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IN REPLY  
REFER TO: LS6-79-118  
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December 5, 1979

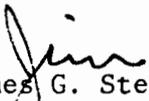
0817 1A-50  
7180

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

Dear John:

Enclosed are the October 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



MONTHLY PROGRAMS REPORT

October 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: November 28, 1979  
Month Covered: October 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

Margaret Anne Rogers has been appointed as Principal Investigator for this task effective October 26, 1979.

Barry Burton and M. A. Rogers discussed some new work with Steve Stoddard (principal contact), CMB-6. This study would involve melting a representative sample from each unit in the Bandelier Tuff. Then index of refraction would be measured on the "glass" from each unit to determine if the index of refraction on the glass-melt from units is a means to uniquely identify any unit. This study was suggested by Dr. Fred M. Bullard, University of Texas, who was a LS-6 consultant in July.

Recently, Shaft #150, at Area G, was filled, and capped. The shaft was used exclusively for tritium disposal and a serious attempt was made by H-7 to ensure adequate packaging of the tritium. During the early use period of the shaft, sampling holes were drilled around the shaft, and samples analyzed for tritium.

A report is being prepared, summarizing the results of these analyses. Both sets of samples showed that tritium was being released from the waste in the shaft, and that the extra efforts at packing may not have been as successful as was hoped.

Moisture data for Areas C and G was processed further, to permit more ready comparisons of the data. Data for all holes, from 1976 to present are now on ready-access permanent files in the computer.

Budget Variance Analysis

None

Milestone Variance Analysis

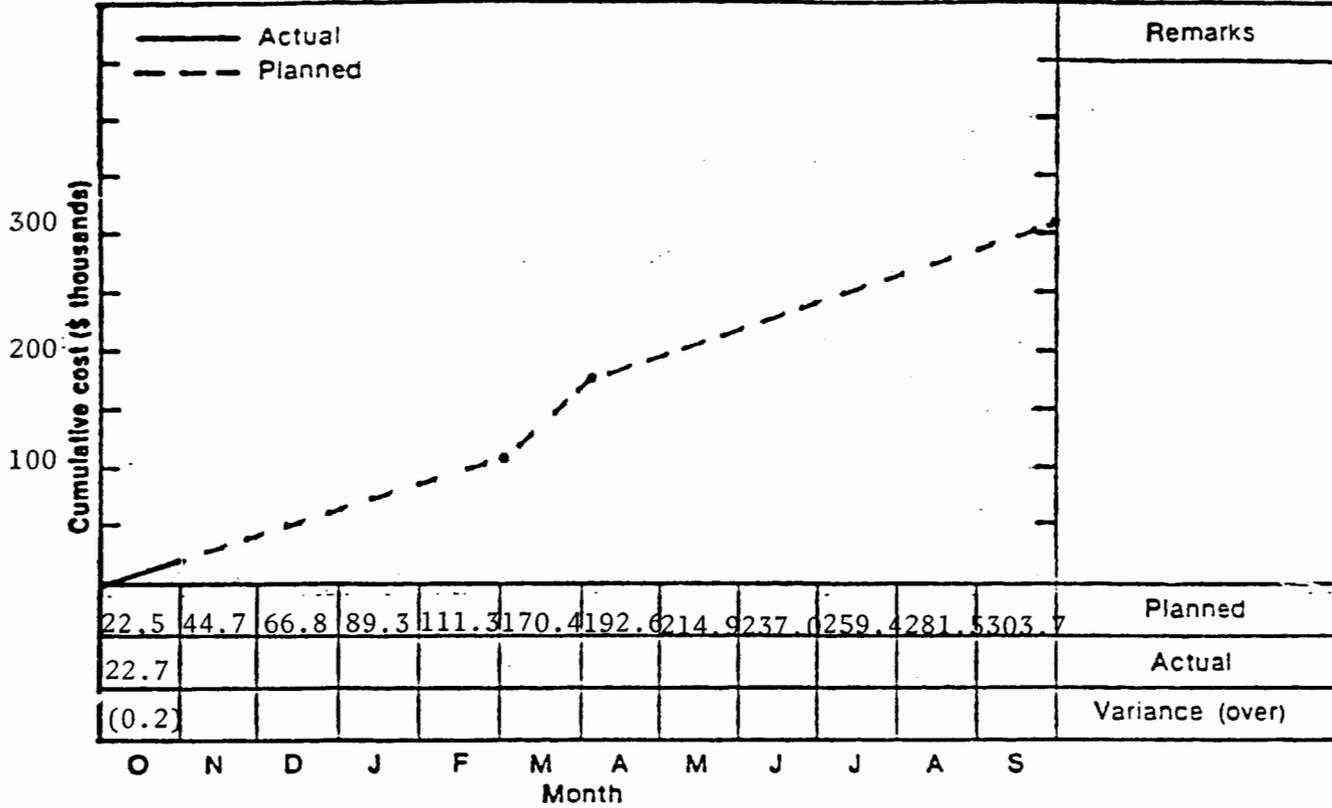
None

Problems and Issues

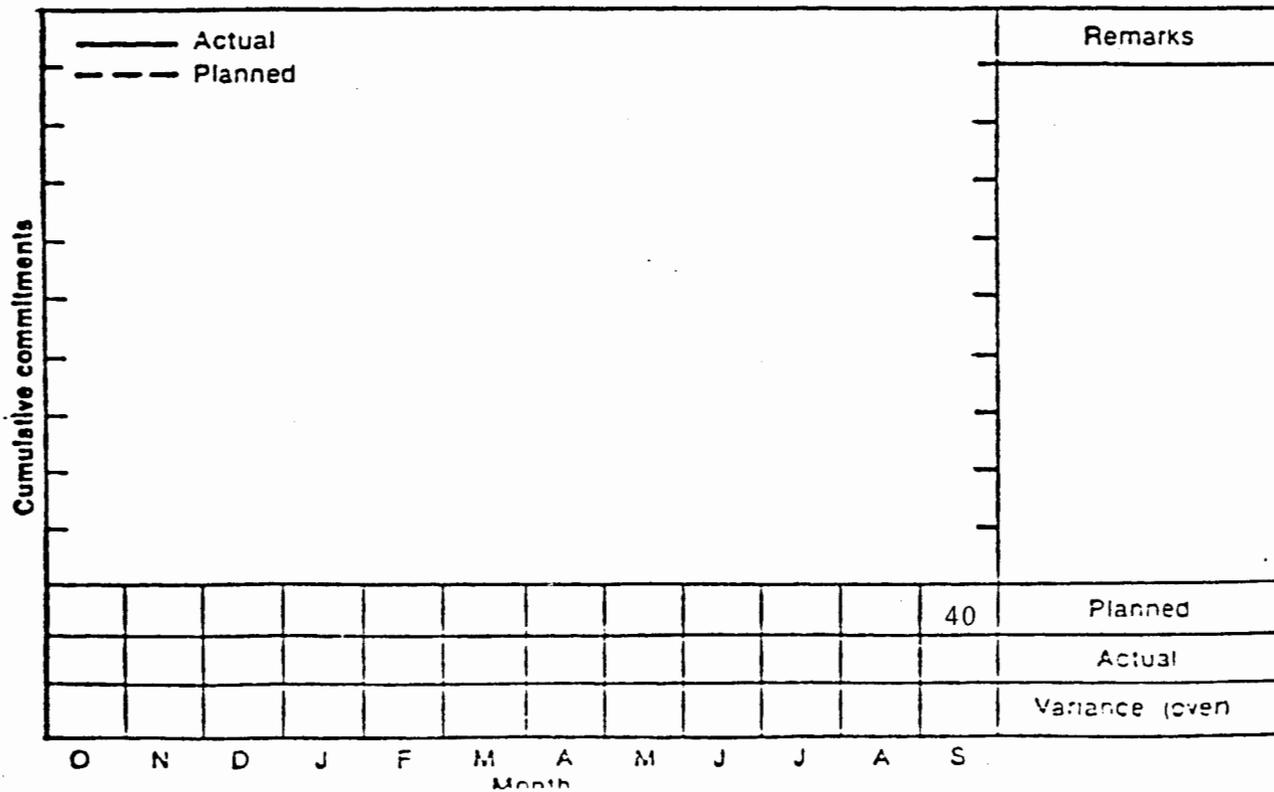
None

Title Solid Radioactive Waste Disposal Studies B&RC No. AR-05-15-15  
 FOI/Contractor: AI/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	1Q	2Q	3Q	4Q		
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																		

Solid Radioactive Waste Disposal Studies  
 ESRC No. AR-05-15-15  
 WEP No. AL-3.5.1

- ⚙️ 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

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: November 14, 1979

Month Covered: October 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 150 of these samples are currently ready to be assayed for transuranics and fission products previously added to these pits using TASS the automated radionuclide assay system we have developed during FY78 and FY79.

Several significant accomplishments were made in the area of instrumentation development supporting potential monitoring capabilities. The hyperpure germanium (HPGE) detector in the automated radionuclide assay system was repaired under warranty and returned to LASL with the original liquid nitrogen (LN<sub>2</sub>) dewar. The vacuum was reconditioned on the detector/dewar system, and the unit now requires LN<sub>2</sub> refilling only every 4-5 days. Energy calibration for both the HPGE detector and the lithium drifted germanium [Ge(Li)] detector have been completed; the hardware for the automated soil analysis system is considered complete and operational. The software for automatic multisample analysis system has been written, debugged, and tested. It is now in use, performing the system calibration on <sup>241</sup>Am, <sup>239</sup>Pu, and <sup>137</sup>Cs standards.

Another major effort was launched during October in anticipation of the design and construction of a waste burial demonstration facility at LASL. In order to evaluate monitoring techniques in shallow land burial configurations, we have decided to use chemical analogs of radioactive elements to detect elemental migration in the proposed field facility using neutron activation techniques. To initiate this radionuclide mimic study, we have chosen the elements of Sc and V. These elements have similar uptake parameters as plutonium, as well as having high thermal neutron capture cross sections and high energy gamma rays for counting purposes. The activation product half-lives are also reasonably short, especially for V. We have also made contact with one commercial vendor that does downhole logging for the mineral industry to determine feasibility and interest. They obtained affirmative answers on both counts. In November, we will prepare a "request for proposal" to be sent to several such vendors to determine what costs, capabilities, and time scales are for a series of downhole measurements at LASL (by the vendor with his equipment) as part of a mimic migration study at a laboratory burial ground. A very large effort was also spent this month by subcontractors finishing annual reports, and by LASL personnel hiring technical help, and advertising for an engineer to work on this project. LASL personnel also were involved in setting up and evaluating university subcontracts, taking a technical writing class, and writing a publication describing the new automated radionuclide assay system.

Budget Variance Analysis:

None

Milestone Variance Analysis:

None

Problems and Issues:

Delays in determining what funding levels this project would receive in FY80 have kept us from hiring the engineer we need to help in the design of the waste burial demonstration facility. We are currently trying to hire this staff member from within LASL.

Title Shallow Land Burial Technology

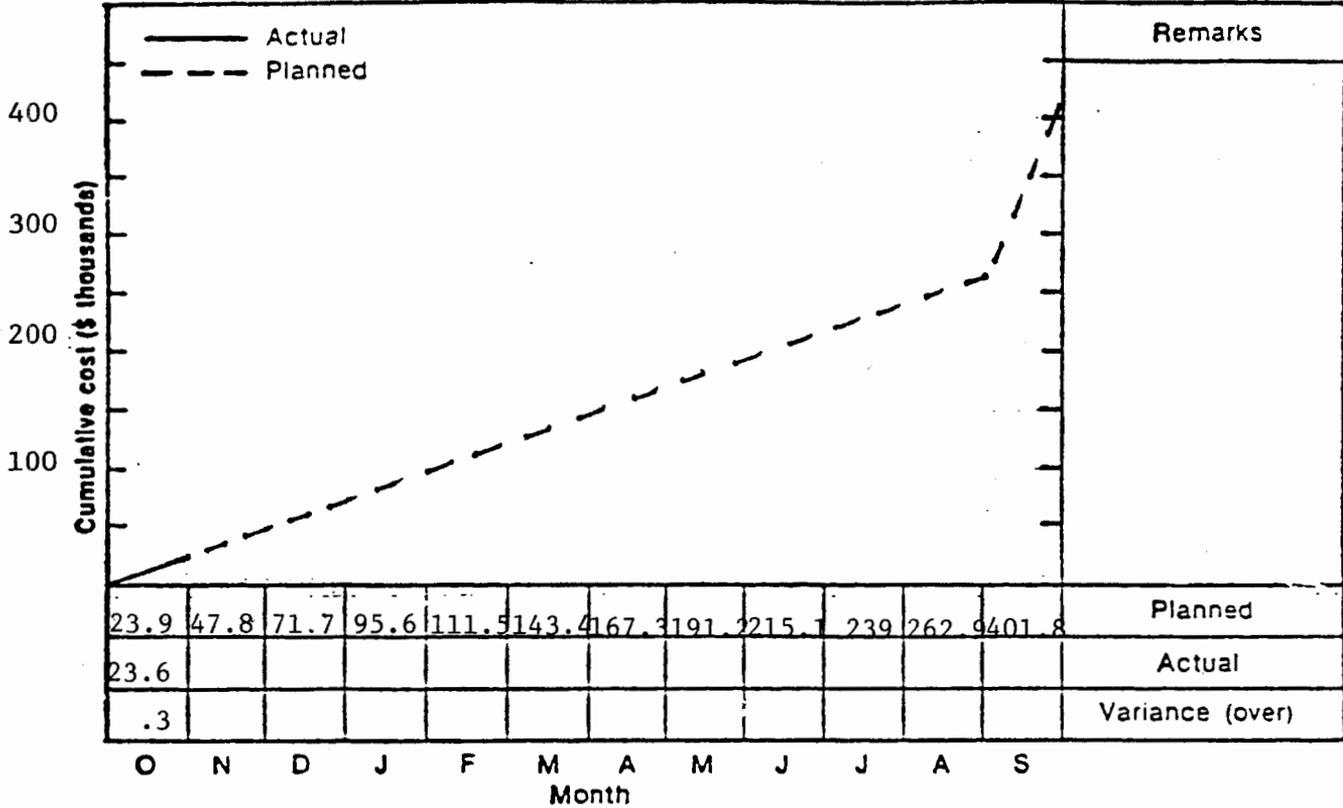
B&RC No. AR-05-15-15

FO/Contractor: AL/LASL

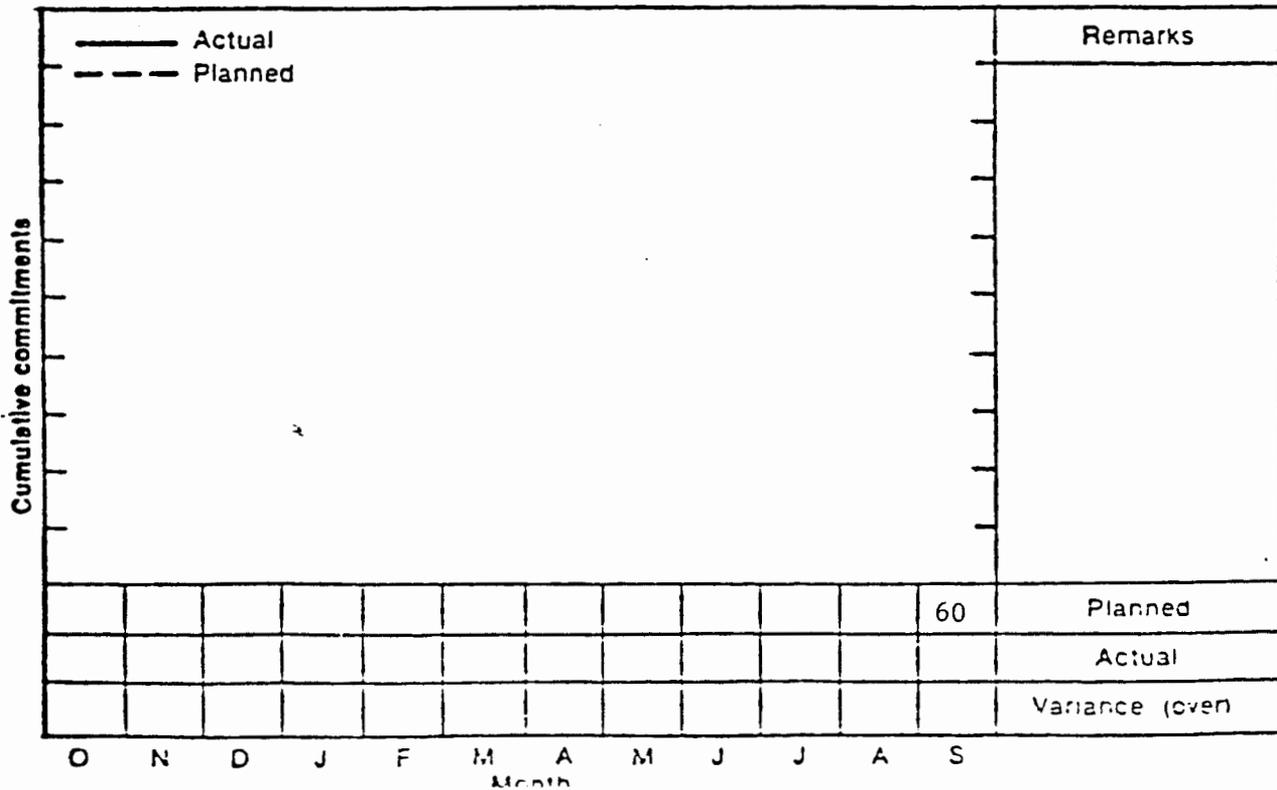
FY 80

WEP No. AL 3.5.4

Operating Dollars in Thousands (BO)



Capital Equipment Dollars in Thousands (BA)





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: M. Wheeler Date: November 28, 1979

Month Covered: October 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;

A purchase request was written to obtain the assistance of the University of Arizona in collecting information related to alternative means for disposal of low level radioactive waste. That contract is currently under negotiation. A significant portion of the work involves direct contact between U of A and the Office of Nuclear Waste Isolation (ONWI). ONWI's function is to coordinate technical research aimed at High Level waste disposal. U of A will be assessing this research from the viewpoint of its applicability to alternatives for low level disposal. A meeting between U of A, DOE officials from Oak Ridge (low level waste technical advisory office) ONWI and LASL was held at ONWI. Contacts within ONWI were identified, and procedures agreed upon for obtaining technical information from ONWI. Subsequent meetings with U of A and ONWI were scheduled.

Budget Variance Analysis:

None

Milestone Variance Analysis:

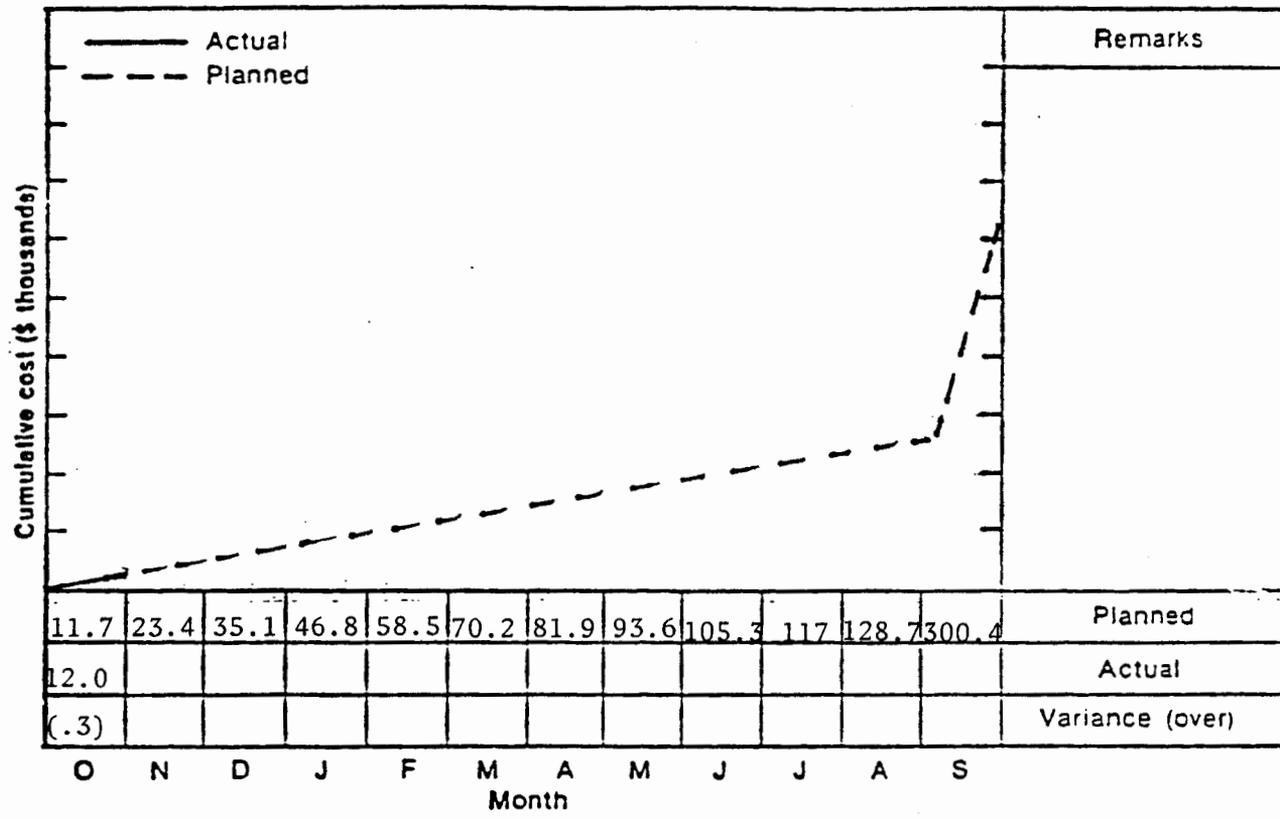
None

Problems and Issues:

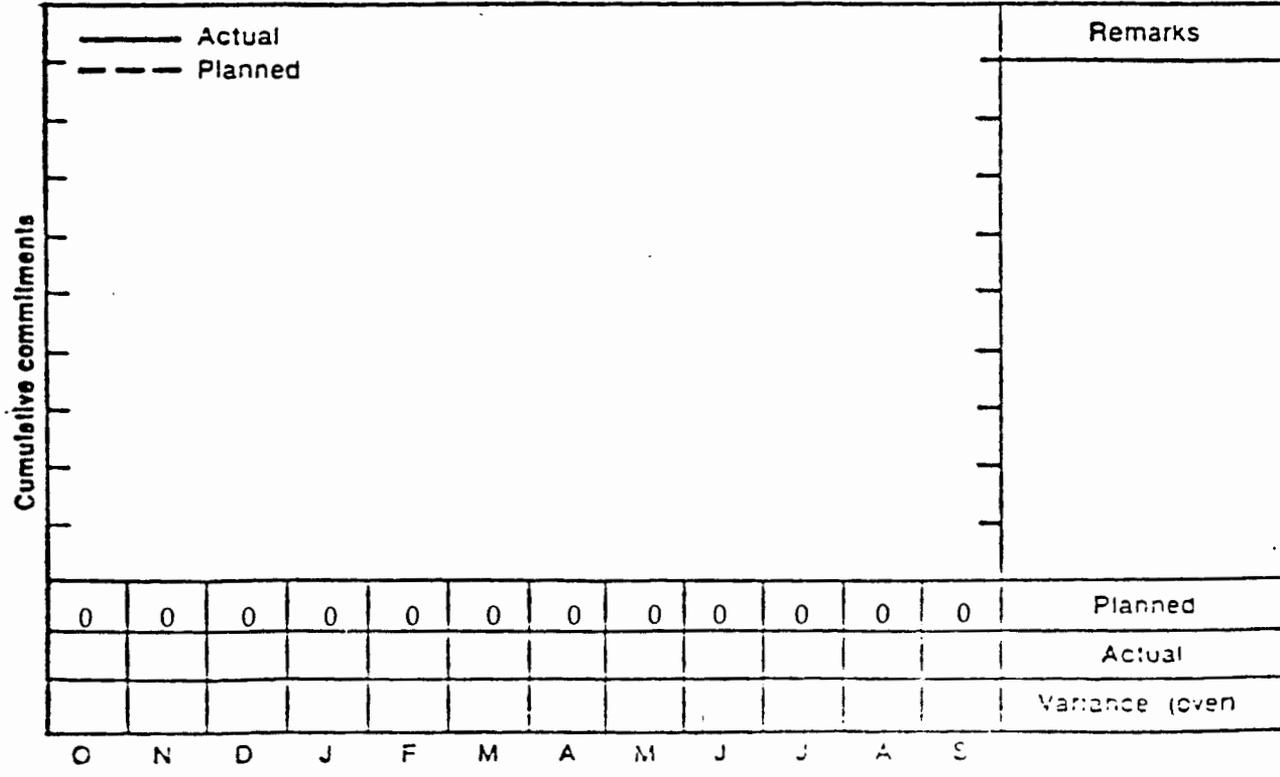
None

Title Alternative Systems Study E&FC 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

Title: Alternative Systems Study

ERRC No.: Am-05-15-15  
 WEP No.: Rev 3.10.1

Level	Milestone No.	Milestone	FY- <u>80</u>												FY- <u>81</u>			
			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															△	

- ☆ 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

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