

SEP 4 1985

18
Distribution:

Subj
Circ
Chron
Branch r/f
RMeyer
RMeyer r/f
MSilberberg
OEBassett
WMorrison
DRoss
RMinogue
FGillaspie
TMargulies
JMitchell
GMarino

MEMORANDUM FOR: M. Ernst, Deputy Director
Division of Risk Analysis and Operations, RES

FROM: M. Silberberg, Branch Chief
Fuel Systems Research Branch, DAE/RES

SUBJECT: MEMO OF UNDERSTANDING ON CODE PACKAGE

The following summarizes agreements from our meeting on August 15, 1985 concerning source term calculations for the risk rebaselining work to be reported in NUREG-1150.

The Fuel Systems Research Branch will assume management responsibility and funding liability for the FY-86 portion of FIN-A3290, "Verification of Source Term Code Package Calculations." We will merge this project with the related FIN-A3284, "Source Term Code Package Verification." Full access to all of the information related to this program will be provided to DRAO, and the project Manager, R. Meyer, will expect to work closely with T. Margulies in this regard.

Configuration control on the Source Term Code Package will be maintained by BCL under Task #9 of FIN-B7499 (the "Umbrella"), which we manage. Modifications to the reference version of the code will be made only when the reasons for making a change are compelling. The decision to make a change will be based on recommendations from the code developers at BCL, the BNL staff doing the QA work, and the source term experts who serve as consultants for the BNL source term programs. Normally, the decision to make a change will be made by the Fuel Systems Research Branch. During the course of the NUREG-1150 calculations, no changes to the Source Term Code Package will be made without your concurrence.

The group of source term experts (Denning, Gieseke, Kress, Powers, and Pratt) will be retained under our QA program at BNL. These experts will be made available for review meetings on source term matters in your SARRP NUREG-1150 program.

8604040382 860218
PDR FOIA
SHOLLY85-772 PDR

C/14

SEP 4 1985

In summary, the Fuel Systems Research Branch feels responsible for the source term science going into your risk rebaselining effort, and we will fulfill this responsibility with the activities described above.

Original Signed By

M. Silberberg, Branch Chief
Fuel Systems Research Branch
Division of Accident Evaluation
Office of Nuclear Regulatory Research

bcc: J. Hickman, SNL
A. Benjamin, SNL
D. Williams, SNL
R. Denning, BCL
J. Gieseke, BCL
P. Cybulskis, BCL
R. Bari, BNL
T. Pratt, BNL
N. PRICE, DRAO

DAE:FSRB
Meyer:md
8/28/85

Liell

DAE:FSRB
Silberberg
8/28/85

MS

DAE:DD
Morrison
8/28/85

DAE:DD
Bassett
8/28/85

RES:DRAO
Ernst
8/30/85

mpuile
8/30/85

September 25, 1985

Weekly - Fuel Systems Research Branch

1. PBF Severe Fuel Damage Tests

Recent data from the PBF Severe Fuel Damage tests has shown significant differences in fission product release rates between low burnup (100 MWD/MT) and high burnup (33,000 MWD/MT) and between heatup and cooldown during severe accidents. Results of four experiments conducted have indicated that high burnup fuel released fission products at release rates of an order of magnitude greater than those of relatively fresh fuel during heatup from 1700 to 2400°K. The reason for this result is under study at INEL. The same tests also identified significant differences in release of radioactive fission products having different half lives. In addition, results from the last PBF test, which incorporated control rod materials, revealed that one of the control activation products (In^{116}) was released, with activity levels equivalent to the activity of some of the fission products. Up until now not a lot of attention has been given to activation products. These results are preliminary and are being studied more.

2. Source Term Code Package

The stand-alone codes of the Battelle Suite of codes (see BMI-2104 and NUREG-0956) have now been combined to form the Source Term Code Package. Minor modifications have been made to the codes in response to the peer review process, and the individual codes have been coupled in a consistent manner to the extent practical. Major portions of the code package have recently been taken to Brookhaven National Laboratory, where they are now being run and subjected to a quality assurance audit. The first set of plant analyses with the code package have been completed at BNL and now are undergoing audit. Additional analyses with the code package are being performed for the DRAO/RES risk rebaselining program.

3. Iodine Chemistry Workshop

Dana Powers from Sandia and Ed Beahm from Oak Ridge attended the Iodine Chemistry Workshop at Harwell, United Kingdom on September 8-13, 1985. The topics of discussion included the thermal chemistry of iodine in aqueous solution, radiation effects on the aqueous chemistry of iodine and reactions of iodine with organic materials to form organo-iodine compounds. The aqueous thermal chemistry of iodine was thoroughly studied and sophisticated kinetic models have been developed. On the effect of radiation on aqueous iodine chemistry, it was generally recognized that the effect is important but may be reduced if contaminants such as those found in the sump of TMI-2 are present. As for organic iodides formation, experimental evidence seems to indicate their origin is in irradiated aqueous solutions. The impact of these findings on severe accident source terms is that irradiated water pools may be important sources of volatile iodides.