

**“Project Management Using Earned Value”
Case Study Solution 27.1**



27.1

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**Estimate
History**

SOLUTION

1. See attached Estimate History Form.
2. Cost overrun factors not related to estimate development include:

1) Late project completion	\$4.6 million
2) Escalation rate variation	\$1.7 million
3) Approved scope changes	<u>\$16.0 million</u>
Total	\$22.3 million

Cost overrun factors attributable to estimating:

1) Productivity rates	\$7.9 million
2) Estimate omission	\$2.1 million
3) Purchase order variation	<u>(\$0.5 million)</u>
Total	\$9.5 million

Therefore, about 30% of the total cost increase was related to estimating efforts. However, this entire amount would have been accommodated within the \$15 million allowance in contingency (which recognized that this was a new process and would have some “unknowns”).

3.

Original estimate:	\$142 million
Approved scope changes:	<u>\$ 16 million</u>
Estimate basis:	\$158 million
Actual cost::	\$158.8 million
Accuracy:	99.5% (0.5% overrun)

If allowances are made for assumptions that were not accurate but beyond the responsibility of estimating (delayed project completion and higher escalation rates), we see that the actual cost of \$158.8 million was actually LOWER than the \$164.3 million that might have been anticipated for the set of circumstances actually encountered by the project. On a “fair comparison” basis, the estimate was actually UNDERRUN for the set of assumed circumstances.

4. Specific recommendations:
 - a. Implement a feedback loop to ensure that actual productivity rates are reported back to estimating. This will allow estimating to stay current with valid rates and will confirm the accuracy of their estimating standards.
 - b. Provide an approach for better estimate review, requiring a team review of all assumptions and input. The overlooked piece of equipment in this estimate would have been caught. If it had been properly reviewed by Production. There should have also been some question about using standard productivity rates for a new process during the estimate review. This likely would have resulted in more accurate rates in the original estimate.

Project ABC – Estimate History Form (\$ x 1000)

Category	Original Estimate (1)	Revised Estimate (2)	Total Variance (3)	Schedule Rate Changes (4)	Escalation Rate Changes (5)	Scope Changes (6)	Estimate Refinement (7)	Estimate Versus Actuals (7)	Estimate Omission or Duplication (7)	Contingency Reevaluation
Major Equipment	60,000	62,500	2,500	0	0	4,500	0	(2,000)	0	0
Material and Other Equipment	12,000	17,900	5,900	0	0	2,300	0	1,500	2,100	0
Construction/ Production	36,000	52,500	16,500	600	0	8,000	7,900	0	0	0
Engineering	6,000	7,200	1,200	0	0	1,200	0	0	0	0
Owner's Cost	5,000	6,000	1,000	1,000	0	0	0	0	0	0
Escalation	8,000	12,700	4,700	3,000	1,700	0	0	0	0	0
Contingency	15,000	0	(15,000)	0	0	0	0	0	0	(15,000)
GRAND TOTAL	142,000	158,000	16,800	4,600	1,700	16,000	7,900	(500)	2,100	(15,000)

NOTES:

- (1) Original Estimate Dated January 5, Yr.1
- (2) Reflects July 31, Yr.1 Estimate Update
- (3) Column (2) – Column (1)
- (4) Completion Date Slipped 6 Months on Planned 2-Year Project
- (5) Reflects Revised Corporate Guidelines Dated March 15, Yr.1
- (6) Includes All Scope Changes Processed Through August 15, Yr.1