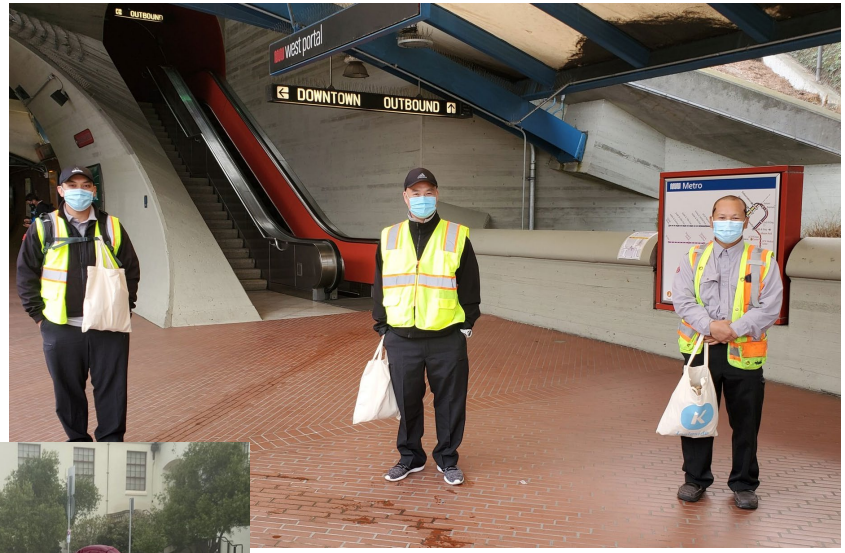
Rail Operational Challenges during COVID

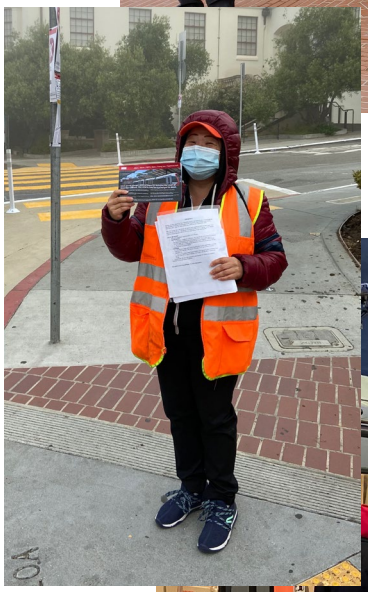
SFMTA Board

September 1, 2020

Rail Reopening *What we learned?*

- Transfers worked, but were complex for customers and staff
  - Cantonese speaking ambassadors were key at West Portal
- Stations were cleanest they have been in a generation
- Public was excited to see trains running again, made things feel “normal” for a time
- New wayfinding had gaps, but Ambassadors and support staff provided assistance
- Staff from all over agency worked together to tackle challenges





Key Issues Leading to Shutdown

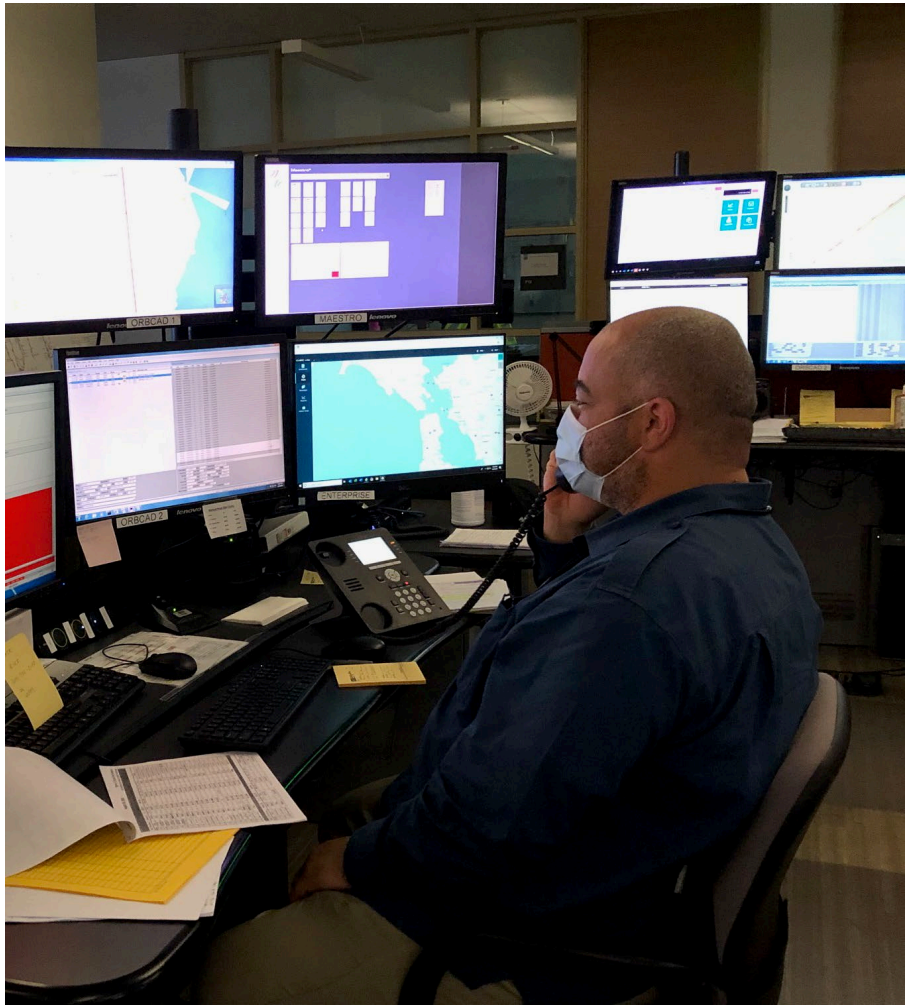
Our rail restart was disrupted by two issues:

1. Splice failures in the subway, raises concern of ongoing risk of additional splice failures and the possibility of customers getting stuck in the subway for extended periods of time during COVID

2. Rail Controller tested positive for COVID, requires 14-day quarantine of team members who came into close contact, limiting staff for service-critical role

Rail Controller Team

- Relatively small team impacted by high quarantining
- Controllers work in teams of three, each managing separate parts of the train control system
- Existing staffing shortages and challenging training program contributed to vulnerability
  - Current class of trainees cannot complete on the job training until the rail system reopens
  - Rail control system is from the 1980s and requires mastering complex and out of date computer techniques



TMC Next Steps

At the Transportation Management Center (TMC)

- Look for opportunities to exceed DPH guidance – e.g., exceed 6ft spacing for workstations
- Encourage console messaging to avoid physical interactions
- Re-enforce face shield compliance, in addition to masks, while working within the rail management area
- Explore using second location for increased staff separation
- Continue to hire and train new train controllers and refresh certifications of past controllers working in other parts of the agency
- Long term – new train control system is more intuitive and will offer enhanced training and service management opportunities

Agency-wide

- COVID-19 requires constant vigilance – working across the agency to combat fatigue
- DOC to identify and analyze vulnerabilities with other small teams

Splice Failure and Service Disruptions

- Overhead wire came down at Castro (pre-start up) and on Monday at Forest Hill
- OHL team responded quickly and discovered both were a failed splice
- Provided bus substitutions

What is a splice?

- A *splice* is how we connect two pieces of overhead wire to one another
- Splices are customized to our system's specifications and require highly specialized manufacturing
- Splices should be stronger than the surrounding wires

Background on Failed Splices

Failed splices

2019 **2020** *No subway service*

April 16

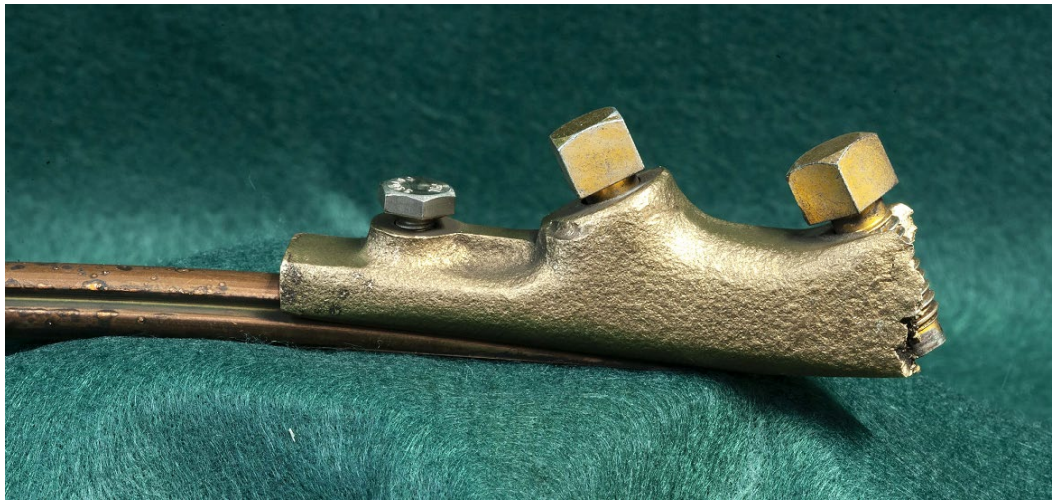
August 23

August 21

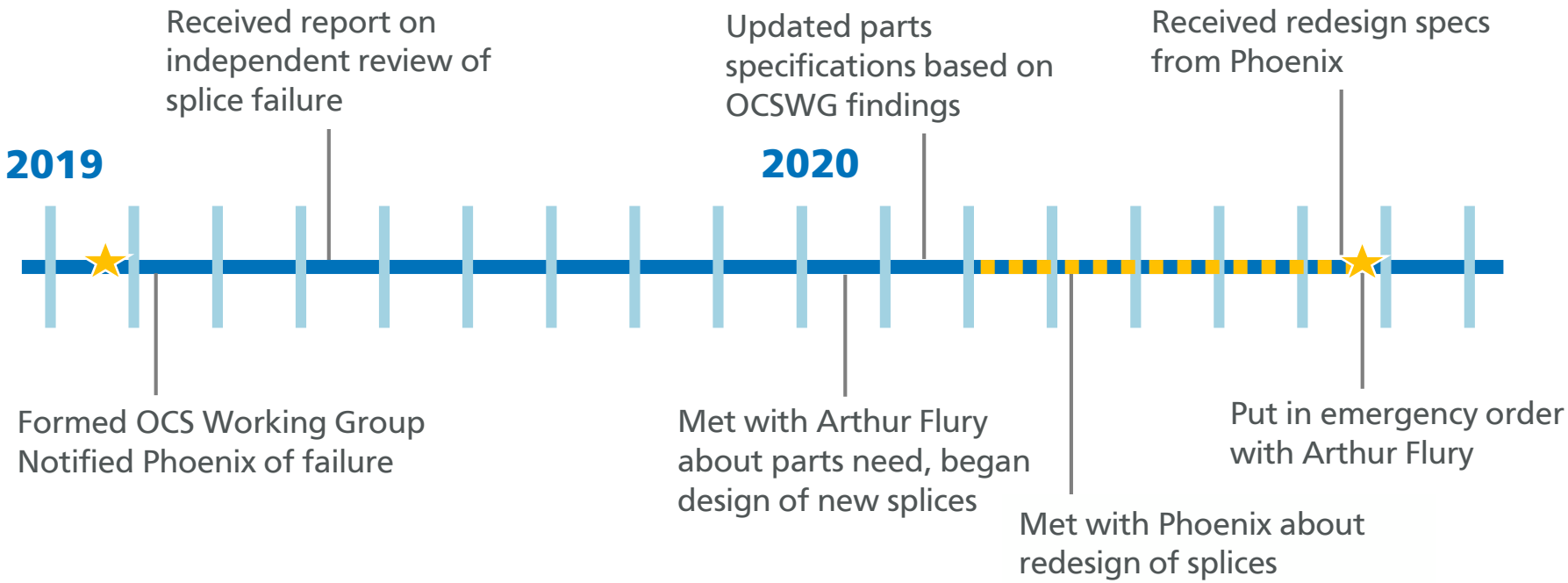
June 9 (surface)

May 15

April 26 (surface)



Background on Failed Splices

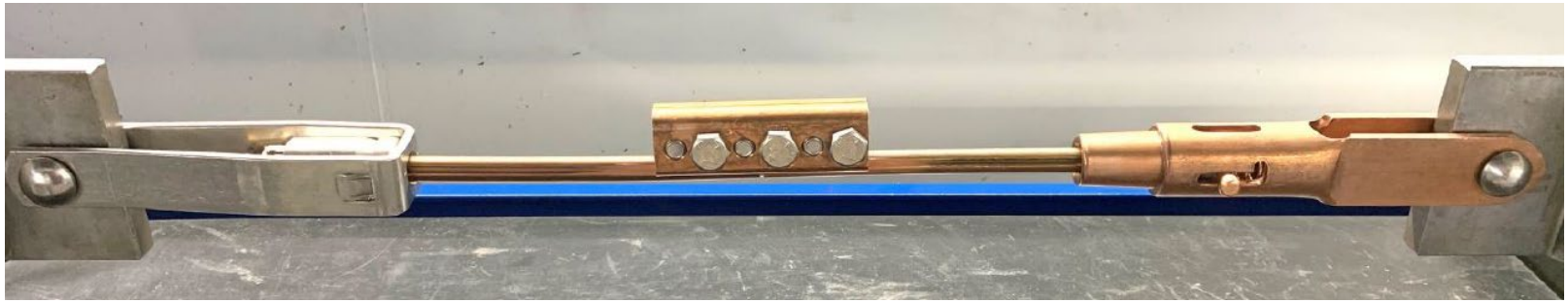


Poor Quality Led to Splice Failure

- Independent failure analysis determined that splices failed due to poor metallurgy quality - it contained low silicon levels which led to low tensile strength
- Splice did not fail because of state of good repair issues
- Splice problem not visible as part of our routine preventative maintenance inspections
- Splice is not a new design, and has been used in our system for over a decade
- We do not know how many splices in our system have poor metallurgy quality or when first bad batch arrived

Next Steps for Overhead Lines

- Map splice locations (subway completed, surface rail/trolley next)
- Procure replacement splices (estimated lead time 8 weeks, $30K)
- By the end of the year, remove all problematic splices in the subway, replace with new splices or longer stretches of wire
- Develop plan for surface rail and trolley – *new rail splice is not trolley compatible*
- Construction support and other work to be reduced to allow in-house teams to focus multiple shifts per day on installation (estimated time 2-3 hours per splice)



Next Steps for Overhead Lines

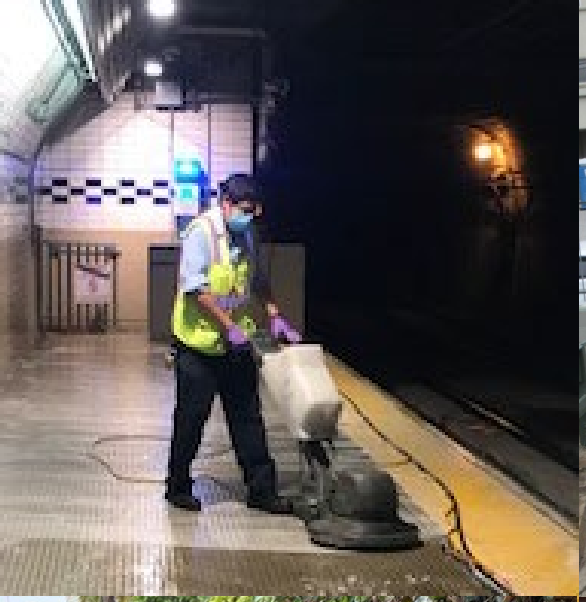
- During shutdown, other challenging areas that are unrelated to the splices will also be addressed
- In many locations, splices will be removed instead of replaced by running new wire – 45 splices removed to date during extended maintenance shutdowns
- Staff also working to develop quality assurance program – including outside parts testing and implement new video technology to improve the early detection of issues that cannot be spotted with naked eye before they become failure

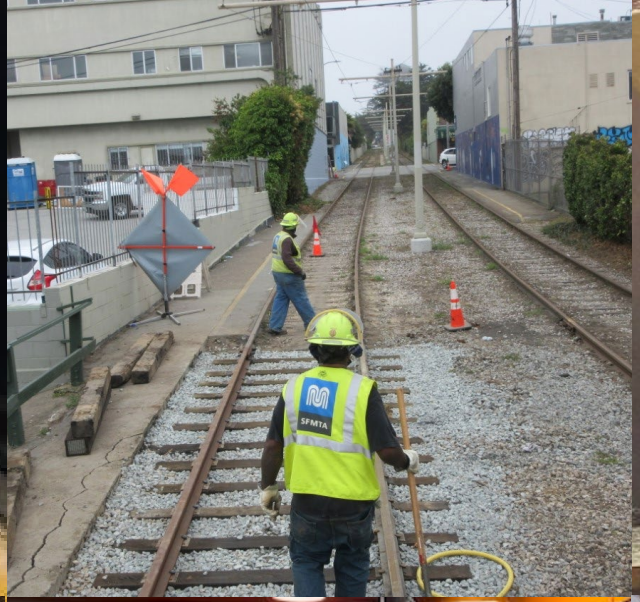
Photo shows section of the subway near Van Ness Station with a slow zone because the height and design need to be modified, this issue is not related to the splice failure, but can be addressed during the shutdown

Maximizing State of Good Repair

Work Underway to Maximize Shutdown:

- Shutdown presents opportunity to address state of good repair needs and create more reliable subway
- Will build on progress made over the summer *(minimal work was conducted this spring due to COVID restrictions)*
- Multi-disciplinary Task Force created to identify and plan work in key areas including track, signals, and fire/life safety systems






MUNI
CUSTODIAL


We Want to
Hold Your Hand

Next Steps

- Subway closure anticipated to extend through end of the year. In that time we will:
  - Remove splices in the subway, make other OHL enhancements to make system stronger than ever
  - Maximize state of good repair work
  - Reach out to peer agencies and study best practices nationally and internationally
- Department Operations Center (DOC) will continue to lead COVID-19 response and make safety adjustments at TMC and agency-wide
- Continue to refine bus service to address challenges, such as system crowding and customer information


Thank you
SFMTA