REVISION INSERTION INSTRUCTIONS

Revision 1 of "NRC Action Plan Developed as a Result of the TMI-2 Accident" (NUREG-0660) should be inserted into the original issuance of the document as follows:

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NUREG-0660
Vol. 1

NRC Action Plan Developed as a Result of the TMI-2 Accident

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U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

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1

plants. This tends to confirm a judgment that the most important and urgent actions requiring prompt implementation have been identified.

This in turn leads to a judgment that most of the remaining changes need not be implemented as urgently as those already required. That is, the prompt application of the most important lessons learned over the past year has afforded NRC the opportunity to continue to pursue further changes at a more deliberate pace over the next several years. Such changes may be necessary for long-term improvement in safety or for maintenance of improvements already gained in the short term. Some people have suggested an additional reason to be more deliberate in our development of future changes; that is, the need to avoid counterproductive actions because of finite resources or, worse yet, changes that are unsafe because they were inadequately studied. It is acknowledged, however, that there are some items in the Action Plan (control room design being the best example) that need to be implemented as quickly as they can be done correctly. Such items require a substantial time period for careful development of soundly based criteria and cannot be rushed without weakening or compromising their effectiveness. In such cases, short-term or interim improvements in safety have been required pending criteria development.

Having considered the factors discussed above, it is concluded that the implementation policy for future TMI-related changes (i.e., those that are in addition to the NTOL list of requirements and that stem from activities described in the Action Plan) should have four principal goals; namely,

(1) To develop and implement additional TMI-related requirements in a priority order that gives consideration both to risk reduction and to resource requirements (i.e., a priority system that gives greater weight to actions with a high potential for risk reduction and low resource requirements).
(2) To obtain public comment on the substance and scheduling of implementation of the most significant new requirements prior to issuance. In most cases, the opportunity for such review would be the formal public comment period for a Regulatory Guide, Standard Review Plan revision, or regulation.

(3) To apply future requirements developed in accordance with this plan uniformly to operating plants and to plants under construction, with due consideration of design or other differences among plants. To require that implementation be complete by some specified date on all plants in operation or going into operation after that date. To allow case-by-case exceptions to the deadlines for good cause.

(4) In order to minimize the costs of these future requirements to be derived from the Action Plan, and absent new information to the contrary, to set implementation deadlines so as to avoid downtime on operating plants and delay in startup of plants under construction beyond that necessary to accomplish the change in an orderly manner.

Organization of the Action Plan

Each item in the plan contains a description of the action required by both NRC and industry, estimates of the schedule and resources required by both NRC and industry to accomplish the action, and a list of references that identify the sources that led to the item being included in the plan. The description of the action is not intended to be definitive but is intended to provide a general outline of the bases for and the form of the requirement, task, study or other action. The references are an integral part of the plan and are to continue to be considered by the NRC staff throughout the process of developing regulatory requirements, performing studies, and completing the other actions in the plan. 1

Although the Action Plan specifies the actions required of the licensees, NRC encourages utilities to form groups that would perform the necessary studies and analyses generically. Individual licensees and applicants could then adopt these as necessary.

Table 1 is a useful overview of the entire plan. It identifies the priority group, lead NRC office, and implementation schedule for each item in the plan. (The priorities and their development are described in Appendix B, Table B.1.) Table 1 also identifies the Decision Group within which each action item falls. There are four Decision Groups:

TABLE 1 - PRIORITIES AND STATUS OF ITEMS IN TMI-2 ACTION PLAN

Action Item	Decision Group	Priority Group	Lead Office	Implementation Complete	
				Operating Reactors	Plants Under Construction
I. OPERATIONAL SAFETY					
I.A Operating Personnel					
I.A.1 Operating Personnel and Staffing					
1. Shift Technical Advisor	A	1	NRR	On duty - 1/1/80 Fully trained - 1/1/81	On duty - FL Fully trained - Same as OR
2. Shift Supervisor Admin. Duties	A	1	NRR	1/1/80	FL
3. Shift Manning	A	1	NRR	Personnel req. - 7/1/82 Overtime req. - 8/1/80	FL
4. Long-term Upgrading	D	-	SD	NA	NA
I.A.2 Training and Qualifications of Operating Personnel					
1. Immediate Upgrading of Operator and Senior Operator Training and Qualifications	A	1	NRR	Overall Exp. - 5/1/80 Lic. Exp. - 12/1/80 Shift Tra. - 8/1/80 Tra. Prog. - 8/1/80 Certification - 5/1/80	Overall Exp. - Same as OR Lic. Exp. - NA Shift Tra. - NA Tra. Prog. - Same as OR Certification - Same as OR
2. Training and Qualifications of Operations Personnel	B	2	NRR	1/1/82	Same as OR
3. Administration of Training Programs	Audits - B Instructors - A	2	NRR	Audits - NA Instructors - 8/1/80	Same as OR

TABLE 1 (continued)

Action Item	Decision Group	Priority Group	Lead Office	Implementation Complete	
				Operating Reactors	Plants Under Construction
4. NRR Participation in Inspector Training	B	3	IE	NA	NA
5. Plant Drills	Short-term - B Long-term - D	1	NRR	Short-term - 7/1/81 Long-term - NA	Same as OR
6. Long-term Upgrading of Training and Qualifications	C	1	SD	NA	NA
7. Accreditation of Training Institutions	C	2	NRR	NA	NA
I.A.3 Licensing and Requalification of Operating Personnel					
1. Revise Scope and Criteria for Licensing Exams	A	2	NRR	Exam Rqmts. Results - 5/1/80 Requal. Pro. Inst. - 5/1/80 Requal. Pro. Exer. - 8/1/80 Renewals - 11/1/80 Acc. Requal. - 3/28/80	Exam Rqmts. Results - Same as OR Requal. Pro. Inst. - Same as OR Requal. Pro. Exer. - Same as OR Renewals - Same as OR Acc. Requal. - Same as OR
2. Operator Licensing Program Changes	C	3	NRR	NA	NA
3. Requirements for Operator Fitness	D	-	SD	NA	NA
4. Licensing of Additional Operations Personnel	C	2	NRR	NA	NA
5. Establish Statement of Understanding with INPO and DOE	D	-	NRR	NA	NA

TABLE 1 (continued)

Action Item		Decision Group	Priority Group	Lead Office	Implementation Complete	
					Operating Reactors	Plants Under Construction
2.	Radioactive Gas Management	B	3	NRR	NA	NA
3.	Ventilation System and Radioiodine Adsorber Criteria	B	2	NRR	NA	NA
4.	Radwaste System Design Features to Aid in Accident Recovery and Decontamination	C	3	NRR	NA	NA
III.D.2	Public Radiation Protection Improvement					
1.	Radiological Monitoring of Effluents	B	2	NRR	NA	NA
2.	Radioiodine, Carbon-14, and Tritium Pathway Dose Analysis	B	3	NRR	NA	NA
3.	Liquid Pathway Radiological Control	C	3	NRR	NA	NA
4.	Offsite Dose Measurements	NTOL - A Remainder - C	3	IE RES	NA NA	NRC install TLDs - FP NA
5.	Offsite Dose Calculation Manual	B	3	NRR	9/1/82	Same as OR
6.	Independent Radiological Measurements	D	-	IE	NA	NA
III.D.3	Worker Radiation Protection Improvement					
1.	Radiation Protection Plans	B	2	NRR	9/1/81	Same as OR
2.	Health Physics Improvements	D	-	SD	NA	NA

TABLE 1 (continued)

Action Item	Decision Group	Priority Group	Lead Office	Implementation Complete	
				Operating Reactors	Plants Under Construction
3. Inplant Radiation Monitoring	Short-term - A Long-term - B, D	3	NRR	Radioiodine Det. - 1/1/80 Radioiodine Mea. - 1/1/81 Addl. Monitors - 6/1/82	Radioiodine Det. - FL Radioiodine Mea. - Same as OR Addl. Monitors - Same as OR
4. Control Room Habitability	NTOL - A	2	NRR	Review - 1/1/81 Mod - 1/1/83	Review - FP Mod - Same as OR
	Long-term - C		NRR	NA	NA
5. Radiation Worker Exposure Data Base	D	-	SD	NA	NA
IV. PRACTICES AND PROCEDURES					
IV.A Strengthen Enforcement Process					
1. Seek Legislative Authority	A	2	OGC	NA	NA
2. Revise Enforcement Policy	D	-	IE	NA	NA
IV.B Issuance of Instructions and Information to Licensees					
IV.B.1 Revise Practices for Issuance of Instructions and Information to Licensees	D	-	IE	NA	NA
IV.C Extend Lessons Learned to Licensed Activities Other Than Power Reactors					
IV.C.1 Extend Lessons Learned from TMI to Other NRC Programs	C	3	NMSS	NA	NA

TASK I.B SUPPORT PERSONNEL

TASK I.B.1 MANAGEMENT FOR OPERATIONS

A. OBJECTIVE: Improve licensee safety performance and ability to respond to accidents by upgrading the licensee groups responsible for radiation protection and plant operation. The areas to be upgraded include (1) staff size; (2) education and experience of staff members; (3) plant operating and emergency procedures; (4) management awareness of and attention to safety matters; and (5) numbers and types of personnel available to respond to accidents. Licensee safety performance would be further improved if (1) a full-time, dedicated, onsite safety engineering staff were established, and (2) an integrated program for the systematic review of operating experience were provided with the concurrent dissemination of information to plant personnel.

B. NRC ACTIONS

1. Organization and management long-term improvements. 1

a. Description: NRC will develop criteria for onsite and offsite organizations, both management and technical, including the radiological protection organization, that will assure the safe operation of the plant during normal and abnormal conditions and the capability necessary to respond to accident situations.

In addition to the NRR and SD staff effort to develop acceptance criteria, a contractor has been selected (RS-NRR-80-105, Teknekron, Inc.) and work to develop the criteria for both normal operations and accident situations has begun. Other arrangements for assistance in this area have also been made with several consultants on a personal services basis. Industry efforts to upgrade ANSI N18.7 (ANS-3.2) will also interact with this work.

Specific items being considered in the development of the acceptance criteria include (a) the qualifications and experience of management, technical staff and safety review groups, both onsite and offsite, including the interactions of these groups to assure effectiveness and to avoid duplication of effort;

(b) the duties and responsibilities of key personnel; (c) the size of offsite staff, types of expertise needed, and the degree of their involvement in plant operations; (d) pooling of resources among utilities to provide the operations staff with the means to acquire prompt expert advice from offsite sources; (e) organizational arrangements for both normal and accident situations; (f) the training and a program of requalification of management and technical personnel, both onsite and offsite (Items I.A.2.1 and I.A.2.2), to assure full knowledge of plant operations and reactor safety; (g) staffing and qualifications of control room personnel (Items I.A.1.3 and I.A.1.4); (h) the quality assurance program and its staffing; (i) financial capability (in the event reliance is placed on outside contractual assistance during the accident situation); (j) procedures for normal operations, accident conditions, surveillance, and maintenance (Item I.C); (k) special requirements for accident situations, including control room access, onsite technical support center, and onsite operational support center; (l) implementation of preestablished plans for using available resources in the event of unusual situations; (m) provision of necessary independent technical review onsite; (n) reporting of unusual events; (o) policy for the consideration by management of unresolved safety issues identified at all levels; (p) provisions for review of plant organization changes and personnel changes in key management technical and operation positions; and (q) provisions for selection of shift supervision and key technical personnel. See also Table C.3, Item 52.

NRR will issue draft criteria for public comment and will coordinate development of the acceptance criteria with similar efforts of the Atomic Industrial Forum (AIF), Institute of Nuclear Power Operations (INPO), and other industry organizations, as appropriate. The criteria will also be provided to ACRS for review and comment.

The proposed NRC activities are identified as follows:

(1) NRR will prepare draft criteria in coordination with other NRC offices. The experience from interoffice review of NTOL applicants will be factored into the draft criteria.

safe operation and management function of the shift supervisor to assure safe operation of the plant.

b. Schedule: This work is complete except for IE confirming implementation.

c. Resources: IE FY80 - 0.1 my; NRR FY80 - 0.1 my.

4. Control room access.

a. Description: Letters dated September 13 and 27, October 10 and 30, and November 9, 1979, were sent to all licensees and applicants requiring that the authority and responsibilities of the person in charge of control room access and clear lines of authority and responsibility in the control room in the event of an emergency be established in conformance to item 2.2.2.a of NUREG-0578.

b. Schedule: This work is complete except for IE confirming implementation.

c. Resources: IE FY80 - 0.1 my; NRR FY80 - 0.1 my.

5. Procedures for feedback of operating experience to plant staff.

a. Description: NRR will require that licensee procedures be reviewed and revised as necessary to assure that important operating experience originating both within and outside the organization is continually provided to operators and other personnel and is incorporated into training and retraining programs. These procedures will assure that high-priority matters are dealt with promptly while keeping operating personnel from being deluged with paper or instructions on less important matters to the detriment of their overall proficiency. See also Table C.3, Item 52.

b. Schedule: The requirement will be issued by May 15, 1980. IE will audit implementation in normal course of routine inspections.

c. Resources: NRR FY80 - 0.3 my, FY81 - 0.1 my; IE FY80 - 0.2 my.

6. Procedures for verification of correct performance of operating activities.

a. Description: NRR will require that licensees procedures be reviewed and revised, as necessary, to assure that an effective system of verifying the correct performance of operating activities is provided as a means of reducing human errors and improving the quality of normal operations. This will reduce the frequency of occurrence of situations that could result in or contribute to accidents. Such a verification system may include automatic system status monitoring, human verification of operations, and verification of maintenance activities independent of the people performing the activity (see NUREG-0585, Recommendation 5). | 1

Implementation of automatic status monitoring if required will reduce the extent of human verification of operations and maintenance activities but will not eliminate the need for such verification in all instances. The procedures adopted by the licensees may consist of two phases - one before and one after installation of automatic status monitoring equipment, if required, in accordance with Item I.D.3. See also Table C.1, Item 5.

b. Schedule: The requirement will be issued by July 1, 1980. IE will audit implementation in normal course of routine inspections.

c. Resources: NRR FY80 - 0.2 my; IE FY81 - 0.3 my.

7. NSSS vendor review of procedures.

a. Description: Applicants for near-term operating licenses will be required to obtain NSSS vendor review of low-power and power-ascension test and emergency procedures (see Regulatory Guide 1.33, Appendix A, Section 6) as a further verification of the adequacy of the procedures. After trial use of this requirement on a few pending operating license applications, the staff will decide whether its further use or expansion to include procedure review by the A-E is desirable. This decision will be made in light of the long-term program described in Item I.C.9. See also Table C.1, Item 4a and Table C.3, Item 50.

(3) NRR will issue a Commission information paper by December 1980, describing the evaluation criteria, the impact of their application, and staff plans for completing the control room reviews. NRR will provide final criteria to licensees and applicants by February 1981.

(4) On a schedule consistent with licensing needs, NRR and IE will review the results of those preliminary control room design assessments performed by applicants granted operating licenses prior to January 1982.

(5) NRR and IE will complete audits of control room design review reports submitted by licensees and applicants for operating licenses by April 1982 or prior to issuance of the operating license, whichever is later.

c. Resources: NRR FY80 - 2.5 my and $160,000, FY81 - 4.0 my and $270,000; IE FY80 - 0.1 my, FY81 - 0.1 my; ADM FY80 - $10,000.

2. Plant safety parameter display console.

a. Description: In conjunction with the control room design upgrade described in Item I.D.1, NRR will require all licensees and applicants to install a safety parameter display system that will display to operating personnel a minimum set of parameters (safety state vector) which define the safety status of the plant. The system should have the capability of displaying a full range of important plant parameters and data trends on demand. In addition, the system should provide indication of when process limits are being approached or exceeded.

NRR will review the proposed designs in conjunction with plans for other control room design modifications developed pursuant to Item I.D.1 to ensure that the needs of the operator are met. See also Table C.3, Items 23 and 55.

b. Schedule: NRR requirements will be issued by August 1980.

c. Resources: NRR FY80 - 2.0 my, FY81 - 1.0 my and $250,000; IE FY81 - 0.5 my.

3. Safety system status monitoring.

a. Description: NRR will study the need for all licensees and applicants not presently committed to the requirements of Regulatory Guide 1.47, "Bypassed and Inoperable Status Indication for Nuclear Power Plant Safety Systems," to monitor and verify operations, test, and maintenance activities by means of an automatic status monitoring system, such as that described in Regulatory Guide 1.47. This study is to be performed following a review of procedures and other nonautomatic actions to verify these activities, as required in Item I.C.6 and installation of the safety monitor console (Item I.D.2). In addition, consideration should be given to the impact of other control room modifications on the need for automatic status monitoring (Item I.D.1). See also Table C.3, Item 55.

b. Schedule: NRR work is planned to be initiated in FY82 or later; however, some approaches by some vendors for Item I.D.1 and I.D.2 above may include safety system status monitoring in which case this part of the plan may need modification. | 1

c. Resources: NRR first year - 0.5 my.

4. Control room design standard.

a. Description: SD will issue for comment a proposed regulatory guide based on an evaluation of industry standards (IEEE 566 and 567) that includes consideration of the applicability of these standards to plants under construction. SD will urge prompt revision of IEEE 566 and 567. NRR will require compliance with the regulatory guide as necessary.

b. Schedule: SD will issue a regulatory guide for comment by July 1981. SD will also develop an implementation schedule and will issue the effective regulatory guide by May 1982. NRR will ensure compliance (or commitment to comply) by May 1983.

c. Resources: SD FY80 - 0.1 my, FY81 - 0.5 my; ADM FY81 - 0.1 my and $5,000.

b. Implementation: Operating reactors will complete requirements at some time beyond 1982, depending on NRC schedule. No action is required for operating license applicants.

c. Resources: 0.3 my per plant.

2. Research on small-break LOCAs and anomalous transients: No licensee action is required.

3. Uncertainties in performance predictions.

a. Description: Holders of approved evaluation models will evaluate the uncertainty of small-break ECCS performance calculations.

b. Implementation: Licensees' evaluations will be completed on a schedule to be determined by NRC, but will be beyond 1982.

c. Resources: 15 my and $1,000,000 computer costs for industry total (based on five evaluation models to be assessed).

D. OTHER ACTIONS: None.

E. REFERENCES

President's Commission Report: Items D.4 and D.4.a
President's Response dated December 7, 1979: Proposal D.1.e

Other: NUREG-0572

1

NUREG/CR-1250, Vol. II, Part 1, p. 199; Part 2, p. 456.
Letter from Chairman, ACRS, to Chairman, NRC, dated August 14, 1979,
Subject: "Studies to Improve Reactor Safety"
Letter from Chairman, ACRS, to Chairman, NRC, dated May 16, 1979,

Subject: "Interim Report No. 2 on Three Mile Island Nuclear Station Unit 2"

Letter from R. Fraley, ACRS, to Commissioners, NRC, dated April 18, 1979, Subject: "Recommendations of the NRC ACRS Regarding the March 28, 1979 Accident at the Three Mile Island Nuclear Station Unit 2"

Letter from Chairman, ACRS, to Chairman, NRC, dated April 7, 1979, Subject: "Interim Report on Reactor Accident at the Three Mile Island Nuclear Station Unit 2"

b. Implementation: Operating reactors were to plan and commit by January 1, 1980 and to complete implementation by January 1, 1981. Applicants for operating licenses will provide designs and will review and revise procedures prior to fuel loading. They will implement the plans prior to full-power operation or January 1, 1981, whichever is later.

c. Resources: 0.2 my per reactor and minimal capital cost.

2. Isolation dependability.

a. Description: Licensees will evaluate present installations for isolation dependability and for purge valve closure on high airborne radiation signal and will modify present installations as needed. Licensees will review containment pressure setpoint and reduce, as necessary. They will also install high-radiation isolation-signal circuity.

b. Implementation: Operating reactors were to complete implementation of item 1 by January 1, 1980. Applicants for operating licenses are to complete item 1 before issuance of a full-power license. Items 2 and 3 are to be complete on operating plants by November 1, 1980 and on new operating licenses before issuance of a full-power license. All plants will have reduced the containment-pressure setpoint for isolation by July 1, 1980 or before full-power operation, whichever is later. All plants will have installed high-radiation isolation circuity by July 1, 1981 or before full-power operation, whichever is later. 1

c. Resources: 1.0 my per plant and $350,000 per plant (average).

3. Integrity check.

a. Description: Licensees will perform feasibility studies of changes in procedures and special tests to ensure containment integrity.

b. Implementation: Feasibility study to be performed on a schedule determined by NRC.

c. Resources: 0-0.5 my and 0-$25,000 recurring cost per plant; 0-1.2 my and 0-$300,000 one-time cost per plant.

4. Purging.

a. Description: Licensees will complete the following requirements: (1) restrict purging and justify any unrestricted purging and verify by letter to NRR; (2) evaluate performance of purging and venting isolation valves against accident pressure and respond to NRR; (3) implement interim NRC guidance on valve operability; and (4) adopt procedures and restrictions consistent with revised requirements.

b. Implementation: Operating reactors were to complete item (1) by January 1, 1980 and item (4) by December 1982. Items (2) and (3) were to be completed by December 1, 1979. Applicants for operating licenses will complete items (1), (2), and (3) before full-power operation, and will complete item (4) by December 1982. Construction permit holders and applicants for operating licenses will complete items (1), (2), and (3) before operating license is granted and will complete item (4) by December 1982 or prior to filing of operating license application, whichever is later.

c. Resources: Items (1), (2), and (3) - 0.3 my and $25,000 per plant. Items (4) and (5) not known.

D. OTHER ACTIONS: None.

E. REFERENCES

President's Commission Report: Items D.2 and D.4

Other: NUREG-0578, Sections 2.1.4 and 2.1.5(a and c)
NUREG/CR-1250, Vol. II, Part 2, p. 461.
Letter from Chairman, ACRS, to Chairman, NRC, dated March 11, 1980, Subject: "ACRS Report on NTOL Items from Draft 3 of NUREG-0660, NRC Action Plans Developed as a Result of the TMI-2 Accident"

TASK II.E.5 DESIGN SENSITIVITY OF B&W REACTORS

A. OBJECTIVE: Reduce the sensitivity of B&W plants to feedwater transients, with emphasis on the overcooling transients that have been observed at B&W operating plants.

B. NRC ACTIONS

1. Design evaluation.

a. Description: NRR has issued show-cause orders that require all holders of construction permits for B&W type reactors to (1) identify the most severe overcooling events (considering both anticipated transients and accidents) that could occur at the facility, (2) show in the light of the arrival rate of these events that the design criterion for the number of actuation cycles of the ECCS and RPS is adequate, (3) recommend changes to systems or procedures that would reduce primary system sensitivity. NRR will evaluate the proposed changes and direct applicants and licensees to make required changes. See also Table C.1, Item 19.

b. Schedule: Orders were issued to constuction permit holders on October 25, 1979. Responses have been received and are being reviewed. Requests for additional information will be sent by April 1, 1980. The staff evaluation will be completed by June 1, 1980. Requirements for changes in design or procedures will be sent to all licensees and applicants with B&W reactors by September 1980.

c. Resources: NRR FY80 - 1.5 my and $200,000. 1

2. B&W Reactor Transient Response Task Force.

a. Description: On March 12, 1980, NRR established a task force to provide a short-term assessment of the B&W operating plants in light of recent operating history and to recommend any additional licensing requirements which will assure satisfactory response to anticipated operational transients. The main areas

of review were to include: sensitivity of response to and recovery from overcooling and undercooling transients; effects and consequences of malfunctions and failures in the Integrated Control System (ICS) and non-nuclear instrumentation (NNI); and effectiveness of ongoing actions of TMI-2 Lessons Learned and Bulletins and Orders Task Forces. Proposed implementation of final recommendations were to be based on risk-reduction potential. NRR will evaluate the proposed recommendation and direct applicants and licensees to make required changes.

b. Schedule: The draft report of the task force findings, NUREG-0667, was released on April 2, 1980. The final version of the report, including implementation recommendations, will be provided by May 1, 1980.

c. Resources: Resources included in Item II.E.5.1.

C. LICENSEE ACTIONS

1. Design evaluation.

a. Description: All licensee and construction permit holders will modify plants as required.

b. Implementation: Construction permit holders with B&W reactors have responded to the show-cause orders. All licensees and construction permit holders will be required to describe the design changes and provide implementation schedules by April 1, 1981 or before full-power operation, whichever is later.

c. Resources: 5.5 my per plant; capital expenditures are not yet determined.

2. B&W Reactor Transient Response Task Force: No licensee action is required at this time.

TASK II.F INSTRUMENTATION AND CONTROLS

A. OBJECTIVE: Provide instrumentation to monitor plant variables and systems during and following an accident. Indications of plant variables and status of systems important to safety are required by the plant operator (licensee) during accident situations to (1) provide information needed to permit the operator to take preplanned manual actions to accomplish safe plant shutdown; (2) determine whether the reactor trip, engineered safety features systems, and manually initiated systems are performing their intended functions (i.e., reactivity control, core cooling, maintaining reactor coolant system integrity, and maintaining containment integrity); (3) provide information to the operator that will enable him to determine the potential for a breach of the barriers to radioactivity release (i.e., fuel cladding, reactor coolant pressure boundary, and containment) and if a barrier has been breached; (4) furnish data for deciding on the need to take unplanned action if an automatic or manually initiated safety system is not functioning properly or the plant is not responding properly to the safety systems in operation; (5) allow for early indication of the need to initiate action necessary to protect the public and for an estimate of the magnitude of the impending threat; and (6) improve requirements and guidance for classifying nuclear power plant instrumentation, control, and electrical equipment important to safety.

B. NRC ACTIONS

1. Additional accident monitoring instrumentation.

a. Description: Instruments are to be provided on all plants to measure (1) containment pressure, (2) containment water level, (3) containment hydrogen concentration, (4) containment radiation intensity (high range), and (5) high-range noble gas effluents from each potential release point, including PWR steam safety and atmospheric-steam-dump valves. See also Table C.1, item 14. | 1

b. Schedule: Requirements for additional accident monitoring instrumentation were submitted to (1) operating reactor licensees in NRR letters dated September 13 and October 30, 1979; (2) operating license applicants in NRR letters

dated September 27 and November 9, 1979; (3) licensees of plants under construction in NRR letters dated October 10 and November 9, 1979; and (4) construction permit applicants in NRR letters dated October 10 and November 9, 1979. NRR will review and IE will audit the implementation.

c. Resources: NRR FY80 - 1.6 my and $130,000, FY81 - 1.2 my and $100,000; IE will incorporate the audit as part of routine inspection efforts; IE FY80 - 0.1 my, FY81 - 0.7 my; ADM FY80 - 0.1 my, FY81 - 0.1 my.

2. Identification of and recovery from conditions leading to inadequate core cooling.

a. Description: NRR has developed requirements for specific equipment to detect and aid in recovery planning for conditions with a potential that could lead to inadequate core cooling. The specific instruments are primary coolant saturation meters in PWRs and unambiguous indicators of inadequate core cooling, such as status of coolant level in the reactor vessel. See also item I.D.5(4) and Table C.1, items 4d, 23 and 27, and Table C.3, item 6.

b. Schedule: Requirements for specific equipment were submitted to (1) operating reactor licensees in NRC letters dated September 13 and October 30, 1979; (2) operating license applicants in NRR letters dated September 27, 1979; (3) licensees of plants under construction in NRR letters dated October 10, 1979; and (4) construction permit applicants in NRR letters dated October 10, 1979. NRR will review and IE will audit the implementation.

c. Resources: NRR FY80 - 2.4 my and $100,000, FY81 - 1.3 my and $100,000; IE FY80 - 0.1my, FY81 - 0.35 my.

3. Instruments for monitoring accident conditions (Regulatory Guide 1.97).

a. Description: Appropriate instrumentation will be required for accident monitoring with expanded ranges and a source term that considers a damaged core capable of surviving the accident environment in which it is located for the length of time its function is required based on Regulatory Guide 1.97, "Instrumentation for Light-Water-Cooled Nuclear Power Plants to Assess Plant and Environs

CHAPTER V
NRC POLICY, ORGANIZATION, AND MANAGEMENT

INTRODUCTION

Chapter V of the Action Plan, which addresses NRC policy, organization, and management, is in a unique category. It is not like other chapters, which are primarily a detailing of plans for NRC staff or licensee action. Rather, it delineates intentions of the Commission itself. 1

This chapter discusses two fundamental assertions: (1) NRC has not articulated a substantive safety standard or policy that underlies its regulatory decisions; and (2) present NRC organization and management is inadequate to protect public health and safety. These assertions follow from several basic conclusions of the President's Commission on TMI and the NRC Special Inquiry Group.

The first item in Chapter V serves as the means for the Commission to develop and articulate the substantive safety standard for its nuclear regulatory decision-making. The remaining items consider primarily the various organizational, management, and licensing process issues. In each of these items the central issue is whether safety and other relevant considerations necessitate or justify substantive or procedural reform. Although no item explicitly considers questions about agency and industry attitudes toward safety, it is recognized that these questions must be resolved in the day-to-day actions of NRC and licensees, rather than as a result of completing a discrete task item.

In recognition of interrelationships that call for correlated planning and action, the items in Chapter V have been grouped into the seven subject areas that follow. Action on most of the identified items has been completed or set in motion. 1

REFERENCES:*

President's Commission Report: Recommendations A.1.c, A.1.d, A.3, A.4, A.4.c(i), A.9.d, A.10.a, A.10.c, A.10.d, A.10.e, A.10.f

President's response dated December 7, 1979, Proposals A.1.c, A.3, A.6.a, A.6.d, D.1.a, G.1.e

Other: NUREG-75/071 (1975) (Task V.D.1, Item 1)
NUREG-0585, Recommendations 1.5, 11, and 12
NUREG-0616, Recommendations 3.2, 3.3-1
NUREG-0646
NUREG-0648
SECY-80-27, Attachment 2
Letters from Chairman Ahearne to Honorable J. T. McIntyre, Jr., January 7, 1980, and February 6, 1980, NRC Reorganization Plan (Task V.B, items 1-2; Task V.F-1, items 3-4)
Commission's draft licensing reform bill and staff memoranda; Commission comments on pending administrative reform bills, sections on intervenor funding (Task V.D, item 1)
Memo from Samuel J. Chilk, Secretary, NRC, to Lee V. Gossick, EDO, dated April 5, 1978 (Task V.D, items 2-3), Subject: "Request for Study of the Generic Issues of Construction During Adjudication."
NUREG/CR-1250, Vol. I, pp. 91, 92, 99, 110, 115-121, 134, 140-144, 146, 151-152; Vol. II, pp. 23-24, 104-05, 130-38, 255-56 and 341.
Letter from Chairman, ACRS, to Chairman, NRC, dated January 15, 1980, Subject: "Recommendations of President's Commission on ACRS Role"
Letter from Chairman, ACRS, to Chairman, NRC, dated March 12, 1980, Subject: "ACRS Comments on Recommendations of NRC Special Inquiry Group Regarding ACRS Activities"
Letter from Chairman, ACRS, to Chairman, NRC, dated December 17, 1979, Subject: "A Review of NRC Regulatory Processes and Functions"
Letter from Chairman, ACRS, to Chairman, NRC, dated May 16, 1979, Subject: "Report on Quantitative Safety Goals"

*The tasks in this chapter for which particular references are pertinent are shown in parentheses.

Letter from Chairman, ACRS, to Chairman, NRC, dated December 13, 1979, Subject: "Report on Quantitative Safety Goals"

Letter from Chairman, ACRS, to Chairman, NRC, dated December 13, 1979, Subject: "Report on TMI-2 Lessons Learned Task Force Final Report"

SECY-80-230B for Commissioners from Hanrahan and Bickwit, dated June 20, 1980, Subject: Update on Chapter V of TMI Action Plan NRC Policy, Organization, and Management. 1

Memo from John C. Hoyle, Acting Secretary, for William J. Dircks, Acting EDO, et al., dated July 9, 1980, Subject: Staff Requirements -- Discussion of Action Plan, Chapter V, etc.

TASK V.A DEVELOPMENT OF SAFETY POLICY

A. OBJECTIVE: Further delineation of substantive safety policy by the NRC.

B. COMMISSION ACTION

1. Develop NRC policy statement on safety.

a. Description: The Commission will endeavor to develop more explicit articulation of policy with respect to the fundamental issues of public health and safety. This will include some general approach to risk acceptability and safety-cost trade-offs, and, to the extent that these reasonably lend themselves to articulation, quantitative safety goals, safety improvement goals, and standards for review of past actions in light of new rules and improved practices. 1

b. Schedule: A general plan for developing and articulating safety objectives will be presented to the Commission by August 7, 1980. A draft statement of policy will be issued by January 1, 1981. Further scheduling will be set by the Commission, as appropriate in the context of the general plan.

c. Resources: To be determined in conjunction with preparation of the general plan. OPE/OGC have the lead to prepare the program plan, in consultation with ACRS, NRR, and RES.

TASK V.B POSSIBLE ELIMINATION OF NONSAFETY RESPONSIBILITIES

A. OBJECTIVE: Elimination of nonsafety responsibilities from NRC jurisdiction, if appropriate.

B. COMMISSION ACTION

1. Study and recommend, as appropriate, elimination of nonsafety responsibilities.

a. Description: The Commission will review nonsafety and nonsafeguard regulatory review responsibilities, including antitrust, NEPA, and exports. The Commission will examine whether removal of these responsibilities would leave gaps in Federal regulation, and whether they may be transferred to other agencies.

b. Schedule: In a letter dated February 6, 1980 to the Director of the Office of Management and Budget, the Commission supported transfer of export licensing functions to the Executive Branch by a 3-2 vote. The Administration has not pursued this recommendation. One member of the Commission majority is no longer a Commission member (Commissioner Kennedy's term expired June 30, 1980). The Commission will take no further action on the export issue until the current Commission vacancy is filled and/or new initiatives on this matter are taken by the Executive Branch or the Congress. The Commission has decided not to seek transfer of other nonsafety responsibilities, but, before undertaking any such new responsibilities, it will analyze whether new functions should be exercised by another agency. 1

c. Resources: Action completed. No further resources needed.

TASK V.C ADVISORY COMMITTEES

A. OBJECTIVE: Strengthen the role of advisory committees in Commission activities.

B. COMMISSION ACTIONS

1. Strengthen the role of Advisory Committee on Reactor Safeguards.

a. Description: The Commission will strengthen the role of the Advisory Committee on Reactor Safeguards (ACRS) by legislating to eliminate its compulsory jurisdiction and by considering ACRS views on the President's Commission recommendations regarding its role.

b. Schedule: The Commission has completed a number of actions with respect to ACRS, including (1) monthly meetings with the Committee (2) expanded procedures for ACRS participation in NRC rulemakings, (3) increased responsiveness to Committee recommendations, (4) additional technical staff positions, and (5) support for elimination of mandatory jurisdiction by legislation. OPE/OGC was scheduled to submit a Commission paper by July 23, 1980 addressing additional Committee proposals for strengthening its role in licensing and the annual identification of safety issues. Completion of action on this paper will complete action on the item (schedule to be determined as necessary, in the context of the OPE/OGC Commission paper). 1

c. Resources: To be determined as necessary, in the context of the OPE/OGC paper.

2. Study need for additional advisory committees.

a. Description: A determination will be made as to whether NRC should establish additional advisory committees, such as a citizens' advisory committee or a general advisory committee similar to that of the Atomic Energy Committee.

b. Schedule: The Commission has decided no further committees are warranted at this time. The Commission asked OPE/OCA/OGC to consider and report back to the Commission on public outreach opportunities by August 3, 1980. Commission action on this paper will complete action on this item (schedule to be determined in the context of the paper).

c. Resources: To be determined in the context of OPE/OCA/OGC paper.

3. Study the need to establish an independent Nuclear Safety Board.

a. Description: The Commission will study the need to establish a Nuclear Safety Board that would independently investigate nuclear accidents and important incidents and would monitor and evaluate the quality of NRC's regulatory process. 1

b. Schedule: The Commission has decided that, in its view, an independent safety board is not needed. Existing and newly created NRC offices address a number of would-be objectives of such a board (e.g., IE, ACRS, AEOD). Ultimately the decision whether to create a new independent board is for the Congress.

c. Resources: Action complete. No resources are needed.

TASK V.D LICENSING PROCESS

A. OBJECTIVE: Enhance public participation in and make needed reforms to the nuclear licensing process.

B. COMMISSION ACTIONS

1. Improve public and intervenor participation in the hearing process.

a. Description: The Commission will assess alternative methods to enhance public and intervenor participation in the hearing process by undertaking a pilot program for intervenor funding in accordance with the FY81 budget request and by studying the concept of an Office of Hearing Counsel, as described by the President's Commission recommendation, and other concepts of Public Counsel (such as the Office of Public Counsel recommended by the NRC Special Inquiry Group or concepts used by some Public Service Commissions). If such concepts seem desirable, the Commission will propose the needed legislation. 1

b. Schedule: Funding for participation expenses has not been forthcoming from Congress to date. OGC is to report to the Commission by September 3, 1980 on alternatives to intervenor funding, including the Office of Hearing Counsel and the Office of Public Counsel proposals. The Commission will then decide what public participation enhancement means to pursue in the NRC FY82 budget proposal.

c. Resources: No further commitment of resources is needed at this time.

2. Study construction-during-adjudication rules.

a. Description: The rulemaking will be completed on whether construction should be permitted while challenges to a construction permit authorized by a licensing board are under administrative adjudication.

b. Schedule: A decision paper on whether and to what extent to adopt final rules will be sent to the Commission by August 1, 1980. Action on this paper will complete this itme.

c. Resources: No further resources needed.

3. Reexamine Commission role in adjudication.

a. Description: The Commission's role in adjudications will be reviewed to examine the extent of Commission involvement in licensing proceedings and to eliminate any undesirable and unnecessary insulation of the Commission from decision-making activities of the staff.

b. Schedule: The Commission has asked OGC to report on its program to monitor licensing proceedings by September 1980 and to monitor interlocutory matters before Licensing and Appeal Boards. Other proposals to increase Commission involvement were not approved by a majority of the Commission, but are subject to reconsideration when the Commission vacancy is filled. A detailed study of NRC ex parte policy was submitted to the Congress in April 1980. OGC will submit a further paper on the Commission's ex parte regulations by September 1980. These activities, when complete, will finalize Commission action on this item. 1

c. Resources: No further resources needed.

4. Study the reform of the licensing process.

a. Description: The Commission will study alternatives to reform the licensing process. One reform would abolish the present two-step process for initial licensing and would substitute a one-step process with increased public involvement prior to the hearing. It would also involve continued NRC jurisdiction after issuance of the single permit to verify that plant construction conforms with plans and permit specifications. The Commission will study the standardization of nuclear power plants. The Commission will consider suspending review and proceedings for applications for construction permits and limited work authorization until the reform issues are resolved.

b. The Commission has decided that no reform action on its part is warranted now. OGC will submit a Commission paper by September 23, 1980 covering further preliminary study and planning of basic reforms of the licensing process. Further scheduling will be done as appropriate. 1

c. Resources: To be determined in light of the OGC paper.

TASK V.E LEGISLATIVE NEEDS

A. OBJECTIVE: Evaluate legislative needs evidenced by/from TMI.

B. COMMISSION ACTION

1. Study the need for TMI-related legislation.

a. Description: The Commission will study the need for legislation with respect to the following:

(1) Clarification of NRC authority to issue a license amendment prior to a hearing when necessary to ensure the health and safety of the public.

(2) Determination of whether NRC should seek an amendment to the Sunshine Act to reduce the Act's requirements for Commission meetings during an emergency. 1

(3) Determination with respect to NRC's current legal authority to take over and conduct cleanup actions at a nuclear facility and with respect to the Federal Government's (a) liability for damages occurring during a cleanup conducted by NRC and (b) entitlement to reimbursement for cleanup costs.

(4) The continuing desirability of the Price-Anderson Act in two areas: (a) extraordinary nuclear occurrence and (b) limitation of liability.

(5) Desirability of creating a new category of license to be issued in place of an operating license for a facility during an extended recovery period following a major accident.

(6) The need for new or modified NRC authority to address the establishment of a chartered national operating company or consortium.

b. Schedule: The Commission has decided not to pursue legislation on any of the TMI subjects at this time. In August 1980, OGC will submit a Commission paper that outlines matters regarding the Commission's legislative needs, and the final Commission decision on its legislative needs will be made in the context of the OGC paper. 1

c. Resources: To be determined in the course of Commission deliberation of OGC paper.

TASK V.F ORGANIZATION AND MANAGEMENT

A. OBJECTIVE: Improve Commission organization and management.

B. COMMISSION ACTIONS

1. Study NRC top management structure and process.

a. Description: The Commission is in the process of hiring an outside management consulting firm to examine the current internal management approaches and procedures used by the Commissioners to execute their responsibilities and to examine possible improvements in the Commission's efficiency and effectiveness. The FY80 NRC Authorization Act requires the Commission to contract for the completion by July 1981 of an independent review of the Commission's management structure, processes, procedures, and operations at all levels of agency management.

b. Schedule: The Commission has directed EDO to prepare a draft scope of work for the management study by September 22, 1980. The study is to be completed by July 1981. 1

c. Resources: To be determined.

2. Reexamine organization and functions of the NRC offices.

a. Description: Examine the current organization and functions of the NRC offices to identify possible improvements in the overall efficiency and effectiveness of NRC (related to items 1 and 3 of this section), including (1) an evaluation of the consolidation of all NRC resources and activities for monitoring operating reactors in a single office; (2) the reorganization of NRR to elevate human factors in criteria development and systems evaluation to a level of prominence equivalent to that of the safety equipment; (3) the reorganization of IE to increase inspection and enforcement effectiveness; (4) the establishment of an integrated program for modifying regulatory requirements

based on systemic identification and assessment of safety issues; and (5) the use of technical consultants to increase staff capability in discrete technical areas.

b. Schedule: The Commission has directed the undertaking of a number of actions including (1) a study of monitoring operating reactors at the regional office level, (2) staff evaluation of a "unit team concept" for each operating reactor, (3) creation of a Division of Human Factors Safety in NRR, (4) study of reorganizing IE, and (5) creation of a Division of Safety Technology in NRR. This completes Commission action on this item.

c. Resources: Action completed. No resources are necessary.

3. Revise delegations of authority to staff.

a. Description: The Commission will improve NRC's organizational and management capabilities for effective pursuit of safety goals by clarifying and, as necessary, revising delegations of authority to the staff. The Commission has delegated substantial rulemaking authority to SD. 1

b. Schedule: The Commission actions on the OGC/OPE Delegation Study, which are nearing completion, respond to this item, and no further action will be taken.

c. Resources: No further action is required, and no further resources are necessary.

4. Clarify and strengthen the respective roles of Chairman, Commission, and Executive Director for Operations.

a. Description: The Commission will clarify and strengthen the respective roles and authorities of the Chairman as chief executive officer, the Commission as head of the agency, and the Executive Director for Operations (EDO) as chief staff officer.

b. Schedule: Commission statements clarifying the respective roles developed in January and February 1980 were superseded by the President's Reorganization Plan No. 1 of 1980, which prescribed the functions of the Chairman, Commission, and EDO. Commission actions to implement the Plan when it becomes effective (to be no later than October 1, 1980) will respond to this item, and no other actions will be taken.

c. Resources: To be determined, as appropriate, in the course of implementing the Reorganization Plan.

5. Authority to delegate emergency response functions to a single Commissioner. 1

a. Description: The Commission will seek authority to delegate specific management responsibilities to an individual Commissioner in the event of defined emergencies. (See also Task III.A.3, item 1, in which NRC is to develop its role in responding to nuclear emergencies.)

b. Schedule: The President's Reorganization Plan authorizes delegation of this authority. No further action will be taken.

c. Resources: No resources are necessary.

TASK V.G CONSOLIDATION OF NRC LOCATIONS

A. OBJECTIVE: Achieve a single location for headquarters office.

B. COMMISSION ACTIONS

1. Achieve single location, long-term.

a. Description: The Commission will break the present impasse hindering the location of NRC and its major headquarters staff components in a single location (a single building or an adjacent group of buildings). The accomplishment of this objective is essential, among other purposes, to minimize adverse disruption of NRC headquarters upon installation of the NRC terminal of the nuclear data link and of headquarters computer and simulator equipment. (See Task III.A.3.4.)

b. Schedule: Action is pending in both the Senate and the House of Representatives to authorize activities that would provide for long-term consolidation of NRC in one location. The Commission continues to support the activities of other entities which have the principal authority to accomplish this goal. No further action within NRC is appropriate. 1

c. Resources: No further resources are needed.

2. Achieve single location, interim.

a. Description: The distance between NRC headquarters offices must be promptly reduced.

c. Schedule: On April 22, 1980 OMB directed GSA to prepare for interim consolidation of NRC at H Street and Bethesda. Congress subsequently directed a GAO review of options for interim consolidation. No further independent action can be taken by the Commission, but the Commission will continue to express its position to entities with final decision authority. No additional action is called for within NRC.

c. Resources: No further resources within NRC are necessary.

C. LICENSEE ACTIONS

1. Power supplies for pressurizer relief valves, block valves, and level indicators.

a. Description: Procedures and modifications will be developed and implemented to upgrade motive and control components to safety-grade criteria and electric power from emergency power sources for the power supplies for pressurizer relief valves, block valves, and level indicators.

b. Implementation: Operating reactors will complete this work by January 1, 1980; operating license applicants will complete before fuel loading.

c. Resources: $350,000 per plant (for plants more than 50% built).

D. OTHER ACTIONS: None.

E. REFERENCES

President's Commission Report: None

Other: NUREG-0578, Section 2.1.1
NUREG/CR-1250, Vol. II, Part 1, p. 199;
Letter from Chairman, ACRS, to Chairman, NRC, dated May 16, 1979,
Subject: "Interim Report No. 3 on Three Mile Island Nuclear Station Unit 2."

APPENDIX A*

1

NEAR-TERM OPERATING LICENSE REQUIREMENTS IN THE TMI ACTION PLAN

Near-term operating license (NTOL) requirements are defined as those actions in the TMI Action Plan that are required to be implemented prior to granting a new operating license because they are needed, are sufficiently characterized and studied at this time, and are known to have significant safety improvement potential. A list of NTOL requirements preliminarily approved by the Commission on February 7, 1980, is given in Table A.1. The list was approved as necessary but not sufficient for granting full-power operating licenses. Additional study has been under way by the Commission and ACRS, as described below. What follows is a description of the development of the NTOL list and a description of the effect of its implementation on other NRC regulatory activities.

It was required from the inception of the TMI Action Plan that primary emphasis be placed on developing and implementing the necessary changes in requirements for operating reactors and changes in NRC practices and procedures to diminish the risk of present operations. By and large, the actions of this sort described in the first draft of the TMI Action Plan were already being implemented as a result of the short-term recommendations of the TMI-2 Lessons Learned Task Force (NUREG-0578, July 1979) and the requirements of the Bulletins and Orders Task Force. The first draft of the Action Plan also contained requirements that were to be applied in licensing reviews of new plants that would be ready to load fuel within the near future; i.e., the so-called near-term operating license facilities. Four new plants fell into the category of being ready to load fuel in 1980 (Sequoyah, North Anna 2, Diablo Canyon, Salem 2).

The NTOL list has been refined several times since the first draft of the Action Plan. Throughout the process, the list has contained all the new requirements for operating reactors plus a few more. Also, in some instances, the requirements for the near-term operating licenses have implementation deadlines that are more stringent in some cases than the comparable requirements for operating plants.

*The NTOL list has been superseded by Commission approval of NUREG-0694, "TMI-Related Requirements for New Operating Licenses," dated June 1980. See also Commission Policy Statement of June 16, 1980 entitled "Further Commission Guidance for Power Reactor Operating Licenses."

1

This was done when there was a significant advantage to have the new procedure or equipment in place during fuel loading or power-ascension testing. As a general rule, however, implementation schedules for near-term operating license requirements were established with the intent of providing adequate safety improvement without incurring significant additional schedule and construction delays.

The first major effort to systematically review and refine the NTOL list occurred shortly after issuance of Draft 1 of the TMI Action Plan. The Steering Group, in consultation with the Task Managers, discussed additions and refinements of the specific actions recommended in Draft 1 for near-term operating license applicants. A revised list of actions was then discussed, further refined and approved by the NRC Program Office Directors. This list of approximately 50 actions was then forwarded to the Commission on January 5, 1980.

On January 10, 1980 the Action Plan Steering Group met with the Advisory Committee on Reactor Safeguards (ACRS) to discuss Draft 1 of the Plan. A copy of the proposed NTOL requirements was also provided to the Committee, although the focus of the meeting was on the entire plan, not the NTOL list. A primary concern expressed by ACRS at that time was the lack of priority assignments within Draft 1 of the Action Plan and the likelihood that without better delineation of priorities, NRC and the utilities could not focus on the most important actions.

In its review of the January 5 version of the NTOL list, the Commission also expressed a need to gain a reactor operator's perspective on the safety implications of the proposed requirements. In order to get operator and industry assessments of the impact on safety of implementing the near-term operating license actions, several site visit teams were created by the Steering Group to conduct onsite meetings with operating personnel and utility management. These teams were composed of IE Regional Branch Chiefs, the licensing project manager for the first four NTOL plants and the four operating plants that were visited, the resident inspectors, and various senior NRC managers and directors. Meetings were held at the four near-term operating license facilities and the

NUREG-0600, "Investigation into the March 28, 1979 Three Mile Island Accident by Office of Inspection and Enforcement," U.S. Nuclear Regulatory Commission, August 1979.

NUREG-0610, "Basis for Emergency Action Levels for Nuclear Power Facilities," U.S. Nuclear Regulatory Commission, September 1979.

NUREG-0611, "Generic Evaluation of Feedwater Transients and Small Break Loss-of-Coolant Accidents in Westinghouse Designed Operating Plants," U.S. Nuclear Regulatory Commission, January 1980.

NUREG-0616, "Report of Special Review Group, Office of Inspection and Enforcement, on Lessons Learned from Three Mile Island," U.S. Nuclear Regulatory Commission, December 1979.

NUREG-0623, "Generic Assessment of Delayed Reactor Coolant Pump Trip During Small-Break Loss-of-Coolant Accidents in Pressurized Water Reactors," U.S. Nuclear Regulatory Commission, November 1979.

NUREG-0625, "Report of the Siting Policy Task Force," U.S. Nuclear Regulatory Commission, August 1979.

NUREG-0626, "Staff Report on the Generic Assessment of Feedwater Transients and Small Break Loss-of-Coolant Accidents in Boiling Water Reactors Designed by the General Electric Company," U.S. Nuclear Regulatory Commission, January 1980.

NUREG-0632, "NRC Views and Analysis of the Recommendations of the President's Commission on the Accident at Three Mile Island," U.S. Nuclear Regulatory Commission, November 1979.

NUREG-0635, "Generic Assessment of Small Break Loss-of-Coolant Accidents in Combustion Engineering Designed Operating Plants," U.S. Nuclear Regulatory Commission, January 1980.

NUREG-0645, "Final Report of Bulletins and Orders Task Force of the Office of Nuclear Reactor Regulation," Vols. 1 and 2, U.S. Nuclear Regulatory Commission, January 1980.

NUREG-0646, "Report from the Advisory Committee on Construction During Adjudication," U.S. Nuclear Regulatory Commission, January 1980.

NUREG-0648, "Study of the NRC Appellate System," U.S. Nuclear Regulatory Commission, January 1980. 1

NUREG-0654 (FEMA-REP-1), "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," U.S. Nuclear Regulatory Commission, January 1980.

NUREG-0667, "Transient Response of Babcock & Wilcox Designed Reactors," U.S. Nuclear Regulatory Commission, to be published (available in draft form).

NUREG/CR-1250, "Three Mile Island, A Report to the Commission and to the Public," Vols. I and II, U.S. Nuclear Regulatory Commission, January 1980 (Vol. I) and May 1980 (Vol. II).

Documents with the following types of designation and other miscellaneous documents are available for inspection and copying for a fee in the NRC Public Document Room at 1717 H St., N.W., Washington, D.C.:

SECY-79-330
RFP-NRR-80-117
ACRS letters and reports
Individual's memorandums and letters
Inspection and Enforcement

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NUREG-0660
Vol. 2

NRC Action Plan Developed as a Result of the TMI-2 Accident

Date Published: May 1980
Revised: August 1980

U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

RECOMMENDATIONS OF THE IE SPECIAL REVIEW GROUP	RELATED TMI ACTION PLAN TASK	STATUS
2. Review shift staffing procedures to ensure that all emergency team, emergency organization, and minimum shift crew training and qualifications are met when personnel are assigned or selected for a shift.	III.A.1.1, III.A.2.2	d
3. If the above have not been specifically inspected since March 1979, they should be inspected by March 1980.	None	d
4. Licensee personnel should be given additional training in plant operations under emergency conditions or when high contamination is present.	I.A.2.5 II.B.4 III.D.3	a

1

3.7.2 IE Personnel

1. Establish an Office of Training, which would operate an NRC Training Center. Locate the NRC Training Center to take advantage of simulator facilities and existing reactor proximity; for example, near the TVA Training Center in Chattanooga, Tennessee. New IE personnel should attend appropriate Training Center courses, or receive certification of competence, before being allowed to conduct unescorted inspections or being assigned lead responsibility for a facility. Existing IE inspectors should be certified or should attend appropriate Training Center courses until certification is received. The Training Center should conduct for IE, as a minimum, courses dealing with the following: (Note: The SRG listed 1-½ pages of specific recommendations which are not included here.)	IV.D	b

RECOMMENDATIONS OF THE IE SPECIAL REVIEW GROUP	RELATED TMI ACTION PLAN TASK	STATUS
2. Promptly establish training and certification programs to prepare reactor resident inspectors to be responsive in the event of an accident, as well as perform routine inspections. Certify both existing and new resident inspectors. (Note: The SRG listed 1-½ pages of specific recommendations which are not included here.)	IV.D	b
3. To provide for individual recognition and documentation, develop a program leading to a Senior Resident Inspector (SRI) certification, which requires the inspector to have site-specific knowledge adequate to assure facility comprehension and the ability to evaluate transients and accidents. This will require knowledge at a level adequate to direct licensee actions, if necessary.	IV.D	b
4. Expand training for IE supervisors and management to ensure that fundamentals in various disciplines and licensee operations are retained in order to ensure that supervision/management is prepared to direct NRC emergency activities. The following training is recommended: (Note: the SRG listed 4 specific recommendations which are not included here.)	IV.D	b
5. Review training needs for IE staff not directly involved in operating reactors to ensure staff readiness for emergencies. Several suggested training courses are: (Note: The SRG listed 6 specific recommendations which are not included here.)	IV.D	b

	RECOMMENDATIONS OF THE IE SPECIAL REVIEW GROUP	RELATED TMI ACTION PLAN TASK	STATUS	
	2. Amend Regulatory Guide 1.101 to provide an Annex C containing several detailed scenarios acceptable to be used for drills.	III.A.2.2	a	
3.13.8	Tests			
	1. Amend 10 CFR 50.54, "Conditions of Licenses," to state: "The licensee shall maintain for the life of the facility an adequate state of emergency preparedness, as specified in Appendix E. A license may be revoked, suspended, or modified for failure of the licensee to maintain an adequate emergency preparedness capability. The Commission shall conduct tests, as necessary, to demonstrate compliance with this part." (The last sentence is consistent with Parts 30.53 and 70.56.)	III.A.2.1, III.A.2.2	b	1
	2. Amend Regulatory Guide 1.101, Annex B, Section 2.3.5, "Tests and Drills," to include a third paragraph, as follows: "Licensees shall establish a program for the conduct of tests of the emergency plan, implementing procedures, facilities, equipment, personnel, and other organizations. The test program function shall demonstrate adequate capability to implement all portions of the emergency plan, implementing procedures, facilities, equipment, personnel, and other organizations at least annually."	III.A.2.1, III.A.2.2	a	

RECOMMENDATIONS OF THE IE SPECIAL REVIEW GROUP	RELATED TMI ACTION PLAN TASK	STATUS
3. Develop and publish criteria for determining when the licensee's test, as described in recommendation (2), above, is unacceptable. In addition, IE and NRR should jointly participate in the development of criteria, scenarios, and administration of the NRC test as identified in recommendation (1), above, upon licensee failure to conduct an adequate test or demonstrate unsatisfactory performance.	III.A.1.1, III.A.2.1, III.A.2.2	b 1
3.13.9 Multiple Responsibilities		
Require all Part 50 and 70 licensees to review shift staffing, emergency training records, and the emergency plan team requirements to ensure that emergency responsibilities are clearly assigned to qualified individuals and that multiple assignments are avoided..	III.A.1.1, III.A.2.2	a
3.13.10 Classification and Notification of Emergencies		
1. Require all Part 50 and 70 licensees to adopt Regulatory Guide 1.101 to ensure standarized criteria and action levels. Each licensee should identify plant-specific criteria to allow determination of the applicable threshold.	III.A.2.1, III.A.2.2	a

NRC FORM 335 (7-77)

U.S. NUCLEAR REGULATORY COMMISSION

BIBLIOGRAPHIC DATA SHEET

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16. ABSTRACT *(200 words or less)*

The Action Plan provides a comprehensive and integrated plan for all actions judged necessary by the Nuclear Regulatory Commission to correct or improve the regulation and operation of nuclear facilities based on the experience from the accident at the Three Mile Island, Unit 2, nuclear facility and the official studies and investigations of the accident. The major portion of Revision 1 is a revised version of Chapter V, which delineates the intentions of the Commission. In recognition of interrelationships that call for correlated planning and action, the items in the Chapter have been grouped into seven subject areas.

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