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Contract Program or Project Title: ACCIDENT AEROSOL CHARACTERIZATION

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Responsible NRC Individual and NRC Office or Division _____

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LETTER REPORT



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August 16, 1983

Steven Bernstein
U.S. Nuclear Regulatory Commission
Office of Nuclear Regulatory Research
Transportation & Materials Risk Branch
5650 Nicholson Lane
Rockville, MD 20852

Dear Steve:

ACCIDENT AEROSOL CHARACTERIZATION AUGUST MONTHLY REPORT

From October 1, 1982 through July 31, 1983, 86.1% or \$288.0K of the available FY-83 operating funds (\$334.3K) have been spent.

PROJECT MANAGEMENT

This report covers progress from June 27 through July 31, 1983. Expenditures during that period were \$25.4K. FY-83 expenditures are now \$288.0K. This is 86.1% of the expense funds available (\$334.3K). The corresponding available time was 82.5% of FY-83.

A reevaluation of funds that could be left over at the end of FY-83 gave us a figure of \$5K maximum to \$0K minimum. The uncertainty is due to primarily the experimental time required to get the 30 experiments completed and uranium samples analyzed. My original evaluation was for \$9K to be left over on September 30, but I did not include enough funds for uranium analyses. I will make another projection at the end of August.

TASK C - FIRE EXPERIMENTS FOR RADIOACTIVE RELEASE

The actual taking of data from burning contaminated materials began in late July. The plan to complete an exploratory data base of about 30 runs included the following as fuels: polychloroprene, polystyrene, PVC, PMMA, cellulose and kerosene. UNH and DUO will be used as contaminants. These runs should be complete by September 1. Uranium analyses will require 2-3 weeks additional time. Thus it will be the end of FY-83 before we have all the results in hand from the initial data base in hand. Limited data analyses will begin before all uranium analyses are known. Since we aim to get new models from the data, we might find that our initial data base needs to be expanded to get adequate



Steven Bernstein
Page 2
August 16, 1983

models. Our intentions as explained in the February '83 RRG meeting were to use the initial runs to see what variables were important and then expand the experimental base using the most important variables. Until we see the radioactive release data we cannot determine the level of effort required beyond the initial experiments. (The data base explained at the February RRG meeting had 168 proposed experiments from which we selected 48 as "core" experiments. We think 30 experiments will give us enough information to decide on more--if we can afford it.)

TASK D - PRESSURIZED RELEASE MODELS

Work here has continued on calculating various parameters for the various experimental runs. Marcel has measured the velocity of the powder front from high speed films taken during some of the releases. These velocities will be useful in determining the effect of enclosures. We have also almost completed corrections for drop evaporation and fallout in the liquid releases.

We will not be able to finish a draft document on pressurized release models by September 30. The delay (1-2 months) is due to a late start, unexpected complexity of some calculations, and concern for overrun of the project FY-83 budget.

Sincerely,

A handwritten signature in cursive script that reads "P.C. Owczarski".

P.C. Owczarski, PhD, Group Leader
Aerosol Engineering Group
Atmospheric Processes & Exposure Assessment Section
GEOSCIENCES RESEARCH AND ENGINEERING DEPARTMENT

PCO:dh

Enclosure

cc: W.S. Gregory/R.A. Martin - LANL
M. Siman-Tov - Union Carbide

July 31, 1983

PNL SCHEDULE/PROGRESS OF DELIVERABLES - FY-83

TASK A. Accident Analysis Handbook

1. AAH. Chapters 2,3,4 (Rework of ORNL Material)
Draft Report due January '83.

Percent Complete 100

2. Gaps in ORNL Material for AAH
Letter Report due January '83.

Percent Complete 100

3. AAH - Chapters 2,3,4 (MOX/FIRINI)
Final Report due 3 months after NRC comments

Percent Complete -

TASK B. Fire Experiments - Planning and Modeling

1. FIRINI Code Tape (with Draft Manual)
due November 1982.

Percent Complete 100

2. Scoping Analysis of Radioactive Source Term Models in Fires.
Letter Report due January '83.

Percent Complete 100

3. Preliminary Concepts for Improved Radioactive Source Terms
Models in Fires. Letter Report due January '83.

Percent Complete 100

4. Plan for Experimental & Analytical Efforts to Improve Fire
Radioactive Source Term Models. Letter of Plan due January '83.

Percent Complete 100

5. FIRINI User Manual and Tape - Final Version due 3 months after
NRC Comments.

Percent Complete -

6. New Radioactive Material Fire Models. Draft Report due September '83.

Percent Complete -

TASK C. Fire Experiments for Radioactive Release

1. Radioactive Material Fire Tests
Draft Report due July '83.

Percent Complete 20

TASK D. Pressurized Release Models

1. Free-Fall Models
Draft Report due November 1982

Percent Complete 100

2. Pressurized Final Report due
June 1983

Percent Complete 100

3. Pressurized Release Models
Draft Report due September 1983

Percent Complete 15

TASK E. FY-82 Carry-Over

1. Factory Mutual Fire Tests
Draft Report due December 1982

Percent Complete 100

2. Combustion Product Literature Review
Final Draft Report due December 1982

Percent Complete 100

3. Aerosol Models Literature Review
Final Draft Report due February 1983

Percent Complete 100