



Report #	Date	Reporting Carrier	Block System	Interlocking	Auto. Systems	Loco or Train No.	Device that Failed	Location	Collision or Derailment?
8	1/17/1995	CSXT	CTC			Train F767-17	Signal 269	Lilesville, NC	N
<p>On January 17, 1995, Train F767-17 reported APPROACH MEDIUM signal at M.P. SF-269. This signal or route was not intended by CSXT due to the signal in advance being a control signal and at STOP.</p> <p>Signal system was removed from service. Signal personnel, along with FRA personnel investigated the incident making all operational tests. The incident could not be duplicated. It was determined that the signal system was functioning as intended. Signal system is restored to service.</p> <p>(Handwritten notes on bottom of form: "CD Relay failing - pitted contacts")</p>									
450	1/26/1995	ATSF	CTC			N/A	Relay	Kansas City, KS	N
<p>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.</p>									
451	1/27/1995	CR	AB			Engine 3521	Signal 2082E	Winchester, Indiana	N
<p>Engineer on train NLP17 reported that signal 2082E displayed STOP AND PROCEED with train ML 460 ahead in the block. After ML460 cleared block of 2082E, signal displayed CLEAR aspect instead of APPROACH. Cause was found to be defective 2082EDHR relay, due to polar armature failing to move to the reverse position account frozen in normal position. Relay removed from service, signal system tested, and placed back in service.</p>									
456	2/16/1995	CR	CTC			Train HLP21B, Engi	Signal 113N	Keating Summit, PA	N
<p>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 1NTRFP circuit. Metal build up was caused by diode which was shorted, across coils of 1NTRFP relay. Shorted diode and 1NTR relay removed from service and replaced. Signal system was tested and placed back in service.</p>									

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40	4/27/1995	UP	CTC		ACS	CNW 6933		Keith, Nebraska	N
<p>On April 27, 1995, at 03:50 (CDT) westbound ELNP on Track No. 1 on the Council Bluffs Subdivision reported that the westbound signal at CP B276 was Yellow into an occupied block.</p> <p>An investigation revealed that a loose piece of solder bridged a contact and falsely energized the 1COTESER relay allowing a Yellow signal with a train ahead in the block.</p> <p>The signal system was restored to proper operation, and all applicable tests were performed.</p>									
488	6/17/1995	ATSF	CTC			UP 5055	Track Relay	Near Keenbrook, CA	N
<p>Approximately 8:19 PM, June 17, 1995, crew on the (UP) F-CNYR1-17 reported intermediate signal 672 was Yellow as they passed signal and upon approach of next intermediate signal 642 they observed an eastbound train with approximately six or seven cars in their block. Signal personnel were notified and their investigation of the reported incident verified the condition reported. Further investigation determined that with standard .06 ohm shunt (2ATR) track relay would de-energize but signal control circuit stayed energized. The track relay was found to have moisture on the contacts allowing signal control circuit to be energized with track relay in the de-energized position. The track relay was replaced and signal system tested to prove proper operation. All other relays in the instrument case were inspected and found to be moisture free. The defective track relay will be returned to US&amp;S for their investigation to determine how the moisture was allowed to enter the sealed relay</p>									
44	8/9/1995	UP	AB			PRBME	None	Des Plaines, IL	N
<p>On August 9, 1995, at 12:00 (CDT) on the New Line Subdivision at M.P. 8.8, PRBME reported eastbound signal 22 displaying a Yellow indication with 22's block occupied.</p> <p>An investigation revealed the 22H relay had a burnt contact jumpered around in the signal lighting circuit.</p> <p>The signal system was restored to proper operation, and all applicable tests were performed.</p>									
45	8/10/1995	UP	AB			UP2400	Track Relay	Adair, OK	N
<p>On August 10, 1995, at 11:30 (CDT) on the Cherokee Subdivision while the MOWDWD-10 was switching at the south end of Adair, Oklahoma, the southbound leaving signal at M.P. 454.5 displayed a Green indication with the main line track circuit south of the OS circuit occupied.</p> <p>An investigation revealed the signal being held in a Green position by the track relay for the occupied track circuit having contacts fused in the normally-energized position caused by a lightning strike. The track relay was replaced.</p> <p>The signal system was restored to proper operation, and all applicable tests were performed.</p>									

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<a href="#">47</a>	8/12/1995	UP	CTC			UP 3598	Relay, Insulated Joint	Pickens, LA	N
<p>On August 12, 1995, at 13:50 (CDT) on the Monroe Subdivision, northbound GSWWEG-11 observed a Green indication from northbound approach signal 435 while northbound signal 433 at the control point indicated a Red over Lunar.</p> <p>An investigation revealed a shorted insulated joint and track relay out of tolerance at Approach Signal 435.</p> <p>The signal system was restored to proper operation, and all applicable tests were performed.</p>									
<a href="#">513</a>	8/29/1995	CR	CTC			Train TV-79, Engin	Signal 355W	Pittsford, NY	N
<p>Engineer on train TV-79 reported that signal 355W displayed CLEAR with signal 359W at STOP AND PROCEED. Problem was determined to be defective 355WHDR, 220-ohm retained neutral, style B2, polar relay. Relay was stuck in the normal position. Relay removed from service, replacement relay installed, signal system tested and placed back in service. Relay is being taken to manufacturer to determine cause of failure.</p>									
<a href="#">565</a>	7/17/1996	SP	CTC			SP 1HOEGM-16	Signal 34LB	Harlem (West End), Texas	N
<p>On July 17, 1996 at approximately 3:45 AM, Engineer operating train no. 1HOEGM16 traveling west, reported that he went by signal 34LB, at the west end of Harlem, looked back and saw that the signal was Red over Yellow instead of Red over Red.</p> <p>Under the direction of the Signal Supervisor, the signal system was put at STOP and thoroughly tested. It was found that the H-2 mechanism at signal 34LB was sticking in the Yellow position. The H-2 unit was replaced. The signal system was tested and found to be working as intended with no exceptions.</p> <p>The signal system was returned to service on July 17, 1996 at 8:10 AM.</p>									
<a href="#">586</a>	8/29/1996	CR	CTC			Eng 8206	Auto. Sig. 1291	Smithville, OH	N
<p>Engineer on westbound train WIMA-3 reported signal 1291 West Dark and signal 1292 East CLEAR with the rear of his train in the block. Cause was determined to be a defective B2ETR track relay which remained in the energized position with a .06 ohm shunt applied to the track circuit and 18mA of current on the coils. Relay was replaced, all appropriate tests were performed, and the signal system was returned to service. Failed relay is being sent to the manufacturer for further analysis.</p>									
<a href="#">78</a>	12/15/1996	BNSF	CTC			94-650-15	Signal 92R	South Ada, OK	N
<p>At approximately 0340 hours on 12/15/96, train 94-650-15 reported absolute signal 92R, northbound home signal, South Ada, OK displayed a Green aspect with train 50-JJ005-13 still occupying the block between South and North Ada.</p> <p>Signal Maintainer found 92RHDR in the energized position with no voltage applied to the coils. Relay was replaced, operating tests performed, and system operated as intended. 92RHDR will be sent to the Springfield Signal shop for further testing.</p>									

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153	2/8/1997	UP	AB			UP9191	Relay, 75 Coder	North Platte, Nebraska	N
<p>On February 8, 1997, at 14:40 CDT on the Council Bluffs Subdivision, CJRWB-07 was eastbound on Track No. 2 at M.P. 285.5 and observed the eastbound signal at B285 was cycling from Green to Yellow with the second track ahead of the signal occupied.</p> <p>An investigation revealed a Style 75 Coder Relay that operated the eastbound signal at B285 intermittently failing.</p> <p>The relay was replaced, and the signal system was restored to proper operation, and all applicable tests were performed.</p> <p>NOTE: This report supercedes previous report of this incident dated February 14, 1997.</p>									
146	5/3/1997	NS	CTC			7129	Relay	Powder Springs, GA	N
<p>At approximately 7:35 AM, Train No. 150G102 with Engineer, Engineer Trainee, and Conductor, was northbound north of Powder Springs when they called a CLEAR indication (G/R) at intermediate signal 128.2 and then had a STOP indication at the next location, Clark control point. Train No. 688 was occupying the block north of Clark. Train No. 150 was brought to a stop before passing the STOP signal at Clark.</p> <p>The incident was reported, and signal personnel were called to investigate. They were able to recreate the problem and traced it to an intermittently sticking 180D relay. The signals are controlled by a GRS Ratecode system. Yellow code rate, which was seen being received during recreation, is 75 per minute. The 180D relay is supposed to be picked only by a 180 per minute code rate as selected through a 180 decoder. With the 180D relay stuck up, signal 128.2 would display a Green over Red instead of a Yellow over Red while a 75 rate was received. If no rate received, the signal would display stop since the H relay needs to be up in order to get any signal.</p> <p>The relay, a GRS B type, was replaced; the signals were tested and then returned to service. The relay was sent to the Signal Repair Facility in Roanoke for further investigation, results of which are pending.</p>									
133	5/4/1997	CSXT	CTC			Q68402	Signal Mechanism	Oakworth, Decatur, AL	N
<p>On May 4, 1997 at approximately 2:00 a.m. Signal Maintainer while on a trouble call discovered an improperly displayed Northward Absolute Signal at Oakworth. The signal was displaying a Red over Green aspect while train Q68402 was occupying the O.S. track section. The Signal Maintainer immediately removed the signal system from service. Investigation revealed that the bottom signal mechanism was stuck on the Green aspect. A new signal mechanism was installed and additional test were performed to the Maintainer's satisfaction. The signal system was returned to service. The signal mechanism was sent to a repair facility to determine the cause of the failure with results forthcoming.</p>									

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171	9/29/1997	UP	CTC			SP 8007	Code Relay	Lasca, TX	N
<p>On September 29, 1997 at 04:40 CDST, on the Valentine Subdivision at Lasca, Texas, eastbound 11LAAV/23, on the main track at mile pole 746.1, observed a Green eastbound signal at the west end of Lasca, with a Red eastbound signal at the east end of Lasca.</p> <p>An investigation revealed a bad order 180 code relay at west end of Lasca was responding to 75 code.</p> <p>The signal was restored to proper operation, and all applicable tests were performed.</p>									
593	1/11/1998	KCS	CTC			NS 314 A7	A04XTR	Meridian, MS	N
<p>At 02:30 hrs on 1/11/98 Norfolk Southern's NS 314 A7 was traveling north on the NS northbound main at Meridian, MS and reported they received a Yellow aspect at signal 04, when they reached the crossover they realized that #6 Switch was lined against their move.</p> <p>Please see attached memo from Signal Supervisor for details of investigation, the problem found and the preventative action taken. Also attached is a track diagram of this location.</p>									
210	7/18/1998	UP	CTC		ACS	UP 9507	75 Code Transmitter	Rawlins, WY	N
<p>On July 18, 1998 at 07:309 CDST, on the Laramie Subdivision at Rawlins, WY, westbound ZAPLA-16 observed the westbound CP-W680 was Yellow with a Green CAB, and westbound CP-W681 was Red with a Red over Yellow CAB. The ZAPLA-16 was following another train.</p> <p>An investigation revealed that the eastward 75 Code Transmitter Relay at CP-W681 was coding faster than 75 because of a bad contact, which caused the eastward cab code at CP-W680 to upgrade the code to a Green (180 code rate).</p> <p>The 75 Code Transmitter Relay was replaced, the signal system was restored to proper operation, and all applicable tests were performed.</p>									
608	10/30/1998	METX		Manual			38RAHDR	Tower A-2, Chicago, IL	N
<p>Train took signal 38R after past insulated joints in plant signal stayed Yellow. Mtr. Took track 2 out of service and started to trouble shoot. Found relay 38RAHDR not dropping with no battery on it. Replace relay, tested system and put back in service.</p> <p>Time out: 11:30 AM Back in Service: 2:30 PM</p>									
613	3/8/1999	MNCR		Remote			Track Repeater Relay	CP230 - Cos Cob, CT	N
<p>RTC reported @ 0745 train # 1926 going westbound did not indicate a track occupancy on the 2T circuit and the 2W signal was displayed on the model board. Track 2 was taken out of service and the 2W and 2E signals put to STOP. The cause was found to be that the 2TPR relay (Track Repeater Relay) remained in the energized position when track 2 was shunted. Power was removed from the relay and the relay continued to remain in the energized position. After several hours the relay started to operate as intended. The relay was replaced and the circuit was tested and worked as intended.</p>									

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<b>616</b>	6/9/1999	FEC		Manual		420	1NDR Relay	Pompano, Florida	N
<p>On June 9, 1999 at approximately 8:43 PM FEC train 21609 engine 420 reported signal 1N displayed a Red over Green aspect DIVERGING ROUTE CLEAR at Pompano North Interlocking with train 9809 occupying the block in advance. Signal 1N should have displayed Red over Red STOP under these conditions. Both trains were stacked in Pompano siding and train 21609 was following train 9809 in a northward direction after meeting southbound train 10509. The cab signal on train 21609 went to single Red and remained at this condition immediately after entering the OS track and no incidents occurred as a result of the wayside signal failure. After arrival at the scene FEC personnel were able to simulate the conditions and duplicate the failure.</p> <p>The cause of the failure was determined to be the 1ND relay that was observed mechanically stuck in the energized position by FEC signal personnel. Contacts of the 1ND relay operate the clear control on the searchlight mechanism for the 1N signal that caused the B head of the 1N signal to display a Green aspect. The relay was removed from service and replaced in kind. Operational tests were made and the signals restored back to service.</p> <p>The 1ND relay is a Type B plug in relay serial number H76-96N, Drawing Number 56001-925 manufactured in 1976 by General Railway Signal Co. Rochester NY. The relay will be sent to the manufacturer for inspection by an independent lab to determine the cause of the failure. Test results are forthcoming.</p>									
<b>635</b>	6/8/2000	AMTK		Manual		None Involved	64L Signal at 200 (DI)	Philadelphia, PA	N
<p>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.</p>									
<b>273</b>	6/12/2000	UP		CTC		UP-9709	Relay	Hood River, OR	N
<p>On June 12, 2000 at 14:49 CDT, at Hood River, Oregon on the Portland Subdivision at MP 61.40, westbound IG2SE 10 had gone by a Green westbound signal at MP 61.50 and looked back to see the eastbound signal at MP 61.40 displaying a Yellow aspect.</p> <p>An investigation revealed a broken armature pin in the 614 HR relay allowed the armature to twist allowing contact connection that false picked the HPR relay for the eastbound signal at MP 61.40, which caused the eastbound signal at MP 61.40 to display Yellow.</p> <p>The signal system was restored to proper operation, and all applicable tests were performed.</p>									

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<a href="#">266</a>	8/26/2000	NS	CTC			BN 9647, BN 9648	Relay	Hammond, IN	N
<p>At approximately 6:40 p.m., Saturday, 8/26/00, the crew of eastbound CSX train #939 with Engineer, Conductor, and Engineer Trainee, was moving on track #2 and went by signal 2E at CP 507 which was displaying a STOP aspect. Crew reported they had a CLEAR aspect at CP 508, the approach to CP 507, and were unable to stop.</p> <p>Upon investigation, C&amp;S personnel did observe the 508-2E signal display a CLEAR indication on track #2 EB with a train in the block immediately ahead.</p> <p>It was determined that the 1EHPR signal control relay was sticking up when no energy was being applied to the coil due to worn and pitted contacts. Relay was replaced and signals restored to service.</p>									
<a href="#">265</a>	10/7/2000	NS	CTC			BNSF 9730	Relay	Pinola, IN	N
<p>At approximately 8:30 a.m., October 7, 2000 the train crew of #41M were stopped at the 2W signal at CP 466 when they observed the signal upgrade to APPROACH with a train setting, and visible, in the block ahead.</p> <p>Investigation by C&amp;S personnel confirmed what the train crew saw and it was confirmed that signal 2W improperly displayed an APPROACH aspect with track ahead occupied. From the tests and simulations we identified a failure of the 4661 WHPR relay, a GRS 194 ohm Slow Release Relay, which remained stuck "up" when the battery to its coils was removed. Relay was replaced and signal 2W was returned to service at 10:30 p.m., October 7, 2000.</p>									
<a href="#">236</a>	12/8/2000	BNSF	CTC			LAUPT1 06	Relay	West Stevenson	N
<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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<a href="#">254</a>	12/21/2000	CSXT	CTC			K996-20	None	Mango, FL	N
<p>On December 21, 2000, K996-20 while traveling SB reported the SAS at NE Mango displaying an alleged CLEAR indication. K996-20 reported a STOP indication at the SAS SE Mango coming to a controlled stop beyond the limits of the SE Mango. Signals were immediately removed from service at the NE and SE Mango. Additionally the train dispatcher reported an inability to control the signal at the NE Mango prior to the arrival of K996-20. K996-20 was instructed to handle the switch NE Mango from motor to hand lining the switch reverse and restore the switch to motor position. K996-20 failed to perform this instruction. Subsequent investigation revealed no exceptions. Additional field investigation was performed by CSX and the signal mechanism apparently operated slower than normal. The signal mechanism was replaced and after full operational testing the signal was restored to service. On January 4th FRA performed a field investigation and made an assumption alleging that the signal mechanism was slow on December 21, 2000. We are reporting this but we do not consider this to be a false proceed.</p>									
<a href="#">659</a>	2/28/2001	METX	AB			Train 730 (MU)	22 HD Relay	Richton Park, Illinois	N
<a href="#">661</a>	3/13/2001	ST		Automatic			GRS B-1 Relay	Detroit, Maine	N
<p>Local WA2 (Conductor, Engineer) - cars 5/10, power 72-77 POBK (Conductor, Engineer) - cars 7/69, power 317-216-372-329</p>									
<a href="#">673</a>	6/25/2001	KCS	CTC			KCS 685	B1 Relay	Page, OK	N
<p>At 13:27hrs on 06/25/01, train #109824 North left the switch at North Page on signal indication traveling north. The dispatcher requested a follow up signal behind train #109824 for train 108224 to follow him north. At 13:37hrs on 06/25/01, train #108224 North with engines KCS685, KCS717, IMRL213, KCS2040, and KCS2034 with Engineer [redacted], and Conductor [redacted], and a consist of 34 loads, 47 empties, 5548 tons and 5192 feet, arrived at the north siding switch at Page, MP 353.9 with a Green over Red displayed for a north bound move. Train #108224 confirmed the location of train #109824 and realized he was only by the first signal north of Page at MP 351.8. Upon inspection by Signal Engineer [redacted], Signal Supervisor [redacted], and Signal Supervisor [redacted], we were able to reproduce the failure. We discovered that the north bound Yellow Green Repeater (12YGPR) relay at the first intermediate north of Page at Mile Post 351.8 was failing to drop out causing a Code 4 (Electrocode) to be transmitted south to the north switch at Page. There was no visible evidence for why the relay was hanging up. It would remain up even when gently removed from the plugboard. The information on the defective relsy is as follows: GRS B1, 300 ohm, D.C. Neutral, Drawing #56001-750 GR1, Serial #142277, manufacturer's inspection date is 5/14/53.</p>									
<a href="#">299</a>	11/15/2001	BNSF	CTC			L TWI8101 15	SA-1 Signal Mechanism	Minneapolis, MN MP 16.3, Control Point	

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362	12/5/2002	NS	CTC			NS 9515	Thermal Timer Relay	Reid, KY	N
<p>On Thursday, December 5, 2002 at 2:30 p.m., train #230, lead unit NS 9515, reported the northbound automatic signal at MP 356 changing from APPROACH to CLEAR prior to passing the signal. The next signal at Reid, Control Point MP 32.0 was a DIVERGING CLEAR into number two track. The correct aspect for the signal at 35.4 would have been APPROACH to APPROACH DIVERGING.</p> <p>Investigation of the above occurrence was duplicated and found to be a thermal time relay at the 35.4 automatic signal. The time was designed to hold off the signal upgrade at 35.4 for 8 seconds. This allows the northbound signal to remain at APPROACH until the track code changes to positive and the minus codes for the approach is lost.</p> <p>If the timer operates less than the required time the coding of a minus for the APPROACH and a plus for the APPROACH DIVERGING gets decoded as a minus plus (CLEAR).</p> <p>The timer relay was replaced and the signals returned to service. The particular timer is a type B1 GRS LOS timer and is common on the first and second districts of the CNO&amp;TP. All locations are being inspected for style of timer relay and operation is being checked.</p>									
413	4/23/2003	UP	CTC			(WB) UP 9318, (EB	Code Xmit Relay	Kramm, CA	N
<p>On April 23,2003 at 13:20 PDT, in Kramm,CA on the Canyon Subdivision, two incidents happened. Westbound WDMELB/22 reported westbound signal at 216.10 was Yellow then turned Green until he passed it, and the next absolute signal at CPF215 was Red over Yellow.</p> <p>Eastbound IOASC/22 reported that eastbound absolute signal at CPF213 was Yellow, turned Green, and then back to Yellow while he approached the signal.</p> <p>An investigation revealed a bad 75 code transmitter relay common to both track circuits feeding from CPF215.</p> <p>The code relay was replaced, and all applicable tests were performed.</p>									
415	5/3/2003	UP	AB			UP 4580	H2 Mechanism	Wells, NV	N
<p>On May 10, 2003 at 14:40 CDT, in Wells, NV on the Lakeside Subdivision, eastbound 1ZLTG1 10, on the #2 track at mile post 605.2, reported the eastbound signal at MP 605.2 displayed a Green aspect with the next block east occupied.</p> <p>An investigation revealed the H2 mechanism at the eastbound signal at MP 605.2 was stuck displaying a Green aspect.</p> <p>The H2 mechanism was replaced and all applicable tests were performed.</p>									

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713	5/15/2003	ST	CTC			Train ED2	VTB Relay	Control Point CPR-9, Deerfield, MA	N
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Train ED2 at CRML location CPR-9 received a MEDIUM CLEAR (RGR) aspect when routed toward Deerfield Yard tracks at CP 384. Aspect should have been RYR. Track speed for all moves on this track is 10 MPH. Investigation determined that a defective VTB coded track relay caused this problem. Operation was investigated, application of component modified & system tests performed to assure proper function.

[Editor's Note: What is meant by "application of component modified"??]

714	7/13/2003	SEPA		Automatic			Cab Decoder Circuit (see below)	Juniper Interlocking, Philadelphia, PA	N
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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.

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401	8/9/2003	NS	CTC			9526	B1 Biased Relay	Flovilla, GA	N
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At approximately 12:56 p.m. on August 9, 2003, northbound train 264 ran through a power switch lined against them at Flovilla, Georgia, MP 203 H under a CLEAR aspect. The GRS 5H dual control machine was in the reverse position in hand throw operation. The machine indicated normal correspondence allowing the dispatcher to request and clear the northbound signal for the main track. Train 264 accepted the signal and ran through the switch stopping clear of the OS track. Signals at this location are color light signals, no exceptions were found with the signals, cable or switch machine.

Investigation revealed that the NWP switch correspondence relay had remained in the falsely energized position, after voltage had been removed from the relay coils. This allowed the switch to falsely indicate it was in the normal position.

The control point data logger showed the relay remained in the energized position with the switch machine in hand throw operation and laying in the reverse position. This allowed northbound signal to display Green over Red or CLEAR, and allowed the approach signal at CP Sandy to display a CLEAR aspect for train 264.

The fault and signal display was reproduced and verified during testing. The faulty relay is a 500 ohm biased relay and was removed from service on 8/9/2003.

403	8/24/2003	NS	APB			8923	68H Relay	White Siding, TN	N
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On August 24, 2003 at 3:30 p.m. CDT, eastbound train No. 334, while stopped in the East End of White Siding observed the eastbound mainline signal MP 540.2A display a CLEAR signal. Westbound train 391 was running on CLEAR signals in the automatic block territory between the West End of Rossville and the East End of White Siding. The eastbound signal at the E.E. White Siding displaying a CLEAR did not downgrade to STOP until westward train 391 passed the automatic signal at MP 538.8A. Trains operate under track warrant authority in the Automatic Block Signal territory.

The failed condition was observed by C&S Supervisor while performing simulation tests. The failure was determined to be the 68H relay at automatic signal MP 536.8A. In attempt to duplicate the actual conditions a heat lamp was used to apply heat to the 68H relay. After applying heat for 30 minutes the relay remained energized without power for 4 minutes. The relay failed the field drop away test with a value of 1.8 milliamps. The last relay test was performed on September 9, 2002 with a drop away value of 4.7 milliamps. Required test interval is 4 years. The relay was manufactured by GRS with a tag date of March 27, 1971. It is a 900 ohm neutral relay. Relay is being shipped to Texas Transport Institute, College Station, TX for further testing.

Report #	Date	Reporting Carrier	Block System Narrative	Interlocking	Auto. Systems	Loco or Train No.	Device that Failed	Location	Collision or Derailment?
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<b>405</b>	8/27/2003	NS	CTC			8818	B-1 Biased Relay	Mansfield, OH	N
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At 6:03 p.m. August 27, 2003, train 528, traveling from track #2 to track #1 westbound at CP Lucas, reported the home signal was LIMITED CLEAR (Red over Flashing Green). 528 reported his next signal, intermediate signal 1727-1W, displayed STOP AND PROCEED. Train 528 brought his train to a normal stop. No other trains were involved.

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

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

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

<b>425</b>	10/21/2003	UP	CTC			BNSF 8819	2 Relays	Castle Rock, CO	N
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On October 21, 2003 at 13:20 MDT, in Castle Rock, CO on the Colorado Springs Subdivision, northbound BNSF 8819, on the main track at MP 31.6, reported the northbound signal at MP 31.6 was Flashing Yellow and the next northbound signal at MP 29.4 was Red.

An investigation revealed a high resistant contact on the coded 20T track relay along with an internal jumper missing in the 20HR relay allowing northbound signal at MP 31.6 to alternately display Yellow and Dark.

The relays were replaced and all applicable tests were performed.

<b>429</b>	12/9/2003	UP	CTC			UP 9072	Code Following Relay	Ft. Hancock, TX	N
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On December 9, 2003 at 15:26 CDT, in Ft. Hancock, TX on the Valentine Subdivision, westbound IMNLB 07, on the main track at MP 780.7, reported the westbound approach signal to SA738, East Iser, was Yellow over Yellow, and the next westbound signal at SA738 was Red.

An investigation revealed a defective 120 CDF (code following relay) allowed the WDDR to energize while receiving 75 code.

The relay was replaced, and all applicable tests were performed.

Report #	Date	Reporting Carrier	Block System	Interlocking System	Auto. Systems	Loco or Train No.	Device that Failed	Location	Collision or Derailment?
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433	1/2/2004	CSXT	CTC			071502	Relay	North End of Indiantown, Indiantown, FL	N
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At 1430 hours on January 2, 2004, train crew report on O71502 while operating southbound on signal main track into signal siding over reverse switch, observed and reported a MEDIUM APPROACH (Red over Yellow) into the siding with a set of cars setting in siding. The signals were removed from service at 1645 hours and a team was dispatched to the site to investigate this event. Investigation revealed that the RBCTPR relay, a Track Coding Relay, had bridge contacts, allowing the Code Following Relay (RBTR) to be energized. Further investigation revealed that the RBCTPR relay contacts were allowed to become bridged from the constant shunting of the track from the train cars left in the signaled siding for a long period of time. The constant coding at a high current value caused the contacts to become pitted and bridged. The cars were stored in the siding three weeks prior to the incident.

The RBCTPR relay was replaced and a circuit design to open the negative coil path through the RBCTPR relay coding contact. Signals were restored to service at 1400 hours on 1/9/04.

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