102

ltr to Purcell fm. Vieth. 4/2/86

U.S. DEPARTMENT OF ENERGY

OCRWM OGR

Nevada Nuclear Waste Storage Investigations PROJECT

YUCCA MOUNTAIN

NEVADA NUCLEAR WASTE STORAGE INVESTIGATIONS PROJECT

MONTHLY REPORT

FEBRUARY 1986

UNITED STATES DEPARTMENT OF ENERGY

NEVADA OPERATIONS OFFICE

NEVADA NUCLEAR WASTE STORAGE INVESTIGATIONS PROJECT

MONTHLY REPORT

MARCH 1986

Prepared by Nevada Nuclear Waste Storage Investigations (NNWSI) Project participants as part of the Civilian Radioactive Waste Management Program. The NNWSI Project is managed by the Waste Management Project Office of the U.S. Department of Energy (DOE), Nevada Operations Office. NNWSI Project work is sponsored by the Office of Geologic Repositories of the DOE Office of Civilian Radioactive Waste Management.

UNITED STATES DEPARTMENT OF ENERGY
NEVADA OPERATIONS OFFICE

TABLE OF CONTENTS

ABSTRACT

Key Activities

WBS 1.2.1 SYSTEMS

A meeting between staff members from Sandia National Laboratories and the Waste Management Project Office established the system description document as a milestone. Selected portions of the reference information base will be published as part of the subsystem design requirements document. The environmental assessment reference report, "Rock Classification of Candidate Repository Units at Yucca Mountain, Nye County, Nevada," is ready for printing.

WBS 1.2.2 WASTE PACKAGE

February report not available.

WBS 1.2.3 SITE INVESTIGATIONS

Project personnel agreed that siting of seismic reflection and refraction lines will be determined by an integrated program of interconnected lines extending from the Las Vegas Shear Zone westward to Death Valley and northward through the Nevada Test Site (NTS) to its northern boundary. A paper entitled "Microcomputer controlled geophysical logging and groundwater monitoring system" was presented at a meeting of the American Geologist Association. The report "Mineralogic Summary of Yucca Mountain, Nevada," was pubished.

WBS 1.2.4 REPOSITORY INVESTIGATIONS

The Design Review and Design Issue Resolution Strategy for the Site Characterization Plan was completed. The horizontal-emplacement development plan was revised to be consistent with the new shorter emplacement hole depths. A drawing defines the interface between the exploratory shaft facility and the repository.

WBS 1.2.5 REGULATORY AND INSTITUTIONAL INVESTIGATIONS

Approved procedures describe building, maintaining, and closing of data-set notebooks for the Data Records Management System. Meteorological data for the Yucca Mountain alluvial site and the Fran Ridge site will be added to the system. The DOE and the NRC have agreed to an Issue Resolution Strategy to resolve Project design and performance issues. The final EA is scheduled to be released to the public on April 21, 1986. The quarterly update of the data catalog was completed.

WBS 1.2.6 EXPLORATORY SHAFT INVESTIGATIONS

The edited version of the Exploratory Shaft Test Plan was printed and distributed. Modifications to the prototype strike rail goniometer will permit dip readings of structural elements as well as strikes.

WBS 1.2.7 TEST FACILITIES

All of the 17 fuel assemblies at E-MAD are stored in the Hot Bay Lag Storage Pit where the highest exhaust temperature was 27.2 °C. Annual maintenance, routine weekly checks, and training programs covered a number of activities and systems.

WBS 1.2.9 PROGRAM MANAGEMENT

Installation of the Project Records Management System is complete at four participant locations. The Environmental Assessment Management Plan was issued. A procedure for engineering and scientific software was approved. A number of detailed technical procedures give instructions for mineralogical and petrological investigations and for geochemical activities. Recommendations resulting from a quality assurance surveillance would suspend any future coring or sampling operations until adequate procedures are implemented.

U.S. DEPARTMENT OF ENERGY

OCRWM OGR

Nevada Nuclear Waste Storage Investigations PROJECT

YUCCA MOUNTAIN

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

SYSTEMS MANAGEMENT AND INTEGRATION

Sandia National Laboratories (SNL) personnel discussed the issues-resolution process in workshops with NNWSI Project participants from Lawrence Livermore National Laboratory (LLNL), and Los Alamos National Laboratory (Los Alamos). The issues-resolution process, as it relates to the resolution of design issues, was also discussed at an NNWSI Project design review attended by members of the Office of Geologic Repositories (OGR) from the Department of Energy Headquarters (DOE/HQ) and representatives of the other OGR repository development projects.

In late February 1986, the issue-resolution process was presented at a Project-wide workshop to start work on Chapter 8 of the Site Characterization Plan (SCP). The discussion of the issue-resolution process and its incorporation into the SCP included proposed allocations of performance for the 10 CFR 60 performance objectives dealing with pre-waste-emplacement groundwater travel time and cumulative release of radionuclides to the accessible environment. The discussion also covered application of issue resolution to Issue 4.7 of the NNWSI Project Issues Hierarchy (the 10 CFR 960 requirement for construction, operation, and decommissioning using reasonably available technology).

SYSTEMS ENGINEERING

System Description

The system requirements (SR) document (Milestone M120) was submitted by SNL to the DOE-Nevada Operations Office(NV)/Waste Management Project Office (WMPO) for policy review.

SNL personnel completed the annotated outline for the system description (SD) document in mid-February 1986. A meeting between SNL management and staff and WMPO representatives led to agreement to establish the SD as a baselined NNWSI Project milestone (Milestone M261) with a due date of July 31, 1986.

Cost Schedule

The current draft of SNL Milestone R058, "Cost Estimate of the Yucca Mountain Repository Based on Design Information Developed for the SCP-Conceptual Design Report (CDR)," will require some rewriting to include recent changes in the conceptual design pertaining to commingling of waste types. The cost data and

the text will be affected by the new emplacement configuration. Sections 1, 3, and 4 have been rewritten and the cost estimates for Section 2 and Appendix A compiled.

Most of the problems with the cost-estimating system have been solved, and the system is now operational.

Systems Engineering Integration

SAIC staff members completed preparation of an interim design interface control procedure for the Exploratory Shaft Facility (ESF).

Project participants presented information about the NNWSI Project Systems Engineering activities at the February 18-19 Edison Electric Institute (EEI) briefing on the NNWSI Project.

The NNWSI Project Design Review meeting in Albuquerque on February 11-13, 1986, included a systems-engineering presentation in the main meeting and a separate 4-hour session with representatives from all NNWSI Project participants, the Basalt Waste Isolation Project, the Salt Repository Project, and R. F. Weston, Inc. These participants were also briefed on the purpose and proposed content of the Reference Information Base.

Configuration Management and Change Control

A final draft of Administrative Procedure 3.3 will be submitted to WMPO during late March or early April 1986 for review and comment. Changes incorporated reflect the expansion of the responsibilities of the NNWSI Project Change Control Board (CCB) to include management of technical and regulatory activities and an expanded Management baseline. Also included are lower tier change boards, called Baseline Review Boards, to support analysis of significant change requests and management of less significant change requests and items that require WMPO appoval for change.

Due to the late issue of a large CCB agenda and the volume of proposed changes to the Planning and Scheduling Baseline, none of the proposed changes were signed as approved by the Director of WMPO.

TECHNICAL DATA BASE MANAGEMENT

Tuff Data Base

At SNL the data base was updated to version DB14001 during February 1986. DB14001 includes new and updated borehole information from Holmes & Narver, some schema streamlining, new glossary entries for water chemistry, and the removal of duplicate, multi-report entries in the C200 (bulk properties) record.

Two separate data requests were filled, initiating the official NNWSI Project "data-dissemination service." Porosity and hydraulic-conductivity data were provided to two requestors, one from SNL and the other from Los Alamos.

Computer Graphics

SNL staff members have prepared preliminary drawings continuing the definition of critical project boundaries. These boundaries define the accessible environment, the controlled area, and the projection of the disturbed zone to the ground surface.

The U.S. Geological Survey (USGS) Geologic Division at Flagstaff, Arizona, provided information on the availability and nature of higher-resolution topographical data for the repository surface-facility and the exploratory-shaft areas. These data will be transferred to SNL.

Reference Information Base

Members of the SNL Geosciences Analysis Division met with WMPO personnel to discuss problems with defining the content of the TUFFDB and the Reference Information Base (RIB). The WMPO representatives were briefed on the proposed purpose of the data-base working groups.

Selected portions of the RIB (specifically, rock-property data) will be published as part of Appendix A of the Subsystem Design Requirements document.

TOTAL SYSTEMS PERFORMANCE ASSESSMENT

Flow and Radionuclide Transport

The SNL report entitled "Preliminary Estimates of Groundwater Travel Time and Radionuclide Transport at Yucca Mountain Repository Site" (SAND85-2701) was submitted for preliminary technical review. This report (Milestone R082) presents the assumptions, methods, and data used for a statistical approach to the calculation of groundwater travel times and total radionuclide releases into the water table. Assumptions and mathematical principles that serve as the basis for the formulation of the calculational model are described. Data to support the analyses are abstracted from formal and informal reports generated by technical participants in the NNWSI Project. Results from the analyses consist of groundwater travel-time distributions from the disturbed zone to the water table and cumulative curie releases to the water table. These results provide some of the information required in support of the environmental assessment. The analyses provide a basis for assessing whether the Yucca Mountain site will be capable of maintaining compliance with regulatory requirements on groundwater travel time.

Radionuclide Source Term

Because of task reorganization at SNL, a portion of the activities from WBS 1.2.1.4.3, Development and Certification of Computer Codes, which is inactive, were transferred into this task.

The SNL environmental assessment reference report entitled "Rock Classification of Candidate Repository Units at Yucca Mountain, Nye County, Nevada" (SAND82-2034) was submitted for printing.

Radionuclide Releases from Total System

The HYDROCOIN Conference paper, "The Effect of Percolation Rate on Water Travel Time in Deep, Partially Saturated Zones" (SAND85-0854C) was approved by WMPO and submitted for inclusion in the HYDROCOIN Proceedings. The document entitled "Estimation of Hydrologic Properties for an Unsaturated, Fractured Rock Mass" (SAND84-2642) received final WMPO approval and has been submitted to SNL line review.

SNL analysts have derived a model for the diffusion of solute between the fracture system and the matrix pore system.

SNL staff members are using the TOSPAC hydrology module to solve problems that may provide information useful in making decisions about experiments and construction techniques in the Exploratory Shaft. One such problem addresses the potential penetration into the rock matrix of the fluids used in mining the shaft.

PLANNED WORK

The issue-resolution process will be implemented in a series of NNWSI Project workshops during March and April 1986. These workshops will define Project strategy for resolving Key Issues and issues in the NNWSI Project Issues Hierarchy. This strategy will be the basis for Chapter 8.3 of the NNWSI Project SCP.

SAIC expects to deliver a draft Configuration Management Plan to WMPO in March or early April 1986.

A working meeting on SD structure and content with SNL personnel and the Director of WMPO is tentatively scheduled for March 12, 1986.

During March 1986, SNL staff members will work on developing an issue-resolution strategy for NNWSI Project Performance Issue 1.16. They will present much of the so-far-undocumented calculations and reasoning to other Project participants, such as the USGS and Los Alamos, and attempt to gain a consensus on the kinds and amounts of data to be produced in site-characterization experiments needed to resolve Issue 1.16.

PROBLEM AREAS

Preparation for and participation in the February 11-13, 1986, review of NNWSI Project design activities by DOE/HQ and other systems-coordination activities will delay preparation of the Systems Engineering Management Plan. A draft will be completed before the OGR peer review of systems engineering activities tentatively scheduled for April 1986.

At SNL, SCP and performance-allocation commitments may delay the initial meetings of the data-base working groups.

Work towards completion of the SNL milestones for the Radionuclides Releases from the Total System task may be delayed because staff members have been

assigned responsibility for preparing writeups of certain SCP Performance Issues and providing technical support for Issues 1.15, 1.16, 1.17, and 1.18.

MILESTONE PROGRESS

The due date for Sandia Milestone R057, Preliminary Assessment of the Conditions of Criticality at the Prospective Yucca Mountain Repository, was changed to January 31, 1987.

SNL Milestone N448, Preliminary Validation of Subsurface Conditions for Repository Surface Facilities, will be delayed.

The NNWSI Project Position Paper describing the engineered-barrier system and disturbed-zone boundaries (SNL Milestone M107), should be completed by March 15, 1986.

The update of the "User's Manual for the Tuff Data Base Interface" (Milestone M177), is being prepared for printing at SNL.

The estimated delivery date for the Systems Engineering Management Plan (SNL Milestone M108) is April 1, 1986.

The SNL Milestone R074, Systems Engineering Review of the NNWSI Project, has been delayed by the DOE Office of Geologic Repositories until sometime in April.

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

February report not available.

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 an attempt to understand 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 area of study involves an attempt to understand 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

MANAGEMENT AND INTEGRATION

All Project participants began work on the FY 88 WPAS.

GEOLOGY

Geologic Investigations

USGS personnel spent most of February on revisions of Chapter 1 (Geology) of the SCP, Quality Assurance (QA) activities, and test planning activities for the Exploratory Shaft.

Geophysical Investigations

Gravity and Magnetics

USGS staff members began preparation for a detailed geophysical study of two aeromagnetic anomalies to help site a drillhole. One anomaly is located near Lathrop Wells and the other is in Crater Flat. A summary of the gravity reduction scheme and reduction of recent gravity data in Crater Flat have been completed.

Seismic Investigations

On February 12, USGS and SAIC personnel discussed siting of seismic reflection and refraction lines for the site characterization effort. An agreement was reached on an integrated program of interconnected lines extending from the Las Vegas Shear Zone westward to Death Valley and northward through the NTS to its northern boundary.

Site Stability

Tectonics and Volcanism

The USGS paper "Surficial geology of the Bare Mountain Quadrangle, Nye County, Nevada" has been approved and will be processed as U.S. Geological Survey Miscellaneous Investigations Map I-1826.

A Quaternary Studies Plan has been prepared by USGS for the Yucca Mountain area. This comprehensive plan is the outcome of SCP planning meetings and will be merged with the main SCP planning document.

USGS field work will begin in March on the Skull Mountain surficial geology as part of the program to assemble a surficial geologic map of the 1:100,000 Beatty sheet.

USGS personnel are preparing for the hydrofracture work on the boreholes at Crater Flat.

HYDROLOGY

Streamflow

During early February USGS personnel were assessing sites for future emplacement of recording stream gages to measure runoff for the unsaturated-zone (UZ) groundwater investigations. They also prepared project plans and cost estimates for this streamgaging program.

Groundwater Flow Analysis

A USGS paper entitled "Microcomputer controlled geophysical logging and groundwater monitoring system" was given during the February meeting of the American Engineering Geologist Association at the Colorado School of Mines.

Unsaturated Zone Hydrology

USGS staff members are logging 74 completed holes with moisture meters on a monthly basis.

A USGS plan for UZ-holes hydrologic monitoring and stemming has been prepared for the deep and shallow borehole instrumentation and monitoring program.

A gas chromatograph instrument for CO_2-concentration analysis (UZ-holes) was installed and tested at the Test Cell C laboratory at NTS. Further tests and calibration are needed to verify the accuracy of the instrument.

More gas samples for CO_2 and H_2O analyses were collected by USGS staff members from test hole USW UZ-1 between February 3 and 11, 1986.

GEOCHEMISTRY

Groundwater Geochemistry

For the modeling of C-Well tracer tests, Los Alamos staff members began two modeling efforts. Simulation of possible injection-backflow tests involving Wells UE-25a#1, #2, and #3 begin using TRACR3D. Simulation of possible thermal effects in the well region is using FEHM (Finite Element Heat and Mass).

Natural Isotope Chemistry

During a literature search, Los Alamos staff members found several analyses (by the USGS) of uranium in groundwater. At this time, it seems that only uranium-238 and uranium-234 would be measurable in the groundwater. The references found in conducting the literature search on uranium disequilibrium have been added to a data base for easy access. Any other references found in the future will also be added to the data base.

Sorption and Precipitation

At Los Alamos staff members completed desorption experiments for strontium, cesium, barium, and europium on three tuff samples. These experiments are part of the effort to characterize the effects of groundwater composition on sorption.

Additional grinding and sieving experiments were completed at Los Alamos to determine what size distribution of crushed tuff is most representative of the average grain sizes found in fractured tuff. These results will be used to determine whether to change the standard batch procedure to include particles as large as 1,000 microns. Current particle sizes range from 75 to 500 microns.

Several draft QA procedures were prepared by Los Alamos personnel, including one for grinding and sieving of core samples and one for groundwater collection at Yucca Mountain.

Enough core material from existing cores is available at Los Alamos to make possible a set of serial sorption experiments with plutonium and also a study of small-scale feed concentration under laboratory and CO_2-controlled conditions.

At Los Alamos sorption ratios for strontium, cesium, barium, and europium have been calculated and data analysis is in progress.

Los Alamos personnel are evaluating a new data base dump containing about 1,025 entries relative to equilibrium and kinetic sorption experiments involving a number of variables including solute, particle size, contact time, and initial concentration. The new data base dump was in a different format than the data base previously in use and thus requires a different set of computer programs to convert and sort the results according to desired parameters. The program SOSCOCO (renamed SOSI) does that sorting and calculates the solution concentration and amount of solute on the solid phase.

The long-term phase (6 weeks) of the sorption experiments at Los Alamos was completed. One-hour uptake (plutonium-239) rates will be determined for 6-hour, 24-hour, 3-week, and 6-week cultures of organism 11c.

Dynamic Transport Process

Results to date from diffusion cell experiments at Los Alamos with tritiated water (HTO) and technetium-95m spiked solutions show consistent variations with wafer thickness and are being analyzed. New cells are complete and being prepared for loading of tracer.

The experimental containers for diffusion experiments in Topopah rock beakers have been modified to eliminate volatile exchange of tracer around the rock beaker.

Retardation Sensitivity Analysis

In the process of collecting and compiling the necessary data for the transport simulations at Los Alamos, work began on the task of a conceptual geochemical model of Yucca Mountain.

Los Alamos staff members developed a schedule to support SNL in benchmark calculations or code verification and to determine what other efforts would have to be postponed in order to accomplish this task.

Improvements in the WAFE code have been made at Los Alamos. A copy of the improved WAFE code was sent to LLNL for their use in waste package and near-field studies.

Analysis at Los Alamos of petrographic modal data for polished thin sections from five cored holes at Yucca Mountain will consider the homogeneity of the several cooling zones within the Topopah Spring Member of the Paintbrush Tuff and the accuracy of classification of a sample based on the petrographic modal data.

An SAS data base incorporates x-ray diffraction data from 10 wells in the vicinity of Yucca Mountain. The primary question to be investigated using these data concerns the homogeneity with respect to mineralogy of the functional thermal-mechanical units defined by SNL on the basis of drill-log information. Initial work will reclassify borderline observations and look for obvious outliers.

An SAS data base was also constructed for water chemistry data. Some preliminary examination of water chemistry data from wells in the vicinity of Yucca Mountain was undertaken.

Los Alamos personnel will use modal counting data to distinguish zones within the Topopah Spring Member of the Paintbrush Tuff.

Mineralogy and Petrology

The Los Alamos report "Mineralogic Summary of Yucca Mountain, Nevada" (LA-10543-MS) was published and distributed. This report is a compilation of quantitative x-ray diffraction data collected through the end of FY 85.

A collection of data from USW G-1, UE-25a#1, and Well J-13 drill cores was completed at Los Alamos; these data will be compiled in Milestone M332 during March. The complete data set is now available to the Analysis and Assessment Division at Los Alamos for the preparation of Milestone M331, a statistical evaluation of the mineralogy corresponding to the finest level of stratigraphic subdivision now available in the Tuff Data Base.

DRILLING

Drilling, Construction, Engineering

Fenix & Scisson, Inc. (F&S), received a change order incorporating an increase in task scope with the addition of the Size of Workings Study and additional personnel for the Project staff.

ENVIRONMENT

Environmental Surveys

The meteorological monitoring stations are operating and there are no significant problems to report. A Readiness Review will be held on April 7, 1986.

SAIC will provide regional meteorological data to an infiltration study being prepared by the USGS.

Transportation

Members of the SAIC Transportation Branch mapped truck shipments as a function of time for the various routes to Yucca Mountain. Rail route maps are under development.

Representatives from SAIC, DOE/NV, and Nellis AFB attended a briefing on February 6 and a follow-up meeting on February 25 to discuss the impact of the reference rail spur and repository surface facilities on activities of the U.S. Air Force (USAF). As a result of these meetings, the USAF has agreed to provide information on their activities and safety history. Preliminary indications are that the types of activities that are conducted over the areas of interest to the NNWSI Project include takeoffs, landings, touch-and-go, acrobatics, and cruising to the practice ranges; activities that have very good safety records compared to practice combat.

SAIC personnel submitted to WMPO documentation of analysis scenarios (Milestone E414) for the USAF overflights.

Staff members from SAIC conducted a visual survey of the reference rail route along U.S. Highway 95 and the site of the repository surface facilities. Results indicate that there are potential conflicts in the area of Indian Springs due to the proximity of existing USAF facilities to the highway. Passing to the south of Indian Springs may be a possibility.

Data needs were developed at SAIC for Key Issue 3 related to transportation. The scope of data needs covers the period beginning with site characterization through operations.

Documentation of the procedure for and status of fuel shipments by the Office of Civilian Radioactive Waste Management (OCRWM) from E-MAD to Idaho National Engineering Laboratory was completed and sent to WMPO. No problems were identified.

SOCIOECONOMICS

Work continued on the Socioeconomics Monitoring and Mitigation Plan. SAIC socioeconomics staff members attended a monitoring and mitigation planning session with State and local planners on February 21.

SAIC expects the draft Tourism Report will be published in April 1986. This is an Environmental Assessment reference.

PLANNED WORK

Plans are being made to obtain uranium and thorium data to determine the variability of these elements at Yucca Mountain and to calculate what the uranium and thorium concentrations theoretically should be in the groundwater. All data found for uranium and thorium will be added to a data base and will be part of the preliminary report due in July.

Los Alamos staff members will sample cores in March to obtain detailed compositional and structural data on clays in drill cores.

Batch measurements of plutonium prepared in specific oxidation states will be made at Los Alamos when the stock solutions have been prepared. The stock solution will be regularly monitored during the course of the sorption experiments (1 day to 3 weeks) to watch for changes in the plutonium oxidation state distribution.

The studies of the effects of variations in groundwater composition on sorption will continue at Los Alamos with the addition of americium and neptunium, and eventually plutonium and uranium, as radionuclides of interest.

Los Alamos personnel will visually evaluate the sorted data base (from SOSI) for adequacy of results for isotherm calculations. Attempts will be made to calculate isotherms on combinations of data derived under different operational conditions in order to provide sufficient data points to describe an isotherm. Further attempts will be made to obtain additional sorption equilibrium and kinetic results.

For Milestone M325, Los Alamos personnel will obtain fault data, source term data, and finish gathering data on material properties and stratigraphic unit base elevations. The investigators will look at the effect of tilted stratigraphic layers as opposed to horizontal layers on transport, and finish incorporating the information into the preliminary geochemical model of Yucca Mountain.

PROBLEM AREAS

There continues to be an unresolved, and perhaps insurmountable, problem as the finite-difference code in use at USGS for flow simulations may not be sufficiently robust to simulate the hydrology of the Yucca Mountain site. A better-suited code such as LBL's TOUGH may solve the problem.

Los Alamos Milestone R325, "Alteration Products and Processes in the Lower Topopah Spring Member of the Paintbrush Tuff, Yucca Mountain and Vicinity, Nevada," took longer for technical review than anticipated and will be about 10 days late for submission to WMPO.

At Los Alamos concerns with the QA program for geologic drill holes may delay the drilling of the volcanism holes.

A potential QA problem is being addressed regarding a shipment of Well J-13 water from Los Alamos to Lawrence Berkeley Laboratory (LBL).

Attendance at and preparation for the Performance Allocation Workshops by Los Alamos personnel may negatively impact other programmatic demands.

Demands of other programs not associated with the NNWSI Project will become paramount at Los Alamos during the second half of March and the first half of April. Consequently, there may be some delays in NNWSI Project work during this period.

For Los Alamos Milestone M325, it has been found that the material property and R_d data are very incomplete with respect to the stratigraphic layers.

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 site-specific 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

MANAGEMENT AND INTEGRATION

Management

SAIC personnel distributed for comment a draft NNWSI Project Exploratory Shaft Facility Design Requirements document.

Representatives from SAIC attended a Material Steering Committee meeting in Germantown on February 12 and the copper container planning meeting in Washington on February 13.

Engineering Design Support: Special Studies

SNL and Los Alamos personnel held initial meetings to ensure that appropriate plans for the Exploratory Shaft Facility are included in the Repository Design Plan.

SNL review and comment for Chapter 5.0, Conclusions, of the Alternative Monitored Retrievable Storage Repository Interface Summary Report have been completed and submitted to the WMPO and OCRWM. This completes the activities for Milestone R152.

DEVELOPMENT AND TESTING

Rock Mechanics

Rock Mass Analysis

At SNL considerable effort was devoted to rewriting Section 6.1.2, Reference Design Data Base, of the SCP, superseding other work planned for this WBS task.

Field Testing

Six multipoint borehole extensometers were located and grouted into a planar measurement station in the Demonstation Drift in the G-Tunnel Underground Facility.

Water-Migration Analysis

At SNL a new lead investigator will take over the imbibition phase of the gamma beam experimental series. A delay will occur while the new investigator becomes familiar with the experimental series.

Equipment and Instrumentation Development

The horizonal-emplacement development plan was revised to be consistent with the new shorter emplacement hole depths. This plan (SNL Milestone N406) presents arguments for a common development effort for the equipment required for horizontal emplacement that will be applicable to all candidate geologies.

Sealing

Seal Performance Requirements

Work at SNL on Milestone P404, Design Requirements and Materials Recommendation for the NNWSI Project Repository Sealing Activity, focused on developing a technical approach to establish the design requirements. This approach will be consistent with the performance-allocation effort that is part of the SCP activities.

Seal Materials Evaluation

SNL staff members initiated testing associated with determining the hydraulic conductivity and consolidation behavior of crushed tuff.

A literature review by Los Alamos personnel addressed questions arising from the persistence of tobermorite at temperatures above the generally accepted stability limits for tobermorite. Due to uncertainties not resolved by the literature review, data experiments are being designed to identify the limit and manner of aluminum substitution into tobermorite.

Seal Concepts Development

To support SNL Milestone P404, several design calculations were performed. These design calculations included an estimate of a realistic amount of water that could enter the shaft at each shaft location. Other calculations that were performed earlier in the sealing program give an indication of the amounts of water that may occur for events having different probabilities. Additionally, design charts are being prepared for a plug placed below the top of the bedrock and for a shaft station seal.

FACILITIES

Surface Facilities

The existing contract with BNI for performing conceptual design of surface facilities was reinitiated by SNL. Under this contract, BNI personnel are performing some special studies, including preclosure safety analysis under accident conditions (to determine a preliminary Q-list). BNI staff members are also completing the block and flow diagrams for the various operations in the surface facilities. A detailed, revised workscope is being developed for the work to be performed during the next 18 months under this contract. A number of special studies will resolve some of the important design issues and incorporate the results of these special studies into the Repository Conceptual Design/Surface Configuration (RCD/SC) design in order to produce a reference configuration for License Application Design. The new workscope is expected to be ready by mid-March, 1986.

Shafts/Ramps

SNL staff members have defined the interface between the exploratory shaft facility and the repository. A letter detailing the interface was sent to the major Project participants. The interface drawing has been peer-reviewed and entered into the repository drawing data base of the Interactive Graphics Information System.

Underground Excavations

The new drawings of the exploratory shaft facility also show the emplacement patterns based on the commingling of spent fuel and defense high-level waste. Numerous alternatives were examined to determine emplacement configurations that provide for the commingling of waste and also do not exceed the temperature constraints placed on the waste package and the host rock.

Underground Service Systems

Staff members at SNL are designing the ventilation system for the new repository layout with the exploratory shaft testing facility located at the repository horizon (1,020 ft).

OPERATIONS AND MAINTENANCE

A revised draft of the fuel-consolidation report for the NNWSI Project is being reviewed at Bechtel National, Inc., and Parsons, Brinkerhoff, Quade, and Douglas. The final draft should be available for editorial and peer review at SNL by mid-March 1986.

Staff from R. F. Weston, Inc., report that the OGR fuel-consolidation study has been approved by DOE, and that authorization to begin work has been sent to the three repository project offices. There are two principal differences between the NNWSI Project and OGR studies: (1) the OGR study adds a third case in which there is an MRS facility in the spent fuel disposal system; and (2) the OGR study requires total lifetime repository costs, whereas the NNWSI Project study considered only relative costs for disposal scenarios with and without

consolidation at the repository. An (unofficial) annotated outline for the OGR report raises a number of questions regarding the technical and cost bases to be used in the study; these were discussed at the Advanced Conceptual Design planning meeting in Washington, DC, during the week of February 24, 1986.

REPOSITORY PERFORMANCE ASSESSMENT

Repository Performance Code Development and Certification

Work began at SNL on a verification and validation plan for thermal and mechanical codes in order to meet criteria in the NNWSI Project draft SOP-03-02. A draft of this plan should be available by the end of April 1986.

The conference paper entitled "A Two-Dimensional Continuum Model for Jointed Media with Orthogonal Sets of Joints" prepared at SNL has been peer-reviewed for submission to the 27th U.S. Rock Mechanics Symposium to be held at the University of Alabama in June 1986. The paper provides documentation for the new version of the JAC compliant joint material model with its new capabilities of an orthogonal joint set and hardening behavior in the joint shear portion of the model.

Design Analysis

Personnel at SNL have completed initial studies to plan performance comparison of horizontal and vertical emplacement modes. These included radiation, borehole liner stress, and two geometrical water-travel-time calculations.

Calculations of vertical borehole stress states at SNL used results of the finite-element reference drift calculations. Horizontal borehole stress states were also analyzed using data and codes consistent with the reference drift calculations.

The initial draft of the RCD/SC section entitled "Stability of Underground Openings" was completed at SNL along with appendix materials to support it. Results of over 25 calculations were discussed.

Preclosure Safety Analysis

At SNL staff members began preliminary screening of initiating events. Radiological consequence analyses were initiated for source terms based on 10-year-old pressurized-water-reactor fuel with an average burnup of 33,000 megawatt days/metric ton heavy metal.

PLANNED WORK

SNL personnel will finalize and publish the Subsystem Design Requirements document and develop and implement change-control procedures to approve changes to that document and other baselined documents.

The demonstration drift will be extended 6 meters, and rock-mass relaxation measurements will be taken.

In work planned for March through May 1986, SNL staff members will complete the draft reports on properties of the Topopah Spring Member. The report subjects include thermal properties of lithophysae-rich material, property summary, sample-size effects, and mechanical properties from USW G-2 samples.

At SNL instrumentation has been obtained to measure water saturations as a function of pressure head using the method of thermocouple psychrometry. Tests are being set up to obtain these data on water-retention characteristics at both ambient and nonambient temperatures.

The SNL report "Modification of Hydraulic Conductivities Surrounding a Vertical Excavation in Tuff" (Milestone R037) will be revised during March and resubmitted for peer and management reviews.

Sensitivity studies at SNL of the effect of parameter uncertainty on underground excavation stability will be expanded to include broader coverage and multivariate effects.

In March SNL staff members will develop event trees based on the set of screened internal and external initiating events and will begin quantification of event-tree scenarios for frequency and consequences. They will also meet with SAIC personnel on March 7 to coordinate preclosure safety analysis with the Regulatory Compliance Plan and the Environmental Monitoring Plan.

PROBLEM AREAS

Progress on SNL Milestone N463 and SNL design analysis milestones is delayed because of commitments to other Project work such as the SCP and RCD/SC.

Impact of the Issues Resolution Strategy (IRS) on the RCD/SC has not been defined at this time. The impact may delay additional work as current guidance and structure are likely to change when the IRS is incorporated into the RCD/SC.

Because of the change in the direction of the Advanced Conceptual Design and the time needed to develop and place a revised contract with a new workscope, progress on SNL milestones N428, P408, and P409 may be delayed.

At SNL, adjustment of NNWSI Project priorities and establishment of new milestones continue to impact the completion of the sealing-related milestones, especially Milestone P404.

Involvement of SNL personnel with the SCP and Issue Resolution Strategy activities has delayed activities for the water migration analysis task.

The due date for Milestone N434, the first draft of the Repository Design Plan, will not be met. Completion of the draft is dependent upon the development and provision of information for the waste package and Exploratory Shaft Facility by Los Alamos and LLNL, respectively. This information has not yet been received.

MILESTONE PROGRESS

SNL Milestone 86A, SCP Design Review and Design Issue Resolution Strategy, was completed on February 13, 1986.

SNL Milestone N433, the report entitled "Initial Draft Subsystem Design Requirements to Support the Advanced Conceptual Design Studies for the Yucca Mountain Mined Geologic Disposal System (SDR)," was submitted to WMPO for review. The SDR provides a single-point focus to control the basic criteria and design requirements for the SNL design activities.

Because Sections 2.7, 4.6, 5.4, 6.5, and all of Chapters 7 and 8 of the RCD/SC text are not yet unavailable, Milestone N432 may be delayed.

The SNL report entitled "Liquid Permeability Measurements on Densely Welded Tuff Over the Temperature Range 25°C to 90°C" (SAND85-2482) (Milestone R061) has been sent to WMPO for approval.

SNL Milestone M491, a summary report on thermomechanical analysis as an SCP reference, is delayed.

1.2.5 REGULATORY AND INSTITUTIONAL INVESTIGATIONS

OBJECTIVE

The objective of the Regulatory/Institutional 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 repository facilities 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

LICENSING

Regulatory Interactions

SAIC Project management personnel met with representatives of the Nuclear Regulatory Commission (NRC) on February 19-21. The meeting included discussions about the issues hierarchy, seismic/tectonic studies, performance allocation, hydrology/geochemistry, and the exploratory shaft and testing. Tentative plans for technical meetings on these topics were discussed. In addition, open items and responses from previous meetings on the exploratory shaft and the waste package were reviewed and QA was discussed.

Licensing Branch staff members from SAIC participated in technical reviews of SCP Chapters 5.2 and 3.0 for the purpose of assuring that the NRC requirements of Regulatory Guide 4.17 are addressed in an appropriate manner.

SNL and Los Alamos have been requested to report status and plans for a response to NRC concerns about the exploratory shaft design and construction technical meeting.

NNWSI Project representatives attended several meetings in Washington during February. The meetings included a presentation to the Commission on February 27 covering general program status; a status presentation to the full Advisory Committee on Reactor Safeguards (ACRS) on February 14; an ACRS discussion of proposed 10 CFR 20 revisions on February 13; and a DOE/NRC Licensing Support System Interagency Coordinating Committee meeting on February 20.

NNWSI Project representatives attended the OCRWM Information Resources Management meeting in Washington on February 19 and 20. Major topics of discussion included the Management Information System (MIS) Integration Study, the OCRWM Infolink System, the Office Automation Steering Committee Charter and the OCRWM Automated Data Processing (ADP)/MIS Standard Operating Procedures. The next OCRWM Information Resources management meeting will be held in Las Vegas on March 19 and 20, 1986.

The SNL Data Records Management System (DRMS) Procedures (Rev. A) for building, maintaining, and closing data-set notebooks have been approved.

Entry of data stored in computer files for the DRMS is being held in abeyance while criteria are developed to improve archival methods and documentation for access of records. Problems encountered with existing data involve an inability to access program and data files (due to lack of complete documentation and/or compatible hardware and software) that may render the data inaccessible in the future. Solutions currently under investigation by SNL include transfer of data to nine-track tape in ASCII format. Recommendations that will affect how statements of work (test plans or LOC) address acquisition of magnetically stored data will be made when the problem is resolved.

In a continuing effort to document information pertaining to tasks supporting the NNWSI Project, meteorological data acquired at the Yucca Mountain alluvial site between October 1982 and June 1983 and the Ridge site data from January to June 1983 have been provided to the DRMS.

Site Characterization Plan

SNL personnel have developed an Issue Resolution Strategy (IRS) including performance allocation that will be used by the NNWSI Project for resolving all Project design and performance issues from the Issues Hierarchy. According to agreement between the DOE and the NRC, this methodology will be used for the 19 design and performance issues addressed by the SCP to guide the site-characterization testing program.

A Performance Allocation workshop held at SAIC February 20 and 21 involved representatives from each of the participating organizations, including the Principal Investigators, and two observers from the Salt Repository Project Office. The main purposes of the meeting were to present the current status of the implementation of Performance Allocation; to explain how Performance Allocation will be incorporated into the SCP; to explain the relationship between Performance Allocation and the Issues Hierarchy; and to exchange information regarding parameter needs among the participants. SNL representatives presented an overall description of the IRS and five example applications. These examples demonstrated that this methodology can be used to establish (allocate) performance goals for subsystems and components of the repository system. The performance goals lead to the identification of site parameters for which data are required and the accuracy and confidence with which the data must be acquired. Essentially, they form the basis for the testing program.

The SCP Chapter 3 minireview that was scheduled for February 27 has been postponed and will be held at SAIC on March 6, 1986.

Hard copies of SCP Chapter 4 references are being accumulated at Los Alamos. This task is 75 percent complete.

USGS personnel continued revision and rewriting of Chapter 1 (Geology), Chapter 2 (Hydrology), and Section 5.2 (Paleoclimatology) of the SCP throughout February. Draft SCP investigations outlines for Section 8.3.1 were completed during February. USGS geologic, hydrologic, and climatologic study and work activity plans for characterizing the Yucca Mountain site were completed to a level of detail that allowed USGS internal review.

ENVIRONMENTAL COMPLIANCE

Environmental Assessment

The final EA is still scheduled to be released to the public on April 21, 1986. The Candidate Site Recommendation Report is also scheduled for release on the same date. In February, SAIC staff members prepared an estimate of time and manpower necessary to revise the EA. The revisions occur primarily as a result of changes in the exploratory shaft (ES) test facilities level. The estimate was transmitted to WMPO. Additionally, the EA is being reviewed for any necessary corrections (technical content and style) and the reference verification process continues.

During February 1986, staff from SNL, DOE/HQ, Los Alamos Technical Associates (LATA), and SAIC worked together to establish the number of individuals that will be working in an environment requiring exposure to radioactive materials at the proposed Yucca Mountain Mined Geologic Disposal System (MGDS). This number will be published in the final EA.

Environmental Regulatory Interactions

Review sessions were held on February 3 and February 20 with WMPO, REECo, H&N, and SAIC personnel to revise the draft Environmental Permit Plan and to include all construction permits and agreements that might be required.

SAIC staff members attended the environmental monitoring and mitigation task force meeting held in Las Vegas on February 25-27 with DOE/HQ and Argonne National Laboratory.

COMMUNICATION AND LIAISON

Institutional Studies

Institutional staff members from SAIC attended a meeting of the DOE/HQ Institutional-Socioeconomic Coordinating Group (ISCG) February 3-5 in Dallas.

SAIC personnel began a major effort to draft a preliminary NNWSI Project Facility-Specific Outreach and Public Participation Plan. The plan is outlined in the OCRWM Mission Plan. The initial draft will be discussed with the State of Nevada and widely circulated for review and comment. WMPO will seek formal approval for development of two information products through DOE/HQ.

Bureau of Reclamation and SAIC representatives met to discuss a proposal by the Bureau to build a new bridge and highway across the Colorado River that would bypass Hoover Dam. The bridge and highway would provide a safe alternate transportation route for spent fuel.

SAIC staff members researched and helped prepare for a meeting between the Nevada Local Government Advisory Group and DOE representatives on environmental and socioeconomic monitoring and mitigation plans for site characterization. The meeting was held February 21 in Las Vegas.

PLANNED WORK

SAIC and SNL representatives will meet to discuss the annotated outline for the Radiological Compliance Plan.

A series of Performance Allocation Workshops will continue for the next few months. The workshops are designed to establish the licensing strategy of the NNWSI Project by developing an Issue Resolution Strategy necessary for completing Chapter 8 of the SCP. The workshops are scheduled to be held at the facilities of each of the participating organizations to share travel and meeting preparation burdens among the participants.

The SCP Chapter 4, Geochemistry, and Section 8.6, Quality Assurance, are scheduled for OCRWM review March 6 and 7, 1986, in Washington.

SNL references for the EA will be distributed upon completion of the approval process.

The next Environmental Coordinating Group meeting to begin planning efforts for the Environmental Impact Statement is scheduled for May in Washington after the EA is released.

A series of 11 mini-workshops is scheduled for March and April 1986 (22 days total) for completing the IRS on all 19 issues of the NNWSI Project Issues Hierarchy. Based on results from the workshops, draft text for SCP Section 8.3 is scheduled for delivery to the Project by late May 1986.

MILESTONE PROGRESS

SNL Milestone R038, the quarterly update of the SNL data catalog, was completed in January.

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.

ACTIVITIES

MANAGEMENT AND INTEGRATION

Exploratory Shaft Management, Planning, and Design Review

At Los Alamos, development is nearly complete for the new underground test area layout and the long lateral drifts, all at the 1,020-foot level. The layout was coordinated with the repository layout currently planned for that depth. The layout will be an interface control drawing, which shows the baselined parameters.

The quality levels of the items and activities associated with ESF design, construction, and operations were revised to reflect changes suggested by WMPO. The listing of quality levels was then transmitted to WMPO for review and approval. Additional changes requested by WMPO are not considered to be significant; most result from a last-minute modification to NNWSI-SOP-02-02, the procedure for assigning quality levels.

The ES Test Plan Committee met February 6 in Las Vegas to discuss (1) the assignment of quality levels for ESF test items and activities, (2) the needs of the upcoming WPAS, (3) the Project Work Plans for ESF Testing and Prototype Testing, and (4) the need for criteria letters for each of the ESF tests.

On February 13, F&S submitted to SAIC the engineering schedule, which reflects the F&S workload.

F&S participated in the drilling of seven 5-1/2-inch neutron access holes and two 6-inch neutron access calibration holes.

TESTING

Exploratory Shaft Test Plan

SNL staff members attended the Exploratory Shaft Test Plan committee meeting in Las Vegas on February 6, 1986.

The January 1986 edited version of the Exploratory Shaft Test Plan (ESTP) Revision 1 was completed, printed, and sent to those who received Revision 1 last August. It will replace the August 1985 version of the ESTP Revision 1.

USGS staff made preparations to begin the prototype shaft-wall mapping in three recently completed test pits at the east side and southwest end of Fran Ridge near Yucca Mountain.

Meetings of USGS and Bureau of Reclamation personnel resulted in agreement to modify the existing prototype strike rail goniometer in order to permit dip readings of structural elements as well as strikes. When these alterations produce satisfactory results, the Bureau of Reclamation will fabricate five Model II goniometers for use in the actual shaft mapping. Prototype mapping on the surface and at G-Tunnel will use the prototype goniometers.

Exploratory Shaft Testing

At SNL work will begin on the upper demonstration-breakout-room analysis. During March 1986, analysis of the convergence of the lower breakout room will be initiated.

Integrated Data System

Preparation of a draft document to provide complete and current requirements for the IDS is in progress at Los Alamos.

PLANNED WORK

SNL staff will respond to requests from Los Alamos for information or submissions needed to continue Exploratory Shaft Test Plan functions.

Los Alamos personnel will continue priority production of the IDS requirements document, while planning continuation of IDS activities in response to internal redirection.

Many ESTP activities at Los Alamos may be deferred in March because of SCP work. Activities that must go forward include preparation of WPAS input, QA levels assignments, and preparation of criteria letters for design and support of each test proposed for the ESF. A thorough and formal technical (peer) review of the ESTP is tentatively planned to begin in March if the necessary approvals are given by the DOE and participant organizations.

PROBLEM AREAS

The conflicts at Los Alamos between SCP, ESTP, and ESF design activities are becoming formidable--especially for the next 2 months. Given the stated Project priorities, the ESTP schedule is likely to suffer significant delays.

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

TESTING

E-MAD

At the E-MAD facility, Westinghouse personnel performed annual maintenance for shield doors and the south wall-mounted handling systems. Maintenance on the north wall-mounted handling system is in progress. The annual load test of facility slings and shackles was completed.

Westinghouse staff members completed the Preliminary Equipment Maintenance Schedule for FY 1986 and transmitted it to DOE/NV.

All of the 17 fuel assemblies at E-MAD are now being stored in the Hot Bay Lag Storage Pit. With exhaust fans off, the highest Lag Storage Pit exhaust temperature was 27.2 °C. All canisterized fuel assemblies located in the Lag Storage Pit are in a safe configuration. The maximum recorded canister temperatures are well below the canister design limits.

Westinghouse and EG&G/Idaho personnel discussed transfer of the 17 fuel assemblies from E-MAD to Idaho. They also discussed the possibility of shipping an empty TN-8L shipping cask to E-MAD for training and dry runs. Training and dry runs will take place in March. A representative of Transnuclear will visit E-MAD on March 3 to discuss TN-8L cask handling requirements.

At Westinghouse, validated records are being indexed in accordance with instructions from the Effective Solutions, Inc., consultant for establishing the NNWSI Records Management System. Transfer of the packaged records will not begin until the E-MAD Records Disposition and Storage Plan is approved by WMPO.

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.

PLANNED WORK

To be included in future NNWSI Project Monthly Reports.

PROBLEM AREAS

None.

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

MANAGEMENT AND INTEGRATION

Management

The NNWSI Project Administrative Procedures Manual (APM) was updated and sent to WMPO for review and approval. Only minor changes were necessary to update six of the procedures. Procedures AP 3-1, 3-2, and 3-3 are undergoing extensive revision and will be submitted for WMPO review in April 1986.

On February 21, a task force met at WMPO to discuss revision of the Exploratory Shaft (ES) Project Management Plan. FY 88 Long-Range Plan input for the WMPO information technology Automated Data Processing (ADP) was delivered to WMPO on February 7.

The SAIC library staff is working with the computer programmers to create a computer system that will replace the card catalog. The system will improve access to documents on the library shelves. The system is expected to be in place by the end of April 1986.

The SAIC contract with DOE/NV has been modified to extend the period of performance to May 2, 1986.

Staff members of SAIC Computer Support Services conducted the first course in a series of training classes for new users. There were approximately 25 attendees with 3 representatives from DOE.

In accordance with NNWSI Project guidance, a new task entitled Records Management, WBS 1.2.9.1.4, was created for SNL to accommodate the Records Management System (RMS).

Records Management

Installation of the NNWSI Project QA Records Management System was completed at LLNL in February. Presently the QA Records Management System is installed at USGS/Denver, SAIC/Las Vegas (includes QASC and T&MSS QA records), LLNL, and SNL. The tentative schedule for the remainder of the installation of the system is as follows:

Los Alamos National Laboratory	- April 1, 1986
Holmes & Narver, Incorporated	- May 19, 1986
Reynolds Electrical and Engineering Co.	- June 23, 1986
Fenix & Scisson, Incorporated	- July 21, 1986.

PROJECT CONTROL

The SAIC Planning and Scheduling Branch issued the schedule network status booklet to all of the Project participants.

SNL and SAIC personnel have developed a preliminary network for WBS 1.2.7 (Testing). The Quality Assurance network section of WBS 1.2.9 is being expanded to include the efforts of all participants and should be available in mid-March 1986. A network for WBS 1.2.8 (Land Acquisition) is being developed and should be available during April 1986.

QUALITY ASSURANCE

A surveillance of SCP preparation occurred on February 26 at SAIC in Las Vegas. The surveillance, SR-86-04 resulted in five observations and three recommendations for consideration.

SAIC SR-86-03 identifying eight observations and one recommendation for consideration was delivered to the EA manager for use in evaluation of EAMP activities.

A QA training application status report has been prepared to track all NNWSI Project personnel QA level assignments, responsibilities, orientation and/or indoctrination dates, any technical training accomplished, the date of their last proficiency review (for Quality Level 1 work activities), and home office location. The report will be distributed quarterly to subtask managers for updating.

Due to a change in the FY 86 Audit Schedule, the F&S audit is now scheduled for the week of June 16, 1986, and that for Los Alamos, the week of July 14, 1986.

The audit of LLNL was conducted as scheduled on February 3-7. Of the 15 FY 85 audits conducted, 11 remain open. Eight surveillances were conducted during the month of February. The surveillances were concentrated in the following seven areas: neutron access hole drilling in Nevada Test Site (NTS) Area 25; instrumentation and mining at G-Tunnel in NTS Area 12; USGS core library in Mercury; Lawrence Livermore National Lab in Livermore, California; U.S. Geological Survey in Denver, Colorado; Sandia National Lab in Albuquerque, New Mexico; and Los Alamos National Lab in Los Alamos, New Mexico.

A total of 20 items and activities were monitored, and 5 nonconformances and 1 observation were reported. The nonconformances related to activities being performed without approved Quality Assurance levels and core samples not being controlled properly at NTS. The subjects of these NCRs are being reviewed by WMPO to determine possible consequences due to the serious implications of the infractions. The nonconformances and observations have been discussed with the individuals responsible within the affected organizations.

To date 25 surveillances have been conducted in FY 86 and 122 items or activities have been monitored. During this effort 16 NCRs and 11 observations were recorded.

The second draft of NNWSI-SOP-17-01, the records management plan, was distributed in February to NNWSI Project participant organizations. These comments will be discussed at the QA Records Management Committee meeting on March 5, 1986.

NNWSI-SOP-03-03, Acceptance of Data or Data Interpretation Not Developed Under the QA Plan, was approved by DOE and was distributed to all Project participants.

The final QA Software Procedure for Engineering and Scientific Software was approved and issued by controlled distribution on February 7.

A committee of representatives from SNL, SAIC, Los Alamos, LLNL, and USGS will develop QA auxiliary software requirements for the NNWSI Project. Preparations for the first meeting in April are in progress.

A draft annotated outline of a procedure for core sample control and storage was sent to WMPO for review and comment on February 21.

Two USGS QA procedures have been finally approved. The first deals with chemical correlations by tephrachronology and the second is the procedure for describing soils in the field.

An approval letter was issued by WMPO for the remaining F&S QA procedures submitted for approval. The letter provides contingent approval of the procedures pending incorporation of WMPO comments. H&N submitted a QA Program Plan for formal review and approval.

On February 25 staff members participated in a surveillance of core sample control activities at the NTS Core Library. The surveillance concentrated on the handling, storage, and identification of NNWSI Project core from the drill site to the library and processing in the library. Surveillance reports (SRs) and Nonconformance Reports (NCRs) are being generated to document the results of the surveillance. Also, as a result of the surveillance, suspension of any future coring or sampling operations was recommended until adequate procedures are in place and implemented, and an investigation is conducted of samples being tested to assure their traceability to specified drill holes.

A second revision of quality level assignments for ESF activities will incorporate the new assignment guidance of NNWSI-SOP-02-02.

At Los Alamos a surveillance of the Nonconformance Report (NCR) function determined that the NCR procedure should include provision for faster resolution and closure of NCRs.

Eight detailed technical procedures were approved for issue at Los Alamos. These procedures involve instructions for various preparation activities for mineralogical and petrological investigations at ESS-1.

Detailed technical procedures were drafted for four geochemical activities: (1) NTS water sample collection, (2) handling of core samples, and (3) experiments involving saturated cell diffusion and fracture flow.

Los Alamos administrative QA procedures were submitted to WMPO for review and approval. The procedures include document control, research and development activities, surveillances (Milestone R236), and audits (Milestone R237).

PLANNED WORK

SNL staff members will prepare a Quality Assurance Program Plan (Milestone R088) based on the requirements of NVO 196-17 and NNWSI-SOP-02-02, during March 1986. Also during March 1986, a QA audit of the U.S. Army Corps of Engineers Waterways Experiment Station will be conducted.

PROBLEM AREAS

At Los Alamos, audit report 85-11 has not been closed; NCR-0401, submitted to WMPO for review and approval, has not been closed; and QA assignment sheets submitted to WMPO have not been approved.

February 1986

NEVADA NUCLEAR WASTE STORAGE INVESTIGATIONS
LEVEL 1 MILESTONES IN A TIME WINDOW OF 30 Sep 1985 TO 01 Oct 1986
Run Date: 26 March 1986

MILESTONE DESCRIPTION	WBS NO.	WMPO RESP	LEVEL	RESP ORG	MILESTONE	BASELINED	HQ PLANNED HQ ACTUAL
Annual PASS Program Interaction - (Letter Report)	1.2.1.1.S	Blanchard	1	SNL	M277	B	30 Sep 85 01 Oct 85
Annual PASS Program Interaction - (Letter Report)	1.2.1.1.S	Blanchard	1	SNL	M870	B	30 Sep 86
Yucca Mountain Mined Geologic Disposal System (MGDS) Requirements	1.2.1.2.1.S	Skousen	1	SNL	M120	B	30 Nov 85
Updated System Requirements Document	1.2.1.2.1.S	Skousen	1	SNL	M158	B	30 Sep 86
Draft Yucca Mountain Site-Specific Mined Geologic Disposal System (MGDS) Description	1.2.1.2.1.S	Skousen	1	SNL	M261	B	30 Sep 86
System Engineering Management Plan (SEMP)	1.2.1.2.4.S	Skousen	1	SNL	M108	B	02 May 86
Generic Requirements (GR) Appendix E - Review and Comment	1.2.1.2.4.T	Skousen	1	SAIC	R253	B	11 Mar 86
Development of OGR Program Guidance Approach for Implementing Performance Allocation for the Site Characterization Plan (SCP) Provided	1.2.1.4.4.S	Rotert	1	SNL	R160	B	24 Jan 86
Technical Rationale for the NNWSI Project Waste Package Program with Respect to 10CFR60.113 Performance Objectives Submitted to WMPO/NV	1.2.2.1.L	Valentine	1	LLNL	R003	B	15 May 86
Draft Waste Acceptance Preliminary Specifications (WAPS) for the Defense Waste Processing Facility and the West Valley Demonstration	1.2.2.1.L	Skousen	1	LLNL	R217	B	03 Feb 86

NEVADA NUCLEAR WASTE STORAGE INVESTIGATIONS
LEVEL 1 MILESTONES IN A TIME WINDOW OF 30 Sep 1985 TO 01 Oct 1986
Run Date: 26 March 1986

MILESTONE DESCRIPTION	WBS NO.	WMPO RESP	LEVEL	RESP ORG	MILESTONE	BASELINED	HQ PLANNED HQ ACTUAL
Project-Review and Comment							
Draft Report on Spent Fuel Rod Consolidation	1.2.2.1.S	Skousen	1	SNL	R266	B	01 May 86
Final Report on Spent Fuel Rod Consolidation	1.2.2.1.S	Skousen	1	SNL	R267	B	22 May 86
Agenda for Waste Package Coordination Group Meeting, March 6-7, Tucson, Arizona	1.2.2.1.X	Skousen	1	WMPO	R226	B	31 Jan 86
Attend Meeting at DOE/HQ to Discuss 1986 Copper Plans	1.2.2.1.X	Skousen	1	WMPO	R258	B	12 Feb 86
Attend Waste Package Coordination Group Meeting in Tucson, Arizona on March 6-7, 1986	1.2.2.1.X	Skousen	1	WMPO	R264	B	07 Mar 86
Submit Input for Task 2 on Common Canister Evaluation to DOE/HQ	1.2.2.2.L	Skousen	1	LLNL	R240	B	03 Mar 86
Spent Nuclear Fuel as a Waste Form for Geologic Disposal-Assessment and Recommendations on Data Modeling Needs—Review and Comment	1.2.2.3.1.L	Skousen	1	LLNL	R216	B	25 Feb 86
Input to DOE/HQ Report to Congress on Copper for Waste Packages	1.2.2.3.2.L	Valentine	1	LLNL	M222	B	01 Aug 85 24 Oct 85
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.L	Valentine	1	LLNL	M236	B	30 Apr 86

NEVADA NUCLEAR WASTE STORAGE INVESTIGATIONS
LEVEL 1 MILESTONES IN A TIME WINDOW OF 30 Sep 1985 TO 01 Oct 1986
Run Date: 26 March 1986

MILESTONE DESCRIPTION	WBS NO.	WMPO RESP	LEVEL	RESP ORG	MILESTONE	BASELINED	HQ PLANNED HQ ACTUAL
Final Report on Feasibility of Using Copper as a Waste Package Material	1.2.2.3.2.L	Valentine	1	LLNL	M247	B	30 Sep 86
Revised Draft Waste Package Subsystem Conceptual Design Requirements to DOE/HQ for Review	1.2.2.4.L	Valentine	1	LLNL	M013	B	30 May 86
Initiate Waste Package Advanced Conceptual Design	1.2.2.4.L	Valentine	1	LLNL	M233	B	31 Jan 86
Report on the System Model for Waste Package Performance Analysis	1.2.2.5.L	Valentine	1	LLNL	M276	B	30 Jun 86
Seismic/Tectonic Investigations Annotated Outline-Review and Provide Proposed Resolutions	1.2.3.1.T	Blanchard	1	SAIC	R221	B	31 Jan 86
Attend OGR Institutional/Socioeconomic Coordination Group meeting on April 8-10, 1986 in Las Vegas, Nevada	1.2.3.1.T	Dixon	1	SAIC	R254	B	10 Apr 86
Submit Number of Water Samples Needed by Project to be Processed during 1987, 1988, 1989, 1990, and 1991.	1.2.3.1.X	Blanchard	1	WMPO	R225	B	07 Feb 86
Materials Review Board (MRB) Report of the Review of the SRP, NNWSI, BWIP, and MCC, Corrosion Programs by the Ad Hoc Corrosion Panel - Review and Comment	1.2.3.2.X	Valentine	1	WMPO	R157	B	31 Jan 86
Report on Geochemistry Simulation of Yucca Mountain Using Best Available Data on Mineralogy, Water Chemistry, Flow Rates and Crack Statistics	1.2.3.4.1.7.A	Clanton	1	LANL	M325	B	27 Jul 86

NEVADA NUCLEAR WASTE STORAGE INVESTIGATIONS
LEVEL 1 MILESTONES IN A TIME WINDOW OF 30 Sep 1985 TO 01 Oct 1986
Run Date: 26 March 1986

MILESTONE DESCRIPTION	WBS NO.	WMPO RESP	LEVEL	RESP ORG	MILESTONE	BASELINED	HQ PLANNED HQ ACTUAL
Texas Bureau of Economic Geology (TBEG) Core Repository Literature Review and Comment	1.2.3.5.1.X	Blanchard	1	WMPO	P055	B	03 Jan 86 07 Jan 86
Implementation of Meteorological Monitoring Plan	1.2.3.6.1.T	Blanchard	1	SAIC	M364	B	01 Jun 85
Socioeconomics Committee Draft Reference Package for ISCG-Review and Comment	1.2.3.7.T	Dixon	1	SAIC	R218	B	22 Jan 86
Review of the Concepts Developed by HEDL for Remote/Automated Waste Handling Systems Initiated	1.2.4.1.1.S	Skousen	1	SNL	M802	B	30 Jul 86
Assistance to HEDL in Defining Remote/Automated Waste Handling Systems	1.2.4.1.1.S	Skousen	1	SNL	M806	B	31 Oct 85
Start Repository Advanced Conceptual Design	1.2.4.1.1.S	Skousen	1	SNL	N430	B	30 Jan 86
SCP Design Review and Design Issue Resolution Strategy	1.2.4.1.1.S	Skousen	1	SNL	R230	B	14 Feb 86
Initiation of FY 86 HEDL Tasks on Remote Handling/Robotics, with Change Noted	1.2.4.1.1.X	Skousen	1	WMPO	R206	B	01 Apr 86
Initial Subsystem Design Requirement (SDR)	1.2.4.1.2.S	Skousen	1	SNL	N433	B	31 Jan 86
Repository Conceptual Design in Support of Site Characterization	1.2.4.1.3.S	Skousen	1	SNL	N432	B	31 Mar 86

NEVADA NUCLEAR WASTE STORAGE INVESTIGATIONS
LEVEL 1 MILESTONES IN A TIME WINDOW OF 30 Sep 1985 TO 01 Oct 1986
Run Date: 26 March 1986

MILESTONE DESCRIPTION	WBS NO.	WMPO RESP	LEVEL	RESP ORG	MILESTONE	BASELINED	HQ PLANNED HQ ACTUAL
Alternative MRS/Repository ITF Summary Report Chapter 5 Conditions - Review and Comment	1.2.4.1.4.S	Skousen	1	SNL	R152	B	20 Dec 85
Report on G-Tunnel Underground Facility (GTUF) Summary	1.2.4.2.1.2.S	Skousen	1	SNL	M455	B	30 Sep 86
Feasibility Analysis of Horizontal Emplacement and Retrieval - Letter Report	1.2.4.2.2.1.S	Skousen	1	SNL	M295	B	31 Oct 85
Horizontal Waste Emplacement Equipment Development Plan	1.2.4.2.2.1.S	Skousen	1	SNL	N406	B	30 Apr 86
Prepare Design Requirements and Materials Recommendation Report	1.2.4.2.3.1.S	Skousen	1	SNL	P404	B	30 Jul 86
Preliminary Study of the Effects of Uncertain Geologic Data on Design of the Underground Facility	1.2.4.6.2.S	Skousen	1	SNL	N457	B	30 Aug 86
Preliminary Repository Safety Assessment Report-Review and Comment	1.2.4.6.2.X	Skousen	1	WMPO	R215	B	17 Feb 86
Licensing Coordinating Group Meeting in Washington, D.C. on January 29, 1986	1.2.5.1.X	Blanchard	1	WMPO	R242	B	29 Jan 86
Attend the Environmental Compliance Planning Meeting on February 26-27, 1986 in Las Vegas, Nevada	1.2.5.1.X	Blanchard	1	WMPO	R255	B	27 Feb 86
NRC Proposed Changes to 10CFR20 as Printed in the Federal Register-Review and Comment	1.2.5.2.1.T	Blanchard	1	SAIC	R251	B	07 Mar 86

NEVADA NUCLEAR WASTE STORAGE INVESTIGATIONS
LEVEL 1 MILESTONES IN A TIME WINDOW OF 30 Sep 1985 TO 01 Oct 1986
Run Date: 26 March 1986

MILESTONE DESCRIPTION	WBS NO.	WMPO RESP	LEVEL	RESP ORG	MILESTONE	BASELINED	HQ PLANNED HQ ACTUAL
Provide comments on NRC Generic Technical Positions (GTPs) B.1, B.2, and B.3	1.2.5.2.1.T	Blanchard	1	SAIC	R256	B	28 Feb 86
Draft Site Characterization Plan	1.2.5.2.2.T	Blanchard	1	SAIC	M521	B	06 Dec 85
Site Characterization Plan	1.2.5.2.2.T	Clanton	1	SAIC	M522	B	07 Mar 86
Proposed QA Level for Site Characterization Plan (SCP)- Review and Comment	1.2.5.2.2.T	Blaylock	1	SAIC	R250	B	17 Feb 86
Follow-up Meeting on Development of Revised Schedules for SCPs to be Held on January 8, 1986 in Denver, CO	1.2.5.2.2.X	Blanchard	1	WMPO	R155	B	08 Jan 86 14 Jan 86
Camera Ready Environmental Assessment/Comment Response Appendix (EA/CRA) to DOE/HQ	1.2.5.3.1.T	Blanchard	1	SAIC	M504	B	06 Dec 85 24 Jan 86
List of Libraries and Other Institutions to Receive Environmental Assessment References-Review and Confirm Accuracy	1.2.5.3.1.T	Blanchard	1	SAIC	R222	B	11 Feb 86
Revision Pages of Environmental Assessment Which Include DOE/HQ Review Comments	1.2.5.3.1.T	Blanchard	1	WMPO	R233	B	20 Feb 86
First Draft of Environmental Monitoring and Mitigation Plan-Annotated Table of Contents—Review and Comment	1.2.5.3.3.T	Blanchard	1	SAIC	R219	B	10 Feb 86

NEVADA NUCLEAR WASTE STORAGE INVESTIGATIONS
LEVEL 1 MILESTONES IN A TIME WINDOW OF 30 Sep 1985 TO 01 Oct 1986
Run Date: 26 March 1986

MILESTONE DESCRIPTION	WBS NO.	WMPO RESP	LEVEL	RESP ORG	MILESTONE	BASELINED	HQ PLANNED HQ ACTUAL
ISCG Meeting, February 4, 5, and 6 in Dallas, Texas	1.2.5.4.1.X	Dixon	1	WMPO	R159	B	06 Feb 86 28 Jan 86
ESF Shaft and Mining Subcontract Awarded	1.2.6.1.1.A	Irby	1	LANL	M022	B	21 Mar 86
Complete Exploratory Shaft Readiness Review	1.2.6.1.1.A	Irby	1	LANL	M243	B	24 Feb 86
Start First Shaft (ES-1) Construction	1.2.6.1.1.A	Irby	1	LANL	M652	B	28 Aug 86
Exploratory Shaft Facility (ESF) Subsystems Design Requirements Document	1.2.6.1.1.A	Skousen	1	LANL	R241	B	01 Apr 86
Draft Exploratory Shaft Facility (ESF) Cost Estimating Guidelines - Review and Comment	1.2.6.1.1.X	Irby	1	WMPO	P059	B	16 Dec 85 18 Dec 85
Start ESF Site Preparation	1.2.6.2.A	Irby	1	LANL	M645	B	20 Mar 86
Begin ESF Testing	1.2.6.9.2	Skousen	1	LANL	M612	B	28 Aug 86
Final Report on the SFT-C	1.2.7.2.1.L	Zavada	1	LLNL	M708	B	28 Feb 86
Completion of Mining for G-Tunnel Welded Tuff Mining Evaluations	1.2.7.2.3.S	Skousen	1	SNL	M279	B	30 May 86
Draft Project Management Plan	1.2.9.1.T	Dixon	1	SAIC	M907	B	29 Mar 85

NEVADA NUCLEAR WASTE STORAGE INVESTIGATIONS
LEVEL 1 MILESTONES IN A TIME WINDOW OF 30 Sep 1985 TO 01 Oct 1986
Run Date: 26 March 1986

MILESTONE DESCRIPTION	WBS NO.	WMPO RESP	LEVEL	RESP ORG	MILESTONE	BASELINED	HQ PLANNED HQ ACTUAL
OCRWM Draft Annual Report FY 85 to Congress - Review and Comment	1.2.9.1.X	Vieth	1	WMPO	R156	B	10 Jan 86 10 Jan 86
General Accounting Office (GAO) Draft Report - Review and Comment	1.2.9.1.X	Vieth	1	WMPO	R158	B	24 Dec 85 30 Dec 85
Submit FY 85 NNWSI Project Plan to DOE/HQ for Approval	1.2.9.1.1.T	Vieth	1	SAIC	M901	B	15 Mar 85 18 Oct 85
Information Services Directory - Review and Comment	1.2.9.1.1.T	Dixon	1	SAIC	P056	B	22 Jan 86 28 Jan 86
Agenda for Project Managers meeting in Washington, D.C. on January 30, 1986	1.2.9.1.1.T	Vieth	1	SAIC	P058	B	14 Jan 86 14 Jan 86
NNWSI Project Charter—Review and Enter Correct Date for Charter Being Superseded	1.2.9.1.1.X	Dixon	1	WMPO	R220	B	24 Feb 86
Project Managers Meeting Draft Minutes and Action Items-Review and Comment	1.2.9.1.1.X	Vieth	1	WMPO	R223	B	07 Feb 86
List of OCRWM Publications-Review and Comment	1.2.9.1.1.X	Dixon	1	WMPO	R252	B	18 Mar 86
WPAS (FY 1988) Submission to OGR	1.2.9.1.2.X	Dixon	1	WMPO	M719	B	21 Apr 86
Document entitled "Status of OCRWM Geological Disposal Technical Exchange Cooperation with Nations and International Agencies." - Review and Comment	1.2.9.1.2.X	Vieth	1	WMPO	P057	B	01 Mar 86

NEVADA NUCLEAR WASTE STORAGE INVESTIGATIONS
LEVEL 1 MILESTONES IN A TIME WINDOW OF 30 Sep 1985 TO 01 Oct 1986
Run Date: 26 March 1986

MILESTONE DESCRIPTION	WBS NO.	WMPO RESP	LEVEL	RESP ORG	MILESTONE	BASELINED	HQ PLANNED HQ ACTUAL
Agenda for Spent Fuel and High-Level Waste Transporation Coordination Meeting-Review and Comment	1.2.9.1.2.X	Dixon	1	WMPO	R228	B	31 Jan 86
Submit List of Available Equipment at E-MAD	1.2.9.1.2.X	Skousen	1	WMPO	R232	B	27 Feb 86
Attend Transportation Coordination Group Meeting on March 24-26, 1986	1.2.9.1.2.X	Dixon	1	WMPO	R260	B	26 Mar 86
Participate in Conference Call on Transportation Issues on February 20, 1986 at 2:30 P.M.	1.2.9.1.2.X	Vieth	1	WMPO	R261	B	20 Feb 86
Action Items from OGR/ISGC Meeting Held January 4-6, 1986-Review and Comment	1.2.9.1.3.X	Dixon	1	WMPO	R249	B	19 Feb 86
Attend Meeting to Discuss Information Resources Management at DOE/HQ	1.2.9.1.3.X	Dixon	1	WMPO	R259	B	20 Feb 86
Request for WMPO Definitions for Key Milestones of the 9/6/85 Guidance Letter	1.2.9.2.T	Dixon	1	SAIC	R161	B	09 Jan 86 16 Jan 86
Attend Meeting Regarding Long-Term Public Information and Educational Development	1.2.9.2.T	Dixon	1	SAIC	R263	B	12 Mar 86
Revision to FY 86 Program Operating Plan (POP)	1.2.9.2.X	Dixon	1	WMPO	R231	B	31 Jan 86
List of Personnel Participating in Quality Assurance Identified Audits and OGR Audit Schedule for FY 86 for HQ-OGR Participation in Project	1.2.9.3.T	Blaylock	1	SAIC	R224	B	24 Feb 86

10-26

NEVADA NUCLEAR WASTE STORAGE INVESTIGATIONS
LEVEL 1 MILESTONES IN A TIME WINDOW OF 30 Sep 1985 TO 01 Oct 1986
Run Date: 26 March 1986

MILESTONE DESCRIPTION	WBS NO.	WMPO RESP	LEVEL	RESP ORG	MILESTONE	BASELINED	HQ PLANNED HQ ACTUAL
Audits-Review and Co							
Quality Assurance Coordinating Group Meeting scheduled for January 28, 1986 in Albuquerque, NM	1.2.9.3.X	Blaylock	1	WMPO	R162	B	29 Jan 86
Meeting to Discuss Graded Approach to QA schedule for 12/19/85	1.2.9.3.X	Blaylock	1	WMPO	R203	B	19 Dec 85 19 Dec 85
Develop Project-Specific Presentation for Identified Items in Exploratory Shaft Facility (ESF) Licensability and Generic Requirements (GR) Workshop	1.2.9.3.X	Skousen	1	WMPO	R257	B	14 Apr 86

NO. MILESTONES IN THIS REPORT: 91

10-27

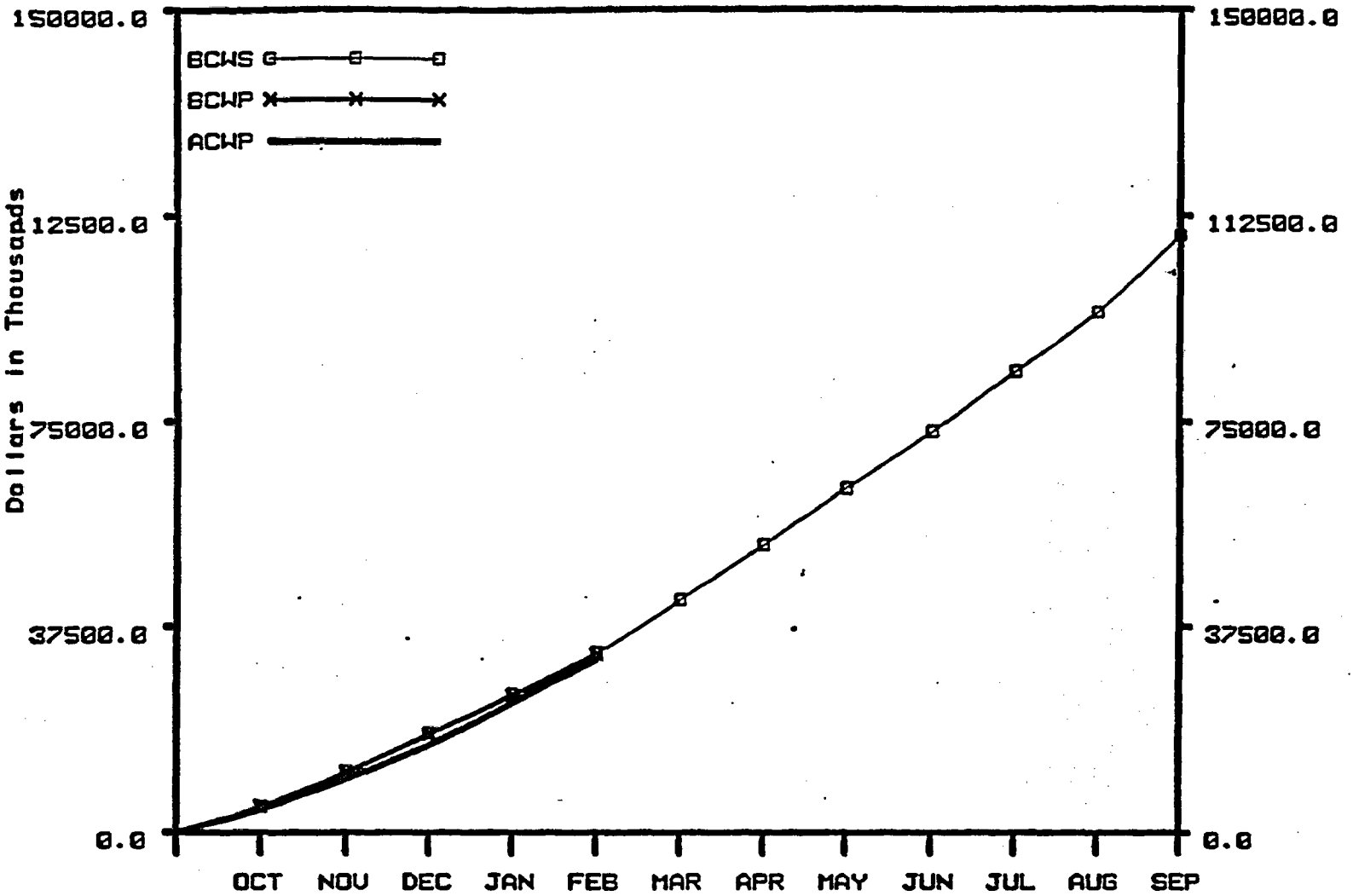
Funding Overview

The month-end estimated costs were $7,898,848 against a plan of $7,496,539 resulting in a cost overrun of $402,309.

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

		Plan	($000) (Cost)	Variance	% Variance
1.2.1	Systems	$ 2,392	$ 2,350	$ 42	2
1.2.2	Waste Package	2,416	2,124	292	12
1.2.3	Site	9,820	9,694	126	1
1.2.4	Repository Investigations	3,706	4,332	(626)	(17)
1.2.5	Regulatory and Institutional Investigations	3,633	3,328	305	8
1.2.6	Exploratory Shaft Investigations	3,661	3,334	327	9
1.2.7	Test Facilities	400	384	16	4
1.2.9	Project Management	6,710	6,070	640	10
1.2	NNWSI Project	$32,738	$31,616	$1,122	3%

NNWSI PROJECT
COST PERFORMANCE GRAPH FOR FEB 1986
WBS: 1.2



NNWSI - TOTAL	Current Period	Year To Date
A. BUDGETED COST OF WORK SCHEDULED (BCWS)	7496.5	32738.1
B. BUDGETED COST OF WORK PERFORMED (BCWP)	7553.1	32549.8
C. ACTUAL COST OF WORK PERFORMED (ACWP)	7898.8	31616.6
D. BUDGET AT COMPLETION (BAC)		108877.0
E. LATEST REVISED ESTIMATE (LRE)		107768.2

VARIANCES (Year To Date)	Dollars	Percent
F. SCHEDULE VARIANCE (B-A)	-188.3	-0.58
G. COST VARIANCE (B-C)	933.2	2.87
H. AT COMPLETION VARIANCE (D-E)	1108.8	1.02

Remarks:

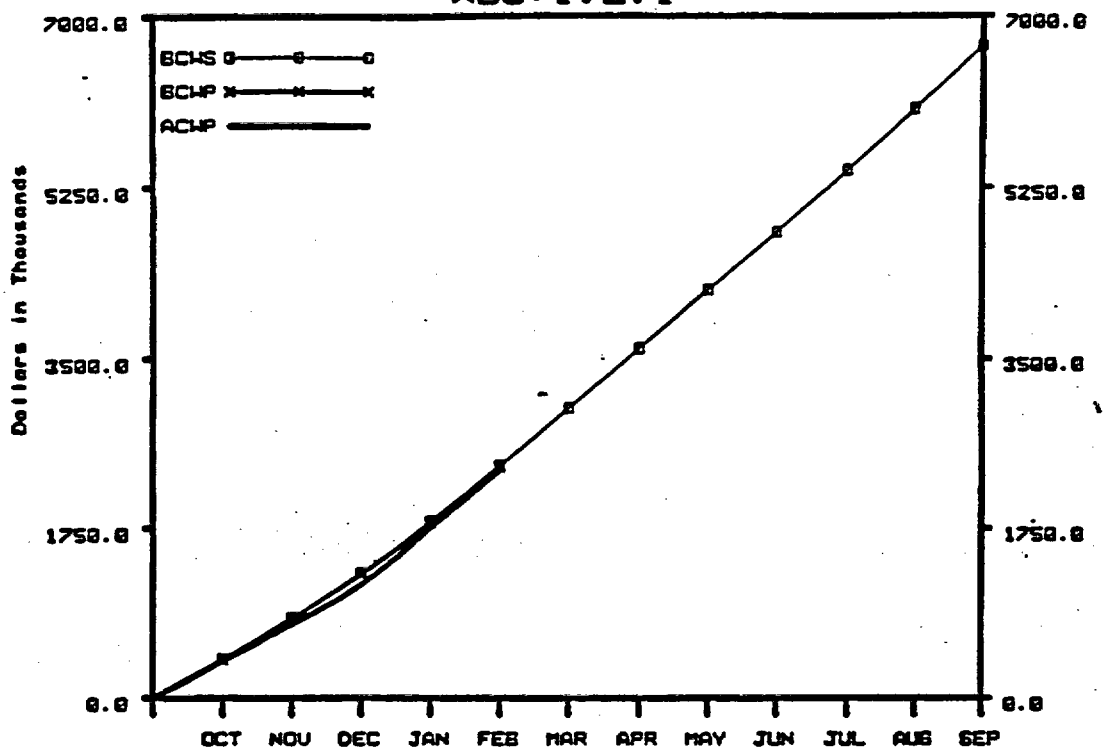
Variances below analysis threshold. No detailed explanation required.

NNWSI BUDGET BASELINE
(PRELIMINARY)

FEBRUARY 1985

CONTRACTORS	($000) FY 86 FUNDING	($000) REVISED ESTIMATE	($000) CHANGE
SNL	$25,309	$24,284	(1,025)
LLNL	12,620	12,480	140
Los Alamos	13,465	13,149	(316)
USGS	16,645	19,360	2,715
SAIC	14,891	17,524	2,633
REECo	17,476	10,077	(7,399)
H&N	1,153	2,298	1,145
F&S	3,014	2,860	(154)
WSI	221	208	(13)
PAN AM	52	49	(3)
State grant	2,600	4,650	2,050
DRI	160	160	--
EG&G	80	82	2
LBL	400	761	361
NTS allocation	1,314	935	(379)
SUBTOTAL	$109,400	$108,877	(523)
CAPITAL EQUIPMENT	5,400	6,800	1,400
TOTAL	114,800	115,677	877

NNWSI PROJECT
COST PERFORMANCE GRAPH FOR FEB 1986
WBS:1.2.1



SYSTEMS	Current Period	Year To Date
A. BUDGETED COST OF WORK SCHEDULED (BCWS)	$68.0	2391.8
B. BUDGETED COST OF WORK PERFORMED (BCWP)	$75.1	2387.5
C. ACTUAL COST OF WORK PERFORMED (ACWP)	$86.3	2349.7
D. BUDGET AT COMPLETION (BAC)		6688.0
E. LATEST REVISED ESTIMATE (LRE)		6431.6

VARIANCES (Year To Date)	Dollars	Percent
F. SCHEDULE VARIANCE (B-A)	-4.4	-0.18
G. COST VARIANCE (B-C)	37.8	1.58
H. AT COMPLETION VARIANCE (D-E)	256.4	3.83

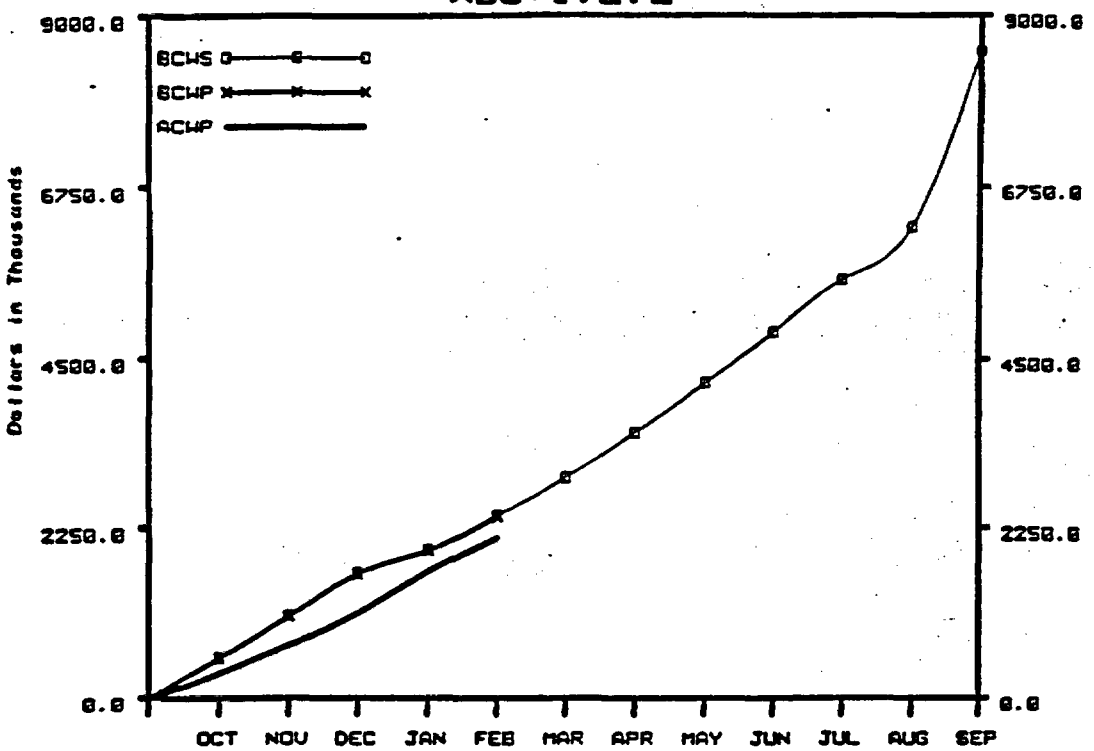
Remarks:

Variances below analysis threshold. No detailed explanation required.

MILE-STONE	RESP. AGENCY	WBS	MILESTONE DESCRIPTION	O	N	D	J	F	M	A	M	J	J	A	S
M277	SNL	1.2.1	Annual PASS Program Interaction - (Letter Report)	◆											
M870	SNL	1.2.1	Annual PASS Program Interaction - (Letter Report)												△
M120	SNL	1.2.1	Yucca Mountain Mined Geologic Disposal System (MGDS) Requirements		△				◇						
M108	SNL	1.2.1	Systems Engineering Management Plan (SEMP)						△		◇				

△ PLANNED MILESTONE COMPLETION DATE
◇ REVISED MILESTONE COMPLETION DATE
▲ COMPLETED AS SCHEDULED
◆ COMPLETED AS REVISED

NNWSI PROJECT
COST PERFORMANCE GRAPH FOR FEB 1986
WBS:1.2.2



WASTE PACKAGE	Current Period	Year To Date
A. BUDGETED COST OF WORK SCHEDULED (BCWS)	448.3	2416.8
B. BUDGETED COST OF WORK PERFORMED (BCWP)	448.3	2483.2
C. ACTUAL COST OF WORK PERFORMED (ACWP)	448.3	2124.6
D. BUDGET AT COMPLETION (BAC)		8529.8
E. LATEST REVISED ESTIMATE (LRE)		7474.1

VARIANCES (Year To Date)	Dollars	Percent
F. SCHEDULE VARIANCE (B-A)	-12.8	-0.53
G. COST VARIANCE (B-C)	278.6	11.59
H. AT COMPLETION VARIANCE (D-E)	1055.7	12.38

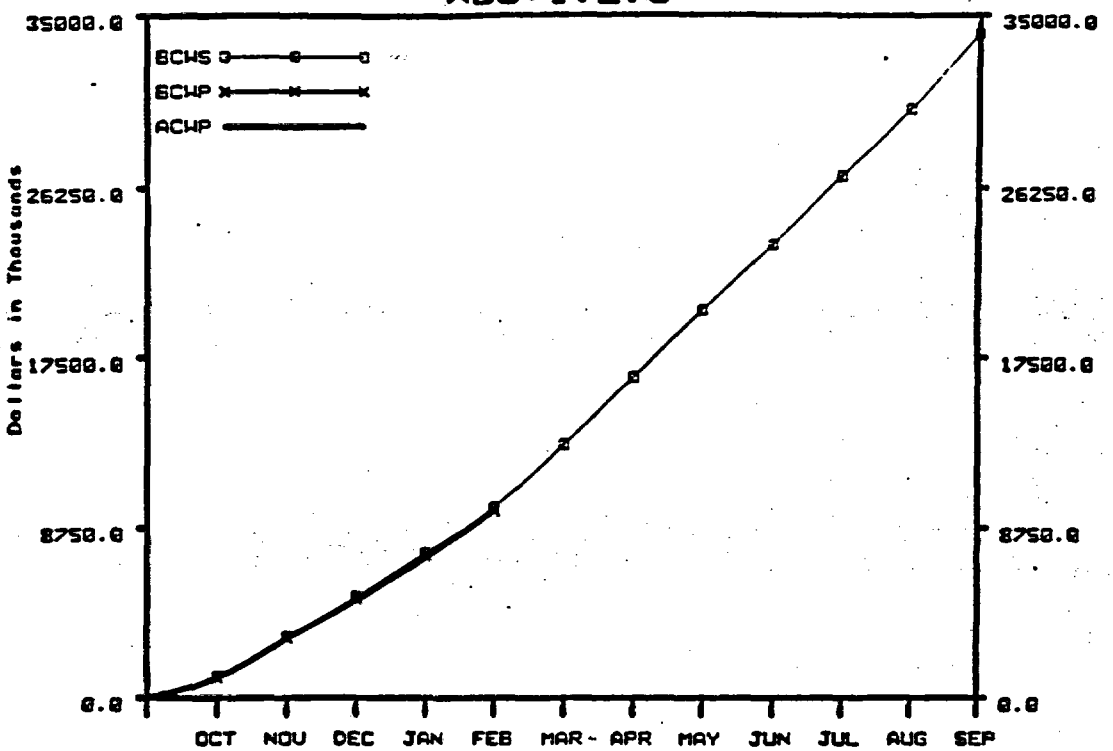
Remarks:

LLNL February input delayed. Corrected data results in variances below analysis threshold. No detail explanation required.

MILE-STONE	RESP. AGENCY	WBS	MILESTONE DESCRIPTION	O	N	D	J	F	M	A	M	J	J	A	S
M222	LLNL	1.2.2	Input to DOE/HQ Report to Congress on Copper for Waste Packages	◆											
M233	LLNL	1.2.2	Initiate Waste Package Advanced Conceptual Design									◇			
M276	LLNL	1.2.2	Report on the System Model for Waste Package Performance Analysis						△			◇			

△ PLANNED MILESTONE COMPLETION DATE
◇ REVISED MILESTONE COMPLETION DATE
▲ COMPLETED AS SCHEDULED
◆ COMPLETED AS REVISED

NNWSI PROJECT
COST PERFORMANCE GRAPH FOR FEB 1986
WBS: 1.2.3



SITE INVESTIGATIONS

	Current Period	Year To Date
A. BUDGETED COST OF WORK SCHEDULED (BCWS)	2368.0	9820.4
B. BUDGETED COST OF WORK PERFORMED (BCWP)	2295.3	9619.3
C. ACTUAL COST OF WORK PERFORMED (ACWP)	2477.3	9693.6
D. BUDGET AT COMPLETION (BAC)		34056.8
E. LATEST REVISED ESTIMATE (LRE)		34223.4

VARIANCES (Year To Date)	Dollars	Percent
F. SCHEDULE VARIANCE (B-A)	-201.1	-2.05
G. COST VARIANCE (B-C)	-74.3	-0.77
H. AT COMPLETION VARIANCE (D-E)	-166.6	-0.49

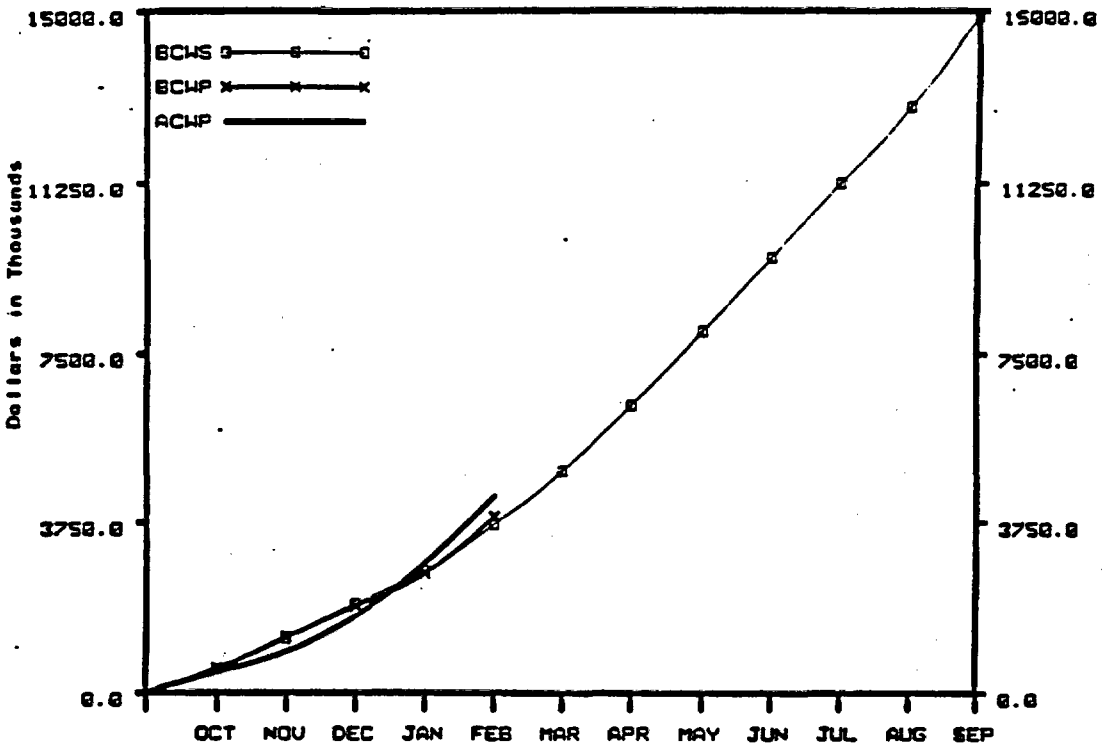
Remarks:

Variances below analysis threshold. No detailed explanation required.

MILE-STONE	RESP. AGENCY	WBS	MILESTONE DESCRIPTION	O	N	D	J	F	M	A	M	J	J	A	S
M364	SAIC	1.2.3	Implementation of Meteorological Monitoring Plan						◇						

△ PLANNED MILESTONE COMPLETION DATE
◇ REVISED MILESTONE COMPLETION DATE
▲ COMPLETED AS SCHEDULED
◆ COMPLETED AS REVISED

NNWSI PROJECT
COST PERFORMANCE GRAPH FOR FEB 1986
WBS: 1.2.4



REPOSITORY INVESTIGATIONS	Current Period	Year To Date
A. BUDGETED COST OF WORK SCHEDULED (BCWS)	1038.5	3706.2
B. BUDGETED COST OF WORK PERFORMED (BCWP)	1258.3	3873.9
C. ACTUAL COST OF WORK PERFORMED (ACWP)	1484.0	4332.5
D. BUDGET AT COMPLETION (BAC)		14864.6
E. LATEST REVISED ESTIMATE (LRE)		17477.2

VARIANCES (Year To Date)	Dollars	Percent
F. SCHEDULE VARIANCE (B-A)	167.8	4.53
G. COST VARIANCE (B-C)	-458.6	-11.84
H. AT COMPLETION VARIANCE (D-E)	-2612.6	-17.58

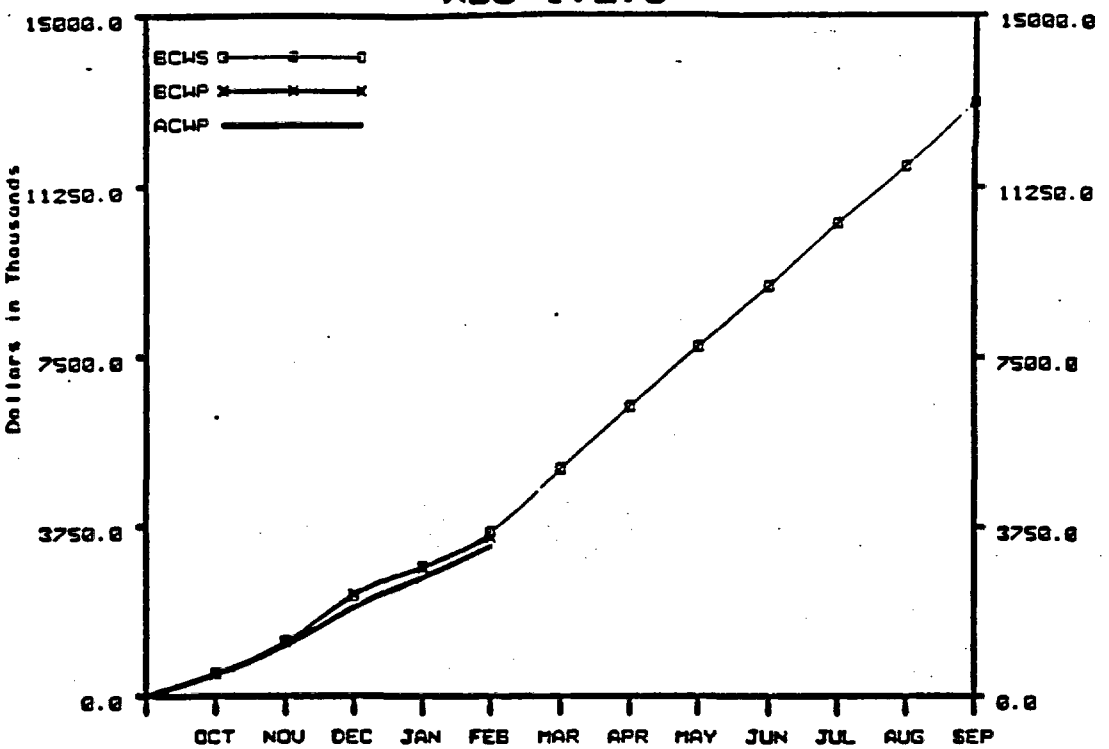
Remarks:

SNL reports that the phasing of the planned work is under review and corrective action will be defined by May 1986.

MILE-STONE	RESP. AGENCY	WBS	MILESTONE DESCRIPTION	O	N	D	J	F	M	A	M	J	J	A	S
M802	SNL	1.2.4	Review of Concepts Developed by HEDL for Remote/Automated WHS Initiated										△		
M806	SNL	1.2.4	Assistance to HEDL in Defining Remote/ Automated Waste Handling Systems	◆											
N430	SNL	1.2.4	Start Repository Advanced Conceptual Design				△		◇			◇			
N432	SNL	1.2.4	Repository Conceptual Design in Support of Site Characterization						△			◇			◇
N433	SNL	1.2.4	Initial Subsystem Design Requirement (SDR)				△	◇		◇					
M295	SNL	1.2.4	Feasibility Analysis of Horizontal Emplacement & Retrieval - Letter Report	△					◇						
N406	SNL	1.2.4	Horizontal Waste Emplacement Equipment Development Plan							△	◇		◇		

△ PLANNED MILESTONE COMPLETION DATE
◇ REVISED MILESTONE COMPLETION DATE
▲ COMPLETED AS SCHEDULED
◆ COMPLETED AS REVISED

NNWSI PROJECT
COST PERFORMANCE GRAPH FOR FEB 1986
WBS: 1.2.5



REGULATORY AND INSTITUTIONAL INVESTIGATIONS	Current Period	Year To Date
A. BUDGETED COST OF WORK SCHEDULED (BCWS)	771.1	3632.6
B. BUDGETED COST OF WORK PERFORMED (BCWP)	665.4	3512.6
C. ACTUAL COST OF WORK PERFORMED (ACWP)	695.1	3328.4
D. BUDGET AT COMPLETION (BAC)		13088.0
E. LATEST REVISED ESTIMATE (LRE)		12693.9

VARIANCES (Year To Date)	Dollars	Percent
F. SCHEDULE VARIANCE (B-A)	-120.8	-3.38
G. COST VARIANCE (B-C)	184.2	5.24
H. AT COMPLETION VARIANCE (D-E)	394.1	3.01

Remarks:

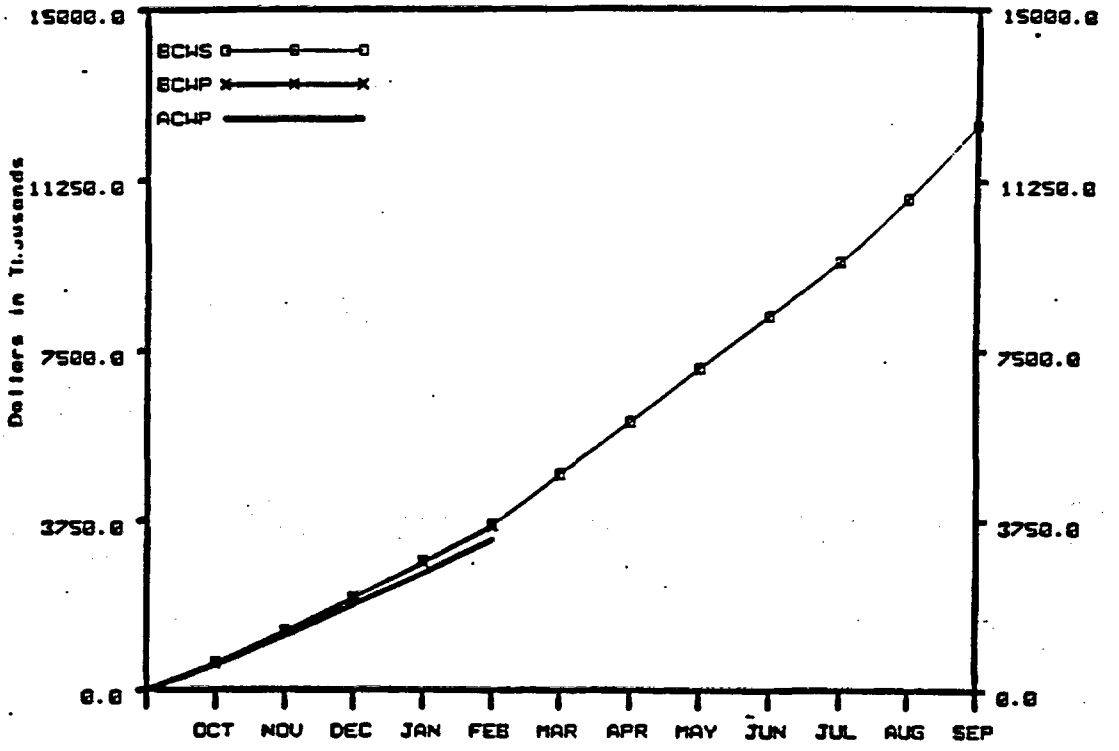
Variances below analysis threshold. No detailed explanation required.

MILE-STONE	RESP. AGENCY	WBS	MILESTONE DESCRIPTION	O	N	D	J	F	M	A	M	J	J	A	S
M521	SAIC	1.2.5	Draft Site Characterization Plan			△								◇	
M522	SAIC	1.2.5	Site Characterization Plan						△						
M503	SAIC	1.2.5	EA Comment/Response Document				◆								
M504	SAIC	1.2.5	Final Environmental Assessment			△	◆								

11/

△ PLANNED MILESTONE COMPLETION DATE
▲ COMPLETED AS SCHEDULED
◇ REVISED MILESTONE COMPLETION DATE
◆ COMPLETED AS REVISED

NNWSI PROJECT
COST PERFORMANCE GRAPH FOR FEB 1986
WBS: 1.2.6



EXPLORATORY SHAFT INVESTIGATIONS	Current Period	Year To Date
A. BUDGETED COST OF WORK SCHEDULED (BCWS)	812.1	3661.6
B. BUDGETED COST OF WORK PERFORMED (BCWP)	812.1	3643.0
C. ACTUAL COST OF WORK PERFORMED (ACWP)	734.6	3333.8
D. BUDGET AT COMPLETION (BAC)		12441.7
E. LATEST REVISED ESTIMATE (LRE)		11392.1

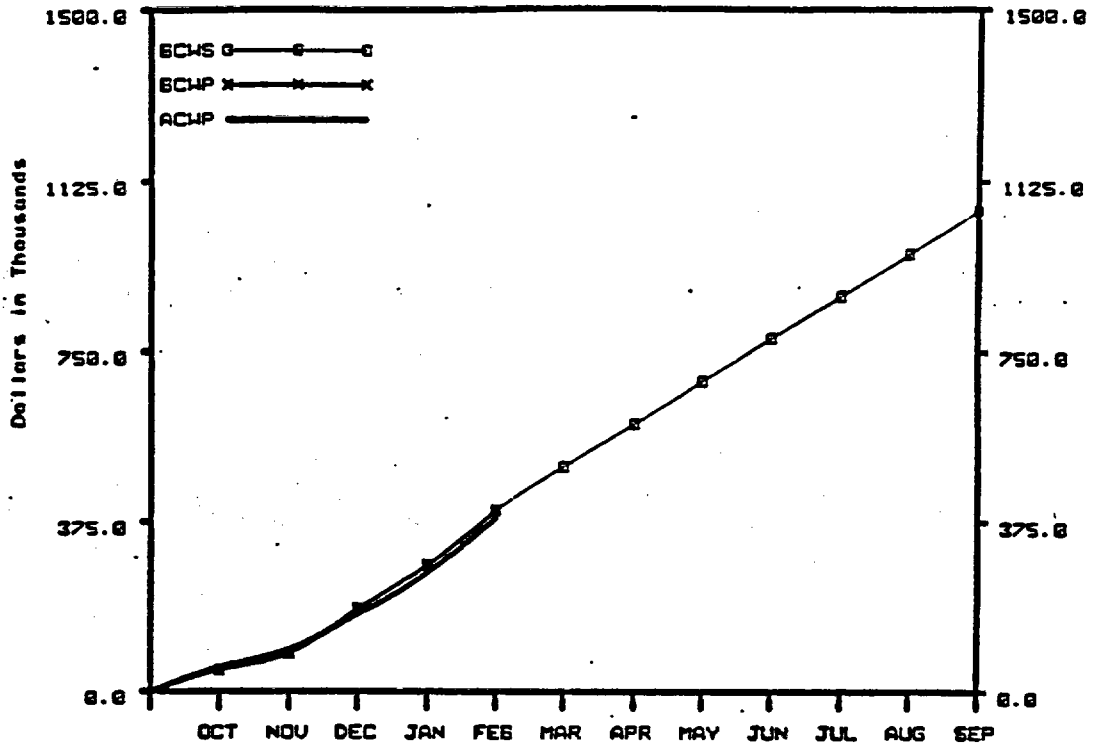
VARIANCES (Year To Date)	Dollars	Percent
F. SCHEDULE VARIANCE (B-A)	-18.6	-0.51
G. COST VARIANCE (B-C)	309.2	8.49
H. AT COMPLETION VARIANCE (D-E)	1049.6	8.44

Remarks:

Variances below analysis threshold. No detailed explanation required.

Milestones not available due to replanning.

NNWSI PROJECT
COST PERFORMANCE GRAPH FOR FEB 1986
WBS: 1.2.7



TEST FACILITIES	Current Period	Year To Date
A. BUDGETED COST OF WORK SCHEDULED (BCWS)	119.8	399.6
B. BUDGETED COST OF WORK PERFORMED (BCWP)	119.8	399.8
C. ACTUAL COST OF WORK PERFORMED (ACWP)	119.8	383.7
D. BUDGET AT COMPLETION (BAC)		1058.8
E. LATEST REVISED ESTIMATE (LRE)		1043.3

VARIANCES (Year To Date)	Dollars	Percent
F. SCHEDULE VARIANCE (B-A)	0.2	0.05
G. COST VARIANCE (B-C)	16.1	4.03
H. AT COMPLETION VARIANCE (D-E)	17.5	1.65

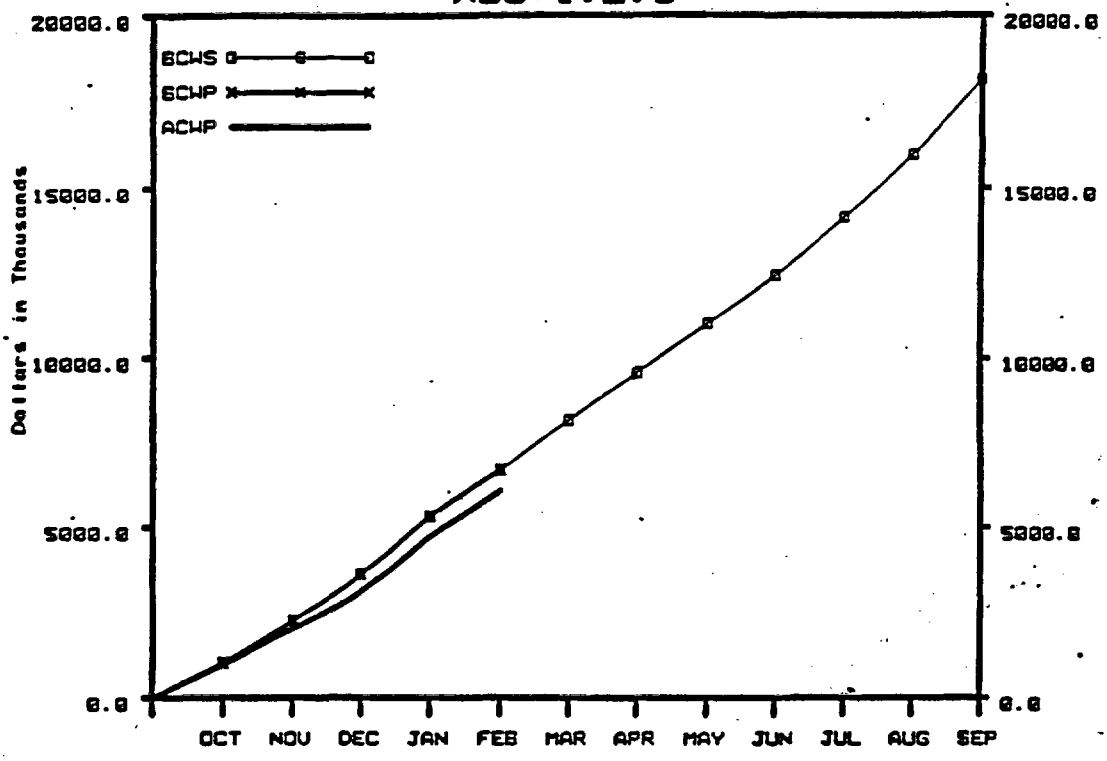
Remarks:

Variances below analysis threshold. No detailed explanation required.

MILE-STONE	RESP. AGENCY	WBS	MILESTONE DESCRIPTION	O	N	D	J	F	M	A	M	J	J	A	S
M708	LLNL	1.2.7	Final Report on the SFT-C					△				◇			

△ PLANNED MILESTONE COMPLETION DATE
▲ COMPLETED AS SCHEDULED
◇ REVISED MILESTONE COMPLETION DATE
◆ COMPLETED AS REVISED

NNWSI PROJECT
COST PERFORMANCE GRAPH FOR FEB 1986
WBS: 1.2.9



PROJECT MANAGEMENT	Current Period	Year To Date
A. BUDGETED COST OF WORK SCHEDULED (BCWS)	1378.7	6789.9
B. BUDGETED COST OF WORK PERFORMED (BCWP)	1378.7	6710.5
C. ACTUAL COST OF WORK PERFORMED (ACWP)	1353.4	6870.2
D. BUDGET AT COMPLETION (BAC)		18147.3
E. LATEST REVISED ESTIMATE (LRE)		17032.6

VARIANCES (Year To Date)	Dollars	Percent
F. SCHEDULE VARIANCE (B-A)	0.6	0.01
G. COST VARIANCE (B-C)	640.3	9.54
H. AT COMPLETION VARIANCE (D-E)	1114.7	6.14

Remarks:

Variances below analysis threshold. No detailed explanation required.

MILE-STONE	RESP. AGENCY	WBS	MILESTONE DESCRIPTION	O	N	D	J	F	M	A	M	J	J	A	S
M907	SAIC	1.2.9	Draft Project Management Plan					◇	◇						
M901	SAIC	1.2.9	Submit FY 85 NNWSI Project Plan to DOE/HQ for Approval	◆											

△ PLANNED MILESTONE COMPLETION DATE
◇ REVISED MILESTONE COMPLETION DATE
▲ COMPLETED AS SCHEDULED
◆ COMPLETED AS REVISED

U.S. DEPARTMENT OF ENERGY

OCRWM OGR

Nevada Nuclear Waste Storage Investigations PROJECT

YUCCA MOUNTAIN

PARTICIPANT

BUDGET vs COST

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

CONTRACTOR:	CONTRACT TYPE NO.:	PROJECT NAME/NUMBER:	REPORT YEAR AND MONTH	SIGNATURE:
NNSI Project LOCATION: P.O. Box 14100 Las Vegas, NV 89114		NEVADA NUCLEAR WASTE STORAGE INVESTIGATIONS	FEB 1986	TITLE: PROJECT MANAGER Date: March 25, 1986

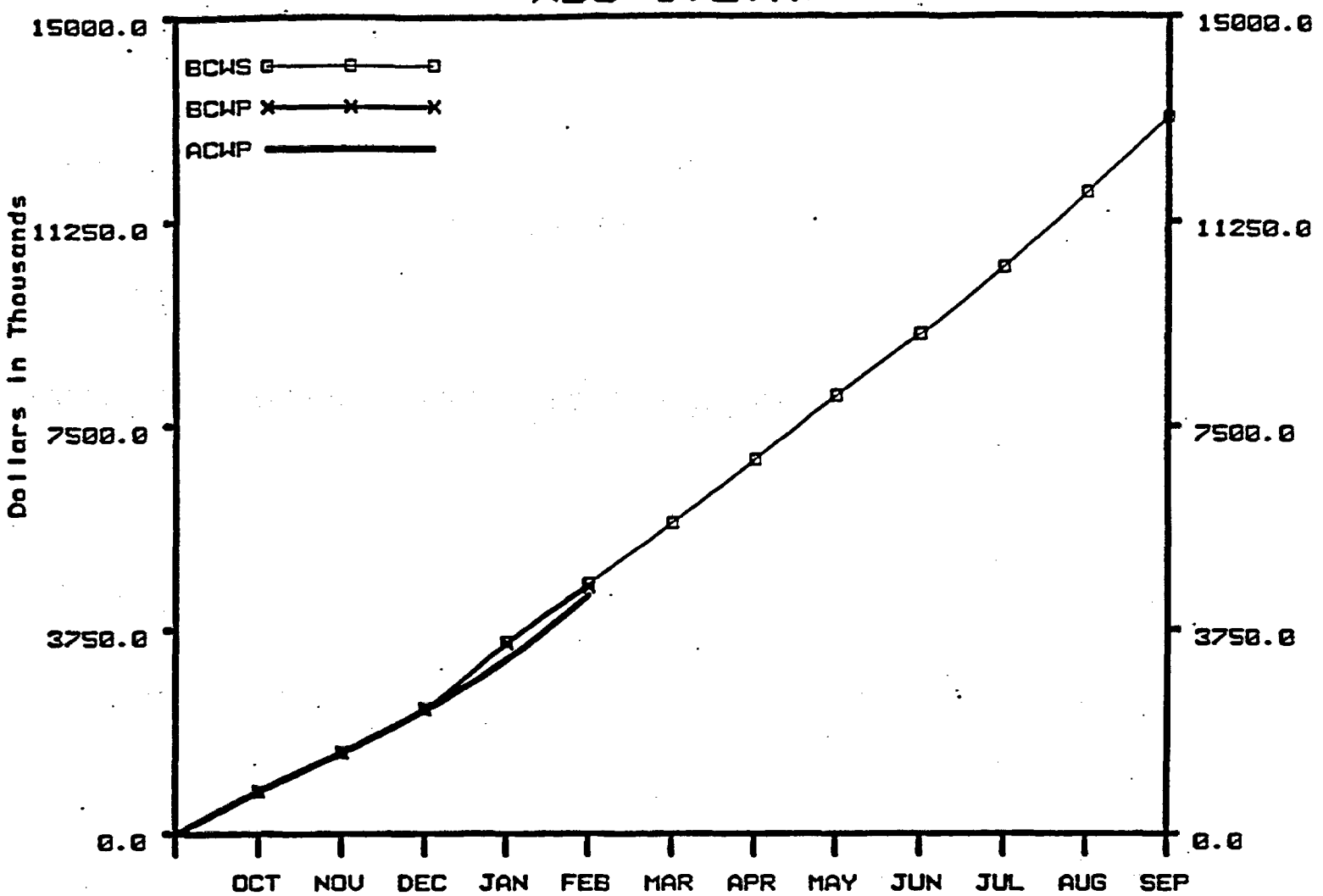
WBS NUMBER AND DESCRIPTION		CURRENT PERIOD					YEAR TO DATE					FISCAL YEAR COMPLETION		
		BUD. COST OF WORK SCHEDULED	BUD. COST OF WORK PERFORMED	ACTUAL COST OF WORK PERFORMED	VARIANCES SCHEDULE	VARIANCES COST	BUD. COST OF WORK SCHEDULED	BUD. COST OF WORK PERFORMED	ACTUAL COST OF WORK PERFORMED	VARIANCES SCHEDULE	VARIANCES COST	BASELINED BUDGET	LATEST REVISED ESTIMATE	VARIANCE
(1)		(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
121	SYSTEMS	568.002	575.090	586.279	7.088	-11.189	2,391.844	2,387.454	2,349.679	-4.390	37.775	6,688.000	6,431.571	256.429
122	WASTE PACKAGE	448.300	448.300	448.300	-.000	-.000	2,416.000	2,403.168	2,124.600	-12.832	278.568	8,529.000	7,474.075	1,055.725
123	SITE INVESTIGATIONS	2,368.822	2,295.335	2,477.259	-72.687	-181.924	9,820.488	9,619.287	9,693.687	-201.121	-74.320	34,656.000	34,223.488	-166.688
124	REPOSITORY INVESTIGATIONS	1,030.494	1,258.348	1,484.005	227.854	-225.657	3,786.164	3,873.930	4,332.535	167.766	-458.606	14,864.600	17,477.195	-2,612.596
125	REGULATORY AND INSTITUTIONAL INV	771.052	665.353	695.117	-105.699	-29.764	3,632.969	3,512.587	3,328.436	-119.582	184.151	13,088.000	12,693.917	394.083
126	EXPLORATORY SHAFT INVESTIGATIONS	812.138	812.138	734.638	-.000	77.500	3,651.589	3,643.017	3,333.789	-18.572	389.228	12,441.700	11,392.144	1,049.556
127	TEST FACILITIES	119.822	119.822	119.822	.000	.000	399.627	399.844	383.727	.217	16.117	1,860.800	1,843.327	17.473
128	LAND ACQUISITION	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
129	PROJECT MANAGEMENT	1,378.710	1,378.711	1,353.428	.001	25.283	6,789.913	6,790.487	6,670.210	.574	640.277	18,147.300	17,032.557	1,114.783
12	NNSI - TOTAL	7,496.540	7,553.036	7,898.848	56.556	-345.752	32,738.114	32,549.773	31,816.583	-188.341	933.190	108,877.000	107,768.235	1,108.765

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

CONTRACTOR:	CONTRACT TYPE NO.:	PROJECT NAME/NUMBER:	REPORT YEAR AND MONTH:	SIGNATURE:
NNWSI Project		NEVADA NUCLEAR WASTE STORAGE INVESTIGATIONS	FEB 1986	
LOCATION: P.O. Box 14100 Las Vegas, NV 89114				TITLE: PROJECT MANAGER
				Date: March 20, 1986

WBS NUMBER AND DESCRIPTION (1)		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)
1211	Systems Management and Integration	12.000	12.000	9.000	.000	3.000	70.000	69.958	51.000	-.040	18.958	180.000	131.281	48.719
1212	Systems Engineering	211.002	211.002	234.279	-.000	-23.277	813.844	814.158	798.679	.314	15.479	2.325.000	2.132.488	192.512
1213	Technical Data Base Management	92.000	99.088	134.000	7.088	-34.912	440.000	435.762	432.000	-4.238	3.762	1.126.000	1.122.927	3.073
1214	Total Systems Performance Assessment	253.000	253.000	209.000	-.000	44.000	1.068.000	1.067.574	1.068.000	-.426	-.426	3.057.000	3.044.875	12.125
121	SYSTEMS	568.002	575.090	586.279	7.088	-11.189	2.391.844	2.387.454	2.349.679	-4.390	37.775	6.688.000	6.431.571	256.429
1221	Management and Integration	17.300	17.300	17.300	-.000	-.000	127.000	126.993	118.400	-.007	8.593	509.000	478.075	30.925
1222	Package Environment	52.000	52.000	52.000	-.000	-.000	320.000	305.170	380.500	-14.830	-75.330	870.000	1.110.933	-240.933
1223	Waste Form & Materials Testing	335.000	335.000	335.000	.000	.000	1.635.000	1.637.175	1.370.600	2.175	266.575	5.895.000	4.911.460	983.540
1224	Design, Fabricate, and Prototype Testing	20.000	20.000	20.000	-.000	-.000	142.000	141.830	117.200	-.170	24.630	655.000	541.870	113.130
1225	Performance Assessment	24.000	24.000	24.000	.000	.000	192.000	192.000	137.900	.000	54.100	600.000	430.938	169.062
122	WASTE PACKAGE	448.300	448.300	448.300	-.000	-.000	2.416.000	2.403.168	2.124.600	-12.832	278.568	8.529.000	7.474.075	1.055.725
1231	Management & Integration	180.893	180.893	181.584	.000	-.690	806.688	806.178	783.181	-.510	22.997	2.780.000	2.711.587	68.413
1232	Geology	624.550	624.469	586.250	-.081	38.219	2.503.480	2.487.922	2.448.580	-15.558	39.342	7.059.000	6.855.074	203.926
1233	Hydrology	445.250	445.250	445.250	-.000	-.000	1.811.021	1.811.938	1.811.021	.917	.917	5.451.300	5.448.581	2.719
1234	Geochemistry	503.400	466.790	657.200	-36.610	-190.410	2.294.100	2.232.976	2.338.300	-61.124	-105.324	6.095.000	6.457.019	-362.019
1235	Drilling	453.692	453.691	453.692	-.001	-.001	1.686.668	1.684.640	1.686.668	-2.028	-2.028	9.975.800	9.981.371	-5.571
1236	Environment	73.362	63.766	70.981	-9.681	-7.214	261.181	229.091	272.243	-32.090	-43.151	970.400	1.168.446	-198.046
1237	Socioeconomic	41.870	15.476	37.303	-26.394	-21.827	209.350	119.016	136.314	-90.334	-17.298	502.300	502.300	.000
1238	Geochemical Modeling Code EQ3/6	45.000	45.000	45.000	-.000	-.000	248.000	247.516	217.300	-.484	30.216	1.223.000	1.099.030	123.970
1239	Deferred Site Close Out	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
123	SITE INVESTIGATIONS	2.368.022	2.295.335	2.477.259	-72.687	-181.924	9.820.400	9.619.287	9.693.657	-201.121	-74.370	34.056.800	34.223.400	-166.600
1241	Management and Integration	385.394	385.394	688.505	.000	-303.110	1.448.164	1.448.142	1.962.635	-.022	-514.493	5.122.600	7.530.358	-2.407.758
1242	Development and Testing	324.100	551.954	390.500	227.854	161.454	1.376.000	1.543.810	1.528.900	167.810	14.910	5.096.000	4.609.530	486.470
1243	Facilities	188.000	187.999	316.000	-.001	-128.001	422.000	421.922	478.000	-.078	-56.078	2.937.000	3.998.620	-1.061.620
1244	Operations and Maintenance	35.000	35.000	39.000	-.000	-4.000	112.000	112.175	119.000	.175	-6.825	441.000	467.318	-26.318
1245	Decommissioning	2.000	2.000	.000	.000	2.000	9.000	9.000	.000	.000	9.000	48.000	48.000	.000
1246	Repository Performance Assessment	96.000	96.000	50.000	-.000	46.000	339.000	338.880	244.000	-.120	94.880	1.220.000	823.369	396.631
124	REPOSITORY INVESTIGATIONS	1.030.494	1.258.348	1.484.005	227.854	-225.657	3.706.164	3.873.930	4.332.535	167.766	-458.606	14.864.600	17.477.196	-2.612.596
1251	Management and Integration	59.724	59.724	78.407	-.000	-18.683	308.460	308.421	278.945	-.039	29.476	762.400	690.373	72.027
1252	Licensing	526.212	429.065	481.999	-97.147	-52.934	2.009.537	1.921.356	1.761.403	-88.181	159.953	6.001.000	5.907.794	93.206
1253	Environmental Compliance	159.823	151.272	114.349	-8.551	36.922	760.405	728.646	759.496	-31.759	-30.850	1.382.600	1.218.678	163.922
1254	Communication and Liaison	25.293	25.293	20.362	.000	4.931	114.887	114.887	89.312	.000	25.576	292.000	226.996	65.004
1255	Technology and Financial Assistance	.000	.000	.000	.000	.000	439.280	439.276	439.280	-.004	-.004	4.650.000	4.650.077	-.077
125	REGULATORY AND INSTITUTIONAL INVESTIGATIONS	771.052	665.353	695.117	-105.699	-29.764	3.632.569	3.512.587	3.328.436	-119.982	184.151	13.088.000	12.693.917	394.083
1261	Management and Integration	221.065	221.065	209.965	-.000	11.100	894.643	893.907	805.543	-.736	88.364	3.261.800	2.970.062	291.738
1262	Site Preparation	7.625	7.625	7.625	.000	.000	60.825	60.813	60.825	-.012	-.012	111.300	111.333	-.033
1263	Surface Facilities	.000	.000	.000	.000	.000	2.900	2.900	2.900	-.000	-.000	21.200	21.202	-.002
1264	First Shaft	5.535	5.535	5.535	.000	.000	23.807	23.783	23.807	-.024	-.024	117.400	119.018	-1.618
1265	Second Shaft	.764	.764	.764	.000	.000	1.948	1.944	1.948	-.004	-.004	28.000	28.156	-.156
1266	Subsurface Excavations	3.129	3.129	3.129	.000	.000	33.539	33.465	33.539	-.074	-.074	325.200	326.784	-1.584
1267	Underground Service Systems	21.920	21.920	21.920	-.000	-.000	56.227	56.217	56.227	-.010	-.010	256.600	256.778	-.178
1268	Operations	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
1269	Testing	551.300	551.300	484.900	-.000	66.400	2.587.700	2.569.990	2.349.000	-17.710	220.990	8.320.200	7.558.812	761.388
126	EXPLORATORY SHAFT INVESTIGATIONS	812.138	812.138	734.638	-.000	77.500	3.661.585	3.643.017	3.333.785	-18.572	309.228	12.441.700	11.392.144	1.049.556
1271	Management and Integration	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
1272	Testing	119.822	119.822	119.822	.000	.000	399.627	399.844	383.727	.217	16.117	1.060.800	1.043.327	17.473
1273	New Facility Acquisitions	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
127	TEST FACILITIES	119.822	119.822	119.822	.000	.000	399.627	399.844	383.727	.217	16.117	1.060.800	1.043.327	17.473
128	LAND ACQUISITION	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
1291	Management and Integration	718.131	718.132	713.033	.001	5.099	3.517.537	3.517.520	3.145.347	-.017	372.173	9.161.400	8.775.422	385.978
1292	Project Control	271.327	271.327	286.508	-.000	-15.181	1.411.026	1.410.728	1.313.368	-.298	97.360	3.927.700	3.661.249	266.451
1293	Quality Assurance	389.252	389.252	353.887	.000	35.365	1.781.350	1.782.239	1.611.495	.889	170.743	5.058.200	4.595.926	462.274
129	PROJECT MANAGEMENT	1.378.710	1.378.711	1.353.428	.001	25.283	6.709.913	6.710.487	6.070.210	.574	640.277	18.147.300	17.032.597	1.114.703
12	NNWSI - TOTAL	7.496.540	7.553.096	7.898.848	56.556	-345.752	32.730.114	32.549.773	31.616.583	-180.341	933.190	108.877.000	107.760.235	1.108.765

NNWSI PROJECT
COST PERFORMANCE GRAPH FOR FEB 1986
WBS: 1.2.A



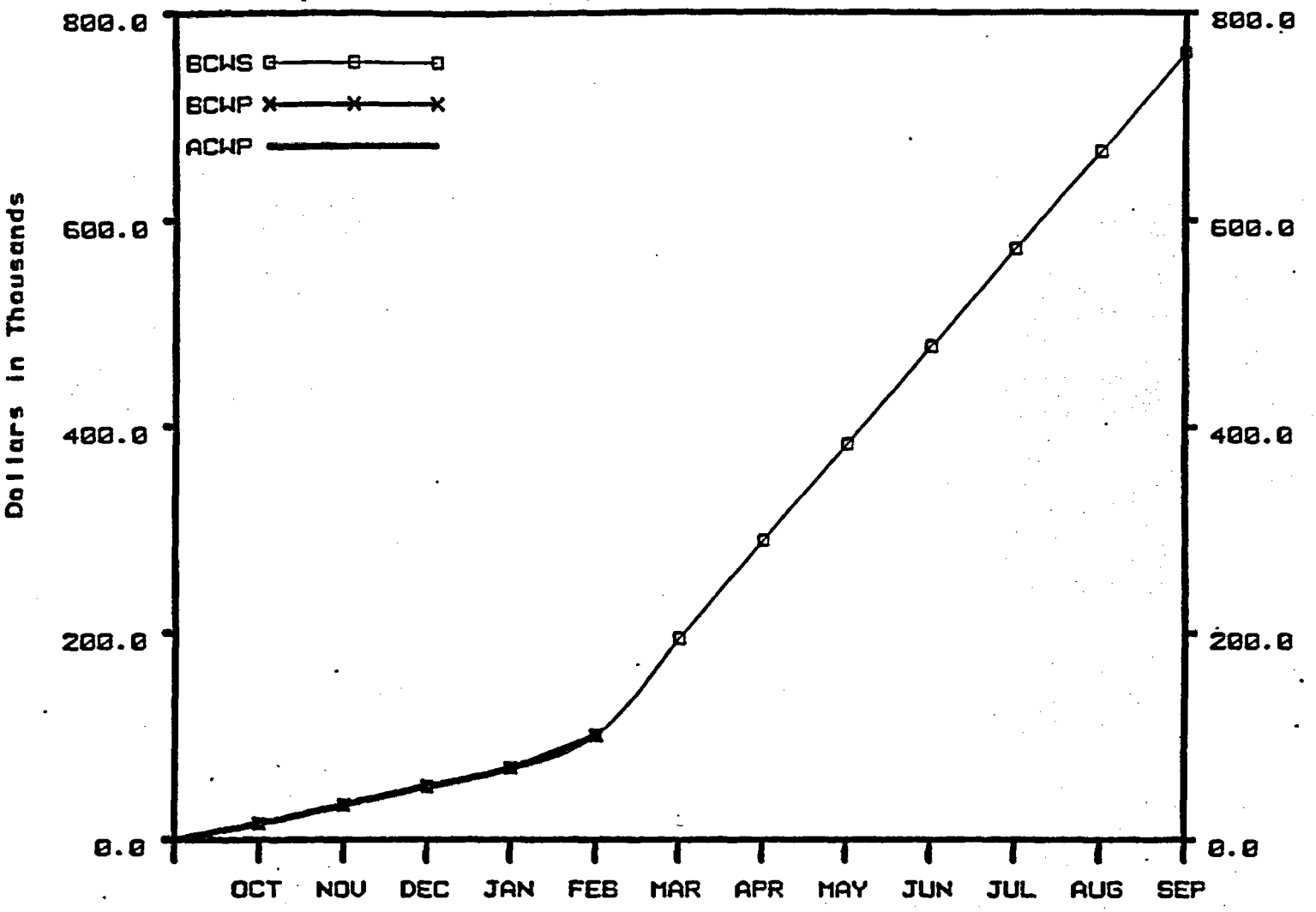
LOS ALAMOS - TOTAL	Current Period	Year To Date
A. BUDGETED COST OF WORK SCHEDULED (BCWS)	1066.1	4584.4
B. BUDGETED COST OF WORK PERFORMED (BCWP)	1029.5	4524.4
C. ACTUAL COST OF WORK PERFORMED (ACWP)	1171.3	4368.3
D. BUDGET AT COMPLETION (BAC)		13149.0
E. LATEST REVISED ESTIMATE (LRE)		12687.9

VARIANCES (Year To Date)	Dollars	Percent
F. SCHEDULE VARIANCE (B-A)	-60.0	-1.31
G. COST VARIANCE (B-C)	156.1	3.45
H. AT COMPLETION VARIANCE (D-E)	461.1	3.51

Remarks:

Variances below analysis threshold. No detailed explanation required.

NNWSI PROJECT
COST PERFORMANCE GRAPH FOR FEB 1986
WBS:1.2.B



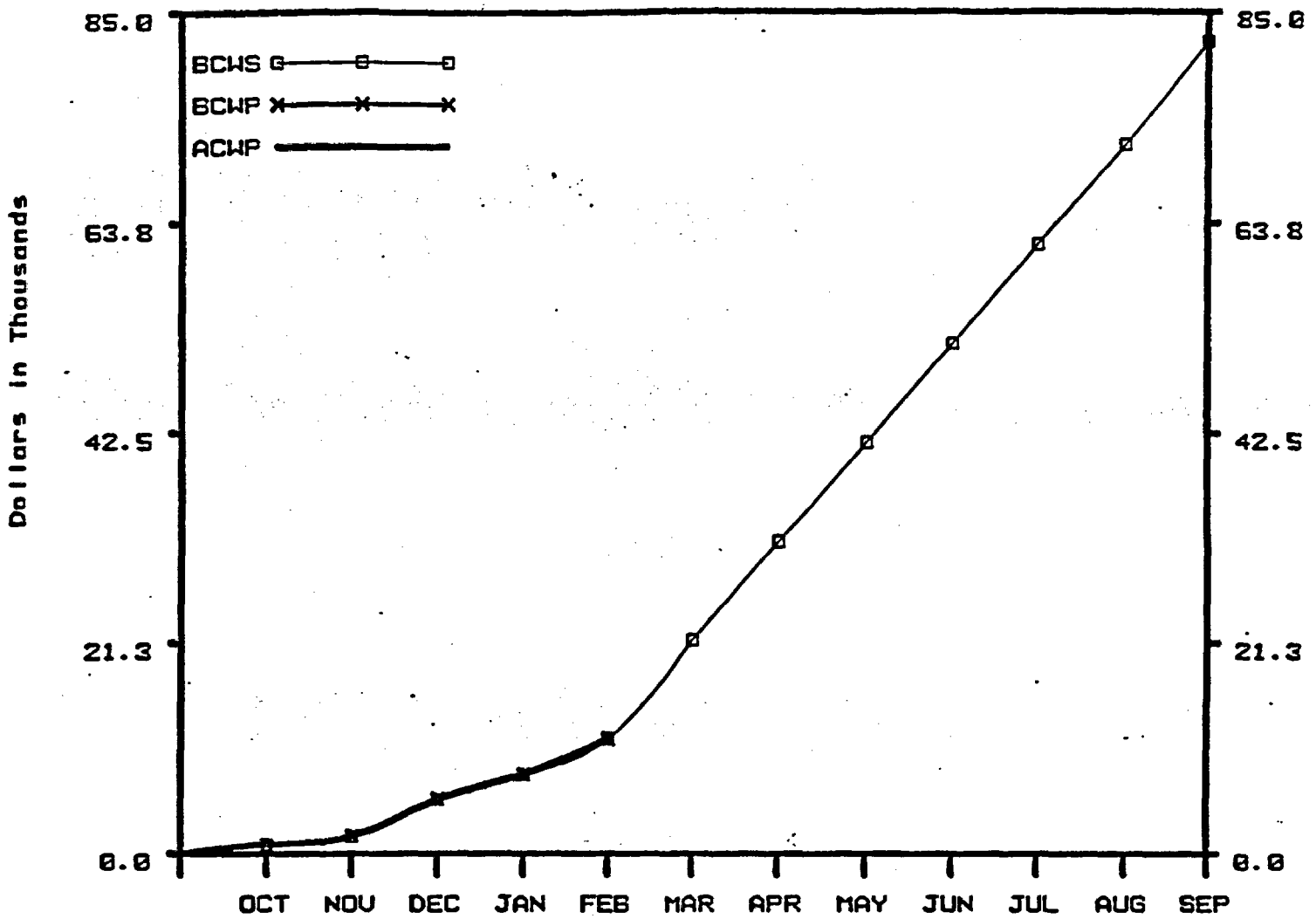
LBL - TOTAL	Current Period	Year To Date
A. BUDGETED COST OF WORK SCHEDULED (BCWS)	31.6	100.4
B. BUDGETED COST OF WORK PERFORMED (BCWP)	31.6	100.2
C. ACTUAL COST OF WORK PERFORMED (ACWP)	31.6	100.4
D. BUDGET AT COMPLETION (BAC)		761.0
E. LATEST REVISED ESTIMATE (LRE)		763.6

VARIANCES (Year To Date)	Dollars	Percent
F. SCHEDULE VARIANCE (B-A)	-0.2	-0.24
G. COST VARIANCE (B-C)	-0.2	-0.24
H. AT COMPLETION VARIANCE (D-E)	-2.6	-0.34

Remarks:

Variances below analysis threshold. No detailed explanation required.

NNWSI PROJECT
COST PERFORMANCE GRAPH FOR FEB 1986
WBS: 1.2.E



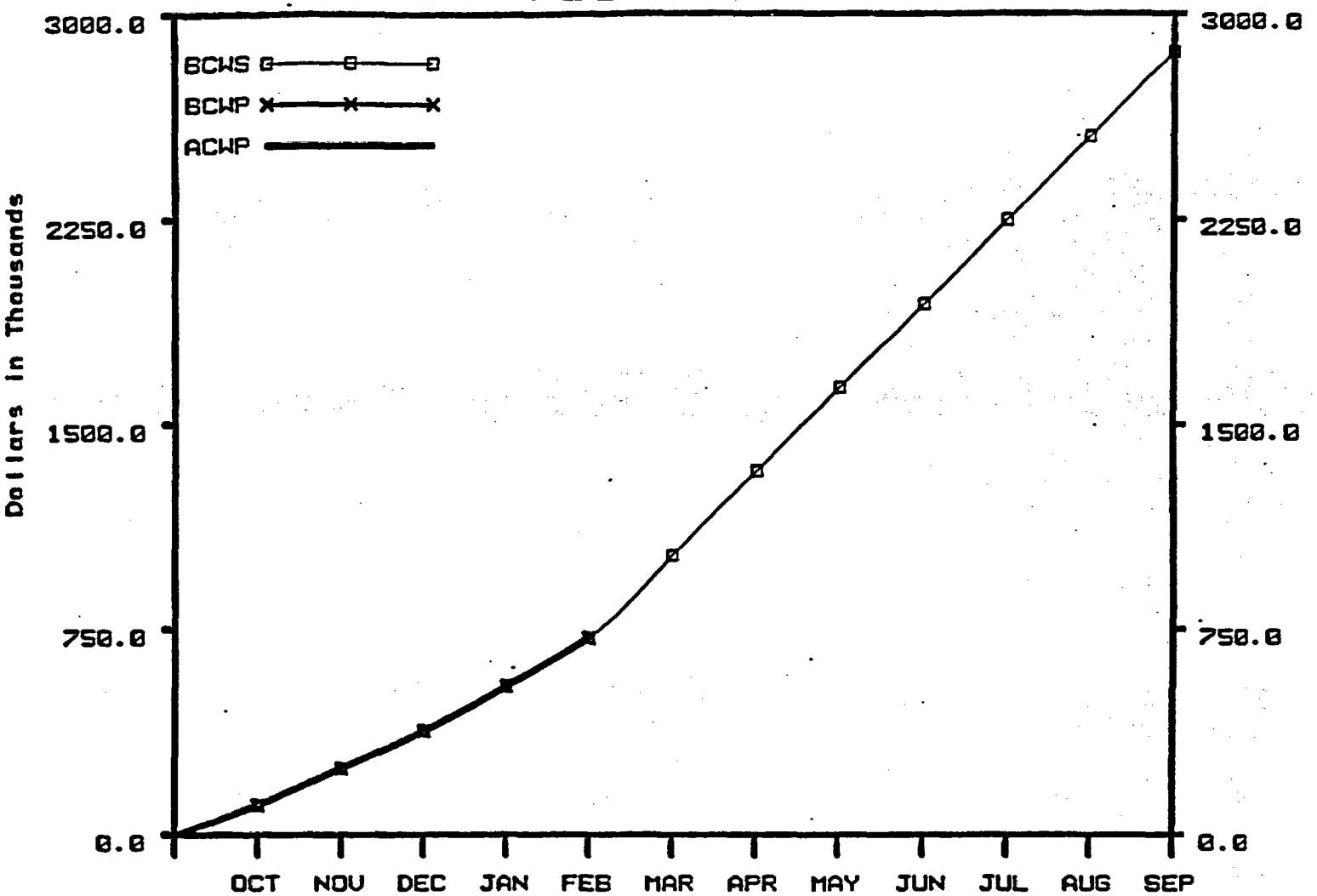
EG&G - TOTAL	Current Period	Year To Date
A. BUDGETED COST OF WORK SCHEDULED (BCWS)	3.5	11.6
B. BUDGETED COST OF WORK PERFORMED (BCWP)	3.6	11.6
C. ACTUAL COST OF WORK PERFORMED (ACWP)	3.5	11.6
D. BUDGET AT COMPLETION (BAC)		82.0
E. LATEST REVISED ESTIMATE (LRE)		81.7

VARIANCES (Year To Date)	Dollars	Percent
F. SCHEDULE VARIANCE (B-A)	0.0	0.21
G. COST VARIANCE (B-C)	0.0	0.21
H. AT COMPLETION VARIANCE (D-E)	0.3	0.39

Remarks:

Variances below analysis threshold. No detailed explanation required.

NNWSI PROJECT
COST PERFORMANCE GRAPH FOR FEB 1986
WBS: 1.2.F



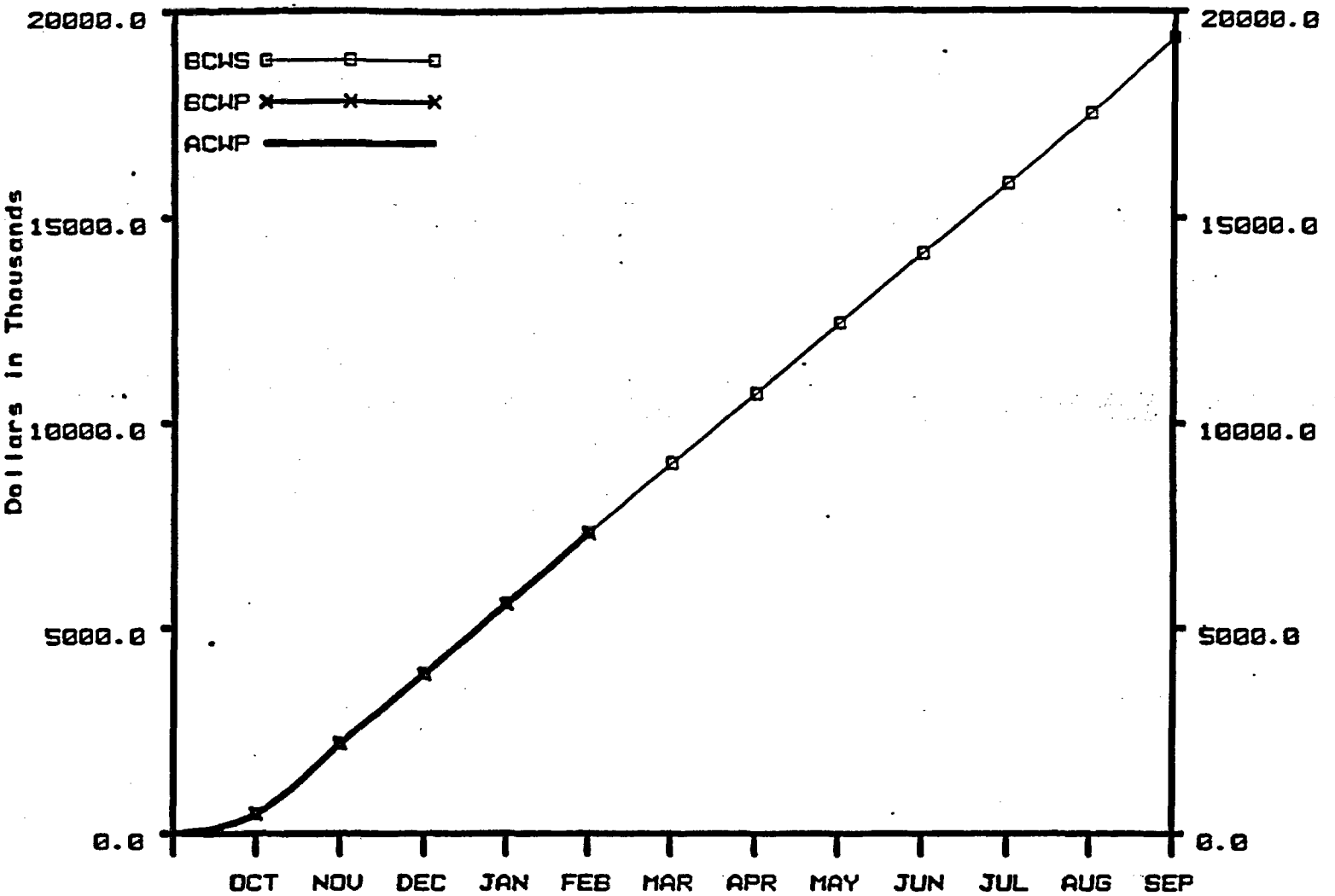
F&S - TOTAL	Current Period	Year To Date
A. BUDGETED COST OF WORK SCHEDULED (BCWS)	175.1	715.8
B. BUDGETED COST OF WORK PERFORMED (BCWP)	175.1	715.7
C. ACTUAL COST OF WORK PERFORMED (ACWP)	175.1	715.8
D. BUDGET AT COMPLETION (BAC)		2860.2
E. LATEST REVISED ESTIMATE (LRE)		2864.5

VARIANCES (Year To Date)	Dollars	Percent
F. SCHEDULE VARIANCE (B-A)	-0.2	-0.02
G. COST VARIANCE (B-C)	-0.2	-0.02
H. AT COMPLETION VARIANCE (D-E)	-4.3	-0.15

Remarks:

Variances below analysis threshold. No detailed explanation required.

NNWSI PROJECT
COST PERFORMANCE GRAPH FOR FEB 1986
WBS: 1.2.G



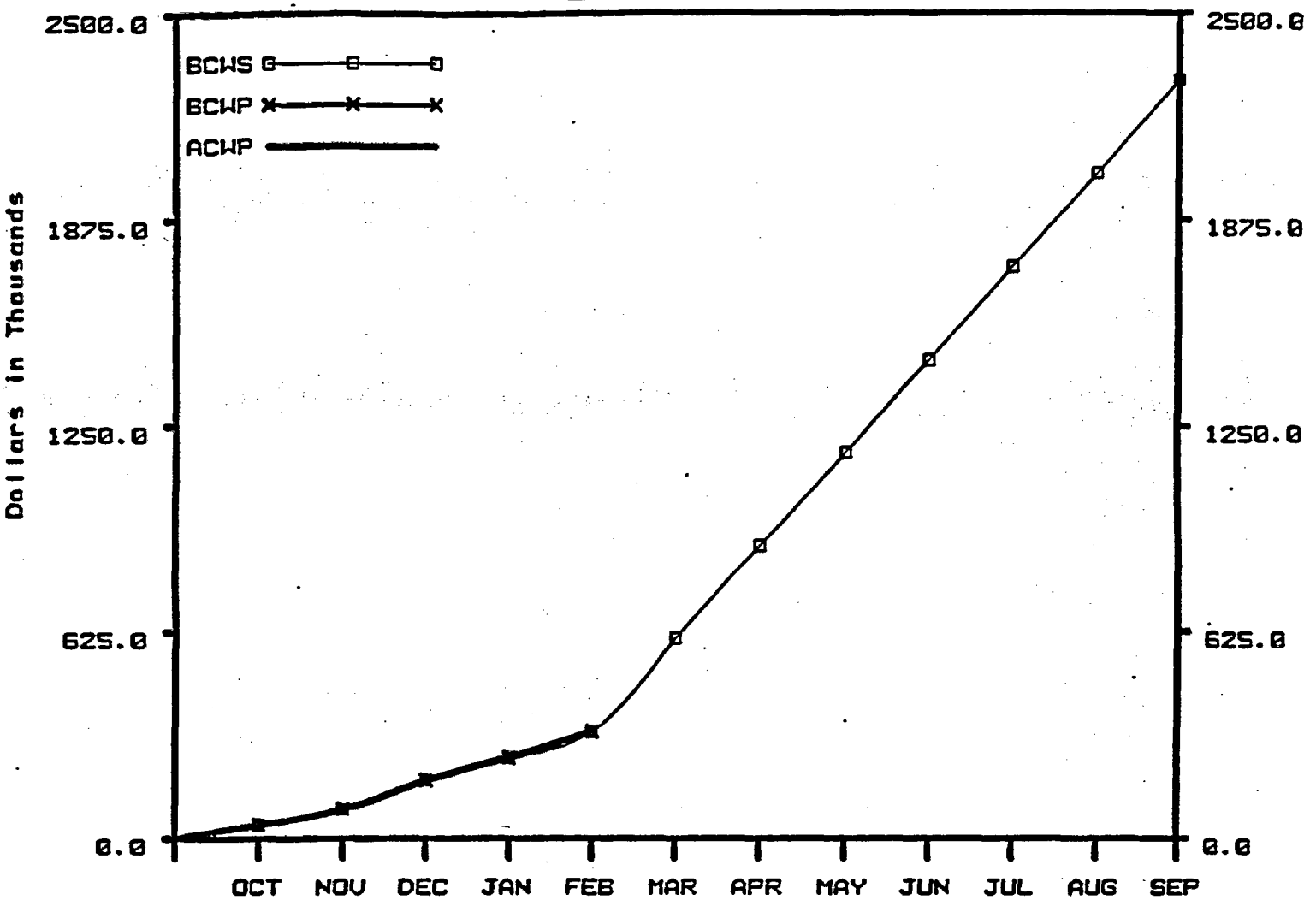
USGS - TOTAL	Current Period	Year To Date
A. BUDGETED COST OF WORK SCHEDULED (BCWS)	1705.4	7292.1
B. BUDGETED COST OF WORK PERFORMED (BCWP)	1705.3	7277.3
C. ACTUAL COST OF WORK PERFORMED (ACWP)	1705.4	7289.7
D. BUDGET AT COMPLETION (BAC)		19359.9
E. LATEST REVISED ESTIMATE (LRE)		19413.9

VARIANCES (Year To Date)	Dollars	Percent
F. SCHEDULE VARIANCE (B-A)	-14.9	-0.20
G. COST VARIANCE (B-C)	-12.5	-0.17
H. AT COMPLETION VARIANCE (D-E)	-54.0	-0.28

Remarks:

Variances below analysis threshold. No detailed explanation required.

NNWSI PROJECT
COST PERFORMANCE GRAPH FOR FEB 1986
WBS: 1.2.H



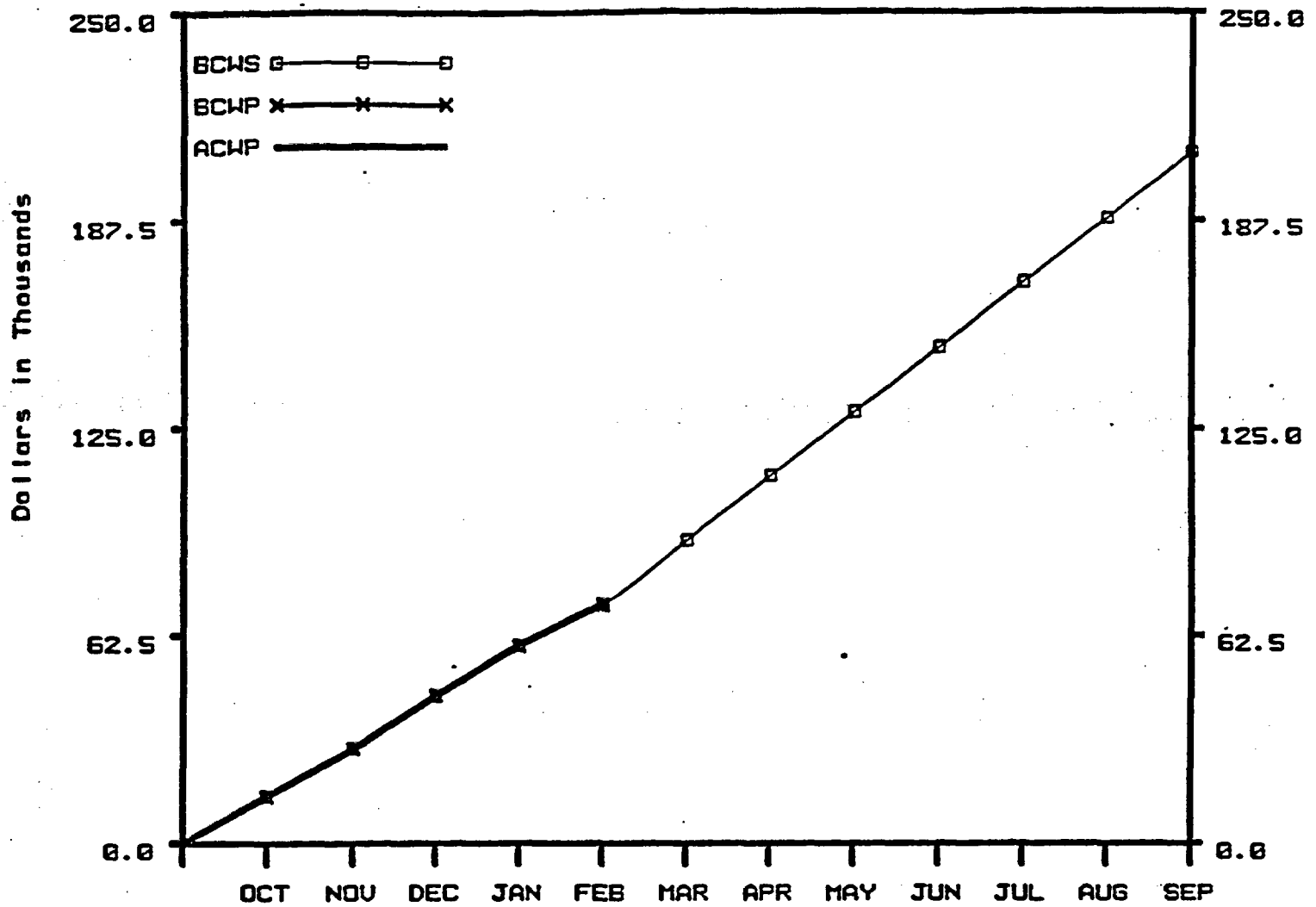
H&N - TOTAL	Current Period	Year To Date
A. BUDGETED COST OF WORK SCHEDULED (BCWS)	78.6	323.0
B. BUDGETED COST OF WORK PERFORMED (BCWP)	78.6	322.8
C. ACTUAL COST OF WORK PERFORMED (ACWP)	78.6	323.0
D. BUDGET AT COMPLETION (BAC)		2298.4
E. LATEST REVISED ESTIMATE (LRE)		2302.1

VARIANCES (Year To Date)	Dollars	Percent
F. SCHEDULE VARIANCE (B-A)	-0.2	-0.07
G. COST VARIANCE (B-C)	-0.2	-0.07
H. AT COMPLETION VARIANCE (D-E)	-3.7	-0.16

Remarks:

Variances below analysis threshold. No detailed explanation required.

NNWSI PROJECT
COST PERFORMANCE GRAPH FOR FEB 1986
WBS:1.2.I



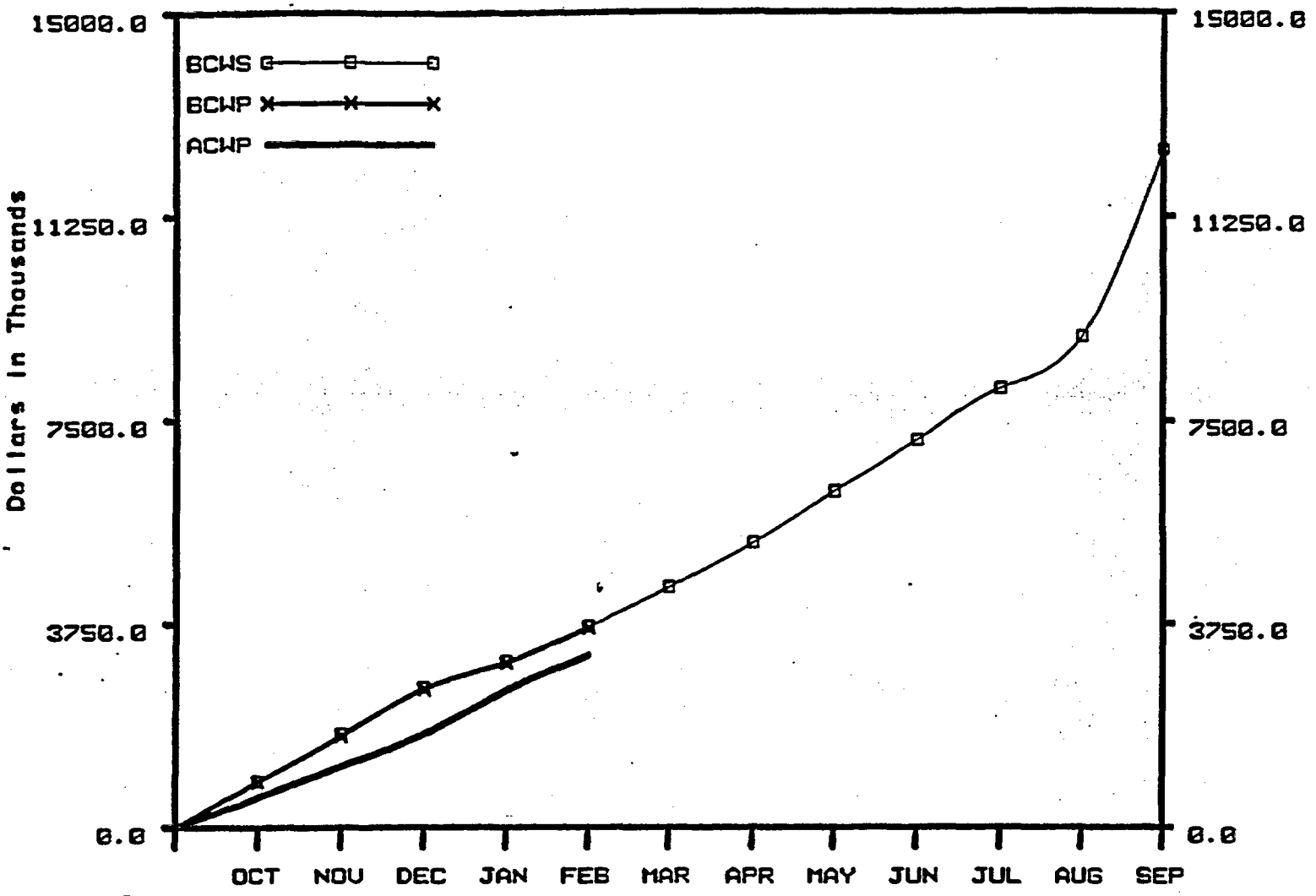
WSI - TOTAL	Current Period	Year To Date
A. BUDGETED COST OF WORK SCHEDULED (BCWS)	12.4	71.8
B. BUDGETED COST OF WORK PERFORMED (BCWP)	12.4	71.7
C. ACTUAL COST OF WORK PERFORMED (ACWP)	12.4	71.8
D. BUDGET AT COMPLETION (BAC)		208.0
E. LATEST REVISED ESTIMATE (LRE)		208.4

VARIANCES (Year To Date)	Dollars	Percent
F. SCHEDULE VARIANCE (B-A)	-0.1	-0.10
G. COST VARIANCE (B-C)	-0.1	-0.10
H. AT COMPLETION VARIANCE (D-E)	-0.4	-0.17

Remarks:

Variances below analysis threshold. No detailed explanation required.

NNWSI PROJECT
COST PERFORMANCE GRAPH FOR FEB 1986
WBS: 1.2.L



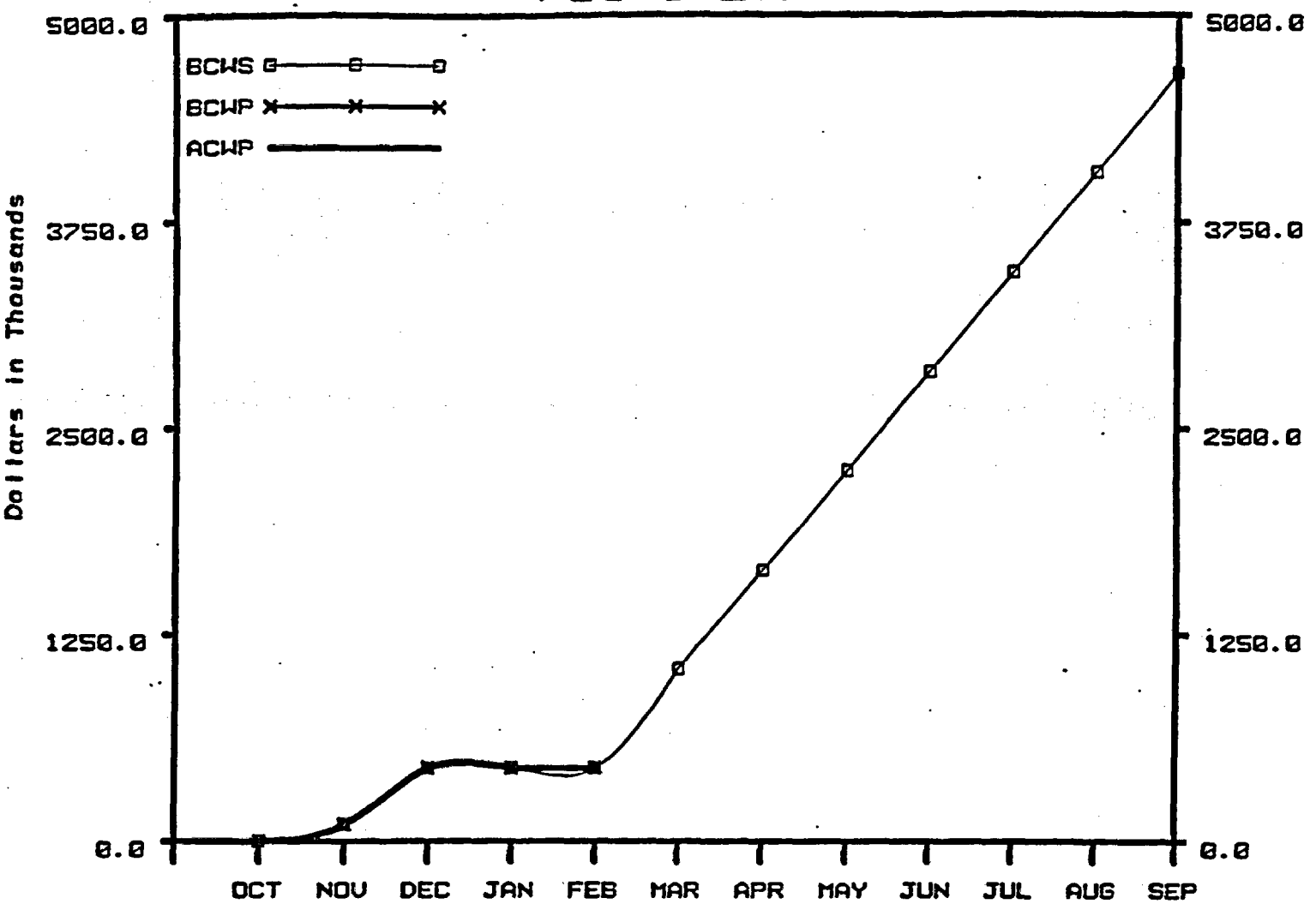
LLNL - TOTAL	Current Period	Year To Date
A. BUDGETED COST OF WORK SCHEDULED (BCWS)	645.0	3694.0
B. BUDGETED COST OF WORK PERFORMED (BCWP)	645.0	3662.9
C. ACTUAL COST OF WORK PERFORMED (ACWP)	645.0	3151.6
D. BUDGET AT COMPLETION (BAC)		12480.0
E. LATEST REVISED ESTIMATE (LRE)		10862.6

VARIANCES (Year To Date)	Dollars	Percent
F. SCHEDULE VARIANCE (B-A)	-31.1	-0.84
G. COST VARIANCE (B-C)	511.3	13.96
H. AT COMPLETION VARIANCE (D-E)	1617.4	12.96

Remarks:

LLNL February input delayed. Corrected data results in variances below analysis threshold. No detailed explanation required.

NNWSI PROJECT
COST PERFORMANCE GRAPH FOR FEB 1986
WBS: 1.2.N



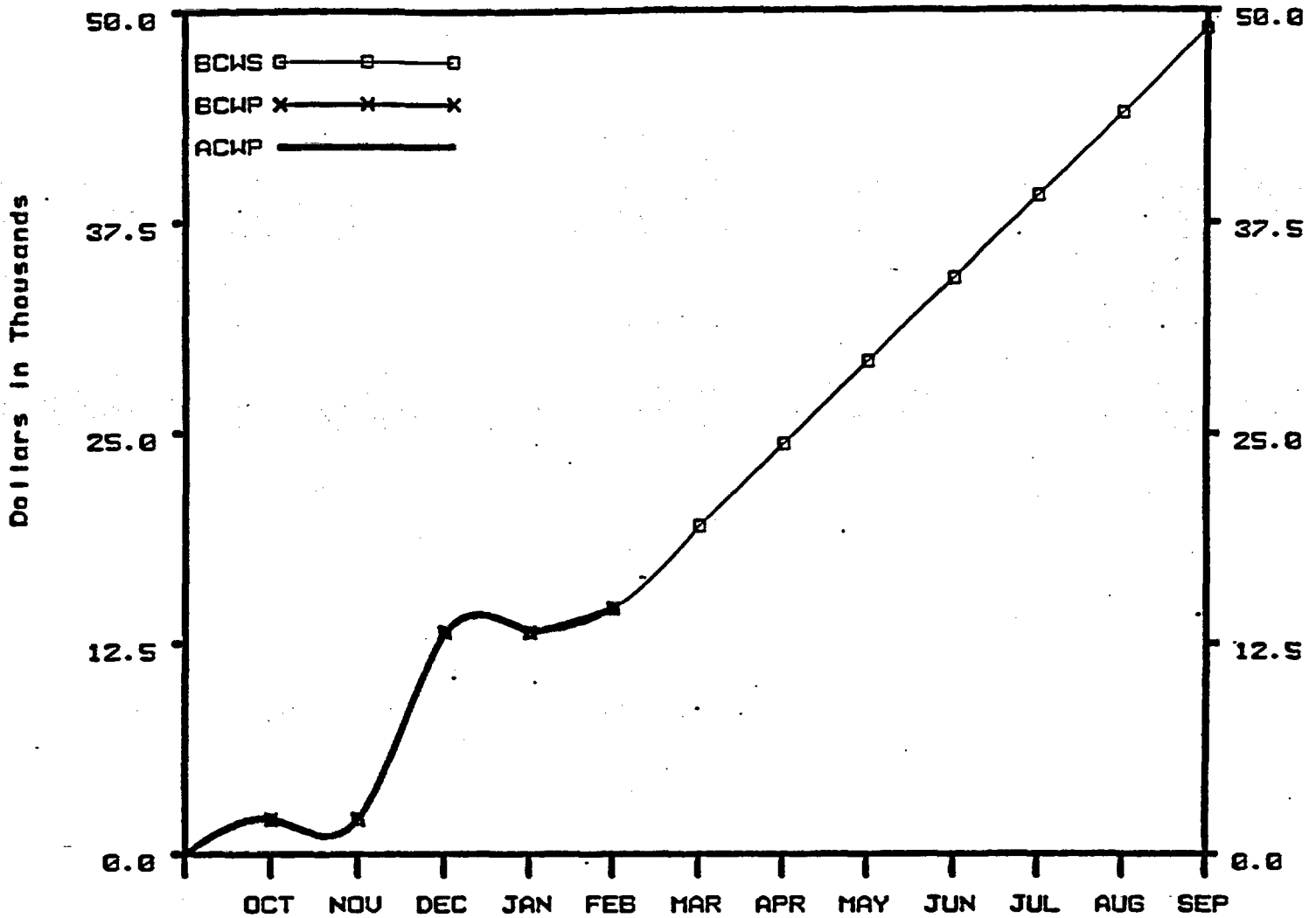
STATE - TOTAL	Current Period	Year To Date
A. BUDGETED COST OF WORK SCHEDULED (BCWS)	0.0	439.3
B. BUDGETED COST OF WORK PERFORMED (BCWP)	0.0	439.3
C. ACTUAL COST OF WORK PERFORMED (ACWP)	0.0	439.3
D. BUDGET AT COMPLETION (BAC)		4650.0
E. LATEST REVISED ESTIMATE (LRE)		4650.1

VARIANCES (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:

Variances below analysis threshold. No detailed explanation required.

NNWSI PROJECT
COST PERFORMANCE GRAPH FOR FEB 1986
WBS: 1.2.P



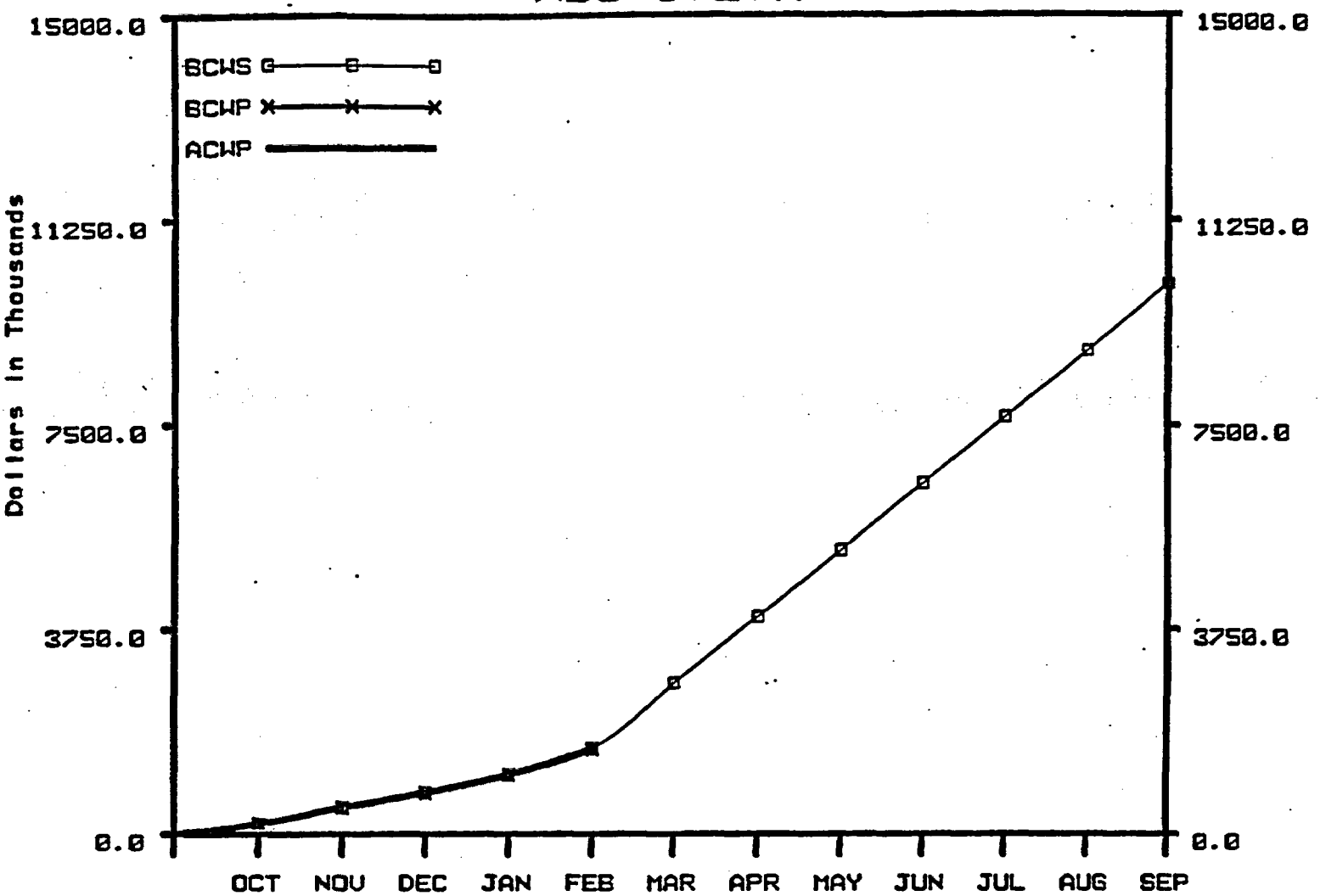
PAN AM - TOTAL	Current Period	Year To Date
A. BUDGETED COST OF WORK SCHEDULED (BCWS)	1.4	14.5
B. BUDGETED COST OF WORK PERFORMED (BCWP)	1.4	14.6
C. ACTUAL COST OF WORK PERFORMED (ACWP)	1.4	14.5
D. BUDGET AT COMPLETION (BAC)		48.9
E. LATEST REVISED ESTIMATE (LRE)		48.8

VARIANCES (Year To Date)	Dollars	Percent
F. SCHEDULE VARIANCE (B-A)	0.0	0.10
G. COST VARIANCE (B-C)	0.0	0.10
H. AT COMPLETION VARIANCE (D-E)	0.1	0.16

Remarks:

Variances below analysis threshold. No detailed explanation required.

NNWSI PROJECT
COST PERFORMANCE GRAPH FOR FEB 1986
WBS: 1.2.R



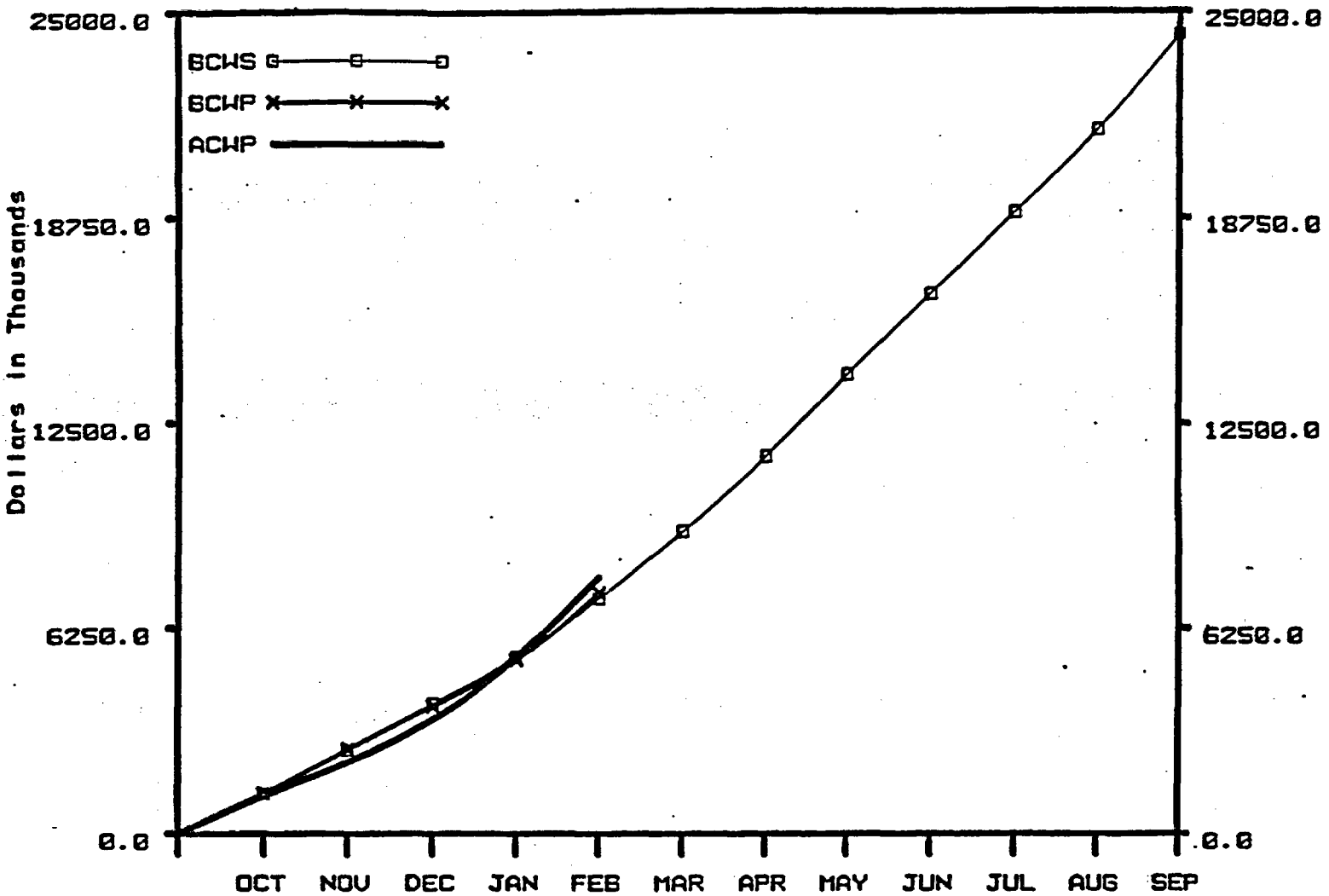
REECO - TOTAL	Current Period	Year To Date
A. BUDGETED COST OF WORK SCHEDULED (BCWS)	474.7	1548.9
B. BUDGETED COST OF WORK PERFORMED (BCWP)	474.7	1547.0
C. ACTUAL COST OF WORK PERFORMED (ACWP)	474.7	1548.9
D. BUDGET AT COMPLETION (BAC)		10077.4
E. LATEST REVISED ESTIMATE (LRE)		10081.4

VARIANCES (Year To Date)	Dollars	Percent
F. SCHEDULE VARIANCE (B-A)	-1.9	-0.12
G. COST VARIANCE (B-C)	-1.9	-0.12
H. AT COMPLETION VARIANCE (D-E)	-4.0	-0.04

Remarks:

Variances below analysis threshold. No detailed explanation required.

NNWSI PROJECT
COST PERFORMANCE GRAPH FOR FEB 1986
WBS: 1.2.S



SNL - TOTAL

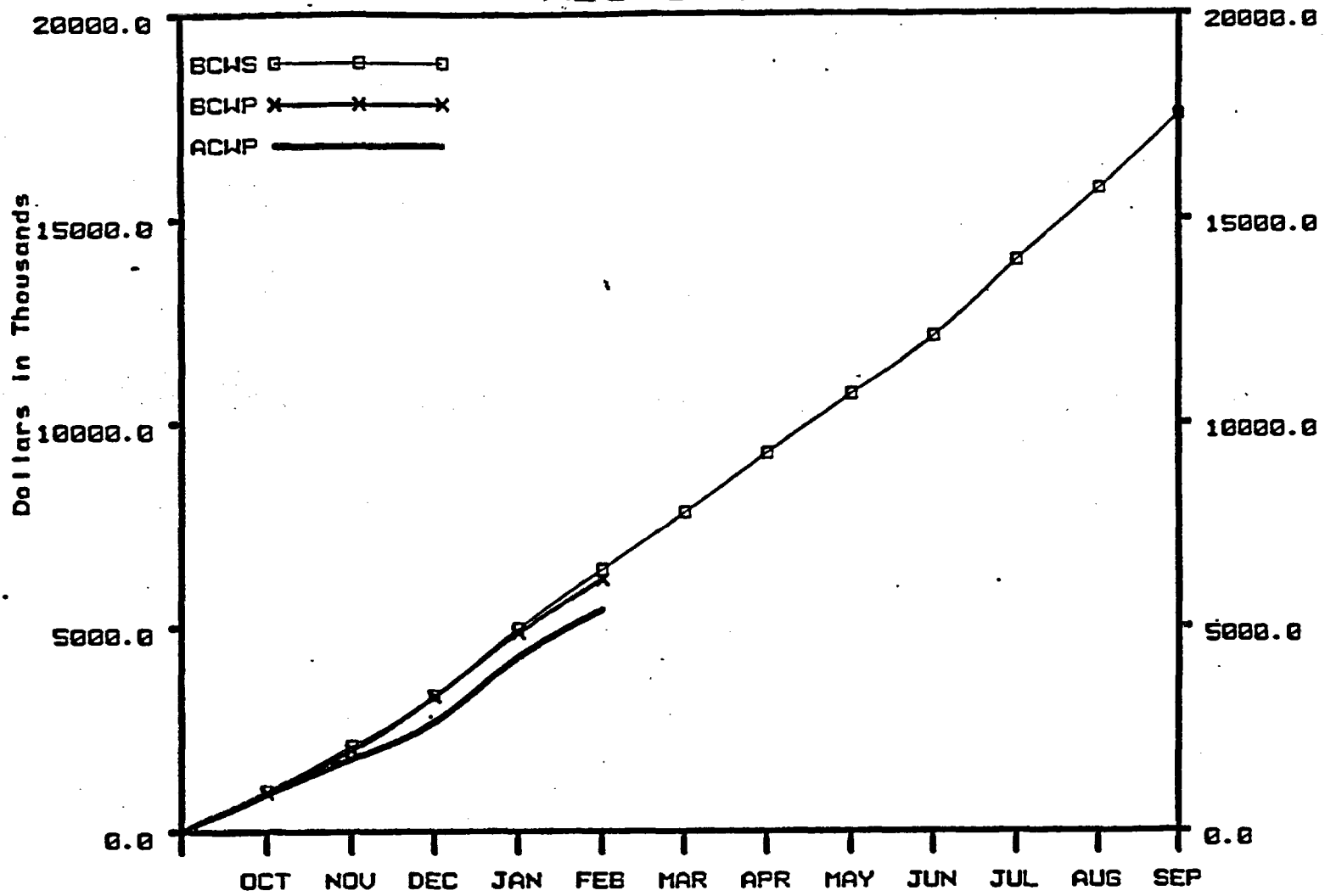
	Current Period	Year To Date
A. BUDGETED COST OF WORK SCHEDULED (BCWS)	1787.0	7141.0
B. BUDGETED COST OF WORK PERFORMED (BCWP)	2021.9	7303.2
C. ACTUAL COST OF WORK PERFORMED (ACWP)	2377.0	7761.0
D. BUDGET AT COMPLETION (BAC)		24284.0
E. LATEST REVISED ESTIMATE (LRE) .		26320.6

VARIANCES (Year To Date)	Dollars	Percent
F. SCHEDULE VARIANCE (B-A)	162.2	2.27
G. COST VARIANCE (B-C)	-457.8	-6.27
H. AT COMPLETION VARIANCE (D-E)	-2036.6	-8.39

Remarks:

Variances below analysis threshold. No detailed explanation required.

NNWSI PROJECT
COST PERFORMANCE GRAPH FOR FEB 1986
WBS: 1.2.T



SAIC - TOTAL	Current Period	Year To Date
A. BUDGETED COST OF WORK SCHEDULED (BCWS)	1434.3	6394.7
B. BUDGETED COST OF WORK PERFORMED (BCWP)	1292.7	6152.7
C. ACTUAL COST OF WORK PERFORMED (ACWP)	1141.5	5414.0
D. BUDGET AT COMPLETION (BAC)		17523.9
E. LATEST REVISED ESTIMATE (LRE)		16387.5

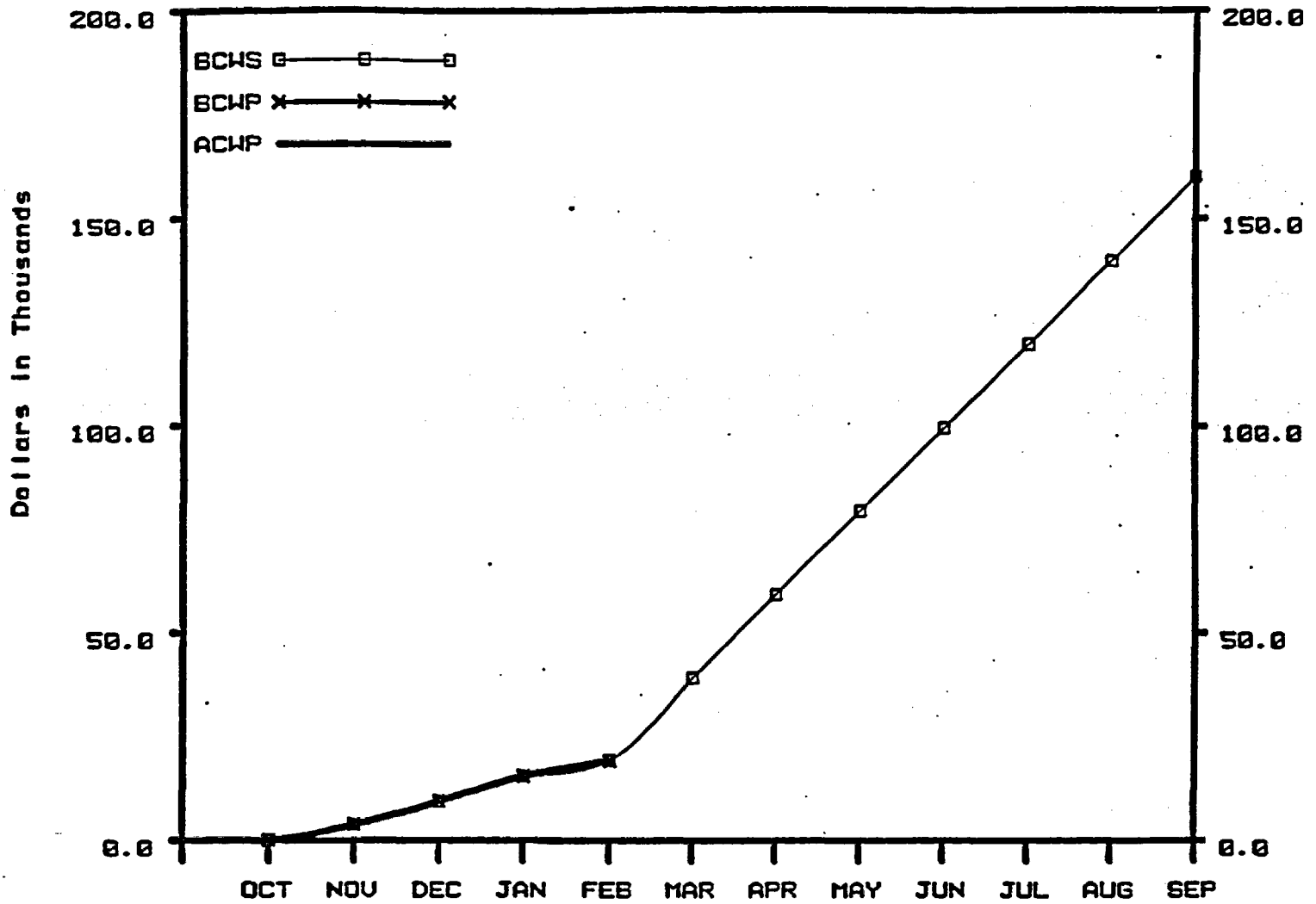
VARIANCES (Year To Date)	Dollars	Percent
F. SCHEDULE VARIANCE (B-A)	-241.9	-3.78
G. COST VARIANCE (B-C)	738.7	12.01
H. AT COMPLETION VARIANCE (D-E)	1136.4	6.48

Remarks:

Cost variance underrun due to:

- Staffing lag
- EA priorities
- Delay in relocations and capital expenditures

NNWSI PROJECT
COST PERFORMANCE GRAPH FOR FEB 1986
WBS: 1.2.U



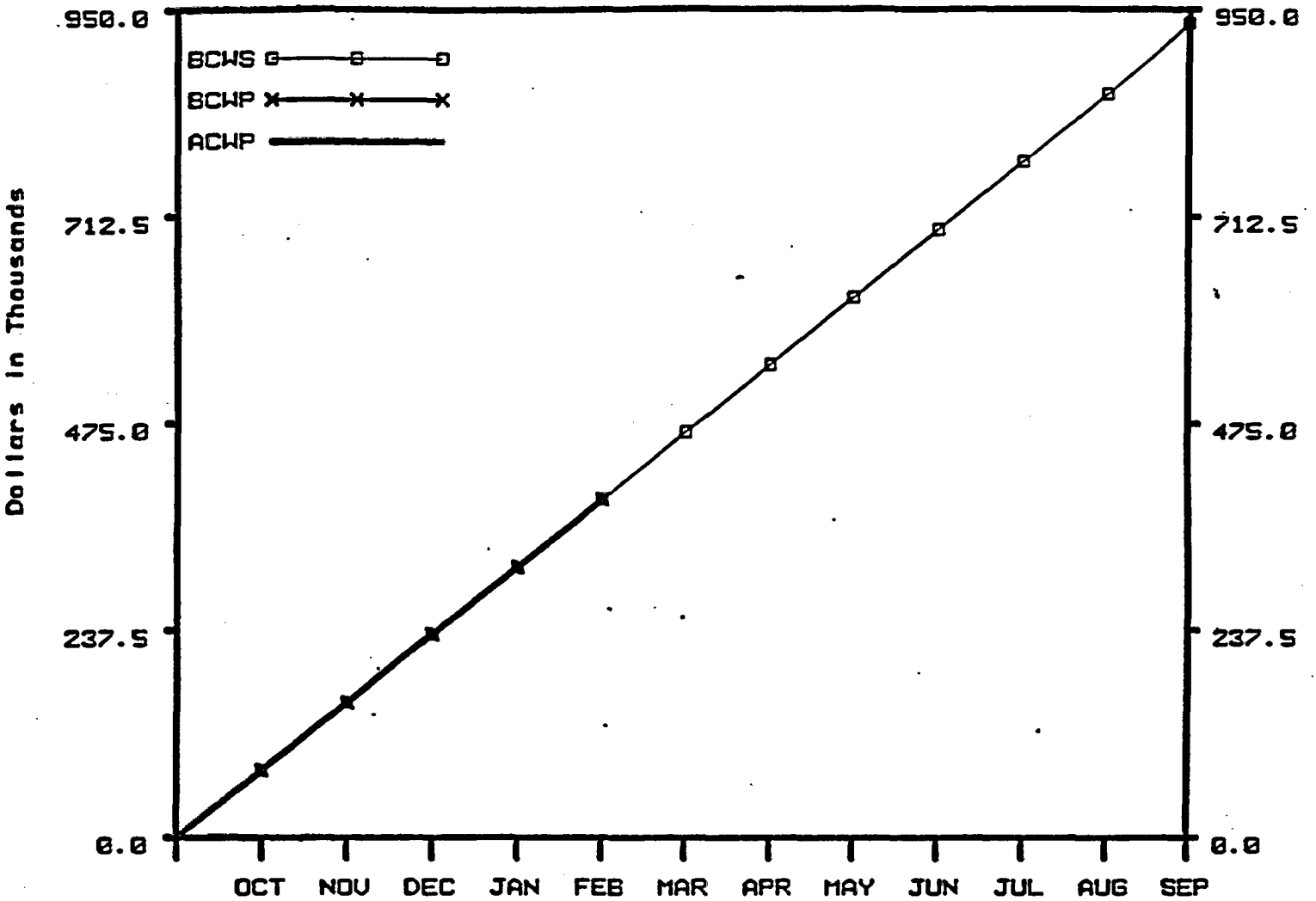
DRI - TOTAL	Current Period	Year To Date
A. BUDGETED COST OF WORK SCHEDULED (BCWS)	3.8	19.1
B. BUDGETED COST OF WORK PERFORMED (BCWP)	3.8	19.0
C. ACTUAL COST OF WORK PERFORMED (ACWP)	3.8	19.1
D. BUDGET AT COMPLETION (BAC)		160.0
E. LATEST REVISED ESTIMATE (LRE)		161.3

VARIANCES (Year To Date)	Dollars	Percent
F. SCHEDULE VARIANCE (B-A)	-0.1	-0.42
G. COST VARIANCE (B-C)	-0.1	-0.42
H. AT COMPLETION VARIANCE (D-E)	-1.3	-0.79

Remarks:

Variances below analysis threshold. No detailed explanation required.

NNWSI PROJECT
COST PERFORMANCE GRAPH FOR FEB 1986
WBS: 1.2.X



NTS - TOTAL

	Current Period	Year To Date
A. BUDGETED COST OF WORK SCHEDULED (BCWS)	77.5	387.5
B. BUDGETED COST OF WORK PERFORMED (BCWP)	77.5	387.6
C. ACTUAL COST OF WORK PERFORMED (ACWP)	77.5	387.5
D. BUDGET AT COMPLETION (BAC)		934.3
E. LATEST REVISED ESTIMATE (LRE)		934.1

VARIANCES (Year To Date)	Dollars	Percent
F. SCHEDULE VARIANCE (B-A)	0.1	0.02
G. COST VARIANCE (B-C)	0.1	0.02
H. AT COMPLETION VARIANCE (D-E)	0.2	0.02

Remarks:

Variances below analysis threshold. No detailed explanation required.