



IronWood Technologies

Railroad Accident Reconstruction

Federal Railroad Administration

False Proceed Signal Database

January 1, 1995 through May 3, 2004

All Reports - State of Washington

Report #	Date	Reporting Carrier	Block System	Interlocking	Auto. Systems	Loco or Train No.	Device that Failed	Location	Collision or Derailment?
46	8/16/1995	UP	CTC			UP9191	None	Auburn, WA	N
<p>Human Error - Signal Circuit Design Error, Inadequate Service-Testing</p> <p>On August 16, 1995, at 2:48 (CDT) on the Seattle Subdivision at Control Point S162, northbound APSEZ-13 reported northbound signal displayed a Flashing Red over Red with the switch north of the signal out of correspondence.</p> <p>An investigation revealed a problem in the circuit design. Circuits were revised; the signal system was restored to proper operation, and all applicable tests were performed.</p>									
5	12/19/1995	BNSF		Remote		1-G83-18	Alleged 1NA Signal	21st ST. Interlocking, Tacoma, WA	N
<p>Scenario Reenacted, Unable to Duplicate, No Defects Found</p> <p>Train 1-G83-18 northbound on -1 between Ruston and 21st Street Interlocking reported they had an APPROACH indication at signal 1.6 and when they got to 21st Street Interlocking, crew claims signal 1NA went from APPROACH indication to Red. Dispatcher logs show that no signal was requested and that no signals at this location indicated CLEAR.</p> <p>Tested signal heads, cable, interlocking, and indications back to office - all tests completed with no exceptions taken. (When signal is positioned to other than the Red position with no request from the dispatcher, signal shows as an unsolicited CLEAR and is logged in the log files.)</p>									
54	1/5/1996	BNSF	CTC			Amtrak 1796	None	Ostrander, WA	N
<p>Scenario Reenacted, Unable to Duplicate, No Defects Found</p> <p>Amtrak 1796 reported that they had a Green signal at signal 96.2 and a Green over Red at Ostrander Control Point Northbound Main 1 however they went through the crossover from Main One to Main 2. Crew on train 53-866 stopped on Main 2 reported observing the signal line up as a Red over Green for Main One. Testing performed was tested for grounds, tested signal mechanism heads, route locking, approach locking, verified data recorders for the control office and for Signal 96.2.</p> <p>No exceptions taken to the signal system.</p>									

Report #	Date	Reporting Carrier	Block System	Interlocking	Auto. Systems	Loco or Train No.	Device that Failed	Location	Collision or Derailment?
57	2/20/1996	BNSF	CTC			Boeing Switcher	Full Wave Rectifier	Mukilteo, WA	N
<p>Cause</p> <p>Failed Equipment or Device - Full Wave Rectifier</p> <p>Boeing Switcher reported that the 2W (westbound signal main 2) signal appeared to be Flashing Red over Red but was very dim. Signal Maintainer found the W-EB full wave rectifier was shorted and causing the 2WLOR relay to pick and drop. With the 2WLOR picking and dropping the voltage to the red bulb was low (5 vac) and pumping, giving the appearance of a dim Flashing Red signal. Signal Maintainer dropped the power off relay to light the signal on DC and bypass the full wave rectifier as a temporary fix. Permanent repairs made to eliminate the full wave rectifiers and use only DC lighting.</p>									
73	8/24/1996	BNSF	CTC			None Involved	PSO Receiver	Signal MP 48.6 near Silvana, WA	N
<p>Human Error - Improper Frequency Selection for Replaced Component</p> <p>Signal employees while performing signal test discovered that with switch at MP 49.8 in the open position the signal governing movement over the switch at MP 48.6 didn't display STOP indication. Further investigation revealed that a PSO transmitter located 12,200' to the south was being coupled around the insulated joints by tunable joint couplers causing the receiver to remain energized. The PSO transmitter is the same frequency as the PSO used for the NWP circuit. The switch at MP 49.8 was at the time spiked and clamped out of service due to the switch frog having been removed on August 28, 1996. On May 8th the signal maintainer had been called for a Red signal at the signal governing movement over this switch and found a broken wire on the PSO transmitter used for the NWP circuit. The frequency of the PSO located south of the signal was changed to 1430 Hz. ROOT CAUSE - The frequency of the PSO located 12,000' to the south had been changed 5 years ago from the original 1430 Hz to a 970 Hz due to an equipment failure. When the original equipment was repaired it was not reinstalled. With the dry conditions the PSO was coupled around the insulated joints causing the receiver to be energized. Under most conditions this was not happening as is demonstrated by the signal trouble in May of this year and the testing that was performed when the 970 Hz PSO was installed for the NWP circuit in March of '96.</p>									
71	9/12/1996	BNSF	AB	Remote		UP 01XSEAP	Shunt Wires	Vancouver, WA	N
<p>Maintenance - Switch Shunt Wires Broken</p> <p>Section crew replaced reverse switch point and stock rail on hand throw switch at MP 136.3 and cut shunt wires from the switch circuit controller to the rail. Switch was equipped with a shunt type circuit and is in ABS territory. The signal maintainer failed to properly check shunt box and the wires that were cut were not replaced. The UP 01XSEAP was lined from Main 2 to Main 1 at Vancouver interlocking and received a Red over Yellow signal with the hand throw switch at MP 136.3 in the reverse position. The signals should have been all Red. The UP 01XSEAP ran through the hand throw switch.</p> <p>Formal investigation on the Signal Maintainer is scheduled for September 27, 1996.</p>									

Report #	Date	Reporting Carrier	Block System	Interlocking	Auto. Systems	Loco or Train No.	Device that Failed	Location	Collision or Derailment?
76	11/22/1996	BNSF	CTC			None	SB ABS Sig B Yard Switch	Vancouver, WA	N
<p>Cause</p> <p>Narrative</p> <p>Insufficient Information in Report to Assign Cause</p> <p>SB Absolute signal at B Yard Switch displayed a Yellow over Yellow when Vancouver interlocker displayed a Red/Red/Lunar. The double yellow at B Yard Switch is used to tell train crews they are taking one of many diverging routes at Vancouver interlocking. All speeds through the diverging routes are 10MPH. The lunar signal at Vancouver checks a 1800 foot OS track before the train gets to the yard. On a temporary basis, the lower yellow at B Yard Switch has been replaced with a lunar lens.</p> <p>No train reported this problem. The Yellow over Yellow was engineered and cutover for this route due to the 10 MPH speed. I personally don't like the Yellow over Yellow but question whether this is a false clear. Plan to talk more with FRA on this issue.</p>									
116	7/9/1997	BNSF	CTC			LWAS861	Wiring Error	East Columbia River, WA	N
<p>Human Error - Field Wiring Error, Inadequate Service Testing</p> <p>Signal Technician and a Signalman were testing new VHLC equipment at East Columbia River control point in preparation for signal cutover. During the testing the flex wires for the westbound signal lower head were opened and when closed the WBRE wire was placed on the terminal for WBLE which resulted in the Lunar aspect being displayed when the signal should have been Red.</p> <p>Signal wires restored to proper position and complete signal aspect checkout was conducted with no other exceptions noted. Formal Investigation schedules on both individuals involved.</p>									
123	10/8/1997	BNSF	CTC			UINBROO108	None	Towal, WA	N
<p>Scenario Reenacted, Unable to Duplicate, No Defects Found</p> <p>Signal Supervisor was notified by SCC, approximately 1415 10-08-97, that a train had passed a Red absolute signal at West Towal. After talking to NOC, Supervisor it was determined that at West Towal the replay showed no signal had been requested, no EB signal was cleared, switch was reversed, WBK was on, and OS circuit was occupied. While Signal Supervisor was in route to West Towal, Trainmaster interviewed the train crew and reported the approach signal 121.2 displayed an APPROACH, then when they were about five to six cars from the signal the signal displayed APPROACH MEDIUM. On approach to West Towal the signal displayed STOP and the train crew could not stop their train before passing the signal displaying STOP. The engine stopped approximately 15 feet past the signal. The train crew reported the approach signal was properly aligned and had a bright aspect. The day was overcast with intermittent rain showers, All tests and inspections were made at both West Towal and at the signal 121.2 with no exceptions taken to any equipment. Signal aspect observed at approx. same time of day and no exceptions taken. An event recorder has been installed at signal 121.2 and will be monitored.</p>									

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124	10/9/1997	BNSF	CTC			STACBPA109	None	Wishram, WA	N
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Scenario Reenacted, Unable to Duplicate, No Defects Found

On Friday 10/10/97, at 16:00 Pacific time, Signal Supervisor was informed by the Superintendent that there was an alleged false proceed at Wishram Center at around 22:00 Thursday night, 10/9/97. A train crew near Maryhill claimed they overheard a conversation between the dispatcher and STACBPA109 train crew about going by a CLEAR signal at Wishram Center into a Red signal at Wishram East. The CTC logs were pulled, and it was determined that they did have a signal at Wishram Center, but the aspect cannot be determined by the logs. At that time, East Wishram had not been lined yet.

Signal Supervisor and Signal Inspector tested both Wishram Center and Wishram East and could not duplicate the reported problem and took no exception to the operation of the signal system at these locations. The train crew was interviewed by the Superintendent in Vancouver when they returned Friday night, and they verified what the other train crew reported.

Signal Supervisor talked to Engineer on 10/15. He thought the dispatcher lined the signal, then took it away putting the plant in time. According to the CTC logs, this did happen earlier, but it was long before they would have seen it at Wishram Center. The engineer advised he called the dispatcher immediately to report the incident and was told by the dispatcher to continue on.

128	11/22/1997	BNSF		Manual		SPOALB		Loc. CP 143, Pasco, WA	N
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Human Error - Signal, Improper Lenses Installed

Signal Supervisor was notified by Division Trainmaster on Nov. 24 that a train reported passing a signal displaying an ADVANCE APPROACH (Rule 9.1.5) at CP 143 and the next signal was RESTRICTING (Rule 9.1.13) at CP Grapevine. The message said CP 143 was Yellow over Green and CP Grapevine was Lunar under. After Trainmaster spoke with the Engineer, he reported the train was on Main One and at CP 143 the signal aspect west bound was Yellow over Green, at CP Grapevine the route was Main One to the Grapevine Lead with a Red over Lunar. The Engineer reported he knew the route he was lined for and recognized the aspect displayed at CP 143 was incorrect and handled his train accordingly. Rule 9.1.5 ADVANCE APPROACH was NOT listed as an applicable signal for Main One West Bound in the General Order putting CP 143 in service.

Upon investigation it was found the 1WB signal at CP 143 had Green, Green, and Red lens installed, when it should have been Lunar, Lunar, Red lens. The correct lens were installed and testing completed at 1400 24 Nov 1997.

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			Cause							
			Narrative							
189	10/19/1998	BNSF	CTC			BN 7908, HPASFT	GRS SA Mechanism	Spokane, WA	Y	
			Vandalism - Signal Damaged, Caused Unintended Signal Aspect							
			<p>At Parkwater Interlocking, the BN 3018 light power took a Flashing Yellow signal eastward at Parkwater. He went through the OS and onto the East track, 1E signal did not return to the Red position when de-energized. The GRS SA mechanism stuck in the Yellow position. This gave the BN 7908 a more favorable signal (Yellow) than intended. The 1E signal did drop off when the BN7908 entered the OS. The BN7908 proceeding on the Yellow aspect struck the BN 3018 which was stopped causing @ \$200 00 damage and no injuries. We were able to duplicate the stuck mechanism in our tests. The 1E signal had been vandalized and may have caused the mechanism to stick. The GRS SA mechanism was replaced and the new mechanism was tested, and system restored to service.</p> <p>Incident called in to FRA and recorded as Case # 460535 by Rutherford.</p>							
231	8/25/2000	BNSF		ATC		BN2375	Track Ckt	Seattle, WA	N	
			<p>On 8/25/2000 at about 1100, Light Engines BN2375, BN2723, and BN 2734 were sitting on the round house track at a Red signal at MP4. Work Train W TacPac-25, BN2871, was pulling off the main line at the hand throw switch just west of the plant at MP4. When the work train cleared the main track and was on the fouling track, a switchman normalled the hand throw switch for main line traffic. After a few seconds the signal cleared to Green for the light engines to come out of the yard while the work train still occupied the fouling track. Inspections found that both long fouling jumpers that connected outside rail to outside rail of the turnout were broken off the rail. With the fouling wires broken, the system did not detect the cars shunting the track. Both fouling jumpers were repaired and tested. An investigation is pending.</p>							
236	12/8/2000	BNSF	CTC			LAUPT1 06	Relay	West Stevenson	N	
			Failed Equipment or Device - Relay							
			<p>At approximately 18:30 Pacific Time on 12/8/00, the LAUPT1 -6 was westbound at East Stevenson and viewed a Green over Red signal for westward movement. The dispatcher had West Stevenson lined for Eastward movement into the siding for the MPTLPAS2 08. At that time the MPTLPAS2 08 was having problems at Skamania, approximately 11 miles west of Stevenson. The train crew of LAUPT1 06 knew that they were going to meet an eastward train at Stevenson and stopped before they reached the westbound Red absolute signal at West Stevenson. Signal Supervisor and his testing team found while testing circuits at the West Stevenson that the WAYGP relay (yellow green repeater) remained energized approximately 90 seconds after energy was removed from the coil of the relay. This relay controls the reference chain for the Electrocode 4 unit that transmits Code 7 to the east. At East Stevenson with the power switch lined normal and Code 7 is received from the west, it is decoded and will display a Green over Red signal. The defective WAYGP relay was replaced with field testing complete at approximately 01:00 Pacific Time on 12/9/00. The relay with serial # 532459 is going to be evaluated and tested at our relay repair facility and sent to the manufacturer for further evaluation.</p> <p>NOC trouble ticket 573620.</p>							

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379	4/24/2003	BNSF		Remote		G HURINB 1 19, B	2EA Signals (SA Mech)	River Street Control Point, Tacoma, WA	N
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Human Error - Signal Equipment Improperly Installed

At about 2:30 PST the train BTACTAC in the Tacoma, WA, yard observed an EB signal on Main 2 that they felt did not go Red when the OS was occupied by EB train GHURINB at the River Street Control Point. The BTACTAC made the next move in the same direction and the same signal and took the time to observe the signal and it did not go Red while they were still in the OS section. The signal did not slot off to Red until the train hit the first track circuit east of the control point. Signal personnel found a bent contact in the plugboard of the 2EA searchlight mechanism that caused an intermittent circuit path to the mech coil. This particular signal was hit by a hanging boxcar door in November of 2002. The signal was replaced at that time, and believe the contact was bent at that time.

2EA Signal SA Mech was changed and tests made to correct the problem.

389	5/13/2003	BNSF	CTC			S-BPATAC1-10M	Phantom Aspect	East Wishram, WA	N
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Phantom Signal - Due to Sun Angle

The train crew of S-BPATAC1-10M was headed westbound on the Fallbridge Subdivision toward East Wishram and observed a Yellow/Red at the approach signal 110.1, and proceeded prepared to stop at East Wishram. At approximately 11:50 on 11/13/03 the train got out of the tunnel at M.P. 108.1, they could see the bottom head was Red, but the top head looked dark at East Wishram. Just before they got to the milepost sign at 108, both crew members said that it looked like the top head was Green. They kept looking at the signal, and at M.P. 107.9, they realized that the top head was Red and stopped about 500 feet before getting to the signal. The signal is a color light signal located at M.P. 107.7. Event recorder at the dispatcher's office showed no signal was called at this location, and the recorder in the field showed no signals lined at that time. The signal maintainer opened the circuits to the green and yellow bulbs until testing could be completed. The trainmaster rode the next train through, and said the signal looked dark, but it did have a green "hue."

Field testing showed no defects to signal equipment inside the bungalow, but the top head of the signal was not aligned the same as the bottom head, and the bulb voltage was about 0.5 volt low in both the top and bottom heads. The bulb voltage was raised to 9.4 volts and the top head was aligned the same as the bottom head. The next train crew said the signals looked good to them.

Signal trouble ticket #937845.

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381	5/15/2003	BNSF	AB			U-INBROO115	0.5 Signal	Seattle, WA	N
<p>Cause</p> <p>Narrative</p> <p>Human Error - Field Wiring Error, Inadequate Service Testing</p> <p>Crew on U-INBROO reported at approx 2320 Hrs on May 15, 2003 that the 0.5 signal on the Seattle Subdivision was Red then went Green with a train in the next block.</p> <p>Cutover of new Spokane Street CTC equipment and interface to old equipment was accomplished on May 14, 2003. During this process a N12 battery wire was inadvertently left in the wiring, and was not found during checkout. This allowed N12 and B12 to the SA mech of signal 0.5 when they should not have been causing the mech to poll to a Green aspect.</p> <p>This N12 wire was removed and the signal system tested and then returned to service at 0350 Hrs PT on May 16, 2003.</p>									
418	6/10/2003	UP	CTC			BNSF 706	None	Burbank, WA	N
<p>Loss of Shunt - Possible Rust or Foreign Material on Rail</p> <p>On June 10, 2003 at 11:57 PDT, in Burbank, WA on the Yakima Subdivision, eastbound F52817, on the main track at MP 6.3, reported the eastbound absolute signal at CP E006 (West Villard) was Red, turned Green, and then back to Red, with the block occupied.</p> <p>An investigation revealed the CAD log indicated a loss of shunt in the occupied block.</p> <p>All applicable tests were performed.</p>									
385	8/26/2003	BNSF	AB	Remote		ZCHCSSE124	Hand Throw Switch MP 4.05, Main 1 SB	ARGO Interlocking, Seattle, WA	N
<p>Human Error - Signal Circuit Design Error, Inadequate Service-Testing</p> <p>Train crew on the ZCHCSSE124 reports that they had a Yellow signal southbound Main 1 at ARGO Interlocking and then found the hand throw Airport Way Switch at MP 4.05X in the open position. This was reported at about 1950 hrs PT on August 26, 2003.</p> <p>Main 1 south of the ARGO Interlocking was taken out of service with notification to the Signal Department at about 2015 hrs PT. Tests were conducted and the Yellow signal was confirmed with the New Airport Hand Throw Switch open, when the Main 1 southbound signal should have been at Red.</p> <p>Switch was removed from service, tagged and clamped awaiting signal circuit changes. Changes to the 2-3 WD1 and the N2-3 WD1 were accomplished on August 28, 2003 and all required and necessary tests were made and switch was placed back in service.</p>									

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387	9/30/2003	BNSF	CTC			L-NWE823130	CL	Everett, Washington	N
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Phantom Signal - Due to Sun Angle

At approximately 16:05 PDT on 10-30-03, train L-NWE823130 while traveling north on main 2 ran by a red signal displaying Red over Red at Everett Jct. The train was traveling in reverse with a caboose in the lead. The crew thought they saw a Yellow over Yellow signal and found the switch lined against them in the OS section of Everett Jct. The train stopped before they ran through the switch.

The signal team was notified and all logs were downloaded and revealed that the signal was Red over Red when the train entered the OS section at Everett Jct. Further investigation by the signal team revealed lamp voltage was lower than standard by about a 1/2 volt. They also found that the signal alignment was poor. The following day, 10/1/03, the signal team along with the operating team recreated the incident at the same time of day with the same conditions. Lamp voltage was reduced to the levels of the previous day and the train proceeded north. They viewed the signal as they proceeded north taking pictures along the way. Although the pictures clearly show the signals being Red, they thought they could see a phantom aspect of Yellow over Yellow. The weather conditions were bright afternoon sun.

The repairs were that the signal was re-aligned and lamp voltages raised to BNSF standard.

No. of Reports Shown in this Listing: **20**