

ADDRESSEES - LETTER DATED APR 8 1980

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L. Rubenstein, NRC/DSI/CPB
W. Russell, NRC/NRR
T. Speis, NRC/DSI
TIDC Accessions Unit/PDR (2) ✓
M. Tokar, NRC/CPB
J. Voglewede, NRC/CPB
S. Weiss, NRC/RS
RSR Staff

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

APR 8 1980

Those on Attached List

Dear Colleague:

Subject: Mid-Year Review of the Program Titled "Experimental Support
and Development of Single-Rod Fuel Codes

You are invited to attend the FY 1980 mid-year review of the subject
program (FIN B2043) sponsored at Battelle Northwest Laboratory by the
Office of Nuclear Regulatory Research.

Date: April 24, 1980 (Thursday)

Time: 9:15AM

Place: Room 1133, Willste Building, Silver Spring, Maryland

The meeting is scheduled for 1-½ hours and will cover accomplishments
and future plans. Handouts will be provided by Don Lanning. A copy of
the FY 1980 Program Brief and the FY 1981 Program Assumption is enclosed
for your information. A list of topics/questions for discussion is also
enclosed.

Please contact Harold Scott (427-4272) if you plan to attend.

Sincerely,

A handwritten signature in cursive script that reads "W. V. Johnston".

W. V. Johnston, Chief
Fuel Behavior Research Branch
Division of Reactor Safety Research

Enclosures: As stated

DRAFT

FY 1980 PROGRAM BRIEF

PROGRAM: WRSR

TITLE: EXPERIMENTAL VERIFICATION OF
STEADY-STATE FUEL CODESFIN: B2043
CONTRACTOR: BNWL
SITE: RICHLAND
STATE: WASHINGTON

NRC TECHNICAL MONITOR: H. SCOTT AND G. MARINO

PRINCIPAL INVESTIGATOR: C. L. MOHR AND D. D. LANNING

OBJECTIVE: OBTAIN WELL CHARACTERIZED EXPERIMENTAL DATA TO BE USED FOR MODELING
AND ASSESSMENT OF BEST ESTIMATE FUEL CODES. CONTRIBUTE TO CODE DEVELOPMENT.

BUDGET ACTIVITY: 601910041

FY 1980 SCOPE:

- TASK A:
1. TECHNICAL COORDINATION, PLANNING LIAISON WITH HALDEN PROJECT, PIE REQUIREMENTS, AND CONTRIBUTIONS TO NRC AND INTERNATIONAL MEETINGS.
 2. INITIATE IRRADIATION OF IFA-527 (RELOCATION ASSEMBLY) IN HALDEN.
- TASK B:
1. ISSUE FINAL REPORTS ON IFA-431 (PIE, SUMMARY AND DATA FOR ASSESSMENT).
 2. ISSUE REPORT ON RELOCATION KINETICS/MODELING.
 3. ISSUE DATA REPORT ON IFA-513 AND SECOND DATA REPORT ON IFA-432.
 4. PREPARE REPORT ON HIGH BURNUP FISSION GAS RELEASE IN IFA-432.
 5. PREPARE REPORT ON STARTUP BEHAVIOR (RELOCATION, CLADDING ELONGATION, ETC.) OF IFA-527.
 6. PREPARE REPORT ON SCRAM DATA INCLUDING ANALYSIS FOR SELECTED HALDEN AND PBF TEST RODS.
- TASK C:
1. COORDINATE FRAPCON CODE DEVELOPMENT WITH EG&G.
 2. PERFORM DEVELOPMENTAL TESTING OF FRAPCON-2 AND ISSUE LETTER REPORT.
 3. CONDUCT OUT-OF-PILE MECHANICAL TESTS ON SHORT RODS. MEASURE COMPLIANCE VS. STRAIN AND CYCLIC AXIAL RATCHETING.
 4. ESTABLISH FRAPCON-2 AT BROOKHAVEN FOR NRC USE.
 5. PROVIDE PRINTOUTS OF CALCULATIONS (FRAPCON-1 AND FRAPCON-2) USING THE PWR CHECK CASE SET UP BY VOGLEWEDE IN JULY 1977.

DRAFT

FY 1981 PROGRAM ASSUMPTIONS

PROGRAM: WRSR

MAR 4 1980

TITLE: EXPERIMENTAL SUPPORT AND
DEVELOPMENT OF SINGLE ROD FUEL CODES

FIN #: B2043-1
CONTRACTOR: PNL
SITE: RICHLAND
STATE: WASHINGTON

NRC TECHNICAL MONITORS: H. SCOTT AND G. MARINO

PRINCIPAL INVESTIGATORS: C. L. MOHR AND D. D. LANNING

OBJECTIVE: OBTAIN WELL CHARACTERIZED EXPERIMENTAL DATA TO BE USED FOR
MODELLING AND ASSESSMENT OF BEST ESTIMATE FUEL CODES. CONTRIBUTE TO CODE
DEVELOPMENT.

BUDGET ACTIVITY: 601910041

FY 1981 ASSUMPTIONS:

TASK A:

1. TECHNICAL COORDINATION, PLANNING, LIAISON WITH HALDEN PROJECT, PIE REQUIREMENTS, AND CONTRIBUTIONS TO NRC AND INTERNATIONAL MEETINGS.
2. COMPLETE IRRADIATION OF IFA-432 AND IFA-513 IN HALDEN.

TASK B:

1. REVIEW SOAR ON FUEL THERMAL PERFORMANCE PREPARED BY OECD.
2. PREPARE PAPER ON SCRAM DATA.
3. REPORT TRANSIENT BEHAVIOR OF IFA-513 AND IFA-527.
4. ISSUE DATA REPORT ON IFA-527.
5. ISSUE SECOND DATA REPORT ON IFA-513.
6. REPORT FISSION GAS BEHAVIOR OF IFA-432 IN QUARTERLIES.

TASK C:

1. COMPLETE ALL DOCUMENTATION AND DEVELOPMENTAL TESTING OF FRAPCON-2.
2. COMPLETE MECHANICAL TESTING OF LONG RODS. COMPLETE HOT CELL TESTING OF SHORT IRRADIATED RODS IF NECESSARY.

TASK D: PROFIT DEVELOPMENT AND ASSESSMENT

1. CHARACTERIZE ZIRCALOY TUBING IN TERMS OF SEAF (STRAIN ENERGY ABSORBED TO FAILURE) VERSUS STRAIN RATE.
2. PERFORM COMPLIANCE TESTING WITH FUEL PIN SIMULATOR TO CORRELATE $\dot{\epsilon}$ (OR \dot{P}) WITH STRAIN RATE.
3. PERFORM RAMP TESTS WITH FUEL PIN SIMULATORS AT DIFFERING HEATING RATES TO FAILURE TO VERIFY STRAIN RATE (AND $\dot{\epsilon}$) WITH SEAF CORRELATION.
4. COORDINATE ABOVE WORK WITH PCI EXPERIMENTS AT ANL, INEL (PBF), HALDEN, AND STUDEVIK.

B2043 MID-YEAR REVIEW WITH PNL
APRIL 24, 1980

TOPICS/QUESTIONS FOR DISCUSSION

1. Status of IFA-432, 513, and 527 (e.g., instrumentation performance, current burnup, PIE, and data reduction).
2. Preparation of input to State-of-the-Art Report (SOAR) being sponsored by OECD.
3. Ex-reactor mechanical testing program.
4. Stored energy report update on PWR rods.
5. Status of FRAPCON-2
 - a. PNL modeling tasks,
 - b. User manual input,
 - c. Developmental assessment,
 - d. FRAPCON-1 and -2 calculations for "Voglewede" case,
 - e. Plans for FY 81 and 82.
6. PCI program plans for FY 1981/1982.
7. Topical reports and papers issued and planned.
8. Related DOE programs.
9. Related EPRI programs.
10. Related Halden programs.
11. Plans for program completion in FY 82/83.
12. Reporting of Uncertainties in Reactor Safety Research