the activities were conducted in accordance with approved procedures, regulatory guides, and industry codes or standards, and in conformance with Technical Specifications.

Maintenance

NWR B 70342 - Limitorque Valve - Change grease to calcium base grease, Exxon Nebula EP0
NWR B 6881A - Rewire wide range temperature recorders or repair.
NWR B 68868 - 111 DC Bus - MCB Alarm
NWR B 68959 - Investigate and repair DC ground on Bus 111.
NWR B 69611 - Install new alarm horn or redirect/rotate existing alarm horn.
NWR B 69615 - Install new alarm horn or redirect/rotate existing alarm horn.
NWR B 69684 - U-Bolt on pipe hanger 1FW 01268R needs repair.
NWR B 69686 - Investigate unexplained trip of AC feed to charger 111.
NWR B 69746 - Investigate and repair high positive ground on DC Bus 211.
NWR B 70104 - Rod control urgent failure alarm.
NWR B 70337 - Replace electro thermal link fire damper
NWR B 70338 - Replace electro thermal link fire damper
NWR B 70339 - Replace exhausted halon bottles for upper cable spreading room.
NWR B 70342 - Limitorque Valve - Change grease to calcium base grease Exxon Nebula EP0
NWR B 70452 - Found 2 MEG ground on OVS-SX142.
NWR B 70626 - Investigate and repair DC ground on Bus 111.

Surveillance

* 1 BHS FP-18, "Semi-annual test of fire protection detection and suppression wire trouble alarm for cross logic zones. 1 PA39J cabinet."

Surveillance

* 1 BOS DC-M1, "(Unit 1) 125V DC ESF battery III monthly surveillance."
* 1 BVS 0.5-3.AF.1-2, "ASME surveillance requirements for the diesel driven AFW pump and Train B AFW valves."
* 1 BVS 1.1.3.b-1, "Moderator temperature coefficient at power - EOL"
* 1 BOS 3.1.1-21, "(Unit 1) Train B solid state protection system bi-monthly surveillance (staggered)."
* 1 BOS 8.1.1 2.a-1, "1A Diesel Generator operability monthly (staggered) and semi-annual staggered surveillance.
* 2 BVS 0.5-3.AF.1-1, "ASME surveillance motor driven AFW Pump and train A AFW valves."

The following items were considered during this review: the limiting conditions for operation were met while affected components or systems were removed from and restored to service; approvals were obtained prior to initiating work or testing; quality control records were maintained; radiological and fire prevention controls were accomplished in accordance with approved procedures; test instrumentation was within its calibration interval; functional testing and/or calibrations were performed prior to returning components or systems to service; test results conformed with Technical Specifications and procedural requirements and were reviewed by personnel other than the individual directing the test; any deficiencies identified during the testing were properly documented, reviewed, and resolved by appropriate management personnel. The following concern was identified:

The inspectors reviewed the status of the process for verification of proper grease in Limitorque gearcase operators for Motor Operated Valves (MOVs) used in Environmentally Qualified (EQ) applications. In January of 1939 a System Materials Analysis Department (SMAD) report, M-5825-88, dated January 6, 1989, reported on the results of tests performed on 25 grease samples submitted for analysis on November 22, 1988. Of the 25 samples analyzed by SMAD, two had unsatisfactory results. Valve 1SI8804B was identified with mixed greases. The ratio of mixed greases was 20:1, calcium based grease to lithium based grease. NWR B 65783 was issued on March 13, 1989, to replace the unsatisfactory mixed grease, with Exxon Nebula EPO grease. This was completed in July 1989. The other unsatisfactory test result involved valve 1SI8814. The test results identified that the incorrect grease was in the MOV gearcase. Instead of a calcium based grease, the gearcase contained a lithium based grease. It does not appear that a Deviation Report (DVR) was generated as a result of these two unsatisfactory test results. It also appears that the

SMAD report, M-5825-88 was not distributed to the EQ Coordinator for information or action as appropriate.

On August 31, 1989, based on a visual inspection of three grease samples taken from the gearcase on a EQ Limitorque actuator for valve 1 CC 9412 B, it appeared that the grease was not of the type that would be acceptable for use in EQ applications. The three samples were sent to SMAD for analysis and DVR No. 6-1-89-110 was written. Samples from eight other gearcases were also sent for analysis at the same time. SMAD report M-4194-89, of September 8, 1989, reported that the eight additional valve grease samples were acceptable ratio; however, the grease in valve actuator 1 CC 9412 B was primarily a lithium based grease instead of the required calcium based grease. NWR B70342 was issued to change the grease, to the correct calcium base grease, Exxon Nebula EPO.

Based on the recent August 31, 1989, SMAD test results the licensee initiated action to test the grease in 100% of the accessible 90 valves used in safety related EQ applications for both units. Also the licensee initiated administrative action to ensure involvement of the EQ coordinator with SMAD test results. Approximately 40 of the 90 valves had been sampled at the end of this inspection period. This will remain an unresolved item pending the results of the current sample program. (454/89017-01(DRP); 455/89019-01(DRP)).

b. Backlog

The inspectors reviewed the licensee's backlog of non-outage corrective NWRs on hold for parts to assess the significance. The NWRs were evaluated for safety impact of the deferrals.

As of September 19, 1989, the licensee had 106 corrective non-outage NWRs on hold for parts. The backlog of open corrective non-outage NWRs was 411. The inspectors reviewed a computer listing of NWRs and selected four for detailed review to assess if there was an impact on operability of the affected component/system. The NWRs selected were:

NWR#	Date	Problem
B56238	06/1/88	Damper has bad oil leak
B63540	12/21/88	Valve is binding not allowing proper stroke.
B63895	01/9/88	Switch appears to have failed closed not allowing jacket water to flow through jacket.
B65419	03/2/89	Vertical directional vibration reads Hi during surveillance.

No violations or deviations were identified.

5. Safety Assessment/Quality Verification (35502, 40500, 40704)

a. Licensee Event Report (LER) Follow-up (90712 and 92700)

(Closed) LER (454/89007)): Through direct observation, discussions with licensee personnel, and review of records, the following LER was reviewed to determine that the reportability requirements were fulfilled, immediate corrective action was accomplished, and corrective action to prevent recurrence had been accomplished in accordance with Technical Specifications.

LER No.	Title
Unit 1	
454/89007	Control room ventilation alignment due to voltage transient caused by lightning.

b. Evaluation of Licensee Quality Assurance Program Implementation (35502)

The inspectors reviewed the licensee's corrective actions to findings identified by an external industry assessment organization to determine the effectiveness of the licensee's Quality Assurance Program.

The licensee's corrective actions were timely and adequate in regards to deficiencies noted in the maintenance departments; in heightening the awareness of first line supervisors on good industrial safety practices through additional enhanced training and on monitoring the radiation exposure received while performing repetitive and routine jobs for ALARA considerations.

The inspectors attended a modification status meeting. In attendance were members from Operating, Tech Staff, all three Maintenance departments, and QA; and each member actively participated. The status of each modification was readily made available; indicating adequate planning, proper interface and good communications between groups. The licensee had a conscientious effort underway to complete all routine activities in anticipation of the large upcoming manpower demand during the outage.

The inspectors also reviewed LERs issued during the 1989 calendar year and concluded that root causes were properly determined, adequate corrective actions were implemented, and no significant discernible trends were identified.

c. Evaluation of Licensee Performance (35502)

A review of site operations from January through August 1989, was conducted to evaluate the performance of the licensee as it may require adjustment of the NRC inspection plan. The review included operational events and trends indicated by monthly status reports.

No violations or deviations were identified.

6. Radiological Environmental Monitoring Program (REMP) (IP 84750, IP 80721)

In a review of the corporate and nuclear plant radiological environmental monitoring programs, the inspector noted several deficiencies in the Byron program. Although the Annual Radiological Environmental Reports from 1985 through 1988 contained summaries of the results of analysis of all radiological environmental samples, the reports did not include the actual results, as required by Technical Specification (TS) 6.9.1.6. A licensee representative agreed to correct this by adding the results to the reports. This failure to include the results is considered a violation of Technical Specifications (454/89017-02(DRSS); 455/89019-02(DRSS)). The violation was assigned a Severity Level IV due to poor programmatic oversight of TS requirements by corporate and licensee management and the related deficiency noted below.

A 1988 Corporate QA audit (QAA 20-88-31, October 21-28, 1988), identified that contrary to Technical Specification 4.12.3, the Interlaboratory Comparison Program was not described in the Offsite Dose Calculation Manual (ODCM). Corporate representatives revised the generic section of the ODCM where it appears to satisfy the TS requirement, especially when combined with the details in the Annual Radiological Environmental Report.

One violation of NRC requirements was identified.

7. Engineering and Technical Support (37700)

a. On-Site Reviews

The inspectors reviewed five On-Site Review (OSR) that pertained to potentially degradable equipment or system configurations different from UFSAR requirements. The OSRs were reviewed for clarity, accuracy, and technical content. The five OSRs reviewed were:

89-194	Containment Floor Drain Instrument (1FR-RF008)
89-203	AFW Battery Capacity
89-206	1B CV Pump Seal Replacement
89-207	RHR Bearing Life analysis
89-209	Operation with Charging/Safety Injection mini-flow loop isolated

The inspectors identified one concern with OSR 89-206 that pertained to a seal replacement for the 1B CV pump. The OSR stated that a ASME Pump Performance Test was not required as the work performed

did not affect the pump performance reference values of inlet pressure, differential pressure or flow rate. Since the work involved uncoupling the pump from the motor, the ASME reference value for vibration could have been affected. The OSR did not identify the affect of the work on pump vibration. However, subsequent to the work, the licensee did perform a ASME Pump Performance Test to accurately evaluate future maintenance to be performed on the 1B CV pump. The inspectors emphasized, to the licensee, the need for OSRs to be technically accurate and address the salient points.

b. Discrepancy Records/Degraded Equipment

The inspectors reviewed DVR No. 89-016, which was issued on August 15, 1989, that identified the AFW "B" battery bank capacity for the Unit 1 diesel driven AFW pump as 73%, based on the performance of surveillance, 1BVS AF-2. The acceptance criteria in the surveillance procedure was 80%. The DVR stated that the battery was considered operable based on a letter from the licensee's Nuclear Engineering Department (NED). The inspectors reviewed the letter and the history of the Nickel Cadium (NiCa) batteries utilized to start the Unit 1 diesel driven AFW pump. There are two banks of NiCa batteries (Bank A and Bank B), each capable of starting the diesel driven AFW pump. A selector switch on the local panel is positioned to either bank, with Bank "A" selected on the odd months and Bank "B" on the even months. The inspectors identified the following concerns:

(1) DVR No. 89-016 referenced a letter for the basis of determining operability for the "B" NiCa battery bank that was dated July 11, 1989. The letter referenced a calculation, which was performed as a result of a similar capacity test for the "A" NiCa battery bank. The capacity test on the "A" battery bank was conducted in accordance with procedure SPP-89-037 on May 9, 1989. The capacity of Bank "A" was determined to be 61% which was below the 80% acceptance criteria defined in SPP-89-037. The calculation by the NED, to determine the minimum battery capacity, was determined by the inspectors to be inadequate. The calculation concluded that the minimum capacity was 49%; however, the calculation did not use the correct duty cycle for the battery. The inspectors determined that the duty cycle utilized in the calculation did not meet the duty cycle described in the Updated Final Safety Analysis Report (UFSAR). The duty cycle in the UFSAR was four cranks of the diesel with the diesel AFW pump starting on the fifth attempt. The licensee performed another calculation on August 29, 1989, with the correct duty cycle. The revised minimum capacity of 58% did not affect the operability status of both banks of the Unit 1 AFW NiCa batteries. However, the licensee has issued NWRs to replace both battery banks within one year. The original capacity test on May 9, 1989, for the "A" Bank was based on a two hour discharge. Based on vendor recommendations, the

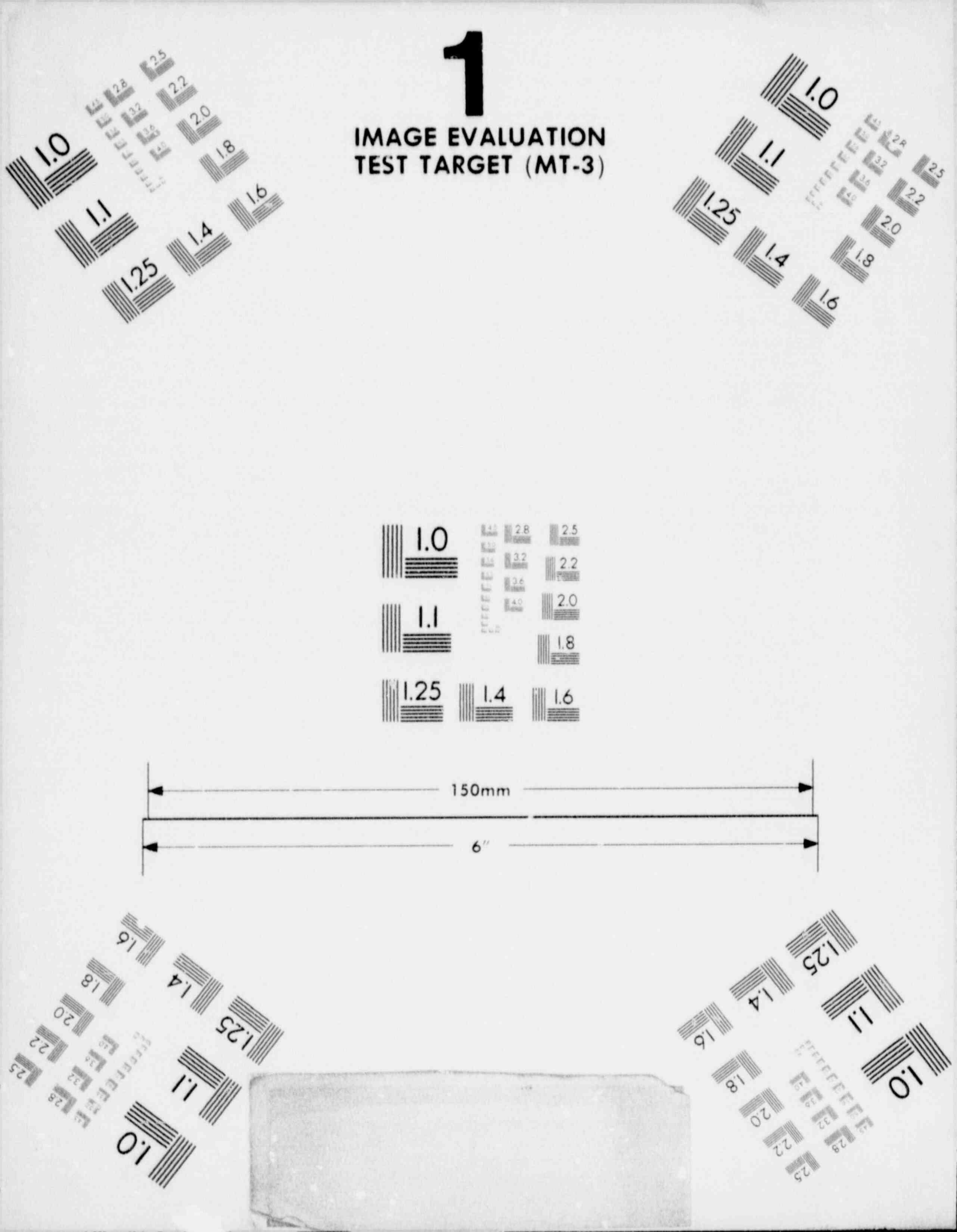
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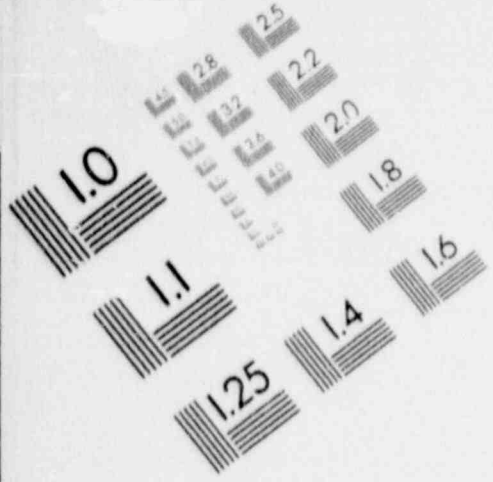
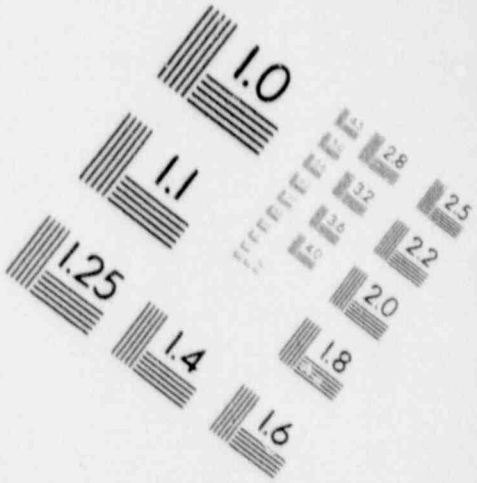
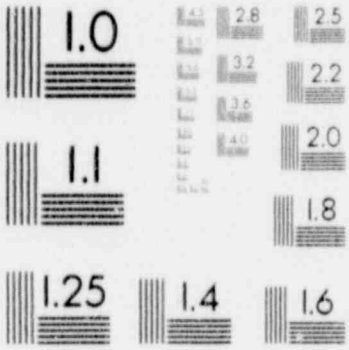
IMAGE EVALUATION
TEST TARGET (MT-3)
1.0
1.1
1.25
1.4
1.6
1.8
2.0
2.2
2.5
2.8
3.2
3.6
4.0
150mm
6″

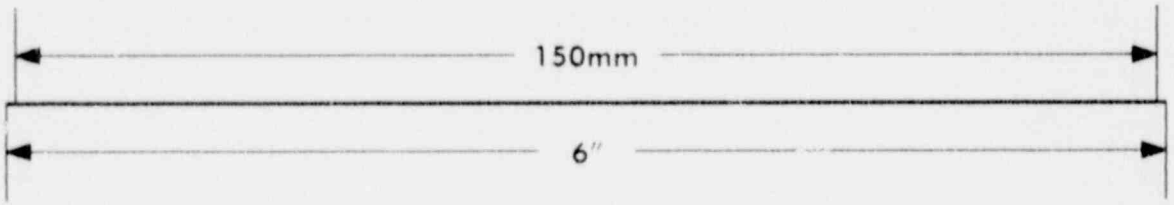
1

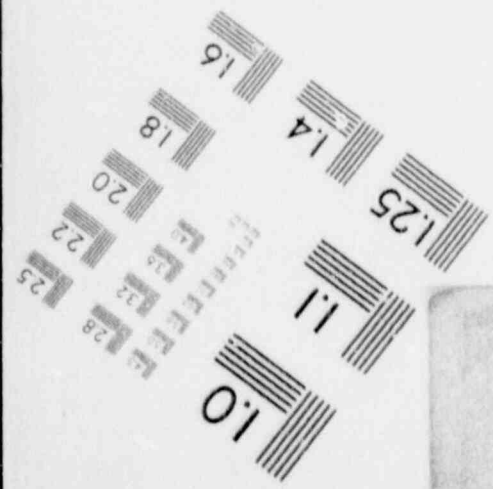
IMAGE EVALUATION TEST TARGET (MT-3)

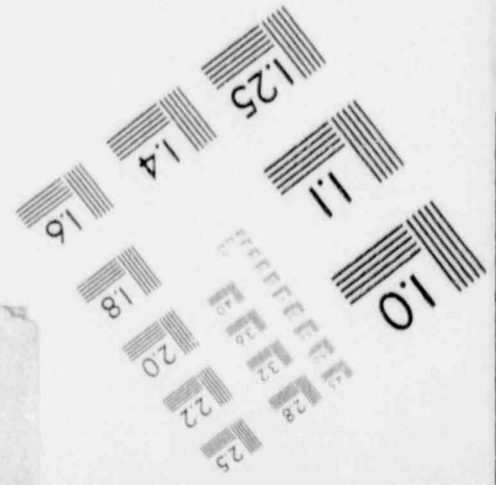












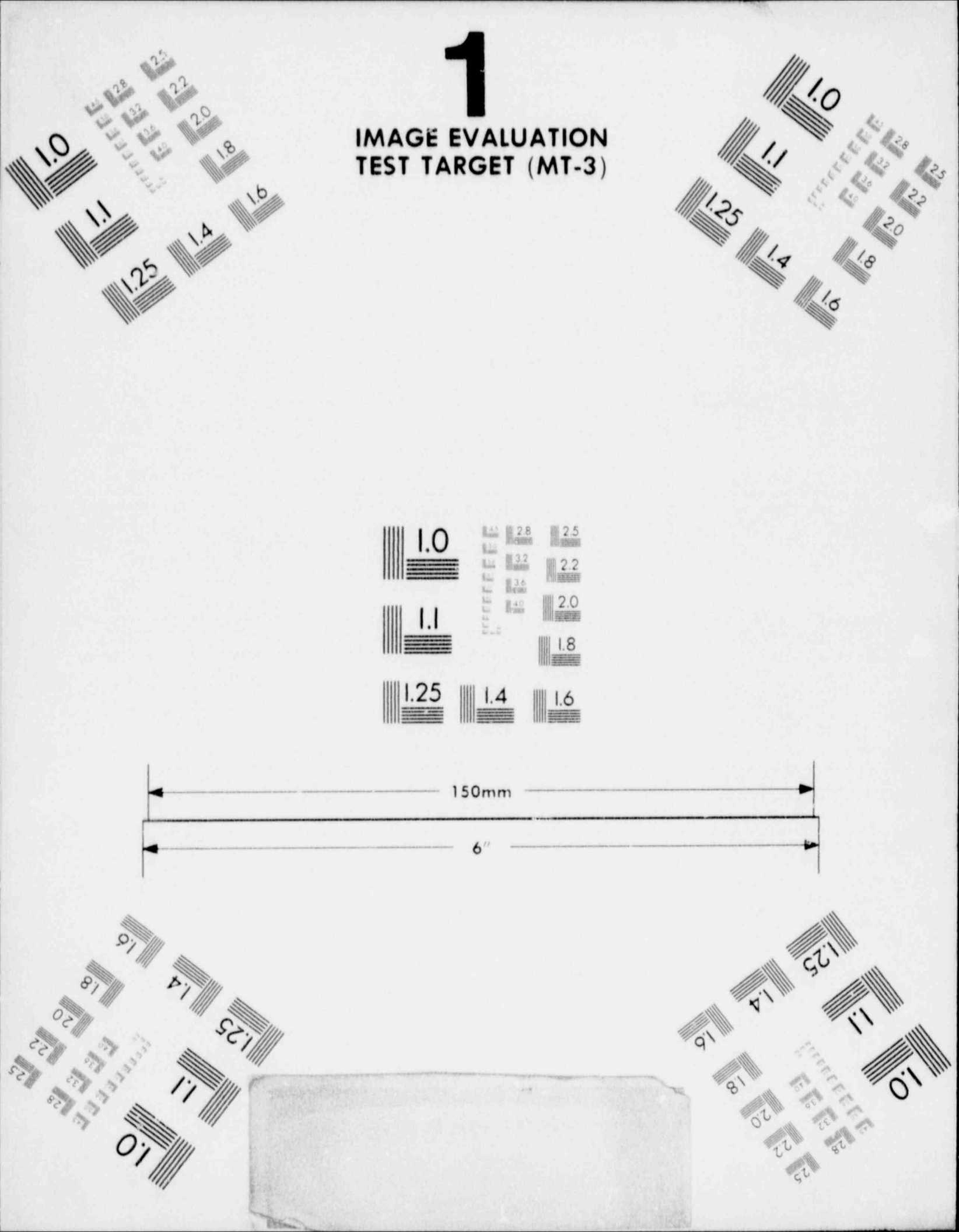

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IMAGE EVALUATION
TEST TARGET (MT-3)
1.0
1.1
1.25
1.4
1.6
1.8
2.0
2.2
2.5
2.8
3.2
3.6
4.0
150mm
6"

licensee conducted another discharge test of Bank "A" but utilized a five hour discharge method on September 5, 1989. The vendor stated that a five hour discharge would be a more representative test of battery capacity. The capacity of the "A" Bank was determined to be 72%, based on the five hour discharge test.

(2) The evaluation of Bank "A" NiCa batteries discharge test results of May 9, 1989 by the station did not address all the salient issues to determine Bank "A" operability. The evaluation was conducted by the system engineer and was part of the SPP-89-037 package. The evaluation stated that operability of the batteries will be verified by starting the diesel driven AFW pump with the NiCa battery charger off during the monthly surveillances. The evaluation did not address if the NiCa batteries would meet the design criteria (duty cycle) of the batteries described in the UFSAR, which was the batteries capable of cranking the AFW diesel four times with the diesel starting the fifth time.

(3) The review of the status of Unit 1 AFW Bank "A" battery after the discharge test on May 9, 1989, was considered untimely based on the test being done May 9, 1989; the review of results on June 5, 1989, and the calculations to determine minimum capacity performed July 11, 1989.

In conclusion, the inspectors are concerned with the licensee's process of assessing degraded equipment. The inspectors have identified where the licensee had performed timely and adequate assessments of degraded equipment such as for the containment flow drain measurement system on August 10, 1989. However, inconsistencies have been noted by the inspectors that warrant an evaluation of the process used by the licensee. Since degraded or nonconforming equipment directly relates to safe plant operations, the effectiveness of the process for assessing degraded/nonconforming equipment is considered an Open Item (454/89017-03(DRP); 455/89019-03(DRP)).

No violations or deviations were identified.

8. Unresolved Items

Unresolved items are matters about which more information is required in order to ascertain whether they are acceptable items, violations, or deviations. An Unresolved item has been identified during the inspection and is discussed in paragraph 4.a.

9. Meetings

a. Management Meetings (30702)

On September 7, 1989, J. M. Hinds, Chief, Reactor Projects Section 1A, and the NRC resident inspectors toured the Byron plant and on September 8, 1989, met with licensee management to discuss plant performance and plant material condition.

b. Exit Interview (30703)

The scope and findings of the inspection were reviewed with corporate representatives (Section 1) at the conclusion of the inspection on July 14, 1989. Telephone discussions were held with corporate representative on August 30, 1989, and a licensee representative on September 1, 1989.

During the exit interviews, the inspector discussed the likely informational content of the inspection report with regard to documents or processes reviewed during the inspection. Licensee representatives did not identify any such documents or processes as proprietary.

The inspectors met with the licensee representatives denoted in Paragraph 1 at the conclusion of the inspection on September 29, 1989. The inspectors summarized the purpose and scope of the inspection and the findings. The inspectors also discussed the likely informational content of the inspection report, with regard to documents or processes reviewed by the inspectors during the inspection. The licensee did not identify any such documents or procedures as proprietary.