Entergy

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Fred Dacimo
Site Vice President
Administration

November 28, 2005

Re: Indian Point Unit 2
Docket No. 50-247
NL-05-126

Document Control Desk
U.S. Nuclear Regulatory Commission
Mail Stop O-P1-17
Washington, DC 20555-0001

SUBJECT: Industry Actions resulting from Information Notice 2005-26

Reference: 1. NRC Information Notice 2005-26, "Results of Chemical Effects Head Loss Tests in a Simulated PWR Sump Pool Environment", dated September 16, 2005.

Dear Sir:

On September 30, 2005 the NRC held a public meeting with industry regarding the PWR sump blockage issue (GSI-191). The purpose of the meeting was to review the results of chemical effects head loss tests conducted at the Argonne National Laboratory (ANL) as described in IN 2005-26 (Reference 1). During that meeting the Nuclear Energy Institute presented immediate industry actions to be undertaken in response to IN 2005-26, namely:

- Enter IN 2005-06 into plant operating experience program
- Review compensatory actions identified in NRC Bulletin 2003-01 in light of IN 2005-06
- Document review and identify any additional actions warranted or mitigating plant features
- Docket response describing actions taken by November 30

This letter provides a summary of such industry actions undertaken by Entergy Nuclear Operations (Entergy), Inc. for Indian Point Unit 2.

IN 2005-26 was determined to be applicable to Unit 2, and was entered into the plant operating experience and corrective action programs for evaluation. The ANL test results indicate that a simulated sump pool environment containing phosphate and dissolved calcium can rapidly produce a calcium phosphate precipitate that, if transported to a fiber bed covered screen, produces significant head loss. Unit 2 contains both phosphate (trisodium phosphate (TSP) is used as the sump pool pH buffering agent) and calcium (primarily as a constituent of Cal-Sil insulation).

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Add: Paul Klein
Robert Tregoning

While IN 2005-26 was determined to be applicable to Unit 2 the ANL test conditions are not prototypical. The non-prototypical nature of the ANL test conditions were noted by industry representatives during the September 30th public meeting. For example:

1. The in plant calcium concentration is expected to be much less than the concentration used in the ANL head loss tests.

2. The manner in which the calcium phosphate was deposited on the screen in the ANL tests was inconsistent with the expected in plant deposition behavior.

3. The in plant time at low pool pH due to TSP dissolution is relatively short.

The above three points are notable in that they have the potential to significantly affect the extent of calcium phosphate formation and the resultant impact on sump screen head loss. Entergy's evaluation of IN 2005-26 confirmed that the ANL test conditions are not prototypical of Unit 2 post loss of coolant accident (LOCA) sump conditions.

In addition to evaluating the ANL test conditions, Westinghouse and Entergy have reviewed the compensatory actions taken in response to Bulletin 2003-01 in view of IN 2005-26. Those compensatory actions specifically address sump blockage through revised Emergency Operating Procedures and Operator training. This review concluded that no additional actions are warranted at this time.

The major factors considered in the review include the small amount of calcium silicate at Indian Point 2 when compared to the tested configuration, the compensatory actions that address sump blockage already implemented as a result of Bulletin 2003-01, and plant specific mitigating features. A significant mitigating feature is that Indian Point Unit 2 has two sumps in containment: the recirculation sump and a backup containment sump that can also be used for recirculation. The containment sump is located in a different part of the containment building from the recirculation sump, utilizes the residual heat removal pumps instead of the recirculation pumps, and is not put into operation during an accident unless initiated by operator action (i.e. will not collect debris on suction screens while the recirculation sump is in operation). This backup system can be used for recirculation if the recirculation sump loses suction due to debris clogging of the sump screen. Thus, this backup system provides an additional level of redundancy and diversity and is an integral part of the Emergency Operating Procedures.

In addition, the recirculation sump screen arrangement is such that the recirculation flow direction is upward through the sump screen (Figure 1) and any resulting debris bed will therefore form on the underside of the screen. This arrangement lends itself to the potential for debris falling off the screen due to gravity should the pump be secured due to indications of cavitation due to sump blockage.

Entergy has performed operator training on the issue of debris blockage on sump recirculation. Entergy will continue to raise operator awareness of the issue as more details become available. Entergy is participating in the Westinghouse Owner's Group Chemical Effects testing plan as presented at the November 2, 2005 public meeting with industry regarding the PWR sump blockage issue.

New recirculation and containment sump strainers are to be installed in the Spring 2006 refueling outage. These strainers are being designed to accommodate blockage arising from LOCA generated debris and chemical effects. These strainers will be tested with the specific Unit 2 debris mix. The additional head loss due to chemical effects will also be evaluated. The replacement strainers will be of sufficient surface area to accommodate the debris loading including chemical effects.

No new commitments are being made in this submittal. If you have any questions or require additional information, please contact Mr. Patric W. Conroy, Licensing Manager at 914-734-6668.

Sincerely,

Fred R. Dacimo
Site Vice President
Indian Point Energy Center

cc: next page

cc:

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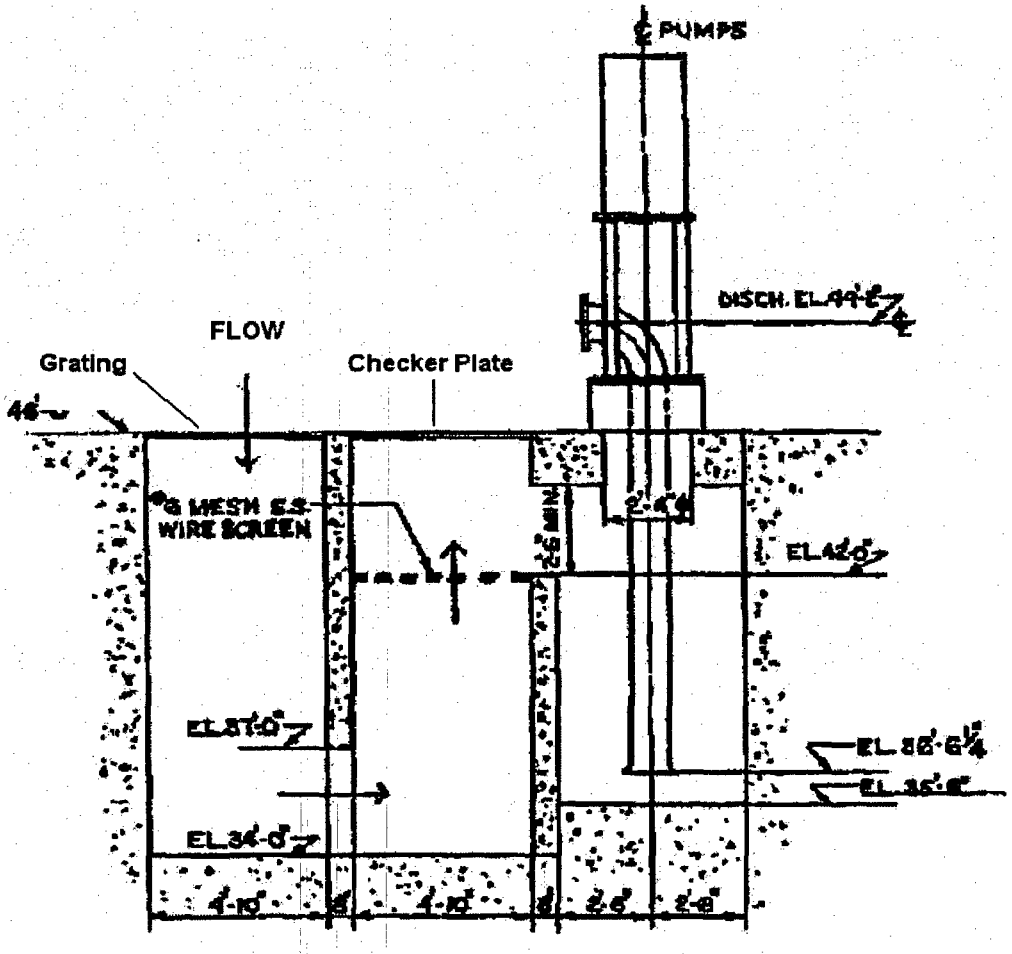
FIGURE 1

UNIT 2 RECIRCULATION SUMP SCHEMATIC