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September 1, 1982

Steven Bernstein
U.S. Nuclear Regulatory Commission
Office of Nuclear Regulatory Research
Transportation & Materials Risk Branch
Standards Section
Mail Stop NL 5650
Washington, DC 20555

Dear Steve:

ACCIDENT AEROSOL CHARACTERIZATION - JULY MONTHLY REPORT

This monthly report covers progress under both FIN-B2287 and FIN-B2407 entitled AEROSOL RELEASE OF RADIOACTIVE MATERIALS FROM FUEL CYCLE FACILITY ACCIDENTS and AEROSOL RELEASES OF RADIOACTIVE MATERIALS FROM ACCIDENTS, respectively.

Through June 27, 1982, 62.9% or \$338.9K of the available operating funds for FY-82 have been spent.

PROJECT MANAGEMENT

FY-82 operating expenditures through June 27, 1982 were \$338.9K, which is 62.9% of the available \$537K. The corresponding working period (October 1-June 27) was 73.7% of the available time in FY-82. Expenditures from May 31 to June 27 were \$31.8K. Factory Mutual subcontract charges are still unbilled even though approximately 50% of the experimental work is completed.

A PNL Schedule/Progress of Deliverables - FY-82 is attached. It represents progress up to May 30, 1982. Please refer to it along with the narrative task progress discussed below.

TASK A - A.A.H. DELIVERABLES

Marcel has continued to prepare the A.A.H. sections for FIRIN1 and FIRIN1 User's Manual.

TASK B - AEROSOL GENERATION EXPERIMENTS

A paper entitled "Investigation of Accident-Generated Aerosols: Pressurized Powder Release Experiments" was presented at the 1982 American Industrial Hygiene Conference in Cincinnati, Ohio. Concurrently, a paper reporting this work was submitted for publication in the American Industrial Hygiene Association Journal.

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An article based on earlier work, "Investigation of Accident-Generated Aerosols: Releases from Free Fall Spills" appears in the July 1982 American Industrial Hygiene Association Journal.

These activities have generated interest in the project; requests for reprints have come from both this country and abroad. Lists of the requestors are attached. There are two categories, one for those wanting information and reports on free fall spills and pressurized releases and a second for those interested in the literature review and total project.

During June drafting a document reporting the pressurized powder and liquid experiments continued. Writing the FY-83 RART plan was completed and it is now in final word processing.

Mark Halverson is now contributing to the aerosol generation tasks. He contributed a section on potential explosive release experiments that has been included in the FY-83 RART plan document. He was co-author of an abstract on pressurized liquid releases submitted to the Aerosol Technology Meeting to be held at UC Berkeley in August.

TASK C1 - FIRE EXPERIMENTS DELIVERABLES

Factory Mutual Research Corporation has completed about 50% of the experimental work. Documentation of the results in monthly reports is about 30% complete.

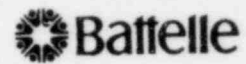
TASK D - FAILED COMPARTMENT TESTS

John Glissmeyer has sent you a review copy of the document "Review of Models Applicable to Accident Aerosols", NUREG/CR-2835, PNL-4294 for review and comment on June 24.

TASK E - MODELS

The free fall spills models and draft documentation are more likely to be completed in September, rather than in August.

The coding of FIRINI was completed by the end of June. This was possible only through nearly heroic efforts of Martin Chan and Marcel Ballinger.



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Sincerely,

A handwritten signature in cursive script, appearing to read "P. C. Owczarski for".

P. C. Owczarski, Ph.D.
Senior Research Engineer
Applied Meteorology & Emissions Assessment Section
Geosciences Research and Engineering Department

PCO:dh

Enclosures

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

People Requesting Information and Reports on Free Fall Spill & Pressurized Release

1. Mark Hoover
Lovelace ITRI
Albuquerque, NM
2. Mr. Stanley S. Grosse
Corporate Engineering Department
Hoffman-La Roche Inc.
Nutley, NJ
3. Dr. Vittorio Prodi
Comitato Nazionale
Per L'Energia Nucleare
Centro Studi E. Ricerche
Ezio Clementel
Via Mazzini, 2 40138 Bologna
ITALY
4. Mr. Charles Griffin
Rockwell International
8900 DeSota Avenue
Canoga Park, CA
5. Clyde Roe
United States Gypsum
Des Plaines, IL
6. James Johnson
Lawrence Livermore Laboratory
Livermore, CA
7. Melvin First
Harvard School of Public Health
Boston, MA
8. Vilija Markunas
Sandia National Laboratory
Albuquerque, NM
9. Ken Yoshida
Department of Social and Preventive Medicine
University of Saskatchewan
Saskatoon
10. A. Takami
Yamawaki Jr. College
Tokyo
11. Douglas W. Cooper, PhD.
276 Marlborough Street
Boston, MA
12. D. Jeff Burton
Radian Corporation
Salt Lake City, UT

People Interested in the Literature Review and Total Project

1. Dr. Tom Fry
Associated Nuclear Services
123 High Street
Epsom, Surrey KT19 8EB
United Kingdom

2. Mr. J. A. Williams
Head of Technical Services
R107 Rutherford House
British Nuclear Fuels Limited
Risley Warrington WA36AS
United Kingdom

June 25, 1982

PNL SCHEDULE/PROGRESS OF DELIVERABLES - FY-82

TASK A. A.A.H. Deliverables

1. Revise Chapters 2 and 3 to Accomodate FIRIN1 (Sept 82)
Percent Complete 50
2. Revise Chapter 4 to Accomodate FIRIN1 (Sept 82)
Percent Complete 50
3. Write FIRIN1 User's Manual (Sept 82)
Percent Complete 20
4. ORNL Material into New Format (Dec 82)
Percent Complete 5
5. Identify Further Needs in ORNL Material (Dec 82)
Percent Complete 0
6. First Explosion Problem (See Task C2.)
Percent Complete --
7. Complete Planning Document with LANL (June 82)
Percent Complete 70

TASK B. Aerosol Generation Experiment Deliverables

1. Revised Free Fall Spills Document (Nov 81)
Percent Complete 100
2. Extended Spills (Dec 81)
Percent Complete 100
3. Pressurized Powders and Liquids Document (1st Draft Aug 82)
Percent Complete 30
4. FY-82 RART Plan (July 82)
Percent Complete 97
5. Revised Source Term Literature Review (Early 82)
Percent Complete 100

TASK C1. Fire Experiments Deliverables

(Factory Mutual Experiments Begin Jan. 82)

Factory Mutual Final Report (Sept 82)

Percent Experiments Complete 50

Percent Monthly Documentation Complete 30

Percent Final Documentation Complete 0

TASK C2. Fire and Explosion Studies

1. Combustion Products Literature Review (Jan 82)
Percent Complete 100
2. LANL Smoke Generator (Feb/March 82)
Percent Complete 100
3. Initiate Explosion Parameters Literature Review (Oct 81)
4. Draft Explosion Parameters Literature Review (3rd Qtr '83)
Percent Complete 20 (first outline complete)
5. Develop Preliminary Level One Source Term Models for Explosions
Percent Complete 60
6. Develop Radioactive Release Scenario for Each Model in 5.
(Letter Report Sept 82)
Percent Complete 20
7. For A.A.H., Provide Step-by-Step Procedures for Models in 5.
(1st Qtr '83)
Percent Complete 0
8. For A.A.H., Provide Sample Explosion Problem
(2nd Qtr, FY-83)
Percent Complete 0

TASK D. Failed Compartment Tests Deliverables

SUBTASK 1. Experiment Planning

1. Aerosol Behavior Code Literature Search (Jan. 82)
Percent Complete 100
2. Summarize Historical Data on Glovebox Fires (Informal Report - April 82)
Percent Complete 80
3. Experimental Plan to Characterize Glovebox (April 82)
Percent Complete 35
4. Preliminary Plan for First Fire Release (Aug. 82)
Percent Complete 10

SUBTASK 2. Experimentation

1. Complete Glovebox Characterization (June 82)
Percent Complete 0
2. Analyze Data (July 82)
Percent Complete 0
3. Prepare Equipment for Fire Experiments (Late 82)
Percent Complete 0

TASK E. Models Deliverables

1. Free Fall Spills (Draft Aug 82)

Percent Complete 40

2. Combustion Products Computer Code (Aug 82)

Percent Complete 30

3. Pressurized Releases (Late 82)

Percent Complete 0

4. Task D Support - Well Mixed Compartment (Late 82)

Percent Complete 0

Accession No. _____
Contractors Report No. _____

Contract Program or Project Title: ACCIDENT AEROSOL CHARACTERIZATION

Subject of this Document: Progress reported for JUNE 82

Type of Document: Informal Monthly Progress Report

Author(s): P. C. Owczarski

Date of Document: September 1, 1982

Responsible NRC Individual and NRC Office or Division _____

Steven Bernstein, DRA, RES

Prepared by
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U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

NRC FIN NO. B2287 & B2407

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LETTER REPORT