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SUBJECT: Aluminum Determination in Reactor Cooling Water

TO: See Distribution

FROM: J. F. Emery
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This memorandum reports on the determination of submicrogram amounts of aluminum in reactor cooling water by a neutron activation analysis technique. (1)

The reactor cooling water was concentrated to a small volume in covered beakers. Aliquots were taken equivalent to 160 to 400 mls of reactor water. The samples were counted over the 1.78 Mev gamma photopeak of Al^{28} (2.3 m) (Figure 1) using the 20 channel gamma scintillation spectrometer. Five samples of reactor cooling water were analyzed for aluminum by neutron activation analysis, four were from the ORR and the fifth from the Bulk Shielding Reactor. The results are summarized in Table I.

Reference

1. Leddicotte, G. W. and Reynolds, S. A., Nucleonics, March, 1951, Vol. 8, No. 3, pp. 62-65, 78.

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Table I

<u>Sample</u>			<u>Aluminum Concentration</u> <u>g/ml</u>
1. ORR (Cooling)	6-5-58	05:30	$< 3 \times 10^{-9}$
2. ORR (Cooling)	6-23-58	10:32	2.1×10^{-8}
3. ORR (Pool)	6-23-58	10:32	2.6×10^{-8}
4. ORR (Cooling)	6-24-58	08:40	2.9×10^{-8}
5. Bulk Shielding	7-7-58		4×10^{-8}

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