

FINAL REPORT OF INVESTIGATION A&I E19456

August 29, 2019

Serious Injury

W-0024

Adopted by the Washington Metrorail Safety Commission at its meeting on March 12, 2020.

Washington Metrorail Safety Commission
777 North Capitol Street, NE, Suite 402
Washington, DC 20002



FINAL REPORT OF INVESTIGATION A&I E19456

SMS 20190829#82593

Date of Event:	8/29/2019
Type of Event:	Serious Injury
Incident Time:	02:22 hrs.
Location:	Huntington Station
Time and How received by SAFE:	22:09 hrs., SAFE on Call Phone
Safety Officer Response:	Yes
Time of Safety Officer Arrival:	8/30/2019 – 10:00 hrs.
Time of Safety Officer Departure:	8/30/2019 – 11:30 hrs.
Rail Vehicle:	No
Injuries:	TRST employee suffered a severe burn injury to left foot
Damage:	No
Emergency Responders:	No

Executive Summary

On Thursday, August 29, 2019, at approximately 22:09 hrs., SAFE was notified that on at approximately 02:22 hrs., Thursday morning., a Track and Structure (TRST) employee sustained a serious injury to left foot while performing a Thermite Welding operation within Huntington Interlocking, Track 1. This area was located within an Authorized Construction Site (ACS) which was located between National Airport and Huntington (Yellow Line)/Franconia Stations (Blue Line).

Reportedly, employee's left foot became wedged between an ATC bracket and running rail while removing a weld shearing tool. Reportedly, a piece of hot slag from the newly welded rail, contacted the affected employee's boot. However, affected employee did not report any injuries at this time and declined medical attention, continued to work, and subsequently went home at end of shift. An initial investigation was not performed by TRST Supervisor (TRST/S) on location. Nevertheless, per discussion with TRST Assistant Superintendent (Asst Supt) shortly after the event, TRST/S retrieved written statements from the work crew based on Asst Supt direction. At no time immediately following initial event was, Mobile Command Center (MCC) notified.

Later on that evening on Thursday, August 29, 2019, at approximately 20:42 hrs., TRST Management reported via email that, employee involved in the earlier "slag making

contact with boot” event sustained serious injuries and sought medical attention at the MedStar Washington Hospital Center in Washington, D.C. where it was determined, employee had sustained third-degree burns to the inside of left foot. Employee was admitted for further medical care on Friday, August 30, 2019.

Note: This event was reported to Mobile Command and SAFE personnel after the employee was admitted to the hospital.

Notification

Title	Time	Comment:
FTA	22:18	Email; notification
WMSC	22:18	Voice mail
CMC	22:18	Email; notification
VOSH	09:00	Phone Notification 9/4/2019

Incident Site

Incident area was located at Huntington Station, Track 1, at Chain Marker (CM) 520+30.

Investigation

On Thursday, August 29, 2019, at approximately 02:22 hrs., a TRST employee sustained an injury to left foot while performing Thermite welding on running rails at Huntington Interlocking, concrete viaduct, direct fixation, Track 1 within the ACS.

Prior to event, based on an interview with injured employee, TRST personnel were (Thermite) welding two pieces of rail together. During this process, TRST work crew used a Railtech Matweld rail shear, weighing 110 lbs., Reportedly, employee lost footing while engaging in a “team lift” removing rail shearing tool from weld on the running rails.

Note: TRST Supervisor stated during the interview that work area was clear of any unnecessary work-related obstructions.

Reportedly the affected employee’s left foot became wedged between an ATC bracket and the running rail in the area of the weld. During a post incident interview with the affected TRST employee, it was stated that the piece of the hot Thermite slag fell inside their boot through the open zipper on the left side of the boot. This updated information was contrary to the initial report that the hot Thermite slag only made contact with the outer shell of the boot. The employee stated they were wearing the appropriate footwear

and the time of the event. Due to the late report of the event, SAFE was unable to obtain and examine the employee's boot to substantiate the affected employee's statement.

During interview, TRST Supervisor stated no investigation was initiated at time of the incident, i.e., pictures of incident area and condition of employee's boots etc. Per interview with TRST/S's Manager (Asst Supt) who received notification from TRST/S shortly after event stated, that they instructed TRST/S to retrieve written statements from work crew and further instructed their direct report not to report event at that time. Asst Supt. further stated they did not think; a level of severity was reached based on report from the TRST/S. At no time immediately following initial event was the Mobile Command Center (MCC) notified.

Note: SAFE performed an inspection of the area and identified inadequate housekeeping practices. Refer to photo 1

Interview with members of the work crew supported accident event taking place although they did not witness.

At time of event, injured employee reported that slag did not burn through their boot but rather radiant heat from thermite slag or weld.

Reportedly, immediately after the event, injured employee declined medical attention and resumed work until their shift concluded. Injured employee reported to TRST Management, that they had self-transported to the hospital upon arriving at home, after feeling extreme discomfort. Further medical evaluation determined employee, suffered third-degree burns to instep of left foot and was admitted for further medical care.

Office of Track and Structures (TRST)

Work Procedures

Thermite Welding is performed on the trackbed and is covered under a yearly permit under the Hot Work Program – SAFE FM-M-01 Rev. 1 Section 6.18 – Annual Permit Required Hot Work Locations.

In accordance with section 3 of the hot work program, WMATA has allotted a two-year time frame to bring facilities into compliance with the program. The SAFE FMO has completed annual hot work permits for fixed facilities at this time; permits for the roadway and tunnels will be forthcoming prior to the two-year full implementation date (April 24, 2020).

The TRST personnel has quality assurance checks for welds being "shot." Thermite welds are Ultrasonic Test (UT) inspected by a level II qualified UT technician within 72 Hours of the weld being performed. When removing Thermite welding spoils from the job site,

personnel are required to put the spoils in a hot box and dispose of only after the material has cooled down sufficiently.

Training / Recertification

Thermite welders undergo refresher courses every year. Training is a two-day course provided by Orgo-Thermite (the manufacturer of our weld material). The procedures outlines, in detail; personnel errors in handling and application can expose welding crews to unnecessary risk of injury, material inspection, housekeeping techniques, job briefing processes, tools, hydraulic shear operation, maintenance procedures, The Thermite Welding kit contents, PPE, maintenance life of tools, etc. After review, SAFE determined, The TRST personnel received adequate training and requires no revision at this time.

Job Hazard Analysis

SAFE performed a Thermite Welding Job Hazard Analysis (JHA) in February 2018 related to Thermite Welding of Running Rails. The Safety Footwear specification for this required PPE when performing the Thermite Welding job task is ASTM F2413.

Human Factors

Years of Service

Employee is an 8-year Veteran, TRST laborer. Employee was certified at the time of the incident and possessed a valid Road Way Protection (RWP) Level 2 ID. Based on a review of employee's transcript in E-Learning Module (ELM), Thermite training commenced on 7/11/2019.

Fatigue

Based on employees 30-day work history, it was determined that the employees' hours of service were in accordance with WMATA's *Fatigue Risk Management Policy 10.6* and *Hours of Service Limitations for Prevention of Fatigue Policy 10.7*.

Post-Incident Testing

Post-Incident testing was not conducted as a result of this event due to the timeliness of report. Additionally, Reportedly, TRST Supervisor performed a visual post-incident fitness assessment of the injured employee and did not report any negative concerns with the employee's behavior that would warrant further reasonable suspicion evaluation to include but not limited to post-incident testing. **Note:** There is no training data to support that TRST Supervisor had been "Reasonable Suspicion" trained prior to this accident event.

Findings

- TRST Assistant Superintendent instructed the TRST/S to retrieve written statements from the work crew based and further instructed their direct report not to report the event at that time.
- TRST Supervisor failed to perform immediate investigation after the accident event occurred or report accident event to Mobile Command
- No training data to support that TRST Supervisor was "Reasonable suspicion" trained
- SAFE identified inadequate housekeeping practices, tripping hazards and foot entrapment areas within the work location
- TRST personnel failed to address immediate hazards and inspect the area for proper lighting before performing work
- No evidence supporting an inspection of the boots worn by the injured employee was performed and results provided by TRST Injured Employee, TRST Supervisor or TRST Management
- TRST management failed to oversee work operations to ensure personnel were following policies and procedures.

Weather

At the time of the event, the temperature was 68 °F, SAFE has concluded that weather was not a contributor (Weather source: National Oceanic Atmospheric Administration (NOAA) – Location: Alexandria V.A.)

Immediate Mitigation to Prevent Recurrence

- Injured employee self-transported to MedStar Washington Hospital Center in Washington, D.C.
- TRST re-instructed all TRST employees certified and Non-Certified in Hot Works. Refer to attachment 1 pages 1-2.

Conclusion

Based on salient facts, SAFE concluded that the accident event was not reported in a timely manner to Mobile Command nor was there an initial investigation conducted by TRST Supervisor. TRST Supervisor failed to inspect the boots worn by the injured employee and provide results of an inspection to SAFE. The type of boots worn at the time of the accident event were not checked for compliance by SAFE. However, based on the nature of the event, SAFE can reasonably assume that footwear worn during the time

of the accident event may have been worn improperly (untied) or the condition of the boot presented a hazard. Ie. holes, tears, worn soles etc.

Additionally, SAFE concluded that inadequate house-keeping practices, lack of management oversight, and TRST personnel's failure to recognize immediate hazards associated with the work location contributed to the accident event. These causal factors may have contributed to the event which subsequently contributed in the injured employee's foot contacting hot materials from welding process.

Corrective Action Plan

1. TRST Management shall enroll TRST Assistant Superintendent into "Rail Incident Investigation" course with Transit Safety Institute (TSI).
2. TRST Management shall enroll TRST Supervisor into "Supervisor Safety Management" training with an emphasis on conducting Accident Investigations.
3. TRST Management shall must provide transcript of TRST Supervisor that reveals that "Reasonable Suspicion" training requirement has been fulfilled.
4. TRST shall develop an SOP for Thermite Welding that ensures that relevant hazards such as housekeeping concerns and the hazards associated with the job (JHA) are identified through the SOP.
5. Upon return to full duty work assignment, TRST management shall enroll the injured employee into a training class that places emphasis on proper body mechanics that when used properly, can prevent slip trips and falls within the work environment. **The Injured employee completed the Body Mechanics and Hot Work Familiarization Computer Based Training (CBT) upon return to work.**

Photos



Photo 1 – Housekeeping at work location



Photo 2 - Arrow indicates weld location



Photo 3 -Accident location

Certified and Non Certified Hot Works

Branch Avenue Safety Signature Sheet

Tuesday October 22, 2019

During Fire Prevention Week, the Department of Safety and Environmental Management (SAFE) would like to remind you that a fire can occur at anytime and anywhere. Whether you are at home or here at the work, always remember:

"Fire can happen anywhere. Plan and practice your escape!"

(Please visit firepreventionweek.org for more details.)

Situational Awareness - It is important that you are aware of the hazards that you may face in your work environment and the harm that the hazards may cause you and your colleagues.

Clothing:

Always wear fitted clothing, put away any jewelry, if clothes get caught on something (stop observed and execute before moving if possible to do so base on circumstances.

Welding:

When welding make sure that your hoses are: **1.** sufficient length, **2.** hoses not too loose or close to the work being performed, **3.** tanks gauges working properly, **4.** tank gauges are secure, **5.** fire extinguisher handy, **6.** A. **Hot Box** for old welding slack, **7.** Smell, listen, feel for any leaks to hoses, gauges, tanks, tools or equipment being used or not, **8.** Ensuring everyone knows and understand their task given, **9.** In the event of an **Emergency don't panic**, **10.** Get to a place of safety and notify you Supervisor or Lead personnel of the event that occurred, **11.** Any Damage tools, equipment and ETC: Removed from Flatcar, Prime Mover or Work Truck and notify Superior of defective equipment, **12.** **No short cuts**, and last thing **13.** **Always look out for one another.**

Attachment 1 – Hot Work Re-instruction page 1 of 2

Tools and Equipment:

1. Always inspect, 2. Operate tools/equipment in safe manner and only used them for their intended purpose, 3. Handles are free of Grease, 4. Electric cables and plugs are not being frayed or broken, 5. Hoses are not kinked or bent, 6. Check calibration date, and 7. Make sure tool or equipment works properly before usage.

Housekeeping:

1. Make sure all hoses, extensions cords and ETC are all coiled up. 2. Keep work area maintained and organize, 3. Reduce tripping hazards, 4. Put all tools away, 5. Put away any tools, 6. Material or equipment away not being used, and 7. Always keep areas worked or traveling to free of spills or leaks and if so dry clean ASAP.

Footwear:

1. You must only wear composite-toed work boots with non-slip soles that comply with WMATA Rules and Procedures, work boots must be in good condition, 2. Properly laced with non-skid soles that are not worn smooth, and 3. Fire and electrical – Prevention work boots (from sparks, fire or Voltage.).

Ergonomics:

1. Make sure you are aware of your surroundings, be alert to changing, conditions, or hazards in your environment, avoid getting trapped in, on, or between objects. 2. Use tools as intended, follow standard operating procedures. Be aware of pinch points, work load, and sharp objects, and sharp of high temperature surfaces.

3. When lifting heavy objects, always lift with your legs, not your back, and make sure that you never lift more than (75) pounds without assistance. Test the weight if necessary, and use a firm hand grip. 4. Always clear walkway.

******If you have any questions regarding this Safety Bulletin, please contact your Regional Safety Officer or call the Safety Hotline at 202-249-SAFE (7233).*****

REMINDER: Daylight-Saving time ends this year on Sunday, November 3, 2019. Please be sure to set your clocks back one hour and change the batteries in your home smoke alarms (if equipped). If your smoke alarm(s) are more than 10 years old, consider replacing them with a new 10-year smoke alarm.

Attachment 1 – Hot Work Re-instruction page 2 of 2