REPORT NUMBER: SPNCAP-MGA-2015-057

NEW CAR ASSESSMENT PROGRAM (NCAP)
Side Impact Pole Test

FORD MOTOR CO.
2015 Ford F-150 SuperCrew XL Truck
NHTSA No.: M20150217

MGA RESEARCH CORPORATION
5000 Warren Road
Burlington, WI 53105

Test Date: February 18, 2015

Final Report Date: April 17, 2015

FINAL REPORT

U.S. DEPARTMENT OF TRANSPORTATION
National Highway Traffic Safety Administration
Office of Crashworthiness Standards
Mail Code: NVS-111
1200 New Jersey Ave, SE
Room W43-410
Washington, DC 20590

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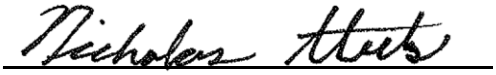
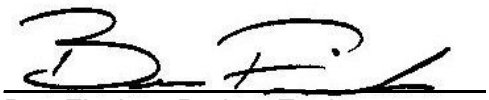
Prepared by: 
Nicholas Abels, Project Engineer

Approved by: 
Ben Fischer, Project Engineer

Approval Date: April 17, 2015

FINAL REPORT ACCEPTANCE BY OCWS:

_____
Division Chief, New Car Assessment Program
NHTSA, Office of Crashworthiness Standards

Date: _____

_____
COTR, New Car Assessment Program
NHTSA, Office of Crashworthiness Standards

Date: _____

Technical Report Documentation Page

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4. Title and Subtitle Final Report of New Car Assessment Program Side Impact Pole Testing of a 2015 Ford F-150 SuperCrew XL Truck, NHTSA No.: M20150217		*5. Report Date* April 17, 2015 *6. Performing Organization Code* MGA
7. Author(s) Ben Fischer, Project Engineer		*8. Performing Organization Report No.* SPNCAP-MGA-2015-057
9. Performing Organization Name and Address MGA Research Corporation 5000 Warren Road Burlington, WI 53105		*10. Work Unit No.* *11. Contract or Grant No.* DTNH22-09-D-00124
12. Sponsoring Agency Name and Address United States Department of Transportation National Highway Traffic Safety Administration Office of Crashworthiness Standards (NVS-111) 1200 New Jersey Ave, SE, Room W43-410 Washington, DC 20590		*13. Type of Report and Period Covered:* Final Test Report February 18, 2015 to April 17, 2015 *14. Sponsoring Agency Code* NVS-111
15. Supplementary Notes		

16. Abstract

A 32.20 km/h, 75° oblique impact Side NCAP Test was conducted on the subject 2015 Ford F-150 SuperCrew XL Truck in accordance with the specifications of the Office of Crashworthiness Standards Side NCAP Pole Laboratory Test Procedure for the generation of consumer information on vehicle side pole crash protection. The test was conducted at MGA Research Corporation in Burlington, Wisconsin on February 18, 2015.

The impact velocity was 32.1 km/h, and the ambient temperature at the struck (driver's) side of the target vehicle at the time of impact was 21.6°C. The test vehicle post-test maximum crush was 313 mm at level 2. The test vehicle's performance was as follows:

	Driver ATD (SID-IIs)		
Measurement Description	**Units**	**Threshold**	**Result**
Head Injury Criteria (HIC_{36})	N/A	1000	281
Resultant Lower Spine Acceleration	Gs	82	46
Total Pelvic Force (sum of acetabular and iliac forces)	N	5525	2059
Maximum Thoracic Rib Deflection	mm	38*	19
Maximum Abdomen Rib Deflection	mm	45*	17

*Proposed IARV

The rear door 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. The left front door became unlatched during the event.

17. Key Words New Car Assessment Program (NCAP) Side Impact Pole Part 572V SID-IIs		*18. Distribution Statement* Copies of this report are available from: National Highway Traffic Safety Administration Technical Information Services Division, NPO-411 1200 New Jersey Ave, SE Washington, DC 20590 e-mail: tis@nhtsa.dot.gov FAX: 202-493-2833	
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SECTION 1
TEST PURPOSE AND PROCEDURE

This side impact test is part of the MY 2015 New Car Assessment Program Side Impact Test Program, sponsored by the National Highway Traffic Safety Administration (NHTSA), under Contract No. DTNH22-09-D-00124. The purpose of this test is to generate comparative side impact performance in a 2015 Ford F-150 SuperCrew XL Truck. The side impact test was conducted in accordance with the Office of Crashworthiness Standard's Side NCAP Pole Laboratory Test Procedure, dated September 2013.

SECTION 2
SUMMARY OF TEST RESULTS

A rigid pole side impact test was conducted on a 2015 Ford F-150 SuperCrew XL Truck. The subject vehicle was towed into the rigid pole at an angle of 75° and a velocity of 32.1 km/h. The test was conducted by MGA Research Corporation in Burlington, Wisconsin on February 18, 2015. Pre-test and post-test photographs of the test vehicle and side impact dummy (SID-IIs) are included in Appendix A of this report.

One Part 572V (SID-IIs) dummy was placed in the driver designated seating position according to instructions specified in the OCWS Side NCAP Pole Laboratory Test Procedure dated September 2013. Camera locations and other pertinent camera information are included in this report.

The Part 572V (SID-IIs) dummy was instrumented accordingly:

Primary and Redundant Head CG Triaxial Accelerometers
Thorax Upper, Middle, and Lower Rib Displacement Potentiometers
Abdomen Upper Rib and Lower Rib Displacement Potentiometers
Lower Spine (T12) Triaxial Accelerometers
Iliac Load Cell
Acetabulum Load Cell

Appendix B contains the vehicle and dummy response data. Dummy configuration and performance verification data can be found in Appendix C of this report. Appendix D contains the test equipment and instrumentation calibration data.

Injury readings for the SID-IIs dummy were recorded as follows:

Measurement Description	Driver ATD (SID-IIs)		
	Units	Threshold	Result
Head Injury Criteria (HIC_{36})	N/A	1000	281
Resultant Lower Spine Acceleration	Gs	82	46
Total Pelvic Force (sum of acetabular and iliac forces)	N	5525	2059
Maximum Thoracic Rib Deflection	mm	38*	19
Maximum Abdominal Rib Deflection	mm	45*	17

*Proposed IARV

Supplemental restraint information is given below:

Restraint Type	Struck Side Driver		Struck Side Rear Passenger	
	Mounted	Deployed	Mounted	Deployed
Frontal Airbag	Yes	No		
Knee Airbag	No			
Side Curtain Airbag	Yes	Yes	Yes	Yes
Side Torso/Pelvis Airbag	Yes	Yes	No	
Seat Belt Pretensioner	Yes	Yes	No	
Seat Belt Load Limiter	Yes		No	
Other				

The test data can be found on the NHTSA website at www.nhtsa.dot.gov

GENERAL COMMENTS

Vehicle CG X has no valid data after 34 ms.
Vehicle CG Y has no valid data after 34 ms.
Vehicle CG Z has no valid data after 34 ms.
Left B-Post @ Sill Y has no valid data after 27 ms.
Left Mid B-Post Y has no valid data after 10 ms.

SECTION 3
OCCUPANT AND VEHICLE INFORMATION

DATA SHEET NO. 1
GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2015 Ford F-150 SuperCrew XL Truck
Test Program: NCAP Side Pole Impact Test
NHTSA No. M20150217
Test Date: 2/18/2015

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA No.	M20150217
Model Year	2015
Make	Ford
Model	F-150 SuperCrew XL
Body Style	4 Door Pickup
VIN	1FTEW1C85FFA22741
Body Color	Magnetic Metallic
Odometer Reading (km/mi)	42 / 26
Engine Displacement (L)	3.5
Type/No. Cylinders	6
Engine Placement	Longitudinal
Transmission Type	Automatic
Transmission Speeds	6
Overdrive	Yes
Final Drive	Rear
Roof Rack	No
Sunroof/T-Top	No
Running Boards	No
Tilt Steering Wheel	Yes
Power Seats	No
Anti-Lock Brakes (ABS)	Yes

Traction Control System (TCS)	Yes
Auto-Leveling System	No
Automatic Door Locks (ADL)	Yes
Power Window Auto-Reverse	Yes
Other Optional Feature	N/A
Driver Front Airbag	Yes
Driver Curtain Airbag	Yes
Driver Head/Torso Airbag	No
Driver Torso Airbag	No
Driver Torso/Pelvis Airbag	Yes
Driver Pelvis Airbag	No
Driver Knee Airbag	No
Rear Pass. Curtain Airbag	Yes
Rear Pass. Head/Torso Airbag	No
Rear Pass. Torso Airbag	No
Rear Pass. Torso/Pelvis Airbag	No
Rear Pass. Pelvis Airbag	No
Driver Seat Belt Pretensioner	Yes
Rear Pass. Seat Belt Pretensioner	No
Driver Load Limiter	Yes
Rear Pass. Load Limiter	No
Other Restraint Feature	N/A

Does owner's manual provide instructions to turn off automatic door locks?	Yes

DATA FROM CERTIFICATION LABEL

Manufactured By	Ford Motor Co.
Date of Manufacture	11/14
Vehicle Type	Truck

GVWR (kg)	2790
GAWR Front (kg)	1361
GAWR Rear (kg)	1497

VEHICLE SEATING AND WEIGHT CAPACITY DATA

Measured Parameter	Front	Rear	Third	Total	
Designated Seating Capacity (DSC)	3	3		6	
Capacity Weight (VCW) (kg)				750	(A)
DSC x 68.04 kg				408	(B)
Rated Cargo and Luggage Weight (RCLW) (kg)				342	(A-B)

VEHICLE SEAT TYPE

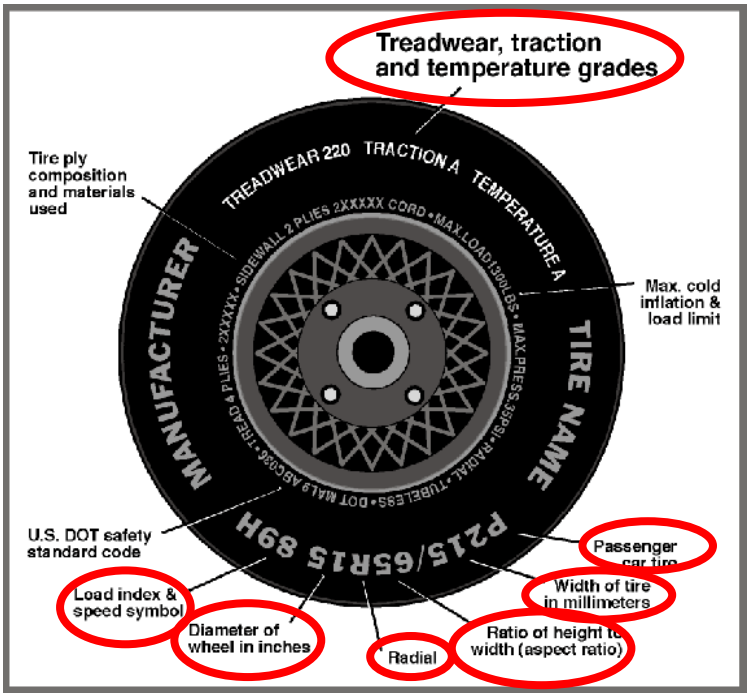
Seating Location	Type of Seat Pan				Type of Seat Back		
	Bucket	Bench	Split Bench	Contoured	Fixed	Adjustable	
						Manual	Power
Front Seat	X					X	
Rear or Second Row			X		X		
Third Row Seat							

DATA SHEET NO. 1 (CONTINUED)
GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2015 Ford F-150 SuperCrew XL Truck
Test Program: NCAP Side Pole Impact Test

NHTSA No. M20150217
Test Date: 2/18/2015

VEHICLE TIRE INFORMATION



Measured Parameter	Front	Rear
Max. Tire Pressure (kPa)	300	300
Cold Pressure (kPa)	260	260
Recommended Tire Size	245/70R17	245/70R17
Tire Size on Vehicle	245/70R17	245/70R17
Tire Manufacturer	Michelin	Michelin
Tire Model	LTX M/S	LTX M/S
Treadwear	720	720
Traction	A	A
Temperature Grade	A	A
Tire Plies Sidewall	2 Polyester	2 Polyester
Tire Plies Body	1 Polyester, 2 Steel, 1 Polyamide	1 Polyester, 2 Steel, 1 Polyamide
Load Index/Speed Symbol	110T	110T
Tire Material	Rubber	Rubber
DOT Safety Code Left	M3X6 00AX 2414	M3X6 00AX 2414
DOT Safety Code Right	M3X6 00AX 2414	M3X6 00AX 2414

DATA SHEET NO. 1 (CONTINUED)
GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2015 Ford F-150 SuperCrew XL Truck NHTSA No. M20150217
Test Program: NCAP Side Pole Impact Test Test Date: 2/18/2015

TEST PRESSURES

	Units	LF	RF	LR	RR
As Delivered	kpa	269	276	276	283
Tire Placard	kpa	260	260	260	260
Owner's Manual	kpa				
As Tested	kpa	260	260	260	260

TEST VEHICLE WEIGHTS

	Units	As Delivered (UVW)			As Tested (ATW)			Fully Loaded		
		Front	Rear	Total	Front	Rear	Total	Front	Rear	Total
Left	kg	548.5	465.0		579.0	530.0		560.5	562.5	
Right	kg	617.0	401.5		616.0	488.5		601.0	496.0	
Ratio	%	57.4	42.6		54.0	46.0		52.3	47.7	
Totals	kg	1165.5	866.5	2032.0	1195.0	1018.5	2213.5	1161.5	1058.5	2220.0

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value	
Total Delivered Weight (UVW)	kg	2032.0	(A)
Actual Weight of 1 P572V ATD (SID-IIs) ATD Used	kg	52	(B)
Rated Cargo/Luggage Weight (RCLW)	kg	136	(C)
Calculated Vehicle Target Weight (TVTW)	kg	2220.0	(A+B+C)

Does the measured As Tested Vehicle Weight lie within the required weight range (i.e. Calculated Test Vehicle Target Weight – 4.5 kg to 9 kg)? **YES**

TEST VEHICLE ATTITUDES AND CG

	Units	As Delivered	As Tested	Fully Loaded	Meets Requirement***
Driver Door Sill Angle (front-to-rear)*	deg	-0.5	-0.5	0.0	Yes
Front Pass. Sill Angle (front-to-rear)*	deg	-1.0	-0.7	-0.6	Yes
Front Bumper Angle (left-to-right)**	deg	0.3	0.2	0.2	Yes
Rear Bumper Angle (left-to-right)**	deg	0.2	0.0	0.0	Yes
Vehicle CG (Aft of Front Axle)	mm	1570	1694	1755	
Vehicle CG (Left (+) / Right (-) from Longitudinal Centerline)	mm	-2	2	10	

*ND=Nose Down (-), NU=Nose Up (+) ** LD=Left Down (-), LU=Left Up (+)
*** The "As Tested" vehicle attitude measurements must be equal to or between the "As Delivered" and "Fully Loaded" vehicle attitude measurements.

WEIGHT OF BALLAST AND VEHICLE COMPONENTS REMOVED TO MEET TVTW

Component Description	Weight (kg)
Ballast (if any)	71.7
None	0.0

Test height adjustable suspension setting, if applicable:	Not Applicable

DATA SHEET NO. 2
SEAT, SEAT BELT, STEERING WHEEL ADJUSTMENT AND FUEL SYSTEM DATA

Test Vehicle: 2015 Ford F-150 SuperCrew XL Truck
Test Program: NCAP Side Pole Impact Test
NHTSA No. M20150217
Test Date: 2/18/2015

SEAT POSITIONING

The driver's seat, front center seat (if applicable), and right front passenger's seat should be set to the forward-most, mid-height, mid-angle position. The struck-side rear passenger's seat, rear center seat, and non-struck side rear passenger's seats should be set to the rear-most, lowest, mid-angle position.

SCRL ANGLE RANGE

Seat	SCRL (°)		
	Max	Min	Mid
Driver Seat	Fixed	Fixed	Fixed
Front Passenger Seat	Fixed	Fixed	Fixed
Front Center Seat	Fixed	Fixed	Fixed
Struck Side Rear Seat	Fixed	Fixed	Fixed
Non-Struck Side Rear Seat	Fixed	Fixed	Fixed
Rear Center Seat	Fixed	Fixed	Fixed

SEAT HEIGHT AND ANGLE

Seat	As Tested SCRL Angle (Mid) (°)	As Tested SCRP Height (mm)	SCRP Height Position	SCRP Height (mm)		
				Rear-most	Mid-Fore/Aft	Forward-Most
Driver Seat	Fixed	Fixed	Max	Fixed	Fixed	Fixed
			Mid	Fixed	Fixed	Fixed
			Min	Fixed	Fixed	Fixed
Front Passenger Seat	Fixed	Fixed	Max	Fixed	Fixed	Fixed
			Mid	Fixed	Fixed	Fixed
			Min	Fixed	Fixed	Fixed
Front Center Seat	Fixed	Fixed	Max	Fixed	Fixed	Fixed
			Mid	Fixed	Fixed	Fixed
			Min	Fixed	Fixed	Fixed
Struck Side Rear Seat	Fixed	Fixed	Max	Fixed	Fixed	Fixed
			Mid	Fixed	Fixed	Fixed
			Min	Fixed	Fixed	Fixed
Non-Struck Side Rear Seat	Fixed	Fixed	Max	Fixed	Fixed	Fixed
			Mid	Fixed	Fixed	Fixed
			Min	Fixed	Fixed	Fixed
Rear Center Seat	Fixed	Fixed	Max	Fixed	Fixed	Fixed
			Mid	Fixed	Fixed	Fixed
			Min	Fixed	Fixed	Fixed

DATA SHEET NO. 2 (CONTINUED)
SEAT, SEAT BELT, STEERING WHEEL ADJUSTMENT, AND FUEL SYSTEM DATA

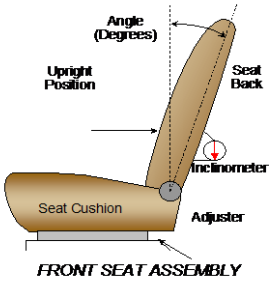
Test Vehicle: 2015 Ford F-150 SuperCrew XL Truck NHTSA No. M20150217
Test Program: NCAP Side Pole Impact Test Test Date: 2/18/2015

SEAT FORE/AFT POSITIONS

Seat	Total Fore/Aft Travel		Test Position from Forward-most Position	
	mm	Detents	mm	Detent
Driver Seat	256	38 (1st as 1)	0	0 (1st as 0)
Front Passenger Seat	256	38 (1st as 1)	0	0 (1st as 0)
Front Center Seat	Fixed	Fixed	Fixed	Fixed
Struck Side Rear Seat	Fixed	Fixed	Fixed	Fixed
Non-Struck Side Rear Seat	Fixed	Fixed	Fixed	Fixed
Rear Center Seat	Fixed	Fixed	Fixed	Fixed

SEAT BACK ANGLE ADJUSTMENT

The driver's seat back is positioned such that the dummy's head is level. The front center and front passenger's seat backs are positioned in a similar manner as the driver's seat back. The struck-side rear passenger seat back is positioned in accordance with the information provided by the manufacturer on Form No. 1 for the 5th percentile female dummy in a Side NCAP MDB test. The rear center and non-struck side rear passenger's seat back is set to match the struck-side rear seat back.



Seat	Total Seat Back Angle Range		Test Position from Vertical	
	Degrees	Detents	Degree	Detent
Driver Seat w/Seated Dummy	50.1	28 (1st as 1)	-7.7	2 (1st as 0)
Front Passenger Seat	50.7	28 (1st as 1)	-8.5	3 (1st as 0)
Front Center Seat	Fixed	Fixed	Fixed	Fixed
Struck Side Rear Seat	Fixed	Fixed	Fixed	Fixed
Non-Struck Side Rear Seat	Fixed	Fixed	Fixed	Fixed
Rear Center Seat	Fixed	Fixed	Fixed	Fixed

Seat back angles measured on headrest post guide.

SEAT BELT ANCHORAGE ADJUSTMENT

Seat belt anchorages are adjusted in accordance with the information provided by the manufacturer on Form No. 1.

	Total # of Positions	Placed in Position #
Driver Seat	4 detents (1st as 1)	0 (uppermost as 0)

HEAD RESTRAINT ADJUSTMENT

Head restraints are adjusted to the lowest and most full forward in-use position.

	Total # of Positions	Placed in Position #
Driver Seat	3	Lowest

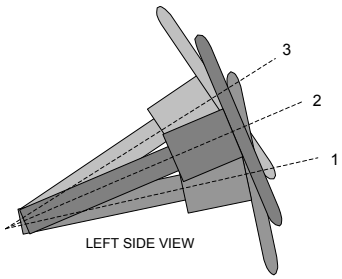
DATA SHEET NO. 2 (CONTINUED)
SEAT, SEAT BELT, STEERING WHEEL ADJUSTMENT, AND FUEL SYSTEM DATA

Test Vehicle: 2015 Ford F-150 SuperCrew XL Truck NHTSA No. M20150217
Test Program: NCAP Side Pole Impact Test Test Date: 2/18/2015

STEERING COLUMN ADJUSTMENT

Steering wheel and column adjustments are made so that the steering wheel geometric locus is described when it moves through its full range of motion.

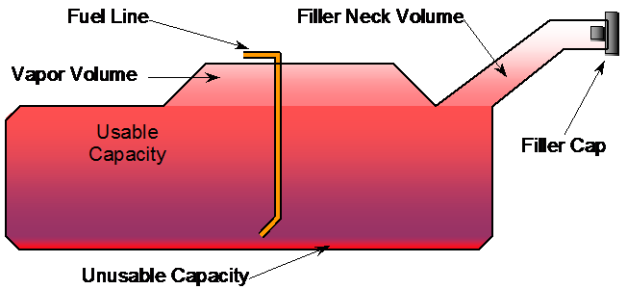
	Degrees	Fore/Aft Position (mm)
Lowermost, Position 1	72.0	252
Geometric Center, Position 2	70.0	272
Uppermost, Position 3	68.0	292
Telescoping Steering Wheel Travel		40
Test Position	70.0	272



STEERING COLUMN ASSEMBLY

FUEL PUMP

Describe the fuel pump type, details about how it operates and the location of the fuel filler pipe.
The electric fuel pump operates for 3 seconds to pressurize the fuel system following the actuation of the ignition. If no attempt has been made to start the engine within 3 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, the fuel pump is shut-off by the restraint control module to stop fuel flow to the engine if the vehicle sustains an impact above a certain magnitude.



VEHICLE FUEL TANK ASSEMBLY

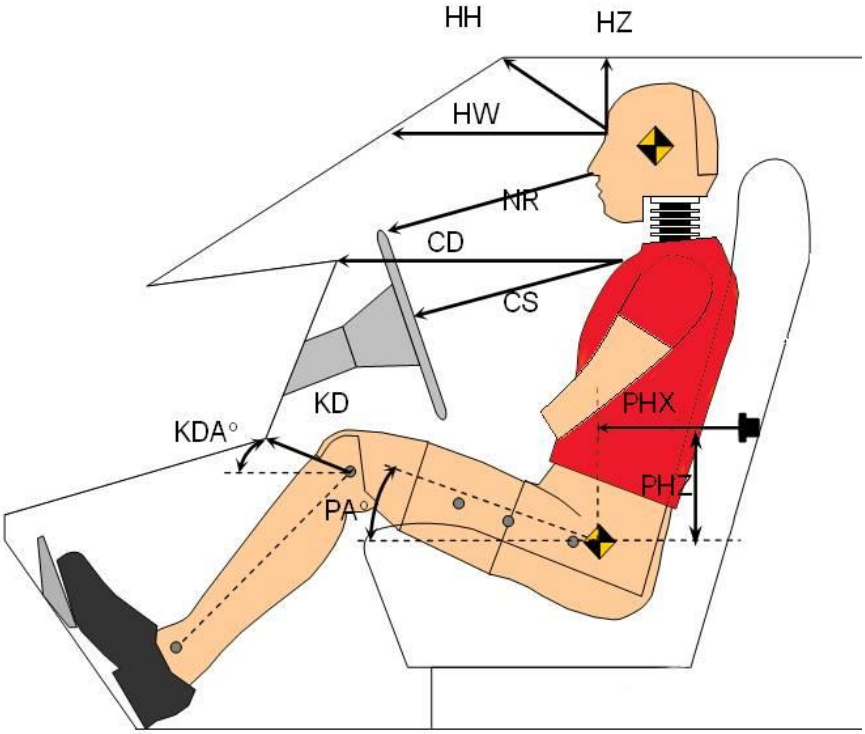
FUEL TANK CAPACITY DATA

	Liters
Usable Capacity of "Standard Tank" (see Form No. 1)	90.8
Usable Capacity of "Optional Tank" (see Form No. 1)	136.3
Usable Capacity of Standard Tank as Specified in Owner's Manual	87.1
Usable Capacity of Optional Tank as Specified in Owner's Manual	136.2
93% of Usable Capacity	84.4
Actual Amount of Solvent Used	84.4
1/3 of Usable Capacity	30.3

Is the actual amount of solvent used in the test equal to 93% ± 1%
of the Usable Capacity stated in Form No. 1? **YES**

.DATA SHEET NO. 3
DUMMY LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: 2015 Ford F-150 SuperCrew XL Truck NHTSA No. M20150217
Test Program: NCAP Side Pole Impact Test Test Date: 2/18/2015



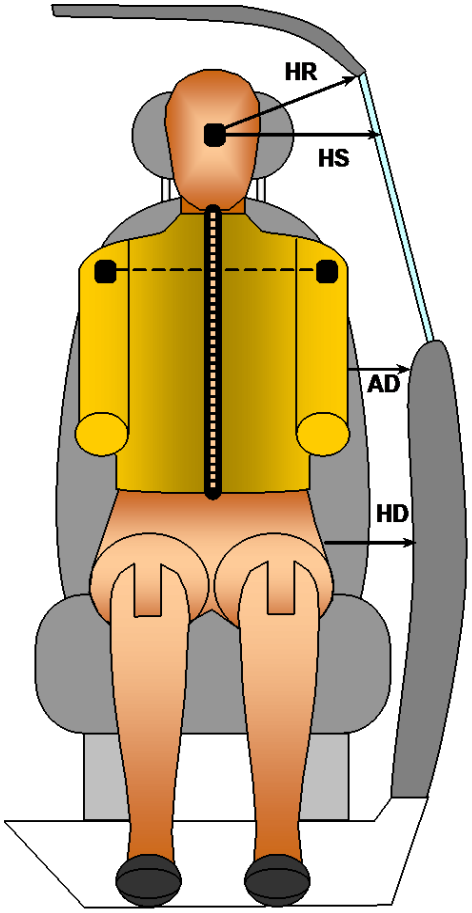
LEFT SIDE VIEW

Code	Measurement Description	Driver	
		Length (mm)	Angle (°)
HH	Head to Header	325	
HW	Head to Windshield	630	
HZ	Head to Roof Liner	245	
NR	Nose to Rim	215	
CD	Chest to Dashboard	447	
CS	Chest to Steering Wheel	175	
KDL/KDAL°	Left Knee to Dash	98	31.8
KDR/KDAR°	Right Knee to Dash	95	30.2
PAX°	Pelvic Tilt Angle (X-Axis)		19.8
PAY°	Pelvic Tilt Angle (Y-Axis)		0.4
PHX	Hip Point to Striker (X-Axis)	456	
PHZ	Hip Point to Striker (Z-Axis)	45	

DATA SHEET NO. 4
DUMMY LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2015 Ford F-150 SuperCrew XL Truck
Test Program: NCAP Side Pole Impact Test

NHTSA No. M20150217
Test Date: 2/18/2015

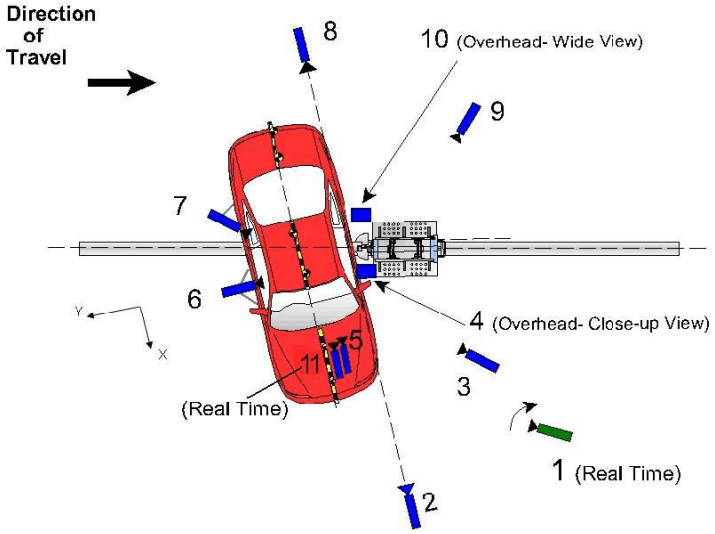


FRONT VIEW OF DUMMY

Code	Measurement Description	Driver Length (mm)
HR	Head to Side Header	262
HS	Head to Side Window	388
AD	Arm to Door	180
HD	Hip Point to Door	180

DATA SHEET NO. 5
CAMERA AND INSTRUMENTATION DATA

Test Vehicle: 2015 Ford F-150 SuperCrew XL Truck NHTSA No. M20150217
Test Program: NCAP Side Pole Impact Test Test Date: 2/18/2015



Reference: (from Point of Impact for X and Y; from Ground for Z):
+X = Forward of Impact, + Y = Right of Impact, +Z = Down

Camera No.	View	Coordinates (mm)			Lens (mm)	Film Speed (fps)
		X*	Y*	Z*		
1	Real-Time Pan View					30
2	Front Ground Level	6120	-60	-1810	24	1000
3	Impact Side 45° Forward	5110	-2320	-1960	20	1000
4	Overhead Closeup	0	90	-4420	50	1000
5	Onboard – Driver Front				16	1000
6	Onboard – Driver Side				8	1000
7	Onboard – Driver Rear				8	1000
8	Rear Ground Level	-7010	-60	-1830	24	1000
9	Impact Side 45° Rearward	-3870	-4415	-1970	20	1000
10	Overhead Wide View	0	330	-4610	14	1000
11	Real-Time Dummy Front View					30

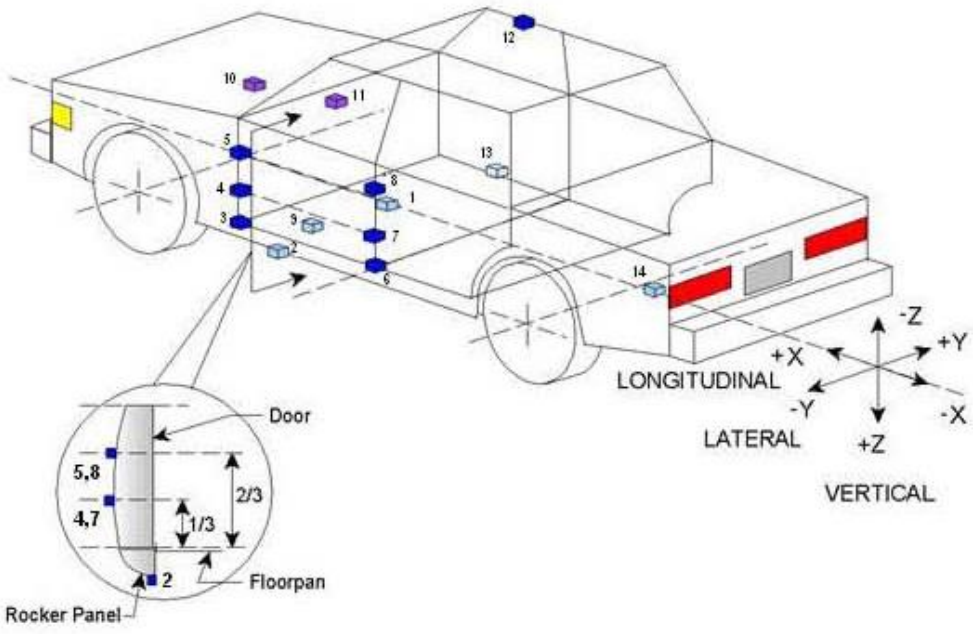
* All measurements accurate to ± 6 mm
Note: Vehicle was at a 75° angle to the rigid pole.

Explain why camera(s) did not operate as intended: None

INSTRUMENTATION	Number of Channels
Driver Dummy	16
Vehicle Structure	18
Pole Load Cells	8
TOTAL	42

DATA SHEET NO. 6
VEHICLE ACCELEROMETER DATA

Test Vehicle: 2015 Ford F-150 SuperCrew XL Truck NHTSA No. M20150217
Test Program: NCAP Side Pole Impact Test Test Date: 2/18/2015



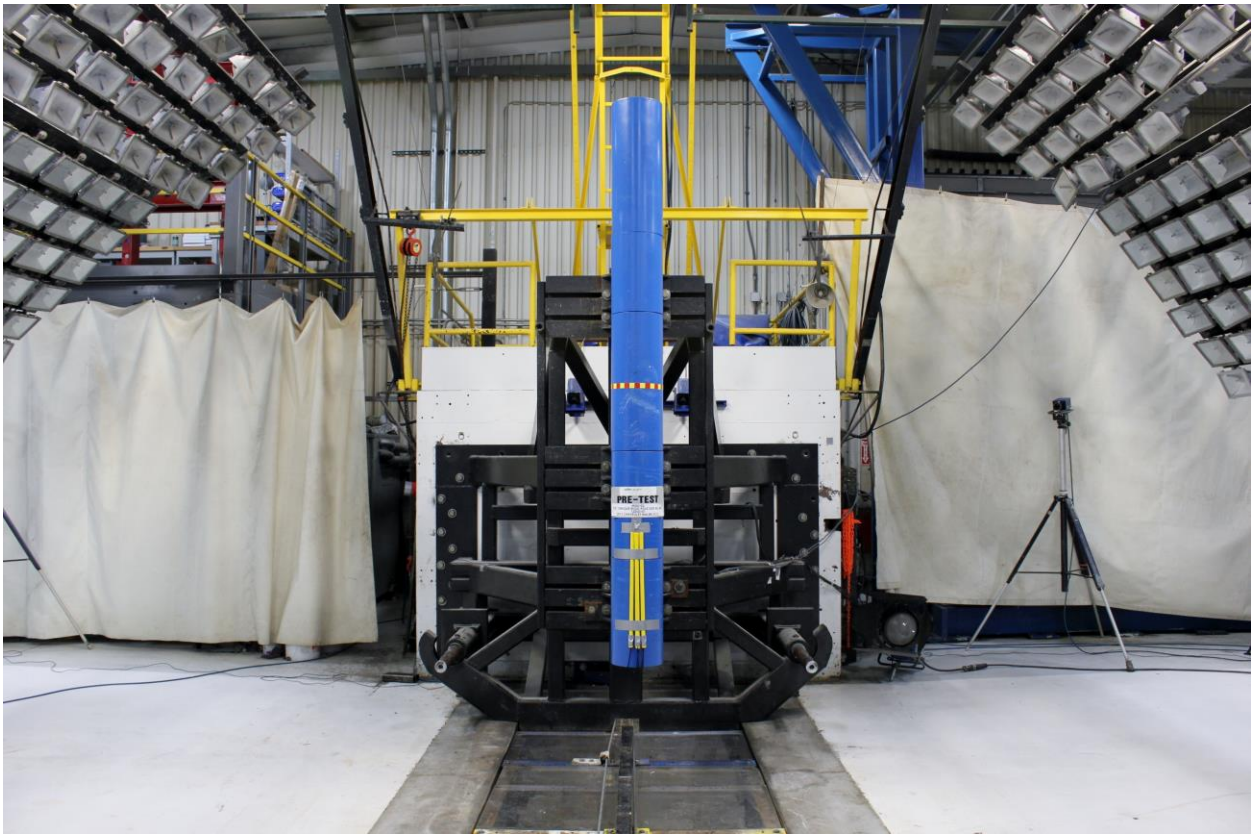
	Accelerometer Location			
	ID	Coordinates (mm)		
		X	Y	Z
1	Vehicle CG	2888	75	-573
2	Left Floor Sill	3883	-872	-385
3	A Pillar Sill	4292	-872	-382
4	A Pillar Low	4253	-938	-697
5	A Pillar Mid	4265	-930	-1035
6	B Pillar Sill	3056	-872	-380
7	B Pillar Low	2998	-828	-751
8	B Pillar Mid	3006	-800	-998
9	Driver Seat Track	3379	-450	-582
10	Engine Top	4886	116	-1107
11	Firewall	4751	0	-1248
12	Right Roof	3086	628	-1922
13	Right Floor Sill	3878	872	-395
14	Rear Floorpan	1244	0	-823

Reference:
X – Test Vehicle Rear Bumper (+forward)
Y – Test Vehicle Centerline (+ to right)
Z – Ground Plane (+ down)

DATA SHEET NO. 7
RIGID POLE LOAD CELL DATA

Test Vehicle: 2015 Ford F-150 SuperCrew XL Truck
Test Program: NCAP Side Pole Impact Test

NHTSA No. M20150217
Test Date: 2/18/2015



254 mm Diameter Rigid Pole

Load Cell Locations	
ID	Height From Impact Surface (mm)
1	182
2	470
3	698
4	986
5	1212
6	1641
7	1854
8	2053

DATA SHEET NO. 8
POST-TEST OBSERVATIONS

Test Vehicle: 2015 Ford F-150 SuperCrew XL Truck NHTSA No. M20150217
Test Program: NCAP Side Pole Impact Test Test Date: 2/18/2015

TEST DUMMY INFORMATION AND CONTACT POINTS

Description	Driver SID-IIs Dummy
Face	Curtain Airbag
Top of Head	Curtain Airbag
Left Side of Head	Curtain Airbag
Back of Head	Curtain Airbag, Headrest, Seat Back
Left Shoulder	Side Airbag
Upper Torso	Side Airbag, Seatback
Lower Torso	Side Airbag, Seatback
Left Hip	Side Airbag, Seatpan
Left Knee	Door Panel

POST-TEST DOOR PERFORMANCE

Description	Struck Side		Non-Struck Side		Rear Hatch/ Other Door
	Front	Rear	Front	Rear	
Remained Closed and Operational	No	No	Yes	Yes	Yes
Total Separation from Vehicle at Hinges or Latches	No	No	No	No	No
Latch or Hinge Systems Pulled Out of Their Anchorages	No	No	No	No	No
Disengaged from Latched Position	Yes	No	No	No	No
Latch Separated from Striker	Yes	No	No	No	No
Jammed Shut	Yes	Yes	No	No	No
If Door Opened at Striker, Record Width of Opening at Striker (mm)	40	N/A	N/A	N/A	N/A

POST-TEST SEAT PERFORMANCE

	Struck Side		Non-Struck Side	
Description	Front	Rear	Front	Rear
Seat Movement Along Seat Track	No	Fixed	Yes	Fixed
Seat Disengagement from Floor Pan	No	Fixed	No	Fixed
Seat Back Movement from Initial Position	No	Fixed	No	Fixed
Seat Back Collapse	No	Fixed	No	Fixed

POST-TEST STRUCTURAL OBSERVATIONS

Critical Areas of Performance	Observations and Conclusions
Pillar Performance	No Separation
Sill Separation	None
Windshield Damage	Cracked
Side Window Damage	Left Front Window Broken
Other Notable Effects	None

DATA SHEET NO. 8 (CONTINUED)
POST-TEST OBSERVATIONS

Test Vehicle: 2015 Ford F-150 SuperCrew XL Truck NHTSA No. M20150217
Test Program: NCAP Side Pole Impact Test Test Date: 2/18/2015

SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

Restraint Type	Struck Side Driver		Struck Side Rear Passenger	
	Mounted	Deployed	Mounted	Deployed
Frontal Airbag	Yes	No		
Knee Airbag	No			
Side Curtain Airbag	Yes	Yes	Yes	Yes
Side Torso/Pelvis Airbag	Yes	Yes	No	
Seat Belt Pretensioner	Yes	Yes	No	
Seat Belt Load Limiter	Yes		No	
Other				

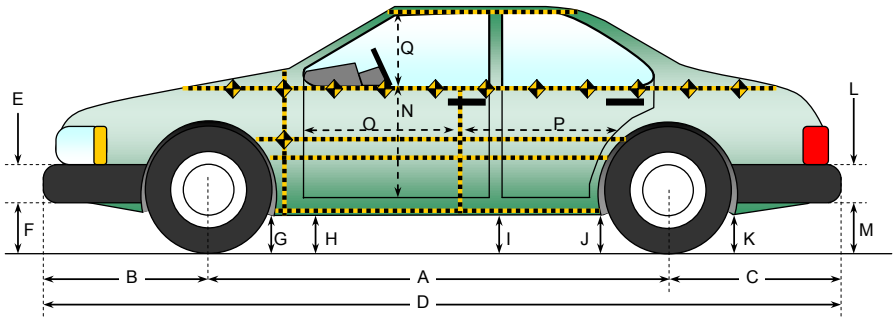
VEHICLE SPEED, VEHICLE ANGLE AT IMPACT, AND IMPACT POINT LOCATION DATA

Measured Parameter	Units	Tolerance	Value
Vertical Impact Reference Line (Aft of Front Axle) (Intended Impact Point)	mm		1240
Actual Impact Point (Aft of Front Axle)	mm		1245
Horizontal Offset (+forward / -rearward)	mm	+/- 38 of Intended Impact Point	-5
Angle Between Vehicle's Longitudinal Centerline and Line of Forward Motion	deg	75 +/- 3	75
Trap No. 1 Velocity (Primary)	km/h	31.4 to 33.0	32.06
Trap No. 2 Velocity (Redundant)	km/h	31.4 to 33.0	32.15

DATA SHEET NO. 9
VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2015 Ford F-150 SuperCrew XL Truck
Test Program: NCAP Side Pole Impact Test

NHTSA No. M20150217
Test Date: 2/18/2015



All measurements in (mm) with tolerance of ± 3 mm

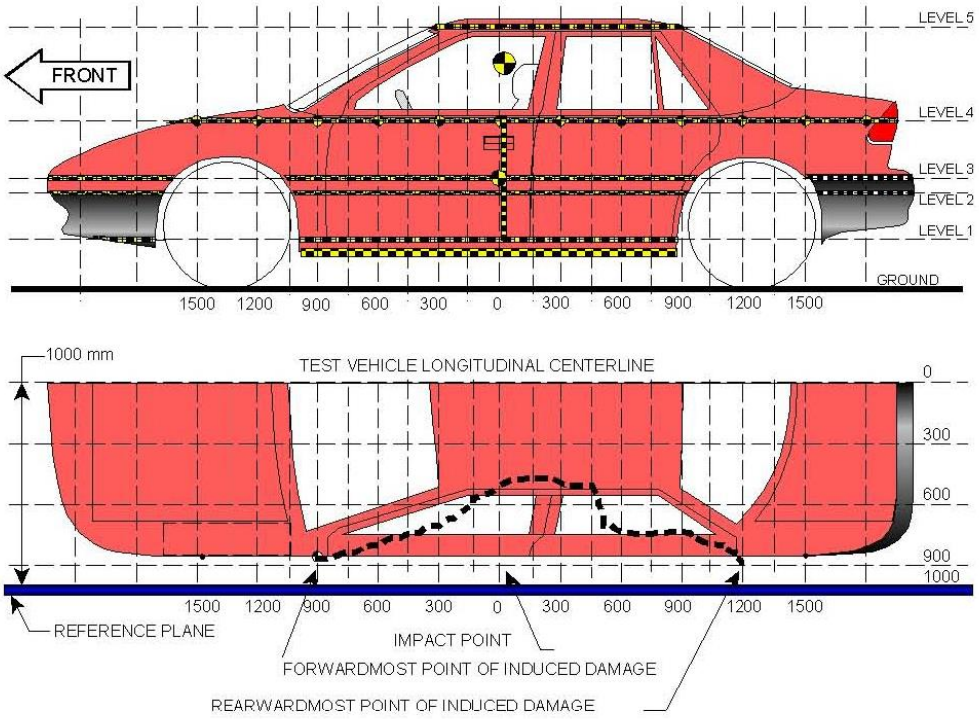
LEFT SIDE VIEW

VEHICLE PRE- AND POST-TEST MEASUREMENT INFORMATION

Code	Measurement Description	Pre-Test	Post-Test	Difference
A	Wheelbase	3682	3657	25
B	Front Axle to FSOV	964	976	-12
C	Rear Axle to RSOV	1246	1248	-2
D	Total Vehicle Length at Centerline	5892	5881	11
E	Front Bumper Thickness	290	290	0
F	Front Bumper Bottom to Ground	203	211	-8
G	Sill Height at Front Wheel Well	357	346	11
H	Sill Height at Front Door Leading Edge	360	356	4
I	Sill Height at B-Pillar	365	355	10
J1	Sill Height at Rear Wheel Well	380	400	-20
J2	Pinch Weld Height at Rear Wheel Well	372	385	-13
K	Sill Height Aft of Rear Wheel Well	412	450	-38
L	Rear Bumper Thickness	180	180	0
M	Rear Bumper Bottom to Ground	430	430	0
N	Sill Height to Bottom of Front Window Sill	782	782	0
O	Front Door Leading Edge to Impact CL	562	473	89
P	Rear Door Trailing Edge to Impact CL	1652	1575	77
Q	Front Window Opening	550	523	27
R	Right Side Length	4995	5008	-13
S	Left Side Length	4995	4889	106
T	Vehicle Width at B-Pillars	2030	1995	35

DATA SHEET NO. 10
VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2015 Ford F-150 SuperCrew XL Truck NHTSA No. M20150217
Test Program: NCAP Side Pole Impact Test Test Date: 2/18/2015



NOTE: The measurements are taken along the vertical impact reference line.
Vehicle measurements forward of the vertical impact reference line are negative.

MAXIMUM EXTERIOR CRUSH MEAUREMENTS

Level	Measurement Description	Height Above Ground (mm)	Maximum Exterior Static Crush	Distance from Impact
1	Sill Top	430	313	75
2	Occupant Hip Point	784	313	75
3	Mid Door	905	312	75
4	Window Sill	1104	286	75
5	Window Top	1820	100	75

DATA SHEET NO. 10 (CONTINUED)
VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2015 Ford F-150 SuperCrew XL Truck NHTSA No. M20150217
Test Program: NCAP Side Pole Impact Test Test Date: 2/18/2015

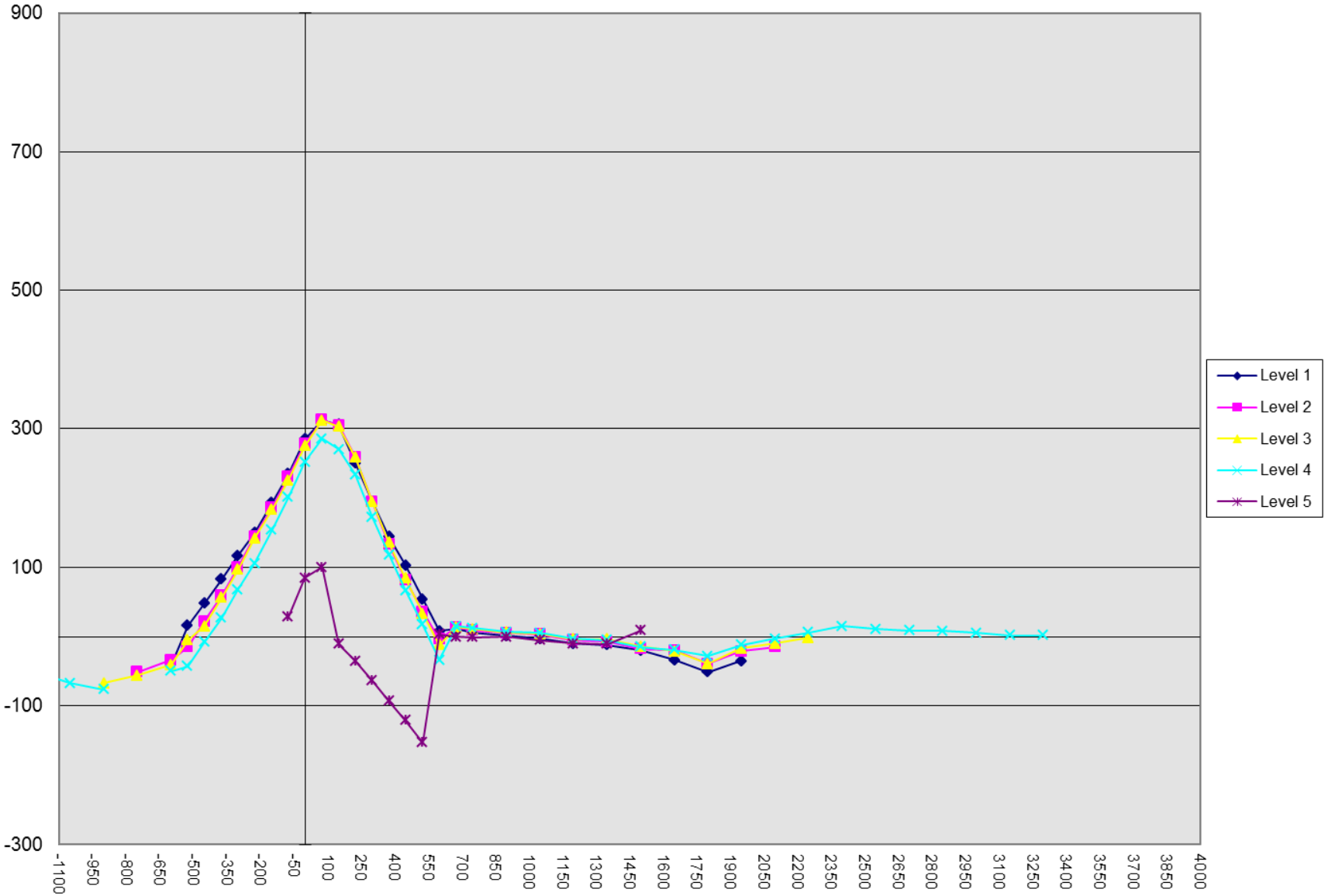
	Pre-Test					Post-Test					Difference				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
-1650				210					191					-19	
-1500				181					151					-30	
-1350				162					119					-43	
-1200				145					93					-52	
-1050				136					69					-67	
-900			92	128				25	52				-67	-76	
-750		93	102				42	46				-51	-56		
-600	118	102	98	117		78	68	57	67		-40	-34	-41	-50	
-525	118	100	95	116		134	85	90	73		16	-15	-5	-43	
-450	116	99	94	114		164	121	109	106		48	22	15	-8	
-375	115	98	93	112		198	157	149	139		83	59	56	27	
-300	115	98	92	109		232	198	189	177		117	100	97	68	
-225	115	96	90	107		265	241	232	213		150	145	142	106	
-150	113	96	90	106		306	282	273	260		193	186	183	154	
-75	114	95	90	103	379	349	326	316	304	407	235	231	226	201	28
0	112	94	89	102	361	397	372	364	354	446	285	278	275	252	85
75	112	94	88	101	357	425	407	400	387	457	313	313	312	286	100
150	112	93	88	100	357	418	398	391	370	346	306	305	303	270	-11
225	110	92	87	99	355	361	351	346	333	320	251	259	259	234	-35
300	110	92	87	98	354	304	286	281	270	290	194	194	194	172	-64
375	110	92	86	97	353	254	225	222	215	260	144	133	136	118	-93
450	108	91	85	95	353	211	173	169	162	232	103	82	84	67	-121
525	108	90	84	93	353	162	126	117	110	200	54	36	33	17	-153
600	107	88	83	93	353	115	84	71	59	356	8	-4	-12	-34	3
675	109	88	82	93	352	120	102	96	108	352	11	14	14	15	0
750	109	89	83	93	351	115	98	94	105	350	6	9	11	12	-1
900	108	90	83	93	351	109	95	89	100	351	1	5	6	7	0
1050	109	90	83	93	350	106	93	87	98	345	-3	3	4	5	-5
1200	109	90	84	93	348	99	85	80	90	338	-10	-5	-4	-3	-10
1350	110	90	84	94	348	98	83	80	89	337	-12	-7	-4	-5	-11
1500	108	90	84	96	345	88	72	70	81	354	-20	-18	-14	-15	9
1650	114	91	86	95		80	71	65	76		-34	-20	-21	-19	
1800	122	99	93	101		71	60	54	73		-51	-39	-39	-28	
1950	116	96	97	103		81	75	80	91		-35	-21	-17	-12	
2100		85	90	105		0	70	80	102			-15	-10	-3	
2250			80	107				78	113				-2	6	
2400				110					125					15	
2550				115					126					11	
2700				119					128					9	
2850				123					131					8	
3000				130					135					5	
3150				138					140					2	
3300				145					147					2	

Pre-test measurements are taken when the vehicle is in the “As Tested” weight condition. Vehicle measurements forward of the vertical impact reference line are negative. The crush pile grid is established prior to the test based on an estimated impact point. The final distance from impact is determined after the final dummy positioning and the pole is aligned with the center of gravity of the dummy’s head.

DATA SHEET NO. 10 (CONTINUED)
VEHICLE EXTERIOR CRUSH MEASUREMENTS

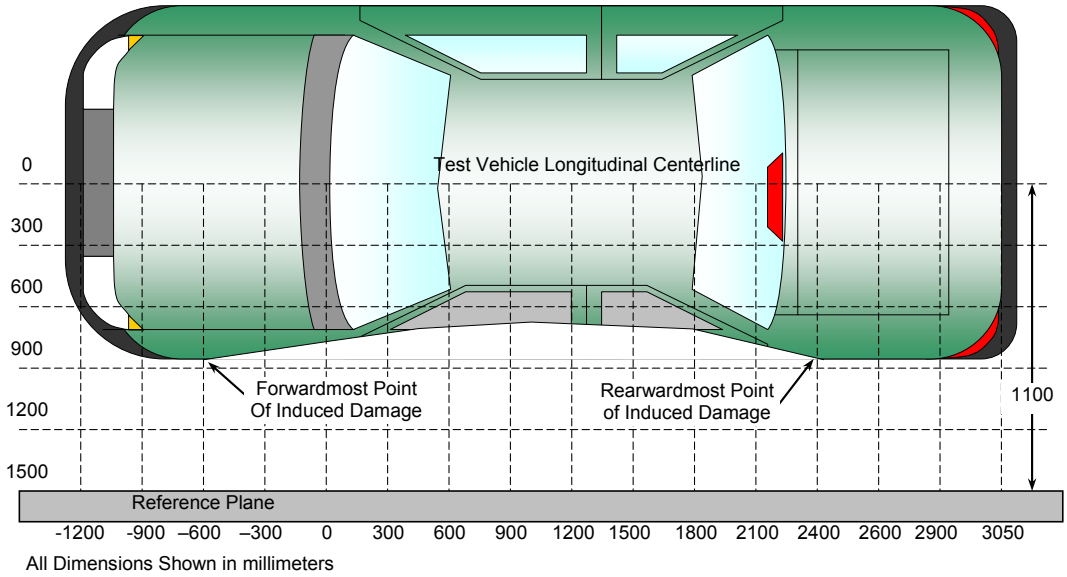
Test Vehicle: 2015 Ford F-150 SuperCrew XL Truck
Test Program: NCAP Side Pole Impact Test

NHTSA No. M20150217
Test Date: 2/18/2015



DATA SHEET NO. 11
VEHICLE DAMAGE PROFILE DISTANCES

Test Vehicle: 2015 Ford F-150 SuperCrew XL Truck NHTSA No. M20150217
Test Program: NCAP Side Pole Impact Test Test Date: 2/18/2015



TOP VIEW

DAMAGE PROFILE DISTANCES

DPD	Distance from Impact Point (mm)	Level	Pre-Test (mm)	Post-Test (mm)	Crush (mm)
1	675	3	82	96	14
2	425	3	86	125	39
3	175	3	88	380	292
4	-75	3	90	316	226
5	-325	3	93	178	85
6	-575	3	97	60	-37

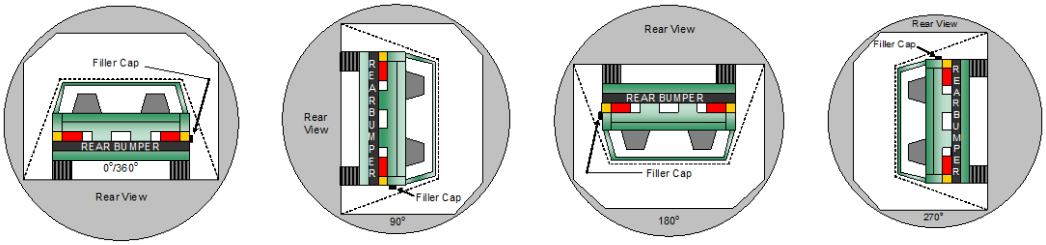
DATA SHEET NO. 12
FMVSS NO. 301 STATIC ROLLOVER RESULTS

Test Vehicle: 2015 Ford F-150 SuperCrew XL Truck NHTSA No. M20150217
Test Program: NCAP Side Pole Impact Test Test Date: 2/18/2015

Test Time: 10:49 am Temperature: 21.6°C

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

FMVSS 301 STATIC ROLLOVER DATA



0°/360° 90° 180° 270°

ROLLOVER SOLVENT COLLECTION TIME TABLE IN SECONDS

Test Phase	Rotation Time	Hold Time	Total Time
0° to 90°	141	300	441
90° to 180°	125	300	425
180° to 270°	134	300	434
270° to 360°	126	300	426

FMVSS 301 ROLLOVER SPILLAGE TABLE (units in ounces)

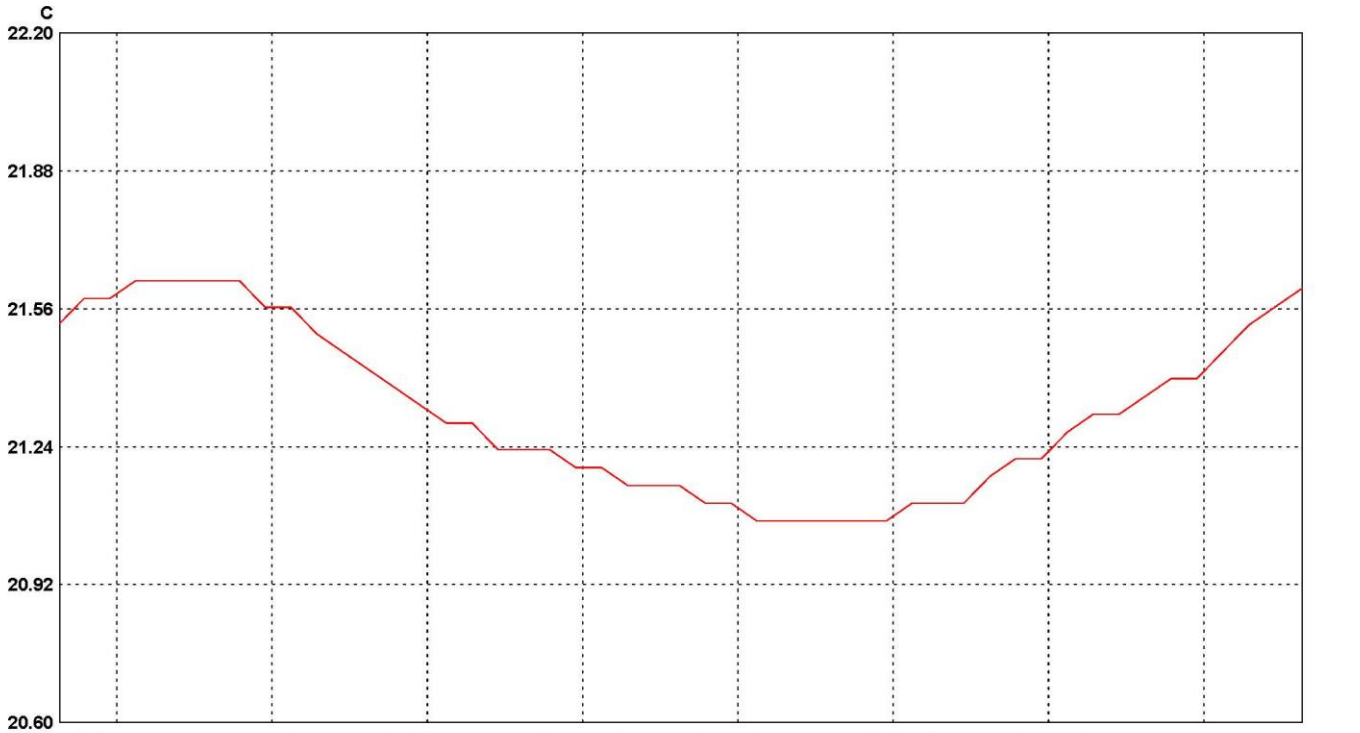
Test Phase	First 5 Minutes	Sixth Minute	Seventh Minute	Eight Minute
0° to 90°	0	0	0	0
90° to 180°	0	0	0	0
180° to 270°	0	0	0	0
270° to 360°	0	0	0	0

ROLLOVER SOLVENT SPILLAGE LOCATION TABLE

Test Phase	Spillage Location
0° to 90°	
90° to 180°	
180° to 270°	
270° to 360°	

DATA SHEET NO. 13
DUMMY/VEHICLE TEMPERATURE STABILIZATION DATA

Test Vehicle: 2015 Ford F-150 SuperCrew XL Truck NHTSA No. M20150217
Test Program: NCAP Side Pole Impact Test Test Date: 2/18/2015



30 minutes/div 4 hours (M/d/yyyy h:mm:ss tt) Central Time Graph file (truncated): 2015 Ford F-150 SuperCrew 2-18-15.spg

LN	Serial #	Description	CH	Value	Maximum	Average	Minimum	Units	CH description	Logger file
1	10102056	Crash Prep	1		21.63	21.32	21.07	C	Temperature	10102056_Crash_Prep.spl

APPENDIX A
PHOTOGRAPHS

TABLE OF PHOTOGRAPHS

As Delivered Right Front ¾ View of Test Vehicle

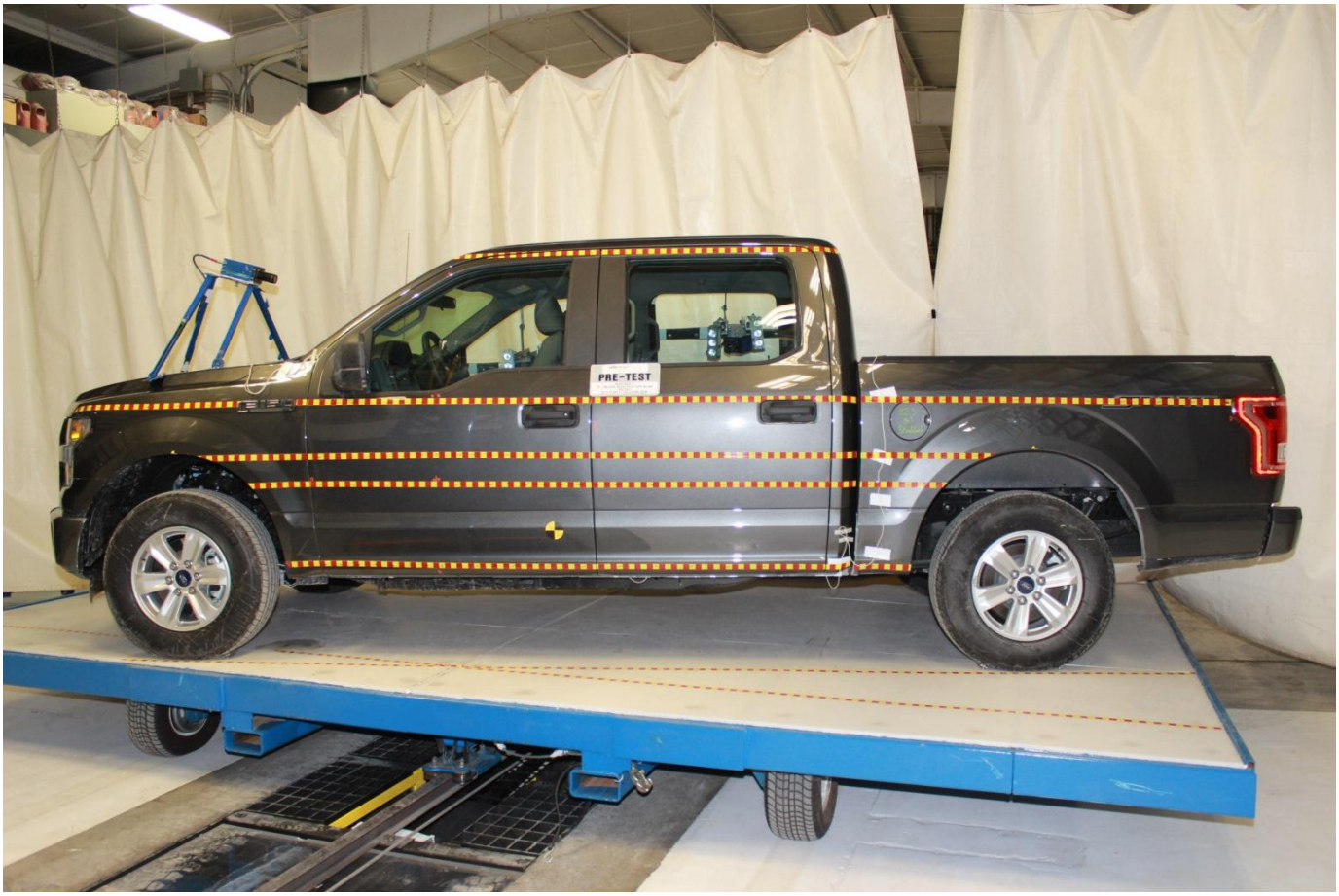
As Delivered Left Rear ¾ View of Test Vehicle

Pre-Test Frontal View of Test Vehicle

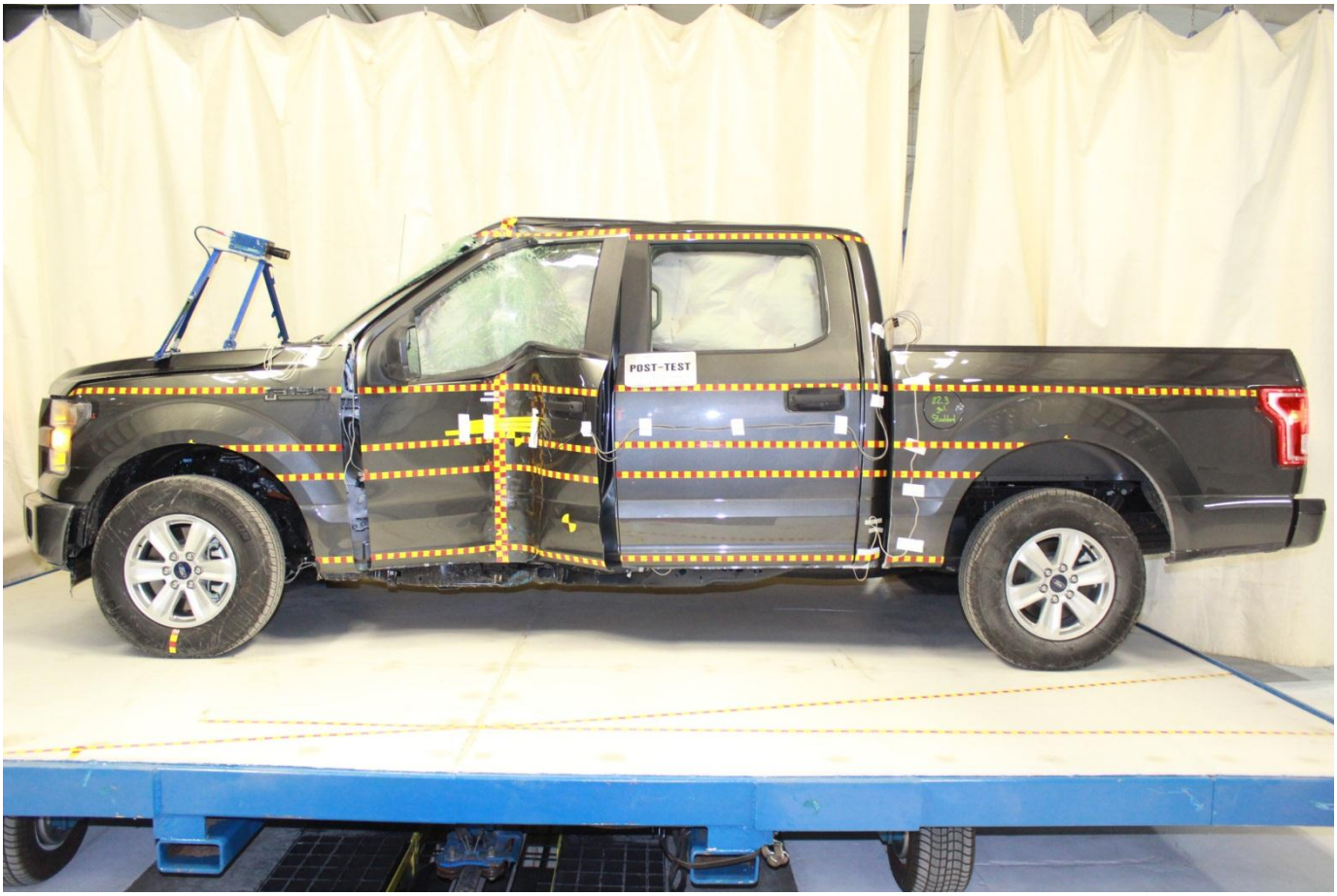
Post-Test Frontal View of Test Vehicle

Pre-Test Left Front ¾ View of Test Vehicle

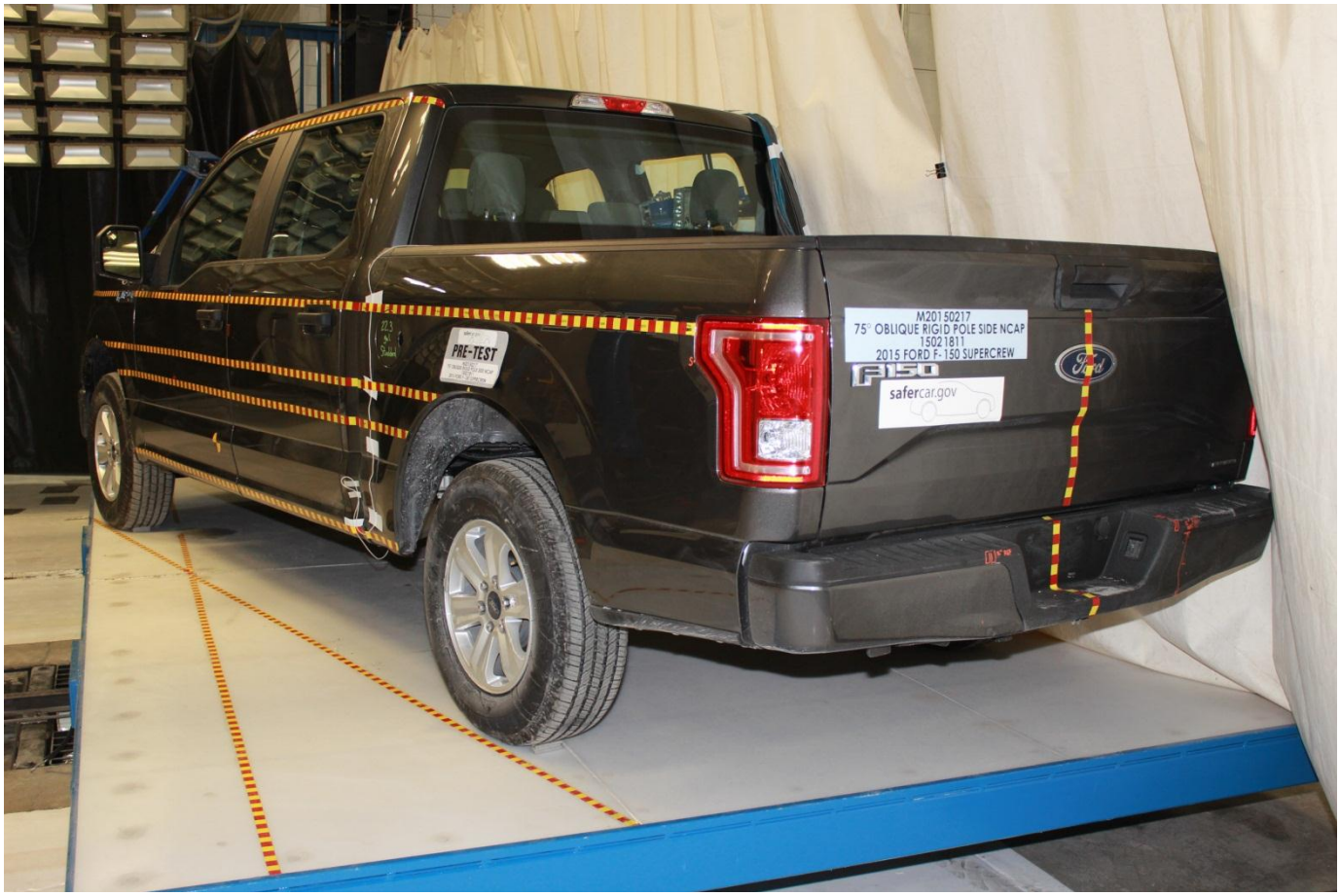
Post-Test Left Front ¾ View of Test Vehicle



Pre-Test Left Side View of Test Vehicle



Post-Test Left Side View of Test Vehicle



Pre-Test Left Rear ¾ View of Test Vehicle

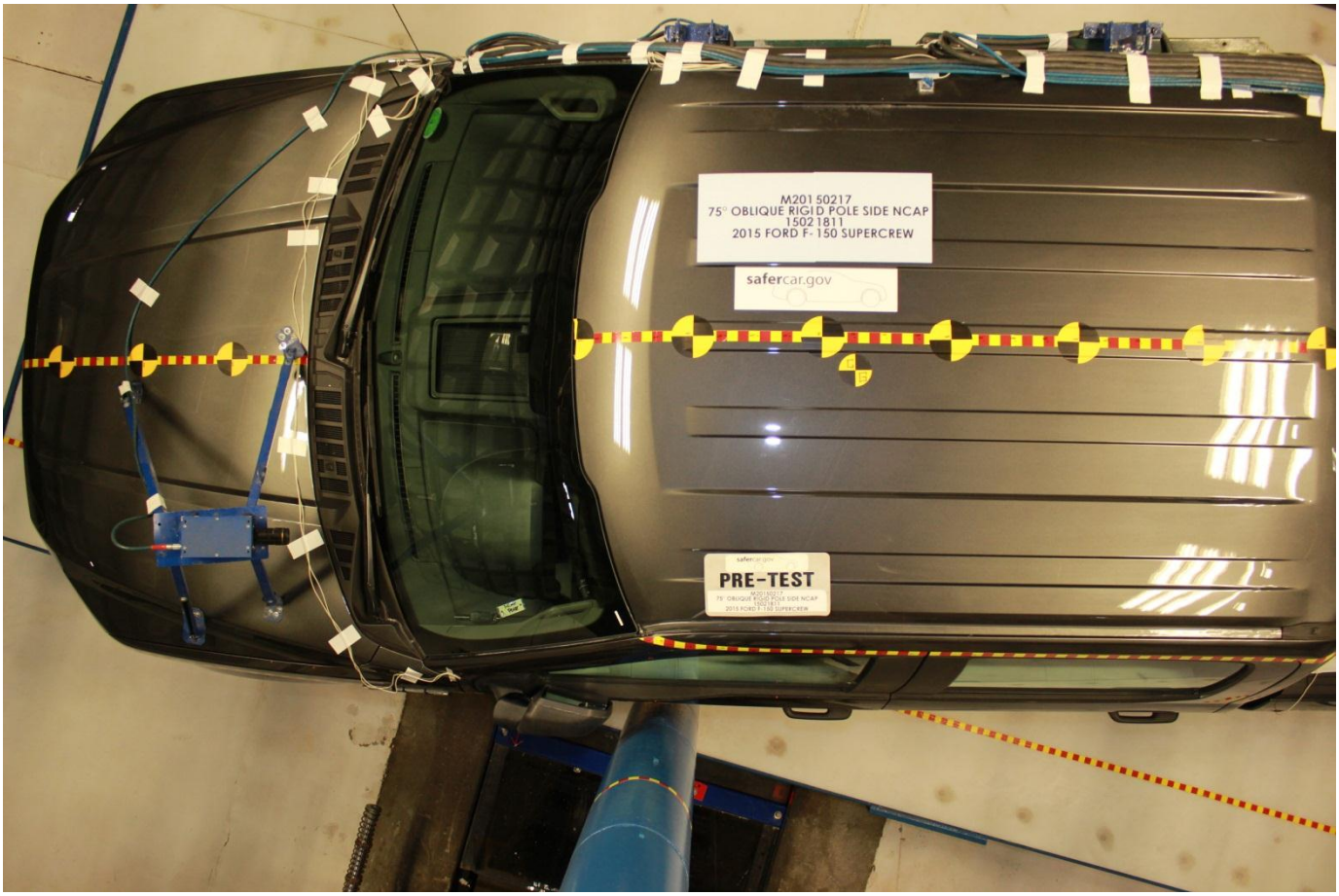
Post-Test Left Rear ¾ View of Test Vehicle

Pre-Test Rear View of Test Vehicle

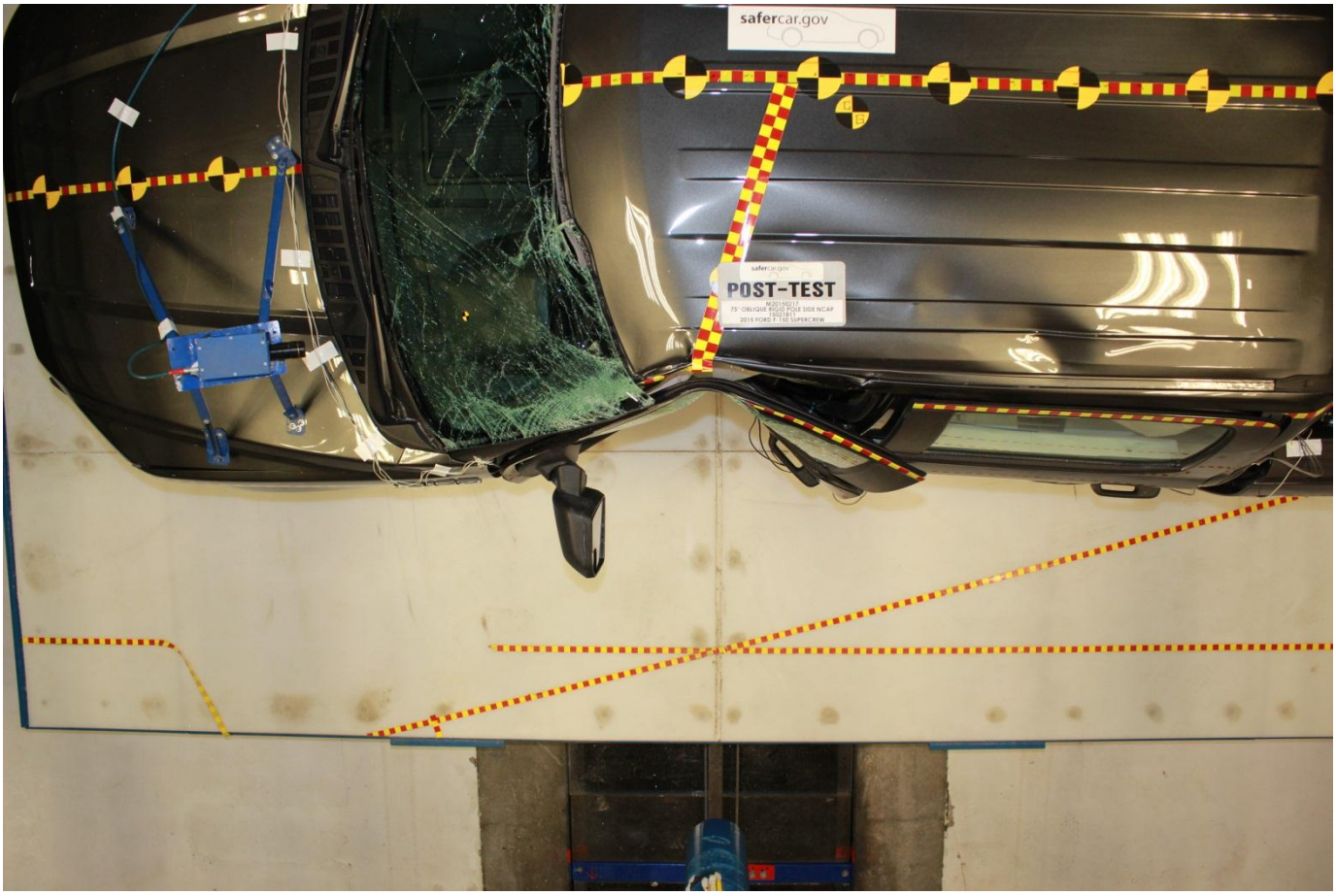
Post-Test Rear View of Test Vehicle

Pre-Test Right Side View of Test Vehicle

Post-Test Right Side View of Test Vehicle



Pre-Test Overhead View of Test Area



Post-Test Overhead View of Test Area

Pre-Test Left Side View of Pole Positioned Against Side of Vehicle

Pre-Test Right Side View of Pole Positioned Against Side of Vehicle

Pre-Test Close-Up View of Impact Point Target

Post-Test Close-Up View of Impact Point Target Showing Impact Location

Pre-Test Front Close-Up View of Dummy Head and Chest

Post-Test Front Close-Up View of Dummy

Pre-Test Left Side View of Dummy Showing Belt and Chalking

Pre-Test Left Side View of Dummy Shoulder and Door Top View

Post-Test Left Side View of Dummy Shoulder and Door Top View

Pre-Test Front View of Seat Back Prior to Dummy Positioning

Pre-Test Front Close-Up View of Dummy Head and Shoulders in Relation to Head Restraint

Pre-Test Front View of Seat Pan Prior to Dummy Positioning

Pre-Test Overhead View of Dummy Thighs on Seat Pan

Pre-Test Left Side View of Dummy's Neck Showing Position of Adjustable Neck Bracket

Pre-Test Left Side View of Dummy's Head Showing Dummy's Head is Level

Pre-Test Placement of Dummy's Feet

Pre-Test View of Belt Anchorage for Dummy

Pre-Test Left Side View of Steering Wheel

Pre-Test View of Disengaged Parking Brake

Pre-Test View of Parking Brake

Pre-Test Close-Up Left Side View of Driver Seat Track

Pre-Test Close-Up Left Side View of Driver Seat Back

Pre-Test Close-Up View of Driver Seat Back or Head Restraint

Pre-Test Dummy and Door Clearance View

Post-Test Dummy and Door Clearance View

Pre-Test Right Side View of Dummy and Front Seat of Occupant Compartment

Post-Test Right Side View of Dummy and Front Seat of Occupant Compartment

Pre-Test Inner Door Panel View

Post-Test Inner Door Panel View Showing Dummy Contact Location

Post-Test Dummy Close-Up Head Contact with Vehicle Interior View

Post-Test Dummy Close-Up Head Contact with Side Air Bag View

Post-Test Dummy Close-Up Torso Contact with Vehicle Interior View

Post-Test Dummy Close-Up Torso Contact with Side Air Bag View

Post-Test Dummy Close-Up Pelvis Contact with Vehicle Interior View

Post-Test Dummy Close-Up Pelvis Contact with Side Air Bag View

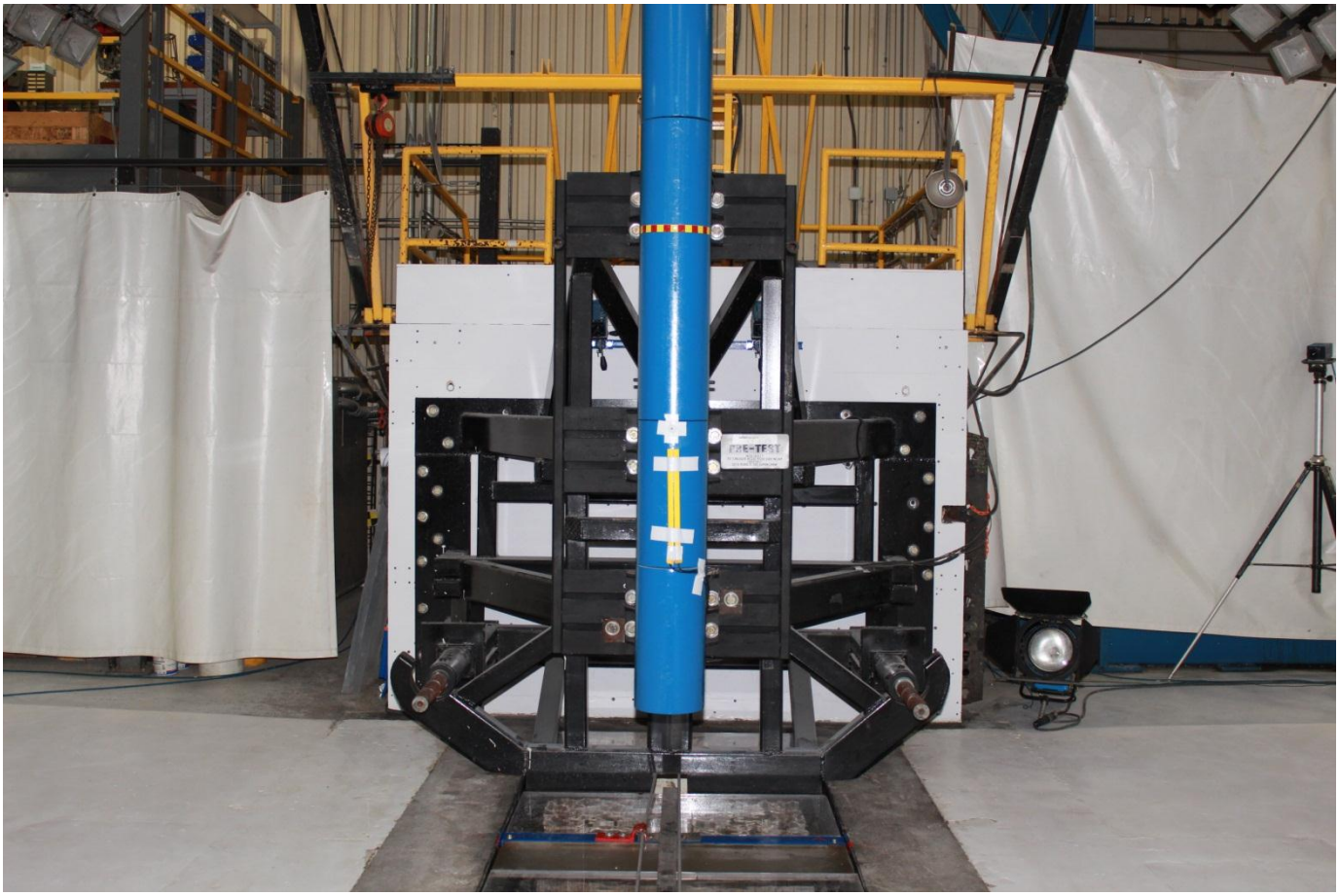
Post-Test Dummy Close-Up Knee Contact with Vehicle Interior View

Pre-Test View of Fuel Filler Cap or Fuel Filler Neck

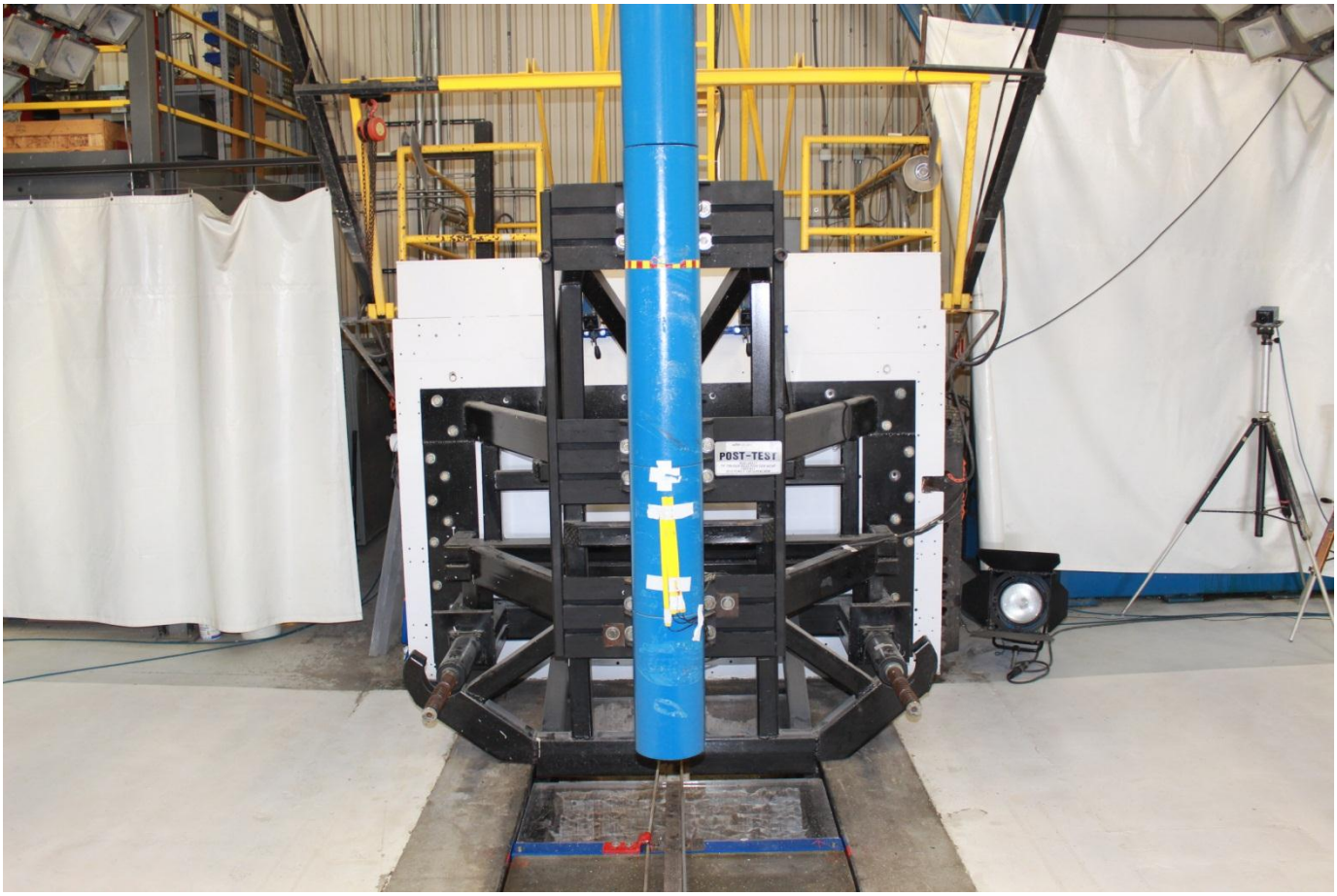
Post-Test View of Fuel Filler Cap or Fuel Filler Neck

Close-Up View of Vehicle's Certification Label

Close-Up View of Vehicle's Tire Information Placard or Label



Pre-Test Pole Barrier Front View



Post-Test Pole Barrier Front View

Pre-Test Pole Barrier Side View

Post-Test Pole Barrier Side View

Pre-Test Ballast View

Post-Test Primary and Redundant Speed Trap Read-Out

FMVSS No. 301 Static Rollover 0 Degrees

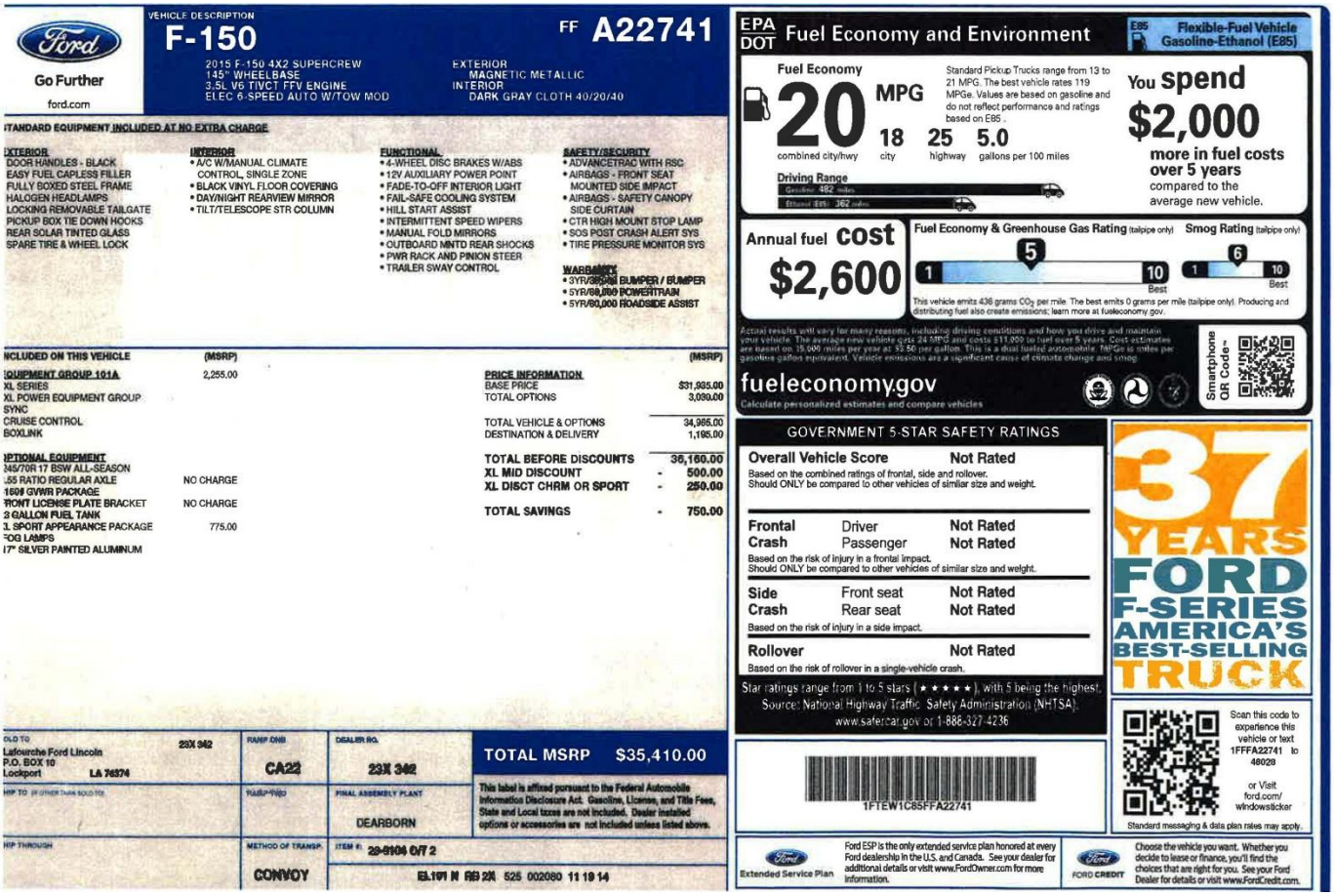
FMVSS No. 301 Static Rollover 90 Degrees

FMVSS No. 301 Static Rollover 180 Degrees

FMVSS No. 301 Static Rollover 270 Degrees

FMVSS No. 301 Static Rollover 360 Degrees

Impact Event



VEHICLE DESCRIPTION
F-150
FF A22741
2015 F-150 4X2 SUPERCREW
145" WHEELBASE
3.5L V6 TIVCT FFV ENGINE
ELEC 6-SPEED AUTO W/TOW MOD
EXTERIOR
MAGNETIC METALLIC
INTERIOR
DARK GRAY CLOTH 40/20/40

Go Further
ford.com

STANDARD EQUIPMENT INCLUDED AT NO EXTRA CHARGE

EXTERIOR
DOOR HANDLES - BLACK
EASY FUEL CAPLESS FILLER
FULLY BOXED STEEL FRAME
HALOGEN HEADLAMPS
LOCKING REMOVABLE TAILGATE
PICKUP BOX TIE DOWN HOOKS
REAR SOLAR TINTED GLASS
SPARE TIRE & WHEEL LOCK

INTERIOR
• A/C W/MANUAL CLIMATE CONTROL, SINGLE ZONE
• BLACK VINYL FLOOR COVERING
• DAY/NIGHT REARVIEW MIRROR
• TILT/TELESCOPE STR COLUMN

FUNCTIONAL
• 4-WHEEL DISC BRAKES W/ABS
• 12V AUXILIARY POWER POINT
• FADE-TO-OFF INTERIOR LIGHT
• FAIL-SAFE COOLING SYSTEM
• HILL START ASSIST
• INTERMITTENT SPEED WIPERS
• MANUAL FOLD MIRRORS
• OUTBOARD MNTD REAR SHOCKS
• PWR RACK AND PINION STEER
• TRAILER SWAY CONTROL

SAFETY/SECURITY
• ADVANCETRAC WITH RSC
• AIRBAGS - FRONT SEAT MOUNTED SIDE IMPACT
• AIRBAGS - SAFETY CANOPY SIDE CURTAIN
• CTR HIGH MOUNT STOP LAMP
• SOS POST CRASH ALERT SYS
• TIRE PRESSURE MONITOR SYS

WARRANTY
• 3YR/36,000 BUMPER / BUMPER
• 5YR/60,000 POWERTRAIN
• 5YR/60,000 ROADSIDE ASSIST

INCLUDED ON THIS VEHICLE	(MSRP)
EQUIPMENT GROUP 101A	2,255.00
XL SERIES	
XL POWER EQUIPMENT GROUP	
SYNC	
CRUISE CONTROL	
BOXLINK	
OPTIONAL EQUIPMENT	
245/70R 17 BSW ALL-SEASON	
3.55 RATIO REGULAR AXLE	NO CHARGE
7600 GVWR PACKAGE	
FRONT LICENSE PLATE BRACKET	NO CHARGE
36 GALLON FUEL TANK	
XL SPORT APPEARANCE PACKAGE	775.00
FOG LAMPS	
17" SILVER PAINTED ALUMINUM	

PRICE INFORMATION	(MSRP)
BASE PRICE	$31,935.00
TOTAL OPTIONS	3,030.00
TOTAL VEHICLE & OPTIONS	34,965.00
DESTINATION & DELIVERY	1,195.00
TOTAL BEFORE DISCOUNTS	36,160.00
XL MID DISCOUNT	- 500.00
XL DISCT CHRM OR SPORT	- 250.00
TOTAL SAVINGS	- 750.00

SOLD TO
Lafourche Ford Lincoln
P.O. BOX 10
Lockport LA 70374
23X 342

RAMP ONB
CA22

DEALER NO.
23X 342

TOTAL MSRP $35,410.00

This label is affixed pursuant to the Federal Automobile Information Disclosure Act. Gasoline, License, and Title Fees, State and Local taxes are not included. Dealer installed options or accessories are not included unless listed above.

FINAL ASSEMBLY PLANT
DEARBORN

METHOD OF TRANSP.
CONVOY

ITEM #: 29-6106 0/7 2

EL 101 N RB 2A 525 002080 11 19 14

EPA DOT Fuel Economy and Environment

E85 Flexible-Fuel Vehicle Gasoline-Ethanol (E85)

Fuel Economy
20 MPG
18 city 25 highway 5.0 gallons per 100 miles
Standard Pickup Trucks range from 13 to 21 MPG. The best vehicle rates 119 MPGe. Values are based on gasoline and do not reflect performance and ratings based on E85.

Driving Range
Gasoline: 482 miles
Ethanol E85: 362 miles

You spend $2,000 more in fuel costs over 5 years compared to the average new vehicle.

Annual fuel cost $2,600

Fuel Economy & Greenhouse Gas Rating (tailpipe only) 5 (1 – 10, Best)
Smog Rating (tailpipe only) 6 (1 – 10, Best)
This vehicle emits 436 grams CO_2 per mile. The best emits 0 grams per mile (tailpipe only). Producing and distributing fuel also create emissions; learn more at fueleconomy.gov.

Actual results will vary for many reasons, including driving conditions and how you drive and maintain your vehicle. The average new vehicle gets 24 MPG and costs $11,000 to fuel over 5 years. Cost estimates are based on 15,000 miles per year at $2.50 per gallon. This is a dual fueled automobile. MPGe is miles per gasoline gallon equivalent. Vehicle emissions are a significant cause of climate change and smog.

fueleconomy.gov
Calculate personalized estimates and compare vehicles

Smartphone QR Code

GOVERNMENT 5-STAR SAFETY RATINGS

Overall Vehicle Score		Not Rated
Based on the combined ratings of frontal, side and rollover. Should ONLY be compared to other vehicles of similar size and weight.		
Frontal Crash	Driver	Not Rated
	Passenger	Not Rated
Based on the risk of injury in a frontal impact. Should ONLY be compared to other vehicles of similar size and weight.		
Side Crash	Front seat	Not Rated
	Rear seat	Not Rated
Based on the risk of injury in a side impact.		
Rollover		Not Rated
Based on the risk of rollover in a single-vehicle crash.		

Star ratings range from 1 to 5 stars (★★★★★), with 5 being the highest. Source: National Highway Traffic Safety Administration (NHTSA). www.safercar.gov or 1-888-327-4236

37 YEARS FORD F-SERIES AMERICA'S BEST-SELLING TRUCK

1FTEW1C85FFA22741

Scan this code to experience this vehicle or text 1FFFA22741 to 48029
or Visit ford.com/windowsticker
Standard messaging & data plan rates may apply.

Extended Service Plan
Ford ESP is the only extended service plan honored at every Ford dealership in the U.S. and Canada. See your dealer for additional details or visit www.FordOwner.com for more information.

FORD CREDIT
Choose the vehicle you want. Whether you decide to lease or finance, you'll find the choices that are right for you. See your Ford Dealer for details or visit www.FordCredit.com.

Monroney Label

Seats

WARNINGS

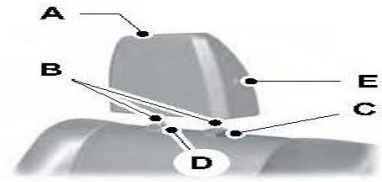
Install the head restraint properly to help minimize the risk of neck injury in the event of a crash.

Note: *Adjust the seatback to an upright driving position before adjusting the head restraint. Adjust the head restraint so that the top of it is level with the top of your head and as far forward as possible. Make sure that you remain comfortable. If you are extremely tall, adjust the head restraint to its highest position.*

Front Seat Head Restraint

E138642

Rear Seat Outboard Head Restraints



E166700

Rear Seat Center Head Restraint

E166701

The head restraints consist of:

A	An energy absorbing head restraint.
B	Two steel stems.
C	Guide sleeve adjust and release button.
D	Guide sleeve unlock and remove button.
E	Fold button (rear seat outboard only).

Adjusting the Head Restraint

Raising the Head Restraint

Pull the head restraint up.

Lowering the Head Restraint

1. Press and hold button C.
2. Push the head restraint down.

Removing the Head Restraint

1. Pull up the head restraint until it reaches the highest adjustment position.
2. Press and hold buttons C and D.
3. Pull up the head restraint.

Note: *For rear seat outboard seats, you can fold the head restraint forward for easier removal.*

142

Head Restraint Use and Adjustment Information from Vehicle Owner's Manual

Installing the Head Restraint

Align the steel stems into the guide sleeves and push the head restraint down until it locks.

Folding the Head Restraint

Note: *The rear seat outboard head restraints may fold forward for improved visibility.*

1. Press and hold button E.
2. Pull it back up to reset.

Front Seat Center Head Restraint

Your vehicle may be equipped with a front row center head restraint that you cannot adjust or remove.

Tilting Head Restraints (If Equipped)

The front head restraints tilt for extra comfort. To tilt the head restraint, do the following:

E144727

1. Adjust the seatback to an upright driving or riding position.
2. Pivot the head restraint forward toward your head to the desired position.

After the head restraint reaches the forward-most tilt position, pivot it forward again to release it to the rearward, untilted position.

Note: *Do not attempt to force the head restraint backward after it is tilted. Instead, continue tilting it forward until the head restraint releases to the upright position.*

MANUAL SEATS

WARNING

Do not adjust the driver's seat or seatback when your vehicle is moving.

Moving the Seat Backward and Forward

E175314

Recline Adjustment

E175315

Head Restraint Use and Adjustment Information from Vehicle Owner's Manual

Post-Test View of Shattered Vehicle Inner Door Panel

APPENDIX B
DUMMY RESPONSE DATA PLOTS

TABLE OF DATA PLOTS
Driver Dummy Instrumentation Plots

The following additional data for this test can be obtained from the Research and Development section of the NHTSA website. The website can be found at www.NHTSA.dot.gov

Additional Driver Dummy Instrumentation Data

Driver Head CG Redundant Acceleration (X) vs. Time

Driver Head CG Redundant Acceleration (Y) vs. Time

Driver Head CG Redundant Acceleration (Z) vs. Time

Driver Upper Thorax Rib Deflection (Y)

Driver Middle Thorax Rib Deflection (Y)

Driver Lower Thorax Rib Deflection (Y)

Driver Upper Abdomen Rib Deflection (Y)

Driver Lower Abdomen Rib Deflection (Y)

Vehicle Instrumentation Data

Vehicle Center of Gravity Acceleration (X)

Vehicle Center of Gravity Acceleration (Y)

Vehicle Center of Gravity Acceleration (Z)

Left Floor Sill Acceleration (Y)

Left A-Pillar Sill Acceleration (Y)

Left Lower A-Pillar Acceleration (Y)

Left Mid A-Pillar Acceleration (Y)

Left B-Pillar Sill Acceleration (Y)

Left Lower B-Pillar Acceleration (Y)

Left Mid B-Pillar Acceleration (Y)

Driver Seat Track at Dummy Hip Point Acceleration (Y)

Engine Top Acceleration (X)

Engine Top Acceleration (Y)

Firewall Center Acceleration (Y)

Right Roof at Vertical Impact Reference Line Acceleration (Y)

Right Sill at Vertical Impact Reference Line Acceleration (Y)

Rear Floorpan Behind Rear Axle at Centerline Acceleration (X)

Rear Floorpan Behind Rear Axle at Centerline Acceleration (Y)

Pole Instrumentation Data

Load Cell Pole Barrier #1 Force (Y)

Load Cell Pole Barrier #2 Force (Y)

Load Cell Pole Barrier #3 Force (Y)

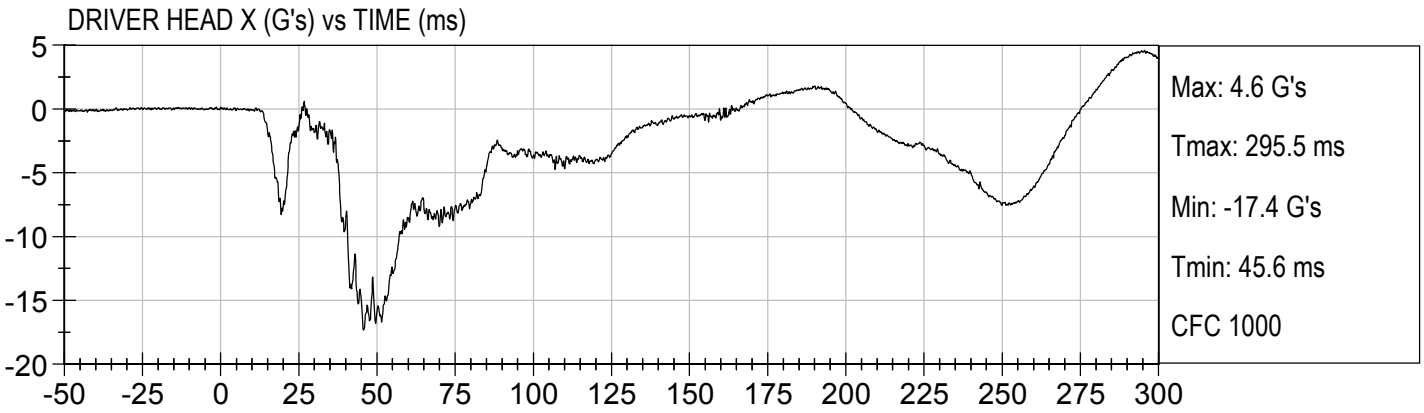
Load Cell Pole Barrier #4 Force (Y)

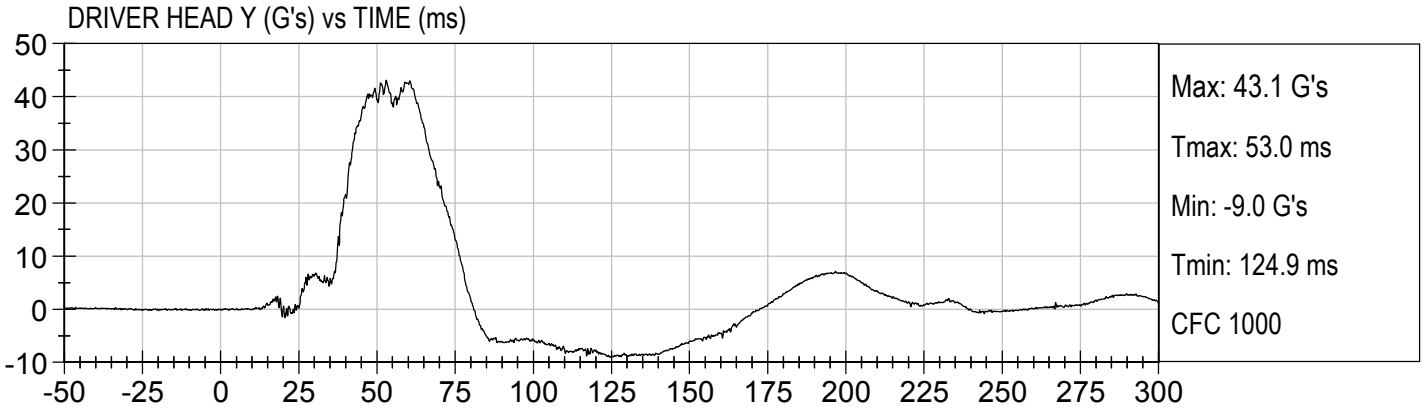
Load Cell Pole Barrier #5 Force (Y)

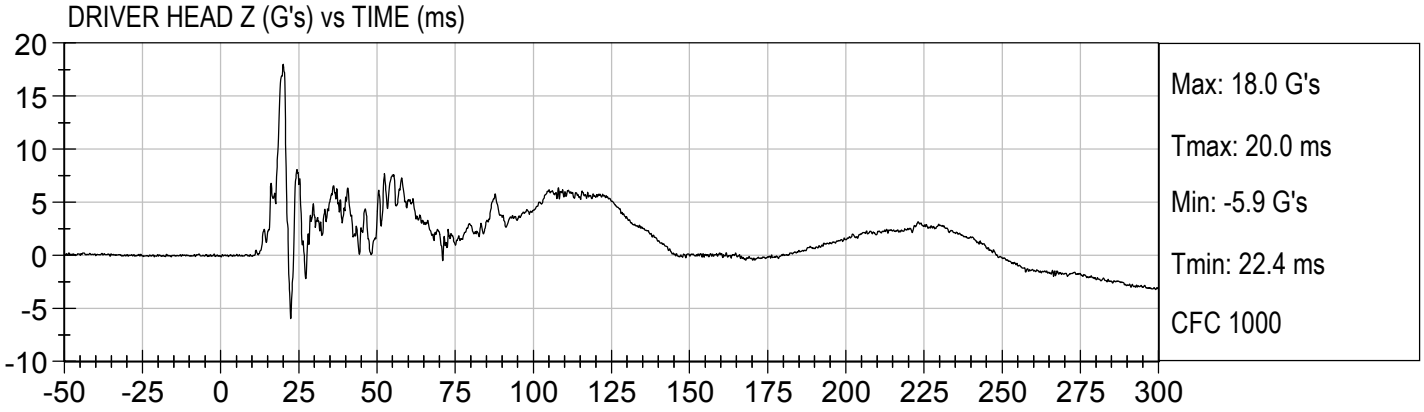
Load Cell Pole Barrier #6 Force (Y)

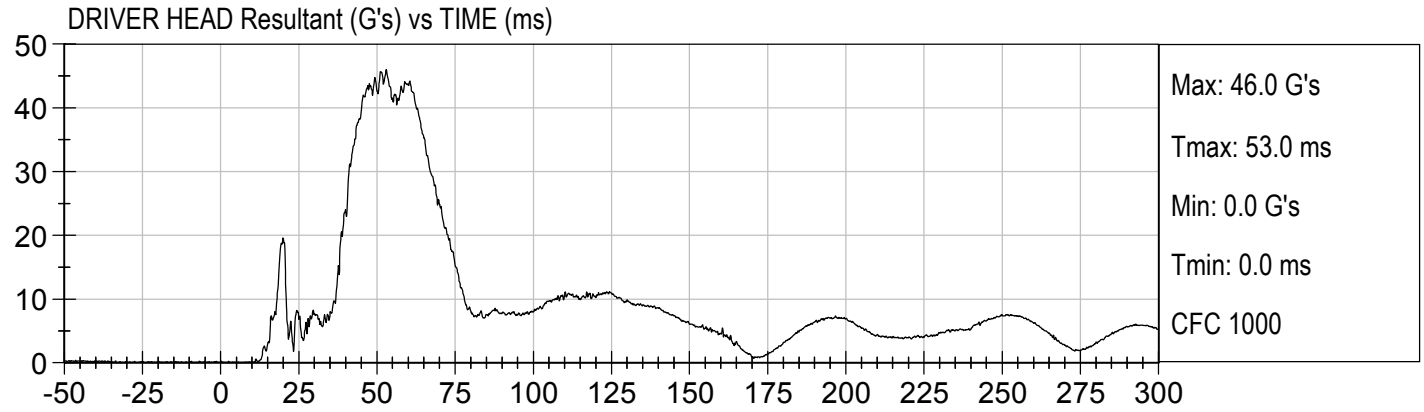
Load Cell Pole Barrier #7 Force (Y)

Load Cell Pole Barrier #8 Force (Y)

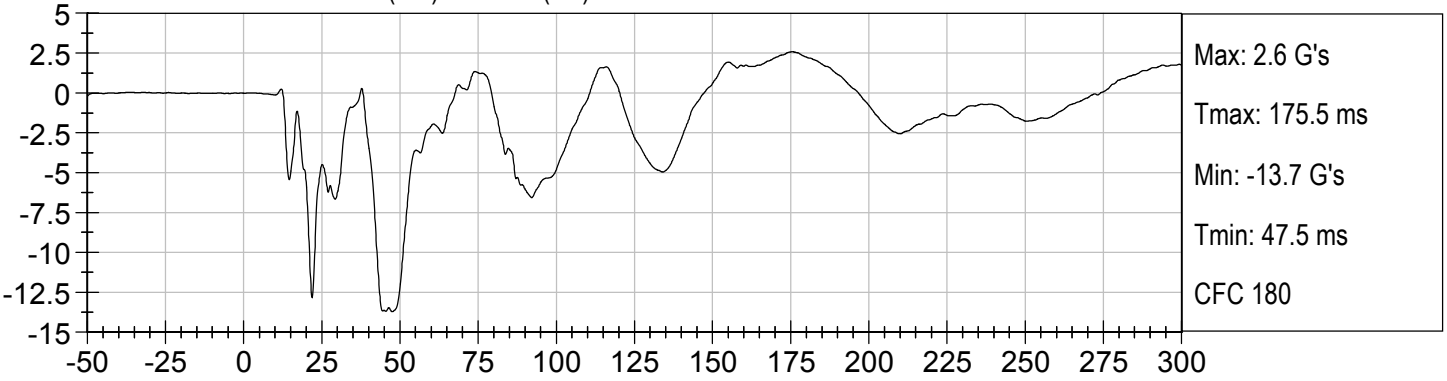

DRIVER HEAD X (G's) vs TIME (ms)
5
0
-5
-10
-15
-20
-50 -25 0 25 50 75 100 125 150 175 200 225 250 275 300
Max: 4.6 G's
Tmax: 295.5 ms
Min: -17.4 G's
Tmin: 45.6 ms
CFC 1000


DRIVER HEAD Y (G's) vs TIME (ms)
50
40
30
20
10
0
-10
-50 -25 0 25 50 75 100 125 150 175 200 225 250 275 300
Max: 43.1 G's
Tmax: 53.0 ms
Min: -9.0 G's
Tmin: 124.9 ms
CFC 1000

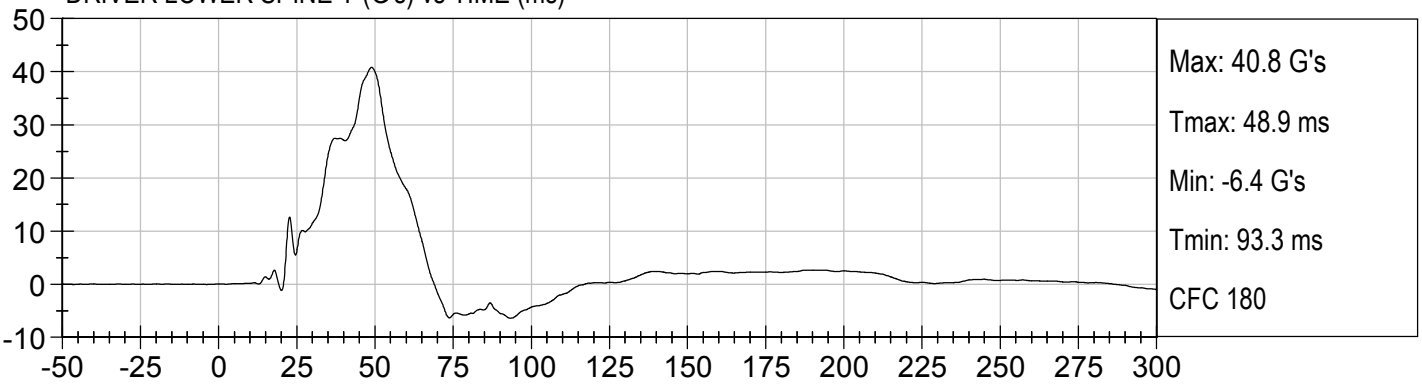

DRIVER HEAD Z (G's) vs TIME (ms)
20
15
10
5
0
-5
-10
-50 -25 0 25 50 75 100 125 150 175 200 225 250 275 300
Max: 18.0 G's
Tmax: 20.0 ms
Min: -5.9 G's
Tmin: 22.4 ms
CFC 1000


DRIVER HEAD Resultant (G's) vs TIME (ms)
50
40
30
20
10
0
-50 -25 0 25 50 75 100 125 150 175 200 225 250 275 300
Max: 46.0 G's
Tmax: 53.0 ms
Min: 0.0 G's
Tmin: 0.0 ms
CFC 1000

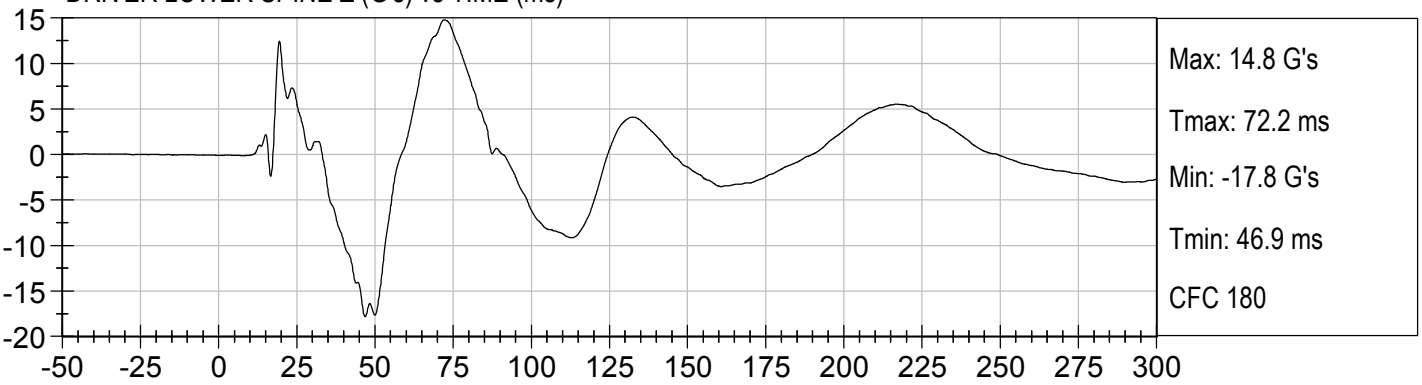
DRIVER LOWER SPINE X (G's) vs TIME (ms)



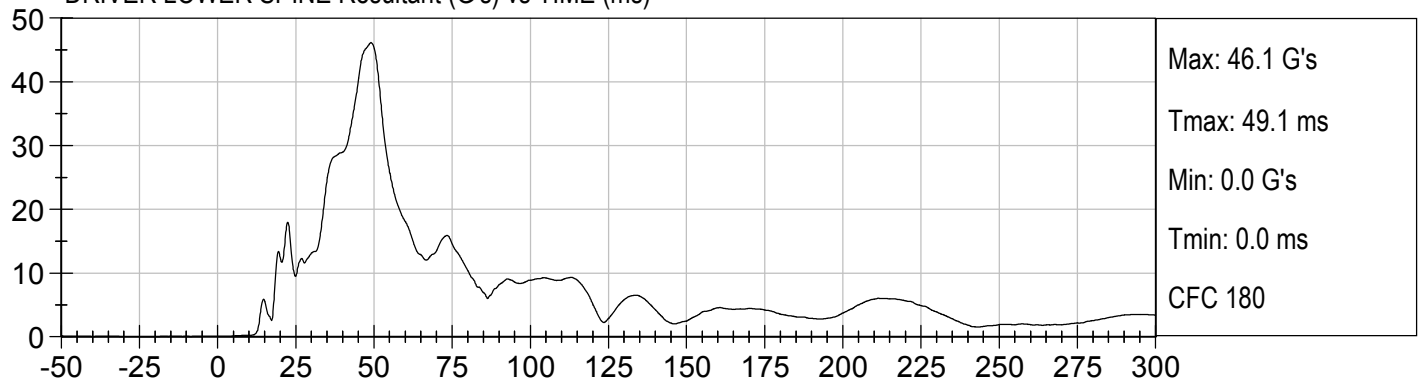
DRIVER LOWER SPINE Y (G's) vs TIME (ms)



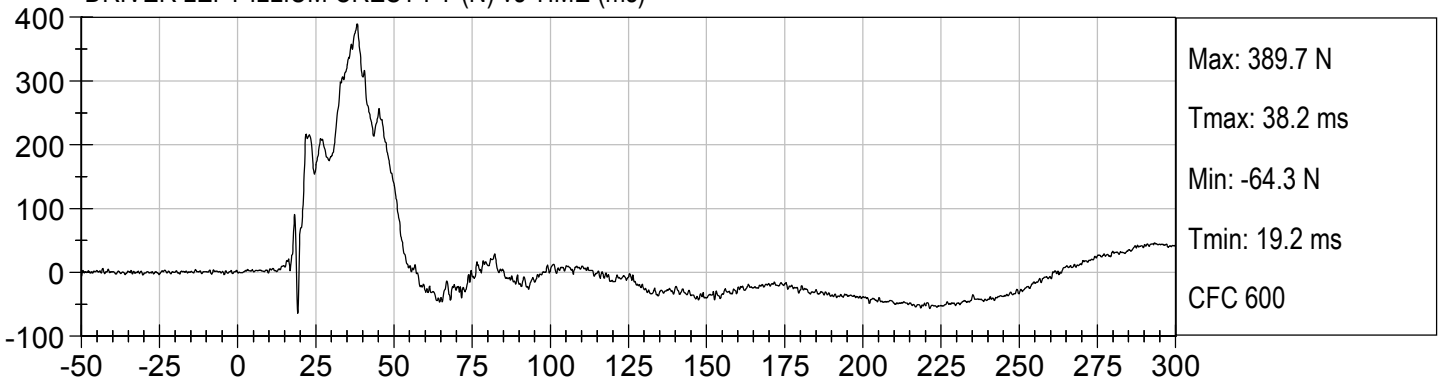
DRIVER LOWER SPINE Z (G's) vs TIME (ms)



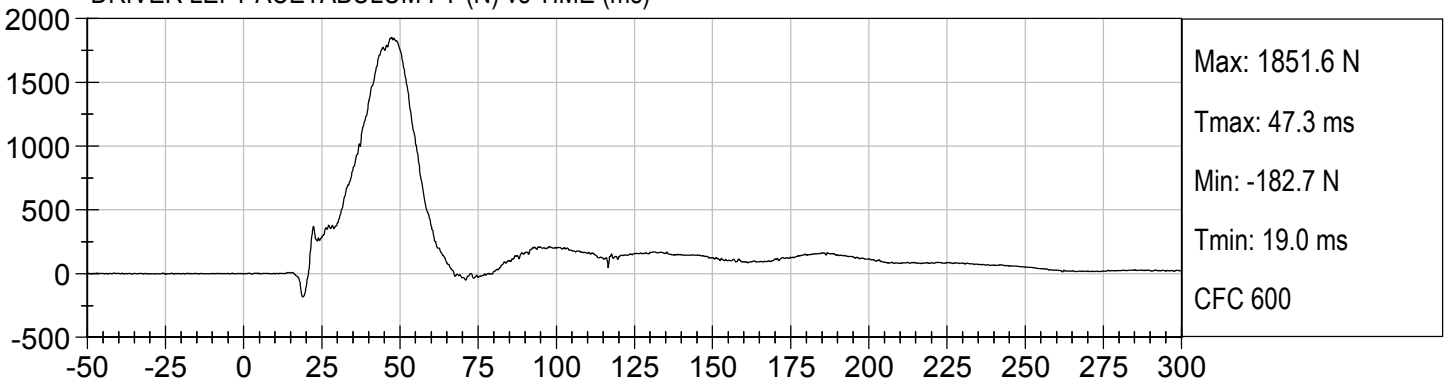
DRIVER LOWER SPINE Resultant (G's) vs TIME (ms)



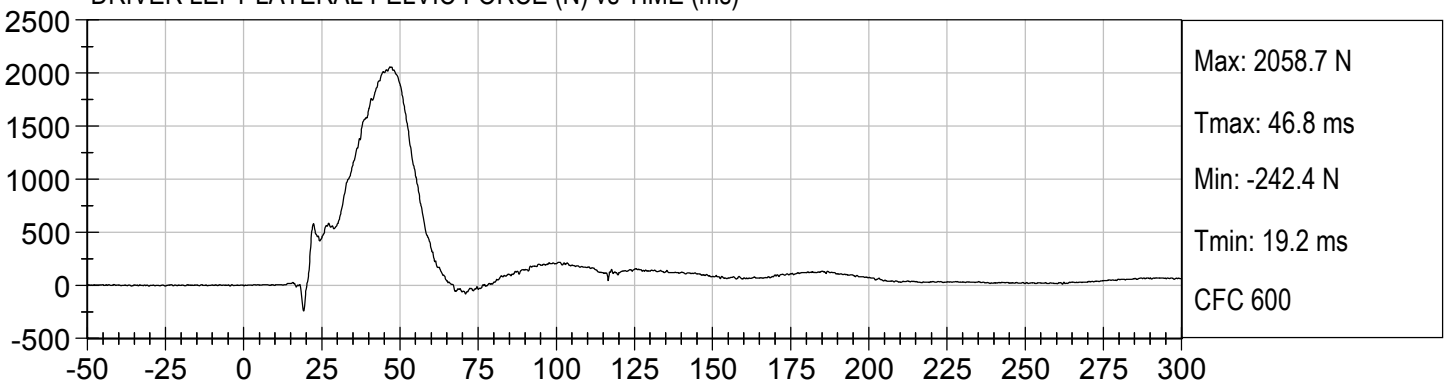
DRIVER LEFT ILLIUM CREST FY (N) vs TIME (ms)



DRIVER LEFT ACETABULUM FY (N) vs TIME (ms)



DRIVER LEFT LATERAL PELVIC FORCE (N) vs TIME (ms)



APPENDIX C
DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA

SID-IIsD External Measurements
SN: 306

No.	Name	Spec. (mm)	Result	Pass/Fail
A	Sitting Height	772 - 788	785	Pass
B	Shoulder Pivot Height	437 - 453	449	Pass
C	H-point Height	79 - 89	86	Pass
D	H-point from Seatback	141 - 151	147	Pass
E	Shoulder Pivot from Backline	97 - 107	99	Pass
F	Thigh Clearance	119 -135	120	Pass
G	Head Breadth	140 - 148	141	Pass
H	Head Back from Backline	40 - 46	45	Pass
I	Head Depth	178 - 188	182	Pass
J	Head Circumference	541 - 551	550	Pass
K	Buttock to Knee Length	514 - 540	538	Pass
L	Popliteal Height	343 - 369	349	Pass
M	Knee Pivot to Floor Height	392 - 409	394	Pass
N	Buttock Popliteal Length	416 - 442	435	Pass
O	Chest Depth w/o Jacket	195 - 211	198	Pass
P	Foot Length	216 - 232	222	Pass
Q	Hip Breadth (w/ pelvic plugs)	313 - 323	317	Pass
R	Arm Length	249 - 259	250	Pass
S	Knee Joint to Seatback	477 - 493	483	Pass
V	Shoulder Width	341 - 357	351	Pass
W	Foot Width	78 - 94	82	Pass
Y	Chest Circumference w/ jacket	851 - 881	863	Pass
Z	Waist Circumference	761 - 791	782	Pass

MGA RESEARCH CORPORATION

HEAD DROP TEST

SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 306 **Test ID:** D15291

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	21.9	Pass
Laboratory Relative Humidity	%	10 to 70	25	Pass
Peak Resultant Acceleration	G's	115 to 137	116	Pass
Peak Longitudinal Acceleration	G's	+/- 15	-7.0	Pass
Unimodal	N/A	Yes	Yes	Pass
Oscillations	N/A	<15%	Yes	Pass
		Overall Test Results		Pass

Jack Coleman
Laboratory Technician

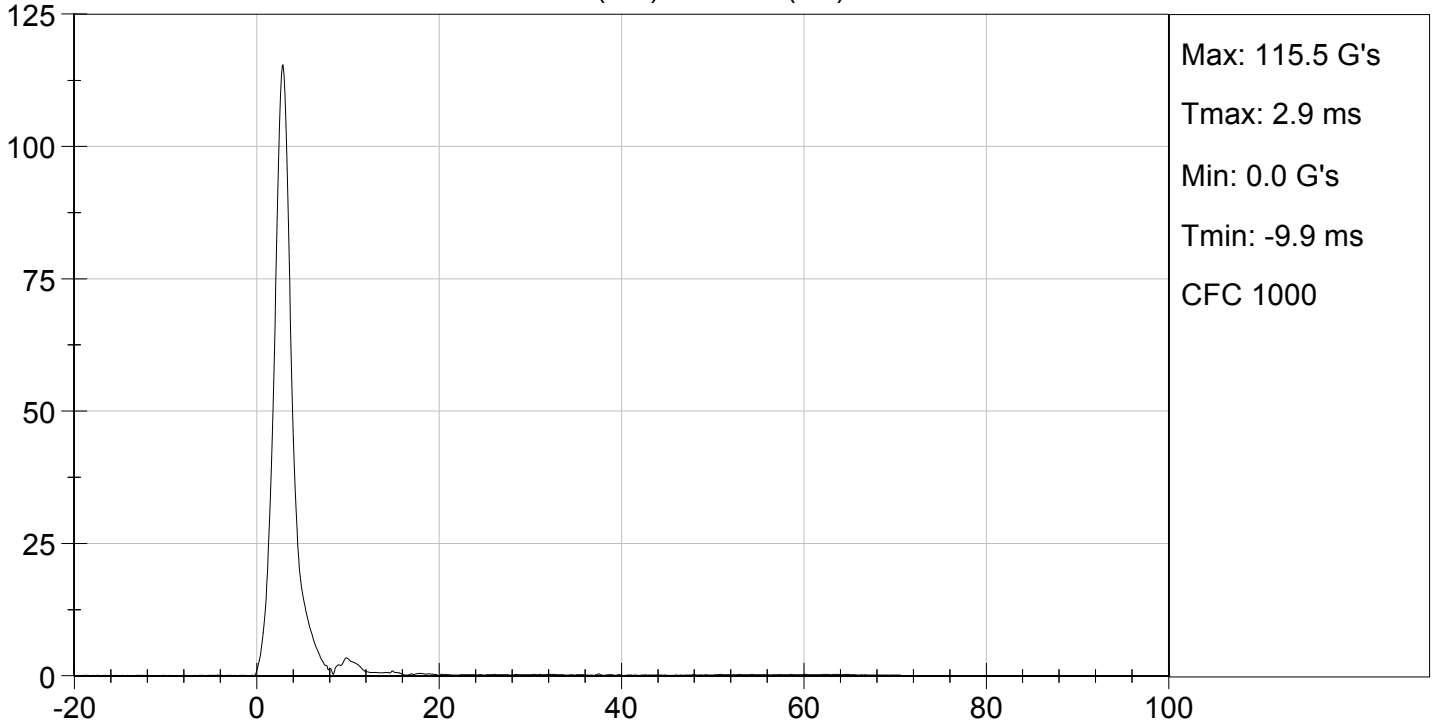
01/29/2015
Test Date

Jessica Gall
Approved By

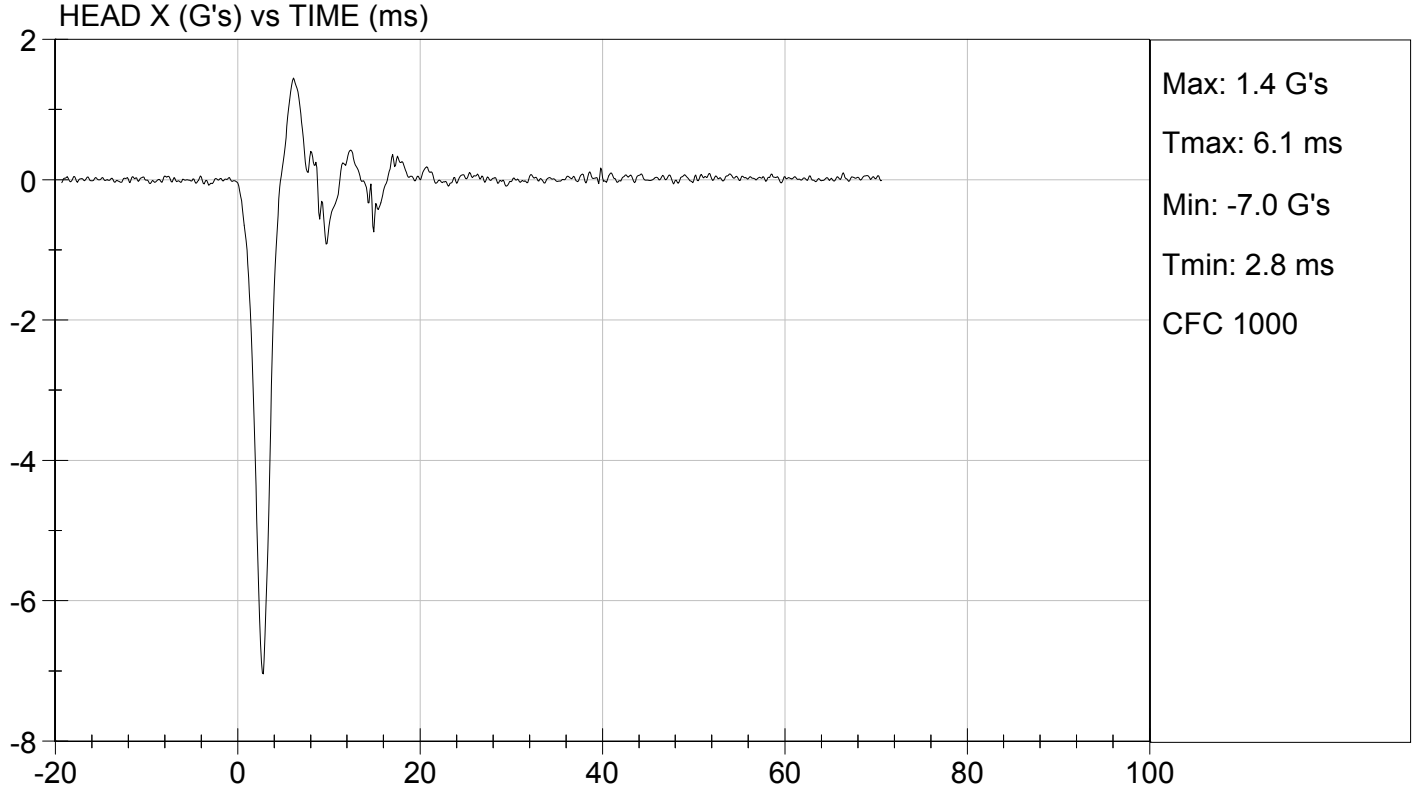
TEST DESC: HEAD DROP

TEST DATE: 01/29/2015
TEST #: D15291

HEAD RESULTANT ACCELERATION (G's) vs TIME (ms)



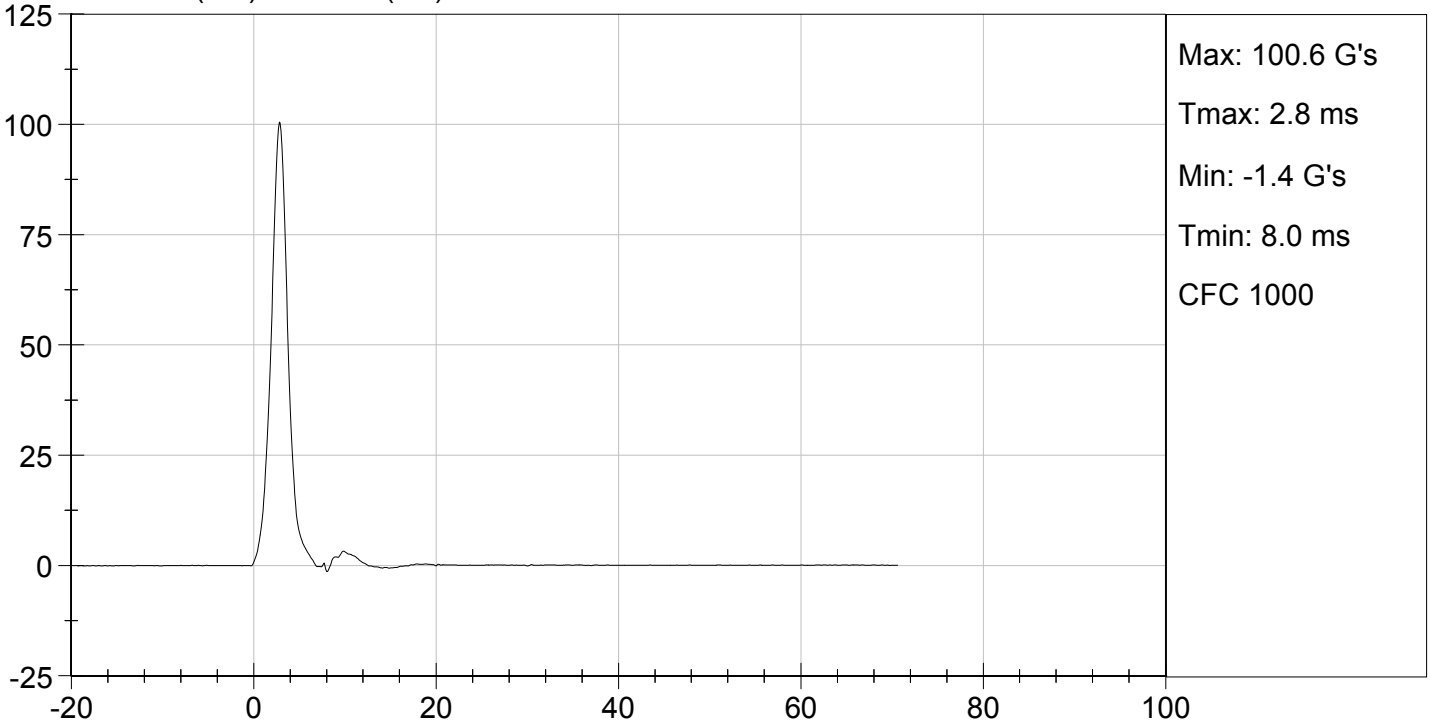
HEAD X (G's) vs TIME (ms)



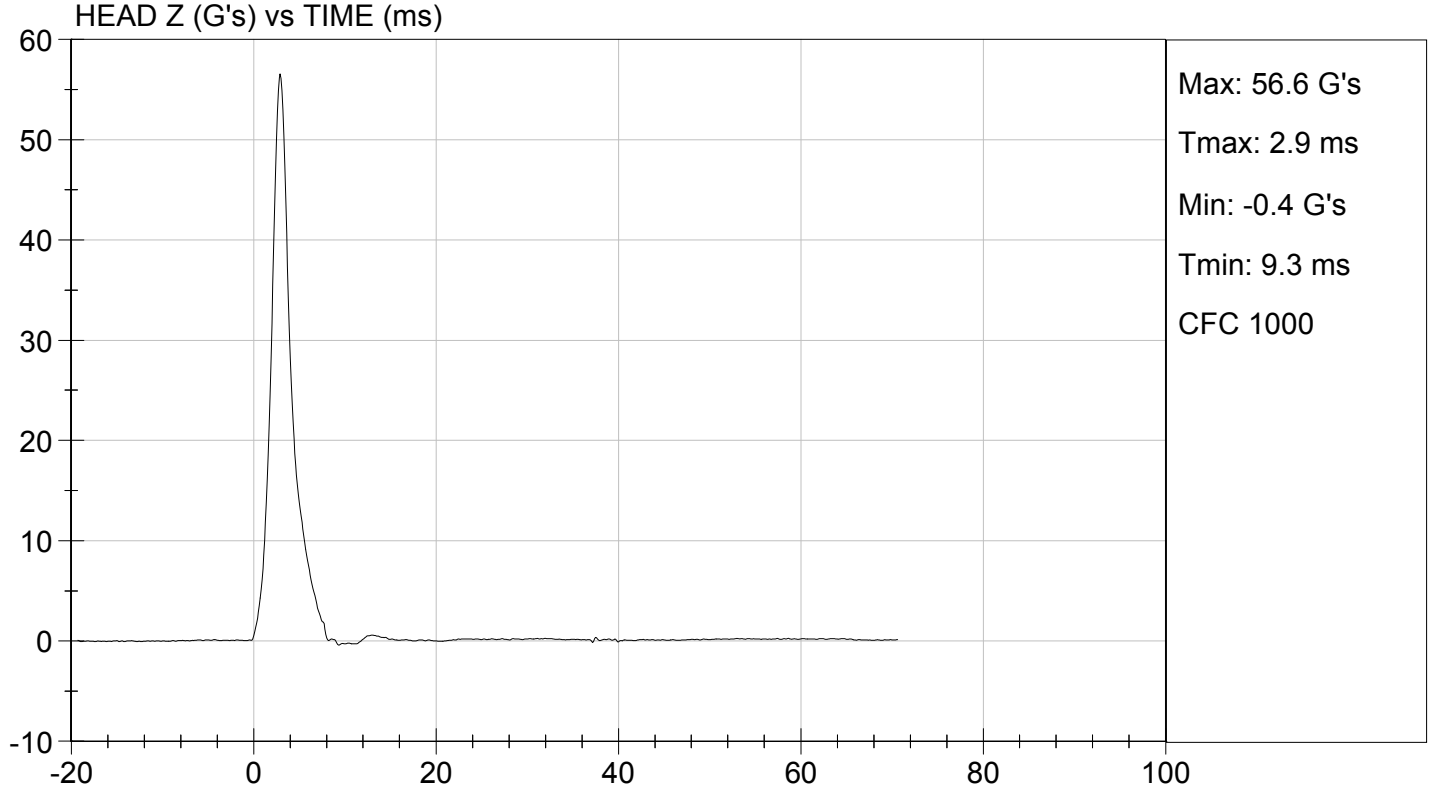
TEST DESC: HEAD DROP

TEST DATE: 01/29/2015
TEST #: D15291

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



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



MGA RESEARCH CORPORATION

LATERAL NECK PENDULUM TEST

SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 306 **Test I.D:** D15292

Tested Parameter		Units	Specification	Result	Pass/Fail
Temperature		deg C	20.6 to 22.2	21.2	Pass
Humidity		%	10 to 70	23	Pass
Impact Velocity		m/s	5.51 to 5.63	5.56	Pass
Pendulum Velocity	10 ms	m/s	2.20 to 2.80	2.58	Pass
	15 ms	m/s	3.30 to 4.10	3.62	Pass
	20 ms	m/s	4.40 to 5.40	4.70	Pass
	25 ms	m/s	5.40 to 6.10	5.43	Pass
	25-100 ms	m/s	5.50 to 6.20	5.52	Pass
Maximum D-Plane Rotation		deg	71 to 81	74	Pass
Time of Maximum D-Plane Rotation		ms	50 to 70	60	Pass
Maximum Occipital Condyle Moment		Nm	-44 to -36	-41	Pass
Time of Moment Decay to 0 Nm		ms	102 to 126	117	Pass
			Overall Test Results		Pass

David Schoedel
Laboratory Technician

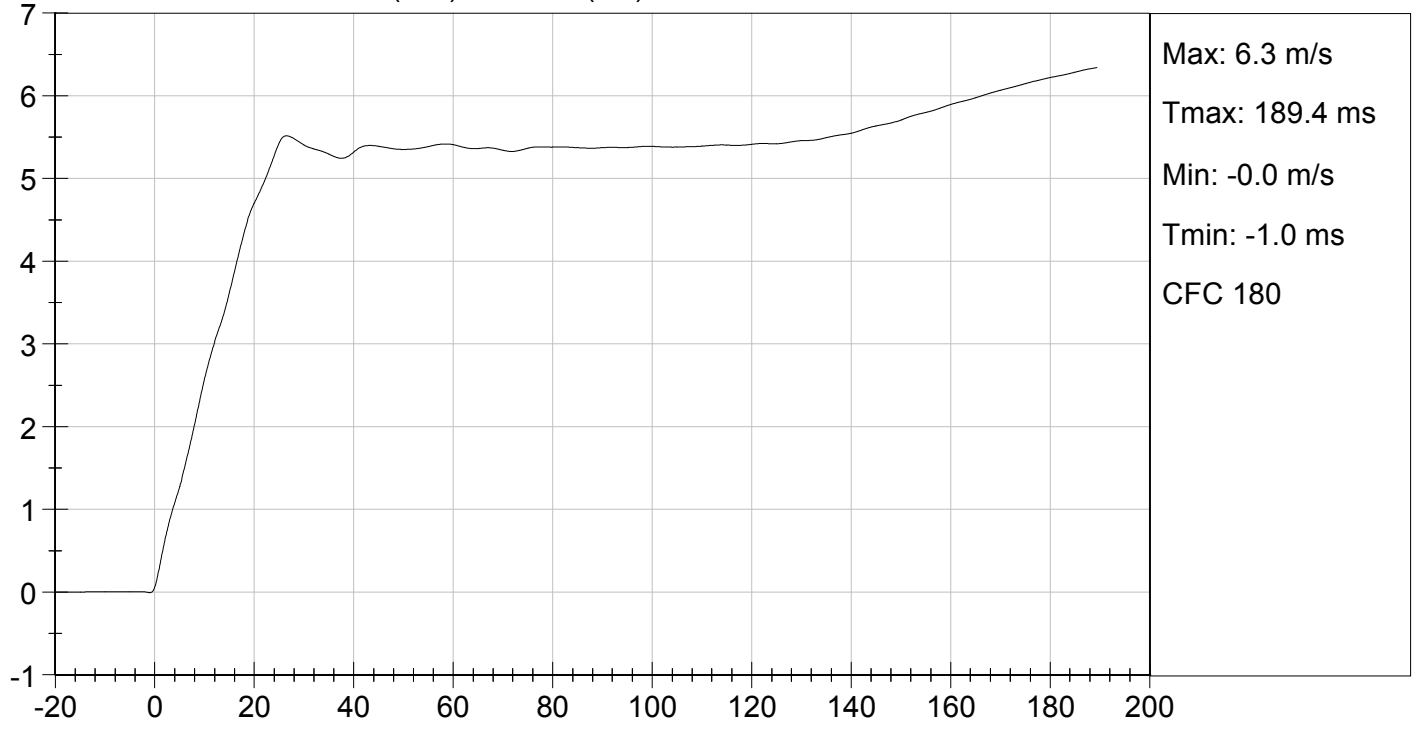
01/29/2015
Test Date

Jessica Hall
Approved By

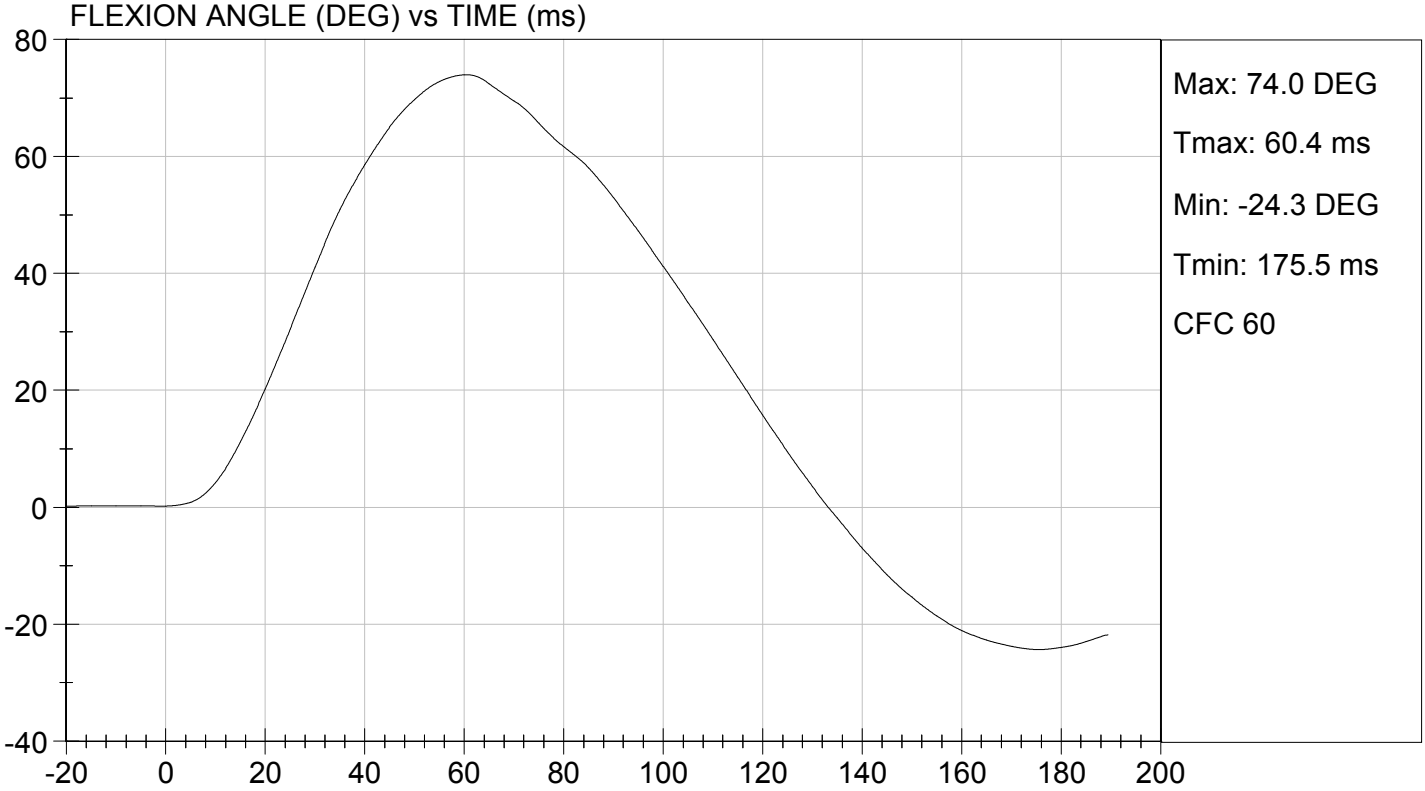
TEST DESC: NECK BENDING
VELOCITY: 18.24 ft/s, 5.56 m/s

TEST DATE: 01/29/2015
TEST #: D15292

PENDULUM VELOCITY (m/s) vs TIME (ms)

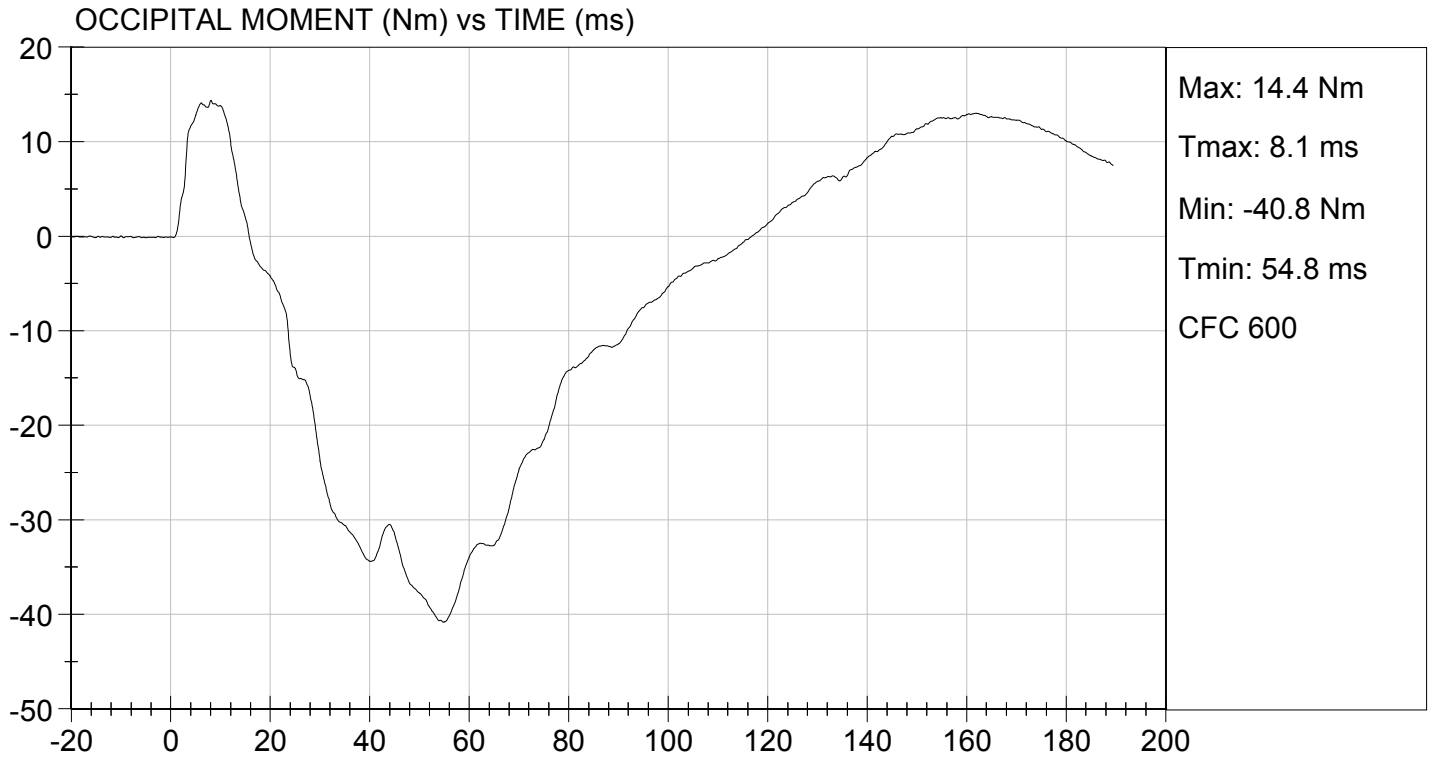


FLEXION ANGLE (DEG) vs TIME (ms)



TEST DESC: NECK BENDING
VELOCITY: 18.24 ft/s, 5.56 m/s

TEST DATE: 01/29/2015
TEST #: D15292



MGA RESEARCH CORPORATION

SHOULDER IMPACT TEST

SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 306 **Test ID:** D15293

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	21.9	Pass
Laboratory Relative Humidity	%	10 to 70	25	Pass
Impact Velocity	m/s	4.20 to 4.40	4.34	Pass
Maximum Probe Acceleration	G's	13 to 18	14	Pass
Shoulder Displacement	mm	28 to 37	28	Pass
Upper Spine (T1) Y Acceleration	G's	17 to 22	18	Pass
		Overall Test Results		Pass

David Schoedel
Laboratory Technician

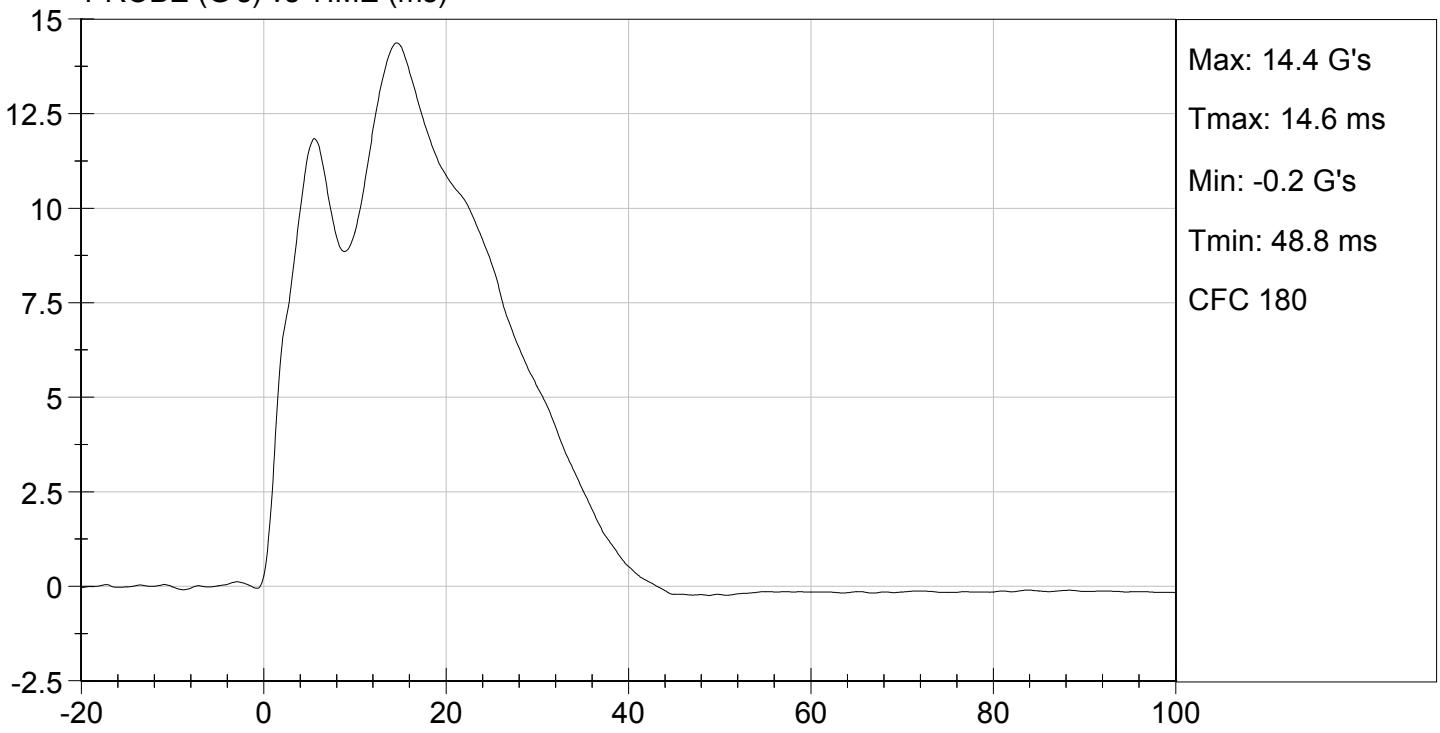
01/29/2015
Test Date

Jessica Hall
Approved By

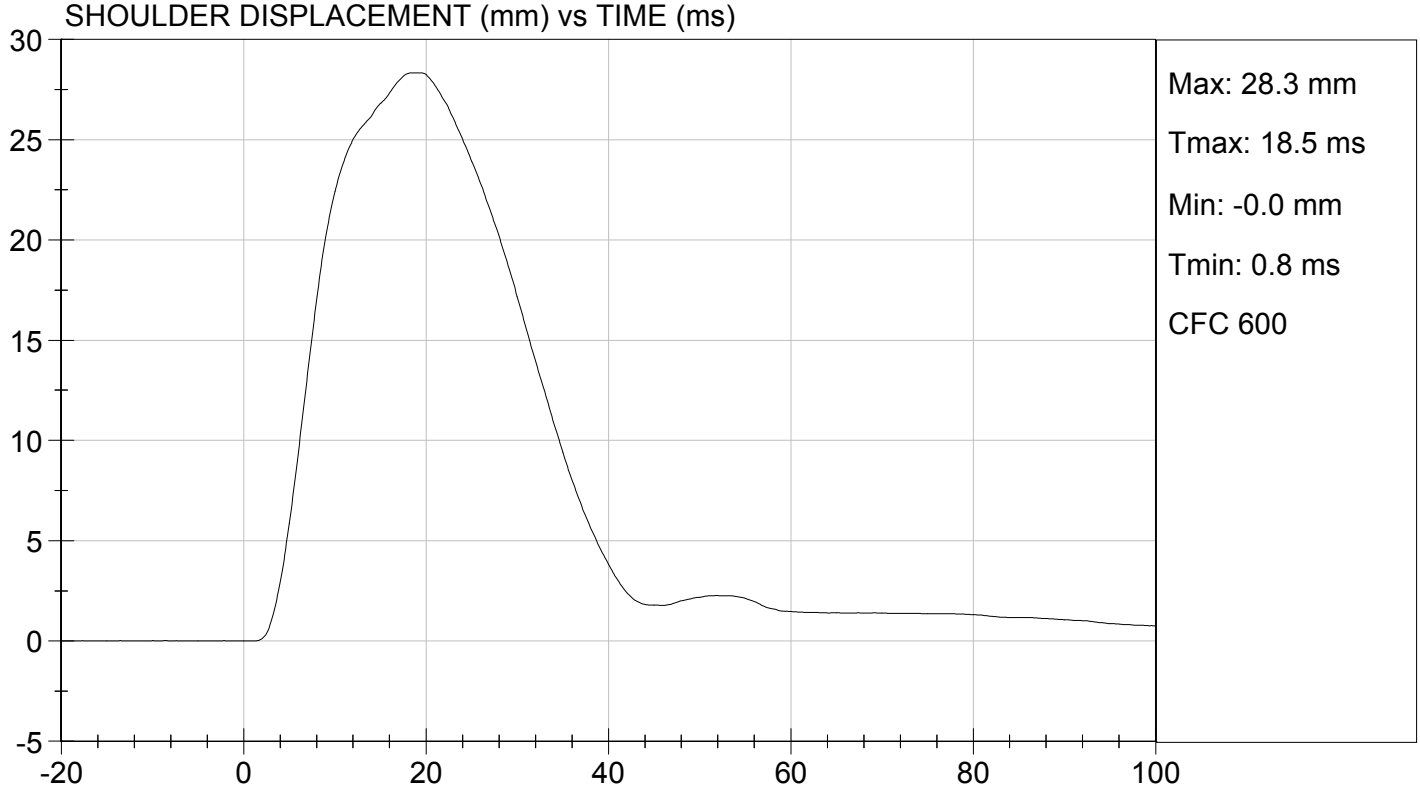
TEST DESC: SHOULDER IMPACT
VELOCITY: 14.24 ft/s, 4.34 m/s

TEST DATE: 01/29/2015
TEST #: D15293

PROBE (G's) vs TIME (ms)



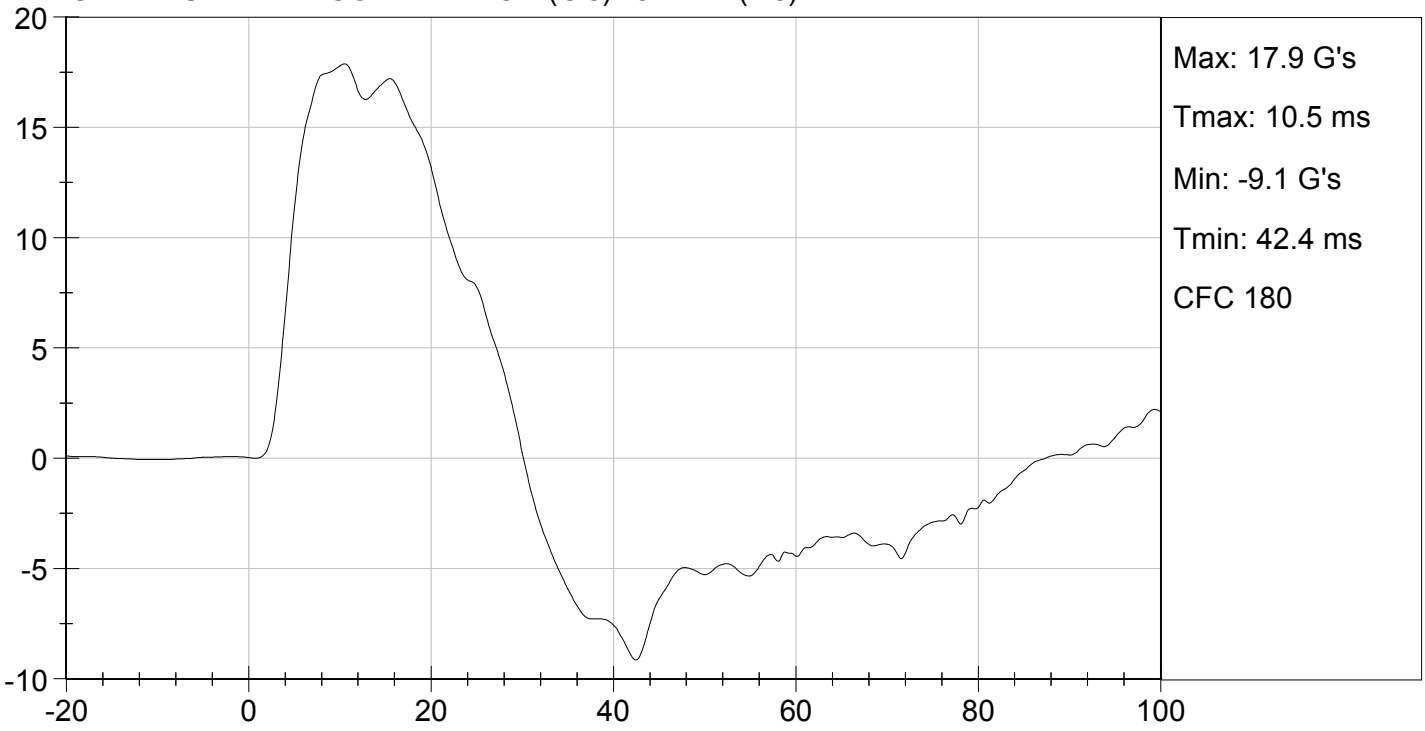
SHOULDER DISPLACEMENT (mm) vs TIME (ms)



TEST DESC: SHOULDER IMPACT
VELOCITY: 14.24 ft/s, 4.34 m/s

TEST DATE: 01/29/2015
TEST #: D15293

UPPER SPINE Y ACCELERATION (G's) vs TIME (ms)



MGA RESEARCH CORPORATION

THORAX (WITH ARM) IMPACT TEST

SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 306 **Test I.D:** D15294

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.9	Pass
Humidity	%	10 to 70	25	Pass
Impact Velocity	m/s	6.60 to 6.80	6.60	Pass
Maximum Probe Acceleration	G's	30 to 36	33	Pass
Shoulder Displacement	mm	31 to 40	34	Pass
Upper Rib Displacement	mm	25 to 32	27	Pass
Middle Rib Displacement	mm	30 to 36	31	Pass
Lower Rib Displacement	mm	32 to 38	35	Pass
Upper Spine (T1) Y Acceleration	G's	34 to 43	38	Pass
Lower Spine (T12) Y Acceleration	G's	29 to 37	33	Pass
		Overall Test Results		Pass

David Schoedel
Laboratory Technician

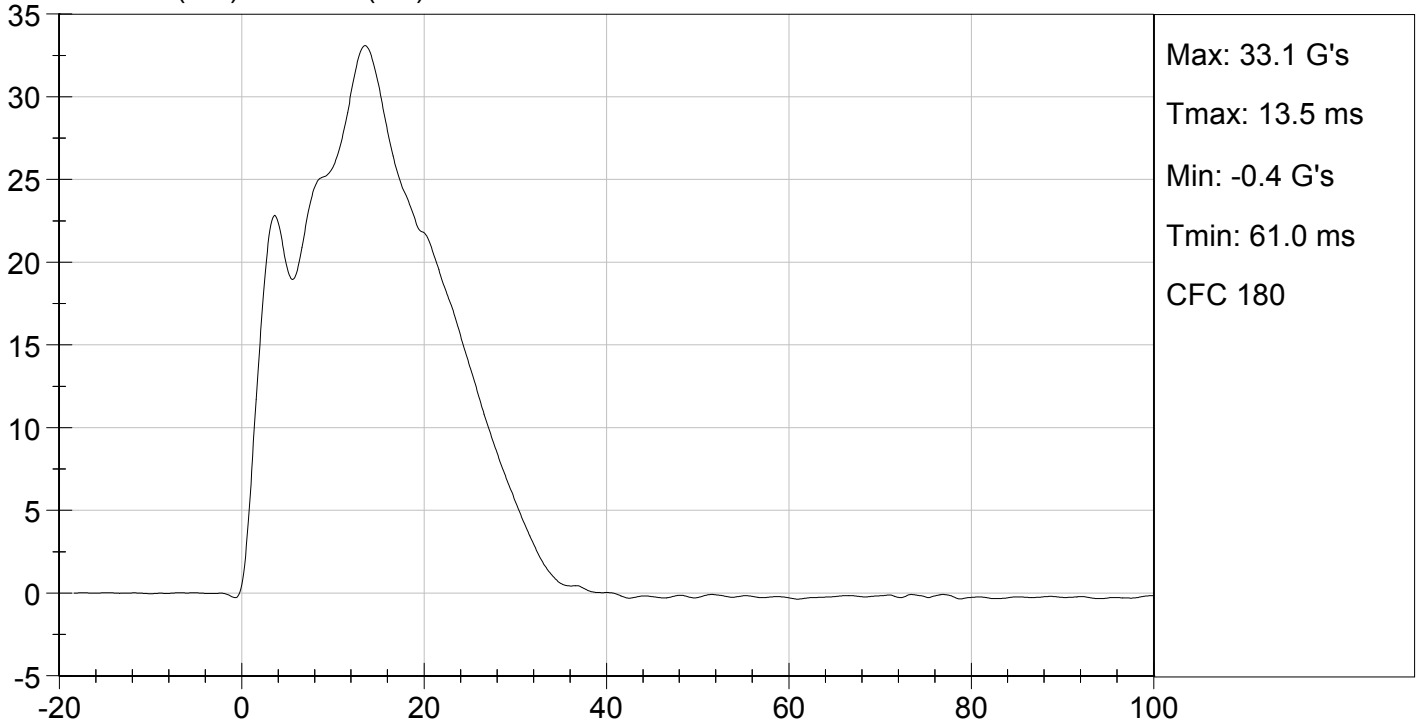
01/29/2015
Test Date

Jessica Gall
Approved By

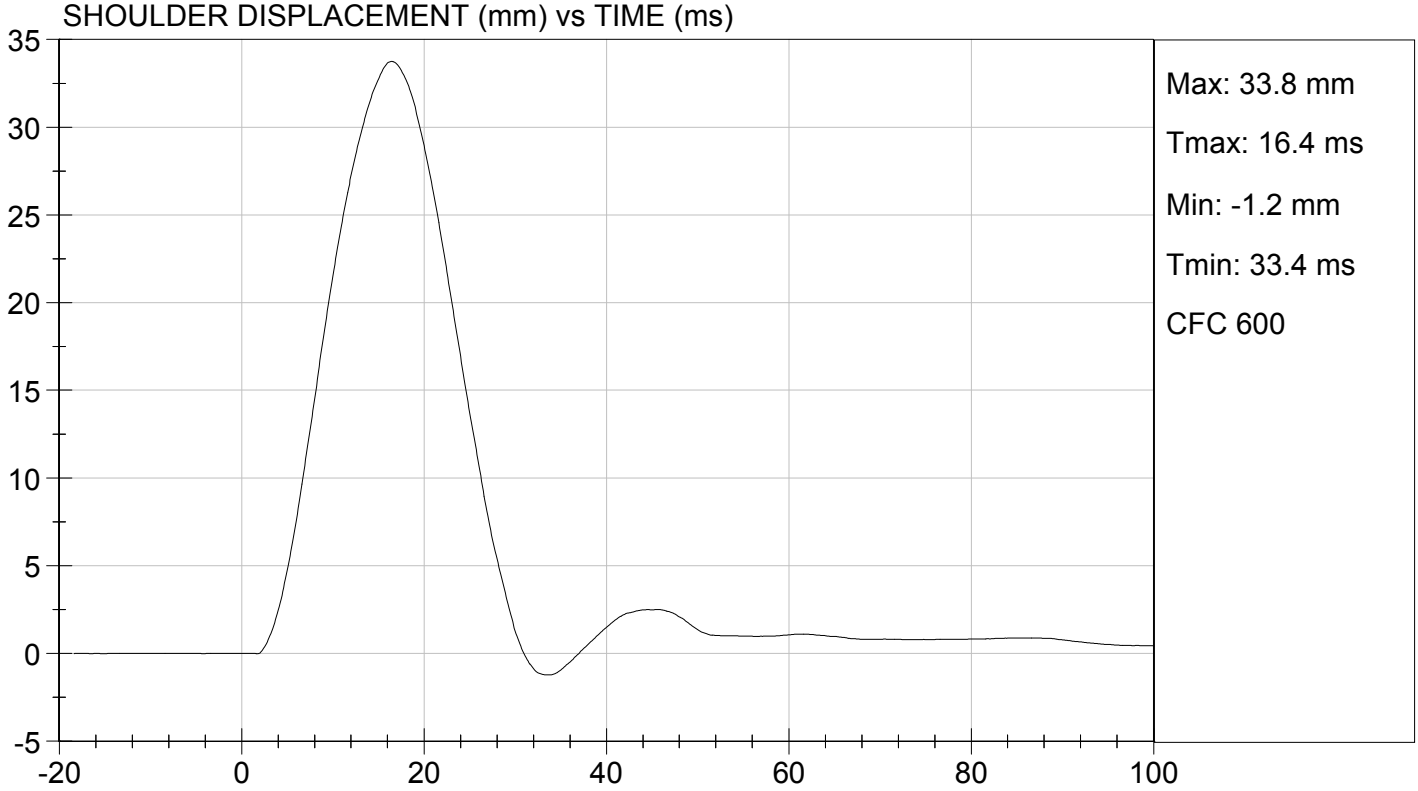
TEST DESC: THORAX IMPACT WITH ARM
VELOCITY: 21.65 ft/s, 6.60 m/s

TEST DATE: 01/29/2015
TEST #: D15294

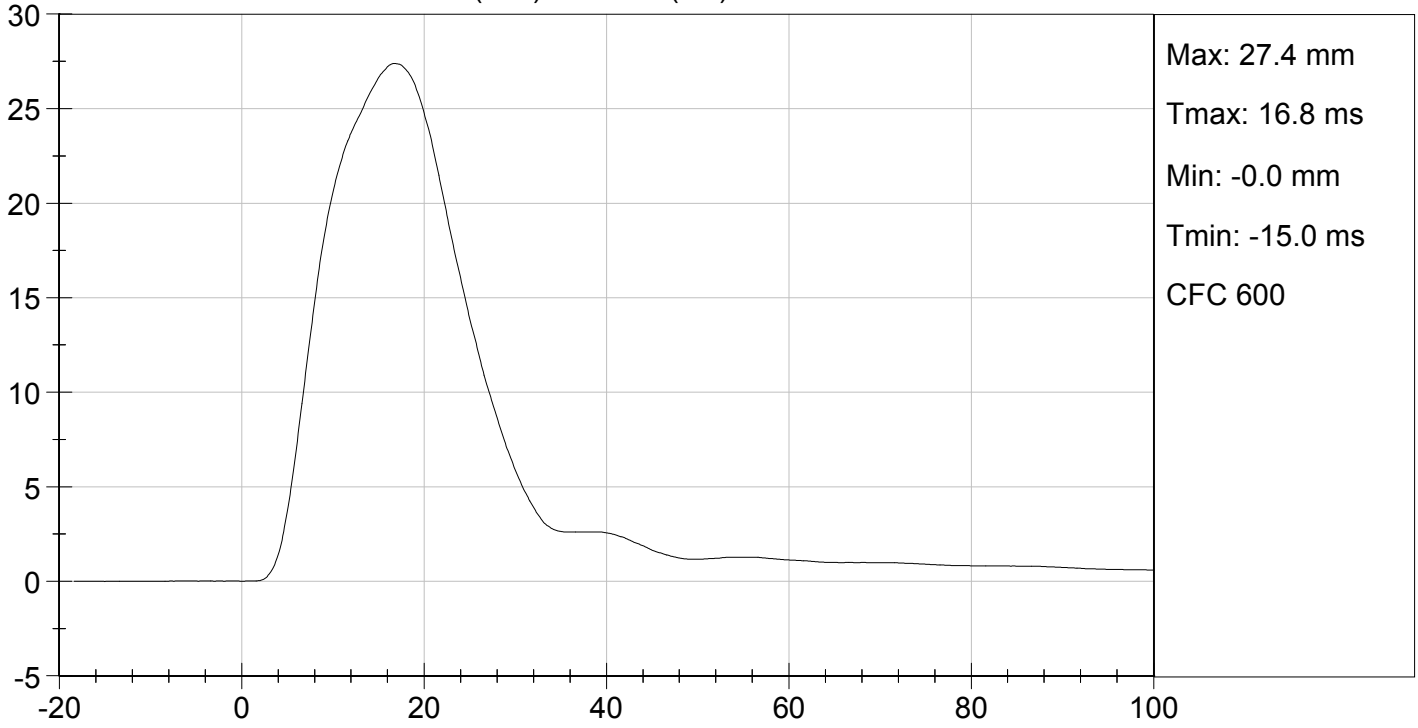
PROBE (G's) vs TIME (ms)



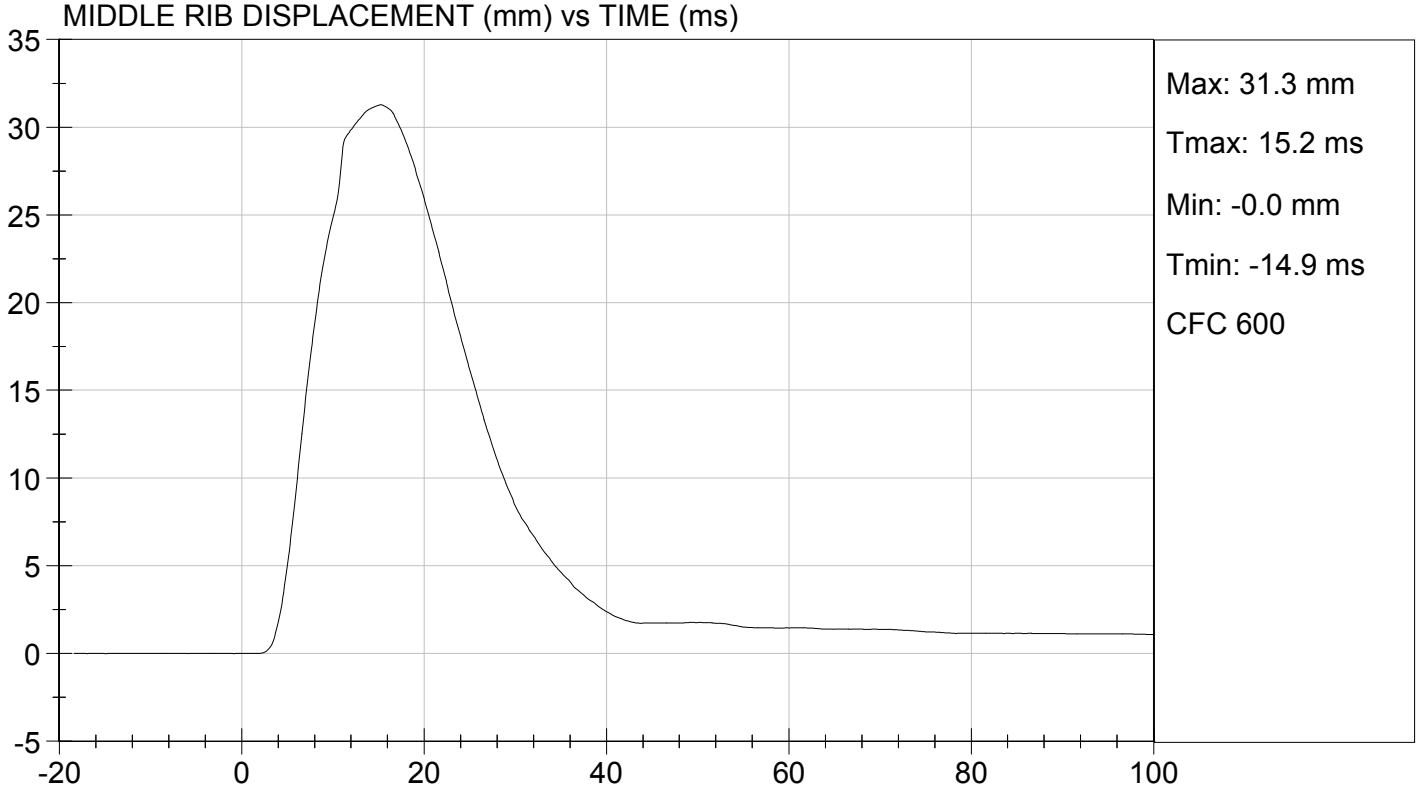
SHOULDER DISPLACEMENT (mm) vs TIME (ms)



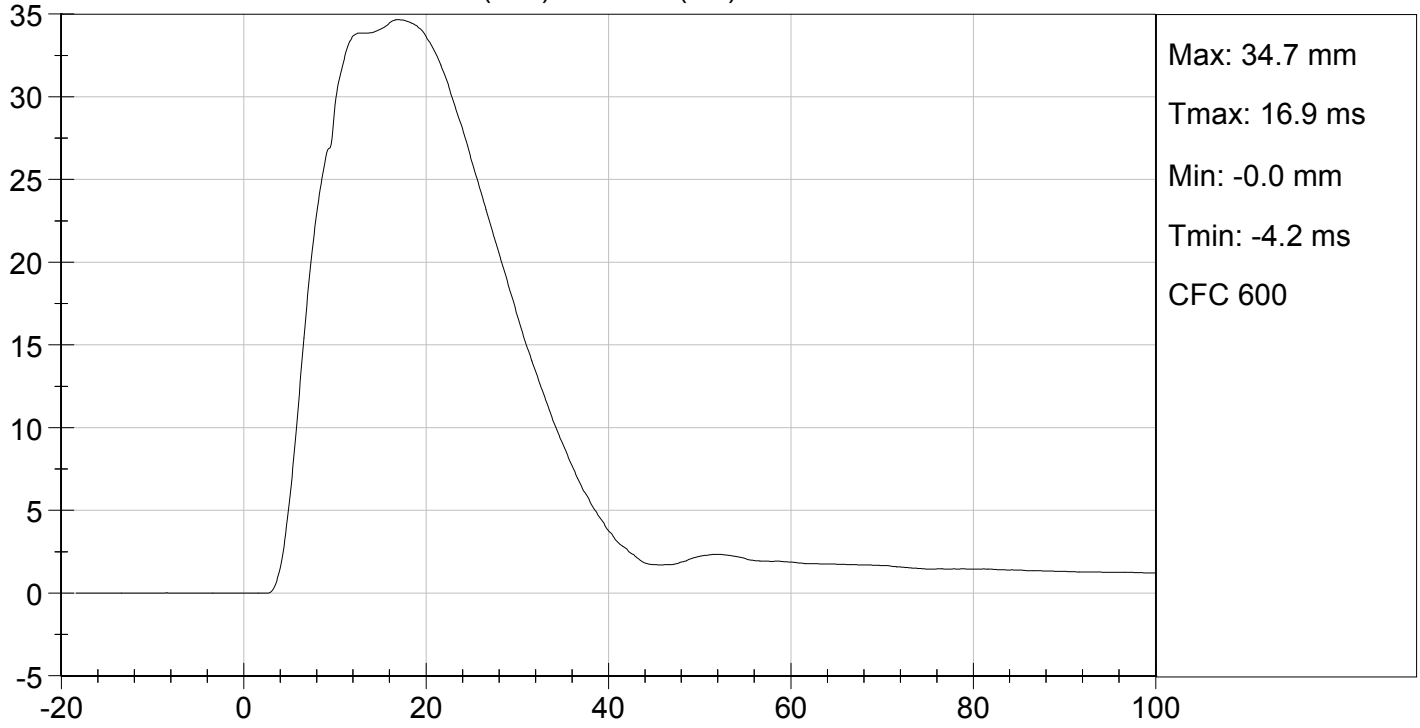
UPPER RIB DISPLACEMENT (mm) vs TIME (ms)



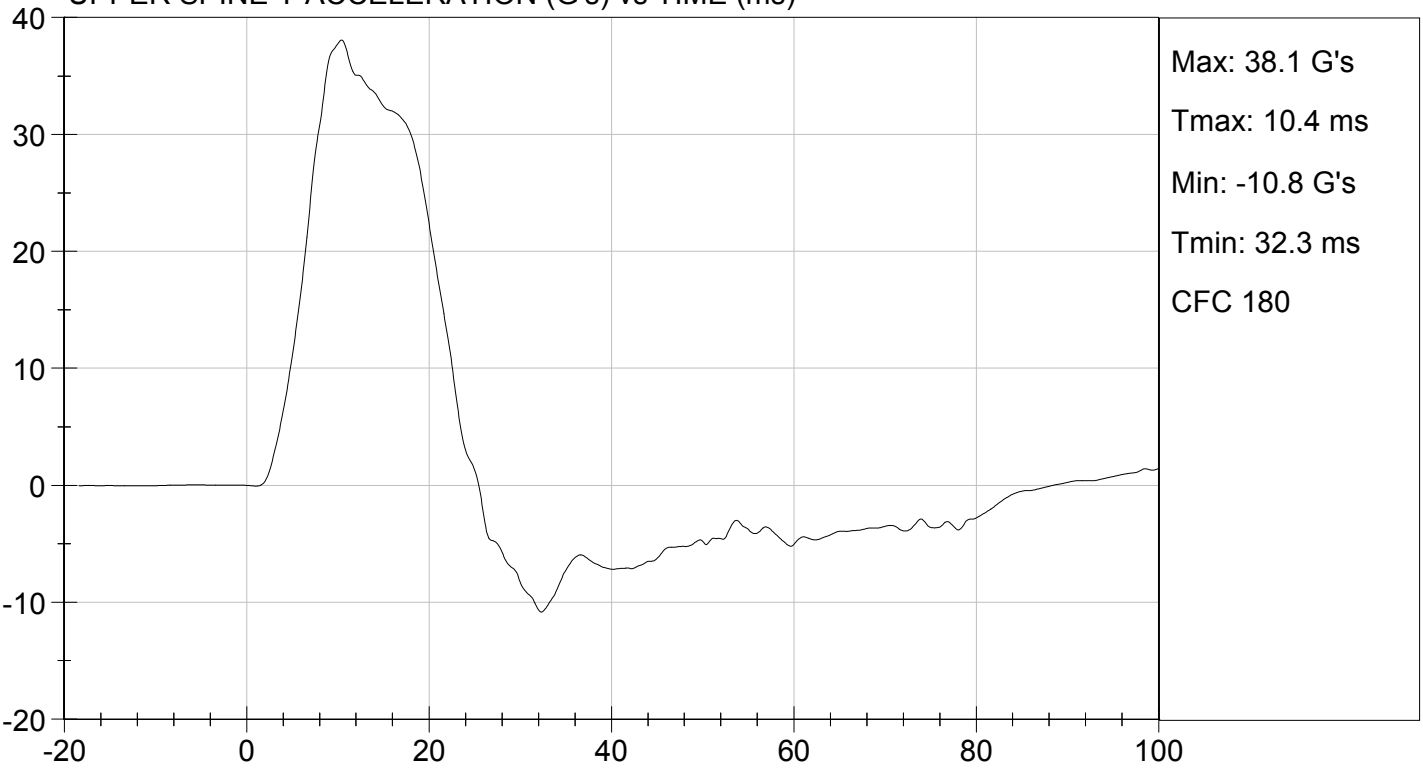
MIDDLE RIB DISPLACEMENT (mm) vs TIME (ms)



LOWER RIB DISPLACEMENT (mm) vs TIME (ms)



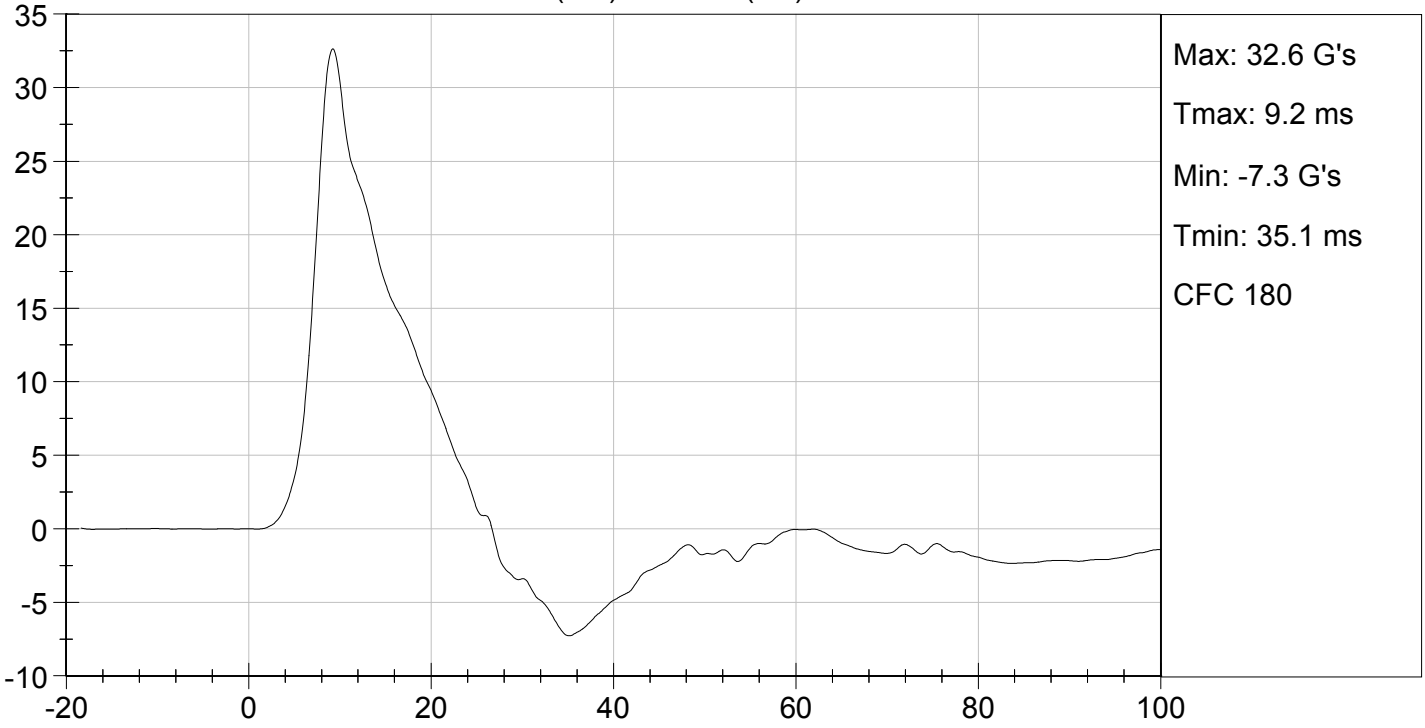
UPPER SPINE Y ACCELERATION (G's) vs TIME (ms)



TEST DESC: THORAX IMPACT WITH ARM
VELOCITY: 21.65 ft/s, 6.60 m/s

TEST DATE: 01/29/2015
TEST #: D15294

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



MGA RESEARCH CORPORATION

THORAX (WITHOUT ARM) IMPACT TEST

SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 306 **Test I.D:** D15295

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.9	Pass
Humidity	%	10 to 70	25	Pass
Impact Velocity	m/s	4.20 to 4.40	4.20	Pass
Maximum Probe Acceleration	G's	14 to 18	15	Pass
Upper Rib Displacement	mm	32 to 40	35	Pass
Middle Rib Displacement	mm	39 to 45	40	Pass
Lower Rib Displacement	mm	35 to 43	39	Pass
Upper Spine (T1) Y Acceleration	G's	13 to 17	14	Pass
Lower Spine (T12) Y Acceleration	G's	7 to 11	8	Pass
		Overall Test Results		Pass

David Schoedel
Laboratory Technician

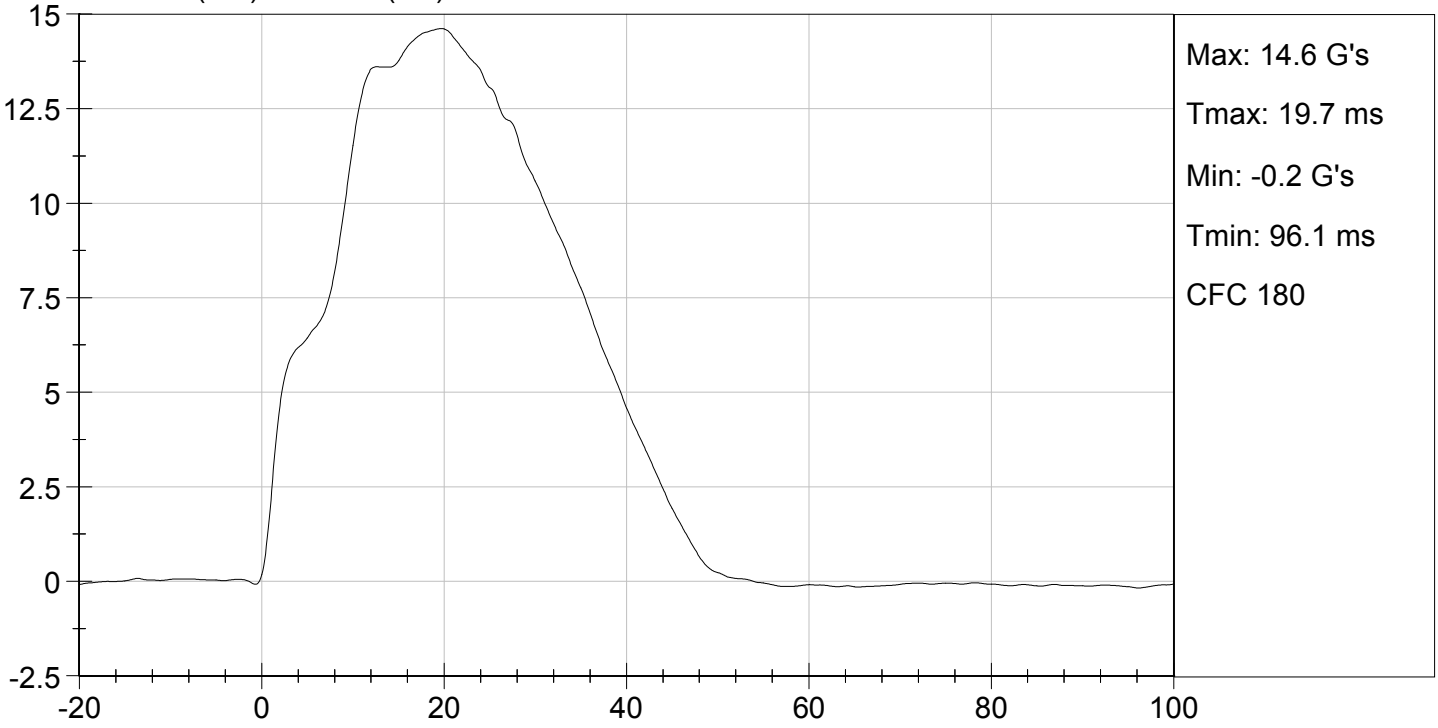
01/29/2015
Test Date

Jessica Gall
Approved By

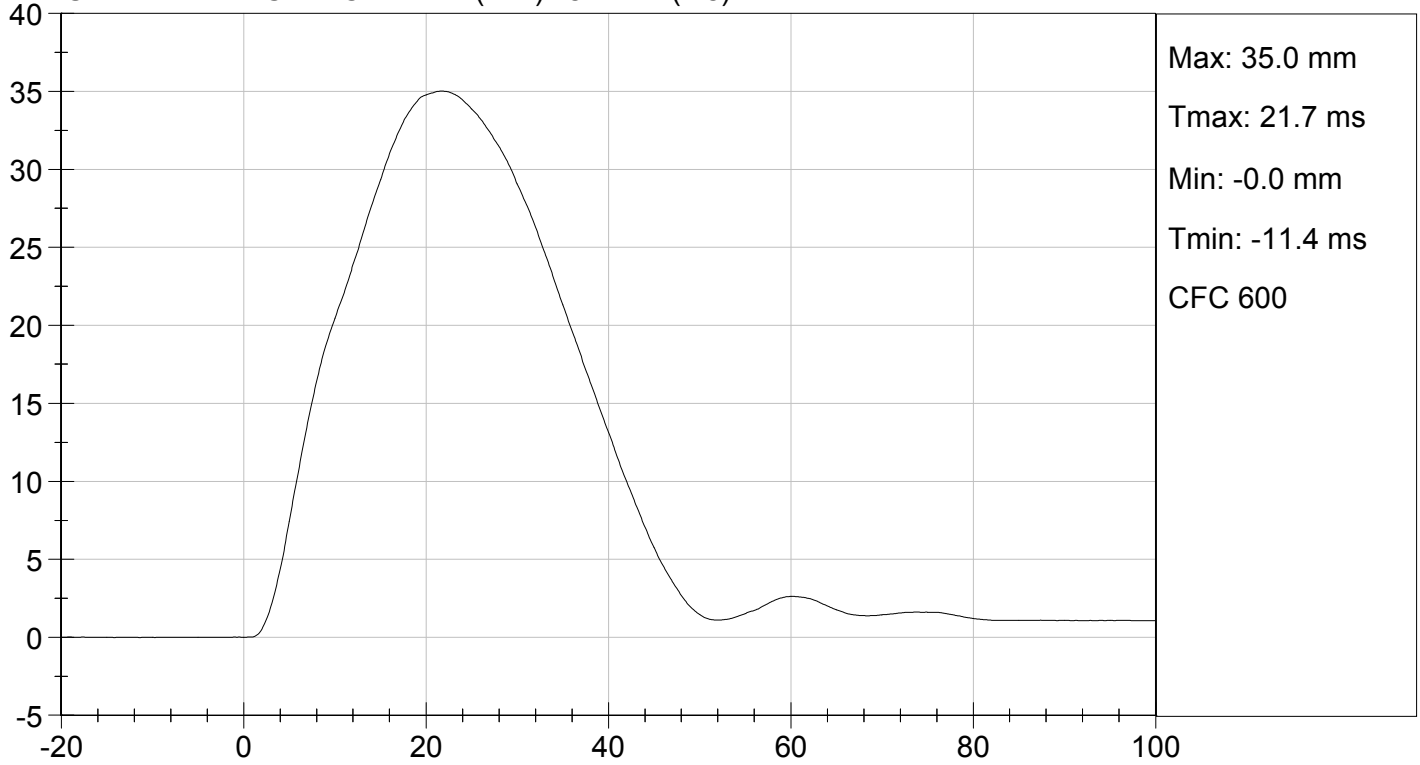
TEST DESC: THORAX IMPACT WITHOUT ARM
VELOCITY: 13.77 ft/s, 4.20 m/s

TEST DATE: 01/29/2015
TEST #: D15295

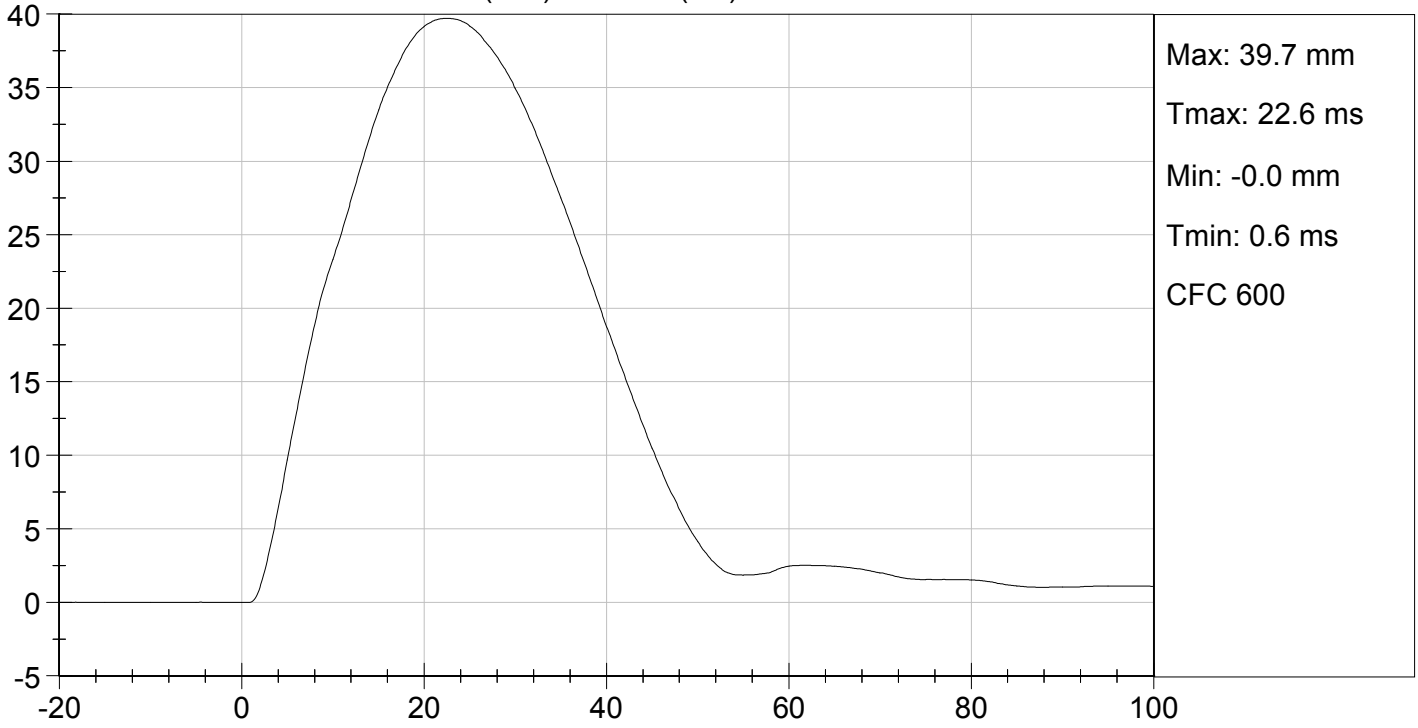
PROBE (G's) vs TIME (ms)



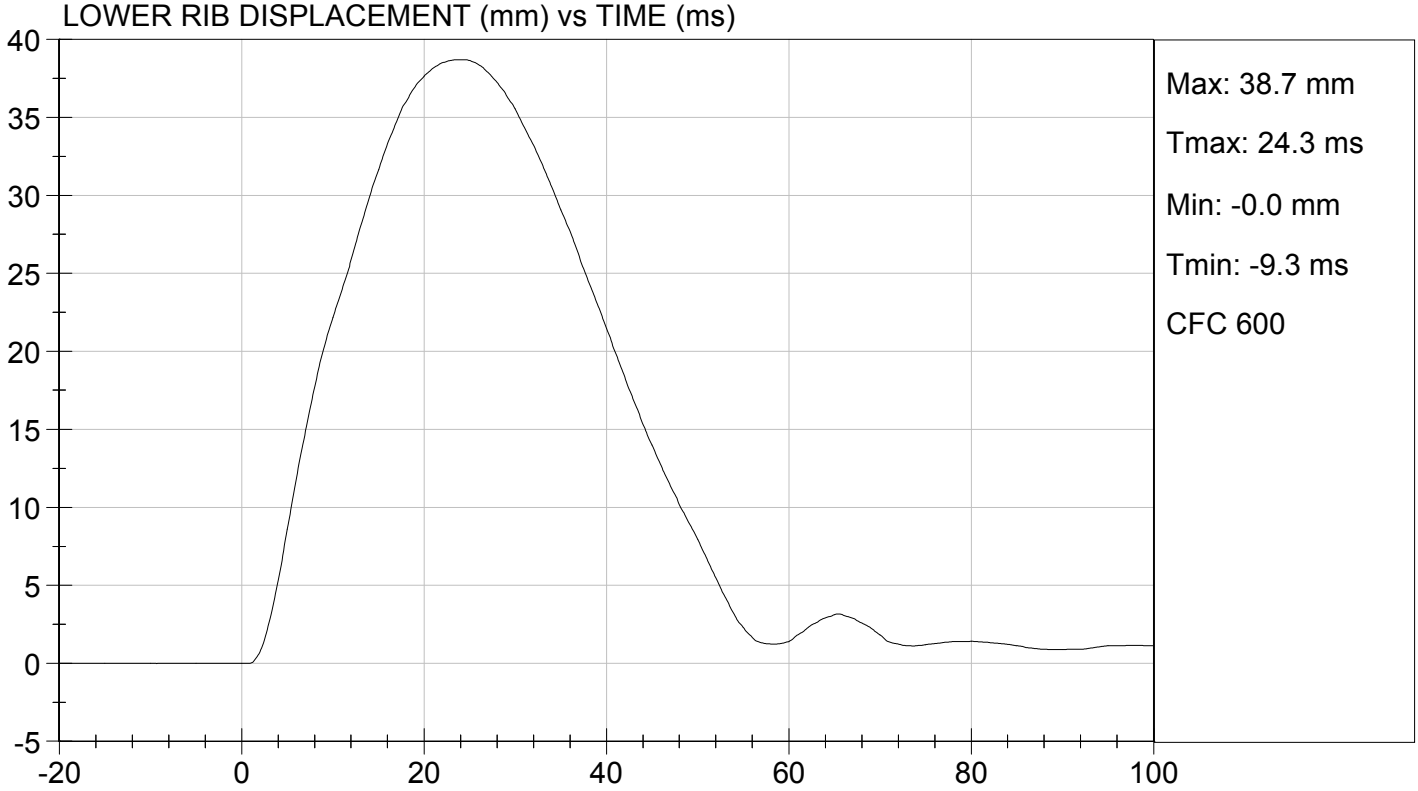
UPPER RIB DISPLACEMENT (mm) vs TIME (ms)



MIDDLE RIB DISPLACEMENT (mm) vs TIME (ms)



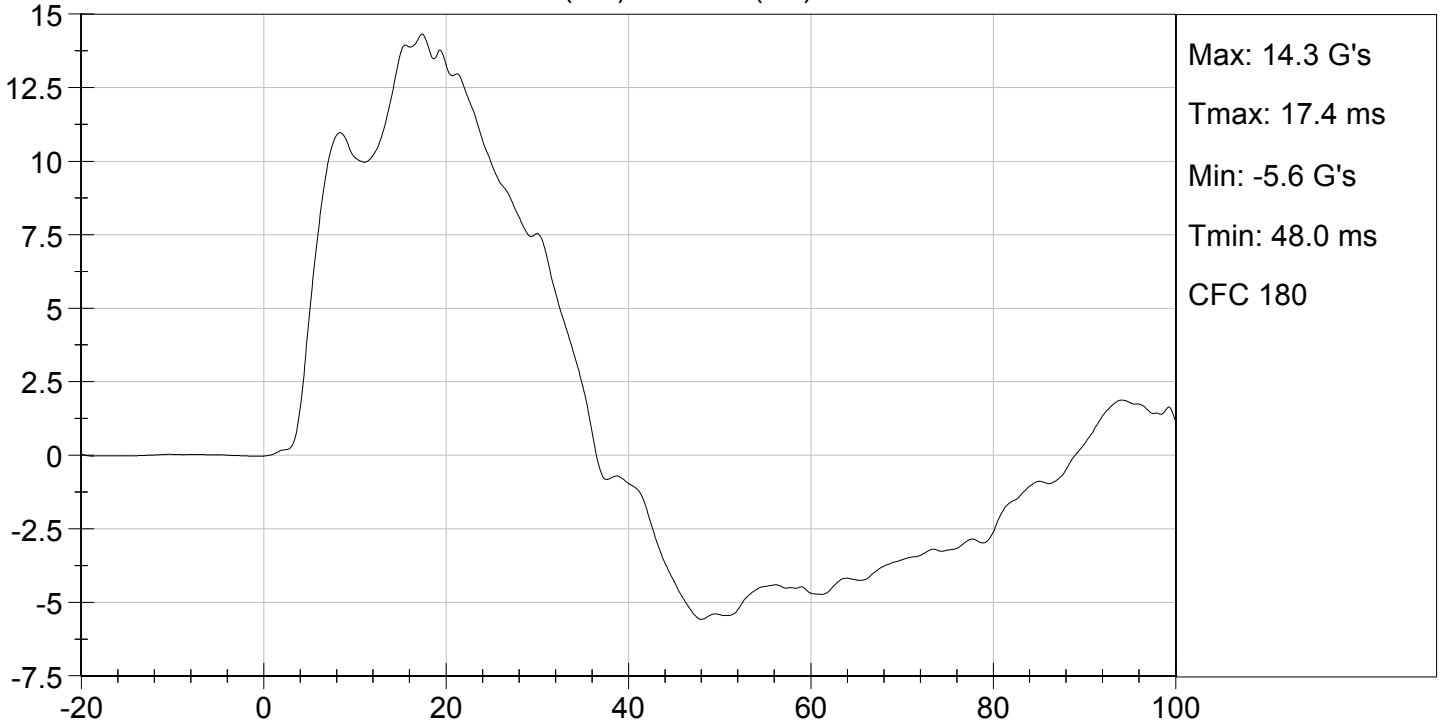
LOWER RIB DISPLACEMENT (mm) vs TIME (ms)



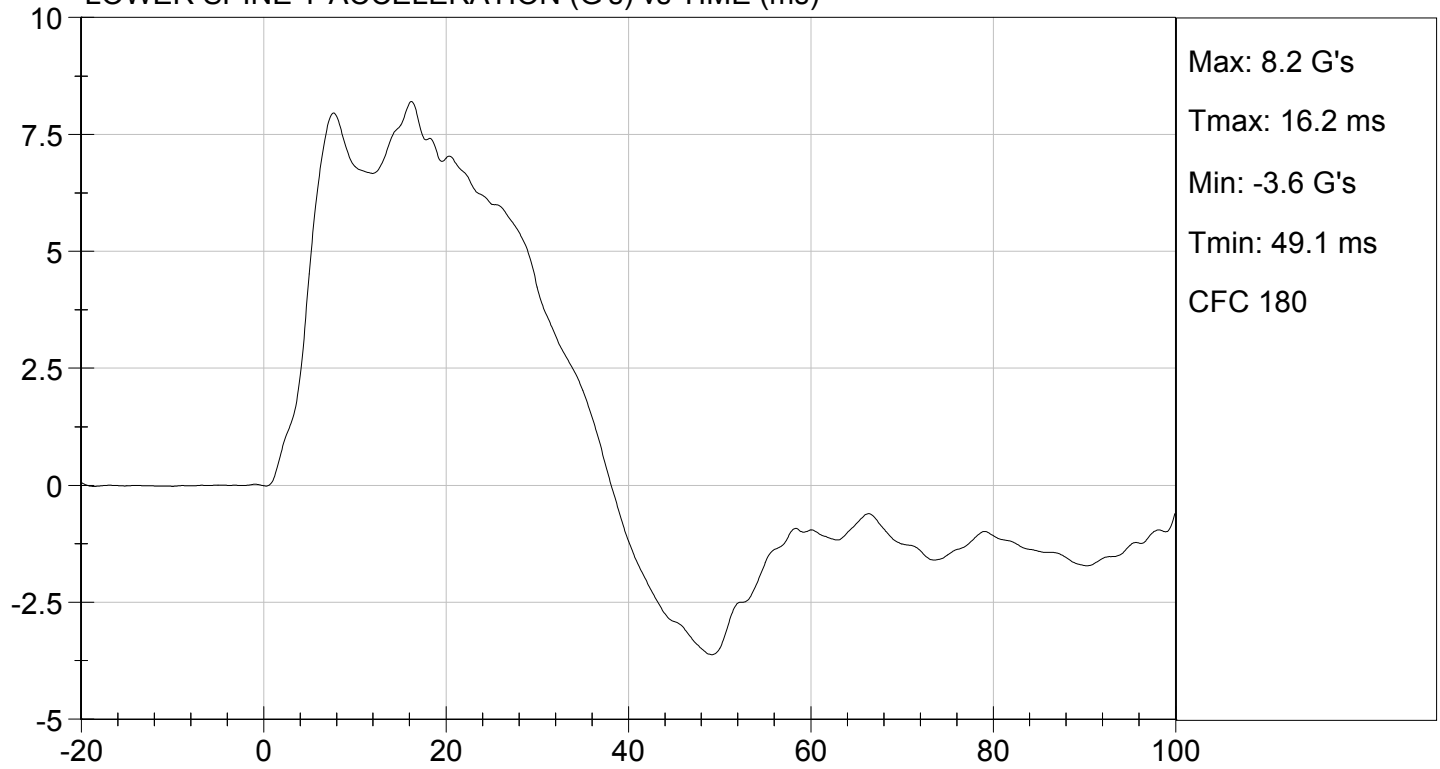
TEST DESC: THORAX IMPACT WITHOUT ARM
VELOCITY: 13.77 ft/s, 4.20 m/s

TEST DATE: 01/29/2015
TEST #: D15295

UPPER SPINE Y ACCELERATION (G's) vs TIME (ms)



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



MGA RESEARCH CORPORATION

ABDOMINAL IMPACT TEST

SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 306 **Test I.D:** D15296

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.9	Pass
Humidity	%	10 to 70	25	Pass
Impact Velocity	m/s	4.20 to 4.40	4.23	Pass
Maximum Probe Acceleration	G's	12 to 16	13	Pass
Upper Abdomen Rib Displacement	mm	36 to 47	39	Pass
Lower Abdomen Rib Displacement	mm	33 to 44	40	Pass
Lower Spine (T12) Y Acceleration	G's	9 to 14	10	Pass
		Overall Test Results		Pass

David Schoedel
Laboratory Technician

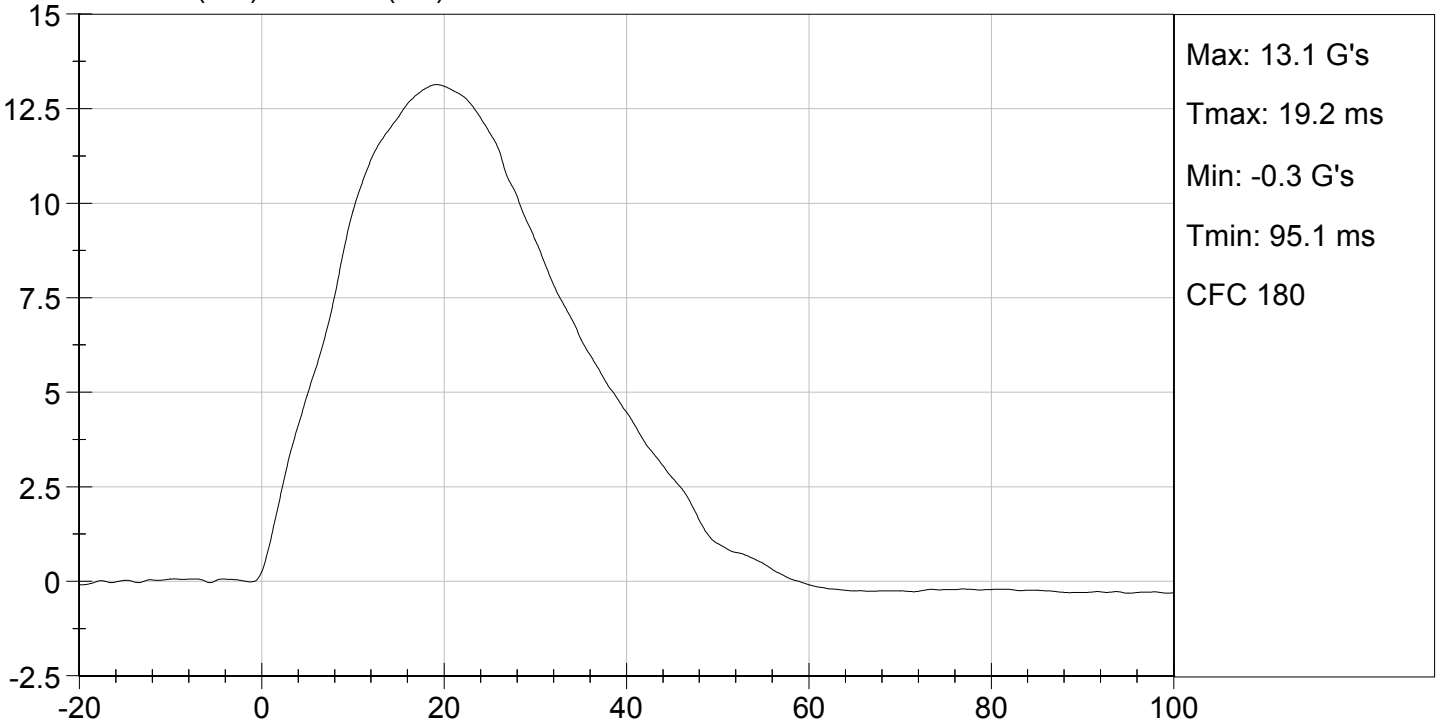
01/29/2015
Test Date

Jessica Hall
Approved By

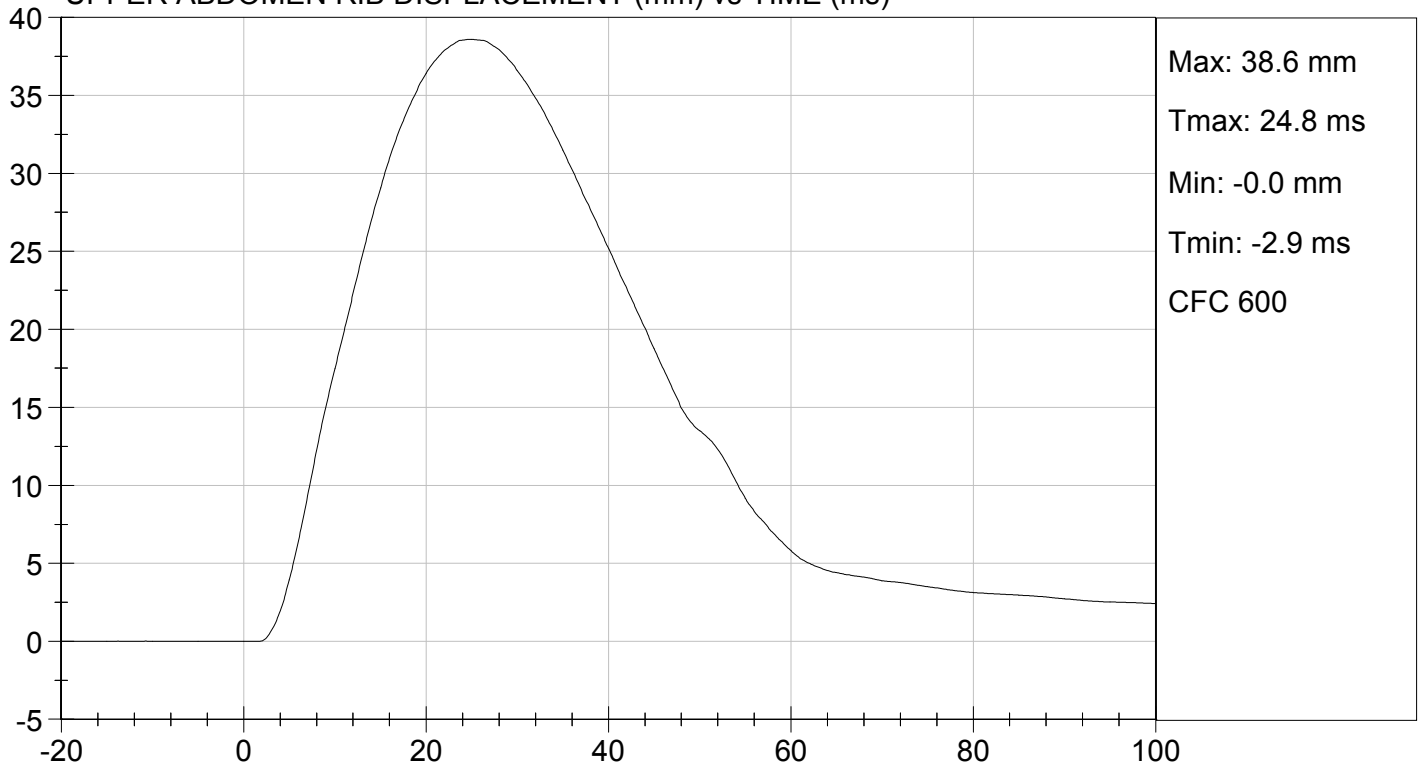
TEST DESC: ABDOMEN IMPACT
VELOCITY: 13.89 ft/s, 4.23 m/s

TEST DATE: 01/29/2015
TEST #: D15296

PROBE (G's) vs TIME (ms)



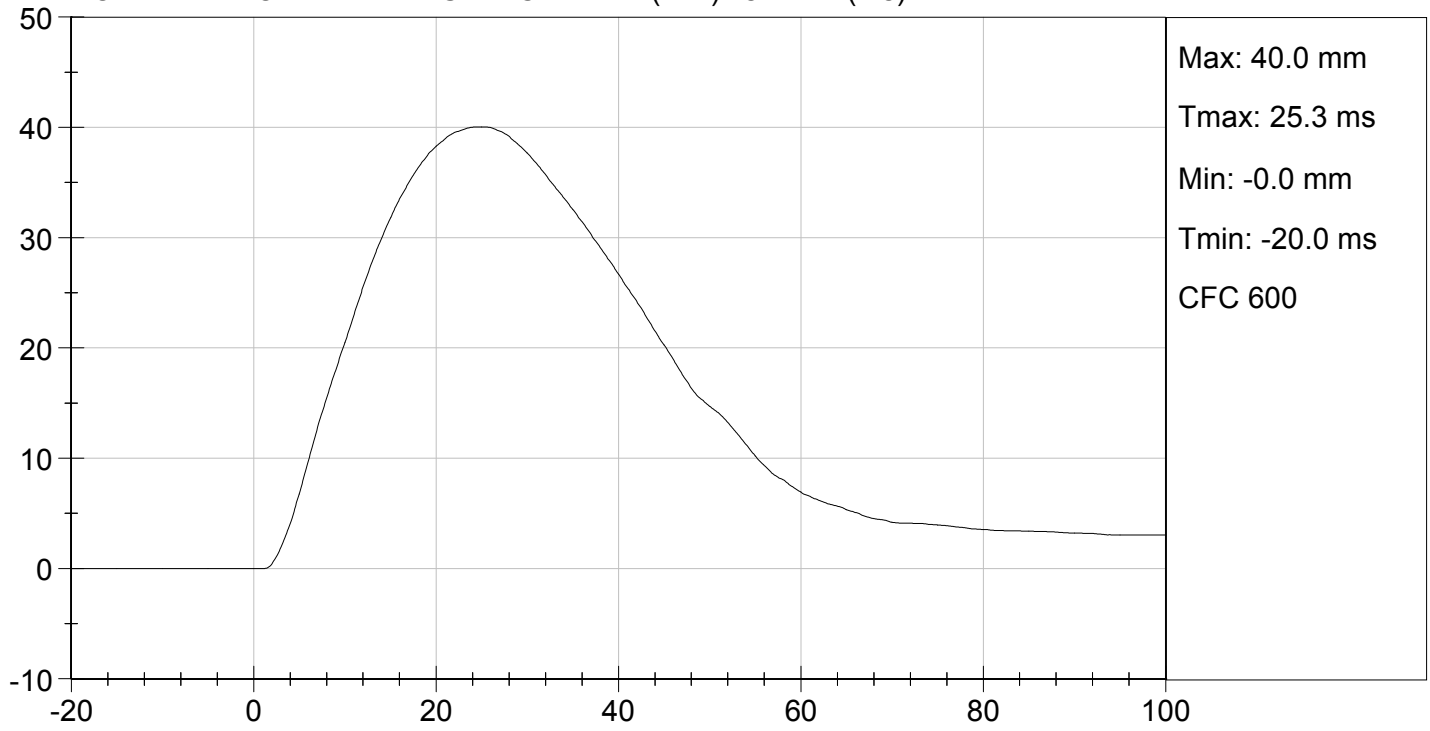
UPPER ABDOMEN RIB DISPLACEMENT (mm) vs TIME (ms)



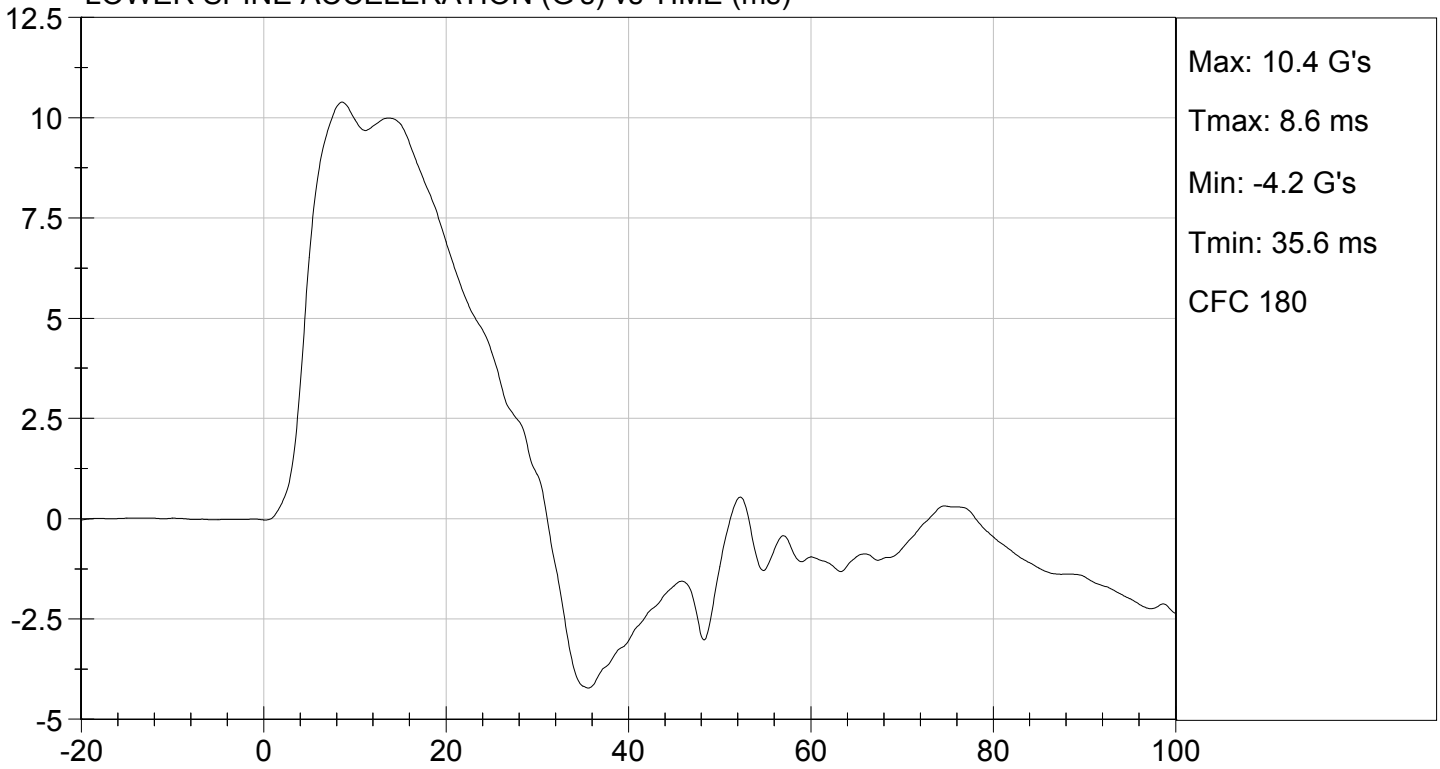
TEST DESC: ABDOMEN IMPACT
VELOCITY: 13.89 ft/s, 4.23 m/s

TEST DATE: 01/29/2015
TEST #: D15296

LOWER ABDOMEN RIB DISPLACEMENT (mm) vs TIME (ms)



LOWER SPINE ACCELERATION (G's) vs TIME (ms)



MGA RESEARCH CORPORATION

PELVIS IMPACT TEST

SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 306 **Test I.D:** D15297

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.9	Pass
Humidity	%	10 to 70	25	Pass
Impact Velocity	m/s	6.60 to 6.80	6.68	Pass
Maximum Probe Acceleration	G's	38 to 47	44	Pass
Pelvis Y Acceleration After 6 ms	G's	34 to 42	41	Pass
Peak Acetabulum Force	N	3600 to 4300	4,135	Pass
		Overall Test Results		Pass

David Schoedel
Laboratory Technician

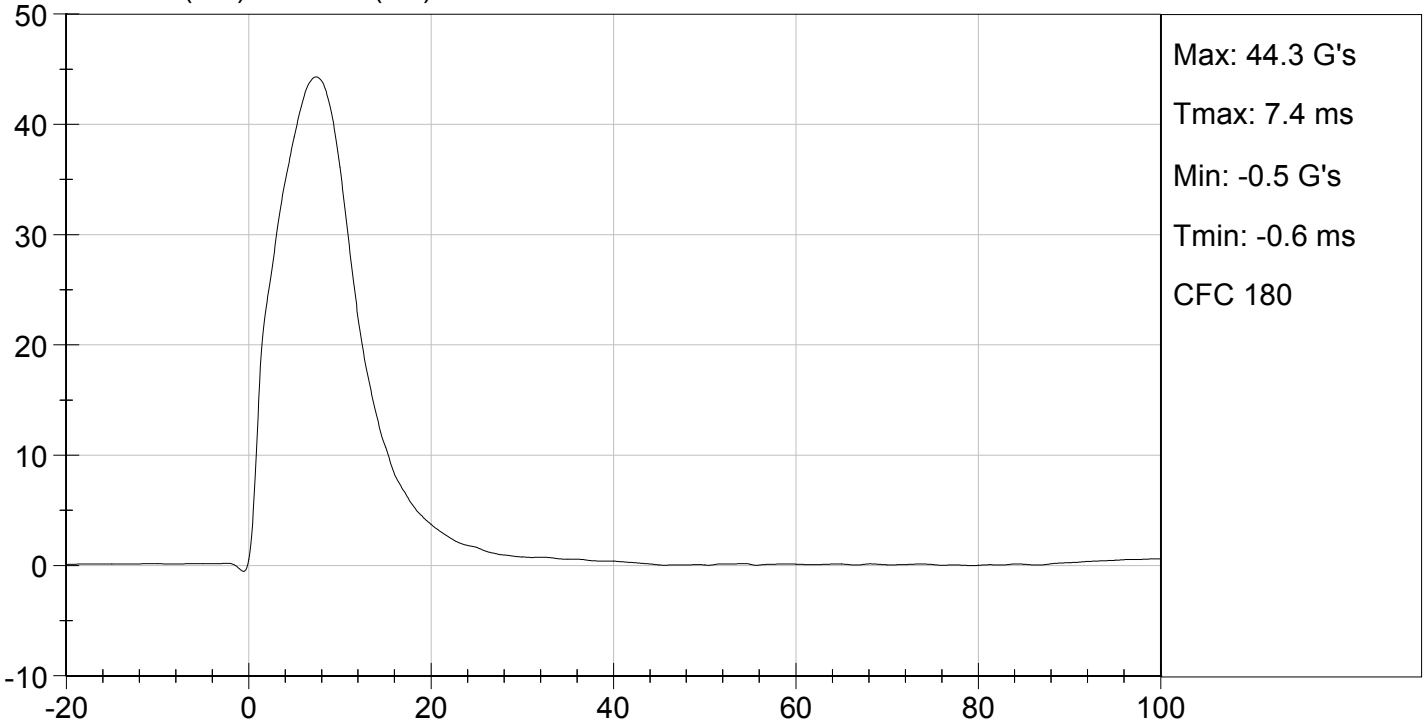
01/29/2015
Test Date

Jessica Hall
Approved By

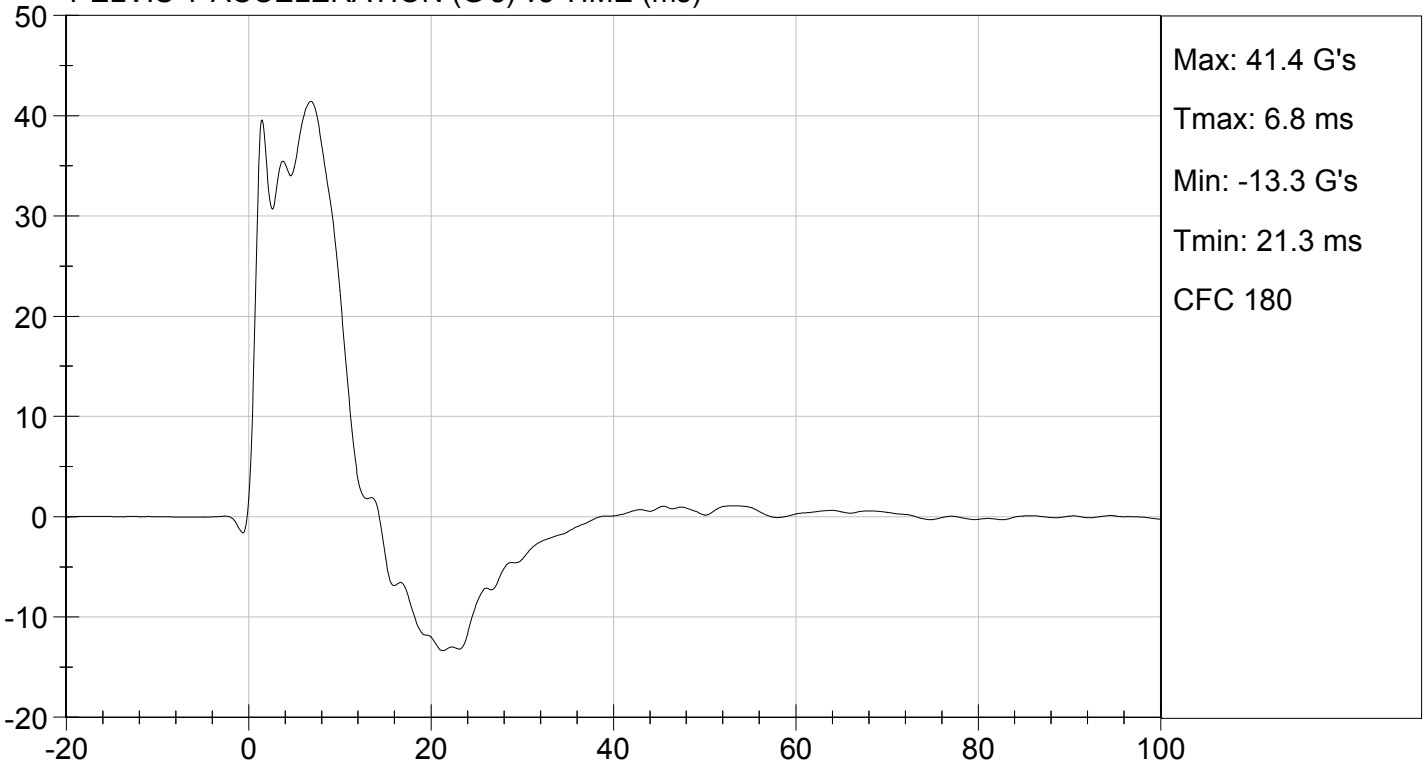
TEST DESC: PELVIS IMPACT
VELOCITY: 21.93 ft/s, 6.68 m/s

TEST DATE: 01/29/2015
TEST #: D15297

PROBE (G's) vs TIME (ms)

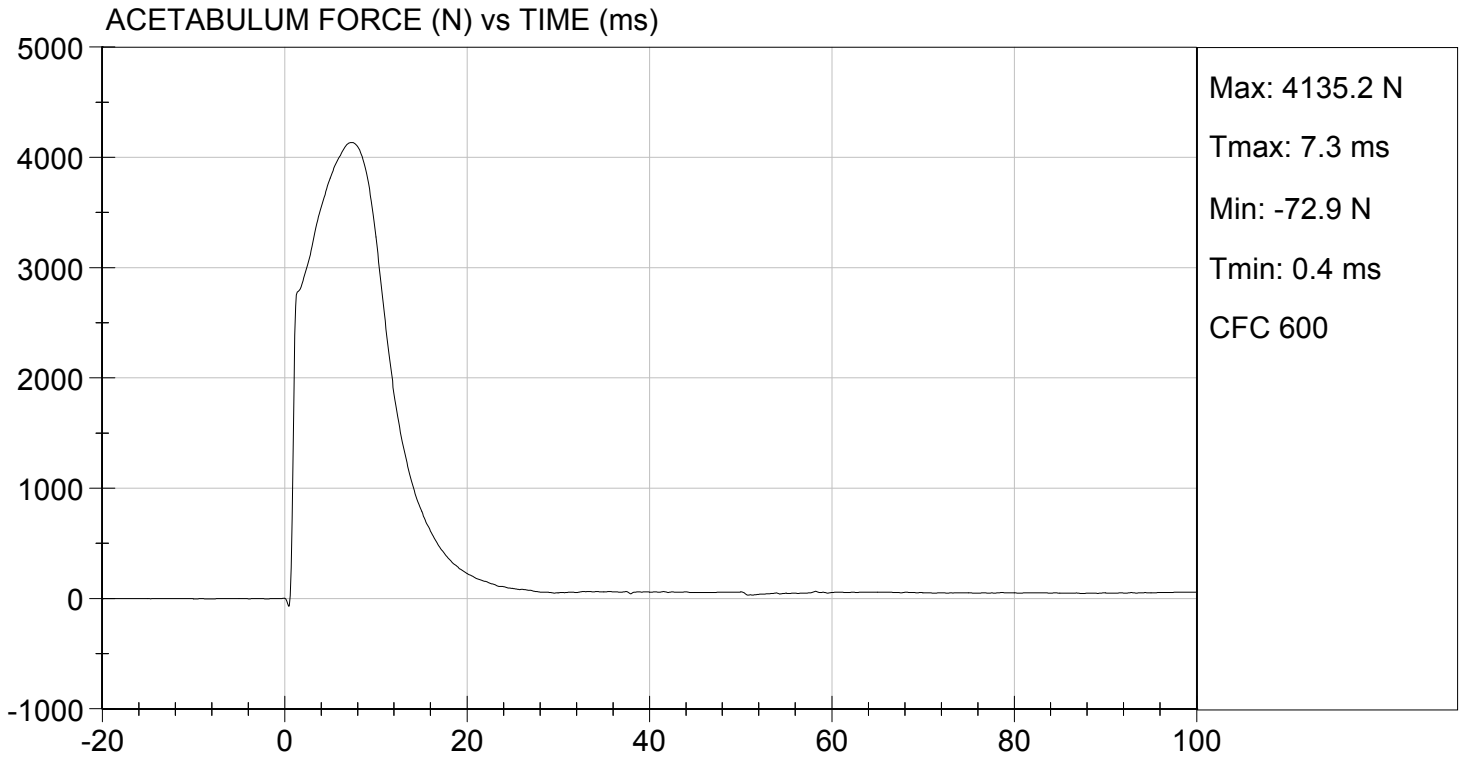


PELVIS Y ACCELERATION (G's) vs TIME (ms)



TEST DESC: PELVIS IMPACT
VELOCITY: 21.93 ft/s, 6.68 m/s

TEST DATE: 01/29/2015
TEST #: D15297



MGA RESEARCH CORPORATION

ILIAC IMPACT TEST

SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 306 **Test I.D:** D15298

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.9	Pass
Humidity	%	10 to 70	25	Pass
Impact Velocity	m/s	4.20 to 4.40	4.23	Pass
Maximum Probe Acceleration	G's	36 to 45	40	Pass
Pelvis Y Acceleration	G's	28 to 39	32	Pass
Peak Pelvis Iliac Force	N	4100 to 5100	4,736	Pass
		Overall Test Results		Pass

David Schoedel
Laboratory Technician

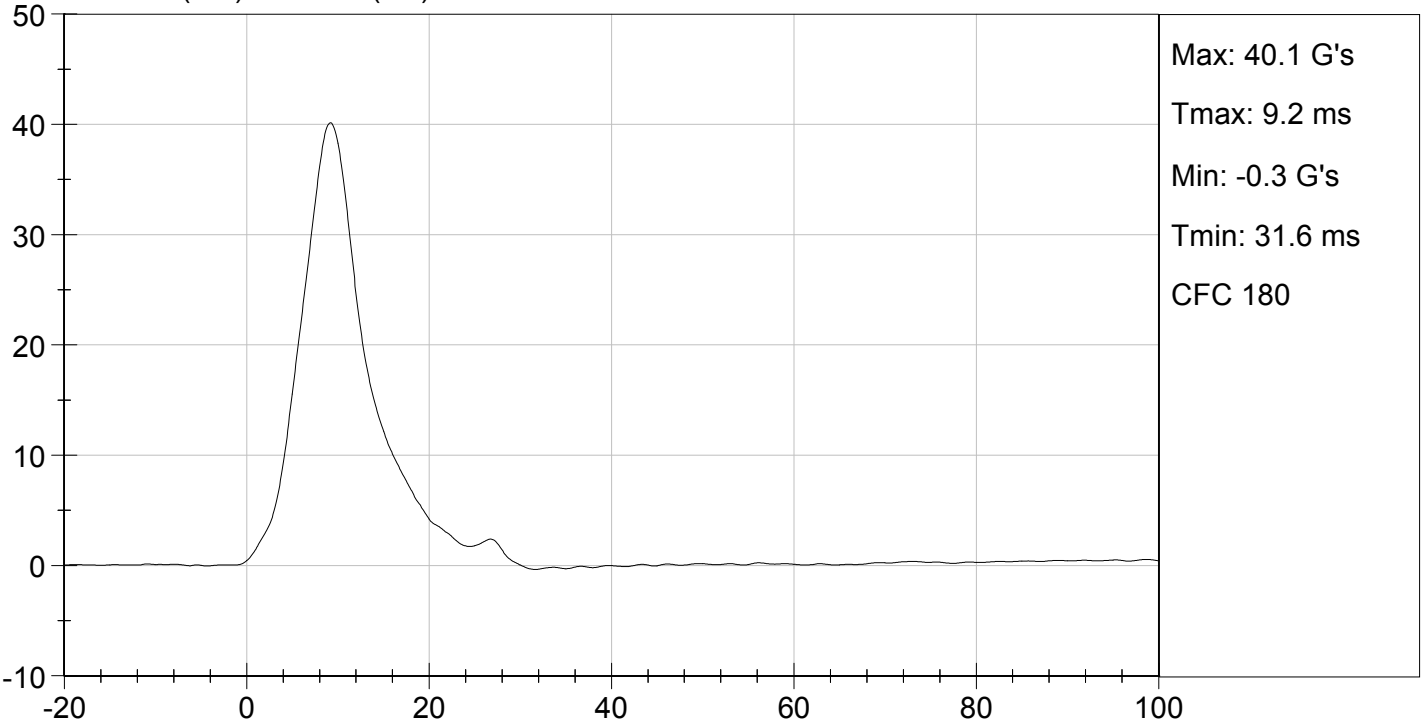
01/29/2015
Test Date

Jessica Hall
Approved By

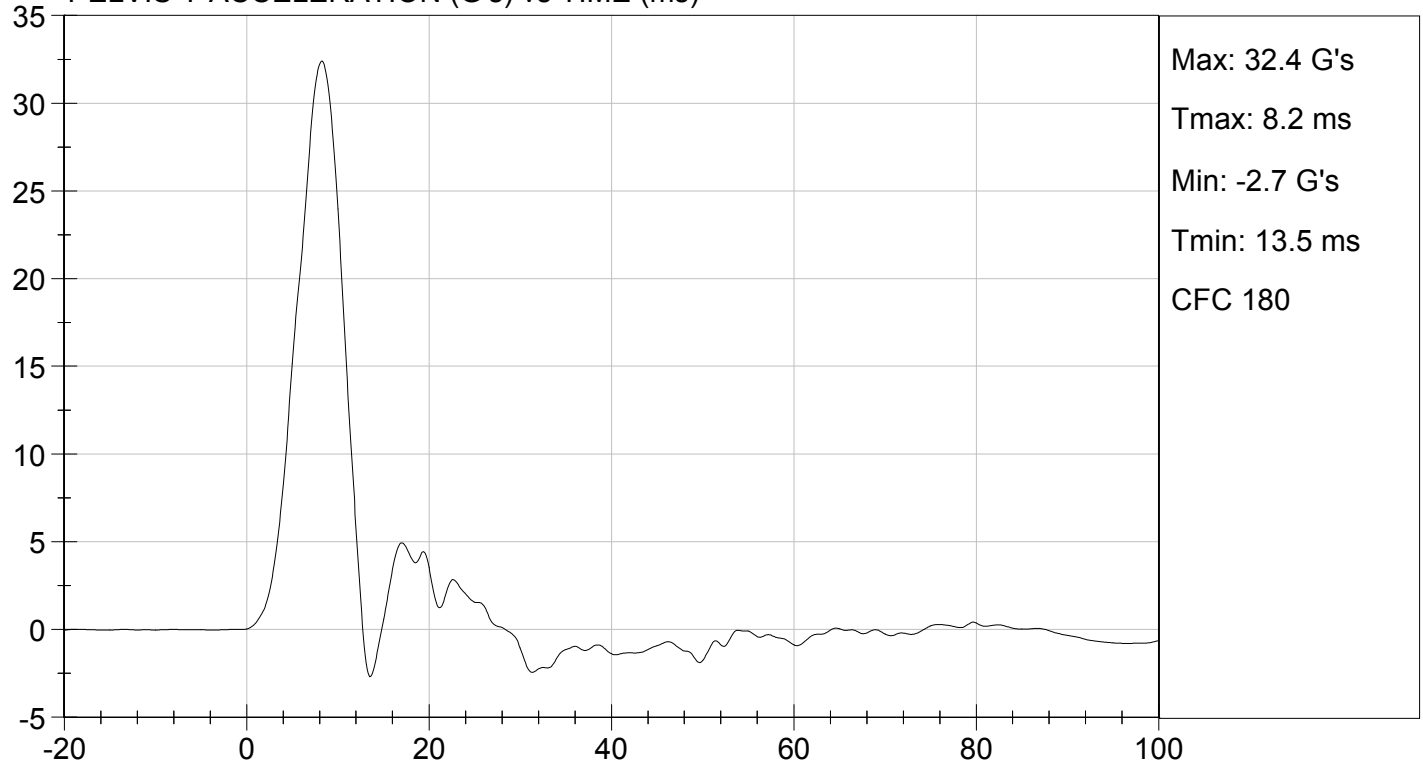
TEST DESC: ILLIAC
VELOCITY: 13.89 ft/s, 4.23 m/s

TEST DATE: 01/29/2015
TEST #: D15298

PROBE (G's) vs TIME (ms)

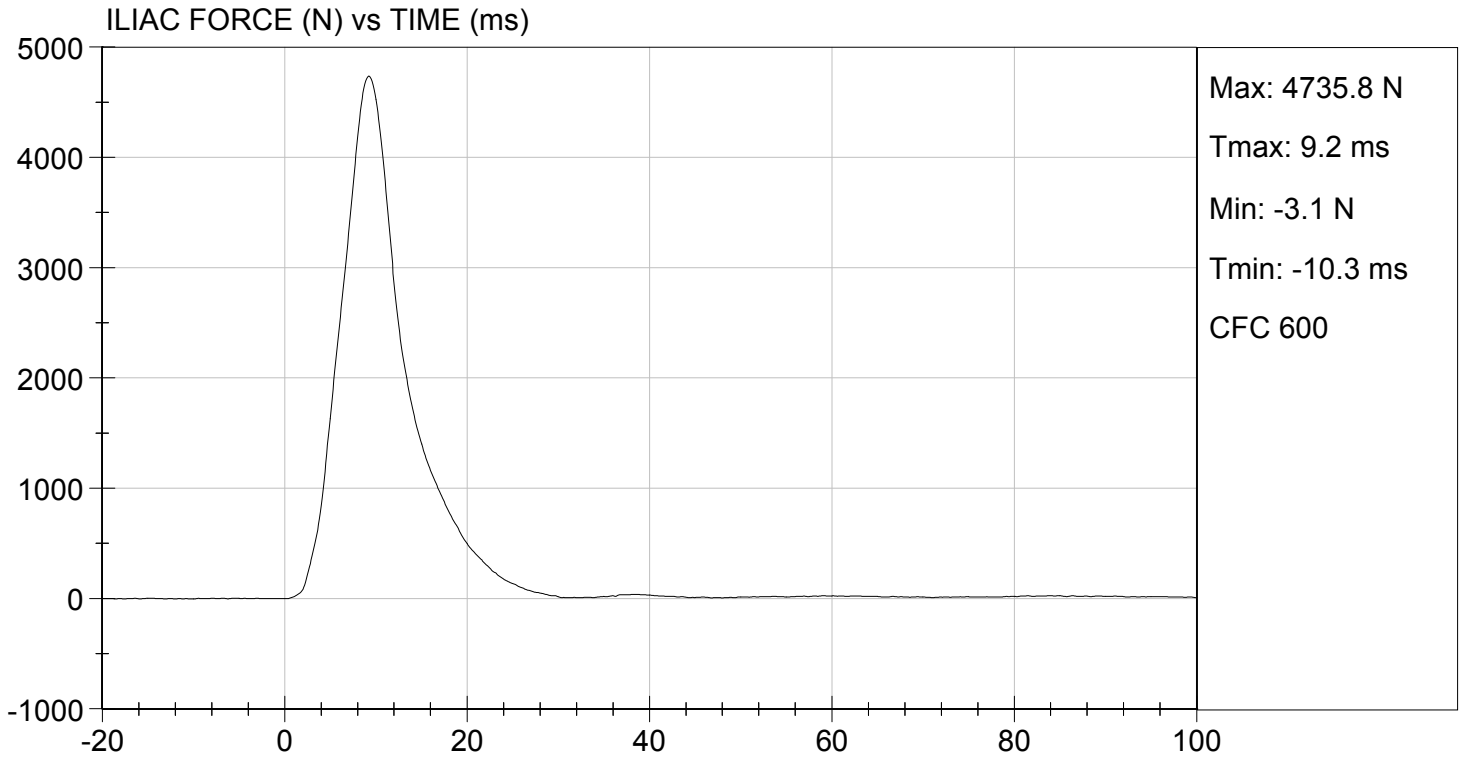


PELVIS Y ACCELERATION (G's) vs TIME (ms)



TEST DESC: ILLIAC
VELOCITY: 13.89 ft/s, 4.23 m/s

TEST DATE: 01/29/2015
TEST #: D15298



SID-IIsD External Measurements
SN: 306

No.	Name	Spec. (mm)	Result	Pass/Fail
A	Sitting Height	772 - 788	785	Pass
B	Shoulder Pivot Height	437 - 453	449	Pass
C	H-point Height	79 - 89	86	Pass
D	H-point from Seatback	141 - 151	147	Pass
E	Shoulder Pivot from Backline	97 - 107	99	Pass
F	Thigh Clearance	119 -135	120	Pass
G	Head Breadth	140 - 148	141	Pass
H	Head Back from Backline	40 - 46	45	Pass
I	Head Depth	178 - 188	182	Pass
J	Head Circumference	541 - 551	550	Pass
K	Buttock to Knee Length	514 - 540	538	Pass
L	Popliteal Height	343 - 369	349	Pass
M	Knee Pivot to Floor Height	392 - 409	394	Pass
N	Buttock Popliteal Length	416 - 442	435	Pass
O	Chest Depth w/o Jacket	195 - 211	198	Pass
P	Foot Length	216 - 232	222	Pass
Q	Hip Breadth (w/ pelvic plugs)	313 - 323	317	Pass
R	Arm Length	249 - 259	250	Pass
S	Knee Joint to Seatback	477 - 493	483	Pass
V	Shoulder Width	341 - 357	351	Pass
W	Foot Width	78 - 94	82	Pass
Y	Chest Circumference w/ jacket	851 - 881	863	Pass
Z	Waist Circumference	761 - 791	782	Pass

MGA RESEARCH CORPORATION

HEAD DROP TEST

SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 306 **Test ID:** D15491

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	21.5	Pass
Laboratory Relative Humidity	%	10 to 70	26	Pass
Peak Resultant Acceleration	G's	115 to 137	117	Pass
Peak Longitudinal Acceleration	G's	+/- 15	-3.1	Pass
Unimodal	N/A	Yes	Yes	Pass
Oscillations	N/A	<15%	Yes	Pass
		Overall Test Results		Pass

David Schoedel
Laboratory Technician

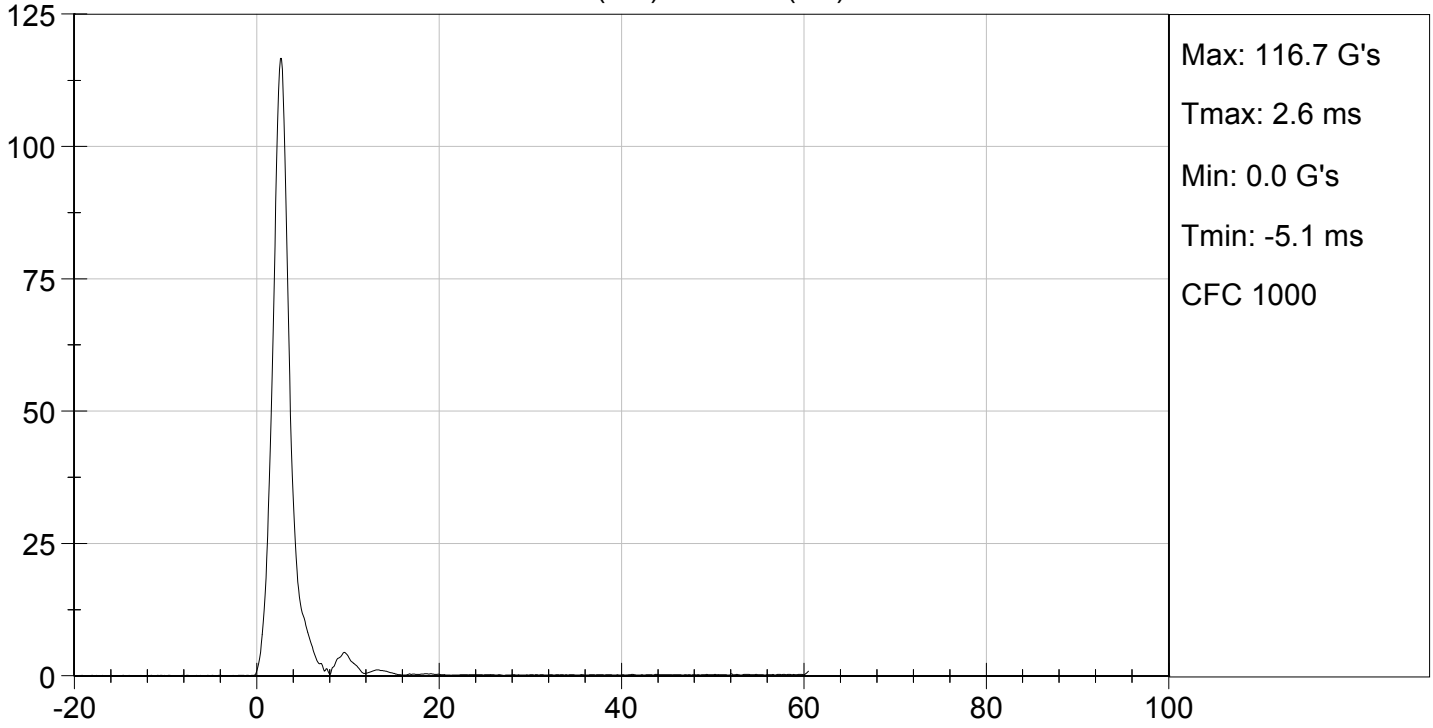
02/18/2015
Test Date

Jessica Hall
Approved By

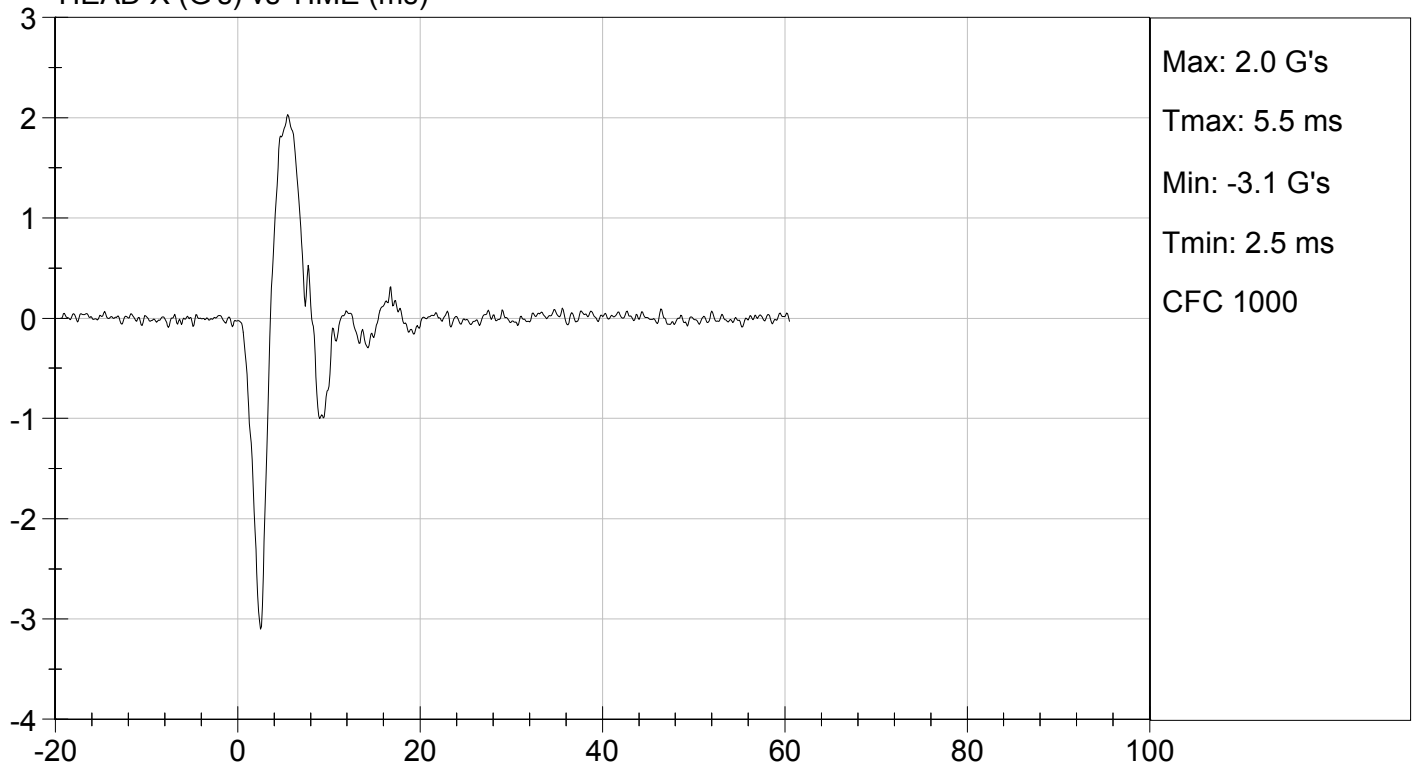
TEST DESC: HEAD DROP

TEST DATE: 02/18/2015
TEST #: D15491

HEAD RESULTANT ACCELERATION (G's) vs TIME (ms)



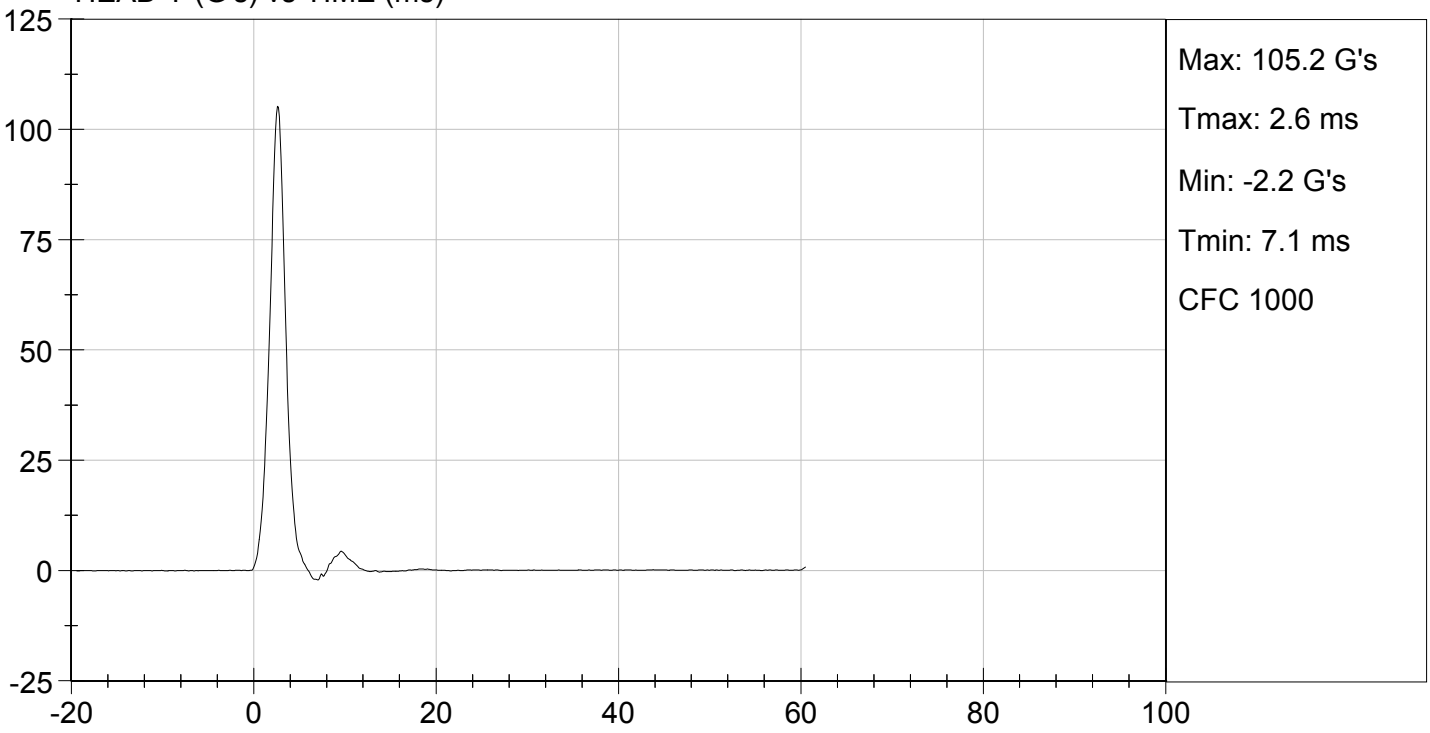
HEAD X (G's) vs TIME (ms)



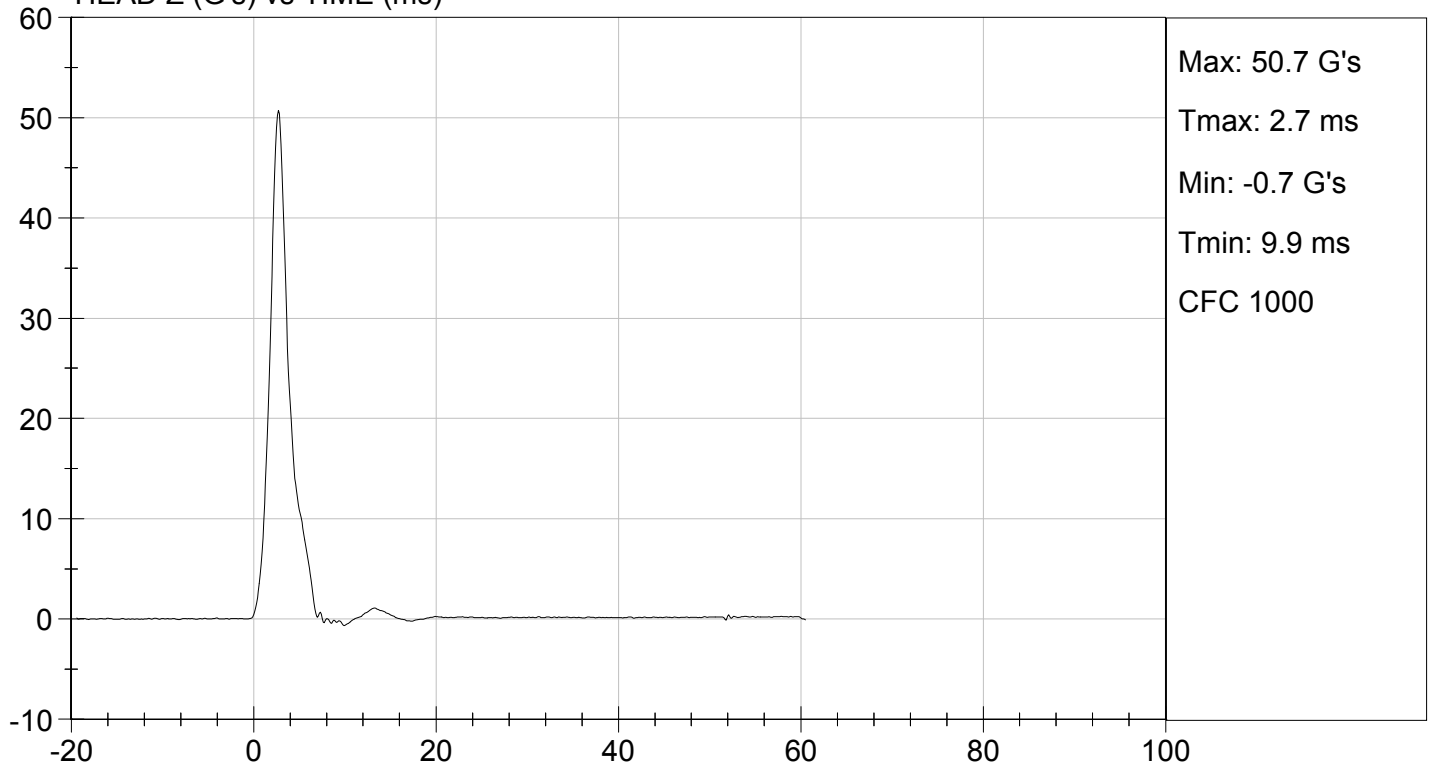
TEST DESC: HEAD DROP

TEST DATE: 02/18/2015
TEST #: D15491

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



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



MGA RESEARCH CORPORATION

LATERAL NECK PENDULUM TEST

SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 306 **Test I.D:** D15492

Tested Parameter		Units	Specification	Result	Pass/Fail
Temperature		deg C	20.6 to 22.2	21.4	Pass
Humidity		%	10 to 70	22	Pass
Impact Velocity		m/s	5.51 to 5.63	5.58	Pass
Pendulum Velocity	10 ms	m/s	2.20 to 2.80	2.46	Pass
	15 ms	m/s	3.30 to 4.10	3.47	Pass
	20 ms	m/s	4.40 to 5.40	4.66	Pass
	25 ms	m/s	5.40 to 6.10	5.57	Pass
	25-100 ms	m/s	5.50 to 6.20	5.68	Pass
Maximum D-Plane Rotation		deg	71 to 81	72	Pass
Time of Maximum D-Plane Rotation		ms	50 to 70	58	Pass
Maximum Occipital Condyle Moment		Nm	-44 to -36	-40	Pass
Time of Moment Decay to 0 Nm		ms	102 to 126	114	Pass
			Overall Test Results		Pass

Maxime Chamberland

Laboratory Technician

02/18/2015

Test Date

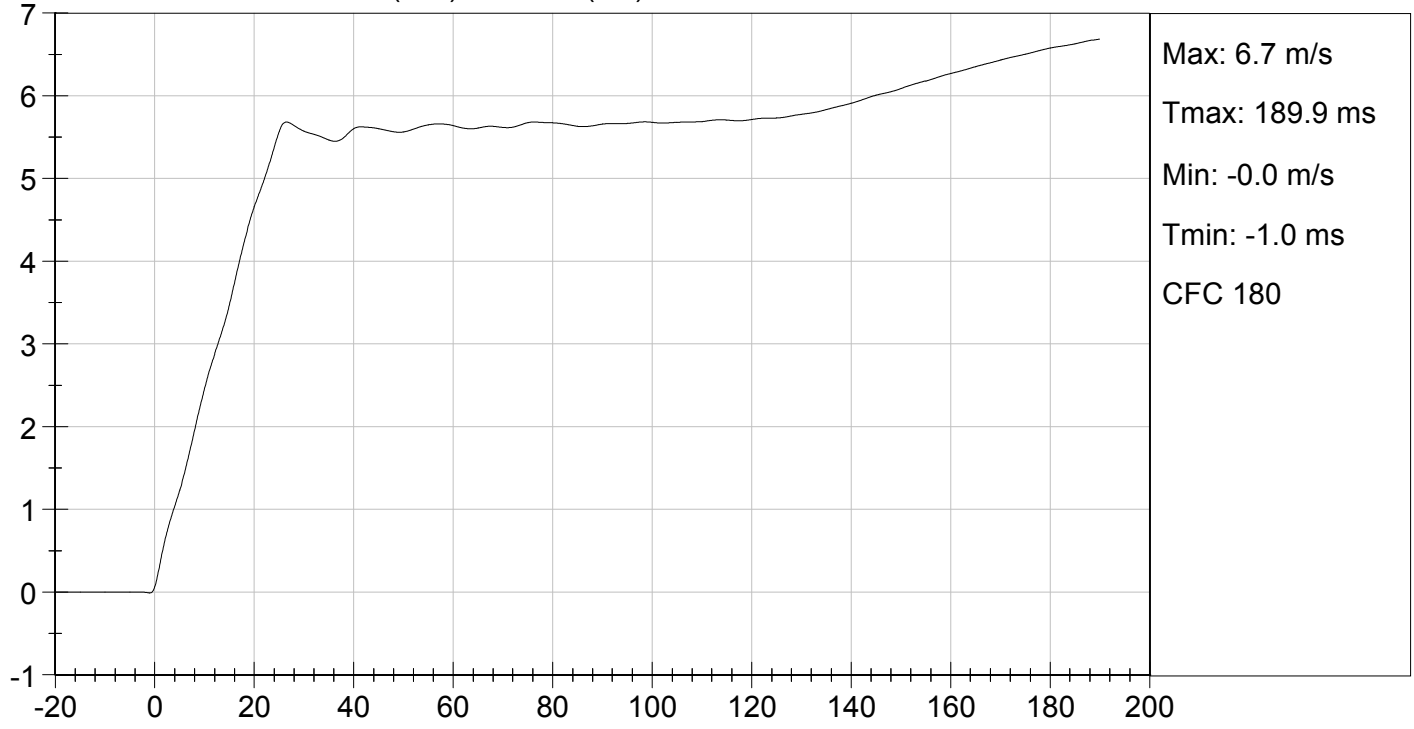
Jessica Hall

Approved By

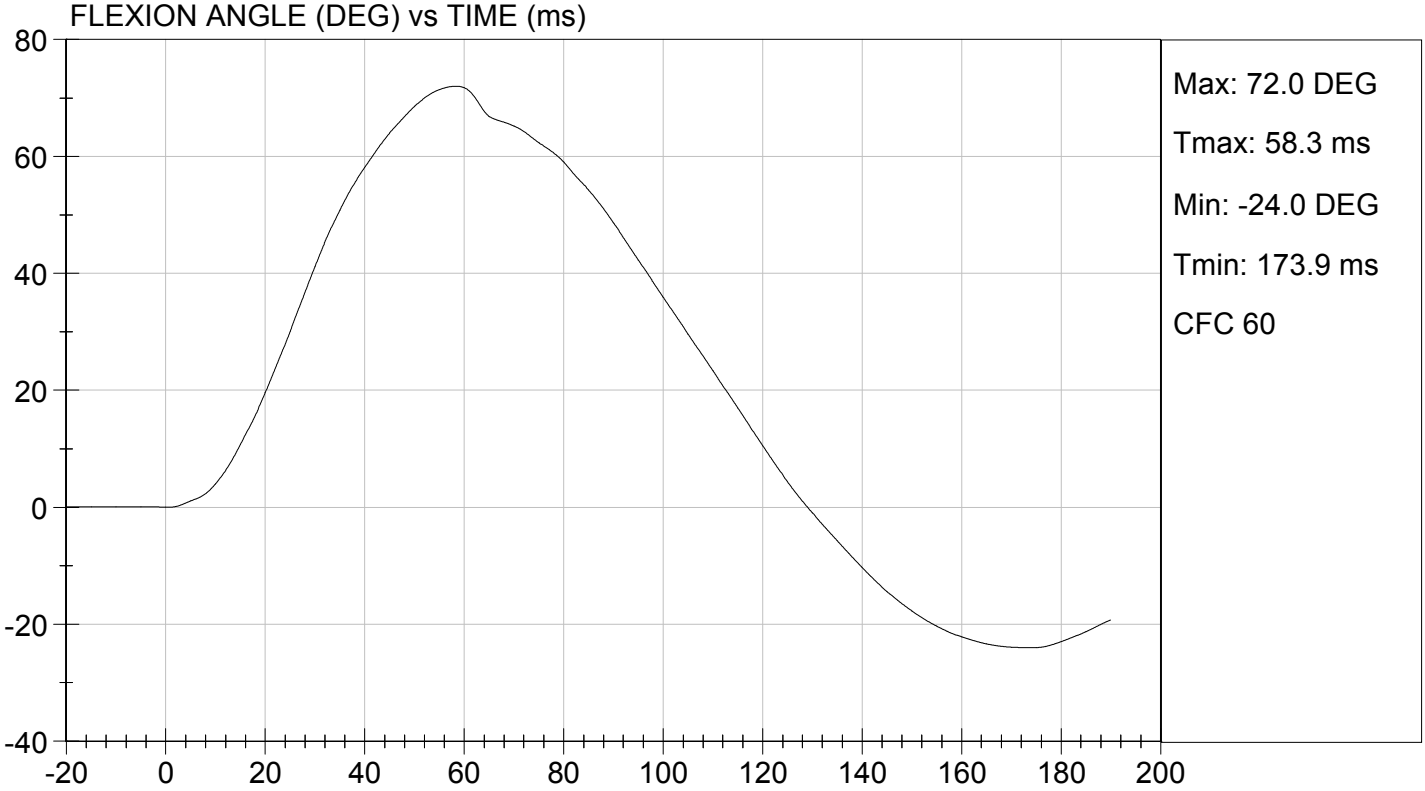
TEST DESC: NECK BENDING
VELOCITY: 18.31 ft/s, 5.58 m/s

TEST DATE: 02/18/2015
TEST #: D15492

PENDULUM VELOCITY (m/s) vs TIME (ms)

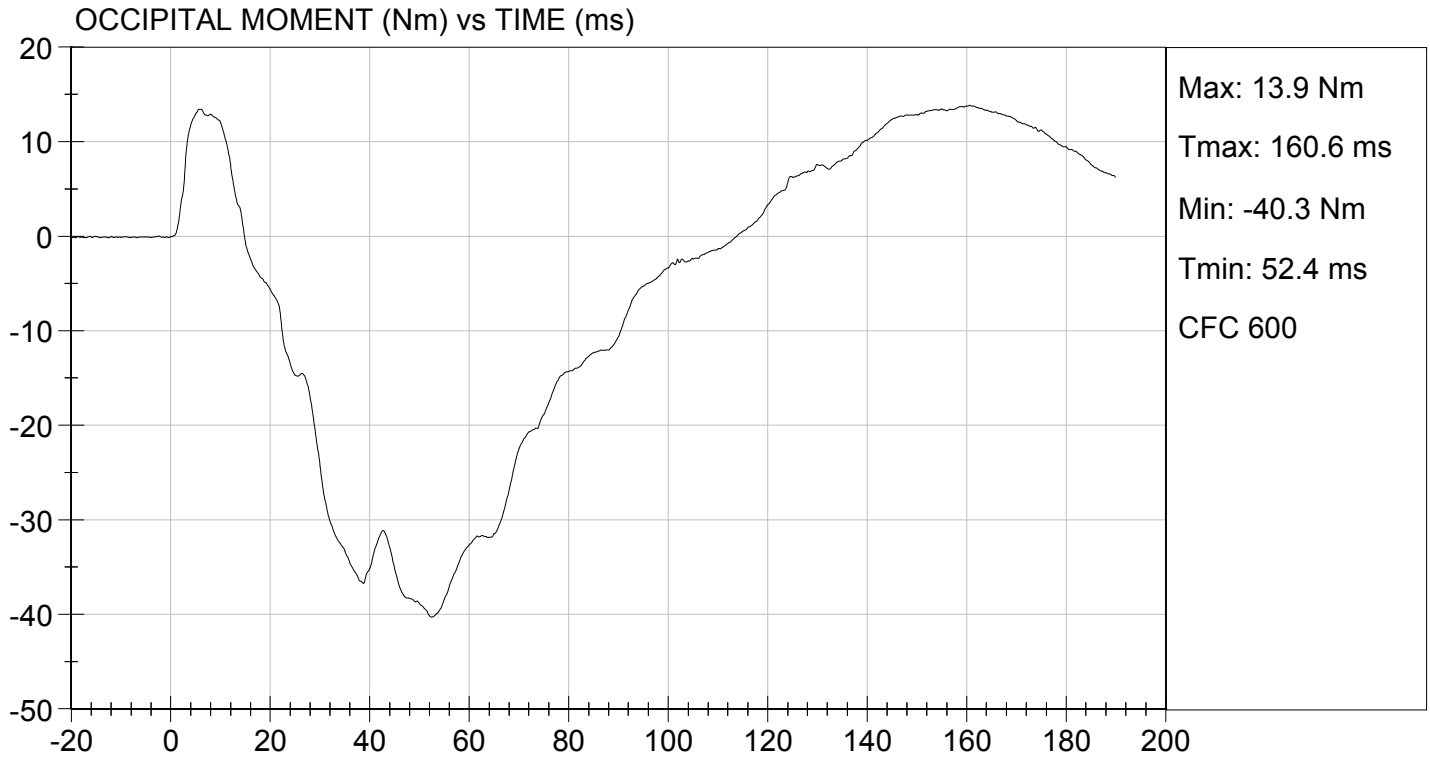


FLEXION ANGLE (DEG) vs TIME (ms)



TEST DESC: NECK BENDING
VELOCITY: 18.31 ft/s, 5.58 m/s

TEST DATE: 02/18/2015
TEST #: D15492



MGA RESEARCH CORPORATION

SHOULDER IMPACT TEST

SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 306 **Test ID:** D15493

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	21.4	Pass
Laboratory Relative Humidity	%	10 to 70	25	Pass
Impact Velocity	m/s	4.20 to 4.40	4.30	Pass
Maximum Probe Acceleration	G's	13 to 18	15	Pass
Shoulder Displacement	mm	28 to 37	28	Pass
Upper Spine (T1) Y Acceleration	G's	17 to 22	18	Pass
		Overall Test Results		Pass

David Schoedel

Laboratory Technician

02/18/2015

Test Date

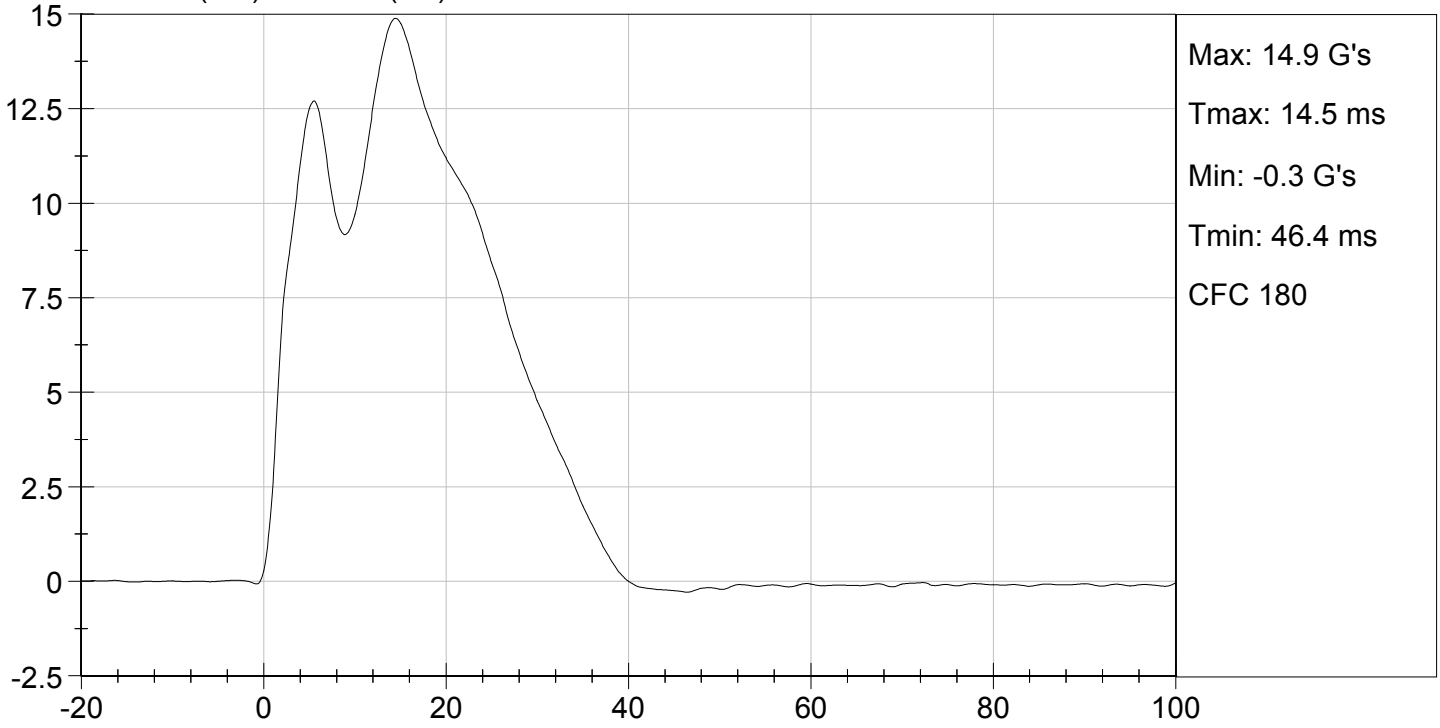
Jessica Gall

Approved By

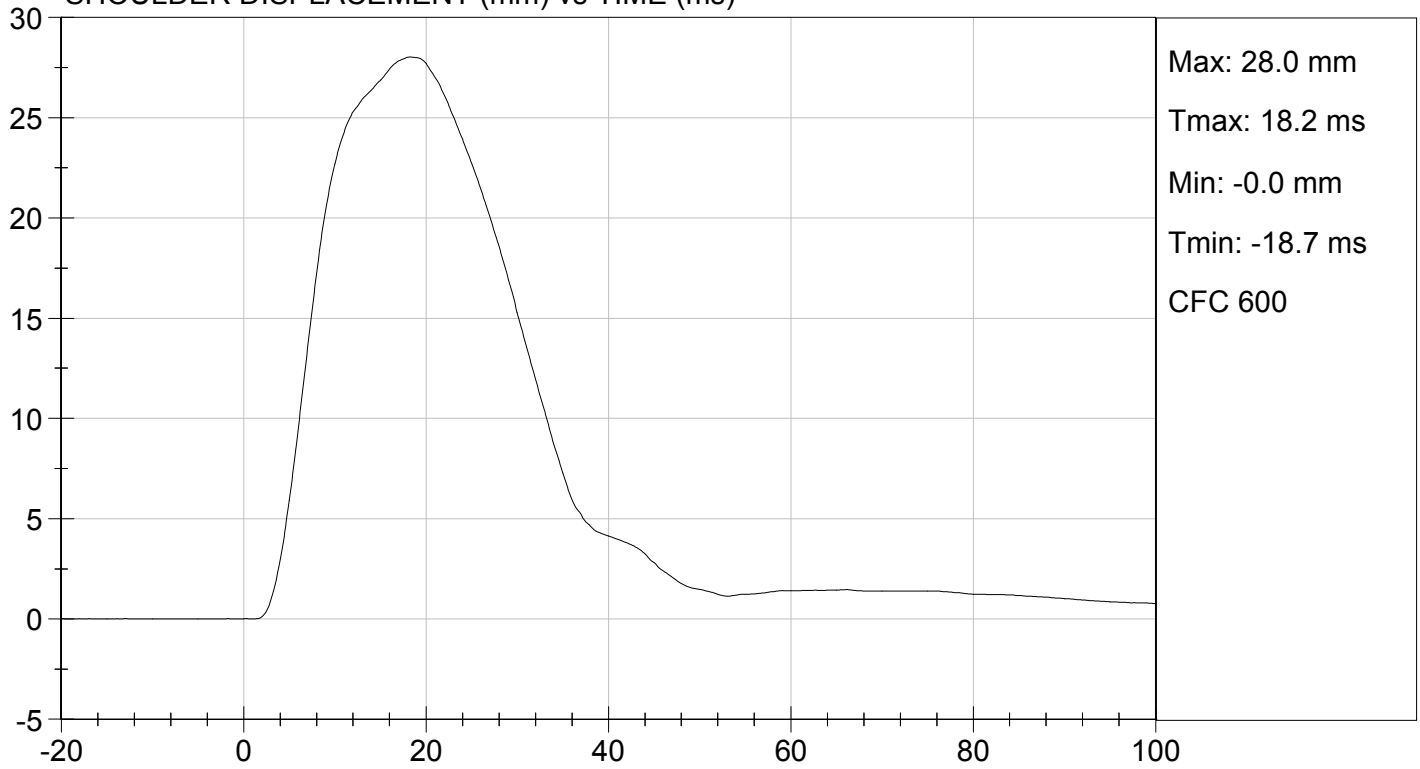
TEST DESC: SHOULDER IMPACT
VELOCITY: 14.12 ft/s, 4.30 m/s

TEST DATE: 02/18/2015
TEST #: D15493

PROBE (G's) vs TIME (ms)

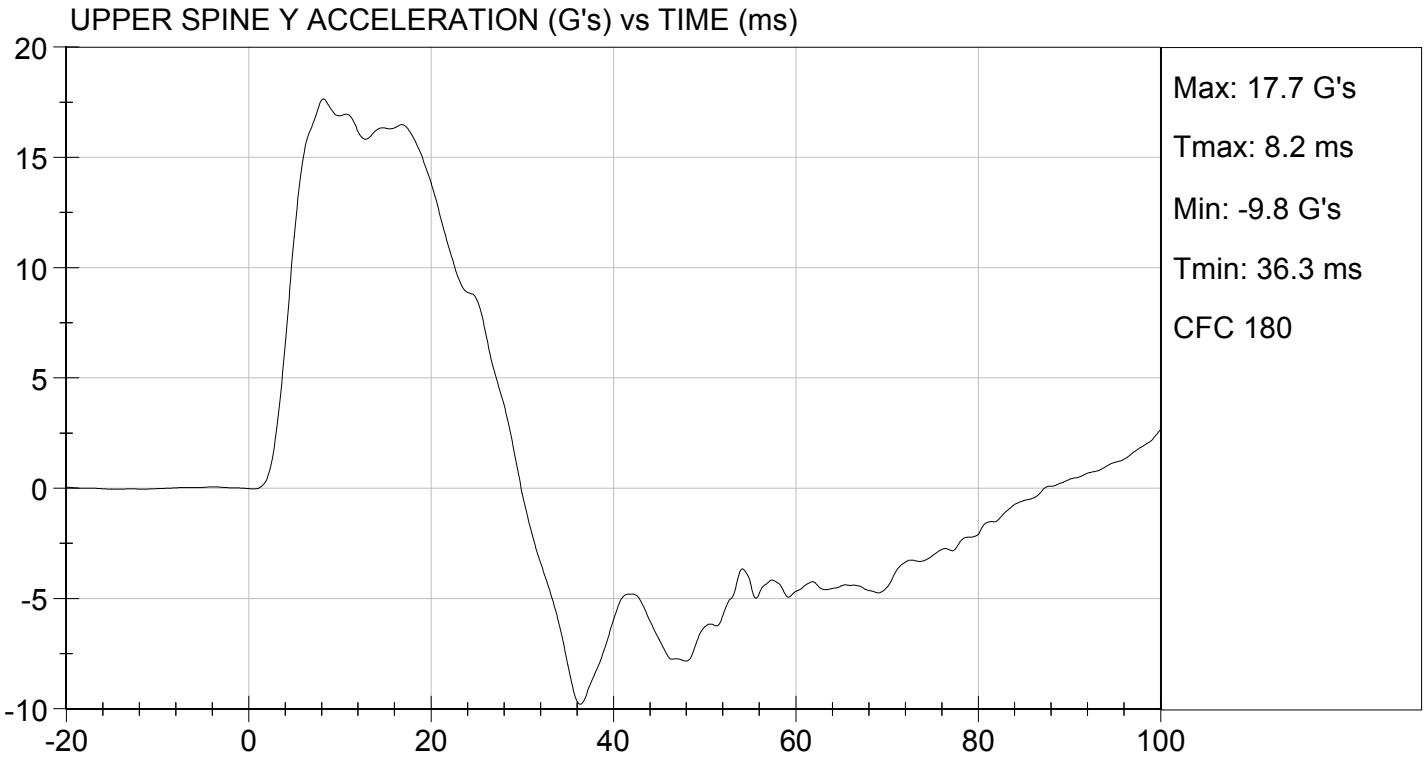


SHOULDER DISPLACEMENT (mm) vs TIME (ms)



TEST DESC: SHOULDER IMPACT
VELOCITY: 14.12 ft/s, 4.30 m/s

TEST DATE: 02/18/2015
TEST #: D15493



MGA RESEARCH CORPORATION

THORAX (WITH ARM) IMPACT TEST

SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 306 **Test I.D:** D15494

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.5	Pass
Humidity	%	10 to 70	26	Pass
Impact Velocity	m/s	6.60 to 6.80	6.68	Pass
Maximum Probe Acceleration	G's	30 to 36	34	Pass
Shoulder Displacement	mm	31 to 40	32	Pass
Upper Rib Displacement	mm	25 to 32	27	Pass
Middle Rib Displacement	mm	30 to 36	31	Pass
Lower Rib Displacement	mm	32 to 38	35	Pass
Upper Spine (T1) Y Acceleration	G's	34 to 43	38	Pass
Lower Spine (T12) Y Acceleration	G's	29 to 37	33	Pass
		Overall Test Results		Pass

David Schoedel

Laboratory Technician

02/18/2015

Test Date

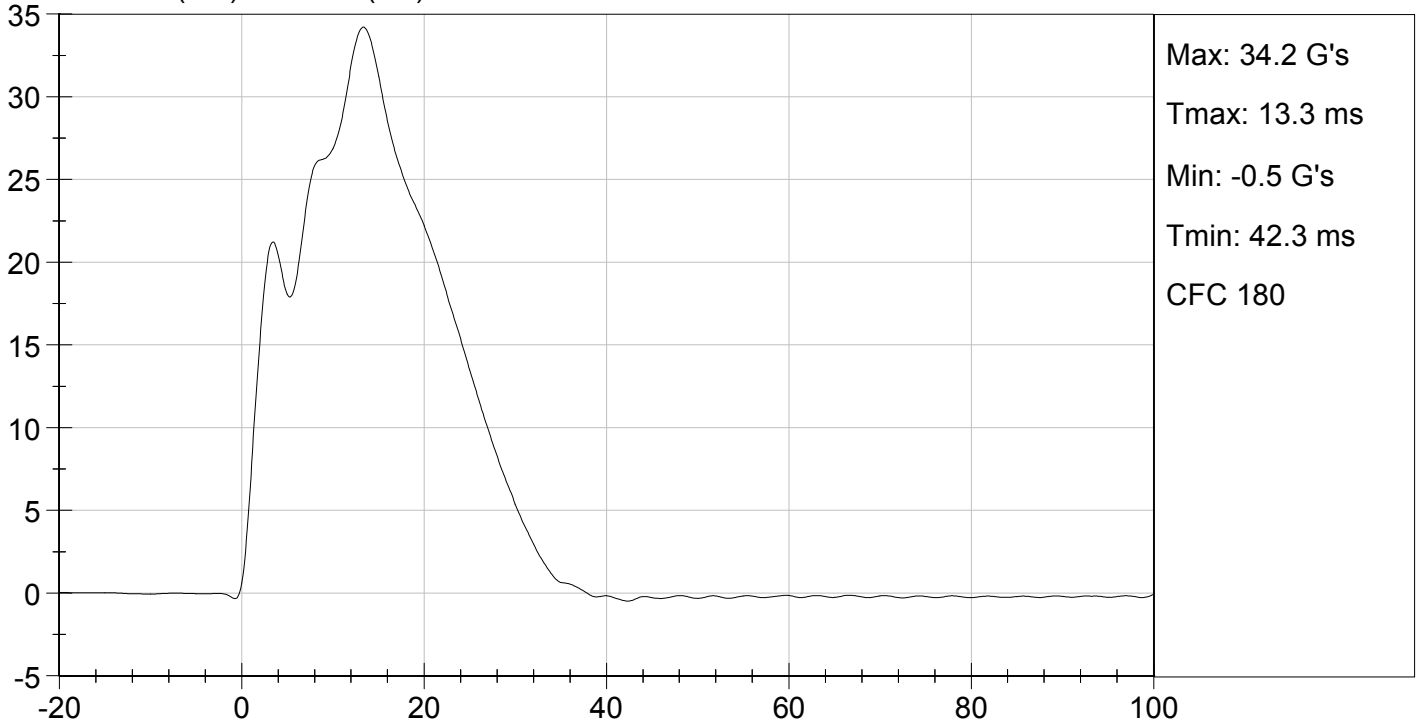
Jessica Gall

Approved By

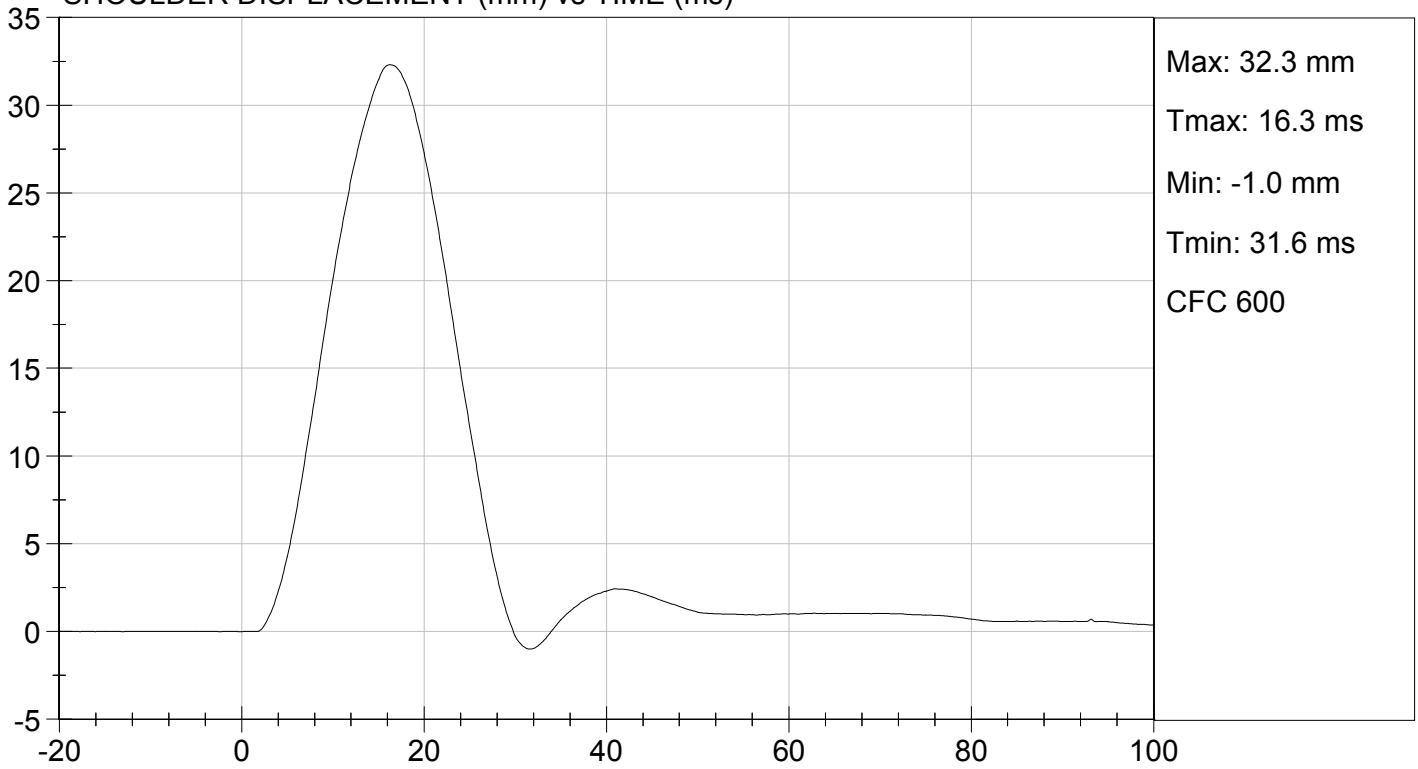
TEST DESC: THORAX IMPACT WITH ARM
VELOCITY: 21.93 ft/s, 6.68 m/s

TEST DATE: 02/18/2015
TEST #: D15494

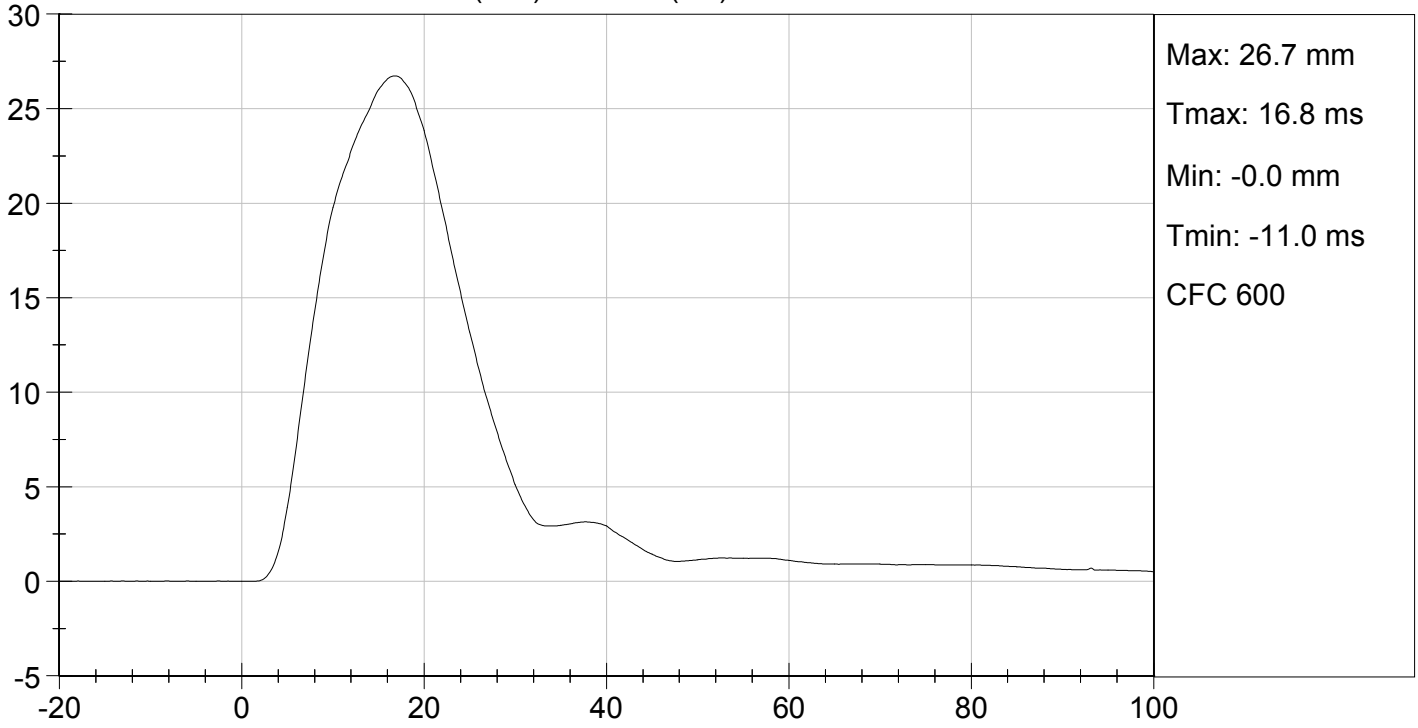
PROBE (G's) vs TIME (ms)



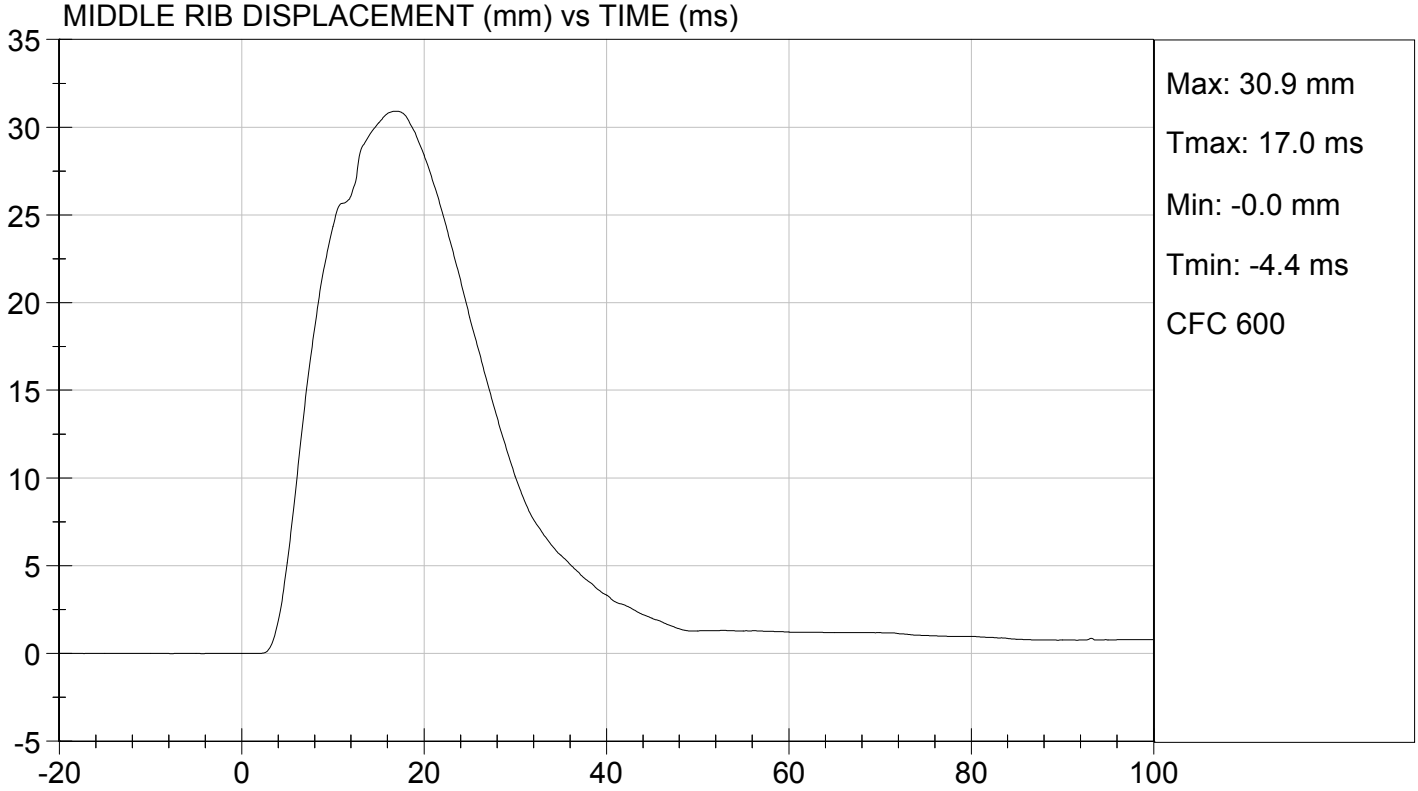
SHOULDER DISPLACEMENT (mm) vs TIME (ms)



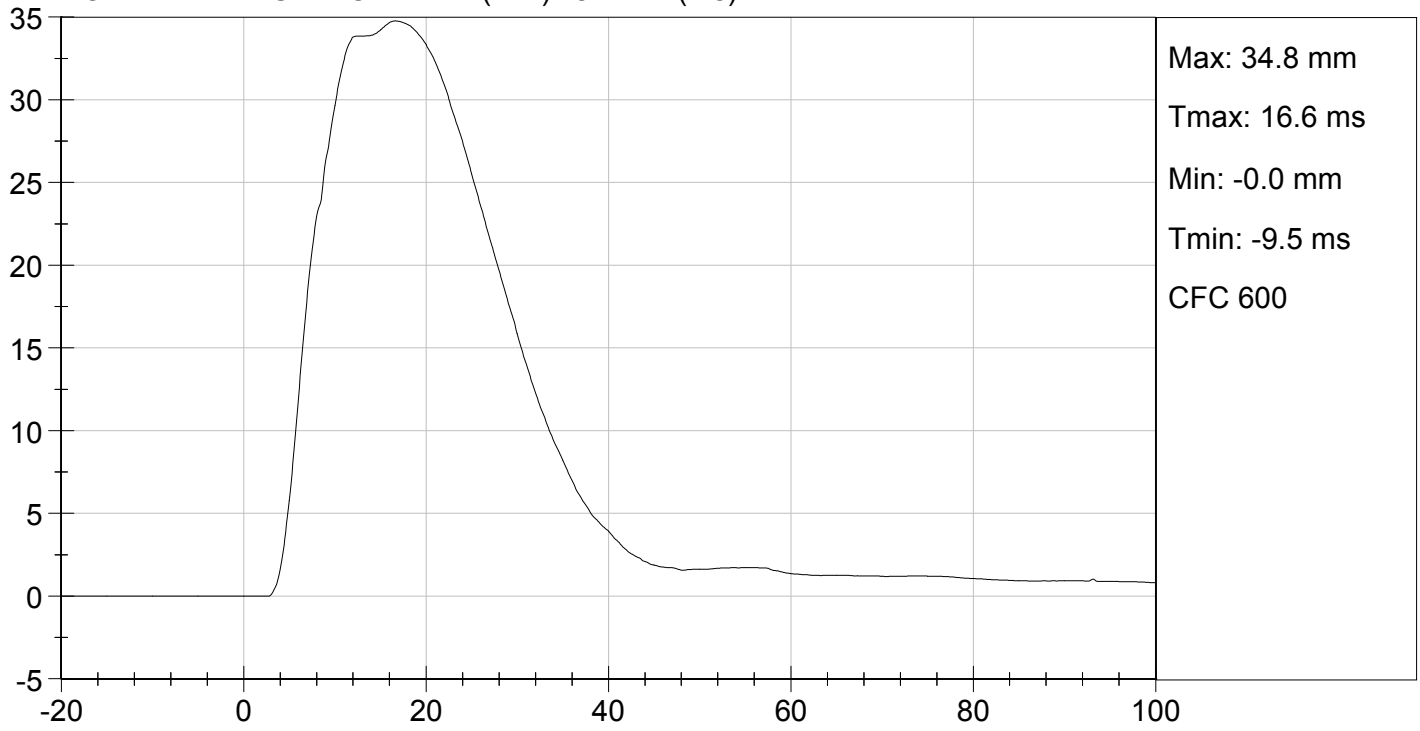
UPPER RIB DISPLACEMENT (mm) vs TIME (ms)



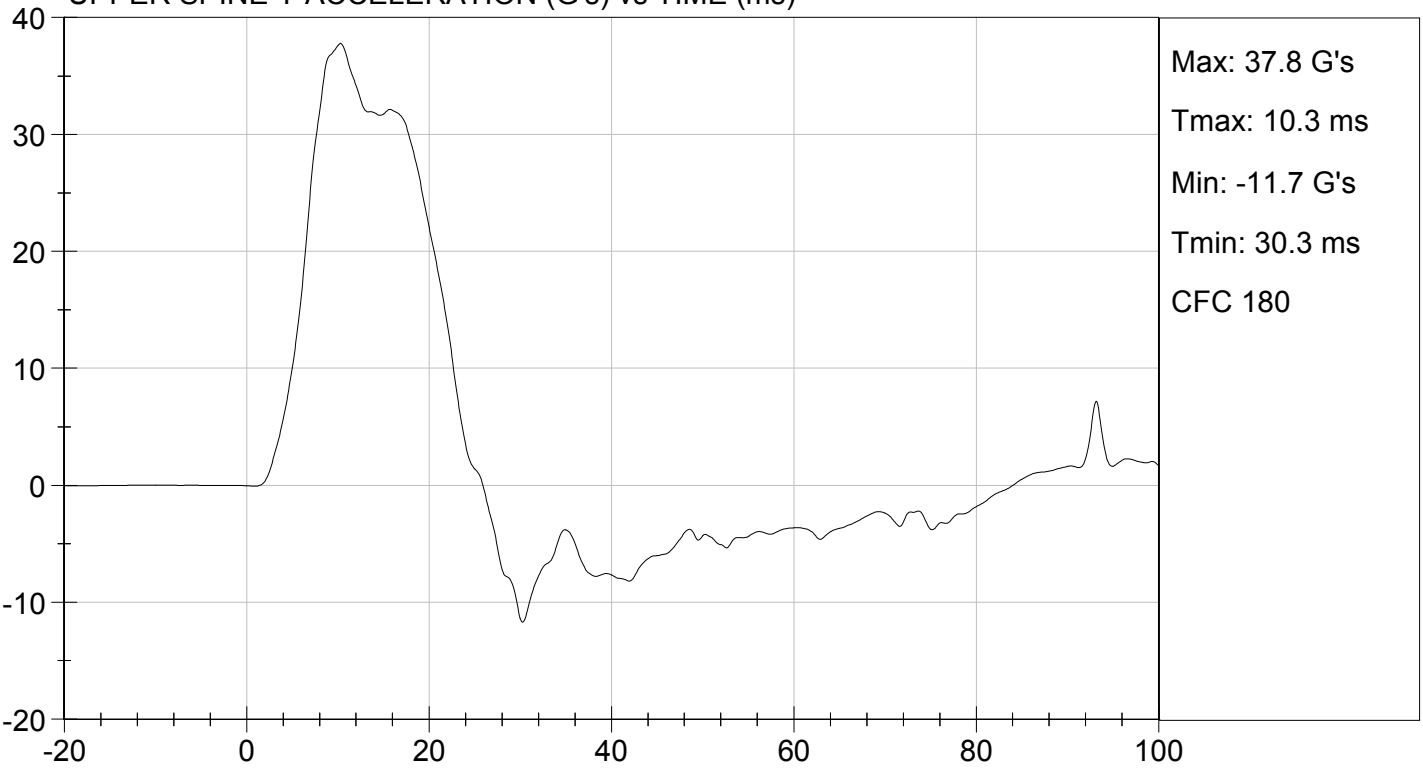
MIDDLE RIB DISPLACEMENT (mm) vs TIME (ms)



LOWER RIB DISPLACEMENT (mm) vs TIME (ms)

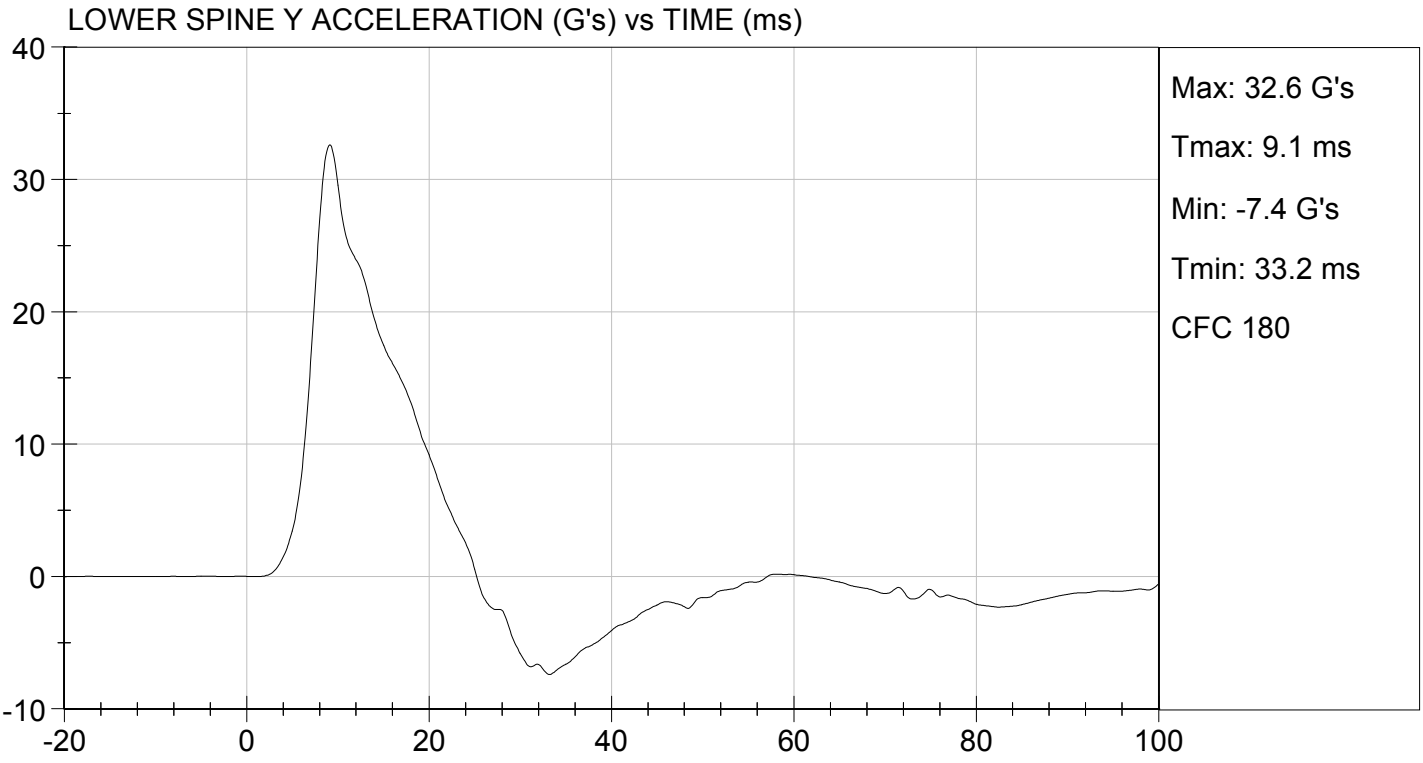


UPPER SPINE Y ACCELERATION (G's) vs TIME (ms)



TEST DESC: THORAX IMPACT WITH ARM
VELOCITY: 21.93 ft/s, 6.68 m/s

TEST DATE: 02/18/2015
TEST #: D15494



MGA RESEARCH CORPORATION

THORAX (WITHOUT ARM) IMPACT TEST

SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 306 **Test I.D:** D15495

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.5	Pass
Humidity	%	10 to 70	26	Pass
Impact Velocity	m/s	4.20 to 4.40	4.34	Pass
Maximum Probe Acceleration	G's	14 to 18	16	Pass
Upper Rib Displacement	mm	32 to 40	34	Pass
Middle Rib Displacement	mm	39 to 45	40	Pass
Lower Rib Displacement	mm	35 to 43	40	Pass
Upper Spine (T1) Y Acceleration	G's	13 to 17	15	Pass
Lower Spine (T12) Y Acceleration	G's	7 to 11	10	Pass
		Overall Test Results		Pass

David Schoedel
Laboratory Technician

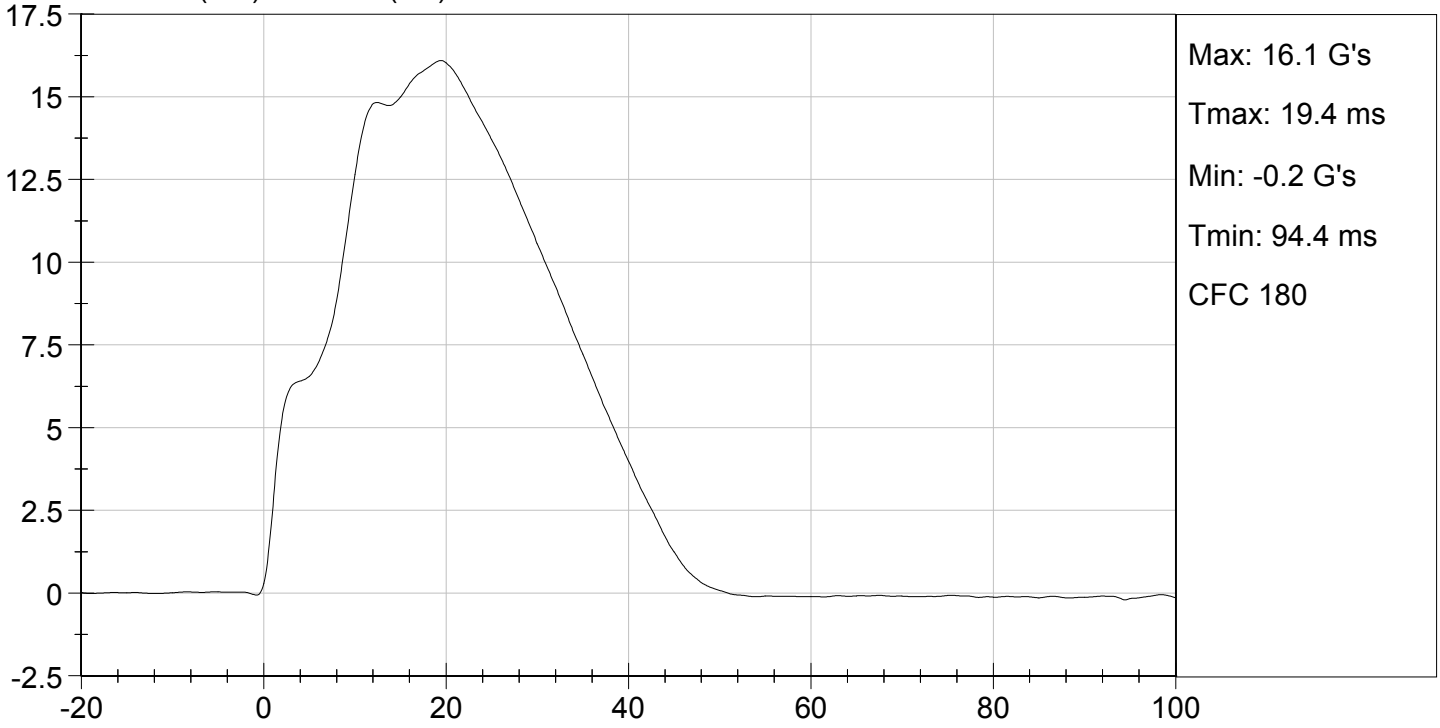
02/18/2015
Test Date

Jessica Gall
Approved By

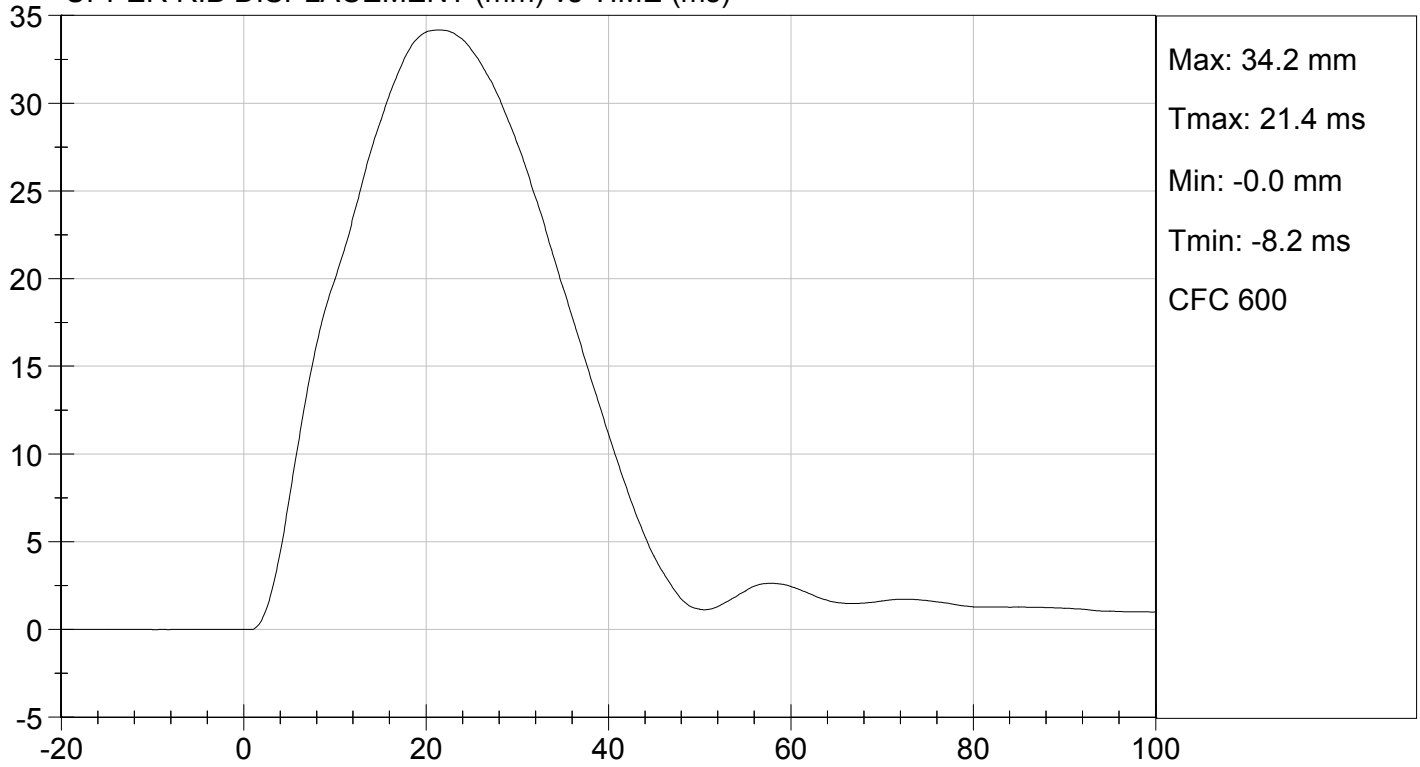
TEST DESC: THORAX IMPACT WITHOUT ARM
VELOCITY: 14.25 ft/s, 4.34 m/s

TEST DATE: 02/18/2015
TEST #: D15495

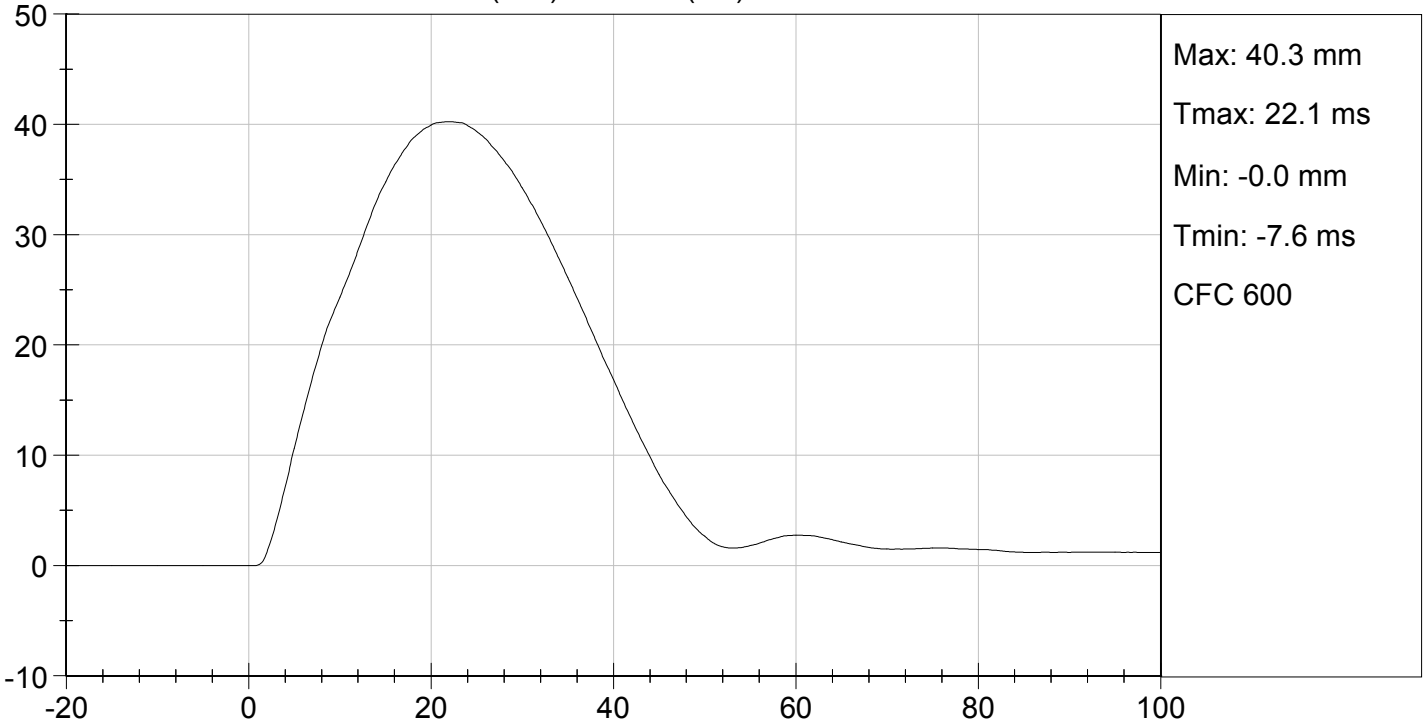
PROBE (G's) vs TIME (ms)



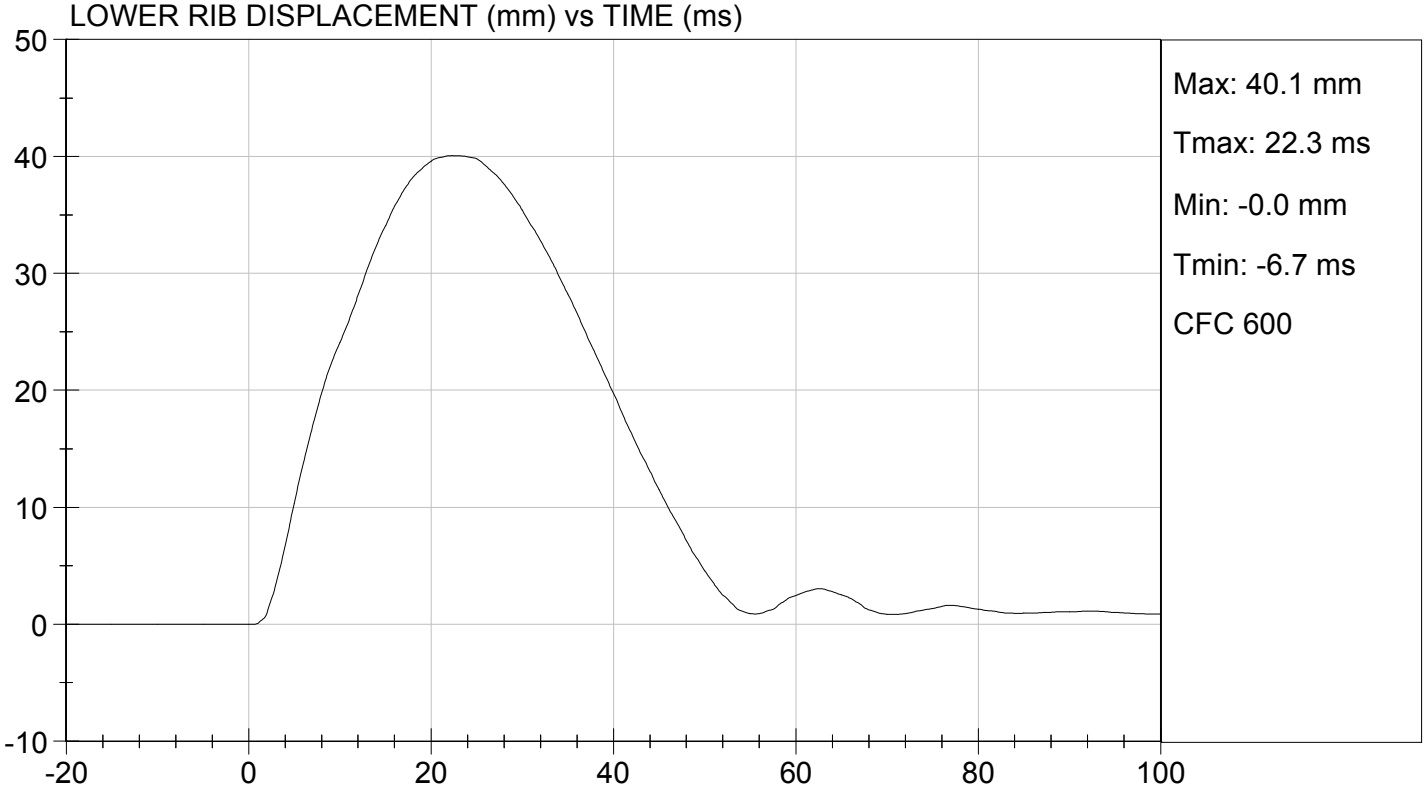
UPPER RIB DISPLACEMENT (mm) vs TIME (ms)



MIDDLE RIB DISPLACEMENT (mm) vs TIME (ms)



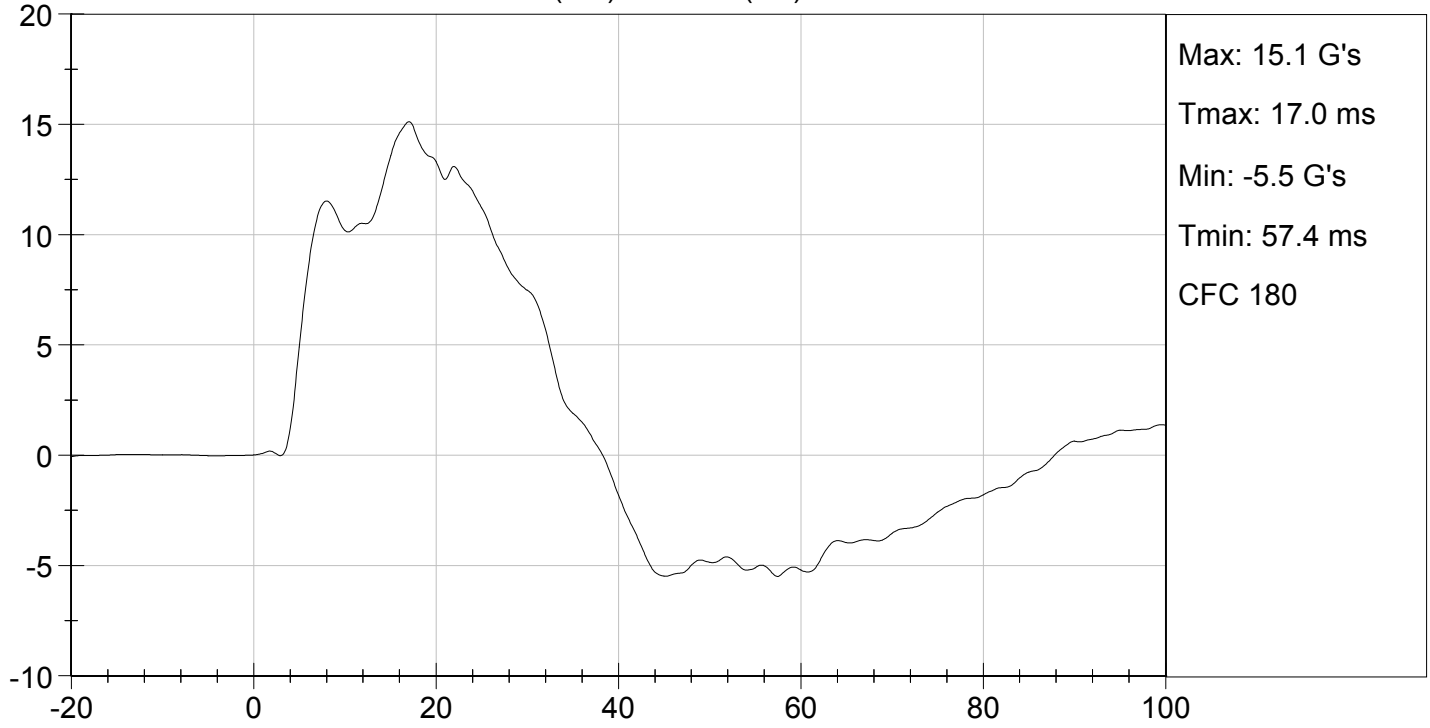
LOWER RIB DISPLACEMENT (mm) vs TIME (ms)



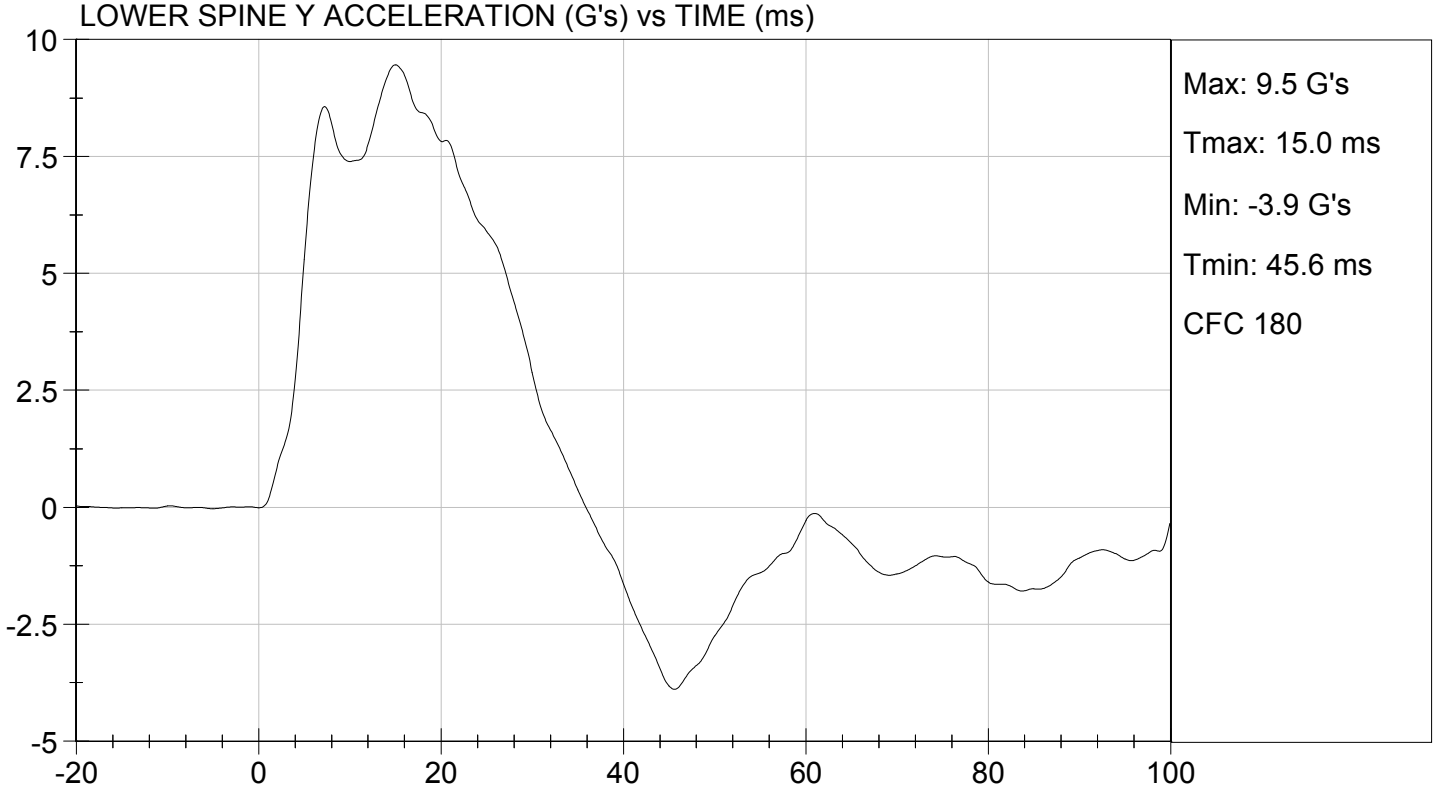
TEST DESC: THORAX IMPACT WITHOUT ARM
VELOCITY: 14.25 ft/s, 4.34 m/s

TEST DATE: 02/18/2015
TEST #: D15495

UPPER SPINE Y ACCELERATION (G's) vs TIME (ms)



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



MGA RESEARCH CORPORATION

ABDOMINAL IMPACT TEST

SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 306 **Test I.D:** D15496

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.5	Pass
Humidity	%	10 to 70	26	Pass
Impact Velocity	m/s	4.20 to 4.40	4.27	Pass
Maximum Probe Acceleration	G's	12 to 16	14	Pass
Upper Abdomen Rib Displacement	mm	36 to 47	39	Pass
Lower Abdomen Rib Displacement	mm	33 to 44	40	Pass
Lower Spine (T12) Y Acceleration	G's	9 to 14	11	Pass
		Overall Test Results		Pass

David Schoedel

Laboratory Technician

02/18/2015

Test Date

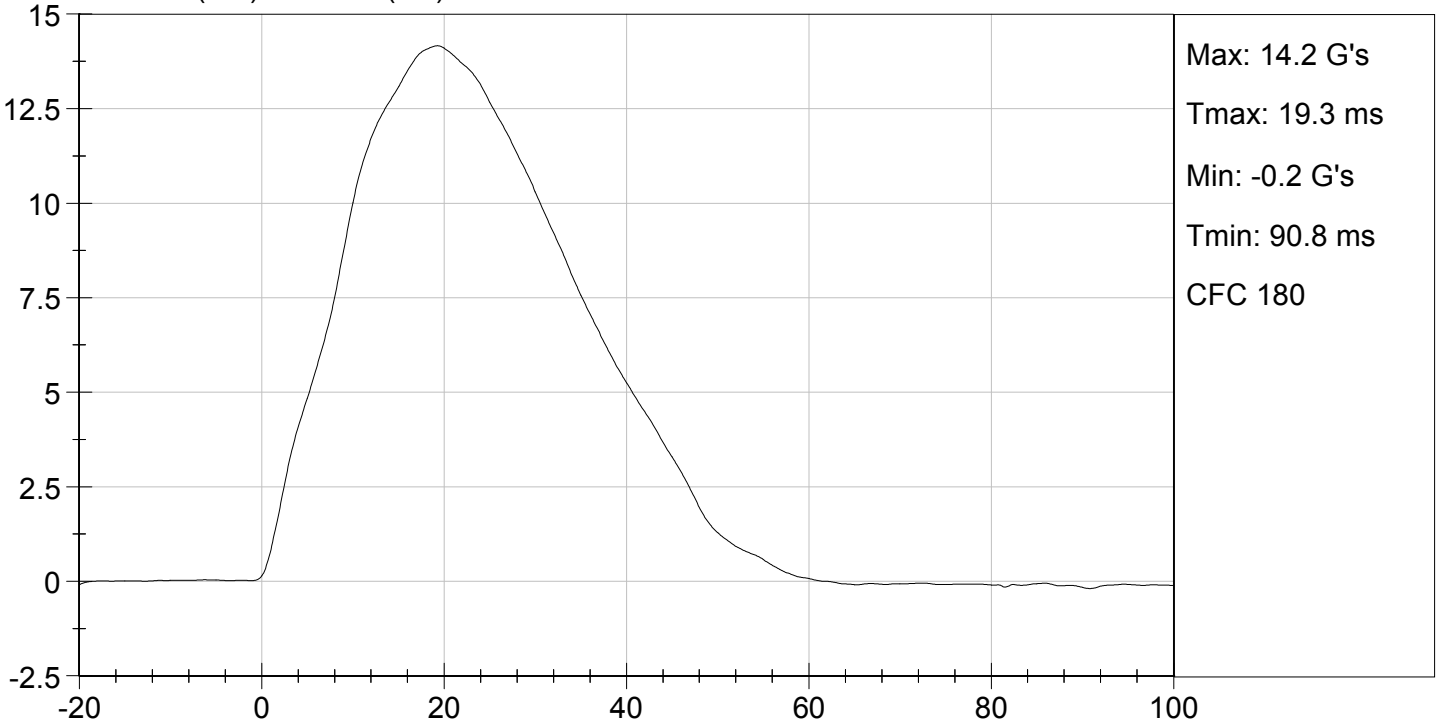
Jessica Gall

Approved By

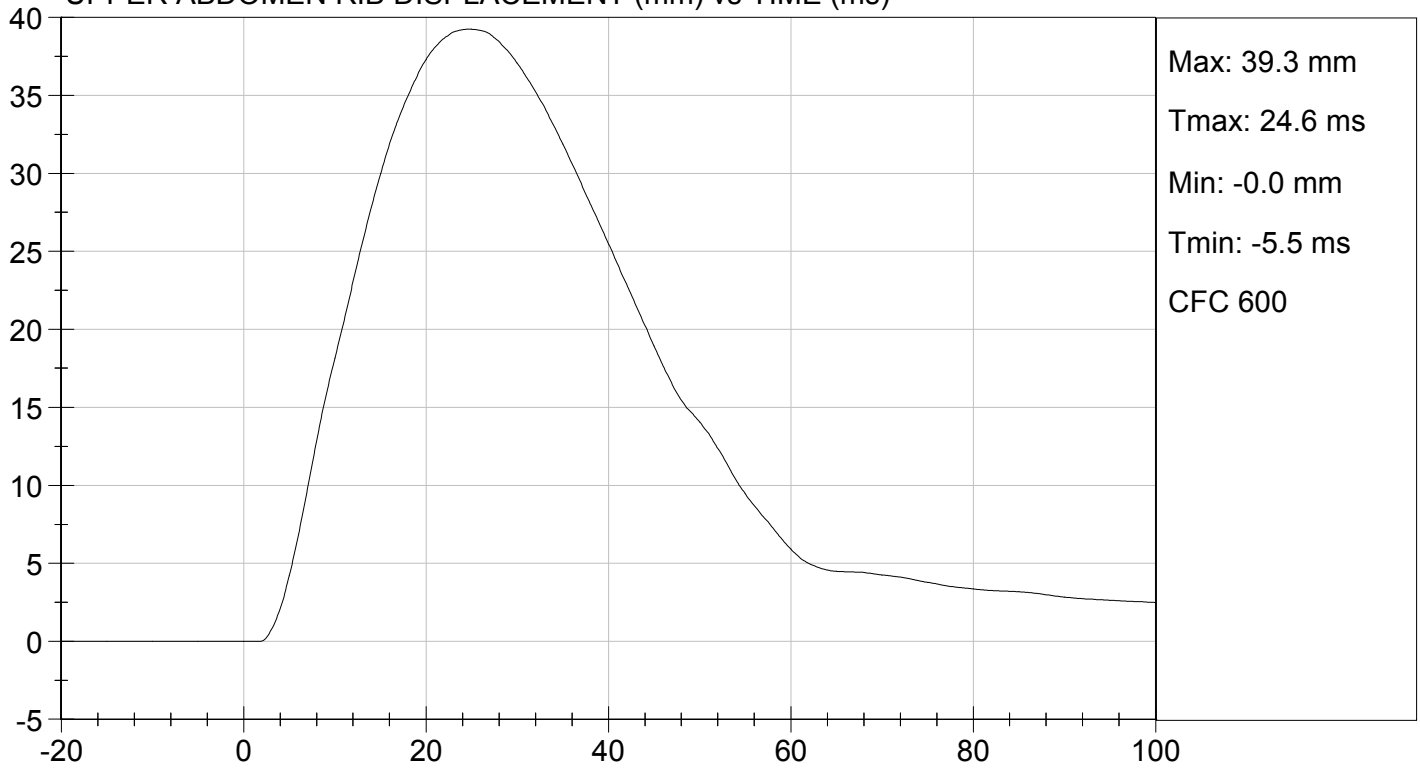
TEST DESC: ABDOMEN IMPACT
VELOCITY: 14.01 ft/s, 4.27 m/s

TEST DATE: 02/18/2015
TEST #: D15496

PROBE (G's) vs TIME (ms)



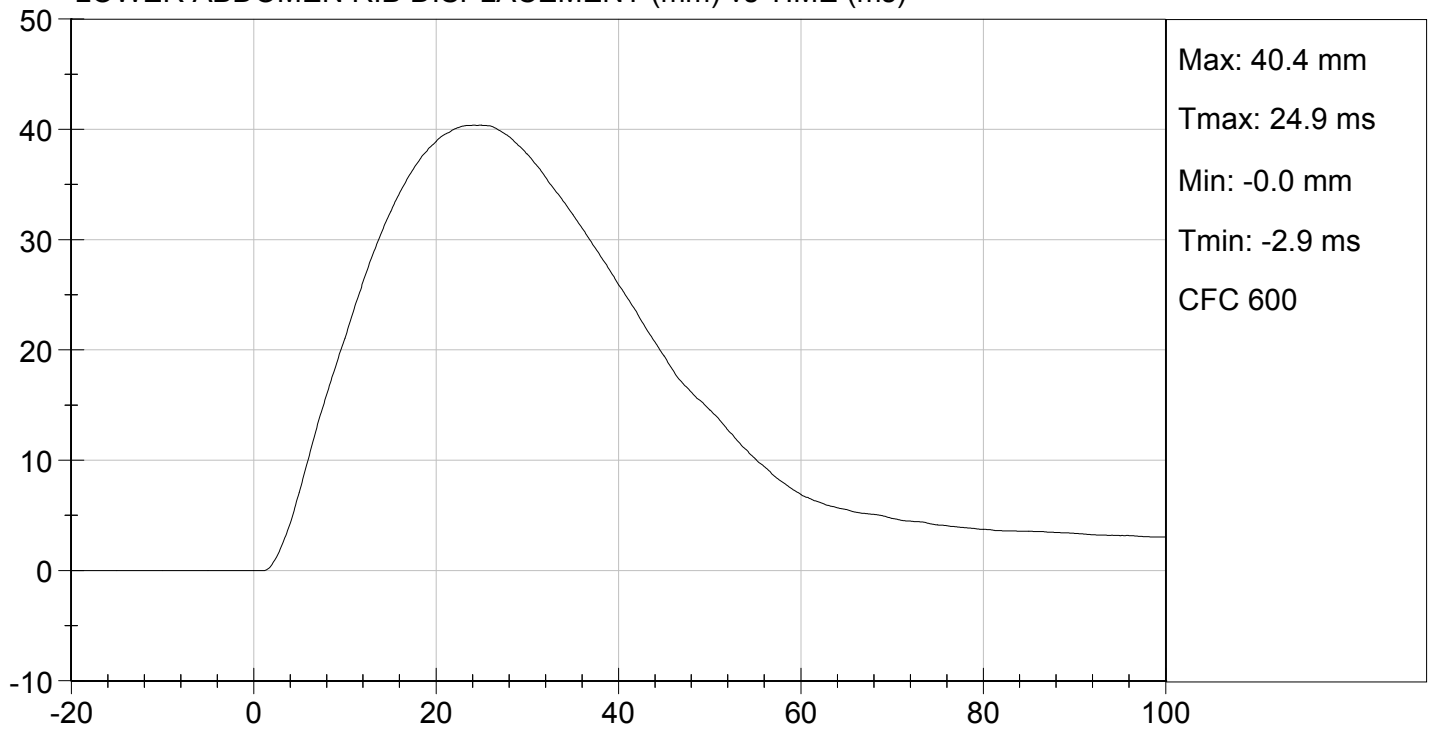
UPPER ABDOMEN RIB DISPLACEMENT (mm) vs TIME (ms)



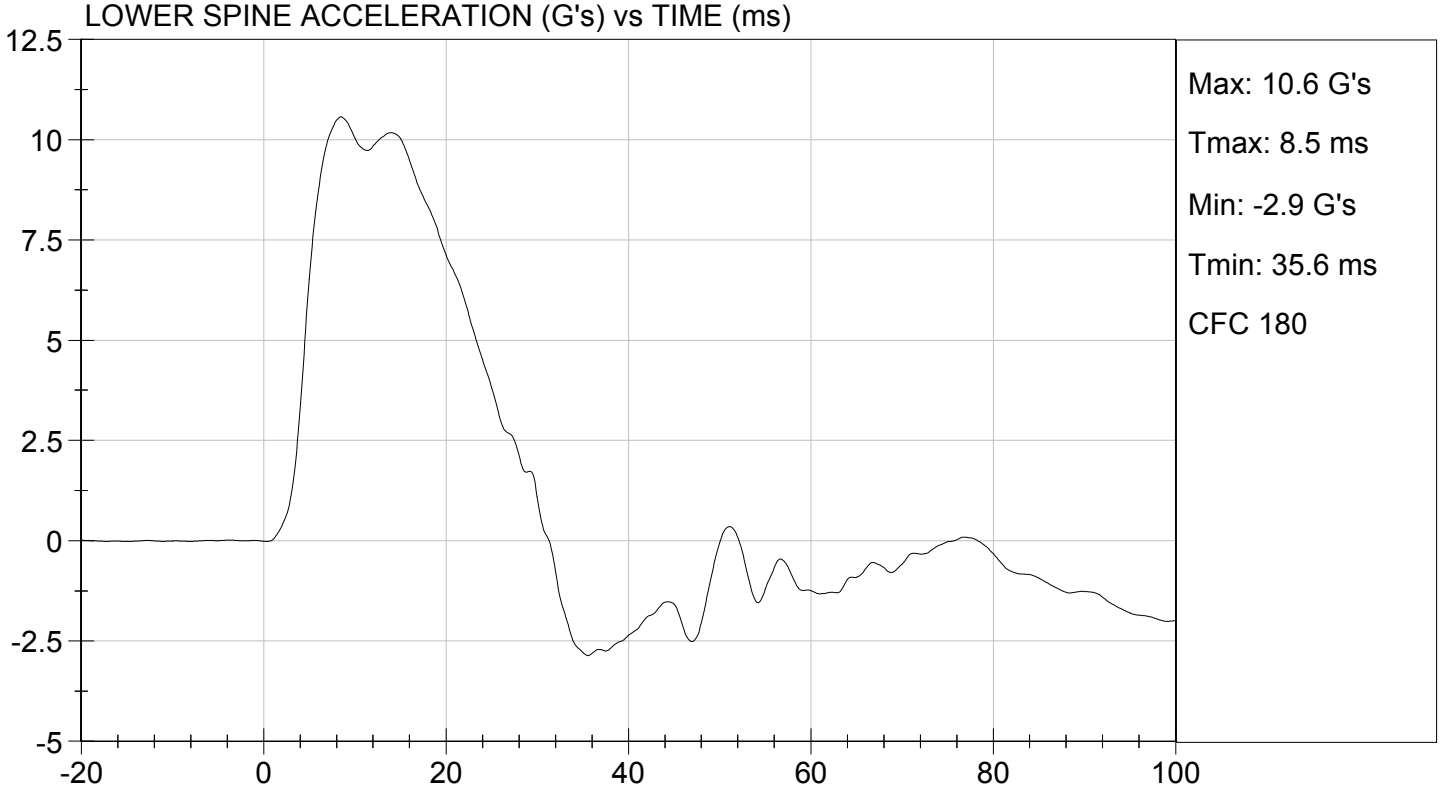
TEST DESC: ABDOMEN IMPACT
VELOCITY: 14.01 ft/s, 4.27 m/s

TEST DATE: 02/18/2015
TEST #: D15496

LOWER ABDOMEN RIB DISPLACEMENT (mm) vs TIME (ms)



LOWER SPINE ACCELERATION (G's) vs TIME (ms)



MGA RESEARCH CORPORATION

PELVIS IMPACT TEST

SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 306 **Test I.D:** D15497

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.5	Pass
Humidity	%	10 to 70	26	Pass
Impact Velocity	m/s	6.60 to 6.80	6.68	Pass
Maximum Probe Acceleration	G's	38 to 47	45	Pass
Pelvis Y Acceleration After 6 ms	G's	34 to 42	41	Pass
Peak Acetabulum Force	N	3600 to 4300	4,228	Pass
		Overall Test Results		Pass

David Schoedel

Laboratory Technician

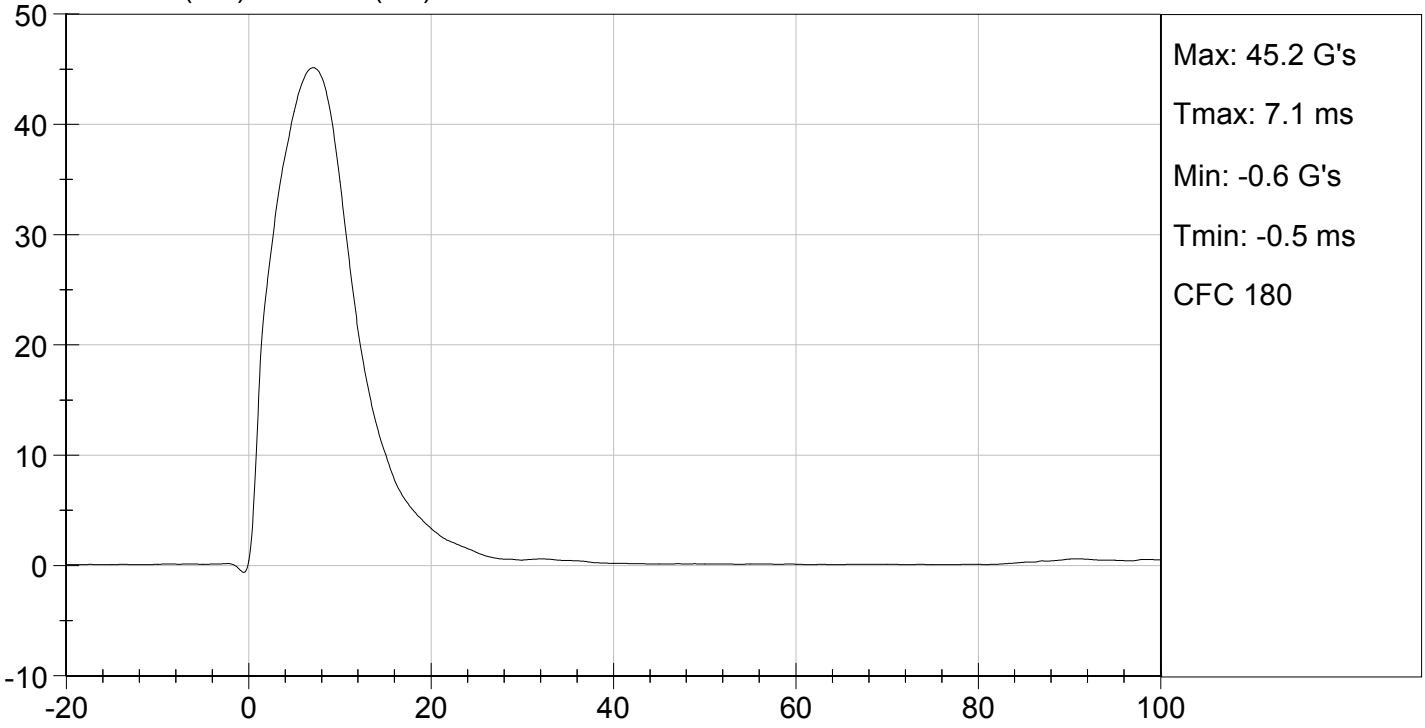
02/18/2015

Test Date

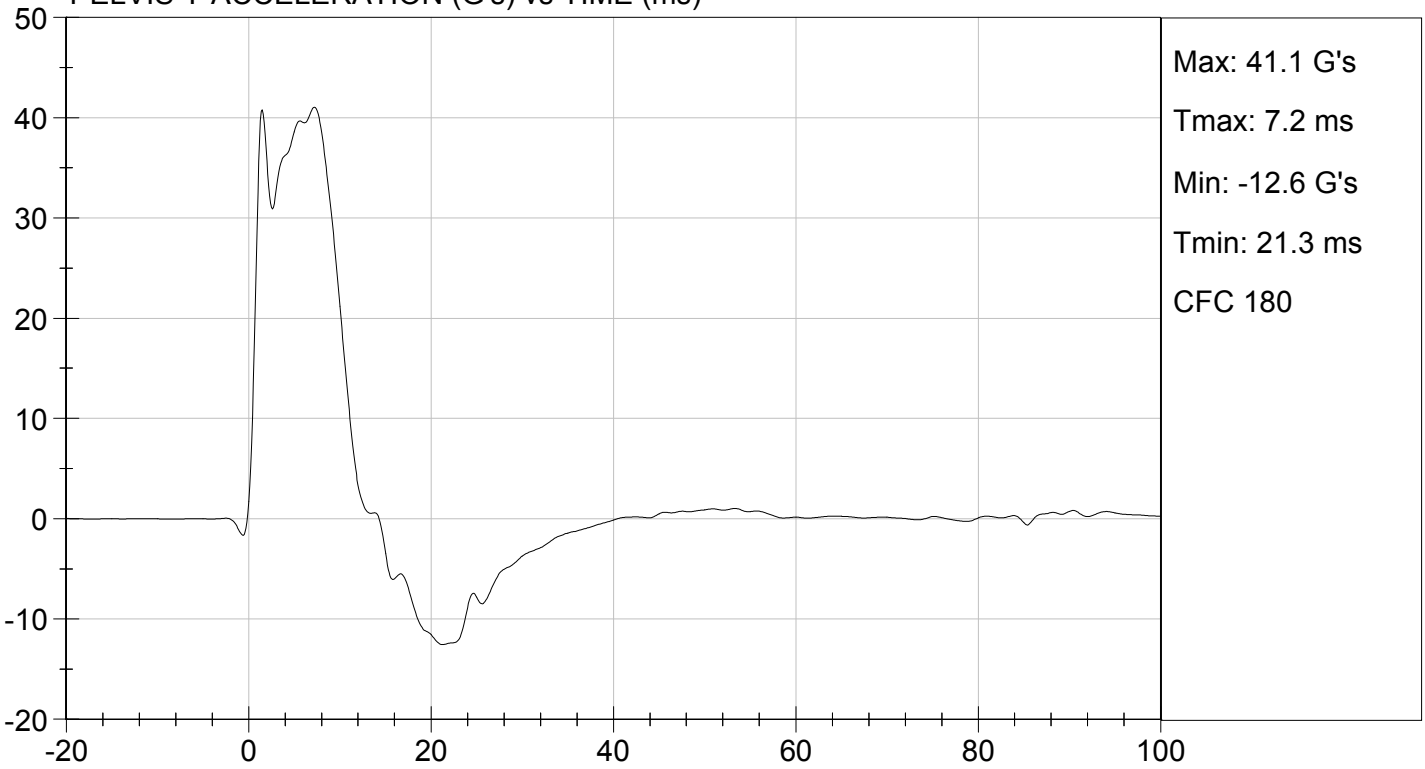
Jessica Hall

Approved By

PROBE (G's) vs TIME (ms)

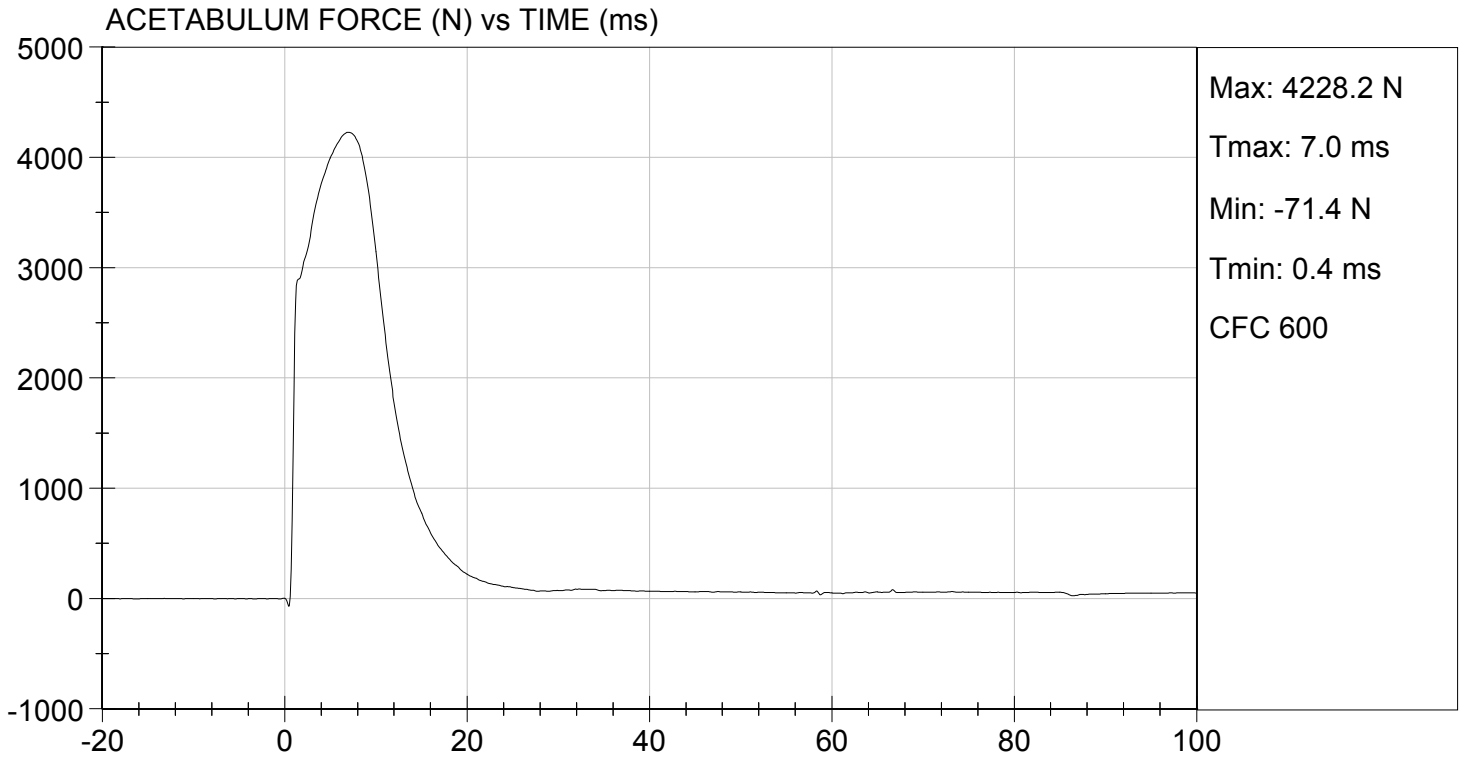


PELVIS Y ACCELERATION (G's) vs TIME (ms)



TEST DESC: PELVIS IMPACT
VELOCITY: 21.93 ft/s, 6.68 m/s

TEST DATE: 02/18/2015
TEST #: D15497



MGA RESEARCH CORPORATION

ILIAC IMPACT TEST

SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 306 **Test I.D:** D15498

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.1	Pass
Humidity	%	10 to 70	12	Pass
Impact Velocity	m/s	4.20 to 4.40	4.23	Pass
Maximum Probe Acceleration	G's	36 to 45	42	Pass
Pelvis Y Acceleration	G's	28 to 39	33	Pass
Peak Pelvis Iliac Force	N	4100 to 5100	4,922	Pass
		Overall Test Results		Pass

David Schoedel

Laboratory Technician

02/19/2015

Test Date

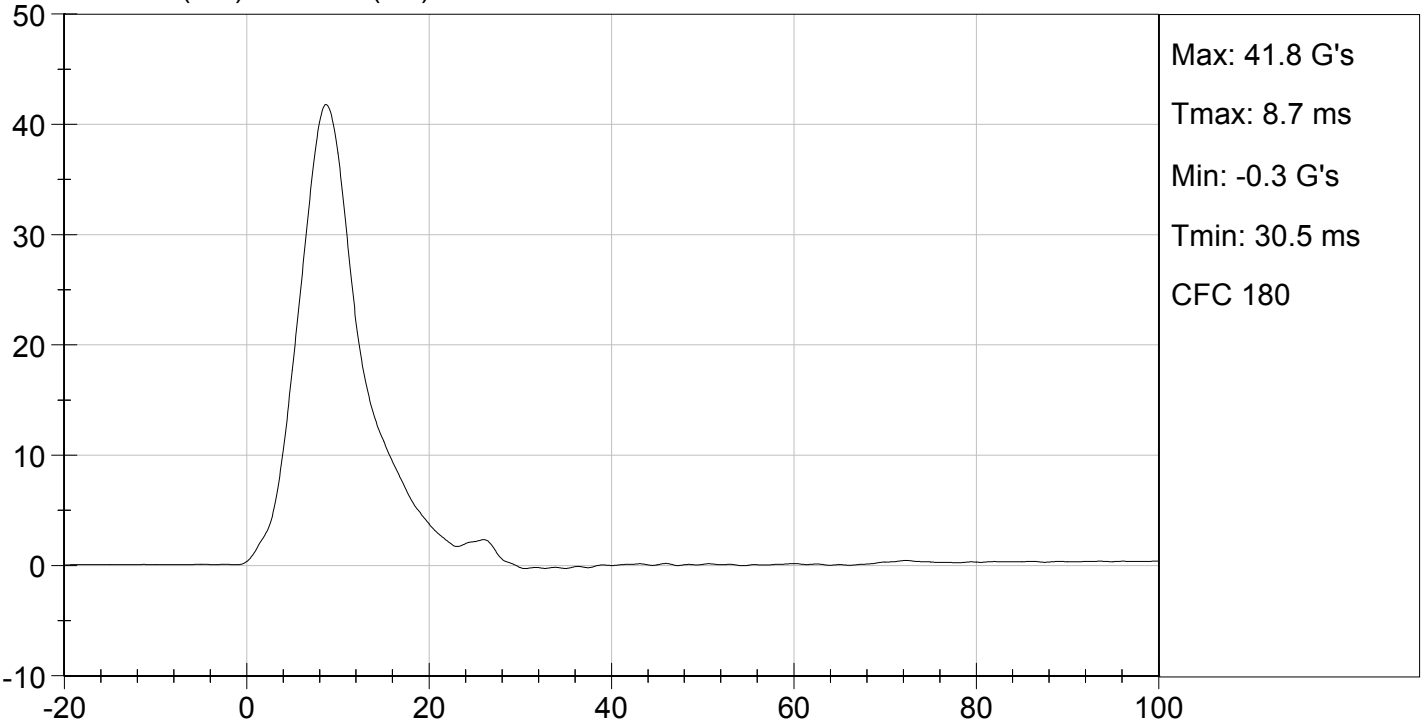
Jessica Gall

Approved By

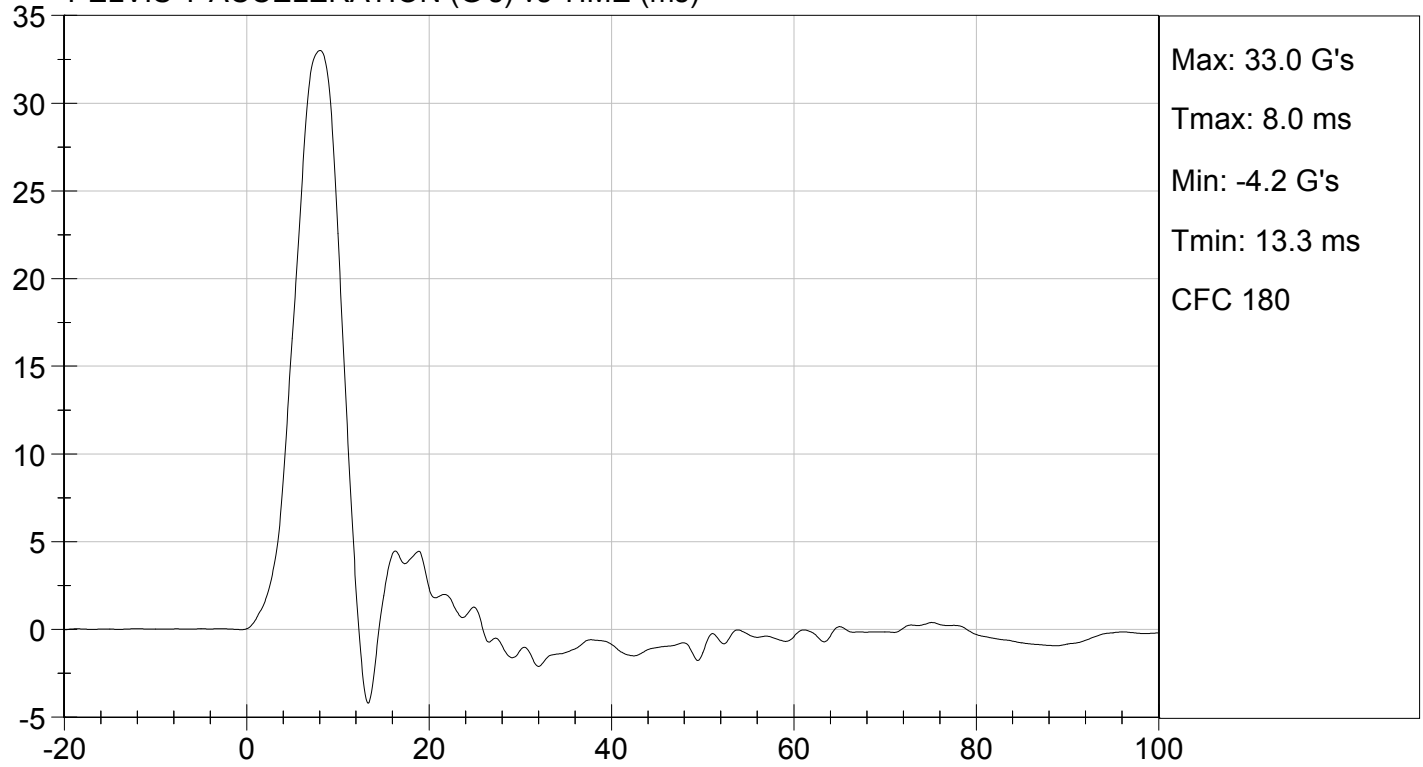
TEST DESC: ILLIAC
VELOCITY: 13.89 ft/s, 4.23 m/s

TEST DATE: 02/19/2015
TEST #: D15498

PROBE (G's) vs TIME (ms)

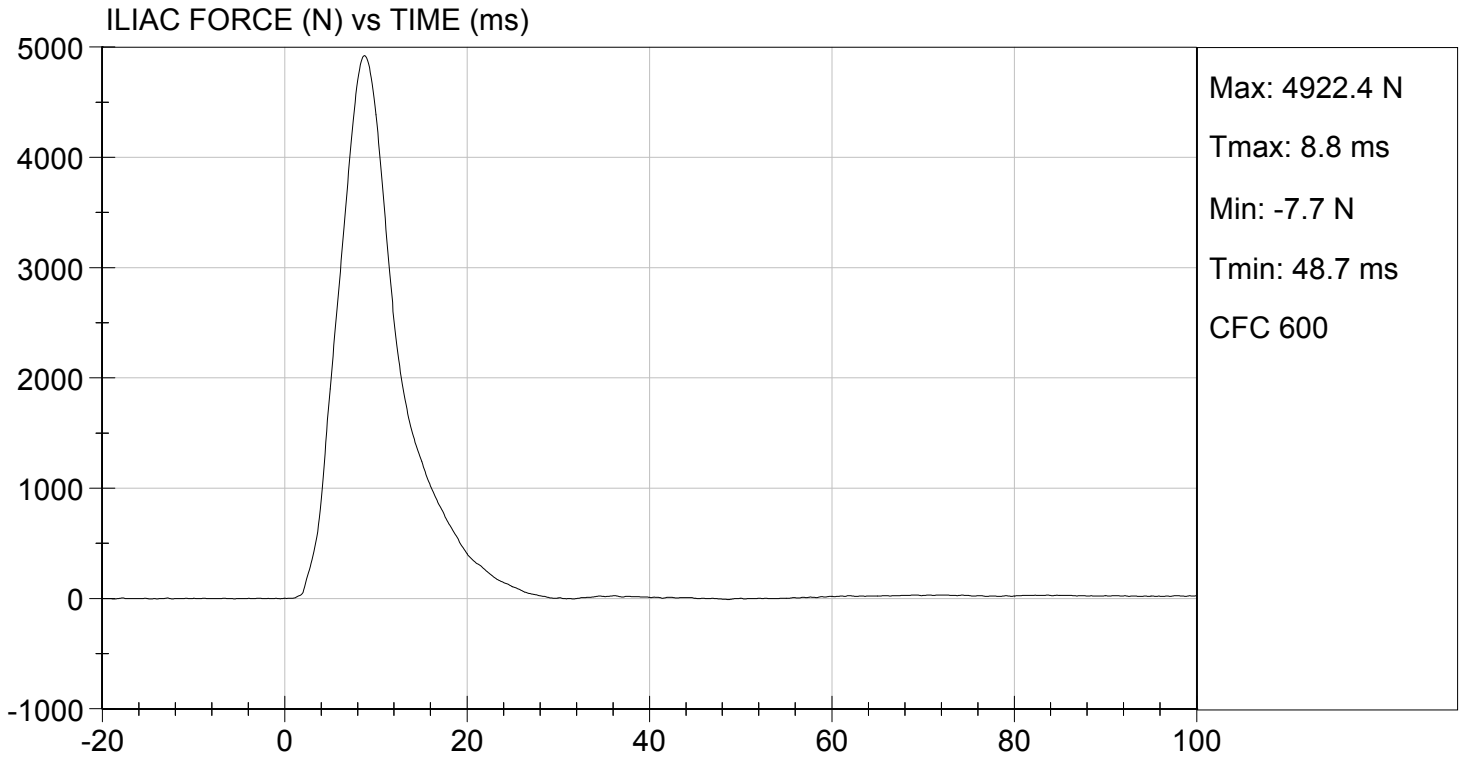


PELVIS Y ACCELERATION (G's) vs TIME (ms)

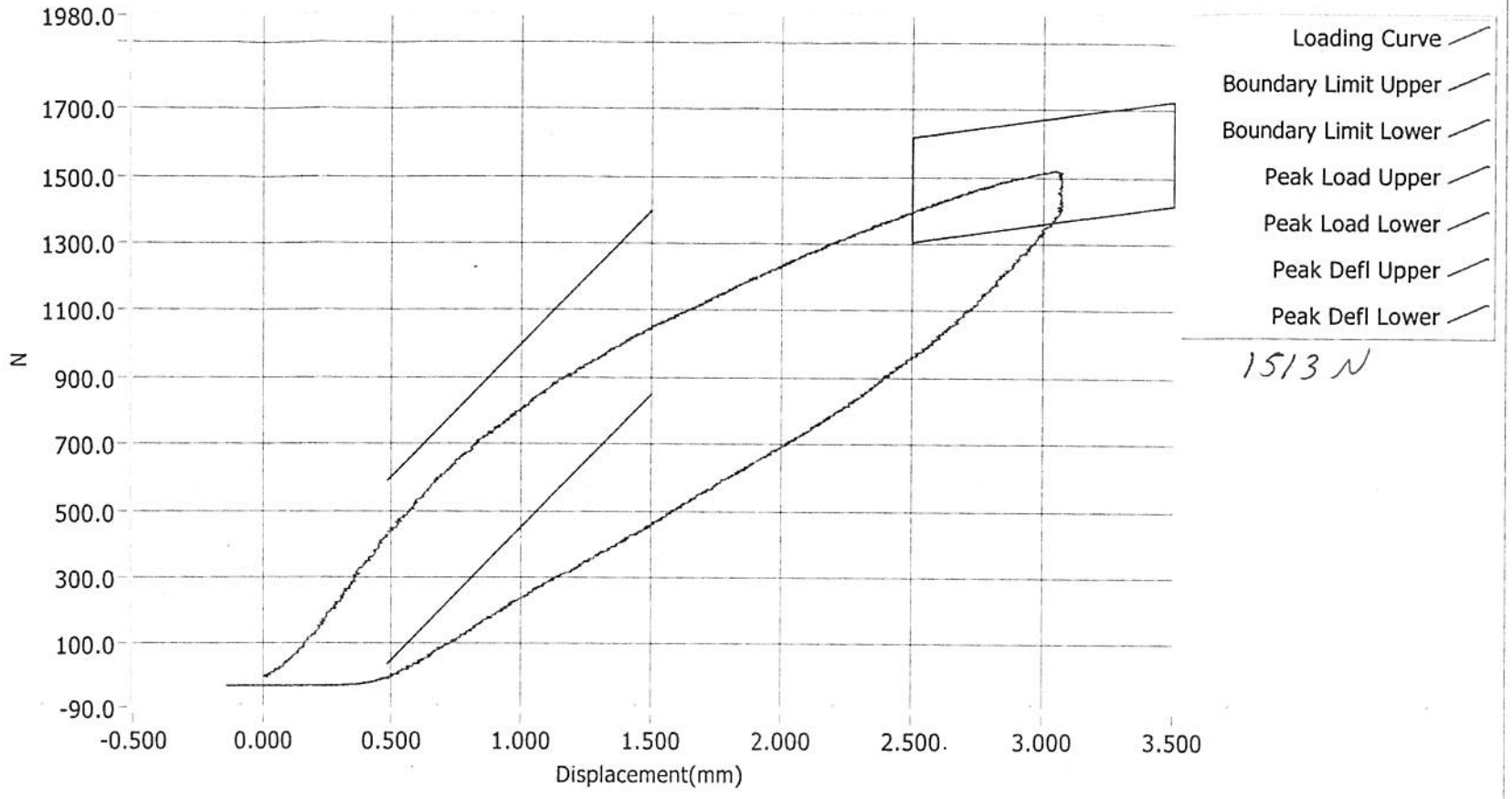


TEST DESC: ILLIAC
VELOCITY: 13.89 ft/s, 4.23 m/s

TEST DATE: 02/19/2015
TEST #: D15498



Resultant Data - SIDIIs Plug Compression



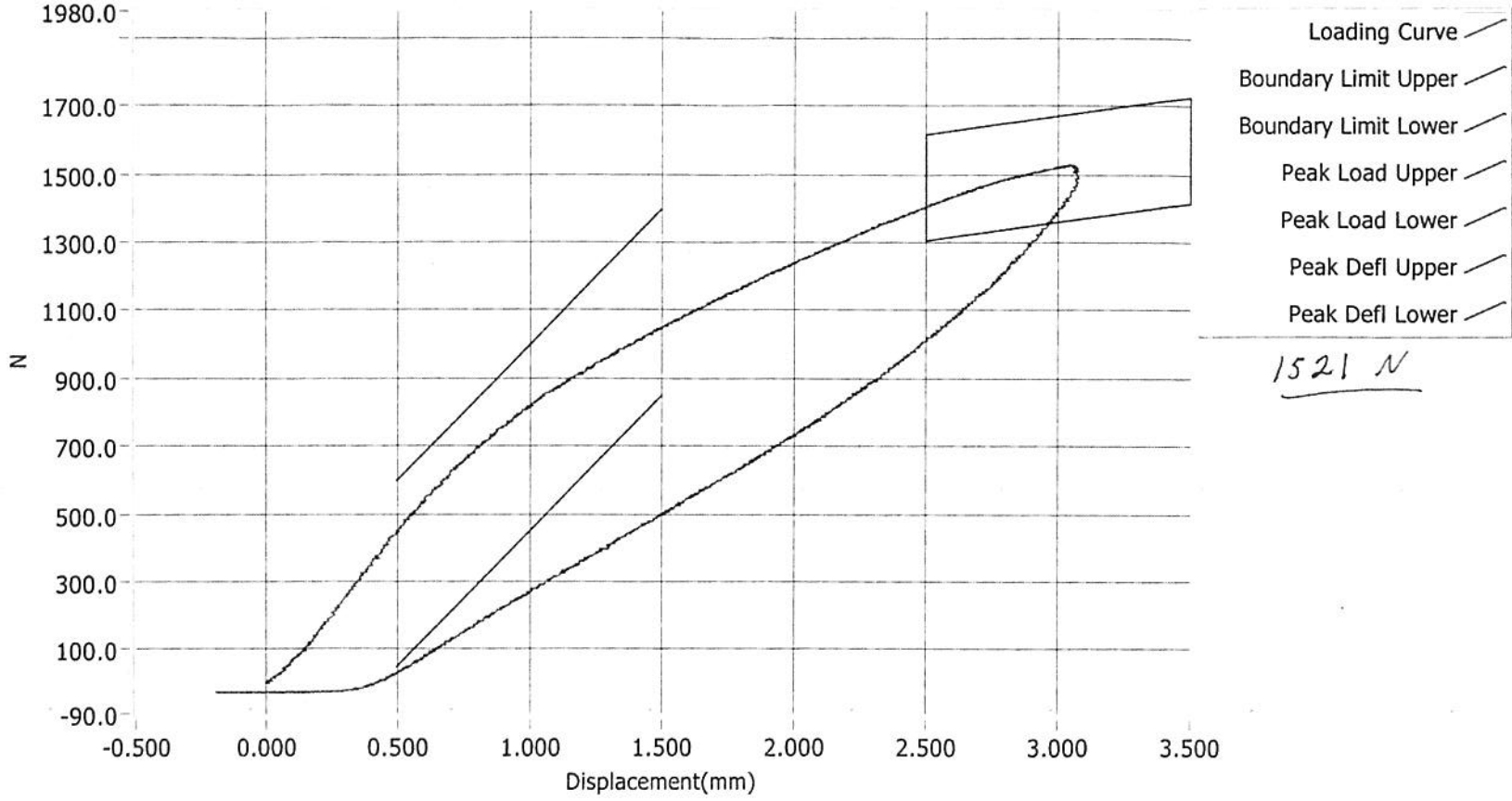
1513 N

ATD Calibration Lab

Test ID	Part Serial Number	Test Date	Test Time
	71024	12/13/2013	11:39 PM
Cert ID	ATD Serial Number	ATD Type	
	N/A	SIDIIs	

Current Date : 12/13/2013 Current Time : 23:39:42

Resultant Data - SIDIIs Plug Compression



1521 N

ATD Calibration Lab

Test ID	Part Serial Number	Test Date	Test Time
	71143	12/18/2013	9:30 PM
Cert ID	ATD Serial Number	ATD Type	
	N/A	SIDIIs	

Current Date : 12/18/2013 Current Time : 21:31:08

APPENDIX D
TEST EQUIPMENT AND INSTRUMENTATION CALIBRATION DATA

Table 1 – Dummy Instrumentation

				SID-IIs S/N 306		
				Serial Number	Manufacturer	Calibration Date
Head CG Accelerometers			X	P79684	Endevco	10/21/14
			Y	P79685	Endevco	10/21/14
			Z	P79686	Endevco	10/21/14
			Xr	P79745	Endevco	10/21/14
			Yr	P79746	Endevco	10/21/14
			Zr	P79747	Endevco	10/21/14
Displacement Potentiometers	Thoracic Rib	Upper	Y	G033	FTSS	10/03/14
		Middle	Y	G1261	FTSS	10/03/14
		Lower	Y	G1270	FTSS	10/03/14
	Abdominal Rib	Upper	Y	G032	FTSS	10/03/14
		Lower	Y	G1304	FTSS	10/03/14
Lower Spine Accelerometers (T12)			X	P82084	Endevco	09/11/14
			Y	P82085	Endevco	09/11/14
			Z	P82086	Endevco	09/11/14
Acetabulum Load Cell			Y	ACG111	FTSS	04/03/14
Iliac Wing Load Cell			Y	IWG226	FTSS	04/03/14
Pelvis Plug (struck side)				71024	FTSS	12/12/13
Pelvis Plug (non-struck side)				71143	FTSS	12/18/13

Table 2 – Vehicle Instrumentation

		Serial Number	Manufacturer	Calibration Date
Vehicle Center of Gravity	X	P77593	Endevco	08/21/14
Vehicle Center of Gravity	Y	P77592	Endevco	08/21/14
Vehicle Center of Gravity	Z	P77594	Endevco	08/20/14
Left Floor Sill	Y	P74586	Endevco	09/04/14
A-Pillar Sill	Y	P85127	Endevco	09/08/14
A-Pillar Low	Y	P79434	Endevco	10/31/14
A-Pillar Mid	Y	P78488	Endevco	10/02/14
B-Pillar Sill	Y	P79669	Endevco	10/02/14
B-Pillar Low	Y	P85146	Endevco	10/15/14
B-Pillar Mid	V	P85147	Endevco	10/15/14
Driver Seat	Y	P85128	Endevco	09/08/14
Engine Top	X	P78893	Endevco	01/06/15
Engine Top	Y	P78892	Endevco	01/06/15
Firewall	Y	P78838	Endevco	10/08/14
Right Roof	Y	P74670	Endevco	09/23/14
Right Floor Sill	Y	P68853	Endevco	09/23/14
Rear Floorpan	X	P66772	Endevco	09/23/14
Rear Floorpan	Y	P66773	Endevco	09/23/14

Table 3 – Pole Instrumentation

	Serial Number	Manufacturer	Calibration Date
Load Cell 1	DG6277	FTSS	08/12/14
Load Cell 2	DG6278	FTSS	08/12/14
Load Cell 3	DG6279	FTSS	08/12/14
Load Cell 4	DG6280	FTSS	08/12/14
Load Cell 5	DG6281	FTSS	08/12/14
Load Cell 6	DG6283	FTSS	08/12/14
Load Cell 7	DG6284	FTSS	08/12/14
Load Cell 8	DG6582	FTSS	08/12/14