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 SORENSEN, G. C. Washington Public Power Supply System
 RECIP. NAME RECIPIENT AFFILIATION
 MARTIN, J. B. Region 5, Office of Director

SUBJECT: Provides util position on iodine plate-out potential in post-LOCA effluent sampler, per Insp Rept 50-397/85-20. Mods of effluent sample line will be deferred until study & results of iodine sampling & parameters complete.

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50-397

Docket No. 50-397

April 15, 1987
G02-87-136

Mr. J. B. Martin
Regional Administrator
U.S. Nuclear Regulatory Commission
Region V
1450 Maria Lane, Suite 210
Walnut Creek, California 94596

Dear Mr. Martin:

Subject: NUCLEAR PLANT NO. 2
POSITION ON IODINE PLATE-OUT

- References:
- (a) Unresolved Item 04 from I&E Inspection Report 85-20, dated 6/13/85
 - (b) G02-85-347, 6/27/85, GC Sorensen (Supply System) to JB Martin, "WNP-2 Position on Iodine Plate-Out"
 - (c) Letter, FA Wenslawski to GC Sorensen, NRC Inspection Finding Related to NUREG-0737, Item II.F.1, dated 4/14/86
 - (d) 1986 Air Cleaning Conference at Seattle, WA, paper by KE Curtis and A. Guest, "Performance Evaluation of the Air Exhaust Sampling and Monitoring Systems at the Bruce-A Nuclear Generating Station"
 - (e) 18th DOE Nuclear Airbourne Waste Management and Air Cleaning Conference, paper by PJ Unrein, CA Pelletier, JE Cline, and PG Voilleque, "Transmission of Radioiodine Through Sampling Lines"

In Reference (a), the NRC requested additional information on the Supply System's evaluation of iodine plate-out potential in the WNP-2 post-LOCA effluent sampler. Additionally, in a separate communication, Mr. G. Yuhas of your staff requested additional information on REA-SR-48. Accordingly, the requested information was supplied by the Supply System in Reference (b). Subsequently, we have reviewed your response, Reference (c), with regard to current research and testing activities conducted in the area of radioiodine plate-out in sample lines (References d and e).

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Actual WNP-2 accident effluent releases can only be monitored when there is flow in the elevated release duct (i.e., the Standby Gas Treatment System (SGTS) is operating). If neither SGTS train is operating, then there is no release in the elevated duct to monitor. Release to the environment would simply be through minimal bypass leakage paths in the reactor building which are not monitored. In an accident (high drywell pressure, low vessel water level, high radiation (13 mr/hr) in reactor building exhaust air), all normal reactor building HVAC is immediately isolated and both SGTS trains automatically start. In a mechanistic accident scenario, it is impossible to get any plateable iodine to the elevated release duct without traversing a minimum of 105' of 30" diameter piping with a minimum of 9-90° elbows, or traversing throughout the secondary containment (Reactor Building) which has abundant cool surface area capability for depositing any potential plateable iodine that was somehow released into the Reactor Building. In either case, the released iodine must still pass through one of the 100% redundant SGTS trains (which have two HEPAs plus activated charcoal with a filtering efficiency of 99.99%) to get to the release duct.

Thus, postulating any plateable iodine present in the elevated release duct during an accident is extremely difficult. Because essentially no plateable iodine will exist in the duct, our current sampling system will give a representative sample of remaining gaseous iodine actually being released.

However, even if some unknown accident scenario beyond our design basis were to allow plateable iodine in the elevated release duct, with an operating SGTS train to provide the flow, we believe any modification to our existing effluent monitoring system is premature. Sample line-loss determination is an extremely complicated issue based on multiple variables and requires more research and testing activities to properly address the design considerations necessary to conform to the NRC's goal of sample representivity.

Sampling line-loss of iodine and particulate material depends on a number of parameters, such as:

- o particle size distribution
- o sample line material
- o roughness of inside of line
- o length of line
- o sample line size
- o number of bends
- o curvature of bends
- o conditioning of line (i.e., passification)
- o velocity of flow
- o humidity



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Testing completed in the Bruce-A plant at Ontario Hydro, Reference (d), confirms that even poorly designed sample lines may have 100% transmission of plateable iodine.

Reference (c) stated that research being performed for the NRC would be complete in late 1986, and would provide more definitive guidance on line-loss determination. These research activities could more fully quantify all the line-loss variables and determine which modifications, if any, would improve the representivity of WNP-2 sampling. The results of this work are of interest to us in evaluating proposed modifications.

In the meantime, the Supply System has implemented a defense in depth concept at WNP-2 that should either eliminate or prevent almost all plateable iodine from reaching the elevated release duct. The Supply System has also installed an effluent sample system that fully satisfies the requirements of NUREG-0737. The Supply System considers any modifications at this point to be unnecessary and without sufficient technical merit or justification. We are not aware of any current testing or research that quantitatively supports your staff's position that adding heat trace to the WNP-2 effluent sampling system will improve the representivity of our sample. WNP-2 supports your efforts for further research and testing activities to obtain more definite design guidance on line-loss variables and their impact on sample representivity.

WNP-2 is technically satisfied with our effluent sampling system. We are aware that the staff is continuing to study iodine sampling and parameters important to plate-out. These studies and their results may impact the WNP-2 design; however, any changes now contemplated would be premature and possibly unnecessary until the iodine sampling plate-out research is complete. WNP-2 intends to defer modifications of the WNP-2 effluent sample line until research activity and results are completed. We do not believe any modifications are justified at this time.

Very truly yours,


G. C. Sorensen, Manager
Regulatory Programs

cc: NS Reynolds BLCP&R
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CE Revell BPA
RT Dodds NRC Site
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