



OFFICE of INSPECTOR GENERAL
NATIONAL RAILROAD PASSENGER CORPORATION

TRAIN OPERATIONS:

Opportunities to Reduce the Cost of Servicing and Inspecting
Trainsets

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

OIG-A-2019-002 | November 7, 2018

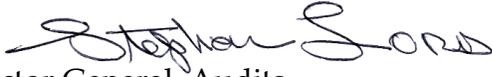
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Memorandum

To: Scot L. Naparstek
Executive Vice President/Chief Operating Officer

From: Stephen Lord 
Assistant Inspector General, Audits

Date: November 7, 2018

Subject: *Train Operations: Opportunities to Reduce the Cost of Servicing and Inspecting Trainsets (OIG-A-2019-002)*

Several of our previous reports identified inefficiencies in Amtrak's (the company) Mechanical department and outlined ways it could reduce the cost of its operations or put funds to better use.¹ Most recently, we reported in April 2018 on opportunities to reduce the cost of rebuilding components at the department's three major maintenance facilities,² including better aligning the number of staff to the workload and considering contracting out some activities. Such changes support the Chief Mechanical Officer's current efforts to realign workloads and staffing at these back shops and the company's efforts to reduce its operating losses.

This report is the second in a series about the Mechanical department's operating efficiency and focuses on the department's service and inspection activities. Workers at service and inspection sites inspect the company's locomotives and passenger cars to ensure that they meet safety standards set by the Federal Railroad Administration (FRA), and clean and service the trainsets to ensure that they meet the company's guidelines for cleanliness.³ The company has a total of 62 locations nationwide where it services and inspects trainsets; 50 smaller outlying sites (sites), as well as 12 larger

¹ *Amtrak Mechanical Maintenance Operations* (E-05-04), September 6, 2005, found that the company's maintenance operation was conducted mostly at time-based intervals and was characterized by a high number of reactive, unscheduled repair actions. In addition, see *Mechanical Maintenance: Improved Practices Have Significantly Enhanced Acela Equipment Performance and Could Benefit Performance of Equipment Company-wide* (OIG-E-2012-008), May 21, 2012, found that the company made significant progress on its Acela fleet, but additional improvements in maintenance practices could be made company-wide.

² *Train Operations: Opportunities to Reduce the Cost of Rebuilding and Manufacturing Components at Maintenance Facilities* (OIG-A-2018-006) April 16, 2018. The three facilities are known as back shops; they are located in Wilmington, Delaware; Bear, Delaware; and Beech Grove, Indiana.

³ 49 CFR Parts 229, 236, and 238.

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preventative maintenance facilities. This audit focused on the service and inspection functions conducted at the 50 sites.⁴

Our objective for this audit was to identify opportunities, if any, for the Mechanical department to reduce the cost of its service and inspection operations at its 50 outlying sites. The department staffs 16 of these sites with company employees and the remaining 34 with contractors, and is responsible for overseeing operations at all of these sites. In fiscal year (FY) 2017, the service and inspection activities at the 16 company-staffed sites cost about \$30.4 million and at the 34 contractor sites about \$11.5 million.

To assess opportunities to reduce costs, we examined financial and operational data on the department's service and inspection sites, including data on staffing and expenditures, such as labor and materials. Because workers at these sites can perform service and inspection work only when trains are onsite, we also compared work schedules to train schedules across various sites to identify potential opportunities to better align the workforce with the workload. In addition, we visited five sites to interview staff, including supervisors, and to observe daily operations: Lorton, Virginia; Fort Worth, Texas; Oklahoma City, Oklahoma; Pontiac, Michigan; and New Haven, Connecticut. We also interviewed company labor relations officials to identify what type of actions the company could take consistent with its collective bargaining agreements. Our scope and methodology is discussed in detail in Appendix A.

SUMMARY OF RESULTS

The Mechanical department has opportunities to reduce the cost of performing service and inspection activities by (1) adjusting workloads and staffing to achieve greater efficiencies, and (2) better managing overtime. The department has taken some recent steps to reduce costs in other areas of its operations, but it has not fully assessed changes that could be implemented to make its service and inspection activities more cost-effective and efficient without affecting service delivery. By making the changes recommended in this report, we estimate that the department could put \$2.3 million to

⁴ Preventative maintenance facilities are located in Albany, New York; Boston, Massachusetts; Chicago, Illinois; New York City, New York; Washington, D.C.; Sanford, Florida; Hialeah, Florida; New Orleans, Louisiana; Los Angeles, California; Oakland, California; Philadelphia, Pennsylvania; and Seattle, Washington.

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\$6.4 million to better use annually, depending on the extent of changes the department implements.

We identified several cost-savings opportunities for the department to consider:

- **Moving inspection work to the service and inspection areas of preventative maintenance facilities.** Shifting FRA-mandated safety inspections from some service and inspection sites to the service and inspection areas of preventative maintenance facilities could reduce costs while still meeting federal safety requirements. For example, we found that the department could move some trainset inspections from company-staffed and contractor-staffed sites in Michigan and Missouri to the Chicago preventative maintenance facility. The department could make these changes and still meet the timeframe that federal safety standards require – once every 24 hours for equipment in operation.

The department could then adjust staffing at these sites to reflect the reduced workload. For example, some trainsets inspected by these sites travel through the Chicago facility every day, such as those on the *Wolverine* and *Lincoln* routes, and Chicago staff are already involved in cleaning these trainsets. An outside consulting group found that the Chicago facility has excess capacity, including in the train service and inspections section, which a senior company official confirmed. Based on the results at the Chicago facility, the company may have similar savings opportunities at the other 11 preventative maintenance facilities. Depending on the amount of additional inspection work these facilities absorb, we estimate that the department could put \$1.4 million to \$3.9 million to better use by conducting more inspection work in these facilities.

- **Reducing unnecessary full-time positions.** At a sample of 4 of the 16 company-staffed service and inspection sites, we found that full-time employees work standard 8-hour shifts even though the sites do not have enough regularly scheduled service and inspection work to fill an 8-hour shift. For example, the daily train at Fort Worth is onsite for five hours, and because of track constraints, staff have a three-hour window to inspect, clean, and service the trainset.⁵

⁵ Typically, the timeline for layover or turnaround servicing for an eight-car trainset is two to two and a half hours. In this report, we used three hours (to include a half-hour lunch) when modeling the time needed to perform these activities, although this timeframe can vary depending on factors like the length of the trainset and whether any mechanical issues arise.

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However, staff are assigned regular eight-hour shifts to complete the three hours of work. We observed, and a site supervisor confirmed, that staff use part of their workday to perform other tasks, including gathering their tools and supplies before the trainset arrives in a station. During site visits, however, we observed that these tasks did not require a significant amount of time to complete.

Two senior company officials acknowledged that staffing levels at sites were not usually based on workload but more on a historical preference to have a full complement of staff on-hand to respond quickly to any unforeseen mechanical failures on trains at the site or along the route. This is a costly practice. For example, we estimated from assessments we conducted on 4 of the 16 sites that the idle staff hours at these 4 sites cost the department almost \$3 million annually.

We also found that it is relatively expensive to staff a site with company employees as compared to contractor employees. For example, along one route, it cost 83 percent more for company employees to perform service and inspection activities on a trainset than for contractor staff to perform similar work on the same trainset.⁶ This is, in part, because contractors' pay and benefits differ from company employees.

- **Better managing the cost of overtime.** Management of overtime has been a long-standing issue for the company.⁷ However, our work showed that management of overtime continues to be a challenge at some of the 16 company-staffed service and inspection sites. For example, we found that in FY 2017, company employees at all sites earned a total of about \$3.1 million in overtime, even staff at the four sites we noted earlier who have full-time staff without full-time work. In addition, at 8 of the 16 sites, staff were earning on average at least 20 percent more than their regular base wage in overtime pay. Supervisors at two of the sites we visited were unaware of either why overtime was being incurred or the

⁶ While company executives told us that there may be some challenges to contracting out work due to labor rules, they also said there are a number of options the company could consider to adjust its workforce, including the use of contractors in certain instances.

⁷ *Amtrak: Top Management and Performance Challenges—Fiscal Years 2019 and 2020* (OIG-SP-2018-011) September 28, 2018. Additionally, in its FY 2017 budget request to Congress, the company committed to documenting and reporting overtime, including identifying its root causes and reducing any unnecessary expenses.

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amount of overtime staff earned. Because these supervisors were not aware,⁸ they were missing opportunities to manage the overtime and help reduce costs. We estimate that taking steps to better manage overtime and reduce it when possible could allow the department to put about \$900,000 to \$2.4 million dollars to better use.

As part of the Mechanical department's efforts to realign its workforce and reduce costs, we recommend that the department consider taking steps to reduce costs at its 50 service and inspection sites including shifting more service and inspection work to preventative maintenance facilities, reducing unnecessary positions, and better managing overtime use. In commenting on a draft of this report, the Chief Mechanical Officer agreed with our recommendations and highlighted efforts the company has initiated or plans to take, including assessing workload and staffing options, and issuing a new policy on overtime. These actions, if fully implemented, will address the intent of the recommendations.

BACKGROUND

The Mechanical department has oversight responsibility for all of the company's service and inspection activities conducted at 16 company-staffed sites and 34 contractor-staffed sites (see Figure 1). The activities that the staff perform while the trainsets are onsite include the following:

- **FRA-mandated safety inspections.** This includes conducting cab signal tests, air brake tests, and interior and exterior inspections, as well as documenting that the company completed the required tests.
- **Cleaning.** This includes removing trash, washing windows, vacuuming carpets, and wiping down restrooms and café cars.
- **Other service and inspection activities.** This includes replenishing potable water, pumping waste from toilets, and repairing equipment.

The department also performs similar service and inspection activities at the 12 preventative maintenance facilities.

⁸ IMA, *The Conceptual Framework for Managerial Costing* states that managers' best guidance for future outcomes is often provided by understanding the cause-and-effect relationships in the process they are trying to influence and improve.

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Figure 1. Mechanical Department's 50 Outlying Service and Inspection Sites



Amtrak staff

LOCATION	STAFF ^a
Baltimore, MD	■
Fort Worth, TX	■
Harrisburg, PA	■
Kansas City, MO	■
Lorton, VA	■
New Haven, CT	■
Newport News, VA	■
Niagara Falls, NY	■
Pittsburgh, PA	■
Pontiac, MI	■
Richmond, VA	■
San Antonio, TX	■
San Diego, CA	■
Springfield, MA	■
St. Louis, MO	■
Washington, DC	■
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Contractor staff

LOCATION	LOCATION
Albuquerque, NM	Oklahoma City, OK
Auburn, CA	Omaha, NE
Bakersfield, CA	Port Huron, MI
Brunswick, ME	Portland, ME
Carbondale, IL	Portland, OR
Charlotte, NC	Rutland, VT
Denver, CO	Sacramento, CA
Eugene, OR	Salt Lake City, UT
Everett, WA	San Jose, CA
Goleta, CA	San Luis Obispo, CA
Grand Rapids, MI	Savannah, GA
Lakewood, WA	Spokane, WA
Lynchburg, VA	St. Albans, VT
Milwaukee, WI	St. Paul, MN
Minot, ND	Toledo, OH
Montreal, QC	Toronto, ON
Norfolk, VA	West Quincy, MO

Source: OIG analysis of company data

Note:

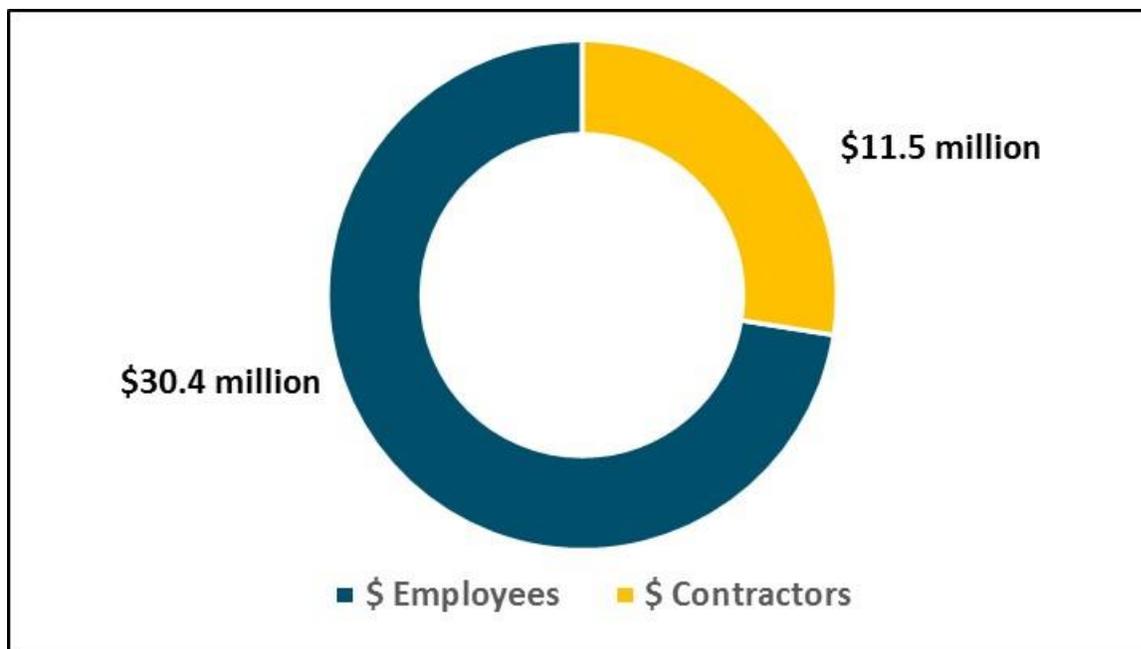
^a The average number of staff is rounded at company sites.

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In FY 2017, service and inspection activities at the 50 sites listed above cost a total of about \$42 million as seen in Figure 2. Company-staffed sites represented most (\$30.4 million) of these costs.

**Figure 2. Cost of Service and Inspection Activities
at Company-Staffed vs. Contractor-Staffed Sites, FY 2017**



Source: OIG analysis of company data

MECHANICAL DEPARTMENT HAS NOT ASSESSED OPPORTUNITIES TO REDUCE COSTS AT SERVICE AND INSPECTION SITES

The Mechanical department is striving to reduce the cost of its service and inspection activities but has not fully assessed opportunities to shift some safety inspection work to preventative maintenance facilities, reduce excess staff capacity where sites do not need as many full-time positions, and better manage overtime costs.

Moving inspection work to the service and inspection areas of preventative maintenance facilities. The department can reduce the cost of service and inspection activities by shifting some FRA-mandated safety inspections⁹ from service and

⁹ FRA-mandated safety inspections that must be performed within a 24-hour period include cab signal testing.

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inspection sites to the service and inspection areas of preventative maintenance facilities.

For example, we examined the Chicago preventative maintenance facility¹⁰ and found that the company could move some FRA-mandated safety inspections that are currently conducted at four service and inspection sites in Michigan and Missouri to the Chicago facility and still meet federal timeframes for conducting FRA-mandated safety inspections.¹¹ Specifically, we assessed the schedules of routes that originate or terminate in Chicago and found a number of routes where the trainsets are in Chicago once every 24 hours, such as the *Wolverine* and *Lincoln* routes, and Chicago staff are already responsible for cleaning them. Their current route schedules would allow the Chicago staff to perform the FRA-mandated safety inspections within the required time frames. In addition, in 2015 an outside consulting group tasked with assessing the company's Chicago operations concluded that the facility had excess staff capacity, including in the service and inspection section.¹² Furthermore, a senior Mechanical department official with oversight responsibilities for service and inspections acknowledged that the Chicago facility has the staff capacity to take on these additional inspections.

We recognize that the four affected sites—Pontiac, Michigan; Port Huron, Michigan; St. Louis, Missouri; and West Quincy, Missouri—may still need to maintain the capacity to clean trainsets in accordance with company cleaning standards. However, the reduced workload would allow the department to adjust staffing levels at company-staffed sites and reduce the scope of work at sites staffed with contractors. For example, our work shows that by shifting FRA-mandated safety inspections to Chicago, the department could reduce the scope of work at two contractor-staffed sites in Michigan and Missouri. We estimate that the department could put approximately \$240,000 to

¹⁰ We selected the Chicago preventative maintenance facility for this analysis because long-distance and state-supported corridor routes originate and terminate there. Additionally, during our audit work, a senior Mechanical department official told us that Chicago has the existing capacity and resources to conduct these inspections.

¹¹ At some sites where the company also performs service and inspection activities for state-supported or commuter routes, the company would consult these customers about staffing levels if making adjustments involves a change in the contractual agreements.

¹² Executive Summary, Amtrak Chicago Terminal Assessment, Argo, July 8, 2015.

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better use as a result.¹³ The department could also adjust staffing levels at two company-staffed sites in these same states, and we estimate that the department could put more than \$100,000 to better use for each position it eliminated.¹⁴

Our findings for the Chicago preventive maintenance facility suggest that by assessing similar cost-savings opportunities at the company's 11 other preventative maintenance facilities, the department could further reduce costs by shifting safety inspections performed at service and inspection sites. For the company-staffed sites, we estimate that the potential cost savings of this shift is about \$1.2 million to \$3.8 million annually, depending on the amount of work preventative maintenance facilities absorb as shown in Table 1.¹⁵

Table 1. Estimated Savings Associated with Shifting Company-staffed Inspections to Preventative Maintenance Facilities^a

Percent of outlying inspection work that could potentially be absorbed by preventative maintenance facilities:	5%	10%	15%
Projected elimination of company inspection staff across outlying sites	12 workers	24 workers	37 workers
Potential savings	\$1,217,000	\$2,435,000	\$3,753,000

Source: OIG modeling based on company financial data

Note:

^a Savings might not be immediately realized if this change is implemented as a transfer in which employees would be expected to follow their work.

Reducing unnecessary full-time positions. The department could also reduce the costs at some of its 16 company-staffed service and inspection sites by reducing the number of full-time positions where the workload does not justify them. At some of these sites, we found that there is not enough work to fill an eight-hour shift.¹⁶ For instance, the Fort Worth service and inspection site is primarily responsible for servicing and inspecting the *Heartland Flyer*. This trainset is scheduled to be onsite for five hours but due to track constraints, staff can work on the trainset only for about three of those

¹³ We did not model the cost savings associated with reducing the scope of work at contractor-staffed service and inspection sites outside the Midwest.

¹⁴ Based on the company's financial data and interviews with company officials, we calculated that the cost of the average wages and benefits was ██████ per employee in FY 2017.

¹⁵ Percentages are based on the total company staff at sites in FY 2017.

¹⁶ Full-time is considered to be five consecutive eight-hour days.

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hours despite working eight-hour shifts. In another instance, the Lorton site is responsible for servicing and inspecting the *Auto Train*, but because of the time it takes for passengers to board and depart from the train, company staff can work on the trainset only during a five-hour period. Nonetheless, the company staffs each of the two sites with full-time employees. We found four examples of company-staffed service and inspection sites where the workload does not justify having full-time service and inspection staff based on our analysis of the time available to conduct service and inspection activities, though we did not examine all 16 sites. See Table 2.

**Table 2. Examples of Sites with Unnecessary Full-time Staff
and the Estimated Cost to the Company**

	Pittsburgh	Pontiac	Fort Worth	Lorton	Total
Hours the site is staffed each day ^a	13	15	8	8	
Hours needed to perform S&I workload each day	3	9	3	5	
Hours of planned idle time each day	10	6	5	3	
Percent planned idle time each day	77%	40%	63%	38%	
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████████████████████	████████	████████	████████	████████	████████

Source: OIG analysis of company shifts, time typically needed to complete service and inspection activities, and company financial data

Notes:

^a Full-time shifts are eight hours each; however, both Pittsburgh and Pontiac have two shifts that overlap.

^b Dollar amounts have been rounded for the purpose of this analysis.

We observed, and a site supervisor confirmed, that employees complete some tasks before they start work on the trainsets, such as gathering tools and supplies; however, these tasks do not require a significant amount of time to complete. Additionally, two senior company officials told us that the company typically did not base staffing levels at these sites on workload. Rather, it based levels on a historical preference to ensure that sites have a full complement of staff on hand to quickly mitigate any incident that may arise at a site, or along the train route. However, this practice results in staffing inefficiencies for the company.

We also found that it is relatively expensive to staff a site with company employees compared to contractor employees. One train route, the *Heartland Flyer*, is serviced and

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inspected by company staff at one end and contractor personnel at the other. The FY 2017 cost associated with company-staffed operations in Fort Worth was about \$1 million while payments to the contractor for services provided in Oklahoma City was about \$177,000—an 83 percent difference. This is partly due to the difference in pay and benefits between company staff and contractors.

When making adjustments to staffing levels, the vice president of labor relations told us that labor agreements generally do not restrict staffing levels or starting times so the company has some flexibility within the current agreements. He said that although unions generally favor full-time employment positions, the company has a variety of options to reduce the number of unnecessary full-time positions, including the following:

- eliminating positions
- choosing not to replace staff who leave the company, or if necessary, replacing them with part-time, flexibly scheduled contract support
- assigning certain work to other crafts

Some of these actions might raise union concerns, but the company said it would consult labor representatives, if needed. In a 2013 report on public transit, the Government Accountability Office (GAO) noted that companies have to weigh the potential for union resistance against the financial pressures to increase cost-effectiveness when making decisions on how to use resources most effectively.¹⁷

Better managing the cost of overtime. The department could also reduce the cost of service and inspection activities by better managing its use of overtime at the 16 company-staffed sites.¹⁸ As we have previously reported, management of overtime has been a long-standing issue for the company.¹⁹ However, we found that staff at all 16 sites earned overtime, including 4 sites where we identified significant idle time,²⁰ although the amounts varied significantly across sites. In FY 2017, average overtime

¹⁷ GAO, *Public Transit: Transit Agencies' Use of Contracting to Provide Service* (GAO-13-782), September 2013.

¹⁸ Amtrak generally pays a fixed monthly fee to the companies that staff contractor service and inspection sites.

¹⁹ *Amtrak: Top Management and Performance Challenges—Fiscal Years 2019 and 2020* (OIG-SP-2018-011) September 28, 2018.

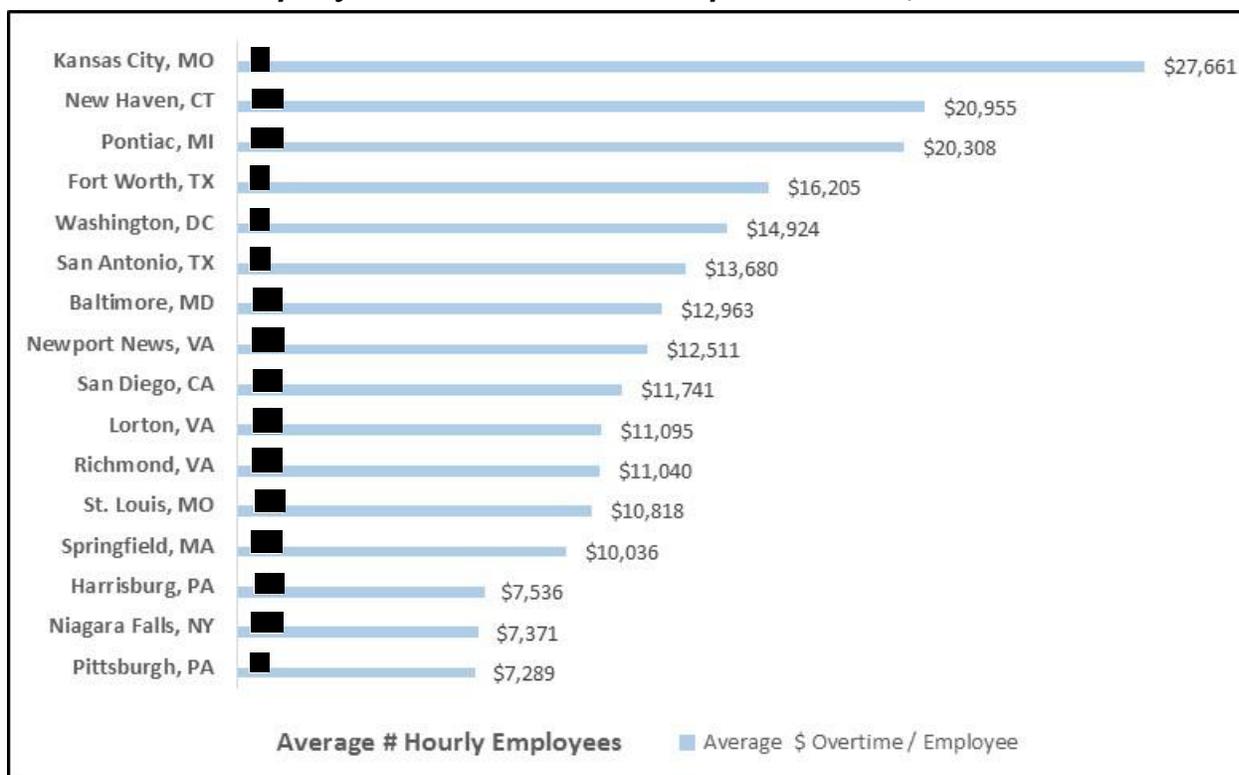
²⁰ The four sites with significant idle time are listed in Table 2, and are Pittsburgh, Pennsylvania; Pontiac, Michigan; Fort Worth, Texas; and Lorton, Virginia.

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costs at these 16 sites ranged from \$7,289 to \$27,661 per employee, as shown in Figure 3. This resulted in \$3.1 million in overtime.

**Figure 3. Average Overtime Incurred
 at Company-staffed Service and Inspection Sites, FY 2017**



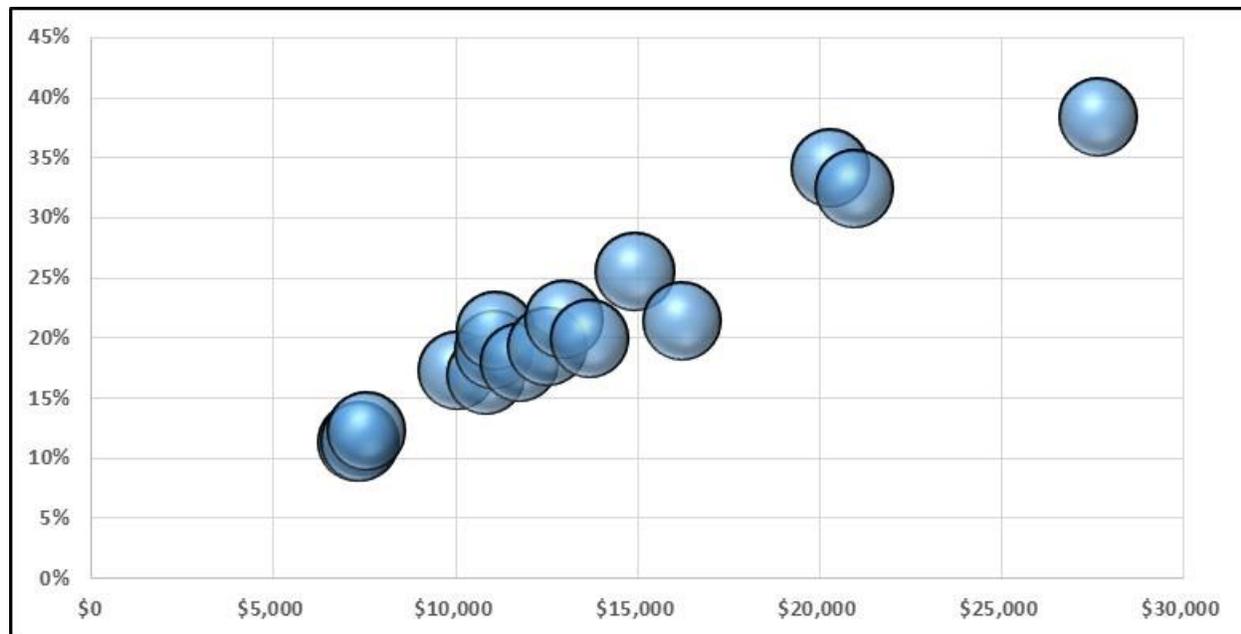
Source: OIG analysis of company data

The average, annual extra percentage of pay employees earned above their base wage as a result of overtime (or the overtime-to-straight-time ratio) across all 16 sites was 21 percent, and it ranged from 11 percent to 38 percent at individual sites as shown in Figure 4.

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**Figure 4. Overtime-to-Straight-Time Ratios
at 16 Company-staffed Service and Inspection Sites, FY 2017**



Source: OIG analysis of company data

In some cases, however, we found that site managers did not know why their staff were earning overtime or how much they were earning. Without this information, these managers could not take steps to ensure that the overtime was necessary or to assess ways to reduce it in line with the company's stated goal.

For example, the foreman at one site was unaware of how much overtime his staff incurred and was surprised to learn that it averaged more than \$20,000 per person in FY 2017. At another site where staff incurred on average more than \$16,000 in overtime per employee in FY 2017, the assistant superintendent initially said this overtime was needed to complete work on late trains. However, our analysis of on-time performance data and work order data shows that the primary driver of overtime costs at this site was staff working at least a full eight-hour shift of overtime on their scheduled days off. This occurred even though the daily trainset that is serviced at this site is only available for work for about three hours during a typical eight-hour shift.

While there are legitimate reasons for the use of overtime—the vice president of labor relations said that sites could more cost-effectively manage overtime. For example, he said they could do this by calling in staff for only the number of overtime hours needed

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or supplementing the workforce with contractors on days certain staff are not scheduled to work or for certain shifts. Depending on the amount of overtime reduced by the sites, we estimate that the department could save annually, on average, about \$900,000 to \$2.4 million, as shown in Table 3.

**Table 3. Estimates of Potential Cost Savings
Associated with Reduced Use of Overtime**

If outlying sites reduced their average overtime-to-straight-time ratio from 21% to:	15%	10%	5%
Resulting savings would be:	\$858,000	\$1,609,000	\$2,361,000

Source: OIG modeling based on company financial data

The Chief Mechanical Officer updated us in September 2018 about the status of plans to realign the workforce and workload of the Mechanical department and noted that he will be able to use the findings outlined in this report as he considers the department's workforce needs. He also noted that he anticipates the needs will change again over the next decade as the company moves through the process of procuring and commissioning a new fleet of locomotives and passenger cars that come with new technologies and, therefore, new maintenance strategies.

CONCLUSIONS

The Mechanical department has several opportunities to reduce the cost of service and inspection activities across its nationwide network of service and inspection sites. We determined that the company could put \$2.3 million to \$6.4 million in funds to better use annually by shifting more service and inspection work to the service and inspection areas of preventative maintenance facilities, reducing unnecessary full-time positions, and better managing overtime use at these sites. Implementing changes to reduce costs across its service and inspection sites as part of its continuing efforts to realign its staffing to its workload would help the Mechanical department operate more efficiently and the company meet its broader goal of eliminating its net operating loss by 2021.

RECOMMENDATIONS

As part of the Mechanical department's efforts to better align workforce with workload and reduce costs, we recommend that the Chief Operating Officer direct the Chief Mechanical Officer to consider the extent to which the department can take actions to

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operate more efficiently at its service and inspection sites, including implementing the following changes:

- a) identifying opportunities to shift work from these sites to the service and inspection areas of preventative maintenance facilities
- b) reducing unnecessary full-time positions at sites without a full-time workload
- c) better managing the amount of overtime that staff incur at these sites

MANAGEMENT COMMENTS AND OIG ANALYSIS

In commenting on a draft of this report, the company's Chief Mechanical Officer generally agreed with our recommendations and stated that the company will take actions to implement them in a timely manner. The company's planned actions are summarized below.

Recommendation 1 (a): Management agreed to identify opportunities to shift work from service and inspection sites to the service and inspection areas of preventive maintenance facilities. As part of this effort, the Mechanical Department will review train schedules to determine if it can consolidate required federal inspections at larger maintenance locations. The target completion date for these actions is July 2019.

Recommendation 1 (b): Management agreed to consider reducing unnecessary full-time positions at sites without a full-time workload. The company will annually evaluate the staffing of each service and inspection site and its hours of operation and will seek to balance reducing costs with operational considerations such as train schedules, distance between repair locations, and terms of collective bargaining agreements. The target completion date for these actions is once per year, in conjunction with the development of the company's annual operating plan.

Recommendation 1 (c): Management agreed to better manage the cost of overtime. On November 1, the Mechanical department issued a new policy addressing requests, use, and approval of overtime. The department also now issues a daily report to front line managers so that they can better monitor overtime as employees incur it. The target completion date for these actions is November 15, 2018.

For management's complete response, see Appendix B.

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APPENDIX A

Scope and Methodology

Our objective for this audit was to assess the extent to which the Mechanical department has opportunities to reduce the cost of performing service and inspection activities at its 50 service and inspection outlying sites. This report identifies opportunities for the Mechanical department to reduce costs by assessing how it conducts trainset service and inspection activities. This is our second audit to assess the extent to which the Mechanical department has opportunities to more efficiently conduct its maintenance activities. Certain information in this report has been redacted due to its sensitive nature.

Our work focused on the service and inspection activities conducted at the company's 50 sites. We performed our audit work from May 2018 through October 2018, conducting site visits in New Haven, Connecticut; Pontiac, Michigan; Oklahoma City, Oklahoma; Fort Worth, Texas; and Lorton, Virginia, as well as interviewing company officials in Chicago, Illinois, and Washington, D.C. We selected the five sites to visit based on the types of trains serviced and the type of staffing arrangement to ensure that we included contractor-staffed and company-staffed sites.

To understand the range of activities at the company's service and inspection sites, we reviewed Mechanical department manuals, interviewed company officials, and visited the five locations listed above. We also reviewed FRA regulations related to passenger train safety tests and inspections. Additionally, we interviewed company labor relations officials to better identify the actions the company could take based on its collective bargaining agreements.

To identify opportunities to move inspection work to the service and inspection areas of preventative maintenance facilities, we examined the train schedules for all state-supported routes that originate and terminate in Chicago—the location of one of the company's 12 preventative maintenance facilities—and assessed whether work at some of the company's service and inspection sites could be moved to the service and inspection area of this facility. We chose state-supported routes because long-distance routes do not meet the timeframe criteria described below. Additionally, we focused our assessment on the Chicago facility because, during our audit work, a senior Mechanical department official told us that Chicago had excess capacity, which an outside consulting firm also concluded.

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

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We identified trains scheduled to depart Chicago and return within 24 hours, which is the maximum time interval allowed for conducting FRA-mandated cab signal tests. We then performed 2 types of estimates for potential savings: 1 for all 16 sites staffed by company personnel and another for 2 sites staffed by contractor personnel in Michigan and Missouri.

For the company-staffed sites, we estimated the potential savings if the company moved 5 percent, 10 percent, or 15 percent of service and inspection work from the sites to the service and inspection areas of preventative maintenance facilities. We used average wages and benefits per employee for FY 2017 as the basis for these estimates. For the two contractor-staffed sites, we compared the costs paid to the contractors that conduct both the cleaning and inspection activities in FY 2017 with the cost paid to another contractor in the Midwest that performs only the cleaning services.

To identify opportunities to reduce unnecessary full-time positions, we reviewed train schedules and selected a sample of four outlying service and inspection sites staffed by company personnel who service a small number of trains each day. To determine the number of shifts and the associated start- and end-times, we interviewed supervisors from each of these four sites and compared this information to the hours that trains were scheduled to be at these sites. We calculated the approximate amount of time required to service and inspect the trainsets (plus a meal period) based on company documentation and our observations during our site visits, then calculated idle hours when staff were scheduled to be at the site without a scheduled train on site. To estimate the cost of idle time, we calculated the percentage of planned idle hours at each site and multiplied it by the FY 2017 costs of operations at those sites.

To identify opportunities to reduce the cost of overtime at the service and inspections sites, we calculated the average, annual extra percentage of pay employees earned above their base wage as a result of overtime (overtime-to-straight-time ratios) for each of the 16 company-staffed sites for FY 2017, as well as a company-wide average across all 16 sites. Our estimation model calculated the potential savings if the company reduced the overtime-to-straight-time ratio across the company-staffed sites from the FY 2017 average of 21 percent to 15 percent, 10 percent, or 5 percent. Additionally, for Fort Worth, Texas, we performed an analysis of on-time performance and work order data to validate the information obtained from an assistant supervisor about the cause of overtime spending at this site.

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We conducted this performance audit in accordance with generally accepted 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 management oversight of the service and inspection work process. We interviewed superintendents and managers at various service and inspection sites, as well as budget and finance personnel. Additionally, we reviewed financial reports prepared for the outlying service and inspection sites. We discussed these controls with various managers to understand how they apply to the service and inspection workload. We did not conduct an independent review of the company's overall system of controls.

Computer-Processed Data

The company uses the Systems Applications and Products (SAP) software solution, an integrated, module-based Enterprise Reporting Package that shares data between functional modules. SAP is also interfaced to and from external partner systems, such as the company's Work Management Systems (WMS), which is used to initiate, track and finalize work orders on various company assets. Additionally, we relied on computer-processed data from the company's on-time performance database during the audit.

Company budgeting and planning managers generated standard cost center reports for FY 2017 from the SAP Business & Planning Consolidation module. We used these reports to determine the total spending at contractor-staffed and company-staffed service and inspection sites. We validated the total spending in the cost centers through interviews with a Finance department official, who recreated reports to verify the totals.

We also extracted work order data from WMS and downloaded on-time performance data from a company database to determine whether late trains were the primary cause of overtime spending in Fort Worth, Texas. We validated these data by having an independent auditor recreate our extraction of work orders from WMS, as well as our download of on-time performance information, and verifying the totals.

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Based on this analysis, we determined that the data were reliable for the purposes of our audit.

Prior Audit Reports

We identified and reviewed the following relevant reports by our office and GAO:

Amtrak OIG:

- *Train Operations: Opportunities to Reduce the Cost of Rebuilding and Manufacturing Components at Maintenance Facilities* (OIG-A-2018-006), April 16, 2018
- *Amtrak: Top Management and Performance Challenges—Fiscal Years 2019 and 2020* (OIG-SP-2018-011) September 28, 2018.
- *Acquisition and Procurement: Opportunities Exist to Improve Management of Technical Support Services Contracts* (OIG-A-2016-013), September 30, 2016
- *Mechanical Maintenance: Improved Practices Have Significantly Enhanced Acela Equipment Performance and Could Benefit Performance of Equipment Company-wide* (OIG-E-2012-008), May 21, 2012
- *Amtrak Mechanical Maintenance Operations* (E-05-04), September 6, 2005

GAO:

- *GAO, Public Transit: Transit Agencies' Use of Contracting to Provide Service* (GAO-13-782), September 2013

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APPENDIX B

Management Comments

NATIONAL RAILROAD PASSENGER CORPORATION

Memo



Date	November 5, 2018	From	Charles King, CMO 
To	Stephen Lord, Assistant Inspector General, Audits	Department	Operations/Mechanical
cc	Eleanor Acheson, EVP General Counsel Michael Bello, Sr. Director Mechanical Operations Bill Feidt, EVP CFO Stephen Gardner, EVP CCO Tim Griffin, EVP CMO Carol Hanna, VP Controller Kenneth Hylander, EVP CSO Mark Richards, Sr. Director Risk & Controls Daniel Rimer, Sr. Director Mechanical Operations Scot Naparstek, EVP COO DJ Stadtler, EVP CAO Christian Zacariassen, EVP CIO		
Subject	Management Response to <i>Train Operations: Opportunities to Reduce the Cost of Servicing and Inspecting Trainsets (Report for Project No. 009-2018)</i>		

This memorandum provides Amtrak's response to the audit report for Project No. 009-2018 entitled, "*Train Operations: Opportunities to Reduce the Cost of Servicing and Inspecting Trainsets (Report for Project No. 009-2018)*". Management appreciates the opportunity to respond to the OIG recommendations. As indicated in our responses, we agree with each of the OIG recommendations and will initiate actions to address them in a timely manner.

Recommendation 1: Identify opportunities to shift work from these sites to S&I facilities with Preventative Maintenance (PM) facilities.

Management Response/Action Plan:

Management agrees with this recommendation. S&I facilities and associated work tasks are designed for quick turnaround activities such as brake shoe replacement, dumping of toilets, watering and cleaning of interiors as well as FRA calendar inspection locations. Mechanical's intent is to repair to the maximum extent possible at suitable location so that the equipment can be used in a revenue service condition. Mechanical will review train schedules to determine if Federal inspection requirements can be consolidated at larger locations and how we improve the condition of the customer facing functions such as toilet dumping and interior cleanliness.

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NATIONAL RAILROAD PASSENGER CORPORATION

Responsible Amtrak Official(s): Charles King, CMO

Target Completion Date: July 2019 in conjunction with network design review for budget build.

Recommendation 2: Reduce unnecessary full-time positions at sites without a full-time workload.

Management Response/Action Plan:

Management agrees with this recommendation. Management continues to evaluate operational functions at every location. Facilities need to be assessed based on the customer requirements for cleanliness and functionality of the customer facing amenities as well as the guidelines as set forth in FRA compliance for safety and reliability until the next service or maintenance destination. As train schedules change, manning and facility capabilities need to be re-evaluated and balanced for long term investments for building more capability as well as reducing the footprint of people and service functions. Where opportunities present themselves for part-time positions, those will be considered against the constraints of the collective bargaining agreements. Additionally, train schedules due to distance and unforeseen delays can dictate inefficient responses to meet the S&I required functions which can create additional gaps in workloads. Quick turnaround or mechanical response to line-of-road issues between service locations is necessary to keep trains on schedule. Having minimum response times for these issues is required to meet the customer expectations of on-time arrivals and departures. Many times, these repairs require qualified FAR-238 employees for completing the work before the train can continue.

Responsible Amtrak Official: Charles King, CMO

Target Completion Date: Review annually in AOP development.

Recommendation 3: Better manage the amount of overtime that the staff incur at these sites.

Management Response/Action Plan:

Management agrees with this recommendation. Mechanical has reduced headcount and overtime at many locations and will continue to do so in the future. The overtime budget for FY19 is several million dollars less than FY18. To meet the budget, the newly revamped overtime policy requires a manager to approve any overtime prior to bring additional personnel to work or extending those at work in an overtime status. As stated previously, train schedules sometimes dictate use of overtime. It is also often more cost effective to use overtime than hire fully loaded additional staff. All overtime is reviewed at the local, regional and system level. Justification is required at each level.

Responsible Amtrak Official(s): Charles King, CMO

Target Completion Date: 11/15/2018

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APPENDIX C

Acronyms and Abbreviations

FRA	Federal Railroad Administration
FY	fiscal year
GAO	Government Accountability Office
OIG	Amtrak Office of Inspector General
SAP	Systems Applications and Products
the company	Amtrak
WMS	Work Management System

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APPENDIX D

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Alexandra Gabitzer, Intern

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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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or

800-468-5469

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