

Amtrak Office of Inspector General

EVALUATION REPORT E-09-04

LESSONS LEARNED: AN ANALYSIS OF THE
ACELA AND SURFLINER PROGRAMS

July 21, 2009



This report will become available to the public on August 20, 2009.

INTRODUCTION

Amtrak is currently planning a number of near-term rolling stock procurements. To insure current Amtrak decision-makers are knowledgeable of “lessons learned” from past Amtrak procurements, the OIG decided to review the experience of Amtrak’s two most recent major procurement programs (*Acela* and *Surfliner*) and document the “lessons learned” from these programs.

The objective of this study was to review the history of these projects with key individuals, identify project elements (both successful and unsuccessful) which had major impacts on the results achieved, and summarize key “lessons learned” into recommendations relevant to the forthcoming round of Amtrak procurements.

BACKGROUND

The *Acela* procurement involved the purchase of 20 high-speed trainsets, 15 high-horse power electric locomotives (HHP-8), three maintenance facilities and a financing agreement at a cost of more than \$750 million. Six additional HHP-8 units were purchased by the State of Maryland for MARC service utilizing an option in the Amtrak contract. The contract also included a 10-year trainset maintenance contract with an option for an additional 10 years. The trainsets and locomotives were to operate on the Northeast Corridor between Washington DC and Boston with the intent of reducing the trip time between New York City and Boston to a congressionally mandated 3 hours.

The *Surfliner* procurement involved the purchase of 40 bi-level cars and 21 F-59 locomotives for service between Los Angeles and San Diego. An additional 25 cars were purchased by the State of California utilizing options in Amtrak’s contract. These cars were based on an existing Alstom-built design and essentially represented the next generation of the service-proven *California*-type cars. As a next generation car, this procurement represented a low-risk option for both Amtrak and Alstom. While there were some changes to the car design (food service, trucks and door systems), the basic engineering was already extant and many of the technical problems encountered during the original *California* car procurement had been resolved. Similarly, the F-59 locomotive was a mature design which presented low technical risk. The *Surfliner* project was a negotiated procurement with Alstom for a total value of \$99.5M. The F-59s were manufactured by General Motors EMD at a cost of \$46.0M.

The first *Acela* trainset for revenue service was delivered more than a year late and had numerous technical problems while the *Surfliner* cars were delivered on schedule, within budget, and with very few technical problems.

METHODOLOGY

To help with this review, the OIG contracted with LTK Engineering Services (LTK), a Philadelphia-based rail engineering firm. LTK had supported Amtrak with the *Acela* procurement and therefore was familiar with many of the details of the program. LTK and the OIG jointly developed a list of individuals who played a significant role in the procurements. Then, a team consisting of one person from LTK and one person from the OIG interviewed over a dozen of these key individuals to capture the most significant “Lessons Learned” from the programs. LTK documented the interviews and produced the final report (attached).

LIMITATIONS

The comments and recommendations contained in this report are developed from the collective opinions and recollections of the individuals interviewed. They are provided to help guide future procurements and provide advice for decision-makers. No attempt was made to verify the comments or opinions expressed by the interviewees and therefore this document should not be considered a thorough, evidence-based, detailed analysis of the programs or used to support any legal determination of fault or cause and effect. It is solely provided to capture, in one document, the opinions of the individuals most knowledgeable of these past procurements and therefore help future decision-makers in avoiding the types of problems they encountered.

OIG RECOMMENDATION

1. Amtrak’s Chief Operating Officer and Chief Logistics Officer should disseminate copies of this report to the key individuals involved in future rolling stock procurements and insure that the comments and recommendations contained in the attached report are reviewed and considered before any major rolling stock acquisition in the future.

LESSONS LEARNED - AN ANALYSIS OF THE ACELA AND SURFLINER PROGRAMS FINAL REPORT

Executive Summary

Amtrak is currently planning a number of near-term rolling stock procurements and therefore, the Amtrak OIG contracted with LTK to review the experience of its two most recent procurement programs (*Acela* and *Surfliner*) and conduct a “lessons learned” study. Both the *Acela* and *Surfliner* programs took place during the same approximate time frame – 1993 through 2002.

The purpose of this study was to review the history of these projects with key individuals, identify project elements (both successful and unsuccessful) which had major impacts on the results achieved, and summarize key “lessons learned” into recommendations relevant to the forthcoming round of Amtrak procurements.

The *Acela* procurement involved the purchase of 20 high-speed trainsets, 15 high-horse power electric locomotives (HHP-8), three maintenance facilities and a financing agreement at a cost of more than \$750 million. Six additional HHP-8 units were purchased by the State of Maryland for MARC service utilizing an option in the Amtrak contract. The contract also included a 10-year trainset maintenance contract with an option for an additional 10 years. The trainsets and locomotives were to operate on the Northeast Corridor between Washington DC and Boston with the intent of reducing the trip time between New York City and Boston to a congressionally mandated 3 hours.

The Bombardier/Alstom proposal offered the least mature technology of the three proposers and a design which was untried under North American conditions. However, the financing package offered by this group left Amtrak management little choice given the railroad’s financial constraints but to accept the low cost proposal rather than one of the other more technically-proven trainset designs. The trainset program was planned to be the primary piece of Amtrak revenue stream for “financial self sufficiency” as mandated by Congress.

The *Surfliner* procurement involved the purchase of 40 bi-level cars and 21 F-59 locomotives for service between Los Angeles and San Diego. An additional 25 cars were purchased by the State of California utilizing options in Amtrak’s contract. These cars were based on an existing Alstom-built design and essentially represented the next generation of the service-proven *California*-type cars. As a next generation car, this procurement represented a low-risk option for both Amtrak and Alstom. While there were some changes to the car design (food service, trucks and door systems), the basic engineering was already extant and many of the technical problems encountered during the original *California* car procurement had been resolved. Similarly, the F-59 locomotive was a mature design which presented low technical risk. The *Surfliner* project was a negotiated procurement with Alstom with a total value of \$99.5M. The F-59s were manufactured by General Motors EMD at a cost of \$46.0M.

The *Acela* trainset for revenue service was delivered more than a year late and had numerous technical problems while the *Surfliner* cars were delivered on schedule, within budget and with very few technical problems. While the *Acela* program was a much more complicated and challenging program than the *Surfliner* project, there are some interesting comparisons:

<i>Acela</i>	<i>Surfliner</i>
Unproven designs and new technology	Existing designs and service-proven technology
Interior change order reconfigured the trainset shortly after the contract was signed, with major impacts to cost and schedule	Very few change orders
Aggressive schedule for a new design having a high level of technical risk	Reasonable schedule given the level of technical risk present
Aggressive contract terms and conditions for a complex, multi-faceted procurement covering vehicles, shops and management services.	Terms and conditions were much less of an issue because the contract involved only rolling stock based on existing designs

Summary Recommendations

- Executive management must have a clear vision what they want to buy. It is important to know what performance requirements and interior features are required to meet Amtrak's market demand in order to have a successful procurement and control change orders.
- Educate management as to the types of rolling stock and technology available to impart a clear understanding of the strengths and weaknesses of each technical approach.
- Avoid a marriage of technologies which have been proven individually but never proven together. If possible buy an existing design or the next generation of an existing design. Application of new technologies or unproven technologies in the US environment and market can present high risks. If new technology is selected, insist on an extensive prototype test program before series production, so that technical problem can be discovered and corrected before production begins.
- Require all proposers to be prequalified before bidding on a future trainset procurement.

- Technical proposals should not be overly influenced by a financing package offered by a given proposer. If possible, Amtrak should arrange its own financing package separate from the carbuilder.
- Do not deal with a consortium. There should be one company with responsibility as the prime so Amtrak has a single point of contact in the event of technical or legal disputes.
- Establish program schedules which are reasonable and can be realistically achieved under real world conditions. Provide some degree of schedule cushion to accommodate the inevitable problems which must be addressed while the clock ticks.
- Negotiate Terms and Conditions which are fair and reasonable to both parties. Understand and equitably share risk, recognizing that there can be value in assigning designated risks to the party which is in best position to control them.

Introduction

Amtrak is currently planning a number of near-term rolling stock procurements. These procurements will encompass a wide variety of vehicle types for service in several different corridors. From an overall project management standpoint, these procurements will be extremely complicated given the number of corridor-specific technical and commercial requirements which must be incorporated and coordinated. These requirements will include vehicle type (individual cars or trainsets), order quantities, vehicle capacity, available technologies, passenger amenities, maintenance considerations, delivery schedule, terms and conditions and financing, to name a few.

To assist Amtrak in planning for these future procurements, the OIG contracted with LTK to review the experience of Amtrak's two most recent rolling stock procurements (*Acela* and *Surfliner*) and to conduct a "lessons learned" study. The purpose of this study is to:

- Review the history of these projects with key personnel who participated in them, with emphasis on the technical, commercial and project management approaches employed;
- Identify elements of each project which were considered successful, and those which were considered less than satisfactory;
- Identify "lessons learned" from these experiences; and
- Summarize key "lessons learned" into recommendations relevant to the forthcoming round of Amtrak procurements.

Background Information – *Acela* and *Surfliner* Programs

Acela Program

The *Acela* procurement involved the purchase of 20 high-speed trainsets, 15 high-horse power locomotives, three maintenance facilities and a trainset maintenance contract. The Maryland Rail Commuter Service (MARC) also purchased six HHP locomotives using options under the Amtrak contract. The *Acela* trainsets operate between Washington and Boston. The rolling stock, while based on proven European practice, was essentially newly designed to meet Amtrak NEC requirements. The contractor was a consortium of Bombardier and Alstom. The program was managed from a dedicated Amtrak project office in Philadelphia.

The *Acela* program began in the spring of 1993 with a request for Expressions of Interest from potential carbuilders. By October 1993, six carbuilder teams had been pre-qualified by Amtrak. Also during this time a preliminary specification was under development. The specification was prepared using a "Task Team" approach with Amtrak stakeholders,

in conjunction with input from the six carbuilders and the FRA. The FRA input resulted in a mandate for a Crash Energy Management (CEM) system and the requirement for a second power car for additional crash protection. The Amtrak reorganization into SBUs also had an impact. The new management required changes to the interior and food service configuration. After a number of carbuilder meetings to discuss and review the various changes to the trainset specification and RFP requirements, the RFP was finally issued to three pre-qualified proposers on September 1, 1994. The three proposers were:

- ABB Traction, Inc., General Electric Transportation Systems and Raytheon;
- Bombardier/Alstom Consortium; and
- Siemens, AEG Transportation Systems, Inc., General Motors Corporation - EMD Division, Morrison Knudsen Trainset Group and Fiat Ferroviaria.

The proposers submitted their technical proposals on November 21, 1994 and their commercial proposals on January 3, 1995. There then ensued an approximate year-long clarification of technical details with the proposers, in conjunction with Amtrak's internal resolution of these major issues:

- The economic justification for the program;
- The number of trainsets to be ordered;
- The type of food service to be provided and the configuration of the food service car;
- Maintenance facility issues; and
- Fine-tuning of operational and commercial requirements for Management Services, Consist-at the-Block and Financing.

Best and final offer (BAFO) proposals were solicited in September 1995. After evaluation of those proposals in accordance with pre-established selection criteria and intensive negotiations with the two final carbuilder teams, Amtrak requested revisions to the best and final offers in February 1996. Amtrak selected the Bombardier/Alstom Consortium to supply Trainsets, Facilities, Financing and Management Services. The contract was signed on May 1, 1996.

Shortly after the contract was signed, Amtrak issued a change order to revise the interior design of the trainset. The change order provided for a schedule extension of two months and added approximately \$30 million to the contract amount.

In 1998 the FRA issued new track safety standards (CFR213 subpart G) for train speeds over 125 mph. The introduction of new performance requirements almost two years after

the contract was signed and the lack of consistency by the FRA in interpreting these requirements caused much confusion during the testing program.

There were also a number of technical challenges during the design and testing phases of the program which caused the schedule to slip. The first pre-production trainset was scheduled to be delivered for testing 34 months after Notice to Proceed (February 1999) and the first production trainset was to be delivered in 40 months (August 1999). These trainsets were actually delivered in March 1999 and October 2000, respectively. Because of the impact of the interior change order and numerous subcontractor problems the design and manufacturing of the trainset was delayed.

In an effort to mitigate this delay Amtrak agreed that the Pueblo trainset could begin testing without a food service car and several of the coaches were only shells with no interior appointments. Technical difficulties continued during testing at Pueblo. Because the Consortium could not correct the trainset performance issues at Pueblo and the pressure on Amtrak management to get the trains into revenue service testing was suspended at the Pueblo test facility and moved to the NEC in an effort to accelerate the testing program. Limited trainset revenue service started in December 2000 with two trainsets. A more complete timeline of the program can be found in Attachment C.

Surfliner

The *Surfliner* procurement involved the purchase of 40 bi-level cars and 21 F-59 locomotives for service between Los Angeles and San Diego. These cars were based on an existing Alstom-built design and were basically the next generation of the *California* cars. Similarly, the F-59 locomotive was a pre-existing, service-proven design. The contractor for the cars was Alstom while EMD manufactured the locomotives. The program was managed from Amtrak's Los Angeles office.

The initial *Surfliner* program was a procurement of 40 cars purchased by Amtrak. Then the State of California exercised two options from the Amtrak contract for additional cars – 10 cars for Northern California and 15 cars for Southern California. California also purchased 6 F59 locomotives. There were three *Surfliner* bidders:

- Alstom
- Bombardier
- Talgo

General Electric and EMD were bidders on the locomotive contract.

The *Surfliner* specification was an Amtrak in-house project written primarily by G. Brunner and D. Bruss. The equipment was ordered to replace the Amfleet and Horizon cars used on the San Diegan. The cars were delivered to Amtrak in five-car consists comprised of cab car (1), coaches (2), food service car (1) and first class car (1). The first consist was delivered in May 2000 and the last in June 2002. Pueblo testing was completed in May 2000. Inaugural service started in June.

Approach

The “Lessons Learned” task started with the identification of individuals who played a key role in each program. LTK contacted as many of these individuals as possible to arrange interviews.

A list of interview questions regarding each project was developed (see Attachment A) and provided to the individuals as a guide in advance to give them the opportunity to prepare and help recall some of the significant events during each program. Interested individuals were interviewed and asked those questions from the list relevant to their personal experiences on each project. Interviewees were encouraged to go beyond the points addressed in Attachment A and discuss any program issue they thought was significant.

The majority of the interviews were conducted in person. A few were conducted by telephone.

Comments resulting from these interviews were documented for subsequent review and analysis.

Comments from Interviews

Below is a consolidated summary of the comments received from those interviewed:

Acela Program

Business Conditions

- Combining financing and technical requirements in the same RFP complicated the evaluation process. Because of restricted funding the financing package dominated the selection process.
- The political mandate for Amtrak to improve its financial condition based on financial goals established by Congress and pressure from the FRA Administrator to have the trainsets begin revenue service during her term forced Amtrak management to begin trainset service before all the technical problems were resolved.
- Amtrak undertook an extensive effort to measure the needs of the marketplace and the potential impact on Amtrak’s revenue stream. However when the final decision on trainset configuration was made the market analysis appears to have been disregarded.

Technical Decisions

- The interior change order that resulted after Mr. Warrington's trip to Spain made a difficult contract situation impossible. The two month schedule relief negotiated between the Consortium and Amtrak for the change order proved to be insufficient. Bombardier management underestimated the impact of such a major change order on the program.
- Most of the engineering man-hours were expended getting the documentation correct rather than developing the product. Bombardier felt that Amtrak's project team was more interested processing paper than focusing on technical issues.
- Weight was a major concern of Bombardier before the contract was signed. Bombardier believed Amtrak and the FRA disregarded the Consortium's warning that the power car and HHP locomotive were too heavy to meet the performance requirements.
- The EMI Limit Detector (ELD) was a device on the power cars to detect EMI from the power car that could potentially interfere with the wayside signal system. When EMI was detected, the device would shutdown the power car as a safety precaution. The ELD worked as designed and would shutdown the power car when the EMI level reached a prescribed level. However, after weeks of testing delays because of the ELD, it was determined that the EMI was not from the power car but from passing AEM7 locomotives and Amtrak's traction power system. It was clear to Bombardier that Amtrak had no idea of the EMI environment on the NEC and that its locomotives and substations were a major source of the EMI.
- Because of the pressure to get the trainsets into revenue service Amtrak did not take full advantage of the Pueblo test center to resolve trainset technical performance problems through modeling and on track testing. The testing was terminated only after approximately 30,000 miles.
- The Consortium did not understand the characteristics of the NEC infrastructure and as a result were not prepared for the problems that occurred during the dynamic testing.

Schedule Requirements

- The interior change order was a major impact to the design and manufacturing schedule, even far greater than Bombardier management realized at the time.

- While schedule negotiations were intense Bombardier agreed to a 34 month delivery schedule for the first trainset. They knew the schedule was tight but possible if every thing went as planned. However, when Amtrak directed the implementation of the interior change order that made that contractual schedule “unattainable”.
- Delivering the second trainset to the NEC at 36 months could be achieved but it gave no opportunity to incorporate anything learned at Pueblo into the second trainset. As it turned out this approach led to an extensive series of modifications to the trainsets before revenue service could begin.
- The contractual schedule assumed no technical difficulty would be encountered. This was an unreasonable approach for a new and unproved design. In addition, the contractor had only limited ability to test the power cars at its manufacturing facility.

Testing

- The original schedule did not provide sufficient time to test the trainset which was necessary and important given the state of the new technology being employed. The implementation of new FRA Track Safety Standard (CFR213 part G and others) almost two years after the contract was signed with new wheel/ rail performance criteria causes further impact to the testing schedule.
- Pueblo testing was valuable for propulsion and braking issues but counter-productive for performance testing. The difference in the track conditions between Pueblo and the NEC made any information gathered at Pueblo almost useless as a benchmark for NEC performance.
- The Consortium’s power car and coach models, operating in conjunction with the VOCO train performance model was very unreliable in predicting and understanding train dynamic performance. The vehicle dynamics simulations were of little help in diagnosing the source(s) of problems experienced with ride quality, truck accelerations and wheel/rail forces.
- The FRA requirement of having adjacent tracks vacant and track work and other revenue trains in the testing zone during testing forced most of the trainset qualification testing to be done at night on the NEC and at times caused testing delays.

Food Service

- The original food service car had approximately 18 revenue seats. The interior Change Order removed those seats in favor of a European bistro configuration.

- The change to the Bistro car was the result of Amtrak management being influenced by the European (AVE) style layout after the contract was signed without the revenue impacts being properly evaluated.

Contract Requirements

- Even though the Contract was negotiated and the Consortium management agreed to the final language, the Consortium's project management team believed the contract was very one-sided in Amtrak's favor. The Consortium's outside counsel recommended that they not sign the contract because it was so one-sided. This created a very strained relationship between the Consortium and Amtrak project management teams from the beginning.

Management Services Contract

- The *Acela* trainset handoff from the program office to operations and maintenance was not smooth. The Amtrak maintenance staff was not experienced and there was no integrated team to assume control of the maintenance, operation and ongoing engineering issues for the trainset.
- The HHP locomotives were not part of the Maintenance Agreement.
- While the training program could have been better, Amtrak did not take advantage of the training classes offered and many of the available classroom seats were not filled. In addition there was no requirement for follow-on training by the contractor and Amtrak trainers who were to do additional training were short of trainers and the program was never implemented.
- The *Acela* was not given any special consideration or priority by the Amtrak's Transportation Department. It was treated like any other train on the NEC and not the revenue producer it has become.
- Having Amtrak responsible for the workforce discipline (hourly workers) created friction with the shop management (NECMSC). NECMSC had little or no control over the workforce.
- Amtrak did not manage the process for delivering trainsets to the maintenance facility according to its contractual obligations. Amtrak did not maintain records to measure compliance with the contract provisions.

Surfliner Program

Business Conditions

- The Amtrak vehicles were financed through a third party leveraged lease (Phillip Morris Capital).
- The option cars were paid for by the State of California.
- Amtrak had a clear vision of what they wanted to purchase and understood the market.

Technical Decisions

- The *Surfliner* seats are very high maintenance (They are the same as the *Acela* seats).
- In general, there were no major technical issues with the program primarily because the *Surfliners* were the next generation of the *California* car also built by Alstom. While there were some HVAC problems they were addressed through the warranty program.
- The trucks were upgraded to be compatible with the Superliners and problems with the original *California* car door system was addressed on the *Surfliner* car.

Schedule Requirements

- The delivery schedule was of primary importance to the Amtrak management.

Testing

- The testing program was managed closely by Amtrak. This included the qualification testing of the various systems at the vendor's plants as well as static testing after the systems were installed in the car. Because the *Surfliners* were very similar to the *California* car, many of the system qualification tests were waived.

Food Service

- Food service changes on the *Surfliners* did not appear to create a problem for Alstom since they were only incremental changes from the original *California* car.

Contract Requirements

- At the time Alstom had no major problems with the contract terms and conditions. However, current corporate policy will not allow them to accept some of the provisions in that past contract.

Recommendations for Forthcoming Rolling Stock Procurements

Business Conditions

- Education of executive staff as to the type of rolling stock available is extremely important. Management must have a clear vision what they want to buy. It is important to know what performance requirements and interior features are required to meet Amtrak's market demand in order to have a successful procurement and control change orders.
- Conduct separate technical and commercial proposal evaluations so that the best technical proposal is not overly influenced by the financing package offered by a given proposer. While total cost is a very important consideration, the selection committee must evaluate the risks associated with accepting the low price and financing package if that proposal is for a less than mature technical design. Accepting the low price proposal in this case could increase the risk of many technical problems during implementation on revenue service.
- Require all proposers to be prequalified before bidding on future rolling stock procurements. One of the prequalification requirements should be that the prospective bidders must participate in a vehicle demonstration to show how their rolling stock will perform on Amtrak's infrastructure.
- Amtrak should coordinate another round of equipment demonstrations for the next generation of *Acela* equipment.
- Evaluate trip time savings achievable from rolling stock changes vs. improvements to the infrastructure. This could be a by-product of an Amtrak infrastructure analysis.

Technical – All Rolling Stock Types

- Avoid a marriage of technologies that have not been proven together. If possible buy an existing design or the next generation of an existing design. New technology and/ or unproven technology in the US environment and market can be high risk. If it is decided to accept new technology an extensive prototype testing program at the Pueblo test facility is strongly recommended before series production is allowed to begin.
- Require the carbuilder to perform an operational characteristics analysis to ensure they understand the total environment of the NEC. This will force the carbuilder very early in the design process to immerse it engineers into the specific operational and physical characteristics of the railroad. This will also identify constraints on the NEC infrastructure allowing Amtrak the option to make changes or improvement to the infrastructure vs. buying a train to meet a system limitation at a single location.

- Amtrak must have a better understanding of the conditions existing in its infrastructure (signaling, clearances, geometry, traction power, catenary etc) on the NEC to avoid problems similar to that caused by the EMI Limit Detector. By doing its own operational characteristics analysis in advance of preparing a specification Amtrak can reduce the risks of technical and performance problems during the qualification testing program.
- Given the current cost of energy and trainset performance issues during *Acela* qualification testing Amtrak must insist on an aggressive but realistic weight control program for the rolling stock.
- Reducing trip time should be the goal of any new equipment procurement. While a higher top speed is very appealing from a marketing perspective, buying a trainset that can achieve higher curving speeds can do more to reduce trip time than a higher top speed.
- Trainset development requires extensive prototype testing before series production begins. An expanded endurance simulated revenue testing program of 500,000 miles at Pueblo should be a requirement supported by on site representatives from the carbuilder and all major subsystem suppliers. Delay the start of serial production until prototype testing is complete so modifications made during testing can be incorporated into the series production units to reduce the number of technical problem and improve reliability during the start of revenue service.
- Use railcar and trainset dynamic modeling to the fullest extent possible and validate the model with actual performance during the Pueblo testing phase of the procurement.
- Provide for reliability, maintainability and availability requirements in the specification and a means to verify that the carbuilder has achieved those requirements. Amtrak needs to be focused on these requirements during design, as well as during the verification of these requirements.
- Provide for better training and manuals for the technical staff who will maintain the rolling stock. Concentrate on diagnostic and troubleshooting procedures and develop an understanding of the fault monitoring system. Use that information to manage vehicle maintenance. Make provisions for continuously updating training programs for current staff and new employees. Make annual training recertification a requirement.

- Amtrak must commit to an R&D program to improve the performance of power car trucks and ride quality of the coach trucks before buying the next generation of trainsets for the NEC. To the extent possible, Amtrak should encourage truck performance that not only meets the FRA and APTA requirements but exceeds them where possible.
- The Amtrak and carbuilder project teams must have an experienced system integrator to manage the design development. Since so much of today's equipment design is software driven the project team should also include an experienced software engineer to over see the development of the software in accordance with current IEEE requirements.
- If possible, create synergy with the California High Speed Rail group. Amtrak should be willing to share its experience with California as they embark on their project. Also consider a joint procurement or buy trainsets from option provisions within each others contract.

Commercial Issues

- Do not deal with a consortium. One company should be the prime so Amtrak has a single point of contact in the event of technical or legal disputes.
- A contract with more balanced terms and conditions will provide a better initial working relationship between Amtrak and the carbuilder. Successful delivery of a trainset should be the focus of the procurement and not collection of Liquidated Damages.
- Require an effective warranty program with regular reports of all technical problems and an open exchange of information.

Attachment A

Acela Interview List			
	Affiliation	Schedule	Status
David Carroll	Former Amtrak	6/20/08 in Charlotte	Complete
Frank Duschinsky	Former Bombardier	6/19/08 In Montreal	Complete
John Bennett	Amtrak	7/02/08 Washington	Complete
Drew Galloway	Amtrak	7/25/08 30th Street	Complete
Helmut Kolig	Former Amtrak	8/12/08 Maryland	Complete
Pete Cannito	Former Amtrak	7/10/08 in NY	Complete
Tom Devenny	LTK Engineering	6/05/08 30th Street	Complete
Mark Yachmetz	FRA	7/09/08 Washington	Complete

Surfliner Interview List			
	Affiliation	Schedule	Status
Gary Echenrode	Amtrak	Telephone Interview	Complete
Dick Bruss	Amtrak	6/ 9/08 30th Street	Complete
Jack Wilson	Amtrak	6/26/08 Los Angles	Complete
Jerry Mescal	Amtrak	6/26/08 Los Angles	Complete
Chuck Wochele	Alstom	6/5/08 30th Street	Complete

Questions for *Acela* Lessons Learned Interviews

Business Case

1. What was the underlying reason for buying Trainsets vs. cars and locomotives?
2. Why did Amtrak select a non revenue Bistro car?
3. Did the North End Electrification project impact the trainset program costs?
4. How important was the financing package in the selection of the winning proposal?
5. Was there a business model created that summarized projected operating costs against revenue?
6. How would you suggest the procurement process be improved?
7. What in the process went well and what didn't?

Technical Issues – Amtrak Team

1. What were some of the major technical problems and how comfortable were you with the agreed upon solutions? Were these problems caused by unclear requirements of the specification or the carbuilder not understanding or wanting to understand Amtrak concerns?
2. Do you have any suggestions how to improve the procurement process?
3. Did you find the Task Team approach helpful in the preparation of the *Acela* Specification?
4. Can you address the quality of the training and manuals provided?
5. What system or subsystem would you recommend that Amtrak focus on for future procurements?

Schedule Requirements

1. Was the requirement to deliver the first preproduction trainset to Pueblo for testing in 34 months realistic? If no please explain why.
2. A second preproduction trainset was required to be delivered to the NEC for testing in 36 months. Was this achievable?
3. Was the rate of production of one to two trainsets a month achievable?

4. How did Amtrak issuance of change orders affect the ability of the vendor to meet the schedule?
5. How was consideration of the Option Order for more cars considered and dealt with?
6. How did Amtrak changing of the quantity of trainsets affect the schedule?

Testing

1. What were some of the major issues with the testing program?
2. What the master test plan comprehensive?
3. Did the carbuilder have adequate staff to accomplish the required static and dynamic testing program?
4. Did Amtrak have adequate staff to over see the testing program?
5. Did the schedule allow enough time for testing the trainsets?

Food Service

1. How did Amtrak arrive at its decision for a Bistro/ Cart style food service?
2. Why was cart service abandoned?
3. Why was the delivery bulk beverages discontinued and what was the economic argument?
4. Was there an over all food service plan with projected costs and revenue the dictated the design of the food service?

Contract Requirements

1. What elements of the contract provisions do you believe where the primary cost drivers? Can you explain?
3. What were the performance measures that were put in place to measure compliance with the contract provisions?
4. How were warranty provisions of the contract handled?
5. What functionality was included in the contract and never utilized by Amtrak?
6. What functionality was included in the contract and never delivered by the Consortium?
7. What functionality was included in the contract and did not work after delivery?

8. Would you recommend changes to the warranty or Liquidated Damages provisions?

Maintenance Agreement

1. The initial years of the trainset Maintenance Agreement did not run smoothly. What changes would you recommend to future agreements of this type?
2. How did the existence of the maintenance agreement affect Amtrak ability to enforce warranty provisions?
3. How did the Maintenance Agreement affect the ability of Amtrak to ensure compliance with Federal Regulations?
4. What were the performance measures put in place to measure compliance with the contract provisions and did Amtrak use them to manage the contract?

Questions for *Surfliner* Lessons Learned Interviews

Business Case

1. Was there a business model that directed the purchase of a bi-level design?
2. Was there a financing package as part of the RFP package?
3. Could the RFP have been structured in a way that could have produced a lower bid price?

Technical Issues

1. What were some of the major technical problems and how comfortable were you with the agreed upon solutions? Were these problems caused by unclear requirements of the specification or the carbuilder not understanding or wanting to understand Amtrak concerns?
2. Do you have any suggestions how to improve the procurement process?
3. How clear were the technical discussions between the Carbuilder and Amtrak? Was the design review process productive?
4. Can you address the quality of the training and manuals provided?
5. What system or subsystem would you recommend that Amtrak focus on for future procurements?
6. Were the Reliability and Maintainability requirements achievable?

Schedule Requirements

1. Was the initial delivery schedule reasonable?
2. What was the largest impediment to keeping the program on schedule?

Testing

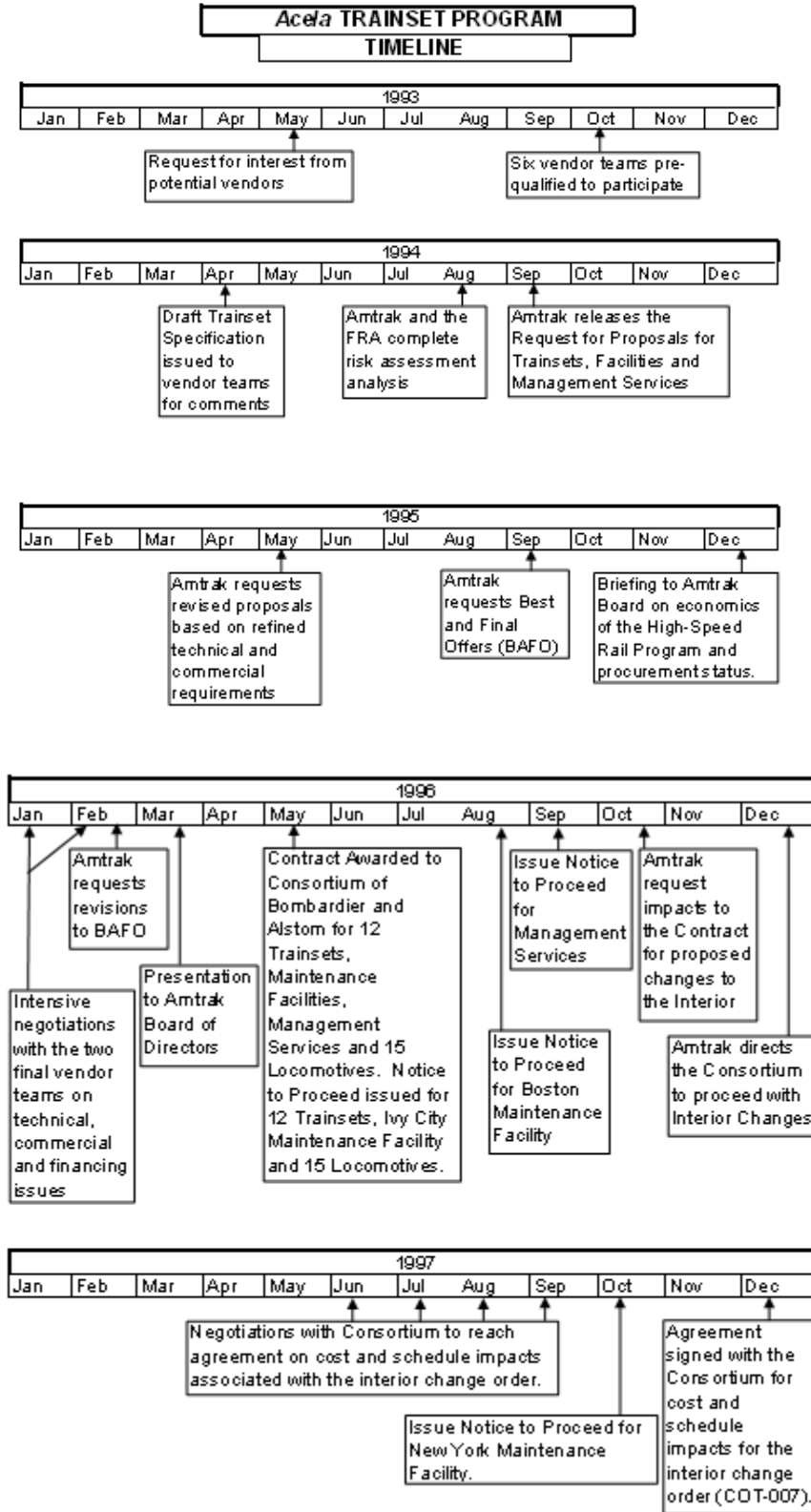
1. What were some of the major issues with the testing program?
2. Was the master test plan comprehensive?
3. Did the carbuilder have adequate staff to accomplish the required static and dynamic testing program?
4. Did Amtrak have adequate staff to oversee the testing program?
5. Did the schedule allow sufficient time for testing the various car types?

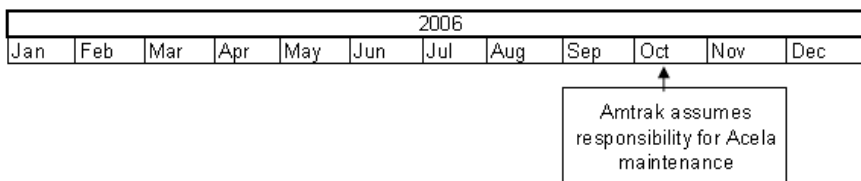
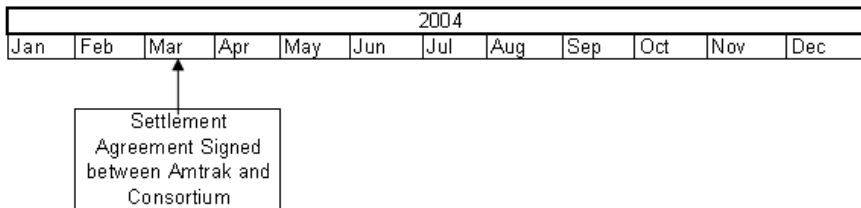
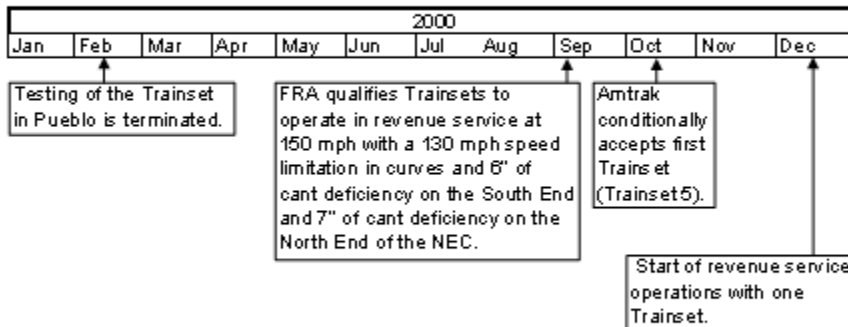
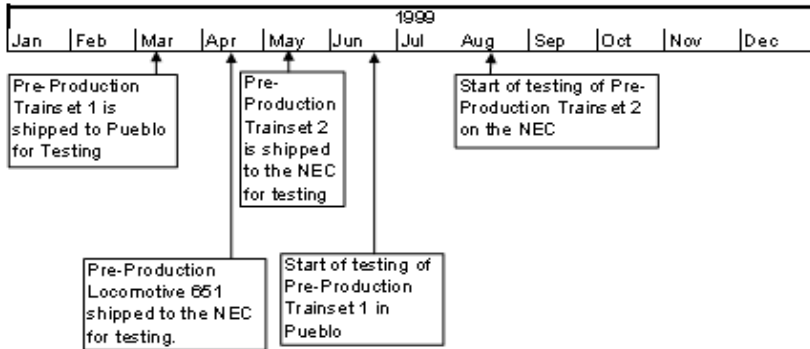
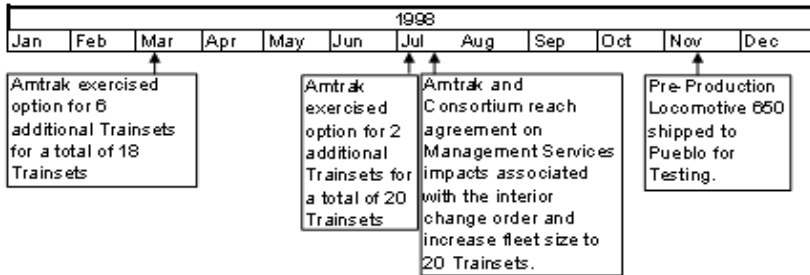
Food Service

1. How was the type of food service determined?
2. Were there any unrealistic requirements to the food service concept?

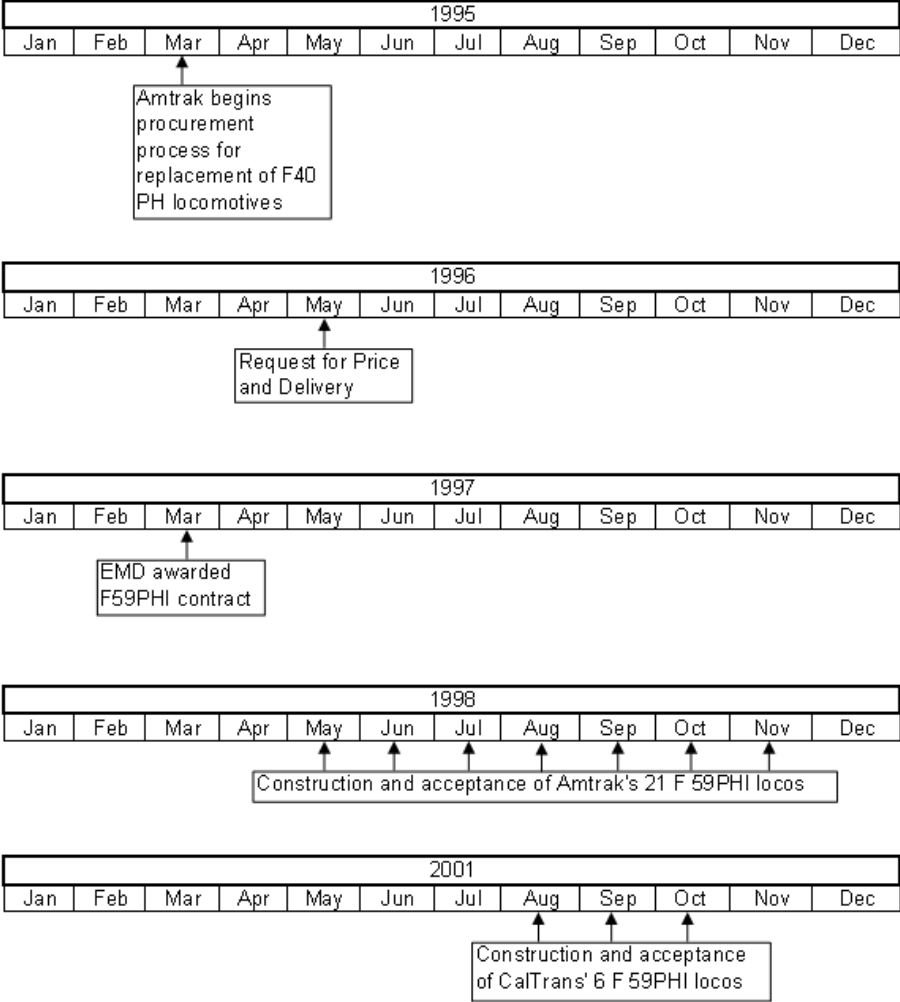
Contract Requirements

1. What elements of the contract provisions do you believe were the primary cost drivers? Can you explain?
2. Would you recommend changes to the warranty or Liquidated Damages provisions?
3. Would you recommend changes to any other Terms and Conditions?
4. Could the milestone payments have been be restructured to provide a more equitable payment for funds?





F59 PHI PROJECT
prepared December 31, 2008



SURFLINER PROJECT
prepared December 31, 2008

1997											
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Amtrak begins
procurement process for
new Surfliner trainsets

1998											
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Alstom awarded contract

2000											
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Trainset
acceptance
begins

Pueblo high
speed stability,
ride quality and
brake testing
completed

Inaugural
service LA to
San Diego

2001											
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Last trainset
accepted

Cat Trans cars delivered and accepted

2002											
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec