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COMMONWEALTH of VIRGINIA

Council on the Environment

J B JACKSON JR
ADMINISTRATOR

903 NINTH STREET OFFICE BUILDING
RICHMOND 23219
804 786 4500

October 1, 1980

Dr. Bernard J. Snyder
Program Director, Three Mile
Island Program Office
Office of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Dear Dr. Snyder:

The Commonwealth of Virginia has completed its review of the Draft Environmental Impact Statement (Programmatic) related to decontamination and disposal of radioactive wastes resulting from the Three Mile Island accident on March 28, 1979. The Council on the Environment is responsible for coordinating the state's review of environmental impact statements and responding to appropriate federal officials on behalf of the Commonwealth. The following agencies took part in the review of this document:

Department of Health
Marine Resources Commission
State Air Pollution Control Board
State Office of Emergency and Energy Services
State Water Control Board
Virginia Institute of Marine Science.

The Commonwealth anticipates that the decontamination and disposal activities for Three Mile Island will have no adverse effects upon Virginia's resources, provided the specifications in the Programmatic Draft Environmental Impact Statement are followed and the processed water is not disposed of by release into the Susquehanna River.

The release of processed water into the Susquehanna River would, if pursued, pose some questions that merit further discussion. The Virginia Institute of Marine Science has addressed some of the questions in the attached comments; the Commonwealth will want additional review of the matter if this alternative is chosen. Similarly, the Commonwealth reserves the right of further comment if the preferred transportation route for

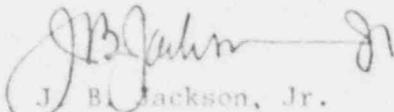
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Dr. Bernard J. Snyder
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low-level wates goes through Virginia to South Carolina (pages 3-28, 3-32) instead of north and west to Hanford, Washington as is now contemplated.

Thank you for the opportunity to review this document.

Sincerely,



J. B. Jackson, Jr.

JBjr:CHE:pw

CC: The Honorable Maurice B. Rowe, Secretary of Commerce and Resources
Dr. Paul L. Zubkoff, Virginia Institute of Marine Resources
Mr. Raymond E. Bowles, State Water Control Board
Mr. A. C. McNeer, Department of Health



COMMONWEALTH of VIRGINIA

STATE WATER CONTROL BOARD
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R. V. Davis
Executive Secretary

Post Office Box 11143
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September 24, 1980

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Mr. Charles H. Ellis, III
Environmental Impact Statement Coordinator
Governor's Council on the Environment
903 Ninth Street Office Building
Richmond, Virginia 23219

Dear Charlie:

RE: DEIS-Three-Mile Island Nuclear Waste Decontamination and Disposal

We have no comment regarding the above-referenced document; however, we reserve the right to comment later should discharge to the Susquehanna River become the chosen alternative for disposal of "processed water."

Thank you for the opportunity to review this document.

Very truly yours,

Raymond E. Bowles, P.E.
Director
Bureau of Surveillance
and Field Studies

:scc

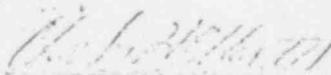
cc: EIS File

8. REVIEW INSTRUCTIONS:

- A) Please review the document carefully. If the proposal has been reviewed earlier (e.g., if the current document is a FINAL EIS), please consider previous comments.
- B) Prepare your agency's comments in a form which would be acceptable for responding directly to a project sponsoring agency.
- C) Use the space below for your comments. If additional space is needed, please attach extra sheets.

Return your comments to:

Charles H. Ellis III
Environmental Impact Statement Coordinator
Council on the Environment
903 Ninth Street Office Building
Richmond, Virginia 23219


CHARLES H. ELLIS III

ENVIRONMENTAL IMPACT STATEMENT COORDINATOR

COMMENTS

A careful review of NUREG-0683 leads us to believe that there should be no problem for Virginia from the TMI decontamination and disposal activities as stated in the EIS providing the specifications found in the document are used. Therefore, we find no basis for objection to the project proceeding as expeditiously and prudently as possible.



(SIGNED)

A. C. McNeel

(TITLE)

Public Health Officer, Bureau of Public Health

(AGENCY)

Virginia State Department of Health



CHARTERED 1693

COLLEGE OF WILLIAM AND MARY
VIRGINIA INSTITUTE OF MARINE SCIENCE
SCHOOL OF MARINE SCIENCE



Gloucester Point, Virginia 23062

Department of Environmental Physiology
September 30, 1980

Phone (804) 642-2111

Mr. Charles H. Ellis, III
Environmental Impact Statement Coordinator
Council on the Environment
903 Ninth Street Office Building
Richmond, Virginia 23219

Dear Mr. Ellis:

Enclosed are the comments of the Virginia Institute of Marine Science on the Draft Programmatic EIS related to clean-up of TMI-2 (NUREG-0683). Since speaking to you on the telephone, we have reinterpreted Figure 3.1-5 to indicate that the intakes to TMI-1 and TMI-2 are on the Center Channel and the combined 2 unit discharge is into the Center Channel. The comments of the enclosed text take this reconsideration into account.

If I may be of further assistance, please feel free to call upon me.

Sincerely,

Paul L. Zubkoff, Ph.D.
Senior Marine Scientist

PLZ:lj

Enclosure



Draft Programmatic Environmental Impact Statement related to
decontamination and disposal of radioactive wastes
resulting from March 28, 1979, accident

Three Mile Island Nuclear Station, Unit 2
Docket No. 50-530 July 1980

Comments by Paul L. Zubkoff, Ph.D.
Virginia Institute of Marine Science
Gloucester Point, Virginia 23062
804/642-2111 X133

The following comment is addressed to the discussion of treatment of processed water (pages 5-6 and 5-7). Processed water which may potentially enter the Chesapeake Bay via discharge into the Susquehenna by controlled or accidental means is discussed in 6.3.5.4, Postulated Accidental Effects (6.26-6.30).

In the discussion, 2 scenarios are identified for the potential of the sump containing 500,000 gallons of radionuclide (^3H , ^{137}Cs , ^{134}Cs , ^{90}Sr and ^{89}Sr) contaminated water:

1. Controlled release of plant effluents into the Susquehenna River at (30 gpm - 1800 gph) which is the equivalent of release for 277.78 hours (Table 6.3-16)
2. Accidental release of entire sump effluent over a two-hour period (Table 6.3-17)

Either scenario estimates a 1000 fold immediate dilution of the 500,000 gallon with 4.5×10^6 gpm river flow rate. Under either of the above conditions, dilution of the radionuclide-contaminated sump water will be effectively diluted upon further flow down the river.

The discussion also mentions adsorption by suspended particles (especially in the freshwaters for ^{137}Cs) and the possibility of trapping particles behind the dams (Safe Harbor Dam, Holton Dam and Conowingo Dam), the escape of particles in the freshwater flow, the

entry into the Chesapeake Bay, and the subsequent entry into the food chain (water-food chain-fish or water-food chain-shellfish). The assumptions of 1% equilibrium of the water-food chain-shellfish are introduced and the following reasonable concentrations factors between fish or shellfish are used:

^3H	1:1
^{137}Cs , ^{134}Cs	3000:1
^{90}Sr , ^{89}Sr	500:1

Under the above conditions, the effects of either controlled release or accidental release are of the same order of magnitude (Table 6.3.18). The effect to biota in the lower Susquehenna under such levels ultimately reached is minimal from technical considerations.

The above conditions also provide further estimates of radionuclide concentrations in fish of the Chesapeake Bay (Table 6.3-20). The effects associated with fishes of the Chesapeake Bay are approximately 0.1% of those associated with fishes of the Susquehenna (Table 6.3-18), and are also negligible.

Comments

1. With reference to Figures 3.1-5 and 3.1-6, the assumption of river flow (10,000 cfs \approx 4.5×10^6 gpm) has been stated. Does this figure relate to the flow of the Susquehenna through the Center Channel or West Channel or over the York Haven Dam. Figure 3.1-7 refers to minimum flow of 10,000 cfs at Harrisburg, Pa.
2. The mention of particle absorption of radionuclides and the subsequent trapping of particles behind dams has been discussed.

What proportion of the release of radionuclides would be expected to be absorbed to particles during the time of release from the Three Mile Island-2 discharge canal into the center Channel

and passage over York Haven, Safe Harbor, and Holtwood Dams and what proportion of released radionuclides would be expected to be trapped behind Conowingo Dam?

3. The assumption of dilution and flow are based upon the 500,000 gpm value. However, the flow through the Susquehenna and the Center and West Channels is probably variable. The conditions to be addressed are the minimum flow conditions and normal flow conditions through Center Channel. The conditions utilized are not explicitly indicated for this critical first-phase dilution.
4. As has been shown elsewhere (Eaton et al., 1980), particles originating in the Susquehenna River basin reach as far into the Chesapeake as 100 Km below the Conowingo Dam. The time of transport is unknown, although the distribution of particles is seasonally (stream-flow) dependent. The duration of radionuclides in the water column is not clearly estimated, nor the amount adsorbed to particles and released under other conditions estimated, nor the cycling of radionuclide adsorption and resuspension addressed.
5. The question of radionuclides and other contaminants in the TMI-2 sump needs further clarification. If the sump also contains detergents, oils, greases and chelators used in clean-up operations, the assumptions of radionuclide - mineral absorption and ion-exchange may easily break-down because of interfering substances (Appendix G, this report). The radionuclides and their matrix should be better identified in order to effectively test the models proposed concerning radionuclide release to and recycling within the environment.

6. With respect to the conclusions listed on pages 6-30, the following changes are in order because the questions of time scale and recycling are not resolved:
1. Susquehenna River and Upper Chesapeake Bay sediments would remain contaminated with low, but measureable, levels of ^{137}Cs after either controlled or accidental discharges. This might be a source of continuing public concern since radioactivity might be detectable in the sediments for *decades* after the releases are completed; however, it would pose very small hazards to man or other organisms. [There are presently ^{137}Cs residuals in the sediments of the lower Susquehenna either from fallout in the 1950's, associated with Peach Bottom discharges, or some other unknown source].
 2. Low but detectable levels of ^{137}Cs from TMI-2 might persist in some fish of the upper bay dependent upon the form of radionuclides and other substances such as chelators present in the releases of processed water. [The time is not indicated in the calculations and remains in doubt until the question of cycling of radionuclides is addressed.]
 3. At the postulated radionuclide concentrations, radiation effects on fish, shellfish and other biota in the Susquehenna River and Chesapeake Bay would be minimal and have no impact on aquatic populations or on man.

Paul H. Zuckoff
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