NTSB National Transportation Safety Board

Office of Railroad, Pipeline & Hazardous Materials Investigations

Operations

Method of Operation

- Train movements on D Branch are governed by an Automatic Block System
- Operators control their trains based on signal indications on wayside signals

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Method of Operation (Cont)

- Green Line trains are governed by signal indication. They do not need authority from a train dispatcher to occupy main tracks

- Control center dispatchers monitor operations and become involved in train movements only when circumstances require it

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6
3
TRAIN
STOP
HERE
OUTBOUND
TRAIN STOP
WABAN
STATE
STOP
LAW
WAKE UP
SLEEPY'S


H64
HX
34
HX

Relevant Operating Rules

- Rules for Trainpersons and other Employees of the Light Rail System
- Rule 55 - Restricted Speed
- Rule 56 - Observance of Signals

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Response to Signal H-66

- Stopped for Red Signal. (H-66)
- Observed track ahead was unoccupied
- Waited one minute by the rules
- Began to move but was struck from behind

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Signal Maintenance

- Train operators are not required to report red signals with an unoccupied block
- Defects in the signal system could remain undetected and unrepaired
- Could increase safety risk

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Conclusion

Because Massachusetts Bay Transportation Authority operating rules do not require that train operators report signals displaying red when the block of track governed by that signal can be determined to be unoccupied, possible problems in the signal system could remain undetected and unrepaired, which could increase safety risks on the rail line

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Operating Rules

- Operators are not required to communicate restrictive signals
- Trail Operators are unable to observe signals
- Trail Operator was unaware of restriction
- Trail Operator could not intervene

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Conclusion

Had the Massachusetts Bay Transportation Authority required train operators to inform trail operators of restrictive signal indications and had the operator of the striking train informed her trail operator of the restrictive signal indication just west of Waban station, the trail operator might have been able to prevent the accident by questioning the operator about the train speed or by applying the brakes

MBTA Actions Since the Accident

- Initiated a program for rules compliance
- 2,088 Observations/tests = 97.6% compliance
- Data tracking system to detect trends in rules compliance
- Instituted a monthly review of accident data to identify ways to prevent accidents caused by human error

Positive Train Control

- Four decades of investigations
- Many factors can play a role
- React to speed or signal violation

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Conclusion

- This accident could have been prevented had the Massachusetts Bay Transportation Authority Green Line been equipped with a positive train control system that could have intervened to stop train 3667 before it could strike the rear of train 3681

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