

Molled

DEC 18 1995

Decision 95-12-034 December 18, 1995

BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

Investigation on the Commission's (BART) (A85) through the A85 interlocking on the own motion into the safety appliances and procedures of the San Francisco Bay Area Rapid Transit District (BART) (Filed February 4, 1995) Case 9867

OPINION

ORIGINAL

Summary

This decision adopts the recommendations contained in a joint report submitted by the Bay Area Rapid Transit District (BART) and the Commission's Rail Transit Safety Section (Staff) concerning an accident which occurred in January 1995 in Fremont. The adopted recommendations include establishment of a plan and schedule by December 31, 1995 to develop and implement management procedures requiring periodic review of BART's Operations Rules & Procedures Manual, as well as timely correction of conflicting, obsolete and improperly issued operating directives. BART is also directed to hire additional field supervisors, and to prepare a plan and schedule for developing a program of operational evaluation of train operators' performance by supervisors.

Background

On January 9, 1995 at 3:21 p.m. southbound BART Train 230 derailed the first two of five cars when switch number 127 at the A85 interlocking<sup>1</sup> Fremont changed position under the first car. Three of the 19 passengers on board reported and were treated for injuries and damage.

1 "Interlocking" is defined in BART's Operations Rules & Procedures Manual as "An arrangement of gates and control apparatus so interconnected that functions must succeed each other in proper sequence, permitting train movements over controlled routes only as safe conditions exist." See Appendix A for a diagram of the A85 interlocking, together with the switches involved in the derailment.

DEC 18 1992

Decision 92-15-034 December 18, 1992

minor injuries. The derailment was caused by the failure of BART personnel to follow correct procedures before authorizing train 230 to proceed through the A85 interlocking in the road manual mode. Manual operation of the train, in excess of the 10 miles per hour required by BART rules at the derailment site, contributed to the severity of the damage caused by the accident.

The Derailment

The operator of Train 230 was issued manual orders by the trainee to operate through the A85 interlocking on the A1 Track to Fremont Station. The A85 interlocking was in the central automatic mode. The route through Gates C and D was verified for the train operator by the trainee confirming the alternate route alignment, Gate A to Gate B, on the central room display.

At the same time, the instructor, working as a train controller, was trying to clear a false occupancy on the A1 Track at Fremont station by resetting the sequential Occupancy Release System (SORS). As Train 230 was about to enter the A85 interlocking, the SORS Queue behind departing train 111 was deleted as a result of the instructor's actions. The A85 interlocking equipment then found that the A2 Track at Fremont Station was unoccupied, and that the Gate A to Gate B route was clear and therefore ready to receive a route request. With the A85 interlocking in the Central automatic mode, Train 230 was detected and presumed held in the approach zone by the automatic train control system as it requested a Gate C to Gate A route. Switch 127 at Gate C was in the process of aligning for that route as the first car of Train 230 passed over it. The first two cars of the five car train were derailed before the train came to a stop at the interlocking.

Injuries and Damage

Three passengers reported minor injuries. They were treated and released from Washington Hospital in Fremont the same day. See Appendix A for a diagram of the A85 interlocking, together with the switches involved in the derailment.

The two derailed cars had major damage to the adjacent ends of their bodies and under-car components. Total damage to the train was about \$506,000.

Damage to the track was minimal, requiring only minor alignment. Traction power and train control equipment were also damaged. Total damage to track and wayside equipment was about \$38,000.

The Report

During the course of a prehearing conference held in San Francisco on March 17, 1995, the assigned Administrative Law Judge (ALJ) directed that a joint report, prepared by BART and the staff, be submitted with appropriate comments and recommendations. The report, dated September 18, 1995 is attached. It contains a thorough description of the derailment, the injuries and damage, post-derailment inspections, compliance with General Order 127, and an evaluation of possible modifications to the interlocking.

The report states that there have been two prior derailments at the A85 interlocking similar to the instant accident - the first in 1972 and the second in 1978. No substantial information is available concerning the 1972 incident, but the 1978 incident was similar to the instant occurrence in several ways. The attached report discusses these similarities, as well as the possibility of similar derailments at other BART interlockings. The report also contains recommendations designed to insure that such incidents do not recur.

The train operator and instructor had both completed initial certification and recertification training. The trainee had completed six weeks of train controller training, but had not been qualified to work at the train control console without direct supervision by an instructor.

Following the derailment, the train controller on-the-job training program was modified to clarify activities of the instructor and trainee. The program now provides that an

unqualified trainee may not log onto or make any inputs to the train control system, nor operate the train radio system, except while under direct supervision of the instructor.

The report concludes that BART's present mainline supervisory staffing levels are insufficient to undertake a comprehensive program of operational evaluation including direct observation of train operator performance and compliance with safety related operating rules and procedures. However, with the imminent opening of the Pittsburg/Antioch Extension (PAX), Dublin/Pleasanton Extension (DPX), and the Colma Station Extension (CSX), BART has plans to increase the number of mainline supervisors to a level that will allow a program of operational evaluation to be implemented.

The results of the investigation conducted by BART and staff as set forth in the attached report appear to properly identify the cause of the accident. The recommendations contained in the report are reasonable. Based thereon, coupled with the modification to the train controller on-the-job training program clarifying the activities of the instructor and trainee, we believe that the likelihood of this and similar accidents will be eliminated. The report will be adopted, and the recommendations contained therein included in our decision.

**Findings of Fact**

1. The January 1995 derailment was caused by the failure of BART personnel to follow correct procedures before authorizing Train 230 to proceed through the A85 interlocking in the road manual mode.

2. Manual operation of the train in excess of the 10 miles per hour required by BART rules at the derailment site contributed to the severity of the accident.

3. BART's program of instruction for train controllers did not prohibit unqualified trainees from operating the train control system equipment without the direct supervision of the instructor.

at the time of the derailment. The program has since been modified to prohibit unqualified trainees from logging on to or operating the train control equipment or radio equipment except under the direct supervision of the instructor.

4. BART's 1978 derailment at the A85 interlocking was similar to the January 9, 1995 derailment in that both were caused by the failure of BART personnel to follow the correct rules and procedures in the manual operation of the interlocking and the manual operation of the trains. There was no program of operational evaluation by BART supervisors at the time of either derailment.

5. BART has no current program of operational evaluation for supervisors to determine if train operators are performing their duties in compliance with the appropriate rules and procedures. Since BART does not currently have enough supervisors, such a program cannot be immediately implemented. BART plans to make additional supervisors available with the opening of the PAX, DPX, and CSX projects so that a program of operational evaluation can be established.

6. BART has no specific criteria or procedures to establish when its various operations rules and procedures manuals should be revised. It has been at least seven years, and as long as twelve or 15 years, since all the operations manuals were last revised. BART has added, deleted, and modified many of the rules and procedures in the manuals by issuing separate written directives. In many instances, the directives have been modified by subsequent directives, or have been in effect for long periods of time. As a result, there are many conflicting safety-related documents in existence which enhance the possibility of confusion or misunderstanding of rules and procedures by BART operating personnel.

#### Conclusions of Law

1. BART should, by December 31, 1995 establish a plan and schedule to develop and implement management procedures that

require periodic review of the BART Operations Rules & Procedures Manual, supplementary operations manuals and operating bulletins to guarantee identification and timely correction of conflicting, obsolete and improperly issued operating directives.

2. BART should hire additional field supervisors concurrent with the opening of the PAX, DPX and CSX projects as delineated in BART's current extensions staffing plan. In anticipation of adding these new supervisors, BART should prepare a plan and schedule for developing a program of operational evaluation of train operators performance by their supervisors. This plan and schedule to develop the program should be completed by December 31, 1995.

3. BART should hire the additional supervisors in a timely manner and sufficient number that will permit implementation of the program of operational evaluation by the time the DPX extension is operational. The program of operational evaluation should determine the extent of train operator compliance with BART rules, procedures and other operating directives. It should also require records of evaluations and inspections to be maintained for a period of not less than two years.

4. Each of these BART plans and schedules should be subject to review and approval by the BART System Safety Department and the Commission.

5. BART's System Safety Department should monitor each of the above recommended plans and schedules, regularly advise the Commission regarding the progress of each, and provide the Commission with a written report each quarter detailing the status of each plan until completed.

6. BART should enhance the possibility of confusion or misunderstanding of rules and procedures by BART operating personnel.

Conclusions of Law

1. BART should, by December 31, 1995 establish a plan and schedule to develop and implement management procedures that

BART's System Safety Department shall monitor each of the above plans and schedules for compliance with the Commission's orders. O R I D B R R and provide the Commission with written reports detailing the progress of each, and provide the Commission with written reports detailing the progress of each.

**IT IS ORDERED** that:

1. Bay Area Rapid Transit District (BART) shall establish a plan and schedule by December 31, 1995 to develop and implement management procedures that require periodic review of the BART Operations Rules & Procedures Manual, supplementary operations manuals, and operating bulletins to guarantee identification and timely correction of conflicting, obsolete and improperly issued operating directives.

2. BART shall hire additional field supervisors concurrent with the opening of the PAX, DPX, and CSX projects as delineated in BART's current extensions staffing plan. In anticipation of adding these new supervisors, BART shall prepare a plan and schedule for developing a program of operational evaluation of train operators' performance by their supervisors. This plan and schedule to develop the program shall be completed by December 31, 1995.

3. BART shall hire the additional supervisors in a timely manner and sufficient number that will permit implementation of the program of operational evaluation by the time the DPX Extension is operational. The program of operational evaluation shall determine the extent of train operator compliance with BART rules, procedures and other operating directives. It shall also require records of the evaluations and inspections to be maintained not less than two years.

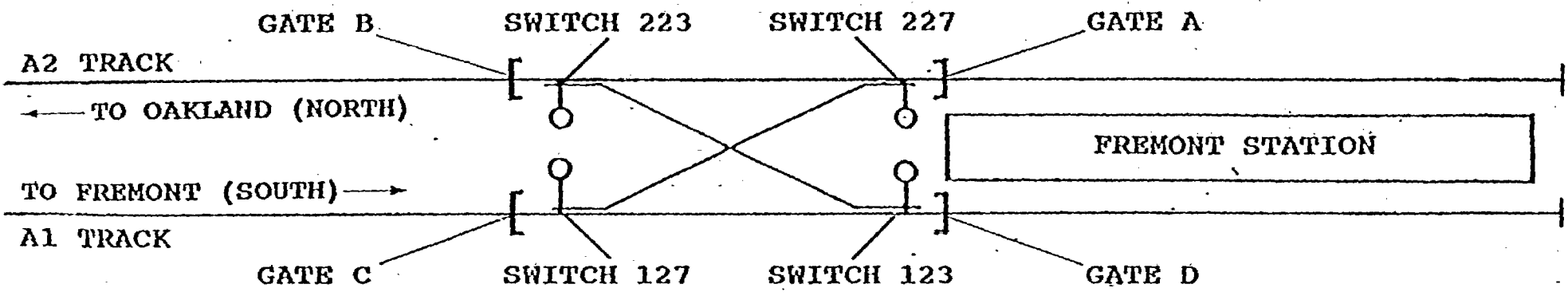
4. Each of these BART plans and schedules shall be subject to review and approval by the BART System Safety Department and by the Commission.

5. BART's System Safety Department shall monitor each of the above plans and schedules, regularly advise the Commission regarding the progress of each, and provide the Commission with a written report each quarter detailing their status until completed.

This order is effective today  
 Dated December 18, 1995, at San Francisco, California  
 Operations Rules & Procedures Manual, supplementary operations manuals, and bulletins to guarantee identification and timely correct, obsolete and improperly issued operating direct  
 with the opening of the BAX, DPX, and CSX projects as delineated in BART's current extensions staffing plan. In anticipation of adding these new supervisors, BART shall prepare a plan and schedule for developing a program of operational evaluation of train operators performance by their supervisors. This plan and schedule to develop the program shall be completed by December 31, 1995.  
 BART shall hire the additional supervisors in a timely manner and sufficient number that will permit implementation of its program of operational evaluation by the time the DPX Extension is operational. The program of operational evaluation shall determine the extent of train operator compliance with BART rules, procedures and other operating directives. It shall also require records of the evaluations and inspections to be maintained not less than two years.  
 4. Each of these BART plans and schedules shall be subject to review and approval by the BART System Safety Department and by the Commission.

DANIEL Wm. FESSLER  
 President  
 P. GREGORY CONLON  
 JESSIE J. KNIGHT, JR.  
 HENRY M. DUQUE  
 JOSIAH L. NEPPER  
 Commissioners





[ ] = GATES  
⊥ = SWITCH