



Brake Issues on North County Transit District's (NCTD) "Sprinter" Light Rail Vehicles



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March 21, 2013





Presentation Overview

- Sprinter overview, background, regulation.
- Commission's Safety and Enforcement Division (SED) inspections.
- Inspection results and wear limits.
- Post-inspection actions.



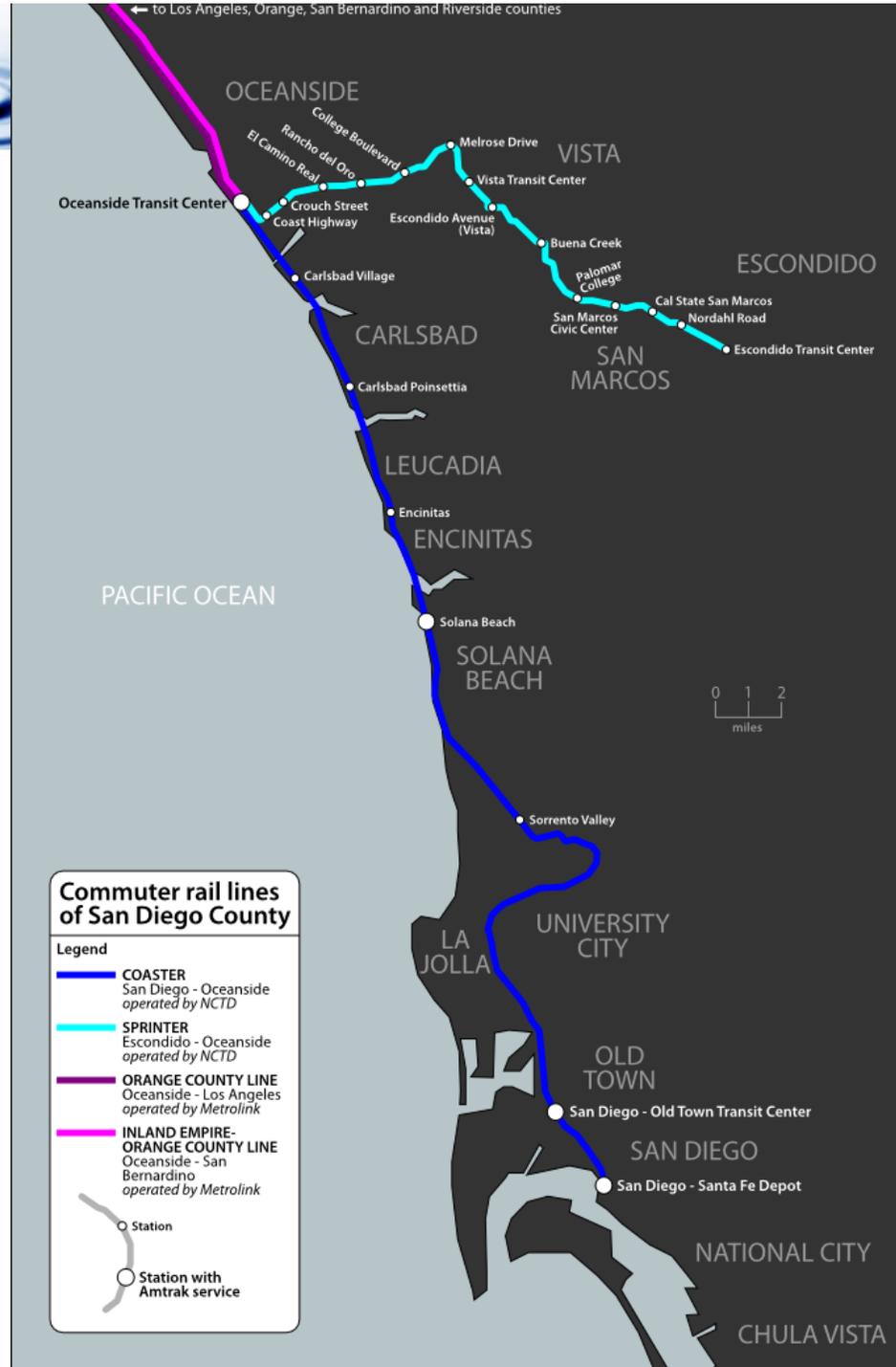


NCTD's "Sprinter"





- Sprinter service runs between Escondido and Oceanside.
- At Oceanside:
 - Connects with the NCTD Coaster to San Diego.
 - Connects with the Metrolink system.





NCTD's "Coaster"
Connects with the Sprinter at Oceanside





Sprinter background, history

- Service began March 2008.
- Operates under a Federal Railroad Administration (FRA) waiver.
- Exempted from FRA regulations.
- Under regulatory authority of the Commission.
 - Public Utilities Code section 99152.
 - Commission General Orders 143-B, 164-D.
- Commission is State Safety Oversight agency
 - Title 49 Code of Federal Regulations, Part 659.
- 2012, Federal Transit Administration (FTA) received authority to directly regulate safety.
- FTA has yet to exercise its new authority.





NCTD's Escondido maintenance facility
March 8, 2013, SED follow-up inspection to include FRA





Front powered truck axle, showing brake rotors





SED inspector measuring powered truck axle rotor wear





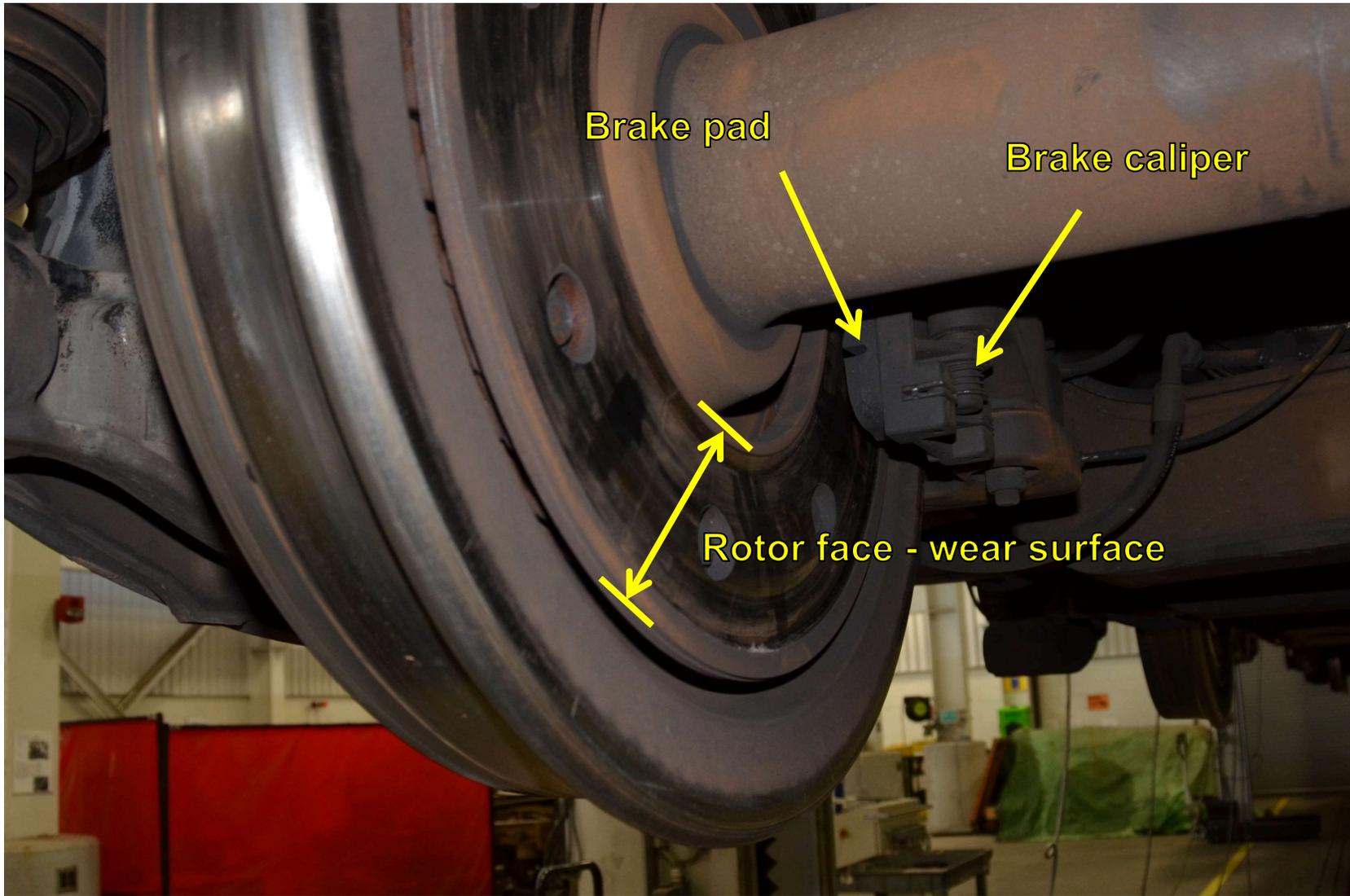
Center non-powered truck axle, showing brake rotors





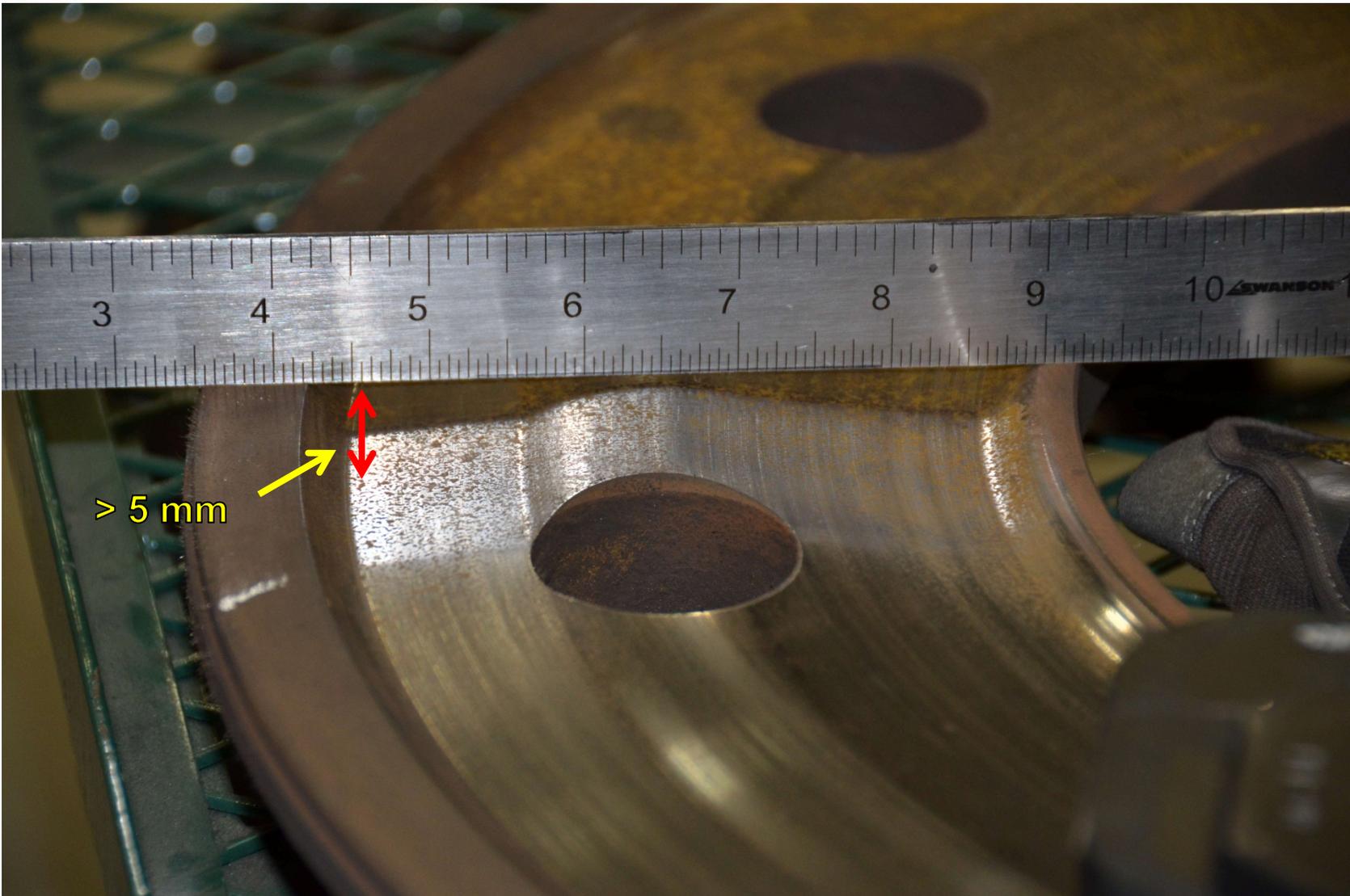
SED inspectors showing FRA inspector excess wear rotors





Layout of brake rotor, pad, and caliper





Center-truck brake rotor wear, greater than 5 mm



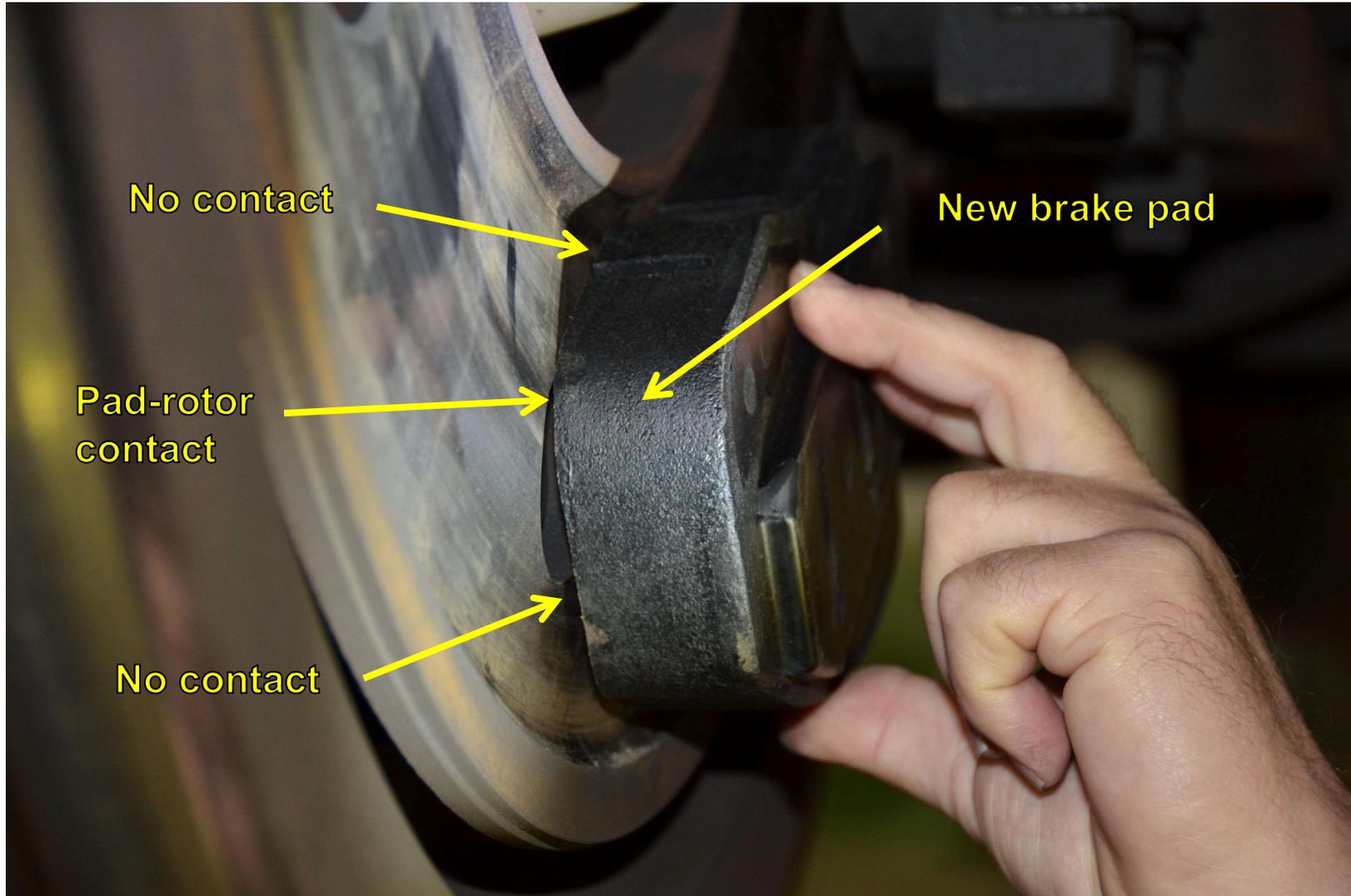
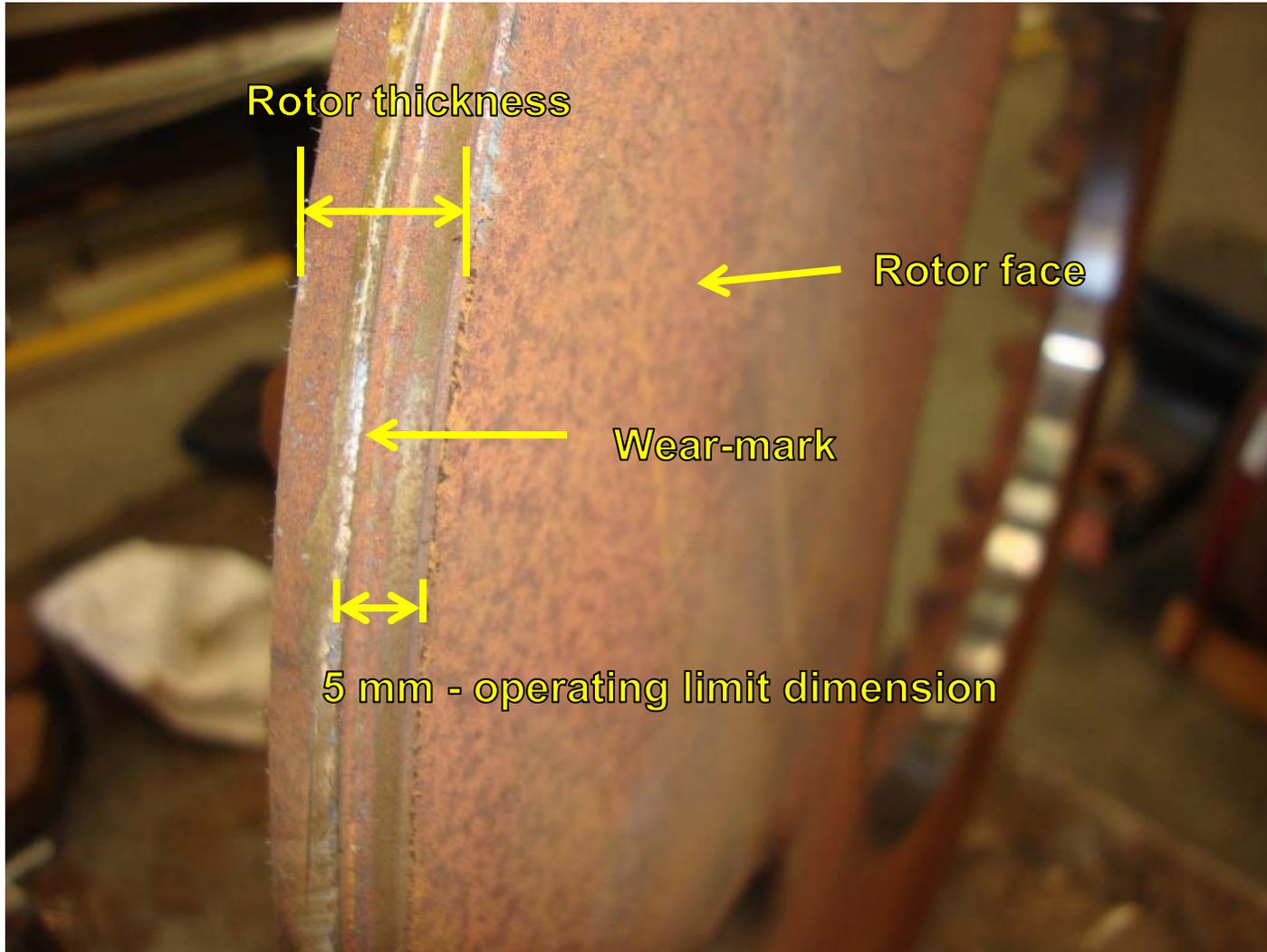


Illustration of minimal pad-rotor contact with new pad





Edge of new rotor showing thickness, wear limit mark





Manufacturer's wear limits

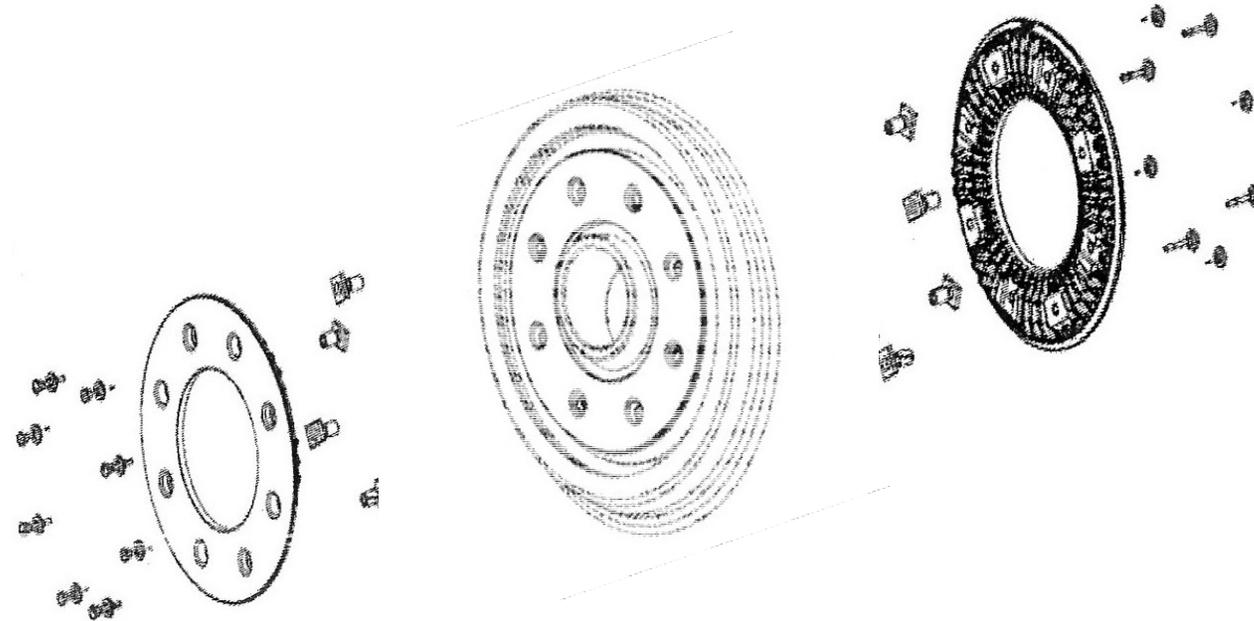
Faiveley Transport wear specifications:

- “The maximum admissible wear per wheel-mounted brake disc is 5 mm.”
- “The deepest point of the hollow wear or scoring must not exceed the lower deviation of the operating limit dimension.”



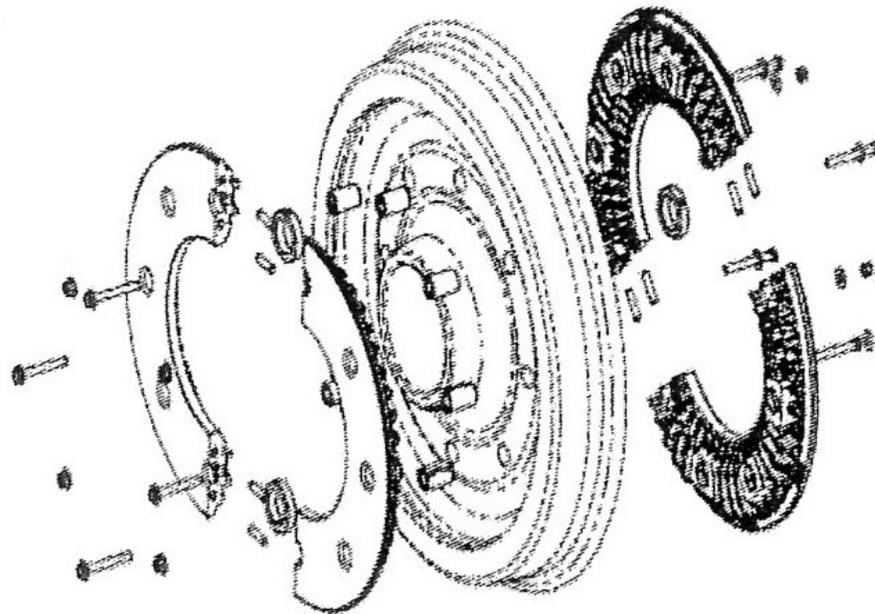


One-piece brake rotor





Two-piece brake rotor





Post-inspection actions

- March 7, 2013, SED letter to NCTD:
 - Rotors must be replaced immediately.
 - Continued operation with rotors beyond wear limit:
 - Unsafe by manufacturer's standards.
 - Violation of CPUC General Order 143-B.
 - Subject to penalties under PU Code sections.





Post-inspection actions (cont.)

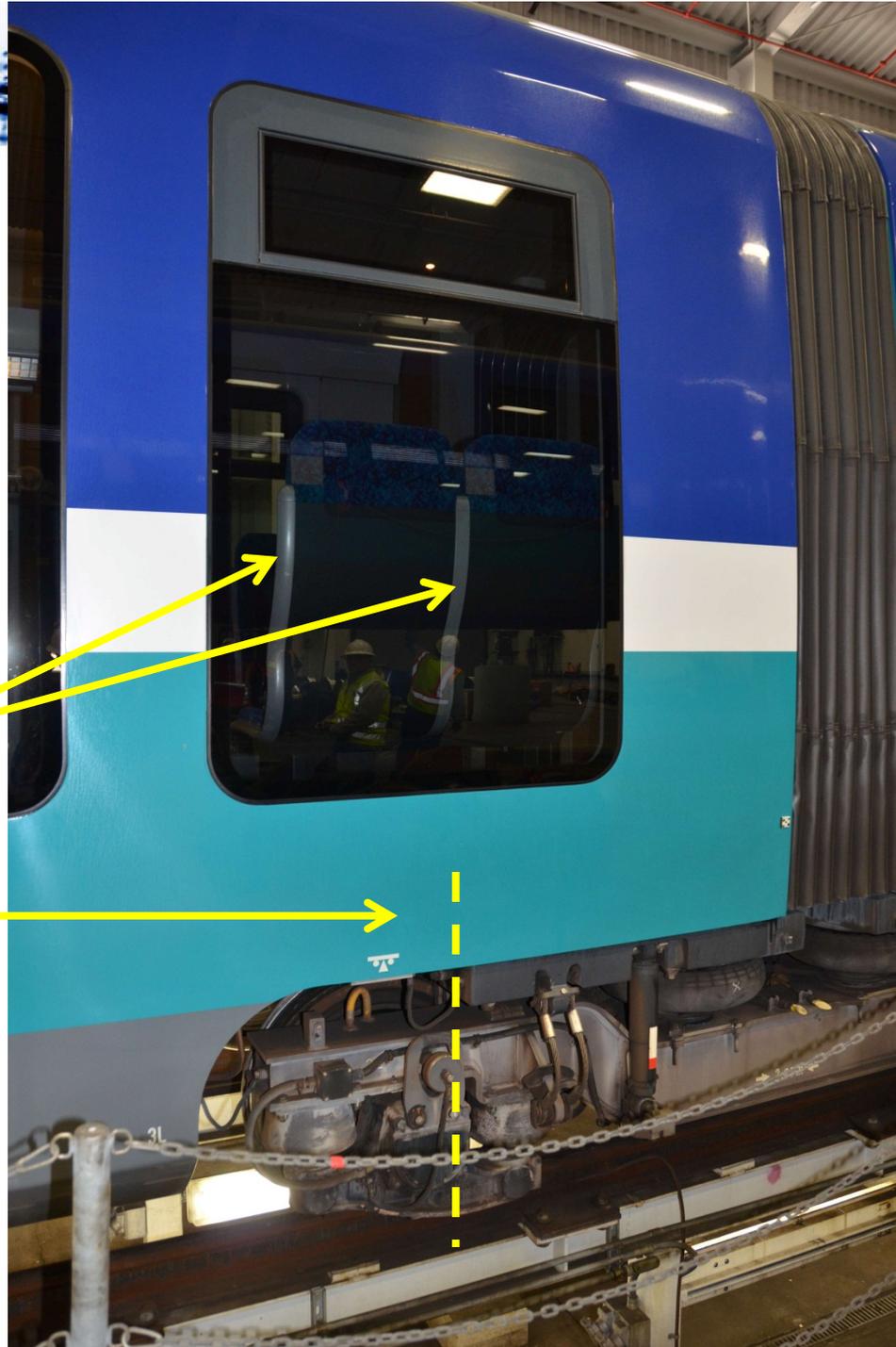
- March 8, 2013, Oceanside meeting:
 - CPUC/NCTD/Veolia/Bombardier
 - Invited FRA and FTA to join meeting.
 - Reviewed new performance data from night before.
 - Determined was no additional risk data from Faiveley.
 - NCTD sent out speed reduction order.
 - Leave for Escondido maintenance facility.

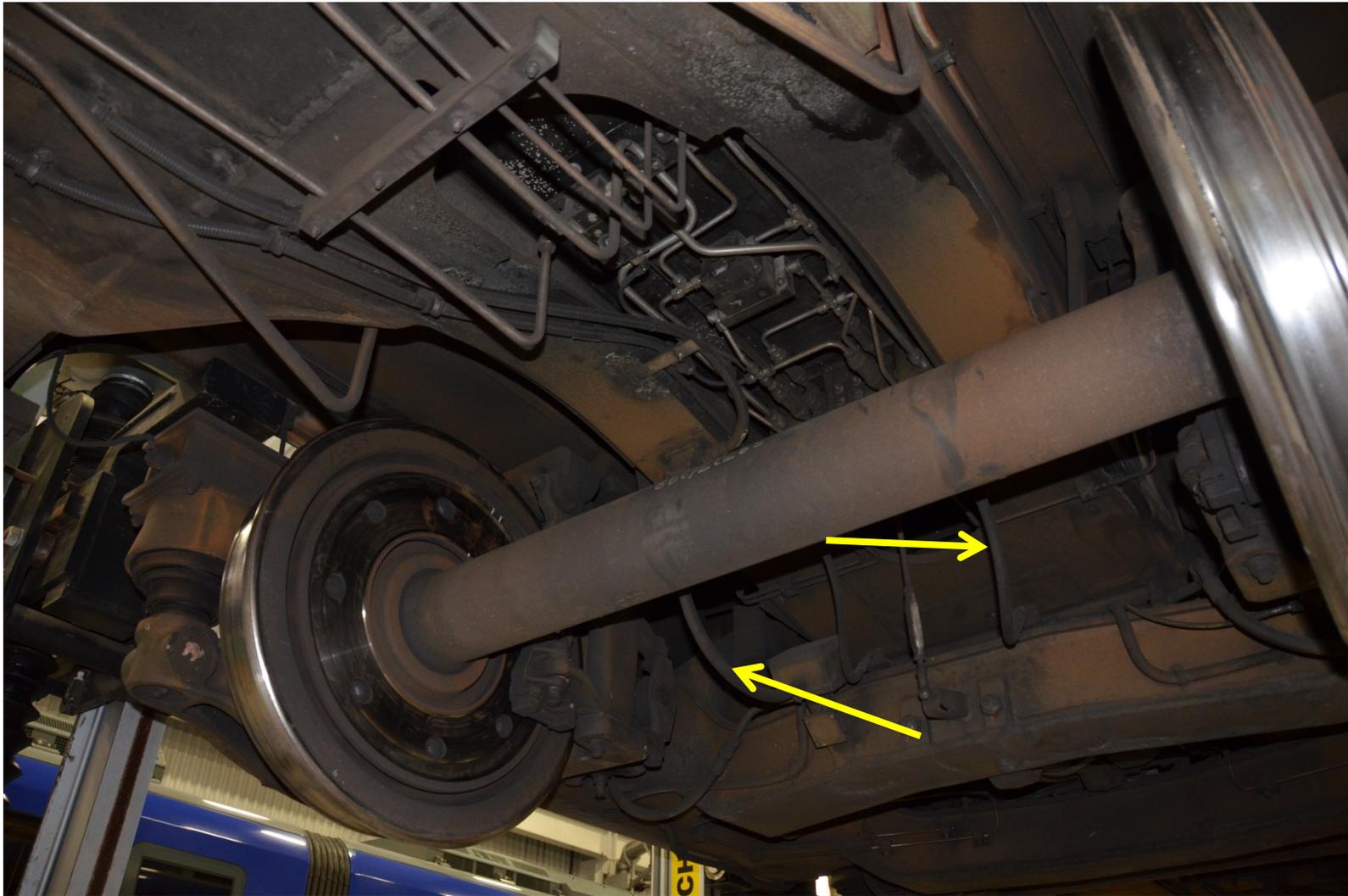




Side view of vehicle
over center truck:

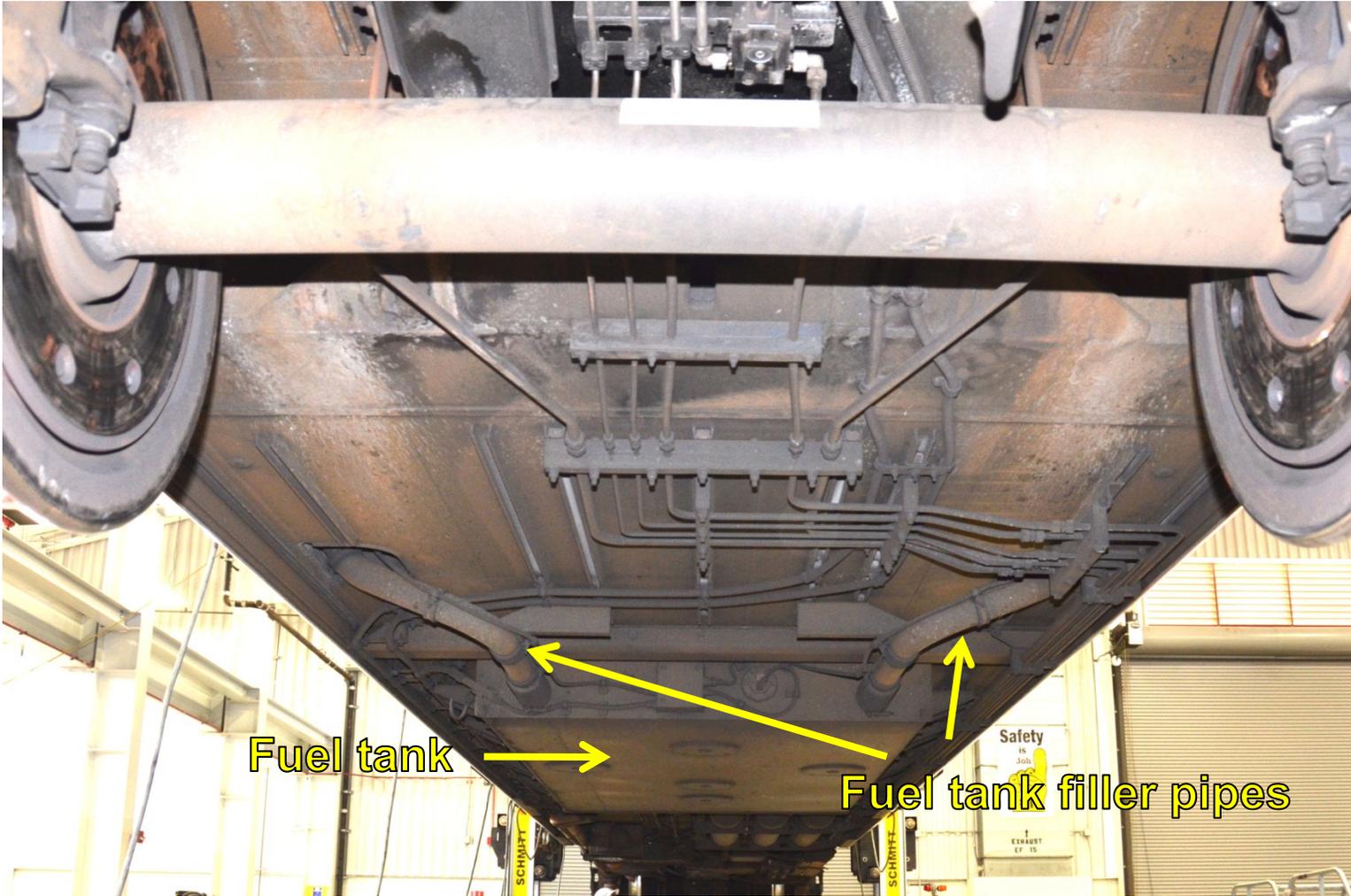
- Location of
passenger seats.
- Center of axle,
wheels, rotors.





Proximity of primary air lines for brakes – fails to safe





Proximity of rotors to diesel fuel tank, filler pipes





Post-inspection actions (cont.)

- March 8, 2013, Escondido maintenance facility inspection:
 - CPUC/FRA joint inspection for FRA benefit, further risk analysis.
 - NCTD issued service cessation order.
 - Maintenance-management recommendations:
 - Internal NCTD maintenance communication?
 - Document and trend measurement data, not just “pass/fail.”

