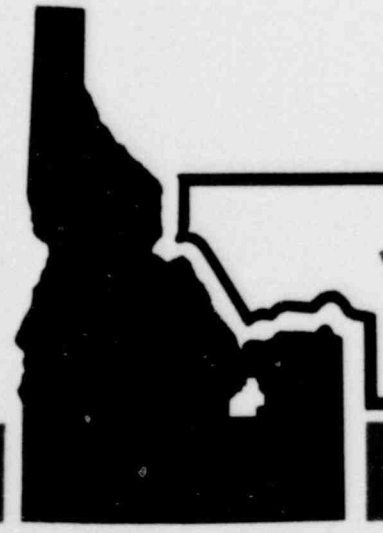
WRRD MONTHLY REPORT FOR
MARCH 1979

April 1979



EG&G Idaho, Inc.

IDAHO NATIONAL ENGINEERING LABORATORY

DEPARTMENT OF ENERGY

IDAHO OPERATIONS OFFICE UNDER CONTRACT EY-76-C-07-1570

INTERIM REPORT

Accession No. _____

5-3-79

7906020114

Contract Program or Project Title:

Subject of this Document: "WRRD Monthly Report for March 1979"

Type of Document: Monthly Report

Author(s): L. J. Ybarrondo, et al

Date of Document: April 1979

Responsible NRC Individual and NRC Office or Division: Various Offices

This document was prepared primarily for preliminary or internal use. It has not received full review and approval. Since there may be substantive changes, this document should not be considered final.

for H. P. Pearson, Supervisor
Information Processing
EG&G Idaho

Prepared for
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

2306 098

INTERIM REPORT

NRC Research and Technical Assistance Report

EG&G Idaho, Inc.

P. O. Box 1625
Idaho Falls, Idaho 83401

April 17, 1979

Mr. R. E. Tiller, Director
Reactor Operations & Programs Division
Idaho Operations Office - DOE
Idaho Falls, ID 83401

TRANSMITTAL OF WRRD MONTHLY REPORT - Ybr-67-79

Dear Mr. Tiller:

Transmitted herewith are 4 copies of the WRRD Monthly Report for March, 1979, including all WRR Programs except LOFT. The NRR Technical portion for Code Development & Analysis Program and Code Assessment & Applications Program is also included.

Please let me know if you have any questions or comments.

Very truly yours,

Paul Wirth for

L. J. Ybarrondo, Director
Water Reactor Research

WEB:ca

Enclosures:
As stated

cc: W. F. Anderson, NRC-OSD
R. L. Baer, RS-NRR
R. W. Barber, DOE-RSRC
G. L. Bennett, NRC-RSR
R. J. Bosnak, DSS-NRR
A. R. Buhl, NRC-RES - 3
D. Bunch, NRC-NRR
W. R. Butler, PSYB-NRR
P. S. Check, DOR-NRR
E. H. Davidson, NRC-RSR
D. K. Davis, NRC-DOR
D. G. Eisenhut, NRC-DOR
S. Fabic, NRC-RSR
W. Farmer, NRC-RSR
B. K. Grimes, DOR-NRR
W. V. Johnston, NRC-RSR
K. Kniel, NRC-DSS
J. P. Knight, DSS-NRR
G. C. Lainos, NRC-DOR
R. J. Mattson, DSS-NRR
S. B. Milam, DOE-ID
T. E. Murley, NRC-RSR
T. H. Novak, DSS-NRR
S. S. Pawlicki, DSS-NRR
H. P. Pearson, EG&G Idaho - 6
Z. R. Rosztoczy, DSS-NRR
L. Rubenstein, NRC-NRR
L. Shao, NRC-RSR
V. Stello, DOR-NRR
P. O. Strom, NRC-ID
R. L. Tedesco, DSS-NRR
J. T. Telford, DOR-NRR
L. S. Tong, NRC-RSR
R. W. Kiehn, EG&G Idaho, w/o encl.

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MARCH 1979

William E. Bostwick

W. E. Bostwick, Officer
Planning and Budgets Branch

Paul North for L.J.Y.

L. J. Ybarrondo, Director

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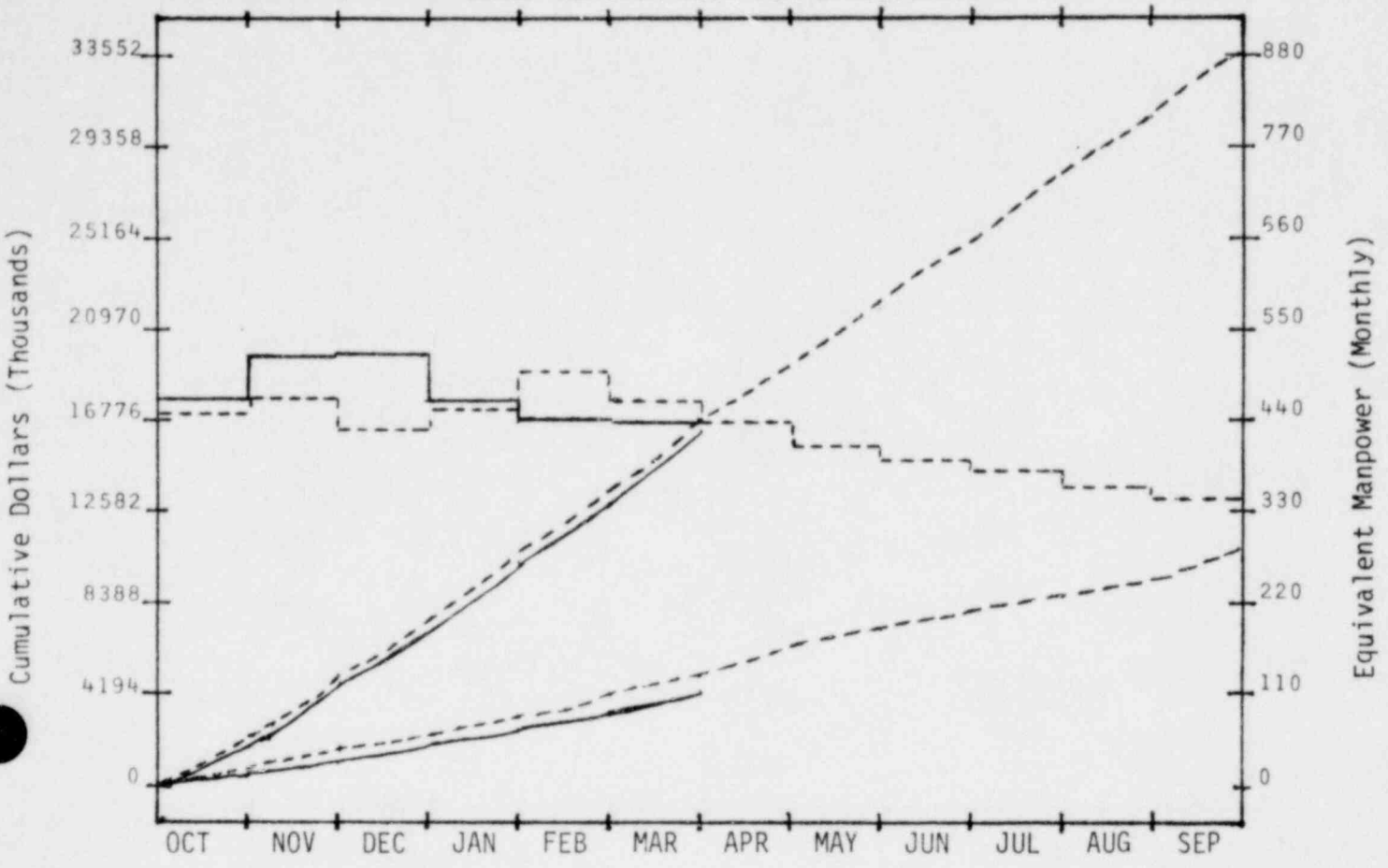
Responsible Manager
L. J. Ybarrondo

EG&G Idaho, Inc.

WATER REACTOR RESEARCH DIRECTORATE



TOTAL PROGRAM

BUDGET	2555	4892	7508	10565	13352	16690	19560	22420	24962	27825	30162	33552
ACTUAL	2302	4748	7462	10295	12760	16390						

BUDGET

ACTUAL

MATERIAL

BUDGET	682	1339	2129	3107	3993	4948	5852	6908	7796	8670	9431	10979
ACTUAL	397	1012	1622	2337	2998	4386						

MANPOWER

BUDGET	443	462	427	446	483	449	430	407	391	373	355	344
ACTUAL	460	502	503	450	438	426						

YTD VARIANCE: 300 (2%)

The total WRR Programs are underrun by $300K. Individual 189a cost graphs will provide variance explanations.

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

SEMISCALE

WRRD MONTHLY REPORT FOR
MARCH 1979
SEMISCALE PROGRAM

J. P. Crouch
Plans & Budget Representative

D. J. Olson, Manager

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SEMISCALE

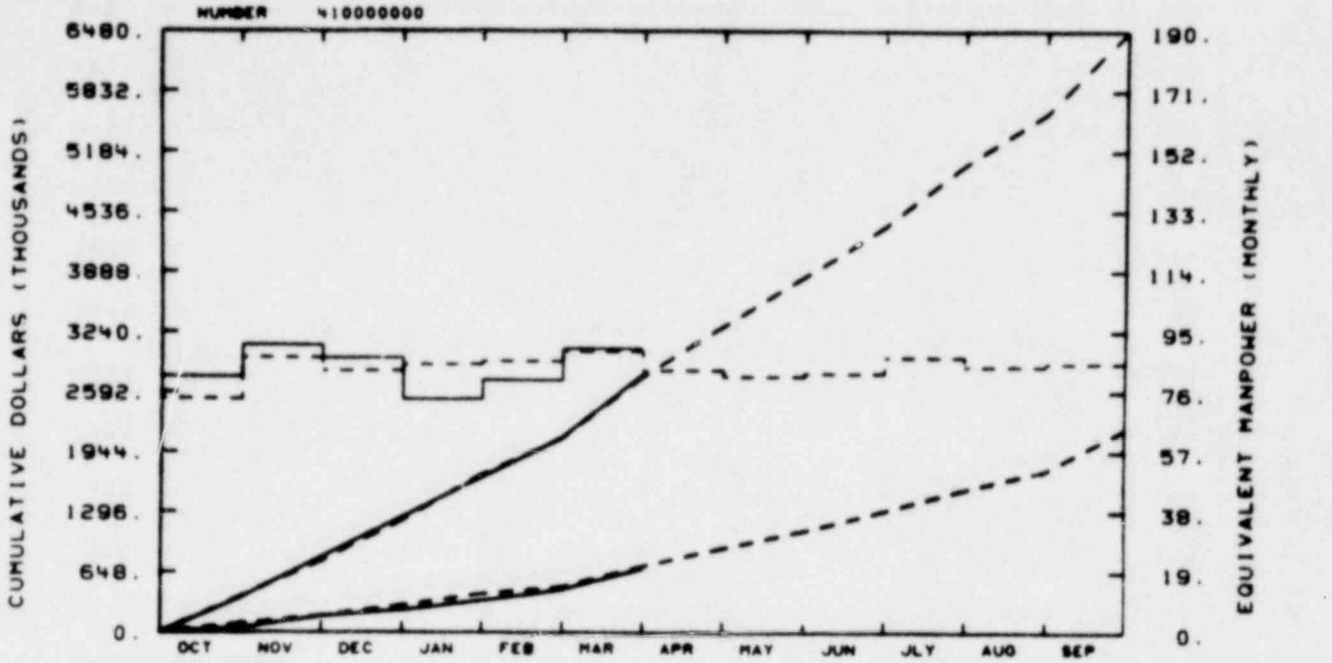
COST SUMMARY & COMMENTS

RESPONSIBLE MANAGER
D J OLSON

EG&G IDAHO INC.

SEMISCALE PROGRAM

NUMBER 410000000



TOTAL PROGRAM

BUDGET	389	788	1210	1701	2102	2765	3307	3835	4377	5045	5598	6472
ACTUAL	373	811	1242	1676	2111	2794						

MATERIAL

BUDGET	94	179	291	413	491	709	904	1092	1308	1539	1737	2183
ACTUAL	45	172	239	341	460	695						

BUDGET - - - - -

ACTUAL ———

MANPOWER

BUDGET	74	87	83	85	86	89	83	81	82	87	84	85
ACTUAL	81	91	87	74	80	90						

A6038

YTD VARIANCE: <29> (1%)

The overrun is due primarily to a shift in emphasis to additional analysis related to Test S-07-6 and to the advanced instrumentation development effort to resolve measurement anomalies related to low energy densitometer systems. A shift in emphasis from increased utilization of scientific to a more technician level effort should correct this overage.

SEMISCALE
CAPITAL EQUIPMENT

EG&G IDAHO, INC.

CAPITAL EQUIPMENT PRIORITY LIST

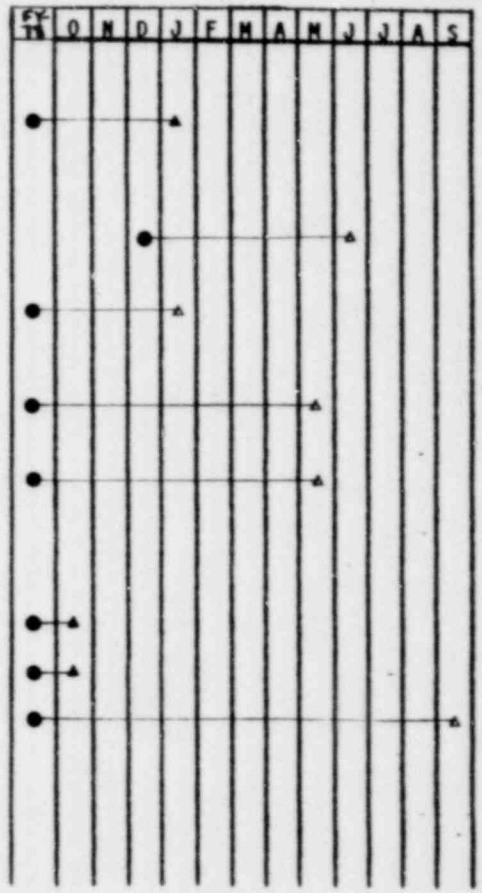
CARRYOVER

Program SEMISCALE **189 Number** A6038 (A6059) **Manager** D. J. Olson

Priority Number	EA No.	Item Description	Authorized Amount	YTD Costs & Commit.	Project to Date	<Over>/Under Balance
1	9D1DA2000	Amplifier & Signal Conditioners for DAS Upgrade	$ 159,369	$157,202	$ 158,639	$ 730
3	9D1DA1000	Multiplexing & Analog to Digital Conversion Components				
8	9D1DA1000	Data Acquisition Equipment for Inst. Devel. Flow Loop	130,000	16,501	16,501	113,499
4	9D1M31000	Acquisition & Interpretation Sys. for Low Energy Densitometers	118,000	42,235	136,175	-18,175>
5	9D1M22000	Intact Loop Pump				
6	9D1M32000	Spare Braoken Loop Pump Control System	415,561	400,786	534,203	<118,642>
7	9D1AW1000	Variable Speed Pump for Instrument Development & Low Loop	19,000	16,502	17,495	1,505
8	9D1AS200	Wang				
9	9D1AS200	Data Retrieval & Display Equip.				
9	9D1AS200	Data Retrieval & Display Equip.				
10	9D1AS200	Systems Maintenance/Modification Equip.				
10	9D1AS200	Portable Pneumatic Calibration	57,510	993	129,514	<72,004>
	9D1AS2100	Rectifier Cap	258,521	4,563	263,084	< 4,563>
		Misc. items from prior years	94,859	18,915	18,915	75,944
			$1,252,820	$657,697	$1,274,526	$<21,706>

Carryover Budget $ 635,991
-YTD Costs & Commit. 657,697
BALANCE $ <21,706>

Item Authorized o
Money Committed Δ
Equipment Received, Account Closed ■



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EG&G IDAHO, INC.

CAPITAL EQUIPMENT PRIORITY LIST

FY-1979

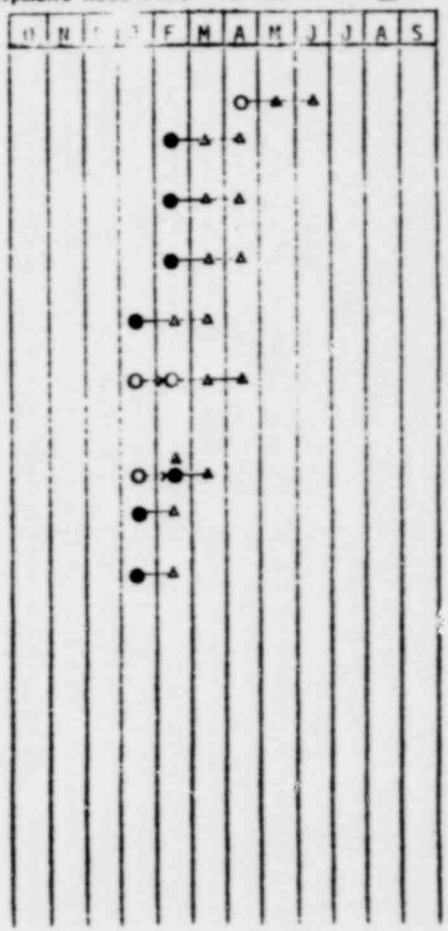
Program Semiscale

189 Number A6038 (A6059)

Manager D. J. Olson

Item Authorized o
Money Committed Δ
Equipment Received, Account Closed ■

Priority Number	EA No.	Item Description	Authorized Amount	March YTD Costs & Commitments	<Over>/Under Balance
1.	411TP1100	Low Energy Densitometer Support Electronics	$200,000	--	$200,000
2.	411M21100	Type II Steam Generator	175,000	$ 685	174,315
3.	411AD1100	Data Acquisition & Interpretation System for Optical Scanning	80,000	--	80,000
4.	411DA2100	DAS Support & Calibration Equipment & Turbine Conditioners	85,000	19,993	65,007
5.	411DA1100	DDAPS Equipment, Digital Magnetic Tapes, 475 Scope, Tester, and IO Extender	20,000	28,032	<8,032>
6.	411FU1100	Semiscale Facility Power Distribution System Replacement Components	87,000	2,142	84,858
7.	411DE1000	Integrated Data Systems Support	148,000	--	148,000
8.	411FU1200	Semiscale Operation Monitor Display, Including TV System and Display Board	30,000	26,596	3,404
9.	411DA2200	Control System Support Equipment	15,000	4,868	10,132
10.	411FU1300	Systems Maintenance/Modification Equipment (power tools, gages, handling devices, etc.)	10,000	2,111	7,889
			$850,000	$ 84,427	$765,573



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SEMISCALE

TECHNICAL REVIEW & SUMMARY

PROGRAM MANAGER'S SUMMARY AND HIGHLIGHTS

Semiscale Program personnel worked round the clock Friday, March 30th, through Monday, April 2nd, to perform testing and analysis in response to DOE-ID and NRC requests for data and analysis to aid the investigation of thermal-hydraulic phenomena associated with then current conditions at the Three Mile Island nuclear power plant. Two major tests associated with this effort were performed on March 31st and April 2nd.

Other Semiscale Program effort was directed toward the conduct of two Mod-3 baseline tests during March 1979. Tests S-07-8 and S-07-9 were conducted to investigate the effectiveness of lower plenum ECC injection and the effect of time of accumulator ECC injection on the Semiscale Mod-3 core and system response. Preliminary evaluation of the data from the two tests indicates that the important test parameters were within specified tolerances and that the test objectives were achieved.

1. 189a A6038 - Semiscale Program

2. Scheduled Milestones for March 1979

Node	Description	Due Date	Actual Date
____	Perform Mod-3 Test S-07-8, lower plenum injection experiment	03-13-79	03-16-79
____	Perform Mod-3 Test S-07-9, lower plenum injection experiment	03-27-79	03-21-79

3. Summary of Work Peformed in March 1979

a. Semiscale Facility Operations

(1) Following a series of mechanical problems (seal leakage) with both the intact and broken loop pumps, Test S-07-8 was successfully completed on March 16, 1979. Test S-07-9 was successfully completed 5 days later on March 21, 1979.

(2) Two tests supporting the Three Mile Island incident known as 3MI-1 and 3MI-2 were accomplished on March 30, 1979, and April 1, 1979, respectively. Test Operations personnel worked through the night in support of a Nuclear Regulatory Commission request.

(3) The experiment data reports (EDRs) for Mod-3 Tests S-07-8 and S-07-9 are scheduled for release on June 18, 1979, and June 20, 1979, respectively. Work in support of these EDRs was continued.

(4) The Semiscale Air-Water Loop was used to evaluate the instrumentation in the broken loop of the Semiscale Mod-3 system. All water flows were routed from the Air-Water Loop through the Semiscale Mod-3 system and back into the Air-Water Loop. An Air-Water Loop calibrated flow turbine standard was used to measure the flow leaving the Air-Water Loop and the flow returning back to the Air-Water Loop. Measurements from Semiscale flow-sensitive instrumentation were compared to the flows measured by the Air-Water Loop standards for varied flow rates to provide in-place calibration data for such instrumentation.

b. Semiscale Design and Fabrication

(1) Subcontract K-4601 was awarded to fabricate, assemble, and hydrostatically test the two-pipe downcomer components for the Mod-3A vessel.

(2) Several configurations of instrument washer designs were completed and released for evaluation. These are in conjunction with the low energy densitometer systems which require beryllium inserts to allow passage of the low energy X-rays. Every attempt is being made in the design phase to utilize existing Monel washers because of the large investment involved.

(3) The bids were received for the new steam generator and a preaward conference was held at the potential vendors plant. The apparent low bid is $197,800 and is below the engineering estimate of $225,000. A problem may exist on vendors ability to procure the full length seamless tubing required for the tube bundle.

(4) The contract for the new intact loop pump base was awarded on March 1. The base utilizes Thompson ball bushings for easy translation of the pump in the X-Y planes to prevent distortion in the pump from piping growth.

(5) The contract for balancing the spare broken loop pump shaft and rotor assembly was awarded.

(6) A contract was negotiated and let to Metallurgical Consultants Incorporated to fabricate and test 92 water cooled pressure probes. These are to be used on 3-D and Semiscale.

(7) Design and fabrication of a test fixture to test individual alarm/trip/scaling chassis NIM modules was completed and checkout of NIM module prototype was completed.

(8) A design layout of the control room for the proposed air-water loop modification was prepared.

(9) Interconnect diagrams were prepared for installation of the 100-hp air-water loop pump.

c. Semiscale Mod-3 Baseline Tests (Test Series 7)

(1) Data from Tests S-07-8 and S-07-9 were reviewed and the quick look report for these tests is in preparation. Instrumentation performance was generally good with the exception of some range problems and failures. The core and downcomer density data are being reviewed in detail. Preliminary comparisons of the code to the data indicated in general that the measured quench times are shorter than those calculated.

(2) Work was continued on reflood heat transfer analysis. Several slip correlations were examined for use in a general film boiling correlation that includes a pool boiling and a convective term.

(3) Estimates of PWR downcomer heat fluxes (conduction limited) were extended to 450 seconds. A letter will be written to NRC to document the estimated improvement in insulating capability of the honeycomb insulator to be used in the Semiscale Mod-3 system relative to the grafoil downcomer insulator.

(4) Recommendations were prepared for Semiscale heater rod conduction model modifications. The modifications are slight and are based on actual photographs of the rod cross sections. The recommended modifications are minor and do not significantly affect the values of the output parameters. The "new" and "old" values of the boron nitride thermal conductivities were also used in conduction models used to simulate the results from a power pulse test. Results from the calcultions are similar.

(5) Analysis and modeling of the mass depletion phenomena which occurred in Test S-07-6 were continued. The primary effort was toward RELAP4 simulation of possible remedies to the mass depletion. The first effort was a simulation of the reflood portion of Test S-07-6 using the honeycomb insulator rather than the grafoil. For this calculation initial conditions in the downcomer were at saturation. Although heat transfer from the downcomer walls was reduced, the mass depletion occurred similar to Test S-07-6 with about a 10-second delay. Another RELAP4 model was used which had the honeycomb piping cooled to an initial temperature of 400 K. This model has shown no calcuation of mass depletion.

(6) The results of the RELAP4 posttest analysis for the reflood portion of Test S-07-6 were reported.

Preparation of a paper on the results of applying RELAP4/MOD6 to Test Series 7 was initiated.

(7) A TRAC steady-state deck for Test S-07-6 was received from LASL. This deck will be changed to bring the inlet annulus and downcomer internal to the vessel, which will allow the downcomer behavior to be calculated using the 3-D two-fluid models instead of the 1-D drift flux model.

(8) Draft outlines for topical reporting of the results of the Semiscale Mod-3 system baseline tests (Test Series 7) were reviewed with management. Comments and revisions were incorporated, and in-depth outlines consistent with the draft outlines are now being prepared.

d. Semiscale Mod-3 Upper Head Injection Tests (Test Series 8)

Two RELAP4 calculations were completed out to 10 seconds using the separate effects model of the Semiscale Mod-3 upper head region. One calculation included upper head injection and the other did not. Comparison of these calculations to each other and to the RELAP4 calculation which provided the boundary conditions for the separate effects model should provide an indication of how well the model is working; this analysis is underway.

e. Special Experiments and Studies

(1) A user's guide for the HEATO code was completed and the code was put under configuration control.

(2) Assessment of various codes available for small break analysis was continued to determine which code will provide the best small break calculation for the Mod-3 system. These calculations will be used in specifying future Mod-3 small break tests and as preliminary pretest calculations for the small break tests. Specified items completed were: (1) a RELAP5 input deck was prepared for a Mod-3 small break calculation, and (2) a RELAP4/MOD6 input deck was assembled for Mod-1 small break Test S-02-6 and a calculation for this test was conducted from 0 to 173 seconds. Results of this calculation are being compared with test data.

(3) Management review of the Semiscale Mod-3 system versus PWR scaling report was completed. Revisions to the draft have been completed and the report has been submitted to the LOFT Experimental Program for review.

(4) The draft of the LOFT-PWR scaling report has been reviewed, and revisions to the document are being made prior to submittal to the LOFT Experimental Program for review.

(5) Initial work was completed on a research information letter (RIL) concerned with the steam generator tube rupture tests conducted in the Semiscale Mod-1 system. A draft RIL has been submitted for Semiscale management review.

(6) Preliminary comparisons of LOFT L2-2 data and Semiscale Test S-06-2 data were made. The comparisons will be analyzed to help assess the differences in the hydraulics and core response between the two tests. A new Semiscale core power decay curve based on L2-2 calculated rod boundary condition was produced. With the new power decay curve, conduction calculations indicate that if the Semiscale boundary conditions would have been the same as the LOFT L2-2 estimated boundary conditions, the electrical rods temperature-time profile would have been quite similar to the LOFT temperature-time curve. In fact, conduction calculations indicate that even with the decay curve used in Test S-06-2, the electrical rods would have rewet given the LOFT boundary conditions.

(7) Development of the RELAP4/MOd6 model of the single-loop Semiscale system was continued. The piping volumes and junctions have been completed.

f. Measurement Systems and Experimental Instrumentation

(1) Data acquisition, was accomplished, and review, evaluation and correction of data for Tests S-07-8, S-07-9, and 3MI-1 were completed.

(2) Initial drag coefficient air-water loop testing was completed and second round test series was started. Analysis of data obtained was begun.

(3) Operation of control room TV cameras and monitors was checked. HP 21-MX-E and associated tape reader were repaired; these were interfaced with Tektronix terminal for interim use in software development and backup of DAS II.

(4) Software development on programs CHECK and CHCKR was completed and used on Mod-3 Tests S-07-8 and S-07-9. Initial work on the 3-D plotting program THRED was completed. Revision of scanning densitometers data reduction program was continued.

(5) Inplace flow calibration of vessel, downcomer, and intact and broken loop turbine and drag devices was completed.

(6) Proof of principle tesing on a pitot tube rake for use in measuring the subcooled portion of blowdown was conducted.

(7) Preparation of two-pipe downcomer densitometer specifications was started. Procurement for repair and replacement of sources and instrument washers for low energy densitometers was initiated.

(8) Review of vessel densitometer measurement problems and issuance of letter report was completed. Work on densitometer and drag screen presentations was initiated for the international two-phase flow colloquium to be conducted at INEL in June 1979. Draft of interface document for new instrumentation on Semiscale was completed.

4. Scheduled Milestones for April 1979

Node	Description	Due Date	Actual Date
____	Perform Mod-3 Test S-07-1A*	04-10-79	_____
____	Peform Mod-3 Test 3MI-3	04-18-79	_____

* Performance of Test S-07-1A will be delayed to facilitate preparation for and conduct of Test 3MI-3

5. Summary of Work to be Performed in April 1979

a. Semiscale Facility Operations

(1) Test 3MI-3 will be performed in support of NRC anaysis of the Three Mile Island incident. Test S-07-1A, a repeat of a Semiscale Mod-3 blowdown heat transfer test (Test S-07-1) will be deferred to accommodate performance of Test 3MI-3.

(2) Major effort will be devoted to preparation for Test 3MI-3 and then Test S-07-1A.

(3) Preparation of the experiment data reports for upper plenum injection tests (Tests S-07-8 and S-07-9) will be continued.

b. Semiscale Design and Fabrication

(1) The contract for the Semiscale Type II intact loop (PWR type) steam generator will be awarded.

(2) Detailed design of the total downcomer insulators including an insulated turbine meter will be completed.

(3) Body castings for the water-cooled drag transducer will be delivered to satisfy 3-D requirements.

(4) Preparation of detailed design drawings will be started for the core honeycomb insulators.

(5) Support bracket drawings for the broken loop low-energy densitometers will be completed.

(6) Continuing support of the test program will be given to facilitate hardware changes on any testing in conjunction with the nuclear incident at Three Mile Island in Pennsylvania.

c. Semiscale Mod-3 Baseline Tests (Test Series 7)

(1) The quick look report for the lower plenum injection tests conducted in March 1979 in the Semiscale Mod-3 system (Tests S-07-8 and S-07-9) will be completed and issued.

(2) Analysis of Test Series 7 tests will continue; preparation of analytical topical reports will be initiated.

(3) Documentation of expected honeycomb insulator performance and plans for small break analysis and code assessment will be completed and transmitted to DOE-ID and NRC.

(4) LOFT review comments on the Mod-3 versus PWR scaling report will be incorporated into the final draft prior to releasing the document as a letter report.

(5) Modifications to the LOFT-PWR scaling report, in response to Semiscale Program review comments, will be completed and the document submitted to LOFT for review.

(6) Management review and necessary modifications to the research information letter (RIL) for the steam generator tube rupture tests conducted in the Semiscale Mod-1 system will be completed and the letter transmitted.

(7) The TRAC model of the Semiscale system will be checked for accuracy and all numbers and decisions made in modeling will be documented. The TRAC model received from LASL will be modified to include the downcomer pipe in the vessel module. A steady-state calculation will be made with TRAC code and results will be compared with experiment data.

(8) Work will continue on modeling the Semiscale single-loop system.

(9) Results from RELAP4/MOD6, RELAP4/MOD7, and RELAP5 calculations for the small break Test S-02-6 will be compared with test data.

d. Semiscale Mod-3 UHI Test (Test Series 8)

The calculated behavior of Semiscale with UHI using the Sandia version of RELAP4/MOD5 will be completed.

e. Measurement Systems and Experimental Instrumentation

(1) Data acquisiton and review and correction of data for Test 3MI-3 will be accomplished.

(2) Attenuation measurements will be performed on beryllium samples to evaluate need for use of nuclear grade material in instrument washers.

(3) Air-water loop densitometer tests with a new instrment washer will be started.

(4) Work will be continued on colloquium papers and presentations for the advanced instrumentation colloquium to be held at INEL in June of this year.

(5) The second round of air-water loop drag coefficient tests will be completed.

(6) Scanning densitometer data reduction program modification will be performed and reduction of air-water loop data and Karlsruhe densitometer data will be implemented.

(7) Two-pipe downcomer densitometer specifications will be completed and procurement will be started.

(8) Proof of principle tests will be reported and installation of pitot tube rakes will be implemented in the Semiscale Mod-3 system for development tests of these instruments.

TFBP

WRRD MONTHLY REPORT FOR

MARCH 1979

THERMAL FUELS BEHAVIOR PROGRAM

J. T. Sanders
Plans & Budget Representative

H. J. Zeile, Manager

2306 121

THERMAL FUELS BEHAVIOR PROGRAM

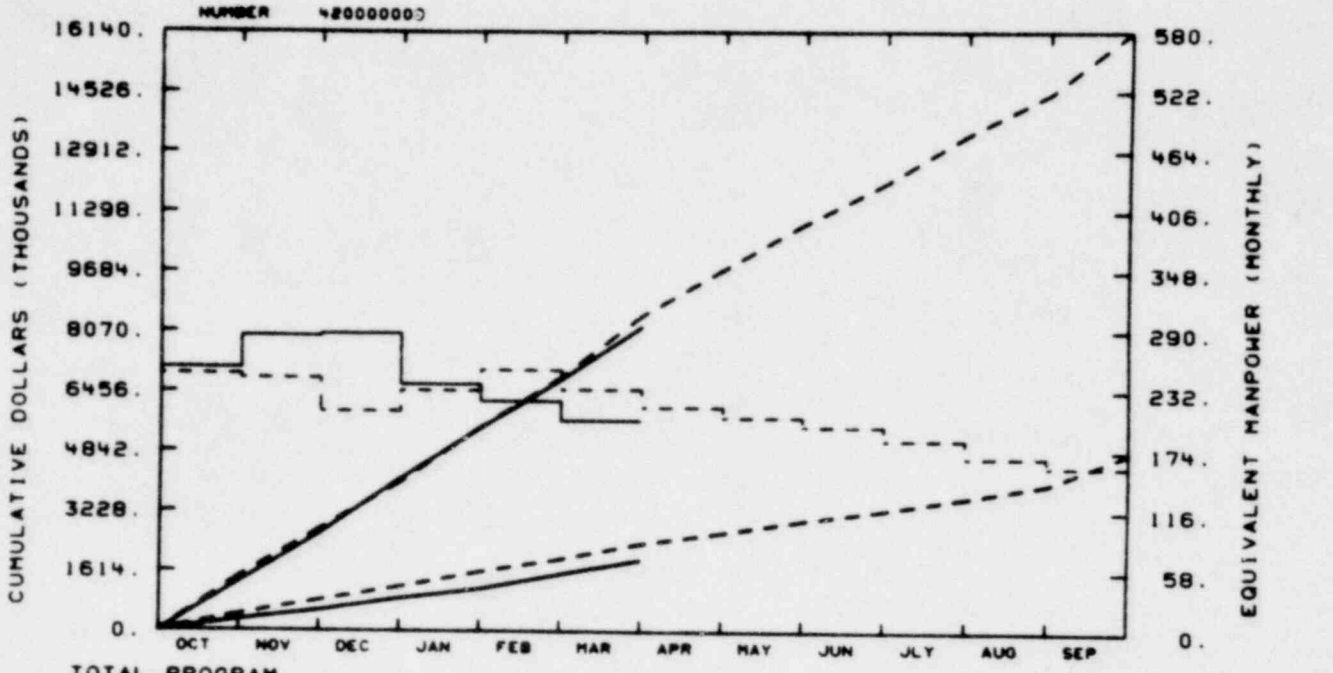
COST SUMMARY & COMMENTS

RESPONSIBLE
MANAGER
MJ ZEILE

EG&G IDAHO INC.

THERMAL FUELS BEHAVIOR PROGRAM

NUMBER 420000000



TOTAL PROGRAM

BUDGET	1478	2743	4007	5493	6859	8510	9751	10970	12079	13380	14468	16136
ACTUAL	1323	2624	4101	5477	6781	8211						

MATERIAL

BUDGET	443	824	1189	1595	1948	2361	2664	2984	3273	3605	3861	4793
ACTUAL	293	551	874	1138	1542	1925						

MANPOWER

BUDGET	248	245	213	233	253	234	217	207	198	185	168	159
ACTUAL	255	286	288	239	223	204						

BUDGET - - - - - -

ACTUAL ———

YTD VARIANCE: 299 (4%)

Individual cost graphs will give individual explanations.

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

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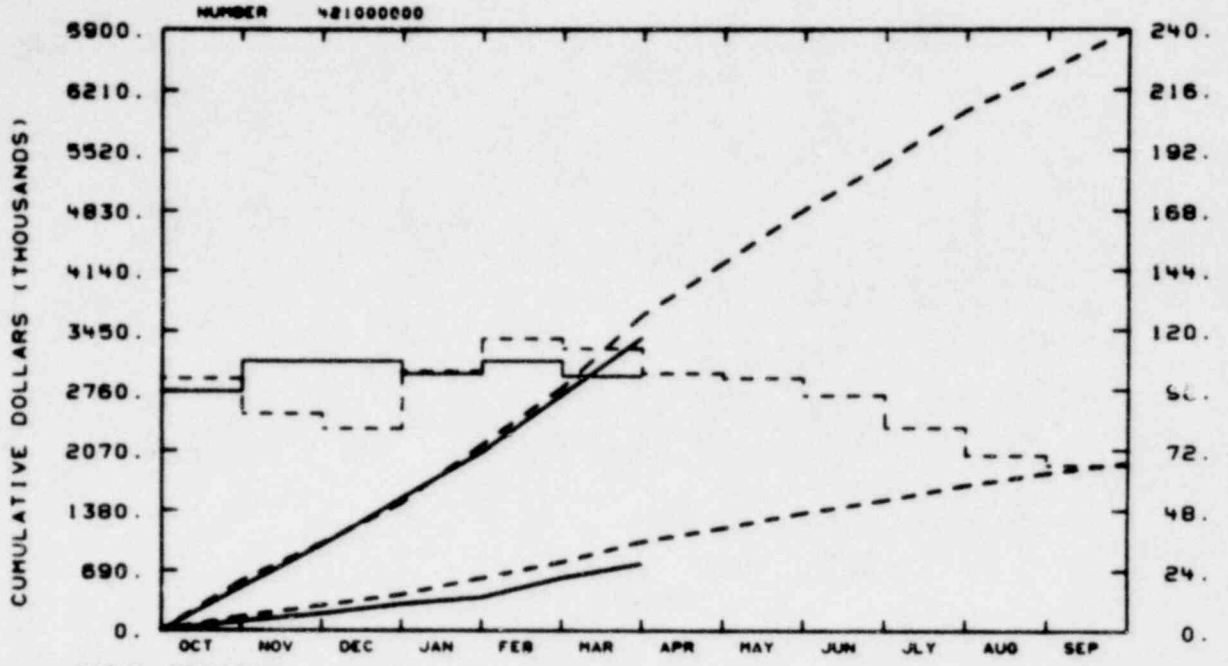
RESPONSIBLE MANAGER
PE MACDONALD

EG&G IDAHO INC.

TFBP EXPERIMENT DESIGN & ANAL

NUMBER 421000000



TOTAL PROGRAM

BUDGET	568	1003	1468	2141	2803	3837	4233	4842	5380	5978	6424	6895
ACTUAL	500	984	1524	2059	2722	3376						

MATERIAL

BUDGET	158	287	413	602	786	1023	1178	1348	1496	1666	1808	1929
ACTUAL	105	193	308	383	606	768						

MANPOWER

BUDGET	101	87	81	104	117	113	103	101	94	81	70	66
ACTUAL	96	108	108	103	108	102						

BUDGET

ACTUAL

A6041

YTD VARIANCE: 261 (7%)

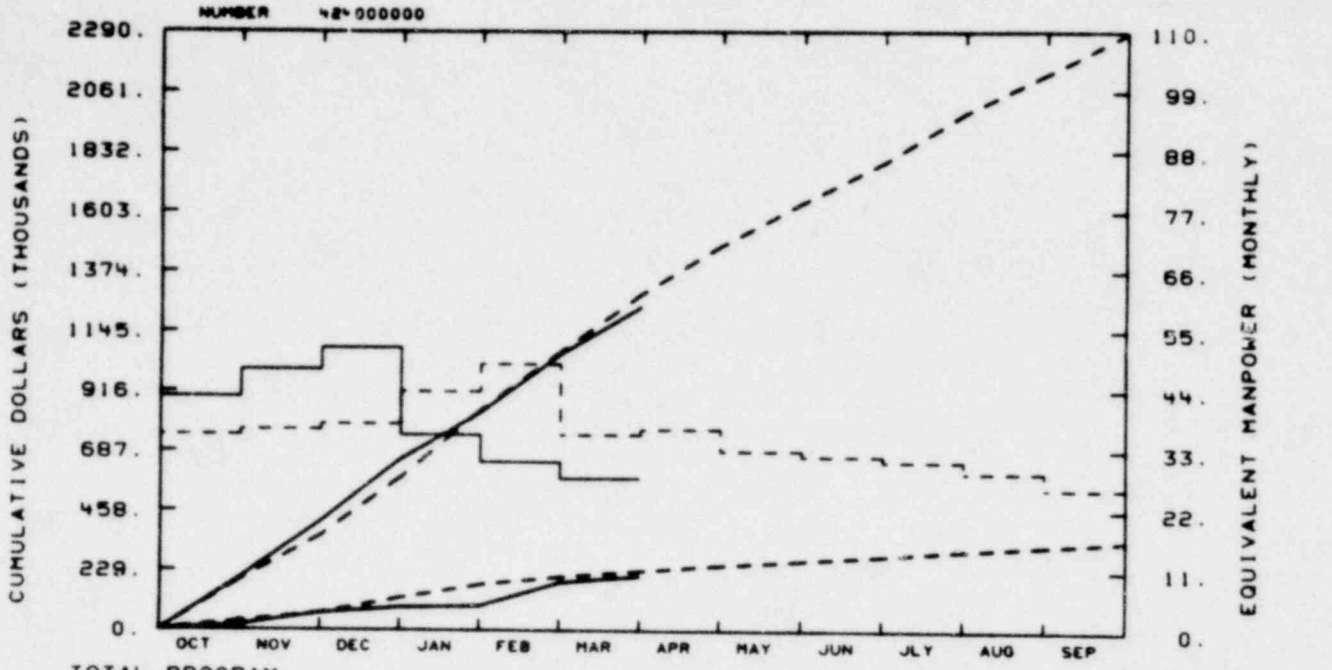
Analysis of the variance in this account indicates that the underrun is caused by the test train assembly being behind schedule for the PCM-7 and RIA 1-4 tests and test train fabrication being delayed for tests LOC-6 and RIA 1-3. This will not impact the TFBP test schedule. Additionally, post-irradiation examination hot cell charges are late coming in for the RIA-ST, RIA 1-1, and RIA 1-2 tests.

RESPONSIBLE MANAGER
RM MARSHALL JR

EG&G IDAHO INC.

PBF ENGINEERING

NUMBER 42-000000



TOTAL PROGRAM

BUDGET	192	363	585	844	1069	1289	1475	1840	1794	1982	2129	2285
ACTUAL	200	418	656	836	1059	1240						

MATERIAL

BUDGET	33	65	122	174	204	228	249	267	286	307	324	343
ACTUAL	19	65	86	93	184	208						

MANPOWER

BUDGET	38	37	38	44	49	36	37	33	32	31	29	26
ACTUAL	43	48	52	36	31	28						

BUDGET - - - - -

ACTUAL ———

A6044

YTD VARIANCE: 49 (4%)

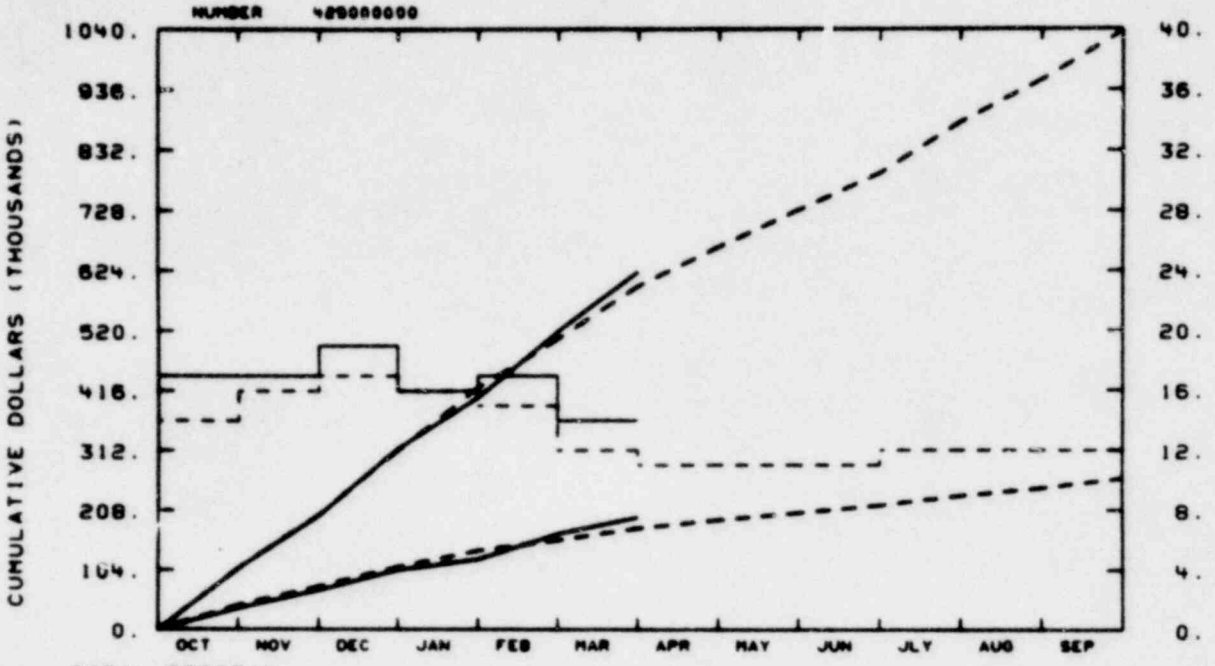
Variance of 4% reflects adequate project control of these type of activities. Minor fluctuations will occur and are based upon availability of work windows for minor mods plus material deliveries. In addition, CCB 79-17 has been approved for a $125K yearly reduction and will be reflected in the April report.

RESPONSIBLE MANAGER
PE MACDONALD

EG&G IDAHO INC.

FUEL BEHAVIOR ANALYSIS VERIF.

NUMBER 420000000



TOTAL PROGRAM

BUDGET	107	200	312	422	505	587	665	729	793	881	953	1037
ACTUAL	106	199	315	405	519	622						

MATERIAL

BUDGET	42	75	109	137	155	176	190	203	218	233	248	263
ACTUAL	38	68	103	122	167	186						

MANPOWER

BUDGET	14	16	17	16	15	12	11	11	11	12	12	12
ACTUAL	17	17	19	16	17	14						

BUDGET

ACTUAL

A6046

YTD VARIANCE: <25> (4%)

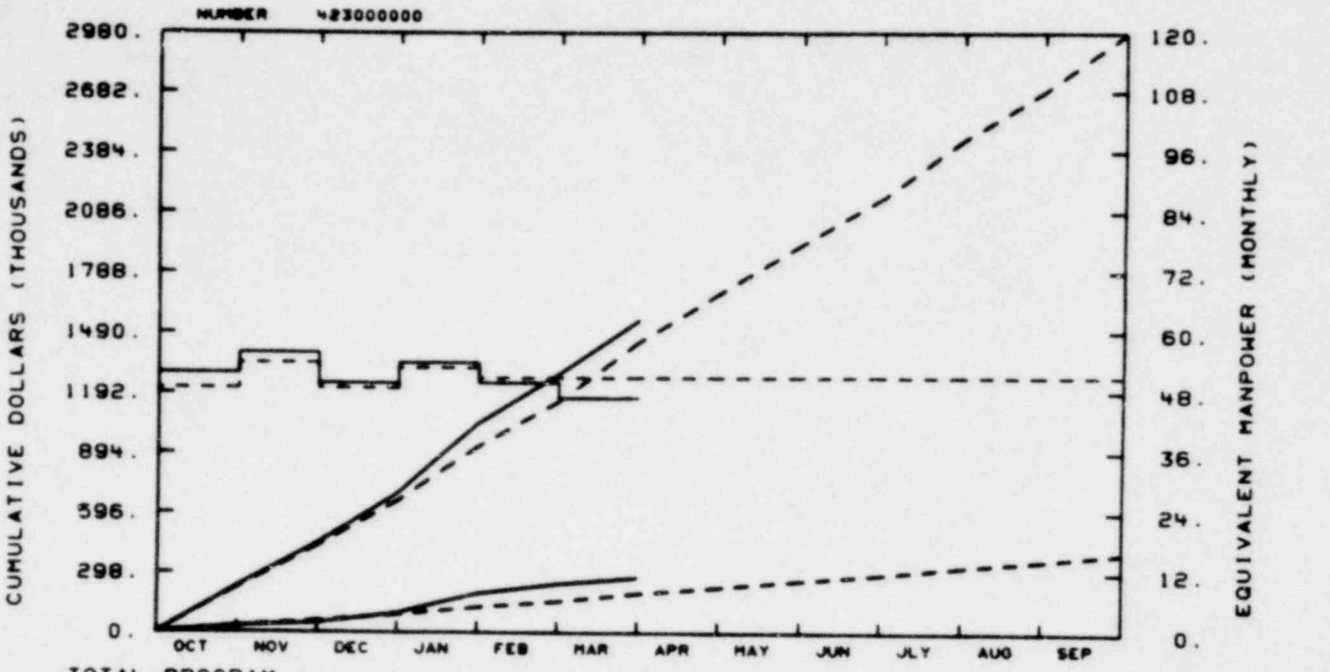
Analysis of the variance in this account indicates that the major discrepancy ($23K) occurs in the Program Development and Analysis area. This discrepancy is due to the costs involved in reviewing, editing and publishing four topical reports. Now that three of these reports have been published and the fourth is in composition, monthly expenditures will be dropping. It is expected that the total annual program budget will not be exceeded.

RESPONSIBLE
MANAGER
CO DOUCETTE

EG&G IDAHO INC.

PBF OPERATIONS

NUMBER 423000000



TOTAL PROGRAM

BUDGET	223	434	657	927	1150	1444	1685	1926	2156	2445	2687	2977
ACTUAL	231	447	695	1042	1285	1553						

MATERIAL

BUDGET	30	58	89	125	155	195	226	258	288	326	358	396
ACTUAL	30	47	96	194	243	274						

MANPOWER

BUDGET	48	54	49	53	51	51	51	51	51	51	51	51
ACTUAL	52	56	50	54	50	47						

BUDGET - - - - -

ACTUAL ———

A6057

YTD VARIANCE: 109 (7%)

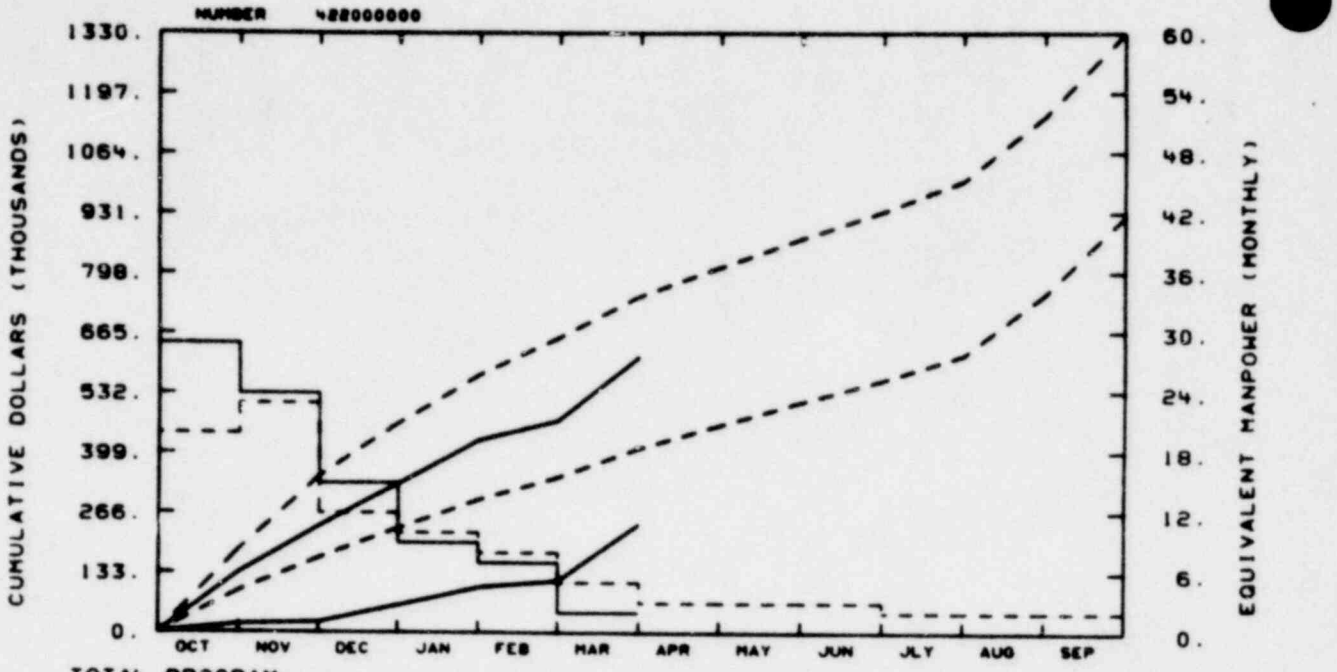
Stringent controls established in mid February have reduced the overrun. An approved CCB, which will be incorporated in April, provides funds necessary to complete the fiscal year on budget. The established fiscal controls will continue throughout the program.

RESPONSIBLE MANAGER
RM MARSHALL JR

EG&G IDAHO INC.

PBF MODIFICATIONS

NUMBER 422000000



TOTAL PROGRAM

BUDGET	185	347	464	571	654	748	810	874	934	1002	1143	1330
ACTUAL	134	237	330	427	471	612						

MATERIAL

BUDGET	83	186	232	295	345	410	480	511	560	615	748	823
ACTUAL	18	23	60	100	115	241						

MANPOWER

BUDGET	28	23	12	10	8	5	3	3	3	2	2	2
ACTUAL	29	24	15	9	7	2						

BUDGET - - -
ACTUAL ———

A6095

YTD VARIANCE: 134 (18%)

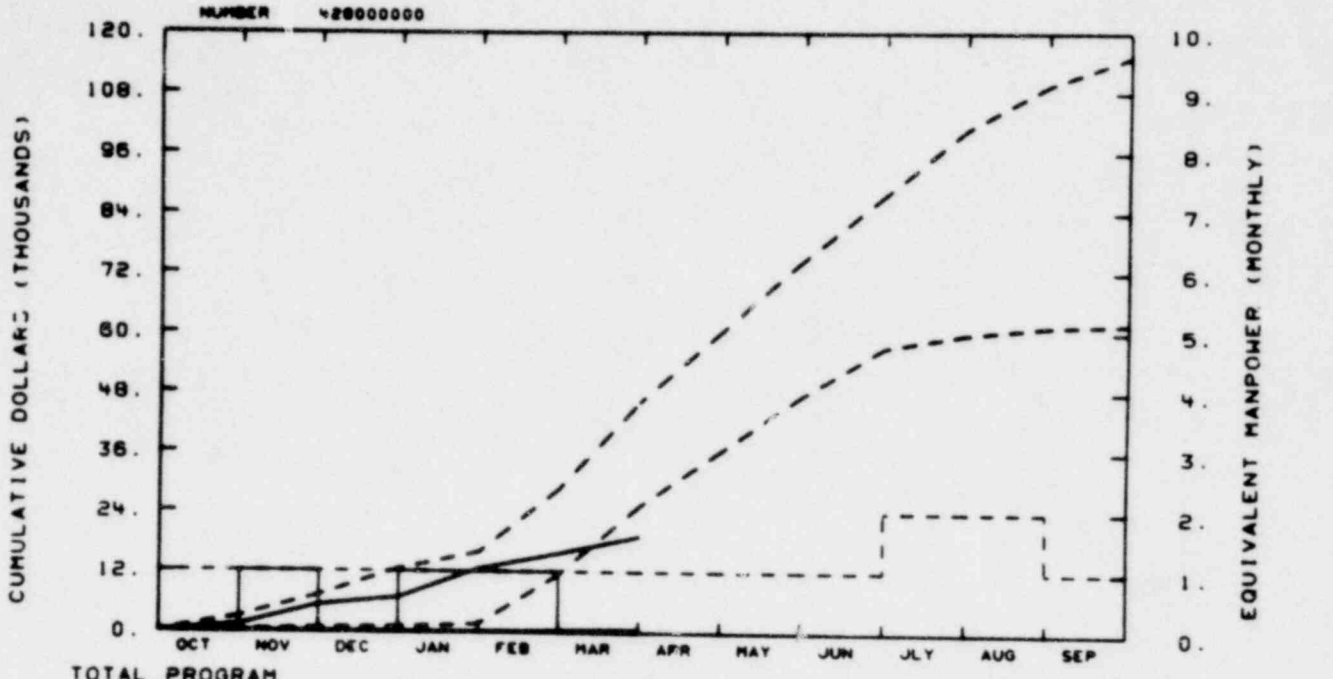
Analysis of the indicated underrun shows that the variance is expected because of long lead procurement activities. Through February, vendors have refused progress payments. This accounts for the underrun. In March, GA received a $122K payment which is reflected in the material and total costs above. The rate of vendor requested payments remains uncertain on a month-to-month basis; however, both contracts are expected to complete this fiscal year.

RESPONSIBLE MANAGER
PE MACDONALD

EG&G IDAHO INC.

PBF COOPERATIVE RESEARCH-AUSTRIA

NUMBER 428000000



TOTAL PROGRAM

BUDGET	3	7	12	18	29	46	60	75	88	101	110	115
ACTUAL	1	5	7	13	18	19						

MATERIAL

BUDGET	0	1	1	2	11	25	38	47	57	60	61	62
ACTUAL	0	0	0	0	0	1						

MANPOWER

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

BUDGET - - - - -

ACTUAL ———

A6274

YTD VARIANCE: 27 (59%)

Effort is being redirected from one instrumentation package to a new one. Expenditures will resume once the new direction is firmly established.

THERMAL FUELS BEHAVIOR PROGRAM
CAPITAL EQUIPMENT

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EG&G IDAHO, INC.

CAPITAL EQUIPMENT PRIORITY LIST

CARRYOVER

Program THERMAL FUELS BEHAVIOR PROGRAM

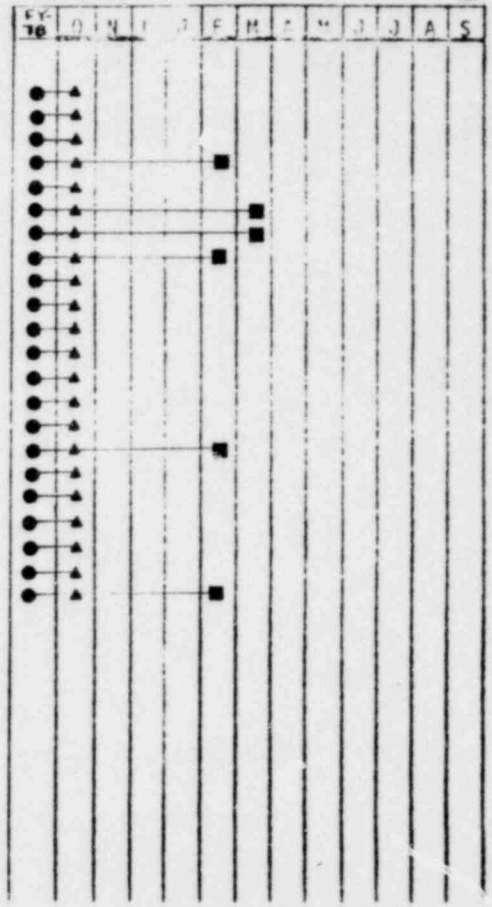
189 Number A6041 (A6087)

Manager H. J. Zeile

Item Authorized o
Money Committed Δ
Equipment Received, Account Closed ■

Priority Number	EA No.	Item Description	Authorized Amount	March YTD Costs & Commit.	Project to Date	<Over>/Under Balance
	98134	Shielded Electron Microprobe	$ 44,330	$ 10,636	$ 44,594	$< 264>
	98353	Fission Product Detection System	66,000	386	59,240	6,760
	98354	Calculator Center Interface	4,600	0	3,825	775
Closed	98466	Quantitative Image Analysis	25,250	0	25,242	8
	98467	Hot Cell Periscope & Camera	35,000	33,830	33,830	1,170
Closed	98478	Vacuum Cleaner for Canal	8,000	4	4,698	3,302
Closed	98563	Calc. for Fuel Pellet Char./TV Camera	25,000	0	25,248	< 248>
Closed	98564	Dry Tube	5,620	0	5,254	366
	98579	Gamma Scanner Collimators	24,000	17,607	24,632	< 632>
	98594	General Capital Equipment	1,000	<471>	342	658
	98595	Remote Pressure Msmt. System	8,600	3,000	8,429	171
	98648	Rod Puncture Chamber	15,000	14,268	17,186	<2,186>
	98649	Fission Gas Filter & Collection Sys.	10,000	9,305	10,002	< 2>
	98650	Gamma Scanner Stg. Mod.	2,000	3,347	3,491	<1,491>
	98679	Stack Monitor	26,250	26,985	26,985	< 735>
Closed	98688	Wang Word Processing	33,000	0	33,000	0
	98705	Diameter Gauge	20,000	16,411	20,000	0
	98721	Two Zeolite Adsorbers	98,320	49,745	96,000	2,320
	98738	Laser System Bench Mod	6,000	11,338	11,338	<5,338>
	98778	Test Train Hydrotest Fixture	30,000	29,999	29,999	1
	98791	Prog. Function Generator	6,500	6,488	6,488	12
Closed	99899	Remote Milling Machine	32,400	0	31,757	643
			$526,870	$232,876	$521,580	$ 5,290

Carryover Budget	$ 249,557
-YTD Costs & Commit.	-232,876
-Bal. of Auth. EA's	- 5,290
BALANCE	$ 11,391



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EG&G IDAHO, INC.

CAPITAL EQUIPMENT PRIORITY LIST

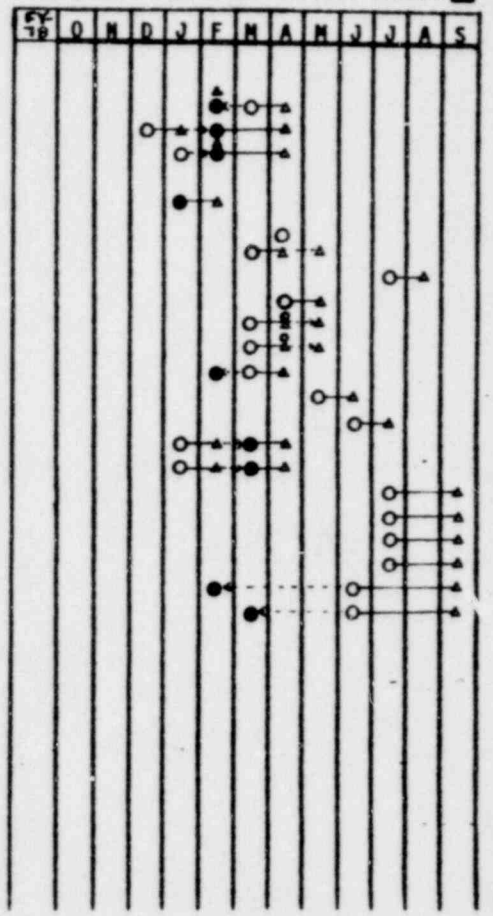
FY-1979

Program THERMAL FUELS BEHAVIOR PROGRAM **189 Number** A6041 (A6087) **Manager** H. J. Zeile

Priority Number	EA No.	Item Description	Authorized Amount	YTD Costs & Commitments	<Over>/Under Balance
1.	98872	MTR Canal Test Train & Associated Support Equipment Structure	$ 30,000	$ 30,622	$ <622>
2.	98873	MTR Canal Miscellaneous Tools	12,000	1,000	11,000
3.	98874	Instrumentation Test Equipment	20,000	1,610	18,390
4.		Germanium Gamma Detector	13,000		
5.	98960	Multichannel Analyzer	13,000	346	31,654
6.		Data Storage System	6,000		
7.		Gamma Scanner Stage Modification	40,000	0	40,000
8.		Remote SEM with X-Ray Dispersive Analysis	90,000	0	90,000
9.		CCTV System for ARA-I	15,000	0	15,000
10.		Laser Profilometer	40,000	0	40,000
11.		PEC Scanner Expansion & Modification	65,000	0	65,000
12.	98886	In-cell Light System	5,000	0	5,000
13.		Remote Manipulator Modification	58,000	0	58,000
14.	98916	Hot Cell Transfer Cask	20,000	20,000	0
15.	98899	Blower and Isokinetic Stack Probe	10,000	3,029	6,971
16.	98900	Analytical Balance	8,000	4,817	3,183
17.		Tektronix 4027 Color Graphics Terminal	10,500	0	10,500
18.		Color Hard Copy	10,500	0	10,500
19.		Tektronix 4025 with Graphics Options	6,300	0	6,300
20.		Tektronix 4025 without Graphics	4,200	0	4,200
21.	98887	Tektronix 4014 Intelligent upgrade	4,200	0	4,200
22.	98908	CSC Support: Cyber 76 Upgrade/Cyber 173 Upgrade	69,300	0	69,300
			$550,000	$ 45,174	$504,826

FY-79 Budget	$ 550,000
MAR YTD Costs & Commit.	45,174
BALANCE	$ 504,826

Item Authorized o
Money Committed △
Equipment Received, Account Closed ■



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EG&G IDAHO, INC.

CAPITAL EQUIPMENT PRIORITY LIST

CARRYOVER

Program THERMAL FUELS BEHAVIOR PROGRAM

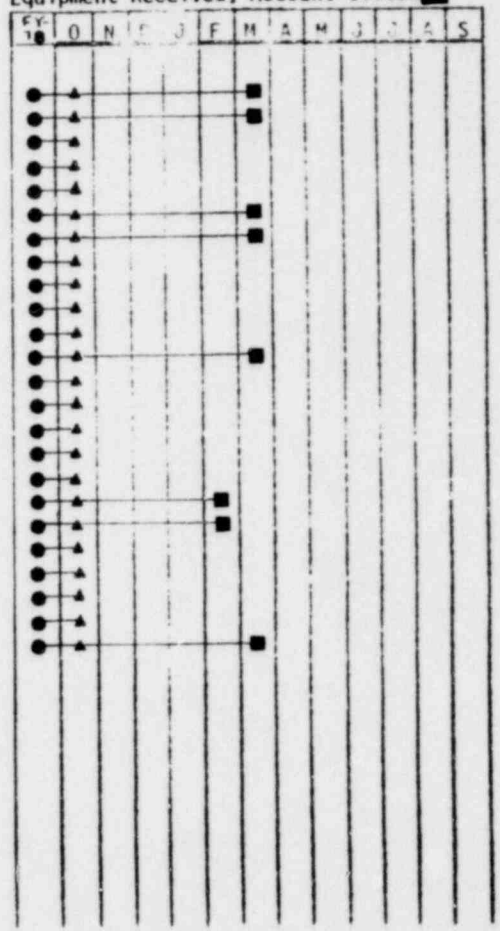
189 Number A6044 (A6091)

Manager H. J. Zeile

Priority Number	EA No.	Item Description	Authorized Amount	March YTD Costs & Commit.	Project to Date	<Over>/Under Balance
Closed	98006	DARS Backup Power Supply	$ 20,000	$ 18,035	$ 18,738	$ 1,262
Closed	98008	Signal Conditioning Equipment	25,000	0	26,185	< 1,185>
	98009	Signal & Control Cables	94,500	35,108	94,500	0
	98212.	Liquid Waste Disp. Tank Trailer	7,000	7,210	7,210	<210>
	98355	Signal Conditioning Equipment	38,000	1,576	44,256	<6,256>
Closed	98357	Discr. & Low Level Amps.	32,000	26	32,619	< 619>
Closed	98358	Mods to Data System	37,000	0	39,690	< 2,690>
	98368	Exper. DARS Input Sig. Offset	73,875	38,067	77,544	< 3,669>
Closed	98390	Inspection Measuring Equipment	10,000	0	9,020	980
	98477	Computer Terminals	24,860	2,413	23,293	1,567
	98479	Miscellaneous RCE	4,000	1,269	3,259	741
Closed	98493	SPND Log Amps.	18,620	0	18,617	3
	98528	Misc. Prog. & Cont. Inst. & Equip.	26,800	6,587	25,721	1,079
	98558	Misc. Test & Maintenance Equipment	27,050	6,159	26,344	706
	98560	DARS Terminal	5,000	4,184	4,184	816
	98561	Strip Chart Recorder	40,000	39,631	39,631	369
	98562	Voltage Calibration for DARS	72,000	51,147	73,640	<1,640>
Closed	98577	Sys. Oper. Console Hardcopy Equip.	3,000	0	2,881	119
Closed	98605	RML Data Communications	2,146	0	2,146	0
	98616	Disc. Memory	43,000	20,843	43,943	< 943>
	98722	Data System IRIG Time	7,000	6,883	6,883	117
	98755	DARS Recorder Monitor	17,950	17,872	17,872	78
	98777	Test Train Handling Fixture	36,500	36,500	36,500	0
Closed	98785	Storage Discs - PMS	15,000	15,750	15,750	< 750>
			$680,301	$309,260	$690,426	<10,125>

Carryover budget	$ 382,922
-Adjustment	- 70,000 (to current year - Loop Perf. Mod)
-YTD Costs & Commit.	309,260
-Bal. of Auth. EA's	<10,125>
BALANCE	$ 13,787

Item Authorized o
Money Committed Δ
Equipment Received, Account Closed ■



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EG&G IDAHO, INC.

CAPITAL EQUIPMENT PRIORITY LIST

FY-1979

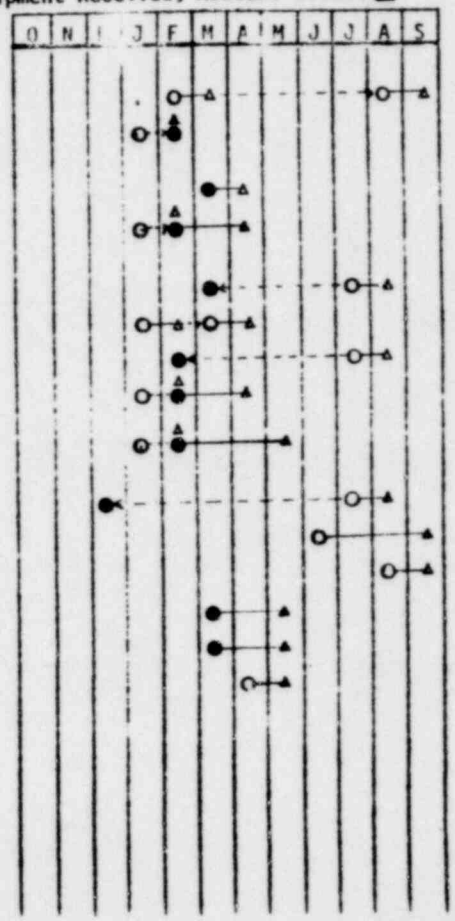
Program THERMAL FUELS BEHAVIOR PROGRAM

189 Number A6044 (A6091)

Manager H. J. Zeile

Item Authorized o
Money Committed Δ
Equipment Received, Account Closed ■

Priority Number	EA No.	Item Description	Authorized Amount	March YTD Costs & Commitments	<Over>/Under Balance
1.		PBF P&M System	$132,000	--	$132,000
2.	98896	PBF Experiment & Data System Input Interface Upgrade	50,000	$ 50,674	<674>
3.	98901	PBF/DARS Memory Expansion	25,000	--	25,000
4.	98888	PBF PDP-15 Terminal Upgrade	4,500	--	4,500
5.	98915	PBF Data System Test, Maintenance, and Calibration Equipment	42,000	--	42,000
6.		PBF/DARS Versatec Upgrade	6,500	--	6,500
7.	98889	PBF/DARS Data Processing Software Package	30,000	--	30,000
8.	98890	Microfiche Reader	4,000	2,918	1,082
9.	98891	Terminal Upgrade	11,000	--	11,000
10.					
11.	98842	PBF Process Equipment	28,000	13,677	14,323
12.		Gould Plotter	30,000	--	30,000
13.	98909	Cyber Upgrade	10,000	--	10,000
14.	98902	Loop Perf. Mod	63,000	59,500	3,500
15.	98903	Loop Perf. Mod - Instr.	15,000	14,223	777
16.		Unidentified	49,000	--	49,000
			$500,000	$140,992	$359,008



FY-79 Budget	430,000
Adjustment	+70,000
YTD Costs & Commit.	-140,992
	359,008

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EG&G IDAHO, INC.

CAPITAL EQUIPMENT PRIORITY LIST

CARRYOVER

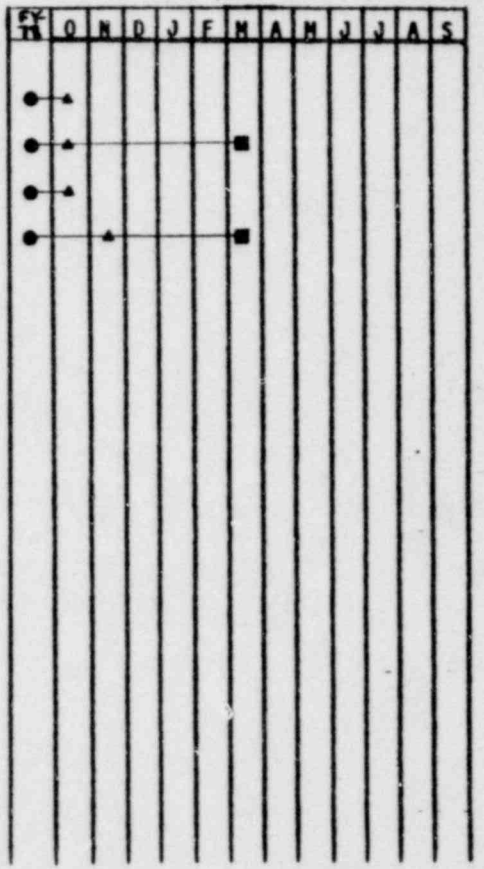
Program THERMAL FUELS BEHAVIOR PROGRAM **189 Number** A6046 (A6093) **Manager** H. J. Zeile

Priority Number	EA No.	Item Description	Authorized Amount	March YTD Costs & Commit.	Project to Date	<Over>/Under Balance
	98346	Laser System	$37,500.00	$ 3,819.00	$34,765.00	$2,735.00
Closed	98347	Diameter Gauging System	2,000.00	-0-	3,099.00	<1,099.00>
	98762	IFA-430 Gamma Spectrometer	10,000.00	6,421.00	10,238.00	<248.00>
Closed	98763	Zeolite Adsorbers	10,000.00	10,000.00	10,000.00	-0-
			$59,500.00	$20,240.00	$58,102.00	$1,398.00

Carryover Budget	$22,794
- YTD Costs & Commit.	20,240
- Bal. of Auth. EA's	1,398
BALANCE	$ 1,156

*Commitments are included in this balance. An EA commitment report should be available in the near future.

Item Authorized o
Money Committed Δ
Equipment Received, Account Closed ■



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EG&G IDAHO, INC.

CAPITAL EQUIPMENT PRIORITY LIST

FY-1979

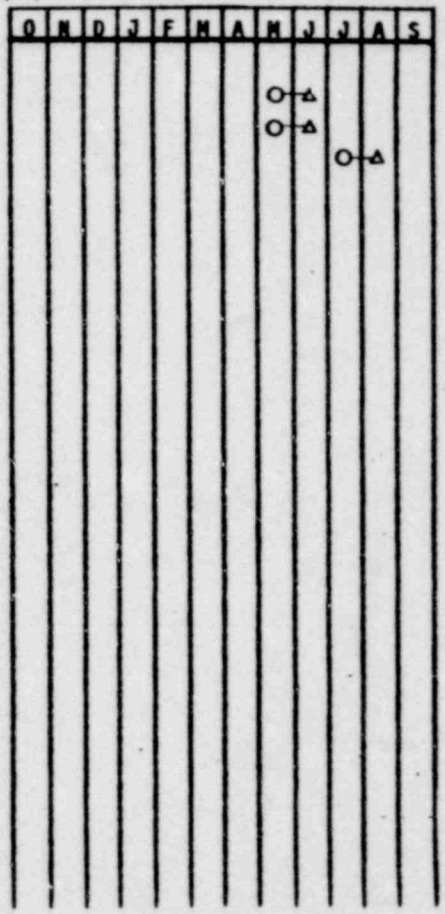
Program THERMAL FUELS BEHAVIOR PROGRAM

189 Number A6046 (A6093)

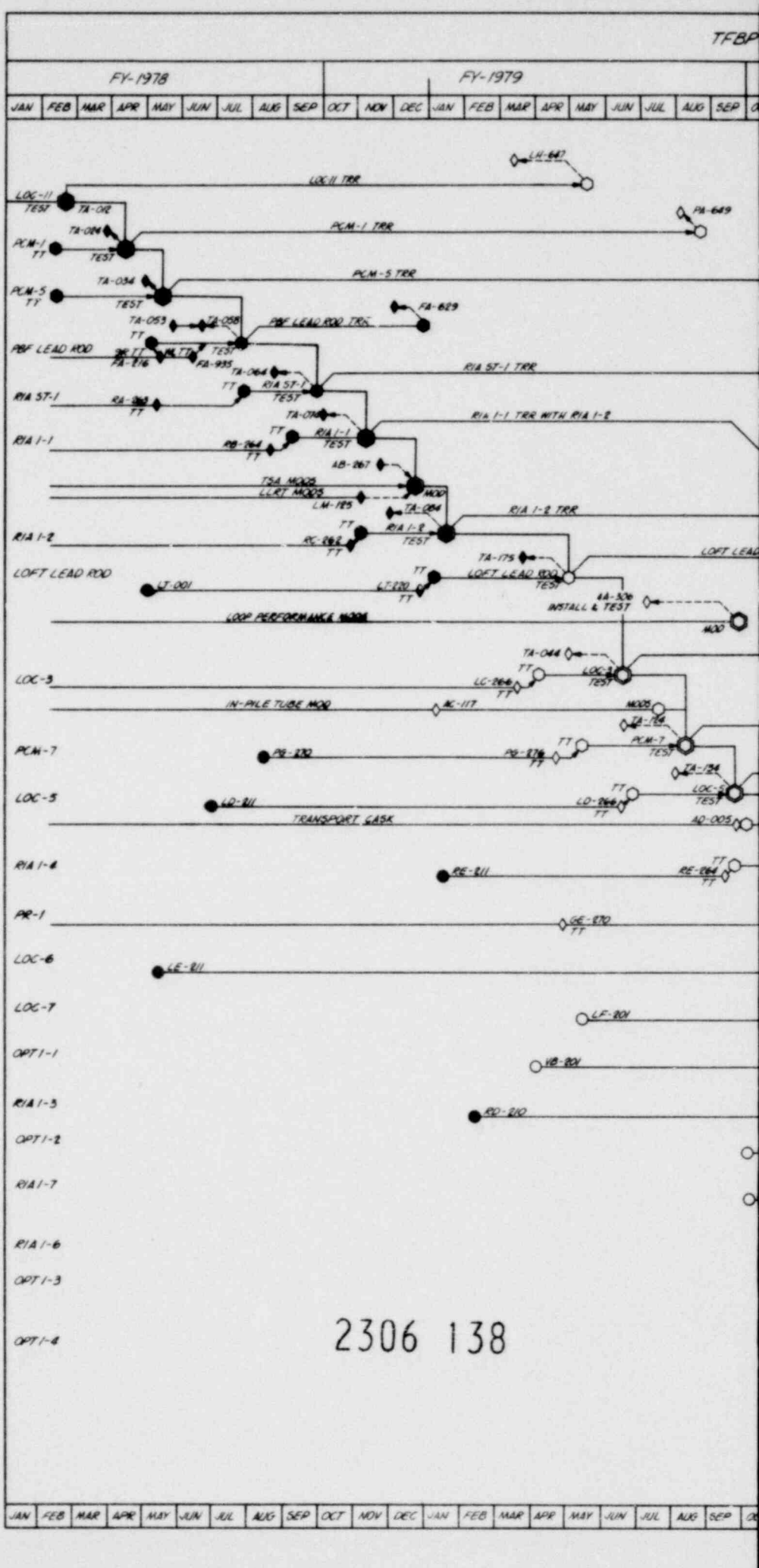
Manager H. J. Zeile

Item Authorized o
Money Committed Δ
Equipment Received, Account Closed ■

Priority Number	EA No.	Item Description	Authorized Amount	YTD Costs & Commitments	<Over>/Under Balance
1.		Calibration & Check Source	$ 3 K		
2.		Detector Enclosure & Collimator	5 K		
3.		Miscellaneous Equipment	12 K		
			$ 20 K		



THERMAL FUELS BEHAVIOR PROGRAM
TEST SUMMARY SCHEDULE


TFBP
FY-1978
FY-1979
JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC JAN FEB MAR APR MAY JUN JUL AUG SEP
LH-647
LOC-11 TRR
LOC-11 TEST
TA-012
FA-649
TA-014
PCM-1 TRR
PCM-1 TT
TEST
TA-034
PCM-5 TRR
PCM-5 TT
TEST
FA-629
TA-053
TA-058
PBF LEAD ROD TRR
TT
PBF LEAD ROD
TA-076
TEST
FA-935
TA-064
RIA ST-1 TRR
TT
RIA ST-1
TEST
RIA ST-1
TA-074
RIA 1-1 TRR WITH RIA 1-2
TT
RIA 1-1
TEST
RIA 1-1
AB-267
TSA MODS
LLRT MODS
MOD
LM-185
TA-084
RIA 1-2 TRR
TT
RIA 1-2
TEST
RIA 1-2
TA-175
LOFT LEAD ROD
TT
LOFT LEAD ROD
TEST
LT-001
INSTALL & TEST
LOOP PERFORMANCE MODS
MOD
TA-044
TT
LOC-3
TEST
LOC-3
LC-266
TT
IN-PILE TUBE MOD
MODS
TA-114
PCM-7
TT
TEST
PCM-7
TA-124
LOC-5
TT
TEST
LOC-5
LD-211
LD-266
TT
TRANSPORT CASK
RIA 1-4
RE-211
RE-266
TT
PR-1
GE-870
TT
LOC-6
LE-211
LOC-7
LF-201
OPT 1-1
VB-201
RIA 1-3
RD-210
OPT 1-2
RIA 1-7
RIA 1-6
OPT 1-3
OPT 1-4

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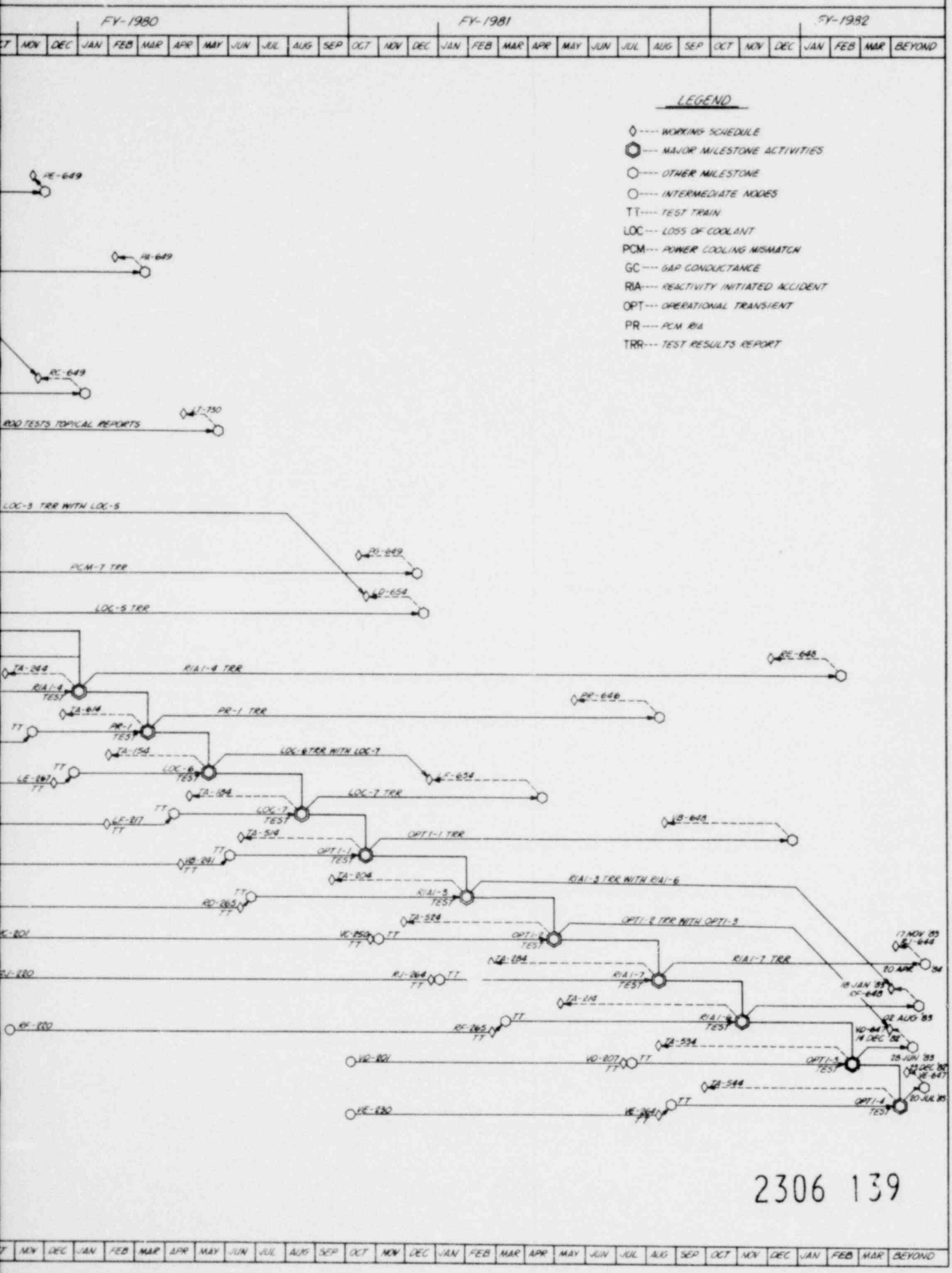
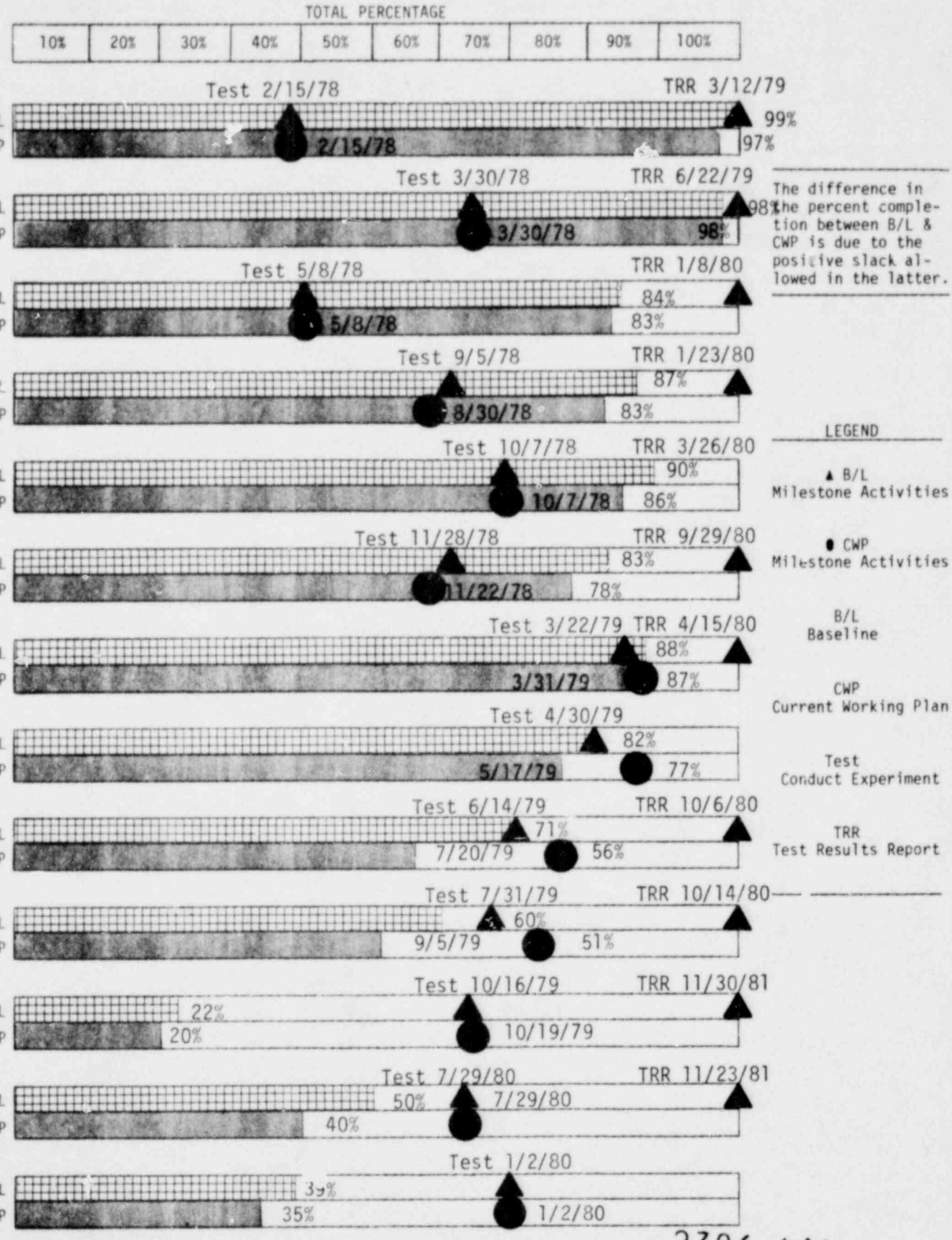
MANAGEMENT SUMMARY SCHEDULE



THERMAL FUELS BEHAVIOR PROGRAM
SCHEDULE PERFORMANCE STATUS

SCHEDULE PERFORMANCE STATUS

March, 1979



The difference in the percent completion between B/L & CWP is due to the positive slack allowed in the latter.

LEGEND

▲ B/L Milestone Activities

● CWP Milestone Activities

B/L Baseline

CWP Current Working Plan

Test Conduct Experiment

TRR Test Results Report

THERMAL FUELS BEHAVIOR PROGRAM

TECHNICAL REVIEW & SUMMARY

PROGRAM MANAGER'S

SUMMARY AND HIGHLIGHTS

The Test RIA-ST Experiment Data Report (EDR) was published and distributed to meet the Buff Book commitment date of March 21, 1979. The failed rod behavior and fuel powdering topical reports were issued, meeting Buff Book commitments of March 16 and March 23, 1979, respectively.

PBF/LOFT Lead Rod Tests LLR-3, LLR-4, and LLR-5 were conducted, completing this test series.

Preliminary data taken during operation of the new reactor and canal cleanup system show it to be working effectively.

Final verification of the Halden Instrumented Fuel Assembly 429 (IFA-429) data reduction system has been completed and the user's manual is ready to be printed.

The construction package for installation of the motor-generator as part of the loop performance modifications has been approved and the contract awarded.

1. 189a A6041 - TFBP Experiment Design and Analysis

2. Scheduled Milestones for March 1979

Node	Description	Due Date	Actual Date
Page 2-35, Line 4 Node 1	RIA-ST EDR	03-21-79	03-19-79C

3. Summary of Work Performed in March 1979

a. PCM Test Series

The draft PCM-1 Fuel Rod Behavior Report was completed. The PCM-1 Fuel Rod Material Report was submitted to technical editing. The first draft of the PCM-3 Fuel Rod Behavior Report was completed. Appendices for the PCM-4 Fuel Rod Behavior Report were completed and are being reviewed. Analysis for Test PCM-5 was completed and the report preparation initiated. The Test PCM-7 Experiment Prediction Report (EPR) draft was reviewed and is being revised. The PCM-7 test train assembly was initiated and the fuel rod cladding characterization was completed.

b. OPTRAN Test Series

The Test OPT 1-1 Experiment Specification Document (ESD) was issued. Reactor physics calculations were initiated. The TWIGGLE code was examined as the probable method of establishing the feasibility of performing the Test OPT 1-1 power transient. Preparation of the OPT 1-1 test train hardware design specification continued.

c. LOCA Test Series

The Test LOC-3 EPR, was completed. Preparation for the conduct of Test LOC-3 was initiated and RELAP plots were completed. The measurement requirements list was completed. The LOC-3 test train assembly was completed, except for installation of the irradiated fuel rods. The Test LOC-5 fuel rod parts were fabricated and the test train assembly planning was initiated. The Test LOC-6 final design review was completed. Data and RELAP plots for the Test LOC-11 Fuel Rod Behavior Report (TRR) draft were redone and the report was returned to typing. The LOC-11 Fuel Rod Material Report was submitted for printing.

d. RIA Test Series

The initial phase of the postirradiation examination (PIE) work for Test RIA-ST has been completed and the draft of the TRR was begun. PIE continued on the Test RIA 1-1 and RIA 1-2 fuel rods. Preliminary arrangements were made for additional RIA burnup measurements at Hanford Engineering and Development Laboratory. The design of the RIA 1-3 test train assembly continued. A final design review of the RIA 1-4 test train assembly was completed. Reactor physics calculations for Test RIA 1-4 continued. Thermal-hydraulic calculations for Test RIA 1-4 were initiated. Fuel rod energy measurements for Tests RIA-ST, RIA 1-1, and RIA 1-2 were recalculated using qualified Data Acquisition and Reduction System (DARS) data. Reactor physics calculations to determine fission energy deposited after control rod scram following a power burst were also initiated.

4. Scheduled Milestones for April 1979

Node	Description	Due Date	Actual Date
Page 2-35, Line 1, Node 5	LOC-3 Test Train	04-12-79	04-02-79E
Page 2-35, Line 2, Node 5	LLR Test Series	04-30-79	03-31-79C

5. Summary of Work to be Performed in April 1979

a. PCM Test Series

Technical editing and graphics for the Test PCM-1 Fuel Rod and Fuel Rod Mateial Behavior Reports will continue. The report drafts for the Test PCM-3 and PCM-4 TRRs will be completed and review initiated. Work will continue on the Test PCM-5 PIER. An outline for the Test PCM-5 Fuel Rod Behavior Report will be completed and reviewed. The Test PCM-7 EPR will be completed. The assembly of the PCM-7 test train assembly will continue.

b. OPTRAN Test Series

Work on the Test OPT 1-1 Experiment Operating Specification (EOS) will continue. FRAP-T calculations will be performed to finalize the inlet coolant conditions. The design of the OPT 1-1 test train assembly will continue.

c. LOCA Test Series

The irradiated fuel will be installed in the LOC-3 test train assembly, data acquisition specification will be completed, and the test will be performed. The Quick Look

Report and posttest data evaluation will be initiated. The Experiment Operating Procedure for Test LOC-3 will be prepared. The Test LOC-11 TRR will be submitted for printing.

d. RIA Test Series

The fuel rod energy problem for Tests RIA-ST, RIA 1-1, and RIA 1-2 will be reviewed and investigated further and the results will be documented. The nondestructive portion of the Test RIA 1-2 PIE will be completed. Work will continue on the Tests RIA 1-1 and RIA-ST PIEs. Drafting of the Test RIA-ST TRR will continue. The RIA 1-3 test train design will continue, and the RIA 1-4 test train design will be released and the part fabrication initiated. Reactor physics and thermal-hydraulic calculations for Test RIA 1-4 will continue.

6. Problems and Potential Problems

Variation in fuel rod energy measurements will delay the Tests RIA-ST, RIA 1-1, and RIA 1-2 Fuel Behavior Reports.

1. 189a A6044 - PBF Design Engineering

2. Scheduled Milestones for March 1979

Node	Description	Due Date	Actual Date
Line 5, Node 4 Page	SDD 4.1 - Reactor Vessel System	03-06-79	02-16-79C

3. Summary of Work Performed in March 1979

a. IPT Support Column

The preliminary design review was held for the in-pile tube support column modifications. Approval was received from the committee to continue into the final design.

b. PBF Resin Columns

Preliminary data taken during operation of the new reactor and canal cleanup system show it to be working effectively. After two weeks of operation the decontamination factors for Iodine and Cessium are 150 and 50, respectively. Particulate matter in the canal has been reduced substantially, and, in addition, the working area around the canal has been reduced from a Zone III to a Zone II radiation area.

c. Central Filler Piece Adapter Plate

An existing adapter plate for the central filler piece has been refurbished, which will provide the facility with a spare, should it be needed.

d. Backup NMS Chamber

Fabrication has started on the housing for the backup nuclear monitoring system (NMS) chamber. The chamber has been procured and is on-site.

e. Cask Qualification to ID 0529

A meeting was held with DOE to discuss their comments for the cask qualification. After the unresolved comments are formally transmitted, the document will be revised accordingly and the cask will be ready for use.

f. Diesel Generator Modification

The redesign of the lube oil cooling system was completed. It will be installed in the next available opening in the schedule.

g. SDD Revisions

System Design Descriptions (SDD) 7.2 and 7.5 were revised and approved. These revisions were the result of facility modifications for the pressurizer level control, NMS digital readout and transient rod servo control.

h. Corrosive Waste System

The SO Test for the corrosive waste system was started. All deficient items on the system were repaired.

i. Fission Product Detection System (FPDS) Thermocouple

Design was completed on the FPDS thermocouple installation.

4. Scheduled Milestones for April 1979

None.

5. Summary of Work to be Performed in April 1979

a. Miscellaneous Construction Jobs

1) Remote loop cleanup system bypass valve
2) SO Tests for hot and corrosive waste systems
3) Diesel generator regulator SO test
4) High speed valve no. 1 rework

b. Adjustable Experiment Power Level Shutdown (AEPL)

Design and installation of the AEPL w ll be completed.

c. Demineralized Water Tank Drain Valve Controllers

Design will be completed on the valve controllers.

d. Backup NMS Chamber

All fabrication will be completed on the backup NMS chamber and it will be ready for installation.

6. Problems and Potential Problems

None.

1. 189a A6046 - Fuel Behavior Analysis Assessment

2. Scheduled Milestones for March 1979

Node	Description	Due Date	Actual Date
Line 2, Node 4, Page 6	Performance of Failed Rods (TREE)	03-16-79	03-29-79C
37260	IFA-430 - Fabrication Instrument Calibration Report (TFBP-TR)	03-01-79T	02-15-79C
Line 3, Node 6, Page 7	Convert Halden Data Reduction to CDC 7600	03-18-79	03-16-79C
---	Fuel Powdering Topical (TREE)	03-23-79	03-23-79C

3. Summary of Work Performed in March 1979

a. Halden Program

Final verification of the IFA-429 data reduction system has been completed. The user's manual is ready for printing. Gas flow and thermal performance data obtained during the first four power ramps of IFA-430 were analyzed and a corresponding paper for presentation at an ANS Topical Meeting in Portland, Oregon, April 28 to May 1 was completed. Bids on the fission product monitoring system for the IFA-430 gas flow system were received and evaluated. He/Xe gas mixtures for special tests in IFA-430 were ordered.

b. Power Reactor Postirradiation Examination

The initial evaluation of the pulsed-eddy current data was completed. The experimental work has been terminated due to funding limitations.

c. Update Fuel Properties - MATPRO-12

A report describing new MATPRO models for fuel vapor pressure was submitted to management for final review.

d. Update Cladding Properties for MATPRO-12

The review of fuel-cladding chemical interaction data was completed, and development of a MATPRO model for chemical attack of cladding by fuel was started. Development of a revised model for cladding local failure was delayed further by a request to confirm a special link of two MATPRO-11 models to FRAP-S3 for a LOFT study.

e. PCM and IE Topical Reports

The fuel powdering and failed rod behavior topical reports were published as TREEs. Work on the zircaloy embrittlement and the molten fuel-cladding interaction topicals continued. Analyses of fission gas behavior continued.

f. Program Development

A draft of the report on the fission product release from defective fuel rods was completed. Work on the IE/PCM Experiment Requirements Document (ERD) was initiated.

g. Model Assessment

Tabulation of the FRAPCON-1 predictions for rod temperature, pressure, strain, and surface effects was essentially completed. Results from a few runs are outstanding. A draft of the introductory material and results of calculations for standard fuel rod designs was written. Finalization of the fuel temperature analysis is underway. Preliminary data-code comparison plots for all categories have been generated. Recommendations were given to PBF in the areas of future IE/PCM test activities, the fission gas release Research Information Letter, and thermal-hydraulic experimental data. A contribution was made to a company-wide recommendation which specifies changes desirable for 10CFR50 Appendix K. Review of LOFT L2-2 posttest and L2-3 pretest calculations is underway. The Fuel Code Development Branch was assisted in preparing a statement of model and correlation uncertainties to be used by Sandia Laboratories in the LOCA RELAP studies.

4. Schedule Milestones for April 1979

Node	Description	Due Date	Actual Date
Line 5, Node 5 Page 2-13	Embrittlement Topical	04-01-79	04-13-79E
Line 6, Node 3	IE-PCM-ERD Update	04-01-79	07-20-79E
Line 10, Node 4 Node # 37697	Fuel Vapor Pressure Correlation	04-01-79	04-06-79E
Node # 37825	FRAPCON-1 Assessment Issue Draft Report	04-01-79	05-15-79T-2

5. Summary of Work to be Performed in April 1979

a. Halden Program

The IFA-429 data reduction system user's manual will be printed and issued. Final evaluation of the IFA-430 startup data will be completed for incorporation into startup report due June 1. Fission product monitoring system will be ordered. A paper on the IFA-430 startup results will be presented at the ANS Topical Meeting in Portland. The data reduction system for IFA-430 data will be completed.

b. Power Reactor Postirradiation Examination

The BWR rods will be returned to storage in the TAN canal.

c. Update Fuel Properties - MATPRO-12

A description of the new fuel vapor pressure model will be issued and a review of PBF grain growth data for a new MATPRO restructuring model will be carried out.

d. Update Cladding Properties for MATPRO-12

Development of a fuel-cladding chemical interaction model will continue. A revised model for cladding local failure will be finished and the document describing this model will be issued if further unexpected delays do not interfere.

e. PCM and IE Topical Reports

The zircaloy embrittlement topical will be published as a TREE. Editing of the molten fuel-cladding interaction topical will be completed. Fission gas behavior analysis will continue.

f. Program Development

Work on the IE/PCM ERD will continue.

g. Model Assessment

Tabulation of FRAPCON-1 predictions from all outstanding runs will be completed. Additional code-data comparison plots will be generated, as needed, to assist in analysis activities. A draft of the results from comparing the data on the temperature, pressure, strain, and surface effects with FRAPCON-1 predictions will be written. Assistance will be provided to LOFT in the areas of Tests L2-2 and L2-3 fuel behavior calculations. PBF will be given 189a support recommendations.

6. Problems and Potential Problems

None.

1. 189a A6274 - PBF Cooperative Research - Austria

2. Scheduled Milestones for March 1979

None.

3. Summary of Work Performed in March 1979

a. Instrument Development

A work package defining the revised work scope was prepared. The instrument development tasks were initiated.

b. Combinatorial Geometry

Checkout of the RAFFLE code continued. The PBF RIA 1-4 test sample problem has been set up and, as expected at this stage of development, "bugs" were encountered during execution. It was found to be quite awkward to describe the many r,θ regions typically required for PBF test design. To simplify input, a method was determined for incorporating a new geometrical "body type" into the package.

4. Scheduled Milestones for April 1979

None.

5. Summary of Work to be Performed in April 1979

a. Instrument Development

The linear variable differential transformer signal conditioner design documentation will be started.

b. Combinatorial Geometry

Work on the Test RIA 1-4 sample problem will continue. The new geometrical body (right vertical wedge) will be incorporated into the code and, in April or May, the RIA 1-4 test problem will be set up again using the new body type to assess use of this option and to check it out by comparison with previous runs.

6. Problems and Potential Problems

Conversion to the CDC Cyber 176 with the NOS-BE system in June could cause a delay in implementation of the combinatorial geometry.

1. 189a A6275 - Electrical Heater Rod Evaluation Studies

2. Scheduled Milestones for March 1979

Node	Description	Due Date	Actual Date
Line 2, Node 3	Prepare IFA-511 Test Specification	03-31-79	03-30-79C

3. Summary of Work Performed in March 1979

a. Electrical Heater Rod Performance Review

No work was accomplished on the electric versus nuclear rod comparison study due to higher priority work related to LOFT Test L2-2, PBF/LOFT Lead Rod Tests, and LOFT Test L2-3 predictions.

b. IFA-511 Nuclear Heater Rod Experiments

The cladding for one IFA-511-II rod arrived at EG&G Idaho, Inc., and the attachment of four LOFT thermocouples to it was initiated. The contractual correspondence with Rama Corporation concerning the procurement of eight electric heaters for IFA-511 was completed. Difficulties encountered with the pretest predictions using the TRAC code were associated with the small system dimensions. The model is being rebuilt to permit the use of larger time steps. A parametric study of the nuclear and electric rod response was initiated using the SSYST and COUPLE codes.

c. COSIMA Testing

Two COSIMA rods are being shipped from KfK to the INEL to have four LOFT thermocouples attached to each. The thermocouple location was discussed with KfK. The RELAP model of the facility was obtained from Germany and is being executed using RELAP4/MOD6.

d. Swiss Reflood Test Support

The specification and requisition for bid quote for the cladding thermocouples were finalized and sent to prospective vendors. Because of the time involved in making the thermocouple cable, the decision was made to obtain 40-mil cable instead of the LOFT 46-mil cable. The standard size, 40-mil, is much easier to obtain and the chance of meeting the June 1 schedule date for having the thermocouples at the NEPTUN facility is much better. The impact of the smaller diameter thermocouple cable is not considered to be significant. The application of the data to be obtained from the experiments in developing RELAP correlations was evaluated. This information will be used in defining thermocouple locations when NEPTUN instrumentation plans are obtained from the Swiss. The spacer grid strip material will be shipped to the Swiss by April 5.

4. Scheduled Milestones for April 1979

None.

5. Summary of Work to be Performed in April 1979

a. Electric Heater Rod Performance Review

No work is anticipated on this project until June, due to current manpower shortages and higher priority work.

b. IFA-511 Nuclear and Electric Heater Rod Experiments

The attachment of four LOFT thermocouples to the cladding of one IFA-511-II fuel rod will be completed. Fabrication of eight electric heater rods at RAMA Corporation will begin. The TRAC code pretest analysis will continue using a model including all actual system dimensions.

c. COSIMA Testing

Two COSIMA heater rods will arrive at the INEL and the attachment of four LOFT thermocouples to each will be initiated. Priorities for tests proposed by EG&G Idaho, Inc., will be agreed upon with COSIMA personnel. RELAP4/MOD6 will be used to assist in the test planning.

d. Swiss Reflood Test Support

The thermocouple cable will be acquired and fabrication of thermocouple junctions started. NEPTUN instrumentation plans will be required, which will allow completion of the analysis for thermocouple placement definition. Also, definition of experiment parameters will be underway.

6. Problems and Potential Problems

The Swiss have requested the t ermocouple materials by June 1, but this date may not be met due to possible procurement problems. The impact of not meeting this date will be discussed with the Swiss during April.

1. 189a A6057 - PBF Operations

2. Scheduled Milestones for March 1979

None.

3. Summary of Work Performed in March 1979

a. PBF Operations

Construction work continued on Phase II of the reactor building expansion.

The work performed during this reporting period was primarily associated with conduct of the LOFT Lead Rod Tests LLR-4 and LLR-5.

Removal of the LLR-3 test train and changeout of the fuel rods was completed. Reinstallation of the LLR-5 test train (also used for Test LLR-4), loop coolant system refill, hydrostatic pressure testing, and plant system startup were completed. Reactor startup was completed and Test LLR-5 was conducted. Refill of the loop coolant system, hydrostatic pressure testing, plant system and reactor startup were completed, and Test LLR-4 was conducted.

The Instrument and Data Section of PBF Operations completed the March preventive maintenance (PM) on all process equipment, pre- and posttest data system calibrations in support of Test LLR-5, and repaired the hot leg gamma densitometer for Test LLR-5.

b. PBF Operations Support

The January and February preventive maintenance inspections were completed and the March PMs are 95% complete. The remaining March PM inspections and all of those for April are scheduled to be performed during the shutdown period after Test LLR-4. Corrective maintenance efforts included plant maintenance support for Tests LLR-4 and LLR-5. Several plant deficiencies have been corrected and all maintenance has been completed for the shutdown period after Test LLR-5.

The Test RIA-ST Experiment Data Report (EDR) was published and distributed to meet the Buff Book commitment date of March 21, 1979. A draft of the Test RIA 1-1 EDR was completed, review comments were incorporated, and it was submitted to the Information Division for publication. Work continued on the Test RIA 1-2 and LOFT Lead Rod EDR drafts and associated data qualification.

LOCA drawings are currently being prepared for inclusion into the indentured drawing system at PBF Configuration Document Control Service (CDCS). Preparations are being made to incorporate the test train drawings into the drawing system. A review of all record release PBF drawings was completed. As a result, appropriate drawings are currently being incorporated into the PBF CDCS drawing list.

Chapter 1 (PBF Facility Description) of the Plant Operating Manual was completed and issued. The LOFT Lead Rod Experiment Operating Procedure was also issued.

A CCB, which will provide funds to further identify the poison(s) in the silver zeolite, has been prepared and is being circulated for approval. Following poison identification, appropriate correction actions can be taken, and new silver zeolite obtained.

During the month of March, stringent controls were placed on expenditures to maintain costs within budget. A CCB is currently being processed to cover budget overruns. Preventive maintenance costs increased due to the performance of the January, February, and March PMs.

4. Scheduled Milestones for April 1979

Node	Description	Due Date	Actual Date
TA-175	LOFT Lead Rod Test	4-30-79	3-31-79C

5. Summary of Work to be Performed in April 1979

a. Complete March and April PM inspections.

b. Perform the building leak rate test.

c. Complete rework and installation of high speed valve no. 1 (HSV-1), including, reinstallation of its corresponding Henry nozzle.

d. Complete modifications to the remote loop cleanup system.

e. Continue with Phase II of the reactor building expansion.

f. Complete installation of adjustable experiment power level shutdown.

6. Problems and Potential Problems

During preparations for Test LLR-5, a problem was encountered with the calibration relay panel in the surveillance system. As a result, a replacement panel fabrication was initiated. Installation will take place in April.

1. 189a A6095 - Major Modifications

2. Scheduled Milestones for March 1979

Node	Description	Due Date	Actual Date
Line 2, Node 3, Page 3	Loop Performance Modification - Deliver Motor Generator Set	03-09-79	02-23-79C

3. Summary of Work Performed in March 1979

   a. Loop Performance Modifications

      The construction package for installation of the motor-generator has been reviewed and approved by DOE and EG&G Idaho, Inc. M-K has awarded the contract to Biggers Construction Company.

   b. In-Pile Tube Spare

      The outer diameter of the in-pile tube has been finish turned. Profiling of the breech, spline, and nozzle areas is underway. The proposed heat treating fixture design was reviewed and approved.

   c. Transport Cask

      The lead was poured into the transport cask shell and the components returned to General Atomic for machining.

4. Scheduled Milestones for April 1979

   None.

5. Summary of Work to be Performed in April 1979

   a. Loop Performance Modification

      Construction will be underway on the Phase II portion of the motor generator installation. Installation of the heat exchanger thermocouples will also be started.

   b. In-Pile Tube (IPT) Spare

      All 3-D machining will be completed on the IPT breech, spline, and nozzles. Fabrication of the heat treat fixture will be completed.

   c. Transport Cask

      The final machining will continue.

6. Problems and Potential Problems

VOTAW will have lost about three weeks on the fabrication schedule by the time the 3-D machining on the IPT is complete. This was due to the difficulty in machining Inconel 718. The time required was underestimated by VOTAW. They have submitted a recovery schedule to pick up the lost time during fabrication processes later in the schedule.

THERMAL FUELS BEHAVIOR PROGRAM

CHANGE CONTROL BOARD ACTIONS

CHANGE CONTROL BOARD STATUS

COST ACCOUNT	CCB #	DESCRIPTION	STATUS	DATE
4233000	79-10	Silver Zeolite	Pending	3-28-79
4232000	79-12	OPS return to Management Reserve	Pending	3-29-79
4232000	79-13	OPS Overrun	Pending	3-29-79
4240000	79-17	Transfer to Management Reserve	Pending	3-29-79
42LRC00	79-18	Fuel Pin Change	Pending	3-23-79
4213A00	79-22	PCM-81RS	Pending	3-29-79
4214B00	79-23	Inlet Blockage Studies	Pending	3-29-79
4213D00	79-24	PCM-3 TRR Overrun	Pending	3-29-79
421AB00	79-28	PR-1 Test Reschedule	Pending	3-29-79
4218000	79-29	TRR Extension	Pending	3-29-79
4221A00	79-15	Loop Performance Mod, Delay Completion	Withdrawn	
4219E00	79-19	Delete OPTI-U EDR	Withdrawn	
4218E00	79-20	Delete RIA 1-3 EDR	Withdrawn	
4218G00	79-21	Delete RIA 1-6 EDR	Withdrawn	
4216D00	79-25	Delete LOC-3 EDR	Withdrawn	
4219C00	79-26	Delete OPT 1-2 EDR	Withdrawn	
4219D00	79-27	Delete OPTI-3 EDR	Withdrawn	

CHANGE CONTROL BOARD ACTIONS

(Dollars in Thousands)

CCB NUMBER	DESCRIPTION	FY-79	FY-80	FY-81	BEYOND	TOTAL APPROVED ACTION
79-08	Revised FY-79 Baseline-2	31.4				31.4
79-09	Repair of LLR Test Assembly (funded from LOFT JAERI foreign funding contingency account)	12.5				12.5
79-11	RIA-ST-1 TRR	<26.7>				<26.7 >
79-14	Core Surveillance	< 2.64>				< 2.64>
79-16	RIA-ST PIE	<16.0 >				<16.0 >

WRRD MONTHLY REPORT FOR

MARCH 1979

3-D PROGRAM

R. A. DaBell
Plans & Budget Representative

R. D. Wesley, Manager
Engineering Support Projects

2306 163

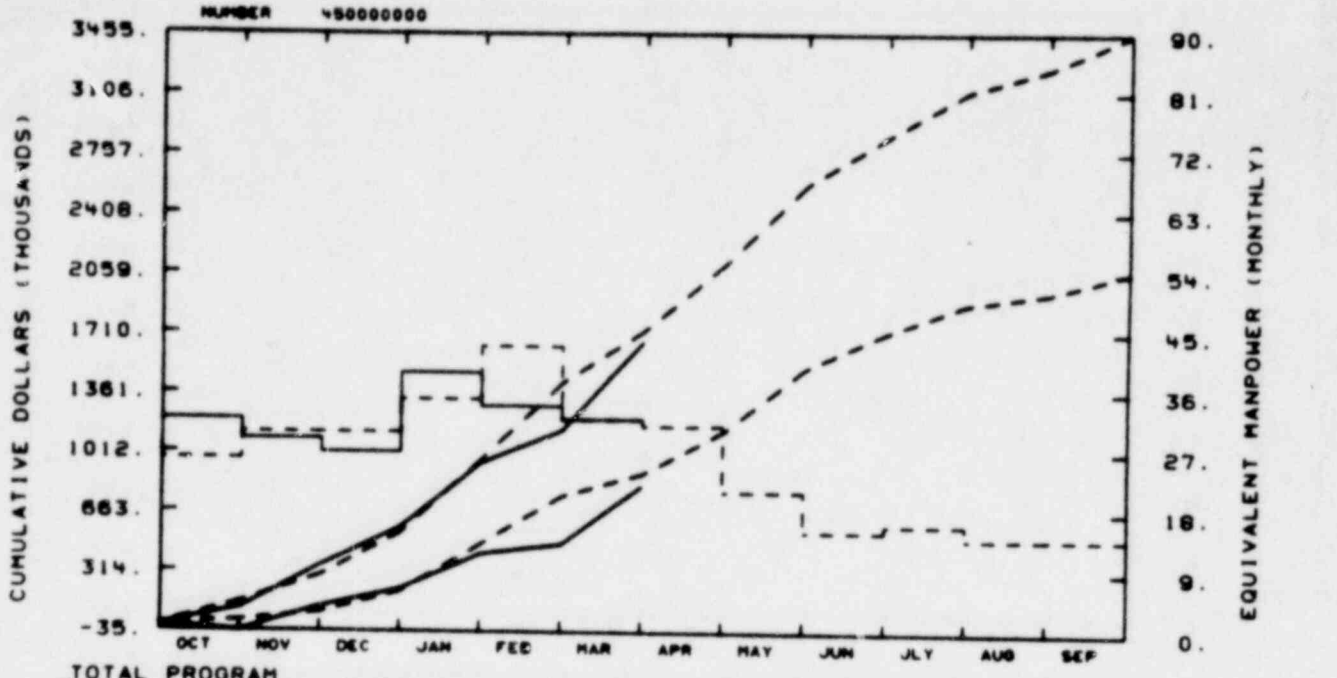
3-D

COST SUMMARY & COMMENTS

RESPONSIBLE MANAGER
R.E. RICE

EG&G IDAHO INC.

3-D EXPERIMENT PROJECT



TOTAL PROGRAM

BUDGET	132	288	535	964	1418	1720	2110	2574	2957	3118	3248	3451
ACTUAL	95	345	568	947	1140	1661						

MATERIAL

BUDGET	24	72	194	489	752	884	1134	1501	1713	1880	1944	2067
ACTUAL	-34	108	208	413	471	813						

MANPOWER

BUDGET	28	30	30	35	43	32	31	21	15	16	14	14
ACTUAL	38	29	27	38	34	32						

BUDGET - - - - -

ACTUAL ———

A6100

YTD VARIANCE: 59 (3%)

The February costs from EG&G San Ramon ($61.9K) for the PKL Spool Piece activity are not reflected in the YTD actuals. These costs will be included in the April activity.

3-D

TECHNICAL REVIEW & SUMMARY

PROGRAM MANAGER'S
SUMMARY AND HIGHLIGHTS

The final design review was held for the JAERI Instrumented Spool Piece Task. Survival testing of the prototype spool piece was completed. A report of two-phase data from the prototype spool test was issued.

PKL instrumented spool piece testing is continuing at Wyle Labs. (Norco, California).

A team was sent to JAERI to install, checkout, calibrate and train operators for the vessel CLLD systems. The work was performed satisfactorily, and there are no current problems with this system.

Five PKL CLLDs have been fabricated and successfully tested. Preparation for shipment was begun.

Work is continuing on the fabrication of the PKL upper plenum flowmeter and JAERI downcomer drag disk systems. Test plans for these systems have been updated.

The air-water instrumentation test data reduction has continued.

1. A6100 - 3-D Technical Support and Instrumentation

2. Scheduled Milestones for March 1979

Node	Description	Due Date	Actual Date
Page 5, Line 1	Long Lead Procurement LSRT Instrumented Spool Piece	03-20-79T-1	03-20-79C
Page 5, Line 1	Final Design Review LSRT Instrumented Spool Piece	03-06-79E	03-20-79C
Page 5, Line 1	NRC Acceptance of LSRT Instrumented Spool Piece Design	03-20-79T-1	03-23-79C
Page 8, Line 3	Assemble and Test Upper Plenum CLLD's PKL Liquid Level Detectors	03-23-79T-1	03-23-79C
Page 8, Line 7	Component Fabrication & Design Documentation for JAERI Downcomer Drag Disk	03-13-79T-1	*

3. Summary of Work Performed in March 1979

a. JAERI CCTF Instrumented Spool Pieces

The final design review was conducted and the thermal shock, temperature, and pressure cycle tests were completed. Response to MPR's comments on the test plan for the production units TP-009 was issued. The test plan was revised to implement appropriate comments and Revision A of Test Plan TP-009 transmitted with the letter of response. Revision B of Test Plan TP-005 was issued for information. The prototype spool piece two-phase data report was issued. Procedures for handling the JAERI spool pieces at the JAERI Test Facility were drafted and hand carried to JAERI. A draft of the procedure for the temperature and pressure acceptance EP-070 was initiated.

b. PKL Instrumented Spool Piece

The PKL instruments spool piece two-phase flow testing continued at Wyle Labs. Prototype Test Plans 50324, MES-001 and MES-003 were critiqued per MPR's review and updated. Electrofusion Company responded to EG&G San Ramon's RFQ and expedited the fabrication of the 113mm beryllium ring. The 113mm instrumented spool was prototype tested per San Ramon Test Plan MES-001. The facility was converted to handle the 80.8mm vertical spool.

*Pending NCR

c. JAERI CCTF Liquid Level Detectors (CLLDs)

The following tasks were performed and completed by the EG&G installation support team at the JAERI Facility in Tokai, Japan.

1. The three upper plenum CLLDs and the upper plenum instrument stalk were installed in the test vessel.

2. The conax seals were assembled and torqued to the required value.

3. The JAERI test vessel was pressurized and the instrument stalk penetrations and the conax seal assemblies checked for leakage. No leaks were observed.

4. The high temperature resistant hard-to-soft cable splices were assembled and the soft-to-soft cable connections were made in the junction boxes.

5. All cables, cable splices and cable connections were visually checked and electrically tested for integrity. No faults were observed.

6. The electrical connectors for the CLLD electronics were assembled, visually checked and electrically tested for integrity, and sealed for strain relief.

7. The final calibration of the CLLD electronics was completed in the presence and with the assistance of JAERI technical personnel as part of the JAERI training program.

8. The CLLD electronics and the IRIG time code generator were connected to the JAERI Sangamo Sabre VII analog tape recorder.

9. The entire CLLD analog data system was checked for proper recording and replay of CLLD data and IRIG time code data.

10. A two-day teaching class on the principles of operation, including hands-on, practical experience, was conducted for JAERI/IHI technical personnel, with satisfactory results.

d. PKL Liquid Level Detectors (LLDs)

The assemblies of five CLLDs were completed; three upper plenum, one upper plenum spare, and one incore spare. Final acceptance test was performed. Cable-to-pin assemblies were electrically tested using time domain reflectometry, to disclose any defects such as nicks, kinks, sharp bends or other gross inhomogeneities in the hard cables or faulty conditions in the electrical pins. No faults were observed. Preparation for shipment has been initiated.

e. PKL Upper Plenum Turbine Flowmeter

Response to MPR's comments on the test plan was issued. The Test Plan TP-009 and Specification ES-50371 were revised to implement appropriate comments and the revised test plan and specification transmitted with the letter of response. The magnetic field test equipment was delivered to the turbine flowmeter subcontractor. The subcontractor performed some acceptance testing on proposed pick off coils.

f. JAERI Downcomer Drag Disk

Changes were initiated on Test Plan TP-008. A test facility specification was drafted. Fabrication of the calibration test section and drag transducer components continued.

g. Air-Water Instrumentation Tests

The reduction of data from the air-water instrumentation tests has been completed. Data analysis is continuing. A package of preliminary results is being assembled for delivery to NRC.

4. Scheduled Milestones for April 1979

Node	Description	Due Date	Actual Date
Page 5, Line 1	Procure & Fabricate JAERI CCTF Instrumented Spool Piece	04-09-79T-1	
Page 6, Line 2	Deliver Spare Cable Set to PKL (Spool Piece)	04-02-79T	
Page 6, Line 3	Fabricate and Test 3 PKL Prototype Spools	04-06-79E	
Page 6, Line 3	PKL Spool Piece Error Analysis	04-10-79T-1	
Page 6, Line 3	PKL Spool Piece Design Modification	04-13-79E	
Page 6, Line 3	PKL Spool Piece Final Design Review	04-19-79T-1	
Page 6, Line 3	Fabricate 4 Production Spools for PKL	04-20-79T-1	
Page 8, Line 7	Assemble and Test JAERI Downcomer Drag Disk	04-24-79T-1	
Page 4, Line 1	Air-Water Upper Plenum Data Reduction & Analysis	04-06-79	

5. Summary of Work to be Performed in April 1979

a. JAERI CCTF Instrumented Spool Pieces

Issue the temperature and pressure acceptance test report. Procure and fabricate spool piece components. Perform error analysis and modify software as required.

b. PKL Instrumented Spool Piece

Complete prototype testing of the 80.8 vertical spool. Prepare required documentation and present final design review on 4-20-79 at EG&G INEL. Finish all testing as outlined in the Testing Summary MES-003 and response testing per MES-006. Begin final checkout of the spool system. Return all drag disk transducers to INEL for change out of the internal components and assembly of new units.

c. JAERI CCTF Liquid Level Detectors (CLLDs)

As a result of the actual installation of the upper plenum instrument stalk completed during the month of March 1979, the applicable drawings and installation procedure will be updated to incorporate specific installation details and accessories.

The qualification tests of the electronics developed for the PAM signal channel synchronization of the CLLD signal conditioner electronics will be completed. Synchronization of the PAM signal channels is required for the operation of the stand-alone data acquisition system which will replace the present LOFT procedure later in the year. Design of the CLLMS stand-alone data acquisition system and procurement of long lead items will be initiated. Work on the CLLMS Technical Manual will continue.

d. PKL Liquid Level Detectors (LLDs)

The extending hard cables of the five CLLD assemblies will be cut flush, the magnesium oxide around the cable ends removed, and the cable ends seal welded. The cable ends will then be tightly bundled and temporarily soft-soldered together, including the pull wire, to facilitate CLLD installation in the PKL test vessel. The packing material and the container for shipment will be prepared for packaging of the CLLD assemblies. The shipping inspection check list will be prepared, the check executed and witnessed by Quality Control, and the CLLD assemblies packaged in the shipping container.

e. PKL Upper Plenum Turbine Flowmeter

Subcontractor will redesign pick off coil and perform acceptance testing and magnetic field tests.

f. JAERI Downcomer Drag Disk

The test facility specification and revised Test Plan TP-008 will be issued. Fabrication of the calibration test section and assembly of the JAERI downcomer drag disks will be completed. A requisition for test facility services will be issued.

g. Air-Water Instrumentation Tests

Preliminary data will forwarded to NRC for review and comment. The final report will be drafted.

6. Problems and Potential Problems

a. JAERI CCTF Instrumented Spool Pieces

Improper thermal shock testing resulted overheating of portions of the spool piece. The region near the turbine meter housing is estimated (from discoloration) to have reached 800°-900°F, well above the specified limit (600°F). The spool piece deformed a maximum of 0.015 inch (expansion) of the 6 inch internal diameter. The portions of the spool piece that were not overheated retained their specified dimensions. The spool is still judged usable despite the slight deformation, and the tests have lead to the conclusion that the spool pieces do meet the thermal shock requirements.

b. PKL Instrumented Spool Pieces

During testing of the 113mm spool, moisture caused shorting of the preamplifier on the silicone detector - causing the amplifier to fail - it has been returned to Ortec. A change out, using the 80.8mm vertical detector's amplifier, was accomplished. We are working on a method of water proofing the system to prevent further amplifier damage due to moisture.

c. PKL Liquid Level Detectors (LLDs)

The shipping dates for the CLLD electronics, the CLLD assemblies, and the soft cable spools have not been determined by KWU. EG&G will propose to KWU to send the entire remaining portion of the CLLMS in one combined shipment, including installation tools and accessories and spare parts and modules.

d. PKL Upper Plenum Turbine Flowmeter

Pick off coils subjected to acceptance testing were unacceptable.

e. Air-Water Instrumentation Tests

An NCR has been written to postpone the final report date by six weeks.

WRRD MONTHLY REPORT FOR

MARCH 1979

CODE DEVELOPMENT AND ANALYSIS PROGRAM

N. H. Drysdale
Plans & Budget Representative

Paul North.

P. North, Manager

CODE DEVELOPMENT & ANALYSIS PROGRAM

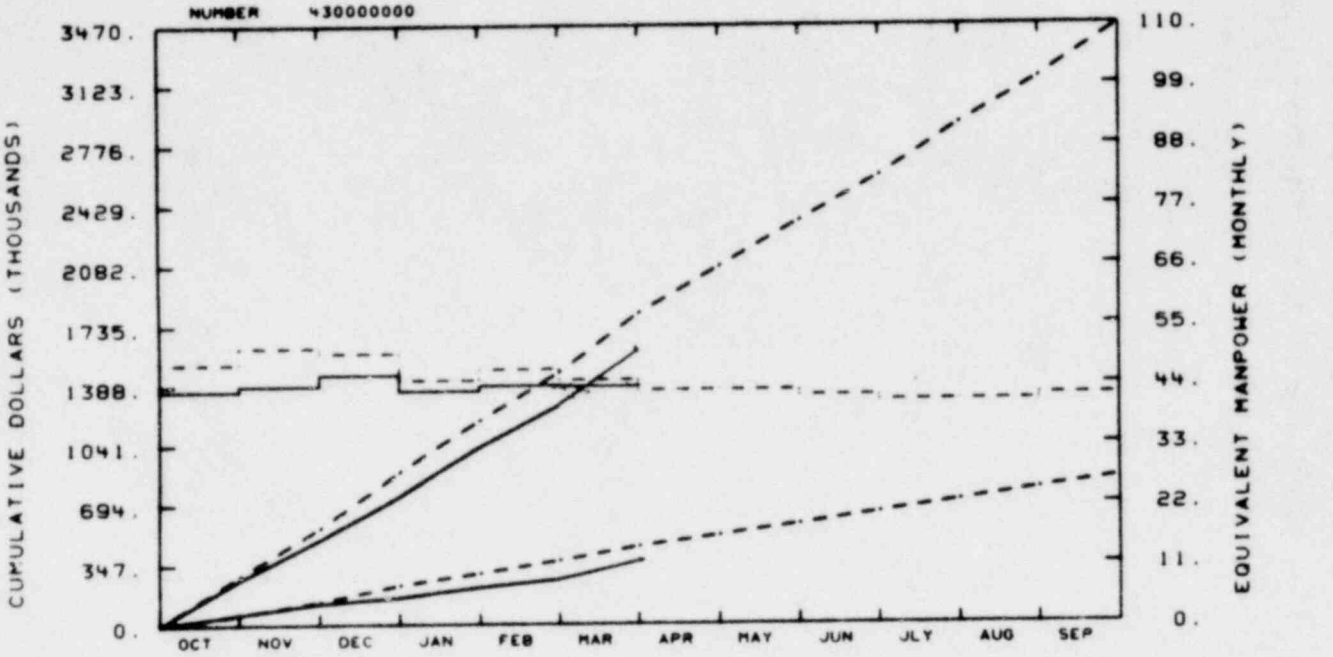
COST SUMMARY & COMMENTS

ESPONSIBLE
ANAGER
P NORTH

EG&G IDAHO INC.

CODE DEVELOPMENT & ANALYSIS PROG

NUMBER 430000000



TOTAL PROGRAM

BUDGET	280	557	882	1182	1407	1732	2068	2334	2594	2895	3158	3466
ACTUAL	258	490	741	1027	1269	1624						

MATERIAL

BUDGET	57	132	225	293	366	447	509	571	641	708	777	843
ACTUAL	61	122	155	213	256	352						

MANPOWER

BUDGET	48	51	50	45	47	45	43	43	42	41	41	42
ACTUAL	43	44	46	43	44	44						

BUDGET - - - - -

ACTUAL ———

YTD VARIANCE: 108 (6%)

Individual cost graphs will give individual explanations.

The MATPRO part of A6046, Task 42551, is not reflected in the Code Development Program total as the major portion of A6046 is part of the TFBP.

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

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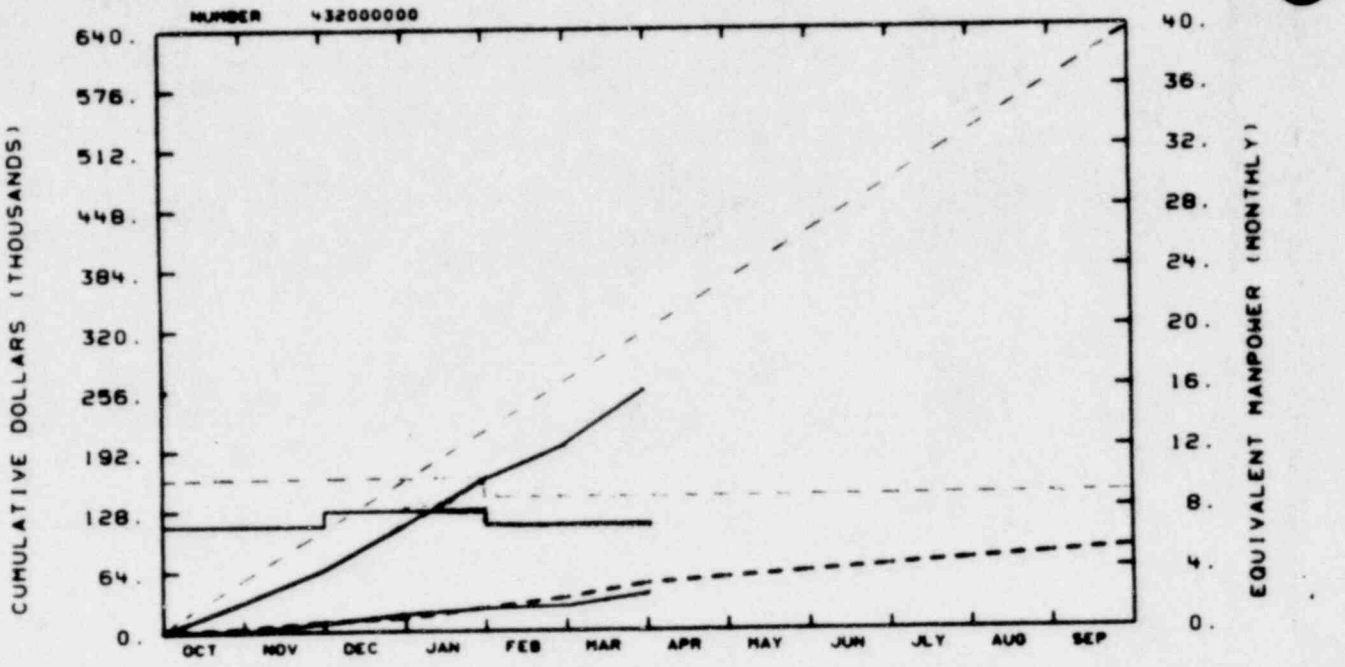
RESPONSIBLE MANAGER
P NORTH

EG&G IDAHO INC.

CONTAINMENT ANALYSIS DEVELOPMENT

NUMBER 432000000



TOTAL PROGRAM

BUDGET	53	106	159	212	265	318	371	424	477	530	583	636
ACTUAL	32	66	113	164	195	252						

MATERIAL

BUDGET	4	10	14	24	35	50	58	61	68	74	80	85
ACTUAL	0	9	18	26	27	43						

MANPOWER

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

BUDGET - - -
ACTUAL ———

A6042

YTD VARIANCE: 66 (21%)

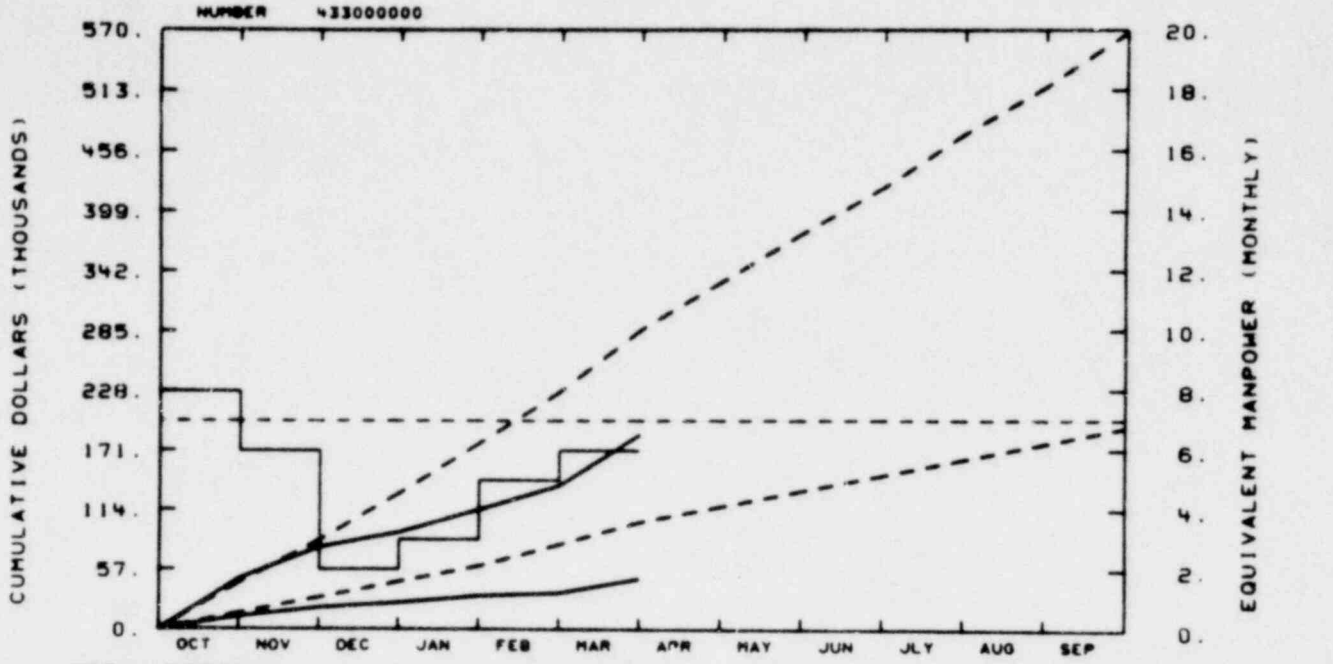
In November, personnel were assigned to activities associated with A6009 causing an underrun. These personnel have now been returned and expenditure is occurring at the budgeted rate. Recovery is expected in the last quarter of FY-79 due to heavy computer expenditures in developmental assessment.

RESPONSIBLE
MANAGER
P NORTH

EG&G IDAHO INC.

FUEL BEHAVIOR MODEL DEVELOPMENT

NUMBER 433000000



TOTAL PROGRAM

BUDGET	44	85	130	178	227	286	332	378	421	472	516	567
ACTUAL	48	78	92	114	138	186						

MATERIAL

BUDGET	15	30	45	60	81	102	117	132	147	162	177	192
ACTUAL	12	20	25	32	35	48						

MANPOWER

BUDGET	7	7	7	7	7	7	7	7	7	7	7	7
ACTUAL	8	8	2	3	3	6						

BUDGET - - - - - -

ACTUAL ———

A6050

YTD VARIANCE: 100 (35%)

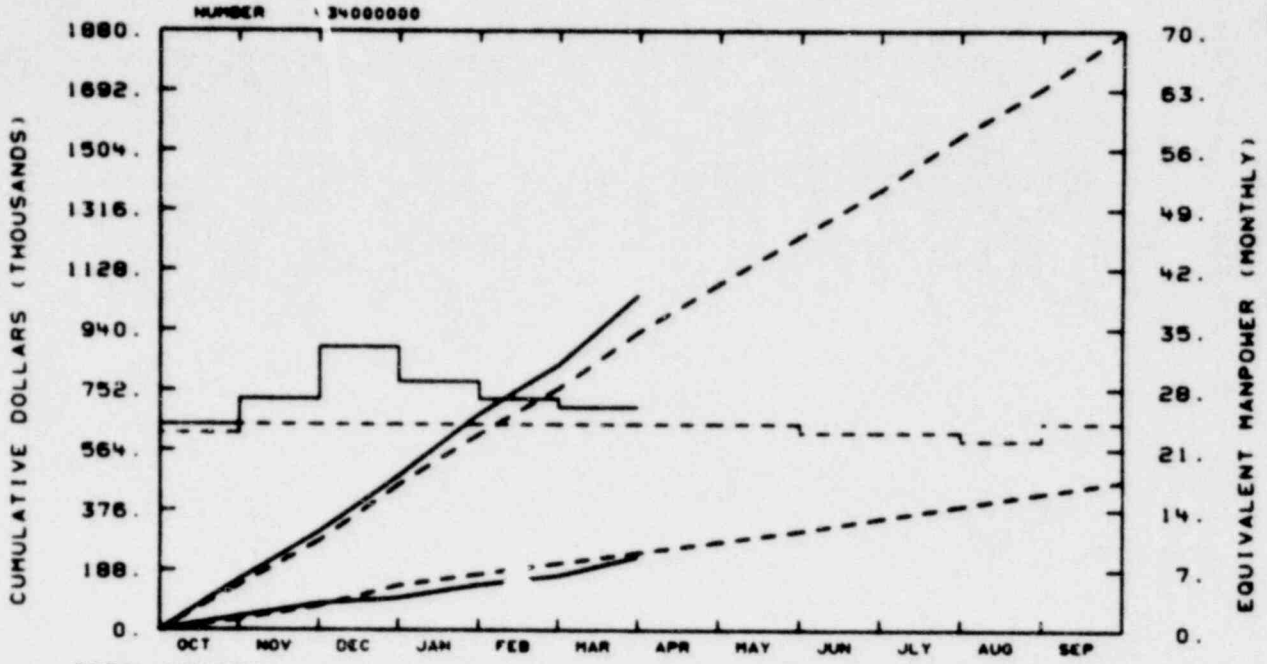
The underrun is due largely to work done on FRAP-T4-LACE being charged to A6052. NRC has accepted the associated schedule slippage and associated funding will be carried to FY-80. Slippage of the FRAP-T5 TREE publication has caused an additional underrun. This process has now begun and that portion of the underrun should be made up before June.

RESPONSIBLE
MANAGER
P NORTH

EG&G IDAHO INC.

LOSS OF COOLANT ACCIDENT ANALY

NUMBER 34000000



TOTAL PROGRAM

BUDGET	138	279	455	615	757	932	1083	1233	1379	1551	1699	1874
ACTUAL	150	308	482	678	831	1048						

MATERIAL

BUDGET	33	75	139	174	208	242	278	310	348	388	428	485
ACTUAL	43	83	101	141	170	230						

BUDGET

ACTUAL

MANPOWER

BUDGET	23	24	24	24	24	24	24	24	23	23	22	24
ACTUAL	24	27	33	29	27	26						

A6052

YTD VARIANCE: <116> (12%)

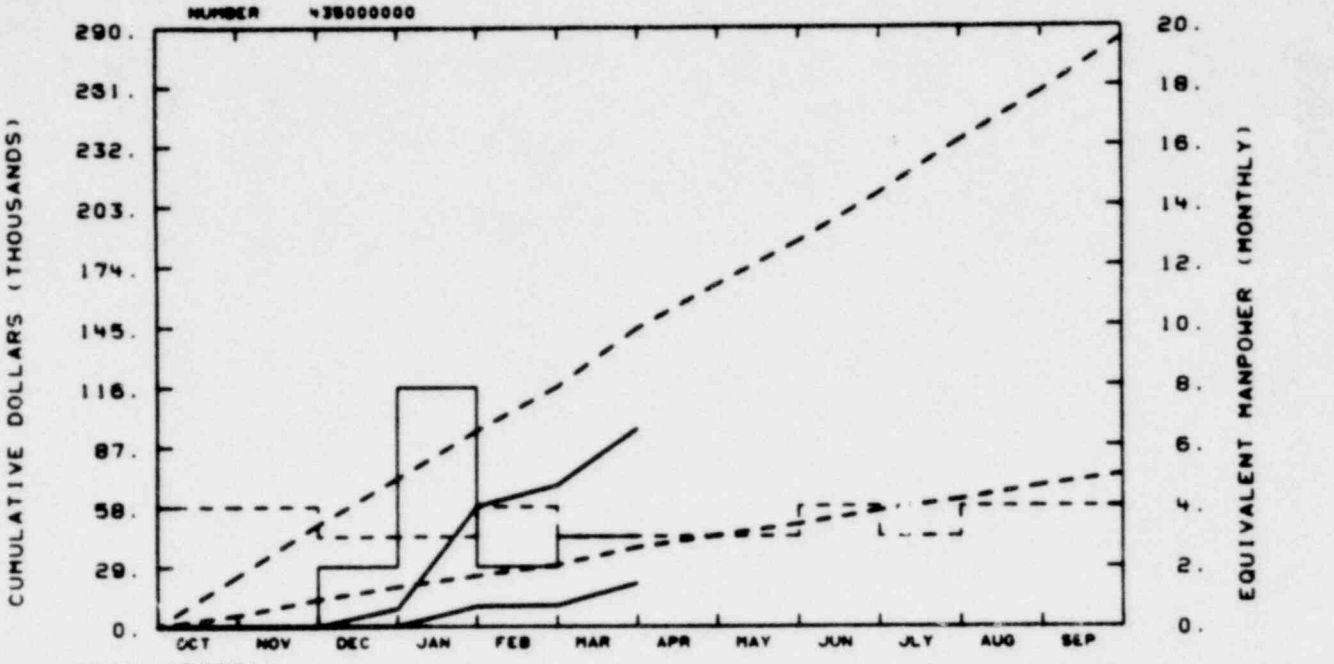
The overrun reflects work done on FRAP-T4-LACE for WRAP in December and January by Fuels Analysis, Research and Development Branch personnel. Continuing overrun reflects additional work by Reference Code Development Branch personnel in support of the WRAP and WREM tasks. This is recognized by NRC. The total funding will need adjustment by NRC.

RESPONSIBLE MANAGER NORTH

EG&G IDAHO INC.

CORRELATION VERIFICATION

NUMBER 438000000



TOTAL PROGRAM

BUDGET	25	49	72	95	116	144	165	186	209	235	258	284
ACTUAL	0	0	9	58	68	96						

MATERIAL

BUDGET	5	13	19	25	30	38	44	49	56	61	68	73
ACTUAL	0	0	0	10	10	21						

MANPOWER

BUDGET	4	4	3	3	4	3	3	3	4	3	4	4
ACTUAL	0	0	2	8	2	3						

BUDGET - - - - - -

ACTUAL ———

A6278

YTD VARIANCE: 48 (33%)

Lack of personnel during the first quarter caused the underrun. To correct this, a new employee has been hired and several tasks are being handled by outside personnel. The rate of expenditure is now approximately as budgeted. Additional work associated with the Denver Transition Boiling meeting in April is expected to reduce the underrun.

CODE DEVELOPMENT & ANALYSIS PROGRAM

CAPITAL EQUIPMENT

EG&G IDAHO, INC.

CAPITAL EQUIPMENT PRIORITY LIST

CARRYOVER

Program CODE DEVELOPMENT

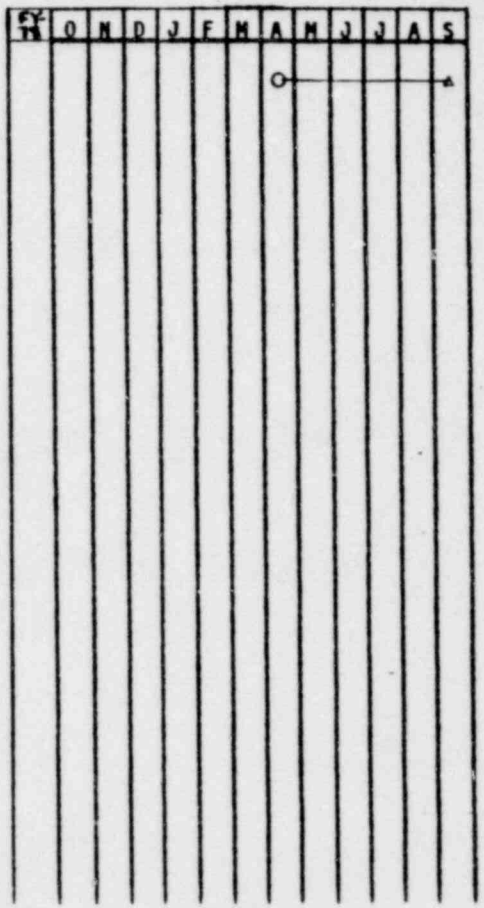
189 Number A6052 (A6109)

Manager P. North

Priority Number	EA No.	Item Description	Authorized Amount	YTD Costs & Commit.	Project to Date	<Over>/Under Balance
	98923	Tektronix Graphic Tablet	$ 2,863			$ 2,863

Carryover Budget	$ 2,863
YTD Costs & Commit.	-0
BALANCE	$ 2,863

Item Authorized o
Money Committed Δ
Equipment Received, Account Closed ■



2306 183

CODE DEVELOPMENT & ANALYSIS PROGRAM

TECHNICAL REVIEW & SUMMARY

PROGRAM MANAGER'S

SUMMARY AND HIGHLIGHTS

RELAP4/MOD7 development is continuing on a stretched schedule in consideration of the WRAP and WREM tasks. Checkout of the ECC mixing model was completed and significant renodalization capabilities verified. Debugging of the reflood model continued.

After minor modifications, the WREM RELAP4/MOD5 code version was completed and checked out. WRAP code modifications are now complete except for the GEXL correlation and TLTA modifications.

Development and checkout of RELAP5/MOD"0" were completed.

The FRAP-T5 document was completed and transmitted, and underwent a preliminary review by Technical Editing in preparation for release in TREE format.

1. 189a A6052 - Loss of Coolant Accident Analysis (RELAP4)

2. Scheduled Milestones for March 1979

No scheduled milestones for March.

3. Summary of Work Performed in March 1979

a. Blowdown

All items in this work package have been completed.

b. Reflood Model Development

The core hydraulic model development is the critical path task in this work package.

1. The forward flow model changes have been initiated and a preliminary model added to the code. Checkout consists of approximately 2 sec of the FLECHT 0085 transient.

2. Reverse flow case coding has been completed with changes introduced in the forward flow model changes. Coding was completed and debugging initiated.

c. Integral Code Development

The renodalization development task continues to be the critical path task in this effort.

1. A mapping of heat slabs on themselves has been accomplished.

2. Checkout of the ECC mixing model has been completed.

3. Linking of the ECC mixing model to reflood model has been initiated.

SI unit conversion task has continued to the extent possible as the input has been changed.

d. Developmental Checkout

EG&G is waiting final recalculation of the funding level in FY-80 before plans can be finalized.

e. WREM/WRAP Code

Minor modifications to the WREM code have been made and support to NRC on the LOFT-EM analysis given. Analytical models to be included in the WRAP code have been completed except for the GEXL and TLTA modifications. GEXL modifications have been impacted because of the Denver REWET meeting work and TLTA modifications will be available at the end of May as scheduled. The MOXY modifications and checkout have been initiated.

4. Scheduled Milestones for April 1979

Node	Description	Due Date	Actual Date
New	WRAP Code Development - Add EM Model	4-16-79	
New	LOFT and PWR Analysis - Add EM Model	4-23-79	

5. Summary of Work to be Performed in April 1979

a. Reflood Model Development

A replanning effort for the reflood model development task will be initiated. This is necessary because of loss of manpower.

b. Integral Code Development

Renodalization of heat slabs to allow combination and splitting will be initiated.

c. WREM/WRAP Development

The blowdown and reflood code will be assembled and checked out. A check problem will be run and sent to SRL.

6. Problems and Potential Problems

Reflood model development replanning is required because of the loss of key personnel assigned to model formulation and programming. Three Mile Island work is expected to impact both the WREM/WRAP and MOD7 development efforts.

1. 189a A6052 - Loss of Coolant Accident Analysis (RELAP5)

2. Scheduled Milestones for March 1979

Node	Description	Due Date	Actual Date
Line 6, Node 4	RELAP5/MOD"0" Applications	3-30-79	3-30-79 PN-60-79
Line 7, Node 1	RELAP5/MOD"0" User Manual - Deliver to NESC	3-30-79	4-30-79 PN-60-79

3. Summary of Work Performed in March 1979

The RELAP5/MOD"0" code development and checkout were completed. Extra effort was expended to correct several code errors and modeling oversights. This additional effort has impacted the documentation task and the node for completion of the users manual will slip to April 30, 1979.

4. Scheduled Milestones for April 1979

Node	Description	Due Date	Actual Date
Line 7, Node 1	RELAP5/MOD"0" User Manual - Deliver to NESC	4-30-79	

5. Summary of Work to be Performed in April 1979

Complete documentation (draft users manual) including model descriptions and a summary of the code applications will be delivered to the National Energy Software Center.

Work will begin on the planning for the TRAC/BWR code development.

6. Problems and Potential Problems

None

1. 189a A6278 - Heat Transfer Correlation and Verification

2. Scheduled Milestones for March 1979

No scheduled milestones for March.

3. Summary of Work Performed in March 1979

a. GEXL Into RELAP

The effort to include GEXL into RELAP is continuing but has slowed because of the Denver meeting on Transition Boiling and Rewet. The basic framework and approach is complete but the programming has yet to be completed.

b. Heater Rod Rewet Study

This study is complete and the report draft has been reviewed twice. Publication is forthcoming.

c. Thermal Resistance Study

This study has just started. This task is being done by Engineering Analysis Division under GWA.

d. Transition Boiling Program

This task is primarily in preparation for the Denver meeting in April. Several small analyses are underway to provide input to this meeting. Because of the importance NRC has placed on this meeting, we have spent considerably more time than previously expected.

4. Scheduled Milestones for April 1979

Node	Description	Due Date	Actual Date
New	BWR CHF Correlation into RELAP - Letter Report	4-16-79	
New	Heater Rod RNB Study - Letter Report	4-16-79	
New	Development of Transition Boiling and RNB Program	4-16-79	

5. Summary of Work to be Performed in April 1979

   a. GEXL Into RELAP

      The GEXL correlation will be included into RELAP and checked out.

   b. Heater Rod Rewet Study

      The report on the Heater Rod RNB Study will be completed and published as scheduled.

   c. Transition Boiling Program

      The meeting to be held in Denver April 11, 12, 1979 will provide input for definition of additional transition boiling analysis tasks.

6. Problems and Potential Problems

   None

1. 189a A6042 - Containment Analysis Development

2. Scheduled Milestones for March 1979

Node	Description	Due Date	Actual Date
L1, N4	Issue Informal Users Manual to NESC	3-31-79	4-13-79C PN-62-79

3. Summary of Work Performed in March 1979

Post-analysis of the Battelle-Frankfurt D-15 CASP run using BEACON was performed in preparation for the containment technology exchange meeting in Germany.

Work on droplet size modeling and heat transfer correlation checkout was deferred due to difficulties encountered in the rerun of the CASP.

The method for out-of-plane mesh coupling has been formulated and coding has been strated.

Work has been initiated on minor edit output for BEACON.

Coding errors in BEACON and the BEACON plot file program have been corrected.

4. Scheduled Milestones for April 1979

No scheduled milestones for April.

5. Summary of Work to be Performed in April 1979

Additional analysis of the CASP results will continue. The conclusions report will be sent to Germany.

Work will continue on obtaining a best-estimate model for droplet/bubble size and on obtaining best-estimate interphasic heat, mass and momentum transfer.

BEACON/MOD2A input to the OECD-CSNI Standard Problem will be generated and issued.

Coding for the out-of-plane coupling and minor edit output will continue.

Work will be started on modeling for form losses and wall friction and on improving the computational stability of the pressure-velocity interaction in BEACON.

A work plan for the developmental assessment of BEACON/MOD3 will be formulated.

6. Problems and Potential Problems

None

1. 189a A6050 - Fuel Behavior Model Development

2. Scheduled Milestones for March 1979

Node	Description	Due Date	Actual Date
36101	FRACAS-2 - Issue Letter Report	3-7-79	4-6-79 PN-50-79
36020	Document FRAP-T5	3-1-79	3-14-79C PN-45-79

3. Summary of Work Performed in March 1979

a. FRAP Code Development and Programming

The FRAP-T5 document was issued and transmitted to the Documentation Office for preparation as a TREE.

b. Developmental Assessment

The initial set of developmental assessment problems using FRAP-T5 have been made and are being scrutinized.

c. Statistical Models

The initial uncertainty analysis option link to FRAPCON-2 was completed.

d. Mechanical Response Modeling

The AXISYM finite element and FRACAS-2 finite difference subcodes were modified for insertion into FRAPCON-2.

e. WREM Calculation

Assistance has been provided to NRC for the fuel calculation portion of the LOFT-WREM calculation.

4. Scheduled Milestones for April 1979

Node	Description	Due Date	Actual Date
36101	FRACAS-2 - Issue Letter Report	4-6-79	
36023	Developmental Assessment of FRAP-T5	4-16-79	
36103	Link Uncertainty Option - Issue Letter Report	4-30-79	
36106	Link FRAPCON-2 to AXISYM - Issue Letter Report	4-30-79	

5. Summary of Work to be Performed in April 1979

a. FRAP Code Development and Programming

The AXISYM subcode will be linked to FRAPCON-2.

b. Developmental Assessment

The developmental assessment of FRAP-T5 will be completed and preparation of the document initiated.

c. Statistical Models

A report describing the FRAPCON uncertainty analysis option will be issued.

The FRAP-T5 uncertainty analysis option will be run for three standard problems; a PCM, an RIA and a LOCA.

6. Problems and Potential Problems

The assistance provided to NRC for the fuel calculation portion of the LOFT-WREM calculation was unscheduled. Additional work is now being performed on the Three Mile Island plant at the request of NRC. Depending on the extent of assistance requested, some slippage of schedules could result.

Resolution of the systems programming error in FRAPCON-2 was delayed due to the termination of the programmer performing this work. Additional time for this task will be needed. This will have no affect on the completion date of FRAPCON-2 however, since model development efforts can continue in parallel.

1. 189a A6046 - Fuel Behavior Analysis Assessment (MATPRO)

2. Scheduled Milestones for March 1979

No scheduled milestones for March.

3. Summary of Work Performed in March 1979

a. Update Cladding Properties for MATPRO-12

The review of fuel-cladding chemical interaction data was completed and development of a MATPRO model for chemical attack of cladding by fuel was started. Development of a revised model for cladding local failure was delayed further by a request to confirm a special link of two MATPRO-11 models to FRAP-S3 for a LOFT study.

b. Update Fuel Properties for MATPRO-12

A report describing new MATPRO models for fuel vapor pressure was submitted to management for final review.

4. Scheduled Milestones for April 1979

Node	Description	Due Date	Actual Date
37697	Fuel Vapor Pressure Correlation	4-1-79	

5. Summary of Work to be Performed in April 1979

a. Update Cladding Properties for MATPRO-12

Development of a fuel-cladding chemical interaction model will continue. A revised model for cladding local failure will be finished and the document describing this model will be issued.

b. Update Fuel Properties for MATPRO-13

A description of the new fuel vapor pressure model will be issued and a review of PBF grain growth data for a new MATPRO restructuring model will be carried out.

6. Problems and Potential Problems

None

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CA&AP

WRRD MONTHLY REPORT FOR

MARCH 1979

CODE ASSESSMENT AND APPLICATIONS PROGRAM

N. H. Drysdale
Plans & Budget Representative

J. A. Dearien, Manager

2306 196

CODE ASSESSMENT & APPLICATIONS PROGRAM

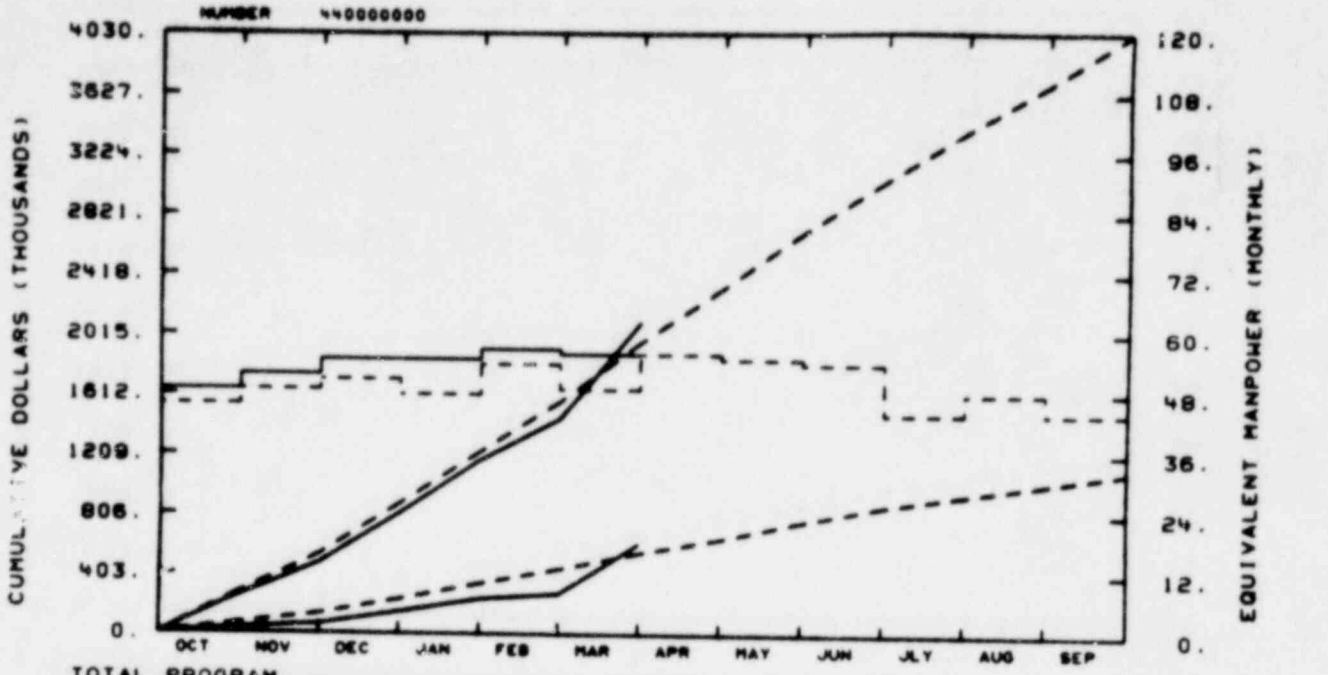
COST SUMMARY & COMMENTS

RESPONSIBLE MANAGER
J A DEARIEN

EG&G IDAHO INC.

CODE ASSESSMENT & APPLICATIONS

NUMBER 440000000



TOTAL PROGRAM

BUDGET	275	536	874	1225	1565	1963	2324	2707	3055	3387	3691	4027
ACTUAL	253	478	810	1168	1449	2100						

MATERIAL

BUDGET	84	132	230	337	436	547	641	760	861	938	1012	1093
ACTUAL	32	81	148	234	269	611						

BUDGET - - - - -

ACTUAL ———

MANPOWER

BUDGET	48	49	51	48	54	49	56	55	54	44	48	44
ACTUAL	49	52	55	55	57	56						

YTD VARIANCE: <13[illegible] (7%)

Individual cost graphs will give individual explanations.

The Fuel Code portion of A6046, Task 42571, is not reflected in the Code Assessment total as the major portion of A6046 is part of the TFBP.

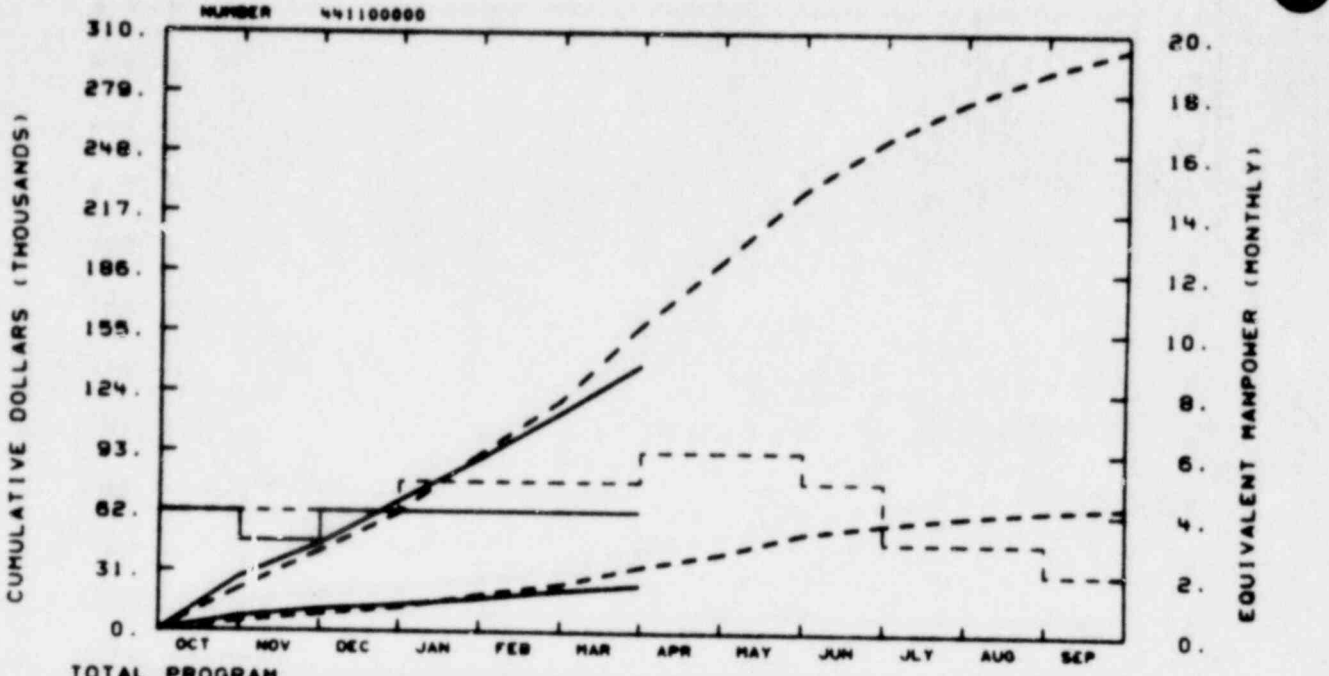
Explanations for major 189a's will be made if the variance exceeds $25K. Minor 189a graphs will explain variance of over $10K.

RESPONSIBLE MANAGER
J A BEARICH

EG&G IDAHO INC.

TECH SUR FOR NRC/INDUST COOP PRO

NUMBER 441100000



TOTAL PROGRAM

BUDGET	22	41	81	92	120	159	192	229	255	275	290	302
ACTUAL	20	45	68	89	113	138						

MATERIAL

BUDGET	5	9	12	19	24	34	41	51	58	61	64	68
ACTUAL	7	11	14	17	21	24						

MANPOWER

BUDGET	4	4	4	5	5	5	6	6	5	3	3	2
ACTUAL	4	3	4	4	4	4						

BUDGET

ACTUAL

A6039

YTD VARIANCE: 21 (13%)

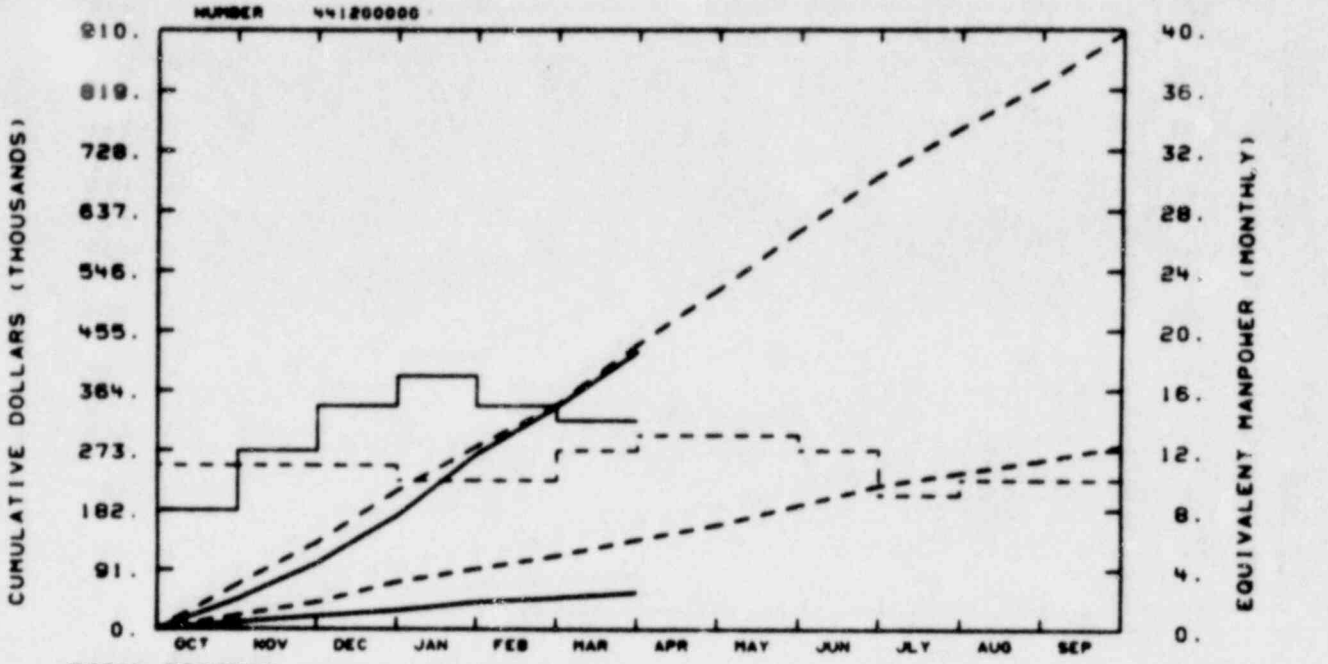
The Technical Surveillance Task was on budget as of the middle of January 1979, but has been underbudget, at an increasing rate, since that time. This under run has developed because of the experimental program schedules. Those schedules, during the time period January through March, were such that the data necessary to this task was not developed and/or available. This condition has changed in the month of March such that the data is now or soon will be in house. Future expenditures will reflect a considerable increase in material (i.e. computer) charges.

RESPONSIBLE
MANAGER
J A DEARIEN

EG&G IDAHO INC.

THERMAL HYDRAULIC CODE ASSESS

NUMBER 441200000



TOTAL PROGRAM

BUDGET	68	133	212	280	343	435	516	608	691	762	827	904
ACTUAL	48	101	173	267	340	424						

MATERIAL

BUDGET	20	41	72	92	112	137	159	189	219	238	257	279
ACTUAL	10	20	28	41	48	56						

MANPOWER

BUDGET	11	11	11	10	10	12	13	13	12	9	10	10
ACTUAL	8	15	15	17	15	14						

BUDGET - - - - -

ACTUAL ———

A6047

2306 200

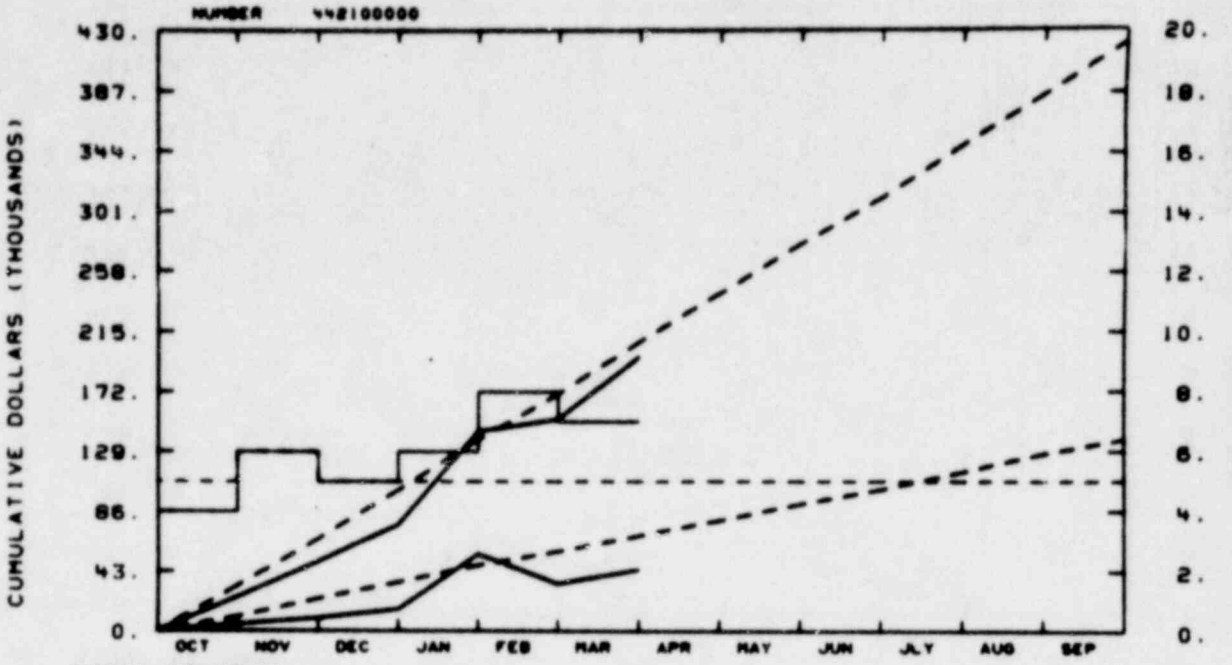
YTD VARIANCE: 11 (2%)

RESPONSIBLE MANAGER
J A DEARIEN

EG&G IDAHO INC.

NRC/RSR DATA BANK & HEAT TRANS

NUMBER 442100000



TOTAL PROGRAM

BUDGET	32	66	101	136	171	208	242	276	311	348	386	421
ACTUAL	24	50	76	144	192	197						

MATERIAL

BUDGET	10	23	35	47	57	68	79	91	102	114	127	137
ACTUAL	5	9	15	26	34	44						

MANPOWER

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

BUDGET
- - - -
ACTUAL

A6102

YTD VARIANCE: 11 (5%)

The $11K underrun is due to the continuing lack of manpower. The Data Bank is and will continue, until June, to be one programmer short. Efforts are being made to locate supplemental help in-house, but there is a general shortage of programming and data processing personnel.

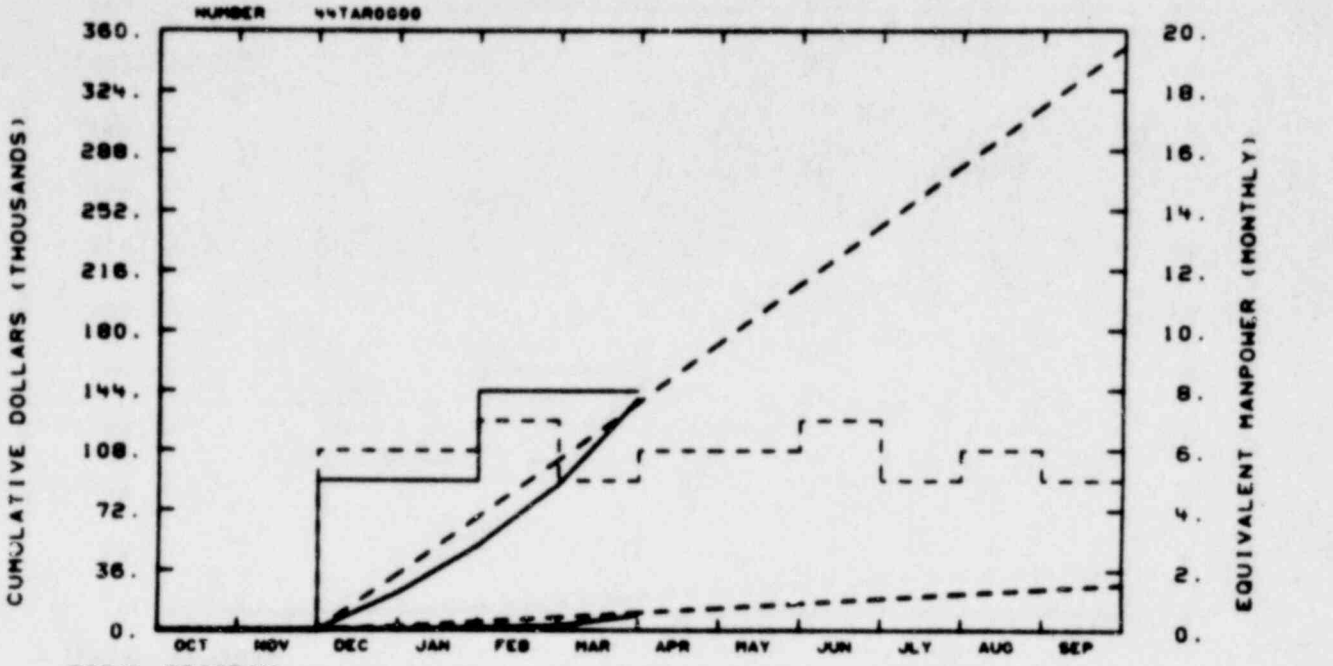
2306 201

RESPONSIBLE
MANAGER
J A DEARIEN

EG&G IDAHO INC.

LER EVALUATION PROGRAM

NUMBER 44TAR0000



TOTAL PROGRAM

BUDGET	0	0	34	68	103	137	173	208	244	279	315	350
ACTUAL	0	0	28	51	88	140						

MATERIAL

BUDGET	0	0	2	5	8	11	13	16	19	22	25	28
ACTUAL	0	0	0	1	3	9						

MANPOWER

BUDGET	0	0	6	6	7	5	6	6	7	5	6	5
ACTUAL	0	0	5	5	8	8						

BUDGET

ACTUAL

2306 202

A6276

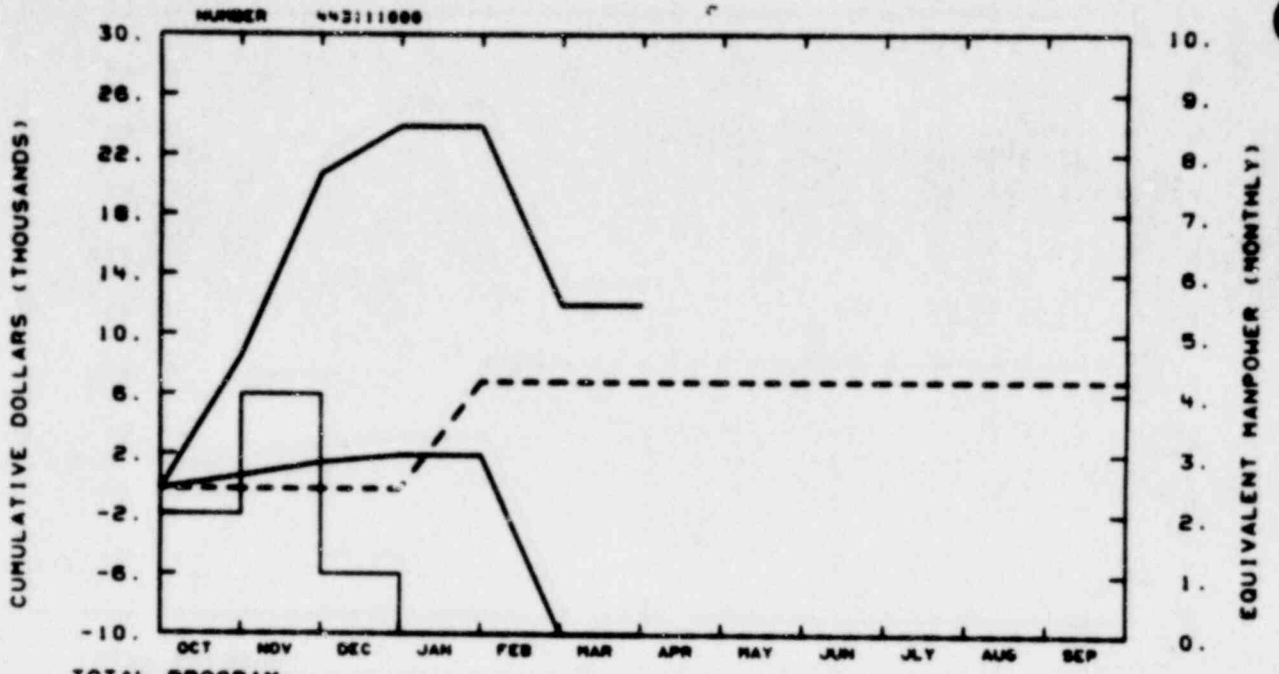
YTD VARIANCE: <3> (2%)

RESPONSIBLE MANAGER
J A BEARIEN

EG&G IDAHO INC.

ECCS EVALUATION MODEL DEVELOP

NUMBER 442111000



TOTAL PROGRAM

BUDGET	0	0	0	7	7	7	7	7	7	7	7	7
ACTUAL	9	81	8%	8%	18	18						

MATERIAL

BUDGET	0	0	0	7	7	7	7	7	7	7	7	7
ACTUAL	1	2	2	2	-9	-9						

MANPOWER

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

BUDGET
- - - -
ACTUAL

A6154

YTD VARIANCE: <5> (71%)

2306 203

CODE ASSESSMENT & APPLICATIONS PROGRAM

CAPITAL EQUIPMENT

2306 204

EG&G IDAHO, INC.

CAPITAL EQUIPMENT PRIORITY LIST

CARRYOVER

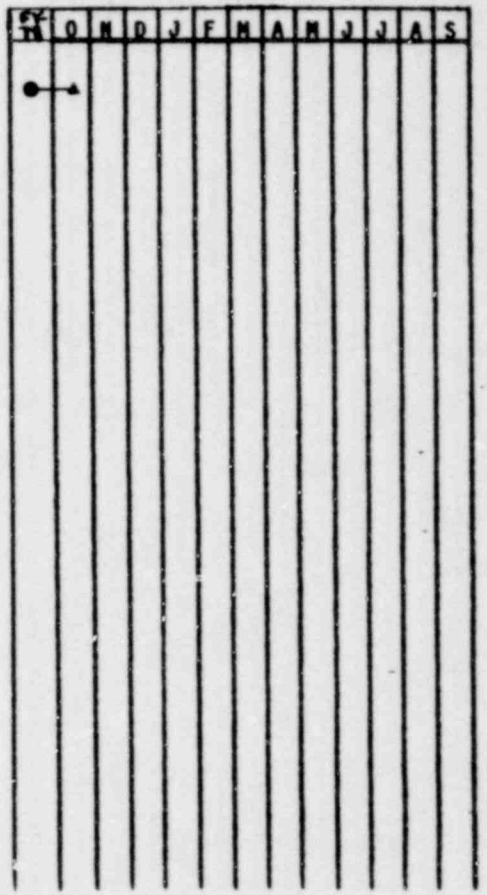
Program CODE ASSESSMENT

189 Number A6102 (A6117)

Manager J. A. Dearien

Item Authorized o
Money Committed Δ
Equipment Received, Account Closed ■

Priority Number	EA No.	Item Description	Authorized Amount	March YTD Costs & Commit.	Project to Date	<Over>/Under Balance
	98500	ADPE Equipment	$ 6,748	$ 6,748	$ 6,748	0



Carryover Budget	$ 5,216
Adjustment	+1,532
YTD Costs & Commit.	-6,748
BALANCE	0

2306 205

EG&G IDAHO, INC.

CAPITAL EQUIPMENT PRIORITY LIST

FY-1979

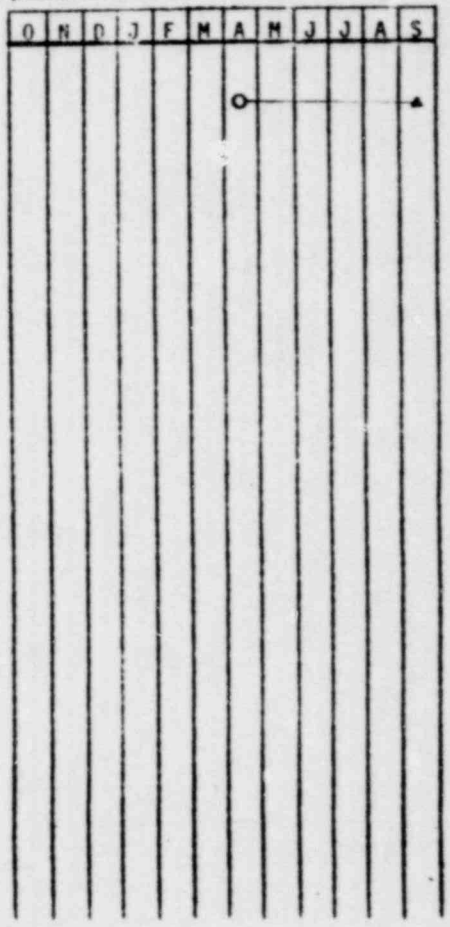
Program CODE ASSESSMENT

189 Number A6102 (A6117)

Manager J. A. Dearien

Item Authorized o
Money Committed Δ
Equipment Received, Account Closed ■

Priority Number	EA No.	Item Description	Authorized Amount	YTD Costs & Commitments	<Over>/Under Balance
	98924	Tektronix Graphic Tablet	$ 8,468		$ 8,468



FY-79 Budget	$ 10,000
Adjustment	- 1,532
YTD Costs & Commit.	- 0
BALANCE	$ 8,468

2306 206

CODE ASSESSMENT & APPLICATIONS PROGRAM

TECHNICAL REVIEW & SUMMARY

PROGRAM MANAGER'S SUMMARY AND HIGHLIGHTS

The fourth modification to the DBPS (Data Bank Processing System) was completed and released. All Group 5 data tapes (11 experiments) have been sent to ORNL. The remaining work on the DBPS (A6102) is progressing satisfactorily.

The RELAP4/MOD6 Code Assessment (A6047) is continuing satisfactorily. The Semiscale small break test prediction is progressing and we have received the design package for the LOBI test prediction.

The TRAC-P1A Code Assessment work is progressing satisfactorily. The TRAC-P1A applications to a PWR have been started.

The INEL Technical Support to NRC for Industry Cooperative Programs (A6039) is progressing satisfactorily and on schedule.

The International Standard Problem (ISP) 8 reflood calculation was completed and graphical results for ISP8 were submitted to NRC.

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

2. Scheduled Milestones for March 1979

Node	Description	Due Date	Actual Date
Pg 1-41	21-Rod Bundle Test	3-30-79T	3-7-79C

3. Summary of Work Performed in March 1979

The RELAP4/MOD6 Improved Jet Pump Report was completed and submitted for management review.

RELAP4/MOD6 decks for TLTA Tests 6006 and 6007 were developed. Initialization of the 6007 model was started.

Attended PMG meeting at San Jose on March 21, through March 23, 1979.

4. Scheduled Milestones for April 1979

Node	Description	Due Date	Actual Date

None scheduled.

5. Summary of Work to be Performed in April 1979

The Improved Jet Pump Report will be issued.

The Data Comparisons for TLTA Tests 6006 and 6007 will continue.

A data comparison for TLTA Test 6406 will be started.

Pending receipt of the actual boundary condition data from FLECHT-SEASET Steam Generator Reference Test a blind test prediction will be started.

6. Problems and Potential Problems

None

1. A6047 - LOCA Analysis Assessment and Applications

2. Scheduled Milestones for March 1979

Node	Description	Due Date	Actual Date

None scheduled.

3. Summary of Work Performed in March 1979

Continued work on the Marviken Critical Flow task.

Stagnation properties for two Marviken tests were calculated and plotted. Check out of the separate effects RELAP4/MOD6 model was initiated.

Continued work on the task which compares the blowdown heat transfer correlations with the data base.

Completed development of code scoring procedure and began documentation of results.

Completed overlay plots for THTF Test 177 and began draft of report.

A TRAC model was developed for FLECHT-SET Reflood Test 2213B. TRAC models were developed and independently checked for FLECHT Skewed-Bundle Test 110C3 and for Semiscale Mod-1 Reflood Tests S-03-7 and S-03-8.

4. Scheduled Milestones for April 1979

Node	Description	Due Date	Actual Date

None scheduled.

5. Summary of Work to be Performed in April 1979

Stagnation properties will be calculated for the remaining tests in the investigation matrix. Separate effects critical flow calculations using the HEM, Henry-Fauske, and Modified Burnell models will be performed for all of the selected tests and comparison plots will be generated.

Draft report will be written describing the blowdown heat transfer correlations comparisons with the data base.

Complete documentation of code scoring procecure.

Complete draft of Test 177 report.

Prepare for LOBI pre-prediction and attend meeting for participants in ISPRA.

The TRAC model for FLECHT-SET Test 2213B will be independently checked. TRAC models will be developed and independently checked for Semiscale Mod-1 Reflood Test S-03-5 and Semiscale Mod-3 Test S-07-4. A TRAC model of the Zion PWR Facility will be obtained and reviewed.

6. Problems and Potential Problems

None

1. A6102 - Data Bank Processing System

2. Scheduled Milestones for March 1979

Node	Description	Due Date	Actual Date
Pg 1-25 Line 4, Node 3	All Group 5 Tapes Due at ORNL	3-30-79T	3-30-79C
Pg 1-25 Line 9, Node 2	DBPS MOD4 Release	3-30-79T	3-30-79C
Pg 1-25 Lines 4 & 5 Node 2	Procedures to NRC for Review	5-1-79T	3-27-79C

3. Summary of Work Performed in March 1979

DBPS MOD4 was released. Later Group 5 tapes were sent to ORNL. Work began on internal system documentation and other documentation efforts continued. Procedures were sent to NRC for review. Work began on software to read Marviken data tapes. A preliminary report on uncertainty will be generated.

4. Scheduled Milestones for April 1979

Node	Description	Due Date	Actual Date

None scheduled.

5. Summary of Work to be Performed in April 1979

Documentation efforts will continue. New data will be added to the Data Bank. Any remaining bugs in DBPS MOD4 will be removed and some needed peripheral software will be developed.

6. Problems and Potential Problems

Staffing for data bank remains a problem.

I-661 LER EVALUATION PROGRAM

1. A6276 - LER Evaluations Program

2. Scheduled Milestones for March 1979

Node	Description	Due Date	Actual Date

None scheduled.

3. Summary of Work Performed in March 1979

Completed preliminary report on safety system pumps, transmitted it to NRC for review.

Continued work on valve and valve operators one-liners.

Commenced coding LERs for diesel generators.

Completed modification to failure rate program for trend analysis.

Completed work on control rod drive mechanisms and transmitted preliminary report to NRC.

4. Scheduled Milestones for April 1979

Node	Description	Due Date	Actual Date

None scheduled.

5. Summary of Work to be Performed in April 1979

The valve and valve operators one-liners and the diesel generator one-liners will be finished.

NPRDS data will be incorporated into the data base when available.

Begin preliminary reports on valve and valve operators as well as diesel generators.

6. Problems and Potential Problems

2306 213

None

1. A6279 - Preparation of Documents for Tap A-1

2. Scheduled Milestones for March 1979

Node	Description	Due Date	Actual Date

None scheduled.

3. Summary of Work Performed in March 1979

Modifications of Standard Review Plans to include water hammer continued. Work was initiated on a summary report of all NRC water hammer studies. A first draft summary was completed for several sections of the report.

4. Scheduled Milestones for April 1979

Node	Description	Due Date	Actual Date

None scheduled.

5. Summary of Work to be Performed in April 1979

Work will continue on revising the suggested SRPs to include review of potential water hammer and on preparation of the summary report.

6. Problems and Potential Problems

The performing engineer on the SRP modification subtask resigned from EG&G on March 16, 1979. To date a replacement has not been found. At this point in time this is considered a potential problem.

1. Task A6154 - Standard Problem Analysis and Heat Transfer Assistance

2. Scheduled Milestones for March 1979

Node	Description	Due Date	Actual Date
None scheduled.			

3. Summary of Work Performed in March 1979

Continued work on the analysis of Semiscale Small Break Experiment (Test S-07-10B).

Continued preparation for ISP meeting in June, 1979.

ISP8 reflood calculation was completed.

Graphical results of ISP8 were submitted to NRC.

Submittal report for ISP8 was written and is in review.

4. Scheduled Milestones for April 1979

Node	Description	Due Date	Actual Date
DA-31	Issue BE Calculation and Report	4-15-79T	

5. Summary of Work to be Performed in April 1979

Work will continue on the analysis of Semiscale Small Break Experiment (Test S-07-10B).

Continue preparation for ISP meeting in June, 1979.

The ISP8 submittal report will be completed.

Work will be initiated on the ISP8 preliminary comparison report.

6. Problems and Potential Problems

None

WRRD MONTHLY REPORT FOR

MARCH 1979

CODE DEVELOPMENT AND ANALYSIS PROGRAM

CODE ASSESSMENT AND APPLICATIONS PROGRAM

(NRR)

N. H. Drysdale
Plans & Budget Representative

P. North, Manager
Code Development And Analysis Program

2306 217

J. A. Dearien, Manager
Code Assessment And Applications Program

CODE DEVELOPMENT & ANALYSIS PROGRAM

NRR

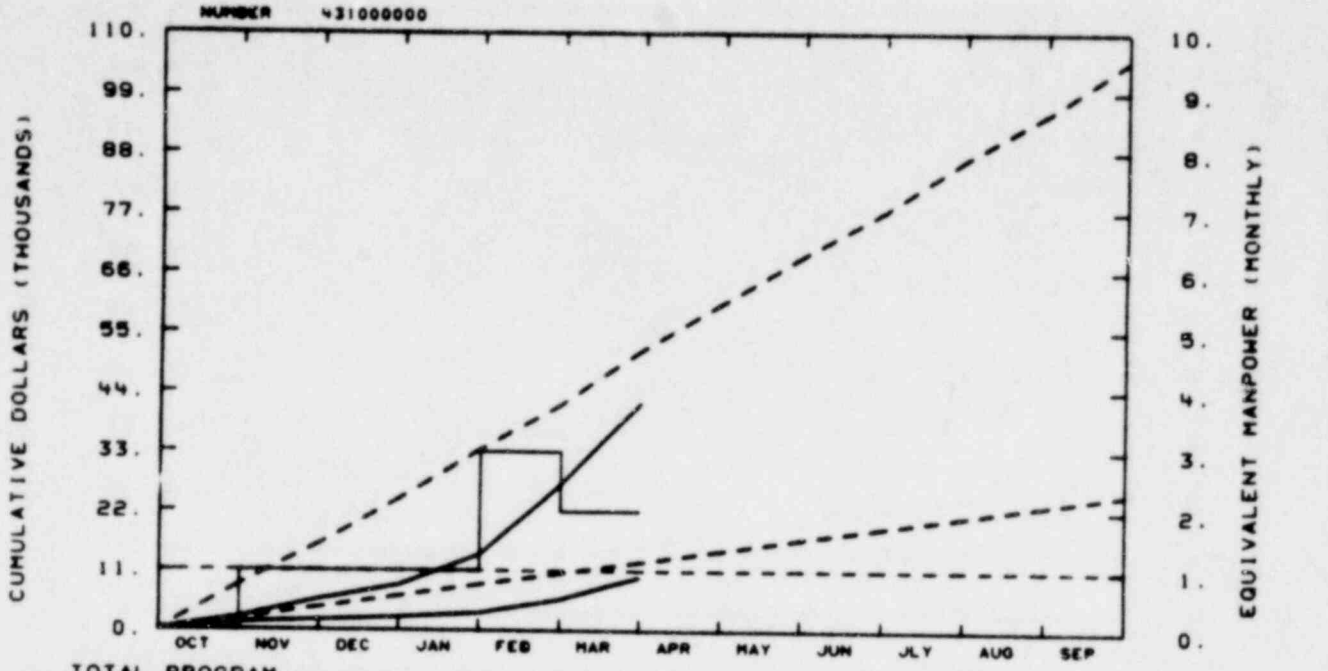
COST SUMMARY & COMMENTS

RESPONSIBLE
MANAGER
P NORTH

EG&G IDAHO INC.

CONTAINMENT ANALYSIS

NUMBER 431000000



TOTAL PROGRAM

BUDGET	8	16	24	33	42	52	60	69	77	87	95	105
ACTUAL	2	6	8	14	27	42						

MATERIAL

BUDGET	2	4	6	8	11	13	15	17	19	21	23	25
ACTUAL	1	2	2	3	6	10						

MANPOWER

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

BUDGET - - - - - -

ACTUAL ———

A6009

YTD VARIANCE: 10 (19%)

Due to a lack of personnel for this program, expenditures were limited to part-time activity by personnel assigned to A6042 through January. With the addition of two new analysts (plus one analyst on GWA in February), activity level is back to that planned. Full recovery is anticipated due to an increase in NRC requests for calculations.

CODE DEVELOPMENT & ANALYSIS PROGRAM

NRR

TECHNICAL REVIEW & SUMMARY

PROGRAM MANAGER'S

SUMMARY AND HIGHLIGHTS

The task to analyze the Containment Analysis Standard Problem (CASP) results was begun and is in progress.

1. 189a A6009 - Containment Analysis

2. Scheduled Milestones for March 1979

No scheduled milestones for March.

3. Summary of Work Performed in March 1979

CONTEMPT4/MOD2A was checked out in preparation for release of the code to the National Energy Software Center on April 1. Work was begun on the restart capability to be included in MOD3.

Post-analysis of the Battelle-Frankfurt D-15 CASP run using CONTEMPT4 was performed in preparation for the international CASP meeting in Germany.

CONTEMPT-LT/028 was issued to NESC.

4. Scheduled Milestones for April 1979

Node	Description	Due Date	Actual Date
BG2	MOD2A Checkout and Release to NESC	4-2-79	

5. Summary of Work to be Performed in April 1979

Work on the CONTEMPT4 restart capability will continue, along with the collection and documentation of previous CONTEMPT4 runs. Work on the NRC ice condenser maldistribution study will be initiated.

Additional analysis of the D-15 CASP run with CONTEMPT4 will continue. Conclusions report will be sent to Germany.

6. Problems and Potential Problems

None

CODE ASSESSMENT & APPLICATIONS PROGRAM

NRR

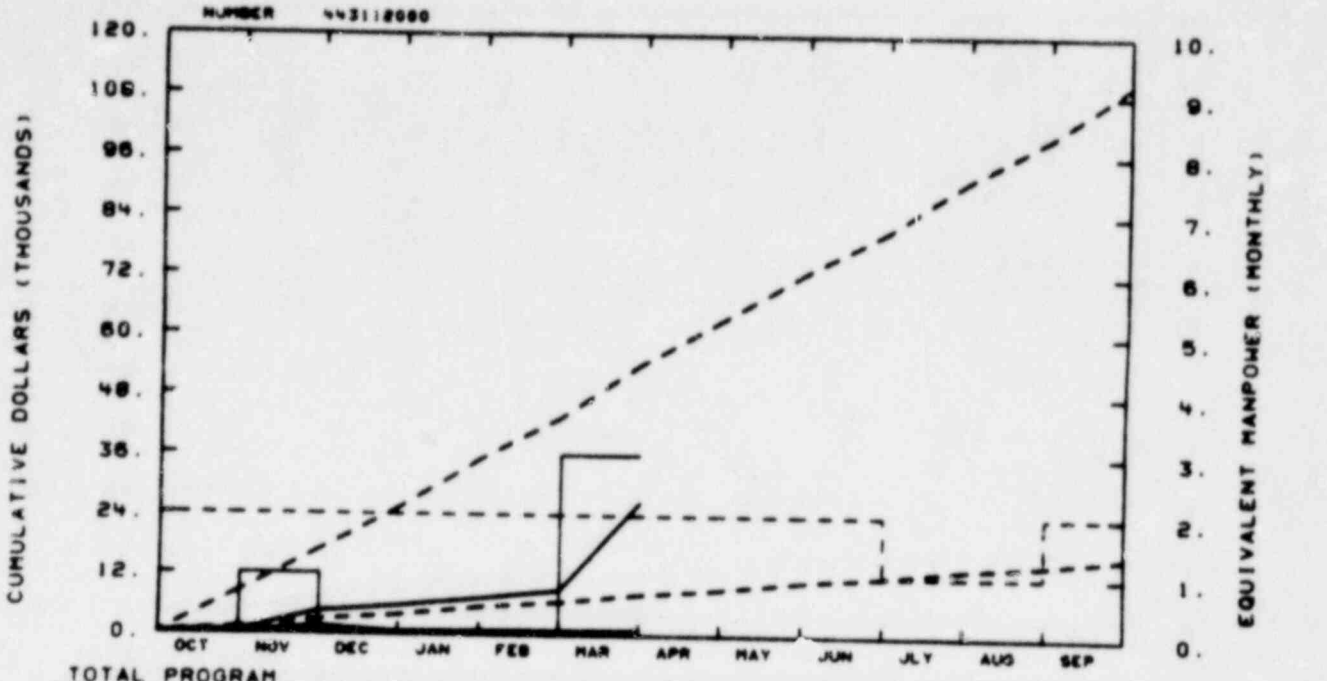
COST SUMMARY & COMMENTS

RESPONSIBLE MANAGER
J A DEARIEN

EG&G IDAHO INC.

FAILURE MODES ANALYSIS

NUMBER 443112000



TOTAL PROGRAM

BUDGET	8	17	25	35	44	54	63	73	81	91	100	110
ACTUAL	1	4	6	7	9	27						

MATERIAL

BUDGET	1	3	4	5	7	8	9	11	12	14	15	16
ACTUAL	0	1	0	1	1	1						

MANPOWER

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

BUDGET

ACTUAL

A6025

YTD VARIANCE: 27 (50%)

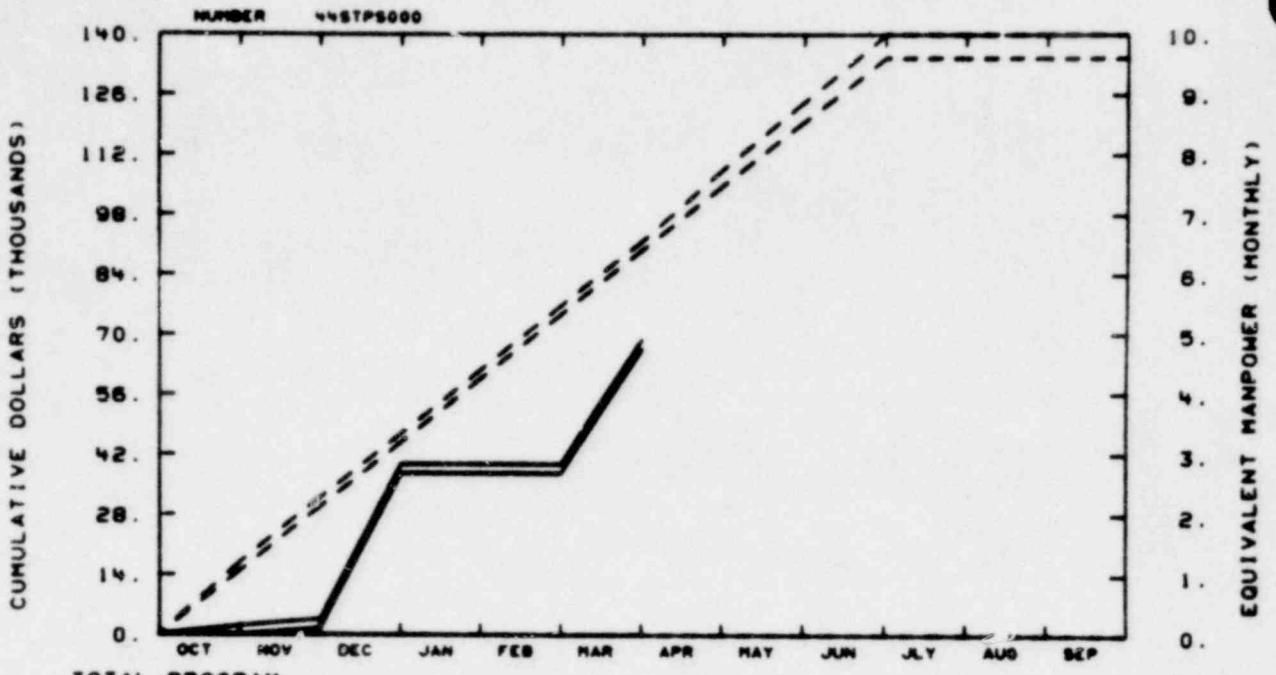
This under expenditure balances the over expenditure ($34K) in task A6165. The reason for these compensating discrepancies is priority of work requests from NRC, i.e., emphasis has recently been on A6165. By the end of FY-79, these two tasks will counter balance.

RESPONSIBLE
MANAGER
J A DEARIEN

EG&G IDAHO INC.

ULTRA TESTING CLASS I&II PIPING

NUMBER 44STPS000



TOTAL PROGRAM

BUDGET	17	32	47	62	77	92	108	124	140	140	140	140
ACTUAL	2	4	40	40	40	89						

MATERIAL

BUDGET	15	30	45	60	75	90	105	120	134	134	134	134
ACTUAL	0	2	38	38	38	87						

MANPOWER

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

BUDGET
- - -
ACTUAL

A6135

YTD VARIANCE: 23 (25%)

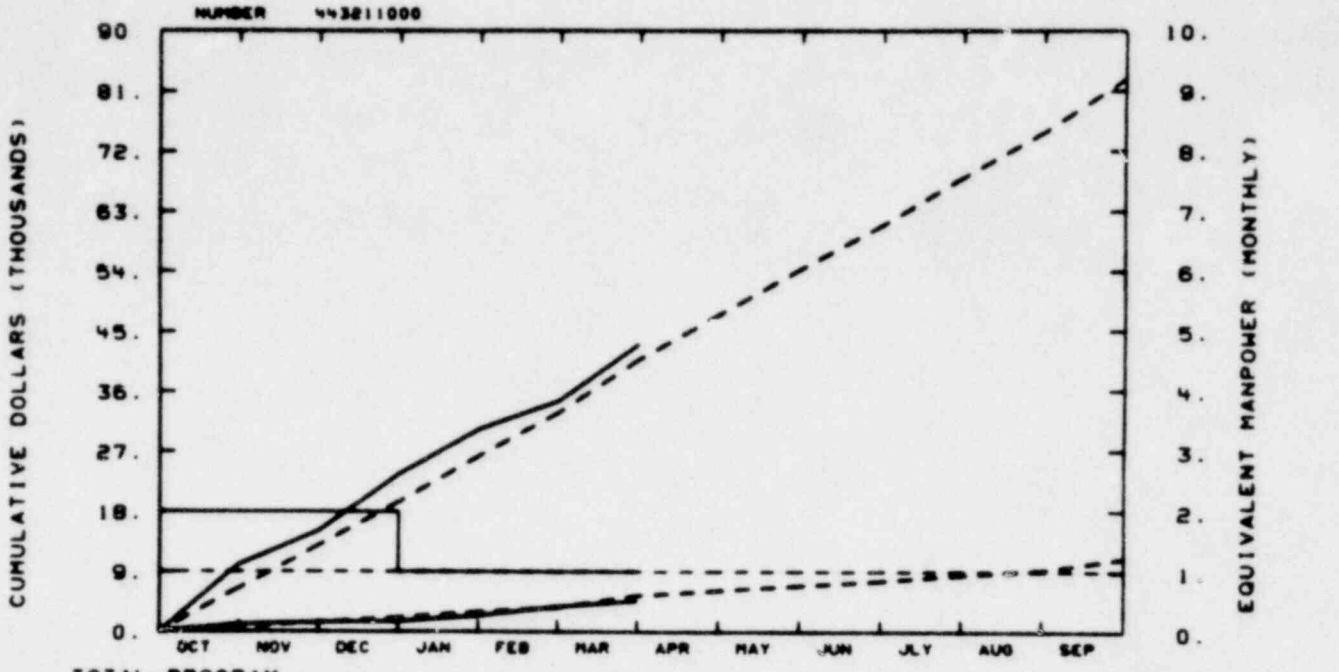
Charges made at the end of March against this task, through the facility account, had not yet cleared the accounting system. These charges will show in April and will bring this into line.

RESPONSIBLE MANAGER
J A DEARIEN

EG&G IDAHO INC.

PWR/BWR PRIM SYS RESP ANAL-LOCA

NUMBER 443211000



TOTAL PROGRAM

BUDGET	7	13	19	26	33	41	48	54	61	68	75	83
ACTUAL	10	15	24	30	35	43						

MATERIAL

BUDGET	1	1	2	3	4	5	6	7	8	8	9	11
ACTUAL	1	1	2	2	4	5						

MANPOWER

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

BUDGET - - - - -

ACTUAL ———

A6152

2306 226

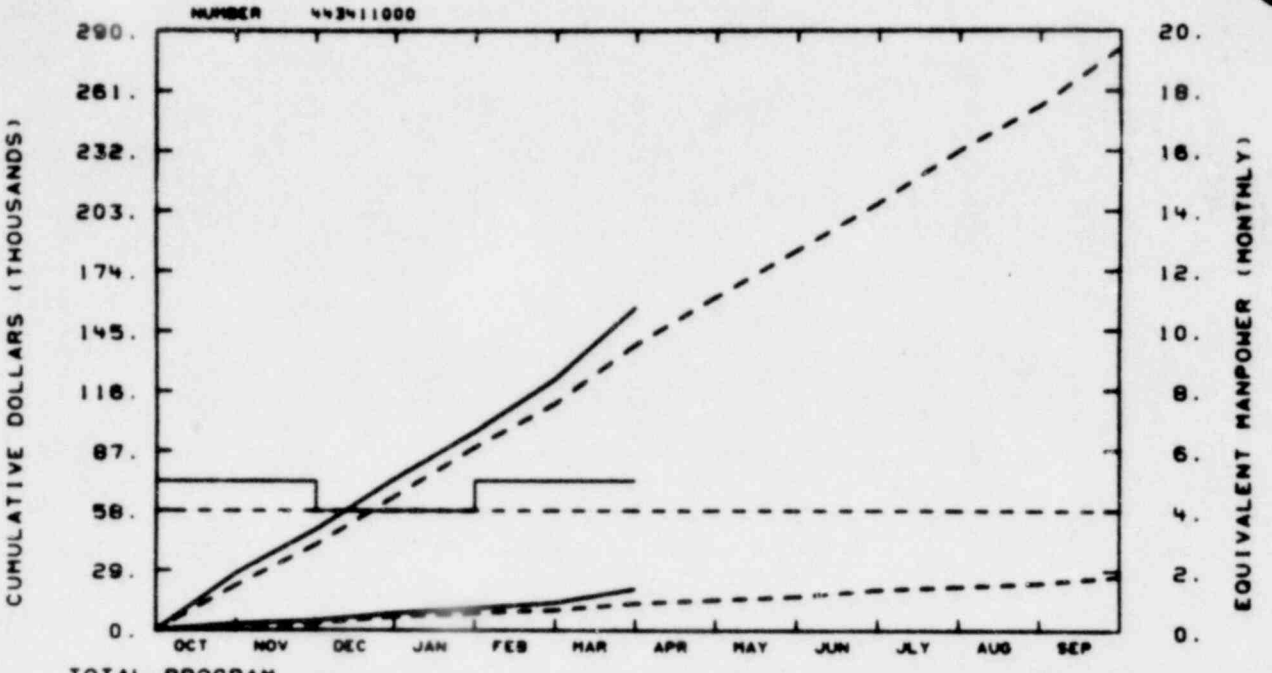
YTD VARIANCE: <2> (5%)

RESPONSIBLE MANAGER
J A DEARIEN

EG&G IDAHO INC.

TECH ASST ON ASYMMETRIC LOCA LOA

NUMBER 443411000



TOTAL PROGRAM

BUDGET	22	41	65	89	110	138	161	184	207	232	254	281
ACTUAL	28	48	73	96	122	156						

MATERIAL

BUDGET	2	3	7	8	10	13	15	18	20	21	23	26
ACTUAL	3	5	8	11	13	20						

MANPOWER

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

BUDGE
ACTUAL

A6156

YTD VARIANCE: <18> (13%)

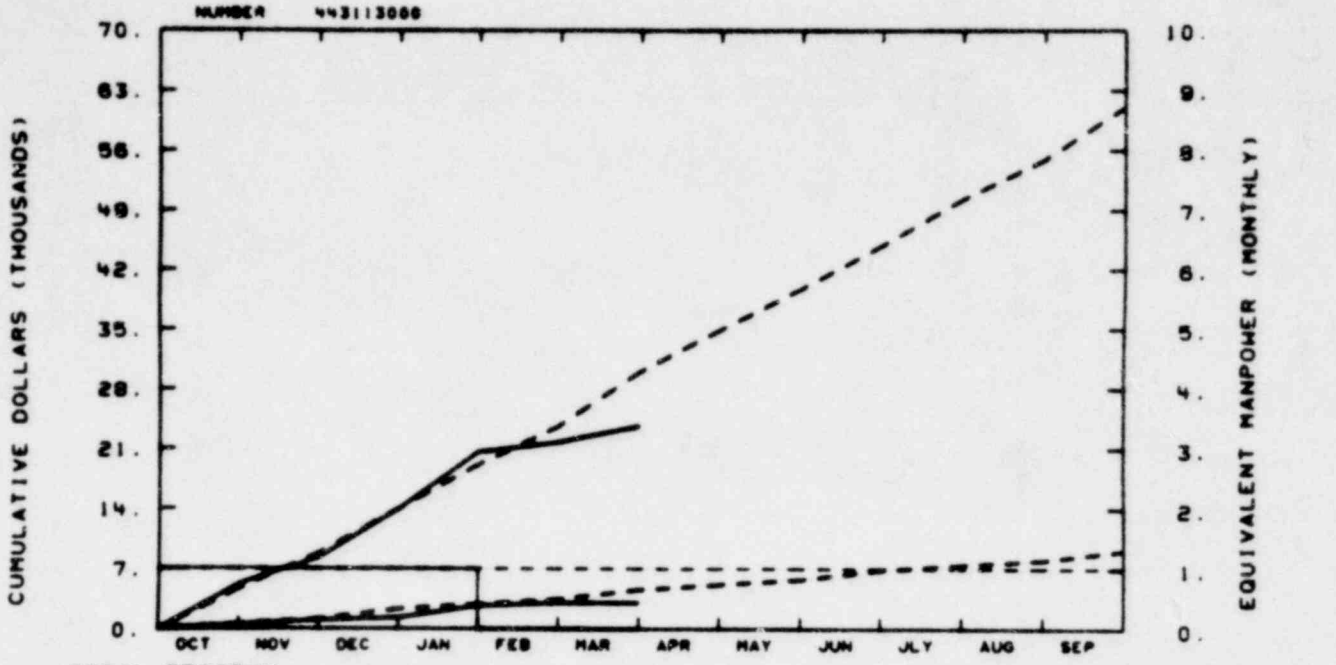
Intense activity this month and next month will show costs in excess of the budget. It is expected that this will be compensated for by decreased activity during the summer months. Further evaluation of expenditures against the budget should be made at the end of the third quarter of FY-1979 to assess whether a reduction of manpower is necessary.

RESPONSIBLE
MANAGER
J A DEARIEN

EG&G IDAHO INC.

FUEL ASSEM SEISMIC & LOCA RESPON

NUMBER 443113066



TOTAL PROGRAM

BUDGET	8	8	14	18	24	30	36	48	48	50	55	61
ACTUAL	8	8	14	21	22	24						

MATERIAL

BUDGET	1	1	2	3	3	5	5	6	7	7	8	9
ACTUAL	1	1	1	3	3	3						

MANPOWER

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

BUDGET - - - - -

ACTUAL ———

A6157

YTD VARIANCE: 6 (2%)

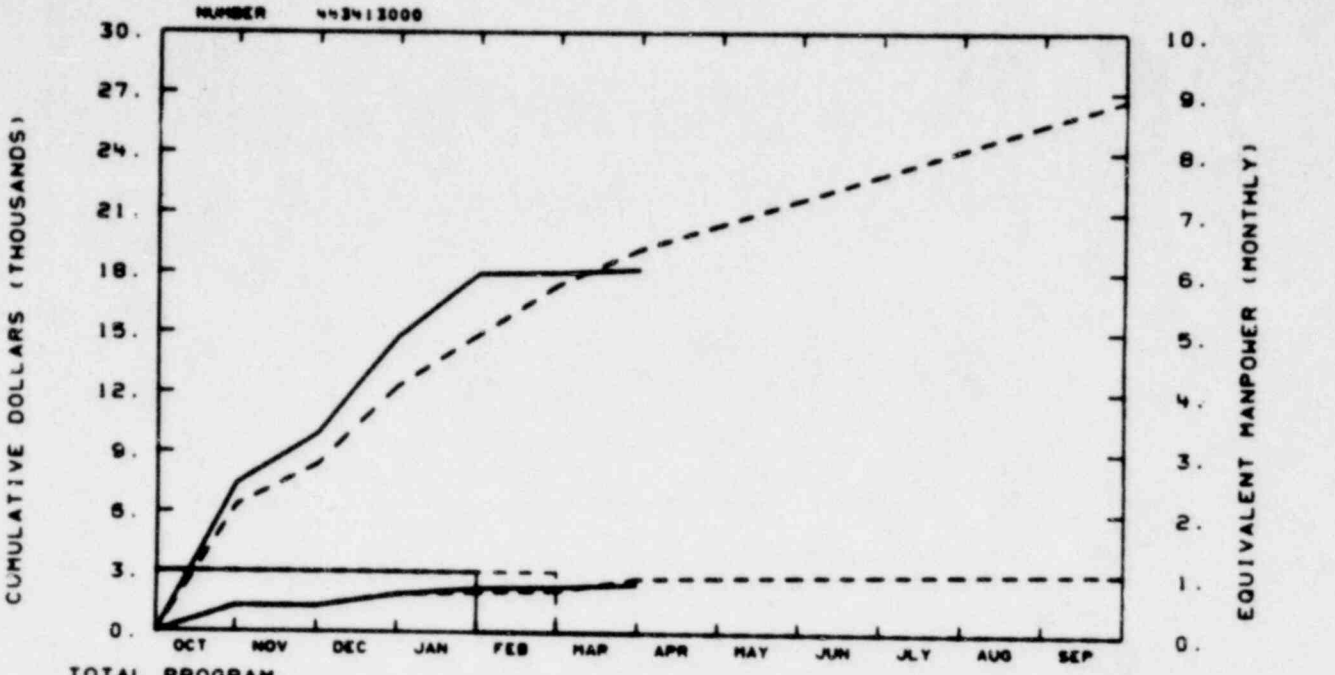
2306 228

RESPONSIBLE
MANAGER
J A DEARIEN

EG&G IDAHO INC.

ONCALL ASST AT OPERATING LWRS

NUMBER 44341 3000



TOTAL PROGRAM

BUDGET	6	8	12	15	17	19	20	22	23	24	25	27
ACTUAL	7	10	15	18	18	18						

MATERIAL

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

MANPOWER

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

BUDGET - - - - -

ACTUAL ———

A6159

YTD VARIANCE: 1 (1%)

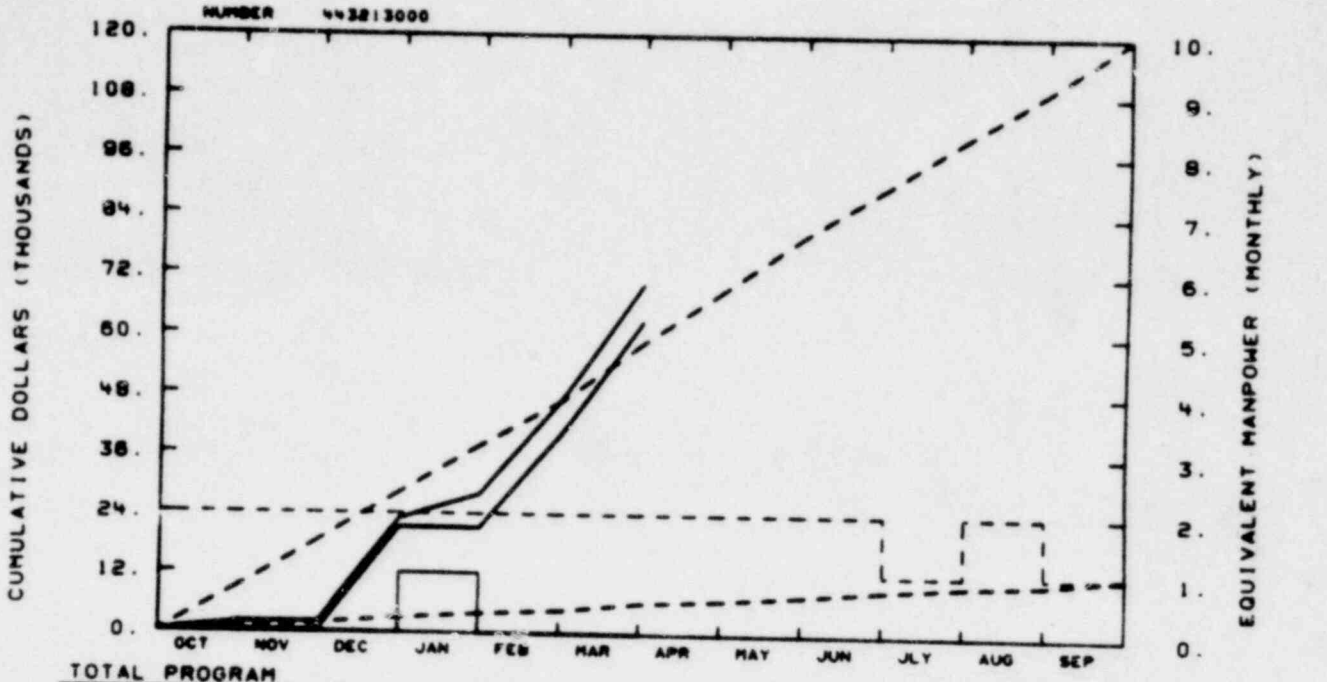
2306 229

RESPONSIBLE MANAGER
J A DEAPIEN

EG&G IDAHO INC.

IN-SERVICE INSPECTION

NUMBER 443213000



TOTAL PROGRAM

BUDGET	9	19	28	38	47	58	68	80	90	100	109	120
ACTUAL	2	2	23	28	47	70						

MATERIAL

BUDGET	1	2	3	4	5	6	7	8	9	10	11	12
ACTUAL	0	0	21	21	40	63						

MANPOWER

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

BUDGET - - - - -

ACTUAL ———

2306 230

A6162

YTD VARIANCE: 12 (21%)

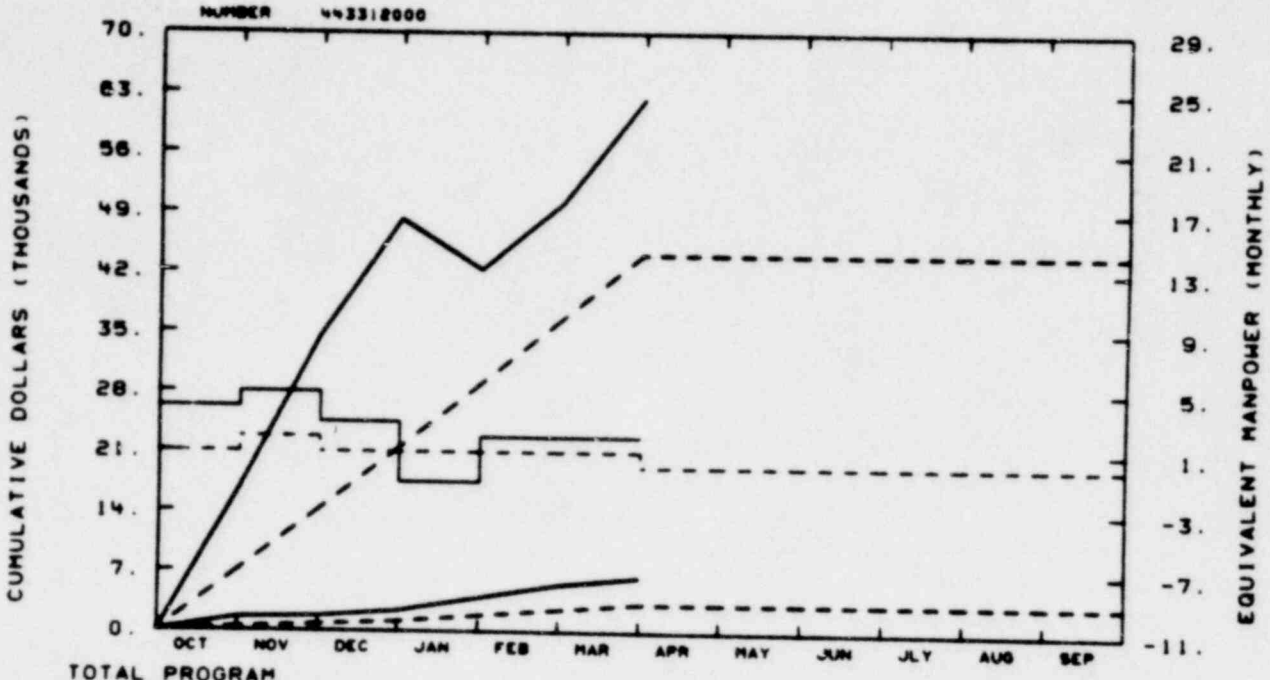
Careful monitoring will bring it back on budget.

RESPONSIBLE MANAGER
J A DEARIEN

EG&G IDAHO INC.

ANALY OF WATER HAMMER IN OPER RE

NUMBER 44331200O



TOTAL PROGRAM

BUDGET	7	14	21	29	36	44	44	44	44	44	44	44
ACTUAL	17	35	48	42	50	62						

MATERIAL

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

MANPOWER

BUDGET	1	2	1	1	1	1	0	0	0	0	0	0
ACTUAL	4	5	3	-1	2	2							

BUDGET
ACTUAL

A6164

YTD VARIANCE: <18> (14%)

Cost transfers for erroneous charges are being made to bring these charges into line.

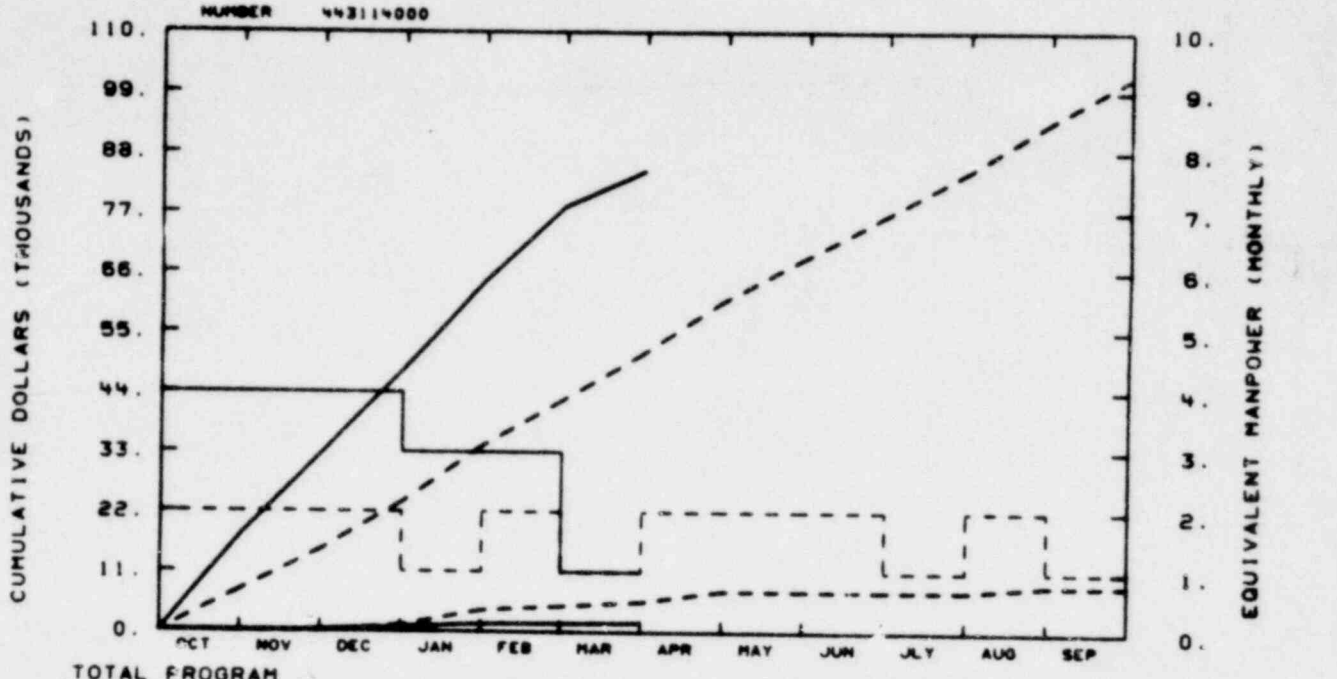
2306 231

RESPONSIBLE MANAGER
J A DEARIEN

EG&G IDAHO INC.

REACTOR SYSTEMS CASE REVIEWS

NUMBER 443114000



TOTAL PROGRAM

BUDGET	8	15	24	34	43	51	61	69	77	85	94	102
ACTUAL	18	33	48	64	78	95						

MATERIAL

BUDGET	0	0	1	4	5	6	7	7	7	7	8	8
ACTUAL	0	0	1	1	2	2						

MANPOWER

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

A6165

YTD VARIANCE: <34> (66%)

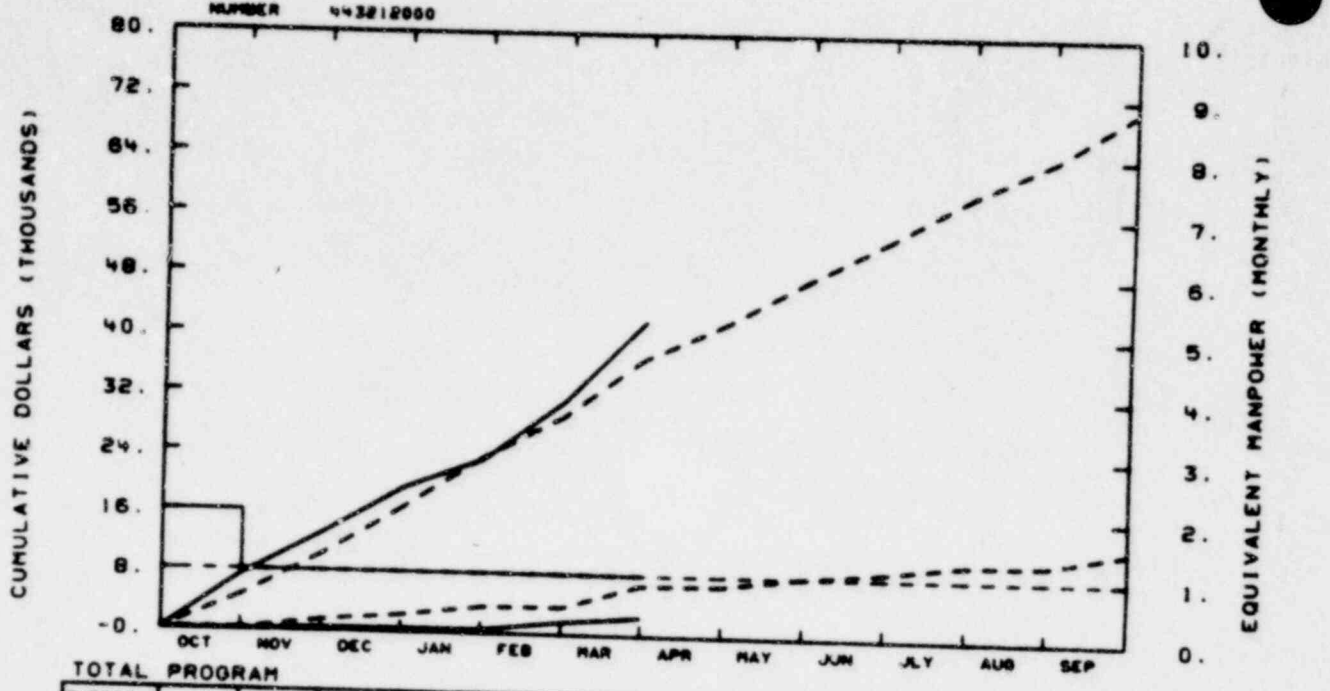
This over expenditure balances the under expenditure ($27K) in task A6025. The reason for these compensating discrepancies is priority of work requests from NRC, i.e., emphasis has recently been on A6165. By the end of FY-79, these two tasks will counter balance.

RESPONSIBLE MANAGER
J A DEARIEN

EG&G IDAHO INC.

FRACTURE TOUGHNESS CRITERIA

NUMBER 443212000



TOTAL PROGRAM

BUDGET	8	10	17	23	29	37	42	48	53	59	64	70
ACTUAL	7	13	19	23	31	42						

MATERIAL

BUDGET	0	1	2	3	4	7	7	8	9	10	10	12
ACTUAL	0	0	0	0	2	2						

MANPOWER

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

A6166

YTD VARIANCE: <5> (14%)

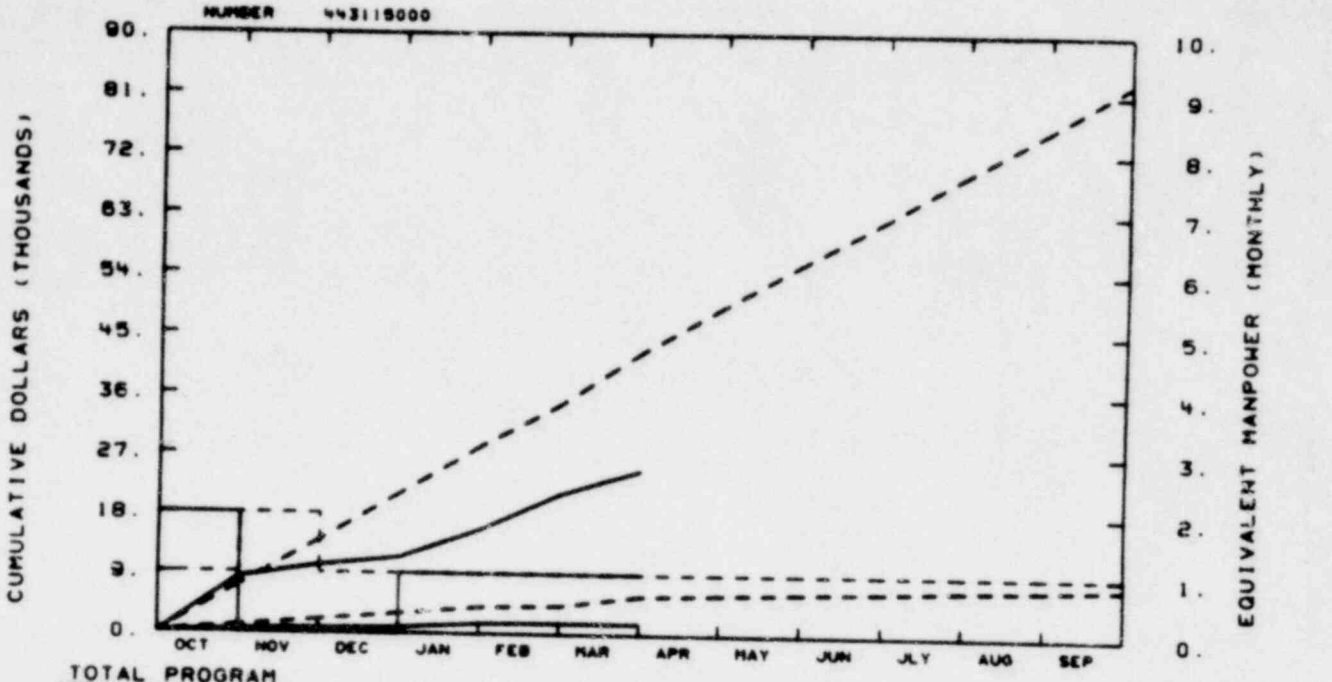
2306 233

RESPONSIBLE MANAGER
A DEARIEH

EG&G IDAHO INC.

FUEL PERFORMANCE CODE APPLICA

NUMBER 443115000



TOTAL PROGRAM

BUDGET	7	14	21	28	35	43	49	56	62	69	76	83
ACTUAL	8	10	11	18	21	25						

MATERIAL

BUDGET	1	2	3	4	4	6	6	6	7	7	7	8
ACTUAL	0	1	1	2	2	2						

MANPOWER

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

BUDGET - - - - -

ACTUAL ———

A6167

YTD VARIANCE: 18 (42%)

Almost all work was suspended on this task during December, 1978, and January, February, and March, 1979 while awaiting NRC's recommendations on FRAPCON models. Manpower loading will increase to two people in April and May, and we should be back on budget by the end of May if sufficient information is received from NRC in April.

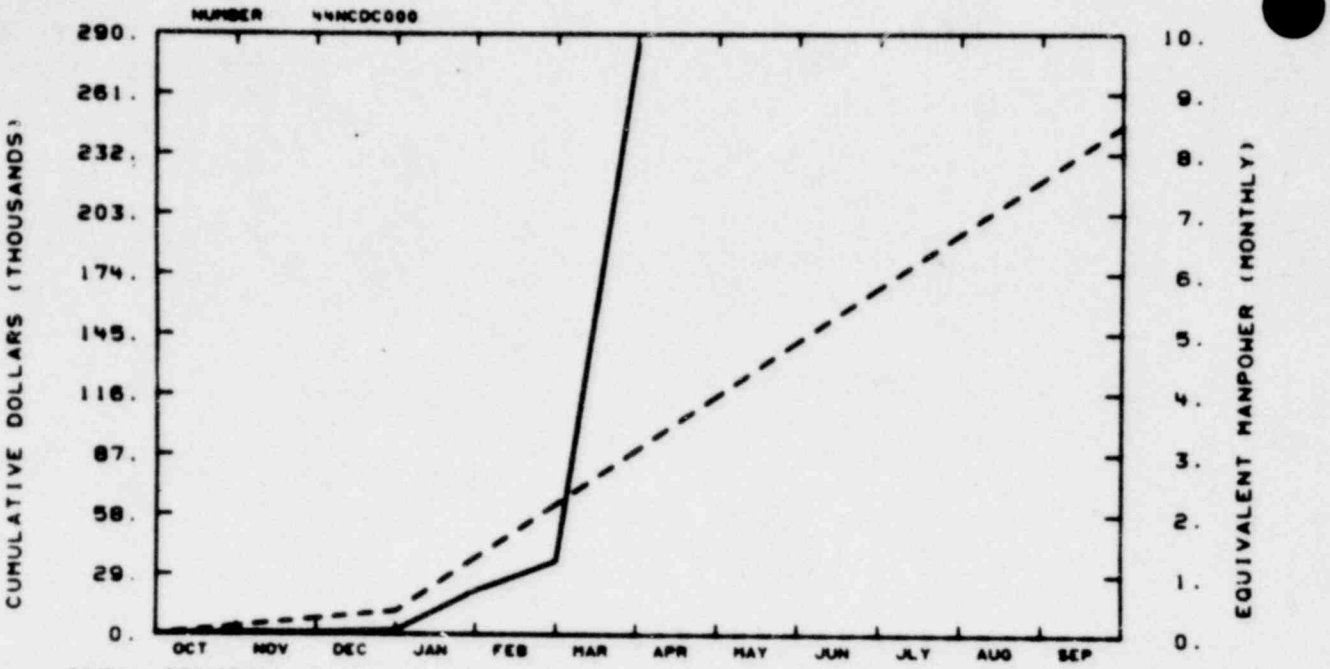
2306 234

RESPONSIBLE MANAGER
J A DEARIEN

EG&G IDAHO INC.

NRC USE OF INEL CDC

NUMBER 44NCDC000



TOTAL PROGRAM

BUDGET	4	8	11	37	63	89	115	141	167	193	219	245
ACTUAL	1	1	2	21	36	286						

MATERIAL

BUDGET	4	8	11	37	63	89	115	141	167	193	219	245
ACTUAL	1	1	2	21	36	285						

MANPOWER

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

BUDGET - - -
ACTUAL ———

A6209

YTD VARIANCE: <197> (221%)

Calculations by NRC for standard problem 10 (EM) are responsible for this overrun. NRC will add $200K to this account.

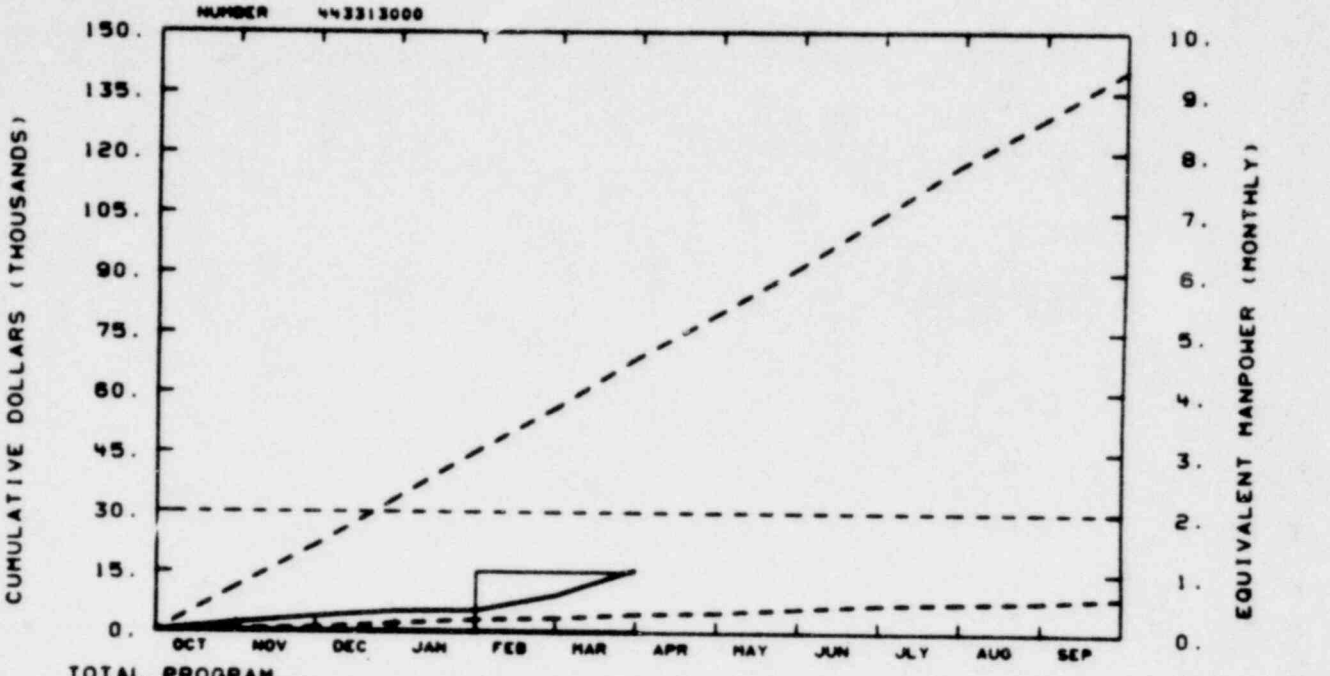
2306 235

RESPONSIBLE MANAGER
J A DEARIEN

EG&G IDAHO INC.

ENG SUPPORT FOR PIPE BK INSI CON

NUMBER 443313000



TOTAL PROGRAM

BUDGET	11	22	33	45	56	69	80	92	104	117	129	141
ACTUAL	2	4	5	5	9	16						

MATERIAL

BUDGET	0	1	2	3	3	5	5	6	7	8	8	9
ACTUAL	0	0	0	0	0	0						

MANPOWER

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

BUDGET - - - - -

ACTUAL ———

A6250

YTD VARIANCE: 53 (76%)

Work requests for pipe break inside containment were received late. Authorization has been received to also perform steam generator water hammer work under this financial number and all monies will be spent by the end of the year.

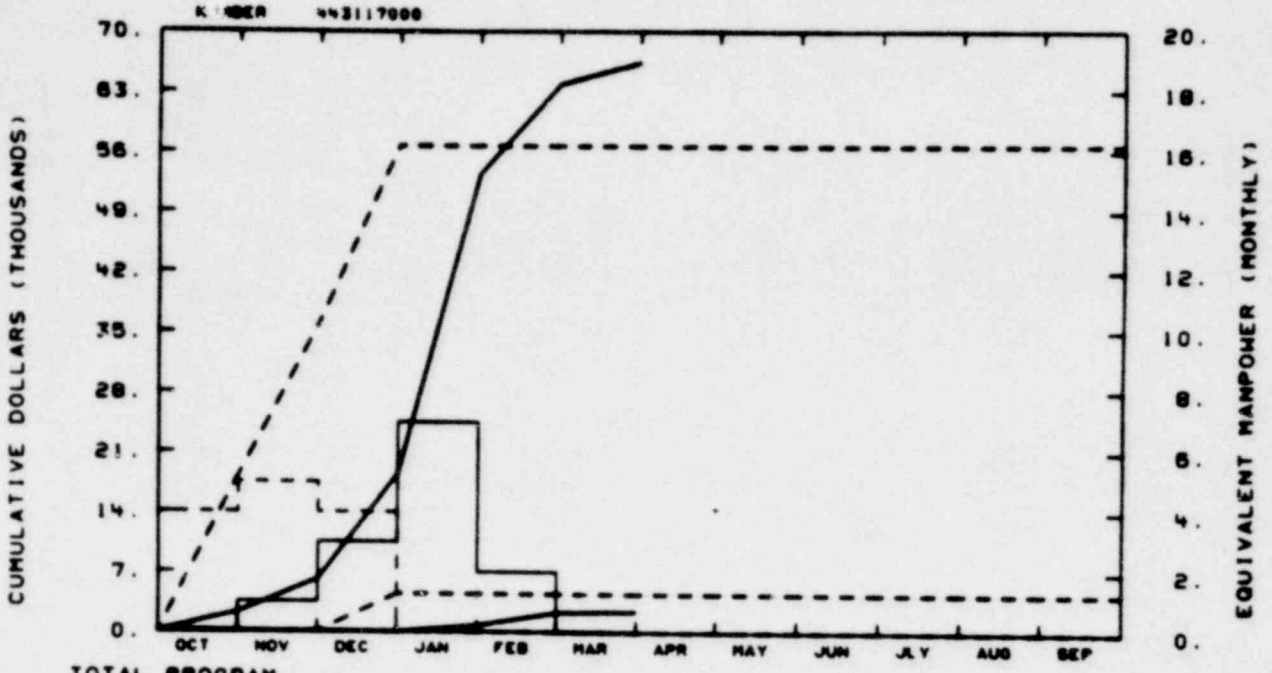
2306 236

RESPONSIBLE
MANAGER
J A DEARIEN

EG&G IDAHO INC.

WATER HAMMER REVIEW & EVALUATION

K [illegible] 443117000



TOTAL PROGRAM

BUDGET	18	36	57	57	57	57	57	57	57	57	57	57
ACTUAL	2	6	18	53	84	86						

MATERIAL

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

BUDGET
- - - -
ACTUAL

MANPOWER

BUDGET	4	8	4	0	0	0	0	0	0	0	0	0
ACTUAL	0	1	3	7	2	0						

A6251

YTD VARIANCE: <9> (16%)

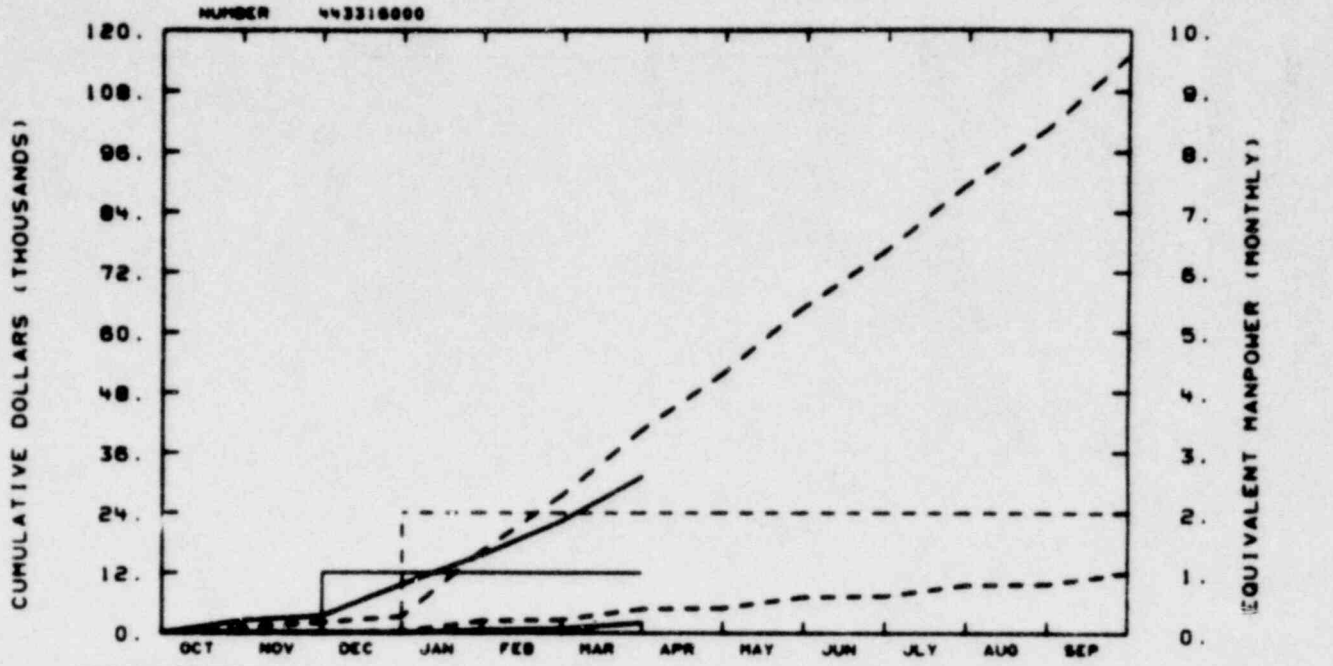
2306 237

RESPONSIBLE
MANAGER
J A DEAPIEN

EG&G IDAHO INC.

EICS SUPPORT

NUMBER 443316000



TOTAL PROGRAM

BUDGET	1	2	3	16	28	41	52	65	76	90	101	115
ACTUAL	2	3	10	18	22	31						

MATERIAL

BUDGET	0	0	0	2	3	5	5	7	7	10	10	12
ACTUAL	0	0	0	1	1	2						

MANPOWER

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

BUDGET - - - - -

ACTUAL ———

A6256

YTD VARIANCE: 6 (14%)

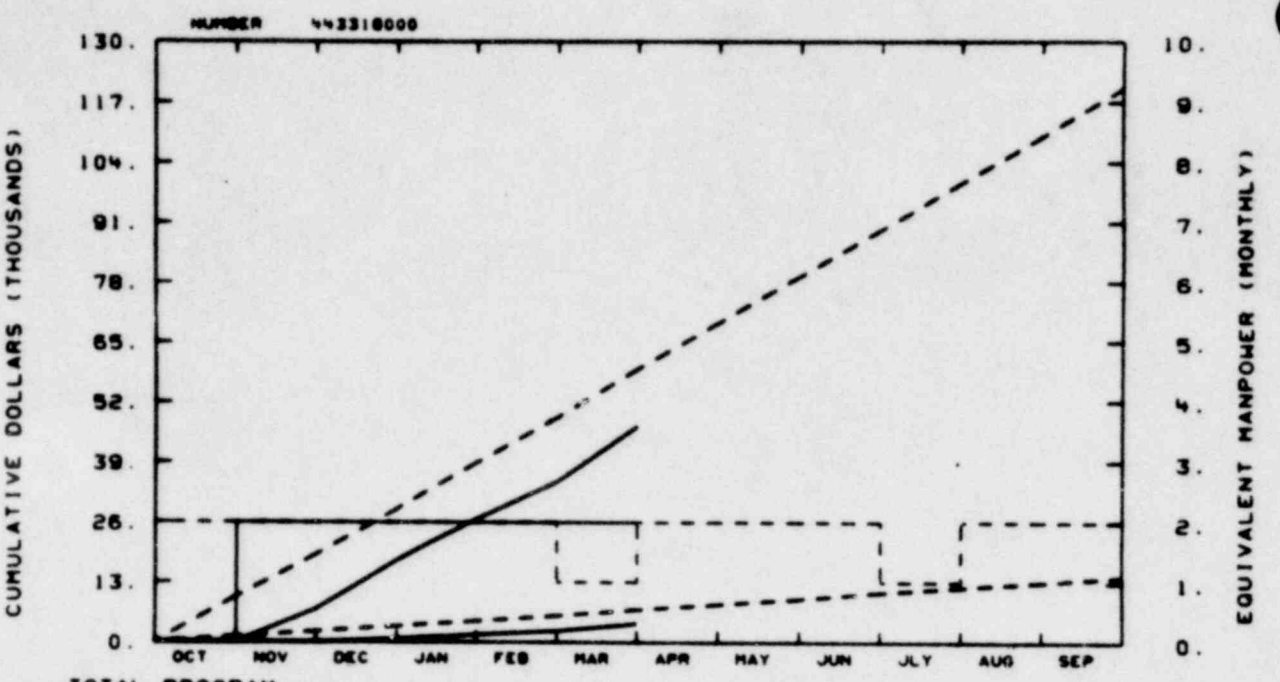
2306 238

RESPONSIBLE MANAGER
J A DEGRIEN

EG&G IDAHO INC.

SYSTEMS ENGR SUPPORT

NUMBER 443318000



TOTAL PROGRAM

BUDGET	10	18	29	38	48	58	68	78	88	100	110	120
ACTUAL	0	7	18	27	35	47						

MATERIAL

BUDGET	1	2	3	5	6	7	8	9	11	12	13	14
ACTUAL	0	0	1	2	2	4						

MANPOWER

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

BUDGET
ACTUAL

A6258

YTD VARIANCE: 12 (20%)

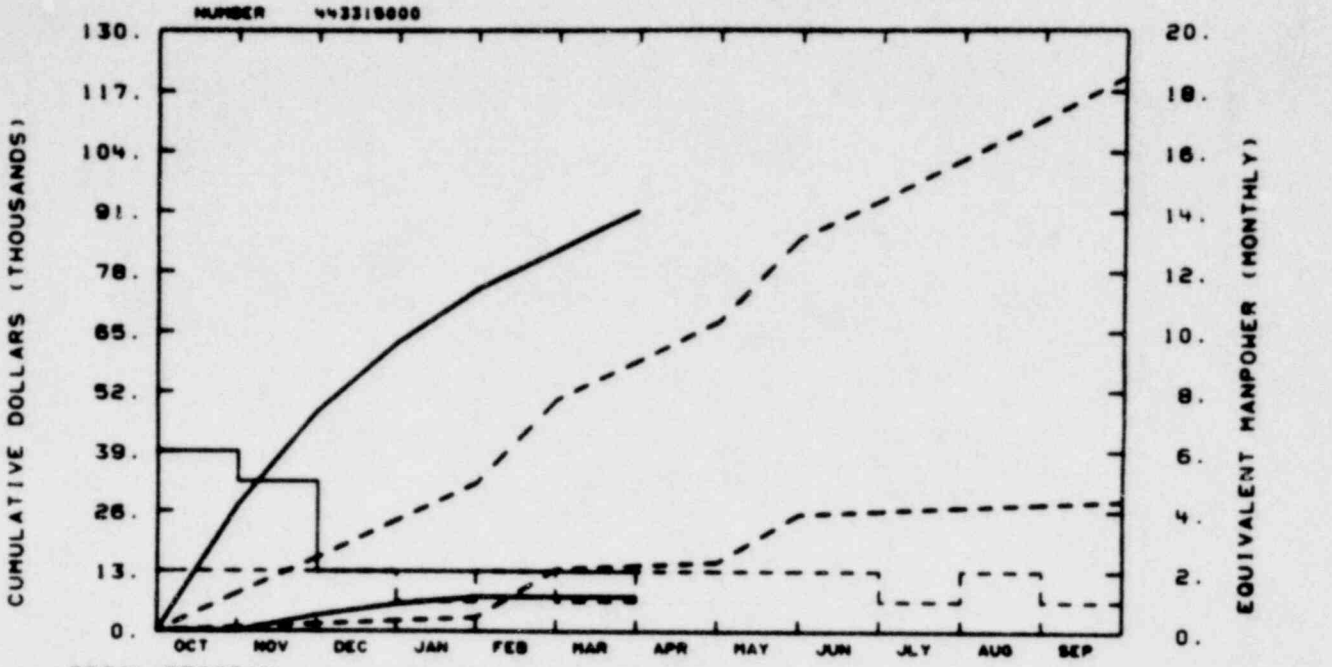
Some of these charges ($17K) were made to A6260 and the appropriate accounting transfer is in process. The actual expenditures are therefore about $5K over budget rather than $12K under. Heavy travel is the main reason for this over expenditure. This task will be in line when the transfers are completed.

RESPONSIBLE MANAGER
J A DEARIEN

EG&G IDAHO INC.

EICS SUPPORT FOR SEP

NUMBER 443318000



TOTAL PROGRAM

BUDGET	8	16	24	32	50	66	87	95	94	102	111	120
ACTUAL	27	48	63	74	83	91						

MATERIAL

BUDGET	1	2	2	3	13	14	15	25	26	27	28	28
ACTUAL	0	3	6	8	8	8						

MANPOWER

BUDGET	2	2	2	1	2	1	2	2	2	1	2	1
ACTUAL	6	5	2	2	2	2						

BUDGET - - - - - -

ACTUAL ———

A6260

YTD VARIANCE: <32> (54%)

A $37K erroneous charge is included in this spending. With that backed out, this financial number is $5K underspent.

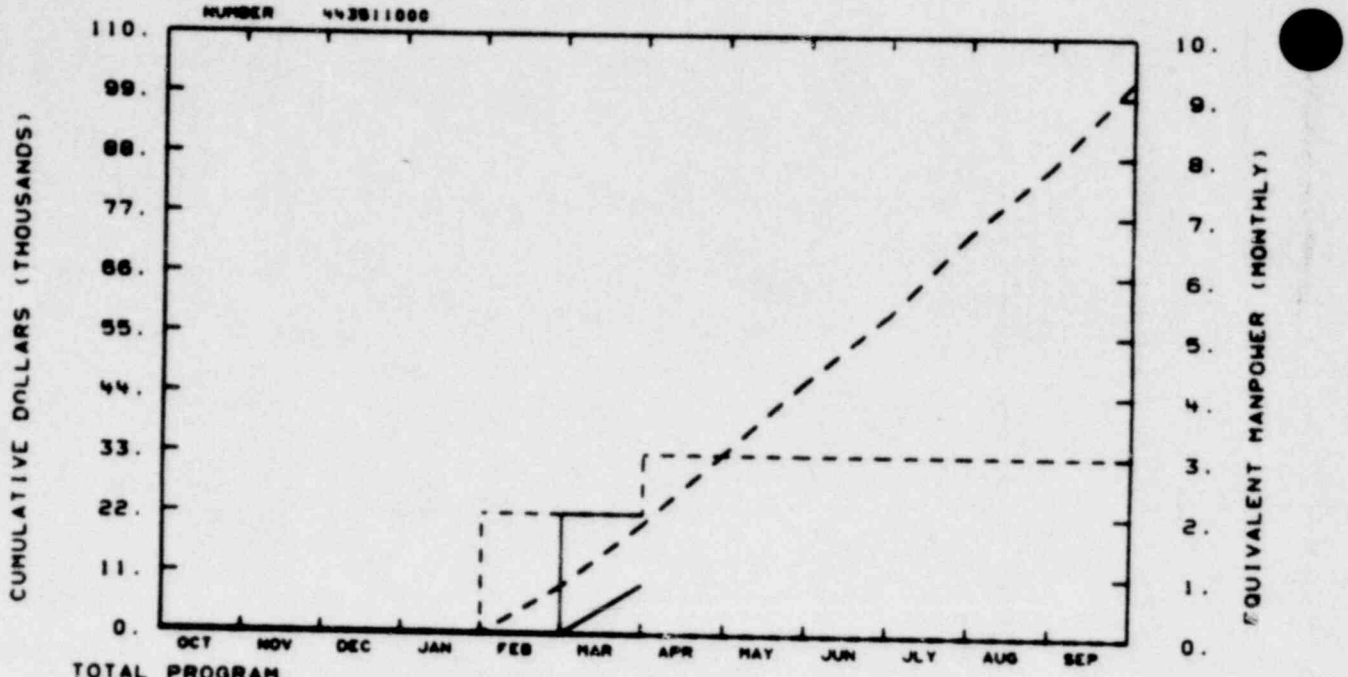
2306 240

RESPONSIBLE MANAGER
J A DEARIEN

EG&G IDAHO INC.

PREP OF DOCUMENT FOR TAP-A1

NUMBER 443811000



TOTAL PROGRAM

BUDGET	0	0	0	0	9	20	33	47	59	74	86	102
ACTUAL	0	0	0	0	0	9						

MATERIAL

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

MANPOWER

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

BUDGET

ACTUAL

A6279

YTD VARIANCE: 11 (6%)

The EG&G individual assigned to this task resigned in March. A replacement is being sought. There is a planned carryover of $46K into FY-80.

2306 241

CODE ASSESSMENT & APPLICATIONS PROGRAM

NRR

TECHNICAL REVIEW & SUMMARY

PROGRAM MANAGER'S
SUMMARY AND HIGHLIGHTS

Program letters have now been received for all but one of the tasks to be funded in FY1979.

The following March accomplishments are highlighted:

1. Support was provided NRC in the seismic piping reevaluation for the Maine Yankee, Fitzpatrick, Beaver Valley, and Surrey 1 and 2 plants.

2. The final report "Big Rock Point Containment Isolation" was completed and transmitted to NRC.

3. The final SER for the Calvert Cliffs IST program was issued.

4. Technical assistance tasks were initiated in support of NRC investigations of Three Mile Island.

I-651 TECHNICAL ASSISTANCE TO REACTOR SAFETY - DSS

1. I-651 Task A6025 - Failure Mode Analysis

2. Scheduled Milestones for March 1979

Node	Description	Due Date	Actual Date

None scheduled.

3. Summary of Work Performed in March 1979

Work was again initiated on the ECCS interlock task. Interlocks on the La Salle plant are being reviewed.

Work was started again on the ECCS diversions task. Preliminary reviews have been completed on Midland, Summer, and San Onofre and review of La Salle is in progress.

Preliminary scoping work was initiated on the non-safety grade equipment task.

4. Scheduled Milestones for April 1979

Node	Description	Due Date	Actual Date

None scheduled.

5. Summary of Work to be Performed in April 1979

Work will continue on the tasks performed during March.

6. Problems and Potential Problems

None

1. I-651 Task A6157 - Fuel Assembly Seismic and LOCA Response

2. Scheduled Milestones for March 1979

Node	Description	Due Date	Actual Date
BE-38	Evaluation of EG&G Fuel Supplier Sensitivity Study Results	3-1-79T	2-15-79C

3. Summary of Work Performed in March 1979

Work was initiated on finalizing the fuel assembly seismic and LOCA response sample problem report. Results of this effort were previously documented in a letter. A fuel vendor meeting concerned with fuel system acceptance criteria was attended. The G.E. fuel assembly liftoff problem was discussed with DSS & DOR personnel. A meeting at the Maine Yankee power plant was attended to review initial piping seismic reanalysis and to tour the plant.

4. Scheduled Milestones for April 1979

Node	Description	Due Date	Actual Date

None scheduled.

5. Summary of Work to be Performed in April 1979

Continue to support the NRC with respect to the Maine Yankee piping concerns and the ACRS concerns regarding G.E. fuel assembly liftoff. Independent fuel system analyses will be reviewed and audited upon receipt of data.

6. Problems and Potential Problems

There could be a funding impact as a result of the Maine Yankee effort unless additional funding is provided.

1. I-651 Task A6165 - Reactor Systems Case Review

2. Scheduled Milestones for March 1979

Node	Description	Due Date	Actual Date

None scheduled.

3. Summary of Work Performed in March 1979

Questions resulting from review of the Waterford FSAR and a summary of compliance with the Standard Review Plan were telecopied to NRC. The information is being prepared for formal transmittal.

Review of the South Texas FSAR was initiated.

Sensitivity studies were begun on the models developed for the ECCS unavailability study.

4. Scheduled Milestones for April 1979

Node	Description	Due Date	Actual Date

None scheduled.

5. Summary of Work to be Performed in April 1979

Review of the South Texas FSAR will be completed and results telecopied to NRC.

Sensitivity studies will continue on the ECCS unavailability study.

6. Problems and Potential Problems

None

1. I-651 Task A6167 - Fuel Performance Code Applications

2. Scheduled Milestones for March 1979

Node	Description	Due Date	Actual Date
DE-2	Create FRAPCON-1EM Issue Format Report	3-1-79T	N/A JAD-65-7

9

3. Summary of Work Performed in March 1979

No work was performed on this task during this month.

4. Scheduled Milestones for April 1979

Node	Description	Due Date	Actual Date

None scheduled.

5. Summary of Work to be Performed in April 1979

If the approved evaluation models are received from NRC-DSS, work will commence on creation of FRAPCON-1/EM and documentation in a letter report (Node DE-2).

Vendor input information and comments will be acquired and FRAP-T4 "BE" sensitivity studies initiated.

6. Problems and Potential Problems

None

1. I-651 Task A6251 - Water Hammer Review and Evaluation

2. Scheduled Milestones for March 1979

Node	Description	Due Date	Actual Date

None scheduled.

3. Summary of Work Performed in March 1979

The water hammer literature review report draft was written and reviewed and is currently in the final stages of release.

4. Scheduled Milestones for April 1979

Node	Description	Due Date	Actual Date
DF-11	Issue Report on Literature Review	4-1-79T	4-5-79C

5. Summary of Work to be Performed in April 1979

Incorporation of NRC comments into the final report CAAP-TR-042 "Review and Evaluation of Actual and Potential Water Hammer Events in Nuclear Plants" will be initiated if received.

The water hammer literature review report will be issued to NRC.

6. Problems and Potential Problems

None

I-652 TECHNICAL ASSISTANCE TO ENGINEERING - DSS

1. Task A6152 - PWR/BWR Primary System Response Analysis to LOCA Excitation

2. Scheduled Milestones for March 1979

Node	Description	Due Date	Actual Date
EA-12	Complete Zimmer Analysis	3-31-79T	3-16-79C

3. Summary of Work Performed in March 1979

The Zimmer analysis was completed. However, there are some differences between G.E.'s results and those of the EG&G verification which cannot be totally resolved until G.E. responds to some of EG&G's questions on G.E.'s modeling techniques.

This task has been temporarily suspended in lieu of the work done on the Fitzpatrick seismic piping analysis reevaluation.

4. Scheduled Milestones for April 1979

Node	Description	Due Date	Actual Date

None scheduled.

5. Summary of Work to be Performed in April 1979

Work will continue on the Fitzpatrick evaluation.

6. Problems and Potential Problems

Node EA-13 will be changed to not scheduled until all questions with G.E. are resolved.

The Fitzpatrick evaluation will also impact Pert Nodes EA-2 and EA-3.

There could be a funding impact as a result of the Fitzpatrick effort unless additional funding is provided.

1. I-652 A6162 - In-Service Inspection

2. Scheduled Milestones for March 1979

Node	Description	Due Date	Actual Date

None scheduled.

3. Summary of Work Performed in March 1979

For Task 1, covering a technical evaluation of the nondestructive methods for examination of stainless steel piping to detect stress corrosion cracking, a testing program to confirm proposed positions was tentatively scheduled at Battelle Columbus using part of their collection of cracked samples. Work was begun on preparing the UT test procedures to be used for cracked sample evaluation.

For Task 2 (report on weld inspectability), drafts of two sections were completed, one on the "definition of inspectability" and the other one on "Survey of ASME Code Section XI piping examination requirements."

For Task 3 (pipe rupture protection for the McGuire Nuclear Station), comments on ISI procedures and results were transmitted by letter report. This completed Node EC-39.

4. Scheduled Milestones for April 1979

Node	Description	Due Date	Actual Date
EC-39	Letter Report, Task 3 Pipe Rupture Protection for the McGuire Nuclear Station	4-1-79T	3-13-79C JAD-71-79

5. Summary of Work to be Performed in April 1979

For Task 1, a trip will be made to Battelle Columbus for ultrasonic testing of samples with stress corrosion cracking. Two UT procedures, one incorporating all proposed positions for improved IGSCC detection, and one meeting, but not exceeding, minimum ASME Code requirements will be evaluated.

For Task 2, additional sections of the report on weld inspectability will be prepared.

6. Problems and Potential Problems

None

1. I-652 Task A6166 - Fracture Toughness Criteria

2. Scheduled Milestones for March 1979

Node	Description	Due Date	Actual Date
EB-1	Issue Draft Report Flywheel Analysis	3-12-79T	3-5-79C

3. Summary of Work Performed in March 1979

Reviewed reactor coolant pump (RCP) flywheel report for NRC. The revisions discussed with them have been incorporated. A report on turbine disks has been prepared incorporating the topics requested by NRC.

4. Scheduled Milestones for April 1979

Node	Description	Due Date	Actual Date

None scheduled.

5. Summary of Work to be Performed in April 1979

Second drafts of the RCP flywheel report and the turbine disk report are expected to be issued and probably discussed in Bethesda with NRC personnel.

6. Problems and Potential Problems

None

I-653 TECHNICAL ASSISTANCE TO PROJECTS AND SYSTEMS - DOR

1. Task A6164 - Analysis of Water Hammer in Operating Reactors

2. Scheduled Milestones for March 1979

Node	Description	Due Date	Actual Date

None scheduled.

3. Summary of Work Performed in March 1979

The check valve closure report was revised and reissued. Some editorial changes to the structural report were initiated.

4. Scheduled Milestones for April 1979

Node	Description	Due Date	Actual Date

None scheduled.

5. Summary of Work to be Performed in April 1979

The water hammer demonstration problem structural report will be revised and reissued. This entire task should be completed this month.

6. Problems and Potential Problems

None

1. I-653 Task A6250 - Engineering Support for Pipe Break Inside Containment

2. Scheduled Milestones for March 1979

Node	Description	Due Date	Actual Date

None scheduled.

3. Summary of Work Performed in March 1979

Reviews were initiated of the Ginna and Dresden 2 seismic reports. The Ginna plant was visited as part of the SEP program and modeling of the Dresden 2 recirculation pipe. Trips were made to Beaver Valley, Unit 1 and to Stone & Webster in conjunction with the piping seismic reevaluation.

The following were accomplished under the steam generator feedwater water hammer evaluations:

Started evaluations for Kewaunee, Turkey Point, and Prairie Island.

Continued Point Beach evaluation and wrote first draft of SER.

Wrote first draft of Zion SER.

4. Scheduled Milestones for April 1979

Node	Description	Due Date	Actual Date

None scheduled.

5. Summary of Work to be Performed in April 1979

Review of Beaver Valley power station piping reanalysis at Stone & Webster. Perform audit calculations of Stone & Webster reanalysis. Part-time manpower is being applied to SEP to minimize manpower impact as a result of the Beaver Valley effort. There may be a long-term funding impact unless funding to cover the Beaver Valley review is provided.

Under steam generator feedwater water hammer evaluations, the following will be accomplished during April:

Will issue Zion SER final report.

Will issue Point Beach SER final report.

Will continue evaluations of Kewaunee, Turkey Point, and Prairie Island.

6. Problems and Potential Problems

None

1. I-653 Task A6256 - EICS Support

2. Scheduled Milestones for March 1979

Node	Description	Due Date	Actual Date

None scheduled.

3. Summary of Work Performed in March 1979

An EG&G representative met with NRC in Bethesda to develop guidelines for the reviews of nuclear station Degraded Grid protection.

EG&G was assigned 36 nuclear station Degraded Grid reviews.

The licensee inputs for Monticello and Palisades Degraded Grid protection were reviewed and questions to licensees were transmitted to NRC.

The final report for Big Rock Point Containment Isolation was completed and transmitted to the NRC Plant Systems Branch.

The "St. Lucie Technical Specification Change" review was completed.

The "Salem Inadvertent SI" technical evaluation report was completed and transmitted to the NRC for their review.

4. Scheduled Milestones for April 1979

Node	Description	Due Date	Actual Date

None scheduled.

5. Summary of Work to be Performed in April 1979

Technical evaluation reports on overpressure mitigating systems for Turkey Point Units 3 and 4 and Surry Units 1 and 2 will be completed and transmitted to NRC.

The "St. Lucie Technical Specification Change" review will be transmitted to the NRC.

The licensee inputs for Degraded Grid protection for three additional nuclear stations will be reviewed and questions prepared.

6. Problems and Potential Problems

None

1. I-653 Task A6258 - Systems Engineering Support

2. Scheduled Milestones for March 1979

Node	Description	Due Date	Actual Date

None scheduled.

3. Summary of Work Performed in March 1979

Review of the Big Rock Point IST program was completed. Questions resulting from the review are in final typing and will be transmitted to NRC when complete.

A draft SER was completed for the Oconee IST program. The report is in final typing and will be transmitted to NRC when complete.

The final SER for the Calvert Cliffs IST program was issued (JAD-57-79, dated 2/26/79).

4. Scheduled Milestones for April 1979

Node	Description	Due Date	Actual Date

None scheduled.

5. Summary of Work to be Performed in April 1979

The draft SER on the Oconee IST program will be transmitted to NRC for their review.

The questions on the Big Rock Point IST program will be transmitted to NRC for review and forwarding to the utility.

A meeting is tentatively scheduled for mid April at St. Lucie to discuss the questions on check valve testing previously transmitted.

The SER on Calvert Cliffs will be revised to reflect additional changes in the utility resubmittal.

Work will begin on another IST package which is being sent by NRC.

6. Problems and Potential Problems

2306 255

None

1. I-653 Task A6260 - EICS Support for SEP

2. Scheduled Milestones for March 1979

Node	Description	Due Date	Actual Date

None scheduled.

3. Summary of Work Performed in March 1979

The SEP review of Diesel Generator Loading (DG) (Topic VIII-2) for the 11 SEP plants was expanded to include the review of DG protective trip bypass equipment qualification and periodic testing. This will require a further review of docketed information. A draft review of the Big Rock Point Nuclear Station diesel generator was prepared and transmitted to NRC-DOR SEP branch for their review.

San Onofre's equipment qualification re-submittal was reviewed and an anomaly list prepared.

The equipment qualification cross-reference listing was updated.

4. Scheduled Milestones for April 1979

Node	Description	Due Date	Actual Date

None scheduled.

5. Summary of Work to be Performed in April 1979

An EG&G engineer will meet with NRC at Bethesda to formulate plans for onsite audits of SEP plant equipment qualification. The plant audits will commence in April.

Draft reviews of onsite electrical power system independence (Topic VII-7) will be completed for four SEP plants.

Work will continue on other SEP topics.

6. Problems and Potential Problems

None

I-654 TECHNICAL ASSISTANCE TO PROJECTS AND ENGINEERING - DOE

1. Task A6159 - On-Call Assistance at Operating LWR's

2. Scheduled Milestones for March 1979

Node	Description	Due Date	Actual Date
GA-38	Issue Cooper Revised Report	3-1-79T	2-15-79C
GA-46	Issue Vermont Yankee Revised Report	3-1-79T	3-1-79C
GA-51	Issue Pilgrim Letter Report	3-1-79T	2-14-79C

3. Summary of Work Performed in March 1979

NRC comments on the draft report on Plant #4 (Brown's Ferry) which was submitted January 24, 1979 have been received. Revisions are in progress.

On March 30, 1979 DOR requested on-call assistance from EG&G in connection with the Three-Mile Island plant. EG&G began work on the same date.

4. Scheduled Milestones for April 1979

Node	Description	Due Date	Actual Date

None scheduled.

5. Summary of Work to be Performed in April 1979

Revisions of Brown's Ferry off-gas system report and submission to NRC will be completed.

Perform technical assistance work as requested. It is expected that work related to the Three-Mile Island plant will extend into April.

6. Problems and Potential Problems

None

1. I-654 Task A6156 - Technical Assistance on Asymmetric LOCA Loads

2. Scheduled Milestones for March 1979

Node	Description	Due Date	Actual Date

None scheduled.

3. Summary of Work Performed in March 1979

The St. Lucie Unit 1 structural model was converted for use in the seismic and LOCA load combination task. The analysis of break opening areas and times continued with investigation of postulated LOCAs at different locations in the primary coolant system. Dynamic analysis of the St. Lucie core barrel was completed for two cases. Definition of the buckling pressure was also completed. Detailed analysis of the Arkansas fuel was initiated. A meeting in Bethesda was held to 1) attend a B&W presentation on hydrodynamic mass, 2) present results of Arkansas analysis to B&W, 3) discuss break area-time study with NRC personnel, and 4) discuss other programs with technical contacts. Work was initiated on review of piping seismic issue for the Surrey I and II plants.

4. Scheduled Milestones for April 1979

Node	Description	Due Date	Actual Date

None scheduled.

5. Summary of Work to be Performed in April 1979

The break area-time analysis should be completed and preparation of a report initiated. A report on the core barrel analysis will be completed. Work will continue on the Arkansas fuel analysis, the load combination task, and on the Surrey I and II seismic review. Progress on the load combination task depends on the effort required on the Surrey seismic task.

6. Problems and Potential Problems

None

189a I-660 ULTRASONIC TESTINGS ASME CODE-CLASS I AND II PIPING SYSTEM (OSD)

1. Task A6135 - Ultrasonic Testing ASME Code-Class I and II Piping System (OSD)

2. Scheduled Milestones for March 1979

Node	Description	Due Date	Actual Date
IA21	Submit Preliminary Physical Testing Plan	3-1-79T	3-2-79C
IA31	Submit Preliminary Physical Testing Plan for Value-Impact Statement	3-1-79T	3-2-79C

Both physical testing plans were combined in a single document and submitted on March 3, 1979, (JAD-62-79) as reported in last month's report.

3. Summary of Work Performed in March 1979

The preliminary physical testing plan was presented to and discussed with cognizant NRC/OSD personnel. The plan, with small modifications related to a change in emphasis on procedural matters (see below), was adopted as the basis for physical testing.

Work was begun during March on the detailed test matrix and test protocol. A modified half-factorial statistical design for the test is being adopted. This design produces a manageable-sized sample population with good confidence in the results. Work continues on the matrix, with presentation due in April.

Sources for wrought materials properties samples to fit the test design have been located. Work on availability of cast samples is in progress. Flaw samples are being tracked down and their availability determined. There are remarkably few manufacturers of each material form and size; the total number of materials properties and flaw samples will probably not exceed a few hundred.

Our approach to the Regulatory Guide was revised after discussion with cognizant NRC/OSD personnel. Performance criteria will be emphasized instead of procedural matters. This will necessitate a revision of the tentative outline submitted in January and a re-examination of some of the procedural tests in the preliminary physical testing plan.

4. Scheduled Milestones for April 1979

Node	Description	Due Date	Actual Date

None scheduled.

5. Summary of Work to be Performed in April 1979

The detailed test matrix and protocol will be submitted. Coordination and refinement of the plans will continue.

Revision of the outline of the Regulatory Guide will begin.

6. Problems and Potential Problems

None

CONST/GPP & L. I.

WRRD MONTHLY REPORT FOR

MARCH 1979

GPP AND LINE ITEMS

M. L. Rucker

M. L. Rucker, Sr. Financial Analyst
Plans & Budgets Division

H. M. Burton for

E. N. Fray, Manager by H. M. Burton (Acting Manager)
Project Management Division

2306 262

SEMISCALE

2306 263

EG&G IDAHO, INC.

GPP ITEMS

PROGRAM SEMISCALE PROGRAM

FY- 1979

MANAGER D. J. Olson

189a No. A6038

EA No.	Item Description	Original PA Amount	($000) Current Est. Cost	Actual Cost at Completion
932000000	Semiscale Shop and Instrument Lab*	121	94	

Task Initiated o
Task Completed Δ

2306 264

*Schedules are for planning only and subject to change.

**Design is complete.

***Bid and award period may be shortened with performance specs., if so, the construction period will be moved forward.

EG&G IDAHO, INC.

GPP/LINE IT. 1

PROGRAM SEMISCALE PROGRAM

PROPOSED FY-1980

MANAGER D. J. Olson

189 No. A6038

FY-YR	EA No.	Item Description	Original PA Amount	($000) Current Est. Cost	Actual Cost at Completion
'80		TAN-WRRTF Electrical Line	N/A	200	
'80		Semiscale Support Facility Office Building	N/A	433	
'80		Semiscale Storage Facility	N/A	64	
'80		LFST/WRRTF Deep Well Upgrade	N/A	54	
'80 Line Item		WRRTF Upgrade	N/A	1,600	

Month

O	N	D	J	F	M	A	M	J	J	A	S

2306 265

THERMAL FUELS BEHAVIOR PROGRAM

EG&G IDAHO, INC.

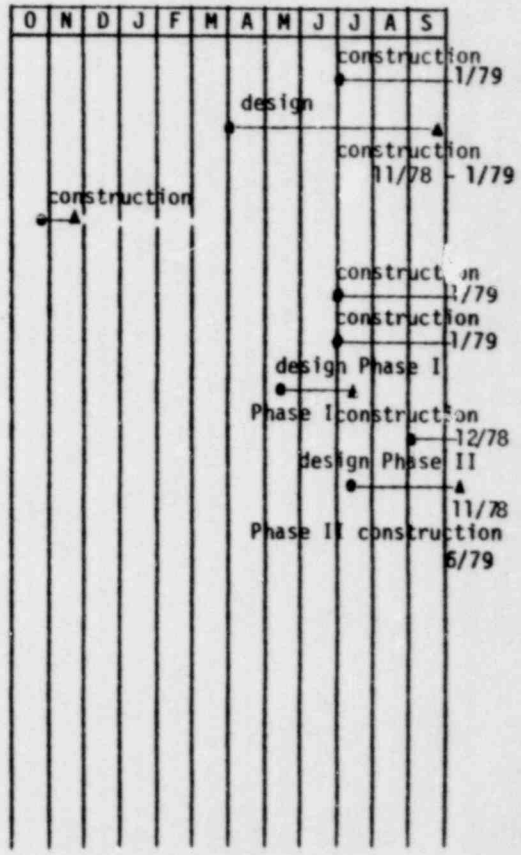
GPP ITEMS

PROGRAM THERMAL FUELS BEHAVIOR PROGRAM (FY-76, 77 & 78 Carryover) MANAGER R. W. Marshall, Jr.

189a No. A6044

EA No.	Item Description	Original PA Amount	($000) Current Est. Cost	Actual Cost at Completion
922600000	Reactor Bldg. Partial Fire Spr. System [1]	35	30	end of MAR $27,644
923600000	PBF Nitrogen System Mod [1]	165	70	end of MAR $70,802
923900000	PBF Loop Fission Product Detection Sys. [1]	123	123	Final cost $116,712
924800000	PBF Hot Waste Storage Capacity Increase [2]	181	242	end of MAR $226,940
924900000	PBF Corrosive Waste Disposal Mods [1]	155	200	end of MAR $180,405
929800000	PBF Reactor Building Extension	250	250	end of MAR EG&G $112,193 M-IL $106,223

Task Initiated o
Task Completed Δ



[1] These projects are complete.

[2] Grounding system will be installed when ground thaws.

EG&G IDAHO, INC.

GPP ITEMS

FY-1979

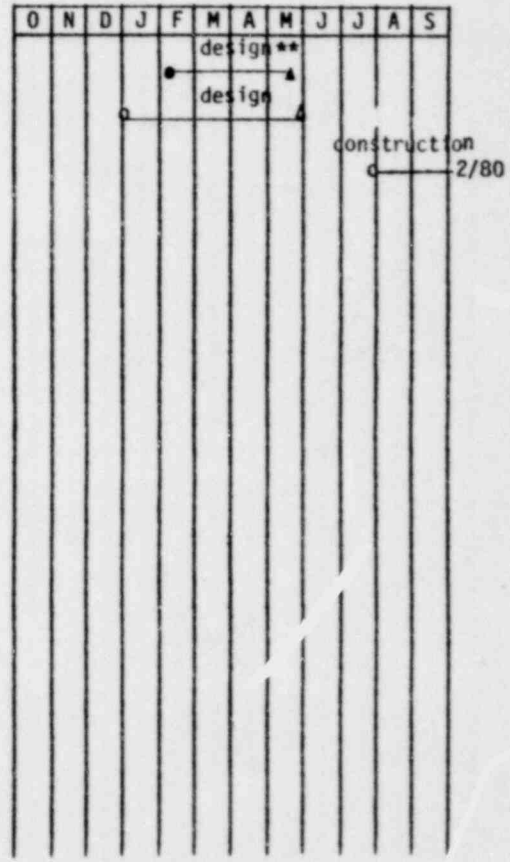
PROGRAM THERMAL FUELS BEHAVIOR PROGRAM

MANAGER R. W. Marshall, Jr.

189a No. A6044

EA No.	Item Description	Original PA Amount	($000) Current Est. Cost	Actual Cost at Completion
931600000	PBF Control Room Noise Abatement*	59	41	
931900000	PBF Support Building*	509	525	

Task Initiated o
Task Completed Δ



*Schedules are for planning only and subject to change.

**Title I was completed on 3/29/79.

2306 268

EG&G IDAHO, INC.

GPP ITEMS

PROGRAM THERMAL FUELS BEHAVIOR PROGRAM

PROPOSED FY-1980

MANAGER R. W. Marshall, Jr.

189 No. A6044

FY-YR	EA No.	Item Description	Original PA Amount ($000)	Current Est. Cost ($000)	Actual Cost at Completion	Month O	N	D	J	F	M	A	M	J	J	A	S
'80		PBF Reactor Area Yard, Road, Parking & Lighting Improvements	N/A	70													

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