Report #	Date	Reporting Carrier	Block System	Interlocking	Auto. Systems	Loco or Train No.	Device that Failed	Location	Collision or Derailment?
473	4/5/1995	ATSF	AB			3850	Wiring Error	Athos, AZ	N

Narrative

Approximately 6:20AM, April 5, 1995, crew on the Q-R1AL1-03 reported as they were on the Athos siding approaching the leave siding signal at the east end of Athos to wait for Amtrak No. 4 to pass on the south main track, the leave siding signal displayed a Green aspect. Signal Department personnel were notified and their investigation of the reported incident verified the condition as reported. Further investigation determined that a wiring error had been made while changing a two-point relay to a four-point relay the day before and proper tests were not conducted to prove correct operation of the signal system. The wiring error was corrected and tests were conducted to prove proper operation of the signal system. Responsibility for the wiring error has been determined and discipline will be assessed.

Report #	Date	Reporting Carrier	Block System	Interlocking	Auto. Systems	Loco or Train No.	Device that Failed	Location	Collision or Derailment?
39	4/13/1995	UP	CTC	Manual		UP 3316	None	Binney Junction, California	N

Narrative

On April 13, 1995, at 9:30 (CDT), eastbound UP3316 on the Canyon Subdivision observed eastbound signal at CP F180 was Green with the next intermediate signal 183.0 Red and the track occupied between Signal 183.0 and Signal 185.6.

An investigation revealed that circuit revisions had been made at Signal 183.0 without making required corresponding revisions at CP F180. Circuit revisions were made at CP F180 restoring the system to proper operation.

All applicable tests were performed.

Report #	Date	Reporting Carrier	Block System	Interlocking	Auto. Systems	Loco or Train No.	Device that Failed	Location	Collision or Derailment?
487	6/14/1995	CR		Remote		Train YPAL-22, En	Signal 4E @ CP-JU	Bethlehem, PA	N

Narrative

Engineer on train YPAL-22 observed signal 4E at CPJU displaying an APPROACH SLOW aspect with signal 5R at CP Bethlehem displaying RESTRICTING. Cause was found to be crossed conductors, 5RCHD and 5RCGP circuits, in cable from 5RC signal mechanism to case at CP Bethlehem. Cable repaired, signal system 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?
30	8/25/1995	NS		Remote		Unknown	Human Error	Columbus, OH	N

Narrative

At approximately 4:00 AM, Train No. 195 had set off five cars in the west end of the Middle Track at Bannon but did not return the derail to derailing position when they left. No. 195'2 crew asked Train No. L78's crew to replace the derail for them when they came west. No. L78 came out of the intermodal ramp and proceeded west on the Westbound Main. No. L78 had a CLEAR indication at the west end of the Middle Track which was the signal protecting the electric lock switch to the Middle Track. With the derail left off, this signal should not have cleared.

Signal personnel investigating the incident determined that the Middle Track derail was not setting signals to STOP when in the reverse position. The cause was found to be that during a recent construction project the "OS" track wires that had fed through the derail controller box had been replaced with new wires that went directly to the track. There was no evidence on the circuit plans that the track wires had gone through the derail, so the construction forces assumed that the derail was not involved in the work they were doing. The track wires were rerun and broke back through the derail circuit controller to correct the problem.

524	10/22/1995	SP	AB			SP 1HOCMX-20	Signal 1496	Lafayette, LA	N

On October 22, 1995 at approximately 11:45 AM, Engineer operating train no. 1HOCMX-20 traveling east, reported that signal 1502 at the West End of Scott was Yellow, signal 1496 was Green and signal 1482 was Red. Signal 1496 should have been Yellow.

Under the direction of Signal Supervisor, the signal system was put to STOP and thoroughly tested. It was found that the coil wires on the 1496HR relay had been transposed, thus causing the signal to display the incorrect aspect.

After the wires were switched to their proper positions, the signal system was again tested and found to be working as intended with no exceptions.

The signal system was returned to service on October 22, 1995 at 2:00 PM.

1	10/29/1995	BNSF	CTC			BN 9509	Wiring Error	West Antelope, WY	N

At approximately 13:00 hours on 10/29/1995 eastbound train lead locomotive BN 9509, Conductor and Engineer reported intermediate signal at MP 28.1 displayed Green aspect. Next location West Antelope train went on to diverging route with a Red over Green signal displayed. Signal system was tested and wiring error was found. During circuit changes for a signal cutover on 10/27/1995 a wiring error was made. Normal switch correspondence check was inadvertently left out of the pole change circuit feeding line circuits between West Antelope and intermediate signal at MP 28.1. Wiring error was corrected, signal system tested, and placed back in service at 16:36 hours on 10/29/1995. Attachments include diagram of train movement and portion of signal circuit plan. Investigation scheduled for signal employees involved.

Report #	Date	Reporting Carrier	Block System	Interlocking	Auto. Systems	Loco or Train No.	Device that Failed	Location	Collision or Derailment?
			Narrative						
528	11/2/1995	EJE					Track Relay	Vernon Hills, Illinois	N
			On subject interlocking, a track circuit BNWLP, in the fouling section is so arranged that when the Electric Lock installed on the switch allowing movements from the siding onto the main and into interlocking limits is unlocked or opened 1/4" from full normal, the track circuit is de-energized. Once de-energized, it de-energizes a relay that is used as the OS track. All signals on all routes are effectively slotted off with the OS relay down. Shunt fouling wires were inadvertently installed from the main to the fouling section. When the electric locks were unlocked or opened 1/4" from full normal, the track relay BNWLP remained energized through the OS track battery, not effectively slotting off all signals. Shunt fouling wires were removed correcting the failure.					
529	11/6/1995	SP	AB			Pittsburg Local	Signal 391	Avon, CA	N
			On November 6, 1995 at approximately 5:00 PM, Engineer operating Pittsburg Local reported that signal 391 was Green with the hand throw switch at MP B-38.1 in reverse position, lined for the siding. Signal 391 should have been Red. Under the direction of the Signal Supervisor, the signal system was put to STOP and thoroughly tested. The two wires going from the NWP relay coils were incorrectly wired to a battery source coming from an aerial cable, thus, bypassing the U-5 switch circuit controller box at the West End of Avon, and causing the NWPR to remain energized when the switch was reversed. The circuit was rewired, the signal system was thoroughly tested and found to be working as intended with no exceptions.					
536	11/19/1995	SP	AB			SP West Local	Signal 9064	Phoenix, AZ	N
			On November 19, 1995 at approximately 3:57 AM, the Engineer operating train West Local traveling east, reported that signal 9064 was Green with a train still occupying the block ahead of him. Signal 9064 should have been Red. Under the direction of the Signal Supervisor, the signal system was put at STOP and thoroughly tested. It was found that during the relocation of the hand throw switch at MP 906.6, two track circuits were left out of the signal system. The problem was immediately corrected, the signal system was thoroughly tested and found to be working as intended with no exceptions. The signal system was restored to service on November 19, 1995 at 4:00 PM.					

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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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?
			Narrative						
95	5/11/1996	NS	CTC			8951-8955	Human Error	Williamson, WV	N

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.

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.

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

Narrative

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.

Report #	Date	Reporting Carrier	Block System	Interlocking	Auto. Systems	Loco or Train No.	Device that Failed	Location	Collision or Derailment?
91	10/25/1996	CSXT	CTC			Train R67410	Lighting Circuit	South Halls, Halls, GA	N

Narrative

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.

574	11/1/1996	AMTK		Manual			52R Signal	21st St. Int., Chicago, IL	N

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.

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.

Report #	Date	Reporting Carrier	Block System	Interlocking	Auto. Systems	Loco or Train No.	Device that Failed	Location	Collision or Derailment?
77	12/2/1996	BNSF		Remote			Searchlight Signal 808EE	University Ave., Minneapolis, MN	N

Narrative

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.

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.

152	1/23/1997	UP	CTC			UP 3697	None	Mason City, Iowa	N

On January 23, 1997, at approximately 1:50 CDT on the Mason City Subdivision KSIT/22 was northbound at M.P. 199.69 and had the distant signal Green with a route to the siding at U199. The distant signal should have displayed a Yellow signal.

An investigation revealed the Electrocode program at U199 needs to be changed to code a Yellow to the distant signal with the route lined for the siding.

The green bulb has been removed from the distant signal until the new software is installed. All applicable tests were performed.

579	1/28/1997	WC	AB				Signal 105.9	Sussex, WI	N

SA mechanism had improper polarity giving CLEAR indication verses APPROACH.

Mechanism changed out 1/27/97 rail gang working west of signal so circuit could not be tested.

Testman did not return to make final check after track was put back together.

Report #	Date	Reporting Carrier	Block System	Interlocking	Auto. Systems	Loco or Train No.	Device that Failed	Location	Collision or Derailment?
110	2/3/1997	BNSF	CTC			Z-KCTP2-28 Eng Li	None	Argentine, KS	N

Narrative

At 06:45 hours on Feb 3, 1997 Lite Eng 636 passed signal 2W, at CP-143, Middle Track, MP-5.5 of the Emporia Sub., Kansas Division displaying CLEAR, Green over Red. The next signal, 4W at CP-142, MP-5.8 was observed to be at Stop or Red. After stopping short of the red 4W signal the crew reported to the Kansas City dispatcher in the Soc at Schaumberg, IL.

The incident was investigated by Gen. Supvr. Const. and Supvr. Signals. The condition was found to exist as described by the train crew. Further investigation revealed that the 4WHDP relay was energized at CP-142 when Signal 4W was at STOP causing signal 2W at CP-143 to display CLEAR. The 4WHDP relay was energized from the new wiring that was done for future track changes. No. 1 front and heel of the 4WCR had an existing circuit, 4WHDP wired in and working. An additional circuit 4WALOR was crimped into the same flag terminals (US&S plug-in relays) with No. 1 front connected to 4WGB battery buss. This connection to the battery buss was the source to energize the 4WHDP relay.

The wiring was corrected and the system checked out and left operating as intended. There is a formal investigation of this matter pending.

Report #	Date	Reporting Carrier	Block System	Interlocking	Auto. Systems	Loco or Train No.	Device that Failed	Location	Collision or Derailment?
581	2/20/1997	KCS	CTC			UP3589	N/A	Mauriceville, TX	N

Narrative

At 11:30hrs on 2/20/97 Extra UP3589 North the AGLI with Engineer and Conductor was traveling north on the main line at Mile Post 752.88 and received a CLEAR signal at signal #7522 the north bound approach to South Mauriceville. Upon arriving at South Mauriceville Mile Post 750.1 they received a Red over Lunar signal which is a normal head in move into the siding. Signal Maintainer [redacted] and Signalman [redacted] performed all applicable tests and found and corrected the problem. Signal Supervisor [redacted] was en route and verified testing and results with [redacted].

On 2/19/97 [redacted] and [redacted] combined a split battery system (LB10 & RB10) at control point South Mauriceville, TX. During a previous wiring change an old circuit had been left in, which referenced B10 to the Code 4 output (Green output) on the south Electrocode IIC unit. This caused the approach signal (7522) to display a Green aspect. Proper testing was not performed after disarrangement of LB10 and RB10. A formal investigation is scheduled concerning this matter.

Attached are the statements of findings from [redacted] and [redacted].

Report #	Date	Reporting Carrier	Block System	Interlocking	Auto. Systems	Loco or Train No.	Device that Failed	Location	Collision or Derailment?
143	3/22/1997	NS	CTC			8610, 7026	Wiring Error	Harriman, TN	N

Narrative

At approximately 3:00 PM, Train No. 235 was running northbound approaching Harriman. The signal at milepost 47.1D, the approach to Harriman, was displaying a CLEAR aspect. Knowing the location of Train No. 196 ahead, the crew correctly assumed that their next signal (Signal 24-2N at Harriman, milepost 49.6D) would be displaying STOP and that they would have seen an APPROACH at 47.1D. Train No. 235 had no trouble complying with subsequent signal indications and reported the incident to the dispatcher. A following train, No. 302, reported a similar occurrence at about 3:30 PM.

Signal personnel were called to investigate and were able to duplicate the reported incident. The problem was traced to a wiring error in the code out selection circuit for the Electrocode box connected to the south track at Harriman. The error allowed a "D" code (code 4) to be sent to 47.1D when a "H" code (code 2) should have gone out. The problem was corrected, the system was checked and the signals were returned to service.

The wiring error was apparently made during a cut-in of a new code system the day before the incident. The modified prints called for the #5 contact group in the 24-2NAG relay to be used for an indication circuit. During cut-in, it was discovered that the Electrocode code selection circuit already used this group, and somehow as the conflict was corrected, the front contact selection wire got doubled in with the heel wire.

Report #	Date	Reporting Carrier	Block System	Interlocking	Auto. Systems	Loco or Train No.	Device that Failed	Location	Collision or Derailment?
144	3/22/1997	NS	CTC			8516-8558	Wiring Error	Poe, VA	N

Narrative

At approximately 12:10 AM, Train No. 184 eastbound received a CLEAR indication on #2 signal at Poe off the Beltline for movement onto Main No. 1. At the time, Train No. 676 was working the Car Lot track, having entered through the west end crossover off of Main No. 1. Though No. 676 was clear of the fouling circuit, both the mainline and inside hand throw switches were still in the reverse position, and since this was in the block immediately east of Poe, the #2 signal should not have cleared. The dispatcher had requested the route for Train No. 184 when the block light went off on Main No. 1 east of Poe, thinking that No. 676 had cleared up in the Car Lot track and restored his switches. The #2 signal went in time once No. 676's crew started to restore the switches. Train No. 184 did not move on the #2 CLEAR signal indication since they were aware of the reversed switches. The alertness of the involved train crews prevented an accident in this case.

Signal personnel were called to investigate and were able to duplicate the incident. They found that neither the mainline nor the inside switch were wired according to the print. The way they were wired caused the normal switch repeater relay for this crossover to be energized not only when both switches were normal, but also when both were lined reverse (for movement main to Car Lot track). When either switch was out of correspondence with the other, the relay dropped. This is why the condition was not detected during 236.103 tests.

The wiring errors were corrected, the signal system tested appropriately, and signals were returned to service. It is not known when or how this wiring error came about. Due to the "normal" nature of train operations involving this switch, it could have gone undetected for a long time.

Report #	Date	Reporting Carrier	Block System	Interlocking	Auto. Systems	Loco or Train No.	Device that Failed	Location	Collision or Derailment?
			Narrative						
132	3/30/1997	CSXT	CTC					North Tucker, Tucker, GA	N

On Saturday March 30, 1997 at 1:38 P.M. northbound train Q51428 reported Northward Absolute Signal at North Tucker displaying a CLEAR indication while a southward train was just south of the Gloster Holdout signal.

The signal system was removed from service immediately. Signal personnel were able to recreate the situation and investigation revealed that a small machine screw was bridging the LCH relay's 1 and 2 heel contacts thus causing the LA signal at North Tucker to display a CLEAR aspect.

The screw was removed, operational tests completed, and proved the signal system to operate properly. Signals were returned to service.

Further investigation revealed that approximately 1 year earlier the installation of radio control equipment and the removal of Union Switch and Signal 506 system was the origin of the machine screw. The old code equipment was residing directly above the LCH relay and is believed to be the culprit of the machine screw and was inadvertently missed during clean up.

An alert bulletin has been issued to all field personnel to promptly inspect for similar conditions as well as emphasizes the importance of prompt and proper cleanup subsequent to wiring work.

114	4/15/1997	BNSF	CTC			UP-		North Portland Jct., Oregon	N

At 12:30 IB 4/14/97, the signal crew cut several cables with the backhoe. It was determined that just one of the cables was being used, and the rest were abandoned. After the cable was spliced together, it was decided that since the cable from the U.P. signal to the case and the cable from the U.P. case to the BN case had not been disturbed, only the circuits between the BN case and the BN tower were tested.

On 4/15 at 02:45, I was called back because the U.P. was investigating a false proceed. They said their Yellow repeater was being held up with 4 volts on the coil, and sending a Green back to their approach when the absolute signal at North Portland Jct. was Red. It was determined that the cable supplying N-10 to the U.P. case was not repaired. With this missing, and because the case battery negative, and the tower battery negative were tied together in the U.P. case, the B-10 connected to the UP-H relay found its way back to N-10 through the Yellow repeater in the U.P. case picking this relay, and causing a false proceed on the U.P. approach signal. The negative batteries were tied together by the U.P. in their case, but this was not shown on our print or theirs.

The N-10 cable was repaired, and the negative batteries were separated in the case eliminating the possibility of a single fault in the N-10 allowing a track relay to pick up through the common negative.

Report #	Date	Reporting Carrier	Block System	Interlocking	Auto. Systems	Loco or Train No.	Device that Failed	Location	Collision or Derailment?
115	6/14/1997	BNSF	CTC			Train S-CHRII-14, E	None	Argentine, Kansas	N

Narrative

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

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

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

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

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

Report #	Date	Reporting Carrier	Block System	Interlocking	Auto. Systems	Loco or Train No.	Device that Failed	Location	Collision or Derailment?
147	6/25/1997	NS	CTC			6594-8971	Human Error	Parrish, AL	Y

At approximately 11:49 PM, Train No. 152, running east on signal indication, derailed on the west end of No. 2 power crossover at Parrish, MP NA-95.6.

The west end switch is a facing point move for eastbound trains. Though the route requested and the signal indication were for a straight move, the west end switch was found to be locked up in the reverse (crossover) position. TC logs showed a normal indication for this crossover since about 3:00 PM that day.

Investigation revealed that a combination of two wiring errors in the Parrish signal bungalow resulted in this accident. The first error, precipitated by an outsider cutting some of the underground cabling, resulted in the crossover correspondence relays being controlled only by the condition of the east end switch. The west end of the crossover had been erroneously patched out of the correspondence circuit. The crossover had apparently been operated this way without incident since June 10th. Then sometime presumably during the early afternoon of June 25th, the motor control straps (in the bungalow) were inadvertently removed from the west end switch while it was in the reverse position. Then when the Birmingham dispatcher requested the crossover normal at about 3:00 PM, the east end threw normal and, due to the first wiring error, picked up the normal switch correspondence relay in the bungalow. The west switch stayed locked up reverse since motor control was absent. With the crossover in this condition likely three trains, running on signal indication trailed through the west switch running westbound on the main track. The trains and approximate times were: No. W73 at about 4:01 PM, No. 319 at about 6:01 PM, and No. 191 at about 8:06 PM. Marks found on the switch point following the derailment indicated that the switch had been run through by at least one westbound move on the main while the switch was laying reverse. The point was probably bent open by this action, and this set up the condition for a derailment on the next eastbound train.

Report #	Date	Reporting Carrier	Block System / Interlocking / Auto. Systems	Loco or Train No.	Device that Failed	Location	Collision or Derailment?
116	7/9/1997	BNSF	CTC	LWAS861	Wiring Error	East Columbia River, WA	N

Narrative

Signal Technician and a Signalman were testing new VHLC equipment at East Columbia River control point in preparation for signal cutover. During the testing the flex wires for the westbound signal lower head were opened and when closed the WBRE wire was placed on the terminal for WBLE which resulted in the Lunar aspect being displayed when the signal should have been Red.

Signal wires restored to proper position and complete signal aspect checkout was conducted with no other exceptions noted. Formal Investigation schedules on both individuals involved.

164	8/28/1997	UP	CTC	CNW 6887	None	Dunlap, IA	N

On August 28, 1997, at 11:45 CDST, on the Boone Subdivision at Dunlap, Iowa, westbound APRNP reported the westbound approach signal 299.9 to Dunlap displayed a Yellow over Green indication, and the westbound signal at Dunlap (A304) displayed a Red over Green indication with the switch lined for the siding.

An investigation revealed that the 299BG and N299BG wires were swapped in the signal head at signal 299.9.

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

165	9/2/1997	UP	CTC	UP 9512	None	Harvard, CA	N

On September 2, 1997, at 14:00 CDST, on the Los Angeles Subdivision at Harvard, CA, westbound IG2LA/30 observed a Flashing Yellow indication at westbound signal 172.3, and with a Red indication at the next westbound signal 170.5.

An investigation revealed that a faulty eyelet on the HDR relay at signal 172.3 shorted the #1 and #2 reverse contacts together which allowed the flasher relay to pick up and operate.

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

169	9/22/1997	UP	AB	SSW9627	None	Fort Worth, TX	N

On September 22, 1997, on the Dallas Subdivision at Fort Worth, TX, westbound ZMEL/21 on track #1 observed a Green signal aspect at westbound signal T246, and Red signal aspect at the next intermediate westbound signal 246.3, with the track occupied west of 246.3.

An investigation revealed the polarity was reversed on the "D" relay coils for signal T246.

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

Report #	Date	Reporting Carrier	Block System / Interlocking / Auto. Systems	Loco or Train No.	Device that Failed	Location	Collision or Derailment?
590	12/2/1997	AMTK	AB	101	3BSA Relay	Phila., PA	N
			Narrative: Amtrak train no. 653 engine no. 101 traveling west on no. 3 track passed auto signal mo. 69. Auto signal 69 on no. 3 track was observed displaying APPROACH with the block occupied. C&S forces investigating found the "3BSA" relay not wired properly. The relay was replaced. All appropriate tests were made along with a complete operational check. Signal 69 was returned to service with no exceptions. Disciplinary actions have been initiated to prevent any reoccurrence.				
177	12/5/1997	UP	CTC	CSX T8603	None	AMA Jct., LA	N
			Narrative: On December 05, 1997 at 04:23 CST, on the Alexandria Subdivision at CPL021, AMA Jct., LA, southbound MLINOB/04 on track #1 observed a Yellow over Red signal with the track ahead occupied. An investigation revealed the HR relay output and relay common wires swapped between track 1 and track 2 at LO21. The signal system was restored to proper operation, and all applicable tests were performed.				
591	12/16/1997	CR	CTC	MAIL 8M, Eng 5564	Signal 2E	Nasby Interlocking, Toledo, OH	N
			Narrative: Crew of MAIL-8, located on the siding west of Nasby Interlocking, Chicago Line, MP 272, observed signal 2E on Track 2 displaying APPROACH with MAIL-8M head end in the interlocking and the rear end west of the plant on #2 Track. Cause was found to be improperly wired contacts on the 2HPR polar relay. This allowed lighting energy to hold up the SR relay when AC power was off. The additional wire was removed from the relay, all appropriate tests were performed and the signal system returned to service.				
595	1/14/1998	INOX	Automatic	None	1342 Approach Signal	Lima, Ohio	N
			Narrative: Approach Signal 1342 on northbound approach to the Conrail Sugar Interlocking, Lima, Ohio displayed a Green aspect into a Red home signal at the interlocking. This condition was caused by the control wires 1342 HD and N1342 ND having been transposed where the line wire and aerial cable junction at MP 133.45. This condition was discovered about 9:00 A.M. on 1/14/98 and corrected and placed back into service at 2:30 P.M. The discovery of the false proceed was made by RailTex and RCL signal personnel while making routine tests of the system. It is unknown how long this condition existed, but it appears to have been wired in when the aerial cable was installed several years ago. RailTex acquired this property less than a year ago from the Grand Trunk Railroad.				

Report #	Date	Reporting Carrier	Block System	Interlocking	Auto. Systems	Loco or Train No.	Device that Failed	Location	Collision or Derailment?
182	2/2/1998	BNSF	CTC			LKAN677	Color Light Signal	Arcadia, KS	N

Narrative

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

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

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

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

438	2/28/1998	CSXT	CTC			Q21327	None	Potomac Run, Fredricksburg, VA	N

On February 28, 1998, Q21327 was traveling south on the RF&P subdivision on signal indication. The engineer called a CLEAR signal at the Potomac Run intermediate signal (633A). He noticed that the cab signal displayed APPROACH as the train passed signal 633A. The crew proceeded observing the most restrictive indication, the cab signal. The crew notified the dispatcher of the conflicting indications. The signals were removed from service.

Signal personnel were dispatched to investigate. The investigation revealed that the wrong relay had been altered during a consolidation of stand alone dragging equipment detectors to a combined equipment defect detector at Ross. The alteration to the DR relay vice the DEDPR relay resulted in the signal displaying a CLEAR aspect whenever code was received at the signal. The signal did display a Red aspect when no code was received at the signal.

The circuit was rewired to alter the DEDPR relay and the signal was returned to service after all operational checks were completed.

203	3/7/1998	UP	CTC			Amtrak #6	None	Citrus Heights, CA	N

On March 7, 1998 at 1000 PST, on the Martinez Subdivision at Citrus Heights, CA, eastbound Amtrak #6, on the main track and was lined from 2 Tk to 1 Tk, observed the approach signal 2E to Citrus Heights at MP 99.4 Green with the Home signal at Citrus Heights Red over Green.

An investigation revealed the pole change wires on the FYR at signal 99.4 were reversed causing incorrect polarity to the HPR relay.

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

Report #	Date	Reporting Carrier	Block System	Interlocking	Auto. Systems	Loco or Train No.	Device that Failed	Location	Collision or Derailment?
439	4/24/1998	CSXT	CTC			Q21922	None	Godsend, Fostoria, OH	N

Narrative

At about 10:48 AM on April 24, 1998, the crew on train Q21922 viewed a CLEAR aspect on the #10 signal (LE&W) westbound on number one track at Fostoria, Ohio and a LIMITED CLEAR aspect at the absolute W1 signal at Godsend. The crossover was reversed for a movement from number one to number two track. The aspect should have been an APPROACH into a LIMITED CLEAR. The signals were removed from service pending investigation by signal personnel.

Signal personnel investigated the problem and verified the aspects as described above. The problem was identified as a wiring problem in a temporary case. The temporary case contained an Electrocode 4H. The wire for the Code 7 decoder was on the Code 3 decoder post. This caused the false proceed. The wire was returned to its proper post. Operational tests were performed and the signals were returned to service on April 25, 1998.

Report #	Date	Reporting Carrier	Block System	Interlocking	Auto. Systems	Loco or Train No.	Device that Failed	Location	Collision or Derailment?
184	5/4/1998	BNSF	CTC			CNW8820	None	Logan, WY	N

Narrative

At approximately 2115MDT Signal Maintainer was notified of a switch out of correspondence and a track indication on main track 2 at crossovers 72.5. On inspection maintainer found 3B moveable point frog and 3A switch had been trailed through and sustained bent throw, lock and point detector rods on both switch layouts. Dispatcher was notified to stop train movements and Signal Supervisor and Signal Manager were notified. Vital Harmon Logic Controller logs were obtained and it was determined that at 21:05:23 MDT the C&NW 8820 coal train CANN0478 with 107 loads and 0 empties 14980 tons, had received a Red over Yellow DIVERGING APPROACH on the 1E signal over crossover main track 1 to main track 2 and had trailed through the 3B moveable point frog and 3A switch in the reverse position. Train crew was unaware they had trailed through the reversed frog and switch. Crossover at 72.5 had been reconfigured same day, with preliminary changes made to have the new crossover from main track 1 to main track 2 used in hand throw only, and the existing crossover from main track 1 to main track 2 was removed from service to allow reconfiguration for addition of third main track and final cutover on May 6. In an effort to expedite traffic during the track changes, Signal Supervisor used existing control and indication ciruits from the retired crossover to control and indicate the new main 1 to main 2 crossover using the existing VHLC program. External Indication Locking tests were performed on all switches and moveable point frogs and all showed correct normal and reverse correspondence with the VHLC. Supervisor assumed that since no VHLC software had been changed that it was not necessary to check switch indications against clear signals over affected routes. As a result of moving control and indication circuits from the retired crossover east of 3 crossover to the new crossover west of 3 crossover neither the 1EBHGR or the 2WBHGR checked the 3 crossover switch correspondence. A 1EB signal was requested over main track 1 to main track 2 crossover and the 3 crossover reverse and the eastbound CNW 8820 proceeded on a APPROACH DIVERGING splitting the 3B moveable point frog and the 3A switch.

CORRECTIVE ACTION: 3B moveable point frog and 3A throw, lock, and point detector rods repaired, adjusted and tested switches for indication correspondence and returned to service at 0300 MDT May 5th. Main track 1 to main track 2 crossover removed from service until May 6th, when new VHLC program was installed and signal cutover performed.

Investigation scheduled with Signal Supervisor.

Report #	Date	Reporting Carrier	Block System	Interlocking	Auto. Systems	Loco or Train No.	Device that Failed	Location	Collision or Derailment?
601	5/17/1998	INOX	CTC			3807	60R	Cincinnati, OH	N

Narrative

On May 17, 1998 at approximately 07:00 AM vandals set fire to a pole and cables at Mile Post 10.9 Ridge Interlocker. The signal Maintainer was called at 9:00 AM and found the power and 7 conductor destroyed. Repairs began about 12:00 PM and were complete about 06:00 PM. During reconnection the H's for the 60R signal were transposed, which gave a Green signal instead of a Yellow into a Red. The signals were put back into service.

At 10:45 PM the Signal Dept. was informed of the false proceed and took the signals out of service. The problem was found and corrected. The signal system was tested and put back into service.

603	6/18/1998	CR	CTC			CP 5616	Auto. Sig. 94E	Castasauqua, PA	N

Signal control wires terminated in switch location junction box reconnected on opposite terminals reversing polarity and allowing Sig. 94E to display CLEAR with signal 2E at CP Caty at STOP. Wires were properly connected, all tests performed and signal system returned to service.

Investigation is being held to determine responsibility.

440	6/22/1998	CSXT	CTC			Q50321	None	NE Weston, Weston, OH	N

On June 22, 1998, the southbound Q50321 reported a CLEAR signal at the NE Weston and a STOP signal at the SE Weston. The signals were removed from service and signal personnel dispatched to investigate. The situation was simulated by the signal personnel and the false clear was confirmed. The investigation revealed that reverse polarity on a pair of HD wires had caused the false clear signal. The polarity of the HD wires was corrected and the signal system was tested and returned to service.

A signal maintainer was called to investigate a problem at the SE Weston on June 14. The maintainer identified the problem as an open in the HD lines and changed to a pair of spare wires. He placed two spare wires on each of the open cable wires marked R22HD4 and NR22HD1. He then went to the Taylor St. crossing warning system and jumpered the wires together to complete the circuit from the SE Weston. The maintainer checked voltage to verify the circuit but failed to perform an adequate operational test of the circuit before returning the signals to service. The polarity of the circuit was inadvertently swapped by the maintainer. This was determined to be the cause of the false clear.

212	8/7/1998	UP	CTC	Manual		UP-0508	None	Kinder, LA	N

On August 7, 1998 at 22:45 CDST, on the Beaumont Subdivision at Kinder, LA, westbound MLIBT-07, at Mile Pole 545.3, observed a Yellow westbound signal governing the Interlocker at Kinder with the gate lined against movement on the Beaumont Sub.

An investigation revealed a wiring error which caused the gate repeater to be ineffective in the signal circuits.

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

Report #	Date	Reporting Carrier	Block System / Interlocking / Auto. Systems	Loco or Train No.	Device that Failed	Location	Collision or Derailment?
213	8/27/1998	UP	CTC	UP 8266	None	Midvale, UT	N

On August 27, 1998 at 15:46 MDST, on the Provo Subdivision at Midvale, Utah, westbound 1 RUT611 27, at Mile Pole 26.30, had a switch lined under him while he was occupying the OS circuit.

An investigation revealed that an OS track relay was not wired into the OS track repeater, which allowed the switch to be lined while the train occupied a portion of the OS circuit for that switch.

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

214	8/27/1998	UP	CTC	SP 8108	None	Georgetown, LA	N

On August 27, 1998 at 14:40 CDST, on the Monroe Subdivision at Georgetown, LA, northbound MDYNL-26 observed the northbound signal at Control Point A560 upgrade from Red to Green with OS track circuit occupied.

An investigation revealed the relay track connections on either side of one insulated joint at the north end of the OS were transposed, which allowed the track battery from the north to be in series with both relays and energize the relays with the OS track occupied.

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

445	10/9/1998	CSXT	CTC	Q44009	None	NE Cherry, Plant City, FL	N

On October 9, CSX train Q44009 was traveling northbound on the main line of the Lakeland Subdivision approaching NAS Cherry. The train crew observed Green aspect on the main line NAS and a Red over Green aspect on the siding NAS. The signals were removed from service and train control personnel dispatched.

Train control personnel responded and verified the aspects viewed by the train crew. After investigation, it was determined the root cause of the false clear was caused by wire changes made recently in conjunction with replacing the searchlight with a color light signal. The operational tests were not performed correctly after the wiring changes were completed. The RAHDGR contact in the circuit the the NAS main line had been replaced with a contact from the RHDPR. The effect of this change was to remove the checks on switch position, detector circuit, and opposing routes when lining a signal. Therefore, both signals were lit when a northbound signal was requested. The wiring was corrected and the signals were returned to service after operational tests were completed.

606	10/12/1998	AMTK	CTC	316	Signal 884-1 CS 89.2	Guilford, CT	N

Engineer on train 12 reported signal 884-1 displayed CLEAR aspect and CLEAR cab instead of cab speed. Also, CS 89.2 displayed CLEAR cab instead of cab speed with signal 1E at Guilford displaying cab speed. Upon investigation it was determined that peripheral boards of Micro Lok Plus for track #1 and track #2 at Loc. A at Guilford Interlocking were swapped which allowed wrong code to be sent to signal 884-1 and CS 89.2. 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?
217	10/13/1998	UP	AB	Unknown	None	El Paso, TX	N

Narrative

On October 13, 1998, at unknown time, on the Valentine Subdivision at El Paso, TX, an unknown westbound train on track #1 reported the westbound signal at MP 826.9 was Red over Green over Red with the next westbound signal Red over Red.

An investigation revealed the wires on the #3 and #4 contacts of the 2RBHDR relay were transposed.

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

218	10/21/1998	UP	AB	UP 6046	None	Pastura, NM	N

On October 21, 1998 at 23:45 MDT, on the Carrizozo Subdivision at Pastura, NM, eastbound IILADU-20 was lined from the Main track to the siding, and eastbound approach signal at MP 1543.0 and the eastbound home signal for the switch at MP 1545.8 displayed a Green signal.

An investigation revealed the switch was not wired correctly which allowed the normal switch position indication to remain energized with the switch reverse.

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

199	11/4/1998	NS	CTC	8929-6659	Human Error	Bandy, VA	N

At approximately 6:00 AM, train J69, a single unit helper, had traveled westbound on the Dry Fork Branch to the west end of Bandy, where he was to clear up in the siding. After lining himself into the siding and getting in the clear, the Engineer was in the process of tying his unit down when he heard the following train J60 call a CLEAR signal westward at the east end of Bandy. Since the engineer had not yet lined the handthrow mainline switch and derail back to normal, he reported the occurrence as a false proceed.

Signal personnel were called to investigate and were able to duplicate the problem. The normal switch detection relay for the handthrow switch is located at an ElectroLock cut section case about 700 feet west of the switch. Though this relay was properly down when the west end of Bandy switch was not normal, it was not affecting the electronic track code passing through the ElectroLock equipment. Investigation revealed that a handthrow switch adjacent to the ElectroLock had been removed from the track two days following the FRA 236.103 testing. When modifications were made for this removal, the maintainer erroneously cut out the circuit through the WP relay, too. Improper testing after disarrangement resulted in the wiring error going undetected at the time.

Corrections were made to the circuits, the signal system was properly tested and returned to normal service.

190	11/17/1998	BNSF	CTC	UPSACD, Engine #	70 L Signal	Kansas City, MO	N

The UPSACD was a northbound train approaching the 70L signal at Tower 8, Sheffield, on the KCS Railroad. The train reported that the 70L displayed a Red over Green aspect with the next signal, 66L, displaying a Red aspect. Signals were tested and found to be as reported. The cause was due to a wiring error in the signal control circuit. Circuit was corrected and signals tested and restored to service on 11-18-98 at 0200 hours.

Report #	Date	Reporting Carrier	Block System	Interlocking	Auto. Systems	Loco or Train No.	Device that Failed	Location	Collision or Derailment?
			Narrative						
446	12/14/1998	CSXT	CTC				None	NE Parkwood, Parkwood, AL	N
			A southbound train observed a CLEAR signal at the SAS NE Parkwood. The switch at the SE Parkwood was lined normal and the next switch to the south was lined reverse for a movement onto the Lineville Subdivision. The signal at ME Parkwood should have displayed an APPROACH MEDIUM aspect for this movement. The signals were removed from service and signal personnel were dispatched. Signal personnel verified the false proceed indication and identified two wires that had been reversed during a splice to repair a cut cable. The wiring error resulted in a false track code to be sent north to the SAS NE Parkwood. The splice was rewired correctly and the signals were returned to service following operational tests.						
220	12/18/1998	UP	CTC	Manual		UP 9455 W	None	Houston, TX	N
			On December 18, 1998 at 09:30 CST, at Tower 26 on the Terminal Subdivision in Houston, Texas, at mile post 360.69, westbound IEWLBB 18, on Main Track #2, reported westbound signal #70 was Green and the next westbound signal #59 was Red. An investigation revealed the yellow/green control wires for signal #70 were reversed. The signal system was restored to proper operation, and all applicable tests were performed.						
191	12/28/1998	BNSF	CTC			LSOE8151-27	SA Signal 42RA	West Aurora, MO	N
			At approximately 0040 hours, December 28, 1998, westbound train LSOE8151-27, reported a Green main line signal at East Aurora, Yellow at West Aurora and Red at Interlocker Aurora. Signal at East Aurora should have been Yellow for westbound movement, account 2D signal at Interlocker. On 12-16-98 signal 42RA at West Aurora had cable and light head changed out. Jumper on the GY repeater circuit of this signal had been mistakenly installed. The error was not discovered during operational checkout. The jumper was removed and system tested at 0400 hrs on 12-28-98.						
623	10/22/1999	CR		Remote		Unknown	2E Signal	CP Jersey, Delair, NJ	N
			On October 22, 1999, Conrail's Director-Operating Rules notified [redacted], Asst. Chief Engineer - C&S that a B. of L.E. Local Chairman informed him that 2E signal at CP Jersey was displaying a SLOW CLEAR when it had previously displayed a SLOW APPROACH going from CP Jersey to CP Hatch. The cause of the problem was the 2RE and 2R2E wires for the 0 and 1 lights were reversed causing the PL4 signal to display a SLOW CLEAR when it should have been displaying a SLOW APPROACH. The signal was rewired and tested and returned to service on October 22, 1999. An investigation will be held to ascertain employee responsibility. Further, instruction on company policy regarding circuit changes and testing will be reviewed with all C&S employees.						

Report #	Date	Reporting Carrier	Block System	Interlocking	Auto. Systems	Loco or Train No.	Device that Failed	Location	Collision or Derailment?
268	1/8/2000	UP	CTC			UP5869	None	Odem, TX	N

Narrative

On January 8, 2000, at 06:10 CST at Odem, Texas, on the Brownsville Subdivision at MP 156.40, northbound MBVHO/07, on the main track, reported a CLEAR northbound approach signal at J156, into a Red over Lunar northbound home signal at J159.

An investigation revealed a wiring error on the Electrocode unit at J156.

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

237	2/4/2000	CSXT		Automatic		Q13501	None	Columbia Ave., Hammond, IN	N

On February 4, 2000, Q33501 reported to the dispatcher that he had received a MEDIUM APPROACH indication at the WAS #1 Track at Columbia Avenue with train engine J701 in the block ahead. The signals were removed from service and Signal personnel were dispatched.

Signal personnel simulated the movement and verified the false proceed indication. The westbound signal on #1 track at Columbia Avenue upgraded from STOP to MEDIUM APPROACH when the west end of the eastbound crossover from #1 to #2 track was reversed. Further investigation revealed that a pair of Safetran Dual Wideband Shunts were improperly applied around both insulated joints between the track circuits on #1 track. The improperly applied shunts acted as a DC shunt, allowing battery from the adjacent track circuit to pick the track relay when the shunt & break circuit broke the track circuit battery feed.

The wiring error was corrected and the signals were returned to service following operational testing.

628	3/27/2000	AMTK	AB			N/A	Hand Throw Switch MP 14.9	Norwood, MA	N

Maintenance inspector discovered that the hand throw switch at MP 14.9 was not checking the signal control circuits for 2E signal at Norwood Central and 131.2 signal. This was found during a routine maintenance inspection. It appears that due to a signal circuit revision at Railroad Ave. sometime in 1995 the signal control circuits were removed from checking the hand throw switch at MP 14.9. Circuits were revised, tested and signal system returned to service. Person responsible for circuit changes made in 1995 no longer is employed by Amtrak.

Report #	Date	Reporting Carrier	Block System / Interlocking / Auto. Systems	Loco or Train No.	Device that Failed	Location	Collision or Derailment?
240	4/21/2000	CSXT	CTC	Y16221	#27 Track Circuit	Baldwin, Baldwin, FL	N

Narrative

At approximately 1558 hours on April 21, 2000, northbound single engine Y16221 passed the northbound signal at Baldwin on the main track. The engine had previously indicated occupancy on two separate track circuits at Baldwin, but then indicated clear of the Baldwin circuits upon passing the northbound signal. When the track circuits indicated clear, a previously stored request began automatically lining signals. The switch at Baldwin subsequently reversed and a southbound route lined through Baldwin while Y16221 still occupied the track. The signals were removed from service and Signal personnel were dispatched.

Further investigation revealed that the track circuit had been altered by Signal employees attempting to resolve a previous track circuit problem. The employees believed that the existing track wires were faulty, disconnected the existing track wires, and replaced them with temporary wire. In re-wiring the track circuit, the employees failed to recognize the track circuit as a series fouling circuit, and inadvertently eliminated a short portion of the main track from the circuit.

The wiring errors were corrected, and signals were returned to service following operational testing.

The cause was found to be improper operational testing following field wiring changes.

Report #	Date	Reporting Carrier	Block System / Interlocking / Auto. Systems	Loco or Train No.	Device that Failed	Location	Collision or Derailment?
632	5/15/2000	METX	Manual	Unknown	Signal 2-0	Chicago, IL	N

Narrative

Signal 40R was reported Green and signal at 2-0 was reported Red. Found wires on RSRIT on print A1-2-1A contact #16 and 13 reversed. Repaired same signal 5/15/00 2:50 PM.

Report #	Date	Reporting Carrier	Block System / Interlocking / Auto. Systems	Loco or Train No.	Device that Failed	Location	Collision or Derailment?
633	5/23/2000	PATH	AB		Signal 232	Tunnel E, Exchange Place, Jersey City, NJ	N

Narrative

At some undetermined time in the past, automatic signal 232Z was improperly wired in the field to display a speed control aspect (Rule 208, Figure 1 - Yellow over Yellow), when it was designed to display an APPROACH aspect (Rule 211, Figure 1 - Yellow). Due to track alignment and entering a station platform, this is a slow speed location, and no unsafe conditions or incidents have occurred over the period of years that this has been in place. The wiring has been corrected and the signal displays the proper aspects as designed.

Report #	Date	Reporting Carrier	Block System / Interlocking / Auto. Systems	Loco or Train No.	Device that Failed	Location	Collision or Derailment?
271	5/31/2000	UP	CTC	SP 2710	None	Houston, TX	N

Narrative

On May 31, 2000, at 11:30 CDT, at Houston, TX on the Terminal Subdivision at MP 2.8, eastbound YHS52-31 on #2 main was lined through the 121 x-over, and reported the eastbound signal 19B at the #23 switch displayed a Red over Green.

An investigation revealed the HD control wires to eastbound signal 19B were reversed.

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

Report #	Date	Reporting Carrier	Block System / Interlocking / Auto. Systems	Loco or Train No.	Device that Failed	Location	Collision or Derailment?
260	6/4/2000	NS	CTC	NS 9316	Human Error	Bellwood, NJ	N

Narrative

At approximately 5:00 p.m., June 4, 2000, train #I62H403 was eastbound on the Lehigh Line, in the controlled siding between CP 67 and CP 64, when they observed the eastbound signal at CP 64 on the single track displaying a CLEAR aspect with the #1 switch at CP 64 in reverse position lined against them.

Investigation revealed switch junction box had been damaged earlier in the day (at approx. 9:00 a.m.) by what appears to be All Terrain vehicles. Repairs were made by Maintainer and Maintainer Test. They gave the switch back to the dispatcher at 2:06 p.m. The investigation by Fye and Renninger revealed four conductors of the switch cable had been placed in the wrong position which resulted in the switch points laying in the reverse position, yet indicating it was in the normal position. Wiring corrections were made and a complete breakdown of the switch indication circuits were done along with verification of switch correspondence with the dispatcher. Indication locking tests were made and the interlocking was restored to service at 9:55 p.m.

The false proceed signal at CP 64 was due to both maintainers' failure to make proper in-service tests after disarrangement of the signal system.

Report #	Date	Reporting Carrier	Block System / Interlocking / Auto. Systems	Loco or Train No.	Device that Failed	Location	Collision or Derailment?
636	6/15/2000	PATH	AB		Auto Signal 90	Hoboken Station, Hoboken, NJ	N

Narrative

A wiring change in the signal control circuit was improperly installed and tested as part of a timing relay replacement. This resulted in the improper display of an APPROACH aspect (Yellow, old Rule 211, Fig. 1, new Rule 213, Fig. 1) with no train on the approach circuit, instead of a STOP AND PROCEED (Red, old Rule 215, Fig. 1, new Rule 219, Fig. 1). Due to this being a stub-end terminal station, this is a slow speed location. No unsafe incidents occurred. The wiring was corrected, retested, and the signal displays the proper aspects as designed.

Report #	Date	Reporting Carrier	Block System / Interlocking / Auto. Systems	Loco or Train No.	Device that Failed	Location	Collision or Derailment?
261	6/24/2000	NS	CTC	8933, 2506, 8713	Human Error	Dorset, OH	N

Narrative

At approximately 2:22 a.m., June 24, 2000, train #62V was southbound at MP 10.5 on the Youngstown Line when they observed signal 10S displaying APPROACH LIMITED (Yellow over Flashing Green) with signal at CP 13 MEDIUM APPROACH (Red over Flashing Yellow). The train crew knew that MP 10.5 should have been displaying Yellow over solid Green since they were lined to take the turnout at CP 13. The number 15 turnout at CP 13 is limited to 30 MPH, therefore, the signal observed by the train crew at 10S, Yellow over Flashing Green, was improper since it was a 40 MPH speed limit through the turnout at CP 13.

Investigation determined that this improper signal was displayed due to our Signal Supervisor replacing the EC-4 box when it was in trouble on 6/1/00, at CP 13. He placed a control wire on the wrong terminal post of an EC-4 box which generated a Code 4 instead of a Code 3. He failed to make proper in-service tests after disarrangement of the signal system.

The wiring on the EC-4 box was corrected, in-service tests were done and the signal system placed back in service 6/24/00.

Report #	Date	Reporting Carrier	Block System / Interlocking / Auto. Systems	Loco or Train No.	Device that Failed	Location	Collision or Derailment?
243	7/19/2000	CSXT	AB	Q138-19	EB Signal, #2 Track	Scott Haven, PA	N

Narrative

At approximately 1830 on 19 July, Q136-19 eastbound on #2 track reported a CLEAR signal with the crossover from #2 to #1 track lined against them. The eastbound signal on #2 track was removed from service.

The false clear signal was found to be due to a wiring error. The B-12 wire was found to be connected to the heel contact of a relay in the 51B circuit instead of to the front contact. The wiring error bypassed a relay contact which should have opened the HD circuit when the switch was reversed and set the signal to red. With this contact bypassed, the switch could be reversed without knocking down the opposing signal.

The wiring error was corrected, operational checks were performed, and the signals were restored to service at 2310.

230	8/2/2000	BNSF	CTC	GCCMTAC931	169.7	Culbertson, MT	N

Narrative

After a cutover a signal man called Supervisor and then a train crew member of the train reported to Signal Supervisor that at approximately 1500 MDT his westbound train had passed signal 169.7 (the approach to East Culbertson) displaying a Yellow over Yellow. The signal at East Culbertson was Red over Lunar. Signal crew had just installed new intermediate signals between Culbertson and Snowden. The approach signal was configured for a signaled siding that will be cut in later this month. During checkout there was missed communication between parties at approach signal and control point. The control point was modified to not allow a Code 3 to be transmitted. System checked and operating as intended. Decision reached by this group that all future cutovers will have aspect chart at EACH location. Counseling session will be held with this group to discuss aspects and the importance of diligently observing and relaying them during a cutover.

276	8/10/2000	UP	AB	UP6053	None	Mulford, CA	N

Narrative

On August 10, 2000 at 00:50 PDT in Mufford, CA on the Coast Subdivision, southbound IOAMN 09, on the Main Track at MP 15.70, reported the northbound signal 15.70 displayed a Green aspect when they were 100 feet south of signal 15.70 and 1,900 feet of their train was north of the signal.

An investigation revealed that a field construction gang had extended some track circuits and had failed to break the control to northbound signal at MP 15.70 with the track contacts.

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

648	11/5/2000	CN	AB	CN2415, CN5724	1614	Scotts, MI	N

Narrative

On Sunday, November 5, 2000 at 1555 hrs, train M398-71-04 reported that ABS 1614 displayed a CLEAR with train E254-61-05 occupying the next block governed by ABS 1628. The ABS 1614 should have displayed an APPROACH. Failure to follow proper testing procedures resulted in this false proceed. A newly installed coded track circuit at ABS 1614 was miswired. The code 2 caused the signal to display CLEAR rather than APPROACH. The coded track circuit at 1614 was rewired and tested properly.

Report #	Date	Reporting Carrier	Block System / Interlocking / Auto. Systems	Loco or Train No.	Device that Failed	Location	Collision or Derailment?
284	12/2/2000	UP	CTC	N/A	None	Kansas City, KS	N

Narrative

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

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

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

317	1/3/2001	UP	CTC	UP 9201	None	Anita, CA	N

On January 3, 2001 at 11:30 PST, at Anitac, CA on the Valley Subdivision at MP 193.95, southbound QUERV 02 on the main track reported the southbound signal at the north end of Anita displaying Flashing Yellow, and the southbound signal at the south end of Anita displayed Red.

An investigation revealed the control wires for the H circuit at the south end of Anita were reversed.

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

318	1/18/2001	UP	CTC	UP 743	None	Houston, TX	N

On January 18, 2001 at 8:40 CST, in Houston, TX, on the Terminal Subdivision, westbound YEW50 18, on track NR2, reported the westbound 1-14-RD signal at LF395 was Green with the westbound 1-24-R signal at LR 360 displaying a Red.

An investigation revealed that the mechanism polarity wires at the westbound 1-14-RD signal were reversed.

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

300	1/25/2001	CSXT	CTC	None	Switch Repeater	318-2 EB Int. Signal, Maidens, VA	N

EB Train V454-22 while running on Number 1 track observed the EB Intermediate signal on Number 2 Track displaying a RESTRICTED PROCEED signal which upgraded to APPROACH while the block ahead was occupied by the B010-25 working at Wood Yard Switch on Number 2 Track. The signal was immediately removed from service. Investigation revealed a wiring change error due to a switch's derail removal. The wiring error was a misapplication of relay tag identity and connecting the wiring to the wrong switch repeater relay thus eliminating a track circuit break in the switch repeater circuit. Wiring was corrected and full operational tests were made. Signal was restored to service.

Report #	Date	Reporting Carrier	Block System / Interlocking / Auto. Systems	Loco or Train No.	Device that Failed	Location	Collision or Derailment?
657	2/27/2001	MRL	CTC	MRL 406	WP Circuit	Livingston, MT	N

Narrative

On February 27, 2001, Signal Maintainer Mike Hardesty observed the 841 local crossing over from the east leg of the Y at Livingston to the yard when he observed the WP relay at Livingston Hump in the energized position. The WP relay should have been deenergized at this time since two of the 3 hand operated switches in this WP circuit were in the reverse position.

Signal Department personnel immediately corrected the problem by making the appropriate circuit changes. Tests were performed to verify the signal system functioned as intended.

Investigation by Signal Department personnel revealed that this problem occurred when signal crew 101961 cut over a new underground cable for the west leg of Y switch and thereby removed the WP circuit from the Yard Switch and east leg of Y switch. The Signal Foreman took full responsibility for this error and stated the error occurred because he did not know that all 3 switches were on the same WP circuit. The Signal Foreman was relieved of all Foreman responsibilities pending a fact-finding hearing.

On March 9, 2001, a fact finding hearing was held to determine the facts involving this incident. In the fact finding hearing the Signal Foreman accepted full responsibility for this incident. The Foreman stated in the hearing that he thought this was a simple circuit change and did not see a need to consult with his Supervisor prior to performing the work. Although this was not intentional interference, this incident happened because the Signal Foreman interfered with vital circuits and did not make the appropriate tests to ensure the integrity of the signal system. Upon review of the official transcript, disciplinary action will be taken as deemed necessary.

Report #	Date	Reporting Carrier	Block System / Interlocking / Auto. Systems	Loco or Train No.	Device that Failed	Location	Collision or Derailment?
660	2/28/2001	SDNR	Remote		Improper Wiring of 4WBFLHR Circuit	CP Ash, San Diego, California	N

Narrative

On February 28, 2001, while Amtrak train #573 was occupying track #3 with a properly displayed aspect on the 4WA signal (Flashing Yellow over Red), the engineer reported that 4WB signal on an adjacent track #4 was displaying a Dark over Flashing Red signal. This was an improperly displayed aspect on the 4WB signal. The aspect should have been Dark over a solid Red signal, with the top aspect lamp burned out.

Upon investigation, it was determined that the 4WB signal on track #4 had a burned out lamp in the top aspect and an improperly wired flasher circuit in the bottom aspect. On February 28, 2001 the lamp was replaced on the top aspect of the 4WB signal. On March 2, 2001 a bulletin order was put into effect instructing all engineers to notify the dispatcher's office and receive permission by any Flashing Red aspects at CP Ash until permanent corrections could be made. On March 5, 2001, permanent corrections were made to wiring of the 4WBFLHR circuit. Tests were conducted and the 4WB signal displayed all the proper aspects and functioned as designed.

Report #	Date	Reporting Carrier	Block System / Interlocking / Auto. Systems	Loco or Train No.	Device that Failed	Location	Collision or Derailment?
323	4/4/2001	UP	AB	UP4267	None	Optima, OK	N

Narrative

On April 4, 2001 at 11:00 CDT, at Optima, OK on the Pratt Subdivision, eastbound MWCHN 02, on the main track at MP 460.80, reported a CLEAR eastbound signal at MP 460.80, with a switch reversed east of the signal.

An investigation revealed that the switch circuit controller was improperly wired.

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

Report #	Date	Reporting Carrier	Block System / Interlocking / Auto. Systems	Loco or Train No.	Device that Failed	Location	Collision or Derailment?
324	4/5/2001	UP	CTC	UP4128	None	Ogden, UT	N

Narrative

On April 5, 2001 at 12:20 MDT, at Ogden, UT on the Lakeside Subdivision, westbound AKSBEX 03, on the main track at MP 759.00, reported a Yellow over Red westbound signal at MP 759.0 with the next block occupied.

An investigation revealed that the eastbound and westbound signal control wires were connected together at the 7577 track relay.

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

307	4/27/2001	CSXT	CTC	T676-23	Workmanship	Apex St. Albans, St. Albans, WV	N

At 0216 hours on April 27, 2001, the train crew of T67623 reported having a MEDIUM APPROACH SLOW (R/Y/G) into a MEDIUM APPROACH EB signal at the Apex Wye at St. Albans. The eastbound signals were removed from service at the Apex Wye at St. Albans. The proper signal should have been a SLOW CLEAR (R/R/G). This was confirmed in testing by signal personnel. The preliminary investigation revealed a wire in the lighting circuit was incorrectly wired to the heel contact of the LA8JR. The wire should have been on the back contact of this relay. This allowed the Yellow aspect to be energized rather than the Red aspect. After consulting with signal design personnel, wiring was corrected and testing completed. The signals were returned to service.

291	5/9/2001	BNSF	CTC	BNSF 8234, Train P	Improper Wiring - Human Error	Vernon, CA	N

Signal gang was wiring in permanent circuits for a switch lock located at MP 145.3 to new vital house MP 145.1. They relocated temporary line protection thru NWBP circuit from the field side of arrestor to house side of the arrestor wire one wire at a time. They hooked up a new circuit that was intended for the next phase cutover on top of the existing NWBP circuit thus introducing foreign battery with straight polarity. When the 2W signal at East Hobart was cleared it went to Green over Red instead of the proper aspect Yellow over Red. Wiring was removed and all affected circuits tested.

325	5/9/2001	UP	CTC	UP7578	None	Orogrande, NM	N

On May 9, 2001 at 12:31 MDT, at Orogrande, NM on the Carrizozo Subdivision, eastbound ILCIM-08, on the main track, was lined to the siding, and at MP 921.80, reported the eastbound signal at TC922 at West Orogrande was Red over Yellow (DIVERGING APPROACH), with a switch in the siding lined against him.

An investigation revealed the Switch Circuit Controller was wired incorrectly causing the Normal Switch Repeater Relay to energize with the switch reversed.

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

675	7/9/2001	CR	CTC		2N-2 Signal	Camden, NJ	N

2N-2 interlocking signal, governing northbound moves off the controlled siding at CP Mill on the Vineland Secondary, was reported to be displaying SLOW APPROACH when the signal on the main (2N-1) was displaying RESTRICTED. Investigation revealed wiring change was made to 2N-2 lighting circuit earlier and was not properly tested. Change was removed and signal tested without any other exceptions. Responsible parties involved were appropriately disciplined.

Report #	Date	Reporting Carrier	Block System	Interlocking	Auto. Systems	Loco or Train No.	Device that Failed	Location	Collision or Derailment?
313	8/16/2001	NS	CTC			9369	Signal "HD" Relay	Vansant, VA	N

Narrative

At approximately 7:00 p.m. on 8/16/01, train U70U616, running westbound on Big Prater Branch, observed a CLEAR aspect on the 391 eastbound operative approach signal at MP BP 0.4. Signal was displayed into a de-energized OS track repeater circuit and displayed a STOP aspect on the 98R signal at Control Point Vansant. Investigation revealed the 391HD relay positive and negative signal wires had been swapped during trouble on 8/15/01 by assigned Signal Maintainer for this territory. The swapped polarities caused the 391HD relay (250 ohm polar relay) to pole normal displaying a CLEAR aspect when it should display an APPROACH aspect. Corrections were made and signal restored to service 8/17/01.

338	5/14/2002	BNSF	CTC			KCKOKC 9-14	Flashing Yellow Aspect Control Not Remo	Lebo, Kansas	N

Train crew of KCKOKC 9-14 westbound reported Red over Flashing Yellow aspects while making a crossover move from main 2 to 1 at Ridgeton. The next westbound intermediate signal was Red. Supervisor Lefler reported that the control circuits that produce the Red over Flashing Yellow had not been removed as planned before timetable change. Due to Hours of Service law the crossovers were removed from service for night. May 15, 2002 the Red over Flashing Yellow aspect was removed at Ridgeton and the location was tested with no exceptions.

366	8/30/2002	UP	CTC			BNSF 4432	None	Norden, CA	N

On August 30, 2002 at 21:27 PDT, at Norden, CA on the Roseville Subdivision, westbound 1QDVST 27, on track 1 at MP 191.20, reported that the westbound absolute signal was Red over Green, with the crossover switch on track 1 lined normal and the crossover switch on track 2 lined reverse.

An investigation revealed wiring errors in the crossover switch on track 1.

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

354	10/4/2002	CSXT		Automatic		NS-B46	Wiring	Warsaw Crossing At Grade, Warsaw, IN	N

At approximately 03:15 on October 4, 2002 the southbound train NS-B46 traveled across the Warsaw Interlocker (Railroad Crossing at Grade) in Warsaw, IN. The NS-B46 proceeded south into the siding at CP 33 (Claypool). The southbound train NS-175 followed the NS-B46 across the Warsaw Interlocker. The crew of the southbound NS-175 reported that they had received a CLEAR indication at the Warsaw Interlocker and a STOP indication at Signal 30 with the NS-B46 ahead. The Warsaw Interlocker was removed from service and Norfolk Southern signal personnel were dispatched. Norfolk Southern signal personnel contacted CSX signal personnel at 07:45. The Norfolk Southern signal personnel was able to re-create the False Proceed signal through standard field testing procedures. During the investigation it was discovered that a Code Following Relay with Frequency Decoding Contacts (STPAR) had the negative control wire for the relay device (SBDR) that supplies battery to the 4S signal on the number 4 (four) contact when it should have been on the number 1 (one) contact. The number 4 (four) contact is a non-tuned contact that follows the working action of the relay. The number 1 (one) contact is a tuned contact that follows the working action of the relay only when the action reaches a minimum of 115 code cycles through a maximum of 125 code cycles. The use of the number 4 (four) contact supplied battery to the SBDR. Further investigation revealed that the circuit plans for the location show that the wire was designed to be on the number 1 (one) contact on the STPAR and the condition was corrected. The appropriate tests were made and the Warsaw Interlocker was returned to service.

Report #	Date	Reporting Carrier	Block System / Interlocking / Auto. Systems	Loco or Train No.	Device that Failed	Location	Collision or Derailment?
363	12/17/2002	NS	CTC	908P217	Relay Circuit	Burlington, NC	N
			Narrative				
			At 12:01 p.m. on 12/17/02, train 908P217 with engine 5196 handling 1 load 11 empties, passed the westbound STOP signal at control point Merrill, M.P. H23.5. Train passed the STOP signal by approximately 182 feet. Train crew reported to dispatcher that the non-automatic signal at Haw River, NC, M.P. H25.5 displayed a CLEAR aspect. The controlled holdout signal at MP H23.5 displayed a STOP aspect. Investigation of the incident revealed the CLEAR signal indication at the non-automatic signal at MP H25.5 displayed account of improper temporary wiring made by signal personnel during a signal cutover on 12/13/02. The "H" and "D" output of the Electrocode unit were wired together to the coil of the relay used to light the CLEAR aspect, allowing either the "H" or "D" to display the CLEAR. The wire was removed from the "H" output to the relay coil and the system was tested and returned to service at 2:00 p.m. on 12/17/02.		
705	1/14/2003	CN	AB		113N Trk Relay	Broadview, IL	N
			A westbound train, WC 349 on main track #2 reported signal 11.3W CLEAR and signal 13.3W RESTRICTED. Upon investigation, the 11.3W westbound approach signal displayed CLEAR when it should have displayed APPROACH. The transmit battery wire was transposed on the 113 Normal Track Relay which was energized when it should have been deenergized, and the 113 Reverse Track was deenergized when it should have been energized. Prior to the incident a construction gang was replacing track wires at Des Plaines Ave. on the Freeport Subdivision near Broadview, IL. After replacing the track wires, the crossing was tested, however the foreman failed to test the wayside signal system, which consisted of back to back BH relays and line circuits.				
412	4/4/2003	UP	CTC	UP 2205	None	Missouri City, CA	N
			On April 4, 2003 at 08:50 CST, in Missouri City, TX on the Glidden Subdivision, eastbound RBMBD-02, at mile post 20.60, reported the eastbound intermediate signal 20.60 was Green, and the next eastbound absolute signal at SA019 was Red over Yellow. An investigation revealed that the polarity on the control circuit to eastbound signal 20.60 was reversed. The signal system was restored to proper operation and all applicable tests were performed.				
377	4/5/2003	BNSF	CTC	Gateway Railroad	54 LB Signal	Kansas City, MO	N
			A Gateway Railroad switch engine crew on April 5, 2003 reported observing Red over Green aspect at the 54 LB signal, and stated they stopped short of the next signal (50L) displaying a Red aspect. Signals were put to STOP and traffic was suspended over said route. Investigation revealed that report by crew was factual. Investigation also revealed that during a cutover March 27, 2003 changes had been made to correct a wiring error, but related signals were not re-tested. Circuit changes were made to correct the wiring error and all signals were tested without exceptions. Signal 54 LB put back in service April 5, 2003.				

Report #	Date	Reporting Carrier	Block System / Interlocking / Auto. Systems	Loco or Train No.	Device that Failed	Location	Collision or Derailment?
380	5/13/2003	BNSF	APB	H-BARVAW1-09	Switch Circuit Controller	West Deschutes, OR	N

Narrative

At about 09:30 on 5/13/03, train H-BARVAW1-09 was headed eastbound on the Oregon Trunk when it stopped and the crew lined themselves into the siding at West Deschutes. The signal for movement over the switch should have dropped to Red when they threw the switch, but it stayed Green. The signal maintainer and signal technician went to the location and set the signals to STOP.

The signal maintainer installed new track wires at this location the previous week, from the track to the signal case. He inadvertently bypassed the switch circuit controller when he installed the new wires. He shunted both track circuits after connecting the new track wires, but he did not test the switch because he did not remember that the circuit controller was in the control circuit for the track relay.

The signal technician and maintainer found the old track wires and connected them and tested the system. The circuit was working correctly by 14:00, 5/13/03.

Reference signal trouble ticket number 872336.

Report #	Date	Reporting Carrier	Block System / Interlocking / Auto. Systems	Loco or Train No.	Device that Failed	Location	Collision or Derailment?
381	5/15/2003	BNSF	AB	U-INBROO115	0.5 Signal	Seattle, WA	N

Narrative

Crew on U-INBROO reported at approx 2320 Hrs on May 15, 2003 that the 0.5 signal on the Seattle Subdivision was Red then went Green with a train in the next block.

Cutover of new Spokane Street CTC equipment and interface to old equipment was accomplished on May 14, 2003.During this process a N12 battery wire was inadvertently left in the wiring, and was not found during checkout. This allowed N12 and B12 to the SA mech of signal 0.5 when they should not have been causing the mech to poll to a Green aspect.

This N12 wire was removed and the signal system tested and then returned to service at 0350 Hrs PT on May 16, 2003.

Report #	Date	Reporting Carrier	Block System / Interlocking / Auto. Systems	Loco or Train No.	Device that Failed	Location	Collision or Derailment?
712	5/21/2003	CN	Remote	M393 3120	Plant Trap	Wellsboro, IN	N

Narrative

Event: Dispatcher on Desk TD4 from [redacted] operations center reported westbound train M39331 20 accepted a signal 4L at the Wellsboro interlocker on the South Bend Subdivision, although his panel had shown an occupancy on track 2 on the CSX. This occurred on Wednesday, May 21, at 12:41 EDT. Plant was taken out of service to be investigated by the Signal Department.

Investigation: CSX was performing undercutter maintenance on their track, and created a track circuit wire to be severed, therefore creating a track occupancy on the TD4 panel. From the Digicon logs, signal 4L had been previously clear prior to the CSX severing the track wire. This track occupancy put signal 4L at STOP, until the CSX had repaired the track wire. Then the signal recleared even with the panel still reflecting an occupancy.

The occupancy shown on the panel was created by the CSX trap circuit (trap circuits are used for the 66-foot dead section of track where the CSX crosses the CN trackage. In a normal train move the track circuit gets released after the train passes through the entire interlocker. With the occupancy created by the undercutter only on the north side of the interlocker the trap did not release.

The investigation has revealed that planned additions were requested by CSX to this location in 1998. In the investigation we found that CN missed installing a portion of the modifications, also there was a software logic error introduced with the CSX electronic interlocker. Either of the railroads performing these changes correctly would have prevented this false proceed to occur. The CN has retrofitted the logic changes to its portion of the interlocker to correct the situation. The CSX will be correcting their software, to have a second method of preventing this condition from occurring.

It should be noted this interlocker worked properly for all normal through movements, the fault was found only on the trap circuit.

Report #	Date	Reporting Carrier	Block System / Interlocking / Auto. Systems	Loco or Train No.	Device that Failed	Location	Collision or Derailment?
382	6/11/2003	BNSF	CTC	ZWSPLAC408A	Cable	San Bernardino, CA	N

Signal gang replaced cable between the main control house and the westbound control signals at Verdemont. The conductors in the cable for the control circuit of bottom head on the #1 main track westbound signal were hooked up incorrectly, causing a false proceed signal.

Report #	Date	Reporting Carrier	Block System / Interlocking / Auto. Systems	Loco or Train No.	Device that Failed	Location	Collision or Derailment?
404	8/26/2003	NS	APB	3285	Incorrect Wiring	Leighton, AL	N

On August 26, 2003 at 11:30 a.m. CDT, eastbound train A80 left Sheffield Yard on an APPROACH signal at MP 399.0A. Another eastbound train Q36 had left Sheffield Yard prior to A80. Train A80 reported the next automatic signal at MP 396.2A, Leighton, AL to be a CLEAR signal but suspected that train Q36 had not traveled far enough east to permit the signal to clear. In addition they had heard the Town Creek defect detector reporting the passing of train Q36, indicating that the train ahead had just passed the next signal location at MP 393.2A. Train crew of A80 notified the signal maintainer.

C&S personnel investigated and discovered the S-Code Electronic Track Circuit cabinet was improperly wired at the automatic signal location MP 396.2A. The wiring was corrected per the location signal plans and operational tests performed.

Report #	Date	Reporting Carrier	Block System / Interlocking / Auto. Systems	Loco or Train No.	Device that Failed	Location	Collision or Derailment?
395	8/28/2003	CSXT	CTC	N935-15	Wiring	East End of B&O Siding, Fostoria, OH	N

Narrative

On August 28th at approximately 21:10, westbound N93515 on #2 track at the East End of the B&O center siding, reported receiving a Yellow over Yellow (APPROACH SLOW) into a STOP signal at the West End of the B&O center siding. Signals were removed from service and signal personnel were dispatched. During testing and inspection of the signals, it was discovered that a wiring change from a prior project was made incorrectly that allowed the improper aspect to display if the R178WFSR stick relay was picked. The wiring error was corrected, operational tests were performed and the signals were returned to service.

396	9/8/2003	CSXT	CTC	Q27808 - L29607	Wiring	Lemoyne, OH	N

Narrative

On Sept. 8th at 13:44, Q27808 was sitting at the westbound absolute signal number #1 at Lemoyne, MP CD 111.0, waiting to cross over to #2 track following the L29607. L29607 was WB on #2 track. Q27808 heard the L29607 call the aspect on the 1071-2 intermediate signal, the 2nd intermediate west of Lemoyne. Q27808 observed the WB signal on #2 track display a MEDIUM CLEAR, Red over Green, for 6 to 8 seconds before slotting off to STOP. The event log indicated the WB signal at Lemoyne had gone into time. The signal was removed from service. A simulation recreation of the false clear. An investigation revealed that the coded track circuit west of the 1091-2 intermediate signal, the first intermediate west of Lemoyne, when shunted, had an 8 to 10 second delay before the 1092-2 or 1071-2 HD relays would be deenergized. The 8 to 10 second delay was found to be caused by wires on a front and back contacts of the 1092-2 ZTR, code following relay, that had been reversed and were not according to design. This resulted in energy being applied to the positive coil wire of the 1092-2TPR when the track circuit was shunted. The 1092-2TPPR drops the HD circuits. The 1092-2TPPR wasn't dropping immediately due to a capacitor, which by design, was across the coil wires causing an 8 to 10 second drop delay while the capacitor bled off. This caused the improper aspect to be displayed for eight to ten seconds as reported. The wiring error was corrected, operational tests were performed with no exceptions. The signals were placed in service.

397	10/21/2003	CSXT	CTC	Q52621	Workmanship	Montfort, MP 172.2, Hendersonville, TN	N

Narrative

At approximately 1227 on October 21, 2003, northbound Q52621 received a CLEAR (Green) signal at MP 172.2 with northbound Q28621 in the second block ahead. The correct signal should have been an APPROACH (Yellow). Signals were set to Red and removed from service and Train Control personnel were dispatched.

The cause was found to be a broken cable at a circuit controller which had been spliced together incorrectly earlier that day and placed back in operation at approximately 1200 hours without proper operational tests being performed. The wiring error was corrected, operational tests were performed, and signals restored to service.

Report #	Date	Reporting Carrier	Block System	Interlocking	Auto. Systems	Loco or Train No.	Device that Failed	Location	Collision or Derailment?
719	10/31/2003	AMTK		Manual			Route Locking	Union Interlocking, Rahway, NJ	Y

Narrative

On October 31, 2003 at approximately 7:15am New Jersey Transit train no. 3818 derailed while diverting No. 1 to "A" track west end of Union Interlocking over No. 43 switch reverse. The train remained upright, with only the lead MU derailed. There were no passenger injuries associated with the derailment. Investigation found that signal circuit wiring revisions completed incorrectly in May 2001 caused this derailment. As a result of this mistake by Amtrak signal employees the Route Locking was ineffective when the first circuit was occupied on No. 1 track in advance of the 44L signal when NJT 3818 passed the signal. Although Union Interlocking doesn't have an event recording of signal functions (no event recorder installed). NJT 3818 locomotive event recorder indicated that the cab signal changed from 120 (APPROACH MEDIUM) to 75-code rate (APPROACH) when the train crossed the insulated joints located close to 43-switch points. This event recording information indicates that the points of 43-switch had to move away from the reverse position toward normal position because the track circuit is designed with separate feeds that correspond with switch position. The C&S department believes that the tower lever man was able to operate the No. 43-switch to the normal position, and then back to the original reverse position in the face of NJT 3818 (however, the lever man states that he never threw the switch when NJT 3818 was traversing the route). This action caused the first MU car to derail when the first wheel set of the truck went toward No. 1 track, instead of No. "A" track. On October 31, 2003 C&S forces resolved the wiring problem; however, on Monday, November 3, 2003 the 43-switch was removed from service pending the completion of a full point check of all revised circuits. Discipline investigations will be scheduled for the responsible employees, as well as an inspection of other projects that were completed by the same Supervisor crew.

Report #	Date	Reporting Carrier	Block System	Interlocking	Auto. Systems	Loco or Train No.	Device that Failed	Location	Collision or Derailment?
408	11/12/2003	NS		Remote		NS 3425	10WB Dwarf P/L, Signal Man Failure	GP Works, Altoona, PA	N

Narrative

On 11/12/03 at approximately 6:40 p.m., Engineer and Conductor moving light engines NS 3425 and NS 3359 reported signal 10WB displaying a SLOW CLEAR with the next signal 12W at STOP. Investigation revealed that the internal wiring of signal 10WB was improperly wired, the green and yellow wires reversed causing 10WB to display a SLOW CLEAR instead of a SLOW APPROACH. Wiring error was made on 7/21/02 when 10WB was replaced and improperly tested. Corrections made along with proper tests and signal returned to service on 11/12/03.

Report #	Date	Reporting Carrier	Block System	Interlocking	Auto. Systems	Loco or Train No.	Device that Failed	Location	Collision or Derailment?
721	1/15/2004	CN		CTC			HT Switch 40.08 NWP	N. Mundelein, IL	N

Narrative

At 11:30AM on 01-15-04 a defect was found in the signal system a N. Mundelein, IL on the Waukesha Sub. The South Dispatcher [redacted] train to hand operate the hand throw switch at MP 40.08 (near Maple St.) on the #1 main. When train operated HT switch Dispatcher noticed a track light on the #2 main. Signal Dept. was notified and HT switch was spiked and 20 MPH HER was applied.

After investigation it was discovered that the 40.08 NWP was wired into wrong MicroTrax unit at N. Mundelein/ 40.08 NWP switch is on the #1 main, however, it was wired into the #2 coded track unit in error. This 40.08 NWP should have been moved from the #2 unit to the #1 unit during the 11-09-03 cutover, when the N. Mundelein's power turnout was converted from a RH to LH turnout.

Corrective Action:

1. The NWP was wired into the correct track and tested on 1-15-04. All other HT switches in cutover area were also tested. 40.08 was then returned to service.

2. The CN is currently reviewing its testing procedures to prevent any future incidents.

Report #	Date	Reporting Carrier	Block System	Interlocking	Auto. Systems	Loco or Train No.	Device that Failed	Location	Collision or Derailment?
			Narrative						
723	2/24/2004	AMTK		Remote			Signal 64L	Valley Interlocking, Philadelphia, PA	N

On Tuesday, February 24, 2004, FRA Specialist [readcted] and Amtrak Signal Department personnel inspected Valley Interlocking signal 64L after receiving a report of a signal abnormality. This report indicated that 64L signal on number one (1) track was displaying a SLOW CLEAR signal aspect up to signal 52L at STOP. Amtrak Signal Department personnel in the presence of [redacted] were able to reproduce and verify the report. Signal 64L lighting cable wires 64L2SL and 64LSL were terminated incorrectly inside the low home signal. Inspection also found that the 64LS2L wire was not tagged inside the signal. Signal personnel corrected the wiring, meggered (tested) the cable, field tested signal relays, and made a full operational check of affected circuits. Signal system was left working as intended. Further investigation found that the last time the cable was tested was August 16, 1995. The employees who last tested the cable were interviewed, and claimed that they removed the light bulbs to facilitate testing the lighting cable, and did not remove any cable conductors. The test record that they signed was incomplete in that the 3rd conductor nomenclature was missing. The employees will be counseled for submitting incomplete test record information. Investigation cannot determine when the cable wires were incorrectly terminated. This false proceed incident will be reviewed with all C&S employees, and AMT-23 Rule 202, and AMT-27 Rule 23 will be re-enforced with all employees. These rules address safe procedures for returning vital signal circuits to service after any disarrangement of working circuits.

727	5/3/2004	AMTK					CP 226	Michigan City, MI	N

On May 3, 2004 the Engineman operating train number 351 westbound reported to the train dispatcher that signal 224W was displaying a CLEAR signal aspect up against a STOP signal at CP-226 in Michigan City. Signal Department personnel dispatched to investigate this report were able to verify and reproduce the false proceed signal aspect observed by train number 351 at the intermediate signal 224W. An improperly wired GRS SA-1 signal mechanism at CP-226 allowed the 2RRGPR (Red Mechanism Repeater) and the 2RAHDGPR (Yellow/Green Repeater) to become energized at the same time. This resulted in track circuit Code-4 being transmitted from CP-226 to 224W signal location. This caused the 224W to display a CLEAR signal aspect into CP-226 STOP signal. The improperly wired GRS SA-1 signal mechanism located at CP-226 was corrected, and is now wired according to the signal circuit plans. Signal aspect tests were completed, and the signal system is now functioning as intended. It is not known how this error in wiring occurred. This CP has not been modified since its cutover around 1979. Checking the internal wiring of a signal mechanism is not a normal field activity unless there is a problem, and there is no reason to believe that circuits had been modified by field forces for any reason. As a precautionary measure signal department personnel will conduct tests at all locations on the Michigan Line to ensure that this type of incident doesn't occur in the future.

No. of Reports Shown in this Listing: **108**