



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

In reply refer to: LS6-80-27
Mail stop: 495

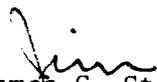
January 28, 1980

Mr. John Peel
Idaho Operations Office
550 2nd St.
Idaho Falls, ID 83404

Dear John:

Enclosed are the December 1979 Monthly Reports on those projects under your low-level waste program.

Sincerely,


James G. Steger
LS-6 Alternate Group Leader
Environmental Science Group

JGS:tj

Enc: Monthly Report
Distribution List



7972

MONTHLY PROGRAMS REPORT

December 1979

AL 3.5.1
Solid Radioactive Waste Disposal Studies

AL 3.5.4
Shallow Land Burial Technology

AL 3.10.1
Alternative Systems Study

LOS ALAMOS SCIENTIFIC LABORATORY
ENVIRONMENTAL SCIENCE GROUP LS-6

Work performed for

DIVISION OF WASTE MANAGEMENT
US DEPARTMENT OF ENERGY

University of California



LOS ALAMOS SCIENTIFIC LABORATORY

PROGRAM STATUS REPORT

Title: Solid Radioactive Waste Disposal Studies BR&C NO.: AR-05-15-15
FO/Contractor: AL/LASL WEP NO.: AL 3.5.1
Manager: James G. Steger Annual Budget: \$300k
Principal Investigator: M. A. Rogers Date: January 1980
Month Covered: December 1979

Task Description:

The purpose of this task is to develop methods for environmental monitoring and surveillance of low-level waste disposal facilities. The approach taken will be to assess the migration of radionuclides from wastes buried during the last 35 years at LASL in order to determine waste/soil interactions and radionuclide movement in a semi-arid environment. Potentially significant pathways will be identified and modeled. A method of monitoring radionuclide movement along these pathways will be developed along with identifying the constraints that must be imposed upon disposal site operating practices and waste forms.

Highlights and Significant Accomplishments

Two additional moisture access holes were drilled, one at Area G and the other near Area C, both to a depth of about 190 feet. These holes, along with several others at Area G, Area C, and Area F were logged by the US Geological survey, to measure hole diameter, moisture content, formation density, and natural gamma radiation. The logs will be used to further refine the calibration of our readings, and will aid in stratigraphic interpretations at the disposal sites. Measurements of the unsaturated conductivity of solid tuff were performed, for the 17.5-20' depth interval at Area G shaft field.

We have reviewed PNL's reports characterizing the Hanford 300 burial site. They have used some very interesting techniques, especially in their geophysical evaluation. They found that a combination of metal detector, magnetometer, and ground-penetrating radar was sufficient to outline the pits and was apparently

even able to correct some faulty engineering drawings. Acoustic methods were not very useful because of the soil at the site. Since LASL is set in a more uniform geologic environment we may want to look closely at the acoustic techniques (both reflection and holography) in any attempts to outline old burial pits.

Budget Variance Analysis

None

Milestone Variance Analysis

None

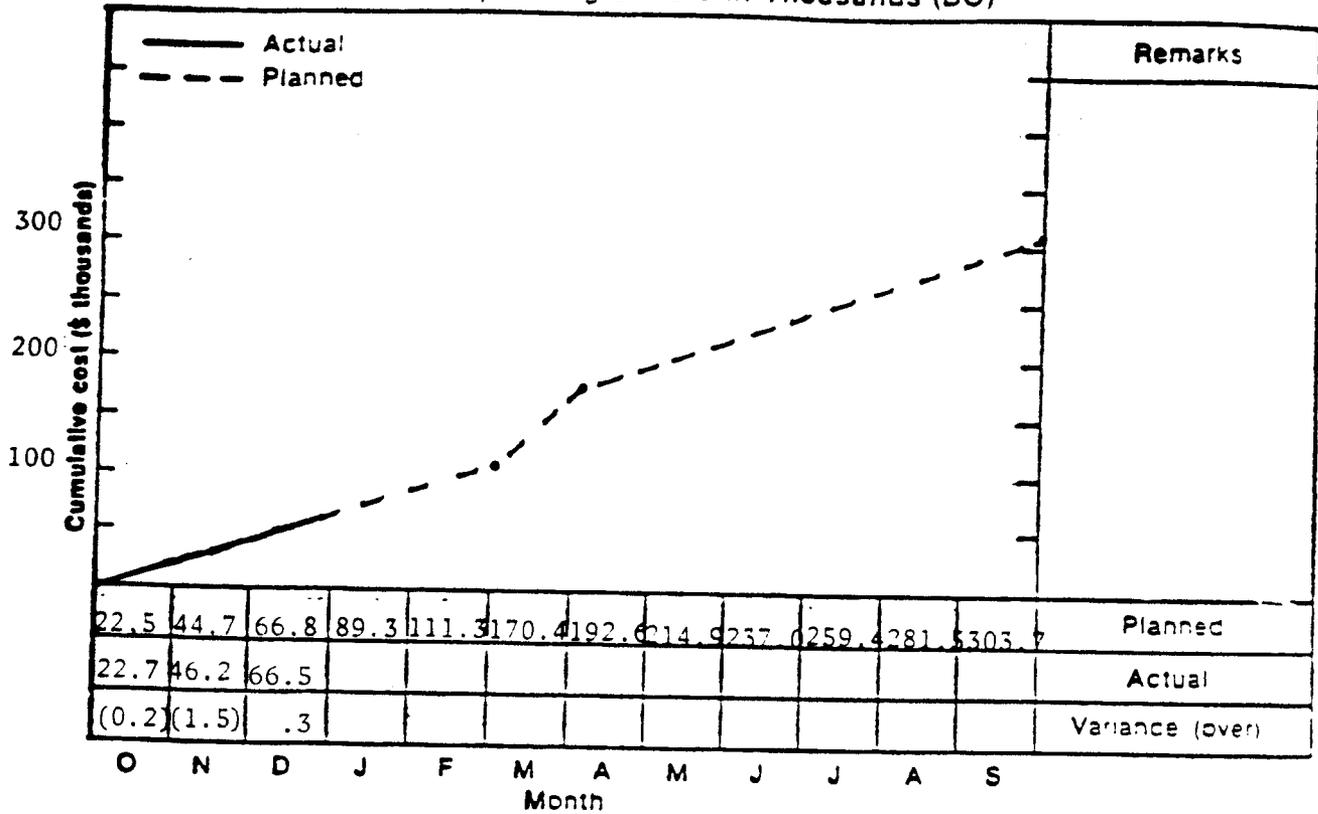
Problems and Issues

None

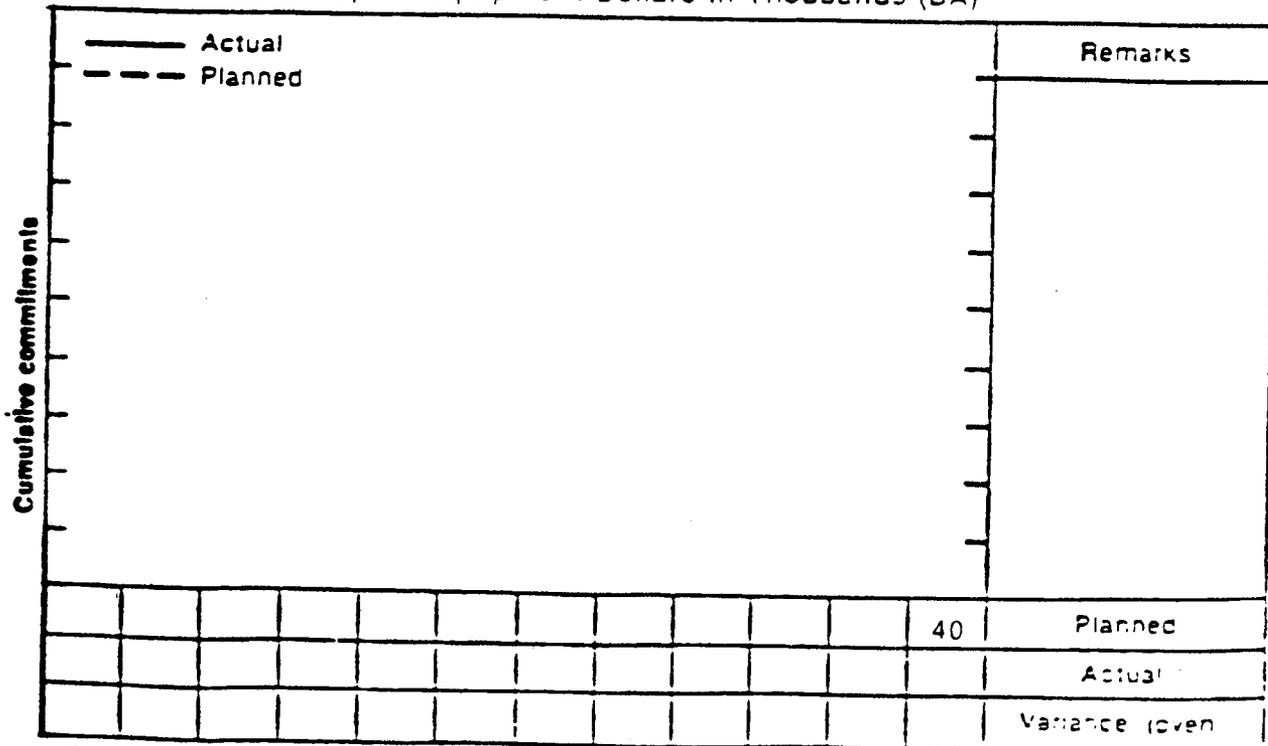
Title Solid Radioactive Waste Disposal Studies B&RC No. AR-05-15-15

FO/Contractor: AL/LASL FY 80 WEP No. AL-3.5.1

Operating Dollars in Thousands (BO)



Capital Equipment Dollars in Thousands (BA)



Milestone Schedule

Level	Milestone No.	Milestone	FY. 80												FY. 81			
			O	N	D	J	F	M	A	M	J	J	A	S	10	20	30	40
3	1.1	Summary Report on Source Term				↓												
3	1.2	Field Sampling Completed																
3	2.1A	Summary Report on Hydrology																
3	2.1B	Summary Report on Geology																
3	2.2A	Feasibility of Coupling PNL/LASL Surface Models Determined																
3	2.2B	PNL/LASL Surface Models for TRU Adopted to LLW																

- Level 0 - Department Controlled Milestone
- Level 1 - E1W - Controlled Milestone
- Level 2 - E1W P - Controlled Milestone
- △ Level 3 - Lead Field Office - Controlled Milestone
- ▽ Level 4 - Other Milestones and/or Intermediate Event

- ◇ Scheduled Deviation for ☆ or △
- Activity Line
- ↓ Time Now

Solid Radioactive Waste Disposal Studies

BSCC No. 05-15-15
WEP No. AI 3.5.1

PROGRAM STATUS REPORT

Title: Shallow Land Burial Technology BR&C NO.: AR-05-15-15
FO/Contractor: AL/LASL WEP NO.: AL 3.5.4
Manager: James G. Steger Annual Budget: \$400k
Principal Investigator: John W. Nyhan Date: January 1980
Month Covered: December 1979

Task Description:

To improve the technology related to the shallow land burial of radioactive waste by examining radionuclide mobilization and migration mechanisms, by developing monitoring techniques around burial sites, by developing engineering methods to improve waste containment, and by the construction of a waste burial demonstration facility.

Highlights/Significant Accomplishments:

We have continued to process a group of 800 tuff samples collected under an old liquid waste disposal pit at LASL in an effort to examine radionuclide mobilization/migration mechanisms. About 260 of these samples are currently ready to be assayed for transuranics and fission products previously added to these pits using ATASS, the automated radionuclide assay system, which we have developed during FY78 and FY79.

Several significant accomplishments were made in the area of instrumentation development supporting potential monitoring capabilities. A recurring ATASS problem occurred concerning the loss of signal from the analog-to-digital converter (ADC), associated with the Ge(Li) detector. The dropped bits were apparently caused by a faulty cable connecting the ADC to the multichannel analyzer (MCA). The manufacturer suggested that the configuration of modules in the instrument rack required too long a cable between the ADC multiplexer and the MCA. The rack was

reconfigured and new cables installed, eliminating this problem. Calibration of the ATASS system for plutonium sensitivity is dependent upon the primary standards being developed by LASL chemists who are currently investigating the instability and inhomogeneity of solutions with low concentrations of Pu.

A major effort was expended this month in writing a first draft of a potential LASL report describing the ATASS system (Trujillo, G., J. W. Nyhan, and J. M. Crowell, "Radioactive Waste Burial Technology Program: An Automated Transuranic Assay System for Soils"), as well as five contributions to the waste management annual report.

Budget Variance Analysis:

None

Milestone Variance Analysis:

None

Problems and Issues:

None

Title Shallow Land Burial Technology

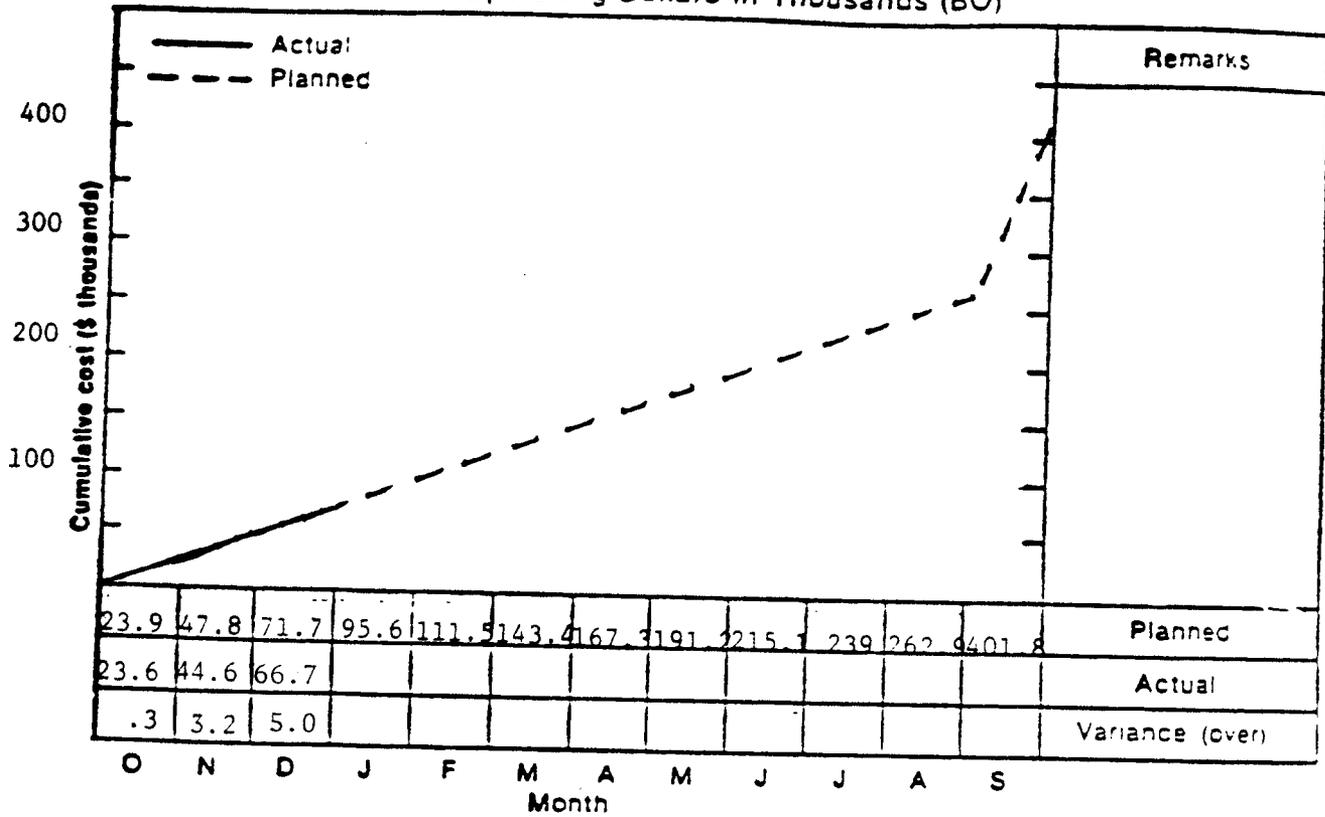
B&RC No. AR-05-15-15

FO/Contractor AL/LASL

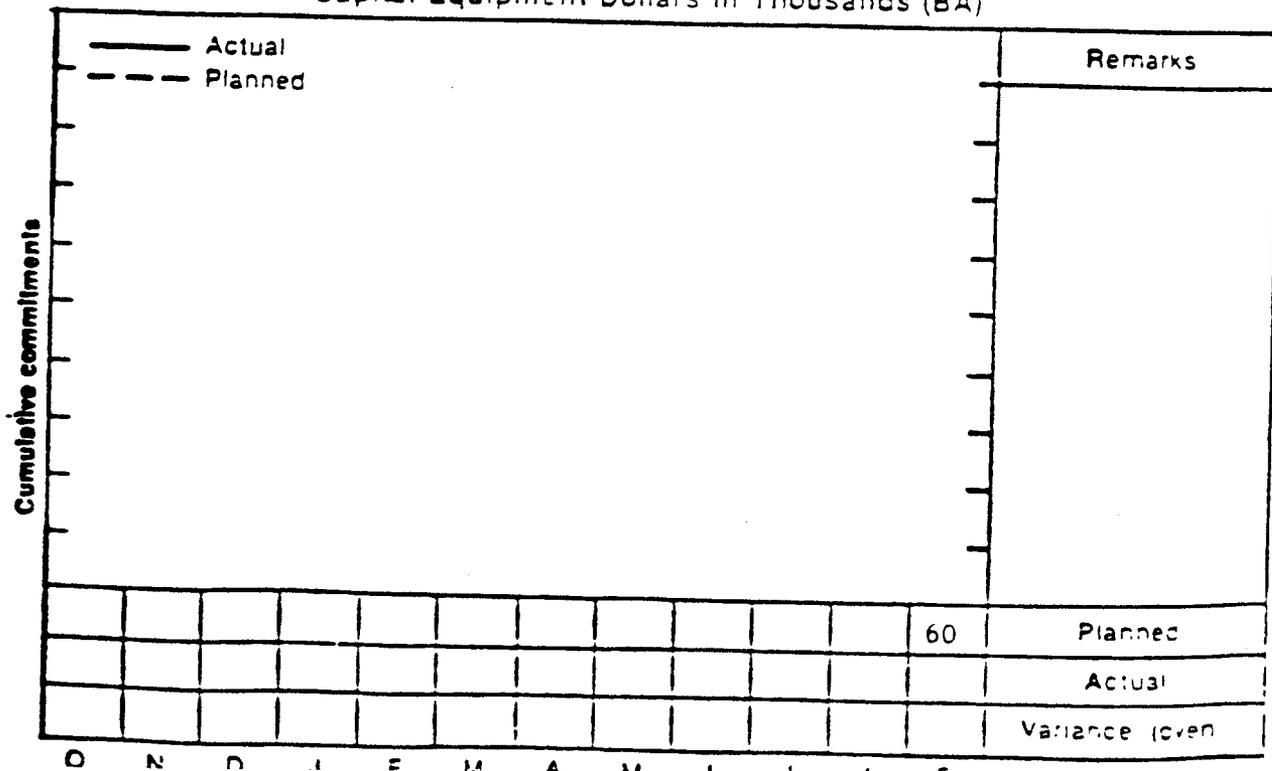
FY 80

WEP No. AL 3.5.4

Operating Dollars in Thousands (BO)



Capital Equipment Dollars in Thousands (BA)



Milestone Schedule

Level	Milestone No.	Milestone	FY. 80												FY. 81				
			O	N	D	J	F	M	A	M	J	J	A	S	1Q	2Q	3Q	4Q	
	1	Evaluation of manmade barriers.				↓													
	3	Literature survey on influence of waste materials & environmental factors on engineered barriers.																	
	6	Analysis of tuff samples collected under a previously-used liquid radioactive waste disposal bed.																	
	7	Technology & modeling of water flow through unsaturated materials.																	
	8	Completion of LASL lab studies on saturated and unsaturated flow of radioactive waste solutions in tuff.																	
	9	Report on NMSU lab studies on stable element solute retention by soils & tuff.																	
	12	Development of neutron activation tracers & field equipment for monitoring tracer migration.																	

○ Level 0 - Department Controlled Milestone

◐ Level 1 - ETW - Controlled Milestone

◑ Level 2 - ETW P - Controlled Milestone

△ Level 3 - Lead Field Office - Controlled Milestone

∇ Level 4 - Other Milestones and/or Intermediate Event

—◇— Scheduled Deviation for ☆ or △

— Activity Line

↓ Time Now

PROGRAM STATUS REPORT

Title: Alternative Systems Study BR&C NO.: AR-05-15-15

FO/Contractor: AL/LASL WEP NO.: AL 3.10.1

Manager: James G. Steger Annual Budget: \$300k

Principal Investigator: Merlin Wheeler Date: January 1980

Month Covered: December 1979

Task Description:

The overall goals of the proposed work are to gather information pertinent to analyzing Alternative Disposal Methods and to generate a management plan for a program to evaluate selected alternatives to shallow land burial for the disposal of low level radioactive waste. The work will be structured so as to take maximum advantage of all applicable ongoing and proposed work within DOE and other organizations. In particular, close cooperation will be sought between this work and the High Level Waste disposal work coordinated by ONWI.

Highlights/Significant Accomplishments:

Most of the effort during the month was spent on writing annual report inputs, travel, collecting and collating information, and of course Christmas vacations. In the next monthly report, we expect to be able to give a rather detailed report of the University of Arizona effort as a result of their quarterly report to us.

Budget Variance Analysis:

None

Milestone Variance Analysis

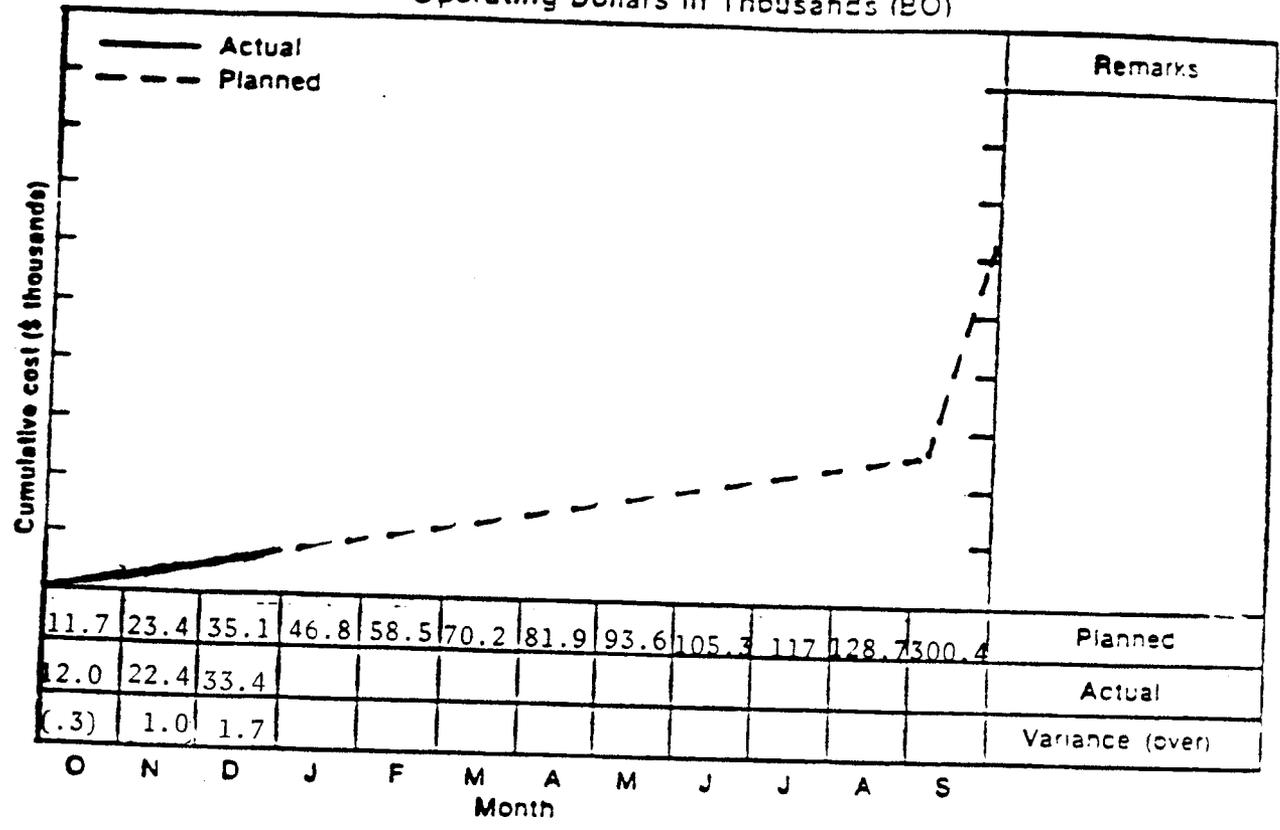
None

Problems and Issues;

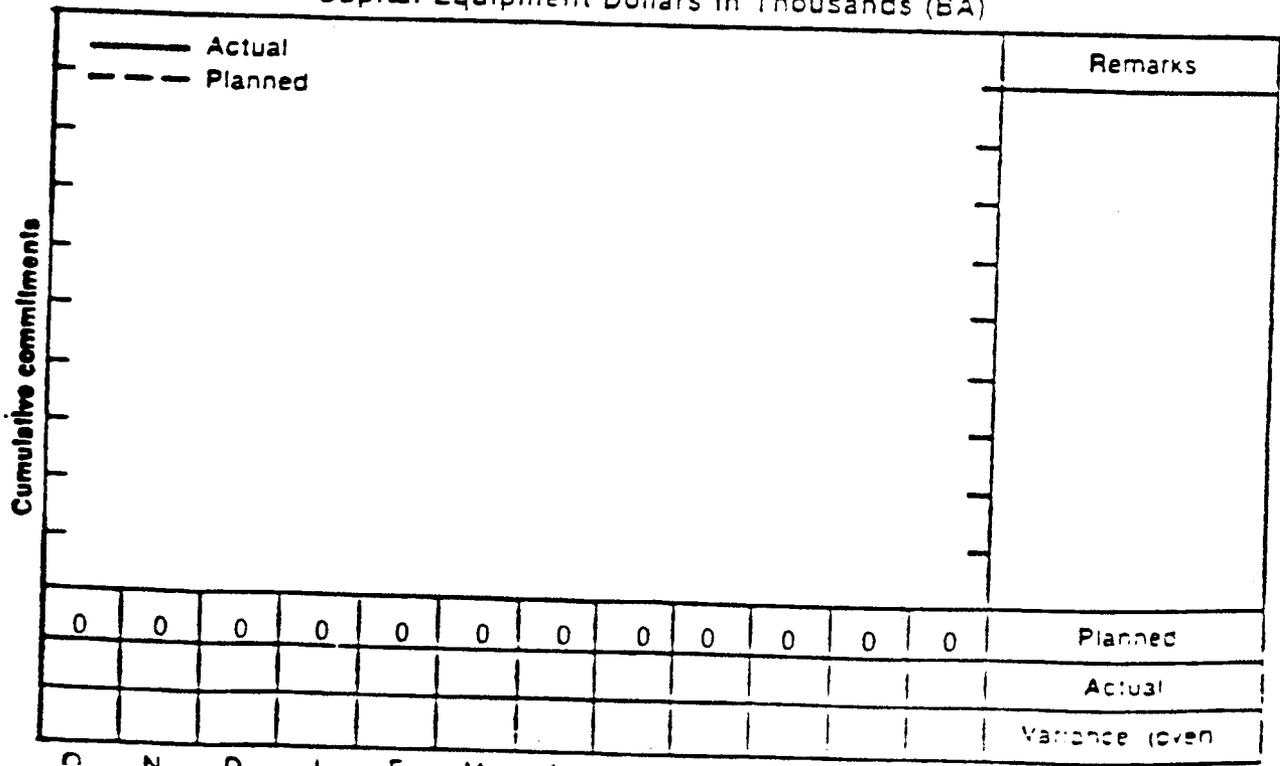
None

Title Alternative Systems Study E&PC No. AR-05-15-15
 FC/Contractor AL/LASL FY 80 WEP No. AL 3.10.1

Operating Dollars in Thousands (BO)



Capital Equipment Dollars in Thousands (BA)



Milestone Schedule

Level	Milestone No.	Milestone	FY- 80												FY- 81				
			O	N	D	J	F	M	A	M	J	J	A	S	10	20	30	40	
3	1.	Input waste characterized				↓			△										
3	2.	Alternative Options Catalogued									▲								
3	3.	Report on assessment of technical issues												▲					
3	4.	Issue Development Plan																△	

Weepie Alternative Systems Study

EPCRC No. AR-05-15-15

WEP No. AL 3.10.1

- ⌚ Level 0 - Department Controlled Milestone
- ⌚ Level 1 - ETW - Controlled Milestone
- ⌚ Level 2 - ETW P - Controlled Milestone
- △ Level 3 - Lead Field Office - Controlled Milestone
- ▽ Level 4 - Other Milestones and/or Intermediate Event

- ◇— Scheduled Deviation for ☆ or △
- Activity Line
- ↓ Time Now

M.A. Rogers

DISTRIBUTION LIST

Kenneth B. Braziel, Area Manager
Los Alamos Area Office
US Department of Energy
Los Alamos, NM 87544

Robert Lowrey
Weapons Production Division
Albuquerque Operations Office
US Department of Energy
P.O. Box 5400
Albuquerque, NM 87115

Ms. Louise Dressen, ET-95
Office of Waste Management
US Department of Energy
Mail Station B-107
GTN, Room A-179
Washington, DC 20545

James E. Dieckhoner, ET-951
Office of Waste Management
US Department of Energy
Mail Station B-107
GTN, Room A-179
Washington, DC 20545

Mr. Robert S. Lowrie
Oak Ridge National Laboratory
Bldg. 1505, Rm. 205
P.O. Box X
Oak Ridge, TN 37830

Mr. Gerald H. Daly, ET-952
Office of Waste Management
US Department of Energy
Mail Station B-107
GTN, Room A-170
Washington, DC 20545

Dr. William Bennett (2)
Rockwell International
Rocky Flats Plant
P.O. Box 464
Golden, CO 80401

Leo Duffy
EG&G Idaho, Inc.
P.O. Box 1625
Idaho Falls, ID 83401

Ms. Beverly Rawles
Columbus Program Office
ONWI Library
505 King Ave.
Columbus, OH 42301

LASL Distribution

D. F. Petersen, LS-DO, MS-881
L. J. Johnson, H-DO, MS-400
T. K. Keenan, H-7, MS-518
C. J. Umbarger, H-1, MS-888
J. Crowell, H-1, MS-692
W. R. Hansen, H-8, MS-490
ISD-5, MS-150 (2)