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INTERIM REPORT

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LOFT MONTHLY PROGRESS REPORT FOR MAY 1979

EG&G Idaho, Inc.

IDAHO NATIONAL ENGINEERING LABORATORY

DEPARTMENT OF ENERGY

IDAHO OPERATIONS OFFICE UNDER CONTRACT DE-AC07-76IDO1570

LOFT
MONTHLY PROGRESS
REPORT FOR
May 1979

JUNE 1979

Approved: N C Kaufman

N.C. Kaufman, Director LOFT Project

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I. Director's Monthly Summary

I. DIRECTOR'S MONTHLY SUMMARY

LOFT personnel successfully performed the second nuclear experiment in the power ascension series, L2-3, on May 12 after several months of preparations. Satisfactory initial conditions were achieved, including a maximum linear heat generation rate of 39.4 kW/m. Core rewet, which occured early in the blowdown phase, influenced core thermal response. This was similar to the results of experiment L2-2.

Initial evaluation indicates the thermal-hydraulic response generally agreed with the pretest calculation. However, the predicted peak clad temperature exceeded the measured value by about 100 K. The L2-3 experiment met all objectives sucessfully.

To prepare for program redirection, an isothermal, nonnuclear, small break experiment (designated L3-0) was conducted on May 30, using the power-operated relief valve. The test appears to have met all objectives.

Costs through May continue to be less than budgeted, primarily as a result of material costs accrued but not costed, some necessary rescheduling, and cost savings not yet reflected in Change Control Board actions. Initial work to accelerate the Small Break Series with consequent deferral of the remaining Power Ascension Series experiments has begun.

II. Accomplishments

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1. 189a-A-500001 LOFT Integral System Design and Fabrication

(1) Efforts continued for reload core II upper structure procurement. Bids were evaluated and a recommendation was made to award the contract to L&S Machine Company. L&S was also the supplier of the previous upper core support structures.

(2) Procurement activities for components requred for assembly of the control rod assemblies (CRA) for reload core II continued. The following contract awards were made:

Springs -- K-5901, Precision Coil Spring
Poison -- K-5852, Engelhard Industrial
Miscellaneous machined components -- K-5971, United Precision

(3) The final phase of the Fuel Module Installation and Removal Cask (FMIRC) training in the TAN-607 Hot Shop has been deferred, pending modifications to the unloading stand.

(4) A special purpose drawing was completed for fabrication of a new lower receiver section for the FMIRC/Hot Shop unloading stand modifications. (The existing receiver was undersized and would not accept fuel modules.)

(5) Engineering was completed for the FMIRC water level readout.

(6) An analysis was performed to assess the backup cooling system capability for the FMIRC.

(7) The Hot Shop/FMIRC off gas system installation was completed.

(8) Work on removing overhead obstructions (power lines, guys, gates enroute from containment to the Hot Shop) was completed except for minor road repair.

(9) Fabrication of fuel module transporter components is 60 percent complete with assembly of the unit to start the first week in June.

(10) Work (such as fuel handling procedures, and site work requests) was continued on software in support of a mid-June center fuel module changeout.

(11) Design on the downcomer stalk removal cask was completed and drafting was started. The expected completion date for design/drafting is July 1.

(12) The two remaining HV System 9 valves were converted to the containment isolation system. This conversion will permit HV-9 to be operated through halogen adsorbers while the reactor is operating.

(13) Design of resin handling cask piping system was completed.

(14) The breathing air system installation and testing were completed.

(15) A contract was awarded for a replacement compressor (PA-C-1). The replacement of this compressor will provide a redundant compressed air supply without interfering with the Data Acquisition and Visual Display System (DAVDS). The old compressor generated excessive vibrations that interfered with the DAVDS.

(16) The containment isolation system is being upgraded (test ports are being added) to permit leak tests to be conducted more easily.

(17) The design effort to permit obtaining of primary coolant pressurized samples (50 psi) was completed. The modification

will permit accurate measurement of noble gases in the primary coolant system. The modification will be completed on schedule to support LOFT refueling.

(18) Risk assessments were performed for the primary coolant and blowdown systems to support small break test L3-0. The assessment identified areas of concern for system performance during L3-0 and analyzed the concerns for system functionability and surviveability during the test.

(19) The refueling effort was supported by technical direction for the removal and reinstallation of peripheral equipment such as the control rod drive mechanism (CRDM) vent system and blowdown system snubbers.

(20) A plant operation risk assessment was performed as part of the inservice inspection (ISI) program to evaluate the risk of operating with snubbers that are untested for functionability. The study concluded the risk was acceptable for plant operation, but all untested snubbers would be tested as soon as possible after L2-3.

(21) The requirements for an ISI status computer code were defined. The code will provide a means to easily monitor ISI activities, plan future ISI work, provide a record of ISI inspection results, and provide special ISI reports.

(22) The revised ISI manual was released for final approval. The manual identifies the ISI basic philosophy and describes specific examinations, measurements, and tests associated with plant systems.

(23) A preliminary design review was held with MTS Corporation to review the basic functional requirements and preliminary configuration for a snubber test stand. The stand will provide snubber test capability for the LOFT ISI program.

(24) An engineering safety assessment (ESA) and changes to the technical specifications (TS) were prepared for the small break test L3-0.

(25) An ESA, operational safety assessment document (OSAD), and changes to the TS were prepared for test L2-3.

(26) A waste gas processing system (WGPS) safety analysis report (SAR) was prepared and submitted to ID for review and approval.

(27) An under-frequency relay was replaced on circuit breaker (CB-B-V) with a faster-acting relay, and three additional relays were ordered. Two relays will be installed and one will be a spare. The loss of commercial power test was repeated.

(28) The polar crane speed control circuitry was modified to limit the crane speed to 38 $\pm$ 2 inches per minute.

(29) A site work request (SWR) was prepared and parts were ordered for testing the polar crane overcurrent problem.

(30) Engineering evaluation is continuing to determine the extent of modifications required to solve random trips and to alleviate detrimental effects of radiation on the electronics for the failure detection system of the polar crane.

(31) A Herculite dust protection cover was fabricated and added to CB-B-V spare circuit breaker to keep dust off the breaker.

(32) Parts were ordered for adding electrical heaters to the accumulator. The parts for the heater control have not been ordered yet.

(33) Two SWRs were released for removing cable and tubing to the core center fuel module instrumentation.

(34) An SWR was prepared for installing the intercoms to be used in refueling the core.

(35) The following quality discrepancy reports (QDR) have been resolved:

No. 2863 - Calibration problems on equipment used in the loss-of-power test

No. 2578 - Diesel Generator B fan control problem

No. 2879 - The difference between drawing 630-T-325/1 and information obtained in the field was resolved and the drawing was revised.

(36) A draft of the power system technical manual (theory of operation) was completed.

(37) The second infrared and vibration maintenance inspections of the electrical power equipment was performed.

(38) LOFT Technical Report (LTR) 1310-36, "Evaluation of Voltage Transients on the Vital Power System," was prepared and issued.

(39) Engineering was started to install a printer for the fac lity temperature monitor.

(40) Engineering continued on:

a. The high accuracy primary coolant flow instrumentation that EG&G Los Alamos is fabricating for LOFT

b. The revamp of the main control room (MCR) radiation monitoring system

c. The Traversing Incore Probe System (TIPS) upgrade

d. The plant protection system (PPS) remote meter replacement

e. Neutron monitoring for refueling the core.

(41) Engineering and installation was completed on the vault temperature measurement, radiation continuous air monitor (CAM), oil pressure interlock, and the vacuum pump remote control for the WGPS.

(42) Engineering support was given to problems on the WGPS radiation system for the L2-3 test.

(43) Work was started on:

a. Defining two-out-of-three (2/3) matrix readout

b. Adding radiation monitoring for Building 726.

(44) Investigation of a mismatch between the wide-range and narrow-range steam generator water level indicators began before test L2-3. An excessive wide-range transmitter drift is suspected. Further investigation will be resumed in the near future.

(45) An additional phase of engineering was completed on the DAVDS communication expansion to install GAI phones on the test assembly.

(46) A selector switch and digital readout arrangement was installed to permit selected core temperature readouts in the main control room.

(47) LTR 111-101, "Analysis of the Effects of Flow Blockages on Departure from Nucleate Boiling Ratio in LOFT Reactor Core," N. F. Faust, was published.

(48) LTR 113-63, "LOFT Post L2-3 Decay Heat Information," G. H. Hanson, was published.

(49) In support of the L2-5 safety analysis, off-nominal high flow power distribution was calculated (DRC-7-79).

(50) For Mode 7 L2-5 safety analysis, three rod scrams from 50 and 60 inches were calculated.

(51) In support of technical specification change relaxing the emergency core cooling (ECC) disable wait-out period, worst case peaking for core after heat was calculated.

(52) Expected axial peak-to-average flux ratios (P/A) were computed for various pre-LOCE conditions, and acceptance criteria was developed for L2-3 TIPS measurements.

(53) L2-3 Pre-LOCE maneuvering analysis was performed in support of the L2-3 blowdown.

(54) Level I fuel module requalificaton was performed following the L2-3 test.

2. 189a-500004-LOFT Operations

(1) All prerequisites were completed for experiment L2-3.

(2) Experiment L2-3 was run successfully.

(3) All posttest plant decontamination and fuel requalification were finished.

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(4) Prerequisites were finished for the first small break test.

(5) The first small break test, L3-0, was completed.

3. 189a-A-6048 LOFT Experimental Measurements

(1) Installation of modems and terminals was completed for telecommunications link to TSA. This was checked out and operational for L2-3. Quick-look plots were available in TSA for the experiment.

(2) Hook-up and calibration of six experimental core thermocouples to strip chart recorders in the control room were finished. These were used during L2-3 by the Joint Experiment Group.

(3) General engineering assistance to LOFT operations and software personnel in support of the L2-3 experiment was provided.

(4) Two separate problems concerning the Visitor's Display Board (VDB) were investigated. The first problem involved a request that the "on-line" video plots be incorporated into the VDB replay system. This would allow playback of the plots in conjunction with the existing playback system. The second problem concerned the source of the on-line plots the Data Disk System. Although the DAta Disk System is currently functioning properly, it is obsolete and replacement parts are unavailable. Therefore, if it fails, it will mean an end to the on-line video plots.

The most feasible approach to solve both problems would be to purchase a color computer terminal and interface it to the existing VDB. This solution will not be implemented however, because the funding has been eliminated.

(5) The final draft of the Liquid Level Transducer Operation and Maintenance Manual has been completed.

(6) The purchase package for the LOFT Fuel Rod Scanner Data System was approved by DOE. Bids are due in June.

(7) Another loss of commercial power test was performed and analysis completed. Two Topaz regulators supplying power to the DAVDS were found failed. Both were repaired and the test subsequently completed successfully.

(8) The Medium-Band Data System package was approved. Bids will be returned early in June.

(9) The contract with Science Applications, Inc. (SAI) to incorporate a second tape drive on the gamma densitometer was changed to allow them to have two more weeks to complete the job since they were not able to work on the system until after L2-3.

SAI is also investigating the feasibility of modifying the gamma densitometer system to provide variable sampling rates. A reduction in sampling rate would also help extend record time during the small break test series.

(10) A position indication (open or closed) for the pressurizer power operated relief valve (CV-P139-5-4) was provided to the DAVDS for monitoring purposes during the small break test L3-0.

(11) The wiring data base was started. This is an engineering data base that uses Query Update. This data base is designed to provide efficient traceability of cable, terminal, and penetration numbers for all experimental transducers.

(12) Two persons attended the ISA International Instrumentation Symposium to present the following papers:

a. "LOFT Two-Phase Flow Data Integrity Analysis," L. D. Goodrich and L. P. Leach

b. LOFT Liquid Level Transducer Application Techniques and Measurement Uncertainty," D. L. Batt, S. L. Biladeau, L. D. Goodrich, and C. M. Nightingale

c. "Interpreting Two State Instruments for Intermediary Values," R. R. Good.

(13) The new differential moving average liquid level program was successfully used for L2-3. This program will now be transferred to a production COPERA program for future tests. The normalizing of individual electrodes has not been successful. Both resistance and random noise have been investigated. It appears that some testing of individual electrodes will be required to adequately define the correct method of normalization.

(14) The application of the data reduction technique learned from LTSF Wyle and BL-2 rake testing was successfully used with L2-3 data. A couple of drag disks could not be corrected, but this appeared to be due to malfunctioning of the transducer.

(15) The following support was supplied for L2-3 and L3-0.

a. The MCLs for L2-3 and L3-0 were completed.

b. The short term DIRC activities for L2-3 were completed. This included preand post-LOCE activities. The DIRC committee successfully completed these activities in record time.

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c. A critical measurements data base was written and published with the status report.

(16) MDTT for A2UP has been rebuilt and shipped to Fuels Engineering for assembly into the A2UP structure. The unit had previously experienced bent springs as a result of final acceptance tests.

(17) Two drag disc modules (-1 range) have been assembled and tested. Work has been initiated on the third drag disc and the three turbines (D range). These three units are to be used for a future PC-1 rake assembly.

(18) One MDTT for C5UP (B-2 range) has been assembled and tested. However, problems initiating in the final flow test have resulted in rebuilding the drag disc module. The drag disc module has been rebuilt and the force-displacement test has been completed.

(19) Two drag disc modules for A3CI (-3 range) have been assembled and the force-displacement test has been completed. Turbine bodies have been received for these two MDTTs so that the mounting holes can be located to Exxon's requirements. Drawings for final assembly of these units with special mounting hole requirements have been modified and are in sign-off.

(20) Several leads on the Wyle spare MDTT failed during testing at WRRTF. The unit is currently being disassembled so that it can be repaired.

(21) Parts for one set of rakes are 90 percent complete. Parts for another four sets of rakes are currently being machined with an estimated completion date of September 30.

(22) A proposal is being prepared to work assembly and flow test problems associated with the drag disc module transducer. This will lead to a correction of the existing problems with bending drag disc springs.

(23) A design change to upgrade the two MDTTs on the 290° downcomer has been determined. Stress analyses have been completed with the design found acceptable. Drawing changes and paperwork to perform the modification are continuing.

(24) The nuclear-hardened gamma densitometers were operated for LOFT Test L2-3. The following problems have been identified and a schedule for their repair has been established:

a. Four detector/preamplifier problems

b. Seven possible ground problems

c. Five failed thermocouples.

Two of the detector problems are due to defective crystals and will be returned to BVicron for repair.

(25) The nuclear-hardened gamma densitometer at PC-2 was satisfactorily operated for Test L2-3 without the concrete neutron shielding blocks installed. Since there was no observed degraded performance, it is recommended that the concrete blocks be removed from the densitometers at PC-1, BL-1, and BL-2. This will facilitate maintenance and troubleshooting.

(26) Six Bell & Howell differential pressure transducers were received for qualification testing. If qualified, Bell & Howell will be an alternate vendor to supply differential pressure transducers. Test procedures were written and reviewed and testing is in progress. Initial results look

very good. Bell & Howell pressure transducers are of particular interest since they employ a sputtered strain gauge which produces a transducer with very low drift and very little sensitivity to thermal effects.

(27) Test L2-3 was conducted with 94 percent of present pressure measurements working. Failed instruments included two suppression tank absolute pressure transducers which developed cable problems after containment close out, one differential pressure transducer which is working but was left valved out, and two free field pressure transducers which failed before L2-3 and cannot be replaced until core reload.

(28) Work is continuing on schedule at the instrument assembly lab on two upper plenum LLTs. Completion date is still scheduled for June 30.

(29) The LLT signal conditioning electronics were recalibrated before L2-3. In addition, the electronics and sight glass were monitored during L2-3 to assure proper operation.

(30) The data obtained from the LLTs during L2-3 was of better quality than obtained from previous tests.

(31) The LLT performance test procedure was released for comments. This procedure covers the separate effects portion of the performance test plan.

(32) A paper was submitted to the Intersociety of Energy Conversion Conference for presentation in August.

4. 189a-A-6053 LOFT Fuel Fabrication

(1) The A_2 center fuel module drag disc turbine transducer was replaced with a unit featuring graphite bearings.

(2) Documentation (FCF's, requisitions, and contract change orders) was prepared to (a) reinstate the five-rod-cluster of instrumented fuel rods in the A_3 and F_1 fuel bundles to provide full length distribution of cladding surface thermocouples and, (b) provide two fuel rods with nondensifying (stable) fuel pellets for posttest examination comparison of densifying and nondensifying fuel behavior.

(3) Exxon started assembly of special components (annular fuel pellets, external thermocouple fuel rods, etc.) for the A_3 fuel bundle.

(4) The LOFT Fuel Requalification Working Group evaluated the L2-3 test data and concluded that there was no evidence of fuel damage.

(5) The LOFT post L2-3 fuel condition of no perforated fuel rods will allow post-LOCE plant recovery, requalification, maintenance, and modification activities to proceed with minimum radioactive contamination complications.

(6) Movies of the core liquid level detector conductivity station signals during LOCE L2-3 were prepared that allow an improved capability for evaluation of the data in a timely manner.

5. 189a-A-6121 LOFT Experimental Program Planning

(1) Experiment L2-3 was performed on May 12. All objectives were achieved and the experiment was a success in every way.

(2) Three anticipated transients without scram (ATWS) were analyzed using the ALMOD computer code. These were:

a. Loss of load

b. Pump coastdown

c. Loss of feedwater.

Experiments of these types appear feasible in LOFT and results of these analyses will be used in preparing an Experiment Operating Specification.

(3) The LOFT test program is under revision to allow the performance of four small breaks to be completed this fall before the remaining tests in the L2 series are performed.

The basic purposes of these tests are to define the sequence of events expected to happen in a reactor during the following conditions:

a. L3-1 - A small break where the break flow exceeds the HPIS flow. The primary system is slowly depressurized until the plant emergency core cooling (ECC) systems are actuated.

b. L3-2 - A small break where the break flow is less than the HPIS flow. The primary system is gradually repressurized.

c. L3-3 - A small break where the break flow is equal to the HPIS flow.

d. L3-4 - A small break out of the pressurizer power operated relief valve.

Specific planning for these experiments is continuing and a draft of the EOS will be issued in July.

(4) An isothermal small break test was performed in LOFT on May 31. This small break was initiated by opening the pressurizer power operated relief valve. The experiment is identified as L3-0. the EOS, the Experiment Prediction (EP),

the Experiment Operating Procedure (EOP), the DAVDS procedures, and the Experiment Safety Analysis for L3-0 were prepared and approved in a very short time.

(5) The experiment prediction for experiment L2-3 was completed.

Preliminary work was done on evaluation of the L2-3 EP. Comparisons between the RELAP4/MOD6 pretest prediction and the L2-3 experimental data revealed very good agreement in most areas except for the core thermal response. Preliminary L2-3 posttest analysis activities have been centered on modifications of the RELAP4/MOD6 heat transfer surface. The code was modified to include the Biasi CHF correlation, which significantly changes the heat transfer surface. Hot pin calculations with the modified code have been performed for both L2-3 and L2-2, and the trends of the core thermal response during the early rewet phase are well predicted. Further work is being planned to modify the transition boiling correlation in RELAP4/MOD6.

(6) A member of the Test Prediction Section, W. H. Grush, returned from a month-long work assignment in Japan. Mr. Grush has been working with Japan Atomic Energy Research Institute (JAERI) engineers in a cooperative task to perform LOFT calculations using both RELAP4/MOD6 and RELAP/REFLA.

(7) Work was started on the RELAP5 and RELAP4/MOD7 experiment predictions for LOFT LOCE L3-0.

(8) LTR 20-100 documenting the comparisons of L2-2 data to the RELAP4/MOD6 predictions was completed. A similar report is now being written for LOFT LOCE L2-3.

(9) The Quick Look Report (QLR-L2-3, Project No. P394) for LOFT LOCE L2-3 was issued.

(10) All specified qualifications of LOCE L2-3 data were completed and the Experiment Data Report (EDR) for L2-3 is being written. Data from this experiment is of high quality and results were very similar to those from L2-2, including an early core rewet causing lower than predicted peak cladding temperatures.

(11) Two papers were completed for the 24th Energy Conversion Conference. These papers are part of the full session on LOFT.

(12) Several presentations of LOCE L2-3 results were given to audiences of the NRC, DOE-ID, Intermountain Technologies, Incorporated, and EG&G Idaho, Inc. personnel.

(13) Test evaluation personnel participated in the L3-0 experiment. Initial conditions and initial mass flow rate out of the pressurizer were determined after the experiment for use in performing blind code predictions with TRAC, RELAP4/MOD6, RELAP4/MOD7, and RELAP5. The results from this test will not be released until the predictions are completed on June 21.

(14) The best estimate prediction for LOFT fuel rod response during LOCE L2-3 using FRAP-T4 was completed. The RELAP computed fuel rod surface heat transfer coefficients, which show large variances in adjacent time steps, was manually adjusted for input to the FRAP-T4 code.

(15) Assessment of the LOFT fuel rod stored energy prediction accuracy continued. Comparison of the FRAP-S3 (modified version), FRAPT and the code verification data base was completed. Evaluation of the data was initiated.

(16) A study about determining fuel rod stored energy by scramming the reactor and measuring the subsequent deterioration of

the core coolant temperature differential, which is a function of the integrated fuel rod stored energy and the decay heat generated, was started. This test data would provide information about whether LOFT fuel densification is causing a nonrepresentative stored energy to exist at test initiation.

(17) The multiple, low-temperature-cycle (Phase 2) zircaloy oxidation measurement tests were completed and data reduction and evaluation activities commenced.

(18) The technical report (LTR 1111-59) on the initial (1978) LOFT fuel densification tests results and data evaluation was issued.

(19) Preparation was completed for a L2-2 Fuel Behavior presentation at the Atlanta American Nuclear Society Summer Meeting and the American Society of Mechanical Engineers Pressure Vessel Meeting in San Francisco.

(20) The MOXY calculations for center module radiation heat transfer have been approved and sent to CDCS for final approval and publication.

(21) Analysis of the L2-2 cladding thermocouple data is continuing. Overlays of thermocouples at identical axial elevation are being compared. Of specific interest is the apparent difference between calculated and measured temperatures at elevations above 1.0 meter. This difference is a result of lower calculated temperatures which may be due to (a) the codes' inability to handle two-phase nonequilibrium conditions which exist around the upper part of the rods, and (b) the local core flow not being predicted exactly. A study has indicated only slight changes in core flow rate (under nearly stagnated conditions) could make significant differences in the coolant quality at the top of the rods.

(22) Two new employees are working in the section; Seppo Keippe, a foreign national from Finland, will be working in the area of nuclear-electrical rod simulation and Eric Coryell will be assisting in pretest prediction work and posttest analysis work.

(23) The cladding of one IFA-511-II fuel rod was shipped back to Halden after the attachment of four LOFT thermocouples. Fabrication of eight electric heater rods at RAMA Corporation was started. Blowdown analysis of the IFA-511 loop, using the TRAC code, was completed. Presentations on the EG&G Idaho, Inc., work for IFA-511 at the Halden Workshop, June 18-21, were prepared.

(24) RELAP4/MOD6 analysis of the COSIMA Test V44 progressed, but did not result in completely satisfactory agreement of the cladding temperatures.

(25) Thermocouple locations on the heater rods and the heater rod locations in the NEPTUN rod bundle were defined. The range of initial conditions for proposed experiments were determined. Information on the local measurements in the NEPTUN loop were obtained and studied relative to the objectives of LOFT involvement in the NEPTUN program.

Procurement of thermocouple materials continued. The delivery date of the materials remains mid-June.

(26) Preparations were made for presentations in June to the LOFT Review Group, to the LOFT foreign-funded task representatives, and to special technical review meetings with KFK and NRC representatives.

(27) The boiler for the two-phase loop was selected. Shipment is scheduled in September with delivery expected in October.

(28) The construction package for the two-phase flow loop was signed off and released to M-K. bids for the construction have been solicited by M-K and will be evaluated in June. Construction will begin July 9, 1979.

(29) The footings for the steam supply vessel for the two-phase loop were completed. The tanks will be installed on the foundation at the LOFT Test Support Facility (LTSF) in June.

(30) MOD II changes to the Wyle contract have been approved and Wyle has committed to a schedule. The system will be completed, checked out and ready for the formal test program July 16.

(31) The Wyle vessel has been assembled with the liquid level probes installed. All data acquisition system hardware has been assembled and checkout is approximatly 50 percent complete.

(32) The Eptak microprocessor has been installed at LTSF. Initial reflood tests for the heater rod quench test have been completed. The objective of these tests was to verify system operation and to verify the operation of a microprocessor control system recently installed on the blowdown facility for control of heaters and valves. The system hardware performed as specified and the microprocessor successfully controlled the reflood events. Phase I of the quench test program will proceed in June.

(33) The experimental tests related to determining the pipe size effects on the DTT performance were initiated.

(34) The facility hardware for the lower core support orifice size test program was completed. This program will be conducted after the pipe size effects test.

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(35) A comprehensive review was made of Phase I and II of the Karlsruhe test data obtained with LOFT instruments. This was in preparation of the planned meeting with the KFK representatives in June.

SUMMARY OF FRG-FUNDED TASKS

Task 5072, 5073 - Core Instrumentation

Status: Three production ultrasonic density detectors (UDD) successfully passed acceptance tests and were sent to Exxon on May 25 for installation into the A3 bundle. A fourth UDD, planned for use at the A3 outlet, developed an electrical short during the autoclave test. The unit was returned to the shop to determine the failure mode and repairs will be made as required.

Task 5074 - FRG Management

Status: R. Loeffel, KFK, Germany arrived at EG&G on May 9 for a two-week visit to participate in final planning for a demonstration test of the radiotracer method at the Blowdown Facility.

R. Loeffel visited TRA and the LTSF for discussions toward final planning for a demonstration test of the radiotracer method at the Blowdown Facility. The facilities for irradiation and production of the radioactive isotopes were acceptable. A method of insertion and removal of the materials from the reactor will have to be developed.

As a result of the discussions, it was concluded that the effort and costs required by EG&G and KFK to install the equipment for tests at the Blowdown Facility in September was too great for the small amount of data which would result. Peforming a demonstration of the radiotracer method of slip measurement in the INEL two-phase loop was considered to be a more reasonable target.

Task 507611 - Miscellaneous Short-term Tasks

Status: No change.

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Task 507631 - Steam Temperature Probe

Status: Discussions were held with a vendor, IRCON, about using infrared thermometers for measuring superheated steam temperatures to develop and calibrate a steam probe. Usually such an IR thermometer is set up to look through windows in the water spectrum. However, by selection of other frequencies, the vendor thought that steam temperature measurement was feasible. A letter report of the status of this task has been written and distributed.

SUMMARY OF JAPANESE (JAERI)-FUNDED TASKS

Task 50811 - JAERI Management

Status: No change.

Task 5082 - Additional Instruments

Status: No change.

Task 5083 - Pressure Balanced Drag Turbine

Status: The equipment (positive feed pump, accumulator, etc.) for fabricating a bench test for testing the next prototype instrument has arrived at INEL. The test assembly is under construction.

Task 5084 - ECC Rakes

Status: The subcontractor, SAI, submitted revised manufacturing procedures for brazing the rake assemblies which were approved by EG&G. A new brazing contractor, PYROMET, provided a means of reducing the surface oxides on the rake parts and proposed a method of completing the brazing operations on the rake assemblies. The brazing of the rake assemblies was successfully completed on May 18.

The fabrication of the first two production ECC rakes is four days behind schedule, however, SAI still says that the rakes will be ready for shipment by June 8.

Task 5085 - LOFT/PBF Lead Rod Testing

Status: The test train was removed after the LLR4 test. Visual inspection of the rods, particularly Rod 312-1 which had been installed throughout the test series, showed that the cladding had collapsed.

Diametrical measurements of Rod 312-1 indicated that the gap between cladding and fuel pellets had been reduced from 8 mils down to 2 mils. Photos were taken of the fuel rods which were reproduced and distributed. The schedule for running the LLR4A test was moved forward to the week of May 21 due to problems in the LOC-3 hardware which delayed the LOC-3 test.

The LLR4A test was successfully completed on Friday, May 21. One rod reached 1250 K and the other three rods reached 1170 K. A meeting was held on May 16 to define in detail the PIE requirements on the rods from the LLR tests. The PIE testing is summarized as follows:

Fuel Rod	Number of High Temperature Transients	Profile Scans-T/C Removed	X-ray	Metallographic Slides
312-1	1	x	x	2
312-2	2	x	x	3
345-1	2	x	-	2
345-2	2	x	-	3
399-2	1	x	-	

518 320

Task 508721 - Reevaluation of LOFT Experiments

Status: The analyses have been completed and a final report is in preparation. The scheduled completion date for the report is August 1979.

Task 508731 - Miscellaneous Code Studies

Task A - Independent RELAP/REFLA Calculations of L2-2 Reflood

Status: W. A. Grush, EG&G Idaho, has completed his participation in Japan in a JAERI analysis of L2-2 test using the RELAP/REFLA code.

He will complete a trip report by June 1 that will include results of the analyses. JAERI representatives will bring additional data and graphs when they come to participate in the LOFT Review Group Meeting in June.

SUMMARY OF AUSTRIAN (SGAE)-FUNDED TASKS

Task 509110 - SGAE Task Management

Status: On May 3, W. Binner, Manager SGAE, discussed proposals for LOFT-related work with NRC representatives in Washington, D.C. Agreements were reached concerning the proposed tasks. The proposed tasks will now be started.

Task 509121 - Semiscale MOD-1/LOFT Scaling

Status: No change.

Task 509121 LOFT/PWR Scaling Study

Status: The final letter report was published and distributed.

Task 509131 - Semiscale MOD-3/LOFT Scaling

Status: Task completed.

SUMMARY OF NETHERLANDS (ECN)-FUNDED TASKS

Task 509210 - ECN Task Management

Status: No change.

Task 509220 - Development of Two-Phase Models for Orifice Flow

Status: A report entitled "A Flow Regime Dependent Model of Two-Phase Flow ir a Pipe" by D. J. Statile was received. The report summmarized work performed under th's task. Copies of the report nave been distributed at EG&G and t⁻nsmitted to DOE and NRC representatives.

Task 509241 - Transient Test Program - Additional Scope

Status: Two work releases were written for the additional scope for the tr⁻nsient two-phase testing task. Sinc⁻ much of the work related to the added scope has already been com leted, a cost transfer of 1200 hours and $12,000 was made to the above mentioned work releases.

SUMMARY OF FRG/JAERI-SHARED TASKS

Task 5092110 - Two-Phase Transient Test Program

Status: Reported in A-6121 Highlights.

Task 5093210 - Two-Phase Steady State Tests

Status: Reported in 6121 Highlights.

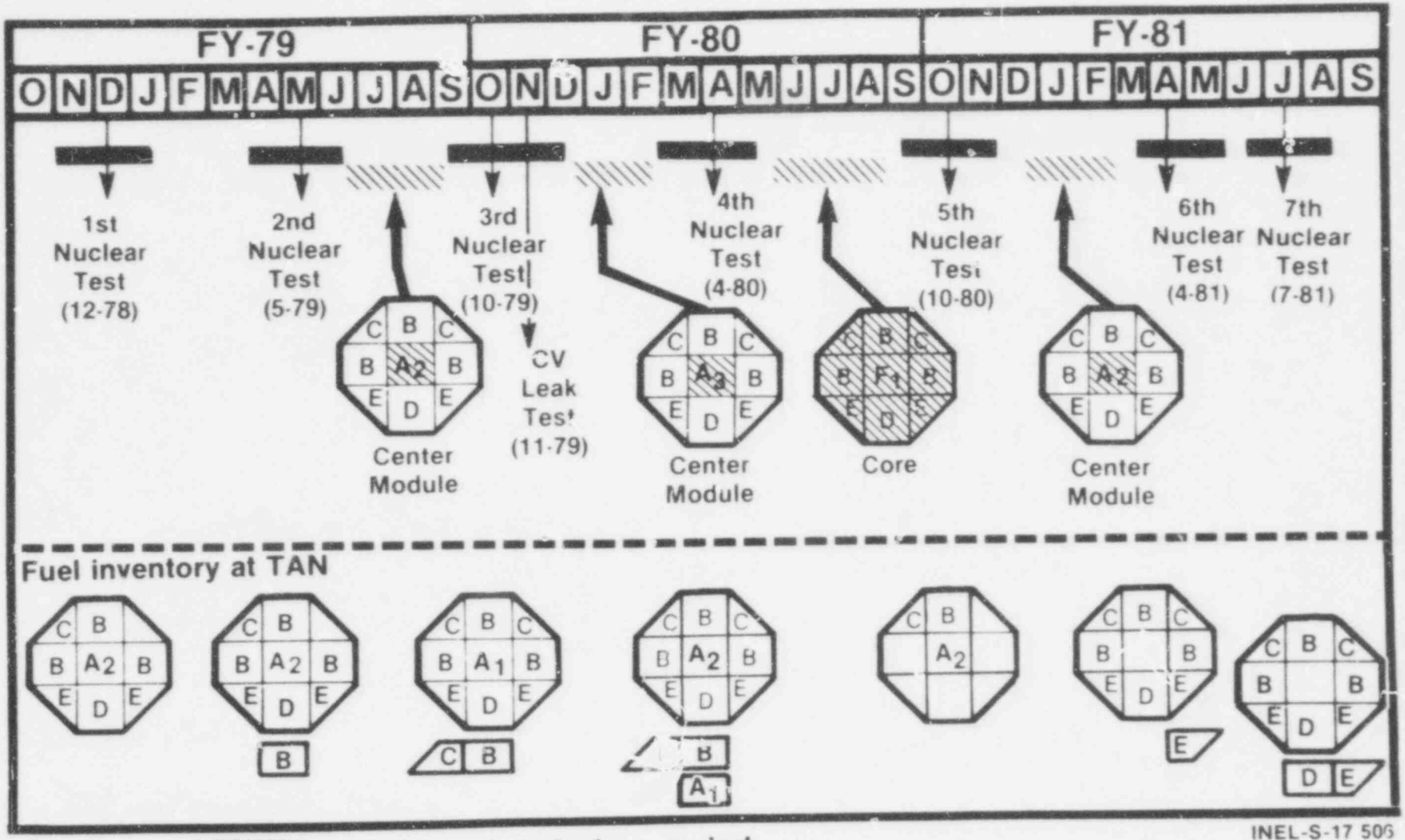
518 322

Task 5093310 - TRAC Code Studies

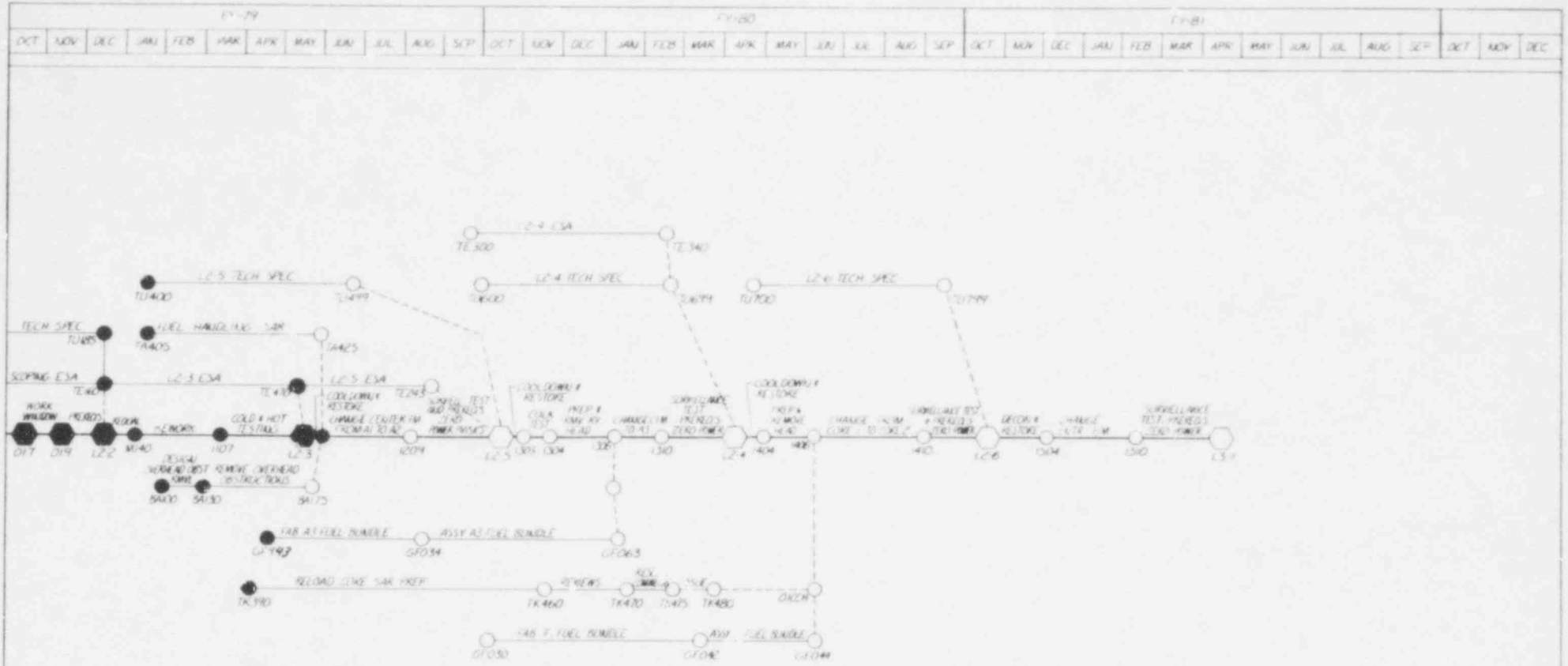
Status: The steady state calculations of both the LOFT L2-2 and the L2-3 tests have been performed. The L2-3 calculation was set up as a pretest prediction. Calculated system pressures (with step width of 20 M/sec and a vessel convergence criteria of 5) did not converge to the expected pressurizer pressures. Many parametric calculations have been performed to determine the cause of the nonconvergence of pressurizer pressure. The investigations of the cause will continue.

III. Summary Schedules

LOFT Three - Year Plan



MANAGEMENT SUMMARY SCHEDULE
OIL A BASELINE



FOREIGN-FUNDED COST AND SCHEDULE SUMMARY
($\times 10^3$ $)

● ACTUAL START ○ PLANNED START △ PLANNED COMPETITION ▲ ACTUAL COMPETITION (c)

Total Proposal Estimate (Incl. Contingency)	Total Spending Authorized by CCB	Funds Spent to Date	Items	FY-79 JAN	FEB	MAR	APR	MAY	JUNE	JUL	AUG	SEP	FY-80 OCT	NOV	DEC
436	436	436	Task 5051110 - Suppression Tank Instrumentation - (Completed 5-78) (c)												
19	19	19	Task 5051250 - Drag Screen (Cancelled 5-77) (c)												
895	895	895	Task 5071000 - DTT Rakes (Completed 5-78) (c)												
642	642	509	Task 5072000 - Core Void Fraction 5072100 - Core Inlet Instr. ----------△ 5072210 - Upper Structure Den. ----------△												
379	329	298	Task 5073000 - Core Inlet Flow 5073120 - Transducer Attachment (c) 5073130 - DTT Instruments ----------^ 5073140 - Core Instr. Tests --- ----------△												
150	150	133	Task 5074 - FRG Task Mgmt. ----------△												
143	133	132	Task 5075000 - Commercialization of Instruments (c)												

FOREIGN-FUNDED COST AND SCHEDULE SUMMARY (continued)
($\times 10^3$ $)

Total Proposal Estimate (Incl. Contingency)	Total Spending Authorized by CCB	Funds Spent to Date	Items	FY-79 JAN	FEB	MAR	APR	MAY	JUNE	JUL	AUG	SEP	FY-80 OCT	NOV	DEC
50			Task 5076110 - Misc. Short Term Tasks												
	7	7	Task A - Neutron Scatter Study (c)												
	9	10	Task B - Radiotracer Study (c)												
	9	0	Task C - Review LOFT Test Plans	----------								Δ			
	10	10	Task D - Return Nucleate Boiling (c)												
100	90	2	Task 5076310 - Steam Temp. Probe	----------											Δ
			FRG Part of Shared Tasks												
138	132	130	5093110 - 2-Phase Transient Tests	----------								Δ			
800	732	264	5093210 - 2-Phase SS Tests	----------											Δ
50	50	9	5093310 - TRAC Code Study	----------								Δ			
3,802	3,643	2,85?	Total FRG Funded Items												
202	202	130	Task 5081110 - JAERI Task Management	----------											Δ
150	150	70	Task 5082 - Additional Instr. (presently inactive)												
154	154	113	Task 5083110 - Advanced DTT	----------									Δ		
518	503	504	Task 5084100 - ECC Rake	----------					Δ						
1,891	1,839	1,440	Task 5085000 - LOFT/PBF Lead Rod Tests												
			50852 - Task Mgmt/Documentation	----------								Δ			
			50853 - Facility Modification (c)												
			50854 - LLR Tests												

FOREIGN-FUNDED COST AND SCHEDULE SUMMARY (continued)

($\times 10^3$ $)

Total Proposal Estimate (incl. Contingency)	Total Spending Authorized by CCB	Funds Spent to Date	Items	FY-79 JAN FEB MAR APR MAY JUNE JUL AUG SEP	FY-80 OCT NOV DEC
15	14	14	Task 5086110 - Fission Prod. Monitoring Conceptual Design (Complete 5-78) (c)		
55	55	16	Task 5087210 - Re-evaluation of LOFT Experiments	----------Δ	
21	20	8	Task 5087310 - Misc. Code Studies RELAP/REFLA Posttest Analysis of L2-2	●---------Δ	
			JAERI Part of Shared Tasks		
138	132	130	5093110 - 2-Phase Transient Tests	----------Δ	
800	732	264	5093210 - 2-Phase SS Tests	----------Δ	
50	50	9	5093310 - TRAC Code Studies	----------Δ	
3,994	3,851	2,698	TOTAL JAERI FUNDED ITEMS		
12	12	7	Task 5091110 - SGAE Task Management	----------Δ	
90	82	77	Task 509121 - S/Mod-1 - LOFT Scaling	----------Δ	
45	41	46	Task 5091310 - S/S Mod-3 Scaling (C)		
147	136	130	TOTAL SGAE FUNDED TASKS		
			NETHERLANDS		
10	10	8	5092110 - Task Management	----------Δ	
117	117	55	5092210 - RPI Subcontract	----------Δ	
10	10	0	5092310 - INEL Support	----------Δ	

FOREIGN-FUNDED COST AND SCHEDULE SUMMARY (continued)
($\times 10^3$ $)

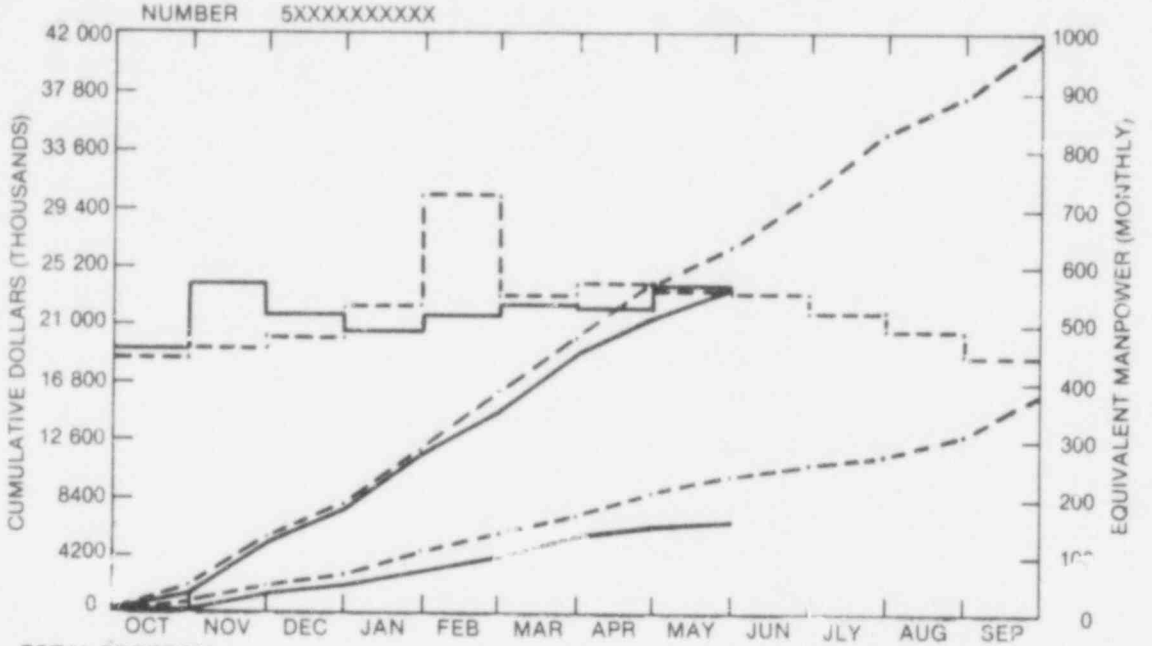
Total Proposal Estimate (Incl. Contingency)	Total Spending Authorized by CCB	Funds Spent to Date		FY-79 JAN	FEB	MAR	APR	MAY	JUNE	JUL	AUG	SEP	FY-80 OCT	NOV	DEC
100	89	0	Task 5092410 - Added Scope Transient Testing		●							△			
237	226	63	Total ECN Funded Tasks												

IV. Cost Charts & Variance Analysis

EG&G IDAHO INC.

TOTAL LOFT

NUMBER 5XXXXXXXXXX



TOTAL PROGRAM

BUDGET	2824	5403	8275	12 030	16 100	20 672	24 054	27409	30710	34656	37639	41 940
ACTUAL	2135	5262	8185	11 678	14 210	18 299	21132	23890				

MATERIAL

BUDGET	1052	1998	2899	4296	5599	7354	8497	9399	10587	11873	12885	15006
ACTUAL	307	1409	2235	3595	4126	5430	6103	6619				

BUDGET

ACTUAL

MANPOWER

BUDGET	431	465	476	532	723	548	576	556	540	513	489	441
ACTUAL	462	575	515	487	512	539	529	566				

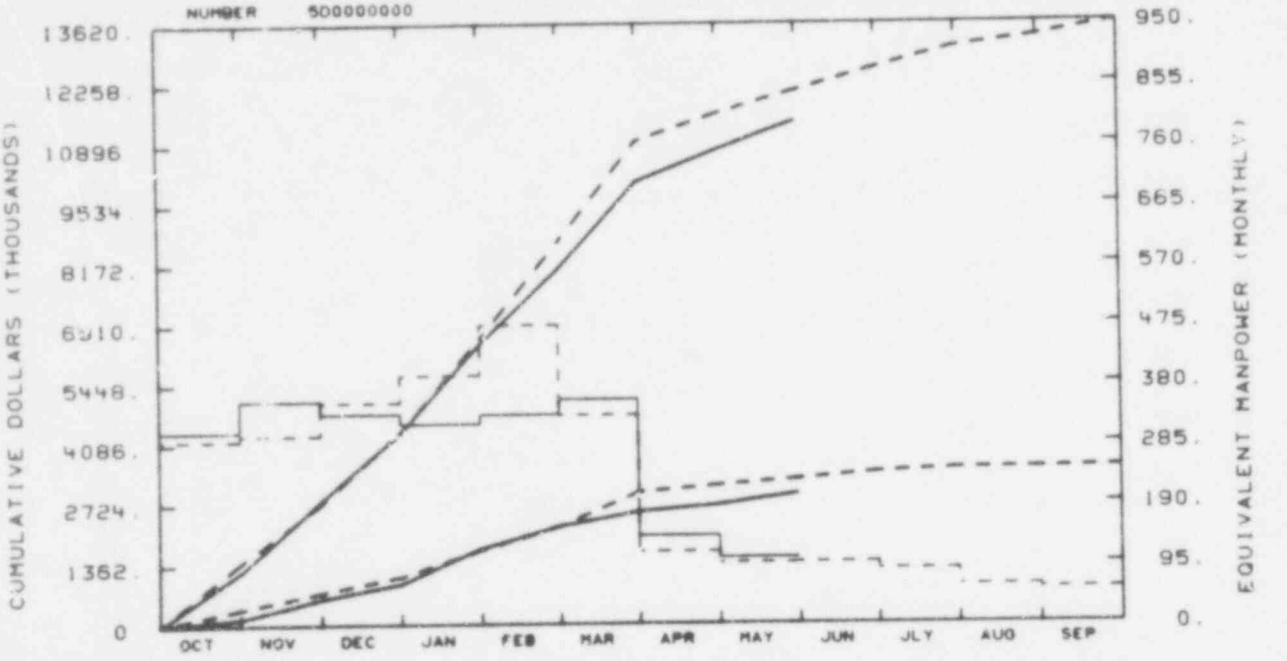
Manpower = Payroll Hours Less Holidays

Indicated material variance consists in part of uncosted obligations and in part savings achieved relative to budget.

EG&G IDAHO INC.

TOTAL LOFT DOE BUDGET

NUMBER 500000000



TOTAL PROGRAM

BUDGET	1407	2727	4349	6479	8677	10956	11574	12082	12580	13058	13293	13611
ACTUAL	1201	2801	4340	6381	8058	10036	10752	11398				

BUDGET - - - -

ACTUAL ——

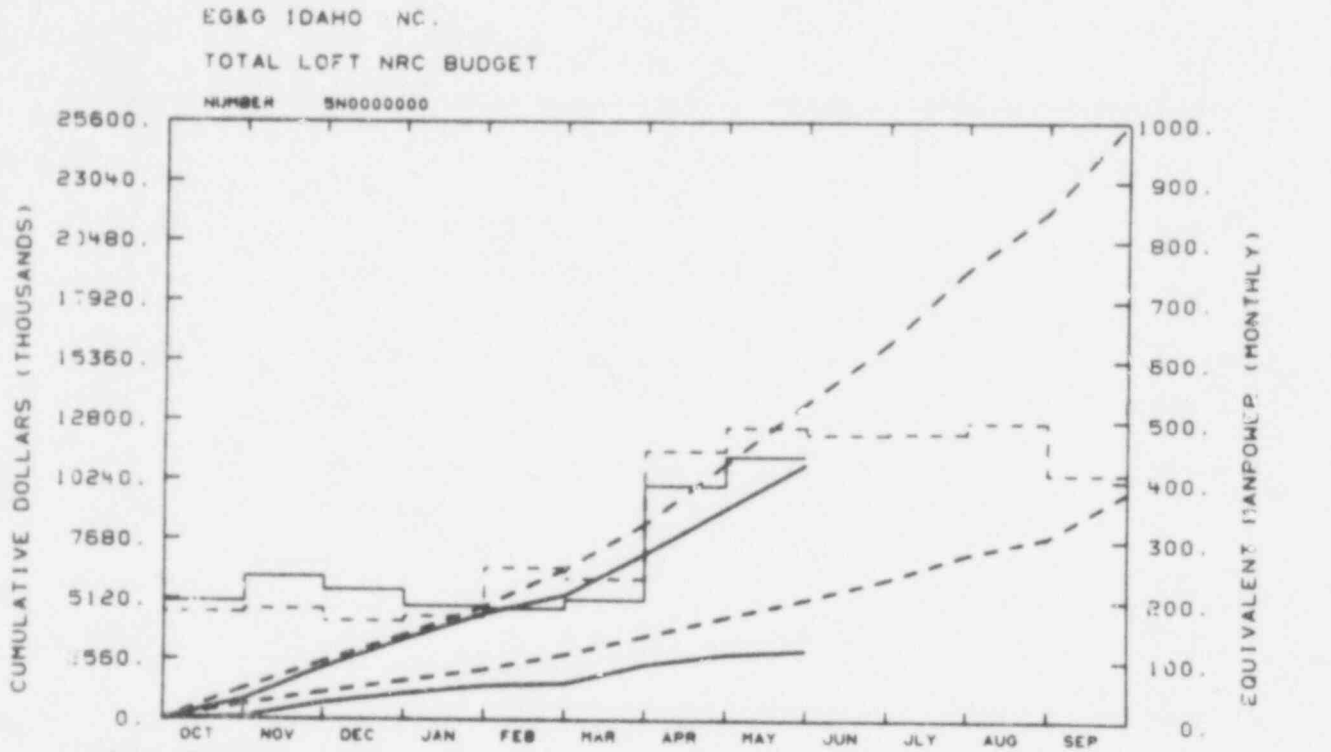
MATERIAL

BUDGET	383	724	1072	1869	2196	2958	3113	3250	3406	3486	3494	3525
ACTUAL	150	585	915	1707	2196	2517	2673	2918				

MANPOWER

BUDGET	291	299	351	394	474	330	113	95	98	85	59	54
ACTUAL	305	354	333	317	331	355	138	103				

No significant variance.



TOTAL PROGRAM

BUDGET	1307	2473	3586	4820	6422	8366	10962	13572	16118	19295	21774	25598
ACTUAL	831	2223	3412	4518	5323	7088	9027	10959				

MATERIAL

BUDGET	824	1160	1641	2135	2777	3577	4401	5180	6041	7121	7835	9781
ACTUAL	101	705	1105	1448	1548	2360	2810	2994				

MANPOWER

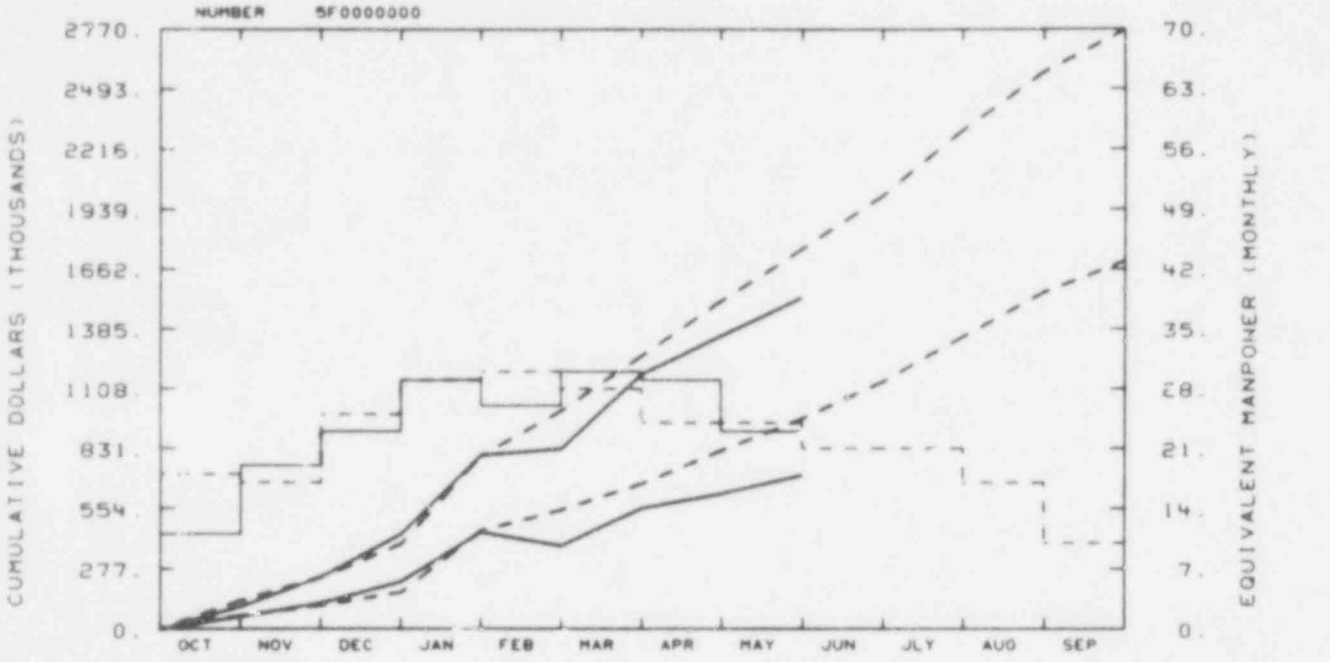
BUDGET	178	184	184	172	253	235	449	489	477	479	497	411
ACTUAL	197	238	216	188	185	200	391	440				

The underrun represents a combination of problems that are discussed in lower level charts. Corrective action has begun.

EG&G IDAHO INC.

TOTAL LOFT FOREIGN FUNDED

NUMBER SF0000000



TOTAL PROGRAM

BUDGET	130	235	389	794	1004	1281	1515	1755	2002	2304	2572	2786
ACTUAL	102	238	433	798	828	1175	1353	1533				

MATERIAL

BUDGET	61	107	166	448	545	665	821	989	1140	1348	1555	1700
ACTUAL	56	118	218	443	381	553	620	707				

MANPOWER

BUDGET	18	17	25	29	30	28	24	24	21	21	17	10
ACTUAL	11	19	23	29	26	30	29	23				

BUDGET

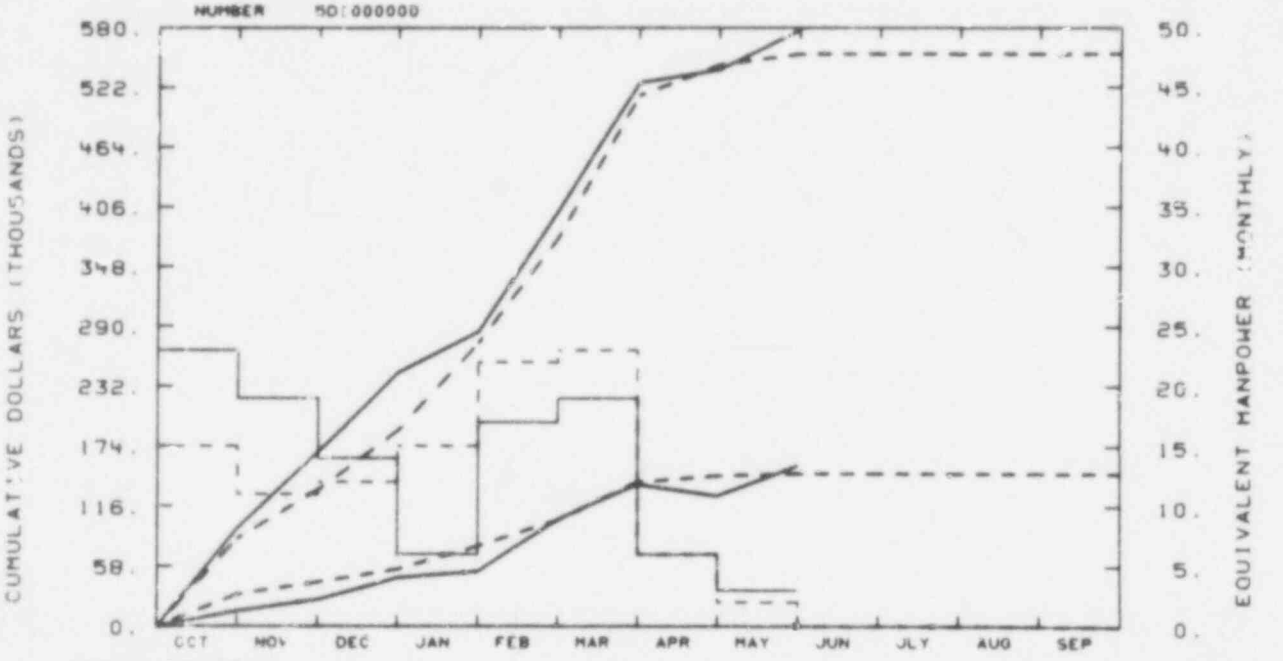
ACTUAL

No significant variance.

EG&G IDAHO INC.

500002 - EXPERIMENTAL MEAS

NUMBER 50:000000



TOTAL PROGRAM

BUDGET	115	152	189	274	378	514	544	554	554	554	554	554
ACTUAL	95	168	245	285	403	527	539	573				

MATERIAL

BUDGET	31	43	55	77	102	[illegible]	148	148	148	148	148	148
ACTUAL	15	28	47	53	103	137	126	156				

MANPOWER

BUDGET	15	11	12	15	22	23	8	2	0	0	0	0
ACTUAL	23	19	14	5	17	19	8	3				

BUDGET

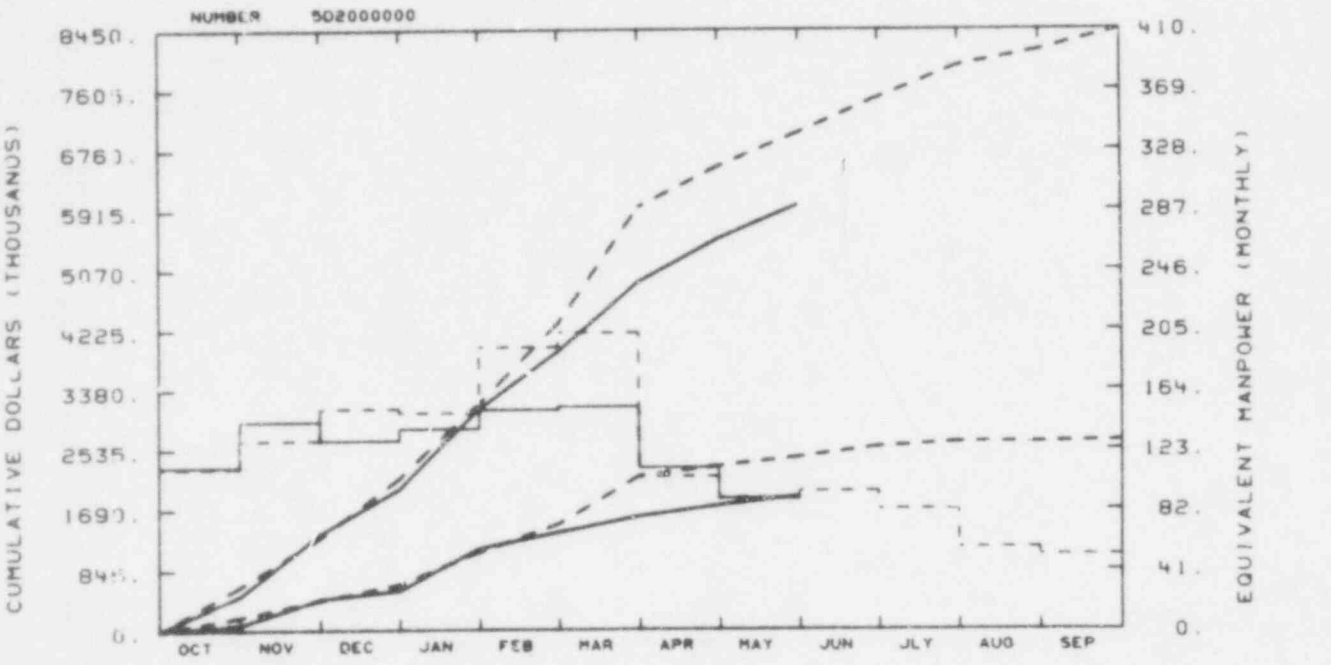
ACTUAL

No significant variance.

EG&G IDAHO INC.

500001 - INTERNAL SYS DESIGN

NUMBER 502000000



TOTAL PROGRAM

BUDGET	814	1297	2120	3185	4317	5959	6526	7003	7493	7937	8192	8447
ACTUAL	487	352	1974	3105	3917	4900	5503	5984				

MATERIAL

BUDGET	184	419	642	1088	1478	2148	2288	2415	2563	2633	2633	2654
ACTUAL	79	438	555	1141	1363	1582	1734	1864				

MANPOWER

BUDGET	110	129	151	148	193	203	104	89	94	82	58	51
ACTUAL	111	142	129	137	150	152	110	89				

BUDGET

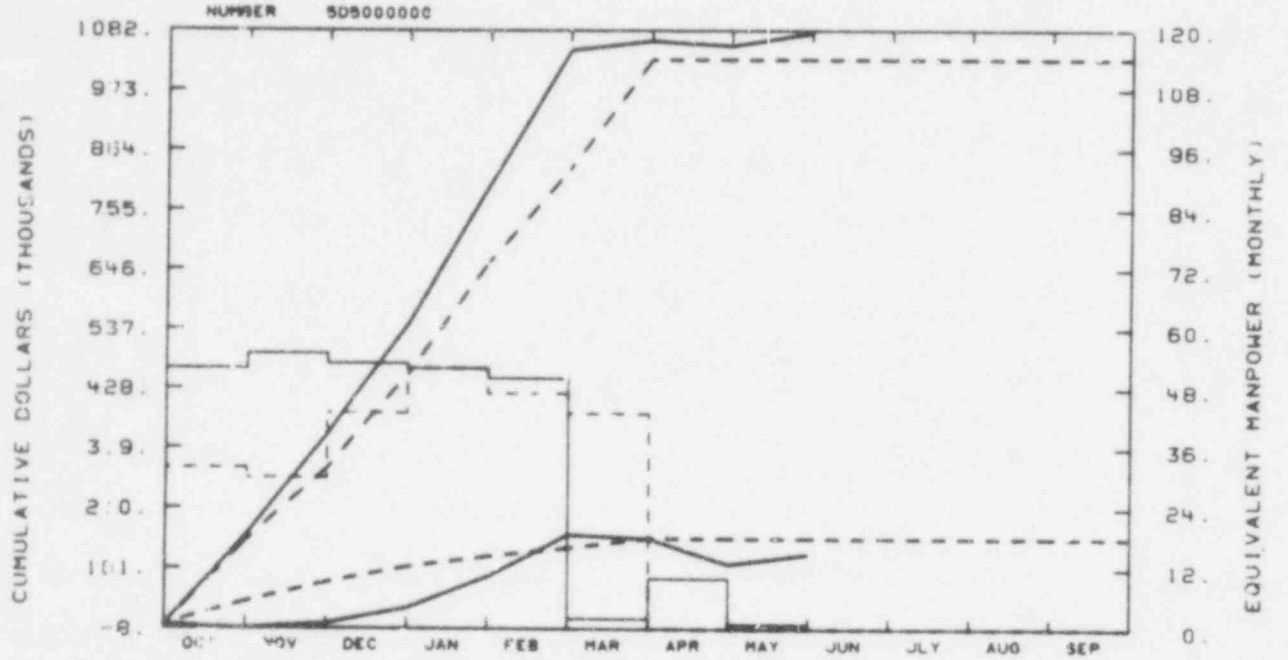
ACTUAL

The underrun was caused by several factors: (1) deferral of some work because of priorities or technical matters, (2) uncosted material, and (3) some manpower-induced delays when CCBs are being prepared.

EG&G IDAHO INC.

500006 - PLANS/BUDG/QA/SAFETY

NUMBER 5D5000000



TOTAL PROG

BUDGET	15a	[illegible]	455	660	830	[illegible]	1030	1030	1030	1030	1030	1030
ACTUAL	163	344	547	801	1047	1064	1055	1078				

MATERIAL

BUDGET	41	76	104	123	138	156	156	156	156	156	156	156
ACTUAL	-7	1	30	86	162	156	110	128				

MANPOWER

BUDGET	32	30	43	52	47	43	6	0	0	0	0	0
ACTUAL	52	55	53	52	50	2	10	1				

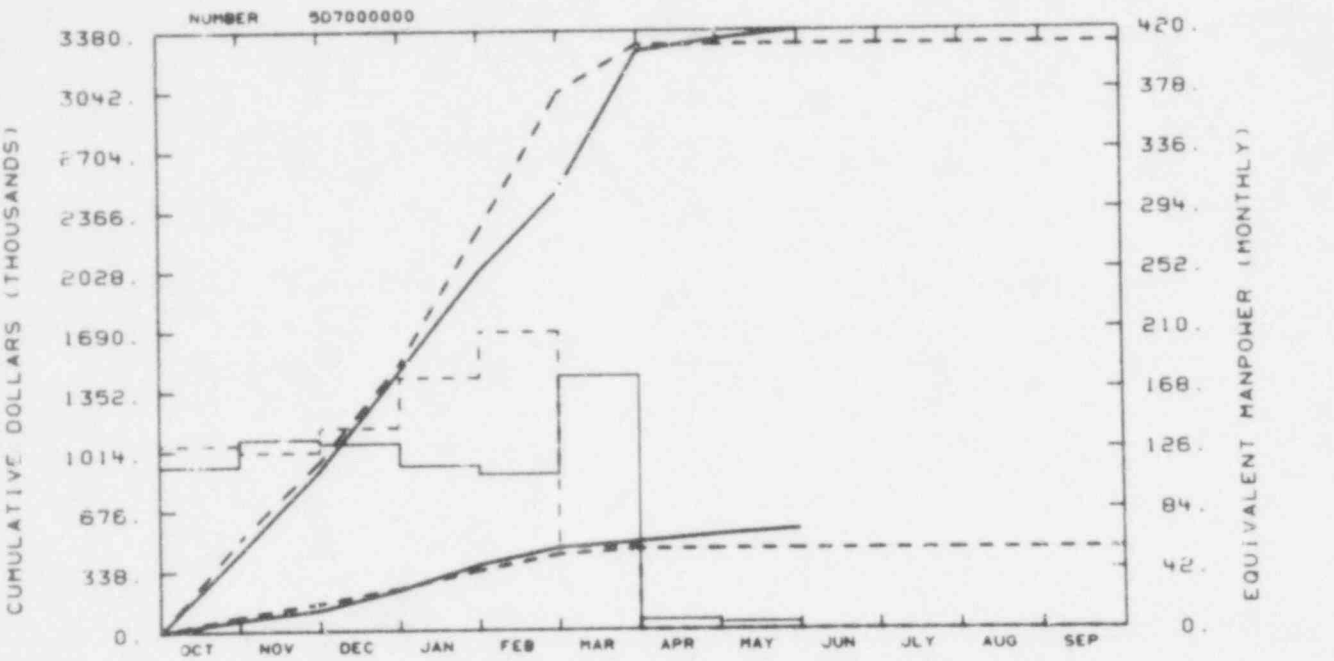
No significant variance. Costs incurred after April 1 are being transferred to 5N5000000. Effective use of computer time to generate required financial reports resulted in a $24,000 underrun in material dollars.

51. 338

EG&G IDAHO INC.

500004 - OPERATIONS

NUMBER 5D7000000



TOTAL PROGRAM

BUDGET	515	953	1504	2255	3031	3301	3301	3301	3301	3301	3301	3301
ACTUAL	440	902	1483	2024	2478	3288	3331	3378				

MATERIAL

BUDGET	84	155	238	338	424	452	452	452	452	452	452	452
ACTUAL	83	117	227	388	462	493	533	563				

BUDGET - - - - - -

ACTUAL ——— ———

MANPOWER

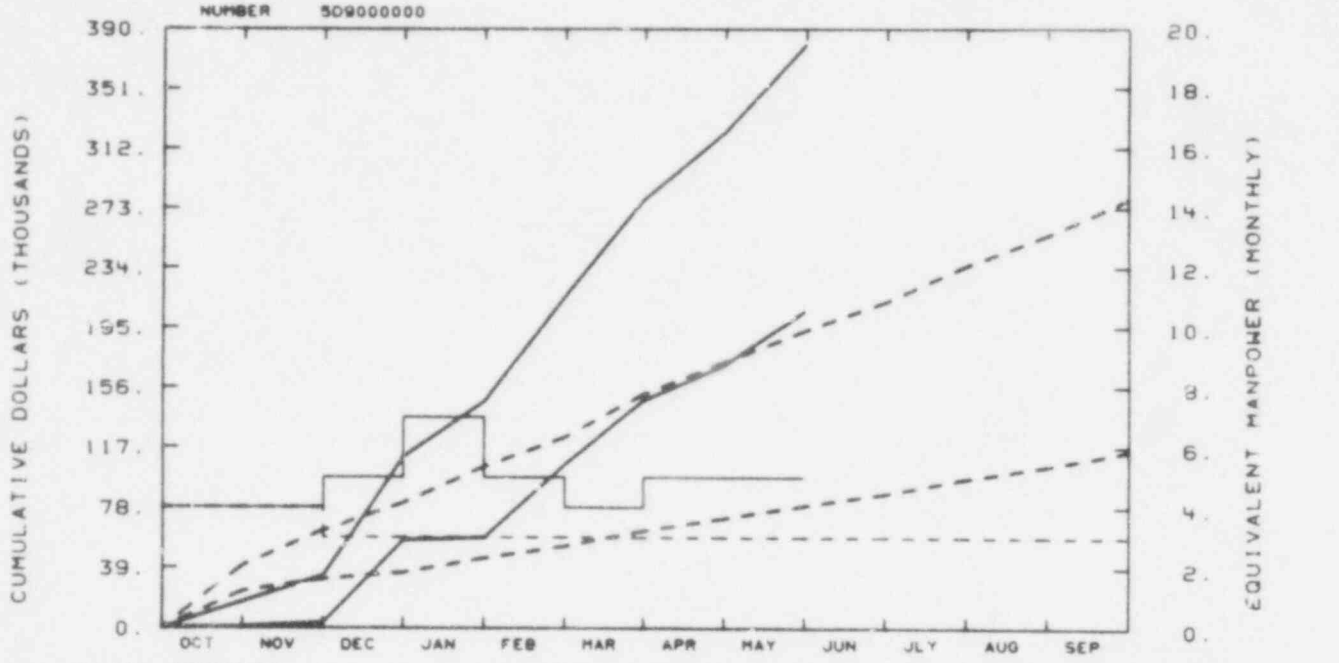
BUDGET	130	125	142	177	209	58	0	0	0	0	0	0
ACTUAL	115	134	131	115	109	178	7	5				

The budget overrun reflects $80,000 in expenditures erroneously charged to 5D7000000 instead of 5N7000000. A cost transfer will correct the situation.

EG&G IDAHO INC.

500005 - PLANT REQUALIFICATION

NUMBER 509000000



TOTAL PROGRAM

BUDGET	40	83	81	104	124	152	173	193	212	238	255	279
ACTUAL	17	34	111	147	215	279	323	380				

MATERIAL

BUDGET	24	32	36	45	53	63	71	79	87	97	105	115
ACTUAL	1	3	57	58	106	148	171	208				

BUDGET - - - - -

ACTUAL ———

MANPOWER

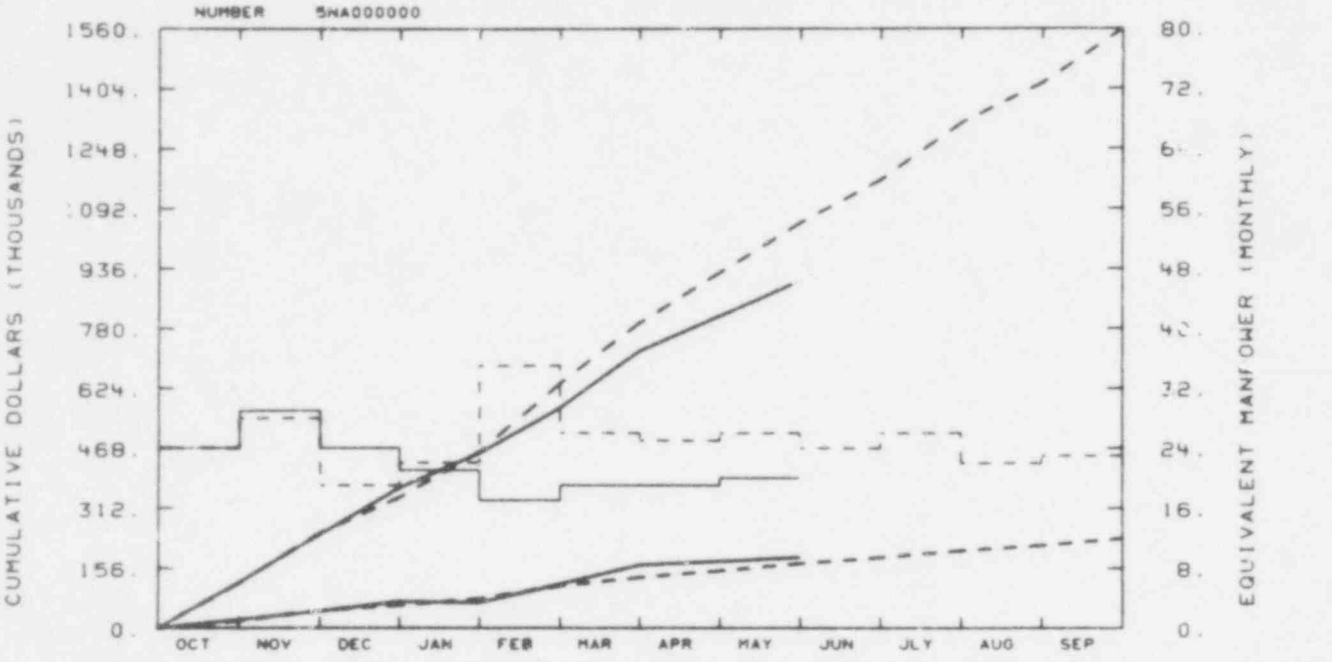
BUDGET	4	4	3	3	3	3	3	3	3	3	3	3
ACTUAL	4	4	5	7	5	4	5	5				

Delays in shifting to NRC funding caused the overrun. No significant variance will exist when the shift is finished.

EG&G IDAHO INC.

A6122 - PHYSICS & THERMAL HYDRO

NUMBER SNA000000



TOTAL PROGRAM

BUDGET	117	247	340	458	637	795	925	1056	1187	1318	1418	1560
ACTUAL	119	243	384	454	574	722	813	905				

MATERIAL

BUDGET	18	46	59	78	110	131	148	167	183	201	215	233
ACTUAL	22	44	89	86	114	183	173	183				

MANPOWER

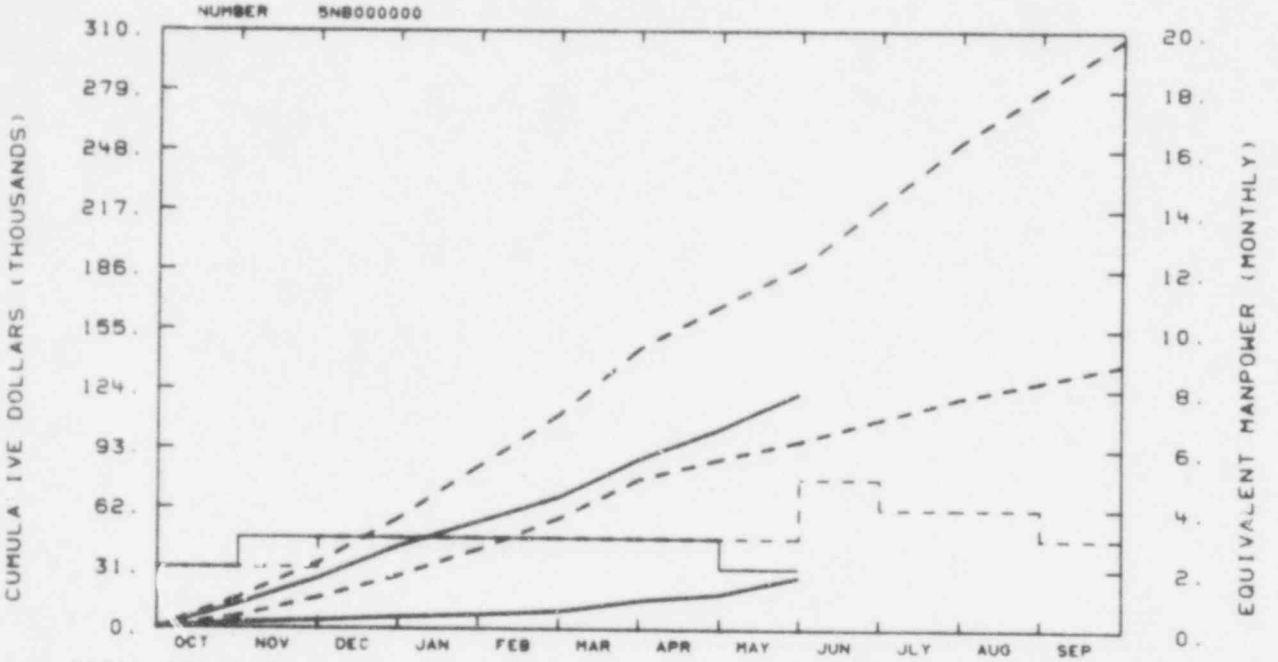
BUDGET	24	28	19	22	35	26	25	26	24	26	22	23
ACTUAL	24	29	24	21	17	19	19	20				

The underrun reflects: (1) a programming problem that resulted in duplicate funding of one task, and (2) manloading problems that are being resolved.

EG&G IDAHO INC.

A6275 - ELEC HEAT ROD EV ST

NUMBER 5NB000000



TOTAL PROGRAM

BUDGET	15	34	57	84	111	143	168	188	220	253	279	306
ACTUAL	12	28	42	55	68	88	104	122				

MATERIAL

BUDGET	8	18	27	41	57	77	88	97	109	120	128	137
ACTUAL	3	4	6	7	9	15	18	27				

MANPOWER

BUDGET	2	2	3	3	3	3	3	3	5	4	4	3
ACTUAL	2	3	3	3	3	3	3	2				

BUDGET - - - - - -

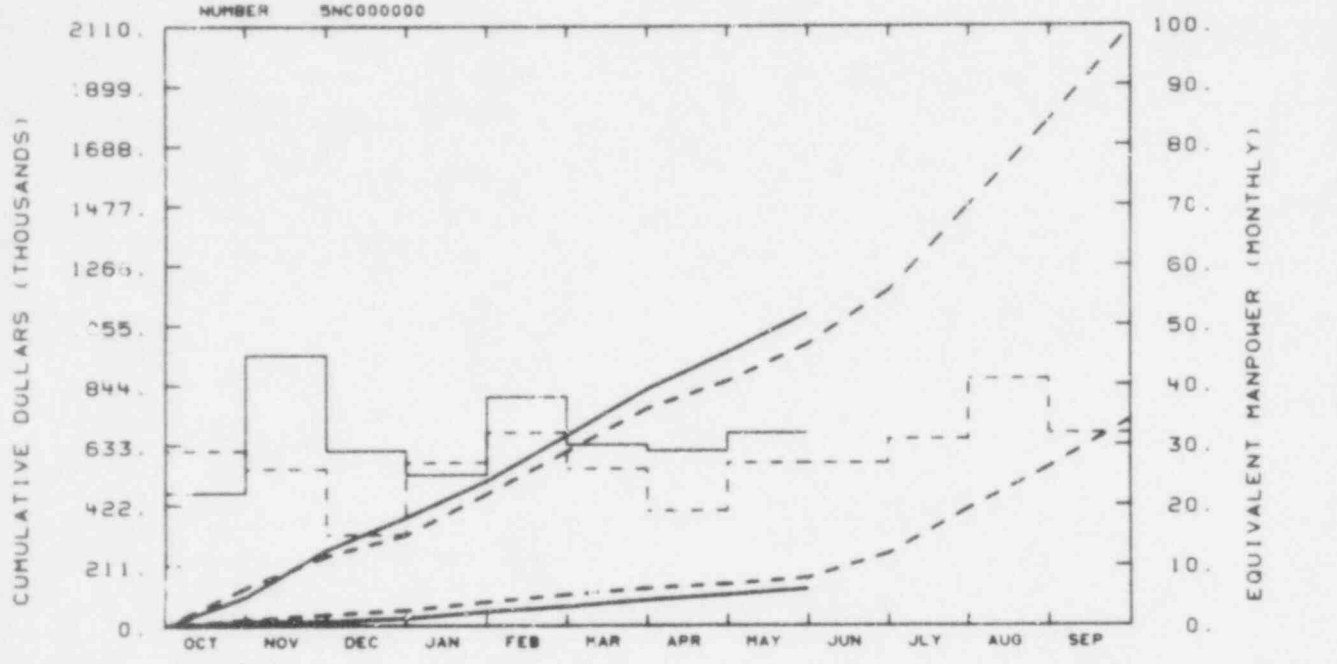
ACTUAL _____

Charges of $15,000 for the heater rods haven't been received. The Halden test schedule has been slipped by three months, delaying scheduled work.

EG&G IDAHO INC.

A6121 - EXP SUPT TESTING

NUMBER SNC000000



TOTAL PROGRAM

BUDGET	133	241	315	460	609	781	857	988	1178	1478	1778	2103
ACTUAL	101	284	377	505	685	829	959	1098				

MATERIAL

BUDGET	21	38	53	82	107	130	144	166	252	408	555	721
ACTUAL	15	15	26	48	66	89	107	128				

MANPOWER

BUDGET	29	26	15	27	32	28	19	27	27	31	41	32
ACTUAL	22	45	29	25	38	30	29	32				

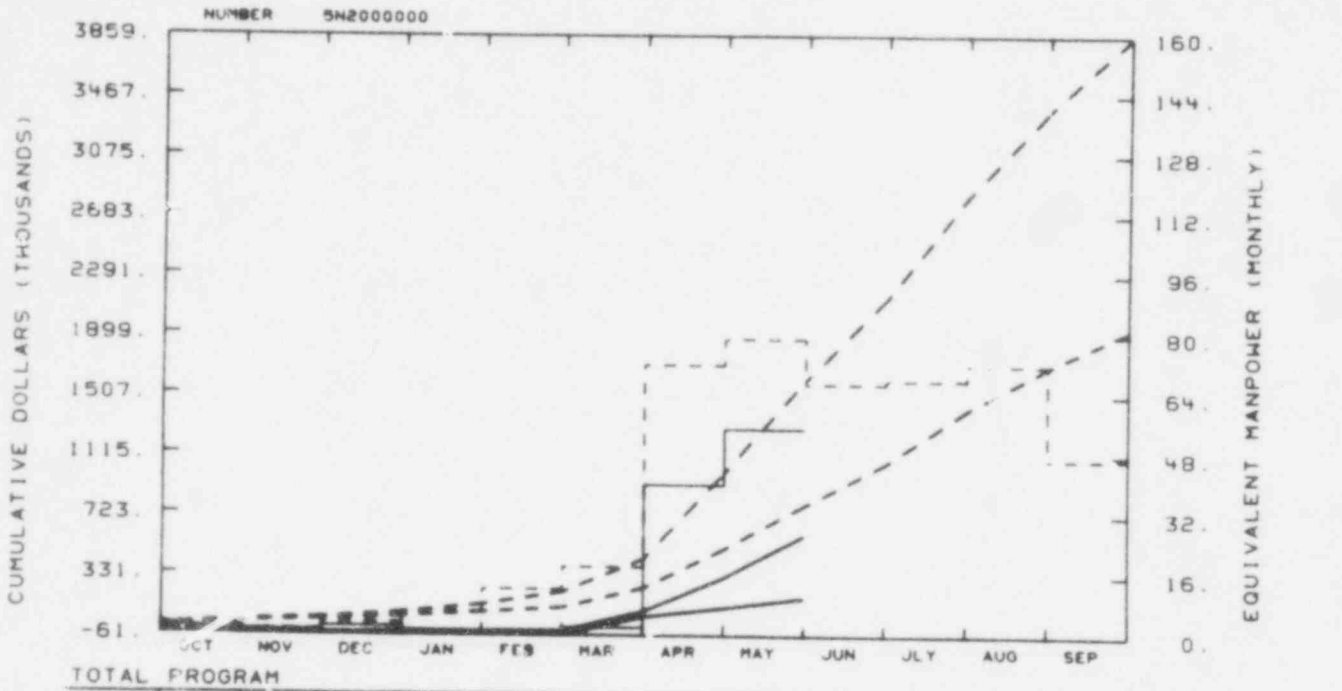
BUDGET

ACTUAL

Change control form 1932, submitted in April, redistributed the budget but isn't reflected in this report.

EG&G IDAHO INC.

A6107 - TECH-SUPPORT REQUAL



TOTAL PROGRAM

BUDGET	22	44	78	135	217	435	999	1607	2137	2815	3375	3852
ACTUAL	-50	-53	-47	-43	-35	95	316	593				

MATERIAL

BUDGET	15	32	54	84	117	245	501	789	1082	1415	1694	1932
ACTUAL	-54	-60	-60	-60	-59	58	120	186				

MANPOWER

BUDGET	2	1	3	6	12	18	72	79	67	68	72	47
ACTUAL	1	1	2	1	1	2	40	55				

BUDGET

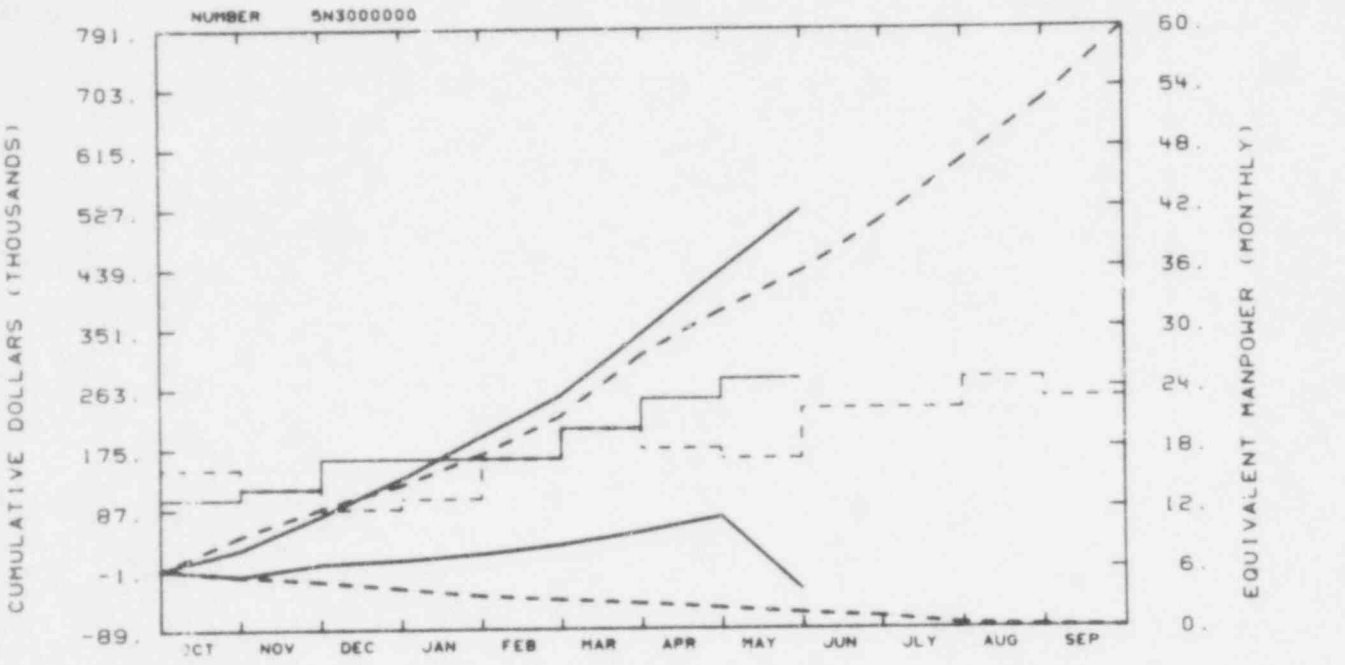
ACTUAL

The following items caused the underrun: (1) uncosted material, (2) savings through completed w[illegible], (3) deferred work that will require reprogramming and CCB action, and (4) problems associated with the shift from DOE to NRC funding.

EG&G IDAHO INC.

A6074 - ADVANCED INSTRUMENTATION

NUMBER 5N3000000



TOTAL PROGRAM

BUDGET	46	88	123	167	224	313	377	435	510	597	685	791
ACTUAL	29	78	132	194	254	344	438	527				

BUDGET

ACTUAL

MATERIAL

BUDGET	-9	-17	-28	-39	-45	-50	-57	-65	-71	-82	-85	-88
ACTUAL	-9	7	12	21	34	53	75	-31				

MANPOWER

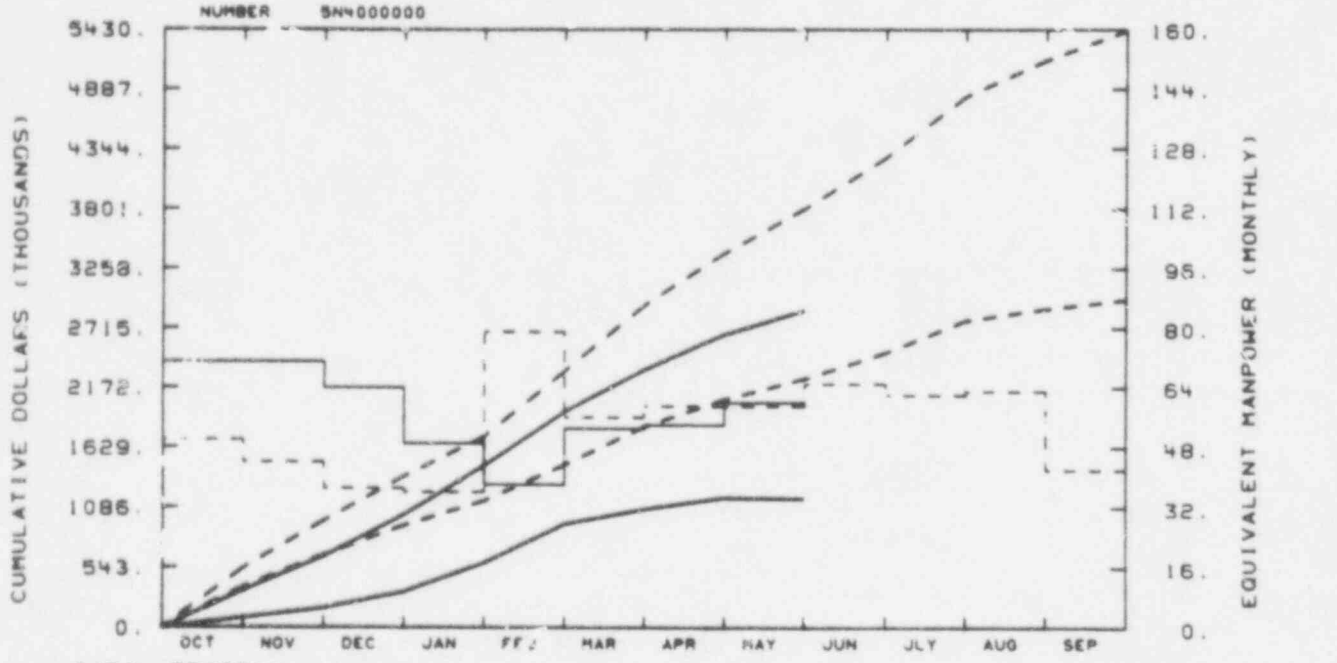
BUDGET	18	14	12	13	17	20	18	17	22	27	25	23
ACTUAL	17	14	17	17	17	20	23	25				

A CCB action that was approved several months ago isn't reflected on this chart.

EG&G IDAHO INC.

A6043 - EXPERIMENTAL INSTR

NUMBER SN4000000



TOTAL PROGRAM

BUDGET	538	982	1362	1726	2325	2824	3400	3805	4288	4821	5149	5420
ACTUAL	333	641	1015	1460	1955	2337	2859	2879				

MATERIAL

BUDGET	388	654	922	1172	1470	1816	1957	2255	2491	2783	2892	2974
ACTUAL	88	174	322	562	935	1088	1175	1169				

MANPOWER

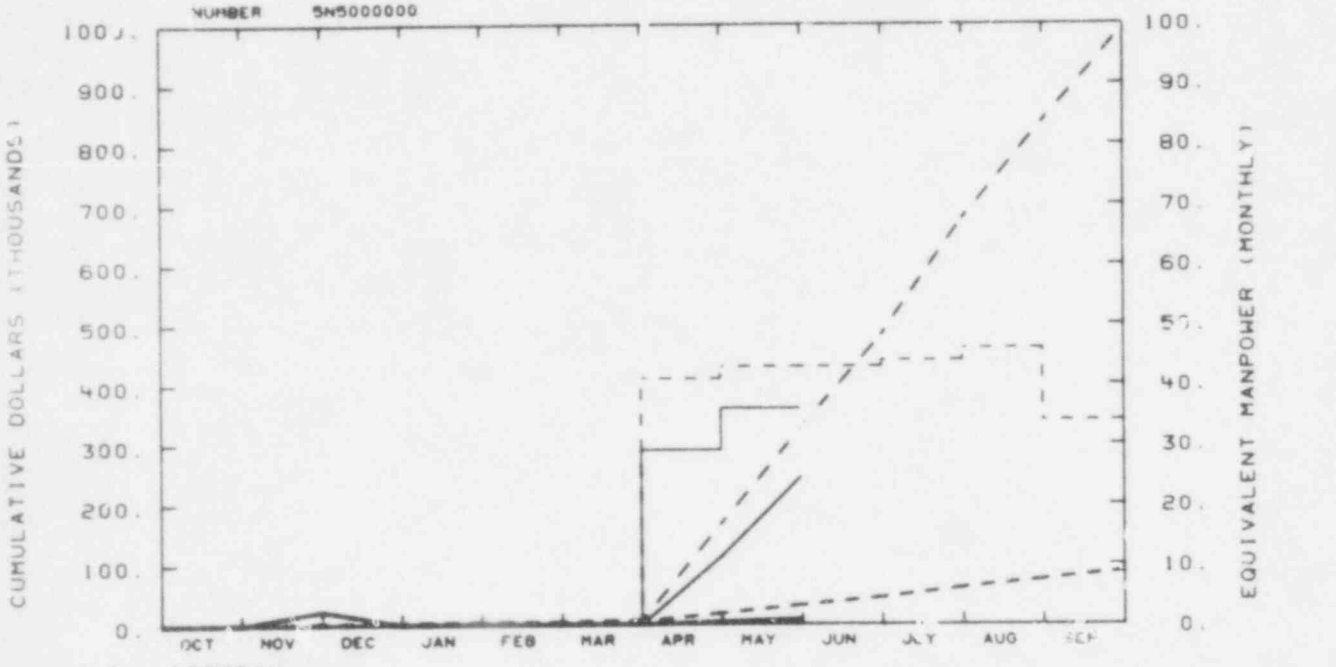
BUDGET	50	44	37	36	79	58	59	59	85	82	63	42
ACTUAL	71	71	84	48	38	53	54	60				

The underrun was caused by: (1) a CCB action for $415,00[illegible] that isn't shown, (2) a material commitment isn't shown, (3) a delay in releasing a contract caused by difficulties in qualifying a zircaloy-sheathed TC vendor, (4) additional material commitments for pressure transducers, and (5) additional outstanding commitments.

EG&G IDAHO INC.

A6110 PLANS/BUDG/QA/SAFETY

NUMBER SN5000000



TOTAL PROGRAM

BUDGET	1	1	2	3	4	7	187	329	482	678	837	993
ACTUAL	0	23	0	0	0	1	112	246				

MATERIAL

BUDGET	1	1	2	3	4	5	18	32	45	61	74	89
ACTUAL	0	23	0	0	0	0	4	9				

MANPOWER

BUDGET	0	0	0	0	0	0	41	43	43	44	48	34
ACTUAL	0	0	0	0	0	0	29	36				

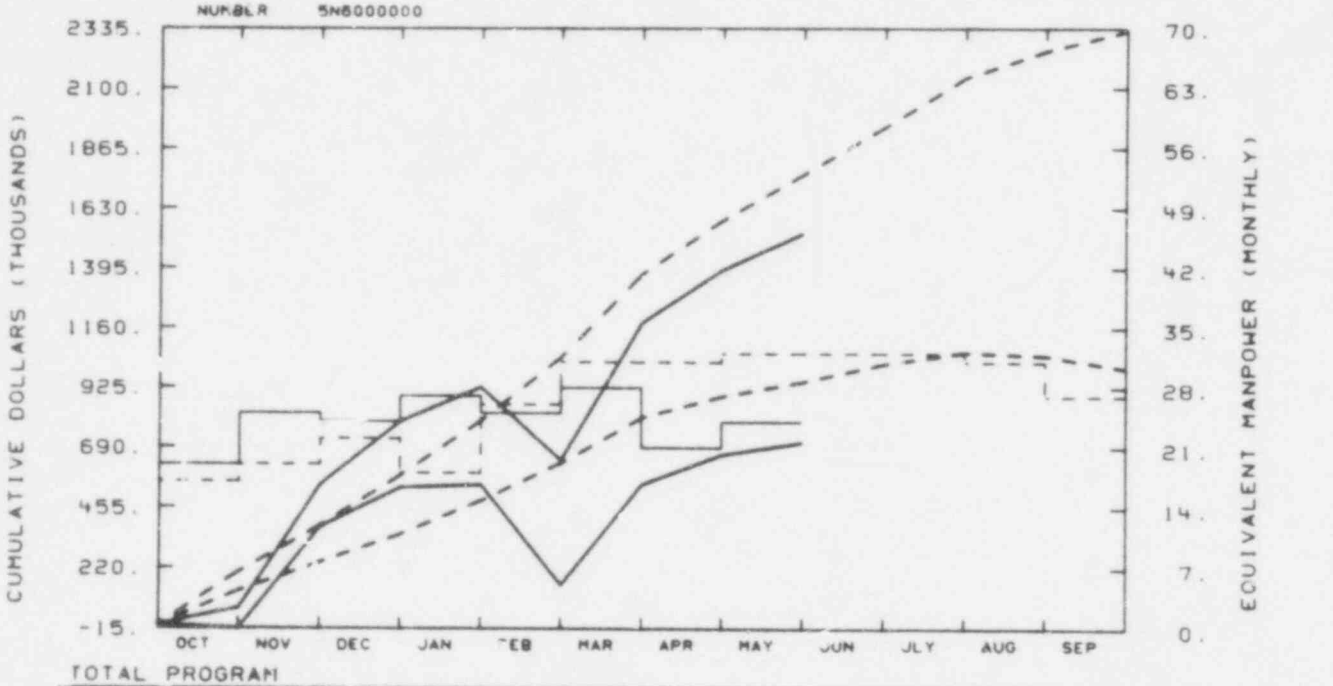
BUDGET

ACTUAL

No significant variance.

EG&G IDAHO INC.

A6053 - LOFT FUEL DES/FAB/REQUAL



TOTAL PROGRAM

BUDGET	204	383	580	793	1044	1372	1584	1784	1950	2142	2247	2325
ACTUAL	83	544	790	926	841	1180	1388	1533				

MATERIAL

BUDGET	130	241	349	481	629	807	891	949	1019	1085	1053	1002
ACTUAL	14	378	532	543	155	545	663	712				

MANPOWER

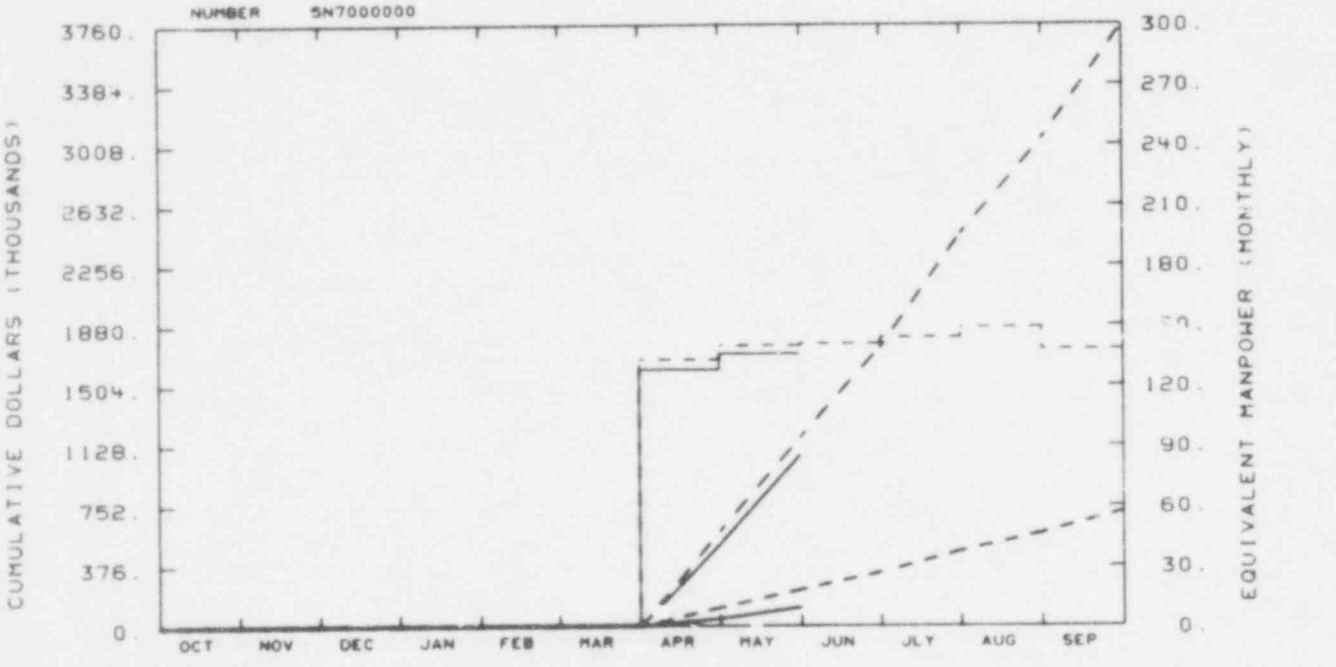
BUDGET	17	19	22	18	28		31	32	32	32	31	27
ACTUAL	19	25	24	27	25	8	21	24				

Nonpayment of work accomplished by the suppliers of Reload Core II test instrumentation materials caused the underrun.

EG&G IDAHO INC.

A6054 - LOFT OPERATIONS

NUMBER SN7000000



TOTAL PROGRAM

BUDGET	0	0	0	0	0	0	590	1181	1742	2452	3043	3752
ACTUAL	0	0	0	0	0	0	508	1071				

MATERIAL

BUDGET	0	0	0	0	0	0	113	225	332	468	580	715
ACTUAL	0	0	0	0	0	0	44	114				

MANPOWER

BUDGET	0	0	0	0	0	0	133	140	141	144	149	138
ACTUAL	0	0	0	0	0	0	128	136				

BUDGET - - - - -

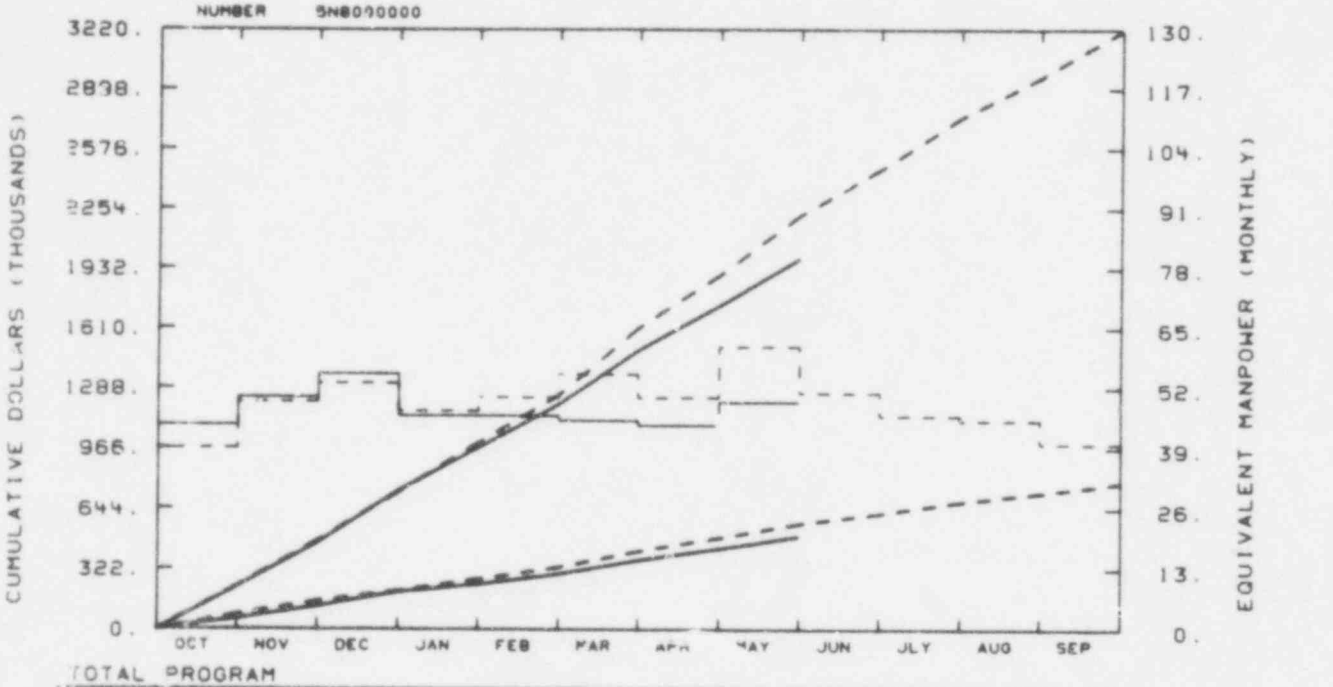
ACTUAL ———

The budget underrun reflects $80,000 in expenditures erroneously charged to the 507000000 account.

EG&G IDAHO INC.

A604R - EXPERIMENTAL PROGRAM PL

NUMBER SN8000000



TOTAL PROGRAM

BUDGET	230	472	730	995	1252	1613	1896	2219	2483	2747	2963	3214
ACTUAL	225	459	740	989	1202	1493	1732	1987				

MATERIAL

BUDGET	78	149	203	266	331	417	489	566	620	683	730	784
ACTUAL	55	122	198	238	295	370	431	488				

BUDGET - - - - -

ACTUAL ———

MANPOWER

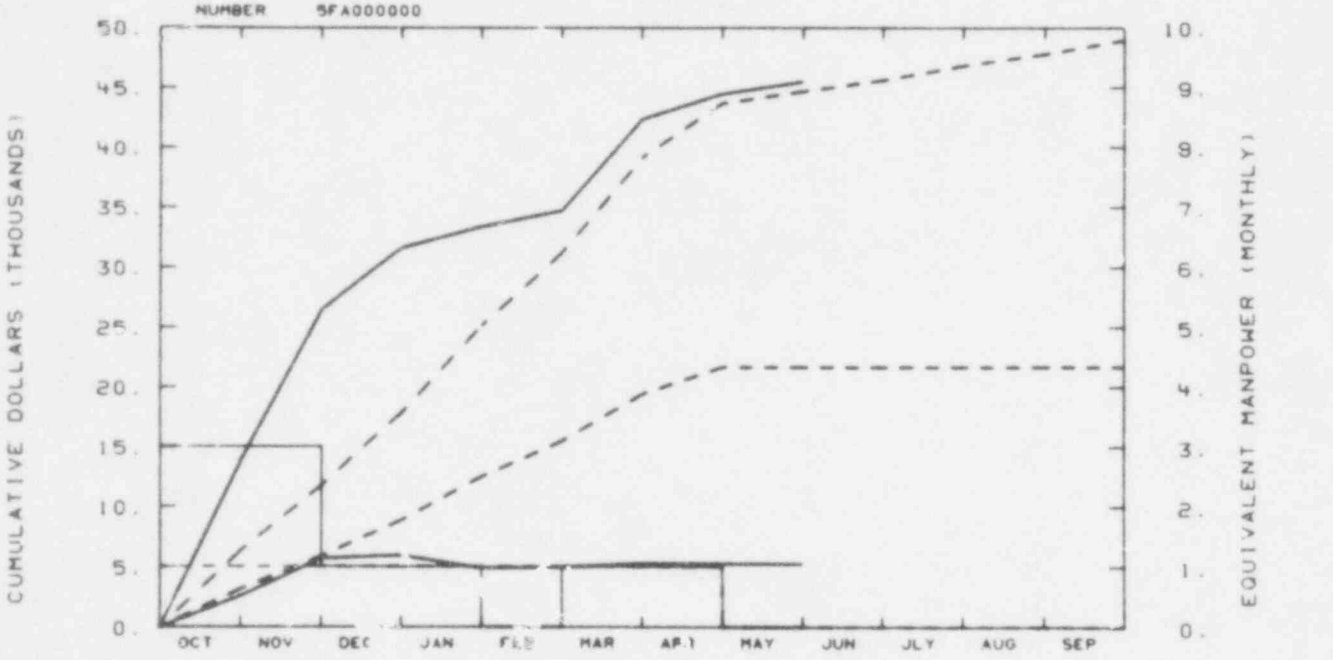
BUDGET	38	49	53	47	50	55	50	61	51	48	45	40
ACTUAL	44	50	55	48	48	45	44	49				

A CCN action will return underexpenditures to the management reserve.

EG&G IDAHO INC.

A6273 - AUSTRIAN FUNDS

NUMBER 5FA000000



TOTAL PROGRAM

BUDGET	6	12	18	25	31	39	44	45	46	47	48	49
ACTUAL	14	26	32	33	35	42	44	46				

MATERIAL

BUDGET	3	6	9	12	15	19	22	22	22	22	22	22
ACTUAL	3	6	6	5	5	5	5	5				

MANPOWER

BUDGET	1	1	1	1	1	1	1	0	0	0	0	0
ACTUAL	3	3	1	1	0	1	1	0				

BUDGET - - - - -

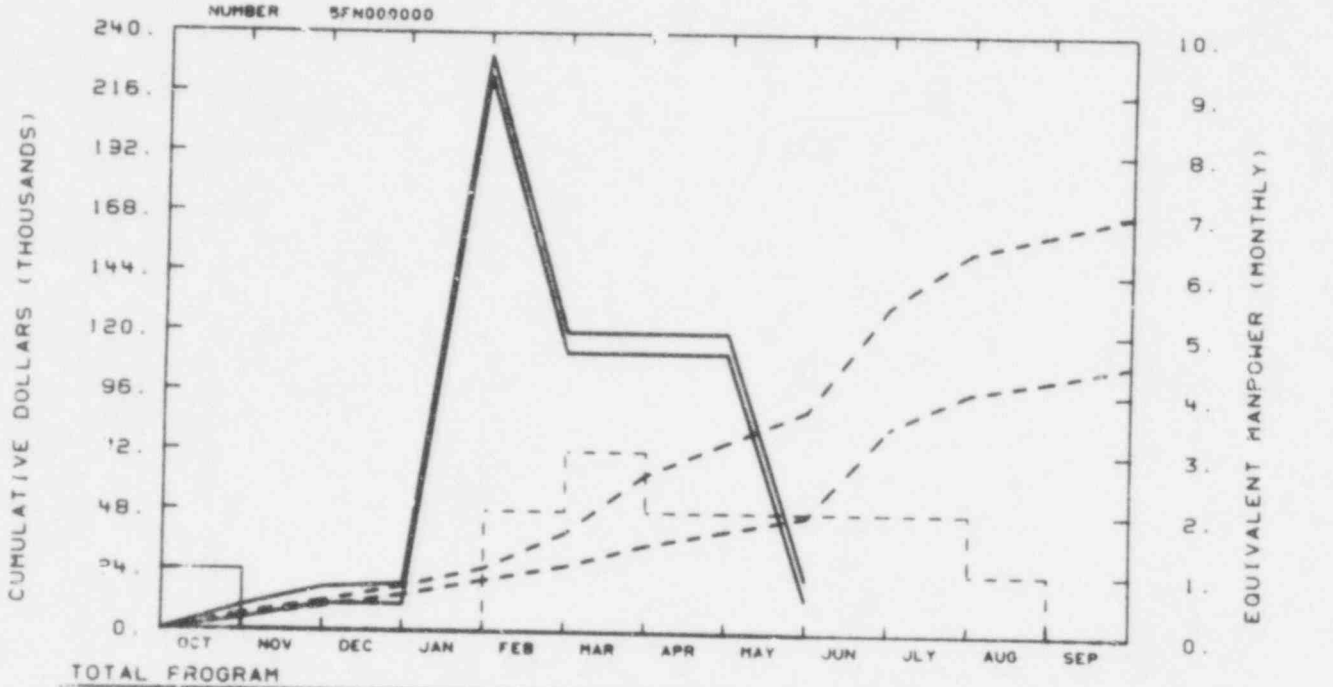
ACTUAL ———

Charges of $98,400 against this account should have been costed to foreign shared projects.

EG&G IDAHO INC.

A6271 - NETHERLAND FUNDS

NUMBER 5FN000000



TOTAL PROGRAM

BUDGET	6	12	18	25	39	63	76	89	131	153	160	168
ACTUAL	10	17	19	231	120	120	120	21				

MATERIAL

BUDGET	5	9	14	20	28	35	41	47	82	97	102	108
ACTUAL	5	11	11	223	112	112	112	13				

MANPOWER

BUDGET	0	0	0	0	2	3	2	2	2	2	1	0
ACTUAL	1	0	0	0	0	0	0	0				

BUDGET

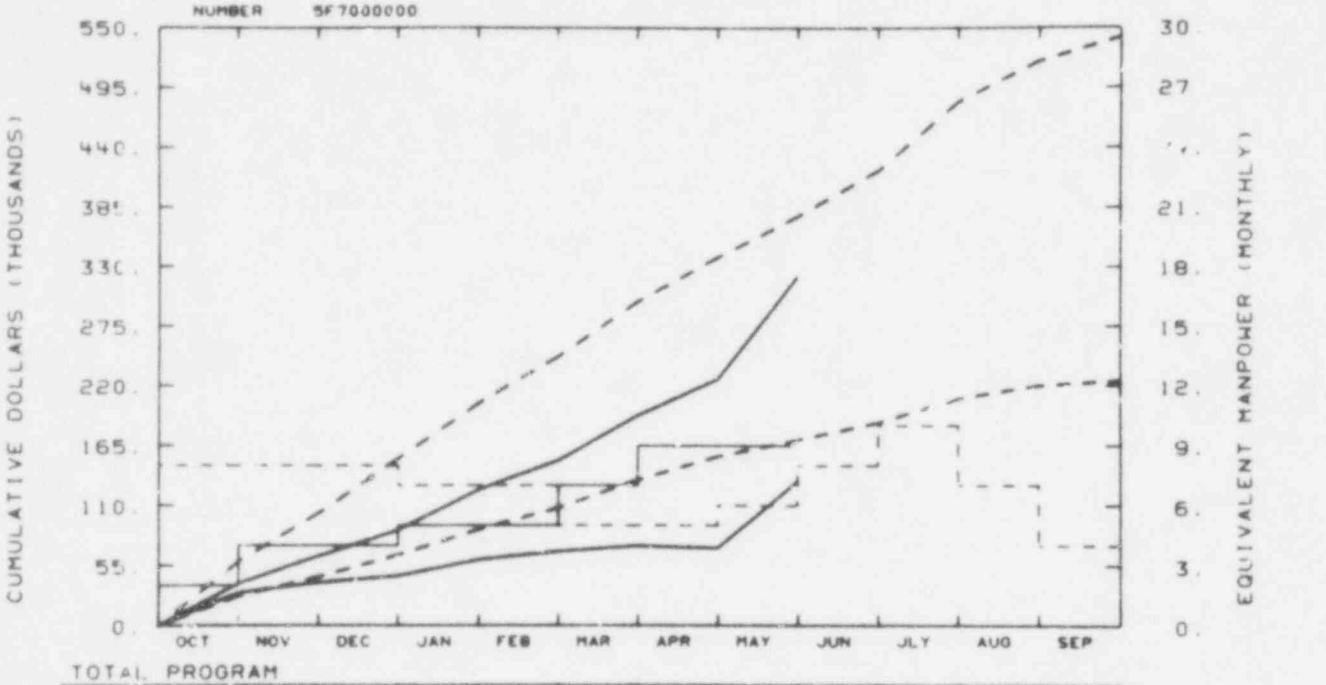
ACTUAL

The tasks were completed within budget and ahead of schedule.

EG&G IDAHO INC.

A6'04 - GERMAN FUNDS

NUMBER SF7000000



TOTAL PROGRAM

BUDGET	58	103	153	204	247	298	339	377	419	482	519	541
ACTUAL	38	64	87	125	151	193	228	321				

MATERIAL

BUDGET	27	45	65	88	108	134	155	170	196	208	220	225
ACTUAL	30	39	45	60	68	73	71	132				

MANPOWER

BUDGET	8	8	8	7	7	5	5	6	8	10	7	4
ACTUAL	2	4	4	5	5	7	9	9				

BUDGET - - - - - -

ACTUAL ———

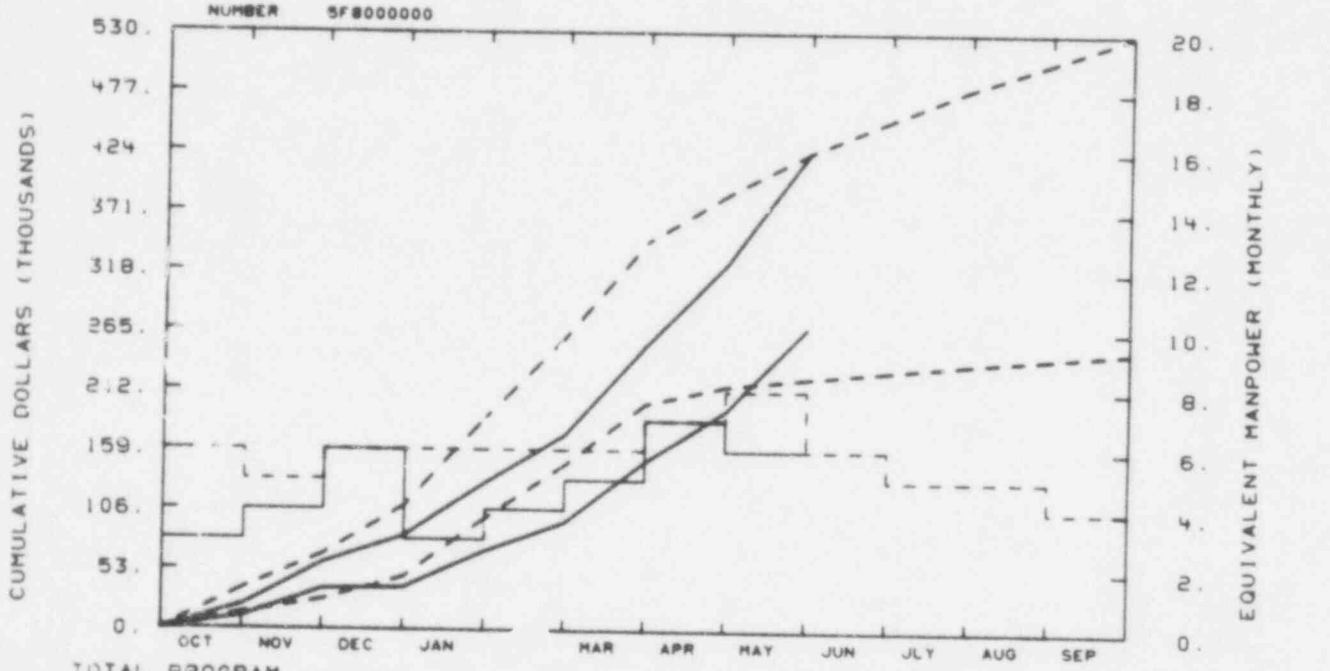
No significant variance. The material underrun is due to unpaid purchase orders for materials.

518 353

E3&G IDAHO INC.

A6111 - JAPANESE FUNDS

NUMBER SF8000000



TOTAL PROGRAM

BUDGET	36	66	109	188	260	344	387	424	453	481	505	529
ACTUAL	21	59	83	130	173	252	325	424				

MATERIAL

BUDGET	14	28	47	98	146	201	218	223	230	238	242	248
ACTUAL	11	35	37	89	95	150	195	269				

BUDGET - - - - -

ACTUAL ———

MANPOWER

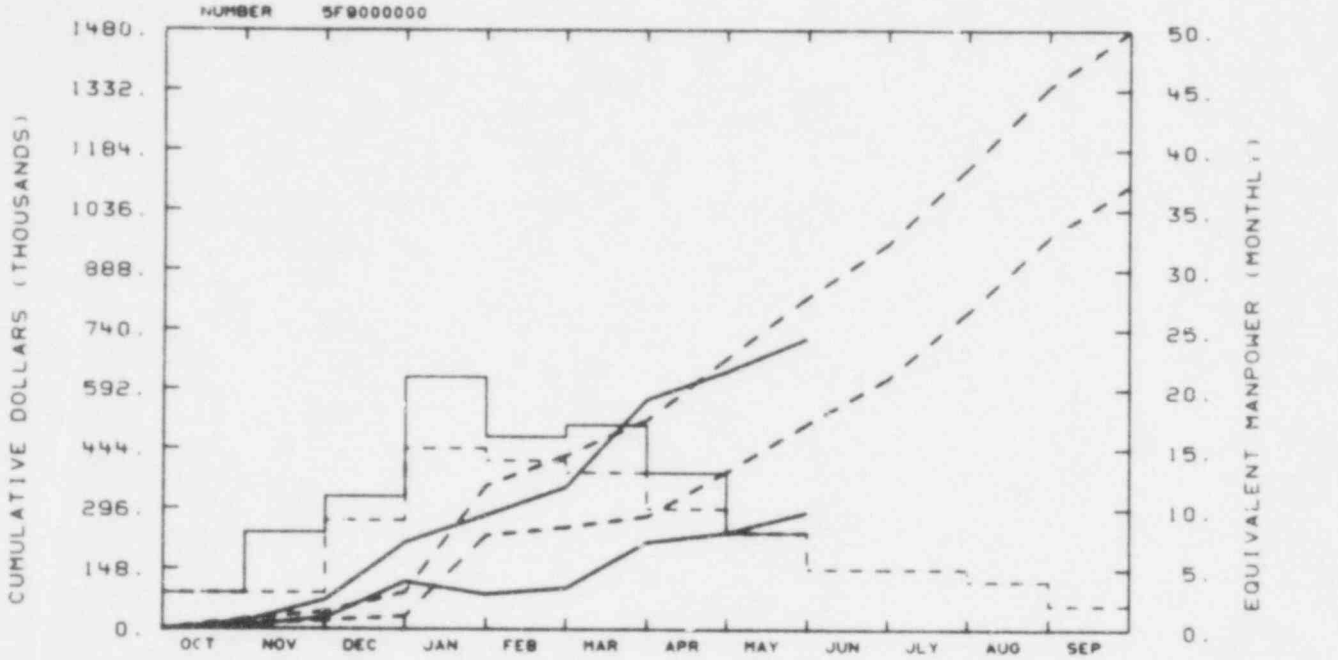
BUDGET	6	5	6	6	6	6	7	8	6	5	5	4
ACTUAL	3	4	6	3	4	5	7	6				

No significant variance.

EG&G IDAHO INC.

A6104S - SHARED PROJ FORE FUNDS

NUMBER 5F9000000



TOTAL PROGRAM

BUDGET	23	43	90	352	427	516	669	820	953	1141	1340	1478
ACTUAL	18	72	213	279	349	567	637	720				

MATERIAL

BUDGET	11	21	32	229	250	277	388	507	620	785	970	1087
ACTUAL	8	27	117	86	101	213	237	288				

MANPOWER

BUDGET	3	3	9	15	14	13	10	8	5	5	4	2
ACTUAL	3	8	11	21	18	17	13	8				

BUDGET - - - - - -

ACTUAL ———

The total program underrun is due principally to unpaid purchases of hardware.

518 55

PERFORMANCE ANALYSIS REPORT

Q 11-C

Account 5N6000000

	Month	Cumulative
BCWS	181	1,764
BCWP	175	1,610
ACWP	144	1,532

Reason for schedule and cost variances: A delay in resuming assembly on downcomer instrument stalk No. 2 (CA561152), nonachievement of projected staffing levels in CA561351 and CA561356, and nonpayment of work accomplished by the LOFT fuel supplier caused the May cost underrun. Cumulative totals show no significant variance.

Account 5D2280000

	Month	Cumulative
BCWS	219	1,185
BCWP	173	1,002
ACWP	125	856

Reason for schedule and cost variances: A shortage of design engineering manpower caused the engineering effort to go below baseline planning levels and created a schedule variance. Tasks accomplished at less than budgeted costs and reduced funding needs for level-of-effort tasks caused the cost variance.

518 356

V. Budget Status Report

V. BUDGET STATUS REPORT

FY-1979 SUMMARY DOE
(In thousands of dollars)

LOFT WBS #	189 #	Q11-A	Approved CLI CCB's	Current PMB # Q11-C	Approved CLII CCB's	Current Co. Budget
5D1XX	500002	551	3	554	-	554
5D2XX	500001	8,652	(220)	8,432	-	8,432
5D5XX	500006	749	286	1,035	-	1,035
5D7XX	500004	3,370	70	3,300	-	3,300
5D9XX	500005	278	1	279	-	279
5DXXX	-	13,600		13,600	0	13,600

DOE DISCRETIONARY RESERVES	0
DOE MANAGEMENT RESERVES	0
TOTAL DOE FUNDING (FY-1979)	13,600

FY-1979 SUMMARY NRC
(In thousands of dollars)

LOFT WBS #	189 #	Q11-A	Approved CLI CCB's	Current PMB # Q11-B	Approved CLII CCB's	Current Co. Budget
5NAXX	A6122	1,569	-	1,569	-	1,569
5NBXX	A6275	338	(28)	310	-	310
5NCXX	A6121	2,104	-	2,104	-	2,104
5N2XX	A6107	4,078	(166)	3,912	-	3,912
5N3XX	A6074	791	-	791	-	791
5N4XX	A6043	5,439	-	5,439	-	5,439
5N5XX	A6110	1,093	(105)	988	-	988
5N6XX	A6053	2,312	-	2,312	10	2,322
5N7XX	A6054	3,683	69	3,752	-	3,752
5N8XX	A6048	3,180	-	3,180	-	3,180
5NXXX	-	24,587	(230)	24,357	10	24,367
				NRC DISCRETIONARY RESERVES		40
				NRC MANAGEMENT RESERVES		1,111
				TOTAL NRC FUNDING (FY-1979)		25,518

518 359

FY-1979 SUMMARY TOTAL PROJECT FOREIGN FUNDS
(In thousands of dollars)

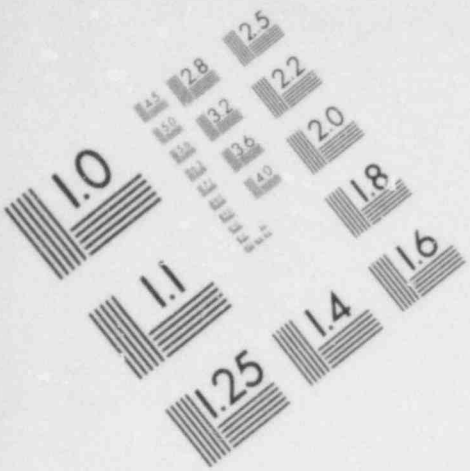
LOFT WBS #	189 #	Q11-A	Approved CLI CCB's	Current PMB # Q11-B	Approved CLII CCB's	Current Co. Budget	Authorized Spending Limit	Current FY-1979 Budget
5FAXX	A6273	135	-	135	-	135	135	49
5FNXX	A6271	223	-	223	-	223	223	168
5F7XX	A6104	2,884	-	2,884	-	2,884	2,884	541
5F8XX	A6111	1,701	(7)	1,694	-	1,694	1,694	529
5F9XX	A6104S	1,828	-	1,828	-	1,828	1,828	1,478
5FXXXX	-	6,771	(7)	6,764	0	6,764	6,764	2,765
		FOREIGN CONTINGENCY RESERVES				308	308	
		MANAGEMENT RESERVES				474	474	
		FUNDS BUDGETED TO OTHER PROJECTS*				1,161	1,161	
		TOTAL FOREIGN FUNDS RECEIVED TO DATE				8,707	8,707	
		PROJECTED ADDITIONAL FOREIGN FUNDS				343	343	
		TOTAL FOREIGN FUNDING				9,050	9,050	

*PBF has been authorized to budget and use $1,161,000 of LOFT JAL 's for LOFT lead rod testing.

VI. Change Control Board Actions

VI. MAY CHANGE CONTROL BOARD ACTIONS

The Change Control Board did not meet during the month.



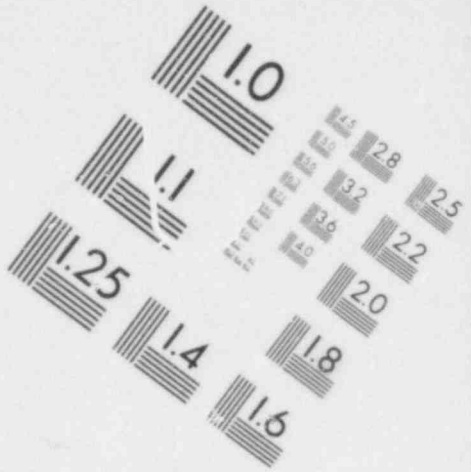
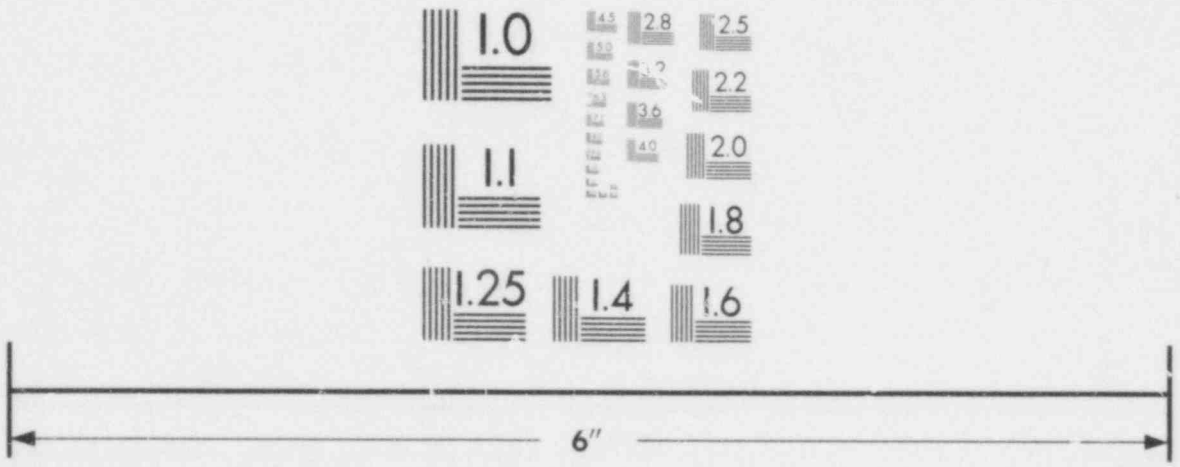
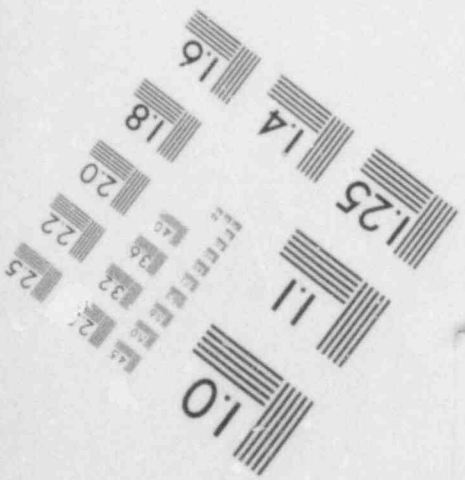
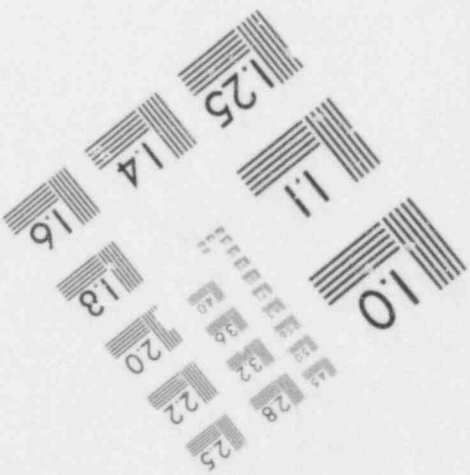
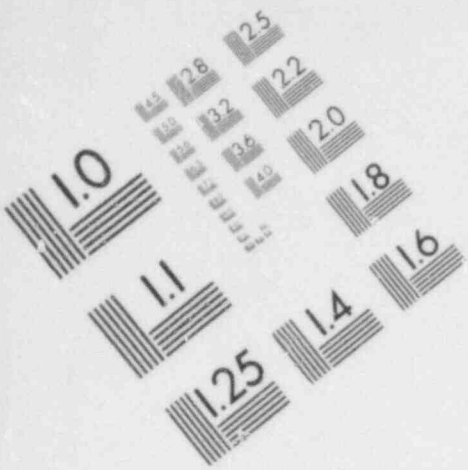


IMAGE EVALUATION TEST TARGET (MT-3)









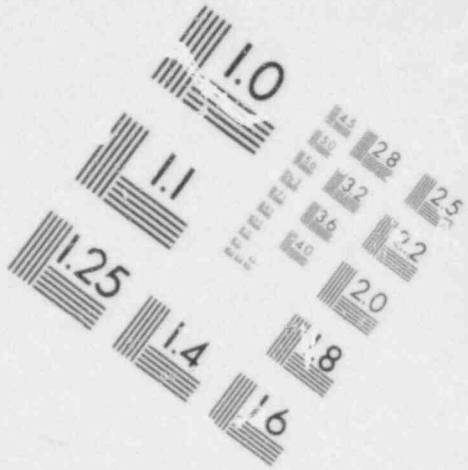
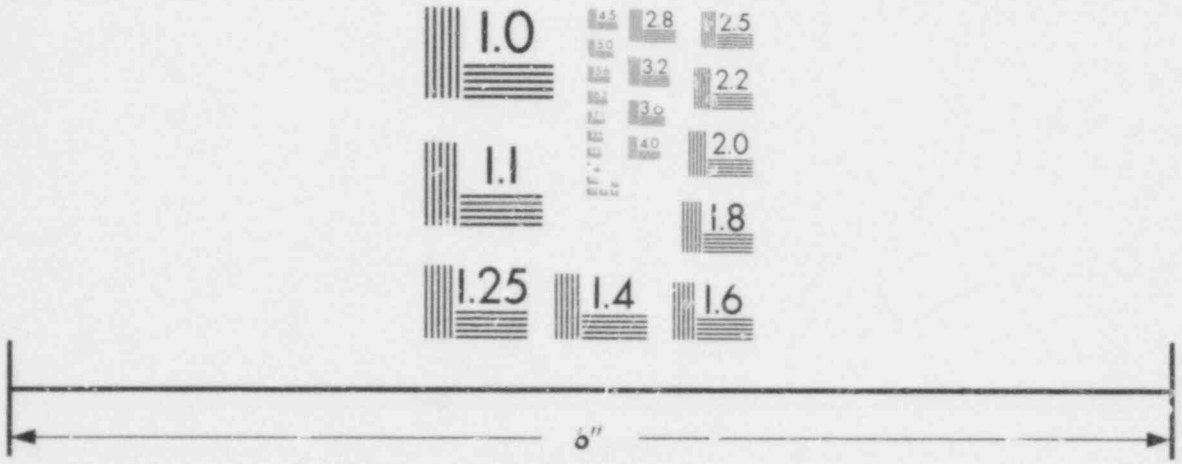
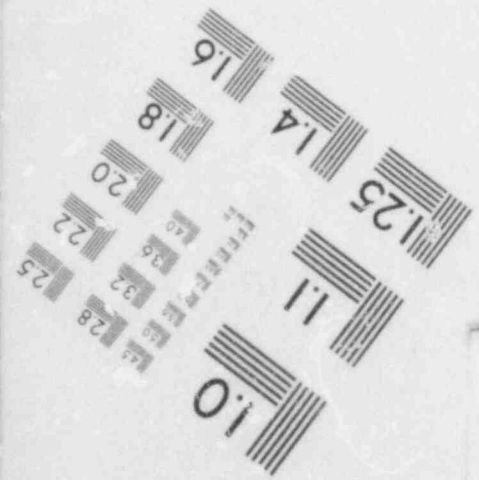
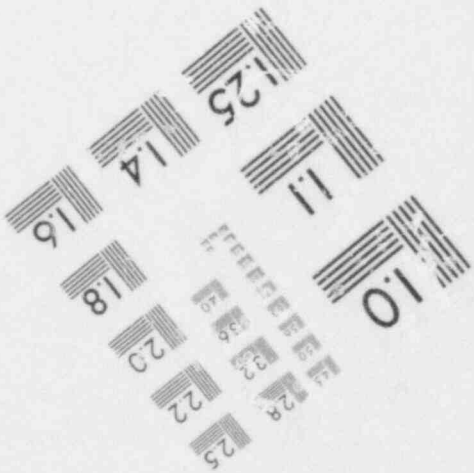


IMAGE EVALUATION
TEST TARGET (MT-3)







VII. Capital Equipment Summary

519-001

519 363

LOFT Capital Equipment Summary Through May

Schedule 189a	Title	Prior Yr. Uncosted	Current Year Funds	Total Available To Cost	Current Year Costs	Outstanding Commitments	Balance Less Estimate Cost & Com.	To Comp.	Balance	Held For FY-1980 Commitment
500001	Integral Sys. Design & Fabrication	35,129	137,000	172,129	41,332	59,652	71,145	130,709	88	
500004	LOFT Operations	22,790	223,000	245,790	24,550	22,200	199,040	214,261	6,979	
500005	UT & Requal. Program	37,379	140,000	177,379	34,316	122,640	20,424	138,000	5,063	
	Total DOE	95,298	500,000	595,298	100,198	204,492	290,609	482,970	12,130	-0-
A6089	Fuel Design, Fab. & Requalification	169,533	340,000	509,533	101,996	6,400	401.137	26,809	380,728	380,728
A6088	LOFT Operations	21	150,000	150,021	123,288	-0-	26,733	21,712	5,021	5,021
A6086	Advanced Instrumentation	32,812	588,000	620,812	115,221	81,696	423,895	506,870	[1,279]	[1,279]
A6085	Experimental Program Planning	103,475	-0-	103,475	100,139	1,200	2,136	7,162	[3,826]	[3,826]
A6084	Integral System Design & Fab.	146,390	507,000	653,390	95,877	89,100	468,413	569,495	[11,982]	[11,982]
A6061	Experimental Measurements	488,043	415,000	903,043	450,391	93,600	359,052	411,650	41,602	[1],002
	Total NRC	940,274	2,000,000	2,940,274	986,912	271,996	1,681,366	1,543,698	409,664	409,664
	Total LOFT	1,035,572	2,500,000	3,535,572	1,087,110	476,488	1,971,975	2,026,668	421,794	409,664

1) Radiation Monitoring Upgrade was originally estimated at 80K, the scope of the job has changed and an additional 60K is needed to complete the job. Permanent CAMS required for the waste Gas Processing System, two temporary CAMS are installed which must be replaced and redundant units are required. The estimate to complete has been increased for this additional scope pending identification and resolution of available funds.

5/9

002