



IronWood Technologies

Railroad Accident Reconstruction

Federal Railroad Administration

False Proceed Signal Database

January 1, 1995 through May 3, 2004

All Reports - Cause: Human Error - Improper Circuit Jumper in Place

Report #	Date	Reporting Carrier	Block System	Interlocking	Auto. Systems	Loco or Train No.	Device that Failed	Location	Collision or Derailment?
468	3/14/1995	PATH	AB				Signal 500	Tunnel D, Jersey City, NJ	N
<p>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.</p> <p>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.</p>									
481	5/2/1995	CR	CTC			Train TVLA2, Engin	Signal 1812W	Fonda, NY	N
<p>Engineer on train TVLA2 reported signal 1812W displayed APPROACH Medium aspect with 4W at CP184 at STOP. Cause was found to be jumper wires applied to Master Decoding Transformer limiting resistors, which applied increased energy to the decoding units. This caused 120 Decode Unit to respond to 75 code rate. Jumpers were removed, circuitry tested and signal system restored to service.</p>									
511	8/28/1995	CR	AB			Train PIH08, Engine	Signal 549	Columbiana, OH	N
<p>Engineer on train PIH08 reported signal 549 displayed STOP AND PROCEED with train 261F (with engine and 3 cars) ahead. When train 261F occupied the interlocking at CP Lum, signal 549 went to CLEAR for about 60 seconds, then to APPROACH. Cause was found to be an unauthorized jumper applied to the 4TR track circuit. Jumper removed, signal system tested and returned to service. Investigation being conducted to determine responsibility.</p>									
519	9/30/1995	CR		Automatic		Engine #2	4W Signal @ Burnham	Burnham, IL	N
<p>Engineer on NICTD train 509 observed signal 4W CLEAR with M/W crane occupying 2CT track circuit in interlocking. Cause was determined to be jumper placed on 2TPR relay by signal maintainer who was working with M/W equipment. Jumper removed after train moves were completed.</p>									
522	10/11/1995	CP		Automatic		See Below	4RC & 4L Signals	Dewey Indiana	N
<p>At approximately 1400 hrs on October 11, 1995, CP Rail System Maintenance of Way employees were raising the crossing at N. 25th Street, CSX Dewey Diamond, in Dewey, Indiana. The gang was working under Form B authority obtained by the foreman. Because of the intermittent shunting of the equipment, the Signal Maintainer held up the 2 LT relay. CSX trains were operating over the Diamond, on signal indication with the 2 LT relay held up.</p> <p>It has been explained to the Maintainer that this is not an acceptable practice. Disciplinary action will be taken.</p>									

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4	12/12/1995	BNSF	CTC			Train 01-131-12	Power Switch	Afton, OK	N
<p>Replaced crossover switch machine (67sw) on main track number 2, Afton, OK. When crossover was requested reverse, switch 67A on main track number 1 did not throw reverse and stayed in the normal position. Switch 67 on main track 2 threw reverse and crossover indicated reverse through incorrect jumpers in 67sw allowing signal 68RB to display false proceed signal through crossover. Train ran through switch on main number 1. Removed incorrect jumpers and tested crossover, system functioned as intended.</p>									
181	1/3/1998	BNSF	CTC			H-BARGAL1-03, E	2E Signal	West Baca, New Mexico	N
<p>At 2224 hours on January 3, 1998, train H-BARGAL-1-03 was stopped at the 2E signal at West Baca waiting for train ahead to clear the plant at East Baca. When the train ahead cleared the plant at East Baca, the 2E signal at West Baca displayed a Yellow over Green aspect. This signal should have been Yellow over Red.</p> <p>Signal tests revealed that this could be duplicated. The problem was found to be an AAR washer had fallen down between two terminals on the back of the H-2 mechanism at East Baca. This washer bridged two terminals thereby falsely energizing the 2E signal at West Baca.</p> <p>The washer was removed and signal system restored.</p>									
444	10/1/1998	CSXT	CTC			X90129	None	Republic, OH	N
<p>Train K90129 was traveling westbound on number one track near Republic, OH on October 1, 1998. The train crew received a CLEAR signal at the intermediate approach signal for Republic. After stopping and receiving permission to pass through a work authority, the crew observed a CLEAR signal with the WAS on number one track at Republic. The crew observed the number 15 crossover switch from number one to number two track reversed and braked the train. The train crew reported the incident to the dispatcher and the signals were removed from service.</p> <p>Signal personnel were dispatched to investigate and observed the number 15 switch on number one track to be locked reverse and the number 15A switch on number two track to be locked in the normal position. Further investigation revealed that two jumpers installed at the factory had not been removed from the switch machine in accordance with the circuit plans. The effect of the jumpers was to return a correspondence indication of only the number 15A switch to the vital microprocessor unit. The shunt bar for the switch was also in the non-shunting position. The jumpers were removed and the shunt bar changed to the shunting position. The signals were returned to service after operational tests were performed.</p>									
607	10/22/1998	CR		Remote		Train XSM49E	4TPR Relay	Pittsburgh, PA	Y
<p>Train XSM49E was proceeding on signal indication through CP Penn from #1 track on the Conemaugh Line to #2 Island Connecting track over #9 switch reverse. The west end of the 41st car proceeded down #2 Island Connecting track while the east end of the car traveled down the Fort Wayne Line #2 track. The train went into emergency with the one car derailed. The cause of the derailment was determined to be jumpers that had been applied to the 4TPR relay allowing the #9 switch to be thrown with a train on that circuit. The jumper was removed, circuits tested and returned to service the same day. An investigation will be held to assess any employee responsibility, and instruction on company policy concerning jumper permission will be reviewed with all C&S employees.</p>									

Report #	Date	Reporting Carrier	Block System Narrative	Interlocking System	Auto. Systems	Loco or Train No.	Device that Failed	Location	Collision or Derailment?
619	8/25/1999	MNCR		Remote		Train #2736, Head	2S Signal	CP 26 - Phillipse Manor, NY	N
<p>Train #2736 received a NORMAL cab signal for a short period of time when the 2S signal at CP 26 was at STOP, due to a section of third rail laying on tie plates. This bridged an insulated joint at the signal, downgrading it to STOP as the train approached, while permitting cab signal intended for this train after passing the signal, to be received before passing the signal.</p> <p>The section of third rail was removed from the insulated joint location.</p>									
239	4/11/2000	CSXT		Remote		H89611	None	E.E. Quinimont, Quinimont, WV	N
<p>At approximately 1515 hours on April 11, 2000, the crew of H89611 reported that they had received a MEDIUM CLEAR signal at MP 377 while proceeding eastbound out of the siding at E.E. Quinimont into a STOP signal at Backus MP 371. The signal should have displayed a MEDIUM APPROACH. Signal personnel were dispatched, verified the false proceed indication, and subsequently removed the signals from service.</p> <p>Further investigation revealed that the R270 DR relay was improperly energized by a wire which ran directly to the BH-6 battery buss, effectively removing the #1 reverse polar contact of the R268 HDR from the circuit. This permitted the R270 DR relay to be energized when the R270 signal was requested without checking the aspect displayed at Backus.</p> <p>The wiring error was corrected and signals were returned to service following operational testing.</p> <p>The cause was found to be improper operational testing following field wiring changes.</p>									
652	12/1/2000	WC		Manual		EJE Train	OS Circuit	EJE - Diamond, Leithton, Illinois	N
<p>Dispatcher observed a westbound train cross the Leithton plant without indicating an OS circuit occupied. After investigation it was found that an EJE RR signalman had left a temporary jumper on the OS relay. The temporary jumper was immediately removed.</p> <p>The EJE RR is conducting an investigation of this - how the temporary jumper was left on.</p>									
253	12/12/2000	CSXT	CTC			M742-11	#6 Dwarf Signal	N.E. Live Oak, Live Oak, FL	N
<p>At approximately 0040 on December 12, 2000, Train M742-11 backed southward into the siding at the North End of Live Oak MP SP 713.4 on the Tallahassee Subdivision. When the switch into the siding was restored to normal, the crew observed that the dwarf signal governing movement out of the siding displayed a Red over Yellow (MEDIUM APPROACH) signal. The signal was removed from service and Train Control personnel were dispatched.</p> <p>The cause was found to be a jumper which had been installed the previous day to set the lamp voltage on the Yellow aspect after replacing the dwarf signal, which had been damaged by track equipment. This jumper caused the Yellow aspect to be continuously illuminated. The jumper was removed, signal tests were made with no exceptions, and the signals were returned to service.</p>									

Report #	Date	Reporting Carrier	Block System Narrative	Interlocking	Auto. Systems	Loco or Train No.	Device that Failed	Location	Collision or Derailment?
654	12/18/2000	CP	CTC			CP8507	X-Over Switch	South Milwaukee, WI	N
<p>Nature of Failure:</p> <p>On Dec. 18, 2000 at approx. 1300 CP8507, with Engineer Skotartzak and Conductor Franklin, proceeding east on #2 main track approaching control point at Lake had a CLEAR signal to proceed east on #2 main track with the east end of the west crossover (#5) lined reverse.</p> <p>Just previous, a westbound Amtrak train had crossed over from #2 main track to #1 main track at the west crossover (#5) at Lake.</p> <p>After Amtrak had passed control point at Lake, Dispatcher requested west crossover (#5) to be lined normal and requested an eastbound absolute signal on #2 main track at Lake to be cleared. The switch on the west end of the west crossover (#5) went normal and the switch at the east end of the west crossover (#5) did not move, staying reverse. The west crossover (#5) indicated both ends were lined normal and the eastbound absolute signal cleared.</p> <p>Signal Maintainer K.D. Huebner noticed the malfunction and stopped train CP 8507 before running through the switch.</p> <p>Cause and Corrective Action:</p> <p>Further investigation revealed a jumper wire in the GRS 5F switch machine on the east end of crossover had been applied across terminals 1 and 8 which would allow the crossover to indicate normal or reverse dependent upon position of the crossover switch on the west end of crossover. It is unknown why the east end of the crossover (#5) did not move to normal as requested but frost in contacts or armature is suspected.</p> <p>Corrective action taken was removal of the jumper from contacts 1 and 8 and crossover tested by removing power from each end simultaneously requesting opposite end of crossover to go normal or reverse and verifying if either end is not in correspondence and it will not indicate. Immediately all crossovers on the CP Railway (Soo Line) utilizing GRS Model 5F switch machines were inspected and found to be correct. CP Railway (Soo Line) is presently drafting a test procedure to be done every 2 years in conjunction with RS&I Rule 236.380 Indication Locking test utilizing the above testing procedure.</p>									
319	3/28/2001	UP		Manual		Unknown	None	West Bridge Jct., LA	N
<p>On March 29, 2001 at 17:00 CST, at West Bridge Jct., LA, on the Livonia Subdivision, the westbound signal #7 at MP 10.2 stayed Yellow after a westbound train passed it and occupied the track circuit west of the signal #7.</p> <p>An investigation revealed that pulling levers for signals #6 and #7 in the mechanical interlocker created a bridge that applied battery which held signal #7 Yellow.</p> <p>The signal system was restored to proper operation, and all applicable tests were performed.</p>									
671	6/20/2001	CR					As Information Only.	CP Mill, Ecorse, MI	N
<p>Jumper applied to 2TPR for track work, not removed when Track Department finished. Jumper removed and employees responsible disciplined.</p>									

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327	7/3/2001	UP	CTC		ACS	UP 6869	None	Nevens, NE	N
<p>On July 3, 2001 at 13:16 CDT, at Nevens, Nebraska on the South Morrill Subdivision, eastbound CNRWX 02, on the main track at MP 18.7, reported the eastbound signal WO18 displayed a Yellow aspect with the track east of Signal WO18 occupied.</p> <p>An investigation revealed a loose terminal washer had caused a short in the BELOR relay that caused the AEHR relay to pick and display a Yellow aspect from eastbound signal WO18.</p> <p>The signal system was restored to proper operation, and all applicable tests were performed.</p>									
328	7/13/2001	UP	CTC			UP0705	GRS SA Searchlight Mechanism	Houston, TX	N
<p>On July 13, 2001 at 03:20 CDT, at Houston, TX on the Houston East Belt Subdivision, northbound YBS80-12, on 2 Tk at MP 5.40, received a Green aspect north of EB061 at northbound signal 52 into a Red aspect at northbound signal 57 at Wallisville Rd.</p> <p>An investigation revealed water in the SA Signal Mechanism at signal 57 causing the YGPR to pick, which sent a Code 4 back to signal 52, causing the Green aspect.</p> <p>The signal system was restored to proper operation, and all applicable tests were performed.</p>									

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692	5/17/2002	AMTK		Automatic			Switch Detector Locking	Chicago, IL	Y
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On May 17, 2002 at approximately 8:30 AM-CT METRA Commuter train 2116 operating in a shoving move with 2 locomotives and 9 cars derailed the lead locomotive at the switch (37-MPF) entering track number nine. There were no injuries to passengers or crew. Investigation determined that the (37-MPF) switch had been thrown normal while the last locomotive was traversing over the switch. Investigation revealed that a 39-foot section of rail located between the N37 switch and the R40 signal had been removed to facilitate the replacement of long switch ties on track two. This rail removal caused the 37-track circuit to be down and the 37 & 39 switches to be detector locked. Engineer C&S revealed that jumpers had been applied bridging contacts in the 37 & 39 switch lock circuit, which disabled the switch locking circuits on the 37 & 39 switches. This condition allowed the train director to throw the 37-switch under the METRA train. This accident caused considerable damage to the interlocking infrastructure (Track & Signal) and on-board equipment which was estimated at \$30,000 cost. Track and signal restoration was completed by 2-PM on Sunday, May 19, 2002. Record of jumper permission was found in [redacted] office per AMT-23, section number eight that indicated that [redacted] authorized the jumper to be applied (copies attached). This accident was caused by an employee failing to follow proper procedures in the application of jumpers, per Amtrak AMT-23 Rules number 300 thru 304 & 407. Rule number 302 reads: "The guiding principle at all times must be that any protection temporarily defeated by the jumper must be provided by some other means until the removal of all jumpers is assured and original protection is restored." Rule number 407 which reads in part "... When necessary to disconnect or impair the function of locks, circuits, or other safeguards in an interlocking, all switches affected must be safely secured before any train or engine is permitted to pass over them..." [redacted] failed to ensure that protective measures were in place. The Division Engineer has indicated to this writer that the events that caused this incident are not normal procedure. He has initiated new procedures for the application of jumpers that require his or [redacted] the Manager C&S authority. He has also scheduled instructional meetings with C&S employees to re-enforce jumper procedures, as well as checking C&S employee AMT-23 & 27 qualifications. He has also discussed discipline against [redacted] (who has accepted full responsibility for this accident), and is requiring [redacted] to meet with all C&S employees to discuss his involvement in this accident. The C&S system office will be issuing an advisory on the use of jumpers and attaching a paper copy of the Electronic Jumper Permission Log currently in use on the Northeast Corridor for distribution to other areas of the Amtrak system.

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707	2/21/2003	CN		Manual		STCBCHI1	33 Crossover	Brighton Park, IL	Y
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On February 21 at approximately 1730 hours eastward train STCBCHI1 derailed 2 cars at #33 switch at 33 crossover at Corwith Interlocker. The route given displaying a permissive signal at 35 signal was 33 reverse, 39 normal, and 43 reverse to Santa Fe Yard. A second incident had also occurred with the BNSF local reporting that after proceeding past a permissive signal switch 75 was lined reverse, against the established route. At the time of the derailment being reported, the Operator, was verifying in the field that 75 switch was lined reverse.

Signal Supervisor [redacted] contacted Manager [redacted] of the situation and the interlocker was taken out of service. At approximately 1930 hours [redacted] and Field Engineer [redacted] arrived to investigate the incident. It was confirmed in the tower that levers 33, 35, 43, and 41 were pulled, which is correct for signal 35 to display a signal to proceed. Upon inspection of the derailment, it was determined that the #33 switch of the 33 crossover had moved from the reverse position to a position one inch from normal, while the other end of the crossover was still lined reverse. It was also discovered that [redacted] and the Corwith Maintainer were replacing a polar relay for switch 34 while trains STCHCHI1 and the BNSF local were moving across the interlocker. The relay change out started at approximately 16:30 hours and was completed at approximately 1700 hours. While the relay was pulled the Santa Fe main breaker (140VDC), which supplies control battery to the switch machines, was tripped open. At approximately 17:30 hours the main breaker had been reset. At this moment the Supervisor stated he had heard a couple of clicks for the control machine in the tower and within five minutes STCBCHI1 reports they had derailed at #33 switch at the crossover.

Further investigation of the interlocker included resistance testing on all cables, ground tests, and verification of all routes. No exceptions were found during these tests. The incident could not be reproduced. Cause was determined to be human interference during the relay change out.

[Note from editor: The above description is unclear as to exactly how the human interference could have occurred (jumper, etc.). Since it doesn't mention errors in circuit design or field wiring, this false proceed is being charged to Human Error - Improper Circuit Jumper in Place.]

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407	11/3/2003	NS		Automatic		F729729	Signal System	Durham, NC	N
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At approximately 12:00 p.m. on November 3, 2003, CSX train F729729 approached the D&S Interlocking at MP H57.4 on the H-Line and MP D86.40 on the D-Line, westbound on the CSX track which intersects both the H-Line and D-Line at this interlocking. As F729729 approached the interlocking, the signal controlling CSX westbound movement across the diamond, displayed a PROCEED aspect, Green over Red. The crew then noticed NS train E22 had fouled the interlocking limits, attempting to make a northbound move on the D-Line through the interlocking.

Train E22 stopped at the 2R signal of the interlocking, the signal was dark and E22 acted in accordance with the time table special instructions for movements across the interlocking with signal outages or troubles. E22 had moved across the joints at the signals and fouled the interlocking 2T OS track but had not fouled the diamond when F729729 observed E22. E22 was waiting the prescribed 5 minutes before proceeding across the diamond. The CSX signal should have displayed a STOP, Red over Red aspect.

Investigation found that the 2T OS and 2L approach track circuit relays had been energized with temporary jumpers during new construction at this interlocking. The D-Line had been taken out of service during the new work. While out of service, the 2T OS and 2L track wires were destroyed during grading and temporary jumpers were applied to get the interlocking back in service for CSX train moves. The D-Line was then restored to service without the 2T OS and 2L approach track relay jumpers being removed.

The D-Line is currently out of service pending restoration of damaged interlocking cable and the 2T OS track circuit has been restored to service and tested.

436	1/8/2004	UP		CTC		UP 2016	None	Grosse Tete, LA	N
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On January 08, 2004 at 13:05 CST, in Grosse Tete, LA on the Livonia Subdivision, northbound LLL08 08, at MP 101.40 on the main line, was lined for the siding, and reported a Red over Yellow northbound absolute signal at L101 with the siding occupied.

An investigation revealed the H circuit was bridged not letting the G relay drop out.

The bridge was removed, and all applicable tests were performed.

No. of Reports Shown in this Listing: **22**