PDR

LETTER REPORT

NRC Research and Technical Assistance Report

June 23, 1981

Accession No. _____

Contractors Report No. _____

Contract Program or Project Title: INVESTIGATION OF VENTILATION COMPONENT RESPONSE TO LARGE-PRESSURE PULSES

Subject of this Document: Progress reported for May 1981

Type of Document: Informal Monthly Progress Report

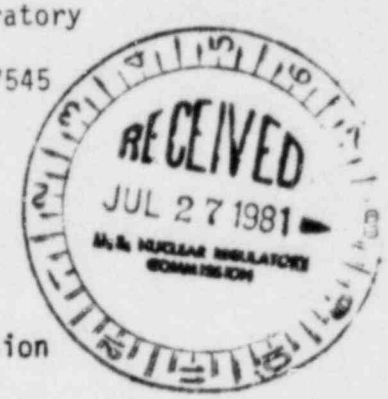
Author(s): W. S. Gregory, H. L. Horak

Date of Document: June 23, 1981

Responsible NRC Individual and NRC Office or Division

Donald E. Solberg, Section Leader, Standards Sections, TMDB, DES

Prepared by
Los Alamos Scientific Laboratory
P.O. Box 1663
Los Alamos, New Mexico 87545



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

NRC FIN NO. A7028

Distribution:
J. Ayer
A. T. Clark
P. Loysen
G. Lewis
D. Solberg
S. Bernstein

LETTER REPORT

University of California
LOS ALAMOS SCIENTIFIC LABORATORY
Post Office Box 1663 Los Alamos, New Mexico 87545

In reply refer to: Engineering Analysis
Mail stop: WX-8-4260 (R295)

June 23, 1981

777

Mr. D. E. Solberg, Chief
Systems Performance Branch
Division of Safeguards, Fuel Cycle
and Environmental Research
US Nuclear Regulatory Commission
MS 1130SS
Washington, DC 20555

Dear Don:

SUBJECT: R295 MONTHLY PROGRESS LETTER FOR MAY 1981--INVESTIGATION OF VENTILATION COMPONENT RESPONSE TO LARGE-PRESSURE PULSES

Please let us know if you have any questions or comments.

Sincerely,

William S. Gregory

Henry L. Horak

WSG/ng

Cys: J. E. Boudreau/R. A. Haarman, EP/NRC, MS 671
L. W. Hantel, WX-DO, MS 945
W. A. Bradley, WX-8, MS 777
H. L. Horak, WX-8, MS 777
E. S. Idar, WX-8, MS 777
R. W. Leep, WX-8, MS 777
H. A. Lindberg, WX-8, MS 777
CRMO (2), MS 150
WX-8 File, MS 777

NRC Research and Technical Assistance Report

PROGRAM STATUS REPORT

TITLE. Experimental Evaluation of Ventilation System Components During Large-Pressure Pulses

PROJECT NO: R295

FIN NO: A7028

CONTRACTOR: Los Alamos National Laboratory

MONTH COVERED: May 1981

BUDGET STATUS: Annual Budget $260 k (includes FY 1980 carryover of $250 k) and planned carryover to FY 1982 of $65 k)

Monthly spending	: $ 31.6 k
Cumulative Spending:	$172.8 k
Funds Remaining	: $ 87.2 k

I. PROGRAM DESCRIPTION

The objective of this program is to experimentally evaluate the performance of ventilation system components subjected to simulated tornado environments.

The high-efficiency particulate air (HEPA) filter is considered to be the most crucial ventilation system component for maintaining the confinement of radioactive particulates. Therefore we selected this component for initial study and evaluation. We have determined the structural response of standard nuclear-grade HEPA filters for major tornado parameters (peak pressure, pressurization rate, and duration) and major filter characteristics (pack tightness, air flow direction, pack thickness, separator type, faceguards, particulate loading, manufacturer, and medium strength).

In FY 1981 we will determine the filtration efficiency of these filters for simulated tornado transients. Other components to be evaluated in FY 1981 are centrifugal and axivane fans.

II. HIGHLIGHTS/SIGNIFICANT MONTHLY ACTIVITITES

Damper Testing - The inlet-vane damper for the 24-in. centrifugal blower was tested on the tornado simulator for quasi-steady behavior. The data are beirg reduced.

Blower Testing - The development of software to produce computer-generated movies showing experimental blower performance response to tornado pressure transients was completed. The software was successfully tested by generating a movie showing the performance response of a 24-in. centrifugal blower subjected to a pressure transient at the inlet for a pressurization rate of 0.6 psi/s and a peak pressure level of 1.0 psi. The results indicate that the dynamic response performance curve is in close agreement with the quasi-steady performance curve for this blower.

The 24-in. centrifugal blower is now being set up for dynamic and quasi-steady blowdown testing through the exhaust side.

Test Lab Instrumentation - We made additions to the test sequence controller to provide pressure feedback and dual rate operation. These additions provide more control over the shape of the pressure transient.

The timing light generator was modified to accept external triggering. This change allows the cameras and the oscillograph to be slaved to the system clock.

III. PROGRAM DEVELOPMENT VARIANCE

There is no program development variance to report this month (Fig. 1).

IV. BUDGET VARIANCE

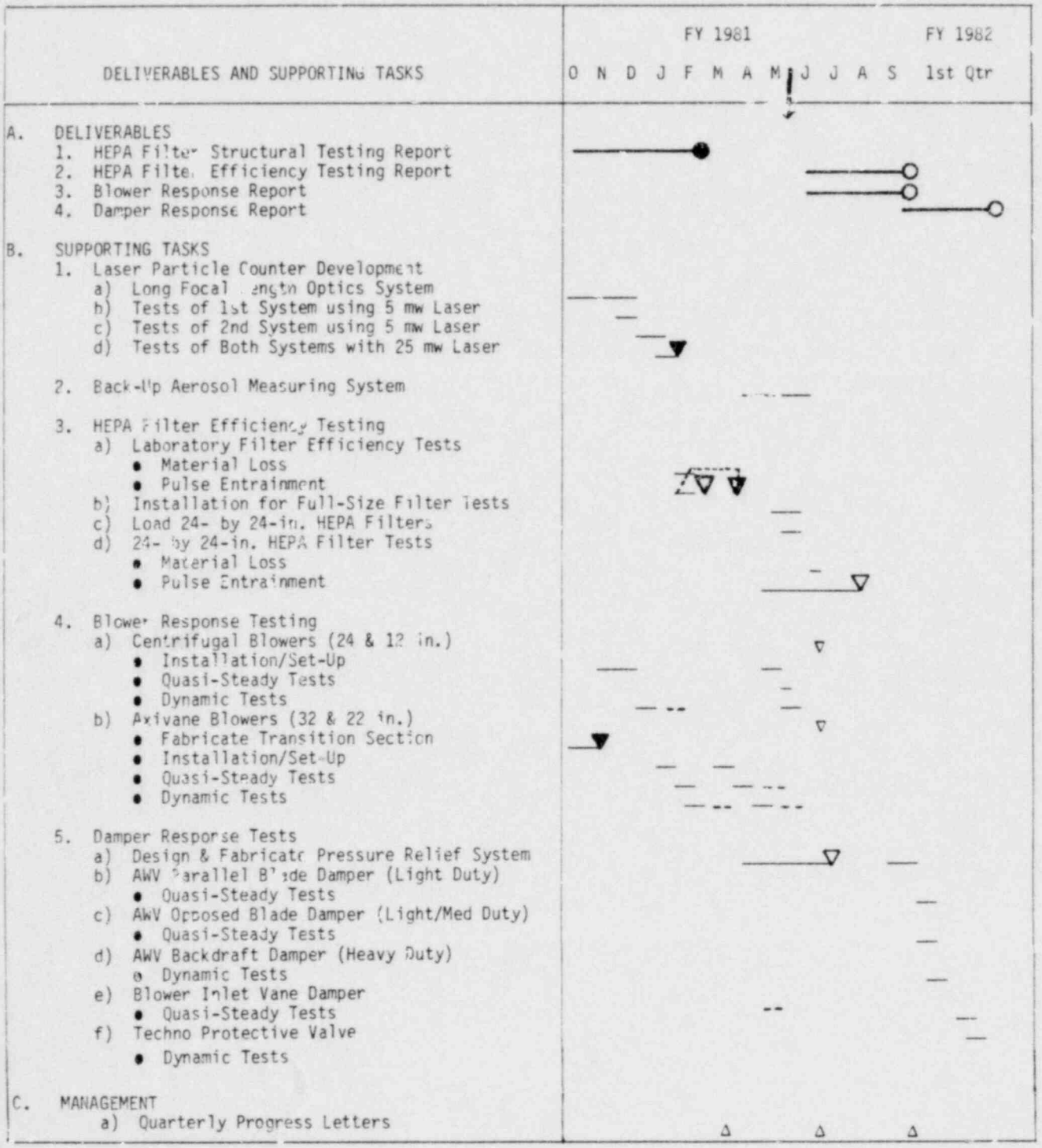
At this time, there is very little difference between the planned and actual budgets (Fig. 2).

V. PROBLEMS AND ISSUES

We have no problems or issues to discuss at this time.

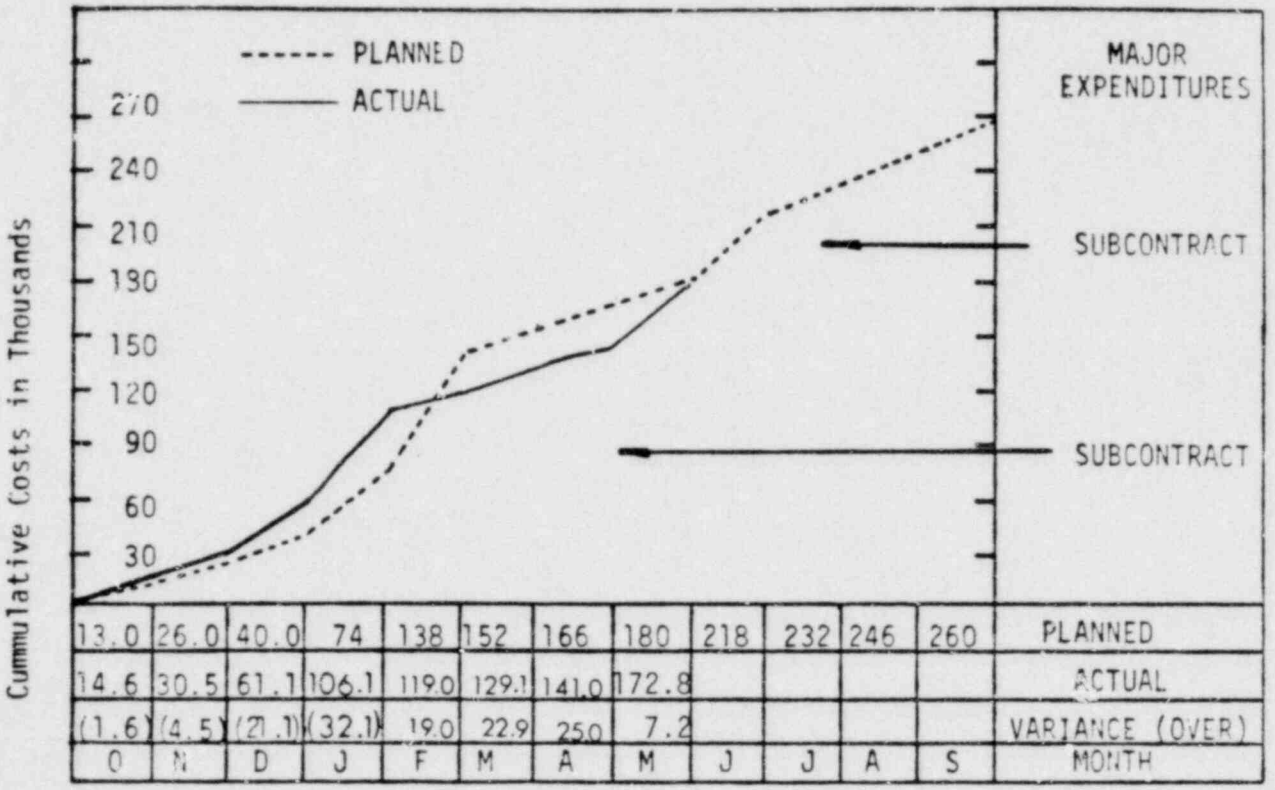
Fig. 1

FY 1981 PROGRAM DEVELOPMENT SCHEDULE



LEGEND

- ○ Topical Report, ● Topical Report Completed
- △ Progress Report, ▲ Progress Report Completed
- ↓ Time Now
- ▽ Intermediate Milestone
- * Identification of Task Causing Variation
- ___ Activity Line
- --- Scheduled Variation



13.0	26.0	40.0	74	138	152	166	180	218	232	246	260	PLANNED
14.6	30.5	61.1	106.1	119.0	129.1	141.0	172.8					ACTUAL
(1.6)	(4.5)	(21.1)	(32.1)	19.0	22.9	25.0	7.2					VARIANCE (OVER)
O	N	D	J	F	M	A	M	J	J	A	S	MONTH

Fig. 2.
OPERATING COSTS IN THOUSANDS