



# IronWood Technologies

Railroad Accident Reconstruction

## Federal Railroad Administration

### False Proceed Signal Database

January 1, 1995 through May 3, 2004

All Reports - State of Kansas

Report #	Date	Reporting Carrier	Block System	Interlocking	Auto. Systems	Loco or Train No.	Device that Failed	Location	Collision or Derailment?
<b>450</b>	1/26/1995	ATSF	CTC			N/A	Relay	Kansas City, KS	N
<b>Failed Equipment or Device - Relay</b>									
At approximately 8:45PM, January 26, 1995 dispatcher reported signal 2W at CP 148 had cleared without being requested. Signal Department investigated the reported incident and determined the 2WBHR relay failed to de-energize allowing signal 2W to reclear after the train passed 2W signal. The 2WBHR relay was removed from service and signal system tested to verify proper operation. Defective relay has been taken to Topeka for further testing to determine cause of failure.									
<b>495</b>	7/7/1995	ATSF	CTC			608W	None	Argentine, Kansas	N
<b>Phantom Signal - Due to Object in Foreground or Background</b>									
At approximately 9:53 AM, July 7, 1995, crew on H-SRBA1-07 reported their train sitting on 2 track waiting for an eastbound train that was crossing over from 2 track to 1 track. Crew observed the 4W control signal flash between R/R and Y/Y while the eastbound train was passing under signal. Signal Department was notified and made inspection and operational test of the system in question. All signal tests concluded signal system was operating properly. Subsequent investigation revealed that the signal aspects looked like a reflection or phantom aspect. Special signal hoods are being installed on the bottom side of these signals. This is being reported as a phantom aspect signal incident.									
<b>500</b>	7/19/1995	ATSF	CTC			3448	Human Error	Kansas City, KS	N
<b>Human Error - Signal, Improper Lenses Installed</b>									
Approximately 12:20 PM, July 19, 1995, train crew on the work train reported signal 176 was displaying a Yellow aspect for their route, and felt it should have been a lunar aspect. Signal Department was notified and their investigation of the reported incident verified the condition reported. Further investigation determined that the H2 head relay of signal 176 had the wrong color roundel in the left position. The H2 head relay was replaced to provide a lunar roundel instead of a yellow roundel. The signal system was tested to prove proper operation. Person responsible for condition found is under investigation so discipline can be assessed.									

Report #	Date	Reporting Carrier	Block System	Interlocking	Auto. Systems	Loco or Train No.	Device that Failed	Location	Collision or Derailment?
<b>505</b>	8/11/1995	SP	AB			SP 1KCOAF-09	Signal 7401	Walkinghood, KS	N
<p><b>Cause</b></p> <p><b>Narrative</b></p> <p><b>Maintenance - Switch Shunt Wires Broken</b></p> <p>On August 11, 1995 at approximately 8:00 AM, Engineer operating train no. 1KCOAF-09 traveling west, reported that signal 7401 at the East End of Walkinghood was CLEAR with the switch at the West End lined for the siding.</p> <p>The signalmaintainer found that the shunt wires from the switch circuit controller to the track had been cut off by the switch rod and tie plate, thus eliminating the switch protection.</p> <p>The shunt wires were replaced, and the signals were then found to operate as intended with no exceptions. The signals were placed back in service on August 11, 1995 at 9:00 AM.</p>									
<b>49</b>	9/25/1995	UP	CTC			UP3970	Signal Head	Kansas City, KS	N
<p><b>Phantom Signal - Due to Sun Angle</b></p> <p>On Septmber 25, 1995, at 07:50 (CDT) on the Kansas City Terminal Subdivision, westbound KSSI-25 on Track No. 3 at Control Point K006 reported the westbound signal Red over Yellow for his movement from Track No. 3 to Track No. 2 and the switch was lined against him.</p> <p>An investigation revealed the sun reflections in the lower signal head diffused the Red signal and made it appear to give a Yellow indication.</p> <p>The signal system was restored to proper operation, and all applicable tests were performed.</p>									
<b>50</b>	11/9/1995	UP	CTC			UP2324	None	Marysville, KS	N
<p><b>Maintenance - Improper Adjustment, Track Circuit</b></p> <p>On November 8, 1995, at 11:15 (CST) on the Marysville Subdivision, westbound LNE75-08 flagged by Red signal at Z150. The westbound train ahead of LNE75-08 was stopped by the Signal No. 153.7 with 2 1/2 cars of the train east of the insulated joints. As LNE75-08 approached Signal No. 153.7, his cab signal upgraded from Red to Yellow.</p> <p>An investigation revealed the current of the ACS east of the insulated joint at signal No. 153.7 was 3 amps which allowed the current to pass under the stopped 2 1/2 cars upgrading the ACS in LNE75-08.</p> <p>The signal system was restored to proper operation, and all applicable tests were performed.</p>									

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541	12/20/1995	SP	AB			1BSMFF19 West	Wire Eyelet	West Missler, Kansas	N
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**Failed Equipment or Device - Interior Wiring**

On Dec. 20, 1995 at 7:55 PM Engineer operating the 1BSMFF-19 reported that the westward signal 3977 on the main track was Green with the switch reversed at West Missler, Kansas. The Signal Supervisor tested the signal system and verified that signal 3977 was Green with the switch reversed. He found that the insulation on the ring eyelet or terminal had failed causing the number 4 front contact post to be connected falsely to the number 4 back contact of the 2NWPR relay thus allowing the 3977 HPR relay to remain energized when the switch was reversed.

The defective eyelet was replaced and the signals were tested and found to be working properly. The signal system was restored to service at 1:00 AM on December 21, 1995.

557	4/29/1996	SP	CTC			1MNGVCA-27	Signal 1539	E. White City, Kansas	N
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**Maintenance - Rain Entering Signal Case**

On April 29, 1996 at approximately 7:45 AM, Engineer operating train no. 1MNGVCA-27 traveling west, reported that signal 1539 was Yellow over Yellow when it should have been Yellow over Dark.

Under the direction of the Signal Supervisor, the signal system was immediately put to STOP and thoroughly tested. It was found that the Signal Maintainer working on the Electrocode box at that location the previous night, in the rain, had trouble keeping the box and the cards within dry. The wet cards caused an intermittent malfunction of the Electrocode resulting in the incorrect signal display.

When repeated attempts at drying the cards in the field were not satisfactory, the box and all of the cards were replaced. The signal system was thoroughly tested and found to be working as intended with no exceptions.

The signal system was returned to service on April 29, 1996 at 5:30 PM.

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			<b>Cause</b>							
			<b>Narrative</b>							
<b>558</b>	4/30/1996	SP	AB			1CVSHC-27	Signal 4926	Bridgeport, Kansas	N	
			<b>Maintenance - Switch Shunt Wires Broken</b>							
			<p>On April 30, 1996 at approximately 8:00 AM, Engineer operating train no. 1CVSHC-27 traveling east, reported that signal 4926, at the west end of Bridgeport, was Green when it should have been Red due to the switch being reversed.</p> <p>Under the direction of the Signal Supervisor, the signal system was put to STOP and then thoroughly tested. It was found that when the stock rail was replaced at West Bridgeport siding on April 29, 1996, shunt wires from the stock rail to the switch circuit controller were left disconnected resulting in the false proceed.</p> <p>Switch shunt wires were connected, and the signal system was thoroughly tested. All tests showed the signal system to be working as intended with no exceptions.</p> <p>The signal system was returned to service on April 30, 1996 at 11:00 AM.</p>							
<b>110</b>	2/3/1997	BNSF	CTC			Z-KCTP2-28 Eng Li	None	Argentine, KS	N	
			<b>Human Error - Field Wiring Error, Inadequate Service Testing</b>							
			<p>At 06:45 hours on Feb 3, 1997 Lite Eng 636 passed signal 2W, at CP-143, Middle Track, MP-5.5 of the Emporia Sub., Kansas Division displaying CLEAR, Green over Red. The next signal, 4W at CP-142, MP-5.8 was observed to be at Stop or Red. After stopping short of the red 4W signal the crew reported to the Kansas City dispatcher in the Soc at Schaumburg, IL.</p> <p>The incident was investigated by Gen. Supvr. Const. and Supvr. Signals. The condition was found to exist as described by the train crew. Further investigation revealed that the 4WHDP relay was energized at CP-142 when Signal 4W was at STOP causing signal 2W at CP-143 to display CLEAR. The 4WHDP relay was energized from the new wiring that was done for future track changes. No. 1 front and heel of the 4WCR had an existing circuit, 4WHDP wired in and working. An additional circuit 4WALOR was crimped into the same flag terminals (US&amp;S plug-in relays) with No. 1 front connected to 4WGB battery buss. This connection to the battery buss was the source to energize the 4WHDP relay.</p> <p>The wiring was corrected and the system checked out and left operating as intended. There is a formal investigation of this matter pending.</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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115	6/14/1997	BNSF	CTC			Train S-CHR11-14, E	None	Argentine, Kansas	N
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**Human Error - Field Wiring Error, Inadequate Service Testing**

Train S-CHR11-14, traveling westbound on the south main track of the Emporia Subdivision of the Kansas Division at MP-3.5, CP-148, 12st St., at approximately 14:43 hours on June 14, 1997, reported signal 4W displaying a Red over Flashing Yellow, signal 4W at MP-3.9, CP-147, AY Tower, was displaying a Red over Red while signal 4W at MP-4.0, CP-145, 18th St., was displaying a Red over Flashing Yellow with a route over No. 1 crossover reverse to the middle main.

The incident was investigated by Mgr Sig, Sup Sig, Gen Sup Sig Const, and Sig Mntr. The lineup was recreated and revealed that the 4W signal at CP-148 was displaying a Flashing Yellow over Red with 4W at CP-147 displaying a Red over Red with 4W at CP-145 displaying a Red over Flashing Yellow with a route over No. 1 crossover reverse to the middle main.

Further investigation revealed that the SWADGR relat at CP-147 was energized with the 4W signal at STOP. When the SWADGR relay is energized it in turn energizes the SMR circuit between CP-147 and CP-148 and allows the 4W signal to display a Flashing Yellow over Red.

The SWADGR relay should not have been energized unless the 4WAHDP was energized at CP-147. The front heel combination in the 4WAHDP relay of the SWADGR circuit was inadvertently removed during a cutover on 6/12/97 and the subsequent testing did not reveal the defect.

The SWADGR circuit was rewired to correct the defect and the route tested and returned to service at approximately 22:00 hours on 6-14-97.

179	1/1/1998	BNSF	CTC			BNSF9783, E-PAM	OS Track 5	Rosedale, KS	N
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Train E-PAMBAM-322, Engine BNSF 9783 was following the EB-FMFWKS-0130 at Rosedale, KS. The first train was lined into the siding toward the UPRR connection with the #5 switch reversed. The train disappeared from the signal system and CTC system onto dark territory. The switch was aligned normal and the 6L signal was cleared with a Yellow over Red for the second train. As the Engineer rounded the curve just south of Rosedale he saw the rear end of the first train fouling his track. He stopped his empty coal train short of the signal and called the dispatcher.

The Signal Supervisor and Maintainer arrived and observed the situation. The dispatcher was again contacted and asked for time to test before running the second train. The turnout of the 5 Track at the power switch #5 was tested and revealed the long fouling jumpers were both open and were ineffective. The 5 TR had .7 volts on the relay with the shunt down on the turnout.

The long fouling jumpers were replaced. The circuit was again tested and worked OK. The system was put back in service and left working as intended.

Report #	Date	Reporting Carrier	Block System	Interlocking	Auto. Systems	Loco or Train No.	Device that Failed	Location	Collision or Derailment?
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<b>182</b>	2/2/1998	BNSF	CTC			LKAN677	Color Light Signal	Arcadia, KS	N
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**Human Error - Field Wiring Error, Inadequate Service Testing**

Dispatcher reported to Signal Operations Center, the LKAN677, a northbound local, was following the Q-MEMSSE1-2 at North Arcadia. When the local left North Arcadia they had a Yellow signal. At the first intermediate signal, 114.6, they saw it Red, then change to Green. The local crew thought the train they were following was not far enough ahead for them to have a Green at 114.6.

Signal Supervisors were called to investigate, joining them were Signal Inspector and Maintainer.

It was determined that the color light signal at 114.6 was wired so that if the Electrocode 4 was receiving a code 2, the signal would display a Green aspect and if the EC4 was receiving a code 4, the signal was also Green. It was found that the yellow lamp was missing a strap in the signal head. Without this strap the yellow lamp would never be lit. Also, in the case, the yellow and green wires were reversed. This caused the signal to be in a "light out condition" causing the EC4 to downgrade the signal to yellow. With the wires reversed the yellow energy was applied to the green lamp wire, so that the signal would display Green any time a yellow was called for by the EC4.

The strap was installed and the wiring was corrected. The signal was tested and checked OK. The system was left working as intended.

<b>222</b>	1/25/2000	BNSF	CTC			Local	Signal 76L	Ft. Scott, KS	N
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**Human Error - Signal Circuit Design Error, Inadequate Service-Testing**

Local train, while switching train at Ft. Scott yard, reported seeing Flashing Red on main one and a Flashing Yellow on main two southbound at absolute signals South Ft. Scott, KS. Upon arrival it was determined that if code 4 was received on both main tracks from the south and either southbound signal was lined, that both the Yellow signal that was requested and Red on the adjacent main track would flash. Investigation revealed that a yellow signal repeater contact break was not in the light energy circuit.

Yellow repeater check was added to the light energy circuits, operational tests were performed and all systems working as intended.

Report #	Date	Reporting Carrier	Block System	Interlocking	Auto. Systems	Loco or Train No.	Device that Failed	Location	Collision or Derailment?
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224	2/11/2000	BNSF	CTC			XSPMWLM110	Signal 144R	Kansas City, KS	N
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**Cause**  
**Narrative**

**Vandalism - Pole Line**

XSPMWLM110 was northbound on main track 2 and reported, while a train was still in the block between Rosdale and 30th Street, North Bound Signal at Bravo displayed Yellow then Red then Green then Red then Yellow. This was reported to repeat several times. Bravo is at MP 5.6, Rosdale is at MP 3.9 and 30th Street is at 2.2. There are no intermediate signals in between these control points.

Investigation revealed bailing wire in pole line at MP 3 was shorting Main 1's 22RHD1 circuit to Main 2's 6LR1 circuit. This allowed positive battery to bypass the breaks in the track circuits north of MP 2.85. The dispatcher had requested a signal north bound at Rosdale Main 2, when the rear of the first train passed north of MP 2.85 the signal at Rosdale would clear intermittently, allowing a Green aspect to be intermittently displayed at Bravo.

Bailing wire was removed from pole line. Operation tests were performed and the system operated as designed. Cause is due to vandalism, Special Agents and police notified.

279	9/20/2000	UP	CTC			UP6558	None	Atchison, KS	N
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**Human Error - Signal Circuit Design Error, Inadequate Service-Testing**

On September 20, 2000 at 13:15 CDT, at Atchison, KS on the Falls City Subdivision, northbound CWBCD 17 was on the Main Track at MP 329.50, south of Signal Z329. The Dispatcher was able to line northbound signal at Z329 with the A-B crossover north of northbound Signal Z329 reversed.

An investigation revealed the normal switch repeater relay for the A-B crossover was not in the signal control for northbound Signal Z329.

The signal system was restored to proper operation, and all applicable tests were performed.

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<b>233</b>	10/25/2000	BNSF	CTC			BNSF 4594	Rail (Insulated)	Wellington, KS	N
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**Loss of Shunt - Possible Rust or Foreign Material on Rail**

MCILAC7-24A operating westbound on MT 1, CP 238.5 cut their power from the rest of the train and took a signal westward from MT 1 to MT 1. Then they were given a signal into the yard to pick-up 4 cars. After coupling onto the cars they were lined westward from the yard to MT 1. After traveling west of the eastbound absolute signal the dispatcher normalized the switch and then talked them back onto their train sitting east of the westbound absolute signal. The leading wheels of the BNSF 4594 remained in the OS of CP 238.5 while the power and the additional four cars were coupled onto the rest of the train. During this period of setting at this spot for @ 15 minutes the OS relay re-energized. The dispatcher then requested the 1 West signal clear. The 1 West signal cleared displaying an APPROACH MEDIUM. Upon arrival several meter readings were obtained; current on the relay was 165 milliamps, voltage on the relay was 0.73 volts voltage on the rail was 0.95 volts. A 0.06 ohm shunt was placed on the track and the track relay de-energized with 7mA of current on the relay. The shunt was removed and the relay re-energized. The resistance of the wheels was measured at 0.3 of an ohm. Samples of a light film of unknown origin covering the rail were then taken and the train was talked out of the OS. The OS track relay and a meter were observed while this occurred. The relay de-energized as soon as the wheels started to move with the current on the relay going to 3 mA with the third set of trucks and 0 with the next set of wheels. The thin layer of grease coupled with the sand from the locomotive and the moisture from the rain appeared to form an insulating material which prevented the axles from shunting the OS. The subsequent train moves through this location shunted the track without incident. A sample of this substance has been sent to the Topeka Labs for analysis.

Note on top of page: "This should not be charged as a false proceed. Rail Conamination (Rule 136.51)"

<b>284</b>	12/2/2000	UP	CTC			N/A	None	Kansas City, KS	N
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**Human Error - Field Wiring Error, Inadequate Service Testing**

On December 02, 2000 at 13:15 CST in Kansas City, Kansas on the KCT Subdivision, westbound signal at MP 5.0 was Yellow with a switch west of the signal in the reverse position.

An investigation revealed that during field wiring changes a wire had not been removed that held up the GZP relay which allowed the signal to display a Yellow (APPROACH) with signal's H relay down.

The signal system was restored to proper operation, and all applicable tests were performed.

<b>290</b>	4/11/2001	BNSF	CTC			Train YEMP2011-1	Phantom Aspect Signal	Emporia, Kansas	N
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**Phantom Signal - Due to Sun Angle**

Train crew on 3-11-2001 stated that signal 20 RB was Yellow when they proceeded by it eastbound at NR Junction. All dispatcher and field logs show the signal to be Red, switches lined against move, no request ever received. No exceptions taken to all signal testing in field. The operational opinion is that a crew expecting a Yellow aspect might misconstrue the Red aspect to be Yellow at this time of day at this time of year. Signal voltage was at standard prescribed, but a outer lens was changed that did improve visual perception.

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			<b>Cause</b>						
			<b>Narrative</b>						
<b>295</b>	8/26/2001	BNSF	CTC			Z-KCKRIC1-26A M	Line Circuits were Wrapped	Kansas City, Kansas	N
			<b>Maintenance - Pole Line (storm, excessive vegetation, rotting poles, excessive slack in wires, etc.)</b>						
			Crew of Z-KCKRIC1-26A westbound on Main 3 proceeding on Green/Red at Holiday MP 13.5 reported seeing a Yellow/Green at Int. MP 12.8 Main 1, and analyzed that the aspects display would be a conflicting route to their route at West Holiday MP 14.40. They reported situation to dispatcher and dispatcher had the westbound SCWSLBP1-25, who had not reached Morris MP 11.0, proceed prepared to stop at signals 12.8 and at West Holiday. This train crew saw the Yellow/Green at MP 12.8 and had a Red/Red at West Holiday Main 1. Signal forces were able to duplicate the Yellow/Green aspect at MP 12.8 and Red/Red at West Holiday. Line wraps in the 21 LGRN-NWBP1, 21 LGR-NWDP1 and 24 LMRN-NWBP circuits discovered and removed. ACG/DC to DC converter also added to isolate batteries on 21-LGR and 21-LGRN circuits. Line wraps due to storms in area and problem intermittent. All circuits tested and signal system returned to service.						
<b>296</b>	8/31/2001	BNSF	CTC			NS-112-28, Engine		Kansas City, Kansas	N
			<b>Phantom Signal - Due to Object in Foreground or Background</b>						
			Crew of NS-112-28 westbound stated that they had a Yellow over Red at 12th Street main 2 and a Yellow over Red at AY (CP 39) on main 2. Signals were taken out of service. The dispatcher and field logs show that a signal was never requested or indicated at AY (CP 39). There were no exceptions taken in all field tests. Signal system was restored to service. On 09/01/2001 at the same time (1059 hours) as incident with the same engine the signals were observed on main 2. Signals were Red over Red until nearing the 2W signal. At that time an eastbound train loaded with double stack containers on main 3 went by 2W signal and the top head could be perceived as Yellow, Lunar, or Red account sun reflecting off the top of the aluminum containers causing a phantom aspect. The outer lens of the H-5 (2WA) signal were removed and signal head was re-aligned. The aspects were then observed with container train on main 3 and no phantom aspects were observed.						
<b>338</b>	5/14/2002	BNSF	CTC			KCKOKC 9-14	Flashing Yellow Aspect Control Not Remo	Lebo, Kansas	N
			<b>Human Error - Field Wiring Error, Inadequate Service Testing</b>						
			Train crew of KCKOKC 9-14 westbound reported Red over Flashing Yellow aspects while making a crossover move from main 2 to 1 at Ridgeton. The next westbound intermediate signal was Red. Supervisor Lefler reported that the control circuits that produce the Red over Flashing Yellow had not been removed as planned before timetable change. Due to Hours of Service law the crossovers were removed from service for night. May 15, 2002 the Red over Flashing Yellow aspect was removed at Ridgeton and the location was tested with no exceptions.						

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**Cause**  
Narrative

**390** 12/29/2003 BNSF AB Y-HUT-1011-29 Signal Circuit Design Hutchinson, KS N

**Human Error - Signal Circuit Design Error, Inadequate Service-Testing**

The local, working between Dodge City KS & Newton KS noticed intermediate signal 2221 displayed a CLEAR aspect while the track circuit was occupied. Upon report, the signal system between stations was removed from service and signal personnel were dispatched to the area. Signal personnel confirmed this aspect and proceeded to test circuitry. During testing it was noted that although the track relay de-energized with a .06 shunt the signal still displayed PROCEED. Tests were then made to determine why this did not show up during in-service testing in 1996. It was determined that this was a center feed track circuit with the relay on the west end of the circuit containing a line break but the relay on the east end did not. The track circuit was walked and several broken bonds were discovered between the east track relay and the battery feed point. A shunt placed between east track relay and the battery feed point would deenergize only the east track relay. After replacing the bonds a shunt anywhere in the circuit would de-energize both track relays in this circuit. After consulting the engineering office a break of the line circuits was installed in the west track relay at intermediate signal 2221 and test were made de-energizing either relay of this circuit would set the signals governing movement over this track circuit to STOP. Root cause was an improper design with the in-service testing procedure being inadequate to determine the design error.

No. of Reports Shown in this Listing: **24**