REPORT NUMBER: 201-MGA-2008-002

SAFETY COMPLIANCE TESTING FOR FMVSS 201
RIGID POLE SIDE IMPACT TEST

FORD MOTOR COMPANY
2008 FORD FOCUS 4-DOOR
NHTSA NUMBER: C80204

PREPARED BY:
MGA RESEARCH CORPORATION
5000 WARREN ROAD
BURLINGTON, WI 53105

TEST DATE: JUNE 4, 2008

FINAL REPORT

PREPARED FOR:
U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
OFFICE OF VEHICLE SAFETY COMPLIANCE
1200 NEW JERSEY AVENUE, SE
WASHINGTON, D.C. 20590

This final test report was prepared for the U.S. Department of Transportation, National Highway Traffic Safety Administration, in response to Contract Number DTNH22-06-C-00030.

Prepared by: Joe Fleck Date: September 19, 2008
Joe Fleck, Project Engineer

Reviewed by: David Winkelbauer Date: September 19, 2008
David Winkelbauer, Director of Operations

FINAL REPORT ACCEPTED BY:

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COTR, Side Impact

_____
Date of Acceptance

Technical Report Documentation Page

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16. Abstract

A rigid pole side impact test was conducted on a 2008 Ford Focus 4-Door in accordance with FMVSS 201, "Occupant Protection in Interior Impact", S6.2(b)(3) and the Office of Vehicle Safety Compliance Test Procedure No. TP-201P-02 "Rigid Pole Side Impact Test". The test was conducted at MGA Research Corporation in Burlington, Wisconsin on June 4, 2008.

The impact velocity of the vehicle was 28.3 kph, and the ambient temperature at the struck side (driver's) of the target vehicle at the time of impact was 21°C. The post-test maximum crush was 380 mm at level 3. The test vehicle's occupant performance is as follows:

	REQUIREMENT	DRIVER
HIC	≤ 1000	236

The doors on the struck side of the vehicle did not separate from the body at the hinges or latches and the opposite doors did not open during the side impact event.

17. Key Words Compliance Testing Rigid Pole Side Impact Test FMVSS 201		*18. Distribution Statement* Copies of this report are available from: National Highway Traffic Safety Adm. Technical Ref. Division, (NPO-230) 1200 New Jersey Avenue, SE Washington, D.C. 20590	
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SECTION 1
PURPOSE AND TEST PROCEDURE

1.1 PURPOSE

This rigid pole side impact test is conducted as part of the FY' 2008 test program sponsored by the National Highway Traffic Safety Administration (NHTSA), under contract No. DTNH22-06-C-00030. The purpose of this test was to evaluate occupant protection in interior impact in a 2008 Ford Focus 4-Door manufactured by Ford Motor Company.

1.2 TEST PROCEDURE

The rigid pole side impact test was conducted in accordance with the current National Highway Traffic Safety Administration (NHTSA), Office of Vehicle Safety Compliance (OVSC), laboratory test procedure TP-201P-02, dated October 21, 2001 and the corresponding MGA Research Corporation Test Procedure MGA-NHTSA8. The procedures for receiving, inspection, testing, and reporting of test results are described in the test procedures and are not repeated in this report.

MGA does not endorse or certify products. The manufacturer's name appears solely for identification purposes.

SECTION 2
SUMMARY OF RIGID POLE SIDE IMPACT TEST

2.1 SUMMARY OF RIGID POLE SIDE IMPACT TEST

A rigid pole side impact test was performed on a 2008 Ford Focus 4-Door. The subject vehicle was towed into a rigid pole at a velocity of 28.3 km/h. The specified impact velocity range is from 27.2 to 28.8 km/h. The test vehicle was positioned 90° to the line of forward motion. The weight of the vehicle as tested was 1324.5 kg. The test was conducted at MGA Research Corporation in Burlington, Wisconsin, on June 4, 2008.

One (1) real-time motion picture camera and eleven (11) high-speed motion picture cameras were used to document the impact event. Camera locations and pertinent camera information are documented in the data sheets. Pre- and post-test photographs of the vehicle and SID/HIII can be found in Appendix A. One SID/HIII was placed in the left front outboard designated seating position according to instructions specified in the TP-201P-02 dated October 21, 2001. The SID/HIII was instrumented in the following locations:

- Head Center of Gravity (CG) tri-axial accelerometers (X, Y, and Z axis)
- Upper Neck 6 channel load cell (X, Y, Z force and moment)
- Left Upper Rib (LUR) uni-axial accelerometer (Y-axis primary and redundant)
- Left Lower Rib (LLR) uni-axial accelerometer (Y-axis primary and redundant)
- Lower Thoracic Spine (T12) uni-axial accelerometer (Y-axis primary and redundant)
- Pelvic (PEV) section uni-axial accelerometer (Y-axis primary and redundant)

The test vehicle was instrumented with seventeen (17) structural accelerometers. All data channels were recorded with a fully self contained on-board DTS TDAS Pro. The data was digitally sampled at 10,000 samples per second and processed per Section 12.2 of the OVSC Test Procedure.

2.2 GENERAL COMMENTS

The test vehicle sustained a maximum static crush of 380 mm at level 3, at the vertical impact line. The driver SID/HIII, Serial No. 037, was calibrated just prior to this test. The SID/HIII's injury criteria are summarized as follows:

Measurements	Units	Driver
HIC		236
TTI*	G's	45.4
Pelvis*	G's	57.3
Neck Force X*	N	-316
Neck Force Y*	N	-322
Neck Force Z*	N	629
Neck Moment X*	Nm	-38.7
Neck Moment Y*	Nm	-20.0
Neck Moment Z*	Nm	44.4

* For Information Purposes Only

Test summaries and post-test observations are presented in Section 3. The vehicle, camera, and occupant measurements are presented in Section 4. Appendix A contains the still photograph prints. Appendix B contains the SID/HIII and vehicle data traces. Appendix C contains the SID/HIII's configuration and performance verification data. Appendix D contains the calibration information data.

TEST NOTES

The following channels were not used in this test:

Right Roof Y
Driver Door Lower
Driver Door Mid
Driver Door Upper

SECTION 3
SIDE IMPACT DUMMY (SID/HIII) AND VEHICLE TEST DATA

Test Vehicle: 2008 Ford Focus 4-Door
Test Program: FMVSS 201P

NHTSA No. C80204
Test Date: June 4, 2008

CONVERSION FACTORS USED IN THIS REPORT*

Quantity	Typical Application	English Units	Metric Unit	Multiply By
Mass	Vehicle Weight	lb	kg	0.4536
Linear Velocity	Impact Velocity	mile/h	km/h	1.609
Length or Distance	Measurements	in	mm	25.4
Volume	Small Fluids	oz	mL	29.573
Pressure	Tire Pressure	lbf/in^2	kPa	7.0
Volume	Liquid	gal	liter	3.785
Temperature	General Use	°F	°C	=(tf -32)/1.8
Force	Dynamic Forces	lbf	N	4.448
Moment	Torque	lbf/ft	Nm	1.355

*Based on the Recommended Practice in SAE J916, May 85

DATA SHEET NO. 1

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2008 Ford Focus 4-Door
Test Program: FMVSS 201P

NHTSA No. C80204
Test Date: June 4, 2008

TEST VEHICLE INFORMATION

Make	Ford
Model	Focus
Body Style	Sedan
NHTSA No.	C80204
VIN	1FAHP34N88W145582
Color	Silver Frost
Delivery Date	3/28/2008
Odometer Reading (mile)	154
Dealer	Boucher Fleet Group
Transmission	Manual
Final Drive	Front
Number of Cylinders	4
Engine Displacement (L)	2.0
Engine Placement	Lateral

TEST VEHICLE OPTIONS

Front Airbag	Yes
Side Airbags	Yes
Power Windows	No
Power Steering	Yes
Power Door Locks	No
Tilt Wheel	Yes
Air Conditioning	Yes
Power Brakes	Yes
Disc Brakes, Front	Yes
Disc Brakes, Rear	No
Anti-lock Brakes	Yes
AM/FM/CD	Yes
Anti-theft System	Yes
Cruise Control	No

DATA FROM CERTIFICATION LABEL

Manufactured By	Ford Motor Company
Date of Manufacture	12/07

GVWR (kg)	1685
GAWR Front (kg)	896
GAWR Rear (kg)	796

DATA FROM TIRE PLACARD

Measured Parameter	Front	Rear
Maximum Tire Pressure (kPa)	300	300
Cold Pressure (kPa)	220	220
Recommended Tire Size	P195/60R15	P195/60R15
Tire Size on Vehicle	P195/60R15	P195/60R15
Tire Manufacturer	Hankook	Hankook

Measured Parameter	Front	Rear	Third	Total
Type of Seats	Bucket	Bench		
Number Of Occupants	2	3		5
Capacity Wt. (VCW) (kg)				375
Cargo Wt. (RCLW) (kg)				35

DATA SHEET NO. 1... (continued)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2008 Ford Focus 4-Door
Test Program: FMVSS 201P

NHTSA No. C80204
Test Date: June 4, 2008

TEST VEHICLE WEIGHTS

	Units	As Delivered (UVW) (Axle)			As Tested (ATW) (Axle)		
		Front	Rear	Total	Front	Rear	Total
Left	kg	370.1	234.1		386.0	286.7	
Right	kg	367.0	244.0		375.6	276.2	
Ratio	%	60.7	39.3		57.5	42.5	
Totals	kg	737.1	478.1	1215.2	761.6	562.9	1324.5

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value
Total Delivered Weight (UVW)	kg	1215.2
Weight of SID/HIII Side Impact Dummy	kg	80.7
Rated Cargo/Luggage Weight (RCLW)	kg	35
Calculated Vehicle Target Weight (TVTW)	kg	1330.9

TEST VEHICLE ATTITUDES

	Units	As Delivered	Fully Loaded	Ready For Test
Right Front	mm	670	656	808
Left Front	mm	674	652	810
Right Rear	mm	695	677	827
Left Rear	mm	694	666	8028
Right Door Sill Angle	deg	1.1 ND	0.7 ND	1.1 ND
Left Door Sill Angle	deg	0.6 ND	0.4 ND	0.5 ND
Front Bumper Angle	deg	0.0	0.3 LD	0.3 LD
Rear Bumper Angle	deg	0.1 LD	0.2 LD	0.2 LD

ND = NOSE DOWN, BD = BACK DOWN, LD = LEFT DOWN, RD = RIGHT DOWN, RU = RIGHT UP

GENERAL TEST VEHICLE DATA

Measurement Description	Units	Value
Test Vehicle Wheel Base	mm	2608
Total Vehicle Length at Left Side	mm	3458
Total Vehicle Length at Centerline	mm	4431
Total Vehicle Length at Right Side	mm	3458
Total Vehicle Width at B-Post	mm	1684
Weight of Ballast in Cargo Area	kg	0
Amount of Stoddard Solvent in Fuel Tank	liters	32.6

DATA SHEET NO. 1... (Continued)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2008 Ford Focus 4-Door
Test Program: FMVSS 201P

NHTSA No. C80204
Test Date: June 4, 2008

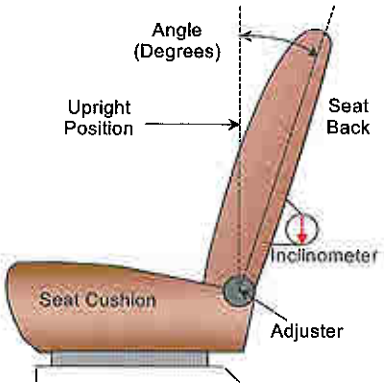
TEST VEHICLE VERTICAL IMPACT LINE DATA

Measurement Description	Units	Value
Target Impact Point Aft of Front Axle	mm	1318
Actual Impact Point Aft of Front Axle	mm	1321

NORMAL DESIGN RIDING POSITION

The driver's seat back is positioned to the manufacturer's designated angle. The procedure for the seat is as follows: Measure seatback angle at the head restraint post. Set at 18.9 degrees.

Initial driver seat back angle: 18.7 degrees on head rest post
Final driver seat back angle: 14.9 degrees on head rest post



FRONT SEAT ASSEMBLY

SEAT FORE/AFT POSITIONS

Initial Seat position: 25th notch (forward-most as 0)
Final Seat position: 14th notch (forward-most as 0)

SEAT BELT UPPER ANCHORAGE

The test vehicle is equipped with adjustable "D" ring anchorage for the driver's seat position. The driver's "D" ring anchorage was placed in the 1st position down from full up.

DATA SHEET NO. 1... (continued)

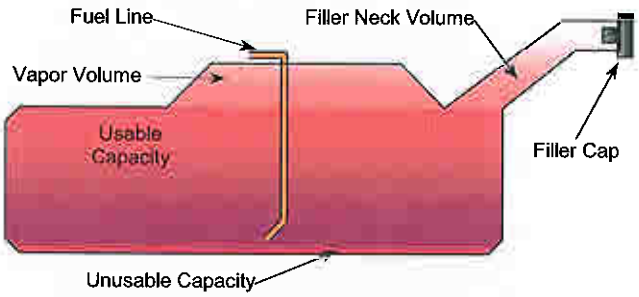
GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle:	2008 Ford Focus 4-Door	NHTSA No.	C80204
Test Program:	FMVSS 201P	Test Date:	June 4, 2008

FUEL TANK CAPACITY DATA

The "Usable Capacity" of the standard equipment fuel tank is:	49.2	liters
The "Usable Capacity" of any optional equipment fuel tank is:	N/A	liters
92-94% of "Usable Capacity" for certification to FMVSS 301 requirements:	45.3 – 46.2	liters
Actual amount of Stoddard solvent added to vehicle for certification test	32.6	liters

The vehicle is equipped with electric fuel pump. The electric fuel pump operates for 2 seconds to pressurize the fuel system following the actuation of the ignition. If no attempt has been made to start the engine within 2 seconds following ignition actuation the fuel pump will shut off. The fuel pump operates continuously while the engine is running. If the engine stalls the fuel pump is deactivated. Also, a fuel pump shut-off switch is provided, designed to stop the fuel flow to the engine if the vehicle sustains an impact above a certain magnitude.

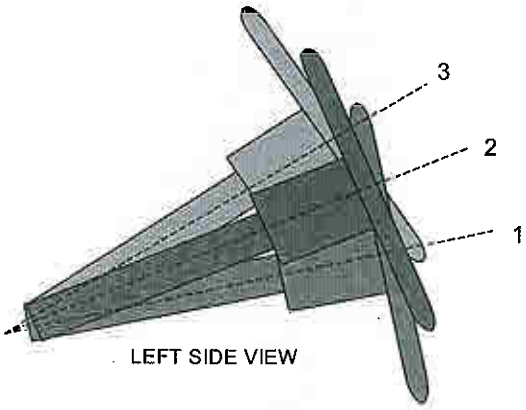


VEHICLE FUEL TANK ASSEMBLY

STEERING COLUMN ADJUSTMENT

Steering wheel and column adjustments are made so that the steering wheel hub is at the geometric center of the locus it describes, when it is moved through its full range of motion.

The steering column was placed in the mid position at 67.3 degrees.



STEERING COLUMN ASSEMBLY

DATA SHEET NO. 2

TEST VEHICLE SUMMARY OF RESULTS

Test Vehicle: 2008 Ford Focus 4-Door
Test Program: FMVSS 201P

NHTSA No. C80204
Test Date: June 4, 2008

TEST VEHICLE WEIGHTS

	Units	As Delivered (UVW)			As Tested (ATW)		
		Front Axle	Rear Axle	Total	Front Axle	Rear Axle	Total
Left	kg	370.1	234.1		386.0	286.7	
Right	kg	367.0	244.0		375.6	276.2	
Weight Ratio	%	60.7	39.3		57.5	42.5	
Totals	kg	737.1	478.1	1215.2	761.6	562.9	1324.5

MAXIMUM EXTERIOR STATIC CRUSH

Level	Measured Parameter	Units	Maximum Crush	Above Ground
Level 1	Sill Top Height	mm	344	274
Level 2	Occupant H-Point	mm	370	536
Level 3	Mid Door	mm	380	662
Level 4	Window Sill	mm	335	970
Level 5	Window Top	mm	138	1438
N/A	Maximum Penetration	mm	380	755

INSTRUMENTATION

SID/HIII Instrumentation	17
Vehicle Structure Accelerometers	17
Total	34

HIGH SPEED CAMERAS

Onboard Vehicle	3
Offboard Vehicle	8
Total	11

IMPACT POINT DATA

Measured Parameter	Units	Requirement	Value
Horizontal Offset	mm	+/- 38	3 rearward

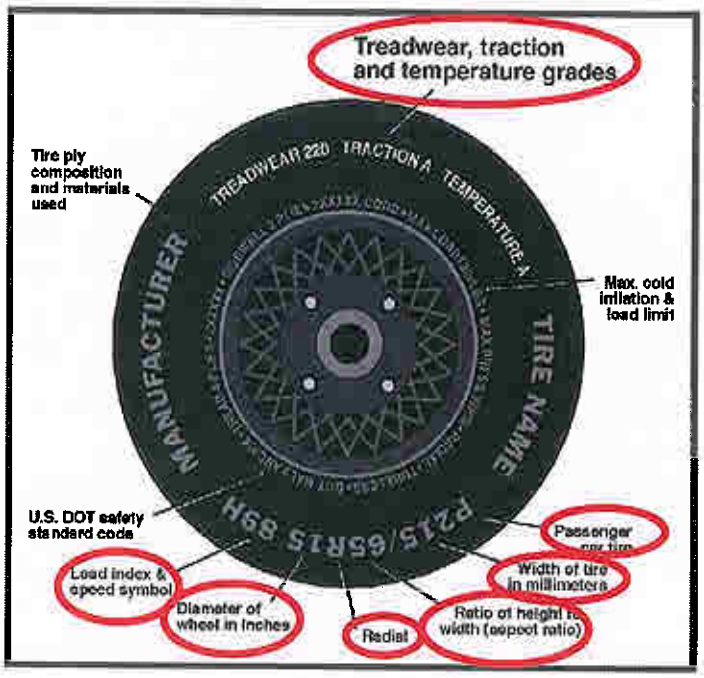
DATA SHEET NO. 3

TEST VEHICLE TIRE INFORMATION

Test Vehicle: 2008 Ford Focus 4-Door
Test Program: FMVSS 201P

NHTSA No. C80204
Test Date: June 4, 2008

Vehicle Year	2008	Vehicle Make	Ford
VIN	1FAHP34N88W145582	Vehicle Model	Focus



	Front	Rear
Tire Manufacturer	Hankook	Hankook
Tire Name	Optimo H725	Optimo H725
Tire Type	P	P
Tire Width (mm)	195	195
Ratio of Height to Width (aspect ratio)	60	60
Radial	R	R
Wheel Diameter	15	15
Load Index & Speed Symbol	87T	87T
Treadwear	620	620
Traction Grade	B	B
Temperature Grade	B	B

DATA SHEET NO. 4

POST TEST OBSERVATIONS

Test Vehicle: 2008 Ford Focus 4-Door
Test Program: FMVSS 201P

NHTSA No. C80204
Test Date: June 4, 2008

TEST DUMMY INFORMATION AND CONTACT POINTS

Description	Left Front Seating Position
Dummy Type / Serial No.	SID/HIII / 037
Head Contact	Curtain Airbag, Headrest
Upper Torso Contact	Side Airbag
Lower Torso Contact	Door Panel
Left Knee Contact	Door Panel
Right Knee Contact	Left Knee

POST TEST DOOR OPENING AND SEAT TRACK INFORMATION

Description	Front	Rear
Left Side Door Opening	Door remained closed and latched	Door remained closed and latched
Right Side Door Opening	Door remained closed and latched	Door remained closed and latched
Seat Movement	0	0
Seat Back Failure	None	None

POST TEST STRUCTURAL OBSERVATIONS

Critical Areas of Performance	Observations and Conclusions
Pillar Performance	No failures
Sill Separation	None
Windshield Damage	Cracked
Window Damage	Left side windows down for test
Other Notable Effects	None

AIRBAG DEPLOYMENT

	Driver
Front	No
Side	Yes
Curtain	Yes

ARMREST LOCATION AND SEAT CRUSH

	Driver
Front Armrest (from bottom of window)	246
Front Seat Back Crush	124
Front Seat Cushion Crush	159

SECTION 4
OCCUPANT AND VEHICLE INFORMATION

DATA SHEET NO. 5

SID/HIII INJURY CRITERIA AND SENSOR DATA

Test Vehicle: 2008 Ford Focus 4-Door
Test Program: FMVSS 201P

NHTSA No. C80204
Test Date: June 4, 2008

THORAX AND PELVIS PEAK ACCELERATIONS (FIR 100 Filtered)

Location	Axis	Units	Driver			
			Max	Time	Min	Time
Upper Rib (LUR)	Y	G's	48.7	42	-6.1	94
Upper Rib (LUR) (R)	Y	G's	48.8	42	-6.1	94
Lower Rib (LLR)	Y	G's	46.8	42	-7.3	92
Lower Rib (LLR) (R)	Y	G's	47.1	42	-7.1	92
Lower Spine (T_{12})	Y	G's	42.1	39	-18.9	76
Lower Spine (T_{12}) (R)	Y	G's	46.5	42	-19.1	76
Pelvis (PEV)	Y	G's	57.3	36	-10.8	70
Pelvis (PEV) (R)	Y	G's	58.2	36	-11.3	71

THORACIC TRAUMA INDEX (TTI) AND PELVIC ACCELERATION (FIR 100 Filtered)

Location	Driver			
	LUR	T_{12}	TTI(g)	PEV(g)
Rib, Spine, and Pelvis	48.7	42.1	45.4	57.3
Rib, Spine, and Pelvis (R)	48.8	46.5	47.7	58.2

UPPER NECK FORCES AND MOMENTS (SAE CLASS 1000/600 Filtered)

Location	Axis	Units	Driver			
			Max	Time	Min	Time
Neck Force	X	N	176	189	-316	59
Neck Force	Y	N	173	52	-322	71
Neck Force	Z	N	629	47	-164	70
Neck Moment	X	Nm	6.0	112	-38.7	52
Neck Moment	Y	Nm	14.5	74	-20.0	58
Neck Moment	Z	Nm	44.4	62	-12.0	112

HEAD CG PEAK ACCELERATIONS (SAE CLASS 1000 Filtered)

Location	Axis	Units	Driver			
			Max	Time	Min	Time
Head CG	X	G's	4.2	192	-16.4	61
Head CG	Y	G's	49.0	56	-7.7	159
Head CG	Z	G's	10.1	76	-3.1	18
Head CG Resultant		G's	50.9	56		

HEAD INJURY CRITERIA (SAE CLASS 1000 Filtered)

Location	Driver		
	HIC	T1	T2
Head CG Resultant	236	45.8	67.6

Positive Acceleration Polarities: (Conforms to SAE J211)

Longitudinal (X)	= + Forward
Lateral (Y)	= + Right
Vertical (Z)	= + Down

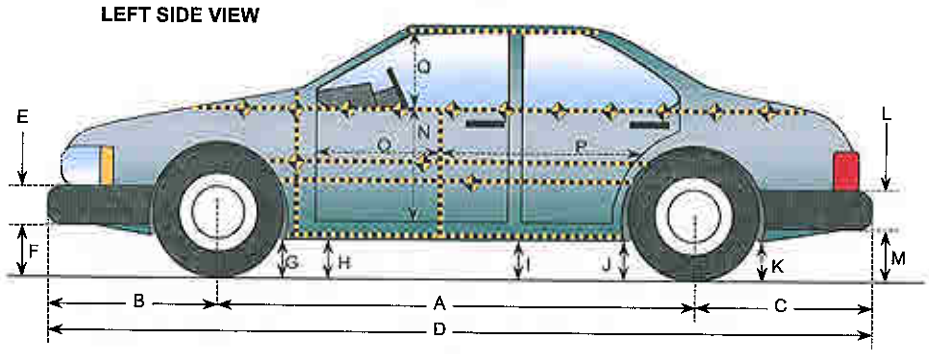
DATA SHEET NO. 6

VEHICLE PRE-TEST AND POST-TEST MEASUREMENTS

Test Vehicle: 2008 Ford Focus 4-Door
Test Program: FMVSS 201P

NHTSA No. C80204
Test Date: June 4, 2008

LEFT SIDE VIEW



All Measurements in mm

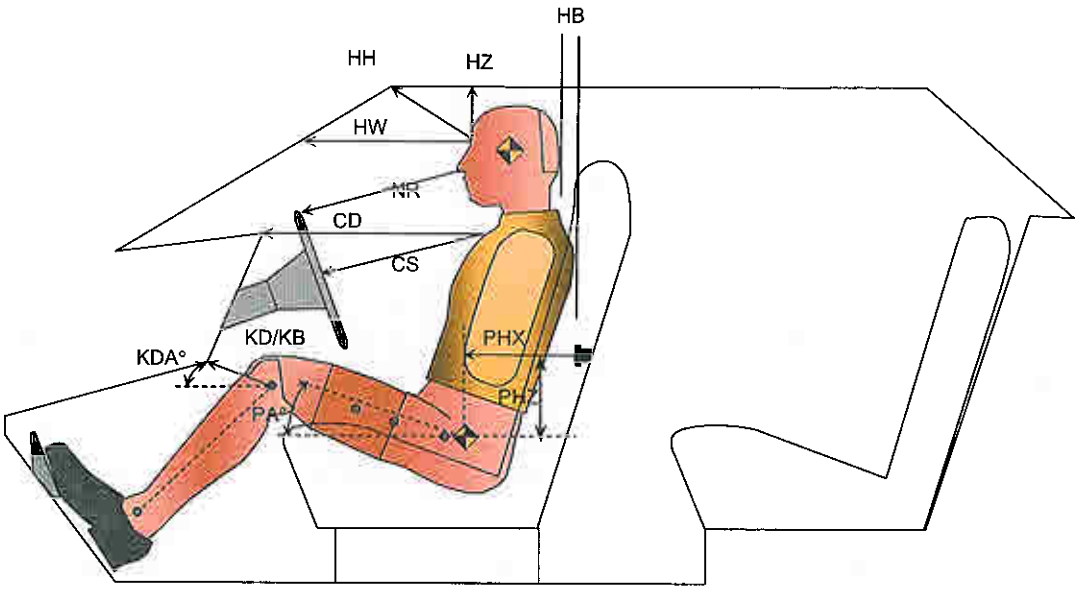
Code	Measurement Description	Pre-Test	Post-Test	Difference
A	Wheelbase	2608	2464	144
B	Front Axle to FSOV	888	888	0
C	Rear Axle to RSOV	935	935	0
D	Total Length at Centerline	4431	4287	144
E	Front Bumper Thickness	137	137	0
F	Front Bumper Bottom to Ground	543	545	-2
G	Sill Height at Front Wheel Well	310	303	7
H	Sill Height at Front Door Leading Edge	304	305	-1
I	Sill Height at "B" Pillar	317	331	-14
J1	Sill Height at Rear Wheel Well	332	338	-6
J2	Pinch Weld Height at Rear Wheel Well	333	329	4
K	Sill Height Aft of Rear Wheel Well	617	586	31
L	Rear Bumper Thickness	194	194	0
M	Rear Bumper Bottom to Ground	466	432	34
N	Sill Height to Window Bottom Sill	704	695	9
O	Front Door Leading Edge to Impact CL	984	894	90
P	Rear Door Trailing Edge to Impact CL	1043	1062	-19
Q	Front Window Opening	432	402	30
R	Right Side Length	3458	3479	-21
S	Left Side Length	3458	3321	137
T	Vehicle Width at "B" Post	1684	1421	263

DATA SHEET NO. 7

SID/HIII LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: 2008 Ford Focus 4-Door
Test Program: FMVSS 201P

NHTSA No. C80204
Test Date: June 4, 2008



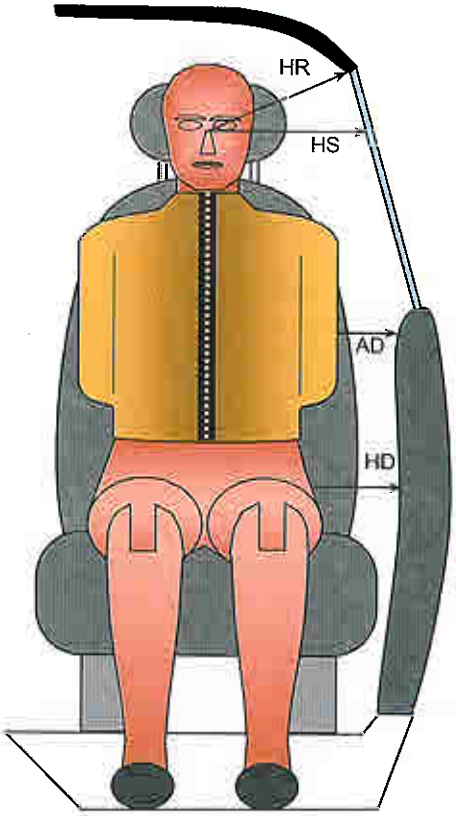
Driver Code	Measurement Description	Driver	
		Length (mm)	Angle (°)
HH	Head to Header	292	
HW	Head to Windshield	480	
HZ	Head to Roof	132	
NR	Nose to Rim	356	
CD	Chest to Dash	450	
CS	Chest to Steering Wheel	287	
KDL	Left Knee to Dash	134	27.0
KDR	Right Knee to Dash	130	33.2
PA	Pelvic Angle		23.6
PHX	H-Point to Striker (X-Axis)	194	
PHZ	H-Point to Striker (Z-Axis)	119	
HB	Head to Seatback Clearance	52	

DATA SHEET NO. 8

SID/HIII LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2008 Ford Focus 4-Door
Test Program: FMVSS 201P

NHTSA No. C80204
Test Date: June 4, 2008



FRONT VIEW OF DUMMY

Code	Measurement Description	Units	Driver
HR	Head to Side Header	mm	163
HS	Head to Side Window	mm	287
AD	Arm to Door	mm	73
HD	H-Point to Door	mm	128

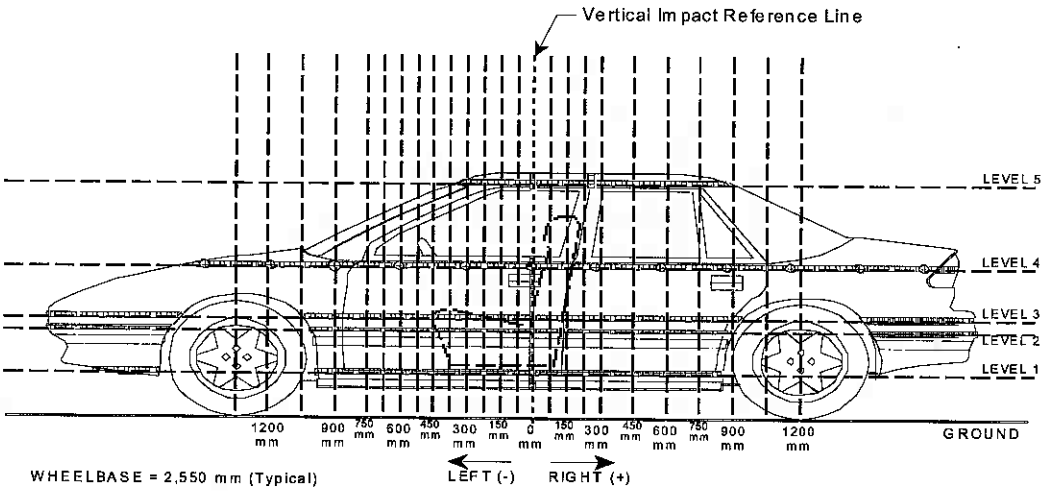
DATA SHEET NO. 9

VEHICLE SIDE MEASUREMENTS

Test Vehicle: 2008 Ford Focus 4-Door
Test Program: FMVSS 201P

NHTSA No. C80204
Test Date: June 4, 2008

PRETEST AND POST TEST EXTERIOR PROFILE MEASUREMENTS



LEFT SIDE VIEW

Measurements are taken with vehicle in the as tested condition.
Measurements along the vertical 0 mm.

Level	Measurement Description	Units	Height Above Ground
5	Window	mm	1438
4	Window Sill	mm	970
3	Mid Door	mm	662
2	Occupant H-Point	mm	536
1	Sill Top	mm	274

DATA SHEET NO. 10

VEHICLE EXTERIOR CRUSH PROFILES

Test Vehicle: 2008 Ford Focus 4-Door
Test Program: FMVSS 201P

NHTSA No. C80204
Test Date: June 4, 2008

	Pre-Test					Post-Test					Difference				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
-750	189	166	162	201		209	178	169	190		20	12	7	-11	
-675	188	164	161	200		234	205	195	213		46	41	34	13	
-600	187	164	160	200		263	229	222	233		76	65	62	33	
-525	186	163	159	198		291	257	248	270		105	94	89	72	
-450	187	163	159	197		322	283	275	311		135	120	116	114	
-375	189	162	158	196		354	310	307	351		189	148	149	155	
-300	189	161	158	196		394	340	348	391		205	179	190	195	
-225	190	161	157	196	452	432	395	398	430	515	242	234	241	234	63
-150	191	161	156	198	452	475	455	450	469	528	284	294	294	271	76
-75	192	161	156	199	450	513	499	511	522	546	321	338	355	323	96
0	193	160	156	200	448	537	530	536	535	5797	344	370	380	335	131
75	193	160	156	202	450	517	513	522	536	588	324	353	366	334	138
150	195	160	156	201	453	461	460	465	492	556	266	300	309	291	103
300	197	160	157	201	453	400	386	372	431	542	203	226	215	230	89
450	199	161	157	203	455	371	341	325	405	528	172	180	168	202	73
600	203	164	160	205	455	345	283	298	371	503	142	119	138	166	48
750	207	166	163	211	456	320	228	247	332	474	113	62	84	121	18
900	208	170	166	216	457	225	177	205	300	463	17	7	39	84	6
1050	181	161	166	221	458	169	128	165	267	462	-12	-33	-1	46	4
1200		142	155	225	466		153	128	228	467		11	-27	3	1

Reference plane is parallel to test vehicle longitudinal centerline

Units = mm

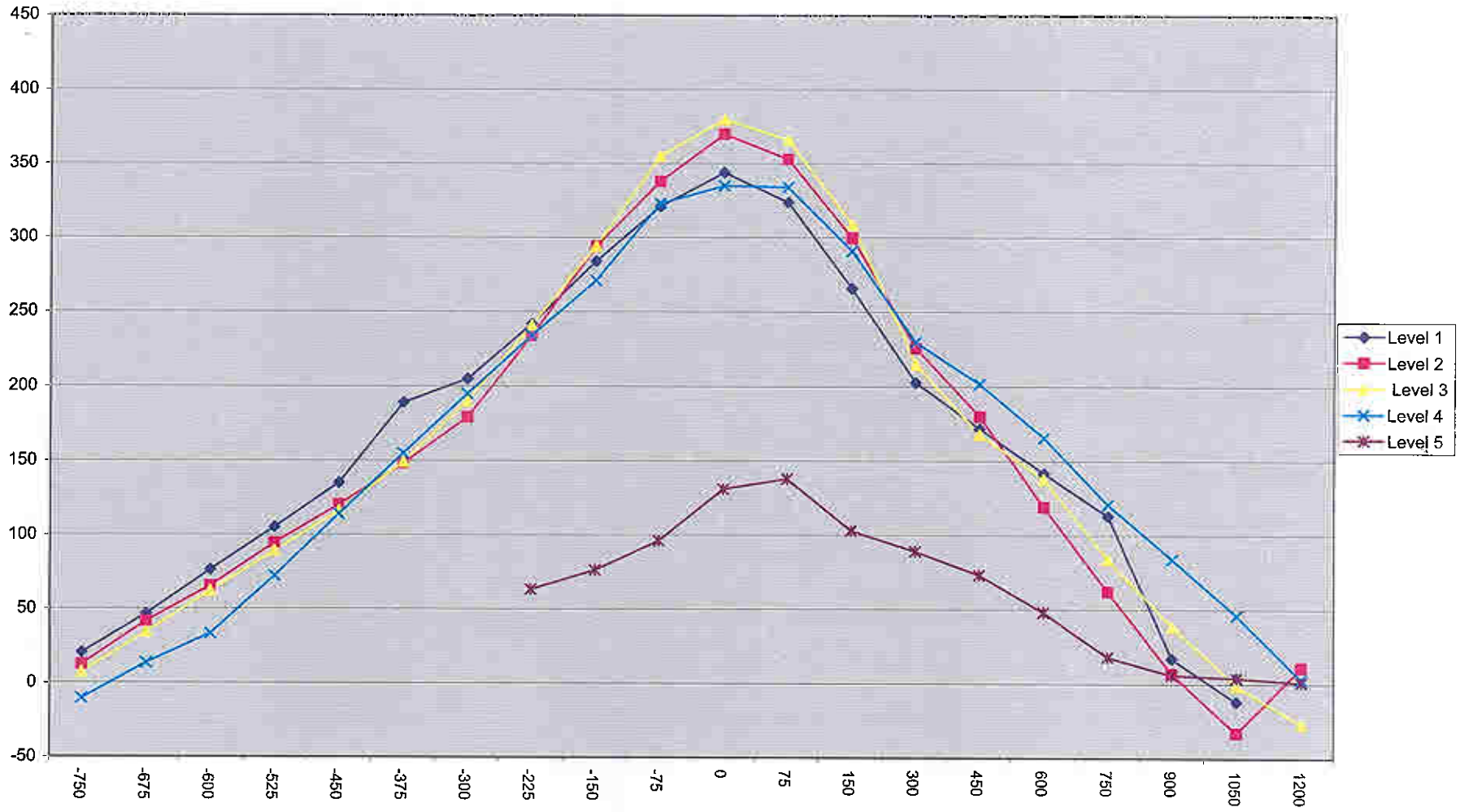
Given dimensions = Reference plane to car body

DATA SHEET NO. 10... (continued)

VEHICLE EXTERIOR CRUSH PROFILES

Test Vehicle: 2008 Ford Focus 4-Door
Test Program: FMVSS 201P

NHTSA No. C80204
Test Date: June 4, 2008

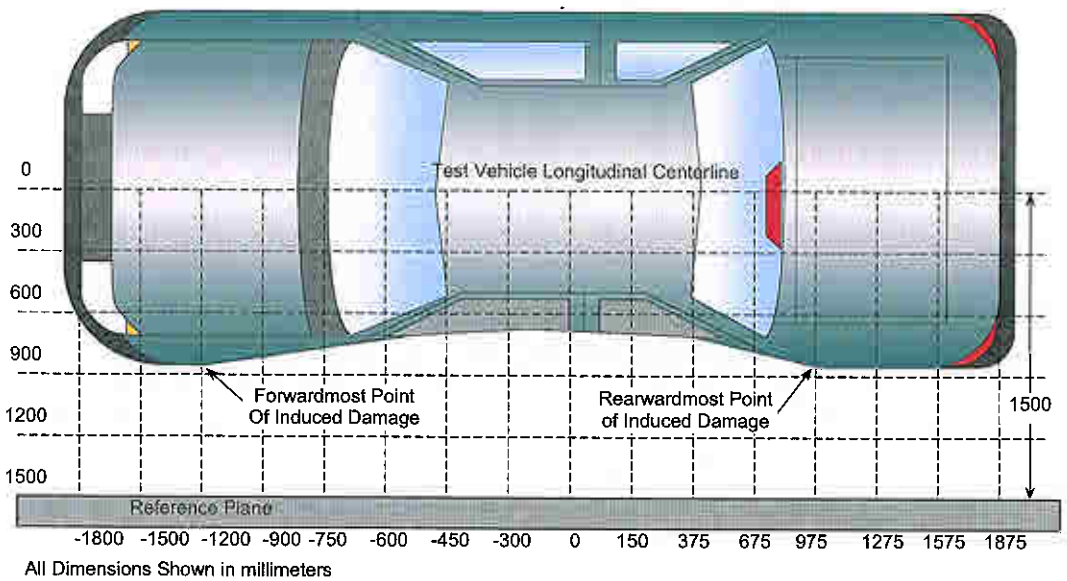


DATA SHEET NO. 11

VEHICLE DAMAGE PROFILE DISTANCES

Test Vehicle: 2008 Ford Focus 4-Door
Test Program: FMVSS 201P

NHTSA No. C80204
Test Date: June 4, 2008



TOP VIEW

Damage Profile Distances

DPD	Distance from Impact Point in mm	Level	Pre-Test (mm)	Post-Test (mm)	Max Static Crush (mm)
1	1200	2	142	153	11
2	800	4	213	321	108
3	420	4	203	409	206
4	40	3	156	528	372
5	-350	1	189	382	193
6	-750	1	189	209	20

Reference plane is parallel to test vehicle longitudinal centerline

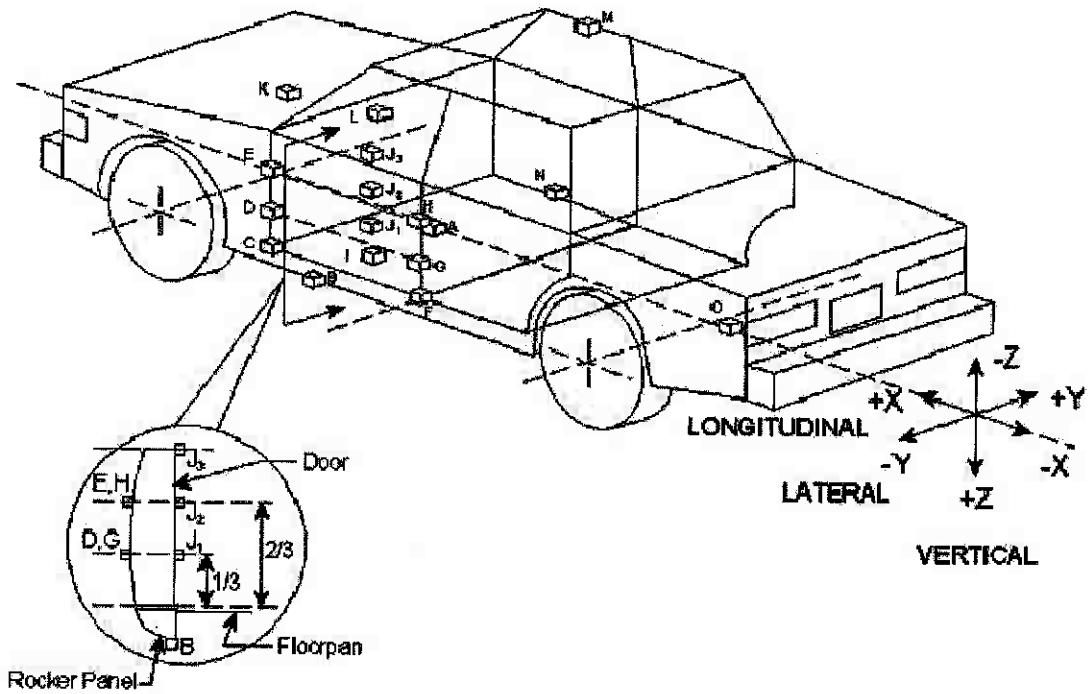
Given dimensions = Reference plane to car body

DATA SHEET NO. 12

VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY

Test Vehicle: 2008 Ford Focus 4-Door
Test Program: FMVSS 201P

NHTSA No. C80204
Test Date: June 4, 2008



No.	Location
A	Vehicle CG
B	Left Floor Sill
C	A Pillar Sill
D	A Pillar Low
E	A Pillar Mid
F	B Pillar Sill
G	B Pillar Low
H	B Pillar Mid
I	Driver Seat

No.	Location
J1	Driver Door Lower / Knee
J2	Driver Door Mid / Pelvis
J3	Driver Door Upper / Rib
K	Engine
L	Firewall
M	Right Roof
N	Right Floor Sill
O	Rear Deck

DATA SHEET NO. 12... (continued)

VEHICLE ACCELEROMETER LOCATION AND DATA SUMMARY

Test Vehicle: 2008 Ford Focus 4-Door
Test Program: FMVSS 201P

NHTSA No. C80204
Test Date: June 4, 2008

VEHICLE ACCELEROMETER PEAK DATA AND PRE-TEST LOCATIONS

Loc. No.	Accelerometer Location	Peak Values (G's)				
		Axis	Max	Time	Min	Time
A	Vehicle CG	X	3.3	102	-4.2	17
		Y	19.3	43	-3.0	39
		Z	7.4	16	-7.8	9
		RES	19.3	43		
B	Left Floor	Y	37.1	11	-14.0	20
C	A Pillar Sill	Y	10.6	28	-1.2	3
D	A Pillar Low	Y	19.0	14	-5.2	18
E	A Pillar Mid	Y	10.8	11	-2.1	1
F	B Pillar Sill	Y	80.6	12	-20.9	18
G	B Pillar Low	Y	51.0	11	-22.0	19
H	B Pillar Mid	Y	50.7	7	-2.9	95
I	Driver Seat	Y	58.3	39	-44.0	44
J1	Driver Door Lower / Knee	Y				
J2	Driver Door Mid / Pelvis	Y				
J3	Driver Door Upper / Rib	Y				
K	Engine	X	4.4	130	-7.8	44
		Y	9.6	76	-1.7	213
L	Firewall	Y	9.0	48	-1.2	300
M	Right Roof	Y				
N	Right Floor Sill	Y	11.4	18	-1.5	300
O	Rear Deck	X	7.3	17	-3.3	49
		Y	11.8	38	-2.1	217

Positive Acceleration Polarities: (Conforms to SAE J211)

Longitudinal (X)	= + Forward	
Lateral (Y)	= + Right	
Vertical (Z)	= + Down	

DATA SHEET NO. 12... (continued)

VEHICLE ACCELEROMETER LOCATION AND DATA SUMMARY

Test Vehicle: 2008 Ford Focus 4-Door NHTSA No. C80204
Test Program: FMVSS 201P Test Date: June 4, 2008

VEHICLE ACCELEROMETER PEAK DATA AND PRE-TEST LOCATIONS

Loc. No.	Accelerometer Location	Measurements (mm)			
		Axis	Pre-Test	Post-Test	Difference
A	Vehicle CG	X	2463	2361	-102
		Y	0	0	0
		Z	339	370	-31
B	Left Floor Sill	X	2668	2492	-176
		Y	-698	-605	93
		Z	191	225	-34
C	A Pillar Sill	X	3087	2951	-136
		Y	-702	-722	-20
		Z	183	220	-37
D	A Pillar Low	X	3013	2838	-175
		Y	-788	-800	-12
		Z	506	530	-24
E	A Pillar Mid	X	3001	2810	-191
		Y	-767	-802	-35
		Z	740	750	-10
F	B Pillar Sill	X	2010	1938	-72
		Y	-702	-510	192
		Z	200	245	-45
G	B Pillar Low	X	2014	2032	18
		Y	-677	-480	197
		Z	475	481	-6
H	B Pillar Mid	X	2008	2045	37
		Y	-682	-505	177
		Z	756	801	-45
I	Driver Seat	X	2170	2092	-78
		Y	-586	-390	196
		Z	461	472	-11
J1	Driver Door Lower / Knee	X			
		Y			
		Z			
J2	Driver Door Mid / Pelvis	X			
		Y			
		Z			
J3	Driver Door Upper / Rib	X			
		Y			
		Z			
K	Engine	X	3695	3592	-103
		Y	15	20	5
		Z	816	810	6
L	Firewall	X	3496	3333	-163
		Y	15	20	5
		Z	835	808	27
N	Right Floor Sill	X	2449	2471	22
		Y	698	712	14
		Z	196	230	-34
O	Rear Deck	X	680	700	20
		Y	0	0	0
		Z	322	370	-48

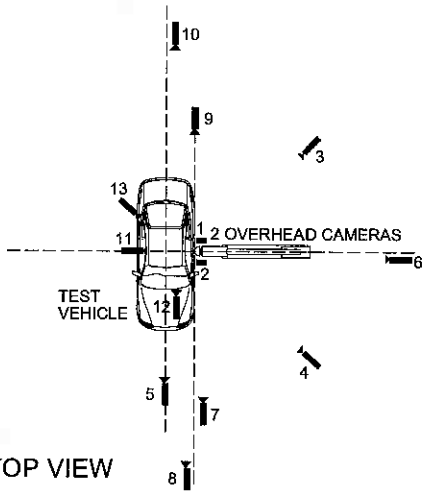
Ref. Points: X-Rear of Vehicle (+ forward); Y-Vehicle Centerline (+ to right); Z-Ground Plane (+ down)

DATA SHEET NO. 13

HIGH SPEED CAMERA LOCATIONS AND DATA

Test Vehicle: 2008 Ford Focus 4-Door
Test Program: FMVSS 201P

NHTSA No. C80204
Test Date: June 4, 2008



TOP VIEW

No.	Camera View	Location (mm)			Lens (mm)	Film Speed (fps)
		X	Y	Z		
1	Overhead Overall	350	0	5050	14	1000
2	Overhead Close-Up	30	0	5050	50	1000
3	Left Side 45° Rearward Pole View	-2380	4190	1210	24	1000
4	Right Side 45° Forward Pole View	-2280	-3690	1180	24	1000
5	Real Time				13	24
6*	Left Side Rear Pole View					
7	Front Ground Level Vehicle/Pole Impact	280	-980	1500	35	1000
8	Front Ground Level Vehicle Roof Targets and Vehicle/Pole Impact	30	-1390	1250	24	1000
9	Rear Ground Level Vehicle/Pole Impact	-80	1710	1315	24	1000
10	Rear Ground Level	260	1440	1590	35	1000
11	Test Vehicle Onboard Driver Side View				8	1000
12	Test Vehicle Onboard Driver Front View				12.5	1000
13	Test Vehicle Onboard Driver ¾ Rear View				8	1000

Reference Points X - + Forward of Impact
Y - + Right of Impact
Z - + Ground Plane Down

* Camera 6 was not used for this test.

DATA SHEET NO. 14

FMVSS 301 FUEL SYSTEM INTEGRITY POST IMPACT DATA

Test Vehicle:	2008 Ford Focus 4-Door	NHTSA No.	C80204
Test Program:	FMVSS 201P	Test Date:	June 4, 2008

Test Time: 10:48 AM Temperature at Time of Impact: 21°C

Stoddard Solvent Spillage Measurements

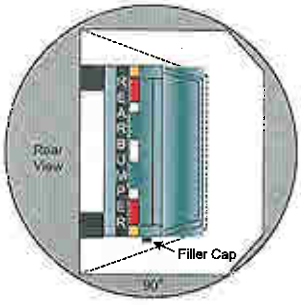
A. From impact until vehicle motion ceases: (Maximum Allowable = 1 ounce)	0
B. For the 5 minute period after motion ceases: (Maximum allowable = 5 ounces)	0
C. For the following 25 minutes: (Maximum allowable = 1 oz./minute)	0
D. Spillage Details:	None

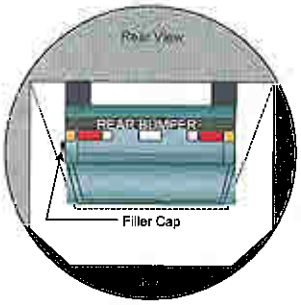
DATA SHEET NO. 15

FMVSS 301 STATIC ROLLOVER DATA SHEET

Test Vehicle: 2008 Ford Focus 4-Door
Test Program: FMVSS 201P

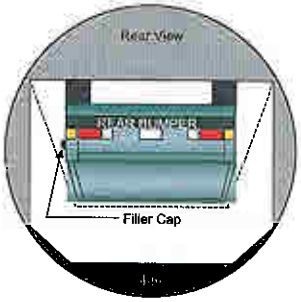
NHTSA No. C80204
Test Date: June 4, 2008

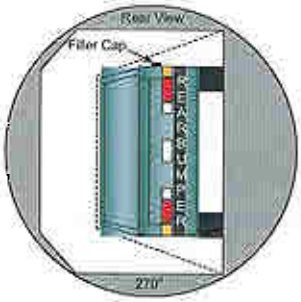




0° to 90°

90° to 180°





180° to 270°

270° to 360°

1. The specified fixture rollover rate for each 90° of rotation is 60 to 180 seconds.
2. The position hold time at each position is 300 seconds (minimum).
3. Details of Stoddard Solvent Spillage locations: None

Rollover Test Phase	Rotation Time (sec.)	Hold Time (sec.)	Spillage (oz.)
0° to 90°	119	300	0
90° to 180°	114	300	0
180° to 270°	112	300	0
270° to 360°	114	300	0

APPENDIX A

PHOTOGRAPHS

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Pre-Test Front View of Test Vehicle

Post-Test Front View of Test Vehicle

Pre-Test Rear View of Test Vehicle

Post-Test Rear View of Test Vehicle

Pre-Test Left Side View of Test Vehicle

Post-Test Left Side View of Test Vehicle

Pre-Test Right Side View of Test Vehicle

Post-Test Right Side View of Test Vehicle

Pre-Test Left Rear Three-Quarter View

Post-Test Left Rear Three-Quarter View

Pre-Test Left Front Three-Quarter View

Post-Test Left Front Three-Quarter View

Pre-Test Right Rear Three-Quarter View

Post-Test Right Rear Three-Quarter View

Pre-Test Right Front Three-Quarter View

Post-Test Right Front Three-Quarter View

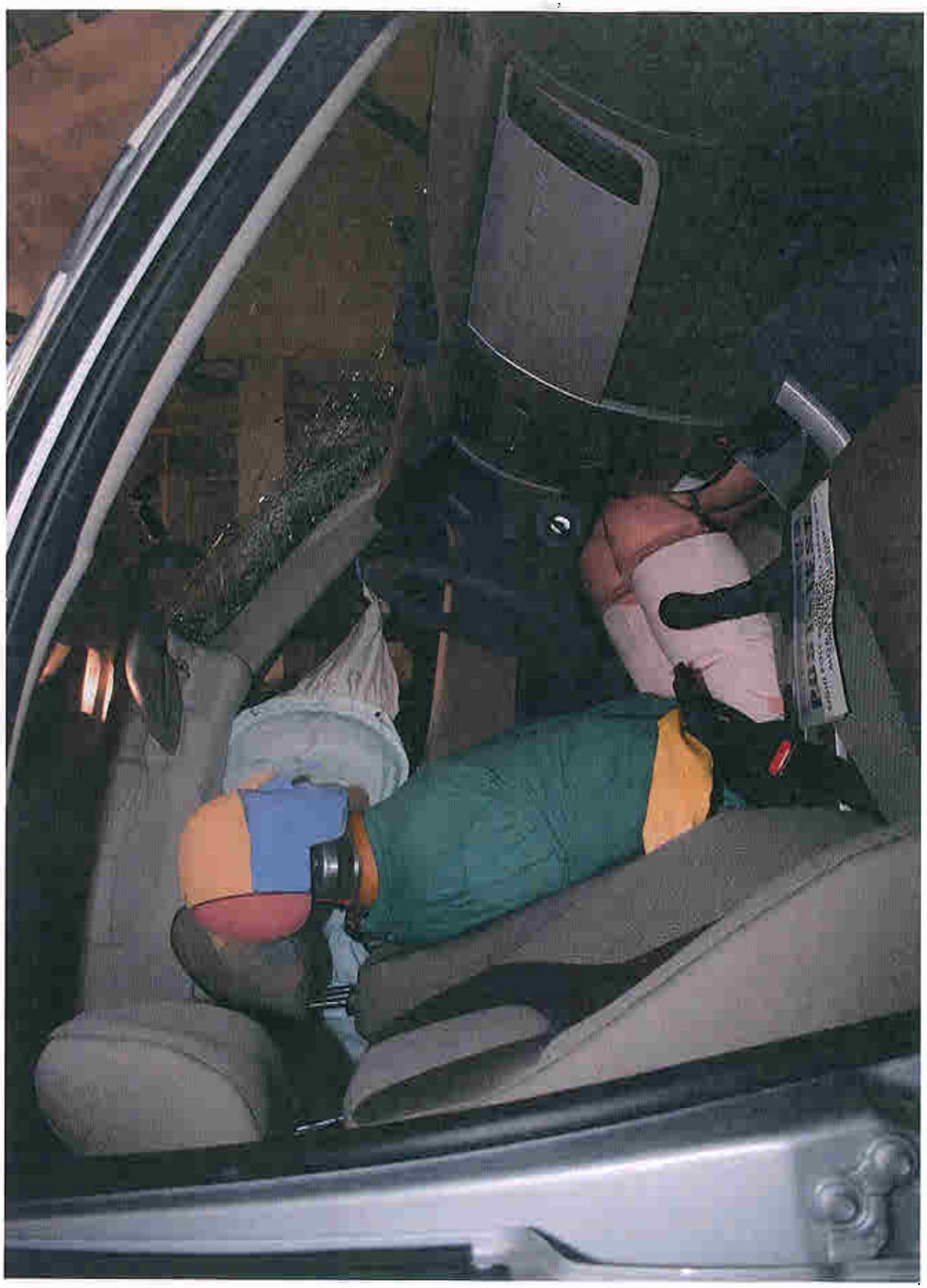
Pre-Test Overhead View of Test Vehicle

Post-Test Overhead View of Test Vehicle

Pre-Test Overhead View of Test Vehicle (Closeup)

Post-Test Overhead View of Test Vehicle (Closeup)

Pre-Test Driver Dummy Right Side View



Post-Test Driver Dummy Right Side View

Pre-Test Driver Dummy Left Side View

Post-Test Driver Dummy Left Side View

Pre-Test Driver Dummy Left Side View (Door Open)

Pre-Test Driver Dummy Shoulder and Door Top View

Post-Test Driver Dummy Head Contact (CAB)

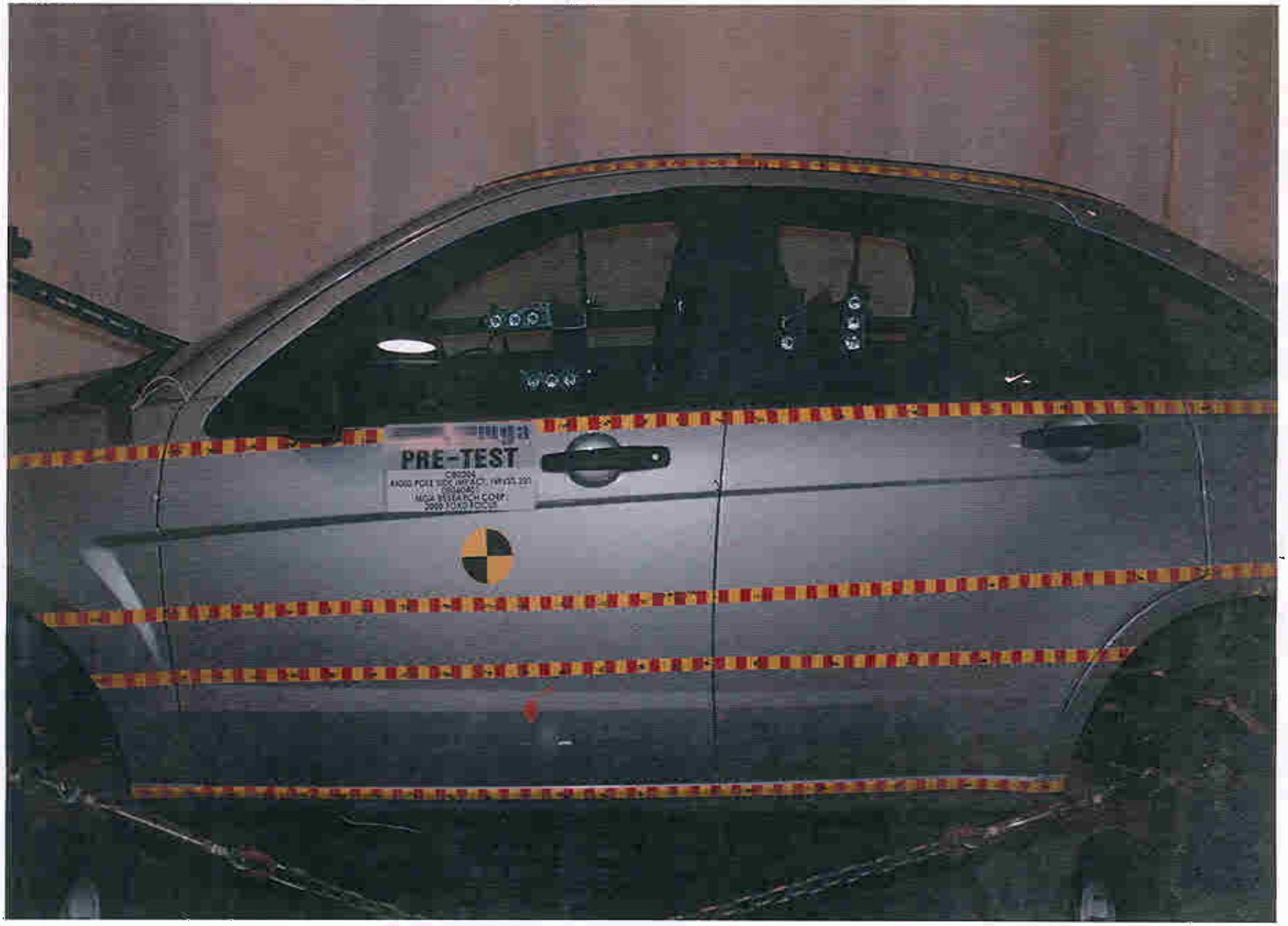
Post-Test Driver Dummy Head Contact (Headrest)

Post-Test Driver Dummy Upper Thorax Contact

Post-Test Driver Dummy Lower Thorax Contact

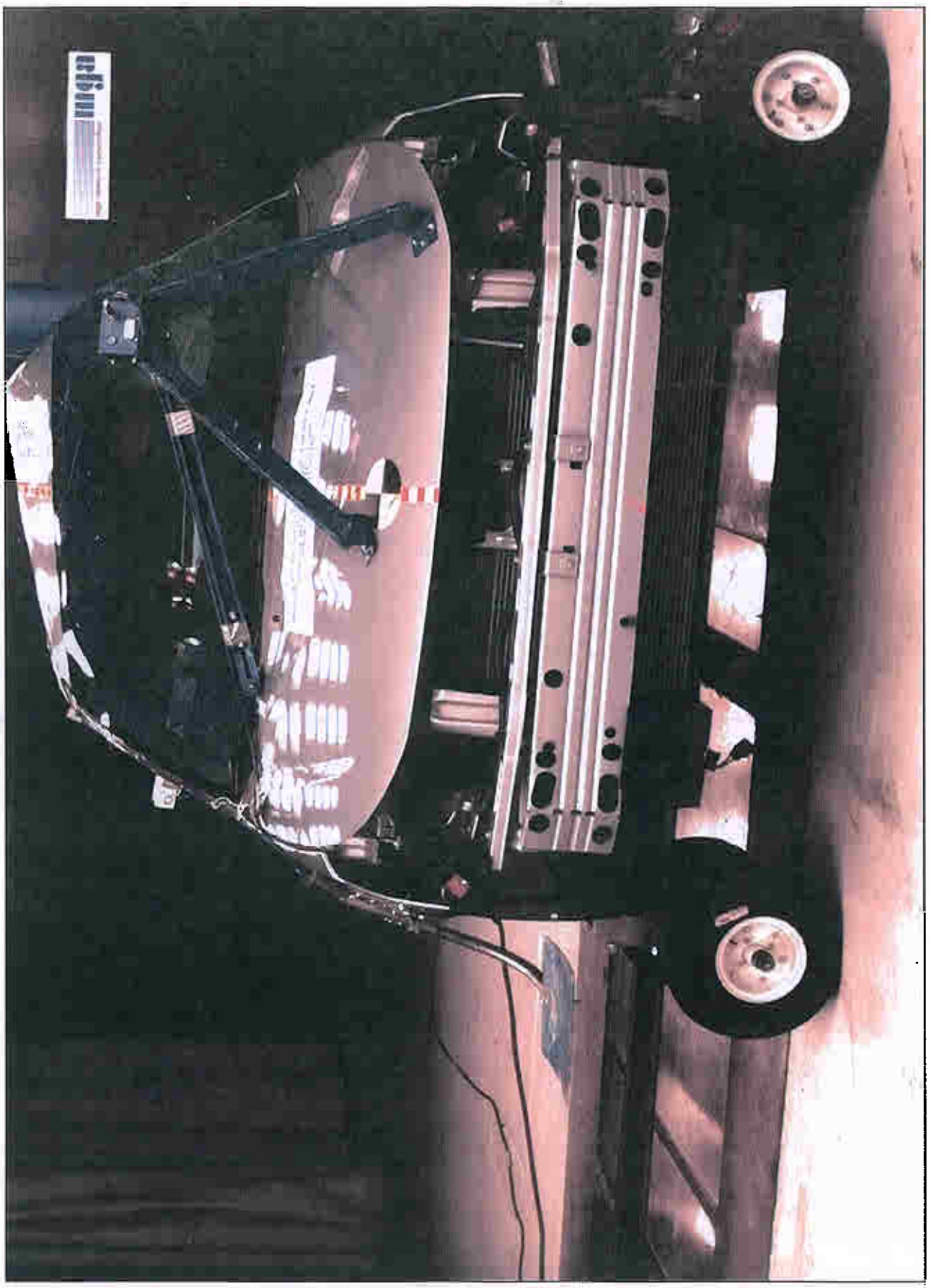
Post-Test Driver Dummy Contact

Post-Test Impact Point on Vehicle

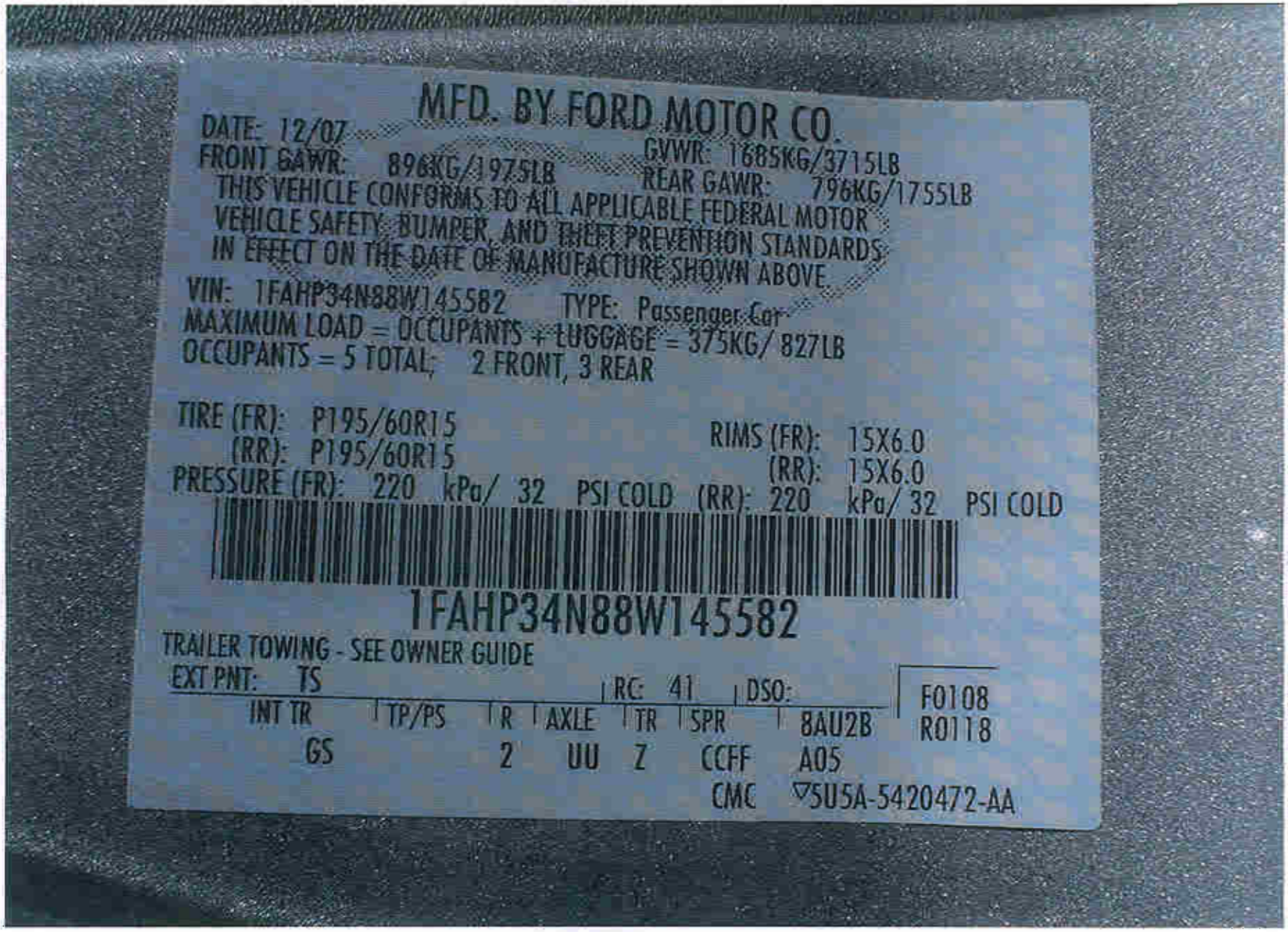


Pre-Test Impact Zone Close-up View

Post-Test Impact Zone Close-up View



Vehicle Impact



MFD. BY FORD MOTOR CO.

DATE: 12/07

FRONT GAWR: 896KG/1975LB GVWR: 1685KG/3715LB

REAR GAWR: 796KG/1755LB

THIS VEHICLE CONFORMS TO ALL APPLICABLE FEDERAL MOTOR VEHICLE SAFETY, BUMPER, AND THEFT PREVENTION STANDARDS IN EFFECT ON THE DATE OF MANUFACTURE SHOWN ABOVE.

VIN: 1FAHP34N88W145582 TYPE: Passenger Car

MAXIMUM LOAD = OCCUPANTS + LUGGAGE = 375KG/ 827LB

OCCUPANTS = 5 TOTAL; 2 FRONT, 3 REAR

TIRE (FR): P195/60R15 RIMS (FR): 15X6.0

(RR): P195/60R15 (RR): 15X6.0

PRESSURE (FR): 220 kPa/ 32 PSI COLD (RR): 220 kPa/ 32 PSI COLD

1FAHP34N88W145582

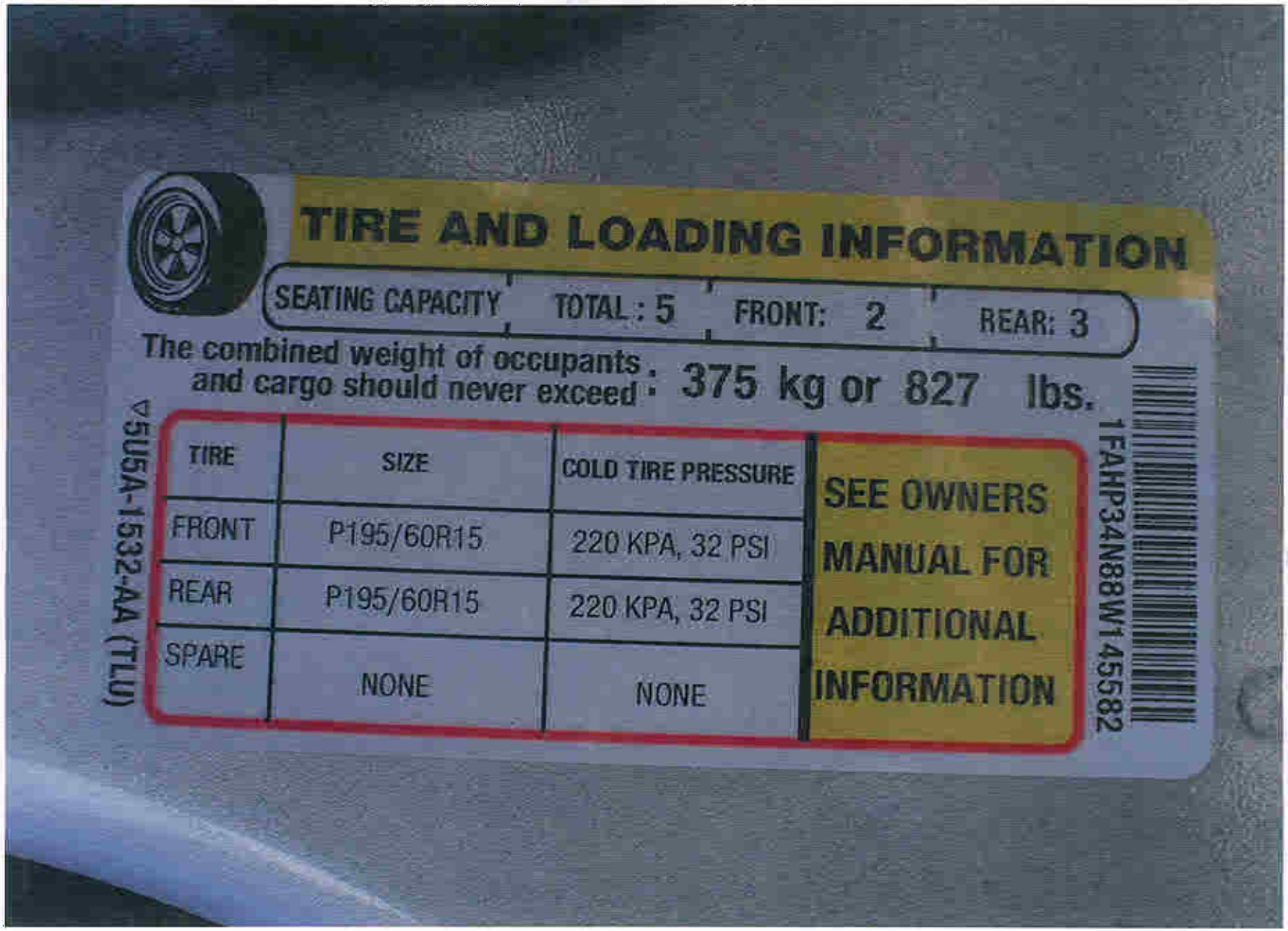
TRAILER TOWING - SEE OWNER GUIDE

EXT PNT: TS RC: 41 DSO:

INT TR	TP/PS	R	AXLE	TR	SPR	8AU2B
GS		2	UU	Z	CCFF	A05
					CMC	▽5U5A-5420472-AA

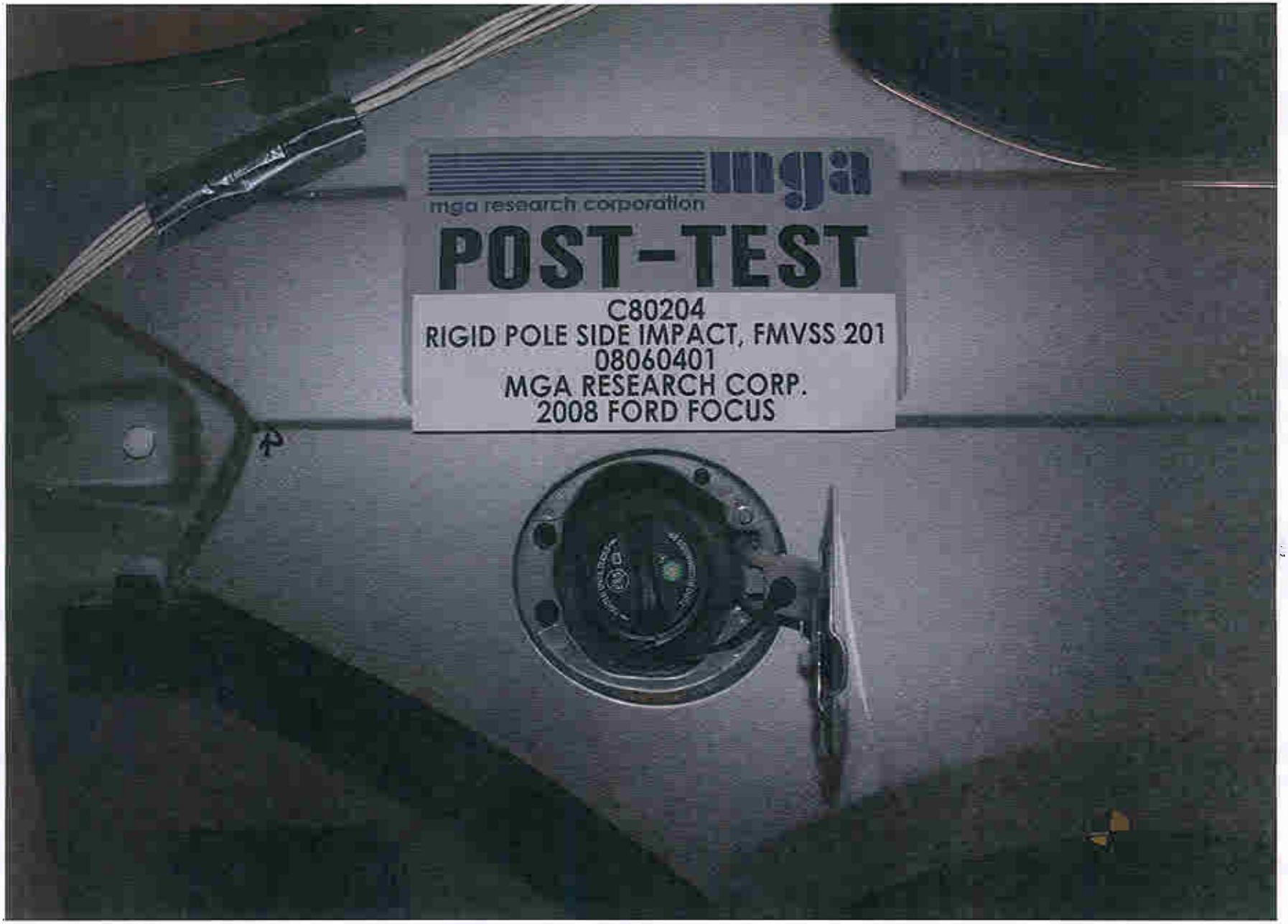
F0108
R0118

Vehicle Certification Label



Tire Placard

Pre-Test Fuel Filler Cap



Post-Test Fuel Filler Cap

Pre-Test Left Front Wheel Dolly

Post-Test Left Front Wheel Dolly

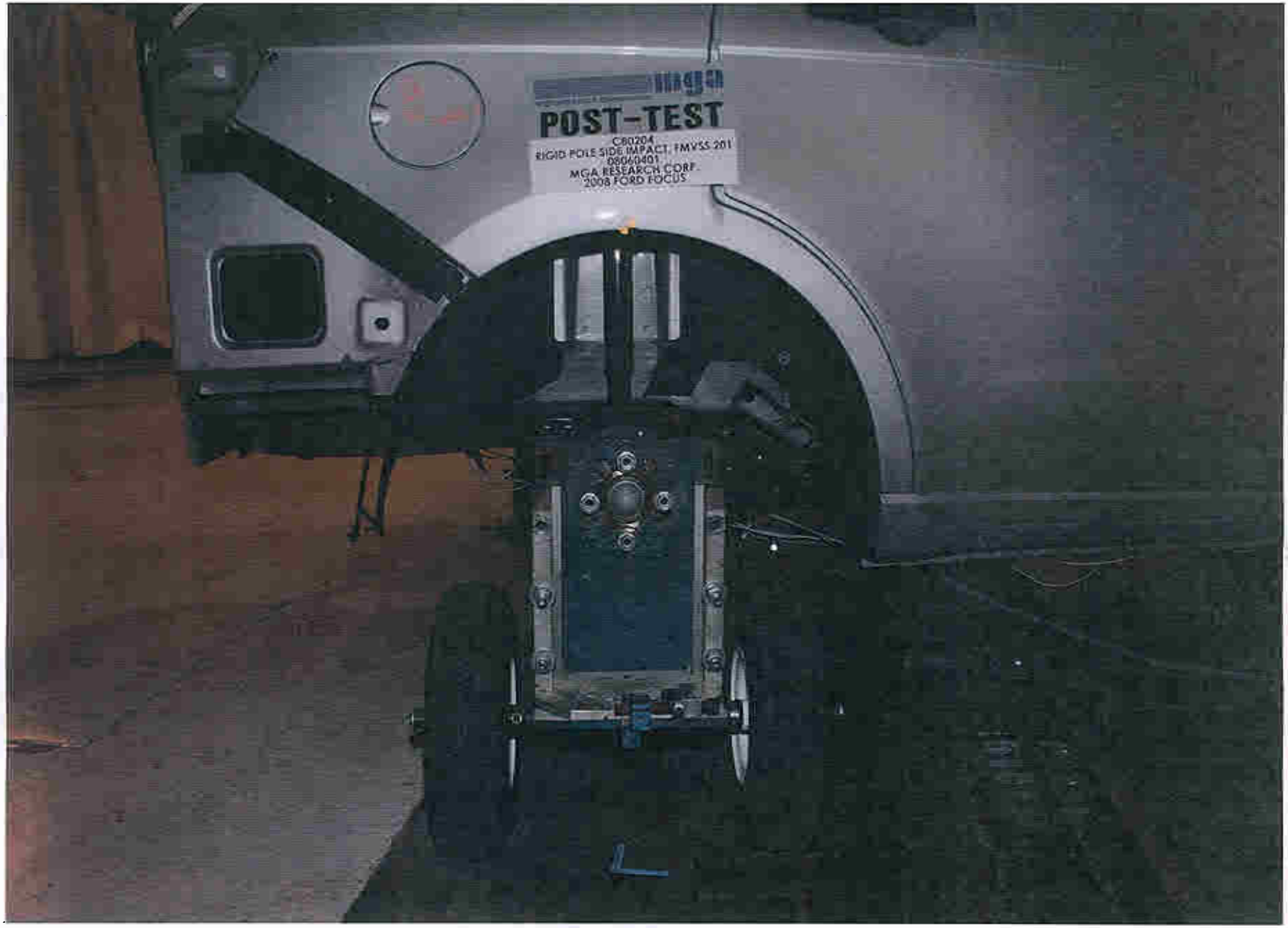
Pre-Test Right Front Wheel Dolly

Post-Test Right Front Wheel Dolly

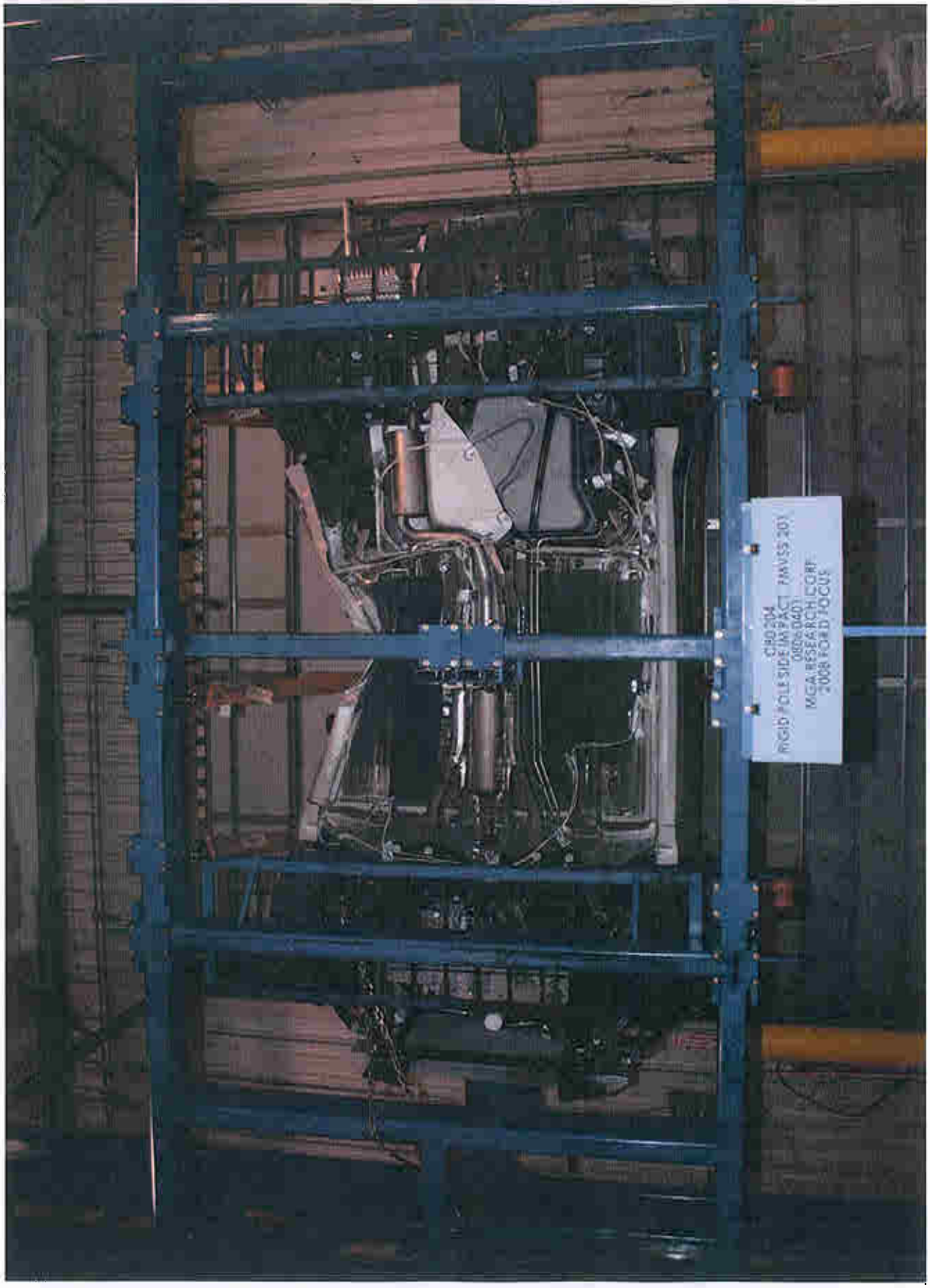
Pre-Test Left Rear Wheel Dolly

Post-Test Left Rear Wheel Dolly

Pre-Test Right Rear Wheel Dolly



Post-Test Right Rear Wheel Dolly



Rollover 90 Degrees

Rollover 180 Degrees

Rollover 270 Degrees

Rollover 360 Degrees

APPENDIX B

SID/HIII AND VEHICLE RESPONSE DATA

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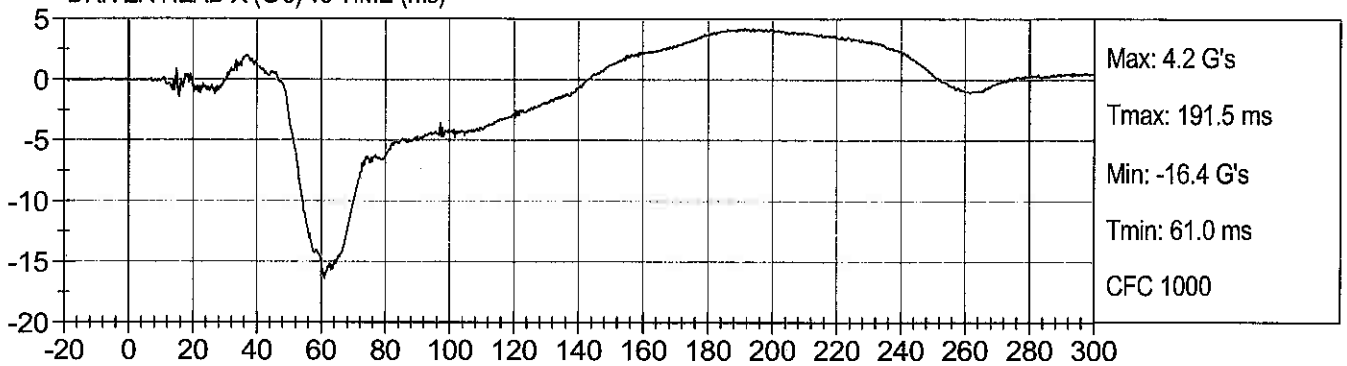
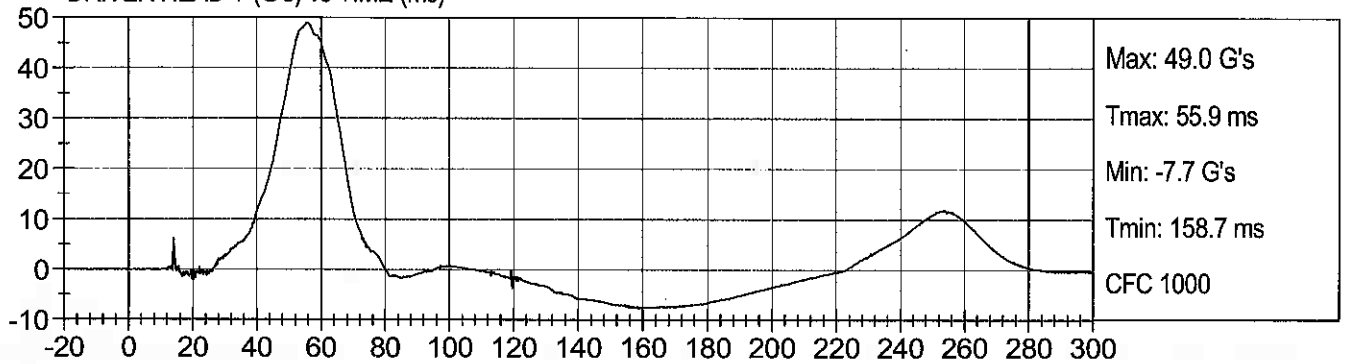
RIGID POLE SIDE IMPACT
2008 FORD FOCUS C80204

Test Date: 06/04/2008
Speed: 17.6 mph (28.3 km/h)

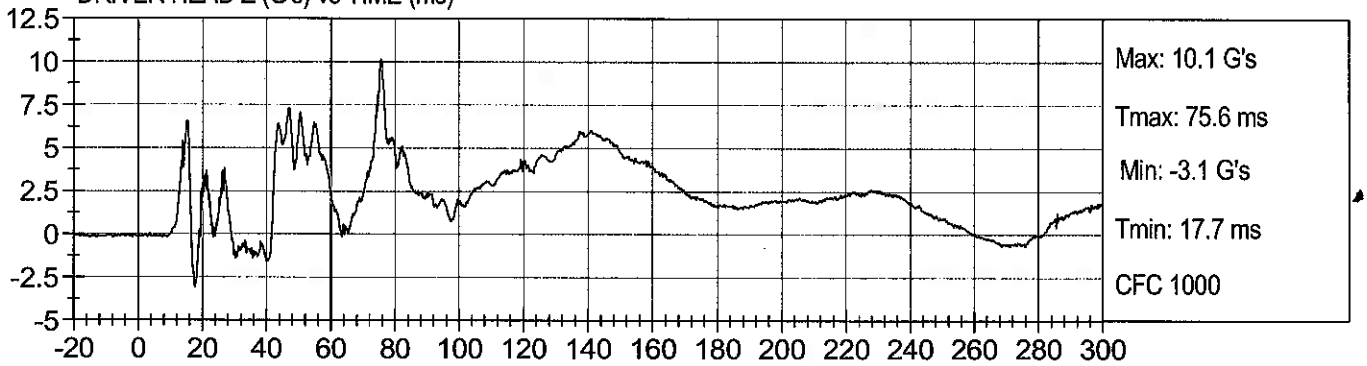
DRIVER HEAD X (G's) vs TIME (ms)



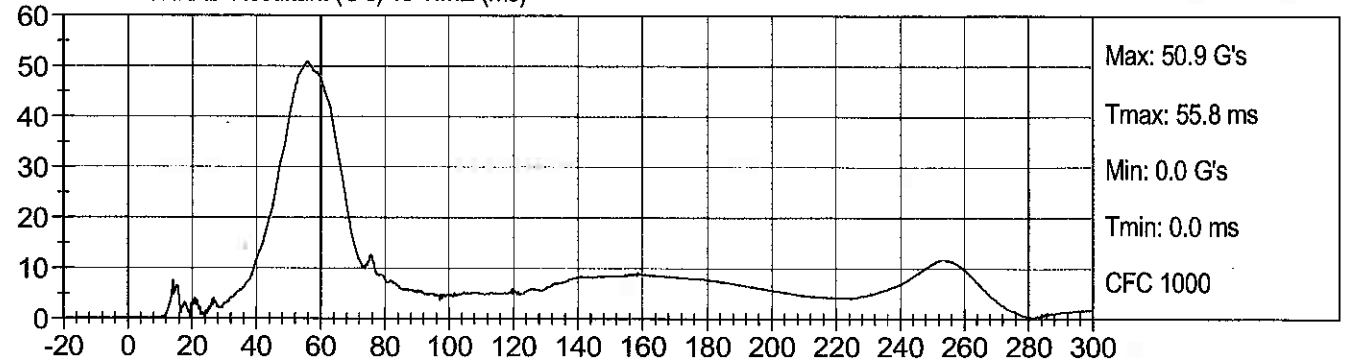
DRIVER HEAD Y (G's) vs TIME (ms)



DRIVER HEAD Z (G's) vs TIME (ms)

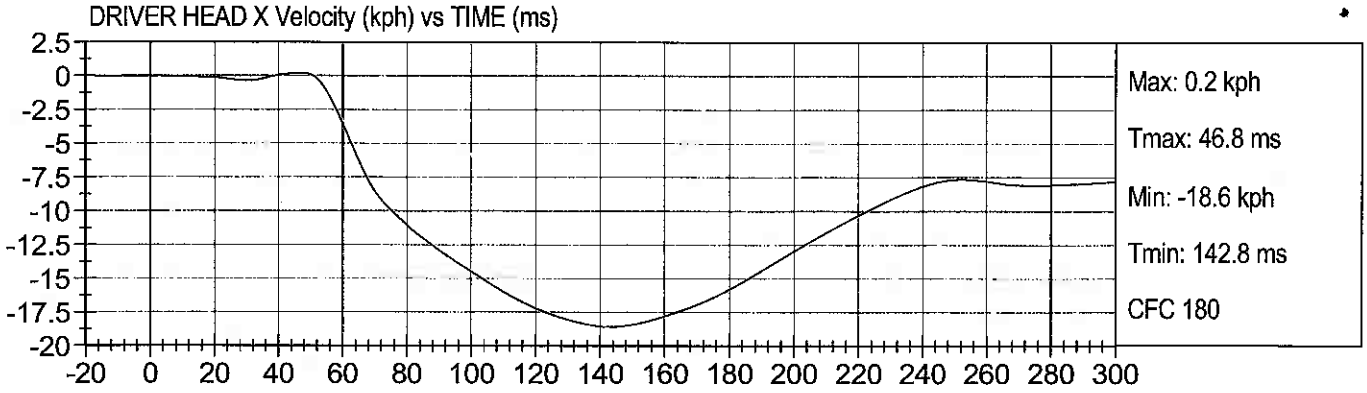


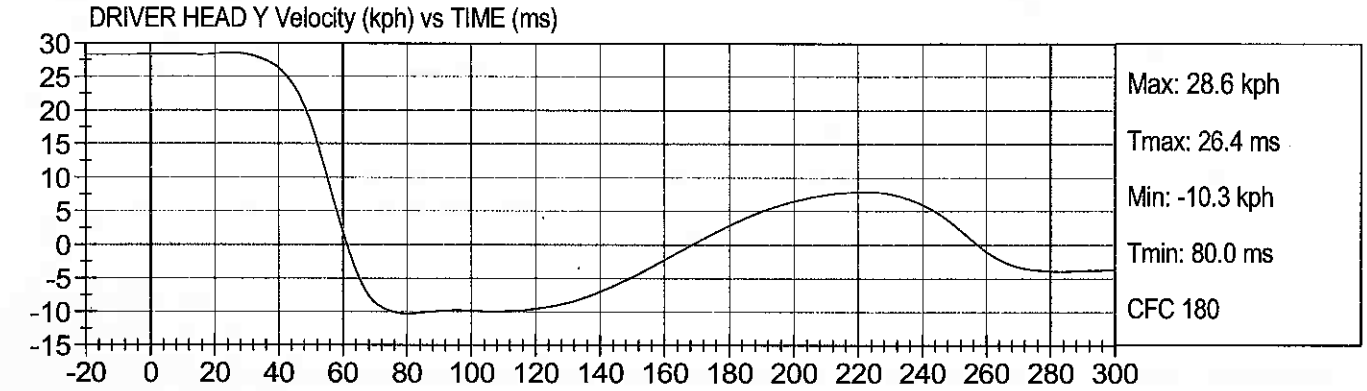
DRIVER HEAD Resultant (G's) vs TIME (ms)

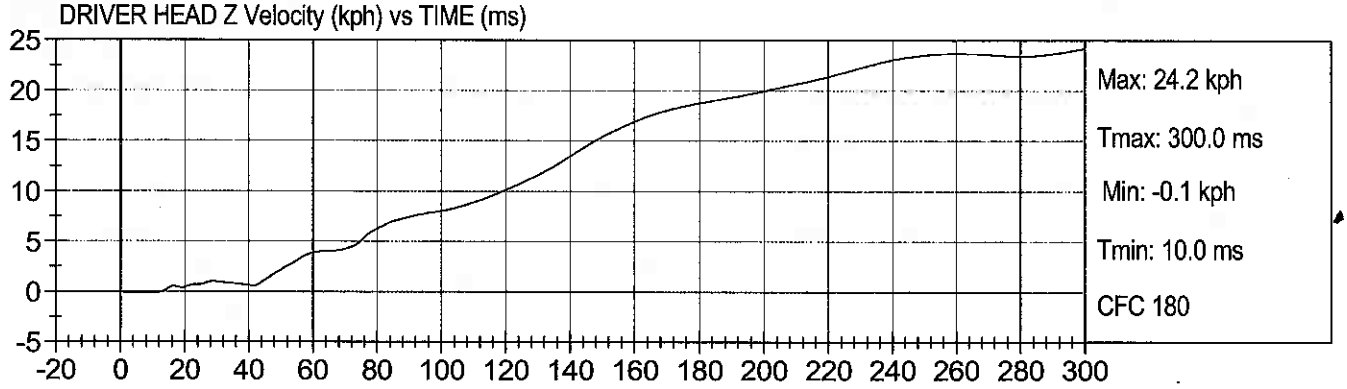


RIGID POLE SIDE IMPACT
2008 FORD FOCUS C80204

Test Date: 06/04/2008
Speed: 17.6 mph (28.3 km/h)

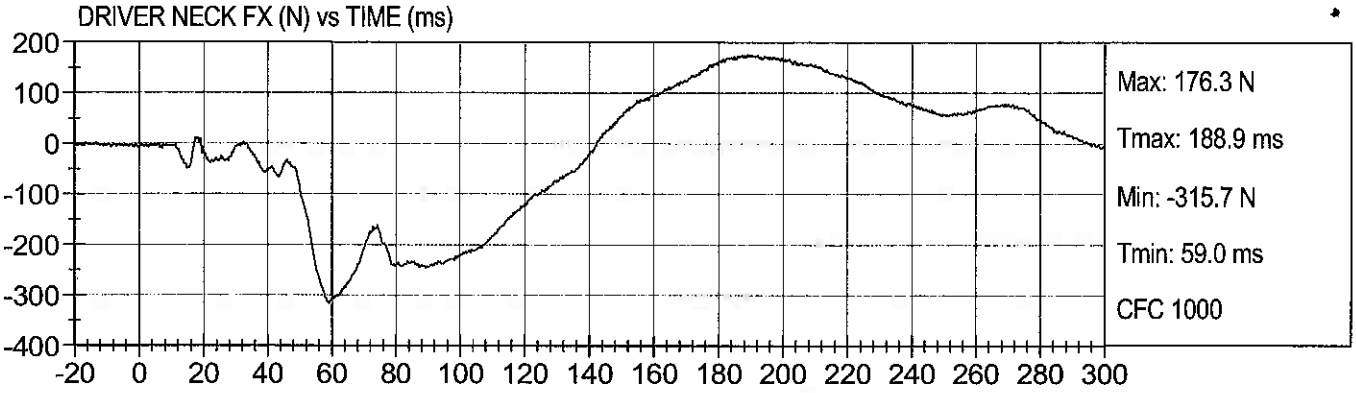


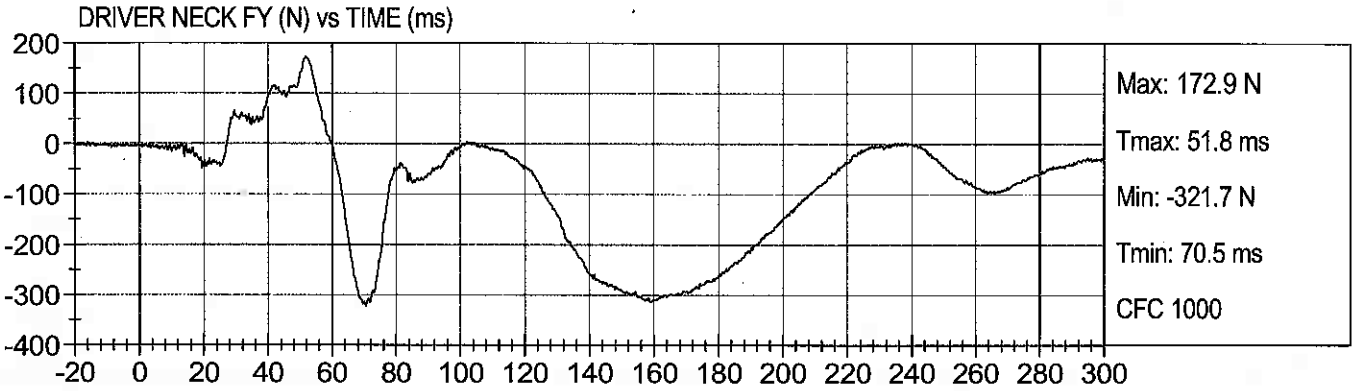


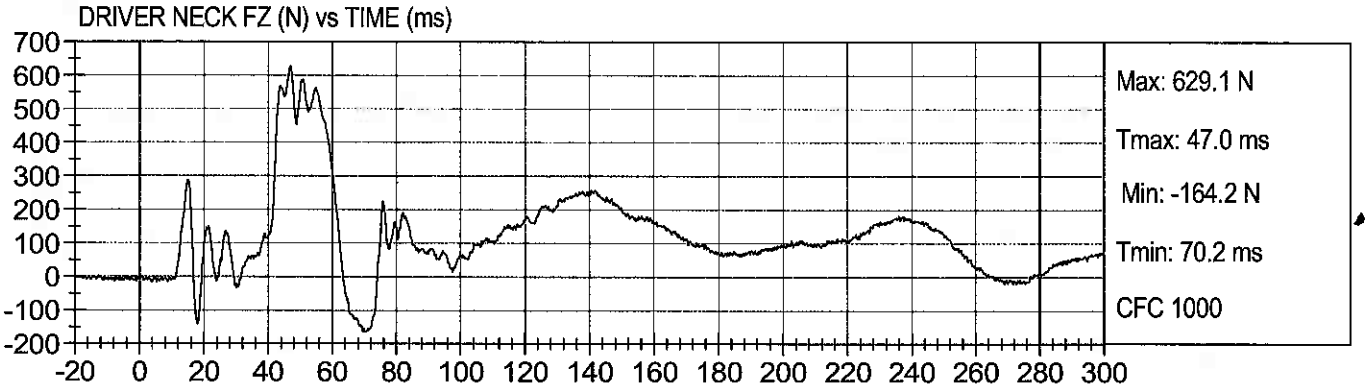


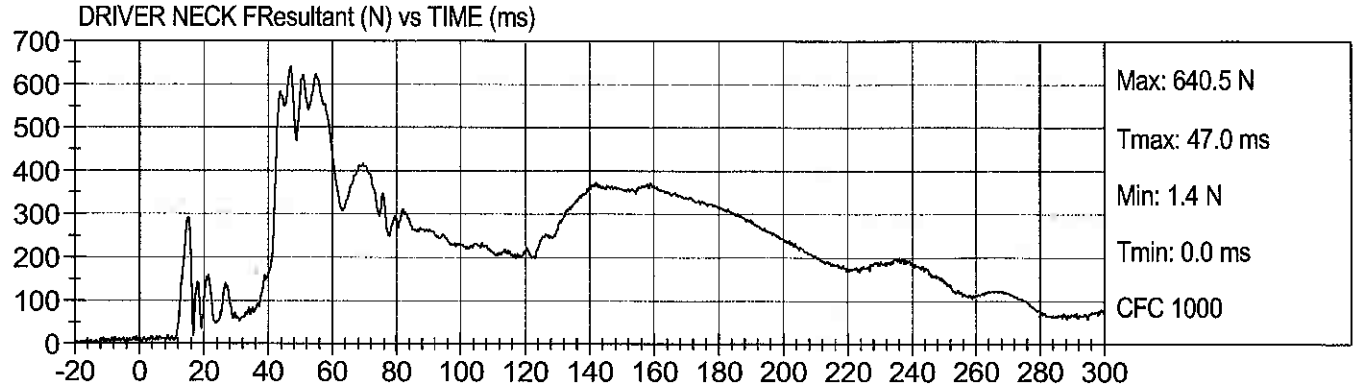
RIGID POLE SIDE IMPACT
2008 FORD FOCUS C80204

Test Date: 06/04/2008
Speed: 17.6 mph (28.3 km/h)



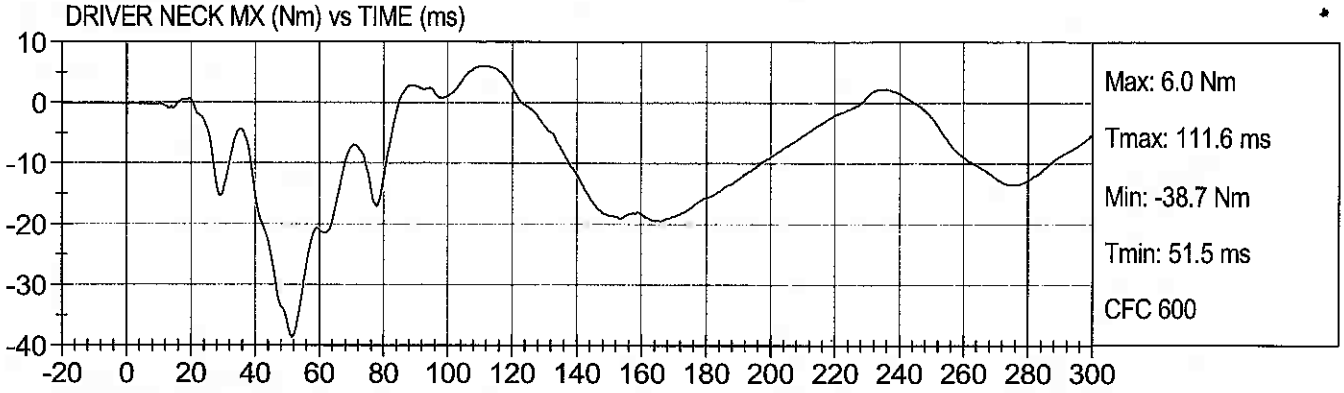


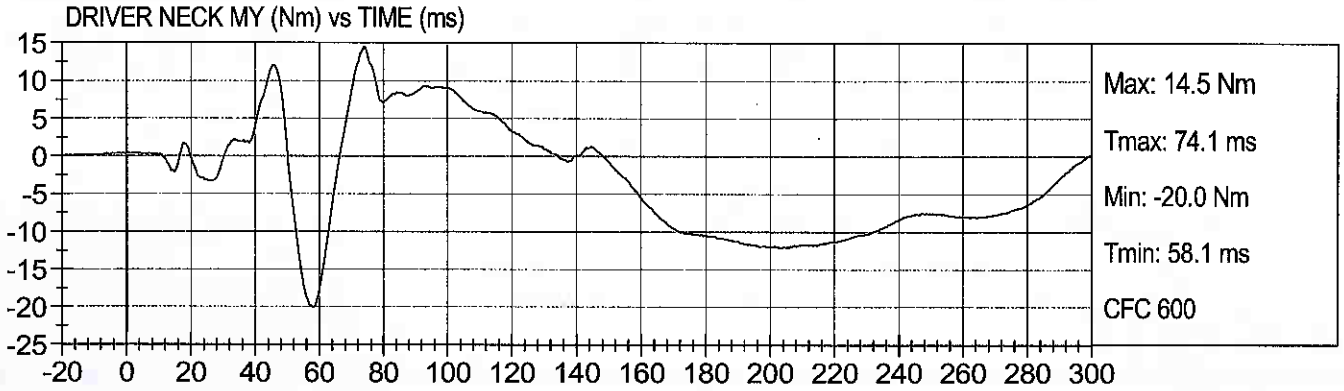


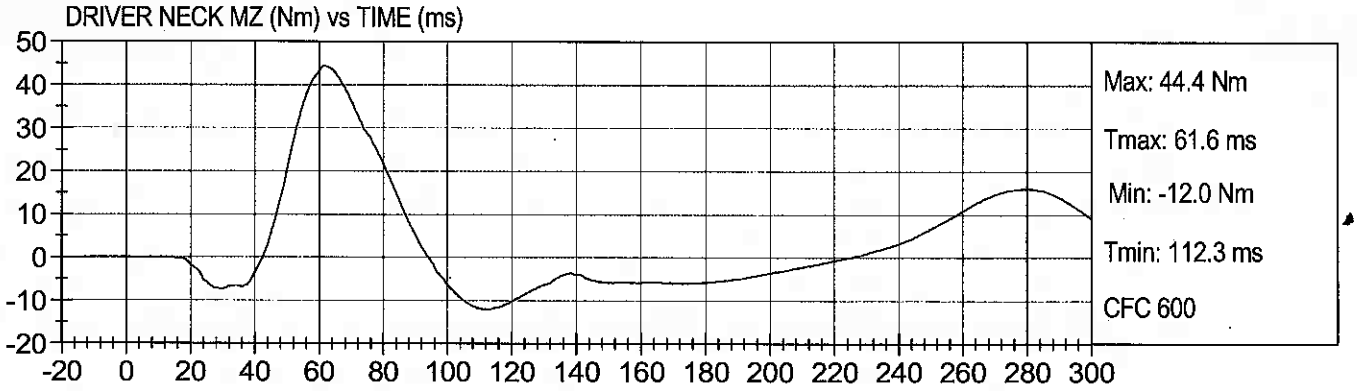


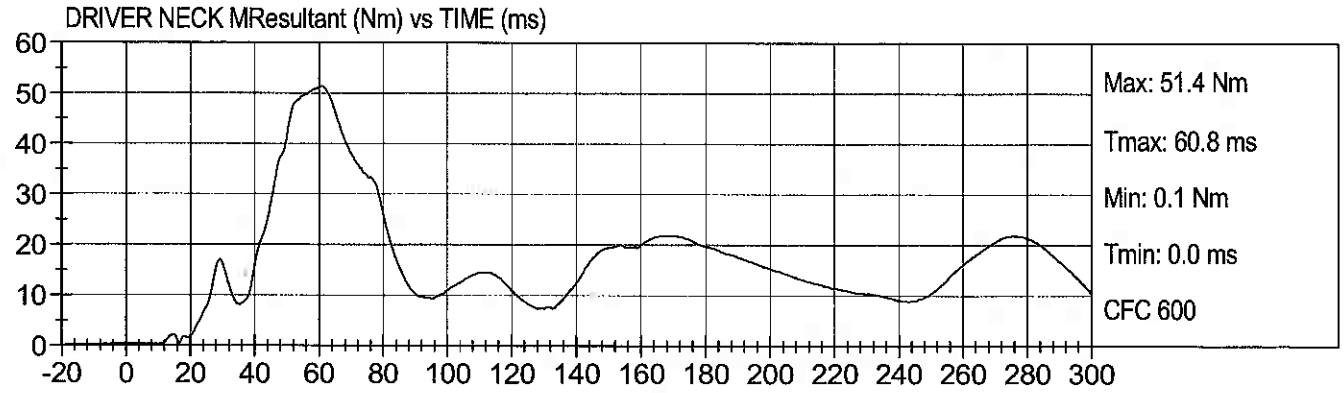
RIGID POLE SIDE IMPACT
2008 FORD FOCUS C80204

Test Date: 06/04/2008
Speed: 17.6 mph (28.3 km/h)





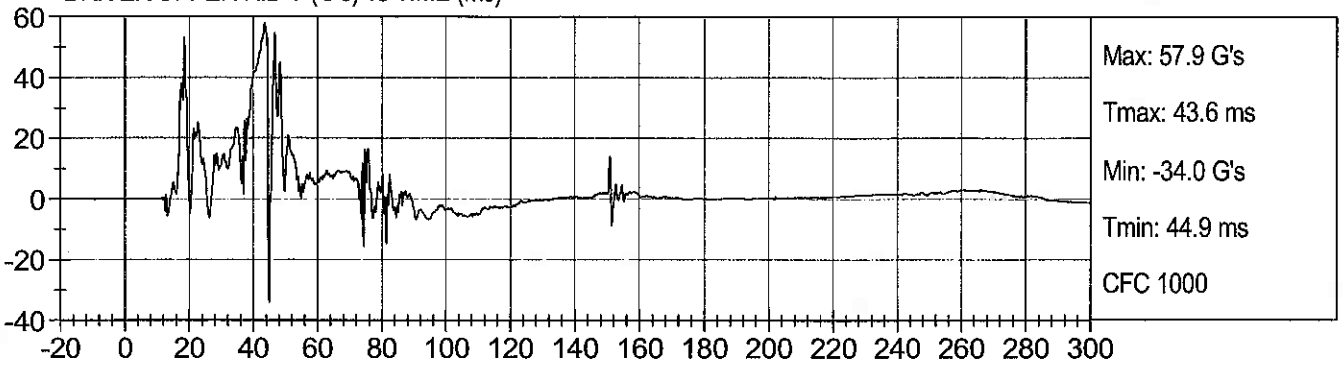




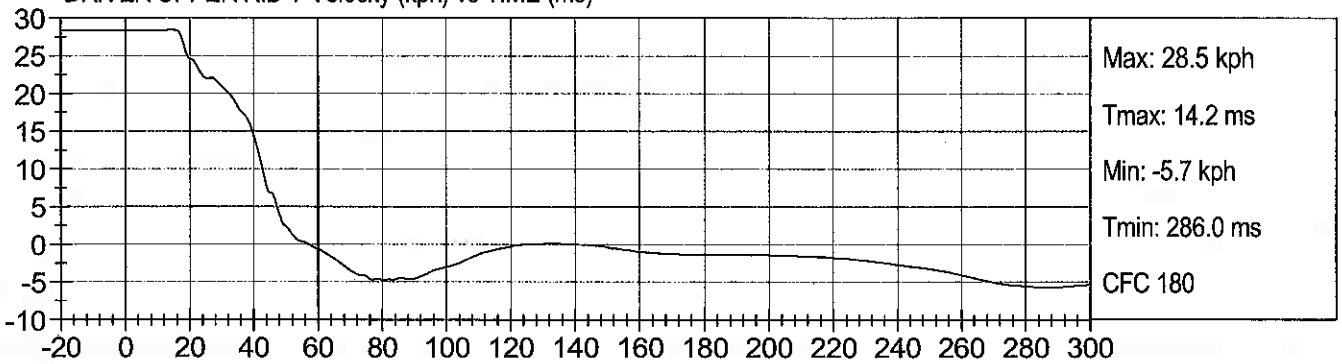
RIGID POLE SIDE IMPACT
2008 FORD FOCUS C80204

Test Date: 06/04/2008
Speed: 17.6 mph (28.3 km/h)

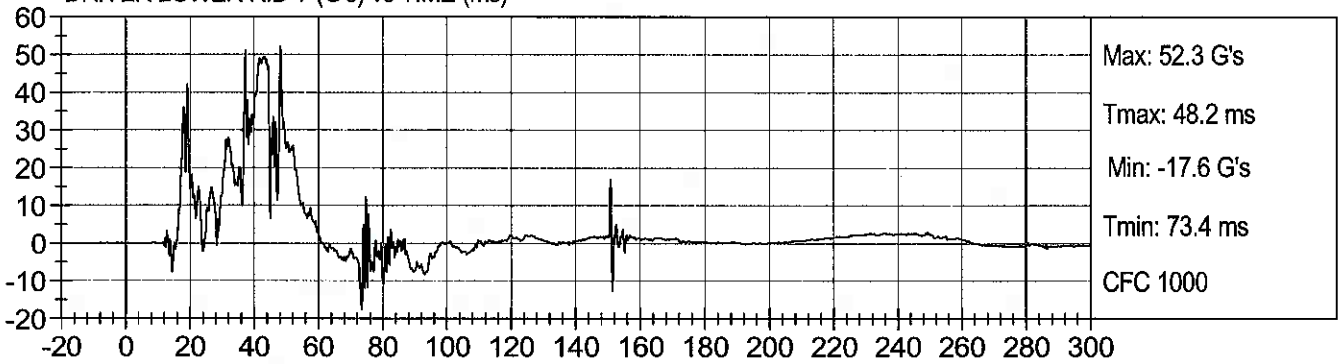
DRIVER UPPER RIB Y (G's) vs TIME (ms)



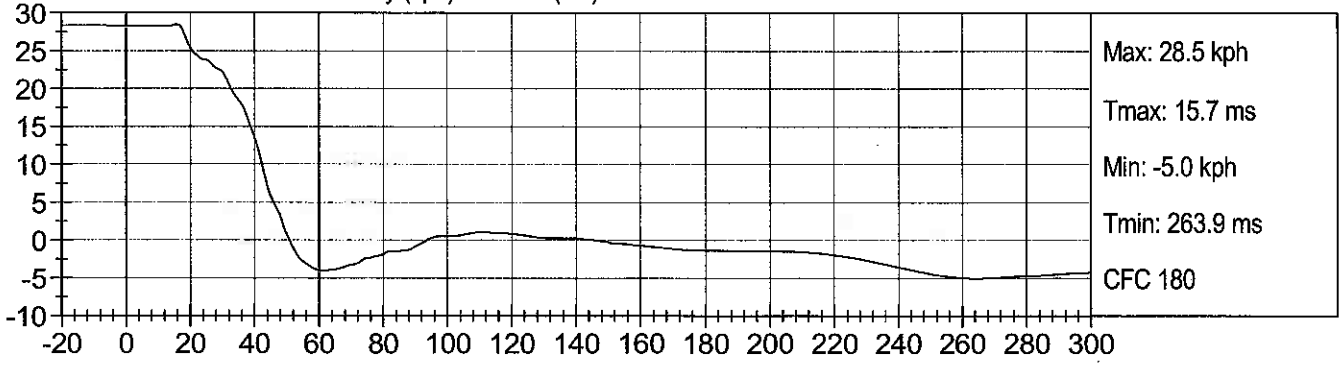
DRIVER UPPER RIB Y Velocity (kph) vs TIME (ms)



DRIVER LOWER RIB Y (G's) vs TIME (ms)



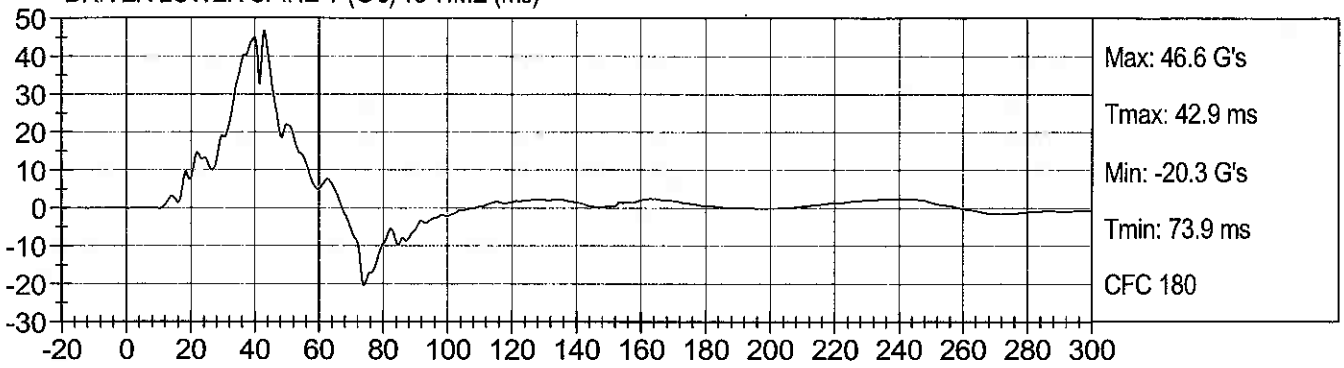
DRIVER LOWER RIB Y Velocity (kph) vs TIME (ms)



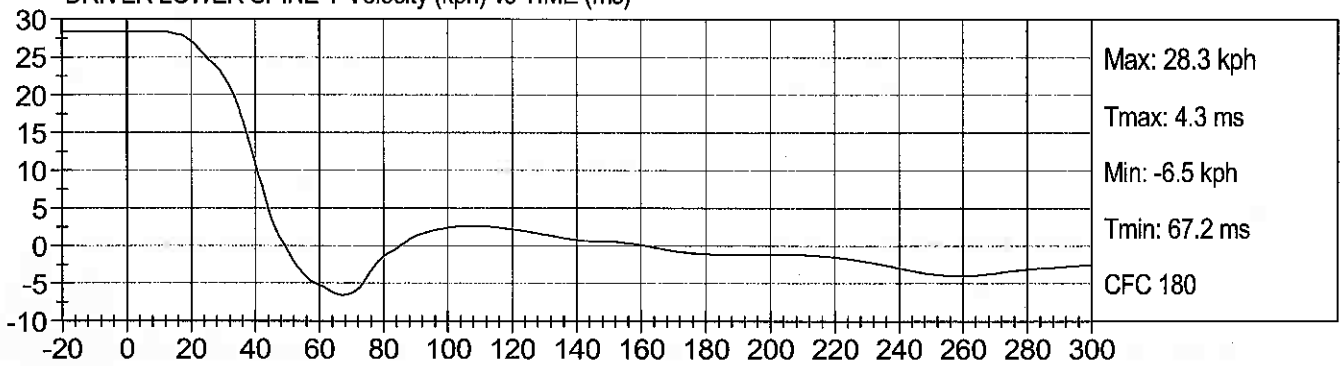
RIGID POLE SIDE IMPACT
2008 FORD FOCUS C80204

Test Date: 06/04/2008
Speed: 17.6 mph (28.3 km/h)

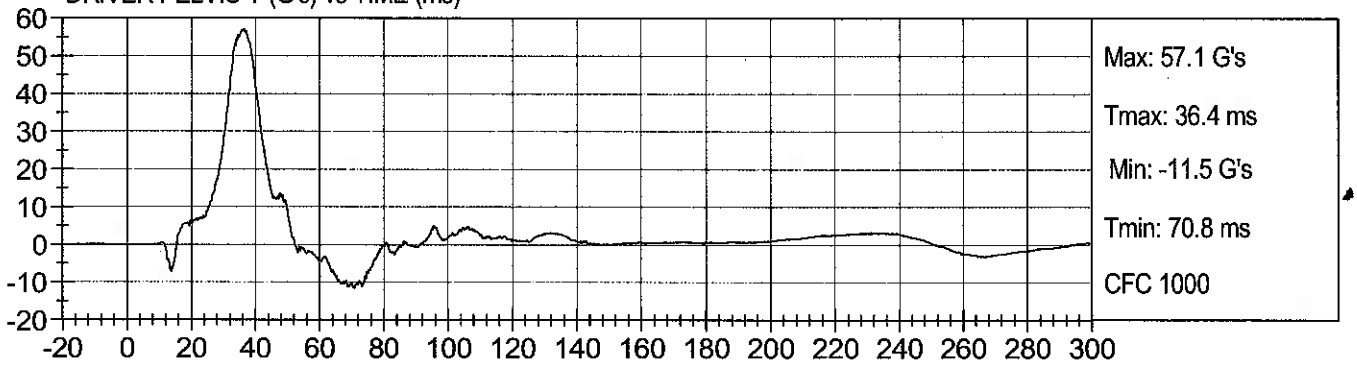
DRIVER LOWER SPINE Y (G's) vs TIME (ms)



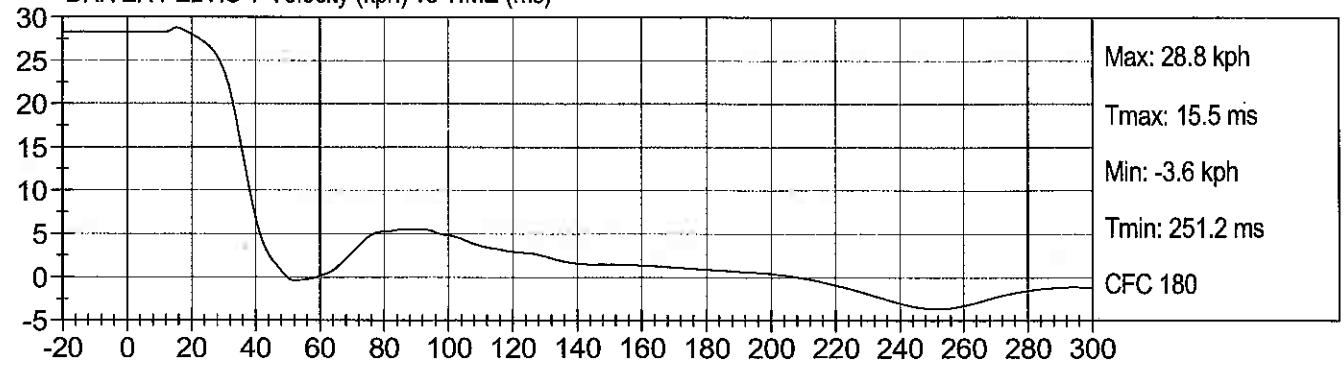
DRIVER LOWER SPINE Y Velocity (kph) vs TIME (ms)



DRIVER PELVIS Y (G's) vs TIME (ms)



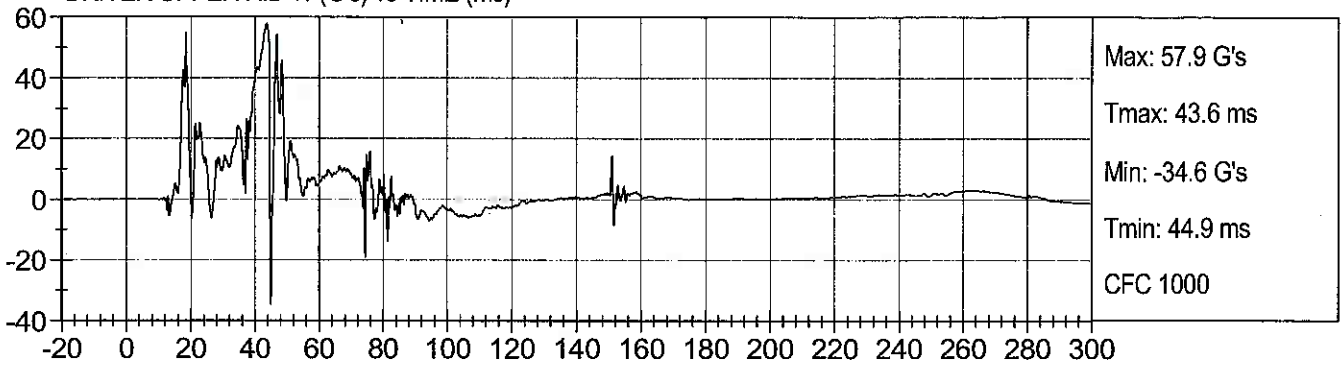
DRIVER PELVIS Y Velocity (kph) vs TIME (ms)



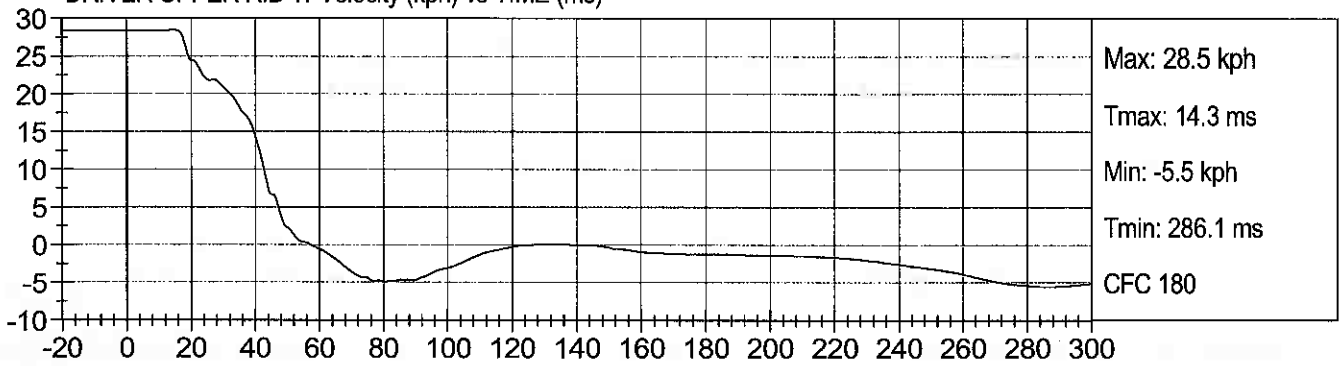
RIGID POLE SIDE IMPACT
2008 FORD FOCUS C80204

Test Date: 06/04/2008
Speed: 17.6 mph (28.3 km/h)

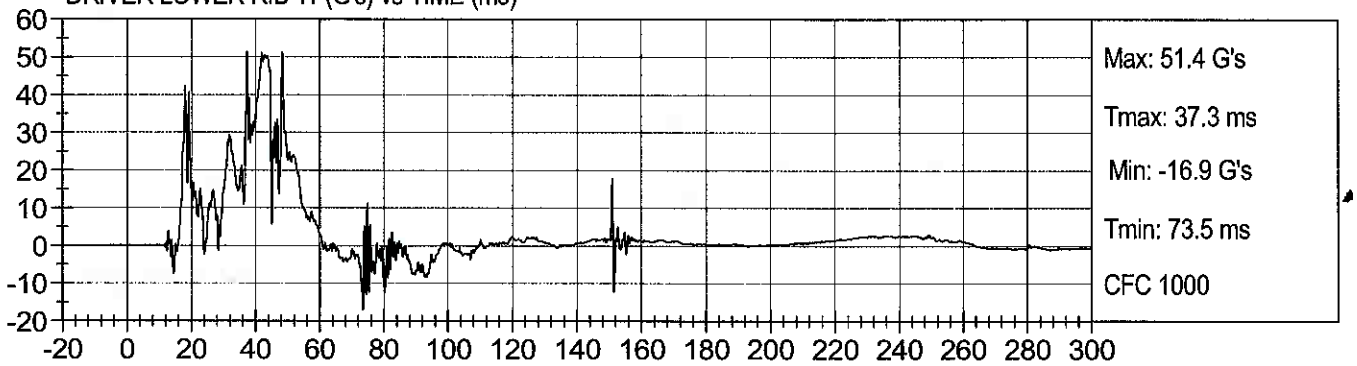
DRIVER UPPER RIB Yr (G's) vs TIME (ms)



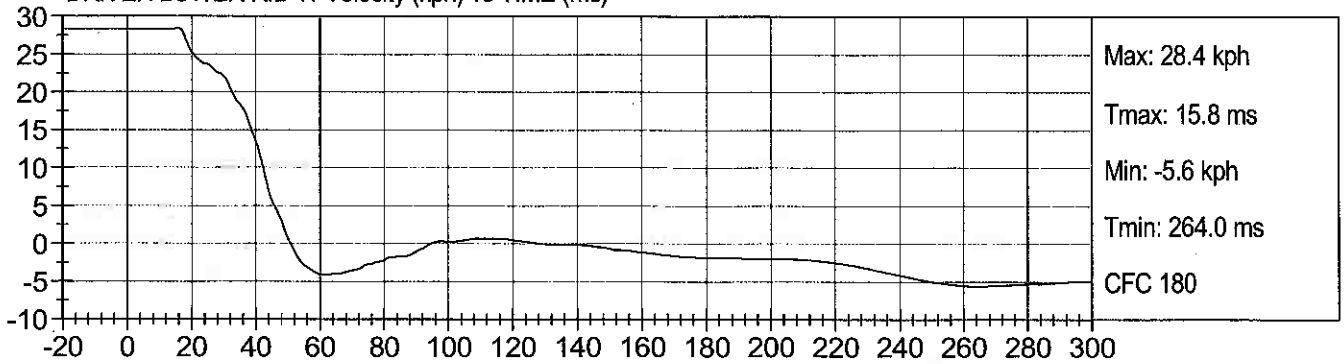
DRIVER UPPER RIB Yr Velocity (kph) vs TIME (ms)



DRIVER LOWER RIB Yr (G's) vs TIME (ms)



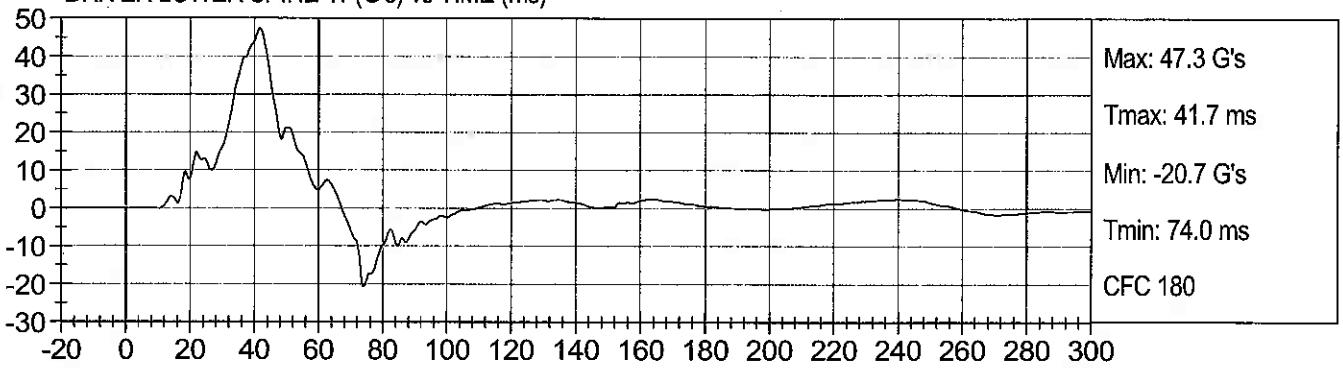
DRIVER LOWER RIB Yr Velocity (kph) vs TIME (ms)



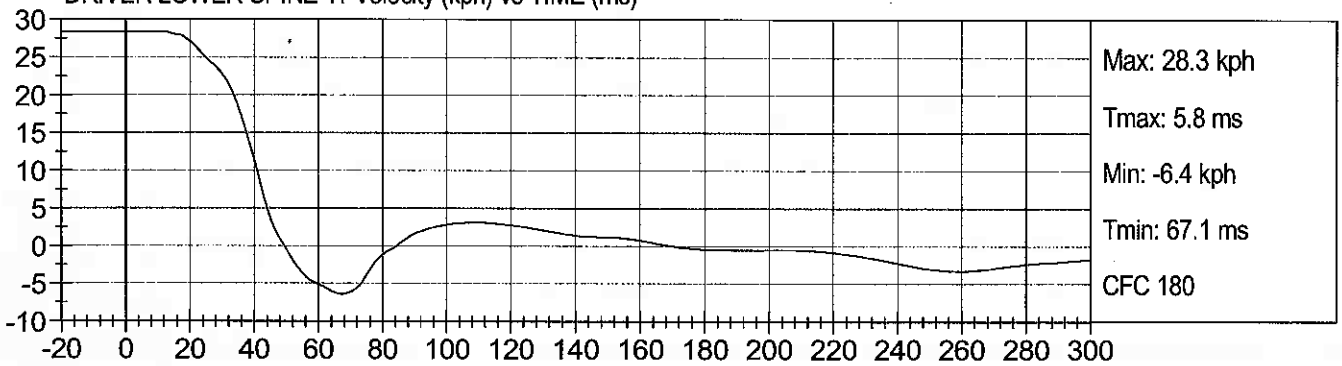
RIGID POLE SIDE IMPACT
2008 FORD FOCUS C80204

Test Date: 06/04/2008
Speed: 17.6 mph (28.3 km/h)

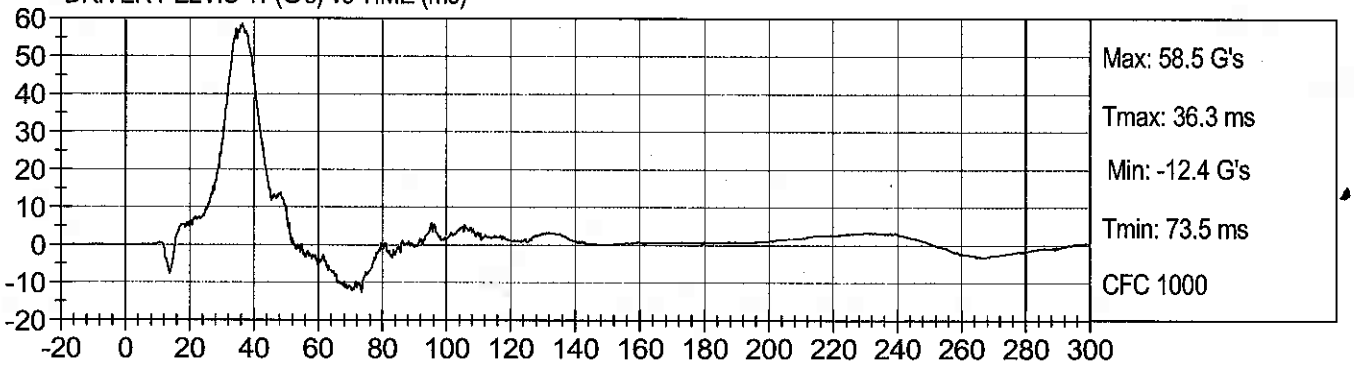
DRIVER LOWER SPINE Yr (G's) vs TIME (ms)



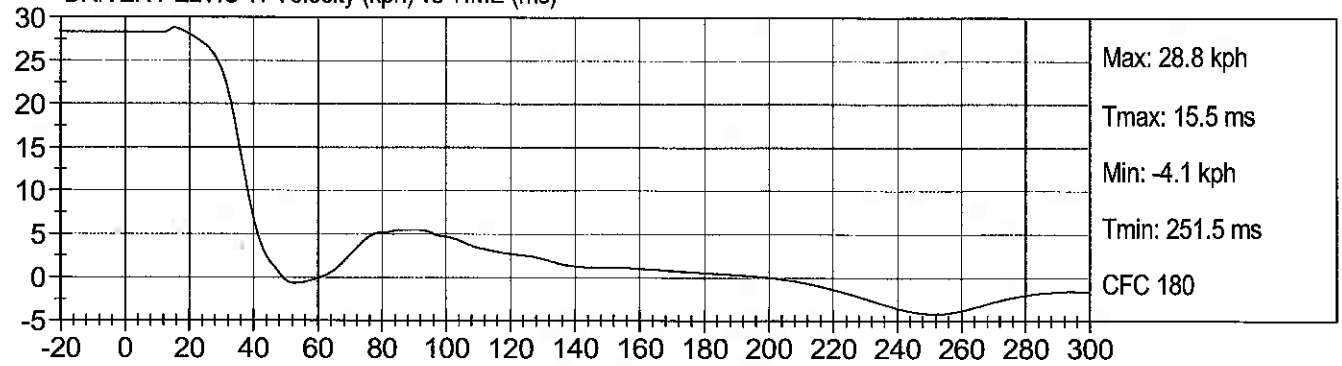
DRIVER LOWER SPINE Yr Velocity (kph) vs TIME (ms)



DRIVER PELVIS Yr (G's) vs TIME (ms)

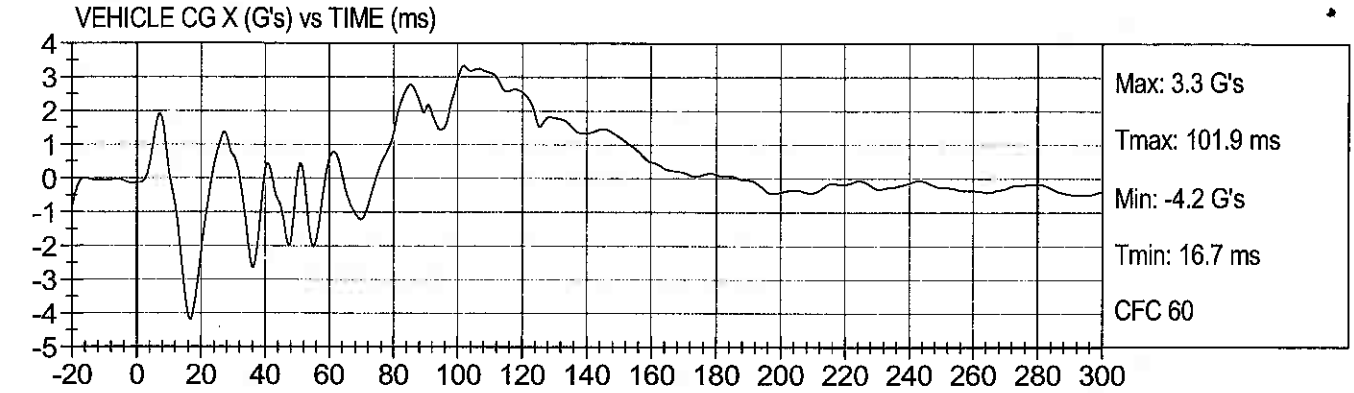


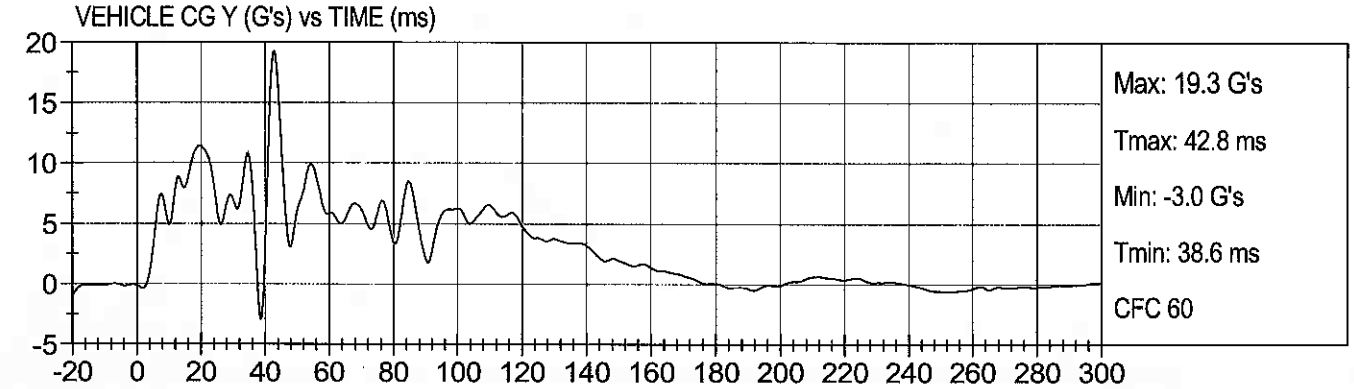
DRIVER PELVIS Yr Velocity (kph) vs TIME (ms)

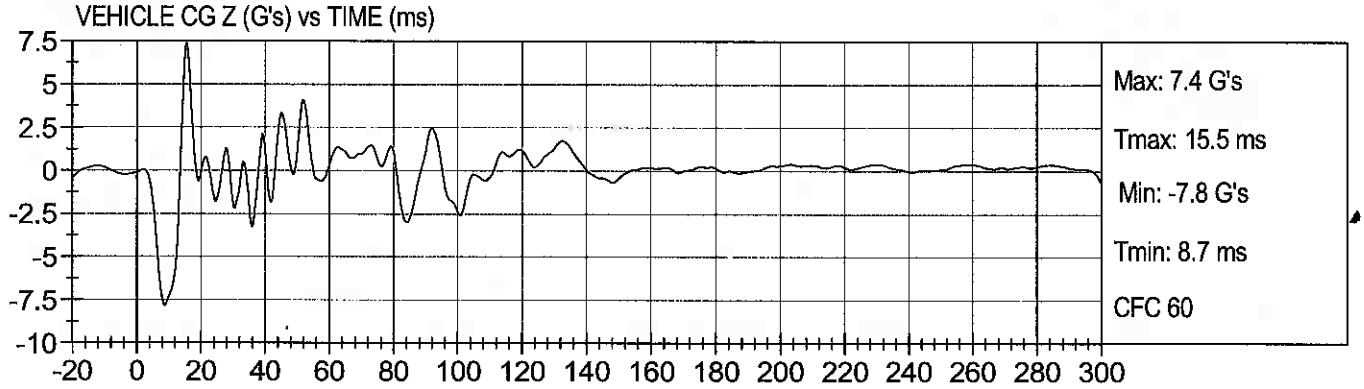


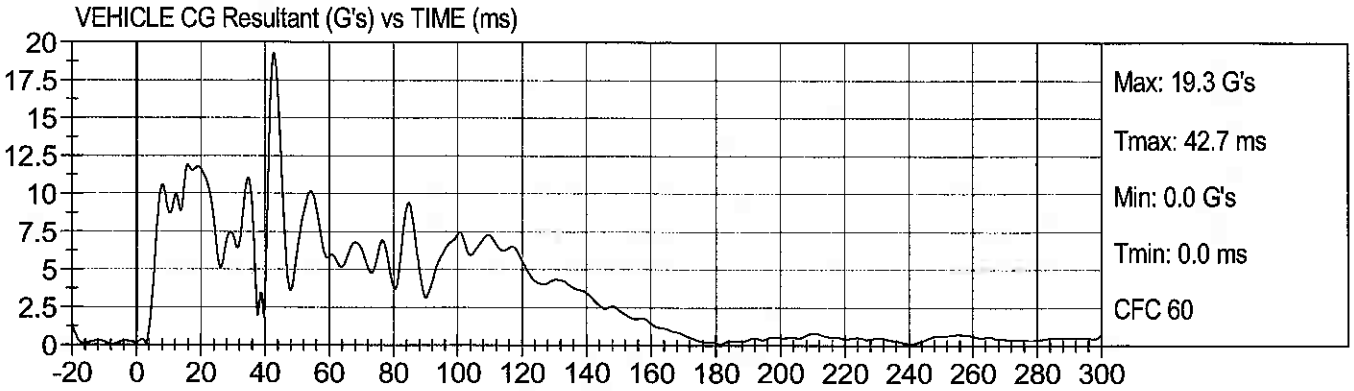
RIGID POLE SIDE IMPACT
2008 FORD FOCUS C80204

Test Date: 06/04/2008
Speed: 17.6 mph (28.3 km/h)



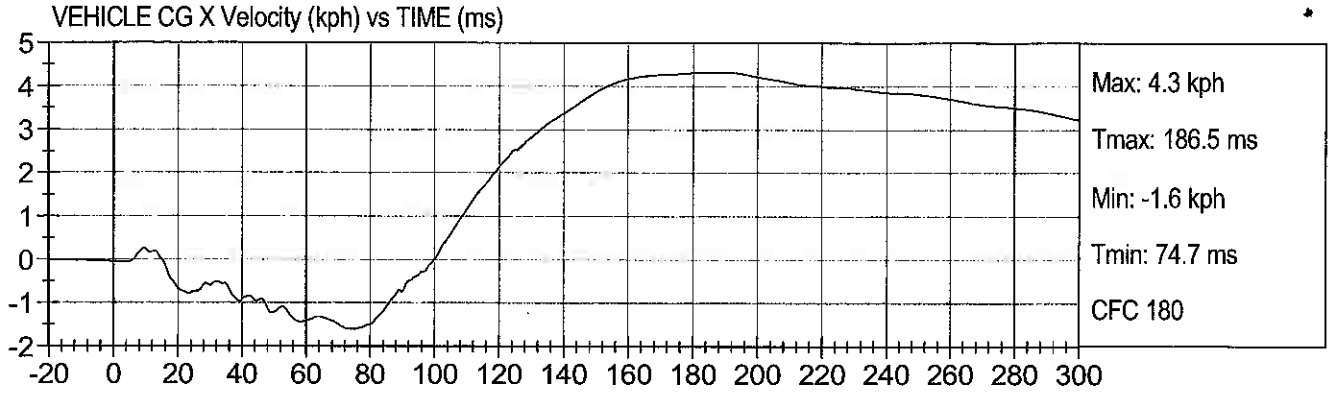


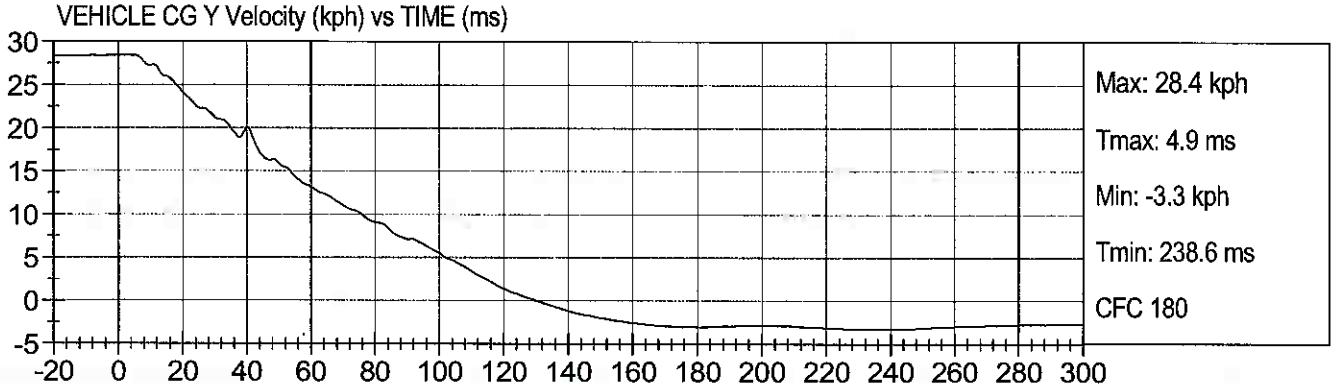


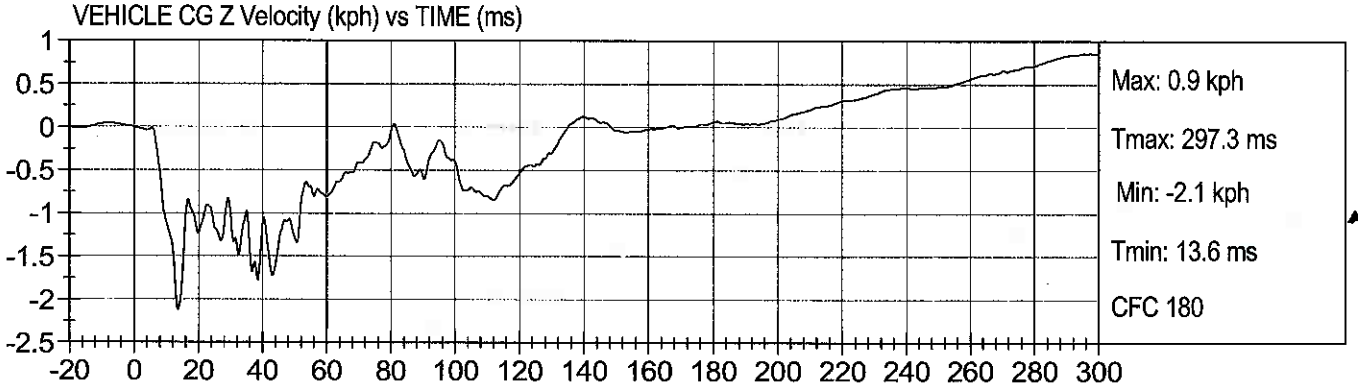


RIGID POLE SIDE IMPACT
2008 FORD FOCUS C80204

Test Date: 06/04/2008
Speed: 17.6 mph (28.3 km/h)

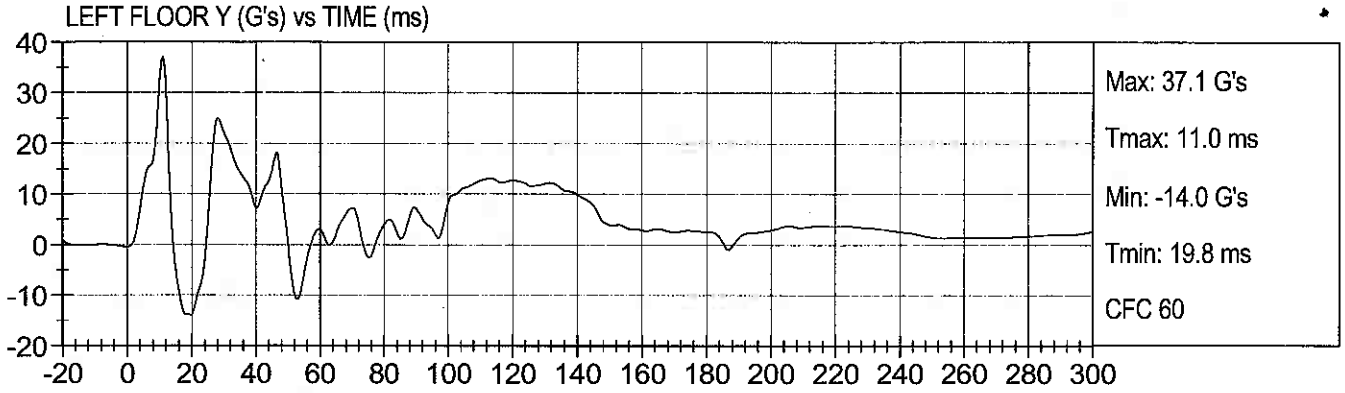


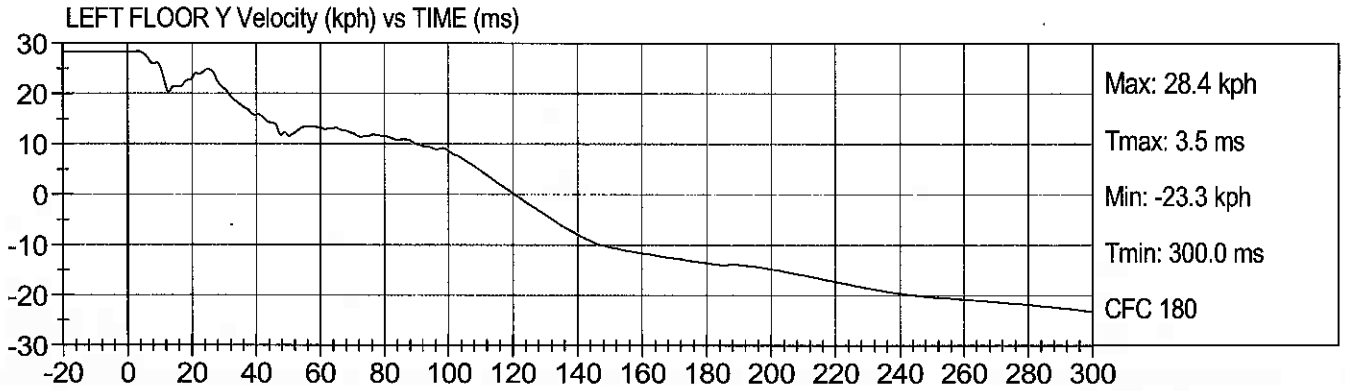


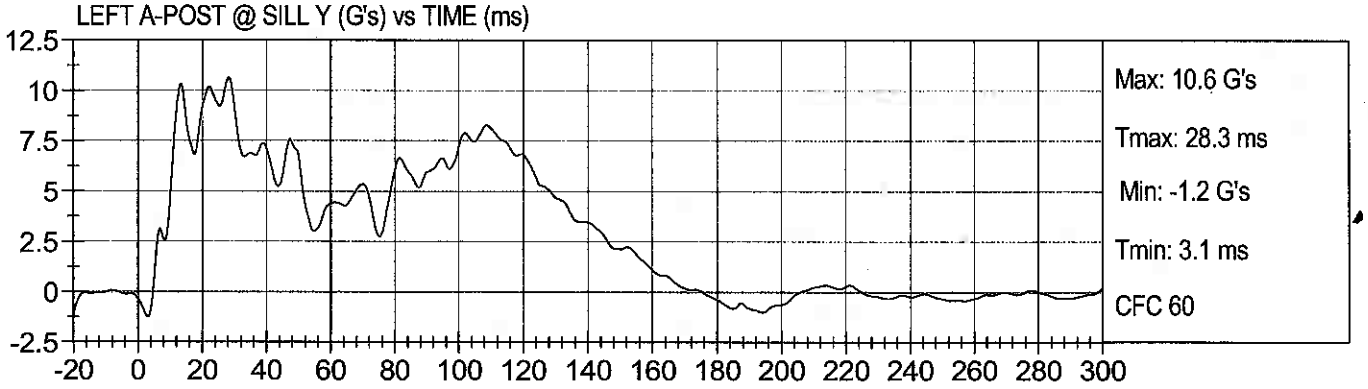


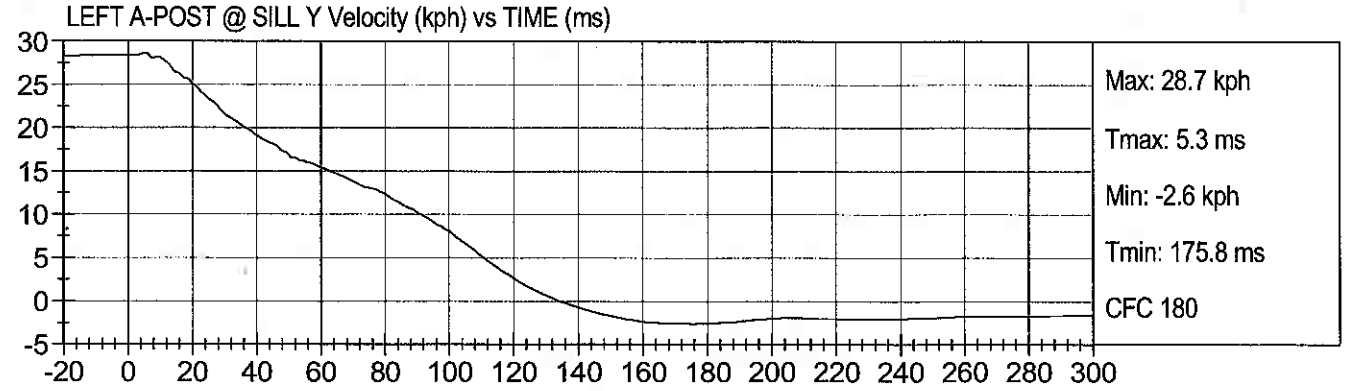
RIGID POLE SIDE IMPACT
2008 FORD FOCUS C80204

Test Date: 06/04/2008
Speed: 17.6 mph (28.3 km/h)





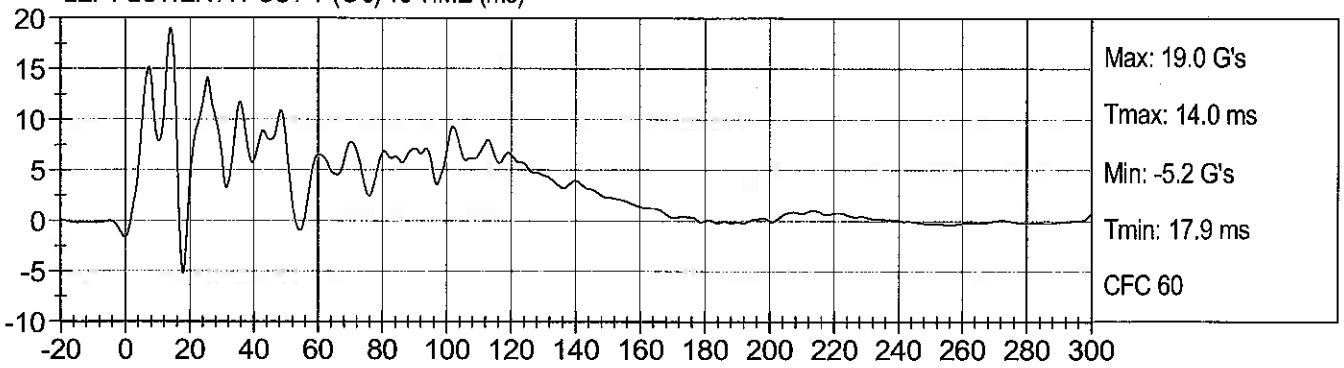




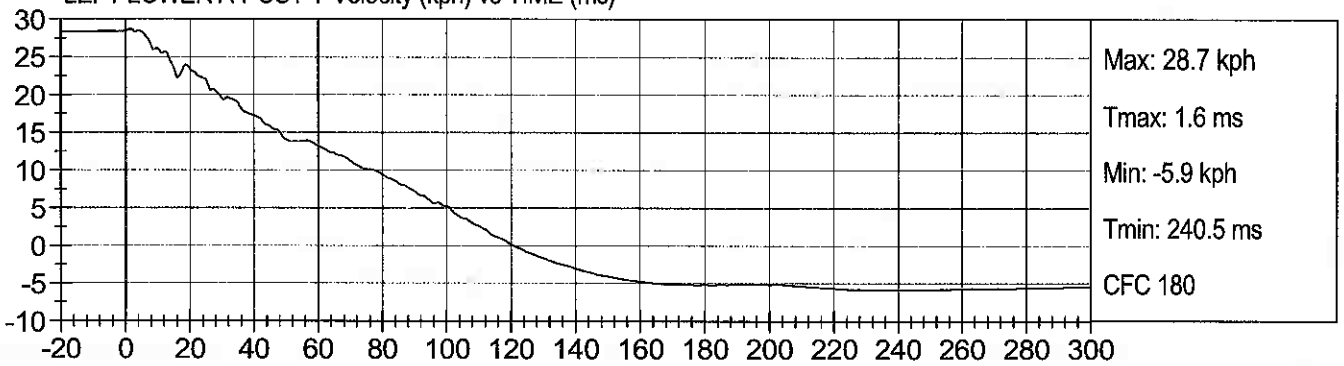
RIGID POLE SIDE IMPACT
2008 FORD FOCUS C80204

Test Date: 06/04/2008
Speed: 17.6 mph (28.3 km/h)

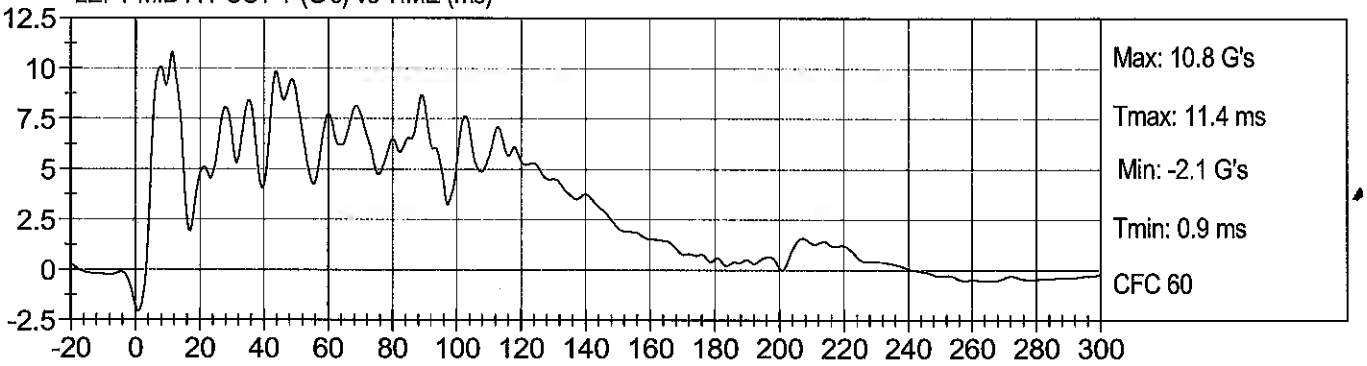
LEFT LOWER A-POST Y (G's) vs TIME (ms)



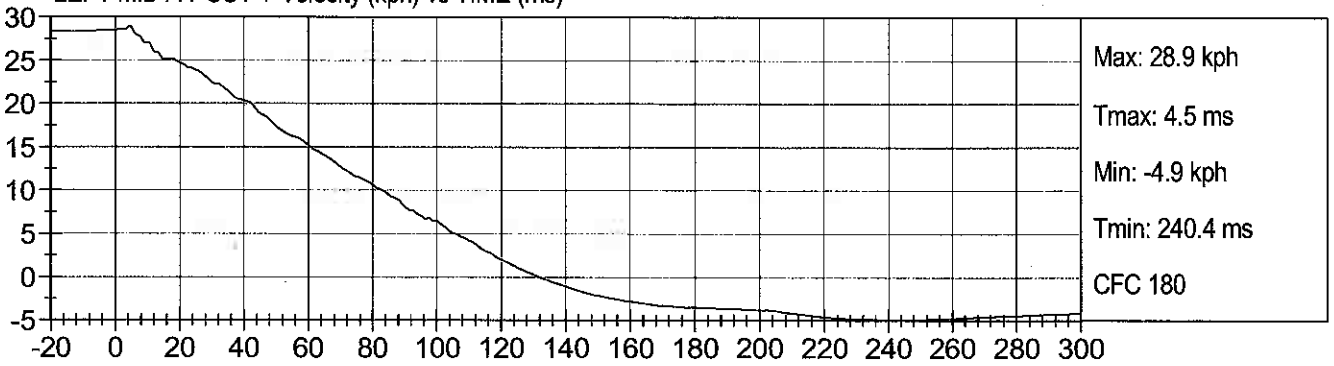
LEFT LOWER A-POST Y Velocity (kph) vs TIME (ms)



LEFT MID A-POST Y (G's) vs TIME (ms)



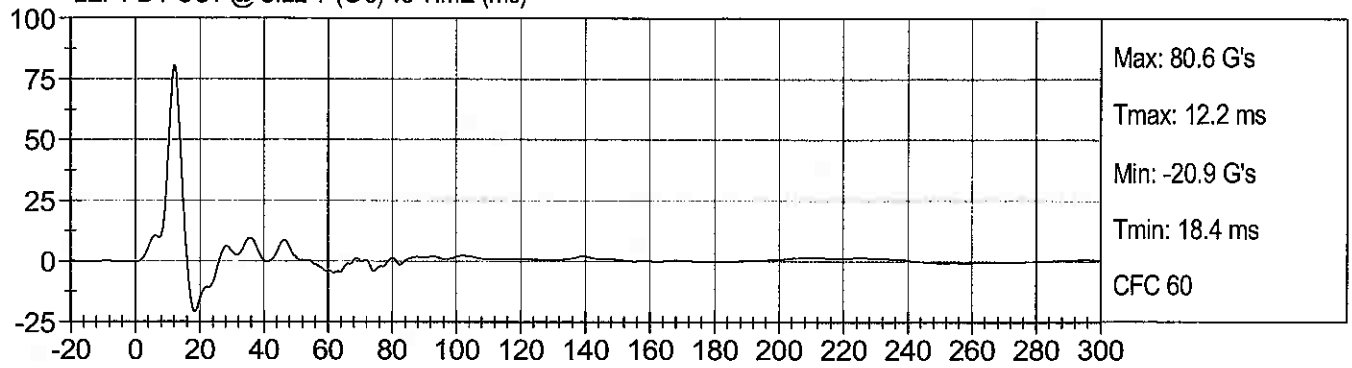
LEFT MID A-POST Y Velocity (kph) vs TIME (ms)



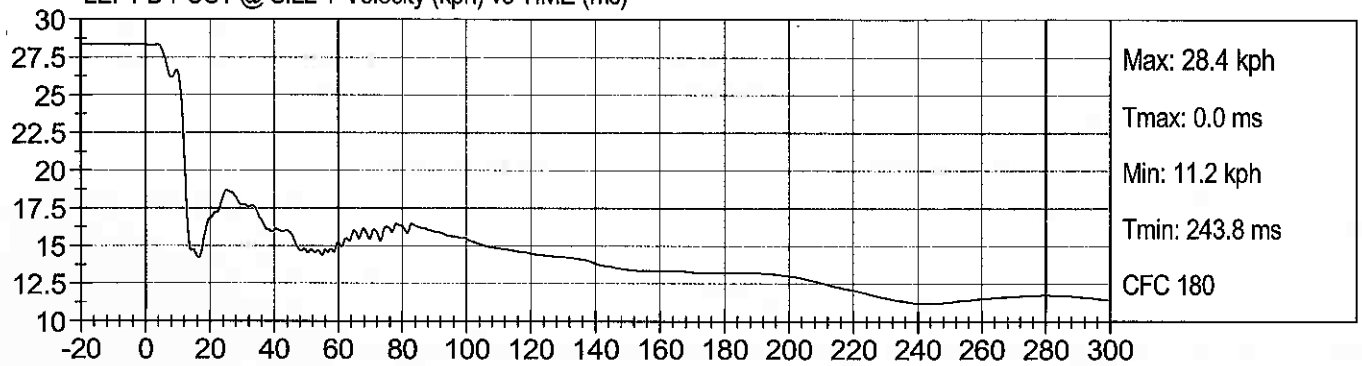
RIGID POLE SIDE IMPACT
2008 FORD FOCUS C80204

Test Date: 06/04/2008
Speed: 17.6 mph (28.3 km/h)

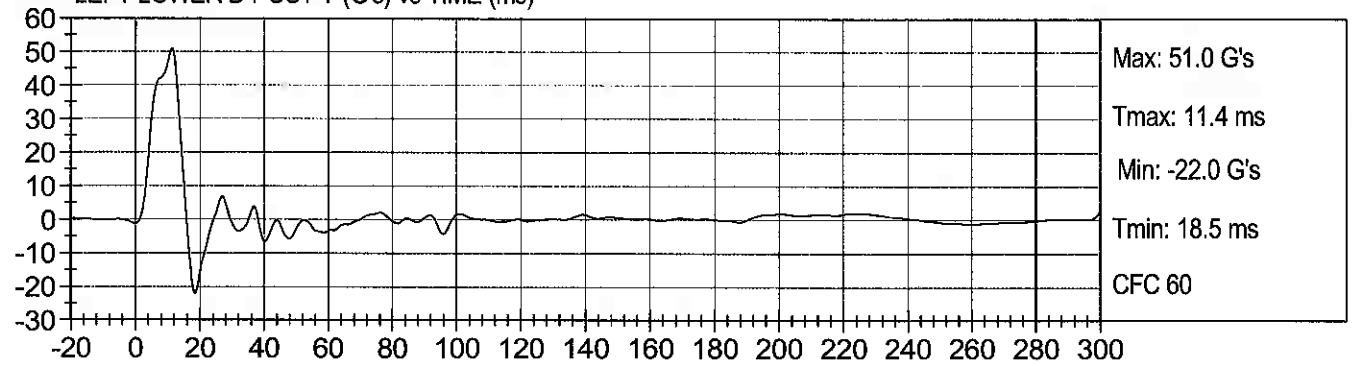
LEFT B-POST @ SILL Y (G's) vs TIME (ms)



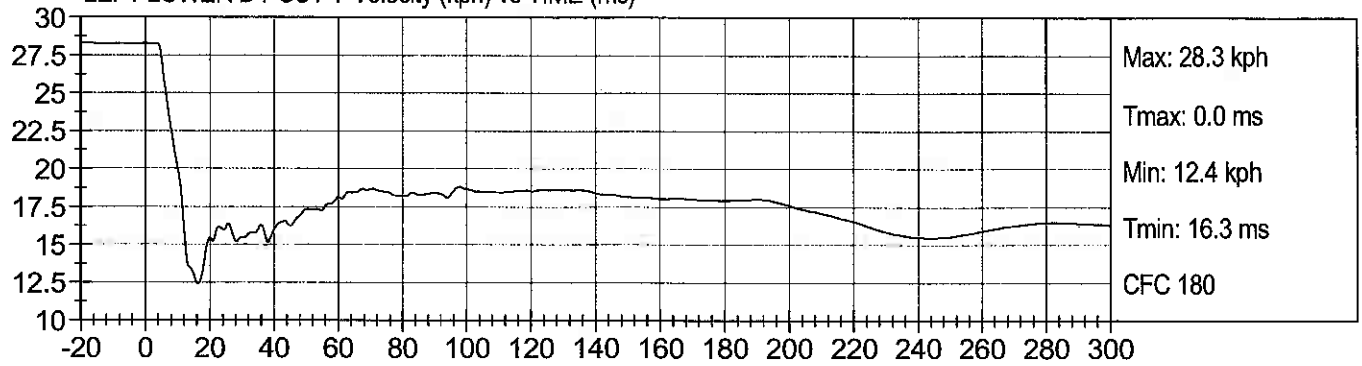
LEFT B-POST @ SILL Y Velocity (kph) vs TIME (ms)



LEFT LOWER B-POST Y (G's) vs TIME (ms)

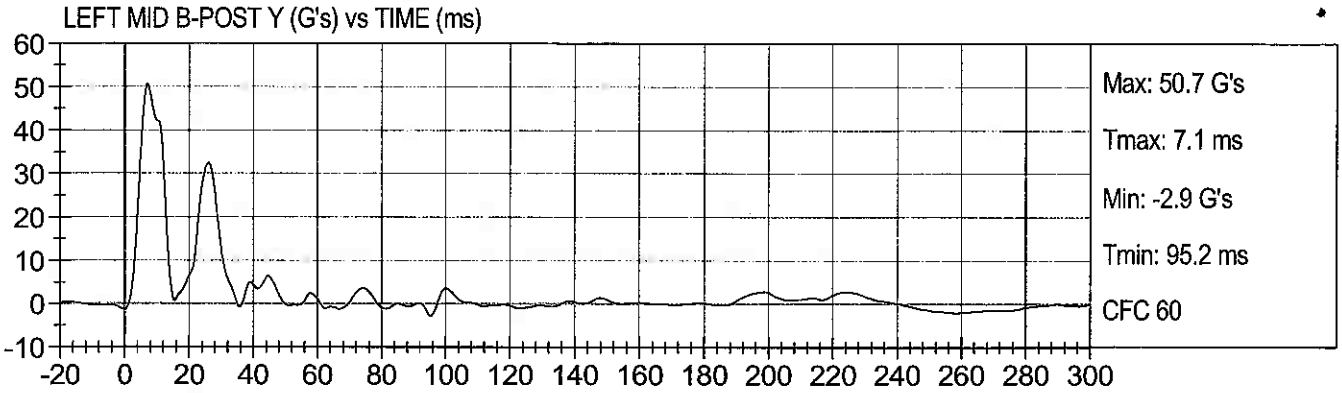


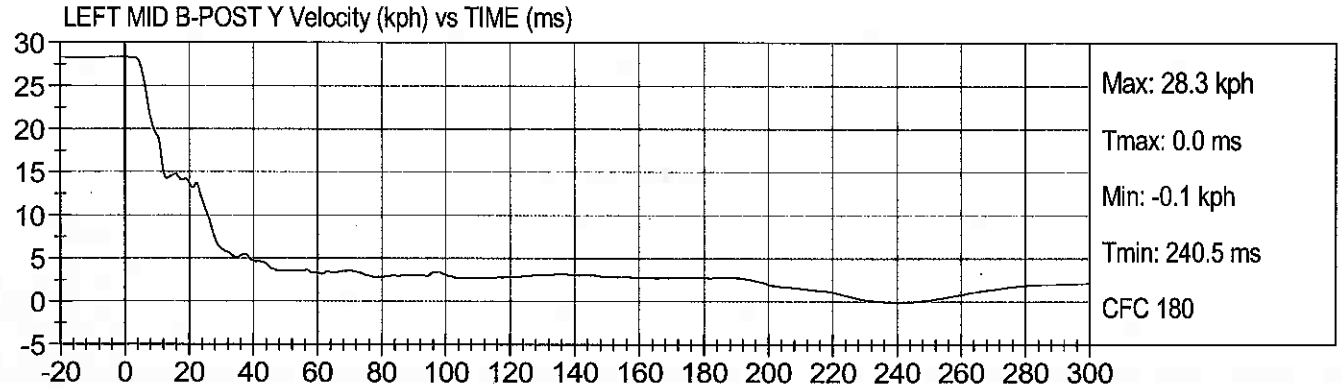
LEFT LOWER B-POST Y Velocity (kph) vs TIME (ms)

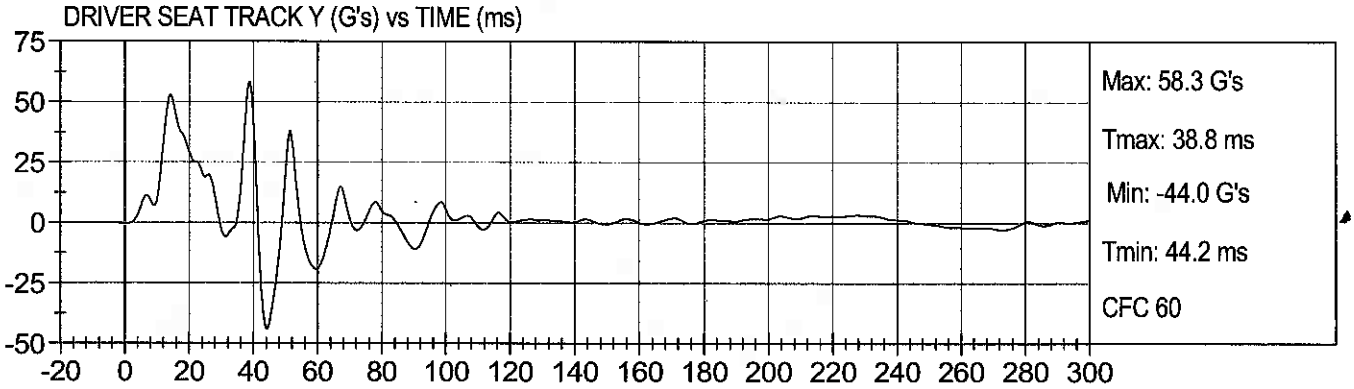


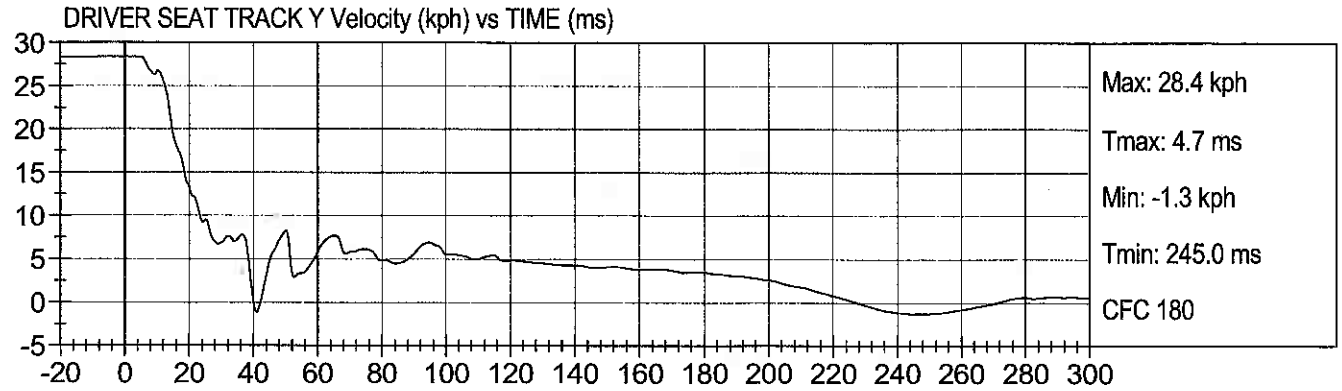
RIGID POLE SIDE IMPACT
2008 FORD FOCUS C80204

Test Date: 06/04/2008
Speed: 17.6 mph (28.3 km/h)



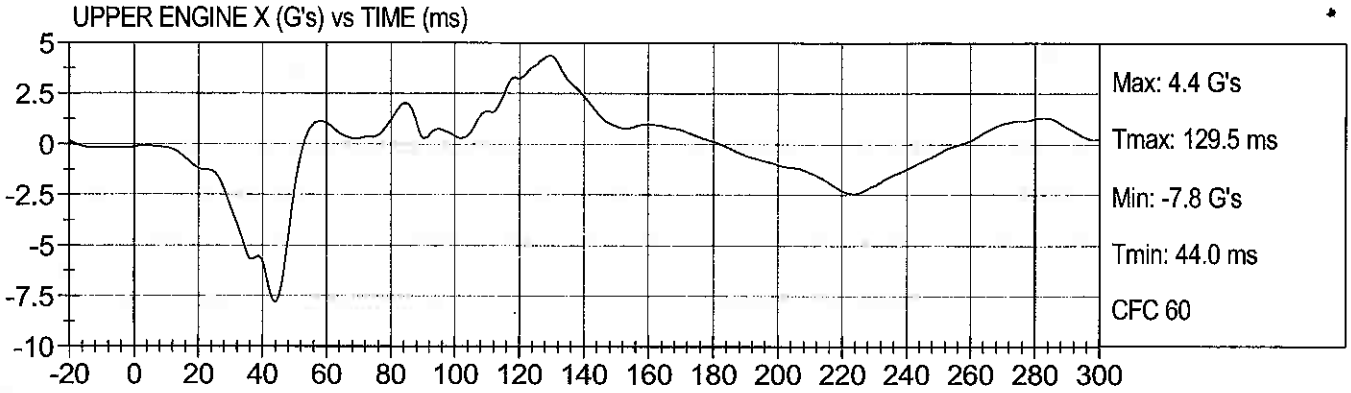


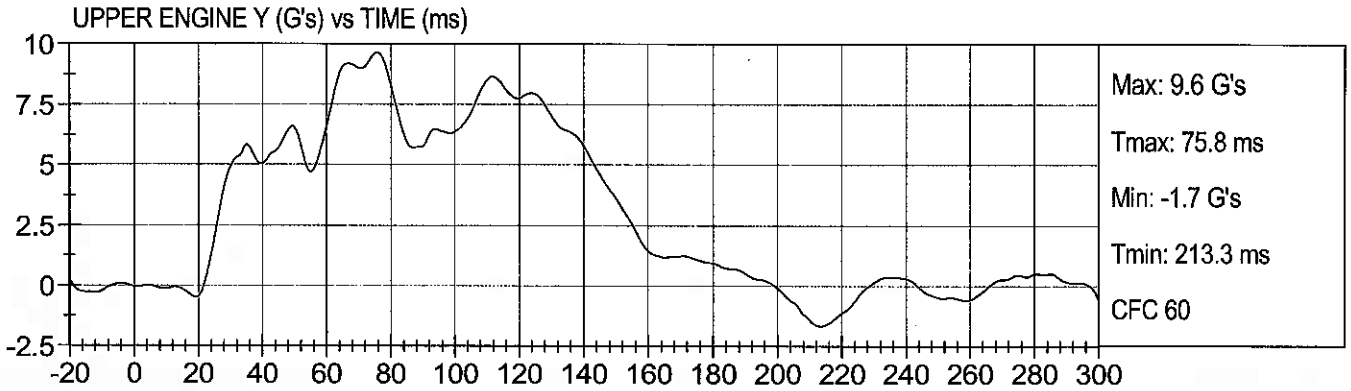


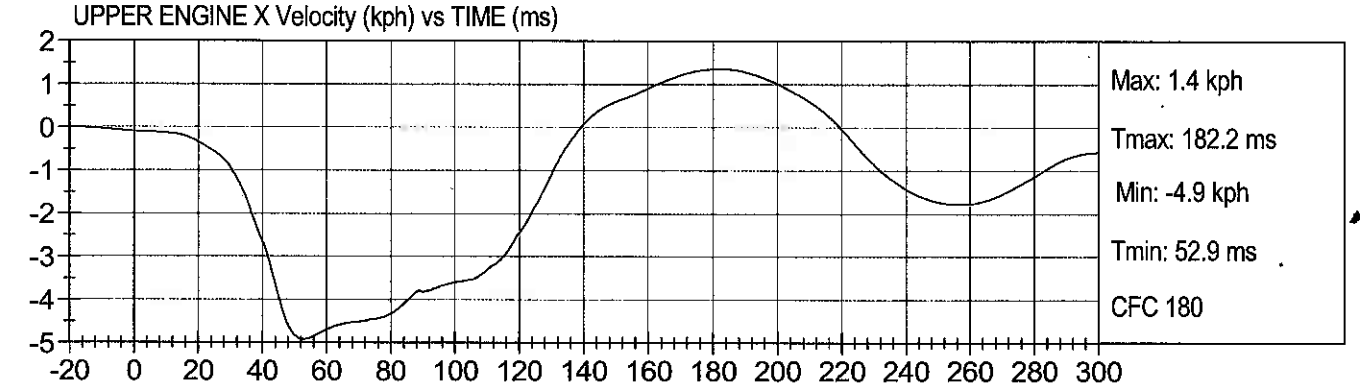


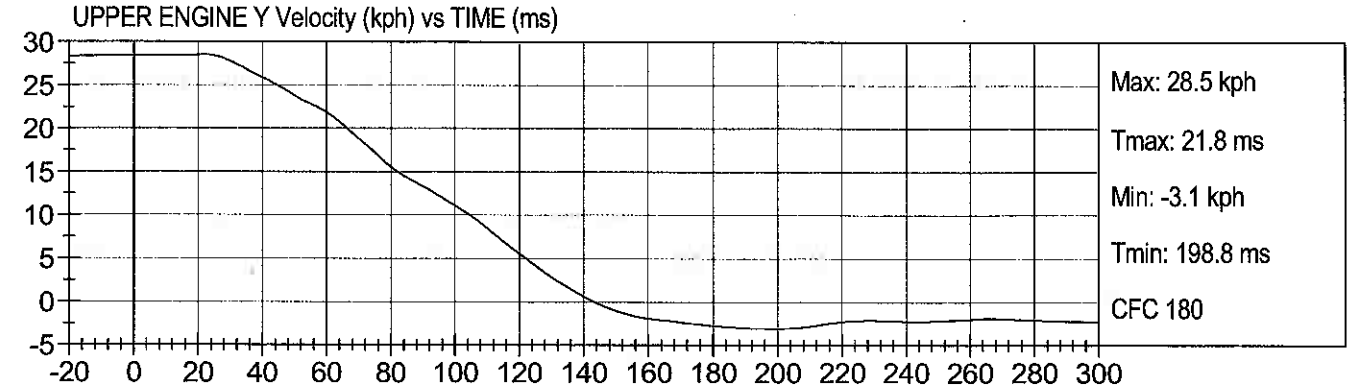
RIGID POLE SIDE IMPACT
2008 FORD FOCUS C80204

Test Date: 06/04/2008
Speed: 17.6 mph (28.3 km/h)



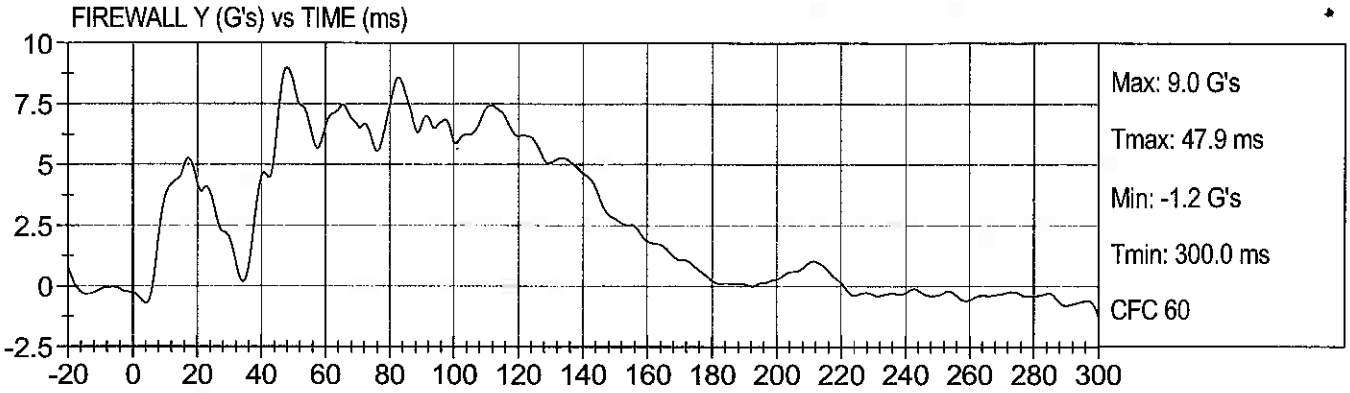


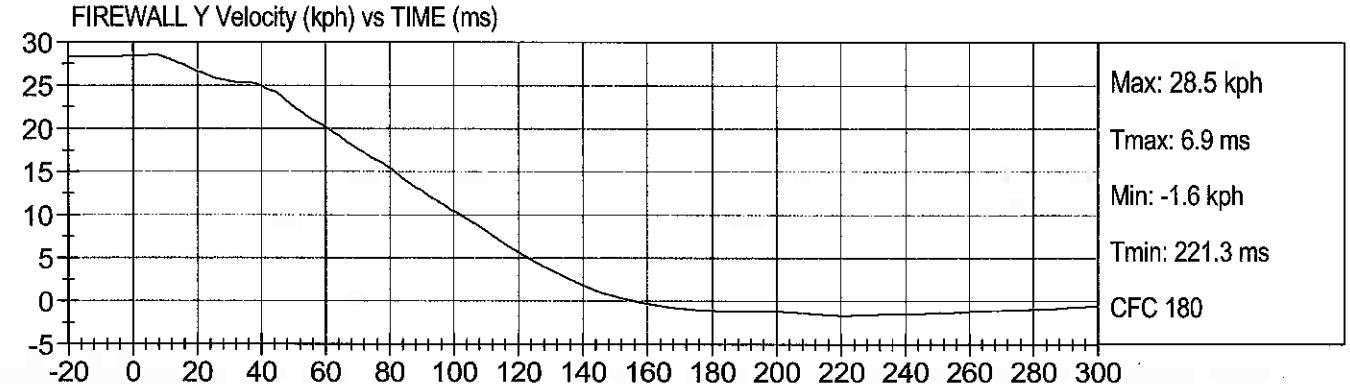


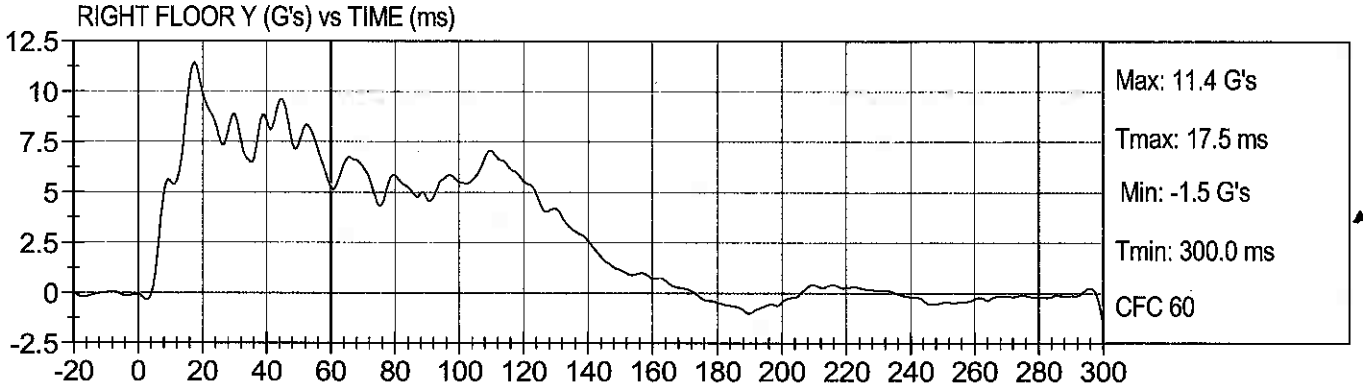


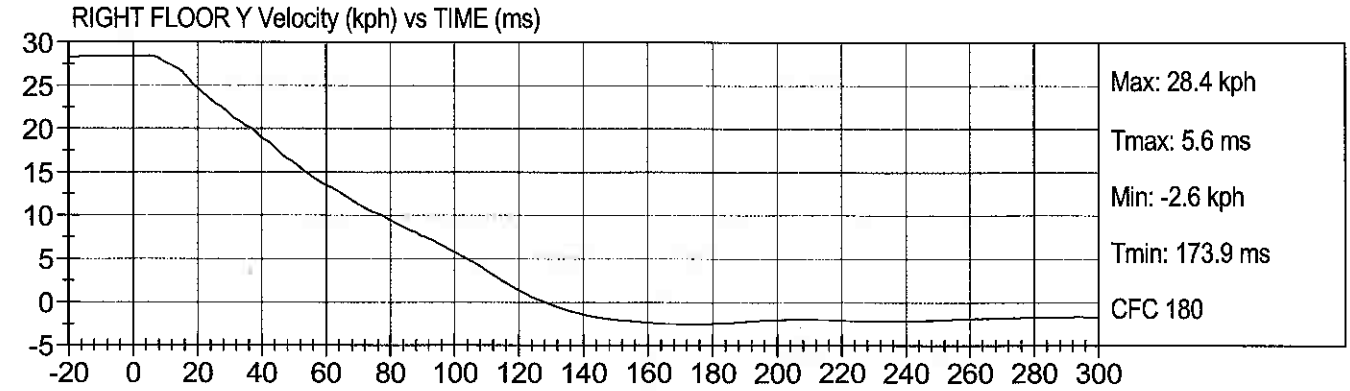
RIGID POLE SIDE IMPACT
2008 FORD FOCUS C80204

Test Date: 06/04/2008
Speed: 17.6 mph (28.3 km/h)



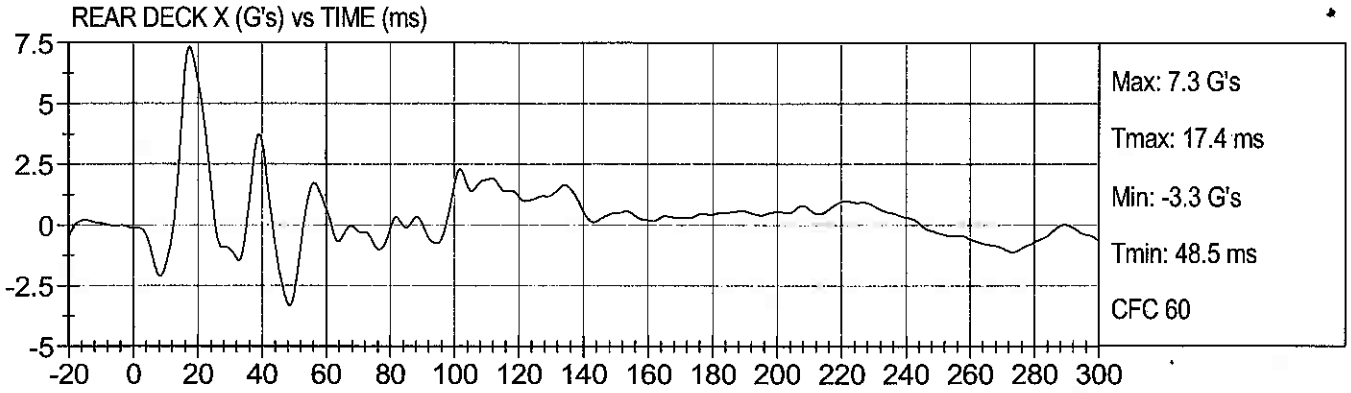


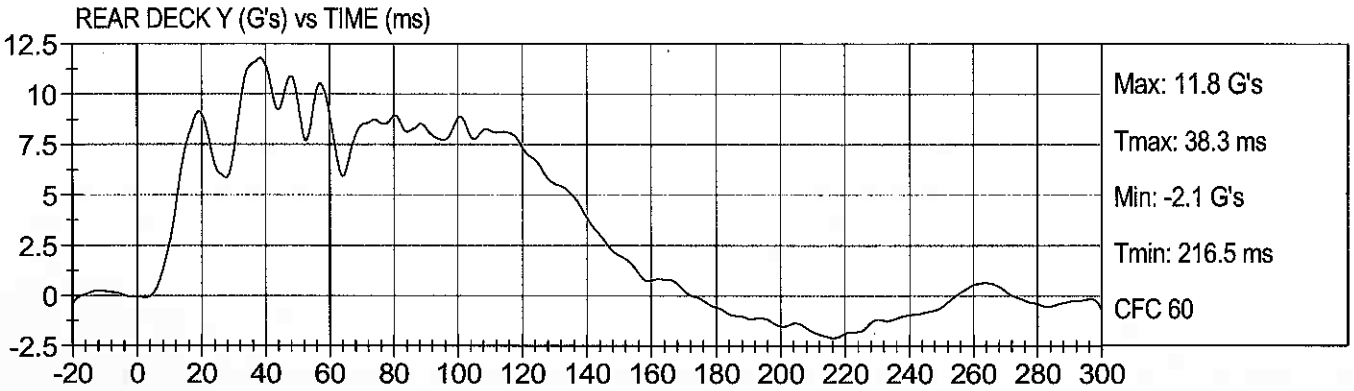


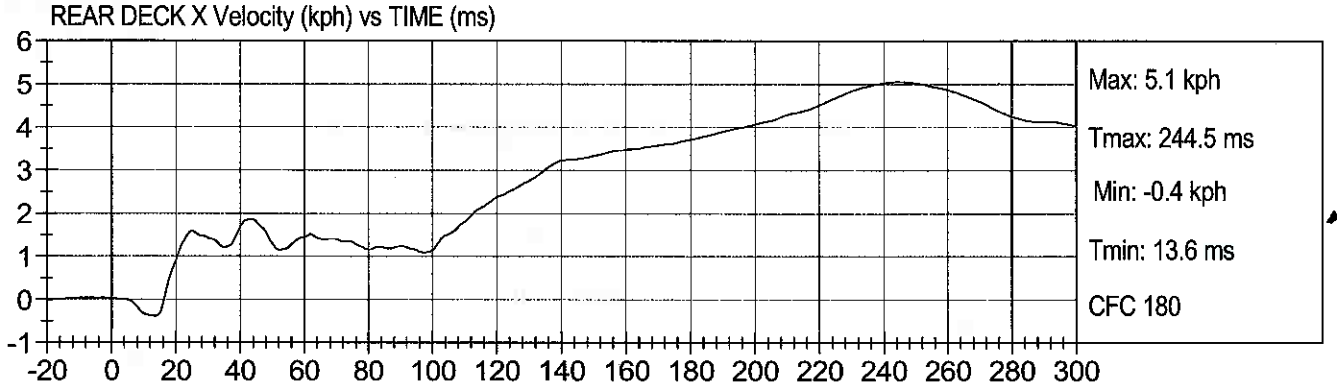


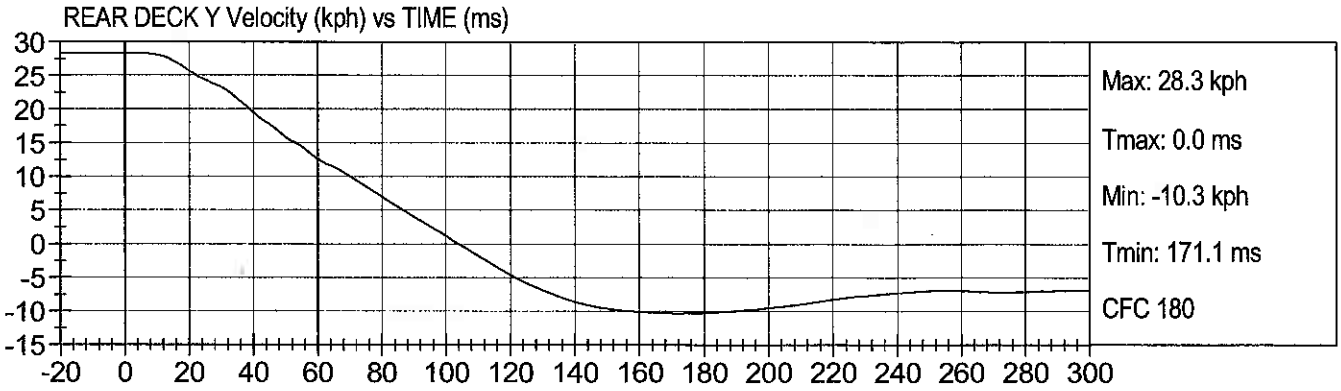
RIGID POLE SIDE IMPACT
2008 FORD FOCUS C80204

Test Date: 06/04/2008
Speed: 17.6 mph (28.3 km/h)





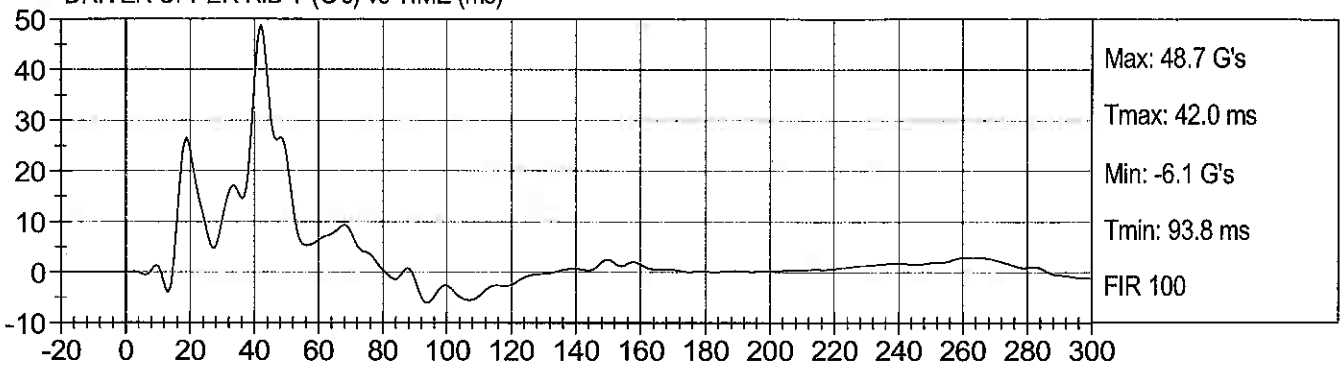




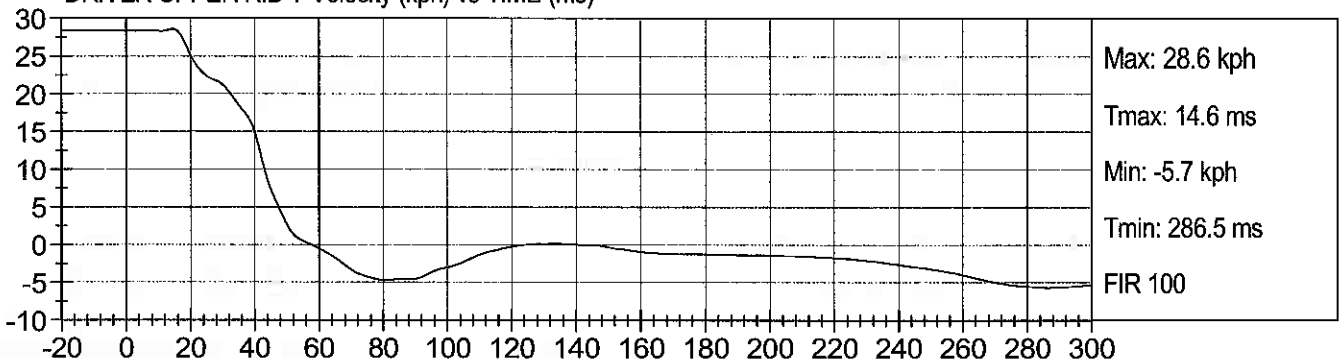
RIGID POLE SIDE IMPACT
2008 FORD FOCUS C80204

Test Date: 06/04/2008
Speed: 17.6 mph (28.3 km/h)

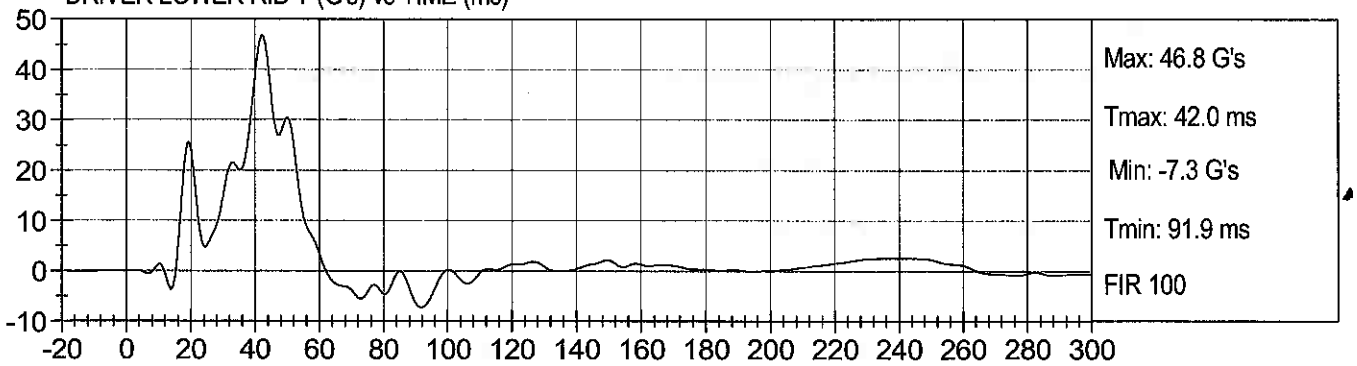
DRIVER UPPER RIB Y (G's) vs TIME (ms)



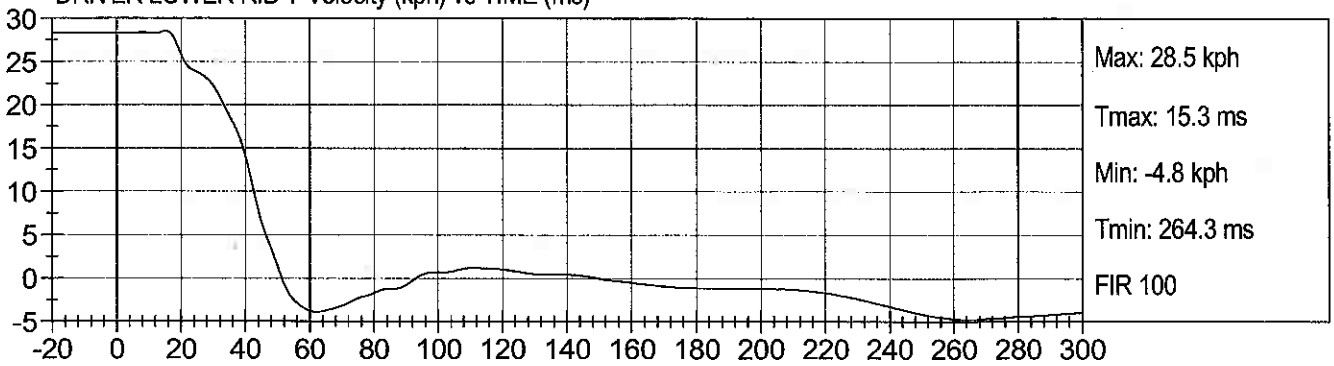
DRIVER UPPER RIB Y Velocity (kph) vs TIME (ms)



DRIVER LOWER RIB Y (G's) vs TIME (ms)



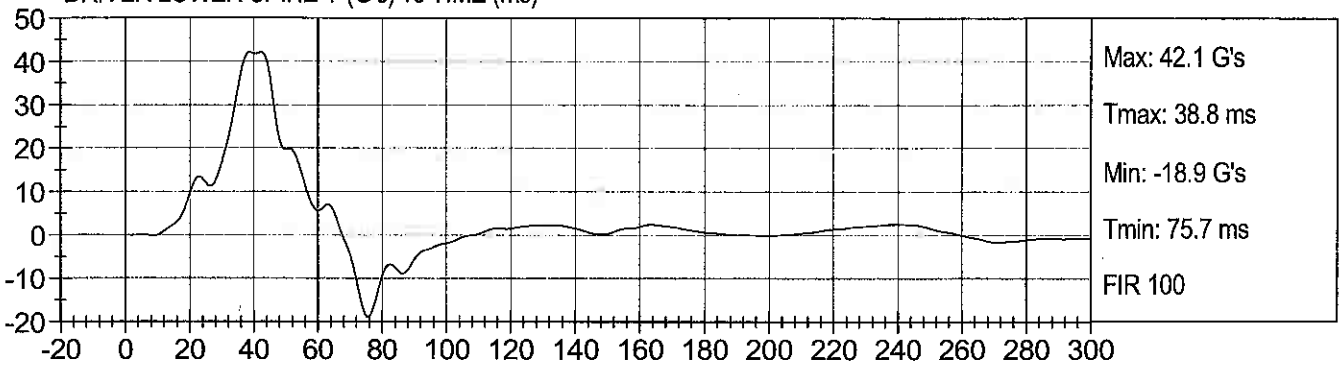
DRIVER LOWER RIB Y Velocity (kph) vs TIME (ms)



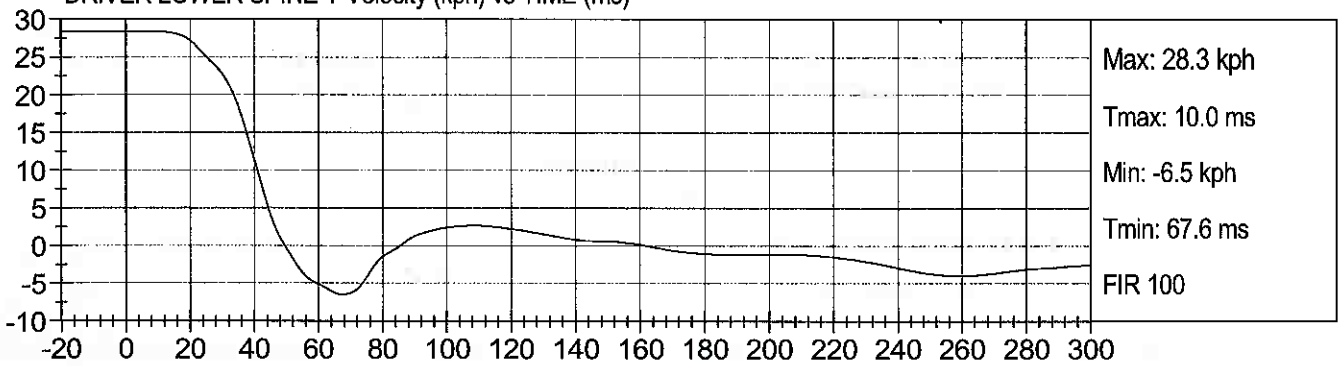
RIGID POLE SIDE IMPACT
2008 FORD FOCUS C80204

Test Date: 06/04/2008
Speed: 17.6 mph (28.3 km/h)

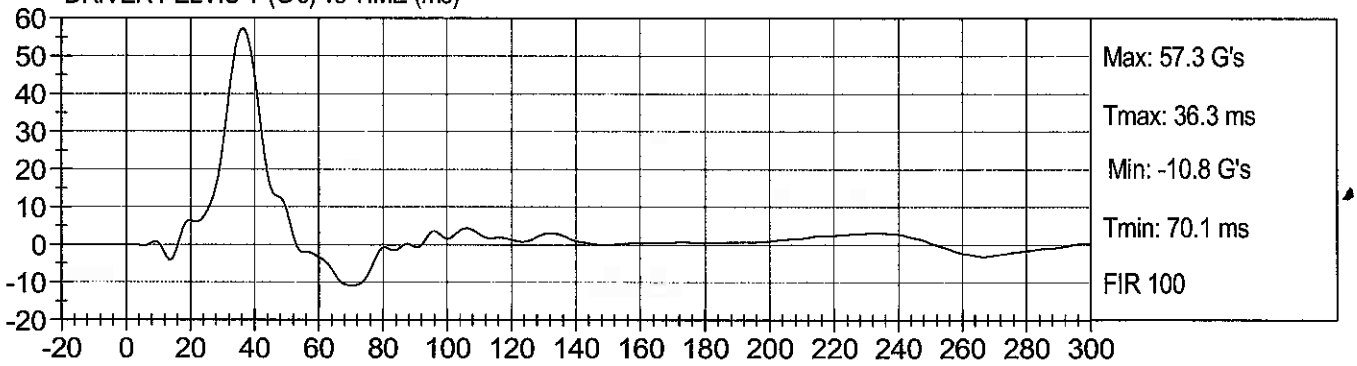
DRIVER LOWER SPINE Y (G's) vs TIME (ms)



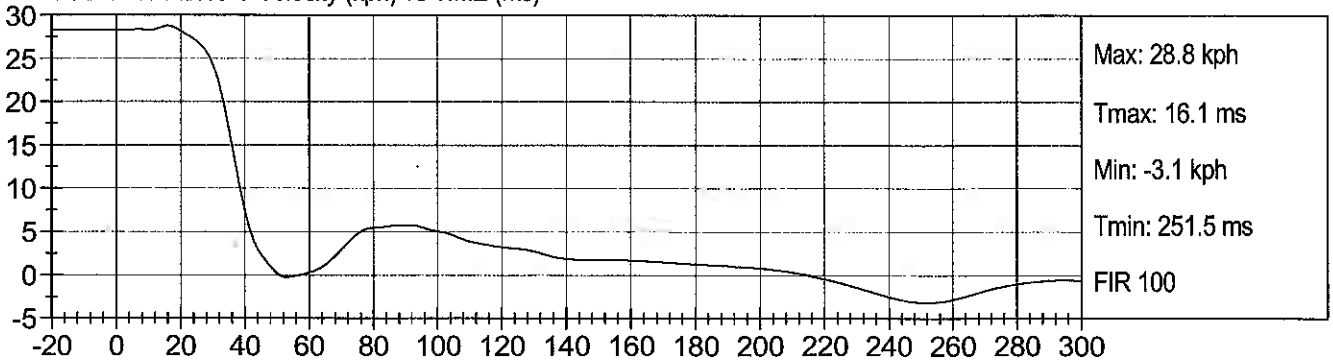
DRIVER LOWER SPINE Y Velocity (kph) vs TIME (ms)



DRIVER PELVIS Y (G's) vs TIME (ms)



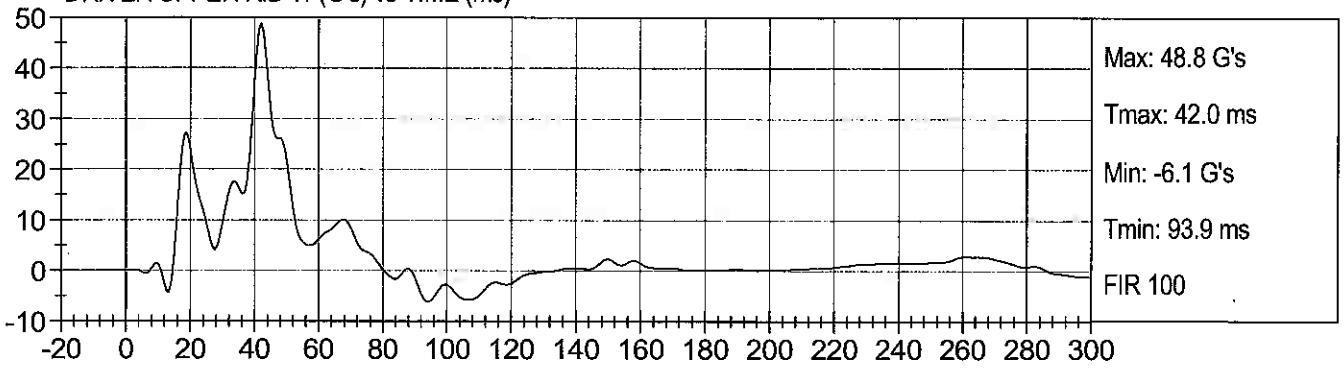
DRIVER PELVIS Y Velocity (kph) vs TIME (ms)



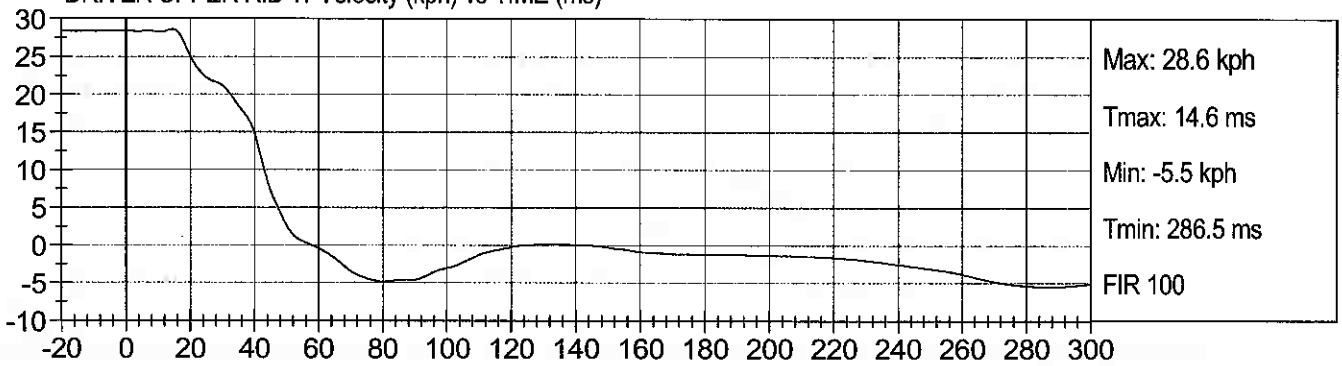
RIGID POLE SIDE IMPACT
2008 FORD FOCUS C80204

Test Date: 06/04/2008
Speed: 17.6 mph (28.3 km/h)

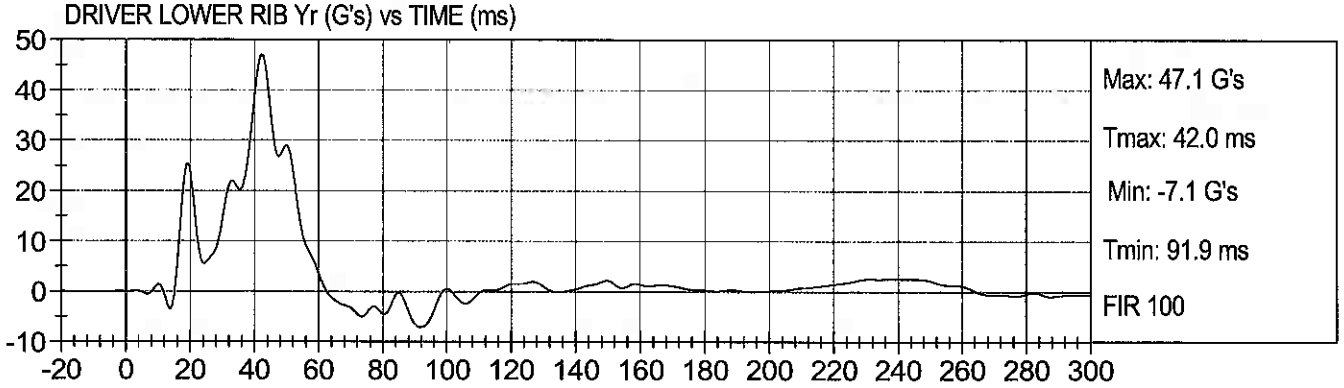
DRIVER UPPER RIB Yr (G's) vs TIME (ms)



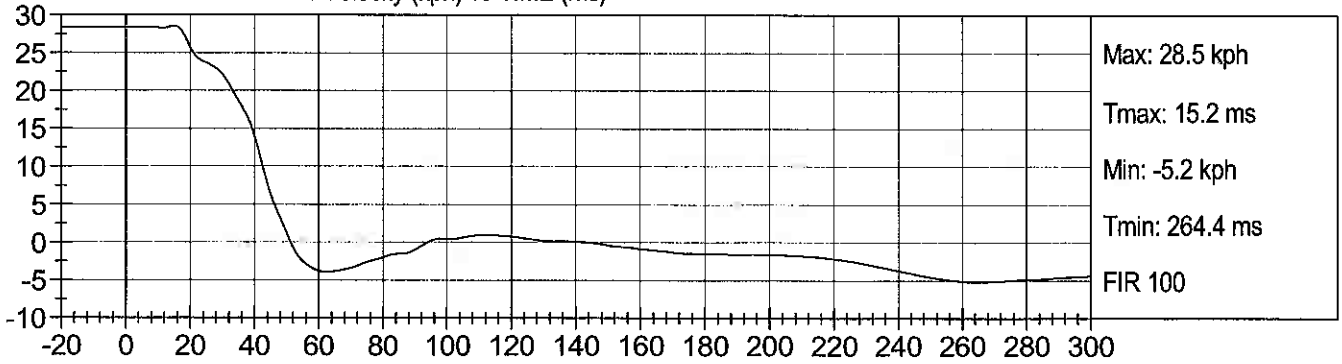
DRIVER UPPER RIB Yr Velocity (kph) vs TIME (ms)



DRIVER LOWER RIB Yr (G's) vs TIME (ms)



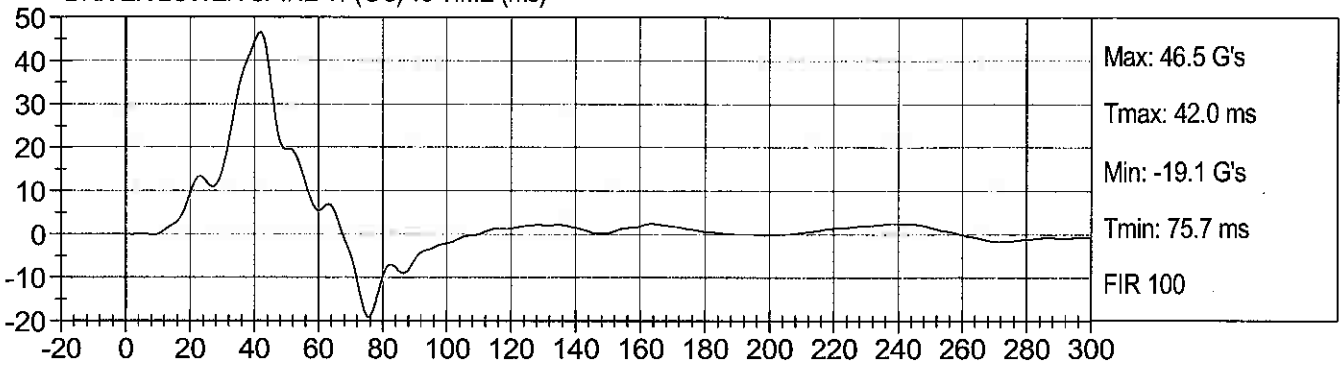
DRIVER LOWER RIB Yr Velocity (kph) vs TIME (ms)



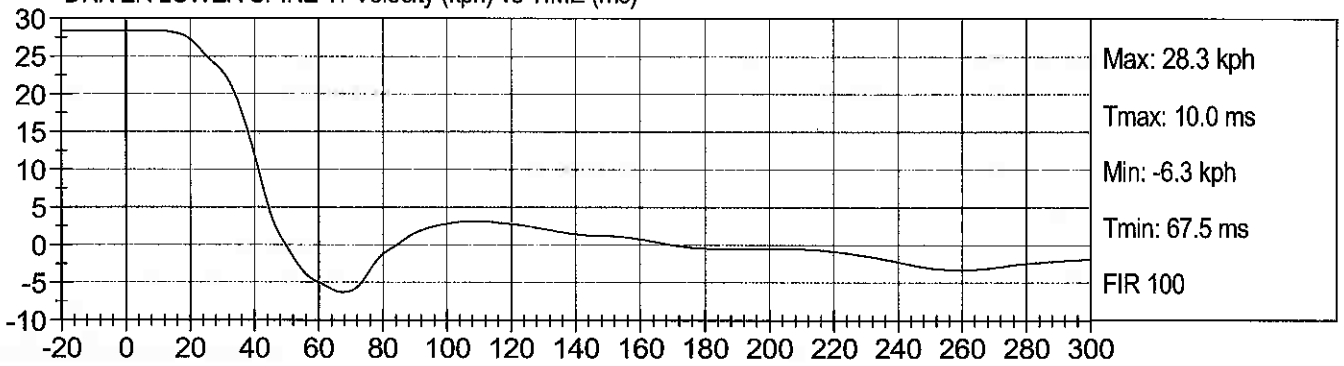
RIGID POLE SIDE IMPACT
2008 FORD FOCUS C80204

Test Date: 06/04/2008
Speed: 17.6 mph (28.3 km/h)

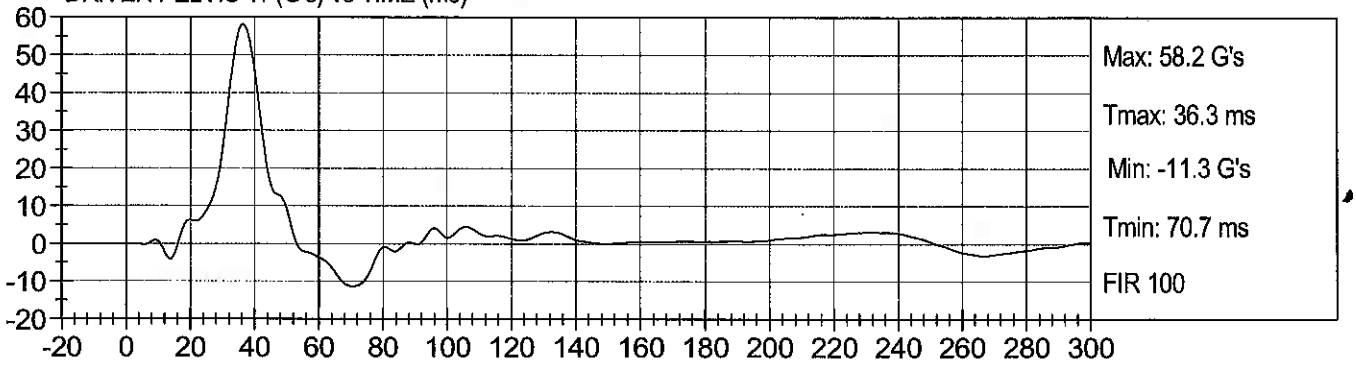
DRIVER LOWER SPINE Yr (G's) vs TIME (ms)



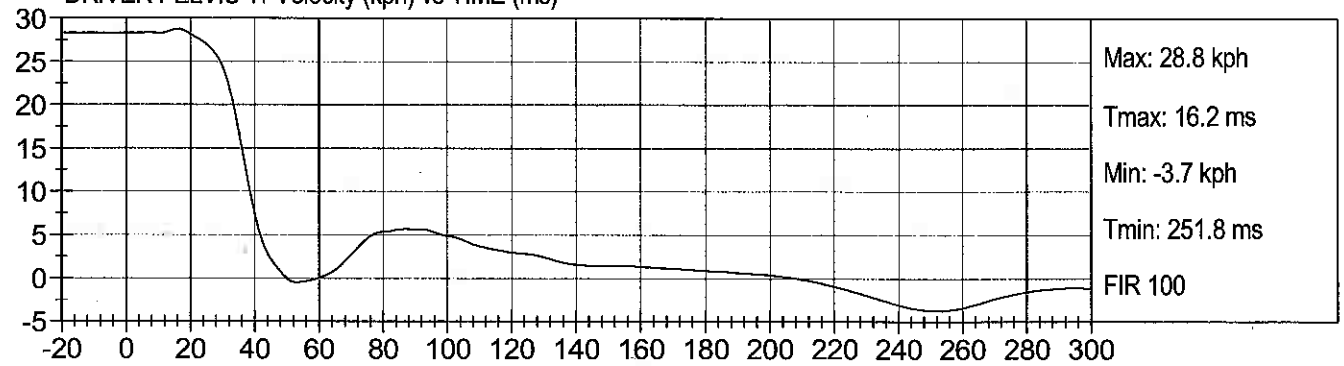
DRIVER LOWER SPINE Yr Velocity (kph) vs TIME (ms)



DRIVER PELVIS Yr (G's) vs TIME (ms)



DRIVER PELVIS Yr Velocity (kph) vs TIME (ms)

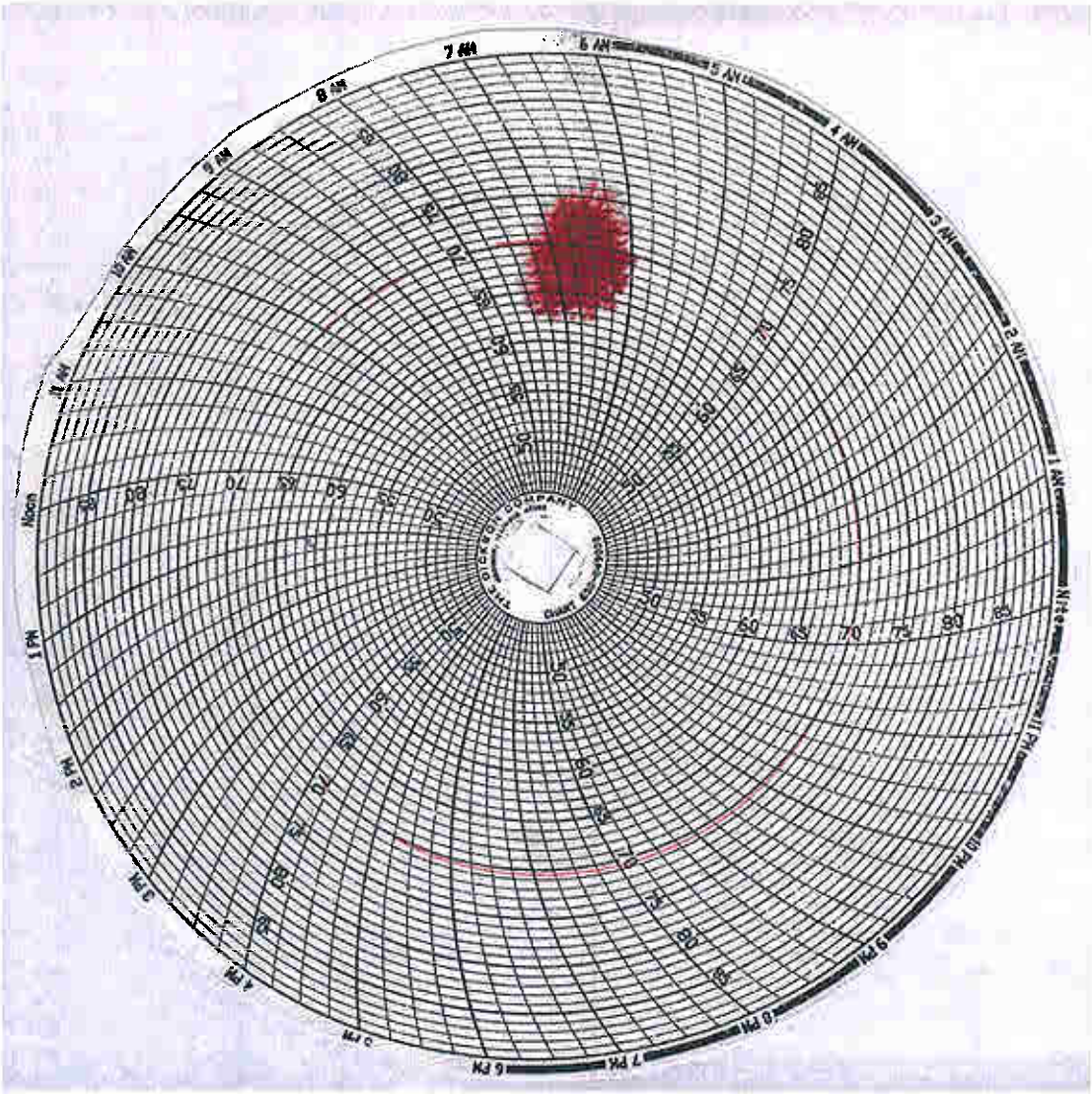


APPENDIX C

SID/HIII CONFIGURATION AND PERFORMANCE VERIFICATION DATA

Vehicle and Dummy Temperature

Test Vehicle:	2008 Ford Focus 4-Door	NHTSA No.	C80204
Test Program:	FMVSS 201P	Test Date:	June 4, 2008



SID/HIII Calibration Data Sheet

Side Impact Dummy

Head Drop Calibration (Lateral)

ATD Serial No: 037 **Test I.D:** D08AH1

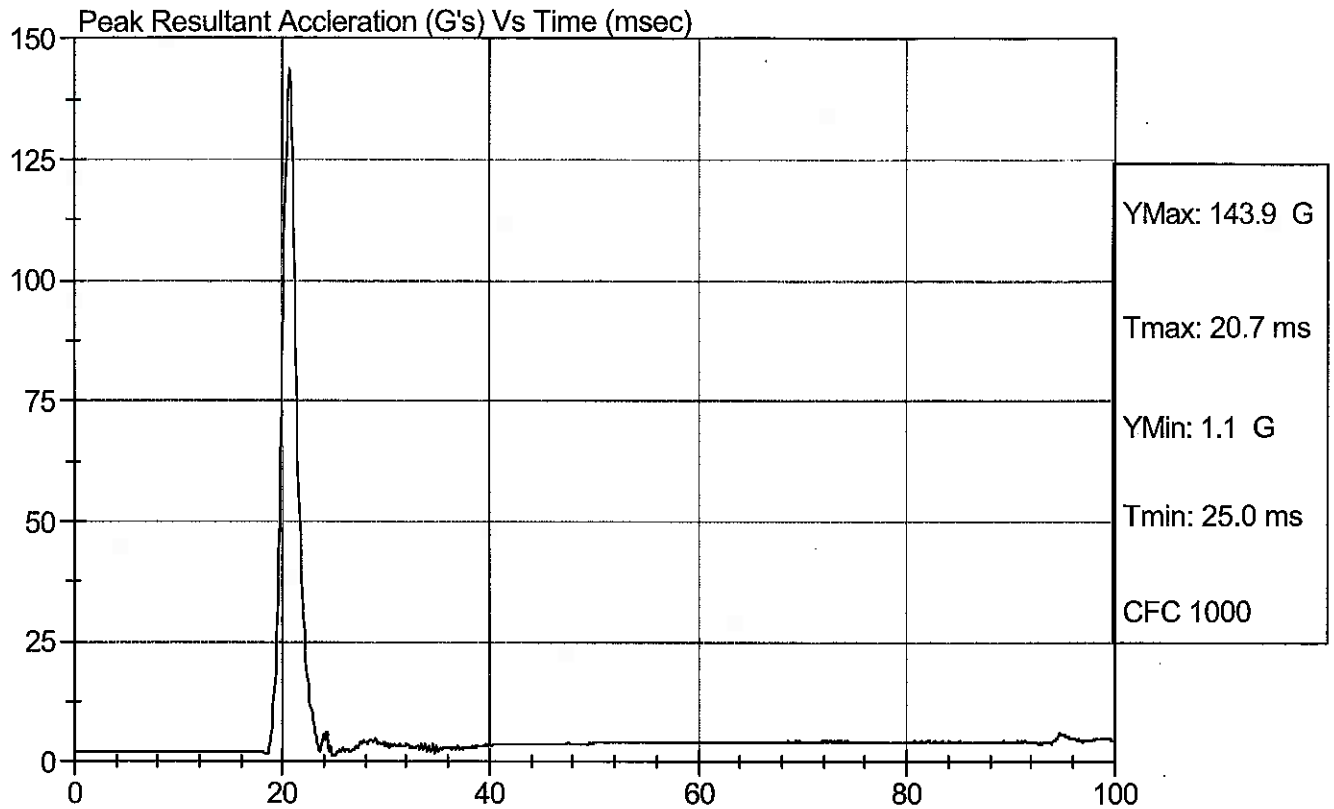
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.5	21.5	Pass
Laboratory Relative Humidity	%	10 to 70	26	Pass
Peak Resultant Acceleration	G's	120 to 150	144	Pass
Is Resultant Curve Unimodal?	N/A	15% of peak	Yes	Pass
Peak Longitudnal Acceleration	G's	+/- 15	-9.5	Pass
		Overall Test Results		Pass

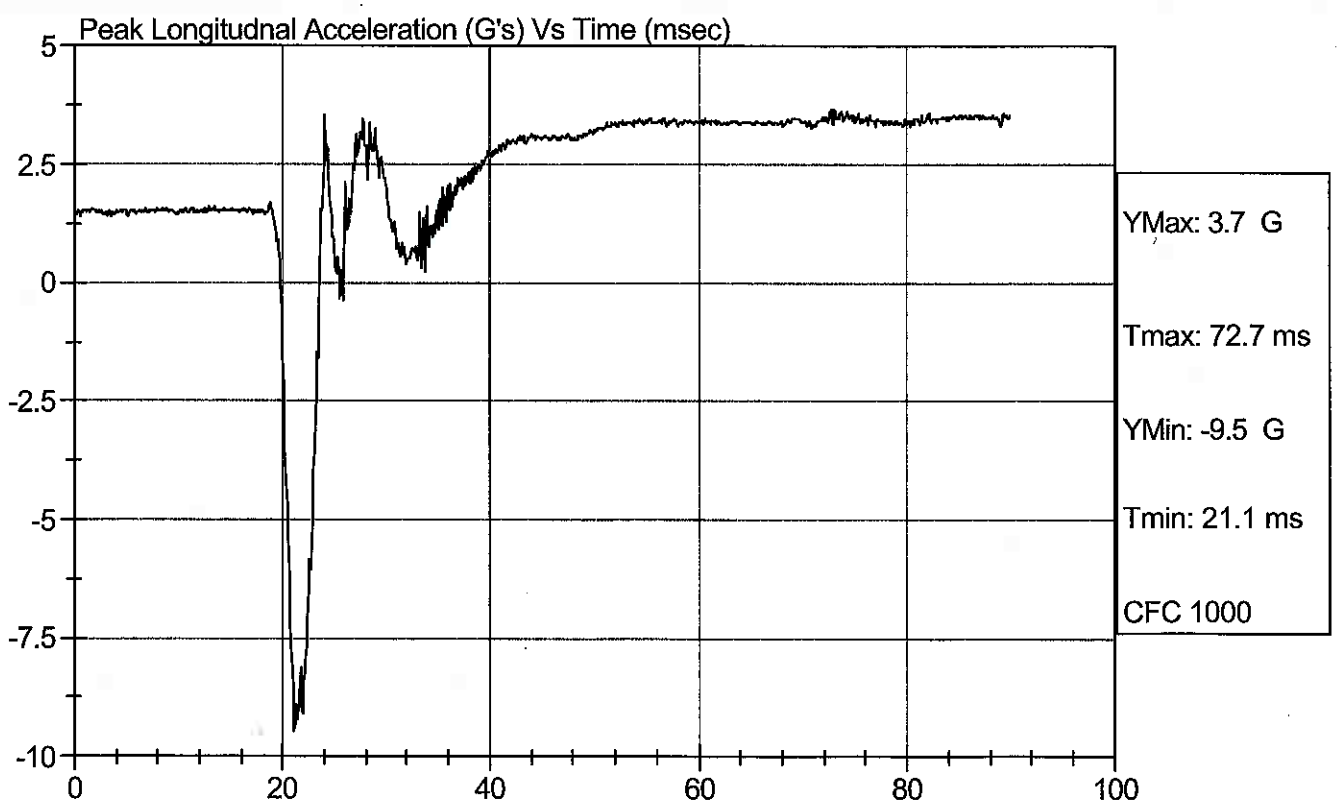
Laboratory Technician

5/29/08
Test Date

Approved By

	Test Description: Head Drop	Test Date: 5/29/08
	Component: D08AH1	Speed: 0 ft/s, 0 m/s





SID/HIII Calibration Data Sheet

Side Impact Dummy

Thorax Impact Test

ATD Serial No: 037 **Test I.D:** D08882

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 - 25.5	20.7	Pass
Laboratory Relative Humidity	%	10 to 70	22	Pass
Probe Velocity	m/s	4.22 - 4.31	4.27	Pass
Upper Rib	G's	37 - 46	41	Pass
Lower Rib	G's	37 - 46	40	Pass
Lower Spine	G's	15 - 22	20	Pass
		Overall Test Results		Pass

Tim Brat

Laboratory Technician

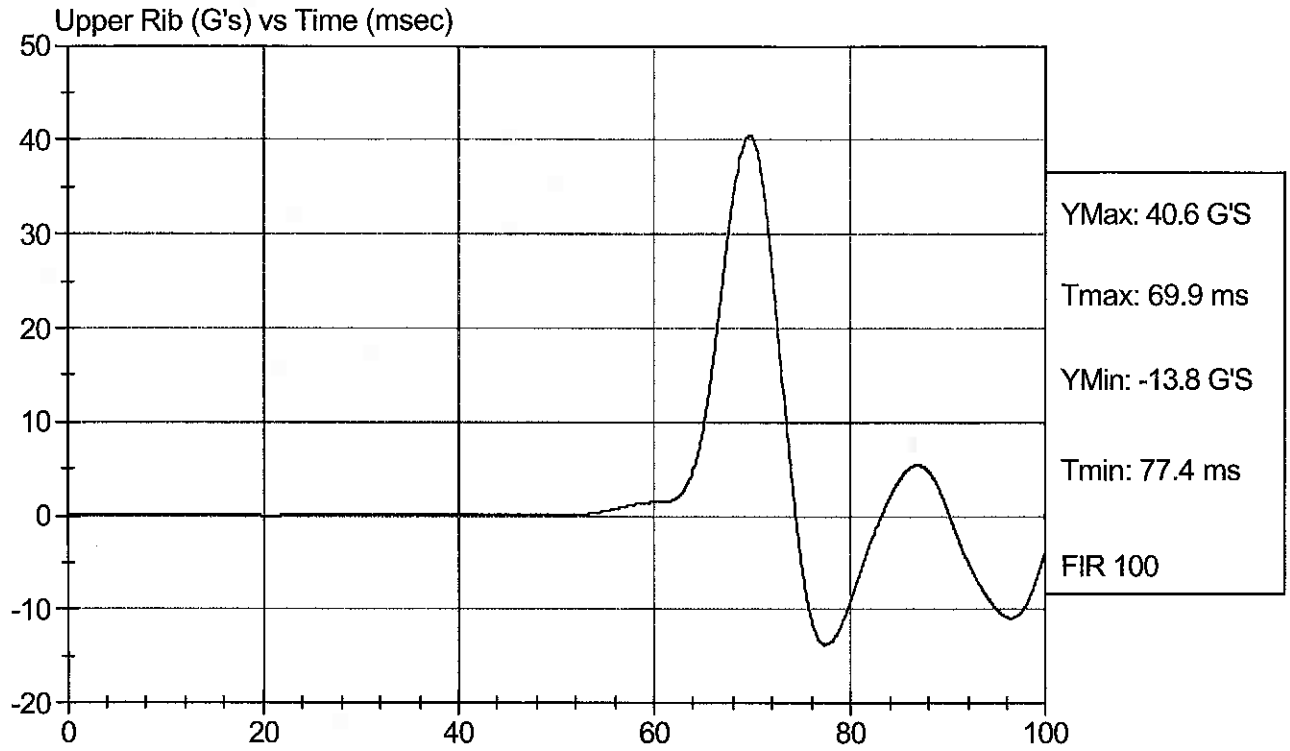
3/25/08

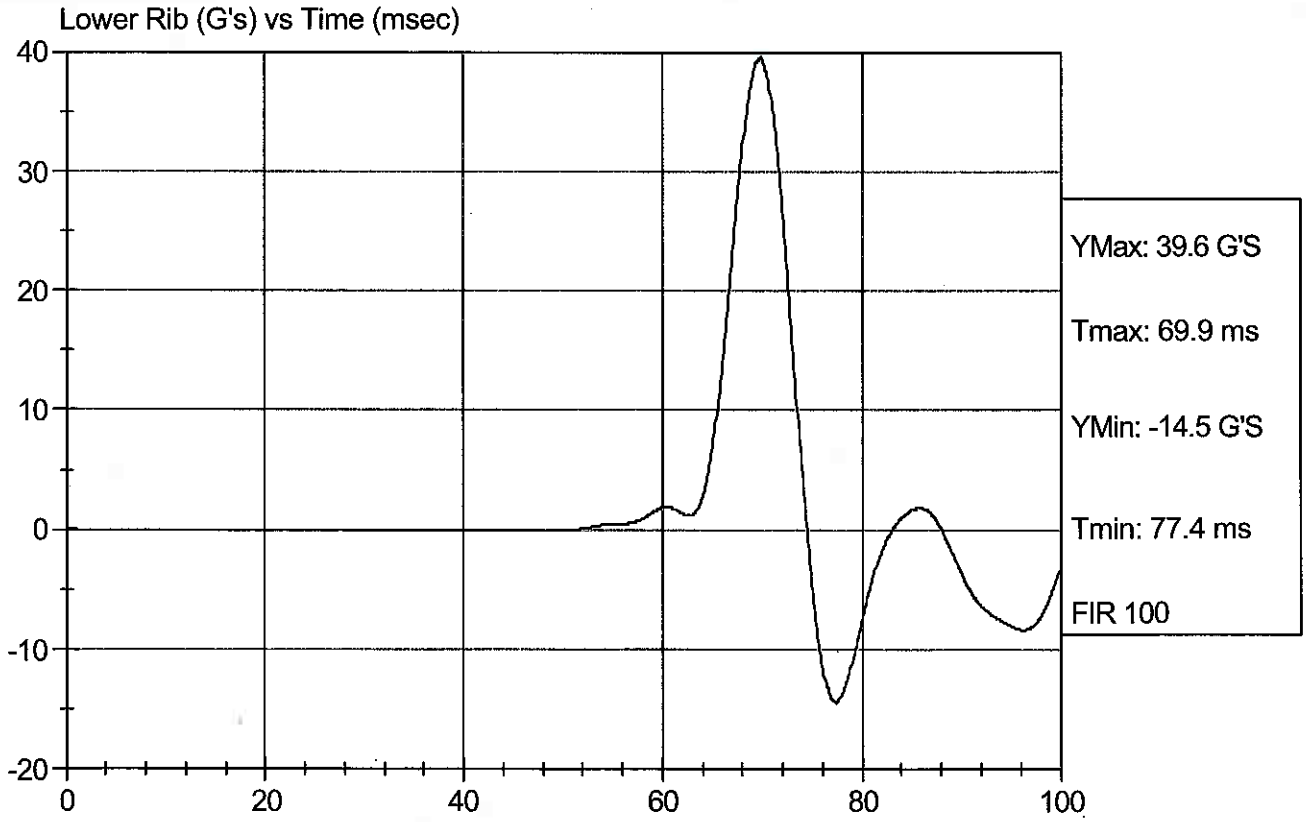
Test Date

Jessica Hall

Approved By

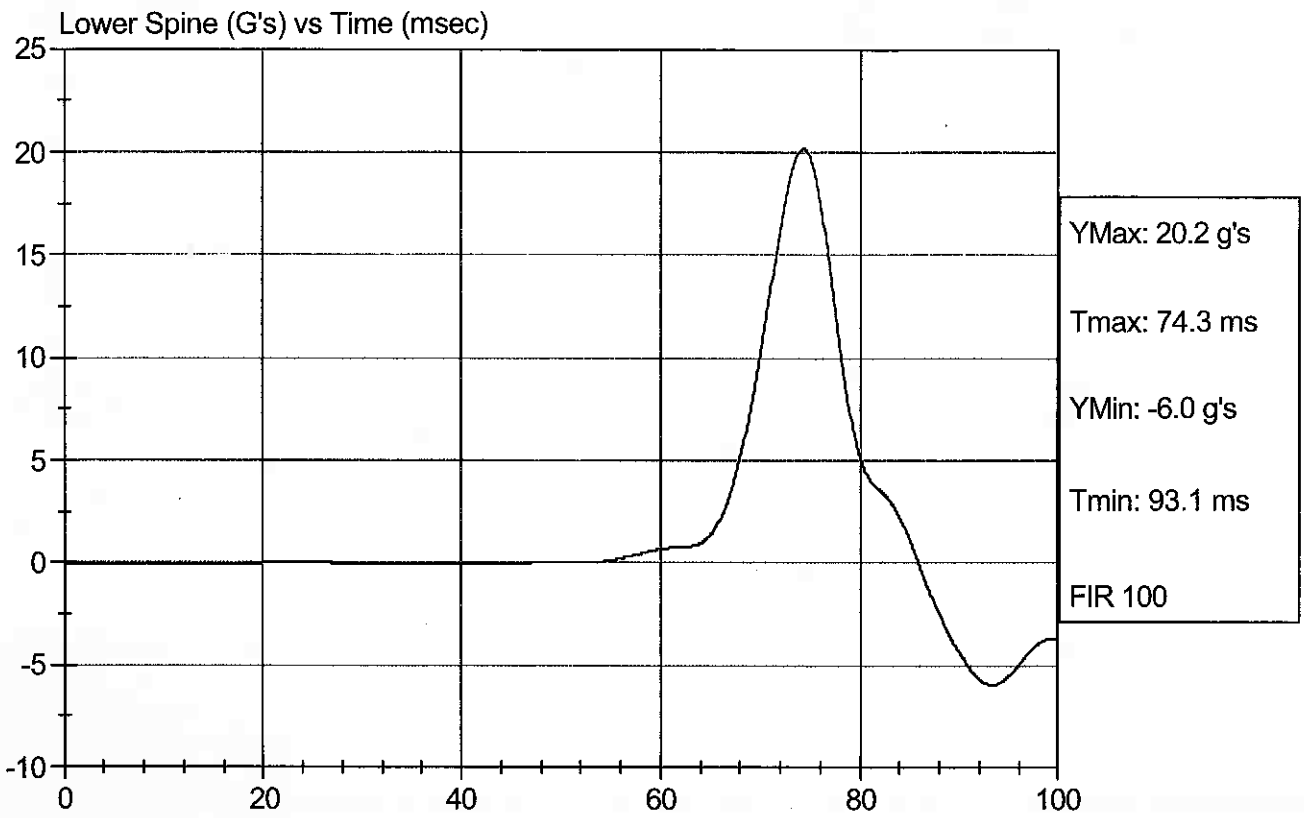
	Test Desc: Thorax Impact Component ID: D08882	Test Date: 3/25/08 Speed: 14.00 ft/sec, 4.27 m/sec





Test Desc: Thorax Impact
Component ID: D08882

Test Date: 3/25/08
Speed: 14.00 ft/sec, 4.27 m/sec



SID/HIII Calibration Data Sheet

Side Impact Dummy

Pelvis Impact Test

ATD Serial No: 037 **Test I.D:** D08883

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.5	20.7	Pass
Laboratory Relative Humidity	%	10 to 70	22	Pass
Probe Velocity	m/s	4.27 - 4.33	4.30	Pass
Pelvis Acceleration	G's	40 - 60	43	Pass
		Overall Test Results		Pass

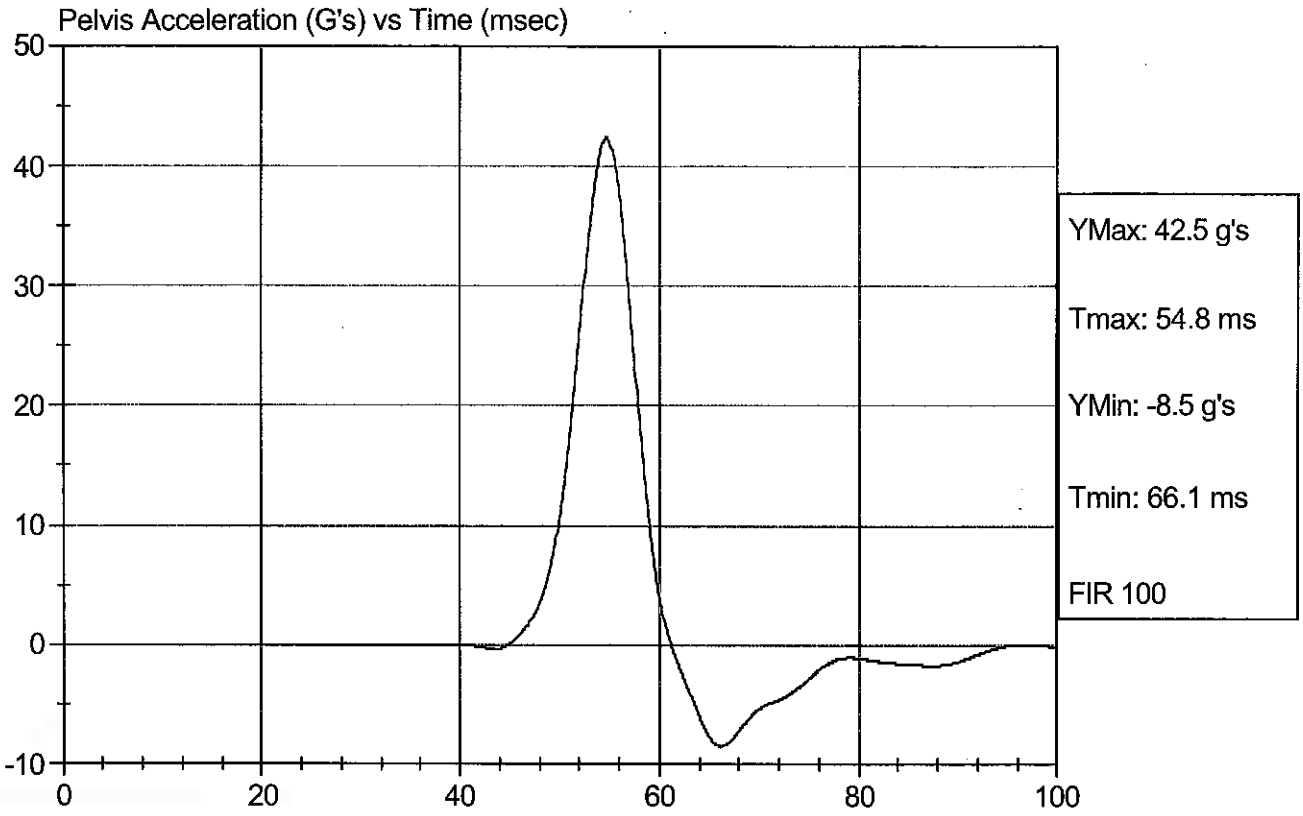
Laboratory Technician

3/25/08
Test Date

Approved By

Test Desc: Pelvis Impact
Component ID: D08883

Test Date: 3/25/08
Speed: 14.124 ft/sec, 4.30 m/sec



SID/HIII Calibration Data Sheet

Side Impact Dummy

Abdominal Compression Calibration (Pre-Load = 10 lbs)

ATD Serial No: 037 **Test I.D:** D08884

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 - 25.5	20.7	Pass
Laboratory Relative Humidity	%	10 to 70	22	Pass
Force At 12.7 mm	N	104 -162	132	Pass
Force At 19 mm	N	163 - 222	186	Pass
Force At 25.4 mm	N	222 - 280	257	Pass
Force At 33 mm	N	325 - 391	356	Pass
		Overall Test Results		Pass

Tim Brady

Laboratory Technician

3/25/08

Test Date

Jessica Hall

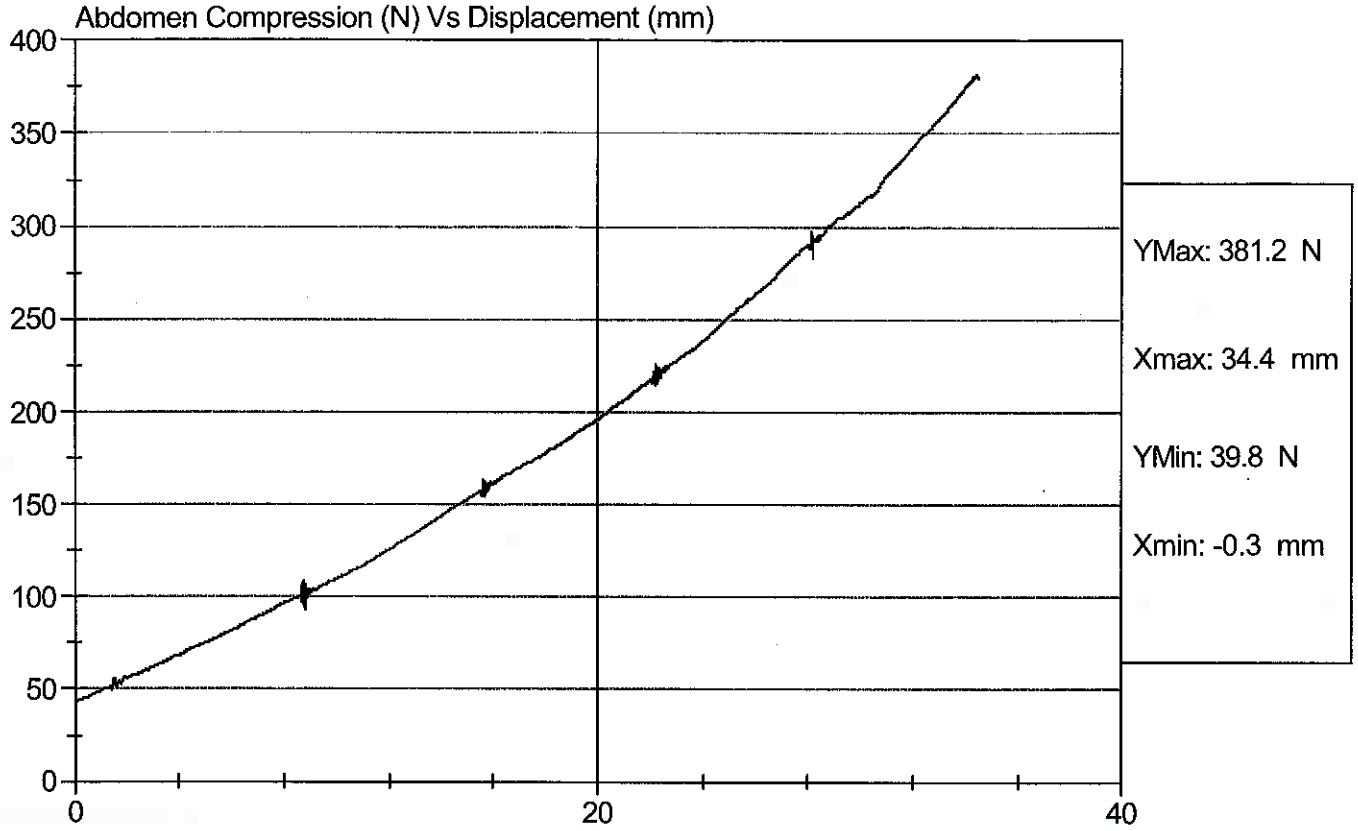
Approved By

Test Description: Abdomen Compression

Test Date: 3/25/08

Component: D08884

Speed: 0 ft/sec, 0 m/sec



SID/HIII Calibration Data Sheet

Side Impact Dummy

Lumbar Flexion Calibration

ATD Serial No: 037 **Test I.D:** D08885

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 - 25.5	20.7	Pass
Laboratory Relative Humidity	%	10 to 70	22	Pass
Force At 0 deg	N	0 - 26.7	0	Pass
Force At 20 deg	N	97.9 - 151.2	114.9	Pass
Force At 30 deg	N	151.2 - 204.6	153.5	Pass
Force At 40 deg	N	204.6 - 258.0	209.2	Pass
Return Angle	Deg	12 Maximum	4	Pass
		Overall Test Results		Pass

Tim Brady

Laboratory Technician

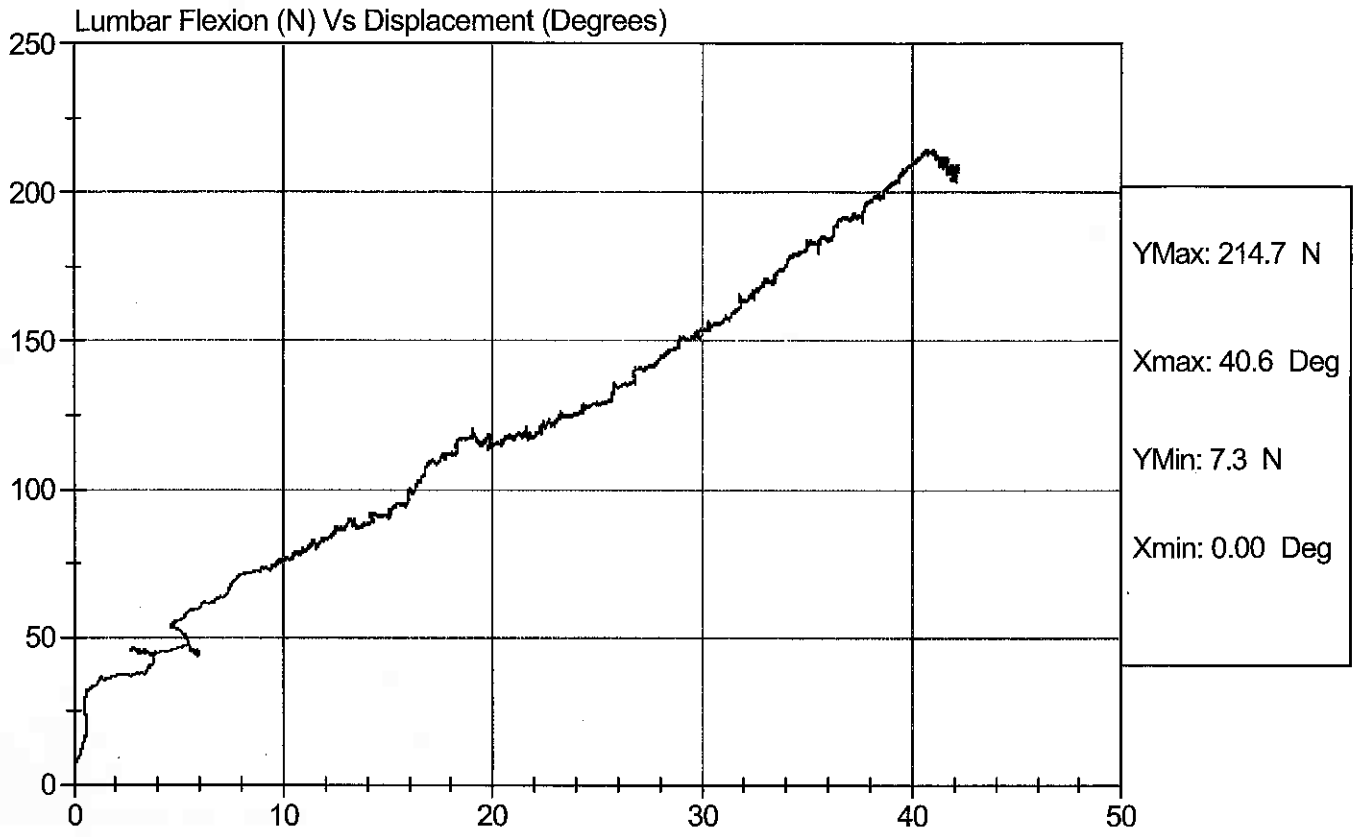
3/25/08

Test Date

Jessica Hall

Approved By

Test Description: Lumbar Flexion	Test Date: 3/25/08
Component: D08885	Speed: 0 ft/sec, 0 m/sec



SID/HIII Calibration Data Sheet
Side Impact Dummy
Neck Pendulum Test

ATD Serial No: 037 **Test I.D:** D08AH9

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.2	Pass
Laboratory Relative Humidity		%	10 to 70	41	Pass
Impact Velocity		m/s	6.89 to 7.13	7.06	Pass
Pendulum Deceleration	10 msec	m/s	1.96 to 2.55	2.20	Pass
	20 msec	m/s	4.12 to 5.10	4.54	Pass
	30 msec	m/s	5.73 to 7.01	6.27	Pass
	40 to 70 msec	m/s	6.27 to 7.64	6.64	Pass
Midsaggital Plane Max Rotation		deg	66 to 82	70	Pass
Head Rotation Peak to Zero - Decay Time		msec	58 to 67	59	Pass
Max. Mx at Occipital Condyles		Nm	73 to 88	75	Pass
Mx Peak To Zero - Decay Time		msec	49 to 64	57	Pass
Mx Peak to Max. Head Rotation		msec	2 to 16	13	Pass

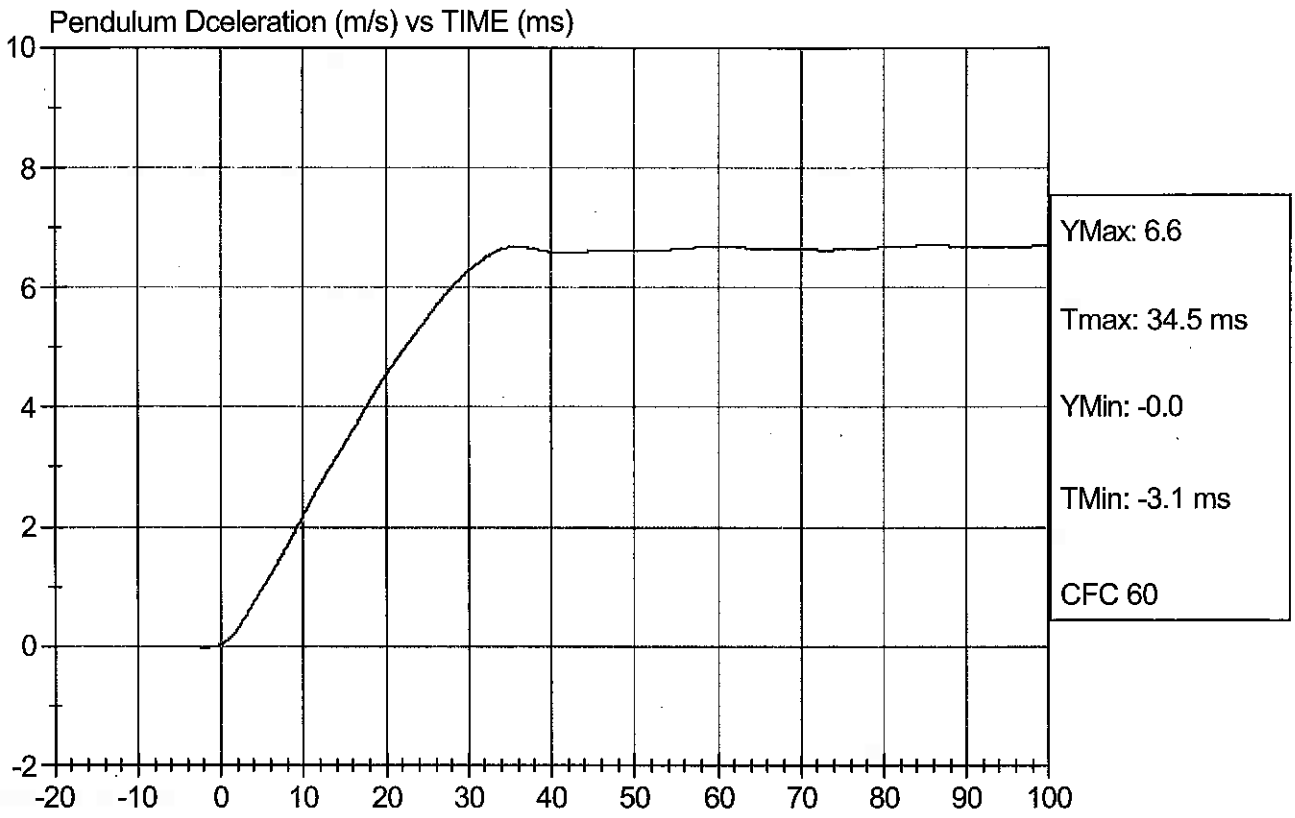
Laboratory Technician

5/30/08
Test Date

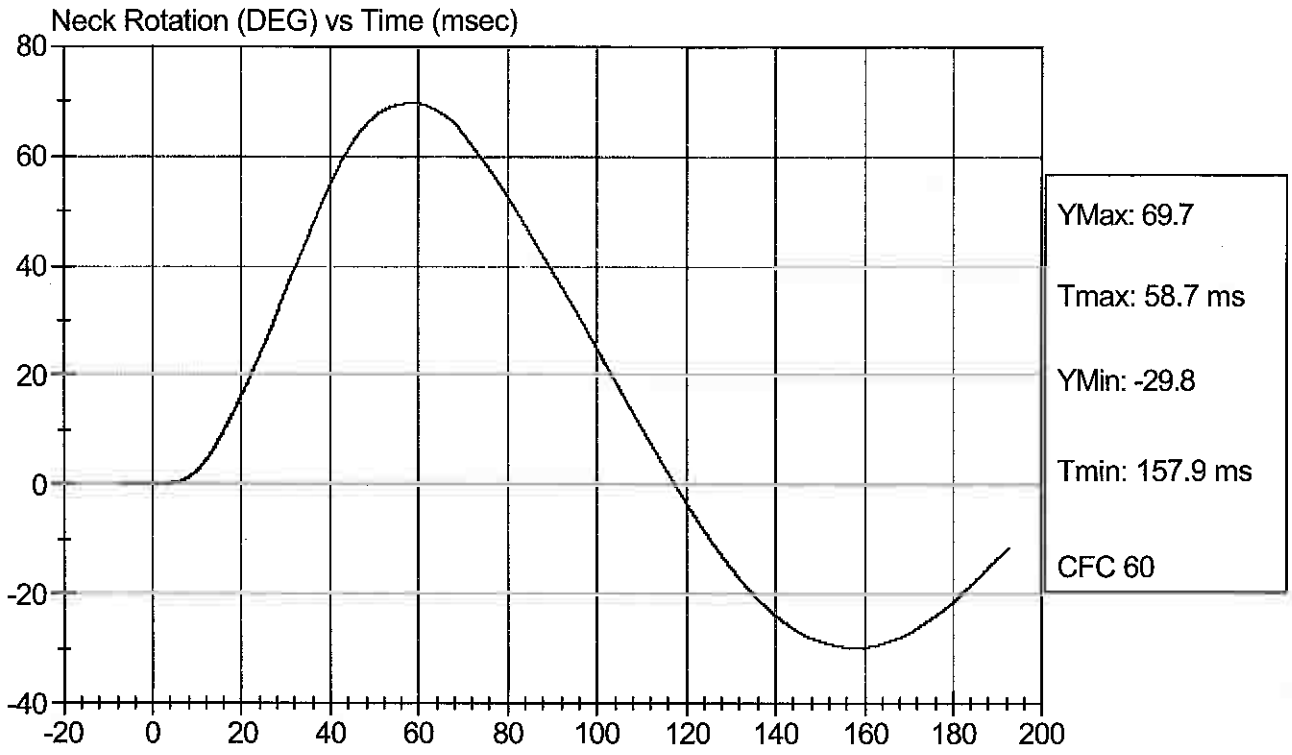
Approved By

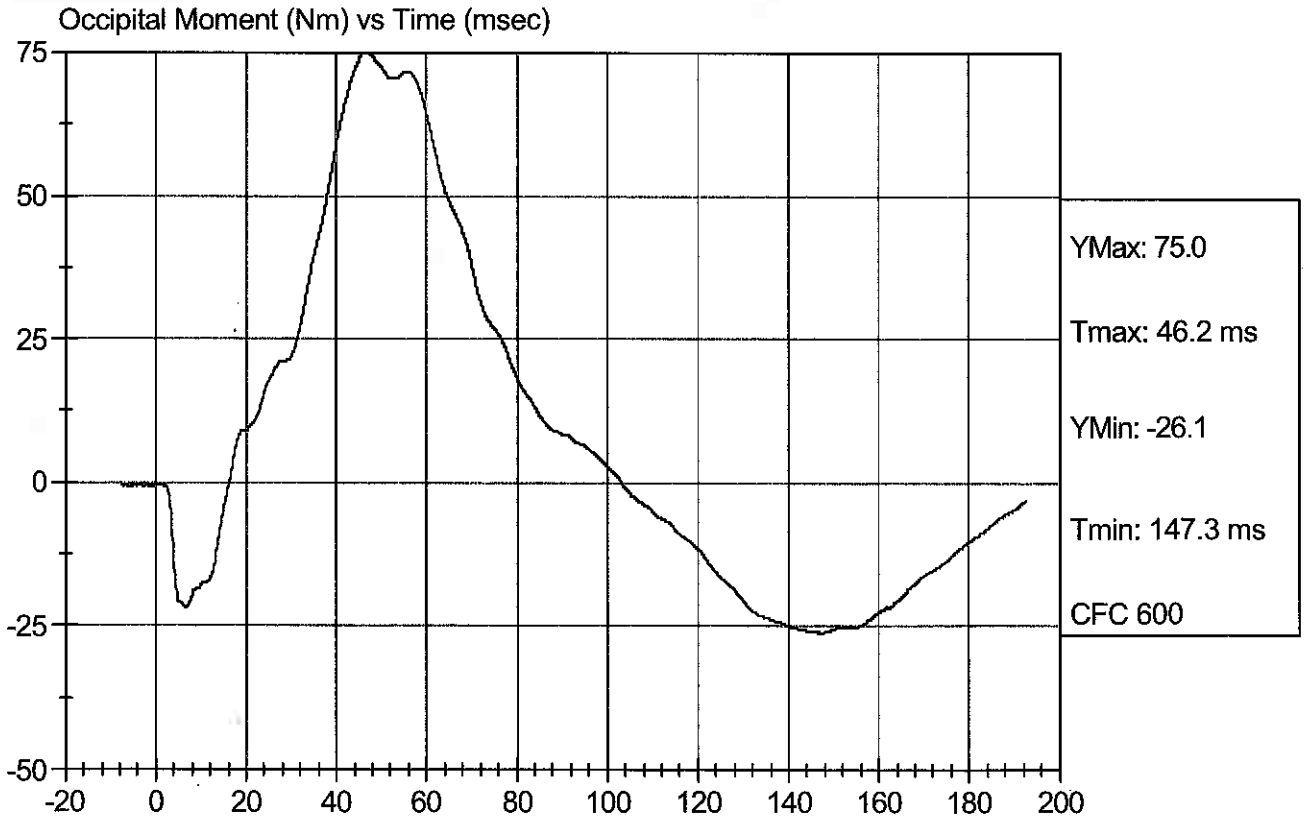
Test Desc: Neck Bending
Component ID: D08AH9

Test Date: 5/30/08
Speed: 23.148 ft/sec, 7.06 m/sec



mga	Test Desc: Neck Bending Component ID: D08AH9	Test Date: 5/30/08 Speed: 23.148 ft/sec, 7.06 m/sec





SID/HIII Calibration Data Sheet

Side Impact Dummy

Head Drop Calibration (Lateral)

ATD Serial No: 037 **Test I.D:** D081551

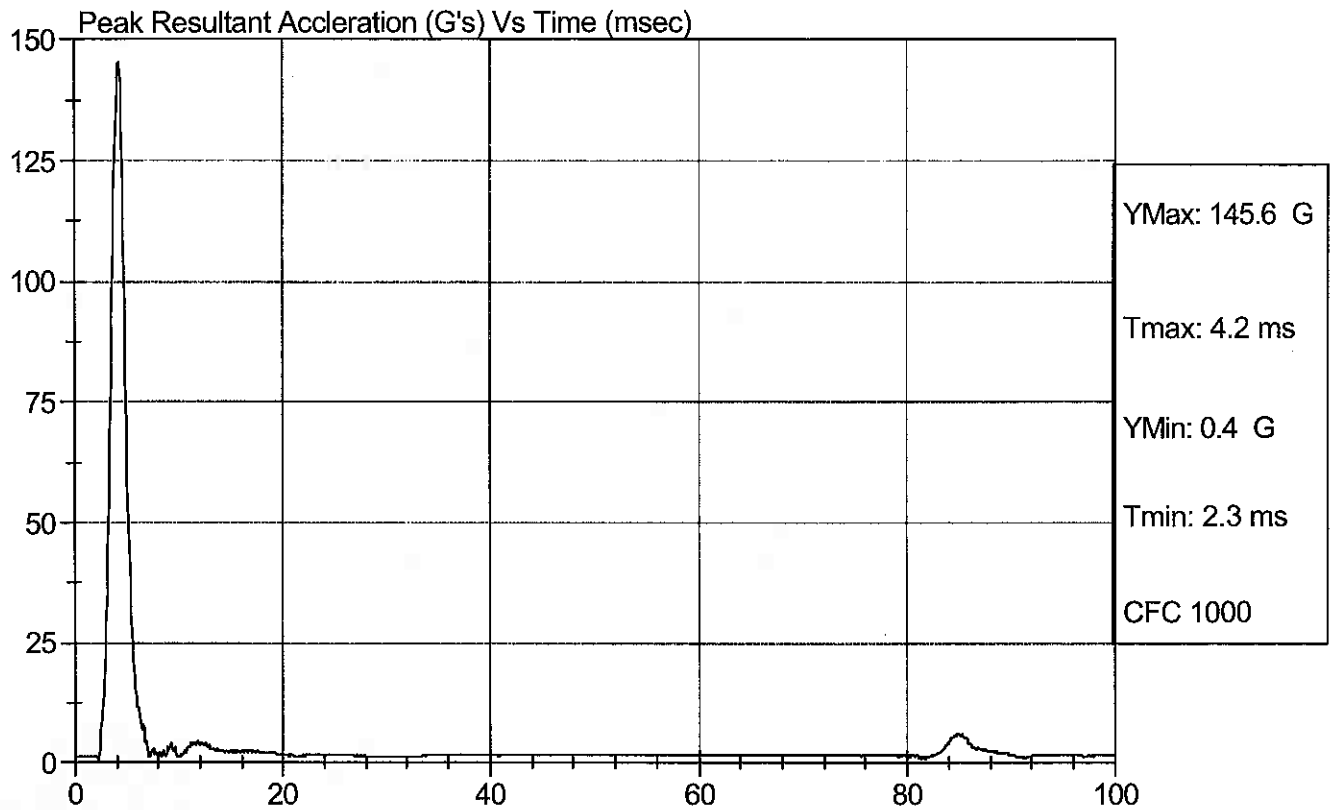
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.5	21.0	Pass
Laboratory Relative Humidity	%	10 to 70	40	Pass
Peak Resultant Acceleration	G's	120 to 150	146	Pass
Is Resultant Curve Unimodal?	N/A	15% of peak	Yes	Pass
Peak Longitudnal Acceleration	G's	+/- 15	-7.9	Pass
		Overall Test Results		Pass

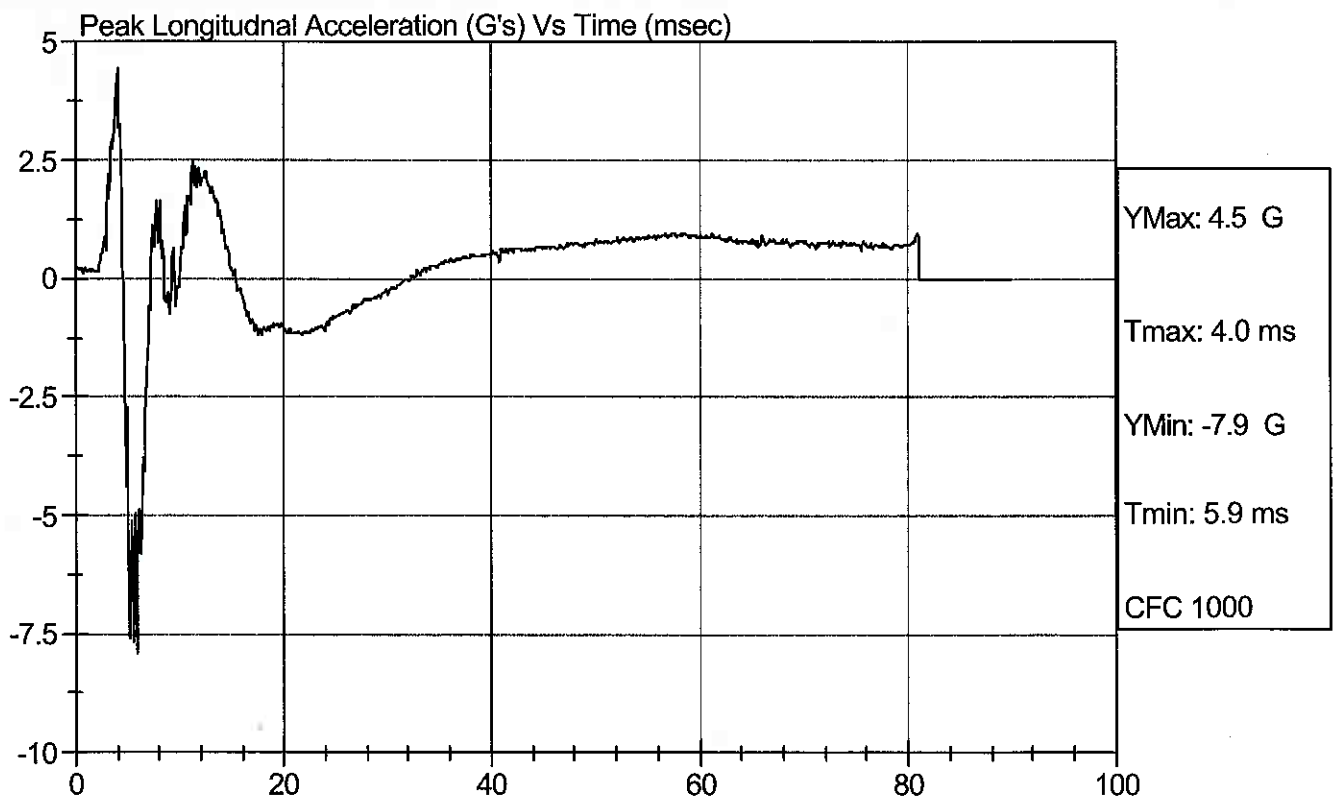
Laboratory Technician

6/4/08
Test Date

Approved By

mga	Test Description: Head Drop	Test Date: 6/4/08
	Component: D081551	Speed: 0 ft/s, 0 m/s





SID/HIII Calibration Data Sheet

Side Impact Dummy

Thorax Impact Test

ATD Serial No: 037 **Test I.D:** D081552

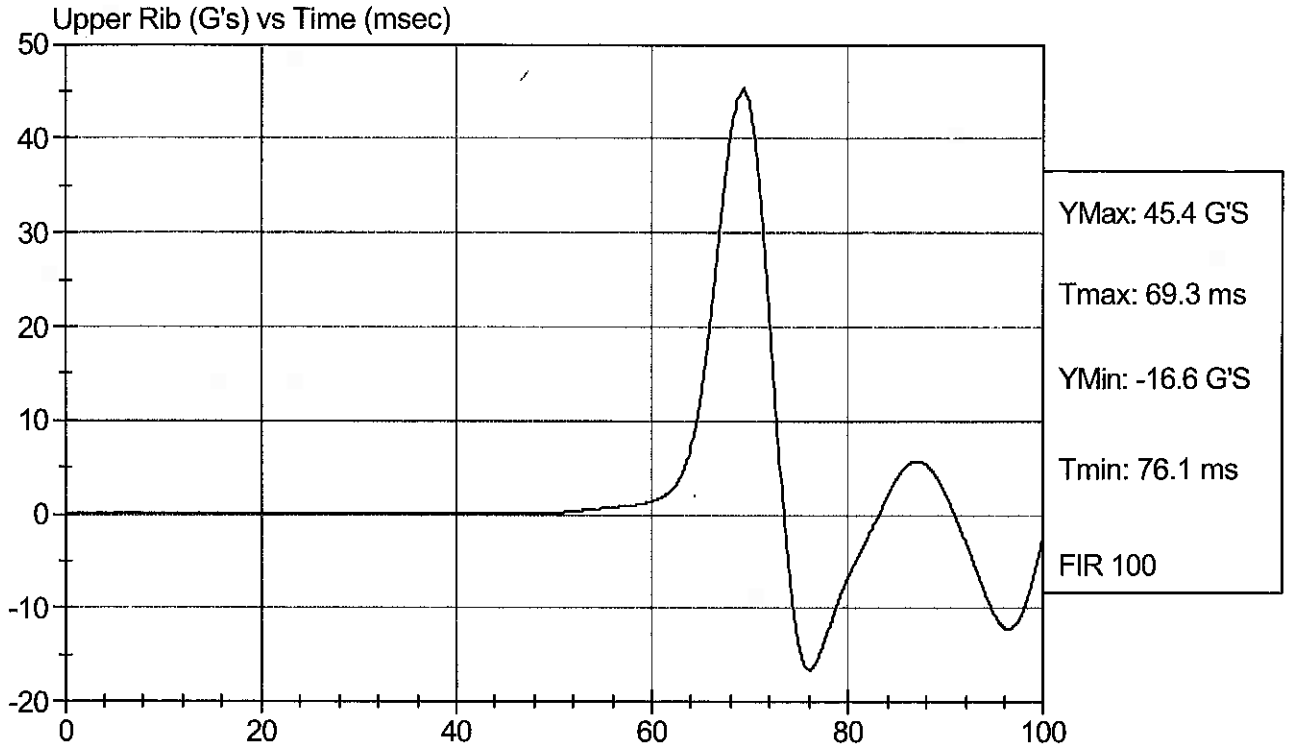
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 - 25.5	21.5	Pass
Laboratory Relative Humidity	%	10 to 70	44	Pass
Probe Velocity	m/s	4.22 - 4.31	4.27	Pass
Upper Rib	G's	37 - 46	45	Pass
Lower Rib	G's	37 - 46	41	Pass
Lower Spine	G's	15 - 22	21	Pass
		Overall Test Results		Pass

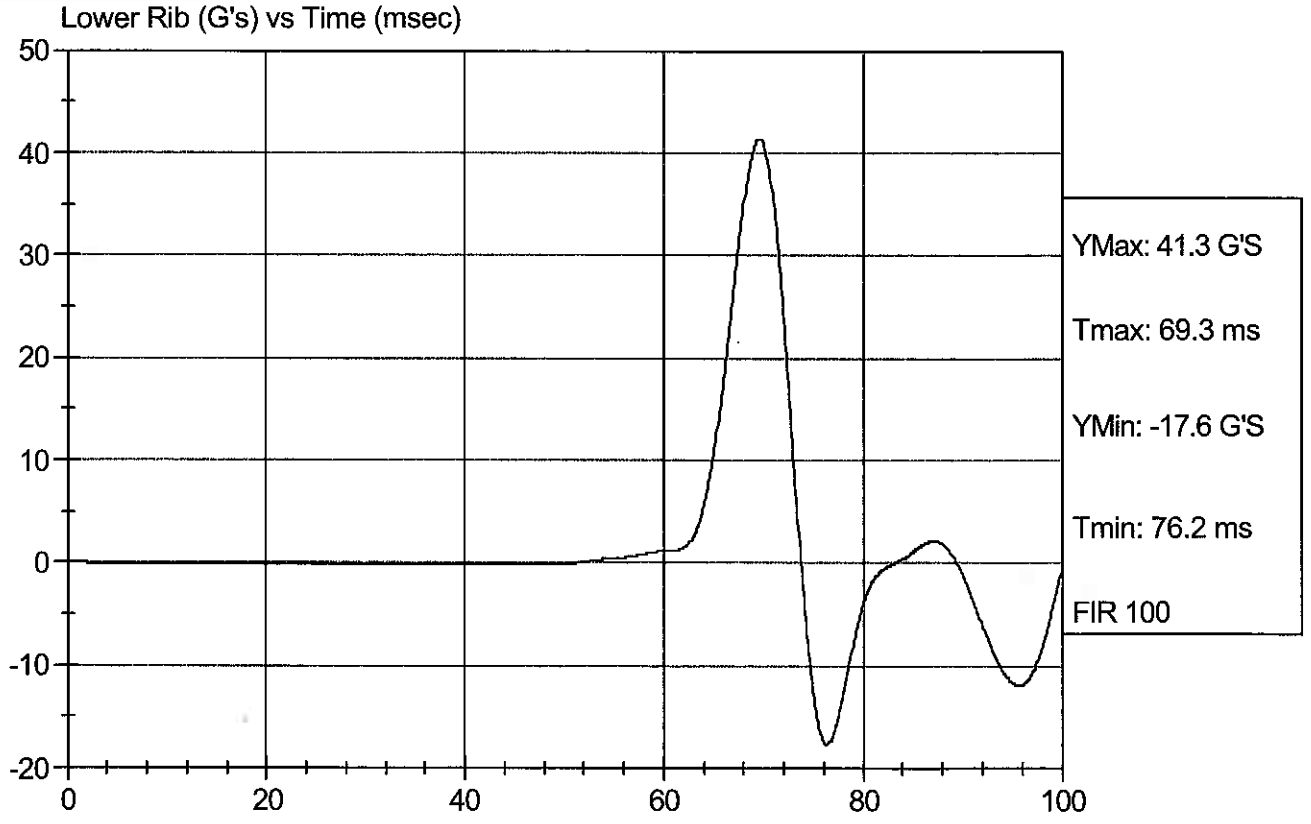
Laboratory Technician

6/4/08
Test Date

Approved By

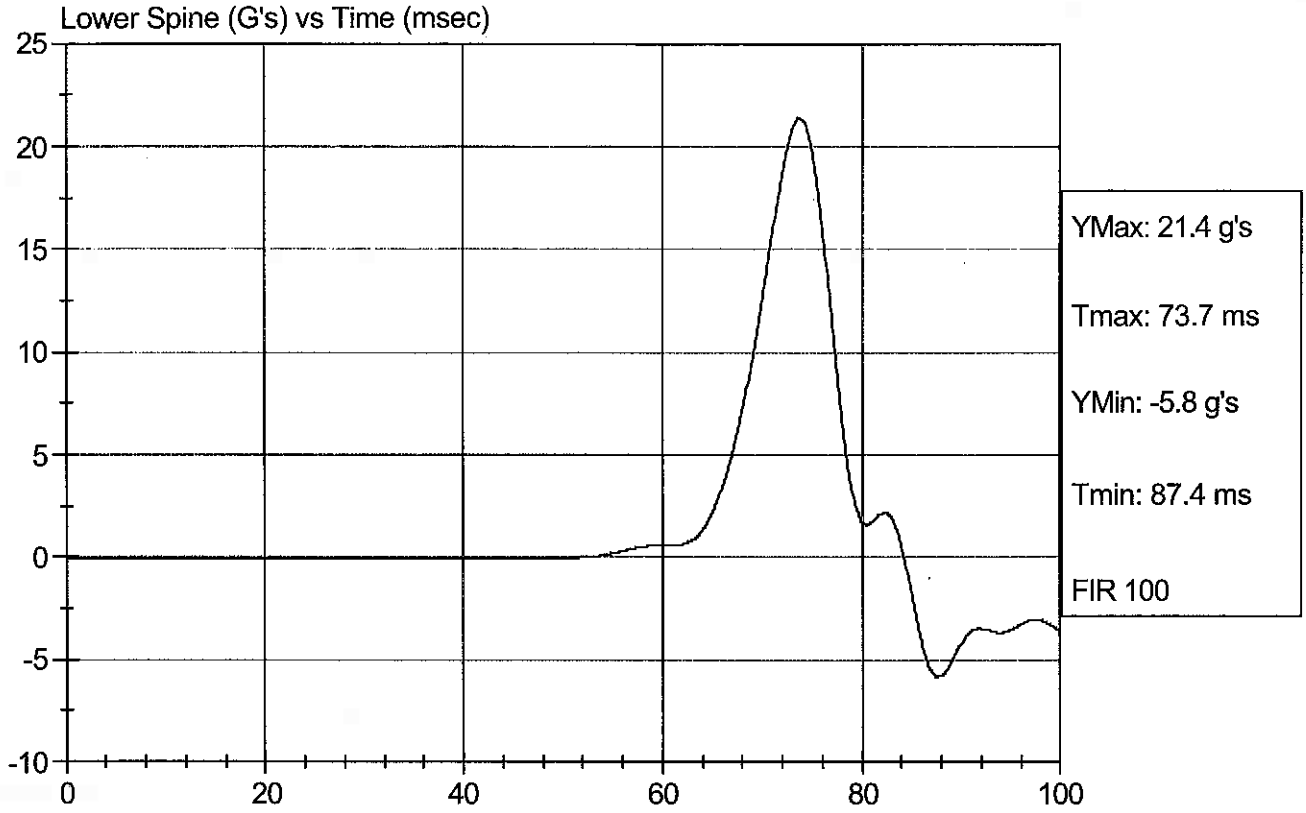
	Test Desc: Thorax Impact Component ID: D081552	Test Date: 6/4/08 Speed: 14.01 ft/sec, 4.27 m/sec





Test Desc: Thorax Impact
Component ID: D081552

Test Date: 6/4/08
Speed: 14.01 ft/sec, 4.27 m/sec



SID/HIII Calibration Data Sheet

Side Impact Dummy

Pelvis Impact Test

ATD Serial No: 037 **Test I.D:** D081553

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.5	21.8	Pass
Laboratory Relative Humidity	%	10 to 70	46	Pass
Probe Velocity	m/s	4.27 - 4.33	4.30	Pass
Pelvis Acceleration	G's	40 - 60	45	Pass
		Overall Test Results		Pass

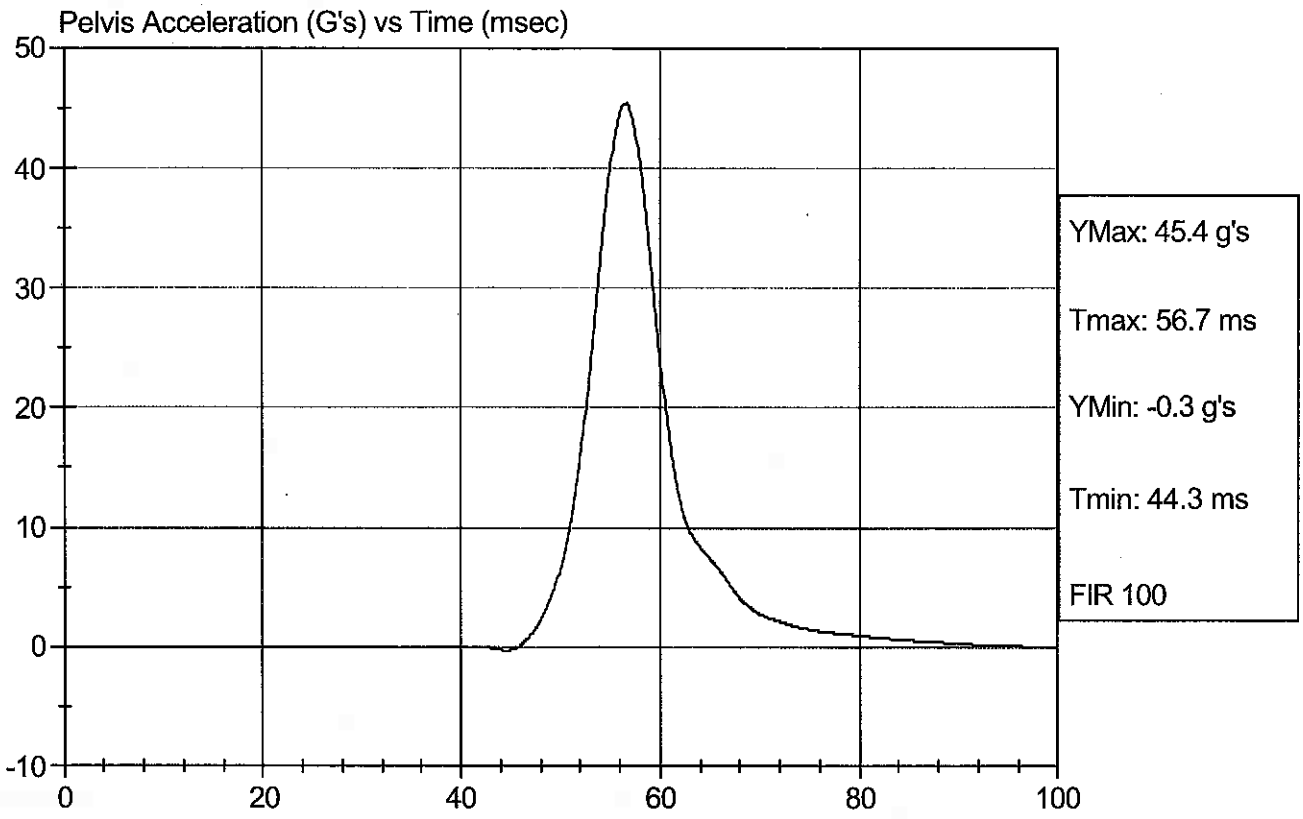
Laboratory Technician

6/4/08
Test Date

Approved By

Test Desc: Pelvis Impact
Component ID: D081553

Test Date: 6/4/08
Speed: 14.12 ft/sec, 4.30 m/sec



SID/HIII Calibration Data Sheet

Side Impact Dummy

Abdominal Compression Calibration (Pre-Load = 10 lbs)

ATD Serial No: 037 **Test I.D:** D081554

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 - 25.5	21.5	Pass
Laboratory Relative Humidity	%	10 to 70	42	Pass
Force At 12.7 mm	N	104 -162	132	Pass
Force At 19 mm	N	163 - 222	183	Pass
Force At 25.4 mm	N	222 - 280	250	Pass
Force At 33 mm	N	325 - 391	348	Pass
		Overall Test Results		Pass

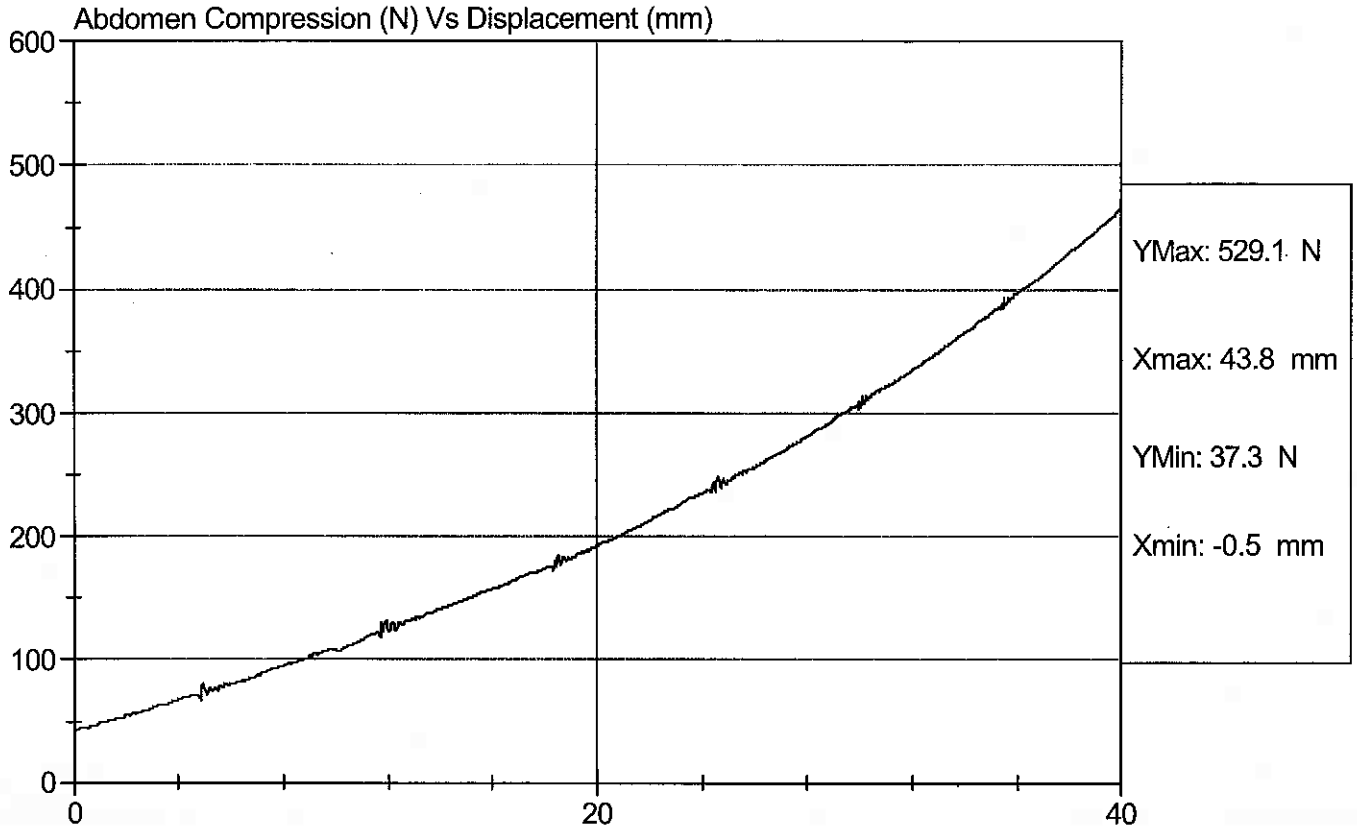
Laboratory Technician

6/4/08
Test Date

Approved By

Test Description: Abdomen Compression | Test Date: 6/4/08

Component: D081554 | Speed: 0 ft/sec, 0 m/sec



SID/HIII Calibration Data Sheet

Side Impact Dummy

Lumbar Flexion Calibration

ATD Serial No: 037 **Test I.D:** D081555

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 - 25.5	21.4	Pass
Laboratory Relative Humidity	%	10 to 70	43	Pass
Force At 0 deg	N	0 - 26.7	0	Pass
Force At 20 deg	N	97.9 - 151.2	123.7	Pass
Force At 30 deg	N	151.2 - 204.6	167.4	Pass
Force At 40 deg	N	204.6 - 258.0	224.1	Pass
Return Angle	Deg	12 Maximum	6	Pass
		Overall Test Results		Pass

Tim Brady
Laboratory Technician

6/4/08
Test Date

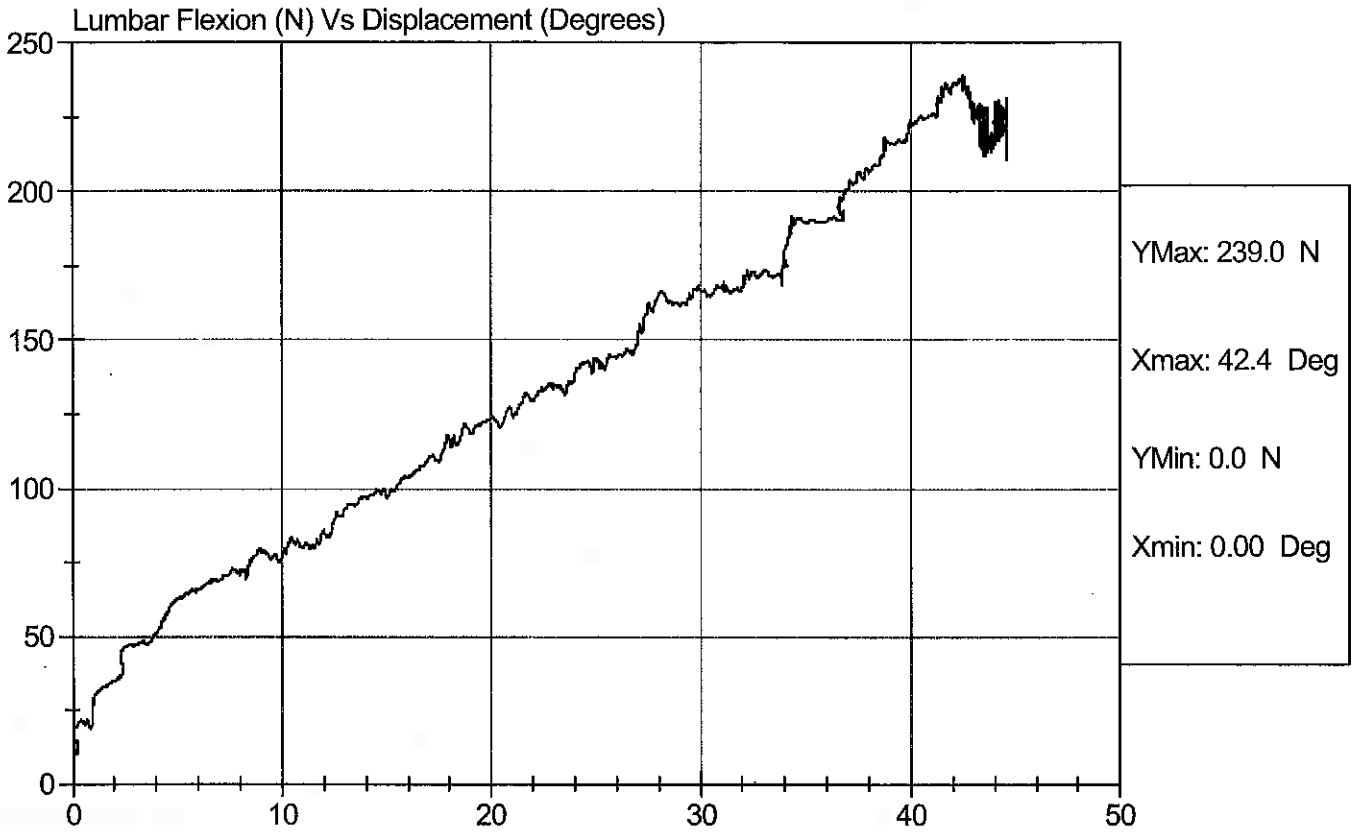
Jessica Hall
Approved By

Test Description: Lumbar Flexion

Test Date: 6/4/08

Component: D081555

Speed: 0 ft/sec, 0 m/sec



SID/HIII Calibration Data Sheet

Side Impact Dummy

Neck Pendulum Test

ATD Serial No: 037 **Test I.D:** D081559

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.0	Pass
Laboratory Relative Humidity		%	10 to 70	41	Pass
Impact Velocity		m/s	6.89 to 7.13	7.05	Pass
Pendulum Deceleration	10 msec	m/s	1.96 to 2.55	2.25	Pass
	20 msec	m/s	4.12 to 5.10	4.42	Pass
	30 msec	m/s	5.73 to 7.01	5.91	Pass
	40 to 70 msec	m/s	6.27 to 7.64	6.66	Pass
Midsaggital Plane Max Rotation		deg	66 to 82	69	Pass
Head Rotation Peak to Zero - Decay Time		msec	58 to 67	60	Pass
Max. Mx at Occipital Condyles		Nm	73 to 88	75	Pass
Mx Peak To Zero - Decay Time		msec	49 to 64	55	Pass
Mx Peak to Max. Head Rotation		msec	2 to 16	9	Pass

Tim Brat

Laboratory Technician

6/4/08

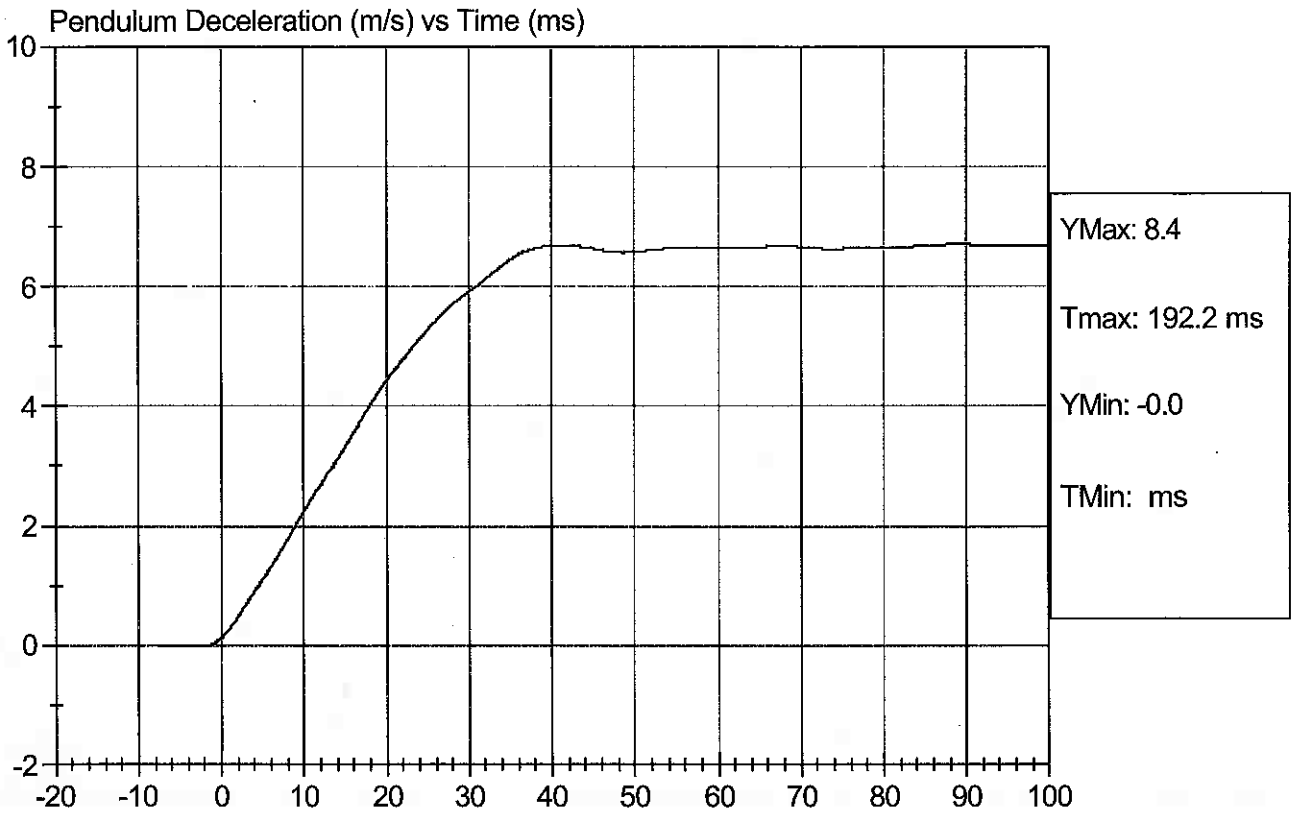
Test Date

Jessica Hall

Approved By

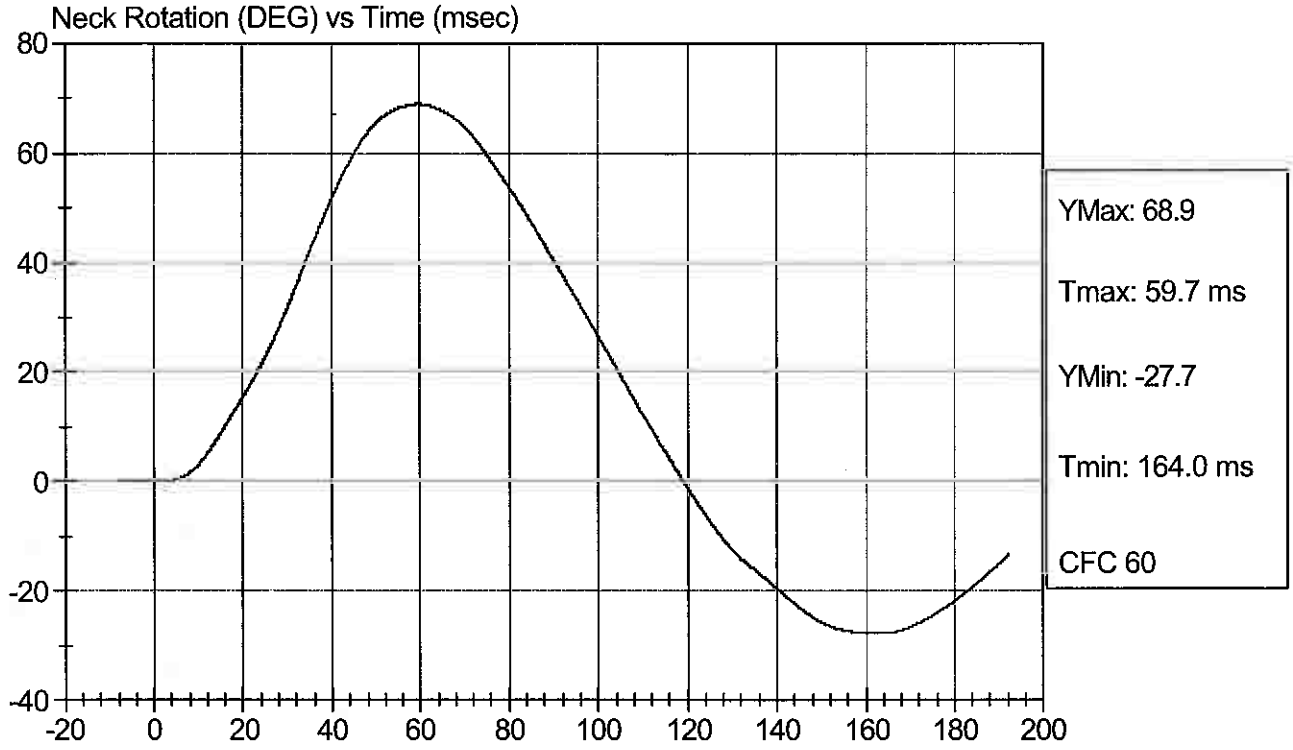
Test Desc: Neck Bending
Component ID: D081559

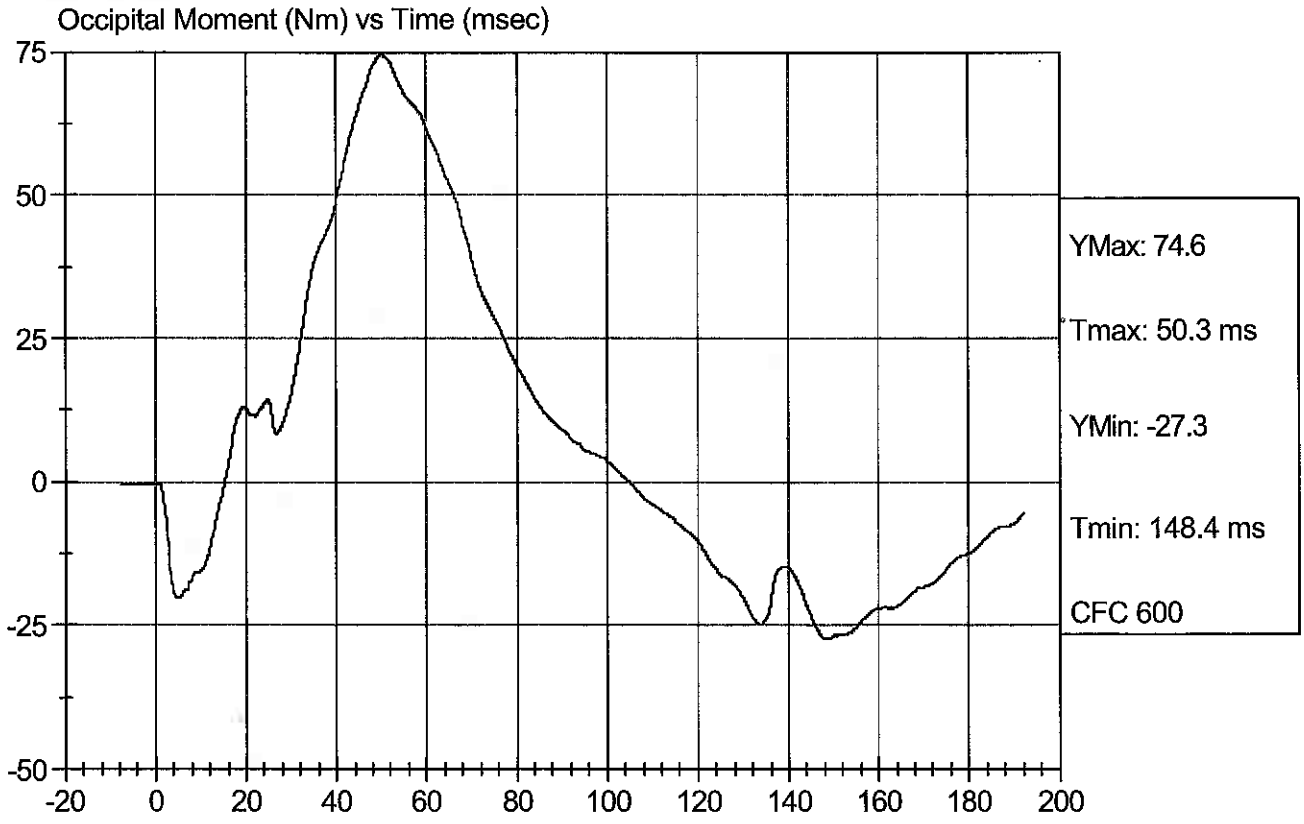
Test Date: 6/4/08
Speed: 23.14 ft/sec, 7.05 m/sec



Test Desc: Neck Bending
Component ID: D081559

Test Date: 6/4/08
Speed: 23.14 ft/sec, 7.05 m/sec





APPENDIX D

CALIBRATION INFORMATION DATA

DUMMY AND VEHICLE CALIBRATION DATA

	INSTRUMENTS FOR DRIVER S/N 037		
	SERIAL NO.	MANUFACTURER	CALIBRATION DATE
Head CG X	AH5E5	Endevco	1/25/2008
Head CG Y	C10770	Endevco	1/25/2008
Head CG Z	C12863	Endevco	1/25/2008
Neck Load Cell	606	Denton	1/30/2008
Upper Rib Y	P50055	Endevco	1/24/2008
Lower Rib Y	P50053	Endevco	1/24/2008
Lower Spine Y	P47107	Endevco	1/15/2008
Pelvis Y	P49530	Endevco	1/24/2008
Upper Rib Redundant Y	P50054	Endevco	1/24/2008
Lower Rib Redundant Y	P50052	Endevco	1/24/2008
Lower Spine Redundant Y	P47078	Endevco	1/15/2008
Pelvis Redundant Y	P49531	Endevco	1/24/2008

VEHICLE INSTRUMENT CALIBRATION

	VEHICLE ACCELEROMETERS		
	SERIAL NO.	MANUFACTURER	CALIBRATION DATE
Vehicle CG X	J26-H14	Entran	2/21/2008
Vehicle CG Y	B05-J14	Entran	2/21/2008
Vehicle CG Z	A27-Z05	Entran	2/21/2008
Left Floor Y	L20-B17	Entran	1/24/2008
Left A-Post @ Sill Y	E05-Z14	Entran	1/09/2008
Left Lower A-Post Y	F04-R22	Entran	3/07/2008
Left Mid A-Post Y	F29-X18	Entran	3/07/2008
Left B-Post @ Sill Y	P27029	Endevco	4/11/2008
Left Lower B-Post Y	P28960	Endevco	4/28/2008
Left Mid B-Post Y	AJ462	Endevco	4/11/2008
Driver Seat Track Y	P47824	Endevco	2/22/2008
Upper Engine X	D12-X21	Entran	1/24/2008
Upper Engine Y	C09-Y11	Entran	1/24/2008
Firewall Y	G02-L07	Entran	1/24/2008
Right Floor Sill Y	P27024	Endevco	4/21/2008
Rear Deck X	P47833	Endevco	2/22/2008
Rear Deck Y	P48178	Endevco	2/22/2008