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SUBJECT: Provides addl info re radiological consequences of accident during purging, LOCA, iodine spike Tech Specs, valve closure time & limitation on purge & vent time discussed.

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Washington, DC 20555

MONTICELLO NUCLEAR GENERATING PLANT
Docket No. 50-263 License No. DPR-22

Additional Information Related to Radiological
Consequences of an Accident During Purging

In a letter dated April 13, 1984 from Mr Domenic B Vassallo, Chief, Operating Reactors Branch #2, Division of Licensing, USNRC, we were requested to provide additional information needed by the NRC Staff for their review of the radiological consequences of a loss of coolant accident (LOCA) during purging. The purpose of this letter is to provide the requested information.

Evaluation of LOCA During Purging

Our letter dated February 26, 1980 reported the results of a General Electric evaluation of the radiological consequences of a LOCA during purging.

An upper limit was determined for the amount of containment atmosphere released through the purge and vent isolation valves during the time required for them to close. The following assumptions were made:

1. An 18-inch purge path was fully open.
2. A valve closure time of 20-seconds. No credit was taken for flow reduction as the valve closed. (The Technical Specification limit is 60 seconds. This value was not used since it is much greater than the actual closure time.)
3. Piping losses are neglected.
4. Steady-state choked flow is assumed to start immediately and stop when the valve is fully closed.
5. Containment pressure is constant at $P_a = 41$ psig.

Calculated flow rate is 210 lb/sec for air or 167 lb/sec for steam. Total amount of atmosphere released would be less than 4200 lbs of air and less than 3340 lbs of steam.

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The amount of steam reported in Section 14.7.3 of the Monticello Updated Safety Analysis Report (USAR) lost in a steam line break outside of containment is 20,000 lbs. This accident, which has been previously analyzed, is therefore bounding.

It should be noted that this conclusion (i.e., that the steam line break accident is more limiting than a LOCA during purging) does not require assumptions to be made regarding a pre-existing iodine spike.

Monticello Iodine Spike Technical Specifications

As noted in Mr Vassallo's letter, the Monticello Technical Specifications do not conform to the Standard Technical Specifications on reactor coolant iodine transients. This matter was reviewed by the NRC Staff, however, and Technical Specifications addressing this concern were issued on April 10, 1975. Specifically, the NRC Staff issued changes related to:

1. Sampling of reactor coolant for radioiodines of I-131 through I-135 instead of sampling for gross beta activity based on the Standard Technical Specification format.
2. A limiting condition of 5 microcuries I-131 dose equivalent per gram of water to replace the 20 microcuries of total iodine per cubic centimeter of water. This change was made to make the radiological consequences of a steam line break outside of containment acceptable and well within the limits of 10 CFR 100.
3. Surveillance requirements for steady state radioiodine concentrations prior to operation to be consistent with that of similar boiling water reactor installations. The change provides a means for surveillance of possible transient radioiodine spike conditions during startup and shutdowns.

While no specific limit on spiking is included in the current Technical Specifications, a limit based on dose equivalent iodine and spike surveillance requirements are provided.

Valve Closure Time

The General Electric analysis described above assumed a valve closure time of 20 seconds. This is equivalent to the nominal measured operating time of the Monticello purge and vent valves. The current Technical Specification maximum allowable closure time is 60 seconds.

The Technical Specification limit could be reduced to 30 seconds. The conclusions of the General Electric analysis would still apply if a 30-second valve closure is assumed.

Limitation on Purge and Vent Time

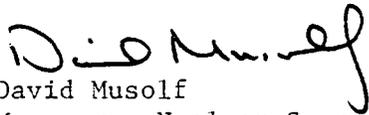
One of the methods suggested in Mr Vassallo's letter for resolution of this issue is to restrict purging of the primary containment to less than 90 hours per year. It should be noted that Monticello currently has an equivalent limit in Technical Specification 3.8.B.6. This limiting condition for operation states:

6. Containment Venting and Purging
 - a. Except for inerting operations following startup and de-inerting prior to shutdown, containment venting and purging above cold shutdown shall be via the 2-inch bypass flow path using the Standby Gas Treatment System.
 - b. Containment inerting following startup and deinerting prior to shutdown shall be via the Reactor Building plenum and vent.

This Technical Specification requirement limits use of the 18-inch purge and vent butterfly valves above cold shutdown to inerting and deinerting operations. It is estimated that the plant would have to experience up to eight unplanned shutdowns requiring containment entry per year to exceed 90-hours of purging. This is never expected to happen.

This Technical Specification also requires, when the 18-inch flow path is used for inerting and deinerting, that the release be directed in the reactor building ventilation plenum and vent. This eliminates much of the concern for damage to the standby gas treatment system components in the event of a LOCA during inerting or deinerting and provides for isolation if high radiation is sensed by the plenum monitors.

Please contact us if you have any questions related to the information we have provided. As discussed with our Project Manager in the Division of Licensing, we would be pleased to meet with the Staff to reach final resolution of concerns related to radiological consequences of purging as well as any other remaining unresolved items related to the containment purge and vent valves.


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