



IronWood Technologies

Railroad Accident Reconstruction

Federal Railroad Administration

False Proceed Signal Database

January 1, 1995 through May 3, 2004

All Reports - State of Pennsylvania

Report #	Date	Reporting Carrier	Block System	Interlocking	Auto. Systems	Loco or Train No.	Device that Failed	Location	Collision or Derailment?
459	2/9/1995	CR	CTC			Train ML420, Engin	Signal 254S	Northumberland, PA	N
Human Error - Signal Circuit Design Error, Inadequate Service-Testing									
Engineer on train ML420 reported that signal 254S displayed APPROACH. The aspect then upgraded to APPROACH MEDIUM several times before passing the signal with 76L signal at Norry at STOP. Cause was due to contact bounce of the 76LBR relay. 76LBFR relay was removed from service, circuit design corrected, signal system tested and returned to service.									
456	2/16/1995	CR	CTC			Train HLP21B, Engi	Signal 113N	Keating Summit, PA	N
Failed Equipment or Device - Relay									
Engineer on HLP 21B observed an APPROACH aspect on signal 113N with HBBU-6 occupying the block. Cause was large metal build up on contacts 16/17 of the 1NTR relay, which allowed false energy on the 1NTFP circuit. Metal build up was caused by diode which was shorted, across coils of 1NTFPR relay. Shorted diode and iNTR relay removed from service and replaced. Signal system was tested and placed back in service.									
476	4/10/1995	SEPA	CTC				Open wire - pole line	100' N of Sig. 501, MP 1.0 Warminster Line	N
Maintenance - Pole Line (storm, excessive vegetation, rotting poles, excessive slack in wires, etc.)									
Nature of Failure: Engineer reported passing signal 501 displaying APPROACH MEDIUM and approaching next signal, signal 41A, displaying STOP.									
Cause of Failure: Inspection of pole line conditions revealed open line wire conductor 501AD was crossed with open line wire conductor 41AHA thus energizing 501ADR relay. Fault condition was apparently caused by a severe windstorm that passed through the area.									
Corrective Action Taken: Re-aligned open wire conductors on pole line.									

Report #	Date	Reporting Carrier	Block System	Interlocking	Auto. Systems	Loco or Train No.	Device that Failed	Location	Collision or Derailment?	
			Cause							
			Narrative							
479	4/18/1995	CR	AB			Train UCI-18A, En	Signal 29.2	Shire Oaks, PA	N	
			Human Error - Signal Circuit Design Error, Inadequate Service-Testing							
			Engineer on train UCI-18A reported automatic signal 29.2 displayed a CLEAR aspect with 2S at CP Oak displaying Dark over Red. Problem was determined to be incorrect circuit design of the 292TATN and 292TATB track circuit selection through the 2S ALOR. Circuitry was corrected and signal system tested and restored to service.							
			Investigation being conducted to determine responsibility.							
487	6/14/1995	CR		Remote		Train YPAL-22, En	Signal 4E @ CP-JU	Bethlehem, PA	N	
			Human Error - Field Wiring Error, Inadequate Service Testing							
			Engineer on train YPAL-22 observed signal 4E at CPJU displaying an APPROACH SLOW aspect with signal 5R at CP Bethlehem displaying RESTRICTING. Cause was found to be crossed conductors, 5RCHD and 5RCGP circuits, in cable from 5RC signal mechanism to case at CP Bethlehem. Cable repaired, signal system tested and returned to service.							
504	8/7/1995	CR		Remote		Train BAL-2AH, En	CP Shocks, Cab Signal at 110L Signal	Shocks Mill, PA	N	
			Failed Equipment or Device - Full Wave Rectifier							
			Engineer on train BAL-2AH reported cab signal ungraded from RESTRICTING to APPROACH MEDIUM with wayside home signal 110L displaying STOP. Cause was found to be shorted W-10 transformer on 111 track circuit. Transformer replaced, signal system tested and placed back in service.							
518	9/28/1995	SEPA	AB				Open Wire Pole Line	MP 17.5 to MP 18.6, Neshaminy Line	N	
			Maintenance - Pole Line (storm, excessive vegetation, rotting poles, excessive slack in wires, etc.)							
			Nature of Failure: Engineer reported passing NB automatic signal #71 displaying CLEAR and approaching next NB automatic signal #73 displaying STOP AND PROCEED.							
			Cause of Failure: Inspection of pole line conditions revealed open line conductors 73H, 75CX110 and 72A were crossed due to vegetation growth. In addition, investigation revealed single conductors at a line drop to a terminal box were bare in a bridle ring above the terminal box, grounding circuits 73H, 76H and 75CX110 and shorting an isolation transformer located at #72 automatic signal feeding 76H circuit and 75CX110.							
			Corrective Action Taken: NB automatic signals 71 & 73 and SB automatic signals 76 & 72 were placed in their most restrictive condition. All brush and vegetation were removed, line wires were realigned and affected conductors in line drop were replaced. Isolation transformer feeding energy to 76H circuit was also replaced. System was tested and returned to service.							

Report #	Date	Reporting Carrier	Block System	Interlocking	Auto. Systems	Loco or Train No.	Device that Failed	Location	Collision or Derailment?	
			Cause							
			Narrative							
523	10/18/1995	CR	CTC			Train SENS-7, Engi	Signal P383	Shippensburg, PA	N	
			Failed Equipment or Device - Aerial or Underground Cable, Shorted or Grounded (not due to vandalism or digging)							
			Engineer on train SENS-7 reported that signal P383 displayed a CLEAR aspect with signal 15W at CP Ship displaying MEDIUM APPROACH. Problem was determined to be false energy on L15APC circuit due to grounded and crossed aerial cable conductors between Loc "C" and Loc "D" at CP Ship. Cable removed from service, new cable installed, signal system tested and returned to service.							
532	11/12/1995	URR		Remote		Engine #7	---	Signal 176	N	
			Scenario Reenacted, Unable to Duplicate, No Defects Found							
			On November 12, 1995, signal 176, a southbound controlled signal, was reported by Engine 7 to have displayed a CLEAR (Green) instead of a MEDIUM CLEAR (Red over Green). The system is a color light system with light-out relay circuits. A printout of controls and indications was obtained from the office system to verify that crossover 187 was in the reverse position. The light-out relays were checked along with the 176 AHR relay and its associated circuits. The relays were tested and all pertinent cable meggered. The exact conditions that took place on November 12 were duplicated, but we could not duplicate the failure. There were no grounds found on the system.							
537	11/20/1995	SEPA		Remote			Unknown	Sig. 20L, Newtown Jct. Int., MP 6.2	N	
			Scenario Reenacted, Unable to Duplicate, No Defects Found							
			Nature of Failure: Engineer reported passing signal 20L displaying MEDIUM CLEAR and approached next signal, signal 4W at CP Nice, displaying STOP.							
			Cause of Failure: Could not repeat the condition, therefore could not verify that the condition existed. It should be noted the signal 20L does not display a MEDIUM CLEAR for the route taken.							
			Corrective Action Taken: Performed all necessary tests and inspections to determine if the condition existed. It was determined that the system was working as intended and that the reported condition did not exist. Therefore no corrective action was required.							
			NOTE: From the conclusions drawn it is the position of SEPTA that a False Clear condition did not exist and the condition is only alleged.							
549	1/20/1996	CR	AB			Train TV2M, Engine	Automatic Signal 732E	Womelsdorf, PA	N	
			Signal Equipment and/or Circuits Flooded							
			Engineer on train TV2M observed automatic signal 732E displaying a CLEAR aspect with train PIM09 ahead, occupying the block. Failure was found to be ice inside of 142 TR track relay causing relay to be held in the energized position, due to flood conditions which caused over two (2) feet of water to enter instrument case. Relay replaced, instrument case dried out, signal system tested and returned to service.							

Report #	Date	Reporting Carrier	Block System	Interlocking	Auto. Systems	Loco or Train No.	Device that Failed	Location	Collision or Derailment?
			Cause						
			Narrative						
550	1/21/1996	CR	AB			No Train Involved	Automatic Signal 111W	Fleetwood, PA	N
			Signal Equipment and/or Circuits Flooded						
			Signal maintainer observed automatic signal 111W displaying a CLEAR aspect with a train occupying the block. Failure was found to be ice inside of 111TR track relay causing relay to be held in the energized position due to flood conditions. Relay replaced, instrument case dried out, signal system tested and returned to service.						
559	5/9/1996	CR	AB			Train YIFE11, Engin	Automatic Signal 143.1	Sharon, PA	N
			Human Error - Field Wiring Error, Inadequate Service Testing						
			Conductor on YIFE11, westbound on #1 track observed automatic signal 143.1 upgrade to a CLEAR aspect with the handthrow switch and derail at MP 81.6 in the reverse positions. Upon investigation, it was found that the N81.16WP1A and the 81.16WP1A wires were transposed in the circuit controller at the derail.						
			The wiring problem was corrected and all applicable tests were made. An investigation is being conducted to determine responsibility.						
567	8/10/1996	SEPA	CTC	Remote			Home Signal L12D	CP Kalb, Borough of Norristown, Montgomer	N
			Human Error - Signal Circuit Design Error, Inadequate Service-Testing						
			Nature of Failure: Engineer reported passing home signal L12D at CP Kalb (approach signal to home signal 2S at CP Ford) displaying APPROACH MEDIUM instead of MEDIUM APPROACH with home signal 2S at CP Ford displaying RESTRICTED.						
			Cause of Failure: Cause was traced to a circuit design condition. Circuit for signal L12D (searchlight-type) should not have been poled when a RESTRICTED signal was displayed for signal 2S at CP Ford.						
			Corrective Action Taken: Set signal L12D at CP Kalb to RESTRICTED. Corrected circuit design. Conducted necessary tests and inspections. Returned system to normal operation.						
87	8/12/1996	CSXT	CTC			Train D773	Insulation	Conboy, PA	N
			Failed Equipment or Device - Interior Wiring						
			Train D773 traveling west on #1 track reported a Red over Green aspect and that a Green aspect was displayed on #2 track. Signals were removed from service. Signal department personnel investigated the incident and determined that the LCHR relay control wires were environmentally damaged causing a short which allowed current to flow improperly to the relay coil.						
			Signal personnel replace the wires and performed all operational test. Signal system functioned as intended and were placed back in 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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573	11/1/1996	SEPA		Remote			20LBDPR Circuit	Signal 20L, Newtown Jct. Int., MP 6.2 Main Li	N
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Human Error - Signal Circuit Design Error, Inadequate Service-Testing

Nature of Failure: Conrail engineer of southbound freight train SCCS-1 reported southbound home signal 20L displayed MEDIUM CLEAR and approached next signal, signal 4W-2 at CP Nice displaying STOP.

Cause of Failure: Design problem. Signal 20L should have displayed a MEDIUM APPROACH indication for a route through the interlocking to the Conrail low grade route for this move. The least restrictive indication to be displayed at signal 20L for this route is APPROACH MEDIUM.

The MEDIUM CLEAR indication that was displayed at signal 20L was the result of the 20L BDPR circuit being energized through an alternate energy source that had existed from a former circuit configuration. The circuit energy should have been fed only through #17 switch reverse indication a crossover route, to southbound on the Main Line.

A simultaneous southbound parallel move from home signal 16L for a SEPTA train caused the 20L BDPR relay to energize from the alternate energy source.

Correction: Revised circuit by removing the alternate energy source.

580	1/29/1997	SEPA	AB				Signal #302	ABS #302, MP 11.1, Main Line, Montgomery	N
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Failed Equipment or Device - Aerial or Underground Cable, Shorted or Grounded (not due to vandalism or digging)

Nature of Failure: Engineer of southbound train 0121 reported passing signal #302 displaying CLEAR with next signal, #R2 at CP-Jenkin displaying STOP.

Cause of Failure: Could not duplicate condition, however, during investigation and testing it was found that circuit NR2DRP contained a conductor with less than 100,000 ohms resistance to ground although the circuit was working as intended.

A grounded conductor in this circuit could cause the condition.

Corrective Action Taken: Relocated NR2DRP circuit to a conductor with acceptable resistance to ground reading. No other condition was found that would have contributed to the incident. Performed all necessary tests and inspections to determine if the condition existed.

582	2/27/1997	CR		Remote		6749	Home Sig. 4E @ CP Tara	Rutherford, PA	N
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Maintenance - Wiring Chewed by Rodents

4E signal at CP Tara observed at Advance Approach with automatic signal 1022E ahead at STOP AND PROCEED. Cause was the 432 HGP relay being falsely energized at signal 1022E. False energy on the 432HGP circuit was caused by rodents chewing through the insulation of the conductors which control the signal mechanism. All damaged conductors were replaced, all appropriate tests were completed and the 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?
584	7/25/1997	CR				Train ML 420, Engi	Auto Sig 254S	Northumberland, PA	N
<p>Cause</p> <p>Narrative</p> <p>Maintenance - Pole Line (storm, excessive vegetation, rotting poles, excessive slack in wires, etc.)</p> <p>Southbound ML420 reported automatic signal 254S displaying CLEAR with home signal ahead at CP-Norry displaying STOP.</p> <p>Cause was found to be North and South signal control wires shorted with 120volt AC line to ground due to trees fallen into pole line at mile posts 255.7 and 255.8.</p> <p>Trees were removed, signal system tested and restored to service.</p>									
585	8/14/1997	AMTK		Manual		None	Signal 42L	North Philadelphia, PA	N
<p>Failed Equipment or Device - Aerial or Underground Cable, Shorted or Grounded (not due to vandalism or digging)</p> <p>At North Philadelphia Interlocking on the NEC in Philadelphia, PA. The tower operator reported a problem with the 42L signal. The C&S forces found the 42L displaying an APPROACH aspect with a train occupying the block. Investigation finds cable conductor 42LAH5 not meeting insulation resistance standards allowing foreign current to energize the 42LAH relay. The circuit was rerouted to good conductors. All appropriate tests were made along with a complete operation check observing all aspects with no exceptions found. Signal was restored to service.</p>									
590	12/2/1997	AMTK	AB			101	3BSA Relay	Phila., PA	N
<p>Human Error - Field Wiring Error, Inadequate Service Testing</p> <p>Amtrak train no. 653 engine no. 101 traveling west on no. 3 track passed auto signal mo. 69. Auto signal 69 on no. 3 track was observed displaying APPROACH with the block occupied. C&S forces investigating found the "3BSA" relay not wired properly. The relay was replaced. All appropriate tests were made along with a complete operational check. Signal 69 was returned to service with no exceptions. Disciplinary actions have been initiated to prevent any reoccurrence.</p>									
598	5/4/1998	RBMN	AB			2396	C1741A	Dupont, PA	N
<p>Vandalism - Signal Mechanism Shot - Stuck in Position</p> <p>Signal C 1741, MP 174.1, Lehigh Main Line was observed by an eastbound train displaying APPROACH while the block it governed was occupied.</p> <p>Investigation revealed that the signal was vandalized by trespassers throwing rocks, breaking the lenses causing glass to fall into the SA mechanism lodging it in the Yellow position.</p> <p>Lenses and mechanism were replaced and signal tested and restored to service.</p>									

Report #	Date	Reporting Carrier	Block System	Interlocking Systems	Auto. Systems	Loco or Train No.	Device that Failed	Location	Collision or Derailment?
603	6/18/1998	CR	CTC			CP 5616	Auto. Sig. 94E	Castasauqua, PA	N
<p>Cause</p> <p>Human Error - Field Wiring Error, Inadequate Service Testing</p> <p>Signal control wires terminated in switch location junction box reconnected on opposite terminals reversing polarity and allowing Sig. 94E to display CLEAR with signal 2E at CP Caty at STOP. Wires were properly connected, all tests performed and signal system returned to service.</p> <p>Investigation is being held to determine responsibility.</p>									
607	10/22/1998	CR		Remote		Train XSM49E	4TPR Relay	Pittsburgh, PA	Y
<p>Human Error - Improper Circuit Jumper in Place</p> <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>									
612	12/12/1998	CR		Remote		OIPI-1	14W Signal, CP UN	Gallitzin, PA	N
<p>Human Error - Signal Circuit Design Error, Inadequate Service-Testing</p> <p>Westbound crew on OIPI-1 observed home signal 14W at CP "UN" displaying MEDIUM CLEAR with train RR 261 ahead in the block. Cause was found to be a design error which allowed the 14 WADR to be energized with a train in the block.</p> <p>Design revisions were issued, all signal tests were completed and the signal system was returned to service.</p>									
615	5/4/1999	CR		Remote		6664	2E Signal	CP Alum, Blairsville, PA	N
<p>Failed Equipment or Device - Insulated Joint(s)</p> <p>Engineer on eastbound PICA4 reported receiving APPROACH MEDIUM cab signal aspect with home signal 2E at STOP ahead. Problem was found to be 2 bad insulated joints at home signal 2E, which caused the DC track circuit in the interlocking to drop but did not shut off the MEDIUM APPROACH cab which was the proper cab for the route lined.</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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258	3/10/2000	NS	CTC			8373, 8792, 8051	Light Out Circuit	Reading, PA	N
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Human Error - Signal Circuit Design Error, Inadequate Service-Testing

At approximately 5:30 AM on 3/10/00, train 11AH510 was proceeding west on Track #1 on the Harrisburg Line in Reading, PA. After having passed Intermediate Signal 591 displaying a CLEAR indication, the train encountered the next signal, Intermediate Signal 601 displaying a RESTRICTING indication.

The train was brought to a safe stop, and the problem was reported to the Harrisburg Dispatcher.

Investigation of the incident revealed a lamp failure on the Green aspect of Signal 601, and a design deficiency in the light out circuit at Signal 601. The signal design at this location would cause a Red aspect to be displayed when a lamp failure condition existed on the Green or Yellow aspect (as is proper), but failed to change the polarity feeding the approach signal, Signal 591. The result was Signal 591 displaying a CLEAR indication into a RESTRICTING indication at Signal 601 when a lamp failure condition was present on the Green or Yellow aspect at Signal 601.

After the incident, changes were made in the circuit design at Signal 601 such when a lamp failure occurs on the Green or Yellow aspects at Signal 601, in addition to causing Signal 601 to display RESTRICTING indication, a polarity change will be fed to Signal 591, causing it to display an APPROACH indication. Upon completion of these changes, the signal system was restored to normal service.

635	6/8/2000	AMTK		Manual		None Involved	64L Signal at 200 (DI)	Philadelphia, PA	N
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Failed Equipment or Device - Relay

Engineman on SEPTA train no. 562 reported that, while making a move on Track No. 1 at signal 54L, he looked over and observed signal 64L displaying a STOP AND PROCEED aspect. At no time did the operator at Zoo call for signal 64L to be cleared. Upon investigation, it was found that signal 64L was displaying a bottom marker light. Further investigation revealed that the bolt holding the No. 3 front contact of the 64LBHB relay had broken and the carbon contact inside of the relay slid down and allowed a continuous electrical path between the No. 3 front, heel, and back. This allowed EBX energy to be applied to the 64LBN2L circuit, thereby illuminating the 64L marker light. The relay was removed from service, a new relay installed, circuitry tested, and the signal system returned to service. Further testing with the vendor will take place to determine the cause of the bolt failure.

Report #	Date	Reporting Carrier	Block System	Interlocking	Auto. Systems	Loco or Train No.	Device that Failed	Location	Collision or Derailment?
			Cause						
			Narrative						
243	7/19/2000	CSXT	AB			Q138-19	EB Signal, #2 Track	Scott Haven, PA	N
			Human Error - Field Wiring Error, Inadequate Service Testing						
			<p>At approximately 1830 on 19 July, Q136-19 eastbound on #2 track reported a CLEAR signal with the crossover from #2 to #1 track lined against them. The eastbound signal on #2 track was removed from service.</p> <p>The false clear signal was found to be due to a wiring error. The B-12 wire was found to be connected to the heel contact of a relay in the 51B circuit instead of to the front contact. The wiring error bypassed a relay contact which should have opened the HD circuit when the switch was reversed and set the signal to red. With this contact bypassed, the switch could be reversed without knocking down the opposing signal.</p> <p>The wiring error was corrected, operational checks were performed, and the signals were restored to service at 2310.</p>						
262	7/21/2000	NS	CTC			NS 7136	Pole Line	Milton, PA	N
			Maintenance - Pole Line (storm, excessive vegetation, rotting poles, excessive slack in wires, etc.)						
			<p>At 9:30 a.m., July 21, 2000, southbound train #H46 received a CLEAR signal, southbound at CP South Fair into a STOP AND PROCEED aspect at automatic signal 247S. Dispatcher notified of incident.</p> <p>Investigation of this incident revealed three separate trouble areas. These three conditions were a grounded code line (L-) wire at MP 246.1, a grounded line drop at Cameron Street, Milton, PA on the negative EHD line wire, and a dead comm line wire that was making contact with both the positive EHD and code line (L+) wires at MP 246.6.</p> <p>The above conditions caused false code line voltage to be applied to the HD resulting in a CLEAR aspect at CP South Fair into a STOP AND PROCEED at signal 247S. The dead comm wires were removed from both code line wires and the signal control wires and the grounded line drop cable has been replaced.</p>						
642	7/24/2000	SEPA	AB				Cable	Jenkintown, PA	N
			Failed Equipment or Device - Aerial or Underground Cable, Shorted or Grounded (not due to vandalism or digging)						
			<p>See attached [nothing attached].</p>						

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679	9/5/2001	URR		Remote		Engine 30	188 Signal	J Tower Interlocking, Duquesne, PA	N
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Failed Equipment or Device - Aerial or Underground Cable, Shorted or Grounded (not due to vandalism or digging)

On September 5, 2001 at approximately 11:00 AM, engine 30 reported an APPROACH MEDIUM aspect on signal 188 and a STOP aspect on signal 150. Upon arrival, Signal Manager [redacted] had the Union Railroad TMD (Dispatcher) request a signal on 188 and an APPROACH MEDIUM aspect displayed (Yellow over Green). The proper aspect should have been an APPROACH (Yellow). Signal 188 was taken out of service.

Plant grounds were checked and found okay. Voltages were checked between case 27 and case 186. Cable 27-186A was meggered and had several bad conductors in the 19 conductor cable. This cable was last meggered on 12/1/98. A new 9 conductor cable was run and circuits were moved to the new cable. The new cable was meggered and all signal aspects were operationally checked. Signal 188 was put back in service.

704	11/19/2002	SEPA	AB				Track Relay	Automatic Signal 330, Pennbrook, PA	N
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Vandalism - Instrument Case, Cable, or Junction Box Damaged

Vandalized relay case caused weather conditions to fail relay. See attached report from Foreman.

[following is the entire text of the attached report]

This morning at 6:30 AM signal maintainer [redacted] received a trouble report from the C&S desk that automatic signal 330 was reported dark. This signal is on SEPTA's main line just south of Pennbrook Station.

[redacted] proved the signal lamp to be good and noticed that the AR relay was up with a train in the approach block. As a precaution the maintainer set automatic 330 to STOP AND PROCEED.

The cut section case in automatic 330's block was vandalized. A solid shunt was applied across the rails at the relay end of 330AT circuit and the track relay did not respond. The track relay remained in the energized position after being physically removed from the relay rack.

The state of the relay remained unchanged because it had been exposed to the elements and was covered with ice as a result of the vandalized signal case.

Repairs were made to secure the case and the track relay and its repeater were replaced and tested.

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709	3/1/2003	DH		Automatic		Train #165	Approach Signal 652.9	Hop Bottom, PA	N
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Human Error - Signal Circuit Design Error, Inadequate Service-Testing

On Saturday, March 01, 2003, D&H train 165 was traveling northbound on the Freight Main Line. The crew of train 165 observed an ADVANCE APPROACH signal (Rule 282A) at signal 652.9, the northbound approach at CPF at 650, the crew observed a MEDIUM APPROACH signal. The crew reported the incident to the Train Dispatcher at this time and the signal system was removed from service. S&C personnel investigated the report, and determined that a Code 2 indication was being transmitted from the interlocking at CPF 650 in lieu of a Code 4. The codes were corrected to display the proper signal indication and the signal system was tested and returned to service.

{Note from Editor: The above report offers no detail as to what caused the incorrect code to be transmitted to the approach signal, and so, this false proceed is being attributed to Human Error - Signal Circuit Design Error, Inadequate Service Testing.}

714	7/13/2003	SEPA		Automatic			Cab Decoder Circuit (see below)	Juniper Interlocking, Philadelphia, PA	N
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Failed Equipment or Device - Relay

On June 29th at 08:50hrs, the C&S Trouble Desk received a report of cabs dropping to RESTRICTING after accepting interlocking signal 4N at Juniper. Signal Maintainers were dispatched to investigate the alleged report of the cabs dropping out, but they could not duplicate the reported failure.

Then on July 4th at 07:43hrs, the C&S Desk took a report of Juniper Interlocking signal 4N displaying CLEAR, then having the cabs drop to RESTRICTING with the next interlocking signal at Market East displaying RESTRICTING. Once again, Signal Maintainers were dispatched to the scene to investigate an alleged report that the signal was dropping in the train's face, and once again could not duplicate the failure.

Finally, on July 13, 2003 at approximately 18:00hrs, the C&S Desk received a report that a train operating north on no. 2 track from Suburban Station, reported Juniper Interlocking signal 4N displaying CLEAR with 180 cab in the 4T interlocking track circuit and a train ahead sitting in Market East station. The train also reported that when the train exited Juniper Interlocking and entered track circuit 2ET the cabs dropped to RESTRICTING.

Upon learning of the incident, the C&S Desk immediately removed signal 4N from service via form C&S 39 "Signal Facility Out of Service," 4N signal was set to STOP SIGNAL and Signal Maintainers were dispatched to investigate. Concurrently, Signal Foreman J. Caro was dispatched to the scene.

During the investigation, signal 4N was set to display RESTRICTING and the cab was removed from track circuits 4T and 2ET.

Using operational simulations, it was not possible to recreate the alleged false proceed. Nonetheless, from the Juniper circuit drawings it appeared possible for a failure fitting the reported description to occur if the 2EDR relay were to fail to drop away. Consequently, the 2EDR relay, Decoding Unit and Decoding Transformer were replaced. In addition, the 2EDR, 2EHR, 4AHR as well as other suspected circuits were point checked and broken down. Grounds were also checked. Finally, during testing, the 2EDR was falsely energized and signal 4N displayed CLEAR with 180 code in the interlocking and no code in track circuit 2ET.

On July 15, 2003 at 17:25hrs Juniper Interlocking signal 4N was 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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408	11/12/2003	NS		Remote		NS 3425	10WB Dwarf P/L, Signal Man Failure	GP Works, Altoona, PA	N
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Human Error - Field Wiring Error, Inadequate Service Testing

On 11/12/03 at approximately 6:40 p.m., Engineer and Conductor moving light engines NS 3425 and NS 3359 reported signal 10WB displaying a SLOW CLEAR with the next signal 12W at STOP. Investigation revealed that the internal wiring of signal 10WB was improperly wired, the green and yellow wires reversed causing 10WB to display a SLOW CLEAR instead of a SLOW APPROACH. Wiring error was made on 7/21/02 when 10WB was replaced and improperly tested. Corrections made along with proper tests and signal returned to service on 11/12/03.

723	2/24/2004	AMTK		Remote			Signal 64L	Valley Interlocking, Philadelphia, PA	N
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Human Error - Field Wiring Error, Inadequate Service Testing

On Tuesday, February 24, 2004, FRA Specialist [redacted] and Amtrak Signal Department personnel inspected Valley Interlocking signal 64L after receiving a report of a signal abnormality. This report indicated that 64L signal on number one (1) track was displaying a SLOW CLEAR signal aspect up to signal 52L at STOP. Amtrak Signal Department personnel in the presence of [redacted] were able to reproduce and verify the report. Signal 64L lighting cable wires 64L2SL and 64LSL were terminated incorrectly inside the low home signal. Inspection also found that the 64LS2L wire was not tagged inside the signal. Signal personnel corrected the wiring, meggered (tested) the cable, field tested signal relays, and made a full operational check of affected circuits. Signal system was left working as intended. Further investigation found that the last time the cable was tested was August 16, 1995. The employees who last tested the cable were interviewed, and claimed that they removed the light bulbs to facilitate testing the lighting cable, and did not remove any cable conductors. The test record that they signed was incomplete in that the 3rd conductor nomenclature was missing. The employees will be counseled for submitting incomplete test record information. Investigation cannot determine when the cable wires were incorrectly terminated. This false proceed incident will be reviewed with all C&S employees, and AMT-23 Rule 202, and AMT-27 Rule 23 will be re-enforced with all employees. These rules address safe procedures for returning vital signal circuits to service after any disarrangement of working circuits.

No. of Reports Shown in this Listing: **37**