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Braidwood Nuclear Power Station
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May 20, 1994
SVP/94-029

Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Attention: Document Control Desk

SUBJECT: Braidwood Nuclear Power Station Units 1 and 2
NRC Dockets 50-456 and 50-457
BRAIDWOOD STATION RESPONSE REVISION TO
GENERIC LETTER 89-13

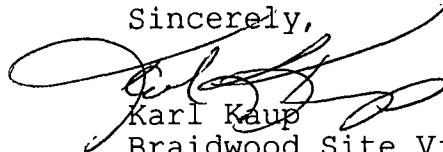
REFERENCES: a) NRC Generic Letter 89-13, "Service Water
System Problems Affecting Safety-related
Equipment" Dated July 18, 1989.

b) Commonwealth Edison Response to Generic
Letter 89-13 attachment F page 3, from
M. Richter/Commonwealth Edison Co. to
U.S. Nuclear Regulatory Commission Document
Control Desk, dated January 29, 1990.

The purpose of this letter is to notify the NRC of a change being made to a previous commitment by Braidwood Station in response to Generic Letter 89-13 (reference a) in Section I: Surveillance and Control Techniques to Reduce Flow Blockage Problems Due to Biofouling. In that response (reference b), Braidwood originally committed to injecting Sodium Bromide in addition to Sodium Hypochlorite in the treatment of its raw water cooling systems. In revision of that response, Braidwood will not inject Sodium Bromide as a part of its cooling water treatment program. Braidwood has determined that the addition of sodium hypochlorite alone is adequate in controlling fouling, and that the environmental and financial burdens of sodium bromide addition outweigh the benefits. Details and justification of the changes are contained in the attachment to this letter.

Any questions on this issue can be directed to Howard James,
System Engineering Secondary Systems Group Leader at
(815) 458-2801 Ext. 2475.

Sincerely,



Karl Kaup
Braidwood Site Vice President

cc: J. B. Martin, NRC Regional Administrator- RIII
R. R. Assa, Braidwood Project Manager
S. G. Dupont, Senior Resident Inspector (Braidwood)

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ATTACHMENT A

REVISION TO BRAIDWOOD STATION COMMITMENT FROM GENERIC LETTER 89-13

Braidwood's current response to the NRC regarding Generic Letter 89-13 (reference b) makes reference to the addition of Sodium Bromide to our cooling water chemistry via the addition of a modification proposed prior to the issue of Generic Letter 89-13. This modification was not initiated in response to Generic Letter 89-13. The modification is currently installed, and testing is complete. We currently do not operate the system and do not have an EPA permit to use Sodium Bromide here at the station.

The modification was originally proposed with the intent of reducing chemical costs and providing more effective control of fouling. With the use of Bromine chemistry, hypobromous acid is released as the toxin. In Sodium Hypochlorite treatment alone, hypochlorous acid is released as the toxin. Both reactions undergo a pH dependant partial dissociation, but the hypobromous acid remains unionized more than the hypochlorous acid, allowing for a higher percentage of toxic chemical in solution, thereby requiring less concentration and reduced contact time. Theoretically, this will lead to reduced chemical costs and lower corrosion rates within the cooling water system.

In actuality, the use of bromine chemistry would inject up to 358 lbs of chemical per day more than with sodium hypochlorite use alone, and carries a chemical cost increase of about \$136,000 annually. This is true because the consumption of sodium hypochlorite at Braidwood is much less than the average station and the cost of sodium bromide is much greater than that of sodium hypochlorite and continues to increase. It is also true that since hypobromous acid remains unionized longer than hypochlorous acid, the toxicity introduced to the environment is of a greater EPA concern. The future of bromine chemistry is uncertain from an Illinois EPA viewpoint. Many plants have been required to use debromination methods at extensive costs. Current system corrosion rates are not negatively impacted by chemical treatment utilizing sodium hypochlorite.

According to sample coupons taken from our monitoring skids, cooling water corrosion rates are of the general corrosion type. Stainless steels and yellow metals are below the maximum acceptable corrosion limits. Mild steel rates are higher due to lake water chemistry. In addition, when the current hypochlorite system is reliable, heat exchanger inspections will confirm the sodium hypochlorite system to be adequate at controlling fouling.

In summary, Braidwood has changed our commitment to Generic Letter 89-13 by not injecting sodium bromide as part of the cooling water treatment program. The station feels that the reasons initially used to justify the system are no longer to our advantage nor do they warrant the additional environmental or financial burden.

The station is currently focusing its resources on improvement of the sodium hypochlorite system. A modification is proposed to improve system reliability and allow for 24 hour treatment of each service water system and train simultaneously while providing expanded system coverage. The new system will inject into Non-essential and Essential service water via independent pumps, injecting into essential service water at the suction line of each train at the Lake Screen house and Non-essential service water at the discharge from the Lake Screen house. The simultaneous treatment will allow for the adequate control of fouling in all systems at all times of the year without sacrifice.