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A Strategy Balancing Act: The Peacekeeper Rail Garrison Acquisition

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A STRATEGY BALANCING ACT:

THE PEACEKEEPER RAIL GARRISON ACQUISITION

by LTC Terrence G. Crossey

ABSTRACT

This case study reviews the Peacekeeper Rail Garrison weapon system acquisition. It focuses on the program manager's acquisition strategy from program inception to termination and the balancing act he performed to accomodate the program's many variables. It examines the acquisition and business strategy, program schedules, contractor interactions, and Congressional and user program support. It raises three important questions: (1) Should the Air Force have initiated the acquisition? (2) Could the Air Force have executed this program better? (3) Should the program manager have stopped this acquisition? An attached teaching note discusses how the critical variables impacted the program and presents an outline for case presentation.

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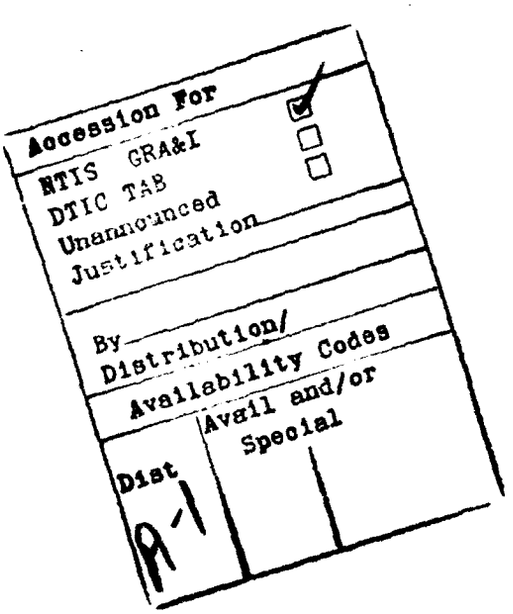


A STRATEGY BALANCING ACT:

THE PEACEKEEPER RAIL GARRISON ACQUISITION

OVERVIEW

The Peacekeeper Rail Garrison weapon system acquisition presents an enlightening story which epitomizes the unique problems encountered in major acquisition programs. This program charted a circuitous course during its existence. It started in 1971 with a validated user need and was terminated by the President in 1991. Built to maintain a credible nuclear deterrence, the Air Force spent billions of dollars on this system. The return on this investment, in both real and perceived terms, is now questionable.

The case follows the development of the Peacekeeper Rail Garrison acquisition. It presents the opportunities and challenges the program faced from its inception, and the strategies the program manager (PM) utilized to balance them. It explores the critical variables--requirements, funding, technical challenges, program support, schedules--which ultimately determine a program's destiny. Within these parameters, the case highlights some of the issues which allow for conjecture or second guessing.

At its conclusion, three important questions surface which bear relevant discussion: (1) Should the Air Force have initiated this acquisition? (2) Did the eventual outcome result from an inadequate acquisition strategy--could it have been better? and (3) Was there an earlier point in time in which the program manager should have stopped the program?

PROGRAM EVOLUTION

In 1971, the Air Force's Strategic Air Command (SAC) submitted a required operational capability (ROC) which identified the need for a new land-based, mobile, inter-continental ballistic missile (ICBM) system. This system would counter the Soviet development of like ICBM systems, provide greater

survivability for the land portion of the strategic triad (land-based ICBMs, manned strategic bombers, and submarine launched ICBMs), and eventually replace the aging Minuteman ICBM fleet. In 1976, the Air Force began the full-scale development of the Peacekeeper missile (so named in 1983 by President Reagan), but they had no direction for an operational basing mode.

During the Peacekeeper missile development, Headquarters, United States Air Force (HQ USAF) and the Department of Defense (DoD) struggled to define the optimal basing system. Survivability was a paramount issue. Presidential commissions and DoD provided many operational concepts; however, they could not achieve consensus. Congressional and public arguments, environmental concerns, and extreme costs were just a few of the many variables which clouded the decisionmaking process. In June 1983, the Air Force successfully flight tested the first Peacekeeper missile. This test proved the missile technology, however, they still needed a basing decision. It came a few months later.

In September 1983, the USAF directed basing 100 Peacekeeper missiles in Minuteman silos (PIMS) at Francis E. Warren AFB, Wyoming. These missiles would replace existing Minuteman III missiles. Upon receipt of this direction, the Air Force's Ballistic Missile Office (BMO) at Norton AFB, California awarded contracts for the design, development, and testing of the PIMS concept. Operational deployment of the PIMS weapon system began in 1986. However, in August 1985, Congress limited this deployment to 50 missiles, and instructed DoD to develop a more survivable, mobile basing concept for the remaining Peacekeeper missiles.

OSD tasked the Air Force to perform studies designed to identify acceptable basing modes for the second 50 Peacekeeper missiles. BMO analyzed several potential basing options and presented the results to the Defense

Acquisition Board (DAB) in December 1985. The DAB, composed of nine senior military and DoD members and chaired by the Undersecretary of Defense for Acquisition, reviewed the studies and directed the Air Force to begin concept studies on a refined list of candidate basing modes. Their decision marked the Milestone 0 approval.

Responding to the DAB's direction, HQ USAF instructed BMO to develop and implement plans to analyze the Carry Hard and Shallow Tunnel basing concepts. Also, BMO was to complete preliminary analysis of other basing concepts, one of which was the Rail Garrison system, and present their analyses to a Joint Requirements Oversight Council (JROC) review in late 1986. The JROC was responsible to the DAB for: (1) validating the mission need, (2) confirming performance objectives satisfy the need, and (3) providing recommendations on cost, performance, and schedule trade-offs.

In December 1986, the DAB concurred with the JROC recommendation to begin demonstration and validation (Milestone 1) of the Rail Garrison basing concept. They were satisfied the Rail Garrison basing mode offered the most survivable system for the cost. This decision formally established the Peacekeeper Rail Garrison weapon system as a new major acquisition program.

On December 19, 1986, President Reagan issued National Security Decision Directive (NSDD) 252, directing the engineering and manufacturing development (EMD) of Peacekeeper Rail Garrison. This weapon system formed part of the President's ICBM modernization program. Accordingly, HQ USAF issued a program management directive (PMD) to implement the NSDD.

The PMD directed BMO to design, develop, and operate the Rail Garrison system. System configuration and requirements included:

* 50 Peacekeeper missiles based in 25 trains

* Trains garrisoned at F.E. Warren AFB and six other bases

* Two to four trains per garrison (one garrison at each base)

* December 1991 Initial operational capability (IOC-2 trains/4 missiles)

* December 1993 Full operational capability (FOC-25 trains/50 missiles)

The Air Force would operate this system under two conditions: peacetime and advanced states of military readiness. During peacetime, the trains would normally be parked within train alert shelters in the garrisons. During advanced states of readiness, the trains would deploy to the commercial railroad network. Using preplanned and random movements during mobility, the trains would cover thousands of miles of commercial track. This mobility feature would significantly complicate Soviet targeting operations--if you can't find them, you can't destroy them. Thus, the Rail Garrison system would provide an enhanced deterrent capability due to its increased survivability.

During this same time, the US and the Soviet Union were preparing for a new round of strategic arms reduction talks (START). The goals of START were to achieve substantial reduction in strategic offensive nuclear systems, especially the land-based ICBM, and provide a "strategic nuclear balance" between the two countries. The implications of these talks to the Rail Garrison basing concept, and vice versa, are not fully known or understood. However, speculation dictated their destinies would intersect in the interests of our national security strategy.

Fifteen years had passed since SAC first identified their need for this type of system. Twenty-two years would elapse before the Air Force could meet full operational capability in December 1993. This concept was not new--a rail mobile ICBM--it had been examined, and discarded, several times. What made it the "right" solution this time? Why did some DoD officials insist on such a

compact schedule? Why didn't everyone want Rail Garrison? Consensus still did not exist with the national decisionmakers and this would impact the program manager's ability to successfully execute this program.

Figure 1 depicts the schedule BMO developed to meet the program requirements. The program manager used this schedule as the framework for his acquisition strategy. Optimism would be the operative word.

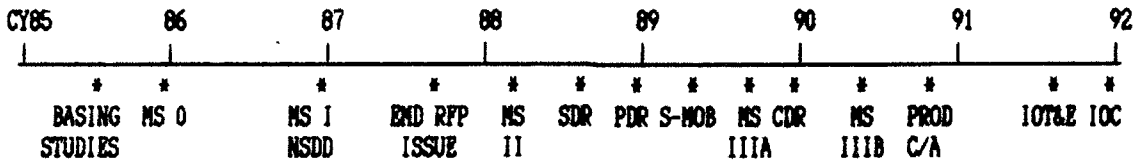


FIGURE 1 - RAIL GARRISON PROGRAM SCHEDULE (FOC-DEC 93)

DELIVERABLES

BMO divided the program into four separate subsystem development efforts. At their completion, BMO would integrate the subsystems to provide the final weapon system. These four areas were:

1. BASING TEST AND SYSTEM SUPPORT (BT&SS)
   - Systems engineering/analysis and basing integration testing.
   - Integrate missile and commercial railroad technology.
   - Design and develop hardware, support equipment, and software to operate the main operating base (MOB-F.E. Warren AFB), garrisons, and rail garrison trains.
2. MISSILE LAUNCH CAR (MLC)
   - Design and develop the Peacekeeper rail car launcher.
3. LAUNCH CONTROL SYSTEM (LCS)
   - Design and develop launch control system and software.

- Design and develop launch control and security rail cars.
- Design and develop train security and communication systems.
- Design and develop train electrical system.

4. PEACEKEEPER MISSILE

- Deliver remainder of original 100 Peacekeeper missiles with no modifications.

These categories formed the foundation for the Rail Garrison acquisition strategy.

ACQUISITION STRATEGY

BMO developed a Rail Garrison acquisition strategy consistent with their historical approach. BMO retained the overall missile systems integration and management responsibility with help from a systems engineering and technical assistance (SETA) contractor. BMO awarded three development contracts for the other major subsystems of the Rail Garrison system. Figure 2 is a summary of the three development contracts and BMO's risk assessments.

CONTRACT	TYPE	COST (TY$M)	RISK ASSESSMENT			
			COST	TECH	SCHED	MANUF
BT&SS	CPIF/AF	647	M-H	L-M	M	L-M
MLC	FPIF/AF	642	M	L-M	M	L-M
LCS	FPIF/AF	715	M	M-H	M	L-M

FIGURE 2 - CONTRACT SUMMARY

NOTE: CPIF/AF - Cost Plus Incentive Fee/Award Fee
FPIF/AF - Fixed Price Fee/Award Fee
H - High M - Medium L - Low

Across the board, BMO felt costs and schedule were the greatest risk areas. They developed the estimated costs through employment of valid, independent cost estimating techniques. The early IOC date mandated an accelerated development program and allowed little to no margin in the schedule. Concurrency did not exist; however, it loomed on the horizon. Other significant risk areas included:

* Lack of fully defined requirements.

* System level test requirement uncertainties.

* Software developments and modifications.

* Main operating base (F.E. Warren AFB) facility construction.

Each of these risk areas were potential schedule and cost drivers and were a concern to the program office.

A final part of the acquisition strategy involved the inclusion of low rate initial production (LRIP) as part of the EMD effort. These LRIP articles would serve as the test assets for systems level and initial operational testing, and validate the production tooling and manufacturing processes. Upon completion of the full EMD effort, BMO would compete production contracts for like articles.

BMO briefed this acquisition and business strategy to HQ Air Force Systems Command (AFSC). HQ AFSC approved these strategies and supported the delegation of the source selection authority (SSA) to the BMO Commander. At the completion of the source selection, the SSA would select the winning contractors. No one raised an issue with the fixed price contracts for the LCS and MLC efforts, although these contracts inherently contained higher risks due to hardware and software development and integration. Nor did they raise concern over the program's "green light" schedule.

PROGRAM SCHEDULES

The key program milestone date was the IOC of December 1991. The Strategic Air Command (SAC) established this need date through their draft Operational Requirements Document (ORD) and HQ USAF validated it through the PMD. SAC redefined the IOC, or first assets delivered (FAD), as one train with two missiles plus availability of one training train. Based upon the projected last contract award date of March 1988, only 45 months were available to develop, design, produce, test, and deploy this weapon system. To meet the IOC date required two independent schedules: (1) the weapon system design schedule which BMO controlled and (2) the MOB facility construction schedule that Congress indirectly managed through the budget process.

CONSTRUCTION SCHEDULE

The Rail Garrison program required new facilities at both the Vandenberg AFB, California test site and the MOB at F.E. Warren AFB. The Air Force funded the test facilities under the research and development (R&D) authorization (3600 funds); however, neither BMO nor the Air Force could authorize MOB construction funding due to military construction (MILCON) authorization practices. By law, Congress required a two year lead-time to authorize MILCON funds. The first year funds paid for the MILCON design work; the second year funds paid for the actual construction. In September 1987, Congress did not authorize the MILCON for FY89. This action was the first indication of their lack of support for Rail Garrison.

HQ USAF responded to the Congressional action by reprogramming these funds to FY90. This new funding profile, however, would not support the program IOC. The program office required 36 months for MOB construction, assembly and checkout, and first operational train delivery. As a result, BMO initiated

contingency plans for accelerating construction work which they would implement when Congress authorized the necessary funds in September 1988. Although Congress again withheld MILCON funds in September 1988, they allowed BMO to begin design study work on key MOB facilities to support an even more accelerated construction schedule.

WEAPON SYSTEM DESIGN SCHEDULE

Three major development milestones would establish the integrity of meeting SAC's IOC. These milestones were the system design review (SDR), completion of all configuration item (CI) preliminary design reviews (PDR), and completion of all CI critical design reviews (CDR). In order to reduce the schedule compression risk, BMO incentivized all three contracts. These monetary incentives stressed technical adequacy and schedule performance based upon the design review dates.

The program office established the SDR date as the BT&SS contract award plus twelve months. This critical event would define the system concept (the program's functional baseline) and serve as the design requirements departure point for the PDRs and CDRs. Assuming a successful SDR and corresponding program office authentication of the weapon system specification, BMO needed the PDRs and CDRs completed eight months and eighteen months post-SDR respectively. This would be a significant challenge, especially since BMO developed the draft weapon system contract specification without a validated ORD.

Despite the challenges, BMO was optimistic it would get the job done. They depended on their years of experience in ICBM acquisitions. Many of them had been more difficult. Besides, the contractor proposals helped convince BMO the program was "do-able.

CONTRACTOR INPUT

BMO expected several bidders for each of the three development contracts. As is true with typical weapon system acquisitions, ICBM programs maintained a corp of qualified development and production contractors. These included Boeing, Martin Marietta, General Dynamics, McDonnell Douglas, Westinghouse, GTE, and Rockwell International. To ensure they would have a legitimate competition, BMO issued a sources-sought synopsis which solicited interest from prospective bidders. They followed this with distribution of draft requests for proposal (RFP). By using this approach, they hoped to use industry comments to construct a better contract package.

Surprisingly, prospective contractors provided little to no feedback on the quality or content of the draft RFPs. As a result, BMO maintained their original contract packages and issued formal RFPs after HQ AFSC approved their acquisition plan. They conducted the source selections in accordance with established regulations. During proposal discussions, contractors did not take exception with the contract packages and BMO did not determine any proposal non-responsive in either cost or technical content. Accordingly, all proposals were in the competitive range. One disconnect did exist on all contract proposals--the cost proposals were approximately 25% of the government's cost estimate!

One of three reasons could explain the differences in cost. Either the contractors underbid their effort to be competitive, or misunderstood the required effort, or the government was too conservative in their cost estimates. BMO was confident in their costing, citing analogies to actual and negotiated costs from similar efforts in the PIMS EMD effort. With this confidence, the burden fell on the contractors--what was wrong?

Based upon their proposals and oral discussions, the contractors repeatedly stated they fully understood the schedule compression risk and technical challenges. BMO gave the contractors an opportunity to resubmit an updated cost proposal prior to contract award (C/A) to, in other words, increase their required costs. However, their resubmitted cost requirements were only slightly higher than their original proposals. It was obvious they were influenced by the competition process. They pulled out all the stops to offer their best proposal.

BMO did not take the contractors to further task on this very important issue. The cost differential was too significant to ignore; however, they had no clear reason for the difference and they had an acquisition to get started! They awarded the three contracts (Boeing-the BT&SS, Westinghouse-the MLC, and Rockwell-the LCS) on the targeted schedule dates. They met the first major program milestone. This would be one of only two milestones BMO would complete on time. Subsequent milestones would slip because of undefined and "soft" user requirements.

SAC USER PROGRAM INPUTS

The evolution of the Peacekeeper Rail Garrison weapon system spanned a period of almost 20 years. In 1971, SAC submitted its initial required operational capability (ROC) for an advanced ICBM system. This ROC initiated the development of the Peacekeeper missile; however, the basing system remained unresolved. For over 12 years this remained an open issue. The main reasons were deployment, life cycle costs, and vulnerability/survivability, based upon increased numbers and accuracy of the Soviet missile force.

In 1983 SAC submitted a new statement of need (SON) for a small, single reentry vehicle ICBM (SICBM). Once OSD directed the development of the Rail

Garrison concept in 1986, BMO was developing two separate mobile ICBM weapon systems for SAC. Each of these two programs had its own supporters and detractors; the media sufficiently documented the debate over which system, if any, was necessary. SAC's advocacy was split. This multiple commitment plagued the Rail Garrison program in many ways.

To further complicate matters, SAC was in the midst of modernization planning for its entire strategic force. This effort was the product of the Reagan administration's initiative to modernize the armed forces. However, SAC's flying mission (B-1/B-2) competed directly against their land based missile systems. When funding was not a primary issue, SAC devoted minimal manpower to the Rail Garrison program. But, as the budgets decreased during the Bush administration and the Soviet threat changed, SAC found itself in a Catch-22 position; something had to give. Would it be the flying mission or the ICBMs?

The flying mission stayed with continued Congressional support of the B-2 program. SAC never strongly advocated the Rail Garrison basing concept. Their choice and advocacy for land-based ICBMs rested with the mobile SICBM. This lack of support for Rail Garrison contributed to a delayed and incomplete ORD. The ORD did not support the development of the weapon system specification or the program funding requirements. Because of this, the program office initiated this acquisition with a "rubber" technical and cost baseline.

The lack of solidified baselines presented this acquisition many unique problems, ones that go beyond the scope of this case study. However, these problems were attributable to undefined requirements. Additionally, in some instances where SAC specified requirements, designs proposed by the program office were not satisfactory. In many cases SAC had design solutions in mind

from the outset. If they were contrary to the program office (contractor provided design) solution, disconnects resulted which usually required senior leadership disposition. By disagreeing with the solution, the government unnecessarily delayed detailed engineering which resulted in schedule delays and contract disputes.

Outside of the incomplete requirements and less than perfect advocacy, SAC worked well with the BMO from the start. This typified the historical relationship between the two agencies. SAC was intimately involved with the system design and testing process. The "working level" relationships resolved many day to day issues and encouraged open, frank communications between the two agencies.

HOW DID THE PROGRAM FARE?

After completion of contract awards, HQ USAF requested BMO return a large percentage of the estimated costs to be more in line with the awarded contracts. It was not apparent until after SDR why there was such a disconnect between the government and contractor estimates. BMO conducted the SDR in September 1988. Although they established a functional technical baseline, many disconnects existed, both technically and contractually. For SDR, the ORD was not the design baseline--it did not exist yet. The user requirements did not fully correlate with the weapon system specification. Additionally, the SDR established a design concept and at least one contractor admitted their proposal defined a point design which did not agree with this concept. These disconnects mandated increased schedule and cost to correct.

Congress dealt the first "death blow" to Rail Garrison by refusing to appropriate the MILCON funds for MOB facility construction in September 1989. They withheld this money for the entire program. Additionally, they decreased

R&D funding in FY89/90/91. With reduced funds, BMO changed and reduced program content. This action eventually "opened up" the three EMD contracts, two of which were in a cost over-run mode and the other was close. The IOC slipped to June 1992, and then to December 1992. When Congress withheld long-lead production funds, as well as MILCON funds, BMO placed the IOC on hold. The contractors were smart enough to see the dwindling support and probable loss of production contracts. This changed their whole attitude about contract administration. Their prime concern became recovery of costs.

Finally, Congress and OSD terminated the Peacekeeper Rail Garrison program in September 1991 at the direction of President Bush. This action came as a surprise to no one. Since its inception in 1987, Air Force and Congressional support diminished to such a degree that BMO could not execute the program in accordance with the original, or subsequent, PMDs. Also the threat had changed--the Soviet Union had collapsed.

SUMMARY

It is doubtful this acquisition would have met its original schedule requirements, even under the most optimal conditions. Enclosure 1 contains the Peacekeeper Rail Garrison program chronology. Congress "saved" the program office through their funding actions while, at the same time, making this an "unachievable" acquisition. The schedule proved to be too optimistic. Compounding the cost, schedule, and performance problems, no agreement existed on the design requirements of all three contracts and their interaction. A floating technical baseline exacerbated the disagreement as much as fixed-price contracts for development work. Finally, the role of advocacy, or lack of it, essentially doomed the program from the start.

The questions still remain--(1) Why was this acquisition ever started? Did the Air Force spend a lot of money for nothing? (2) Could the program manager have done anything differently? Or, was the program successful (politically speaking) at a fraction of the deployment cost? (3) Or, more importantly, when in the course of events should (or could) the PM have "raised the flag" and said he could no longer execute his program?

ENCLOSURE 1

PEACEKEEPER RAIL GARRISON PROGRAM CHRONOLOGY

September 1983	USAF directed deployment of 100 Peacekeeper missiles in Minuteman silos.
August 1985	PIMS deployment limited to 50 by congressional direction.
August 1985	BMO started studies for new basing concept for 50 Peacekeeper missiles.
December 1985	DAB presented study results (Milestone 0).
February 1986	BMO directed to perform more basing studies.
February 1986	BMO Business Strategy Plan approved by HQ AFSC.
December 1986	JROC/OSD recommends Peacekeeper deployment in Rail Garrison basing mode (Milestone I).
December 1986	President Reagan issued NSDD 252 directing EMD of Rail Garrison with a December 1991 IOC.
January 1987	PMD direction for Rail Garrison received at BMO.
March 1987	Draft BT&SS RFP issued.
May 1987	BT&SS RFP issued.
September 1987	BT&SS contract award.
September 1987	HQ USAF PMD No. 0075(18) received at BMO.
September 1987	MLC & LCC RFP issued.
September 1987	FY89 MCP funding delayed and reprogrammed to FY90.
February 1988	TEMP finalized for Milestone II.
March 1988	MLC & LCC contracts awarded.
May 1988	DAB II. (Milestone II)
September 1988	SDR.
September 1988	ORD finalized.
September 1988	MCP FY90 funding delayed, facility design allowed to proceed.

November 1988	WSS authenticated.
September 1989	PDR (9 month delay).
September 1989	MCP funding withheld.
September 1989	IOC delayed 6 months (June 1992) due to MCP funding problems.
April 1990	DAB III delayed. (Milestone IIIA)
June 1990	IOC delayed additional 6 months (December 1992) due to lack of long lead production funds.
June 1990	BT&SS, MLC, LCC contracts modified for new schedule. (December 1992 IOC)
December 1990	Deployment decision delayed.
March 1991	Program changed to concept demonstration objective only (deployment and IOC cancelled).
September 1991	President Bush terminated Rail Garrison program.

PEACEKEEPER RAIL GARRISON CASE STUDY - TEACHING NOTE

ABSTRACT

The Peacekeeper Rail Garrison program offers acquisition students and managers insight to the initiation of a major program acquisition. From the position of a program manager (PM), it stresses the importance of a sound and valid acquisition strategy--one accompanied by legitimate advocacy and requirements.

From the onset of this acquisition the PM had to be satisfied he identified the risks of his program, knew what his customer wanted, possessed the resources to do the job, and communicated all of these to the prospective contractors. A breakdown in any of these areas places the program in jeopardy. No PM has the perfect crystal ball to foresee all future problems. However, he can minimize the negative effects by thorough up-front planning. This case focuses attention on the impacts a less than optimized acquisition strategy can create.

TEACHING OBJECTIVE

The problem in this case is to determine the legitimacy of initiating this acquisition. Based upon tentative (draft) user requirements and a relatively short development timeline, was an executable acquisition strategy possible? Two possible answers exist: yes or no. Therefore, under this premise, the principle objectives are to assess:

(1) **SHOULD THIS ACQUISITION HAVE STARTED? WAS IT EXECUTABLE? WHAT SHOULD THE PM HAVE CHANGED, IF ANYTHING?** This plan was not ready to begin a "green-light" EMD phase. The cost, schedule, and technical risks were too high, especially in combination. The PM had his direction and, as such, quickly became the program's strongest advocate. His almost impossible task of

balancing the many acquisition variables, both known and unknown, proved to be an insurmountable task. Without question, each of these variables contributed its own part to the end result. The PM should have requested more time at a minimum. It may be argued the decision to initiate this acquisition was only to solicit a more positive response from the START negotiations.

(2) **DID THE OUTCOME RESULT FROM AN INADEQUATE ACQUISITION STRATEGY? WHAT PROBLEMS COULD HAVE BEEN AVOIDED WITH A BETTER ACQUISITION STRATEGY?** The outcome was at least partially a result of an inadequate acquisition strategy. The program should have been on the verge of achieving IOC when President Bush terminated it. Instead, not all CDRs were complete. The initial risk assessments were too optimistic. The PM needed to address these issues earlier. The START issue was very real and its full impacts are not known. Was the straw that "broke the camel's back" and led to the dissolution of the Soviet threat?

(3) **SHOULD THE PM HAVE STOPPED THE PROGRAM EARLIER, AND IF SO, WHEN?** Evidence appeared to prove the state of the program at SDR warranted this type of action. The cost of continuing this program with the identified disconnects was exorbitant. The program needed to be redefined immediately to present to OSD a more realistic assessment based on a better understanding of the true cost, schedule, and technical risks.

In each instance, students should discuss the ethical responsibility of the PM. Specifically, under what conditions does the PM draw the line and determine he can not execute his program. More so, when is the PM morally bound to say he can't do the job? Acquisition managers feel there is no instance, under any conditions, whereby a PM can say "no" and expect his career to survive such a decision. A strong case can be made this acquisition "wasn't

quite ready," thus warranting such a difficult decision. Did the PM err in his choice?

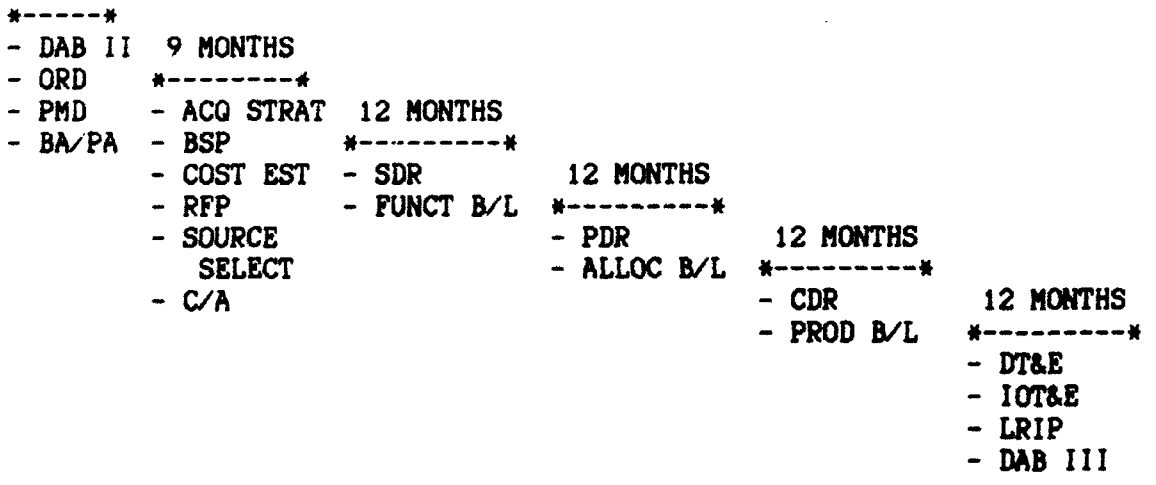
ASSIGNMENT QUESTION

Have the class read the entire case study. The idea is to have the class assume the role of the PM. Let them second-guess decisions the PM made, or had made for him. Also, have the class identify criteria and priorities the PM had to decide upon in order to (1) start the program, and (2) keep it progressing satisfactorily. Enclosure 2 contains the case acronym listing for teaching assistance.

CLASS PLAN

The instructor should identify a typical 60-month ICBM Engineering and Manufacturing Development (EMD) program outline. This schedule should show major milestones and timeframes. The following is an example:

TYPICAL 60-MONTH ICBM EMD EVENT FLOW



The instructor should examine the EMD event flow and approach it from a program manager's perspective.

THE PROGRAM MANAGER'S DIRECTION

Have the class review the front-end planning to contract award phase (the first 12 months). Focus student attention on what the program management directive (PMD) directs the program office to accomplish:

* Design, development, and operation
* Weapon system description, program quantities, and deployment bases
* Deployment capability dates (IOC/FOC)
* User and supporting command responsibilities
* Funding profiles

The PMD, ORD, and budget authorization/program authorization (BA/PA) are the PM's contract with the Air Force. In order to support the requirements of this contract, the PM develops his acquisition strategy which defines how he will contract, conduct, test, and produce the necessary weapon system. The instructor should highlight the fact that the acquisition strategy must correlate with the requirements of the PMD and funding authorizations. If disconnects exist, the PM must resolve them immediately.

EMD CHALLENGES

Questions the instructor might consider asking the class in their role of the PM:

1. **HOW COULD THE PM MEET THE DECEMBER 1991 IOC REQUIREMENT WITHOUT MILITARY CONSTRUCTION FUNDS?** The PM could not meet the IOC without these funds for the Main Operating Base (MOB) facilities. HQ USAF should have resolved this program incompatibility.

2. **SHOULD THE PM HAVE ASKED FOR RELIEF OF THIS DATE? WHY?** Yes, because the construction funds were not in his control. As a result, he did not have

at his control all the resources to do the job the PMD required. He was in a no-win situation.

3. HOW IMPORTANT IS THE USER'S OPERATIONAL REQUIREMENTS DOCUMENT (ORD)? The ORD is the most important document in the acquisition process. It is the foundation of the system specifications and contracts--it dictates the scope, direction, and ultimate success of the acquisition strategy.

4. WHAT SHOULD THE PM HAVE DONE WITH HIS CONTRACT WEAPON SYSTEM SPECIFICATION WHEN IT DID NOT TRACK WITH THE USER'S REQUIREMENT? WHAT'S THE DEGREE OF RISK HE ASSUMES BY DOING SO? SHOULD HE HAVE DELAYED THE PROCUREMENT UNTIL SAC DELIVERED AN APPROVED ORD? The JROC should have stopped DAB I until SAC had a complete and validated ORD. Since they did not, the PM unnecessarily assumed an increased risk in completing his program within the cost, schedule and technical parameters. All program documentation must be traceable to the requirements in the ORD.

5. DID THE PROGRAM OFFICE ESTIMATE THE PROGRAM COSTS AND RISKS CORRECTLY? ASSUMING YES, DID THEIR CONTRACT BUSINESS STRATEGY (CONTRACT TYPE, INCENTIVES, ETC.) COMPLEMENT THESE RISKS? The program office correctly estimated the costs. However, their contract business strategy was not compatible with the work they required on the contracts. There was not enough detailed system design information to justify a fixed price contract. All of the contracts should have been cost contracts, thus reflecting the initial immature design concept. This approach would have allowed equal cost sharing between the contractors and the government. It also would have allowed the contractors to develop more realistic proposals.

6. DID THE GOVERNMENT'S REQUEST FOR PROPOSAL (RFP) DEFINE THE PROGRAM ADEQUATELY? The RFPs lacked the necessary detail to adequately define what the

government wanted. In addition to not disclosing intended design solutions, the statements of work lacked flexibility and did not adequately mechanize the consolidation of work between the contractors and the government.

7. **WHAT'S THE VALUE OF CONTRACTOR FEEDBACK TO THE RFP? HOW CAN THE GOVERNMENT LOOK BEYOND THE CONTRACTOR'S "CAN DO" OPTIMISM IN ORDER TO INSURE BOTH THE GOVERNMENT AND THE CONTRACTOR HAVE SCOPED THE PROGRAM CORRECTLY? WHAT SHOULD THE GOVERNMENT DO IF THERE IS EVIDENCE OF A POTENTIAL "BUY-IN?"** Contractor feedback is imperative. No RFP is perfect. Good feedback will help reduce confusion and misunderstanding before contracts are signed. If there is evidence of a "buy-in", the PM must understand the reasons why and where the liabilities exist.

8. **WITH NO FEASIBLE EXPLANATION FOR THE LARGE COST DIFFERENTIAL, WAS THE PM JUSTIFIED IN RETURNING THE EXCESS FUNDS?** With such a large cost differential, the PM was wrong in returning the funds. There was obviously a disconnect somewhere. Until he understood where, he should have kept these funds in a management reserve. He also would have been justified in declaring the contractor proposals non-responsive.

9. **WHAT'S THE RELATIVE IMPORTANCE OF PROGRAM ADVOCACY? CAN A PROGRAM SURVIVE WITHOUT IT?** A program cannot survive without advocacy, especially from the user and Congress. Both have the eminent power, through statement of need and funds, to "make or break" an acquisition program.

10. **WAS THERE ANY ACTION THE PM COULD HAVE TAKEN TO MINIMIZE THE EFFECT OF LACK OF USER AND CONGRESSIONAL SUPPORT?** Unfortunately, there is little the PM can do to offset the impact the lack of program support can create.

The ten question areas above highlight the program office's most challenging tasks. They are, by no means, all inclusive. However, each area

presented enough potential trouble on its own to preclude a successful EMD effort.

The program office realized very quickly this would be a difficult acquisition to complete in accordance with the PMD requirements. A synopsis of the program at the initiation of EMD produced the following concerns:

* Cost--risk was higher due to contractor cost proposals.
* Schedule--very green light; concurrency very possible.
* Program--MILCON status jeopardized IOC.
* Congressional support and program stability.

THE PM EARNS HIS PAY

It is appropriate now to ask the class what they would do as the PM. At the completion of the SDR, it was obvious the program was behind schedule and cost growth was imminent. The PM had two possible choices: reduce EMD content to maintain schedule or keep content and maintain schedule through acceleration of work.

With either choice, the program required additional funds. Although SDR occurred in accordance with the program office plan, its lack of definitization delayed the PDR for twelve months. Following the standard rule of thumb, the system CDR would follow the PDR by an additional twelve months. In total, therefore, detailed design and fabrication would not be completed until September 1990--barely a year before the IOC! Additional funds would increase manpower and buy time; however, it would just be a temporary fix.

The contractors and program office underestimated the technical complexity and the time necessary to design a missile launcher and the launch control system software. The program office used technical performance measurements (TPM) to monitor progress in these critical areas, but they weren't enough.

With the delays in technical progress, the contractors were in a Catch-22 condition with their fixed price contracts: Increasing either manpower or time costs money, eventually leading to cost overruns. This dilemma is probably the most difficult decision a contractor and government PM must resolve. Usually their individual criteria for solution are opposed to each other. The PM wants his final product on time at the agreed to price; the contractor needs to make a profit.

In summary, the program on-contract costs, technical requirements, and schedule allowances were not compatible with each other. In retrospect, no acquisition strategy could have satisfied the needs of this program with all its limitations and constraints.

As the program progressed through its five years, BMO restructured its content three times. During its third restructure, the President terminated the program. The program office had slipped the IOC twice, then finally declared they could not achieve an IOC after Congress withheld long-lead production and construction funds.

It can be argued this program was never intended to succeed in a conventional sense. Was the "real" program requirement nothing more than a START negotiation tool? Lack of resources, requirements, and contract specifications left the PM in a very tenuous position. He could not, almost under any circumstance, develop an acquisition strategy that could have met the PMD requirements.

This case should leave students with a better understanding of the "realities" (or "irrationalities") of today's acquisition environment. It should also leave them thinking about what the PM's priorities should be. This

is an opportunity for students to think out loud. What's important--resources, requirements, advocacy, or acquisition/business strategy?

**** OPTION ** - THE CONTRACTOR PM ROLE**

As time permits, the instructor may consider having part of the class take the role of the contractor's PM(s). Ask the students what they feel are the most important acquisition aspects from the contractor's perspective. Use the following list of ideas to stimulate discussion:

* Can a profit be made?--Is it necessary in the short-term?
* Is the acquisition in the company's long-term interest?
* Can the contractor afford to "no-bid" and still be competitive?
* Does the company have the resources to do the job?

Not surprisingly, many of the contractor's concerns parallel those of the government's PM.

ETHICS IN ACQUISITION

As a final note from the contractor and government's perspective, the instructor should discuss "buy-in". For Peacekeeper Rail Garrison, the government planned to award a competitive production contract upon completion of EMD. Under the guise of a full and open competition for production, contractors who participate in EMD typically will have a competitive advantage for follow-on work. Knowing this, one can reasonably be assured that industry will propose a "bare bones" EMD effort, assuming they can recoup losses and extract profit from the subsequent production contract. If the "buy-in" looks too risky, the PM should not accept the offer under any condition. This real life issue presents an interesting ethical dilemma for both industry and the government.

Although "buy-in" usually has negative connotations in the procurement process, it can be a legitimate contractor acquisition strategy. Reasons for this approach can include a contractor's desire to expand their technical base, maintain their competitiveness, or use it as a springboard to other applications. What ever the reason, the PM must fully understand the context of the "buy-in." He must be fully aware of the inherent risks and liabilities a "buy-in" brings to an acquisition.

SUMMARY

This case offers students the opportunity to play arm-chair quarterback and apply large doses of 20/20 hindsight. Although impacted by some unique circumstances, this acquisition experienced many typical procurement problems. This case does not suggest definitive answers; it only offers exposure to the difficulties typical of the acquisition process, both expected and unexpected.

The key task for the PM is to develop an executable acquisition strategy. The success of this strategy depends upon the availability of the needed resources and a user validated requirement. Without these, and the accompanying advocacy, no acquisition strategy can succeed. These hopefully will be the primary known acquisition variables the PM must balance throughout his program. A final question--how does he address variables he is not aware of or cannot control?

ENCLOSURE 2

ACRONYMS

AFSC	Air Force Systems Command
ALLOC B/L	Allocated Baseline
BA/PA	Budget Authorization/Program Authorization
BMO	Ballistic Missile Office
BSP	Business Strategy Plan (Panel)
BT&SS	Basing Test and System Support
C/A	Contract Award
CI	Configuration Item
CDR	Critical Design Review
CPIF/AF	Cost Plus Incentive Fee/Award Fee
DAB	Defense Acquisition Board
DT&E	Development Test and Evaluation
DoD	Department of Defense
EMD	Engineering and Manufacturing Development
FAD	First Assets Delivered
FOC	Full Operational Capability
FPIF/AF	Fixed Price Incentive Fee/Award Fee
FUNCT B/L	Functional Baseline
FY	Fiscal Year
ICBM	Inter-continental Ballistic Missile
IOC	Initial Operational Capability
IOT&E	Independent Operational Test and Evaluation
JROC	Joint Requirements Oversight Council
LCS	Launch Control System
LRIP	Low Rate Initial Production
MILCON	Military Construction
MLC	Missile Launch Car
MOB	Main Operating Base
NSDD	National Security Decision Directive
ORD	Operational Requirements Document
OSD	Office of the Secretary of Defense
PIMS	Peacekeeper In Minuteman Silos
PDR	Preliminary Design Review
PM	Program Manager
PMD	Program Management Directive
PROD B/L	Product Baseline
RFP	Request For Proposal
ROC	Required Operational Capability
SAC	Strategic Air Command
SDR	System Design Review
SE&TA	Systems Engineering and Technical Assistance
SICBM	Small ICBM
SON	Statement of Need
SSA	Source Selection Authority
START	Strategic Arms Reduction Talks
USAF	United States Air Force
WSS	Weapon System Specification