APPENDIX D

Test Documents and Logs

Acela Brake Disc Test - Test Log

Date	14-May-05
Test Run	Shakedown Run
Train Configuration	Car 3413 on Trail End of Consist (PC 2038 Trailing)
Sample Rate	1200 samples/sec
Anti-Alias Filter Setting	Set to 300 Hz

Filename	Start Location	End Location	Comments
051405_01.ABT	Ivy City	Ivy City	Prior to leaving, set spoke temperature by offset, zeroed strain gages.
051405_02.ABT	Ivy City	Ivy City	
051405_03.ABT	Ivy City	Washington Union Sta.	
051405_04.ABT	Washington Union Sta.	Washington Union Sta.	
051405_05.ABT	Washington Union Sta.	Baltimore	Vert/Lat Lbox failed; Temp OR R seems low 40deg, Temp CR L seems high 40 deg
051405_06.ABT	Baltimore	MP AP77	Applied Emergency Brake at end of file
051405_07.ABT	MP AP77	MP AP77	After Emergency Brake, checked temps with TC, hand pyrometer
051405_08.ABT	MP AP77	Wilmington, DE	Brake application at t=540; saturation of lateral accel on axle at t=1002; longitudinal looked off
Scale factors changed from 25mv/G to 50 mv/G on tri-axials on calipers			
051405_09.ABT	Wilmington, DE	Baltimore, MD	apply snow brake MP 27-MP 60, every disc, every pad @ 10psi; end of snow brake at Susq Br
051405_10.ABT	Baltimore, MD	Baltimore, MD	Sitting

CHANGED ACCELS IN BALTIMORE; BOTH ACCELS ON ENDS OF AXLES BAD
- Knorr Supplied 200G (L) and 500g (V) for Left Side Axle Box
- ENSCO put on 100 G tri-axial on right side axle box

051405_10.ABT	Baltimore, MD	Washington Union Sta.	Saw Noise on Left Axle End Accels (Lat & Vert) when slowing down, not while running

Acela Brake Disc Test - Test Log

Date	16-May-05
Test Run	Washington to Boston, 7-inch Cant Deficiency Run
Train Configuration	Car 3413 on Trail End of Consist (PC 2038 Trailing)
Sample Rate	2000 samples/sec
Anti-Alias Filter Settin	Set to 500 Hz

Filename	Start Location	End Location	Channels	Header	Comments
systest16.ABT	NeC-MSC	NeC-MSC	sensors_VER8.xls	sample2000r1.hed	System Test in Shop - 2 Volts peak-to-peak, Fixed Frequency of 57 Hz
systest17.ABT	NeC-MSC	NeC-MSC	sensors_VER8.xls	sample2000r1.hed	System Test in Shop - Frequency Sweep
calfile1.ABT	NeC-MSC	NeC-MSC	sensors_VER8.xls	sample2000r1.hed	Zero All Accels/Gages
calfile2.ABT	NeC-MSC	NeC-MSC	sensors_VER8.xls	sample2000r1.hed	Shunted all Strain Gages
051605_01.ABT	Ivy City	Ivy City	sensors_VER8.xls	sample2000r1.hed	Yard Move
051605_02.ABT	Ivy City	Washington Union Sta.	sensors_VER8.xls	sample2000r1.hed	
051605_03.ABT	Washington Union Sta.	Baltimore MD (~MP AP 95)	sensors_VER8.xls	sample2000r1.hed	Pressures Dropped Out ~MP AP119
051605_04.ABT	Baltimore MD (~MP AP 95)	MP AP 85	sensors_VER8.xls	sample2000r1.hed	Full Service Brake Test at End so Temperature Meas. Could Be Made
051605_05.ABT	MP AP 85	~ MP AP 77	sensors_VER8.xls	sample2000r1.hed	System Lock-Up Ended Data Collection
051605_06.ABT	~ MP AP 77	MP AP 63	sensors_VER8.xls	sample2000r1.hed	Stopped Train to Close Open Door
051605_07.ABT	MP AP 63	Wilmington DE (MP AP 26)	sensors_VER8.xls	sample2000r1.hed	Noise on Left Axle Box Accels (Knorr); Same Signature on Both Lat and Vert
051605_08.ABT	Wilmington DE (MP AP 26)	Philadelphia, PA (MP AP 0)	sensors_VER8.xls	sample2000r1.hed	~MP AP 3 - Large Hit, Also Negative Spikes on Axle Lat Accel
051605_09.ABT	Philadelphia, PA (MP AP 0)	MP AN 60	sensors_VER8.xls	sample2000r1.hed	Full Service Brake Test at End, No Temperature Meas Could Be Made
051605_10.ABT	MP AN 60	Newark, NJ (MP AN 8)	sensors_VER8.xls	sample2000r1.hed	At End of Run, Inserted Amtrak Lat and Vert Accels on Left End of Axle Box into Data Stream, Removed Knorr Accels from Data Collection; Lateral and Vertical Accels - +/- 250 G
051605_11.ABT	Newark, NJ (MP AN 8)	New York City (MP AN 0)	sensors_VER9.xls	sample2000r1.hed	Now Recording Amtrak Accels
051605_12.ABT	New York City (MP AN 0)	~ MP E 3	sensors_VER9.xls	sample2000r1.hed	Stopped Train to Fix Loose Tape on Axle
051605_13.ABT	~ MP E3	MP E 19	sensors_VER9.xls	sample2000r1.hed	
051605_14.ABT	MP E 19	New Haven, CT (MP AB 73)	sensors_VER9.xls	sample2000r1.hed	Observed Periodic Signature From Time ~ 2100 - 2790; Observed Large Hit ~ MP MN 56
051605_15.ABT	New Haven, CT (MP AB 73)	~ MP AB 116	sensors_VER9.xls	sample2000r1.hed	Full Service Brake Test at End so Temperature Meas. Could Be Made
051605_16.ABT	~ MP AB 116	New London CT (MP AB 123)	sensors_VER9.xls	sample2000r1.hed	
051605_17.ABT	New London CT (MP AB 123)	~ MP AB 183	sensors_VER9.xls	sample2000r1.hed	Full Service Brake Test at End so Temperature Meas. Could Be Made
051605_18.ABT	~ MP AB 183	~ MP AB 185	sensors_VER9.xls	sample2000r1.hed	

Acela Brake Disc Test - Test Log

Date	16-May-05
Test Run	Washington to Boston, 7-inch Cant Deficiency Run
Train Configuration	Car 3413 on Trail End of Consist (PC 2038 Trailing)
Sample Rate	2000 samples/sec
Anti-Alias Filter Settin	Set to 500 Hz

Filename	Start Location	End Location	Channels	Header	Comments
051605_19.ABT	~ MP AB 185	~ MP AB 200	sensors_VER9.xls	sample2000r1.hed	System Lock-Up During Full Service Brake Test to Take Temperature Meas.
051605_20.ABT	~ MP AB 202	~ MP AB 202	sensors_VER9.xls	sample2000r1.hed	Collected Data During Temperature Measurement
051605_21.ABT	~ MP AB 202	~ MP AB 212	sensors_VER9.xls	sample2000r1.hed	
051605_22.ABT	~ MP AB 212	~ MP AB 215	sensors_VER9.xls	sample2000r1.hed	
051605_23.ABT	~ MP AB 215	~ MP AB 219	sensors_VER9.xls	sample2000r1.hed	Full Service Brake Test at End so Temperature Meas. Could Be Made
051605_24.ABT	~ MP AB 219	Boston MA (MP AB 228)	sensors_VER9.xls	sample2000r1.hed	Saw Negative Spikes on Axle Mounted Accel ~MP AB 225

Acela Brake Disc Test - Test Log

Date	17-May-05
Test Run	Boston to Washington, 7-inch Cant Deficiency Run
Train Configuration	Car 3413 on Lead End of Consist (PC 2038 Leading)
Sample Rate	2000 samples/sec (Changed in Baltimore to 4kHz, then to 3kHz)
Anti-Alias Filter Setting	Set to 500 Hz (Changed to 1kHz in Baltimore)

Filename	Start Location	End Location	Channels	Header	Comments
calfile051705_01.ABT	Maintenance Facility	Maintenance Facility	sensors_VER9.xls	sample2000r2.hed	Zero All Accels/Gages
calfile051705_02.ABT	Maintenance Facility	Maintenance Facility	sensors_VER9.xls	sample2000r2.hed	Shunted all Strain Gages
calfile051705_03.ABT	Maintenance Facility	Maintenance Facility	sensors_VER9.xls	sample2000r2.hed	Continuous Frequencies 100Hz, Ch 16, 19
calfile051705_04.ABT	Maintenance Facility	Maintenance Facility	sensors_VER9.xls	sample2000r2.hed	Sweep of Frequencies 100-1000 Hz, in Steps of 100 2 Volt P-P, Ch 16, 19
051705_01.ABT	Maintenance Facility	Boston MA (MP AB 228)	sensors_VER9.xls	sample2000r2.hed	
051705_02.ABT	Boston MA (MP AB 228)	Route 128 Station	sensors_VER9.xls	sample2000r2.hed	t=450 saturation on lat axle accel; no GPS
051705_03.ABT	Route 128 Station	?	sensors_VER9.xls	sample2000r2.hed	SYSTEM CRASH
051705_04.ABT	?	?	sensors_VER9.xls	sample2000r2.hed	SYSTEM RESTART, NO DATA
051705_05.ABT	?	?	sensors_VER9.xls	sample2000r2.hed	SYSTEM RESTART, NO DATA
051705_06.ABT	?	Providence RI	sensors_VER9.xls	sample2000r2.hed	t=522, noise spikes on strain gages, no GPS
051705_07.ABT	Providence RI	Westerley RI	sensors_VER9.xls	sample2000r2.hed	t=35, 340-360 spikes on Ctr Spoke F1 strain ENSCO system issue; no GPS
051705_08.ABT	Westerley RI	MP AB 127	sensors_VER9.xls	sample2000r2.hed	Stopped Train to Look at Lat Accel Axle; no GPS
051705_09.ABT	MP AB 127	MP AB 127	sensors_VER9.xls	sample2000r2.hed	Collecting Data During Troubleshooting, recover GPS
051705_10.ABT	MP AB 127	New London CT (MP AB 122)	sensors_VER9.xls	sample2000r2.hed	
051705_11.ABT	New London CT (MP AB 122)	MP AB 82	sensors_VER9.xls	sample2000r2.hed	
051705_12.ABT	MP AB 82	New Haven, CT (MP MN 72)	sensors_VER9.xls	sample2000r2.hed	
051705_13.ABT	New Haven, CT (MP MN 72)	MP MN 65	sensors_VER9.xls	sample2000r2.hed	
051705_14.ABT	MP MN 65	MP MN 57	sensors_VER9.xls	sample2000r2.hed	
051705_15.ABT	MP MN 57	MP MN 40	sensors_VER9.xls	sample2000r2.hed	
051705_16.ABT	MP MN 40	MP MN 19	sensors_VER9.xls	sample2000r2.hed	
051705_17.ABT	MP MN 19	New York City (MP AN 0)	sensors_VER9.xls	sample2000r2.hed	t=230,520 large strains on CTRSPOKE Rib 1 when brakes applied
051705_18.ABT	New York City (MP AN 0)	Newark NJ	sensors_VER9.xls	sample2000r2.hed	

Acela Brake Disc Test - Test Log

Date	17-May-05
Test Run	Boston to Washington, 7-inch Cant Deficiency Run
Train Configuration	Car 3413 on Lead End of Consist (PC 2038 Leading)
Sample Rate	2000 samples/sec (Changed in Baltimore to 4kHz, then to 3kHz)
Anti-Alias Filter Setting	Set to 500 Hz (Changed to 1kHz in Baltimore)

Filename	Start Location	End Location	Channels	Header	Comments
051705_19.ABT	Newark NJ	Philadelphia, PA	sensors_VER9.xls	sample2000r2.hed	t=120, strains in CTRSPOKE ribs huge when braking not in face, audible braking noise; t=360, same thin not as high no audible brake noise; t=705 strain gage jump - SCU issue Large Hits at Midway; Full Service Brake Application look at strains after Midway (no high strains); t=~1585 brake applied, high CTRSPOKE Ribs strains t~1728,1785 and after - several examples of lat accel saturation.
051705_20.ABT	Philadelphia, PA	Wilmington DE (MP AP 26)	sensors_VER9.xls	sample2000r2.hed	t=1250 big strains CTRSPOKE ribs during braking
051705_21.ABT	Wilmington DE (MP AP 26)	Baltimore MD (MP AP 95)	sensors_VER9.xls	sample2000r2.hed	t=1220, 1476 big strains on CTRSPOKE ribs during braking; Saturation of lat axle accel at t=1310,1900,2210 t=2017, big strains during braking on CTRSPOKE, big strain spike follows; t~2200(MP 89) saturation of Lat Accel axle, left axle box lat, right axle box vert t=2410 big strains on CTRSPOKE ribs during braking starting to see same in OUTSPOKE as well
051705_22.ABT	Baltimore MD (MP AP 95)	Baltimore MD (MP AP 95)	sensors_VER9.xls		SWITCH SAMPLE RATE TO 4kHZ, Anti-Alias @ 1kH SYSTEM CRASH
051705_23.ABT	Baltimore MD (MP AP 95)	MP AP 110	sensors_VER9.xls	sample3000r2.hed	SWITCH SAMPLE RATE TO 3kHZ, Anti-Alias @ 1kH SYSTEM CRASH DUE TO COPYING FILES
051705_24.ABT	MP AP 110	Washington DC	sensors_VER9.xls	sample3000r2.hed	Sample Rate 3kHz, Anti-Alias @ 1kHz

Acela Brake Disc Test - Test Log

Date	26-May-05
Test Run	Washington to Boston, 7-inch Cant Deficiency Run
Train Configuration	Car 3413 on Lead End of Consist (PC 2038 Leading)
Sample Rate	3000 samples/sec on ENSCO System, 10,000 Hz on Amtrak System
Anti-Alias Filter Setting	Set to 1000 Hz for ENSCO System Only; No Anti-Alias Filter Used on Amtrak System

3kHz (32 ch) System Filename (*.ABT, *.CAL, *.GPS)	10kHz (16 ch) System Filename (*.001)	Start Location	End Location	Track (if avail)	Channels	Header (3kHz)	Header (10kHz)	Comments
052605_0		NeC-MSC	NeC-MSC		sensors_VER13.xls	sample3000r5.hed	sample10000r3.hed	zeroes the gages and the accelerometers
052605_shunt		NeC-MSC	NeC-MSC		sensors_VER13.xls	sample3000r5.hed	sample10000r3.hed	System Test in Shop - Frequency Sweep
052605_sweep		NeC-MSC	NeC-MSC		sensors_VER13.xls	sample3000r5.hed	sample10000r3.hed	Chs. 1 & 17, 100 to 8K 5 secs 2V Pk-to-Pk sine wave
052605_freq		NeC-MSC	NeC-MSC		sensors_VER13.xls	sample3000r5.hed	sample10000r3.hed	
052605_zero2		NeC-MSC	NeC-MSC		sensors_VER13.xls	sample3000r5.hed	sample10000r3.hed	zeroing of center caliper actuator accelerometers
052605_sync		NeC-MSC	NeC-MSC		sensors_VER13.xls	sample3000r5.hed	sample10000r3.hed	sync test of the 2 systems
052605_shuntaxlelat3		NeC-MSC	NeC-MSC		sensors_VER13.xls	sample3000r5.hed	sample10000r3.hed	to shunt calib the lat 3 accel
052605_sync2		NeC-MSC	NeC-MSC		sensors_VER13.xls	sample3000r5.hed	sample10000r3.hed	testing of the sync again
052605_sync3		NeC-MSC	NeC-MSC		sensors_VER13.xls	sample3000r5.hed	sample10000r3.hed	testing of the sync again; successful
052605_roll1		NeC-MSC	Ivy City Yard		sensors_VER13.xls	sample3000r5.hed	sample10000r3.hed	
052605_roll2		Ivy City Yard	Ivy City Yard		sensors_VER13.xls	sample3000r5.hed	sample10000r3.hed	
052605_roll3		Ivy City Yard	Ivy City Yard		sensors_VER13.xls	sample3000r5.hed	sample10000r3.hed	
052605_roll4		Ivy City Yard	Union Station		sensors_VER13.xls	sample3000r5.hed	sample10000r3.hed	
052605_01	052605_01	Union Station Wash DC	Baltimore, MD	Track 3	sensors_VER13.xls	sample3000r5.hed	sample10000r3.hed	Observed satruration on lateral accels; sign issue with strains (ENSCO); signs were changed on all strain gages in Baltimore; print outs modified
052605_02	052605_02	Baltimore, MD	Wilmington	Track 2	sensors_VER13.xls	sample3000r5.hed	sample10000r3.hed	t~700, high lat/vert activity, high strains t~865 neg noise spikes on some strains; t~1570-1656 lost power to SCU2; 1/2 of channels lost t~2060 poss noise spike on Sp6 gages
052605_03	052605_03	Wilmington	MP AP5	Track 1, Track 2	sensors_VER13.xls	sample3000r5.hed	sample10000r3.hed	switch to Tr 2 near AP16; lateral accel 2 (piezoelectric on axle) stopped working (const up/down drift) stopped behaving this way ~MP AP8
052605_04	052605_04	Philadelphia	MP AN 84.5		sensors_VER13.xls	sample3000r5.hed	sample10000r3.hed	Labview System Crash Stopped Collection; High Speed System Continued to Collect ~45 secs
052605_05	052605_05	MP AN 82	Newark NJ		sensors_VER13.xls	sample3000r5.hed	sample10000r3.hed	Gage on Spoke 6F2 starting to get noisy (lg spikes) consistently; noise spikes on Spoke 3R2, Spoke 6F1 seeing a bit on Spoke 3 R1 as well **Near MP AN12 (t~2300) big vert hit & activity;** **t=2340 MOANING OF BRAKES AND BIG STRAINS DURING BRAKING**
052605_06	052605_06	Newark NJ	New York (MP W3)		sensors_VER13.xls	sample3000r5.hed	sample10000r3.hed	strain signals are not noisy anymore
052605_07	052605_07	New York, NY (MP E6)	New York (MP E 14)	Track 2	sensors_VER13.xls	sample3000r5.hed	sample10000r3.hed	**t=420 HIGH STRAINS ON BRAKING no moaning on instr axle**
052605_08	052605_08	New York (MP E 15)	MP MN55	Track 2 (on MN) Sw to Track 4 MN @ MN23	sensors_VER13.xls	sample3000r5.hed	sample10000r3.hed	**t=156 HIGH STRAINS ON BRAKING no moaning on instr axle** **t~2000 Mild case of high strains during braking near MP MN 44**
052605_09	052605_09	MP MN55.5	MP MN 65	Start on MN Tr 4	sensors_VER13.xls	sample3000r5.hed	sample10000r3.hed	**t~200 Mild case of high strains during braking**
052605_10	052605_10	MP MN 65	MP MN 72 New Haven	On MN Tr 4	sensors_VER13.xls	sample3000r5.hed	sample10000r3.hed	spoke 3 R2 a bit noisy @t~180
052605_11	052605_11	MP MN 72 New Haven	MP AB 75	Start Amtrak Track 1	sensors_VER13.xls	sample3000r5.hed	sample10000r3.hed	little lateral jolt @ t~105; CSP6F1 noise spikes around t~150

Acela Brake Disc Test - Test Log

Date	26-May-05
Test Run	Washington to Boston, 7-inch Cant Deficiency Run
Train Configuration	Car 3413 on Lead End of Consist (PC 2038 Leading)
Sample Rate	3000 samples/sec on ENSCO System, 10,000 Hz on Amtrak System
Anti-Alias Filter Setting	Set to 1000 Hz for ENSCO System Only; No Anti-Alias Filter Used on Amtrak System

3kHz (32 ch) System Filename (*.ABT, *.CAL, *.GPS)	10kHz (16 ch) System Filename (*.001)	Start Location	End Location	Track (if avail)	Channels	Header (3kHz)	Header (10kHz)	Comments
				Switch to Tr 2 @ t=400				
052605_12	052605_12	MP AB 75	MP AB 105	Start on Amtrak Tr2	sensors_VER13.xls	sample3000r5.hed	sample10000r3.hed	still have noise on CSPK3 R2; **t=400 HIGH STRAINS FOR LONG DURATION DURING BRAKING NEAR MP AB 85** **t=600 HIGH STRAINS FOR LONG DURATION DURING BRAKING NEAR MP AB 90** CSPK6 F2 noisy prior to braking @ MP AB 90, cleared up after braking
052605_13	052605_13	MP AB 105	New London CT (MP AB 123)	Amtrak Tr2	sensors_VER13.xls	sample3000r5.hed	sample10000r3.hed	t=90, spikes in vertical and strains on bridge **t=480 MP AB116 HIGH STRAINS BRAKING INTO CURVE FOLLOWED BY VERTICAL HITS ON BRIDGE**
052605_14	052605_14	New London CT (MP AB 123)	MP AB 134	Amtrak Tr2	sensors_VER13.xls	sample3000r5.hed	sample10000r3.hed	No Significant Activity
052605_15	052605_15	MP AB 134	MP AB 185	Amtrak Tr2	sensors_VER13.xls	sample3000r5.hed	sample10000r3.hed	Bit of noise develop on CSPK3 R2 t~370; t~915, noise spikes on some gages **t=984 @ MP AB159 Braking from 150-60 MPH HIGH STRAINS DURING BRAKING; ALMOST +/- 1000uE, used suppression braking (1/2 pressure), planned braking** **t~1212 SMALL CASE OF ACTIVITY DUE TO BRAKING**; Noise spikes near t~1330 **t=1580 @ ~MP AB179 Braking HIGH STRAINS DURING BRAKING; used braking of ~35psi (recorded sound file 052605_09.WAV)**
052605_16	052605_16	MP AB 185	?	Amtrak Tr2	sensors_VER13.xls	sample3000r5.hed	sample10000r3.hed	LABVIEW CRASH ENDED COLLECTION; high speed system continued to collect
052605_17	052605_17	MP AB 200	Rte 128 Station	Amtrak Tr2	sensors_VER13.xls	sample3000r5.hed	sample10000r3.hed	**t=110 @ ~MP AB203 Braking HIGH STRAINS DURING BRAKING;** **t=456 @ ~MP AB217 Braking HIGH STRAINS DURING BRAKING;**
052605_18	052605_18	Rte 128 Station	Boston Terminal	Amtrak Tr2	sensors_VER13.xls	sample3000r5.hed	sample10000r3.hed	No Significant Activity

Sound Files

Filename	Start Location	Comments
052605_01.WAV	MP AP 113	Lat Accels Show Signs of Saturation
052605_02.WAV	MP AP 62	Brake Sound?, moderate braking
052605_03.WAV	MP AP 31	Brake Sound?, moderate braking
052605_06.WAV	**~MP AN 11**	**Moaning of brakes during braking with high strain activity**
052605_09.WAV	**~MP AB 179**	**Braking with high strain activity**

Acela Brake Disc Test - Test Log

Date	27-May-05
Test Run	Boston to Washington, 7-inch Cant Deficiency Run
Train Configuration	Car 3413 on Trail of Consist (PC 2016 Leading)
Sample Rate	3000 samples/sec on ENSCO System, 10,000 Hz on Amtrak System
Anti-Alias Filter Setting	Set to 1000 Hz for ENSCO System Only; No Anti-Alias Filter Used on Amtrak System

3kHz (32 ch) System Filename (*.ABT, *.CAL, *.GPS)	10kHz (16 ch) System Filename (*.001)	Start Location	End Location	Track (if avail)	Channels	Header (3kHz)	Header (10kHz)	Comments
052705_zero		Boston Facility	Boston Facility		sensors_VER13.xls	sample3000r5.hed	sample10000r3.hed	zeroes the gages and the accelerometers
052705_shunt		Boston Facility	Boston Facility		sensors_VER13.xls	sample3000r5.hed	sample10000r3.hed	shunting strain gages
052705_shuntaxle Lat2		Boston Facility	Boston Facility		sensors_VER13.xls	sample3000r5.hed	sample10000r3.hed	shunting PR accel on axle
052705_freq		Boston Facility	Boston Facility		sensors_VER13.xls	sample3000r5.hed	sample10000r3.hed	channels 1 and 17, 164 Hz
052705_sweep		Boston Facility	Boston Facility		sensors_VER13.xls	sample3000r5.hed	sample10000r3.hed	Chs 1 & 17, 100 to 8K 5 secs 2V Pk-to-Pk sine wave
052705_sine		Boston Facility	Boston Facility		sensors_VER13.xls	sample3000r5.hed	sample10000r3.hed	channels 1 and 17, 200Hz 2V peak to peak sine wave
052705_sync		Boston Facility	Boston Facility		sensors_VER13.xls	sample3000r5.hed	sample10000r3.hed	sync test of the 2 systems
052705_sweep2		Boston Facility	Boston Facility		sensors_VER13.xls	sample3000r5.hed	sample10000r3.hed	sweep 1 bad sine; wave not triangular; filename should be sync2
052705_zero2		South Street Sta.	South Street Sta.		sensors_VER13.xls	sample3000r5.hed	sample10000r3.hed	re-zero axle strain gages only
052705_zero3		South Street Sta.	South Street Sta.		sensors_VER13.xls	sample3000r5.hed	sample10000r3.hed	re-zero all strain gages only
052705_01	052705_01	South Street Sta.	Rte 128 Sta	Track 1	sensors_VER13.xls	sample3000r5.hed	sample10000r3.hed	After departure, adjusted disc temperature (with TC)
052705_02	052705_02	Rte 128 Sta	~ MP AB193.5	Track 1 Sw to Track 2 @ t~740 (MP AB 199)	sensors_VER13.xls	sample3000r5.hed	sample10000r3.hed	Caliper Pad Accels bad t~160,650-700
052705_03	052705_03	~ MP AB193.5	~ MP AB193.5	Track 2	sensors_VER13.xls	sample3000r5.hed	sample10000r3.hed	No Significant Data
052705_04	052705_04	~ MP AB193.5	Providence Sta.	Track 2 Sw to Track 1 @ t~490 (MP AB 186)	sensors_VER13.xls	sample3000r5.hed	sample10000r3.hed	
052705_05	052705_05	Providence Sta.	~MP AB 160	Track 1	sensors_VER13.xls	sample3000r5.hed	sample10000r3.hed	Spoke 6 F2 seeing noise spikes; t=860 noise on all gages
052705_06	052705_06	~MP AB 160	~MP AB 159	Track 1	sensors_VER13.xls	sample3000r5.hed	sample10000r3.hed	No Significant Data
052705_07	052705_07	~MP AB 159	New London CT (MP AB 124)	Track 1	sensors_VER13.xls	sample3000r5.hed	sample10000r3.hed	
052705_08	052705_08	New London CT (MP AB 122)	~MP AB 77	Track 1	sensors_VER13.xls	sample3000r5.hed	sample10000r3.hed	Noise spikes on Spoke6F2 off and on; t=1236 LATERAL HIT BUT NO ACTIVITY ON STRAINS
052705_09	052705_09	~MP AB 76	New Haven CT (~MP 72)	Track 1	sensors_VER13.xls	sample3000r5.hed	sample10000r3.hed	
052705_10	052705_10	New Haven CT (~MP 72)	MP MN 53	Track 1 Metro North	sensors_VER13.xls	sample3000r5.hed	sample10000r3.hed	
052705_11	052705_11	MP MN 53	MP MN 53	Track 1 Metro North	sensors_VER13.xls	sample3000r5.hed	sample10000r3.hed	LABVIEW CRASH ENDED COLLECTION; high speed system continued to collect
052705_12	052705_12	MP MN 50	MP MN 33	Track 1 Metro North	sensors_VER13.xls	sample3000r5.hed	sample10000r3.hed	
052705_13	052705_13	MP MN 32	MP MN 17	Track 1 Metro North	sensors_VER13.xls	sample3000r5.hed	sample10000r3.hed	
052705_14	052705_14	MP MN 17	MP E19		sensors_VER13.xls	sample3000r5.hed	sample10000r3.hed	LABVIEW CRASH ENDED COLLECTION; high speed system continued to collect
052705_15	052705_15	MP E18	New York		sensors_VER13.xls	sample3000r5.hed	sample10000r3.hed	
052705_16	052705_16	New York	New York		sensors_VER13.xls	sample3000r5.hed	sample10000r3.hed	LABVIEW CRASH ENDED COLLECTION; high speed system continued to collect
052705_17	052705_17	New York	~Secaucus NJ Station	Track 3	sensors_VER13.xls	sample3000r5.hed	sample10000r3.hed	No GPS file
052705_18	052705_18	~MP W6	Newark NJ	Track 3	sensors_VER13.xls	sample3000r5.hed	sample10000r3.hed	
052705_19	052705_19	Newark NJ	MP AN 40	Track 3	sensors_VER13.xls	sample3000r5.hed	sample10000r3.hed	Noise develop on Spoke6 F2 gage
052705_20	052705_20	MP AN 41	MP AN 84.5	Track 3	sensors_VER13.xls	sample3000r5.hed	sample10000r3.hed	t~517, spoke 6 F1 & F2 noisy; notice Axle Lat 3 high response in curves
052705_21	052705_21	Philadelphia Sta	MP AP 10	Track 3	sensors_VER13.xls	sample3000r5.hed	sample10000r3.hed	
052705_22	052705_22	MP AP 10	Wilmington Station	Track 3	sensors_VER13.xls	sample3000r5.hed	sample10000r3.hed	
052705_23	052705_23	MP AP 27	MP AP 61	Track 3	sensors_VER13.xls	sample3000r5.hed	sample10000r3.hed	
052705_24	052705_24	MP AP 61	MP AP 64	Track 3	sensors_VER13.xls	sample3000r5.hed	sample10000r3.hed	Noise develop on Spoke6 F1 gage
052705_25	052705_25	MP AP 65	MP AP 74	Track 3	sensors_VER13.xls	sample3000r5.hed	sample10000r3.hed	
052705_26	052705_26	MP AP 75	MP AP 78	Track 3	sensors_VER13.xls	sample3000r5.hed	sample10000r3.hed	
052705_27	052705_27	MP AP 79	MP AP 89	Track 3	sensors_VER13.xls	sample3000r5.hed	sample10000r3.hed	
052705_28	052705_28	MP AP 89	Baltimore Station	Track 3	sensors_VER13.xls	sample3000r5.hed	sample10000r3.hed	
052705_29	052705_29	Baltimore Station	BWI Station	Track 3	sensors_VER13.xls	sample3000r5.hed	sample10000r3.hed	
052705_30	052705_30	BWI Station	MP AP 134	Track 3	sensors_VER13.xls	sample3000r5.hed	sample10000r3.hed	

Acela Brake Disc Test - Test Log

Date	16-Jun-05
Test Run	Washington-NY-Washington, 7-inch Cant Deficiency Speed Profile
Train Configuration	Cars 3413, 3534 on Lead of Consist (PC 2038 Leading) to NY: Cars 3413, 3534 on Trail of Consist (PC 2038 Trailing)
Sample Rate	3000 samples/sec
Anti-Alias Filter Setting	800 Hz
Header File Used	sample3000_65r5.hed

3kHz (65 ch) System Filename (*.AB3, *.CAL, *.GPS)	Start Location	End Location	Track (if avail)	Channel List/Settings	Comments
061605_zero	NeC-MSC	NeC-MSC		sensors_VER22.xls	zero strain gages, accels
061605_shunt	NeC-MSC	NeC-MSC		sensors_VER22.xls	
061605_sweep1	NeC-MSC	NeC-MSC		sensors_VER22.xls	used "sync" channel
061605_sweep2	NeC-MSC	NeC-MSC		sensors_VER22.xls	used CTRSPK6F2
061605_sweep3	NeC-MSC	NeC-MSC		sensors_VER22.xls	USED CTR2SPK4_6
061605_sweep4	NeC-MSC	NeC-MSC		sensors_VER22.xls	used LBOXVert2
061504_freq1	NeC-MSC	NeC-MSC		sensors_VER22.xls	used "sync" channel w/88Hz
061504_freq2	NeC-MSC	NeC-MSC		sensors_VER22.xls	used CTRSPK6F2 w/88Hz
061504_freq3	NeC-MSC	NeC-MSC		sensors_VER22.xls	USED CTR2SPK4_6 w/88Hz
061504_freq4	NeC-MSC	NeC-MSC		sensors_VER22.xls	used LBOXVert2 w/88Hz
061605ivycity1	NeC-MSC	Ivy City Yard		sensors_VER22.xls	
061605ivycity2	Ivy City Yard	Ivy City Yard		sensors_VER22.xls	
061605ivycity3	Ivy City Yard	Ivy City Yard		sensors_VER22.xls	
061605ivycity4	Ivy City Yard	Union Station		sensors_VER22.xls	
061605_01	Union Station	~MP 101 AB	Track 2	sensors_VER22.xls	No GPS t~350, brake appl; t~450 lost temp sensor, then came back CTR2SPK3_R2 noisy off and on; t~630 brake application; **t~880 VERT HITS WABTEC/SAB-WABCO axle more active than Knorr axle** sync signal no good for first file. Stopped to fix speed signal (sine wave) and GPS
061605_02	~MP 101 AB	Baltimore Sta	Track 2	sensors_VER22.xls	GPS failure 10 seconds in
061605_03	Baltimore Sta	~Bush River	Track 3	sensors_VER22.xls	t~640 brake application? t~720 vertical hits on bridge t~920 brake appl **SMALL AMOUNT OF OSCILL DURING BRAKING**, tried to capture sound
061605_04	~Bush River	~MP 51AP	Track 2	sensors_VER22.xls	t~160 brake appl **SMALL AMOUNT OF OSCILL DURING BRAKING** t~260 vertical activity; t~345 big vertical hit
061605_05	~MP 51AP	Wilmington Station	Track 2	sensors_VER22.xls	**t~390 BIG VERTICAL HIT WABTEC/SAB-WABCO axle more active than Knorr axle** **t~620 BRAKE APPLICATION W/SMALL AMPLITUDE OSCILLATION, FOLLOWED**

Acela Brake Disc Test - Test Log

Date	16-Jun-05
Test Run	Washington-NY-Washington, 7-inch Cant Deficiency Speed Profile
Train Configuration	Cars 3413, 3534 on Lead of Consist (PC 2038 Leading) to NY: Cars 3413, 3534 on Trail of Consist (PC 2038 Trailing)
Sample Rate	3000 samples/sec
Anti-Alias Filter Setting	800 Hz
Header File Used	sample3000_65r5.hed

3kHz (65 ch) System Filename (*.AB3, *.CAL, *.GPS)	Start Location	End Location	Track (if avail)	Channel List/Settings	Comments
					BY BIG VERTICAL HIT
061605_06	Wilmington	Near Philadelphia Yard		sensors_VER22.xls	**t~95, 108 BIG VERT HITS WABTEC/SAB-WABCO axle more active than Knorr axle** **t~285 BIG VERT HITS WABTEC/SAB-WABCO axle more active than Knorr axle** **t~405,411 VERICAL HITS;** **t~925, VERY SMALL BRAKE OSCILL ON WABTEC/SAB-WABCO DISC**
061605_07	Near Philadelphia Yar	Philadelphia 30th Street Sta		sensors_VER22.xls	Nothing of Interest
061605_08	Philadelphia 30th Stre	~MP 69 AN		sensors_VER22.xls	t~70-80, 160 - Elevated activity on WABTEC/SAB-WABCO disc with no brake application **t~225, 337 BIG VERT ACTIVITY WABTEC/SAB-WABCO axle more active than Knorr axle** t~550 high activity on WABTEC/SAB-WABCO disc in curve
061605_09	~MP 69 AN	~MP 48AN		sensors_VER22.xls	t~70 heard squeeling though curve, recorded sound file **t~97 VERY LARGE VERT HIT WABTEC/SAB-WABCO axle more active than Knorr axle** t~562 SMALL OSCILLATION DURING BRAKING
061605_10	~MP 48AN	~MP 21AN		sensors_VER22.xls	
061605_11	~MP 21AN	Newark, NJ		sensors_VER22.xls	**t~40-50, LARGE VERT HITS WABTEC/SAB-WABCO axle more active than Knorr**
061605_12	Newark, NJ	~MP 7AN		sensors_VER22.xls	
061605_13	~MP 6AN	New York Penn Sta		sensors_VER22.xls	
Switched CTRSPK6_R2 & CTRSPK6_R1 from Amplifier 1-3,1-4 to 1-7,1-8					
061605_14	New York Penn Sta	Secacaus,NJ		sensors_VER24.xls	
061605_15	Secacaus,NJ	Newark, NJ		sensors_VER24.xls	t~190 saw activity in brake mount tri-axial accel
061605_16	Newark, NJ	~MP 30AN		sensors_VER24.xls	t~90 vertical hit t~200 during braking, saw Knorr Br Mount tri-axial accel vibrating +/-4g but no action on WABTEC/SAB-WABCO t~500 long braking with activity on Knorr brake mount accel t~840 long braking with activity on Knorr brake mount accel

Acela Brake Disc Test - Test Log

Date	16-Jun-05
Test Run	Washington-NY-Washington, 7-inch Cant Deficiency Speed Profile
Train Configuration	Cars 3413, 3534 on Lead of Consist (PC 2038 Leading) to NY: Cars 3413, 3534 on Trail of Consist (PC 2038 Trailing)
Sample Rate	3000 samples/sec
Anti-Alias Filter Setting	800 Hz
Header File Used	sample3000_65r5.hed

3kHz (65 ch) System Filename (*.AB3, *.CAL, *.GPS)	Start Location	End Location	Track (if avail)	Channel List/Settings	Comments
061605_17	~MP 30AN	~MP 55AN	Track 3	sensors_VER24.xls	t~290 noise again on CTR2SPK3_R2, then went away; intermittent "Noisy" signal on WABTEC/SAB-WABCO disc temperature
061605_18	~MP 55AN	N. Philadelphia	Track 3	sensors_VER24.xls	**t~470, VERT HITS WABTEC/SAB-WABCO axle more active than Knorr** t~630 appeared to bea lateral hit only Noise reappear on CTR2SPK3_R2
061605_19	N. Philadelphia	Philadelphia 30th Street Sta		sensors_VER24.xls	
061605_20	Philadelphia 30th Stre	~Wilmington, DE		sensors_VER24.xls	t~920 Disconnected CTR2SPK3_R2
061605_21	Wilmington Sta	~Newark DE		sensors_VER24.xls	t~80 Axle1 CTRSPK6R1 Died; t~220 AXLECSPK6 Died
061605_22	~Newark DE	~MP 61AP		sensors_VER24.xls	
061605_23	~MP 62AP	MP 87AP		sensors_VER24.xls	
061605_24	MP 88AP	Baltimore Station		sensors_VER24.xls	
061605_25	Baltimore	Within Baltimore Tunnel		sensors_VER24.xls	Discovered AXLE2CSPK3 Disabled
061605_26	Within Baltimore Tunn	MP 106AP		sensors_VER24.xls	Working on Strain Gage Connections
061605_27	MP 106AP	Near Ivy City		sensors_VER24.xls	t~200 high strains during braking, very low amplitude motion

Sound Files

Filename	Start Location
061605_01.WAV	~Bush River
061605_02.WAV	~MP 68AN

Acela Brake Disc Test - Test Log

Date	17-Jun-05
Test Run	Washington-Boston, 90-inch Cant Deficiency Speed Profile
Train Configuration	Cars 3413, 3534 on Lead of Consist (PC 2038 Leading) to Boston
Sample Rate	3000 samples/sec
Anti-Alias Filter Setting	Set to 800 Hz, Calculated at 750 Hz
Header File Used	sample3000_65r5.hed

3kHz (65 ch) System

Filename (*.AB3, *.CAL, *.GPS)	Start Location	End Location	Track (if avail)	Channel List/Settings	Comments
board1	NeC-MSC	NeC-MSC		sensors_VER25.xls	used "sync" channel w/95 Hz 2 V Pk-Pk
board2	NeC-MSC	NeC-MSC			used CTRSPK6F1 w/95 Hz 2 V Pk-Pk
board3	NeC-MSC	NeC-MSC			used AXLE1RLINK w/95 Hz 2 V Pk-Pk
board4	NeC-MSC	NeC-MSC			used LBOXLat1 w/95 Hz 2 V Pk-Pk
sweep1	NeC-MSC	NeC-MSC			used "sync" channel w/4.0 V Pk-Pk sin w/100Hz-3KHz over 5 seconds
sweep2	NeC-MSC	NeC-MSC			used CTRSPK6F1 w/4.0 V Pk-Pk sin w/100Hz-3KHz over 5 seconds
sweep3	NeC-MSC	NeC-MSC			used AXLE1RLINK w/4.0 V Pk-Pk sin w/100Hz-3KHz over 5 seconds
sweep4	NeC-MSC	NeC-MSC			used LBOXLat1 w/4.0 V Pk-Pk sin w/100Hz-3KHz over 5 seconds
zeroes	NeC-MSC	NeC-MSC			zero strain gages, accels
shunt	NeC-MSC	NeC-MSC			All strain gages shunted; **CTR2SPK6_4 WILL NOT SHUNT, BLACK LEAD OPEN**
061705_ivycity1	NeC-MSC	NeC-MSC			Moving in Yard
061705_ivycity2	Ivy City Yard	Ivy City Yard			
061705_ivycity3	Ivy City Yard	Union Station			**CTR2SPK6_4 is Open, AXLE2CSPK6_5 VERY NOISY**
061705_01	Union Station	~MP AP131			
061705_02	~MP AP131	~MP AP 99			AXLE2CSPK6 seems a bit noisy from time to time CTR2SPK3R2 intermittent noise (hash on top of signal) **t~825 BIG VERTICAL HIT WABTEC/SAB-WABCO axle more active than Knorr axle** some braking towards end of file
061705_03	~MP AP99	Baltimore Tunnel			
061705_04	Baltimore Tunnel	Baltimore Tunnel			**t~95 BRAKE APPLICATION, MED LEVEL OSCILL IN WABTEC/SAB-WABCO DISC**
061705_05	Baltimore Tunnel	Baltimore Station			Nothing of Interest, Short File
061705_06	Baltimore Station	~MP AP48			**t~475 BIT OF OSCILL ON WABTEC/SAB-WABCO DISC DURING BRAKING** t~530 interesting signal on Faively disk gages ~MP 83 **t~830 MUCH VERTICAL ACTIVITY** **t~1270 VERTICAL ACTIVITY ON BRIDGE** t~1370 VERTICAL ACTIVITY t~1580 Some oscillation observed
061705_07	~MP AP47	~MP AP28	Track 2		
061705_08	Wilmington Sta	Wilmington Sta	Track 2		Odd Oscillation in Spokes as Rolling

Acela Brake Disc Test - Test Log

Date	17-Jun-05
Test Run	Washington-Boston, 90-inch Cant Deficiency Speed Profile
Train Configuration	Cars 3413, 3534 on Lead of Consist (PC 2038 Leading) to Boston
Sample Rate	3000 samples/sec
Anti-Alias Filter Setting	Set to 800 Hz, Calculated at 750 Hz
Header File Used	sample3000_65r5.hed

3kHz (65 ch) System Filename (*.AB3, *.CAL, *.GPS)	Start Location	End Location	Track (if avail)	Channel List/Settings	Comments
061705_09	Wilmington Sta	~MP AP 8.5	Track 2		t~255, 285-400, 510 Vertical Activity t~580 VERTICAL HIT @ BEGINNING OF BRAKING
061705_10	~MP AP 8.5	Philadelphia	Track 2		t~135-150 LATERAL ACTIVITY, RBOXVERT2 showed signs of saturation **t~205 BRAKING OSCILLATION ON WABTEC/SAB-WABCO DISC**
061705_11	Philadelphia	MP AN63.5	Track 2		**t=555-570 MUCH ACTIVITY ON WABTEC/SAB-WABCO DISC WHILE CURVING** t~708 VERTICAL ACTIVITY t~725, 915-930, 1070 SATURATION OF LBOXVERT2 DURING CURVING TILT SYSTEM FAILED t~1060 VERTICAL ACTIVITY
061705_12	MP AN63	MP AN56	Track 2		Nothing of Interest
061705_13	MP AN56	MP AN21	Track 2		TILT SYSTEM RESTORED t~430-450 VERTICAL ACTIVITY t~885-900 MUCH LATERAL/VERTICAL ACTIVITY
061705_14	MP AN20.5	MP AN11	Track 2		**t~35-50 LARGE VERTICAL ACTIVITY** t~155 Small Oscill During Braking t~320 VERTICAL ACTIVITY
061705_15	MP AN11	Newark Station	Track 2		t~60,87 VERTICAL ACTIVITY
061705_16	Newark	MP AN7			t~205 Small Amplitude Oscillation During Braking Notice Noise on WABTEC/SAB-WABCO Axle Disk Temp and Cyl Press at end of file
061705_17	MP AN7	NY Penn Station			Notice Noise on WABTEC/SAB-WABCO Axle Disk Temp at begin of file
061705_18	NY Penn Station	~MP E18			
061705_19	~MP E18.5	MP MN22			**t~350 OSCILLATION OF WABTEC/SAB-WABCO DISK DURING BRAKING**
061705_20	MP MN22	MP MN23			Nothing of Interest
061705_21	MP MN23	~MP MN 39			**t~150-170,310,865 OSCILLATION OF WABTEC/SAB-WABCO DISK DURING BRAKING** **t~350-370 LARGE VERTICAL ACTIVITY**
061705_22	MP MN 39	~MP MN 42			**t~120 Brake Activity**
061705_23	~MP MN 43	~MP MN 55			**t~30,165,620 OSCILLATION OF WABTEC/SAB-WABCO DISK DURING BRAKING**
061705_24	~MP MN 55	MP MN 60			**t~80 LARGE VERTICAL ACTIVITY** **t~270, End of File, BRAKING OSCILL ON WABTEC/SAB-WABCO DISC**

Acela Brake Disc Test - Test Log

Date	17-Jun-05
Test Run	Washington-Boston, 90-inch Cant Deficiency Speed Profile
Train Configuration	Cars 3413, 3534 on Lead of Consist (PC 2038 Leading) to Boston
Sample Rate	3000 samples/sec
Anti-Alias Filter Setting	Set to 800 Hz, Calculated at 750 Hz
Header File Used	sample3000_65r5.hed

3kHz (65 ch) System Filename (*.AB3, *.CAL, *.GPS)	Start Location	End Location	Track (if avail)	Channel List/Settings	Comments
061705_25	MP MN 60	MP MN 72			**t~170,220,305,490,555,630 BRAKING OSCILL ON WABTEC/SAB-WABCO**
061705_26	MP MN 72	MP MN 72			**Oscillation During Braking, Short File**
061705_27	MP MN 73	MP MN 73			**Oscillation During Braking, Short File**
061705_28	MP MN 73	MP AB95			**t~610 Odd Oscillations After Applications**
061705_29	MP AB97	MP AB104			**t~120 MAJOR OSCILLATION OF WABTEC/SAB-WABCO DISC DURING BRAKING!!!!!!** **t~240 OSCILLATION OF WABTEC/SAB-WABCO DISC DURING BRAKING**
061705_30	MP AB104	MP AB116			**t~180, 405 SMALL OSCILLATION OF WABTEC/SAB-WABCO DISC DURING BRAKING** **t~210 HIGH VERTICAL ACTIVITY** **t~560 HIGH AMPLITUDE OSCILLATION OF WABTEC/SAB-WABCO DISC DURING BRAKING**
061705_31	MP AB116	~MP AB 122			**t~95, 165 OSCILLATION OF WABTEC/SAB-WABCO DISC DURING BRAKING** **t~120 LONG OSCILLATION, SMALL AMPLITUDE OF WABTEC/SAB-WABCO DISC DURING BRAKING**
061705_32	~MP AB 122	MP AB126			**t~170 HIGH ACTIVITY ON WABTEC/SAB-WABCO DISC WITH NO BRAKING IN CURVE** **t~335 OSCILL DURING BRAKING ON WABTEC/SAB-WABCO DISC;** **t~385 HIGH OSCILL DURING BRAKING ON WABTEC/SAB-WABCO DISC** **t~350 HIGH ACTIVITY ON WABTEC/SAB-WABCO DISC IN CURVE**
061705_33	MP AB126	MP AB129			**t=0 OSCILL OF WABTEC/SAB-WABCO DISC DURING BRAKING** **t~70 VERY LARGE OSCILLATION OF WABTEC/SAB-WABCO DISC DURING BRAKING**
061705_34	MP AB130	MP AB138			**t~90-115 LONG OSCILLATION OF WABTEC/SAB-WABCO DISC DURING BRAKING** **t~220 OSCILL OF WABTEC/SAB-WABCO DISC DURING BRAKING** **t~420 VERY LARGE OSCILLATION OF WABTEC/SAB-WABCO DISC DURING BRAKING**
061705_35	MP AB138	MP AB140			**t~80-110 VERY LARGE OSCILLATION OF WABTEC/SAB-WABCO DISC DURING BRAKING**

Acela Brake Disc Test - Test Log

Date	17-Jun-05
Test Run	Washington-Boston, 90-inch Cant Deficiency Speed Profile
Train Configuration	Cars 3413, 3534 on Lead of Consist (PC 2038 Leading) to Boston
Sample Rate	3000 samples/sec
Anti-Alias Filter Setting	Set to 800 Hz, Calculated at 750 Hz
Header File Used	sample3000_65r5.hed

3kHz (65 ch) System

Filename (*.AB3, *.CAL, *.GPS)	Start Location	End Location	Track (if avail)	Channel List/Settings	Comments
061705_36	MP AB140	MP AB 156			**t~130-140 VERY LARGE OSCILLATION OF WABTEC/SAB-WABCO DISC DURING BRAKING 2000uE pk-pk from 90 mph**
061705_37	MP AB 156	MP AB 160			**t~45 VERY HIGH VERY LONG OSCILLATION OF WABTEC/SAB-WABCO DISC DURING BRAKING FULL SERVICE BRAKE APPLICATION FROM 150 mph**
061705_38	MP AB 160	MP AB 186			**t~540 OSCILL OF WABTEC/SAB-WABCO DISC DURING BRAKING, SOUND RECORDED**
061705_39	MP AB 186	MP AB 187			**SHORT FILE, MILD ACTIVITY DURING CURVING**

END OF TESTING

Sound Files

Filename	Start Location	
061705_01.WAV	~MP MN 47	
061705_02.WAV	~MP MN 59	
061705_03.WAV	~MP MN 72	
061705_04.WAV	~MP AB 179	**BRAKING**

Acela Brake Disc Test - Test Log

Date	18-Jun-05
Test Run	Boston-Washington, 9-inch Cant Deficiency Speed Profile
Train Configuration	Cars 3413, 3534 on Lead of Consist (PC 2038 Leading) to Washington
Sample Rate	3000 samples/sec
Anti-Alias Filter Setting	Set to 800 Hz, Calculated at 750 Hz
Header File Used	sample3000_65r5.hed

3kHz (65 ch) System Filename (*.AB3, *.CAL, *.GPS)	Start Location	End Location	Track (if avail)	Channel List/Settings	Comments
zeroes	South Street Station	South Street Station		sensors_VER25.xls	zero strain gages, accels
shunt	South Street Station	South Street Station			All strain gages shunted; **CTR2SPK6_4 WILL NOT SHUNT (BLACK LEAD OPEN), CTR2SPK4_6 WILL NOT SHUNT**
board1	South Street Station	South Street Station			used "sync" channel w/82 Hz 4 V Pk-Pk
board2	South Street Station	South Street Station			used CTRSPK6F1 w/81 Hz 4 V Pk-Pk
board3	South Street Station	South Street Station			used CTR2SPK6_5 w/81 Hz 4 V Pk-Pk
board4	South Street Station	South Street Station			used AXLE2OSPK3 w/81 Hz 4 V Pk-Pk
sweep1	South Street Station	South Street Station			used "sync" channel w/4.0 V Pk-Pk sin w/100Hz-3KHz over 5 seconds
sweep2	South Street Station	South Street Station			used CTRSPK6F1 w/4.0 V Pk-Pk sin w/100Hz-3KHz over 5 seconds
sweep3	South Street Station	South Street Station			used CTR2SPK6_5 w/4.0 V Pk-Pk sin w/100Hz-3KHz over 5 seconds
sweep4	South Street Station	South Street Station			used AXLE2OSPK3 w/4.0 V Pk-Pk sin w/100Hz-3KHz over 5 seconds
061805_01	South Street Station	MP 225AB			
061805_02	MP 225AB	Rte 128			**t~270,295,313 VERTICAL ACTIVITY** **t~325 Short signs of oscill on WABTEC/SAB-WABCO Disc during braking**
061805_03	Rte 128	~MP 201.5AB			**t~475 LARGE OSCILLATION OF WABTEC/SAB-WABCO DISC DURING BRAKING, FS Stop from 150 MPH**
061805_04	~MP AB 201.5	Providence Station			t~233,345 Mild Activity on WABTEC/SAB-WABCO Disc During Braking t~415 Activity on WABTEC/SAB-WABCO Disc During Curving
061805_05	Providence Station	~MP AB 176.5	Track 1 Tr 2 @t=370		**t~530-550 LARGE OSCILLATION OF WABTEC/SAB-WABCO DISC DURING BRAKING FS Stop**
061805_06	~MP AB 176.5	~MP AB 160	Tr2		**t~240 HIGH ACTIVITY ON WABTEC/SAB-WABCO DISC DURING FS BRAKING**
			Sw to Tr 1~t350		**t~505-542 HIGH ACTIVITY ON WABTEC/SAB-WABCO DISC DURING FS BRAKING**
061805_07	~MP AB 160	~MP AB 140	Track 1		**t~30 HIGH ACTIVITY ON WABTEC/SAB-WABCO DISC DURING BRAKING FS Braking from 125 MPH** **t~160 HIGH ACTIVITY ON WABTEC/SAB-WABCO DISC DURING BRAKING FS Braking from 115 MPH**
061805_08	~MP AB 140	~MP AB 133 Mystic CT	Track 1		
061805_09	~MP AB 131	MP AB 114	Track 1		**t~255,420 ACTIVITY ON WABTEC/SAB-WABCO DISC DURING CURVING**
061805_10	MP AB 114	MP AB 99	Track 1		

Acela Brake Disc Test - Test Log

Date	18-Jun-05
Test Run	Boston-Washington, 9-inch Cant Deficiency Speed Profile
Train Configuration	Cars 3413, 3534 on Lead of Consist (PC 2038 Leading) to Washington
Sample Rate	3000 samples/sec
Anti-Alias Filter Setting	Set to 800 Hz, Calculated at 750 Hz
Header File Used	sample3000_65r5.hed

3kHz (65 ch) System Filename (*.AB3, *.CAL, *.GPS)	Start Location	End Location	Track (if avail)	Channel List/Settings	Comments
061805_11	MP AB 99	MP AB 77	Track 1		t~270,360 Braking w/no real activity
061805_12	MP AB 77	MP MN 62			t~250 Bit of Activity on WABTEC/SAB-WABCO Disc Through Curve
061805_13	~MP MN 61	~MP MN 47			
061805_14	~MP MN 47	~MP MN 31			
061805_15	~MP MN 31	~MP MN 23			**t~150 VERTICAL ACTIVITY ON WABTEC/SAB-WABCO DISC**
061805_16	~MP MN 23	MP E 12			**At end of file, long braking with no activity**
061805_17	MP E 12	~MP E 4			
061805_18	~MP E 4	~MP E 3			**t~75, 245 SMALL AMOUNT OF ACTIVITY ON WABTEC/SAB-WABCO DISC DURING BRAKING**
061805_19	~MP E 3	NY Penn Station			
061805_20	NY Penn Station	MP AN 8			Little of Interest
061805_21	MP AN 8	Newark Station			GPS Issue in File, Nothing of Interest
061805_22	Newark Station	MP AN 22			**t~210 LARGE OSCILLATION OF WABTEC/SAB-WABCO DISC DURING BRAKING (Sound Recording Made)** **t~445 LARGE OSCILLATION OF WABTEC/SAB-WABCO DISC (SHORT) DURING BRAKING (Sound Recording Made)**
061805_23	MP AN 22	~MP AN 41			t~690, End of File BRAKE APPLICATION w/NO ACTIVITY
061805_24	~MP AN 41	~MP AN 58			t~305 FS BRAKE APPLICATION FROM 135 MPH, NO ACTIVITY **t~570 FS BRAKE APPLICATION FROM 135, ACTIVITY DID NOT START UNTIL I'LOCK HIT PREVIOUS BRAKE APPLICATION NOT ACTIVE AND DID SEE VERTICAL HIT BEFORE??**
061805_25	~MP AN 58	~MP AN 82.5			t~100 FS BRAKE APPLICATION FROM 125 MPH, NO ACTIVITY MANY BRAKE APPLICATIONS W/NO ACTIVITY
061805_26	~MP AN 82.5	Philadelphia Station			t~210 Brake Application w/No Activity
061805_27	Philadelphia Station	Philadelphia South			GPS Failure, No Activity of Interest
061805_28	Philadelphia South	Wilmington Car Shop			t~0-250 Much Lateral Activity t~290 Braking w/No Activity **t~500 MUCH VERTICAL & LATERAL ACTIVITY** t~600 VERTICAL ACTIVITY
061805_29	Wilmington Station	~MP AP 52			Some Saturation of vertical accels observed t~340 FS BRAKE APPLICATION FROM 135mph, NO ACTIVITY

Acela Brake Disc Test - Test Log

Date	18-Jun-05
Test Run	Boston-Washington, 9-inch Cant Deficiency Speed Profile
Train Configuration	Cars 3413, 3534 on Lead of Consist (PC 2038 Leading) to Washington
Sample Rate	3000 samples/sec
Anti-Alias Filter Setting	Set to 800 Hz, Calculated at 750 Hz
Header File Used	sample3000_65r5.hed

3kHz (65 ch) System

Filename (*.AB3, *.CAL, *.GPS)	Start Location	End Location	Track (if avail)	Channel List/Settings	Comments
061805_30	~MP AP 52	~MP AP 78			t~80 BIG VERTICAL HIT t~180 BRAKING w/NO ACTIVITY **t~220 BIG VERTICAL ACTIVITY** **t~730 BIG VERTICAL HIT @ EDGEWOOD I'LOCK** **t~780 SMALL BIT OF VERTICAL ACTIVITY DURING BRAKING FOLLOWING VERTICAL HIT**
061805_31	~MP AP 78	BaltimoreStation			**t~630 BIG VERTICAL HIT**

END OF TESTING

Sound Files

Filename	Start Location
061805_01.WAV	~MP AN14
061805_02.WAV	~MP AN19

Daily Reports

The following reports were provided to test participants by Knorr-Bremse, usually on the same day as the test. There was usually not sufficient time to verify extreme data values cited in the daily reports prior to their dissemination.

These reports are provided for historical reference only. Values cited in the final report should be considered as verified and accurate.

Please note that no daily report was issued following the test conducted on May 27, 2005.

From: Rich.Bowie@knorrbrakecorp.com
Sent: Wednesday, May 18, 2005 10:34 AM
To: Ronald.Newman@fra.dot.gov; edlombardi@comcast.net; nbehety@necmsc.com; frank.duschinsky@ca.transport.bombardier.com; schramd@amtrak.com
Cc: GAGARIG@amtrak.com; Magdy.El-Sibaie@fra.dot.gov; JWhite@Wabtec.com; bjoern.neller@faiveleytransport.com; Bernd.Hetterscheidt@faiveleytransport.com
Subject: RE: Summary of Test Train Results 5/16/05

Dear Mr. Newman,

As you requested, following is a summary of the test results from today and instrumentation status.

1. The rotating axle mounted accelerometer was inspected and re-tightened en-route from Boston. Performing properly now.

2. Aliasing frequency was increased to 1000 Hz with sampling at 4000 Hz initially, but was needed to be changed to 1000 Hz filter with 3000 Hz sampling.

3. Thermocouple was added to the back side of the friction ring and replaced spoke thermocouple on the data acquisition.

We observed the following data from the test runs:

Maximum rotor temperatures were observed during the test run were within acceptable limits. We observed maximum rotor temperatures of about 258 F, with an average peak of 200 F. (No Full-Service Stops were performed). Adding 100 degrees for correction factor has the discs temperature within expected and acceptable results. Spoke temperatures were reported to be in the range of less than 150 F. Allowing for a correction factor that is to be determined, they are Still within acceptable limits.

Maximum measured temp on back of the friction face was 275 F

For the accelerations, we noted the following peak values from the charts (detailed evaluation of the data will be conducted shortly):

Location: Direction Maximum

Left Axle Box	Vertical	117
Left Axle Box	Lateral	38
Right Axle Box	Vertical	99
Right Axle Box	Lateral	73
Rotating Axle	Lateral	30; however values in excess of 200 recorded. This must be evaluated further.

The values recorded all seem to coincided well with each other. We believe to have recorded accurate data that is within acceptable results.

Spoke Strains were monitored and found to be in the range of what was observed during the shakedown run. Today we observed peak values of approximately 2400 uE as compared to approximately 2000uE in the shakedown run.

These data values need to be validated by Ensco and considered further.

Best Regards,

Richard Bowie

Director of Engineering

Knorr Brake Corp.

861 Baltimore Blvd.

Westminster, MD 21157

Phone +(410) 875-1251

Fax +(410) 875-9053

< <mailto:rich.bowie@knorrbrakecorp.com>
mailto:rich.bowie@knorrbrakecorp.com>

< <http://www.knorrbrakecorp.com/> http:/www.knorrbrakecorp.com>

< <http://www.knorr-bremse.com/> http:/www.knorr-bremse.com/>

From: Rich.Bowie@knorrbrakecorp.com
Sent: Wednesday, May 18, 2005 10:28 PM
To: Ronald.Newman@fra.dot.gov; edlombardi@comcast.net; nbehety@necmsc.com; frank.duschinsky@ca.transport.bombardier.com; schramd@amtrak.com
Cc: GAGARIG@amtrak.com; Magdy.El-Sibaie@fra.dot.gov; JWhite@Wabtec.com; bjoern.neller@faiveleytransport.com; Bernd.Hetterscheidt@faiveleytransport.com; jquigley@faiveleyrail.com
Subject: RE: Summary of Test Train Results 5/17/05

Dear Sirs,

First, please note that the original email had not updated the date reported in the "Subject" Line to be 5/17/05. This has now been corrected.

Please find below an update to the prior report to include the data reported by NEC from the MPI inspection of TS 10 after the Boston-Washington test run 5/17/05.

Car	Axle	S/n disc	location	Spoke#	Was	Now
3306	3	062/J5713	G	1	W0	W0
2		W1	S1			
3		W2	S3			
4		W1	W1			
5		W1	W1			
6.		W0	W0			
			C			
ALL		NO CHANGES				
			S	1	W0	W0
2		W0	W2			
3		W2	S1			
4		W2	W2			
5		W0	W0			
6.		W2	W2			

This axle has been replaced.

Rich
-----Original Message-----
From: Bowie, Rich
Sent: Wednesday, May 18, 2005 10:34 AM
To: 'Newman, Ronald'; 'Ed Lombardi'; 'Norbert Behety'; 'Frank Deschinsky'; 'David Schramm'
Cc: 'GAGARIG@amtrak.com'; 'El-Sibaie, Magdy'; 'JWhite@Wabtec.com'; 'bjoern.neller@faiveleytransport.com'; 'Bernd.Hetterscheidt@faiveleytransport.com'
Subject: RE: Summary of Test Train Results 5/16/05

Dear Mr. Newman,

As you requested, following is a summary of the test results from today and instrumentation status.

1. The rotating axle mounted accelerometer was inspected and re-tightened en-route from Boston. Performing properly now.

2. Aliasing frequency was increased to 1000 Hz with sampling at 4000 Hz initially, but was needed to be changed to 1000 Hz filter with 3000 Hz sampling.

3. Thermocouple was added to the back side of the friction ring and replaced spoke thermocouple on the data acquisition.

We observed the following data from the test runs:

Maximum rotor temperatures were observed during the test run were within acceptable limits. We observed maximum rotor temperatures of about 258 F, with an average peak of 200 F. (No Full-Service Stops were performed). Adding 100 degrees for correction factor has the discs temperature within expected and acceptable results. Spoke temperatures were reported to be in the range of less than 150 F. Allowing for a correction factor that is to be determined, they are Still within acceptable limits.

Maximum measured temp on back of the friction face was 275 F

For the accelerations, we noted the following peak values from the charts (detailed evaluation of the data will be conducted shortly):

Location:	Direction	Maximum
Left Axle Box	Vertical	117
Left Axle Box	Lateral	38
Right Axle Box	Vertical	99
Right Axle Box	Lateral	73
Rotating Axle	Lateral	30; however values in excess of 200 recorded. This must be evaluated further.

The values recorded all seem to coincided well with each other. We believe to have recorded accurate data that is within acceptable results.

Spoke Strains were monitored and found to be in the range of what was observed during the shakedown run. Today we observed peak values of approximately 2400 uE as compared to approximately 2000uE in the shakedown run.

These data values need to be validated by Ensco and considered further.

Best Regards,

Richard Bowie
Director of Engineering

Knorr Brake Corp.
861 Baltimore Blvd.
Westminster, MD 21157
Phone +(410) 875-1251
Fax +(410) 875-9053

< <mailto:rich.bowie@knorrbrakecorp.com>
mailto:rich.bowie@knorrbrakecorp.com>
< <http://www.knorrbrakecorp.com/> http:/www.knorrbrakecorp.com>
< <http://www.knorr-bremse.com/> http:/www.knorr-bremse.com/>

From: Dave.Welly@knorrbrakecorp.com
Sent: Thursday, May 26, 2005 6:42 PM
To: Ronald.newman@fra.dot.gov
Cc: edlombardi@comcast.net; Rich.Bowie@knorrbrakecorp.com
Subject: FW: Summary of Test Train Results 5/26/05

Dear Mr. Newman,

As you requested, the following is reported regarding today's test run from Washington to Boston.

Upon departure from Washington, no discs were reported to have cracks. After completion of the visual inspection in Boston this evening, a summary will be provided at the 10:00 p.m. conference call.

All instrumentation worked as expected, and no changes/modifications were required during the trip to Boston.

We observed the following data from the test runs:

Maximum rotor temperatures were observed during the test run were within acceptable limits. We observed maximum rotor temperatures of about 300 F, with an average peak of 200 F. Adding 100 degrees for correction factor has the discs temperature within expected and acceptable results.

For the accelerations, we noted to following peak values by observing real time data on the displays:

Location:	Direction	Maximum
Left Axle Box	Vertical	>100
Left Axle Box	Lateral	40
Right Axle Box	Vertical	>100
Right Axle Box	Lateral	40
Rotating Axle	Lateral	40

The values recorded all seem reasonable and coincided well with each other. We believe to have recorded accurate data that is within acceptable results.

Spoke strains were monitored and found to be in the range of what was observed during the first test run. Today we observed peak values of approximately 2100 uE. The highest peak strains were noted to occur when entering suppression from approximately 120 mph. Values of this magnitude were noted just prior to Newark and then further North as well. The strains are within the expected and allowable ranges.

In summary, results were within acceptable range and are believed to be valid.

There is nothing noted that is of concern. Knorr recommends that the testing schedule for tomorrow be conducted as planned.

From: Dave.Welly@knorrbrakecorp.com
Sent: Friday, June 03, 2005 10:50 AM
To: Ronald.newman@fra.dot.gov
Cc: edlombardi@comcast.net; Rich.Bowie@knorrbrakecorp.com
Subject: RE: Summary of Test Train Results 5/26/05

Ron,

As you requested, below is the disc test inspection results following the 5/27 run from Boston to Washington.

Car	Axle	S/n disc	Location	Spoke#	Was	Now
3413	4	067J6642	c	1		
---		W1				
3214	4	095J6642	c	1		
---		W1				
3214	4	095J6642	c	4		
---		W1				
3214	4	078J6642	c	6		
---		W1				
3214	3	078J6642	c	5		
---		W1				

Please let me know if you have any questions.

From: Rich.Bowie@knorrbrakecorp.com
Sent: Thursday, June 16, 2005 10:06 PM
To: SchramD@amtrak.com; Magdy.El-Sibaie@fra.dot.gov; edlombardi@comcast.net; frank.duschinsky@ca.transport.bombardier.com; Ronald.Newman@fra.dot.gov
Cc: Dave.Welly@knorrbrakecorp.com; Terry.Welsh@knorrbrakecorp.com; Joe.DeStefano@knorrbrakecorp.com; Mike.Kmon@knorrbrakecorp.com; Frank.Guenther@knorr-bremse.com; Christian.Witzleben@knorr-bremse.com; Sherrock.Eric; Kesler.Kevin; Whitten.Brian; JWhite@Wabtec.com; BjoernNeller@t-online.de; jquigley@faiveleyrail.com
Subject: Summary of Test Train Results 6/16/05

Dear Mr. Newman,

As you requested, the following was reported regarding the status of the disc inspection:

No changes to spoke inspection status except:

Car	Axle	S/n disc	location	Spoke#	Was	Now
4214	4		c	4	W1	W0

(this will be noted in case it re-appears in Boston)

The following is a summary of the instrumentation status.

1. GPS did not function for the duration of the trip and may not be functional for the trip
2. Two strain gauges on the Knorr disc (Strain gauges 4 and 5) appear to been damaged and may not be functional for the trip. These were noted as not being critical for evaluation of the disc for bending. They were added to get some information about the stresses from thermal expansion. Data collected from today's run should be adequate.

We observed the following data from the test runs:

Maximum rotor temperatures were observed during the test run were within acceptable limits. We observed maximum rotor temperatures of approximately 300F, with an average peak of 200F, measured on the back side of the friction face.

For the accelerations, we noted to following peak values from the charts:

Location:	Direction	Axle 1 Maximum	Axle 2 Maximum
Left Axle Box	Vertical	100	100
Left Axle Box	Lateral	40	>50
Right Axle Box	Vertical	80	80
Right Axle Box	Lateral	40	>50
Rotating Axle	Lateral	>50	30
TR Mounted Axle	Vertical	20	20
Brake Mounted Axle	Vertical	10	15

The values recorded all seem reasonable and coincided well with each other. We believe to have recorded accurate data that is within acceptable results.

Spoke Strains were monitored and found to be in the range of what was observed previously. Today we observed peak values of approximately 2400 uE. The strains are within the expected and allowable ranges.

In summary, results were within acceptable range and are believed to be valid.
There is nothing noted that is of concern. Knorr recommends that the testing schedule for tomorrow be conducted as planned.

From: Dave.Welly@knorrbrakecorp.com

Sent: Friday, June 17, 2005 11:27 PM

To: Rich.Bowie@knorrbrakecorp.com; SchramD@amtrak.com; Magdy.El-Sibaie@fra.dot.gov; edlombardi@comcast.net; frank.duschinsky@ca.transport.bombardier.com; Ronald.Newman@fra.dot.gov

Cc: Terry.Welsh@knorrbrakecorp.com; Joe.DeStefano@knorrbrakecorp.com; Mike.Kmon@knorrbrakecorp.com; Frank.Guenther@knorr-bremse.com; Christian.Witzleben@knorr-bremse.com; Sherrock.Eric; Kesler.Kevin; Whitten.Brian; JWhite@Wabtec.com; BjoernNeller@t-online.de; jquigley@faiveleyrail.com

Subject: Summary of Test Train Results 6/17/05

Dear Mr. Newman,

Disc inspection results will be reported during the 7:30 a.m. conference call on 6/18.

The following is a summary of the instrumentation status.

1. Strain gauge Axle2spk6_4 (on the Knorr disc) was inoperable during the run. This was discussed during the Thursday evening conference call and noted as acceptable to Knorr as this was a redundant gauge.

We observed the following data from the test runs:

Maximum rotor temperatures observed during the test run were within acceptable limits. We observed maximum rotor temperatures of approximately 220F, with an average peak of 150F, measured on the back side of the friction face.

For the accelerations, we noted to following peak values from the charts:

Location:	Direction	Axle 1 Maximum	Axle 2 Maximum
Left Axle Box	Vertical	80	100
Left Axle Box	Lateral	45	>50
Right Axle Box	Vertical	100	100
Right Axle Box	Lateral	>50	>50
Rotating Axle	Lateral	>50	25
TR Mounted Axle	Vertical	20	20
Brake Mounted Axle	Vertical	5	10

The values recorded all seem reasonable and coincided well with each other. We believe to have recorded accurate data that is within acceptable results.

Spoke Strains were monitored and found to be in the range of what was observed previously. Today we observed peak values of approximately 2200 uE. The strains are within the expected and allowable ranges.

In summary, results were within acceptable range and are believed to be valid.

There is nothing noted that is of concern. Knorr recommends that the testing schedule for tomorrow be conducted as planned.

From: Dave.Welly@knorrbrakecorp.com
Sent: Monday, June 20, 2005 1:24 PM
To: Ronald.Newman@fra.dot.gov; SchramD@amtrak.com; MurphyM@amtrak.com; GagariG@amtrak.com
Cc: Ed.Pritchard@fra.dot.gov; Rich.Bowie@knorrbrakecorp.com; Stephen.Carullo@fra.dot.gov; Harold.Blankenship@fra.dot.gov; Gary.Fairbanks@fra.dot.gov; George.Scerbo@fra.dot.gov; Satya.Singh@fra.dot.gov
Subject: Summary of Test Train Results 6/18/05

Dear Mr. Newman,

Disc inspection results from Saturday have not yet been reported.

The following is a summary of the instrumentation status.

1. Strain gauge Axle2spk6_4 (on the Knorr disc) was inoperable during the run. This was also inoperable during the 6/17 run from Washington to Boston.

We observed the following data from the test runs:

Maximum rotor temperatures observed during the test run were within acceptable limits. We observed maximum rotor temperatures of approximately 270F, with an average peak of 150F, measured on the back side of the friction face.

For the accelerations, we noted to following peak values from the charts:

Location:	Direction	Axle 1 Maximum	Axle 2 Maximum
Left Axle Box	Vertical	100	100
Left Axle Box	Lateral	45	25
Right Axle Box	Vertical	100	100
Right Axle Box	Lateral	>50	>50

Rotating Axle	Lateral	>50	25
TR Mounted Axle	Vertical	20	20
Brake Mounted Axle	Vertical	5	10

The values recorded all seem reasonable and coincided well with each other. We believe to have recorded accurate data that is within acceptable results.

Spoke Strains were monitored and found to be in the range of what was observed previously. Today we observed peak values of approximately 2600 uE. The strains are within the expected and allowable ranges.

In summary, results were within acceptable range and are believed to be valid.

There is nothing noted that is of concern.