

**PRM-50-84
(72FR28902)**

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August 20, 2007 (9:24am)

OFFICE OF SECRETARY
RULEMAKINGS AND
ADJUDICATIONS STAFF

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August 17, 2007

Ms. Annette L. Vietti Cook
Secretary
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555-0001

Attention: Rulemaking and Adjudications Staff

Thick crud at EBWR: History for NRC reviewers of PRM-50-84

Dear Ms. Annette L. Vietti Cook:

The reviewers of PRM-50-84 should study the following reference that details the source and impact of thick crud at Argonne's Experimental Boiling Water Reactor during the late 1950s.

Leyse analyzed BWR crud during 1959 including thermal conductivity

Document

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Title

WATER CHEMISTRY AND FUEL ELEMENT SCALE IN EBWR

Creator/Author

Breden, C.R. ; Charak, I. ; **Leyse, R.H.**

Publication Date

1960 Nov 01

OSTI Identifier

OSTI ID: 4081362

Report Number(s)

ANL-6136

DOE Contract Number

W-31-109-ENG-38

Resource Type

Technical Report

Resource Relation

Other Information: Orig. Receipt Date: 31-DEC-61

Research Org

Template=SECY-067

SECY-02

Argonne National Lab., Ill.

Sponsoring Org

USDOE

Subject

REACTOR TECHNOLOGY; CANNING; CHEMICAL REACTIONS;
CONTAMINATION; CORROSION; DECOMPOSITION; DEPOSITS;
DISTRIBUTION; EBWR; FAILURES; FISSION PRODUCTS; FUEL CANS; FUEL
ELEMENTS; **HEAT TRANSFER**; HEATING; HIGH TEMPERATURE; LEAKS;
MATHEMATICS; MEASURED VALUES; PLATES; QUALITATIVE ANALYSIS;
RADIOACTIVITY; RADIOCHEMISTRY; REACTOR CORE; REACTORS;
TEMPERATURE; **THERMAL CONDUCTIVITY**; VOLUME; WATER

Description/Abstract

The first two sections summarize investigations in EBWR concerned with some aspects of water chemistry. The results of many of these investigations have not been previously published in a form given wide distribution. Included are studies of water conditions, corrosion products (composition, activities, transportation, deposition, and distribution), water dissociation, water activity, fission-product release, and build-up of plant activity. **The last two sections of the report give the results of studies of the heat transfer characteristics of fuel-element scale and effects of high-temperature heating on scale removal and fuel element growth. The maximum scale thickness measured was about 0.008 in. Heat-transfer calculations based on scale thermal conductivity measurements indicate the possibility of maximum fuel temperatures as high at 1692/sup o/F at 100-Mw operation of the core. This temperature is in a range where fuel growth, with resulting fuel element distortion and damage, is expected. Observed trends that may alleviate damage are the tendency of scale to flake off in high-heat transfer areas and the restraining effect of cladding on growth of fuel.** No satisfactory means has been found to descale the fuel plates. (auth)

Country of Publication

United States

Language

English

Format

Size: Pages: 105

Availability

NTIS

System Entry Date

2007 May 21

See the complete report at

<http://www.osti.gov/energycitations/servlets/purl/4081362-fmbN3r/4081362.PDF>

Robert H. Leyse

From: Angella Love-Blair
To: SECY
Date: Fri, Aug 17, 2007 2:23 PM
Subject: Comment letter on PRM-50-84

Attached for docketing is a comment letter from Robert H. Leyse on the above noted PRM. The letter was received by the rulemaking website on 8/17/07.

Mail Envelope Properties (46C5E783.152 : 11 : 10288)**Subject:** Comment letter on PRM-50-84**Creation Date** Fri, Aug 17, 2007 2:22 PM**From:** Angella Love-Blair**Created By:** ALB5@nrc.gov**Recipients**

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1898-0012.msw.doc	25088	Friday, August 17, 2007 2:18 PM

Options**Expiration Date:** None**Priority:** Standard**ReplyRequested:** No**Return Notification:**

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