



IronWood Technologies

Railroad Accident Reconstruction

Federal Railroad Administration

False Proceed Signal Database

January 1, 1995 through May 3, 2004

All Reports - Cause: Phantom Signal - Due to Object in Foreground or Background

Report #	Date	Reporting Carrier	Block System	Interlocking	Auto. Systems	Loco or Train No.	Device that Failed	Location	Collision or Derailment?
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460	2/20/1995	SP	CTC			1DVROM 20	Signal 6767W	Rio Xover, CO	N
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On February 20, 1995 at approximately 10:25 PM, Engineer operating train no. 1DVROM 20 traveling west, reported that he had a Yellow at signal 6745W approaching Rio and the next signal 6767W at Rio initially appeared to be Green, but as they came around the curve and observed the signal from a different angle, they saw it was Red over Red as intended.

Under the direction of the Signal Maintainer, the signal system was removed from service and thoroughly tested. The train crew was also interviewed. Tests showed the signal system to be working as intended with no exceptions. However, it was revealed that a yard light at Rio which was recently restored to service could be mistaken for a Green signal aspect when viewed from a certain location.

The light in question was turned off to eliminate the problem. The next day, the light cover was painted to keep crews from seeing it.

The signal system was restored to service on February 21, 1995 at 4:05 AM.

490	6/21/1995	SP	CTC			SP 1ZIWCM-21	Signal 32RB	Marne, CA	N
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On June 21, 1995 at approximately 5:45 PM, Engineer operating train no. 1ZIWCM-21 traveling east, reported that while waiting in a siding, he observed signal 32R, 1/4 miles away, and noticed that the bottom head (the 32RB) appeared to intermittently change from Red to Yellow instead of remaining Red.

Under the direction of the Signal Supervisor, the signal system was removed from service and thoroughly inspected and tested in conjunction with the dispatch center. All tests showed the signal system to be working as intended with no exceptions.

It should be noted, however, that at the time of the incident, a westbound train carrying a number of bright orange trailers was passing under the 32R cantilever, and the reflection of the afternoon sun upon these orange trailers might have washed out the Red aspect as each trailer passed by the signal, thus giving the illusion of an intermittent Red and Yellow,

The signal system was restored to service on June 21, 1995 at 9:00 PM.

Report #	Date	Reporting Carrier	Block System Narrative	Interlocking	Auto. Systems	Loco or Train No.	Device that Failed	Location	Collision or Derailment?
495	7/7/1995	ATSF	CTC			608W	None	Argentine, Kansas	N
<p>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.</p>									
31	9/18/1995	NS	CTC			Unknown	Signal	Maxwell, MO	N
<p>At approximately 7:40 AM, westbound SP Train CHRBM was in the BN siding east of Maxwell Control Point as eastbound BN Train 154 cleared them on the BN main track. Train CHRBM got a DIVERGING APPROACH indication on the leaving signal at the BN siding, and at the same time called out STOP indication which they saw on the next signal, the 48L signal at NS Control Point Maxwell. The 48L signal was about 1300' ahead of the train as it started to move out of the BN siding. The SP engineer stopped his train at a point about 780' from 48L signal to let vehicular traffic pass on highway crossing. At that location, the crew reported seeing 48L display Red over Yellow, DIVERGING APPROACH, and so the engineer started to move again toward Maxwell. When the train got within about six (6) car lengths from signal 48L, they noticed it was then Red over Red, STOP. The engineer was able to stop the train with only one truck of the lead engine past the 48L signal. The NS dispatcher had not lined a route for Train CHRBM, and this fact was verified later by reading data loggers.</p> <p>Signal personnel were called to investigate and after making appropriate operational and FRA tests, were unable to duplicate the incident or find any problem with the signal system. A phantom signal was suspected and confirmed four days later under similar sunlight conditions. It seems that the rising sun was reflected partly by some aluminum signal cases on the north side of the track, and that contributed to the phantom. A 10-degree deflecting lens on the 48LB head was removed to lessen the chance of the phantom signal. The signal was realigned to account for track curvature. The 48L signal was also changed from approach to continuously lit due to the fact that a phantom has been seen on it, and a dark signal is more susceptible to a phantom aspect.</p>									

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98	7/22/1996	NS	CTC			2822	N/A	Peru, IN	N
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At approximately 1:57 PM, Train No. 068 was traveling eastbound when each member of the crew called the eastward signal ahead at milepost D-197.3 CLEAR. About one minute later they saw that this signal was Red over Red and were able to stop short of the signal. They reported to the dispatcher that the signal fell in front of them. The dispatcher then lined the signal up for their move, and No. 068 proceeded on signal indication after inspecting their train.

The dispatcher had not lined the signal for No. 068 at the time they reported they had first seen it (verified later with recordings) so he called signal personnel to report a possible false clear. Signal personnel arrived and could not duplicate the incident. All appropriate signal tests were performed with no exceptions taken and the signal itself appeared to have no physical defects. A phantom signal was suspected but could not be checked until the sun conditions were right. The signal was placed back in service with instructions that it not be cleared east until eastbound trains had reported they were stopped at the signal.

The next day at the same time and with the same engine and road foreman engines, an attempt was made to recreate the incident. The engine approached the signal (at STOP) from the west with instructions to the crew to call out the signal indication as soon as they could interpret the aspect. Two crew members called a CLEAR two miles from the signal. The third crew member called a CLEAR 1.5 miles from the signal. The engine was stopped at the 1.5 mile point where all three were in agreement that it was a CLEAR indication. The signal maintainer right at the signal location confirmed that the signal was displaying Red over Red at this time and throughout the test. Signal personnel on the engine agreed that they saw glimmering green light. As the engine was moved toward the signal a red over red aspect was seen by all personnel at about one mile from the signal. The bright green had faded to become a dark green spot above the signal. As the engine neared the signal it was noticed that the green spot was the sun shining on the leafy limbs of a sumac tree located 40 yards behind the signal and about 15 yards off the south rail. Based on this test it was determined that the crew had seen a phantom signal produced by sun reflection off the tree leaves. The tree was cut down and the signal returned to normal service after confirming that the phantom no longer was seen.

149	12/30/1997	NS	CTC			8808-8677	Phantom Signal	Pearisburg	N
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At approximately 3:10 PM, Train No. 817 reported to the dispatcher that they had received an APPROACH DIVERGING westbound at signal 327.5, but when they arrived at the next signal, Control Point Pearisburg, the signal there was at STOP. The switch was lined normal (correct for their move), but the dispatcher had not yet requested a signal at Pearisburg for their move. Signal 327.5 should have been displaying APPROACH. No. 817 got stopped 35 cars lengths past the signal. No other trains were involved.

Signal personnel were called to investigate, but could not find a problem or duplicate the incident. The signal control on the single track approaching Pearisburg is by Electrocode 4. Signal 327.5 is a right hand ground mast colorlight. It has a three position head over a single green head which is illuminated only for APPROACH DIVERGING. All heads are phankill equipped. As the train crew said the bottom green appeared weak, a test was scheduled for the same time the following day for a possible phantom signal. That test did show a weak (whitish) phantom green on the normally dark head that was found to be caused by reflection from heavy snow on the ground in front of the signal. The sun at the time was about 40-degrees up and to the back of the signal in question. As the sun went down, the reflection got dimmed, disappearing altogether by 4:00 PM. The bottom head was turned to the field until the snow was gone.

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296	8/31/2001	BNSF	CTC			NS-112-28, Engine		Kansas City, Kansas	N
<p>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.</p>									
314	9/11/2001	NS	CTC			TR3529211	Phantom Signal	Leesville, VA	N
<p>At approximately 9:54 a.m. on 9/11/2001, Train TR 3529211, running eastbound on the siding at Amos Branch, MP V-210.0 on the Altavista District, Virginia Division, reported they had a CLEAR signal to leave the Amos Branch siding. Train TR 3529211 entered the siding at Control Point Huddleston, approached the control point at Amos Branch and stopped short of the eastbound control signal at Amos Branch which was displaying a STOP signal. At 9:54:43, TR 3529211 reported they had a CLEAR signal to leave Amos Branch. All signals at Amos Branch indicated STOP with switch normal to the dispatcher. The dispatcher had not requested the signal clear nor had the switch been requested reverse. At 9:54:55 TR 3529211 reported the signal at Amos Branch had changed to STOP after moving approximately 1 and 1/2 car lengths.</p> <p>Initial review indicated a phantom aspect. Conditions were identical the next day, 9/12/01 at 9:45 a.m., and a phantom aspect was observed by C&S and Transportation personnel from the previous day's engine position on the eastbound control signal for the siding at Amos Branch. The STOP aspect was not visible and a reflection in the clear position was observed. The sun was to the left approximately 22-25 degrees from top 90 degree. It reflected off the top signal mast pinnacle and a cable junction box located below the background to give the appearance of two spots in the same general position as a CLEAR aspect. Signals in question are color position light signals. Lamps were set at 6.9 volts with 25 watt bulbs.</p> <p>To correct the situation, signals have been refocused, 20 watt bulbs installed and voltage raised to 8.0 - 9.2 VDC on all signals at CP Amos Branch. Cable junction box was rotated so sunlight would not reflect toward oncoming train.</p>									
333	12/2/2001	UP	CTC			Unknown	None	Redding, CA	N
<p>On December 2, 2001 at 15:30 PST, at Redding, CA on the Valley Subdivision, an unknown southbound train on the main track at MP 286.90 reported that the intermediate southbound signal at MP 286.90 displayed a Yellow over Yellow aspect with the next southbound signal at North Lakehead displaying a Red aspect.</p> <p>An investigation revealed that the ditch lights, on high beam on a new Comfort Cab, were refracting off the lower ("B") head of the southbound signal at MP 286.90 causing a washed out Yellow aspect.</p> <p>The screen has been installed on the signal and the signal system was restored to proper operation, and all applicable tests were performed.</p>									

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383	7/13/2003	BNSF	CTC			X GATRED9 13	None	Somerville, TX	N
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As a northbound train was departing the yard at North Somerville Yard control point. A second northbound train, the X GATRED9-13 approached the control point on the mainline from the south. The northbound train on the mainline was to follow the northbound train departing the yard. The mainline train received a Yellow aspect at the approach signal and a Red aspect at the absolute NB mainline signal at North Somerville Yard control point. While stopped, and as the train departing the yard was occupying the OS track circuit, the engineer on the mainline train glanced up at the absolute NB mainline signal and noticed that it appeared to be displaying a Yellow aspect. The engineer reported the occurrence to the dispatching center, however, did not take the signal.

Signal and Operating Department personnel were dispatched to investigate and determined that the signal system was working as intended. It was found that light colored rock (white marble/limestone), recently spread on an access road adjacent to the absolute NB mainline signal, reflected sunlight into the H2 signal head causing the Red aspect to appear Yellow when viewed from the locomotive. The investigation team further verified the cause to be reflected sunlight when the aspect was observed Red with the sun behind the clouds and Yellow when the sun came out from behind the clouds.

The phantom signal was resolved by removing the white rock and replacing it with darker colored rock (absorbs, not reflects sunlight). In addition, ...

No. of Reports Shown in this Listing: 10