

March 24, 2005

MEMORANDUM FOR: Victor Nerses, Project Manager, Project Directorate I-2
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

FROM: Paul G. Krohn, Projects Branch 6 */RA/*
Division of Reactor Projects, Region I

SUBJECT: REGIONAL COMMENTS ON MILLSTONE UNIT 2, TRISODIUM
PHOSPHATE TECHNICAL SPECIFICATION CHANGE
REQUEST DATED FEBRUARY 15, 2005

Region I has inspected the Millstone Unit 1, Trisodium Phosphate (TSP) Technical Specification change request, the current Millstone Unit 2, TSP Technical Specification (TS), the plant processes and procedures used to implement the TS, and the engineering calculations and safety assessments used by the licensee to establish the TS amount and type of TSP needed to meet the design basis of the Millstone Unit 2 facility. The design basis and the intended purpose of the staged TSP are to mediate post accident pH. The mediation of post accident pH is necessary to eliminate accelerated corrosion of reactor coolant system components and to limit the Millstone Unit 2 post accident source term. Regional inspections identified a number of compliance and engineering issues related to the control, inventory, sampling and quantification of TSP at Millstone Unit 2, which should be addressed prior to the approval of the recent TS change request and the approval of the anticipated TS change request for the Millstone Unit 2 post accident alternate source term. These issues include:

1. The TS change request is not clear concerning the target, post accident pH and the supporting documentation at the site is not consistent, with the TS change request.
2. Engineering calculations used to develop the amount of TSP needed to moderate the pH do not consider a complete list of boric acid sources within containment (quench tank, boric acid lines, etc).
3. The TS change removes the term "dodecahydrate" from the TS. As a result, the licensee has expanded the possible span of water content in the TSP to a heterogeneous mixture of 45 to 57 percent. The licensee has not determined the water content in its sampling procedures and has chosen a median water content for its TSP procedures which does not match the associated calculations. Furthermore, the chosen median may not be conservative if a different distribution of water content is present in the TSP. The TS submittal does not indicate that, in a worst case scenario, the proposed 282 ft³ will still be able to maintain pH at the target value.
4. The Industry Technical Specification Traveler Form (TSTF) standard TS change traveler used by the licensee for its TS change request, indicates that there is a need for [291] cubic feet of TSP on page 3.5-11.

5. The licensee's calculations did not include boric acid sampling and analysis errors, and the sampling methodology used by the Millstone chemistry laboratory does not support the engineering calculation used to develop the TS quantity of TSP. The engineering calculations do not address error, and the method used to expand the engineering calculations from the titration sample to the bulk amount of TSP needed, are statistically inaccurate and do not include a treatment of assurance.
6. The licensee's calculations do not include the amounts of boric acid added to the reactor coolant system and then dispersed into containment through unidentified leakage. An estimate, based on the following rough calculation, for the last four operating cycles is about 2000 pounds of boric acid added to containment. This boric acid is not addressed in the licensee's calculations.
$$4 * (.1 \text{ gpm} * 60 * 24 * 350 * 7 \text{ lbs/gallon} * 1500 \text{ ppm}) = 2000 \text{ pounds of boric acid}$$
7. The submittal does not address the issues raised in NRC Generic Letter 2004-005 which notes that post accident sump performance is impacted by post accident chemical reactions. The licensee does not address chemical reactions in containment other than those that result in Nitric or Sulfuric acids. Numerous combinations are likely and known to the industry (ie paint, rubber, etc) which will reduce the effectiveness of the TSP.
8. The analytical methods used by the licensee can not be traced to a national standard and did not match a NIST sampling method (now expired) used to titrate TSP.

The region provides these comments for consideration in the TS review process. Please contact Kenneth Jenison at 610-337-5244 or Paul Krohn at 610-337-5120 for further information or any clarifications that are necessary.

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SISP Review Complete: KML (Reviewer's Initials)

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