UNITED STATES
NUCLEAR REGULATORY COMMISSION
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MEMORANDUM FOR: M. Silberberg, Assistant Director
Accident Source Term Program Office
Office of Nuclear Regulatory Research

FROM: Ralph O. Meyer
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SUBJECT: NRC SOURCE TERM CODE PACKAGE

On April 10, 1985, Hans Ludewig (BNL) and I met with J. Gieseke, P. Cybulskis, H. Jordan, and K. Lee at BCL to discuss final plans for packaging the BMI-2104 Battelle suite of codes. This packaging will be done in several steps as follows.

In the next one to two months (i.e., by June 15, 1985), additions (as opposed to subtractions to be mentioned below) will be made to produce a good working code package. The constituents of this package will also be discussed below. This work will proceed with a high priority, and the BCL staff believes that this is the quickest route to new sequence calculations -- quicker than starting immediately with the uncoupled codes. BNL will assist BCL in this early phase, particularly in the area of core-concrete interactions.

In the following four to six months, subtractions from the code will be made. That is, unused options (like 4 unused in-vessel fission product release options, 2 unused meltdown models, etc.) will be removed from the package to make it more efficient and less user-dependent. A code manual will also be prepared during this time. Since we will still be utilizing the basic codes, reviewed in the BMI-2104 study, the manual for the code package will rely on existing manuals for the individual codes. The new manual will merely discuss any code changes that have been made and describe how to use the package. During this time, BNL will be actively engaged in quality assurance verification, including some detailed comparisons with BMI-2104 cases.

Following verification and documentation of this NRC Source Term Code Package, work will continue at BCL and BNL to provide additional validation (or benchmarking) with new data and mechanistic codes leading to improved versions of the code package (e.g., Mod 1).

The code package will consist of the following:

MARCH-3

MARCH-3 will be MARCH-2 with CORSOR-M, CORCON2 and probably VANESA (a recent version) built right into MARCH. CORSOR has already been put into MARCH at BCL. CORCON has been put into MARCH at SNL. And CORCON has been coupled directly with VANESA at BNL. Therefore, no development work should be required to assemble MARCH-3.

TRAP-MELT-3

TRAP-MELT-3 is a combination of TRAP-MELT-2 and MERGE. This work has been completed at BCL, and a draft report describing some of the revaporization calculations with this code has been completed.

NAUA/SPARC/ICEDF

Near-term changes will concentrate on better interfaces with MARCH and TRAP-MELT. An improvement is being made in the treatment of water droplets in the MARCH/NAUA interface. A small program has also been written to un-bin the VANESA output so that NAUA will get individual species. A few other modest changes are also planned.

In summary, the code package as it will exist this summer will not require any new developmental work. It will consist of the basic BMI-2104 methodology, which was reviewed, along with some improvements that were made during the course of that review (e.g., CORCON 2).

Procedurally, BCL was to give us a letter report proposing the specifications for the code package, and they did that on November 9, 1984. We were then to reply to BCL with further instructions to proceed. Our meeting of April 10, 1985 and this memorandum are intended to provide that feedback.

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