

FEB 9 1981



MEMORANDUM FOR: Denwood F. Ross, Jr., Director
Division of Systems Integration

FROM: Thomas E. Murley, Director
Division of Safety Technology

SUBJECT: LOCATION OF IGNITERS IN ICE CONDENSER PLANTS

I believe that further analysis is needed to deal with Sandia's concerns on the location of igniters in ice condenser plants. Specifically, they state in NUREG/CR-1762, Rough Draft dated December 1, 1980, the following:

"Under certain accident conditions, the lower compartment could be inerted either by high concentrations of steam, or by low concentrations of oxygen. If this should occur, the interim deliberate ignition system (IDIS) as presently planned for Sequoyah has a serious shortcoming. The inerted gas mixture entering the bottom of the ice condensers will emerge as an extremely rich mixture at the top. Concentrations could approach or exceed the detonability limits in a toroidal region around the periphery at the top of the ice condensers. Four igniters are presently planned for this region. We strongly recommend that those igniters be removed. Instead, we suggest that upper compartment delivrage ignition strategy should attempt to burn lean mixtures high in the upper compartment."
(emphasis added)

If Sandia is correct that igniters are intended to be placed at the top of the ice condensers, then I believe their recommendation should be evaluated in more detail. In my judgment, it is unlikely that we will be able to show that inerted conditions cannot exist in the lower compartment. Sandia states that steam inerting can occur with steam fractions of 30-55 percent, depending on hydrogen concentration. Under these circumstances, we would have to consider the possibility of a detonation in the upper plenum.

I don't believe this accident sequence is sufficiently probable that we need to modify our position regarding Sequoyah at this time. However, I believe

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Denwood A. Ross, Jr.

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we should evaluate the pros and cons of igniters in the ice condenser upper plenum in more detail over the coming months, taking into account the results of further testing and analysis we are planning.

Please keep me informed of your progress on this issue.

Original signed by:
Thomas E. Murley

Thomas E. Murley, Director
Division of Safety Technology

cc: H. Denton
D. Eisenhut

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