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 SUBJECT: Semi-Monthly Progress Report on ETR Development,
 Covering Work During Period from April 1 to April 16.
 TO: J. H. Frye, Jr.
 FROM: R. J. Beaver

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Distribution

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INTRA-LABORATORY CORRESPONDENCE

OAK RIDGE NATIONAL LABORATORY

To: J. H. Frye, Jr.
Copies: Listed Distribution

Subject: Semi-Monthly Progress Report on
ETR Development, Covering Work
During Period from April 1 to
April 16, 1956.

I. Samples for Corrosion Testing Under Irradiation Conditions in the MTR.

Further preliminary corrosion information of these alloys received unofficially from Phillips Petroleum Company is listed below:

18 days in boiling water of MTR water purity--

- a. Type 2S gained $1.0 \text{ to } 1.8 \times 10^{-4} \text{ g/cm}^2$.
- b. Al-B-Ni alloy gained $1.0 \text{ to } 1.8 \times 10^{-4} \text{ g/cm}^2$.
- c. Al-B alloy gained $8.25 \times 10^{-4} \text{ g/cm}^2$.

After 1 cycle irradiation period in MTR--

- a. Al-B-Ni alloy gained $1.54 \times 10^{-4} \text{ g/cm}^2$.
- b. Al-B alloy lost $3.1 \times 10^{-4} \text{ g/cm}^2$.

II. Manufacture of Enriched MTR Type Fuel Element in which the Fuel Plates Are to be Clad with 0.10 wt % Boron-Aluminum Alloy.

This phase has been completed and the fuel element shipped to the MTR.

III. Fabrication of Forty Plates to ETR Specifications.

This phase has been completed; a report of the results has been published, and the simulated depleted fuel plates and supporting radiographs shipped to General Electric.

IV. Preparation of Ten Samples Containing 0.02 wt % B-10 - Aluminum Alloy.

Results of Analytical Chemistry have not yet been obtained.

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V. Fabrication of Five-Ply Fuel Plates to ETR Specifications.

This alloy has been cast and the samples delivered to Analytical Chemistry for determination of homogeneity.

VI. Fabrication of Three-Ply Fuel Plates to ETR Specifications Containing 0.02 wt % B-10 - Aluminum Alloys as the Cladding Material.

This work has not been initiated.

R. J. Beaver
Metallurgy Division

RJB:fw

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