

U. S. NUCLEAR REGULATORY COMMISSION

REGION V

Report No. 50-344/85-19

Docket No. 50-344

License No. NPF-1

Licensee: Portland General Electric Company
121 S. W. Salmon Street
Portland, Oregon 97204

Facility Name: Trojan Nuclear Power Plant

Inspection at: In-Office

Inspection conducted: May 30 and June 6, 1985

Inspector:

GP Yuhas for
G. H. Hamada, Radiation Laboratory Specialist

6/14/85
Date Signed

Approved By:

GP Yuhas
G. P. Yuhas, Chief
Facilities Radiological Protection Section

6/14/85
Date Signed

Summary:

In-Office Inspection of May 30 and June 6, 1985 (Report No. 50-344/85-19)

This in-office inspection was conducted to review the results obtained on a spiked sample provided by the NRC.

Results: No items of noncompliance were identified in the areas reviewed.

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DETAILS

1. Discussion:

As a part of the confirmatory measurements program, a spiked solution was submitted to Trojan for radiochemical analysis. This test solution was prepared and certified by NRC's reference laboratory, the Radiological and Environmental Sciences Laboratory (RESL) of the Department of Energy. The results are summarized below.

<u>Nuclide</u>	<u>Trojan uCi/ml</u>	<u>RESL uCi/ml</u>	<u>Ratio Trojan/RESL</u>	<u>Agreement* Range</u>
H-3	5.39 E-5	5.78 E-5	0.93	0.75 - 1.33
Fe-55	2.66 E-5	2.02 E-5	1.32	0.60 - 1.66
Fe-59	8.84 E-6	5.72 E-6	1.55	0.60 - 1.66
Co-60	1.25 E-5	1.08 E-5	1.16	0.75 - 1.33
Sr-89	2.55 E-4	2.43 E-4	1.05	0.60 - 1.66
Sr-90	2.88 E-5	2.68 E-5	1.07	0.75 - 1.33
Cs-137	1.61 E-5	1.20 E-5	1.34	0.75 - 1.33

*See enclosure for explanation.

In general, the results indicate adequate agreement. The result for Cs-137 is out of the agreement range, but it is just barely out. While the gamma emitters (Fe-59, Co-60, Cs-137) can be readily measured by gamma spectrometry, other components in the mix require radiochemical separation prior to measurement. Tritium (H-3), requires separation prior to measurement by liquid scintillation counting. Because Fe-55 is a soft x-ray emitter (5.9 Kev), iron must be separated from the other components. Even after separation, however, the counting procedure must account for the potential interference from Fe-59. The beta emitters, Sr-89 and Sr-90, also require separation. The counting procedure must account for measuring each in the presence of the other as well as for the ingrowth of the Y-90 daughter of Sr-90. With this report Open Item No. 84-28-01 is closed, and it can be concluded that Trojan has successfully demonstrated its ability to satisfactorily perform the required measurements for radioactivity.

2. Exit Interview

The results of this test were discussed with W. Kernion (Plant Chemist) by telephone.

Enclosure

Criteria for Accepting the Licensee's Measurements

<u>Resolution</u>		<u>Ratio</u>	
<4		0.4	- 2.5
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.