REENGINEERING THE ACQUISITION PROCESS: *A QUANTITATIVE EXAMPLE OF ACQUISITION REFORM WORKING FOR THE AIR FORCE'S LAUNCH PROGRAMS SYSTEM PROGRAM OFFICE*

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The objective of the Air Force's Launch Programs System Program Office (SPO) was to develop and improve the acquisition process. Realizing that the cycle time for contract proposals was an area that needed reform, the Launch Programs SPO set out to reengineer the process. By developing a contractor and government integrated product team that worked together to define a new streamlined approach for making changes to existing contracts, the Launch Programs SPO has quantitatively demonstrated an average 63 percent cycle time reduction.

The mission of the Air Force's Launch Programs System Program Office (SPO) at Los Angeles Air Force Base, CA, which oversees the Titan, Delta, and Atlas launch vehicles, and the Centaur and Inertial Upper Stage boosters, is to acquire and sustain a reliable, affordable national space launch capability. Launch Programs is facing the challenges common to the Department of Defense (DoD):

The views expressed here are those of the authors and do not necessarily reflect those of the Air Force or Launch Programs SPO.

downsizing, turnover, and competition. To meet the goals outlined in the National Performance Review and Air Force Lightning Bolts, the Launch Programs system program office at the Air Force's Space and Missile Systems Center launched its own aggressive business process reengineering initiative to design and implement an improved and streamlined contract change process (CCP). The specific goals of the reengineering initiative were to streamline the contract change process; reduce process cycle time by at least 50 percent; and implement a comprehensive training program. To achieve those goals, the organization emphasized teamwork, accountability, project management, and empowerment.

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In the past, making modifications to contracts has been a long, tedious process; it is a problem that pervades every part of the government procurement system. The traditional process by which one puts an engineering change proposal (ECP) on contract has six broad areas, in which decisions, roles and responsibilities, and processes are conducted in a bureaucratic environment. First, the project officer develops a requirement without contractor input (Category 1: Requirement Development). The contracting officer develops and issues a request for proposal (RFP) in a vacuum, without contractor participation (Category 2: RFP Development). It is then the contractor's responsibility to understand and interpret the government's requirement and propose a meaningful solution that is acceptable to the government. The contractor accomplishes this without government assistance or insight (Category 3: Proposal Development). The result is numerous revised proposals and technical meetings to understand the government's requirements.

During the proposal review, the requirement is eventually defined and the contractor gains full knowledge of the government's requirement (Category 4: Proposal Review). Negotiations are usually adversarial (Category 5: Negotiations). Finally comes the time-consuming process of awarding the contract modification, with numerous burdensome regulations (Category 6: Contract Award). Everyone has agreed that this process is broken, but for Launch Programs, it was not until the introduction of the reengineered contract change process that the traditional process was eliminated and an integrated product team (IPT) developed a streamlined method for accomplishing a contract modification.

Several years ago the Delta II Launch Vehicle IPT assembled a team that proposed the innovative process now used by Launch Programs. The process basically "front-loads" a large portion of the work that used to be completed after the contractor submitted its proposal. The new process forces the government to work with the contractor as a team to develop the requirement for a contract change. The teamwork continues during the request for proposal (RFP) and proposal development process, and the team actually reaches consensus on the hours and materials required to complete the project before the proposal is submitted to the government. Thus, once the proposal is actually submitted to the government, it is known exactly what it will contain, and ultimately

the government dramatically reduces the turnaround time for putting an ECP on contract.

The Reengineered Contract Change Process

The contract change process that reduced cycle time for the Launch Programs system program office is organized into six stages: need validation; solution definition; proposal request, preparation, and review; proposal disposition; contract modification completion; and contract modification signature and distribution (Figure 1). The purpose and description of each stage is provided below, as well as the improvements gained through the reengineering effort.

Stage 1: Need Validation

The purpose of Stage 1 is to ensure that needs are validated as requirements using a defined, rigorous process based on program office priorities. This stage brings much greater discipline into the acquisition process (the reengineering team had found that previously there was no measurement of when or how a need was validated and became a requirement). By formalizing the process, senior management is aware of the need and the justification for the validation of that need. Each need is identified and evaluated using established criteria, then validated as a requirement by the affected program manager. The benefits of the need validation stage are that the new process provides structure and discipline to the formerly vague requirements validation process. It requires project officers to clearly define potential requirements and encourages the program manager to filter out extraneous changes.

Stage 2: Solution Definition

The purpose of Stage 2 is to identify the best solution based on the impact on technical capability, sustainability, cost, schedule, and risk to the program. Under this stage, the project team is formed and reviews the requirement, evaluates alternative solutions, and provides a recommended solution, which it then presents to the solution validation board in the form of a solution validation briefing. The team also develops a project schedule and begins preparing documentation, such as the statement of work (SOW), and draft Request For Proposal (RFP). The project team consists, at a minimum, of the project officer, buyer, budget analyst, contractor, and end military user. Depending on the scope and complexity of the project, the team may also include representatives from Configuration Management, Defense Contract Management Command (DCMC), Defense Contract Audit Agency (DCAA), legal counsel, and other agencies as necessary at this stage of the process.

"The contract change process that reduced cycle time for the Launch Programs system program office is organized into six stages..."

The benefits of this stage result from the combined expertise of the project team developing a coordinated, well-defined, and understood solution that best meets mission needs and prevents ambiguity in either the technical or contractual requirements. Establishing a project schedule early in the change process also keeps the

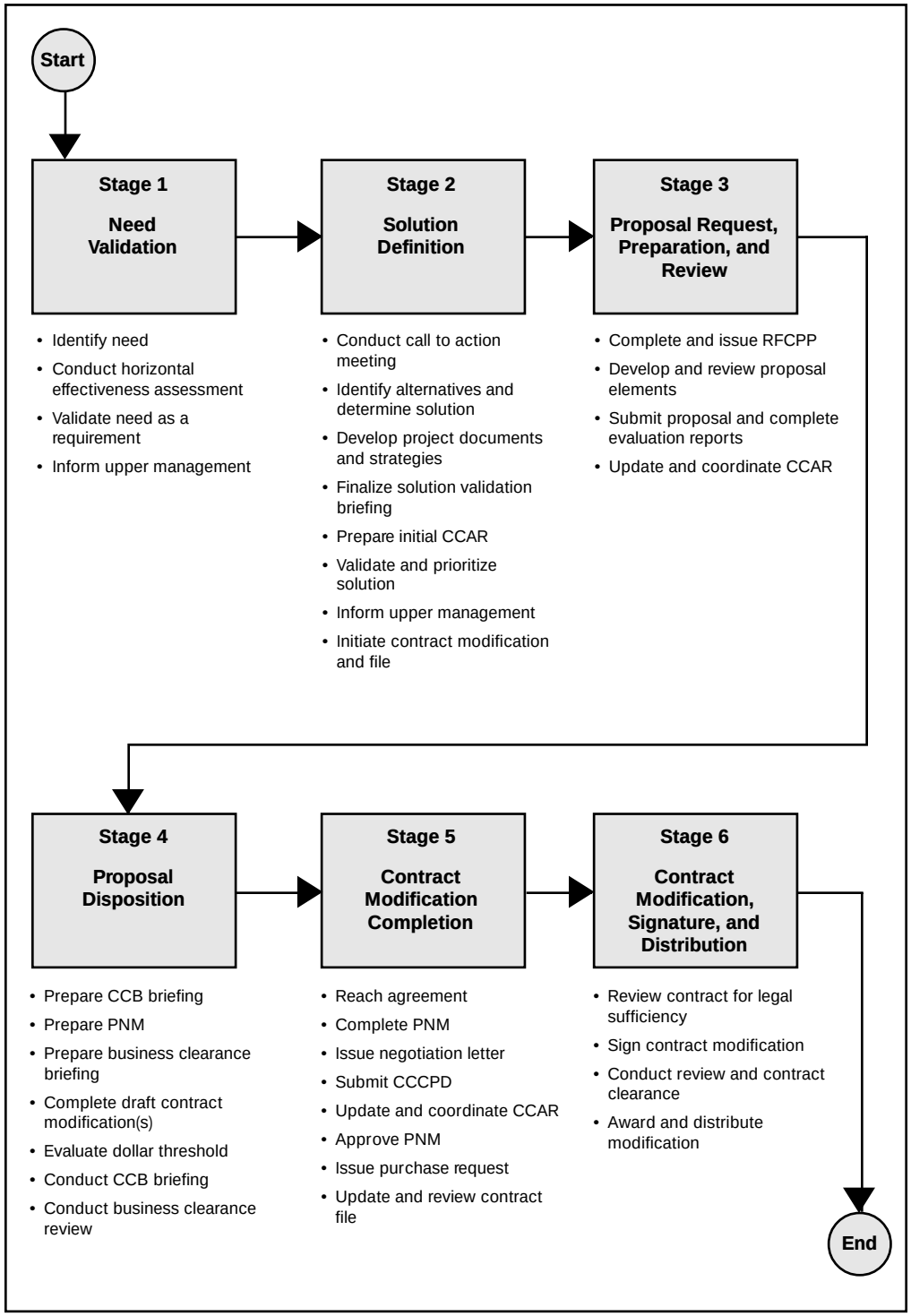


Figure 1. The Contract Change Process

team focused and helps avoid "lagging" requirements. Finally, communication of the requirement to stakeholders in the acquisition process allows the team members to prepare for and address potential budget, contracting, legal, or other issues immediately.

Stage 3: Proposal Request, Preparation, and Review

The purpose of Stage 3 is to issue the RFP, develop and incrementally review the technical and cost elements of the proposal with the prime contractor, and submit the final proposal. This stage is the most significant because it brings the government acquisition process closer to commercialization by working together with the contractor to develop a proposal. The 60-day waiting period, during which the contractor develops a proposal based on the RFP, is eliminated. The contractor does not work in a vacuum to develop his proposal but works with the government engineers to establish the labor skills and mixes and hours for the proposal. The contractor also works with the DCMC and DCAA on material and rates and factors for the proposal. Under this stage, a preliminary agreement is reached between the parties on the proposal before it is submitted: all are in agreement prior to submittal of the contractor's proposal.

As mentioned above, the project team issues the RFP, then works with the contractor to review the proposal incrementally as it is being developed. The proposal development process for Stage 3 has three reviews. The reviews are similar to a 30 percent, 60 percent, and 90 percent review done during certain types of acceptance testing. The initial review (when 30 percent of the estimated effort is completed for the proposal) ensures that the contractor understands the technical requirement and solution. The contractor then develops labor and material estimates. The majority of concurrent fact-finding is done in the middle review (when 60 percent of the estimated effort for the proposal is complete), in which the project team, including the contractor, reviews the contractor's basis of estimates (BOEs) to achieve consensus on labor hours, engineering category and skill level, materials, and subcontractor effort. The team reviews the BOEs to achieve consensus on all issues. The middle review is critical because at this stage of the process the team resolves the majority of the issues. Between the middle and final reviews, the team will resolve any remaining open issues. The final review (when 90 percent of the estimated effort for the proposal is complete) is to resolve any outstanding issues prior to proposal submittal.

> "This stage (3) is the most significant because it brings the government acquisition process closer to commercialization by working together with the contractor to develop a proposal."

Representatives from DCMC and DCAA also support reviews of the proposals over the $500,000 threshold, and begin the price analysis report and audit at this time. The audit is done incrementally and the final report is not the traditional thick package that the DCAA usually issues. For this process, the DCMC comes to an understanding with the contractor on the kinds and quantities of material before the proposal is submitted to the government. The auditor then issues

a memorandum to the buyer stating that he is in agreement with the kinds and quantities of material to be presented in the resulting proposal. By using this process, Launch Programs has eliminated the classic audit report and lead times associated with the submittal of an audit report.

Once consensus is achieved, the contractor submits the final proposal, which is then accepted as written by the government—another significant idea implemented by Launch Programs. In order to accept the proposal as submitted, the contractor must submit the proposal in accordance with the consensus building and audit agreements, and in accordance with the established memorandum of agreement (MOA) between the organizations.

"The MOA is an intergovernmental and quasi-organizational agreement between the DCMC, DCAA, the contractor, and the program office on the acquisition process."

The MOA is an intergovernmental and quasi-organizational agreement between the DCMC, DCAA, the contractor, and the program office on the acquisition process. It details the acquisition process, each organization's responsibilities to the acquisition process, and a rate agreement between the parties. The MOA is the road map for the reengineered process. The MOA is similar to a team charter. There is also a section in the MOA that discusses rates and factors. This section details the process when there are forward pricing rate agreements (FPRAs) and what must be accomplished in the case when there are no FPRAs. Profit rates are not specifically addressed in the MOA. What is agreed to between the parties in the MOA are the rates and factors that are entered in the DoD Form 1861 (weighted guidelines form). The MOA conforms to all acquisition regulations and is an innovative approach to resolving the rate and factor, and profit differences that usually occur between the parties. Therefore, if you have agreement on labor hours and material, and agreement on the rates and factors for labor and overheads, and agreement on rates and factors for determining profit, then when the contractor submits the proposal in accordance with these agreements, the government can accept the proposal as submitted by the contractor.

The benefits of this stage show that the team achieves consensus on the technical, cost, and contractual elements of the contractor's proposal through teamwork, understanding, and communication during the proposal preparation process. Without the openness and teamwork of working for the common good of both organizations, the incremental review of the proposal would not be a productive activity. The key to consensus building is understanding and communication of the proposal and the requirements, so that everyone understands the logical way to proceed to satisfy the requirements. By working together on the proposal, quality is built in so there are no costly revisions or fact-finding to understand the requirements or meaning of the proposal. The contractor's final proposal is then accepted as written, avoiding numerous revisions and added cycle time.

Stage 4: Proposal Disposition

The purpose of Stage 4 is to prepare for and conduct the configuration control board (CCB) and business clearance. In

this stage, the project officer leads the team in concurrent preparation of the price negotiation memorandum (PNM), CCB briefing package, and business clearance briefing. This step combines both briefings. The benefit of combining CCB and business clearance eliminates another coordination step in the contract change process, saving time and using existing forums most efficiently.

Stage 5: Contract Modification Completion

Stage 5 is to ensure that a final agreement has been reached between the contractor and the project team, and to put that agreement is in writing. Once the proposal has been approved through CCB and business clearance, the contractor and buyer confirm the agreement and the contractor forwards the confirmation of negotiations letter and certification of current cost or pricing data (CCCPD).

The benefits from this stage show there are few changes required because the majority of the effort and coordination has been completed in earlier stages. Traditional protracted negotiations are noticeably absent.

Stage 6: Contract Modification Signature and Distribution

The purpose of Stage 6 is to review the contract modification for legal sufficiency and compliance with policies and regulations, and to ensure that the modification file is complete and accurate. In this stage the contract clearance authority obtains the contractor's signature on the modification, and the procuring contracting officer awards the modification. The buyer then distributes the completed modification to the affected parties. There are few changes in this stage of the process, which contributes to streamlining efforts. It should be noted that coordination earlier in the process would expedite processing of the modification.

The benefits of this stage show that having the legal office review the modification file for legal sufficiency prior to obtaining contractor's signature saves valuable transmittal time in the event the lawyer finds a discrepancy. Furthermore, the legal office has already been engaged during Stage 3 (proposal preparation), and coordinated on any special contract provisions or other legally sensitive issues to make this final review pro forma. Distribution of the modification has not changed under this process. The contract change process is complete and ends after this activity.

"The objective of the Launch Programs SPO was to develop and improve the acquisition process."

Validation of Launch Program's Reengineering Goals

The reengineered process defined specific improvement areas targeted by the Launch Programs SPO director. The goal of the SPO was to make business management a part of Launch Programs culture.

The objective of the Launch Programs SPO was to develop and improve the acquisition process. The reengineered process has improved the cycle times of the acquisition process; the following analysis validates the results of using this streamlined method.

Launch Programs correctly anticipated the need for more control in the requirements process, and enhanced controls were put in place in the reengineered process. These new controls reduced upfront cycle times for the contract change process.

The objectives of the reengineering effort were achieved and implemented throughout the Launch Programs SPO. The acquisition process was streamlined and it has reduced process cycle times. The following analysis will look at the achievements of the Launch Programs SPO using a program evaluation review technique (PERT) analysis to validate the hypothesis.

"The acquisition process was streamlined and it has reduced process cycle times."

HYPOTHESIS

This process has been used since 1995 in the Delta II IPT, when it was initially proposed to reduce cycle times by 50 percent. The hypothesis for this analysis is whether the contract change process reduces cycle times by 50 percent or more. The antithesis is that the contract change process does not reduce cycle times by at least 50 percent.

To test this hypothesis, a PERT analysis was used to determine the critical path and average length of time to complete engineering change proposals using the traditional and reengineered process, and to determine the average cycle time reduction that the reengineered process has actually achieved.

The Delta II IPT processes five to seven ECPs per year. A random sample of five ECPs that were completed with the traditional process and five ECPs that were completed using the new reengineered process were chosen for this analysis. A government tracking system (acquisition management information system [AMIS]) was used to track the progress of each ECP. A copy of the AMIS tracking form is included in each ECP file. The AMIS tracking forms used in this analysis are included in the Appendix. The printouts list very specifically the various milestones that must be completed for each ECP. Since AMIS uses the traditional government tracking system, there is a variance between milestones in the two processes. The milestones used for this analysis are:

- *Requirement identified (RI).* This is the date the government identified the need for a change to an existing contract. This date is the same for both processes.

- *Acquisition strategy panel completion (ST).* This is the activity that determines whether the change is in scope or out of scope to the existing contract. For the reengineered process this is the date of the completion of Stage 2.

- *Solicitation issued (SI).* This is the date when the government requests a proposal from the contractor (request for proposal, RFP). This date is the same for both processes.

- *Proposal/bids received (PR).* On this date the contractor submits the proposal to the government. This date is the same for both processes.

- *Price evaluation/technical evaluation/ audit completion (PT).* This is the date (the same for both processes) when all three of these activities have been completed by government personnel.

- *Negotiations completion(NC).* The date negotiations are complete between the parties. Under the reengineered process this is the date of final consensus under Stage 3.

- *Contract file completion (CF).* This is the date when the file is complete and ready for management review. This date is the same for both processes.

- *Contract writing completion(CW).* On this date (the same for both processes) the file has been reviewed and is ready for the contractor's signature.

- *Contractor signed (KS).* This date, the same for both processes, is when the contractor signed the ECP.

- *Legal review completion (JR).* This is the final review of the modification by a government contracts lawyer for legal sufficiency. This is required for modifications over $500,000. This date is the same for both processes.

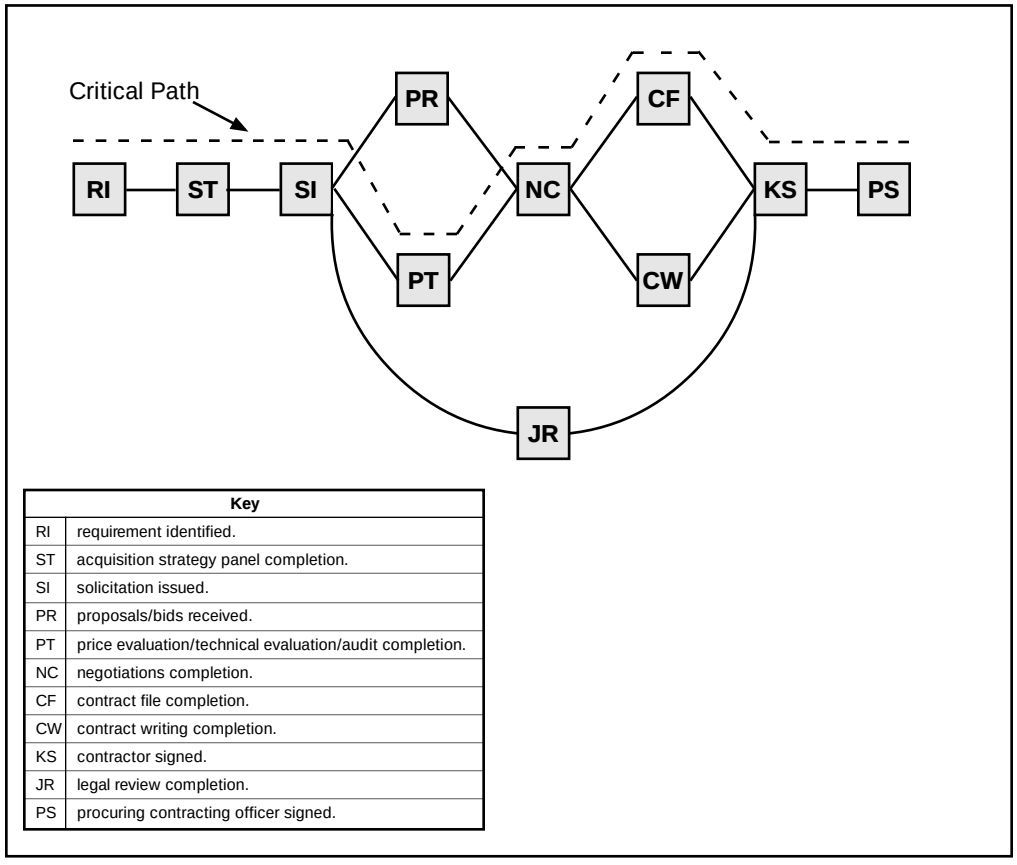
- *Procurement contracting officer signed (PS).* This date, the same for both processes, is when the contracting officer for the government approved the change and obligated the money.

On the AMIS tracking form (see Appendix A), next to each milestone is the scheduled, forecast, and actual date that the milestone was completed for the ECP. The actual date is the one used to calculate the amount of time it took to complete each task. All the dates from the AMIS tracking forms were converted into numerical data (how many weeks it took to complete each activity) and recorded on a spreadsheet (Appendix B). The result was a spreadsheet that calculated the time for each activity per ECP, the total time per ECP, and the average time to complete each of the five ECPs.

The spreadsheet was further expanded by performing the PERT analysis as described in *Quantitative Approaches to Management* (Levine, Rubin, Stinson, and Gardner , 1992). Spreadsheet Column T(1) is the streamlined approach, Column T(2) is the average time for ECPs, and Column T(3) is the worst case for each activity. From these T values it is possible to calculate the expected time and the standard deviation for each task.

"The result was a spreadsheet that calculated the time for each activity per ECP, the total time per ECP, and the average time to complete each of the five ECPs."

The next step of the PERT analysis was to make a "forward pass" through the network to determine the earliest start and finish times for each activity. A "backward pass" was then completed through the network to find the latest start and finish times for each activity. By comparing these passes through the network, the amount of slack time for each activity can be determined. Any activities that have no slack time are on the critical path. The network diagrams for each process were drawn using the Activity-on-the-Node (A-O-N) method (Figure 2).



Key	
RI	requirement identified.
ST	acquisition strategy panel completion.
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PR	proposals/bids received.
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Figure 2. The Old ECP Process

The variances for the system deal with the following observations about the AMIS tracking form: various activities occur in a serial fashion on the form; however, there are several areas in the process where work can be completed in parallel. Any time an activity was completed on the same day as the preceding activity, a time of zero was entered for time of completion of that activity. The serial nature of events on the AMIS tracking form only considers the traditional acquisition process, but there were several activities under the reengineered process that occurred out of the traditional sequences. These variations were observed in this analysis and considered in the findings presented for the reduction in cycle time.

It should also be noted that there are no times listed for "requirements identified," as this is the starting point of the network and by default it is on the critical path. The AMIS form tracks the contracting activities from this point. For RI there is no validated starting point and in our research we could not find any cycle times related to the beginning of any procurement activity in the traditional acquisition process studied for this paper. In the

reengineered process, in theory, you can track the RI time from the beginning of the Stage 1 briefing to the conclusion of the Stage 2 briefing as the RI time for the reengineered process. Since the reengineered process is not adapted to AMIS, there is no data for the specific stages in the reengineering process. Therefore, this analysis is constrained by the traditional process of project scheduling for ECPs.

Critical Paths

Traditional Process

The activities necessary to complete ECPs using the traditional acquisition process were more serialized and required more milestones to be completed before awarding a modification. The serial process resulted in much higher average cycle times. The average cycle time under the traditional process was 46.5 weeks for an ECP with an average value of $700,000. Table 1 below shows the results of the PERT analysis (Appendix B).

The numerical analysis for the traditional process found two activities on the critical path that took a very long time to complete. The PT and NC activities took approximately 11 weeks and 12 weeks to complete, respectively. These two activities combined took more time to complete than the average engineering change proposal under the reengineered process.

It is also important to note that several of the activities had a high standard deviation associated with the degree of uncertainty in the calculated expected time to completion values. The high standard deviations reflect the spread of the low and high values in the columns T(1) and T(3).

The lack of consistency, lack of teamwork, and the potential adversarial relationships in the traditional process may lead to the large difference between the expected and required time to complete some activities. The unquantifiable

Table 1. Results of PERT Analysis of Old ECP Process[a]

Activity	Average Time	Expected Time	Standard Deviation	Slack Time	Critical Path?
RI	—	—	—	—	Y
ST	3.51	5.1	2.76	0.0	Y
SI	0.83	1.1	0.52	0.0	Y
PR	6.46	7.0	1.31	4.0	
PT	11.11	11.0	3.31	0.0	Y
NC	12.31	12.2	1.76	0.0	Y
CF	3.51	3.7	0.98	0.0	Y
CW	0.26	0.3	0.12	3.4	
KS	1.09	1.3	0.50	0.0	Y
JR	7.20	9.9	4.69	17.0	
PS	0.20	0.2	0.07	0.0	Y
Total time	46.48				
Value (dollars)	690,484				

[a] All times in weeks.

relationships between the parties directly affect the quantitative analysis of the critical path and leads one to believe that a better relationship may reduce cycle times. Since this cannot be rationally defined in numerical terms, the analysis drew a conclusion from existing evidence that external factors may affect the standard deviation.

Reengineered Process

The reengineered process reveals that it requires more of the work to be completed up front and many of the milestones can be completed by working activities in parallel. It can be concluded that the ability to work activities in parallel and front-loading the process adds value to the reengineered process and reduces the average cycle times. The average time to complete an ECP under the reengineered process was 17 weeks. The average value of the ECPs that participated in the reengineered process was $4.4 million. This reduction in cycle time represents, approximately, a 63 percent reduction in time required to complete ECPs. It also demonstrates that high-value ECPs can be processed quickly and efficiently in the reengineered process. The ECPs analyzed for the reengineered process are on average 6.5 times greater in value than those ECPs analyzed in the traditional process. This is important to note because typically the larger the value of the ECP, the greater the amount of review it receives in the process. Without looking at an equally high-value ECP in the traditional process it is hard to conclude that the higher value ECPs impact the analysis. What this may show is that regardless of ECP value, the reengineered process streamlines the contract change process.

The numerical analysis of the reengineered process network diagram reveals that there is one specific task on the critical path that took a long time to complete (Table 2). The SI activity took an average

Table 2. Results of PERT Analysis of New ECP Process[a]

Activity	Average Time	Expected Time	Standard Deviation	Slack Time	Critical Path?
RI	—	—	—	—	Y
ST	2.03	2.8	1.43	8.2	
SI	10.03	11.0	4.21	0.0	Y
PR	1.86	1.8	0.45	0.0	Y
PT	0.57	0.6	0.22	0.2	
NC	0.69	0.8	0.31	0.0	Y
CF	0.66	0.7	0.24	0.0	Y
CW	0.14	0.2	0.12	0.6	
KS	0.57	0.8	0.38	0.0	Y
JR	0.31	0.5	0.07	2.8	
PS	0.26	0.2	0.07	0.0	Y
Total time	17.12				
Value (dollars)	4,443,192				

[a] All times in weeks.

of 10 weeks to complete with the reengineered process. Further analysis shows that one ECP may be the cause for this long cycle time. The SI activity for ECP number 3 required 25 weeks to complete. This ECP was delayed due to higher priority contract actions and may not be representative of the true streamlining abilities of the reengineering process. Examination of the raw data indicates that after work was resumed on the ECP it was completed within normal cycle times for the remaining activities in the reengineered process.

It is also important to note that several of the new process activities had a high standard deviation associated with the degree of uncertainty in the calculated expected time to completion values. The high standard deviations reflect the spread of the low and high values in the columns T(1) and T(3) (Appendix B). The long acquisition strategy panel completion activity of more than 8 weeks for ECP number 3 caused the high standard deviation for that activity. There were scope issues that delayed the change from progressing within the streamlined parameters. The long SI activity for ECP number 3 also contributed to the high standard deviation in the reengineered process for this activity.

From the analysis of the new process (Figure 3) it can be seen that external factors also influence the progression of cycle

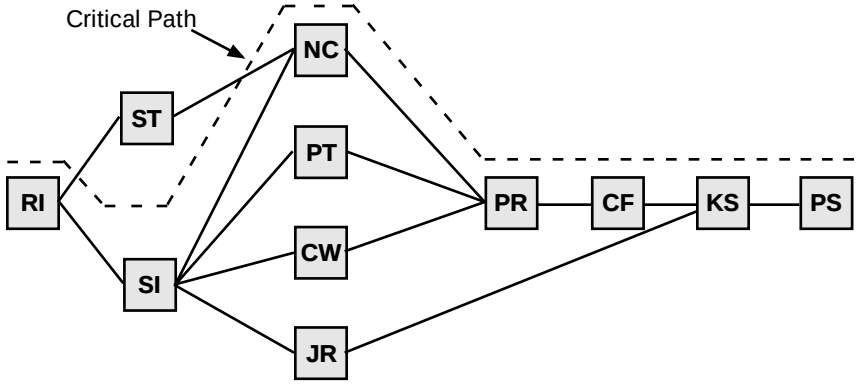

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Figure 3. The New ECP Process

times. These real world examples show that regardless of the best efforts on the part of the Delta II IPT to streamline the contract change process, there is a range of values that can be considered acceptable for meeting cycle times. Prior to this analysis, these values were theoretical to the program office and it was not until this PERT analysis of cycle times was completed that these theoretical cycle time limits could be adopted as being within an acceptable range for the Launch Programs SPO's goal to reduce cycle times. This PERT analysis was also very useful because it was able to quantify an actual cycle time reduction of the reengineered process.

"...we have determined that the activity that takes the longest amount of time to complete under the reengineered process is the issuance of the solicitation."

CONCLUSIONS

The PERT analysis illustrates three important points about the reengineering process. First, the 63 percent reduction in cycle times actually exceeds the initial goals set forth by the reengineering process team. The PERT analysis verifies the results of reengineering and proves that the new process contributes greatly to the efficiency of the acquisition process. The significant reduction in cycle time also verifies that the reengineered process is not the traditional process reordered to be more effective.

The analysis also provides insight into the formal identification of the critical path for each process. The identification of the critical path for the traditional process was important as a comparative study on how reengineering was not constrained by the traditional critical path for cycle time improvements. Understanding the critical paths was significant in streamlining the acquisition process, and understanding the comparative basis of each process is instructive for the cultural change required within the program office.

The final point derived from the analysis is the value of quantifying the activity time on the critical path for examination of the improvements by activities rather than at the aggregate level. This analysis justifies the continued use of the reengineering process for Launch Programs and other acquisition organizations.

As a result, we have determined that the activity that takes the longest amount of time to complete under the reengineered process is the issuance of the solicitation. Consequently, management should focus on this activity to achieve further improvement. This is within the control of the government. The other activity that requires management attention, receiving a proposal from the contractor, is not within the government's control; therefore it is incumbent upon contractors to take the initiative to streamline their own internal processes to compliment the government processes in streamlining the acquisition process.

The comparative analysis also found that the activities that take the longest in each process are different. One would think that by applying efficiencies to the traditional process one would be streamlining the contract change process and thereby meeting cycle time goals. This was not the case. The traditional process

has PT and NC as its longest activities. The goal of the reengineered process was to front-load the process to end the lengthy technical evaluation and negotiation phases. This was achieved, but it seems that efficiencies were lost in SI and PR activities under the reengineered process. Again, this can be explained by the front-loading structure of the process. By working with the contractor up front to have a proposal that can be accepted as submitted to eliminate traditional negotiations, the consensus-building process extended the cycle time to compensate for such efficiency.

If you discard the traditional process and work within the reengineering process, the spreadsheet Column T(1) (Appendix B) times are being met in most cases, and therefore the comparison is not equivalent to improving the efficiencies of the traditional process. The goal of reengineering is to make organizations "think out of the box" and discard the traditional process for the new reengineered process. This is what the Launch Programs SPO accepted in streamlining the acquisition process.

The two keys to consistently implementing the reengineering process over many programs are teamwork and consensus building. A team methodology better defines and validates the need as a requirement. It brings structure up front in the process and allows for better communication between organizations.

Consensus building combines proposal building and evaluation to obtain consensus prior to the formal submission of the proposal. The incremental reviews allow the team to work out problems and reach a common understanding of the work being performed and the tasks needed to complete the effort. Launch Programs has also made improvements in the CCB and business clearance subprocesses to complement changes in the requirements definition and contract consensus subprocesses. Finally, the acquisition process has been standardized over all Launch Program IPTs to shorten the acquisition process in duration and increase workplace efficiency.

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The results of the PERT analysis show the critical path necessary to streamline the acquisition process. The analysis identifies activities with long cycle times to management and thus shows which activities require attention. Finally, the analysis validates the hypothesis that the reengineering process has reduced cycle times by at least 50 percent. The findings indicate that cycle times have been reduced by an average of 63 percent and with added efficiencies it is believed that Launch Programs could achieve a 70 percent cycle-time reduction.

Lessons Learned

The analysis laid out here shows that:

- It is important to empower people at lower levels.
- It is vital to remove unnecessary and non-value-added policies, rules, and regulations.
- Development of a low value checks and balances system streamlines cycle times.

The need to empower people at lower levels is critical in today's downsizing environment. The reengineered IPT recognized this tenet and successfully integrated it into the process. The process empowered people at lower levels by giving the project officer the responsibility for the process. He or she is empowered to define the requirements, gain acceptance of the requirements from senior management, agree to labor and material, and gain approval for the contract change. The working-level IPT is empowered to seek agreement on terms and conditions.

"The need to empower people at lower levels is critical in today's downsizing environment."

Another valuable lesson is the importance of removing non-value-added policies, rules, and regulations. While the reengineered process sought deviations, review by senior management interpreted the critical ideas of:

- only one price negotiation memorandum;
- one clearance review approval;
- negotiated rates and factors for profit guidelines; and
- building consensus without the authority to negotiate, as legally sufficient and within the intent of existing regulatory and statutory requirements.

The reengineered process has benefited from acquisition reform and allowed the visionaries in the government to implement reforms with positive and innovative results.

The final lesson learned from the analysis is that in order to streamline the acquisition process, there must be a low-value check and balance system. The reengineered process initiated a "validation of the requirement" briefing to adequately define the requirement for the program. Another check was the single clearance approval briefing prior to pursuing contract award. This review is similar to an "end of runway check," to review that everything is in order and makes sense before approving the change and issuing a modification. This is the contract approval authority's final check before the requirement is incorporated into the contract. Other low-level checks and balances include the contractor's participation in the CCB briefing, contractor's participation in the RFP review process, the government's participation in the contractor's proposal review process, and the IPT's systematic reviews to ensure consistency and completeness to the process. These checks and balances were lacking in the traditional process, which sought one definitive briefing for each step. The key use of teamwork is an invaluable asset to the reengineering process when developing the necessary checks and balances to streamline cycle times.

In terms of program effort to accomplish a contract modification, additional program effort was saved by the fact that the reengineered process focuses on quality, the first time, for deliverables. This first-time quality effort for the RFP and proposal eliminates revised RFPs to the contractor and costly proposal revisions. Defining the requirement in the IPT and

the single focus on a firm requirement allows all participants to fully understand the scope of the acquisition. This saves effort in costly reinterpretation of the request for a proposal and rewrites of contract documents. The program office and the contractor agree to the requirements and the solution. The IPT is then tasked to complete a contract modification to implement the solution. There is a significant amount of effort saved when there is a firm requirement. The reengineered process has saved the program additional effort and added value to the overall acquisition process through these lessons learned by the Delta II IPT.

The reengineered process is a success—but this success is not without risks. One risk—possible perceptions of increased profit to the contractor from agreed-to rates in the memorandum of agreement—was mitigated by the fact that the reverse actually occurred. The contractor needed to hold many briefings with corporate authorities to show the process benefits. Another perceived risk is the concept of empowering people at the lowest level to make decisions for the program. However, the delegation of responsibility is a necessity with the downsizing of government and this risk is mitigated by the formal briefings given to approval authorities.

In today's downsizing and increasingly competitive environment, both inside and outside the government, these projects highlight the significant accomplishments of individuals and organizations, and their commitment to acquisition reform and the idea of doing business faster, cheaper, and better.

Robert Graham is a senior contract negotiator with the Delta II Launch Program Office at Los Angeles Air Force Base, and is a Certified Professional Contracts Manager (CPCM) with the Air Force. He received a bachelor's degree from Whittier College and a master's degree in public administration from the University of Southern California. He is a graduate of the Air Command and Staff College and the Naval War College. Previous experience includes positions in Air Force Launch Programs, the Navy's Space and Naval Warfare Systems Command, and China Lake Naval Warfare Center. (E-mail address: RobertG.Graham@losangeles.af.mil)

Capt Eric Hoffman, U.S. Air Force, earned a B.S. degree in aeronautical engineering from Embry-Riddle Aeronautical University and an MBA degree from Pepperdine University. In his six-year acquisition career, Hoffman has worked as a systems engineer on the Pegasus launch vehicle; a propulsion and ground systems engineer in the Delta II Launch Vehicle Program Office; and is currently the MILSTAR on-orbit operations manager in the Military Satellite Communications (MILSATCOM) Joint Program Office. (E-mail address: Eric.Hoffman@losangeles.af.mil)

REFERENCE

Levine, R., Rubin, D., Stinson, J., & Gardner, E. Jr. (1992). *Quantitative approaches to management* (8th ed., p. 31). New York: McGraw-Hill.

APPENDIX A

AMIS TRACKING FORMS

ECP #1

* * PMS BUYING PLAN REPORT FOR * *

95SEP21 OWNED BY: SMC 14:17

PURCH-DESC: 3RD STAGE CONTROL BOX

CURR-BUYER:			PCO:		
CLERK:			PEO-PROG:		
EST-OBL-AMOUNT:		$800,029	EST-TOT-AMOUNT:	$800,029	
EXT-COMP:	A	COMPETED	SOL-PROC:	B	F&O COMP- COMP PROPOSAL
PROG-STAGE:	P	PRODUCTION	SS-CAT:	A	FORMAL SS AFFARS APP AA
SPECIAL-PRO:	N	NOT APPLICABLE	ARPA:		
TYPE-CONT:	9	MULTIPLE TYPES	FAST-TRK:	D	NOT APPLICABLE
TYPE-ACT:	SA	SUPPLEMENTAL AGREEMENT	STATUS:	I	IN-PROGRESS
ACTION-STARTED:		94OCT11	AGE:	345	CWAM AGE: 337
NETWORK:	M4		SCHEDULED-TIME: 89		
PROGRAM: MEDIUM LAUNCH VEHICLES III			KTR: MCDONNELL DOUGLAS CORP		

	MILESTONE	SCHEDULE	FORECAST	ACTUAL
RI	REQUIREMENT IDENTIFIED	94OCT12	95FEB28	94OCT12
ST	ACQ STRATEGY PANEL COMP	94OCT19	95MAR07	94OCT19
SI	SOLICITATION ISSUED	95MAR14	95MAR14	94NOV10
PR	PROPOSALS/BIDS RECEIVED	95MAR23	95MAR23	94DEC09
PT	PRICE ANAL/TECH EVAL/AUDT	95MAY19	95MAY19	95FEB21
NC	NEGOTIATIONS COMPLETED	95MAY23	95MAY23	95MAY31
CF	CONTRACT FILE COMPLETED	95MAY24	95JUL15	95JUL20
CW	CONTRACT WRITING COMPLETE	95MAY23	95JUL14	95JUL24
KS	CONTRACTOR SIGNED	95MAY29	95JUL20	95AUG15
JR	JAG REVIEW COMPLETED	95MAY26	95JUL17	95SEP19
PS	PCO SIGNED	95JUN08	95JUL30	95SEP21
AM	AWARD MAILED	95JUN18	95AUG09	

LAST PAGE 1

ECP #2

* * PMS BUYING PLAN REPORT FOR * *

95AUG10 OWNED BY: SMC 12:32

PURCH-DESC: ADDITIONAL ALCS WORK STATION

CURR-BUYER:			PCO:		
CLERK:			PEO-PROG:		
EST-OBL-AMOUNT:		$274,566	EST-TOT-AMOUNT:	$274,566	
EXT-COMP:	C	FOLLOW ON TO COMP ACT	SOL-PROC:	N	OTHER THAN F&O COMP
PROG-STAGE:			SS-CAT:		
SPECIAL-PRO:	N	NOT APPLICABLE	ARPA:		
TYPE-CONT:	9	MULTIPLE TYPES	FAST-TRK:	D	NOT APPLICABLE
TYPE-ACT:	SA	SUPPLEMENTAL AGREEMENT	STATUS:	I	IN-PROGRESS
ACTION-STARTED:		95MAR20	AGE:	143	CWAM AGE: 142
NETWORK:	M6		SCHEDULED-TIME: 245		
PROGRAM: MEDIUM LAUNCH VEHICLE			KTR: MCDONNELL DOUGLAS CORP		

	MILESTONE	SCHEDULE	FORECAST	ACTUAL
RI	REQUIREMENT IDENTIFIED	95MAR21	95MAR21	95MAR21
ST	ACQ STRATEGY PANEL COMP	95MAY10	95MAY10	95MAR21
SI	SOLICITATION ISSUED	95JUN19	95JUN19	95MAR27
PR	PROPOSALS/BIDS RECEIVED	95AUG18	95AUG18	95APR27
PT	PRICE ANAL/TECH EVAL/AUDT	95OCT17	95OCT17	95MAY02
NC	NEGOTIATIONS COMPLETED	95OCT29	95OCT29	95JUN29
CF	CONTRACT FILE COMPLETED	95OCT06	95OCT06	95AUG01
CW	CONTRACT WRITING COMPLETE	95NOV12	95NOV12	95AUG01
JR	JAG REVIEW COMPLETED	95NOV23	95NOV23	95AUG01
	REMARKS: NOT APPLICABLE			
KS	CONTRACTOR SIGNED	95NOV27	95NOV27	95AUG08
PS	PCO SIGNED	95NOV30	95NOV30	95AUG10
AM	AWARD MAILED	95DEC03	95DEC03	

LAST PAGE 1

ECP #3

* * PMS BUYING PLAN REPORT FOR * *

95OCT05 OWNED BY: SMC 12:15

PURCH-DESC: BLOCK IIA LON CAPABILITY

CURR-BUYER:			PCO:		
CLERK:			PEO-PROG:		
EST-OBL-AMOUNT:		$3,011,064-	EST-TOT-AMOUNT:		$1,324,752-
EXT-COMP:	C	FOLLOW ON TO COMP ACT	SOL-PROC:	N	OTHER THAN F&O COMP
PROG-STAGE:			SS-CAT:		
SPECIAL-PRO:			ARPA:		
TYPE-CONT:	9	MULTIPLE TYPES	FAST-TRK:		
TYPE-ACT:	DS	DEFIN UNPRICED SUPP AGR	STATUS:	I	IN-PROGRESS
ACTION-STARTED:		94SEP30	AGE:	370	CWAM AGE: 370
NETWORK:	B7		SCHEDULED-TIME: 198		
PROGRAM: MEDIUM LAUNCH VEHICLE			KTR: MCDONNELL DOUGLAS SPACE SYS CO		

	MILESTONE	SCHEDULE	FORECAST	ACTUAL
SI	SOLICITATION ISSUED	94SEP30	94SEP30	94SEP30
PR	PROPOSALS/BIDS RECEIVED	95JAN08	95JAN08	94DEC22
FF	FACT FINDING COMPLETED	95JAN29	95JAN29	95MAR17
	DELAY: XX			
	REMARKS: SLOW REVIEW			
FR	FIELD REPORTS RECEIVED	95FEB12	95FEB12	95MAY01
	DELAY: XX			
	REMARKS: SLOW REVIEW			
BA	BUS CLEARANCE APPROVED	95MAR05	95MAR05	95MAY15
	DELAY: XX REFORECAST 95MAY24			
BC	BUS CLEARANCE REQUEST	95MAR05	95MAR05	95MAY15
PT	PRICE ANAL/TECH EVAL/AUDT	95MAR09	95FEB12	95MAY17
PA	PRICING ANALYSIS COMPLETE	95FEB12	95FEB12	95MAY19
TE	TECH EVAL COMPLETED	95FEB12	95FEB12	95MAY19
NC	NEGOTIATIONS COMPLETED	95APR02	95SEP22	95SEP13
	DELAY: XX			
CF	CONTRACT FILE COMPLETED	95MAY28	95SEP29	95SEP22
CW	CONTRACT WRITING COMPLETE	95MAY14	95OCT13	95SEP22
JR	JAG REVIEW COMPLETED	95MAY28	95OCT13	95SEP26
KS	CONTRACTOR SIGNED	95MAY28	95OCT20	95SEP28
AN	AWARD ANNOUNCEMENT - 1279	95MAY28	95OCT27	95SEP28
CS	CONT CLEARANCE APPROVED	95MAY28	95OCT06	95SEP29
PS	PCO SIGNED	95MAY28	95OCT27	95SEP29
AM	AWARD MAILED	95APR16	95OCT28	

UCA INFORMATION

LAST PAGE 1

ECP #4

* * PMS BUYING PLAN REPORT FOR * *

96MAY02 OWNED BY: SMC 11:49

PURCH-DESC: CCP SELF STUDY GUIDE

CURR-BUYER:			PCO:		
CLERK:			PEO-PROG:		
EST-OBL-AMOUNT:		$1,053,072	EST-TOT-AMOUNT:		$1,053,072
EXT-COMP:	A	COMPETED	SOL-PROC:	B	F&O COMP- COMP PROPOSAL
PROG-STAGE:	P	PRODUCTION	SS-CAT:	A	FORMAL SS AFFARS APP AA
SPECIAL-PRO:	N	NOT APPLICABLE	ARPA:		
TYPE-CONT:	9	MULTIPLE TYPES	FAST-TRK:	D	NOT APPLICABLE
TYPE-ACT:	SA	SUPPLEMENTAL AGREEMENT	STATUS:	A	AWARDED
ACTION-STARTED:		94APR07	AGE:		736
NETWORK:	M4		SCHEDULED-TIME:		89
PROGRAM: MEDIUM LAUNCH VEHICLES III			KTR: MCDONNELL DOUGLAS CORP		

ACRN	APPROP	YR	BPAC	PEC	OBLIGATED
AE	3020	4	23MLVO	35119F	$1,053,072

	MILESTONE	SCHEDULE	FORECAST	ACTUAL
RI	REQUIREMENT IDENTIFIED	94APR08	94JUN30	94JUN30
ST	ACQ STRATEGY PANEL COMP	94APR15	95JAN31	94OCT24
SI	SOLICITATION ISSUED	95FEB07	95FEB07	94OCT24
PR	PROPOSALS/BIDS RECEIVED	95FEB16	95FEB16	94DEC14
PT	PRICE ANAL/TECH EVAL/AUDT	95APR14	95AUG11	95MAY01
NC	NEGOTIATIONS COMPLETED	95APR18	95AUG15	95AUG15
	DELAY: XX			
CF	CONTRACT FILE COMPLETED	95APR18	95AUG15	95SEP01
CW	CONTRACT WRITING COMPLETE	95APR18	95AUG15	95SEP06
JR	JAG REVIEW COMPLETED	95APR18	96JAN05	96MAR29
	DELAY: XX			
KS	CONTRACTOR SIGNED	95APR19	96JAN06	96APR04
PS	PCO SIGNED	95APR20	96JAN07	96APR04
AM	AWARD MAILED	95APR22	96JAN09	96APR12

LAST PAGE 1

ECP #5

* * PMS BUYING PLAN REPORT FOR * *

94JUN09 OWNED BY: SMC 13:23

PURCH-DESC: ECP DELETION OF PAYLOAD ENCAPSULATION

BUYER-CURR:			PCO:		
EST-OBL-AMOUNT:		$0	EST-TOT-AMOUNT:	$0	
EXT-COMP:			SOL-PROC:		
PROG-STAGE:	P	PRODUCTION	SS-CAT:	A	AFR 70-15 PARA 1-1A
SPECIAL-PRO:	N	NOT APPLICABLE	ARPA:	N	NO
TYPE-CONT:	9	MULTIPLE TYPES	FAST-TRK:	D	NOT APPLICABLE
TYPE-ACT:	SA	SUPPLEMENTAL AGREEMENT	STATUS:	I	IN-PROGRESS
ACTION-STARTED:		94FEB01	AGE:	128	
NETWORK:	M4		SCHEDULED-TIME: 89		
PROGRAM: MEDIUM LAUNCH VEHICLES III			KTR: MCDONNELL DOUGLAS CORP		

REQUIREMENTS	IDENT	RCVD	PROJECT OFFICE
NONE			

	MILESTONE	SCHEDULE	FORECAST	ACTUAL
RI	REQUIREMENT IDENTIFIED	94FEB02	94FEB01	94FEB01
ST	ACQ STRATEGY PANEL COMP	94FEB09	94APR13	94FEB01
SI	SOLICITATION ISSUED	94APR13	94APR13	94FEB01
PR	PROPOSALS/BIDS RECEIVED	94APR13	94APR13	94MAR04
PT	PRICE ANAL/TECH EVAL/AUDT	94APR15	94APR15	94APR01
NC	NEGOTIATIONS COMPLETED	94MAY01	94MAY25	94MAY18
CW	CONTRACT WRITING COMPLETE	94MAY10	94JUN03	94MAY31
CF	CONTRACT FILE COMPLETED	94MAY12	94JUN05	94MAY31
JR	JAG REVIEW COMPLETED	94MAY15	94JUN08	94JUN08
KS	CONTRACTOR SIGNED	94MAY17	94JUN10	94JUN09
PS	PCO SIGNED	94MAY18	94JUN11	94JUN09
AM	AWARD MAILED	94MAY19	94JUN12	

LAST PAGE 1

NEW PROCESS
ECP #1

* * PMS BUYING PLAN REPORT FOR * *
97FEB26 OWNED BY: SMC 12:51

PURCH-DESC: OB GROUND VEHICLE SIMULATOR

CURR-BUYER:			PCO:		
CLERK:			PEO-PROG:		
EST-OBL-AMOUNT:		$409,302	EST-TOT-AMOUNT:		$409,302
EXT-COMP:	A	COMPETED	SOL-PROC:	B	F&O COMP- COMP PROPOSAL
PROG-STAGE:	P	PRODUCTION	SS-CAT:	A	FORMAL SS AFFARS APP AA
SPECIAL-PRO:	N	NOT APPLICABLE	ARPA:		
TYPE-CONT:	9	MULTIPLE TYPES	FAST-TRK:	D	NOT APPLICABLE
TYPE-ACT:	SA	SUPPLEMENTAL AGREEMENT	STATUS:	I	IN-PROGRESS
ACTION-STARTED:		96DEC18	AGE:	70	CWAM AGE: 70
NETWORK:	M4		SCHEDULED-TIME: 63		
PROGRAM: MEDIUM LAUNCH VEHICLES III			KTR: MCDONNELL DOUGLAS CORPORATION		

	MILESTONE	SCHEDULE	FORECAST	ACTUAL
RI	REQUIREMENT IDENTIFIED	97JAN01	97JAN01	96DEC18
ST	ACQ STRATEGY PANEL COMP	97FEB15	97FEB15	96DEC18
	REMARKS: LAUNCH FAILURE CAUSED DELAY			
SI	SOLICITATION ISSUED	97FEB15	97FEB15	97JAN31
PR	PROPOSALS/BIDS RECEIVED	97MAR15	97MAR15	97FEB14
PT	PRICE ANAL/TECH EVAL/AUDT	97MAR20	97MAR20	97FEB20
NC	NEGOTIATIONS COMPLETED	97APR01	97APR01	97FEB20
AM	AWARD MAILED	97MAY15	97MAY15	

LAST PAGE 1

NEW PROCESS
ECP #2

* * PMS BUYING PLAN REPORT FOR * *

97MAY16 OWNED BY: SMC 18:09

PURCH-DESC: BO AIR CONDITIONER REPLACEMENT

CURR-BUYER:			PCO:		
CLERK:			PEO-PROG:		
EST-OBL-AMOUNT:		$1,324,034	EST-TOT-AMOUNT:		$1,324,034
EXT-COMP:	A	COMPETED	SOL-PROC:	B	F&O COMP- COMP PROPOSAL
PROG-STAGE:	P	PRODUCTION	SS-CAT:	A	FORMAL SS AFFARS APP AA
SPECIAL-PRO:	N	NOT APPLICABLE	ARPA:		
TYPE-CONT:	9	MULTIPLE TYPES	FAST-TRK:	D	NOT APPLICABLE
TYPE-ACT:	SA	SUPPLEMENTAL AGREEMENT	STATUS:	I	IN-PROGRESS
ACTION-STARTED:		96OCT25	AGE:	203	CWAM AGE: 196
NETWORK:	M4		SCHEDULED-TIME: 63		

PROGRAM: MEDIUM LAUNCH VEHICLES III
KTR: MCDONNELL DOUGLAS CORPORATION

	MILESTONE	SCHEDULE	FORECAST	ACTUAL
RI	REQUIREMENT IDENTIFIED	96NOV01	96NOV01	96NOV01
ST	ACQ STRATEGY PANEL COMP	96NOV01	96NOV01	96NOV01
	REMARKS: CHRISTMAS BREAK AND LAUNCH FAILURE MAY CAUSE DELAY			
SI	SOLICITATION ISSUED	97FEB01	97MAY01	97APR29
	REMARKS: LAUNCH FAIL UCA CAUSED DELAY 01 MAR REVISED DATE			
PR	PROPOSALS/BIDS RECEIVED	97MAR01	97MAY01	97MAY06
	REMARKS: KTR MATERIAL PROBLEMS DELAYING PROPOSAL			
PT	PRICE ANAL/TECH EVAL/AUDT	97MAR05	97MAY05	97MAY08
NC	NEGOTIATIONS COMPLETED	97MAR15	97MAY15	97MAY09
JR	JAG REVIEW COMPLETED	97APR01	97JUN01	97MAY13
CS	CONT CLEARANCE APPROVED	97APR15	97JUN15	97MAY16
PS	PCO SIGNED	97APR16	97JUN16	97MAY16
AM	AWARD MAILED	97MAY01	97JUN27	

LAST PAGE 1

NEW PROCESS
ECP #3

* * PMS BUYING PLAN REPORT FOR * *

96FEB23 OWNED BY: SMC 14:31

PURCH-DESC: OPS BLDG. EQUIPMENT

CURR-BUYER:			PCO:		
CLERK:			PEO-PROG:		
EST-OBL-AMOUNT:		$16,750,884	EST-TOT-AMOUNT:		$19,786,825
EXT-COMP:	A	COMPETED	SOL-PROC:	B	F&O COMP- COMP PROPOSAL
PROG-STAGE:	P	PRODUCTION	SS-CAT:	A	FORMAL SS AFFARS APP AA
SPECIAL-PRO:	N	NOT APPLICABLE	ARPA:		
TYPE-CONT:	9	MULTIPLE TYPES	FAST-TRK:	D	NOT APPLICABLE
TYPE-ACT:	SA	SUPPLEMENTAL AGREEMENT	STATUS:	I	IN-PROGRESS
ACTION-STARTED:		95SEP14	AGE:	162	CWAM AGE: 101
NETWORK:	M4		SCHEDULED-TIME: 63		
PROGRAM: MEDIUM LAUNCH VEHICLES III			KTR: MCDONNELL DOUGLAS CORP		

	MILESTONE	SCHEDULE	FORECAST	ACTUAL
RI	REQUIREMENT IDENTIFIED	95SEP16	95SEP16	95SEP16
	DELAY: XX DELAY DUE TO SCOPE ISSUES			
ST	ACQ STRATEGY PANEL COMP	95SEP20	95OCT04	95NOV14
	DELAY: XX REENGINEERING PROCESS MILESTONE 1			
SI	SOLICITATION ISSUED	95DEC22	96FEB29	96JAN09
	DELAY: XX REENGINEERING PROCESS MILESTONE 2			
PR	PROPOSALS/BIDS RECEIVED	96JAN15	96MAR24	96JAN30
PT	PRICE ANAL/TECH EVAL/AUDT	96JAN27	96APR05	96JAN30
NC	NEGOTIATIONS COMPLETED	96FEB05	96APR14	96JAN30
CF	CONTRACT FILE COMPLETED	96FEB07	96APR16	96FEB09
CW	CONTRACT WRITING COMPLETE	96FEB11	96APR20	96FEB09
JR	JAG REVIEW COMPLETED	96FEB15	96APR24	96FEB16
KS	CONTRACTOR SIGNED	96FEB18	96APR27	96FEB20
PS	PCO SIGNED	96FEB23	96MAY02	96FEB22
AM	AWARD MAILED	96FEB25	96MAY04	

LAST PAGE 1

NEW PROCESS
ECP #4

* * PMS BUYING PLAN REPORT FOR * *
96AUG06 OWNED BY: SMC 17:47

PURCH-DESC: SUPPLEMENTAL AGREEMENT

CURR-BUYER:			PCO:		
CLERK:			PEO-PROG:		
EST-OBL-AMOUNT:		$134,258	EST-TOT-AMOUNT:		$134,258
EXT-COMP:	A	COMPETED	SOL-PROC:	B	F&O COMP- COMP PROPOSAL
PROG-STAGE:	P	PRODUCTION	SS-CAT:	A	FORMAL SS AFFARS APP AA
SPECIAL-PRO:	N	NOT APPLICABLE	ARPA:		
TYPE-CONT:	9	MULTIPLE TYPES	FAST-TRK:	D	NOT APPLICABLE
TYPE-ACT:	SA	SUPPLEMENTAL AGREEMENT	STATUS:	I	IN-PROGRESS
ACTION-STARTED:		96JUL18	AGE:	19	CWAM AGE: 19
NETWORK:	XX		SCHEDULED-TIME:	0	

PROGRAM: MEDIUM LAUNCH VEHICLES III
KTR: MCDONNELL DOUGLAS CORP

	MILESTONE	SCHEDULE	FORECAST	ACTUAL
RI	REQUIREMENT IDENTIFIED	96JUL18	96JUL18	96JUL18
ST	ACQ STRATEGY PANEL COMP	96JUL18	96JUL18	96JUL18
SI	SOLICITATION ISSUED	96JUL25	96JUL25	96JUL18
PR	PROPOSALS/BIDS RECEIVED	96JUL26	96JUL26	96JUL18
PT	PRICE ANAL/TECH EVAL/AUDT	96JUL26	96JUL26	96JUL18
NC	NEGOTIATIONS COMPLETED	96JUL29	96JUL29	96JUL29
KS	CONTRACTOR SIGNED	96JUL29	96JUL29	96JUL29
PS	PCO SIGNED	96JUL29	96JUL29	96JUL30
AM	AWARD MAILED	96JUL29	96JUL29	

LAST PAGE 1

NEW PROCESS
ECP #5

* * PMS BUYING PLAN REPORT FOR * *

96SEP24 OWNED BY: SMC 17:20

PURCH-DESC: OB CREDIT MODIFICATION

CURR-BUYER:			PCO:		
CLERK:			PEO-PROG:		
EST-OBL-AMOUNT:		$561,540-	EST-TOT-AMOUNT:		$561,540-
EXT-COMP:	A	COMPETED	SOL-PROC:	B	F&O COMP- COMP PROPOSAL
PROG-STAGE:	P	PRODUCTION	SS-CAT:	A	FORMAL SS AFFARS APP AA
SPECIAL-PRO:	N	NOT APPLICABLE	ARPA:		
TYPE-CONT:	9	MULTIPLE TYPES	FAST-TRK:	D	NOT APPLICABLE
TYPE-ACT:	SA	SUPPLEMENTAL AGREEMENT	STATUS:	I	IN-PROGRESS
ACTION-STARTED:		96FEB17	AGE:	220	CWAM AGE: 207
NETWORK:	M5		SCHEDULED-TIME: 154		
PROGRAM: MEDIUM LAUNCH VEHICLES III			KTR: MCDONNELL DOUGLAS CORP		

	MILESTONE	SCHEDULE	FORECAST	ACTUAL
RI	REQUIREMENT IDENTIFIED	96FEB19	96FEB19	96FEB20
ST	ACQ STRATEGY PANEL COMP	96MAR04	96MAR04	96MAR01
SI	SOLICITATION ISSUED	96MAR12	96MAR12	96JUL20
PR	PROPOSALS/BIDS RECEIVED	96APR05	96APR05	96AUG01
PT	PRICE ANAL/TECH EVAL/AUDT	96MAY13	96MAY13	96AUG10
NC	NEGOTIATIONS COMPLETED	96JUN15	96JUN15	96AUG20
CF	CONTRACT FILE COMPLETED	96AUG23	96AUG23	96AUG30
CW	CONTRACT WRITING COMPLETE	96AUG26	96AUG26	96SEP04
KS	CONTRACTOR SIGNED	96AUG30	96AUG30	96SEP20
PS	PCO SIGNED	96SEP04	96SEP04	96SEP23
AM	AWARD MAILED	96JUL20	96SEP09	

LAST PAGE 1

APPENDIX B

PERT ANALYSIS OF RE-ENGINEERED CONTRACT CHANGE PROCESS

PERT Analysis of Re-Engineered Contract Change Process

Examination will focus on the information that is kept in a central contracting database called AMIS. This database is used to keep track and record the progress of ECP's as they move through the contracting process. There are very specific milestones that must be reached for each ECP to be put on contract. These are the milestones that are tracked in the database and the ones that will be used in the PERT analysis as the specific activities.

Old Process

Activity			ECP #1	ECP #2	ECP #3	ECP #4	ECP #5	T(2) (Average)
RI	Requirement Identified		–	–	–	–	–	–
ST	Acq Strategy Panel Comp		1	0	–	16.57	0	3.51
SI	Solicitation Issued		3.14	1	–	0	0	0.83
PR	Proposals/Bids Received		4.14	4.43	12	7.29	4.43	6.46
PT	Price Anal/Tech Eval/Audit		10.57	0.71	20.57	19.71	4	11.11
NC	Negotiations Completed		14.14	8.29	17.29	15.14	6.71	12.31
CF	Contract File Complete		7.14	4.71	1.29	2.43	2	3.51
CW	Contract Writing Complete		0.57	0	0	0.71	0	0.26
KS	Contractor Signed		3.14	1	0.29	0.86	0.14	1.09
JR	JAG Review Completed		5	–	0.57	29.29	1.14	7.20
PS	PCO Signed		0.29	0.29	0.43	0	0	0.20
		Total Time	49.13	20.43	52.44	92	18.42	46.48
		Value	$800,029	$274,566	$1,324,752	$1,053,072	$0	$690,484
		Designator	3rd Stage PC	ALCS W/S	LON	SSG	Payload	

New Process

Activity			ECP #1	ECP #2	ECP #3	ECP #4	ECP #5	T(2) (Average)
RI	Requirement Identified		–	–	–	–	–	–
ST	Acq Strategy Panel Comp		0	0	8.57	0.29	1.29	2.03
SI	Solicitation Issued		6.29	25.57	8	0.29	10	10.03
PR	Proposals/Bids Received		2	1	3	0.29	3	1.86
PT	Price Anal/Tech Eval/Audit		1	0.29	0	0.29	1.29	0.57
NC	Negotiations Completed		0	0.14	0	1.86	1.43	0.69
CF	Contract File Complete		0	0	1.43	0.43	1.43	0.66
CW	Contract Writing Complete		0	0	0	0	0.71	0.14
KS	Contractor Signed		0	0	0.57	0	2.29	0.57
JR	JAG Review Completed		–	0.57	1	–	–	0.31
PS	PCO Signed		0	0.43	0.29	0.14	0.43	0.26
		Total Time	9.29	28	22.86	3.59	21.87	17.12
		Value	$409,302	$1,324,034	$19,786,825	$134,258	$561,540	$4,443,192
		Designator	GVS	A/C	OB	R-Size	OB Credit	

T(1) (Streamlined)	T(3) (Worst Case)	Expected	Std. Dev.	Earliest Start	Latest Start	Earliest Finish	Latest Finish	Slack	Critical Path?
–	–	–	–	–	–	–	–	–	Y
0	16.57	5.1	2.76	0.0	0.0	5.1	5.1	0.0	Y
0	3.14	1.1	0.52	5.1	5.1	6.2	6.2	0.0	Y
4.14	12	7.0	1.31	6.2	10.2	13.2	17.2	4.0	
0.71	20.57	11.0	3.31	6.2	6.2	17.2	17.2	0.0	Y
6.71	17.29	12.2	1.76	17.2	17.2	29.4	29.4	0.0	Y
1.29	7.14	3.7	0.98	29.4	29.4	33.1	33.1	0.0	Y
0	0.71	0.3	0.12	29.4	32.8	29.7	33.1	3.4	
0.14	3.14	1.3	0.50	33.1	33.1	34.4	34.4	0.0	Y
1.14	29.29	9.9	4.69	6.2	23.2	16.1	33.1	17.0	
0.2	0.43	0.2	0.07	34.4	34.4	34.6	34.6	0.0	Y

T(1) (Streamlined)	T(3) (Worst Case)	Expected	Std. Dev.	Earliest Start	Latest Start	Earliest Finish	Latest Finish	Slack	Critical Path?
–	–	–	–	–	–	–	–	–	Y
0	8.57	2.8	1.43	0.0	8.2	2.8	11.0	8.2	
0.29	25.57	11.0	4.21	0.0	0.0	11.0	11.0	0.0	Y
0.29	3	1.8	0.45	11.8	11.8	13.6	13.6	0.0	Y
0	1.29	0.6	0.22	11.0	11.2	11.6	11.8	0.2	
0	1.86	0.8	0.31	11.0	11.0	11.8	11.8	0.0	Y
0	1.43	0.7	0.24	13.6	13.6	14.3	14.3	0.0	Y
0	0.71	0.2	0.12	11.0	11.6	11.2	11.8	0.6	
0	2.29	0.8	0.38	14.3	14.3	15.1	15.1	0.0	Y
0.57	1	0.5	0.07	11.0	13.8	11.5	14.3	2.8	
0.26	0.43	0.2	0.07	15.1	15.1	15.3	15.3	0.0	Y