Implementation Reference

Now you are ready to put the plan into action—to use resources to produce deliverables in order to meet the project objectives. To do this you will need to start implementation, monitor and report on progress, modify the plan to deal with changes, and formally close out the completed project.

Start to Implement

Before work actually begins, make sure the team and resources are ready to start, and that all monitoring, change control, and reporting systems are in place. This will help to ensure that work begins promptly and can be executed smoothly.

The project manager may choose to have a project team meeting (often referred to as a "kickoff meeting") and/or to meet individually with key resources and contributors. In any event, it is important to review initial tasks, confirm responsibility and performance expectations, and identify any early barriers to success. If specific protocols or procedures are required to deal with conflicts, client/vendor contacts, changes, spending, reporting, etc., these must also be verified.

Use the process questions and checklist in the workshop materials to assist in Starting to Implement. Use the criteria listed below to plan your activities.

Start to Implement Criteria:

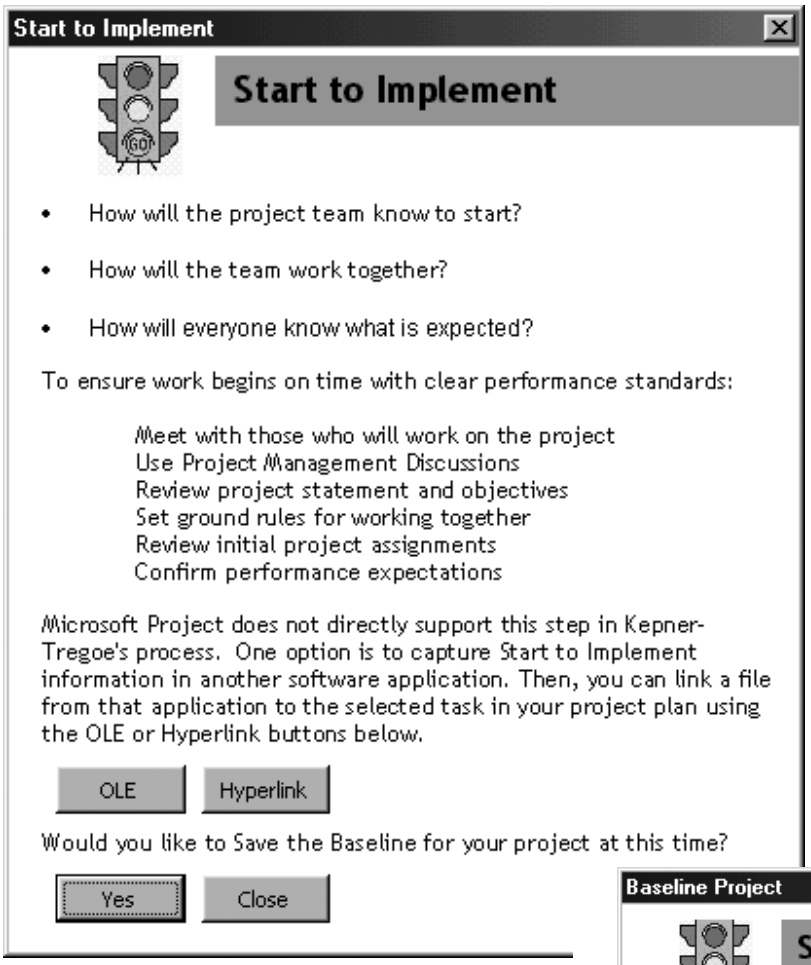
- ✓ Contains individual and/or group communications plan
- ✓ Contains project documentation to guide implementation
- ✓ Indicates materials, facilities, equipment, funding, etc., in place for initial tasks
- ✓ Contains ground rules for team interaction, communication
- ✓ Contains PPA/POA done for critical initial tasks
- ✓ Has information about team and team member performance systems
- ✓ Details monitoring systems and methods
- ✓ Describes issue resolution protocols
- ✓ Describes reporting systems and methods
- ✓ Describes change control systems

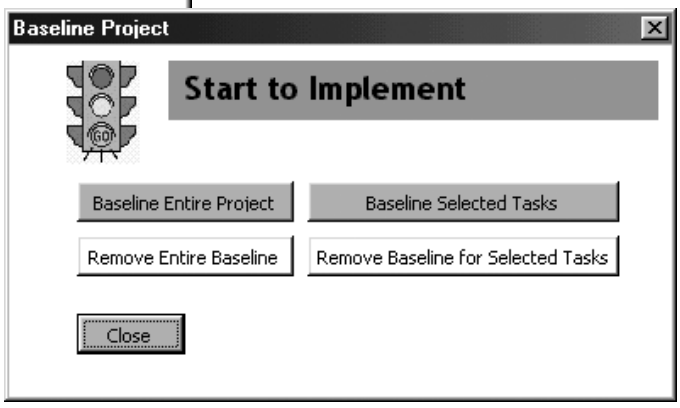
For example…

Start to Implement

Project Logic provides the user with a dialog box to prompt thinking about Start to Implement activities, and for linking documentation around those activities to the project plan in the same manner as described for Project Statement and Objectives.

This dialog box also prompts users to save a baseline for the plan—to "lock in" the data against which progress will be measured. Users can save or remove a baseline for the entire plan or for selected tasks.





For example…

The checklist from the project kickoff meeting for our sample project might look like this:

Project Implementation

Start to Implement

Project Title: Install Robot | Date: 15 March

Project Manager: Production Manager | Page: 1

Project Statement: Install industrial robot by 31 March for $9,500

Start to Implement Checklist

- ❑ Individual and/or group communications planned
- ❑ Project documentation assembled to guide implementation
- ❑ Materials, facilities, equipment, funding, etc., in place for initial tasks
- ❑ Ground rules established for team interaction, communication
- ❑ Potential Problem/Opportunity Analysis done for critical initial tasks
- ❑ Team and team member performance systems agreed to and in place
- ❑ Monitoring systems and methods agreed to and in place
- ❑ Issue resolution protocols agreed to and in place
- ❑ Reporting systems and methods agreed to and in place
- ❑ Change control systems agreed to and in place

What type of project kickoff meeting is required?

- *A formal project kick off meeting. Finishing on time is critical, and since this is a relatively short project, we need to be sure everyone is clear about expectations and all questions are answered. Team members need to know each other and establish contact before work begins.*

Are specific policies or protocols for changes required?

- *Project manager must approve all changes that impact the schedule by more than one hour, or cost more than $50.*

What other communications about the initiation of work might be required or useful?

- *A quick e-mail to the plant manager with a synopsis of the meeting and copy of the plan*
- *An e-mail to the robot vendor reminding them when work will start*
- *An e-mail to managers on the other lines reminding them Line A will be down*

What type of virtual or office space is required?

- *None. Project documentation will reside in project manager's office*

What documentation might be useful or necessary during any kickoff communications?

- *Project plan*
- *Performance expectations printed for each resource*
- *Installation documentation (manuals and specs)*
- *PPA/POA printouts*
- *RAM for each task owner*
- *Additional PPA/POA worksheets*

What else?

- *NA*

What ground rules will be necessary for the entire team, or subgroups of the team, to operate efficiently?

- *Conflict resolved among individuals if possible (escalate to managers as last resort)*
- *All communication with vendors documented in e-mail, cc: to project manager*
- *Time and expenses must be logged on systems by 10 am the following day*
- *ePage project manager with any concerns—timing is critical*

KT

Monitor Project

Once work begins, monitoring or tracking is used to gather, appraise, and report data on actual project performance compared to the project plan (the baseline). Monitoring enables the team to assess use of resources and schedule, completion of deliverables, and to spot trends. It enables them to identify threats and opportunities, and report progress. It also allows them to estimate performance over the rest of the project, and provides the context for making decisions about how to modify the plan, if necessary.

To monitor effectively the team must understand what will be monitored, when and how often, how data will be assessed, and what reporting is required. Monitoring methods and systems should be selected and implemented prior to implementation, and roles and responsibilities determined. Specific, relevant indicators must be selected for each type of outcome. These measures or metrics need to take into account who will use them, how they will show progress, and what thresholds will be used to indicate problems. Resist the urge to "micro-monitor" unless it is required for quality control.

Several tools are available to assess monitoring data. In particular, Earned Value Analysis (EVA) can be used to evaluate current and future performance around cost, schedule, and work. Other tools include variance analysis and trend analysis.

Consider how monitoring information will be communicated. Determine who needs what data, and how it will be used, before selecting reporting formats and media. Reporting can occur regularly or informally. Informal monitoring and reporting may provide better real-time information, but may not allow for significant analysis. Accuracy in reporting is critical, even when reporting bad news. Reporting forms the basis of the project history and should contain a complete picture of progress.

Use the process questions in the workshop materials to assist in monitoring. Use the criteria below to plan monitoring and reporting requirements.

Monitor Project Criteria:

- ✓ Describes monitoring parameters
- ✓ Describes specific measures and standards
- ✓ Defines monitoring roles and responsibilities
- ✓ Outlines timing and frequency of monitoring
- ✓ Describes data appraisal tools and methods
- ✓ Describes reporting formats and frequency
- ✓ Defines reporting roles and responsibilities
- ✓ Compares cost, schedule, and work "actuals" to plan
- ✓ Provides measures of progress against objectives
- ✓ Identifies process for creating and archiving project history

For example…

A basic status report for our sample project might look like this:

Project Implementation
Status Report

Project Title	Install Robot	**Date**	23 March
Project Manager	Production Manager	**Page**	1

Project Statement: Install industrial robot by 31 March for $9,500

General Summary:

The project is on budget, but one day behind schedule. Installation of the robot was delayed one day because site visits took longer than expected. Additional resources will be added so that the installation can be completed in two days instead of the originally planned three. This will impact the budget, but maintain the schedule. The project team is exploring other opportunities to accelerate the installation using techniques seen in the site visits.

Financial Summary:

The project is currently on budget—however, additional resource costs incurred to get back on schedule after the delay in installation will increase the cost by $1,600 (2 days x 2 additional electricians x 8 hrs x $25/hr; 2 days x 2 additional maintenance technicians x 8 hrs x $25/hr). Other costs are expected to remain within budget.

Accomplishments Since Last Report:

1. Robot site visits yielded four specific installation opportunities not previously detected (pre-assembly prior to move, sensor calibration macros, pre-start-up "quick test," materials positioning data loaded prior to tests).
2. All operators completed training and passed certification exams.

Progress on Deliverables (Gantt Chart Optional):

Work Breakdown Structure	*Progress*
1. Project Start	Completed on schedule (3/17)
2. Project managed	Underway—42% complete
3. Robot received and unpacked	Completed on schedule (3/17), on budget ($60)
4. Operator training conducted	Completed on schedule (3/22), on budget ($2,790)
5. Robot installed and certified	(Summary)
5.1 Robot sites visited	Completed on schedule (3/21), on budget ($600)
5.2 Robot moved and installed	Underway—25% complete. Delayed start by one day—scheduled to start 3/23
5.3 Robot operation debugged	Scheduled to start 3/28*
5.4 Robot certified	Scheduled to start 3/29*
6. Pilot testing conducted	(Summary)
6.1 Test prep completed	Scheduled to start 3/30*
6.2 Tests completed	(Summary)
6.2.1 Tests run and evaluated	Scheduled to start 3/31*
6.2.2 Final adjustments completed	Scheduled to start 4/3*
7. Closeout/evaluation completed	(Summary)
8. Project Finish	Scheduled to start 4/4*

*Assumes no adjustments are made to put project back on schedule

Planned Accomplishments:

1. Resolve installation and testing issues/questions (ongoing
2. Return to planned schedule (using OT and/or installation opportunity "lessons learned" from site visits)
3. Manage cost issues (return to project budget if possible)

Problems/Issues/Resolution:

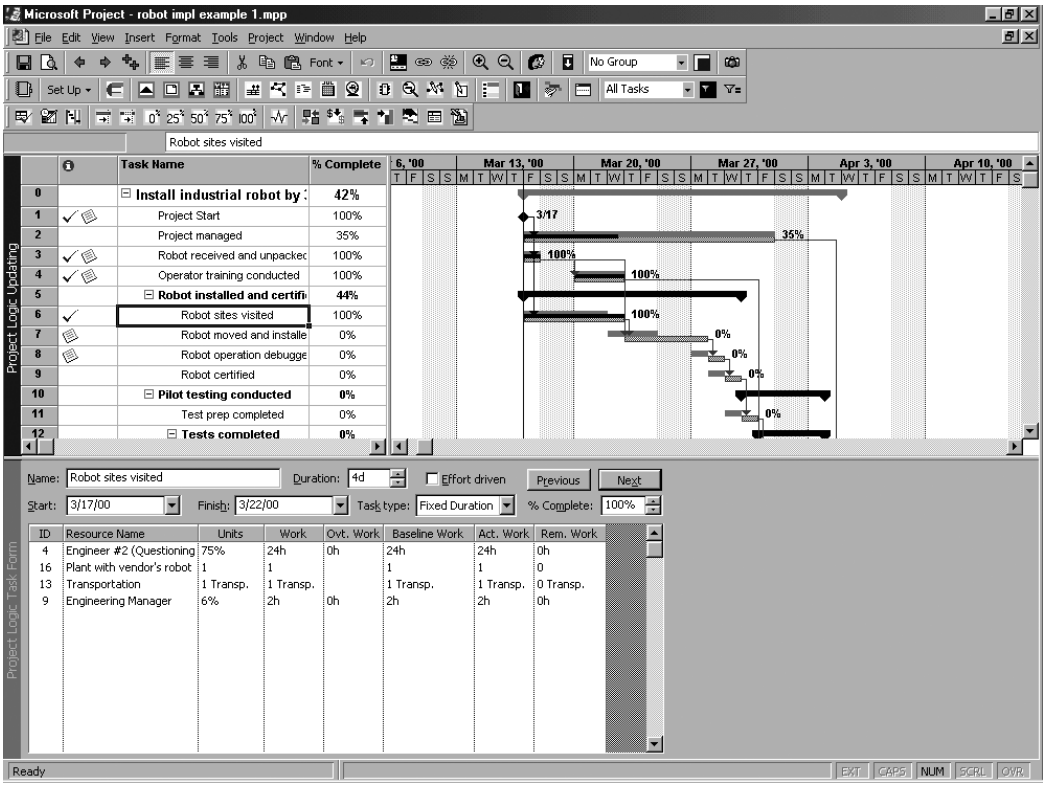
1. Schedule delay. Possible schedule and cost overruns. See proposed solutions above

For example…

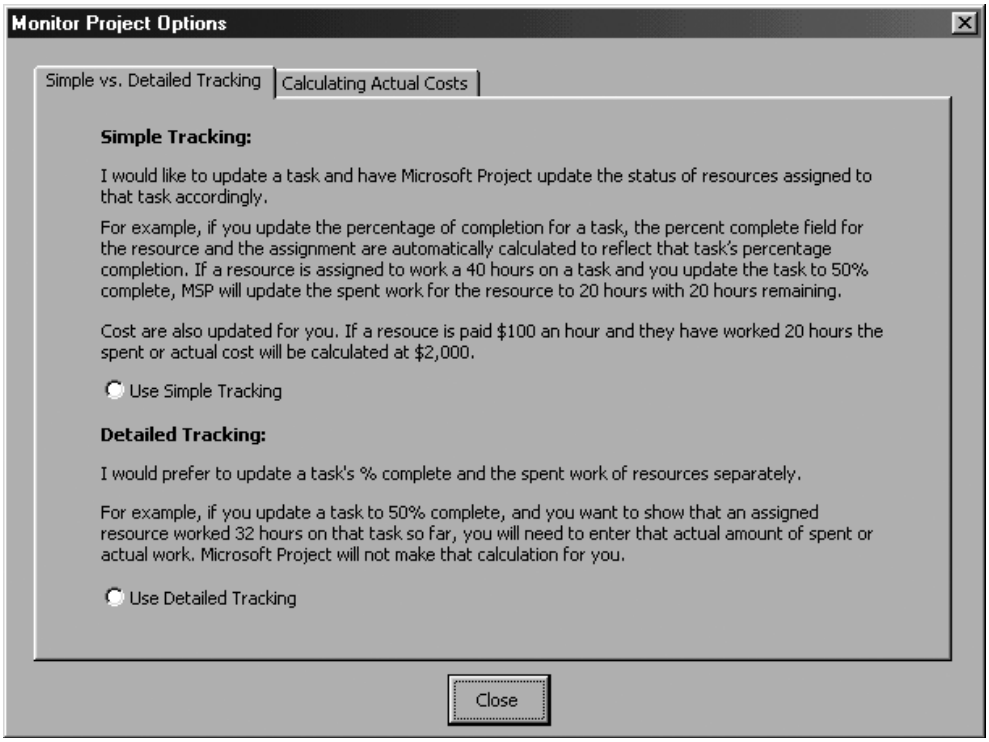
Monitor Project

Project Logic not only streamlines the process of tracking and updating project progress, it enables the user to better understand and utilize the Microsoft Project features that are available. Users can access these features through customized views and a special toolbar.

The updating view provided by Project Logic allows users to see progress in a Gantt view as well as to enter specific progress information. In the example below, the task “Robot sites visited” has taken longer than expected. The impact on the schedule can be seen in the upper window, where the baseline (black bar) is no longer the same as the plan (gray bar). If the project continues on its current schedule, it will not be completed on time.



For example…

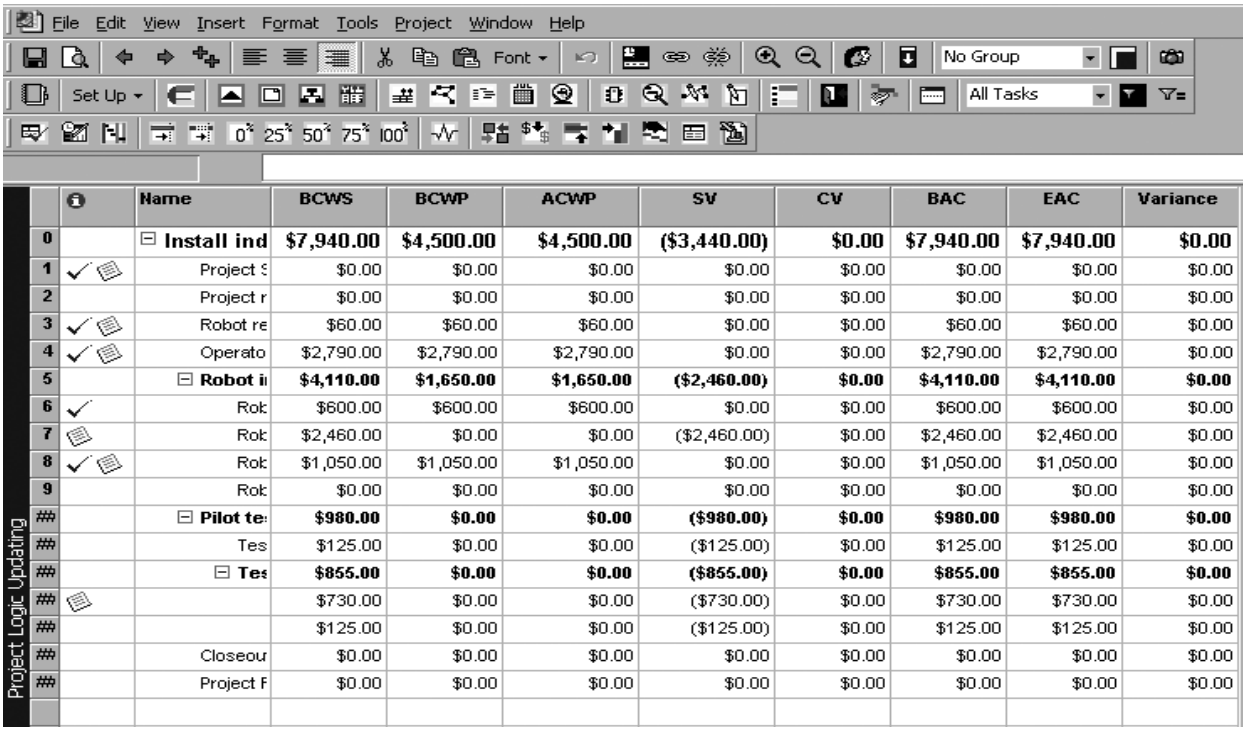


The toolbar facilitates choosing whether to let Microsoft Project update resource and schedule information when you update percent complete (simple tracking), or to enter detailed information about all aspects of project progress (detailed tracking). Project Logic explains the implications of this choice so users can apply the appropriate approach to their project. Other buttons on the Monitor Project toolbar give one-step access to features like inserting project start, current date, and status date lines on the Gantt chart; updating tasks as scheduled; rescheduling work; displaying common percent complete increments; and, seeing an overview of project statistics.

For example…

Also useful are buttons that allow users to see critical project performance data such as cost, schedule, and work (baseline, actual, and variances). These allow the user to quickly assess or communicate the status of individual tasks (or the overall project) for these key measures.

The view below (EVA view) shows a number of earned value indicators, including SV (Schedule Variance) and CV (Cost Variance). These numerical indicators of progress provide one way of looking at the impact of a delay in schedule—in terms of costs. The Project Logic toolbar provides a number of other options as well.

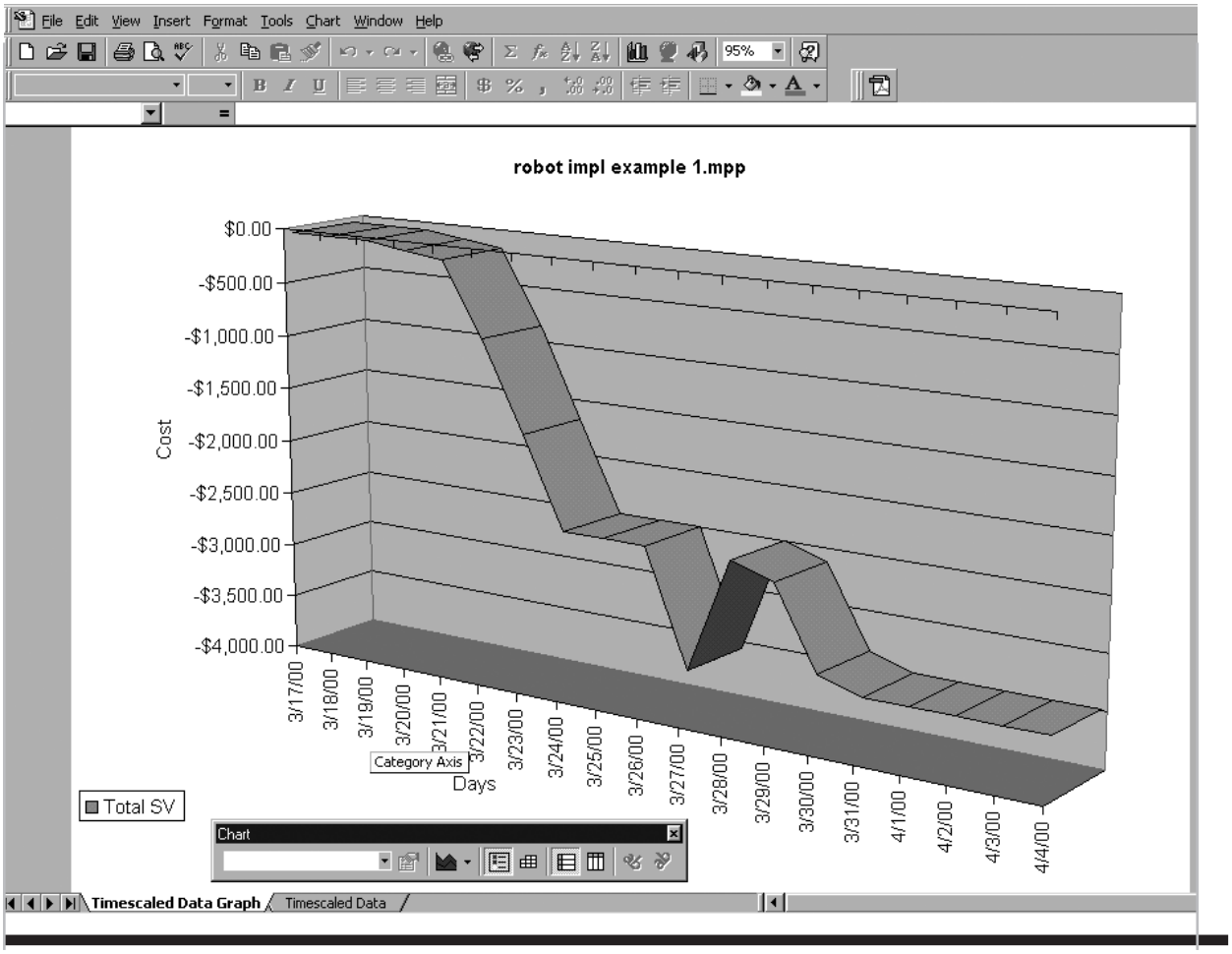


		Name	BCWS	BCWP	ACWP	SV	CV	BAC	EAC	Variance
0		**Install ind**	**$7,940.00**	**$4,500.00**	**$4,500.00**	**($3,440.00)**	**$0.00**	**$7,940.00**	**$7,940.00**	**$0.00**
1	✓	Project S	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
2		Project r	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
3	✓	Robot re	$60.00	$60.00	$60.00	$0.00	$0.00	$60.00	$60.00	$0.00
4	✓	Operato	$2,790.00	$2,790.00	$2,790.00	$0.00	$0.00	$2,790.00	$2,790.00	$0.00
5		**Robot i**	**$4,110.00**	**$1,650.00**	**$1,650.00**	**($2,460.00)**	**$0.00**	**$4,110.00**	**$4,110.00**	**$0.00**
6	✓	Rok	$600.00	$600.00	$600.00	$0.00	$0.00	$600.00	$600.00	$0.00
7		Rok	$2,460.00	$0.00	$0.00	($2,460.00)	$0.00	$2,460.00	$2,460.00	$0.00
8	✓	Rok	$1,050.00	$1,050.00	$1,050.00	$0.00	$0.00	$1,050.00	$1,050.00	$0.00
9		Rok	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
##		**Pilot te**	**$980.00**	**$0.00**	**$0.00**	**($980.00)**	**$0.00**	**$980.00**	**$980.00**	**$0.00**
##		Tes	$125.00	$0.00	$0.00	($125.00)	$0.00	$125.00	$125.00	$0.00
##		**Tes**	**$855.00**	**$0.00**	**$0.00**	**($855.00)**	**$0.00**	**$855.00**	**$855.00**	**$0.00**
##			$730.00	$0.00	$0.00	($730.00)	$0.00	$730.00	$730.00	$0.00
##			$125.00	$0.00	$0.00	($125.00)	$0.00	$125.00	$125.00	$0.00
##		Closeou	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
##		Project F	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00

Project Logic Updating

For example…

Project Logic and Microsoft Project also give users the ability to present raw data in graphic form using the Analyze Timescaled Data feature. Any of the data available in the variance or EVA views can be exported to Excel and printed out as a graph. This equips the project manager to communicate complex data in a form that allows for easy viewing and analysis. In the graph below, schedule variance is shown as a function of cost over time. (The project was on schedule until 3/23 when a delay occurred. If nothing is done, the project will remain significantly behind schedule.)



Modify Project

If monitoring indicates either a threat to project success or an opportunity to exceed expectations, it may be necessary to modify the project. It may also be necessary to modify the project if there are changes in objectives, resources, scope, or in the project's time frame.

Separate threats and opportunities into clearly actionable concerns so that specific responses can be developed. Each concern must be carefully analyzed so that the immediate impact, associated deadlines, and any future impact are well understood. Then it is possible to see if the concern is a problem, a choice, or a separate action.

Once threats and opportunities are clarified, identify the earliest point in the project where there is an impact. Using Project Definition and Project Planning steps, develop possible revisions to the plan to address the threat or opportunity. Make sure you understand the implications of changes to the entire plan, taking into consideration related work packages, resource considerations, and sequencing and scheduling issues. Model different impact scenarios to test changes before implementing them. Use change control processes and obtain authorizations when appropriate or required.

Avoid undue changes to the plan, especially those that would add significant cost or time without adding comparable value. Consider the original project objectives when assessing changes. If changes are warranted, carefully document and communicate them since this is an important part of the project history.

Use the process questions in the workshop materials to assist in Modifying the Project. Use the criteria below to prepare.

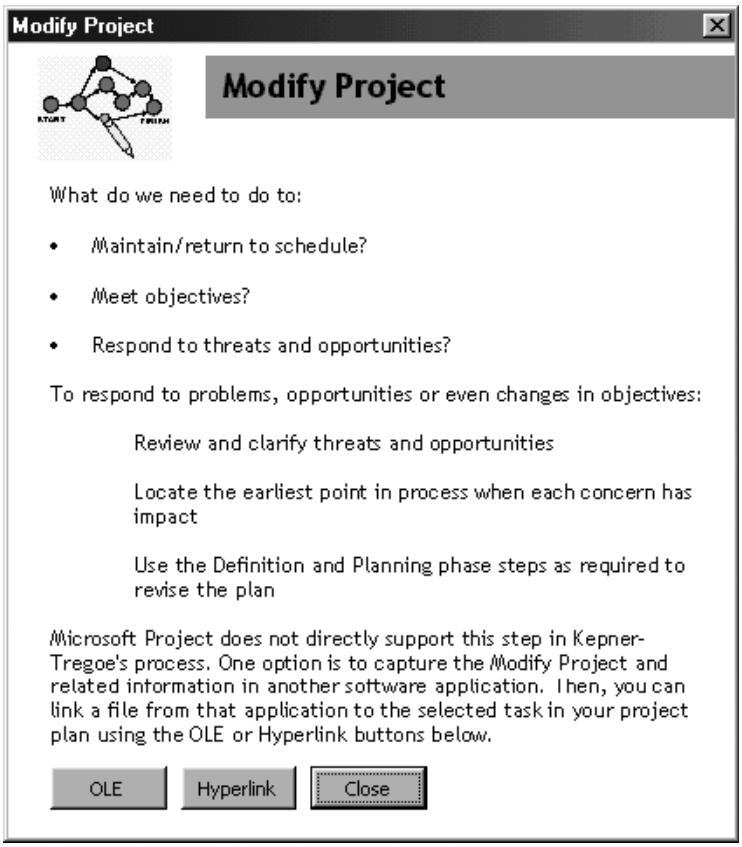
Modify Project Criteria:

- ✓ Identifies threats and opportunities surfaced in monitoring data
- ✓ Separates and clarifies threats and opportunities
- ✓ Sets relative priority of threats and opportunities
- ✓ Documents change options
- ✓ Documents impact of change options on the plan (re: costs, schedule, objectives)
- ✓ Documents use of change processes/protocols (as appropriate)
- ✓ Documents change communications

For example…

Modify Project

Project Logic provides the user with a dialog box to prompt thinking about Modify Project activities, and to link documentation around those activities to the project plan in the same manner as described for Project Statement and Objectives.

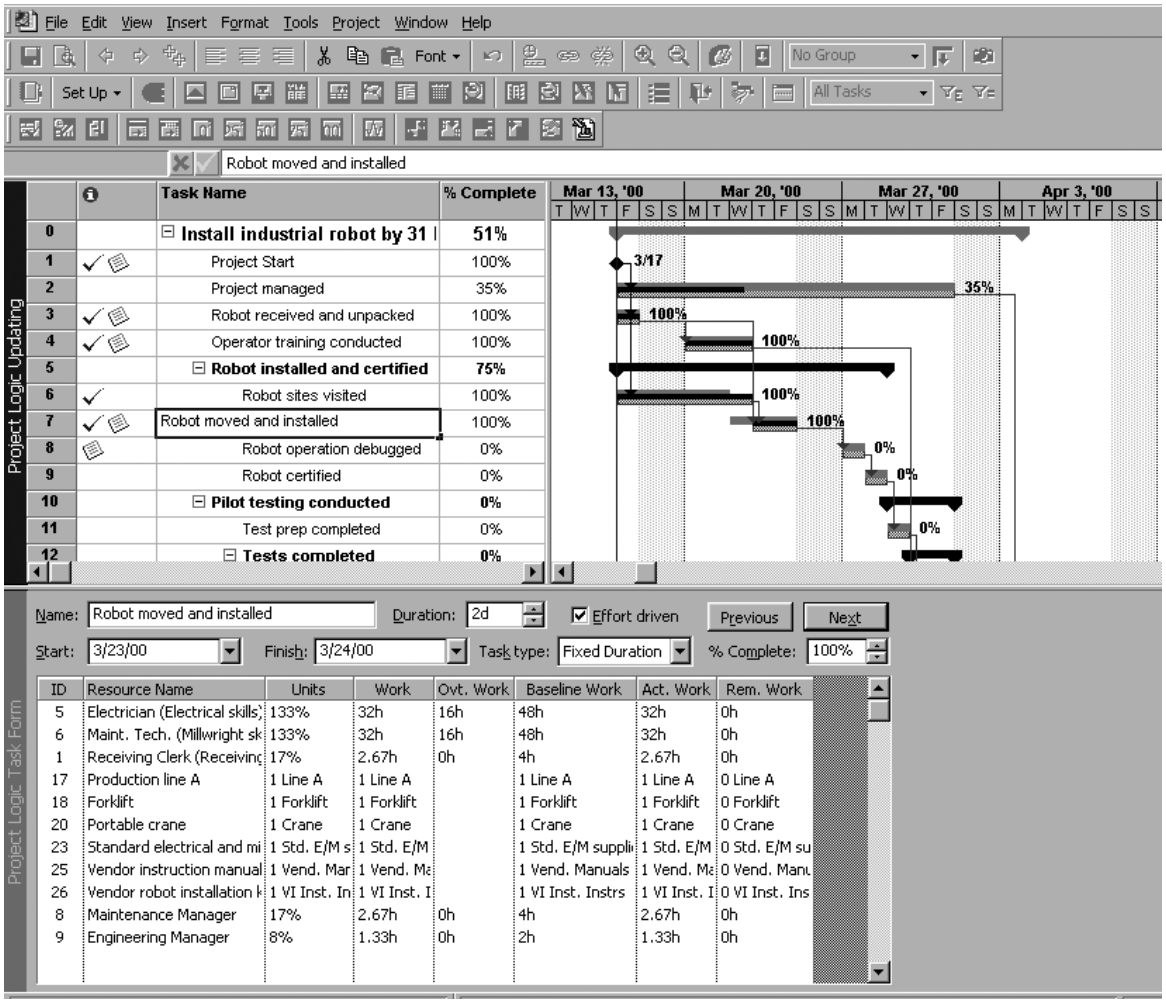


Modifying the project plan requires that you review the plan thoroughly (including objectives) and assess the impact of possible changes. Using Project Logic and Microsoft Project, this means going back to that point in the process of developing the plan where the first impact of a change shows up. Use the Process Walker toolbar and sub-toolbars to view relevant parts of the plan and test change scenarios.

For example, if the scope of a work package must change, this may require additional tasks in the WBS. It may also require that additional resources be defined and assigned. If tasks are added, sequence and schedule must be confirmed, critical path reviewed, and PPA/POA applied. New baseline information, either for the new tasks or for the entire project, must be captured. Additional information about performance expectations, responsibility assignments, and resource loading may be required. All of these must be considered, and can be accessed easily by using the Project Logic toolbars.

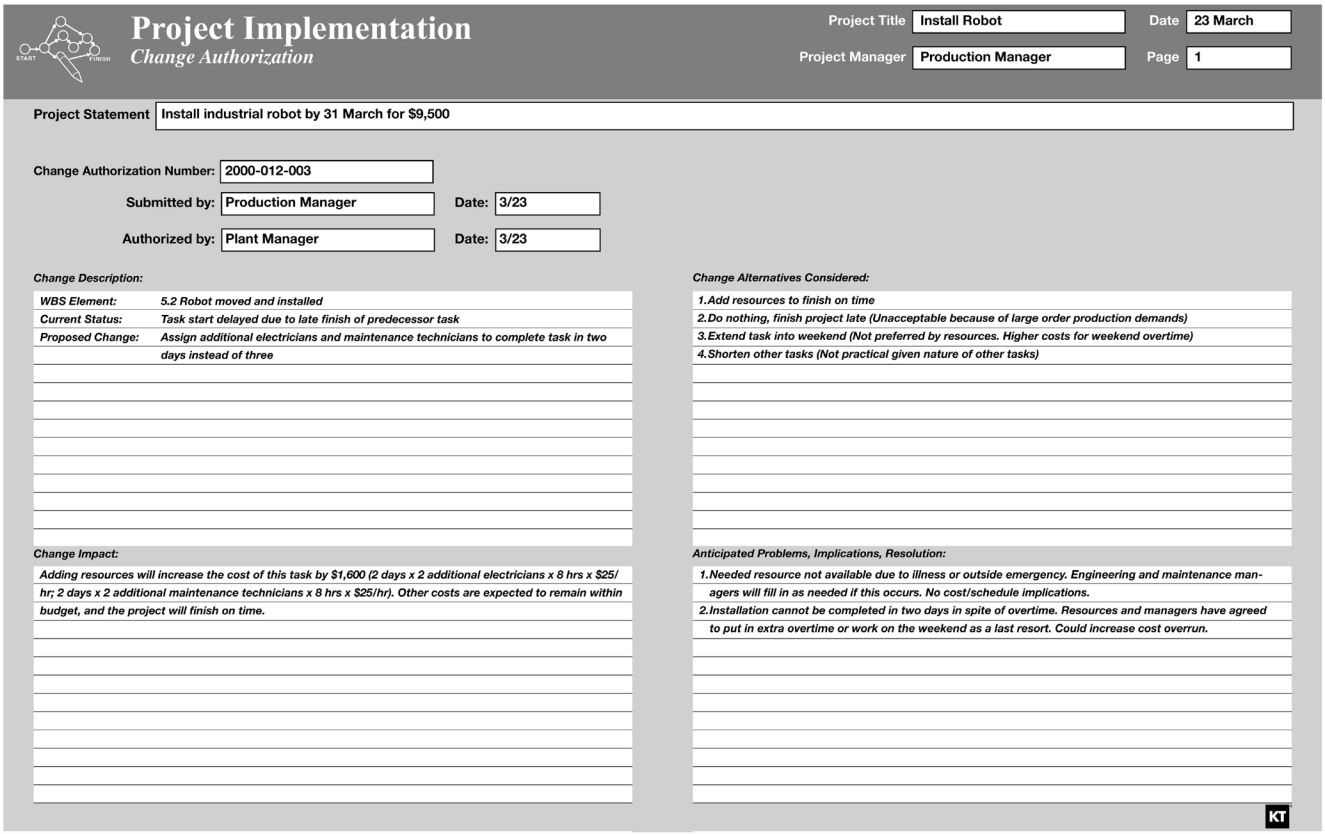
For example…

In the example below, the project manager is testing the cost and schedule implications of completing the robot installation in just two days using additional resources. He has chosen to save a test version of the project plan, and is working in the Updating View (Monitor Project sub-toolbar). He has decreased the duration and adjusted resource information. He will use other views to assess the cost impact, and will need to review the proposed change with resources and stakeholders prior to implementing the change.



For example…

A simple change report for our sample project might look like this:



Project Implementation
Change Authorization

Project Title: Install Robot | Date: 23 March
Project Manager: Production Manager | Page: 1

Project Statement: Install industrial robot by 31 March for $9,500

Change Authorization Number: 2000-012-003

Submitted by: Production Manager **Date:** 3/23

Authorized by: Plant Manager **Date:** 3/23

Change Description:

WBS Element:	*5.2 Robot moved and installed*
Current Status:	*Task start delayed due to late finish of predecessor task*
Proposed Change:	*Assign additional electricians and maintenance technicians to complete task in two days instead of three*

Change Alternatives Considered:

1. *Add resources to finish on time*
2. *Do nothing, finish project late (Unacceptable because of large order production demands)*
3. *Extend task into weekend (Not preferred by resources. Higher costs for weekend overtime)*
4. *Shorten other tasks (Not practical given nature of other tasks)*

Change Impact:

Adding resources will increase the cost of this task by $1,600 (2 days x 2 additional electricians x 8 hrs x $25/hr; 2 days x 2 additional maintenance technicians x 8 hrs x $25/hr). Other costs are expected to remain within budget, and the project will finish on time.

Anticipated Problems, Implications, Resolution:

1. *Needed resource not available due to illness or outside emergency. Engineering and maintenance managers will fill in as needed if this occurs. No cost/schedule implications.*
2. *Installation cannot be completed in two days in spite of overtime. Resources and managers have agreed to put in extra overtime or work on the weekend as a last resort. Could increase cost overrun.*

KT

Closeout and Evaluate

When all of the project work is completed, it is critical to shut down the project systems carefully and purposefully. This is referred to as closing out the project. It is equally important to document progress against objectives and capture lessons learned—to evaluate project results. This final part of Project Implementation also provides an opportunity to recognize the efforts of team members, stakeholders, customers, and others involved with the project.

To shut down the project, make sure that final reporting has been completed, that project accounts are closed, that resources have been released to work on other projects, and that unused resources are dealt with. Make sure any contingent actions or triggers set up for this project are disabled so they cannot be set in motion by mistake in the future and create unintended results.

Project results need to be evaluated from the perspective of customers, end users, and the project team. Focus on the extent to which objectives, measures, and standards were met. Project results should be formally documented, and appropriate reporting completed.

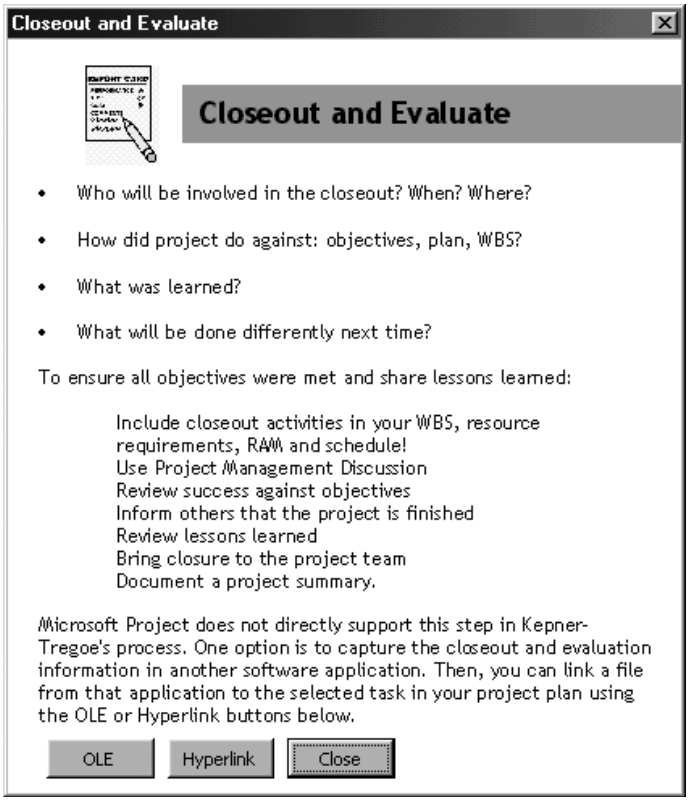
Use the process questions and checklist in the workshop materials to assist in Closing Out and Evaluating. Use the criteria below to plan your project closeout.

Closeout and Evaluate Criteria:

- ✓ Contains assessment of how well objectives were met
- ✓ Captures detailed descriptions of lessons learned
- ✓ Confirms project accounts were formally closed
- ✓ Confirms contingent actions and triggers were disabled
- ✓ Contains final cost, schedule, resource analysis
- ✓ Documents closeout and acknowledgment activities
- ✓ Has been logged into knowledge management system (if applicable)

For example…

Project Logic provides the user with a dialog box to prompt thinking about Closeout and Evaluate activities, and to link documentation around those activities to the project plan in the same manner as described for Project Statement and Objectives.



Once Closeout and Evaluate activities have been completed, log the project plan and all related project files into a knowledge management system (if appropriate). At a minimum, organize the files and back them up to protect against possible computer problems.

For example…

Closeout and Evaluate

A simple closeout report for our sample project might look like this:

Project Implementation

Closeout and Evaluate

Project Title Install Robot | **Date** 4 April

Project Manager Production Manager | **Page** 1

Project Statement Install industrial robot by 31 March for $9,500

Closeout and Evaluate Checklist

- ❑ Deliverables all completed
- ❑ Contingent actions disabled
- ❑ Capitalizing actions disabled
- ❑ Project accounts closed
- ❑ Team members recognized
- ❑ Owners, sponsors, vendors notified of close
- ❑ Results documented
- ❑ Documents archived

Attendance:

Production Manager, *Line A Lead Operator*, *Electrician*, *Maintenance Manager*, *Engineering Manager*, *Vendor Representative*

Summarize the Project

Did the project satisfy the project statement? If not, explain why.

Yes

How well were project objectives satisfied? How well were customers, sponsors, and end users satisfied with the project? If any objectives were not met, explain why.

- *No injuries have been reported during the first days of operation, but more time is needed to make a full evaluation. Operations say they feel good about the safer work environment*
- *Pilot tests indicate at least a ten percent increase in production for this function will be possible*
- *Work completed using the robot to date matches cycle time estimates within three percent*
- *Cost for this subproject were $1,800 greater than expected because of the need to use more resources to get back on schedule*
- *The robot was certified March 29, and we obtained all necessary permits/certificates*

How well did the project stay on schedule? If any major deliverables were early or late, explain why. How well did the team adjust to schedule changes?

- *Site visits took one extra day, and considerable cost/effort was required to complete installation on time. Everyone stepped up to make that happen*

How well were resources estimated overall? How did actual use of resources compare to the plan? How did changes in resource availability affect overall implementation?

- *Additional electricians and maintenance technicians had to be assigned to 5.2 Robot moved and installed because of delay in predecessor task. Task was completed on time but cost increased by $1,600.*

How well did the team work together? How were performance expectations set and maintained?

The team worked extremely well together, especially under trying circumstances. The same team should be considered for similar projects on the other lines. Team members should be included in planning for other line improvement projects since they gained valuable experience on this project.

How well were performance expectations satisfied during the project?

What, if any, changes were made to project definition after implementation started? Why?

No changes made.

What, if any, changes were made to the project plan after implementation started? Why?

No changes made.

How will you improve the next project you do?

- *Reconfirm site visit schedule*
- *Have back up sites selected and confirmed*
- *Schedule site visits further in advance of install*

KT