



**September 28, 2023**

## **A REPORT BY THE OFFICE OF INSPECTOR GENERAL**

**OIG 24-001**

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# **Review of WMATA's 7000-Series Rail Car Cannibalization for Spare Parts**

Office of Inspector General  
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Washington, D.C. 20024

## EXECUTIVE SUMMARY

The Office of Inspector General (OIG) evaluated the Washington Metropolitan Area Transit Authority's (WMATA) process of rail car cannibalization: removal of parts from one rail car to install them on a second. This evaluation stems from concerns raised by the previous Chief Mechanical Officer (CMO) regarding the merits of cannibalizing two 7000-Series rail cars for approximately four years as part of an overall maintenance strategy. The review objective was to assess the effectiveness of the cannibalization of two 7000-Series rail cars for spare parts.

OIG observed gaps in processes and procedures with potential safety implications. OIG coordinated with Safety and Readiness, who plan to take an active role in addressing these concerns. OIG made the following observations:

- WMATA does not clearly define what constitutes a safety sensitive/safety critical part. The Office of Chief Mechanical Officer identified safety sensitive parts based on expertise and professional judgment but subsequently retracted the assertion that the parts are safety sensitive. A broad definition of safety sensitive parts is those parts that could lead to injury or death if they were to fail.
- Six of the 45 parts cannibalized from rail cars 7038 and 7039 were identified by the CMO as safety sensitive parts.
  - The six parts were put on recipient rail cars that were returned to revenue service, without coordination with Safety and Readiness officials.
  - Rail Car Maintenance is unable to identify the recipient rail car because the data was not posted to Maximo for two of the six safety sensitive parts.
  - One of the six parts included electronic integrated systems and components that OIG was told are “rail car specific.”
- Rail cars 7038 and 7039 remained out of service and were subject to cannibalization for over 4 years. During the first 3.5 years, only ten of the cannibalized parts were replaced on rail cars 7038 or 7039. Since OIG's involvement in November 2022, the remaining 35 cannibalized parts on these rail cars have been replaced. Rail Car Maintenance returned the fully configured rail cars 7038 and 7039 to revenue service on August 7, 2023. The combined value of rail cars 7038 and 7039 is approximately \$4 million.
- Rail Car Maintenance personnel did not follow their Standard Operating Procedure (SOP) regarding how long a rail car can be cannibalized. The SOP also did not provide timeframes for replacing parts on the cannibalized rail cars or sending the rail cars back into revenue service, nor did it provide specific guidance for handling parts identified as safety sensitive. Rail Car Maintenance personnel did not conduct thorough Maximo data reviews which should have identified recipient rail cars that received cannibalized parts.

## BACKGROUND

WMATA's rail fleet has 748 7000-Series rail cars, which comprise complex systems made up of thousands of parts. WMATA keeps an inventory of spare parts to maintain and repair these rail cars. When rail cars require parts that are unavailable and no other solution is available, WMATA can authorize parts to be taken from other rail cars – a process known as cannibalization. WMATA defines cannibalization as “the removal of serviceable parts, components, assemblies, and/or sub-assemblies from an unserviceable rail vehicle for immediate installation on another rail vehicle to restore the other vehicle to a revenue ready condition.”<sup>1</sup> Cannibalization is not ideal, but it is an accepted practice in the rail car industry.

In June 2019, rail cars 7038 and 7039 were taken out of service for periodic maintenance. By July 2019, WMATA started removing parts from these two rail cars and replacing needed parts on other “recipient” rail cars, which were then returned to revenue service. As of January 2023, 45 parts had been removed from these cannibalized rail cars – see Appendix B.

**Picture 1: Cannibalized 7000-Series Rail Cars 7038 and 7039 at Brentwood Rail Yard**



### Organization

The rail car maintenance function is under Operations and is assigned to the Department of Rail Services. Under this Department, the Office of the Chief Mechanical Officer is responsible for ensuring the availability of safe, reliable, and clean rail cars for daily revenue service. The Office of Car Maintenance under the CMO provides a comprehensive maintenance program for rail cars.

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<sup>1</sup> WMATA's Office of Car Maintenance, Standard Operating Procedure (SOP) 1.18, entitled *Procedures for Cannibalization of Parts to Repair Class 1 Rail Vehicles*, dated April 4, 2019.

## OBSERVATIONS

### Lack of Standard Safety Sensitive/Safety Critical Parts Definition and Process

Safety and Readiness advised OIG that WMATA does not have a standard definition for what constitutes a safety sensitive/safety critical part. According to the Chief Safety and Readiness Officer, the lack of a standard definition was identified during that office's investigation into the October 2021 Blue Line derailment. The derailment highlighted critical deficiencies in how safety critical items are identified and addressed at WMATA.

In February 2023, the CMO provided OIG with a listing of 45 parts that were cannibalized from rail cars 7038 and 7039. This listing included six parts identified as safety sensitive based on CMO officials' expertise and professional judgment – refer to Table 1. Safety sensitive parts can be broadly defined as those parts that could lead to injury or death if they were to fail.

**Table 1: Safety Sensitive Parts Taken from the Cannibalized Rail Cars**

Work Order	Asset	Description	Part #
16013771	R7038	REMOVED BRAKE PIPE PRESSURE GAUGE TO USED ON 7452. PART #K18324070	A18327030
15123338	R7039	CANNIBALIZED EMV TO FOM ON 7059	K18324029
17144042	R7038	CANNIBALIZE FRONT COUPLER FOR ANOTHER ASSET	K18364001
17149666	R7039	CANNABLIZE F/COUPLER FOR ANOTHER ASSET	K18364001
15205666	R7038	DST FAILED PSS MARKER (ANTENNA INTERFACE BOARD NEEDED K18594029)	M18594029
16596542	R7039	LVPS COMMS BOARD (P/N UNK) REMOVED F.O.M.	K18334025

An example of a safety sensitive part is a front coupler. Picture 2<sup>2</sup> shows a coupler on a typical 7000-Series rail car, whereas Picture 3 shows the missing coupler from a cannibalized rail car. Officials designated this part as safety sensitive because it is used to connect one car to another. Rail Car Maintenance officials indicated it would take over 1.5 years for the couplers to be ordered and installed on rail cars 7038 and 7039. However, when OIG checked Maximo, the system of record, there were seven couplers in stock.

<sup>2</sup> OIG conducted a site visit to the Rail Yard in Brentwood, MD, on December 13, 2022.



**Picture 2: Front Coupler**

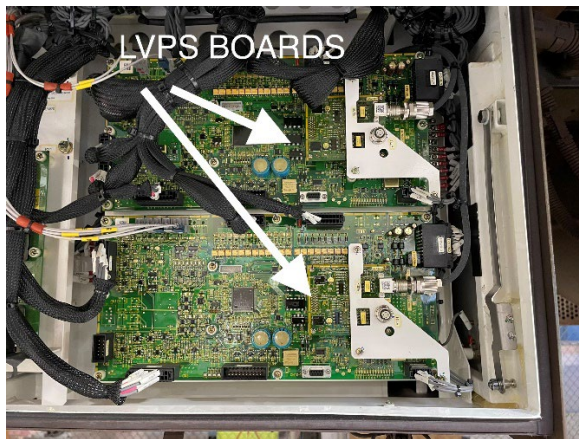


**Picture 3: Cannibalized Front Coupler**



Another example of an electronic part designated as safety sensitive is a component called a “daughter board” on the low voltage power systems (LVPS) board. Picture 4 shows an LVPS board on a typical 7000-Series rail car, whereas Picture 5 depicts the missing component on the LVPS board from rail car 7039 after cannibalization.

**Picture 4: LVPS Boards**



**Picture 5: Cannibalized LVPS Boards**



Moreover, a Rail Car Maintenance official indicated that electronic parts should not be transferred to other rail cars or placed back into inventory because they contain integrated systems and components that are “rail car specific.” OIG notes the listing of safety sensitive parts installed on rail cars includes electronic parts.

Officials told OIG these six parts were installed on six other 7000-Series rail cars in order to return them to revenue service. OIG met with Rail Car Maintenance officials to identify the six recipient rail cars. Officials pulled work orders from Maximo, Rail Car Maintenance’s record system, but were only able to identify the recipient rail cars for four of the six safety sensitive parts (rail cars 7059, 7452, 7511, and 7601). The two recipient rail cars could not be identified because the data was not posted in Maximo.

OIG engaged Safety and Readiness to understand the risks associated with cannibalizing safety sensitive parts. The Chief Safety and Readiness Officer stated she was unaware

WMATA was engaged in the cannibalization of 7000-Series parts but committed to investigate the practice. The Chief Safety and Readiness Officer also stated that, if confirmed, WMATA's inability to track the location of some safety sensitive parts and cannibalizing rail car-specific electronic components could both be of concern from a safety perspective.

### *Inconsistent Interpretation of Safety Sensitive Parts Definition and Process*

In February 2023, WMATA's CMO and other maintenance officials provided a list and description of safety sensitive parts (Table 1). In May 2023, the CMO retracted the assertion that the previously identified parts are safety sensitive. The CMO further opined that identifying individual parts and components as safety sensitive/critical is unnecessary, given that such designations are determined at the system level during acceptance testing as part of the safety certification process. OIG sought clarification from the CMO as to the nature of the change in position. The CMO provided OIG with a nebulous response citing "the perceived change in position regarding safety sensitive items derives from the context of the interpretation and application of that designation." The CMO's revised statement regarding safety sensitive parts differed from those provided by other maintenance officials and personnel within WMATA. The lack of consensus among maintenance officials highlights the necessity for establishing a standardized definition of safety sensitivity/criticality beyond the safety certification process.

WMATA's internal departments, Audit & Compliance and Reliability Engineering & Asset Management [REDACTED]

[REDACTED]<sup>3</sup> In addition to not having a definition of safety sensitive parts, Audit & Compliance found WMATA does not have a process to identify, inventory, and escalate concerns over safety sensitive parts.

### Railcar Specific Integrated Components

According to the CMO, all parts for a given series of rail cars are designed to be wholly interchangeable without impact on the fit, form, or function of that component or the higher-level sub-system. The 7000-Series rail car contractor, Kawasaki, confirmed the CMO's position that parts are interchangeable with the caveat that some components would need to be reformatted or reprogrammed before installation on another rail car.

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<sup>3</sup>An Audit and Compliance Memorandum, [REDACTED] indicated that WMATA did not have a standard definition or a methodology for the identification, inventorying, and escalation process that would align to a standard definition of safety critical items once established. [REDACTED]

### Cannibalization Policy and Processes

Cannibalization of rail cars is sometimes necessary as a last resort when spare rail car parts are not readily available, and to maintain fleet readiness. Generally, cannibalization of rail cars should be minimized, short-term, and used as a last resort. WMATA's SOP entitled *Procedures for Cannibalization of Parts to Repair Class 1 Rail Vehicle(s)* 1.18, sets forth a "management framework that defines roles, establishes responsibilities and protocols to control the cannibalization of parts from rail vehicles." OIG notes that the SOP discusses operational issues but does not cover the management of cannibalized safety sensitive parts or communication of potential safety issues.

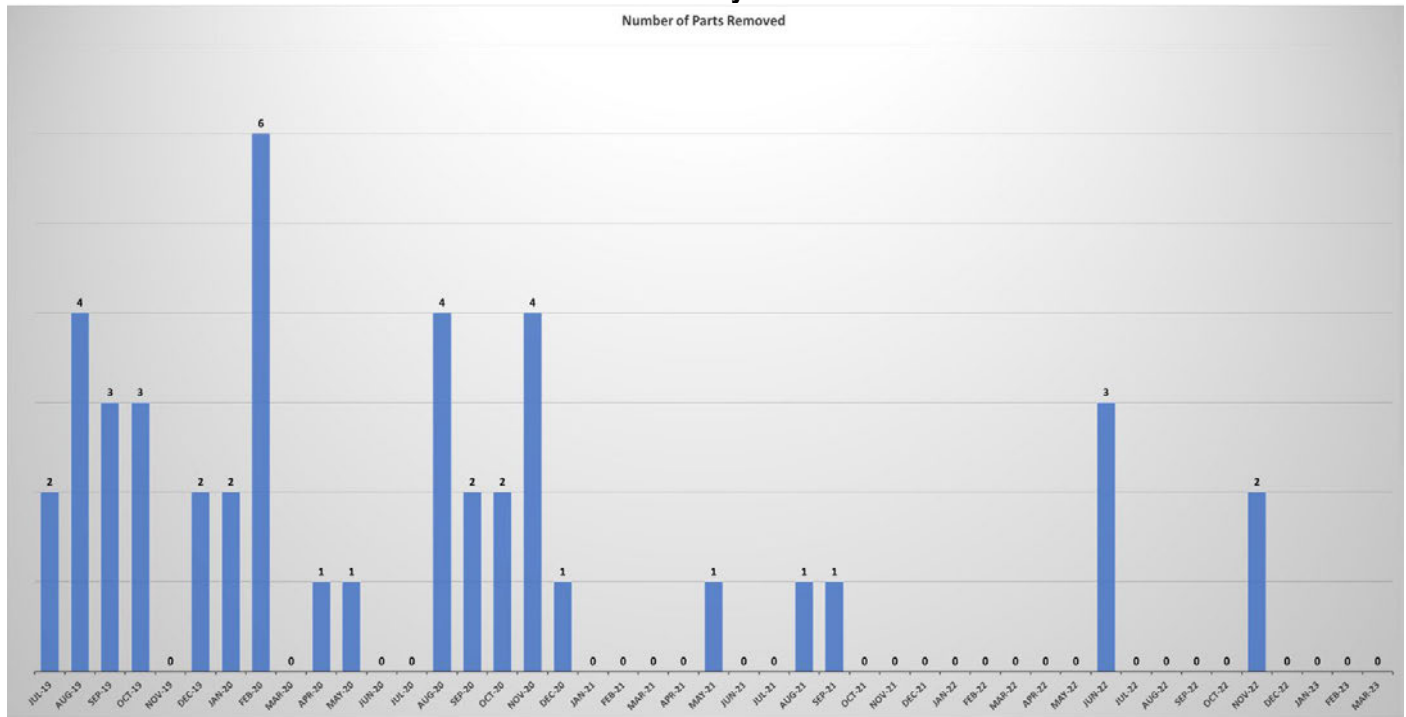
As part of a maintenance strategy, starting in July 2019, WMATA cannibalized parts from two rail cars, 7038 and 7039, which were taken out of service for periodic maintenance. Pictures of what the parts look like on a typical rail car as well as pictures of the corresponding cannibalized part missing from rail cars 7038 and 7039 are shown in Appendix C. The following narrative describes the cannibalization lifecycle of rail cars 7038 and 7039 in comparison to relevant excerpts from the SOP.

SOP Section 3.5.2 on maintenance responsibilities states the need to "minimize cannibalization actions." WMATA did not want to cannibalize parts, but officials felt they had no choice because, according to them, there was a spare parts shortage. OIG could not independently validate the spare parts shortage, nor could OIG validate the parts were not in stock at the time of cannibalization.

SOP Section 6.4.2 states the "The Shop Superintendent and/or Assistant shall review all **MAXIMO** work orders that document the installation of parts, components, assemblies, and/or sub-assemblies due to cannibalization actions onto the **recipient vehicle(s)**." Section 6.4.3 further states "...work order types (cannibalization actions) shall be reviewed to ensure authorized cannibalization actions are properly documented and coded...." The two recipient rail cars which received cannibalized parts could not be identified because the data was omitted from Maximo. The work orders were subsequently closed out. A thorough review was not performed of all codes in Maximo as outlined in Section 6.4.4 of the SOP. The SOP also did not contain a reconciliation process to ensure all the required Maximo protocols were followed.

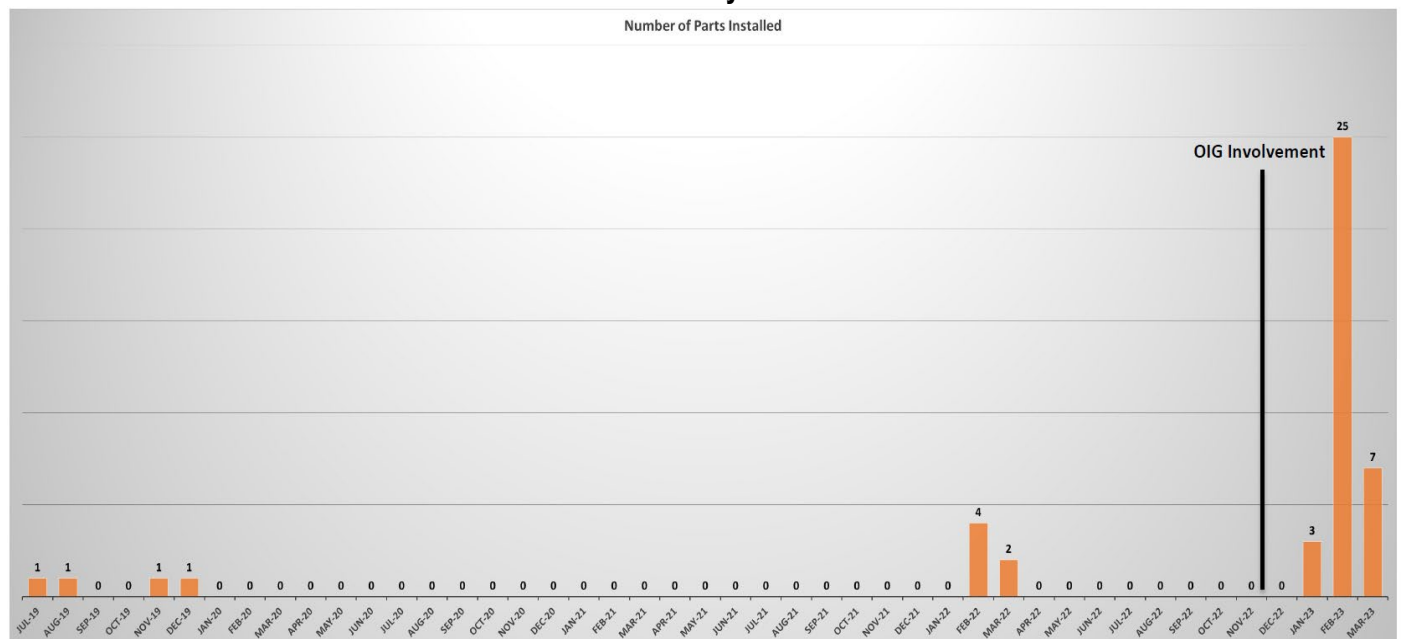
Section 6.1.3 of the SOP states, "No active revenue service rail car shall be used as a donor vehicle for longer than 8 months." However, "... an inactive long term out of service rail car may exceed the 8-month limit." Section 6.1.4 further states, "If the requirement for cannibalization exists after 8-months another rail car will be chosen." Thus, cannibalization is meant to be short-term. However, one official stated that some spare parts need purchase lead times of several years, which would render the 8-month time limit too short. In the case of rail cars 7038 and 7039, 37 parts were removed over a period of 1.5 years (from July 2019 to December 2020), and an additional eight parts were removed throughout 2021 and 2022. Chart 1 illustrates the volume of cannibalization by month.

**Chart 1: Parts Removed from the Cannibalized Rail Cars by Month**



The SOP does not address returning the cannibalized rail car(s) back into revenue service, nor does it discuss timeframes for reinstalling parts on the cannibalized rail cars. In the case of rail cars 7038 and 7039, only 10 parts were reinstalled over the 3.5-year period (from July 2019 to December 2022), whereas 35 parts were reinstalled in the first three months of 2023. Chart 2 illustrates the volume of parts reinstallation by month. OIG started its review in November 2022 – denoted by the vertical black line in the Chart.

**Chart 2: Parts Reinstalled on the Cannibalized Rail Cars by Month**





### **Impact: Cannibalized Rail Cars Being Returned to Revenue Service**

For over 4 years, rail cars 7038 and 7039 were stranded assets<sup>4</sup> as parts were cannibalized to use on other rail cars. As of April 18, 2023, OIG observed both cannibalized rail cars were located at the Greenbelt Rail Facility and Yard. Furthermore, OIG sampled 15 individual cannibalized parts and found all of them reinstalled on the rail cars. WMATA returned rail cars 7038 and 7039 to revenue service on August 7, 2023.

**Picture 6: Parts Restored on the Cannibalized Rail Cars**



## **RECOMMENDATIONS**

As a result of this evaluation, OIG recommends the GM/CEO:

1. Require Safety and Readiness to conduct a safety review/inspection of the Service and Inspection processes of rail cars 7038 and 7039 with a focus on the six parts identified as safety sensitive.
2. Instruct Rail Services to identify the two unknown rail cars in revenue service that received safety sensitive parts from the cannibalized rail cars 7038 and 7039.
3. Require Safety and Readiness to conduct a safety review/inspection of the Service and Inspection processes on all six rail cars in revenue service that received safety sensitive parts from the cannibalized rail cars.
4. Update the SOP entitled *Procedures for Cannibalization of Parts to Repair Class 1 Rail Vehicle(s) 1.18* to include procedures:
  - a. For managing functions including safety sensitive parts;
  - b. For communicating potential safety issues related to cannibalization;

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<sup>4</sup> A stranded asset is an asset that loses its value or becomes unusable, in a sudden or unexpected way.

- c. To clarify timeframes for parts cannibalization as well as reinstallation of parts on the cannibalized rail car;
  - d. For returning cannibalized rail cars back into service;
  - e. For ensuring thorough Maximo reviews are performed; and
  - f. For Maximo review reconciliations.
- 5. Ensure that both internal and external stakeholders are informed of these safety issues in accordance with established policies or guidance.

## SUMMARY OF MANAGEMENT'S RESPONSE

OIG received WMATA's comments on September 15, 2023. Management's comments included disagreement with "OIG's interpretation and designation of safety-sensitive parts." Management's comments incorrectly attribute the designation and interpretation of safety sensitive parts to OIG. As stated in this report, the designation of the six parts as safety sensitive was provided by the CMO. Although the CMO later retracted this designation, he failed to provide OIG with adequate justification for the retraction. Further, the CMO's initial designation aligned with statements from multiple other rail personnel.

Management also identified what they believed to be incorrect statements in the report. Specifically, management believed OIG incorrectly stated two recipient rail cars could not be identified because the data was not posted to Maximo. Management noted that the LVPS Comms Board was subsequently identified as installed on rail car 7049, and the Antenna Interface Board was not cannibalized at all. It is important to note management's use of the term *subsequently*. During the course of this evaluation, management was unable to identify the recipient rail car for either part. An official for Rail Car Maintenance noted in his review of Maximo records that "Info not available" for both the Antenna Interface Board and the LVPS Comms Board. OIG was not notified of management's assertion that they identified the recipient rail car for the LVPS Comms Board until receiving the September 15, 2023 response memorandum. OIG has not validated management's assertion that the recipient rail car was identified.

Management referred to the Maximo Work Order as evidence to support their assertion that the Antenna Interface Board was not cannibalized. OIG notes that the Maximo Work Order for the Antenna Interface Board clearly states in two separate sections, "PART REMOVED TO REPAIR OTHER ASSETS (CANNIBILIZED)" and "NO DEFECT, CANNIBILIZATION REMOVAL, 004, REPLACED."

WMATA management generally concurred with recommendations 1, 3, and 5 and initiated corrective actions to address the recommendations. Management disagreed with recommendation 2 and a portion of recommendation 4.

- Recommendation 2 – Management asserted that all parts on a given railcar fleet are designed for interchangeability and that all railcars undergo scheduled inspections to ensure safe and reliable operations. OIG notes that although management disagreed with the recommendation, actions were taken to identify the recipient rail cars. OIG will coordinate with Operations to validate the assertions made regarding recommendation 2.
- Recommendation 4a – Management disagreed with OIG's interpretation of safety sensitive parts. OIG notes the Office of Reliability Engineering Asset Management is currently working to establish a standard definition, criteria and methodology for the identification and inventorying of safety-critical items across the Authority. Management should ensure the SOP accounts for the standard definitions once established. OIG does not consider management's comments to 4a responsive to the recommendation. OIG will follow up during the corrective action plan process.

Management's comments, in their entirety, are provided in Appendix A.

## MANAGEMENT'S RESPONSE

## Appendix A



# M E M O R A N D U M

SUBJECT: OIG Audit Report: Review of  
WMATA's 7000-Series Rail Car  
Cannibalization for Parts

DATE: September 13, 2023

FROM: Executive Vice President and  
Chief Operating Officer – Brian Dwyer

Brian Dwyer

WMATA

Digitally signed by Brian  
Dwyer  
Date: 2023.09.15  
11:51:56 -0400

Executive Vice President and  
Chief Safety Officer – Theresa Impastato

Theresa Impastato

WMATA

Digitally signed by Theresa  
Impastato  
Date: 2023.09.14 16:05:11  
-0400

TO: OIG – Rene Febles

Operations and Safety & Readiness have carefully reviewed the Office of Inspector General's (OIG) August 24, 2023, "Review of WMATA's 7000-Series Rail Car Cannibalization for Spare Parts." This memorandum includes management clarifications and planned corrective actions to address OIG's recommendations. Metro reiterates its disagreement with the OIG's interpretation and designation of safety sensitive parts. The railcars are designed, qualified, and safety-certified. This process ensures part interchangeability within a given fleet without introducing additional safety risk.

- 1) **Require Safety and Readiness to conduct a safety review/inspection of the Service and Inspection processes of rail cars 7038 and 7039 with a focus on the six parts identified as safety sensitive.**

**Response:**

Safety and Readiness will evaluate all rail car inspection processes to determine which ones would encompass the six parts noted. The evaluation will include all periodic inspections, including A-inspection, B-inspection, and C-inspections. After confirming all inspection processes, the team will analyze the corresponding Maximo data to confirm that the required inspections were conducted and recorded in Maximo for the railcars containing the parts in question and to ensure positive results. This same methodology will be employed with point three below.

- Safety Assessment Target Start: 9/13/23
- Safety Assessment Target Completion: 10/31/23

- 2) **Instruct Rail Services to identify the two unknown rail cars in revenue service that received safety sensitive parts from the cannibalized rail cars 7038 and 7039.**

Washington  
Metropolitan Area  
Transit Authority



OIG Audit Report: Review of WMATA's 7000-Series Rail Car Cannibalization for Spare Parts

**Response:**

We disagree with OIG's recommendation as the WMATA railcar fleets are designed, qualified, and safety-certified within the Agency Safety Plan (ASP) framework. As previously noted in response to the draft OIG report, all parts on a given railcar fleet are designed for interchangeability. Therefore, a part from one car may be removed and installed on another car as a complete fit, form, and function replacement with no additional safety risk.

Also, all railcars undergo scheduled inspections to ensure safe and reliable operation of the railcar. These scheduled inspections include both daily and periodic inspections. The daily inspections consist of both vital and operational function checks. Periodic inspections are intended to provide safe, reliable, and clean vehicles for passenger service. These include three (3) types – A-inspection, B-inspection, and C-inspection, which progressively increase in scope.

The installed assets are identified below for those parts in Table 1 of the OIG report.

Work Order	Removed from Asset	Installed on Asset	Description	Part #
16013771	R7038	R7452	REMOVED BRAKE PIPE PRESSURE GAUGE TO USED ON 7452. PART #K18324070	A18327030
15123338	R7039	R7059	CANNIBALIZED EMV TO FOM ON 7059	K18324029
17144042	R7038	R7601	CANNIBALIZE FRONT COUPLER FOR ANOTHER ASSET	K18364001
17149666	R7039	R7511	CANNABLIZE F/COUPLER FOR ANOTHER ASSET	K18364001
15205666	R7038	N/A Refer to Note 1	DST FAILED PSS MARKER (ANTENNA INTERFACE BOARD NEEDED K18594029)	M18594029
16596542	R7039	R7049	LVPS COMMS BOARD (P/N UNK) REMOVED F.O.M.	K18334025

**Note 1:** Part not cannibalized. Per the WO, the railcar failed DST, and the antenna interface was replaced.

- 3) **Require Safety and Readiness to conduct a safety review/inspection of the Service and Inspection processes on all six rail cars in revenue service that received safety sensitive parts from the cannibalized rail cars.**

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**Response:**

Quality will conduct a safety assessment scoped and constrained specifically to the Service and Inspections processes and any associated processes, as they apply to the six (6) 7K railcars that have received cannibalized parts. This safety assessment aims to affirm compliance with internal controls and standards related to the use of cannibalized parts through the service and inspection process. The timeline of this safety assessment will depend upon data identified in the OIG recommendation #1 that will be used during this safety assessment.

- Safety Assessment Target Start: 11/1/2023
- Safety Assessment Target Completion: 12/29/2023

**4) Update the SOP entitled Procedures for Cannibalization of Parts to Repair Class 1 Rail Vehicle(s) 1.18 to include procedures:**

**a) For managing functions including safety sensitive parts;**

Management disagrees with OIG's interpretation of safety sensitive parts. A detailed response is provided in 4).b) below.

**b) For communicating potential safety issues related to cannibalization**

**Response:**

The WMATA railcar fleets are designed, qualified, and safety certified within the Agency Safety Plan (ASP) framework. All hazards are identified in the Preliminary Hazard Analysis (PHA), and any hazards are mitigated through the design review process and associated failure mode, effects, and criticality analyses (FMECAs).

All railcar components are tested and qualified individually or during vehicle qualification testing depending on the Technical Specification requirements. Functional deficiencies identified during testing are corrected, and hardware or software revisions are implemented. After all vehicle and subsystem design qualification tests are completed and approved by WMATA, the vehicle is safety certified for passenger service. Thus, the design of all components and software of the vehicle are safety certified – certification is not related to a specific component serial number.

The WMATA railcar Technical Specification requires the vehicle to be maintainable and component parts to be interchangeable. Thus, any component can be installed on another vehicle and components are not vehicle-specific. To further illustrate this point, WMATA is currently



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engaging in a scheduled maintenance program (every 6 years) of the 7K cars to overhaul subsystem components in accordance with the manufacturer's recommendations. The overhauled and tested components from another vehicle will be installed on the vehicle undergoing scheduled maintenance. After the components are replaced, the vehicle will be tested to ensure proper functionality.

Thus, replacing vehicle components sourced from inventory or another railcar is not a safety risk.

We will add a reference to the Car Maintenance/Chief Mechanical Officers Safety Risk Management SOP. All staff have the ability to report and communicate potential issues. This SOP will establish this and the communication channels within the department to communicate Safety Issues and the progress being made to address them. Updates to the SOP will be completed by March 31, 2024.

c) To clarify timeframes for parts cannibalization as well as reinstallation of parts on the cannibalized rail car;

**Response:**

SOP 1.18, Section 6.1.3 requires no active revenue service vehicle shall be used as a donor vehicle for longer than eight (8) months. A time limit of 8 months was appropriate for material lead times before COVID-19. Current lead times are considerably longer and more varied. As such, Sections 6.1.3 and 6.1.4 will be revised to focus instead on initiating the reordering process. Updates to the will be completed by March 31, 2024.

d) For returning cannibalized rail cars back into service;

**Response:**

Language will be added to the SOP to specify that railcars will be given the appropriate periodic inspection prior to return to service if the time out of service exceeds the threshold for periodic inspection. Updates to the SOP will be completed by March 31, 2024.

e) For ensuring thorough Maximo reviews are performed; and

**Response:**

This section contains information that is not completely accurate. The OIG report incorrectly states that two recipient railcars could not be identified because the data was not posted to Maximo. Of the two items, one was a

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cannibalized part which subsequently was identified (WO 16596542 – part cannibalized to be used on car 7049 WO 16592010) and the other was a work order for a failure on the rail car, not a part that was cannibalized to be placed onto another car (WO 15205666).

SOP 1.18, Section 6.3 defines the requirements for Maximo documentation to ensure traceability of parts. The Office of Car Maintenance shall provide annual training to appropriate staff to ensure the requirements of SOP 1.18 are complied with. SOP updates and the computer-based training will be developed and deployed by March 31, 2024.

**f) For Maximo review reconciliations.**

Refer to Item 4.e) above.

- 5) **Ensure that both internal and external stakeholders are informed of these safety issues in accordance with established policies or guidance.**

**Response:**

As part of Safety Risk Management (SRM) Implementation, the Car Maintenance/Chief Mechanical Officer is identifying all associated risks and in-place mitigations. Additional mitigations will be developed if deemed necessary. The SRM Team shall ensure Car Cannibalization is identified as a Car Maintenance/Chief Mechanical Officer risk. In addition, the risks are loaded into Origami Risk, which then populates the Safety Management System Dashboard, a reporting tool visible to all Metro Employees; this allows the Executive Safety Committee to monitor the effectiveness of mitigations over time and allocate additional resources if necessary.

As part of the implementation, an SRM SOP is developed, establishing the sustainment of the SRM process and continued monitoring of the identified risks. In addition, this SOP establishes the communication channels within the department to communicate safety issues and the progress being made to address them.

SRM Implementation with Car Maintenance/Chief Mechanical Officer is scheduled to be completed by March 31, 2024.

cc: Senior Executive Team  
VP & Chief Risk and Audit Officer - Elizabeth Sullivan



**Appendix B****LIST OF CANNIBALIZED RAIL CAR 7038/7039 SPARE PARTS**

<b>Count</b>	<b>Asset</b>	<b>Description</b>	<b>Part #</b>	<b>Reported Date</b>	<b>Date Installed</b>
1	R7039	CANNABLIZE F/COUPLER FOR ANOTHER ASSET	K18364001	6/27/2022	2/25/2023
2	R7038	CANNIBALIZE FRONT COUPLER FOR ANOTHER ASSET	K18364001	6/24/2022	2/25/2023
3	R7038	Door POCKET DISPLAY REMOVED TO REPAIR CAR 7666	K/M60044074	5/7/2021	2/16/2023
4	R7039	Load shedding relay busbar removed to repair 7189	K181141655	12/15/2020	2/21/2023
5	R7038	BULKHEAD DOOR LATCH REMOVED. PLACED ON 7204	K18114481	11/18/2020	2/25/2023
6	R7039	REMOVE FOR INTERIOR SPEAKER TO FIX OTHER ASSET	K60044039	11/17/2020	3/3/2023
7	R7039	DOOR POCKET DISPLAY #4 FOM TO REPAIR CAR 7078	K/M60044074	10/8/2020	2/24/2023
8	R7038	REMOVED DOOR POCKET DISPLAY TO FOM CAR 7024	K/M60044074	9/17/2020	3/1/2023
9	R7038	CAB DOOR LOCK CANNIBALIZED (K18.11.4481)	K18114481	9/5/2020	2/25/2023
10	R7038	REMOVED TRUCKS TO USE ON OOS RAIL CAR		8/20/2020	3/2/2022
11	R7038	Car Needs PICU. Part was removed - No w/o was generated when removed.	M60044001	8/5/2020	2/27/2023
12	R7039	Test Port Placards Missing Adjacent To Front & Rear TCU	7K TEAM	2/9/2020	1/23/2023
13	R7038	Test Port Placards Missing Adjacent To rear TCU	7K TEAM	2/9/2020	1/23/2023
14	R7038	REMOVED 30A HVAC CB TO F.O.M. ON (R7046)	MORE INFO	2/1/2020	2/24/2023
15	R7038	CANNIBALIZE FRONT DPD P/N #K60044073 TO FACILITATE OTHER MAINTENANCE	K60044073	1/29/2020	2/27/2023
16	R7039	DOOR #2 POCKET DISPLAY REMOVED TO FACILITATE OTHER MAINTENANCE (CAR 7105).	K60044073	12/30/2019	2/16/2023
17	R7038	SHOE CURRENT SENSOR REMOVED TO F.O.M (R7103 WO 15345874)	K18314036	10/30/2019	2/22/2023
18	R7039	Removed truck to FOM; Damaged HSC #1		10/18/2019	11/7/2019
19	R7038	SWAPPED RIO3M DI-1-1 BOARD TO REPAIR OTHER ASSET(R7058)	K60804028	9/21/2019	2/14/2022
20	R7039	Multiple missing seats	V NUMBER	9/18/2019	2/10/2023
21	R7038	NVR REMOVED TO F.O.M ON CAR 7129 - k60134001	M60134001	8/30/2019	2/25/2023
22	R7039	PART REMOVED TO FACILITATE OTHER MAINTENANCE RIO 6S DI-1-1 K60804028	K60804028	8/9/2019	3/6/2023
23	R7039	CANNIBALIZED EMV TO FOM ON 7059	K18324029	7/2/2019	7/11/2019
24	R7038	MISSING TEST PLUG	MORE INFO	11/29/2022	2/28/2023
25	R7039	HVAC CONTACTOR CANNIBALIZED FOR R7178 FLOOR HEATER CONTACT	K18344051	11/25/2022	2/19/2023
26	R7038	STANCHIONS CONNECTING BRACKET NEAR DOOR #10 REMOVED F.O.M. ON CAR R7697.	K18114656	6/10/2022	3/31/2023
27	R7039	LVPS COMMS BOARD (P/N UNK) REMOVED F.O.M.	K18334025	9/24/2021	2/28/2023

28	R7038	Poe power supply removed to repair another asset		8/17/2021	2/14/2022
29	R7038	REMOVED BRAKE PIPE PRESSURE GAUGE TO USED ON 7452. PART #K18324070	A18327030	11/24/2020	3/31/2023
30	R7038	RIO #5 SECONDARY REMOVED TO REPAIR CAR 7326		11/10/2020	2/8/2022
31	R7038	RIO #5 MAIN REMOVED TO FIX 7102 K60804038		10/15/2020	2/8/2022
32	R7038	DOOR POCKET DISPLAY UNIT REMOVED TO F.O.M.	K/M60044074	8/24/2020	2/28/2023
33	R7039	CANNABIALIZED TRUCKS FOR OOS RAIL CARS		8/20/2020	3/30/2022
34	R7038	REMOVED TWC COVER PLATE TO FACILITATE CAR 7260	MORE INFO	5/4/2020	2/27/2023
35	R7039	DOOR #8 WINDSCREEN TO F.O.M	K18114828	4/29/2020	2/17/2023
36	R7039	REMOVED PICU (PASSENGER INFORMATION CONTROL UNIT-K60044017) TO F.O.M	K60044017	2/29/2020	2/20/2023
37	R7038	REMOVED TEST PORT PLACARDS NEAR FRONT TCU TO F.O.M	7K TEAM	2/9/2020	1/23/2023
38	R7038	RELAY CONTACTOR #K18314127 REMOVED TO F.O.M.	K18314127	2/8/2020	2/20/2023
39	R7038	REMOVED EMERGENCY MAP COVER TO FACILITATE CAR 7035	BODY SHOP	1/17/2020	2/24/2023
40	R7038	SWAPPED LCU MAIN AND SECONDARY TO F.O.M.	K60804001	12/20/2019	12/20/2019
41	R7038	REMOVED HVAC CONTROL BOX COVER TO F.O.M (R7680 WO 15335068) MACHINE SHOP	NA	10/21/2019	3/14/2023
42	R7038	2K10 FLOOR HEATER CONTACTOR REMOVED TO FACILITATE OTHER MAINTENANCE	K18344051	9/13/2019	3/5/2023
43	R7038	DST FAILED PSS MARKER (ANTENNA INTERFACE BOARD NEEDED K18594029)	M18594029	8/12/2019	2/28/2023
44	R7039	PART REMOVED TO FACILITATE OTHER MAINTENANCE RIO 6 DI-1-1 K60804028	K60804028	8/9/2019	2/28/2023
45	R7038	Event Recorder - PART REMOVED TO FOM (K18314121)	K60804061	7/25/2019	8/9/2019

## Appendix C

### PHOTOGRAPHS OF CANNIBALIZED RAIL CAR PARTS

Forty-five parts were removed and used as replacement parts for other 7000-Series rail cars with a goal to keep as many 7000-Series rail cars in revenue service as possible. Examples of the 45 cannibalized rail car parts are described below. Pictures on the left illustrate how the part appears on a fully functional rail car. Pictures on the right show a void on the cannibalized rail cars where parts were removed.

Picture 7: Fully Functional Monitor



Picture 8: Cannibalized Monitor



Picture 9: Fully Functional Speaker



Picture 10: Cannibalized Speaker



Picture 11: Fully Functional Seat



Picture 12: Cannibalized Seat



**Picture 13: Fully Functional Door Latch**



**Picture 14: Cannibalized Door Latch**





## TO REPORT FRAUD, WASTE, OR ABUSE

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