REPORT NUMBER: CAL-07-11

NEW CAR ASSESSMENT PROGRAM (NCAP)
FRONTAL BARRIER IMPACT TEST

DAIMLER CHRYSLER CORPORATION
2007 JEEP PATRIOT
MPV

NHTSA NUMBER: M70306

CALSPAN TEST NUMBER: 8806-NCAP-11

CALSPAN CORPORATION
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February 27, 2007

FINAL REPORT

PREPARED FOR:

U. S. DEPARTMENT OF TRANSPORTATION
National Highway Traffic Safety Administration
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15. Supplementary Notes

16. Abstract

A frontal load cell barrier test of a 2007 Jeep Patriot MPV was performed at Calspan Corporation's crash test facility in Buffalo, New York, on February 27, 2007.

The impact velocity was 55.7 kph and the temperature at the barrier face was 21°C. The maximum post-test vehicle crush was 454 mm. The test vehicle was equipped with 3-point restraint systems, knee bolsters, and airbags at both the driver and right outboard passenger seating positions.

With respect to FMVSS 208 "Occupant Crash Protection - Injury Criteria" both the driver and passenger appeared to comply with head, chest, and femur requirements. The occupant injury criteria summary is as follows:

Measurement Description	**Units**	**Threshold**	**Driver (061)**	**Passenger (064)**
Head Injury Criteria (HIC - 36 ms)	-	1000	564.9	439.0
Maximum Thorax Acceleration (3 ms Clip)	g's	60 g's	42.1	38.9
Chest Displacement	mm	-76 mm	33.0	34.5
Left Femur Force	Newtons	-10000 N	-4043.6	-3081.2
Right Femur Force	Newtons	-10000 N	-2707.5	-3141.2

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SECTION 1

PURPOSE AND SUMMARY OF TEST

1.1 PURPOSE

This 55.7 kph frontal barrier impact test is part of the Vehicle Barrier Impact Testing Program sponsored by the National Highway Traffic Safety Administration (NHTSA) under Contract No. DTNH22-06-D-00024. The purpose of this test was to obtain vehicle crashworthiness and occupant restraint system performance data for an impact speed in excess of the current 48.3 kph requirements.

The 55.7 kph frontal barrier impact test was conducted in accordance with the Office of Crashworthiness Standards Laboratory Indicant Test procedure.

1.2 TEST PROCEDURE

This 55.7 kph frontal barrier impact test was conducted in accordance with the Office of Crashworthiness Standards (OCS) New Car Assessment Program (NCAP) Laboratory Indicant Test Procedure, dated December 1999. Data was obtained indicant of FMVSS 208, "Occupant Crash Protection"; FMVSS 212, "Windshield Retention"; FMVSS 219, "Windshield Zone Intrusion (Partial)"; and FMVSS 301 "Fuel System Integrity" performance. Procedures for receiving, inspection testing and reporting of test results are described in the test procedures and are not repeated in this report.

One real-time camera and 16 high-speed cameras were used to document the frontal barrier impact event. Camera locations and other pertinent camera information can be found in this report.

Two Part 572E, 50th percentile male anthropomorphic test devices (ATDs), were placed in the driver and right-front passenger seating positions according to dummy placement instructions specified in the Laboratory Indicant Test Procedure.

Both ATDs were fully instrumented heads, chest and pelvis triaxial accelerometers, chest displacement potentiometers, upper neck transducers, right/left femur load cells, and lower leg instrumentation. Seat belt load cells were also on the driver's and passenger's lap and shoulder belts to measure dummy torso and pelvic section loading. The driver (position 1) ATD (Serial No. 061) and the right-front passenger (position 2) ATD (Serial No.064) were calibrated previous to this test. Certification details, along with instrumentation calibration data, are found in Appendix C.

The vehicle, occupant, camera and measurement data are presented in Section 2. Appendix A contains the still photograph prints. The 105 channels of data were recorded on an on-board data acquisition system. Appendix B contains the vehicle, load cell barrier and dummy response data traces. Appendix C contains the dummy calibration data and Appendix D contains the transducer calibration dates.

1.3 SUMMARY OF FRONTAL BARRIER IMPACT TEST

A load cell barrier consisting of 36 load cells was impacted by a 2007 Jeep Patriot MPV at a velocity of 55.7 kph. The test was performed at Calspan on February 27, 2007. Pre- and post-test photographs of the vehicle and dummies can be found in Appendix A.

The occupant data is summarized below.

ATD	HIC	T_1	T_2	Clip (g)	T_1	T_2	Chest Disp. (mm)	Left Femur (N)	Right Femur (N)
Driver	564.9	54.1	84.7	42.1	61.9	64.9	33.0	-4043.6	-2707.5
Passenger	439.0	67.3	103.3	38.9	51.5	54.5	34.5	-3081.2	-3141.2

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

TEST NOTES	
Data Channel	Anomalies
V1P1 Left Foot Aft Az	Data Inaccurate after 20 msec

SECTION 2
OCCUPANT AND VEHICLE INFORMATION

DATA SHEET NO. 1
CRASH TEST SUMMARY

Vehicle NHTSA No.: M70306 Test Mode: 56.3 kph Frontal Barrier
Test Date: February 27, 2007 Time: 14:00 Temperature: 21 °C
Vehicle Make/Model/Body Style: 2007 Jeep Patriot MPV
Vehicle Test Weight: 1761 kg Impact Velocity: 55.7 kph (55.5 – 57.1 kph)
Vehicle/Barrier Impact Angle: 0 ° Max Static Crush: 454 mm

ATD INFORMATION AND VISIBLE CONTACT POINTS

	DRIVER	PASSENGER
ATD Type:	Part 572E	Part 572E
Restraint System:	Seatbelt, Airbag, Knee Bolster	Seatbelt, Airbag, Knee Bolster
Head Contact:	The face to the center of the airbag	Airbag / Back of head to headrest / Side of head to side rail entry handle
Abdomen Contact:	None	None
Chest Contact:	Airbag	Airbag
Left Knee Contact:	Knee Bolster	Glove Box
Right Knee Contact:	Knee Bolster	Glove Box

DOOR OPENING, SEAT TRACK AND GLAZING INFORMATION

Description	Driver Side	Passenger Side
Door Lock Status	Unlocked	Unlocked
Front Door Opening	Closed, latched and operable without tools	Closed, latched and operable without tools
Rear Door Opening	Closed, latched and operable without tools	Closed, latched and operable without tools
Hatch/Other Door Opening	Removed from vehicle to reduce weight	
Front Seat Track Shift (mm)	8 mm	0
Front Seat Back Failure	None	None
Glazing Damage	Cracked at the lower ream and corners	

VEHICLE REBOUND FROM BARRIER

Measured Parameter	Left Side (mm)	Center (mm)	Right Side (mm)	Average (mm)
Value	620	595	712	642

BELT LENGTH DATA

Measurement Description	Units	Driver	Passenger
Shoulder belt length as measured on ATD	mm	817	810
Lap belt length as measured on ATD	mm	580	580
Belt length from trim panel exit to bolt hole anchor point for continuous webbing systems	mm	390	390

DATA SHEET NO. 2
GENERAL TEST AND VEHICLE PARAMETER DATA

TEST VEHICLE INFORMATION:

Year/Make/Model/Body Style: 2007 Jeep Patriot MPV

NHTSA No. : M70306 ; VIN: 1J8FF28W17D251201 ; Color: Red

Engine Data: 4 cylinders; - CID; 2.4 Liters; - cc

Placement: - Longitudinal or In-Line; X Transverse or Lateral

Transmission Data: CVT ; - Manual; X Automatic; - Overdrive

Final Drive: - Rear Wheel Drive; - Front Wheel Drive; X Four Wheel Drive

AUTOMATIC DOOR LOCKS:

Is test vehicle equipped with Automatic Door Locks (ADLs)? X Yes; - No;

Does vehicle owner's manual describe how to deactivate ADLs? X Yes; - No; - N/A

DEALER AND DELIVERY INFORMATION:

Date Received: 2/13/07 ; Odometer Reading 32 km

Selling Dealer: West Herr Chrysler Jeep

Dealer Address: 3599 Southwestern Blvd. Orchard Park, NY 14127

TEST VEHICLE OPTIONS:

X AC; X Power Steering; X Power Brakes; X Power Locks; - Power Seats

X ABS; X Tilt Wheel; X Stability Control X Traction Control X Anti-Theft

SAFETY BELT FEATURES:

Driver: X Pretensioner (Shoulder); X Load Limiter; X Adjustable Anchorage

Passenger: X Pretensioner (Shoulder); X Load Limiter; X Adjustable Anchorage

AIRBAG FEATURES:

Position	Frontal	Knee Bolster	Side Torso	Side Head/Torso Combination	Side Curtain
Driver:	X	-	-	-	X
Passenger:	X	-	-	-	X
Rear Passenger:	-	-	-	-	X

DATA FROM VEHICLE'S CERTIFICATION LABEL:

Vehicle Manufactured by: Daimler Chrysler Corporation

Date of Manufacture 1/2007

GVWR: 2076 kg; GAWR: 1080 kg FRONT; 1044 kg REAR

VEHICLE CAPACITY DATA:

Type of Front Seats: - Bench; x Bucket; - Split Bench

Number of Occupants: 2 Front; 3 Rear; 5 Total

Vehicle Capacity Weight (VCW) = 419.0 kg

No. of Occupants x 68.04 kg = 340.2 kg

Rated Cargo/Luggage Weight (RCLW) = 78.8 kg

DATA SHEET NO. 2
GENERAL TEST AND VEHICLE PARAMETER DATA (cont.)

WEIGHT OF TEST VEHICLE AS RECEIVED FROM DEALER (with maximum fluids)= UDW:

	Left Side (kg)	Right Side (kg)	Ratio (%)	Total (kg)
Front =	454	429	57.5	883.0
Rear =	324	329	42.5	653.0
			Total Delivered Weight (UDW) =	1536.0

CALCULATION OF VEHICLE'S TARGET TEST WEIGHT:

Total Delivered Weight (UDW)	=	1536.0	kg
Rated Cargo/Luggage Weight (RCLW)	=	78.8	kg
Weight of 2 p.572 Dummies @ 76 each	=	152	kg
TARGET TEST WEIGHT	=	1766.8	kg

WEIGHT OF TEST VEHICLE WITH TWO DUMMIES AND 73.0 KG OF CARGO WEIGHT:

	Left Side (kg)	Right Side (kg)	Ratio (%)	Total (kg)
Front =	498.5	482.5	55.7	981.0
Rear =	393.0	387.0	44.3	780.0
			Total Vehicle Test Weight (ATW) =	1761.0

Weight of Ballast Secured in Vehicle Trunk Area[1] = 0 kg

Vehicle Components Removed for Weight Reduction: Side View Mirrors, Tail Lights, Rear Hatch

VEHICLE ATTITUDE (all dimension in millimeters):

	Left Front	Right Front	Left Rear	Right Rear	CG[2]
AS DELIVERED:	810	814	811	816	1121.1
FULLY LOADED:	764	769	764	767	-
AS TESTED:	781	779	776	774	1168.0

Vehicle's Wheel Base: 2637 mm

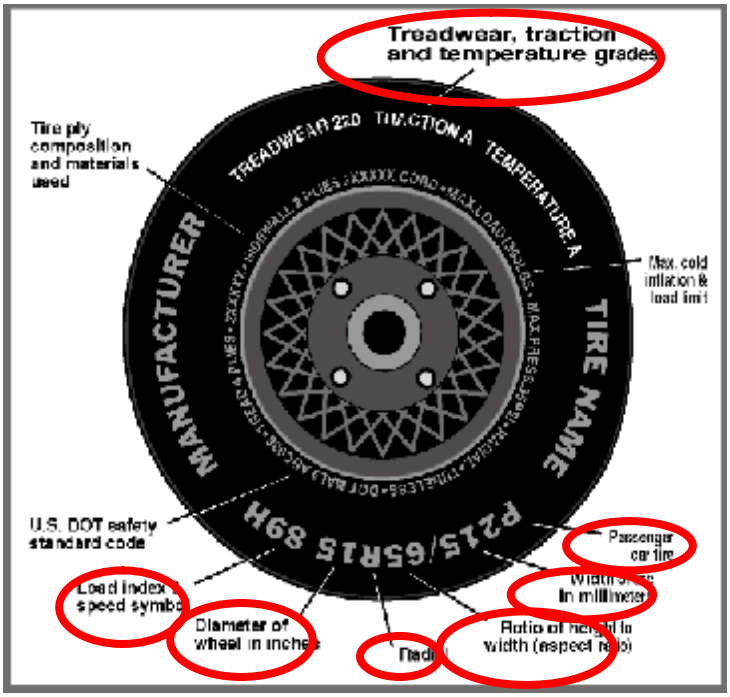
[1]Ballast weight does not include the weight of instrumentation, on-board cameras and data acquisition system

[2]Rearward of the front axle centerline.

DATA SHEET NO. 3
TEST VEHICLE TIRE INFORMATION

Vehicle Year/Make/Model/Body Style: 2007 Jeep Patriot MPV

NHTSA Test No.: M70306 Test Date: February 27, 2007



Measured Parameter	Front	Rear
Maximum Tire Pressure (from sidewall - kPa)	300	300
Cold Pressure (from tire placard - kPa)*	240	240
Recommended Tire Size (from tire placard)	P205/70R16	P205/70R16
Tire size on Vehicle	P205/70R16	P205/70R16
Tire Manufacturer	Goodyear	Goodyear
Tire Name	Eagle LS	Eagle LS
Tire Type	Passenger	Passenger
Tire Width (mm)	205	205
Ratio of Height to Width (aspect ratio)	70	70
Radial	Yes	Yes
Wheel Diameter	16	16
Load Index & Speed Symbol	96T	96T
Treadwear	400	400
Traction Grade	A	A
Temperature Grade	B	B

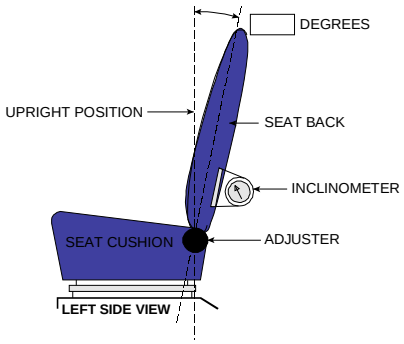
*Tire pressure used for test

DATA SHEET NO. 4
TEST VEHICLE INFORMATION

VEHICLE IDENTIFICATION:

Model Year : 2007 Vehicle Model: Jeep Patriot Body Style : MPV

1. NOMINAL DESIGN RIDING POSITION:
for adjustable driver and passenger seat backs. Please describe how to position the inclinometer to measure the seat back angle. Include description of the location of the adjustment latch detent, if applicable.



FRONT SEAT ASSEMBLY

Seat back angle for driver's seat: 12.7

Measurement instructions: Recline 12.7 degrees from vertical on head restraint post

Seat back angle for passenger's seat: 12.7

Measurement instructions: Recline 12.7 degrees from vertical on head restraint post

2. SEAT FORE AND AFT POSITIONING:

Positioning of the driver's seat: Full forward with full up to full rear at full down – 304 mm travel

Set at 152 mm from 0

Positioning of the passenger's seat: Full forward with full up to full rear at full down – 304 mm travel

Set at 152 mm from 0

3. FUEL TANK CAPACITY DATA:

3.1 A. "Usable Capacity" of the standard equipment fuel tank is 51.5 liters

B. "Usable Capacity" of the optional equipment fuel tank is 0 liters

C. "Usable Capacity" of the vehicle(s) used for certification testing to requirements of FMVSS 301 = 47.4 to 48.4 liters

3.2 Actual Amount of Stoddard solvent added to vehicle for test = 25.75 liters

3.3 One-Third of Useable Capacity = 17.2 liters

3.4 Is vehicle equipped with electric fuel pump? Yes- x ; No- -

If YES, explain the vehicle operating conditions under which the fuel pump will pump fuel.

With the ignition turned “ON”

DATA SHEET NO. 4
TEST VEHICLE INFORMATION (cont.)

4. STEERING COLUMN ADJUSTMENTS:

Steering wheel and column adjustments are made so that the steering wheel hub is at the geometric center of the locus it describes when it is moved through its full range of driving positions. If the tested vehicle has any of these adjustments, does your company use any specific procedures to determine the geometric center.

Operational Instructions: Set to 66 degrees

5. SEAT BELT UPPER ANCHORAGE:

Nominal design riding position: Placed in first detent from full-up

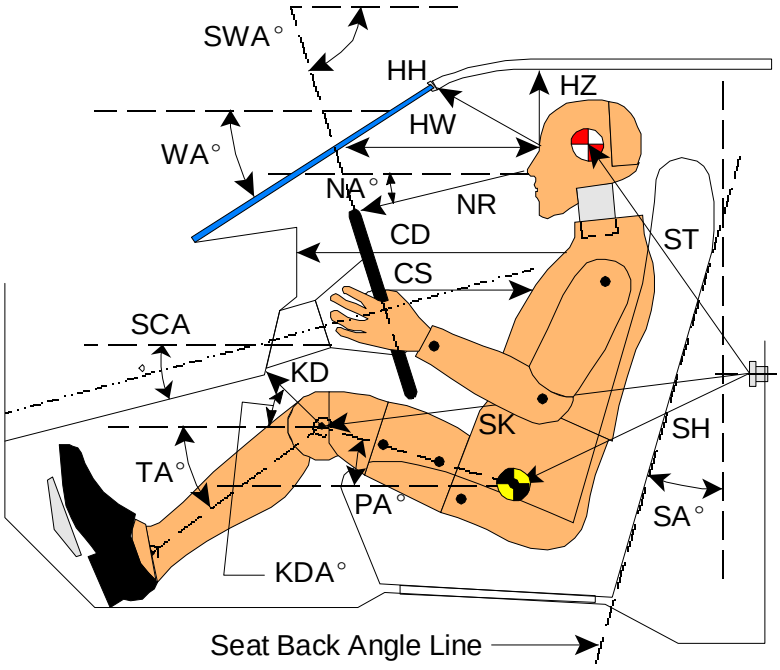
6. AUTOMATIC DOOR LOCKS: Is test vehicle equipped with ADLs? x Yes; - No;

Does vehicle owner's manual describe how to deactivate ADLs? x Yes; - No; - N/A

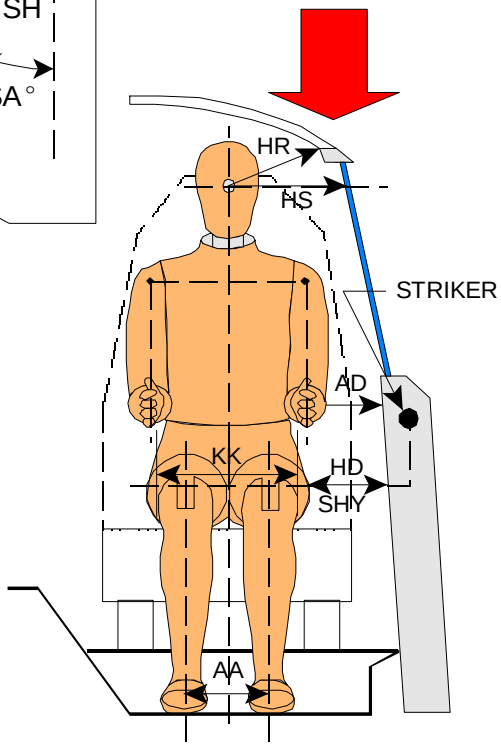
Comments: NONE

DATA SHEET NO. 5
FRONT SEAT DUMMY POSITIONING MEASUREMENTS IN VEHICLE

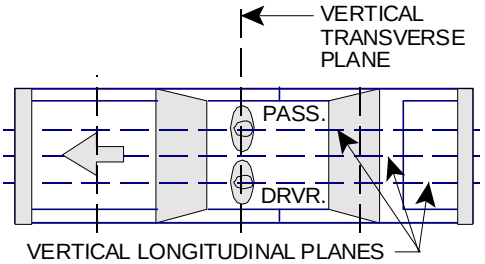
DUMMY MEASUREMENT FOR FRONT SEAT PASSENGERS



AD - Arm to Door
HD - H-Point to Door
HR - Head to Side Header
HS - Head to Side Window
KK - Knee to Knee
AA - Ankle to Ankle
SHY- Striker to H-Point (Y Direction)



CD - Chest to Dash
CS - Steering Wheel to Chest
HH - Head to Header
HW - Head to Windshield
HZ - Head to Roof
KDA - Knee to Dash Angle
KDL- Left Knee to Dash
KDR - Right Knee to Dash
NA - Nose to Rim Angle
NR - Nose to Rim
PA - Pelvic Angle
RA - Rim to Abdomen
SA - Seat Back Angle
SCA - Steering Column Angle
SH - Striker to H-Point
SK - Striker to Knee
ST - Striker to Head
SWA- Steering Wheel Angle
TA - Tibial Angle
WA - Windshield Angle



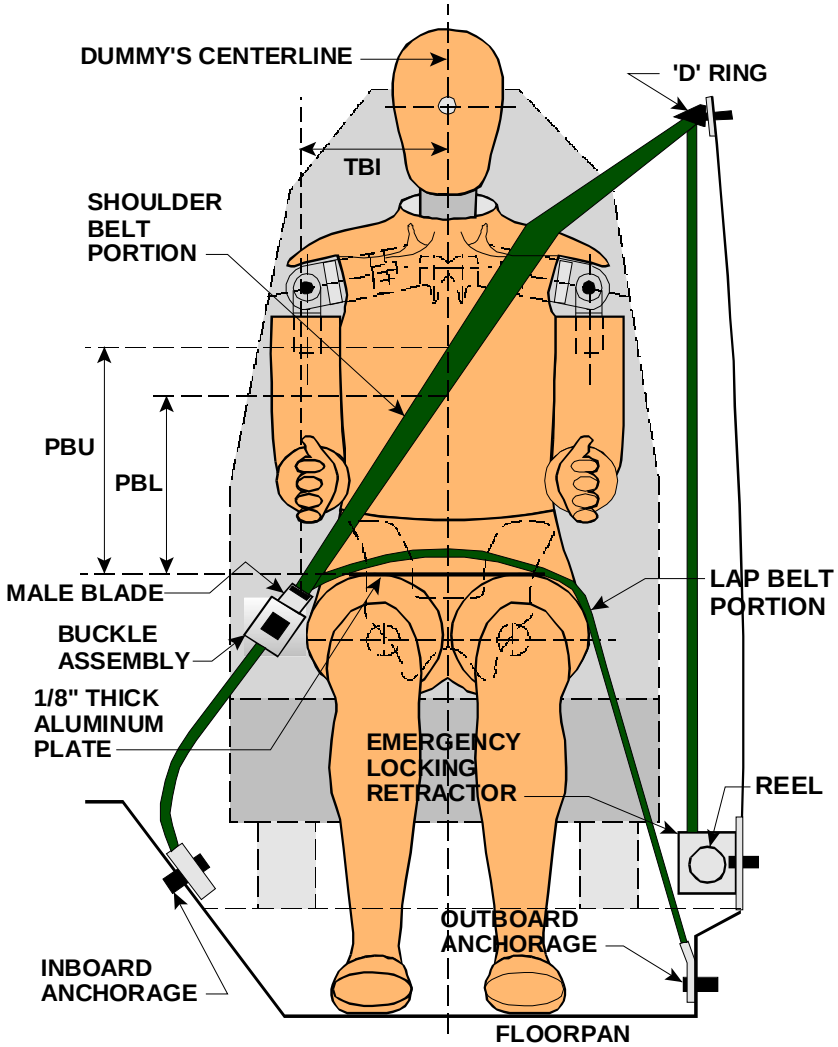
DATA SHEET NO. 5
FRONT SEAT DUMMY POSITIONING MEASUREMENTS IN VEHICLE (cont.)

	DRIVER (Serial #061)			PASS. (Serial #064)		
WA^O	27 deg.			N/A		
SWA^O	24 deg.			N/A		
SCA^O	66 deg.			N/A		
SA^O	20 deg.			20 deg.		
HZ	260			241		
HH	595			610		
HW	787			811		
HR	251			234		
NR	382	Angle	9 deg.	N/A		
CD	546			582		
CS	298			N/A		
RA	182			N/A		
KDL	155	Angle (KDA)	31 deg.	141		
KDR	146			151	Angle (KDA)	32 deg.
PA^O	23.9 deg.			24.2 deg.		
TA^O	57 deg.			49 deg.		
KK	362			270		
AA	332			224		
ST	478	Angle	11 deg.	505	Angle	6 deg.
SK	580	Angle	95 deg.	615	Angle	96 deg.
SH	270	Angle	135 deg.	240	Angle	121 deg.
SHY	255			250		
HS	355			369		
HD	129			146		
AD	91			113		

Dimensions in millimeters

DATA SHEET NO. 6
SEAT BELT POSITIONING DATA

SEAT BELT POSITIONING DATA

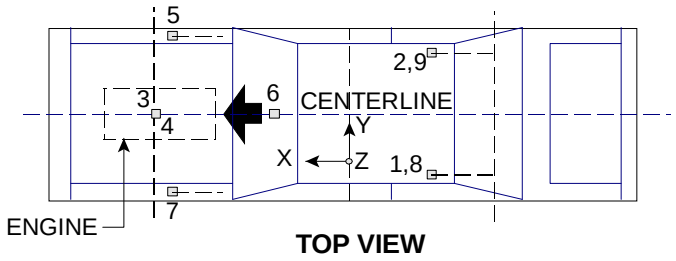


FRONT VIEW OF DUMMY

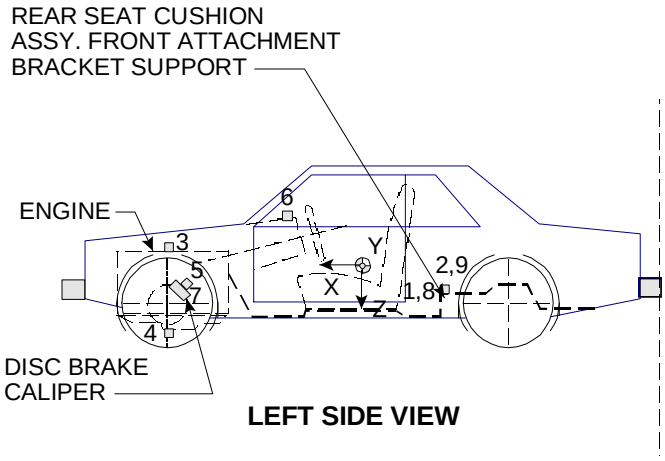
	DRIVER DUMMY (mm)	PASSENGER DUMMY (mm)
PBU -- Top surface of alum. plate to upper edge	340	335
PBL-- Top surface of alum. plate to belt lower edge	270	265
LAP BELT TENSION	10 N	10 N
SHOULDER BELT TENSION	Retractor	Retractor

DATA SHEET NO. 7
VEHICLE ACCELEROMETER LOCATIONS

VEHICLE ACCELEROMETER LOCATIONS



TOP VIEW



LEFT SIDE VIEW

		PRE-TEST LENGTH (mm)		
No.	LOCATION	X	Y	Z
1	Left Rear Seat Cross Member X	1599	-615	406
2	Right Rear Seat Cross Member X	1639	616	404
3	Top of Engine Block	3567	44	868
4	Bottom of Engine	3390	-42	219
5	Disc Brake Caliper @ Right Side	3486	591	654
6	Instrument Panel**	-	-	-
7	Disc Brake Caliper @Left Side	3487	-593	649
8	Left Rear Seat Cross Member Z	1599	-615	406
9	Right Rear Seat Cross Member Z	1639	616	404

X – From rear surface of vehicle (+ forward)
Y – From vehicle centerline (+ right)
Z – From ground plane (+ up)
** Accelerometer was not requested by the COTR

DATA SHEET NO.8
SUMMARY OF FMVSS 212 and FMVSS 219 (Partial) DATA

DETAILS OF WINDSHIELD MOUNTING SUCH AS RETENTION METHOD, TRIM TYPE, ETC.:

Windshield is bonded in place and covered with a 29 mm molding.

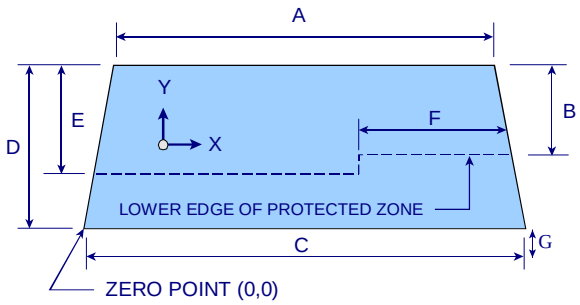
FMVSS 212 REQUIREMENTS:

The Post-Test periphery retention amount must be at least 75% of the Pre-Test periphery measurement for vehicles NOT equipped with automatic restraints, and 50% for each side of the windshield for vehicles equipped with automatic restraint systems for front occupants,

Temperature of windshield molding during test: 21ºC.

FMVSS 212 TEST DATA

	WINDSHIELD PERIPHERY		% OF RETENTION
	PRE-TEST (mm)	POST-TEST (mm)	
RIGHT SIDE	2046.0	2046.0	100.0%
LEFT SIDE	2046.0	2046.0	100.0%
TOTAL	4092	4092	100.0%



FRONT VIEW OF WINDSHIELD

DIMENSIONS (mm)	
A	1265
B	441
C	1541
D	643
E	421
F	576
G	29

FAILURE DETAILS: None

DETAILS OF WINDSHIELD GLASS PENETRATION GREATER THAN 6 mm: None

	COORDINATES	
	X	Y
1.		
2.		
3.		
4.		

DATA SHEET NO. 9
SUMMARY OF FMVSS NO. 301 DATA

NHTSA TEST No.: M70306 TEST DATE: February 27, 2007

VEHICLE MAKE/MODEL: 2007 Jeep Patriot MPV

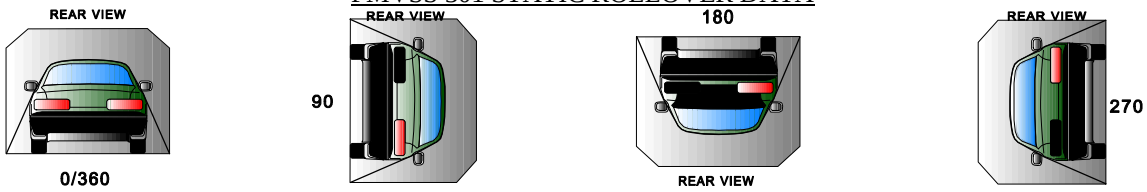
FMVSS 301 FUEL SYSTEM INTEGRITY POST IMPACT DATA

FUEL SPILLAGE MEASUREMENT:

Time Interval	Amount	Maximum Allowable Spillage
Impact Until Motion Ceases		**28 g**
First Five Minutes Following Impact		**142 g**
Next 25 Minutes		**28 g / 1 minute**

SOLVENT SPILLAGE DETAILS: None

FMVSS 301 STATIC ROLLOVER DATA



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Stage	Rotation Time (spec. 1 -3 min)				FMVSS 301 Hold Time		Total Time				Next Whole Minute Interval	
0º - 90º	1	minutes	6	seconds	5	minutes	6	minutes	6	seconds	7	minutes
90º - 180º	1	minutes	10	seconds	5	minutes	6	minutes	10	seconds	7	minutes
180º-270º	0	minutes	54	seconds	5	minutes	5	minutes	54	seconds	6	minutes
270º-360º	1	minutes	10	seconds	5	minutes	6	minutes	10	seconds	7	minutes

II. FMVSS 301 REQUIREMENTS: (Maximum allowable solvent spillage):

First 5 minutes from onset of rotation	6th min.	7th min.	8th min. (if required)
142 g	28 g	28 g	28 g

III. ACTUAL TEST VEHICLE SOLVENT SPILLAGE:

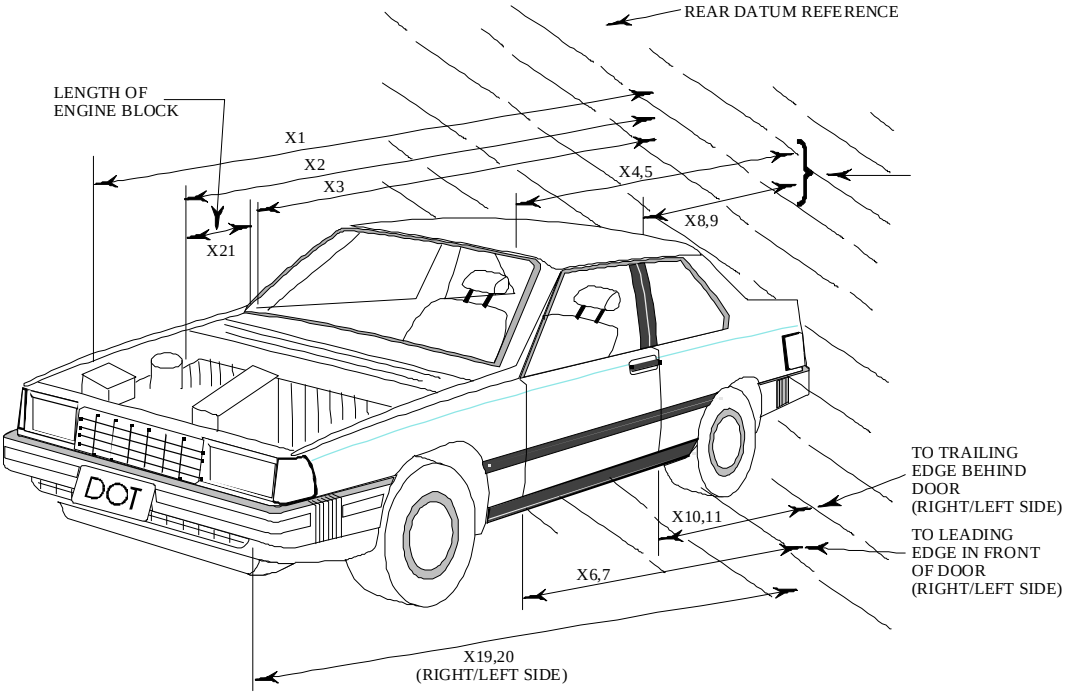
Rollover Stage	First 5 minutes from onset of rotation (g)	6th min. (g)	7th min. (g)	8th min. (if required) (g)
0º - 90º	0	0	0	N/A
90º - 180º	0	0	0	N/A
180º-270º	0	0	0	N/A
270º-360º	0	0	0	N/A

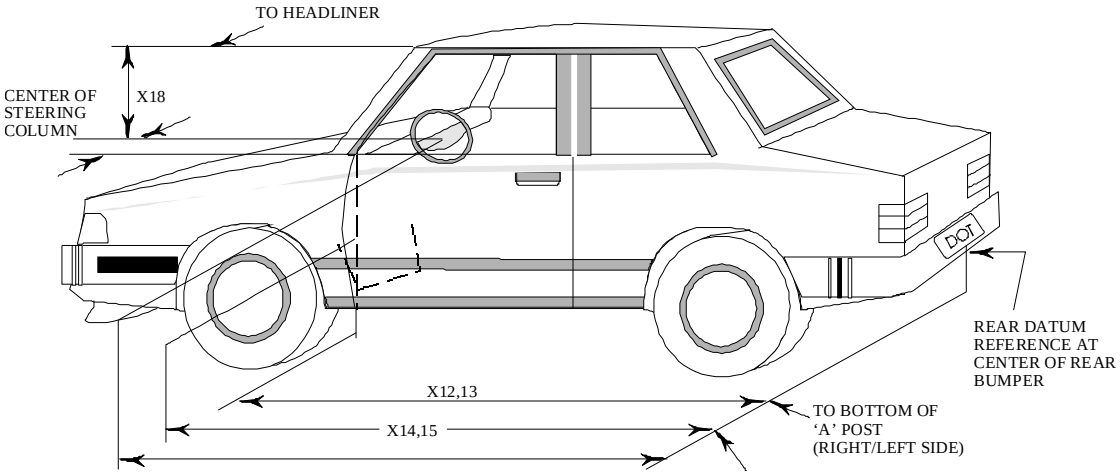
Note: Record spillage for whole minute intervals only as determined above.

IV. SOLVENT SPILLAGE LOCATION(S):

Rollover Stage	Spillage Location
0º - 90º	None
90º - 180º	None
180º-270º	None
270º-360º	None

DATA SHEET NO. 10
TEST VEHICLE MEASUREMENTS





DATA SHEET NO.10
VEHICLE MEASUREMENTS (cont.)

NHTSA TEST No.: M70306 TEST DATE: February 27, 2007

VEHICLE MAKE/MODEL: 2007 Jeep Patriot MPV

No.		Pre-Test	Post-Test	Difference
X1	Total Length of Vehicle at Centerline	4413	3959	454
X2	Rear Surface of Vehicle to Front of Engine	3963	3733	230
X3	Rear Surface of Vehicle to Firewall	3500	3441	59
X4	Rear Surface of Vehicle to Upper Leading Edge of Right Door	3020	3018	2
X5	Rear Surface of Vehicle to Upper Leading Edge of Left Door	3024	3025	-1
X6	Rear Surface of Vehicle to Lower Leading Edge of Right Door	2951	2950	1
X7	Rear Surface of Vehicle to Lower Leading Edge of Left Door	2959	2957	2
X8	Rear Surface of Vehicle to Upper Trailing Edge of Right Door	1979	1978	1
X9	Rear Surface of Vehicle to Upper Trailing Edge of Left Door	1983	1983	0
X10	Rear Surface of Vehicle to Lower Trailing Edge of Right Door	1987	1985	2
X11	Rear Surface of Vehicle to Lower Trailing Edge of Left Door	1994	1995	-1
X12	Rear Surface of Vehicle to Bottom of "A" Post of Right Side	3071	3070	1
X13	Rear Surface of Vehicle to Bottom of "A" Post of Left Side	3080	3080	0
X14	Rear Surface of Vehicle to Firewall, Right Side	3424	3350	74
X15	Rear Surface of Vehicle to Firewall, Left Side	3427	3324	103
X16	Rear Surface of Vehicle to Steering Column	2564	2617	-53
X17	Center of Steering Column to "A" Post	290	289	1
X18	Center of Steering Column to Headliner	491	470	21
X19	Rear Surface of Vehicle to Right Side of Front Bumper	4353	3923	430
X20	Rear Surface of Vehicle to Left Side of Front Bumper	4355	3933	422
X21	Length of Engine Block	443	443	0
RD	Rear Surface of Vehicle to Right Side of Dash Panel	2739	2740	-1
CD	Rear Surface of Vehicle to Center of Dash Panel	2724	2723	1
LD	Rear Surface of Vehicle to Left Side of Dash Panel	2745	2748	-3

All Dimensions in mm

DATA SHEET NO.10
VEHICLE MEASUREMENTS (cont.)

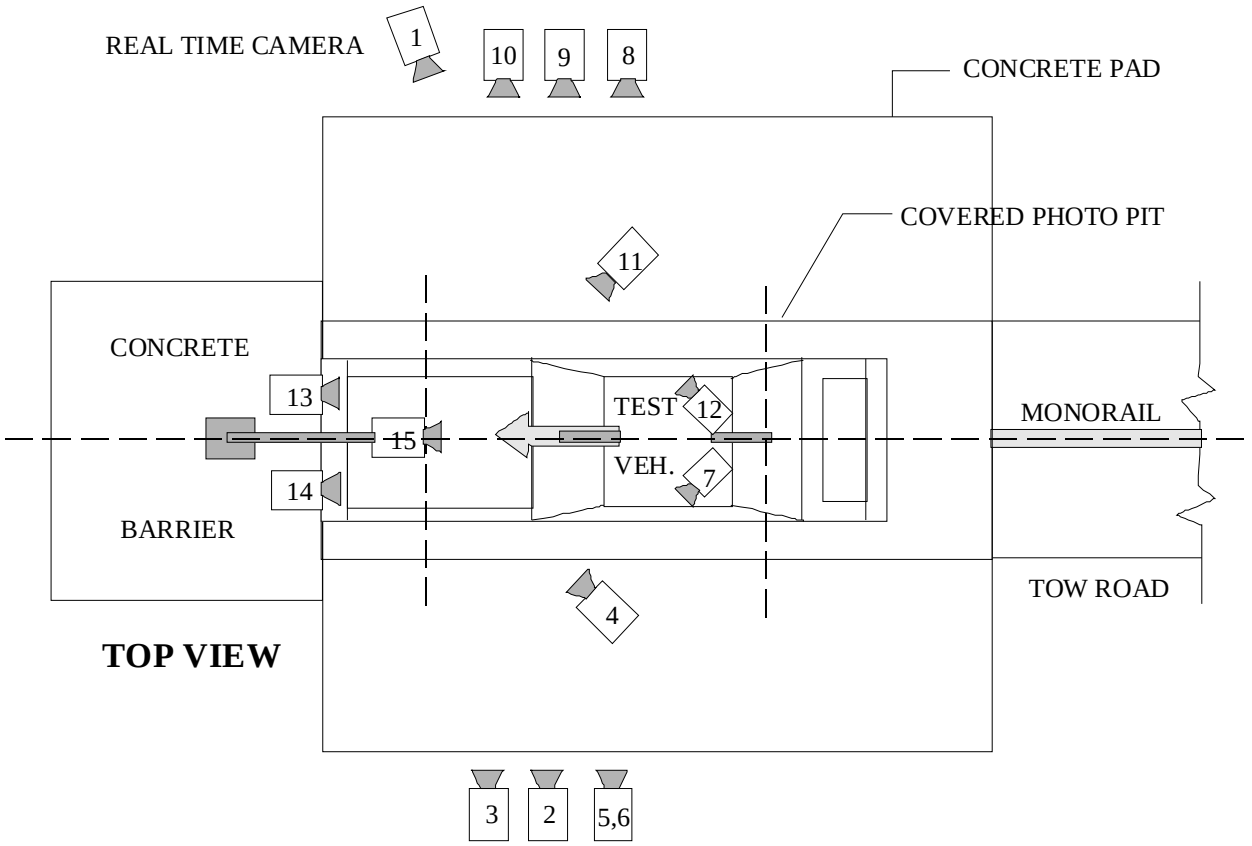
NHTSA TEST No.: M70306 TEST DATE: February 27, 2007

VEHICLE MAKE/MODEL: 2007 Jeep Patriot MPV

TARGET VEHICLE STRUCTURAL MEASUREMENTS

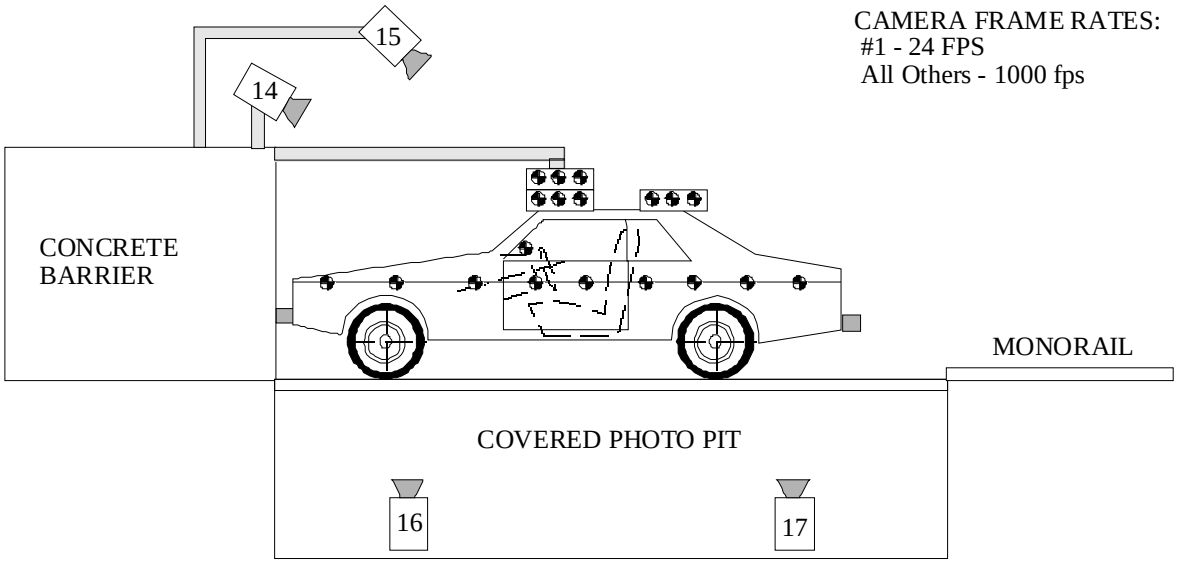
	Elements	Pre-Test (mm)
1	Total length	4413
2	Total Width	1757
3	Bumper Top Height	638
4	Bumper Bottom Height	500
5	Longitudinal Member Top Height	602
6	Distance Between Longitudinal Members	1000
7	Longitudinal Member Width	57
8	Engine top height	900
9	Engine bottom height	219
10	Engine and gearbox width	585
11	Front bumper-engine distance	450
12	Front shock absorber fixing height	947
13	Bonnet leading edge height	984
14	Front shock absorber fixing width	1110
15	Front bumper – front axle distance	883
16	Front axle – A pillar distance	938
17	A-pillar – B pillar distance	613
18	B-pillar – rear axle distance	1086
19	B-pillar – C Pillar distance	826
20	Roof sill bottom height	1518
21	Roof sill top height	1601
22	Floor sill bottom height	261
23	Floor sill top height	396

DATA SHEET NO.11
HIGH-SPEED CAMERA LOCATIONS



TOP VIEW

CAMERA FRAME RATES:
#1 - 24 FPS
All Others - 1000 fps



LEFT SIDE VIEW

DATA SHEET NO.11
HIGH-SPEED CAMERA LOCATIONS (cont.)

NHTSA Test No.: M70306 Vehicle: 2007 Jeep Patriot MPV

CAMERA NO.	VIEW	CAMERA POSITIONS (mm)* X	Y	Z	ANGLE (deg)**	FILM PLANE TO HEAD TARGET	LENS (mm)	SPEED (fps)
1	Real-Time Camera	-	-	-	-	-	-	30
2	Overall Left Side	7849	1966	1000	-2.5	7384	28	1000
3	Left Side View	9493	1141	1040	-2.4	9028	50	1000
4	Driver and Interior View	7669	2903	2045	-8.8	-	35	500
5	Steering Column (Bottom)	8381	2158	1200	-3.1	7916	25	1000
6	Steering Column (Top)	8381	2158	1810	-7.8	7916	28-70	1000
7	Left CRS Lateral View	825	2815	1235	-20.4	-	-	-
8	Overall Right Side	6503	1795	1000	-2.0	6038	28	500
9	Right Side View	8918	1076	1075	-2.7	8453	50	1000
10	Right Passenger View	7862	1481	1280	-2.0	7397	35	1000
11	Passenger and Interior View	7620	2571	2000	-7.4	-	35	500
12	Right CRS Lateral View	825	2771	1229	-5.6	-	-	-
13	Passenger Front View	620	-92	1987	-35.1	-	13	500
14	Driver Front View	620	-92	1987	-35.8	-	13	500
15	Windshield View	0	-530	3374	-51.4	-	20	500
16	Pit View of Engine	0	615	-3048	90	-	13	500
17	Pit View of Fuel Tank	0	2961	-3048	90	-	13	500

*X = film plane to monorail centerline ** = referenced to horizontal plane

Y = film plane to impact location N.T. indicates No Timing

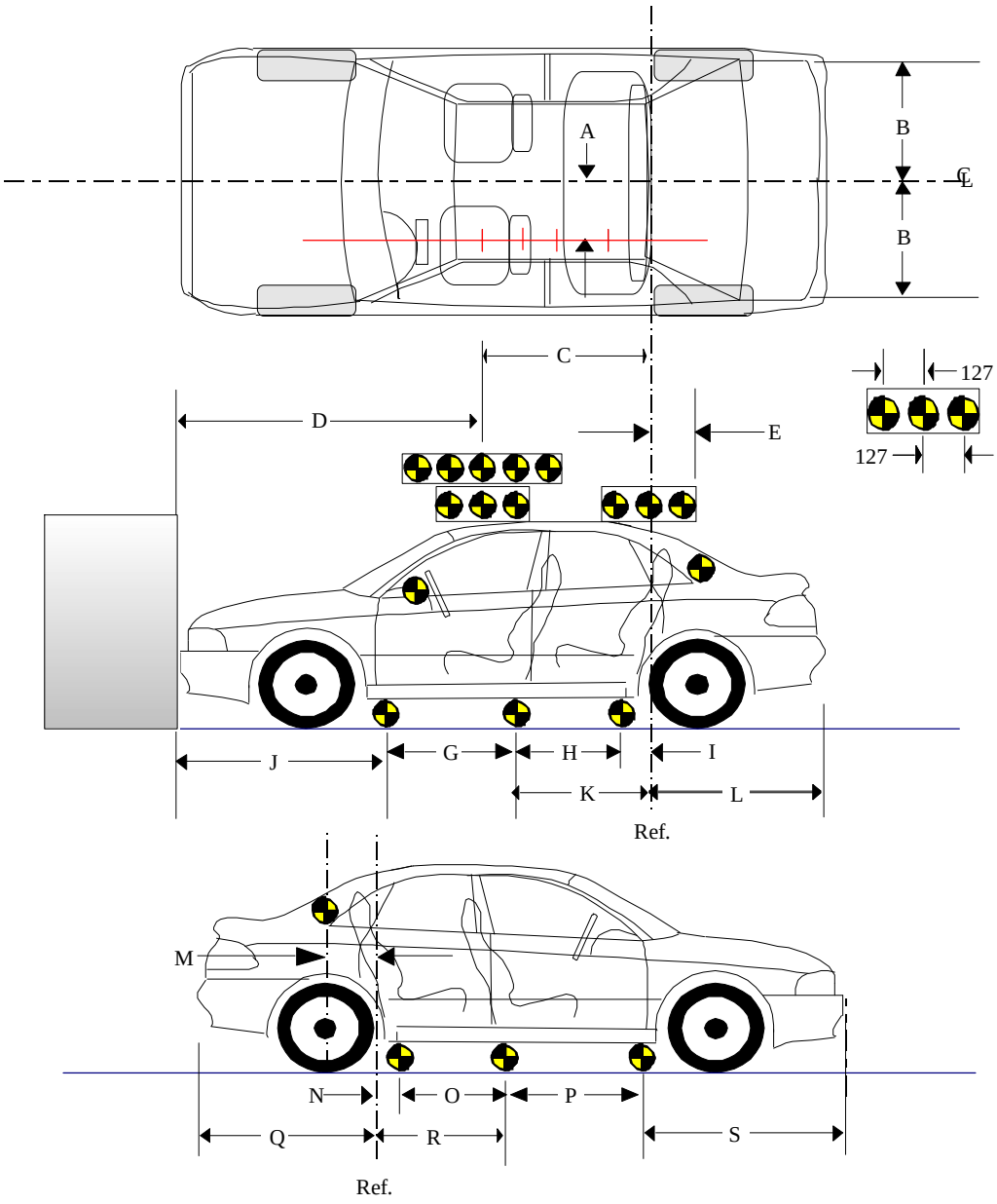
Z = film plane to ground

DATA SHEET NO. 12
VEHICLE REFERENCE PHOTO TARGET LOCATIONS

NHTSA Test No.: M70306 Vehicle: 2007 Jeep Patriot MPV

(Dimensions in millimeters)

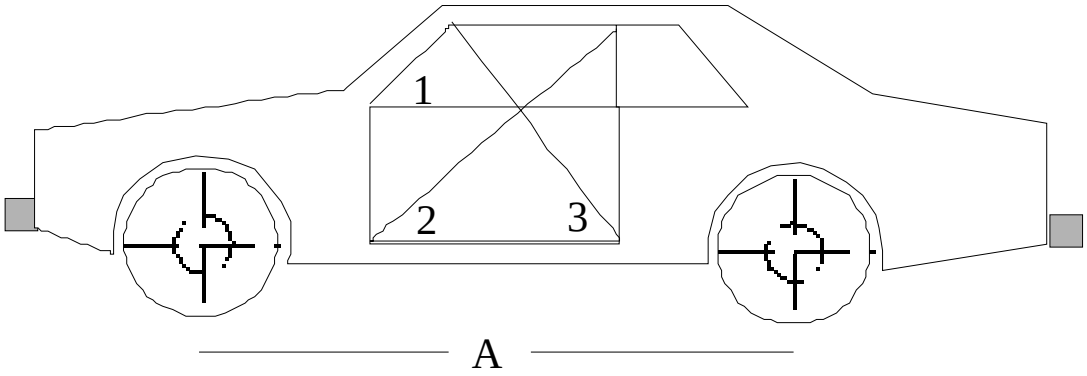
A	389
B	647
C	910
D	2261
E	773
F	1497
G	788
H	778
I	126
J	1475
K	904
L	1246
M	774
N	119
O	789
P	787
Q	1242
R	908
S	1475



DATA SHEET NO. 13
VEHICLE INTRUSION MEASUREMENTS

NHTSA Test No.: M70306 Vehicle: 2007 Jeep Patriot MPV

DOOR OPENING WIDTH AND WHEELBASE MEASUREMENTS



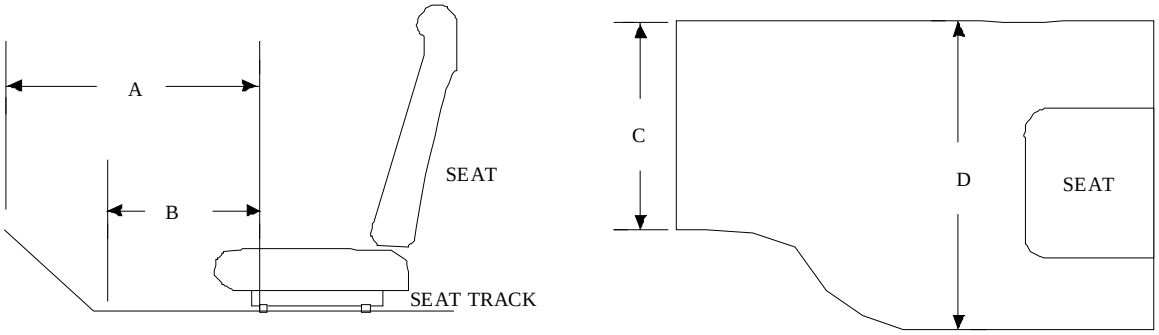
UNITS (mm)	LEFT			RIGHT		
MEASUREMENT	1	2	3	1	2	3
BEFORE TEST	921	1413	1052	921	1414	1053
AFTER TEST	922	1413	1058	920	1412	1051
DIFFERENCE	-1	0	-6	1	2	2

UNITS (mm)	A = WHEELBASE LEFT	A = WHEELBASE RIGHT
BEFORE TEST	2637	2638
AFTER TEST	2586	2599
DIFFERENCE	51	39

DATA SHEET NO.13
VEHICLE INTRUSION MEASUREMENTS (cont)

NHTSA Test No.: M70306 Vehicle: 2007 Jeep Patriot MPV

STATIC FOOTWELL DEFORMATION



DRIVER

Measurement	Pre-Test	Post-Test	Difference
A	675	611	64
B	473	474	-1
C	442	419	23
D	432	434	-2

PASSENGER

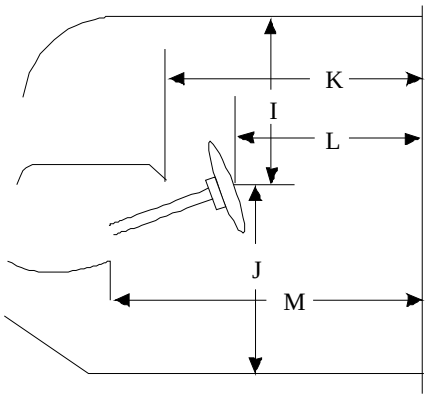
Measurement	Pre-Test	Post-Test	Difference
A	674	662	12
B	458	473	-15
C	364	365	-1
D	402	394	8

Units = mm

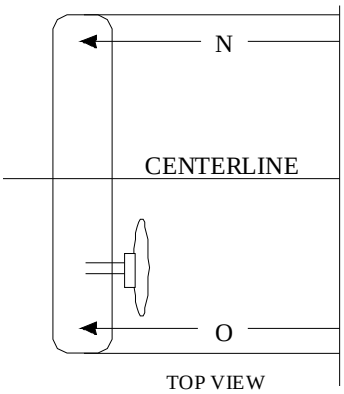
DATA SHEET NO.13
VEHICLE INTRUSION MEASUREMENTS (cont.)

NHTSA Test No.: M70306 Vehicle: 2007 Jeep Patriot MPV

STATIC PASSENGER COMPARTMENT INTRUSION

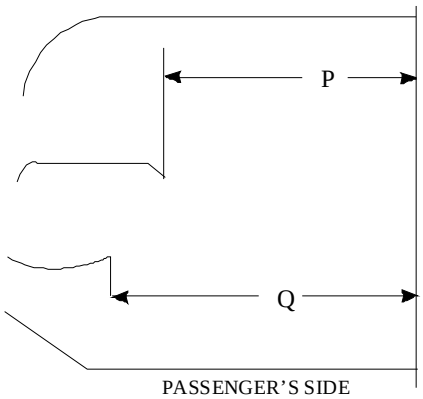


DRIVER'S SIDE



TOP VIEW

MEASUREMENTS
FROM C-PILLAR
BELT ANCHORAGE



PASSENGER'S SIDE

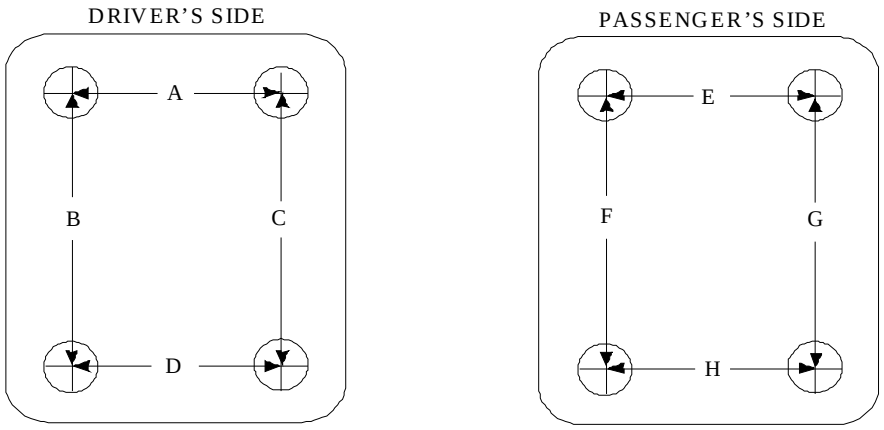
Measurement	Pre-Test	Post-Test	Difference
I	491	470	21
J	695	715	-20
K	759	758	1
L	536	588	-52
M	807	692	115
N	713	714	-1
O	716	719	-3
P = K (PASS.)	982	958	24
Q = M (PASS.)	799	806	-7

Units = mm

DATA SHEET NO.13
VEHICLE INTRUSION MEASUREMENTS (cont.)

NHTSA Test No.: M70306 Vehicle: 2007 Jeep Patriot MPV

FLOORBOARD DEFORMATION



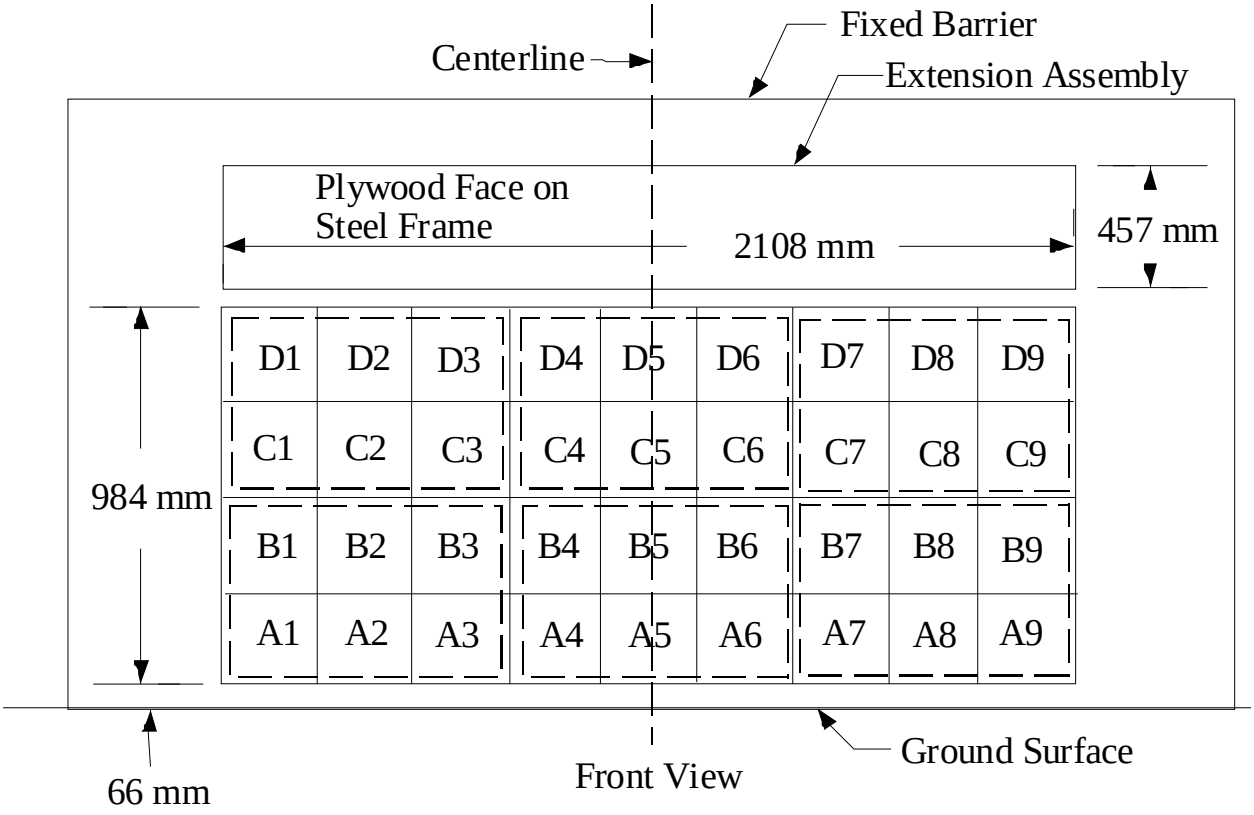
TOP VIEW THROUGH FLOOR PAN

Measurement	Pre-Test	Post-Test	Difference
A	442	419	23
B	318	331	-13
C	333	344	-11
D	432	434	-2
E	364	365	-1
F	353	354	-1
G	340	333	7
H	402	394	8

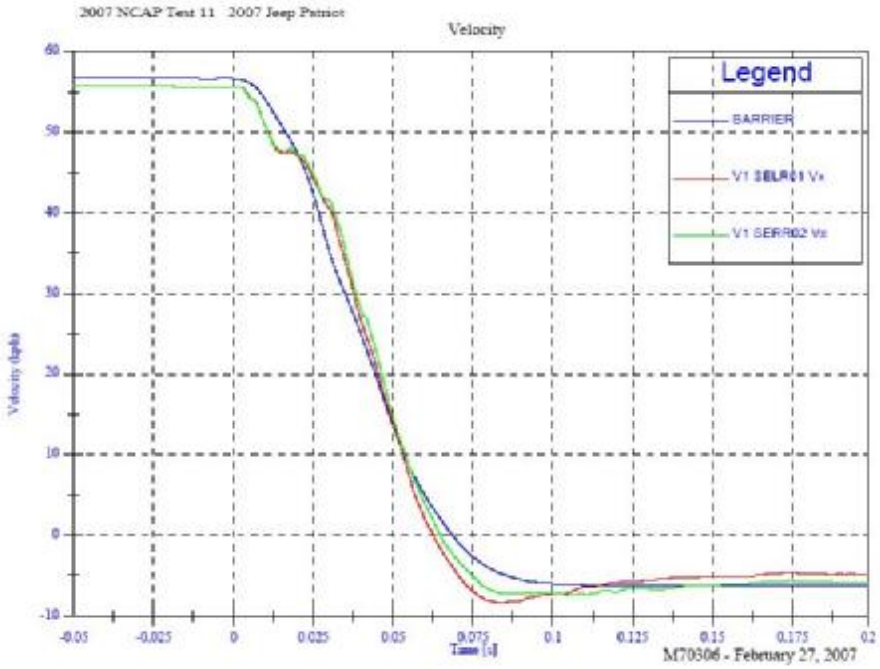
Units = mm

DATA SHEET NO.14
LOAD CELL LOCATIONS ON FIXED BARRIER

36 Load Cells
4 Rows
9 Columns



Momentum Plot



DATA SHEET NO. 15
ACCIDENT INVESTIGATION DIVISION DATA

FOR FRONTAL BARRIER IMPACT

Vehicle Make/Model/Body Style: Jeep Patriot MPV

NHTSA Test No.: M70306 VIN: 1J8FF28W17D251201

Model Year: 2007 Build Date: 1/2007 Test Date: February 27, 2007

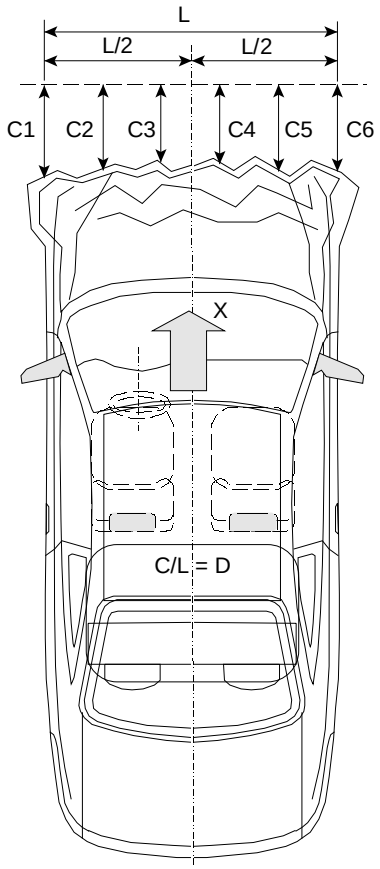
Vehicle Size Category: SUV Test Weight: 1761 kg

Vehicle Wheelbase: 2637 mm; Front Overhang: 883 mm; Overall Width: 1757 mm

Collision Deformation Classification (CDC) Code: 12FDEW3

Crush Depth Dimensions

	PRE (mm)	POST (mm)	DIFF (mm)
C1 =	4170	3895	275
C2 =	4347	3951	396
C3 =	4406	3989	417
C4 =	4405	3987	418
C5 =	4345	3917	428
C6 =	4166	3947	219



Midpoint of Damage: D = Vehicle Centerline (Longitudinal)

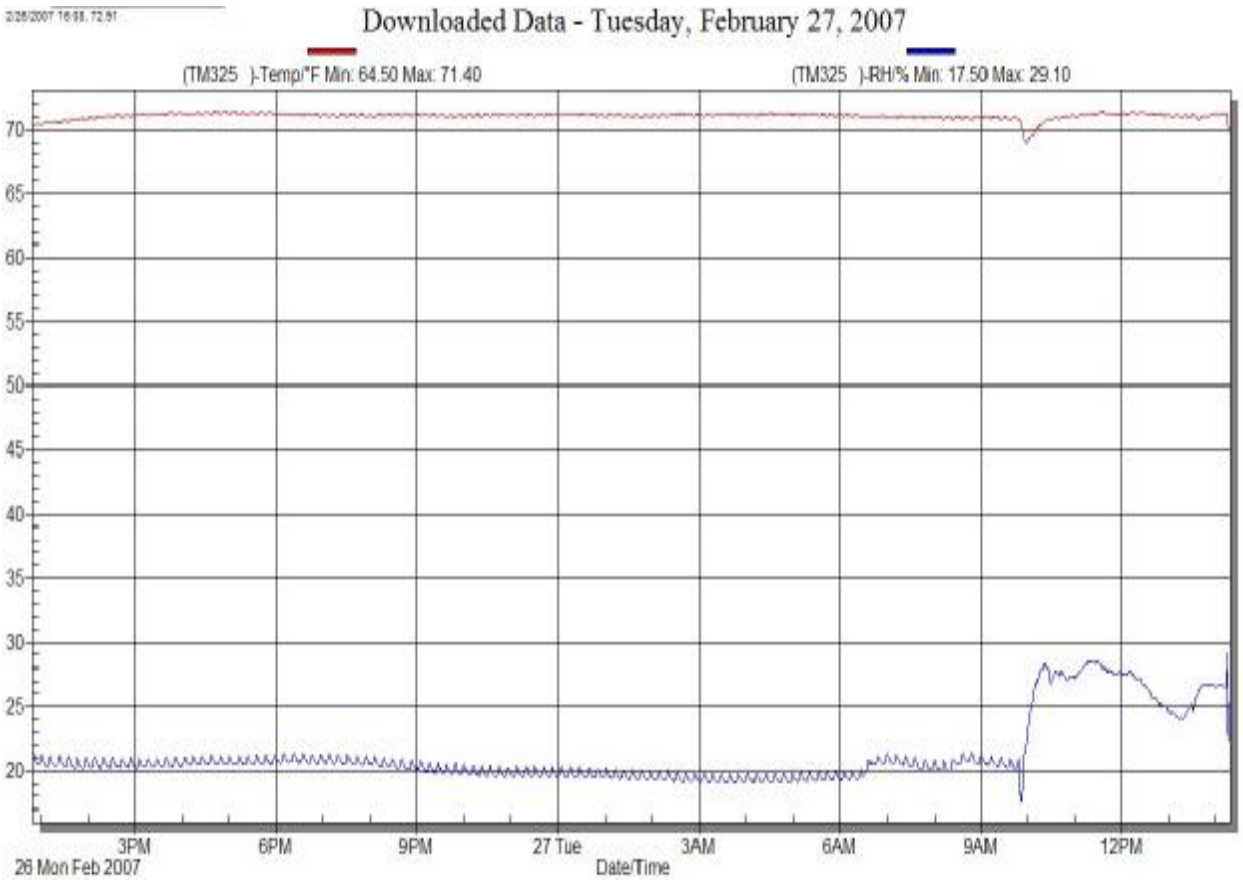
Length of Damaged Region: L1= 1628 mm

L2= 814.0 mm

L5= 325.6 mm

DATA SHEET NO.16
VEHICLE AND DUMMY TEMPERATURE STABILIZATION CHART

NHTSA Test No.: M70306 Vehicle: 2007 Jeep Patriot MPV



APPENDIX A

PHOTOGRAPHS

TABLE OF PHOTOGRAPHS

TABLE OF PHOTOGRAPHS (CONTINUED)

Figure A-1: Load Cell Locations

Figure A-2: Vehicle Certification Placard

Figure A-3: Vehicle Tire Placard

Figure A-4: Right Front, As Received

Figure A-5: Left Rear, As Received

Figure A-6: Pre-Test Front View

Figure A-7: Post-Test Front View

Figure A-8: Pre-Test Left Side View

Figure A-9: Post-Test Left Side View

Figure A-10: Pre-Test Right Side View

Figure A-11: Post-Test Right Side View

Figure A-12: Pre-Test Right Front Three-Quarter View

Figure A-13: Post-Test Right Front Three-Quarter View

Figure A-14: Pre-Test Left Rear Three-Quarter View

Figure A-15: Post-Test Left Rear Three-Quarter View

Figure A-16: Left Rear Three-Quarter View of Doors After Impact

Figure A-17: Right Rear Three-Quarter View of Doors After Impact

Figure A-18: Pre-Test Windshield View

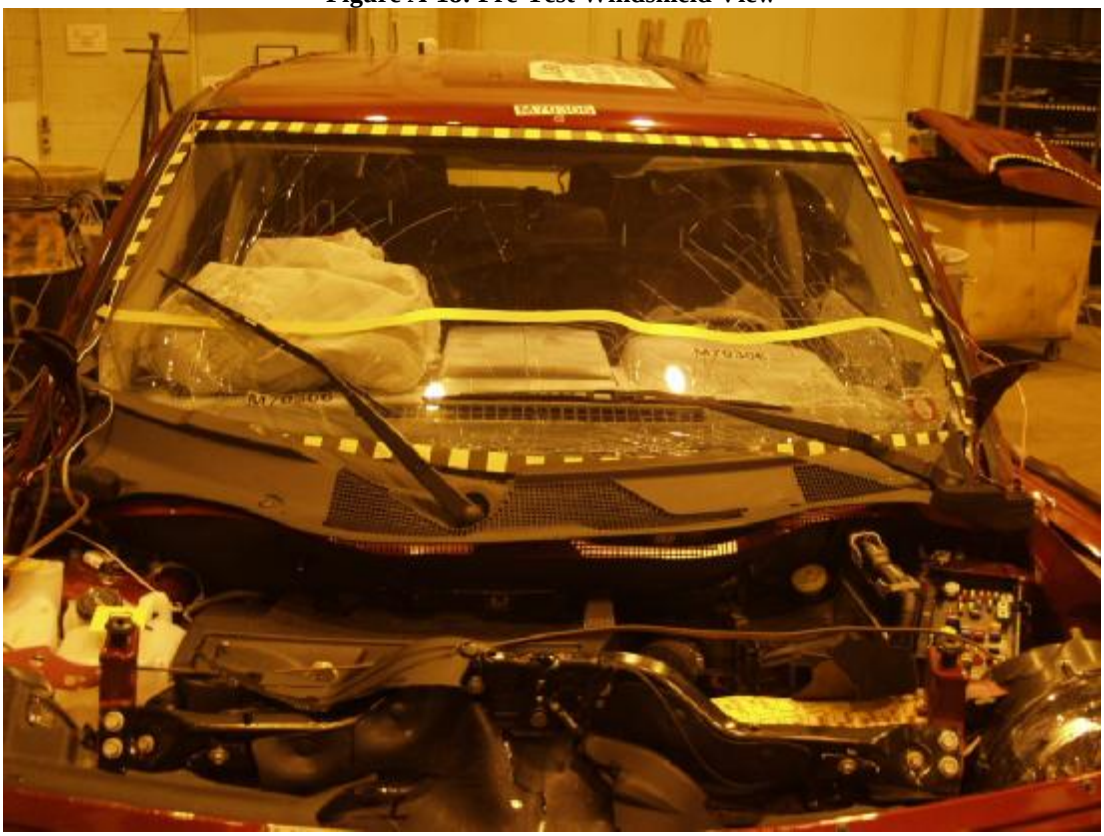


Figure A-19: Post-Test Windshield View

Figure A-20: Pre-Test Engine Compartment View

Figure A-21: Post-Test Engine Compartment View

Figure A-22: Pre-Test Fuel Cap View

Figure A-23: Post-Test Fuel Cap View

Figure A-24: Pre-Test Front Underbody View

Figure A-25: Post-Test Front Underbody View

Figure A-26: Pre-Test Mid Underbody View

Figure A-27: Post-Test Mid Underbody View

Figure A-28: Pre-Test Rear Underbody View

Figure A-29: Post-Test Rear Underbody View

Figure A-30: Pre-Test Driver Head Location

Figure A-31: Post-Test Driver Head Location

Figure A-32: Pre-Test Driver Position View

Figure A-33: Post-Test Driver Position View

Figure A-34: Pre-Test Driver and Interior View

Figure A-35: Post-Test Driver and Interior View

Figure A-36: Pre-Test Driver Feet View

Figure A-37: Post-Test Driver Feet View

Figure A-38: Pre-Test Driver Knee Bolster View

Figure A-39: Post-Test Driver Knee Bolster View

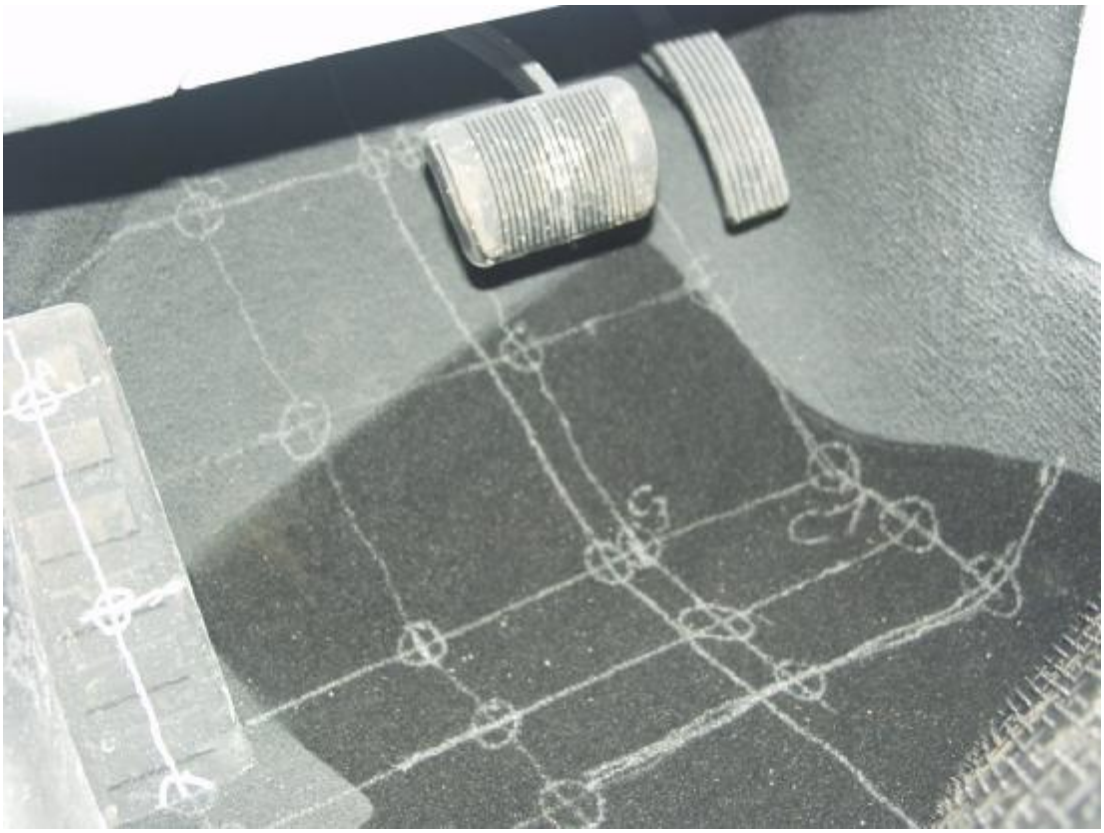


Figure A-40: Pre-Test Driver Floor Pan View

Figure A-41: Post-Test Driver Floor Pan View

Figure A-42: Post-Test Driver Head View

Figure A-43: Post-Test Driver Contact to Airbag

Figure A-44: Pre-Test Passenger Head Location

Figure A-45: Post-Test Passenger Head Location

Figure A-46: Pre-Test Passenger Position View

Figure A-47: Post-Test Passenger Position View

Figure A-48: Pre-Test Passenger and Interior View

Figure A-49: Post-Test Passenger and Interior View

Figure A-50: Pre-Test Passenger Feet View

Figure A-51: Post-Test Passenger Feet View

Figure A-52: Pre-Test Passenger Knee Bolster View

Figure A-53: Post-Test Passenger Knee Bolster View

Figure A-54: Pre-Test Passenger Floor Pan View

Figure A-55: Post-Test Passenger Floor Pan View

Figure A-56: Post-Test Passenger Head View

Figure A-57: Post-Test Passenger Contact to Airbag

Figure A-58: Rollover View - 90°

Figure A-59: Rollover View - 180°

Figure A-60: Rollover View - 270°

Figure A-61: Rollover View - 360°

Figure A-62: Impact View

APPENDIX B

DUMMY, VEHICLE AND LOAD CELL BARRIER RESPONSE DATA

Hybrid III Dummy Sign Conventions
Load Cells and Special Transducers

Transducer	**SAE Sign Convention (positive unless noted)**
Upper Neck Load Cell	Fx Head rearward Fy Head left Fz Neck in tension Mx Left ear to left shoulder My Chin to chest (flexion) Mz Chin to left shoulder (look left)
Chest Displacement Potentiometer	Compression is negative
Pelvic Load Cell (Lower Lumbar)	Fx Chest rearward Fy Chest left Fz Spine in tension
Femur Load Cell	Compression is negative
Upper Tibia Load Cell (right and left leg)	Mx Support tibia at ends, load left side center My Support tibia at ends, load front (shin) center
Lower Tibia Load Cell (right and left leg)	Fz Tibia in tension Mx Support tibia at ends, load left side center My Support tibia at ends, load front (shin) center

DATA CHANNEL FILTER CLASS SUMMARY

NHTSA TEST NO.: M70306

DATA TYPE	**SAE FILTER CLASS (Hz)**
Dummy Head Accelerations	1000
Dummy Chest Accelerations	180
Dummy Chest Displacements	600
Dummy Femur Forces	600
Dummy Belt Loads	60
Dummy Belt Displacements	180
Dummy Neck Forces	1000
Dummy Neck Moments	600
Vehicle Accelerations	60
Vehicle Velocity Integrations	180
Vehicle Displacement Integrations	180
Load Cell Barrier Forces	60

Table of Data Plots

The following dummy, vehicle and load cell response data can be found in the research and development section of the NHTSA website at: www.nhtsa.dot.gov

V1P1 Head CG Ax	V1P1 Lap Belt Load
V1P1 Head CG Ay	V1P1 Shoulder Belt Load
V1P1 Head CG Az	V1P2 Lap Belt Load
V1P1 Head CG Red Ax	V1P2 Shoulder Belt Load
V1P1 Head CG Red Ay	V1 Left Rear #1x
V1P1 Head CG Red Az	V1 Right Rear #2x
V1P1 Upper Neck Fx	V1 Engine Top #3x
V1P1 Upper Neck Fy	V1 Engine Bottom #4x
V1P1 Upper Neck Fz	V1 Right Caliper #5x
V1P1 Upper Neck Mx	V1 Left Caliper #7x
V1P1 Upper Neck My	V1 Left Rear #8z
V1P1 Upper Neck Mz	V1 Right Rear #9z
V1P1 Chest Ax	
V1P1 Chest Ay	
V1P1 Chest Az	
V1P1 Chest Red Ax	
V1P1 Chest Red Ay	
V1P1 Chest Red Az	
V1P1 Chest Compression	
V1P1 Pelvic Ax	
V1P1 Pelvic Ay	
V1P1 Pelvic Az	
V1P1 Left Femur Fz	
V1P1 Right Femur Fz	
V1P1 Left Upper Tibia Mx	
V1P1 Left Upper Tibia My	
V1P1 Left Lower Tibia Fz	
V1P1 Left Lower Tibia Mx	
V1P1 Left Lower Tibia My	
V1P1 Right Upper Tibia Fz	
V1P1 Right Upper Tibia Mx	
V1P1 Right Upper Tibia My	
V1P1 Right Lower Tibia Mx	
V1P1 Right Lower Tibia My	
V1P1 Left Foot Aft Ax	
V1P1 Left Foot Aft Az	
V1P1 Left Foot Fore Az	
V1P1 Right Foot Aft Ax	
V1P1 Right Foot Aft Az	
V1P1 Right Foot Fore z	
V1P2 Head 9 Array X Arm Ay	
V1P2 Head CG Ax	
V1P2 Head CG Ay	
V1P2 Head CG Az	
V1P2 Head CG Red Ax	
V1P2 Head CG Red Ay	
V1P2 Head CG Red Az	
V1P2 Upper Neck Fx	

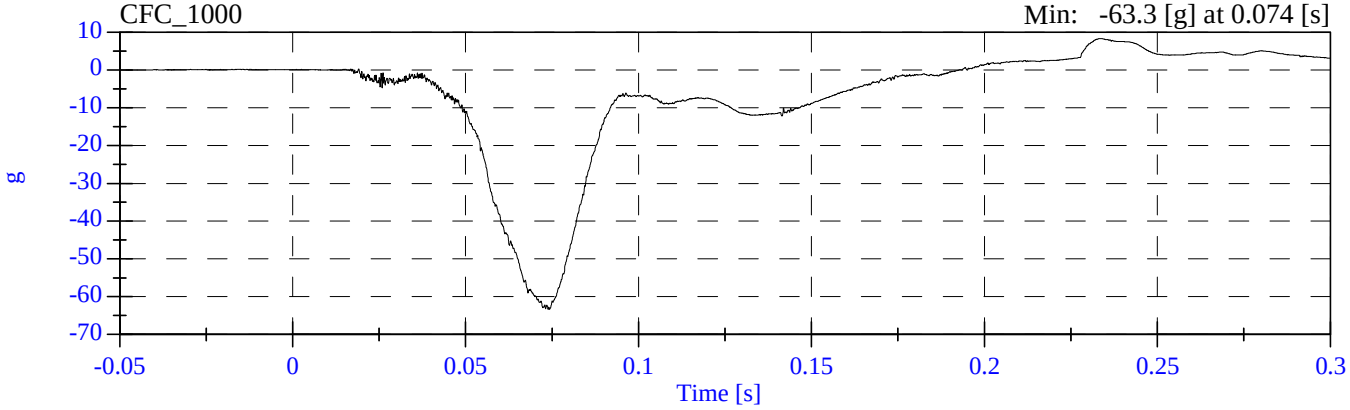
V1P2 Upper Neck Fy	
V1P2 Upper Neck Fz	
V1P2 Upper Neck Mx	
V1P2 Upper Neck My	
V1P2 Upper Neck Mz	
V1P2 Chest Ax	
V1P2 Chest Ay	
V1P2 Chest Az	
V1P2 Chest Red Ax	
V1P2 Chest Red Ay	
V1P2 Chest Red Az	
V1P2 Chest Compression	
V1P2 Pelvic Ax	
V1P2 Pelvic Ay	
V1P2 Pelvic Az	
V1P2 Left Femur Fz	
V1P2 Right Femur Fz	
V1P2 Left Upper Tibia Fz	
V1P2 Left Upper Tibia Mx	
V1P2 Left Upper Tibia My	
V1P2 Left Lower Tibia Mx	
V1P2 Left Lower Tibia My	
V1P2 Right Upper Tibia Mx	
V1P2 Right Upper Tibia My	
V1P2 Right Lower Tibia Fz	
V1P2 Right Lower Tibia Mx	
V1P2 Right Lower Tibia My	
V1P2 Left Foot Aft Ax	
V1P2 Left Foot Aft Az	
V1P2 Left Foot Fore Az	
V1P2 Right Foot Aft Ax	
V1P2 Right Foot Aft Az	
V1P2 Right Foot Fore Az	
Barrier Load Cell A1 Fx	
Barrier Load Cell A2 Fx	
Barrier Load Cell A3 Fx	
Barrier Load Cell A4 Fx	
Barrier Load Cell A5 Fx	
Barrier Load Cell A6 Fx	
Barrier Load Cell A7 Fx	
Barrier Load Cell A8 Fx	
Barrier Load Cell A9 Fx	
Barrier Load Cell B1 Fx	
Barrier Load Cell B2 Fx	
Barrier Load Cell B3 Fx	
Barrier Load Cell B4 Fx	
Barrier Load Cell B5 Fx	
Barrier Load Cell B6 Fx	
Barrier Load Cell B7 Fx	

Barrier Load Cell B8 Fx	
Barrier Load Cell B9 Fx	
Barrier Load Cell C1 Fx	
Barrier Load Cell C2 Fx	
Barrier Load Cell C3 Fx	
Barrier Load Cell C4 Fx	
Barrier Load Cell C5 Fx	
Barrier Load Cell C6 Fx	
Barrier Load Cell C7 Fx	
Barrier Load Cell C8 Fx	
Barrier Load Cell C9 Fx	
Barrier Load Cell D1 Fx	
Barrier Load Cell D2 Fx	
Barrier Load Cell D3 Fx	
Barrier Load Cell D4 Fx	
Barrier Load Cell D5 Fx	
Barrier Load Cell D6 Fx	
Barrier Load Cell D7 Fx	
Barrier Load Cell D8 Fx	
Barrier Load Cell D9 Fx	

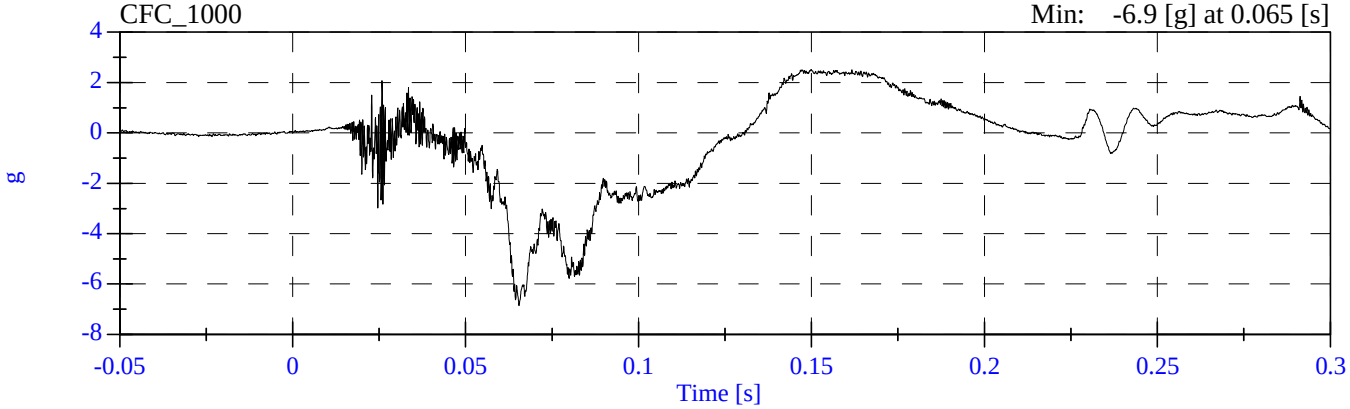
TEST NOTES	
Data Channel	Anomalies
V1P1 Left Foot Aft z	Data Inaccurate after 20 msec

2007 NCAP Test 11 2007 Jeep Patriot
M70306 - February 27, 2007

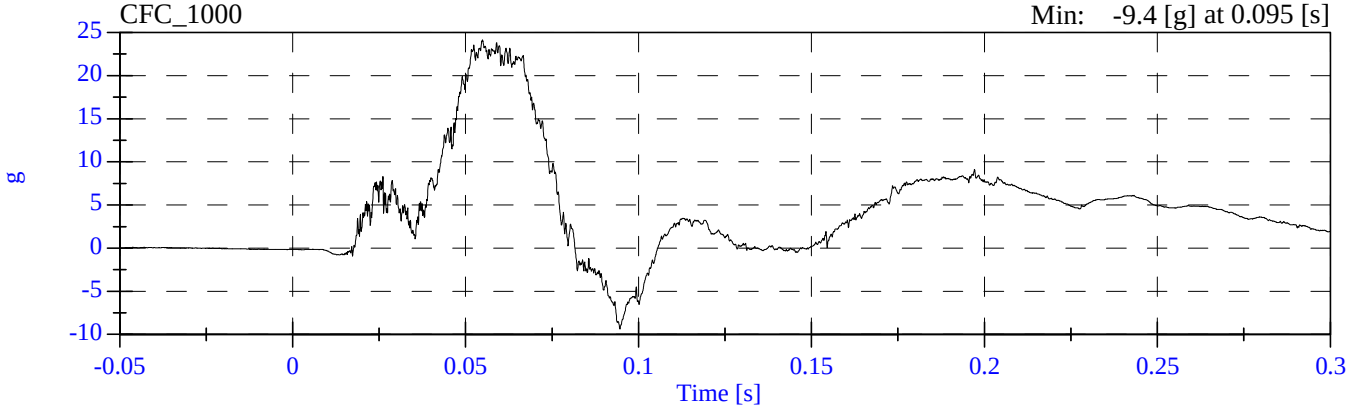
V1P1 Head CG x
CFC_1000
Max: 8.3 [g] at 0.233 [s]
Min: -63.3 [g] at 0.074 [s]



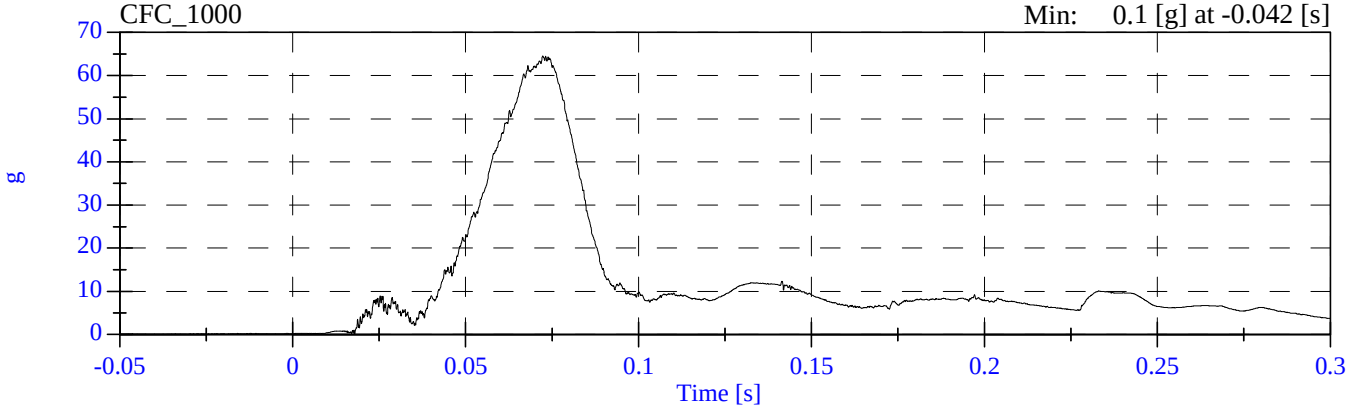
V1P1 Head CG y
CFC_1000
Max: 2.5 [g] at 0.150 [s]
Min: -6.9 [g] at 0.065 [s]



V1P1 Head CG z
CFC_1000
Max: 24.2 [g] at 0.055 [s]
Min: -9.4 [g] at 0.095 [s]



V1P1 Head CG Resultant
CFC_1000
Max: 64.6 [g] at 0.072 [s]
Min: 0.1 [g] at -0.042 [s]



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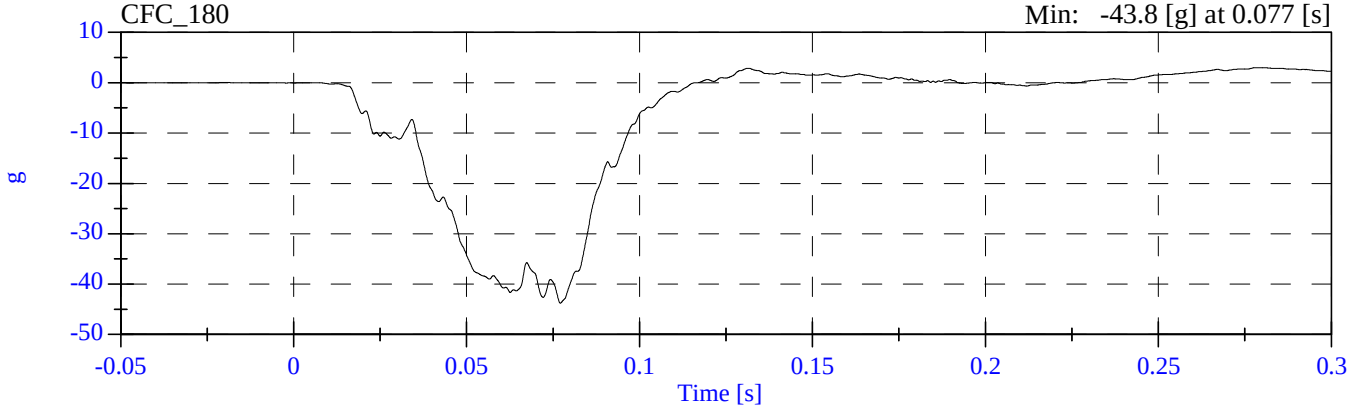
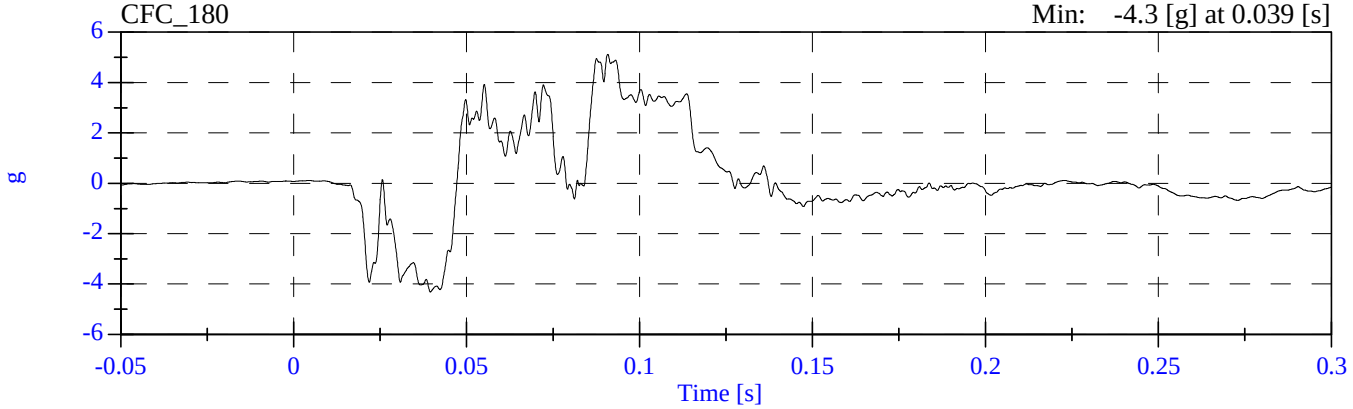
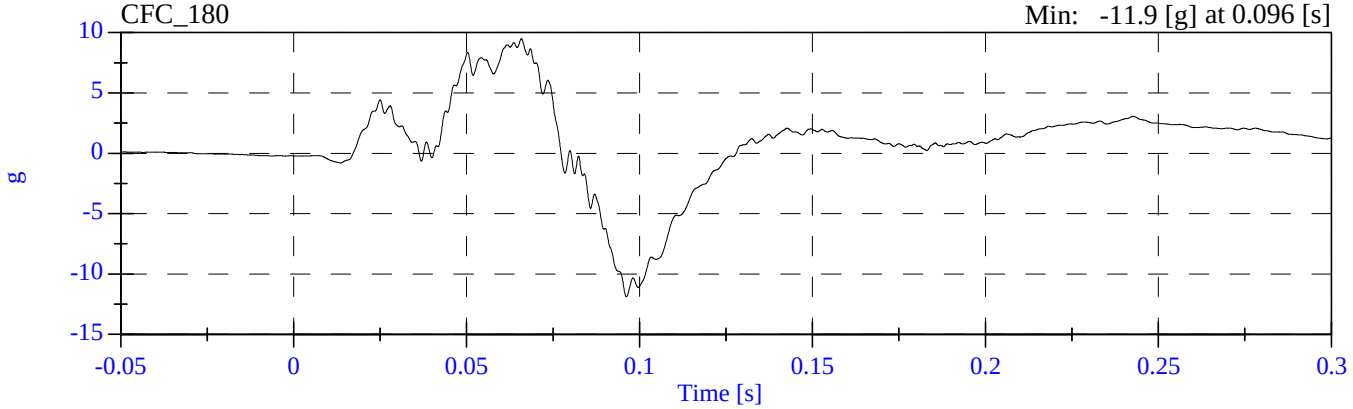
V1P1 Chest x
CFC_180
Max: 2.9 [g] at 0.278 [s]
Min: -43.8 [g] at 0.077 [s]



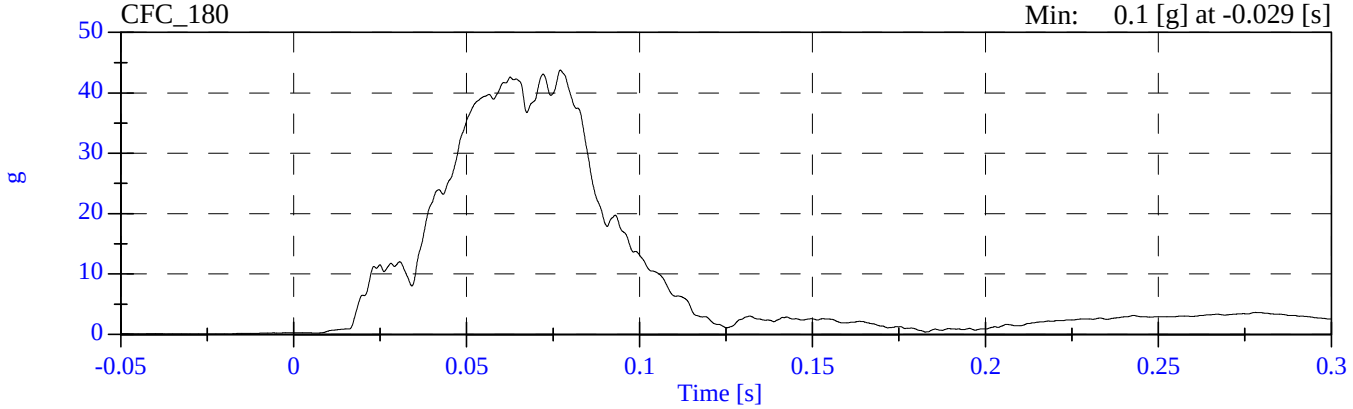
V1P1 Chest y
CFC_180
Max: 5.1 [g] at 0.091 [s]
Min: -4.3 [g] at 0.039 [s]



V1P1 Chest z
CFC_180
Max: 9.5 [g] at 0.066 [s]
Min: -11.9 [g] at 0.096 [s]



V1P1 Chest Resultant
CFC_180
Max: 43.8 [g] at 0.077 [s]
Min: 0.1 [g] at -0.029 [s]



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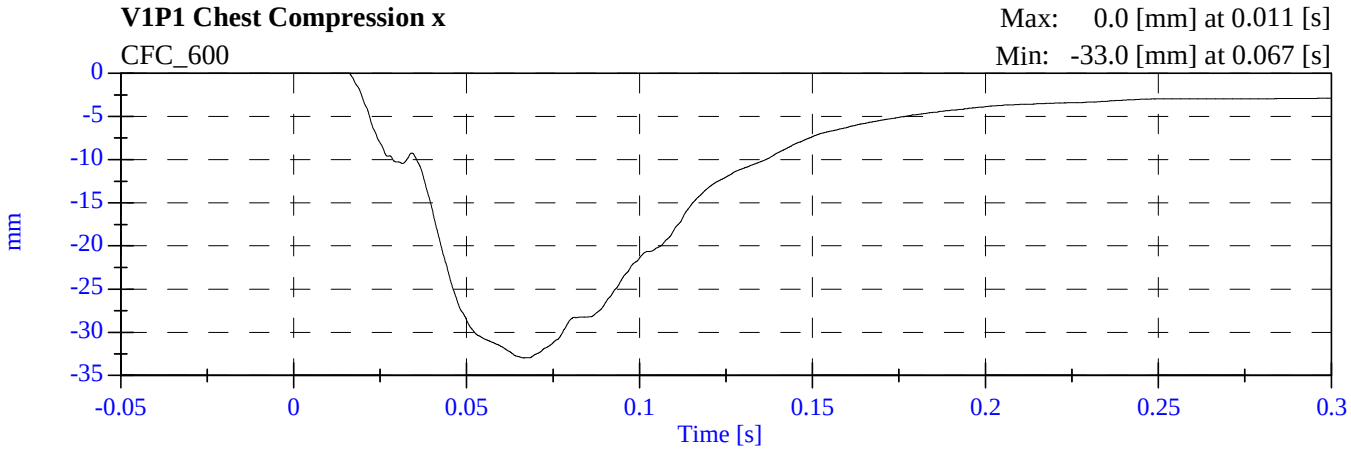

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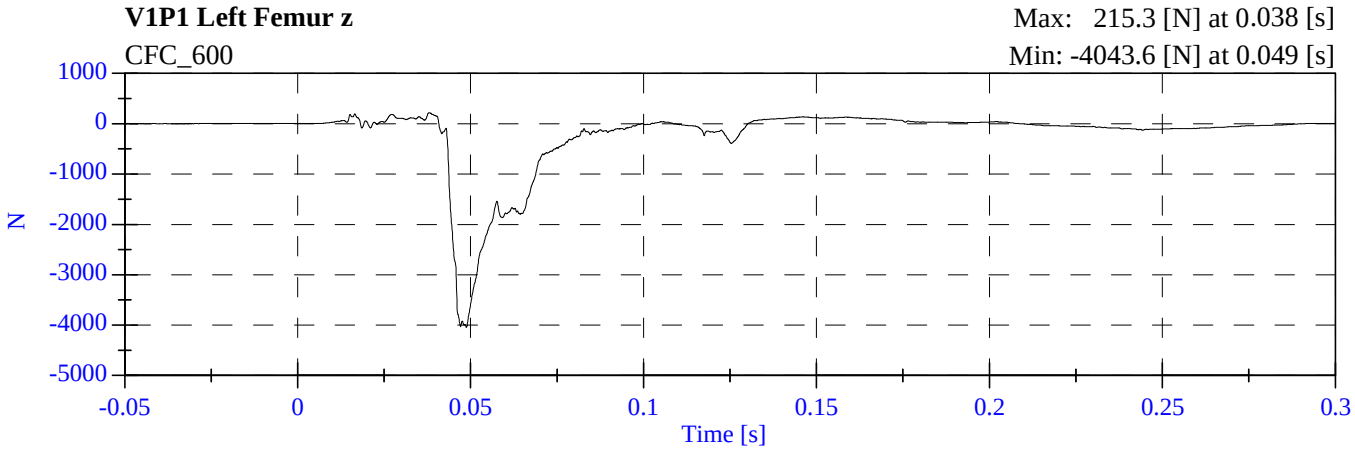
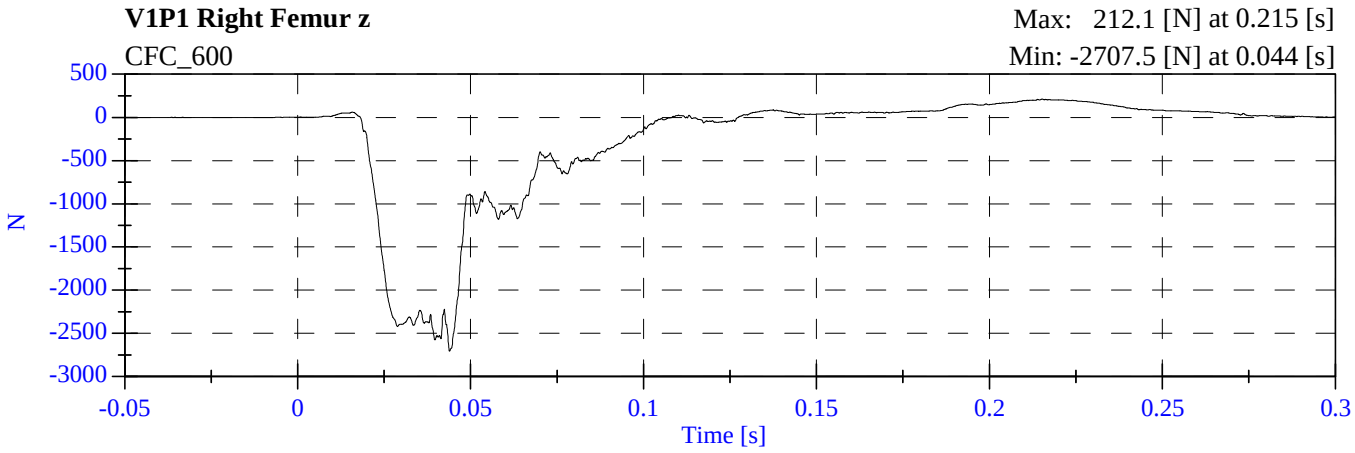
M70306 - February 27, 2007





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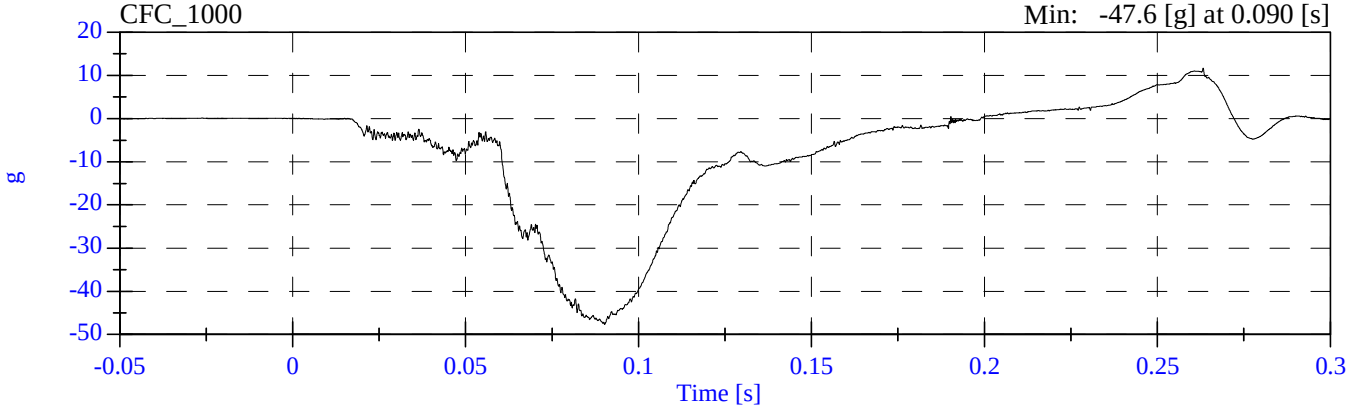
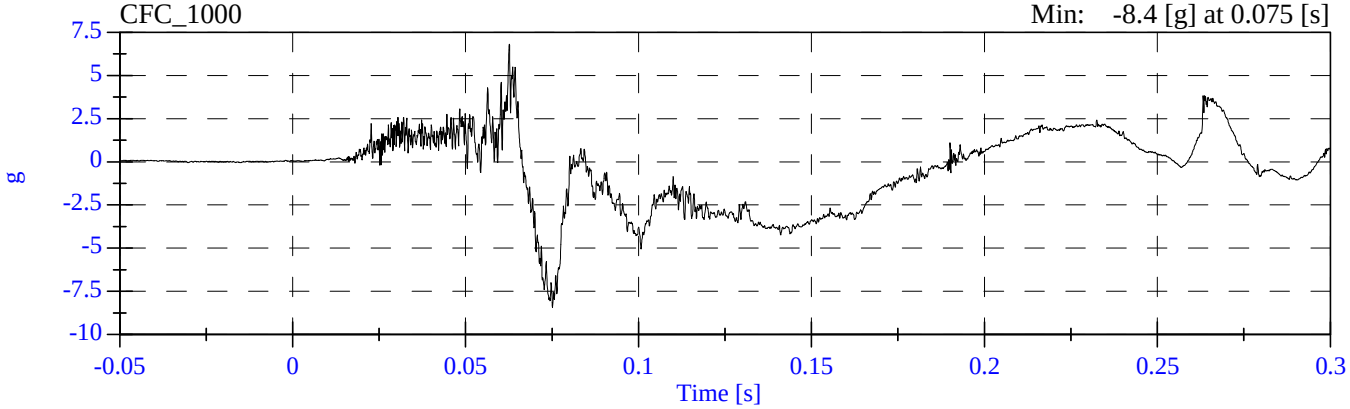
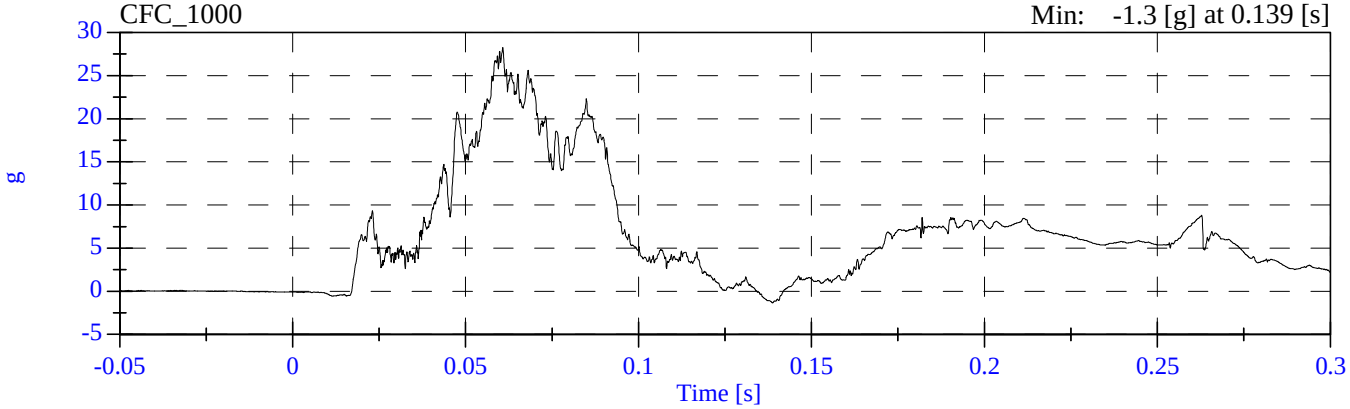
V1P2 Head CG x
CFC_1000
Max: 11.7 [g] at 0.263 [s]
Min: -47.6 [g] at 0.090 [s]



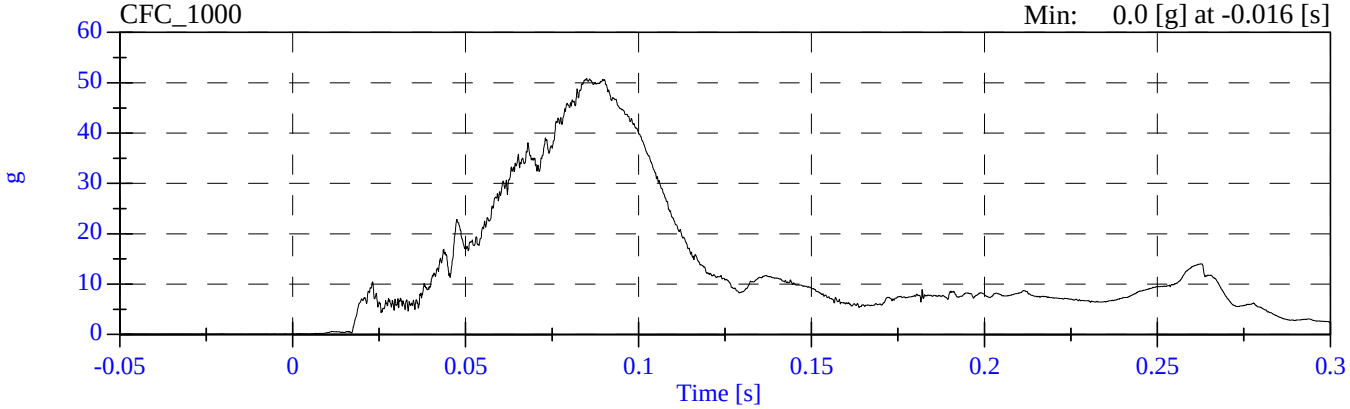
V1P2 Head CG y
CFC_1000
Max: 6.8 [g] at 0.063 [s]
Min: -8.4 [g] at 0.075 [s]



V1P2 Head CG z
CFC_1000
Max: 28.3 [g] at 0.061 [s]
Min: -1.3 [g] at 0.139 [s]



V1P2 Head CG Resultant
CFC_1000
Max: 50.9 [g] at 0.085 [s]
Min: 0.0 [g] at -0.016 [s]



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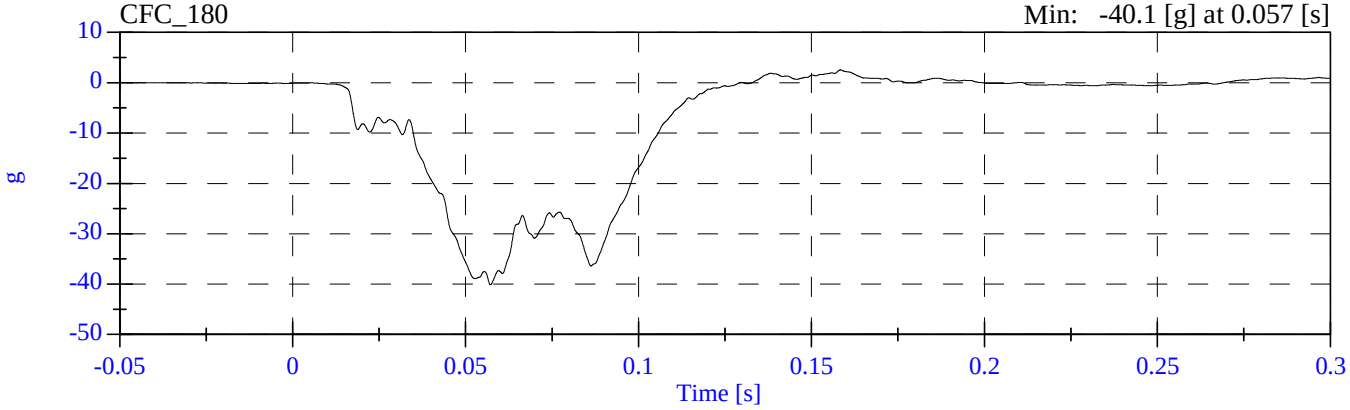
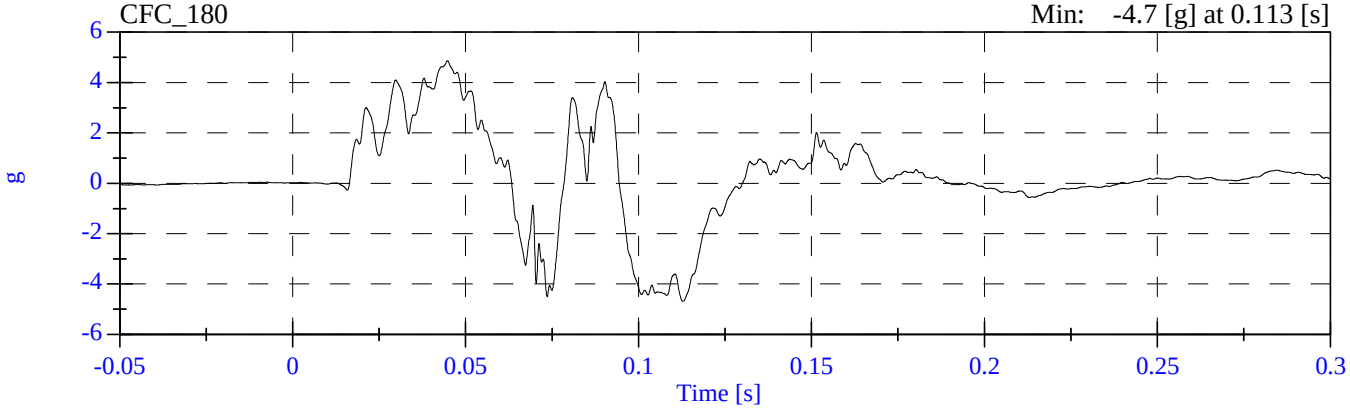
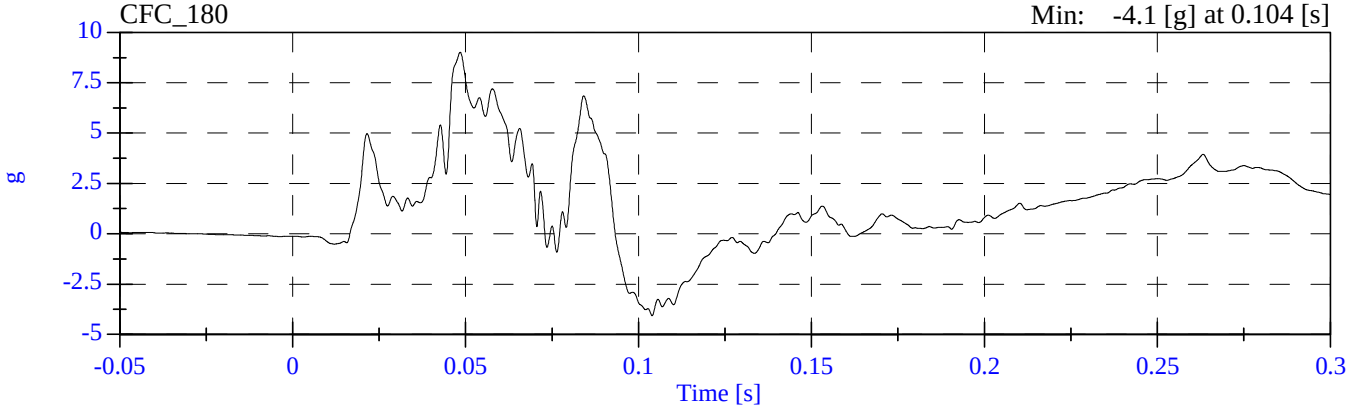
V1P2 Chest x
CFC_180
Max: 2.6 [g] at 0.158 [s]
Min: -40.1 [g] at 0.057 [s]



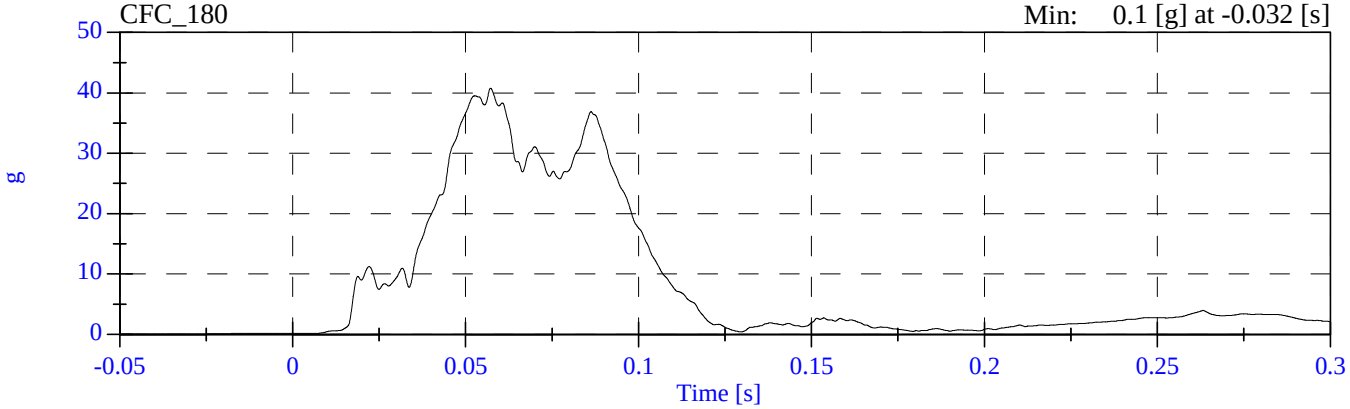
V1P2 Chest y
CFC_180
Max: 4.9 [g] at 0.045 [s]
Min: -4.7 [g] at 0.113 [s]



V1P2 Chest z
CFC_180
Max: 9.0 [g] at 0.048 [s]
Min: -4.1 [g] at 0.104 [s]



V1P2 Chest Resultant
CFC_180
Max: 40.8 [g] at 0.057 [s]
Min: 0.1 [g] at -0.032 [s]



2007 NCAP Test 11 2007 Jeep Patriot
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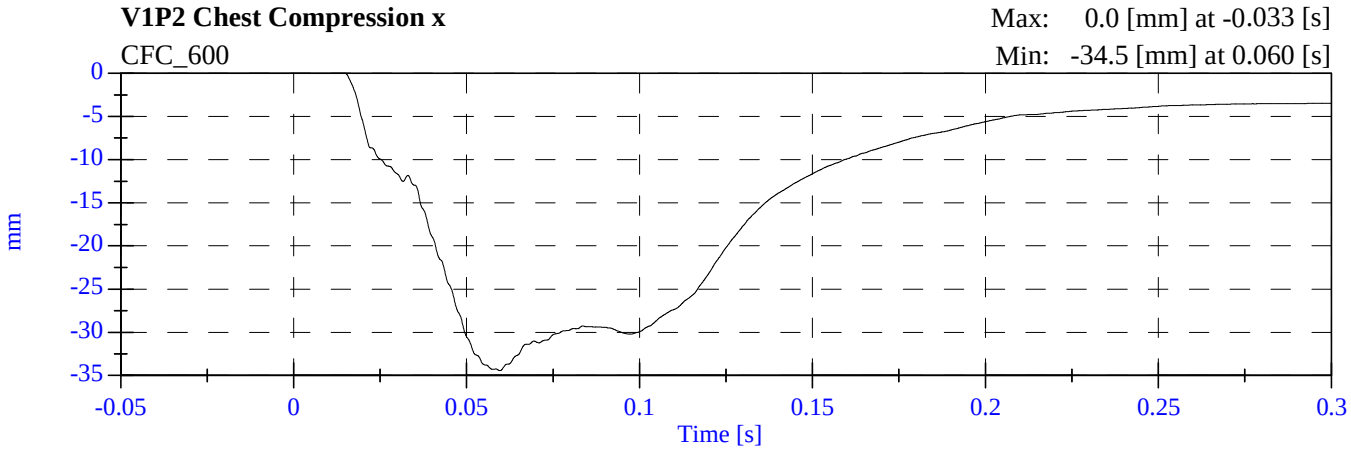
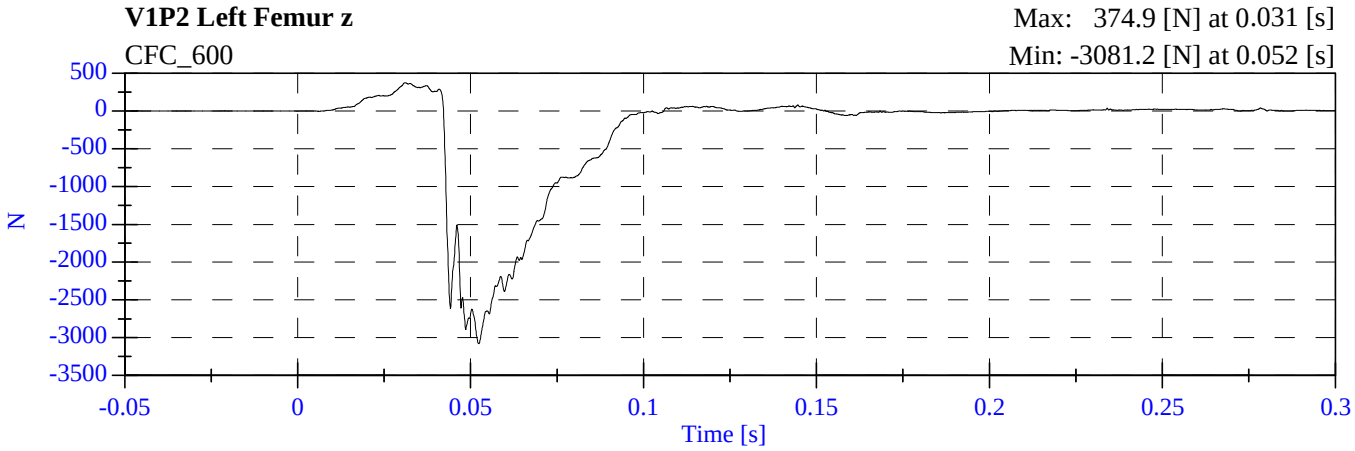
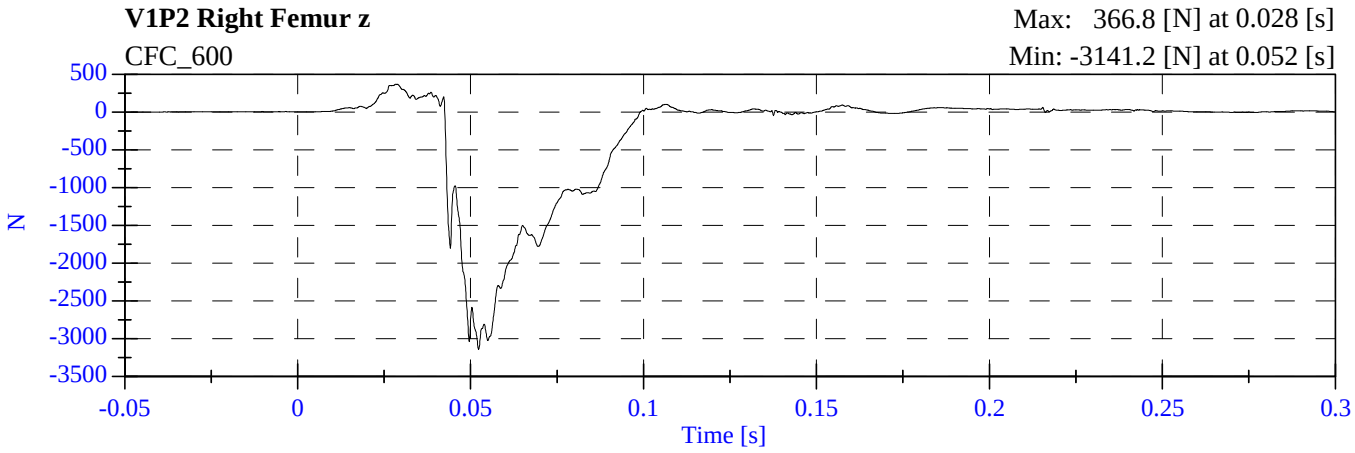


2007 NCAP Test 11 2007 Jeep Patriot
M70306 - February 27, 2007





APPENDIX C

PART 572B/E DUMMY CONFIGURATION
AND PERFORMANCE VERIFICATION DATA SHEETS

Appendix C contains the results from certification tests performed on the 50th percentile male anthropomorphic test devices utilized for this crash test. The results indicate that the dummies meet all of the performance requirements of the six standard tests as specified in 49 CFR Part 572, Federal Register, Volume 42, No. 25, dated February 7, 1977.

The tests were conducted at the Dummy Certification Test Facility of Calspan. A summary of the test results, and Part 572 specifications are included in this Appendix.

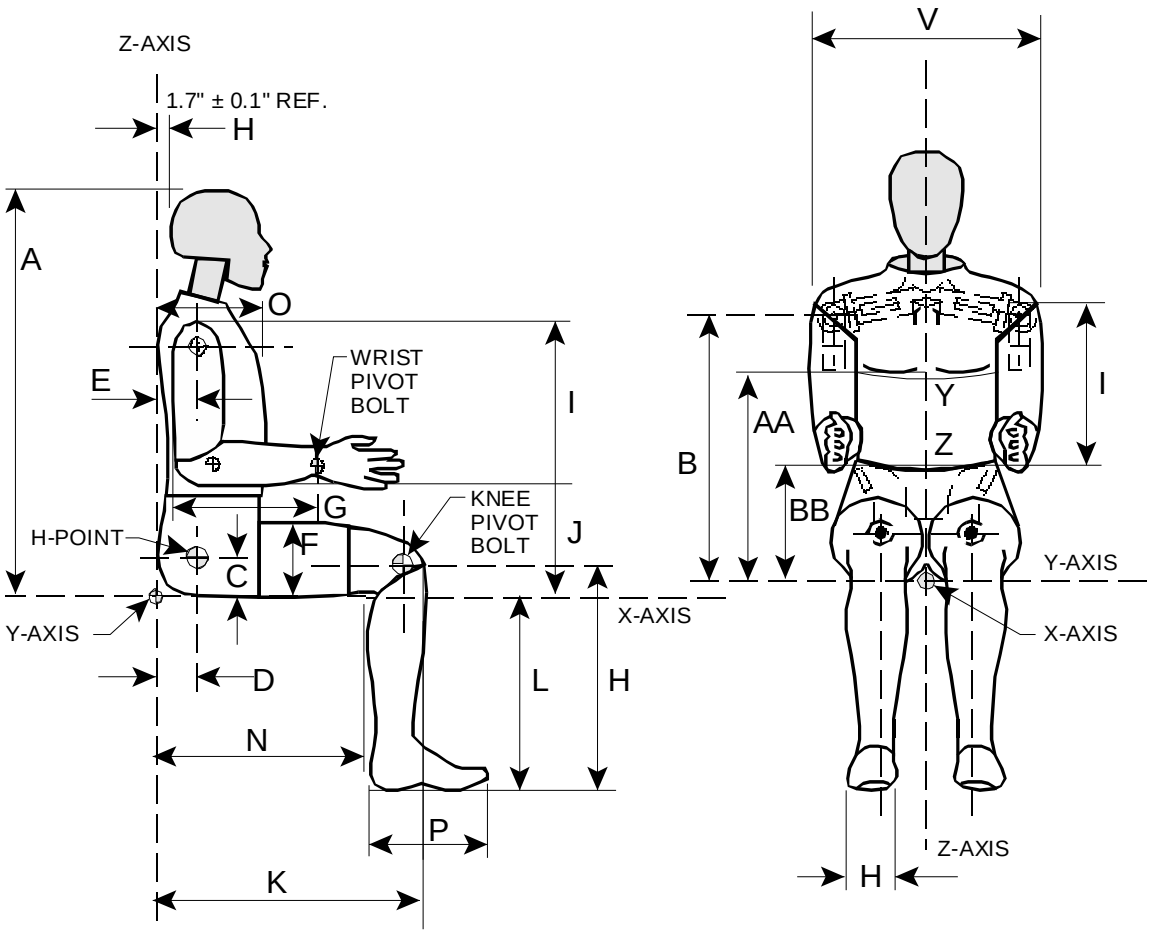
Dummy serial numbers and certification dates are:

Position No./Location	Serial No.	Completion Date
#1/Driver	061	1/10/07
#2/Right Front Passenger	064	1/10/07

Electronic Test Equipment

The complement of signal conditioning, recording and display equipment, in conjunction with dummy certification testing, can be found in New Car Assessment and Standards Indicant Testing Final Report No. 6525-V-1.

EXTERNAL DIMENSIONS SPECIFICATIONS



NOTE: Figure is referenced to the erect seated position. The curved lumbar does not allow the Hybrid III to be positioned in a perfect erect attitude. (REF: S572.31(A)(6))

PART 572E
HEAD DROP TEST

Dummy Serial Number	061
Sequential Test Number	1
Date	1/3/07
Workfile	061HD

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	18.9 – 25.6 Deg C	21.1
Relative Humidity	10% - 70%	33.0
Peak Resultant Acceleration	225-275 G's	249.32
Peak Lateral Acceleration	15 G's Max	12.51
Is Acceleration Curve Unimodal?	YES	YES

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
NECK FLEXION TEST

Dummy Serial Number	061	
Sequential Test Number	1	
Date	1/4/07	6 Axis Neck Transducer
Workfile	061NF	

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature		20.6 – 22.2 Deg C	21.1
Relative Humidity		10% - 70%	36.0
Impact Velocity		6.89 – 7.13 m/s	7.00
Pendulum Deceleration	10 ms	22.50 - 27.50 G's	23.82
	20 ms	17.60 - 22.60 G's	21.90
	30 ms	12.50 - 18.50 G's	18.37
Max Pendulum G's Above 30 ms		29 G's Max	18.37
Deceleration - Time Curve Decay Time to 5 G's		34 - 42 ms	37.10
D Plane Rotation	Max	64 - 78 Deg	64.10
	Time	57 - 64 ms	57.50
Moment About Occipital	Max	88.13 – 108.47 N-m	97.03
Condyle	Time	47 - 58 ms	49.50
Rotation Angle - Time Curve Decay Time to Zero		113 - 128 ms	113.30
Positive Moment - Time Curve Decay Time to Zero		97 - 107 ms	97.00

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
NECK EXTENSION TEST

Dummy Serial Number	061	
Sequential Test Number	1	
Date	1/4/07	6 Axis Neck Transducer
Workfile	061NE	

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature		20.6 – 22.2 Deg C	21.1
Relative Humidity		10% - 70%	36.0
Impact Velocity		5.94 – 6.19 m/s	6.08
Pendulum Deceleration	10 ms	17.20 - 21.20 G's	20.01
	20 ms	14.00 - 19.00 G's	18.35
	30 ms	11.00 - 16.00 G's	14.03
Max Pendulum G's Above 30 ms		22 G's Max	14.03
Deceleration - Time Curve Decay Time to 5 G's		38 - 46 ms	40.00
D Plane Rotation	Max	81 - 106 Deg	89.85
	Time	72 - 82 ms	73.20
Moment About Occipital Condyle	Max	-79.99 - -52.88 N-m	-72.89
	Time	65 - 79 ms	68.90
Rotation Angle - Time Curve Decay Time to Zero		147 - 174 ms	147.60
Positive Moment - Time Curve Decay Time to Zero		120 - 148 ms	130.50

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
THORAX IMPACT TEST

Dummy Serial Number	061
Sequential Test Number	1
Date	1/8/07
Workfile	061T

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	20.6 – 22.2 Deg C	21.1
Relative Humidity	10% - 70%	32.0
Pendulum Velocity	6.58 – 6.83 m/s	6.61
Maximum Deflection	63.50 – 72.64 mm	65.05
Maximum Resistive Force	5159.9 – 5893.9 N	5758.53
Internal Hysteresis	69 - 85 %	75.71

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
KNEE IMPACT TEST

Dummy Serial Number	061
Sequential Test Number	1
Date	1/10/07
Workfile	061LF / 061RF

TEST PARAMETER	SPECIFICATION	TEST RESULTS
LEFT KNEE		
Temperature	18.9 – 25.6 Deg C	21.1
Relative Humidity	10% - 70%	33.0
Probe Velocity	2.07 – 2.13 m/s	2.13
Peak Knee Impact Force	4715.1 – 5782.7 N	5380.18
RIGHT KNEE		
Temperature	18.9 – 25.6 Deg C	21.1
Relative Humidity	10% - 70%	33.0
Probe Velocity	2.07 – 2.13 m/s	2.13
Peak Knee Impact Force	4715.1 – 5782.7 N	5478.03

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
EXTERNAL DIMENSIONS

Dummy Serial Number 061
Sequential Test Number 1
Date 1/10/07

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature			21.1
Relative Humidity			33.0
Location for Chest Circumference	AA	16.9 -17.1 in	17.0
Location for Waist Circumference	BB	8.9 - 9.1 in	9.0
Total Sitting Height	A	34.6 - 35.0 in	34.70
Shoulder Pivot Height	B	19.9 - 20.5 in	20.4
H-Point Height	C	3.3 - 3.5 in	3.5
H-Point from Backline	D	5.3 - 5.5 in	5.3
Shoulder Pivot from Backline	E	3.3 - 3.7 in	3.7
Thigh Clearance	F	5.5 - 6.1 in	6.1
Back of Elbow to Wrist Pivot	G	11.4 - 12.0 in	11.5
Skull Cap to Backline	H	1.6 - 1.8 in	1.7
Shoulder - Elbow Length	I	13.0 - 13.6 in	13.2
Elbow Rest Height	J	7.5 - 8.3 in	8.0
Buttock Knee Length	K	22.8 - 23.8 in	23.4
Popliteal Height	L	16.9 - 17.9 in	17.5
Knee Pivot Height	M	19.1 - 19.7 in	19.2
Buttock Popliteal Length	N	17.8 - 18.8 in	18.7
Chest Depth	O	8.4 - 9.0 in	8.4
Foot Length	P	9.9 - 10.5 in	10.1
Shoulder Breadth	V	16.6 - 17.2 in	16.8
Foot Breadth	W	3.6 - 4.2 in	3.9
Chest Circumference (With Jacket)	Y	38.2 - 39.4 in	38.5
Waist Circumference	Z	32.9 - 34.1 in	33.4

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
HEAD DROP TEST

Dummy Serial Number	064
Sequential Test Number	1
Date	1/10/07
Workfile	064HD

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	18.9 – 25.6 Deg C	21.1
Relative Humidity	10% - 70%	33.0
Peak Resultant Acceleration	225-275 G's	257.40
Peak Lateral Acceleration	15 G's Max	14.87
Is Acceleration Curve Unimodal?	YES	YES

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
NECK FLEXION TEST

Dummy Serial Number	064	
Sequential Test Number	1	
Date	1/04/07	6 Axis Neck Transducer
Workfile	064NF	

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature		20.6 – 22.2 Deg C	21.1
Relative Humidity		10% - 70%	36.0
Impact Velocity		6.89 – 7.13 m/s	7.01
Pendulum Deceleration	10 ms	22.50 - 27.50 G's	24.59
	20 ms	17.60 - 22.60 G's	21.32
	30 ms	12.50 - 18.50 G's	18.15
Max Pendulum G's Above 30 ms		29 G's Max	18.15
Deceleration - Time Curve Decay Time to 5 G's		34 - 42 ms	36.70
D Plane Rotation	Max	64 - 78 Deg	71.02
	Time	57 - 64 ms	58.20
Moment About Occipital Condyle	Max	88.13 – 108.47 N-m	97.09
	Time	47 - 58 ms	49.50
Rotation Angle - Time Curve Decay Time to Zero		113 - 128 ms	115.70
Positive Moment - Time Curve Decay Time to Zero		97 - 107 ms	97.30

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
NECK EXTENSION TEST

Dummy Serial Number	064	
Sequential Test Number	1	
Date	1/4/07	6 Axis Neck Transducer
Workfile	064NE	

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature		20.6 – 22.2 Deg C	21.1
Relative Humidity		10% - 70%	36.0
Impact Velocity		5.94 – 6.19 m/s	6.08
Pendulum Deceleration	10 ms	17.20 - 21.20 G's	18.31
	20 ms	14.00 - 19.00 G's	17.30
	30 ms	11.00 - 16.00 G's	14.12
Max Pendulum G's Above 30 ms		22 G's Max	14.12
Deceleration - Time Curve Decay Time to 5 G's		38 - 46 ms	43.70
D Plane Rotation	Max	81 - 106 Deg	96.60
	Time	72 - 82 ms	76.90
Moment About Occipital Condyle	Max	-79.99 - -52.88 N-m	-67.53
	Time	65 - 79 ms	72.40
Rotation Angle - Time Curve Decay Time to Zero		147 - 174 ms	155.20
Positive Moment - Time Curve Decay Time to Zero		120 - 148 ms	138.50

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
THORAX IMPACT TEST

Dummy Serial Number	064
Sequential Test Number	1
Date	1/8/07
Workfile	064T

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	20.6 – 22.2 Deg C	21.1
Relative Humidity	10% - 70%	32.0
Pendulum Velocity	6.58 – 6.83 m/s	6.60
Maximum Deflection	63.50 – 72.64 mm	64.51
Maximum Resistive Force	5159.9 – 5893.9 N	5633.50
Internal Hysteresis	69 - 85 %	74.29

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
KNEE IMPACT TEST

Dummy Serial Number	064
Sequential Test Number	1
Date	1/10/07
Workfile	064LF / 064RF

TEST PARAMETER	SPECIFICATION	TEST RESULTS
LEFT KNEE		
Temperature	18.9 – 25.6 Deg C	21.1
Relative Humidity	10% - 70%	33.0
Probe Velocity	2.07 – 2.13 m/s	2.13
Peak Knee Impact Force	4715.1 – 5782.7 N	5704.72
RIGHT KNEE		
Temperature	18.9 – 25.6 Deg C	1/10/07
Relative Humidity	10% - 70%	33.0
Probe Velocity	2.07 – 2.13 m/s	2.13
Peak Knee Impact Force	4715.1 – 5782.7 N	5368.24

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
EXTERNAL DIMENSIONS

Dummy Serial Number 064
Sequential Test Number 1
Date 1/10/07

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature			21.1
Relative Humidity			36.0
Location for Chest Circumference	AA	16.9 -17.1 in	17.0
Location for Waist Circumference	BB	8.9 - 9.1 in	9.0
Total Sitting Height	A	34.6 - 35.0 in	34.6
Shoulder Pivot Height	B	19.9 - 20.5 in	20.5
H-Point Height	C	3.3 - 3.5 in	3.5
H-Point from Backline	D	5.3 - 5.5 in	5.5
Shoulder Pivot from Backline	E	3.3 - 3.7 in	3.5
Thigh Clearance	F	5.5 - 6.1 in	6.0
Back of Elbow to Wrist Pivot	G	11.4 - 12.0 in	11.5
Skull Cap to Backline	H	1.6 - 1.8 in	1.7
Shoulder - Elbow Length	I	13.0 - 13.6 in	13.2
Elbow Rest Height	J	7.5 - 8.3 in	7.8
Buttock Knee Length	K	22.8 - 23.8 in	23.5
Popliteal Height	L	16.9 - 17.9 in	17.5
Knee Pivot Height	M	19.1 - 19.7 in	19.1
Buttock Popliteal Length	N	17.8 - 18.8 in	18.7
Chest Depth	O	8.4 - 9.0 in	8.5
Foot Length	P	9.9 - 10.5 in	10.2
Shoulder Breadth	V	16.6 - 17.2 in	16.8
Foot Breadth	W	3.6 - 4.2 in	3.8
Chest Circumference (With Jacket)	Y	38.2 - 39.4 in	38.5
Waist Circumference	Z	32.9 - 34.1 in	33.4

Remarks:

Laboratory Technician: B. Swiecicki

APPENDIX D

DUMMY, VEHICLE AND LABORATORY INSTRUMENT CALIBRATION

INSTRUMENT CALIBRATION FOR DRIVER DUMMY
(Six Month Calibration Minimum)

DRIVER DUMMY (S/N 061)		Manufacturer	Serial #	Calibration	
				Last	Next
Head	X	ENDEVCO	J20018	16-Nov-06	16-May-07
	Y	ENDEVCO	P16755	16-Nov-06	16-May-07
	Z	ENDEVCO	J14667	16-Nov-06	16-May-07
Head	X (R)	ENDEVCO	J38127	16-Nov-06	16-May-07
	Y (R)	ENDEVCO	J20569	16-Nov-06	16-May-07
	Z (R)	ENDEVCO	J21963	16-Nov-06	16-May-07
Neck Load Cell	X	DENTON	1916Fx	12-May-06	9-Nov-06
	Y	DENTON	1916Fy	12-May-06	9-Nov-06
	Z	DENTON	1916Fz	12-May-06	9-Nov-06
Neck Moment	X	DENTON	1916Mx	12-May-06	9-Nov-06
	Y	DENTON	1916My	12-May-06	9-Nov-06
	Z	DENTON	1916Mz	12-May-06	9-Nov-06
Chest	X	ENDEVCO	AAKC6	16-Nov-06	16-May-07
	Y	ENDEVCO	AAKD0	16-Nov-06	16-May-07
	Z	ENDEVCO	J27470	16-Nov-06	16-May-07
Chest	X (R)	ENDEVCO	J21988	16-Nov-06	16-May-07
	Y (R)	ENDEVCO	J20027	16-Nov-06	16-May-07
	Z (R)	ENDEVCO	J36741	16-Nov-06	16-May-07
Chest Deflection	X	SERVO	61	7-Apr-06	5-Oct-06
Pelvic	X	ENTRAN	99H30-Z13	16-Nov-06	16-May-07
	Y	ENTRAN	01G18-F14	16-Nov-06	16-May-07
	Z	ENTRAN	02I02I05-F06	16-Nov-06	16-May-07

INSTRUMENT CALIBRATION FOR DRIVER DUMMY
(Six Month Calibration Minimum)

DRIVER DUMMY (S/N 061)		Manufacturer	Serial #	Calibration	
				Last	Next
Left Femur Load Cell	Fz	DENTON	1532	21-Apr-06	19-Oct-06
Right Femur Load Cell	Fz	DENTON	1533	21-Apr-06	19-Oct-06
Left Upper Tibia	Mx	DENTON	93Mx	26-Jun-06	24-Dec-06
	My	DENTON	93My	26-Jun-06	24-Dec-06
Left Lower Tibia	Fz	DENTON	093Fz	27-Jun-06	25-Dec-06
	Mx	DENTON	093Mx	27-Jun-06	25-Dec-06
	My	DENTON	093My	27-Jun-06	25-Dec-06
Right Upper Tibia	Mx	DENTON	115Mx	26-Jun-06	24-Dec-06
	My	DENTON	115My	26-Jun-06	24-Dec-06
Right Lower Tibia	Fz	DENTON	116Fz	26-Jun-06	24-Dec-06
	Mx	DENTON	116Mx	26-Jun-06	24-Dec-06
	My	DENTON	116My	26-Jun-06	24-Dec-06
Left Foot Rear	X	ENDEVCO	J20030	16-Nov-06	16-May-07
	Z	ENDEVCO	J18662	17-Nov-06	17-May-07
Left Foot Front	Z	ENDEVCO	J119927	17-Nov-06	17-May-07
Right Foot Rear	X	ENDEVCO	J20382	16-Nov-06	16-May-07
	Z	ENDEVCO	DE54J	16-Nov-06	16-May-07
Right Foot Front	Z	ENDEVCO	J19440	16-Nov-06	16-May-07
Lap Belt Load Cell		First Technology	156	11-Jul-06	8-Jan-07
Shoulder Belt Load Cell		First Technology	159	11-Jul-06	8-Jan-07

INSTRUMENT CALIBRATION FOR PASSENGER DUMMY
(Six Month Calibration Minimum)

PASSENGER DUMMY (S/N 064)		Manufacturer	Serial #	Calibration	
				Last	Next
Head	X	ENDEVCO	J27517	4-Dec-06	3-Jun-07
	Y	ENDEVCO	AAKB1	1-Dec-06	31-May-07
	Z	ENDEVCO	AAK48	1-Dec-06	31-May-07
Head	X (R)	ENDEVCO	P16194	4-Dec-06	3-Jun-07
	Y (R)	ENDEVCO	J14688	4-Dec-06	3-Jun-07
	Z (R)	ENDEVCO	P21399	1-Dec-06	31-May-07
Neck Load Cell	X	DENTON	1912Fx	10-May-06	7-Nov-06
	Y	DENTON	1912Fy	10-May-06	7-Nov-06
	Z	DENTON	1912Fz	10-May-06	7-Nov-06
Neck Moment	X	DENTON	1912Mx	10-May-06	7-Nov-06
	Y	DENTON	1912My	10-May-06	7-Nov-06
	Z	DENTON	1912Mz	10-May-06	7-Nov-06
Chest	X	ENDEVCO	J23946	1-Dec-06	31-May-07
	Y	ENDEVCO	AGAC4	1-Dec-06	31-May-07
	Z	ENDEVCO	P16225	1-Dec-06	31-May-07
Chest	X (R)	ENTRAN	03E03E21-M20	1-Dec-06	31-May-07
	Y (R)	ENDEVCO	P15638	1-Dec-06	31-May-07
	Z (R)	ENDEVCO	P16517	1-Dec-06	31-May-07
Chest Deflection	X	SERVO	64	12-Jun-06	10-Dec-06
Pelvic	X	ENDEVCO	AJ5R0	4-Dec-06	3-Jun-07
	Y	ENDEVCO	J22036	4-Dec-06	3-Jun-07
	Z	ENDEVCO	P32204	4-Dec-06	3-Jun-07

INSTRUMENT CALIBRATION FOR PASSENGER DUMMY
(Six Month Calibration Minimum)

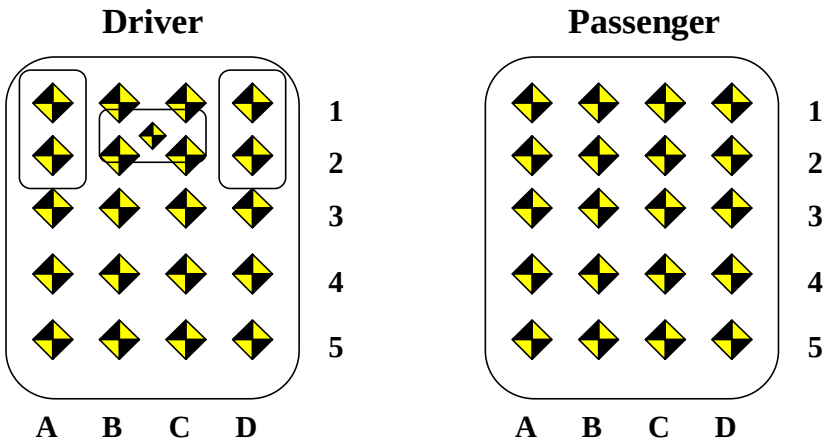
PASSENGER DUMMY (S/N 064)		Manufacturer	Serial #	Calibration	
				Last	Next
Left Femur Load Cell	Fz	DENTON	1525	21-Apr-06	19-Oct-06
Right Femur Load Cell	Fz	DENTON	1526	21-Apr-06	19-Oct-06
Left Upper Tibia	Mx	DENTON	404Mx	9-May-06	6-Nov-06
	My	DENTON	404My	9-May-06	6-Nov-06
Left Lower Tibia	Fz	DENTON	396Fz	9-May-06	6-Nov-06
	Mx	DENTON	396Mx	9-May-06	6-Nov-06
	My	DENTON	396My	9-May-06	6-Nov-06
Right Upper Tibia	Mx	DENTON	374Mx	2-Dec-06	1-Jun-07
	My	DENTON	374My	2-Dec-06	1-Jun-07
Right Lower Tibia	Fz	DENTON	372Fz	14-Nov-06	14-May-07
	Mx	DENTON	372My	14-Nov-06	14-May-07
	My	DENTON	372My	14-Nov-06	14-May-07
Left Foot Rear	X	ENDEVCO	P17912	4-Dec-06	3-Jun-07
	Z	ENDEVCO	J33376	4-Dec-06	3-Jun-07
Left Foot Front	Z	ENDEVCO	P16899	4-Dec-06	3-Jun-07
Right Foot Rear	X	ENDEVCO	J14669	4-Dec-06	3-Jun-07
	Z	ENDEVCO	J20209	4-Dec-06	3-Jun-07
Right Foot Front	Z	ENDEVCO	J14234	4-Dec-06	3-Jun-07
Lap Belt Load Cell		First Technology	173	11-Jul-06	8-Jan-07
Shoulder Belt Load Cell		First Technology	178	11-Jul-06	8-Jan-07

INSTRUMENT CALIBRATION FOR VEHICLE ACCELEROMETERS
(Six Month Calibration Minimum)

	Manufacturer	Serial #	Calibration	
			Last	Next
Left Seat Rear Crossmember X	ICS	FA2490	21-Feb-07	21-Aug-07
Right Rear Seat Crossmember X	GS	9440-046	12-Jan-07	12-Jul-07
Top of Engine	ICS	FA2495	21-Feb-07	21-Aug-07
Bottom of Engine	ICS	FA2472	21-Feb-07	21-Aug-07
Right Disc Brake Caliper	ICS	FA2471	21-Feb-07	21-Aug-07
Left Disc Brake Caliper	ICS	FA2475	21-Feb-07	21-Aug-07
Left Seat Rear Crossmember Z	ICS	FA2491	21-Feb-07	21-Aug-07
Right Seat Rear Crossmember Z	GS	9440-023	12-Jan-07	12-Jul-07

APPENDIX E

VEHICLE INTERIOR INTRUSION MEASUREMENTS

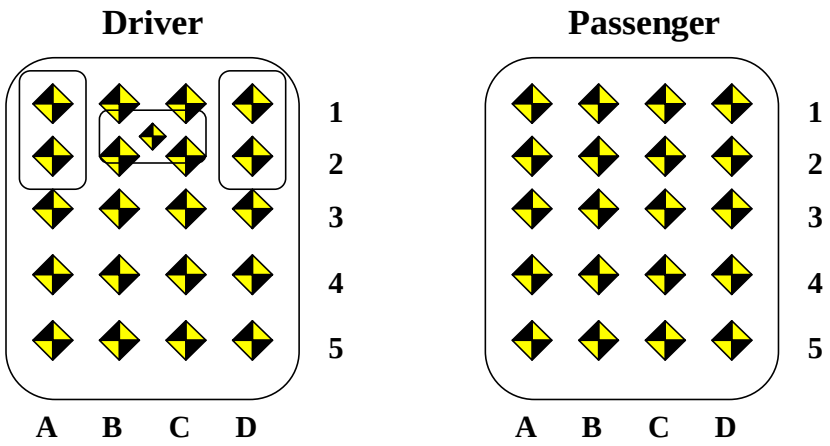


Driver Side Intrusion Measurements

Intrusion Location	PRE-TEST (mm)			POST-TEST (mm)			CHANGE (mm)		
	X	Y	Z	X	Y	Z	X	Y	Z
A1	3069	-565	449	3045	-555	457	24	-10	-8
B1	3183	-441	449	3138	-419	479	45	-22	-30
C1	3178	-310	444	3108	-301	479	70	-9	-35
D1	3180	-191	446	3099	-188	495	81	-3	-49
A2	3009	-565	378	2999	-564	380	10	-1	-2
B2	3083	-434	373	3066	-421	397	17	-13	-24
C2	3083	-307	375	3062	-300	392	21	-7	-17
D2	3085	-185	377	3065	-181	401	20	-4	-24
A3	2957	-563	313	2955	-565	311	2	2	2
B3	2980	-434	317	2982	-426	314	-2	-8	3
C3	2981	-308	318	2982	-295	317	-1	-13	1
D3	2978	-188	320	2975	-177	319	3	-11	1
A4	2919	-561	314	2922	-552	319	-3	-9	-5
B4	2922	-433	314	2925	-422	323	-3	-11	-9
C4	2920	-307	313	2921	-295	321	-1	-12	-8
D4	2923	-182	323	2920	-175	319	3	-7	4
A5	2857	-560	319	2864	-552	331	-7	-8	-12
B5	2865	-434	315	2869	-425	324	-4	-9	-9
C5	2874	-303	314	2871	-294	317	3	-9	-3
D5	2870	-186	321	2862	-179	317	8	-7	4
BP	3029	-332	514	2956	-310	534	73	-22	-20
G	2817	-487	769	2821	-484	779	-4	-3	-10
H	2812	-184	765	2813	-183	780	-1	-1	-15
L	2564	-350	1012	2617	-352	1035	-53	2	-23
AB	2508	-519	402	2508	-516	400	0	-3	2

BP=Brake Pedal, G=Left side of bolster, H=Right side of bolster, L=Steering wheel center;
AB = Front outboard seat anchor bolt

PASSENGER SIDE INTRUSION MEASUREMENTS



Passenger Side Intrusion Measurements

Intrusion Location	PRE-TEST (mm)			POST-TEST (mm)			CHANGE (mm)		
	X	Y	Z	X	Y	Z	X	Y	Z
A1	3150	176	448	3126	161	477	24	15	-29
B1	3188	303	446	3167	291	484	21	12	-38
C1	3183	432	448	3162	415	498	21	17	-50
D1	3126	553	448	3101	530	472	25	23	-24
A2	3069	177	422	3052	177	435	17	0	-13
B2	3081	303	379	3071	292	394	10	11	-15
C2	3075	428	374	3076	417	392	-1	11	-18
D2	3071	549	373	3077	535	388	-6	14	-15
A3	2994	173	415	2983	208	430	11	-35	-15
B3	2974	301	322	2975	291	323	-1	10	-1
C3	2975	426	323	2980	421	325	-5	5	-2
D3	2975	553	322	2982	543	324	-7	10	-2
A4	2924	172	418	2919	181	421	5	-9	-3
B4	2919	298	323	2921	289	322	-2	9	1
C4	2915	422	322	2925	415	324	-10	7	-2
D4	2915	549	319	2926	541	321	-11	8	-2
A5	2860	170	419	2853	175	425	7	-5	-6
B5	2865	292	322	2871	291	321	-6	1	1
C5	2865	421	321	2874	416	324	-9	5	-3
D5	2867	551	320	2879	546	323	-12	5	-3
R	2805	186	766	2814	179	790	-9	7	-24
S	2810	487	769	2817	485	769	-7	2	0
AB	2512	516	406	2504	516	403	8	0	3

R=Left side of bolster, S=Right side of bolster, L=Steering wheel center;
AB = Front outboard seat anchor bolt