REPORT NUMBER: SPNCAP-MGA-2015-039

NEW CAR ASSESSMENT PROGRAM (NCAP)
Side Impact Pole Test

FORD MOTOR COMPANY
2015 Ford Expedition XLT SUV
NHTSA No.: M20150211

MGA RESEARCH CORPORATION
5000 Warren Road
Burlington, WI 53105

Test Date: December 10, 2014

Final Report Date: February 19, 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: 
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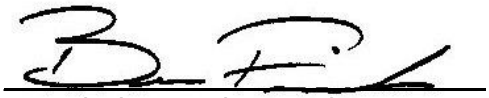
Approved by: 
Ben Fischer, Project Engineer

Approval Date: February 19, 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 Expedition XLT SUV, NHTSA No.: M20150211		*5. Report Date* February 19, 2015 *6. Performing Organization Code* MGA
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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 December 10, 2014 to February 19, 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 Expedition XLT SUV 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 December 10, 2014.

The impact velocity was 32.3 km/h, and the ambient temperature at the struck (driver's) side of the target vehicle at the time of impact was 21.2°C. The test vehicle post-test maximum crush was 399 mm at level 3. 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	251
Resultant Lower Spine Acceleration	Gs	82	58
Total Pelvic Force (sum of acetabular and iliac forces)	N	5525	3798
Maximum Thoracic Rib Deflection	mm	38*	28
Maximum Abdomen Rib Deflection	mm	45*	38

*Proposed IARV

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 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 Expedition XLT SUV. 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 Expedition XLT SUV. The subject vehicle was towed into the rigid pole at an angle of 75° and a velocity of 32.3 km/h. The test was conducted by MGA Research Corporation in Burlington, Wisconsin on December 10, 2014. 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	251
Resultant Lower Spine Acceleration	Gs	82	58
Total Pelvic Force (sum of acetabular and iliac forces)	N	5525	3798
Maximum Thoracic Rib Deflection	mm	38*	28
Maximum Abdominal Rib Deflection	mm	45*	38

*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 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

Left Floor Sill 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 Expedition XLT SUV
Test Program: NCAP Side Pole Impact Test
NHTSA No. M20150211
Test Date: 12/10/2014

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA No.	M20150211
Model Year	2015
Make	Ford
Model	Expedition
Body Style	SUV
VIN	1FMJU1HT5FEF02927
Body Color	Magnetic Metallic
Odometer Reading (km/mi)	61 / 38
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	Yes
Sunroof/T-Top	No
Running Boards	Yes
Tilt Steering Wheel	Yes
Power Seats	Driver Only
Anti-Lock Brakes (ABS)	Yes

Traction Control System (TCS)	Yes
Auto-Leveling System	No
Automatic Door Locks (ADL)	Yes
Power Window Auto-Reverse	Yes
Heavy Duty Trailer Tow Pkg.	Yes
Driver Front Airbag	Yes
Driver Curtain Airbag	Yes
Driver Head/Torso Airbag	No
Driver Torso Airbag	Yes
Driver Torso/Pelvis Airbag	No
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 Company
Date of Manufacture	09/14
Vehicle Type	MPV

GVWR (kg)	3293
GAWR Front (kg)	1497
GAWR Rear (kg)	1928

VEHICLE SEATING AND WEIGHT CAPACITY DATA

Measured Parameter	Front	Rear	Third	Total	
Designated Seating Capacity (DSC)	2	3	3	8	
Capacity Weight (VCW) (kg)				684	(A)
DSC x 68.04 kg				544	(B)
Rated Cargo and Luggage Weight (RCLW) (kg)				140	(A-B)

VEHICLE SEAT TYPE

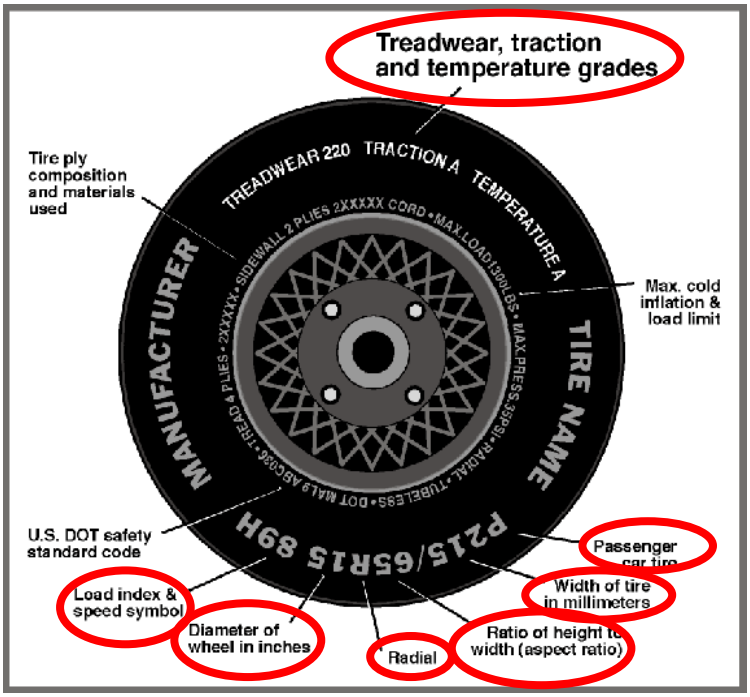
Seating Location	Type of Seat Pan				Type of Seat Back		
	Bucket	Bench	Split Bench	Contoured	Fixed	Adjustable	
						Manual	Power
Front Seat	X					w/lever	
Rear or Second Row			X			w/lever	
Third Row Seat			X		X		

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

Test Vehicle: 2015 Ford Expedition XLT SUV
Test Program: NCAP Side Pole Impact Test

NHTSA No. M20150211
Test Date: 12/10/2014

VEHICLE TIRE INFORMATION



Measured Parameter	Front	Rear
Max. Tire Pressure (kPa)	350	350
Cold Pressure (kPa)	255	255
Recommended Tire Size	275/65R18	275/65R18
Tire Size on Vehicle	275/65R18	275/65R18
Tire Manufacturer	Goodyear	Goodyear
Tire Model	Wrangler	Wrangler
Treadwear	680	680
Traction	A	A
Temperature Grade	B	B
Tire Plies Sidewall	2 polyester	2 polyester
Tire Plies Body	2 Polyester, 2 Steel, 1 Polyamide	2 Polyester, 2 Steel, 1 Polyamide
Load Index/Speed Symbol	116T	116T
Tire Material	Rubber	Rubber
DOT Safety Code Left	4BYJ JEIR 3314	4BYJ JEIR 3314
DOT Safety Code Right	4BYJ JEIR 3314	4BYJ JEIR 3314

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

Test Vehicle: 2015 Ford Expedition XLT SUV NHTSA No. M20150211
Test Program: NCAP Side Pole Impact Test Test Date: 12/10/2014

TEST PRESSURES

	Units	LF	RF	LR	RR
As Delivered	kpa	217	217	217	220
Tire Placard	kpa	255	255	255	255
Owner's Manual	kpa				
As Tested	kpa	255	255	255	255

TEST VEHICLE WEIGHTS

	Units	As Delivered (UVW)			As Tested (ATW)			Fully Loaded		
		Front	Rear	Total	Front	Rear	Total	Front	Rear	Total
Left	kg	607.5	672.5		604.5	775.5		622.5	782.0	
Right	kg	629.5	661.5		615.5	756.5		607.0	747.5	
Ratio	%	48.1	51.9		44.3	55.7		44.6	55.4	
Totals	kg	1237.0	1334.0	2571.0	1220.0	1532.0	2752.0	1229.5	1529.5	2759.0

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value	
Total Delivered Weight (UVW)	kg	2571.0	(A)
Actual Weight of 1 P572V ATD (SID-IIs) ATD Used	kg	52.2	(B)
Rated Cargo/Luggage Weight (RCLW)	kg	136	(C)
Calculated Vehicle Target Weight (TVTW)	kg	2759.2	(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	-0.6	-0.4	-0.4	Yes
Front Pass. Sill Angle (front-to-rear)*	deg	-0.9	-0.7	-0.5	Yes
Front Bumper Angle (left-to-right)**	deg	0.2	0.0	0.0	Yes
Rear Bumper Angle (left-to-right)**	deg	0.1	0.0	0.0	Yes
Vehicle CG (Aft of Front Axle)	mm	1563	1677	1670	
Vehicle CG (Left (+) / Right (-) from Longitudinal Centerline)	mm	-4	2	15	

*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)	48.5
Rear bumper cover	4.1

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 Expedition XLT SUV NHTSA No. M20150211
Test Program: NCAP Side Pole Impact Test Test Date: 12/10/2014

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	26.2	8.2	17.2
Front Passenger Seat	Fixed	Fixed	Fixed
Front Center Seat			
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	17.2	22	Max	44	44	44
			Mid	22	22	22
			Min	0	0	0
Front Passenger Seat	Fixed	Fixed	Max	Fixed	Fixed	Fixed
			Mid	Fixed	Fixed	Fixed
			Min	Fixed	Fixed	Fixed
Front Center Seat			Max			
			Mid			
			Min			
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

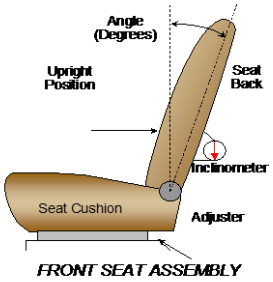
Test Vehicle: 2015 Ford Expedition XLT SUV NHTSA No. M20150211
Test Program: NCAP Side Pole Impact Test Test Date: 12/10/2014

SEAT FORE/AFT POSITIONS

Seat	Total Fore/Aft Travel		Test Position from Forward-most Position	
	mm	Detents	mm	Detent
Driver Seat	222		0	
Front Passenger Seat	220	23 (1st as 1)	0	0th (1st as 0)
Front Center Seat				
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	56.0	29 (1st as 1)	1.6	3rd (1st as 0)
Front Passenger Seat	56.6	29 (1st as 1)	1.2	4th (1st as 0)
Front Center Seat				
Struck Side Rear Seat	18.0	7 (1st as 1)	20.5	0th (1st as 0)
Non-Struck Side Rear Seat	18.0	7 (1st as 1)	20.5	0th (1st as 0)
Rear Center Seat	18.0	7 (1st as 1)	20.5	0th (1st as 0)

Driver seatback angle measured on headrest post.
Left Rear Passenger seat back angle measured on seatback.

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	5 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

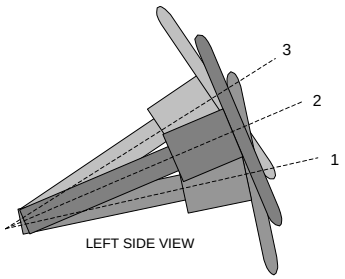
DATA SHEET NO. 2 (CONTINUED)
SEAT, SEAT BELT, STEERING WHEEL ADJUSTMENT, AND FUEL SYSTEM DATA

Test Vehicle: 2015 Ford Expedition XLT SUV NHTSA No. M20150211
Test Program: NCAP Side Pole Impact Test Test Date: 12/10/2014

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.

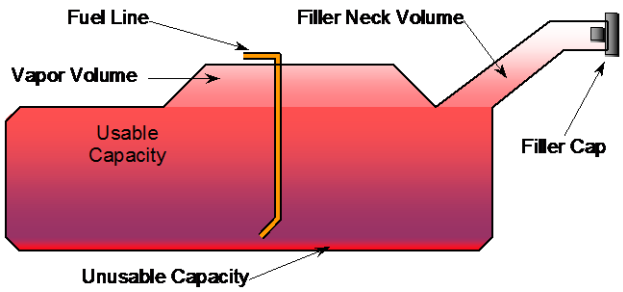
	Degrees	Fore/Aft Position (mm)
Lowermost, Position 1	70.2	220
Geometric Center, Position 2	68.3	195
Uppermost, Position 3	66.4	170
Telescoping Steering Wheel Travel		50
Test Position	68.3	195



STEERING COLUMN ASSEMBLY

FUEL PUMP

Describe the fuel pump type, details about how it operates and the location of the fuel filler pipe.



VEHICLE FUEL TANK ASSEMBLY

The vehicle is equipped with an electric fuel pump. 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 a fuel pump shut-off system is provided and designed to stop fuel flow to the engine if the vehicle sustains an impact above a certain magnitude. The fuel pipe is on the left side.

FUEL TANK CAPACITY DATA

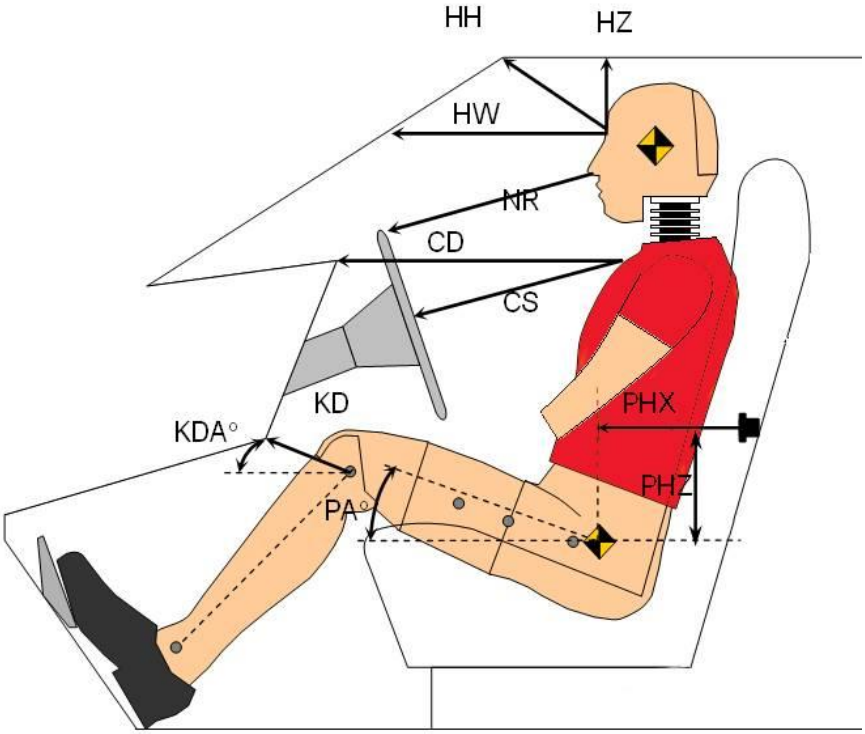
	Liters
Usable Capacity of "Standard Tank" (see Form No. 1)	106.0
Usable Capacity of "Optional Tank" (see Form No. 1)	
Usable Capacity of Standard Tank as Specified in Owner's Manual	106.0
Usable Capacity of Optional Tank as Specified in Owner's Manual	
93% of Usable Capacity	98.6
Actual Amount of Solvent Used	98.4
1/3 of Usable Capacity	35.3

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 Expedition XLT SUV
Test Program: NCAP Side Pole Impact Test

NHTSA No. M20150211
Test Date: 12/10/2014



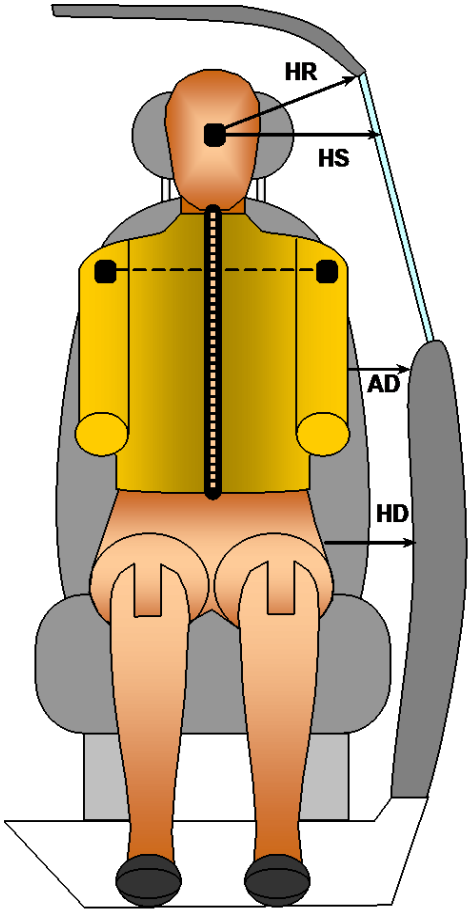
LEFT SIDE VIEW

Code	Measurement Description	Driver	
		Length (mm)	Angle (°)
HH	Head to Header	294	
HW	Head to Windshield	560	
HZ	Head to Roof Liner	212	
NR	Nose to Rim	242	
CD	Chest to Dashboard	426	
CS	Chest to Steering Wheel	207	
KDL/KDAL°	Left Knee to Dash	106	28.6
KDR/KDAR°	Right Knee to Dash	107	27.7
PAX°	Pelvic Tilt Angle (X-Axis)		18.1
PAY°	Pelvic Tilt Angle (Y-Axis)		-1.7
PHX	Hip Point to Striker (X-Axis)	336	
PHZ	Hip Point to Striker (Z-Axis)	20	

DATA SHEET NO. 4
DUMMY LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2015 Ford Expedition XLT SUV
Test Program: NCAP Side Pole Impact Test

NHTSA No. M20150211
Test Date: 12/10/2014

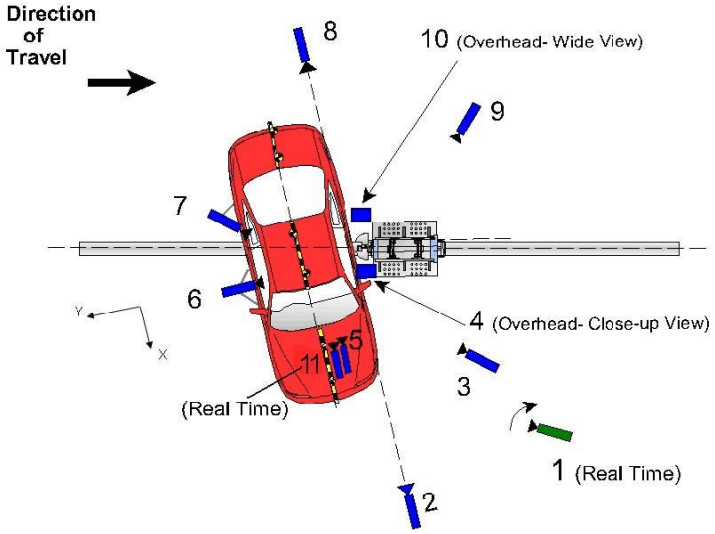


FRONT VIEW OF DUMMY

Code	Measurement Description	Driver Length (mm)
HR	Head to Side Header	250
HS	Head to Side Window	366
AD	Arm to Door	128
HD	Hip Point to Door	177

DATA SHEET NO. 5
CAMERA AND INSTRUMENTATION DATA

Test Vehicle: 2015 Ford Expedition XLT SUV NHTSA No. M20150211
Test Program: NCAP Side Pole Impact Test Test Date: 12/10/2014



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	-60	6120	-1810	24	1000
3	Impact Side 45° Forward	-2300	5120	-1970	20	1000
4	Overhead Closeup	90	0	-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	-80	-7010	-1830	24	1000
9	Impact Side 45° Rearward	-4400	-3880	-1970	20	1000
10	Overhead Wide View	330	0	-4620	14	1000
11	Real-Time Dummy Front View					30

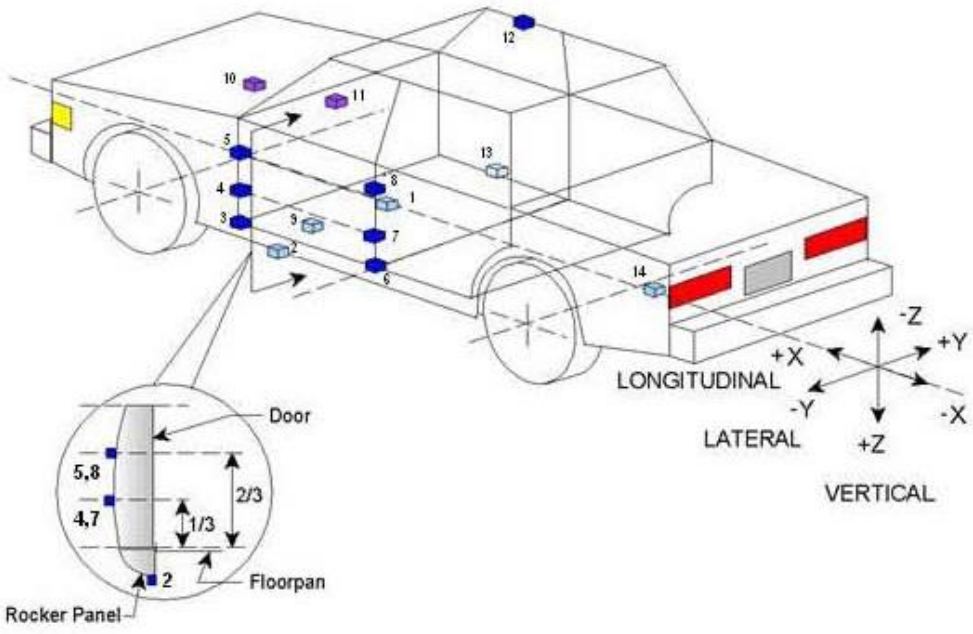
* All measurements accurate to ± 6 mm
Note: Vehicle was at a 75° angle to the rigid pole.

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 Expedition XLT SUV NHTSA No. M20150211
Test Program: NCAP Side Pole Impact Test Test Date: 12/10/2014



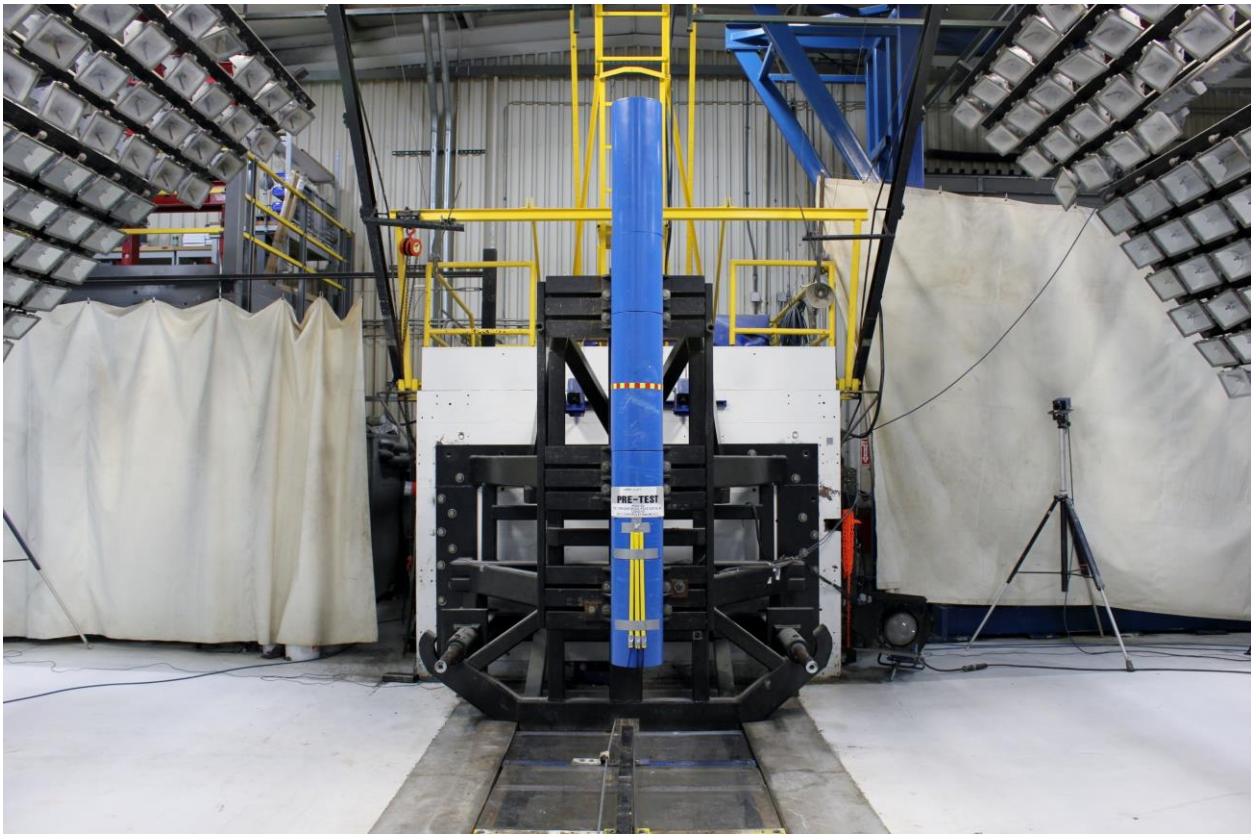
	Accelerometer Location			
	ID	Coordinates (mm)		
		X	Y	Z
1	Vehicle CG	2600	-70	-620
2	Left Floor Sill	3143	-860	-480
3	A Pillar Sill	3543	-828	-475
4	A Pillar Low	3483	-896	-762
5	A Pillar Mid	3494	-880	-1043
6	B Pillar Sill	2368	-865	-470
7	B Pillar Low	2347	-832	-886
8	B Pillar Mid	2331	-828	-1040
9	Driver Seat Track	2569	-435	-590
10	Engine Top	3903	0	-1037
11	Firewall	3899	0	-1275
12	Right Roof	2537	515	-1871
13	Right Floor Sill	3148	860	-480
14	Rear Floorpan	675	0	-649

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 Expedition XLT SUV
Test Program: NCAP Side Pole Impact Test

NHTSA No. M20150211
Test Date: 12/10/2014



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 Expedition XLT SUV NHTSA No. M20150211
Test Program: NCAP Side Pole Impact Test Test Date: 12/10/2014

TEST DUMMY INFORMATION AND CONTACT POINTS

Description	Driver SID-IIs Dummy
Face	None
Top of Head	Curtain Airbag
Left Side of Head	Curtain Airbag
Back of Head	Headrest
Left Shoulder	Side Airbag, Seatback
Upper Torso	Seatback
Lower Torso	Side Airbag, Seatback, Door Panel
Left Hip	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	No	No	No	No	No
Latch Separated from Striker	No	No	No	No	No
Jammed Shut	Yes	Yes	No	No	No
If Door Opened at Striker, Record Width of Opening at Striker (mm)	N/A	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	No	Fixed
Seat Disengagement from Floor Pan	No	Fixed	No	Fixed
Seat Back Movement from Initial Position	No	No	No	No
Seat Back Collapse	No	No	No	No

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 Expedition XLT SUV NHTSA No. M20150211
Test Program: NCAP Side Pole Impact Test Test Date: 12/10/2014

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 Airbag	Yes	Yes	No	
Seat Belt Pretensioner	Yes	Yes	No	
Seat Belt Load Limiter	Yes		No	
Other				

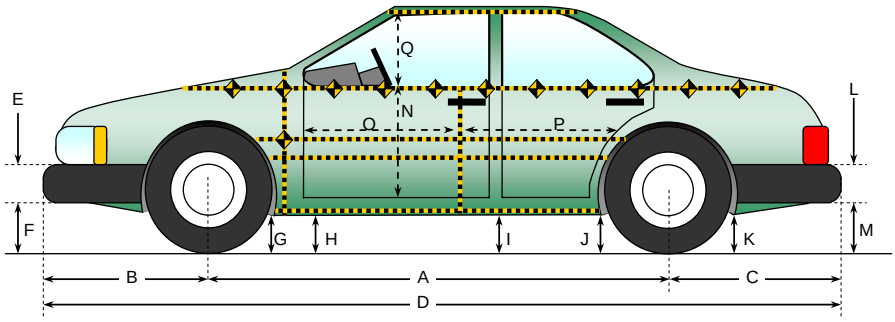
VEHICLE SPEED, VEHICLE ANGLE AT IMPACT, AND IMPACT POINT LOCATION DATA

Measured Parameter	Units	Tolerance	Value
Vertical Impact Reference Line (Aft of Front Axle) (Intended Impact Point)	mm		1235
Actual Impact Point (Aft of Front Axle)	mm		1232
Horizontal Offset (+forward / -rearward)	mm	+/- 38 of Intended Impact Point	+3
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	32.30
Trap No. 2 Velocity (Redundant)	km/h	31.4 to 33.0	32.39

DATA SHEET NO. 9
VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2015 Ford Expedition XLT SUV
Test Program: NCAP Side Pole Impact Test

NHTSA No. M20150211
Test Date: 12/10/2014



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

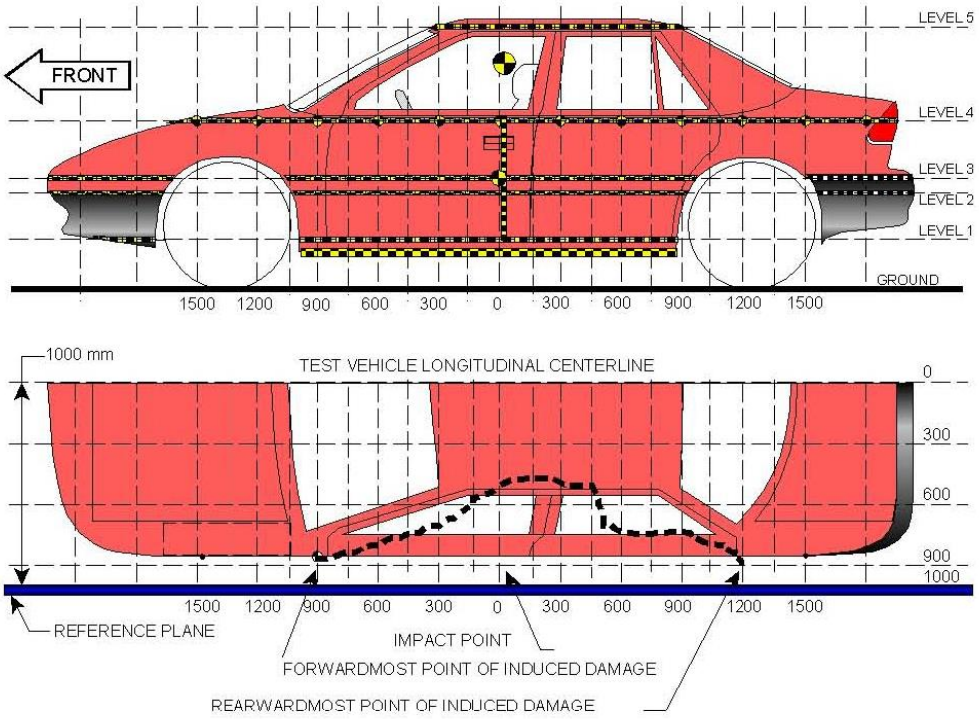
LEFT SIDE VIEW

VEHICLE PRE- AND POST-TEST MEASUREMENT INFORMATION

Code	Measurement Description	Pre-Test	Post-Test	Difference
A	Wheelbase	3012	2934	78
B	Front Axle to FSOV	992	1128	-136
C	Rear Axle to RSOV	1226	1136	90
D	Total Vehicle Length at Centerline	5230	5198	32
E	Front Bumper Thickness	95	95	0
F	Front Bumper Bottom to Ground	337	343	-6
G	Sill Height at Front Wheel Well	392	380	12
H	Sill Height at Front Door Leading Edge	397	382	15
I	Sill Height at B-Pillar	403	406	-3
J1	Sill Height at Rear Wheel Well	414	427	-13
J2	Pinch Weld Height at Rear Wheel Well	403	408	-5
K	Sill Height Aft of Rear Wheel Well	437	451	-14
L	Rear Bumper Thickness	70	70	0
M	Rear Bumper Bottom to Ground	437	431	6
N	Sill Height to Bottom of Front Window Sill	780	776	4
O	Front Door Leading Edge to Impact CL	634	530	104
P	Rear Door Trailing Edge to Impact CL	1436	1347	89
Q	Front Window Opening	587	555	32
R	Right Side Length	4538	4557	-19
S	Left Side Length	4538	4376	162
T	Vehicle Width at B-Pillars	1976	1781	195

DATA SHEET NO. 10
VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2015 Ford Expedition XLT SUV NHTSA No. M20150211
Test Program: NCAP Side Pole Impact Test Test Date: 12/10/2014



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	438	355	0
2	Mid Door	839	398	0
3	Occupant Hip Point	901	399	0
4	Window Sill	1170	359	0
5	Window Top	1795	117	0

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

Test Vehicle: 2015 Ford Expedition XLT SUV NHTSA No. M20150211
Test Program: NCAP Side Pole Impact Test Test Date: 12/10/2014

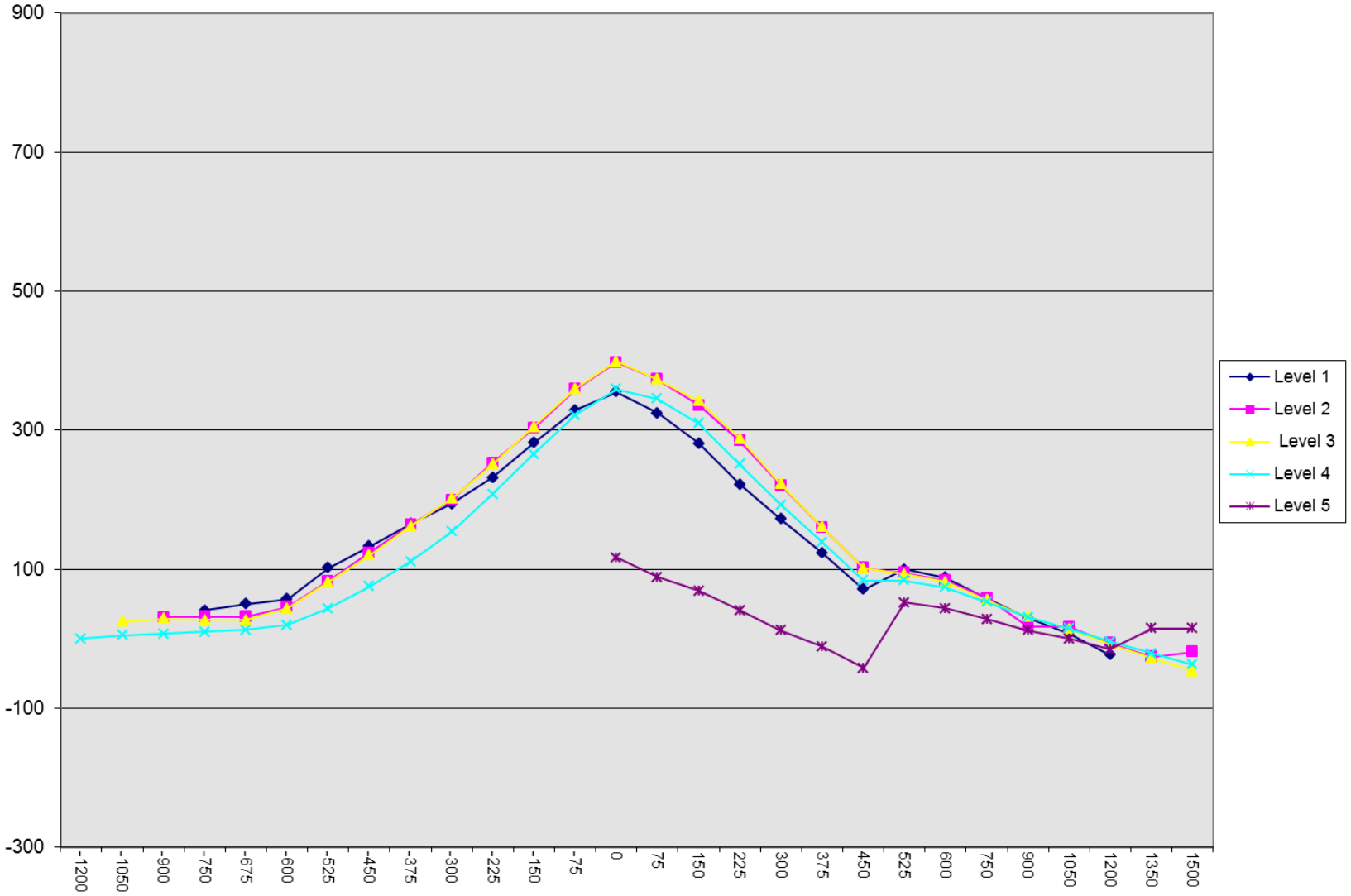
	Pre-Test					Post-Test					Difference				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
-1200				206					206					0	
-1050			106	195				131	200				25	5	
-900		108	123	188			139	152	195			31	29	7	
-750	156	130	134	180		197	162	161	190		41	32	27	10	
-675	151	132	132	178		201	164	159	191		50	32	27	13	
-600	148	131	130	175		205	177	174	195		57	46	44	20	
-525	148	129	128	173		250	212	210	217		102	83	82	44	
-450	145	126	126	169		278	250	246	244		133	124	120	75	
-375	143	124	123	165		308	288	285	276		165	164	162	111	
-300	143	122	121	163		337	322	323	317		194	200	202	154	
-225	143	120	119	160		375	373	370	368		232	253	251	208	
-150	143	119	117	157		425	422	422	423		282	303	305	266	
-75	143	116	115	155		472	475	475	477		329	359	360	322	
0	142	115	114	153	421	497	513	513	512	538	355	398	399	359	117
75	142	114	113	151	417	467	487	486	496	506	325	373	373	345	89
150	140	113	111	150	414	421	449	453	460	483	281	336	342	310	69
225	139	111	110	149	412	361	396	398	400	453	222	285	288	251	41
300	139	110	110	148	410	311	331	333	341	422	172	221	223	193	12
375	140	110	110	147	408	264	270	271	286	379	124	160	161	139	-11
450	140	109	109	145	407	211	211	210	229	365	71	102	101	84	-42
525	145	110	109	145	408	245	205	202	229	460	100	95	93	84	52
600	140	110	109	144	408	228	194	191	218	452	88	84	82	74	44
750	140	109	109	140	403	198	168	165	193	431	58	59	56	53	28
900	138	109	108	140	400	168	144	140	171	412	30	18	32	31	12
1050	137	109	108	140	399	144	126	122	155	399	7	17	14	15	0
1200	140	111	110	140	397	117	105	102	136	382	-23	-6	-8	-4	-15
1350		108	110	140	395		82	82	119	410		-26	-28	-21	15
1500		88	100	140	399		69	54	103	414		-19	-46	-37	15

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 Expedition XLT SUV
Test Program: NCAP Side Pole Impact Test

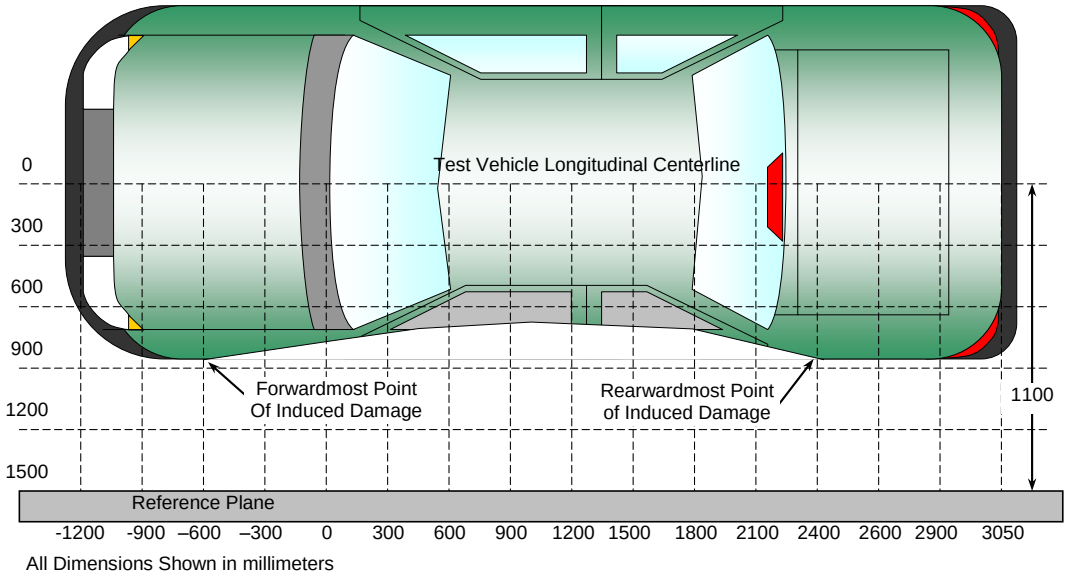
NHTSA No. M20150211
Test Date: 12/10/2014



DATA SHEET NO. 11
VEHICLE DAMAGE PROFILE DISTANCES

Test Vehicle: 2015 Ford Expedition XLT SUV
Test Program: NCAP Side Pole Impact Test

NHTSA No. M20150211
Test Date: 12/10/2014



TOP VIEW

DAMAGE PROFILE DISTANCES

DPD	Distance from Impact Point (mm)	Level	Pre-Test (mm)	Post-Test (mm)	Crush (mm)
1	525	3	109	202	93
2	285	3	110	345	235
3	45	3	113	504	391
4	-195	3	118	389	271
5	-435	3	125	255	130
6	-675	3	132	159	27

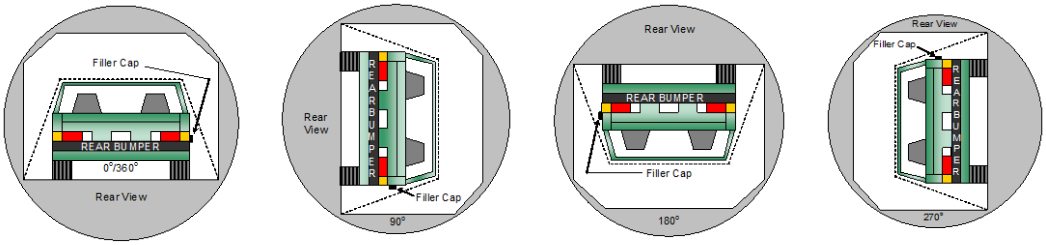
DATA SHEET NO. 12
FMVSS NO. 301 STATIC ROLLOVER RESULTS

Test Vehicle: 2015 Ford Expedition XLT SUV NHTSA No. M20150211
Test Program: NCAP Side Pole Impact Test Test Date: 12/10/2014

Test Time: 10:45 am Temperature: 21.2°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°	114	300	414
90° to 180°	133	300	433
180° to 270°	125	300	425
270° to 360°	155	300	455

FMVSS 301 ROLLOVER SPILLAGE TABLE (units in ounces)

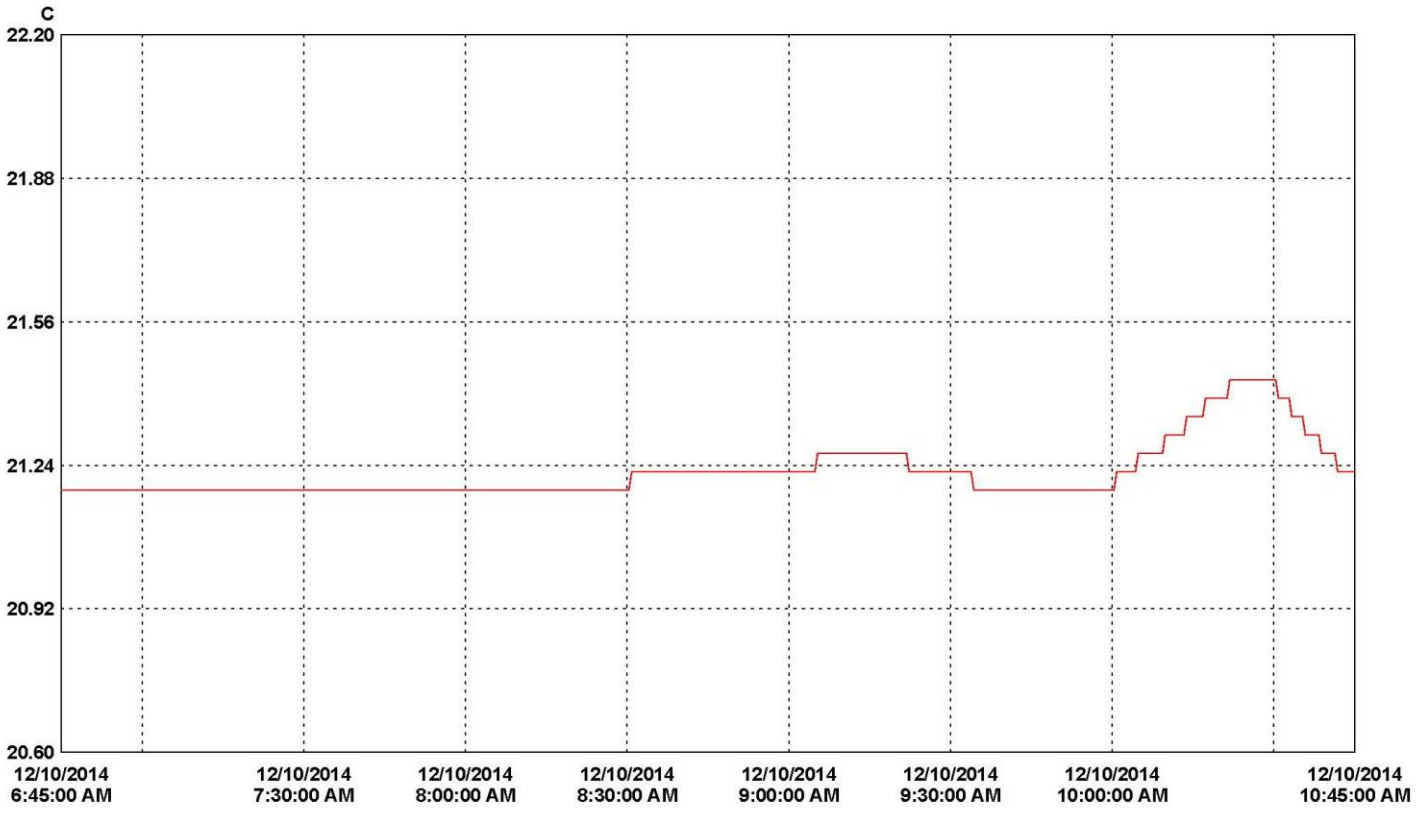
Test Phase	First 5 Minutes	Sixth Minute	Seventh Minute	Eight Minute
0° to 90°	0	0	0	0
90° to 180°	0	0	0	0
180° to 270°	0	0	0	0
270° to 360°	0	0	0	0

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 Expedition XLT SUV NHTSA No. M20150211
Test Program: NCAP Side Pole Impact Test Test Date: 12/10/2014



30 minutes/div 4 hours (M/d/yyyy h:mm:ss tt) Central Time Graph file (truncated): 2015 Ford Expedition SPNCAP 12-10-14.spg

LN	Serial #	Description	CH	Value	Maximum	Average	Minimum	Units	CH description	Logger file
1	14182020	Crash1	1		21.43	21.22	21.18	C	Temperature	14182020_Crash1.spl

LN	Logger file	ID #	Security	Created by	Creation time
1	C:\Program Files (x86)\Veriteq Instruments\vLog 4.4\Prep 2014\14182020_Crash1.spl				