OFFICE of INSPECTOR GENERAL
NATIONAL RAILROAD PASSENGER CORPORATION

ACQUISITION AND PROCUREMENT:

Opportunities Exist to Improve Management of Technical Support Services Contracts

Certain information in this report has been redacted due to its sensitive nature.

OIG-A-2016-013 | September 30, 2016

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OFFICE of INSPECTOR GENERAL
NATIONAL RAILROAD PASSENGER CORPORATION

Memorandum

To: Gerald Sokol, Jr., Executive Vice President/Chief Financial Officer
Bernard Reynolds, Vice President/Chief Procurement and Logistics

From: Stephen Lord, Assistant Inspector General, Audits

Date: September 30, 2016

Subject: *Acquisition and Procurement: Opportunities Exist to Improve Management of Technical Support Services Contracts* (OIG-A-2016-013)

The operation of regional trains on the Northeast Corridor is one of Amtrak's (the company) largest sources of revenue, generating more than $633 million during fiscal year (FY) 2015. To help ensure more reliable and efficient service on this corridor, the company has replaced the electric locomotives used on the regional trains with 70 ACS-64 locomotives purchased from Siemens. In September 2014, the company signed a 15-year, sole-source contract with Siemens to provide technical support and spare parts for these new locomotives.[1] This contract provides the company with additional support staff and technical expertise, allowing in-house staff to focus on other supply-chain management issues. The contract is valued at about $191 million.

Our objective was to examine the extent to which the contract management team followed leading practices in managing the Siemens technical support services contract and to determine whether there are opportunities to improve the management of this contract, and future technical support contracts. We identified leading practices for structuring technical support services contracts by interviewing officials from Class I railroads (CSX, Canadian National, and Kansas City Southern) on the key provisions they include in technical support services contracts, and by interviewing Siemens officials on how they provide technical support services to other rail customers worldwide. We also researched and analyzed the best practices database of the American Productivity and Quality Center, as well as documents related to best practices for internal controls framework and acquisition published by the Committee

[1] Siemens provided 31 support personnel as part of this contract and will manage about 1,450 spare parts, excluding capital spare parts such as wheels and side mirrors.

of Sponsoring Organizations and the Government Accountability Office.[2] Based on our interviews and research, we identified five leading practices for technical support services contracts:

- Pay for spare parts on the basis of mileage instead of per part.
- Establish measurable performance targets, and use performance incentives and guarantees to help ensure that performance targets are met.
- Obtain technical support from the equipment manufacturer or other third party over the expected life of the equipment.
- Decide on a spare parts management strategy as part of the procurement of new equipment.
- Assess the impact of procuring new equipment on related operations.

For additional details on our audit scope and methodology, see Appendix A.

SUMMARY OF RESULTS

The contract management team followed or partially followed some leading practices for the Siemens technical support services contract, but opportunities exist to improve the management of this contract, and similar future contracts. First, the company agreed to pay for spare parts based on locomotive miles traveled rather than on per part, which shifted some of the risks of managing spare parts from the company to the equipment manufacturer. Second, the company established contract performance incentives and guarantees that gave the contractor more incentives to achieve desired performance targets. Third, the company agreed to a 15-year contract—about half of the expected life of the locomotives—which gave the company access to the expertise needed for repairing and maintaining a new line of locomotives.

[2] The American Productivity and Quality Center is a leading authority in benchmarking, best practices, and performance improvement. Also see Committee of Sponsoring Organizations, *Internal Control—Integrated Framework*, May 2013; U.S. Government Accountability Office, *Framework for Assessing the Acquisition Function at Federal Agencies,* September 2005; and Office of Federal Procurement Policy, *A Guide to Best Practices for Contract Administration*, October 1994.

However, the company did not adhere to other leading practices which resulted in increased costs and an inefficient use of labor. Specifically, the company did not take the following actions:

- **Decide on a spare parts management strategy as part of the procurement of the new equipment**. The company did not decide whether it would manage the spare parts for the Siemens locomotives in-house or hire a contractor to perform this function until 2014—four years after signing the contract to purchase the locomotives in 2010. In the interim, company officials decided to use a 25-year loan[3] to purchase about $11.5 million in spare parts. Consequently, the company will incur about $5.8 million in interest expenses to cover the cost of the spare parts. However, the company has not assessed whether cost-effective options exist for prepaying this portion of the loan. Additionally, $3.2 million of the spare parts the company purchased through this loan are now available from Siemens under the terms of the contract. Because of the delayed decision on a spare parts management strategy, there is unnecessary duplication between the inventories of spare parts maintained by the company and Siemens.

- **Assess the impact of the procurement on company-wide operations.** The new locomotives require less maintenance than the fleet they are replacing; however, the company did not assess the impact of the reduced maintenance workload on the Mechanical department. Direct labor hours required for maintenance and repair of the new locomotives were reduced; however, the Mechanical department did not reduce positions. Instead, the department shifted some locomotive maintenance employees from direct maintenance activities to indirect labor activities, such as janitorial services, which did not reduce labor costs. Because the company did not assess the impact of the procurement on company-wide operations, the Mechanical department missed an opportunity to reduce labor costs through better workload planning.

We are making five recommendations to improve the management of this contract and future technical support service contracts. The company agreed with four of these recommendations and disagreed with one. However, the company response outlined a planned action that would address the intent of the recommendation.

[3] The loan was also used to purchase 70 locomotives and to make some facility improvements.

BACKGROUND

The company's Procurement department negotiated the Siemens technical support contract and has the primary responsibility for managing and overseeing it. The contract allows employees of the Mechanical department to requisition spare parts directly from Siemens to maintain the locomotives.

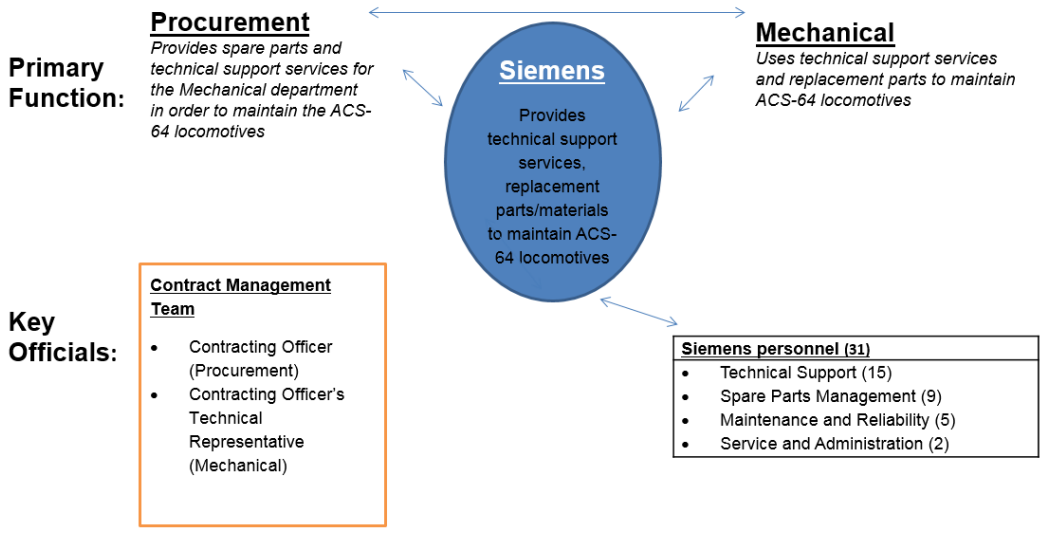
The $191 million contract includes the following:

- [redacted] to provide technical support and manage spare parts
- [redacted] for spare parts
- [redacted] for performance incentives and guarantees
- [redacted] for a one-time mobilization fee

As part of this contract, Siemens has stationed technical support service personnel in four locations: Boston, Massachusetts; Ivy City in Washington D.C.; Sunnyside, New York; and Wilmington, Delaware. These support personnel help manage spare parts and provide technical support to the Mechanical department employees responsible for maintaining the locomotives. Figure 1 shows the functional relationships between Siemens and the company for the contract, as well as the key officials responsible for managing the contract, which we refer to collectively as the contract management team.[4]

[4] The titles we use for the Procurement and Mechanical officials were the titles used during the time period we reviewed.

Figure 1. Functional Relationships Among Amtrak Departments and Siemens on Technical Support Contract



Source: OIG analysis of Amtrak information

In the last few years, the company has taken action to improve contract management and oversight but continues to experience a number of management challenges in this area.[5] For example, in our September 2015 report on the Acela spare parts contract, we found that the company did not assess as much as $19 million in liquidated damages[6] for late parts delivery, among other issues, which had costly consequences.[7] We found that the underlying cause of these conditions was weak contract cost and management controls, and we recommended that the company strengthen its internal controls to more effectively manage and oversee the contract. The company agreed, has since begun using better acquisition and procurement practices and is actively working to address our prior recommendations.

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[5] *AMTRAK: Top Management and Performance Challenges—Fiscal Year 2016 and Beyond* (OIG-SP-2015-015, September 30, 2015).

[6] "Liquidated damages" refers to a set amount of money expressively stipulated in a contract as the amount to be paid by a party that breaches the agreement.

[7] *Acquisition and Procurement: Improved Management Will Lead to Acela Parts Contract Cost Savings* (OIG-A-2015-008, March 10, 2015).

SOME LEADING PRACTICES WERE FOLLOWED, BUT OPPORTUNITIES EXIST TO IMPROVE TECHNICAL SUPPORT SERVICES CONTRACT MANAGEMENT

We found that the contract management team followed or partially followed some leading practices in establishing the terms and conditions of the Siemens technical support contract, as shown in Table 1.

Table 1. Extent to Which Contract Management Team Followed Leading Practices in Managing Siemens Technical Support Contract

Leading Practices	Observed Practices
Pay for spare parts on the basis of mileage traveled by locomotives (rather than paying by part).	**Followed.** Locomotive mileage is being used as the basis for paying the contractor for spare parts.
Establish measurable performance targets, and use performance incentives and guarantees to help ensure that performance targets are met.	**Partially followed.** The technical support contract includes performance targets and uses performance incentives and guarantees to help ensure that these performance targets are met; however, the contract management team did not request supporting documentation from Siemens to help them assess whether the performance targets Siemens proposed were reasonable.
Obtain technical support from the equipment manufacturer or other third party over the expected life of the equipment—typically 30 years for locomotives.	**Partially followed.** Technical support is being provided by the equipment manufacturer. The 15-year contract covers about half of the expected life of the equipment. Although the contract management team did not fully follow this leading practice, its approach gives the company an opportunity to re-evaluate the continued need for such services at the end of the contract.
Decide on a spare parts management strategy as part of the procurement of new equipment.	**Not followed.** The company did not decide whether it would manage the spare parts for the Siemens locomotives in-house or hire a contractor to perform this function until September 2014—four years after the procurement contract was awarded—when it signed the technical support services contract with Siemens. Prior to awarding the technical support services contract with Siemens, the company used a 25-year Railroad Rehabilitation and Improvement Financing loan to purchase 70 locomotives and about $11.5 million in spare parts. The company will pay an estimated $6.8 million in interest over the life of the loan to cover the cost of the spare parts. Additionally, $3.2 million of the spare parts the company purchased through this loan are now available from Siemens under the terms of the contract.
Assess the impact of procuring new equipment on related operations, such as Mechanical department workload.	**Not followed.** The number of direct labor hours required for locomotive maintenance decreased as new locomotives were fielded; however, the company did not assess the impact on the Mechanical department's workload. Indirect labor rates and costs increased because the Mechanical department shifted some workers from direct to indirect labor activities.

Source: Interviews with officials from CSX, Canadian National, and Kansas City Southern Railroads.

Note: We defined our three categories as follows: "followed" means that the company substantially adhered to the stated leading practice and implemented related company policies and procedures; "partially followed" means that the company partially adhered to the stated leading practice and partially implemented related company policies and procedures; and "not followed" means that the company did not adhere to the stated leading practice and did not implement related company policies and procedures.

By adopting these leading practices, the contract management team shifted some of the risks of managing spare parts from the company to the equipment manufacturer, helped create contractor incentives for achieving desired performance targets, and obtained access to the needed expertise in repairing and maintaining a new line of locomotives.

Paying for Spare Parts

Paying for spare parts based on rates per mile traveled per locomotive is an industry leading practice, according to officials from Class I railroads. The advantage of this practice is that the company will pay a fixed rate based on the miles traveled regardless of how frequently the parts need to be replaced. The contract management team followed this leading practice, and the contract requires the company to pay for spare parts based on a fixed-cost-per-mile rate applied to the number of miles traveled and the age of the equipment.

Because the company had no experience using Siemens electric locomotives of this type, the contract management team had no historical data to directly assess the reasonableness of the per-mile rates proposed by Siemens. Instead, the contract management team assessed the appropriateness of the rate Siemens proposed—[redacted] per mile—by comparing it to the spare parts cost-per-mile of [redacted] for the company's existing fleet of electric locomotives. Because the rate Siemens proposed was significantly lower than the rate used for the existing fleet of electric locomotives, the contract management team concluded that the proposed rate was reasonable. We note that the rates for the new locomotives would be expected to be lower than the rates for older locomotives given the age of the equipment, but we had no independent basis for assessing the agreed-upon rate.

Establishing Measurable Performance Targets with Performance Incentives and Guarantees

The use of performance incentives and guarantees is a leading practice in long-term technical support contracts. They help ensure that desired performance targets are met and hold the contractor accountable if they are not met. Incentives are paid to the contractor when the contractor meets or exceeds performance targets, and guarantees are paid to the company when the contractor does not meet the specified targets. Over the 15-year contract, Siemens could receive as much as [redacted] in combined

performance incentives for meeting or exceeding the two performance targets. The upper limit on company guarantees is also [redacted].

The contract management team partially followed this leading practice. The technical support contract contains two performance targets for calculating incentives or guarantees: (1) the number of hours that locomotives are [redacted] during a six-month period, and (2) the [redacted] of the locomotives.

- The first performance target measures the number of hours that locomotives are [redacted][8] during a six-month period. The company and Siemens have agreed on a range of hours that the locomotives can be [redacted]. For example, if 9 to 12 locomotives are in service, the performance target for how long these locomotives can be [redacted] is 513 to 684 hours. If locomotives are [redacted] for less than 513 hours, the company provides Siemens with an incentive payment, if the locomotives are [redacted] more than 684 hours, Siemens pays a guarantee to the company.

  The first measurement period for this performance target was initiated on March 23, 2015. Both the company and Siemens are tracking data on the number of hours locomotives have been [redacted] to assess the potential for incentives or guarantees. The company inputs the actual hours that locomotives are [redacted] into the company's Work Management System, which both the company and Siemens monitor daily. The Superintendent of Locomotives told us the company and Siemens hold a weekly meeting to discuss unresolved issues and open work orders. As of June 15, 2016, no incentives or guarantees had been paid because the company and Siemens have not completed reviewing the data.

- The second performance target measures the [redacted] of the locomotives. Under the contract, [redacted] is determined by the number of [redacted].[9] This incentive/guarantee period does not start until each locomotive reaches the end of its three-year warranty period. The first locomotive will reach the end of its warranty in February 2017. The company has begun tracking the experience with deployed locomotives to better gauge their [redacted] when the performance period begins. According to the

[8] "[redacted]" refers to the period of time when [redacted] cannot be performed on a locomotive because [redacted]

[9] [redacted] can range from a [redacted] or more to the scheduled arrival time to the cancellation of a scheduled trip.

Superintendent of Locomotives, the company documents a description of each [redacted] and works with Siemens officials to determine if it was caused by the company or Siemens.

Although the contract management team was successful in incorporating these performance targets, we rated the adherence to this leading practice as partially followed because Siemens proposed their specific terms, and the contract management team did not request supporting documentation from Siemens to assess their reasonableness. The former contracting officer's representative and the former contracting officer's technical representative told us that they had no historical performance data because these were the first locomotives of this type. Instead, they exercised professional judgement in negotiating the terms of performance target, how the performance incentives would work, and how they would be applied to the contract based on the collective experience of the company's negotiation team. The contract management team also told us they reviewed failure rates from the existing fleet of electric locomotives; however, they could not provide any supporting documentation that we could use as a basis for comparison. The Mechanical department was also unable to provide information on the [redacted] of the existing fleet. As a result, we could not independently assess whether the agreed-upon performance targets were reasonable.

Obtaining Technical Support Over the Expected Life of the Equipment

Obtaining technical support from the equipment manufacturer or other third party over the expected life of the equipment is a leading practice in long-term technical support contracts. This practice helps ensure that needed expertise is obtained for repairing and maintaining a new line of locomotives. The contract management team partially followed this leading practice by obtaining technical support from the original equipment manufacturer, but it entered into a contract for only 15 years, rather than for the equipment's expected lifespan of 30 years. The Chief Mechanical Officer told us that a 15-year contract gives the company an opportunity to assess the need for continued technical support at the end of the contract. Although the contract management team did not fully follow this leading practice, the approach provides the company a basis to judge whether to negotiate a new contract to cover technical support for the expected remaining life of the equipment.

In negotiating the contract, the contract management team did not obtain documentation from Siemens to support the contractor's proposed cost structure.

However, we independently obtained documentation from Siemens to assess the reasonableness of their labor costs and their rates for general and administrative costs and profit, which accounted for about 82 percent of the estimated cost of the contract. To support the projected labor costs, Siemens provided the salary and benefit rate for each of the 31 personnel who will provide technical support.[10] According to these data, the contract included a [redacted] percent rate for general and administrative expenses and a [redacted] percent rate for profit. These rates are comparable to rates the company has approved on other contracts, according to the contracting officer. Based on our analysis and discussions with company contracting officials, the estimated costs for technical support appear reasonable.

Opportunities Exist to Improve Procurement Planning by Following Leading Practices

The contract management team did not follow the two remaining leading practices which resulted in increased costs and inefficient use of labor. Thus, opportunities exist to improve the management of this and future contracts by following leading practices. We estimate that about $6.8 million in funds could be put to better use because of the delay in deciding on a spare parts management strategy and using a loan to purchase spare parts.

Deciding on a Maintenance Strategy at Time of Procurement

Deciding on a maintenance strategy at the time of procurement is a leading practice in long-term technical support contracts to ensure that there is a cost-effective strategy for obtaining spare parts. However, the company did not decide on a spare parts maintenance strategy until September 2014—four years after the contract to purchase the locomotives was signed. Because a maintenance strategy was not in place, the company decided to use a loan to purchase some capital and spare parts in the interim period. This decision resulted in increased costs, as follows:

- The company used a 25-year, $562.9 million loan from the Railroad Rehabilitation and Improvement Financing program to finance the purchases of the 70 Siemens locomotives and spare parts. The spare parts cost about $11.5 million. As a result, the company will incur $6.8 million in interest on cost of the spare parts over the 25-year life of the loan. This expense could have been

[10] Siemens provided an additional employee at no additional cost to the company although the contract was for 30 employees.

avoided if the company had adhered to the leading practice of deciding on a maintenance strategy when it purchased the locomotives. Because of the interest costs, a Finance department official stated that using a loan to pay for these spare parts was not a sound business decision. In September 2013, we also questioned this company practice, stating that using a loan to pay for spare parts and facility improvements associated with the procurements of the Siemens locomotives may not be cost-effective because of the additional interest costs associated with this practice.[11]

We recognize that the lease agreement associated with this loan was not designed to allow the company to re-pay the cost of the spare parts separately from the locomotives. Instead, the agreement assigns 1/70th of the cost of the spare parts to each of the 70 locomotives.[12] The agreement also provides a schedule showing a "termination value"—a dollar amount the company would need to pay to purchase a "unit of equipment", that is, a locomotive and related spare parts. Therefore, in accordance with the lease agreement, the company could pay some or all of the $11.5 million in spare parts by purchasing an equivalent amount of units of equipment. However, the company has not assessed whether it is cost effective to do this. We calculated that the purchase of one unit of equipment would cost about $6.7 million and reduce interest payments by $3.6 million over the remaining 23 years of the loan.

- The company also purchased some spare parts that were later made available under the Siemens technical support contract. Our analysis shows that about $3.2 million of the $11.5 million in spare parts the company purchased (28.21 percent) is now available under the Siemens technical support contract. However, Mechanical department officials stated that they have not explored options for reducing the in-house inventory of spare parts. Thus, the company is unnecessarily maintaining a separate inventory of spare parts and could have

[11] *Asset Management: Amtrak is Preparing to Operate and Maintain New Locomotives, but Several Risks to Fully Achieving Intended Benefits Exist* (Report No. OIG-E-2013-021, September 27, 2013).
[12] On June 21, 2011, the company entered into a Railroad Rehabilitation and Improvement Financing loan financing agreement with the Federal Railroad Administration and a related master lease agreement with Wells Fargo Northwest to finance the purchase of 70 new electric locomotives, related spare parts, and improvements to existing maintenance facilities.

avoided this additional expense if it had decided on a maintenance strategy at the time of the original procurement.

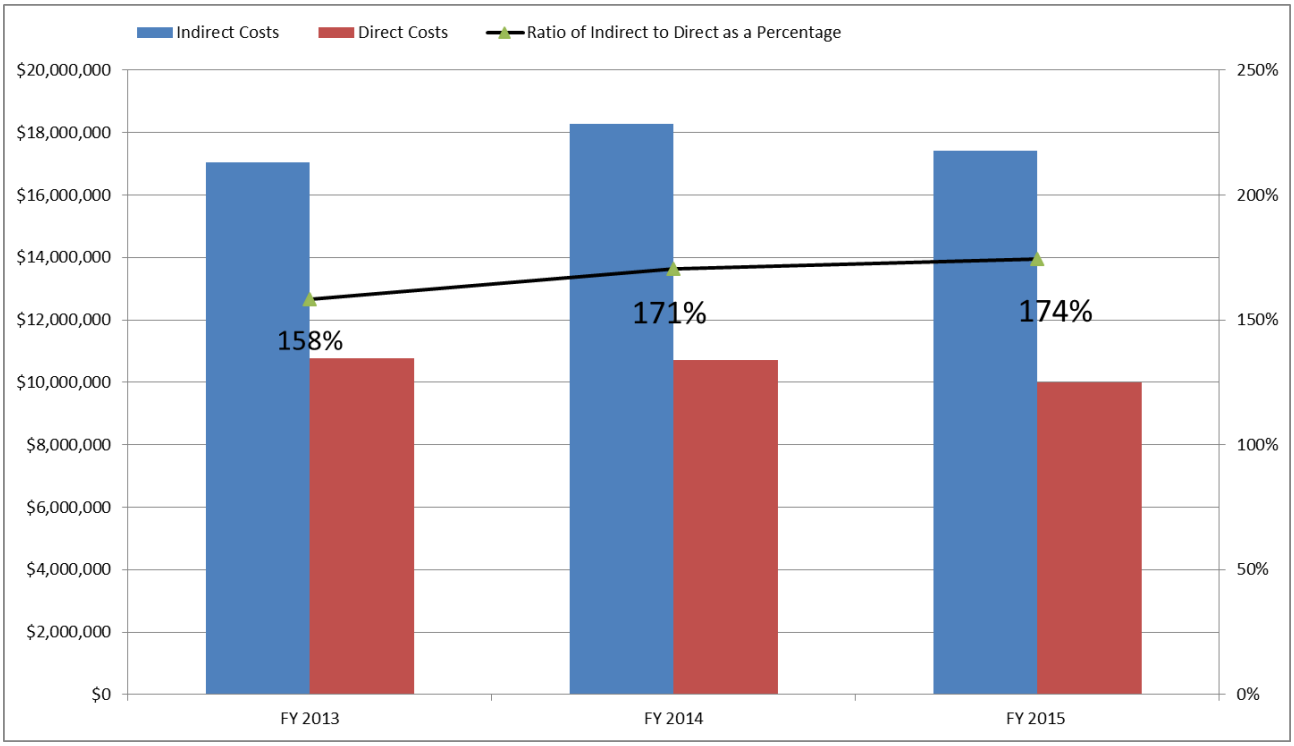
Assessing the Impact of Procuring New Equipment on Company Operations

Another leading practice is to assess the impact of new programs on company-wide operations to ensure efficient and effective use of company resources.[13] However, the Mechanical department did not assess the effect of the new locomotives and the addition of 31 contract support staff on its workload and missed an opportunity to reduce costs. The new locomotives require less maintenance than the fleet they are replacing, which reduces the number of direct labor hours needed to maintain and repair them. However, instead of reducing personnel, the Mechanical department shifted some locomotive maintenance personnel in Wilmington, Delaware,[14] from direct maintenance and repair activities to indirect labor activities, such as janitorial services.

Although shifting personnel from direct to indirect labor activities reduced direct costs, the ratio of indirect labor to direct labor costs increased from FY 2013 to FY 2015, as shown in Figure 2. In June 2015, Finance department officials determined that the indirect labor rates and costs for the maintenance facility in Wilmington, Delaware, were increasing as personnel were shifted from direct to indirect labor positions and they notified Mechanical department officials of the increase. Mechanical department officials told us that they have since taken actions to lower the indirect labor rates and costs, including eliminating some positions related to overhead activities. However, in FY 2015, the indirect labor rate and costs of 174 percent and $17.4 million, respectively, were still higher than the FY 2013 indirect labor rate and costs of 158 percent and $17 million, respectively, as shown in Figure 2.

[13] *Governance: Alignment with Best Practices Could Improve Project Management Office Implementation* (Audit Report OIG-A-2016-002, December 16, 2015).
[14] The maintenance facility at Wilmington, Delaware, is a key facility for performing overhauls on locomotives.

Figure 2. Ratio of Indirect to Direct Labor Costs at Wilmington Maintenance Facility Increased From FY 2013–2015



Source: OIG Analysis of Amtrak Finance and Procurement department data

Note*:* The company accepted 0 ACS 64 locomotives in FY 2013, 21 in FY 2014, and 48 in FY 2015.

CONCLUSIONS

The 15-year, $191 million technical support contract with Siemens is a significant financial investment that is critical to ensuring reliable and efficient service on the heavily traveled Northeast Corridor—one of the company's largest sources of revenue. By following three leading practices, the company (1) shifted the risks of managing spare parts from the company to the equipment manufacturer, (2) provided the contractor incentives to achieve desired performance targets, and (3) gave the company access to the expertise needed for repairing and maintaining a new line of locomotives. However, we could not independently assess the reasonableness of some of the prices and performance targets proposed by Siemens given the lack of supporting documentation. Collecting such data over the contract period would help facilitate decision-making on whether to extend the contract beyond 15 years.

Further, the company incurred increased costs and used labor inefficiently by not following some leading practices. We estimate that about $6.8 million in funds could

have been put to better use because a loan was used to purchase spare parts due to the delay in deciding on a spare parts management strategy. Assessing whether cost-effective options exist for prepaying this loan could help relieve the company of paying future principal and interest expenses and could contribute to company-wide efforts to reduce unnecessary expenses. Additionally, $3.2 million of the spare parts purchased by the company through this loan are also available from Siemens under the terms of the contract. Thus, the company is unnecessarily maintaining a duplicative inventory of spare parts and could have avoided this additional expense if it had decided on a maintenance strategy at the time of the original procurement. Moreover, conducting an assessment of the impact of locomotive procurement on the company-wide operations and workforce requirements could have enabled the company to reduce labor costs and use resources more efficiently. Finally, applying the leading practices we identified to future technical support contracts could help leverage company resources and help ensure more effective and efficient operations.

RECOMMENDATIONS

We recommend that the Senior Vice President/Chief Financial Officer direct the Vice President/Chief Procurement and Logistics to take the following actions:

1. Apply the leading practices we identified in this report to future technical support contracts.
2. Collect data on the cost of technical support services and the agreed-upon performance targets to help facilitate decision-making on whether to extend the contract beyond 15 years.
3. Assess whether it would be cost-effective to purchase (a unit or units) of equipment equivalent to the cost of the spare parts to reduce future interest expenses.
4. Identify available cost-effective options for reducing the duplicate inventory of spare parts maintained by the company.
5. Evaluate whether additional opportunities exist to reduce maintenance costs resulting from the acquisition of the new locomotives.

MANAGEMENT COMMENTS AND OIG ANALYSIS

In commenting on a draft of the report, the company's Executive Vice President/Chief Financial Officer agreed with four of our recommendations and disagreed with one

which we modified in response to company feedback about the structure of the lease agreement. The management response outlined planned actions that address the intent of our recommendations, but it did not provide implementation dates, as we requested. The company's planned actions are summarized below.

- **Recommendation 1:** Management agrees with this recommendation to apply the leading practices we identified in this report to future technical support contracts and noted several actions it plans to take to ensure further compliance with the recommendations on future technical support contracts.

- **Recommendation 2:** Management agrees with this recommendation to collect data on the cost of technical support services and the agreed-upon performance targets to help facilitate decision-making on whether to extend the contract beyond 15 years. The company is tracking the performance requirements included in the Siemens contract and plans to use these data to evaluate the contract once it is up for renewal. The company will also use these data to develop performance requirements and measurements for other new equipment purchases.

- **Recommendation 3:** Management disagrees with this recommendation to assess whether it would be cost-effective to purchase a unit or units of equipment equivalent to the cost of the spare parts to reduce future interest expenses. The company cited several reasons why this was not appropriate and questioned our characterization of the company's purchasing and financing process for spare parts. However, the Executive Vice President/CFO also noted that the company is now considering refinancing the entire outstanding loan amount, which would help meet the intent of our recommendation, once implemented, by reducing future interest expenses associated with this loan.

- **Recommendation 4**: Management agrees with this recommendation to identify cost-effective options for reducing the duplicate inventory of spare parts maintained by the company but accepts the risk associated with maintaining the current inventory level of critical spare parts. The Executive Vice President/CFO noted that long-lead items were purchased to meet demand in the event of a wreck and to build a stock for required overhauls. He noted that under the technical support services contract, Siemens normal lead time for replacing a part required due to a wreck or debris strike could keep a locomotive out of service for 6 to 8 months.

We do not agree with the management decision to accept the risk associated with maintaining the current inventory level of critical spare parts. In May 2013, we reported[15] that the company needs 56 locomotives to meet its peak demand on a normal day, which is 14 fewer locomotives than the number of ACS-64s actually purchased. Therefore, having one locomotive out of service at any one time would have a minimal impact on train operations and does not justify maintaining a separate stock of spare parts.

Recommendation 5: Management agrees with this recommendation to evaluate whether additional opportunities exist to reduce maintenance costs resulting from the acquisition of the new locomotives. . The Mechanical Department will continue to evaluate the resources required to maintain the ACS-64 locomotives. The Delaware Shops Plant Manager is responsible for evaluating whether additional opportunities exist to reduce maintenance costs resulting from the acquisition of the new locomotives.

For management's complete response, see Appendix B.

[15] *Asset Management: Integrating Sound Business Practices into its Fleet Planning Process Could Save Amtrak Hundreds of Millions of Dollars on Equipment Procurements,* Report No. OIG-E-2013-014, May 28, 2013.

Appendix A

SCOPE AND METHODOLOGY

This report provides the results of our audit to examine the extent to which the contract management team followed leading practices for managing technical support contracts to determine whether there are opportunities to improve the management of this contract, and future technical support contracts. The scope of our work included the terms and conditions of the Siemens contract, as well as leading practices to provide technical support for new locomotive equipment. We also met with officials from the Procurement, Mechanical, and Finance departments and from Siemens. We conducted our audit work from December 2014 through June 2016 in Philadelphia, Pennsylvania; Wilmington, Delaware; and in Washington D.C. Certain information in this report has been redacted due to its sensitive nature.

To identify leading practices for technical support contracts, we researched the following external sources:

- Committee of Sponsoring Organizations, *Internal Control—Integrated Framework*, May 2013
- U.S. Government Accountability Office, *Framework for Assessing the Acquisition Function at Federal Agencies*, September 2005
- Office of Federal Procurement Policy, *A Guide to Best Practices for Contract Administration*, October 1994

We also researched and analyzed the best practices database of the American Productivity and Quality Center. We also interviewed officials from CSX, Canadian National, and Kansas City Southern regarding the leading practices they include in technical support services contracts, and Siemens officials on how they provide technical support services to other rail customers worldwide.

To document the company's practices in managing the technical support contract, we reviewed the contract terms and conditions. We interviewed Procurement and Mechanical employees involved in managing the technical support contract to understand how they assessed (1) the proposed cost of the various elements of the contract and (2) the various performance and reliability measures Siemens proposed. We obtained documentation from Siemens to support the estimated cost for salary and benefits of their 31 personnel and the rates for general and administrative expenses and profit.

We also interviewed Finance department officials to discuss the terms and conditions of the Railroad Rehabilitation Improvement Financing loan. We used the lease agreement to calculate the interest expense. To determine the extent of duplicative spare parts, we compared the list of capital spare maintained by Siemens to those purchased by Amtrak. We considered that any spare part on both lists was a duplicate spare part.

We conducted this performance audit in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Internal Controls

We reviewed the management controls the contract management team used to manage and oversee the contract with Siemens. We reviewed the company's program management policies and procedures for the Siemens contract, and we interviewed company and Siemens officials on how these policies and procedures are being implemented. We did not assess the Procurement's department overall system of controls for contract management.

Computer-Processed Data

We did not use computer-processed data in preparing this report.

Prior Audit Reports

In conducting our analysis, we reviewed and used information from the following OIG reports:

- *Governance: Alignment with Best Practices Could Improve Project Management Office Implementation* (OIG-A-2016-002, December 16, 2015)
- *AMTRAK: Top Management and Performance Challenges—Fiscal Year 2016 and Beyond* (OIG-SP-2015--015, September 30, 2015)
- *Acquisition and Procurement: Improved Management Will Lead to Acela Parts Contract Cost Savings* (OIG-A-2015-008, March 10, 2015)

- *Acquisition and Procurement: Closer Alignment with Best Practices Can Improve Effectiveness* (OIG-A-2014-006, May 7, 2014)
- *Asset Management: Amtrak is Preparing to Operate and Maintain New Locomotives, but Several Risks to Fully Achieving Intended Benefits Exist* (Report No. OIG-E-2013-021, September 27, 2013)
- *Asset Management: Integrating Sound Business Practices into its Fleet Planning Process Could Save Amtrak Hundreds of Millions of Dollars on Equipment Procurements* (Report No. OIG-E-2013-014, May 28, 2013)

Appendix B

MANAGEMENT COMMENTS

Memo

Date:	21 September, 2016	From:	Gerald Sokol Jr., Executive Vice President/Chief Financial Officer
To:	Stephen Lord, Assistant Inspector General, Audits	Department:	Finance & Operations
		cc:	DJ Stadtler, Executive Vice President/Chief Operations Officer Bernard Reynolds, Vice President & Chief Procurement & Material Management Mario Bergeron, Senior Vice President, Chief Mechanical Officer Michael McGee, Sr Vice President and Treasurer Matthew Gagnon, Senior Director, Amtrak Controls

Subject: "ACQUISITION AND PROCUREMENT: Opportunities Exist to Improve Management of Technical Support Services Contracts"

This memorandum provides Amtrak's response to the OIG August 5, 2016 audit report: *ACQUISITION AND PROCUREMENT: Opportunities Exist to Improve Management of Technical Support Services Contracts (Project No. 005-2015).*

Recommendation #1
The OIG recommends applying the following leading practices for technical support contracts:

1. Pay for spare parts on the basis of mileage instead of per part
2. Establish measurable performance targets, and use performance incentives and guarantees to help ensure that performance targets are met.
3. Obtain technical support from the equipment manufacturer or other third party over the expected life of the equipment
4. Decide on a spare parts management strategy as part of the procurement of new equipment
5. Assess the impact of procuring new equipment on related operations.

Management Response/Action Plan
Management agrees with these recommendations and followed, or partially followed, the majority of the recommendations in awarding the TSSSA contract to Siemens for the ACS-64 locomotives. Management will institute the following actions to ensure further compliance with the recommendations on future technical support contracts.

1. The Mechanical Department, in partnership with the Procurement and Logistics group will evaluate the need for technical support contracts to include spare parts and other replacement parts required due to wear or overhaul requirements. Together, these

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departments will determine the value of this material being included and determine the most effective method for pricing, strongly considering mileage or other similar usage based measurements rather than paying for parts on a per part basis.

- Official(s) Responsible: The Chief Mechanical Officer (CMO), and the Vice President & Chief Procurement & Logistics Officer.
- Target Implementation Date These leading practices will immediately be incorporated into all new equipment procurement requests.

2. The Mechanical Department will continue to recommend that technical service contracts incorporate measurable performance targets based on both Amtrak and contractor data sources and will use performance enhancements and guarantees to help ensure that performance targets are met.
    - Official(s) Responsible: The Chief Mechanical Officer (CMO), and the Vice President & Chief Procurement & Logistics Officer.
    - Target Implementation Date: The Mechanical and Procurement Departments will immediately begin to incorporate performance targets into technical service contracts and will use performance enhancements and guarantees as available to ensure that the performance targets are met.

Recommendation #2
Collect data on the cost of technical support services and the agreed upon performance targets to help facilitate decision-making on whether to extend the contract beyond 15 years.

Management Response/Action Plan
Management agrees with this recommendation and is already in the process of tracking the performance requirements that were included as part of the initial 15 year TSSSA Technical Services Contract. This data is currently being tracked to enable Siemens and Amtrak to monitor the performance of the ACS-64 locomotives prior to the point at which penalties or incentives will commence. Amtrak and Siemens will monitor these initial performance targets throughout the life of the TSSSA contract and will work to continually develop additional performance measures designed to reduce the operating and maintenance costs of the fleet and improve the overall reliability, thereby improving Amtrak' s performance on the important Northeast Corridor.

Amtrak will then use the data generated over the 15 year life of the current TSSSA agreement to continually evaluate the TSSSA contract up to and including the time of renewal. This data will also be used to develop performance requirements and measurements for other new equipment purchases.

- Official(s) Responsible: The TSSSA Project Manager, and the Senior Principal Contract Specialist will be responsible for developing and monitoring the performance targets over the life of the contract.
- Target Implementation Date: The performance targets are currently being developed and monitored.

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Recommendation #3
Assess whether it would be cost-effective to purchase a unit (or units) of equipment equivalent to the cost of the spare parts to reduce future interest expenses.

Management disagrees with this recommendation.

Use of Funds
"General Operating Funds" are a constrained source of funds. We cannot purchase whatever we want out of general operating funds as that would balloon the operating loss and concomitant operating grant to unacceptable levels. So one cannot simply say that a mistake was made because we borrowed instead of using "general operating funds." You can be sure all available operating funds in every year of Amtrak's operation are used for one expenditure or another.

Also, please note this statement in the draft report, "In the interim, company officials decided to use a 25-year loan to purchase about $11.5 million in spare parts. Consequently, the company will incur about $6.8 million in interest expenses unless it prepays the loan."

We feel that it is an oversimplification to say that the parts cost $11.5 Million plus $6.8 Million in financing costs because we borrowed these funds as part of our overall RRIF Loan II drawdowns. This conclusion ignores basic financial concepts such as that money paid back in future years generally has less value than money paid today. Without differentiating between the present value of money and the discounted future value of money, much of the theory of finance is rendered meaningless.

Finally, the idea that we should pay down some small portion of a $465 million loan (just $11 million worth) because it is s*ymbolically* equivalent to the cost of certain spare parts that it is felt should not have been financed, is not with great merit. If the economics dictate that such $11million should be repaid to save the interest expense, then it must also follow that the entire $465 million loan should be promptly prepaid in full. The Report fails to distinguish between *good* borrowing and *bad* borrowing; i.e., why we should pay back $11 million, but keep $454 million outstanding.

Purchase of Spare Parts
Going all the way back to the original loan application made to the FRA in 2010, there was $28.9 Million of the overall loan carved out for the purchase of spare parts, out of the total loan facility of $562.9 Million. This was all part of what was reported and approved by the Amtrak Board of Directors in respect of RRIF Loan II. In reality, the full $28.9 Million allocated was not borrowed, but just $11.5 Million in spare parts deemed essential to have on hand, in addition to the spare parts that ended up being managed and owned by Siemens under the spare parts management contract signed in 2014.

Loan Prepayment
With respect to prepaying just the portion of RRIF Loan II related to the $11.5Million in spare parts financed, there is no provision in the Financing Agreement to separately prepay this portion of the loan. Amtrak could prepay the entire $467 Million of loan outstanding (which we now have under consideration) but not specifically the $11.5 Million relating to spare parts.

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Recommendation #4
Identify available cost-effective options for reducing the duplicate inventory of spare parts maintained by the company.

Management Response/Action Plan
Management agrees with this recommendation and accepts the risk associated with maintaining the current inventory level of critical spares for the ACS-64 fleet based on the following analysis.

As of August 26, 2016, Amtrak has issued $6.22 million of the $11.5 million (54%) critical spares procured for the ACS-64 fleet. The critical long-lead materials were purchased in order to meet demand required in the event of a wreck, which has no guaranteed availability under the TSSSA, and to build a pool stock for required overhauls.

It should be noted that the current TSSSA has no LDs associated with damage caused by debris strikes or accidents. This is important as the obligation for Siemens would be to replace the part under their normal lead time. In the case of locomotive 629, with its damaged transformer, not having that critical spare could have kept 629 out of service for 6-8 months.

As the TSSSA was being negotiated, Amtrak did request that Siemens buy back the critical spares covered under the agreement, however, this proposal was declined. Due to the unique nature of this fleet to Amtrak, there is not a market for these spare parts and it is more cost effective for Amtrak to keep them. As indicated in our response to recommendation # 1, Amtrak will define the scope of supply for all new equipment procurements and associated technical support contracts to include a spare parts management strategy in order to prevent this situation from occurring in the future.

Recommendation #5
Evaluate whether additional opportunities exist to reduce maintenance costs resulting from the acquisition of the new locomotives.

Management Response/Action Plan
Management agrees with this recommendation, and to a large extent, this was considered through the rollout of the ACS-64 locomotive. Mechanical Leadership continues to evaluate the resource requirements for Electric Locomotive maintenance as the ACS-64 locomotives have come online.

At the time the ACS-64 locomotives initially went into revenue service, Amtrak was still running the legacy electric fleet. The Wilmington Shops were committed to providing resources to continue the maintenance requirements for the legacy locomotives still in service, as well as providing resources to decommission the legacy fleet. In addition, the Wilmington Shops were responsible for providing the resources necessary to commission the new ACS-64 locomotives, including several Field Modifications that were required.

At the time, due to the potential risk exposure related to not having the resources required for the legacy fleet and the new fleet, coupled with the increase in resource allocation for training (overhead expense), Mechanical Leadership took a conservative approach and decided to protect the NEC business with higher resources, given the importance of this business in generating revenue. Keeping in mind that (4) different types of electric locomotives would require maintenance at the same time coupled with the additional training required for the ACS-64 fleet, higher overheads

could be expected. As the ACS-64 fleet continued to come online and perform well and the legacy fleet decommissioned, the potential risk decreased. As a result, ongoing efforts to reduce overhead expense have resulted in decreased overhead costs and a lower headcount.

- Official(s) Responsible: The Delaware Shops Plant Manager will be responsible for evaluating whether additional opportunities exist to reduce maintenance costs resulting from the acquisition of the new locomotives.
- Target Implementation Date: Target Implementation Date: The Delaware Shops have reduced headcount and overhead costs since the initial OIG review and are continually evaluating the overall maintenance costs for the ACS-64 locomotives to develop the optimum overhead and headcount levels.

Appendix C

OIG TEAM MEMBERS

Michael Kennedy, Senior Director, Audits

Dorian Herring, Senior Audit Manager

John Borrelli, Senior Auditor

Michelle Navitsky, Auditor

OIG MISSION AND CONTACT INFORMATION

Mission

The Amtrak OIG's mission is to provide independent, objective oversight of Amtrak's programs and operations through audits and investigations focused on recommending improvements to Amtrak's economy, efficiency, and effectiveness; preventing and detecting fraud, waste, and abuse; and providing Congress, Amtrak management, and Amtrak's Board of Directors with timely information about problems and deficiencies relating to Amtrak's programs and operations.

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Certain information in this report has been redacted due to its sensitive nature.