



Quarterly Report on Program Cost and Schedule

July 1989

U.S. Department of Energy
Office of Civilian Radioactive Waste Management
Washington, DC 20585

MASTER *db*

DISCLAIMER

This report was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor any agency thereof, nor any of their employees, make any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or any agency thereof.

DISCLAIMER

Portions of this document may be illegible in electronic image products. Images are produced from the best available original document.

PREFACE

This report is intended to provide a summary of the cost and schedule performance for the Civilian Radioactive Waste Management Program. Performance data are presented for each of the major program elements. Also included in this report is the status of the Nuclear Waste Fund revenues and disbursements. This report includes project performance data reported through March 1989.

TABLE OF CONTENTS

Title	<u>Page</u>
HIGHLIGHTS	1
PROGRAM OVERVIEW	
Nuclear Waste Fund Projections	2
Cost Profile for Nuclear Waste Fund	6
FIRST REPOSITORY	
Cost Profile	8
Performance Measurement Analysis	14
SECOND REPOSITORY	
Cost Profile	16
REPOSITORY TECHNOLOGY PROGRAM	
Cost Profile	18
TRANSPORTATION	
Cost Profile	20
Performance Measurement Analysis	22
MONITORED RETRIEVABLE STORAGE	
Cost Profile	24
Performance Measurement Analysis	27
SYSTEMS INTEGRATION	
Cost Profile	28
GLOSSARY	31

HIGHLIGHTS

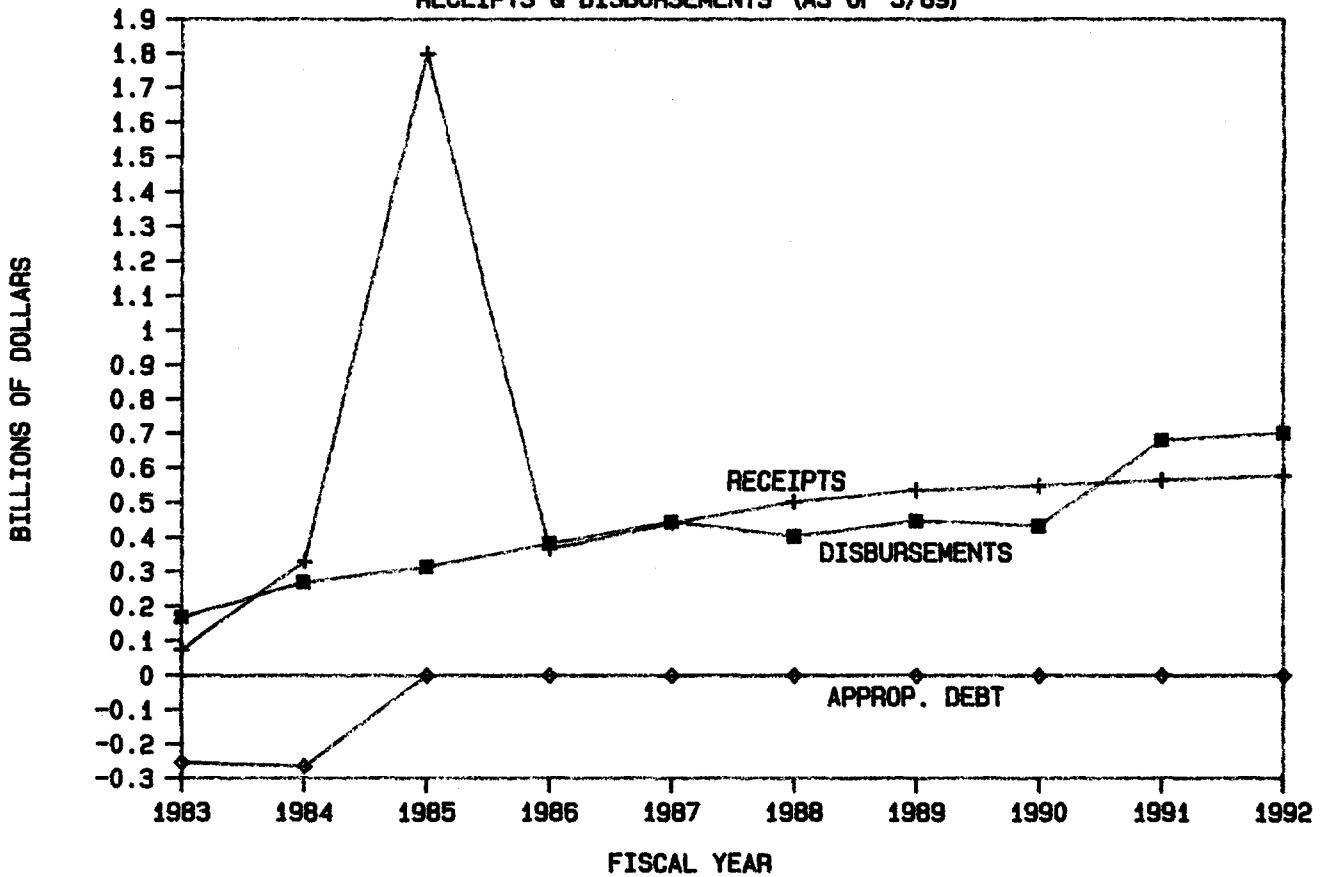
- The following major program accomplishments were reported for the second quarter of FY 1989:
 - Began Yucca Mountain Sample Management Facility operations.
 - Initiated Yucca Mountain Title II ESF Design.
 - Completed revegetation of exploratory shaft site, BWIP.
 - Submitted Dry Cask Study Report to Congress with final NRC comments.
 - Completed revision 9 of the International Fuel Cycle Fact Book.
 - Conducted initial meeting with Nuclear Waste Technical Review Board.
 - Issued five ESF site study plans.
 - Initiated review of draft Technical Support Document Management Plan.
 - SCP public hearings were held in March 1989 in Amargosa Valley, Las Vegas, and Reno, Nevada.
 - A notice of filing for BLM administered land was published in the Federal Register on January 13, 1989. The application requests segregation of the land for two years from real estate actions and mineral entry.
- FY89 actual costs through the second quarter for the total first repository were \$105.4 million. The Yucca Mountain project accounted for 73 percent (or \$77.1 million); technical support activities accounted for 14 percent (or \$15.0 million); and the basalt and salt projects accounted for 7 percent (or \$6.7 million) and 6 percent (or \$6.6 million), respectively, for reclamation activities.
- The negative schedule variance (cumulative from October 1984) reported through the second quarter of FY89 remained constant from the previous quarter at -2 percent (or -\$9.6 million). The cost variance through the second quarter of FY89 also remained constant on a percentage basis at 6 percent but changed on a dollar basis from \$21.5 million to \$23.7 million.
- Actual costs through the second quarter of FY89 were \$11.4 million for the Repository Technology Program.
- Through the second quarter of FY89, actual costs of \$11.6 million for the transportation program were \$3.1 million less than planned costs.
- The schedule variance for the transportation program through the second quarter remained constant on a percentage basis at -6 percent but changed on a dollar basis from -\$1.4 million to -\$1.7 million. The cost variance changed on a percentage basis from 6 percent to 5 percent while remaining constant at \$1.3 million.
- Since June 1986, the MRS project has been reporting level-of-effort for the work performed. Variance analysis reporting will be resumed for the MRS report when future project plans are established. Actual costs through the second quarter of FY89 were \$1.7 million.
- Through the second quarter of FY89, the actual costs for systems integration activities were \$3.0 million.

NUCLEAR WASTE FUND PROJECTIONS

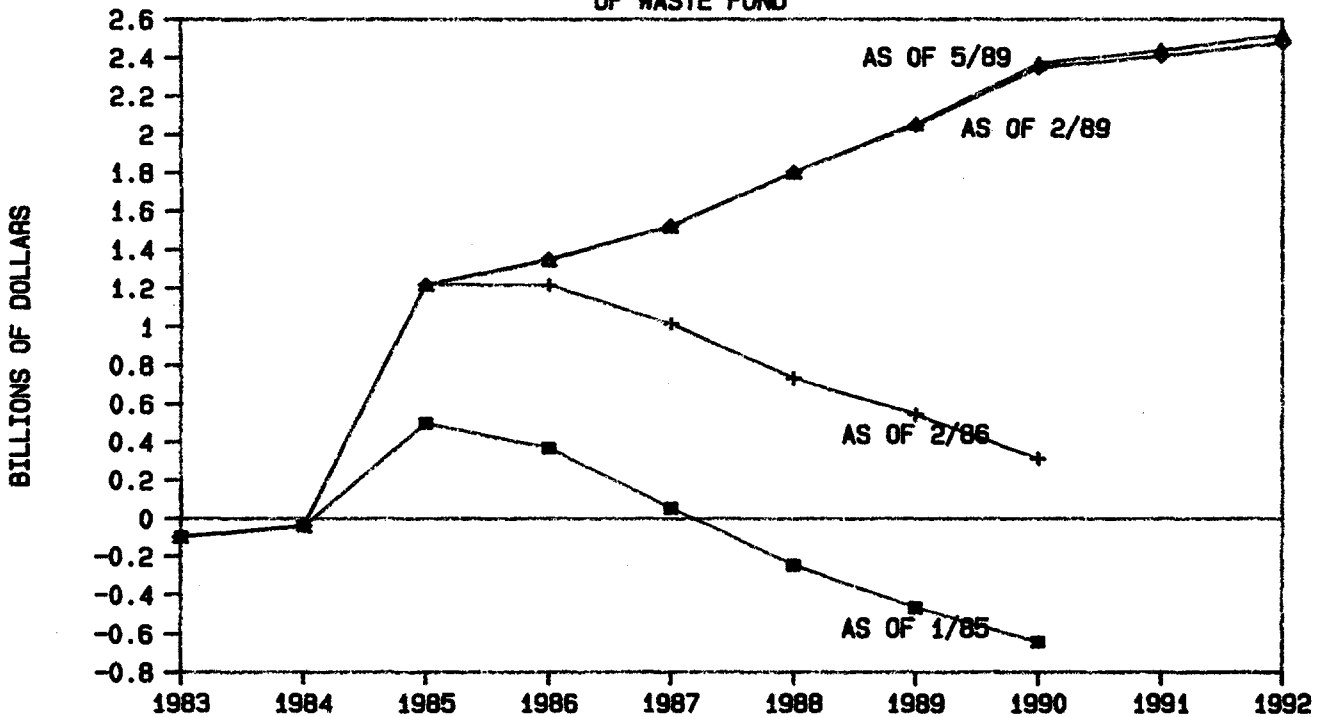
- For FY 1983 through FY 1988, receipts were actual amounts collected from utilities while disbursements included both actual disbursements and interest paid on the appropriated debt.
- The current projection (May 1989) assumes the revenues from the 1 mill per kwh fee contained in the March 1989 EIA projection. Revenues from the one-time fee and earned interest are based on the FY 1990 Congressional budget submission. Disbursements for FY 1989 through FY 1992 assume the budget outlay estimates contained in the FY 1990 budget submittal.
- The February 1989 projection assumed the revenues from the 1 mill per kwh fee contained in the December 1988 EIA Projection. Revenues from the one-time fee and earned interest were based on the FY 1990 Congressional budget submission. Disbursements for FY 1989 through FY 1990 assumed the budget outlay estimates contained in the FY 1990 budget submittal.
- The February 1986 projection assumed the cost estimates, revenue (both from the 1 mill per kwh and the one-time fee), and earned interest contained in the FY 1987 budget submittal.
- Projection of net balance made in January 1985 was based on revenue and cost projections (escalated to current dollars by an average annual growth rate of 5 percent per year) in the FY 1986 budget submitted to Congress in January 1985. This projection assumed that \$770 million would be received in June 1985 for the one-time payment for fuel generated before 1983 (compared to the \$1.4 billion that was actually collected). The projection of net balance assumed that a positive yearly balance earns interest at a rate of 7 percent per year.

PROJECTED NUCLEAR WASTE FUND

RECEIPTS & DISBURSEMENTS (AS OF 5/89)

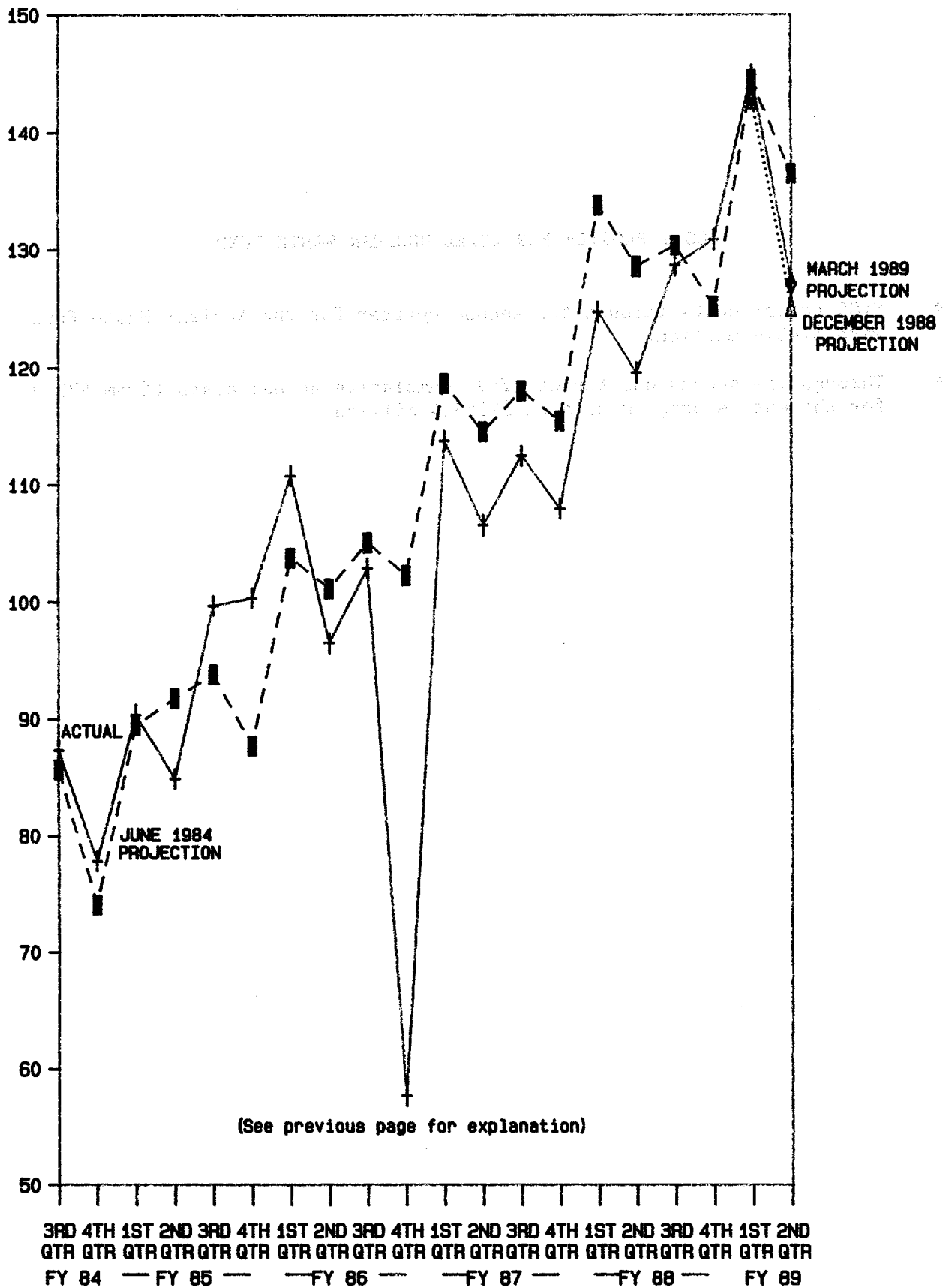


PROJECTED NET BALANCE OF WASTE FUND



PROJECTED VERSUS ACTUAL FUND REVENUES

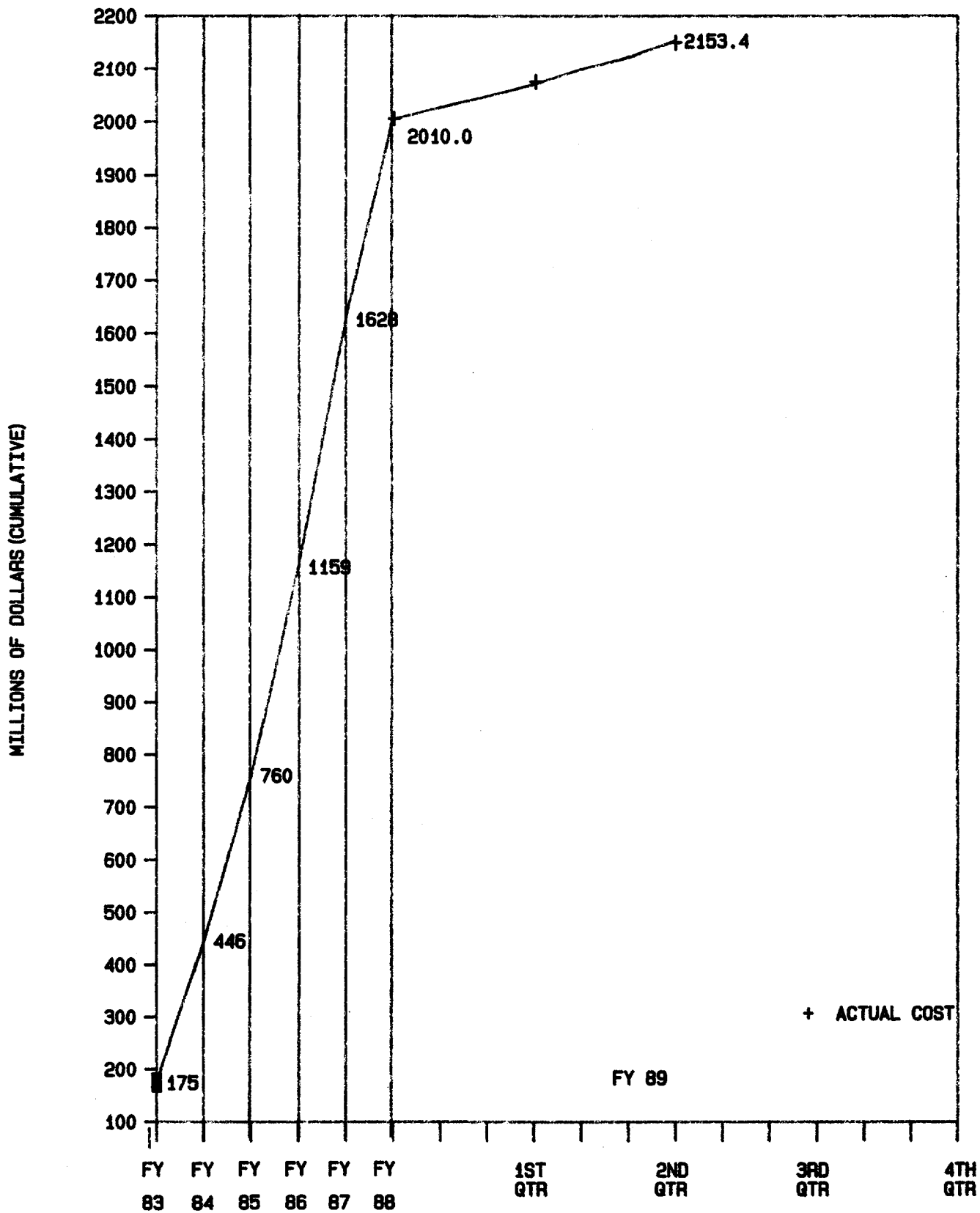
- Actual revenues from the 1 mill/kwh fee for the second quarter of FY89 were \$127.2 million. These revenues were \$0.1 million more than the projection of revenues made for this quarter on March 29, 1989. The projection of revenues for this quarter made on December 12, 1988 were \$2.0 million less than actual revenues. The June 1984 projection of revenues was \$9.3 million more than actuals.
- Comparison of June 1984 projection of revenues from the 1 mill/kwh fee with actual collections on a quarterly basis indicates that the projections have fallen within -\$6 million to +\$45 million of actual amounts. The +\$45 million difference in the June 1984 projection versus the actual amount collected in the 4th quarter of FY86 was due to credits given to the utilities for previous overpayment as a result of the change in the fee basis from gross to net generation.
- These revenue projections do not reflect the March 17, 1989 decision of the U.S. Court of Appeals concerning calculation of the revenues.



3RD QTR 4TH QTR 1ST QTR 2ND QTR 3RD QTR 4TH QTR 1ST QTR 2ND QTR 3RD QTR 4TH QTR 1ST QTR 2ND QTR 3RD QTR 4TH QTR 1ST QTR 2ND QTR
 FY 84 — FY 85 — FY 86 — FY 87 — FY 88 — FY 89
 Waste fund revenues from 1 mill/kwh fee: actual vs projected.

COST PROFILE FOR TOTAL NUCLEAR WASTE FUND

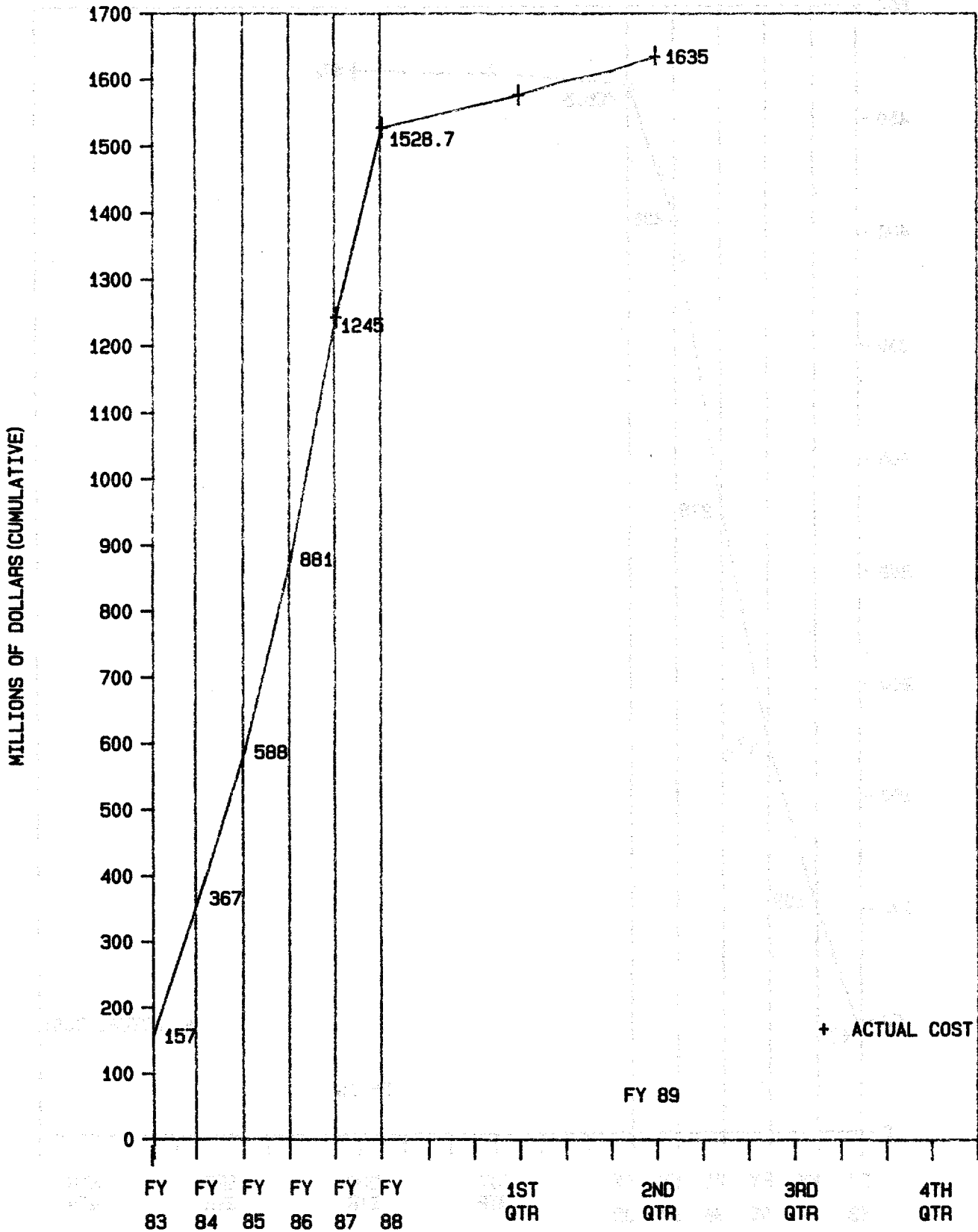
- FY89 actual costs through the second quarter for the Nuclear Waste Fund were \$143.4 million.
- Through the second quarter of FY89, cumulative actual costs (from FY83) for the entire program totaled \$2153.4 million.



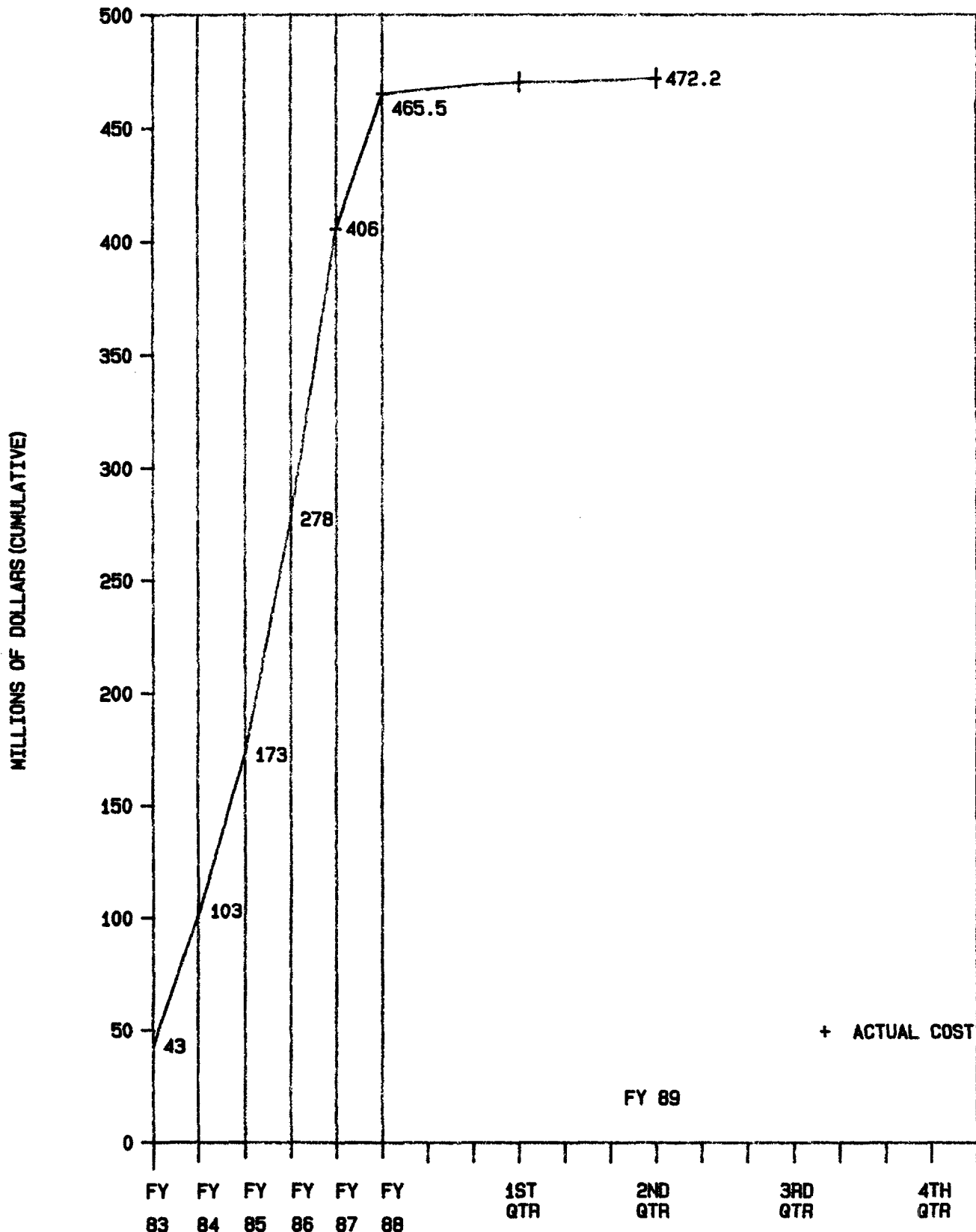
COST PROFILE FOR TOTAL NUCLEAR WASTE FUND

COST PROFILE FOR FIRST REPOSITORY

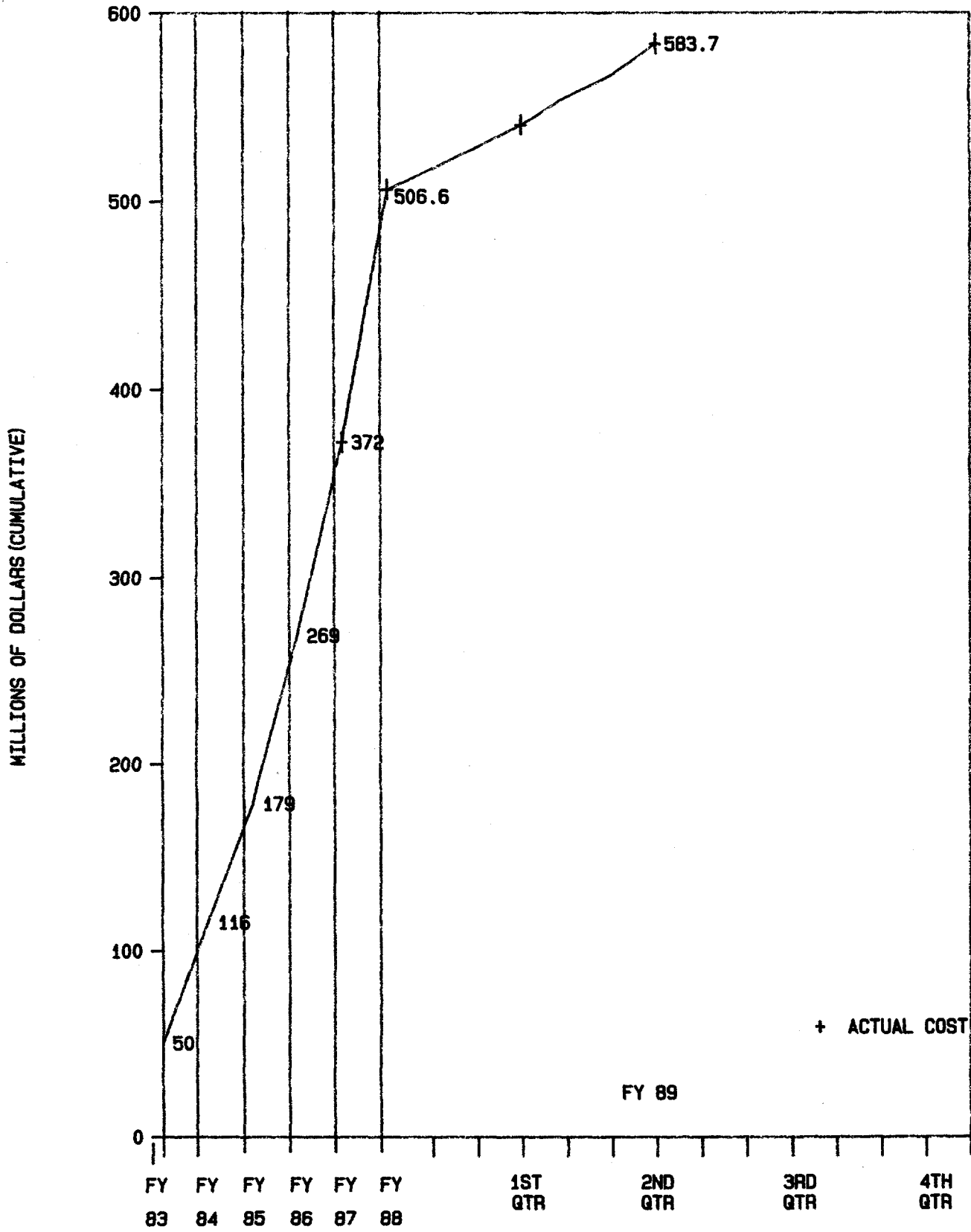
- FY89 actual costs through the second quarter for the first repository were \$105.4 million. The distribution by project was \$77.1 million for the Yucca Mountain project (YMP), \$15.0 million for technical support activities, \$6.7 million for the basalt project (BWIP), and \$6.6 million for the salt project (SRP).
- Through the second quarter of FY89, cumulative actual costs (from FY83) for the first repository projects totaled \$1635 million of which 36 percent (or \$584 million) was accounted for by YMP, 31 percent (or \$515 million) by SRP, 29 percent (or \$472 million) by BWIP, and 4 percent (or \$64 million) by technical support activities.



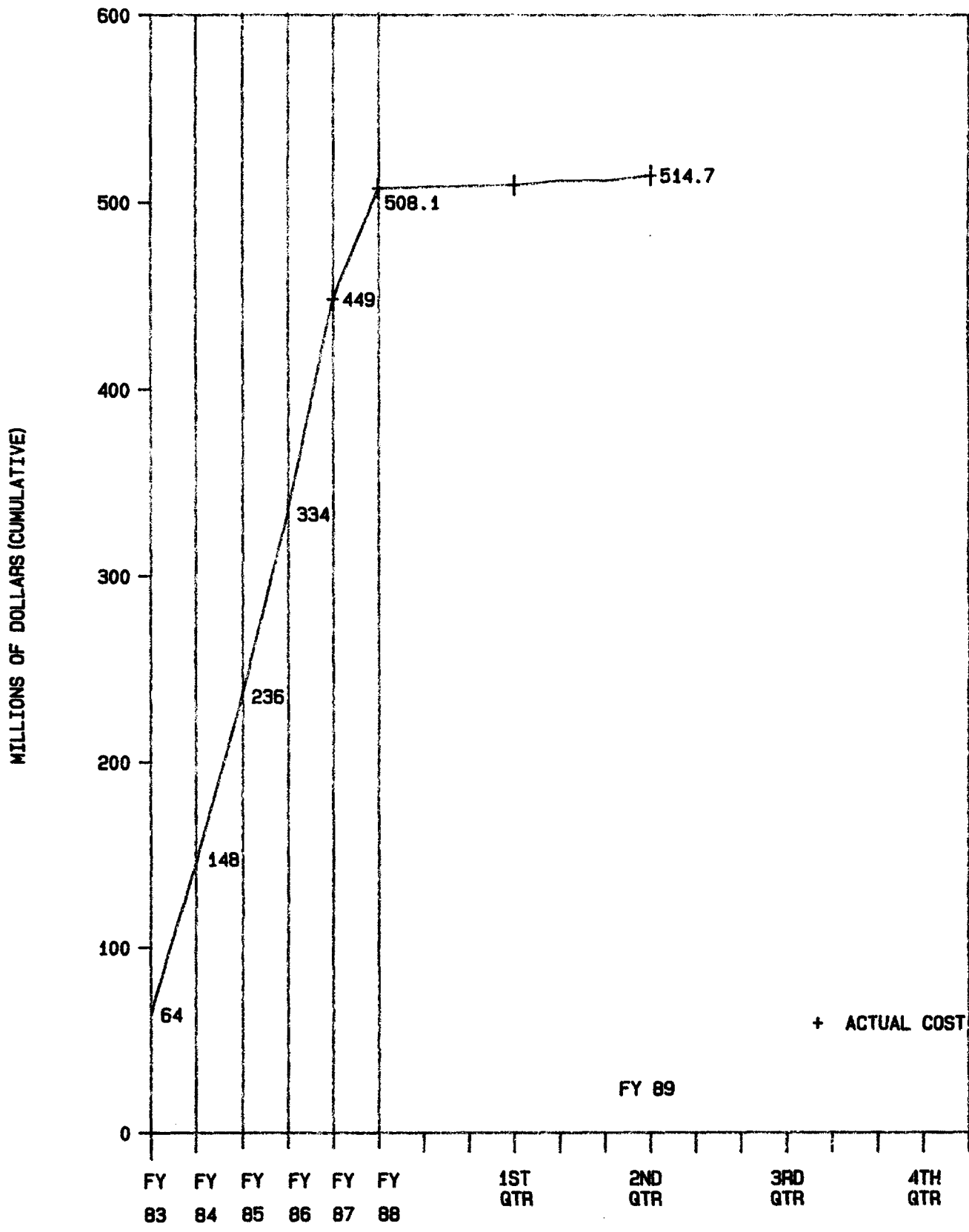
COST PROFILE FOR TOTAL FIRST REPOSITORY



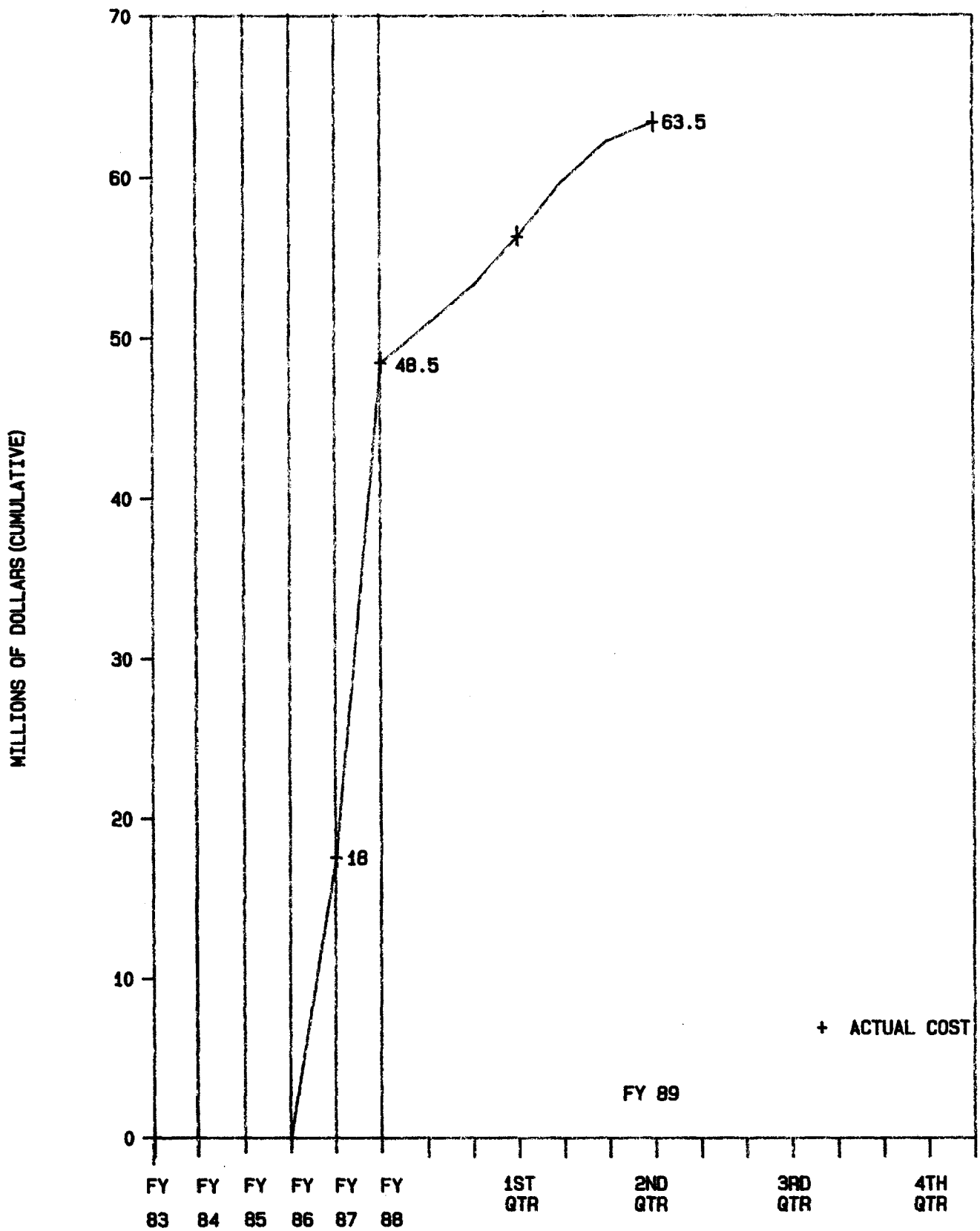
COST PROFILE FOR BWIP



COST PROFILE FOR YMP



COST PROFILE FOR SRP



COST PROFILE FOR TECHNICAL SUPPORT ACTIVITIES

PERFORMANCE MEASUREMENT ANALYSIS

- There are three parameters which provide the basis for variance analysis of project performance, according to the Cost and Schedule Control Systems Criteria (CSCSC). These are:
 - The budgeted cost for work scheduled (BCWS)
 - The budgeted cost for work performed (BCWP)
 - The actual cost of work performed (ACWP)
- The measures of cost and schedule variance presented in this report use these parameters as defined below:

$$\text{Schedule Variance (\%)} = \frac{\text{BCWP} - \text{BCWS}}{\text{BCWS}}$$

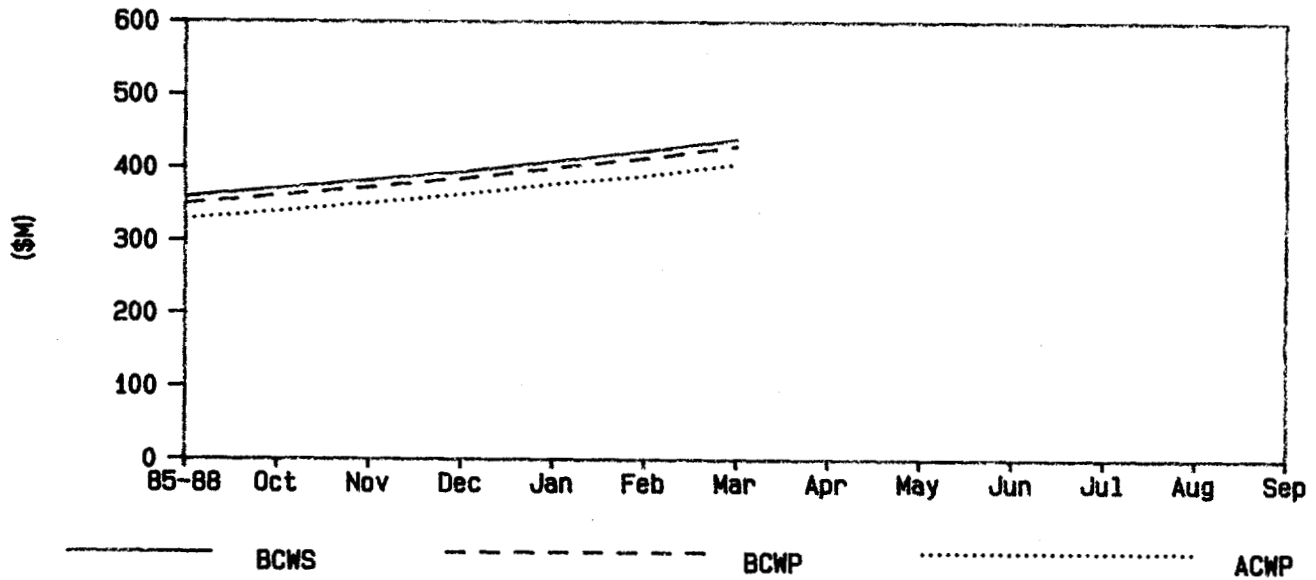
$$\text{Cost Variance (\%)} = \frac{\text{BCWP} - \text{ACWP}}{\text{BCWP}}$$

- A positive variance is a favorable indicator, while a negative variance is an unfavorable indicator.
- In response to the December 1987 legislation, the variance analysis data presented in this report for all program elements except the Yucca Mountain repository project begin with FY 1988. Until the tuff project is rebaselined, the cumulative variance analysis from the beginning of FY 1986 will continue to be presented.

PERFORMANCE MEASUREMENT ANALYSIS FOR THE FIRST REPOSITORY

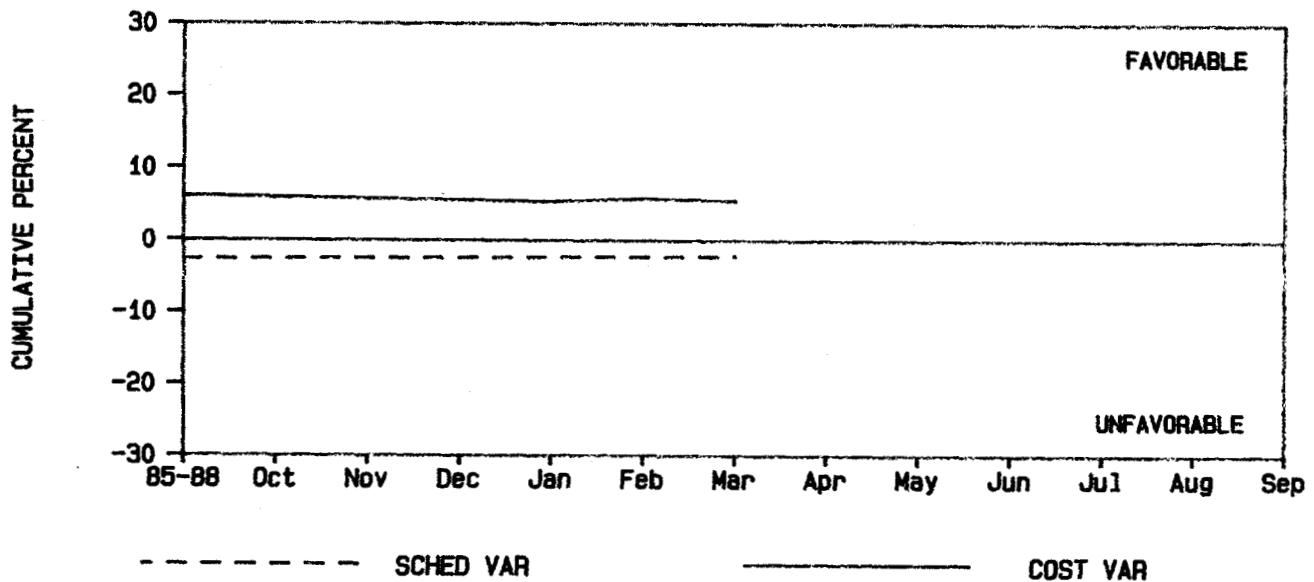
- The negative schedule variance through the second quarter of FY89 for the YMP remained constant at -2 percent (or -\$9.6 million).
- The cost variance through the second quarter of FY89 remained constant on a percentage basis at 6 percent but changed on a dollar basis from \$21.5 million to \$23.7 million.

YMP (TOTAL)
FY 1989 PERFORMANCE MEASUREMENT ANALYSIS
CUMULATIVE THROUGH SECOND QUARTER 1989



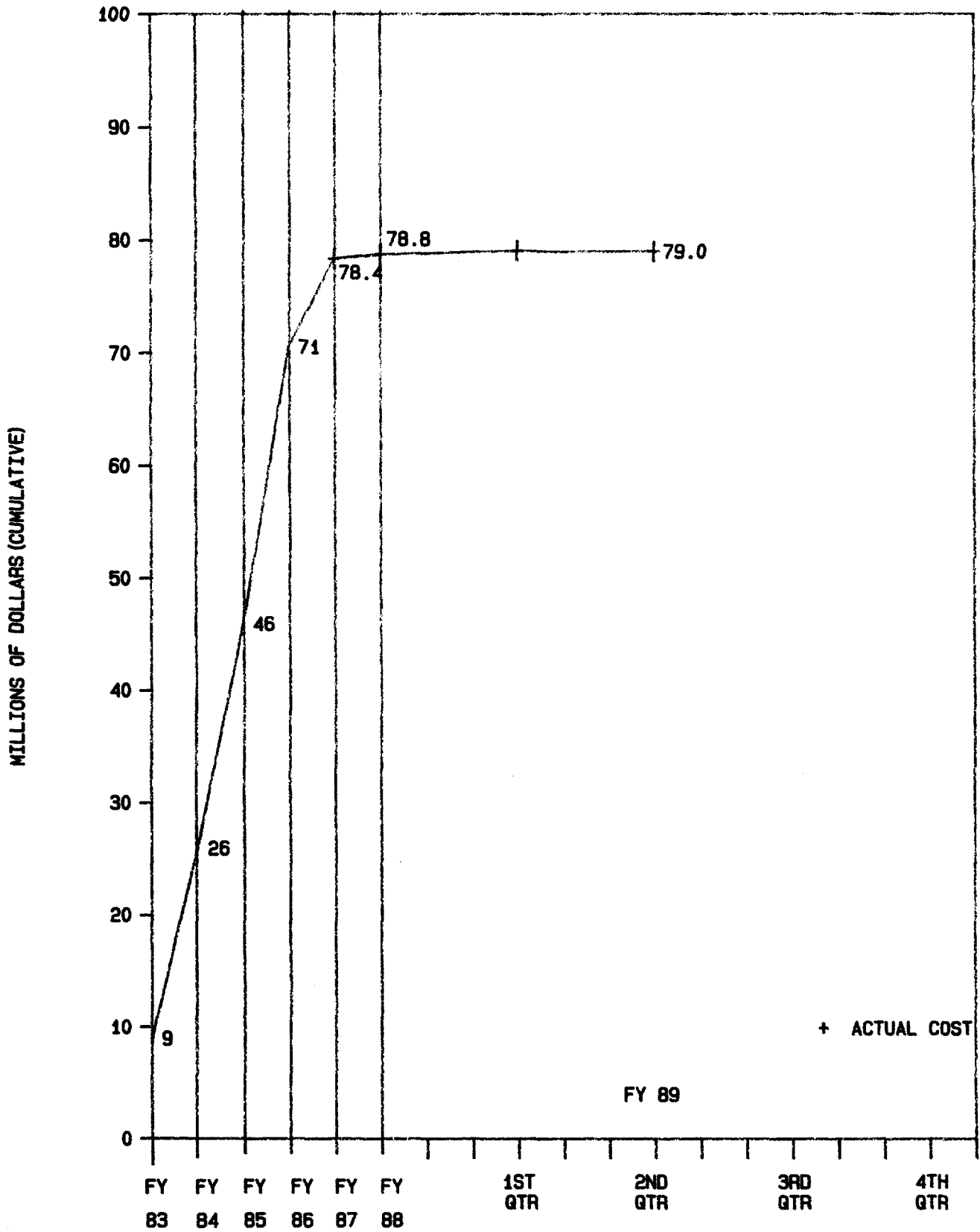
BCWS	360553	371700	383337	394988	409702	423913	439880							
BCWP	350979	362125	373762	385414	400127	414339	430306							
ACWP	329439	340586	352222	363874	378588	390168	406623							
CV \$	21540	21540	21540	21540	21540	24170	23683							
CV %	6	6	6	6	5	6	6							
SV \$	-9574	-9574	-9574	-9574	-9574	-9574	-9574							
SV %	-3	-3	-2	-2	-2	-2	-2							

85-88 OCT NOV DEC JAN FEB MAR APR MAY JUN JUL AUG SEP



COST PROFILE FOR SECOND REPOSITORY

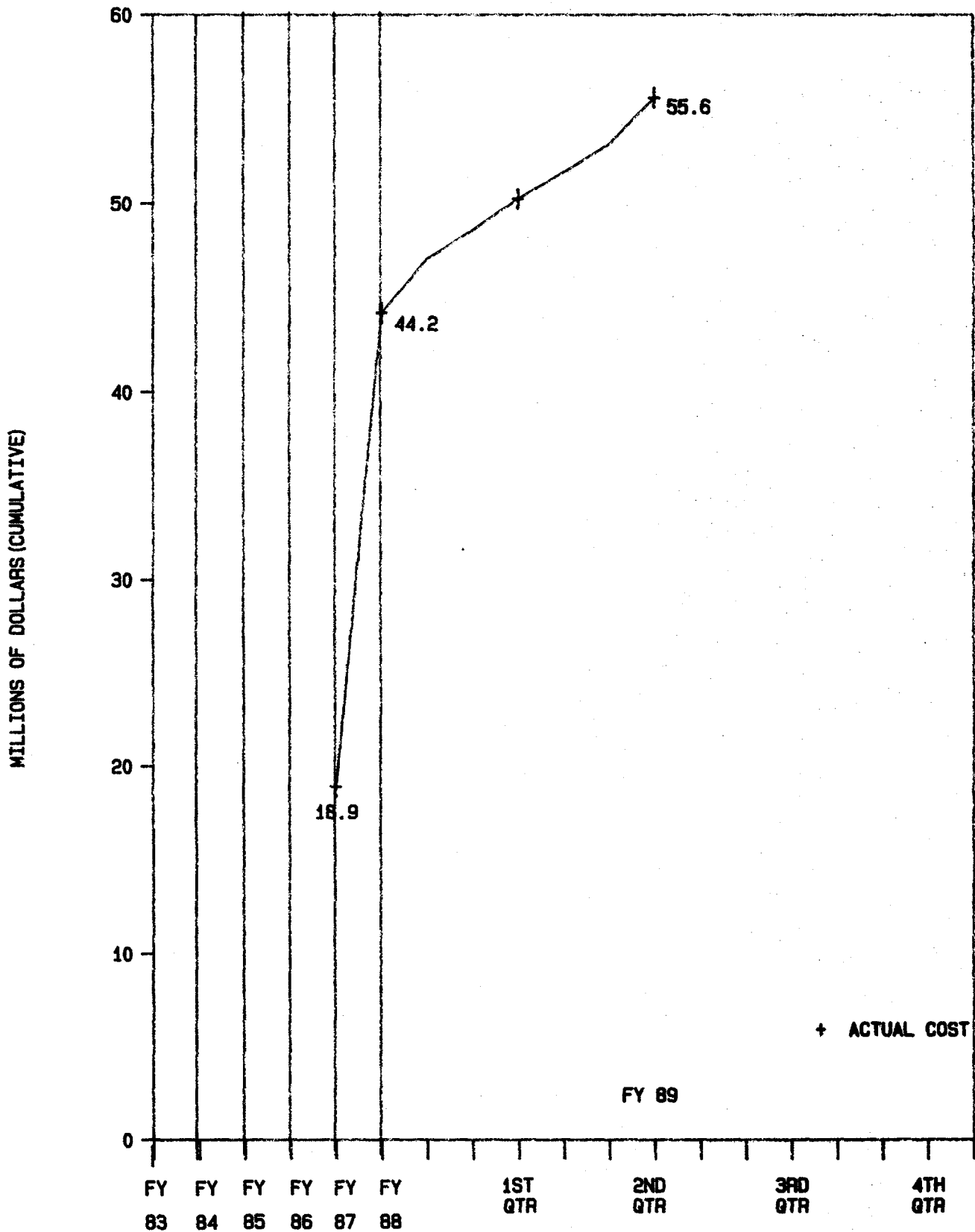
- Actual costs through the second quarter of FY89 for the second repository shutdown were \$0.2 million.



COST PROFILE FOR SECOND REPOSITORY

COST PROFILE FOR REPOSITORY TECHNOLOGY PROGRAM

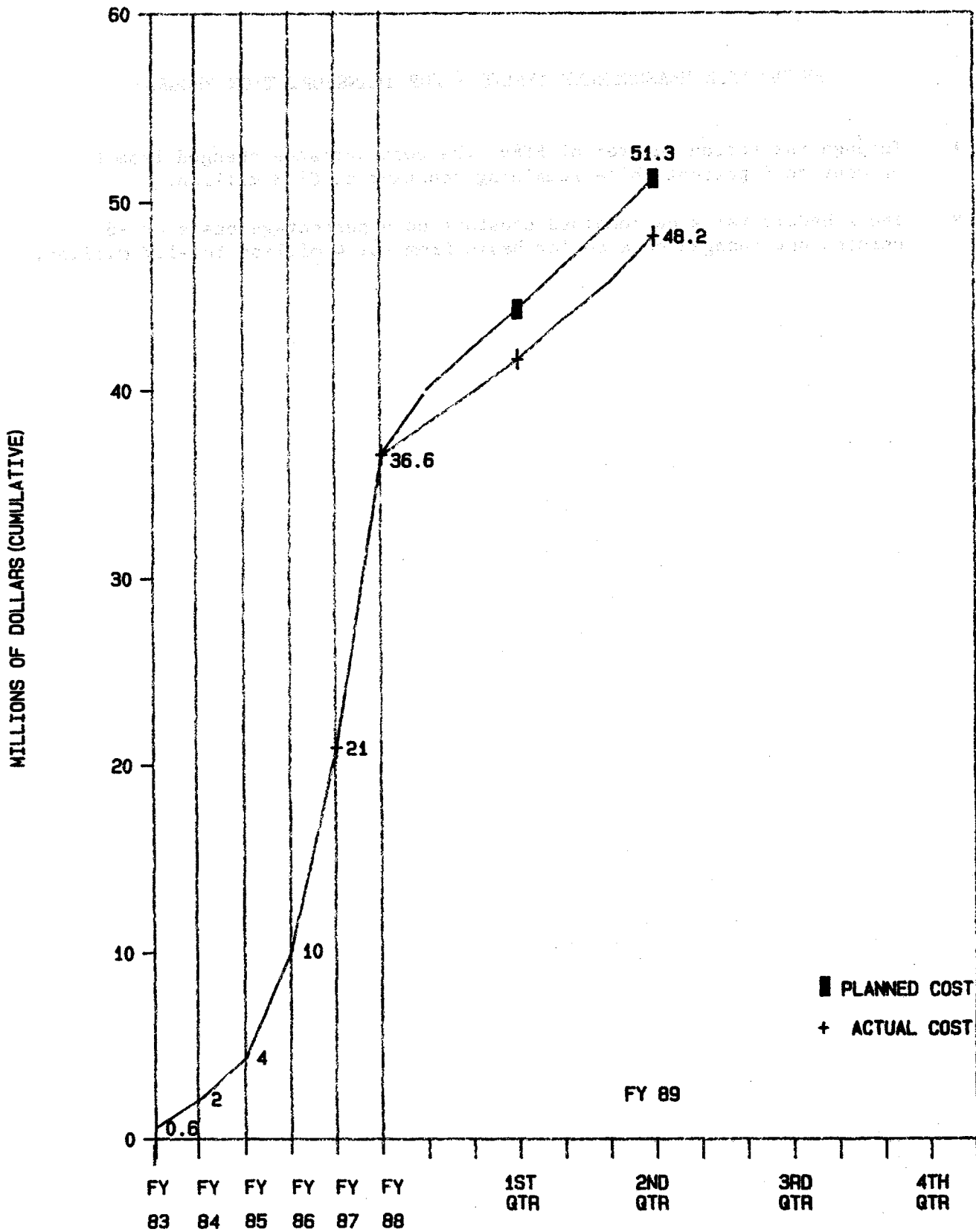
- Actual costs through the second quarter of FY89 for the Repository Technology Program were \$11.4 million.



COST PROFILE FOR REPOSITORY TECH PROGRAM

COST PROFILE FOR TRANSPORTATION

- The three DOE field offices (Idaho, Chicago, and Oak Ridge) which comprise the transportation subprogram, estimated a planned total cost in FY89 of \$29.0 million. Seventy percent (or \$20.2 million) of the total planned cost is accounted for by the Idaho field office. Chicago represents 22 percent of the total planned cost (or \$6.7 million) while Oak Ridge accounts for the remaining 8 percent (or \$2.2 million).
- FY89 actual costs through the second quarter were \$11.6 million, or \$3.1 million below the plan.

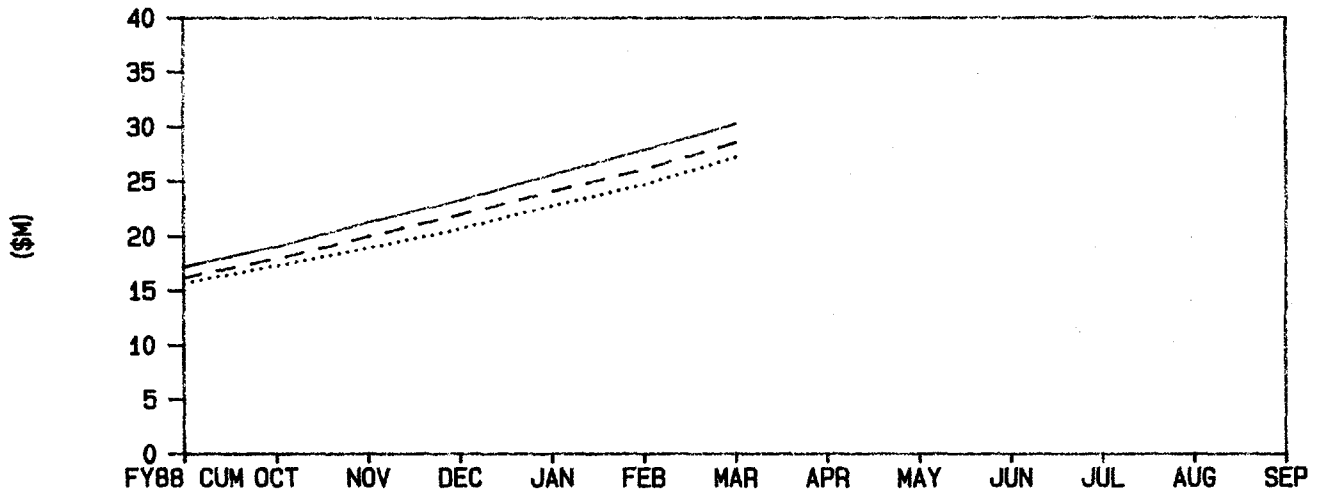


COST PROFILE FOR TRANSPORTATION

PERFORMANCE MEASUREMENT ANALYSIS FOR TRANSPORTATION PROGRAM

- Through the second quarter of FY89, the cost variance changed from 6 percent to 5 percent while remaining constant at \$1.3 million.
- The schedule variance remained constant on a percentage basis at -6 percent but changed on a dollar basis from -\$1.4 million to -1.7 million.

TRANSPORTATION (TOTAL)
FY 1989 PERFORMANCE MEASUREMENT ANALYSIS
CUMULATIVE THROUGH SECOND QUARTER 1989



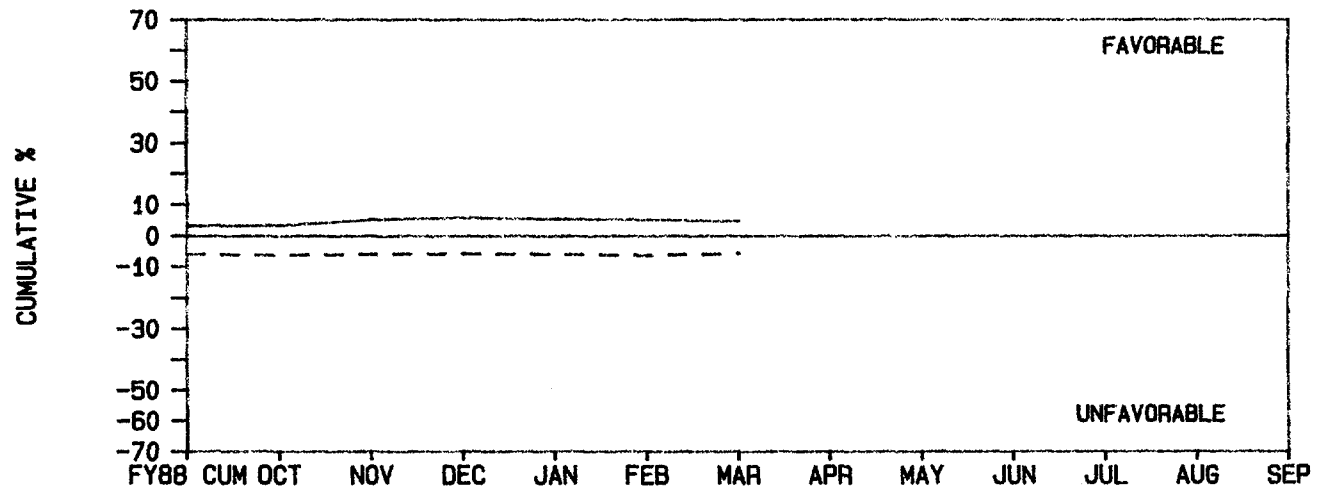
BCWS

BCWP

ACWP

	FY88 CUM	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
BCWS	17220	19114	21302	23352	25648	27883	30288						
BCWP	16185	17915	20030	21996	24119	26115	28560						
ACWP	15652	17288	18958	20692	22802	24745	27223						
CV \$	533	627	1072	1304	1317	1370	1337						
CV %	3	3	5	6	5	5	5						
SV \$	-1035	-1199	-1271	-1356	-1528	-1768	-1728						
SV %	-6	-6	-6	-6	-6	-6	-6						

FY88 CUM OCT NOV DEC JAN FEB MAR APR MAY JUN JUL AUG SEP



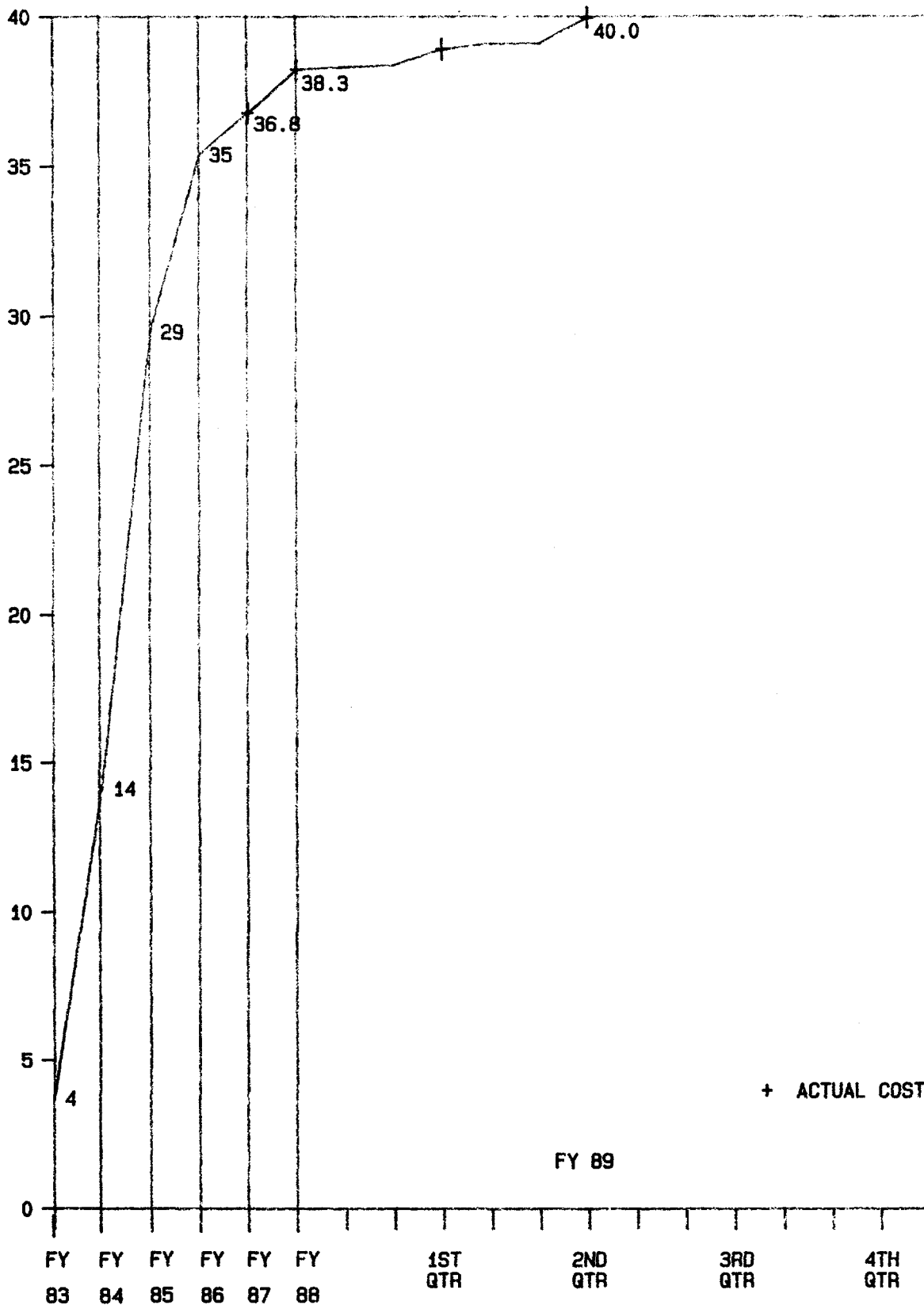
----- SCHED VAR

_____ COST VAR

COST PROFILE FOR MONITORED RETRIEVABLE STORAGE

- The MRS project covers the work administered through the Richland and Oak Ridge field offices. Since work is being performed on a level-of-effort basis, no cost plan is yet available.
- FY89 actual costs for the MRS project through the second quarter were \$1.7 million.

MILLIONS OF DOLLARS (CUMULATIVE)



FY 89

+ ACTUAL COST

COST PROFILE FOR MRS

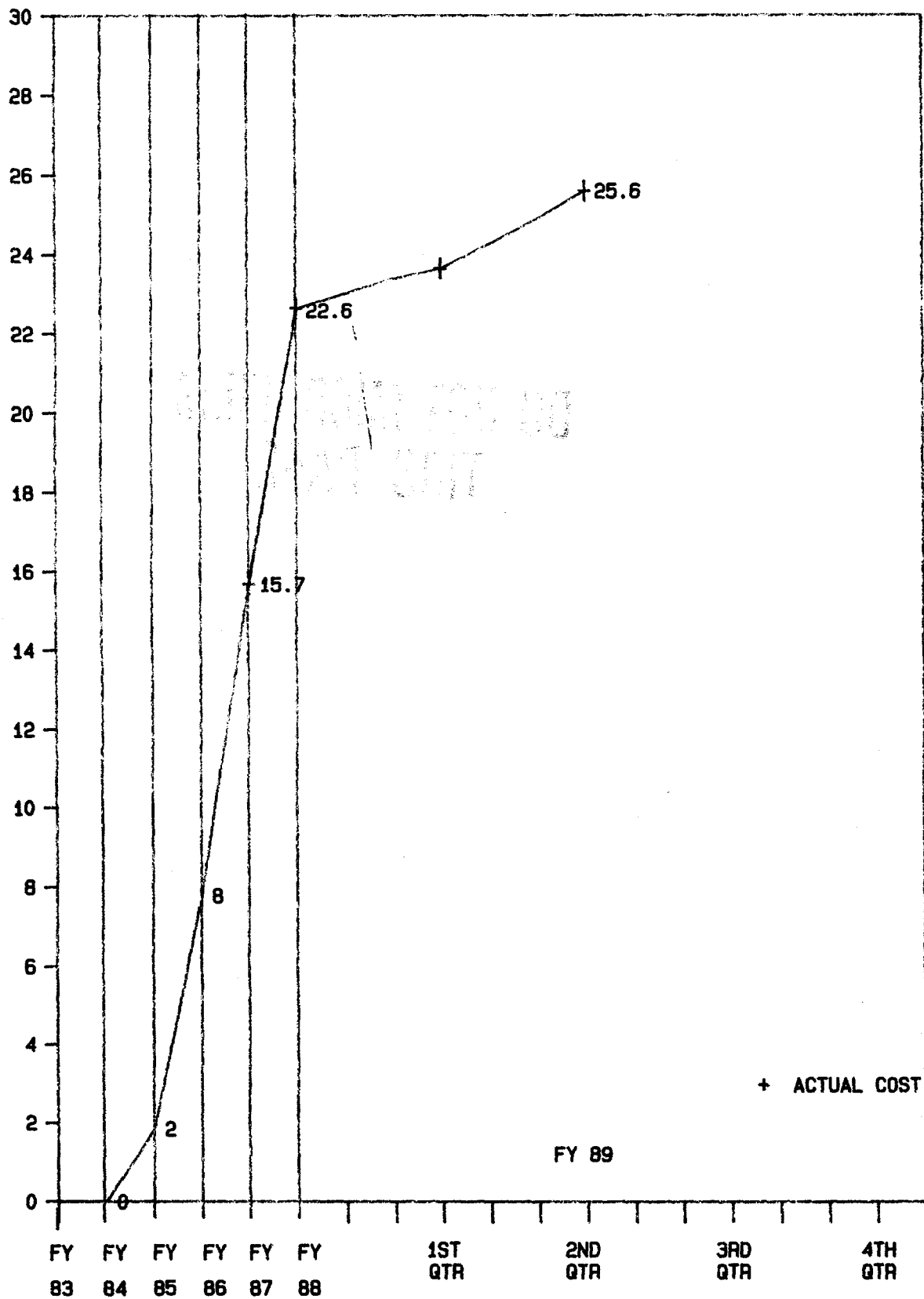
PERFORMANCE MEASUREMENT ANALYSIS FOR MRS PROJECT

- Starting in June 1986, budgeted cost is assumed to equal actual cost due to the level-of-effort nature of the work currently being performed. Variance analysis reporting will be resumed when future project plans are established.

COST PROFILE FOR SYSTEMS INTEGRATION

- Systems integration activities are composed of work performed by Pacific Northwest Laboratory (PNL) and Oak Ridge National Laboratory (ORNL).
- FY89 actual costs for combined systems integration activities through the second quarter were \$3.0 million.

MILLIONS OF DOLLARS (CUMULATIVE)



COST PROFILE FOR SYSTEMS INTEGRATION

DO NOT MICROFILM
THIS PAGE

GLOSSARY

PERFORMANCE MEASUREMENT TERMS:

ACWP - Actual Cost of Work Performed

The cost actually incurred in accomplishing the work performed (BCWP).

BCWP - Budgeted Cost of Work Performed

The earned value of work performed in terms of the original budget. It is a sum of the budgets for completed work packages and the completed portion of in-process work packages during a given period.

BCWS - Budget Cost of Work Scheduled

The sum of budgets for the work packages scheduled to have been accomplished during an incremental period of time or cumulative-to-date.

Cost Variance - (BCWP minus ACWP)

The cost variance indicates whether more or less money was spent for work performed than was planned for that amount of work.

Cost Variance (%) - (Cost Variance over BCWP)

The cost variance measured against the work performed.

Schedule Variance - (BCWP minus BCWS)

The schedule variance is a quantification of the schedule deviation in terms of dollars. A positive variance indicates an ahead-of-schedule condition.

Schedule Variance (%) - (Schedule Variance over BCWS)

The schedule variance measured against the work planned.