



WMSM Commissioner Brief: W-0200 – Evacuation for Life Safety Reasons – Carmen Turner Facility – September 1, 2022

Prepared for Washington Metrorail Safety Commission meeting on January 24, 2023

Safety event summary:

Metrorail's Carmen Turner Facility was partially evacuated due to a fire alarm on September 1, 2022.

The Carmen Turner Facility is a large support facility not far from the New Carrollton Station that is used by Metrorail for functions including training, offices, one of the Rail Operations Control Center (ROCC) locations, and other purposes. Parts of the facility are utilized specifically for bus maintenance, but are part of the same facility and evacuation procedures as the parts of the facility used for rail purposes.

In this case, the alarm requiring Metrorail personnel to evacuate was triggered by a compressed natural gas (CNG) sensor near Room F105 near the Bus Maintenance Shop in Building F. Building F is physically attached to the rest of the facility (buildings A, B, C, D and E). Building F was the only building evacuated at approximately 10:54 a.m., 17 minutes after the initial alarm. WMATA policy requires alarms to be verified before evacuation is initiated. The ROCC (located in a different attached building) did not require evacuation and remained fully operational during this event.

There were several simultaneous conversations between Maintenance Operations Center personnel regarding the alarm, including with Automatic Train Control, Plant Maintenance, Power and Communications, as well as MTPD and the alarm monitoring company. Metrorail personnel and Prince George's County Fire and Emergency Medical Services Department personnel investigated and did not detect any gas.

Approximately one hour after the alarm activated, personnel reset the fire alarm and allowed personnel to return to the building.

Metrorail's Office of Systems Maintenance, Communications Section determined that the sensor that triggered the alarm was defective. The defective sensor was disabled to prevent a recurring alarm.

Probable Cause:

The probable cause of this event was a defective compressed natural gas sensor that caused the activation of the fire alarm system.

Corrective Actions:

- Due to this investigation:
 - The defective components were replaced.
- Other related corrective action plans (CAPs):
 - The WMSM's 2022 Emergency Management and Fire and Life Safety Programs audit found that there is inadequate coordination among organizational units charged with developing, inspecting and maintaining critical fire and life safety assets, and there is no unified process to identify, prioritize and address fire and life safety risks. Among other requirements to address this finding under CAP C-0169, Metrorail must develop and implement a formal, integrated process for the inspection,



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maintenance and repair of fire and life safety and emergency management assets. This CAP is scheduled for completion in April 2024.



Washington Metropolitan Area Transit Authority
Department of Safety (SAFE)
Office of Safety Investigations
FINAL REPORT OF INVESTIGATION A&I E22570

Date of Event:	September 1, 2022
Type of Event:	Evacuation for Life Safety Reasons
Incident Time:	10:37 Hours
Location:	Carmen Turner Facility (CTF) Bus Maintenance (BMNT) Shop, Building F
Time and How received by SAFE:	10:37 Hours – SAFE/MAC
WMSC Notification Time:	11:26 Hours
Responding Safety Officers:	WMATA: N/A WMSC: N/A Other: N/A
Rail Vehicle:	N/A
Injuries:	None
Damage:	None
Emergency Responders:	Metro Transit Police Department (MTPD) and the Prince George's County Fire and EMS Department PGFD
SMS I/A Incident Number:	20220915#102890

Carmen Turner Facility – Evacuation for Life Safety Reasons

September 1, 2022

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Abbreviations and Acronyms

CAP	Corrective Action Plan
CCTV	Closed-Circuit Television
MSRPH	Metrorail Safety Rules and Procedures Handbook
NOAA	National Oceanic and Atmospheric Administration
RTRA	Office of Rail Transportation
ROCC	Rail Operations Control Center
SAFE	Department of Safety
SMS	Safety Measurement System
WMATA	Washington Metropolitan Area Transit Authority
WMSC	Washington Metrorail Safety Commission

Washington Metropolitan Area Transit Authority
Department of Safety – Office of Safety Investigations

Executive Summary

**Note that all times listed are approximate and may contain minor variations due to differences between systems of record. **

On Thursday, September 1, 2022, at approximately 10:37 hours, the building fire alarm activated at the Carmen Turner Facility (CTF). Employees responded to the alarm and evacuated according to the procedures outlined in the Emergency Action Plan (EAP). The Metro Transit Police Department (MTPD) and the Prince George's County Fire and EMS Department (PGFD) were notified. The source of the alarm was identified as a Compressed Natural Gas (CNG) sensor in the Bus Maintenance (BMNT) Shop, located in Building F. Emergency responders and other WMATA personnel investigated the cause of the alarm activation and tested the atmosphere. All meter readings were negative. The fire alarm was reset at approximately 11:38 hours and personnel returned to the building. No injuries or damage were reported.

The probable cause of the Evacuation for Life Safety Reasons (Smoke/Fire) event was a mechanical failure caused by defective CNG sensor in the area of Room F105. The system responded as designed and alarmed. Personnel responded appropriately in line with the EAP.

Incident Site

Carmen Turner Facility – Bus Maintenance Shop, Building F

Field Sketch/Schematics



Purpose and Scope

The purpose of this accident investigation and candid self-evaluation is to collect and analyze available facts, determine the probable cause(s) of the incident, identify contributing factors, and make recommendations to prevent a recurrence.

Investigative Methods

The investigative methodologies included the following:

- Site Assessment through document review
- Formal Interviews – SAFE did not conduct formal interviews.
- Informal Interviews – Collected through emails and conversations with individuals during the investigation to provide background and supporting information.
- Documentation Review – Collection of relevant work history information and process documentation contained in WMATA systems of record. These records include:
 - Metrorail Safety Rules and Procedures Handbook (MSRPH)
 - National Oceanic and Atmospheric Administration (NOAA)
 - Maximo Work Order
 - Fire Alarm Log
- System Data Recording Review – Collection of information contained in Metro Data Recording Systems. This data includes:
 - ARS (Audio Recording System) playback [Radio and Landline Communications]
 - Closed-Circuit Television (CCTV)

Investigation

On Thursday, September 1, 2022, at approximately 10:37 hours, the building fire alarm activated at the Carmen Turner Facility (CTF). Employees responded to the alarm and evacuated according to the procedures outlined in the Emergency Action Plan (EAP). The Metro Transit Police (MTPD) and the Prince George's County Fire and EMS Department (PGFD) were notified. The source of the alarm was identified as a Compressed Natural Gas (CNG) sensor in the Bus Maintenance (BMNT) Shop, located in Building F. Due to the alarm's nature, power was removed from the building during the initial response. Building F of the CTF was evacuated of personnel, however, the Rail Operations Control Center maintained continuous functions.

At approximately 10:43 hours, PGFD arrived to investigate the cause of the alarm activation and tested the atmosphere. All meter readings were negative.

Office of Systems Maintenance (SMNT), Communications Section (COMM) identified the impacted area as near Room F105.

The fire alarm and gas detection system were restored at approximately 11:38 hours and personnel returned to the building. No injuries or damage were reported.

Chronological Event Timeline

A review of ARS playback, i.e., phone and radio communications, revealed the following timeline:

Time	Description
10:37:14 hours	<u>Rail 1</u> : Discussion regarding if there was testing being conducted on the CNG alarming system. [Phone]
10:41:46 hours	<u>MOC PLNT 2</u> : Call the MOC advising of an alert on a gas alarm. [Phone]
10:42:07 hours	<u>MOC PLNT 1</u> : Communication between MOC and an officer relating to an alarm alert. [Phone]
10:42:07 hours	<u>MOC COMM</u> : Alarm monitoring company calling to inform of the current alerts at the CTF. [Phone]
10:42:17 hours	<u>MOC PLNT 1</u> : Alarm monitoring company and MOC discussed details of the CNG alarm alert (natural gas alarm sensor) and its location. [Phone]
10:43:34 hours	<u>MOC ATC</u> : Discussion of the gas leak detection alarm alerting at the CTF location. [Phone]
10:43:46 hours	PGFD arrived at CTF. (CCTV)
10:46:44 hours	<u>MOC COMM</u> : Discussion of the alarm at CTF location in Building F, Room F-105. [Phone]
10:50:13 hours	<u>MOC COMM</u> : Automated call from the Alarm monitoring company advising the current alerts. [Phone]
10:52:16 hours	<u>MOC Power 1</u> : Requesting information about the activated alarm at CTF location. [Phone]
10:54:37 hours	<u>MOC Lead</u> : Confirming the activated alarm at CTF location and that personnel have evacuated the buildings. [Phone]
10:54:46 hours	<u>MOC Power</u> : Discussion relating to dispatching personnel to restore power at CTF location. [Phone]
10:55:41 hours	<u>MOC Power</u> : Conversation regarding power out at the CTF location due to the activated alarm. [Phone]
10:57:24 hours	<u>MOC Lead and MOC PLNT 2</u> : Communication regarding fire protection advising on Supervisory and Trouble alarms activated at CTF. [Phone]
10:58:37 hours	<u>MOC</u> : Inquiring if the fire department had cleared the building. [Phone]
10:58:48 hours	<u>MOC COMM</u> : Informs MOC that they are en route to resolve the issue relating to the activated alarm at CTF. [Phone]
11:13:57 hours	PGCFD departed CTF. (CCTV)
11:14:08 hours	<u>MOC PLNT 1</u> : Officer on the line asking if it was clear to re-enter the building. Officer was informed to stand-by. [Phone]
11:14:30 hours	<u>MOC COMM</u> : Conversation relating to the CTF all clear and personnel can return to the buildings. [Phone]
11:15:24 hours	<u>MOC COMM</u> : Requesting confirmation if personnel are cleared to return to CTF. [Phone]

Time	Description
11:25:33 hours	<u>MOC Power 1</u> : Discussion about restoring power to CTF. [Phone]
11:26:44 hours	<u>MOC Power</u> : Conversation about alarm re-set and restoring power to CTF. [Phone]
11:32:00 hours	<u>MOC Power</u> : Discussion about receiving permission to initiate power restoration at CTF. [Phone]
11:33:47 hours	<u>MOC Power</u> : Conversation about receiving authorization to move forward on restoring power to CTF. [Phone]
11:34:11 hours	<u>MOC Power</u> : MOC received confirmation that power was restored at the CTF location. [Phone].
11:50:34 hours	<u>MOC COMM</u> : Confirmation that power has been restored to Building E and F at the CTF location. [Phone]
11:57:01 hours	<u>MOC Power and MOC Lead</u> : Notification was made to MOC Lead that all power has been restored to CTF location.

****Note:** Times above may vary from other systems' timelines based on clock settings and reporting sources.

Office of Systems Maintenance – Communications Section (COMM)

Personnel from COMM responded to the alarm and identified the source as a CNG sensor detecting elevated levels. Based on their assessment, the sensor that alarmed was defective.

Rapidweb

Menu

Reports

Help

Search Account

Hello Michael Bailey

106609 Cintas - WMATA

Log off

View Cellular 2022 Sunset Accounts

H460433 - WMATA-Carmen Turner (Fire System), 3500 Pennsy Dr Hyattsville, MD 20785 Prince George's County - Commercial [Click to minimize]

System #

H460433

Account Name

WMATA-Carmen Turner (Fire System)

Address

3500 Pennsy Dr Hyattsville, MD 20785 Prince George's County

Account Type

Commercial

Account Groups

1613 - Cintas 2, Inc DBA Cintas Fire Protection (Dealer), 106609 - Cintas - WMATA (Commercial Chain), 99991613 - Cintas 2, Inc DBA Cintas Fire Protection (Principal Dealer)

Refresh

System#	Status	Comm. Type	Area Status	Online Date
H460433	Active	Digital		10/16/18

Phone	Ext	Phone Type
202-962-1700		Premises

1	H460433	09/01/2022 10:38:54	Dispatch Accepted	ACC...							
1	H460433	09/01/2022 10:38:51	E301 - AC POWER LOSS	E301	3		07010614AC Brownout	202-962-1234	7		97612
1	H460433	09/01/2022 10:38:51	Send FD ASAP dispatch								97612
1	H460433	09/01/2022 10:38:35	R200 - RESTORAL- FIRE SUPERVISORY	R200	161		BLDG F ROOM F105 GAS DET SYS CNG WARNING	202-962-1234	7		97612
1	H460433	09/01/2022 10:38:31	E200 - FIRE SUPERVISORY	E200	160		BLDG F ROOM F105 GAS DET. SYSTEM FAULT	202-962-1234	7		97612
1	H460433	09/01/2022 10:38:26	R200 - RESTORAL- FIRE SUPERVISORY	R200	160		BLDG F ROOM F105 GAS DET. SYSTEM FAULT	202-962-1234	7		97612
1	H460433	09/01/2022 10:38:24	Access on Dispatch Window								97612
1	H460433	09/01/2022 10:38:22	R151 - RESTORAL- GAS DETECTION	R151	162		BLDG F ROOM F105 GAS DET SYS CNG ALARM	202-962-1234	7		97612
1	H460433	09/01/2022 10:38:17	E151 - GAS DETECTED ALARM	E151	162		BLDG F ROOM F105 GAS DET SYS CNG ALARM	202-962-1234	7		97612

Image 1 - Alarm History and Progression 1 of 3

	H460433	09/01/2022 10:39:22	E300 - SYSTEM TROUBLE	E300	T137		BLDG F F111B EP#27 TROUBLE SUPERVISION		202-962-1234	7		97612	
1	H460433	09/01/2022 10:39:21	Pending notification (High Priority)									97612	
1	H460433	09/01/2022 10:39:20	ASAPDisp - ASAP Status Update - Unit(s) Dispatched	CAD...							Unit has has been dispatched	97612	
2	H460433	09/01/2022 10:39:07	E300 - SYSTEM TROUBLE	E300	T138		BLDG F F111B EP#28 TROUBLE SUPERVISION		202-962-1234	7		97612	
1	H460433	09/01/2022 10:39:07	E200 - FIRE SUPERVISORY	E200	161		BLDG F ROOM F105 GAS DET SYS CNG WARNING		202-962-1234	7		97612	
1	H460433	09/01/2022 10:39:04	E300 - SYSTEM TROUBLE	E300	T406		BLDG F BY BOOTH 5 EP#33 TRBL SUPERVISION		202-962-1234	7		97612	
1	H460433	09/01/2022 10:39:03	Fire department dispatching									97612	
1	H460433	09/01/2022 10:39:02	E151 - GAS DETECTED ALARM	E151	162		BLDG F ROOM F105 GAS DET SYS CNG ALARM		202-962-1234	7		97612	

Image 2 - Alarm History and Progression 2 of 3

1	H460433	09/01/2022 11:36:04	R300 - RESTORAL-SYSTEM TROUBLE	R300	T135		BLDG F F105 CNTRL EP#25 TRBL SUPERVISION		202-962-1234	7		*No Action	
1	H460433	09/01/2022 11:35:59	R300 - RESTORAL-SYSTEM TROUBLE	R300	T404		BLDG F BY BOOTH 3&4 EP#31 TRBL SUPERV		202-962-1234	7		*No Action	
1	H460433	09/01/2022 11:35:55	R301 - RESTORAL-AC LOSS	R301	3		07010614AC Brownout		202-962-1234	7		*No Action	
1	H460433	09/01/2022 11:35:51	R301 - RESTORAL-AC LOSS	R301	10		07080614AC Brownout		202-962-1234	7		*No Action	
1	H460433	09/01/2022 11:13:39	ASAPClose - ASAP Dispatch Event Closed - Unit(s) cleared	CAD...							CAD Incident Closed		
1	H460433	09/01/2022 11:13:39	ASAPClose - ASAP Dispatch Event Closed - Unit(s) cleared	CAD...							CAD Incident Closed		
1	H460433	09/01/2022 10:59:11	R200 - RESTORAL-FIRE SUPERVISORY	R200	161		BLDG F ROOM F105 GAS DET SYS CNG WARNING		202-962-1234	7		*No Action	
1	H460433	09/01/2022 10:59:09	R151 - RESTORAL-GAS DETECTION	R151	162		BLDG F ROOM F105 GAS DET SYS CNG ALARM		202-962-1234	7		*No Action	

Image 3 - Alarm History and Progression 3 of 3

Interview Findings

Interviews were not conducted for this event.

Weather

At the time of the incident, NOAA recorded the temperature at 83 ° F, with passing clouds. Weather was not a contributing factor in this incident (Weather source: NOAA – Location: Landover, MD)

Related Rules and Procedures

Human Factors

Fatigue

Signs and Symptoms of Fatigue

Fatigue Risk

The biomathematical fatigue modeling application (SAFTE-FAST Web SFC) was not applied for this event.

Post-Incident Toxicology Testing

Post-Incident Toxicology Testing was not conducted for this event.

Findings

- The alarm was caused by a defective CNG sensor.
- Fire alarm systems activated as designed.
- Prince George's County Fire Department and EMS were notified and dispatched.
- The building was evacuated as required.

Immediate Mitigation to Prevent Recurrence

- Identified defective sensor was disabled during troubleshooting to prevent recurring alarm.

Probable Cause Statement

The probable cause of the Evacuation for Life Safety Reasons (Smoke/Fire) event was a mechanical failure caused by defective CNG sensor in the area of Room F105. The system responded as designed and alarmed. Personnel responded appropriately in line with the EAP.

SAFE Recommendations/Corrective Actions

Corrective Action Code	Description	Responsible Party	Completion Date
102890_SAFE CAPS_SMNT_ 001	Replacement of defective components.	SMNT	Completed

Appendices

Appendix A – Maximo Workorder



Washington Metropolitan Area Transit Authority Maintenance and Material Management System Work Order Details

Page 1 of 1
MX76PROD

Work Order #: 17306586
Type: CM



Status: COMP
09/01/2022 14:29

Work Description: T38_Active fire alarm (Bldg. F) from CNG detector
Job Plan Description:

Work Information									
Asset: 21044	MONITOR, FIRE/INTRUSION, THORN, 1Z7025, T38F/I			Owning Office: COMM-TSSM-DFLD			Parent:		
Asset Tag:				Maintenance Office: COMM-TSSM-DFLD			Create Date: 09/01/2022 12:19		
Asset S/N: T38F&I				Labor Group: COMMESSFAC			Actual Start: 09/01/2022 14:29		
Location: 1714	T38, CARMEN TURNER FACILITY, BUILDING (B), 1ST FLOOR, ROOM B102, ELECTRICAL ROOM			Crew:			Actual Comp: 09/01/2022 14:29		
Work Location:				Lead: [REDACTED]			Item: N60650260		
Failure Class: COMM002	FIRE AND INTRUSION			GL Account: WMATA-02-33540-50499950-042-*****_OPR**			Target Start:		
Problem Code: 1893	FIRE ZONE ACTIVE			Supervisor:			Target Comp:		
Requested By: [REDACTED]				Requestor Phone: [REDACTED]			Scheduled Start:		
Chain Mark Start:				Chain Mark End:					
Create-Mileage: 0.0				Complete-Mileage: 0.0					
Task IDs									
Task ID									
10									
Arrived to find building evacuated and no power in F building. No present alarm showing on panel, in history panel showed alarm but was reset. Found two sensors showing relatively high. Turned sensors off and checked all other controllers to make sure they were in range. Controller issue. Power was restored and evacuation ended									
Component:	Work Accompl:			Reason:		Status: COMP	Position:	Warranty?: N	
Actual Labor									
Task ID	Labor	Start Date	End Date	Start Time	End Time	Approved?	Regular Hours	Premium Hours	Line Cost
10	[REDACTED]	09/01/2022	09/01/2022	11:00	14:00	Y	03:00	00:00	\$142.55
10	[REDACTED]	09/01/2022	09/01/2022	11:00	14:00	Y	03:00	00:00	\$143.93
							Total Actual Hour/Labor:	06:00	\$286.48
Related Incidents									
Ticket	Description	Class			Status		Relationship		
8621507	Active fire alarm (Bldg. F) from CNG detector	SR			NEW		RELATED		
Failure Reporting									
Cause	Remedy			Supervisor			Remark Date		
1071	ANNUNCIATOR FAILURE	2841 RESET						09/01/2022	
Remarks: sensors reporting high. Levels came down. Controller issue.									

WT_plust_woprint.rptdesign

09/15/2022 09:22

Maximo Work Order for COMM Response. Page 1 of 1

Incident Date: 09/01/2022 Time: 10:37 hours
Final Report – Evacuation for Life Safety Reasons
E22570

Drafted By: SAFE 711 – 12/29/2022
Reviewed By: SAFE 70 – 01/04/2023
Approved By: SAFE 70 – 01/04/2023

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Appendix - Root Cause Analysis

Problem Statement	Major Cause	Causes	Causes	Root Causes
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5 Root Cause Analysis

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

