Report #	Date	Reporting Carrier	Block System	Interlocking	Auto. Systems	Loco or Train No.	Device that Failed	Location	Collision or Derailment?
543	1/3/1996	KCS	CTC			KCS 621	?	Converse, LA	N

Narrative

At 17:00hrs on 1/3/96 an Extra 621 North the MPASH1 with Engineer, Conductor, Brakeman Trainee, and Road Foreman of Engines was traveling north on the main line at Mile Post 611.50 South Converse and received a CLEAR signal indication. Upon arriving at North Converse, Mile Post 609.64, they realized there was a dark north bound signal. When the train was stopped the Brakeman Trainee stepped out of the cab and looked back south and could see the south bound main line signal and reported it to be CLEAR. The other crew members stepped out to look at the signal and didn't see the signal CLEAR, the brakeman said that it must have went out. [The Brakeman Trainee] has approximately 8 weeks service with the KCS RailRoad. The Signal Supervisor and Signal Maintainer performed all applicable tests and the condition could not be reproduced. The following evening the Signal Maintainer went to the site again on 1/4/96 around the same time of the incident and found that there was a green porch light in the background of the signal at a house near the track, (see Picture Attached) that could have possibly been mistaken for a Green signal. The Signal Maintainer talked to the home owner, explained the situation and got him to change the light bulb to a regular white light. Please find attached a picture of the location, the test records and statements from the Signalmen performing the test and a train report including consist.

54	1/5/1996	BNSF	CTC			Amtrak 1796	None	Ostrander, WA	N

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 ine 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.

No exceptions taken to the signal system.

544	1/10/1996	SP	CTC			SP 1RVASM-08	Signal 6022	East Mounds, CO	N

On January 10, 1996 at approximately 4:20 PM, train no. 1RVASM-08 traveling east, was in the siding at the east end of Mounds waiting for train no. 10ANSF to pass on the main. After the 10ANSF passed by signal 6022 on the main line, the Roadmaster noticed that signal 6022 appeared Green. The train crew on the 1RVASM-08 also reported that the signal appeared Green.

Under the direction of the Signal Supervisor, the signal system was inspected and thoroughly tested. All tests showed the signal system to be working as intended with no exceptions. [The Signal Supervisor] returned the next day at about the same time to observe the signal and noted that as the sun started to shine on the green lens the signal appeared to be Green. Phankill screens were installed on all the eastbound signals at East Mound to correct the problem.

The signal system was restored to service on January 10, 1996 at 11:00 PM.

Report #	Date	Reporting Carrier	Block System / Interlocking / Auto. Systems	Loco or Train No.	Device that Failed	Location	Collision or Derailment?
545	1/15/1996	CR	CTC	Amtrak #277, Engin	Signal 1212N	Styvesant, NY	N

Narrative

Engineer on Amtrak #277 reported that cab signal changed from CLEAR to RESTRICTING at cut section 122.9 and signal 4N at CP124 was Dark. Cause was found to be A2TR relay at C.S. 122.9 being inverted due to impact to instrument case from a deer which was struck by a train. Relay was found to be hanging upside down with its front and heels made while in the de-energized position. Relays were changed out and signal system tested and returned to service.

546	1/17/1996	SP	AB	Amtrak No. 14	Signal 344	Benicia, CA	N

On January 17, 1996 at approximately 10:03 PM, the Martinez Bridge Operator reported that Amtrak train no. 14, traveling east, went by signal 344 and that the signal remained Green after the train had passed and was still occupying the track circuit immediately behind signal 344.

Under the direction of the Signal Supervisor, the signal system was thoroughly tested. The cause of the problem was found to be that tree branches were pushing down on the line wires causing the wires to wrap. The trees were removed, the wrap was undone and the slack wire pulled tighter. The signal system was again inspected and tested and found to be working as intended with no exceptions.

The signal system was returned to service on January 18, 1996 at 6:47 AM.

547	1/18/1996	SP	AB	SP 1PXLAM-17	Signal 8220	Hyder, AZ	N

On January 18, 1996 at approximately 7:30 AM, Engineer operating train no. 1PXLAM-17 traveling west, reported that he was approaching the west end of Hyder at restrictive speed because of a Red signal at 8219 and saw that the opposing signal, the 8220, displayed a clear H are over a restrictive D arm before the signal went into the correct position of a restrictive H over a restrictive D.

Under the direction of the Signal Supervisor, the signal system was thoroughly tested. All tests showed the signal system to be working as intended with no exceptions.

The signal system was returned to service on January 18, 1996 at 4:00 PM.

548	1/19/1996	SP	CTC	Utah Rwy. Helper	Signal 6327E	Lynn, CO	N

On January 19, 1996 at approximately 1:55 PM, Engineer operating Utah Railway Helper Engine No. UR9002, moving east past Lynn Crossover, reported that he looked back behind his train and observed that the westward absolute signal (6327E) appeared to be displaying a Green over Red aspect.

Under the direction of the Signal Supervisor, the signal system was thoroughly tested and found to be working as intended with no exceptions.

The signal system was restored to service on January 19, 1996 at 8:00 PM.

Report #	Date	Reporting Carrier	Block System / Interlocking / Auto. Systems	Loco or Train No.	Device that Failed	Location	Collision or Derailment?
549	1/20/1996	CR	AB	Train TV2M, Engine	Automatic Signal 732E	Womelsdorf, PA	N
			Narrative: Engineer on train TV2M observed automatic signal 732E displaying a CLEAR aspect with train PIM09 ahead, occupying the block. Failure was found to be ice inside of 142 TR track relay causing relay to be held in the energized position, due to flood conditions which caused over two (2) feet of water to enter instrument case. Relay replaced, instrument case dried out, signal system tested and returned to service.				
550	1/21/1996	CR	AB	No Train Involved	Automatic Signal 111W	Fleetwood, PA	N
			Narrative: Signal maintainer observed automatic signal 111W displaying a CLEAR aspect with a train occupying the block. Failure was found to be ice inside of 111TR track relay causing relay to be held in the energized position due to flood conditions. Relay replaced, instrument case dried out, signal system tested and returned to service.				
101	1/24/1996	UP	CTC	None	None	Goodwin, TX	N
			Narrative: On January 24, 1996, at approximately 1500 CST at the north end of Goodwin, Texas, on the Austin Subdivision, FRA Signal and Train Control Inspector observed the red aspect of the bottom head of the northward absolute signal fade from Red to Yellow. An investigation revealed that the lower head needed to be refocused; the lower head was refocused.				
551	1/26/1996	SP	CTC	SP 1LBCXT1-25	Signal 54RA	Mortmar, CA	N
			Narrative: On January 26, 1996 at approximately 12:00 PM, Engineer operating train no. 1LBCXT1-25 traveling east, reported that signal 54RA at the west end of Mortmar displayed a Green aspect and the next signal at East Mortmar was Red and that he had overrun the Red signal. Under the direction of the Signal Supervisor, the signal system was thoroughly inspected and tested and found to be working as intended with no exceptions. Replay showed the signal at East Mortmar was not requested and the 54RAHR was de-energized with the polar contacts in the reverse position indicating that signal 54RA was Yellow when the train passed it. The signal system was restored to service on January 26, 1996 at 5:30 PM.				
552	1/28/1996	CR	AB	Train HLPR 40E, En	Automatic Signal 752	Atwater, Ohio	N
			Narrative: Engineer on HLPR 40E reported that automatic signal 752 displayed a CLEAR aspect with a train occupying the block. Train moves were simulated and at no time could this condition be re-created. Upon investigation, wrapped live wires were found at mile post 75 due to tree in pole line. Tree was removed, all signal components tested and inspected. A 24-hour watch was placed on signal 752 with no exceptions taken and signal system was returned to service. A recording device was installed at signal 752 to monitor the location. Also circuit changes are being made to eliminate the pole line involved.				

Report #	Date	Reporting Carrier	Block System	Interlocking	Auto. Systems	Loco or Train No.	Device that Failed	Location	Collision or Derailment?
			Narrative						
55	1/29/1996	BNSF	CTC			P-CHLA1-29 Engin	FR-2	Edelstein, IL	N

Westbound Train P-CHLA1-29 reported passing Signal 1361 displaying a Green aspect and next signal, westbound control signal at Edelstein, was Dark over Red. Maintainer and Inspector found the FR-2 , the device that supplies lamp voltage, was partially failing, causing the top lamp on the westbound control signal to be very dim, but enough current to hold the light out relay. The defective FR-2 was replaced, the light out relay tested for proper operation and signal system tested.

80	1/30/1996	CSXT		Remote		Train Z24020	#3 Track Circuit	GTW Crossing, Toledo, OH	N

On Tuesday, January 21, 1997 Norfolk Southern Train Y13 reported a RESTRICTING eastbound signal at GTW Interlocking while train Z24020 was fouling the crossing diamond.

CSXT Train Control personnel removed the signal system from service for this route. CSXT Train Control personnel investigated the incident and determined the last car of the train was bridging the track circuit between the dead section of the diamond and the insulated joints at the number 2 signal. The car length was 80 feet and the track circuit length was 37 feet 6 inches.

This route remains out of service with design changes scheduled for completion on January 31, 1997.

81	2/5/1996	CSXT	CTC			Train Q21603	Eastbound Signal	Brentwood, MD	N

On February 5, 1996 at approximately 1200 hours, eastbound train Q21603 reported he had an APPROACH indication at Brentwood Intermediate (M.P. BA35) with train Q29203 ahead in block.

Signal system was removed from service.

Signal personnel investigated the incident making all required tests. It was determined that the signal has been vandalized, damaging 4 signal lamps and that the cover on the back of the yellow lamp unit was off.

Repairs were made and signal system returned to service.

Report #	Date	Reporting Carrier	Block System	Interlocking	Auto. Systems	Loco or Train No.	Device that Failed	Location	Collision or Derailment?
			Narrative						
553	2/6/1996	IHB		Remote		CP 5665	Absolute Signal 8E	CP Hill, Bellwood, IL	N

At approximately 1:15 PM, Tuesday, February 6, 1996, the Engineer of a CP train, Engine 5665, reported that absolute signal 8E momentarily cleared from Red to Green and back to Red with an opposing train setting at the opposing signal on the same track.

Our dispatcher stated and review of the control machine tapes verified that no attempt was made to clear signal 8E for his movement.

Signal personnel were dispatched to the scene and conducted a complete inspection of the interlocking and signal in question with no exceptions found. Attempts to duplicate the existing situation could not reproduce the alleged failure.

All tests and inspections were completed with no exceptions taken and no cause found.

It should be noted that at approximately 5:15PM that same day, this crew passed an absolute signal displaying a STOP indication at Grand Trunk Interlocking, Riverdale, IL, and were removed from service by CSX Transportation Management.

We have no results of any investigation or reports on their status since this is a CSX crew and Grand Trunk Interlocking is not under IHB control.

56	2/11/1996	BNSF	CTC			Train #01-127-11	Signal 116R	South Amory, MS	N

Northbound BNSF 01-127-11 stated that northbound signal 116R, South Amory displayed a Green over Red aspect. The next signal, 124RA, North Amory displayed a Red aspect. At this time, North Amory was lined for a southbound move with a reverse switch.

Signal Supervisor and Maintainer investigated. Incident could not be duplicated. Signal operation center log indicated no exceptions.

Operational tests and inspections were performed with no exceptions noted.

A recorder was installed at South Amory to monitor signal operation.

554	2/14/1996	SP	CTC			SP 1-6A-13	Signal 986	Troublesome, CO	N

On February 14, 1996 at approximately 5:08 PM, Engineer operating train no. 1-6A-13 traveling east, reported that signal 986 was Red over Yellow, but as he got closer, he glanced at the signal and observed that it was Yellow over Yellow.

Under the direction of the Signal Supervisor, the signal system was thoroughly inspected and tested. All tests showed the signal system to be working as intended with no exceptions.

The signal system was returned to service on February 15, 1996 at 2:00 AM.

Report #	Date	Reporting Carrier	Block System	Interlocking	Auto. Systems	Loco or Train No.	Device that Failed	Location	Collision or Derailment?
			Narrative						
57	2/20/1996	BNSF	CTC			Boeing Switcher	Full Wave Rectifier	Mukilteo, WA	N
			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.					
58	3/1/1996	BNSF	CTC			BN8014	Track Circuit	Lohman, MT	N
			Extra 8014 East waiting behind absolute signal behind units 2267 (lead) & 2079 (trail). While light engines were proceeding through block, crew observed absolute signal go to Green and back to Red several times. Train crew reported improperly displayed signal (signal was CLEAR for only a few seconds), and dispatcher talked crew by signal. Data logs at location indicate that H recovered for several seconds several times. Track circuits were checked and all were found properly adjusted. Shunt tests were made throughout block and all OK. We assume that there was a loss of shunt on light engines proceeding through block at 50M.					
59	3/15/1996	BNSF	CTC			Train 05 014Y 14th	Signal 320.0	Saco, MT	N
			Train 05 014 14th was eastbound observed Flashing Yellow at signal 322.6. While approaching signal 320.0, he observed a yellow signal. Approximately five to ten cars from signal, signal appeared to be Green. They reduced speed, came up to control point and observed Red over Lunar. Train stopped on switch and notified dispatcher. System was tested and operated as intended. Bulb voltage was at eight volts. Due to time of day and low bulb voltage, it is believed sunlight reflected in green head and washed out weak Yellow signal. We observed signal at same time of day and believe a train crew would have to use their imagination to believe they saw a true Green signal. Phan kill was added to signal to cut down possibility of mistaking the Green aspect.					
555	3/19/1996	AMTK		Remote		268	Cab Signals	Cranston, RI	N
			Train 177 with Eng 268 traveling west track two was lined to cross from track two to track one at Cranston Int. The 2W home signal was reported to display a MEDIUM CLEAR, and as the train (177) proceeded into the interlocking, the cab signal displayed APPROACH MEDIUM. As train 177 proceeded over the crossover to track one, the enginemen on train 177 reported his cab signal upgraded to CAB SPEED. As a result of this report, Amtrak removed CAB SPEED cab signal from service on all engines operating between New Haven and Boston, and replaced the 100 Hz inverter used to produce 100 Hz for cab signals for westbound moves at Cranston. The inverter was suspected of drifting off frequency. On March 27, 1996, Amtrak re-enacted the two to one move at Cranston Int. using a test Eng 227 with CAB SPEED cab signal aspect cut in. We also re-installed the suspected defective 100 Hz inverter for this test. It was our determination from the test that the 100 Hz inverter had drifted to 89 Hz, and as this inverter is a square wave generator, there was also a significant level of the third harmonic, 267 Hz present in the same wave form. This equipment was tuned to receive 120 code at the 91-100 Hz frequency as well as the 250 Hz frequency and there were sufficient levels of both carriers to support the CAB SPEED aspect at the 120 code rate. The "Fifth Aspect" on-board equipment supporting the CAB SPEED cab aspects remains out of service as of this date and is being re-evaluated. This interim "Five Aspect" on-board equipment does not perform a final "alternating carrier" check as does the full Nine-Aspect cab signal equipment does. We will advise you of our corrective action and our intent to re-establish the interim CAB SPEED cab signal aspect to service.					

Report #	Date	Reporting Carrier	Block System	Interlocking	Auto. Systems	Loco or Train No.	Device that Failed	Location	Collision or Derailment?
			Narrative						
94	3/20/1996	NS	CTC			8534	Human Error	Wytheville, VA	N

At approximately 8:45 AM, Train No. 111 was eastbound at the west end Wytheville siding and observed eastward signal 116R displaying CLEAR for their train. Train No. 227, at that time, was approaching and passing westward signal 118L at east end Wytheville siding. Signal 118L was displaying DIVERGING APPROACH for No. 227's move into Wytheville siding. Engineer on No. 111 was aware of his impending meet with No. 277 at Wytheville and knew he should have seen an APPROACH indication on signal 116L, therefore he stopped his train at the west end and reported the incident.

Signal personnel were called and on arrival were able to duplicate the reported situation. With eastward signal 118R at east end Wytheville displaying STOP the advance signal, 116R, at west end Wytheville did display CLEAR instead of APPROACH. The problem was traced to being caused by different AC power sources feeding the local and control coils on the signal control relay (116R BP), a three position AC vane relay, at west end Wytheville.

The signal circuits on this district are AC type, fed by a 4800 volt distribution line on the poleline. There are three substations between Bristol and Radford, Virginia which can all be feeding portions of the line if separated by sectionalizing switches which are spaced at about every seven miles along the poleline. One of these sectionalizing switches is located between the switches at Wytheville. That set of switches had been left open after storm trouble repairs the previous night, with the west end being fed up from Marion and the east end fed down from Radford. The original configuration had been that the W-BX110 which went through the 118R HR at east end to select control phasing on the 116R BP circuit was off the same (west) side of the switches that fed the local winding at the west end. When a transformer had burned up back in mid-1994, the W-BX110 line had been incorrectly tapped onto a transformer that came off the east side of the switches. Thus the condition was at that time set up to allow the two coils of the 116R BP relay to be fed from two separate sources if these sectionalizing switches were ever left open and fed from two different power companies. The fact that the two power feeds happened to be out of phase, led to the 116R BP relay receiving what looked like the proper control to display a CLEAR signal when the east end controlling relay was sending what was meant to be an APPROACH.

Since this territory is to be converted to electronic track circuits this year, the switches were removed from service, and locked in the closed position. The signals were returned to service after appropriate testing.

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60	3/31/1996	BNSF	CTC			106 of the 30th	Bare Copper Wire Bridging HD and DD	Between Radnor and Brimstone	N

Train 106-30 reported signal 1248.2 Green with signal 1246.4 Yellow and West Radnor Red over Lunar. Signal 1248.2 should have been Flashing Yellow. Vandals had been cutting copper communications wire down which become wrapped in the signal wires between 1248.2 and 1246.4 causing the signal at 1248.2 to be Green instead of Flashing Yellow. Distances between signals are as follows: 1248.2 to 1246.4 8850 feet; 1246.4 to West Radnor 11000 ft and West Radnor to East Radnor 1000 ft. on a 0.2 descending grade. This signal spacing provides adequate braking distance. All lose copper either cut down or tied up to clear signal wires.

Report #	Date	Reporting Carrier	Block System	Interlocking	Auto. Systems	Loco or Train No.	Device that Failed	Location	Collision or Derailment?
			Narrative						
61	4/3/1996	BNSF	CTC			None	Track Circuits	Bristol, IL	N
			Amtrak 1347-3 on the North Track west of Bristol, IL., lost shunt and allowed the westbound signal on the North Track at Bristol to momentarily clear. The dispatcher had entered a stack for this signal behind Amtrak. Shunt test were performed with no exceptions. No train was present near Bristol to observe the westbound signal at Bristol to momentarily clear. Adjustments to track circuits between Bristol and MP 48.7 were made to reduce the voltage on the track relays for better sensitivity.						
102	4/9/1996	UP	AB			LTN71/09	H-Relay	Near Mitchell, Wisconsin	N
			On April 9, 1996, at approximately 22:00 (CDT) on the Milwaukee Subdivision Westbound LTN71/09 was stopped with 15 cars passed westbound signal 80.13 was observed displaying a Yellow signal. An investigation revealed that vandals had destroyed the signal equipment including several relays in the signal house at signal 80.13. The "H" Relay was broken and stuck in the up position. The signal system was restored to proper operation, and all applicable tests were performed.						
103	4/19/1996	UP	AB			FARWRC-15	Spring Switch	Woolridge, Missouri	Y
			On April 19, 1996, at 2008 CDT on the River Subdivision, eastbound FARWRC-15 accepted signal 1570 with a CLEAR aspect at the west end of Woolridge and derailed the lead unit on the spring switch which was not in the full normal position. An investigation revealed that the previous train, westbound LNJ57-19, had come out of the siding with dragging equipment and bent the switch circuit controller lug and connecting rod in such a manner that the switch point was obstructed and held gapped open from normal while the switch circuit controller indicated normal. The signal system was restored to proper operation, and all applicable tests were performed.						
556	4/25/1996	CR		Remote		Train ELBN-5, Eng.	4W Signal at CP-Hick	Indiana Harbor, IN	N
			Engineer on ELBN5, westbound on #3 track, received a LIMITED CLEAR aspect on the 4W signal at CP-Hick with the rear car of BRSE5 occupying #2 track foul of his route. Upon investigation, it was found that the location of the fouling point insulated joints east of #13 switch on #2 track did not provide sufficient track centers through the fouling section to prevent interference with trains on the adjacent track. Changes were made in the home signal network to prevent a signal from being displayed if this section of track is occupied (8T circuit #2 track). Signal system was tested and returned to service.						

Report #	Date	Reporting Carrier	Block System / Interlocking / Auto. Systems	Loco or Train No.	Device that Failed	Location	Collision or Derailment?
82	4/26/1996	CSXT	CTC	Train	None	CT Junction, Cincinnati, OH	N

Narrative

On April 18, 1996 at 0630 hrs Train Y322-17 reported receiving an APPROACH signal at signal 27L into a standing cut of cars. The signal system was removed from service. Signal personnel performed test and inspection and it was determined that a violation of operating procedures was evident with the Train Director and Signal Employees who were performing tests at this location. Investigation is pending. Signal system was returned to service.

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

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.

558	4/30/1996	SP	AB	1CVSHC-27	Signal 4926	Bridgeport, Kansas	N

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.

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.

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.

The signal system was returned to service on April 30, 1996 at 11:00 AM.

559	5/9/1996	CR	AB	Train YIFE11, Engin	Automatic Signal 143.1	Sharon, PA	N

Conductor on YIFE11, westbound on #1 track observed automatic signal 143.1 upgrade to a CLEAR aspect with the handthrow switch and derail at MP 81.6 in the reverse positions. Upon investigation, it was found that the N81.16WP1A and the 81.16WP1A wires were transposed in the circuit controller at the derail.

The wiring problem was corrected and all applicable tests were made. An investigation is being conducted to determine responsibility.

Report #	Date	Reporting Carrier	Block System / Interlocking / Auto. Systems	Loco or Train No.	Device that Failed	Location	Collision or Derailment?
95	5/11/1996	NS	CTC	8951-8955	Human Error	Williamson, WV	N

Narrative

At approximately 7:10PM, Train No. 195U110 had uncoupled from its train on the Old Passenger Main and pulled west of the 82L signal on Main 2. The Bluefield dispatcher lined a route for No. 195 to move east toward the SV Main, and Signal 82L indicated DIVERGING APPROACH DIVERGING. Because the next signal in this route, 92L, was at STOP, the 82L signal should have displayed DIVERGING APPROACH. Train 195 was safely stopped before passing the 92L signal, and signal personnel were notified.

Signal 82L is a color position type. DIVERGING APPROACH is represented by Red-horizontal over Yellow-45 degrees. DIVERGING APPROACH DIVERGING is represented by Red-horizontal over Flashing Yellow-45 degrees. The incident was duplicated by signal personnel. It was evident that any time 82L was setup to display DIVERGING APPROACH, the bottom head would flash making the signal incorrectly indicate DIVERGING APPROACH DIVERGING. This was caused by the improper hookup of a flasher that had been replaced three days before. The flasher that was replaced was of a different manufacturer than the one that replaced it. Though either flasher was capable of flashing the aspect, the two had different terminal board arrangements and had to be hooked up differently. The hookup that was found caused the bottom head to flash improperly for the DIVERGING APPROACH DIVERGING as well as for the DIVERGING APPROACH DIVERGING aspect where it should have flashed. This condition was then corrected, the signals properly tested and returned to service.

62	5/17/1996	BNSF	CTC	113NN226-16	121 R Track	East Finch, MT	N

At approximately 21:00 on 17 May 1996, train 113NN226-16 sitting on main line at East Finch with train 70TT006-16 east of him in the block between him and first intermediate signal east of Finch. Eastbound absolute signal went Red to Yellow and then to Green then back to Red.

Investigation revealed track wires at Finch and RB cut were transposed. Maintainer had replaced track wires after Tie Gang approximately 2 hours prior to incident. Swapped track wires resulted in track relay not shunting with .06 ohm shunt. Track wires were rung out, and restored to proper configuration. System was tested and operating correctly at 06:00 on 18 May 1996.

63	5/20/1996	BNSF	AB	177J68	Signal S238.2	Mt. Pleasant, IA MP 238.2	N

Train 177J68 following train 492 had a Red signal S238.2. Signal S238.2 then went to Yellow for a few seconds and then to Green. Investigation found the "D" control wire crossed on the pole line with "D" wire for the north track due to tree limbs blown into pole line by storm. Tree limbs were removed and circuits tested for proper operation.

64	5/21/1996	BNSF	CTC	Train 1-121-20; 1-1	Color Light Signal	South Elwood, MO	N

At approximately 0930 hrs train 120 (southbound holding main) reported that while making a meet with train 121 (northbound entering siding) at South Elwood that Signal 14LB southbound signal on siding was Lunar. Signal 14LB lower unit had been shot with a small caliber rifle breaking inner red lens giving the appearance of a lunar signal. Replaced outer and inner lens color test performed all OK. Time reported OK at 1100 hrs.

Report #	Date	Reporting Carrier	Block System	Interlocking	Auto. Systems	Loco or Train No.	Device that Failed	Location	Collision or Derailment?
			Narrative						
65	5/30/1996	BNSF	CTC			Train #01-168-29 -	Aerial Cable Shorted	Ashland, NE	N

At approximately 21:21 hours train crew on eastward train #01-168-29 reported that the absolute signal on main track two West Ashland (2E signal) displayed an APPROACH MEDIUM aspect and that they could see that the next signal, absolute signal at Ashland Crossovers (2E signal) was dark. Signal maintenance personnel investigated and determined that two wires in the aerial cable was shorted between West Ashland and Ashland. The two circuits shorted together were the 40LA-42LB RYGP and the 38 RAFY.

The sequence of events were as follows:

Train 01-168-29 was sitting west of absolute signal 2E at West Ashland. The dispatcher requested the 2E signal which did not line. This signal should have displayed an APPROACH aspect since Ashland had not yet been lined, however, with the 38 RAFY energized it caused the signal to display an APPROACH MEDIUM aspect. The 38 RAFY being energized also caused the Red repeater at Ashland to de-energize. Since the dispatcher had not requested the 2E signal at Ashland the Harmon Logic Controller (HLC) de-energized the red bulb voltage. Maintenance personnel megged cable and used spare wires to replace damaged wires. Operational checks performed with system working as intended.

Inspection of the cable did not reveal how or why these wires had become shorted. The cable in this area was then replaced. After new cable was in service a closer examination of old cable revealed that the cable had been partially cut. This damage had been caused by outside contractor who had been removing open line wires. The contractor pulled line wires over cable which cut through insulation and into wires.

560	6/1/1996	CC	AB			2002	FP	West End Duncombe	N

Number 51's train 2002 reported CLEAR at the west end of Duncombe with no. 50's train at MP 370.

50 reported CLEAR eastbound Lake Ole MP 369 Red cab, then CLEAR at 368.5.

Cause was found to be a storm damaged pole and crossarm (hit by lightning) holding pin 4 H wire into pin 5 H wire at MP 368.

Maintainer cleared line and tested system.

Report #	Date	Reporting Carrier	Block System	Interlocking	Auto. Systems	Loco or Train No.	Device that Failed	Location	Collision or Derailment?
			Narrative						
561	6/3/1996	SP	CTC			SP 5HPHLE-03	Signal 6296W	Utah Ry. Jct. Xover, CO	N

On June 3, 1996 at approximately 4:55 PM, train no. 5HPHLE-03 traveling east on the eastbound track was approaching a Red signal at ABS 6296E. The Engineer on board reported that he observed signal 6296W, on the westbound track, remain Green well after train 1EUCHQ-31, traveling east on the westbound track, had passed signal 6296W and was heading towards the Utah Railway Junction.

Under the direction of the Signal Supervisor, the signal system was put to STOP and thoroughly tested. Tests showed that when recent repairs were made to replace damaged track connections at ABS 6288, the wires were installed improperly, thus causing the signal malfunction at ABS 6296W.

The track wires in question were installed properly, the signal system was tested and found to be working as intended with no exceptions.

The signal system was returned to service on June 4, 1996 at 12:30 AM.

83	6/8/1996	CSXT	CTC			T64108	Vandalism	Intermediate Signal 3.2, St. Albans, WV	N

On June 8, 1996 at approximately 1832 hours, trains T64108 and V61507 traveling westbound at M.P. 2.7 observed eastbound signal at 3.2 displaying an APPROACH with their train on circuit.

Signal system was removed from service.

Signal personnel determined that vandals broke into signal control house and damaged relays causing 32 HDR relay from deenergizing.

Repairs to equipment and operational test performed.

Signal system is now functioning as intended.

66	6/10/1996	BNSF	CTC			9593W	None	Northport, NE	N

At 12:58 MDT on June 10, 1996, Engineer operating the 9593 West (Train 131RC211) reported a Red over Yellow aspect at Northport and while approaching West Northport a "high green" was observed at West Northport, while the 9524 East was lined through the West Northport location. Interview with crew of the 9593 revealed that as they approached West Northport, 775 feet from the 1 WA signal, it appeared Green. At 462 feet from the 1 WA signal it was observed Red over Red, and they stopped their train 268 feet from the 1 WA signal. CTC data log and local data in memory at field site indicate 1 WA signal was not requested at West Northport. All signal equipment at West Northport tested. Interlocking tests performed with no exceptions. On June 11, 1996 at 12:58 MDT the area was observed in the same sun light conditions. From the point where the crew alleged a high green, our observation revealed a light colored area on the background of the 1 WA signal. This was caused by bird excrement. The area in question was painted with flat black paint, lenses cleaned, and lamp voltages set at 9.2 volts to improve visibility of signal. It is our opinion, this is not a false proceed incident. This report is being filed as information only. See diagram attached.

Report #	Date	Reporting Carrier	Block System	Interlocking	Auto. Systems	Loco or Train No.	Device that Failed	Location	Collision or Derailment?
			Narrative						
562	6/14/1996	SP	CTC			SP 1LBDAT12	Signal 2816	Sabinal, Texas	N

On June 14, 1996 at approximately 9:20 AM, Engineer operating train no. 1LBDAT12 traveling east, reported that signal 2816 was Green instead of Flashing Yellow, and the next signal at the west end of Sabinal was Yellow.

Under the direction of the Signal Supervisor, the signal system was put to STOP and thoroughly tested. All tests showed the signal system to be working as intended with no exceptions.

The signal system was returned to service on June 14, 1996 at 5:00 PM.

563	6/18/1996	KCS		Automatic		KCS 704	?	Texarkana, AR	N

On 6/18/96 an KCS 704 was traveling north at the KCS/Cotton Belt interlocker at approximately 10:45 hours in Texarkana, AR. The Engineer reported to the Signal Maintainer that the signal at the interlocker was Green and he found a handthrow switch north of the interlocker lined reverse. After investigation by the Signal Supervisor and Signal Maintainer, it was determined that the NWP circuit for the switches north of the interlocker were checking only the yellow aspect and not the green aspect.

Immediately the changes were made for the NWP to check the Green aspect. {The signal Supervisor and Maintainer] made all required tests and returned the interlocker to service.

67	6/21/1996	BNSF	CTC			CFWSX 320 Engine	FR-2	W.E. Landes, TX	N

The CFWSX entered the east end of the siding at Landes on a DIVERGING CLEAR aspect traveling westbound. The next signal encountered at the west end of Landes was dark. The signal was dark due to a bad order FR-2. The FR-2 wouldn't light the signal but allowed enough current flow to keep the light check relay energized. A new FR-2 was installed, tested and left working OK.

68	6/26/1996	BNSF	CTC			491-26	None	Galesburg, IL	N

Train 491 reported having a Red over Green on the 2WCD signal at Graham and a Red signal at CP 1699. Testing revealed that incorrect wiring changes were made causing the problem. Corrections were made to the wiring and signals tested for proper operation.

Report #	Date	Reporting Carrier	Block System	Interlocking	Auto. Systems	Loco or Train No.	Device that Failed	Location	Collision or Derailment?
97	7/8/1996	NS	CTC			8586-8755	Human Error	Beech Fork, WV	N

Narrative

At approximately 3:50 PM Train No. U34U708 pulled their train about one and one-half units past signal R48 and stopped to cut off their caboose. The crew noticed signal R48 was still displaying DIVERGING APPROACH instead of STOP as it should have with their units occupying the track beyond the signal.

Signal personnel were called to investigate and found that the track immediately beyond signal R48 was a shunt fouling that, when shunted, would bring the track voltage on the main track portion down to only 0.2 volts. This was not enough of a shunt to drop out the track relay. Further testing and inspection revealed that when the south rail track connections of the fouling wires were disturbed while the fouling was shunted, the track relay dropped and the R48 signal displayed stop. On close inspection it was found that the bondstrand in both connectors on the south rail had never been crimped. The effects of corrosion over a period of time and vibration resulted in the fouling wires becoming ineffective. No one could remember the last time these particular wires had been reworked/installed. There was documented evidence that shunt fouling tests were performed at this location in accordance with rule 236.104, but apparently the corrosion and vibration had at this point in time caused a high enough resistance to make the wires ineffective for shunting.

Two new rail connectors were installed and the track voltage again measured. With a shunt applied in the fouling section, the reading was 0 volts on the main track and the OS track relay dropped with less than one milliampere current. The signal system was returned to service.

Report #	Date	Reporting Carrier	Block System	Interlocking	Auto. Systems	Loco or Train No.	Device that Failed	Location	Collision or Derailment?
			Narrative						
564	7/11/1996	AMTK			ACS	Engine 929	Track Code	East of Harrison, NJ	N

On July 11, 1996, train no. 179, Engine 929, reported just prior to midnight that after passing signal W63 displaying APPROACH (cab signal conformed) and after the normal code change to RESTRICTING, the cab signal changed to APPROACH MEDIUM several times while approaching s STOP signal at "Swift." Testing was performed following this report as explained in our letter of July 26, 1996, attached. On July 27, 1996, three trains, Engines 925, 912 & 923, each reported a similar condition at the same location. Subsequent tests and conclusions are fully explained in our letter of August 8, 1996, attached.

[Text of Letter of August 8, 1996]

Mr. David R. Meyers
Administrator, FRA
Scott Plaza Two - Suite 550
Philadelphia, PA 19113

Dear Mr. Meyers:

On Saturday, July 27, 1996, at 8:09 AM, a report was made to New York Central Control by train 205, engine 925, that cab signals were flipping from RESTRICTING to APPROACH MEDIUM and back to RESTRICTING, while approaching the 3W signal at Swift Interlocking in the STOP position. At 9:18 AM, train 195 with engine 912, reported experiencing the same irregularity in cab signals. Train 204 with engine 923 was instructed to report waysides and cab signals while approaching the 3W signal at Swift Interlocking in the STOP position. He reported all proper, until approaching this signal, where his cab signals started bouncing between APPROACH MEDIUM and RESTRICTING.

This was the second occurrence involving this same scenario in which cab signals went up to APPROACH MEDIUM while the 3W signal at Swift was at STOP. Please find attached, the July 26, 1996 copy of our letter concerning the first incident on July 11, 1996. All tests performed at that time disclosed no irregularities.

C&S personnel arrived on the scene on July 27, while the cab signals were in the failure mode as described by the Engineers of the above-stated trains. Investigation revealed that intermittent removal of steady energy at the W70 signal location from the 2E1 track circuit was caused by the existing circuit design. This produced pulses from W70, eastward, when the code change went into effect on the approach of a train. These pulses were accepted by the locomotive cab signal equipment on the above stated trains in a manner that caused cycling between APPROACH MEDIUM and RESTRICTING cab signals.

C&S management and supervision became involved and determined, by performing a revision of the track circuit design, that these unwanted pulses could be eliminated. This revision was performed on the morning of July 27, 1996.

A re-enactment was scheduled and held in the early morning of August 6, in which the 929 AEM7 locomotive was used to re-create the code failure when the track circuitry was restored to its original design. Amtrak management and C&S employees, along with FRA representatives were on hand. It was proven that the intermittent track circuit pulse produced the cab signal irregularities. Chart recorders were used to get records of what was occurring in this situation. The 929 was downloaded and the tape will be part of this occurrence file. The circuitry was restored to the revision approved network and put back in normal service.

During the re-enactment, the false display of the APPROACH MEDIUM aspect was clearly demonstrated to be only momentary, of approximately one-half

Report #	Date	Reporting Carrier	Block System	Interlocking	Auto. Systems	Loco or Train No.	Device that Failed	Location	Collision or Derailment?
			Narrative						

second duration, and recurring at a cyclic rate with the display of RESTRICTING for a minimum of two seconds between each one-half second pick-up of the APPROACH MEDIUM. While this condition severely undermined our engineer's confidence in the cab signal system, and is therefore highly undesirable, it did not constitute a dangerous condition such that any engineer would actually accept the momentary false display and try to exceed restricted speed, nor would he have been able to exceed 20 mph, as the speed control continued to limit his speed.

Due to the nature of this condition, there has been some confusion as to whether an actual false proceed report should be filed. However, since the one-half second display was just barely long enough to require an acknowledgment, I am attaching a false proceed report on the prescribed form. Please consider this as a follow-up to our original letter of July 26, 1996, which was filed within fifteen days of the initial occurrence.

If we can be of any assistance concerning any files or records involved with the above, please contact my office at 215-349-1028.

Sincerely,

Assistant Chief Engineer C&S

96	7/11/1996	NS	CTC			7025, CR6028	Resistor	Deal, VA	N

At approximately 11:00 PM, Train No. 203 passed the southward signal at milepost 187.5 on a CLEAR indication. Looking back they noticed that the northward signal was displaying APPROACH while their train was still occupying the north track circuit. At approximately 11:40 PM, train No. 211 noticed the same problem.

Investigation revealed that the Trakode bleeder resistor, design value of 12.5 ohms, had a resistance of 500 ohms. This high resistance value prevented the resistor from properly acting as a bleeder. With shunt on the 187.6 track, the 187.6 signal would display an approach indication. The high resistance was traced to a film that had developed in the bonds between the carbon and the metal tabs on the ends of the cartridge type resistor. The resistor ends were cleaned, and the resistance dropped to 14 ohms. A shunt on the 187.6 track then was found to cause the proper restricting indication.

565	7/17/1996	SP	CTC			SP 1HOEGM-16	Signal 34LB	Harlem (West End), Texas	N

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.

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.

The signal system was returned to service on July 17, 1996 at 8:10 AM.

Report #	Date	Reporting Carrier	Block System / Interlocking / Auto. Systems	Loco or Train No.	Device that Failed	Location	Collision or Derailment?
104	7/17/1996	UP	AB	HOCHT-16	None	Glenwood, Illinois	N

Narrative

On July 17, 1996, at approximately 1840 CDT, on the Chicago Subdivision, the northbound HOCHT-16 accepted an APPROACH aspect at signal 250, Milepost 24.9, on the northward main track and proceeded north stopping short of the northbound UGCCH-17 stopped ahead in the block.

An investigation revealed that a tree had fallen through the pole line at Milepost 22.3 wrapping the northward HD wires with the HD wires for the southbound main track and energizing the northward HD wires falsely.

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

98	7/22/1996	NS	CTC	2822	N/A	Peru, IN	N

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.

85	7/28/1996	CSXT	CTC	Train #	Track Circuit	Vulcan Intermediate, PeeDee, SC	N

On 08/02/96 Traincrew reported that on 7-28-96 they received a Yellow over Green indication at M.P. 262.10 and a STOP at the Northend of PeeDee and was routed through the siding. The signal was removed from service. Signal personnel performed operational test and could not duplicate incident. Event log at the Operations Center did not indicate any problem and indicated the train down the main line. Signal personnel along with the local FRA inspector were able to determine that a track circuit failure was occurring in the siding, that problem was corrected. No exceptions were taken to the signal system it has been restored to service.

Report #	Date	Reporting Carrier	Block System	Interlocking	Auto. Systems	Loco or Train No.	Device that Failed	Location	Collision or Derailment?
84	7/29/1996	CSXT	CTC			Q69629	L-Signal	Richardson Creek, Richardson Creek, SC	N
566	7/31/1996	SP		Automatic		SP 1L374L2-31	Signal 30	Elvas, CA	N
69	8/4/1996	BNSF	CTC			None	PSO	Essex, MT	N
105	8/6/1996	UP	CTC		ACS	UP6322	None	Cheyenne, Wyoming	N
86	8/9/1996	CSXT	APB			Train 361	Semaphore	Salty Block Signal, Rushville, IN	N

Narrative

84

On July 29, 1996 northbound train Q69629 reported a Red over Yellow signal indication with southbound train F76729 pulling into the siding at Richardson Creek ahead. Signal system was removed from service. Signal personnel along with FRA Inspector performed operation test on the signal and could not recreate this occurrence. It was determined that during the same time of day that sunlight was causing a phantom aspect. A longer hood was installed, lamp voltage adjustments were made. Signal system was placed back in service.

566

On July 31, 1996 at approximately 4:30 PM, the train crew operating the no. 1L374L2-31 traveling east, reported that signal 30 was Yellow over Yellow when the next signal was Red over Red. The proper aspect for signal 30 should have been Red over Yellow.

Under the direction of the Signal Supervisor, the signal system was immediately put to STOP. The signal system was inspected and thoroughly tested and found to be working as intended with no exceptions.

The signal system was returned to service on August 1, 1996 at 11:00 AM.

69

Maintainer called account Red blocks. Upon arrival found signals CLEAR. Investigation found that slide fence would not set signals Red. Signals were set to STOP until cause could be determined. It was found that there was a shorted insulated joint at Signal 1158, and enough signal was conducting through ground to allow another PSO for a dragging equipment detector to pick the slide fence receiver PSO at shed 4D (both 211 Hz). Changed frequencies of dragger and slide fence to 4000 Hz and 645 Hz respectively, and insulated joint was also replaced. System tested and operating as intended.

105

On August 6, 1996, at approximately 01:10 CDT on the Laramie Subdivision, Eastbound LAAP7D-04 on Track No. 1, while in the block at approximately M.P. 512.50, received an upgrade of his cab signal from Red to Yellow. Eastbound XOACST-03 was ahead of him on Track No. 1 at M.P. 512.25 still occupying the same block with three axles of the last car.

An investigation revealed the high level output from the cab transmitter at M.P. 512.25 enabled the cab signal to push by the three axles and upgrade the cab signal on LAAP7D-04.

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

86

On August 9, 1996 Train 361 reported a CLEAR signal at signal E67-31, this signal should have been Red. Signal system was removed from service. Signal personnel investigated the incident and determined that the ratchet pawl was engaged with no battery applied. Ratchet pawl assembly was replaced.

Report #	Date	Reporting Carrier	Block System	Interlocking	Auto. Systems	Loco or Train No.	Device that Failed	Location	Collision or Derailment?
			Narrative						
567	8/10/1996	SEPA	CTC	Remote			Home Signal L12D	CP Kalb, Borough of Norristown, Montgomer	N
			Nature of Failure: Engineer reported passing home signal L12D at CP Kalb (approach signal to home signal 2S at CP Ford) displaying APPROACH MEDIUM instead of MEDIUM APPROACH with home signal 2S at CP Ford displaying RESTRICTED. Cause of Failure: Cause was traced to a circuit design condition. Circuit for signal L12D (searchlight-type) should not have been poled when a RESTRICTED signal was displayed for signal 2S at CP Ford. Corrective Action Taken: Set signal L12D at CP Kalb to RESTRICTED. Corrected circuit design. Conducted necessary tests and inspections. Returned system to normal operation.						
87	8/12/1996	CSXT	CTC			Train D773	Insulation	Conboy, PA	N
			Train D773 traveling west on #1 track reported a Red over Green aspect and that a Green aspect was displayed on #2 track. Signals were removed from service. Signal department personnel investigated the incident and determined that the LCHR relay control wires were environmentally damaged causing a short which allowed current to flow improperly to the relay coil. Signal personnel replace the wires and performed all operational test. Signal system functioned as intended and were placed back in service.						
568	8/19/1996	SP	AB			SP 1MNGVC-17	Signal 8461	Ordway, CO	N
			On August 19, 1996 at approximately 10:40 PM, Engineer operating train no. 1MNGVC-17 traveling west, reported that signal 8461 at the east end of Ordway was Green. Signal 8461 should have been Red because the switch at the west end of Ordway was reversed. Under the direction of the Signal Supervisor, the signal system was thoroughly tested. It was found that the Red lamp in signal 8461 had burned out therefore it was dark when it should have been Red. Other than the burned out Red bulb in Signal 8461, all tests showed the signal system to be working as intended with no exceptions. The signal system was returned to service on August 20, 1996 at 7:00 AM.						
88	8/23/1996	CSXT	APB				Lamp Unit	Signal 1711, Salem, IN	N
			On August 9, 1996 Soo Line Train Crew reported a more favorable aspect than desired at signal 1711. Signal system was removed from service. Signal personnel investigated the incident and determined that lamp unit had deteriorated and was obstructing the semaphore arm. The lamp unit was replaced and operational test performed. The signals were placed back in service.						

Report #	Date	Reporting Carrier	Block System	Interlocking	Auto. Systems	Loco or Train No.	Device that Failed	Location	Collision or Derailment?
			Narrative						
73	8/24/1996	BNSF	CTC			None Involved	PSO Receiver	Signal MP 48.6 near Silvana, WA	N
			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.					
106	8/28/1996	UP	CTC	Automatic	ATC	CNW6905	None	Rochelle, Illinois	N
			On August 28, 1996, at approximately 0145 CDT on the Geneva Subdivision, westbound ELNP-27 was proceeding west on No. 2 Track at restricted speed east of M.P. 74.0 with a Restricting cab signal aspect. The cab signal aspect was Restricting as the home signal at the BN interlocking at M.P. 75.3 was displaying a Stop aspect. At approximately M.P. 74.0, the cab signal changed to a Clear aspect and remained Clear until changing back to a Restricting aspect at approximately M.P. 74.25. An investigation revealed a high level of 120 Hz energy on the track originating from a track rectifier at the battery end of a DC track circuit which operated in combination with the feed transformer for the 100 Hz ATC. The wiring for the track rectifier, battery, and ATC feed transformer was revised to a standard arrangement which minimizes the 120 Hz energy on the track circuit. The signal system was restored to proper operation, and all applicable tests were performed.					
586	8/29/1996	CR	CTC			Eng 8206	Auto. Sig. 1291	Smithville, OH	N
			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.					

Report #	Date	Reporting Carrier	Block System	Interlocking	Auto. Systems	Loco or Train No.	Device that Failed	Location	Collision or Derailment?
			Narrative						
569	9/1/1996	SP	CTC			SP 1WCEUQ31	Signal 32LA	Bealville, CA	N

On September 1, 1996 at approximately 1:35 PM, Engineer operating train no. 1WCEUQ31 traveling west, reported that signal 32LA, at the East End of Bealville, was Green; the next signal, the 26LA, at the Bealville Crossover, was Red. Signal 32LA should have been Yellow.

Under the direction of the Signal Supervisor, the signal system was thoroughly tested. All tests showed the signal system to be working as intended with no exceptions.

The signal system was returned to service on September 1, 1996 at 6:00 PM.

70	9/3/1996	BNSF	CTC			Q-CVLI1-02 Eng. 8	EC-4, 213A Module	Avard, OK	N

At approximately 0720 hours on 9-3-96, train Q-CVLI1-02, engine 8534, traveling eastbound on the North track of the Panhandle Subdivision of the Oklahoma Division between Avard and Waynoka, Oklahoma observed intermediate CL signal 3382 pumping from Dark over Dark to Yellow over Yellow with a train in the block ahead. Supervisor of Signals and Signal Maintainer were called to investigate.

The investigation revealed that the condition existed as follows, the signal would display a Yellow over Yellow aspect for 2 seconds then display a Dark over Dark for 40 seconds then repeat. Further investigation revealed a Bad Order Electrocode-4, 213A, Lamp Driver Module and a burst signal bulb in the Top Green position. Suspect a lightning strike close to the signal account heavy storms in the area.

The 213A module and bulb were replaced and a complete operational test performed. The system was left operating as intended.

71	9/12/1996	BNSF	AB	Remote		UP 01XSEAP	Shunt Wires	Vancouver, WA	N

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.

Formal investigation on the Signal Maintainer is scheduled for September 27, 1996.

570	9/13/1996	CR				Train STPI, Eng. #3	Cab Signal	Columbiana, OH	N

Cab signal on STPI upgraded from RESTRICTING to APPROACH MEDIUM with home signal ahead at STOP. Cause was non-insulated lose on rail greaser located between Tracks 1 and 2 coupling rails together and allowing cab signal from Track 2 to couple to Track 1. Hose was replaced with an insulated hose and a nylon coupler was installed.

Report #	Date	Reporting Carrier	Block System	Interlocking	Auto. Systems	Loco or Train No.	Device that Failed	Location	Collision or Derailment?
			Narrative						
99	9/13/1996	NS	CTC			1639	Signal	Clemer, IN	N

Train No. 144 was traveling westbound and had been informed that they were to meet eastbound Train No. 206 at Clemer. At approximately 8:07 AM Train No. 144 called westward signal B-417.9 APPROACH DIVERGING. Approximately two minutes later Train No. 144 called an APPROACH for the westward signal at East End Clemer, which was the correct signal since they were lined to take and hold the main track. Train No. 144 should have seen an APPROACH at B-417.9 with a westward APPROACH displayed at the East End Clemer. A route had been lined for Train No. 206 to take the siding so the B-423.5 signal was correctly displaying APPROACH DIVERGING. TC logs at Ft. Wayne verified these routes were set up for the meet.

Signal personnel were called to investigate and were unable to duplicate the incident as reported. All appropriate tests and inspections were made with no exceptions taken. Numerous attempts to duplicate the problem were made with nothing out of the ordinary seen. The B-417.9 colorlight signal has a three-position head on top and a single Green head that is lit only for the Yellow-over-Green APPROACH DIVERGING indication. The bottom head was observed to be dark as intended unless a route was lined westward into the Clemer siding. A phantom aspect was then suspected but would have to be checked under the sunlight conditions encountered by Train No. 144.

The next morning, right after 8:00 AM, the same crew and engine were used to check for a phantom aspect. During the recreation, two separate occurrences of a phantom signal were observed. At MP 417.2 a faint Green could be seen that was found to be caused by reflection off the aluminum colored mast between the two signal heads. At MP B-417.7 the signal looked proper - Yellow over Dark. About 200 feet from the B-417.9 signal sunlight was seen to be reflecting through the bottom Green lens. The problems were corrected by painting the part of the mast between the heads flat black and by using an extended hood on the bottom head.

89	9/17/1996	CSXT	APB			N/A	Pole Line Control Wires	Signal 2655, Salem, IN	N

On September 17, 1996 a credible report was made that northbound signal at M.P. 265.5 was displaying a CLEAR as a southbound train was approaching a CLEAR southbound signal.

Signal system was removed from service.

Signal personnel performed operational test and determined that a tree had fallen into the pole line at M.P. 259.0 causing the control wires for signal 2655 to become wrapped with a crossing signal start circuit.

Repairs were made, signal system functioned as intended.

Signal system was returned to service.

Report #	Date	Reporting Carrier	Block System / Interlocking / Auto. Systems	Loco or Train No.	Device that Failed	Location	Collision or Derailment?
90	9/18/1996	CSXT	APB	Train PO5017	Semaphore	Indianapolis Subdivision, IN	N

Narrative

On September 18, 1996 Train PO5017 reported that when approaching and passing a CLEAR eastbound signal at MP 102.5 that the Westbound signal at the same location was in the CLEAR position.

Signal system was removed from service. Signal personnel performed operational test and determined that semaphore blade was stuck in the clear position with hold clear mechanism and track relays deenergized.

Repairs to semaphore signal were made and signals performed as intended.

Signal system was returned to service.

100	9/20/1996	NS	CTC	8880	Human Error	Silvercreek, NY	N

At approximately 1:50 AM westbound train No. 548L119 called signal B-25.1 CLEAR. The engineer immediately notified the dispatcher on the radio that he believed he should have received an APPROACH aspect at the subject signal because he did not believe that the train No. 303 ahead had yet cleared the control point at Silver Creek, MP B-32.3. The control point at Silver Creek and the B-25.1 intermediate signal are separated by an intermediate signal at MP B-30.1.

Signal personnel were called to investigate and found two HD control circuit wires improperly rolled in a cut section case at MP B-26.7. It was verified that with these two wires rolled, signal B-25.1 would display a CLEAR instead of an APPROACH with the block between Silver Creek and B-30.1 occupied.

From the investigation, it was obvious that the rolling of the wires had been inadvertently done by C&S employees working at the location. Overtime and train delay records indicate that several signal failures had occurred in the area in the two days immediately preceding the subject incident. Interviewing of employees involved in these trouble calls and all other C&S employees who work on this district has thus far been unsuccessful in identifying the employee who left this defect in the system.

The wires were restored to their proper terminals, proper signal system checks made, and the system restored to normal operation.

72	9/26/1996	BNSF	CTC	Westbound BN Trai	Intermediate Signal 244.6 (A Head)	Springfield, MO	N

Westbound train 91817-26 looked back and observed eastbound signal 244.6 Yellow over Red as they were passing. Train crew stopped train and advised Dispatcher. Dispatcher held 91817-26 until Maintainer, Inspectors, General Construction Supervisor, and Trainmaster arrived at location. With all Signal personnel present the Yellow over Red aspect was verified with train 91817-26 setting on main track with cars setting east and west of signal. Upon investigation it was found the control circuit for the A head H2 mechanism had foreign battery on it holding the top signal Yellow. A ground and cross test was performed on the wires going to the H2 and revealed crossed wires but no current flow to ground. The source of foreign battery was found to be coming from the negative light battery (-B) and positive battery from the +B circuit for the mechanism. Further inspection revealed all wires from the case to the mechanism were bare (insulation wore off) where the wires were routed from the mast into the flexible conduit going to the H2 unit. Wires were replaced to the A and B signal mechanisms and tests performed. Signal OK for normal use at 7:06 PM.

Report #	Date	Reporting Carrier	Block System	Interlocking	Auto. Systems	Loco or Train No.	Device that Failed	Location	Collision or Derailment?
			Narrative						
571	9/27/1996	CR				TV55, Eng. 6117	Automatic Signal 779-2	Galion, OH	N
			Engineer on TV55 westbound on #1 track observed signal 779-2 on #2 track at APPROACH MEDIUM with home signal at CP-80 at Stop. Found that polar control relay 779BDR had been redesigned as a neutral relay by design contractor. Circuit was redesigned with separate BDR circuits and installed correctly.						
74	10/2/1996	BNSF	CTC			1260	Insulated Joints and Lightning Arrestors	Hinsdale, IL	N
			Signal employee observed signal 318.8 display a CLEAR aspect with train 1260 in block. Supervisor and Maintainers found an insulated joint shorted and two gas lightning arrestors shorted allowing enough current to pick up the track relay with shunt on track. Replaced defective insulated joint and lightning arrestors.						
572	10/21/1996	AMTK	CTC			Control Car #1519	180 Decoding Unit	Dorchester Branch, Boston, MA	N
			On Monday, October 21, 1996 at 1:15 p.m., the engineer of MBTA Commuter Train #042 reported holding a CLEAR cab signal after passing signal 225.8 2E displaying an APPROACH aspect (Yellow over Red) while operating #2 track eastbound on the Dorchester Branch. Train #042 had cab car #1519 on the lead with four coaches and engine #1053 pushing the consist. The Dorchester Branch is reverse traffic signaling with 100 Hz Phase Selective circuits. Amtrak C&S management was notified and dispatched to the scene with signal maintainers and test personnel. Tests revealed during the investigation that the 180 decoding unit located at cut section 226.8 (which is also signal location 226.8 2W for westbounds) was permitting the 75 code feeding westward to that location to create an output sufficient enough to energize the DR relay. This would then allow 180 code to be applied to the rails improperly and feed westward to generate CLEAR cab signals. Correction was made by replacing the 180 decoding unit and all operational tests performed afterwards showed all circuits functioning as intended.						
91	10/25/1996	CSXT	CTC			Train R67410	Lighting Circuit	South Halls, Halls, GA	N
			On 10/11/96 Train R67410 reported receiving a MEDIUM APPROACH signal on #2 signal and that #6 signal out of siding was displaying a MEDIUM APPROACH. Signals were removed from service. Signal personnel investigated the incident and determined that a break in the LBHG circuit through the LAHR relay had not been installed. Corrections were made, operational test performed and signals functioned as intended. Signal system was restored to service.						

Report #	Date	Reporting Carrier	Block System	Interlocking	Auto. Systems	Loco or Train No.	Device that Failed	Location	Collision or Derailment?
574	11/1/1996	AMTK		Manual			52R Signal	21st St. Int., Chicago, IL	N

Narrative

On Friday, November 1, 1996, Amtrak's Signal Engineer received a report at approximately 7:30 a.m. that train crews were observing the 52R signal, at 21st Street Interlocking in the Chicago Terminal area, display a SLOW CLEAR aspect when the 4R signal at CP Cermak belonging to the Illinois Central system was lit at STOP. Under normal conditions the 52R will display a SLOW APPROACH to the 4R in the STOP position.

Investigation of this report by Amtrak's Signal Engineer revealed that 15 VDC energy was being incorrectly fed from CP Cermak to the 52R control circuit at 21st Street Interlocking when the 4R signal was in the STOP position. The 52R control circuit was immediately opened so as not to allow unwanted foreign energy into the circuit.

Amtrak and Illinois Central signal management met and found that at the signal bungalow for CP Cermak, incorrect wiring had occurred by Illinois Central personnel after that location had been tested due to a recent signal cutover.

Although the false clear aspect was on Amtrak's 52R signal at 21st Street Interlocking the cause for that failure was due to improper wiring of the Illinois Central signal network.

573	11/1/1996	SEPA		Remote			20LBDPR Circuit	Signal 20L, Newtown Jct. Int., MP 6.2 Main Li	N

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

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

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

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

Correction: Revised circuit by removing the alternate energy source.

Report #	Date	Reporting Carrier	Block System / Interlocking / Auto. Systems	Loco or Train No.	Device that Failed	Location	Collision or Derailment?
575	11/4/1996	SP	AB	SP 1EYSCH-02	Signal 5706	Olmitz, CO	N

Narrative

On November 4, 1996 at approximately 4:00 PM, Engineer operating train no. 1EYSCH-02 traveling east, reported that signal 5706 was Green and signal 5692 at the west end of Olmitz was Red.

The Signal Supervisor was called and arrived at the location within 15 minutes. He watched signal 5706 and observed that the sun was shining onto the signal head in such a way that the Yellow aspect could not be seen, while the Green aspect appeared lit. Phantom screens were installed on the signal head, and the batteries were replaced to increase the voltage on the signal lamp.

The signal system was thoroughly tested; all tests showed the signal system to be working as intended with no exceptions.

The signal system was returned to service on November 4, 1996 at 7:00 PM.

92	11/6/1996	CSXT	CTC	East Bound Train	Grounded Cable	E. Garrett, Garrett, IN	N

On November 6, 1996 at East Garrett, Indiana, an Eastbound Train Crew reported the dwarf signal on adjacent track was displaying a STOP AND PROCEED signal.

Signal system was removed from service.

Repairs were made, operational test performed and signals placed back in service.

93	11/13/1996	CSXT	CTC		Relay	Grand Junction, Jacksonville, FL	N

On October 28, 1996, Train Crew reported receiving a MEDIUM APPROACH signal at Grand Junction for movement from Mildale Lead to #2 track, as they approached the switch it was lined for a normal move from #2 to #2.

The signal system was removed from service. Signal department personnel and FRA Inspector investigated the incident. It was determined that a modification was made to the system and a test was inadvertently missed. Corrections were made, operational tests performed and the signals functioned as intended.

Signal system was placed back in service.

75	11/16/1996	BNSF	CTC	Suburban 1268	Lightning Arrestors	Westmont, IL	N

Suburban train 1268 reported signal 319.6 went from Red, to Yellow, to Green and then back to Red while train 1294 was east of the signal. Signal Supervisor found shorted lightning arrestors on Track Isolation Units. While the last set of trucks in train 1294 were in the stagger of the insulated joints and with the two shorted lightning arrestors, the insulated joints were in effect bypassed. This allowed the track relay on the east side of the insulated joints to be energized by the track battery on the west side of the joints until the last set of trucks were east of the effective insulated joint, at which time the track relay was again de-energized. This allowed the signal to momentarily go to Yellow, Green and then back to Red. The defective lightning arrestors were removed and the circuits tested for proper operation.

Report #	Date	Reporting Carrier	Block System	Interlocking	Auto. Systems	Loco or Train No.	Device that Failed	Location	Collision or Derailment?
			Narrative						
76	11/22/1996	BNSF	CTC			None	SB ABS Sig B Yard Switch	Vancouver, WA	N

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.

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.

577	11/30/1996	CC			ATS		FP-CL	East Absolute C.L. Signal, Mills Siding MP 323	N

False proceed signal; absolute signal east end Mills Siding.

On 11/30/96 at 1:40:00 eastbound train UUPWF04 holding main line west of the siding switch Mills observed Green aspect on eastbound absolute signal with westbound train WFLD29 in the block between Macy and Mills siding. The Green aspect was observed two different times at 15 sec. each time then returning to Red aspect.

Signal department upon arrival recreated the false proceed indication. Further tests produced cause of false proceed as follows: Wood pin holding common line wire on pin 6 of pole line at MP 323.6 was broke and touching pin 9 550 volt supply line. This caused 3232 H relay to burn up fusing contacts causing 3238H to be energized.

576	11/30/1996	SP	CTC			SP 1MNGVC-30	Signal 30	Ridgley, IL	N

On November 30, 1996 at approximately 2:30 AM, Engineer operating train no. 1MNGVC-30 traveling west, reported that signal 30 cleared Yellow while the C.I.M. train was flagging across the Interlocking.

The Signal Supervisor was notified and he had the Dispatcher hold all trains in their position until he arrived. Upon arrival at the Interlocking, he confirmed that the 30 signal was Yellow. The cable was meggered and was found to be bad. The cable was replaced from the tower to the westbound home signals and the signal system was thoroughly tested. All tests showed the system to be working as intended with no exceptions.

The signal system was returned to service on November 30, 1996 at 7:00PM.

77	12/2/1996	BNSF		Remote			Searchlight Signal 808EE	University Ave., Minneapolis, MN	N

Searchlight signal 808EE (eastbound signal on South Receiver Track) reported Flashing Red by eastbound train CN-368 on main track 1. Eastbound main track 1 searchlight signal 808EB displaying DIVERGING APPROACH MEDIUM (Red over Flashing Yellow). Lighting circuit for 808EE signal was in parallel with lighting circuit for 808EB causing 808EE signal to flash whenever 808EB signal displayed DIVERGING APPROACH MEDIUM. This aspect was added on 11-11-96 when CTC was installed on the St. Paul Subdivision. Wiring changes were made to the lighting circuit for 808EE signal eliminating this parallel circuit. Signal forces were notified at 0400 hrs, with wiring changes and testing completed at 0630 hrs.

Report #	Date	Reporting Carrier	Block System	Interlocking	Auto. Systems	Loco or Train No.	Device that Failed	Location	Collision or Derailment?
			Narrative						
78	12/15/1996	BNSF	CTC			94-650-15	Signal 92R	South Ada, OK	N

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.

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.

79	12/16/1996	BNSF	CTC			SLBCH3-12 Engine	Underground Cable	La Lande, NM	N

Train SLBCH3-12 proceeding eastbound on the main track approaching the east end of La Londe noticed a Green aspect displayed on the main track signal and a Yellow aspect displayed on the leave siding signal. Since the switch was normal the proper aspect for the siding signal should have been Red. Investigation revealed that a signal gang was splicing through underground cable to get ready for a track expansion project and had inadvertently spliced RARN to RBN and RBR to RARN. This put both signal mechanisms in series allowing the voltage for the mainline signal mechanism to also display the Yellow aspect on the siding signal.

Procedures were reviewed with all signal personnel involved. Remedial action is as follows: additional formal training for Signalman and Foreman involved, additional test equipment will be provided to this signal gang, discipline was assessed to Signalman involved requiring retraining before returning to work.

107	12/20/1996	UP	AB			UP5041/NLSH-20	None	Marshall, Texas	N

On December 20, 1996, at 16:00 CDT on the Reisor Subdivision, southbound NLSH-20 reported the southbound signal at the north end of Louisiana, M.P. 350.3 was CLEAR and the Spring Switch at the south end of Louisiana was lined reverse.

An investigation revealed the NWP relay for the Spring Switch did not break the HD signal control circuit to cause the southbound signal to display a Red signal.

The circuits were revised to break the southbound signal's HD wires with the NWP relay.

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

578	12/30/1996	CR	AB			UP2455	Signal 2E @ CP-154	St. Elmo, IL	N

Engineer on eastbound NLINO observed a CLEAR signal on 2E with signal 152E STOP AND PROCEED ahead. Investigation revealed that the switch repeater 1520NWPR did not open the 2EHR relay, which allowed a CLEAR code to be generated from the micro unit at signal 152E. Circuit was reissued with 2EHPR relay contact located in input circuit of Microcode unit. Failure was due to unauthorized field change. Plans reissued as originally designed.

Signals tested and returned to service.

No. of Reports Shown in this Listing: **91**