



# IronWood Technologies

Railroad Accident Reconstruction

## Federal Railroad Administration

False Proceed Signal Database

January 1, 1995 through May 3, 2004

All Reports - State of New Jersey

Report #	Date	Reporting Carrier	Block System	Interlocking	Auto. Systems	Loco or Train No.	Device that Failed	Location	Collision or Derailment?
			<b>Cause</b>						
			<b>Narrative</b>						
<b>468</b>	3/14/1995	PATH	AB				Signal 500	Tunnel D, Jersey City, NJ	N
			<b>Human Error - Improper Circuit Jumper in Place</b>						
			A CLEAR signal was displayed at signal 500 before 502T was occupied long enough to guarantee safe train speed. No block protection or other safety features of the signal were compromised.						
			An unwired relay contact was found bridging 5H-5B of 502TP, falsely applying energy to the 502TER relay. The contact was moved and circuits and systems in the area were tested. Signals were found operating as designed. The two employees most recently in the room (February 7, 1995) were interviewed. While no guilt can be positively established, procedures for energizing relays during testing and maintenance were reviewed with these employees.						
<b>486</b>	6/3/1995	CR		Manual		Train JR-7, Engine	Signals 10RA and 6R	"Upper Bay" Newark, NJ	N
			<b>Maintenance - Equipment Inadequately Secured to Ground</b>						
			Engineer on train JR-7 reported signal 10RA displayed RESTRICTING while train OI-21 was occupying a conflicting route governed by signal 8R. In addition, signal 6R was displaying RESTRICTING simultaneously with signal 10RA. Cause was determined to be high double case at location 2W was blown over by high winds and rain, causing 6RBHB and 10RAH relays to be inverted. Case support brackets were repaired and case placed on foundations, signal system tested and returned to service.						



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**Cause**  
Narrative

service.

During the re-enactment, the false display of the APPROACH MEDIUM aspect was clearly demonstrated to be only momentary, of approximately one-half second duration, and recurring at a cyclic rate with the display of RESTRICTING for a minimum of two seconds between each one-half second pick-up of the APPROACH MEDIUM. While this condition severely undermined our engineer's confidence in the cab signal system, and is therefore highly undesirable, it did not constitute a dangerous condition such that any engineer would actually accept the momentary false display and try to exceed restricted speed, nor would he have been able to exceed 20 mph, as the speed control continued to limit his speed.

Due to the nature of this condition, there has been some confusion as to whether an actual false proceed report should be filed. However, since the one-half second display was just barely long enough to require an acknowledgment, I am attaching a false proceed report on the prescribed form. Please consider this as a follow-up to our original letter of July 26, 1996, which was filed within fifteen days of the initial occurrence.

If we can be of any assistance concerning any files or records involved with the above, please contact my office at 215-349-1028.

Sincerely,

Assistant Chief Engineer C&S

623	10/22/1999	CR		Remote		Unknown	2E Signal	CP Jersey, Delair, NJ	N
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**Human Error - Field Wiring Error, Inadequate Service Testing**

On October 22, 1999, Conrail's Director-Operating Rules notified [redacted], Asst. Chief Engineer - C&S that a B. of L.E. Local Chairman informed him that 2E signal at CP Jersey was displaying a SLOW CLEAR when it had previously displayed a SLOW APPROACH going from CP Jersey to CP Hatch. The cause of the problem was the 2RE and 2R2E wires for the 0 and 1 lights were reversed causing the PL4 signal to display a SLOW CLEAR when it should have been displaying a SLOW APPROACH. The signal was rewired and tested and returned to service on October 22, 1999.

An investigation will be held to ascertain employee responsibility. Further, instruction on company policy regarding circuit changes and testing will be reviewed with all C&S employees.

633	5/23/2000	PATH	AB				Signal 232	Tunnel E, Exchange Place, Jersey City, NJ	N
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**Human Error - Field Wiring Error, Inadequate Service Testing**

At some undetermined time in the past, automatic signal 232Z was improperly wired in the field to display a speed control aspect (Rule 208, Figure 1 - Yellow over Yellow), when it was designed to display an APPROACH aspect (Rule 211, Figure 1 - Yellow). Due to track alignment and entering a station platform, this is a slow speed location, and no unsafe conditions or incidents have occurred over the period of years that this has been in place. The wiring has been corrected and the signal displays the proper aspects as designed.

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			<b>Narrative</b>						
<b>260</b>	6/4/2000	NS	CTC			NS 9316	Human Error	Bellwood, NJ	N
			<b>Human Error - Field Wiring Error, Inadequate Service Testing</b>						
			At approximately 5:00 p.m., June 4, 2000, train #I62H403 was eastbound on the Lehigh Line, in the controlled siding between CP 67 and CP 64, when they observed the eastbound signal at CP 64 on the single track displaying a CLEAR aspect with the #1 switch at CP 64 in reverse position lined against them.						
			Investigation revealed switch junction box had been damaged earlier in the day (at approx. 9:00 a.m.) by what appears to be All Terrain vehicles. Repairs were made by Maintainer and Maintainer Test. They gave the switch back to the dispatcher at 2:06 p.m. The investigation by Fye and Renninger revealed four conductors of the switch cable had been placed in the wrong position which resulted in the switch points laying in the reverse position, yet indicating it was in the normal position. Wiring corrections were made and a complete breakdown of the switch indication circuits were done along with verification of switch correspondence with the dispatcher. Indication locking tests were made and the interlocking was restored to service at 9:55 p.m.						
			The false proceed signal at CP 64 was due to both maintainers' failure to make proper in-service tests after disarrangement of the signal system.						
<b>636</b>	6/15/2000	PATH	AB				Auto Signal 90	Hoboken Station, Hoboken, NJ	N
			<b>Human Error - Field Wiring Error, Inadequate Service Testing</b>						
			A wiring change in the signal control circuit was improperly installed and tested as part of a timing relay replacement. This resulted in the improper display of an APPROACH aspect (Yellow, old Rule 211, Fig. 1, new Rule 213, Fig. 1) with no train on the approach circuit, instead of a STOP AND PROCEED (Red, old Rule 215, Fig. 1, new Rule 219, Fig. 1). Due to this being a stub-end terminal station, this is a slow speed location. No unsafe incidents occurred. The wiring was corrected, retested, and the signal displays the proper aspects as designed.						
<b>638</b>	7/9/2000	CR		Manual		N/A	Proximity Detector	Bridgeport, NJ	N
			<b>Human Error - Signal Circuit Design Error, Inadequate Service-Testing</b>						
			On 7/19/00, the bridge operator at Bridgeport moveable bridge at MP 20.79 on the Pennsgrove Secondary notified the signal office that he was able to get a signal with one of the mitre rails not seated. Upon investigation by local C&S forces, we found a proximity switch that failed in the closed position.						
			On 7/19/00, the signal forces removed the defective proximity detector and set the signals.						
			On 7/20/00, the defective proximity detector was replaced after new circuitry was installed to insure that if a proximity detector did fail in the open position, it would be impossible to get a signal.						
			[Note from Editor: This false proceed was charged to "Signal Circuit Design Error" because it is clear from the description above that the circuit was not originally designed on the "closed circuit" principle, as required by 49 CFR Part 236.5]						

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674	7/4/2001	NJTR		Remote		N/A	Span/Rail Locks	Newark Drawbridge - "Broad" Interlocking, N	N
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**Human Error - Signal Circuit Design Error, Inadequate Service-Testing**

M&E train dispatcher reported signals indicated they went to STOP, rail locks not locked, and track circuit occupancy on both tracks at Newark Drawbridge with no trains present and no drawbridge opening requested. The lift rails were found in the raised position with the swing span unlocked and ready to open. With the emergency system the bridge was manually locked and the rails were lowered. The automatic drive system was disengaged and de-energized to allow safe movement of trains. Investigation revealed that the wedge and rail drive control system had become falsely energized by a faulty output from the programmable logic controller used to operate the drawbridge automatically. The drive control circuit was revised to include a physical contact of the signal master relay as well as the existing software interlock.

675	7/9/2001	CR	CTC				2N-2 Signal	Camden, NJ	N
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**Human Error - Field Wiring Error, Inadequate Service Testing**

2N-2 interlocking signal, governing northbound moves off the controlled siding at CP Mill on the Vineland Secondary, was reported to be displaying SLOW APPROACH when the signal on the main (2N-1) was displaying RESTRICTED. Investigation revealed wiring change was made to 2N-2 lighting circuit earlier and was not properly tested. Change was removed and signal tested without any other exceptions. Responsible parties involved were appropriately disciplined.

719	10/31/2003	AMTK		Manual			Route Locking	Union Interlocking, Rahway, NJ	Y
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**Human Error - Field Wiring Error, Inadequate Service Testing**

On October 31, 2003 at approximately 7:15am New Jersey Transit train no. 3818 derailed while diverting No. 1 to "A" track west end of Union Interlocking over No. 43 switch reverse. The train remained upright, with only the lead MU derailed. There were no passenger injuries associated with the derailment. Investigation found that signal circuit wiring revisions completed incorrectly in May 2001 caused this derailment. As a result of this mistake by Amtrak signal employees the Route Locking was ineffective when the first circuit was occupied on No. 1 track in advance of the 44L signal when NJT 3818 passed the signal. Although Union Interlocking doesn't have an event recording of signal functions (no event recorder installed). NJT 3818 locomotive event recorder indicated that the cab signal changed from 120 (APPROACH MEDIUM) to 75-code rate (APPROACH) when the train crossed the insulated joints located close to 43-switch points. This event recording information indicates that the points of 43-switch had to move away from the reverse position toward normal position because the track circuit is designed with separate feeds that correspond with switch position. The C&S department believes that the tower lever man was able to operate the No. 43-switch to the normal position, and then back to the original reverse position in the face of NJT 3818 (however, the lever man states that he never threw the switch when NJT 3818 was traversing the route). This action caused the first MU car to derail when the first wheel set of the truck went toward No. 1 track, instead of No. "A" track. On October 31, 2003 C&S forces resolved the wiring problem; however, on Monday, November 3, 2003 the 43-switch was removed from service pending the completion of a full point check of all revised circuits. Discipline investigations will be scheduled for the responsible employees, as well as an inspection of other projects that were completed by the same Supervisor crew.

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725	3/20/2004	NJTR		Remote		LRV 3508	1AT (1 ANTR) Track Circuit	CP 175, Burlington, NJ	N
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**Loss of Shunt - Possible Rust or Foreign Material on Rail**

Train #247 (equipment: LRV #3508) was tripped by the 2N-2 train stop while heading south through CP175 interlocking. The VHLC download revealed the train was tripped because track circuit 1AT picked up while the train was occupying the circuit. The circuit picked up for a duration 8 seconds (1 second over the loss of shunt timer) due to poor shunting. At no time was there a more favorable aspect displayed than STOP.

Immediate action was taken in the form of lowering the track circuit relay current from 230 milliamps to 190 milliamps. A recorder was setup to monitor shunting and additional rail scrubbing has been scheduled for this area.

No. of Reports Shown in this Listing: **12**