Department of Energy
Washington, D.C. 20545

January 30, 1980

Mr. Robert Budnitz, Director
Office of Nuclear Regulatory Research
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Dear Mr. Budnitz:

Transmitted herein for your information is the record of the meeting of the TMI Information and Examination Program Technical Working Group meeting held at Sandia on December 10 and 11, 1979.

If you have any questions, please contact me or A. C. Millunzi.

Sincerely,

Herbert Feinroth

Herbert Feinroth, Chief
Nuclear Reactor Evaluations
Branch
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Development

Enclosure

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Report of Technical Working Group Meeting
TMI Information and Examination Program
Albuquerque, NM
Dec. 10-11, 1979

Task 1.0 Instrumentation and Electrical Equipment Survivability

A general overview of the draft report by the instrumentation and electrical equipment planning group (11-30-79 version) was given. At this point, 138 items (out of approximately 900 listed) have been proposed for recovery and, of this number, 31 have been tentatively assigned priority one.

Of the several general recommendations, the following are worth stressing here:

1. As soon as possible, a remote test program (i.e., testing from the cable room) for instruments, electrical equipment, etc., to establish the operational status (within spec., or not) for all instruments and electrical equipment within the reactor building should be developed. A diagnosis of out-of-spec. equipment should be attempted. This work should be done prior to decontamination and without disturbing the equipment.

2. The predicted behavior of class 1E electrical equipment should be correlated with actual performance. If significant discrepancies exist, further analysis would be warranted. A similar correlation should be attempted for selected items of non-1E electrical equipment.

3. An instrumentation and electrical equipment data book should be compiled to document, in readily available form, all pertinent pre and post accident information.

4. Items 1 through 3 should be accomplished by engaging the services of a contractor as soon as possible. Items 1 and 2 are obviously time urgent; the urgency of item 3 is simply that much of the data needed for accurate planning would be contained in such a compilation.

A portion of the presentation was devoted to the future status and activities of the planning group. The planning group presented a list of specific activities which included the following:

- Reissue new version of draft based on comments received from TWG and planning group through January 15, 1980.

- Final document by March 15, 1980.

- Expand the test strategy and justification portion of the planning document.

- Refine the selection list.

For the immediate future, the specific response from the Technical Working Group was the following:

1. Refine the priority one selection list and provide a more detailed analysis of the selection rationale. This task should be accomplished by January 30, 1980.

2. Transmit the list of priority one items using the TIO request form to DOE/TIO so that cost estimates can be developed to obtain the requested data on the operational status of these items and subsequent approval from DOE (Millunzi).

3. Continue work necessary to complete the planning document.

4. The completed document will be furnished to DOE/TIO so that the TIO can develop cost and schedule of the total program under this task.

TWG Review of Task 2.1 Draft Report

The recommendations of the Task 2.1 (Fission Product Transport and Deposition and Environment Characterization) Planning Group were presented to the TWG at this meeting. The presentation reviewed the work detailed in the Planning Group draft report, which was distributed the first day of the meeting. In developing recommendations, the Planning Group considered the various technical areas which could benefit from data gathered at TMI under Task 2.1, and proceeded to recommend and prioritize tasks/actions for supplying data in each area. The group then reevaluated all tasks and identified those of highest priority from an overall program standpoint. The Planning Group recommended that continued technical guidance be provided in implementing these tasks, specifically to provide additional detail for certain task procedures, to evaluate and interpret data as it is obtained during this program.

With regard to the Task 2.1 recommendations and draft report, the TWG decided that the following actions will be taken:

- The Task 2.1 draft report will be reviewed by members of the TWG and written comments will be sent to the Task 2.1 Planning Group by January 10, 1980.

- The Planning Group will respond to comments provided by the TWG by January 31, 1980. The Task 2.1 Planning Group will incorporate the agreed to comments received from the TWG in the final Planning Group report. The final report will be completed by February 29, 1980.

Members of the TWG provided the following immediate comments on the content of the draft report:

- The need exists to more clearly delineate the interfaces between actions recommended under Task 2.1 and those which should be taken under other tasks in the TMI Examination and Information program.

- The containment radiation survey as recommended by the Planning Group may require a substantial/excessive commitment in terms of available man-rem to perform activities at TMI. The strategy for that survey may need to be refined and/or remote methods for acquiring the data should be considered.

- Members of Task 2.1 should participate in a review of the Task 2.2 (Decontamination report on the recent DOE/EPRI decontamination workshop (11/27-29)). The recommendations of the Task 2.1 group regarding generic information to be obtained in the area of plant decontamination should be incorporated in that review.

- The immediate request for samples from the sump, bleed tanks and miscellaneous waste holdup tank was approved by TWG. DOE-Hdqtrs will take subsequent action for authorization to proceed.

Task 2.2 Decontamination/Radiation-Dose Reduction Technologies

As per agreement at the September 11-13, 1979, meeting at EPRI headquarters in Washington, D.C., a seminar-workshop on decontamination/radiation-dose reduction technologies was organized and held at Hershey, Pennsylvania, November 27-29, 1979. A brief report covering the highlights of the seminar-workshop was given at the TWG meeting at Albuquerque. Approximately 170 specialists, including the participants, attended the seminar-workshop. By all criteria the seminar-workshop was a success. Information flowed from two directions: from those intimately familiar with TMI plant status and recovery plans, and from specialists who have acquired extensive decontamination knowledge from prior experiences.

The TWG agreed that by January 1, 1980, Art Carson (EPRI) and A. C. Millunzi (DOE) will establish a meeting date to (a) review a draft of the tape recorded proceedings; and (b) develop an executive summary of the proceedings. The executive summary will include a list of "do's" and "don'ts" relative to the planning and implementation of decontamination efforts.

The TWG recommends that a contract or contracts be awarded to document decontamination and waste management activities conducted as the result of TMI recovery operations. R. R. Smith will prepare a scope of work to be contracted.

The TWG recommends the formation of a planning group concerned with the above activities with R. R. Smith (ANL-EBR-II) holding the lead responsibilities. By January 15, 1980, Smith will generate a list of recommendations for assignment to the planning group. Recommendations will be solicited from GPU, NRC, DOE and EPRI. The purpose and scope of this planning group will be consistent with those developed at the TWG meeting in September 1979 in Washington, D.C.

Task 2.3 Early Containment Penetration and Monitoring

No action by the Joint Co-ordinating Group is required at this time for this task.

The purpose of this task is to obtain generic data required to assure safe entrance into contaminated facilities and minimize radiation exposure to workers during such activities. This data will be used to develop procedures and equipment.

Messrs. P. Yarrington and A. Millunzi will submit by January 30, 1980, a recommended course of action in this area to the Technical Working Group for approval.

Task 3.0 Radioactive Waste Handling

The purpose of this task is to obtain data on the demonstration of new and environmentally acceptable techniques for processing radioactive wastes and for transporting them. There is at present no defined scope for this task. However, a meeting among several working group members is scheduled 12/17 to explore several possibilities including:

(1) obtaining data on new methods for ion exchange, adsorption, or filtering the radioactivity from TMI containment water.

(2) obtaining data on new methods for solidifying resins and reducing the volume of combustible wastes, and for transporting them.

Based on the results of this meeting, a defined scope of work will be prepared by DOE (Feinroth/Falci) for presentation to the TWG at its next meeting.

Task 4.1 Damage Assessment - Reactor Building

The purpose of this task is to obtain a generic assessment of the suitability of items in containment to sustain the effects of a major accident. This will be accomplished by obtaining a good visual examination and record of the condition of equipment, structures and exposed surfaces.

An agreement was reached by the TWG that:

1. The TIO will make arrangements with GPU and Bechtel to take any additional photographs that may be needed for those TWG approved tasks that are scoped by the various Technical Planning Groups.

2. The TIO will work with GPU and Bechtel to assure that all such requests will minimize TMI-2 personnel exposure.

Task 4.2 Quantify and Characterize the Debris in and Around the Reactor Building Sump

The objective of this task is to provide information on the type of size of debris that may have been formed during the accident and migrated to the sump. Such debris has the potential of obstructing sump screens and in turn could impair the performance of ECCS pumps.

The plan as outlined would have primarily consisted of photographing the sump prior to and after draining. However, the scope of work outlined in task 2.1, Fission Products Transport, includes a sub-task No. 2 which outlines a sampling plan for obtaining more definitive information on the debris in the sump. The TWG decided that since Task 2.1 would provide sufficient information to quantify and characterize the debris, Task 4.2 was no longer required and was therefore deleted.

Task 5.1 Establish Data Bank

No action by the Joint Co-ordinating Committee is required at this time for this task.

Mr. A. C. Millunzi presented the status and activities in this task. In summary, the data bank at EPRI is being used as the central repository for all data from this program. A meeting will be at EPRI headquarters on December 14-15 between DOE (Millunzi), EPRI (Simard) and the Technical Integration Office (Kocsis) to review the operation of the storage and retrieval system to be used. A plan of action will be prepared to ensure that all data generated in this program will be stored and be easily retrievable. Reports as well as data generated by this program will be stored. The schedule and milestones for this plan of action will be submitted to the Technical Working Group by Messrs. Millunzi, Simard, and Kocsis by January 20, 1980.

Task 5.3 Archival Storage

DOE/TIO is performing a broad review of facilities and management capabilities for examinations, analyses, storage, and disposal of equipment samples and components. Results will be obtained by January 31, 1980.

It was agreed that archival storage should be in one location and the possibilities are limited to DOE laboratories INEL, ORNL, Savannah River and Hedl. The criteria will be: an area with controlled access, ability to handle radioactive components and samples in nearby hot cells, ability to physically accommodate casks up to 55 gal. D.O.T. drums, approximately 5,000 ft^2 with capability for expansion to approximately 10,000 ft^2. DOE-ID will take the lead in locating the most suitable storage area.

Task 6.1 Primary System Pressure Boundary Characterization

In accordance with commitments made at the Technical Working Group meeting of September 13, 1979, the question of technical data requirements to permit conclusions regarding the capability of key primary system pressure boundary components to fulfill their design functions was presented to EPRI's existing Pressure Vessel Study Group at their meeting of October 24, 1979. Following initial discussions at that meeting, a special subcommittee of the study group was established under the chairmanship of S. Bush to consider this question specifically. It was indicated that preliminary response was expected by mid-January 1980. It also was noted that the generic issue of continued use of a component offer experiencing C (emergency) and D (faulted) transients was discussed at the last two meetings of the ASME pressure vessel code committee, at the behest of EPRI representatives.

As the result of Technical Working Group discussions, it was agreed that consideration will be given to the TMI-2 reactor pressure vessel as well as to the RPV head, as first called for, and that request would be made of S. Bush to include a GPU representative on his special subcommittee. In addition, commitment to provide a written report of preliminary findings and recommendations by January 20, 1980, was confirmed.

Task 6.2 Mechanical Components

A written report of Mechanical Components Planning Group activities and accomplishments was presented to the Technical Working Group. This included a first draft listing of candidates for examination and brief notation as to the basis for each nomination.

As the result of Technical Working Group discussion of this topic, it was agreed that the following activities will be carried out by the MCPG in order to accomplish its assignment:

1. Finalize the list of candidate components for examination including clear identification (by tag numbers) and recommendations for testing methods and schedules, decontamination constraints, etc. This action will be completed by January 31, 1980.

2. Assign priorities to listed items.

3. Sharpen the specific justification provided for selecting the candidate components listed.

4. Describe the rationale for not including various other components (e.g., ECCS, containment spray).

5. Final list of candidate components will be submitted to the TWG by February 1, 1980.

Task 7.1 Criticality Control Study

A memo was circulated which addressed the concern over establishing a method of reactivity monitoring during TMI-2 damaged core fuel removal to assure continuous confirmation of the sub-critical state. Several alternatives were mentioned including noise analysis and pulsed neutron methods. A standby neutron poison system was mentioned as a possible back-up if needed.

A more detailed investigation of which instruments can be used, and their effectiveness, will be needed before decisions can be made on reactivity monitoring methods.

GPU clearly has the responsibility for assuring core sub-critical configuration and monitoring. GPU will review the situation discussed in the memo and communicate with NRC on the subject.

The TWG recommends that the TWG take no further action on the criticality control monitoring at this time. It is noted that there are three or four organizations currently investigating this same issue.

Task 7.2 Core Damage Assessment

The objective of the Core Assessment Planning Group is to recommend a program of inspections and measurements that can reasonably be performed at TMI-2 to characterize the undisturbed damaged core conditions.

The following is a summary of activities since the September 1979 meeting of the TWG.

- The planning group was formed consisting of members of Reactor Vendors, DOE, EPRI, NRC and various National Laboratories.
- An initial meeting was held November 19, 1979, to organize the Planning Group and summarize ideas on core inspection.
- A summary listing of potential measurements and inspections was prepared.
- An outline of the planning document was formulated and assignments were made for preparation of "draft" sections.
- ORNL agreed to take the lead in preparing a draft document on measurement/examination techniques. They will obtain input from other participants in the Planning Group.
- A draft document will be issued by January 29, 1980.

During the TWG meeting on December 10-11, 1979, the following suggestions were made:

- The Planning Group should identify any instruments or procedures that require development prior to application. These should be factored into the R&D plan to assure adequate lead time for development.
- The latest analyses of core damage should be reviewed to incorporate latest thinking on the condition of the fuel into the planning study.
- Attention should be directed at getting a view of core conditions from outside the vessel prior to head removal.

Task 7.3 Packaging, Shipment, Disposal of Fuel

The purpose of this task is (a) to study various options of technical approaches to the packaging, shipment and removal of the damaged fuel at TMI and (b) to obtain data on the preferred options by sponsoring development and demonstration of techniques and equipment not presently state of the art.

DOE (Feinroth) stated that a DOE contract has just been placed with Allied Gulf-Nuclear Services Co. to perform the initial study. Results should be available by the March 1980 required date. A review of the approach to be taken in the study is scheduled on December 17, 1979. A progress report will be made at the next meeting of the TWG.

Task 7.4 Fuel Experiment and Examination Program

No action by the Joint Co-ordinating Group is required at this time for this task.

This task is on schedule for the submission of the first draft of the program plan by the end of April 1980.

The activities of this task were described. In summary, the Planning Group is developing criteria to be used to select specimens from the TMI-2 core for this program. The members will submit to A. C. Millunzi (Planning Group Chairman) by December 18, 1979, recommendations for the examinations of TMI-2 core. The chairman will review these, compile them into a single list and submit the list to the Planning Group members in preparation for the next Group meeting to be held on or about January 20, 1980.

At present the Group will use the following guidelines for selection of specimens for examination and/or experiment:

1. Critical data. Data required: to resolve safety issues; to improve reactor design and/or operation; to modify regulatory guides or standards, etc.

2. Data not critical but of significant technical importance.

3. Data which does not meet the above requirements but is technically interesting.