Inter-Office Memorandum

GPU Service

Date May 1, 1979

Subject LONG TERM COOLING SYSTEM FOR OSTG "A"

To COBEAN
WILSON
HIRST
RUSCHE
HERBEIN

Location Three Mile Island

Confirming the decision made during this morning's meeting of the Technical Working Group, all efforts on the Long Term Cooling System modification for the "A" Steam Generator are to be put on hold. This action is in response to Recommendation 1 of the attached report from the Industry Advisory Group "Evaluation of Need for Long Term Cooling System for OSTG "B"."

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GPU

RCA:clb
Attachment

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EVALUATION OF NEED FOR LONG TERM COOLING SYSTEM FOR OSTG B

A preliminary assessment was made of the need to continue with construction and operation of the long term cooling system for the B steam generator. The findings are as follows:

1. The long term cooling system for steam generator B provides another option for cooling the reactor core as long as forced or natural circulation can or needs to be maintained in the primary system. It competes in this purpose against many other cooling methods available or being installed such as:

   Steaming in steam generator A
   Steaming in B steam generator
   Solid water circulation in steam generator A with present balance of plant
   Solid water circulation in steam generator B with present balance of plant
   Long term cooling system for steam generator A
   High pressure coolant injection system
   Decay heat removal system
   Pressure control volume system used as feed-bleed system
   Boiling in reactor core with vent to containment
   Alternate decay heat removal system
   Internal reactor circulation with heat losses to containment and through letdown (about 2 months from now)

2. The construction, design of the long term cooling system for steam generator B is nearing completion. Over 80% of the costs have been incurred and its abandonment will save little money versus completion.

3. The primary adavantage of the long term cooling system for steam generator B is that, if used, it will contain the radioactivity present on the secondary side of the steam generator. It will also provide containment for any future leakage in that generator and its possible growth with time. If the primary system was operated at 600 psi, it will eliminate any outleakage from the primary system.

4. Another advantage of the long term cooling system is its compactness, potentially increased reliability due to its reduced number of components. It is also capable of continued operation with loss of offsite power.

5. The risks associated with operation of the long term cooling system for steam generator B are primarily filling the system with water (i.e. avoiding water hammer problem) and potential startup problems (i.e. operator error due to lack of familiarity and need for continued manual control).

6. The long term cooling system for steam generator B competes against the first five listed alternates. It is of use only if steam generator A is not available and if the leak in steam generator B becomes of concern. This probability for utilization is very small, especially when one takes into account that in a few months, no external cooling mode may be necessary to remove the heat from the reactor core.

7. The preferred long term cooling mode of the reactor core is one in which primary coolant activity is kept in the containment and leakage from the primary system has been brought to practically zero (i.e. depressurized primary system). The long term cooling system for steam generator B could play a valuable role in such a preferred long term reactor cooling mode.

Recommendations

1. Completion of long term cooling system for steam generator B is recommended because it provides a backup to steam generator A and protection against increased leakage in steam generator B. If the decision is made to complete this system, it is recommended that the long term cooling system for steam generator A be abandoned as it provides a backup to a backup with an already very low probability of use..

2. If the long term cooling system for steam generator B is put into use, care should be exercised in filling it with correct water temperature and providing for any pressurizer level change as it comes into operation. Natural circulation in the B loop will be even more susceptible to cold water makeup introduction in the B loop. Adjustment of the makeup temperature to match the colder water temperature in the B loop may, however, be possible to minimize this effect.

3. A long term cooling mode of the reactor with negligible primary system leakage or any coolant being taken in and out of the primary system should be developed. A role for the long term cooling system for steam generator B should be found for such a long term cooling mode. Such a long term cooling plan might help trim the very large number of cooling systems available or being developed.