



IronWood Technologies

Railroad Accident Reconstruction

Federal Railroad Administration

False Proceed Signal Database

January 1, 1995 through May 3, 2004

All Reports - State of Ohio

Report #	Date	Reporting Carrier	Block System	Interlocking	Auto. Systems	Loco or Train No.	Device that Failed	Location	Collision or Derailment?
16	6/22/1995	CSXT	CTC			Train R220	None	CT, Cincinnati, OH	N
Cause									
Narrative									
Scenario Reenacted, Unable to Duplicate, No Defects Found									
On June 22, 1995, Train R220 alleges having a CLEAR signal at CT just prior to running through switch lined against his move.									
Signal system was removed from service; signal personnel investigated the incident performing all operational tests. The incident could not be duplicated. Signal system is returned to service.									
30	8/25/1995	NS		Remote		Unknown	Human Error	Columbus, OH	N
Human Error - Field Wiring Error, Inadequate Service Testing									
At approximately 4:00 AM, Train No. 195 had set off five cars in the west end of the Middle Track at Bannon but did not return the derail to derailing position when they left. No. 195's crew asked Train No. L78's crew to replace the derail for them when they came west. No. L78 came out of the intermodal ramp and proceeded west on the Westbound Main. No. L78 had a CLEAR indication at the west end of the Middle Track which was the signal protecting the electric lock switch to the Middle Track. With the derail left off, this signal should not have cleared.									
Signal personnel investigating the incident determined that the Middle Track derail was not setting signals to STOP when in the reverse position. The cause was found to be that during a recent construction project the "OS" track wires that had fed through the derail controller box had been replaced with new wires that went directly to the track. There was no evidence on the circuit plans that the track wires had gone through the derail, so the construction forces assumed that the derail was not involved in the work they were doing. The track wires were rerun and broke back through the derail circuit controller to correct the problem.									
511	8/28/1995	CR	AB			Train PIH08, Engine	Signal 549	Columbiana, OH	N
Human Error - Improper Circuit Jumper in Place									
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.									

Report #	Date	Reporting Carrier	Block System	Interlocking	Auto. Systems	Loco or Train No.	Device that Failed	Location	Collision or Derailment?	
			Cause							
			Narrative							
20	12/7/1995	CSXT	CTC			Train R27205	None	Troy, OH	N	
			Phantom Signal - Due to Sun Angle							
			On December 7, 1995 at approximately 1240 hours, the crew of northbound train R27205 alleged that they had a STOP AND PROCEED on the northbound absolute signal (21R) at the South End of Troy. This signal was not requested by the train dispatcher at this time. Signal system was removed from service and investigation began. Signal and Transportation personnel concluded that the A marker appeared to be dimly lit due to the effects of sunlight. An alternate hood was placed on the signal to correct the sunlight and signals were restored to service.							
552	1/28/1996	CR	AB			Train HLPR 40E, En	Automatic Signal 752	Atwater, Ohio	N	
			Maintenance - Pole Line (storm, excessive vegetation, rotting poles, excessive slack in wires, etc.)							
			Engineer on HLPR 40E reported that automatic signal 752 displayed a CLEAR aspect with a train occupying the block. Train moves were simulated and at no time could this condition be re-created. Upon investigation, wrapped live wires were found at mile post 75 due to tree in pole line. Tree was removed, all signal components tested and inspected. A 24-hour watch was placed on signal 752 with no exceptions taken and signal system was returned to service. A recording device was installed at signal 752 to monitor the location. Also circuit changes are being made to eliminate the pole line involved.							
80	1/30/1996	CSXT		Remote		Train Z24020	#3 Track Circuit	GTW Crossing, Toledo, OH	N	
			Human Error - Signal Circuit Design Error, Inadequate Service-Testing							
			On Tuesday, January 21, 1997 Norfolk Southern Train Y13 reported a RESTRICTING eastbound signal at GTW Interlocking while train Z24020 was fouling the crossing diamond.							
			CSXT Train Control personnel removed the signal system from service for this route. CSXT Train Control personnel investigated the incident and determined the last car of the train was bridging the track circuit between the dead section of the diamond and the insulated joints at the number 2 signal. The car length was 80 feet and the track circuit length was 37 feet 6 inches.							
			This route remains out of service with design changes scheduled for completion on January 31, 1997.							
82	4/26/1996	CSXT	CTC			Train	None	CT Junction, Cincinnati, OH	N	
			Human Error - Signal Personnel Introduced False Energy into Signal System During Testing							
			On April 18, 1996 at 0630 hrs Train Y322-17 reported receiving an APPROACH signal at signal 27L into a standing cut of cars. The signal system was removed from service. Signal personnel performed test and inspection and it was determined that a violation of operating procedures was evident with the Train Director and Signal Employees who were performing tests at this location. Investigation is pending. Signal system was returned to service.							

Report #	Date	Reporting Carrier	Block System	Interlocking	Auto. Systems	Loco or Train No.	Device that Failed	Location	Collision or Derailment?
586	8/29/1996	CR	CTC			Eng 8206	Auto. Sig. 1291	Smithville, OH	N
<p>Cause</p> <p>Failed Equipment or Device - Relay</p> <p>Engineer on westbound train WIMA-3 reported signal 1291 West Dark and signal 1292 East CLEAR with the rear of his train in the block. Cause was determined to be a defective B2ETR track relay which remained in the energized position with a .06 ohm shunt applied to the track circuit and 18mA of current on the coils. Relay was replaced, all appropriate tests were performed, and the signal system was returned to service. Failed relay is being sent to the manufacturer for further analysis.</p>									
570	9/13/1996	CR				Train STPI, Eng. #3	Cab Signal	Columbiana, OH	N
<p>Human Error - Improper Equipment Installed</p> <p>Cab signal on STPI upgraded from RESTRICTING to APPROACH MEDIUM with home signal ahead at STOP. Cause was non-insulated lose on rail greaser located between Tracks 1 and 2 coupling rails together and allowing cab signal from Track 2 to couple to Track 1. Hose was replaced with an insulated hose and a nylon coupler was installed.</p>									
571	9/27/1996	CR				TV55, Eng. 6117	Automatic Signal 779-2	Galion, OH	N
<p>Human Error - Signal Circuit Design Error, Inadequate Service-Testing</p> <p>Engineer on TV55 westbound on #1 track observed signal 779-2 on #2 track at APPROACH MEDIUM with home signal at CP-80 at Stop.</p> <p>Found that polar control relay 779BDR had been redesigned as a neutral relay by design contractor. Circuit was redesigned with separate BDR circuits and installed correctly.</p>									

Report #	Date	Reporting Carrier	Block System	Interlocking	Auto. Systems	Loco or Train No.	Device that Failed	Location	Collision or Derailment?
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138	8/4/1997	CSXT	CTC			Unknown	None	Deshler, OH	N
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Human Error - Signal Circuit Design Error, Inadequate Service-Testing

On August 13, 1997, the train control group was notified that a south bound train received an APPROACH LIMITED aspect at the approach signal to the south bound absolute signal governing the north crossover at Deshler on 8/4/97. The absolute signal was lined and displayed a MEDIUM APPROACH for the crossover move that was lined. The approach signal should have displayed an APPROACH MEDIUM aspect and was a false proceed indication. The signals were removed from service and signal personnel were dispatched to investigate.

Signal personnel noted that both A and B overlays were not operating and confirmed the false proceed indication viewed by the train. The approach signal is a color position signal with a C marker. The circuit is designed with H and D circuits as well as an A and B overlay on the line wire. The A overlay relay in the energized position gives a flashing C marker at the approach signal to display an APPROACH LIMITED signal for a mainline move. The B overlay relay in the energized position gives a steady C marker at the approach signal to display an APPROACH MEDIUM aspect for a diverging move. The relays are wired so both relays cannot be energized at the same time. A loss of both overlays left only the H & D on the line wire as designed resulted in a flashing C marker for an APPROACH LIMITED aspect into the APPROACH MEDIUM aspect at the absolute signal.

Signal personnel disabled the EOR relay for the C marker until a design revision is engineered.

589	11/20/1997	CR		Remote		None	Home Signal 5W	Cleveland, Ohio	N
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Human Error - Signal Circuit Design Error, Inadequate Service-Testing

Signal 5W was observed by a Signal Maintainer as Green over Green, CLEAR, with 4 switch reverse. Signal should have been Green over Red, SLOW CLEAR.

Cause was found to be a design error, which allowed the signal control relay for the bottom aspect of 5W signal to be energized whenever 11 switch was lined normal. Design changes were made, signals were tested, and returned to service.

591	12/16/1997	CR	CTC			MAIL 8M, Eng 5564	Signal 2E	Nasby Interlocking, Toledo, OH	N
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Human Error - Field Wiring Error, Inadequate Service Testing

Crew of MAIL-8, located on the siding west of Nasby Interlocking, Chicago Line, MP 272, observed signal 2E on Track 2 displaying APPROACH with MAIL-8M head end in the interlocking and the rear end west of the plant on #2 Track. Cause was found to be improperly wired contacts on the 2HPR polar relay. This allowed lighting energy to hold up the SR relay when AC power was off. The additional wire was removed from the relay, all appropriate tests were performed and the signal system returned to service.

Report #	Date	Reporting Carrier	Block System	Interlocking	Auto. Systems	Loco or Train No.	Device that Failed	Location	Collision or Derailment?
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594	1/14/1998	INOX		Automatic		3802	Approach Signal #8	Liberty Center, OH	N
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Maintenance - Pole Line (storm, excessive vegetation, rotting poles, excessive slack in wires, etc.)

It was reported by the train crew on train no. 261-14 that they received a Green approach signal northbound at signal #8, MP 82.22 into a Red-over-Red home signal at the interlocking. This was confirmed by the signal MTR who was near the interlocking at the time of the report. The signals were taken out of service and the incident was investigated by both RailTex and RCL personnel. After the signal, MTR duplicated the false proceed by placing a shunt in advance of the approach and witnessing the Green into a Red. Further attempts to duplicate the incident failed. The pole line was walked out and at MP 82.9, it was found that the 8HR1 and 8DR1 were untied on the pole and nearly touching by means of a tie wire. This would cause both the 8DR and 8HR relays to be energized simultaneously, causing a Green into a Red.

595	1/14/1998	INOX		Automatic		None	1342 Approach Signal	Lima, Ohio	N
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Human Error - Field Wiring Error, Inadequate Service Testing

Approach Signal 1342 on northbound approach to the Conrail Sugar Interlocking, Lima, Ohio displayed a Green aspect into a Red home signal at the interlocking. This condition was caused by the control wires 1342 HD and N1342 ND having been transposed where the line wire and aerial cable junction at MP 133.45. This condition was discovered about 9:00 A.M. on 1/14/98 and corrected and placed back into service at 2:30 P.M. The discovery of the false proceed was made by RailTex and RCL signal personnel while making routine tests of the system. It is unknown how long this condition existed, but it appears to have been wired in when the aerial cable was installed several years ago. RailTex acquired this property less than a year ago from the Grand Trunk Railroad.

439	4/24/1998	CSXT	CTC			Q21922	None	Godsend, Fostoria, OH	N
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Human Error - Field Wiring Error, Inadequate Service Testing

At about 10:48 AM on April 24, 1998, the crew on train Q21922 viewed a CLEAR aspect on the #10 signal (LE&W) westbound on number one track at Fostoria, Ohio and a LIMITED CLEAR aspect at the absolute W1 signal at Godsend. The crossover was reversed for a movement from number one to number two track. The aspect should have been an APPROACH into a LIMITED CLEAR. The signals were removed from service pending investigation by signal personnel.

Signal personnel investigated the problem and verified the aspects as described above. The problem was identified as a wiring problem in a temporary case. The temporary case contained an Electrocode 4H. The wire for the Code 7 decoder was on the Code 3 decoder post. This caused the false proceed. The wire was returned to its proper post. Operational tests were performed and the signals were returned to service on April 25, 1998.

Report #	Date	Reporting Carrier	Block System	Interlocking System	Auto. Systems	Loco or Train No.	Device that Failed	Location	Collision or Derailment?
600	5/15/1998	CR		Remote		Unknown	Signal 6W-4	Toledo, OH	N
<p>Cause</p> <p>Narrative</p> <p>Human Error - Signal Circuit Design Error, Inadequate Service-Testing</p> <p>Signal 6W-4 at Nasby Interlocking displayed a SLOW CLEAR aspect with signal 1WB ahead at STOP. Cause was found to be a design error which omitted a #3 switch in the home network of signal 6W-4. The controls for 6W-4 signal have been opened in the field to prevent 6W-4 from displaying better than SLOW APPROACH. New design will be issued, installed and tested as soon as practicable.</p>									
601	5/17/1998	INOX	CTC			3807	60R	Cincinnati, OH	N
<p>Human Error - Field Wiring Error, Inadequate Service Testing</p> <p>On May 17, 1998 at approximately 07:00 AM vandals set fire to a pole and cables at Mile Post 10.9 Ridge Interlocker. The signal Maintainer was called at 9:00 AM and found the power and 7 conductor destroyed. Repairs began about 12:00 PM and were complete about 06:00 PM. During reconnection the H's for the 60R signal were transposed, which gave a Green signal instead of a Yellow into a Red. The signals were put back into service.</p> <p>At 10:45 PM the Signal Dept. was informed of the false proceed and took the signals out of service. The problem was found and corrected. The signal system was tested and put back into service.</p>									
440	6/22/1998	CSXT	CTC			Q50321	None	NE Weston, Weston, OH	N
<p>Human Error - Field Wiring Error, Inadequate Service Testing</p> <p>On June 22, 1998, the southbound Q50321 reported a CLEAR signal at the NE Weston and a STOP signal at the SE Weston. The signals were removed from service and signal personnel dispatched to investigate. The situation was simulated by the signal personnel and the false clear was confirmed. The investigation revealed that reverse polarity on a pair of HD wires had caused the false clear signal. The polarity of the HD wires was corrected and the signal system was tested and returned to service.</p> <p>A signal maintainer was called to investigate a problem at the SE Weston on June 14. The maintainer identified the problem as an open in the HD lines and changed to a pair of spare wires. He placed two spare wires on each of the open cable wires marked R22HD4 and NR22HD1. He then went to the Taylor St. crossing warning system and jumpered the wires together to complete the circuit from the SE Weston. The maintainer checked voltage to verify the circuit but failed to perform an adequate operational test of the circuit before returning the signals to service. The polarity of the circuit was inadvertently swapped by the maintainer. This was determined to be the cause of the false clear.</p>									

Report #	Date	Reporting Carrier	Block System	Interlocking	Auto. Systems	Loco or Train No.	Device that Failed	Location	Collision or Derailment?
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197	8/5/1998	NS	CTC			3537	Poleline	Leipsic, OH	N
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Maintenance - Pole Line (storm, excessive vegetation, rotting poles, excessive slack in wires, etc.)

At approximately 11:10 PM, eastbound train No. X10 reported receiving an ADVANCE APPROACH indication at intermediate signal 3156 and then a STOP at Leipsic home signal, MP B-311.4, which is the I&O interlocking. The engineer was able to stop short of the home signal at Leipsic. They had been running at restricted speed due to a storm caused code line outage. Signal 3156 should have been displaying APPROACH since it was an automatic signal. The home signal was at STOP because of the code line outage.

Signal personnel called to investigate were able to duplicate the problem and determined that the B3156HR relay that controlled the bottom yellow aspect was falsely energized with 6 volts across the coil. The 6 volts was found to be coming from a combination of several line wire wraps and grounds that resulted from damage from a severe storm which was passing through the area at the time. The voltage ultimately came from the 3156NHD line wire that was normally separated from the B3156H wire by no fewer than two wires fed by different battery. It was only through such an unlikely combination of poleline faults that this problem could have occurred.

The bottom yellow on the 3156 signal has been disabled until the poleline gets configured to prevent a recurrence. Other signal aspects were returned to service by 8:00 AM following poleline repair and appropriate tests.

444	10/1/1998	CSXT	CTC			X90129	None	Republic, OH	N
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Human Error - Improper Circuit Jumper in Place

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.

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 circuitplans. 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.

Report #	Date	Reporting Carrier	Block System	Interlocking	Auto. Systems	Loco or Train No.	Device that Failed	Location	Collision or Derailment?
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611	12/3/1998	CR	CTC			6664	Auto. Sig. 1421W	Columbus, OH	N
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Human Error - Signal Circuit Design Error, Inadequate Service-Testing

Train PICO2, westbound, #1 track on Cincinnati Line observed signal 1421W CLEAR with westbound home signal at CP 144 displaying MEDIUM APPROACH. Cause was found to be field Signal personnel had made unauthorized circuit change and had failed to properly test the signal system.

Circuit design was corrected, all tests were made and the signal system was restored to service. Involved employees were removed from service and discipline was assessed.

255	2/16/2000	NS	CTC			5469-5460	Phantom Signal	Cleveland, OH	N
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Phantom Signal - Due to Sun Angle

At approximately 12:30 PM, Train No. 133 observed the 5WA signal at CP 190, Rockport Yard, displaying a SLOW APPROACH aspect. The dispatcher did not have the signal lined and the train was stopped as it took the signal. No other trains were involved.

Signal personnel arrived to investigate and first interviewed the train crew. The crew reported the signal they saw from about 150 feet had looked to be Yellow over Red. 5WA is a US&S dwarf signal consisting of four (4) light units each with an 18 watt bulb. The top unit is red, the second green, the third yellow and the fourth is a red unit. Initial inspection of the signal found it to be in excellent condition with no cracked or discolored lenses, no missing hoods. The signal was properly sealed, locked and aligned. The lighting voltage on the individual units, when lit, measured between 8.4 and 8.6 volts DC. The train was then backed to the point where the crew thought they saw the Yellow over Red. With the top and bottom red units lit, a STOP signal, the top red appeared to be washed out to the point that it could have been misinterpreted as a yellow. A contributing factor was the train crew's relative unfamiliarity with this location.

All appropriate signal tests were performed with no exceptions taken.

As the sun was above and slightly behind the 5WA signal, it was suspected that the sun reflecting back off the second hood could have caused the top unit, displaying red, to wash out somewhat. The signal bulbs were replaced with 20 watt bulbs, and the voltage was increased to 9.2 volts before returning the signal to service.

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241	4/23/2000	CSXT		Remote		N94820	#4 Signal	VR Tower, Walbridge, OH	N
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Human Error - Signal Circuit Design Error, Inadequate Service-Testing

At approximately 2315 hours on 4/23/2000 at VR Tower in Walbridge, OH, northbound train N94820 reported receiving a MEDIUM CLEAR (Red over Green) on the #4 Signal when lined for a crossover move from #1 track into the receiving yard through #7 and #5 crossovers reversed. The signal for this move should have been RESTRICTED (Red over Yellow). The following train, Q39723, made this same move and reported receiving a RESTRICTING signal. Upon notification, Train Control personnel were dispatched to investigate.

Further investigation revealed that when a signal was lined northbound on the #2 track at Yard D through the next northbound interlocking (#8 Signal), a Code 7 was sent back to VR Tower holding up the W2DR. This permitted a MEDIUM CLEAR signal to be displayed when the signal was lined on #2 track without checking the position of the #5 crossover.

The wiring error was corrected and signals were returned to service following operational testing.

The cause was found to be a design error.

259	6/2/2000	NS	CTC			AMT 57, AMT 37	Design Error	Elyria, OH	N
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Human Error - Signal Circuit Design Error, Inadequate Service-Testing

At 4:45 a.m., June 2, 2000, Amtrak #29 was traveling west on track #2 at MP 203 on the Chicago Line when they received a STOP signal at CP-203. After receiving permission to pass the STOP signal, they progressed to intermediate signal 205 2W which was displaying a LIMITED CLEAR (Red/Flashing Green). At this time they notified the dispatcher concerning the improperly displayed signal.

Investigation: The signals were lined to replicate the conditions experienced by Amtrak 29, The crossover at CP 207 was lined and it displayed a LIMITED CLEAR aspect. At signal 205 2W a LIMITED CLEAR aspect was also displayed. At this time the NWLPPR relay was also still de-energized. Signal 2W at CP-203 was displaying a STOP aspect. Under these conditions Signal 205 2W should display a STOP AND PROCEED aspect (Red/Red), but was displaying an improper aspect of LIMITED CLEAR (Red/Flashing Green).

Review of the in service circuit plans revealed that aspect displayed was consistent with the designed circuit. The circuit design allowed the "B" head to continue to display a Flashing Green with the hand throw switch showing not lined for normal movement. With the cross-over at CP 207 lined from track #2 to track #1 the signal that would be displayed at 205 2W if the NWLPPR relay was energized would be APPROACH LIMITED (Yellow/Flashing Green). When the NWLPPR relay was de-energized the "A" head went to Red but the "B" head remained at Flashing Green.

Correction: Signal engineering was contacted and they developed a circuit modification to correct the problem. The circuit was modified and complete signal checks were performed. The signals were placed back in service at approximately 2:00 p.m.

Report #	Date	Reporting Carrier	Block System	Interlocking	Auto. Systems	Loco or Train No.	Device that Failed	Location	Collision or Derailment?
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261	6/24/2000	NS	CTC			8933, 2506, 8713	Human Error	Dorset, OH	N
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Human Error - Field Wiring Error, Inadequate Service Testing

At approximately 2:22 a.m., June 24, 2000, train #62V was southbound at MP 10.5 on the Youngstown Line when they observed signal 10S displaying APPROACH LIMITED (Yellow over Flashing Green) with signal at CP 13 MEDIUM APPROACH (Red over Flashing Yellow). The train crew knew that MP 10.5 should have been displaying Yellow over solid Green since they were lined to take the turnout at CP 13. The number 15 turnout at CP 13 is limited to 30 MPH, therefore, the signal observed by the train crew at 10S, Yellow over Flashing Green, was improper since it was a 40 MPH speed limit through the turnout at CP 13.

Investigation determined that this improper signal was displayed due to our Signal Supervisor replacing the EC-4 box when it was in trouble on 6/1/00, at CP 13. He placed a control wire on the wrong terminal post of an EC-4 box which generated a Code 4 instead of a Code 3. He failed to make proper in-service tests after disarrangement of the signal system.

The wiring on the EC-4 box was corrected, in-service tests were done and the signal system placed back in service 6/24/00.

244	7/28/2000	CSXT	CTC			Q308-26	Signal 56N	Arlington, OH	N
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Failed Equipment or Device - Aerial or Underground Cable, Shorted or Grounded (not due to vandalism or digging)

On July 28, 2000 northbound Q308-26 received an APPROACH aspect at intermediate signal 56N while the electric lock switch XA54 at the New Generation Industry Spur was lined reverse against the 56N signal. Signal 56N should have displayed an aspect no better than STOP AND PROCEED with the switch reversed. Train H719-26 had lined the switch reverse in order to set off a car in the industry track, and the signal went from STOP AND PROCEED to APPROACH when H719-26 cleared the fouling section of switch XA54. When H719-26 re-entered the fouling section, Signal 56N went back to STOP AND PROCEED. The switch was removed from service and Train Control personnel dispatched.

The cause was found to be shorted HD conductors in a spliced aerial 12-conductor/14 line drop, caused by moisture shorting out the wires. The line drop was replaced, switch and signal checks were made with no exceptions, and the signals were returned to service.

The cause was determined to be a material failure of the splice.

Report #	Date	Reporting Carrier	Block System	Interlocking System	Auto. Systems	Loco or Train No.	Device that Failed	Location	Collision or Derailment?
			Cause						
			Narrative						
251	10/21/2000	CSXT		Remote		L256-21	2WA Signal	CP-124, Ridgeway, OH	N
			Human Error - Signal Circuit Design Error, Inadequate Service-Testing						
			At approximately 0500 hours on October 21, 2000, Train L258-21 was westbound on #1 track awaiting the 2WA signal to proceed into Hayes siding through the #4 crossover reversed. When the signal was received, the crew initially observed a RESTRICTING signal (NORAC Rule 29 - Red over Yellow) which changed to a MEDIUM CLEAR (Rule 283 - Red over Green). The signal should have been RESTRICTING. The signals were removed from service, and Train Control personnel were dispatched.						
			The cause was found to be a design error in the circuit, which included an extra wire allowing the 2WA-BDR to be energized when the #3 crossover was reversed regardless of the position of the #4 crossover. The wire was removed, signal checks were made with no exceptions, and the signals were returned to service.						
267	10/21/2000	NS	CTC			NS 6776, NS 8613,	Human Error	Cleveland, OH	N
			Maintenance - Improper Adjustment, Track Circuit						
			At 1:30 p.m. on 10/21/00, train #24Z on track one observed signal 2E at CP Twin go from RESTRICTING aspect to a CLEAR aspect and back to APPROACH with a train ahead passing the next intermediate signal at MP RD-100.4, 7.7 miles ahead. The CLEAR aspect was only displayed 14 seconds before dropping to APPROACH, the proper aspect.						
			Upon investigation it was discovered that the working current on the 1004T relay was excessive, which resulted in the circuit failing to shunt for light engine 5096 moving in the block ahead of train 24Z.						
305	3/12/2001	CSXT	CTC			Q245-10	Workmanship	Vandalia, OH	N
			Human Error - Signal Circuit Design Error, Inadequate Service-Testing						
			On 3-12-01 train Q245-10 received a MEDIUM CLEAR signal entering the siding at Vandalia into a MEDIUM CLEAR signal crossing over at Vandalia crossover. Signals were removed from service pending investigation. Field investigation revealed that recently installed signals were designed for medium speed while a slow speed crossover was in service. The signals were immediately downgraded to RESTRICTING and STOP. Proper test and inspections were performed and signals were restored to service.						

Report #	Date	Reporting Carrier	Block System	Interlocking	Auto. Systems	Loco or Train No.	Device that Failed	Location	Collision or Derailment?	
			Cause							
			Narrative							
311	5/8/2001	NS	AB			9571	Line Wire Circuit	Columbus, OH	N	
			Vandalism - Pole Line							
			At approximately 10:18 a.m. on May 8, 2001 Train No. 615 southbound reported a CLEAR signal indication at automatic signal 134.1 with automatic signal 135.1 at STOP AND PROCEED and southbound train LY18 approximately 500 feet in advance of the signal 135.1. Crew of train 615 stopped approximately 1000 feet short of signal 135.1 and notified the Dearborn dispatcher.							
			C&S personnel investigated and found a piece of line wire bridging the line wire circuit between the H and D wires. The wire was laying across the line wires at MP AM 134.9. The line wire was inspected and the signals were restored to service.							
308	7/5/2001	CSXT	AB			D750-05	Workmanship	Signal 1598, Sterling, OH	N	
			Human Error - Signal Circuit Design Error, Inadequate Service-Testing							
			At 0845 hours on July 5, 2001, D750-05 train crew observed Signal 1598 displaying a CLEAR (G/R) signal while moving eastbound, following behind train K518-02, which was ahead in the second block. D750-05 stated that Signal 1598 stayed CLEAR for approximately 30 seconds before changing to an APPROACH aspect (Y/R). D750-05 train crew informed the train dispatcher of the signal incident and dispatcher informed the train crew to treat the signal as RESTRICTING. Signals were removed from service. Investigation revealed that the line overlay was not properly broken through the track relays, thus giving the improper signals. Design was notified and the proper wire breaks were designed, installed and tested. Signal system was restored to service.							
309	12/14/2001	CSXT	CTC				Train Bulletin	Crandle Road, Walbridge, OH	N	
			Human Error - Incorrect Bulletin Provided to Train Crew							
			At 1500 on December 14, 2001, Supervisor responded to a report that the signals at Crandle Road indicated MEDIUM APPROACH indication (R/Y/R) over a #1 turnout when lined over the #1 crossover. The northbound signal on #2 track and the southbound signal on #1 track were removed from service. Verified the aspects and found a Detroit Division General Train Bulletin issued at 0001 on 10/01/01 incorrectly stating the signals at Crandle Road are Seaboard-style signals and are to be governed by CSX signal rules 281 through 296 and should have been Chessie-style signals covered by CSX Rules C281 through C296. The signals were restored to service at 1715.							

Report #	Date	Reporting Carrier	Block System	Interlocking	Auto. Systems	Loco or Train No.	Device that Failed	Location	Collision or Derailment?
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355	10/11/2002	CSXT	AB			Q416-09	S8PT Connectors	W.E. Space Center, Lordstown, OH	N
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Maintenance - Switch Circuit Controller

On October 11, 2002 at 6:00 AM the Q416-09 approached intermediate signal W90.41, displaying a CLEAR signal and stopped east of the signal, made a cut on Q416-09 to pick up cars at the West End Space Center, Goodman Yard. The train crew went west of intermediate signal W90.41 and observed that the signal indication changed to RESTRICTED PROCEED. The crew went west of the trailing point switch, threw the switch reverse and entered the West End Space Center. The switch was left open while working and upon clearing the fouling circuit, train crew reported that the W90.41 signal indicated CLEAR. When the train crew came back out onto the fouling circuit, W90.41 signal indicated RESTRICTED PROCEED. The train crew tied back onto their train, restored the switch normal and proceeded west with permission. Signals were removed from service and signal personnel dispatched to the site. Investigation revealed that corroded track connections from the circuit controller to the rail were the cause of the false proceed signal. All track connections from the circuit controller to the rail were renewed and a new switch circuit controller installed. Full operational tests were performed and the signals were restored to service.

361	11/29/2002	NS	CTC			NS 9361	PSO Coupler	Bellevue, OH	N
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Failed Equipment or Device - PSO Coupler

On November 29, 2002 at 9:15 p.m., train LB 28, lead unit NS 9361, while approaching the eastbound signal at Bragg Rd., MP B-246, observed signal to be RESTRICTING. When train LB 28 was seven (7) car lengths from the signal, it upgraded to an APPROACH for less than a second, then dropped to STOP. Train was stopped four (4) car lengths from the signal. Train 403 was proceeding east in the block ahead of LB 28.

C&S investigation determined that a Phase Shift Overlay (PSO) rail to line coupler was discharging enough voltage on the signal control line circuit to energize the R222 HD relay causing the signal to display an APPROACH signal for a second and cancelling the stick circuit causing signal to drop to STOP. The phase shift overlay is superimposed on the signal control line wire and the coupler discharged into the relay after the track circuit was energized. This overlay circuit was not in service at this time.

Manufacturer is testing coupler and their use in this application. The PSO will be moved to spare wires and vendor is reviewing its application.

Report #	Date	Reporting Carrier	Block System	Interlocking	Auto. Systems	Loco or Train No.	Device that Failed	Location	Collision or Derailment?
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405	8/27/2003	NS	CTC			8818	B-1 Biased Relay	Mansfield, OH	N
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Failed Equipment or Device - Relay

At 6:03 p.m. August 27, 2003, train 528, traveling from track #2 to track #1 westbound at CP Lucas, reported the home signal was LIMITED CLEAR (Red over Flashing Green). 528 reported his next signal, intermediate signal 1727-1W, displayed STOP AND PROCEED. Train 528 brought his train to a normal stop. No other trains were involved.

Upon arrival the condition was reproduced and was determined to be caused by a melted contact in the 1727 AHP relay. This contact had battery B-12 on the front and the positive coil of the 1727 AHPP relay on the heel. This condition allowed the 1727 AHR and 1727 AHP relays to be energized and the 1727 to be de-energized when, under normal conditions, it would have been energized. Had the 1727 AHPP been energized, the 1727 signal would have been displaying an APPROACH aspect vs. STOP AND PROCEED. The HD circuits leaving the 1727 signal towards CP Lucas are controlled through the 1727 AHP relay. The aspects to be displayed on 1727 signals are controlled through the 1727 AHPP relay. This scenario allowed the HD circuits to upgrade back towards CP Lucas account the 1727 AHP relay being energized but, account the 1727 AHPP being de-energized held intermediate signal 1727 AHPP at STOP AND PROCEED.

The cause of the relay contact melting in the 1727 AHP relay is suspected to have been caused by several severe thunder storms and lightning in the area earlier in the afternoon.

The 1727 AHPPR relay is a GRS Part #298 B-1 biased 194 ohm slow drop. The relay was replaced in kind and the signal system tested and restored to service at 11:16 p.m., August 27, 2003.

395	8/28/2003	CSXT	CTC			N935-15	Wiring	East End of B&O Siding, Fostoria, OH	N
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Human Error - Field Wiring Error, Inadequate Service Testing

On August 28th at approximately 21:10, westbound N93515 on #2 track at the East End of the B&O center siding, reported receiving a Yellow over Yellow (APPROACH SLOW) into a STOP signal at the West End of the B&O center siding. Signals were removed from service and signal personnel were dispatched. During testing and inspection of the signals, it was discovered that a wiring change from a prior project was made incorrectly that allowed the improper aspect to display if the R178WFSR stick relay was picked. The wiring error was corrected, operational tests were performed and the signals were returned to service.

Report #	Date	Reporting Carrier	Block System	Interlocking	Auto. Systems	Loco or Train No.	Device that Failed	Location	Collision or Derailment?
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396	9/8/2003	CSXT	CTC			Q27808 - L29607	Wiring	Lemoyne, OH	N
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Human Error - Field Wiring Error, Inadequate Service Testing

On Sept. 8th at 13:44, Q27808 was sitting at the westbound absolute signal number #1 at Lemoyne, MP CD 111.0, waiting to cross over to #2 track following the L29607. L29607 was WB on #2 track. Q27808 heard the L29607 call the aspect on the 1071-2 intermediate signal, the 2nd intermediate west of Lemoyne. Q27808 observed the WB signal on #2 track display a MEDIUM CLEAR, Red over Green, for 6 to 8 seconds before slotting off to STOP. The event log indicated the WB signal at Lemoyne had gone into time. The signal was removed from service. A simulation recreation of the false clear. An investigation revealed that the coded track circuit west of the 1091-2 intermediate signal, the first intermediate west of Lemoyne, when shunted, had an 8 to 10 second delay before the 1092-2 or 1071-2 HD relays would be deenergized. The 8 to 10 second delay was found to be caused by wires on a front and back contacts of the 1092-2 ZTR, code following relay, that had been reversed and were not according to design. This resulted in energy being applied to the positive coil wire of the 1092-2TPR when the track circuit was shunted. The 1092-2TPPR drops the HD circuits. The 1092-2TPPR wasn't dropping immediately due to a capacitor, which by design, was across the coil wires causing an 8 to 10 second drop delay while the capacitor bled off. This caused the improper aspect to be displayed for eight to ten seconds as reported. The wiring error was corrected, operational tests were performed with no exceptions. The signals were placed in service.

398	11/25/2003	CSXT	CTC			Z16025	None: Phantom	Hopple Street, Cincinnati, OH	N
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Phantom Signal - Due to Sun Angle

Northbound NS train on #1 track bassed by a STOP signal at 10:19 11-25-03. Logs were pulled and indicated signal was at STOP. Train crew reported they had an APPROACH at previous signal at Tower A and then a RESTRICTED PROCEED at Hopple Street. Signal personnel were dispatched and upon arrival, observed signal at STOP. Crew also stated that when they saw the dwarf signal, they wer about two cars away from the signal and it was lit Green - Yellow with white lights underneath. As the train went by the signal, they also saw Red indications with white light, which they took as RESTRICTED PROCEED. With the above information, Transportation officers from NS, CSX and CSX signal personnel returned to Hopple St. to observe the signal. We observed the sun was shining bright on this day and would have been behind the approaching train's back and could have been shining directly into the signal at the time of the incident. Operational tests were performed on the signal and no exceptions were taken.

Further investigation on 12/01/03 (next day of similar light conditions) was conducted and it was observed that the sun was shining into the signal making it look as though all lights were lit.

Dwarf signals on #1 and #2 tracks were realigned forward to vertical. This action substantially reduced the effect of the sun shining on the lenses. Hoods on these signals are 7 inches long. 12 inch hoods have been ordered and will be installed upon delivery. We are reporting this event but we do not consider this to be a false proceed.

Report #	Date	Reporting Carrier	Block System	Interlocking	Auto. Systems	Loco or Train No.	Device that Failed	Location	Collision or Derailment?
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431	1/14/2004	NS	CTC			NS 5578	None	Bryan, Ohio	N
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Loss of Shunt - Possible Rust or Foreign Material on Rail

On 1/14/04 at approximately 10:30 a.m. train B41, engine only, moving east on track 2, observed 2E signal change from Red (STOP) to Green for approximately 6 seconds then back to Red (STOP) while train B40, engine only, was in the block ahead. Office diagnostics revealed that train B40 lost shunt several times during his movement. Train B41 did not proceed on the Green aspect. All track circuits between CP 340 and intermediate signal at MP CD335.9 were tested with a .06 ohm shunt with no exceptions. Due to rain, no evidence of contamination was found. The prior movement to this incident was an empty grain train (bean meal). As a precaution an order for light engine to operate by absolute block has been placed in these limits.

432	1/22/2004	NS		Remote		CSX 3560	18L Signal Unit	Ironville Interlocking, Toledo, OH	N
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Vandalism - Signal Damaged, Caused Phantom Aspect

On January 22, 2004 at 11:30 a.m., CSX train Y121 was shoving south and passed STOP signal 18L at Ironville Interlocking in Toledo, Ohio. CSX train crew was Engineer and Conductor. Conductor was on the caboose on the rear of train Y121. As they approached the 18L signal from seven car lengths they observed the signal display an APPROACH aspect, Yellow over Red. This signal was not requested by the Dearborn dispatcher nor requested in the field as verified by signal personnel at the site. In addition, the block ahead was occupied by signal construction forces working under Track and Time 23A authority. When train Y121 passed the signal the conductor was contacted by the signal personnel. The train was stopped two car lengths beyond the signal. Weather was clear, sunny, about 15 degrees with snow covered ground.

A reenactment of the incident indicated the signal was Red over Red (STOP) when viewed from 100 yards to the signal. Beyond this distance the top aspect of the signal appeared Yellow. The Yellow aspect improved at higher viewing angles.

The 18L signal is a 2 unit ground signal with 2 US&S searchlight mechanisms on the top unit. The lamp voltage was found to be low at 6.6 volts AC. The outer lens of the signal unit had been damaged by outside parties. The last inspection at this location was on November 25, 2003. The H-2 signal mechanism was last inspected on October 25, 2003. The voltage was raised for all the signals and the searchlight housing and operating unit was changed out to prevent a recurrence.

Report #	Date	Reporting Carrier	Block System	Interlocking	Auto. Systems	Loco or Train No.	Device that Failed	Location	Collision or Derailment?
			Cause						
			Narrative						

722 1/24/2004 INOX Automatic 40024 Southbound DN22 B Relay A21HDPR Quincy, Ohio N

Human Error - Improper Equipment Installed

On 01/24/04, Indiana & Ohio Railroad train 40024 Southbound reported a CLEAR aspect displayed on the southbound distant signal to the Quincy Interlocking. After proceeding by the CLEAR signal at Milepost 162.8, train 40024 approached the home signal, Milepost 164.1, and encountered a STOP aspect displayed on the southbound home signal with a conflicting CSX train proceeding through the interlocking. Train 40024 was able to stop in approach of the home signal. Train 40024 advised the INOH dispatcher of the improper aspect displayed on the distant signal. At this point, both distant signals were taken out of service, the southbound being at milepost 162.8 and the northbound being at milepost 166.2 with all train movements being made prepared to stop at the Quincy Interlocking home signals. Notification was made to their independent signal contractor, Railroad Controls Limited (RCL). RCL then dispatched a signal maintainer and two managers to the scene. It was determined that 3 days prior to this incident a biased relay, the A21HDPR, had been replaced at the southbound home signal, milepost 164.1 and replaced with a neutral relay. The coil wires were removed from the A21HDPR to ensure that the signal in question remained at APPROACH. INOH then notified the Rail America Director of Signals & Communications who then directed that all signal cases be secured by a railroad official until the incident could be confirmed. On 01-26-04 RCL and Director of Signals & Communications recreated the incident, and verified the improper relay was the cause of the signal failure. On 01-27-04, RCL completed testing of all relays and cable, completed operational testing, and then returned the signal system back to regular operation at 16:53. At this time, the signal system was operating as intended.

Attached are the circuit plans pertinent to this incident. Note the A21HDPR on sheet 12 of 21. Walter Fithian, Rail America Director Signals can be contacted at 561-245-1506 if additional information is required.

No. of Reports Shown in this Listing: **42**