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Congress of the United States
House of Representatives
Washington, D.C. 20515

September 25, 1979

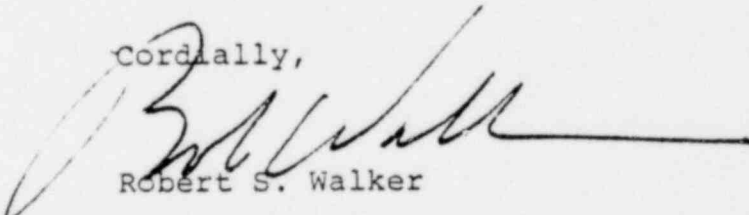
Honorable Joseph Hendrie
Chairman
Nuclear Regulatory Commission
1717 H Street, N.W.
Washington, D.C. 20555

Dear Chairman Hendrie:

Enclosed please find the comments prepared by two geologists from Franklin and Marshall College in Lancaster, Pennsylvania concerning your staff's Environmental Assessment of the Use of Epicor II at Three Mile Island, Unit II.

It is my view that their comments deserve your attention and consideration. I will be looking forward to receiving your reply.

Cordially,



Robert S. Walker

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DEPARTMENT of GEOLOGY

September 14, 1979

Secretary of the Commission
Nuclear Regulatory Commission
Washington, D. C. 20555

Attn: Docketing and Service Branch

Dear Commissioner:

Enclosed are our comments on your staff's report entitled Environmental Assessment: Use of Epicor-II at Three Mile Island, Unit II. As scientists familiar with environmental assessments, we are appalled at the lack of precise data, the limitations of scope, and the overall poor quality of the scientific analysis presented by your staff. We doubt that representatives of private industry would ever consider submitting to a regulatory agency such a vague and poorly-documented assessment of a proposed action involving dangerous materials. If they tried, their assessment would be summarily rejected. It is indeed lamentable that, although the assessment was prepared by a federal regulatory agency, it does little to protect and reassure a skeptical and frightened public. In addition, the preparation of this report was a waste of the taxpayer's money.

We urge you to take a few minutes to read these comments carefully. They provide some insight into the poor quality of regulatory efforts of the NRC.

Yours truly,

Arthur H. Barabas

Arthur H. Barabas, Ph.D.
Assistant Professor of Geology
Coordinator of Environmental Studies Program

Steven Sylvester

Steven Sylvester, M.Sc.
Specialist in Geology

cc:

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Hon. Allen E. Ertel
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DEPARTMENT of GEOLOGY

The Environmental Assessment entitled Use of Epicor-II at Three Mile Island, prepared by the staff of the Nuclear Regulatory Commission, is a seriously flawed and incomplete study. The NRC staff's recommendations supporting the use of the Epicor-II system are unwarranted in light of the following significant shortcomings of the published study:

1. The scope of the present assessment is too limited to allow the proper evaluation of the particular cleanup step involving Epicor-II in the larger context of the entire cleanup operation at TMI.
2. The lack of sufficient detail in the description of the Epicor-II cleanup stage prevents a critical analysis of this step and does not support the broad conclusions drawn by the NRC staff.
3. Detailed evaluation reveals ambiguities in the data on occupational radiation exposure levels cited in the assessment. Thus, the estimates of 1-5 man-rem's of exposure from the use of Epicor-II are suspect. The study neglects to consider other aspects of worker safety.
4. The evaluation of alternatives to the use of Epicor-II is perfunctory and appears to be based more on the expediency of justifying an already constructed system than on considerations of possible impacts on the public health.
5. Procedurally, the NRC staff exceeded and compromised the NRC's regulatory authority by providing design guidance for the Epicor-II system before completing an environmental assessment of this system and possible alternatives to it.

Based on the detailed discussion which follows, we recommend that the NRC Commissioners reject their staff's assessment. A broader, more detailed study should be initiated immediately. Since the NRC staff provided significant assistance in the design and construction of the Epicor-II cleanup system (page 3, section 2.0), the new assessment should be done by a group or agency independent of the NRC.

Detailed Discussion of Principal Shortcomings of the Present Environmental Assessment

1. Limited Scope of the Present Environmental Assessment

The assessment estimates dangers and exposure levels to the public based only on the use of Epicor-II to clean a small fraction of the radioactive water at TMI. Since the biological effects of radiation are cumulative, the public health will be affected by all radiation emissions resulting from the complete cleanup of TMI. In order to evaluate the advisability of using Epicor-II, data on resultant exposure levels from other cleanup activities are first needed. In addition, Epicor-II and its alternatives should be compared in the context of total exposures resulting from complete cleanup of TMI. Until assessments covering each phase of the cleanup (up to and including removal of TMI's fuel rods) are completed and published, it will not be possible to evaluate the impact Epicor-II's use will have on the public.

2. Lack of Sufficient Detailed Information

While the assessment does provide estimates of off-site exposure levels resulting from the use of Epicor-II, no data or explanations are provided on how these estimates were made. The assessment does provide an explanation of how on-site exposure levels were calculated, but detailed inspection of these estimates reveals serious ambiguities (see section 3 of this report).

The assessment leaves unanswered a number of critical questions about the use of Epicor II and the ultimate disposition of the 2500 cubic feet of Epicor-II generated radioactive waste. It is not clear whether Epicor-II will be used to process water other than that in the auxiliary building. The construction of more on-site waste storage modules than required for the liners suggests that additional treatment of contaminated water, beyond the 280,000 gallons of intermediate-level radioactive waste water described in the assessment, is being considered by Met. Ed. or by the NRC. If additional treatment is projected, the added radiation to which the public and plant workers will be subjected should be clearly described. Although the exposure levels expected during the operation of Epicor-II are discussed, the assessment does not consider whether the Epicor-II system's components will become radioactive as a result of its proposed use. Plans for dismantling and disposing of the contaminated system are not included in the assessment.

The impact of the proposed storage and burial at TMI of the 2500 cubic feet of radioactive waste generated by Epicor-II is only incompletely assessed.

Description of the interim storage facility (5.2.1), which will house the radioactive waste, does not include estimates of seismic integrity, details of the structural strength of the corrugated metal walls, calculations of the effects of freezing and thawing, and an estimate of the possibility of flooding by groundwater infiltration. Most significantly, the assessment does not provide an estimate of the time span over which the integrity of the interim storage facility is assumed. The assessment states that a well will be drilled near the interim storage facility "to assure that no activity migrates from the liners to the groundwater" (p. 19). If radioactive contamination is detected in this well, we doubt that the well could assure that migration of radioactive material had not or would not occur. In fact, the presence of a well might even accelerate such migration.

Description of the concrete storage facility, which will provide longer term storage of the same wastes, suffers from the same deficiencies as does the interim storage facility (except for freeze-thaw considerations). The assessment provides no estimate of how long radioactive wastes will be stored at TMI.

The concrete storage facility is described (5.2.2) as consisting of modules of 60 storage cells each capable of housing one large or two small resin storage liners. Epicor-II is anticipated to generate 50 liners. To satisfy storage requirements for Epicor-II waste only one module is needed. Section 5.2.2 indicates space is available to build 6 modules for storage of radioactive wastes. Before the assessment is accepted, it should be clearly stated what will be stored in these other modules and the resultant exposure levels to plant personnel and the public should be determined.

Section 5.2.2 discusses final disposal of the radioactive wastes and indicates that off-site shipment will occur as "licensed shipping casks become available." Since on-site storage will result in release of radiation (5.2.2) the assessment should first determine if licensed shipping casks are available, as well as when and at what rate transport to a licensed burial ground is to take place. The assessment does not consider the alternative of demineralizing the radioactive water at a rate commensurate with the availability of licensed casks, thus eliminating unnecessary on-site storage and associated radioactive releases.

3. Occupational Radiation Exposure Levels and Other Aspects of Worker Safety

The assessment's occupational dose estimate of 1 to 5 man-rem as a result of using Epicor-II cannot be verified using the data presented in the assessment. Workers will have to change Epicor-II's prefilter/demineralizer and two demineralizers (one cation bed and one mixed bed demineralizer) in radiation fields of 100 millirem/hr, 40 millirem/hr, and 20 rem/hr, respectively (section 4.0). Each change is estimated to take 30 seconds. Ambiguities in the assessment leave unclear how many changes personnel will have to perform. Section 4.0 states "We estimate that there will be approximately 50 changes of prefilter/demineralizers and demineralizers." Left unanswered is whether there will be 50 changes of each of 3 units or a total of 50 changes for all 3 units. In the case of the former, the resultant occupational exposure would be 8.39 man-rem, well above the 1-5 man-rem estimate for Epicor-II use. In the latter case it is impossible to calculate the exposure level since the number of changes of

each type of filter is not specified in the assessment. Since the exposure incurred during the change of each type of filter will vary considerably, the total exposure cannot be calculated with the limited information given. These ambiguities prevent verification of the estimated worker exposure levels cited in the report.

Several scenarios of possible accidents that could occur while Epicor-II is in use are described in sections 3.4 and 5.2.1. They include pipeline rupture causing radioactive water to leak into the building housing Epicor-II and dropping radioactive resin casks while moving them around the plant site. For each scenario exposure levels are estimated only for people outside the plant. No estimates of exposure levels are provided for on-site workers. Estimates of the time needed to clean up spilled radioactive material, contingency plans for cleanups and evacuation plans for workers in the immediate area are lacking.

4. Weaknesses and Flaws in the Evaluation of Alternatives to the Proposed Use of Epicor-II

While section 6.0 considers transporting the radioactive water in the auxiliary building to another site as an alternative to using Epicor-II, burial of the liquid is the only final disposal scheme which is discussed. This possibility is rejected because there are no burial grounds that accept liquid radioactive waste. Transporting the radioactive liquid to an existing Epicor system for decontamination is not considered. R. Vollmer, head, NRC Support Group at TMI, has publicly stated other Epicor systems do exist. The advantages of this alternative include reducing the cumulative public and worker exposure levels as a result of the total clean up of TMI, transporting less concentrated radioactive material, and possibly performing the demineralization in a less densely populated area. If existing Epicor systems are unable or unwilling to treat TMI's waste, an Epicor system should be constructed in a remote, sparsely populated area rather than at a plant undergoing concomitant decontamination and radioactive releases.

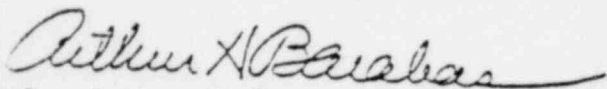
Contrary to section 2.0 which states that "use of Epicor-II (at TMI) does not preclude implementation of the various disposal alternatives," its use would preclude demineralization at an Epicor site remote from TMI.

The assessment deals with three alternatives for processing radioactive water on-site (section 6.0): using existing radwaste systems at the plant, Epicor-II, and removal by evaporation and condensation. The assessment only provides estimates of resulting exposure levels to the public and plant workers for the use of Epicor-II. The first and third alternatives are dismissed for reasons of expediency without considering if these alternatives would result in lower exposure levels.

5. Procedural Shortcomings of the Assessment

Section 2.0 of the assessment states "the NRC staff has provided design guidance and criteria for the Epicor-II processing system, the building housing the system, the building's exhaust filtration system and the process vessel vent system". This participation by NRC staff in the design stage of the system exceeds and compromises the regulatory authority of the NRC since the same staff was called upon later to prepare an environmental assessment.

Based on the above information and our experience as geologists familiar with environmental assessments, we believe that the NRC's Environmental Assessment does not provide an adequate evaluation of the proposed action. Done in a prefatory manner, the assessment lacks sufficient scope and detail to provide assurances that the public and worker well-being would not be endangered. A broad, detailed study of the entire cleanup of TMI should be initiated immediately. To insure rigorous, independent and scientifically sound results, the new study should be done as an Environmental Impact Statement by an agency or group independent of the NRC.



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