NTSB National Transportation Safety Board

Office of Railroad, Pipeline & Hazardous Materials Investigations

Mechanical

Investigation

- Wheel truing procedures
- Quality assurance procedures
- Interdepartmental coordination

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Wheel Truing

- Flat Spots
- Wear

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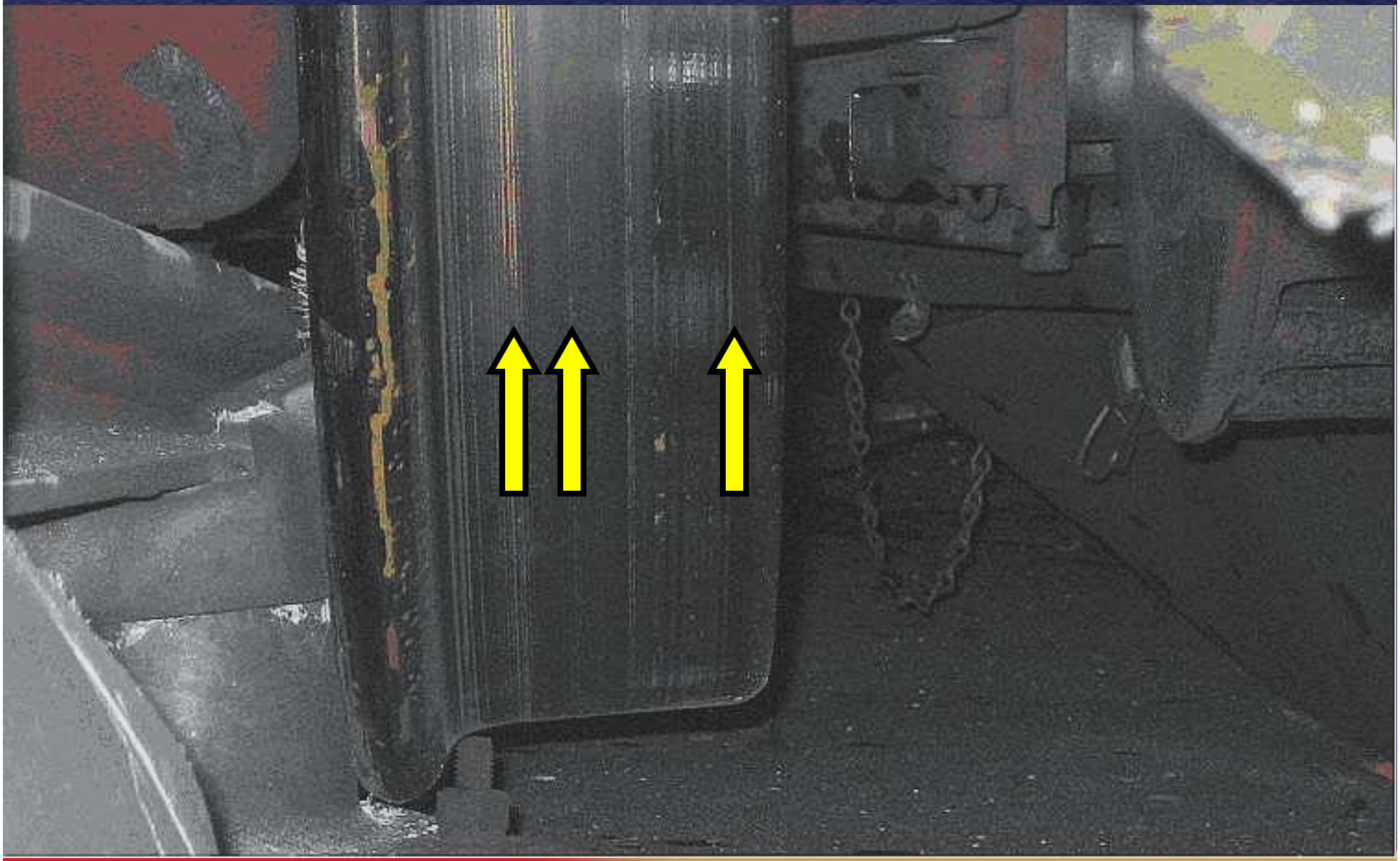
Wheel Truing Procedures

Wheel Truing Procedures



Wheel Truing Procedures

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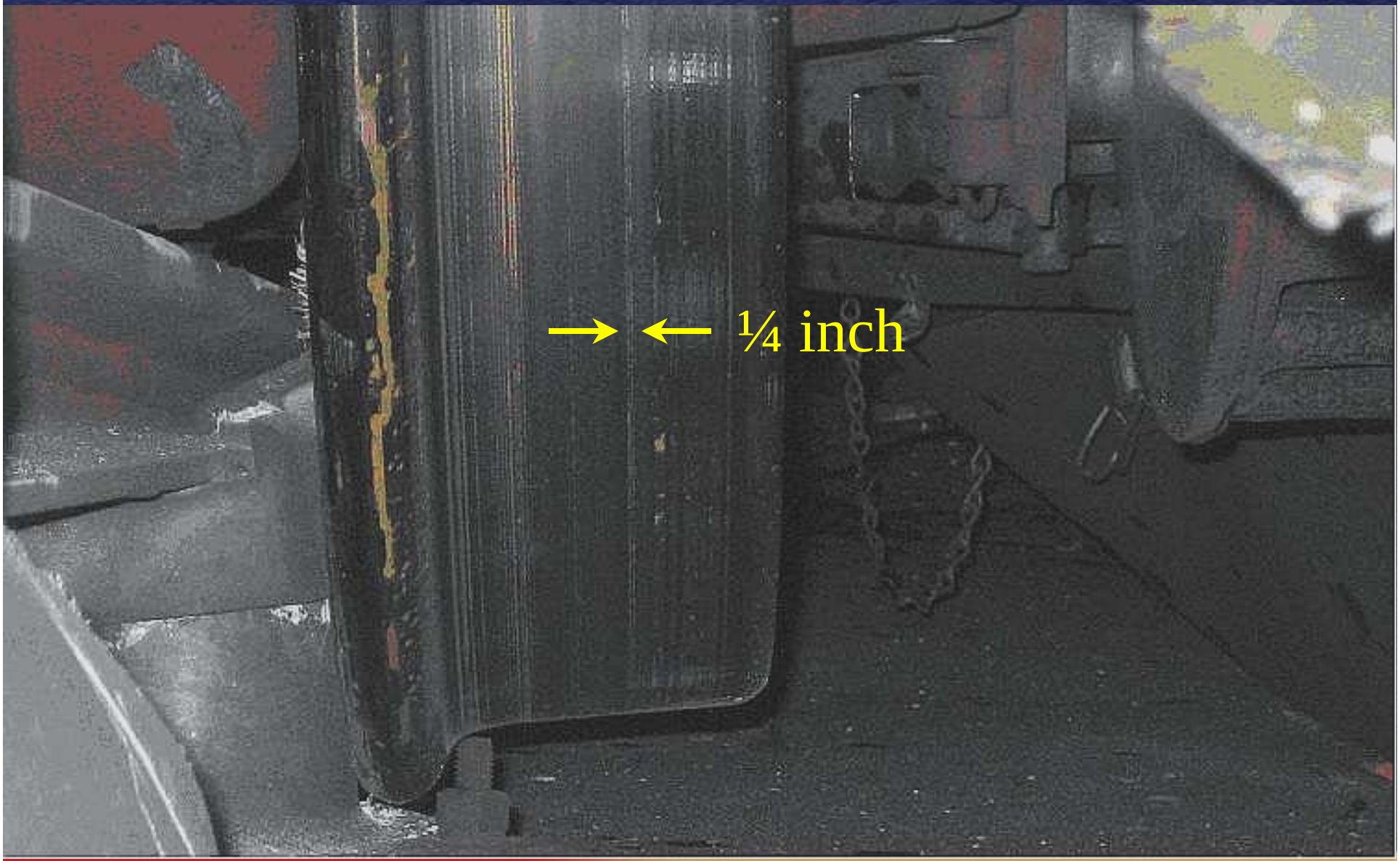

Industry Research

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BART Procedures

- Similar cars
- Polishes newly milled wheel surfaces
- Runs cars through curved yard tracks

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WMATA Procedures

- No formal process
- Wheel surfaces polished through normal operations
- No explicit guidelines for final surface texture

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Draft Conclusion

WMATA's lack of measures to smooth wheel surfaces after truing increases the potential for a wheel climb derailment.

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Quality Assurance

- Irregularities in dimensions of recently trued wheels
- Overall wheel profile was accurate
- Wheels had about 1/16 inch of wear
- Cutting head on milling machine was out of alignment

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Quality Assurance

- Machine operator did not index cutting heads
- WMATA did not have a standard schedule for indexing the heads
- Indexing was done on an “as needed” basis

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Industry Research

- Wheel surface conditions are improved by frequently inspecting cutting tools
- BART requires its milling machines to be indexed every day

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Draft Conclusion

Although the misalignment of the milling machine used in WMATA's wheel truing operation would not have contributed to the wheel climb, it does indicate inadequacies in WMATA's quality assurance process.

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Interdepartmental Coordination

- Problems with car-leveling system on 5000-series cars
- Despite efforts, car-leveling issue has not been resolved
- Replacement valves were considered

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APTA Technical Review Panel

- 98% of the fleet of 5000-series cars failed a car-leveling check
- Same leveling valve in 5000-series cars also specified in the new 6000-series car
- Car maintenance personnel input was either not solicited or listened to during the design and engineering process for new cars

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Investigation

- Leveling valve and associated linkage from the derailed car were damaged in accident
- Extent to which the leveling system and/or valves may be a factor could not be determined

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Investigation

- Inadequate communication between car maintenance department personnel and vehicle engineering design personnel may have delayed bringing this issue to resolution
- WMATA has taken delivery of more than 100 new 6000-series cars

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Investigation

- WMATA is in the process of preparing design specifications for a new 7000-series car with the unresolved issues still associated with these valves
- WMATA failed to effectively address the proposed safety recommendations before this accident

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