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NUCLEAR REGULATORY COMMISSION  
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Solid Waste*

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MEMORANDUM FOR: Harold R. Denton, Director  
Office of Nuclear Reactor Regulation

FROM: William J. Dircks, Director  
Office of Nuclear Material Safety and Safeguards

SUBJECT: REQUEST FOR BRIEFING ON TMI WASTES

Events have moved to the point now where I think it would be extremely helpful if the NMSS staff could be brought up to date on what NRR is doing in the area of waste forms and disposal options. Our areas of interest are summarized in the four questions which follow:

1. What actions will be taken by the utility to solidify Epicor-II wastes and what is the schedule and progress to date?
2. What techniques are under consideration for decontaminating the auxiliary building, the containment building water and the containment building?
3. What are the quantities, forms and concentration levels of the waste which will result from the cleanup techniques under consideration?
4. What plans are under consideration for disposing or storing the fuel, control rods and other core internals?

We believe that NMSS involvement early in the planning stages will help in resolving radioactive waste management issues. For example, our understanding is that utility planners have assumed that containment water cleanup wastes will be disposed of in a shallow land burial site. The available information indicates that the total activity and specific activity of the waste are much higher than typically disposed by conventional shallow land burial. Special handling procedures and disposal techniques may be more appropriate for this waste.

If we can get our two staffs together very soon, we might avoid letting options be chosen that might be in conflict with our current and proposed practice.

We will adjust our schedule as necessary to meet yours for the briefing and request that it be held not later than November 22.

For further details on schedules, please contact Dale Smith or Charles Bishop (427-4433) of my staff.



William J. Dircks, Director  
Office of Nuclear Material Safety  
and Safeguards

RESPONSES TO NMSS ITEMS OF INTEREST CONTAINED IN MEMO

FROM W. DIRKS TO H. DENTON, NOVEMBER 13, 1979

1. What actions will be taken by the utility to solidify EPICOR II wastes and what is the schedule and progress to date?

By the end of December 1979 we expect to receive from Met-Ed a detailed report describing their proposed method of solidifying resins from EPICOR II. At the present time Met-Ed is evaluating proposals received from the principle solidification vendors. (Hittman, Dow, Stock) Both inline solidification and a combination of slucing/solidification techniques are being considered. The report from Met-Ed will contain project schedules for purchasing and installation of necessary equipment.

2. What techniques are under consideration for decontaminating the auxiliary building, the containment building water and the containment building?

The continued decontamination of the auxiliary building will employ the same techniques that have been applied over the past 8 months, namely wet vacuum with small quantities of radiac-wash with waste material being collected in 55 gallon drums.

The processing of the containment sump water will be accomplished with the submerged demineralization system (SDS) using inorganic (zeolite) resins in small volume (10 ft<sup>3</sup>) under water liners. The decontamination of the reactor building will employ a combination of area washdowns using decontamination solutions such as radiac-wash and subsequent manual and mechanical wet vacuum cleaning.

3. What are the quantities, forms and concentration levels of the waste which will result from the cleanup techniques under consideration?

The contaminated radiac-wash from the decontamination of the auxiliary building will be solidified using the DOW polymer solidification agent. To date, approximately 60 drums (55 gallon) of unprocessed waste has been generated. We estimate that the total quantity of solidified waste from the decontamination effort in the auxiliary building will be less than 100 drums with a maximum contact dose rate of 10R/hr.

The submerged demineralization system for processing the containment sump water is being designed with the capability of in-vessel solidification using cement. Maximum expected specific activities of solidified waste from this system will be approximately 3500 curies per cubic foot. We estimate that 30 to 50 liners (10 ft<sup>3</sup>) will be generated from the processing of containment surge water.

With respect to solid waste generated from the decontamination of the reactor building, the licensee is developing plans for an evaporation/solidification facility but has not contracted for specific systems. Thus, we have not evaluated either the quantities of waste or their forms since they are system dependent and must await additional information from the licensee. The licensee has, however, committed to solidify the wastes (decon solutions) resulting from the containment cleanup.

4. What plans are under consideration for disposing or storing the fuel, control rods and other core internals?

The licensee has not developed plans yet for disposing or storing fuel, control rods or other core internals and may not be able to make detailed plans until the reactor vessel head is removed and the condition of the fuel and other core internals identified.

EPICOR II SOLIDIFICATION - STATUS (11/27/79)

GPU Recovery Engineering is conducting a conceptual design study for a sluicing and solidification facility for the Epicor II resins and expects to have an ~~unpublished~~ internal draft by December 7, 1979. A ~~revised~~ final draft and recommendation should be available by year's end. Thus, a specific schedule and decisions for systems to solidify Epicor II resins will probably not be available before mid-January.

Solidification systems designs have been solicited from three vendors for this study. The sluicing system will be a GPU design. It is apparent that considerable cost and a 6 to 12 month schedule will be required before resin can be solidified on a continuous basis. As a result, there may be tradeoff considerations with respect to storing the expended liners and waiting for the Evaporator Solidification System to be constructed.

Several of the factors to be considered in tradeoff studies considerations include:

1. Solidification prior to the ability to ship will increase demand on available staging/storage location.
2. Whether system components can be reinstalled in future facilities.
3. Scheduled availability of capital funds.
4. ~~Effect~~ <sup>Effect</sup> of long term in-line storage without solidification.
5. Ultimate projected Epicor II throughput.