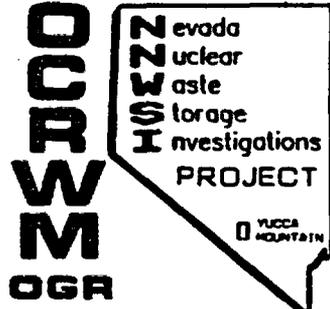


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U.S. DEPARTMENT OF ENERGY



NEVADA NUCLEAR WASTE STORAGE INVESTIGATIONS PROJECT



MONTHLY REPORT

FEBRUARY 1987

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**UNITED STATES DEPARTMENT OF ENERGY
NEVADA OPERATIONS OFFICE**

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ABSTRACT

1.2.1 SYSTEMS

A report on significant items resulting from a preclosure risk assessment methodology (PRAM) meeting at the U.S. Department of Energy/ Headquarters (DOE/HQ) was compiled. A draft charter for the Systems Engineering Integration Group (SEIG) was prepared and will be presented to the SEIG for review and comment. An interim version of the Reference Information Base (RIB) was developed for inclusion as Appendix Q of the Site Characterization Plan-Conceptual Design Report (SCP-CDR). The abstract entitled "Preliminary Estimates of Groundwater Travel Time and Radionuclide Transport at the Yucca Mountain Repository Site," was submitted for presentation at the American Geophysical Union (AGU) Spring Meeting.

1.2.2 WASTE PACKAGE

A telecon interface was conducted with the Basalt Waste Isolation Project (BWIP) staff to discuss revision of the waste package compliance strategy document. Lawrence Livermore National Laboratory (LLNL) staff received samples of glasses representative of those expected to be produced at West Valley for testing to begin in March. Synthesis of tobermite samples was completed for calorimetry. A draft report was prepared by Science and Engineering Associates (SEA) on hydrogen effects in the candidate materials. Work performed by Westinghouse Hanford on copper-zircaloy interactions was completed and a draft report of test results is in LLNL peer review. LLNL staff performed a quality assurance program review at Babcock and Wilcox preparatory to awarding a disposal container fabrication and closure process development subcontract.

1.2.3 SITE INVESTIGATIONS

Maps depicting planned site characterization field activities at Yucca Mountain were developed for use in discussions between the Waste Management Project Office (WMPO) and the Bureau of Land Management (BLM) regarding land access and environmental permitting. The stop-work order issued to the U.S. Geological Survey (USGS) in March 1986 remained in effect through February and almost all site characterization technical activities continued to be suspended. Science Applications International Corporation (SAIC) staff began plans for transferring old core currently stored in the Core Library in Mercury to the custody of the Sample Management Facility (SMF). Los Alamos National Laboratory (Los Alamos) staff members completed a draft of the study plan for reactive tracer testing. Criteria for the fracture mineralogy milestones for the exploratory shaft were submitted to WMPO for review. Equipment testing and calibration was completed at G-Tunnel. A revised draft of the Nevada Routing Study was sent to WMPO for review. The final Preliminary Site Characterization Radiological Monitoring Plan was issued. Los Alamos Milestone M325, "Geochemistry Simulation of Yucca Mountain: Modeling the Transport of Uranium and Technetium through the Unsaturated Tuffs" was completed. The Effects of Groundwater Composition (Los Alamos Milestone M316) was submitted to WMPO for review.

1.2.4 REPOSITORY INVESTIGATIONS

Top priority for this Work Breakdown Structure (WBS) element was given to work on revising the SCP and the SCP-CDR. Efforts also focused on completing documents that are SCP references. A summary planning network for repository activities was developed for integration into the NNWSI Project planning network. Engineering Change Requests (ECRs) and Design Change Requests (DCRs; formerly ECRs) were transmitted to affected organizations. The report entitled "Numerical Analyses for the G-Tunnel Small Diameter Heater Experiment," which is an SCP reference, was submitted to WMPO for policy review. Sandia National Laboratories (SNL) staff members started design and analytical studies required to complete the waste emplacement option study requested by DOE/HQ. A draft of the fan reversibility position paper was completed by Mine Ventilation Services. The Office of Geologic Repositories (OGR) fuel road consolidation study report is being extensively revised in response to the WMPO technical review of the draft report. The report entitled "A Computational Model for Jointed Media with Orthogonal Sets of Joints" was submitted to WMPO for policy review. SNL Milestone N452, thermomechanical analyses of access drifts, storage drifts and alcoves, and the access-drift/storage-drift intersection, was completed. SNL Milestone N498, report on mercury intrusion results for tuffaceous materials for Yucca Mountain, was completed. SNL Milestone R083, numerical analysis of small-diameter heater experiments, was completed.

1.2.5 REGULATORY AND INSTITUTIONAL INVESTIGATIONS

Revision 2 of the Regulatory Document Manual was issued to Project participants. Reference verification for SCP Chapter 2 was completed. Major work efforts for this WBS element focused on providing support for SCP reviews at DOE/HQ and revision of the SCP and SCP-CDR. Initial development of a computerized data base system for analysis and integration of planned USGS site characterization activities and the information derived from these activities. SAIC/Golden Regulatory Compliance staff continued to provide technical review support and detailed planning for the prototype scientific investigation planning (SIP) documentation for the USGS NNWSI Project hydrology task. An evaluation of the unsaturated zone modeling program was completed and improvements in the areas of gas-phase flow and dispersion were recommended.

1.2.6 EXPLORATORY SHAFT INVESTIGATIONS

The Surface Site Layout Study was sent to WMPO for review. Approval was received from WMPO to begin work on the life safety support system portion of the ESF special studies. LLNL approved a contract for services with New Mexico State University for the study of thermal stability of the U.S. Bureau of Mines (USBM) gauge. The air coring detailed prototype test plan and the drilling equipment document were completed. Final arrangements were made for EG&G to design, build, and operate the Integrated Data System (IDS). Los Alamos Milestone M105, Exploratory Shaft (ES) prototype test plans, was delivered to WMPO.

1.2.7 TEST FACILITIES

LLNL spent fuel test-climax reports are being prepared for printing.

1.2.9 PROJECT MANAGEMENT

The Exploratory Shaft Facility (ESF) Excavation Methods and the ESF Compressed Air Systems studies were sent to WMPO for review and comment. Sets of the administrative record references for the Environmental Assessment (EA) are being assembled. SCP files were transferred to the SAIC Information Management Systems (IMS) Section for maintenance. A revised Quality Assurance (QA) Records Type List and Draft Records Management Procedure were sent to WMPO for review. SAIC QA staff attended a meeting with U.S. Nuclear Regulatory Commission QA personnel to explain the method of assigning QA Levels to NNWSI Project activities through the use of SIPs and QA Level Assignment Sheets (QALAS).

FEBRUARY 1987

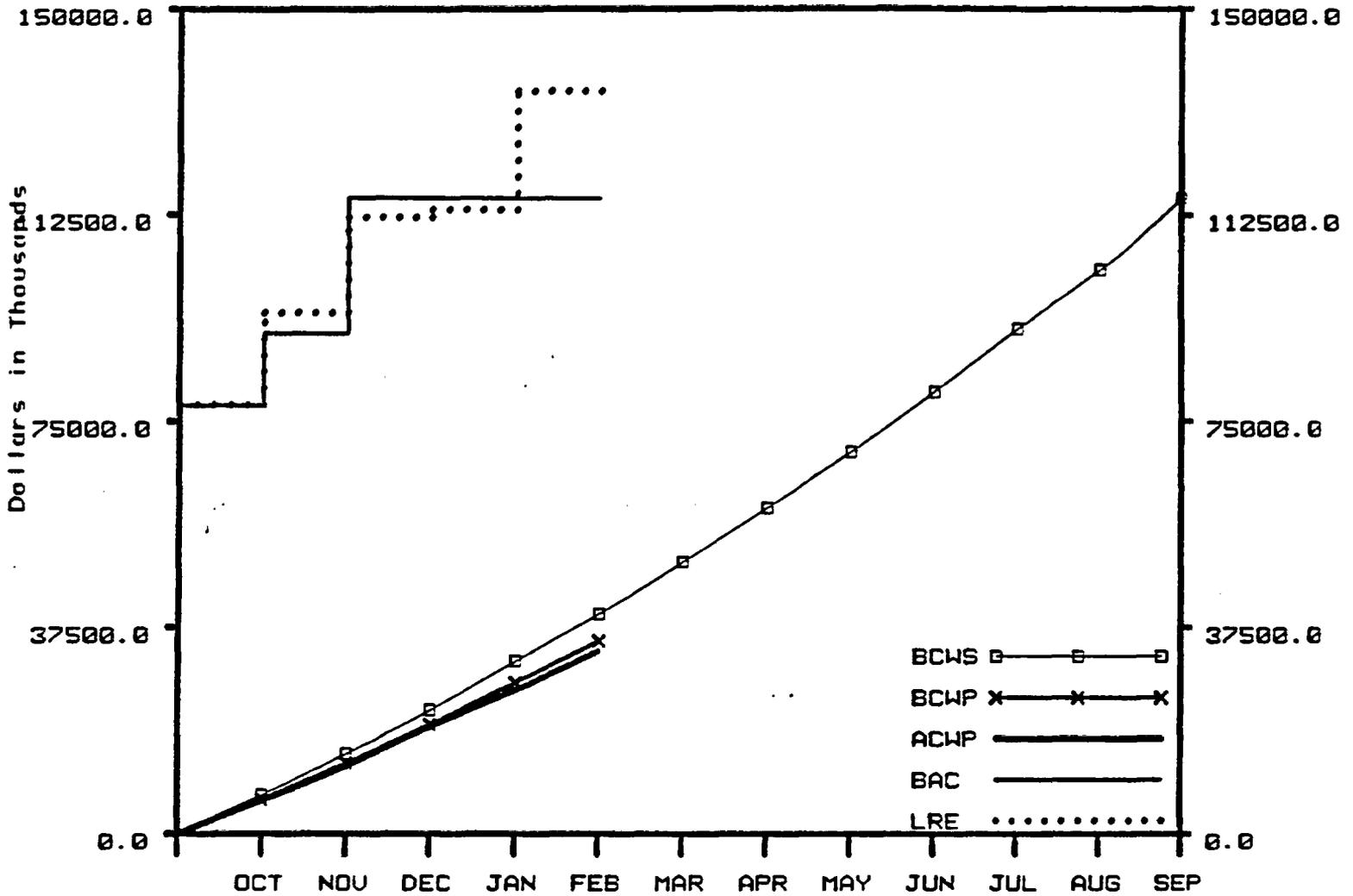
Funding Overview

The month-end estimated costs were \$7,179,150 against a plan of \$8,532,710 resulting in a cost underrun of \$1,353,560.

The following are the year-to-date plans, costs, and variances:

	<u>Plan</u> <u>(\$000)</u>	<u>Cost</u> <u>(\$000)</u>	<u>Variance</u>	<u>%</u> <u>Variance</u>
WBS 1.2.1 Systems	\$ 2,391	\$ 2,195	\$ 196	8
WBS 1.2.2 Waste Package	3,071	2,468	603	20
WBS 1.2.3 Site	11,213	8,302	2,911	26
WBS 1.2.4 Repository Investigations	3,196	2,819	377	12
WBS 1.2.5 Regulatory and Institutional Investigations	3,280	3,286	6	0
WBS 1.2.6 Exploratory Shaft Investigations	5,199	3,585	1,614	31
WBS 1.2.7 Test Facilities	155	127	28	18
WBS 1.2.8 Land Acquisition	42	35	7	17
WBS 1.2.9 Project Management	9,243	8,165	1,078	12
WBS 1.2.10 Financial and Technical Assistance	2,150	2,319	(169)	(8)
WBS 1.2 NNWSI Project	<u>\$ 39,940</u>	<u>\$ 33,301</u>	<u>\$ 6,651</u>	<u>17</u>

NNWSI PROJECT COST PERFORMANCE GRAPH FOR FEB 1987 WBS: 1.2



NNWSI - TOTAL

	Current Period	Year To Date
A. BUDGETED COST OF WORK SCHEDULED (BCWS)	8532.7	39940.1
B. BUDGETED COST OF WORK PERFORMED (BCWP)	7547.2	35027.9
C. ACTUAL COST OF WORK PERFORMED (ACWP)	7179.1	33300.9
D. BUDGET AT COMPLETION (BAC)		115573.0
E. LATEST REVISED ESTIMATE (LRE)		134989.1

VARIANCES (Year To Date)

	Dollars	Percent
F. SCHEDULE VARIANCE (B-A)	-4912.3	-12.30
G. COST VARIANCE (B-C)	1726.9	4.93
H. AT COMPLETION VARIANCE (D-E)	*****	-16.80

Remarks:

NNWSI PROJECT BUDGET BASELINE

FEBRUARY 1987

<u>Contractors</u>	(\$000) Original FY 87 Funding	(\$000) Current Baselined Budget	(\$000) Change
SNL	\$ 16,148	\$ 23,289	\$ 7,141
LLNL	9,311	13,654	4,343
Los Alamos	10,003	13,128	3,125
USGS	13,333	20,592	7,259
SAIC	12,138	21,067	8,929
REECo	3,889	6,584	2,695
H&N	2,182	3,371	1,189
F&S	5,472	5,344	(128)
WSI	230	230	0
Pan Am	5	72	67
State Grant	3,765	5,162	1,397
DRI	100	125	25
EG&G	60	80	20
LBL	267	450	183
OSTI/TC	0	5	5
HEDL	0	117	117
CSC	0	80	80
NTS Allocation	980	2,223	1,243
Undistributed Budget	1,398	1,893	495
<hr/>			
SUBTOTAL	\$ 79,281	\$ 117,466	\$ 38,185
CAPITAL EQUIPMENT	\$ 5,081	\$ 11,045	\$ 5,964
TOTAL	\$ 84,362	\$ 128,511	\$ 44,149

U.S. DEPARTMENT OF ENERGY

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PROJECT STATUS

1.2.1 SYSTEMS

OBJECTIVE

The objective of this task is to apply the concept of systems to the development and design of the repository, both the surface and subsurface facilities, and to the evaluation of the effectiveness of the geologic and hydrologic environment in isolating radionuclides.

ACTIVITIES

WBS 1.2.1.2.4 Systems Engineering Integration

SAIC staff members completed a report of significant items resulting from a preclosure risk assessment methodology (PRAM) meeting at DOE/HQ on February 3 and 4, 1987.

LLNL staff members prepared a draft charter for the Systems Engineering Integration Group (SEIG) and it will be presented to the SEIG for review and comment at the March meeting.

Formal USGS review of the "Draft NNWSI Project Systems Engineering Management Plan" (SEMP) was completed.

An USGS representative attended the Systems Engineering Group (SEIG) meeting in Livermore on February 17-19, 1987. SEMP review comments by the Project participants were resolved during the meeting.

WBS 1.2.1.2.5 Configuration Management and Change Control

SAIC Configuration Management staff processed 89 Cost/Schedule Change Requests (C/SCRs) and added 82 milestones to the data base.

WBS 1.2.1.3 TECHNICAL DATA BASE MANAGEMENT

WBS 1.2.1.3.1 Site and Engineering Properties Data Base

SNL staff members completed the final update and archiving of the Tuff Data Base (TUFFDB). Data base requests in the near future will be supplied from this final version of TUFFDB pending installation of the INGRES-based SEPDB and reentry of data under quality assurance Level I procedures.

WBS 1.2.1.3.2 Computer Graphics

The SNL report entitled "Definition and Pictorial Representation of Critical Boundaries at Yucca Mountain" (SAND86-2157), began the peer review process in early February 1987. Computer graphics were generated for inclusion as illustrations in the report.

WBS 1.2.1.3.3 Reference Information Base

Staff members at SNL developed an interim version of the Reference Information Base (RIB), to be included as Appendix Q of the SCP-CDR, during February 1987. New reference information for the appendix was selected from data generated in preparing the SCP-CDR, and will form the data set to be used for the 1987 stand-alone draft version of the RIB (Milestone M765). To provide for more efficient management of the evolving RIB, new textual portions of the RIB are being stored in Mass-11 format (a word processing system with some database capabilities).

WBS 1.2.1.3.4 Data Base Computer Support

The VAX 8200 computing system has been installed at SNL. This facility is a key component for supporting NNWSI Project Technical Data Base activities at SNL.

WBS 1.2.1.4 TOTAL SYSTEMS PERFORMANCE ASSESSMENT

WBS 1.2.1.4.1 Flow and Radionuclide Transport

An SNL abstract entitled "Preliminary Estimates of Groundwater Travel Time and Radionuclide Transport at the Yucca Mountain Repository Site," has been submitted for presentation at the American Geophysical Union (AGU) Spring Meeting.

A draft report entitled "Hydrologic Modeling of Vertical and Lateral Movement of Partially Saturated Fluid Flow Near a Fault Zone at Yucca Mountain," by Lawrence Berkeley Laboratory has been submitted for SNL review. The SNL report entitled "Simple Modeling of Saturated Flow at Yucca Mountain" (SAND87-0112; Milestone M180), is being revised for line review. This milestone (M180) will be delayed because of extensive comment from reviewers and complicated graphics work. The report describes predicted contours of hydraulic heads and concentrations based on several interpretations of inverse calculations. Numerical calculations examine the sensitivity of the flow and transport to uncertainties in existing data and response to assumed catastrophic changes in hydraulic conductivity. These calculations are intended to delineate data that would be useful in performance assessment analysis.

WBS 1.2.1.4.2 Radionuclide Source Term

Lawrence Berkeley Laboratory (LBL) completed the revisions to an article entitled "Numerical Modeling of Isothermal and Nonisothermal Flow in Unsaturated Fractured Rock - A Review." This article is now in SNL line review and will be submitted to the American Geophysical Union.

The SNL report entitled "Proposed Preliminary Definition of the Disturbed-Zone Boundary Appropriate for a repository at Yucca Mountain" (SAND86-1955), was revised on the basis of review comments and returned to reviewers.

WBS 1.2.1.4.4 Radionuclide Releases from Total System

A special HYDROCOIN workshop will be held in Albuquerque, NM, on March 9-11, 1987. The purpose of this workshop is to explore methods for investigating model sensitivities in a numerically difficult, unsaturated-flow analysis. The basis for discussions at the workshop will be a set of sensitivity analyses proposed for HYDROCOIN by the NNWSI Project. Though the problem is intended to be generic, it incorporates the essential difficulties of analyzing flow through Yucca Mountain.

SNL NNWSI Project staff participated in the SCP PIRC #15, (Seismic and Tectonic Affects) meeting in Las Vegas, NV, on February 9-12, 1987. The meeting put together an issue resolution strategy for Issues 1.19 and 4.9 and integrated the strategy into the Chapter 8 sections concerning these two issues.

Some of the SNL staff assigned to this WBS element will be involved with the production of the SCP. This work includes revision of the Chapter 8 sections associated with Issue 1.1 and this WBS element, and the review of other Chapter 8 sections that directly and indirectly supply information to this WBS element.

PLANNED WORK

The System Requirement (SR) document will be revised in accordance with the agreements with OGR. The revised SR will be sent to WMPO in late April or early May, and WMPO will submit the SR to OGR in late May.

Site characterization parameter specifications have been obtained by SNL staff and transferred to the VAX. The data base of SCP parameters is being extended to include these specifications.

PROBLEM AREAS

Completion of the SR and other (ACD) Advanced Conceptual Design prerequisites depends on the availability of an updated edition of the report entitled "Generic Requirements (GR) for a Mined Geologic Disposal System." An ACD Plan issued by OGR in late January states that the revised GR will be available for use in preparing ACD prerequisites.

MILESTONE PROGRESS

SNL Milestone M735, SNL incorporates WMPO, and TPOs comments into letter report on studies of coupled processes and resubmits to WMPO, has been delayed in review.

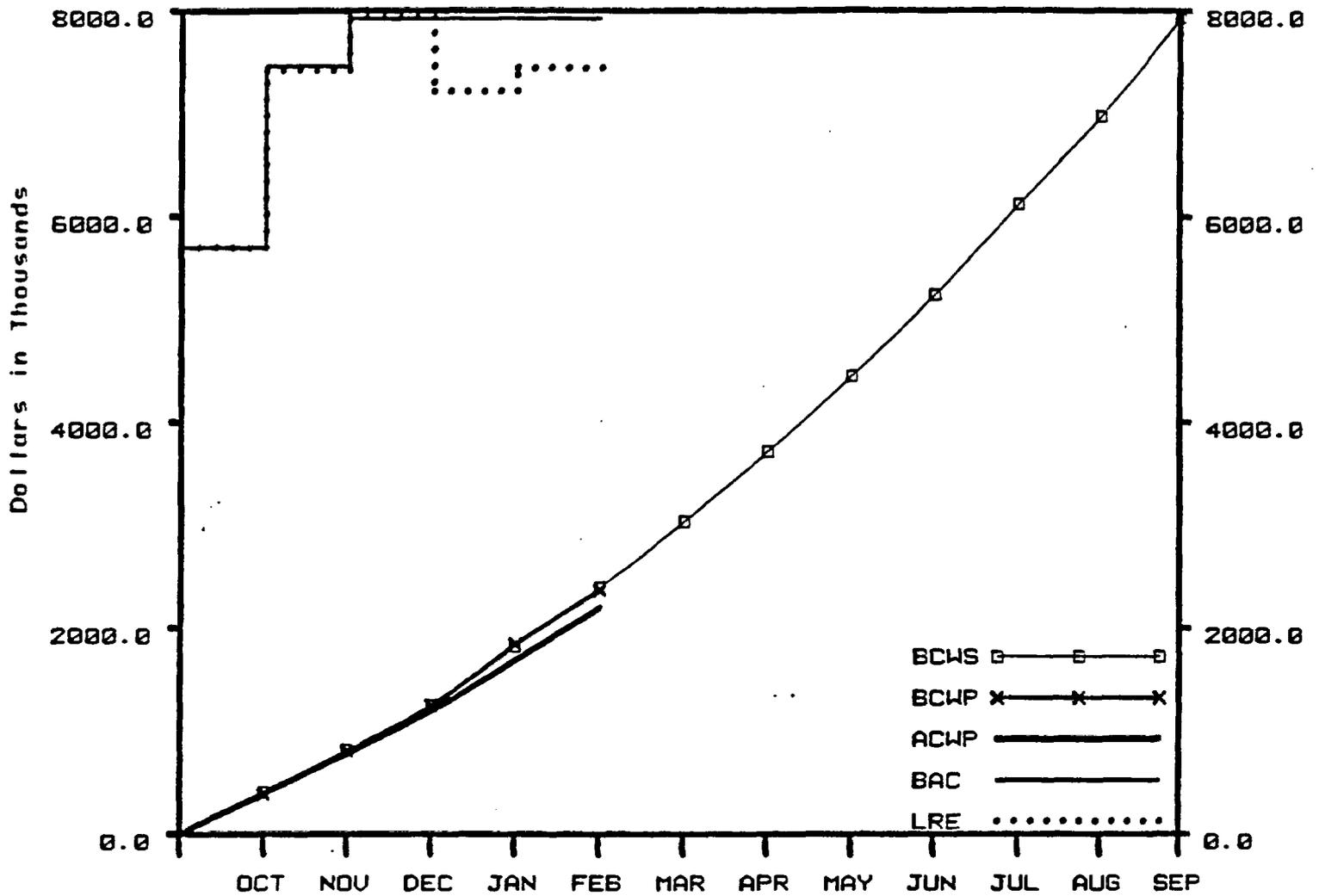
SNL Milestone R058, prepare and submit "A cost Estimate of the Yucca Mountain Repository Based on Design Information Developed for the Repository Conceptual Design in Support of Site Characterization (RCD/SC)," SAND85-1964, is in peer review.

SNL Milestone M293, incorporate WMPO and TPO comments into SEMP, has been delayed in review.

SNL Milestone M180, prepare and submit "Simple Modelings of Saturated Flow at Yucca Mountain," SAND87-0112, has been delayed.

The new estimated date of completion for SNL Milestone M126, SAND Report on issues and data needs for the NNWSI Project postclosure performance assessment, is September 1, 1987.

NNWSI PROJECT COST PERFORMANCE GRAPH FOR FEB 1987 WBS: 1.2.1



SYSTEMS

	Current Period	Year To Date
A. BUDGETED COST OF WORK SCHEDULED (BCWS)	575.4	2390.8
B. BUDGETED COST OF WORK PERFORMED (BCWP)	526.5	2362.2
C. ACTUAL COST OF WORK PERFORMED (ACWP)	511.3	2195.4
D. BUDGET AT COMPLETION (BAC)		7923.0
E. LATEST REVISED ESTIMATE (LRE)		7439.3

VARIANCES (Year To Date)

	Dollars	Percent
F. SCHEDULE VARIANCE (B-A)	-28.6	-1.19
G. COST VARIANCE (B-C)	166.9	7.06
H. AT COMPLETION VARIANCE (D-E)	483.7	6.11

Remarks:

1.2.2 WASTE PACKAGE

OBJECTIVE

The primary objective of this task is to develop a technical basis and engineering capability to design, test, and fabricate a waste package that is compatible with the hydrological conditions and geochemical environment in the unsaturated zone beneath Yucca Mountain.

ACTIVITIES

WBS 1.2.2.1 MANAGEMENT AND INTEGRATION

During February, the SAIC engineering staff completed a draft response for WMPO on "Regulatory Definitions for Waste Package Post-Emplacement," and conducted a telecon interface with Basalt Waste Isolation Project (BWIP) staff on waste package compliance strategy document revision.

WBS 1.2.2.2 PACKAGE ENVIRONMENT

Scientific Investigation Planning (SIP) documentation for the package environment task has been through internal review and is currently being revised.

WBS 1.2.2.3.1.1 Waste Form Testing - Spent Fuel

The Series 3, Cycle 2 tests were terminated by LLNL staff members at 181 days as planned and the bare fuel samples were restarted for a third cycle. These tests are being conducted in 304L stainless steel vessels at 85°C (one test is at 25°C for comparison with Series 2 results). A 62-day sample was taken from the Series 2, Cycle 5 bare fuel tests. Related sample analyses are in progress. Work on a data package supporting the completed Series 1 tests was initiated.

Personnel at LLNL completed a TEM examination of a sample taken from the fragment oxidized at 155°C for approximately 220 hours. Preliminary results indicate gross degradation of the grain boundaries with a layer of disordered U_4O_9 surrounding and sharply delineated from a grain core of UO_2 .

WBS 1.2.2.3.1 Waste Form Testing

Glasses representative of those expected to be produced at West Valley have been received for testing by LLNL NNWSI Project staff. No NNWSI Project testing has yet been conducted on a West Valley glass. In March, an unsaturated test, static leach testing, and vapor phase hydration testing will begin on ATM-10, a fully radioactive glass, and several glasses containing thorium and uranium, but no other radionuclides. ATM-10 was produced by the MCC; the thorium glasses were produced by Catholic University.

LLNL staff completed synthesis of tobermorite samples for calorimetry. Tobermorite is the most important calcium-silicate phase observed to form on waste glasses during leaching and hydration. Infrared analysis showed all the samples to be slightly contaminated with calcium carbonate. This was removed by washing the samples in dilute hydrochloric acid.

WBS 1.2.2.3.2 Metals Barriers Testing

A draft report on hydrogen effects in the candidate materials was prepared Science and Engineering Associates (SEA), Pleasanton, CA. The purpose of the report was to assess the comparative susceptibilities of the candidate materials to hydrogen embrittlement or other hydrogen damage.

Work performed by Westinghouse Hanford on copper-Zircaloy interactions has been completed. A draft report on test results and conclusions was received and is undergoing LLNL peer review. A shorter version of the report was prepared for presentation (in a poster session) at the Waste Management '87 meeting in early March in Tuscon, AZ. The title of the presentation was "The Influence of Copper on Zircaloy Spent Fuel Cladding Degradation under a Potential Tuff Repository Condition." The study concluded that no perceptible adverse interactions were observed on the Zircaloy because of galvanic coupling with copper or because of the formation of copper corrosion products.

At the request of DOE Headquarters staff, some sections of Chapter 8 of the Site Characterization Plan (SCP) are being revised by LLNL staff members. These were discussed in a series of meetings held in late February in Washington, D.C. The revised sections include Information Needs 1.4.1, 1.4.2, and 1.4.3 in which the material will be reformatted so that both candidate alloy systems receive equal emphasis. Also, the material on the ceramic-lined container as an alternative design will be somewhat augmented. Some additional material will be incorporated into Sections 8.2 and 8.3 of the SCP to present and discuss logic diagrams on reference and alternative cases to demonstrate the containment objectives. An added section in 8.3 will summarize the longer presentations in Issue 1.4 and the subsumed information needs.

WBS 1.2.2.3.4 Integrated Testing

A quality assurance program review was conducted by LLNL staff at Babcock and Wilcox preparatory to awarding a disposal container fabrication and closure process development subcontract. A tour of the B&W hot cell facilities in Lynchburg, VA was also conducted in that same time frame.

Members of the LLNL staff are upgrading design details of the disposal containers presented in the SCP utilizing a computer aided design (CAD) system.

LLNL personnel completed a draft of the preliminary ultrasonics assessment report (H20-3) and it is undergoing internal review.

WBS 1.2.2.5 PERFORMANCE ASSESSMENT

LLNL staff attended an NNWSI Project Project Overview Committee (POC) meeting in Las Vegas on February 4-6, 1987, which reviewed SCP Sections 8.3.5.6, 8.3.5.7, 8.3.5.17, and 8.3.5.18.

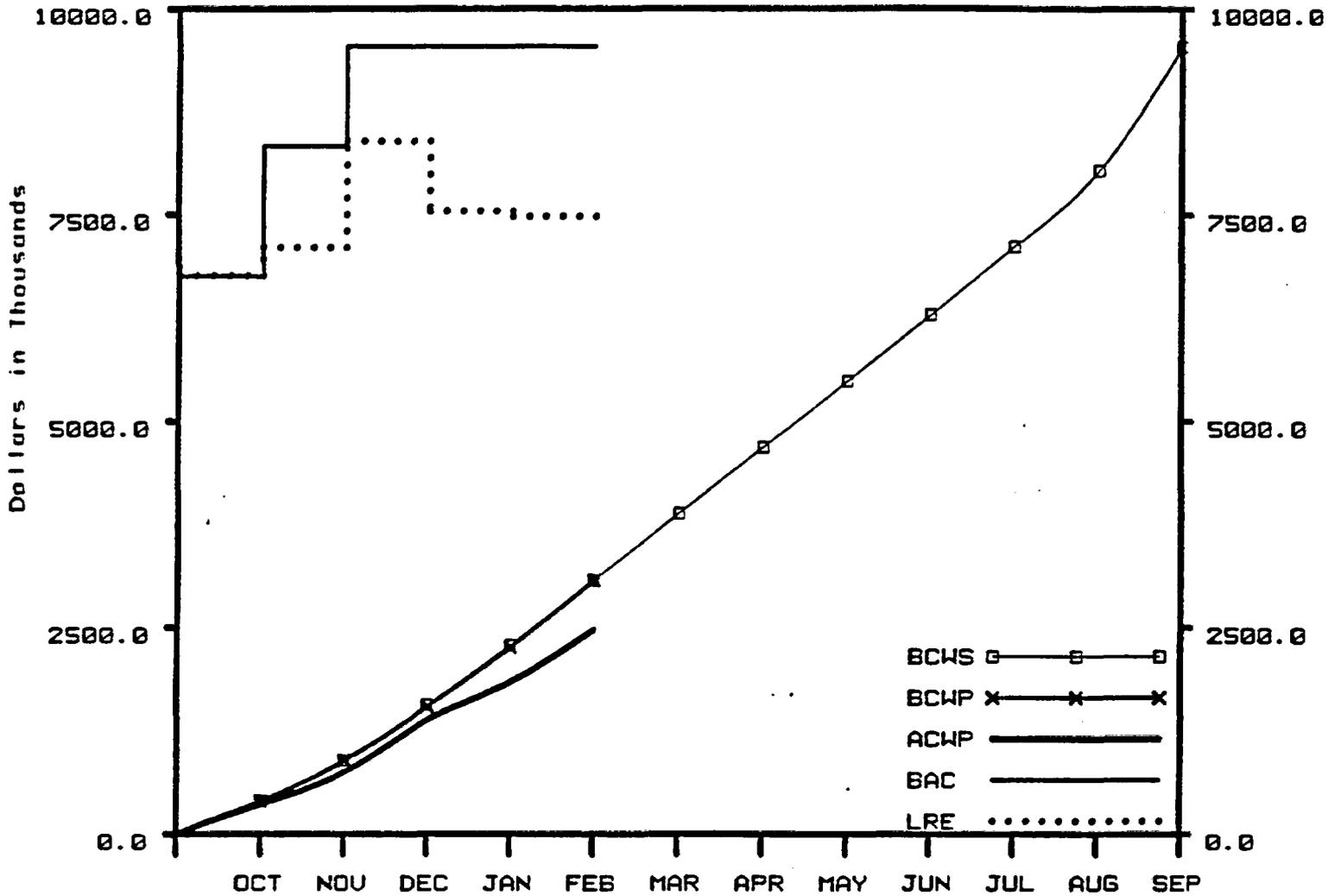
PLANNED WORK

Scientific investigation planning (SIP) documentation for the package environment task has been through internal LLNL review and is currently being revised.

PROBLEM AREAS

Work by LLNL staff on revisions to Chapter 8.3.5 of the SCP is causing delays to the writing of the Scientific Investigation Plan for a portion of the WBS element. The SIP for EQ3/6 (approved earlier this year) covers the laboratory activities to provide data for the EQ3/6 data base. These activities constitute more than half of the work in this WBS element.

NNWSI PROJECT COST PERFORMANCE GRAPH FOR FEB 1987 WBS: 1.2.2



WASTE PACKAGE

	Current Period	Year To Date
A. BUDGETED COST OF WORK SCHEDULED (BCWS)	789.8	3070.7
B. BUDGETED COST OF WORK PERFORMED (BCWP)	809.0	3065.2
C. ACTUAL COST OF WORK PERFORMED (ACWP)	631.9	2467.9
D. BUDGET AT COMPLETION (BAC)		9535.0
E. LATEST REVISED ESTIMATE (LRE)		7476.9

VARIANCES (Year To Date)

	Dollars	Percent
F. SCHEDULE VARIANCE (B-A)	-5.5	-0.18
G. COST VARIANCE (B-C)	597.3	19.49
H. AT COMPLETION VARIANCE (D-E)	2058.1	21.58

Remarks:

COST PERFORMANCE REPORT
WBS LEVEL 4
U.S. DEPARTMENT OF ENERGY
NNWSI PROJECT

For: FEB 1987

Date: March 19, 1987

WBS NUMBER AND DESCRIPTION	YEAR TO DATE				
	BUD. COST OF WORK SCHEDULED	BUD. COST OF WORK PERFORMED	ACTUAL COST OF WORK PERFORMED	VARIANCES	
				SCHEDULE	COST
1221 Management and Integration	292.700	262.700	216.000	-30.000	46.620
1222 Package Environment	415.000	372.000	415.000	-43.000	-43.800
1223 Waste Form & Materials Testing	1,745.000	1,848.503	1,420.000	101.503	426.503
1224 Design, Fabricate, and Prototype Testing	293.000	292.998	160.200	-.002	132.798
1225 Performance Assessment	325.000	291.000	255.800	-34.000	35.200
122 WASTE PACKAGE	3,070.700	3,065.202	2,467.880	-5.498	597.322

MILE- STONE	RESP. AGENCY	WBS	MILESTONE DESCRIPTION													
				O	N	D	J	F	M	A	M	J	J	A	S	
RO03	WMPO/ LLNL	1.2.2.1	Waste Package Postclosure Compliance Strategy Document				△									◇
M236	WMPO/ LLNL	1.2.2.3	Progress Report on the Results of Testing Advanced Conceptual Design Metal Barrier Materials Under Relevant Environ. Conditions for a Tuff Repository				△					◇				
M257	WMPO/ LLNL	1.2.2.3	Decision Made on Using Packing Material in the Waste Package to Assist in Controlling Radionuclides Release Rate				△						◇			
MO13	WMPO/ LLNL	1.2.2.4	Revised Draft Waste Package Subsystem Conceptual Design Requirements to DOE/HQ for Review								△					◇
M233	WMPO/ LLNL	1.2.2.4	Initiate Waste Package Advanced Conceptual Design													△
M260	WMPO/ LLNL	1.2.2.5	Report on Long-Term Performance Analysis of the Conceptual Waste Package Design								△					◇
M276	WMPO/ LLNL	1.2.2.5	Report on the System Model for Waste Package Performance Analysis	△			◆									

△ PLANNED MILESTONE COMPLETION DATE

◇ REVISED MILESTONE COMPLETION DATE

▲ COMPLETED AS SCHEDULED

◆ COMPLETED AS REVISED

1.2.3 SITE INVESTIGATIONS

OBJECTIVE

The objective of this task is to determine whether Yucca Mountain is a suitable location for a high-level waste repository. The effort is divided into two areas of study. The first is understanding the characteristics of the rock mass that lies below the surface of Yucca Mountain. This encompasses the geology (structure and stratigraphy), hydrology (both saturated and unsaturated zone), geochemistry (chemical reactions that can be expected when waste is emplaced), and mineralogy and petrology (the study of the materials that will control the isolation and engineering characteristics of the rock). The second is understanding the processes and events that could occur in the area surrounding Yucca Mountain that could serve as potential disruptive forces. These efforts include the study of tectonics, seismicity, and volcanism, and the regional hydrologic, paleohydrologic, and paleoclimatologic systems.

ACTIVITIES

WBS 1.2.3.1 MANAGEMENT AND INTEGRATION

The stop-work order issued to USGS in March 1986 remained in effect through February and almost all site characterization technical activities continued to be suspended. Most Project personnel continued to work on preparation of scientific investigation planning (SIP) documents and their corresponding quality assurance level assignment sheets (QALAs) -- a necessary step for resumption of work.

USGS representatives attended POC meetings in Washington on February 23-27, 1987, in order to reach final agreement on extensive revisions to the SCP. They also attended the SCP comment resolution workshop to discuss Section 8.3.1.6 (Issue 1.17) with other members of the erosion team; some of the changes suggested during the meetings were incorporated on the spot in Chapter 8.

The SAIC site M&I staff prepared a number of maps for WMPO depicting planned site characterization field activities at Yucca Mountain and surrounding areas. These maps were used in discussion between WMPO and BLM regarding land access and environmental permitting. Efforts will continue on updating these maps to reflect the plans presented in the maturing SCP. The maps will eventually become part of the Field Activities Plan (FAP) and will be updated semiannually along with the FAP.

Staff members at SAIC began plans for conducting the transfer of old core currently stored in the Core Library in Mercury to the custody of the SMF. A meeting was held with USGS, WMPO, and QA staff to discuss the mechanism for transferring the core, and a transfer plan will be developed. It was the consensus at this meeting that the transfer of custody could not officially take place until the SMF could physically control the samples, which will not occur until the facility is completed and operating.

WBS 1.2.3.2 GEOLOGY

WBS 1.2.3.2.1 Geologic Investigations

WBS 1.2.3.2.1.1 Site Geology

Low-sun-angle aerial photographs of Midway Valley were obtained by SNL from H&N and will be used to examine evidence of subtle geomorphic expression of tectonic features underlying the alluvium. Successful placement of waste-handling facilities relies on avoidance of fault features that are apt to move more than 10 cm during the operational lifetime of the repository.

SNL staff that are revising SCP Section 8.3.1.17, Preclosure Tectonics, are incorporating much of the intent of Appendix A of 10 CFR 100, following redirection of licensing strategy regarding seismotectonics. Recent memoranda by the NRC and DOE/HQ are the guiding directives. Golder Associates has submitted a revised cost proposal to accomplish mapping and trenching at the reference conceptual site for surface facilities. Once the contract has been negotiated and study plans approved, the work can begin.

WBS 1.2.3.2.3.1 Tectonics and Volcanism

A draft of the Los Alamos report, "Preclosure Volcanic Effects: Evaluations for a Potential Repository Site at Yucca Mountain, Nevada," was sent to WMPO, fulfilling the level II milestone R202.

Representatives from USGS attended a meeting of PIRC 15, Team 21 members in Las Vegas on February 9-12, at which participants from SAIC, SNL, Weston, and the USGS reviewed the text and tables for the pre- and post-closure tectonics team of the SCP comment resolution workshop meetings in Washington, D.C. February 23-27, discussing Sections 8.3.1.17 and 8.3.1.8, Issues 4.9 and 1.19. To a large degree, these comments were responded to in individual sessions of the tectonic working group.

WBS 1.2.3.2.3.3 Seismicity and Strain

USGS staff members reviewed the SNL report, "Component Ground Motion of Yucca Mountain from Pahute Mesa Underground Nuclear Explosions," and transmitted review comments to WMPO.

WBS 1.2.3.3 HYDROLOGY

WBS 1.2.3.3.1 Stream Flow

Most work activity at USGS this month was directed toward completion of the scientific investigation planning (SIP) document covering surface water hydrology. The SIP has cleared technical review and is being retyped for USGS and WMPO approval. Routine operation of the streamflow and precipitation gaging station in the Yucca Mountain vicinity continued.

WBS 1.2.3.3.3 Saturated Zone Hydrology

The USGS abstract, "Use of Drillers' Logs and Geophysical Surveys to Define the Hydrogeologic Framework of the Amargosa Desert, Southern Nevada, " was

sent to WMPO for approval prior to an oral presentation at the American Geophysical Union (AGU) Spring Meeting in Baltimore, Maryland, May 18-22, 1987, and publication in EOS proceedings.

WBS 1.2.3.3.4 Unsaturated Zone Hydrology

USGS staff members completed the development, testing, and preparation of draft documentation for the moisture-flow and transport computer code VFAST.

The following USGS abstracts were sent to WMPO for approval prior to oral presentation at the AGU Spring Meeting in Baltimore, Maryland, May 18-22, 1987, and publication in EOS proceedings:

"Data Acquisition System for Monitoring the Unsaturated Zone at Yucca Mountain, Nevada."

"Chemical Evidence of Preferred Water Flow Paths in Unsaturated Fractured Tuffs, Yucca Mountain, Nevada."

"Drilling-Induced Water Absorption by a Initially Dry Fractured Indurated Rock Mass."

The following USGS abstract was sent to WMPO for approval prior to presentation at the International Conference on Measurement of Soil and Plant Water Status, Utah State University, July 6-10, 1987 at Logan Utah:

"A Tensiometer-Transducer System for Measuring Matric Potentials on Preserved Core Samples of Unsaturated, Consolidated Porous Rock."

WBS 1.2.3.3.5.2 Future Ground Water

The following USGS abstracts were sent to WMPO for approval prior to presentation at the 1987 Fall convention of the American Society for Photogrammetry and Remote Sensing, the American Congress on Surveying and Mapping and Western Federation of Professional Land Surveyors, October 4-9, 1987, in Reno, Nevada:

"Hydrology and Hydraulic Nature of Fracture Zones and Lineaments in Southwestern Nevada Determined from remote Sensing and Hydrologic Analysis."

"Locating Modern and Ancient Spring Deposits for Paleohydrologic Investigations in Southwestern Nevada using MSS and TM Landsat Data."

"Classification of Upland Soils by Physical Properties Affecting Infiltration in Southern Nevada Using M33 and TM Landsat Data."

WBS 1.2.3.4 GEOCHEMISTRY

WBS 1.2.3.4.1.2 Natural Isotope Chemistry

The Los Alamos abstract "Infiltration at Yucca Mountain, Nevada, Traced by ³⁶Cl" was submitted to the WMPO for approval.

WBS 1.2.3.4.1.7 Retardation Sensitivity Analysis

Los Alamos Milestone M325, "Geochemistry Simulation of Yucca Mountain: Modeling the Transport of Uranium and Technetium through the Unsaturated Tuffs" was completed. In this report, preliminary baseline calculations for the transport of uranium and technetium are presented.

A Los Alamos abstract entitled "Modeling Tracer Diffusion in Unsaturated Porous Media, both Fractured and Unfractured" was submitted for presentation at the American Geophysical Union Spring Meeting, in Baltimore on May 18-22, 1987.

WBS 1.2.3.4.1.8 Reactive Tracer Testing

Los Alamos staff members completed a draft of the study plan for reactive tracer testing. The plan was developed based on approaches and strategies evolved from the experience of the investigators. These experiences were complemented with a literature review and with experiences of experts having various disciplinary backgrounds in sorption processes. The input from these experts was obtained through one- or two-day visits as well as through correspondence. Procedures for laboratory experiments have been defined and are being documented for laboratory operations and for QA purposes.

WBS 1.2.3.4.2.1 Fracture Mineralogy

In February Los Alamos staff members completed a draft of the fracture mineralogy section of the geochemistry study plan. It has been submitted for internal review and compilation with the other sections of this study plan. Much additional work is expected to be required, as the level of detail required for the study plan is still being determined.

Members of the Los Alamos staff wrote the criteria for the fracture mineralogy milestones for the exploratory shaft and submitted them to the WMPO.

WBS 1.2.3.4.2.2 Alteration History

The detailed Los Alamos technical procedure, "Geopetal Orientation Measurement," received technical review and is being revised. A developmental form of this procedure has been used to place constraints on the timing of zeolitic alteration at Yucca Mountain. Future work should provide information about some hydrologic aspects of alteration.

WBS 1.2.3.5 DRILLING

WBS 1.2.3.5.2 Drilling, Construction, Engineering

USGS test hole USW U-28 remained at a temporary depth of 58 ft, as all drilling continued to be suspended under the stop-work order.

H&N survey personnel compiled data to determine points used to locate 50 USGS picture points in Area 25.

H&N survey personnel performed equipment testing and calibration at G-tunnel.

H&N materials testing laboratory personnel completed Concrete Specification Analysis as requested by F&S.

WBS 1.2.3.6 ENVIRONMENT

WBS 1.2.3.6.1 Environmental Monitoring

A contractor report on the potential rail access spur locations, land use constraints, and a generic schedule for the design and construction of a rail line was received by SAIC from De Leuw, Cather and Company. This report is in internal SAIC review.

A revised draft of the Nevada Routing Study was sent to WMPO by SAIC staff for review. The report identifies routes solely for future analytical purposes associated with the selection of a high-level waste repository. The routes will be useful for study purposes to identify likely parameters associated with assessing transportation impacts with the State of Nevada.

Staff members at SAIC issued the final Preliminary Site Characterization Radiological Monitoring Plan on February 25, 1987. The monitoring program will characterize radon and radioactive particulate releases from the site prior to the start of significant site characterization activities.

MILESTONE PROGRESS

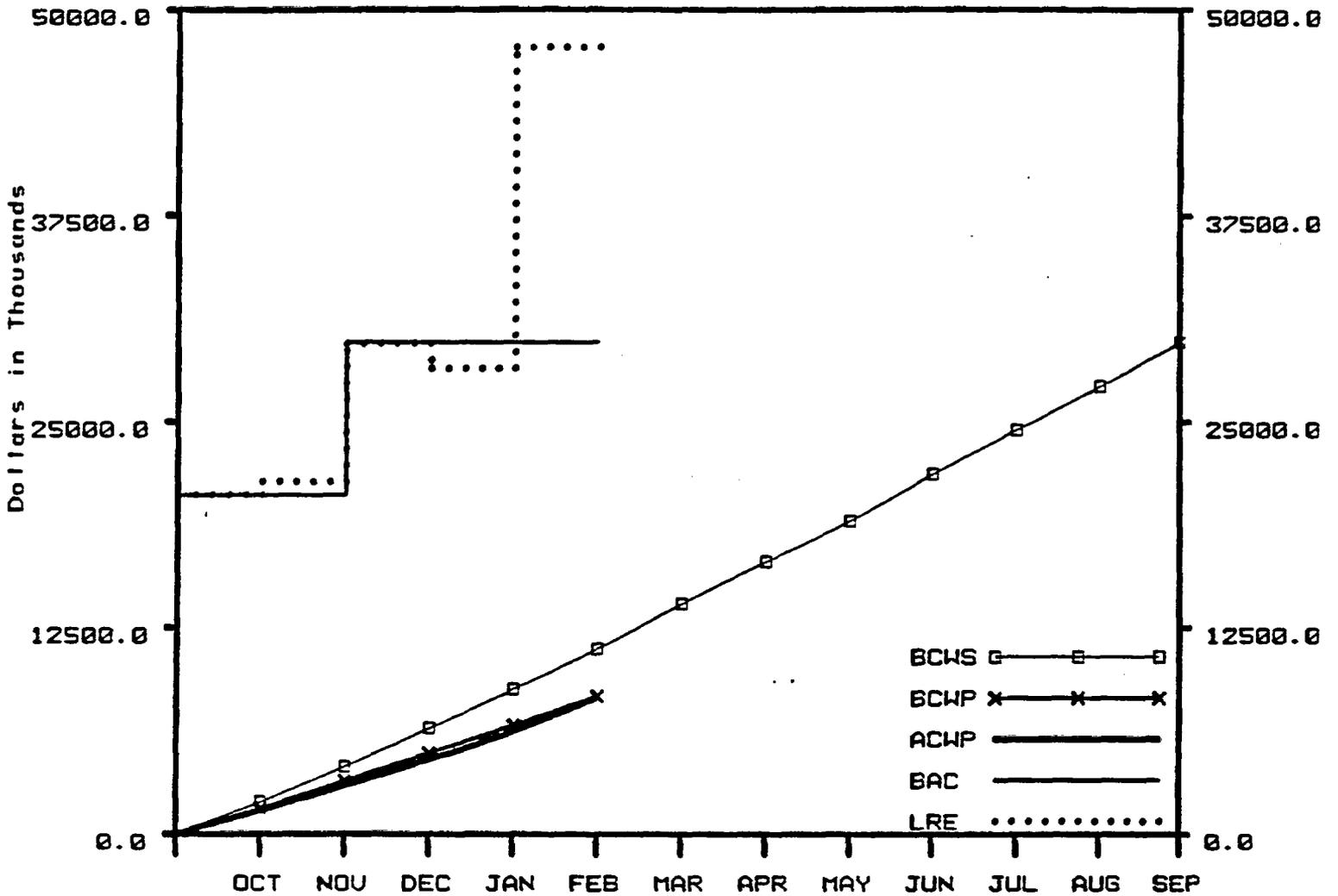
The new estimated date of completion for LLNL Milestone C304, EQ3/6 code Release is April 30, 1987.

Due to a shift in the assignment of key people LLNL Milestone C319, Interim Report on Modeling Sorption with EQ3/6, has slipped to March 30, 1987.

LLNL Milestone M343, draft MCRT Users' Manual is undergoing revision and is scheduled to be released April 30, 1987.

Los Alamos Milestone M316, the Effects of Groundwater Composition, was submitted to the WMPO.

NNWSI PROJECT COST PERFORMANCE GRAPH FOR FEB 1987 WBS: 1.2.3



SITE INVESTIGATIONS

	Current Period	Year To Date
A. BUDGETED COST OF WORK SCHEDULED (BCWS)	2434.5	11212.9
B. BUDGETED COST OF WORK PERFORMED (BCWP)	1760.4	8345.9
C. ACTUAL COST OF WORK PERFORMED (ACWP)	2079.3	8301.5
D. BUDGET AT COMPLETION (BAC)		29835.0
E. LATEST REVISED ESTIMATE (LRE)		47679.4

VARIANCES (Year To Date)

	Dollars	Percent
F. SCHEDULE VARIANCE (B-A)	-2867.0	-25.57
G. COST VARIANCE (B-C)	44.4	0.53
H. AT COMPLETION VARIANCE (D-E)	*****	-59.81

Remarks:

COST PERFORMANCE REPORT
WBS LEVEL 4
U.S. DEPARTMENT OF ENERGY
NNWSI PROJECT

For: FEB 1987

Date: March 19, 1987

WBS NUMBER AND DESCRIPTION	YEAR TO DATE				
	BUD. COST OF WORK SCHEDULED	BUD. COST OF WORK PERFORMED	ACTUAL COST OF WORK PERFORMED	VARIANCES	
				SCHEDULE	COST
1231 Management & Integration	2,138.500	1,723.252	1,485.764	-415.248	237.487
1232 Geology	1,969.600	962.909	1,035.639	-1,006.691	-72.730
1233 Hydrology	2,725.000	1,788.482	2,032.298	-936.518	-243.816
1234 Geochemistry	2,183.200	2,088.500	2,136.300	-94.700	-47.800
1235 Drilling	952.490	771.450	600.237	-181.040	171.213
1236 Environment	612.400	510.659	430.917	-101.741	79.742
1237 Socioeconomic	311.700	197.256	292.762	-114.444	-95.506
1238 Geochemical Modeling Code EQ3/8	320.000	303.400	287.600	-16.600	15.800
1239 Deferred Site Close Out	.000	.000	.000	.000	.000
123 SITE INVESTIGATIONS	11,212.890	8,345.909	8,301.518	-2,866.951	44.391

1.2.4 REPOSITORY INVESTIGATIONS

OBJECTIVE

The objective of this task is to develop the engineering capability to design, construct, operate, and decommission a repository in tuff. Four specific technical areas are involved that include (1) determination of the physical and mechanical properties of the rock matrix and rock mass that are important to the design and construction of an underground structure; (2) engineering analysis and evaluation of technical details that are important to the design and operation of a repository; (3) development of the techniques of sealing a repository as part of decommissioning; and (4) preparation of a sitespecific design that will be accommodated within the development of the equipment to construct the repository, handle the waste and waste package, and transfer the waste package within the repository system.

ACTIVITIES

WBS 1.2.4.1 MANAGEMENT AND INTEGRATION

During February, members of the SAIC Engineering Staff prepared pre- and postclosure surface erosion considerations for incorporation into SCP Section 8.3; conducted comment relocation meeting with SNL staff on SCP Section 8.3.1.14; and attended DOE/HQ Comment Resolution Workshop in Washington, D.C. from February 23 through February 27, 1987, and coordinated resolution of Section 8.3.1.1.

WBS 1.2.4.1.1 Management

SNL personnel developed a summary planning network for repository activities and integrated it into a NNWSI Project planning network. This network will also support the FY 89 WPAS.

WBS 1.2.4.1.2 Basis for Design

SNL staff members transmitted approved Engineering Change requests (ECRs) and Design Change Requests (DCRs; formerly ECRs) to affected organizations on February 17, 1987. This transmittal completes action on all currently initiated change requests and also provides complete correlation of the Repository Design Requirements (RDR) to the SCP-CDR design. The change requests are as follows: (1) ECR 003, Revise fuel assembly thermal output; (2) ECR 004, Miscellaneous Subsystem Design Requirements (SDR) update revisions; (3) DCR 007, Revision of MTU value of WVHLW; and (4) DCR 008, Delete Appendix A from SDR.

DOE/HQ has provided guidance for the RDR, formerly the SDR. The RDR must be reviewed and approved prior to the initiation of the ACD. The RDR will be formatted according to an organizational structure provided by the Office of Geological Repositories, and sections covering each physical subsystem will address the following criteria, definition, state and local regulations,

functional requirements, performance criteria, interfaces, constraints, and assumptions. Bechtel National, Inc., and Parsons Brinckerhoff Quade & Douglas assistance will be required to revise the RDR.

WBS 1.2.4.1.3 Major Design Deliverables

Staff members at SNL reviewed and modified text for SCP-CDR Chapters 1 through 9 to address comments received from the Office of Geologic Repositories (OGR), WMPO, and their contractors. This modified text will be edited and ready for subsequent review by the end of February 1987.

The 19 SCP-CDR Appendices are in various stages of completion, but overall, they are nearly complete. The appendices should be completed about five working days after the body of the report is completed.

WBS 1.2.4.2 DEVELOPMENT AND TESTING

WBS 1.2.4.2.1.1 Rock Mass Analysis

The revision of sections of SCP Chapters 6 and 8 and of SCP-CDR Sections 2.2 and 2.3 continued and superseded all other work at SNL in this task. Also considerable time was devoted to completing references to the SCP and SCP-CDR.

The SNL draft of "Numerical Analyses for the G-Tunnel Small Diameter Heater Experiment" (SAND85-7115), by RE/SPEC, Inc., was revised. The report was submitted to WMPO for policy review, fulfilling Milestone R083. The report is also a reference to the SCP and SCP-CDR.

WBS 1.2.4.2.1.2 Field Testing

SNL staff met with Parsons Brinckerhoff Quade & Douglas personnel in San Francisco, CA, on February 4-5, 1987, to discuss results of the G-Tunnel welded tuff mining evaluations.

WBS 1.2.4.2.1.3 Laboratory Properties

Efforts of SNL staff under this task have been directed toward preparing reports that are SCP references. The status of these reports is as follows:

1. SAND85-0703, "Uniaxial and Triaxial Compression Test Series on the Topopah Spring Member from USW G-2, Yucca Mountain, Nevada," was revised based on initial management review and then submitted to WMPO for policy review.
2. SAND85-0762, "Bulk, Thermal, and Mechanical Properties of the Topopah Spring Member of the Paintbrush Tuff, Yucca Mountain, Nevada," is being revised to incorporate peer review comments. All technical comments have been addressed. The remaining revisions will be made after a more detailed statistical analysis of the data has been performed.

3. SAND83-1711, "Thermal Expansion of Silicic Tuffs from Yucca Mountain, Nevada," has completed peer review. However, material received recently by the Data Records Management system suggests that approximately 10 percent of the data in this report was erroneous when originally received in 1981-82. The impact of this information on the report is being assessed.
4. SAND87-0115, which comprises two previously unpublished memoranda containing material referenced in the SCP, has completed peer review and should be in line review by the end of February 1987.

WBS 1.2.4.2.1.4 Water-Migration Analysis

SNL staff members documented the results of a drying experiment using the gamma-beam attenuation technique to measure transient saturation profiles in SAND87-0293C, "Drying of an Initially Saturated Fractured Volcanic Tuff." The document has been submitted to peer review.

WBS 1.2.4.2.2 Equipment and Instrument Development

SNL staff members started design and analytical studies this month required to complete the waste emplacement option study requested by DOE/HQ. These include repository layout studies, conceptual design of emplacement retrieval equipment, and thermal stress analysis of the borehole liner for each horizontal emplacement option under consideration. In addition, a request was written and approved for contract design services related to horizontal drilling systems for each of the emplacement options. It is anticipated that a contract for these services will be placed in early March 1987.

WBS 1.2.4.2.3.2 Seal Materials Evaluation

No work was performed by SNL staff on the revision of three geochemical reports on the stability of specific mortars, grouts, and concrete and one report on the mechanical properties of mortars and grouts, because their efforts focused on the SCP, the SCP-CDR, and other higher priority activities.

WBS 1.2.4.2.3.3 Seal Concepts Development

The SNL report entitled "Modification of Rock Mass Permeability in a Zone Surrounding a Shaft in Fractured, Welded Tuff" (SAND86-7001), is currently being prepared for publication.

WBS 1.2.4.3 FACILITIES

WBS 1.2.4.3.2 Surface Facilities

SNL staff members conducted a design review of the SCP-CDR design drawings, and the drawings were signed off for use in the SCP-CDR.

WBS 1.2.4.3.4 Underground Excavations

The elevations and coordinates of the interfaces between the Exploratory Shaft Facility and the repository have been identified by SNL staff and agreed to by the Exploratory Shaft Facility Repository Design Interface Coordinating Group.

The final draft of the report entitled "Exploratory Shaft Facility Drift Size Comparison Study" has been received by SNL from Parsons Brinckerhoff Quade & Douglas (PBQ&D).

WBS 1.2.4.3.5 Underground Service Systems

A draft of the fan reversibility position paper has been completed by Mine Ventilation Services. This paper addresses the requirement in the California Administrative Codes for fans ventilating underground workings to be reversible.

WBS 1.2.4.4 OPERATIONS AND MAINTENANCE

The OGR consolidation study report (SAND86-2357) is being revised extensively in response to the WMPO technical review of the draft report. In particular, the spent fuel emplacement schedules for all four cases will be revised to take at-reactor consolidation into account, and the disposal container for Case 3 (Monitored Retrievable Storage (MRS), at-MRS consolidation) will be enlarged in order to reduce the number of containers required. It is anticipated that the report will be resubmitted to WMPO in mid-April 1987.

WBS 1.2.4.6 REPOSITORY PERFORMANCE ASSESSMENT

WBS 1.2.4.6.1 Repository Performance Code Development and Certification

The revision of sections of SCP Chapters 6 and 8 and of SCP-CDR sections 2.2 and 2.3 continued and superseded all other work by SNL staff in this task. Also, considerable time was devoted to completing references to the SCP and SCP-CDR.

The report entitled "The SPECTROM-31 Compliant Joint Model: Verification and Validation Studies" (SAND85-7100), by RE/SPEC, Inc., completed SNL peer review and was submitted for line review. The report summarizes the material model's capabilities and allows for an assessment of the range of stress states for which it can be applied to problems.

The SNL report entitled "A Computational Model for Jointed Media with Orthogonal Sets of Joints" (SAND86-1122), completed line review and was submitted to WMPO for policy approval. The report is an SCP and SCP-CDR reference.

WBS 1.2.4.6.2 Design Analysis

During February 1987, review by SNL staff of the design analysis sections of the SCP-CDR was completed. The SCP-CDR Appendix on the capacity of Yucca Mountain was revised and submitted for review.

Work by members of SNL staff proceeded on revising SCP Section 8.3.2.2 (Issue 1.11, Configuration of Underground Facilities - Postclosure) for the milestone network for SCP Section 8.3.5.

Work by SNL personnel is progressing on seven SCP references. Two more references have been sent to DOE for review, and four more are in line review.

WBS 1.2.4.6.3 Preclosure Safety Analysis

Bechtel National, Inc., (BNI) work on normal conditions safety analyses is complete, and the report is nearly ready for SNL review. BNI work on preliminary criticality assessment and special studies concerning radionuclide plateout, dry deposition, and fuel dust continues. BNI work on design-basis accident development and analysis methods also continues.

Members of SNL staff attended SCP review workshops and revisions to SCP Chapter 8 sections concerning Issues 2.1, 2.2, 2.3, and 2.7 have begun. Comment resolution for SCP-CDR Chapters 6, 7, and 8 and Appendices F and L is continuing.

A paper for the Waste Management '87 Conference based on the SNL report entitled "Initial Q-List for the Prospective Yucca Mountain Repository Based on Items Important to Safety and Waste Isolation" (SAND86-1965C) was completed.

PLANNED WORK

Revisions to sections of SCP Chapter 8 dealing with Issues 2.1, 2.2, 2.3, and 2.7 are expected to take almost all of the SNL staff members time.

Work on the SCP-CDR and BNI tasks will continue at SNL.

During the first part of March 1987, SNL staff will send a comment-resolution draft of the SCP-CDR, along with copies of all comments and a comment log, to OGR and WMPO. The appendices should be transmitted a week after that.

SNL staff commitments to modifying Chapters 6 and 8 of the SCP and the SCP-CDR will supersede all work planned for this task. All schedules are expected to slip accordingly.

High-pressure flatjack testing (up to 35 MPa) will be performed with newly fabricated flatjacks. Also, data from the welded tuff mining evaluations will be reduced and submitted to the Data Records Management System.

SNL staff members will continue to work on the SCP references and on any revisions to SCP Section 8.3 as required by the February 23-24, 1987, DOE/HQ review of the rock characteristics portions.

Commitments by SNL staff to review and rewrite SCP Chapter 6 and 8 and the SCP-CDR will supersede all work planned for this task. All schedules are expected to slip accordingly.

During March 1987, the major emphasis of work performed by SNL staff will be the SCP, SCP-CDR, and the references for those documents.

MILESTONE PROGRESS

SNL Milestone M462, sealing field test requirements letter report, is being reevaluated.

SNL Milestone N429, parameter effects on mechanical properties of the Topopah Spring Member, was the new estimated date of completion is March 16, 1987.

SNL Milestone N452, thermomechanical analyses of access drifts, storage drifts and alcoves, and the access-drift/storage-drift intersection, was completed.

SNL Milestone N498, report on mercury intrusion results for tuffaceous materials for Yucca Mountain, was completed.

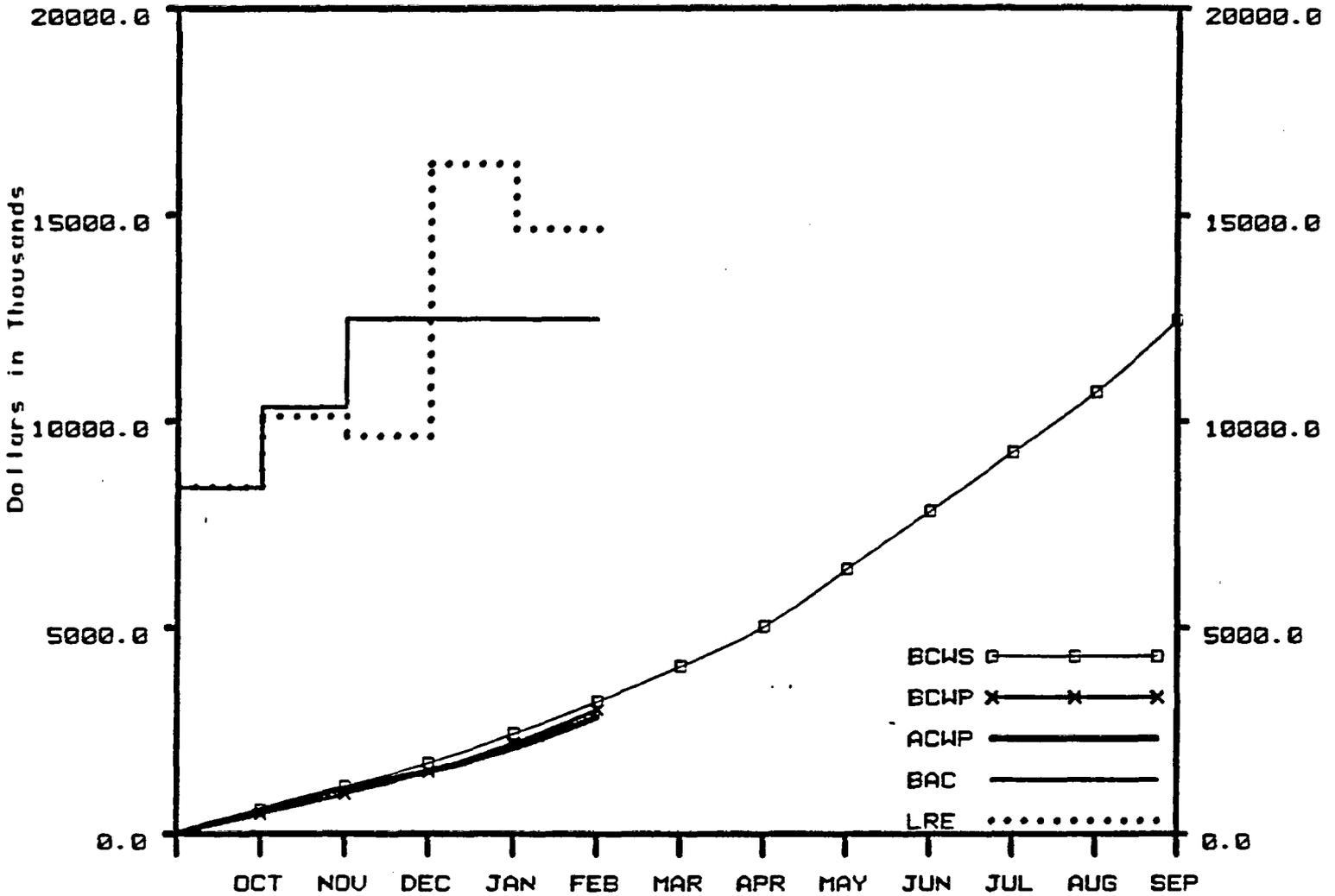
SNL Milestone P198, incorporates comments from WMPO and OGR into SCP-CDR, has been delayed because comments are yet to be received from WMPO.

SNL Milestone P218, SNL incorporates WMPO comments into preliminary study of the effects of uncertain geologic data on design of the underground facility and resubmits to WMPO, was delayed.

SNL Milestone R060, report SAND85-7112, "Impact on Costs and Schedules of Using a Monitored Retrievable Storage Facility in Conjunction with a Repository in Tuff at Yucca Mountain" has been delayed.

SNL Milestone R083, numerical analysis of small-diameter heater experiments, was completed.

NNWSI PROJECT COST PERFORMANCE GRAPH FOR FEB 1987 WBS: 1.2.4



REPOSITORY INVESTIGATIONS

	Current Period	Year To Date
A. BUDGETED COST OF WORK SCHEDULED (BCWS)	780.7	3196.2
B. BUDGETED COST OF WORK PERFORMED (BCWP)	815.4	2996.1
C. ACTUAL COST OF WORK PERFORMED (ACWP)	740.2	2819.5
D. BUDGET AT COMPLETION (BAC)		12472.0
E. LATEST REVISED ESTIMATE (LRE)		14646.3

VARIANCES (Year To Date)

	Dollars	Percent
F. SCHEDULE VARIANCE (B-A)	-200.1	-6.26
G. COST VARIANCE (B-C)	176.7	5.90
H. AT COMPLETION VARIANCE (D-E)	-2174.3	-17.43

Remarks:

COST PERFORMANCE REPORT
WBS LEVEL 4
U.S. DEPARTMENT OF ENERGY
NNWSI PROJECT

For: FEB 1987

Date: March 19, 1987

WBS NUMBER AND DESCRIPTION	YEAR TO DATE				
	BUD. COST OF WORK SCHEDULED	BUD. COST OF WORK PERFORMED	ACTUAL COST OF WORK PERFORMED	VARIANCES	
				SCHEDULE	COST
1241 Management and Integration	982.200	784.160	793.464	-198.040	-9.305
1242 Development and Testing	1,380.000	1,377.966	1,233.000	-2.034	144.966
1243 Facilities	306.000	306.000	469.000	.000	-163.000
1244 Operations and Maintenance	150.000	149.999	128.000	-.001	21.999
1245 Decommissioning	26.000	26.000	.000	-.000	26.000
1246 Repository Performance Assessment	352.000	352.000	196.000	-.000	156.000
124 REPOSITORY INVESTIGATIONS	3,196.200	2,996.125	2,819.464	-200.075	176.661

MILE- STONE	RESP. AGENCY	WBS	MILESTONE DESCRIPTION	O	N	D	J	F	M	A	M	J	J	A	S
N430	WMPO/ SNL	1.2.4.1	Start Repository Advanced Conceptual Design												△
N433	WMPO/ SNL	1.2.4.1	Initial Subsystem Design Requirement (SDR)							△				◇	
N432	WMPO/ SNL	1.2.4.1	Repository Conceptual Design in Support of Site Characterization					△		◇					
M455	WMPO/ SNL	1.2.4.2	Report on G-Tunnel Underground Facility (GTUF) Summary				△		◇						
M295	WMPO/ SNL	1.2.4.2	Feasibility Analysis of Horizontal Emplacement and Retrieval - Letter Report		△										
N406	WMPO/ SNL	1.2.4.2	Horizontal Waste Emplacement Equipment Development Plan					△				◇			
P404	WMPO/ SNL	1.2.4.2	Prepare "Technical Basis for Performance Goals, Design Requirements and Material Recommendation for the NNWSI Project Repository Sealing Program Report"						△		◇				
N427	WMPO/ SNL	1.2.4.2	Initiate Procurement of Development Prototype Boring Machine		△										◇
R036	WMPO/ SNL	1.2.4.2	Analysis to Evaluate the Effect of the Exploratory Shaft on Repository Performance at Yucca Mountain					△				◇			
RB48	WMPO	1.2.4.4	Submit Retrievability Compliance Strategy Plan to OGR for Review and Comment						△						◇
R267	WMPO/ SNL	1.2.4.4	Final Report on Spent Fuel Rod Consolidation			△						◇			
N457	WMPO/ SNL	1.2.4.6	Preliminary Study of the Effects of Uncertain Geologic Data on Design of the Underground Facility					△			◇				

△ PLANNED MILESTONE COMPLETION DATE

◇ REVISED MILESTONE COMPLETION DATE

▲ COMPLETED AS SCHEDULED

◆ COMPLETED AS REVISED

1.2.5 REGULATORY AND INSTITUTIONAL INVESTIGATIONS

OBJECTIVE

The objective of the regulatory and institutional investigations task is to provide the capability for interfacing with all the institutions and to meet the requirements identified in various laws and regulations pertaining to the siting, design, and construction of a nuclear waste repository and a test and evaluation facility. The principal laws and regulations which govern the licensing of these include the Atomic Energy Act of 1954, the National Environmental Policy Act (NEPA) of 1969, and the Nuclear Waste Policy Act (NWPA) of 1982, 10 CFR Part 60, and 40 CFR part 191.

ACTIVITIES

WBS 1.2.5.1 MANAGEMENT AND INTEGRATION

WBS 1.2.5.2.1 Regulatory Interaction

A draft of SNL NNWSI Department Operating Procedure 17-02, "Operation of the SNL NNWSI Data Records Management System (DRMS)," has been submitted for review.

Further planning of technical meetings with the NRC is suspended until the current SCP review at DOE/HQ is completed.

Members of the SAIC staff issued Revision 2 of the Regulatory Document Manual to Project participants. A second printing of the document was completed and the distribution list was expanded.

An SAIC representative served on the POC that reviewed the waste package sections of the SCP and participated in the SCP workshops on waste package, systems performance and ground-water protection that were held in Washington, D.C., February 17, 1987.

WBS 1.2.5.2 LICENSING

WBS 1.2.5.2.2 Site Characterization Plan

Some SCP 8.3.1.3 revisions were made by Los Alamos staff this month, but this task will not be completed until April. Work was begun on the resolution of the SCP Chapter 4 reference verification problems. The verification task will not be completed March 15, as requested, but will be completed during April. Development of the study plans that will accompany the SCP is continuing. The above tasks are considered high priority, and all must be done concurrently. A timely resolution of all tasks in the very near future is not expected.

SCP PIRC 15 completed review and revision of seismotectonic issue resolution strategy development for Issues 1.19 and 4.9. Four team numbers from SNL contributed to this effort.

SCP PIRC 15 also completed a list of site parameters needed from the surface-based drilling program for completion of Issues 1.15 and 4.7. SNL staff participated in this effort.

Reference verification for SCP Chapter 2 was completed by SNL staff members this month. Reference verification for Chapter 6 has been synchronized with comment resolution from the DOE/HQ SCP review.

Representatives from SNL participated in the SCP Section 8.3 workshops held in Washington, DC, February 17-27, 1987. Comment resolution and text revision is now in progress.

A series of workshops were held February 17 through 27, 1987, to discuss and resolve DOE/HQ comments on Section 8.3 of the Draft SCP. Groups of similar issues were addressed by separate working groups made up of Project and DOE/HQ representatives. Working group leaders were responsible for providing brief summaries of each meeting and explaining the comments received and their resolution. Comments that could not be resolved through the working group discussions were referred to the POC, which, for the purpose of the workshops, expanded to include DOE/HQ staff. The POC is responsible for the following:

1. Review the results of each workshop and evaluate of proposed major revisions.
2. Determine what major required revisions could significantly impact SCP completion and estimate the scope of the impact.
3. Develop possible resolutions to unresolved problems and recommend and present these possible resolutions to the SCP overview committee (SOC).

The SOC, a subcommittee formed for NNWSI Project reviews, includes participants from OGR and the WMPO and other technical support as needed. This subcommittee is responsible for reviewing workshop agreements and proposals from the POC for major revisions to issues yet "unresolved." For these issues, analyses and proposed solutions are prepared for consideration by HQ and PO upper management, along with evaluations of the impacts of the various proposed solutions and their acceptability.

Major comments from DOE/HQ on the NNWSI SCP draft of January 15, 1987, are as follows:

1. Chapters 1 through 7 are complete and are of relatively high quality.
2. Chapter 8 is immature; portions were not available, and performance allocation has not been completed.
3. Because performance allocation is incomplete, characterization studies and activities are poorly developed in some areas.
4. Major revisions will be required for issues discussing waste package/EBS, repository design, tectonics, and rock characteristics.

The impact of changes required to Section 8.3, based on the DOE/HQ comments, has not yet been fully assessed, but will definitely push the schedule past the July delivery date to the public.

Sections of the SCP, which were unavailable to be submitted with the critical SCP draft on January 15, have undergone POC review and were transmitted to DOE/HQ prior to the series of DOE/HQ workshops. These sections include the following:

1. Sections 8.3.5.9 and 8.3.5.10, Waste Package Containment and EBS Performance.
2. Sections on Higher-Level Findings and NRC Siting Criteria.
3. Sections 8.4 and 8.7, Plans for Site Preparation and Decontamination and Decommissioning.
4. Markup of the Preclosure and Postclosure Tectonics Sections.
5. Sections 8.3.1.9, Human Interference.
6. Preliminary list of study plans and correlations to activities (for Section 8.5) described in Section 8.3.

Work is continuing on the completion of the SCP parameter data base. Lists of data requests from performance and design issues, based in Section 8.3, have been put into the data base. Data parameters provided by characterization issues have also been put into the data base, and both lists are under review for consistency in terminology.

Project participants have been asked to identify activity interfaces from Section 8.3 and corresponding or new "planning" milestones to be used in preparing Section 8.5, Schedules and Milestones. Work is also continuing on defining various reports and topics for technical position papers, which will support the license application. This information is also to be incorporated into Section 8.5.

Author review of Chapter 7 HQ SCP draft was completed by LLNL staff members, and comments transmitted to SAIC. Response to reference verification comments was completed for most of the Chapter 7. The responses were transmitted to SAIC.

LLNL participated in POC review of 8.3.5.9 and 8.3.5.10 and revised these sections to address POC concerns. Discussions of the Waste Package Strategy Document and its status were ongoing.

LLNL also participated in HQ comment resolution meetings for Issues 1.4 and 1.5 (Section 8.3.5.9 and 8.3.5.10) as well as the overall POC for all 8.3 sections. Section 8.3.4 (Issues 1.10, 2.6 and 4.3) were not discussed at the meetings. A future meeting at Livermore was set up to do this. IRS logic diagrams for Issues 1.4 and 1.5 were prepared. These diagrams and results of the resolution meeting form the basis for current revisions to these sections of the SCP.

SAIC/Golden Regulatory Compliance staff continued to provide management and technical support in the development and coordination of the USGS input to the NNWSI Project SCP. The principle areas of work included: (1) workshop support for the DOE/HQ assembled-document review of SCP Chapter 8; (2) initial implementation of a regulatory-based information management system for the USGS site characterization activities; and (3) technical review and analysis of planned unsaturated zone hydrology prototype testing and site characterization activities.

SAIC/Golden staff participated in the DOE/HQ SCP review held in Washington between February 17 and 27. Project overview, technical integration, and coordination support was provided to the subcommittee reviews of the hydrology, rock characteristics (site geology), and tectonics issues. SAIC/Golden staff assisted in the resolution of comments during the workshop and the coordination of comment resolution for those comments that were not resolved at the workshop. Recommendations were provided to the Project Overview Committee (POC) for resolution of SCP problem areas including: (1) performance allocation (i.e., integration of site characterization data with design and performance data needs); (2) Project activity interfaces (i.e., schedule compatibility among planned site, design, and performance activities); and (3) the development of a systematic drilling and sampling program to satisfy multiple data needs for site characterization, repository design, and performance assessments.

SAIC/Golden staff has completed the initial development of a computerized data base system for analysis and integration of planned USGS site characterization activities and the information derived from these activities. The information management system has been developed in support of a PIRC #15 (Team 1) requirement for detailed data integration among the site, design and performance elements of the NNWSI Project SCP. SAIC/Golden staff has proposed the basic structure of the system for all site characterization activities including those of the USGS, Los Alamos, SNL, and SAIC/Las Vegas. The system has been structured to be an extension of the Project Issues Hierarchy, and the system development has been coordinated with, and is designed to be integrated with, the technical data base system being developed concurrently at SNL. Compilation of all geological, geoengineering, hydrological, geochemical, and climatologic parameters identified in the SCP Chapter 8 plans have been completed and entered into the data base. Preliminary association of the site parameter with the design and performance parameter data base (supplied by SNL) has also been completed.

SAIC/Golden staff has also completed the initial development of another element of the SCP data base in support of a PIRC 15 (Team 24) requirement for schedules and milestones in Sections 8.3 and 8.5 of the SCP. In a manner similar to the parameter association described above, this component of the data base is being used to evaluate technical interfaces among the site, design, and performance activities. The analysis provides an increased level of design for monitoring inter-Project-participant interfaces. An initial identification of all interfaces of USGS activities with other Project participant activities has been completed. Two categories of interfaces are being evaluated: technical interfaces (i.e., those where activity results are important to other activities but are not schedule constraining) and schedule-constraining interfaces. A preliminary list of these interfaces has been submitted to SAIC/Las Vegas for integration with similar data bases

being developed at SNL, Los Alamos, LLNL, and SAIC/Las Vegas. An initial identification of USGS internal interfaces (i.e., geology/ hydrology, hydrology/climate, etc.) has also been completed.

SAIC/Golden Regulatory Compliance staff continues to provide technical review support and detailed planning for the prototype SIPs of the USGS NNWSI Project hydrology task. During February the staff has revised the prototype testing SIP for the Bulk Permeability Test, assisted the WPAS preparation, and completed a preliminary analysis of bulkhead and fan requirements for this test.

SAIC/Golden staff has also completed an evaluation of the unsaturated zone modeling program and recommended several improvements in the areas of gas-phase flow and dispersion. An evaluation of the unsaturated zone instrumentation program has also been completed and recommendations made.

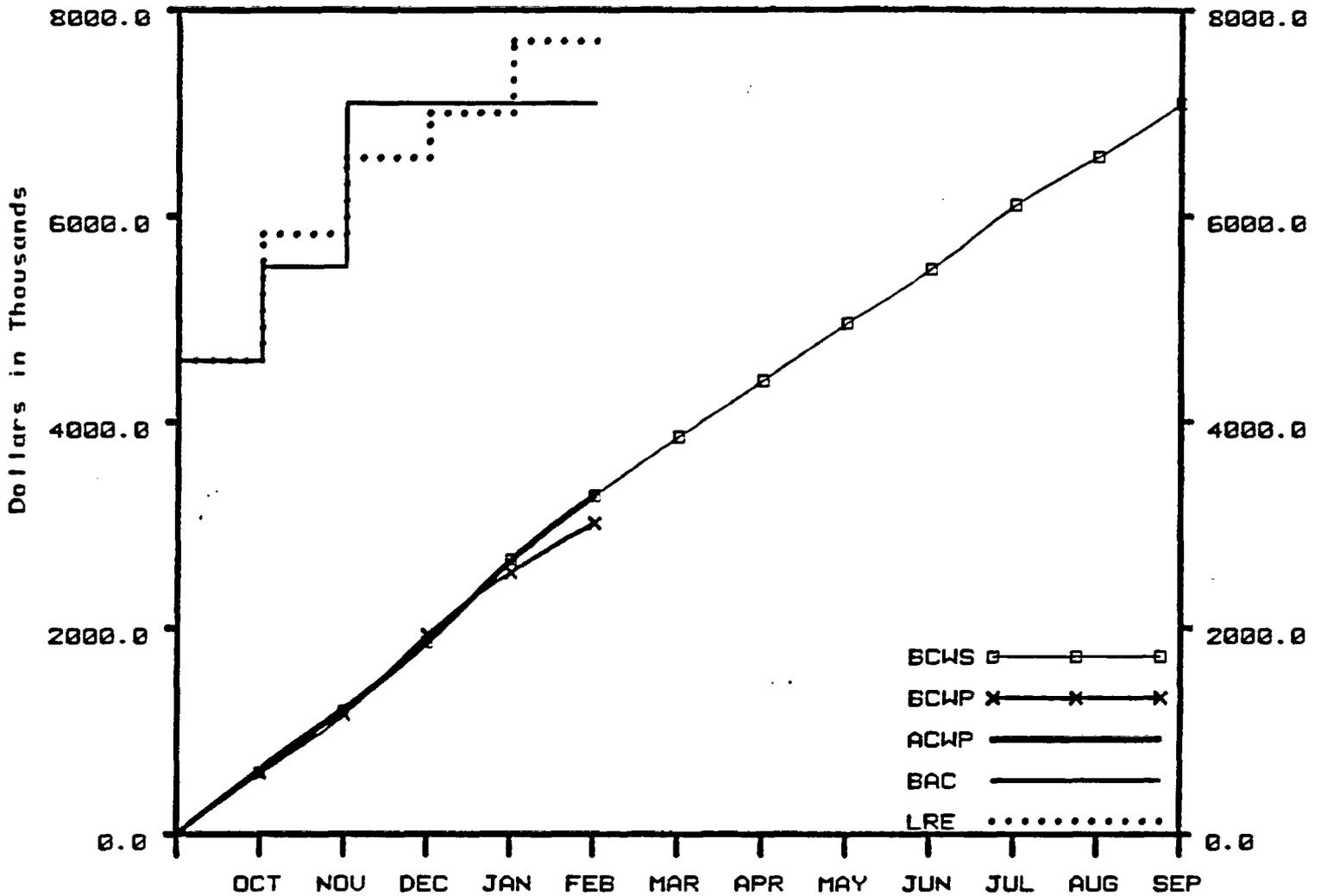
PLANNED WORK

Resolution of SCP comments from the DOE/HQ workshop will continue during March. Reference verification will continue primarily in support of the climate sections of the SCP. Graphics support will also continue, primarily to resolve DOE/HQ review comments about maps and drillhole locations.

SAIC/Las Vegas and WMPO have been impressed with the quality of the USGS-SAIC/Golden graphics input to SCP Chapter 8 and have requested expanded support in the areas of map standardization, base-map digitization, and USGS site integration figures. SAIC/Golden Regulatory Compliance staff will continue to provide coordination and integration support in these areas.

The site parameters data base and the design and performance parameters data base will be merged and used to develop the SCP issues resolution strategies for each of the site characterization issues. DOE/HQ and WMPO agreed (POC, March 4, 1987) to the USGS-SAIC/Golden proposed process for implementing of these performance allocation data bases. Performance allocation meetings scheduled in mid-March will use the results of this work in further evaluations of Project data needs and priorities. Expansions of the parameters data bases will include geographic, stratigraphic, and structural associations with site parameters, and associations of accuracy and precision of site characteristics with design and performance confidence and tolerance requirements.

**NNWSI PROJECT
COST PERFORMANCE GRAPH FOR FEB 1987
WBS: 1.2.5**



REGULATORY AND INSTITUTIONAL INVESTIGATIONS	Current Period	Year To Date
A. BUDGETED COST OF WORK SCHEDULED (BCWS)	621.0	3280.6
B. BUDGETED COST OF WORK PERFORMED (BCWP)	482.0	3016.6
C. ACTUAL COST OF WORK PERFORMED (ACWP)	634.7	3285.8
D. BUDGET AT COMPLETION (BAC)		7086.0
E. LATEST REVISED ESTIMATE (LRE)		7691.9

VARIANCES (Year To Date)	Dollars	Percent
F. SCHEDULE VARIANCE (B-A)	-264.0	-8.05
G. COST VARIANCE (B-C)	-269.2	-8.92
H. AT COMPLETION VARIANCE (D-E)	-605.9	-8.55

Remarks:

COST PERFORMANCE REPORT
WBS LEVEL 4
U.S. DEPARTMENT OF ENERGY
NNWSI PROJECT

For: FEB 1987

Date: March 19, 1987

WBS NUMBER AND DESCRIPTION	YEAR TO DATE				
	BUD. COST OF WORK SCHEDULED	BUD. COST OF WORK PERFORMED	ACTUAL COST OF WORK PERFORMED	VARIANCES	
				SCHEDULE	COST
1251 Management and Integration	278.400	259.660	172.674	-18.740	86.986
1252 Licensing	2,569.400	2,390.821	2,756.828	-178.579	-366.008
1253 Environmental Compliance	225.100	158.455	205.128	-66.645	-46.671
1254 Communication and Liaison	207.700	207.701	151.163	.001	56.538
1255 Technology and Financial Assistance	.000	.000	.000	.000	.000
125 REGULATORY AND INSTITUTIONAL INVESTIGATIONS	3,280.600	3,016.636	3,285.791	-263.964	-269.154

MILESTONE	RESP. AGENCY	WBS	MILESTONE DESCRIPTION	O	N	D	J	F	M	A	M	J	J	A	S
R579	WMPO/ SAIC	1.2.5.2	Submit Draft Preliminary Plan for Scheduling, Management, and Preparation of Position Papers to WMPO/NV												△
R583	WMPO/ SAIC	1.2.5.2	Submit Draft Seismic/Tectonic Summary Position Paper to WMPO/NV									△			
M521	WMPO/ SAIC	1.2.5.2	Draft Site Characterization Plan (SCP)				▲								
M522	WMPO/ SAIC	1.2.5.2	Site Characterization Plan (SCP)					△		◇					
R798	WMPO/ SAIC	1.2.5.3	Draft Environmental Field Study Plans Received at HQ for Review									△			
R799	WMPO/ SAIC	1.2.5.3	Environmental Field Study Plans Received at HQ for Baselineing											△	
R794	WMPO/ SAIC	1.2.5.3	Submit Working Draft Environmental Regulatory Compliance Plan to DOE/HQ and State				△		◇						
R795	WMPO/ SAIC	1.2.5.3	Environmental Regulatory Compliance Plan Issued								△				◇ TBD
R996	WMPO/ SAIC	1.2.5.3	Submit Draft II Environmental Monitoring and Mitigation Plan (EMMP) to WMPO/NV			▲									
P034	WMPO/ SAIC	1.2.5.3	Submit Environmental Monitoring and Mitigation Plan (EMMP) to DOE/HQ							△		◇			
M795	WMPO	1.2.5.4	Complete and Sign C&C Agreement with State						△						◇ TBD

△ PLANNED MILESTONE COMPLETION DATE

◇ REVISED MILESTONE COMPLETION DATE

▲ COMPLETED AS SCHEDULED

◆ COMPLETED AS REVISED

1.2.6 EXPLORATORY SHAFT INVESTIGATIONS

OBJECTIVE

The objective of this task is to identify and plan the tests that need to be conducted at the repository horizon as a part of detailed site characterization and to design and construct the Exploratory Shaft (ES) and the underground test area in Yucca Mountain. The primary focus of this effort will be to establish the basis for evaluating the unsaturated zone in a welded tuff formation. In addition, an effort will be made to define the nature of the unsaturated zone with regard to water content and water movement, and the nature of the natural barriers between the repository horizon and the static water level.

WBS 1.2.6.1 MANAGEMENT AND INTEGRATION

WBS 1.2.6.1.1 Exploratory Shaft Management, Planning, Design, and Review

The WMPO has requested that separate criteria forms be completed for each ESF test. This effort is in addition to completing Appendix B to the ESF Subsystems Design Requirements document. A draft copy of the completed forms was prepared and hand-carried to WMPO on February 23 for review and comment.

Copies of the Systems Engineering Management Plan (SEMP) were received and reviewed by Los Alamos staff. Comments were compiled and transmitted to WMPO.

WBS 1.2.6.1.2 Exploratory Shaft Management and Quality Assurance Support

During February, the SAIC engineering staff revised the ESF briefing paper for a meeting with the NRC and the State to incorporate comments received from OCRWM; revised the ESF Subsystem Design Requirements Document (ESF SDRD) for compatibility with ESF Action Memorandums; prepared Underground Test section of ESF SDRD; reviewed F&S Excavation Methods Study (Study No. 3) for final comments and recommendations; finalized Appendix B data sheets for ESF SDRD; completed assessment of status and prepared response to NRC open items related to ESF; researched exact coordinates of major property boundaries in the vicinity of ESF for use in determination of the land use agreement requirements; reviewed ESF headframe drawings to determine if clearances are sufficient for the sinking of ES-1; completed initial draft of ESF QA review of design documents procedure; and reviewed ESF network schedules and developed a plan for modifying them to respond to the stated needs of the Project participants.

WBS 1.2.6.2.1 ESF Site and Roads

Staff members at H&N submitted the Surface Site Layout study to WMPO on February 20, 1987. Comments are not expected back until mid-March.

WBS 1.2.6.2.2 ESF Water/Sewer

H&N staff members completed the Sanitary Waste Treatment study and it should be submitted to WMPO the first week of March.

WBS 1.2.6.7.1 Utilities and Communications

Members of the F&S staff completed the final draft of the Water and Waste Water Study and the design verification and interdisciplinary check for this study.

Verbal approval was received by H&N from WMPO to begin work on the life safety support system portion of the ESF special studies. New completion schedule is being prepared based on reduced scope of work and delayed start date.

WBS 1.2.6.9.1 Exploratory Shaft Test Plan

The draft test plan for the first phase of prototype testing was reviewed by Los Alamos staff. Writing of the technical procedures required by the test plan were initiated by LLNL.

A LLNL contract for services with New Mexico State University for study of thermal stability of the U.S. Bureau of Mines (USBM) gauge was approved. Work commenced to characterize the thermal stability and response of the USBM borehole deformation gage. This work will allow evaluation of the proper application of this gage in the Waste Package Environment Tests at Yucca Mountain.

Los Alamos personnel completed the air coring detailed prototype test plan and the drilling equipment document. Also completed was an updated revision of Appendix C of the Subsystems Design Requirements document.

WBS 1.2.6.9.2.3 Exploratory Shaft Geomechanical Test

Staff members at SNL completed a draft of Problem Definition Memo (PDM) 71-024 for the pretest analysis of the canister-scale heater experiment and it is in line review.

WBS 1.2.6.9.2.4 Geochemical Testing

A Los Alamos abstract, "Modeling Tracer Diffusion in Unsaturated Porous Media, Both Fractured and Unfractured" was prepared for a presentation at the American Geophysical Union meeting in Baltimore to be held May 18 through 22. The abstract was reviewed and transmitted to the WMPO for approval.

WBS 1.2.6.9.3 Exploratory Shaft Integrated Data System

Los Alamos staff members made final arrangements for EG&G to design, build, and operate the Integrated Data System (IDS). Two purchase requests, to cover the estimated work for FY 87, were written. The first purchase request is to cover the cost of initial administration, planning, and the writing of a Quality Assurance Program Plan (QAPP). A draft copy of the QAPP was

received and reviewed. The second purchase request is to cover the FY 87 costs for IDS system design and procurement of hardware and software.

WBS 1.2.6.9.4 Prototype Testing

WBS 1.2.6.9.4.1 Prototype Geologic Testing

The Prototype Scientific Investigation Plan for geologic mapping was modified and returned to the Bureau of Reclamation by SAIC/Golden for additional work per recommendations received during the January 30 review in Las Vegas. Upon revision, the SIP was transmitted to USGS, who sent it to WMPO for approval.

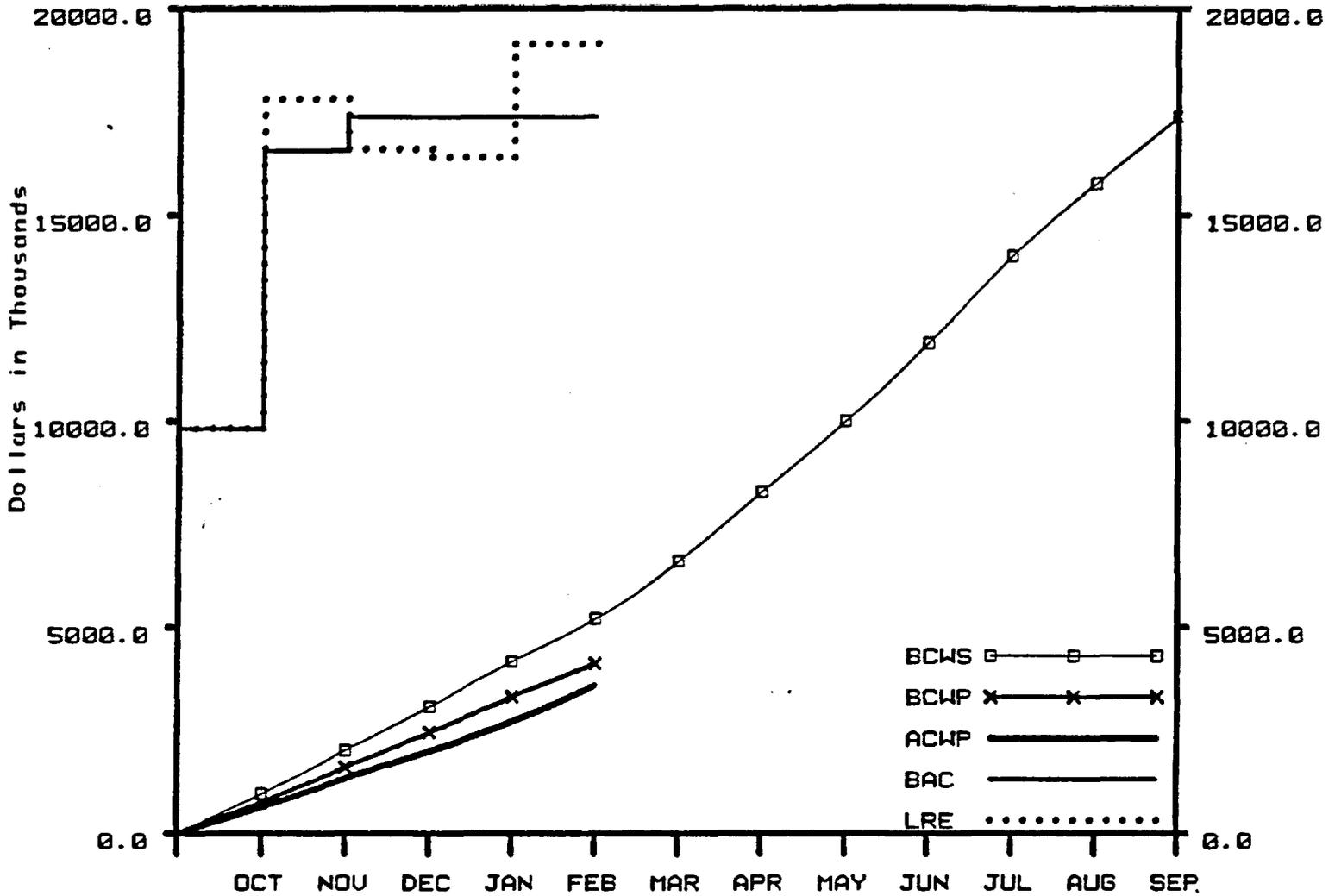
WBS 1.2.6.9.4.2 Prototype Hydrologic Testing

All 13 prototype SIPs have been submitted to the USGS by USBR.

MILESTONE PROGRESS

Los Alamos Milestone M105, ES prototype test plans, was delivered to WMPO.

NNWSI PROJECT COST PERFORMANCE GRAPH FOR FEB 1987 WBS: 1.2.6



EXPLORATORY SHAFT INVESTIGATIONS

	Current Period	Year To Date
A. BUDGETED COST OF WORK SCHEDULED (BCWS)	1027.1	5198.6
B. BUDGETED COST OF WORK PERFORMED (BCWP)	804.9	4112.0
C. ACTUAL COST OF WORK PERFORMED (ACWP)	869.4	3584.9
D. BUDGET AT COMPLETION (BAC)		17370.0
E. LATEST REVISED ESTIMATE (LRE)		19123.8

VARIANCES (Year To Date)

	Dollars	Percent
F. SCHEDULE VARIANCE (B-A)	-1086.6	-20.90
G. COST VARIANCE (B-C)	527.1	12.82
H. AT COMPLETION VARIANCE (D-E)	-1753.8	-10.10

Remarks:

COST PERFORMANCE REPORT
WBS LEVEL 4
U.S. DEPARTMENT OF ENERGY
NNWSI PROJECT

For: FEB 1987

Date: March 19, 1987

WBS NUMBER AND DESCRIPTION	YEAR TO DATE				
	BUD. COST OF WORK SCHEDULED	BUD. COST OF WORK PERFORMED	ACTUAL COST OF WORK PERFORMED	VARIANCES	
				SCHEDULE	COST
1261 Management and Integration	2,052.030	1,820.489	1,576.060	-231.541	244.429
1262 Site Preparation	53.300	41.220	47.100	-12.000	-5.800
1263 Surface Facilities	39.200	41.900	33.600	2.700	8.300
1264 First Shaft	90.000	90.000	57.048	-.000	32.952
1265 Second Shaft	22.000	22.000	6.559	-.000	15.441
1266 Subsurface Excavations	131.000	131.000	175.749	.000	-44.749
1267 Underground Service Systems	192.000	140.900	97.240	-51.100	43.660
1268 Operations	15.000	15.000	7.000	.000	8.000
1269 Testing	2,604.000	1,809.487	1,584.556	-794.593	224.931
126 EXPLORATORY SHAFT INVESTIGATIONS	5,198.610	4,111.995	3,584.911	-1,086.615	527.004

MILE- STONE	RESP. AGENCY	WBS	MILESTONE DESCRIPTION															
				O	N	D	J	F	M	A	M	J	J	A	S			
M105	WMPO/ LANL	1.2.6.1	Submit Prototype Test Plans to DOE/HQ for Review and Comment					△		◇								
M243	WMPO/ LANL	1.2.6.1	Complete Exploratory Shaft Readiness Review														△	◇
R841	WMPO/ SAIC	1.2.6.1	DOE/HQ Receives Final FY 89 Project Validation Material							△								
M282	WMPO/ LANL	1.2.6.1	Start Field Prototype Testing in G-Tunnel							△								
R241	WMPO/ LANL	1.2.6.1	Exploratory Shaft Facility (ESF) Subsystems Design Requirements Document			△			◇									
M773	WMPO/ SAIC	1.2.6.1	Final ESF Title II Design Requirements Document Submitted To DOE/HQ									△				◇		
P763	WMPO/ SAIC	1.2.6.1	Exploratory Shaft Title I Design Summary Submitted to WMPO									△				◇		

◇
3/88

△ PLANNED MILESTONE COMPLETION DATE

◇ REVISED MILESTONE COMPLETION DATE

▲ COMPLETED AS SCHEDULED

◆ COMPLETED AS REVISED

1.2.7 TEST FACILITIES

OBJECTIVE

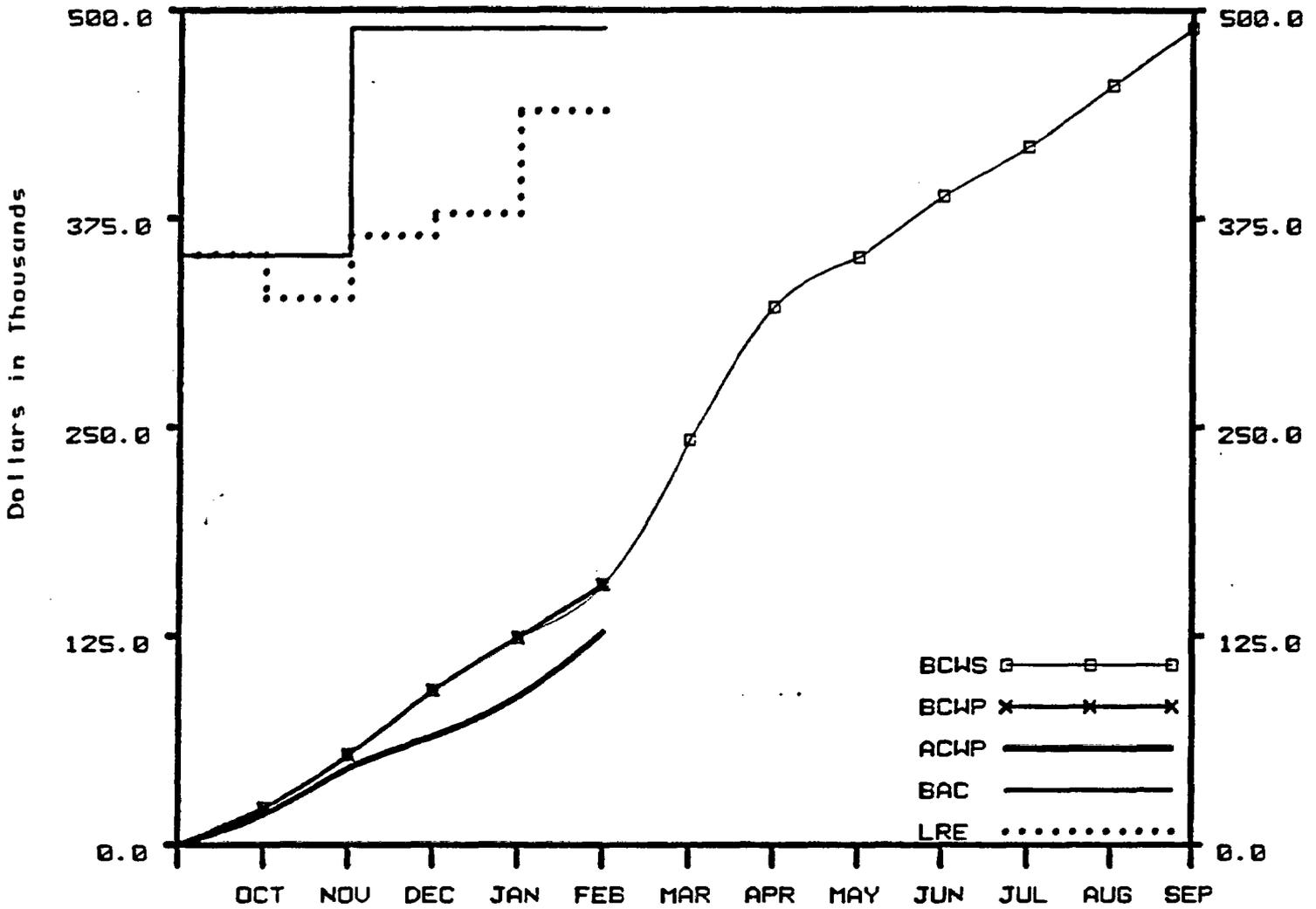
The major objective of this task is the design, construction, and operation of the test facilities that support technology development for other waste management programs and other geologic repository projects. The two major facilities operated under this WBS element are the Climax Spent Fuel Test Facility and the E-MAD Facility.

ACTIVITIES

The remaining LLNL spent fuel test-climax reports are in various stages of completion for printing as follows:

1. The final report is being prepared for printing.
2. The executive summary is ready for printing and distribution.
3. The report on post-test thermal analyses is ready for printing except for minor discrepancies with some of the figures.
4. The geomechanics report is in final editing.

**NNWSI PROJECT
COST PERFORMANCE GRAPH FOR FEB 1987
WBS: 1.2.7**



TEST FACILITIES

	Current Period	Year To Date
A. BUDGETED COST OF WORK SCHEDULED (BCWS)	31.7	155.6
B. BUDGETED COST OF WORK PERFORMED (BCWP)	31.7	155.7
C. ACTUAL COST OF WORK PERFORMED (ACWP)	38.5	127.1
D. BUDGET AT COMPLETION (BAC)		489.0
E. LATEST REVISED ESTIMATE (LRE)		439.5

VARIANCES (Year To Date)

	Dollars	Percent
F. SCHEDULE VARIANCE (B-A)	0.0	0.00
G. COST VARIANCE (B-C)	28.5	18.33
H. AT COMPLETION VARIANCE (D-E)	49.5	10.12

Remarks:

COST PERFORMANCE REPORT
 WBS LEVEL 4
 U.S. DEPARTMENT OF ENERGY
 NNWSI PROJECT

For: FEB 1987

Date: March 19, 1987

WBS NUMBER AND DESCRIPTION	YEAR TO DATE				
	BUD. COST OF WORK SCHEDULED	BUD. COST OF WORK PERFORMED	ACTUAL COST OF WORK PERFORMED	VARIANCES	
				SCHEDULE	COST
1271 Management and Integration	.000	.000	.000	.000	.000
1272 Testing	155.650	155.650	127.121	.000	28.529
1273 New Facility Acquisitions	.000	.000	.000	.000	.000
127 TEST FACILITIES	155.650	155.650	127.121	.000	28.529

1.2.8 LAND ACQUISITION

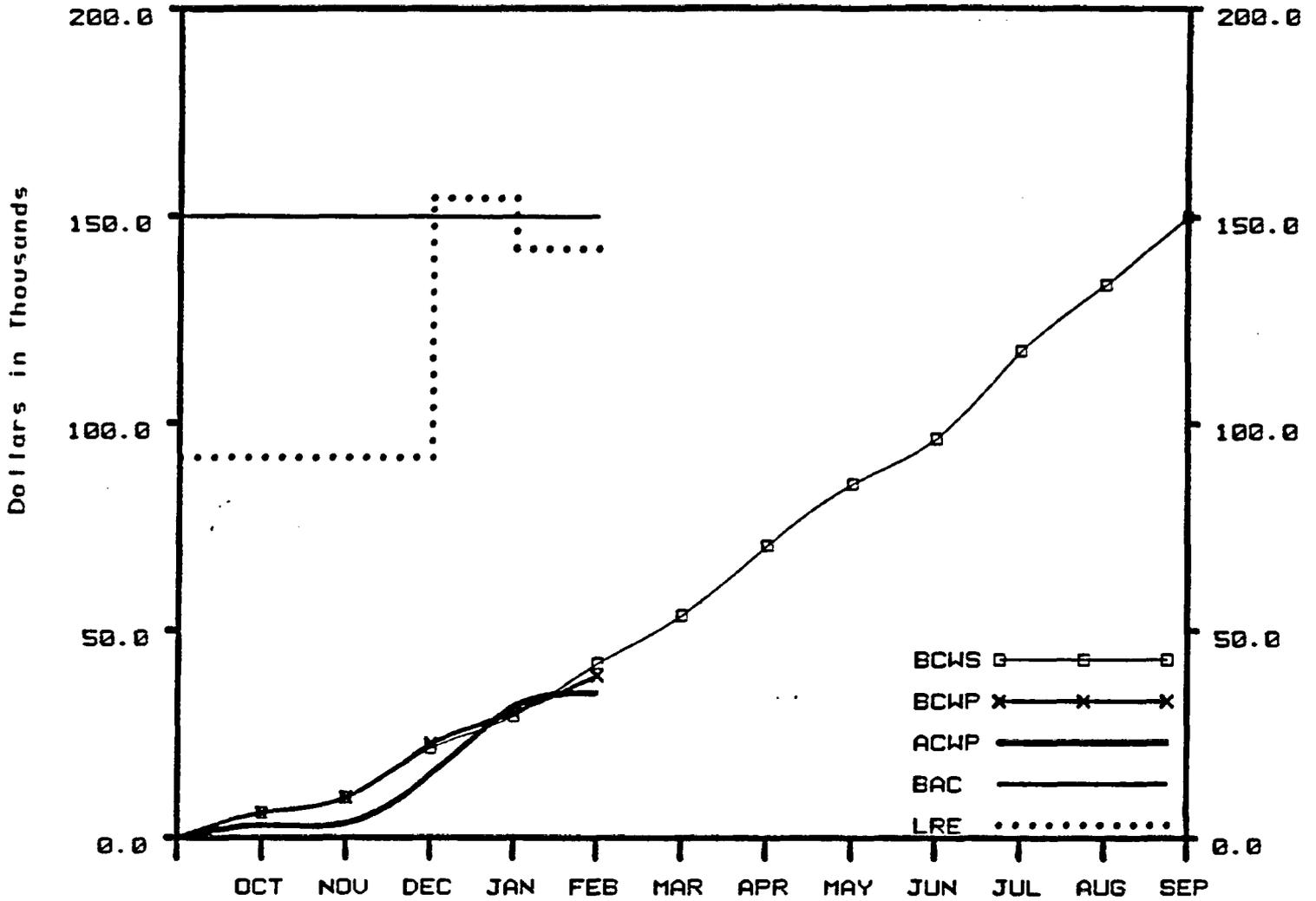
OBJECTIVE

The objective of this task is to maintain access to land adjacent to the Nevada Test Site that is controlled by the U.S. Air Force and the Bureau of Land Management and to protect land that could be used for a high-level waste repository and the surrounding buffer zones.

ACTIVITIES

NONE

**NNWSI PROJECT
COST PERFORMANCE GRAPH FOR FEB 1987
WBS: 1.2.8**



LAND ACQUISITION

	Current Period	Year To Date
A. BUDGETED COST OF WORK SCHEDULED (BCWS)	12.7	41.9
B. BUDGETED COST OF WORK PERFORMED (BCWP)	9.0	39.0
C. ACTUAL COST OF WORK PERFORMED (ACWP)	3.4	34.9
D. BUDGET AT COMPLETION (BAC)		150.0
E. LATEST REVISED ESTIMATE (LRE)		142.1

UARIANCES (Year To Date)

	Dollars	Percent
F. SCHEDULE VARIANCE (B-A)	-2.9	-6.92
G. COST VARIANCE (B-C)	4.1	10.42
H. AT COMPLETION VARIANCE (D-E)	7.9	5.29

Remarks:

COST PERFORMANCE REPORT
 WBS LEVEL 4
 U.S. DEPARTMENT OF ENERGY
 NNWSI PROJECT

For: FEB 1987

Date: March 19, 1987

WBS NUMBER AND DESCRIPTION	YEAR TO DATE				
	BUD. COST OF WORK SCHEDULED	BUD. COST OF WORK PERFORMED	ACTUAL COST OF WORK PERFORMED	VARIANCES	
				SCHEDULE	COST
1281 Land Acquisition	41.900	39.000	34.938	-2.900	4.062
128 LAND ACQUISITION	41.900	39.000	34.938	-2.900	4.062

1.2.9 PROJECT MANAGEMENT

OBJECTIVE

The objective of this task is to manage all activities of the NNWSI Project by all participants. The five major areas identified are Project Management, Project Control, Interface Activities, Quality Assurance, and Generic Requirements Document (GRD) Support.

ACTIVITIES

WBS 1.2.9.1 PROJECT MANAGEMENT

On February 2, 1987, F&S staff members submitted F&S Studies No. 3, ESF Excavation Methods and No. 9, ESF Compressed Air Systems to WMPO for review and comment.

F&S staff members submitted Special Study No. 8, ESF Water and Waste Water Control, and No. 10, ESF Use of GOE, to WMPO and other designated participants on February 23, 1987 for review and comment.

H&N graphics personnel mounted 20 maps and prepared a 20-slide briefing for WMPO during the month.

WBS 1.2.9.1.1 Management

Sets of copies of administrative record references for the EA are being assembled by SAIC library staff. Work is underway on SCP reference confirmation.

SNL Milestone R114, Work Plan, has been delayed until March 15, 1987.

WBS 1.2.9.1.4 Records Management

Records management activities at SAIC/Golden have centered around reviewing documents that explain new or changing records requirements, and processing new records as they become available from the USGS. A list of authorized persons to verify and submit records was sent to the USGS QA office for submittal to the appropriate personnel in conformance with QMP-17-01.

H&N personnel submitted a revised QA Records Type List and Draft Records Management Procedure to WMPO for review.

The SCP files were transferred to the SAIC IMS Section for maintenance.

WBS 1.2.9.2 PROJECT CONTROL

Modifications have been made by SAIC/Golden to Scientific Investigation Plan 3370G-01, synthesis of the Paleoenvironmental History of the Yucca Mountain Region, on the basis of the review held in Las Vegas. The final draft was submitted to the authors. The disks for the exploratory shaft geologic testing plans were retrieved from the NBI. Modifications on the basis of an informal review were made to Scientific Investigation Plans 6921-01, Geologic

Testing, and 6951-01, Prototype Geologic Testing, edited. Diagrams continue to be prepared for input into the Scientific Investigation Plans. Updates were made to several Saturated Zone and Unsaturated Zone figures and schedules for their respective Plans. The following schedules were completed and distributed for inclusion in their respective Scientific Investigation Plans: Hydrologic Prototype Testing; UZ Hydrochemistry; Seismic Investigations; UZ Hydrology; Streamflow; Saturated Zone Hydrology.

WBS 1.2.9.3 QUALITY ASSURANCE

As a requirement for implementing QMP 8.01 and QMP 15.01, sample tags and Hold tags respectively, were printed and a supply was sent to the USGS Division QA implementors.

Numerous technical procedures were reviewed by SAIC/Golden and returned to the preparers with comments for resolution or additional input. Five procedures were returned to the preparers for final review and signatures.

A review of NVO-196-17, Rev. 5 was made by SAIC/Golden and comments were prepared for the QA office for submittal to WMPO, as requested.

REECo QA staff members performed a surveillance of the Procurement Department and its application of QA requirements.

REECo personnel completed assessment of shaft sets and laggings for integrity and minor repairs have been accomplished.

Two LLNL QAPP procedures and one QAPP requirement were submitted for WMPO review and approval on February 9.

An audit of Design, Fabrication, and Prototype Testing was conducted by LLNL on February 25-26. Included was a preaward survey of a potential subcontractor.

SAIC QA staff attended a meeting with NRC QA personnel to explain the method of assigning QA Levels to NNWSI Project activities through the use of Scientific Investigation Plans (SIPs) and QA Level Assignment Sheets (QALAS).

Of the five audits conducted in FY 86, four remain open. Of the 15 audits conducted in FY 85, four audits remain open.

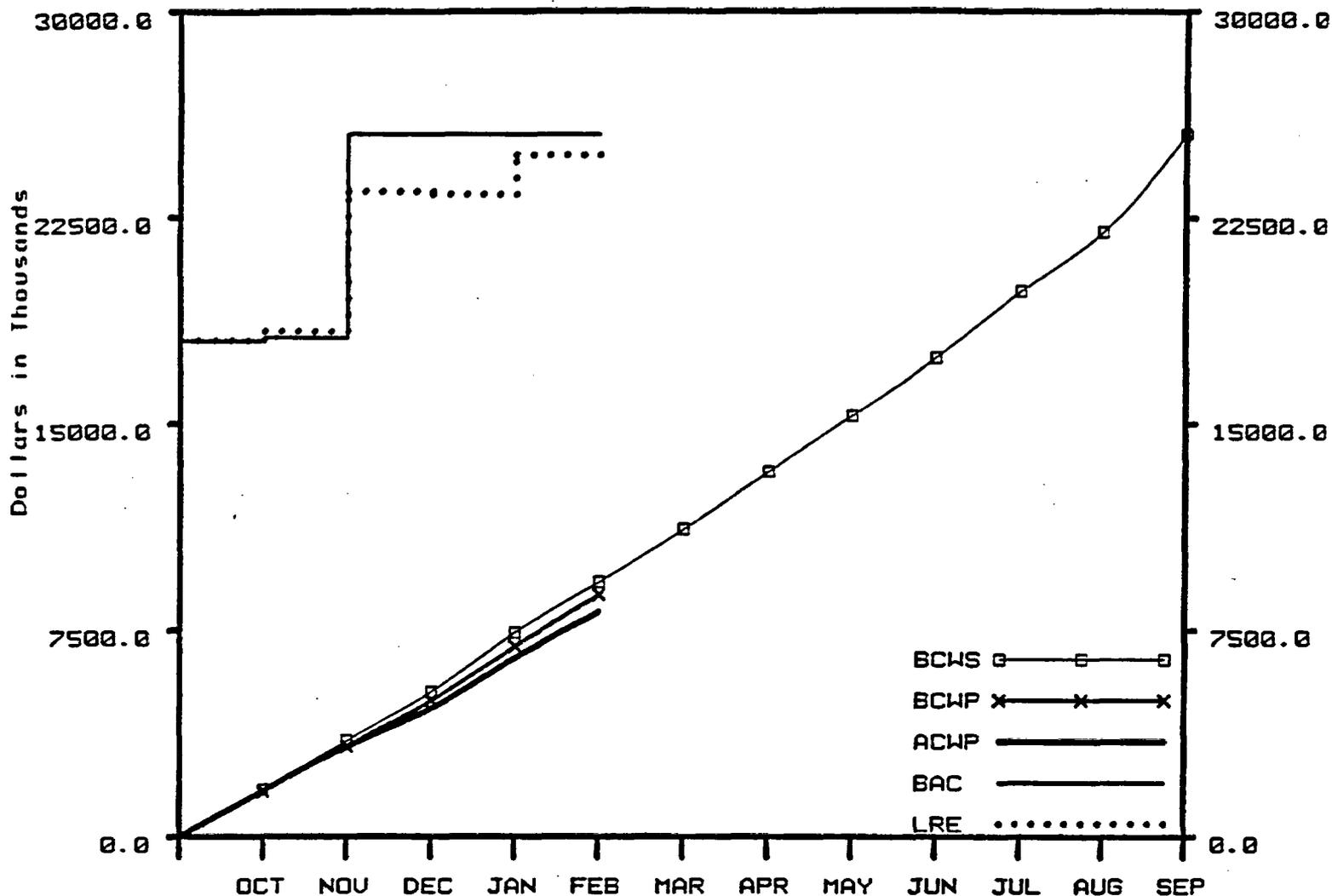
A total of three surveillances was conducted during the month of February. A total of 12 items and activities were monitored revealing no nonconformances. A total of 13 surveillances has been conducted in FY 87 and 44 items or activities monitored. During this effort, no nonconformances have been recorded.

Several members of the QASC attended the ASQC Energy Division Conference on Nuclear Waste Management Quality Assurance in Las Vegas on February 9 through 11, 1987. The meeting highlighted the QA problems and issues facing the DOE in their efforts to investigate the various waste repository sites.

MILESTONE PROGRESS

SNL Milestone R114, work plan, has been delayed until March 15, 1987.

NNWSI PROJECT COST PERFORMANCE GRAPH FOR FEB 1987 WBS: 1.2.9



PROJECT MANAGEMENT

	Current Period	Year To Date
A. BUDGETED COST OF WORK SCHEDULED (BCWS)	1829.9	9242.8
B. BUDGETED COST OF WORK PERFORMED (BCWP)	1878.3	8785.1
C. ACTUAL COST OF WORK PERFORMED (ACWP)	1670.4	8165.3
D. BUDGET AT COMPLETION (BAC)		25551.0
E. LATEST REVISED ESTIMATE (LRE)		24783.0

VARIANCES (Year To Date)

	Dollars	Percent
F. SCHEDULE VARIANCE (B-A)	-457.7	-4.95
G. COST VARIANCE (B-C)	619.8	7.06
H. AT COMPLETION VARIANCE (D-E)	768.0	3.01

Remarks:

COST PERFORMANCE REPORT
WBS LEVEL 4
U.S. DEPARTMENT OF ENERGY
NNWSI PROJECT

For: FEB 1987

Date: March 19, 1987

WBS NUMBER AND DESCRIPTION	YEAR TO DATE				
	BUD. COST OF WORK SCHEDULED	BUD. COST OF WORK PERFORMED	ACTUAL COST OF WORK PERFORMED	VARIANCES	
				SCHEDULE	COST
1291 Management and Integration	4,820.230	4,583.737	4,200.801	-236.492	382.937
1292 Project Control	1,540.780	1,564.660	1,759.689	23.880	-195.029
1293 Quality Assurance	2,486.780	2,241.681	1,809.768	-245.099	431.913
1299 NTS Allocation	395.000	395.005	395.000	.005	.005
129 PROJECT MANAGEMENT	9,242.790	8,785.084	8,165.258	-457.706	619.826

S-6

MILESTONE	RESP. AGENCY	WBS	MILESTONE DESCRIPTION	MONTHS													
				O	N	D	J	F	M	A	M	J	J	A	S		
R448	WMPO/SAIC	1.2.9.1	Final NNWSI Project Management Plan to WMPO/NV and DOE/HQ			△					◇						
RB49	WMPO/SAIC	1.2.9.1	Submit FY 87 Baseline Budget Information and Cost Plans to OGR for Information			▲											
R850	WMPO/SAIC	1.2.9.1	Approved Revised Project Charter				△			◇							
M712	WMPO/SAIC	1.2.9.1	Submit FY 89 Budget to DOE/HQ							△							
R647	WMPO/SAIC	1.2.9.1	Licensing Support System Document Collection Procedure to Headquarters for Approval								△						◇ TBD
M725	WMPO/SAIC	1.2.9.2	Implement Phase II of Earned Value System		△					◇							
R810	WMPO/SAIC	1.2.9.1	Submit NNWSI Project Plan to WMPO/NV and DOE/HQ														△
R842	WMPO/SAIC	1.2.9.1	Implement Document Collection for the Licensing Support System												△		◇ TBD

△ PLANNED MILESTONE COMPLETION DATE

◇ REVISED MILESTONE COMPLETION DATE

▲ COMPLETED AS SCHEDULED

◆ COMPLETED AS REVISED

1.2.10 FINANCIAL AND TECHNICAL ISSUES

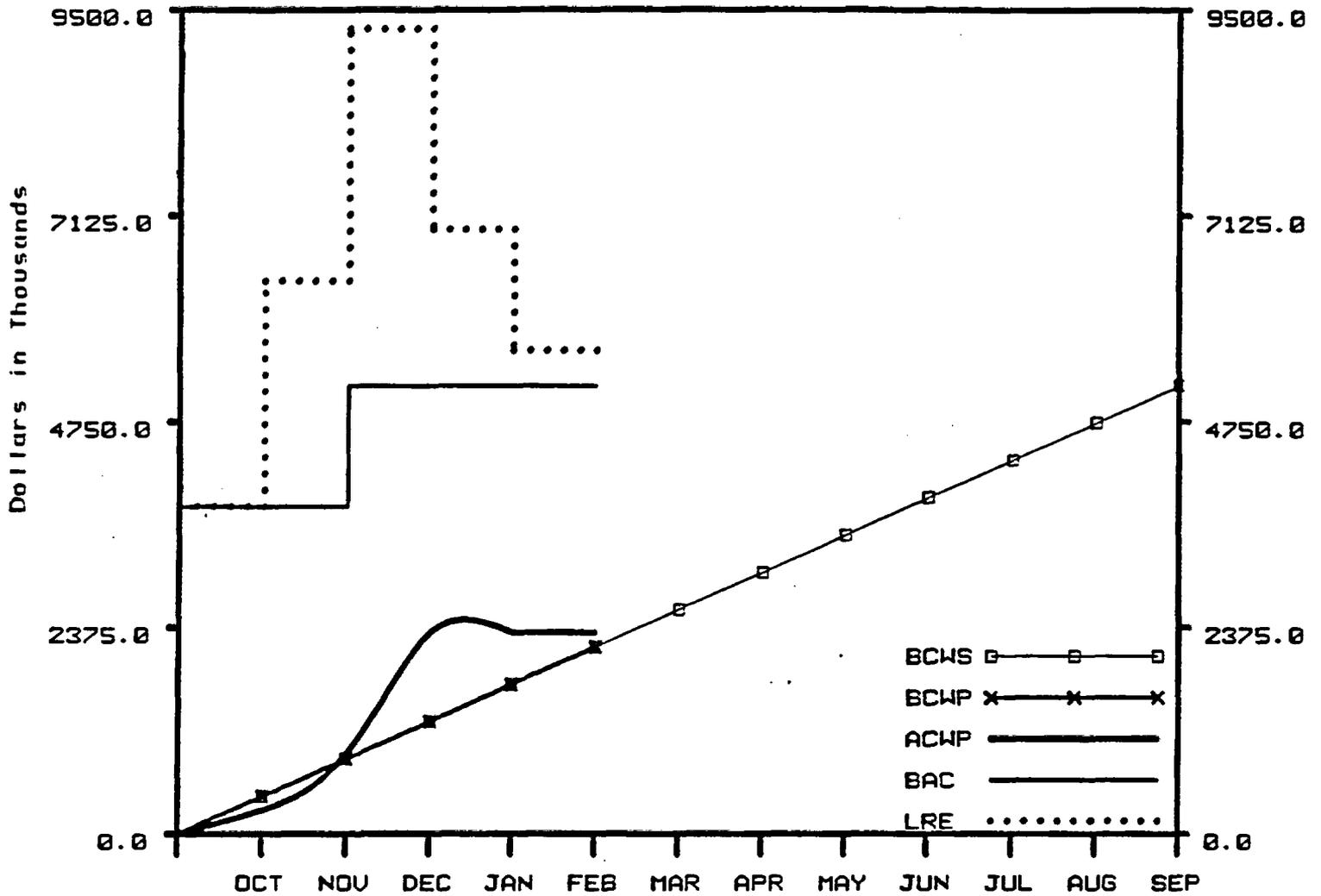
OBJECTIVES

This WBS element includes grant assistance to the State of Nevada.

ACTIVITIES

None to report.

NNWSI PROJECT COST PERFORMANCE GRAPH FOR FEB 1987 WBS: 1.2.10



FINANCIAL & TECHNICAL ASSISTANCE

	Current Period	Year To Date
A. BUDGETED COST OF WORK SCHEDULED (BCWS)	430.0	2150.0
B. BUDGETED COST OF WORK PERFORMED (BCWP)	430.0	2150.0
C. ACTUAL COST OF WORK PERFORMED (ACWP)	0.0	2318.7
D. BUDGET AT COMPLETION (BAC)		5162.0
E. LATEST REVISED ESTIMATE (LRE)		5567.0

VARIANCES (Year To Date)

	Dollars	Percent
F. SCHEDULE VARIANCE (B-A)	0.0	0.00
G. COST VARIANCE (B-C)	-168.7	-7.84
H. AT COMPLETION VARIANCE (D-E)	-405.0	-7.84

Remarks:

COST PERFORMANCE REPORT
 WBS LEVEL 4
 U.S. DEPARTMENT OF ENERGY
 NNWSI PROJECT

For: FEB 1987

Date: March 19, 1987

WBS NUMBER AND DESCRIPTION	YEAR TO DATE				
	BUD. COST OF WORK SCHEDULED	BUD. COST OF WORK PERFORMED	ACTUAL COST OF WORK PERFORMED	VARIANCES	
				SCHEDULE	COST
12101 Financial & Technical Assistance	2,150.000	2,149.999	2,318.664	-.001	-168.665
1210 FINANCIAL & TECHNICAL ASSISTANCE	2,150.000	2,149.999	2,318.664	-.001	-168.665

U.S. DEPARTMENT OF ENERGY

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PARTICIPANT

BUDGET vs COST

**COST PERFORMANCE REPORT - LEVEL 3
WORK BREAKDOWN STRUCTURE (FORMAT 1)
U.S. DEPARTMENT OF ENERGY**

CONTRACTOR MWSI Project	CONTRACT TYPE NO.	PROJECT NAME/NUMBER: NEVADA NUCLEAR WASTE STORAGE INVESTIGATIONS	REPORT FISCAL MONTH AND YEAR: FEB 1987	SIGNATURE:
LOCATION: P. O. Box 14188 Las Vegas, NV 89114				TITLE: PROJECT MANAGER
				Date: March 10, 1987

WBS NUMBER AND DESCRIPTION	CURRENT PERIOD					YEAR TO DATE					FISCAL YEAR COMPLETION		
	BUD COST OF WORK SCHEDULED (2)	BUD COST OF WORK PERFORMED (3)	ACTUAL COST OF WORK PERFORMED (4)	VARIANCES SCHEDULE (5)	COST (6)	BUD COST OF WORK SCHEDULED (7)	BUD COST OF WORK PERFORMED (8)	ACTUAL COST OF WORK PERFORMED (9)	VARIANCES SCHEDULE (10)	COST (11)	BASELINED BUDGET (12)	LATEST REVISED ESTIMATE (13)	VARIANCE (14)
121 SYSTEMS	575.400	526.477	511.309	-48.923	15.100	2,300.000	2,302.250	2,185.375	-20.550	108.874	7,923.000	7,430.268	483.732
122 WASTE PACKAGE	789.000	809.000	631.935	19.200	177.065	3,070.700	3,065.202	2,467.800	-5.498	597.322	9,535.000	7,470.930	2,054.061
123 SITE INVESTIGATIONS	2,434.400	1,700.395	2,070.315	-674.065	-318.920	11,212.890	8,345.909	8,301.510	-2,006.901	44.391	29,835.000	47,070.350	-17,844.350
124 REPOSITORY INVESTIGATIONS	700.700	815.444	740.238	34.744	75.206	3,198.200	2,896.125	2,819.464	-200.075	178.661	12,472.000	14,646.337	-2,174.337
125 REGULATORY AND INSTITUTIONAL INVESTIGATIONS	621.000	481.984	634.654	-139.036	-152.690	3,200.600	3,016.636	3,205.791	-203.004	-209.154	7,000.000	7,691.882	-695.882
126 EXPLORATORY SHAFT INVESTIGATIONS	1,027.000	804.933	869.378	-222.147	-64.445	5,190.810	4,111.995	3,504.911	-1,000.615	527.084	17,370.000	19,123.750	-1,753.750
127 TEST FACILITIES	31.670	31.670	30.500	-.000	-6.830	155.650	155.650	127.121	.000	28.529	400.000	439.513	-40.487
128 LAND ACQUISITION	12.700	9.000	3.412	-3.700	5.500	41.900	30.000	34.938	-2.900	4.002	150.000	142.000	7.940
129 PROJECT MANAGEMENT	1,829.900	1,878.338	1,870.409	48.436	207.927	9,242.790	8,705.004	8,163.250	-457.706	619.826	25,951.000	24,783.935	767.965
1210 FINANCIAL & TECHNICAL ASSISTANCE	430.000	430.000	000	-000	430.000	2,150.000	2,140.999	2,318.664	-001	-160.665	5,102.000	5,568.955	-466.955
12 MWSI - SUBTOTAL	8,532.710	7,547.219	7,170.150	-965.491	368.069	39,940.140	35,027.050	33,300.921	-4,912.290	1,726.929	115,573.000	134,989.105	-19,416.105
UNDISTRIBUTED BUDGET											1,893.00	1,893.000	000
MWSI - TOTAL											117,466.000	136,882.105	-19,416.105

1-11

**COST PERFORMANCE REPORT - LEVEL 4
WORK BREAKDOWN STRUCTURE (FORMAT 1)
U.S. DEPARTMENT OF ENERGY**

CONTRACTOR		CONTRACT TYPE NO.		PROJECT NAME/NUMBER			REPORT FISCAL MONTH AND YEAR				SIGNATURE		
MWSI Project				NEVADA NUCLEAR WASTE STORAGE INVESTIGATIONS			FEB 1967				TITLE: PROJECT MANAGER		
LOCATION: P O Box 14100 Las Vegas, NV 89114											Date: March 19, 1967		
WBS NUMBER AND DESCRIPTION	CURRENT PERIOD					YEAR TO DATE					FISCAL YEAR COMPLETION		
	BUD. COST OF WORK SCHEDULED (2)	BUD. COST OF WORK PERFORMED (3)	ACTUAL COST OF WORK PERFORMED (4)	VARIANCES SCHEDULE (5)	VARIANCES COST (6)	BUD. COST OF WORK SCHEDULED (7)	BUD. COST OF WORK PERFORMED (8)	ACTUAL COST OF WORK PERFORMED (9)	VARIANCES SCHEDULE (10)	VARIANCES COST (11)	BASELINED BUDGET (12)	LATEST REVISED ESTIMATE (13)	VARIANCE (14)
(1) 1211 Systems Management and Integration	35,000	35,400	10,148	-	16,252	136,200	136,200	58,899	0	77,301	478,000	238,364	239,636
1212 Systems Engineering	100,000	104,850	150,181	-22,142	7,687	923,810	923,810	808,478	37,810	75,141	2,740,000	2,368,001	431,919
1213 Technical Data Base Management	113,000	86,220	80,000	-26,780	8,220	432,000	364,435	352,000	-45,545	14,435	1,437,000	1,822,429	-385,429
1214 Total Systems Performance Assessment	238,000	238,000	253,000	-	-15,000	934,000	933,997	936,000	-603	-603	3,268,000	3,078,383	197,617
121 SYSTEMS	573,000	578,477	511,369	-48,923	15,169	2,390,000	2,367,250	2,195,375	-28,550	164,874	7,923,000	7,430,268	483,732
1221 Management and Integration	81,000	51,000	55,535	-10,000	-3,735	292,700	292,700	210,000	-30,000	46,670	725,000	842,013	82,907
1222 Package Environment	85,000	57,900	73,700	-27,100	-15,000	415,000	372,000	415,000	-43,000	43,000	990,000	1,170,596	-180,596
1223 Waste Form & Materials Testing	445,000	513,391	402,000	68,391	110,981	1,745,000	1,846,503	1,420,000	101,503	426,503	5,825,000	4,077,396	1,347,604
1224 Design, Fabricate, and Prototype Testing	118,000	118,000	36,000	-	81,200	283,000	292,890	160,200	-	132,700	1,240,000	877,909	362,091
1225 Performance Assessment	80,000	88,000	63,000	-12,000	4,500	325,000	281,000	255,000	-34,000	35,200	955,000	960,940	-46,940
122 WASTE PACKAGE	789,000	809,000	631,935	10,200	177,065	3,070,700	3,065,202	2,467,600	-5,490	597,322	9,535,000	7,478,930	2,056,061
1231 Management & Integration	416,900	297,487	378,004	-129,413	-89,318	2,138,500	1,723,252	1,485,764	-415,240	237,487	8,521,000	8,228,758	292,242
1232 Geology	400,000	199,985	218,877	-200,035	-17,012	1,989,000	902,909	1,035,030	-1,000,091	-72,730	5,131,000	20,235,500	-15,104,500
1233 Hydrology	545,000	482,194	715,875	-142,898	-313,821	2,725,000	1,788,482	2,032,208	-934,518	-243,018	8,552,000	8,492,185	-2,940,185
1234 Geochemistry	450,500	441,181	472,700	-17,399	-31,500	2,183,200	2,088,500	2,138,300	-94,700	-47,000	5,000,000	8,128,972	-328,972
1235 Drilling	375,760	250,570	128,127	-117,010	136,623	952,000	771,450	600,237	-181,000	171,213	3,024,000	2,250,561	773,439
1236 Environment	195,400	80,434	73,481	-18,966	14,953	612,000	510,850	430,917	-181,741	78,742	1,215,000	1,147,224	67,776
1237 Socioeconomic	68,900	28,564	48,511	-40,336	-20,947	311,700	197,256	292,782	-114,444	-95,500	818,000	1,441,908	-623,908
1238 Geochemical Modeling Code EDS/B	84,000	53,901	53,900	-10,000	0	320,000	303,400	287,000	-10,000	15,000	774,000	758,164	15,836
1239 Deferred Site Close Out	0	0	0	0	0	0	0	0	0	0	0	0	0
123 SITE INVESTIGATIONS	2,434,460	1,788,395	2,079,315	-674,065	-318,920	11,212,000	8,345,000	8,301,518	-2,000,081	44,391	29,835,000	47,679,358	-17,844,358
1241 Management and Integration	218,700	200,540	198,238	-18,160	2,302	902,200	784,180	793,484	-198,040	-9,305	2,908,000	3,215,587	-229,587
1242 Development and Testing	205,000	309,904	275,000	44,904	34,904	1,300,000	1,377,000	1,233,000	-2,034	144,904	5,534,000	7,759,822	-2,225,822
1243 Facilities	133,000	133,000	164,000	0	-31,000	306,000	306,000	489,000	0	-183,000	1,468,000	2,178,744	-730,744
1244 Operations and Maintenance	44,000	44,000	60,000	-	-16,000	150,000	148,990	120,000	-	28,990	911,000	794,320	116,680
1245 Decommissioning	10,000	10,000	0	-	0	26,000	26,000	0	-	26,000	99,000	0	99,000
1246 Repository Performance Assessment	118,000	118,000	43,000	-	75,000	352,000	352,000	196,000	-	156,000	1,594,000	787,934	806,066
124 REPOSITORY INVESTIGATIONS	788,700	815,444	740,238	34,744	75,208	3,196,200	2,998,125	2,819,464	-200,675	176,681	12,472,000	14,046,337	-2,174,337
1251 Management and Integration	54,100	57,320	31,630	3,220	25,900	278,000	259,000	172,074	-18,740	86,906	881,000	481,226	199,774
1252 Licensing	408,900	355,719	534,887	-133,181	-179,168	2,580,000	2,390,821	2,758,828	-178,579	-368,007	5,379,000	8,121,538	-2,744,538
1253 Environmental Compliance	43,000	33,925	37,590	-9,075	-3,674	225,100	158,455	295,126	-68,845	-46,871	550,000	741,234	-191,234
1254 Communication and Liaison	35,000	35,000	30,250	0	4,752	297,700	297,701	151,163	0	56,538	478,000	347,884	130,116
1255 Technology and Financial Assistance	0	0	0	0	0	0	0	0	0	0	0	0	0
125 REGULATORY AND INSTITUTIONAL INVESTIGATIONS	621,000	481,964	634,854	-139,036	-152,890	3,200,000	3,016,636	3,285,791	-263,964	-200,154	7,000,000	7,691,882	-691,882
1261 Management and Integration	395,900	293,140	355,212	-82,360	-82,072	2,052,030	1,820,409	1,570,000	-231,541	244,429	4,871,000	4,770,570	94,421
1262 Site Preparation	8,000	23,920	29,100	17,520	-5,100	53,300	41,220	47,100	-12,000	-5,000	324,000	845,553	-521,553
1263 Surface Facilities	18,700	21,400	22,000	10,700	-1,600	39,200	41,900	33,000	-2,700	8,900	181,000	120,995	40,995
1264 First Shaft	18,000	18,000	28,410	-	-4,410	90,000	90,000	57,040	-	32,960	252,000	158,741	93,259
1265 Second Shaft	14,000	14,000	5,685	-	8,315	22,000	22,000	8,520	-	13,480	150,000	11,901	138,099
1266 Subsurface Excavations	10,000	10,000	18,825	0	-8,825	131,000	131,000	175,740	0	-44,740	350,000	600,291	-250,291
1267 Underground Access Systems	44,000	31,000	53,994	-13,000	-24,994	192,000	140,900	97,240	-51,100	43,660	981,000	1,074,454	-83,454
1268 Operations	0	0	0	0	0	15,000	15,000	7,000	0	8,000	20,000	8,333	11,667
1269 Testing	509,500	395,473	365,852	-174,107	30,421	2,004,000	1,809,487	1,584,554	-794,593	224,931	10,295,000	11,845,963	-1,540,963
126 EXPERIMENTAL SHAFT INVESTIGATIONS	1,027,000	894,933	880,378	-222,147	-64,445	5,198,610	4,111,995	3,584,911	-1,066,615	577,084	17,370,000	19,123,750	-1,753,750
1271 Management and Integration	0	0	0	0	0	0	0	0	0	0	0	0	0
1272 Testing	31,670	31,670	38,500	-	-8,830	155,650	155,650	127,121	0	28,529	408,000	439,313	-40,313
1273 New Facility Acquisitions	0	0	0	0	0	0	0	0	0	0	0	0	0

11-2

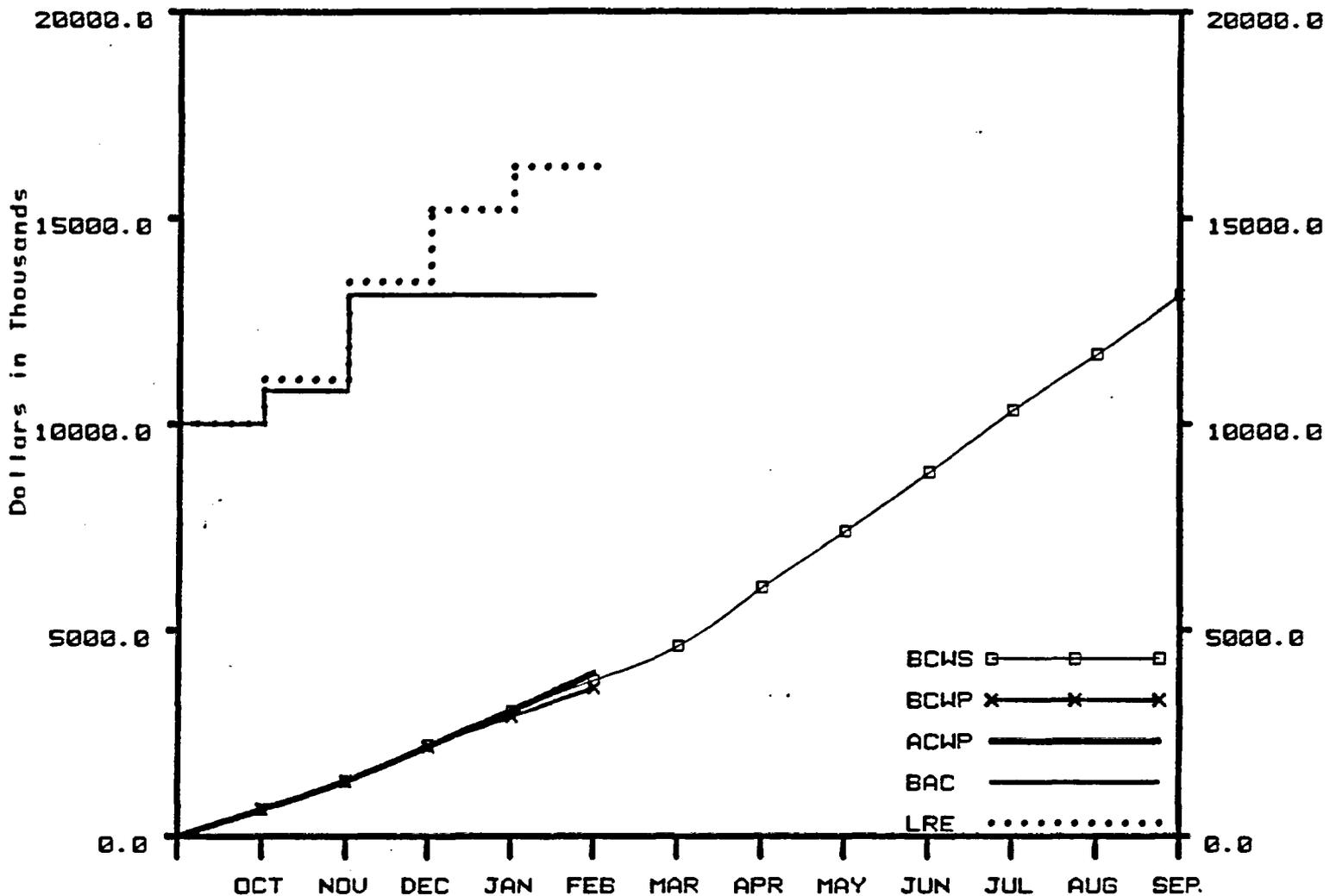
**COST PERFORMANCE REPORT - LEVEL 4
WORK BREAKDOWN STRUCTURE (FORMAT 1)
U.S. DEPARTMENT OF ENERGY
(continued)**

CONTRACTOR NWSI Project	CONTRACT TYPE NO.	PROJECT NAME/NUMBER: NEVADA NUCLEAR WASTE STORAGE INVESTIGATIONS	REPORT FISCAL MONTH AND YEAR: FEB 1987	SIGNATURE:
LOCATION P O Box 14100 Las Vegas, NV 89114				TITLE: PROJECT MANAGER
				Date: March 19, 1987

WBS NUMBER AND DESCRIPTION	CURRENT PERIOD					YEAR TO DATE					FISCAL YEAR COMPLETION		
	BUD. COST OF WORK SCHEDULED	BUD. COST OF WORK PERFORMED	ACTUAL COST OF WORK PERFORMED	VARIANCES		BUD. COST OF WORK SCHEDULED	BUD. COST OF WORK PERFORMED	ACTUAL COST OF WORK PERFORMED	VARIANCES		BASELINED BUDGET	LATEST REVISED ESTIMATE	VARIANCE
	(1)	(2)	(3)	(4)	(5) SCHEDULE (6) COST	(7)	(8)	(9)	(10) SCHEDULE (11) COST	(12)	(13)	(14)	
127 TEST FACILITIES	31,670	31,670	38,500	-600	-8,830	155,650	155,650	127,121	600	28,529	489,000	439,515	49,487
1201 Land Acquisition	12,700	9,000	3,412	-3,700	5,588	41,900	39,000	34,938	-2,900	4,062	150,000	142,000	7,940
120 LAND ACQUISITION	12,700	9,000	3,412	-3,700	5,588	41,900	39,000	34,938	-2,900	4,062	150,000	142,000	7,940
1291 Management and Integration	897,540	976,995	864,811	79,425	112,174	4,829,238	4,563,737	4,299,091	-236,492	382,937	12,315,000	12,000,756	314,242
1292 Project Control	315,000	340,700	347,396	26,500	-27,104	1,548,788	1,584,600	1,759,609	23,800	-195,029	3,999,000	4,421,154	-431,155
1293 Quality Assurance	539,800	482,150	359,205	-57,530	122,948	2,408,780	2,241,581	1,009,780	-245,099	431,813	7,823,000	6,138,172	864,828
1299 NIS Allocation	78,000	78,001	78,000	001	001	385,000	385,005	365,000	005	005	2,223,000	2,222,950	050
129 PROJECT MANAGEMENT	1,829,900	1,878,336	1,679,409	48,436	207,927	9,242,799	8,765,004	8,165,258	-457,786	619,826	23,351,000	24,783,035	-767,965
12101 Financial & Technical Assistance	430,000	430,000	000	-000	430,000	2,150,000	2,149,999	2,318,064	-001	-168,065	5,162,000	5,586,955	-404,955
1210 FINANCIAL & TECHNICAL ASSISTANCE	430,000	430,000	000	-000	430,000	2,150,000	2,149,999	2,318,064	-001	-168,065	5,162,000	5,586,955	-404,955
12 NWSI - SUBTOTAL	8,532,710	7,547,219	7,179,156	-885,491	368,000	39,940,140	35,827,850	33,300,921	-4,912,290	1,726,929	115,575,000	134,000,105	-19,416,105
UNDISTRIBUTED BUDGET											1,093,000	1,093,000	000
NWSI - TOTAL											117,468,000	136,092,105	-19,416,105

U-11

NNWSI PROJECT COST PERFORMANCE GRAPH FOR FEB 1987 WBS: 1.2.A



LOS ALAMOS - TOTAL

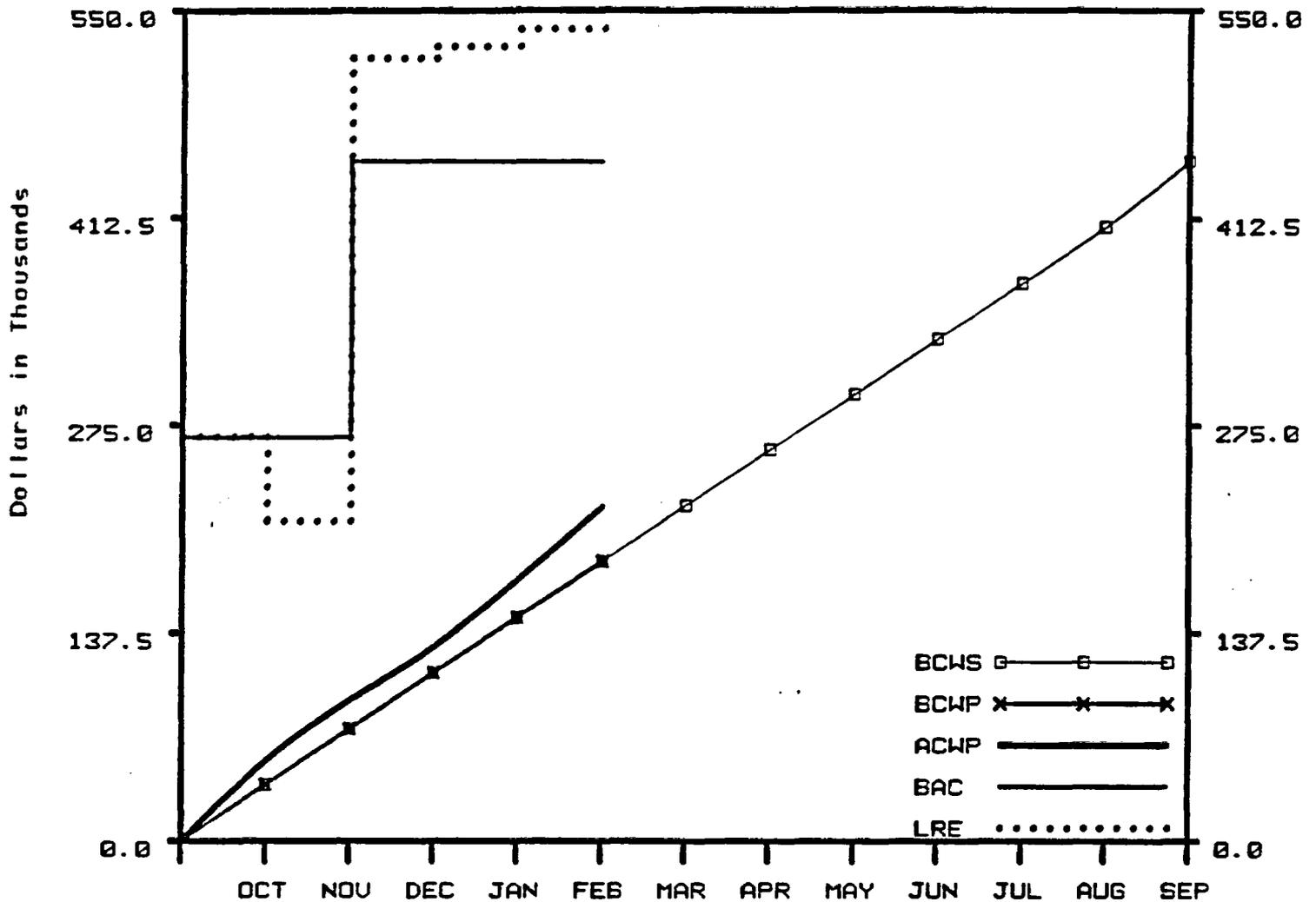
	Current Period	Year To Date
A. BUDGETED COST OF WORK SCHEDULED (BCWS)	753.1	3781.4
B. BUDGETED COST OF WORK PERFORMED (BCWP)	698.2	3606.4
C. ACTUAL COST OF WORK PERFORMED (ACWP)	904.9	3955.2
D. BUDGET AT COMPLETION (BAC)		13128.0
E. LATEST REVISED ESTIMATE (LRE)		16236.0

VARIANCES (Year To Date)

	Dollars	Percent
F. SCHEDULE VARIANCE (B-A)	-175.0	-4.63
G. COST VARIANCE (B-C)	-348.8	-9.67
H. AT COMPLETION VARIANCE (D-E)	-3108.0	-23.67

Remarks:

**NNWSI PROJECT
COST PERFORMANCE GRAPH FOR FEB 1987
WBS: 1.2.6**



LBL - TOTAL

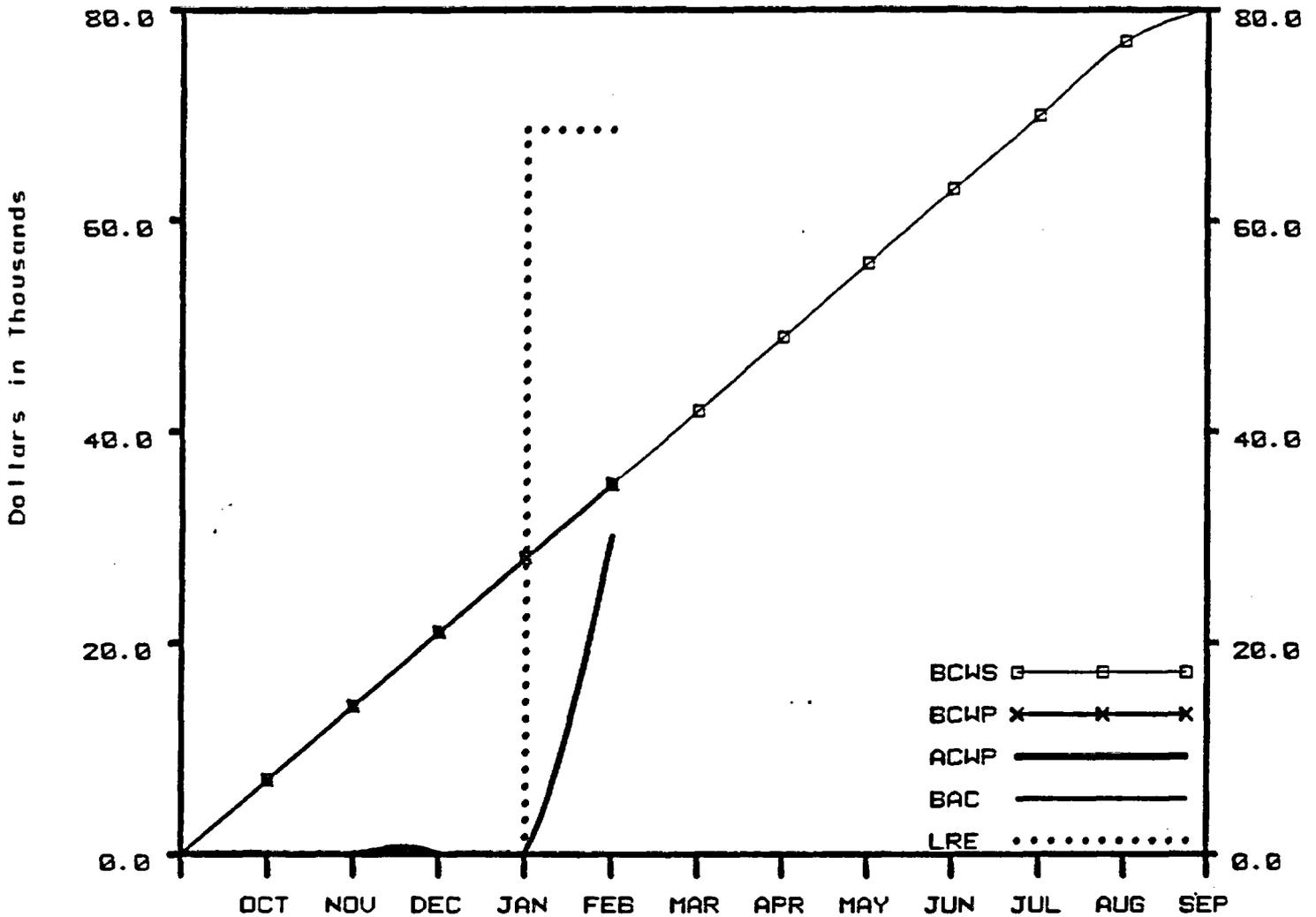
	Current Period	Year To Date
A. BUDGETED COST OF WORK SCHEDULED (BCWS)	37.0	185.0
B. BUDGETED COST OF WORK PERFORMED (BCWP)	37.0	185.0
C. ACTUAL COST OF WORK PERFORMED (ACWP)	47.9	221.1
D. BUDGET AT COMPLETION (BAC)		450.0
E. LATEST REVISED ESTIMATE (LRE)		537.5

VARIANCES (Year To Date)

	Dollars	Percent
F. SCHEDULE VARIANCE (B-A)	0.0	0.00
G. COST VARIANCE (B-C)	-36.1	-19.51
H. AT COMPLETION VARIANCE (D-E)	-87.5	-19.44

Remarks:

**NNWSI PROJECT
COST PERFORMANCE GRAPH FOR FEB 1987
WBS: 1.2.C**



CSC-TOTAL

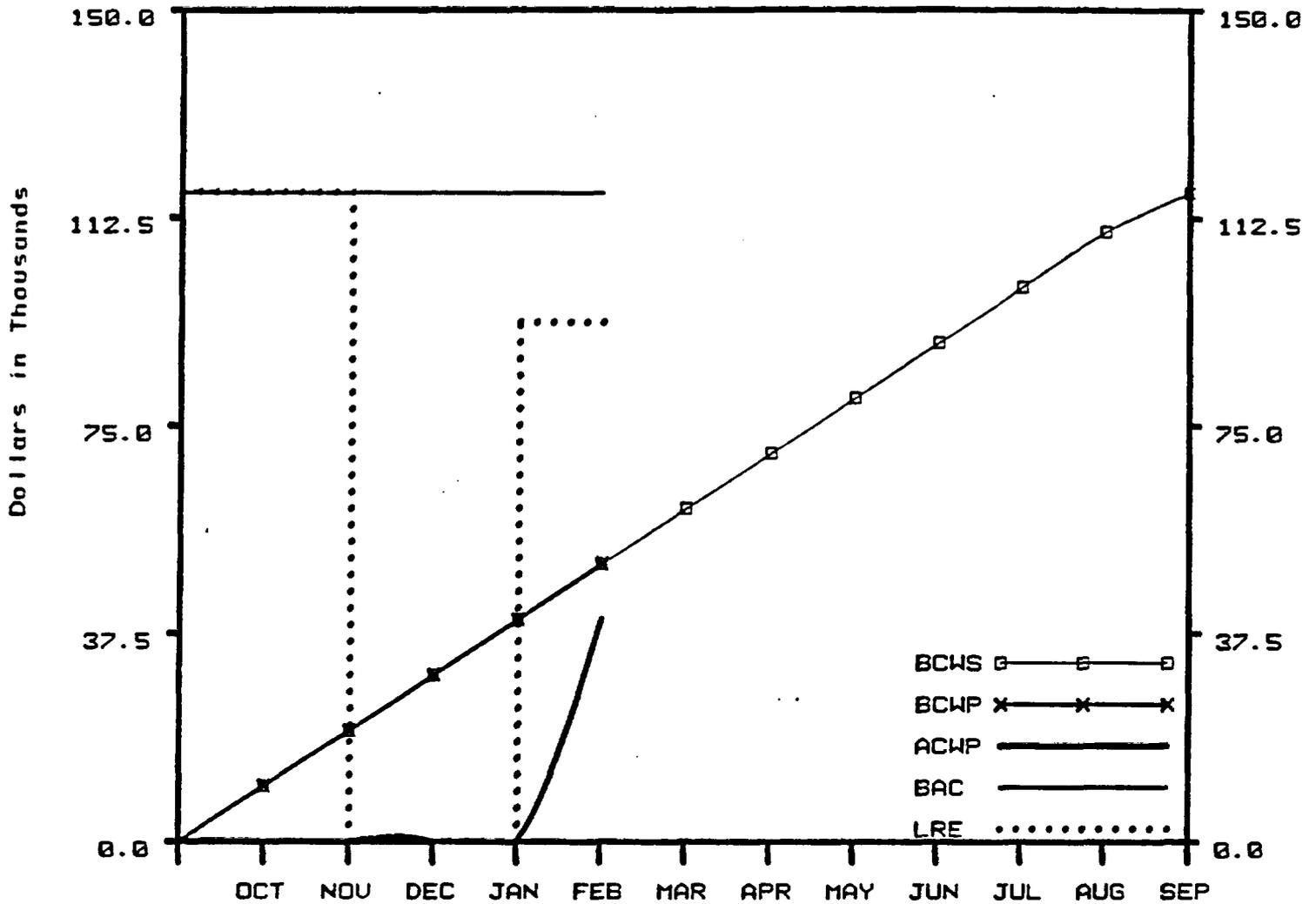
	Current Period	Year To Date
A. BUDGETED COST OF WORK SCHEDULED (BCWS)	7.0	35.0
B. BUDGETED COST OF WORK PERFORMED (BCWP)	7.0	35.0
C. ACTUAL COST OF WORK PERFORMED (ACWP)	30.0	30.0
D. BUDGET AT COMPLETION (BAC)		80.0
E. LATEST REVISED ESTIMATE (LRE)		68.6

VARIANCES (Year To Date)

	Dollars	Percent
F. SCHEDULE VARIANCE (B-A)	0.0	0.00
G. COST VARIANCE (B-C)	5.0	14.29
H. AT COMPLETION VARIANCE (D-E)	11.4	14.29

Remarks:

NNWSI PROJECT COST PERFORMANCE GRAPH FOR FEB 1987 WBS: 1.2.D



HEDL-TOTAL

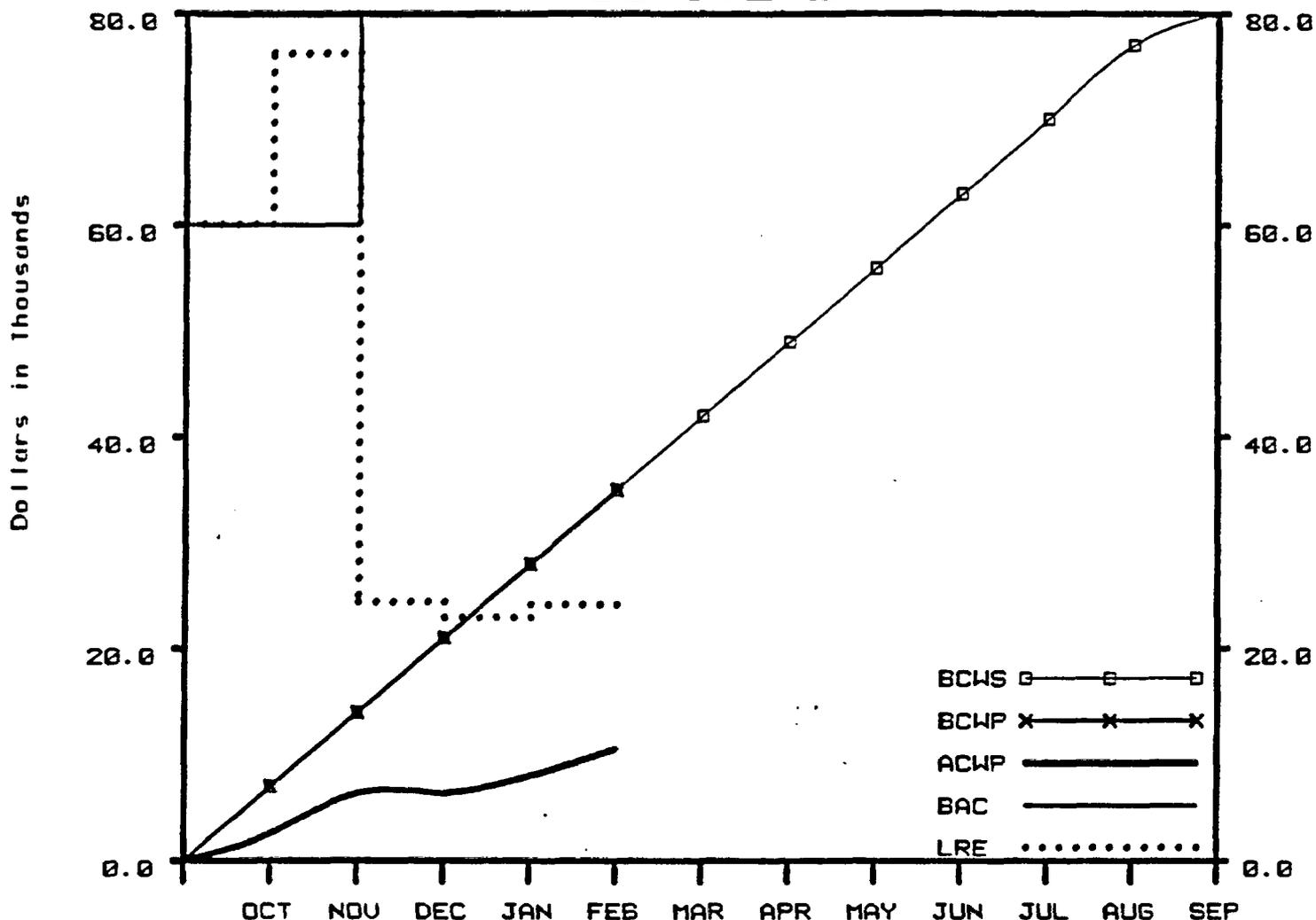
	Current Period	Year To Date
A. BUDGETED COST OF WORK SCHEDULED (BCWS)	10.0	50.0
B. BUDGETED COST OF WORK PERFORMED (BCWP)	10.0	50.0
C. ACTUAL COST OF WORK PERFORMED (ACWP)	40.0	40.0
D. BUDGET AT COMPLETION (BAC)		117.0
E. LATEST REVISED ESTIMATE (LRE)		93.6

UARIANCES (Year To Date)

	Dollars	Percent
F. SCHEDULE VARIANCE (B-A)	0.0	0.00
G. COST VARIANCE (B-C)	10.0	20.00
H. AT COMPLETION VARIANCE (D-E)	23.4	20.00

Remarks:

NNWSI PROJECT COST PERFORMANCE GRAPH FOR FEB 1987 WBS: 1.2.E



EG&G - TOTAL

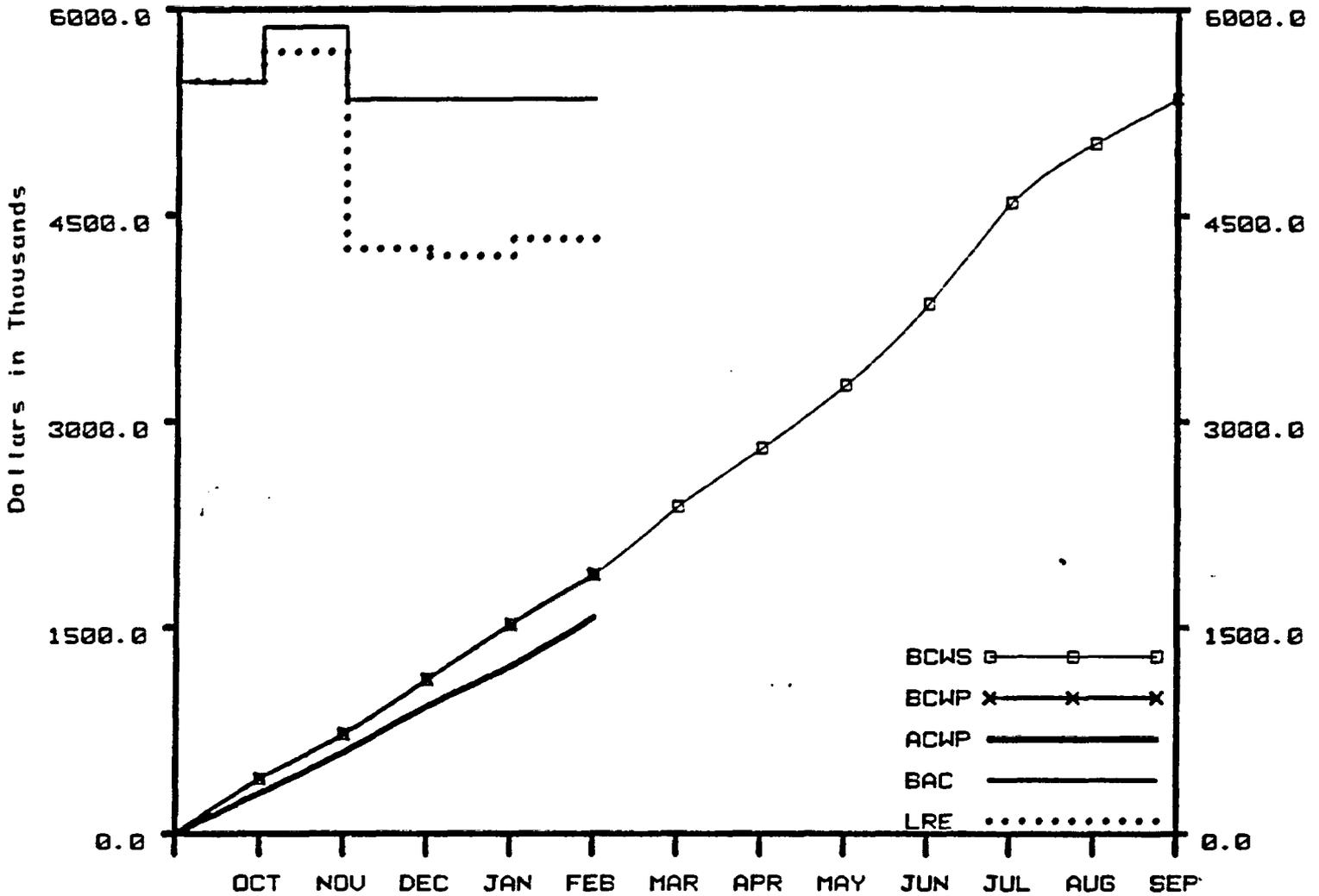
	Current Period	Year To Date
A. BUDGETED COST OF WORK SCHEDULED (BCWS)	7.0	35.0
B. BUDGETED COST OF WORK PERFORMED (BCWP)	7.0	35.0
C. ACTUAL COST OF WORK PERFORMED (ACWP)	2.5	10.6
D. BUDGET AT COMPLETION (BAC)		80.0
E. LATEST REVISED ESTIMATE (LRE)		24.1

UARIANCES (Year To Date)

	Dollars	Percent
F. SCHEDULE VARIANCE (B-A)	0.0	0.00
G. COST VARIANCE (B-C)	24.4	69.84
H. AT COMPLETION VARIANCE (D-E)	55.9	69.84

Remarks:

**NNWSI PROJECT
COST PERFORMANCE GRAPH FOR FEB 1987
WBS: 1.2.F**

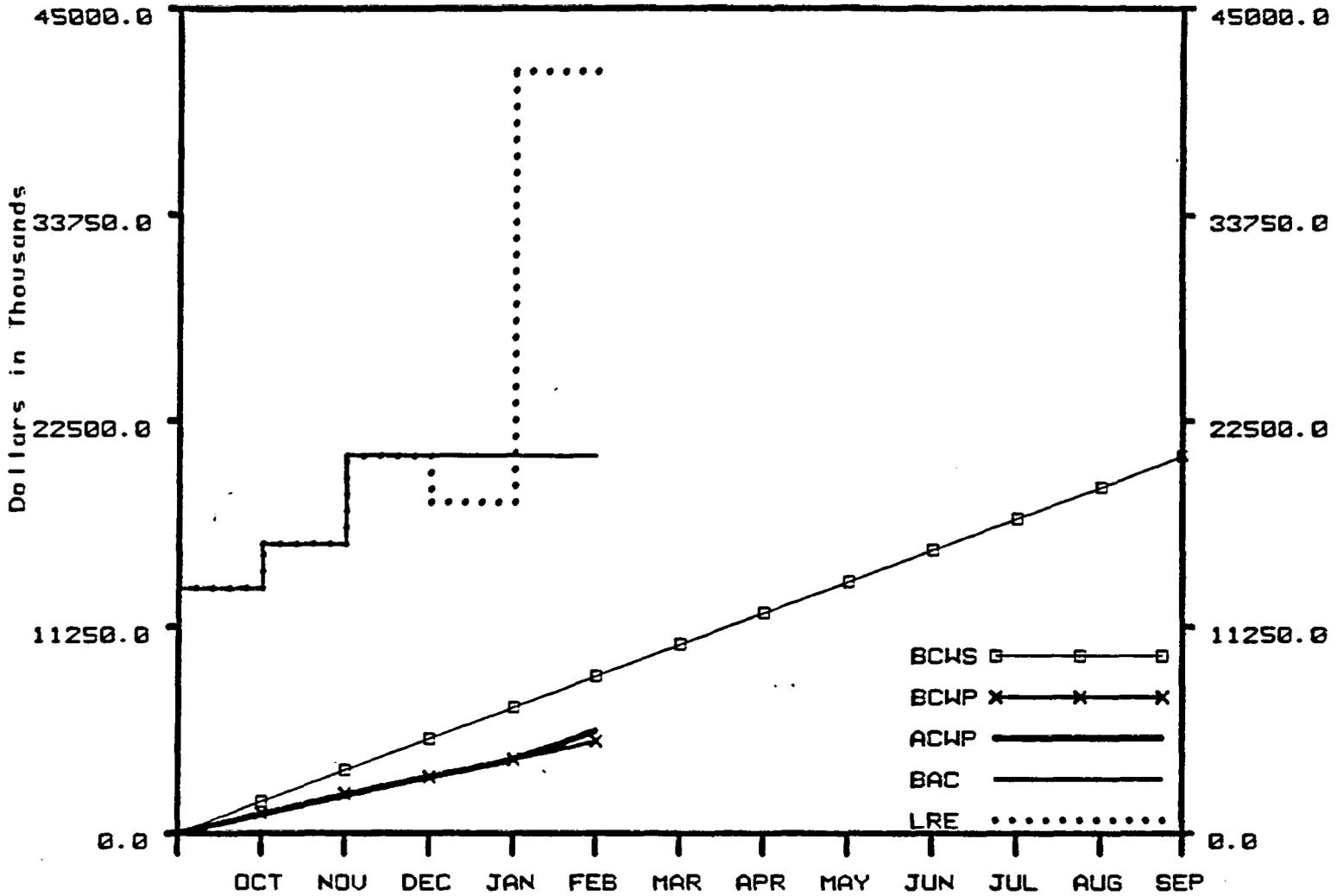


F&S - TOTAL	Current Period	Year To Date
A. BUDGETED COST OF WORK SCHEDULED (BCWS)	361.0	1883.0
B. BUDGETED COST OF WORK PERFORMED (BCWP)	361.0	1883.0
C. ACTUAL COST OF WORK PERFORMED (ACWP)	351.1	1569.9
D. BUDGET AT COMPLETION (BAC)		5344.0
E. LATEST REVISED ESTIMATE (LRE)		4326.9

VARIANCES (Year To Date)	Dollars	Percent
F. SCHEDULE VARIANCE (B-A)	0.0	0.00
G. COST VARIANCE (B-C)	313.1	16.63
H. AT COMPLETION VARIANCE (D-E)	1017.1	19.03

Remarks:

NNWSI PROJECT COST PERFORMANCE GRAPH FOR FEB 1987 WBS: 1.2.G



USGS - TOTAL

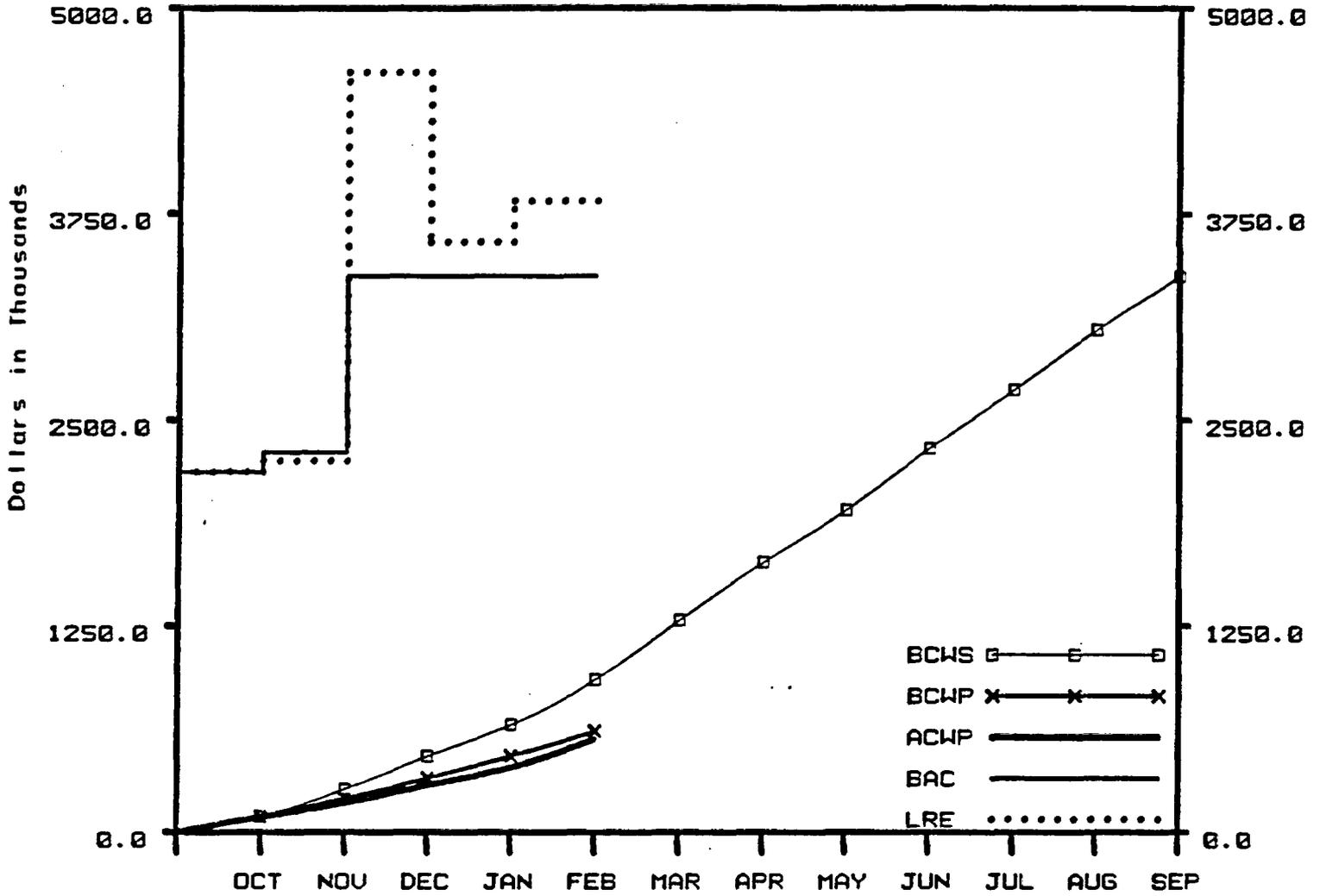
	Current Period	Year To Date
A. BUDGETED COST OF WORK SCHEDULED (BCWS)	1715.0	8575.0
B. BUDGETED COST OF WORK PERFORMED (BCWP)	995.2	5004.4
C. ACTUAL COST OF WORK PERFORMED (ACWP)	1534.2	5584.0
D. BUDGET AT COMPLETION (BAC)		20592.0
E. LATEST REVISED ESTIMATE (LRE)		41550.6

VARIANCES (Year To Date)

	Dollars	Percent
F. SCHEDULE VARIANCE (B-A)	-3570.6	-41.64
G. COST VARIANCE (B-C)	-579.6	-11.58
H. AT COMPLETION VARIANCE (D-E)	*****	-101.78

Remarks:

NNWSI PROJECT COST PERFORMANCE GRAPH FOR FEB 1987 WBS: 1.2.H



H&N - TOTAL

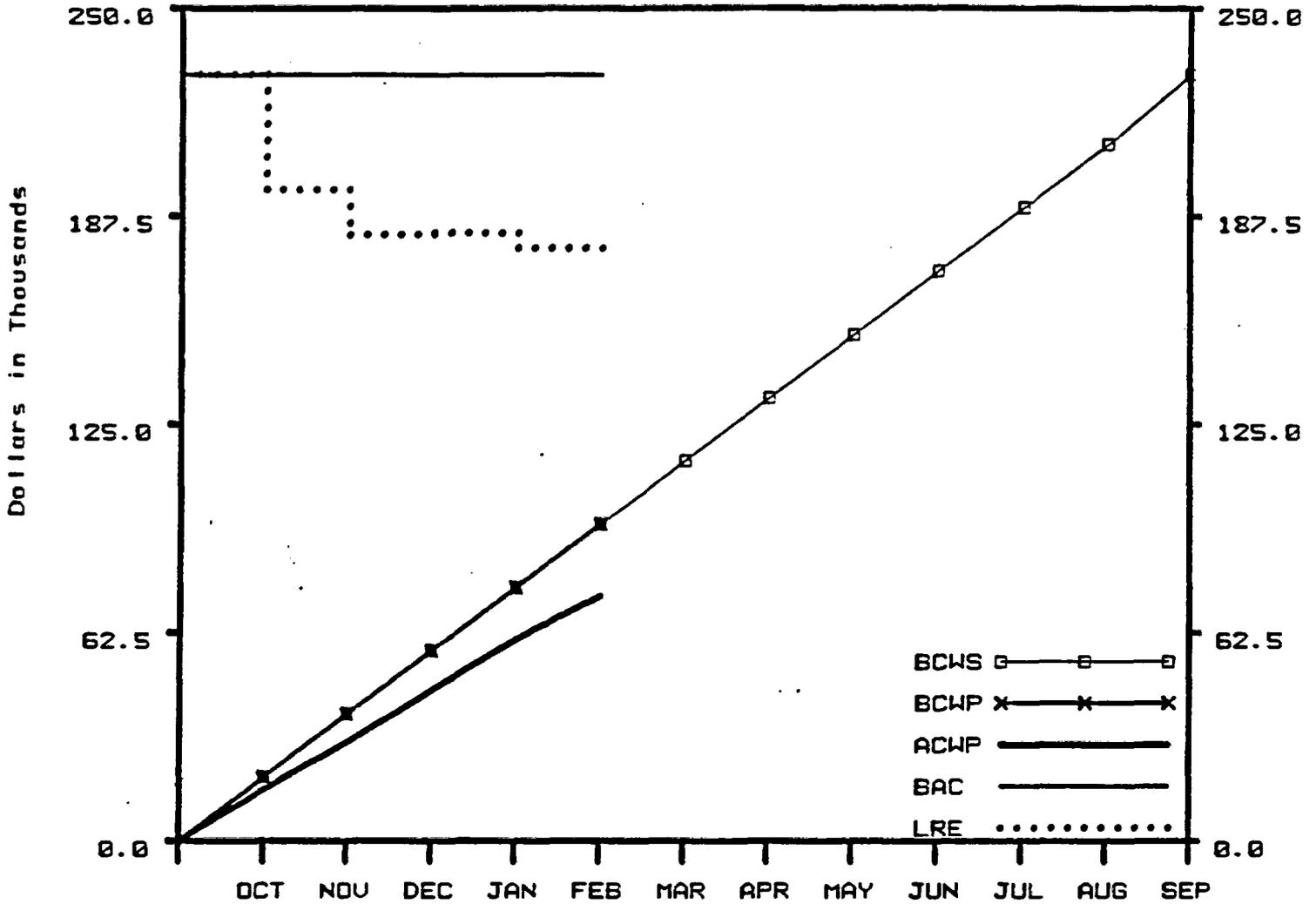
	Current Period	Year To Date
A. BUDGETED COST OF WORK SCHEDULED (BCWS)	275.2	924.9
B. BUDGETED COST OF WORK PERFORMED (BCWP)	148.7	609.5
C. ACTUAL COST OF WORK PERFORMED (ACWP)	170.3	563.6
D. BUDGET AT COMPLETION (BAC)		3371.0
E. LATEST REVISED ESTIMATE (LRE)		3825.3

VARIANCES (Year To Date)

	Dollars	Percent
F. SCHEDULE VARIANCE (B-A)	-315.4	-34.10
G. COST VARIANCE (B-C)	45.9	7.54
H. AT COMPLETION VARIANCE (D-E)	-454.3	-13.48

Remarks:

**NNWSI PROJECT
COST PERFORMANCE GRAPH FOR FEB 1987
WBS: 1.2.1**



WSI - TOTAL

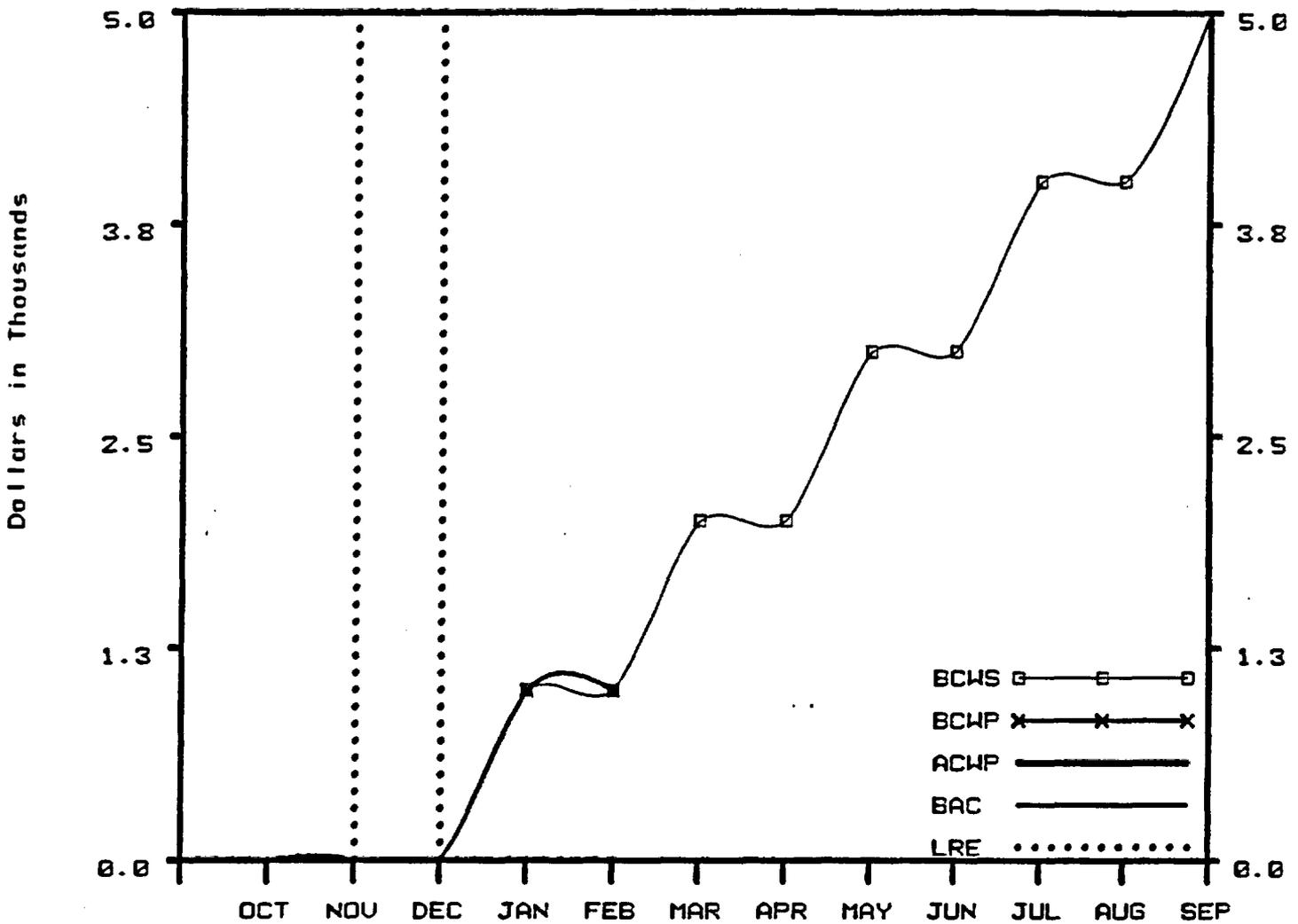
	Current Period	Year To Date
A. BUDGETED COST OF WORK SCHEDULED (BCWS)	19.0	95.0
B. BUDGETED COST OF WORK PERFORMED (BCWP)	19.0	95.0
C. ACTUAL COST OF WORK PERFORMED (ACWP)	13.2	73.5
D. BUDGET AT COMPLETION (BAC)		230.0
E. LATEST REVISED ESTIMATE (LRE)		177.8

VARIANCES (Year To Date)

	Dollars	Percent
F. SCHEDULE VARIANCE (B-A)	0.0	0.00
G. COST VARIANCE (B-C)	21.5	22.68
H. AT COMPLETION VARIANCE (D-E)	52.2	22.68

Remarks:

**NNWSI PROJECT
COST PERFORMANCE GRAPH FOR FEB 1987
WBS: 1.2.J**



OSTI/TC-TOTAL

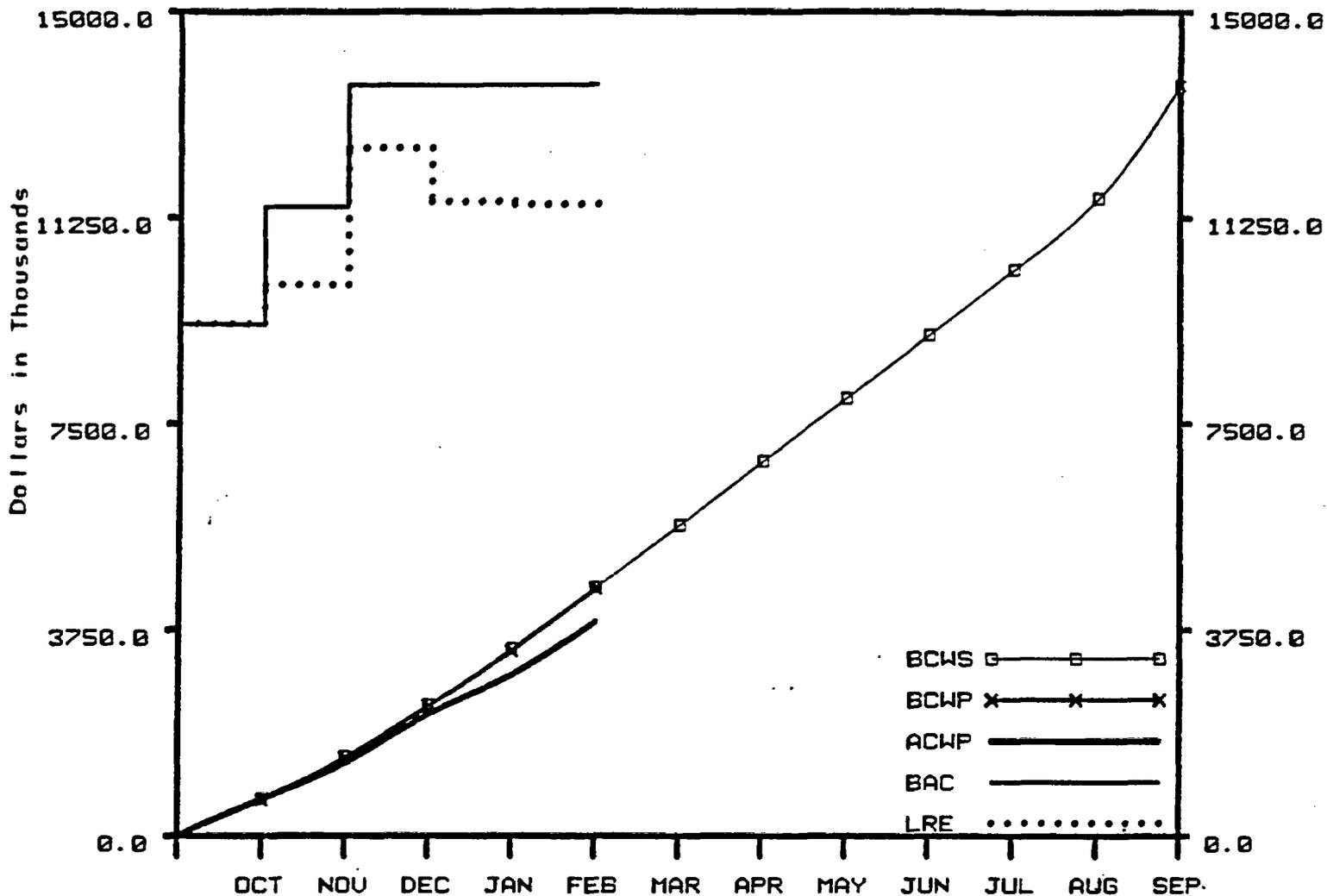
	Current Period	Year To Date
A. BUDGETED COST OF WORK SCHEDULED (BCWS)	0.0	1.0
B. BUDGETED COST OF WORK PERFORMED (BCWP)	0.0	1.0
C. ACTUAL COST OF WORK PERFORMED (ACWP)	0.0	0.0
D. BUDGET AT COMPLETION (BAC)		5.0
E. LATEST REVISED ESTIMATE (LRE)		0.0

VARIANCES (Year To Date)

	Dollars	Percent
F. SCHEDULE VARIANCE (B-A)	0.0	0.00
G. COST VARIANCE (B-C)	1.0	100.00
H. AT COMPLETION VARIANCE (D-E)	5.0	100.00

Remarks:

NNWSI PROJECT COST PERFORMANCE GRAPH FOR FEB 1987 WBS: 1.2.L



LLNL - TOTAL

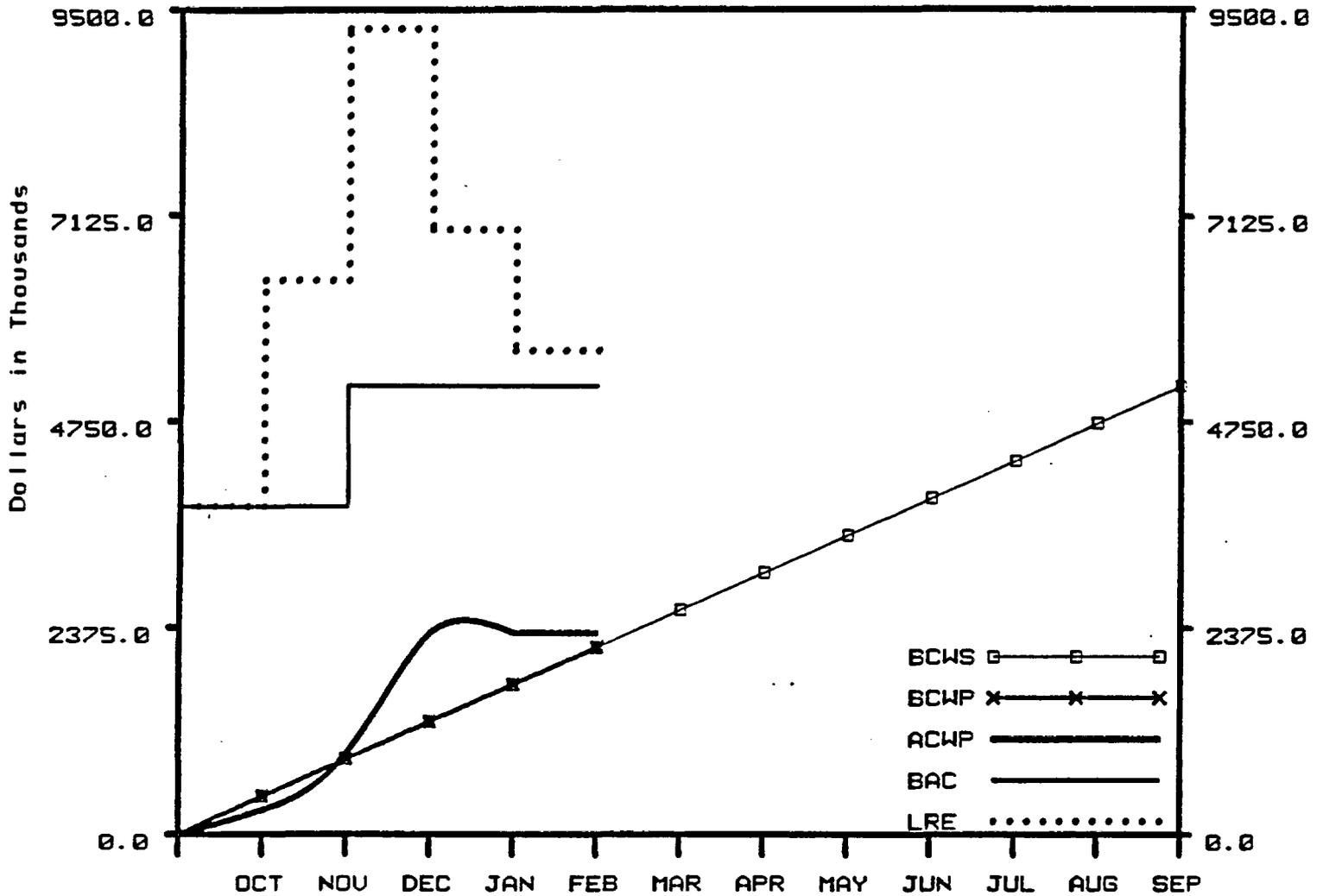
	Current Period	Year To Date
A. BUDGETED COST OF WORK SCHEDULED (BCWS)	1110.0	4512.0
B. BUDGETED COST OF WORK PERFORMED (BCWP)	1133.1	4497.9
C. ACTUAL COST OF WORK PERFORMED (ACWP)	952.8	3884.8
D. BUDGET AT COMPLETION (BAC)		13654.0
E. LATEST REVISED ESTIMATE (LRE)		11479.7

VARIANCES (Year To Date)

	Dollars	Percent
F. SCHEDULE VARIANCE (B-A)	-14.1	-0.31
G. COST VARIANCE (B-C)	613.1	13.63
H. AT COMPLETION VARIANCE (D-E)	2174.3	15.92

Remarks:

NNWSI PROJECT COST PERFORMANCE GRAPH FOR FEB 1987 WBS: 1.2.N



STATE - TOTAL

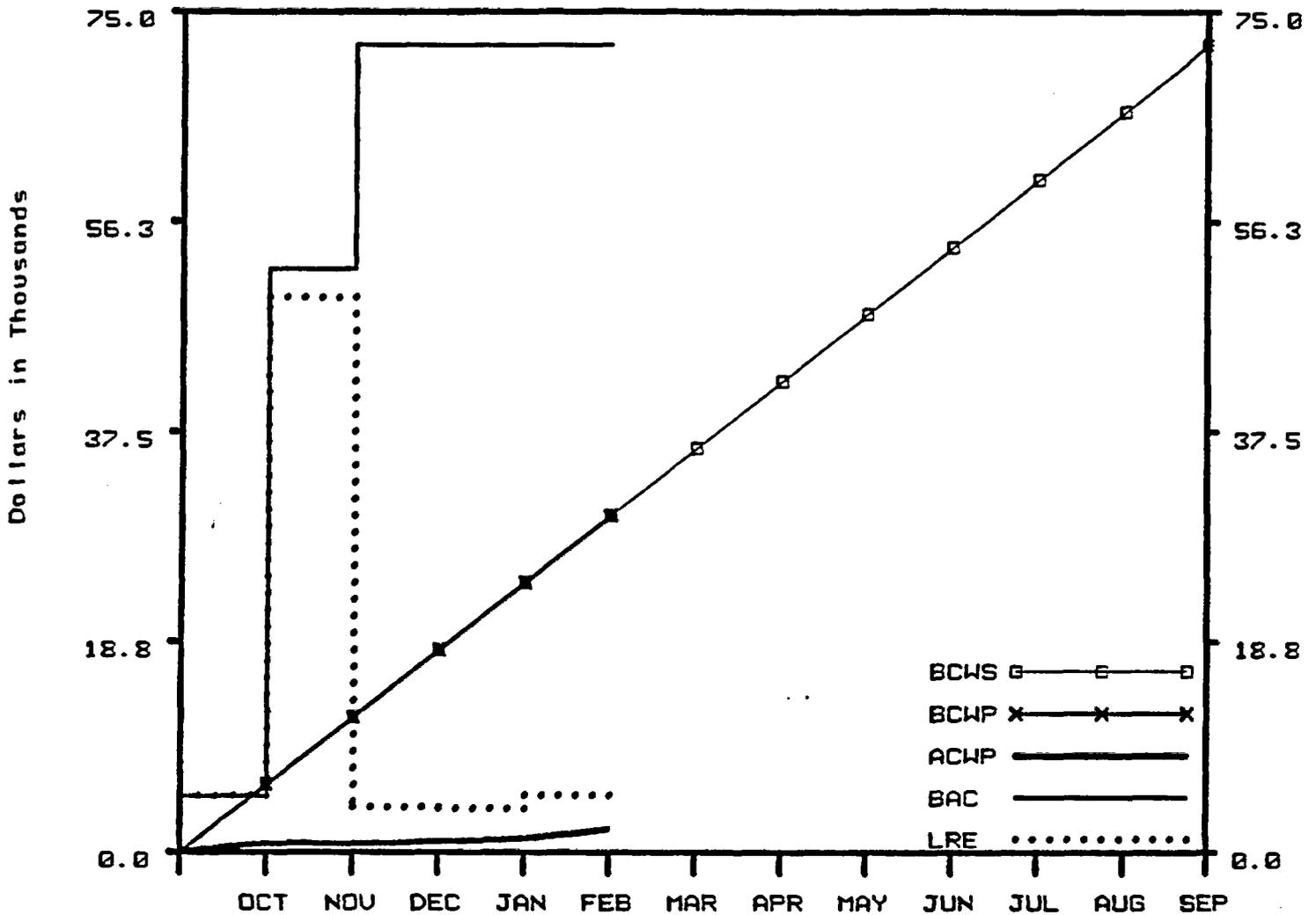
	Current Period	Year To Date
A. BUDGETED COST OF WORK SCHEDULED (BCWS)	430.0	2150.0
B. BUDGETED COST OF WORK PERFORMED (BCWP)	430.0	2150.0
C. ACTUAL COST OF WORK PERFORMED (ACWP)	0.0	2318.7
D. BUDGET AT COMPLETION (BAC)		5162.0
E. LATEST REVISED ESTIMATE (LRE)		5567.0

VARIANCES (Year To Date)

	Dollars	Percent
F. SCHEDULE VARIANCE (B-A)	0.0	0.00
G. COST VARIANCE (B-C)	-168.7	-7.84
H. AT COMPLETION VARIANCE (D-E)	-405.0	-7.84

Remarks:

**NNWSI PROJECT
COST PERFORMANCE GRAPH FOR FEB 1987
WBS: 1.2.P**



PAN AM - TOTAL

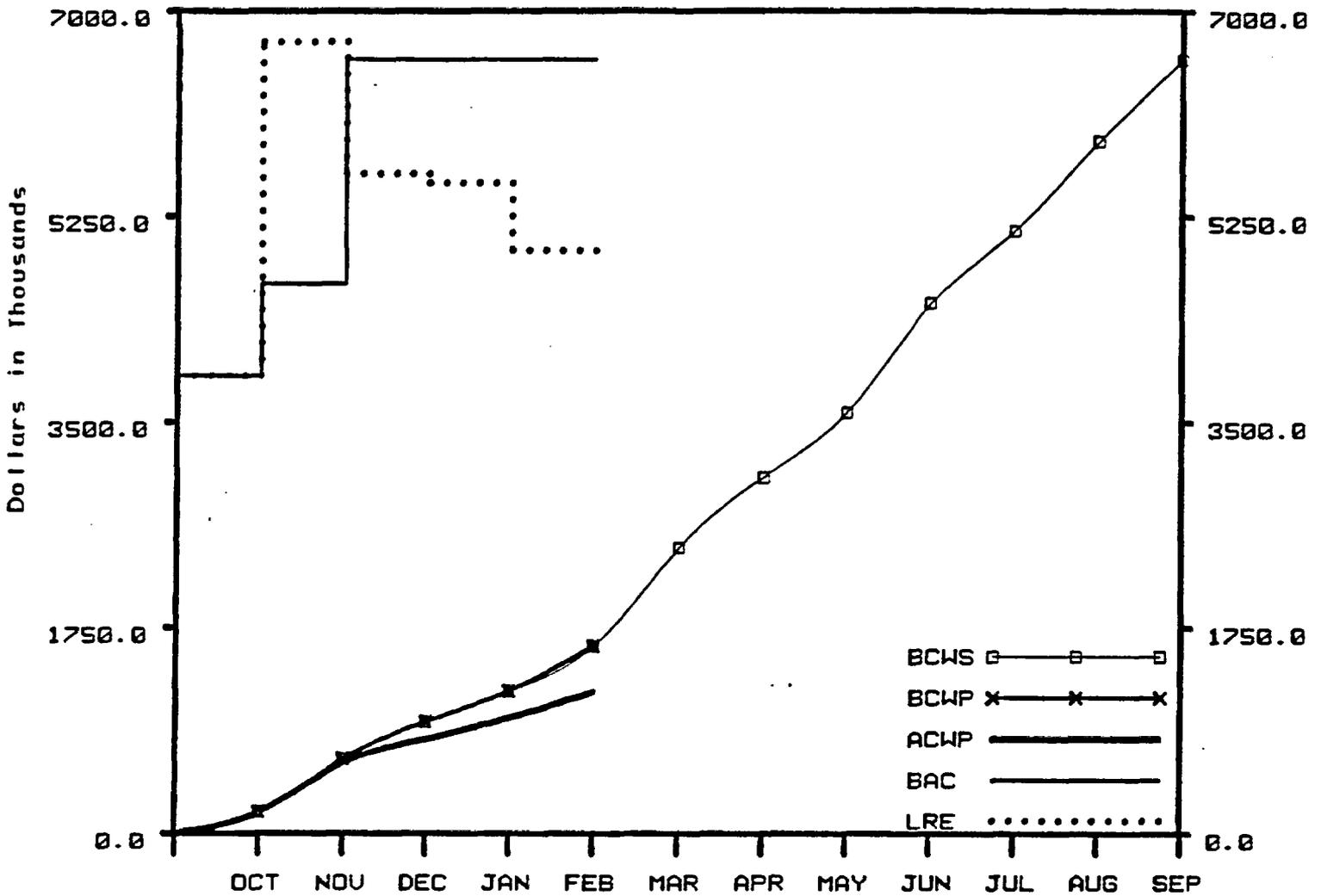
	Current Period	Year To Date
A. BUDGETED COST OF WORK SCHEDULED (BCWS)	6.0	30.0
B. BUDGETED COST OF WORK PERFORMED (BCWP)	6.0	30.0
C. ACTUAL COST OF WORK PERFORMED (ACWP)	0.8	2.1
D. BUDGET AT COMPLETION (BAC)		72.0
E. LATEST REVISED ESTIMATE (LRE)		5.0

VARIANCES (Year To Date)

	Dollars	Percent
F. SCHEDULE VARIANCE (B-A)	0.0	0.00
G. COST VARIANCE (B-C)	27.9	93.12
H. AT COMPLETION VARIANCE (D-E)	67.0	92.99

Remarks:

NNWSI PROJECT COST PERFORMANCE GRAPH FOR FEB 1987 WBS: 1.2.R



REECO - TOTAL

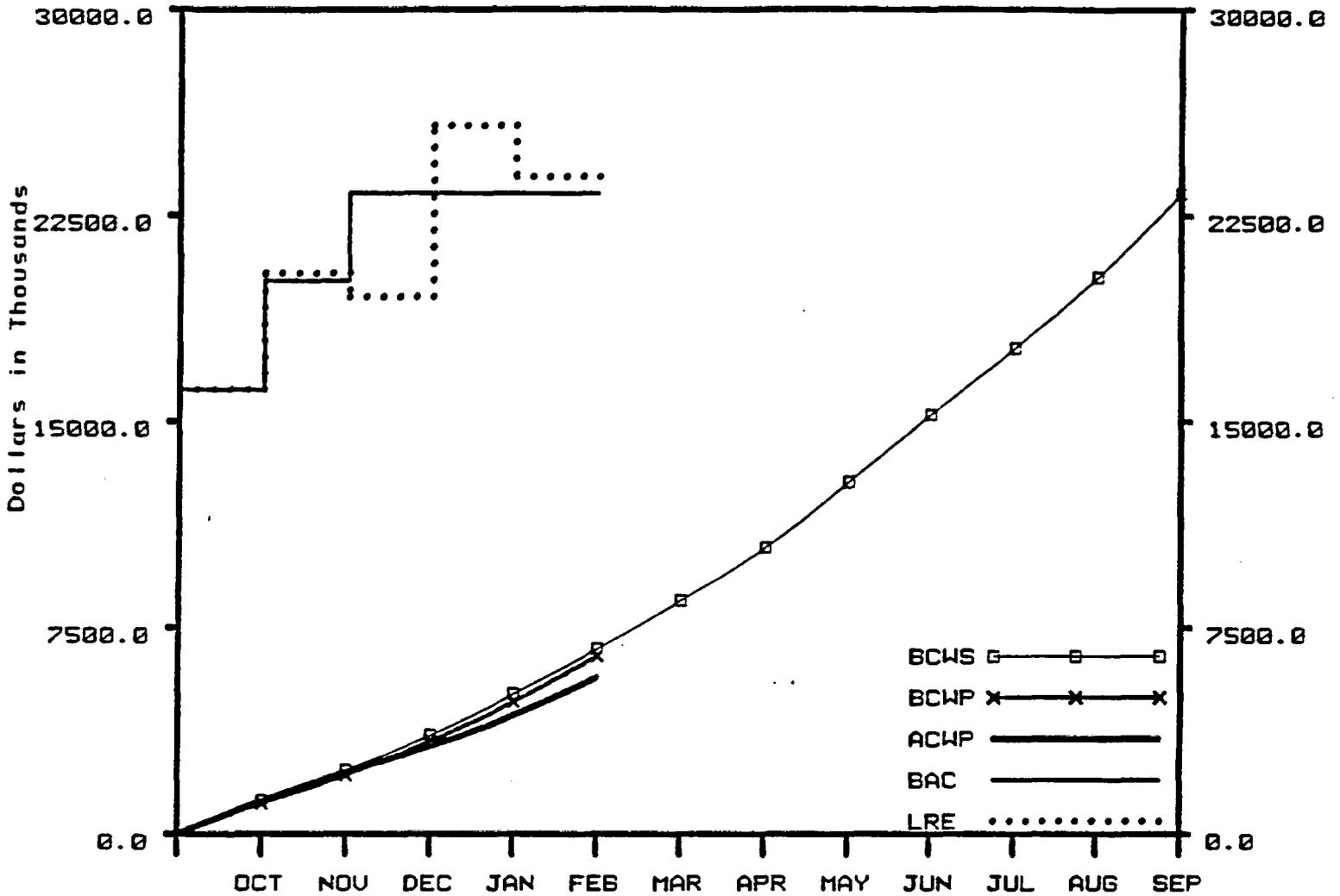
	Current Period	Year To Date
A. BUDGETED COST OF WORK SCHEDULED (BCWS)	380.4	1592.3
B. BUDGETED COST OF WORK PERFORMED (BCWP)	380.4	1592.3
C. ACTUAL COST OF WORK PERFORMED (ACWP)	221.0	1203.8
D. BUDGET AT COMPLETION (BAC)		6584.0
E. LATEST REVISED ESTIMATE (LRE)		4958.4

UARIANCES (Year To Date)

	Dollars	Percent
F. SCHEDULE VARIANCE (B-A)	0.0	0.00
G. COST VARIANCE (B-C)	388.5	24.40
H. AT COMPLETION VARIANCE (D-E)	1625.6	24.69

Remarks:

NNWSI PROJECT COST PERFORMANCE GRAPH FOR FEB 1987 WBS: 1.2.S



SNL - TOTAL

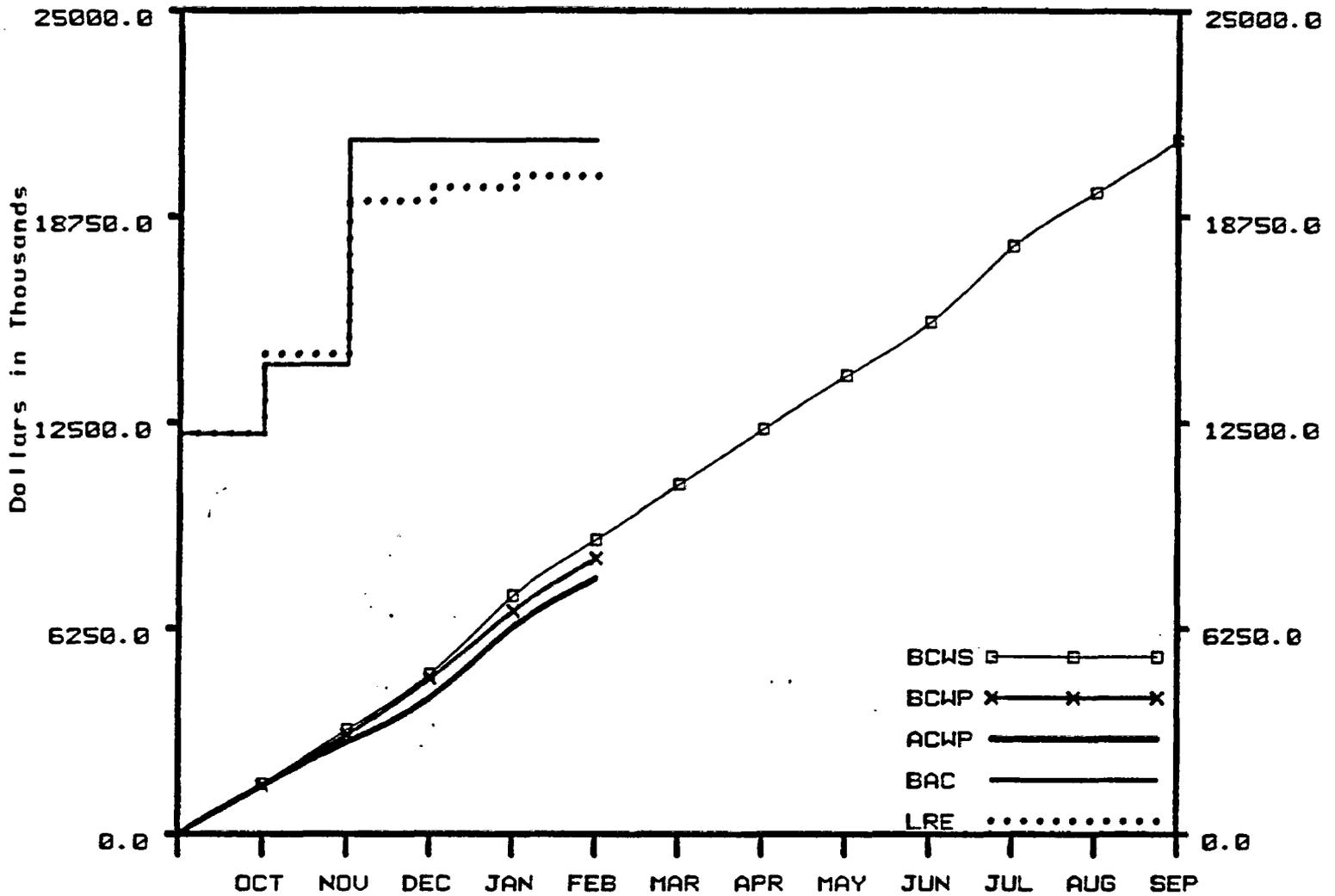
	Current Period	Year To Date
A. BUDGETED COST OF WORK SCHEDULED (BCWS)	1644.0	6722.0
B. BUDGETED COST OF WORK PERFORMED (BCWP)	1652.0	6456.4
C. ACTUAL COST OF WORK PERFORMED (ACWP)	1369.0	5680.0
D. BUDGET AT COMPLETION (BAC)		23289.0
E. LATEST REVISED ESTIMATE (LRE)		23892.3

VARIANCES (Year To Date)

	Dollars	Percent
F. SCHEDULE VARIANCE (B-A)	-265.6	-3.95
G. COST VARIANCE (B-C)	776.4	12.02
H. AT COMPLETION VARIANCE (D-E)	-603.3	-2.59

Remarks :

NNWSI PROJECT COST PERFORMANCE GRAPH FOR FEB 1987 WBS: 1.2.T



SAIC - TOTAL

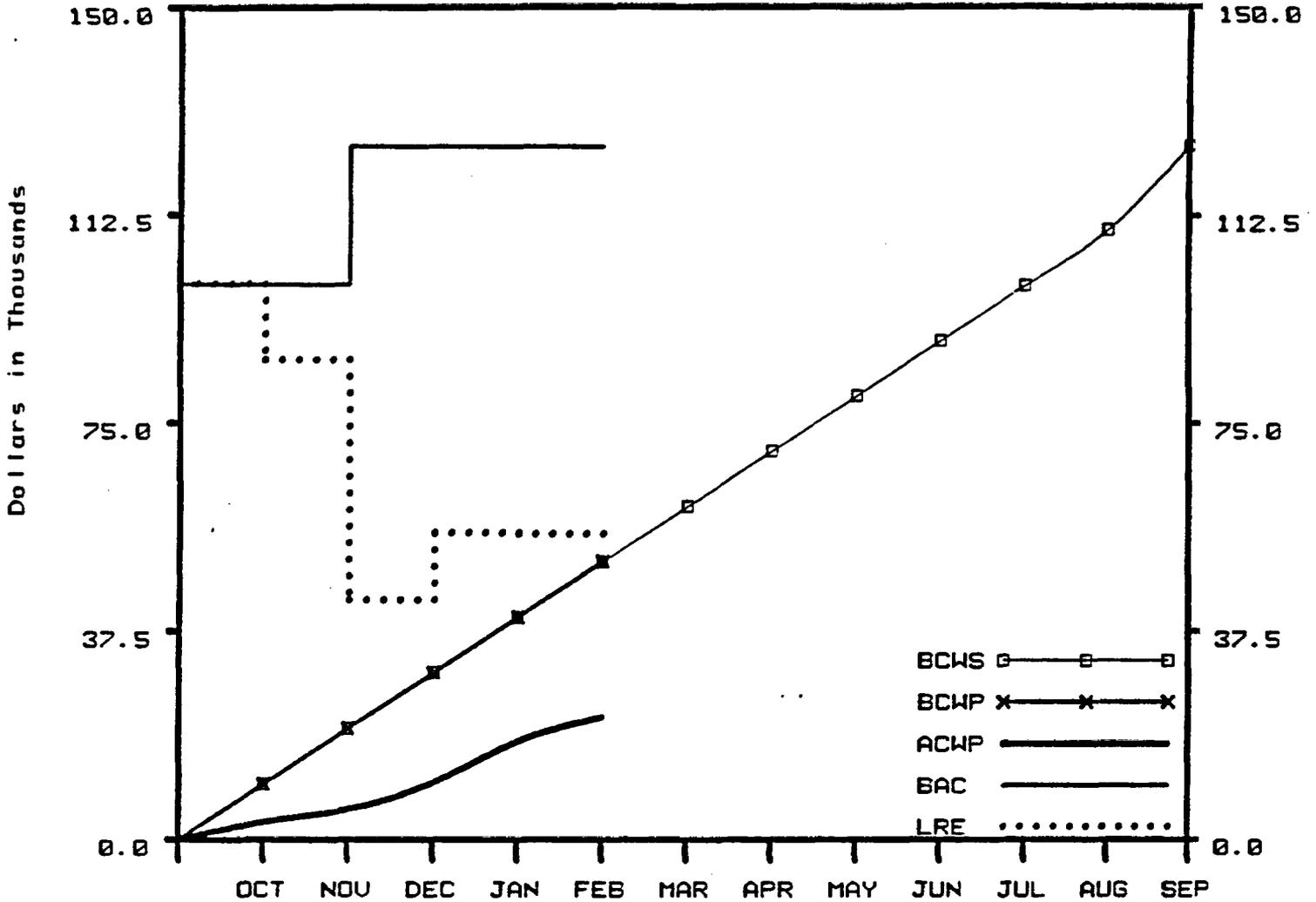
	Current Period	Year To Date
A. BUDGETED COST OF WORK SCHEDULED (BCWS)	1689.0	8923.5
B. BUDGETED COST OF WORK PERFORMED (BCWP)	1573.6	8351.9
C. ACTUAL COST OF WORK PERFORMED (ACWP)	1458.0	7746.7
D. BUDGET AT COMPLETION (BAC)		21067.0
E. LATEST REVISED ESTIMATE (LRE)		19968.2

VARIANCES (Year To Date)

	Dollars	Percent
F. SCHEDULE VARIANCE (B-A)	-571.6	-6.41
G. COST VARIANCE (B-C)	605.2	7.25
H. AT COMPLETION VARIANCE (D-E)	1098.8	5.22

Remarks:

NNWSI PROJECT COST PERFORMANCE GRAPH FOR FEB 1987 WBS: 1.2.U



DRI - TOTAL

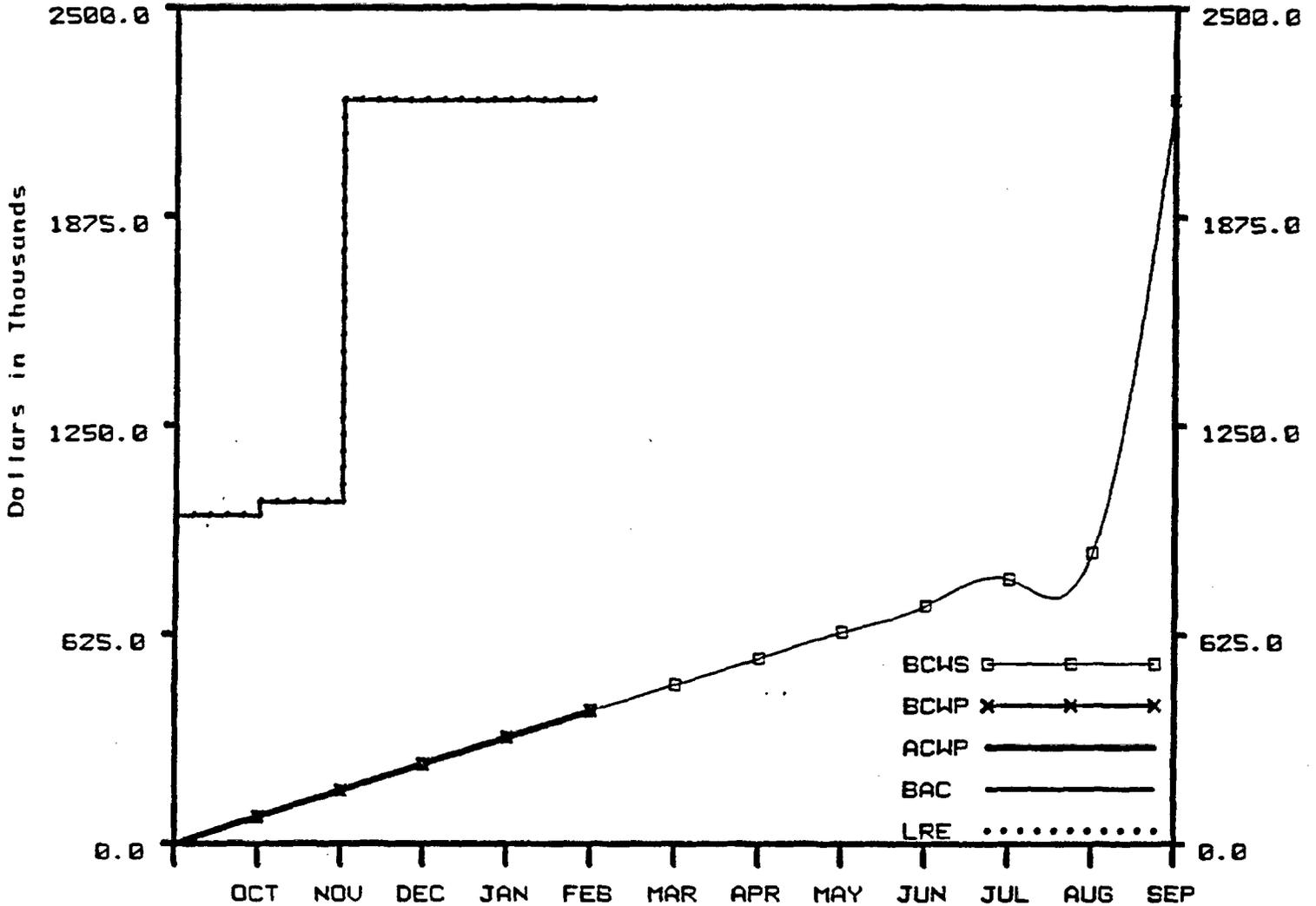
	Current Period	Year To Date
A. BUDGETED COST OF WORK SCHEDULED (BCWS)	10.0	50.0
B. BUDGETED COST OF WORK PERFORMED (BCWP)	10.0	50.0
C. ACTUAL COST OF WORK PERFORMED (ACWP)	4.3	22.0
D. BUDGET AT COMPLETION (BAC)		125.0
E. LATEST REVISED ESTIMATE (LRE)		55.0

VARIANCES (Year To Date)

	Dollars	Percent
F. SCHEDULE VARIANCE (B-A)	0.0	0.00
G. COST VARIANCE (B-C)	28.0	55.97
H. AT COMPLETION VARIANCE (D-E)	70.0	55.97

Remarks:

NNWSI PROJECT COST PERFORMANCE GRAPH FOR FEB 1987 WBS: 1.2.X



NTS - TOTAL	Current Period	Year To Date
A. BUDGETED COST OF WORK SCHEDULED (BCWS)	79.0	395.0
B. BUDGETED COST OF WORK PERFORMED (BCWP)	79.0	395.0
C. ACTUAL COST OF WORK PERFORMED (ACWP)	79.0	395.0
D. BUDGET AT COMPLETION (BAC)		2223.0
E. LATEST REVISED ESTIMATE (LRE)		2222.9

UARIANCES (Year To Date)	Dollars	Percent
F. SCHEDULE VARIANCE (B-A)	0.0	0.00
G. COST VARIANCE (B-C)	0.0	0.00
H. AT COMPLETION VARIANCE (D-E)	0.1	0.00

Remarks:

NEVADA NUCLEAR WASTE STORAGE INVESTIGATIONS
MAJOR SYSTEMS ACQUISITION (MSA) MILESTONES
01 Oct 1986 to 30 Sep 1987

(B)=Baselined
(P)=Planned

MILESTONE DESCRIPTION	WBS NO.	WMPO RESP	LEVEL	RESP ORG	MILESTONE	BASELINE DATE	FORECAST (F) or ACTUAL (A)
WMPO submits letter report on Studies of Coupled Processes Included in the SCP to OGR for Information	1.2.1.1	Robson	1	WMPO	R109 (P)	26 Nov 86	31 Mar 87 (F)
WMPO submits letter report on Studies of Performance Allocation Included in SCP to OGR	1.2.1.1	Robson	1	WMPO/SNL	R108 (B)	16 Feb 87	02 Jul 87 (F)
WMPO submits Annual PASS Program Interaction Letter Report for FY87 to OGR	1.2.1.1	Robson	1	WMPO/SNL	P132 (B)	30 Sep 87	30 Sep 87 (F)
Yucca Mountain Mined Geologic Disposal System (MGDS) Requirements	1.2.1.2.1	Robson	1	WMPO/SNL	M120 (B)	31 Mar 87	30 May 87 (F)
Draft Yucca Mountain Site-Specific Mined Geologic Disposal System (MGDS) Description	1.2.1.2.1	Robson	1	WMPO/SNL	M261 (B)	30 Jun 87	30 Aug 87 (F)
System Engineering Management Plan (SEMP)	1.2.1.2.4	Robson	1	WMPO/SNL	M108 (B)	16 Feb 87	15 Apr 87 (F)
OGR Systems Engineering Review of the NNWSI Project	1.2.1.2.4	Robson	1	WMPO/SNL	R074 (B)	15 Mar 87	06 Jul 87 (F)
WMPO submits hard copy (1987 Annual) version of the Reference Information Base to OGR	1.2.1.3.3	Livingston	1	WMPO/SNL	R092 (B)	29 May 87	29 May 87 (F)
Waste Package Postclosure Compliance Strategy Document	1.2.2.1	Valentine	1	WMPO/LLNL	R003 (B)	30 Jan 87	30 Aug 87 (F)
Progress Report on the Results of Testing Advanced Conceptual Design Metal Barrier Materials Under Relevant Environmental Conditions for a Tuff Repository	1.2.2.3.2	Valentine	1	WMPO/LLNL	M236 (B)	30 Jan 87	31 May 87 (F)
Decision Made on Using Packing Material in the Waste Package to Assist in Controlling Radionuclides Release Rate	1.2.2.3.3	Valentine	1	WMPO/LLNL	M257 (B)	30 Jan 87	30 Jun 87 (F)
Revised Draft Waste Package Subsystem Conceptual Design Requirements to DOE/HQ for Review	1.2.2.4	Valentine	1	WMPO/LLNL	M013 (B)	30 Apr 87	14 Aug 87 (F)
Initiate Waste Package Advanced Conceptual Design	1.2.2.4	Valentine	1	WMPO/LLNL	M233 (B)	30 Sep 87	30 Sep 87 (F)
Report on the System Model for Waste Package Performance Analysis	1.2.2.5	Valentine	1	WMPO/LLNL	M276 (B)	31 Oct 86	12 Jan 87 (A)
Report on Long Term Performance Analysis of the Conceptual Waste Package Design	1.2.2.5	Valentine	1	WMPO/LLNL	M260 (B)	30 Apr 87	30 Sep 87 (F)
Submit Report on Evaluation of Natural Resources at Yucca Mountain and Vicinity received to DOE/ HQ for Information	1.2.3.1	Livingston	1	WMPO/SAIC	M095 (B)	31 Jul 87	31 Jul 87 (F)
Recommendation to Proceed With Deep Regional Seismic Survey to OGR for Approval	1.2.3.2.2	Rotert	1	WMPO/USGS	R045 (B)	31 Aug 87	31 Aug 88 (F)

11-22

NEVADA NUCLEAR WASTE STORAGE INVESTIGATIONS
MAJOR SYSTEMS ACQUISITION (MSA) MILESTONES
01 Oct 1986 to 30 Sep 1987

(B)=Baselined
(P)=Planned

MILESTONE DESCRIPTION	WBS NO.	WMPO RESP	LEVEL	RESP ORG	MILESTONE	BASELINE DATE	FORECAST or ACTUAL	(F) (A)
Report on Geochemistry Simulation of Yucca Mountain Using Best Available Data on Mineralogy, Water Chemistry, Flow Rates and Crack Statistics	1.2.3.4.1	Livingston	1	WMPO/LANL	M325 (B)	26 Nov 86	29 May 87	(F)
Preliminary Report on Sorption Modeling	1.2.3.4.1	Livingston	1	WMPO/LANL	R309 (B)	30 Jan 87	31 Mar 87	(F)
Final Radiological Monitoring Plan Complete	1.2.3.6.1	Jankus	1	WMPO/SAIC	M897 (B)	27 Feb 87	01 May 87	(F)
Submit Air Quality Monitoring Plan to DOE/HQ	1.2.3.6.1	Jankus	1	WMPO/SAIC	R327 (B)	30 Apr 87	TBD	(F)
Begin Air Quality Monitoring	1.2.3.6.1	Blanchard	1	WMPO/SAIC	N345 (B)	30 Sep 87	TBD	(F)
Submit Working Draft Site Characterization Socioeconomic Monitoring and Mitigation Plan (SMMP)	1.2.3.7	Dixon	1	WMPO/SAIC	R945 (B)	01 Dec 86	21 Nov 86	(A)
Submit Draft Socioeconomic Monitoring and Mitigation Plan to DOE/HQ	1.2.3.7	Dixon	1	WMPO/SAIC	P030 (B)	02 Apr 87	22 Jun 87	(F)
Start Repository Advanced Conceptual Design	1.2.4.1.1	Zvada	1	WMPO/SNL	N430 (B)	30 Sep 87	30 Sep 87	(F)
Initial Subsystem Design Requirement (SDR)	1.2.4.1.2	Skousen	1	WMPO/SNL	N433 (B)	30 Apr 87	03 Aug 87	(F)
Repository Conceptual Design in Support of Site Characterization	1.2.4.1.3	Skousen	1	WMPO/SNL	N432 (B)	27 Feb 87	15 Apr 87	(F)
Report on G-Tunnel Underground Facility (GTUF) Summary	1.2.4.2.1	Skousen	1	WMPO/SNL	M455 (B)	30 Jan 87	20 Mar 87	(F)
Feasibility Analysis of Horizontal Emplacement and Retrieval - Letter Report	1.2.4.2.2	Skousen	1	WMPO/SNL	M295 (B)	30 Nov 86	05 Sep 86	(A)
Initiate Procurement of Development Prototype Boring Machine	1.2.4.2.2	Skousen	1	WMPO/SNL	N427 (B)	30 Nov 86	01 Sep 87	(F)
Horizontal Waste Emplacement Equipment Development Plan	1.2.4.2.2	Skousen	1	WMPO/SNL	N406 (B)	27 Feb 87	30 Jun 87	(F)
Analysis to Evaluate the Effect of the Exploratory Shaft on Repository Performance at Yucca Mountain	1.2.4.2.3	Skousen	1	WMPO/SNL	R036 (B)	27 Feb 87	05 Jun 87	(F)
Prepare "Technical Basis for Performance Goals, Design Requirements and Material Recommendation for the NNWSI Project Repository Sealing Program Report"	1.2.4.2.3	Skousen	1	WMPO/SNL	P404 (B)	31 Mar 87	08 May 87	(F)
Final Report on Spent Fuel Rod Consolidation	1.2.4.4	Skousen	1	WMPO/SNL	R267 (B)	31 Dec 86	15 Jun 87	(F)
Submit Retrievability Compliance Strategy Plan to OGR for Review and Comment	1.2.4.4	Skousen	1	WMPO	R848 (P)	31 Mar 87	30 Sep 87	(F)
Preliminary Study of the Effects of Uncertain Geologic Data on Design of the Underground Facility	1.2.4.6.2	Skousen	1	WMPO/SNL	N457 (B)	27 Feb 87	04 May 87	(F)

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February 1987 Status Report
Run Date: 02 Mar 1987

NEVADA NUCLEAR WASTE STORAGE INVESTIGATIONS
MAJOR SYSTEMS ACQUISITION (MSA) MILESTONES
01 Oct 1986 to 30 Sep 1987

(B)=Baselined
(P)=Planned

MILESTONE DESCRIPTION	WBS NO.	WMPO RESP	LEVEL	RESP ORG	MILESTONE	BASELINE DATE	FORECAST (F) or ACTUAL (A)
Submit Draft Seismic/ Tectonic Summary Position Paper to WMPO/NV	1.2.5.2.1	Szymanski	1	WMPO/SAIC	R583 (B)	15 Jun 87	15 Jun 87 (F)
Submit Draft Preliminary Plan for Scheduling, Management, and Preparation of Position Papers to WMPO/NV	1.2.5.2.1	Szymanski	1	WMPO/SAIC	R579 (B)	31 Aug 87	31 Aug 87 (F)
Draft Site Characterization Plan (SCP)	1.2.5.2.2	Clanton	1	WMPO/SAIC	M521 (B)	16 Jan 87	14 Jan 87 (A)
Site Characterization Plan (SCP)	1.2.5.2.2	Clanton	1	WMPO/SAIC	M522 (B)	27 Feb 87	30 Apr 87 (F)
Draft Environmental Field Study Plans Received at HQ for review.	1.2.5.3	Jankus	1	WMPO/SAIC	R798 (B)	30 Jun 87	30 Jun 87 (F)
Environmental Field Study Plans Received at HQ For Baselining	1.2.5.3	Jankus	1	WMPO/SAIC	R799 (B)	31 Aug 87	31 Aug 87 (F)
Submit Working Draft Environmental Regulatory Compliance Plan to DOE/HQ & State.	1.2.5.3.3	Jankus	1	WMPO/SAIC	R794 (B)	30 Jan 87	06 Mar 87 (F)
Environmental Regulatory Compliance Plan Issued	1.2.5.3.3	Jankus	1	WMPO/SAIC	R795 (B)	31 May 87	TBD (F)
Submit Draft II Environmental Monitoring and Mitigation Plan (EMMP) to WMPO/NV	1.2.5.3.4	Jankus	1	WMPO/SAIC	R996 (B)	01 Dec 86	01 Dec 86 (A)
Submit Environmental Monitoring and Mitigation Plan (EMMP) to DOE/HQ	1.2.5.3.4	Jankus	1	WMPO/SAIC	P034 (B)	30 Apr 87	22 Jun 87 (F)
Complete and Sign C&C Agreement with State	1.2.5.4.1	Dixon	1	WMPO	M795 (P)	31 Mar 87	TBD (F)
Exploratory Shaft Facility (ESF) Subsystems Design Requirements Document	1.2.6.1.1	Irby	1	WMPO/LANL	R241 (B)	30 Dec 86	30 Mar 87 (F)
Submit Prototype Test Plans to DOE/HQ for review and comment	1.2.6.1.1	Irby	1	WMPO/LANL	M105 (B)	27 Feb 87	30 Apr 87 (F)
DOE/HQ receives Final FY89 Project Validation Material	1.2.6.1.1	Irby	1	WMPO/SAIC	R841 (B)	13 Mar 87	20 Mar 87 (F)
Start Field Prototype Testing in G-Tunnel	1.2.6.1.1	Irby	1	WMPO/LANL	M282 (B)	30 Mar 87	30 Mar 87 (F)
Final ESF Title II Design Requirements Document submitted to DOE/HQ	1.2.6.1.1	Irby	1	WMPO/SAIC	M773 (B)	29 May 87	29 Jul 87 (F)
Exploratory Shaft Title I Design Summary Submitted to WMPO	1.2.6.1.1	Irby	1	WMPO/SAIC	P763 (B)	29 May 87	29 Jul 87 (F)
Complete Exploratory Shaft Readiness Review	1.2.6.1.1	Irby	1	WMPO/LANL	M243 (B)	30 Sep 87	31 Mar 88 (F)
Submit FY 87 Baseline Budget Information and Cost Plans to OGR for Information	1.2.9.1.1	Kunich	1	WMPO/SAIC	R849 (B)	30 Dec 86	22 Dec 86 (A)

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NEVADA NUCLEAR WASTE STORAGE INVESTIGATIONS
 MAJOR SYSTEMS ACQUISITION (MSA) MILESTONES
 01 Oct 1986 to 30 Sep 1987

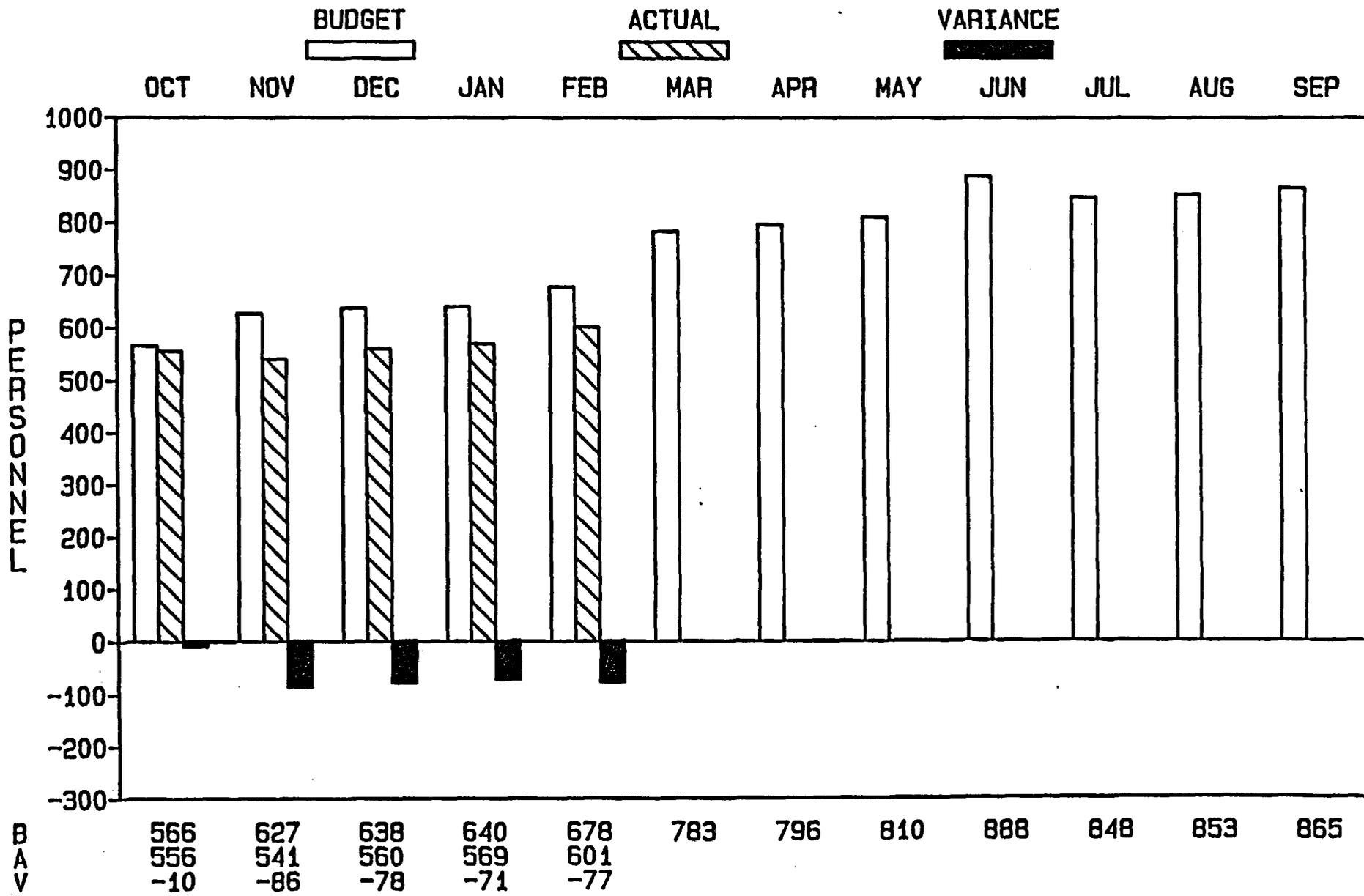
(B)=Baselined
 (P)=Planned

MILESTONE DESCRIPTION	WBS NO.	WMPO RESP	LEVEL	RESP ORG	MILESTONE	BASELINE DATE	FORECAST (F) or ACTUAL (A)
Final NNWSI Project Management Plan to WMPO/NV and DOE/HQ	1.2.9.1.1	Dixon	1	WMPO/SAIC	R448 (B)	30 Dec 86	01 Apr 87 (F)
Approved Revised Project Charter	1.2.9.1.1	Vleth	1	WMPO/SAIC	R850 (B)	30 Jan 87	31 Mar 87 (F)
Submit NNWSI Project Plan to WMPO/NV and DOE/HQ	1.2.9.1.1	Dixon	1	WMPO/SAIC	R810 (B)	30 Sep 87	30 Sep 87 (F)
Submit FY 89 Budget to DOE/HQ	1.2.9.1.2	Dixon	1	WMPO/SAIC	M712 (B)	13 Mar 87	13 Mar 87 (F)
Licensing Support System Document Collection Procedure to Headquarters for Approval	1.2.9.1.4	Hatch	1	WMPO/SAIC	R647 (B)	30 Apr 87	TBD (F)
Implement Document Collection for the Licensing Support System	1.2.9.1.4	Hatch	1	WMPO/SAIC	R842 (P)	31 Jul 87	TBD (F)
Implement Phase II of Earned Value System	1.2.9.2	Dixon	1	WMPO/SAIC	M725 (B)	30 Nov 86	31 Mar 87 (F)

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NNWSI PROJECT STAFFING*

FICAL YEAR 1987



11-26

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*FTE'S SHOWN REFLECT INPUT FROM ALL NNWSI PROJECT PARTICIPANTS EXCEPT THE STATE OF NEVADA

PLANNED NNWSI PROJECT FIELD ACTIVITIES

FOR APRIL

Participant	Activity	Location	Planned	
			Day	Time
LLNL	No scheduled activities			
Los Alamos	No report received			
SAIC	Meteorological monitoring	Yucca Mountain	Field site technicians will maintain stations weekly, 3 days per week.	
USGS	Seismic network monitoring	NTS and Vicinity	Continuous throughout month.	
	Collect and runoff data	NTS	Following storm events.	
	Water-level monitoring	Wells at Yucca Mountain and Vicinity	April 2-3, 16-17, and 30 - May 1	8-4
	Monitoring of test well USW UZ-1	Test well USW UZ-1	April 8, 17, and 27	8-11 2:30-3:30
	Monitoring of neutron test holes	Yucca Mountain and vicinity	Continuous throughout month	8-4
	Gas sampling	Test hole USW UZ-1	March 23- April 5	Daylight hours
	Service and maintenance of paleohydrology analog sites	South-Central April 1	April 1	Daylight