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MEMORANDUM TO FILE

FROM: ANDREW POCALYKO

Andrew Pocalyko/so

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T. R. COUGHENOUR

DATE 9/26/89 *9/11/89*

TRIP REPORT

NATIONAL RESEARCH CORPORATION
Cambridge, Mass. - July 16, 1953

On July 16, 1953 I discussed with P. J. Clough and J. H. Durant the NRC progress on providing bond layers for extended surface fuel elements.

SUMMARY

1. The corrosion testing of four uranium samples, nickel coated by an NRC technique, came to an abrupt and premature end as a result of failures in the testing equipment. The coatings were ruined in the mishap.
2. Similarly coated samples are in the process of being prepared. The corrosion tests will be re-initiated upon completion of the samples.

DISCUSSION

So far, ten nickel-coated uranium flats have been prepared by an NRC non-electrolytic vacuum technique. Only four of the samples were considered good, and these were corrosion-tested in boiling distilled water. Parts of the test equipment failed before the tests were completed. Prior to the premature termination an interesting result was obtained. One NRC nickel coating of 0.7 mil thickness showed no deterioration after 40 exposure hours, whereas a heat-treated KAPL nickel electroplate of 2 mils thickness failed after only 7 hours exposure to similar test conditions.

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During the mishap in corrosion testing equipment the NRC nickel coatings were ruined. To replace these lost sample coatings, other uranium flats are currently being prepared for corrosion testing. Steps have been taken to prevent further accidental loss of samples.

NRC personnel have continued work on modification of their technique in an attempt to provide AED with improved nickel coatings for bonding layers. Current results indicate that a sand-blasted and de-greased surface provides the most adherent deposits. In addition, tests show that the best coatings are obtained at a temperature of about [REDACTED]. Temperatures between [REDACTED] do not produce adherent coatings.