U.S. NUCLEAR REGULATORY COMMISSION

RESPONSE TO FREEDOM OF INFORMATION ACT (FOIA) REQUEST

NRC FOIA REQUEST NUMBER(S)
FOIA — 89-472

RESPONSE TYPE
X FINAL | PARTIAL

DATE
NOV 27 1989

DOCKET NUMBER(S) *(If applicable)*

REQUESTER
Mr. Michael Daniels

PART I. – AGENCY RECORDS RELEASED OR NOT LOCATED *(See checked boxes)*

	No agency records subject to the request have been located.
	No additional agency records subject to the request have been located.
X	Requested records are available through another public distribution program. See Comments Section. Appendix C
X	Agency records subject to the request that are identified on Appendix(es) A are already available for public inspection and copying in the NRC Public Document Room, 2120 L Street, N.W., Washington, DC 20555.
X	Agency records subject to the request that are identified on Appendix(es) B are being made available for public inspection and copying in the NRC Public Document Room, 2120 L Street, N.W., Washington, DC, in a folder under this FOIA number and requester name.
	The nonproprietary version of the proposal(s) that you agreed to accept in a telephone conversation with a member of my staff is now being made available for public inspection and copying at the NRC Public Document Room 2120 L Street, N.W., Washington, DC, in a folder under this FOIA number and requester name.
	Agency records subject to the request that are identified on Appendix(es) _____ may be inspected and copied at the NRC Local Public Document Room identified in the Comments Section.
	Enclosed is information on how you may obtain access to and the charges for copying records placed in the NRC Public Document Room, 2120 L Street, N.W., Washington, DC.
X	Agency records subject to the request are enclosed. Appendix A & B
	Records subject to the request have been referred to another Federal agency(ies) for review and direct response to you.
	You will be billed by the NRC for fees totaling $_____.
	In view of NRC's response to this request, no further action is being taken on appeal letter dated _____, _____ No. _____

PART II. A – INFORMATION WITHHELD FROM PUBLIC DISCLOSURE

Certain information in the requested records is being withheld from public disclosure pursuant to the exemptions described in and for the reasons stated in Part II, sections B, C, and D. Any released portions of the documents for which only part of the record is being withheld are being made available for public inspection and copying in the NRC Public Document Room, 2120 L Street, N.W., Washington, DC in a folder under this FOIA number and requester name.

COMMENTS

Government Printing Office
Superintendent of Documents
P. O. Box 37082
Washington, DC 20013-7982

OR

National Technical Information Service
Springfield, VA 22161

NRC does not waive fees for NUREG reports which are available through the government's official distribution program.

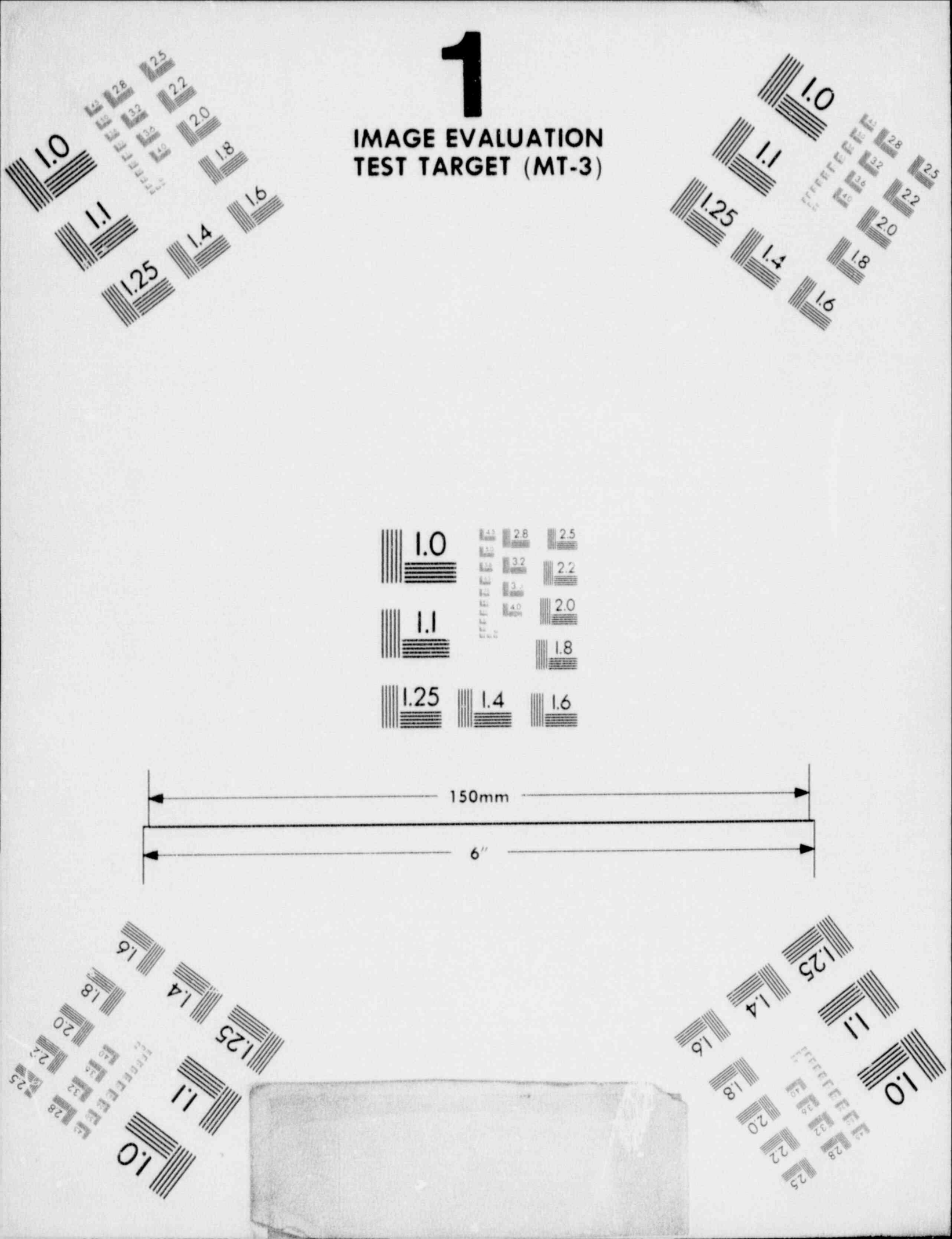
SIGNATURE, DIRECTOR, DIVISION OF FREEDOM OF INFORMATION AND PUBLICATIONS SERVICES
Donnie H. Grimsley

Re: FOIA-89-472

APPENDIX A

RECORDS MAINTAINED AMONG PDR FILES

NUMBER	DATE	DESCRIPTION
1.	6/10/86	IN 86-44 "Failure to Follow Procedures When Working in High Radiation Areas" (4 pages) (ANO 8606040010)
2.	12/29/86	IN 86-107 "Entry into PWR Cavity with Retractable Incore Detector Thimbles Withdrawn" (5 pages) (ANO 8612230089)
3.	7/11/84	Letter to R. B. DeWitt from J. G. Keppler forwarding Inspection Report 50-255/84-06, Palisades Nuclear Generating Plant (13 pages) (ANO 8408300156 & 8408300164)
4.	3/19/84	PNO-III-84-27 (1 page) (ANO 8403230023)
5.	6/12/78	IEB 78-08 "Radiation Levels from Fuel Element Transfer Tubes" (3 pages) (ANO 7909050246)
6.	3/4/88	Letter to E. J. Mroczka from T. T. Martin forwarding Inspection Report 50-213/88-05, Connecticut Yankee Atomic Power Company (8 pages) (ANO 8803140417 & 8803140422)
7.	8/15/88	IN 88-63 "High Radiation Hazards from Irradiated Incore Detectors and Cables" (10 pages) (ANO 8808090264)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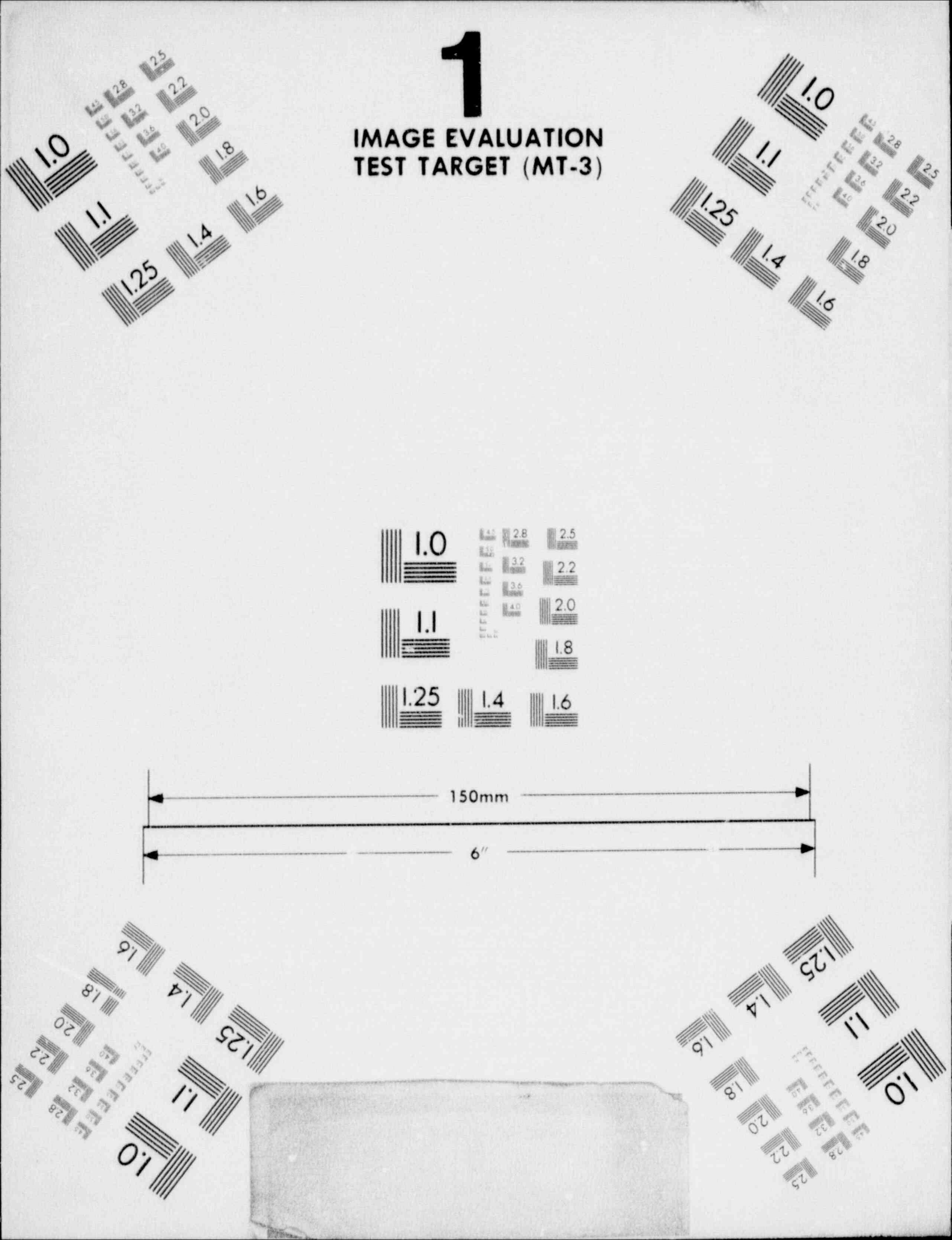
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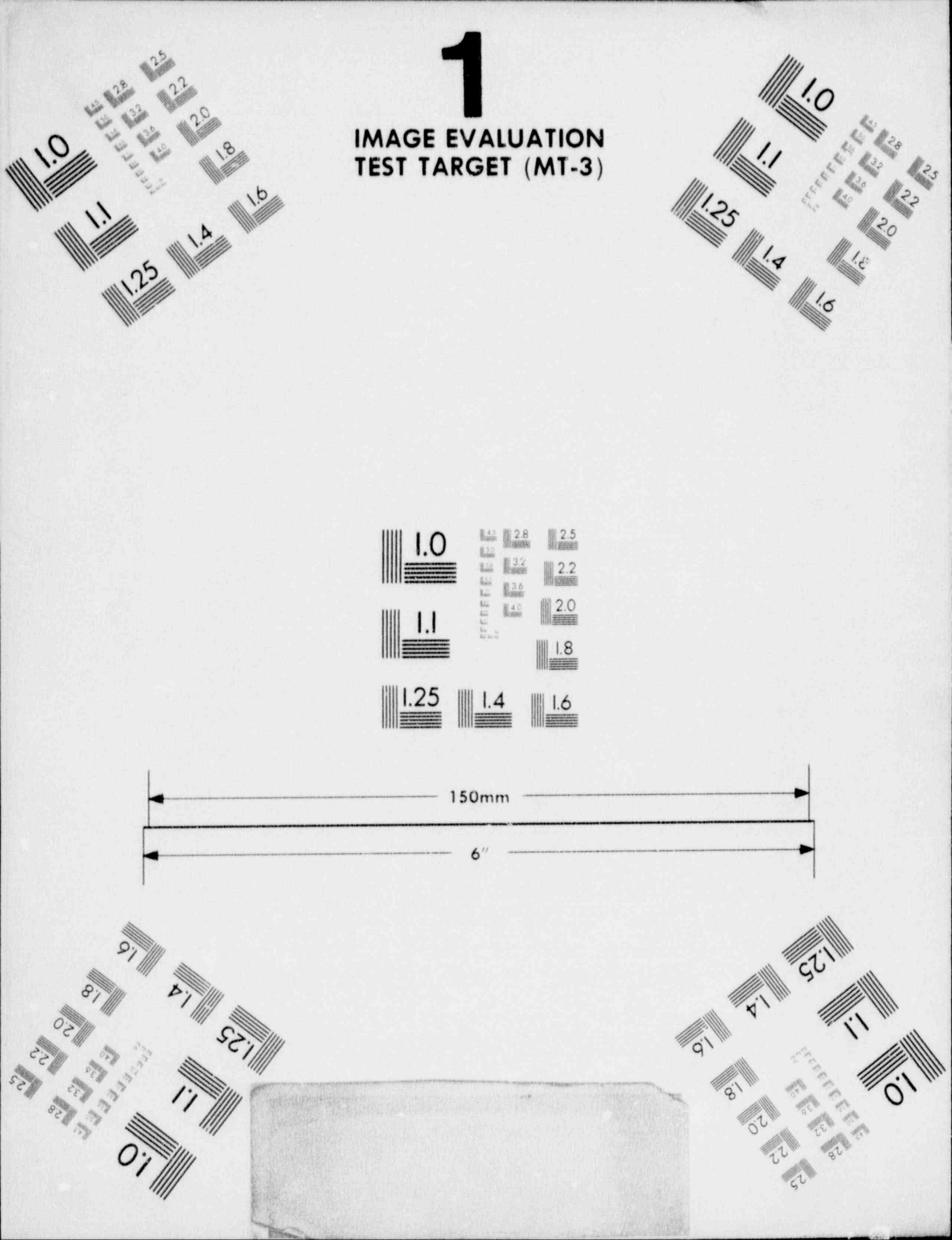
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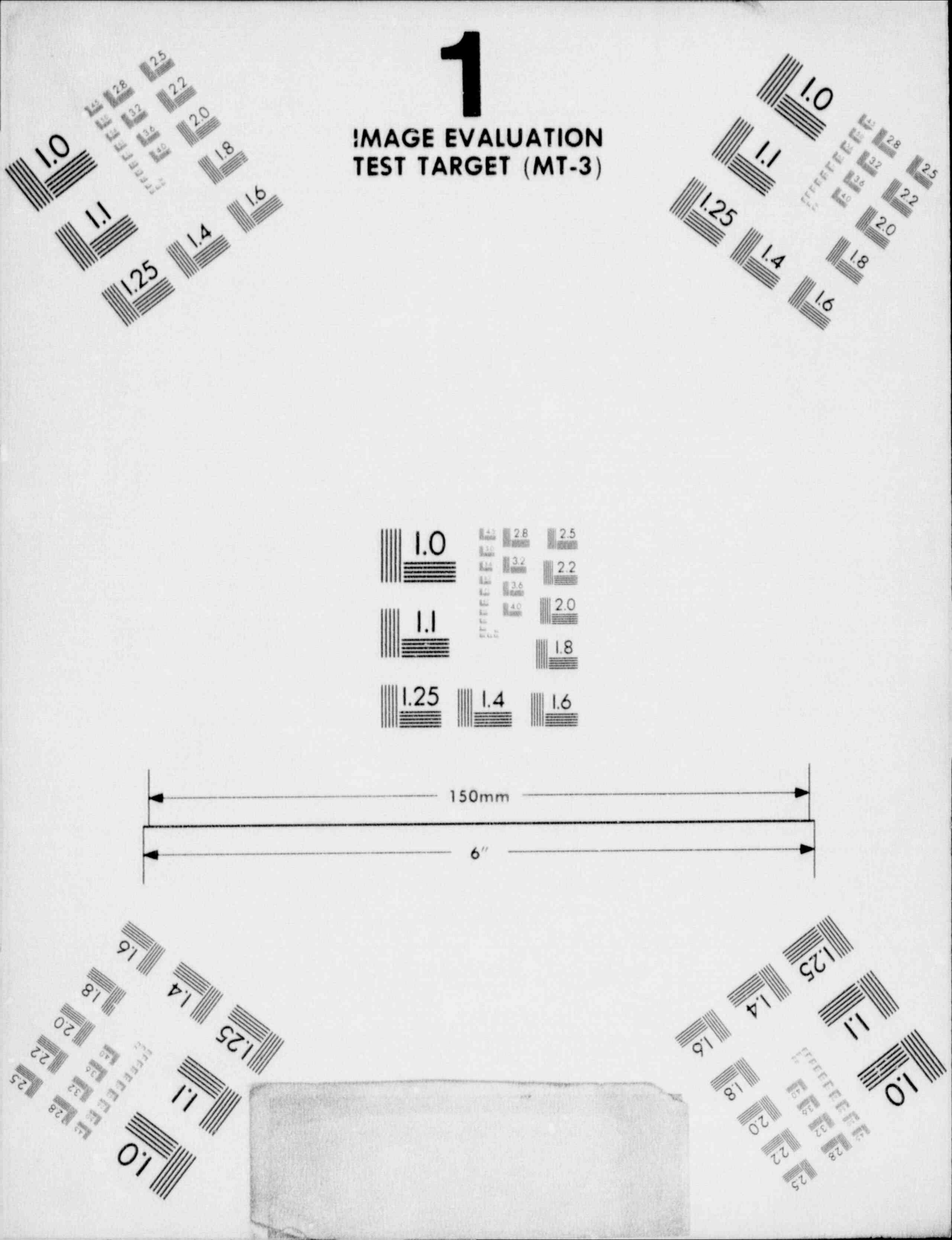
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Re: FOIA-89-472

APPENDIX B

RECORDS BEING PLACED INTO THE PDR UNDER THE ABOVE REQUEST NUMBER

NUMBER	DATE	DESCRIPTION
1.	7/6/84	Memo for V. Stello, Jr. from H. R. Denton, re: PWR Reactor Cavity Uncontrolled Exposures, Generic Letter Implementing a Generic PWR Technical Specification (17 pages)

Re: FOIA-89-472

APPENDIX C

RECORDS AVAILABLE THROUGH ANOTHER PUBLIC DISTRIBUTION PROGRAM

NUMBER	DATE	DESCRIPTION
1.		Report to Congress on Abnormal Occurrences, NUREG-0090 (This is a quarterly report that started in January 1975. Enclosed is an abstract from the latest report.)
2.		Occupational Radiation Exposure at Commercial Nuclear Power Reactors and Other Facilities, NUREG-0713. (There are 28 reports in this series. Enclosed is an abstract from the latest report.)

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555
July 6, 1984

MEMORANDUM FOR: Victor Stello, Jr., Deputy Executive Director
for Regional Operations and Generic Requirements

FROM: Harold R. Denton, Director
Office of Nuclear Reactor Regulation

Richard C. DeYoung, Director
Office of Inspection and Enforcement

SUBJECT: PWR REACTOR CAVITY UNCONTROLLED EXPOSURES, GENERIC LETTER IMPLEMENTING A GENERIC PWR TECHNICAL SPECIFICATION

Over the past several years, the staff has observed at least 9 overexposures and uncontrolled exposures occurring at PWRs when personnel enter the reactor cavity for leakage inspection when the incore neutron flux thimbles are withdrawn. In spite of past regulatory efforts to correct the situation (including IE Circulars, Notices, inspections and civil penalties), roughly one overexposure per year has occurred, with two additional occurrences since the problem was last reviewed with the Committee to Review Generic Requirements (CRGR) in November, 1982. In view of this continuing trend, prompt action is needed to assure that plant personnel are not unnecessarily and inadvertently overexposed. The pressing concern is that personnel entry into the reactor cavity with thimbles withdrawn involves entering a field in which the exposure rate is from 100 R/hr to over 2,000 R/hr. Acute exposures sufficient to cause serious radiation injury are possible at these radiation levels with just a few minutes exposure, particularly if even a minor delay or mishap should occur. It is fortuitous that, to date, only benign overexposures or uncontrolled exposures have happened.

A summary of reactor cavity overexposures and uncontrolled exposures is provided in Table 1 (Enclosure 2), with attendant reactor cavity details provided in Figure 1 (Enclosure 3). Additional background information regarding the reactor cavity uncontrolled exposures is provided in Enclosure 4.

Previous regulatory efforts to correct the problem and avoid additional overexposures focused on after-the-fact enforcement actions - civil penalties, circulars, etc. These actions have not been effective, since the uncontrolled exposures continue. The approach we intend to take is directed at preventing such exposures by enhancing the physical barriers and through controls exercised by a level of plant management equipped to make decisions regarding the potential

8/11

consequences of personnel entries into the reactor cavity. By technical specification, we will require access to the reactor cavity to be controlled by a single key lock, which can be opened only with the direct concurrence of two relatively high management officials, i.e., the plant radiation protection manager and the operations manager or equivalent positions. The costs of this protective measure are trivial, and the requirements are intentionally limited and specific to affect only this unique problem area. Further, the staff has considered the safety-safeguards impact of imposing a single key lock on this existing barrier and has concluded there is no impact on plant safety.

This memorandum is to advise you of the staff concern in this area, outline the actions intended by the staff, and provide pertinent background information. A generic PWR Technical Specification change (Attachment 1 of Enclosure 1) directed at controlling this potential for severe overexposures will be effected by generic letter (Enclosure 1-Draft). This matter has previously been discussed with CRGR. Since a major improvement in safety can be gained with the trivial burden of a Technical Specification implementation and a simple lock change, we will proceed with this action without delay unless you have objections.

Harold R. Denton, Director
Office of Nuclear Reactor Regulation

Richard C. DeYoung, Director
Office of Inspection and Enforcement

Enclosures:
1. mple Technical Specification and Draft Generic Letter
2. ble 1, Summary of PWR Reactor Cavity Uncontrolled Exposures
3. Figure 1, Reactor Cavity Arrangement
4. Background Information

cc: See next page

cc: Acting Director, DSI
D. Muller
F. Congel
O. Lynch
R. Serbu
J. Cunningham
J. Wigginton
R. Alexander
M. Lamastra
W. Travers
R. Tang
V. Stello
E. Jordan
D. Ross
R. Cunningham
D. Eisenhut
R. Purple
R. Vollmer
T. Speis
H. Thompson
W. Russell
G. Arlotto
K. Goller
J. Taylor
J. Partlow
D. Moeller, ACRS
T. Martin, RI
R. Starostecki, RI
P. Bellamy, RI
J. Olshinski, RII
J. P. Stohr, RII
D. Collins, RII
J. Hind, RIII
R. Spessard, RIII
C. Paperiello, RIII
R. Bangart, RIV
J. Gugliardo, RIV
R. Hall, RIV
R. Scarano, RV
T. Bishop, RV
F. Wenslawski, RV
J. G. Davis, NMSS
R. F. Burnett, NMSS

ENCLOSURE (1)

DRAFT GENERIC LETTER

TO ALL PRESSURIZED WATER POWER REACTOR LICENSEES AND APPLICANTS FOR OPERATING PWR LICENSES

Gentlemen:

SUBJECT: IMPLEMENTATION OF GENERIC TECHNICAL SPECIFICATION 6.12.3 AT PRESSURIZED WATER POWER REACTORS (GENERIC LETTER 84-XX)

Sections 20.101, 20.201, 20.202 and 20.203 of Title 10, Part 20 of the Code of Federal Regulations provide requirements for controlling access and exposure in high radiation areas. Over the past several years, the NRC staff has noted an unacceptable trend of overexposures and uncontrolled exposures associated with pressurized water reactor (PWR) cavity entries while thimbles are withdrawn. In spite of industry efforts and past regulatory efforts, including Office of Inspection and Enforcement Circulars and Notices and Regional inspections and civil penalties, it appears certain that additional overexposures will occur unless more positive control is gained over PWR reactor cavity entries.

To effect this positive control and enhance the regulatory requirements noted above, the staff is requiring all licensees of pressurized water reactors which have incore thimbles which enter the bottom of the vessel, and applicants for licenses for such PWRs to implement a new generic technical specification to improve access control. An acceptable approach is to require: 1) a single lock and key for access to the reactor cavity, and 2) approvals for entry into the reactor cavity from two relatively high level management officials, i.e., the facility radiation protection manager and the operations manager or managers in equivalent positions. This sample Technical Specification is provided as attachment 1, "PWR Generic Technical Specification 6.12.3."

You should request the staff to modify your Technical Specifications to incorporate this generic technical specification or an equivalent alternative in sufficient time for it to be implemented by your facility by * _____ _____. This action has been approved by OMB Clearance Number _____.

Questions regarding this matter should be directed to your NRC Project Manager.

Sincerely,

Darrell G. Eisenhut, Director
Division of Licensing
Office of Nuclear Reactor Regulation

*The staff proposes that implementation be required by the first outage of sufficient duration to complete the required installation or the next refueling outage.

ATTACHMENT 1

SAMPLE PWR GENERIC TECHNICAL SPECIFICATION 6.12.3

6.12.3 In addition to the requirements of 6.12.1 and 6.12.2, access to the reactor cavity shall be controlled by:

a. a radiation work permit approved by both the plant radiation protection manager and operations manager; and

b. a door utilizing a single key* and lock for access. The key shall be controlled by the plant radiation protection department and released only following the joint approval noted in a. above.

*An additional master key will be available only for use in the event of an emergency.

ENCLOSURE (2)

TABLE 1
SUMMARY OF OVEREXPOSURES AND UNCONTROLLED EXPOSURES
ASSOCIATED WITH REACTOR CAVITY ENTRY - 1972 to 1984

DATE	PLANT	DOSE RECEIVED	AREA OF RX CAVITY	AREA DOSE RATES	TIME IN AREA	INDIVIDUAL INVOLVED	ACTIVITY INVOLVED	VIOLATION 10 CFR 20. 101	201(b)	TS 6.12	RWP	CIVIL PNLT
2/84	ROBINSON 2	0.5 Rem	Rx Cvty Sump Area	75-100R/hr	30 sec	Reactor Operator RPT	Inspect for leaks into Rx Cavity			X	X	~~30K~~ 0
10/83	TURKEY POINT 3	1.3 Rem	Rx Cvty Sump Area	>50 R/hr	<1 min	Shift Technical Advisor HPT		X	X	X	X	~~40K~~ 0
3/82	ZION	5 Rem	Rx Cvty	>150 R/hr	67 sec	Shift Engineer RPT		X	X	X		100K
4/80	DAVIS-BESSE	5 Rem	Sump Tunnel and vicinity of incore detector housing	200 R/hr	45 sec	Chem and Rad Tester SS/A		X	X	X 6.8.1		13K
4/79	SURRY 2	10 Rem	Rx Cvty	>45 R/hr - >1000 R/hr	~15 min	Shift Supervisor OT		X	X	X 6.4	X	15K
	KEWAUNEE	2.8 Rem	Rx Cvty	2000 R/hr	<30 sec	Shift Supervisor HPT				X 6.13	X	7K
4/76	INDIAN POINT	10 Rem	Sump Room and platform beneath Rx vessel	666 R/hr 11 R/min	100 sec	Nuclear Plant Operator	Check lights for relamping	X	X	X 6.11		~~15K~~ 21K
3/76	ZION	8 Rem	Platform Below Rx Vessel in Rx Cvty	>200 R/hr	1-1.5 min	Management Individual	Inspect for leaks into Rx cavity		X			13K
10/72	POINT BEACH	5 Rem	Keyway assess to Rx Cvty	>2000 R/hr	18 sec	Asst Mgr, Nuc Pwr Div MGR		X	X			0

Table 1 KEY

DATE - Date of event
PLANT - Plant where incident occurred
DOSE RECEIVED - Whole body radiation dose received by individual receiving over/inadvertant exposure
AREA OF RX CAVITY - Principal areas of reactor cavity where individual involved received the majority of his dose
AREA DOSE RATES - Dose rates in the area where the individual involved received the majority of his dose
TIME IN AREA - Amount of time spent in the reactor cavity area; the time spent in maximum radiation fields is typically a fraction of the total time spent in the area
INDIVIDUAL INVOLVED - Title of the individual receiving the indicated exposure. Accompanying individuals are noted by initials as follows: RPT/HPT-radiation protection technician or health physics technician; SS/A-assistant shift supervisor; MGR-Manager, Nuclear Power Division; OT-Operator Trainee
ACTIVITY INVOLVED - Virtually every incident is related to looking for leaks from the refueling cavity through the reactor vessel flange seal into the reactor cavity
VIOLATION - Type of violation cited by IE/Region:
101 - dose in excess of standards
201 - inadequate surveys
TS 6.12 - Tech Spec requirements regarding high radiation area access and controls (# is plant specific)
RWP - failure to provide an RWP or failure to follow RWP provisions
CIVIL PNLTY- Total civil penalties assessed for violations (K=1,000)

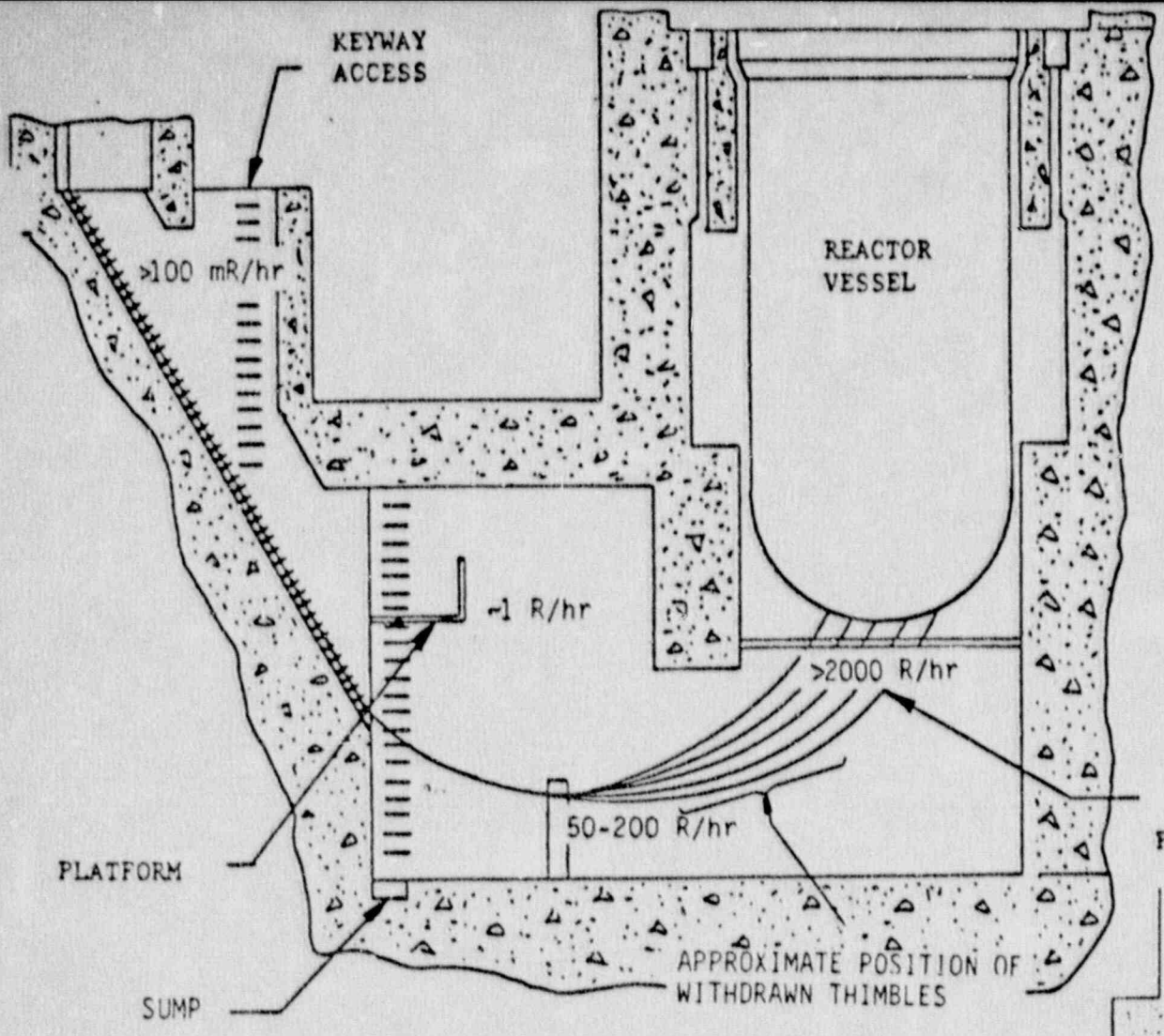
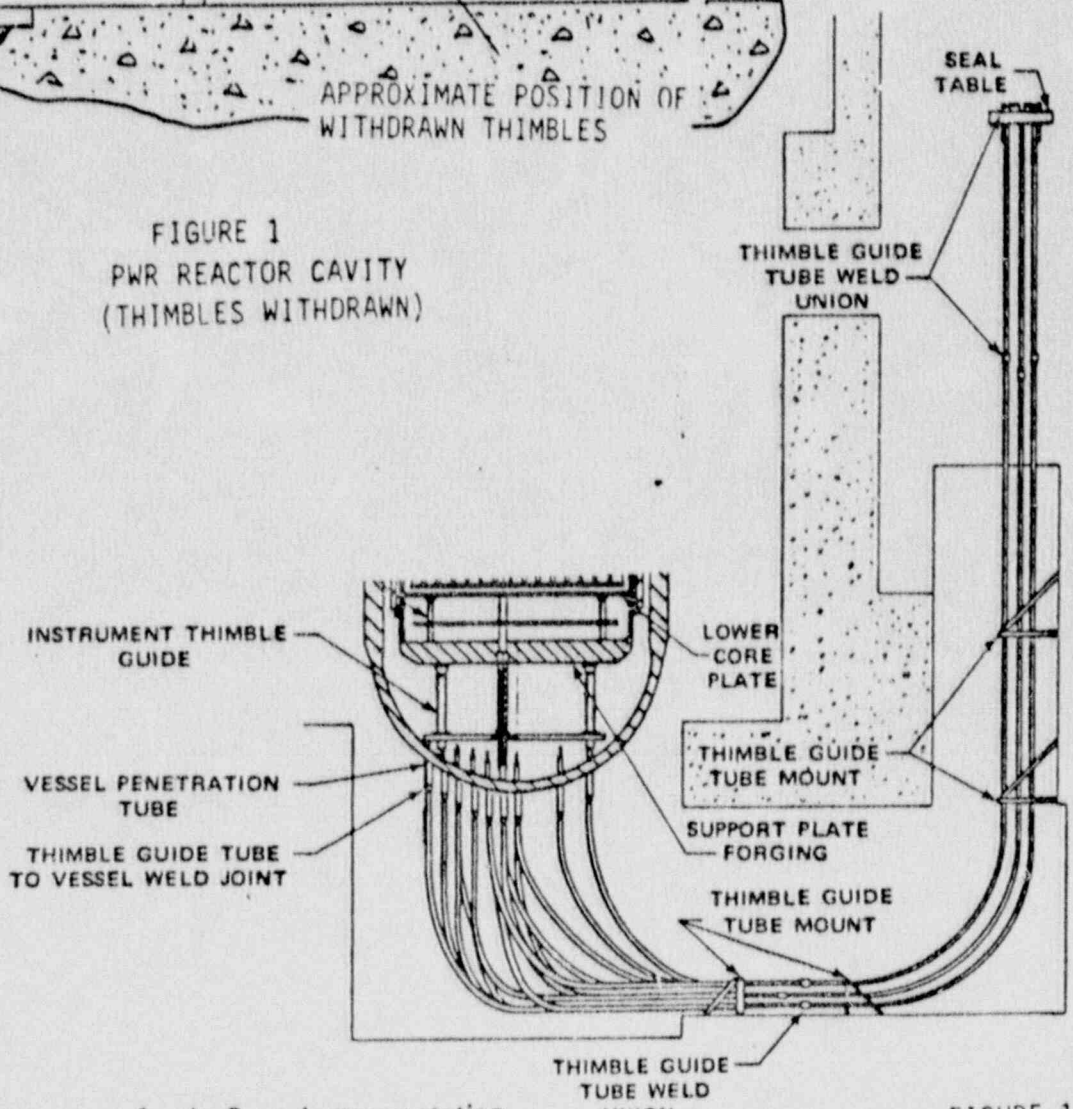


FIGURE 1
PWR REACTOR CAVITY
(THIMBLES WITHDRAWN)



Typical Arrangement for In-Core Instrumentation

FIGURE 1

ENCLOSURE (4)

PWR REACTOR CAVITY UNCONTROLLED EXPOSURES
BACKGROUND INFORMATION

A. BACKGROUND

The trends related to PWR reactor cavity uncontrolled exposures are clear - since 1972 (at PWR's) there have been 9 occurrences including 6 overexposures, 1 near overexposure, and 2 reported uncontrolled exposures during reactor cavity entry. These incidents have occurred at a rate of about one per year since 1976, despite NRC efforts which have included additional recommendations disseminated by IE Circular No. 76-03 (1/13/76) "Radiation Exposures in Reactor Cavities"; information and suggestions promulgated to licensees via IE Information Notice 82-51 (12/21/82), "Overexposures in PWR Cavities"; civil penalties, and corrective actions taken by licensees. An additional IE Information Notice 84-19 (3/21/84), "Two Events Involving Unauthorized Entires into PWR Reactor Cavities" has recently been issued to note the continuing problem. Recognizing this trend earlier, the staff proposed stringent control measures in September of 1982. CRGR advised rejection of the staff proposed measures as noted in the "Minutes of CRGR Meeting Number 24" (Enclosure 4, Attachment A), and the proposed action was not taken at that time. CRGR had proposed a post-occurrence deterrence utilizing very strong enforcement actions such as civil penalties, plant shutdown and license suspension in lieu of the staff's preventative proposals. At this point, it is apparent that increased fines have not been effective, and it is doubtful that such actions as plant shutdown or license suspension of the facility or individual would be imposed.

Such actions would no doubt be extremely effective, however, they would probably be construed to be excessive enforcement action, unless a fatality occurred. The trend still continues, and the potential for serious, life threatening over-exposure remains high, or increases.

A summary of these reactor cavity incidents is provided in Table 1 of Enclosure (2) - special attention should be directed to the very brief time in area, doses received, and extremely high dose rates. It should also be noted that the overexposed individual (e.g., the shift supervisor) was commonly the individual administratively in charge of controlling reactor cavity entries. In fact, the staff believes that the number of uncontrolled/inadvertent exposures is actually much greater than those reported. Even though many unplanned exposures in these circumstances may have occurred, it appears that most have not resulted in exposures high enough to meet the criteria for requiring a report to the NRC. Any entry into these extremely high dose rate areas is potentially hazardous. IE notices and circulars do not appear to be completely effective in that they have had no lasting effect. Civil penalties at presently assessable levels have not appeared to be a major deterrent to continued violations of NRC regulations or licensee procedures and requirements in the industry as a whole. Some licensees are repeat offenders in this area or closely related areas (e.g. steam generator entry).

In general, reactor cavity entry overexposures and uncontrolled exposures have occurred when a member of shift supervision (i.e. shift personnel in leadership positions) has entered the reactor cavity (see Figure 1/Enclosure 3) while the incore thimbles were in the withdrawn position. In several instances, shift supervisory personnel have authorized reactor cavity entry without verifying that adequate precautions have been taken (e.g., surveys, high range dosimeters, high range survey meters, stay time calculations, briefings) for those making the entry. Regulatory overexposures can occur within a matter of minutes at the access to the reactor cavity, and within a matter of moments within the cavity. In the vicinity of the thimbles (general area dose rates greater than 2,000 R/hr, contact dose rates as high as 20,000 R/hr to 40,000 R/hr), acute exposures sufficient to cause clinical (if not lethal) radiation injury effects are possible within only a few minutes (e.g., 2,000 R/hr = 33 R/min). Additionally, a plethora of potential distractions and circumstances for potential accidents, which could lead to delays in very high radiation areas, exist in the reactor cavity (e.g., poor or inoperative lighting, tight spaces and close clearances, obstructed vision, reactor flange seal leaks, sump problems, cavity floor flooding). Under these conditions and in view of the inadequate performance of surveys and failure to adhere to existing controls (which has continued and possibly deteriorated) on the part of many licensees, it is fortuitous that only relatively benign overexposures have occurred.

B. DISCUSSION OF TECHNICAL SPECIFICATION IMPLEMENTATION

The intent of the proposed Technical Specification 6.12.3 (Attachment 1 of Enclosure 1) is twofold: (1) to enhance the physical barrier that prevents ordinary access, and (2) require administrative controls which force evaluation of entries by two separate supervisors, thus establishing direct and high level

licensee management cognizance and responsibility for reactor cavity entries. Physical controls would be enhanced by allocating a single lock and key for the reactor cavity entryway. At present, all high radiation areas are required to be locked (and alarmed or guarded), however, typically a single key will open all high radiation area locks, and keys are held by the shift supervisor.* Administrative controls would require both the radiation protection manager and operations manager (or managers in equivalent positions) to approve key issue and the RWP controlling access for reactor cavity entries. This requirement may force communication between radiation protection and operations-one of the main problems noted in IE's Information Notices - and additionally takes approval authority out of control of the major violators (and victims of reactor cavity entries) - the shift personnel in leadership positions (e.g., the shift supervisor and assistant, shift test engineers, shift technical advisors, reactor operators). The responsibility for entry would be assigned to higher level managers, who, in light of this responsibility, may assume a more objective perspective of the need for adequate controls, and who may be more apt than those in the past to review the necessity for entry, and consider all station objectives, including radiation protection.

The major costs (per reactor) associated with the implementation of this Technical Specification are the administrative costs of the technical specification change. Other costs include replacing the lock presently required and in place for high radiation area control of the reactor cavity with an exclusive use lock (lock and labor - $500, 2 hours in a 10 mR/hr radiation field for a dose of 20 mrem), and the development

*In the event of an emergency, access may be gained through the use of a master key.

and implementation of control procedures - essentially a modest change to existing procedures (about one staff week of effort, - $2,000). Benefits and costs avoided include the elimination of reactor cavity overexposure, dose avoided, avoidance of the temporary loss of worker availability (due to administrative requirements or health effects - $3,000/staff week), avoidance of debilitation of workers and related health treatment, avoided insurance/liability costs and other adverse effects. The following provides a rough basis for estimating the number of overexposures over the coming 30 years with current trends:

- average of 1 uncontrolled exposure per year
- 5 of the last 8 events involved overexposures
- assume 30 years operations for PWR's
- 30 PWR's in operation presently, at least 30 over the next 30 years
- the problem does not occur at BWR's

Thus, 30 years x 1 per year x 5/8 are overexposures = $\frac{150}{8}$ = 19 overexposures. This number would be somewhat higher with more PWR's in operation. There is presently no empirical basis for estimating potential fatalities.

Alternative control measures considered by the staff include: additional rulemaking aimed at controlling very high radiation areas; requirements to eliminate the need to enter the reactor cavity; requiring an area radiation monitor in the cavity; additional RWP requirements; additional specific

training for radiation protection and operation personnel; imposing loss of qualifications on violators; and recommendation of engineering controls to control reactor cavity leakage. Most of these alternatives are described in the staff's September 15, 1982 letter, "CRGR package for I&E Circular on the Recent Zion Overexposure", (Houston to Jordan).

If further incidents occur, a valuable deterrent action in some instances would be the consideration of criminal prosecution for knowingly violating regulations in addition to or in lieu of civil penalties against a utility. The Office of Investigation could be asked to develop the facts promptly concerning any future incidents. It does not appear that any recent events related to reactor cavity uncontrolled exposures should receive such scrutiny, based on available incident reports and regional investigations. If the facts warrant, such matters would be submitted to the Justice Department by OI.

In addition to the apparent need for action from a safety standpoint, it appears that such action would be consistent with both the purpose of 10 CFR 20.1 and the CRGR Charter Purpose, which includes controls "... to reduce the exposure of workers to radiation in implementing ... requirements."

ATTACHMENT A

MEMORANDUM FOR: William J. Dircks
Executive Director for Operations

FROM: Victor Stello, Jr., Chairman
Committee to Review Generic Requirements

SUBJECT: - MINUTES OF CRGR MEETING NUMBER 24

The Committee to Review Generic Requirements met on Wednesday, November 3, 1982 from 1-5 p.m. A list of attendees is enclosed.

1. J. Cunningham (IE) presented for CRGR review the proposed IE bulletin titled Overexposures in PWR Cavities. The purpose of the bulletin is to inform PWR licensees (OLs) and permit holders (CPs) of (a) events with potentially significant impact on the health and safety of workers, (b) circumstances surrounding several violations of the requirements of 10 CFR 20 and (c) required actions to prevent reoccurrence of those events. The staff believes that these violations of 10 CFR 20 are indicative of unsafe practices currently employed at some facilities and that these practices are of a nature that additional (potentially more severe) violations are likely unless preventive action is taken.

A discussion of the actions required by the bulletin and costs associated with those actions follows:

(a) A review of procedures to eliminate the need to enter the reactor cavity. This should require no more than 1 staff-month of effort by an engineer. For those plants that currently do not allow entries into the cavity while the incore thimbles are out of the core, the impact is negligible. For those plants that routinely experience refueling pool leaks and are allowing cavity entries, several alternatives have been suggested to minimize the impact. The cost of these alternatives ranges from several thousand dollars for requiring reinsertion of the thimbles to a very minimal cost for a leak detection system. Filling the refueling pool is usually a critical path effort and reinsertion of the thimbles can add as much as 6 hours thereby possibly extending the outage for 6 hours. On the other hand, the Farley plant has devised a leak detection system which consists of polyethelene bags, fixed below each refueling pool seal, fitted with leak-off tubes that direct any leakage to a central collection point. The method to eliminate cavity entries is left to the licensee or permit holder.

(b) The evaluation of the need for an area radiation monitor in the cavity including documentation of the evaluation. This should require no more than 1 staff week of effort by a health physicist (HP). The evaluation of need is left to the licensee to minimize the impact of this recommendation on those licensees that do not make entries into the cavity area.

(c) Requiring all personnel that enter the reactor cavity area for inspection/work to be issued a radiation work permit (RWP) will cause some licensees that currently exempt RWP requirements if escorted by HP to revise their procedures. Review, revision and approval of the RWP issuance procedures will require 1 to 2 staff weeks per plant. Implementation of the new procedure is another impact on the licensee; however, the added small increment of the number of RWP's issued by this new procedure would be negligible compared to the large number of RWPs issued each year at a plant.

(d) Review and upgrading of HP, and Operations training programs to include training on specific radiological hazards in the reactor cavity should not require more than 2 staff weeks of effort by the utility training staff. Integrating the radiation hazards training into the existing training/retraining programs at the plant, minimizes any impact of implementing this recommendation.

IE believes that the benefit to be derived from the proposed bulletin is the termination of a series of overexposures resulting from inspections of lower reactor cavities in PWRs. These overexposures have averaged slightly less than one per year since 1972, and t he staff is of the view that issuance of this bulletin may prevent a potentially more serious exposure from occurring. Although the highest dose experienced in one of these incidents so far has been 10 rems, the radiation field (2000 R/HR) in the cavity with the thimbles down can deliver potentially life-threatening doses in a short time period.

The Committee is of the view that breakdown in management controls that results in overexposure events of this nature (violation of 10 CFR 20) should be addressed through strong enforcement action. Where there is repeated occurrences of regulation violation, very strong enforcement action such as civil penalties, plant shutdown and license suspension should be considered, particularly where a knowledgeable person such as a reactor shift supervisor is involved. and disregards prudent health physics practices. Therefore, the Committee recommends that the proposed bulletin not be issued but that the following information be issued promptly by the Director, IE, utilizing an appropriate mechanism, to PWR licensees and permit holders.

(a) Information concerning the radiological hazards associated with individuals entering reactor cavities.

(b) Historical information concerning overexposures associated with individuals entering reactor cavities.

(c) A copy of the $100,000 civil penalty recently issued to Zion concerning overexposure of a shift supervisor entering the reactor cavity.

(d) A clear indication that NRC will strongly consider the full range of enforcement actions including (1) largest fines, (2) plant shutdown, (3) license suspension and (4) combinations of 1 through 3 to address overexposure of this nature (violation of 10 CFR Part 20).