SFMTA | Municipal Transportation Agency

Subway ATCS Loop Replacement Project
Presentation to SFMTA Board

09 | 20 | 2011 | SAN FRANCISCO, CALIFORNIA

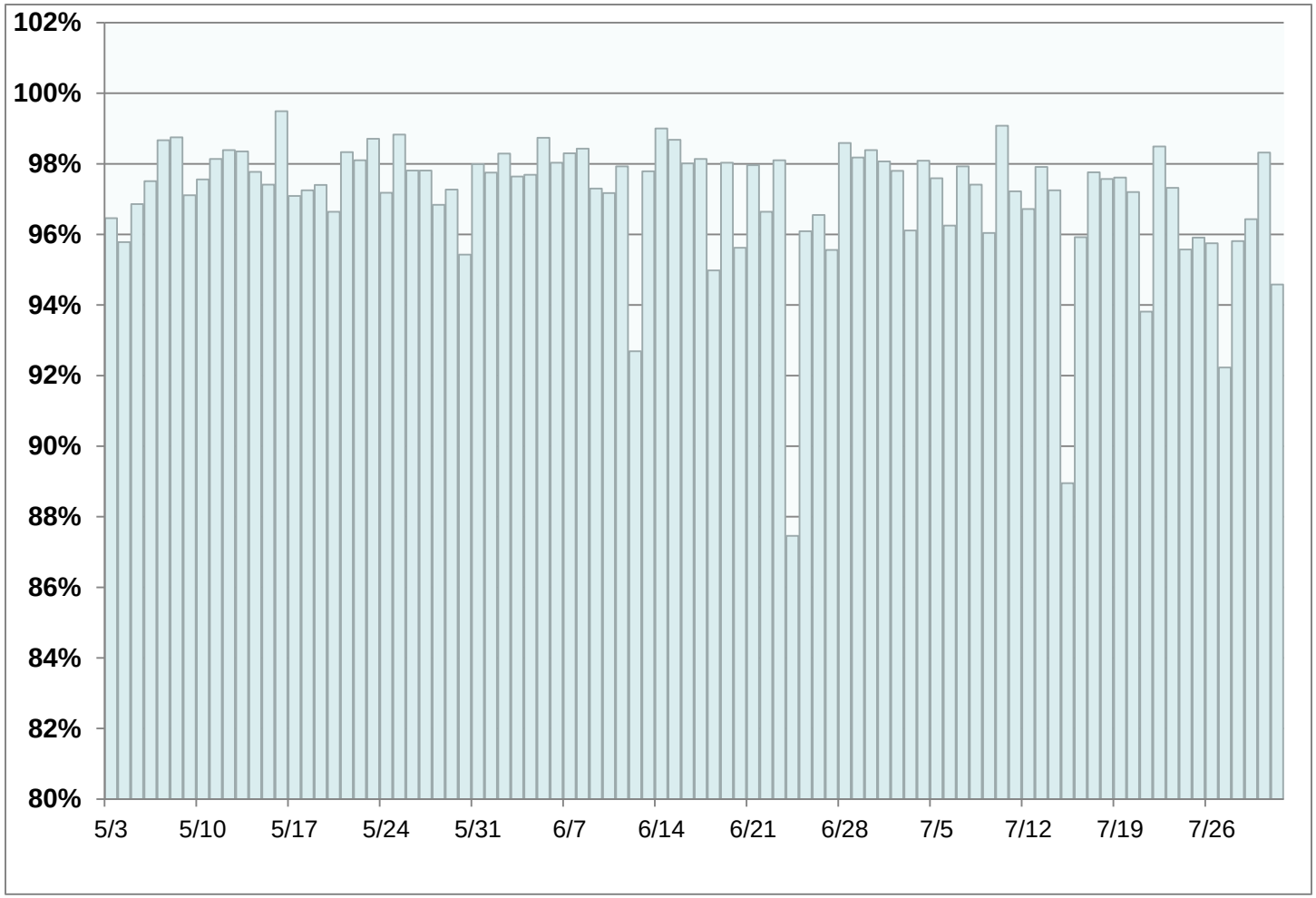
Purpose of Loop Cable

- **Trains operate in automatic in the subway guided by commands transmitted through signal cable.**
- **Signal cable transmits data to and from main train control computer.**
- **Successfully interaction between main computer and vehicle allows us to operate up to sixty trains per hour safely and reliably.**

Why Replace It?

- Life of cable over fifty years old.
- Our operation has placed stress on cable by:
  - Antennas falling off trains making contact with the wire and breaking it.
  - Sander hoses on the LRV coming loose and cutting the cable requiring splices.
  - Cable signal strength diminishing slightly with the introduction of too many splices.
  - Train Control System continues to fail safely. Replacing it will improve reliability and safety.

Percentage of Trains in full Automatic Operation



- Train Control System is continuing to perform at highest level since installation.

First Phase of Replacement Began this Spring

Phase 1-

- Underway to replace any damaged loop cable struts.
- Replace missing cable clips.
- Realign cable as necessary where there are sags or slightly misaligned.
- Expected completion by the end of September.

Project Phases

Phase 2 - September 2011

- Thales the signal vendor will perform a baseline test of all loop cable in the system.
- Thales to prepare a report based on their findings of areas of loop that should be replaced.
- From that data identify an area to perform a **"dry run" proof of concept to actually** replace a portion of the cable, test and implement in service.
- Expect completion of phase 2 in mid October

Project Phases

Phase 3 - November 1, 2011

- Begin installation on weekend long overnight closures of installing cable in sections.
- Each night after installation requires verification testing with a test train that the replacement cable is in the correct location.
- Weekend work will continue until all identified loops have been upgraded.
- End date is estimated on the number of areas identified in Phase 2. Probable date Mid 2012

Expectations Upon Project Completion

- Improved loop cable and service reliability
- Splices are the weak spot in any cable. The reduction in splices improves the reliability of the cable.
- Elimination of delays where a splice has come loose and resulted in trains operating in manual mode until repairs are completed.
- Have brought the inductive loop cable into a state of good repair.