

U. S. NUCLEAR REGULATORY COMMISSION

REGION V

Report No. 50-397/90-08

License No. NPF-21

Licensee: Washington Public Power Supply System  
P. O. Box 968  
Richland, Washington 99352

Facility Name: Washington Nuclear Project No. 2

Inspection at: Walnut Creek, California

Inspection Conducted: April 2-27, 1990

Inspected by: W. K. TenBrook 5-22-90  
W. K. TenBrook, Radiation Specialist Date Signed

Approved by: F. A. Wenslawski FOR 5-22-90  
F. A. Wenslawski, Chief Date Signed  
Facilities Radiological Protection Section

Summary:

Areas Inspected: Routine inspection of radiochemical data submitted by the licensee pursuant to an inspection followup item. Inspection procedure 92701 was used.

Results: The licensee's analyses for tritium and radiostrontium agreed with NRC analyses. The licensee and NRC Fe-55 analyses did not agree. Further review of the licensee's analytical method is required to determine the cause of the disagreement.

## DETAILS

### 1. Persons Contacted

A. Alexander, Acting Chemistry Supervisor  
L. Mayne, Chemistry Supervisor  
L. Morrison, Chemistry Support Supervisor

### 2. Followup (92701)

Item 50-397/89-15-01 (OPEN): This item concerned a floor drain receiver tank liquid sample from FDR-TK-9, split between the licensee and NRC for comparison of tritium, radiostrontium and Fe-55 using the NRC verification test criteria (see enclosure). Neither the NRC or the licensee identified Sr-89 or Sr-90 when analyzed in accordance with the required detection limits. The results of the comparison for Fe-55 and tritium are presented below.

Analyte	NRC			Ratio: Licensee/NRC	Agreement Range
	Licensee Result (uCi/ml)	NRC Result (uCi/ml)	Random Uncertainty (uCi/ml)		
Fe-55	1.01E-07	9.70E-07	4.00E-08	0.10	0.75-1.33
H-3	2.91E-04	2.92E-04	5.00E-06	1.00	0.80-1.25

The tritium result was in excellent agreement. The Fe-55 result was in disagreement. However, the statistical uncertainty of the licensee Fe-55 result was approximately 30%, taken at one standard deviation, and the levels observed by the NRC and licensee were each below the required lower limit of detection. While the licensee uncertainty did not rectify the significance of the disagreement, the validity of the intercomparison was questionable under the circumstances. The licensee's analyses of Fe-55 will be reviewed during a subsequent inspection.

### 3. Exit Meeting

During the inspection period, the inspector notified the individuals listed in Section 1 of the intercomparison results. After both licensee and NRC review, no outstanding problems were identified in the licensee's written Fe-55 analytical procedure, which was similar to that used by the NRC laboratory. Discussions with the NRC laboratory indicated that plating adsorption of iron on the sample container may have affected the analysis. The inspector arranged to send a capability test sample to the licensee for Fe-55 analysis, and would examine the potential for iron adsorption in a subsequent inspection.

Enclosure

Criteria for Accepting the Licensee's Measurements

<u>Resolution</u>		<u>Ratio</u>	
<4		No comparison	
4	- 7	0.5	- 2.0
8	- 15	0.6	- 1.66
16	- 50	0.75	- 1.33
51	- 200	0.80	- 1.25
200		0.85	- 1.18

Comparison

1. Divide each NRC result by its associated uncertainty to obtain the resolution. (Note: For purposes of this procedure, the uncertainty is defined as the relative standard deviation, one sigma, of the NRC result as calculated from counting statistics.)
2. Divide each licensee result by the corresponding NRC result to obtain the ratio (licensee result/NRC).
3. The licensee's measurement is in agreement if the value of the ratio falls within the limits shown in the preceding table for the corresponding resolution.