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OFFICE OF THE SECRETARY

MEMORANDUM FOR: C. Edson G. Case, Acting Director
Office of Nuclear Reactor Regulation

FROM: Saul Levine, Director
Office of Nuclear Regulatory Research

SUBJECT: RESEARCH INFORMATION LETTER # 30 PHASE I FINAL REPORT,
"BARRIER PENETRATION DATA BASE"; OF STUDY, "ASSISTANCE-
PHYSICAL PROTECTION ASSESSMENTS."

A study entitled "Assistance - Physical Protection Assessments" Fin A3210, commenced on December 1, 1977. The study, carried out by the Technical Support Organization of Brookhaven National Laboratories was sponsored by the Technical Support Branch, Division of SAFER, Office of Nuclear Regulatory Research. It was to meet the needs of the Reactor Safeguards Development Branch, Division of Operating Reactors, Office of Nuclear Reactor Regulation as described in the research request memo (#NRR 77-19) from NRR to RES dated September 23, 1977, and in the Response to Research Request memo by RES dated January 31, 1978.

The work was to be carried out in two phases: (1) classification of barriers in terms of the penetration time for selected counter measures which an adversary might use to overcome the barrier, and (2) procedures to be followed in testing reactor sites for compliance for 10CFR 73.55, the reactor safeguards regulation. Funding was 80K and the work was to be completed by the end of FY78.

A final report, "Barrier Penetration Data Base," covering Phase 1 was received on May 1, 1978. Copies have been made available to Mr. A. Fang, Reactor Safeguards Systems Analyst, Reactor Safeguards Development Branch, Division of Operating Reactors, NRR. He has accepted them as bringing Phase 1 to a satisfactory conclusion.

The report lists 32 barriers; including fences, doors, and light through heavy walls, ceiling and floors. All the barrier penetration times presented in the report have been measured experimentally. Much of the experimental work was done by Sandia and National Bureau of Standards. However, not all combinations of barrier and counter measure have been tested. Counter measures that have been tested include: sledge hammers, crow bars, bolt cutters, high explosives in the form of shaped charges and bulk explosives, and cutting torches.

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Work on Phase 2 is underway and a draft report has been received. A letter covering this work will be forwarded when the Reactor Safeguards Development Branch and the RES staff find the work satisfactory.

The RES contact for additional information is Mr. R. E. Zimmerman (427-4375) Consultant, Division of Safeguards, Fuel Cycle and Environmental Research.

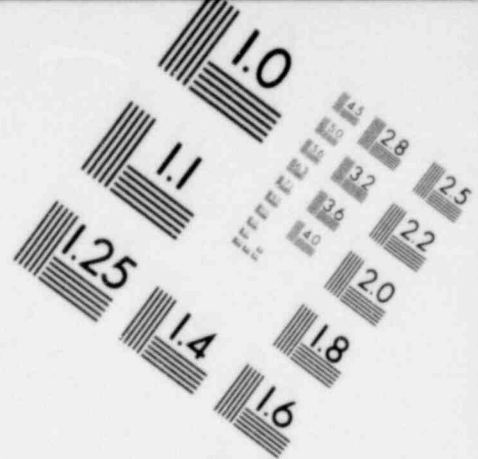
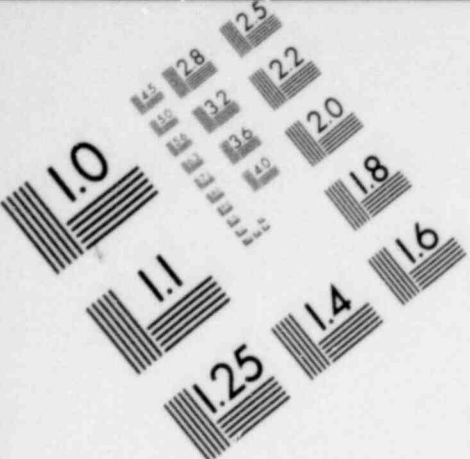
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Saul Levine, Director
Office of Nuclear Regulatory Research

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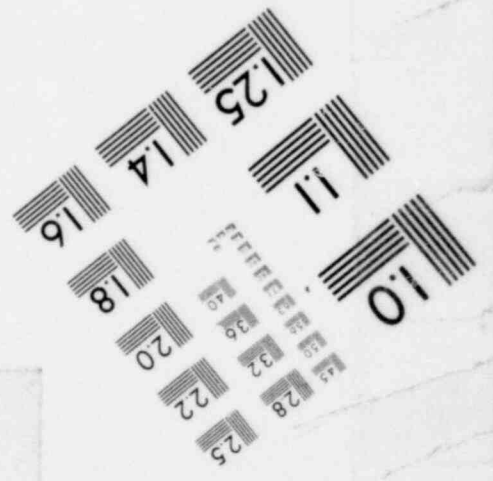
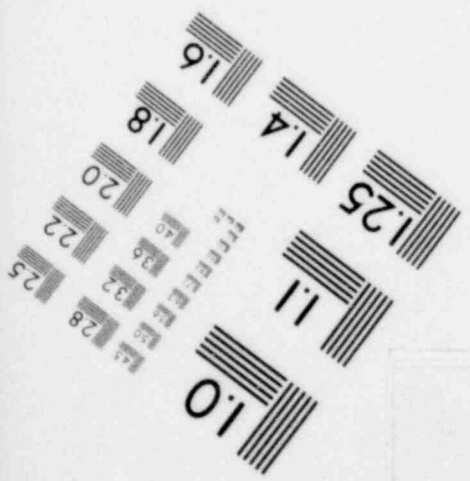
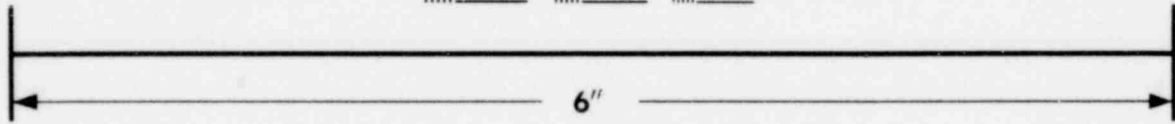
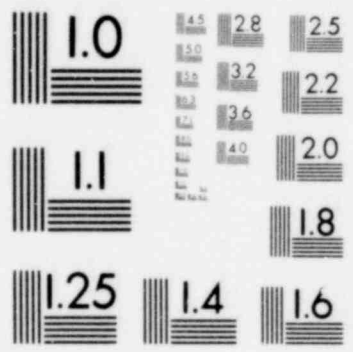
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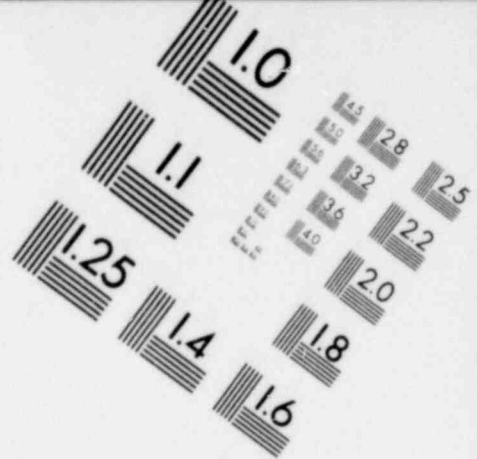
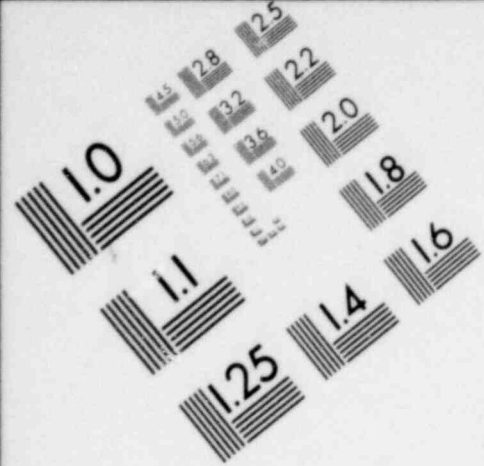
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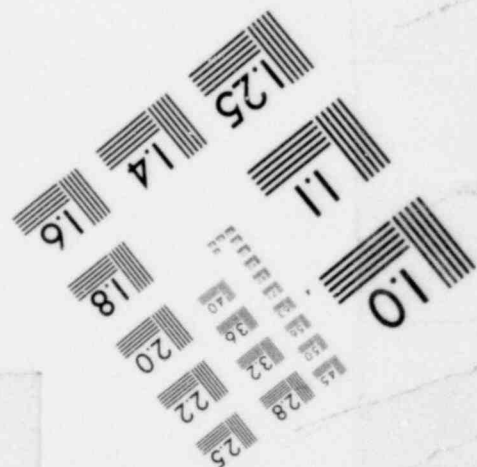
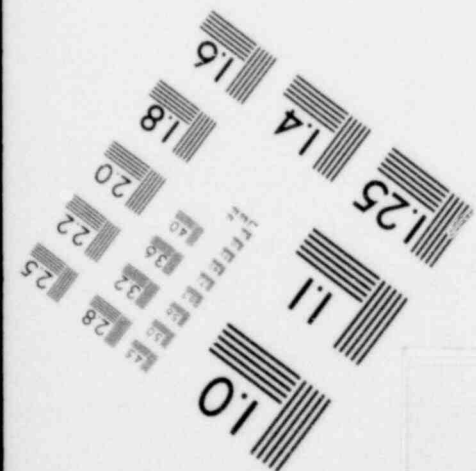
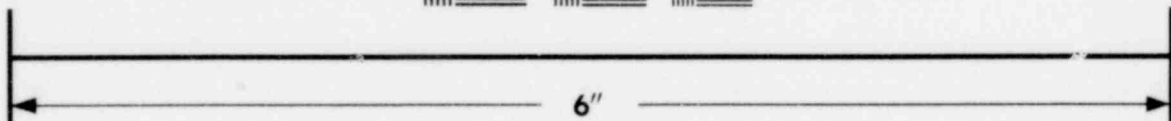
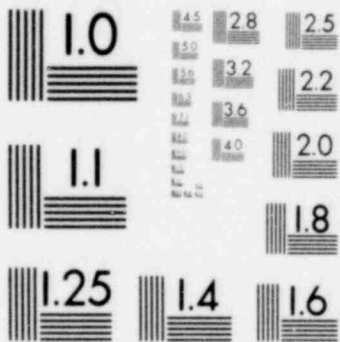


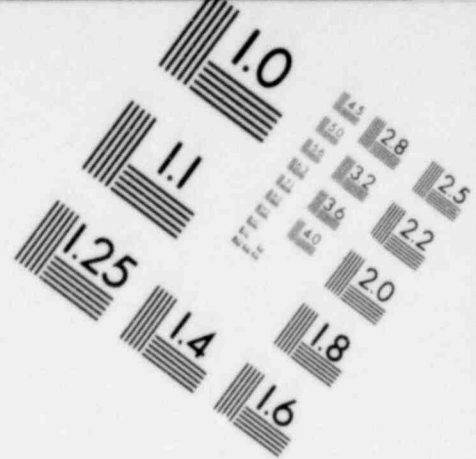
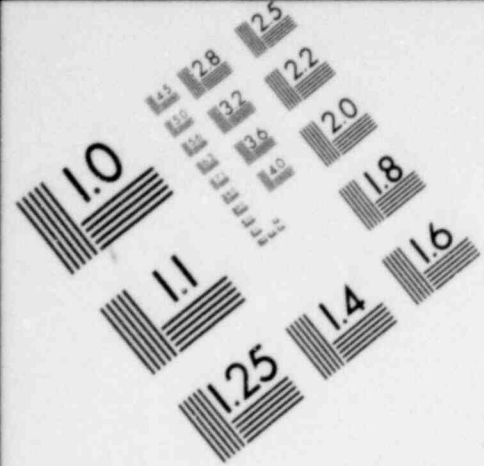
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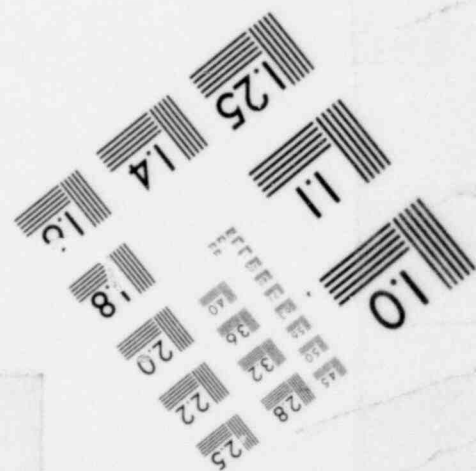
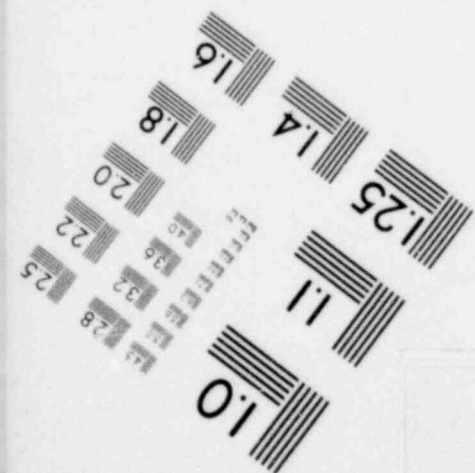
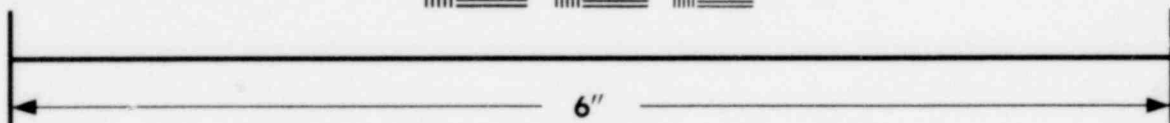
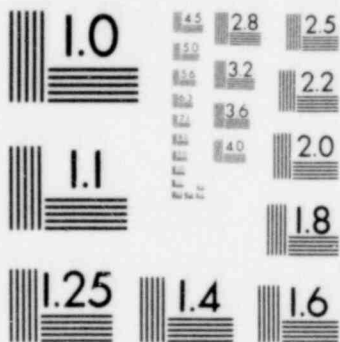


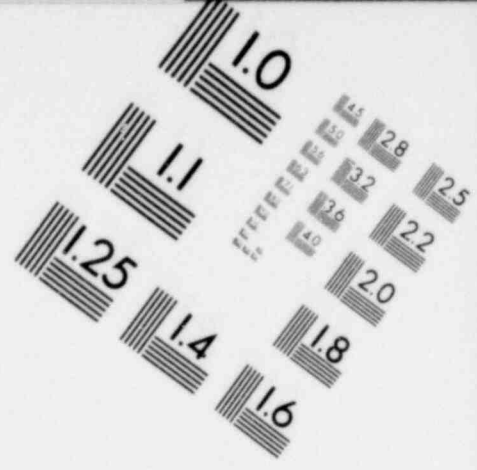
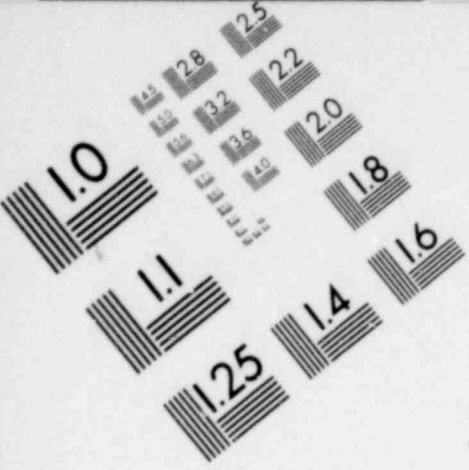
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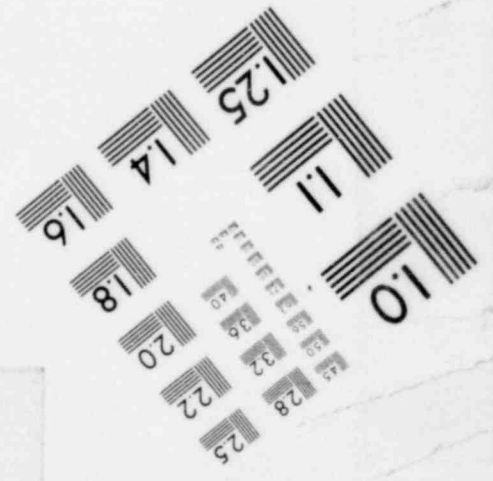
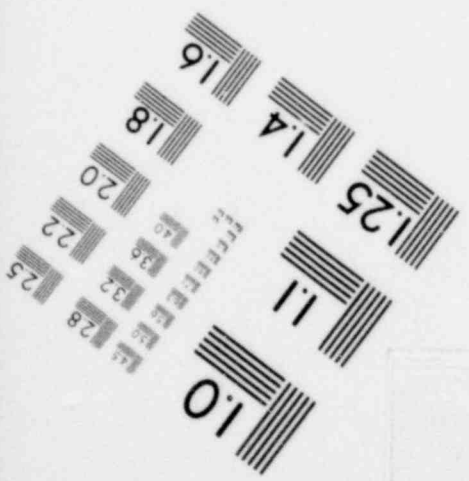
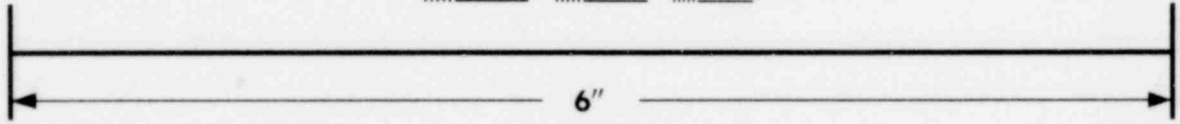
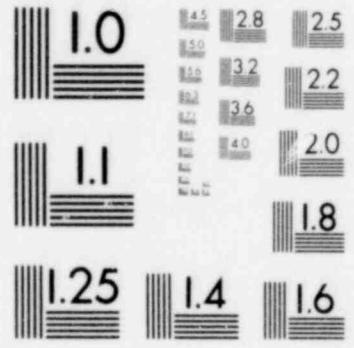


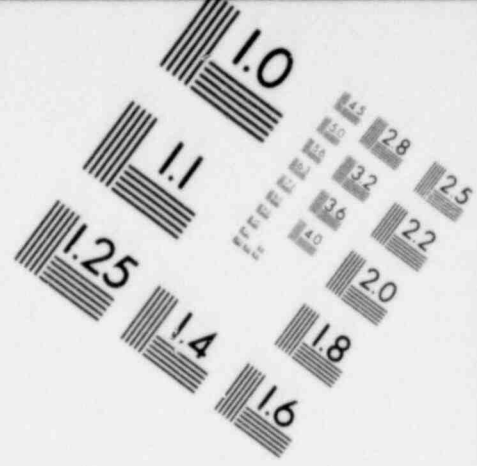
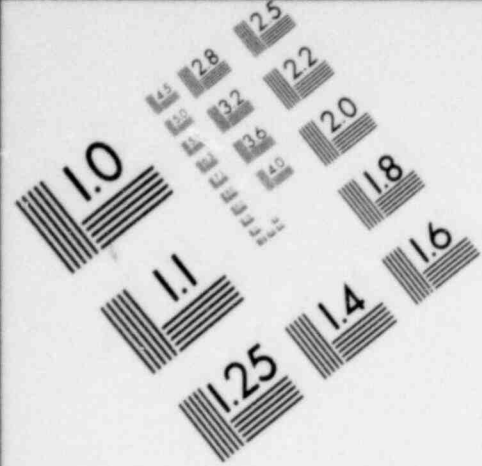
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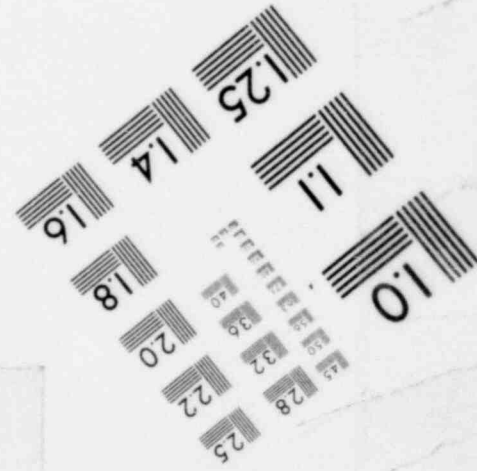
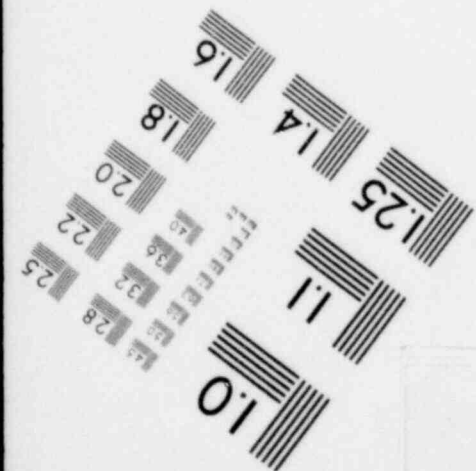
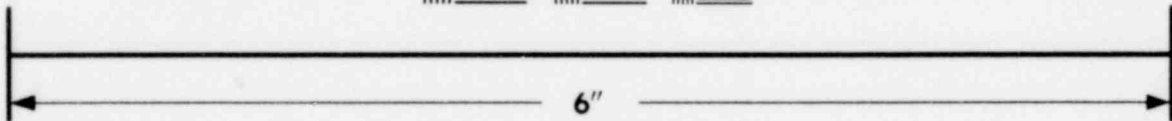
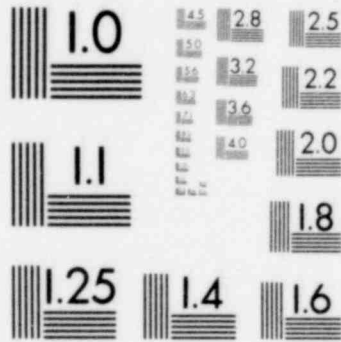


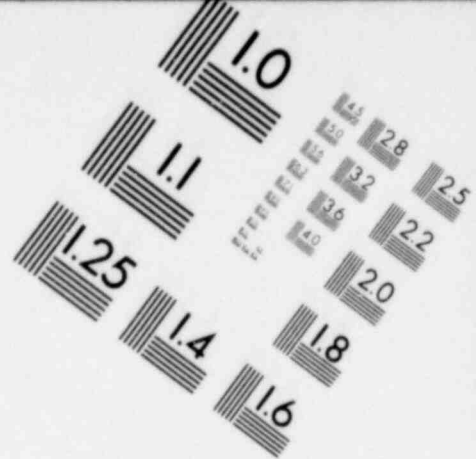
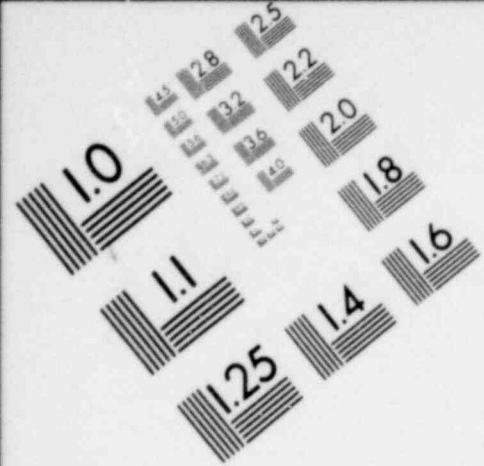
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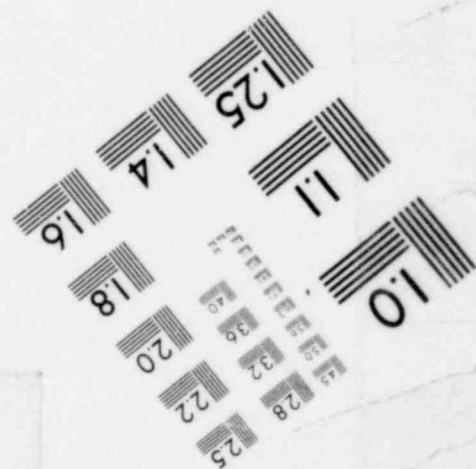
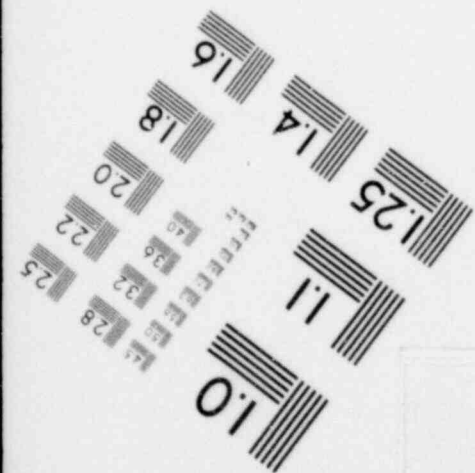
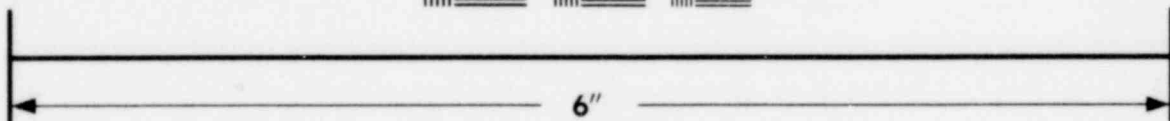
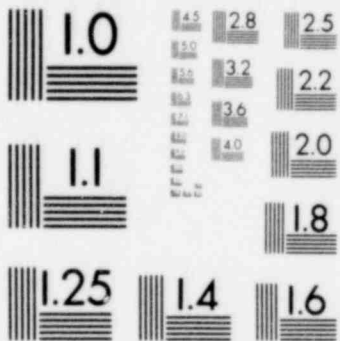


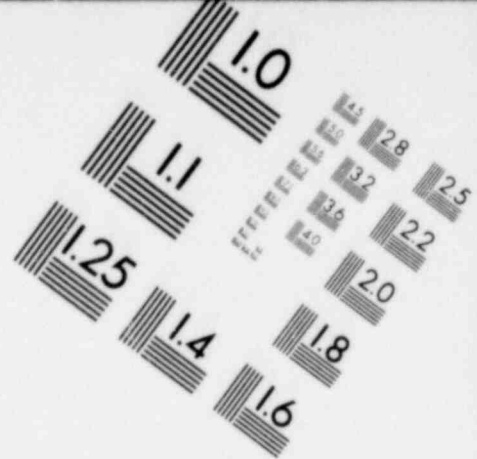
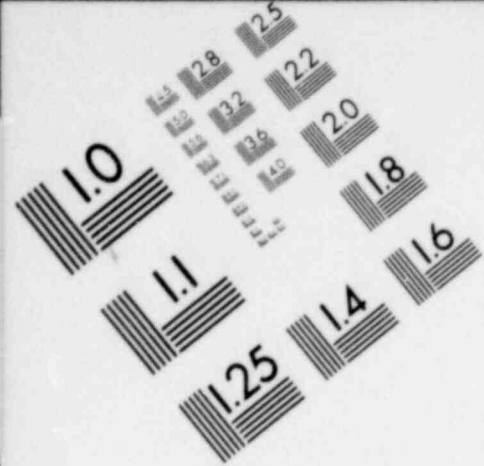
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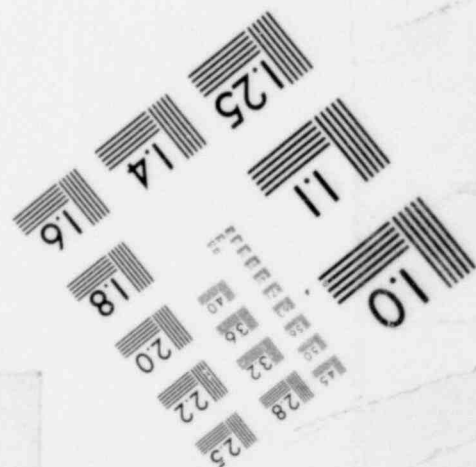
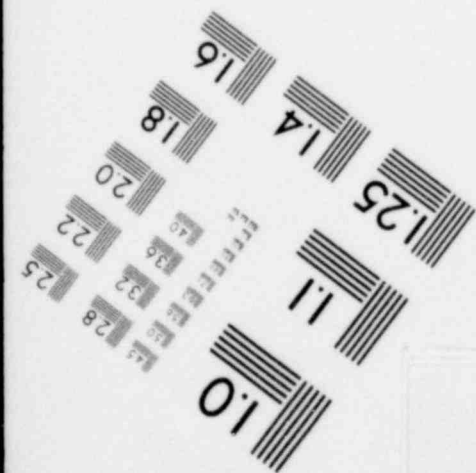
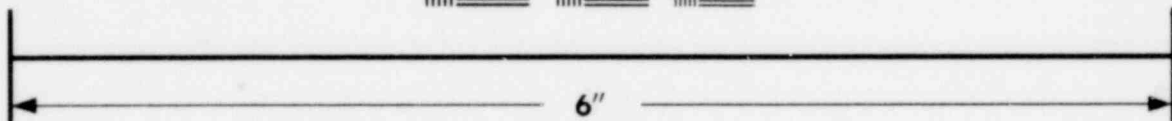
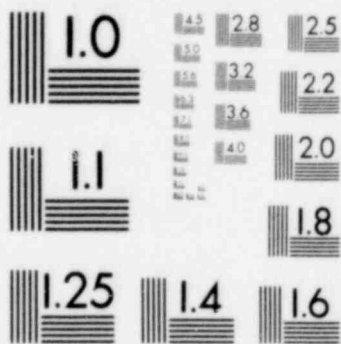


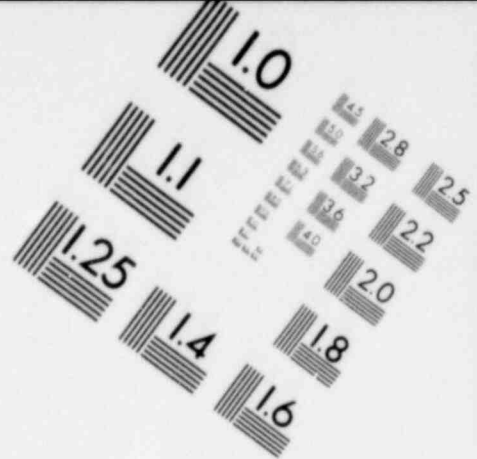
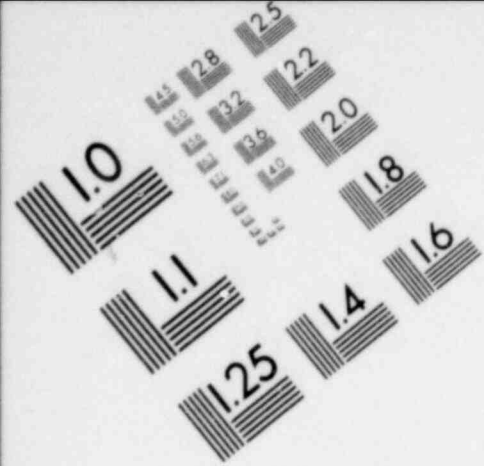
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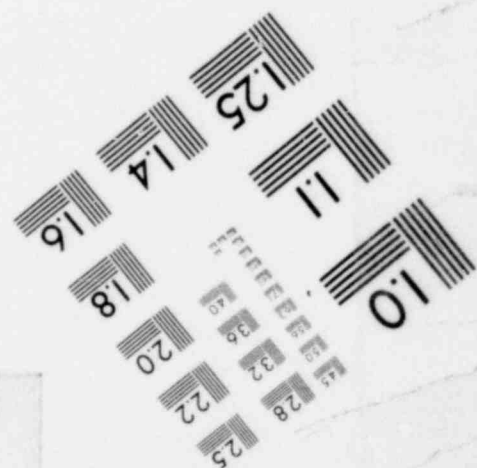
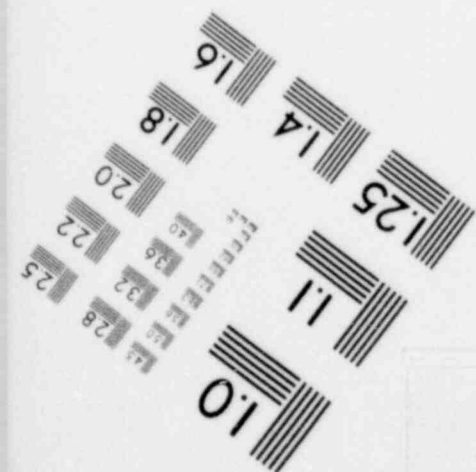
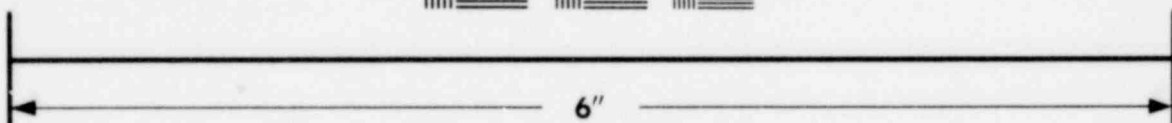
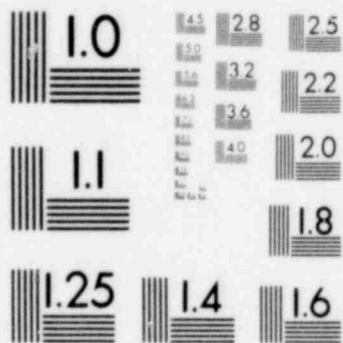


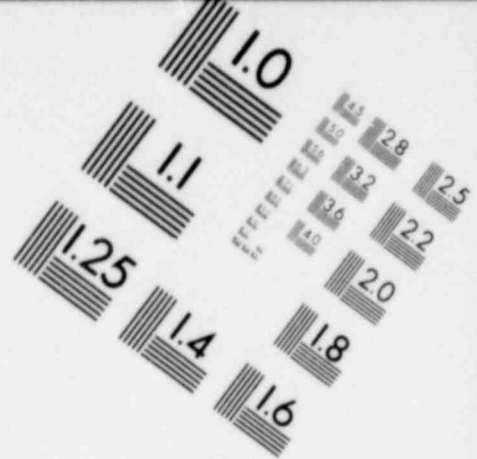
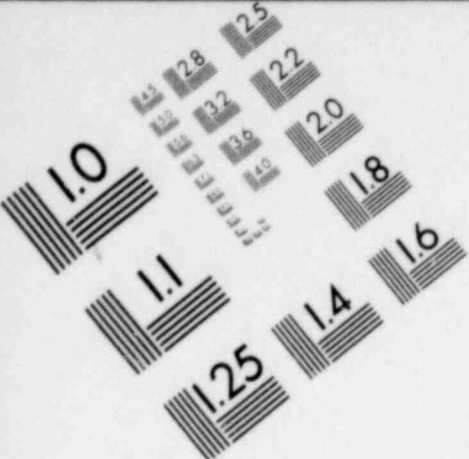
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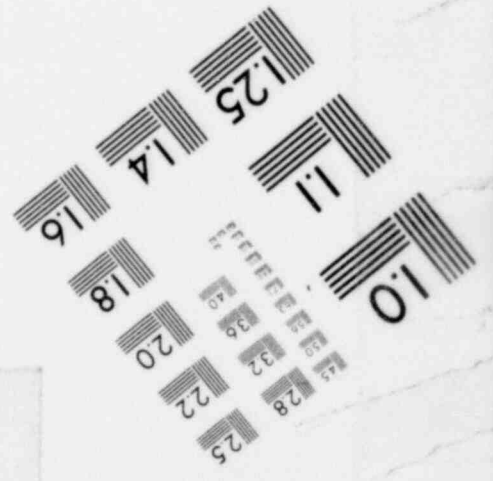
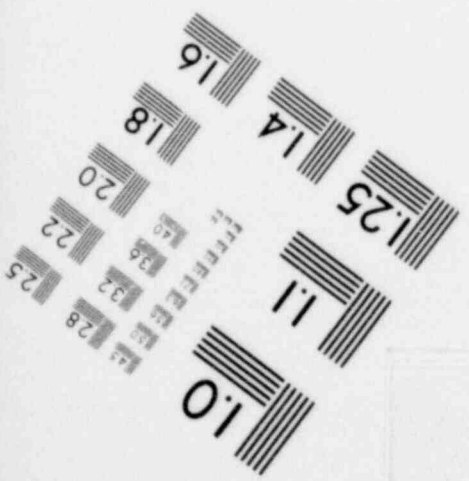
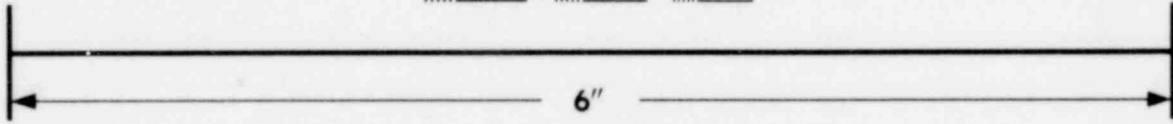
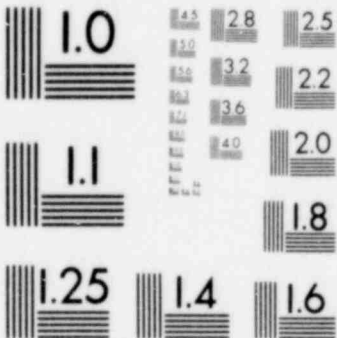


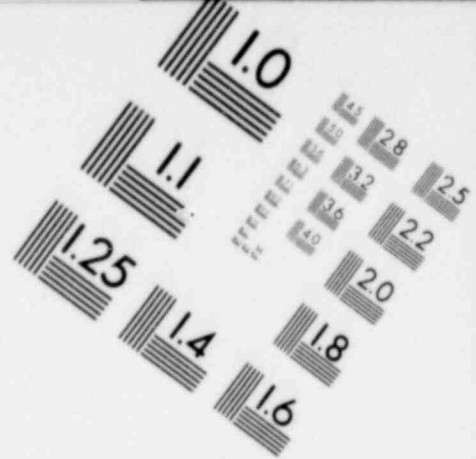
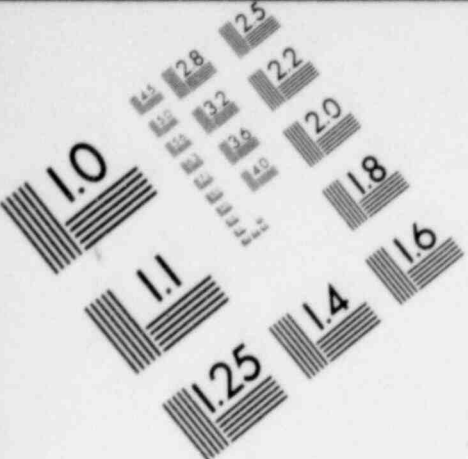
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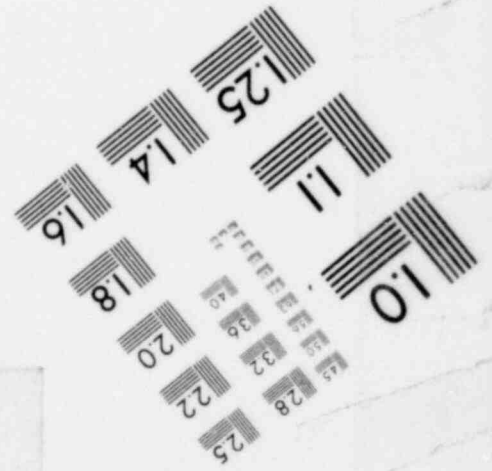
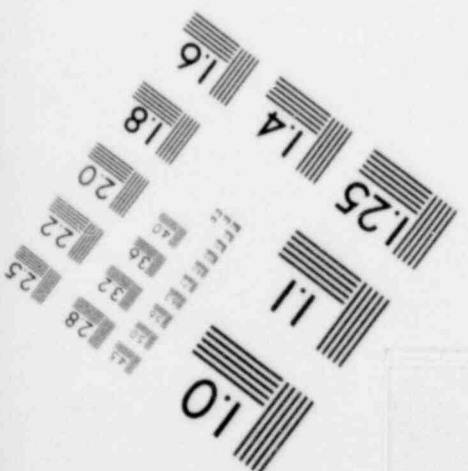
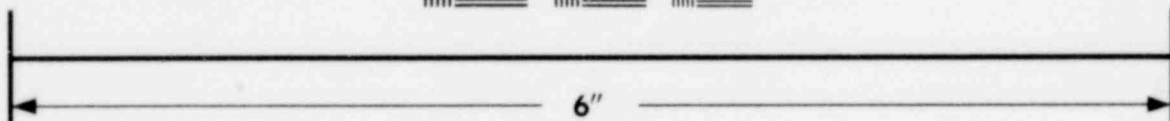
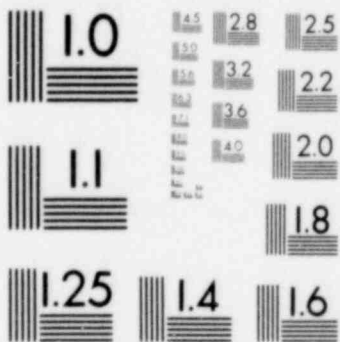


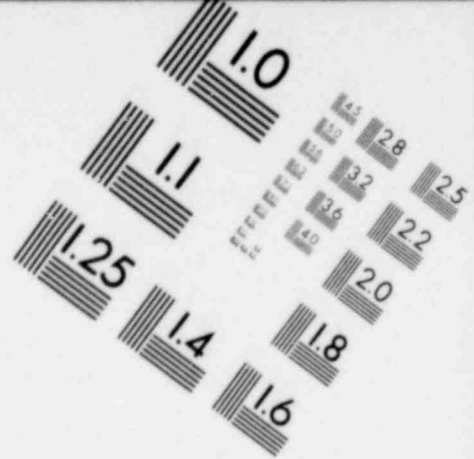
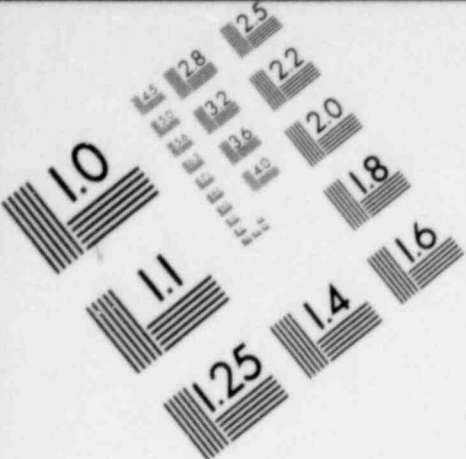
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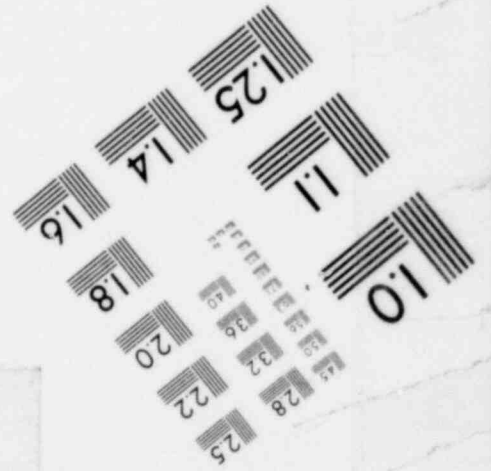
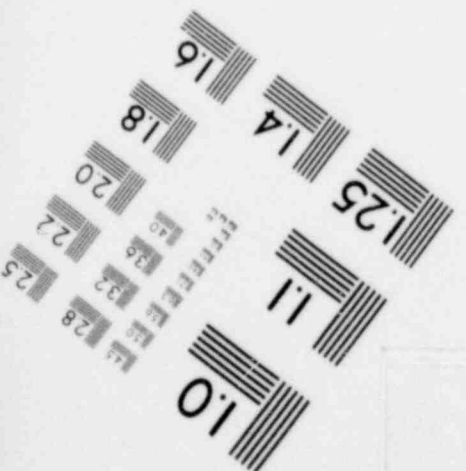
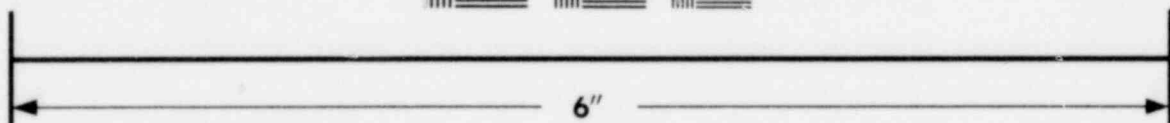
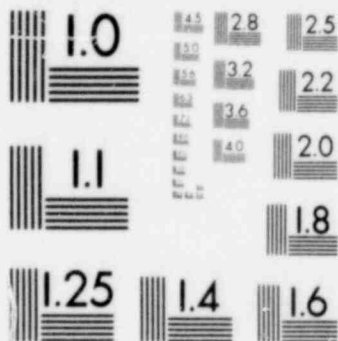


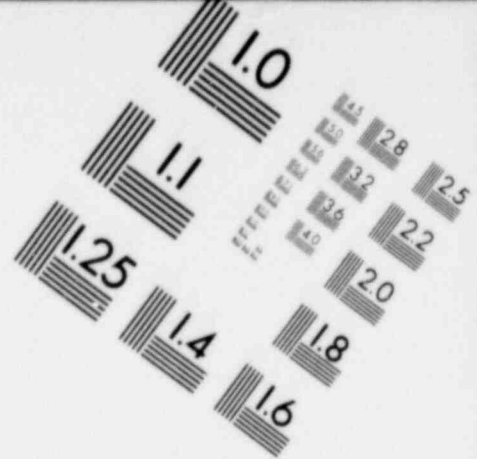
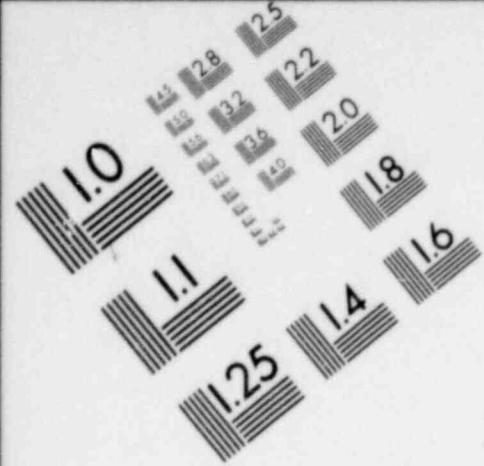
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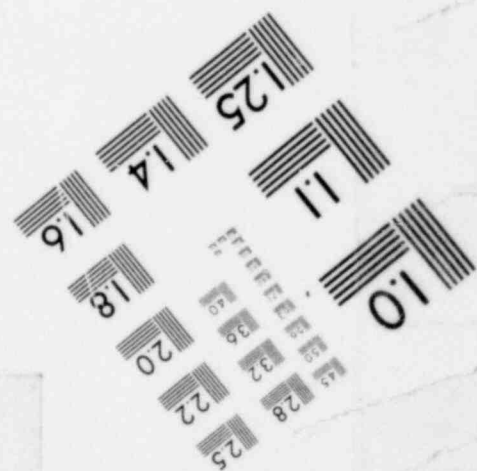
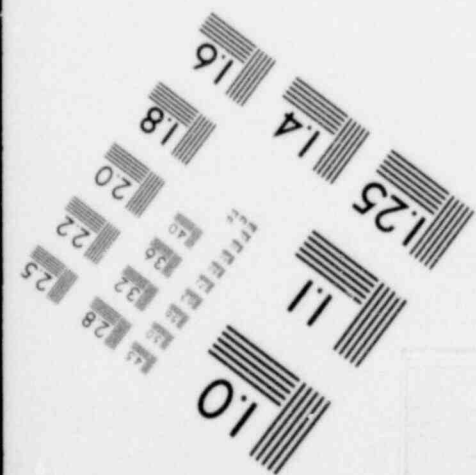
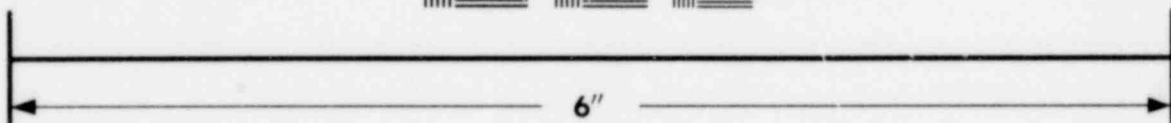
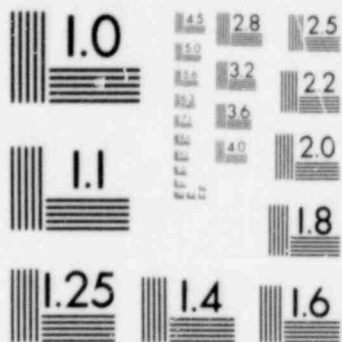


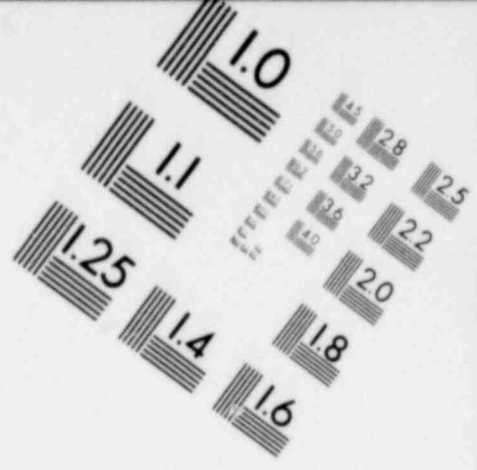
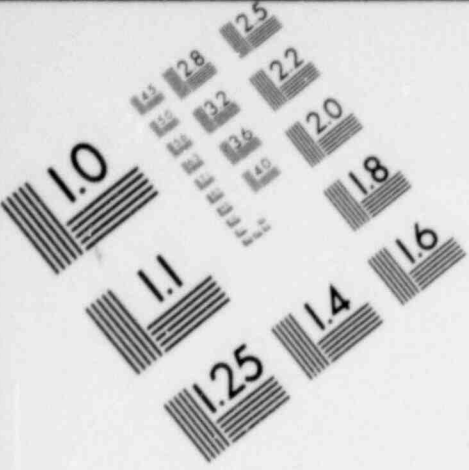
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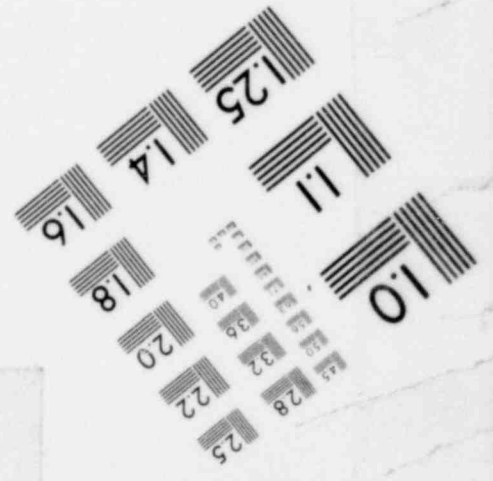
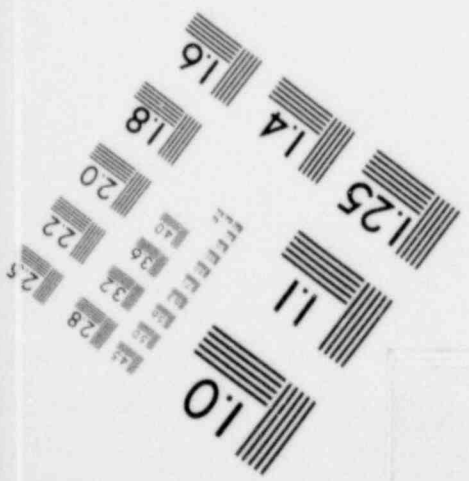
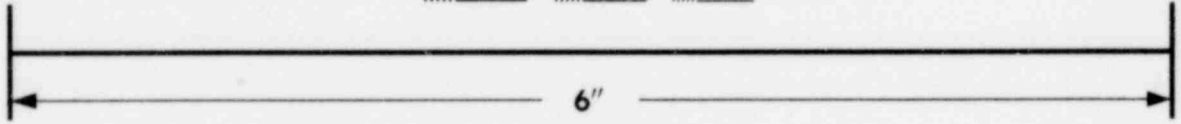
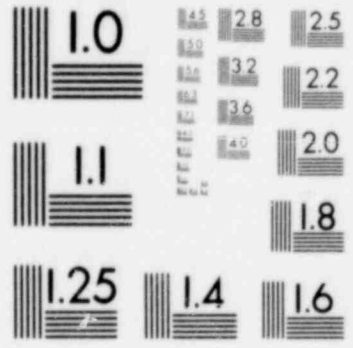


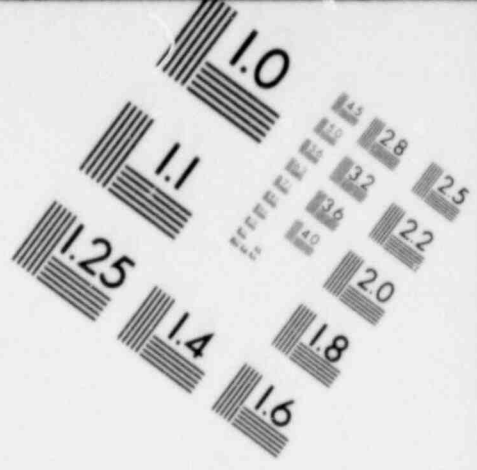
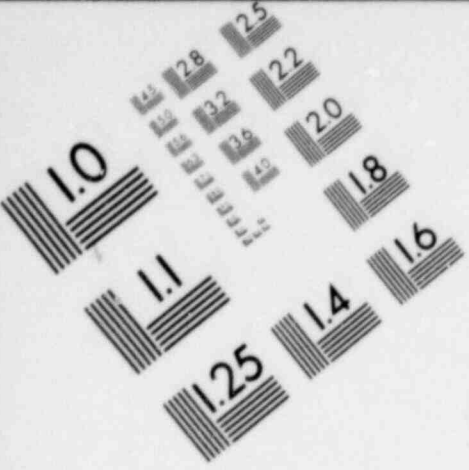
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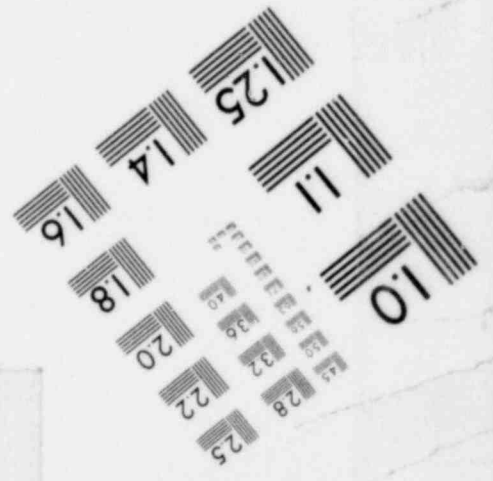
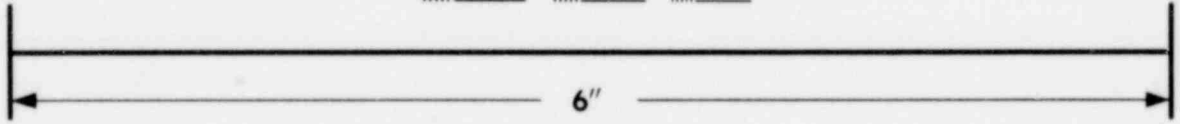
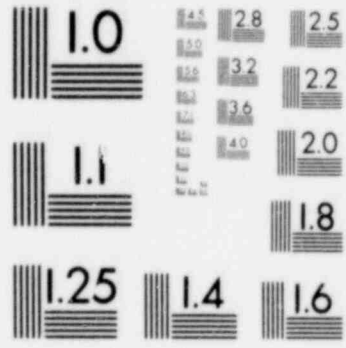


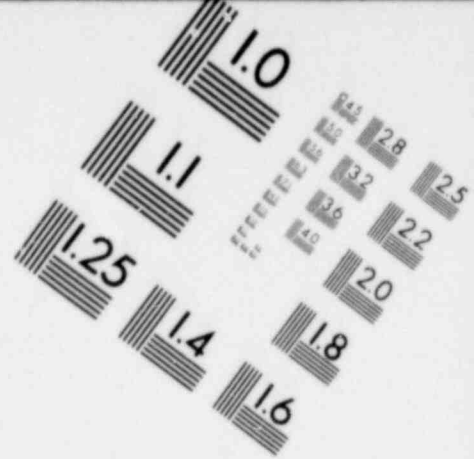
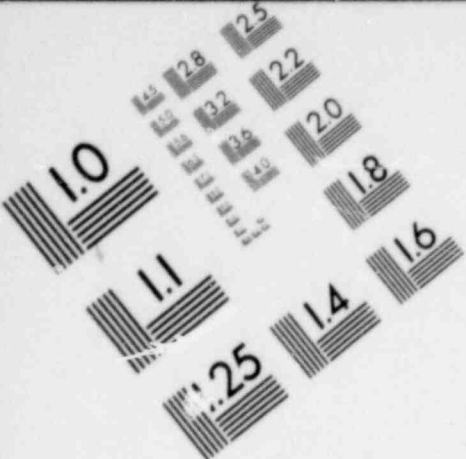
**IMAGE EVALUATION
TEST TARGET (MT-3)**



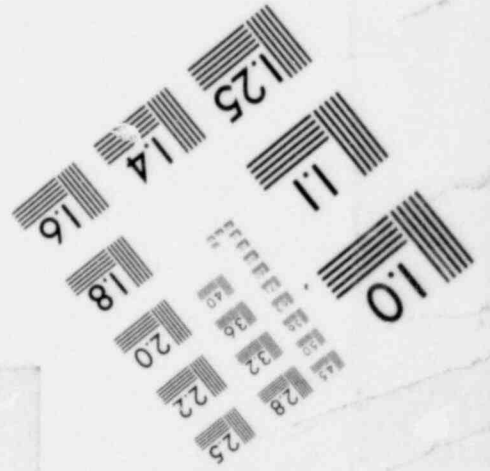
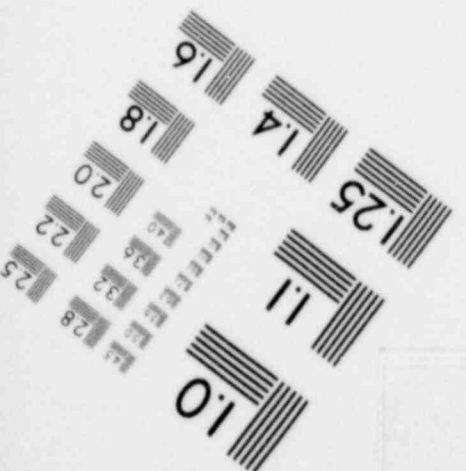
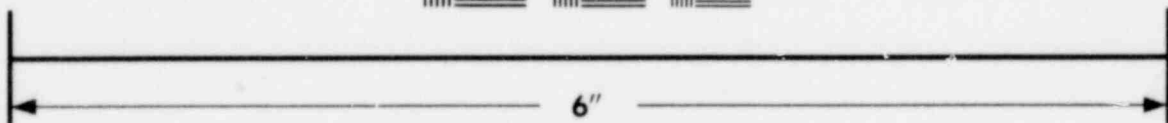
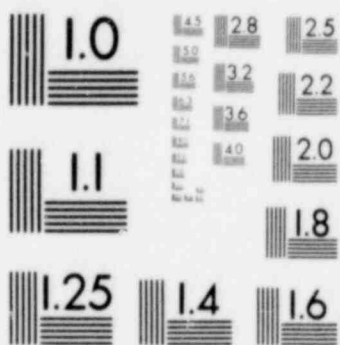


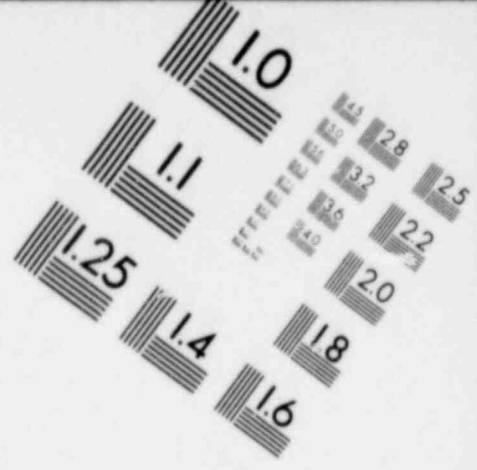
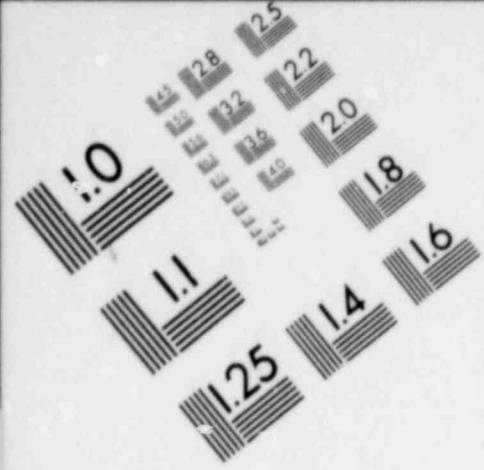
**IMAGE EVALUATION
TEST TARGET (MT-3)**





**IMAGE EVALUATION
TEST TARGET (MT-3)**





**IMAGE EVALUATION
TEST TARGET (MT-3)**

