Crashing 12 January 2008

The Normal duration and costs for the Whitebread Project, as seen in Attachment 1.b.(1) are 48 weeks at $3,152,000, which is 3 weeks beyond the target duration and just slightly under target budget.

In seeking to reduce the Normal duration time, the Project Manager, Bjorn, analyzed the usefulness of "crashing" some of the project tasks. In order to do so, he created an Excel workbook (Attachment 1) and as well as MSProject files (Attachments 2-5) containing cost and time computations, along with depictions of normal and crashed network diagrams.

Bjorn's crash scenarios were conducted as follows and produced the following results:

Assumptions:
- 5-day workweek
- Cost/wk training on old vessel: $4000
- Cost/wk training on new vessel: $6000

Targets:
- Duration: 45 weeks
- Total Cost: $3.2M

Attached Files:
1. Excel - Network.xls
   a. "Overview" Tab:
      (1.) Normal & Crash times
      (2.) Normal & Crash costs
      (3.) Tasks eligible to be crashed
      (4.) Task selected for crash
      (5.) Tasks on Critical Path(s)
   b. "Costs" Tab:
      (1.) Table and Chart of Direct/Indirect/Total Costs
   c. "Normal" & "# Crash" Tabs:
      (1.) Task Duration/Cost/Slack
      (2.) Network Diagram
2-5. MS Project - Normal/Crashed.mpp's
   a. Gantt Charts, Network Diagrams

<u>Normal Duration:</u>
The network diagram shows that tasks on the critical path and eligible for crash consideration include A, B, R & S, having respective cost slopes of $60k, $200k, $240k, $150k; therefore, task A was selected for crashing.

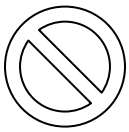
<u>Crash 1</u>:
Reducing task A by 1 day results in a total project duration of 47 days at a total cost of $3,172,000. As well it produces a second critical path along tasks M, Q, R, S & L.

<u>Crash 2</u>:
There are 2 tasks, R & S, that occur along both critical paths, whose crash costs are $240k and $150k, respectively; therefore task S is selected for crashing, resulting in a total project duration of 46 days at a total cost of $3,316,000. Choosing this option would put the project over budget, as well as beyond the target duration.

<u>Crash 3</u>:
As with the previous crash scenario, only tasks R & S are eligible for consideration, and task S would be further reduced by 1 day. While this scenario puts the project on schedule at 45 days, it is the most costly of all the options, costing a total of $3,460,000.

Analysis:

To assist Bjorn in deciding which crash scenario to choose (if any), he created a "Project Priority Matrix", as depicted below:

	Time	Performance	Cost
Constrain			
Enhance		+	
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In order to start the race on time, the project must be completed within 45 weeks; therefore, time is a constraint, as depicted on the priority matrix. While the Crash 3 scenario is $260k over budget, it is the only one that will ensure completion of the project in the required timeframe.

In order to ensure maximum performance the training times should be maximized. Crash scenarios 2 & 3 would require reducing sail training by 1 week per crash, which may result in poor performance during the race. Attempting to accelerate the training cycles may also result in crew fatigue, with attendant loss of morale and motivation.

Conclusion:

Although Crash cycle 3 will ensure completion of the project within the required 45-week period, doing so may be detrimental to the crew's performance, **assuming a 5-day work week, and will result in a cost overrun in excess of a quarter-million dollars**. While further escalating costs, it is recommended that Bjorn consult with Trygve to perform crew training on a 6-day schedule, thus ensuring that full test cycles can be completed. Should the excess costs be prohibitive, the options to reduce expenses would include renegotiating material costs and/or the indirect costs associated with operating the vessels during the training cycles.