

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

NRC PUBLIC DOCUMENT ROOM

COMMISSIONERS:

Joseph M. Hendrie, Chairman  
Victor Gilinsky  
Richard T. Kennedy  
Peter A. Bradford  
John F. Ahearne



In the Matter of  
METROPOLITAN EDISON COMPANY, et al.  
(Three Mile Island Nuclear Station,  
Unit 2)

Docket No. 50-320

MEMORANDUM AND ORDER

Because of the March 28, 1979 accident at the Three Mile Island Unit 2 nuclear power plant (TMI-2), substantial amounts of radioactively contaminated waste water have been collected in tanks at the facility. As the initial step in a program to deal with this accumulation, the Commission's technical staff has recommended that Metropolitan Edison Company, the licensee for Three Mile Island, be permitted to operate an EPICOR-II filtration and ion exchange decontamination system to decontaminate intermediate-level radioactive waste water now held in tanks in the TMI-2 auxiliary and fuel handling building. This recommendation is accompanied by the staff's environmental assessment of the impact of using EPICOR-II and an analysis of comments on the assessment by the public. The staff has concluded, based on this assessment and analysis, that the proposed use of EPICOR-II will not significantly affect the environment and therefore that no environmental impact statement need be prepared prior to authorizing the licensee to operate EPICOR-II. The Commission is now called upon to decide whether the

G 7911060 075

requirements of the National Environmental Policy Act (NEPA) have been met with regard to the proposed use of EPICOR-II and, if so, whether the licensee should be directed to operate the system.<sup>1/</sup>

#### BACKGROUND

There are three major volumes of radioactively contaminated waste water accumulated at Three Mile Island Unit 2 (TMI-2) as a result of the accident in March 28, 1979. These include approximately 530,000 gallons contained in the lower levels of the reactor containment building, 85,000 gallons in the reactor coolant system in use to remove decay heat from the reactor core, and about 387,000 gallons stored in tanks in the auxiliary building. The waste water stored in the auxiliary building has a total radioactivity concentration less than 40 microcuries/milliliter and is referred to as intermediate-level waste water. The radioactivity concentrations of waste water in the reactor building and in the primary coolant systems have been measured at greater than 100  $\mu\text{Ci/ml}$  for some isotopes. This waste water is referred to as high-level waste water.

Principally because of leakage from the primary reactor coolant system, the volume of water in the reactor containment building is increasing in volume by about 430 gallons per day, equivalent to a level increase of about 2 inches per month. The present height is about 7-1/2 feet above the basement floor in the containment building. Since no paths of leakage to the outside have been identified, decontamination of this water is not at present an urgent problem. The situation is different with respect to the intermediate-level waste water now

---

<sup>1/</sup> This decision does not address the subject of disposal of the decontaminated water. Pursuant to the Commission's Statement of May 25, 1979, discharge of TMI waste water is not permitted, with certain exceptions set out in the Statement, pending completion of an environmental assessment dealing with such discharges.

stored in the auxiliary building. The inventory of this water is increasing at the rate of about 800-1000 gallons per day.<sup>2/</sup> Remaining capacity in the auxiliary building tanks as of the end of September 1979 was about 29,000 gallons. Thus there is a pressing need to deal with the intermediate-level waste water. In addition to the problem of inadequate storage capacity, the retention of contaminated water in the auxiliary building contributes to the occupational exposure of workers at the TMI site. The continued safe shutdown of TMI-2 depends upon the use of equipment located in the auxiliary building. Approximately 50 workers per day are currently admitted to the auxiliary building to perform necessary decontamination, operations, and construction activities. Occupational exposure to these workers as a group, primarily as a result of radiation from the stored water, averages about 15 man-rem per month.

The licensee has developed a procedure to decontaminate the intermediate-level waste water using the EPICOR-II filtration and ion exchange system constructed at TMI-2 following the March 28, 1979 accident. Decontamination would be an effective response to the problems identified above, since the processed water would not be a source of significant occupational exposure and could be readily stored in unshielded tanks outside the auxiliary building. Successful operation of EPICOR-II will serve to transfer the significant radioactive contaminants from a mobile form (suspension in water) to a fixed form (held in filter and ion exchange resin materials).

In a Statement dated May 25, 1979 the Commission directed its technical staff, pursuant to NEPA, to prepare an environmental assessment of the use of

---

<sup>2/</sup> The dominant source of this increase is leakage from the component evaporative cooling system, the demineralized water system, and the reactor building cooling system, and from recirculation of water in the tanks prior to sampling. Most of this leakage is non-contaminated water which becomes contaminated while passing through auxiliary building floor drains and sumps provided to collect the leakage.

EPICOR-II. Pursuant to this Statement, the licensee was not permitted to operate EPICOR-II pending completion of the assessment and opportunity for public comment, except for testing with uncontaminated water. The staff's assessment, "Use of EPICOR-II at Three Mile Island, Unit 2," NUREG-0591, was issued for public comment on August 20, 1979. See 44 Fed. Reg. 48829. The assessment concluded that the proposed use of EPICOR-II would not significantly affect the quality of the environment and that accordingly NEPA does not require preparation of an impact statement prior to permitting EPICOR-II to operate.

Some 40 comments were received. In written analyses of the comments and oral discussion at open Commission meetings on October 4 and October 10, 1979, the staff responded to these comments and reaffirmed its conclusion that the environmental effects of operating EPICOR-II as proposed would be insignificant. See revised NUREG-0591, dated October 3, 1979. The public comments, the documents submitted to the Commission by the staff, and transcripts of the October 4 and October 10, 1979 meetings are included in the administrative record and form the basis for the Commission's decision on this matter.<sup>3/</sup>

#### IMPACT OF EPICOR-II

Based on Commission review of the facts and analysis in the staff's environmental assessment and written and oral discussion of the comments, the Commission has determined that the proposed operation of EPICOR-II will not have a significant effect on the environment. Pursuant to 10 CFR 51.7 and 51.50(d) the staff is directed to issue a negative declaration stating that an environmental impact statement for the proposed action will not be prepared.

---

<sup>3/</sup> With respect to the transcripts of the October 4 and October 10, 1979 meetings, the Commission has waived its usual rule that statements at an open meeting are not part of the record of decision of the matters discussed therein. 10 CFR 9.103.

In reaching this conclusion the Commission has taken note of comments which argue that the Commission has violated NEPA by considering the impact of EPICOR-II separately and apart from the overall impact of a complete program for decontamination of TMI-2. The Commission does not believe this "illegal segmentation" argument is well-founded in this case. In meeting NEPA requirements an agency may focus on the impact of a single action, even when it is arguably a segment of a larger program, when the action in question has independent utility. See e.g., Lookout Alliance v. Volpe, 484 F.2d 11 (8th Cir. 1973); Friends of the Earth v. Coleman, 513 F.2d 295 (9th Cir. 1975). The Commission finds that use of EPICOR-II meets this test.<sup>4/</sup>

The independent utility of EPICOR-II is emphasized by the fact that decontamination of the intermediate-level water appears by a considerable margin to be the best available response to the impending accumulation of intermediate-level waste water in excess of adequately shielded storage capacity. The alternative to decontamination would be to find additional storage facilities, but problems with this alternative are severe. Construction of new tanks with the necessary shielding would require several months, at least, and could not be accomplished

---

<sup>4/</sup> In this regard, by letter of October 10, 1979, the Council on Environmental Quality asked to meet with the Commission to discuss its concerns about prospective radioactive cleanup operations at the Three Mile Island Unit 2 reactor. Our respective General Counsels and members of their staffs met on October 11 to discuss these matters. In an exchange of letters with the Commission dated October 15 and October 16 and based on the assurances made in the NRC letter, the Council found that the prompt decontamination of the intermediate-level waste water through the EPICOR-II system is an operation necessary to control the immediate impacts of an emergency situation (40 CFR § 1506.11). In so doing, however, the Council did not reach those questions concerning the legality of the Commission's actions thus far under NEPA. These letters are part of the administrative record on which the Commission has reached its decision.



before the auxiliary building tankage capacity is exceeded. Other than decontamination, there are at present only two timely alternatives available to provide suitably shielded storage space for the intermediate-level waste water, once the auxiliary building tanks are filled. One alternative would be to transfer the water to tanks at Unit 1. This action would significantly raise the contamination level of piping and tankage in Unit 1 and extend the scope of the problem of occupational exposure. The other, even less desirable, alternative would be to transfer the intermediate-level water to the TMI-2 reactor building, mixing it with the higher-radiation-level water presently in the containment, raising the height of that water and in effect increasing by almost 50% the amount of water which must subsequently be decontaminated by systems yet to be developed to handle high-level waste water. Both of these alternatives in effect would enlarge rather than reduce the spread of radioactive contamination and would involve potentially significant safety questions and environmental impacts.

The Commission has thus concluded that prompt decontamination of the intermediate-level water by EPICOR-II is the best response to the situation. The use of this system will immobilize most of the radioactivity presently dispersed in the intermediate-level water, which requires large storage volumes and involves at least some possibility of leakage, by transferring this radioactivity to the compact, more easily stored EPICOR-II resins, thereby reducing the potential hazard to workers and the public of an excessive accumulation of intermediate-level waste water. Decontaminated water which has been cycled through EPICOR-II can be readily stored in conventional, unshielded tanks while disposal options are considered without any pressing time constraint. These benefits of EPICOR-II operation, together with the reduction of occupational exposure to workers in the

auxiliary building, establish the independent utility of the system,<sup>5/</sup> thereby confirming that pursuant to NEPA environmental aspects of EPICOR-II may be evaluated separately from an overall programmatic analysis of cleanup at TMI-2.<sup>6/</sup>

Another objection to the scope of the environmental assessment made in some of the comments is that the environmental assessment did not consider psychological impacts. Without deciding whether NEPA requires the consideration of such impacts, the Commission notes that use of EPICOR-II would provide no objective reason for concern and there is no indication in the comments received that the prospect of EPICOR-II operation, as distinct from release of water, has in fact occasioned public alarm or fear. Several of the commenters did indicate great concern with regard to possible discharge of processed waste water into the Susquehanna, but such disposal activities are separate from EPICOR-II operation and lie outside the scope of the assessment. The Commission stresses again that decontamination by EPICOR-II will not of itself result in any waste water discharges, and the question whether discharges should later be approved is in no way prejudged by permitting use of EPICOR-II.

---

<sup>5/</sup> Another criterion for permitting segmentation is that the proposed action will not foreclose subsequent alternatives. Decontamination of the water in the auxiliary building will not foreclose any alternatives with regard to subsequent processing or disposal options. Rather, such decontamination may reasonably be viewed as a prerequisite to a variety of alternative actions which may subsequently prove necessary and desirable in cleaning up TMI-2.

<sup>6/</sup> Whether a programmatic impact statement for the overall cleanup of TMI-2 may eventually be required is an issue the Commission need not address at the moment. It seems clear that no such statement is required at present because TMI-2 cleanup is a project in contemplation and is not yet a formal agency proposal. The Supreme Court has stated that an agency need not have a final impact statement ready until "the time at which it makes a recommendation or report on a proposal for federal action." Kleppe v. Sierra Club, 427 U.S. 390, 406 (1976) (emphasis in the original).

With regard to the many technical issues concerning EPICOR-II that were raised by the substantive comments, the Commission, as previously noted, has found the staff's responses adequate. Many of the doubts about EPICOR-II expressed by commenters were not relevant to the question at issue in the environmental assessment, which is whether operating EPICOR-II will have a significant environmental impact. Some comments, for example, questioned whether EPICOR-II will in fact achieve the decontamination levels expected by the staff. In the Commission's judgment, we expect that EPICOR-II will be able to remove at least 99% of the radioactive contamination from the intermediate-level waste water the system will process. But that aside, the details of the system's performance do not bear on the conclusion that EPICOR-II does not require an environmental impact statement to justify its use. For NEPA purposes, once it is determined that the proposed action will have no significant impact, no impact statement is required. As noted, the Commission believes the staff's performance expectations for EPICOR-II are reasonable, but even if these expectations are not met, additional decontamination by recycling through EPICOR-II or, if necessary, by other methods would in no way be foreclosed.<sup>7/</sup>

One aspect of the proposed EPICOR-II operation requires further attention here. It is the Commission's view that solidification of the EPICOR-II radioactive waste products (filter and ion-exchange resin materials) prior to offsite

<sup>7/</sup> An alternative decontamination technology frequently mentioned in the comments is the evaporation method. Because an evaporation system is not presently available for use at TMI-2, this technology is not a realistic alternative in the present situation, in view of the need for prompt action. The Commission notes that the evaporator method has significant drawbacks, notably the fact that the highly radioactive sludge remaining after evaporation is in liquid form and may well be more difficult to dispose of than the resins and filters of the EPICOR-II system.



shipment will contribute to improved safety during transportation and to the ease of final disposal. Accordingly, the Commission concludes that the licensee should be directed to construct expeditiously the necessary facilities for solidification and to store EPICOR-II wastes at TMI-2 until the resins have been properly solidified.<sup>8/</sup> There should be no shipment of non-solidified wastes offsite unless necessary to allow waste water decontamination to continue or unless otherwise required to protect public health and safety.

---

<sup>8/</sup> A staff memorandum to the Commission, dated October 12, 1979 included in the record of this proceeding, indicates that unavoidable occupational exposure associated with the solidification process can be kept to acceptable levels. Although no specific facility designs have been developed for the solidification operation at TMI-2, the staff reviewed three topical reports on systems of this type which show that routine maintenance and operation activities are expected to result in an occupational dose of less than 10 man-rem per year. Solidification of resins from EPICOR-II, which has not been specifically designed to accommodate solidification, will likely involve design features not previously analyzed by the staff. Further, resins from EPICOR-II will be more radioactive than the average from an operating plant. However, the staff judgment was that solidification of EPICOR-II resins developed from decontamination of the auxiliary building water would result in occupational exposure levels similar to those of systems previously reviewed if no unusual problems were encountered, and that a best estimate upperbound for the operation would be 25 man-rem.

## ATOMIC ENERGY ACT REQUIREMENTS

We now move to the question whether the Atomic Energy Act authorizes the Commission to direct prompt operation of EPICOR-II.<sup>9/</sup> For the reasons stated below, we conclude that it does.

Our earlier discussion about the accumulation of contaminated water at TMI Unit 2 indicates that public health and safety requires that some action be taken to deal with the intermediate-level waste water, and that the timely alternatives to EPICOR-II operation all present health and safety problems. Although no action which involves the handling of radioactive materials can be found

---

<sup>9/</sup> One of the commenters has argued that construction of EPICOR-II without a construction permit violated the Atomic Energy Act. We do not think that construction of EPICOR-II, a minor commitment of resources in a \$1 billion facility and unrelated to operation of the reactor itself, is a material alteration of a utilization facility within the meaning of our regulations and therefore requiring a construction permit. 10 CFR 50.91. See, Portland General Electric Co. (Trojan Nuclear Plant), LBP-77-70, 6 NRC 1179, 1182 (1977). Beyond this, the NRC staff has monitored the design and construction of EPICOR-II from the beginning, so that there are no serious questions about whether the facility is flawed in some manner that might have been detected if a formal permit proceeding had been held.

inherently free of all risk, the evaluation of EPICOR-II indicates that no significant health and safety (or environmental) impact will likely result from the proposed operation. We are thus confronted with a situation where some action must be taken to reduce health and safety risks, and an appropriate action to reduce those risks has been identified that itself entails no significant health and safety hazards. Under sections 161b. and i. of the Atomic Energy Act the Commission is empowered to issue such orders affecting activities of licensees as it deems necessary or desirable to protect health and to minimize danger to life or property. Further, every facility license, including the operating license for TMI-2, is expressly subject to further Commission orders. 10 CFR § 50.54(h). An order to the licensee here to promptly begin the process of decontaminating the intermediate-level waste water by operating EPICOR-II would be entirely consistent with the purpose of the Act and regulations.

Some of the public commenters have argued in litigation that the Commission cannot take such action without first holding an adjudicatory hearing under Section 189a. of the Atomic Energy Act to amend the TMI Unit 2 operating license. We find section 189a. inapplicable to the type of order contemplated here. Section 189a. is quite careful in specifying the types of proceedings to which it applies, even going so far as to cite to specific sections of the Act. A proceeding for a Commission order under sections 161b. and i. is not one of the proceedings listed in section 189a. Thus, the plain language of the statute supports the Commission's exercise of authority here. Of course it is possible to argue here that the order alters the licensee's obligation to the Commission, as such has the effect of amending the license, and consequently that a Section

189a. proceeding for such an amendment should be held. We think, however, that the entire thrust of the Atomic Energy Act indicates that Congress intended the Commission to be able to act with dispatch when in its judgment the public health and safety calls for prompt action. Even if for purposes of argument it is assumed that the order constitutes a form of license amendment, the result would be a conflict between the authorization to issue immediate orders necessary to protect health and safety in sections 161b. and i. and the hearing requirement in section 189a. We have no difficulty resolving that conflict in favor of protection of the public health and safety especially where, as here, there has already been a fair opportunity for public participation in the form of written comments.

While we conclude that an order for operation of EPICOR-II is not subject to section 189a. of the Act, the licensee itself has due process hearing rights under the Constitution quite apart from section 189a. The law is clear that, given the public health and safety need for prompt EPICOR-II operation, any due process hearing rights can be satisfied by an offer of a prompt hearing after the order for EPICOR-II operation becomes effective. E.g., Ewing v. Mytinger & Casselberry, 339 U.S. 594 (1950); Bowles v. Willingbaum, 321 U.S. 503 (1944). And, given that the licensee is free to request a hearing for purposes of challenging the order, we believe that sound administrative policy in these circumstances dictates that other interested persons be given a similar right. Accordingly, we provide below that the licensee and any other person whose interest may be affected may request a hearing with a view toward lifting or modifying the order, but that the order shall remain effective pending decision in any hearing that may be requested.

One final matter warrants our attention. Operation of EPICOR-II will add several effluent discharge paths to those presently listed in the TMI-2 operating license. As discussed in the staff's environmental evaluation, radionuclide discharges through these additional paths will have no significant impact on the environment. Further, the Commission's regulations in 10 CFR Part 50, Appendix A, Criterion (GDC 64), require that the new discharge paths be monitored. It has been the staff's practice in developing operating license technical specifications to include in the specifications a listing of discharge paths that require monitoring under GDC 64.

It is not necessary to amend the technical specifications to assure that monitoring will be conducted, given the clear requirement of GDC 64 and the provision of 10 CFR § 50.54(h) that all facility licenses are conditioned on compliance with all applicable Commission regulations. Nevertheless, we believe that the Commission's inspection and enforcement program will be simplified if the requirements for discharge path monitoring are spelled out in a single legal document -- the operating license -- that can be readily referenced by the licensee and Commission inspectors. For the same reason there is merit in including in the operating license the obligation to operate EPICOR-II and the conditions associated with solidification and shipment of the spent resins. Accordingly, we are proposing to amend the TMI-2 operating license to include these provisions. In light of our disposition in this regard, and the reasons already discussed as to our authority under Section 161 of the Atomic Energy Act, we need not and do not reach the question whether such a license amendment is required here.

Under section 189 of the Act, the licensee and other interested persons may request a hearing on this proposed amendment. Given the similarity of



issues, hearings requested on this proposed amendment and on the order for EPICOR-II operation will be consolidated.

#### ORDER

For the reasons stated above, the Commission orders as follows:

1. The licensee shall promptly begin the process of decontaminating the intermediate-level waste water from TMI-2 by operating EPICOR-II. Prior to operation, the licensee shall consult the Director of NRR for approval of the final operating procedures and design and construction details. In order to reduce the inherent risk from the contaminated water most expeditiously and prudently, the licensee should to the extent possible process all the water once through the EPICOR-II system.
2. The licensee shall maintain suitable tankage at TMI-1 that could be used to store waste water from TMI-2 at an appropriate state of readiness, should additional storage capacity become necessary.
3. The licensee shall not ship spent resins offsite unless they have been solidified, and only then with the prior approval of the Director of NRR, provided however, that the licensee may ship non-solidified but dewatered spent resins offsite if it determines, and the Director of NRR concurs, that such shipment is required to assure continued operation of EPICOR-II or otherwise required to protect public health and safety. The licensee shall expeditiously construct a facility for solidification of the spent resins and shall use such facilities for resin solidification upon receiving the Director of NRR's concurrence with the design and operating procedures.

4. This Order, except as provided by the Commission's Statement of May 25, 1979, does not authorize discharge into the environment of any of the processed or unprocessed waste water, or processing of any waste water other than the intermediate-level waste water. In carrying out the actions directed by paragraphs 1, 2, and 3 of this Order the licensee shall be subject to all applicable Commission regulations.

5. The Director of NRR has been instructed promptly to prepare and issue an order for the modification of the TMI-2 operating license to (a) add EPICOR-II discharge paths to those presently listed in the technical specifications as requiring monitoring under GDC 64, and (b) include the provisions of paragraphs 1, 2, and 3 of this Order. The order shall state that within 20 days of the date of this Order the licensee and any other person whose interest may be affected may request a hearing on the proposed amendment pursuant to 10 CFR § 2.714 to be held prior to the amendment of the license, i.e., not prior to operation of EPICOR-II but rather prior to the adoption of the formal amendment.

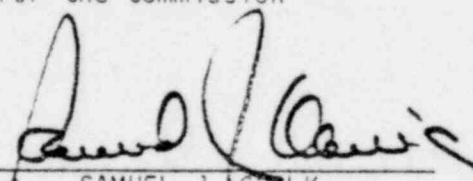
6. Within 20 days from today, the licensee may file an answer to paragraphs 1, 2, and 3 of this Order, and the licensee and any other person whose interest may be affected may request a hearing pursuant to 10 CFR § 2.714 for the purpose of challenging all or any part of paragraphs 1, 2, and 3 of this Order. In any hearing that may be requested, the issues will be those within the scope of whether (a) paragraphs 1, 2, and 3 of this Order are necessary and sufficient to protect health and safety or to minimize danger to life or property, and (b) actions directed under paragraphs 1, 2, and 3 would significantly affect the quality of the human environment. Any hearing that may be requested shall be consolidated with any hearing that may be requested pursuant to the order to be published under paragraph 5. The Commission finds that the public health,

safety, and interest require that this Order become effective immediately and shall remain effective notwithstanding the filing of any requests for a hearing.

7. An Atomic Safety and Licensing Board, consisting of Marshall Miller, Chairman, and Dr. Richard F. Cole and Dr. Martin J. Steindler, is hereby appointed to rule on any requests for a hearing under paragraph 6, or any requests for a hearing that may be filed in response to the order to be published under paragraph 5, and to preside over any hearing that may be held upon those requests. In conducting any such hearing the Board shall bear in mind that the process of operating EPICOR-II to decontaminate the intermediate-level waste water may take as little as two months. Accordingly, the hearing shall be conducted as expeditiously as possible, and the Board is authorized to immediately stay the effectiveness of all or part of paragraphs 1, 2, and 3 of this Order should it determine, based upon affidavits or such other summary stay procedures it deems appropriate, that this is required in order to protect public health and safety.

It is so ORDERED.

For the Commission

  
SAMUEL J. CHILK  
Secretary of the Commission

Dated at Washington, DC,  
this 16<sup>th</sup> day of October, 1979.