CHAIRMAN

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

October 20, 1980

50-320

The Honorable Charles W. Duncan
Secretary of Energy
Washington, D. C. 20545

Dear Mr. Secretary:

As progress is made in the cleanup of TMI-2, additional information becomes available about the nature of the radioactive wastes involved. Through this learning process, it has become evident to the NRC staff that some of the high specific activity wastes resulting from the cleanup operations will be unsuitable for routine disposal at commercial licensed burial grounds. It has been apparent for some time that the spent fuel in the damaged core will have to be considered as high-level waste. In addition, it now appears that other wastes will have some characteristics very similar to high-level waste; typical materials that likely will fall into this category are some of the wastes that will result from processing the reactor building sump water and the reactor coolant system water. The NRC staff considers disposal of these wastes at commercial licensed burial grounds, even with very special provisions, to be unfeasible or unacceptable. The only short-term avenue available for removal of these wastes from the site is transferral to suitable DOE facilities.

The NRC staff believes that the handling and processing of wastes at the TMI site should be limited to well-established operations, such as immobilization of low-level wastes. The site should not become a research, development, and demonstration facility for handling and processing high specific activity wastes which are quite different from normal reactor plant wastes, but which in many ways resemble wastes handled frequently by DOE facilities. Attempting any such advanced operations on site would seriously overburden the utility's technical and management capabilities and could cause unnecessary delays in completing the cleanup. Accordingly, the NRC staff has been working closely with the DOE staff in establishing both short-term and long-term programs to develop information and technology of generic value for radioactive waste management from the TMI-2 cleanup operations. In addition, two meetings have been held with the DOE Assistant Secretary for Nuclear Energy. However, all activities presently being considered by DOE appear to be limited in scope to DOE performing research and development work on limited quantities (10%-20%) of the wastes involved in order to characterize waste processing problems or to develop potential solutions. We understand present DOE planning assumes that the

responsibility for actual waste handling, processing into final disposal forms, and disposal of the bulk of the waste remains with the licensee. If they are not transferred to DOE facilities, we anticipate that the high specific activity wastes which are unique to TMI-2 may have to be retained at the TMI-2 site for tens of years until suitable waste immobilization processes, containers, and facilities are available for the disposal of such wastes.

The staff has serious concerns about the long term stability of the high specific activity (i.e., > 1000 Ci/ft^3) wastes anticipated to be generated at the Three Mile Island site from future cleanup activities. This waste may be in the form of high specific acitivity spent resins or evaporator bottoms from the processing of reactor building sump water. (This waste will also include damaged fuel elements or pieces of fuel elements which will require storage in specially designed sealed containers to preclude the potential spread of radioactivity outside the storage container.) The staff has reservations whether suitable storage containers for spent resins or evaporator bottoms will be able to withstand the macroscopic effects of corrosion, pH change, and gas formation during extended storage (i.e., tens of years).

We do not believe that long term onsite storage of loose resin materials or evaporator bottom slurries is comparable to routine storage of undamaged spent fuel in a fuel pool of a normally operating reactor. In the staff's view, it would be necessary to immobilize the contained activity in the collected solid waste into a solid monolithic form as expeditiously as practicable to eliminate the potential for onsite exposure due to subsequent container failure. This immobilization can best be carried by experienced personnel in a facility designed for that purpose, namely, at one of the existing DOE high level waste handling and processing facilities.

The NRC presently believes that it may be undesirable for radioactive wastes in the forms likely to be produced as a result of cleaning up TMI-2 to be stored at the TMI site for long periods. We are concerned that certain key options for the handling, storage, treatment, or disposal of such wastes are precluded from consideration by the limited scope of activities presently being considered by the DOE staff. In order to further the resolution of the scope of DOE's participation in the management of these wastes, I suggest that we meet in the near future to address these issues in the context of the House Appropriations Committee recent position: "[T]he Department [of Energy] has an overriding public responsibility to assist NRC, the State of Pennsylvania and the utility, as necessary to resolve as quickly as possible an acceptable process to isolate and remove the wastes to a safe disposal site."

Sincerely,

John F. Ahearne