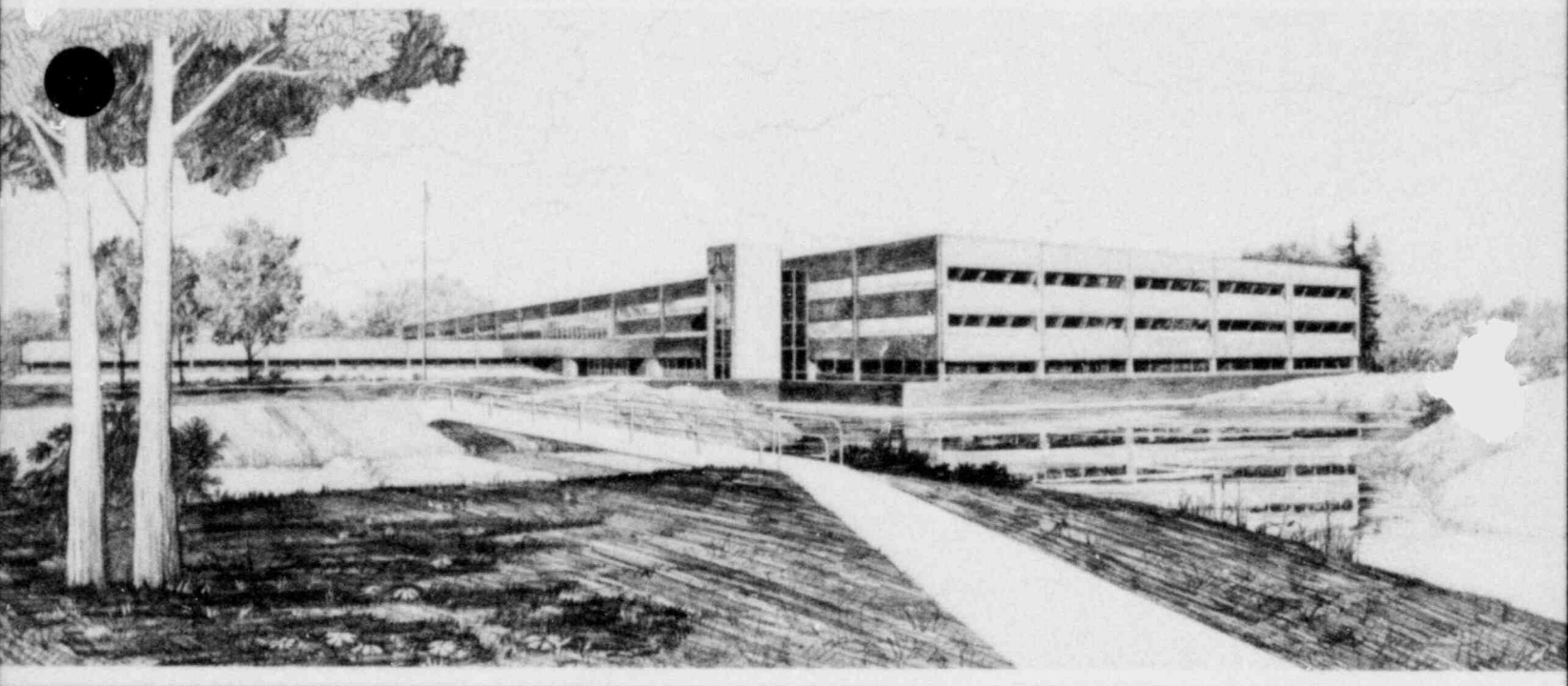
EGG-WRR-5378
February 1981

MONTHLY REPORT FOR THE WATER REACTOR RESEARCH TEST FACILITIES, 2D/3D, CODE DEVELOPMENT, CODE ASSESSMENT AND APPLICATION DIVISIONS, AND THE THERMAL FUELS BEHAVIOR PROGRAM.

J. A. Dearien

NRC Research and Technical Assistance Report

U.S. Department of Energy
Idaho Operations Office • Idaho National Engineering Laboratory



NRC Research and Technical Assistance Report

Prepared for the
U.S. Nuclear Regulatory Commission
Under DOE Contract No. DE-AC07-76ID01570

EG&G Idaho

CONTENTS

NRC Research and Technical Assistance Report

ACRONYMS

AMB	Applied Mechanics Branch
ANL	Argonne National Laboratory
ANS	American Nuclear Society
ACRS	Advisory Committee on Reactor Safety
ASME	American Society of Mechanical Engineers
BD/ECC	Blowdown/Emergency Core Coolant
BWR	Boiling Water Reactor
CA&AD	Code Assessment and Application Division
CAM	Constant Air Monitor
CC	Component Checkout
CCB	Change Control Board
CCTF	Cylindrical Core Test Facility
CDD	Code Development Division
CDUM	Code Description and User's Manual
CE	Combustion Engineering
CHF	Critical Heat Flux
CLLMS	Conductivity Liquid Level Measurement System
CM	Corrective Maintenance
CPM	Critical Path Method
CSNI	Committee on Safety for Nuclear Installation
DAPS	Data Acquisition and Processing System
DARS	Data Acquisition and Reduction System
DAS	Data Acquisition System
DDAPS	Digital Data Acquisition and Processing System
DE	Division of Engineering
DER	Data Evaluation Report
DL	Division of Licensing
DOE	Department of Energy
DP	Differential Pressure
DSI	Division of Systems Integration
DSRR	Division of Systems and Reliability Research
DST	Division of Safety Technology
EI	Energy Incorporated
EICS	Electrical Instrumentation and Control System
EDF	Engineering Design File
EDR	Experimental Data Report
ENICO	Exxon Nuclear Idaho Company, Incorporated
EOS	Experiment Operating Specifications
EP&A	Experimental Planning and Analysis
EPRI	Electric Power Research Institute
EQDB	Equipment Qualification Data Base

ACRONYMS (Continued)

FCF	Facility Change Form
FDG	Fluid Distribution Grid
FIST	Full Integral Simulation Test
FMEA	Failure Mode Effects Analysis
FRG	Federal Republic of Germany
FSAR	Final Safety Analysis Report
GE	General Electric
GRS	Gesellschaft fur Reaktorsicherheit
HDR	Heiss Dampf Reaktor
HLS	Hot Leg Spool Piece
IFA	Instrumented Fuel Assemblies
IGSCC	Intergranular Stress Corrosion Cracking
ILSG	Intact Loop Steam Generator
INEL	Idaho National Engineering Laboratory
IOER	Integrated Operational Experience Reporting System
IPT	In Pile Tube
IREP	Interim Reliability Evaluation Program
ISDMS	Idaho National Engineering Laboratory Scientific Data Management System
ISP	International Standard Problem
IST	Inservice Testing
JAERI	Japan Atomic Energy Research Institute
KfK	Kernforschungszentrum Karlsruhe
LER	Licensee Event Report
LLD	Liquid Level Detector
LOC	Loss of Coolant
LOCA	Loss of Coolant Accident
LOFT	Loss of Fluid Test
LTSF	LOFT Test Support Facility
LVDT	Linear Variable Differential Transformer
LWR	Light Water Reactor
MFD	Master Facility Drawing
MIT	Massachusetts Institute of Technology
NESC	National Energy Software Center
NPRDS	Nuclear Plant Reliability Data System
NPSH	Net Positive Suction Head
NTOL	Near-Term Operating License
OPTRAN	Operational Transient
OR	Operating Reactors
ORNL	Oakridge National Laboratory

ACRONYMS (Continued)

P&IA	Plant and Instrument Air
P&ID	Process and Instrument Diagram
PAS	Probabilistic Analysis Staff
PBF	Power Burst Facility
PCM	Power Cooling Mismatch
PIE	Postirradiation Examination
PKL	Primary Coolant Loop
PM	Preventive Maintenance
PMIS	Performance Management Information System
PNL	Pacific Northwest Laboratory
PORV	Power Operated Relief Valve
PPS	Plant Protection System
PR	Combination of PCM/RIA
PRAC	Power Reactors Advisory Committee
PWR	Pressurized Water Reactor
QA	Quality Assurance
QDR	Quality Discrepancy Report
QLR	Quick Look Report
QPP	Quality Program Plan
RCCS	Reactor and Canal Cleanup System
RFQ	Request for Quotes
RIA	Reactivity Initiated Accident
RSB	Reactor Systems Branch
SAI	Scientific Applications Incorporated
SASA	Severe Accident Sequence Analysis
SBE	Small Break Experiment
SCDAP	Severe Core Damage Analysis Package
SCTF	Slab Core Test Facility
SDD	System Design Description
SEP	Systematic Evaluation Program
SER	Safety Evaluation Report
SHB	Single Heated Bundle
SO	Systems Operations
SOW	Statement of Work
SPERT	Special Power Excursion Reactor Test
SQRT	Seismic Qualification Review Team
SRV	Safety Relief Valve
SSTF	Steam Sector Facility
SWR	Site Work Release
TAN	Test Area North
TC	Thermocouple
TER	Technical Evaluation Report
TFBP	Thermal Fluids Behavior Program
TFCF	Transient Flow Calibration Facility

ACRONYMS (Continued)

TLTA	Two Loop Test Apparatus
TMI	Three Mile Island
TRR	Test Results Report
TVA	Tennessee Valley Authority
UHI	Upper Head Injection
UIC	Unique Identification Code
USSP	United States Standard Problem
UPTF	Upper Plenum Test Facility
WBS	Work Breakdown Structure
WRRD	Water Reactor Research Department
WRRTF	Water Reactor Research Test Facilities

MONTHLY REPORT FOR

FEBRUARY 1981

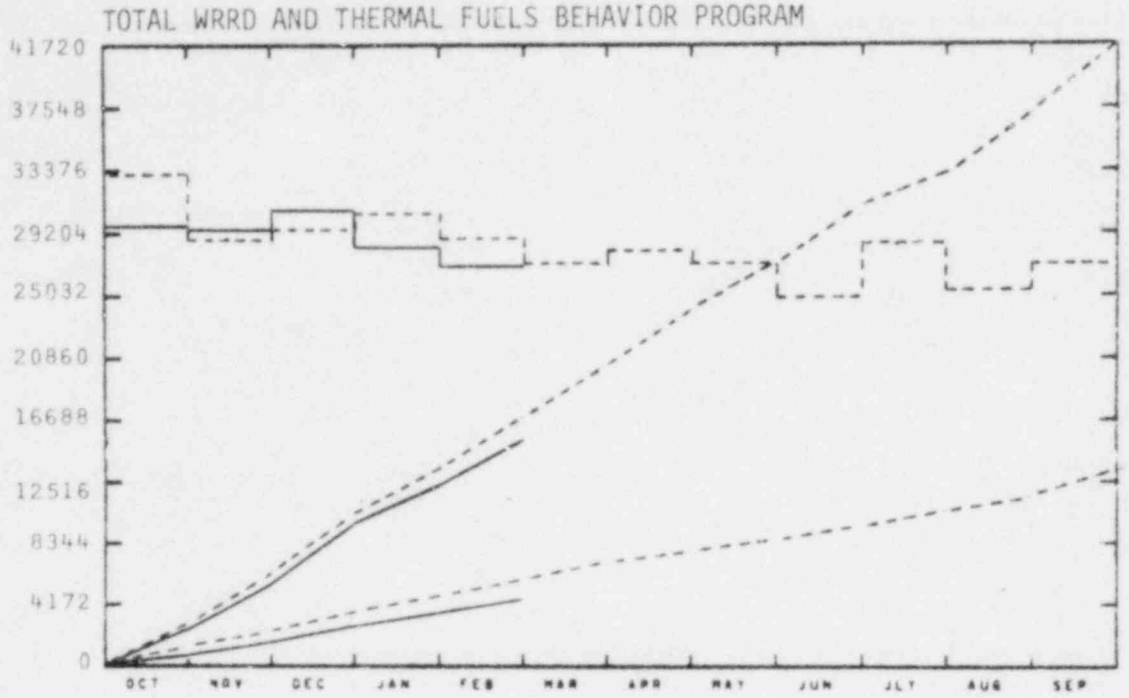
J. A. Dearien, Department Manager

B. E. Williams
Planning & Budgets Branch

RESPONSIBLE
AGER
J A Dearien

EG&G IDAHO, INC.

TOTAL WRRD AND THERMAL FUELS BEHAVIOR PROGRAM



TOTAL PROGRAM

BUDGET	3229	6653	10473	13662	16965	20777	23986	26933	30380	33250	36628	41715	
ACTUAL	2615	5956	9555	12439	15184								

MATERIAL

BUDGET	963	2138	3549	4489	5519	6661	7588	8356	9327	10126	11008	13921	
ACTUAL	623	1705	2797	3582	4213								

BUDGET - - - - - -

ACTUAL ———

MANPOWER

BUDGET	558	487	494	513	489	451	472	451	419	482	425	451	
ACTUAL	496	494	513	476	450								

YTD VARIANCE: 1781 (10%)

Individual cost graphs will provide variance explanations.

Explanations for major 189a's (>$500 K) will be made if the variance exceeds $25 K. Minor 189a graphs (<$500 K) will explain variance of over $10 K.

MONTHLY REPORT FOR

FEBRUARY 1981

WATER REACTOR RESEARCH TEST FACILITIES DIVISION

Paul North.

P. North, Manager

John P. Crouch

J. P. Crouch
Plans & Budget Pepresentative

WATER REACTOR RESEARCH TEST FACILITIES DIVISION

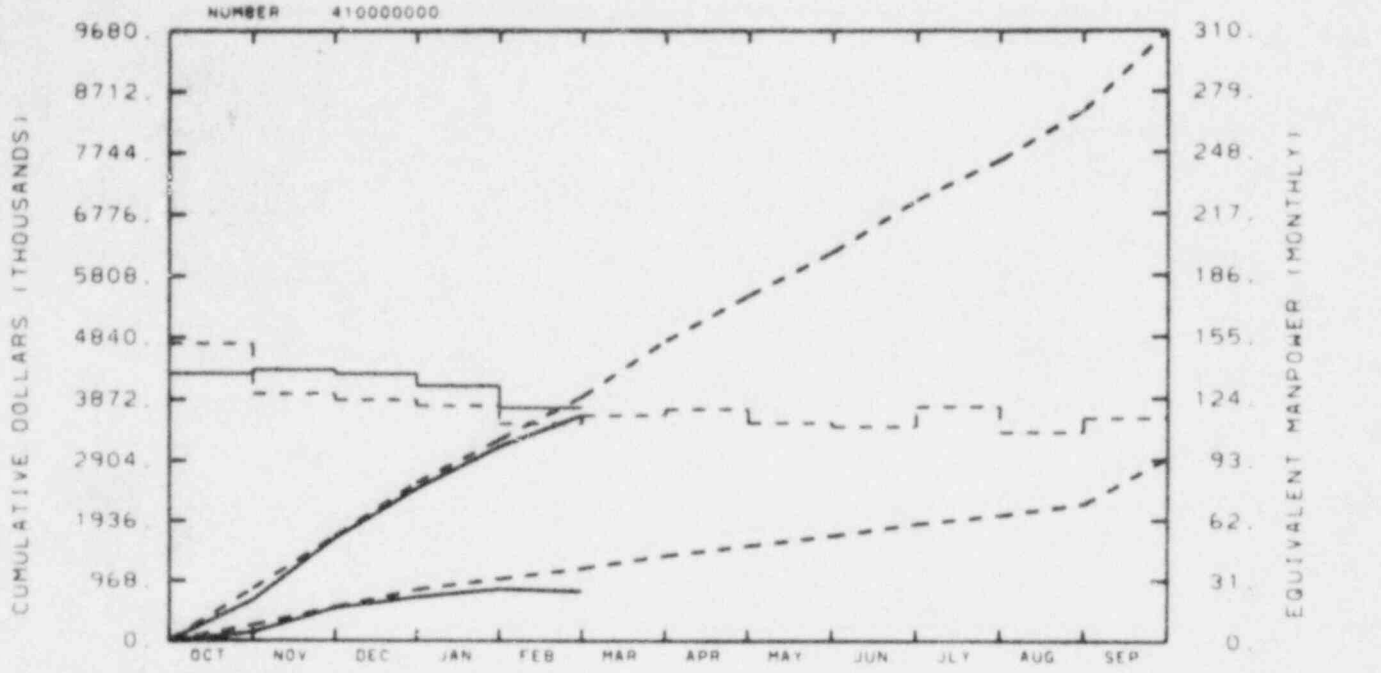
COST SUMMARY & COMMENTS

RESPONSIBLE
MANAGER
NORTH

EG&G IDAHO INC.

WATER REACTOR RESEARCH TEST FAC

NUMBER 410000000



TOTAL PROGRAM

BUDGET	843	1698	2563	3248	3917	4788	5494	6173	6987	7622	8402	9676
ACTUAL	658	1664	2467	3135	3628							

MATERIAL

BUDGET	253	547	829	1005	1171	1376	1533	1693	1879	2018	2194	2935
ACTUAL	136	531	706	838	801							

MANPOWER

BUDGET	152	127	124	121	112	116	119	112	110	120	107	114
ACTUAL	137	139	137	131	120							

BUDGET - - - - - -

ACTUAL ———

YTD VARIANCE: 289 (7%)

Individual cost graphs will give individual explanations.

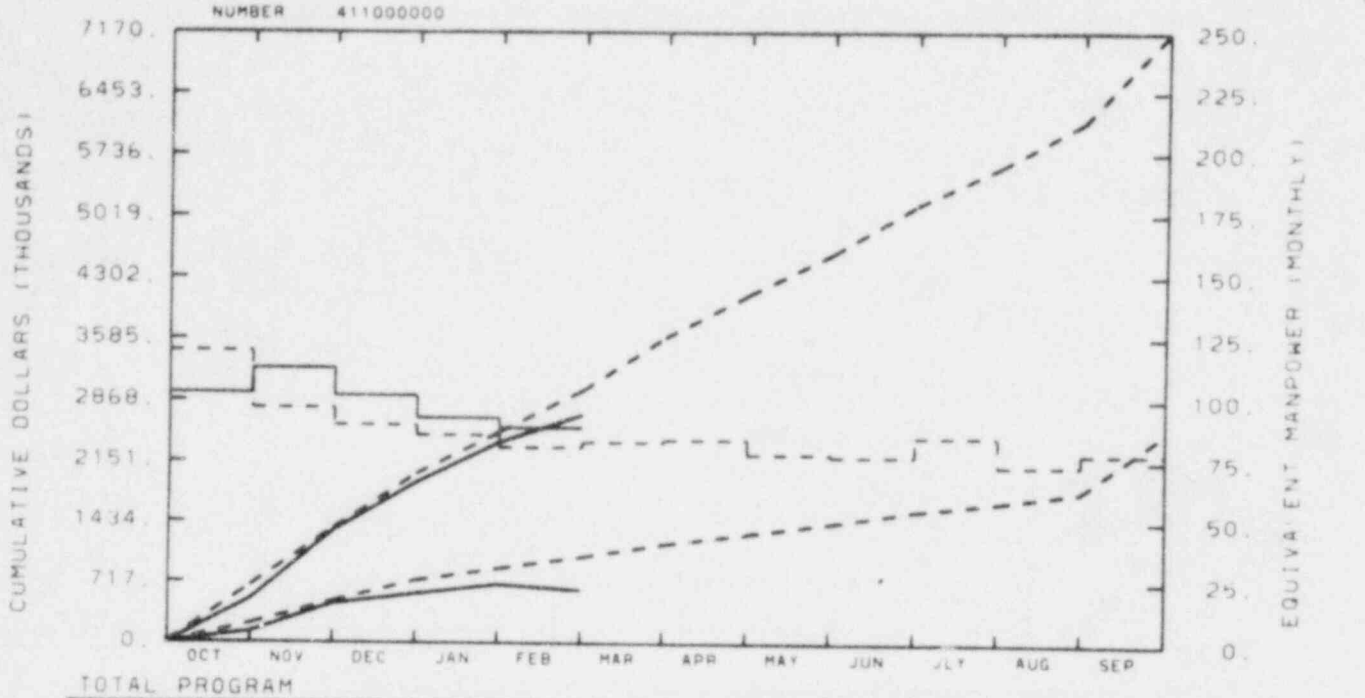
Explanations for major 189a's will be made if the variance exceeds $25 K. Minor 189a graphs will explain variance of over $10 K.

RESPONSIBLE MANAGER
P NORTH

EG&G IDAHO INC.

SEMISCALE

NUMBER 411000000



TOTAL PROGRAM

BUDGET	677	1356	2010	2503	2989	3605	4100	4576	5148	5585	6105	7161
ACTUAL	514	1328	1903	2384	2704							

MATERIAL

BUDGET	224	490	736	879	1016	1174	1293	1419	1567	1667	1792	2498
ACTUAL	128	459	579	690	625							

MANPOWER

BUDGET	120	97	90	86	81	83	84	78	77	85	73	78
ACTUAL	103	113	102	93	89							

BUDGET

ACTUAL

A6038

YTD VARIANCE: 285 (10%)

Outstanding material commitments account for $184 K of the variance. The current computer budget is $81 K underspent but increased work is identified and has been started. The remaining $20 K of the variance represents less than one percent of the year-to-date budget.

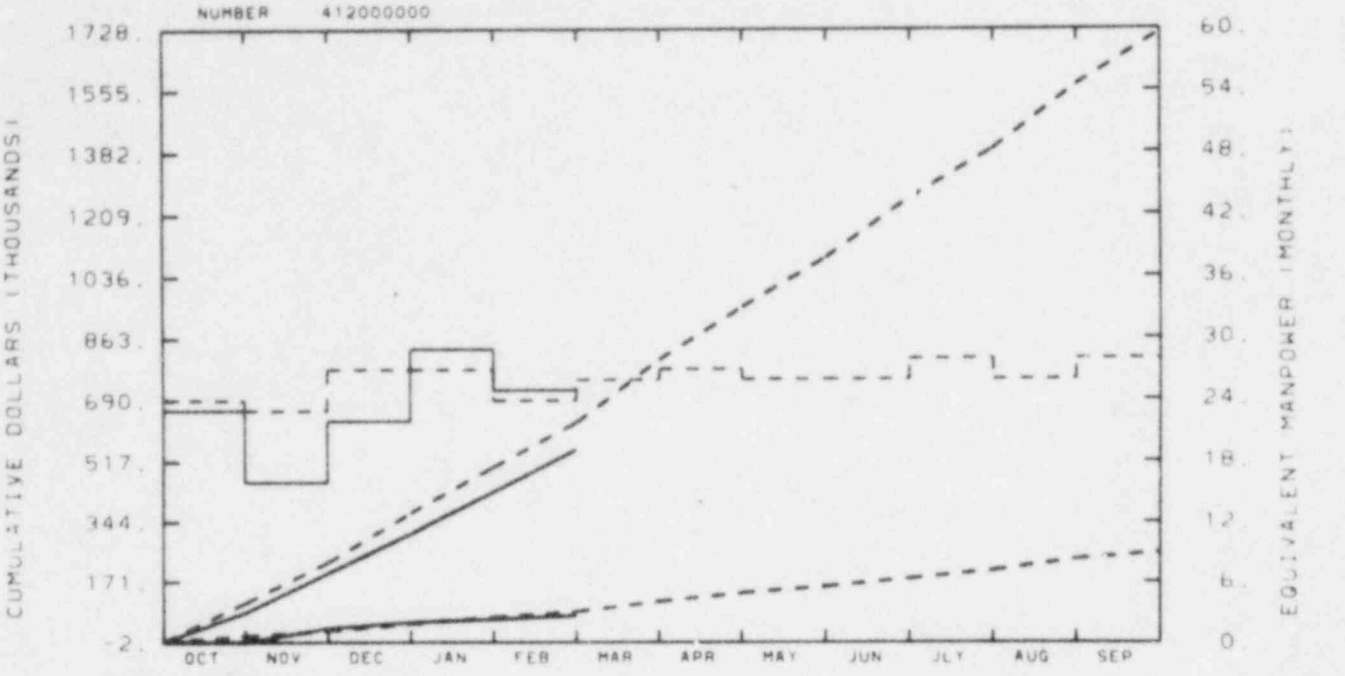
The total budget on this cost graph has been reduced by removing the RELAP5 budget, which will be covered in a separate cost graph in this report.

RESPONSIBLE MANAGER: NORTH

EG&G IDAHO INC.

LOFT TEST SUPPORT FACILITY

NUMBER 412000000



TOTAL PROGRAM

BUDGET	110	226	371	503	627	804	950	1089	1254	1391	1570	1718
ACTUAL	82	195	311	433	551							

MATERIAL

BUDGET	15	31	51	70	86	114	138	157	179	203	235	255
ACTUAL	-1	38	55	63	74							

MANPOWER

BUDGET	24	23	27	27	24	26	27	26	26	28	26	28
ACTUAL	23	16	22	29	25							

BUDGET - - - -

ACTUAL ———

A6043 (LOFT Test Support Facility Portion)

YTD VARIANCE: 76 (12%)

$38 K of the year-to-date underrun will be absorbed by a cost transfer from 2D/3D. Balance of underrun is due to test schedule slip causing a slowdown in spending rate.

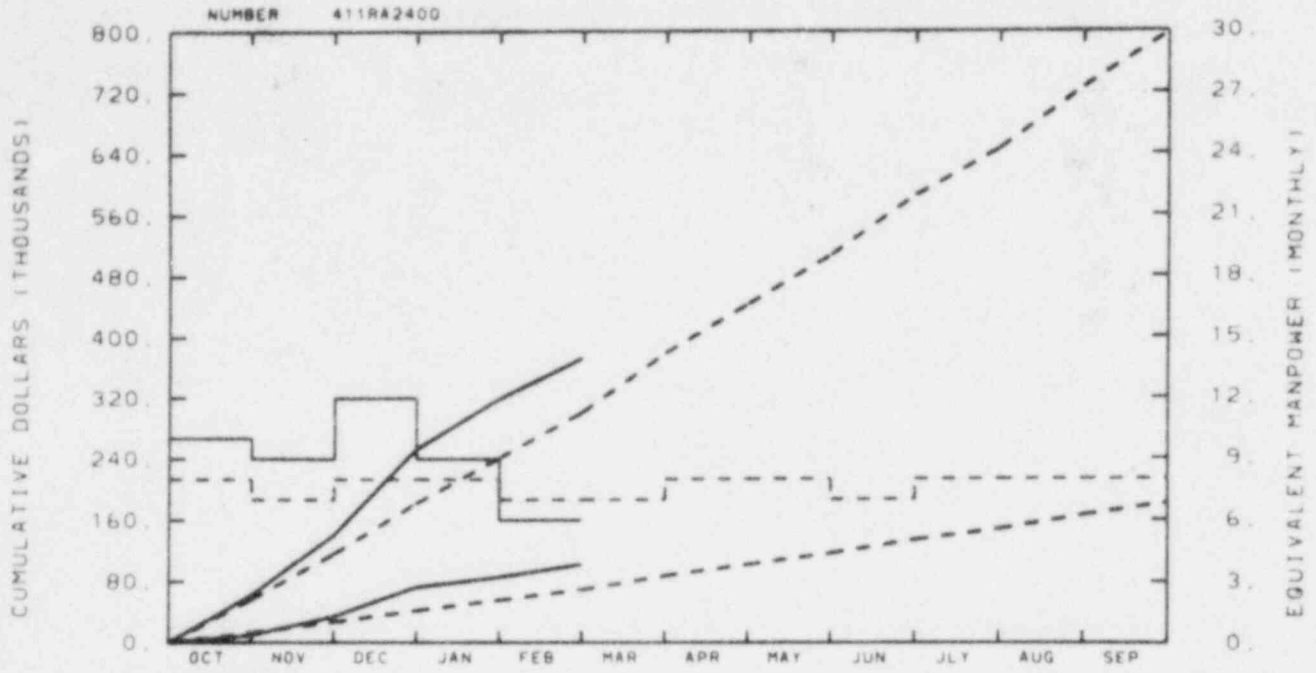
Total budget difference from last month's report is due to direction from LOFT to reduce the FY-1981 budget by $26 K in order to cover FY-1980 overrun of $26 K. Budget was then increased $23 K as a result of the approval in January of LOFT CCB# 81-91 for L9-1 Testing.

RESPONSIBLE MANAGER
F AGUILAR

EG&G IDAHO INC.

RELAP5

NUMBER 411RA2400



TOTAL PROGRAM

BUDGET	56	116	182	241	301	380	444	508	585	646	727	798
ACTUAL	62	141	253	319	373							

MATERIAL

BUDGET	13	27	42	56	70	88	102	117	134	148	166	182
ACTUAL	10	34	73	86	103							

MANPOWER

BUDGET	8	7	8	8	7	7	8	8	7	8	8	8
ACTUAL	10	9	12	9	6							

BUDGET
ACTUAL

A6038

YTD VARIANCE: <72> (24%)

As evident from the manpower and materials data, the cause of the overrun is a higher than planned effort during the first quarter. This effort was directed toward preparation for the RELAP5 workshop held in December and release of RELAP5/MOD1. Actions have been taken to divert labor from RELAP5 to recover the RELAP5 budget. The February cost shows that recovery is in progress.

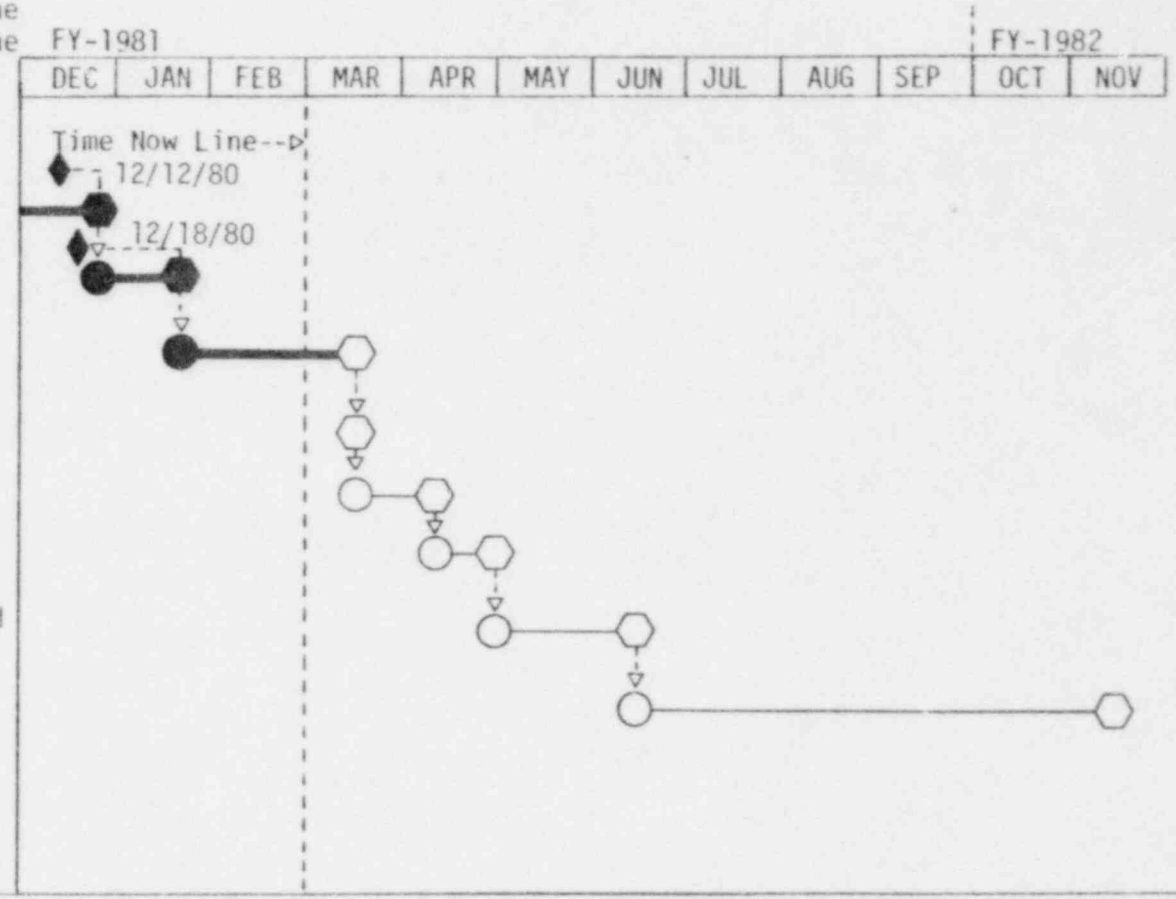
WATER REACTOR RESEARCH TEST FACILITIES DIVISION

CURRENT WORKING SCHEDULE

LEGEND

WATER REACTOR RESEARCH TEST FACILITIES DIVISION February 1981

- Completed Major Milestone
- Scheduled Major Milestone
- Slipped Major Milestone
- Completed Secondary Milestone
- Scheduled Secondary Milestone
- Slipped Secondary Milestone
- Actual Completion Date
- Scheduled Completion Date



NOTES:

WATER REACTOR RESEARCH TEST FACILITIES DIVISION

TECHNICAL REVIEW & SUMMARY

PROGRAM MANAGER'S

SUMMARY AND HIGHLIGHTS

Problems were encountered early in the month with Semiscale trace heater units overheating. These problems have been resolved and the heat loss series is approaching completion. Initial results indicate that the Mod-2A system is very well insulated.

Steam-Air-Water loop testing has started in support of the FLECHT Program.

LTSF Tests have started in support of LOFT L9-1. An initial problem of rupturing an exhaust line flex hose has been overcome by modifying test procedures and a schedule recovery will be made.

1. 189a A6038 - Water Reactor Research Test Facilities Division

2. Scheduled Milestones for February 1981

Node	Description	Due Date	Actual Date
N/A	S-UT-2 Quick Look Report	02/10/81	01/13/80

3. Summary of Work Performed in February 1981

A. 41DA00 - Measurements Engineering

1. 41DA2100

a. Drag screens, mountings, blocks and washers for intact and broken loop have been received.

b. The hinged drag screen assembly has been assembled after some fitting problems; also work included modifying the drag transducers nose pieces and washer assembly and transducer calibration.

c. Low energy densitometer washers for broken loop have been received. The low energy densitometer was modified for mounting bracket to fit drag screen washer and density washers. Alignment of source and detector was begun.

d. Low range turbines were ordered for intact and broken loop steam generator hot legs. Promised delivery date is April 24, 1981.

2. 9D080500 - FLECHT Test and SAW Loop Upgrade

a. The dummy core assembly has been assembled and installed.

b. The operational checkout of the loop has been completed.

B. 411HM00 - Hardware Mods

1. 411HM1100 Completed installation of the steam generator downcomer bypass system.

3.8 Summary of Work Performed in February 1981 (continued)

Conducted final design review of the condensing system for the 2-1/2% small break tests. Hardware for this system was delivered and installation is presently in progress.

An emergency request for removal of the top head of the vessel was responded to and completed. This required hardware design, fabrication in TAN shops with overtime, and writing of a procedure for the work. This was accomplished satisfactorily.

Metal "O" rings were ordered and a site work release (SWR) issued to slightly modify some intact loop spool pieces to permit installation of the drag screen devices for the upcoming small break tests. The "O" rings are scheduled for delivery on March 8, 1981.

Started design work on an emergency request for a lower energy densitometer system in the vessel upper head bypass line for the small break tests. The design will be completed as time permits, but the installation will be postponed. Hardware for this system could not be obtained in time for the small break tests.

Completed drawings of a 2-1/2 in. stainless steel spool piece to replace three existing carbon steel spool pieces in the intact loop hot leg. This spool is designed to permit measurement of the hot leg inclination. This spool will be fabricated and installed during the Mod-2A, phase-two construction shutdown. As a backup measure (alternate plan), an SWR was issued to modify the existing spools to fitup to the new "pantlegs" if a schedule problem develops with the replacement spool piece.

A concept for bypassing the Lawrence pump was agreed upon and the design started. The planned bypass will require removal of the Lawrence pump from the system and parallel pipe, 1-1/2 in., and 1 in., fit into the Lawrence pump space. The new spool(s) will have 1-1/2 in. and 1 in. valves that are on hand and incorporate an existing broken loop instrument spool (1-1/2 in.) to allow flow, temperature, and pressure measurements.

An SWR to modify the broken loop piping to fit the new "pantlegs" was issued.

3.B Summary of Work Performed in February 1981 (continued)

Began design of "dummy" turbine meter sleeves. These items are needed to reduce flow turbulence when "live" turbine meters are not installed in the system.

Began design of two items needed for the natural circulation test series (a) the vessel lower plenum drain and measurement system and (b) the reflux meter. Drawings are underway and some material has been ordered. Although we have obtained informal concurrence with the design approach, a formal design review will be held in early March to document and finalize the design.

The break orifice plate drawing will be revised to include a 5% orifice so that fabrication can be immediately initiated if this experiment is added to the UT series.

C. 411LE00 - Semiscale Operations

1. 411LE1100 The major work effort for February has been in running the Heat Loss Test Series and working the problems that arose due to the testing.

HL-4 was run February 4 and 5, 1981. The test was successful from an operational and data measurements point of view. However, during data review and loop checkout February 6, 1981, it was noted that the glass insulation had started to melt on Spool Piece 4, and that the band heater temperature in Spool Piece 14 had gone above saturation temperature. On Monday, February 9, an investigative committee was formed to investigate the extent of the problem and to recommend solutions. The committee found the following conditions:

a. The band heaters on the intact loop hot and cold leg showed overheating and damage to the wiring in spool pieces 1, 4, 14, 16, and 17. Insulation melted in Spool Piece 4 and 14, and slightly melted in Spool Piece 1, 16 and 17. Band heaters in Spool Piece 5 were shorted and the wiring lugs almost melted off.

b. The band heaters on the intact loop pump suction and all of the broken loop showed no apparent melting of the insulaton or damage to the band heaters. However, the teflon wire wrapping was melted near the insulation.

3.C Summary of Work Performed in February 1981 (continued)

The following recommendations were made:

a. Replace the damaged wiring to band heaters.

b. Replace the band heaters that were shorted or not working.

c. Install thermocouples on several band heaters throughout the system so temperature can be monitored during operation.

d. Limit the operating temperature of the band heaters to a temperature well below the melting point of the insulation.

In order to implement these recommendations, and minimize schedule impact, the following changes in the test plan, procedure, and schedule were made:

a. HL-7 would be run without the upper head. The upper head woud be removed before HL-7 so that the turbines can be repaired and reinstalled by S-UT-3.

b. High temperature wire is on order for the needed repair and replacement.

c. A bench test on a spool piece/band heater set up is being performed to determine safe operation modes of the band heaters under test conditions. This work will be completed by HL-7.

d. HL-7 test plan and procedure have been rewritten to cover the following areas:

   1. No upper head.

   2. Blowdown to assess the capability of the band heaters to perform as designed during post blowdown system voiding.

   3. Assessment of the capability of the intact and broken loop band heaters to compensate for heat loss.

3.C Summary of Work Performed in February 1981 (continued)

HL-7 shall be run February 26 and February 27, 1981. The wire (see Item 2 below) will not be replaced by this time, due to supplier problems. There is no indication that this action will cause damage to either the band heaters or the system.

The EDR for S-UT-1 and S-UT-2 is progressing on schedule. Based on current projections, the EDR will be completed by its May commitment date and shall include published uncertainties for all measurements.

2. 411LE2100 The pretest prediction RELAP5 calculation for Test S-UT-3 was completed and a letter report drafted. This draft is being reviewed by management and is expected to be released by March 4, 1981.

3. 411LE2300 A paper summary entitled "An improved Coupling Technique Between Convection Heat Transfer and Thermal Hydraulic Computer Codes" was prepared and submitted for acceptance at the 1981 Winter Annual ASME Meeting on Heat Transfer Aspects of Reactor Safety to be held in Washington D.C., on November 15-20, 1981.

The summary for a paper to be considered for presentation at the American Nuclear Society (ANS) specialists meeting on small break loss-of-coolant accident (LOCA) analyses in light water reactors (LWR's) was written. The topic of the paper is the effect of primary coolant pump operation during a small break accident LOCA.

The summary was transmitted to the ANS technical program chairman for review. The evaluation of Semiscale and LOFT pumps on/pumps off test data was continued for incorporation into the final paper.

Revisions were completed to the draft of a paper dealing with the design and use of the honeycomb insulators used in the Mod-3 and Mod-2A systems.

4. 411LE2400 RELAP5 calculations are in progress to investigate the thermal-hydraulic responses of postulated breaks in a pressurized water reactor (PWR). Various break sizes, combinations of available charging and safety injection coolant makeup, and operating conditions are being studied. The results of this study will be documented in a letter report by March 31, 1981.

3.C Summary of Work Performed in February 1981 (continued)

An outline of the reports we will prepare, documenting the performance of the Westinghouse reactor vessel liquid level measurement system, was prepared and submitted for NRC review.

Coordination work with Westinghouse included transmitting test schedule and experiment operating specification (EOS) information to them, and making arrangements concerning use of the system with the vessel upper head removed. Work was started on the "boiler plate" part of the test reports and a system operation (S.O.) Test description for Westinghouse system checkout and end-to-end calibration was prepared and discussed with Measurements.

Revision of the Karlsruhe Data Analysis report has been completed. The report will be ready for release shortly, following completion of the figures.

A RELAP5 scoping calculation for a 6% cold leg break in the Semiscale Mod-2A system was completed. A letter report documenting the results is being written and should be completed by March 13, 1981.

5. 411LE2500 The standard practice on EOS generation was revised to incorporate those comments received and was published for final review and approval.

Significant effort was expended in preparing revised work packages to accommodate the deletion of the St. Lucie test and the inclusion of Test S-UT-3.

6. 411LE3100 Some work was done on a simplified Semiscale Mod-2A indentured parts list. Work will continue on this item on non-interference basis with higher priority work.

Issued a draft of the Mod-2A Phase Two System Design Description (SDD) for internal review and comment.

3.C Summary of Work Performed in February 1981 (continued)

7. 411LE4100

a. Experimental data was recorded and processed for Test HL-4 this month. This test involved 150 data channels and five different data runs over a 2 day period--no significant instrumentation problems were encountered.

b. The special band heater test spool piece was set up and instrumented and several data runs made. About 50% of a band heater's rated power results in a 200 K rise on the outside surface of the band heaters.

c. The Semiscale loop was instrumented for additional band heater evaluation tests. This involved an additional 30 thermocouples and installation of five peak reading circuits to monitor band heater temperatures and provide monitor/trip signals to the process control system.

d. The upper head assembly was pulled and work begun on re-instrumenting it. The upper head was ready for installation in the pit by February 26, 1981.

e. Westinghouse would like to have their liquid level system in operation on Test HL-7 during the blowdown. Without the top portion of the upper head, tubing is to be installed between the dummy cap and the Westinghouse sensor. To prevent loss of water from the tubing, tubing shall be run horizontally two feet, down one foot, and then up to the sensor mounted at its same location.

f. Work is continuing on the uncertainty analysis of pressure and differential pressure transducers. This uncertainty covers the calibration and regression curve fit. The remainder of the data system will have an estimate for its uncertainty based on past information. The LOFT format will be used so that existing software is available. The data values will be available by March 13, 1981.

D. 411M200 - Mod-2A Conversion

1. 411M23100 Calculations were performed and requirements transmitted to measurements and design for the on-line break flow rate catch tank equipment for the 2-1/2% break size.

3.D Summary of Work Performed in February 1981 (continued)

2. 411M23400 Five of the six heat loss characterization tests have been completed. The heat losses and their distribution have been characterized for the primary and secondary sides of the Mod-2A system. Heat losses from the secondary sides of the steam generators were found to be on the order of 4 to 5 kW each and are in relatively good agreement with calculated heat loss through the insulation. The heat loss from the primary has been measured to be a total of about 74 kW. This is greatly in excess of calculated values. Work is progressing on the final analysis and letter report for the test series. The final test was run February 25 and 26. The procedure for this test had been revised to allow the resolution of several remaining questions with regard to heat losses and external heater operation.

   A short series of tests on a single spool piece are underway to investigate the performance of the band heaters and heater tape used on the Mod-2A system. The results from these tests will provide information on pipe and heater temperature profiles, heat losses through the insulation, and values for contact resistances necessary to upgrade current models.

   An outline was prepared for the heat loss test series report.

3. 411M24100 Mechanical design of the leakage makeup system was completed. Electrical design was delayed due to higher priority work, but we expect to recover from this situation. Most materials needed for this job are on hand. The injection pump is installed and was functionally tested.

   The removal of the intact loop pump should solve the leak rate problem for the natural circulation tests. The new intact loop pump represents a long term resolution of both the leak rate and heat loss problems. A work package has been prepared to install this pump in the Semiscale broken loop and prepare for pump testing. Testing on a non-interference basis should not be difficult to conduct since the broken loop will be idle for the first six natural circulation tests.

4. 411M24200 A purchase order was issued to design, fabricate, and test a prototype vessel turbo probe.

3.D Summary of Work Performed in February 1981 (continued)

a. Several hardware items needed for loop instrumentation were received. These included:

1. Turbine Meter Housings

2. Beryllium Instrument Washers

3. Densitometer Bracket

4. X-Ray Source Holders

5. Instrument Port Plugs

6. Water Cooled Drag Transducers

Design work was begun on the optical probe system for the steam generator plenum. This design is a recently added work scope which is needed for the natural circulation tests. The - will be based on Olympus optical equipment rat[illegible]n Storz. This should simplify design and the equipmer[illegible] more readily available.

5. 411M25200 A prototype bracket was built to fit the new style densitometer detectors which are on order. Because the new detectors may not be delivered in time to support the test schedule, the design group will begin design of bracketry to be used with the existing old style detectors.

Some of the steam generator "pantleg" spool pieces were returned to the manufacturer for minor rework. The rework is practically complete and the items should be shipped in early March.

E. 411NC10 - Natural Circulation Test Series

1. 411NCX100 RELAP5 scoping calculations for Test S-NC-2 are in progress. These calculations will be used to determine whether the test objectives can be achieved as proposed in the EOS.

A break size for Tests S-NC-8 and S-NC-9 was proposed by evaluating the RELAP5 calculated results. The proposed break size is 1.07 mm representing a 0.4% break. Further evaluation of the break size relating to a break flow and high pressure injection system (HPIS) flow rate is being continued.

3.E Summary of Work Performed in February 1981 (continued)

Analysis personnel provided input for decisions regarding the recommended removal of the vessel upper head for the steady-state natural circulation tests. Input was also furnished as to requirements for the intact loop pump replacement spool piece which will be used for the natural circulation tests.

Work has begun on writing the final EOS for the natural circulation test series. Revisions and improvements which have developed in-house since release of the preliminary EOS are being incorporated. No comments were received from outside parties on the preliminary EOS other than several from PKL which have received consideration.

2. 411RA400 RELAP5 calculations of Test S-UT-4 and S-UT-5 are being performed in order to determine the guard heater power that will best compensate for system heat losses without significantly altering the transient responses. Several calculations have been completed and compared to an adiabatic boundary calculation to determine the most optimum guard heater control scheme. The calculations completed thus far have indicated that the guard heaters can be effectively used in making up the heat losses, even though the heat losses are being made up in the loops and a large percentage of the heat loss is in the reactor vessel. The results of these calculations will be documented in a letter report upon completion of the project.

F. 411TC00 - S-UT Test Series

1. 411TCX100 The EOS for Test S-UT-4 was completed and was released on February 4, 1981.

The EOS for Test S-UT-5 has been reviewed by management and is being revised for final approval. Target issue date is March 6, 1981.

2. 411TC1500 The EOS for Test S-UT-3 was completed and issued for review. This is the first of the EOS's prepared in accordance with the revised standard practice. Some preliminary work has been started on the associated letter report involving this test.

3. Summary of Work Performed in February 1981 (continued)

G. 411T1X0 - External Heaters

1. 411T1X200 Completed second half of the external heater system S.O. test in which the intact loop hot leg, cold leg, and pump loop suction power modules were checked out and placed in an operating mode. A special isolation amplifier module was fabricated and installed in all five power units.

External heater system drawings were as-built and submitted to drafting. Approximately 75% of these drawings have been released with the remaining 25% to be released early in the March report period.

Work has started on assessing damage to external heaters system band wiring caused by excessive heat. All wires that appear to be damaged will be replaced. All asbestos insulated wire inside the soft insulation will be replaced with high temperature 1000°F wire.

H. 411T710 - Test Series 7

1. 411X7X500 Transition Boiling Paper--The paper has been submitted to editing and graphics in preparation for release.

Facilities Comparison Topical--The past month has been spent preparing the rough draft for the Series 7 comparisons topical based on the revised outline submitted and approved last month. The rough draft was completed and submitted for first line management review on February 2, 1981. Several data plots are being obtained at this time as a parallel effort to management review, and final figures were available by about February 27, 1981

4. Scheduled Milestons for March 1981

Node	Description	Due Date
N/A	EOS for S-UT-4, S-UT-5	03/06/81
N/A	EOS for S-UT-3	03/06/81
N/A	Completion of Heat Loss Experiments	03/13/81

5. Summary of Work to be Performed in March 1981

A. 411DA20 - Measurement Engineering

1. 411DA2100 Work is to continue in preparation of instrumentation for the Natural Circulation Test Series. Purchase requisitions will be issued for video equipment and support hardware for acquiring data from a "Borescope". Dollars for these items involve a CCB action.

2. 9D080500 - FLECHT Test and SAW Loop

a. Experiment testing for the FLECHT configuration will start.

b. Westinghouse representation will be at TAN to review the test system and to observe the initiation of testing.

B. 411HM00 - Hardware Mods

411HM1100 Complete installation and checkout of the 2-1/2% small break condensing system.

Modify the intact loop spool pieces and install the drag screen devices for the 2-1/2% small break tests.

Complete design of the vessel bypass line density system. Since this task is a low priority item, it will be worked on a non-interference basis.

Issue material requisition or SWR to fabricate the intact loop hot leg replacement spool. Close monitoring and expediting of this task will be necessary to support the schedule.

Complete drawings and issue work package to fabricate the intact loop pump bypass spool. This task will also require close monitoring and expediting.

Complete design and fabrication of "dummy" turbine meter sleeves.

Conduct design review of the vessel lower plenum drain reflux meter and pump bypass systems. Complete majority of drawings and order material. We have prioritized drawings so that those needed for material purchase and hardware fabrication will be completed first, with the final assembly drawings to follow.

5. Summary of Work to be Performed in March 1981 (continued)

C. 411LE00 - Semiscale Operations

1. 411LE1100 The major work effort for March will be to run Tests S-UT-3, S-UT-4 and S-UT-5. The S-UT-1 and 2 EDR shall be ready for printing by April 1, 1981.

Other areas of work will be planning for the Natural Convection Test Series, and if required, planning for S-UT-6.

2. 411LE2100 Pretest predictions of Tests S-UT-4 and S-UT-5 will be completed using the RELAP5 computer code and documented in a letter report by March 20, 1981.

Tests S-UT-3, S-UT-4 and S-UT-5 will be conducted in March. Analysis personnel will provide test support and begin work on the quick look reports.

3. 411LE2400 Portions of the first Westinghouse reactor vessel liquid level system test report will be prepared, S.O. test checkout will be followed and data reviewed and approved.

An EOS will be written and released for Test S-UT-6 (5% cold leg break) if this test is approved by NRC. Background material will be gathered and reviewed.

The Karlsruhe Data Analysis report will be released.

4. 411LE3100 Evaluate bids on steam-air-water loop tanks and place order.

5. 411LE4100 - DAS Operation

a. Acquire and process data from HL-7; the test is being done without the upperhead.

b. Install instrumentation for S-UT-3 along with the upperhead--three (3) work days are required to ready the system for a pressure check after the upperhead has been set on and clamped to the vessel.

5. Summary of Work to be Performed in March 1981 (continued)

D. 411M200 - Mod-2A Conversion

1. 411M234 The final heat loss test will be completed. Work will continue on posttest analysis and writing of the analysis letter report. Results will be used when determining the appropriate heat loss and heater system operation for the upcoming production tests.

2. 411M24100 - Leakage Makeup System

Complete electrical design and issue work package to complete installation. Issue Component Checkout (C.C.) and System Operations (S.O.) test procedures.

3. 411M24200 - Instrumentation Development

Complete drawings of optical probe hardware for review and order materials. Installation and assembly drawings will be completed in April.

Fabrication of a prototype water cooled pressure probe will be completed and evaluated.

The turboprobe design and planning will be reviewed.

4. 411M25200 - Primary Loop Upgrade

Complete preliminary design of the bracketry to fit the existing densitometer detectors.

Receive the remainder of the steam generator "pantleg" spool pieces.

E. 411NC00 - Natural Circulation Test Series

411NCX100 Analysis support will continue on several studies regarding nautral circulation test procedures, measurements and hardware. Work will begin on a proof-of-principle test for the reflux meter. The RELAP5 calculation results will be reviewed to establish the adequacy of proposed tests and measurements.

F. 411SB00 - Small Break Test Series

411SBX500 Management comments on the test results reports (TRR's) will be received and incorporated into the text.

5. Summary of Work to be Performed in March 1981 (continued)

G. 411TCS - 2-1/2% Break Tests

1. 411TCX100 The EOS for Test S-UT-5 will be released.

2. 411TC1500 The EOS for Test S-UT-3 will be issued. Final test preparations for Test S-UT-3 will be followed/coordinated, the test conduct witnessed and posttest data review and analysis started.

H. 411T1X00 - External Heaters

411T1X200 Complete "as-built" drawings.

Replace existing 14 gauge 550°F wire with 10 gauge 1000°F wire.

Complete system characterization testing, review temperature data, and document operating limitations.

I. 411T700 - Test Series 7

411T7X500 The Transition Boiling paper will be submitted for publication. The comparison topical will be completed for management review.

6. Problems and Potential Problems

Work scope identified for system hardware modifications during the second half of FY-81 will cause an overrun in related work packages as currently defined. Additional instrumentation has also been defined for the natural circulation experiments, over and above that defined in the current baseline. Both of these problems have been discussed with NRC and DOE and CCBs are in preparation to respond to both problems.

1. 189a A6043 LOFT Test Support Facility

2. Scheduled Milestones for February 1981

None.

3. Summary of Work Performed in February 1981

A. 412TPRJ - LTSF Test Projects

1. 412A901 The LTSF Test Schedule was reviewed to assess use of a potential March 9 to April 15 window in the event delays in delivery of the Rebeka rod from EXXON should cause a slip in initiation of the Nine Rod Bundle Tests. Proposals for use of the potential window were discussed with LOFT, but implementation of alternatives was dropped based on best estimate for EXXON delivery of the Rebeka rod.

   LTSF budget was reviewed, and estimate of FY-1981 budget carryover due to existing schedule slip was identified. Use of the carryover to pay for part of the overrun in 2D/3D testing was discussed with LOFT and agreed upon. Cost transfers to closed acounts will be reflected in CAPS reports by March 30. Revised work packages and CPM networks to bring budget baseline up to date with current schedule will be transmitted to Plans and Budgets by March 2.

   Review of separate effects test programs and LOFT Program needs in FY-82 was initiated in support of 189 preparation.

2. 4129111 The Experiment Data Report (EDR) for the JAERI Slab Core Test Facility Hot Leg Spool Piece Performance Tests was presented to management for review. The EDR for the Condensation Experiments is awaiting first line supervisory review and comments prior to final processing.

3. 412AA01 Installation of the embedded thermocouples in the Rebeka rod at EXXON has been delayed due to priority support given to the PBF fuel rod fabrication effort. Current estimate of delivery of the Rebeka rod to INEL is March 16. This delivery date should allow bundle fabrication and installation at LTSF to support test initiation by April 13. Other work related to installation of hardware at LTSF in preparation for this test is advancing on schedule. Installation drawings have been released.

3.A Summary of Work Performed in February 1981 (continued)

4. 412AN01 System Operting (S.O.) and Performance Testing in support of the LOFT L9-1 PORV line Instrumentation assessment was initiated. S.O. tests were completed on February 6, the pressure operated relief valve (PORV) was installed and initial sizing completed on February 18, but testing was delayed due to failure of the flexible hose at the catch tank inlet during set up for the first drag-screen-turbine (DST) performance assessment test.

   Schedule loss of one week required to repair and revise system design and operation due to this failure postponed resumption of testing to February 26. Alternatives to pick up lost time were investigated, and schedule revised indicating a March 11 completion date using two 12 hour shifts beginning February 26. LOFT agreed to covering overtime costs associated with this schedule.

   Experiment Data Report preparaton was initiated and a preliminary draft excluding uncertainty analysis and data presentation was completed for review. Data from tests conducted during February was processed and stored on the CYBER system for use in future qualification and reporting tasks to be completed by April 30.

B. 412F000 - LTSF Data Acquisition

1. 412F11310 Completed the set up and calibration of the DAS system in preparation for the LOFT L9-1 Instrument Performance Test. Maintained and operated the DAS system in support of the L9-1 testing. Work completion remains at 90% for splicing cable to the new IOIS expander.

2. 412F11510 The Blowdown Loop process instrumentation was checked out for L9-1 test. Based on our experience with Phase 1 modification, it is suggested Phase 2 modification not be started until after the completion of the Nine Rod Bundle Tests.

   L9-1 S.O. Test using automatic control was successful. Some refinements are needed in the software program. This will not be attempted until the completion of L9-1 Test. Considerable operator indoctrination into the use of the EPTAK was accomplished during the L9-1 S.O. Test.

3.B Summary of Work Performed in February 1981 (continued)

3. 412F11700 and 412F21600 - LOFT Test Support Facility

Eighty "as-built" drawings of two-phase loop were completed and released for record. An as-built drawing list is being prepared.

Design of the L9-1 assembly and installation was completed at LTSF.

Details of the nine rod quench test assembly were finalized and the drawing released for fabrication.

Prepared and issued drawing for upgrade of the diesel engine cooling system to reduce water consumption during operation. This amounts to installing a valve in the cooling line to control flow rates based on cooling demand. Installation wi be completed in March.

4. 412F21710 No effort was expended on the two-phase flow loop reference instrumentation.

C. Foreign Funded Activities

1. 5F7C222 - Storage Tank Anaylsis

Analysis to upgrade operating limits of the two-phase loop steam supply vessels was completed and transmitted to CDCS for distribution.

2. 5F8C311 - Advanced DTT

No work was performed on this task. Schedule has been revised to permit report completion by April 30 due to priority conflicts with LOFT L9-1 Instrument Performance testing activities.

3. 5F9C411 - Post CHF Heat Transfer Test

The test section and installation drawings are 90% complete. These drawings are one week behind schedule due to limited drafting manpower and will result in a one week delay in conducting the final design review. Requisitions for all hardware and power supplies have been processed and orders placed on schedule. Specifications and procedures for fabrication and assembly of thermocouples on the

3.C Summary of Work Performed in February 1981 (continued)

Inconnel test tube have been completed on schedule, and thermocouple wire is on hand. A preliminary measurement uncertainty analysis has been completed.

4. 5F8C41201 - Post Critical Heat Flux

The detail design of ins'allation is approximately 90% complete. A final design review will be scheduled in early March.

4. Scheduled Milestones for March 1981.

None.

5. Summary of Work to be Performed in March 1981

A. 412TPRJ - LTSF Test Projects

1. 412A901 The LTSF Test schedule will be reviewed and revised as appropriate upon completion of L9-1 Instrument Performance Testing, and delivery of the Rebeka rod for the Nine Rod Bundle Tests. The LTSF budget will be rebaselined from schedule input defined at the end of February. Standard Practices relating to project engineering responsibilities will be reviewed with separate effects section personnel. Review of proposed separate effects test programs and LOFT needs will be completed by March 6 in support of 189 preparation. Results of preliminary inquiries into recalibration of a two-phase loop steam metering orifice will be documented and discussed with design, operations, and measurement systems personnel.

2. 4129111 The EDR's for instrument performance testing and condensation experiments performed for the 2D/3D program will be completed and transmitted by March 30.

3. 412AH01 PORV and instrument performance testing will be completed. Data qualification will be initiated with schedule completion on April 10. EDR preparation will continue with final review scheduled for April 30. Budget assessment at the end of testing will be made and results documented for LOFT review.

5.A Summary of Work to be Performed in March 1981 (continued)

4. 412AA01 The nine rod bundle will be assembled upon receipt of the Rebeka rod from EXXON. Current schedule indicates the rod will be delivered by March 16; delays in this delivery will cause like schedule slip in test initiation from April 13. The blowdown facility will be reconfigured from current L9-1 assembly to support the nine rod tests. Operating procedure draft will be completed by March 30.

5. 412AF01 Requirements for two-phase loop performance testing will be revised in light of current schedule. The EOS will be revised to incorporate comments and results of requirements definition by March 30. A detailed list of activities required to support performance tests will be developed upon EOS approval.

6. 412F11700 and 412F21600

Issue as-built drawing list for the two-phase flow loop.

Complete installation of the diesel engine cooling water flow control valve.

7. 412F000 Operate and maintain the data and control systems in support of the L9-1 Instrument Performance Test.

Start rework of data and control systems in preparation for the Nine Rod Heater Test.

Complete cable hookup and checkout of IOIS expander.

8. 5F8C41201 - Post Critical Heat Flux

Complete drawings and conduct the final design review.

B. Foreign Funded Activities

1. 5F7C22 - Storage Tank Analysis

Results of analysis completed in February will be transmitted. The need and schedule for additional analysis will be discussed with design and operations personnel by March 30.

5.B Summary of Work to be Performed in March 1981 (continued)

2. 5F8C311 - Advanced DTT

Review of preliminary data report will be initiated in support of scheduled report transmittal by April 30.

3. 5F9C411 - Post CHF Heat Transfer Test

Final design review will be conducted. Test section thermocouples will be fabricated, and weld qualification samples will be prepared. Test section fabrication will begin upon receipt of materials. Test initiation has been slipped due to delay in Rebeka rod delivery and associated nine rod bundle test delay. Current best estimate for test initiation is June 10, with completion on August 10.

6. Problems and Potential Problems

412F000 - LTSF Operation

Review of cause and "fix prior to operation" the failure of a flexible hose connected to the blowdown vessel which is used to measure effluent mass flow rates through a test assembly.

MONTHLY REPORT FOR

FEBRUARY 1981

THERMAL FUELS BEHAVIOR PROGRAM

W. A. Spencer, Manager

R. L. Robb
Plans & Budget Representative

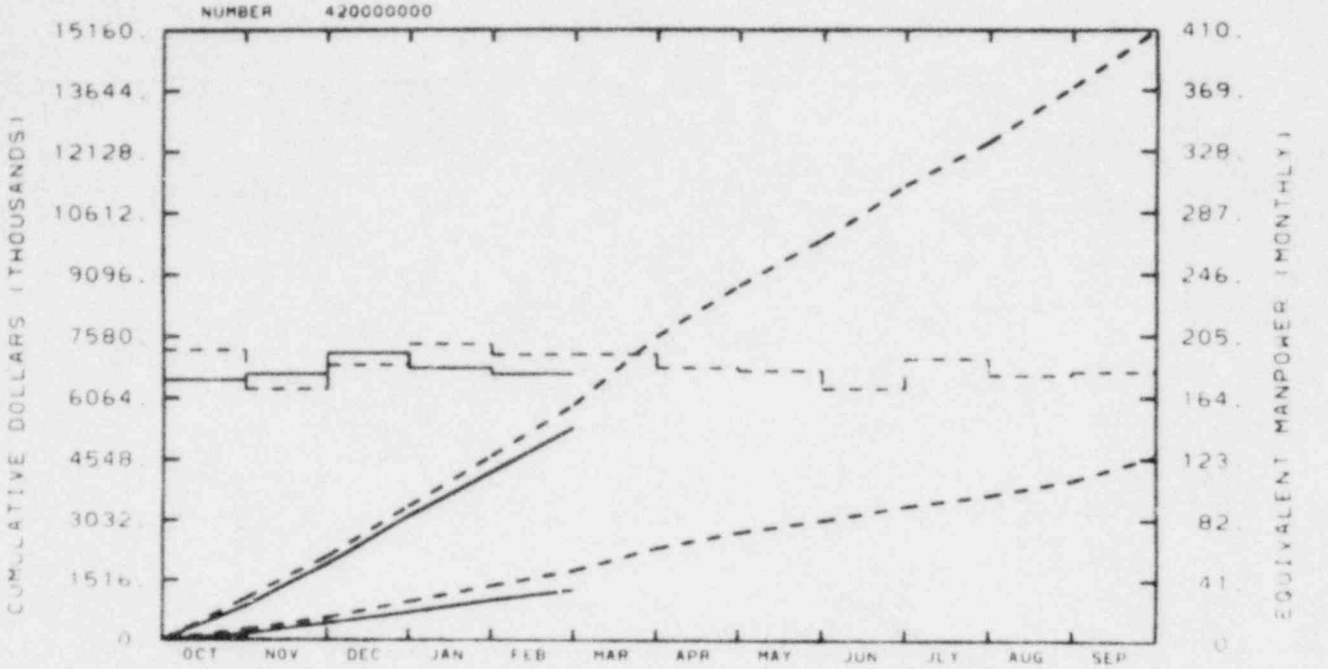
THERMAL FUELS BEHAVIOR PROGRAM
COST SUMMARY & COMMENTS

RESPONSIBLE
MANAGER
SPENCER

EG&G IDAHO INC.

TFBP PROGRAM

NUMBER 420000000



TOTAL PROGRAM

BUDGET	1052	2119	3391	4639	5894	7573	8816	9963	11285	12346	13723	15154
ACTUAL	856	1927	3142	4242	5338							

MATERIAL

BUDGET	271	577	974	1376	1765	2336	2725	3027	3382	3659	4023	4613
ACTUAL	158	426	708	1010	1276							

MANPOWER

BUDGET	196	170	186	200	193	193	184	182	170	190	179	181
ACTUAL	176	180	194	184	180							

BUDGET

ACTUAL

YTD VARIANCE: 556 (9%)

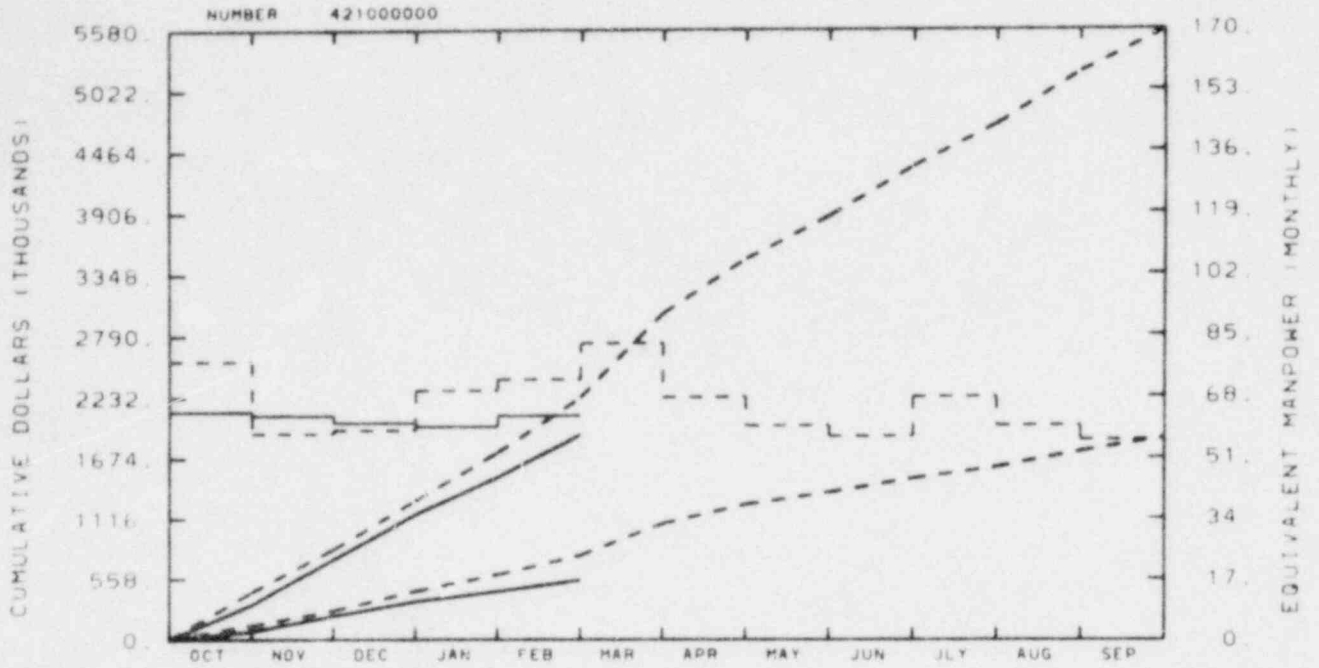
Individual cost graphs will give individual explanations.

Explanations for major 189a's will be made if the variance exceeds $25 K
Minor 189a graphs will explain variance of over $10 K.

ESPONSIBLE
ANAGER
E MACDONALD

EG&G IDAHO INC.

TFBP EXPER DESIGN & ANALYSIS



TOTAL PROGRAM

BUDGET	438	831	1288	1731	2233	2995	3489	3878	4325	4710	5191	5573
ACTUAL	321	738	1159	1503	1894							

MATERIAL

BUDGET	130	266	447	598	776	1070	1247	1357	1484	1588	1732	1857
ACTUAL	75	216	351	443	548							

MANPOWER

BUDGET	78	58	59	70	73	93	68	60	57	68	60	56
ACTUAL	64	63	61	60	63							

BUDGET

ACTUAL

A6041

YTD VARIANCE: 339 (15%)

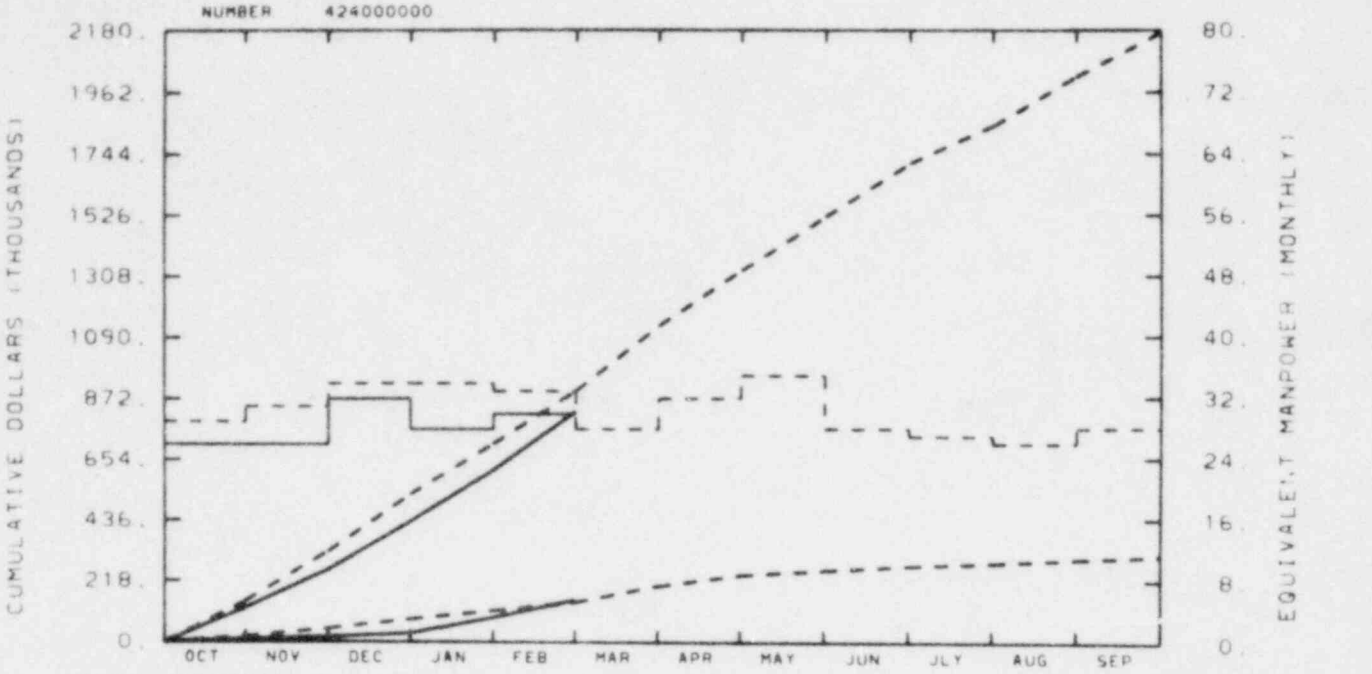
Due to PBF core burnup, the reactivity of the PBF has decreased about 0.8$ since it has been in operation. Reshimming and replacement PBF fuel rods will be necessary to increase the core reactivity. This has impacted the present test schedule and has impacted the test train delivery date requirements for the OPTRAN 1-1, 1-2, and 1-3 test. CCB's are being processed to correct this problem. The PCM-7 Fuel Behavior Report and PIE are slightly behind schedule due to the irradiated condition of the test train. These costs should be recovered by May.

RESPONSIBLE MANAGER
P KESTER

EG&G IDAHO INC.

PBF ENGINEERING

NUMBER 424000000



TOTAL PROGRAM

BUDGET	146	323	529	712	899	1131	1329	1522	1711	1844	2017	2172
ACTUAL	122	258	431	617	827							

MATERIAL

BUDGET	20	48	82	112	143	200	239	256	272	282	295	306
ACTUAL	11	19	31	88	151							

MANPOWER

BUDGET	29	31	34	34	33	28	32	35	28	27	26	28
ACTUAL	26	26	32	28	30							

BUDGET

ACTUAL

A6044

YTD VARIANCE: 72 (8%)

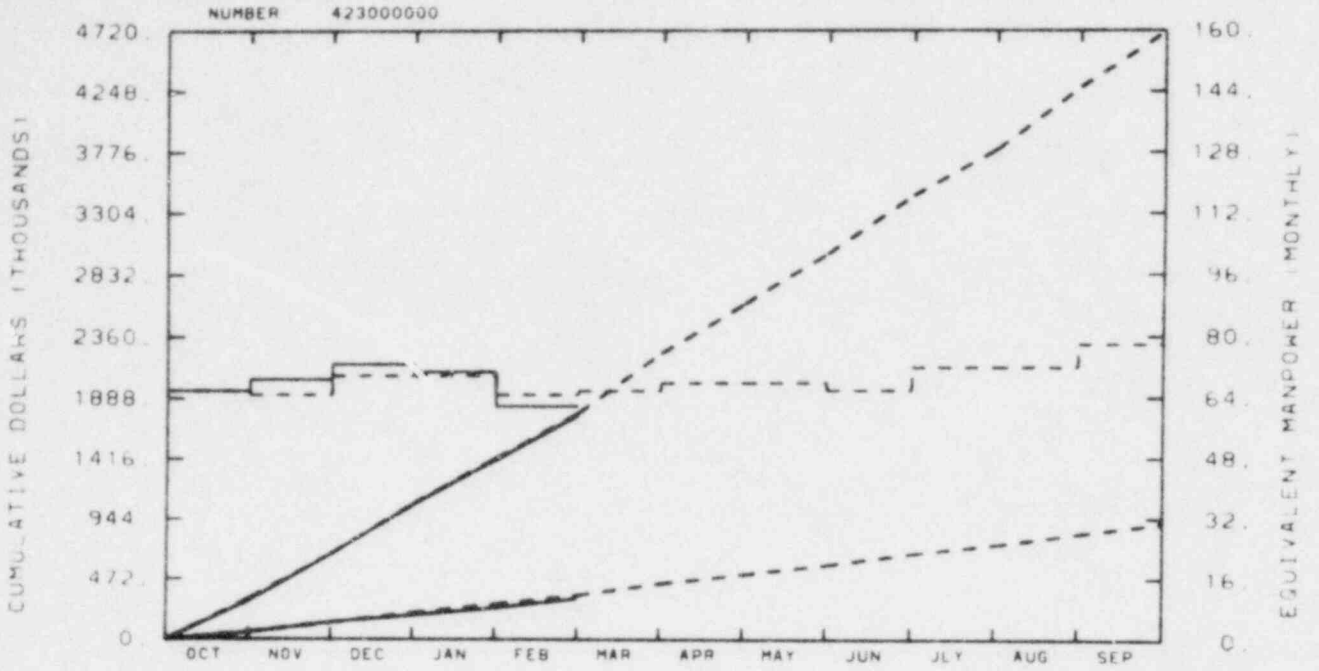
The variance has again been reduced from the previous month in both dollar value and percentage ($98 K to $72 K, 13% to 8%). This is attributable to some increase in craft work and in part to supplementing project engineering manpower with support organization talent. Costs are expected to increase since the Loop Performance Modification will be started ahead of schedule. TFBP manpower shortages will not be pursued because of the uncertainty in FY-1982 funding.

ESPONSIBLE
ANAGER
D DOUCETTE

EG&G IDAHO INC.

PBF OPERATIONS

NUMBER 423000000



TOTAL PROGRAM

BUDGET	319	670	1066	1425	1776	2236	2613	2990	3440	3796	4281	4711
ACTUAL	303	669	1058	1411	1761							

MATERIAL

BUDGET	62	131	207	276	345	436	509	581	668	737	824	904
ACTUAL	57	134	188	246	321							

MANPOWER

BUDGET	66	65	70	70	65	66	68	68	66	72	72	78
ACTUAL	66	69	73	71	62							

BUDGET

ACTUAL

A6057

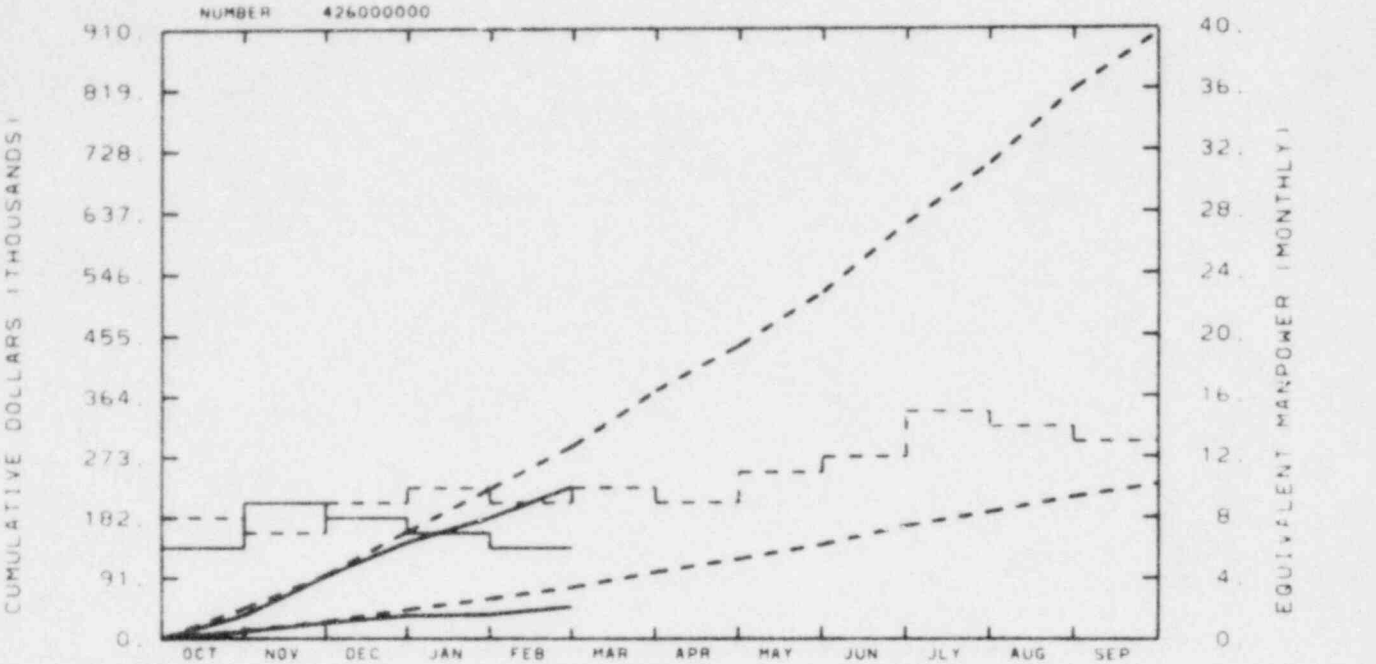
YTD VARIANCE: 15 (1%)

RESPONSIBLE
MANAGER
L. BUESCHER

EG&G IDAHO INC.

SEVERE FUEL DAMAGE

NUMBER 426000000



TOTAL PROGRAM

BUDGET	46	95	-61	226	289	373	440	519	621	709	818	902
ACTUAL	35	94	145	183	229							

MATERIAL

BUDGET	12	26	44	60	77	100	120	141	169	190	213	232
ACTUAL	11	24	34	37	48							

MANPOWER

BUDGET	8	7	9	10	9	10	9	11	12	15	14	13
ACTUAL	6	9	8	7	6							

BUDGET

ACTUAL

A6305

YTD VARIANCE: 60 (21%)

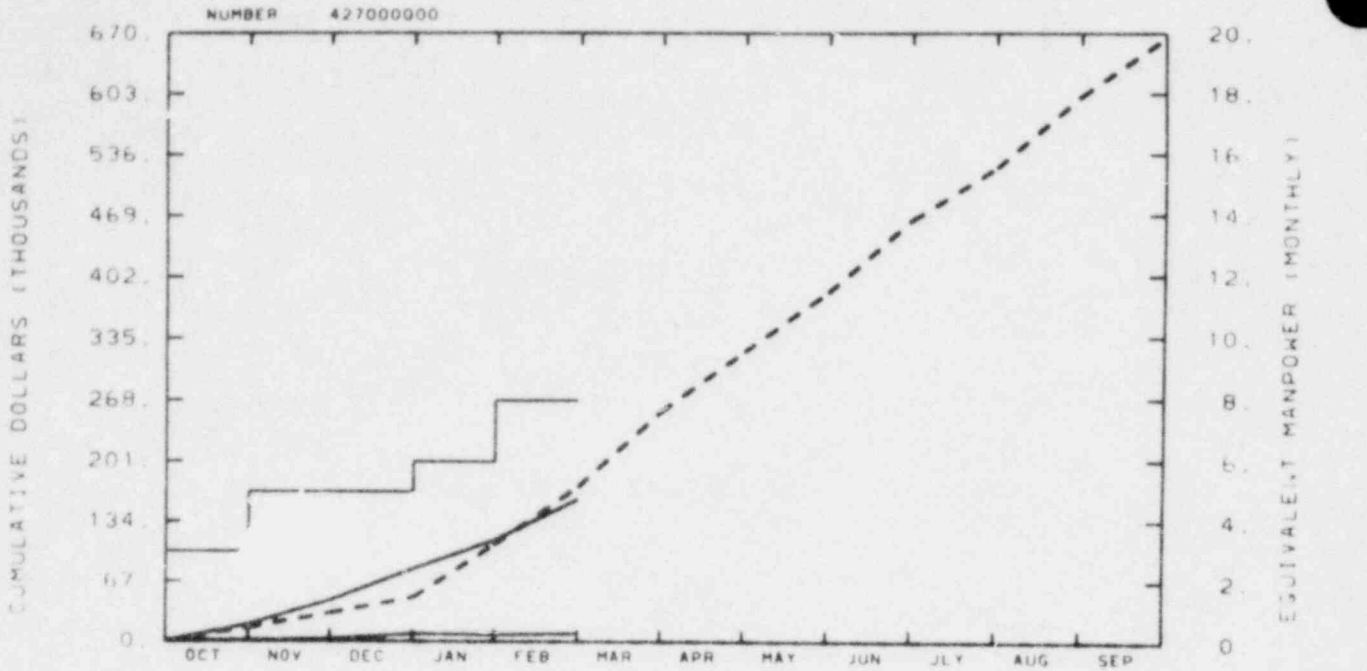
Manpower usage low at beginning of year. Contract costs committed have not yet cleared. Travel costs have been lower than anticipated at beginning of year. Year end costs expected to meet budget.

RESPONSIBLE
MANAGER
SPENCER

EG&G IDAHO INC.

CORE MELT MITIGATION SYSTEM

NUMBER 427000000



TOTAL PROGRAM

BUDGET	15	32	49	109	173	256	321	385	464	521	600	665
ACTUAL	19	46	81	114	160							

MATERIAL

BUDGET	15	32	49	109	173	256	321	385	464	521	600	665
ACTUAL	1	3	9	8	9							

MANPOWER

BUDGET	0	0	0	0	0	0	0	0	0	0	0	0
ACTUAL	3	5	5	6	8							

BUDGET - - - -

ACTUAL ———

A6351

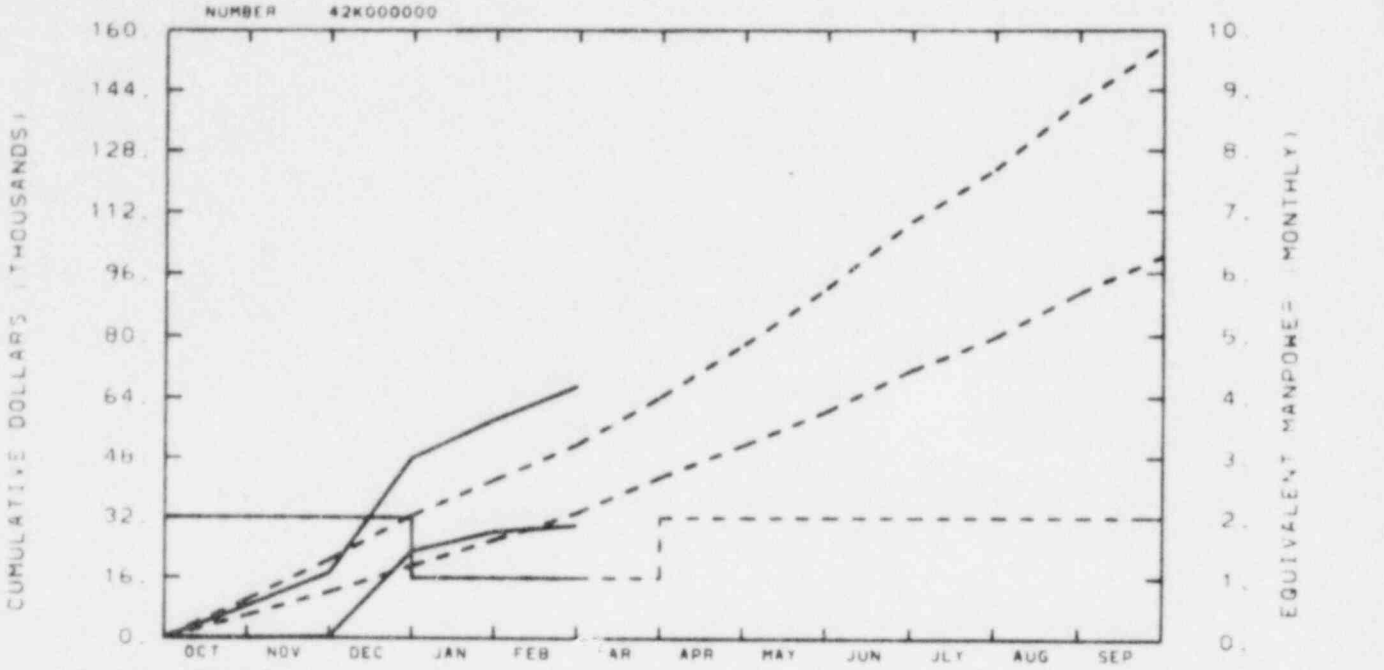
YTD VARIANCE: 13 (8%)

SPONSIBLE
NAGER
E MACDONALD

EG&G IDAHO INC.

NRC REP TO KFK

NUMBER 42K000000



TOTAL PROGRAM

BUDGET	10	21	33	42	52	64	78	92	109	123	141	156
ACTUAL	8	17	48	58	67							

MATERIAL

BUDGET	6	12	19	26	33	43	52	60	71	80	91	100
ACTUAL	0	0	23	28	30							

MANPOWER

BUDGET	2	2	2		1	1	2	2	2	2	2	2
ACTUAL	2	2	2	1	1							

BUDGET - - - - - -

ACTUAL ———

A6352

YTD VARIANCE: <15> (29%)

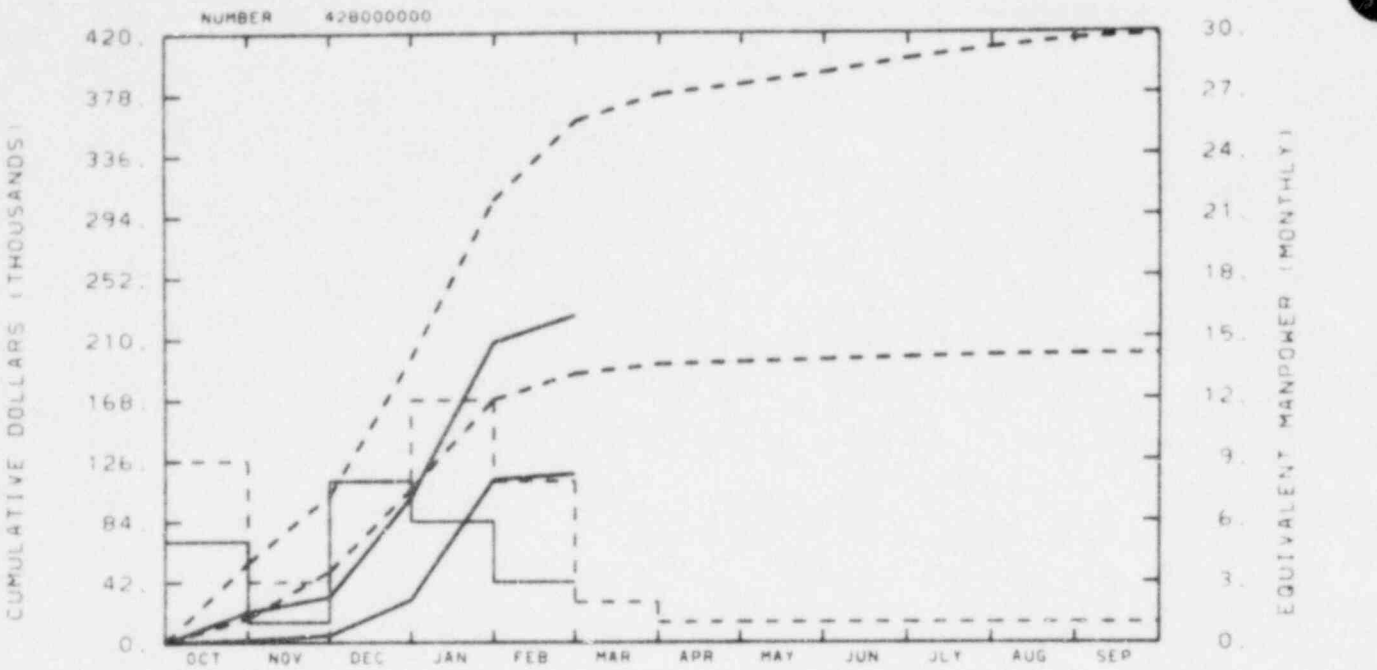
$12 K of the $15 K overrun is attributable to the fact that labor charges are being accrued under organization number 2420 instead of 8855 and, therefore, are receiving full burden charges and common support. This problem is being pursued.

RESPONSIBLE
MANAGER
J. E. MACDONALD

EG&G IDAHO INC.

THERMOCOUPLE TEST

NUMBER 428000000



TOTAL PROGRAM

BUDGET	55	102	196	305	360	378	385	393	402	410	415	418
ACTUAL	21	32	101	208	226							

MATERIAL

BUDGET	17	49	106	168	186	192	194	195	197	198	199	199
ACTUAL	2	5	30	113	117							

MANPOWER

BUDGET	9	3	8	12	8	2	1	1	1	1	1	1
ACTUAL	5	1	8	6	3							

BUDGET
- - - -
ACTUAL

(This Task is Partially Funded by LOFT)

YTD VARIANCE: 134 (37%)

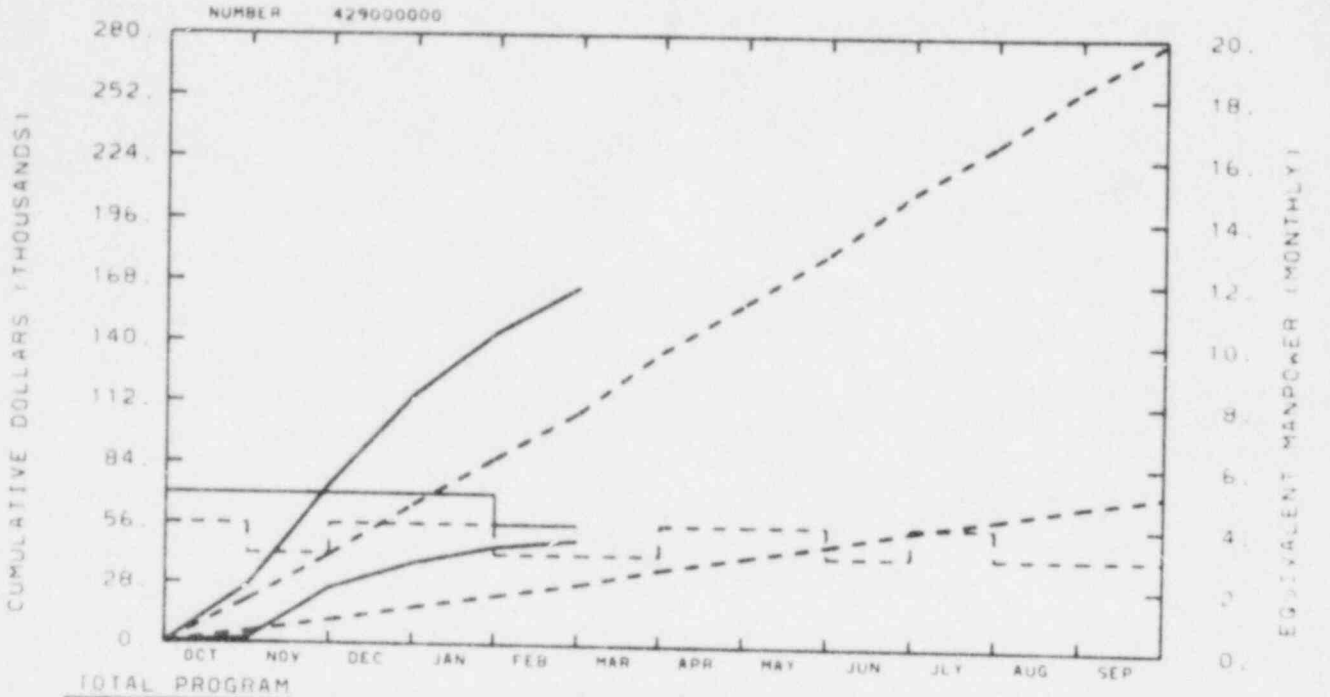
Delay in shipment of the TC-4 fuel rods being fabricated by Exxon has impacted the present EG&G assembly schedule for completion of the test train. This underrun will be corrected when PBF assembly work commences and when Exxon work is invoiced.

RESPONSIBLE MANAGER
PE MACDONALD

EG&G IDAHO INC.

ELECTRIC HEATER ROD

NUMBER 429000000



TOTAL PROGRAM

BUDGET	20	41	65	86	108	136	159	182	209	231	257	278
ACTUAL	27	74	115	144	165							

MATERIAL

BUDGET	5	11	17	23	28	36	42	47	54	60	66	71
ACTUAL	2	26	38	45	49							

MANPOWER

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

(This is LOFT Funding and is not Reflected in the Overall Total)

YTD VARIANCE: <57> (53%)

A lot of the costs involved in this project for FY-1981 have come in "up front". Spending is expected to slow down during the second quarter. A CCB for $19.1 K is being processed for instrumentation of IFA-511.4 Cladding Sheath with 4 LOFT Surface TC's and to also cover the effort on the NRC Research Information letter.

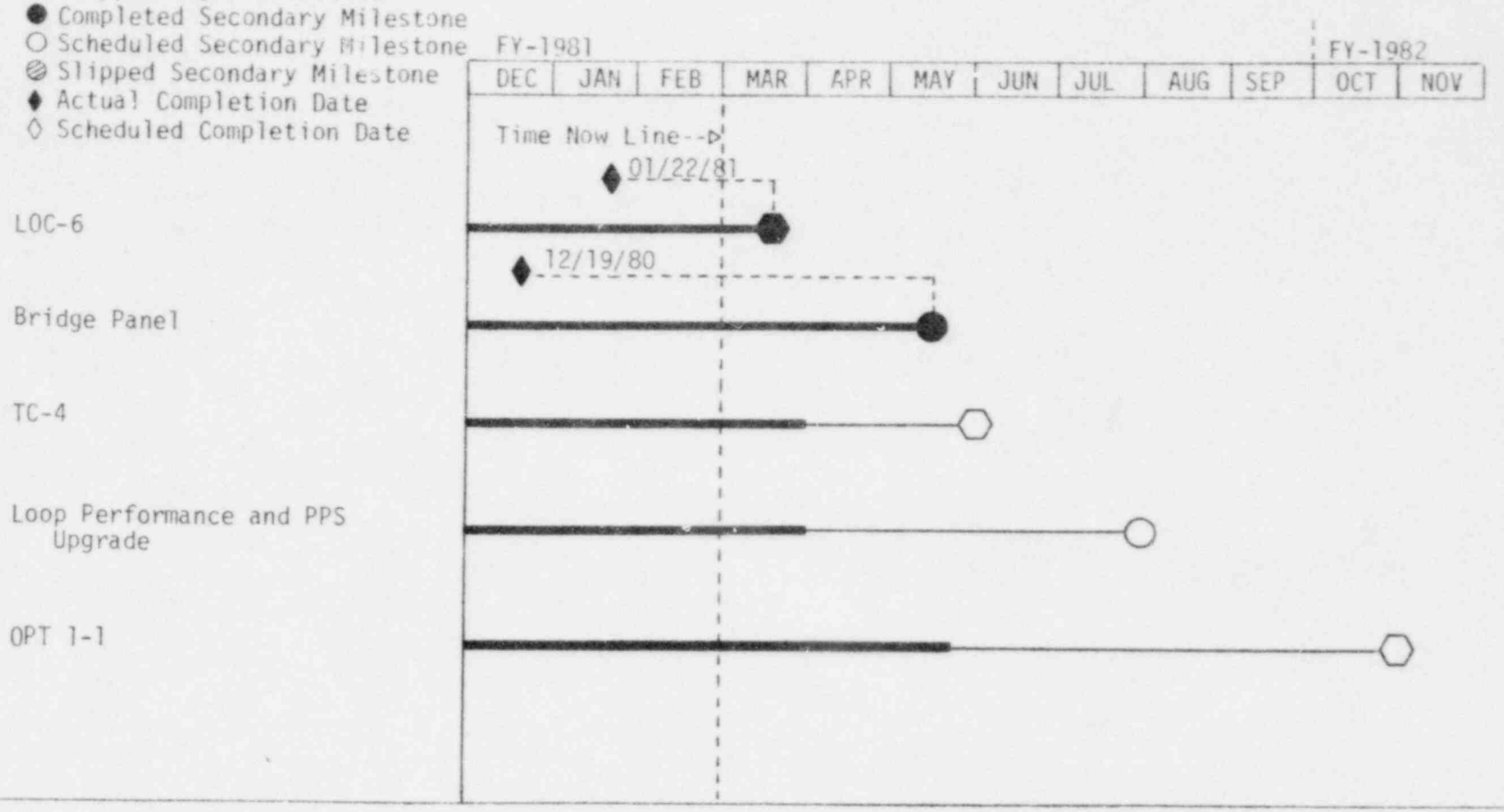
THERMAL FUELS BEHAVIOR PROGRAM

CURRENT WORKING SCHEDULE

LEGEND

- Completed Major Milestone
- Scheduled Major Milestone
- Slipped Major Milestone
- Completed Secondary Milestone
- Scheduled Secondary Milestone
- Slipped Secondary Milestone
- Actual Completion Date
- Scheduled Completion Date

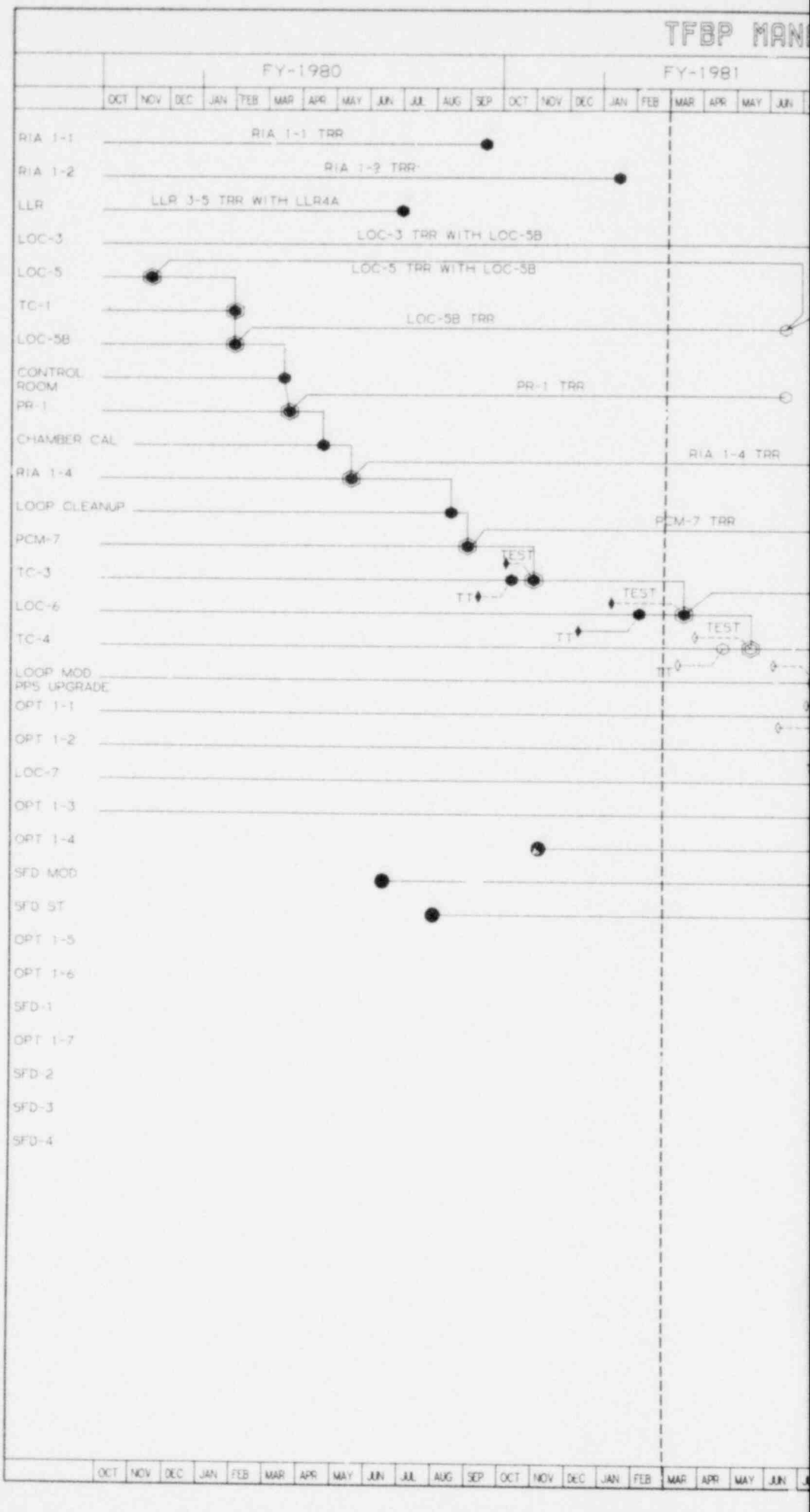
THERMAL FUELS BEHAVIOR PROGRAM February 1981



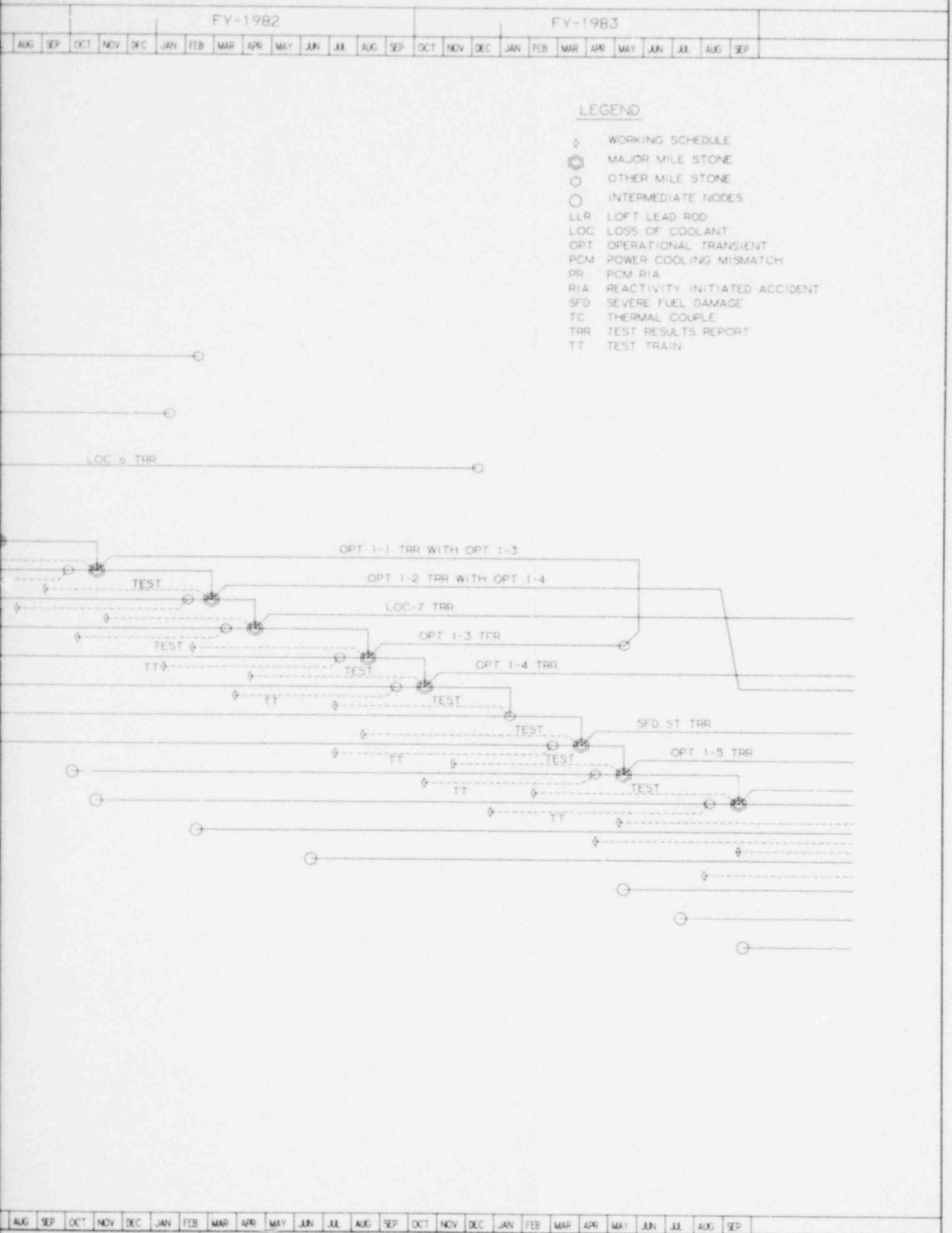
NOTES: Thermal Fuels Behavior Program test completion schedule is currently being revised to add Core Shim work scope.

THERMAL FUELS BEHAVIOR PROGRAM

TEST SUMMARY SCHEDULE


TFBP MAN
FY-1980
FY-1981
OCT NOV DEC JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC JAN FEB MAR APR MAY JUN
RIA 1-1
RIA 1-1 TRR
RIA 1-2
RIA 1-2 TRR
LLR
LLR 3-5 TRR WITH LLR4A
LOC-3
LOC-3 TRR WITH LOC-5B
LOC-5
LOC-5 TRR WITH LOC-5B
TC-1
LOC-5B TRR
LOC-5B
CONTROL ROOM
PR-1 TRR
PR-1
CHAMBER CAL
RIA 1-4 TRR
RIA 1-4
LOOP CLEANUP
PCM-7 TRR
PCM-7
TEST
TC-3
TT
TEST
LOC-6
TT
TEST
TC-4
TT
LOOP MOD
PPS UPGRADE
OPT 1-1
OPT 1-2
LOC-7
OPT 1-3
OPT 1-4
SFD MOD
SFD ST
OPT 1-5
OPT 1-6
SFD-1
OPT 1-7
SFD-2
SFD-3
SFD-4
OCT NOV DEC JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC JAN FEB MAR APR MAY JUN

GEMENT SUMMARY SCHEDULE



THERMAL FUELS BEHAVIOR PROGRAM

TECHNICAL REVIEW & SUMMARY

PROGRAM MANAGER'S

SUMMARY AND HIGHLIGHTS

The Quick Look Report for Loss-of-Coolant Accident Test 6, completed during the previous reporting period, was issued, the test train was disassembled, and the fuel rods were shipped to the hot cell where the postirradiation examination was begun.

Development efforts have been completed for embedding the cladding thermocouples in the two replacement rods for the upcoming Thermocouple Cooling Test 4. The rods are being fabricated for EG&G Idaho by EXXON Nuclear Co., Inc.

Detailed estimates of the Power Burst Facility (PBF) reactivity requirements for the performance of Operational Transient (OPTRAN) Test 1-1 were completed. The results indicate that some of the stainless steel shim rods will need to be replaced with PBF fuel rods to attain the necessary reactivity if the OPTRAN tests are to be performed as planned.

Final machining of the PBF spare in-pile tube was completed and hydrostatic testing was initiated.

1. 189a A6041 - TFBP Experiment Design and Analysis

2. Scheduled Milestones for February 1981

Node	Description	Due Date	Actual Date
N/A	LOC-6 Quick Look Report	02-17-81T	02-24-81C

3. Summary of Work Performed in February 1981

a. Power-Cooling-Mismatch Test Series

Review and revision of the Test PR-1 Fuel Rod Behavior Report was completed. Final qualification of the Test PR-1 data was completed. Metallography of the Test PCM-7 fuel bundle and on-line data analysis continued.

b. Operational Transient (OPTRAN) Test Series

Revision of the OPTRAN 1-1 Experiment Operating Specification continued, and xenon poisoning calculations were completed. Detailed estimates of the PBF reactivity requirements for performing Test OPTRAN 1-1 were completed. The OPTRAN 1-2 design was finalized, the design review was completed, and component fabrication was initiated. The OPTRAN 1-1 test train assembly was initiated. Thermal-hydraulic analysis of the OPTRAN 1-2 variable orifice design concept was initiated. Draft preparations of the OPTRAN 1-2 Experiment Operating Specifications and Experiment Predictions documents were initiated.

c. Loss-of-Coolant Accident Test Series

The Test LOC-6 Quick Look Report was issued, the test train was disassembled, and the fuel rods were shipped to the hot cell where examinations began. Final review of the Tests LOC-3 and LOC-5 Fuel Rod Behavior and Fuel Rod Materials Behavior Reports continued. Replacement fuel rod assembly and test train refurbishment for Test TC-4 continued.

d. Reactivity Initiated Accident Test Series

The report on the Capsule Driver Core reactor physics calculations was issued. Preparation of the Test RIA 1-4 Fuel Rod Behavior Report continued.

3. Summary of Work Performed in February 1981 (Continued)

e. Severe Fuel Damage Test Series

An informal design review meeting was held to review the instrumentation package, the proposed loop modifications for experiment cooling and fission product detection, and the revised test train design. Calculational efforts on the initial conceptual design for Severe Fuel Damage reactor physics was completed and work documented in a letter report.

f. Zircaloy Oxidation Embrittlement Topical Report

An outline of the report and a review of the primary literature were completed.

g. Power-Cooling-Mismatch Fuel Behavior Report

Management review of the rough draft was initiated.

h. Molten Fuel-Coolant Interaction Topical Report

Composition and editing of the report continued.

i. Fission Product Behavior Research

Analyses of Tests PR-1, RIA 1-4 and PCM-7 continued. Design reviews were conducted on the sample injection system and Severe Fuel Damage test monitoring and sampling system.

4. Scheduled Milestones for March 1981

Node	Description	Due Date	Actual Date
N/A	Molten Fuel-Coolant Interaction Topical Report (Formal)	03-15-81T	03-15-81E

5. Summary of Work to be Performed in March 1981

a. Power-Cooling-Mismatch Test Series

Technical editing and graphics work for the Test PR-1 Fuel Rod Behavior Report will be initiated. Burnup analyses and on-line data analyses for Test PCM-7 will continue and metallography of the fuel bundle will be completed.

5. Summary of Work to be Performed in March 1981 (Continued)

b. Operational Transient Test Series

Preparation of the revised OPTRAN 1-1 Experiment Operating Specification document will be continued. Thermal-hydraulic analyses for the Test OPTRAN 1-2 experiment geometry will be completed and fuel rod behavior predictions using these analyses will be initiated. Preparation of the OPTRAN 1-2 Experiment Operating Specification and Experiment Prediction reports will continue. Assembly of the OPTRAN 1-1 test train and fabrication of the OPTRAN 1-2 components will continue.

c. Loss-of-Coolant Accident Test Series

Final review and revision of the Tests LOC-3 and LOC-5 Fuel Rod Behavior and Fuel Rod Materials Behavior Reports will be completed and comments will be incorporated. The nondestructive examination of the Test LOC-6 fuel rods will continue. Final preparations for Test TC-4 will continue, with assembly of the replacement fuel rods and refurbishment of the test train hardware being completed.

d. Reactivity Initiated Accident Test Series

Preparation of the Test RIA 1-4 Fuel Rod Behavior Report will continue.

e. Severe Fuel Damage Test Series

New reactor physics models will be set up for the new design. The final calculations will be performed when the insulation material has been finalized. Efforts will continue on the preliminary design of the experiment cooling modifications. Initial reactor physics work using the new design will continue. Revision of the Thermal Analysis Report will continue.

f. Zircaloy Oxidation Embrittlement Topical Report

Cursory comparisons of in-pile and out-of-pile data will be performed.

g. Power-Cooling-Mismatch Fuel Behavior Report

Management review and author revision of the rough draft will continue.

5. Summary of Work to be Performed in March 1981 (Continued)

h. Molten Fuel-Coolant Interaction Topical Report

Printing and distribution of the report will be completed.

i. Fission Product Behavior Research

Analysis of Tests PR-1 and RIA 1-4 will be completed, and the analysis of Test PCM-7 will continue. Analysis of Tests TC-3 and LOC-6 will be initiated. Hydrogen monitoring instruments will be investigated for application to the Severe Fuel Damage test monitoring equipment.

6. Problems and Potential Problems

Compilation of earlier PBF test data indicates that due to PBF core burnup, the reactivity of the core has decreased about 0.8$. It is estimated that the core reactivity required for the planned conduct of Test OPTRAN 1-1 exceeds the present core capability by about 0.5$, whereas Test OPTRAN 1-2 will probably exceed the core capability by about 0.7$. Removal of some of the stainless steel shim rods and replacement with PBF fuel rods will be necessary to increase the core reactivity if the OPTRAN tests are to be performed as planned.

Delays in receipt of the Test TC-4 fuel rods has delayed completion of the test train and test performance.

1. 189a A6044 - PBF Design Engineering

2. Scheduled Milestones for February 1981

None.

3. Summary of Work Performed in February 1981

a. Presentation to the PBF Technical Response Team

A lecture covering the PBF Air Systems was presented to the PBF Technical Response Team.

b. PBF Spare In-pile Tube Manufacture

Final machining of the in-pile tube was completed and hydrostatic testing was started.

c. PBF Reactor Building First-to-Second Basement Hatch Lifting Mechanism

A hydraulic lifting device was installed to reduce personnel safety hazards involved in opening the first-to-second basement hatch. The new mechanism will replace the overhead crane for this function.

d. Plant & Instrument Air (P&IA) Compressor Installation

Installation of the new P&IA compressor was started and is on schedule. The new compressor will provide the quantity of air needed to meet plant loads that have gradually increased beyond the capacity of the original P&IA compressor.

e. Radiation Monitoring System Upgrade

Design has started on the replacement of obsolete constant air monitors in the reactor building. Maintenance of the existing units has increased significantly during the past year and replacement parts are no longer manufactured or available.

f. Operational Transient (OPTRAN) Test Series - In-pile Tube Transient Cooling

Since the existing in-pile tube (IPT) cooling requirements may not be applicable during the OPTRAN experiment transient, an analysis was performed to determine the minimum IPT cooling requirements. The results indicate the IPT could be exposed to an integrated power of

3. Summary of Work Performed in February 1981

f. OPTRAN - In-pile Tube Transient Cooling (continued)

2500 MW.s before the IPT temperature limit of 537.8°C would be exceeded. Integration of several of the OPTRAN power curves indicates the 2500-MW.s limit is acceptable for the OPTRAN 1-1 and 1-2 tests. Now that the transient requirements have been defined, it has been determined that the test train bypass orifice should be sized to allow 0.0366 ℓ/s downcomer flow during all phases of steady state operation.

g. Three Mile Island Evaluation

The text for the Three Mile Island (TMI) Status Book was typed and distributed for internal review. The review comments will be returned during the first week of March.

h. OPTRAN Critical Heat Flux (CHF) Investigation

An analysis was initiated to determine whether or not it was necessary to impose core operating restraints to keep the spacer blade temperature at acceptable values during the OPTRAN experiments.

i. PBF Core Reshim

A preliminary schedule was developed for reshimming the PBF core. The LWR Fuel Research Division has determined that core reshimming is necessary to adequately perform the OPTRAN experiments. The schedule and cost for this task are being finalized.

j. Power Shaping (> 28 MW) Safety Analysis

A cost estimate and schedule were finalized for completing the safety analysis. The scoping analysis task is nearly complete. Reshimming the PBF core requires that this task be adjusted and coordinated with the core reshim effort. The scoping analysis task must be redone with the new core shim configuration.

k. PBF Technical Specification

It was necessary to revise the silver zeolite efficiency testing. The PBF Technical Specifications were updated to allow the new mode of testing and define the new limits. The Technical Specification revision was approved by EG&G Idaho and transmitted to DOE-ID for approval.

4. Scheduled Milestones for March 1981

None.

5. Summary of Work to be Performed in March 1981

a. Presentations to the PBF Technical Response Team

Lectures covering the Liquid Waste Systems and the Poison Injection System will be presented to the PBF Technical Response Team.

b. PBF Spare In-pile Tube Manufacture

Hydrostatic testing of the pressure boundary will be completed and gas jacket assembly and welding will be started.

c. Plant and Instrument Air (P&IA) Compressor Installation

Installation and checkout of the new P&IA compressor will be completed. The portable compressor that has been temporarily connected to supplement the existing P&IA compressor will be removed.

d. Plant Protective System (PPS) Modification for OPTRAN Testing

All hardware required for the modifications to the PPS will be ordered. The existing system is being changed to provide a variable power-vs-time scram curve instead of the single high power level scram. This will continue to protect the driver core against accidents, but will allow the higher energy limits required for the OPTRAN tests to be obtained.

e. Poisen Injection System (PIS) and In-pile Tube (IPT) Gas Jacket Nitrogen Supply Modifications

A modification to the plant nitrogen system will be completed to eliminate handling and filling of bottles that supply nitrogen to the PIS and IPT gas jacket. The manual filling operations are time consuming and present the normal hazards associated with high pressure gas handling operations.

f. Radiation Monitoring System Upgrade

The design and installation of the new constant air monitors will be completed, thus improving the reliability and reducing maintenance on these parts of the radiation monitoring system.

g. PBF Loop Performance Modification

Installation of the new loop flow control valve will be started. The new valve will improve control at low flow ranges 1.25 to 12.5 ℓ/s and will add the capability of varying the flow during a test.

5. Summary of Work to be Performed in March 1981 (continued)

h. PBF Core Reshim

The cost and schedule to reshim the core will be finalized and approved by EG&G Idaho and DOE-ID. The physics analysis task will be started.

i. PBF Technical Specifications

The DOE-ID comments and the annual Technical Specifications review comments will be finalized and transmitted to DOE-ID for approval.

j. TMI Evaluations

If the TMI Status Book comments are manageable, the document will be issued.

k. Analysis Tasks

Efforts will continue on the following analysis tasks:

(1) Completion of the OPTRAN Safety Analysis task defined as "Scoping Analysis".

(2) Determination of spacer blade temperature during the OPTRAN experiments.

(3) Comparison of the PBF RELAP core model with the PBF ACSL simulator model.

6. Problems and Potential Problems

None.

1. 189a A6057 - PBF Operations

2. Scheduled Milestones for February 1981

None.

3. Summary of Work Performed in February 1981

a. PBF Plant Operations

The work performed during this reporting period was primarily directed toward plant maintenance and preparations for the upcoming Thermocouple Coolant Test 4 (TC-4).

Removal of the Loss-of-Coolant Test 6B (LOC 6B) test train from the in-pile tube and shipment to the Test Reactor Area was completed. Four LOC-6B fuel rods were shipped to the Auxiliary Reactor Area for posttest examination.

The Instrument and Data Section completed special input data processing for Tests LOC-6A, TC-3, and TC-4 and preparations of the directories for Test LOC-6B special input data processing.

b. PBF Operations Support

Preventive Maintenance examinations for February are 99% complete and the March examinations are 10% complete.

Corrective Maintenance efforts for this reporting period include plant cleanup, the completion of the reactor building main bay inside painting, the correction of various plant deficiencies, and plant support work in preparation for Test TC-4. In addition, the combined mechanical and iodide absorption efficiency tests were completed on the silver zeolite filter assembly.

The Data Qualification Report for Power-Cooling-Mismatch Test Series Test PR-1 was distributed. Uncertainty information for reported parameters will be put on data tapes, beginning with the Test PCM-7 qualified data. An auto-calibration problem affecting data reductions must be resolved before completing Tests TC-3 and LOC-6A data qualification. Calculator uncertainty program development is continuing.

Efforts continued on the four remaining Plant Operating Manual chapter rewrites; Chapters 19, 23, and 28 are near completion.

4. Scheduled Milestones for March 1981

None.

5. Summary of Work to be Performed in March 1981

a. Complete March Preventive Maintenance inspections and start the April inspections.

b. Complete planning and schedule the loop in-service inspection examinations for the shutdown period after Test TC-4.

6. Problems and Potential Problems

None.

1. 189a A6275 - Electrical Heater Rod Evaluation Studies

2. Scheduled Milestones for February 1981

None.

3. Summary of Work Performed in February 1981

a. Electrical Heater Rod Performance Review

The initial draft of the NRC Research Information Letter was completed and transmitted for NRC review and comments.

No effort was expended related to the comparison of LOFT Loss-of-Coolant Experiment L2-3 and its Semiscale counterpart test, S-06-3. The funds for this task have been expended.

b. Instrumented Fuel Assembly - 511 (IFA-511) Nuclear and Electric Heater Rod Experiments

Minor modifications to the RELAP5 model were completed and the base case calculation was completed through reflood. The base case calculations are being compared with the data from IFA-511.2, Test 5236. The modeling modifications have resulted in a substantial reduction in computer costs, without significantly reducing the calculational accuracy or detail.

The scoping analysis for IFA-541 is progressing. The TRAC and MIDAS models were modified to account for a radiation shield between the test bundle and the pressure vessel, and then rerun. The calculated circumferential temperature difference on the peripheral rods was reduced approximately 30% by the presence of the radiation shield. The FRAP-T6 modifications required to permit radiation to different sink temperatures is in progress.

A review and evaluation of the comparative ballooning and rupture behavior of nuclear and electrically heated test rods was initiated for inclusion in the final draft of the NRC Research Information Letter. Initial results indicate that the PBF LOCA and KfK FR-2 single-rod nuclear tests are basically similar to the out-of-pile, single-rod, unheated shroud tests. It also appears that the ballooning and rupture behavior of the test rods in the single-rod, heated shroud tests is basically similar to that of the rods in the ORNL heated shroud bundle tests.

The instrumentation of the cladding sheath for IFA-511.4 was completed and the cladding shipped to the Halden Project.

4. Scheduled Milestones for March 1981

None.

5. Summary of Work to be Performed in March 1981

a. Electrical Heater Rod Performance Review

No efforts will be performed on this task until a Change Control Board has been approved for additional funds.

b. Instrumented Fuel Assembly - 511 (IFA-511)

Nuclear and Electric Heater Rod Experiments

The modifications to FRAP-T6 and the analysis will be completed. The RELAP5 analysis of IFA-511.2 and IFA-511.3 will be continued and a detailed evaluation of the calculations and data initiated. The comparison of the ballooning and rupture behavior of nuclearly and electrically heated test rods and a draft report will be completed.

6. Problems and Potential Problems

None.

1. 189a A6355 - Fission Product Signature Analysis

2. Scheduled Milestones for February 1981

None.

3. Summary of Work Performed in February 1981

a. Literature Review

Several potentially useful reports were identified in the initial computer file search. Abstracts were reviewed and a few reports were ordered.

b. Industry Review

Potentially helpful contacts were compiled, and a few were established. Additional Electric Power Research Institute/Nuclear Safety Analysis Center contacts were discovered.

c. Definition of Scaling Parameters

The basic approach to the scaling task and the parameters thought to be most important were identified.

4. Scheduled Milestones for March 1981

None.

5. Summary of Work to be Performed in March 1981

a. Literature Review

Additional libraries will be searched. Useful reports will be ordered and reviewed.

b. Industry Review

Identified useful contacts will be made and information exchange visit will be planned.

c. Definition of Scaling Parameters

Power Plant system descriptions will be obtained and the scaling approach will be discussed.

5. Summary of Work to be Performed in March 1981 (Continued)

d. Conversion of PBF Signatures

Personnel responsible for this task will be familiarized with the PBF signature format.

6. Problems and Potential Problems

None.

THERMAL FUELS BEHAVIOR PROGRAM
CHANGE CONTROL BOARD ACTIONS

CHANGE CONTROL BOARD STATUS

Cost Account	CCB #	Description	Status	Date
4216F52	81-03	LOC-6 Post Irradiation Exam (PIE)	Approved	02/22/81
4216F26	81-10	LOC-6 Test Train Assembly	Approved	02/22/81
4211B11	81-13	Thermal Fuels Administration	Approved	02/22/81
42KR110	81-14	Karlsruhe	Approved	02/22/81
4219CXX	81-16	OPT 1-2 Test Train and EPR	Pending	02/22/81
427XXXX	81-17	Core Melt Mitigation System Design	Pending	02/22/81
425XXXX	81-18	Fission Product Signature Analysis	Pending	02/22/81
4216GXX	81-20	LOC-7 Change of Scope	Pending	02/22/81

CHANGE CONTROL BOARD ACTION

($000)

CCB Number	Description	FY-1981	FY-1982	FY-1983/Beyond	Total Approved Action
81-00	FY-1981 Thermal Fuels Behavior Program Baseline #1	14,089.4			14,089.4
81-02	Loop and In-Pile Tube Nupipe Model	3.0			3.0
81-03	LOC-6 Post Irradiation Exam (PIE)	15.0			15.0
81-09	LOC-6 Linear Variable Differential Transformer Replacement	13.7			13.7
81-10	LOC-6 Test Train Assembly	18.7			18.7
81-11	Cask/Paddle Mods	19.2			19.2
81-12	Establish Discretionary Reserve	22.0			22.0
81-13	Thermal Fuels Administration	10.0			10.0
81-14	Karlsruhe	26.0			26.0
81-15	In-Pile Tube	-0-			-0-

FY-1981 BUDGET STATUS REPORT

189a Number	New 189a Total
A6041	5,869.1
A6044	2,171.7
A6057	4,711.0
A6095	3.0
A6305	902.2
A6352	156.0
A6355	150.0
TOTAL	13,963.0
Management Reserve	254.4
Discretionary Reserve	22.0
	14,239.4

MONTHLY REPORT FOR

FEBRUARY 1981

2D/3D PROGRAM

R. E. Rice, Manager

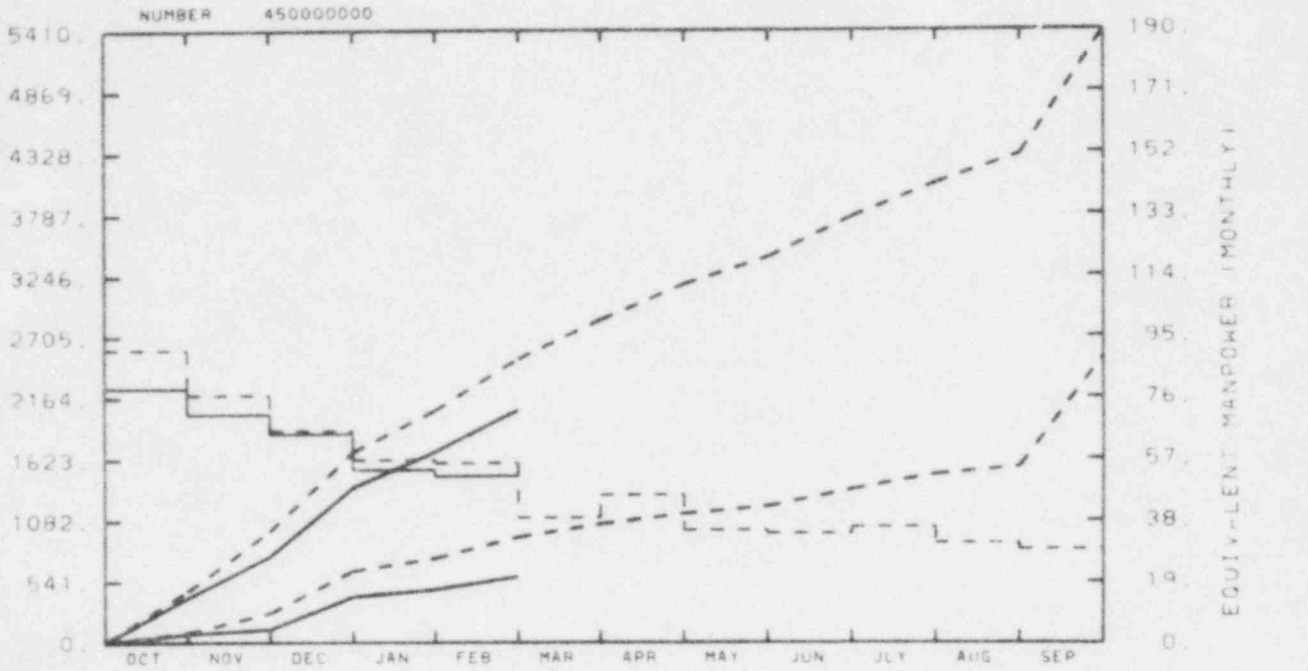
R. A. DaBell
Plans & Budget Representative

2D/3D
COST SUMMARY & COMMENTS

RESPONSIBLE
MANAGER
E RICE

EG&G IDAHO INC.

TOTAL 20/30 PROGRAM



TOTAL PROGRAM

BUDGET	458	993	1690	2055	2509	2855	3171	3409	3763	4054	4304	5404
ACTUAL	398	767	1380	1695	2058							

MATERIAL

BUDGET	88	263	638	749	939	1053	1142	1205	1356	1488	1552	2513
ACTUAL	76	118	408	472	585							

MANPOWER

BUDGET	91	77	66	57	56	39	46	35	34	36	31	29
ACTUAL	79	71	65	54	52							

BUDGET
ACTUAL

YTD VARIANCE: 451 (18%)

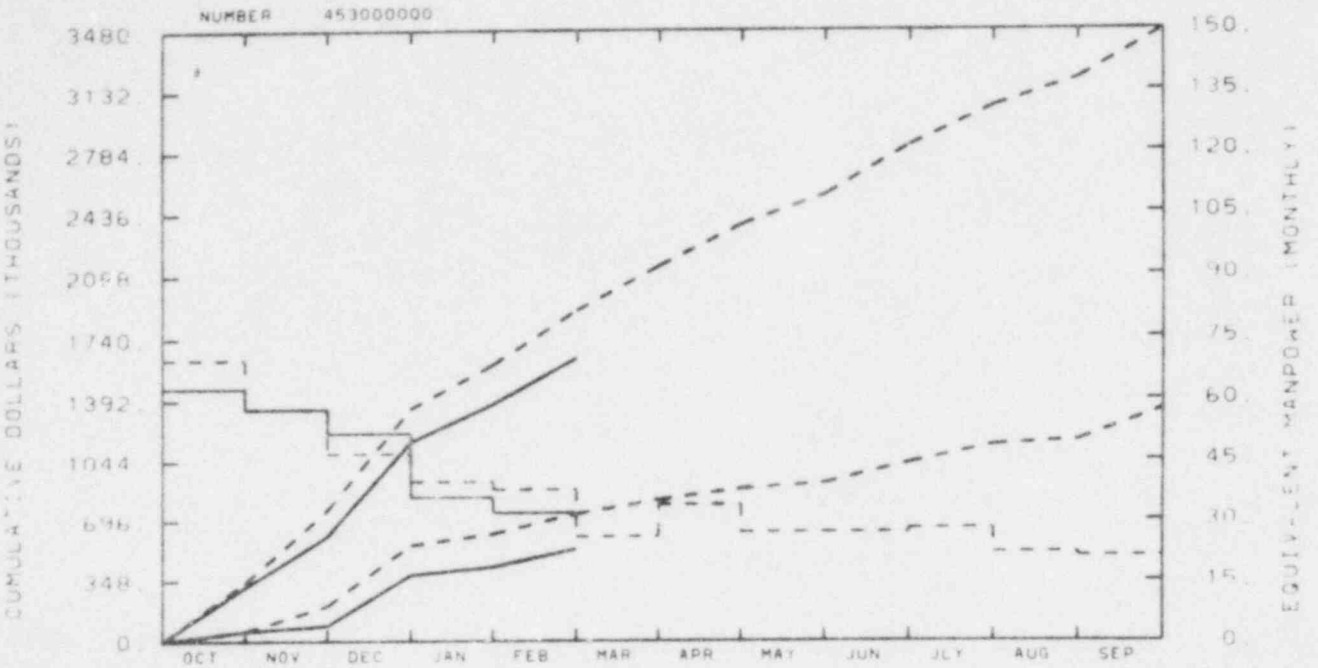
Individual cost graphs will give individual explanations.

Explanations for major 189a's will be made if the variance exceeds $25 K. Minor 189a graphs will explain variance of over $10 K.

RESPONSIBLE
MANAGER
R E RICE

EG&G IDAHO INC.

A6100-2D/3D TECH SUPT & INSTR



TOTAL PROGRAM

BUDGET	342	762	1348	1594	1896	2139	2372	2538	2819	3042	3200	3478
ACTUAL	313	609	1158	1371	1632							

MATERIAL

BUDGET	59	205	555	619	736	818	881	913	1030	1132	1157	1332
ACTUAL	58	90	383	428	530							

MANPOWER

BUDGET	70	58	47	40	38	26	34	27	27	28	22	21
ACTUAL	63	58	52	36	32							

BUDGET - - - -
ACTUAL ———

A6100

YTD VARIANCE: 264 (14%)

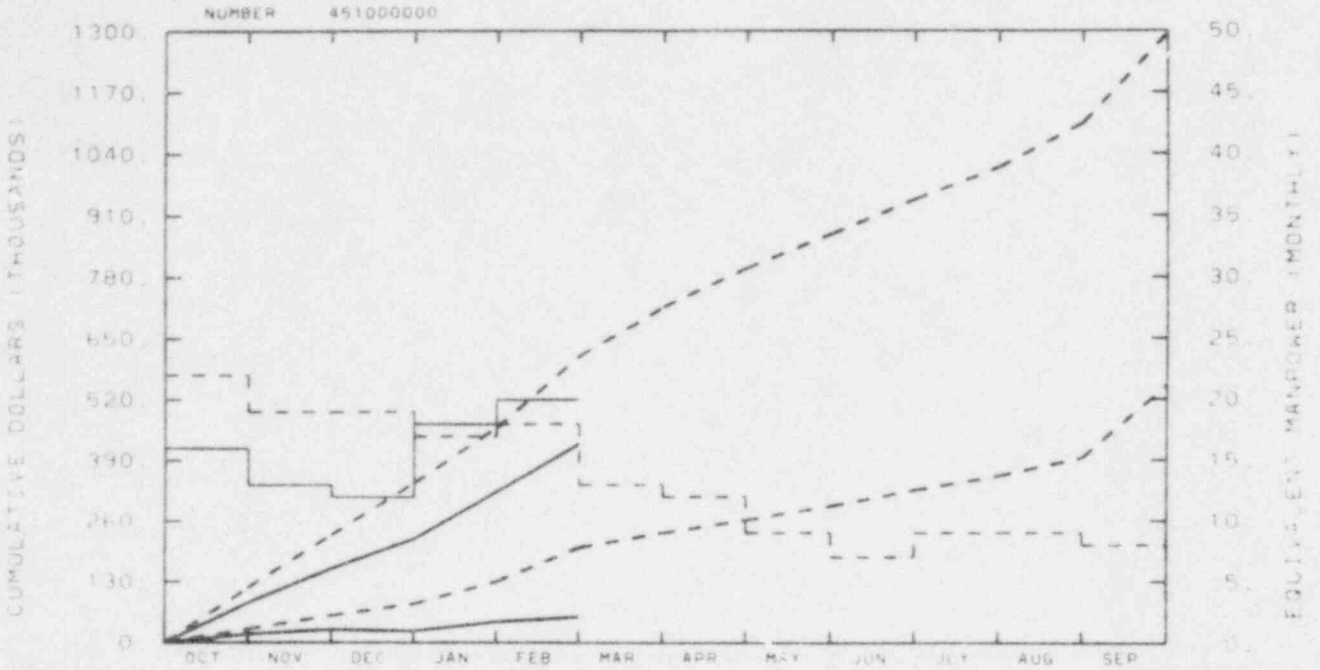
UPTF Instrumentation schedule delays explained previously have not yet been incorporated into the 2D/3D baseline. This effort is presently underway.

RESPONSIBLE MANAGER: [illegible]

EG&G IDAHO INC.

A6282-FLUID DISTRIBUTION GRIDS

NUMBER 451000000



TOTAL PROGRAM

BUDGET	117	230	343	460	613	717	799	871	944	1012	1104	1295
ACTUAL	85	158	222	324	426							

MATERIAL

BUDGET	29	58	83	130	203	235	262	292	326	357	395	549
ACTUAL	18	28	25	44	55							

MANPOWER

BUDGET	22	19	19	17	18	13	12	9	7	9	9	8
ACTUAL	16	13	12	18	20							

BUDGET - - - - - -

ACTUAL ———

A6282

YTD VARIANCE: 187 (31%)

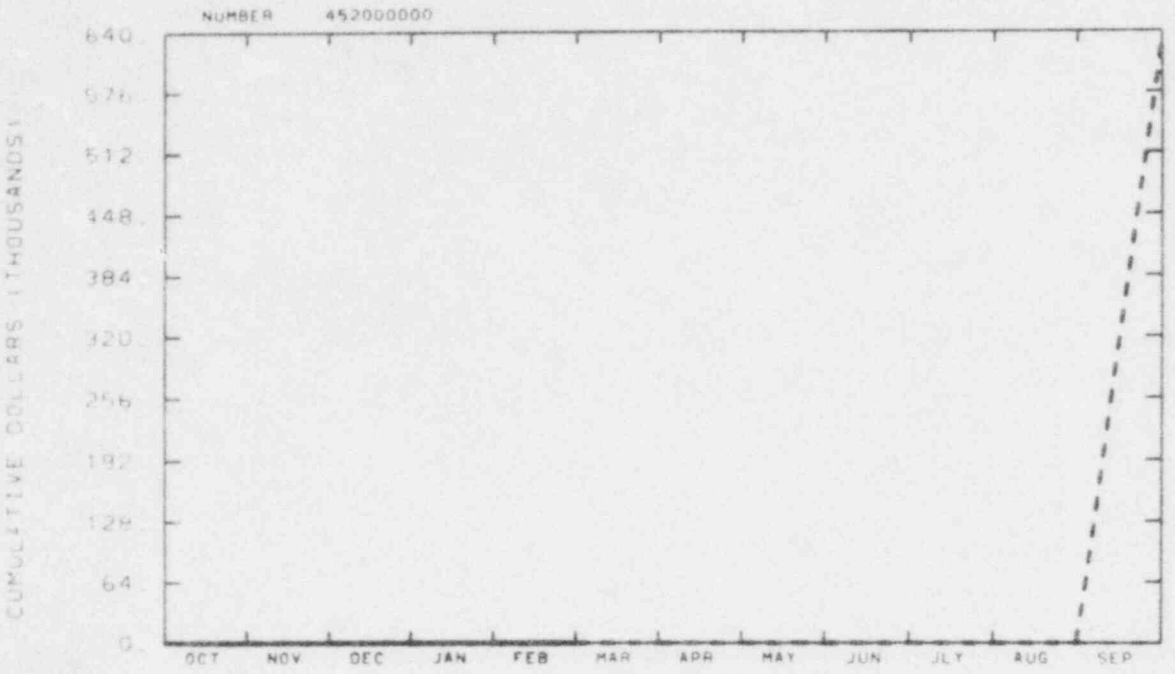
The UPTF FDG schedule delay explained previously is presently being incorporated into the 2D/3D baseline.

RESPONSIBLE
MANAGER
R E RICE

EG&G IDAHO INC

A6289-UPTF DAS

NUMBER 452000000



TOTAL PROGRAM

BUDGET	0	0	0	0	0	0	0	0	0	0	0	632
ACTUAL	0	0	0	0	0							

MATERIAL

BUDGET	0	0	0	0	0	0	0	0	0	0	0	632
ACTUAL	0	0	0	0	0							

MANPOWER

BUDGET	0	0	0	0	0	0	0	0	0	0	0	0
ACTUAL	0	0	0	0	0							

BUDGET
- - - -
ACTUAL
———

A6289

YTD VARIANCE: 0

2D/3D

CURRENT WORKING SCHEDULE

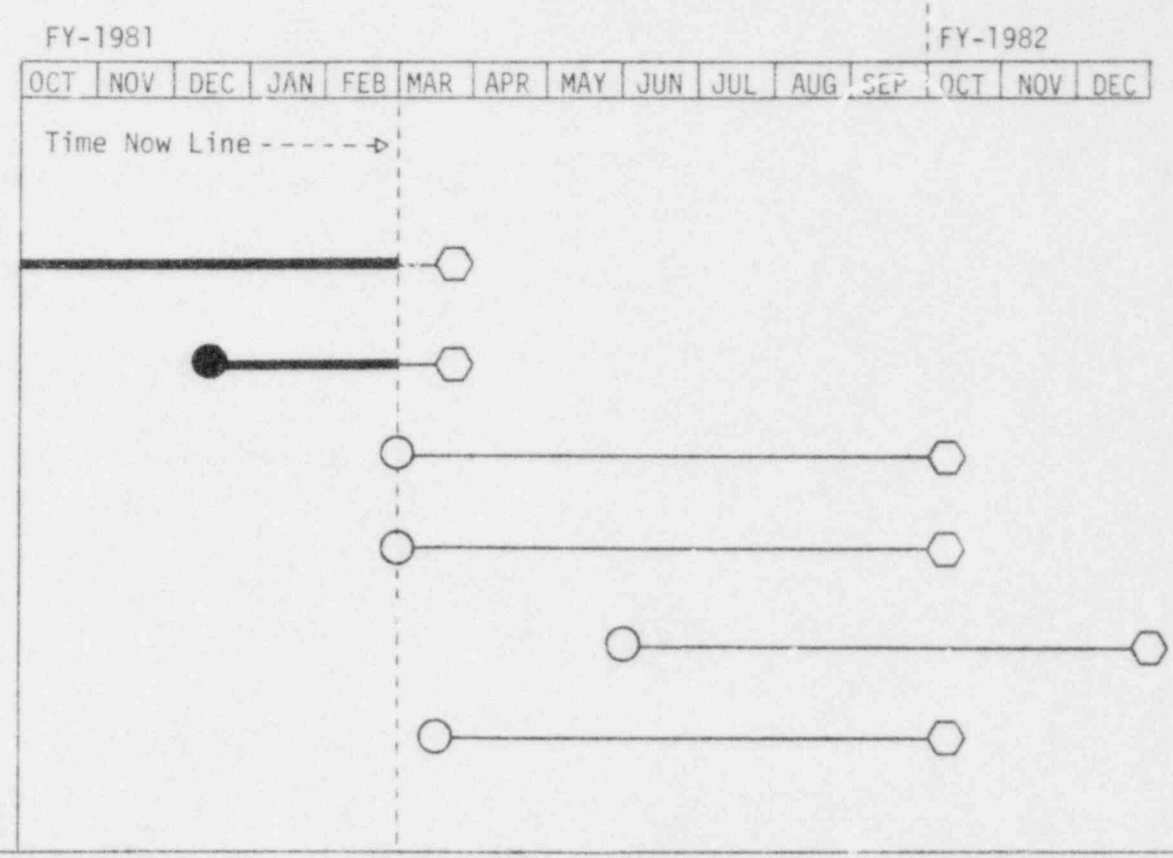
LEGEND

- Completed Major Milestone
- Scheduled Major Milestone
- Slipped Major Milestone
- Completed Secondary Milestone
- Scheduled Secondary Milestone
- Slipped Secondary Milestone
- Actual Completion Date
- Scheduled Completion Date

2D/3D EXPERIMENT PROGRAM

Test Results Analysis

February 1981



NOTES:

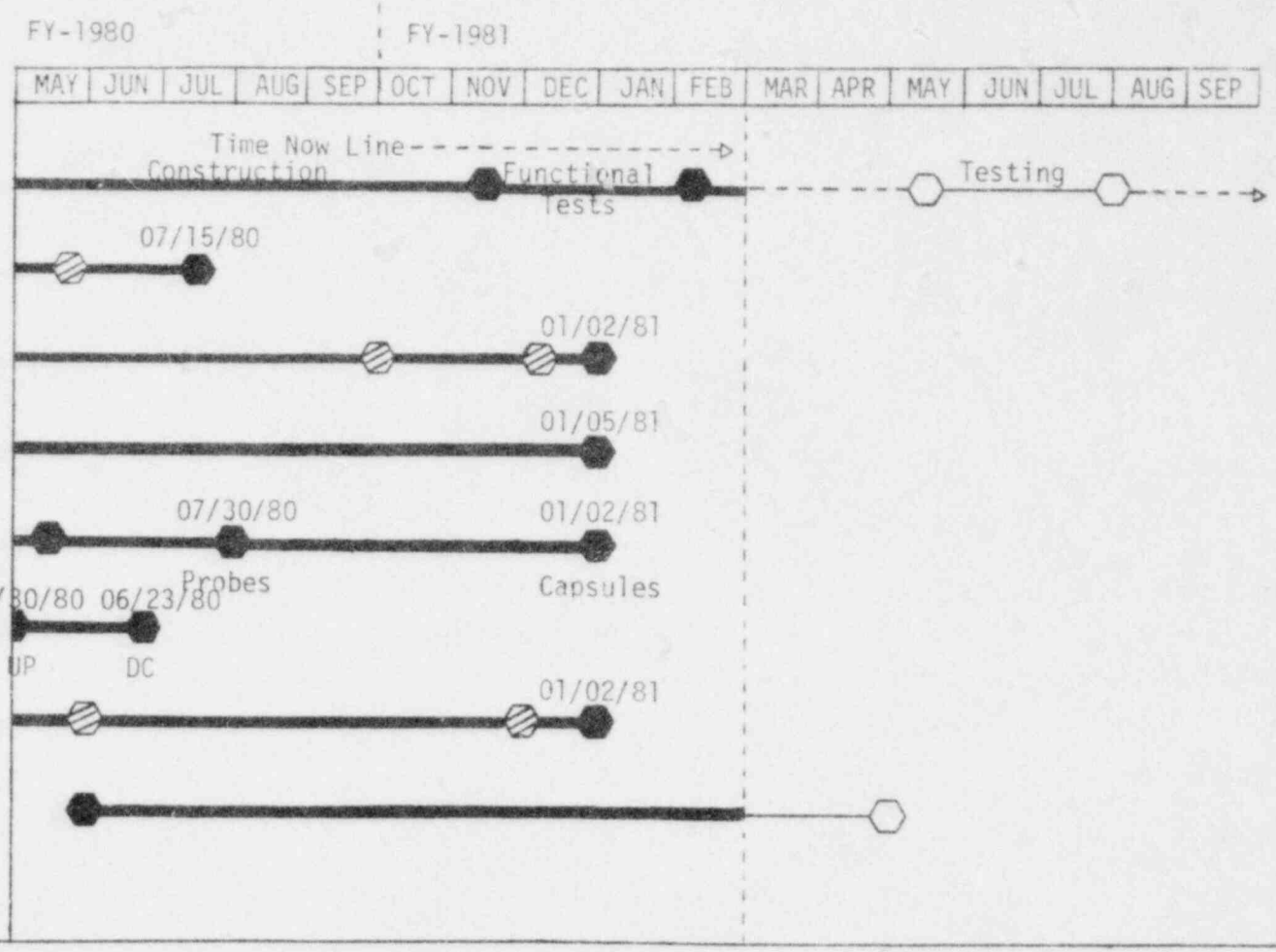
LEGEND

- ● Completed Major Milestone
- ○ Scheduled Major Milestone
- ▨ Slipped Major Milestone
- ● Completed Secondary Milestone
- ○ Scheduled Secondary Milestone
- ▨ Slipped Secondary Milestone
- ♦ Actual Completion Date
- ◊ Scheduled Completion Date

2D/3D EXPERIMENT PROGRAM

SCTF Projects

February 1981



NOTES: Allow one month from shipment dates shown for delivery to meet JAERI requested schedule.

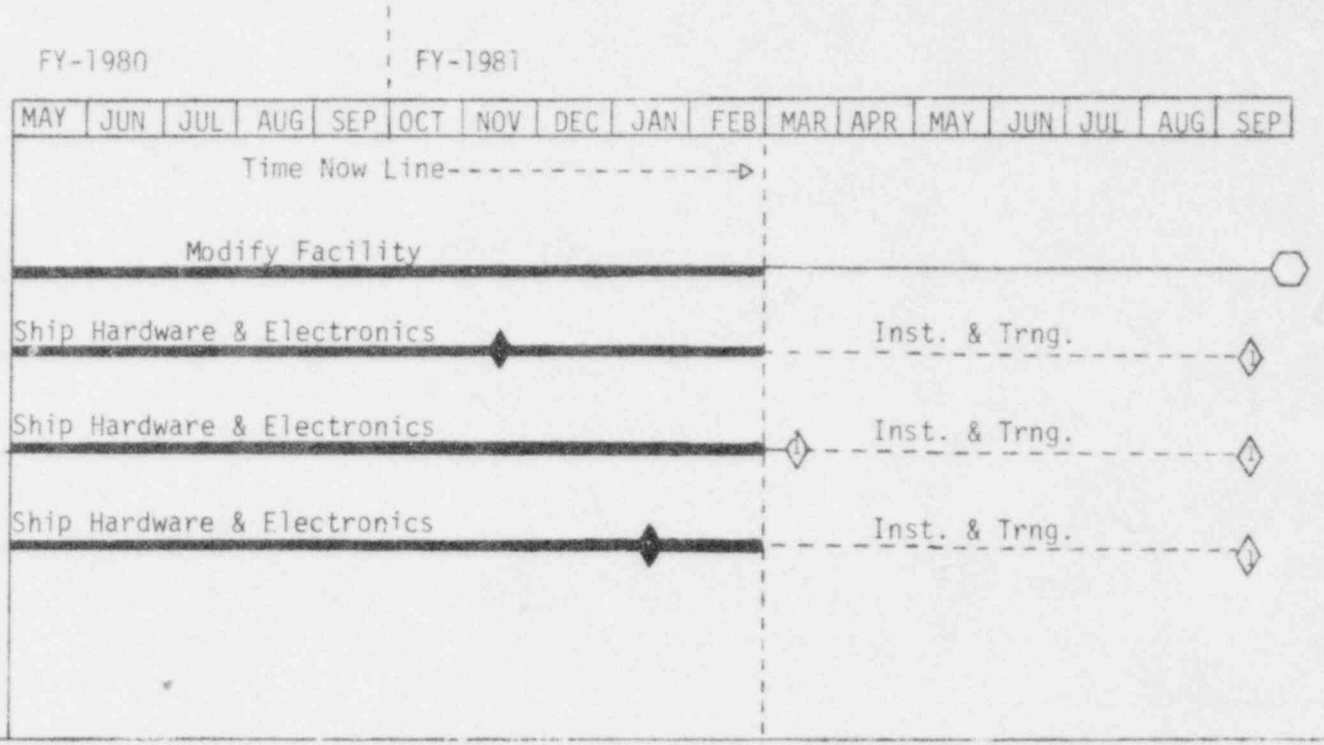
LEGEND

- Completed Major Milestone
- Scheduled Major Milestone
- Slipped Major Milestone
- Completed Secondary Milestone
- Scheduled Secondary Milestone
- Slipped Secondary Milestone
- Actual Completion Date
- Scheduled Completion Date

2D/3D EXPERIMENT PROGRAM

PKL Projects

February 1981



NOTES: Allow one month from shipment dates shown for delivery to meet PKL requested schedule.

(1) These milestones are to be unscheduled because PKL requirements are uncertain.

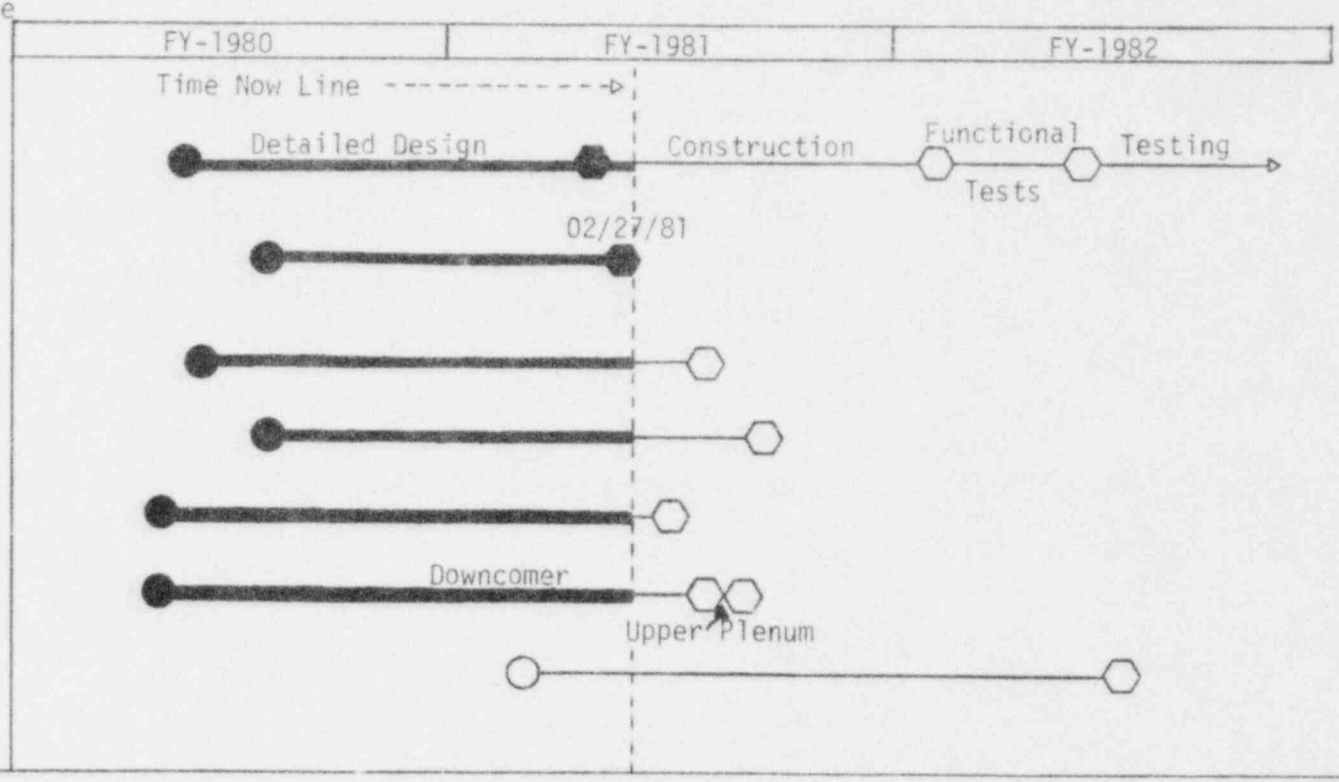
LEGEND

- Completed Major Milestone
- Scheduled Major Milestone
- Slipped Major Milestone
- Completed Secondary Milestone
- Scheduled Secondary Milestone
- Slipped Secondary Milestone
- Actual Completion Date
- Scheduled Completion Date

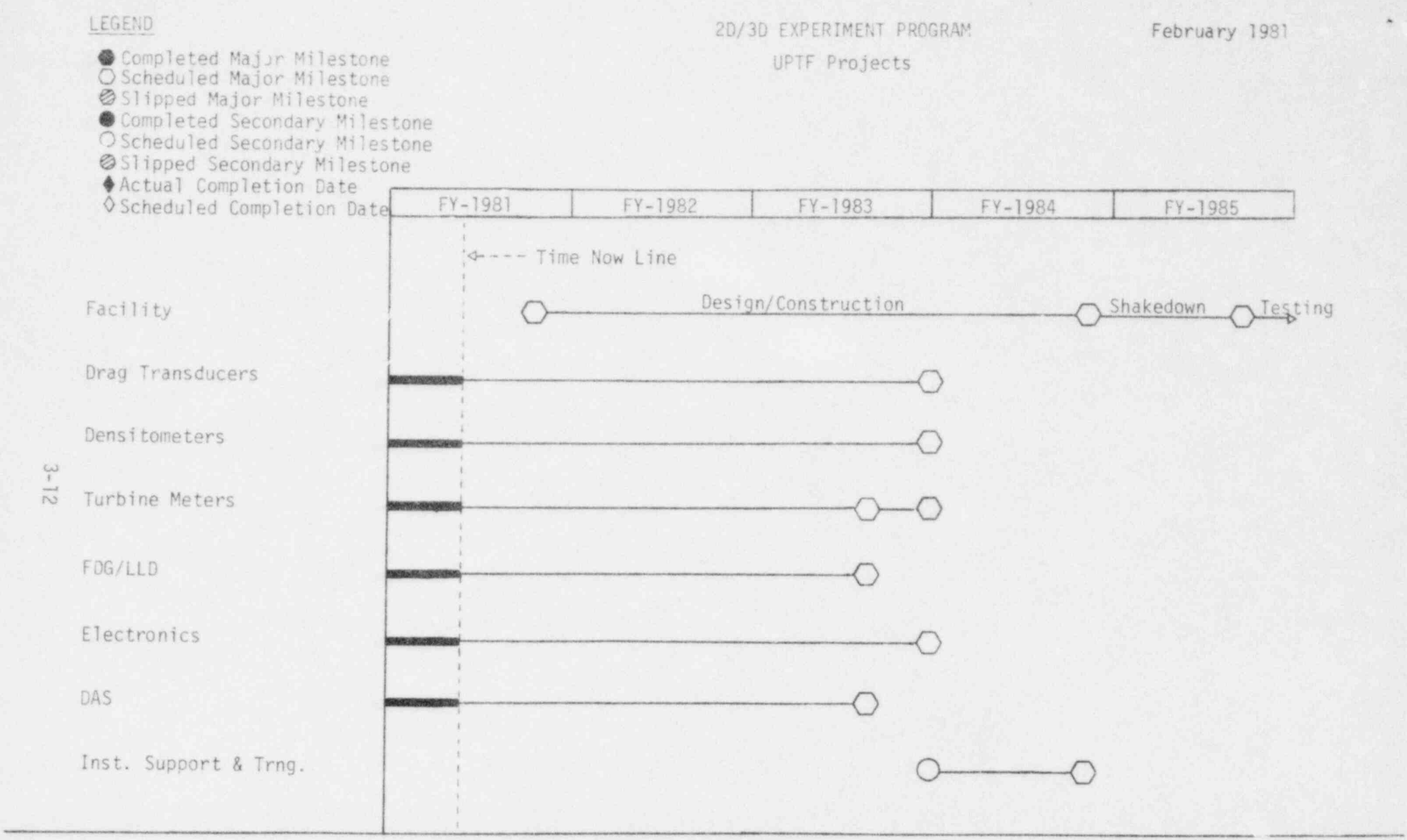
2D/3D EXPERIMENT PROGRAM

CCTF-II Projects

February 1981



NOTES: Allow one month from shipment dates shown for delivery to meet JAERI requested schedule.



NOTES: Allow one month from shipment dates shown for delivery to meet UPTF requested schedule.

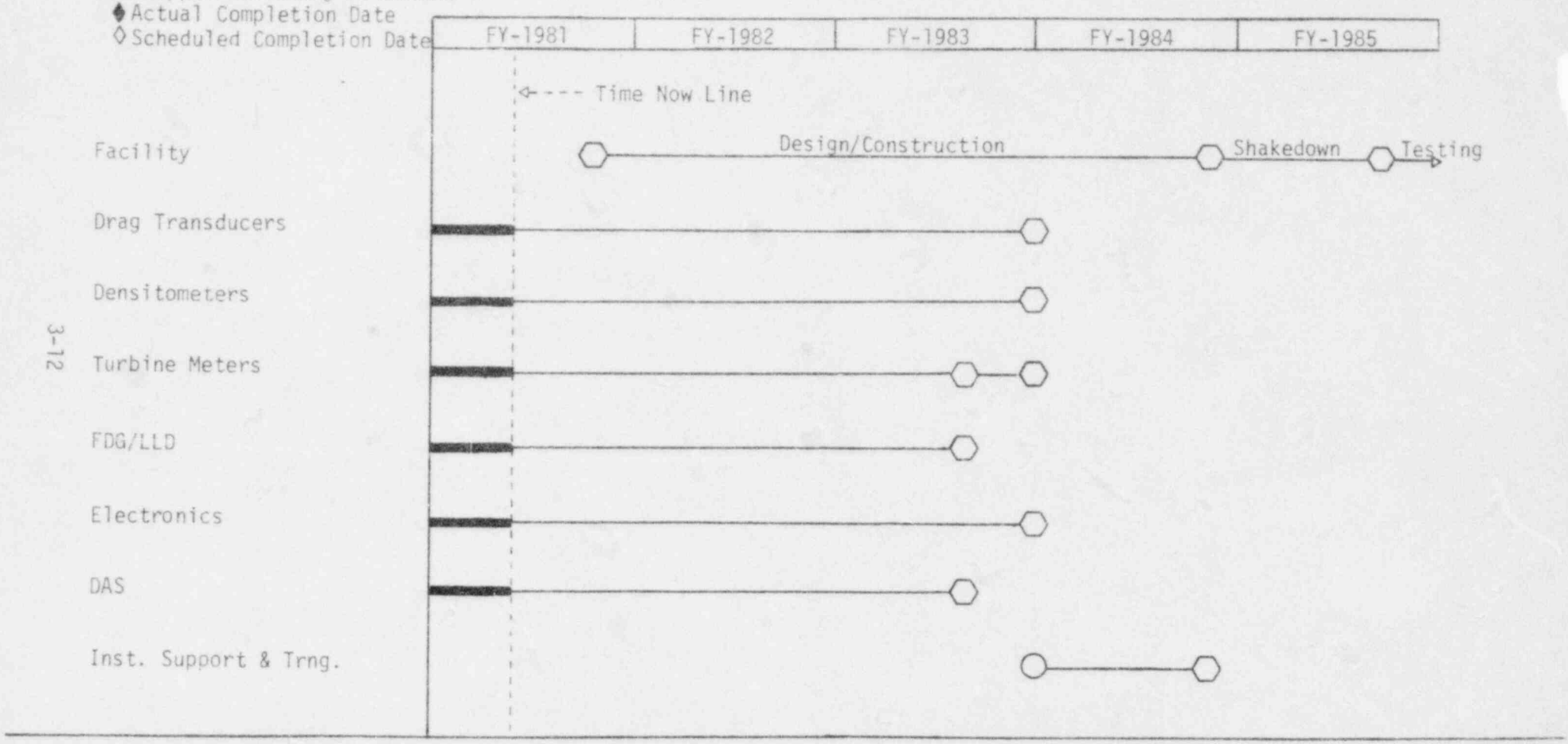
LEGEND

- Completed Major Milestone
- Scheduled Major Milestone
- Slipped Major Milestone
- Completed Secondary Milestone
- Scheduled Secondary Milestone
- Slipped Secondary Milestone
- Actual Completion Date
- Scheduled Completion Date

2D/3D EXPERIMENT PROGRAM

UPTF Projects

February 1981



NOTES: Allow one month from shipment dates shown for delivery to meet UPTF requested schedule.

2D/3D

TECHNICAL REVIEW & SUMMARY

PROGRAM MANAGER'S

SUMMARY AND HIGHLIGHTS

2D/3D Personnel have completed the installation of the turbine meters, hot leg spool piece, densitometers and conductivity liquid level measurement system at Japan Atomic Energy Research Institute Slab Core Test Facility.

Three Japan Atomic Energy Research Institute personnel visited with the 2D/3D program to discuss Cylindrical Core Test Facility II design requirements.

1. 189a A6100 - 3D Technical Support and Instrumentation

2. Scheduled Milestones for February 1981

None.

3. Summary of Work Performed in February 1981

a. Federal Republic of Germany (FRG) Primary Coolant Loop Instruments

1. Spool Pieces

No activity.

2. Conductivity Liquid Level Measurement System

The operation and maintenance manual was reviewed and the publication process was initiated.

3. Turbine Meters

No activity.

b. Japan Atomic Energy Research Institute (JAERI) Slab Core Test Facility Instruments

1. Conductivity Liquid Level Measurement System

The final installation trip was completed with installation and checkout of the nine-track reel-to-reel tape recorder, new data processing and display software and movie camera interface. An informal training session was held to familiarize the JAERI users with the new equipment.

2. Densitometers

All densitometer components except the sources were installed on the Slab Core Test Facility in Japan. The checkout and alignment of these instruments were not completed because the sources have not been released by Japanese Customs.

3. Hot Leg Spool Piece

The instrumented hot leg spool piece was installed on the Slab Core Test Facility in Japan. Checkout of the instruments was completed except for the densitometers. The densitometer sources have not been released from Japanese Customs.

3.b Summary of Work Performed in February 1981 (Continued)

4. Turbine Meters

The turbine flowmeter systems have been installed and checked out in Japan.

5. Cold Leg and Vent Line Spool Piece

Editing of the operation and maintenance manual was completed and prepared for publication.

6. Drag Disk

Oak Ridge National Laboratory completed the flow tests using the Slab Core Test Facility downcomer drag transducer in conjunction with their string probe. The downcomer drag transducer was returned to Idaho National Engineering Laboratory. The force calibrations were performed on the drag transducers at JAERI.

c. Upper Plenum Test Facility Instruments

1. Turbine Meters

A report on turbine testing at LOFT Test Support Facility was drafted and submitted to documentation personnel for completion as an informal report.

2. Drag Disk

No activity.

3. Gamma Densitometers

No activity.

4. Data Acquisition System

No activity.

d. Cylindrical Core Test Facility Core II Instruments

1. Turbine Meters

Final design of the turbine flowmeter systems have continued. A meeting was held with visiting IHI/JAERI personnel to finalize interface design requirements. Fabrication of dummy turbine probes for fitup in Japan has begun.

3.d Summary of Work Performed in February 1981 (Continued)

2. Thermocouple Velocimeter

Fabrication of the production velocimeters has begun. A meeting was held with visiting IHI/JAERI personnel to finalize interface design requirements. A test loop for calibrating the velocimeters has been designed and fabrication of the test loop has been initiated.

3. Spool Piece and Drag Disk Refurbishment

The refurbishment of the spool pieces and drag transducers was completed at JAERI. The rough draft of the specification for the refurbishment of the software was completed.

4. Conductivity Liquid Level Measurement System Refurbishment

The fabrication of the in-core and lower plenum conductivity liquid level detectors was completed.

e. Analysis Support

The draft for the Jet Disintegration Test Data Analysis has been completed and typed. The draft for CCTF I Data Analysis has been completed.

4. Scheduled Milestones for March 1981

None.

5. Summary of Work to be Performed in March 1981

a. Federal Republic of Germany (FRG) Primary Coolant Loop Instruments

1. Spool Pieces

No activity.

2. Conductivity Liquid Level Measurement System

Work will continue on publication of the operation and maintenance manual.

3. Turbine Meters

No activity.

5. Summary of Work to be Performed in March 1981 (Continued)

b. Japan Atomic Energy Research Institute (JAERI) Slab Core Test Facility

1. Conductivity Liquid Level Measurement System

Technical input for the operation and maintenance manual will be compiled and assembled into the final format for publication.

2. Gamma Densitometers

Work for March will include finalization of test reports, revision to the operation and maintenance manual if required, and preparation for training and completion of checkout and alignment in Japan.

3. Hot Leg Spool Piece

The data analysis report on the two-phase flow testing performed at the LOFT Test Support Facility will be completed.

4. Turbine Meters

Work will continue on the supplement to the vendor-supplied operation and maintenance manual.

5. Cold Leg and Vent Line Spool Piece

The operation and maintenance manual will be printed.

6. Drag Disks

No activity.

c. Upper Plenum Test Facility

1. Turbine Meters

Work on the informal report for turbine testing at the LOFT Test Support Facility will continue to completion.

2. Drag Disks

No activity.

3. Gamma Densitometers

No activity.

5. Summary of Work to be Performed in March 1981 (Continued)

d. Cylindrical Core Test Facility II Instruments

1. Turbine Meters

The turbine flowmeter final design will be completed and a final design review held. Fabrication of dummy probes and support structure will continue.

2. Thermocouple Velocimeter

Fabrication of the test loop and velocimeter probes will be completed. Calibration of the velocimeter probes will be initiated. Design of the electronics for the production velocimeters will be initiated.

3. Spool Piece and Drag Disk Refurbishment

The specification for refurbishment of the software will be completed.

4. Conductivity Liquid Level Measurement System Refurbishment

The in-core and lower plenum conductivity liquid level detectors will be delivered to JAERI in Japan.

e. Analysis Support

Work will start on Cylindrical Core Test Facility I uncertainty analysis. In addition, a Cylindrical Core Test Facility I will be modeled using RELAP5. The Cylindrical Core Test Facility I and jet disintegration test data analysis reports will be issued.

6. Problems and Potential Problems

None.

1. 189a A6282 - Fluid Distribution Grid Systems for 3D Program Facilities

2. Scheduled Milestones for February 1981

   None.

3. Summary of Work Performed in February 1981

   a. Japan Atomic Energy Research Institute (JAERI) Slab Core Test Facility Fluid Distribution Grid Systems

      The final installation trip was completed with the installation and checkout of the nine-track reel-to-reel tape recorder, new data processing and display software and movie camera interface. An informal training session was held to familiarize the JAERI users with the new equipment.

   b. Cylindrical Core Test Facility Core II Fluid Distribution Grid Systems

      Qualification testing was completed successfully on ten optical liquid level probes by February 27. The first lot of 20 probes was 50 percent fabricated. All hardware drawings were within two weeks of release. An informal technical review of microprocessor algorithms/program required for the electronics was held.

4. Scheduled Milestones for March 1981

   None.

5. Summary of Work to be Performed in March 1981

   a. Japan Atomic Energy Research Institute (JAERI) Slab Core Test Facility Fluid Distribution Grid Systems

      Technical input for the operation and maintenance manual will be compiled and assembled into the final format for publication.

   b. Cylindrical Core Test Facility Core II Fluid Distribution Grid Systems

      Production of downcomer optical liquid level probes is scheduled to be 60 percent complete. All hardware drawings will be released. Fluid distribution grid assembly procedures will be complete and assembly is planned to commence. Final design review for the hardware is set for March 2, 1981, and final design review for electronics will be scheduled.

6. Problems and Potential Problems

Problems in qualifying the optical liquid level probes have delayed the production startup such that a new delivery date for the upper plenum fluid distribution grid may need to be negotiated with JAERI.

MONTHLY REPORT FOR

FEBRUARY 1981

CODE DEVELOPMENT DIVISION

F. Aguilar, Manager

S. F. Tuck
Plans & Budget Representative

CODE DEVELOPMENT DIVISION

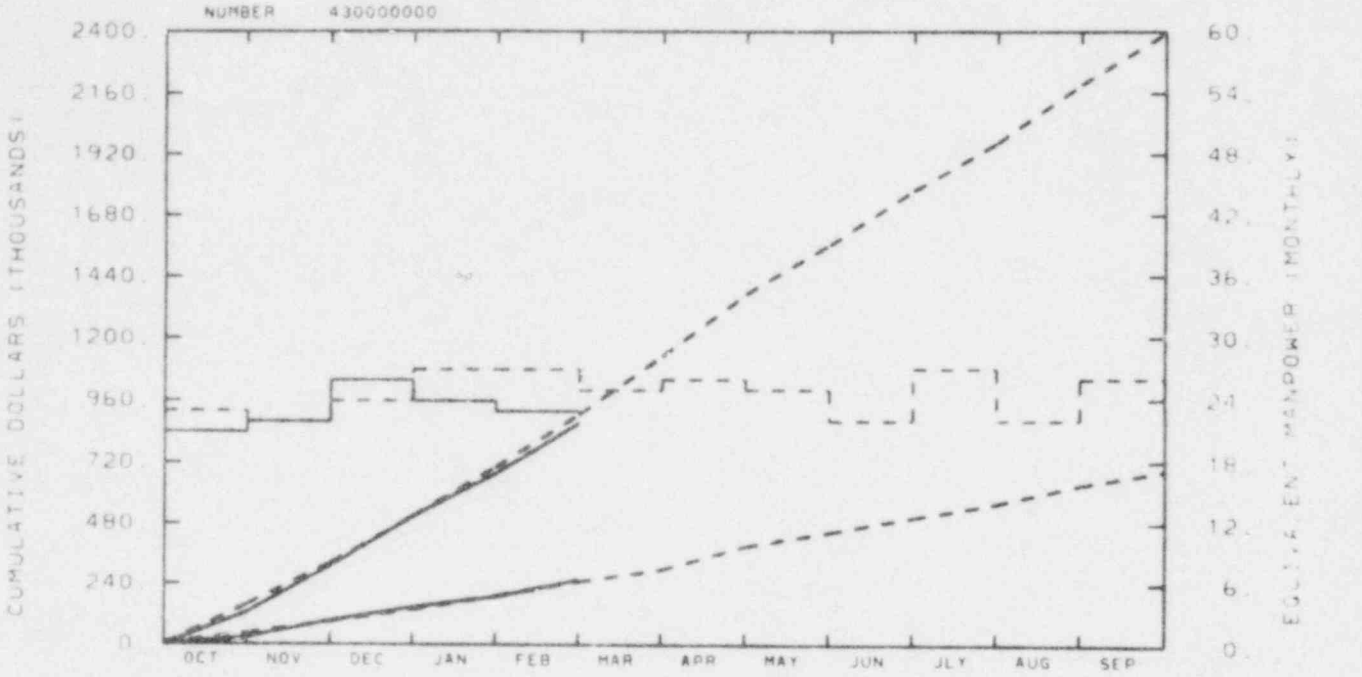
COST SUMMARY & COMMENTS

RESPONSIBLE
MANAGER
J. AGUILAR

EG&G IDAHO INC.

CODE DEVELOPMENT & ANALYSIS PROG

NUMBER 430000000



TOTAL PROGRAM

BUDGET	156	324	510	705	907	1130	1371	1565	1778	1967	2195	2394
ACTUAL	125	312	511	679	874							

MATERIAL

BUDGET	44	90	139	193	250	298	391	446	505	560	632	685
ACTUAL	27	95	148	191	258							

MANPOWER

BUDGET	23	22	24	27	27	25	26	25	22	27	22	26
ACTUAL	21	22	26	24	23							

BUDGET
ACTUAL

YTD VARIANCE: 33 (4%)

Individual cost graphs will give individual explanations.

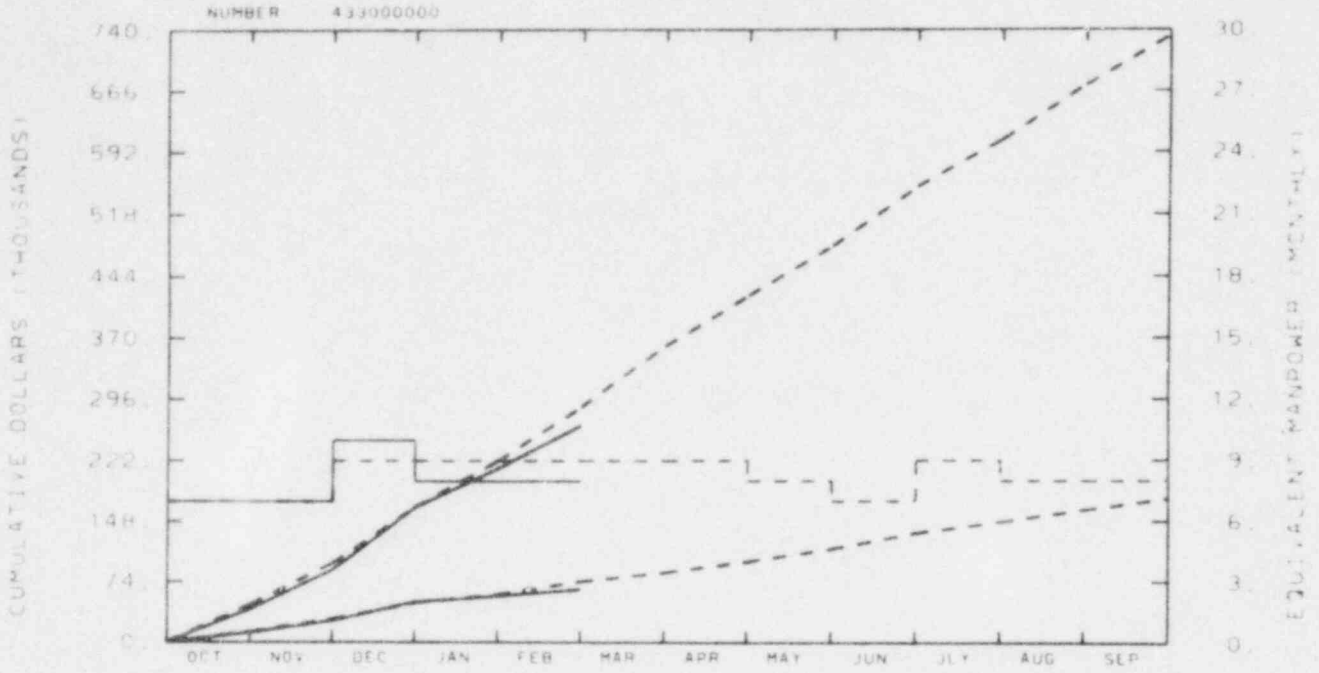
Explanations for major 189a's will be made if the variance exceeds $25 K. Minor 189a graphs will explain variance of over $10 K.

RESPONSIBLE
MANAGER
ASSISTAN

EG&G IDAHO INC.

FUEL BEHAVIOR MOD DEVELOPMENT

NUMBER 433000000



TOTAL PROGRAM

BUDGET	46	92	166	222	287	361	421	481	551	607	673	733
ACTUAL	40	88	165	213	265							

MATERIAL

BUDGET	13	29	48	58	74	85	99	114	134	147	162	176
ACTUAL	12	26	50	57	65							

MANPOWER

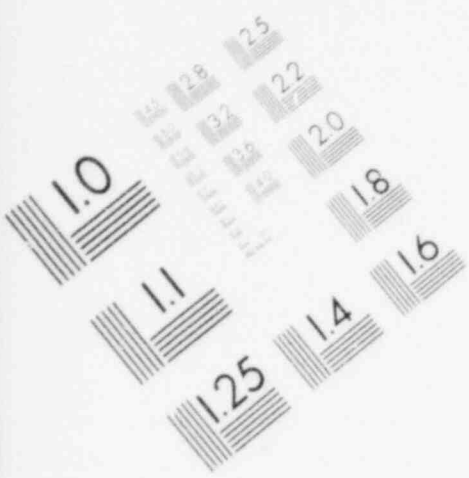
BUDGET	7	7	9	9	9	9	9	8	7	9	8	8
ACTUAL	7	7	10	8	8							

BUDGET

ACTUAL

A6050

YTD VARIANCE: 22 (8%)



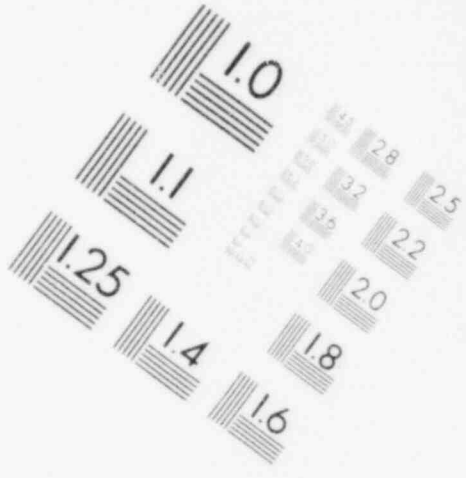
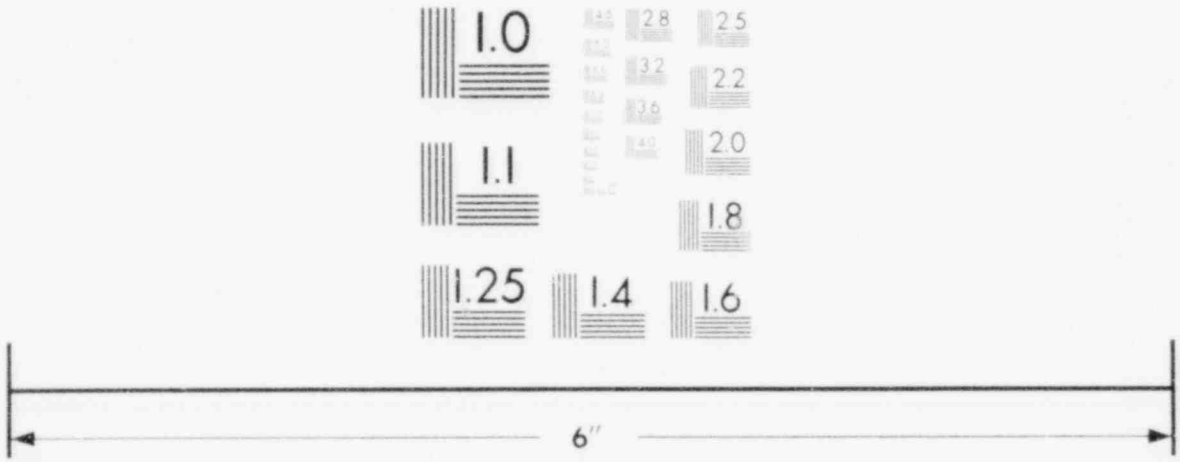
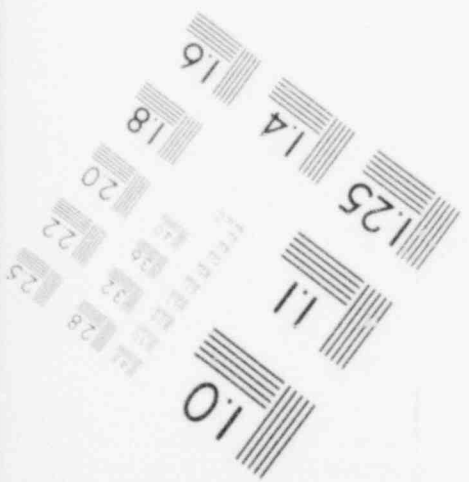
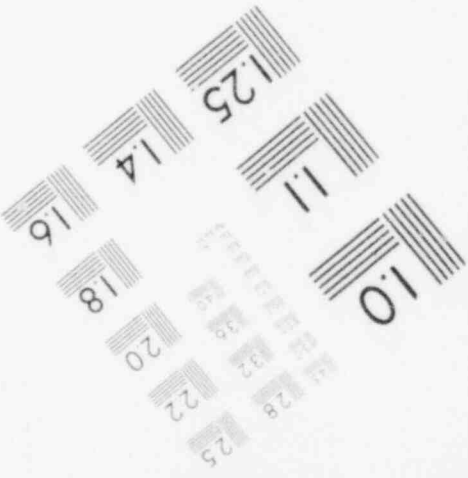
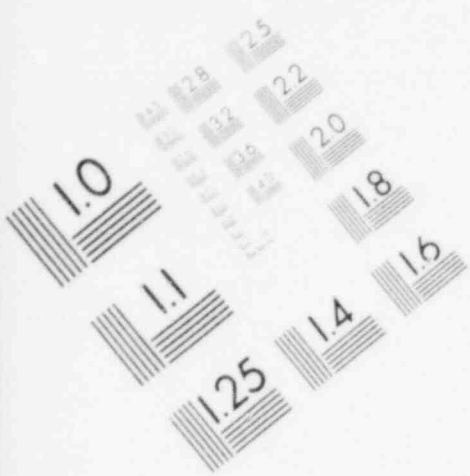


IMAGE EVALUATION TEST TARGET (MT-3)









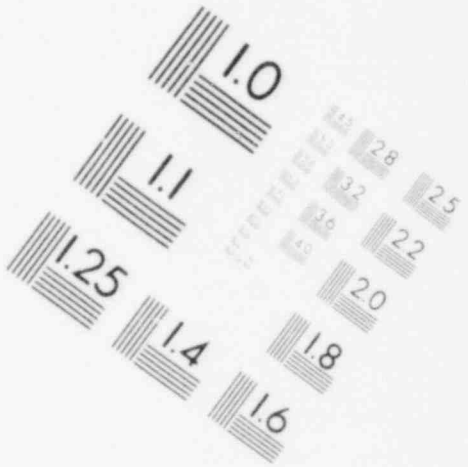
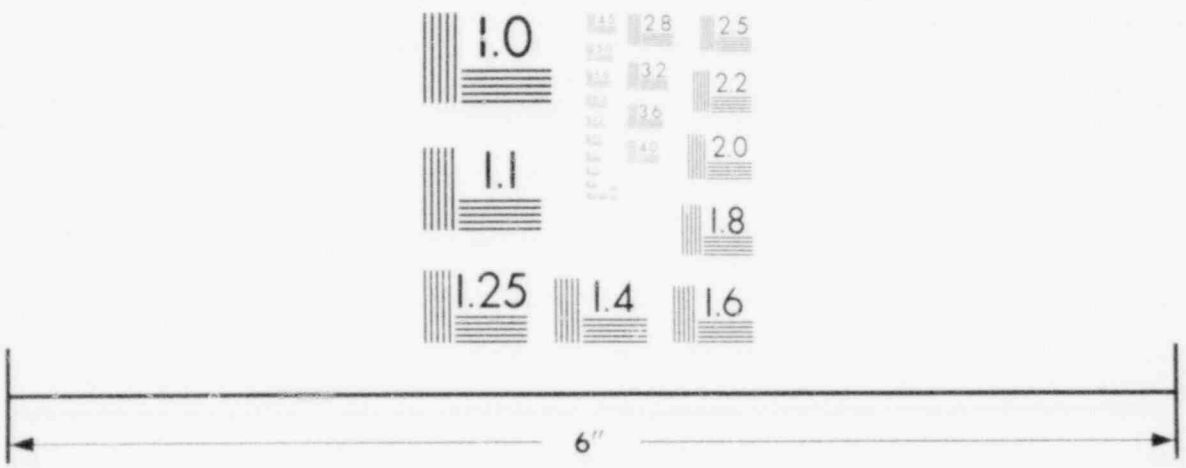
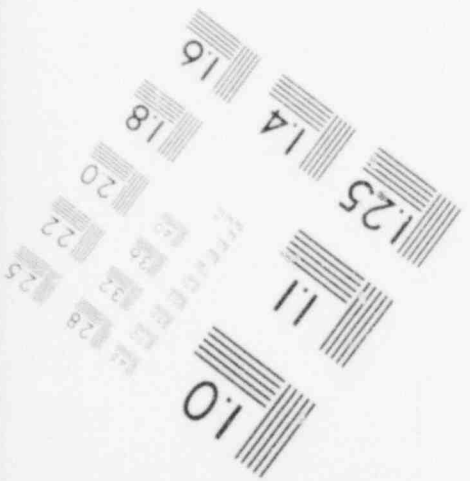
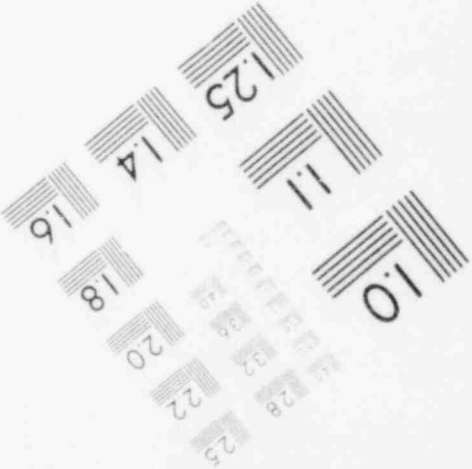


IMAGE EVALUATION TEST TARGET (MT-3)





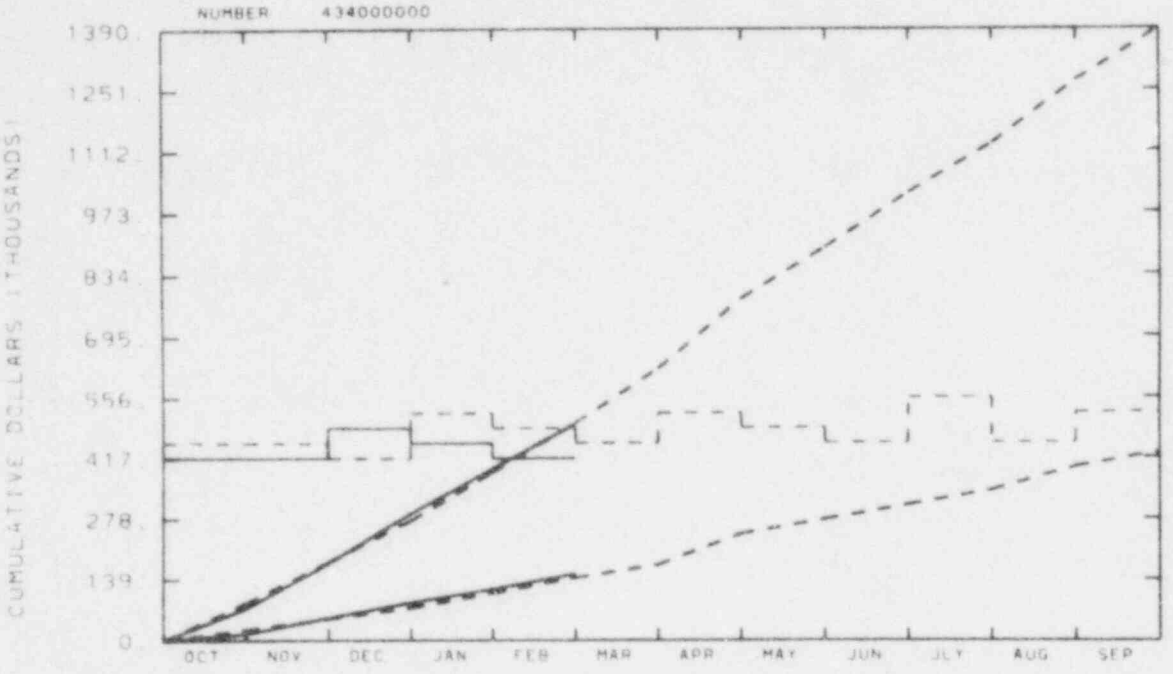


RESPONSIBLE
MANAGER
AGUILAR

EG&G IDAHO INC.

LOCA ANALYSIS

NUMBER 434000000



TOTAL PROGRAM

BUDGET	86	180	275	385	499	623	780	894	1017	1128	1271	1390
ACTUAL	74	176	291	393	496							

MATERIAL

BUDGET	25	50	74	108	144	173	243	276	309	343	396	429
ACTUAL	15	52	87	117	152							

MANPOWER

BUDGET	13	13	12	15	14	13	15	14	13	16	13	15
ACTUAL	12	12	14	13	12							

BUDGET - - - - -

ACTUAL ———

A6052

YTD VARIANCE: 3 (1%)

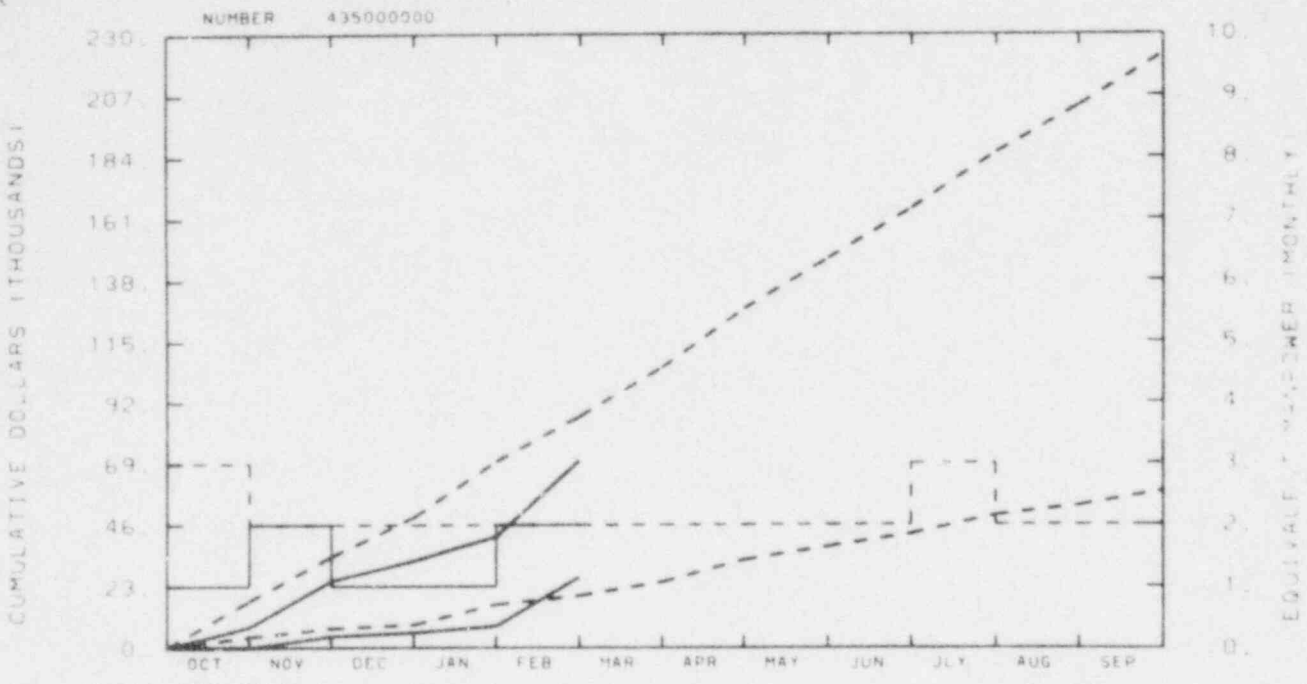
RESPONSIBLE MANAGER

F AGUILAR

EG&G IDAHO INC.

TRAC LWR HEAT TRANSFER

NUMBER 435000500



TOTAL PROGRAM

BUDGET	18	34	49	70	87	106	127	146	165	186	203	223
ACTUAL	8	25	33	42	70							

MATERIAL

BUDGET	4	[illegible]	9	16	19	25	33	38	42	49	53	58
ACTUAL	0	4	6	8	26							

MANPOWER

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

BUDGET

ACTUAL

A6278

YTD VARIANCE: 17 (20%)

Manpower had been diverted to TRAC-BD1 developmental assessment. It is now reassigned to this task, and recovery is in progress.

CODE DEVELOPMENT DIVISION

CURRENT WORKING SCHEDULE

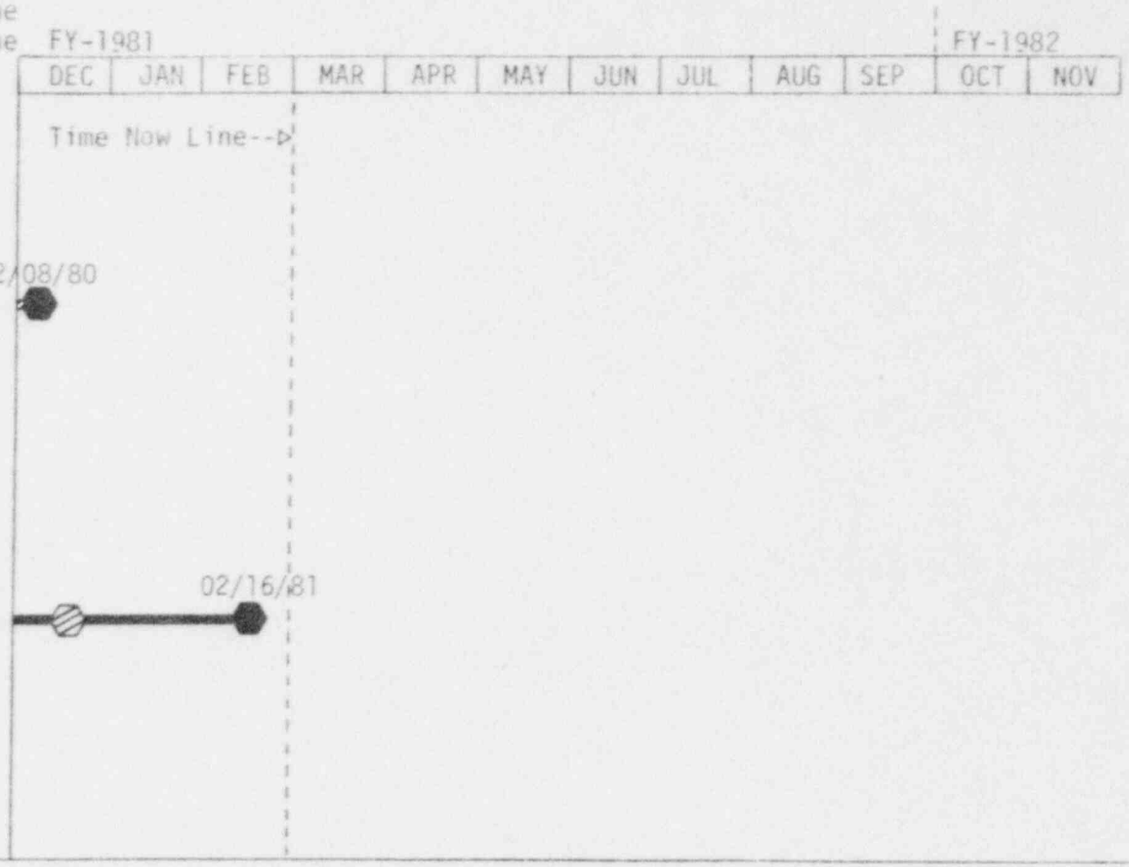
LEGEND

- Completed Major Milestone
- Scheduled Major Milestone
- Slipped Major Milestone
- Completed Secondary Milestone
- Scheduled Secondary Milestone
- Slipped Secondary Milestone
- Actual Completion Date
- Scheduled Completion Date

CODE DEVELOPMENT DIVISION

FRAPCON Development (A6050)

February 1981

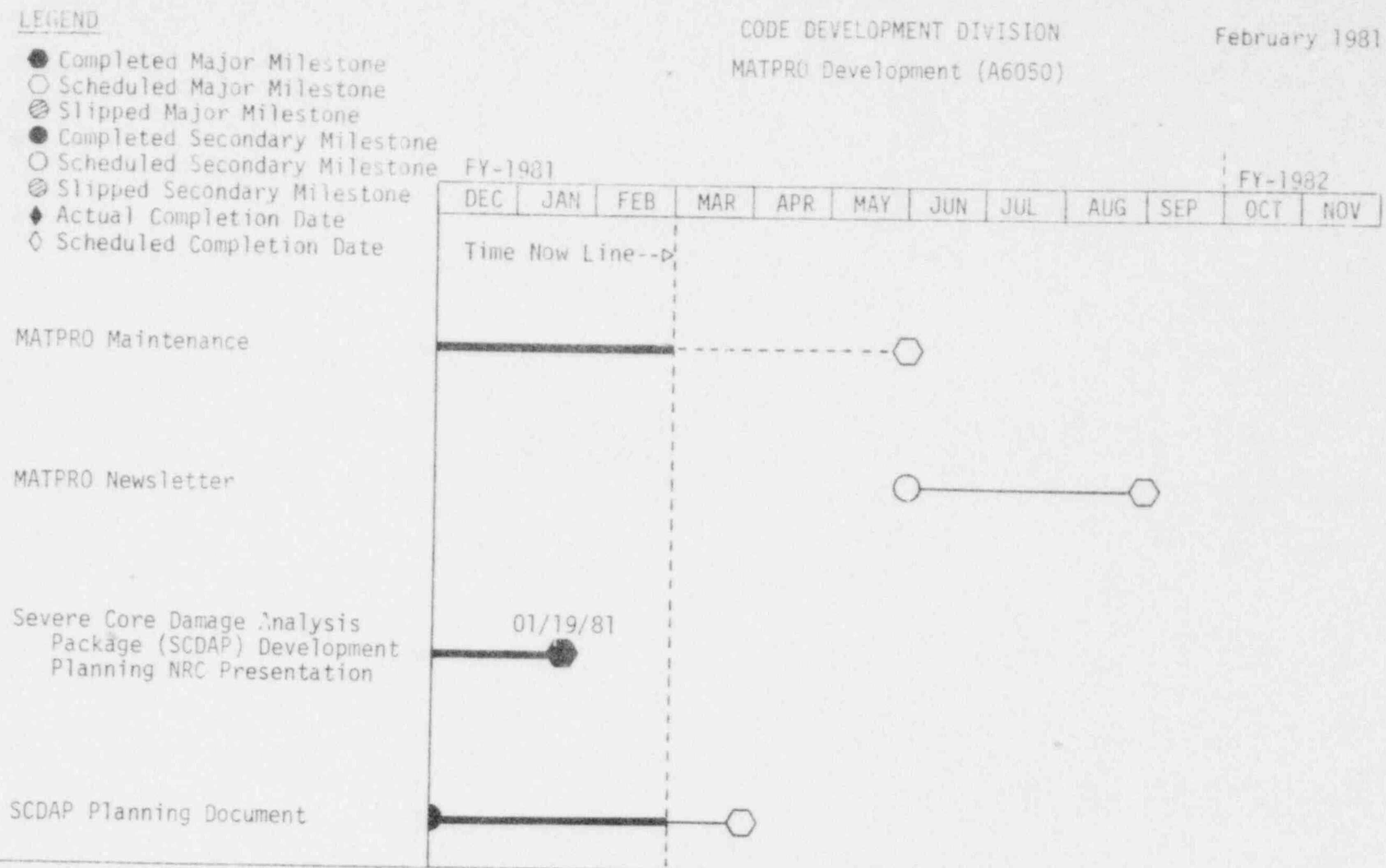


NOTES:

CODE DEVELOPMENT DIVISION

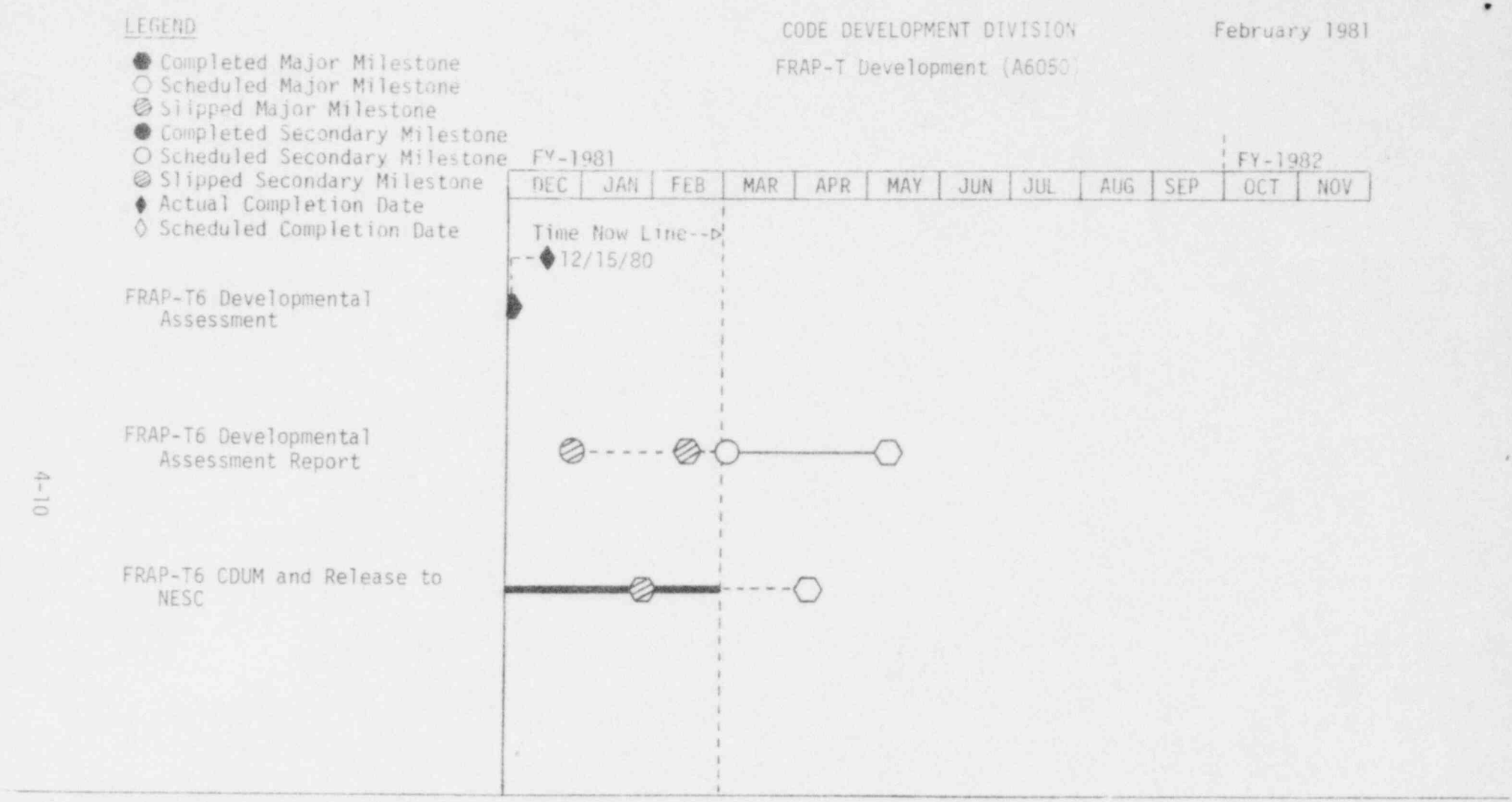
MATPRO Development (A6050)

February 1981

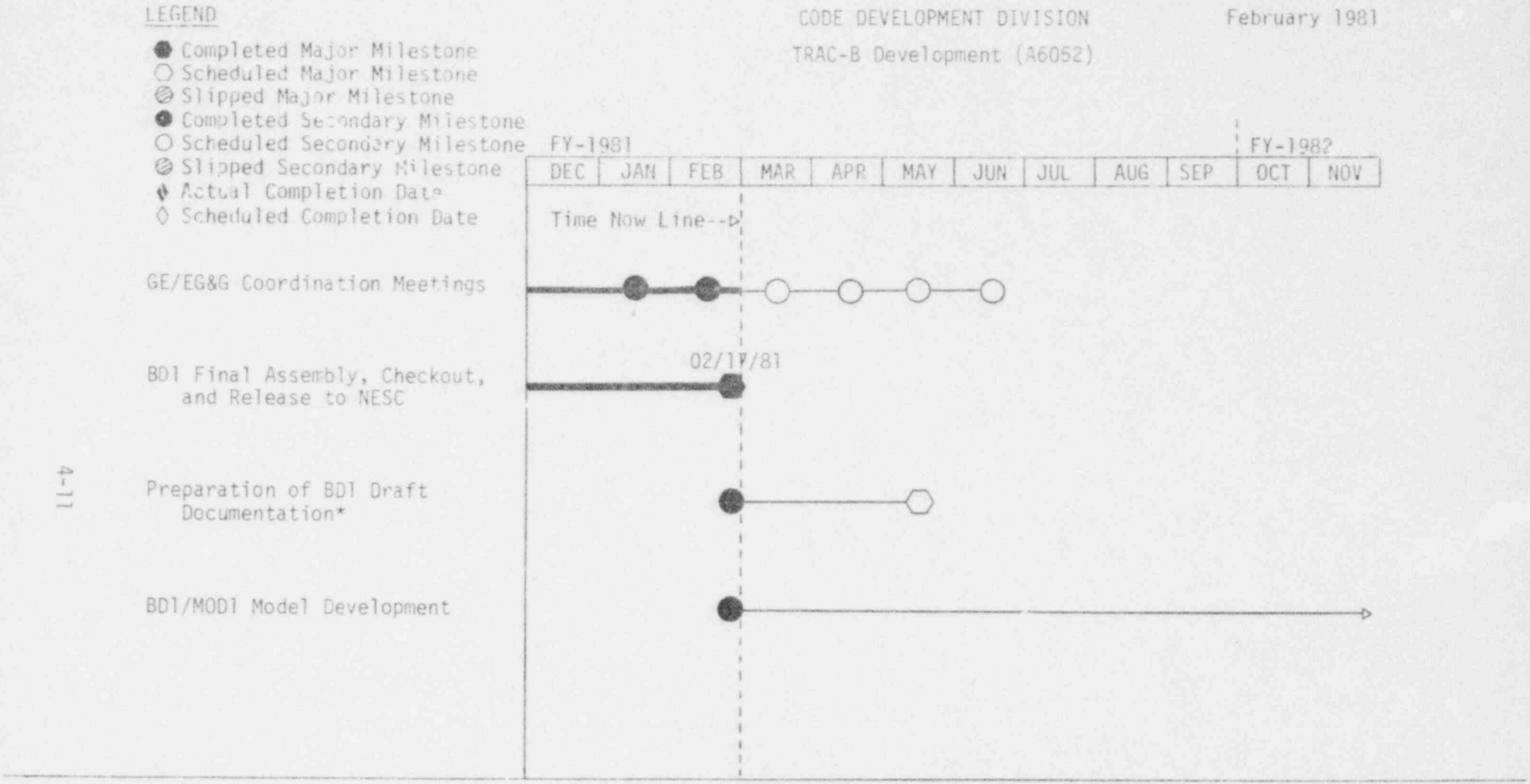


NOTES: MATPRO-11 represents the last version in the development of the MATPRO subcode. Newsletters will be supplied to reflect maintenance. During FY-1981, MATPRO maintenance consists of development of a new fuel hot pressing model.

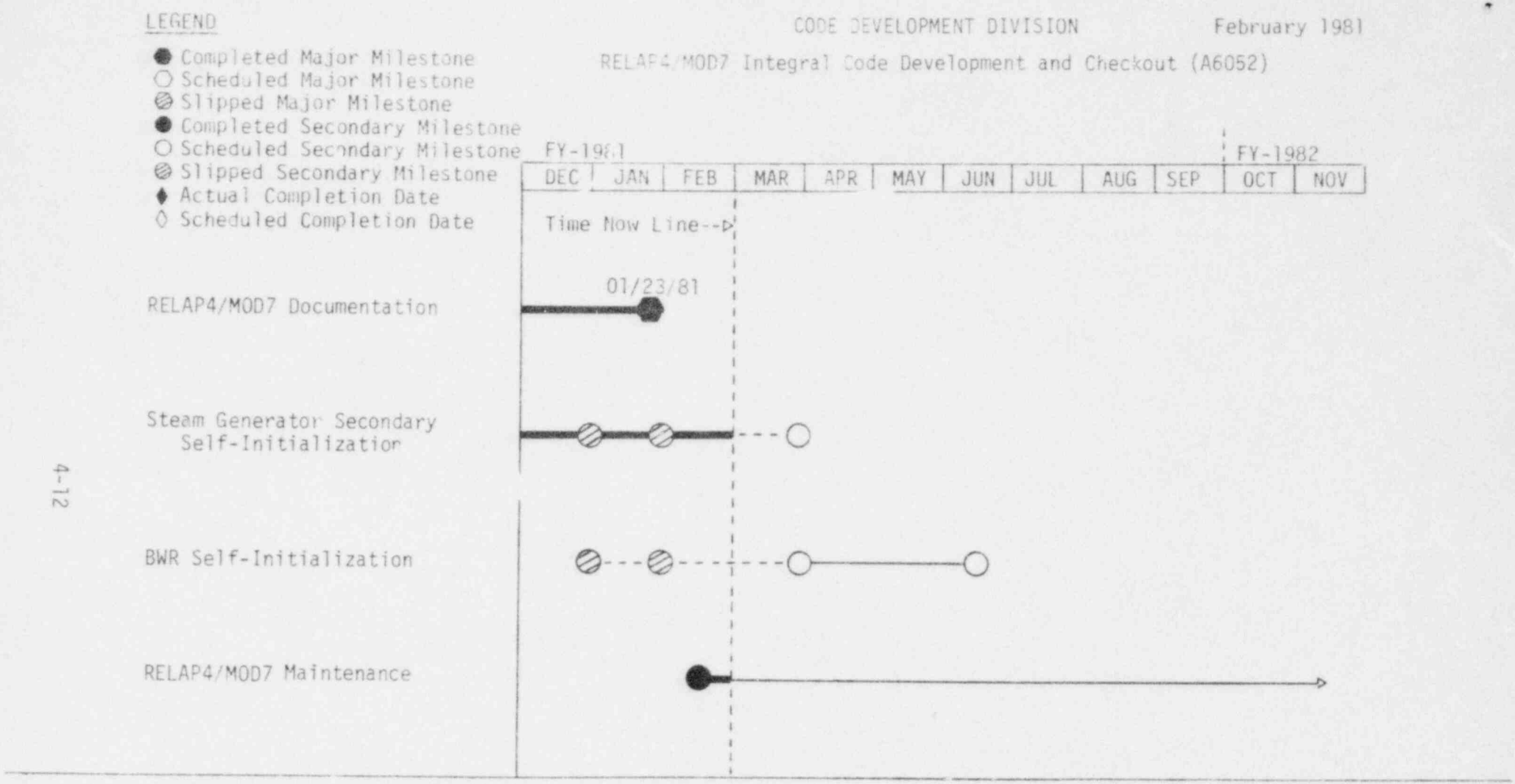
A presentation on SCDAP development planning was not given to the NRC. However, draft copies of the interim report were provided to DOE/NRC for comment instead.



NOTES: The start and completion dates for the FRAP-T6 Developmental Assessment Report have been rescheduled and the completion date for the FRAP-T6 CDUM and release of FRAP-T6 to NESC has been rescheduled. These reschedulings are discussed in detail in FA-01-81.

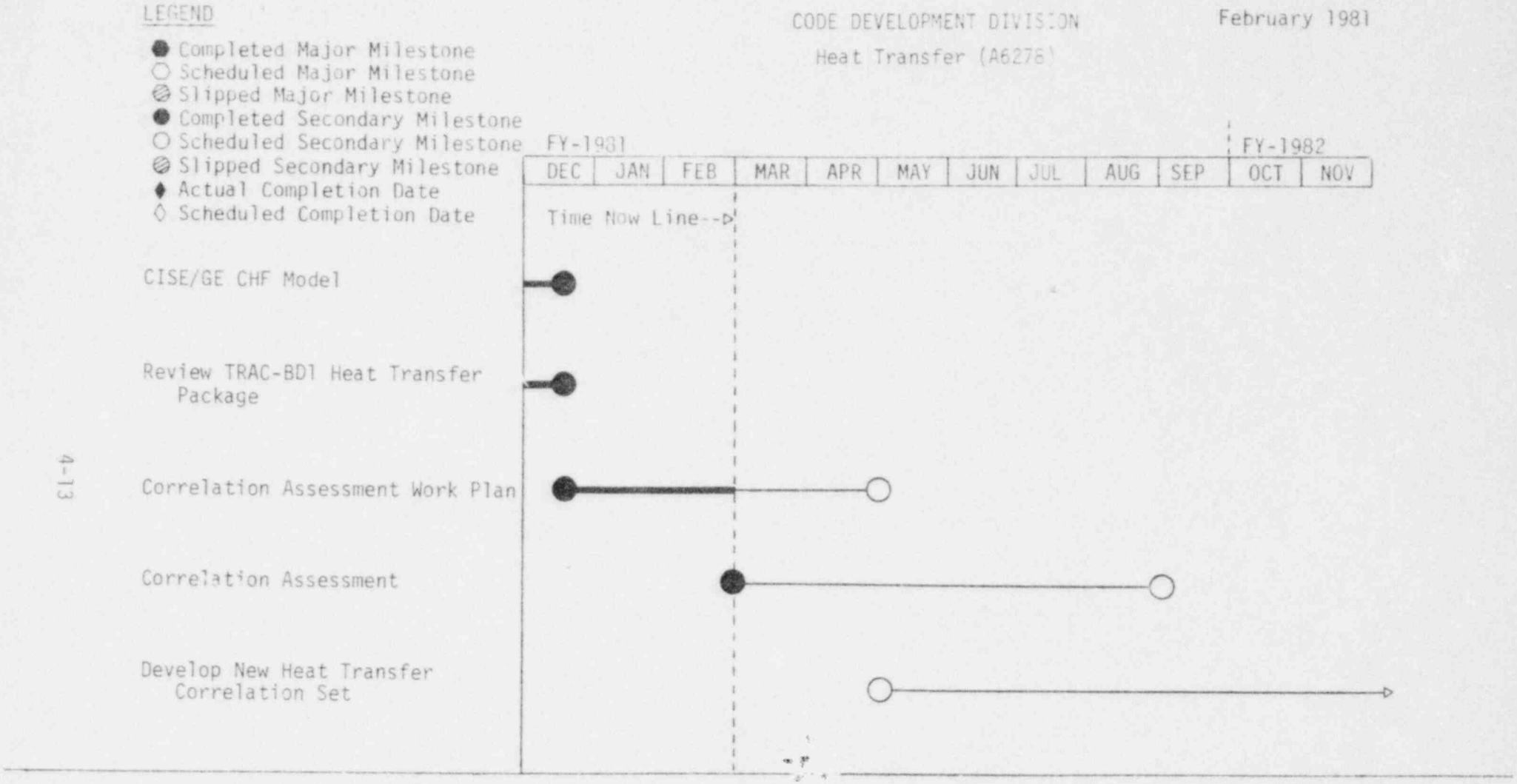


NOTES: * Completion of this task consists of delivery of an approved draft manual to the Documentation Office for subsequent publication as a formal EGG report.



NOTES:

The completion date for the Steam Generator Secondary Self-Initialization task and the start date for the BWR Self-Initialization task have been rescheduled (FA-64-80)



NOTES: The TRAC BWR Heat Transfer milestone chart is extracted from FA-32-80.

CODE DEVELOPMENT DIVISION
TECHNICAL REVIEW & SUMMARY

PROGRAM MANAGER'S

SUMMARY AND HIGHLIGHTS

The development of the TRAC-BD1 code was completed, and the code was released to the National Energy Software Center (NESC) ahead of schedule. This culminates a 16 month development project that has consistently met every milestone ahead of schedule. More analytical capability has been delivered than had been committed. The product is a significant advancement of the NRC's capability to calculate large and small break LOCA in boiling water reactors. TRAC-BD1 has been developed, tested, and carefully documented in accordance with a rigorous configuration control system, which is evidence of an unprecedented concern for quality.

The enhancement of RELAP4/MOD7 has been picked up by new personnel assigned to the task. None of these people are in the Code Development Division. A careful review of both the acceptance test results and the proposed updates for the PWR steam generator initialization task was performed by the new personnel. Modeling and coding errors were identified. Consequently, the completion of this task was rescheduled. Satisfactory progress toward the new completion date is being made. However, this delay will impact completion of the BWR initialization task schedule. Future enhancement and maintenance of RELAP4/MOD7 will be discussed at the NRC Midyear Review. A prioritized list of needs will be determined, and the BWR initialization task will be rescheduled following the meeting.

The FRAPCON-2 developmental assessment report was completed on schedule. Preparation of the FRAP-T6 Code Description and User's Manual is proceeding satisfactorily.

Comments on the SCDAP planning report were received from DOE-ID and NRC. These comments will be incorporated in the report during March and the final report will be issued by April 1, 1981.

1. 189a A6050 - Fuel Behavior Model Development

2. Scheduled Milestones for February 1981

Node	Description	Due Date	Actual Date
FA-1-81	FRAPCON-2 Developmental Assessment Report Delivered to NRC	02-16-81	02-16-81C FA-13-81

3. Summary of Work Performed in February 1981

a. FRAPCON-2

The FRAPCON-2 developmental assessment report was completed as scheduled and transmitted to PNL for insertion of the figures they prepared for the report. PNL will transmit the report to NRC for publication as NUREG/CR-1949.

b. FRAP-T6

The FRAP-T6 Code Description and User's Manual was typed and peer review of the report began. This review will be completed in early March 1981, comments incorporated, and the report will be returned to typing. Preparation of the figures by graphics has begun and typing of equations is about one half completed. The effort is about one week ahead of the April 6, 1981 completion date. A final frozen version of FRAP-T6 was not provided to independent assessment personnel. However, the independent assessment of FRAP-T6 is proceeding using an existing version of the code. The frozen version must be delivered to independent assessment early in March. Problems were encountered in incorporating the new FASTGRASS subcode into the final version. These problems have been resolved. The final version will also include several other updates that will allow either final FRACAS-I or FRACAS-II to be used in FRAP-T6 when restarting from a FRAPCON-2 analysis which used FRACAS-II. Assembly of a frozen version is expected during the second week in March. This effort has had no impact on completion of the FRAP-T6 developmental assessment report by May 11, 1981 as the developmental assessment report effort is not scheduled to begin until early March.

c. MATPRO

Coding of the fuel hot pressing model was not completed during February as planned due to the performing organization preempting the effort to complete another task. However, the performing organi-

3.c Summary of Work Performed in February 1981 (Continued)

zation has negotiated to complete development of the correlation and a draft of the report during March. This action will assure that the effort is complete by the scheduled June 1 date.

d. SCDAP

The revised report describing the SCDAP development plan was not issued as planned because comments from NRC and DOE were received late in the month. These comments will be incorporated in the report during March. The final report will be issued on April 1.

e. Special Projects

Evaluation of the sensitivity data for the flow area restriction model development was completed. The effort is progressing on schedule. A draft of the report describing the FRACAS-II developmental assessment effort and results was completed and reviewed. Comments are in the process of being incorporated and typing of the report will begin during early March. The report is progressing for completion on schedule, April 6, 1981. The draft of the BALOON-2 report was completed as scheduled. Typing of the report is scheduled to begin on March 2. The report is progressing on schedule for completion by May 4, 1981.

4. Scheduled Milestones for March 1981

None.

5. Summary of Work to be Performed in March 1981

a. FRAP-T6

The code will be frozen and formally released for independent assessment. The FRAP-T6 Code Description and User's Manual will be edited and reviewed by management. Preparation of the FRAP-T6 developmental assessment report will begin and a draft is expected to be complete on schedule for issuance on May 11, 1981.

b. MATPRO

The new fuel hotpressing correlation will be completed and a draft report prepared. Coding of the model will begin. The effort will be completed prior to the June 1 scheduled date.

5. Summary of Work to be Performed in March 1981 (Continued)

c. SCDAP

NRC and DOE comments will be incorporated into the draft planning document and the document released. The schedule and scope of SCDAP/MODO will be discussed with NRC and DOE at the Midyear Review. Development of the logic theory will begin.

e. Special Projects

A model will be developed to convert the distribution of input parameters to a distribution of cladding shapes for the flow area restriction model. The FRACAS-II developmental assessment report will be typed and reviewed by management. The BALOON-2 report will be typed and editing will begin.

6. Problems and Potential Problems

The United Kingdom Atomic Energy Authority (UKAEA) has informed us that the MABLE-2 code is not complete and will not be available with documentation until the latter part of the summer. Thus, the comparison of MABLE with FRAP-T6 will be postponed until next fiscal year. The time and resources made available by this postponement will be applied to the SCDAP development effort.

1. 189a A6052 - Loss-of-Coolant Accident

2. Scheduled Milestones for February 1981

Node	Description	Due Date	Actual Date
PN-88-80	BD1 Final Assembly, Checkout and Release to NESC	02-20-81	02-17-81
FA-74-80	Steam Generator Secondary Self-Initialization Task	02-01-81 03-30-81T	03-30-81E (FA-12-81)

3. Summary of Work Performed in February 1981

a. Code Maintenance and Enhancement

The draft RELAP4/MOD7 manual was given to technical editing for final processing. Final checkout results from the steam generator secondary self-initialization task indicated several problems such that the task had to be rescheduled as discussed in FA-12-81. Work on resolving the errors in the steam generator secondary self-initialization task is on schedule toward the new March 30, 1981 completion date. Additional enhancement work on RELAP4/MOD7 has been initiated to resolve a restart problem identified by Code Assessment. Initiation of the RELAP4/MOD7 BWR initialization task has been delayed because of the delay in the PWR steam-generator initialization task. Priorities for further enhancement work including BWR initialization will be discussed with NRC during the Midyear Review.

b. Boiling Water Reactor (BWR) TRAC Development

The TRAC-BD1 code was completed on schedule. Completion of this code represents a significant advancement in our ability to simulate BWR systems. A transmittal tape was prepared and sent to the National Energy Software Center (NESC). Preparation of the draft TRAC-BD1 manual has started. Discussions were held with General Electric Company on February 26 and 27 to establish model requirements for TRAC-BD1/MOD1. Arrangements have been made to coordinate model development with GE. Overall plans for MOD1 will be discussed with NRC during midyear review.

4. Scheduled Milestones for March 1981

Node	Description	Due Date	Actual Date
FA-12-81	Steam Generator Secondary Self-Initialization Task	03-30-81	03-30-81E

5. Summary of Work to be Performed in March 1981

a. Code Maintenance and Enhancement

The steam generator secondary self-initialization task will be completed. Work will continue toward resolving the restart problems identified by Code Assessment. Discussions will be held with NRC during midyear reviews to establish priorities for additional enhancement work.

b. Boiling Water Reactor (BWR) TRAC Development

Work will continue on the four-part BD1 User's Manual. Model requirements for performing BWR operational transients with BD1 will be identified. Results of BD1 developmental assessment and plans for BD1/MOD1 will be discussed with NRC at the midyear review. A presentation will be made to NRR as to the present and planned capabilities of the TRAC-BD1 code.

6. Problems and Potential Problems

Initiation of the RELAP4/MOD7 BWR initialization task has been delayed because of the delay in completion of the PWR steam generator initialization task. Priorities for RELAP4/MOD7 enhancement tasks will be reviewed with NRC, and a new schedule for RELAP4/MOD7 enhancement will be established after the Midyear Review.

1. 189a A6278 - Heat Transfer Correlation Development and Assessment

2. Scheduled Milestones for February 1981

None.

3. Summary of Work Performed in February 1981

Preparation of a plan to evaluate the TRAC-BD1 heat transfer package continues. Preliminary assessment of the BD1 correlation set is in progress to identify problem areas. In particular, the Gota-78 spray cooling test is being simulated to assess the existing radiation model with droplets and cold channel wall. The Full-Length Emergency Cooling Heat Transfer Test Project (FLECHT) 9077 test was simulated as part of the BD1 developmental assessment. Thermal Hydraulics Test Facility (THTF) Test 3.06 6B is also being modeled to investigate upflow film boiling. Also, Chen's Lehigh Test 174-93 is being modeled to look at nonequilibrium film boiling. A draft letter report summarizing the RELAP5 heat transfer package compared with the TRAC-BD1 package has been prepared. Implementation of the TRAC-PD2 reflood heat transfer improvements into BD1 has started.

4. Scheduled Milestones for March 1981

None.

5. Summary of Work to be Performed in March 1981

A letter report comparing the RELAP5 and TRAC-BD1 heat transfer packages will be released. Preliminary assessment of the TRAC-BD1 heat transfer correlation set will continue. A correlation assessment plan will be formulated and discussed with NRC during midyear reviews. An effort will be made to visit the FLECHT Separate Effects and System Effects Test (SEASET) facility to obtain information to help with our evaluation of reflood heat transfer.

6. Problems and Potential Problems

None.

MONTHLY REPORT FOR

FEBRUARY 1981

CODE ASSESSMENT AND APPLICATION DIVISION

B. F. Saffell, Manager

E. L. Pierson
Plans & Budget Representative

CODE ASSESSMENT AND APPLICATION DIVISION

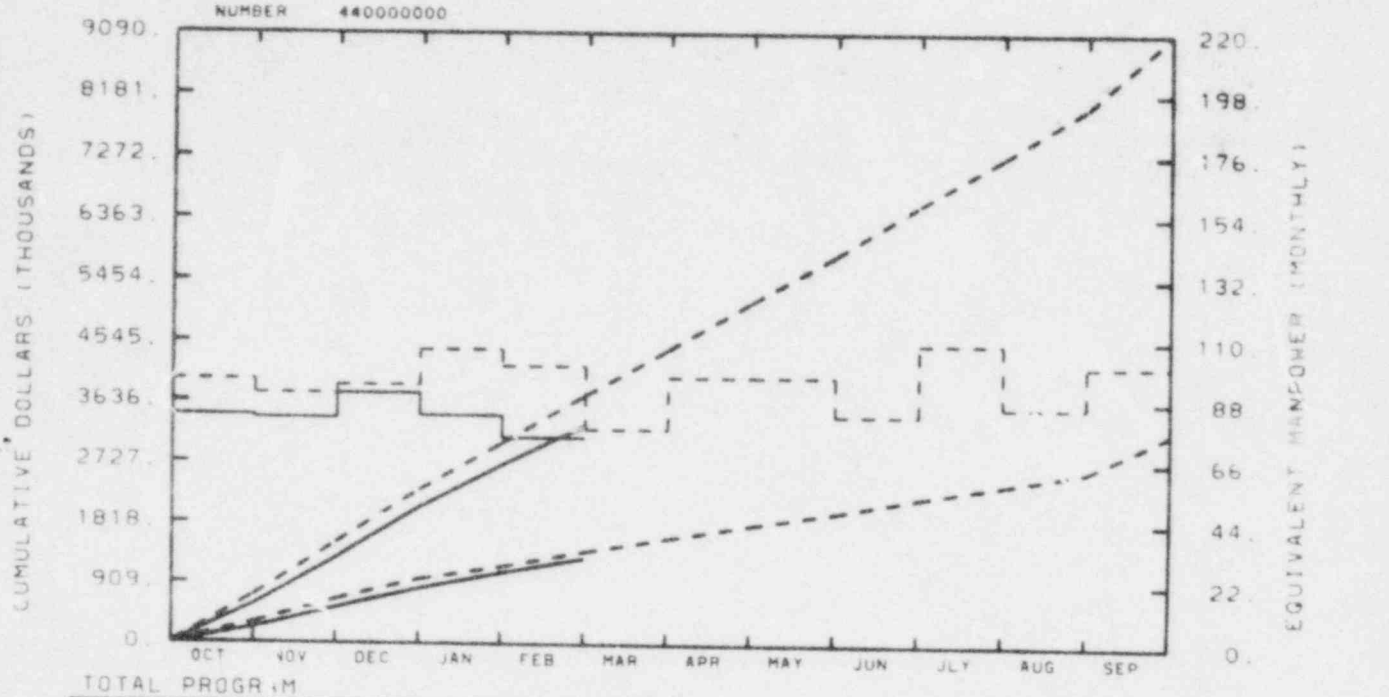
COST SUMMARY & COMMENTS

RESPONSI
MANAGER
B F SAFFELL

EG&G IDAHO INC.

CODE ASSESSMENT & APPLICATIONS

NUMBER 440000000



TOTAL PROGRAM

BUDGET	720	1519	2319	3015	3738	4431	5134	5823	6567	7261	8004	9087
ACTUAL	578	1286	2055	2688	3286							

MATERIAL

BUDGET	307	661	969	1166	1394	1598	1797	1985	2205	2401	2607	3175
ACTUAL	226	535	827	1071	1293							

MANPOWER

BUDGET	96	91	94	107	101	78	97	97	83	109	86	101
ACTUAL	83	82	91	83	75							

BUDGET - - - - - -

ACTUAL ———

YTD VARIANCE: 452 (12%)

Individual cost graphs will give individual explanations.

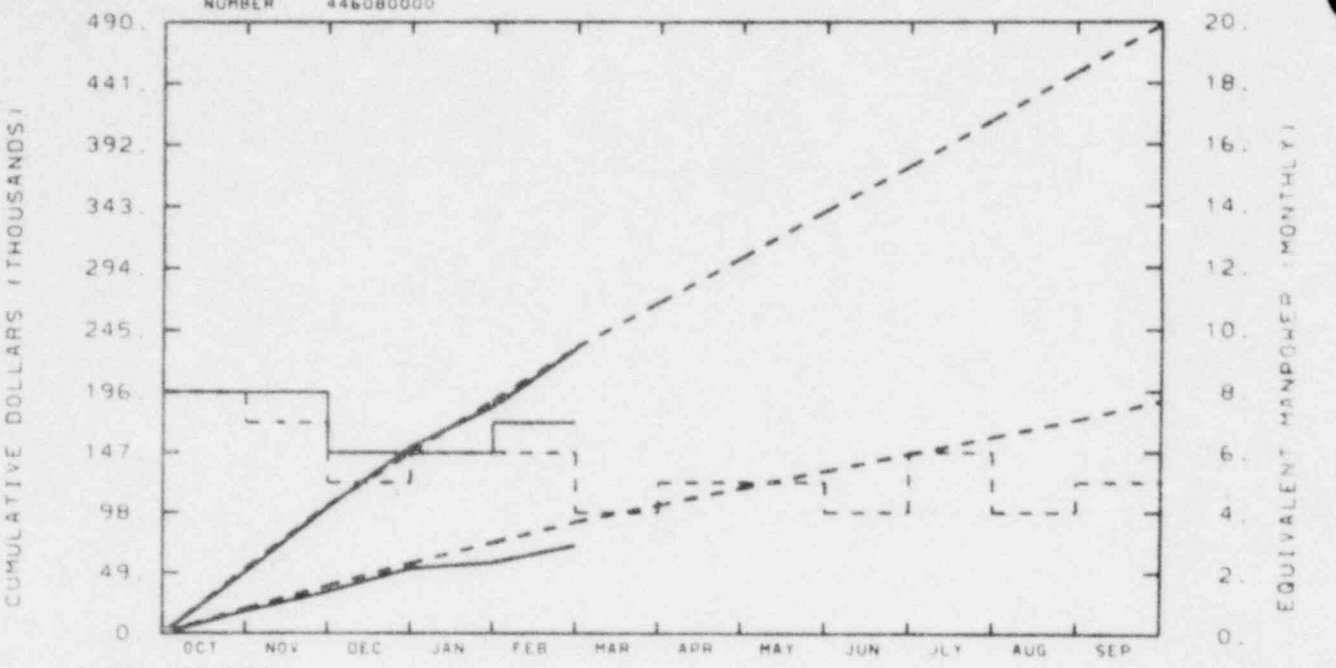
Explanations for major 189a's will be made if the variance exceeds $25 K. Minor 189a graphs will explain variance of over $10 K.

RESPONSIBLE
MANAGER
B F SAFFELL

EG&G IDAHO INC.

TECHNICAL SURVEILLANCE A6039

NUMBER 446080000



TOTAL PROGRAM

BUDGET	52	103	147	189	232	267	302	339	375	412	450	488
ACTUAL	49	102	152	185	231							

MATERIAL

BUDGET	20	39	57	74	90	104	118	132	146	159	173	188
ACTUAL	18	34	53	57	71							

MANPOWER

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

BUDGET
ACTUAL

A6039

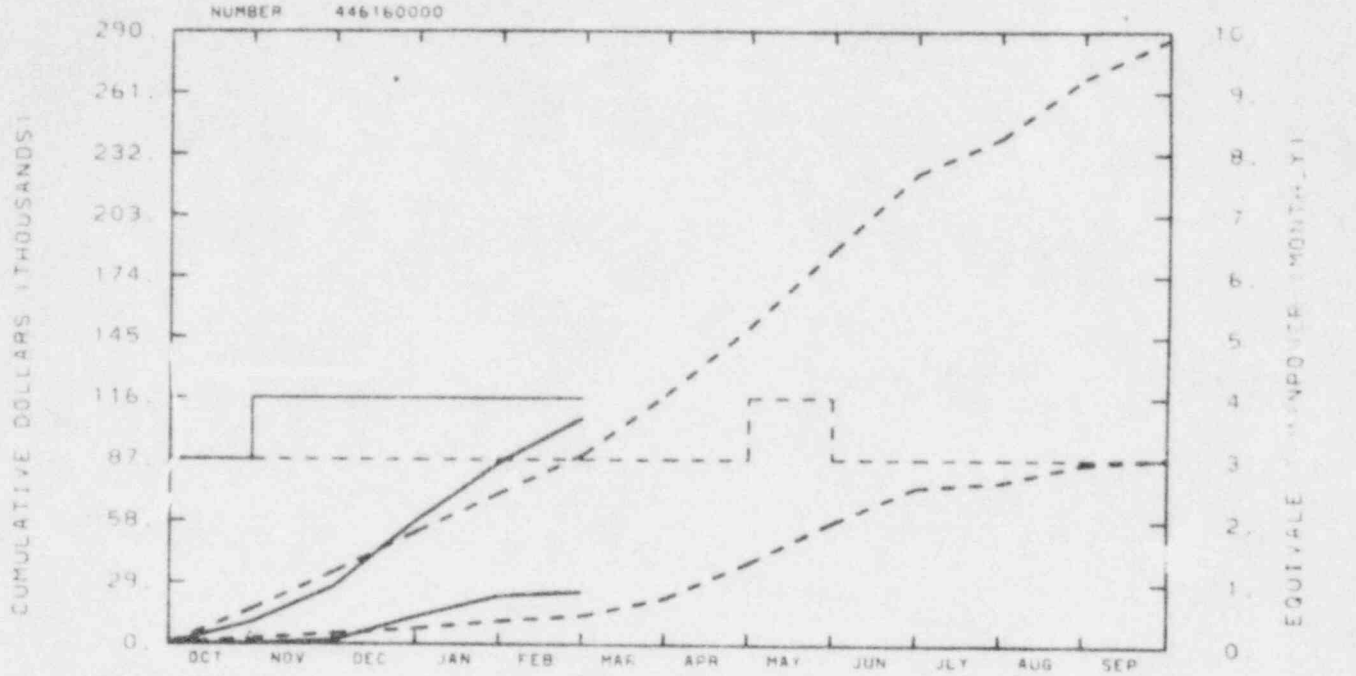
YTD VARIANCE: 1

RESPONSIBLE
MANAGER
B. F. SAFFELL

EG&G IDAHO INC.

FUEL BEHAVIOR ANALYSIS A6046

NUMBER 446160000



TOTAL PROGRAM

BUDGET	16	34	53	71	89	117	150	186	223	240	268	286
ACTUAL	10	27	58	86	107							

MATERIAL

BUDGET	3	5	8	11	14	22	39	57	74	77	85	88
ACTUAL	0	2	13	23	25							

MANPOWER

BUDGET	3	3	3	3	3	3	3	4	3	3	3	3
ACTUAL	3	4	4	4	4							

A6046

YTD VARIANCE: <18> (20%)

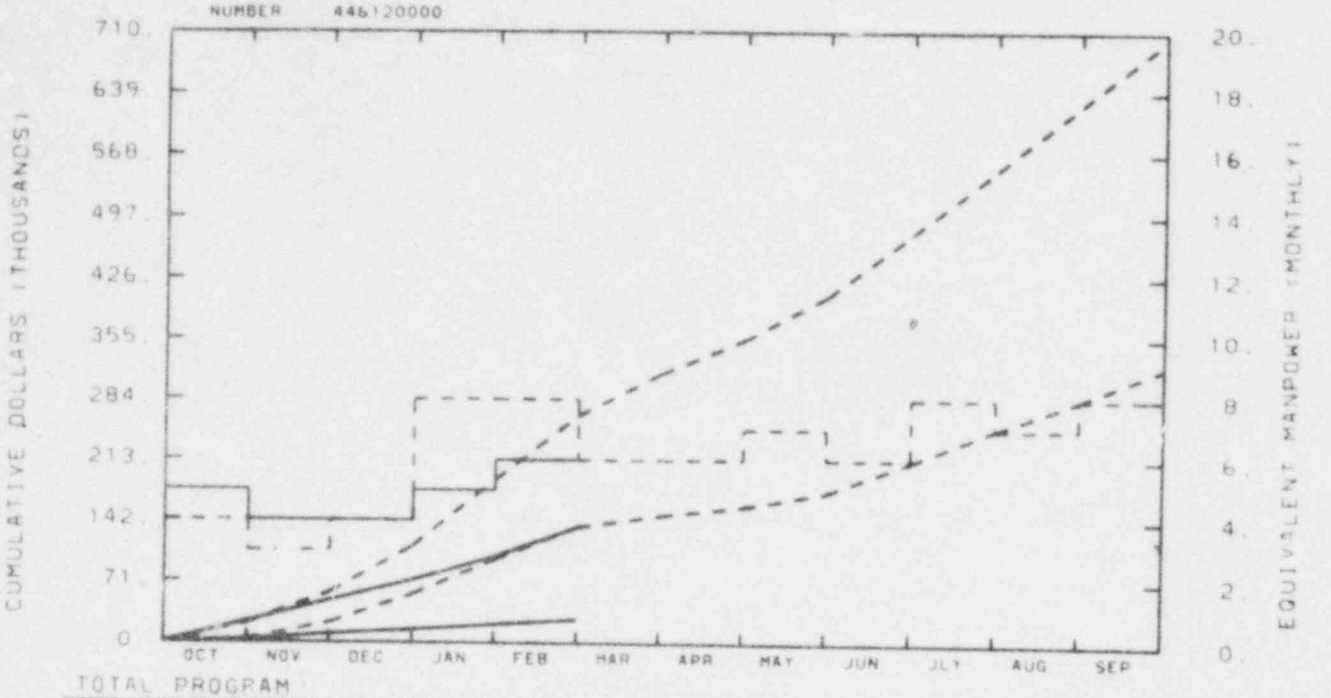
A change of scope in early December resulted in computer charges that were greater than anticipated. Future scope has been revised to allow a balanced budget by the end of FY-1981.

RESPONSIBLE
MANAGER
B. F. SAFFELL

EG&G IDAHO INC.

LOCA ANALYSIS ASSESSMENT A6047

NUMBER 446120000



TOTAL PROGRAM

BUDGET	22	58	112	189	265	314	354	406	478	551	626	701
ACTUAL	24	49	72	100	134							

MATERIAL

BUDGET	3	23	56	96	134	148	158	175	211	249	284	322
ACTUAL	3	10	15	21	27							

MANPOWER

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

BUDGET
ACTUAL

A6047

YTD VARIANCE: 131 (49%)

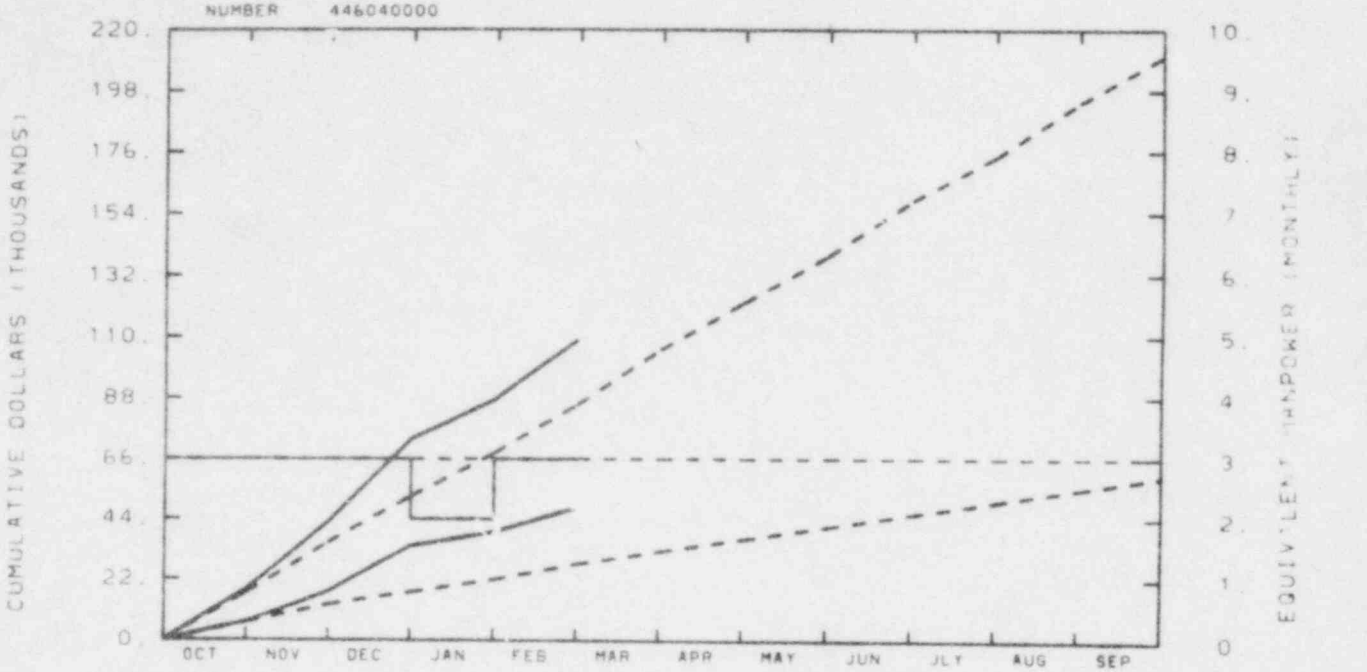
This variation is a result of the initiation of TRAC-PD2 assessment being later than budgeted. TRAC-PD2 assessment has been staffed and will be increasing, however, the material costs will continue to be less than budgeted into the second half of the fiscal year. During the second half of the fiscal year, the costs will increase so that the task will be on budget at year end.

RESPONSIBLE
MANAGER
B F SAFFELL

EG&G IDAHO INC

DATA BANK A6102

NUMBER 446040000



TOTAL PROGRAM

BUDGET	17	35	52	68	86	105	122	139	159	174	194	216
ACTUAL	18	43	73	88	109							

MATERIAL

BUDGET	6	13	17	22	28	32	37	41	46	50	55	59
ACTUAL	7	17	34	39	48							

MANPOWER

BUDGET	3	3	3	3	3	3	3	3	3	3	3	3
ACTUAL	3	3	3	2	3							

A6102

YTD VARIANCE: <23> (27%)

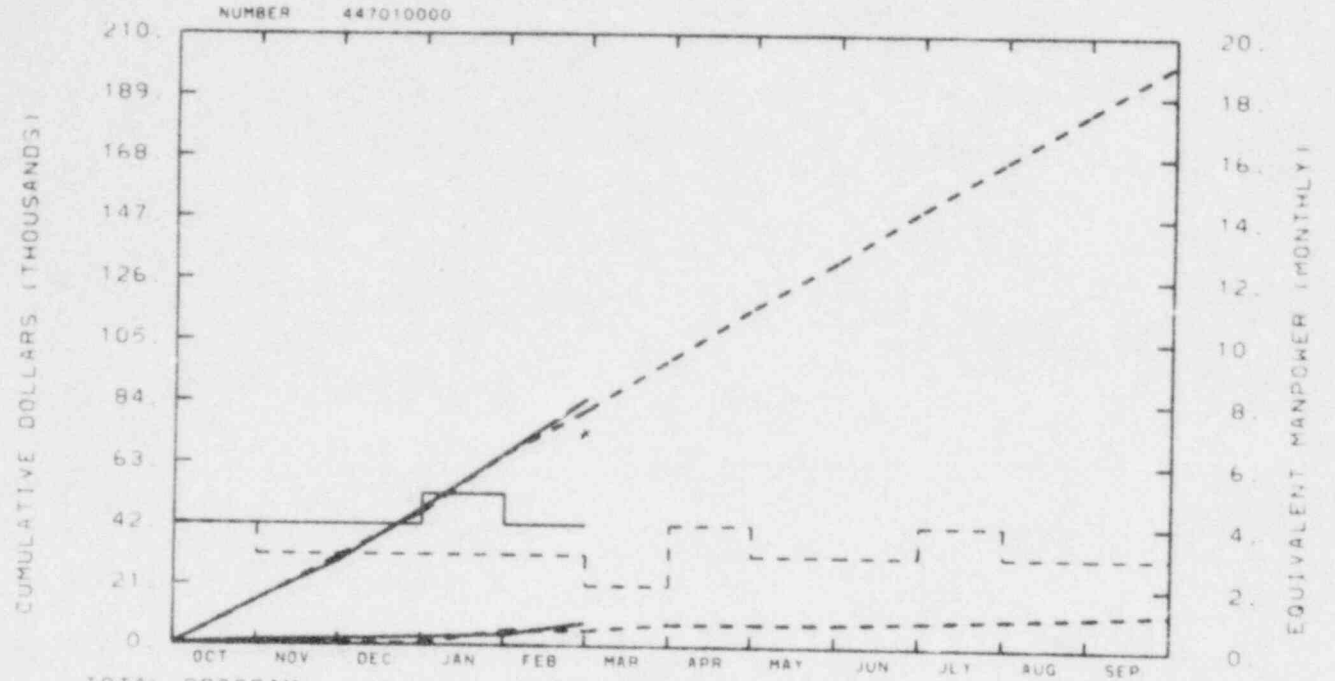
The variance is largely due to an increase in computer charges. Possible ways to resolve this problem are being evaluated. Additional funding is also expected in order to support additional data entry expenses.

SPONSIBLE
NAGER
SAFFELL

EG&G IDAHO INC.

LER FAILURE RATE A6276

NUMBER 447010000



TOTAL PROGRAM

BUDGET	15	31	46	66	81	99	116	132	150	167	184	201
ACTUAL	16	29	47	66	85							

MATERIAL

BUDGET	0	0	1	5	5	8	8	8	9	10	11	13
ACTUAL	2	2	3	4	8							

MANPOWER

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

BUDGET
- - - -
ACTUAL

A6276

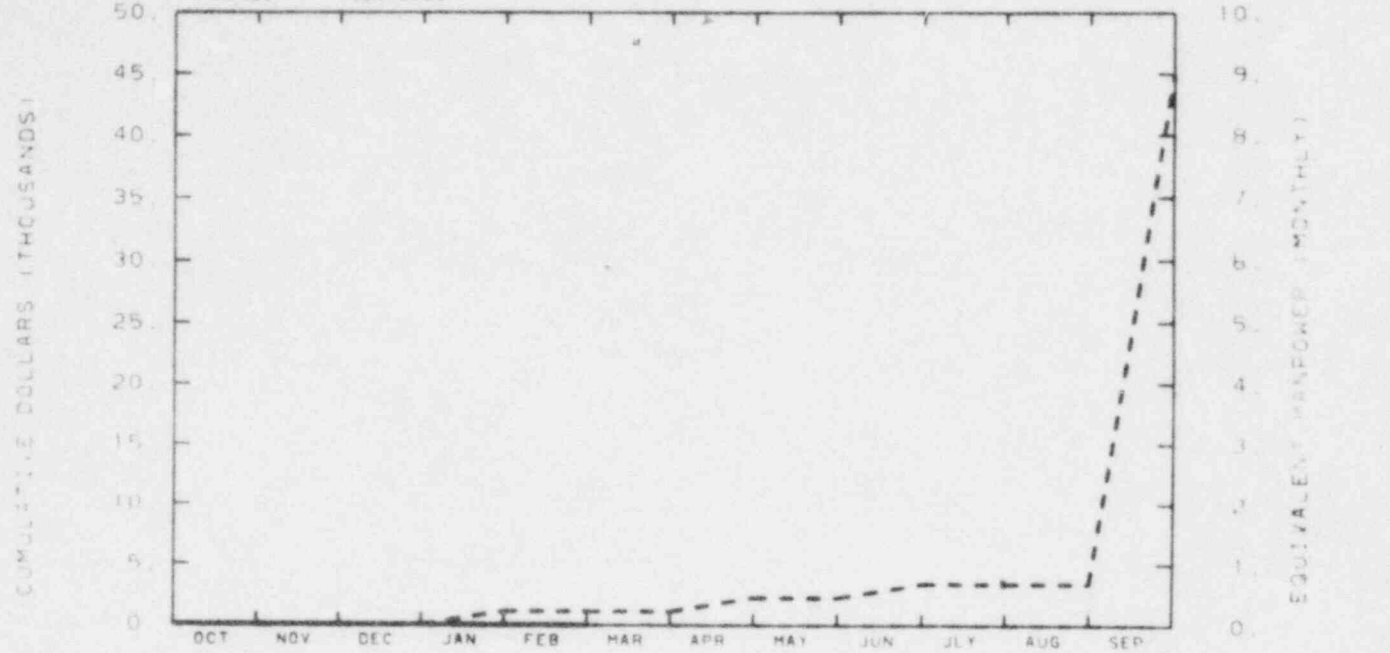
YTD VARIANCE: <4> (5%)

SPONSIBLE
NAGER
F SAFFELL

EG&G IDAHO INC.

PREP OF DOC FOR TAP A1 A6279

NUMBER 446490000



TOTAL PROGRAM

BUDGET	0	0	0	1	1	1	2	2	3	3	3	45
ACTUAL	0	0	0	0	0							

MATERIAL

BUDGET	0	0	0	1	1	1	2	2	3	3	3	15
ACTUAL	0	0	0	0	0							

BUDGET - - - - -

ACTUAL ———

MANPOWER

BUDGET	0	0	0	0	0	0	0	0	0	0	0	0
ACTUAL	0	0	0	0	0							

A6279

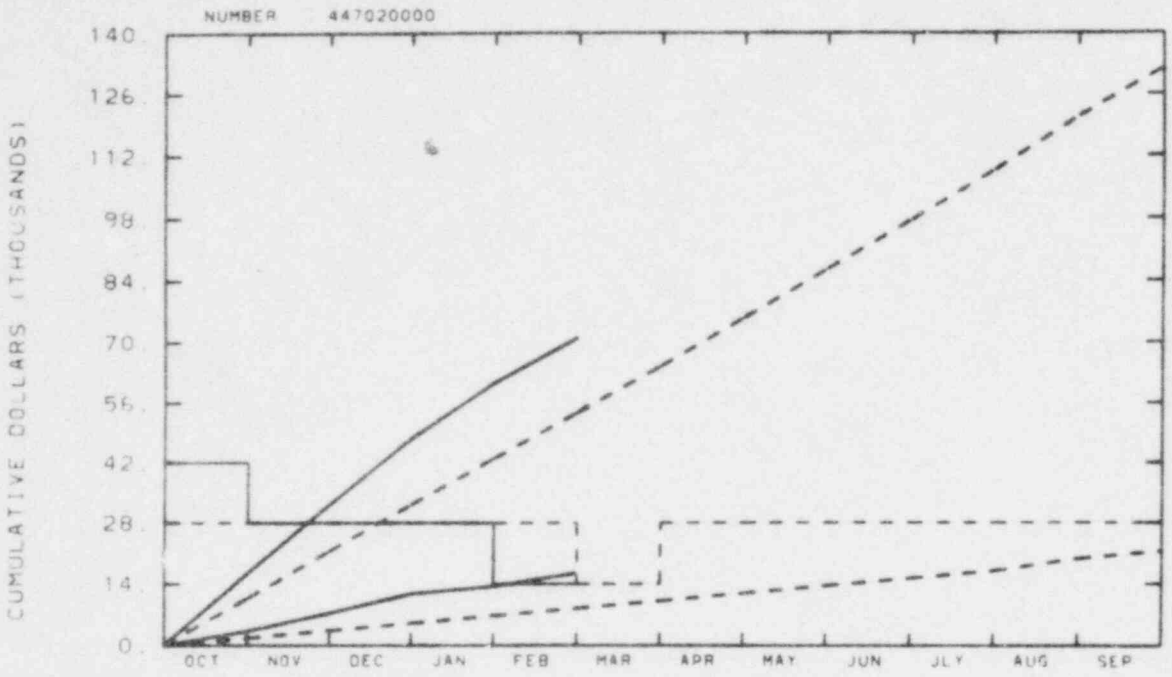
YTD VARIANCE: 1 (100%)

RESPONSIBLE
MANAGER
B F SAFFELL

EG&G IDAHO INC.

COMMON CAUSE STAT MODELING A6283

NUMBER 447020000



TOTAL PROGRAM

BUDGET	11	22	32	43	54	65	76	87	98	109	121	132
ACTUAL	17	32	48	61	71							

MATERIAL

BUDGET	2	3	5	7	8	10	12	14	15	17	20	21
ACTUAL	3	7	12	13	16							

MANPOWER

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

BUDGET
- - - -
ACTUAL

A6283

YTD VARIANCE: <17> (31%)

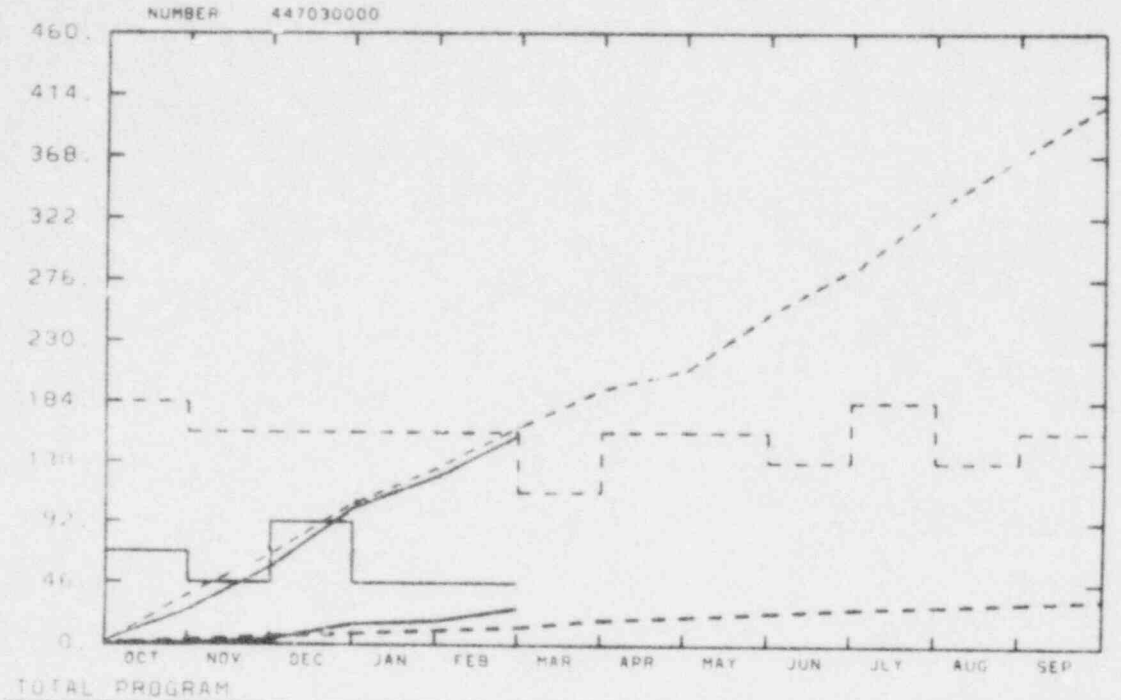
The analysis and reporting work load during the first part of the year has been heavier than anticipated. The expenditures in the last three months of FY-1981 will not be as large as budgeted. Hence, the variance will be eliminated by year end.

RESPONSIBLE MANAGER
R. F. SAFFELL

EC&G IDAHO INC.

NPRDS DATA ANALYSIS A6290 / A6293

NUMBER 447030000



TOTAL PROGRAM

BUDGET	36	73	109	130.	160	192	217	250	289	328	367	407
ACTUAL	27	53	101	126	154							

MATERIAL

BUDGET	3	6	9	11	13	19	21	24	27	30	32	35
ACTUAL	0	4	15	18	27							

MANPOWER

BUDGET	8	7	7	7	7	5	7	7	6	8	6	7
ACTUAL	3	2	4	2	2							

BUDGET - - - - -

ACTUAL ———

A6290/A6293

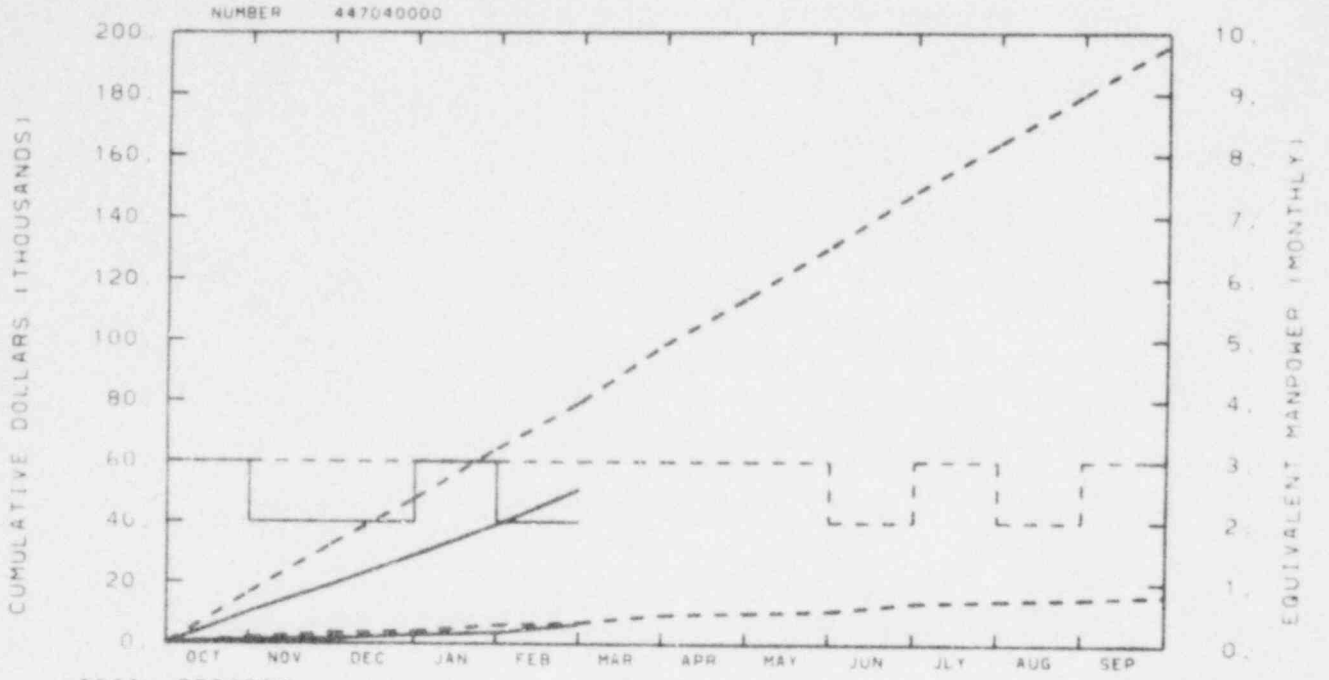
YTD VARIANCE: 6 (4%)

RESPONSIBLE MANAGER
B F SAFFELL

EG&G IDAHO INC.

LER FLAGGING ANALYSIS A6291

NUMBER 447040000



TOTAL PROGRAM

BUDGET	16	32	48	64	80	98	114	131	148	164	180	196
ACTUAL	10	19	29	39	51							

MATERIAL

BUDGET	2	3	4	6	7	9	10	11	14	14	15	16
ACTUAL	1	2	3	4	6							

MANPOWER

BUDGET	3	3	3	3	3	3	3	3	2	3	2	3
ACTUAL	3	2	2	3	2							

BUDGET - - - -

ACTUAL ———

A6291

YTD VARIANCE: 29 (36%)

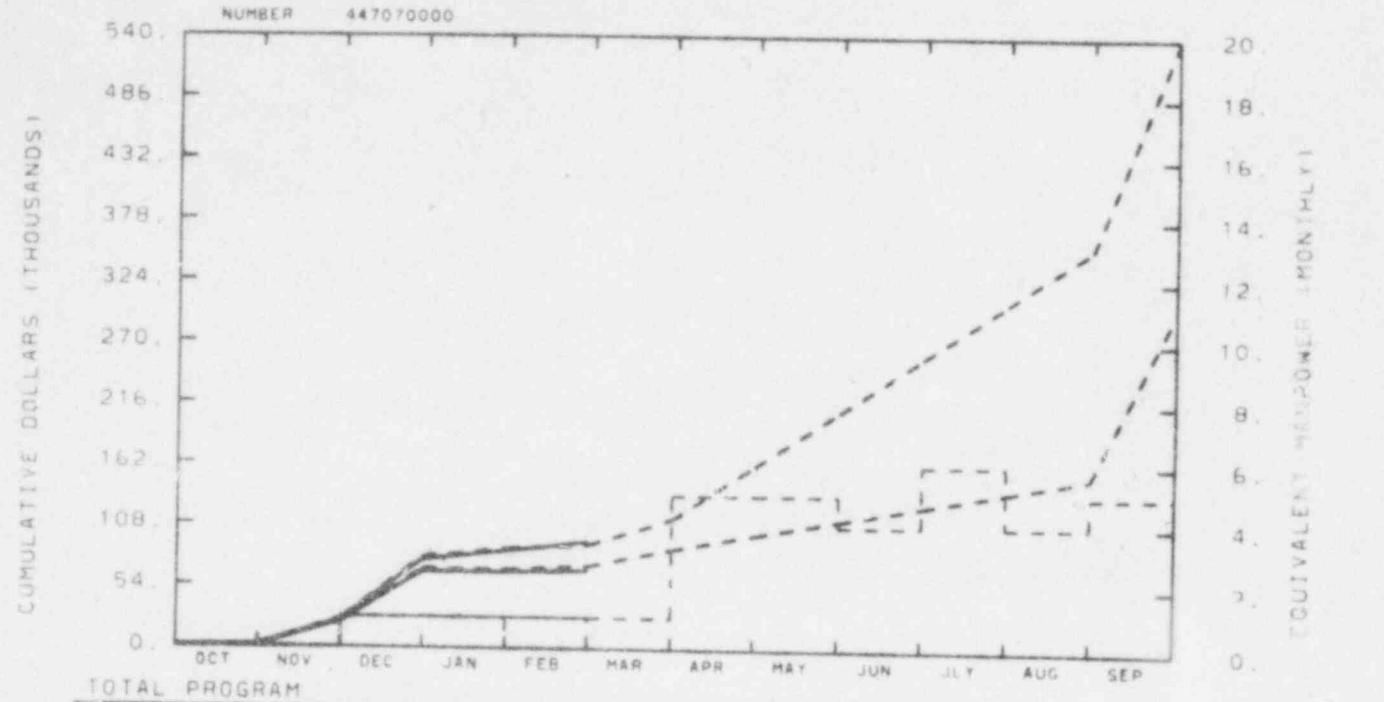
The reasons for the underrun are as follows: (1) October reflected three-man effort as result of program restructure and initial work in refinement of Quick Look Report (QLR) procedures. QLR is now two-man effort, and (2) since QLR's are quick and simple reports, the analysis effort is not as extensive as that required for the Data Evaluation Reports (DER's) to be generated in the latter part of FY-1981. At that time, expenses should rise and vary within tolerable bounds around the proposed budget.

RESPONSIBLE
MANAGER
B I SAFFELL

EG&G IDAHO INC.

PLANT STATUS MONITORING A6294

NUMBER 447070000



TOTAL PROGRAM

BUDGET	1	25	79	88	91	114	162	210	258	306	354	
ACTUAL	1	24	77	85	94							

MATERIAL

BUDGET	1	23	69	69	72	87	100	113	126	139	152	300
ACTUAL	1	22	67	67	68							

MANPOWER

BUDGET	0	0	1	1	0	1	5	5	4	6	4	5
ACTUAL	0	0	1	1	1							

A6294

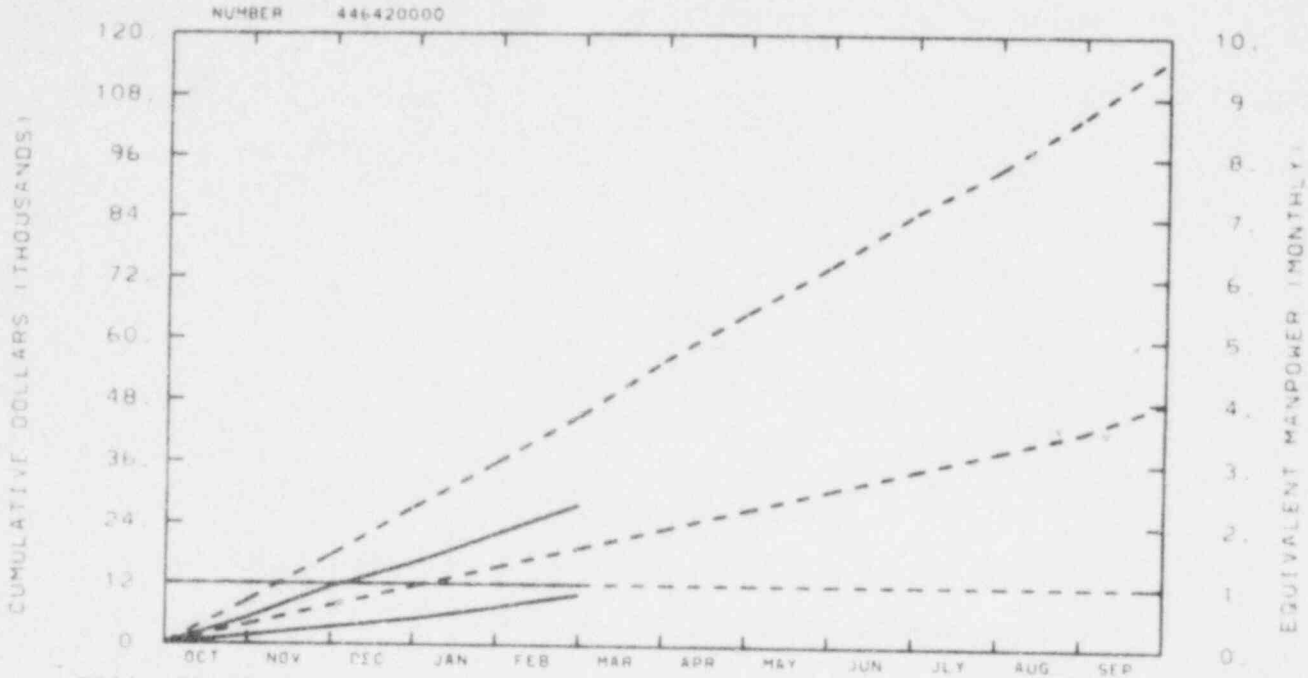
YTD VARIANCE: <3> (3%)

ESPONSIBLE
ANAGER
F SAFFELL

EG&G IDAHO INC.

RESIDENT ENGINEER - FRG A6304

NUMBER 446420000



TOTAL PROGRAM

BUDGET	9	18	27	36	45	56	65	74	85	94	104	116
ACTUAL	5	11	16	22	28							

MATERIAL

BUDGET	4	8	12	15	19	23	27	31	35	38	42	48
ACTUAL	2	3	5	7	10							

MANPOWER

BUDGET	1	1	1	1	1	1	1	1	1	1	1	1
ACTUAL	1	1	1	1	1							

BUDGET
- - - -
ACTUAL

A6304

YTD VARIANCE: 17 (38%)

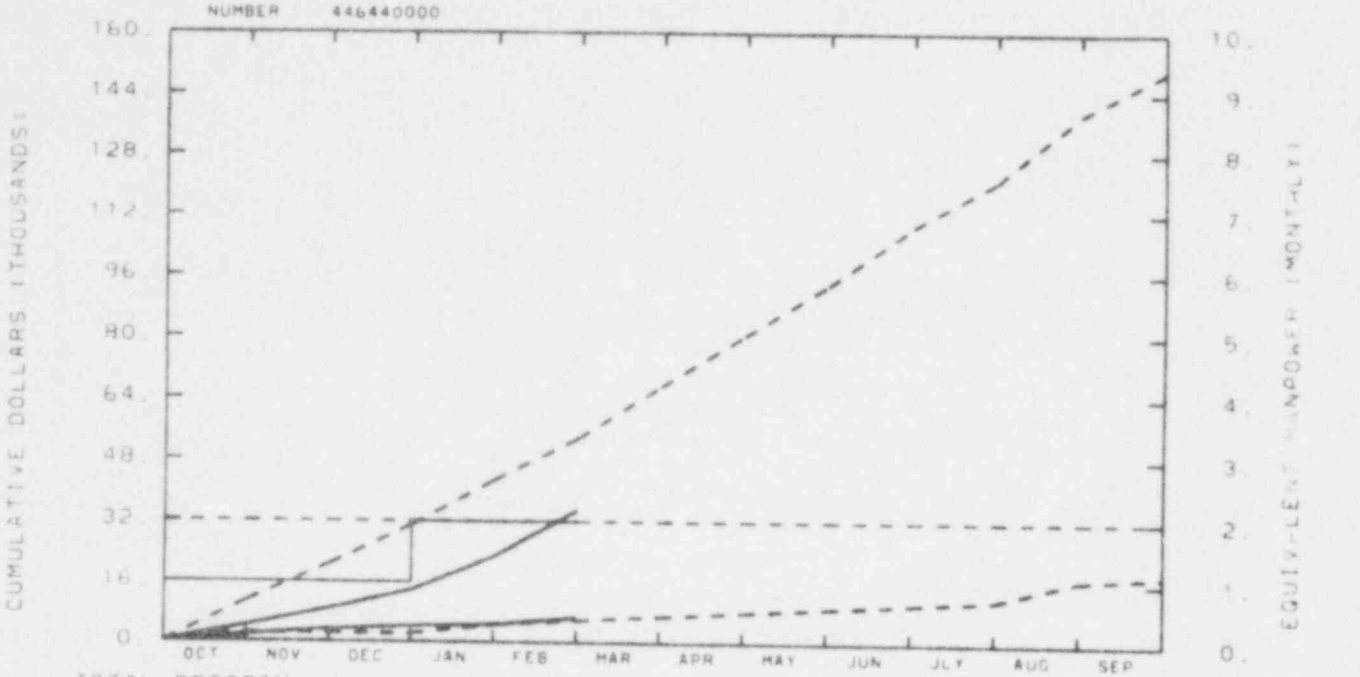
Two major trips have been postponed until later in FY-1981. Planned expenditures in the near future should bring spending within planned limits.

RESPONSIBLE
MANAGER
B F SAFFELL

EG&G IDAHO INC.

HDR EVALUATION A6306

NUMBER 446440000



TOTAL PROGRAM

BUDGET	11	21	31	43	54	67	80	94	109	121	139	150
ACTUAL	4	9	14	23	35							

MATERIAL

BUDGET	2	2	2	5	6	7	8	9	10	12	17	18
ACTUAL	2	3	4	5	7							

MANPOWER

BUDGET	2	2	2	2	2	2	2	2	2	2	2	2
ACTUAL	1	1	1	2	2							

BUDGET

ACTUAL

A6306

YTD VARIANCE: 19 (35%)

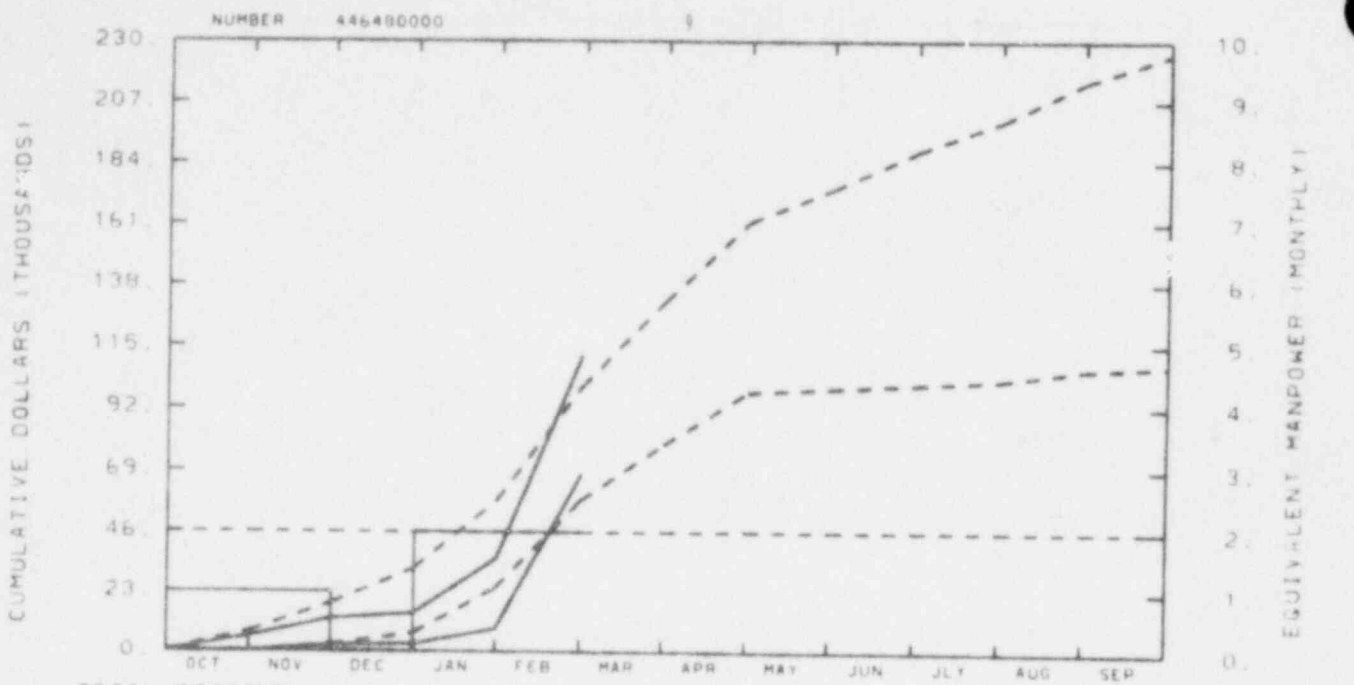
The HDR project is underspent because of unanticipated delays in obtaining input data for the containment vessel tests and flood water storage tank tests. Once the required test data is received, a concentrated effort using additional personnel will compensate this underexpenditure.

RESPONSIBLE
MANAGER
B F SAFFELL

EG&G IDAHO INC.

KUOSHENG SRV DISCHARGE A6353

NUMBER 446480000



TOTAL PROGRAM

BUDGET	8	19	32	58	100	132	162	174	188	200	215	225
ACTUAL	6	13	15	36	111							

MATERIAL

BUDGET	0	2	7	25	58	79	98	99	101	102	106	107
ACTUAL	0	2	3	9	68							

MANPOWER

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

BUDGET - - - -
ACTUAL ———

A6353

YTD VARIANCE: <11> (11%)

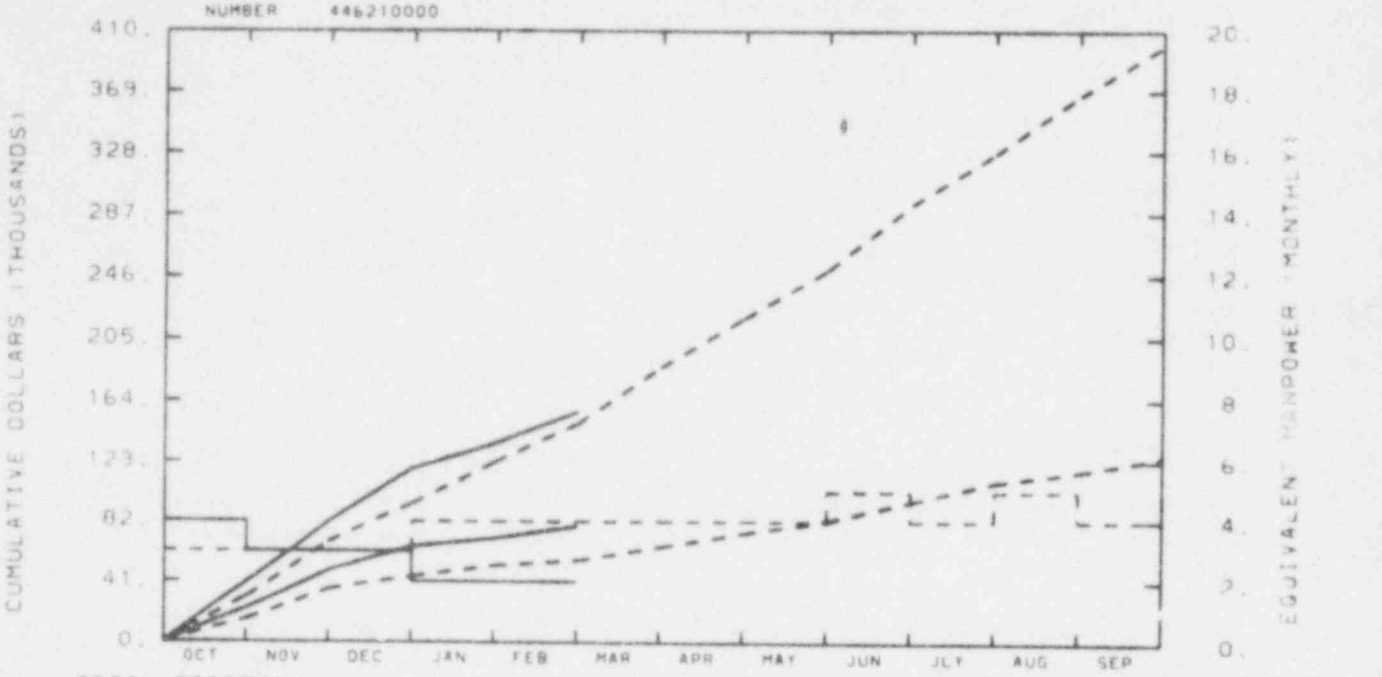
Delayed subcontract charges were billed, as well as additional manpower which created an overrun. This will level in succeeding months and costs and budget will balance.

RESPONSIBLE
MANAGER
B F SAFFELL

EG&G IDAHO INC.

SEVERE ACCIDENT SEQ ANAL A6354

NUMBER 446210000



TOTAL PROGRAM

BUDGET	30	68	94	123	149	187	219	251	294	327	366	400
ACTUAL	40	81	118	135	157							

MATERIAL

BUDGET	15	36	44	52	55	6[illegible]	74	83	96	109	116	126
ACTUAL	22	48	65	70	79							

MANPOWER

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

BUDGET

ACTUAL

A6354

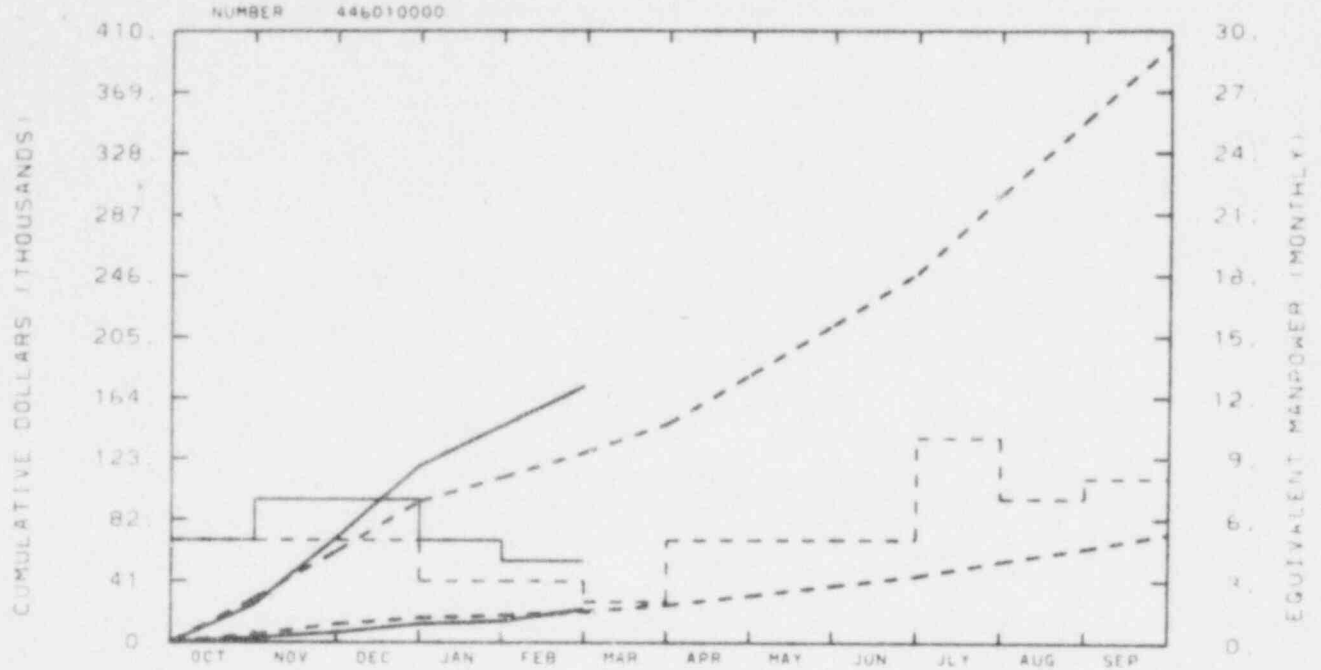
YTD VARIANCE: <3> (5%)

RESPONSIBLE
MANAGER
B F SAFFELL

EG&G IDAHO INC.

NRC RELIEF VALVE PROGRAM A6356

NUMBER 446010000



TOTAL PROGRAM

BUDGET	29	61	94	111	127	146	180	213	248	300	349	400
ACTUAL	25	70	118	145	173							

MATERIAL

BUDGET	5	12	17	18	21	25	31	38	44	54	63	72
ACTUAL	3	7	12	14	22							

MANPOWER

BUDGET	5	5	5	3	3	2	5	5	5	10	7	8
ACTUAL	5	7	7	5	4							

BUDGET
ACTUAL

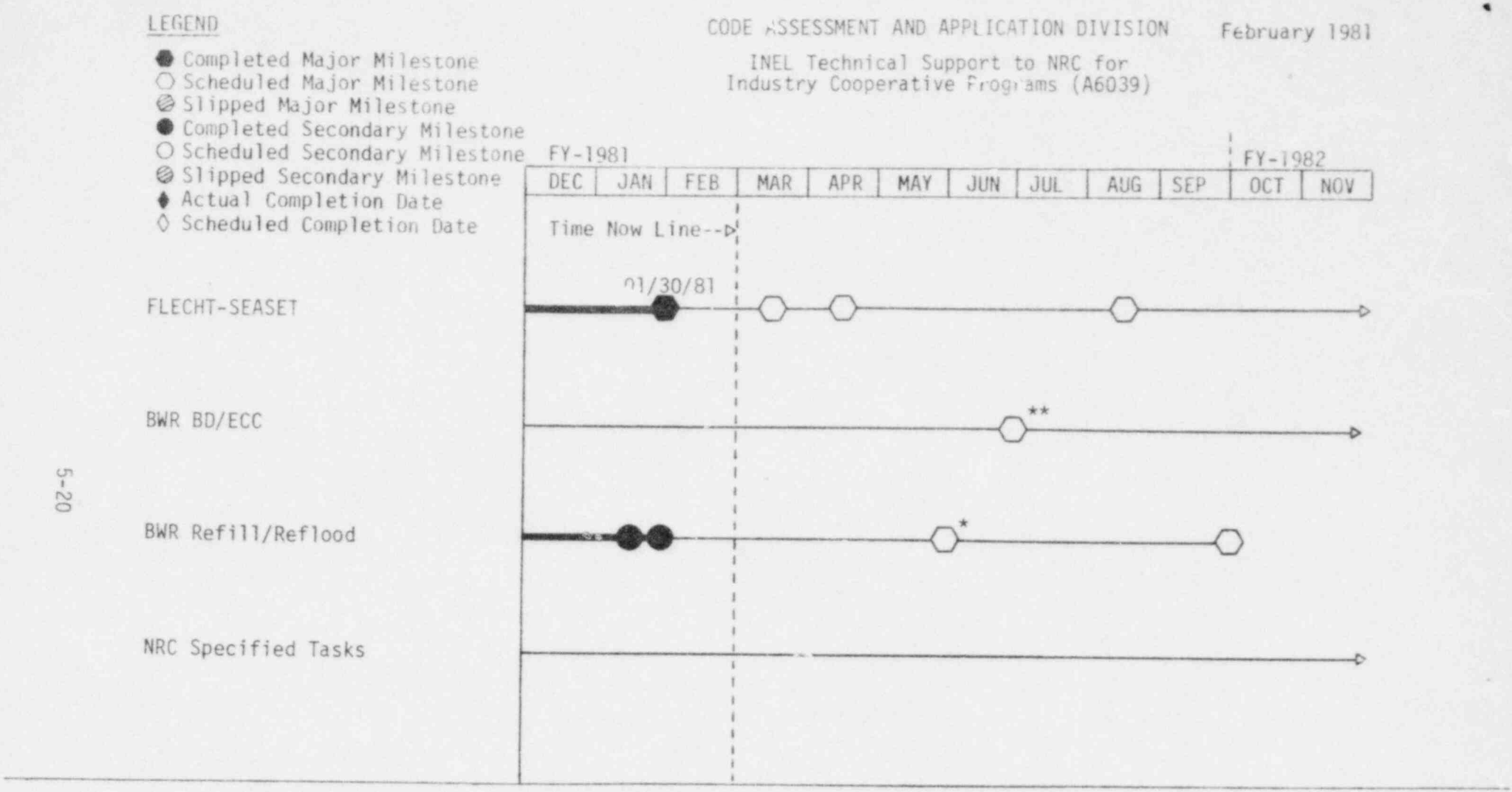
A6356

YTD VARIANCE: <46> (36%)

The accumulated costs are greater than the projected budget for the following reasons: (1) the structural code evaluation work scope expanded due to encountering unanticipated modeling limitations, which required resolution to support assembling an appropriate code package, (2) unanticipated operational problems with the structural and thermal-hydraulic codes required additional resources to resolve, (3) is was necessary to evaluate valve performance deficiencies encountered in the industry test programs. This type of work is funded later in the fiscal year. Consequently, the work is being performed earlier than anticipated, and (4) computer rates related to disc storage, tape generation, and data storage were greater than budgeted.

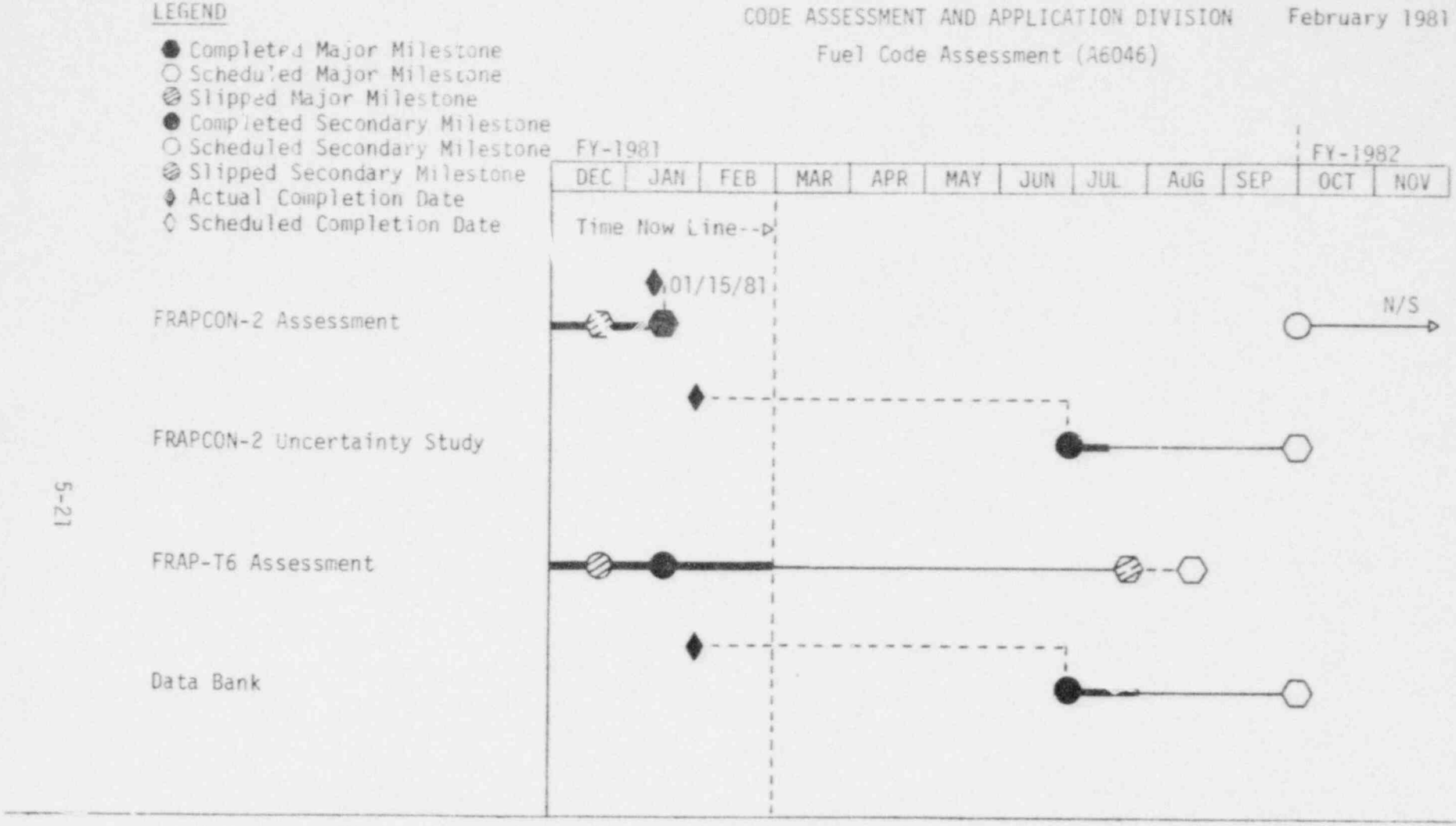
The current budget reflects an anticipated increased spending rate starting in April with a second increase in spending rate in July. It is anticipated that the increase magnitudes will be less than budgeted due to anticipated delays in utility PWR submittals to the NRC and to delays in submittal of industry test data to the NRC for code evaluation purposes. Consequently, the anticipated reduced spending rates later in the fiscal year will compensate for the current budget overrun. Rebudgeting will be implemented as work scope changes, in process, are defined by the NRC.

CODE ASSESSMENT AND APPLICATION DIVISION
CURRENT WORKING SCHEDULE

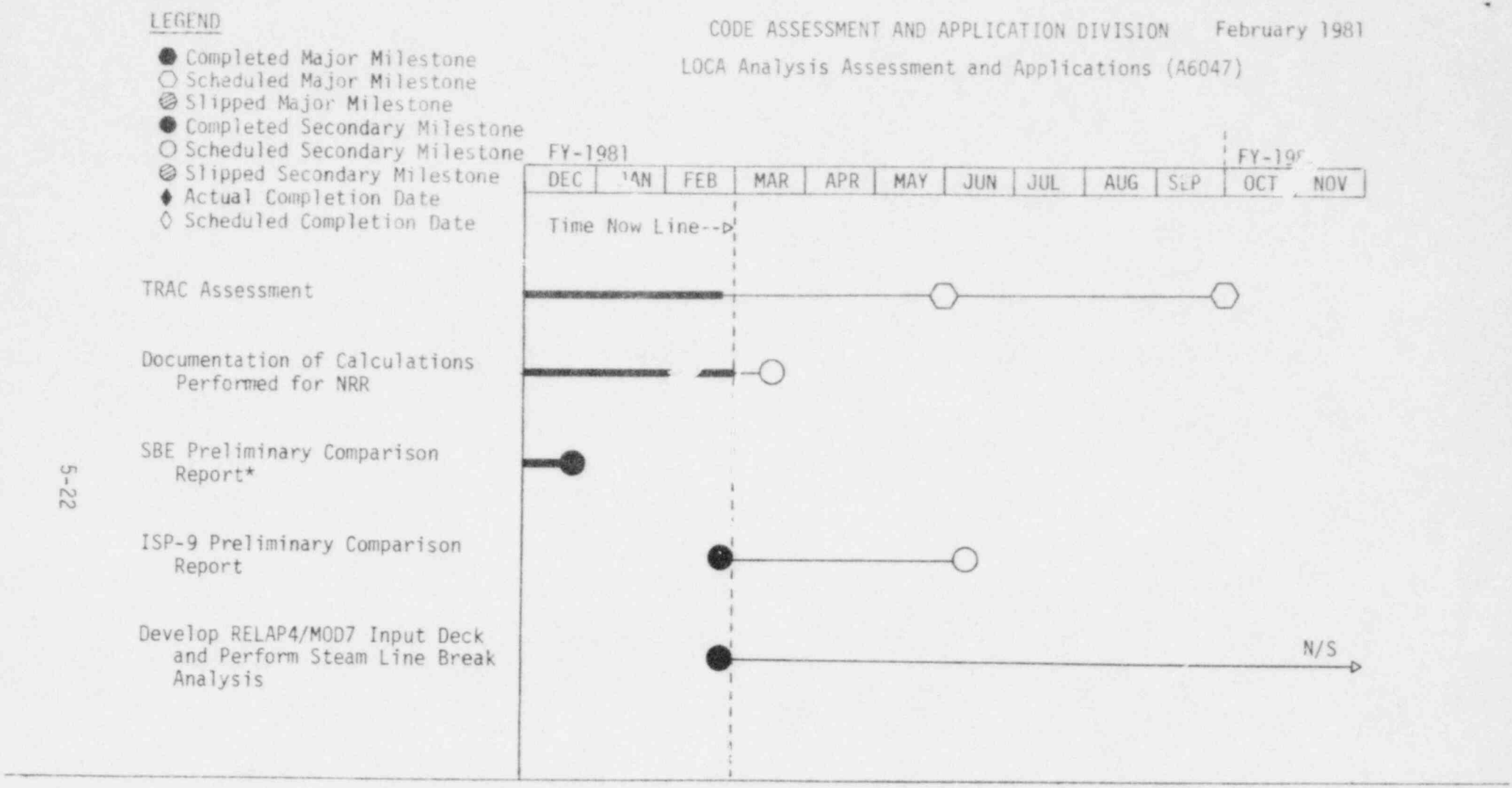


NOTES:
* Problems remain with the second set of data tapes issued by the experimenter. A third issue will be required which results in the indicated reschedule.

** The delay in the BWR Refill/Reflood tasks, because of the data tapes, has required the reschedule shown here.


LEGEND
Completed Major Milestone
Scheduled Major Milestone
Slipped Major Milestone
Completed Secondary Milestone
Scheduled Secondary Milestone
Slipped Secondary Milestone
Actual Completion Date
Scheduled Completion Date
CODE ASSESSMENT AND APPLICATION DIVISION
February 1981
Fuel Code Assessment (A6046)
FY-1981
FY-1982
DEC
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
OCT
NOV
Time Now Line--
01/15/81
N/S
FRAPCON-2 Assessment
FRAPCON-2 Uncertainty Study
FRAP-T6 Assessment
Data Bank

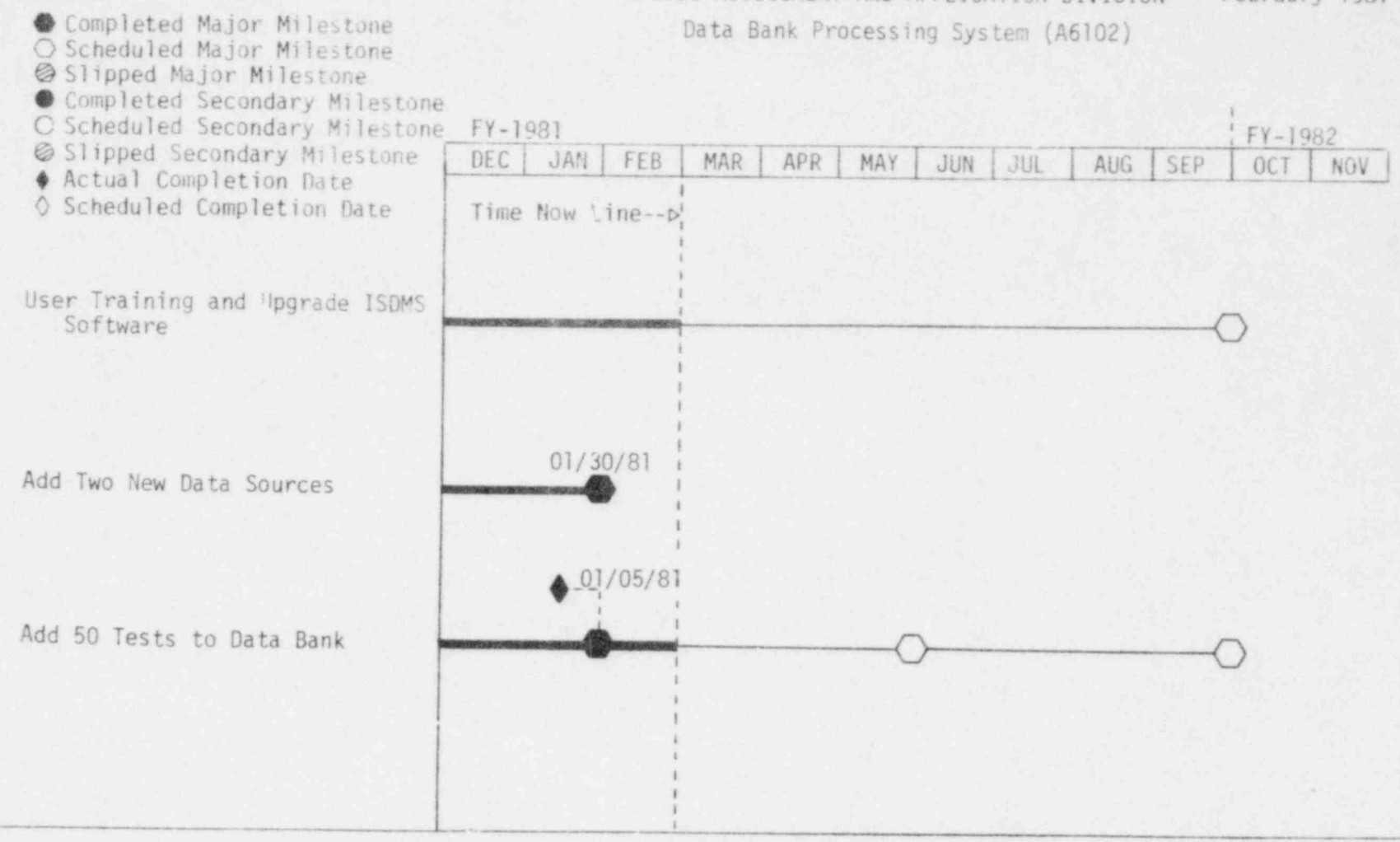
NOTES:



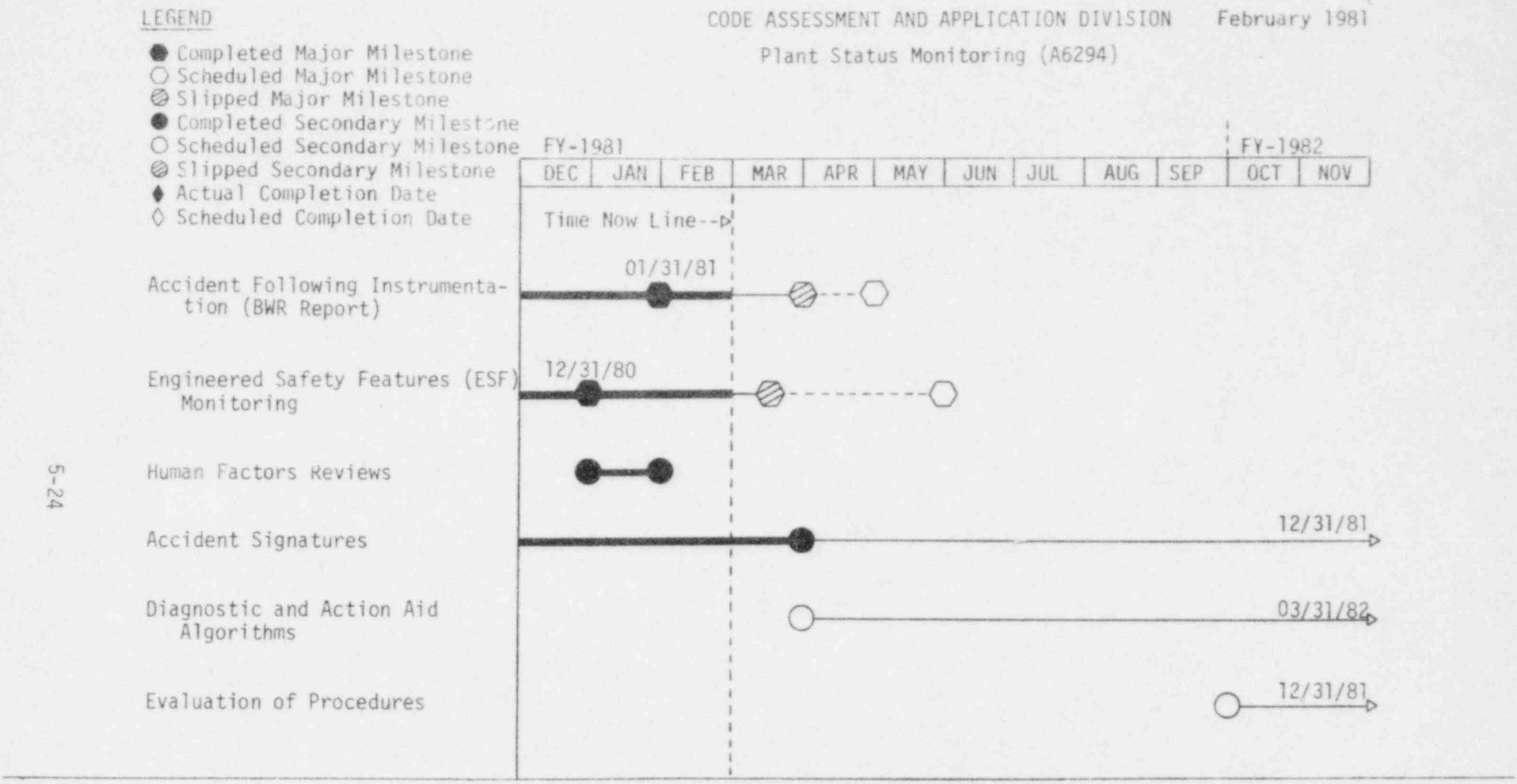
NOTES: * An NRC letter was received directing that this task be completed in A6047 instead of A6048B.

CODE ASSESSMENT AND APPLICATION DIVISION February 1981

Data Bank Processing System (A6102)



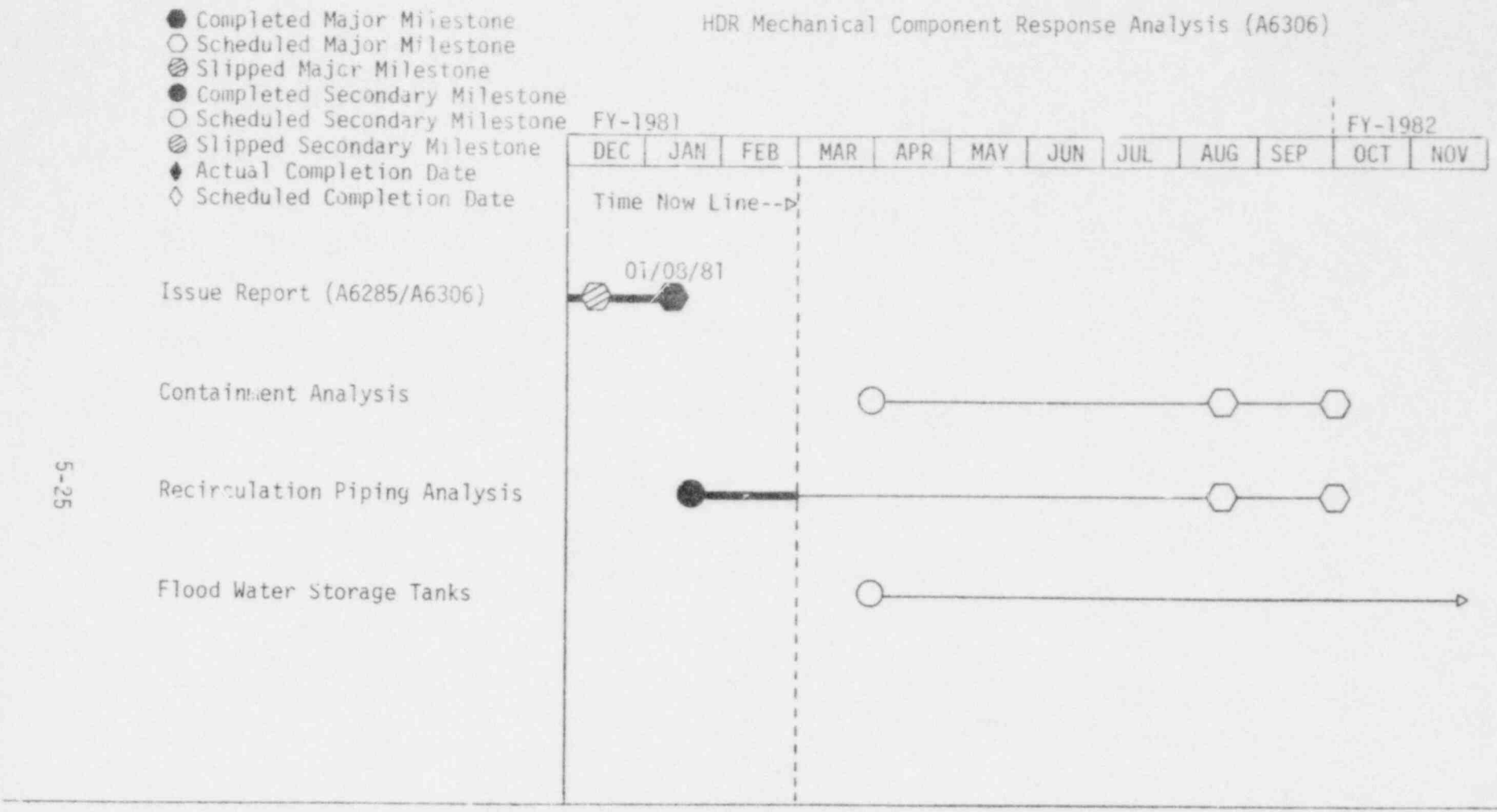
NOTES:


LEGEND
Completed Major Milestone
Scheduled Major Milestone
Slipped Major Milestone
Completed Secondary Milestone
Scheduled Secondary Milestone
Slipped Secondary Milestone
Actual Completion Date
Scheduled Completion Date
CODE ASSESSMENT AND APPLICATION DIVISION February 1981
Plant Status Monitoring (A6294)
FY-1981
FY-1982
DEC
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
OCT
NOV
Time Now Line--
Accident Following Instrumentation (BWR Report)
01/31/81
Engineered Safety Features (ESF) Monitoring
12/31/80
Human Factors Reviews
Accident Signatures
12/31/81
Diagnostic and Action Aid Algorithms
03/31/82
Evaluation of Procedures
12/31/81

NOTES:

CODE ASSESSMENT AND APPLICATION DIVISION February 1981

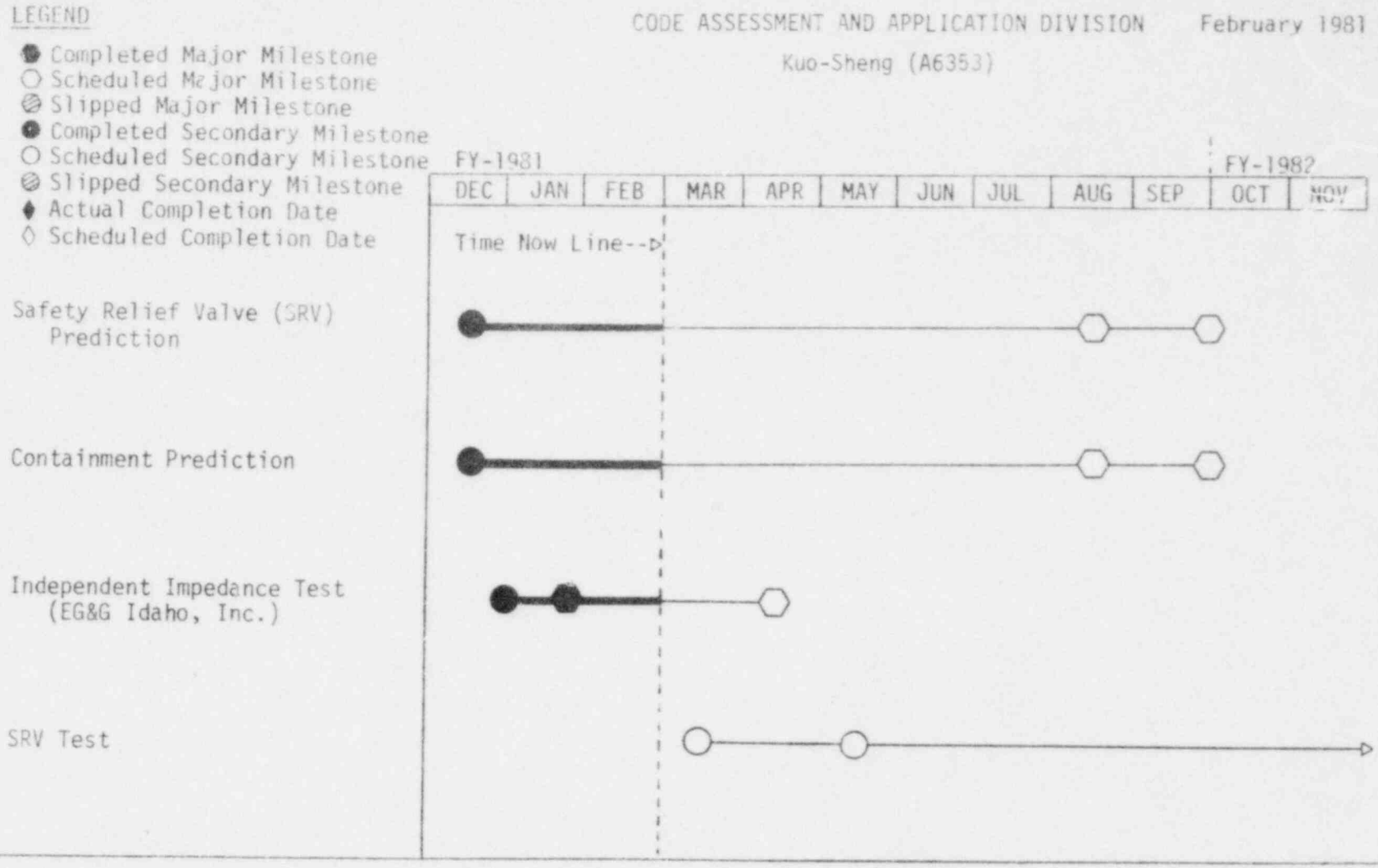
HDR Mechanical Component Response Analysis (A6306)



NOTES: All nodes are subject to change based on HDR's schedule.

CODE ASSESSMENT AND APPLICATION DIVISION February 1981

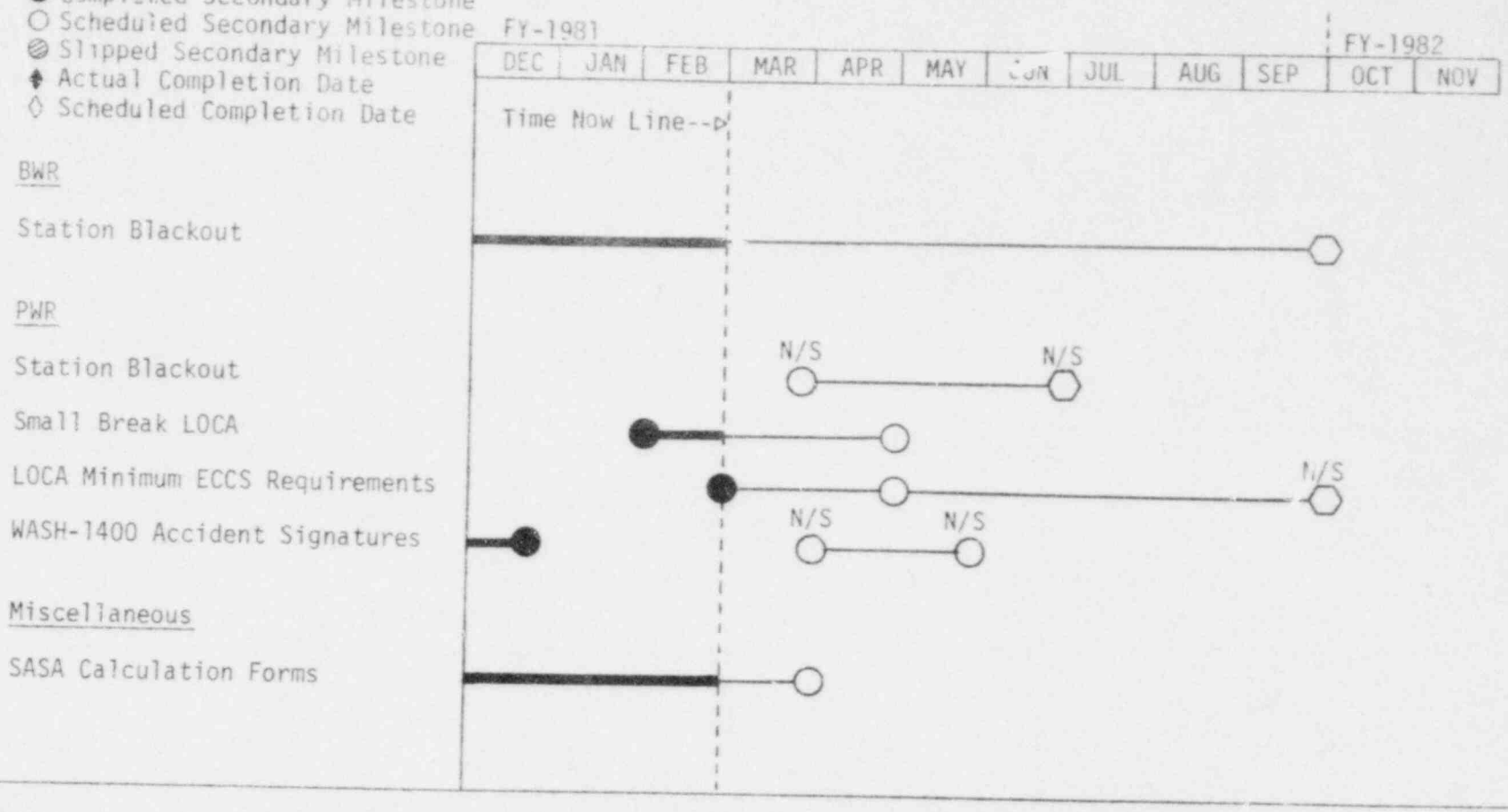
Kuo-Sheng (A6353)



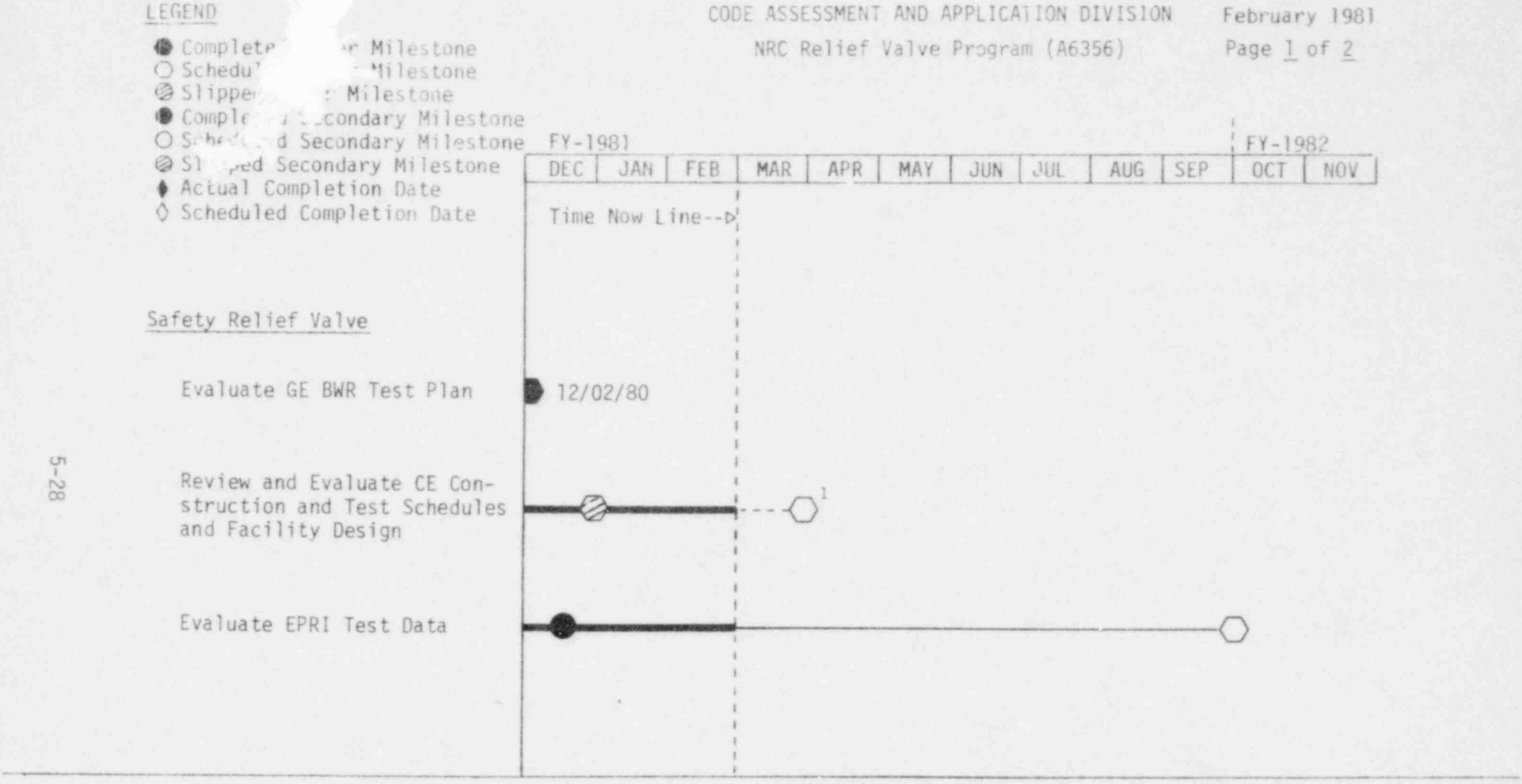
NOTES: All nodes are subject to change based on Tai Power's schedule.

CODE ASSESSMENT AND APPLICATION DIVISION February 1981

Severe Accident Sequence Analysis (A6354)



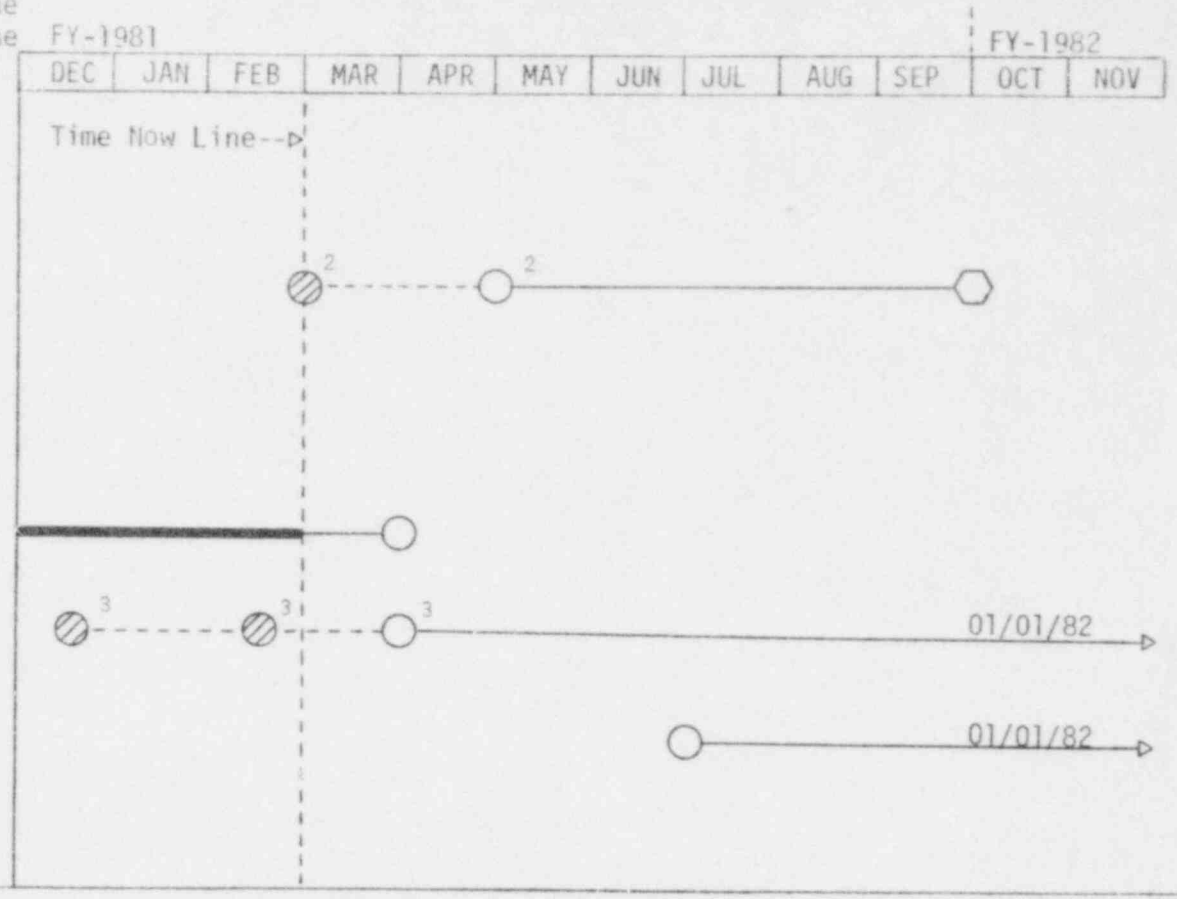
NOTES: This schedule may be revised in the future to reflect assignments made at the Severe Accident Sequence Analysis (SASA) Program review meetings.



NOTES: [1] Completion date depends on date construction, test, and design information is received from EPRI and Combustion Engineering (CE). The milestone completion date has slipped pending a facility design review meeting to be arranged by EPRI.

LEGEND

- ● Completed Major Milestone
- ○ Scheduled Major Milestone
- ▨ Slipped Major Milestone
- ● Completed Secondary Milestone
- ○ Scheduled Secondary Milestone
- ▨ Slipped Secondary Milestone
- ♦ Actual Completion Date
- ◊ Scheduled Completion Date



NOTES: [2] Start date will depend upon the date EPRI or GE will transmit the data to NRC/EG&G. The start date has changed since no EPRI or GE test data has been received.

[3] Start date will depend upon receiving requested check valve blowdown data from HDR.

CODE ASSESSMENT AND APPLICATION DIVISION

TECHNICAL REVIEW & SUMMARY

PROGRAM MANAGER'S

SUMMARY AND HIGHLIGHTS

The report documenting natural circulation cooldown calculations in Combustion Engineering (CE), Babcock & Wilcox (B&W), and Westinghouse pressurized water reactors was issued. A report documenting the data analysis of a one/sixth scaled jet pump test was completed.

The third Interim Reliability Evaluation Program status report was issued to Sandia.

Issued Quick Look Report on Control Rod Drive Mechanisms (A6291).

Kuosheng impedance testing was completed (A6353).

1. 189a A6039 - INEL Technical Support to NRC for Industry Cooperative Programs

2. Scheduled Milestones for February 1981

Node	Description	Due Date	Actual Date
BB11	INEL One-Sixth Scale Jet Pump Data Analysis (EGG-CAAD-5357)	Unscheduled	2/23/81C Saff-21-81

3. Summary of Work Performed in February 1981

The single heated bundle (SHB) program evaluation study continued to mid-month. Because access to the required experimental data has not been effected, this task is temporarily suspended (see Item 6).

The long term and unscheduled evaluation of the one-sixth scale jet pump data base was completed (see Item 2).

The boiling water reactor (BWR) blowdown study, with and without emergency core coolant (ECC), was initiated. Recommendations for the independent assessment of TRAC-BD1 were issued internally to EG&G for review. Subsequent to review, these will be made available to the BWR-Refill/Reflood program.

Evaluation of the FLECHT-SEASET system reflood system continued. The use of RELAP5 in the evaluation was terminated due to code problems. A calculation of the reference test was performed with RELAP4.

A draft of the FLECHT-SEASET COBRA model evaluation report was written. The report is on schedule and will complete the node listed in Item 4.

Personnel attended the FLECHT-SEASET Program Management Group meeting in Pittsburgh.

4. Scheduled Milestones for March 1981

Node	Description	Due Date	Actual Date
BB8	FLECHT-SEASET COBRA Model Evaluation Study	3/16/81E	

5. Summary of Work to be Performed in March 1981

The BWR blowdown study will continue. If received as scheduled, the 30 degree sector steam test facility (SSTF) description document will be reviewed. EG&G personnel will participate in the BWR program management meetings and the A6039 mid-year review.

The FLECHT-SEASET COBRA model evaluation study report will be issued. RELAP4 calculations of several tests from the FLECHT-SEASET system reflood task will be performed as part of the evaluation study.

6. Problems and Potential Problems

Receipt of adequate data tapes for Idaho National Engineering Laboratory (INEL) evaluation of SHB program study have been delayed at least five months. Completion of the evaluation by 6/30/81 may now require significant reduction in the scope of the evaluation.

1. 189a Task A6046 - Fuel Behavior Analysis Assessment

2. Scheduled Milestones for February 1981

None.

3. Summary of Work Performed in February 1981

Preparations for FRAP-T6 assessment are well underway. Input decks have been added to the Critical Heat Flux (CHF) onset and ramp overpower categories. A new category, transient fission gas release, has been added to the data base. FRAP-T5 and FRAPCON-1 decks for the CHF onset, ramp overpower, reactor shutdown, and power oscillation categories are in the final stages of being converted to FRAP-T6 and FRAPCON-2 format, respectively. The commercial rod studies which examine FRAP-T6 calculations for hypothetical 7 x 7 and 15 x 15 rods, are about complete. The tape link between FRAPCON-2 and FRAP-T6 was found to be inoperable and the code developers are in the process of correcting the problem.

Work on the fuels data base is underway. Known errors are being corrected, the output format is beig upgraded and clarified and a user's manual is being prepared. The input decks for the FRAPCON-2 uncertainty study have been assembled and are being debugged.

4. Scheduled Milestones for March 1981

None.

5. Summary of Work to be Performed in March 1981

For the FRAP-T6 assessment effort, assembling the FRAP-T6 input decks will be completed, and running of the decks will be initiated. The commercial rod study will be completed soon after the FRAPCON-2/FRAP-T6 tape link problem is resolved. Work on upgrading the fuels data bank will continue as will the FRAPCON-2 uncertainty study.

6. Problems and Potential Problems

None.

1. 189a A6047 - LOCA Analysis Assessment and Applications

2. Scheduled Milestones for February 1981

None.

3. Summary of Work Performed in February 1981

The version of TRAC-PD2 on the INEL system was updated to TRAC-PD2/MOD1 and this update was checked out.

The assessment of TRAC-PD2 was reinitiated using TRAC-PD2/MOD1. The calculations initiated were for Semiscale Mod-1 Tests S-04-6 and S-28-1 and Semiscale Mod-3 test S-07-4.

A report documenting natural circulation cooldown calculations using RELAP4/MOD7 for CE, B&W and Westinghouse pressurized water reactors (PWR) was issued.

4. Scheduled Milestones for March 1981

Node	Description	Due Date	Actual Date
DD11	Documentation of Analysis for NRR	3-15-81T	

5. Summary of Work to be Performed in March 1981

The TRAC-PD2/MOD1 assessment calculation for Test S-04-6 will be completed.

The TRAC-PD2/MOD1 assessment calculation for Tests S-07-4 and S-28-1 will continue.

A report documenting noding and model sensitivity investigations for RELAP4/MOD7 will be issued.

6. Problems and Potential Problems

None.

1. 189a A6102 - Data Bank Processing System

2. Scheduled Milestones for February 1981

None.

3. Summary of Work Performed in February 1981

New data added in February include tests from Loss of Fluid Test (LOFT)(1), Semiscale(1), Oak Ridge National Laboratory (ORNL)-Thermal Hydraulic Test Facility (THTF)(6), and General Electric (GE)-Two Loop Test Facility (TLTA)(1). A request to use the Data Bank has been received from Yankee Atomic.

A letter was issued which identified the minimal amount of information that must accompany a data tape in order for that tape to be interpreted and the data added to the Data Bank.

An outline for the Data Bank mid-year review presentation and related slides was completed. The Data Bank Users Manual draft with corrections was resubmitted to typing.

Data Bank Flyer #5, identifying recent Data Bank additions, was issued. An update to Data Bank documentation was sent to those offsite persons that had expressed interest in the Data Bank. A letter introducing the Data Bank was sent to 15 schools that have well established Nuclear Engineering departments.

4. Scheduled Milestones for March 1981

None.

5. Summary of Work to be Performed in March 1981

Data Bank mid-year review will be presented in Washington, D.C. Work on the user manual and data addition to the Data Bank will continue.

6. Problems and Potential Problems

None.

1. A6276 Licensee Event Report (LER) Failure Rate Analysis

2. Scheduled Milestones for February 1981

None.

3. Summary of Work Performed in February 1981

Continued preparation of Instrumentation and Controls (I&C) draft report. Continued preparation of 1972-1980 LER pump report.

4. Scheduled Milestones for March 1981

None.

5. Summary of Work to be Performed in March 1981

Continue work on I&C and pump reports.

6. Problems and Potential Problems

None.

1. 189a Task A6279 - Preparation of Documents for TAP A-1

2. Scheduled Milestones for February 1981

   None.

3. Summary of Work Performed in February 1981

   No activity.

4. Scheduled Milestones for March 1981

   None.

5. Summary of Work to be Performed in March 1981

   No activity scheduled.

6. Problems and Potential Problems

   None.

1. A6283 Common Cause Data Analysis

2. Scheduled Milestones for February 1981

None.

3. Summary of Work Performed in February 1981

Diesel report typed. Valve work continued. Initiated work to improve method for testing homogeniety.

4. Scheduled Milestones for March 1981

None.

5. Summary of Work to be Performed in March 1981

Continue work on valves and on a method for testing homogeneity.

6. Problems and Potential Problems

None.

1. A6290/A6293 Nuclear Plant Reliability Data System (NPRDS) Data Analysis

2. Scheduled Milestones for February 1981

   None.

3. Summary of Work Performed in February 1981

   Continued development of an interim prescription for computing failure rate bounds. Continued work on a five-year plan for a systematic reliability/risk analysis network. Awarded contracts for obtaining plant-specific failure rates and for improving the code described in NUREG/CR-1110 (GAMMA code).

4. Scheduled Milestones for March 1981

   None.

5. Summary of Work to be Performed in March 1981

   Continue work on an interim prescription for bounding failure rates, and on a five-year plan for a systematic analysis network. Monitor work on GAMMA code and on plant-specific failure rate estimation.

6. Problems and Potential Problems

   None.

1. A6291 LER Flagging Analysis

2. Scheduled Milestones for February 1981

Node	Description	Due Date	Actual Date
K34	CRDM Quick Look Report	1/30/80E	2/4/81C Saff-17-81

3. Summary of Work Performed in February 1981

Completed and issued Control Rod Drive Mechanism (CRDM) Quick Look Report (QLR).

4. Scheduled Milestones for March 1981

None.

5. Summary of Work to be Performed in March 1981

Assist in completion of I&C NUREG report. Begin I&C Quick Look Report.

6. Problems and Potential Problems

None.

1. 189a Task A6294 - Plant Status Monitoring

2. Scheduled Milestones for February 1981

None.

3. Summary of Work Performed in February 1981

Work concentrated on preparation of a draft report, "Boiling Water Reactor Status Monitoring During Accident Conditions". This report is presently undergoing review prior to final issue as a NUREG. Commenced negotiating scope of work with Wood, Leaver and Associates for continuation of Plant Status Monitoring work. Descriptions were prepared of 8 BWR accident sequences and sent to ORNL.

4. Scheduled Milestones for March 1981

Node	Description	Due Date	Actual Date
S12-2	Engineered Safety Features	3/31/81T	

5. Summary of Work to be Performed in March 1981

It is anticipated that a contract will be in place with Wood, Leaver and Associates by mid-March. The proposed work scope will include providing operator action event trees and accident sequence descriptions, applicable parameters, etc. which EG&G can use to develop decision making algorithms and accident signatures. A status report will be prepared summarizing accident signature work to date.

A mid-year review presentation will be made to NRC.

6. Problems and Potential Problems

None.

1. 189a Task A6296 - Interim Reliability Evaluation Program (IREP)

2. Scheduled Milestones for February 1981

Node	Description	Due Date	Actual Date
	IREP Task 22, Third Status Rpt	2-27-81E	2-27-81C JET-3-81

3. Summary of Work Performed in February 1981

Completed Browns Ferry (BF) support system fault trees.

Met with Quality Assurance (QA) team and Tennessee Valley Authority (TVA) to discuss 2nd IREP status report comments.

Issued 3rd IREP status report.

4. Scheduled Milestones for March 1981

None.

5. Summary of Work to be Performed in March 1981

Presentation to NRC and utilities March 5 in Washington.

Meet with TVA in Knoxville, Tennessee and visit BF plant.

Assign IREP fault event failure data.

Incorporate all comments into BF event trees and fault trees.

6. Problems and Potential Problems

None.

1. 189a Task A6306 - Heiss Dampf Reaktor (HDR) Mechanical Component Response Analysis Testing

2. Scheduled Milestones for February 1981

None.

3. Summary of Work Performed in February 1981

The NUPIPE model was reviewed for accuracy and mass corrections were made to the ANSYS model. The ANSYS model was installed on the Idaho National Engineering Laboratory (INEL) Control Data Corporation (CDC) computer and a check run was made and measured data acceleration time histories were plotted.

4. Scheduled Milestones for March 1981

None.

5. Summary of Work to be Performed in March 1981

The ANSYS model of the recirculation piping will be run with corrected masses, smaller time steps, and different damping in an attempt to resolve questions posed in the HDR interim recirculation piping study report.

6. Problems and Potential Problems

None.

1. 189a Task A6353 - Kuosheng Safety Relief Valve (SRV) Discharge and Piping Vibrational Tests

2. Scheduled Milestones for February 1981

None.

3. Summary of Work Performed in February 1981

EG&G/TRANSITEK Impedance Testing - Impedance testing was completed at the end of January. Sample data brought back by EG&G personnel was reviewed. TRANSITEK is performing an analysis of the test data; a preliminary report will be available by March 15.

Safety Relief Valve (SRV) Discharge Tests - Additional containment and piping drawings were received from Bechtel. Changes in SRV (V8) piping configuration were incorporated into the NUPIPE code geometric model based on the newly received drawings. Work was started on building a piping model for the SAP-IV computer code using NUPIPE geometry. A containment analysis technique was studied for SRV discharge simulation.

4. Scheduled Milestones for March 1981

None.

5. Summary of Work to be Performed in March 1981

The preliminary test report for impedance testing will be reviewed when received from TRANSITEK. Additional details on the containment and piping structures will be obtained. Studying and modeling the containment and SRV piping will continue as will preparations for a trip to Taiwan in April.

6. Problems and Potential Problems

None.

1. 189a Task A6354 - Severe Accident Sequence Analysis Program (SASA)

2. Scheduled Milestones for February 1981

None.

3. Summary of Work Performed in February 1981

Calculations of the Zion PWR response for a small break initiated accident are in progress assuming failure of all high-head injection. The effectiveness of specific operator actions in avoiding core damage will be investigated. A calculation has been completed for a postulated 2 inch diameter break. This break size is the upper end of the spectrum. Preliminary results indicate that opening a single atmospheric dump valve (even with the assistance of opening two power operated relief valves) is not effective in preventing core uncovery.

The BWR SASA effort has focused on constructing a Browns Ferry RELAP5 model to conduct loss of offsite power (LOSP) calculations. The model has been assembled and is now being debugged and set up to conduct a station blackout scenario with no Emergency Core Cooling (ECC) equipment available.

Because the RELAP5 model is not yet available to provide input to the Oak Ridge National Laboratory (ORNL) portion of the calculation, a strategy for continuing MARCH calculation on the LOSP scenario has been discussed with ORNL.

4. Scheduled Milestones for March 1981

None.

5. Summary of Work to be Performed in March 1981

Small break calculations using the Zion model will be continued assuming 1 inch and 2 inch break sizes with 4 atmospheric dump valves being opened.

Efforts to debug the RELAP5 model of Browns Ferry will continue and station blackout calculations will be resumed upon completion of debugging and balancing.

6. Problems and Potential Problems

None.

1. 189a Task A6356 - NRC Safety/Relief Valve Program

2. Scheduled Milestones for February 1981

None.

3. Summary of Work Performed in February 1981

A meeting was attended to discuss the probability analysis and the valve discharge pipe response to high quality two phase flow for the GE/BWR program.

A letter report describing the structural code evaluation efforts and results to date was drafted in preparation for transmittal to NRC. A similar report describing the evaluation efforts and results of the thermal-hydraulic code evaluation efforts and results to date was drafted in preparation for transmittal to NRC.

Recommended additional structural measuremenis to be incorporated into the LOFT Power Operated Relief Valve (PORV) small break test L9-1/L3-3 were made to the LOFT Program.

Evaluation of a technique for lumping frequency modes into static equivalent forces for use in NUPIPE-II was completed. It was found that the technique was not satisfactory for loads caused by blowdown although it is satisfactory for seismic loads.

Comparison and evaluation of the thermal-hydraulic code calculations performed in FY-80 was completed and a draft report initiated. The codes compared were RELAP4/MOD6, RELAP4/MOD7, RELAP5/MOD0 and TRAC-P1A.

A report describing the evaluation of the thermal-hydraulic code DAPSY was issued for internal use.

4. Scheduled Milestones for March 1981

None.

5. Summary of Work to be Performed in March 1981

An evaluation of the PWR Owners Group responses to NRC/EG&G comments on the Electric Power Research Institute (EPRI)/PWR program will be made and transmitted to NRC.

A meeting to resolve the issue of the need for BWR program high pressure testing will be attended.

A mid-year review of the program will be made to NRC.

A summary report of thermal-hydraulic code evaluation work in FY-80 will be completed. The codes addressed will be RELAP4/MOD6, RELAP4/MOD7, RELAP5/MOD0 and TRAC-P1A.

Drafting of a report concerning the thermal hydraulic codes RELAP4/MOD1 and TRAC-B01 and their ability to calculate valve discharge behavior for a loop seal configuration will be started. An effort to develop a plant specific relief valve system with RELAP4/MOD1 will be initiated.

6. Problems and Potential Problems

None.

1. A6358 Applied James-Stein Estimators

2. Scheduled Milestones for February 1981

None.

3. Summary of Work Performed in February 1981

Awarded contract for work on applying James-Stein estimation for failure rates.

4. Scheduled Milestones for March 1981

None.

5. Summary of Work to be Performed in March 1981

Initiate work through subcontractor on James-Stein estimation of failure rates.

6. Problems and Potential Problems

None.

MONTHLY REPORT FOR

FEBRUARY 1981

CODE DEVELOPMENT DIVISION

CODE ASSESSMENT AND APPLICATION DIVISION

(NRR)

F. Aguilar, Manager
Code Development Division

B. F. Saffell, Manager
Code Assessment and Application Division

E. L. Pierson
Plans & Budget Representative

CODE DEVELOPMENT DIVISION

NRR

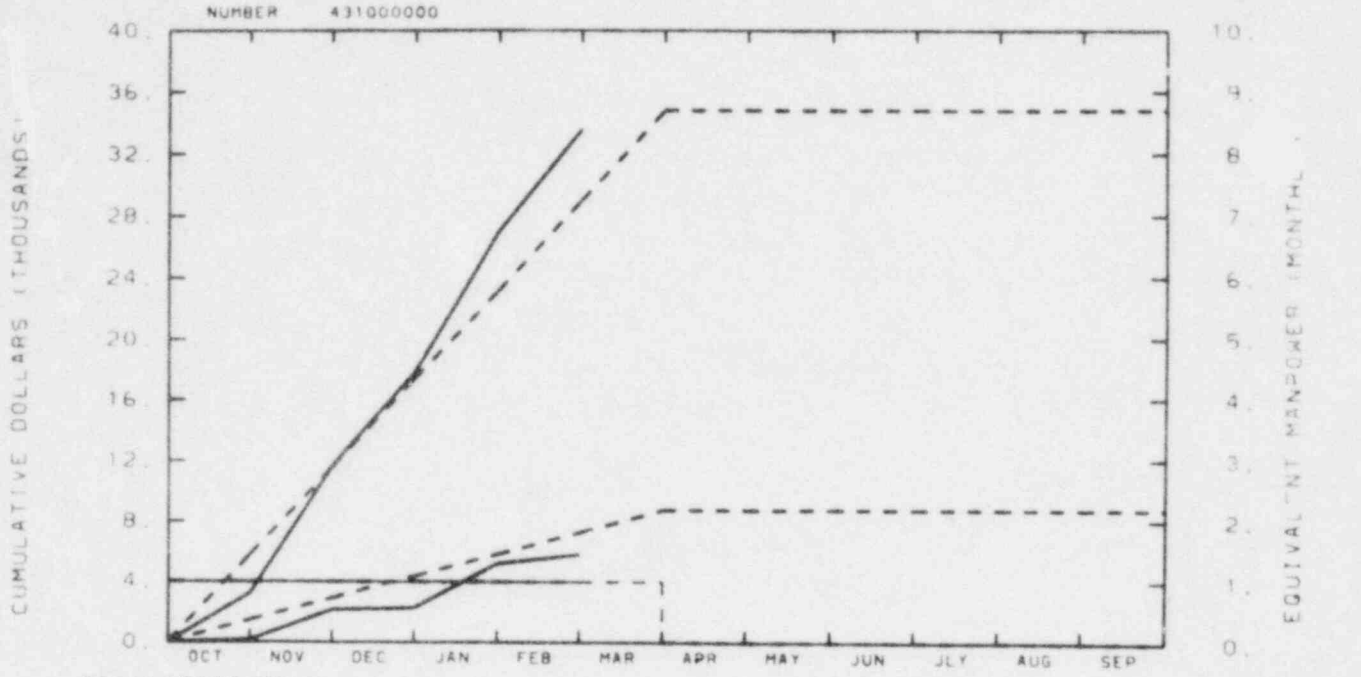
COST SUMMARY & COMMENTS

RESPONSIBLE MANAGER
F AGUILAR

EG&G IDAHO INC.

CONTAINMENT ANALYSIS DEVELOPMENT

NUMBER 431000000



TOTAL PROGRAM

BUDGET	6	12	17	23	29	35	35	35	35	35	35	35
ACTUAL	3	12	18	27	34							

MATERIAL

BUDGET	1	3	4	6	7	9	9	9	9	9	9	9
ACTUAL	0	2	2	5	6							

MANPOWER

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

A6009

YTD VARIANCE: <5> (17%)

$11 K of new funding has been received. The cost graph has not as yet been revised to show the new funding. The task will not overrun the new budget.

CODE DEVELOPMENT DIVISION

NRR

TECHNICAL REVIEW & SUMMARY

PROGRAM MANAGER'S

SUMMARY AND HIGHLIGHTS

Corrections to the dry containment model in CONTEMPT4 have been completed, and documentation is underway. The task will be completed as scheduled by March 30, 1981. Discussion of future workscope is now underway with NRR. Agreement must be reached very soon in order not to break the continuity of the CONTEMPT4 effort.

1. 189a A6009 - Containment Analysis

2. Scheduled Milestones for February 1981

None.

3. Summary of Work Performed in February 1981

Corrections to the dry containment model options in CONTEMPT4 have been completed. Formal documentation of the corrections has been initiated.

4. Scheduled Milestones for March 1981

Node	Description	Due Date	Actual Date
	Completion of Dry Containment Modifications to CONTEMPT4	03-30-81	03-30-81E

5. Summary of Work to be Performed in March 1981

Documentation of dry containment modifications and related code error corrections will be completed. Discussions will proceed wth NRR in order to formalize additional work scope.

6. Problems and Pctential Problems

Work scope must be agreed on with NRR and funding appropriated for work to continue beyond March 30, 1981.

CODE ASSESSMENT AND APPLICATION DIVISION

NRR

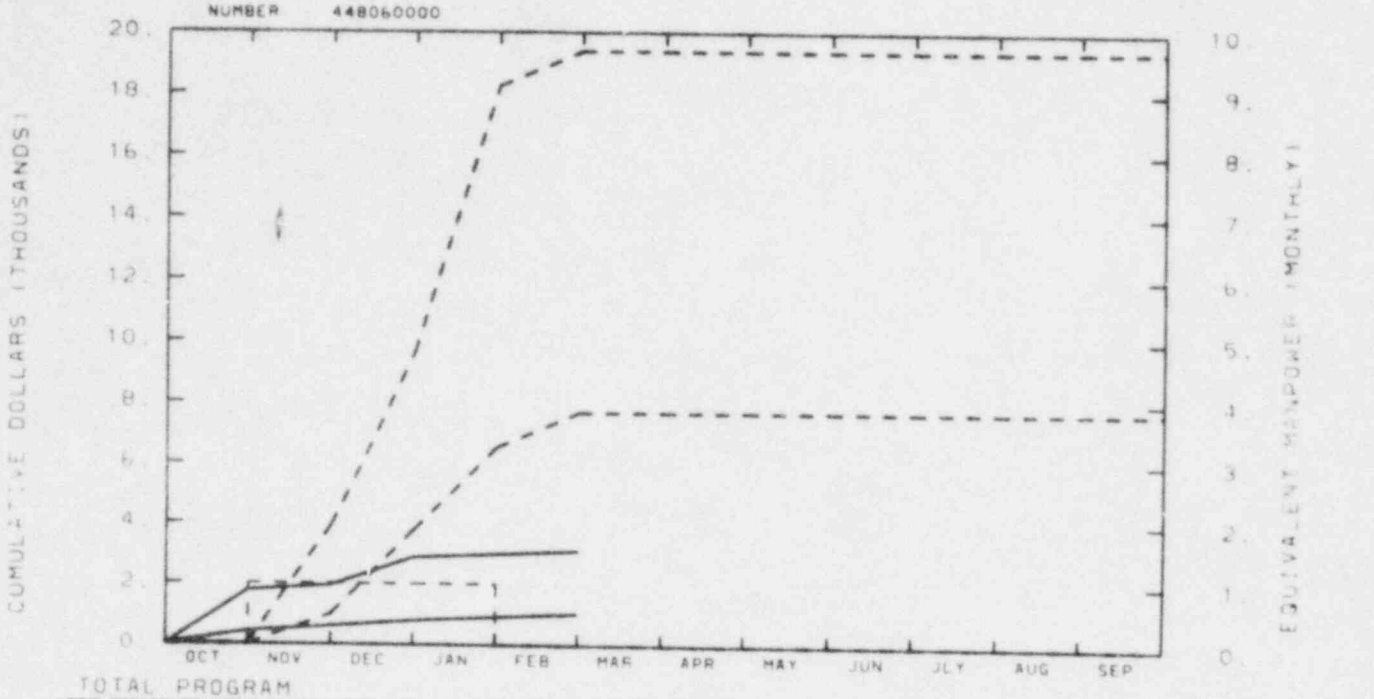
COST SUMMARY & COMMENTS

RESPONSIBLE
MANAGER
L. F. SAFFELL

EG&G IDAHO INC.

REACTOR VESSEL SUPTS A6152

NUMBER 448060000



TOTAL PROGRAM

BUDGET	0	4	18	18	19	19	19	19	19	19	19	19
ACTUAL	2	2	3	3	3							

MATERIAL

BUDGET	0	1	4	7	8	8	8	8	8	8	8	6
ACTUAL	0	1	1	1	1							

BUDGET - - - - -

ACTUAL ———

MANPOWER

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

A6152

YTD VARIANCE: 16 (84%)

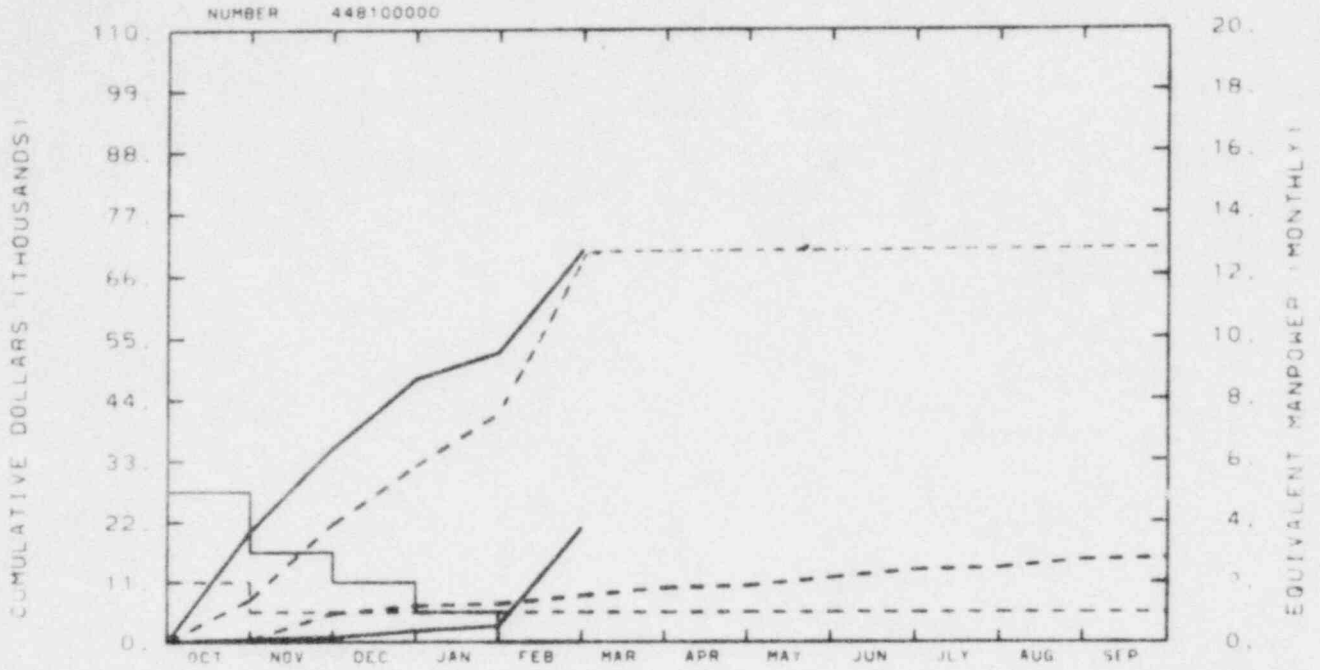
This task is underspent because of lack of vendor data from NRC. As soon as a schedule can be agreed upon, this task will be rebudgeted.

RESPONSIBLE
MANAGER
B. F. JAFFEE

EG&G IDAHO INC.

LOCA LOAD TECH ASSIST A6156

NUMBER 448100000



TOTAL PROGRAM

BUDGET	8	22	32	42	71	71	71	71	71	71	71	71
ACTUAL	20	35	48	53	71							

MATERIAL

BUDGET	0	5	7	7	9	10	10	12	13	14	15	15
ACTUAL	1	1	2	3	21							

MANPOWER

BUDGET	2	1	1	1	1	1	1	1	1	1	1	1
ACTUAL	5	3	2	1	0							

A6156

YTD VARIANCE: 0

An $18 K cost transfer was made from A6209 into A6156 in February to cover computer costs previously incurred in A6156.

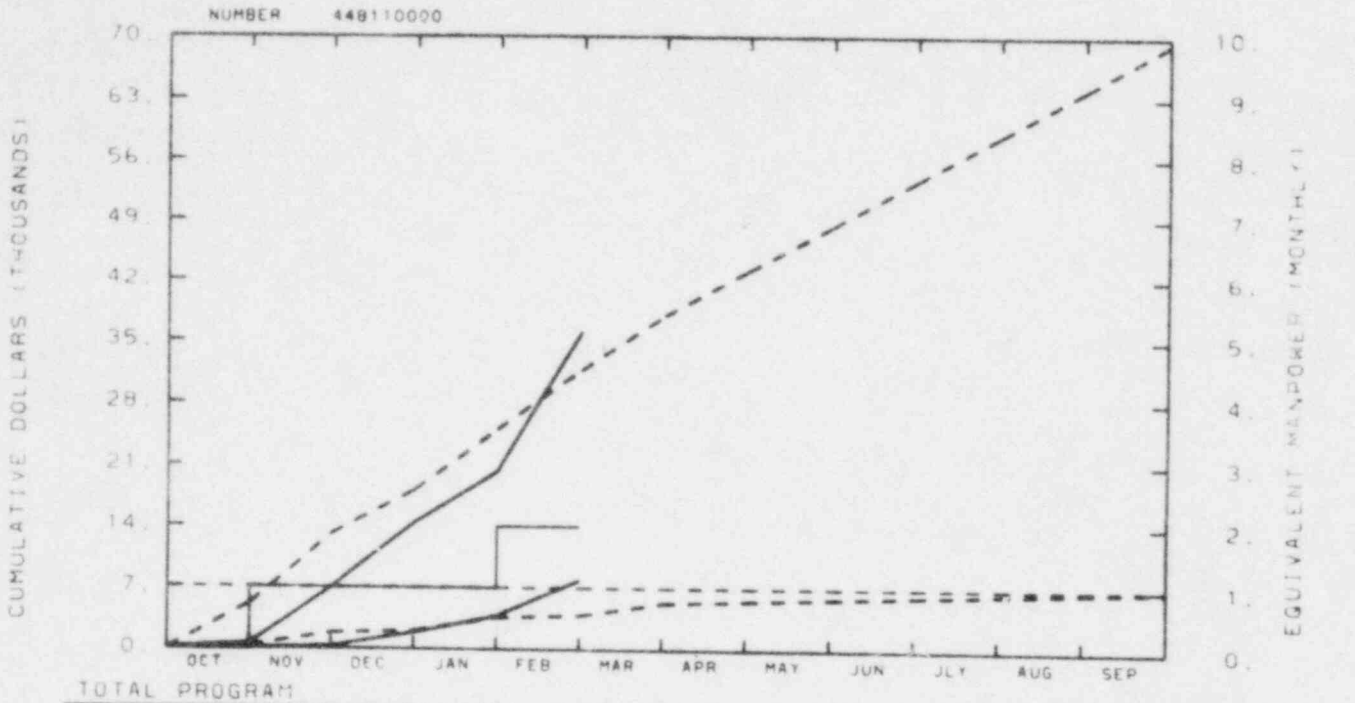
RESPONSIBLE MANAGER

J F Saffell

EG&G IDAHO INC.

FUEL ASSEM SEIS/LOC A6157

NUMBER 448110000



TOTAL PROGRAM

BUDGET	5	13	18	25	32	38	43	48	54	59	64	69
ACTUAL	1	7	14	20	36							

MATERIAL

BUDGET	0	2	2	4	4	5	6	6	6	6	7	7
ACTUAL	0	0	2	4	8							

MANPOWER

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

BUDGET - - - - -

ACTUAL ———

A6157

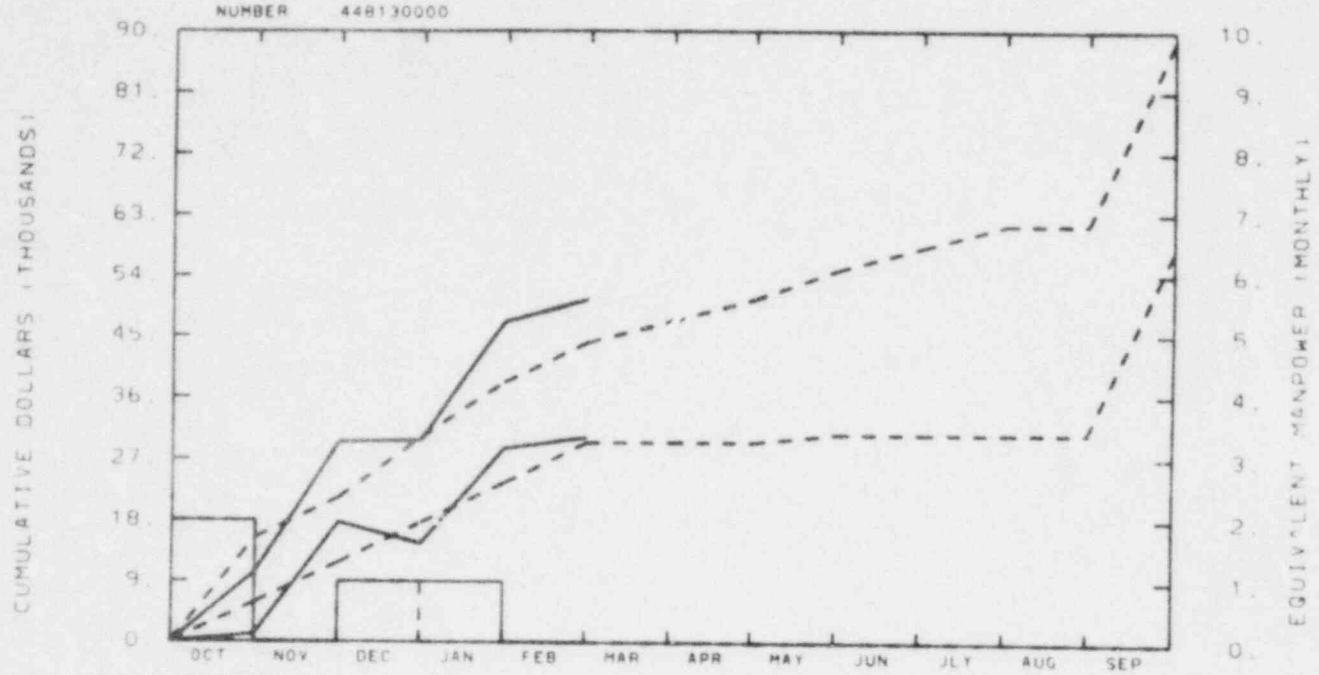
YTD VARIANCE: <4> (13%)

RESPONSIBLE
MANAGER
B. F. SAFFELL

EG&G IDAHO INC.

FAILED FUEL/OFF GAS A6159

NUMBER 448130000



TOTAL PROGRAM

BUDGET	15	21	30	38	44	47	50	55	58	61	61	89
ACTUAL	10	30	30	47	51							

MATERIAL

BUDGET	6	12	18	24	29	29	29	31	31	31	31	58
ACTUAL	1	18	15	29	30							

MANPOWER

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

BUDGET

ACTUAL

A6159

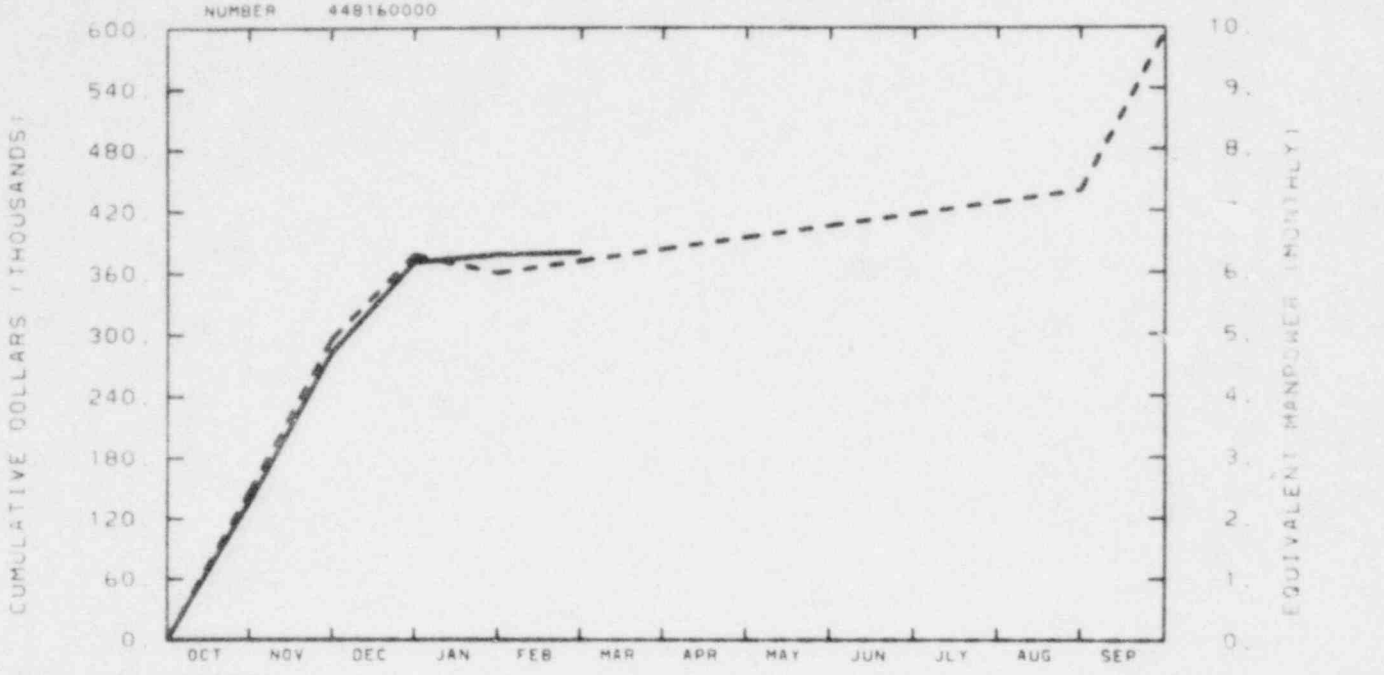
YTD VARIANCE: <7> (16%)

RESPONSIBLE MANAGER
SAFFELL

EG&G IDAHO INC.

NRC USE OF INEL CDC A6209

NUMBER 448160000



TOTAL PROGRAM

BUDGET	146	296	378	360	372	383	394	406	417	428	440	596
ACTUAL	137	283	371	378	380							

MATERIAL

BUDGET	146	296	378	360	372	383	394	406	417	428	440	596
ACTUAL	137	283	371	378	380							

BUDGET - - - - -
ACTUAL ———

MANPOWER

BUDGET	0	0	0	0	0	0	0	0	0	0	0	0
ACTUAL	0	0	0	0	0							

A6209

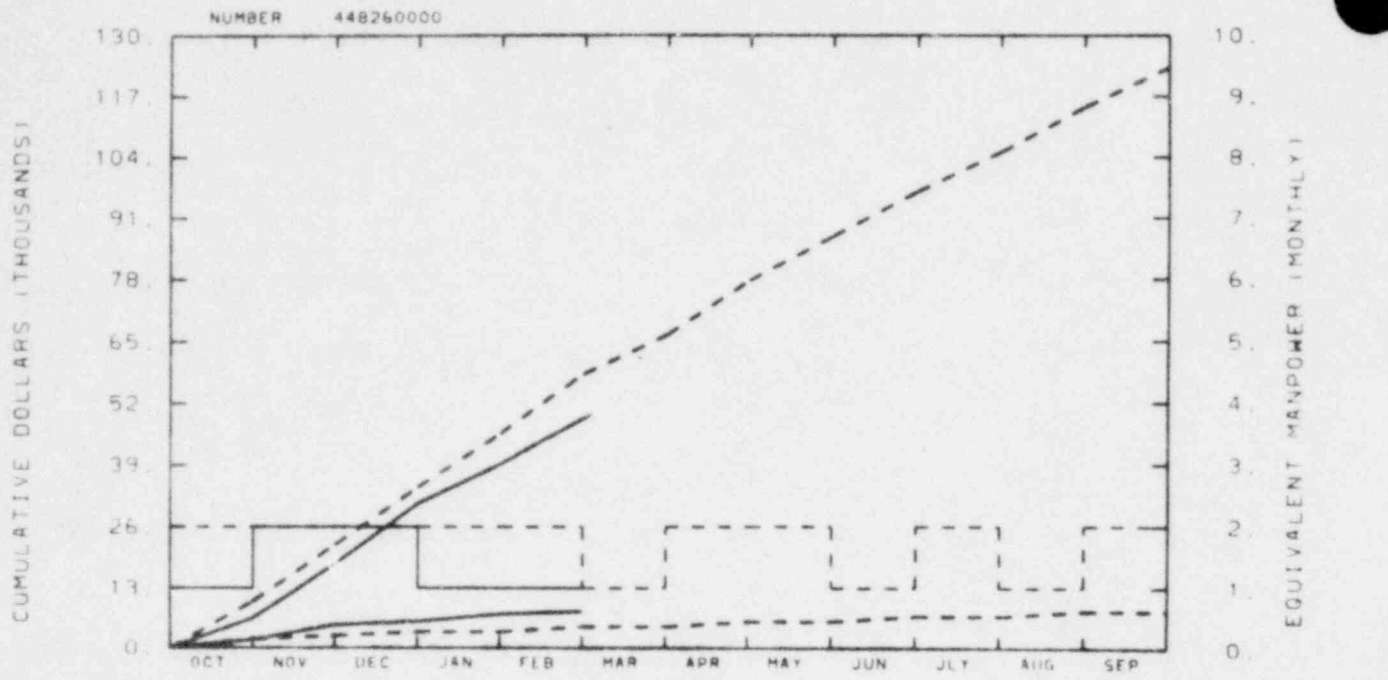
YTD VARIANCE: <8> (2%)

RESPONSIBLE
MANAGER
B F SAFFELL

EG&G IDAHO INC.

ENG'G SUPPORT SERV A6250/A6426

NUMBER 448260000



TOTAL PROGRAM

BUDGET	10	22	34	46	58	66	78	87	97	105	115	123
ACTUAL	6	18	31	39	50							

MATERIAL

BUDGET	2	3	4	4	5	5	6	6	7	7	8	8
ACTUAL	2	5	6	7	8							

MANPOWER

BUDGET	2	2	2	2	2	1	2	2	1	2	1	2
ACTUAL	1	2	2	1	1							

BUDGET
ACTUAL

A6250/A6426

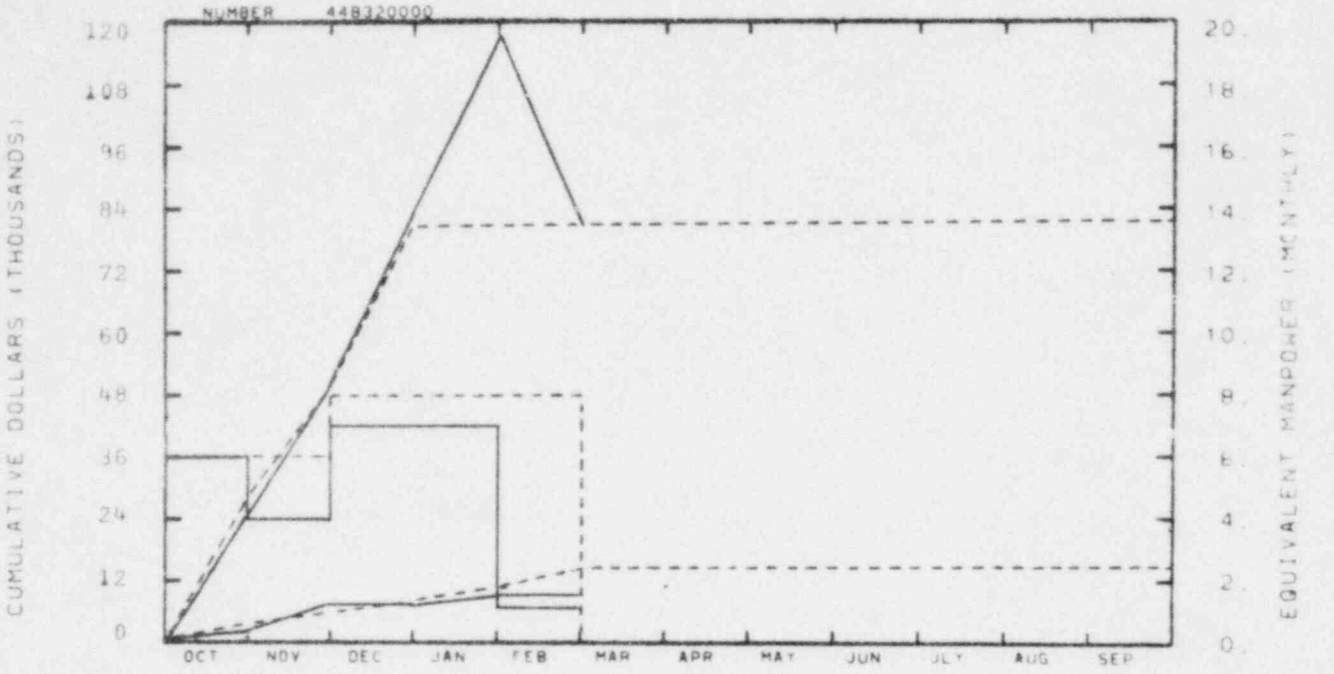
YTD VARIANCE: 8 (14%)

RESPONSIBLE
MANAGER
B F SAFFELL

EG&G IDAHO INC.

ELEC INSTRU/CONT SYS A6256

NUMBER 448320000



TOTAL PROGRAM

BUDGET	29	49	80	80	80	80	80	80	80	80	80	80
ACTUAL	26	49	83	117	80							

MATERIAL

BUDGET	2	4	7	11	14	14	14	14	14	14	14	14
ACTUAL	1	6	6	9	9							

BUDGET
ACTUAL

MANPOWER

BUDGET	6	6	8	8	8	0	0	0	0	0	0	0
ACTUAL	6	4	7	7	1							

A6256

YTD VARIANCE: 0

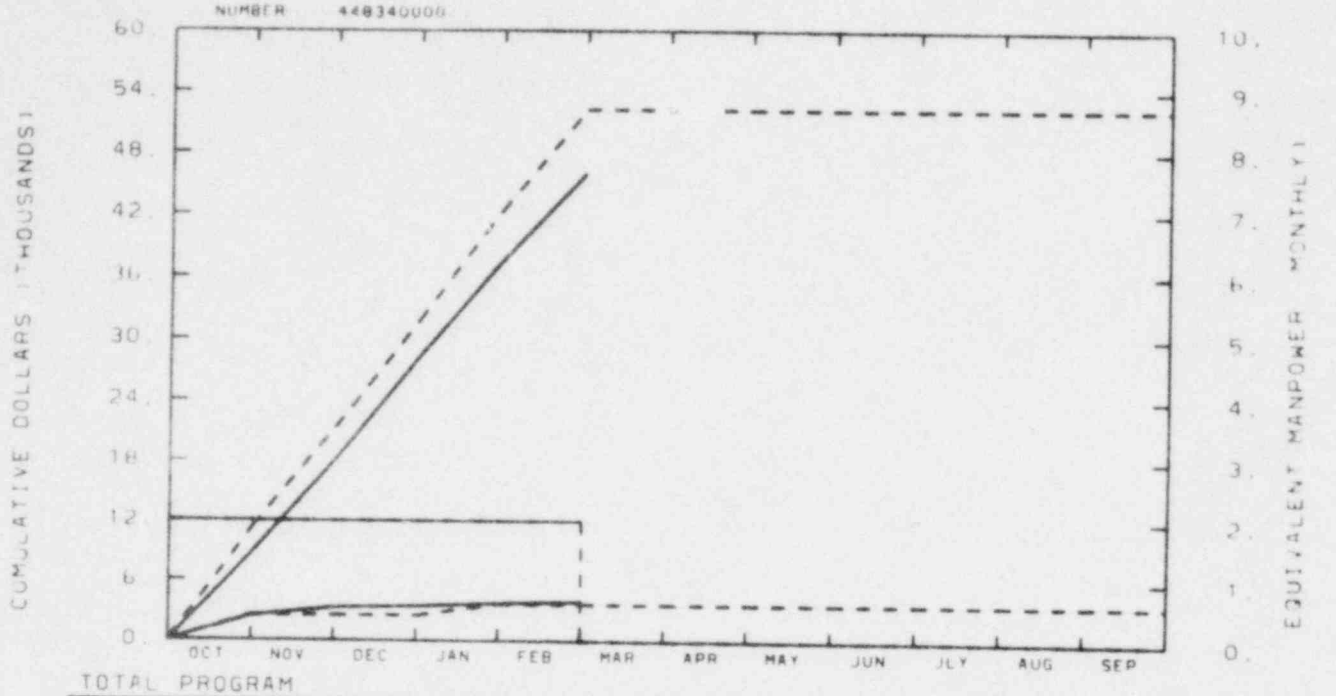
A cost transfer of $37 K was made from A6256 into A6429, which is the FY-1981 equivalent of A6256. The charge against A6256 was erroneous.

RESPONSIBLE
MANAGER
B F SAFFELL

EG&G IDAHO INC.

SYSTEM ENG'G SUPPORT A6258

NUMBER 448340000



TOTAL PROGRAM

BUDGET	11	21	32	42	52	52	52	52	52	52	52	52
ACTUAL	9	18	28	37	46							

MATERIAL

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

MANPOWER

BUDGET	2	2	2	2	2	0	0	0	0	0	0	0
ACTUAL	2	2	2	2	2							

BUDGET - - - -

ACTUAL ———

A6258

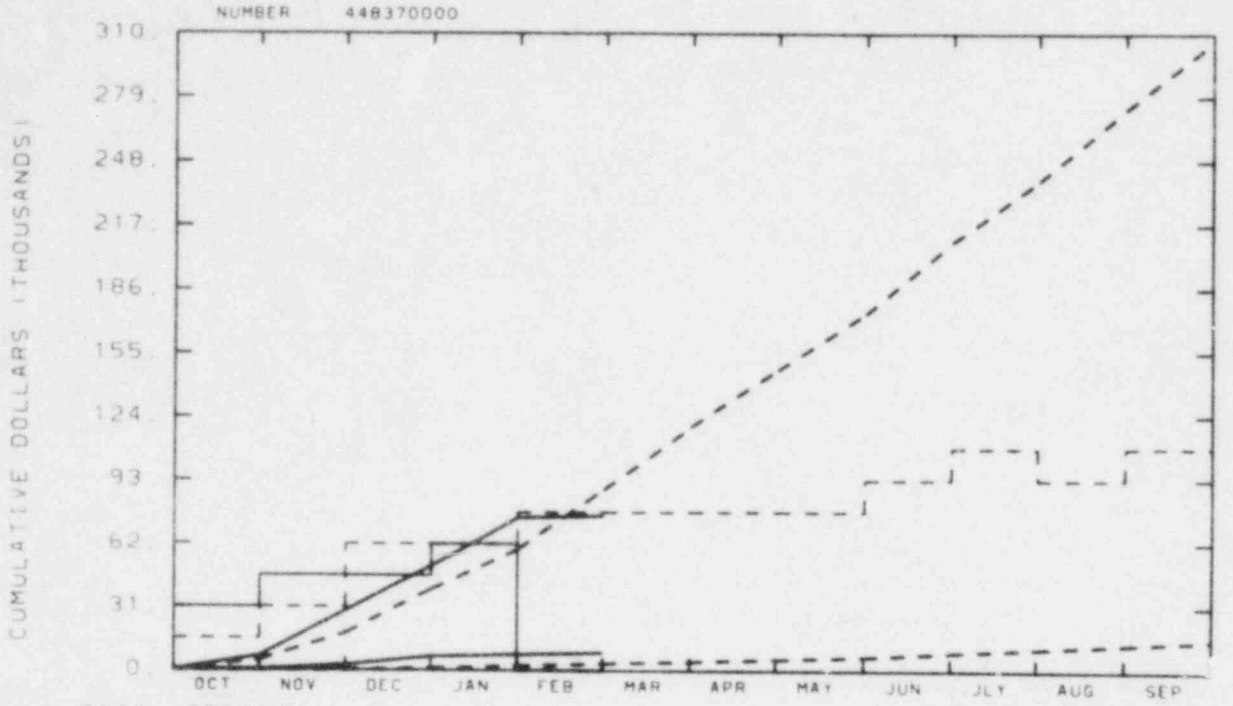
YTD VARIANCE: 6 (12%)

RESPONSIBLE
MANAGER
B F SAFFELL

EG&G IDAHO INC.

ELEC INSTRU/CONTROL A6260/A6425

NUMBER 448370000



TOTAL PROGRAM

BUDGET	5	18	40	59	89	119	147	174	209	239	273	306
ACTUAL	7	29	51	75	97							

MATERIAL

BUDGET	0	0	1	2	3	5	6	7	9	11	13	15
ACTUAL	0	3	7	8	9							

MANPOWER

BUDGET	1	2	4	4	5	5	5	5	6	7	6	7
ACTUAL	2	3	3	4	0							

BUDGET
ACTUAL

A6260/A6425

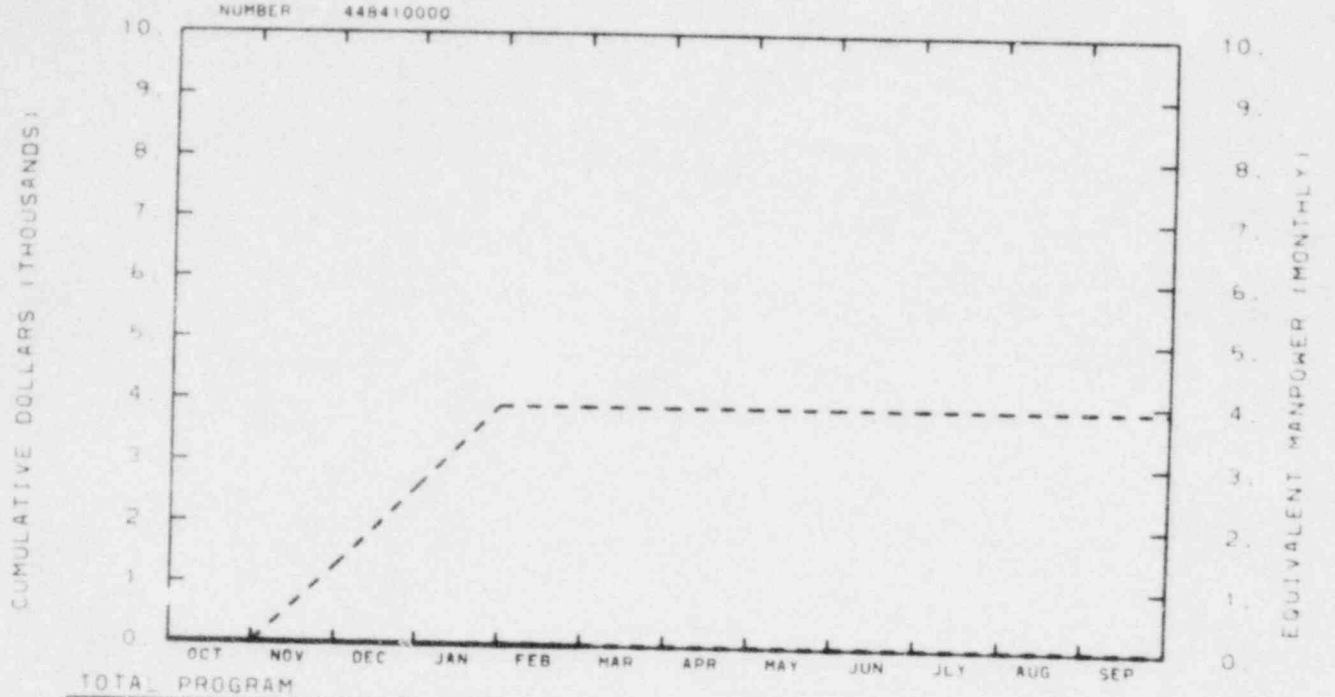
YTD VARIANCE: <8> (9%)

RESPONSIBLE
MANAGER
B F SAFFELL

EG&G IDAHO INC.

ECCS UNAVAIL STUDIES A6264

NUMBER 448410000



TOTAL PROGRAM

BUDGET	0	1	3	4	4	4	4	4	4	4	4	4
ACTUAL	0	0	0	0	0							

MATERIAL

BUDGET	0	0	0	0	0	0	0	0	0	0	0	0
ACTUAL	0	0	0	0	0							

MANPOWER

BUDGET	0	0	0	0	0	0	0	0	0	0	0	0
ACTUAL	0	0	0	0	0							

A6264

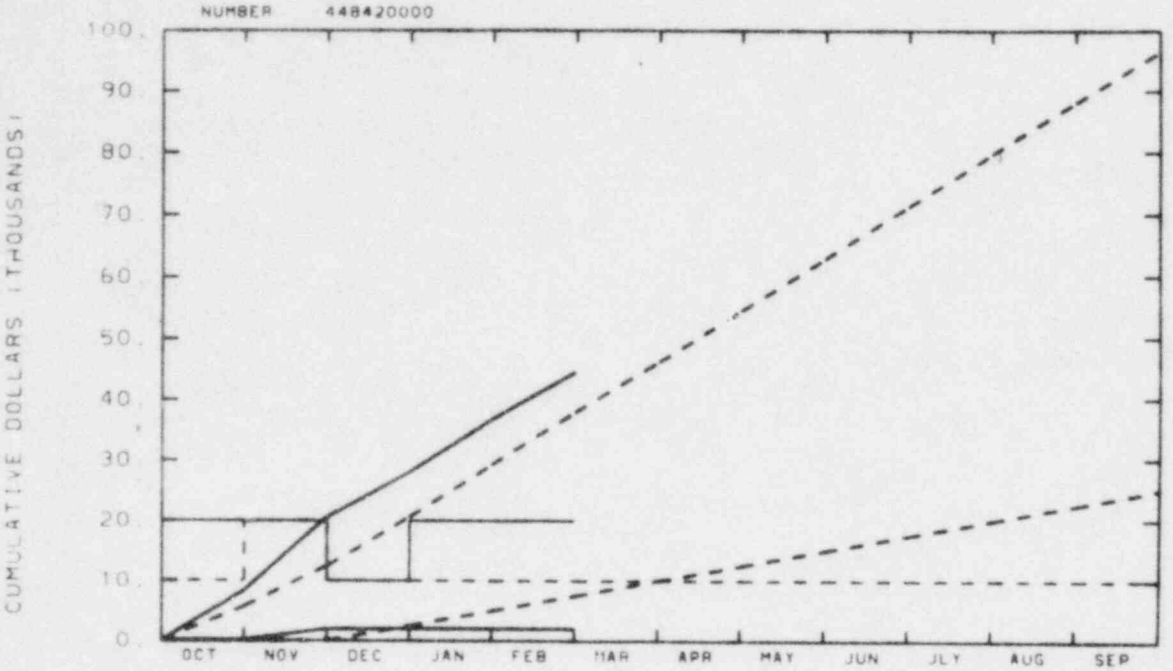
YTD VARIANCE: 4 (100%)

RESPONSIBLE MANAGER
R F SAFFELL

EG&G IDAHO INC.

INSERVICE TESTING - DSS A6265

NUMBER 448420000



TOTAL PROGRAM

BUDGET	6	12	21	29	38	46	55	63	71	80	88	97
ACTUAL	8	21	28	37	45							

MATERIAL

BUDGET	0	0	2	5	7	10	12	15	17	20	22	25
ACTUAL	0	2	2	2	2							

MANPOWER

BUDGET	1	2	1	1	1	1	1	1	1	1	1	1
ACTUAL	2	2	1	2	2							

BUDGET

ACTUAL

A6265

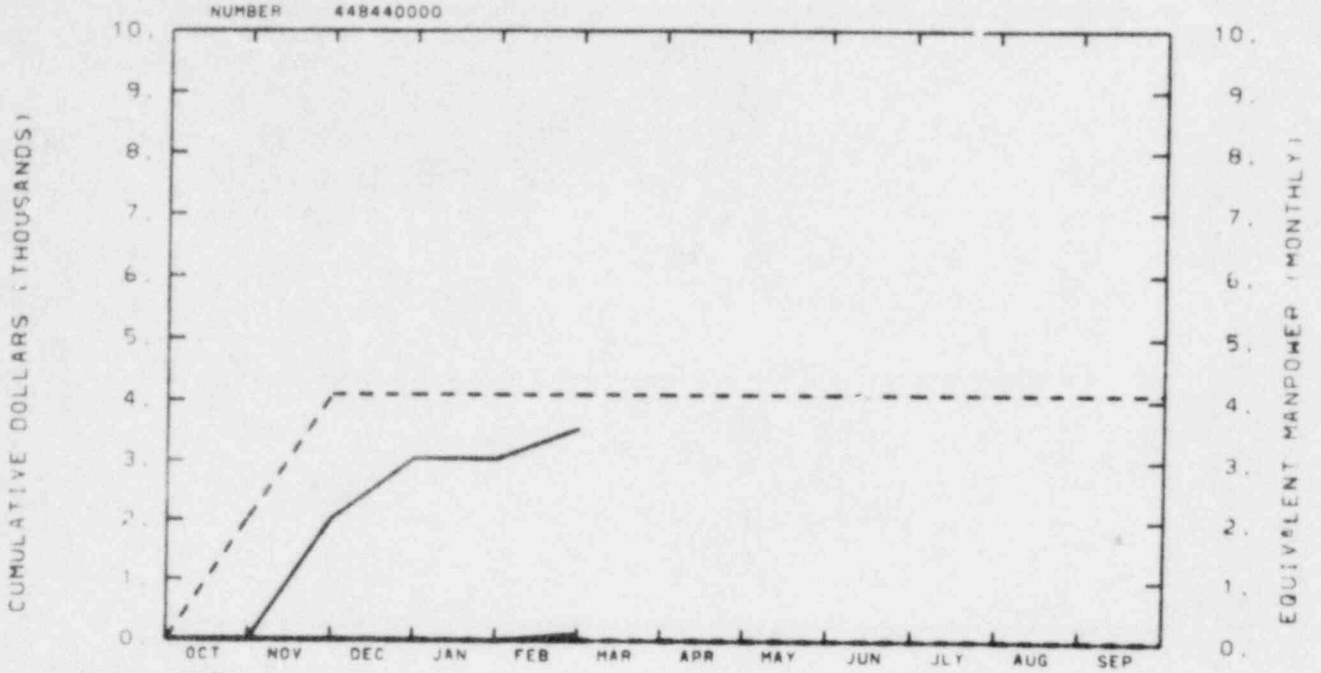
YTD VARIANCE: <7> (18%)

RESPONSIBLE
MANAGER
B F SAFFELL

EG&G IDAHO INC.

BEAVER VALLEY & ZION A6267

NUMBER 448440000



TOTAL PROGRAM

BUDGET	2	4	4	4	4	4	4	4	4	4	4	4
ACTUAL	0	2	3	3	4							

MATERIAL

BUDGET	0	0	0	0	0	0	0	0	0	0	0	0
ACTUAL	0	0	0	0	0							

MANPOWER

BUDGET	0	0	0	0	0	0	0	0	0	0	0	0
ACTUAL	0	0	0	0	0							

A6267

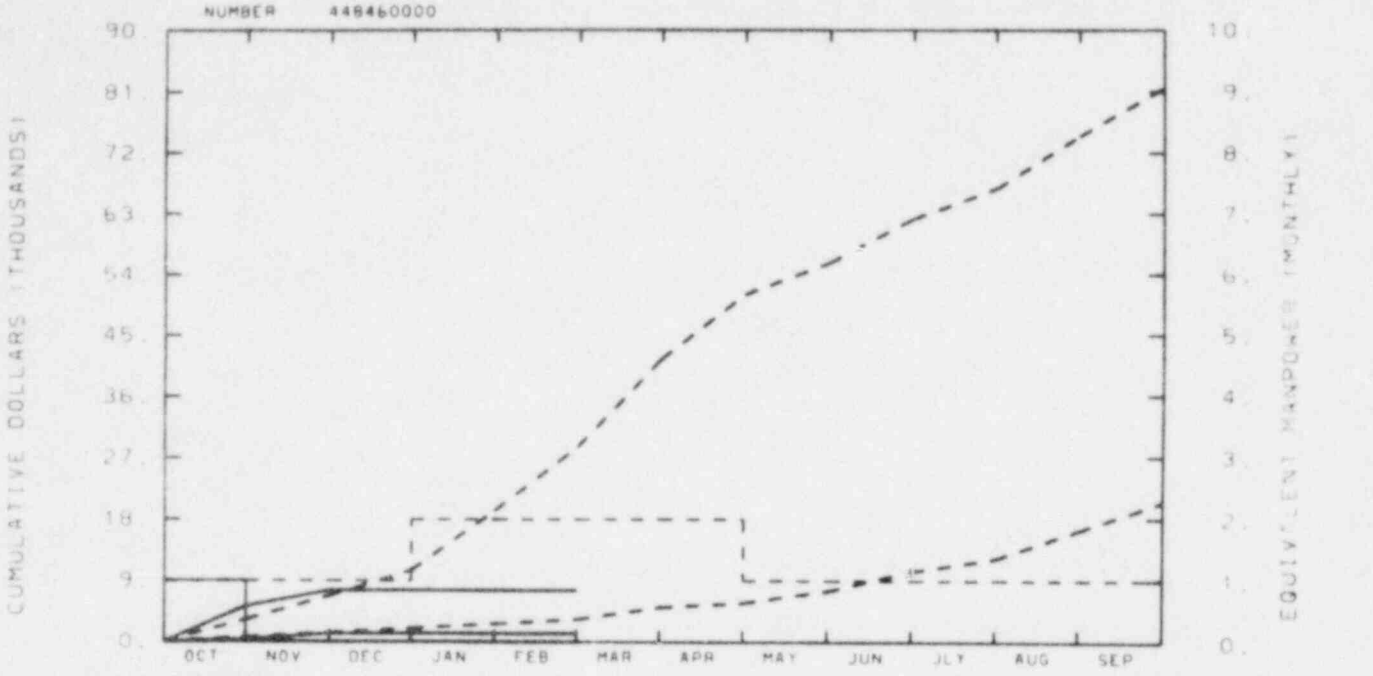
YTD VARIANCE: 1 (25%)

RESPONSIBLE
MANAGER
B F SAFFELL

EG&G IDAHO INC.

FUEL PERF CODE APP PROG II A6268

NUMBER 448460000



TOTAL PROGRAM

BUDGET	3	7	10	19	29	41	51	56	62	67	74	82
ACTUAL	5	8	8	8	8							

MATERIAL

BUDGET	1	1	2	3	3	5	6	7	10	12	16	20
ACTUAL	0	1	1	1	1							

MANPOWER

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

A6268

YTD VARIANCE: 21 (72%)

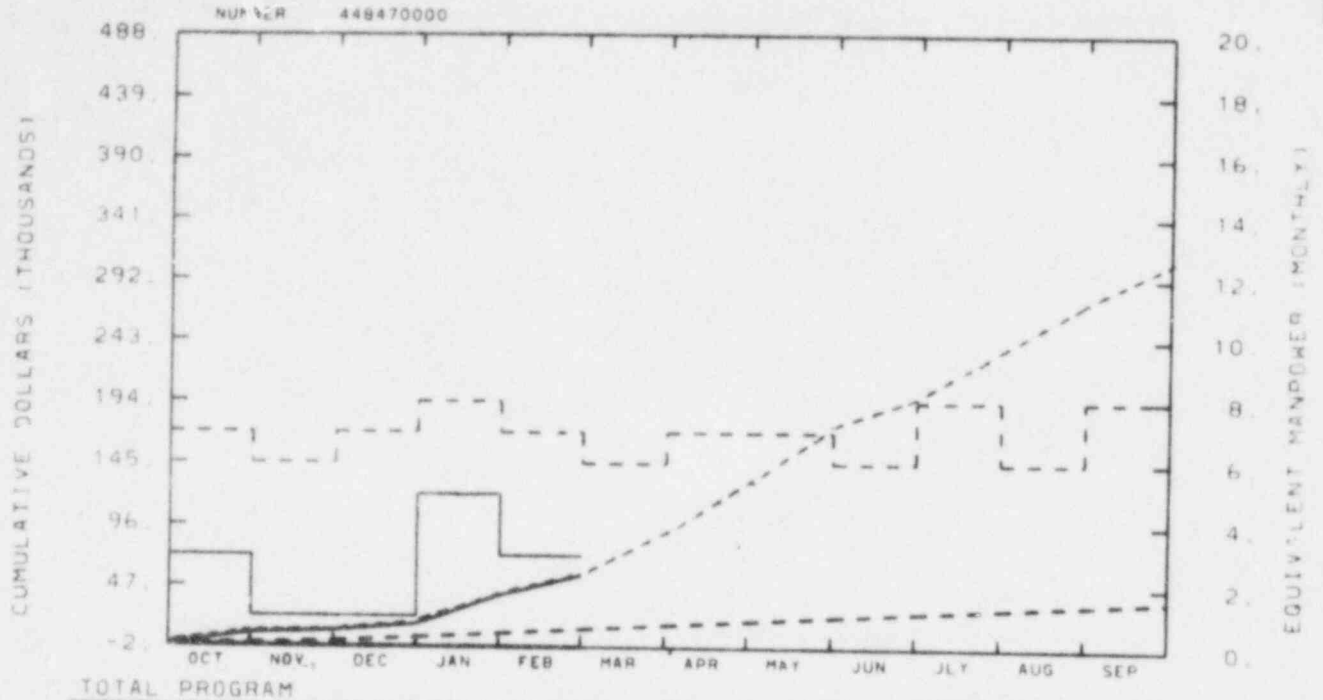
Work on this task is pending the Nuclear Regulatory Commission input regarding direction and overall scope. No work will be performed until direction is received.

RESPONSIBLE
MANAGER
B F SAFFELL

EG&G IDAHO INC.

REGC SYS CASE RVW III A6270

NUMBER 448470000



TOTAL PROGRAM

BUDGET	9	11	17	40	57	92	131	170	196	233	273	309
ACTUAL	9	11	17	40	57							

MATERIAL

BUDGET	1	2	6	9	13	16	20	23	27	30	34	37
ACTUAL	0	-1	0	0	0							

MANPOWER

BUDGET	7	6	7	8	7	6	7	7	6	8	6	8
ACTUAL	3	1	1	5	3							

BUDGET
ACTUAL

A6270

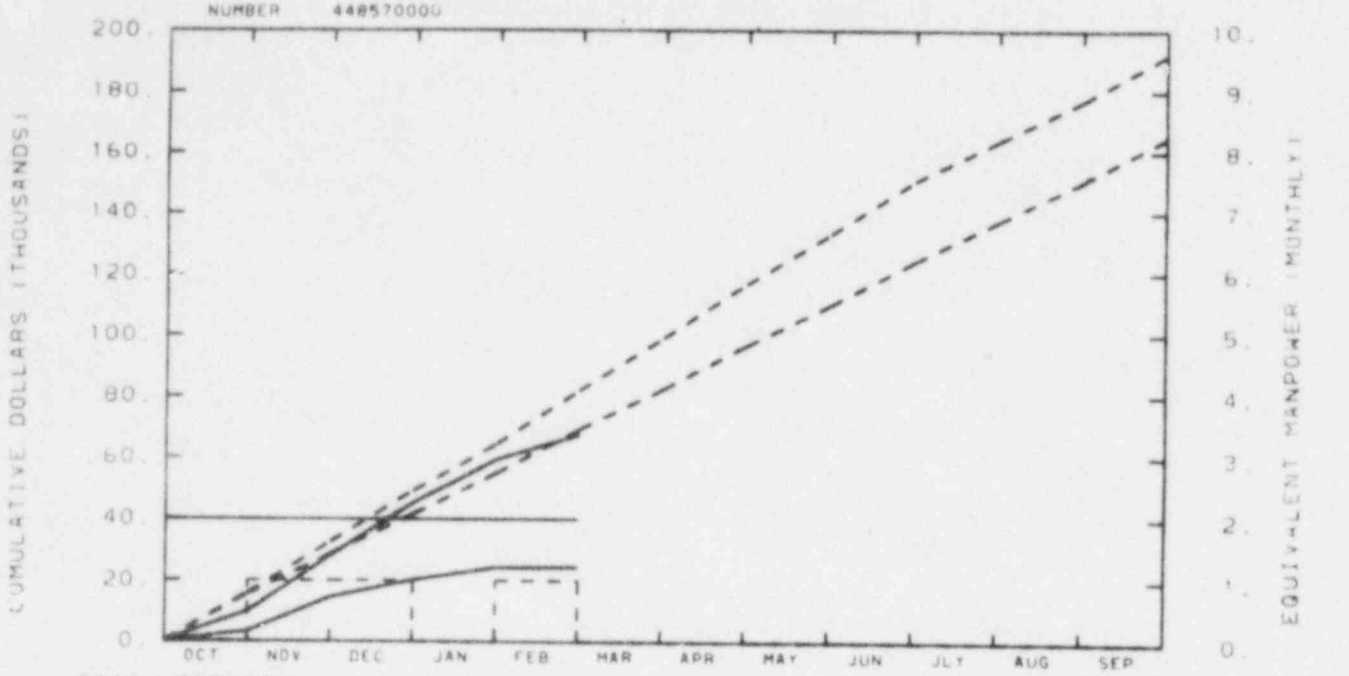
YTD VARIANCE: 0

RESPONSIBLE
MANAGER
B F SAFFELL

EG&G IDAHO INC.

MAT'L ENG'G CASE RVW I AE401

NUMBER 448570000



TOTAL PROGRAM

BUDGET	16	33	49	64	82	99	117	133	151	164	177	192
ACTUAL	10	28	45	59	73							

MATERIAL

BUDGET	15	29	42	55	69	82	97	110	124	137	151	165
ACTUAL	3	15	20	24	24							

MANPOWER

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

BUDGET

ACTUAL

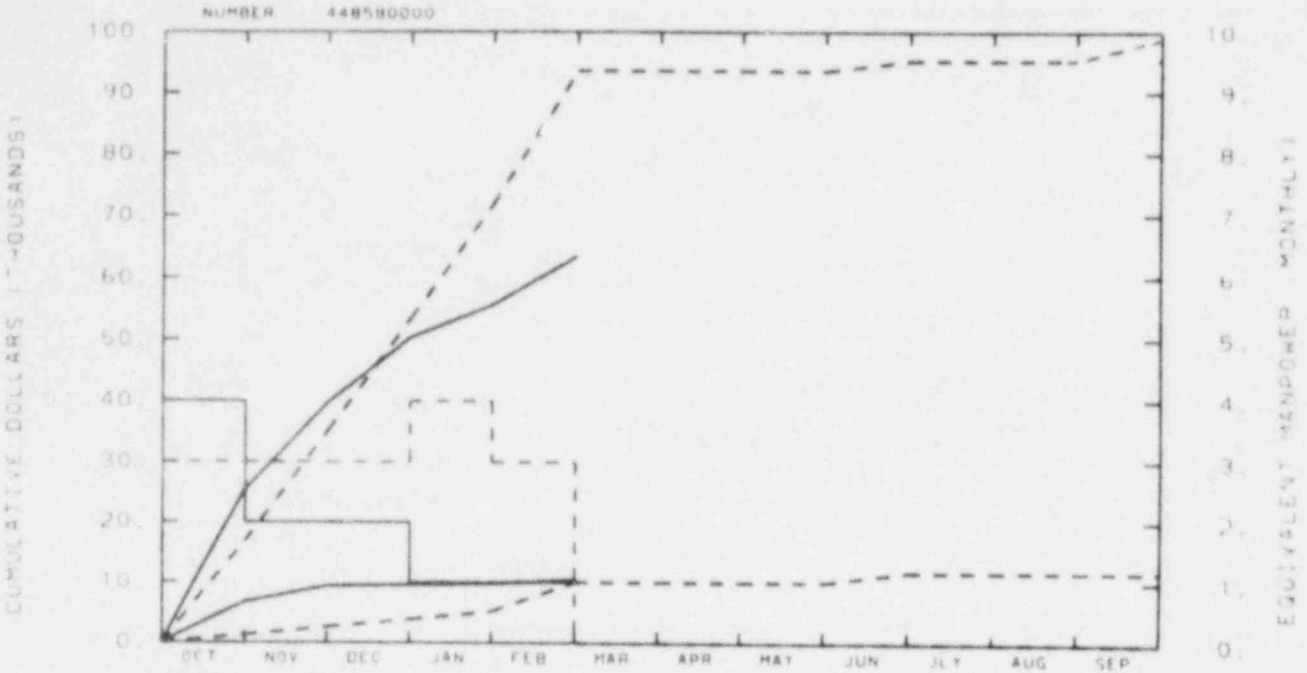
AE401

YTD VARIANCE: 9 (11%)

RESPONSIBLE MANAGER

EG&G IDAHO INC

STRUC ENG'G CASE RVW II A6402



TOTAL PROGRAM

BUDGET	17	35	53	72	94	94	94	94	95	95	95	97
ACTUAL	25	40	50	56	64							

MATERIAL

BUDGET	1	3	4	5	10	10	10	10	12	12	12	12
ACTUAL	7	9	10	10	10							

MANPOWER

BUDGET	3	3	3	4	3	0	0	0	0	0	0	0
ACTUAL	4	2	2	1	1							

A6402

YTD VARIANCE: 30 (32%)

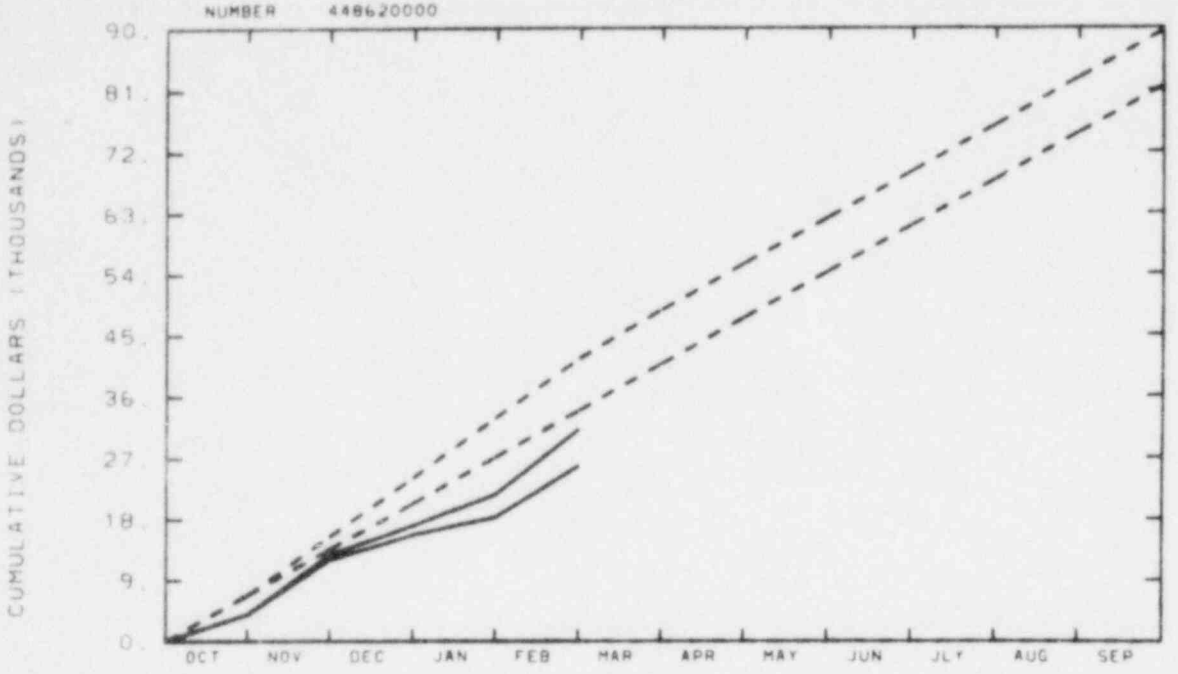
This task was scheduled and budgeted to be complete by March 1981. However, late vendor submittals for the Grand Gulf Nuclear Power Plant plus delays associated with discovery of an error in Bechtel's computer program have necessitated a manpower reduction and hence an underexpenditure. Delay recovery is expected to be complete by the fiscal year third quarter.

RESPONSIBLE
MANAGER
F SAFFELL

EG&G IDAHO INC.

INSERVICE INSPECTION A6405

NUMBER 448620000



TOTAL PROGRAM

BUDGET	7	15	24	33	42	49	56	62	69	76	83	90
ACTUAL	4	13	17	22	31							

MATERIAL

BUDGET	7	14	20	27	34	41	48	54	61	68	75	82
ACTUAL	4	12	16	18	26							

MANPOWER

BUDGET	0	0	0	0	0	0	0	0	0	0	0	0
ACTUAL	0	0	0	0	0							

A6405

YTD VARIANCE: 11 (26%)

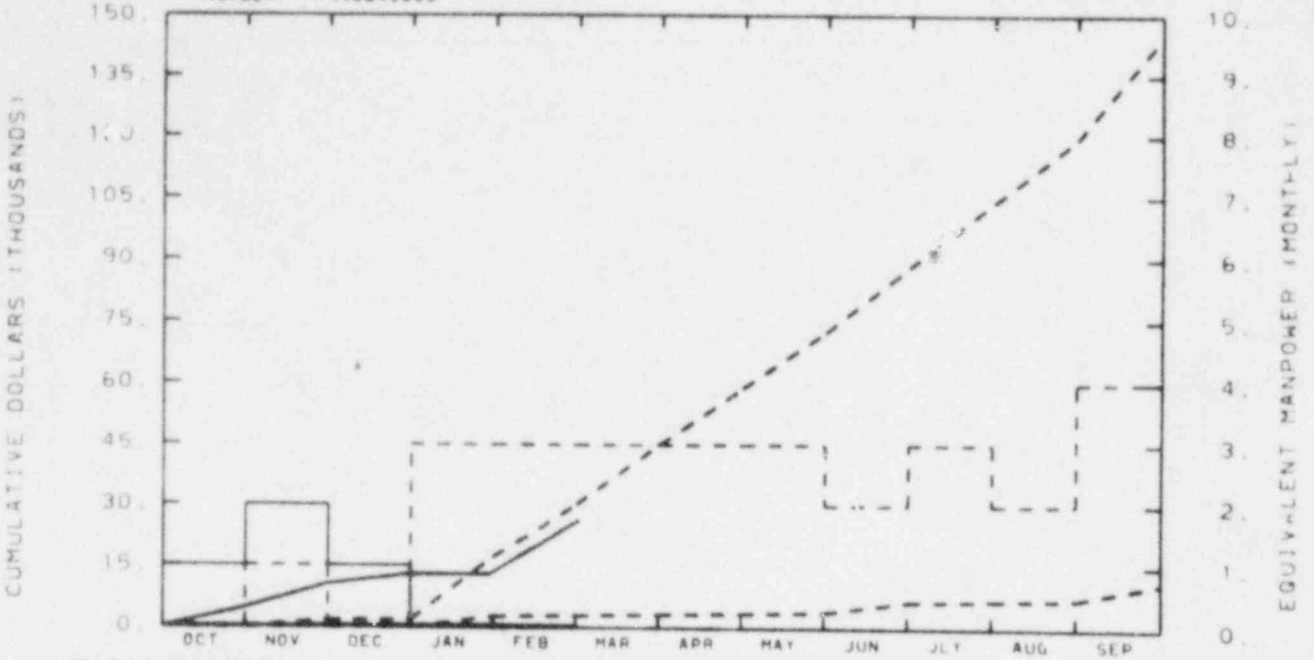
Manpower for this effort was reduced while awaiting additional funding.

RESPONSIBLE MANAGER
B F SAFFELL

EG&G IDAHO INC.

SAFETY REL PUMP/VALVE REL A6407/A6434/A6435

NUMBER 448640000



TOTAL PROGRAM

BUDGET	0	2	2	17	30	49	59	73	88	104	119	145
ACTUAL	5	11	13	13	25							

MATERIAL

BUDGET	0	0	0	3	3	3	4	4	5	7	7	11
ACTUAL	0	0	0	0	0							

MANPOWER

BUDGET	0	1	0	3	3	3	3	3	2	3	2	4
ACTUAL	1	2	1	0	0							

BUDGET
ACTUAL

A6407

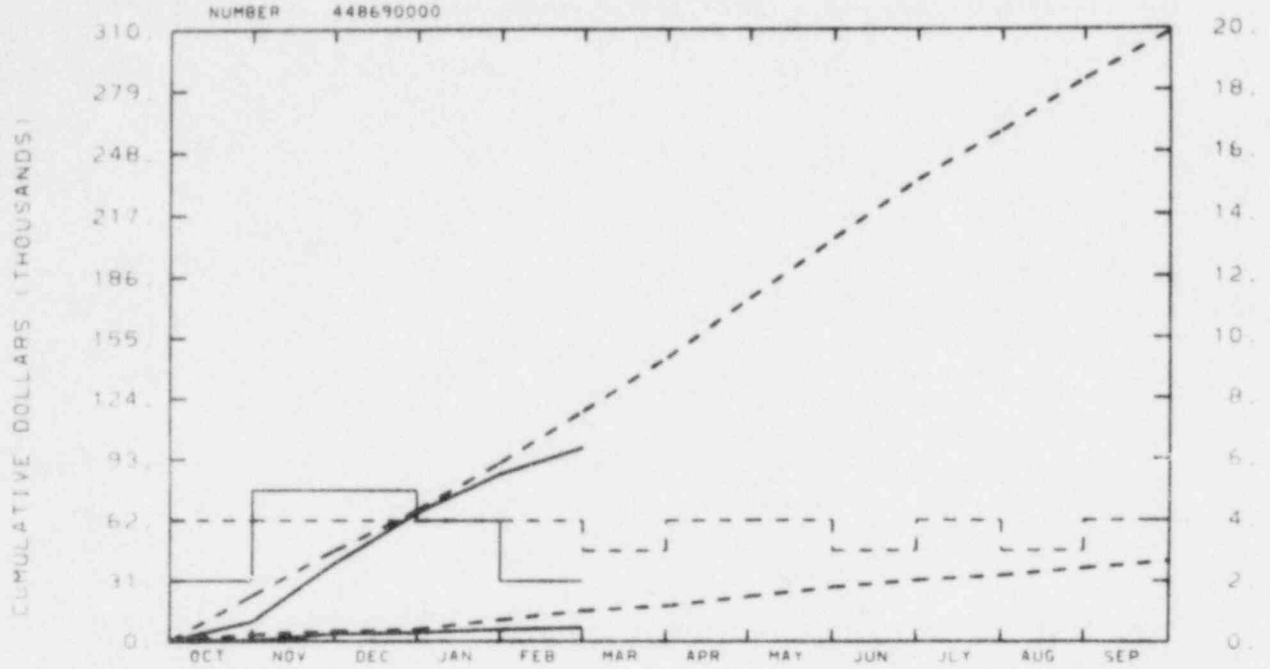
YTD VARIANCE: 5 (17%)

RESPONSIBLE
MANAGER
SAFFELL

EG&G IDAHO INC.

DYNAMIC QUAL ELEC & MECH A6415

NUMBER 448690000



TOTAL PROGRAM

BUDGET	23	47	67	92	118	145	175	205	234	259	285	308
ACTUAL	10	40	66	86	99							

MATERIAL

BUDGET	3	5	6	11	16	18	23	28	31	34	38	41
ACTUAL	0	4	4	6	7							

MANPOWER

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

BUDGET

ACTUAL

A6415

YTD VARIANCE: 19 (16%)

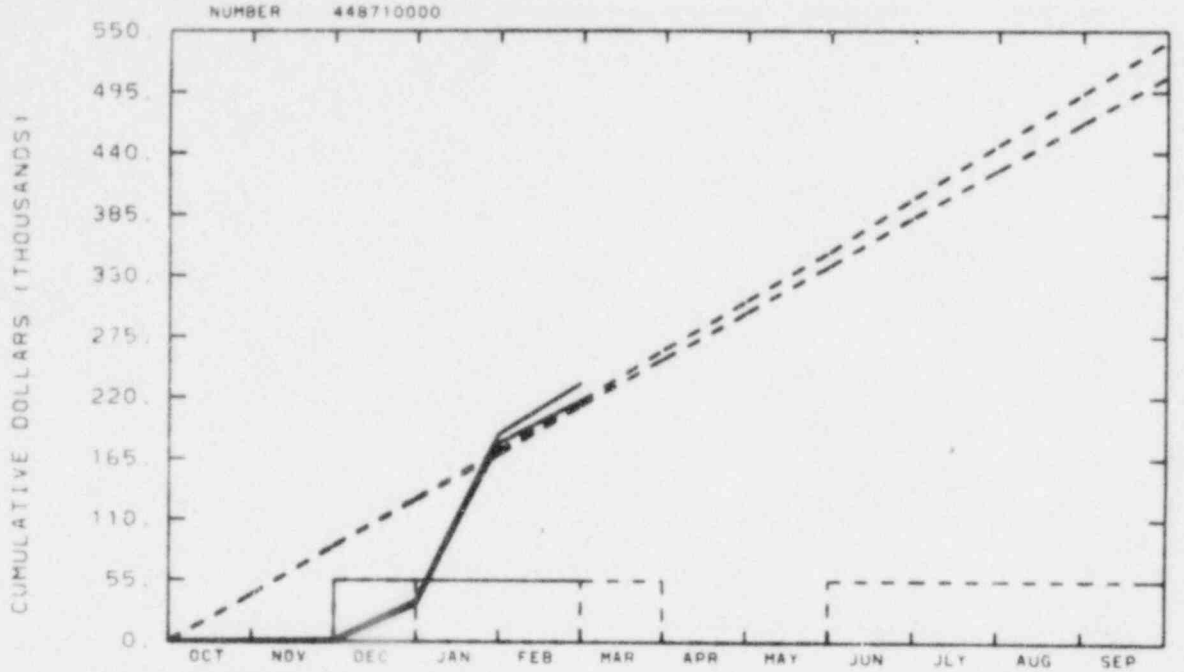
Delays in plant audits, as requested by the NRC, may require a portion of the project funding to be carried over to FY-1982 to complete this task.

RESPONSIBLE
MANAGER
R F SAFFELL

EG&G IDAHO INC.

ENVIR QUAL ELEC EQUIP A6417

NUMBER 448710000



TOTAL PROGRAM

BUDGET	42	86	130	173	218	264	308	352	400	447	494	530
ACTUAL	1	2	37	188	234							

MATERIAL

BUDGET	42	86	128	170	214	255	297	339	383	425	467	509
ACTUAL	0	0	33	180	218							

MANPOWER

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

BUDGET - - - -
ACTUAL ———

A6417

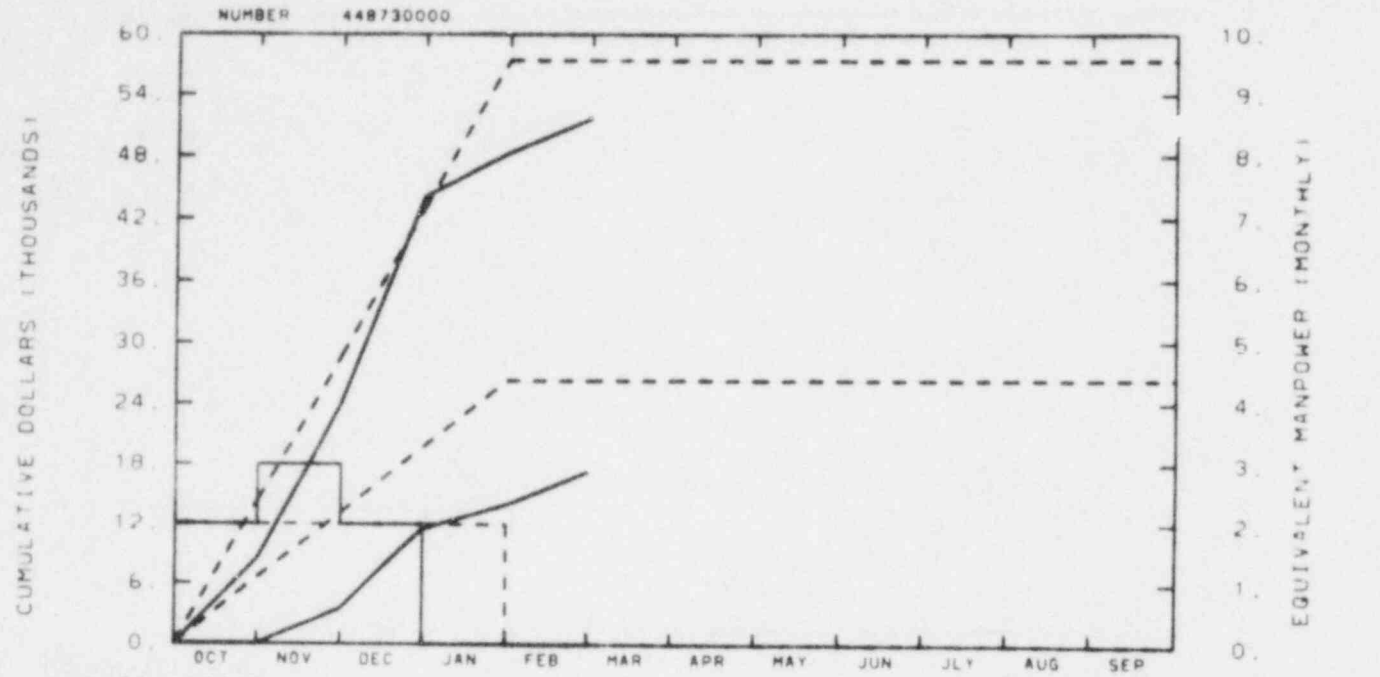
YTD VARIANCE: <15> (7%)

RESPONSIBLE
MANAGER
W. F. SAFFELL

EG&G IDAHO INC.

FRACTURE MECH EVALUATION A6419

NUMBER 448730000



TOTAL PROGRAM

BUDGET	14	29	43	57	57	57	57	57	57	57	57	57
ACTUAL	8	24	44	48	52							

MATERIAL

BUDGET	7	13	20	26	26	26	26	26	26	26	26	26
ACTUAL	0	4	12	14	17							

BUDGET - - - - -

ACTUAL ———

MANPOWER

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

A6419

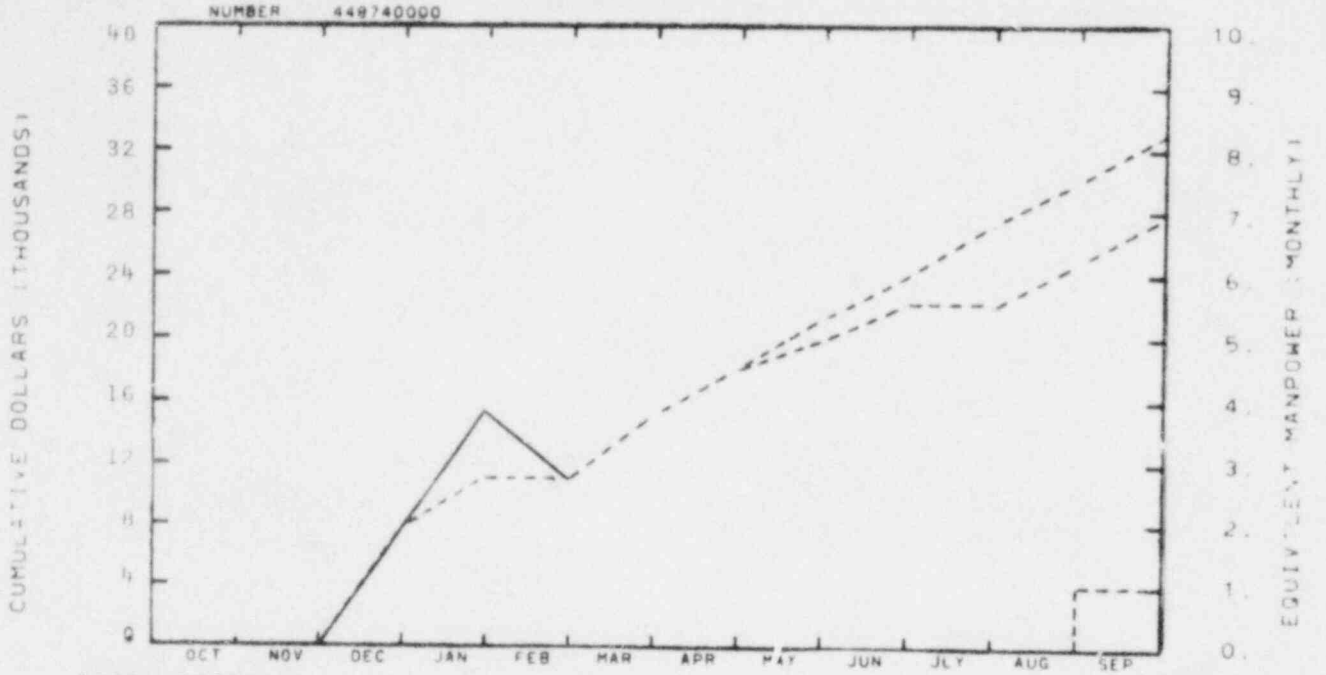
YTD VARIANCE: 5 (9%)

RESPONSIBLE MANAGER
B F SAFFELL

EG&G IDAHO INC.

PIPE CRACK STUDY GROUP A6420

NUMBER 449740000



TOTAL PROGRAM

BUDGET	0	0	8	11	11	15	18	21	24	27	30	33
ACTUAL	0	0	8	15	11							

MATERIAL

BUDGET	0	0	8	11	11	15	18	20	22	22	25	28
ACTUAL	0	0	8	15	11							

MANPOWER

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

BUDGET
ACTUAL

A6420

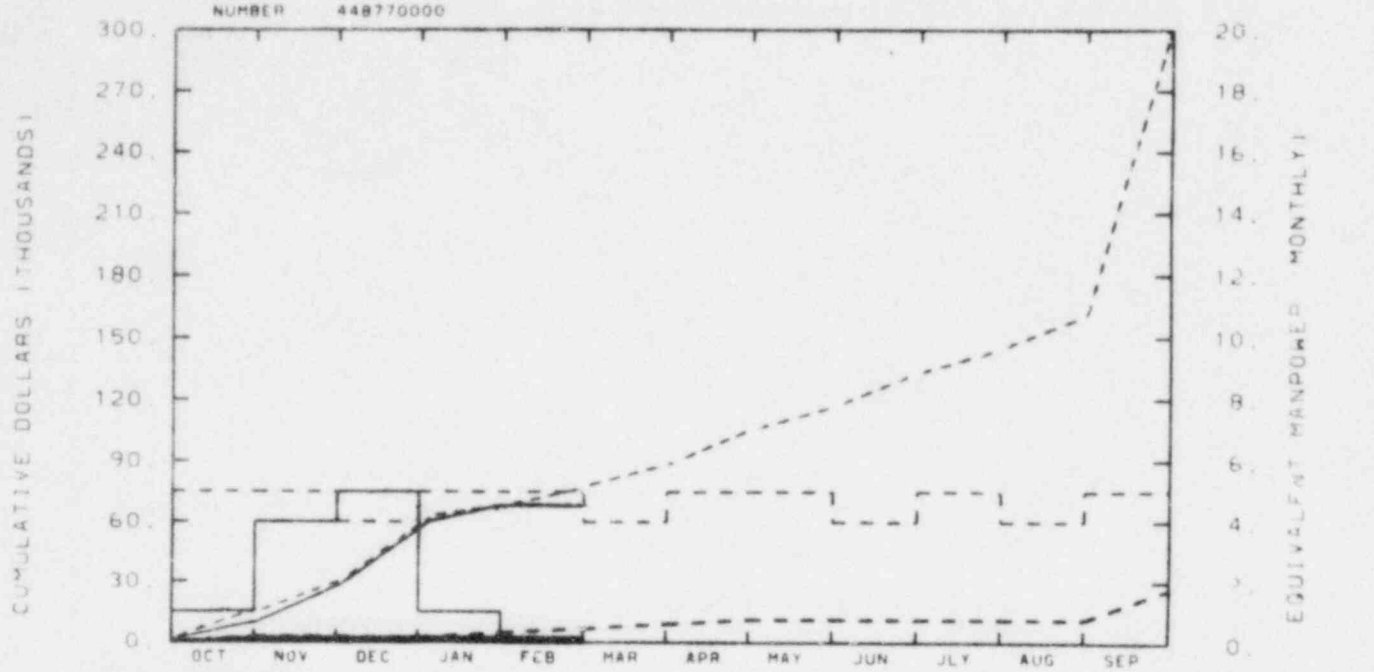
YTD VARIANCE: 0

RESPONSIBLE
MANAGER
[illegible] SAFETY

EG&G IDAHO INC.

CPER LIC FSAR AC RV A6422

NUMBER 448770000



TOTAL PROGRAM

BUDGET	15	30	60	65	73	88	104	117	131	146	160	300
ACTUAL	9	29	59	65	65							

MATERIAL

BUDGET	2	2	2	5	7	9	11	11	11	11	11	26
ACTUAL	2	2	2	2	2							

MANPOWER

BUDGET	5	5	4	5	5	4	5	5	4	5	4	5
ACTUAL	1	4	5	1	0							

BUDGET - - - - -

ACTUAL ———

A6422

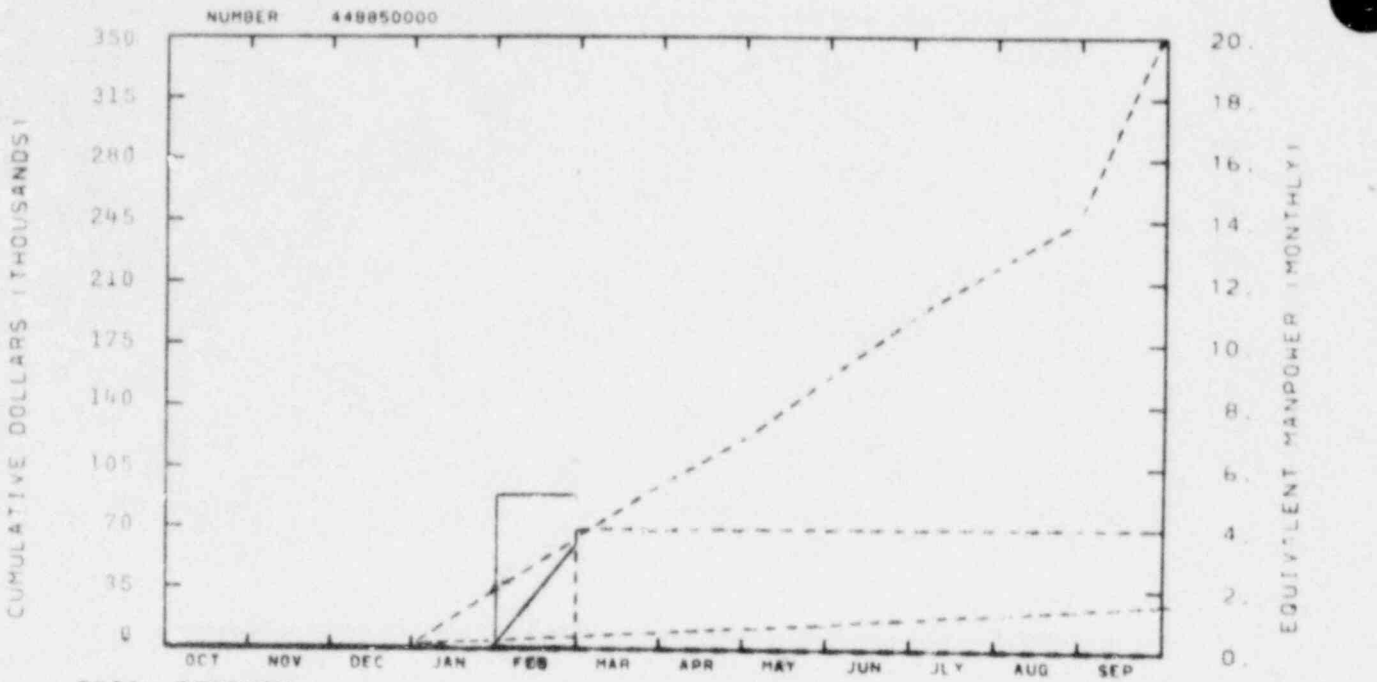
YTD VARIANCE: 8 (11%)

RESPONSIBLE
MANAGER
B / SAFFELL

EG&G IDAHO INC.

SELECT ISS I&C & RS II A6429

NUMBER 449850000



TOTAL PROGRAM

BUDGET	0	0	0	35	65	95	125	155	185	215	245	350
ACTUAL	0	0	0	0	64							

MATERIAL

BUDGET	0	0	0	1	3	7	10	11	13	14	16	18
ACTUAL	0	0	0	0	0							

MANPOWER

BUDGET	0	0	0	0	0	4	4	4	4	4	4	4
ACTUAL	0	0	0	0	5							

BUDGET
ACTUAL

A6429

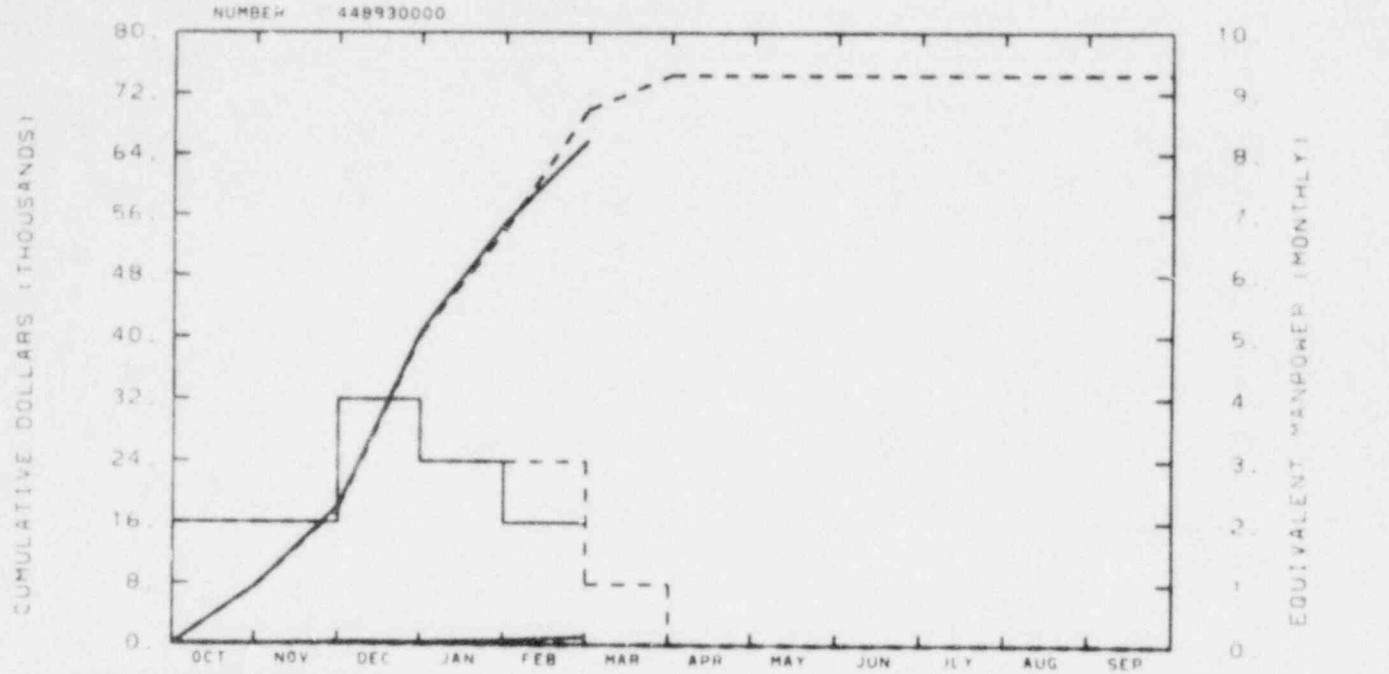
YTD VARIANCE: 1 (2%)

RESPONSIBLE
MANAGER
F SAFFELL

EG&G IDAHO INC.

RELOADS GUIDELINES OR EVAL A6436

NUMBER 448930000



TOTAL PROGRAM

BUDGET	8	18	40	54	70	74	74	74	74	74	74	74
ACTUAL	8	18	41	55	66							

MATERIAL

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

MANPOWER

BUDGET	2	2	4	3	3	1	0	0	0	0	0	0
ACTUAL	2	2	4	3	2							

BUDGET

ACTUAL

A6436

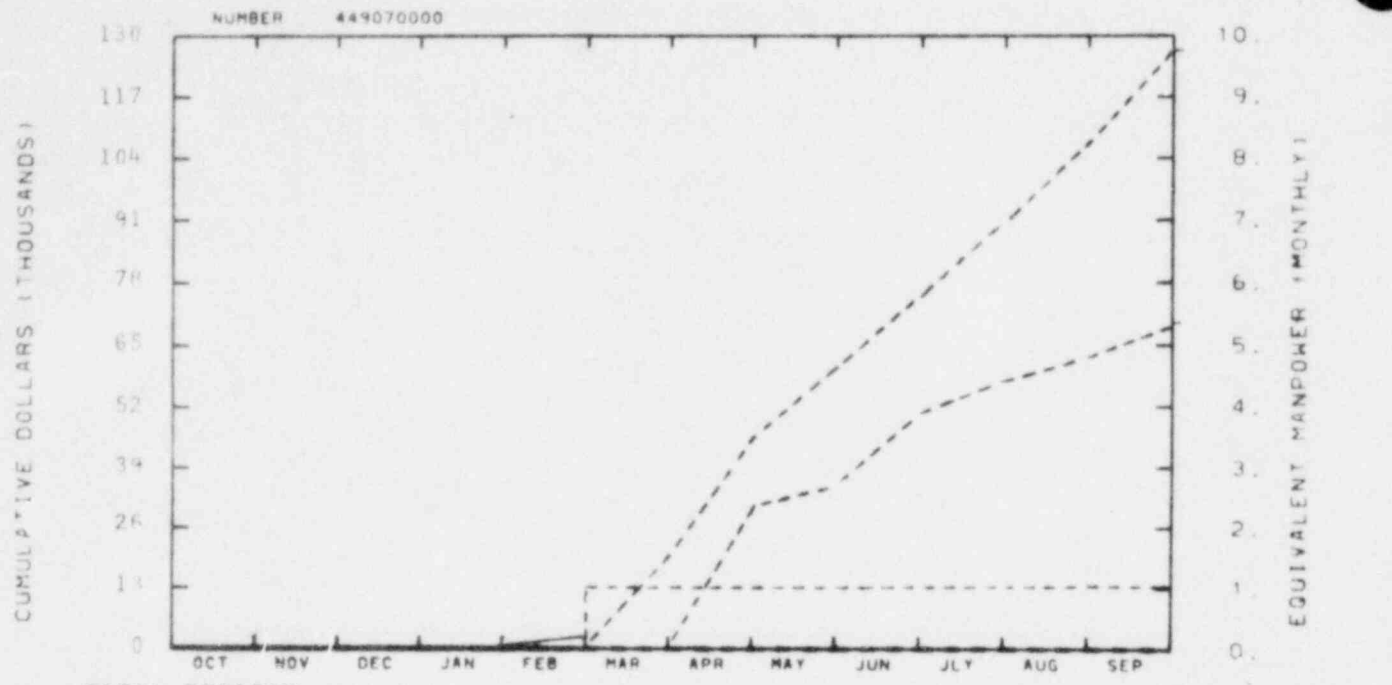
YTD VARIANCE: 4 (6%)

RESPONSIBLE
MANAGER
B F SAFFELL

EG&G IDAHO INC.

PIPE CRACK STUDY II A6449

NUMBER 449070000



TOTAL PROGRAM

BUDGET	0	0	0	0	0	20	45	60	75	91	107	125
ACTUAL	0	0	0	0	1							

MATERIAL

BUDGET	0	0	0	0	0	0	30	35	51	59	62	71
ACTUAL	0	0	0	0	0							

MANPOWER

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

BUDGET

ACTUAL

A6449

YTD VARIANCE: <1>

CODE ASSESSMENT AND APPLICATION DIVISION

NRR

TECHNICAL REVIEW & SUMMARY

PROGRAM MANAGER'S

SUMMARY AND HIGHLIGHTS

A6157: The standard problem supplied by Exxon Nuclear Corporation in support of the review of report XN-76-47P was worked and completed.

A6401: A draft SER on the Washington Public Power Supply System was submitted to NRC.

A6402: An error was discovered in Bechtel's computer code for base motion rotational accelerations. This is estimated to have an $11K fiscal impact against A6402.

A6415: An in-depth review of selected items for the LaSalle plant was completed.

Funding for the following two new programs was received and work initiated. Reporting will begin next month.

A6427: Operating Reactors - TMI Lessons Learned NUREG-0737 Response Evaluations (Program II).

A6453: Equipment Qualification Case Reviews.

A6429: Final TERs were completed for the following plants:

1. TAC# 12743, Crystal River, Unit 3, Cost = $6,562.
2. TAC# 12764, Dresden, Unit 1, Cost = $4,762
3. TAC# 12808, Quad Cities, Unit 1, Cost = $4,121.
4. TAC# 12809, Quad Cities, Unit 2, Cost = $4,122.

A6440: Final seismic-LOCA input for the LaSalle power plant was completed and issued to NRC.

1. A6152 Primary System Loss of Coolant Accident (LOCA) Response

2. Scheduled Milestones for February 1981

None.

3. Summary of Work Performed in February 1981

No work was performed on this task. Technical personnel are waiting for Westinghouse Owners Group data inputs from the NRC.

4. Scheduled Milestones for March 1981

None.

5. Summary of Work to be Performed in March 1981

Work will commence upon receipt of Westinghouse Owners Group data from the NRC.

6. Problems and Potential Problems

None.

1. A6156 Technical Assistance of Asymmetric LOCA Loads

2. Scheduled Milestones for February 1981

None.

3. Summary of Work Performed in February 1981

No work was performed on this task; technical personnel are waiting for NRC concurrence on the hydrodynamic mass report.

4. Scheduled Milestones for March 1981

None.

5. Summary of Work to be Performed in March 1981

It is anticipated that the hydrodynamic mass report will be transmitted formally to the NRC.

6. Problems and Potential Problems

None.

1. A6157 Fuel Assembly Seismic and LOCA Response

2. Scheduled Milestones for February 1981

None.

3. Summary of Work Performed in February 1981

A standard problem supplied by Exxon Nuclear Corporation in support of the review of report XN-76-47P was worked and completed. An audit report associated with this same review was transmitted to the NRC informally for comment.

4. Scheduled Milestones for March 1981

None.

5. Summary of Work to be Performed in March 1981

The final Exxon audit report will be transmitted formally to the NRC. A letter report will be completed documenting the Exxon standard problem comparisons. A technical evaluation report will be developed documenting the Exxon Topical Report XN-76-47P.

6. Problems and Potential Problems

None.

1. A6159 Technical Assistance to Environmental Evaluation Branch

2. Scheduled Milestones for February 1981

None.

3. Summary of Work Performed in February 1981

Technical Evaluation of Temporary/Mobile Radwaste Management Systems - Subcontractor, Exxon Nuclear received extensive NRC review comments on the first report submitted earlier. These comments were reviewed by the subcontractor.

Estimate of Off-Site Direct Radiation from Operating Reactors - Corrections to the final draft report as requested by the NRC Technical Monitor, are nearly complete.

Very Low Level Waste (Deminimus Radioactivity Level Task) - Work on rewriting the final report continued; NRC review comments were extensive requiring a major rewrite of the earlier report submittal.

4. Scheduled Milestones for March 1981

None.

5. Summary of Work to be Performed in March 1981

Estimate of Off-Site Direct Radiation from Operating Reactors - The camera-ready final report will be completed by the end of March and transmitted directly from the subcontractor to the NRC. Copies of the report will concurrently be sent to EG&G Technical personnel.

Very Low Level Waste (Deminimus Radioactivity Level Task) - The revised final report draft will be completed and sent to the NRC Technical Monitor for review and comment.

6. Problems and Potential Problems

None.

1. A6426 Seismic Evaluation/Piping Systems for Systematic Evaluation Program (SEP)

2. Scheduled Milestones for February 1981

None.

3. Summary of Work Performed in February 1981

A Senior Seismic Review Team (SSRT) meeting was held to discuss final modifications to the Oyster Creek report. This meeting was held at Livermore, California and was attended by EG&G technical personnel.

Modifications were made to some Millstone piping models. Preliminary work on the Millstone piping report is in progress.

4. Scheduled Milestones for March 1981

None.

5. Summary of Work to be Performed in March 1981

The Millstone piping analysis will be completed provided that needed information is recieved. Other scheduled tasks will be worked in place of Millstone in the event of late input data submittals.

6. Problems and Potential Problems

Completion of the Millstone piping analyses will be delayed until April 17, 1981 because of late receipt of licensee submittals; this data was received on March 4, 1981.

1. A6258 System Engineering Support (IST)

2. Scheduled Milestones for February 1981

None.

3. Summary of Work Performed in February 1981

The final report for Surry was completed and is in typing. Preparation of the final report for Indian Point continued.

4. Scheduled Milestones for March 1981

None.

5. Summary of Work to be Performed in March 1981

Final reports for Quad Cities, Trojan and Maine Yankee will be issued. Preparation of the final report for Indian Point will be completed, and Nine Mile Point will be started.

6. Problems and Potential Problems

None.

1. A6425 EICS Support for the Systematic Evaluation Program (SEP)

2. Scheduled Milestones for February 1981

None.

3. Summary of Work Performed in February 1981

The "Initial Draft" of Topic VI-4 was completed for Millstone.

4. Scheduled Milestones for March 1981

None.

5. Summary of Work to be Performed in March 1981

Work will continue on assigned topics.

6. Problems and Potential Problems

None.

1. A6265 Inservice Testing - DSS

2. Scheduled Milestones for February 1981

None.

3. Summary of Work Performed in February 1981

Preparation of the final report for Davis Besse continued.

4. Scheduled Milestones for March 1981

None.

5. Summary of Work to be Performed in March 1981

The final report for Davis Besse will be completed.

6. Problems and Potential Problems

None.

1. A6268 Fuel Performance Code Applications II

2. Scheduled Milestones for February 1981

None.

3. Summary of Work Performed in February 1981

No work was performed on this task.

4. Scheduled Milestones for March 1981

None.

5. Summary of Work to be Performed in March 1981

If NRC direction is received, work on this task will commence.

6. Problems and Potential Problems

If the NRC does not provide support and direction to these programs within 2 months, CAAD fuel behavior personnel will have to be reassigned to other work.

1. A6438/A6270 PWR Case Reviews

2. Scheduled Milestones for February 1981

None.

3. Summary of Work Performed in February 1981

Review of utility responses to second round questions was started for Comanche Peak. Preparation of the final Safety Evaluation Report for Waterford continued.

4. Scheduled Milestones for March 1981

None.

5. Summary of Work to be Performed in March 1981

Review of utility responses to second round questions will be completed and preparation of the final Safety Evaluation Report will be started. A meeting will be held at Bethesda to discuss outstanding items. Preparation of the SER for Waterford will continue.

6. Problems and Potential Problems

None.

1. A6450/A6401 Materials Engineering Case Review I

2. Scheduled Milestones for February 1981

None.

3. Summary of Work Performed in February 1981

Inservice Inspection Reviews - An EG&G engineer working on this task spent the weeks of February 16 and 23 at NRC-Division of Engineering working on this task and reviewing background material. New funding authorization was received and the proposal requested was prepared.

Transverse vs. Longitudinal Charpy V-Notch Impact Test - Work continued on compiling data on the transition curve shift between longitudinal versus transverse oriented test specifications. The temperature change relative to these curves and the 50-ft-lb. Charpy impact test was also examined.

Washington Public Power Supply System (WPPSS) SER: A draft SER was submitted; the NRC review comments on this draft were received on February 23, 1981. The NRC technical monitor requested that the trip planned for February be postponed until March 28.

A piping and finite element analysis seminar was prepared.

4. Scheduled Milestones for March 1981

None.

5. Summary of Work to be Performed in March 1981

Inservice Inspection Reviews - Work on new tasks will be continued. Watts Bar preservice inspection (PSI) program plan comments will be updated. Review of the PSI program and issuance of comments will be completed for Washington Public Power Supply System, Unit 2.

Transverse vs. Longitudinal Charpy V-Notch Impact Test - Work will be continued on establishing the temperature related shift for test specimens oriented in the longitudinal direction versus transversly oriented test specimens.

5. Summary of Work to be Performed in March 1981 (Continued)

Washington Public Power Supply System - The draft SER will be completed.

Palo Verde - Work on preparation of the SER will continue.

Seminar - A piping and finite element analysis seminar will be presented to the NRC.

6. Problems and Potential Problems

None.

1. A6402 Structural Engineering Case Review II

2. Scheduled Milestones for February 1981

None.

3. Summary of Work Performed in February 1981

A6402 - Grand Gulf: An error was discovered in Bechtel's computer code for base motion rotational accelerations on February 5; three weeks were lost while Bechtel searched for and found the error. To minimize schedule impact, work on writing the final report was started.

4. Scheduled Milestones for March 1981

None.

5. Summary of Work to be Performed in March 1981

Grand Gulf - The auxiliary building analysis and, the containment building seismic analysis will be redone using the new base motion rotational accelerations supplied by Bechtel.

6. Problems and Potential Problems

The total fiscal impact associated with the Bechtel computer error is a 22K (11 man-weeks plus 3K computer) loss. Three man-weeks were associated with resolving and finding the error, and an additional 8 man-weeks will be required to rerun the analysis with the amended program input. In addition, 3K worth of computer time will also be required.

1. A6405 Inservice Inspection

2. Scheduled Milestones for February 1981

None.

3. Summary of Work Performed in February 1981

New funding authorization was recieved and a proposal has been transmitted to the NRC as requested. Revision of a draft report for Task 1 was completed and put into final typing. Review comments on the draft regulatory guide for ultrasonic examination of austenitic pipe welds were transmitted to NRC.

4. Scheduled Milestones for March 1981

None.

5. Summary of Work to be Performed in March 1981

The report on Task 1 will be prepared for transmittal to NRC. Work will be started on Task 2.

6. Problems and Potential Problems

None.

1. A6415 Dynamic Qualification of Safety Related Electrical and Mechanical Equipment

2. Scheduled Milestones for February 1981

None.

3. Summary of Work Performed in February 1981

In-depth review of the selected items for LaSalle plant was completed. A preliminary review of the "Post-Audit Documentation" for LaSalle was also completed. Some of the outstanding issues were resolved.

4. Scheduled Milestones for March 1981

None.

5. Summary of Work to be Performed in March 1981

The effort to resolve the outstanding issues for LaSalle and San Onofre will continue. The review of the "Post-Audit Documentation" for San Onofre will begin. The Zimmer Seismic Qualification Review Team (SQRT) evaluation/qualification status report will be reviewed.

6. Problems and Potential Problems

None.

1. A6417 Environmental Qualification of Electrical Equipment - Data Bank and Test Report Evaluations

2. Scheduled Milestones for February 1981

None.

3. Summary of Work Performed in February 1981

Tasks 1 and 2: EG&G personnel met with Franklin Laboratories personnel to review work on Tasks 1 and 2. Work is on schedule. A total of 46 plant submittals have now been entered into the plant file. Entry of eleven additional plants is near completion.

Task 3: A total of 181 component items have now been entered into the equipment file.

4. Scheduled Milestones for March 1981

None.

5. Summary of Work to be Performed in March 1981

Tasks 1 and 2: Work will continue to complete entry of eleven additional plants into the plant file (bringing the total to 57). A procedure will be developed to handle ten out-of-the-ordinary format submittals (tabular submittals) and enter those submittals into the plant file. Six plant submittals still have not been received at Franklin.

Task 3: Effort will continue in review of test reports and entry of data into the equipment file.

6. Problems and Potential Problems

None.

1. A6419 Fracture Mechanics Analysis

2. Scheduled Milestones for February 1981

None.

3. Summary of Work Performed in February 1981

The data analysis was completed and the results were plotted for figures in the draft report. Initial review of the subcontractors report was not completed due to a lack of funding.

4. Scheduled Milestones for March 1981

None.

5. Summary of Work to be Performed in March 1981

Complete the review of the subcontractors report.

6. Problems and Potential Problems

None.

1. A6422 Operating License Final Safety Analysis Report (FSAR) Acceptance Reviews

2. Scheduled Milestones for February 1981

None.

3. Summary of Work Performed in February 1981

No effort was expended on this task during the month.

4. Scheduled Milestones for March 1981

None.

5. Summary of Work to be Performed in March 1981

Future work on this task will be dependent on receipt of review materials from the utility.

6. Problems and Potential Problems

None.

1. A6429 Electrical Instrumentation and Control System (EICS) Support

2. Scheduled Milestones for February 1981

None.

3. Summary of Work Performed in February 1981

The final Technical Evaluation Reports (TERs) for the following plants were completed:

1. TAC# 12743, Crystal River, Unit 3, Cost = $6,562.
2. TAC# 12764, Dresden, Unit 1, Cost = $4,762.
3. TAC# 12808, Quad Cities, Unit 1, Cost = $4,121.
4. TAC# 12809, Quad Cities, Unit 2, Cost = $4,122.

To date, ten final TER's have been completed for FIN A6429; 2 for Project 1 and 8 for Project 2.

4. Scheduled Milestones for March 1981

None.

5. Summary of Work to be Performed in March 1981

Work will continue on assigned reviews.

6. Problems and Potential Problems

None.

1. A6431 General Pressurized Water Reactor (PWR) Safety Evaluation Report (SER) for Asymmetric LOCA Loads

2. Scheduled Milestones for February 1981

None.

3. Summary of Work Performed in February 1981

No work was performed in February.

4. Scheduled Milestones for March 1981

None.

5. Summary of Work to be Performed in March 1981

Technical personnel anticipate attending an Owners Group utility meeting when requested to do so by the NRC.

6. Problems and Potential Problems

None.

1. A6432 Component Integrity Evaluation Program

2. Scheduled Milestones for February 1981

None.

3. Summary of Work Performed in February 1981

The subcontractor is performing the contractural work scope as planned.

4. Scheduled Milestones for March 1981

None.

5. Summary of Work to be Performed in March 1981

The subcontractor will continue work toward the contractually scheduled milestones.

6. Problems and Potential Problems

None.

1. A6434 Review of Pump and Valve Operability Assurance Programs

2. Scheduled Milestones for February 1981

None.

3. Summary of Work Performed in February 1981

The task Statement of Work was prepared and orientation started. Review of the pump and valve operability assurance program began for Washington Nuclear Power, Unit 2.

4. Scheduled Milestones for March 1981

None.

5. Summary of Work to be Performed in March 1981

Review of the WNP-2 program will continue and review of the Callaway program will be started.

6. Problems and Potential Problems

None.

1. A6435/A6407 Safety Related Pump and Valve Reliability and Operability

2. Scheduled Milestones for February 1981

None.

3. Summary of Work Performed in February 1981

EG&G project management and technical personnel met with the NRC technical monitor to discuss program definitions and task methodology. The NRC technical monitor supplied draft copies of American National Standards Institute and American Society of Mechanical Engineers (ANSI and ASME) specifications and a draft of Standard Review Plan (SRP) 3.9.3 to be used in the performance of this task.

4. Scheduled Milestones for March 1981

None.

5. Summary of Work to be Performed in March 1981

Work on comparisons of draft ANSI and ASME specifications with a draft of SRP 3.9.3 will be started.

6. Problems and Potential Problems

None.

1. A6436 Steam Generator Transients & Operating Reactors (OR) Evaluations for Reactor Systems Branch (RSB)

2. Scheduled Milestones for February 1981

None.

3. Summary of Work Performed in February 1981

A table of input data to be requested for development of RELAP5 PWR models was established. The development of the format for the Applications Manual was initiated.

4. Scheduled Milestones for March 1981

None.

5. Summary of Work to be Performed in March 1981

The development of a computer code model and analysis of a steam line break in the North Anna plant will continue.

6. Problems and Potential Problems

The development of computer models and analysis of steam line breaks are contingent on receipt of plant specific information from the NRC. If this requested information is not obtained, the schedule for completion of the steam line break analysis will be slipped. Continued effort on this task is also contingent on receiving additional funds for this task by mid-March.

1. A6440 Fuel Assembly Seismic and LOCA Response

2. Scheduled Milestones for February 1981

None.

3. Summary of Work Performed in February 1981

A technical evaluation report documenting the Westinghouse topical report WCAP-9401 review was reviewed and transmitted to the NRC for comment.

Audit calculations for the San Onofre power plant Units 2 and 3 fuel system analyses were compared to those supplied by Combustion Engineering. A meeting was held in Windsor, Connecticut to clear up outstanding issues for the CE topical report CENPD-178 and the San Onofre audit. A draft SER was completed for the San Onofre seismic LOCA analysis and transmitted to the NRC.

Final seismic-LOCA SER input for the LaSalle power plant was completed and given to the NRC for incorporation into the overall SER.

4. Scheduled Milestones for March 1981

None.

5. Summary of Work to be Performed in March 1981

A final Technical Evaluation Report (TER) on the Westinghouse topical WCAP-9401 review will be transmitted formally to the NRC.

Axial audit analyses will be completed for the San Onofre power plant fuel system incorporating changes to yield a better comparison with vendor results. A draft audit analysis report will be completed and transmitted to the NRC for comment. Work will begin on the standard problem comparison required by the Standard Review Plan for the CE topical CENDP-178 review.

6. Problems and Potential Problems

None.

1. A6448 Fuel Mechanical Response Evaluation for Operating Reactors

2. Scheduled Milestones for February 1981

None.

3. Summary of Work Performed in February 1981

No work was performed on this task; technical personnel are currently awaiting receipt of the vendor's Millstone 2 reload analysis.

4. Scheduled Milestones for March 1981

None.

5. Summary of Work to be Performed in March 1981

Work on this task will commence upon receipt of the vendor's Millstone 2 reload analysis.

6. Problems and Potential Problems

None.

1. A6449/A6420 Pipe Crack Study Group Analysis

2. Scheduled Milestones for February 1981

None.

3. Summary of Work Performed in February 1981

No work was performed this month; technical personnel are waiting for input from subcontractor Dr. Paul Paris before a camera-ready copy of the NUREG report can be assembled.

4. Scheduled Milestones for March 1981

None.

5. Summary of Work to be Performed in March 1981

A method of calculating the J integral will be defined and computer calculations of the J integral will be started.

6. Problems and Potential Problems

None.

MONTHLY REPORT FOR

FEBRUARY 1981

GPP AND LINE ITEMS

Ted L Rasmussen

T. L. Rasmussen, Manager
Project Management Division

C. G. Bruch/cmj

C. G. Bruch, Construction Program Manager
Planning & Budgets Division

WATER REACTOR RESEARCH TEST FACILITIES DIVISION

EG&G IDAHO, INC.

GPP ITEM

PROGRAM WATER REACTOR RESEARCH TEST FACILITIES DIVISION

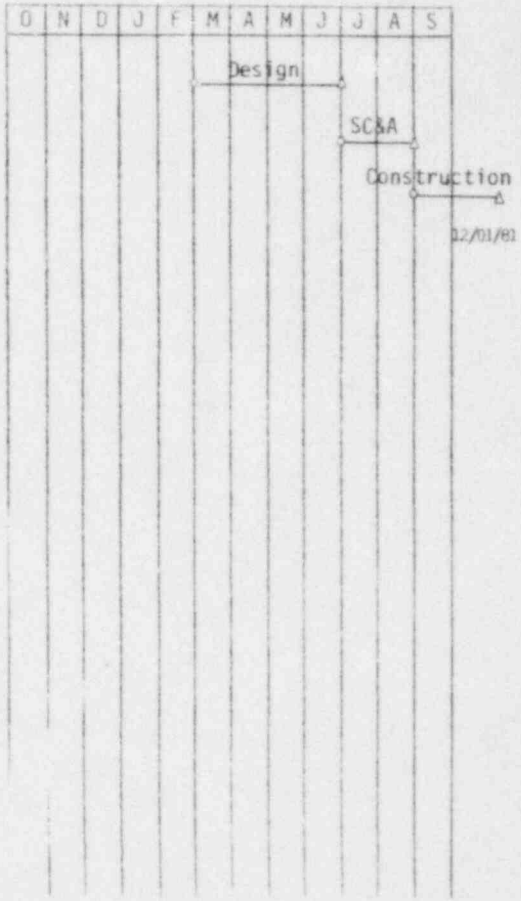
FY-1981

MANAGER P. North

189a No. A6038

EA No.	Item Description	Original PA Amount	($000) Current Est. Cost	Project To Date Costs
93520	WRRTF Water Well Upgrade	125	125	-0-

Task Initiated o
Task Completed Δ



7-03

THERMAL FUELS BEHAVIOR PROGRAM

EG&G IDAHO, INC.

GPP ITEMS

PROGRAM THERMAL FUELS BEHAVIOR PROGRAM

FY-1980 Carryover

MANAGER J. P. Kester

189 No. A6044

EA No.	Item Description	Original PA Amount	($000) Current Est. Cost	Project To Date Costs	
931900000	PBF Support Building 1/	509	575	EG&G	$ 88,080 1/
				MK	$468,583

Month

1/ Work is complete, but costs are still being accumulated.