

INTERIM REPORT

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Author(s):

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R. Sherry
Division of Reactor Safety Research

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INTERIM REPORT

NRC Research and Technical
Assistance Report

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January 15, 1981

Mr. Richard Sherry
Office of Nuclear Regulatory Research
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Mr. Sherry:

Program Title/Activity Identification

This is the sixteenth monthly report for the project "Steam Generator Tube Rupture Iodine Transport Mechanisms", which is Task 12 of agreement NRC-04-76-293.

Progress and Technical Highlights for
December, 1980

Task I

Checkout experiments with the coated slide deposition probe have proved successful for use with sprays into high pressure air. Several revisions to the design were necessary to eliminate problems of excessive moisture collection in the coating or destruction of the coating by air jets during sampling or sample removal. The air jets resulted from pressure equilization between the slide-containing chamber and the gas outside the chamber. It was found that the high temperature steam environment destroyed the physical form of the magnesium oxide coating making it unsuited for droplet collections. Calculations indicated that this may have resulted from a chemical reaction between the coating and the steam. It was, therefore, decided that the system would be operated with 900 psia air at ambient temperature on the secondary side. This condition is not expected to affect the size of droplets formed in the spray.

Task II

A user's guide to the recently completed SGTR accident analysis code was prepared. A topical report on the behavior of iodine in steam generators following a tube rupture is also complete in draft form. The report describes, in detail, the processes that have been included in the computer code, the models that were developed to describe these processes as well as the transport and deposition equations that are solved in the code.

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Sensitivity analysis runs of the code were made in order to assess the relative importance of the magnitudes of the various input parameters as well as the code models. The results of these runs are currently being analyzed. The conclusions drawn from this analysis will be included in the final version of the topical report.

Anticipated Activities in January

Task I

The test matrix is currently being run and is expected to be completed by January 21.

Task II

Modifications will be made to the computer code to include the effect of CsI as the chemical form of iodine. A preliminary version of the code is being sent to the NRC with documentation in draft form.

Costs

Costs for December were \$14,700 including a fee of \$274. Monthly expenditures are shown in Figure 1. The cumulative expenditure on the program is \$160,685.

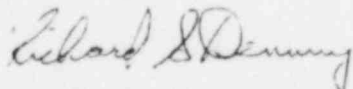
Potential Problems

Major problems were encountered in the measurement of droplet sizes which resulted in considerable additional effort than anticipated. Additional funding will be required to complete the experimental effort.

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This informal document contains information of a preliminary nature and was prepared primarily for the interim use in light water reactor programs in the U.S. Thus, it is subject to revision or correction, does not constitute a final report, and should not be cited as a reference in publication.

Sincerely,



Richard S. Denning
Research Leader
Nuclear Systems Section

RSD:erc

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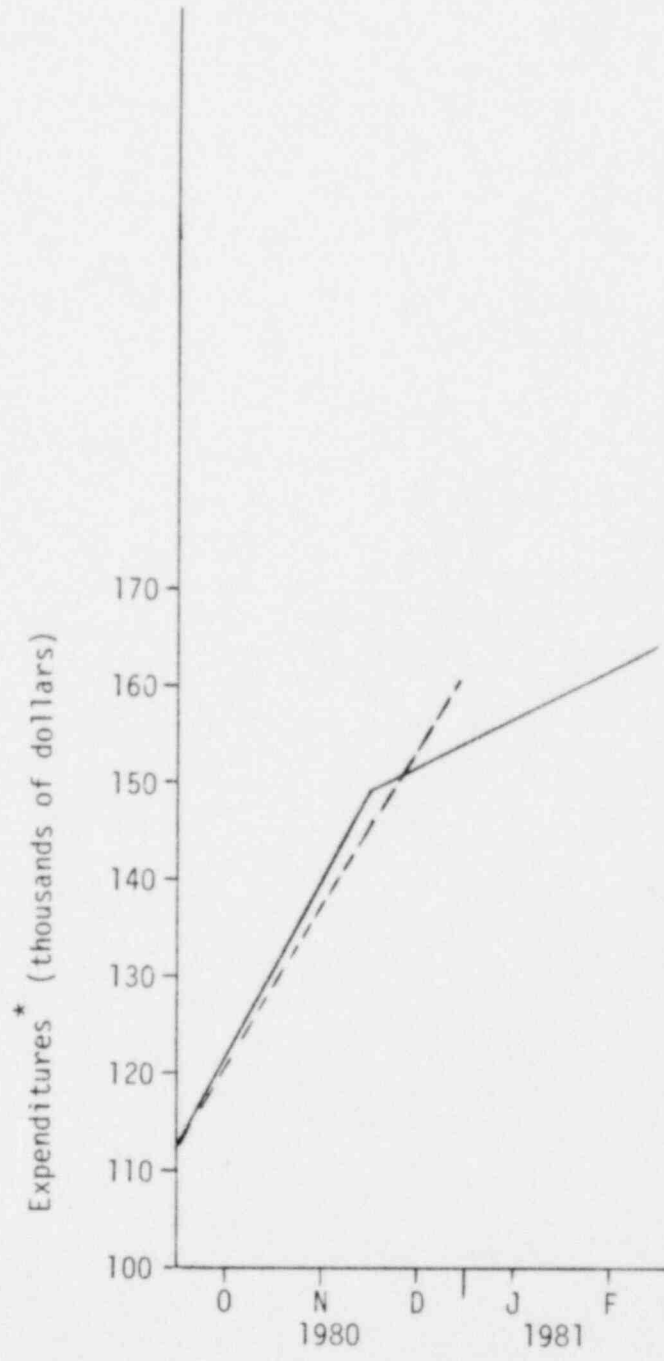


FIGURE 1. EXPENDITURES

* Includes proposed effort on Csl.