

PDR-016



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D. C. 20555

September 16, 1982

Ms. Lynn Connor  
Doc-Search Associates  
P.O. Box 57  
Cabin John, MD 20818

IN RESPONSE REFER  
TO FOIA-82-411

Dear Ms. Connor:

This is in response to your letter dated September 1, 1982 in which you requested, pursuant to the Freedom of Information Act, all documents pertaining to pre-implementation review of NUREG-0737 Item II.F.2, especially NRC internal guidelines on the scope of review.

At this time, we are placing the ten records identified on enclosed Appendix A in the NRC Public Document Room for your inspection and copying. These records will be filed in folder FOIA-82-411 under your name.

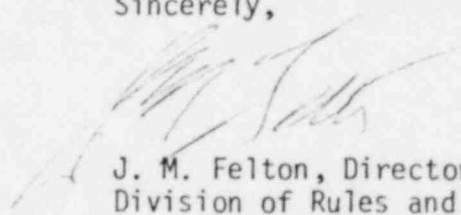
The following records subject to your request have already been made available at the PDR for public inspection and copying:

1. SECY-81-582
2. SECY-81-582A

In addition to the two SECY papers, you may wish to also inspect at the PDR pertinent records related to the January 8, 1982 Commission meeting for discussion of reactor vessel water level indicators.

The staff is continuing to search for and review additional records subject to your request. We will notify you as soon as search and review are completed.

Sincerely,

  
J. M. Felton, Director  
Division of Rules and Records  
Office of Administration

Enclosure: Appendix A

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Appendix A

1. 6/10/80 Memo to Rubenstein from Phillips, "Inadequate Core Cooling", w/stated attachment. (4 pages)
2. 7/9/81 Memo to Lainas from Rubenstein, "Request for Additional Information on CE Heated Junction Thermocouple Reactor Vessel Level Measurement System for San Onofre", w/stated enclosure. (4 pages)
3. 7/27/81 Memo to Crutchfield and Miraglia from Lainas, "Request for Additional Information from CE and W Owners Group on Reactor Vessel Level Measurement System", w/o stated enclosure which is identified at No. 2 above. (1 page)
4. 8/13/81 Memo to Shea from Phillips, "Westinghouse  $\Delta$ P Reactor Vessel Level Instrumentation. (2 pages)
5. 9/16/81 Memo to Varga, et al., from Crutchfield, "TMI Topic II.F.2.3." w/attached sample letter and enclosure. (5 pages)
6. 9/30/81 Letter to licensee (see list in memo identified at No. 5 above) from Varga, "Reactor Vessel Level Instrumentation System (RVLIS)" w/stated enclosure. (5 pages)
7. 11/1981 Report entitled, "Heated Junction Thermocouple, Phase I Test Report" prepared for C-E Owners Group, No. CEN-185 Supplement 1. (27 pages)
8. 11/1981 Report entitled, "Heated Junction Thermocouple, Phase II Test Report" prepared for C-E Owners Group, No. CEN-185-NP, Supplement 2-NP. (85 pages)
9. 12/23/81 Memo to Mattson from Rehm, "Commission Briefing on PWR Vessel Level Indicators", w/attachment. (2 pages)
10. 2/10/82 Note to Eisenhut from Lainas, "SECY-81-582; Task Action Plan Item II.F.2, Additional Instrumentation for Detection of Inadequate Core Cooling", w/attachment 1. (Stated attachment 2 is already in the PDR, as noted in our letter.) (2 pages)

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JUN 10 1980

MEMORANDUM FOR: L. S. Rubenstein, Assistant Director  
for Core and Containment Systems  
Division of Systems Integration

FROM: L. E. Phillips, Acting Chief  
Core Performance Branch  
Division of Systems Integration

SUBJECT: INADEQUATE CORE COOLING

The attached review description provides the agreed upon interfacing and responsibilities in the conduct of the subject review. Current estimates of the DST resource requirements to completion of this project are also included. It is expected that the HFEB will also require some resources for review of the human factors aspects of the information displays. B. Sheron and B. Morris are the assigned reviewers from RSB and ICSB, respectively.

*L. E. Phillips*

L. E. Phillips, Acting Chief  
Core Performance Branch  
Division of Systems Integration

Attachment:  
As stated

cc w/att.:  
D. Ross  
P. Check  
T. Speis  
R. Satterfield  
~~B. Sheron~~  
B. Morris  
R. Mattson  
T. Novak  
D. Ziemann

~~1009010236~~  
PDR

A/1

## Review Responsibilities

1. Overall Management - CPB
2. Adequacy of Proposed ICC Monitoring System Concept for Detection and Early Warning of Inadequate Core Cooling - CPB
3. Functional Performance and Reliability Requirements for the ICC Monitoring System Hardware - CPB & ICSE
4. Human Factors Aspects of the ICC Information Display - HFEB
5. Operator Actions to Prevent ICC or to Restore Core Cooling - RSB & PTRB

The TMI-2 Action Plan includes two tasks which provide for the Inadequate Core Cooling Review.

Action Plan item I.C.1 relates to analyses, guidelines and procedures to help the plant operating staff to (a) recognize and prevent impending core uncovering and (b) recover from a condition in which the core has experienced core uncovering. The aspect of the ICC review which relates the behavior of the variables to be monitored to the advent or occurrence of Inadequate Core Cooling based on the analyses and guidelines and the location and type of monitoring instrumentation is the review responsibility of CPB, Thermal-Hydraulics Section. The functional performance and reliability of the hardware comprising the proposed ICC monitoring system under the limiting service conditions which may exist are to be evaluated jointly by CPB and ICSB. The review of analyses and guidelines which define the operator actions to prevent ICC or restore core cooling is to be performed by RSB. (The review of plant specific procedures is the responsibility of the Procedures and Test Review Branch.) The human factors aspect of information displayed by the operator is to be reviewed by HFEB.

Action Plan item II.F.2 relates to the development and installation of new instrumentation to provide "an unambiguous and easy-to-interpret indication of ICC." The primary review responsibility for this task is shared by CPB and ICSB. The CPB determines if there is an unambiguous relation between the variables to be monitored and the adequacy of core cooling. In addition, CPB must determine the required accuracy and range for the monitored variables. ICSB evaluates the proposed design for functional performance, accuracy, and reliability. The RSB and HFEB must review any guideline revisions and revisions to the information display, respectively, which may result from upgraded ICC monitoring systems.

Overall management of the ICC review is the responsibility of CPB and includes coordination of individual review efforts and liaison with the licensees, applicants, and vendors.

Basis

As stated in the Lessons Learned Short Term Report (NUREG-0578), the intent of these requirements is to provide instrumentation and training to help mitigate the condition of inadequate core cooling regardless of how the conditions developed. Since the reliable indications of inadequate core cooling are all related to conditions in the reactor core and reactor vessel, system effects are not important to monitoring core cooling. The thermal hydraulic conditions in the core and vessel are therefore the significant items to be reviewed under this portion of the program.

The operator action to restore core cooling are system related because these actions call for use of the ECCS, auxiliary feedwater system, PORV, reactor coolant pumps, etc.

In terms of new instrumentation to detect inadequate core cooling, it is the thermal, hydraulic and neutronic conditions in the core and vessel which determine what parameters should be monitored and which parameters provide reliable indications of core cooling. For a design concept to be acceptable, an analytical relation must exist such that, if the monitored variables are known with sufficient accuracy over an adequate range under accident conditions, the adequacy of core cooling can be determined. The implementation of the design concept must meet the accuracy and range conditions and in addition should meet the reliability requirements for post-accident monitoring instrumentation.

Resource Requirements - Inadequate Core Cooling

	TAP Allocated Resources		CPB Est.		RSB Est.		ICSB Est.		Total DSI Estimate	
	PMY	\$	PMY	\$	PMY	\$	PMY	\$	PMY	\$
<u>FY 80</u>										
TAP I.C.1	3.5*	50K*	0.2	--	0.4	--	--	--	0.6	--
TAP II.F.2	2.4	100K	0.2	50K	--	--	0.1	50K	0.3	100K
<u>FY 81</u>										
TAP I.C.1	6.0*	--	0.2	--	0.2	--	--	--	0.4	--
TAP II.F.2	1.3	100K	0.8	100K	--	--	0.4	--	1.2	100K

\*Indicated Resources are for the total TAP; ICC is only part of this action plan.

HFEB resource estimates are not included in the above summary.

FY 80 estimates are for resources after June 1.