

INTERIM REPORT

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INTERIM REPORT

NRC Research and Technical
Assistance Report

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August 12, 1980

G. S. Lewis, Jr.
Systems Performance Branch
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U.S. Nuclear Regulatory Commission
MS 1130-SS
Washington, DC 20555

Dear Lew:

ACCIDENT AEROSOL CHARACTERIZATION - JULY MONTHLY REPORT

Approximately 80% of the operating funds authorized in FY-80 (approximately \$311K) has been spent.

TASK A. PROJECT MANAGEMENT

At the end of July, approximately \$311K of the \$390K in operating funds authorized for FY-80 has been expended. The funds spent in July (\$30.6K) bring the total project spendings to \$444K of a total of \$525K authorized. There are \$66K remaining. FY-80 spending is at 80% with 83% of the time expended.

The June figures reported July 15 were missing one week of spending (\$9.2K).

Approval to allocate \$1200 in funds for the attendance of Arnold Weintraub (Germantown DOE - Division of Operational and Environmental Safety) at an October 1980 meeting at Lawrence Livermore Laboratory has been obtained within PNL. Paperwork to DOE-Richland Operations has been initiated. No difficulties are foreseen at this time.

At the meeting of the Research Review Group (RRG) in Silver Spring July 23, PNL and LASL presented a joint program plan for experiments and analyses. The near term experimental plan was approved by NRC. On July 24 Sue Sutter of PNL presented the PNL wind tunnel program to the RRG.

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TASK B. DEFINE MAJOR, CREDIBLE ACCIDENTS FOR MOX PLANTS

On July 15 in Denver, J. Mishima and P.C. Owzarski of PNL met with R.A. Martin and W.S. Gregory of LASL and H.W. Godbee and E.L. Compere of ORNL to review the adequacy of controlling parameter data for accidents in tail-end fuel cycle facilities.

On July 25 at the Research Review Group meeting PNL presented a "walkthrough" of controlling parameters on fire analyses in mixed oxide fuel fabrication plants. A basic fire model concept was presented that was derived from the Coulbert and Harmathy fire models.

TASK C. LITERATURE REVIEW

References for sections on the behavior of particles in free fall spills and resuspension of powder have been compiled. Work on pressurized releases has begun.

TASK D. EXPERIMENTS TO CHARACTERIZE ACCIDENT GENERATED AEROSOLS

As a result of decisions made at the RRG meetings of July 23-25 work on the proposed wind tunnel at 242-B is being put in "mothballs". Some final calculations to confirm fan selection are being completed so that the design phase will be finished (except for the test section) before the work is set aside.

Six experiments measuring the airborne release from depleted uranium dioxide powder spills have been completed. Chemical analysis methods are being developed, and gravimetric results gave a measurement of mass airborne. Impactor samples did not have sufficient material for gravimetric analysis. Significantly less DUO (density 10.76) became airborne as a result of spills than identical spills with TiO₂ (density 4.26). Values for DUO ranged from 50 to 80% less. These experiments are continuing.

The powder gun is nearing completion and the first of a series of performance tests has been scheduled for August 15. This test will be performed in the RART with TiO₂, and samples will be taken using the current sampling matrix.

Sincerely,

P. C. Owzarski
Applied Meteorology & Emissions Assessment
Atmospheric Sciences Department

cc: W.S. Gregory/R.A. Martin - LASL
H.W. Godbee/E.J. Fredrick - ORNL