REPORT NUMBER: NCAPSIDE-TRC-2006-001

NEW CAR ASSESSMENT PROGRAM
SIDE IMPACT TEST

NISSAN MOTOR COMPANY
2006 NISSAN FRONTIER KING CAB
NHTSA NUMBER: N65200

PREPARED BY:
TRANSPORTATION RESEARCH CENTER INC.
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Test Date: April 18, 2006

Report Date: May 1, 2006

FINAL REPORT

PREPARED FOR:
U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
RULEMAKING
OFFICE OF CRASHWORTHINESS STANDARDS
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Test Performed By: William Millis, Engineering Technician

Report Approved By: _____

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Transportation Research Center Inc.

Approval Date: 5/1/06

FINAL REPORT ACCEPTANCE BY OCWS:

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15. Supplemental Notes

16. Abstract

This 56/28 km/h 90° Moving Deformable Barrier NCAP Side Impact Test was conducted on the subject vehicle, a 2006 Nissan Frontier Pickup, to obtain new car assessment and research data indicant of FMVSS 214D performance. This test was conducted by Transportation Research Center Inc. in East Liberty, Ohio, on April 18, 2006.

The impact velocity of the Moving Deformable Barrier (MDB) was 62.1 km/h, and the ambient temperature at the struck (driver's side) side of the target vehicle at the time of impact was 21° C. The target vehicle's post-test maximum crush was 164 mm at Level 3.

The test or target vehicle's performance is given below (with FIR filter):

	Front SID HIII		Rear SID HIII	
Left Upper Rib Acceleration:	35.1	g's	N/A	g's
Left Lower Rib Acceleration:	35.8	g's	N/A	g's
Lower Spine Acceleration:	32.3	g's	N/A	g's
Thoracic Trauma Index, (TTI):	34.0	g's	N/A	g's
Pelvis Acceleration (PEV):	42.7	g's	N/A	g's
Head Injury Criteria (HIC):	364	g's	N/A	g's

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 side impact event.

17. Key Words	18. Distribution Statement
New Car Assessment Program (NCAP) Side Impact Side Impact Hybrid III Dummy (SID HIII) Occupant Side Impact Protection	Copies of this report are available from: NHTSA Technical Information Services (TIS) Room 5108 (NPO-230), 400 Seventh Street, S.W. Washington, DC 20590 Telephone No. (202) 366-4946 Attn: Robert Hornicle

19. Security Classification (of this report)	20. Security Classification (of this page)	21. Number of Pages	22. Price
Unclassified	Unclassified	120	

TABLE OF CONTENTS

SECTION 1
PURPOSE AND TEST PROCEDURE

PURPOSE

This side impact test was conducted as part of the FY' 2006 test program sponsored by the National Highway Traffic Safety Administration (NHTSA), under Contract No. DTNH22-03-D-02005. The purpose of this test was to evaluate side impact protection in a 2006 Nissan Frontier manufactured by Nissan Motor Company.

TEST PROCEDURE

The side impact test was conducted in accordance with the Laboratory Test Procedure for New Car Assessment Program Side Impact Testing dated November 2002 and the corresponding Transportation Research Center Inc. (TRC Inc.) procedures. The procedures for receiving, inspection, testing, and reporting of test results are described in the test procedures and are not repeated in this report.

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

SECTION 2

SUMMARY OF NCAP SIDE IMPACT TEST

A model year 2006 Nissan Frontier was impacted on the left (driver's) side by a Moving Deformable Barrier (MDB) which was moving forward in a 27° crabbed position to the tow road guidance system at a velocity of 62.1 km/h. The specified impact velocity range is from 61.1 to 62.7 km/h. The test (target) vehicle was stationary and positioned 63° to the line of forward motion. The weight of the vehicle as tested was 1928.7 kg and the test weight of the MDB was 1367.6 kg. The test was conducted at TRC Inc. in East Liberty, OH, on April 18, 2006.

One (1) real-time motion picture camera and nine (9) high-speed motion picture cameras were used to document the impact event. The pre-test and post-test conditions were recorded by one (1) real-time motion picture camera. Camera locations and pertinent camera information are documented in the data sheets. Pre-test and post-test photographs of the vehicle and Side Impact Dummy (SID/HIII) can be found in Appendix A. One 50th percentile adult male SID/HIII was placed in the driver designated seating position according to instructions specified in the Laboratory Test Procedure for New Car Assessment Program Side Impact Testing dated November 2002. The SID/HIII was instrumented in the following locations:

- Left Upper Rib (LUR) uniaxial accelerometer (Y-axis primary and redundant)
- Left Lower Rib (LLR) uniaxial accelerometer (Y-axis primary and redundant)
- Lower Thoracic Spine (T12) uniaxial accelerometer (Y-axis primary and redundant)
- Pelvic (PEV) section uniaxial accelerometer (Y-axis primary and redundant)
- Head Center of Gravity (CG) triaxial accelerometers (X, Y and Z axes primary and redundant)
- Upper Neck load cell (Fx, Fy, Fz, Mx, My, Mz)

The test vehicle was instrumented with twenty-one (21) structural accelerometers and the MDB was instrumented with five (5) accelerometers and two (2) contact switches on the bumper to compare left side to right side bumper impact timing. All data channels were recorded with a fully self-contained onboard Kayser Threde Data Acquisition System. The data was digitally sampled at 12,500 samples per second and processed per Appendix V of the Test Procedure.

GENERAL COMMENTS

The test vehicle sustained a maximum static crush of 164 mm at level 3, -150 mm rearward of the left impact point. The driver SID/HIII, Serial No. 59, was calibrated prior to this test.

Appendix A contains the still photograph prints. Appendix B contains the driver SID/HIII, vehicle, and MDB response data traces. Appendix C contains the SID/HIII configuration and performance verification data.

The occupant data is summarized below:

ATD position	HIC	T^1	T^2	TTI (G's)	Peak Pelvis (G's)
Driver	364	48.4	52.4	34.0	42.7
Passenger	N/A	N/A	N/A	N/A	N/A

Supplemental Restraint Information

Restraint Type	Left Front (Driver)		Left Rear Passenger	
	Installed	Deployed	Installed	Deployed
Front Airbag	Yes	No	Yes	No
Side Torso Airbag	No	Not Applicable	No	Not Applicable
Side Torso/Head Airbag	No	Not Applicable	No	Not Applicable
Side Head Curtain Airbag	No	Not Applicable	No	Not Applicable

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

TEST NOTES

The following channels did not collect valid data:

Left Side Sill at Rear Seat Y
Left Side Sill at Front Seat Y
Left Lower B-Pillar Y

DATA SHEET NO. 1

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2006 Nissan Frontier NHTSA No.: N65200
Test Program: NCAP Side Impact Test Date: 04/18/06

TEST VEHICLE INFORMATION

Make	Nissan
Model	Frontier
Body Style	Pickup
NHTSA No.	N65200
VIN	1N6BD06T56C445501
Color	White
Delivery Date	4/13/2006
Odometer Reading	62 miles
Dealer	Germain Nissan
Transmission	Automatic
Final Drive	Rear wheel drive
Number of Cylinders	4
Engine Displacement	2.5L
Engine Placement	Longitudinally-placed
Automatic Door Locks (ADL)	No
Does Owner's Manual Detail Instructions on Disabling ADLs	Not Applicable

TEST VEHICLE OPTIONS

Driver Front Airbag	Yes
Driver Side Curtain Airbag	No
Driver Side Torso Airbag	No
Rear Passenger Side/Curtain Airbag	No
Rear Passenger Side Torso Airbag	No
Power Steering	Yes
Power Door Locks	No
Tilt Wheel	Yes
Anti-lock Brakes	Yes
Traction Control	No
All Wheel Drive	No
Power Seats	No
Pretensioners	Yes
Load Limiters	Yes
Bucket Seats	Yes

DATA FROM CERTIFICATION LABEL

Manufactured By	Nissan Motor Company
Date of Manufacture	3/06

GVWR (kg)	2132
GAWR Front (kg)	1148
GAWR Rear (kg)	1148

Measured Parameter	Front	Mid	Rear	Total
Type of Seats	Bucket	N/A	Jump seats	
Number Of Occupants	2	0	0	2
Capacity Wt. (VCW)				409
Cargo Wt. (RCLW) (kg)				N/A

DATA SHEET NO. 1 (CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2006 Nissan Frontier NHTSA No.: N65200
Test Program: NCAP Side Impact Test Date: 04/18/06

TEST VEHICLE WEIGHTS

	Units	As Delivered (UVW) (Axle)			As Tested (ATW) (Axle)		
		Front	Rear	Total	Front	Rear	Total
Left	kg	466.5	388.0		502.2	471.5	
Right	kg	471.0	388.5		487.4	467.6	
Ratio	%	54.7	45.3		51.3	48.7	
Totals	kg	937.5	776.5	1714.0	989.6	939.1	1928.7

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value
Total Delivered Weight (UVW)	kg	1714.0
Weight of 2 P572M ATDs	kg	84.0
Rated Cargo/Luggage Weight (RCLW)	kg	136.0
Calculated Vehicle Target Weight (TVTW)	kg	1934.0

TEST VEHICLE ATTITUDES AND CG

	Units	LF	RF	LR	RR	CG(aft of front axle)
As Delivered	mm	868	860	880	878	1452.4
As Tested	mm	839	842	850	848	1561.0
Fully Loaded	mm	834	841	840	840	

GENERAL TEST VEHICLE DATA

Measurement Description	Units	Value
Test Vehicle Wheelbase	mm	3206
Total Vehicle Length at Left Side	mm	5120
Total Vehicle Length at Centerline	mm	5220
Total Vehicle Length at Right Side	mm	5120
Weight of Ballast in Cargo Area	kg	64.0
Amount of Stoddard Solvent in Fuel Tank	liters	75.7

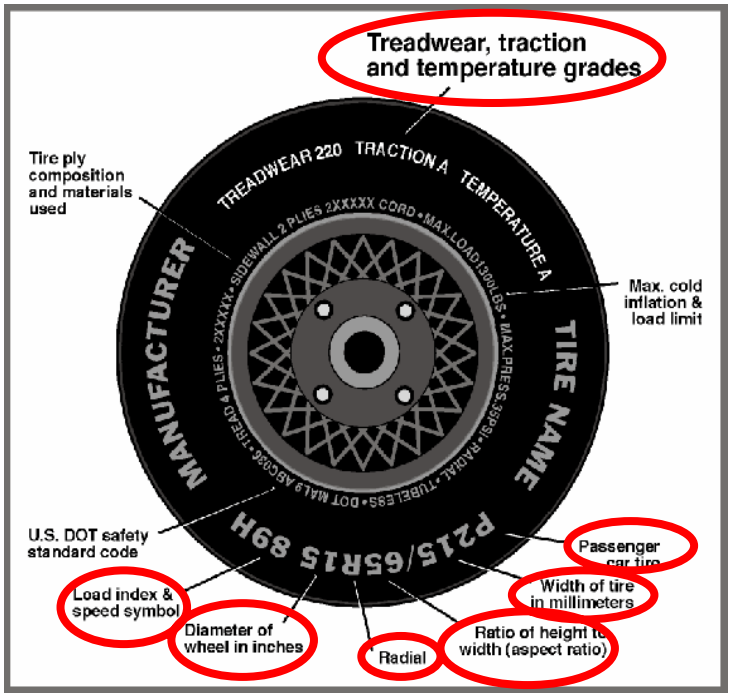
TEST VEHICLE VERTICAL IMPACT LINE DATA

Measurement Description	Units	Value
Test Vehicle Wheel Base	mm	3206
Target Impact Point Aft of Front Axle	mm	508
Actual Impact Point Aft of Front Axle	mm	518

DATA SHEET NO. 2

TEST VEHICLE TIRE INFORMATION

Test Vehicle:	2006 Nissan Frontier	NHTSA No.:	N65200
Test Program:	NCAP Side Impact	Test Date:	04/18/06



DATA FROM TIRE PLACARD

Measured Parameter	Front	Rear
Maximum Tire Pressure (kPa)	300	300
Cold / Test Pressure (kPa)	240	240
Recommended Tire Size	P235/75R15	P235/75R15
Tire Size on Vehicle	235/75R15	235/75R15
Tire Manufacturer	General	General
Tire Name	Grabber AW	Grabber AW
Tire Type	P	P
Tire Width (mm)	235	235
Ratio of Height to Width (aspect ratio)	75	75
Radial	R	R
Wheel Diameter	15	15
Load Index & Speed Symbol	105S	105S
Treadwear	420	420
Traction Grade	B	B
Temperature Grade	B	B

DATA SHEET NO. 3

TEST VEHICLE INFORMATION

Test Vehicle:	2006 Nissan Frontier	NHTSA No.:	N65200
Test Program:	NCAP Side Impact	Test Date:	04/18/06

NORMAL DESIGN RIDING POSITION

The driver and passenger seat back is positioned to the manufacturer's designated angle.

Driver: Total Number of detents: 21

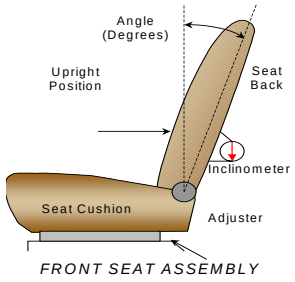
Test detent (with the forward-most detent defined as 0): 10

Passenger: Total Number of detents: N/A

Test detent (with the forward-most detent defined as 0): N/A

Driver seat back angle: 6 notches back from full up

Passenger seat back angle: N/A

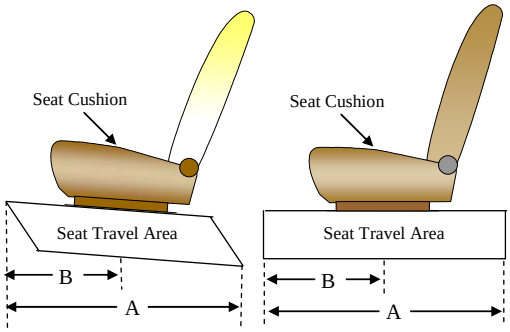


SEAT FORE/AFT POSITIONS

The total seat travel was measured from forward most position to rearmost position, irrespective of vertical seat height in those positions. The seat was set at the longitudinal mid position with vertical adjustment at the lowest position obtainable for both the driver and passenger.

SEAT FORE/AFT POSITIONING

	Total Fore/Aft Travel	Placed in Position No.
Driver Seat	21	10
Rear Seat	N/A	N/A



SEAT BELT UPPER ANCHORAGE

	Total No. of Positions	Placed in Position No.
Driver Seat	4	Full up
Rear Seat	N/A	N/A

Position number one is the uppermost adjustment position.

DATA SHEET NO. 3 (CONTINUED)

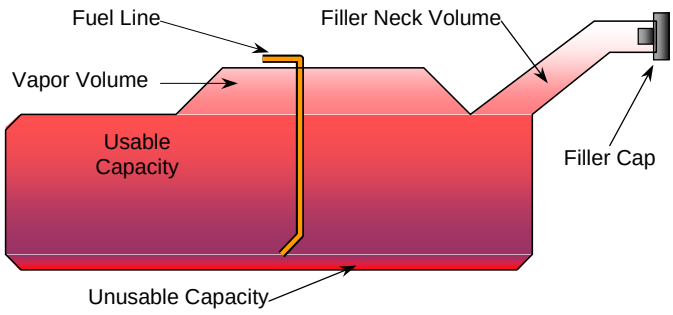
TEST VEHICLE INFORMATION

Test Vehicle:	2006 Nissan Frontier	NHTSA No.:	N65200
Test Program:	NCAP Side Impact	Test Date:	04/18/06

FUEL TANK CAPACITY

	Liters
Usable Capacity of "Standard Tank"	79.9
Usable Capacity of "Optional" Tank	N/A
Usable Capacity used for FMVSS301	79.9
Actual Amount of Solvent used	75.7
1/3 of Usable Capacity	26.6

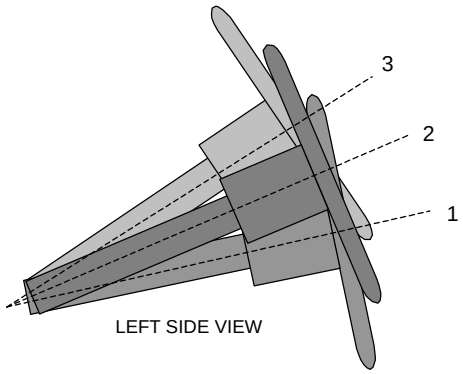
The test vehicle is equipped with an electric fuel pump. The fuel pump operates for approximately two seconds after the ignition is placed in the "ON" position, after which the fuel pump automatically shuts off. The fuel filler door is located on the left rear fender. The standard fuel tank occupies the area under the rear seat.



VEHICLE FUEL TANK ASSEMBLY

STEERING COLUMN ADJUSTMENT

Steering wheel and column adjustments are made so that the steering wheel hub is at the geometric center of the locus it describes when moved through its full range of motion. An aluminum plate is placed across the rim of the steering wheel, an inclinometer is placed on the plate and the angle is measured.



STEERING COLUMN ASSEMBLY

STEERING COLUMN POSITIONS

	Degrees	Fore/Aft Position, mm
Lowermost Position	1st notch	Not Applicable
Geometric Center Position	4th notch	Not Applicable
Uppermost Position	7th notch	Not Applicable

DATA SHEET NO. 4

MOVING DEFORMABLE BARRIER (MDB) SUMMARY OF RESULTS

Test Vehicle: 2006 Nissan Frontier NHTSA No.: N65200
Test Program: NCAP Side Impact Test Date: 04/18/06

MDB SPECIFICATIONS

Measurement Description	Length (mm)
Overall Width of Framework Carriage	1252
Overall Length Including Honeycomb Face	4115
Wheel base of Framework Carriage	2587
C.G. Location aft of Front Axle	1095

MDB WEIGHTS

	Units	Front Axle	Rear Axle	Total
Left	kg	508.8	175	
Right	kg	279.8	404	
Ratio	%	57.7	42.3	
Totals	kg	788.6	579	1367.6

SPEED AND IMPACT ANGLE DATA

Measured Parameter	Units	Requirement	Value
Trap No. 1 Velocity (Primary)	km/h	61.1 to 62.7	62.1
Trap No. 2 Velocity (Redundant)	km/h	61.1 to 62.7	62.2
MDB CL to Target Vehicle CL	degrees	88.5 to 91.5	88.5

POST TEST OBSERVATIONS

MDB LEFT EDGE IMPACT POINT DATA

Measured Parameter	Units	Requirement	Value
Horizontal Offset	mm	+/- 50	10 mm right
Vertical Offset	mm	+/- 20	4 mm down

DATA SHEET NO. 5

POST TEST OBSERVATIONS

Test Vehicle: 2006 Nissan Frontier NHTSA No.: N65200
Test Program: NCAP Side Impact Test Date: 04/18/06

TEST DUMMY INFORMATION AND CONTACT POINTS

Description	Front Seat SID/HIII	Rear Seat SID/HIII
Dummy Type / Serial No.	SID/HIII / 59	None
Head Contact	None	Not Applicable
Upper Torso Contact	Door	Not Applicable
Lower Torso Contact	None	Not Applicable
Left Knee Contact	Door	Not Applicable
Right Knee Contact	None	Not Applicable

POST TEST DOOR OPENING AND SEAT TRACK INFORMATION

Description	Front	Rear
Locked/Unlocked Doors	Not Recorded	Not Recorded
Left Side Door Opening	Jammed & Latched	Jammed & Latched
Right Side Door Opening	Close & Latched	Closed & Latched
Seat Movement	None	Not Applicable
Seat Back Failure	None	Not Applicable

POST TEST STRUCTURAL OBSERVATIONS

Critical Areas of Performance	Observations and Conclusions
Pillar Performance	No
Sill Separation	No
Windshield Damage	None
Window Damage	Left front shattered
Other Notable Effects	None

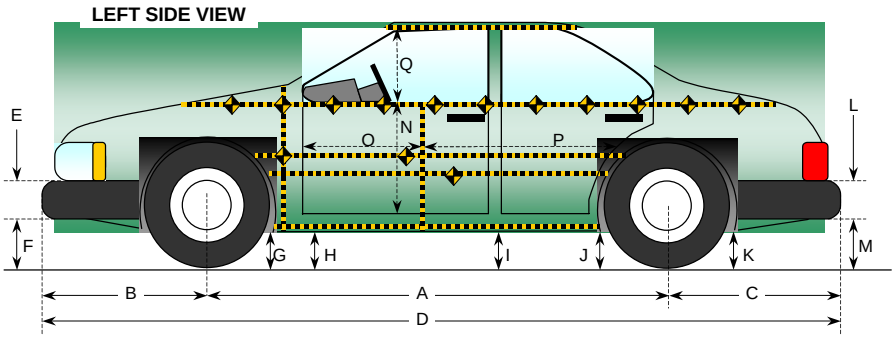
SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

Restraint Type	Left Front (Driver) Occupant Location 01		Left Rear (Passenger) Occupant Location 04	
	Installed	Operation	Installed	Operation
Front Airbag	Yes	No	No	N/A
Side Airbag	No	N/A	No	N/A
Head Airbag	No	N/A	No	N/A
Curtain Airbag	No	N/A	No	N/A
Seat Belt Pretensioner	Yes	No	No	N/A
Seat Belt Load Limiter	Yes	No	No	N/A

DATA SHEET NO. 6

VEHICLE PRE-TEST AND POST-TEST MEASUREMENTS

Test Vehicle: 2006 Nissan Frontier NHTSA No.: N65200
Test Program: NCAP Side Impact Test Date: 04/18/06



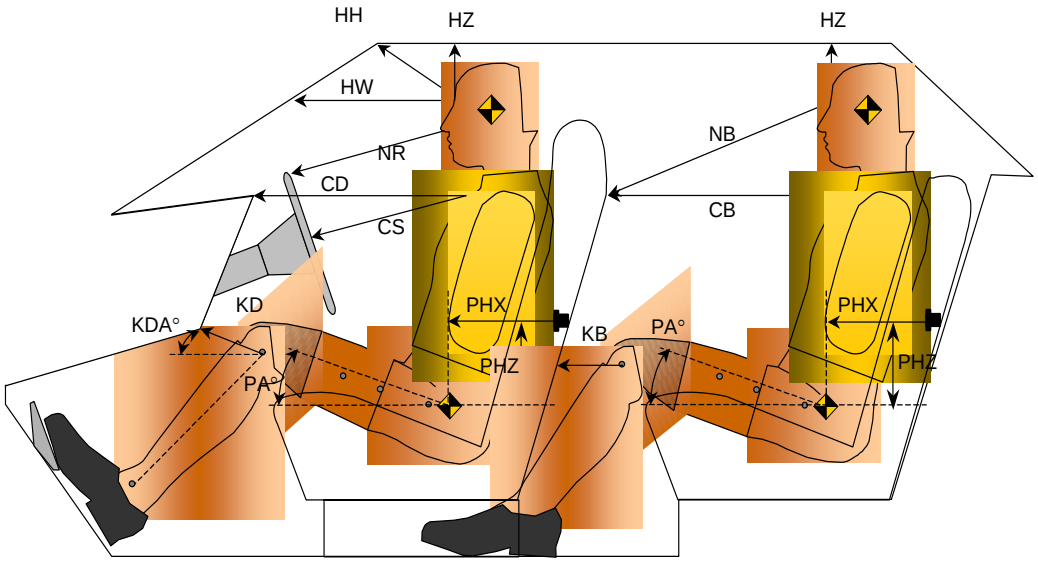
All Measurements in mm

Code	Measurement Description	Pre-Test	Post-Test	Difference
A	Wheelbase	3206	3187	19
B	Front Axle to Front Surface of Vehicle	794	810	-16
C	Rear Axle to Rear Surface of Vehicle	1220	1584	-364
D	Total Length at Centerline	5220	5213	7
E	Front Bumper Thickness	200	200	0
F	Front Bumper Bottom to Ground	455	450	5
G	Sill Height at Front Wheel Well	369	362	7
H	Sill Height at Front Door Leading Edge	Not recorded	Not recorded	Not recorded
I	Sill Height at "B" Pillar	368	390	-22
J1	Sill Height at Rear Wheel Well	370	386	-16
J2	Pinch Weld Height at Rear Wheel Well	327	339	-12
K	Sill Height Aft of Rear Wheel Well	396	420	-24
L	Rear Bumper Thickness	138	138	0
M	Rear Bumper Bottom to Ground	467	469	-2
N	Sill Height to Window Bottom Sill	750	726	24
O	Front Door Leading Edge to Impact CL	736	729	7
P	Rear Door Trailing Edge to Impact CL	956	917	39
Q	Front Window Opening	465	461	4
R	Right Side Length	5120	5130	-10
S	Left Side Length	5120	5094	26
T	Vehicle Width at "B" Post	1352	1731	-379

DATA SHEET NO. 7

SID/HIII LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: 2006 Nissan Frontier NHTSA No.: N65200
Test Program: NCAP Side Impact Test Date: 04/18/06

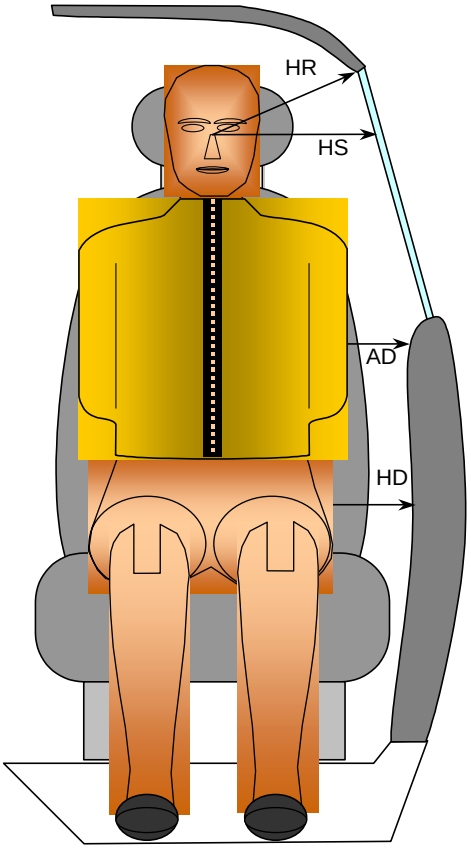


Driver Code	Pass. Code	Measurement Description	Driver S/N 59		Passenger S/N	
			Length (mm)	Angle (°)	Length (mm)	Angle (°)
HH		Head to Header	384			
HW		Head to Windshield	600			
HZ	HZ	Head to Roof	150		N/A	
NR	NB	Nose to Rim/Nose to Seatback	432		N/A	
CD	CB	Chest to Dash or Seatback	554		N/A	
CS		Chest to Steering Wheel	260			
KDL	KBL	Left Knee to Dash or Seatback	142	20.5	N/A	N/A
KDR	KBR	Right Knee to Dash or Seatback	132	23.0	N/A	N/A
PA	PA	Pelvic Angle		23.5		N/A
PHX	PHX	H-Point to Striker (X-Axis)	244		N/A	
PHZ	PHZ	H-Point to Striker (Z-Axis)	69		N/A	

DATA SHEET NO. 8

SID/HIII LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2006 Nissan Frontier NHTSA No.: N65200
Test Program: NCAP Side Impact Test Date: 04/18/06



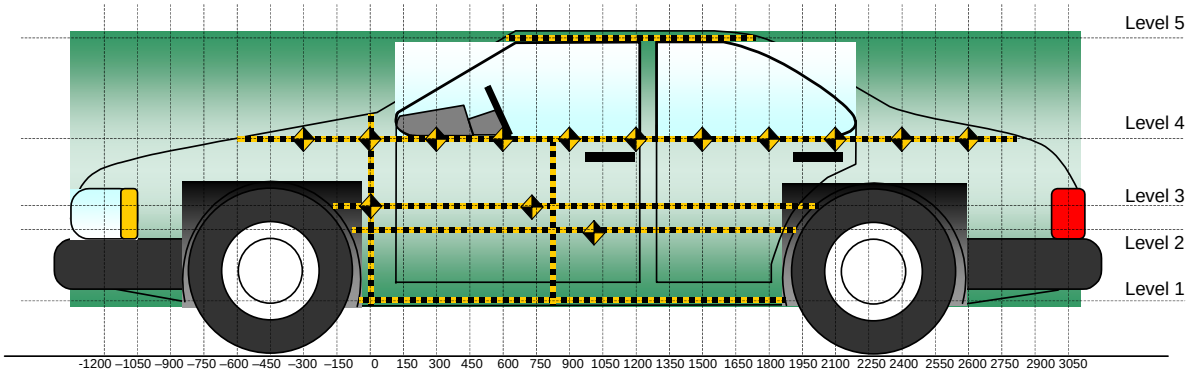
FRONT VIEW OF DUMMY

Code	Measurement Description	Units	Driver S/N 59	Passenger S/N
HR	Head to Side Header	mm	180	N/A
HS	Head to Side Window	mm	300	N/A
AD	Arm to Door	mm	100	N/A
HD	H-Point to Door	mm	170	N/A

DATA SHEET NO. 9

VEHICLE SIDE MEASUREMENTS

Test Vehicle: 2006 Nissan Frontier NHTSA No.: N65200
Test Program: NCAP Side Impact Test Date: 04/18/06



All Measurements Shown in mm

LEFT SIDE VIEW

Measurements are taken with vehicle in the as tested condition.

All measurements below in mm.

MAXIMUM EXTERIOR STATIC CRUSH

Level	Measurement Description	Maximum Exterior Static Crush	Distance From Impact	Height Above Ground
5	Window Top	8	750	1680
4	Window Sill	21	1350	1108
3	Mid Door	164	-150	785
2	Occupant H-Point	140	0	830
1	Sill Top	81	1200	385
	Maximum Penetration	164		

DATA SHEET NO. 10

VEHICLE EXTERIOR CRUSH PROFILES

Test Vehicle: 2006 Nissan Frontier NHTSA No.: N65200
Test Program: NCAP Side Impact Test Date: 04/18/06

	Pre-Test					Post-Test					Difference				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
-900		-884	-897				-887	-899				-3	-2		
-750		-915	-909		-620		-914	-895		-623		1	14		-3
-600		-917	-867	-794	-624		-905	-849	-795	-628		12	18	-1	-4
-450		-900	-872	-811	-626		-887	-776	-806	-631		13	96	5	-5
-300		-869	-875	-821	-627		-851	-721	-813	-632		18	154	8	-5
-150		-871	-877	-829	-629		-782	-713	-825	-635		89	164	4	-6
0	-857	-874	-879	-836	-628	-839	-734	-718	-829	-636	18	140	161	7	-8
150	-806	-877	-880	-841	-625	-785	-738	-723	-854	-634	21	139	157	-13	-9
300	-806	-878	-880	-833	-609	-747	-740	-732	-855	-617	59	138	148	-22	-8
450	-805	-880	-880	-839	-794	-739	-742	-746	-868	-795	66	138	134	-29	-1
600	-803	-880	-881	-844	-811	-731	-754	-805	-876	-806	72	126	76	-32	5
750	-802	-880	-880	-849	-821	-726	-763	-800	-875	-813	76	117	80	-26	8
900	-801	-880	-879	-853	-829	-723	-835	-806	-873	-825	78	45	73	-20	4
1050	-799	-880	-877	-854	-836	-720	-807	-797	-873	-829	79	73	80	-19	7
1200	-798	-879	-865	-855	-841	-717	-823	-820	-870	-854	81	56	45	-15	-13
1350	-796	-878	-859	-856	-833	-715	-813	-947	-835	-855	81	65	-88	21	-22
1500	-792	-865	-860	-855	-839	-717	-825	-1030	-839	-868	75	40	-170	16	-29
1650	-786	-859	-885	-855	-844	-714	-950	-1088	-856	-876	72	-91	-203	-1	-32
1800	-762	-859	-911	-844	-849	-712	-1022	-1120	-834	-875	50	-163	-209	10	-26
1950	-765	-871	-857	-833		-842	-1069	-839	-920		-77	-198	18	-87	
2100	-785	-906	-806	-835		-975	-1109	-785	-951		-190	-203	21	-116	
2250		-897	-806	-836			-899	-747	-974			-2	59	-138	
2400		-909	-805	-837			-895	-739	-998			14	66	-161	
2550				-838					-1019					-181	
2700				-839					-1021					-182	
2850															
3000															

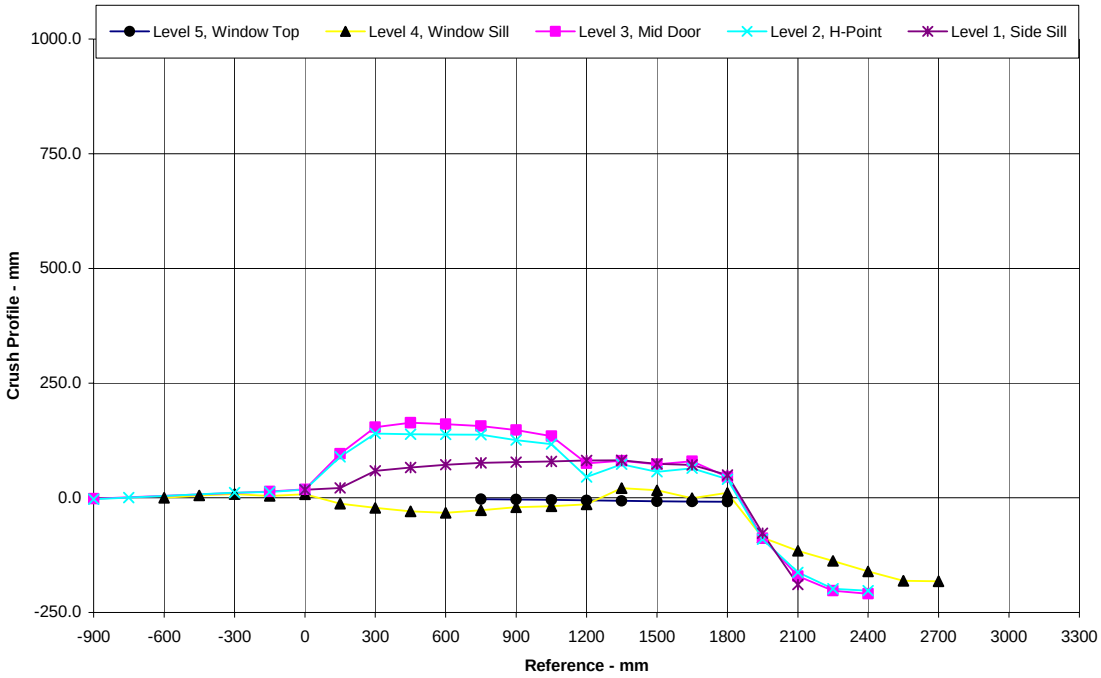
Reference plane is parallel to test vehicle longitudinal centerline.

Given measurements = Reference plane to car body

DATA SHEET NO. 10 (CONTINUED)

VEHICLE EXTERIOR CRUSH PROFILES

Test Vehicle: 2006 Nissan Frontier NHTSA No.: N65200
Test Program: NCAP Side Impact Test Date: 04/18/06

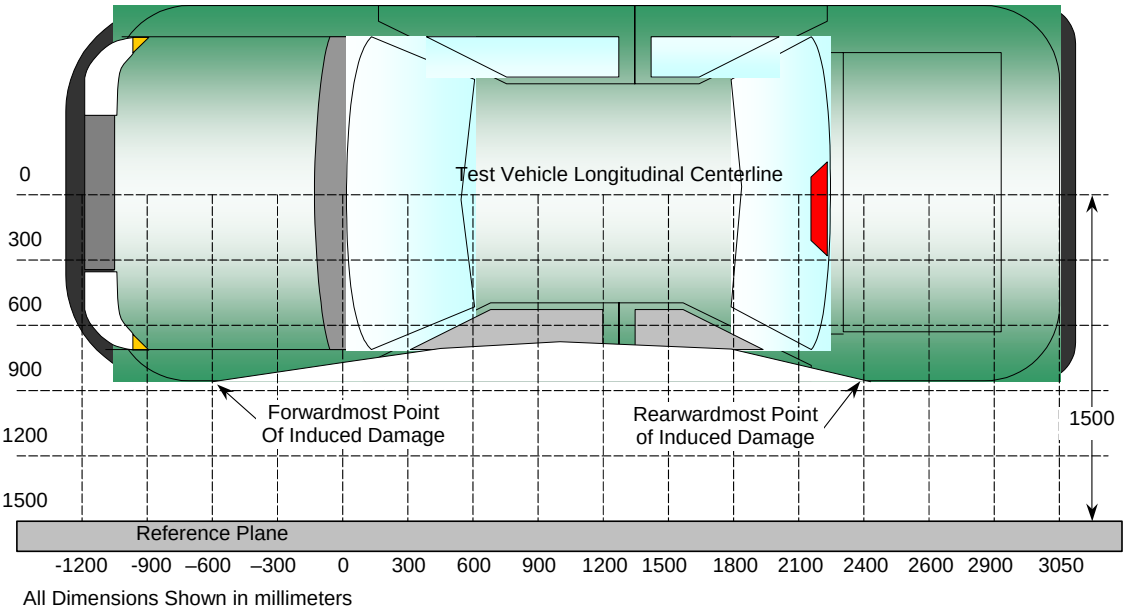


	Units	Level 1	Level 2	Level 3	Level 4	Level 5
Maximum Crush	mm	81	140	164	21	8
Distance from Impact	mm	1200	0	-150	1350	750

DATA SHEET NO. 11

VEHICLE DAMAGE PROFILE DISTANCES

Test Vehicle: 2006 Nissan Frontier NHTSA No.: N65200
Test Program: NCAP Side Impact Test Date: 04/18/06



TOP VIEW

DAMAGE PROFILE DISTANCES

DPD	Distance from Impact Point in mm	Level	Pre-Test (mm)	Post-Test (mm)	Max. Static Crush (mm)
1	2850 mm	N/A	N/A	N/A	0
2	2100 mm	3	-806	-785	21
3	1350 mm	1	-796	-715	81
4	600 mm	2	-880	-754	126
5	-150 mm	3	-877	-713	164
6	-900 mm	N/A	N/A	N/A	0

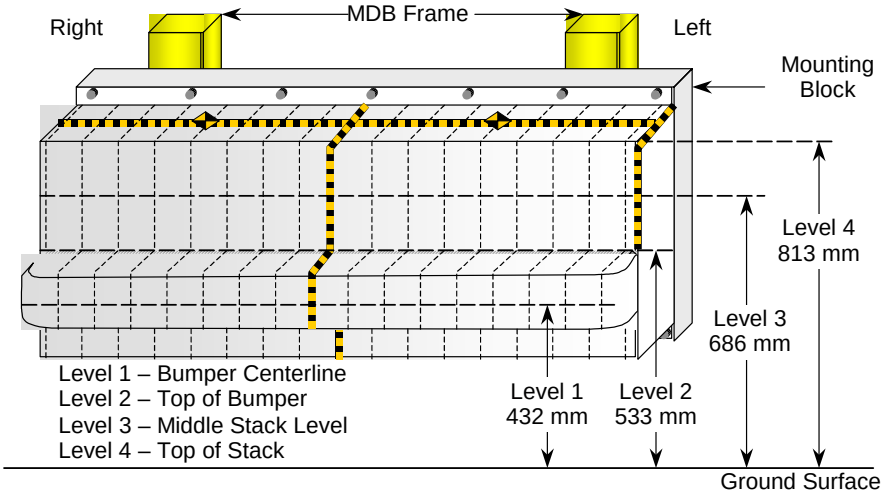
Reference plane is parallel to test vehicle longitudinal centerline.

Given dimensions = Reference plane to car body.

DATA SHEET NO. 12

DEFORMABLE BARRIER HONEYCOMB FACE STATIC CRUSH

Test Vehicle: 2006 Nissan Frontier NHTSA No.: N65200
Test Program: NCAP Side Impact Test Date: 04/18/06



DEFORMABLE BARRIER STATIC CRUSH

Stack Level	Distance Right of Center								C/L	Distance Left of Center							
	800	700	600	500	400	300	200	100	0	100	200	300	400	500	600	700	800
1	**-181**	**-136**	**-131**	**-123**	**-108**	**-116**	**-88**	**-49**	**-32**	**-33**	**-37**	**-42**	**-46**	**-48**	**-50**	**-77**	**-124**
2	**-154**	**-104**	**-75**	**-70**	**-70**	**-80**	**-53**	**-32**	**-28**	**-24**	**-20**	**-21**	**-22**	**-26**	**-34**	**-58**	**-110**
3	**-122**	**-112**	**-104**	**-100**	**-100**	**-92**	**N/A[1]**	**N/A[1]**	**N/A[1]**	**-93**	**-92**	**-90**	**-91**	**-94**	**-96**	**-99**	**-106**
4	**-143**	**-144**	**-140**	**-138**	**-139**	**-142**	**-142**	**-141**	**-141**	**-142**	**-144**	**-146**	**-150**	**-154**	**-159**	**-166**	**-171**

All measurements are in mm

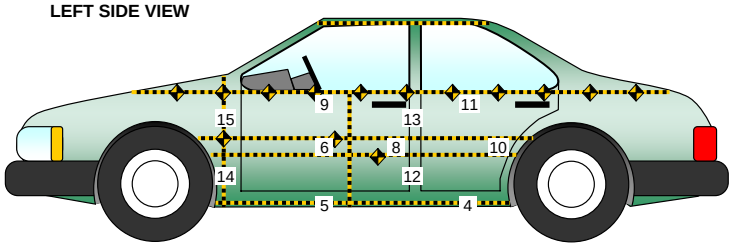
[1] Unable to locate post-test measurement point.

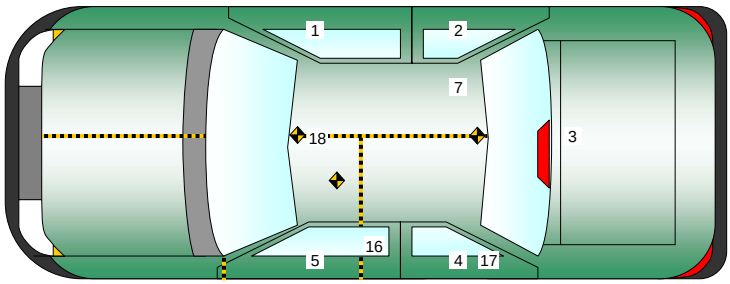
DATA SHEET NO. 13

VEHICLE ACCELEROMETER LOCATIONS

Test Vehicle: 2006 Nissan Frontier NHTSA No.: N65200
Test Program: NCAP Side Impact Test Date: 04/18/06

LEFT SIDE VIEW





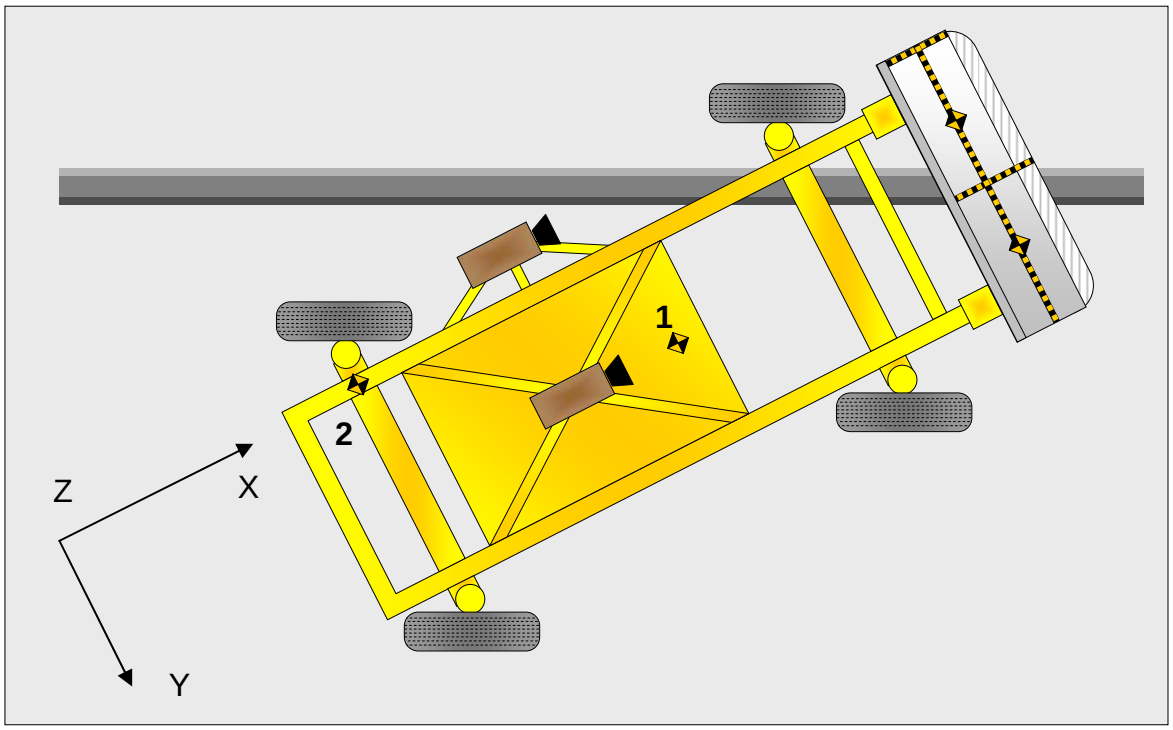
Loc. No.	Accelerometer Location	Measurements (mm)		
		X	Y	Z
1	Right Sill at Front Seat	3790	645	-482
2	Right Sill at Rear Seat	2820	645	-532
3	Rear Floorpan Above Axle	1630	0	-732
4	Left Sill at Rear Door	1810	-646	-515
5	Left Sill at Front Door	3800	-645	-466
6	Left Front Door C/L	N/A	----	----
7	Rear Occupant Compartment	2650	670	-686
8	Left Front Door Mid-Rear	N/A	----	----
9	Left Front Door Upper C/L	N/A	----	----
10	Left Rear Door Mid-Rear	N/A	----	----
11	Left Rear Door Upper C/L	N/A	----	----
12	Left Lower B-Post	3253	-740	-564
13	Left Middle B-Post	3190	-740	-1009
14	Left Lower A-Post	4210	-815	-1041
15	Left Middle A-Post	4215	-785	-745
16	Front Seat Track	3490	-605	-556
17	Rear Seat Track or Structure	2700	-645	-606
18	Vehicle CG	3270	0	-596

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

DATA SHEET NO. 14

MDB ACCELEROMETER LOCATIONS

Test Vehicle: 2006 Nissan Frontier NHTSA No.: N65200
Test Program: NCAP Side Impact Test Date: 04/18/06



Loc. No.	Accelerometer Location	Measurements (mm)		
		X	Y	Z
1	MDB CG	1855	0	-520
2	MDB Rear	412	-677	-625

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

DATA SHEET NO. 15

VEHICLE STRUCTURAL MEASUREMENTS

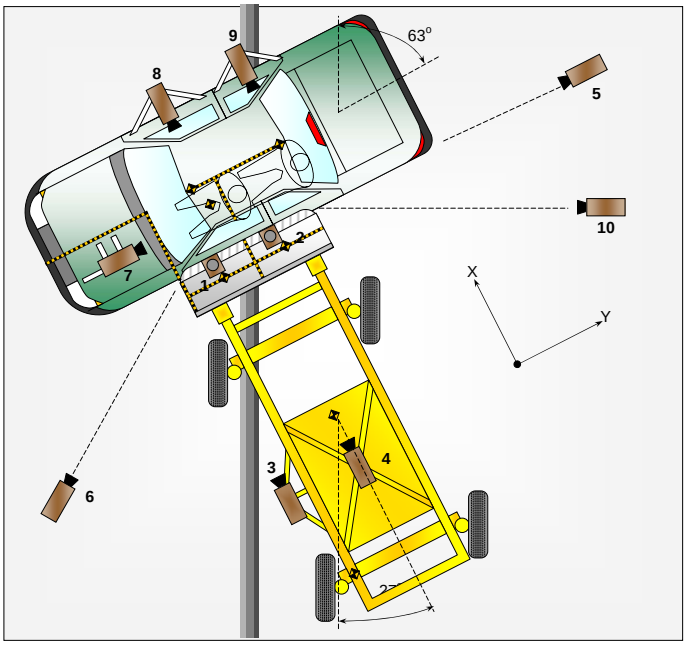
Test Vehicle: 2006 Nissan Frontier NHTSA No.: N65200
Test Program: NCAP Side Impact Test Date: 04/18/06

	Elements	Pre-Test (mm)
1	Total Length	Not Recorded
2	Total Width	Not Recorded
3	Bumper Top Height	Not Recorded
4	Bumper Bottom Height	Not Recorded
5	Longitudinal Member Top Height	Not Recorded
6	Distance between Longitudinal Members	Not Recorded
7	Longitudinal Member Width	Not Recorded
8	Engine Top Height	Not Recorded
9	Engine Bottom Height	Not Recorded
10	Engine and gearbox width	Not Recorded
11	Front bumper-engine distance	Not Recorded
12	Front shock absorber fixing height	Not Recorded
13	Hood (bonnet) leading edge height	Not Recorded
14	Front shock absorber fixing width	Not Recorded
15	Front bumper – front axle distance	Not Recorded
16	Front axle – A pillar distance	Not Recorded
17	A-pillar – B-pillar distance	Not Recorded
18	B-Pillar – rear axle distance	Not Recorded
19	B-pillar – C-pillar distance	Not Recorded
20	Roof sill bottom height	Not Recorded
21	Roof sill top height	Not Recorded
22	Floor sill bottom height	Not Recorded
23	Floor sill top height	Not Recorded

DATA SHEET NO. 16

HIGH SPEED CAMERA LOCATIONS AND DATA

Test Vehicle: 2006 Nissan Frontier NHTSA No.: N65200
Test Program: NCAP Side Impact Test Date: 04/18/06



No.	Camera View	Location (mm)			Lens (mm)	Frame Speed (fps)
		X	Y	Z		
1	Overhead Close-up				25	1000
2	Overhead Overall				10	1000
3	MDB Onboard, Impact Point Close-up				13	1000
4	MDB Onboard, Centerline of Impact				17	1000
5	Right Side, Ground Level, Overall				12.5	1000
6	Left Side, Ground Level, Overall				12.5	1000
7	Vehicle Onboard Front SID/HIII, Front				12.5	1000
8	Vehicle Onboard Front SID/HIII, Side				6.5	1000
9	Vehicle Onboard Rear SID/HIII, Side				N/A	N/A
10	Real Time Coverage				Zoom	30

Reference Points: X - Impact Line
Y - MDB Left Edge Impact Point
Z - Ground Plane

DATA SHEET NO. 17

SUMMARY OF FMVSS 301 DATA

Test Vehicle: 2006 Nissan Frontier NHTSA No.: N65200
Test Program: NCAP Side Impact Test Date: 04/18/06

FMVSS 301 FUEL SYSTEM INTEGRITY POST IMPACT DATA

Temperature at Time of Impact: 21 Test Time: 20:53

Stoddard Solvent Spillage Measurements

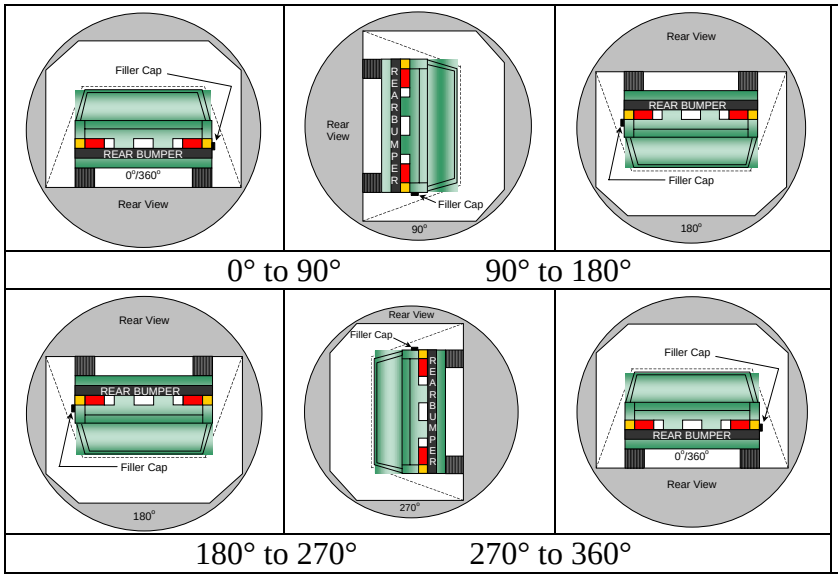
A. From impact until vehicle motion ceases: 0 oz.
(Maximum allowable = 1 ounce)

B. For the 5 minute period after motion ceases: 0
(Maximum allowable = 5 ounces)

C. For the following 25 minutes: 0
(Maximum allowable = 1 oz./minute)

D. Spillage Details: None

FMVSS 301 STATIC ROLLOVER DATA



1. The specified fixture rollover rate for each 90° of rotation is 60 to 180 seconds.

2. The position hold time at each position is 300 seconds (minimum).

3. Details of Stoddard Solvent spillage locations: None

Test Phase	Rotation Time (sec.)	Hold Time (sec.)	Spillage Collection Time (min)	Spillage (oz.)	Spillage Collection Time (min)	Spillage (oz.)	Spillage Collection Time (min)	Spillage (oz.)
0° to 90°	120	300	First 5	0	Sixth	0	Seventh	0
90° to 180°	120	300	First 5	0	Sixth	0	Seventh	0
180° to 270°	120	300	First 5	0	Sixth	0	Seventh	0
270° to 360°	120	300	First 5	0	Sixth	0	Seventh	0

APPENDIX A

PHOTOGRAPHS

LIST OF PHOTOGRAPHS

LIST OF PHOTOGRAPHS (CONTINUED)

LIST OF PHOTOGRAPHS (CONTINUED)

Figure A-1 Manufacturer's Label

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Figure A-2 Tire Placard

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Figure A-3 Pre-Test Front View

Figure A-4 Post-Test Front View

Figure A-5 Pre-Test Left Front Three-Quarter View

Figure A-6 Post-Test Left Front Three-Quarter View

Figure A-7 Pre-Test Left Side View

Figure A-8 Post-Test Left Side View

Figure A-9 Pre-Test Left Rear Three-Quarter View

Figure A-10 Post-Test Left Rear Three-Quarter View

Figure A-11 Pre-Test Rear View

Figure A-12 Post-Test Rear View

Figure A-13 Pre-Test Right Rear Three-Quarter View

Figure A-14 Post-Test Right Rear Three-Quarter View

Figure A-15 Pre-Test Right Side View

Figure A-16 Post-Test Right Side View

Figure A-17 Pre-Test Right Front Three-Quarter View

Figure A-18 Post-Test Right Front Three-Quarter View

Figure A-19 Pre-Test Overhead Alignment View

Figure A-20 Post-Test Overhead Alignment View

Figure A-21 Pre-Test Primary Impact Point

Figure A-22 Post-Test Primary Impact Point

Figure A-23 Pre-Test Secondary Impact Point

Figure A-24 Post-Test Secondary Impact Point

Figure A-25 Pre-Test Engine Compartment View

Figure A-26 Post-Test Engine Compartment View

Figure A-27 Pre-Test Fuel Tank View

Figure A-28 Post-Test Fuel Tank View

Figure A-29 Pre-Test Fuel Filler Neck View

Figure A-30 Post-Test Fuel Filler Neck View

Figure A-31 Pre-Test Fuel Filler Cap View

Figure A-32 Post-Test Fuel Filler Cap View

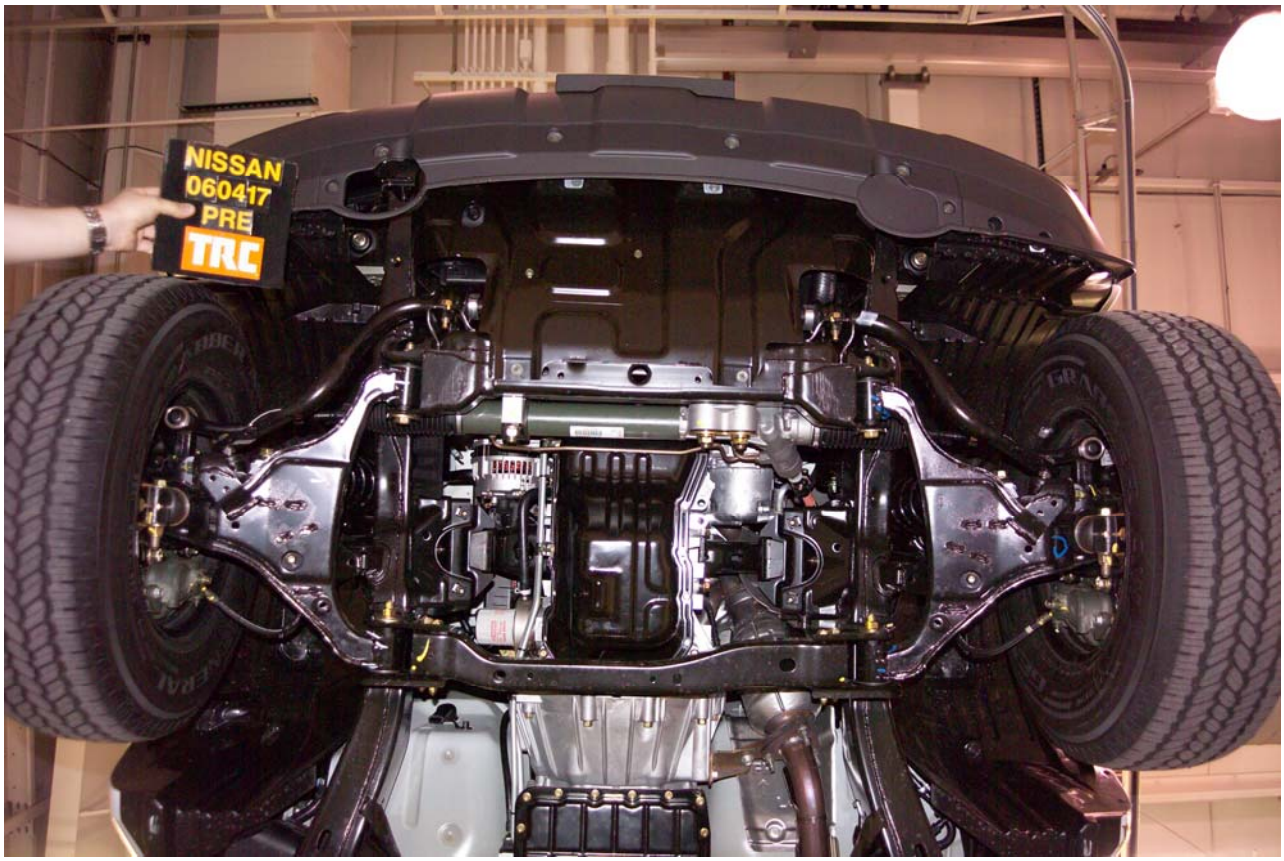

Figure A-33 Pre-Test Front Underbody View

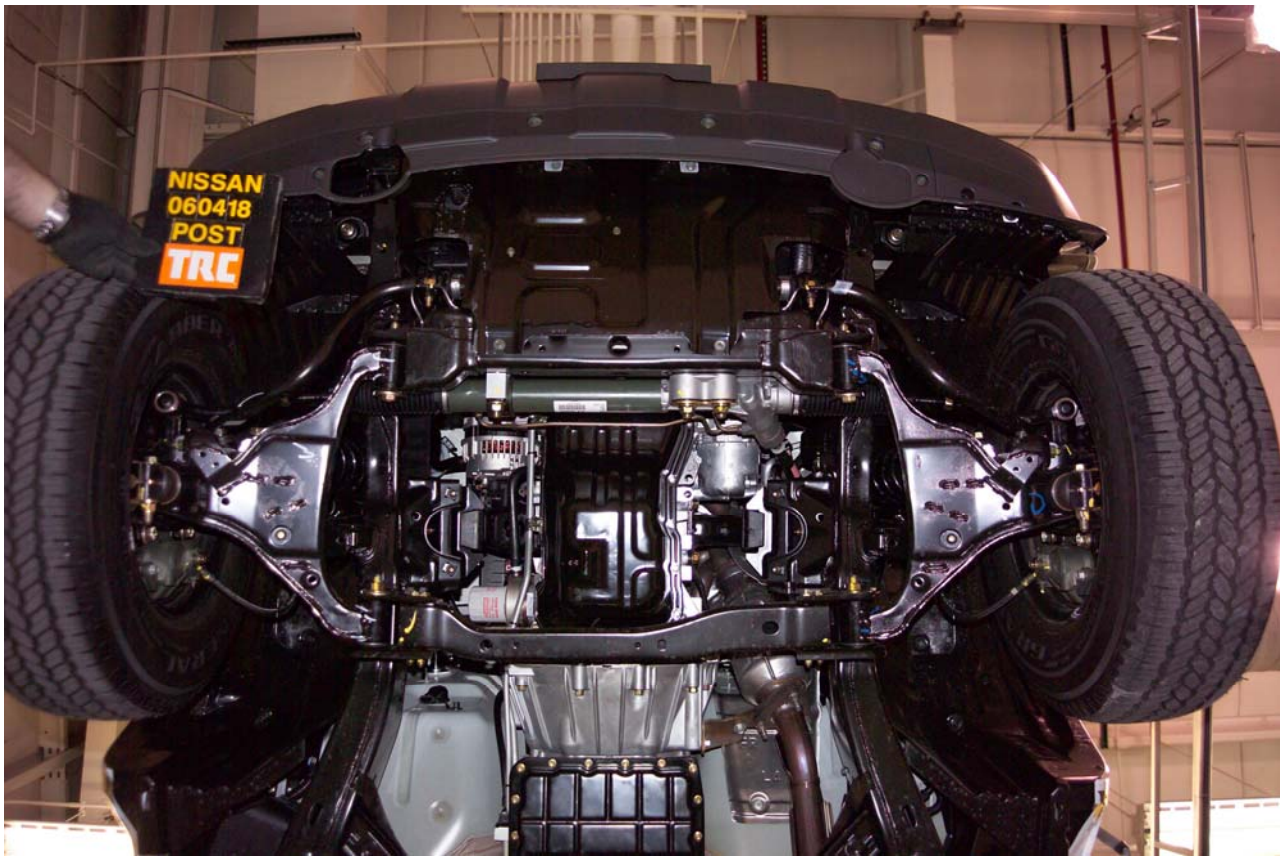

Figure A-34 Post-Test Front Underbody View

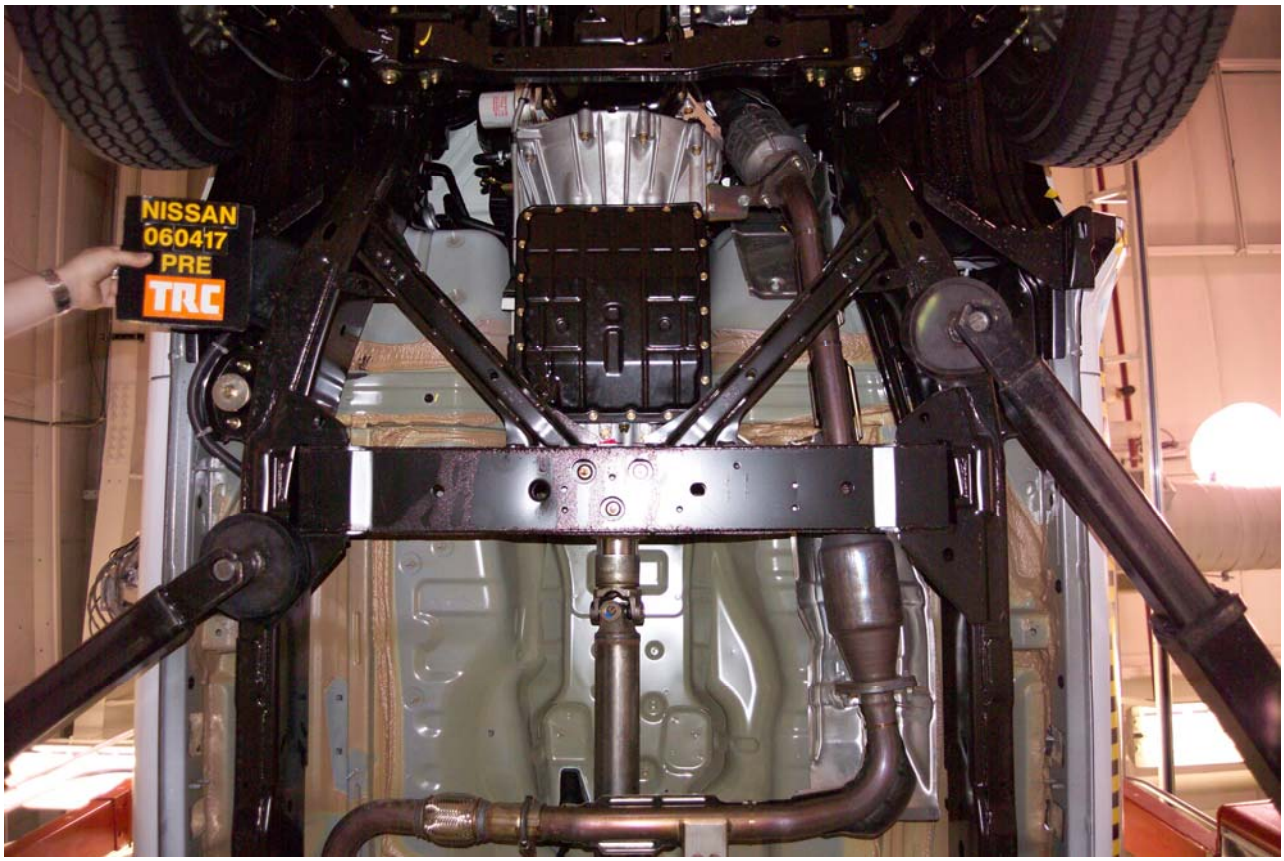

Figure A-35 Pre-Test Mid Front Underbody View

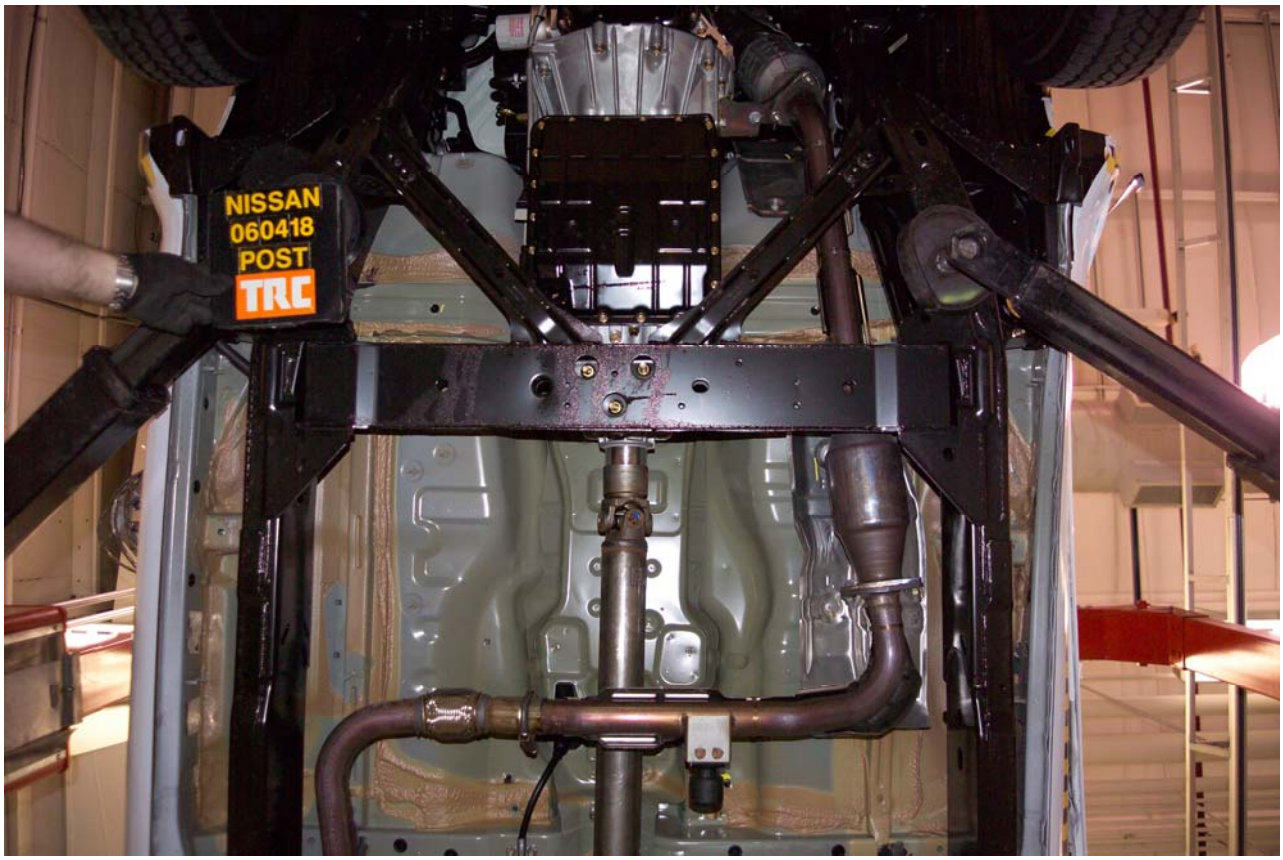

Figure A-36 Post-Test Mid Front Underbody View

Figure A-37 Pre-Test Mid Underbody View

Figure A-38 Post-Test Mid Underbody View

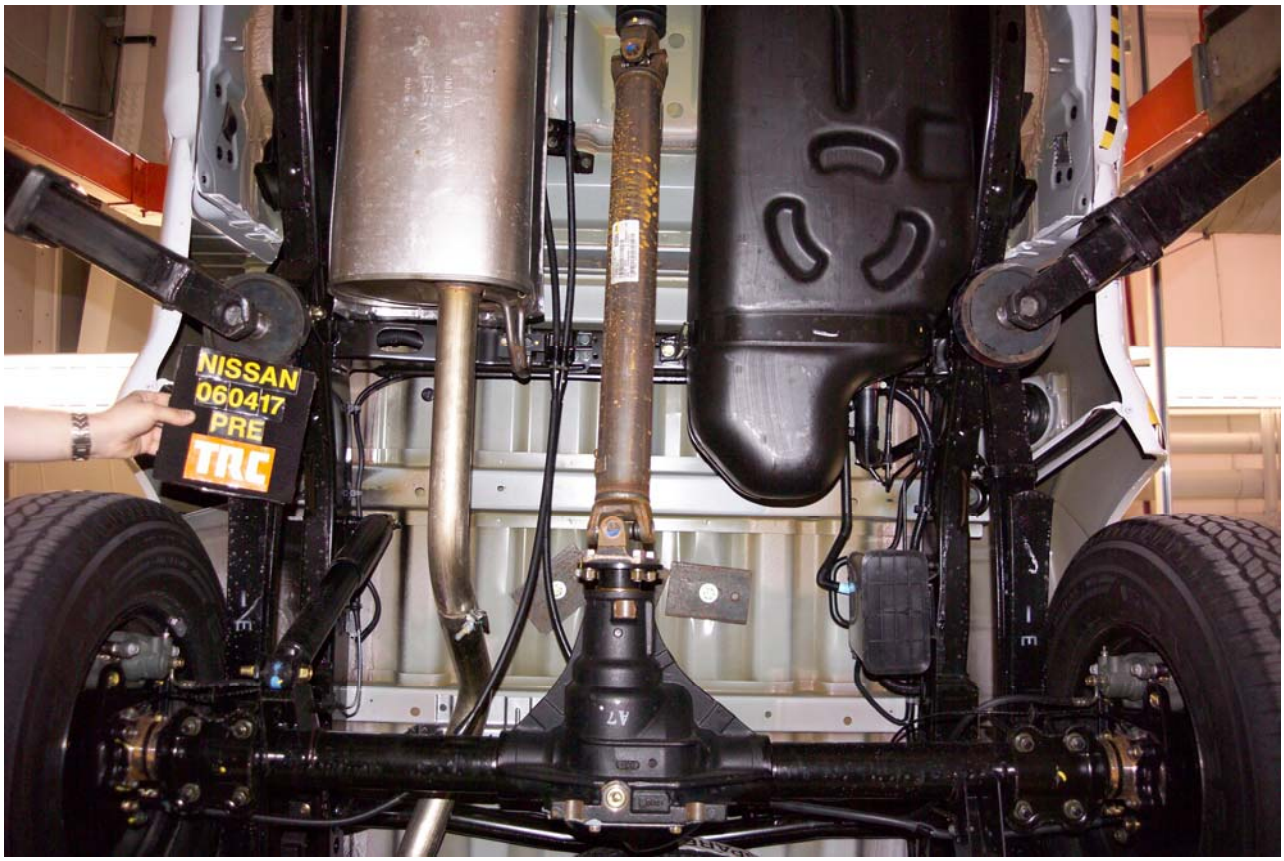

Figure A-39 Pre-Test Mid Rear Underbody View

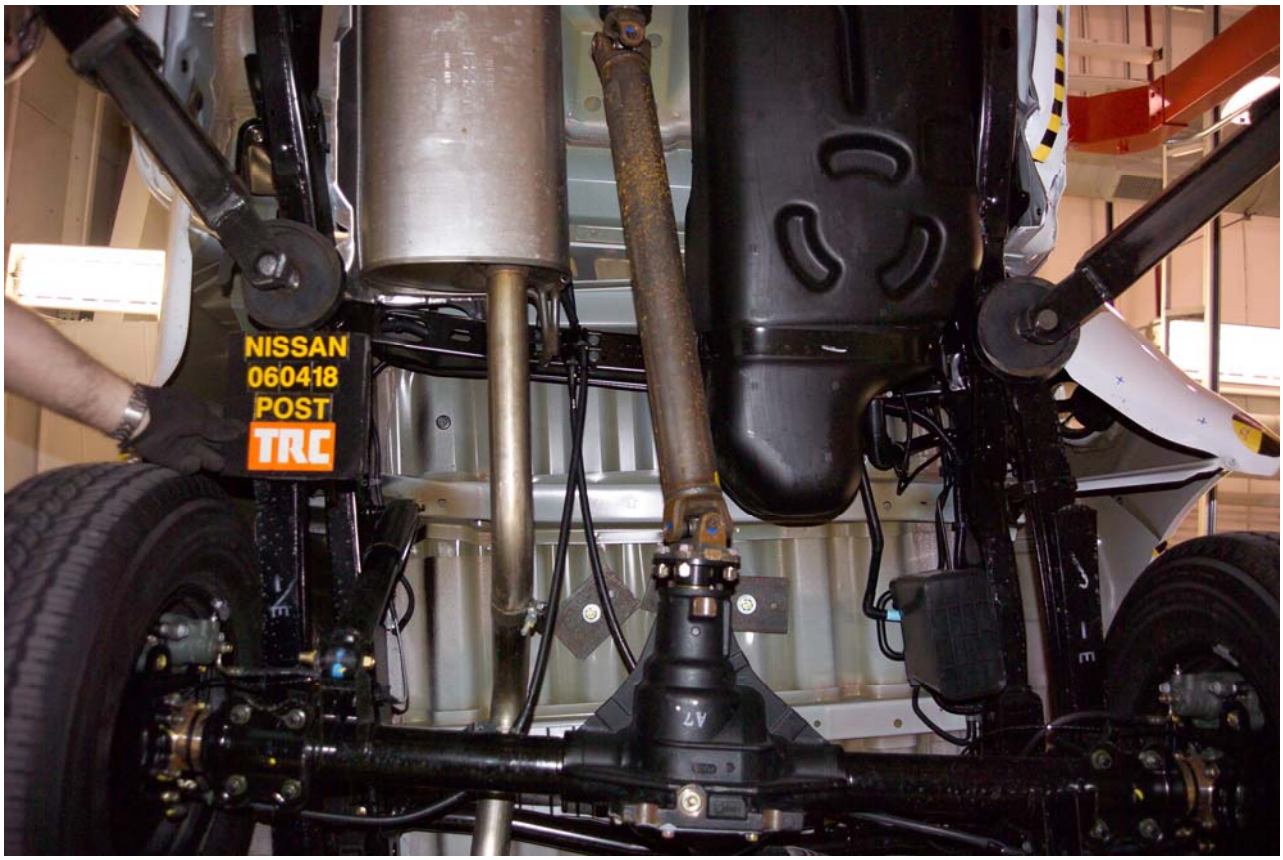

Figure A-40 Post-Test Mid Rear Underbody View

Figure A-41 Pre-Test Rear Underbody View

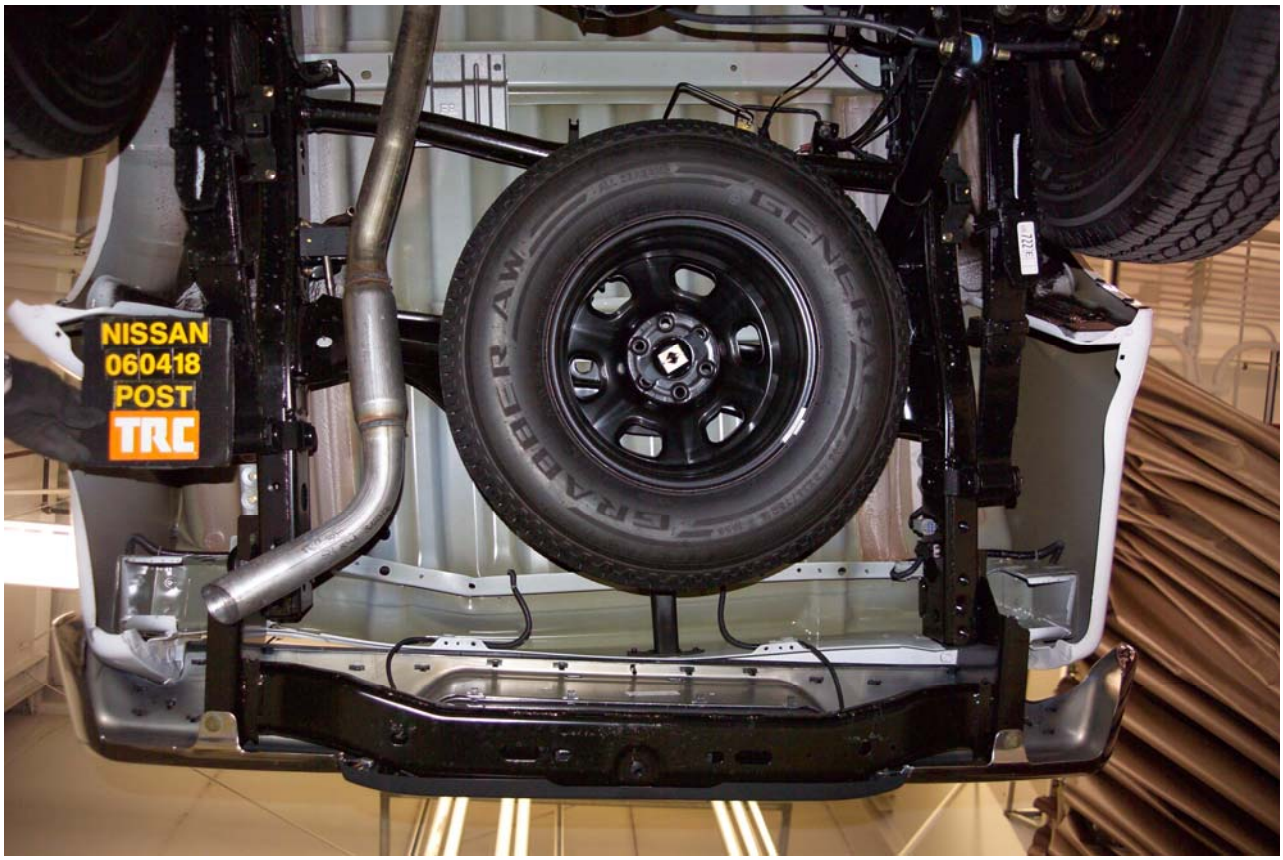

Figure A-42 Post-Test Rear Underbody View

Figure A-43 Pre-Test Driver Dummy (Through Window)

Figure A-44 Post-Test Driver Dummy (Through Window)

Figure A-45 Pre-Test Driver Dummy (Door Open)

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Figure A-46 Pre-Test Driver Dummy Clearance from Door

Figure A-47 Post-Test Driver Dummy Clearance from Door

Figure A-48 Pre-Test Driver Dummy Right Side View

Figure A-49 Post-Test Driver Dummy Right Side View

Figure A-50 Pre-Test Front Door Panel (Interior)

Figure A-51 Post-Test Front Door Panel (Interior) - View 1

Figure A-52 Post-Test Front Door Panel (Interior) - View 2

Figure A-53 Post-Test Front Door Panel (Interior) - View 3

Figure A-54 Post-Test Front Door Panel (Interior) - View 4

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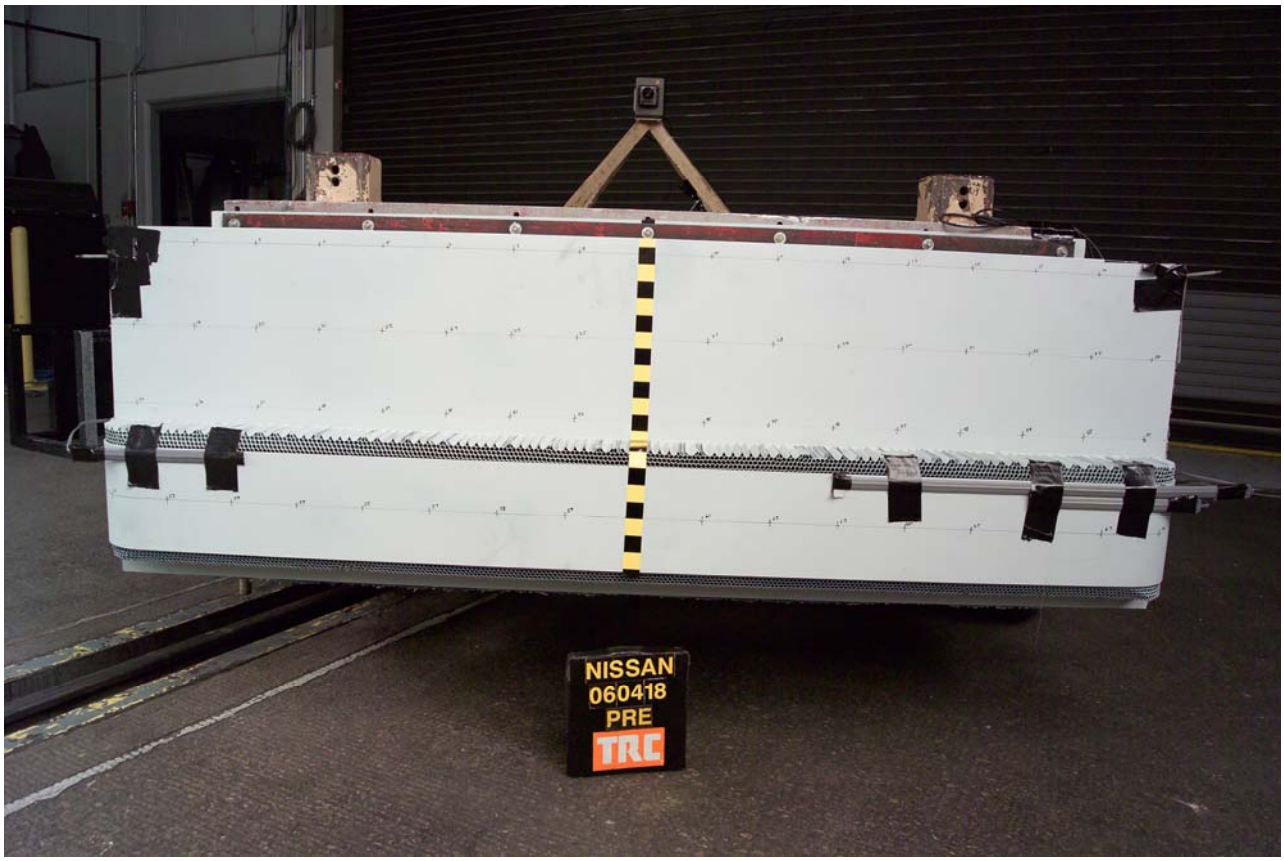

Figure A-55 Pre-Test Front View of Deformable Barrier

Figure A-56 Post-Test Front View of Deformable Barrier

Figure A-57 Pre-Test Left Side View of Deformable Barrier

Figure A-58 Post-Test Left Side View of Deformable Barrier

Figure A-59 Pre-Test Right Side View of Deformable Barrier

Figure A-60 Post-Test Right Side View of Deformable Barrier

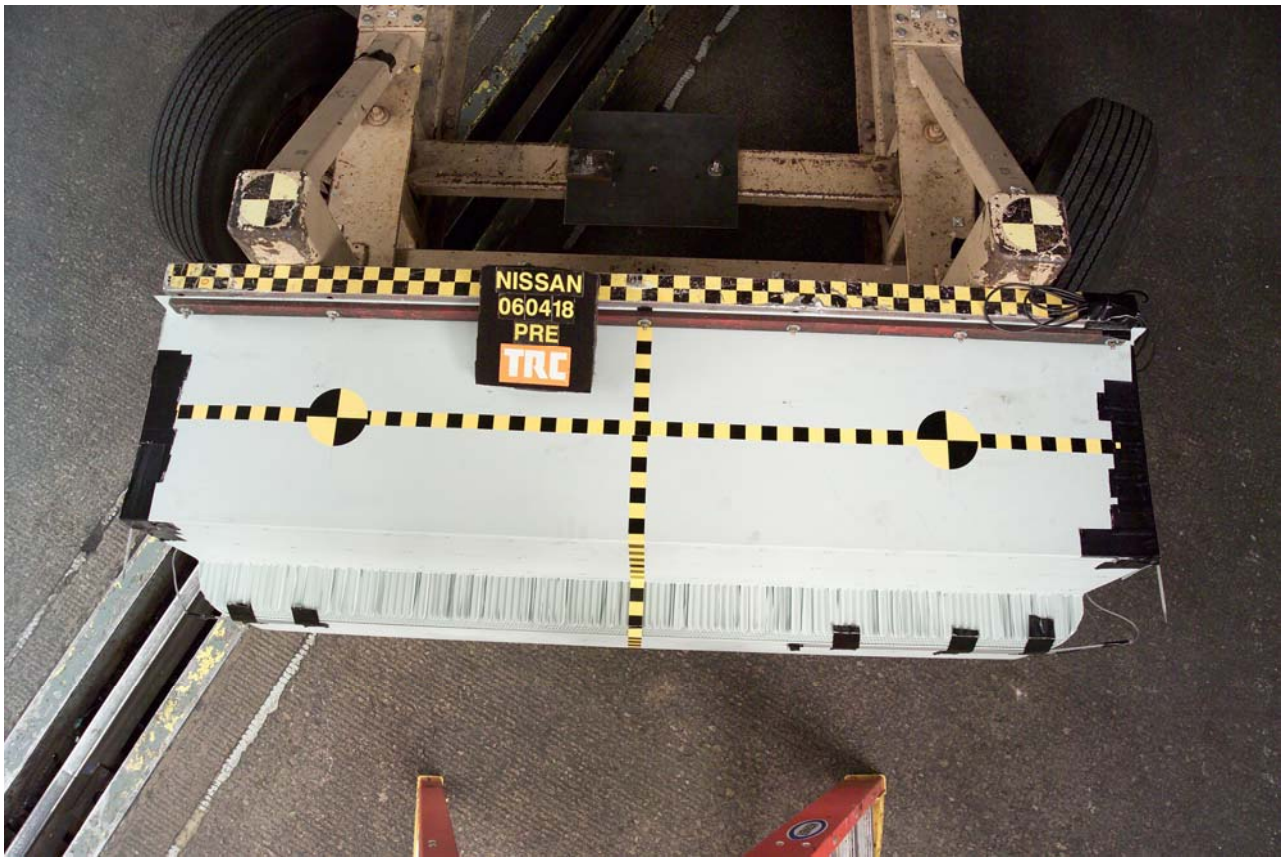

Figure A-61 Pre-Test Top View of Deformable Barrier

Figure A-62 Post-Test Top View of Deformable Barrier

Figure A-63 Pre-Test Moving Barrier and Vehicle Front View

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Figure A-64 Pre-Test Moving Barrier and Vehicle Left Front View

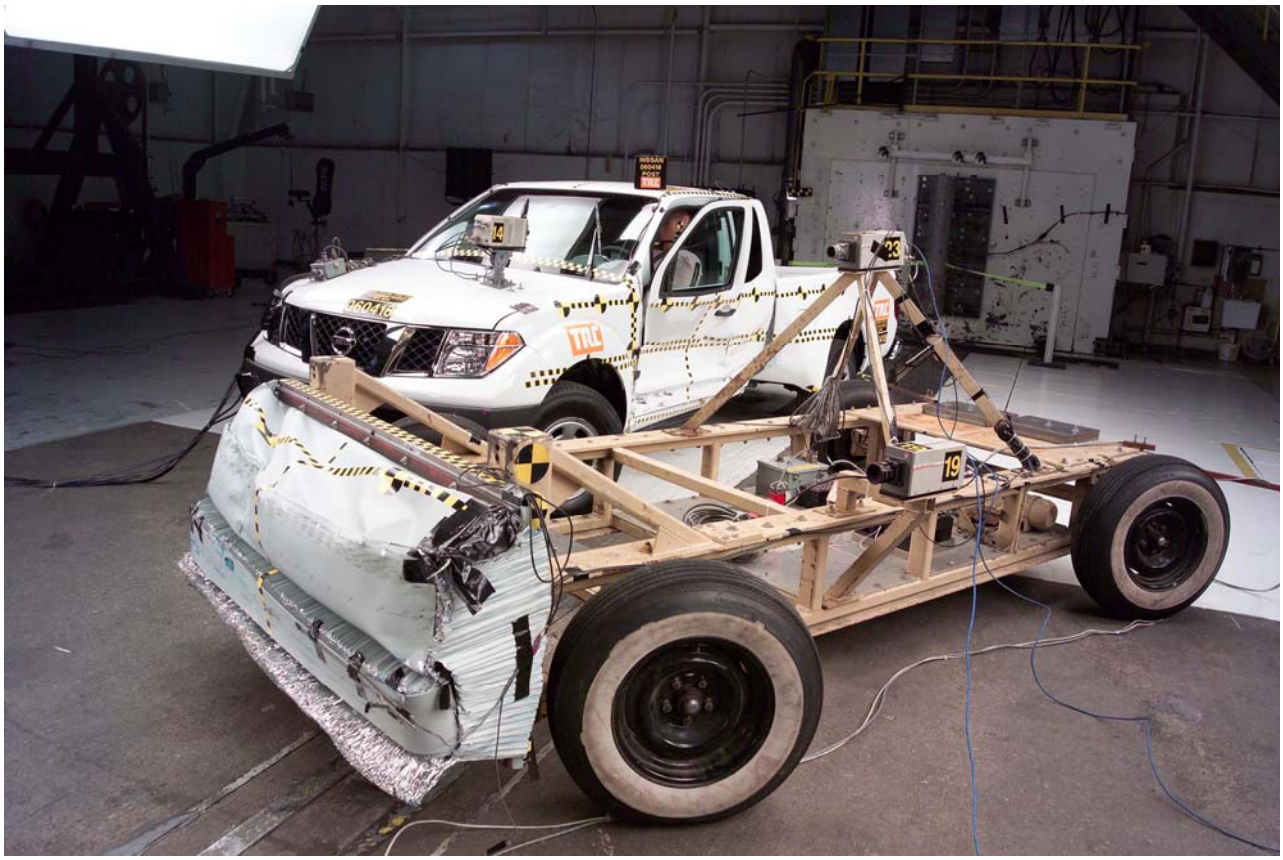

Figure A-65 Post-Test Moving Barrier and Vehicle Left Front View

Figure A-66 Pre-Test Moving Barrier and Vehicle Left Side View

Figure A-67 Post-Test Moving Barrier and Vehicle Left Side View

Figure A-68 Post-Test Moving Barrier and Vehicle Left Rear View

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Figure A-69 Pre-Test Moving Barrier and Vehicle Rear View

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Figure A-70 Pre-Test Moving Barrier and Vehicle Right Front View

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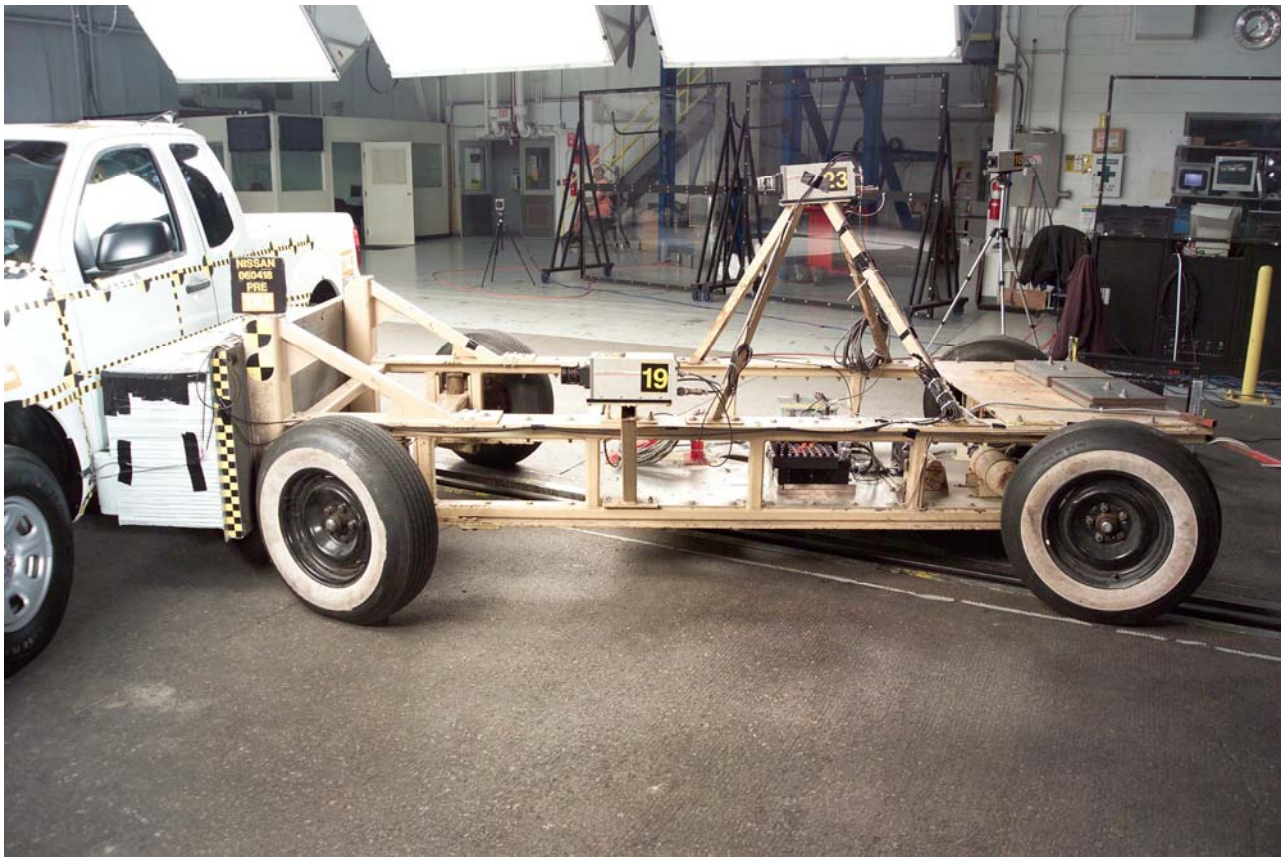

Figure A-71 Pre-Test Moving Barrier Left Side View

Figure A-72 Post-Test Moving Barrier Left Side View

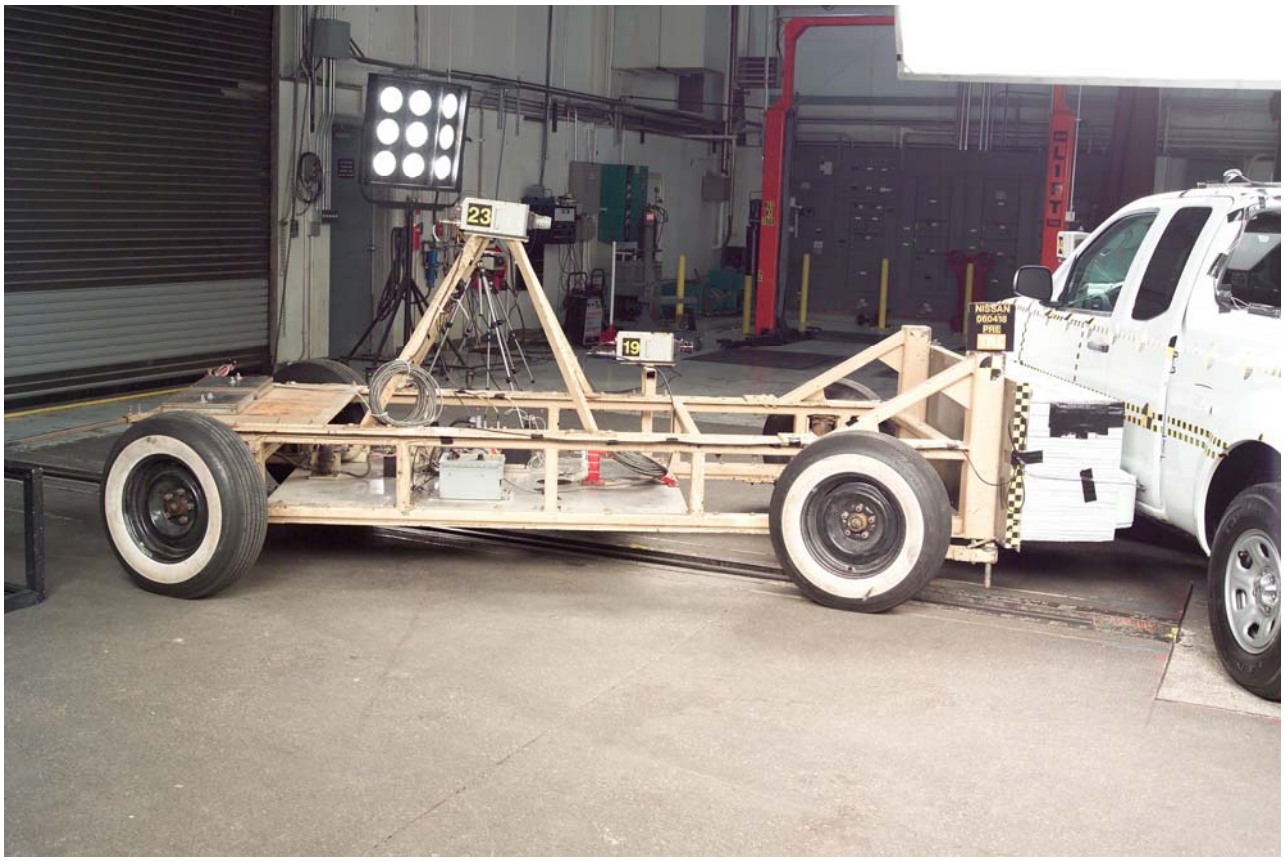

Figure A-73 Pre-Test Moving Barrier Right Side View

Figure A-74 Post-Test Moving Barrier Right Side View

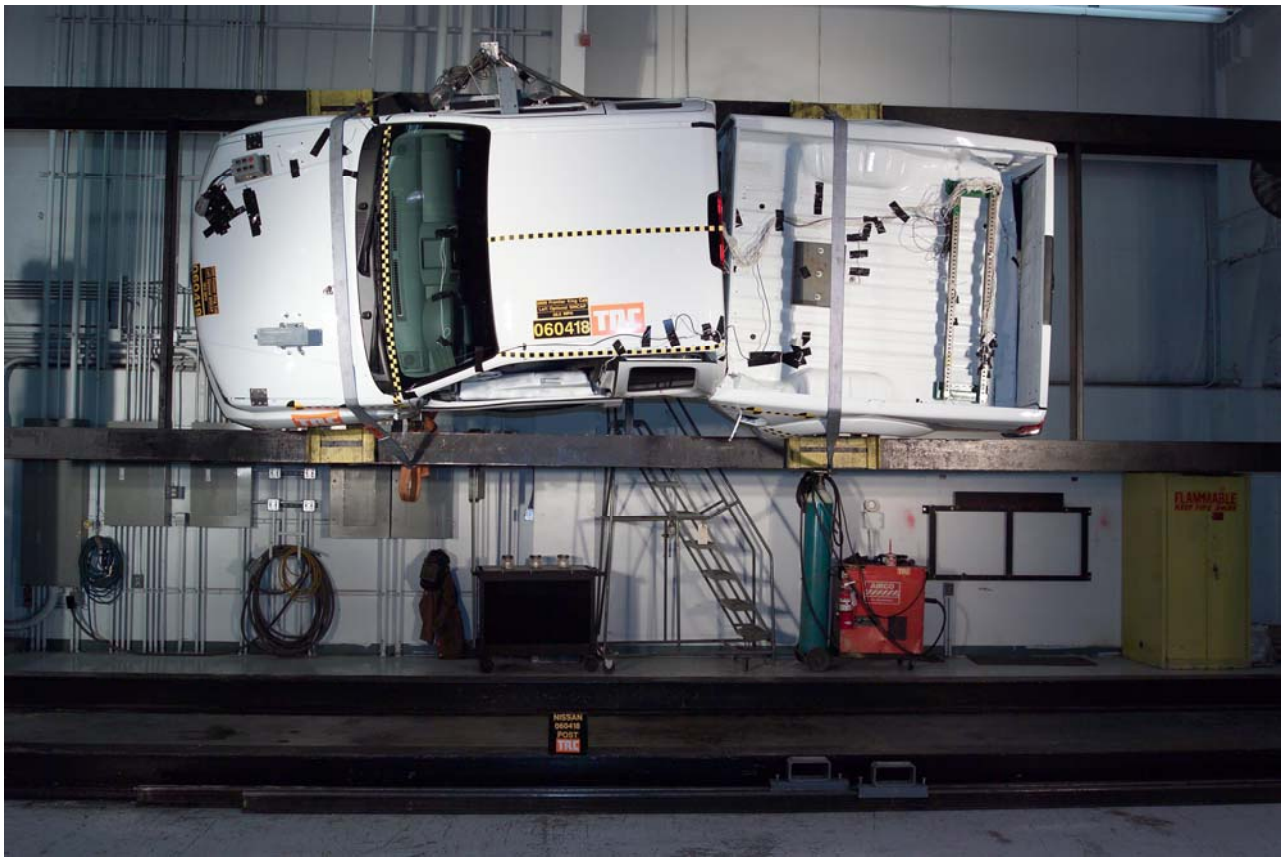

Figure A-75 Vehicle on Rollover Device (90°)

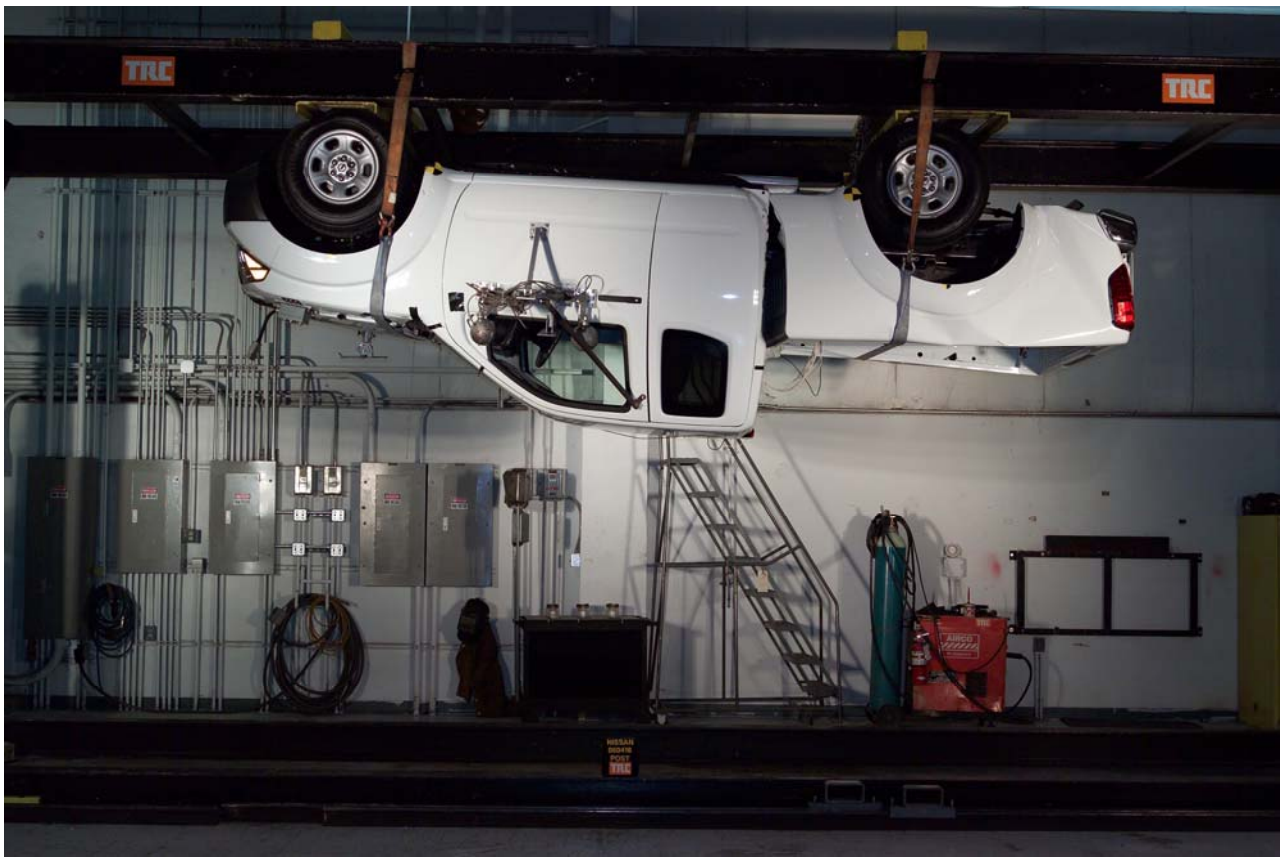

Figure A-76 Vehicle on Rollover Device (180°)

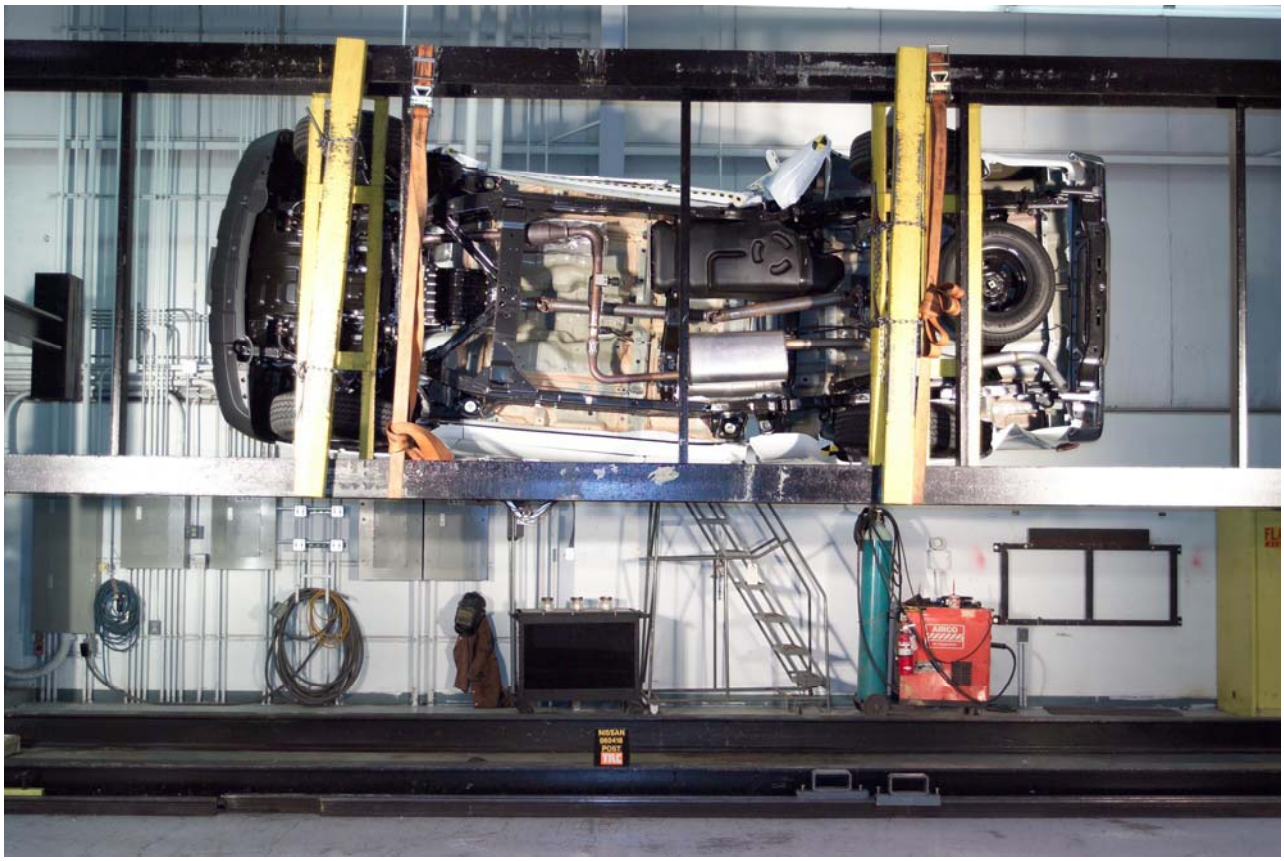

Figure A-77 Vehicle on Rollover Device (270°)

Figure A-78 Vehicle on Rollover Device (360°)

Figure A-79 Pre-Test Ballast View

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Figure A-80 Vehicle Impact

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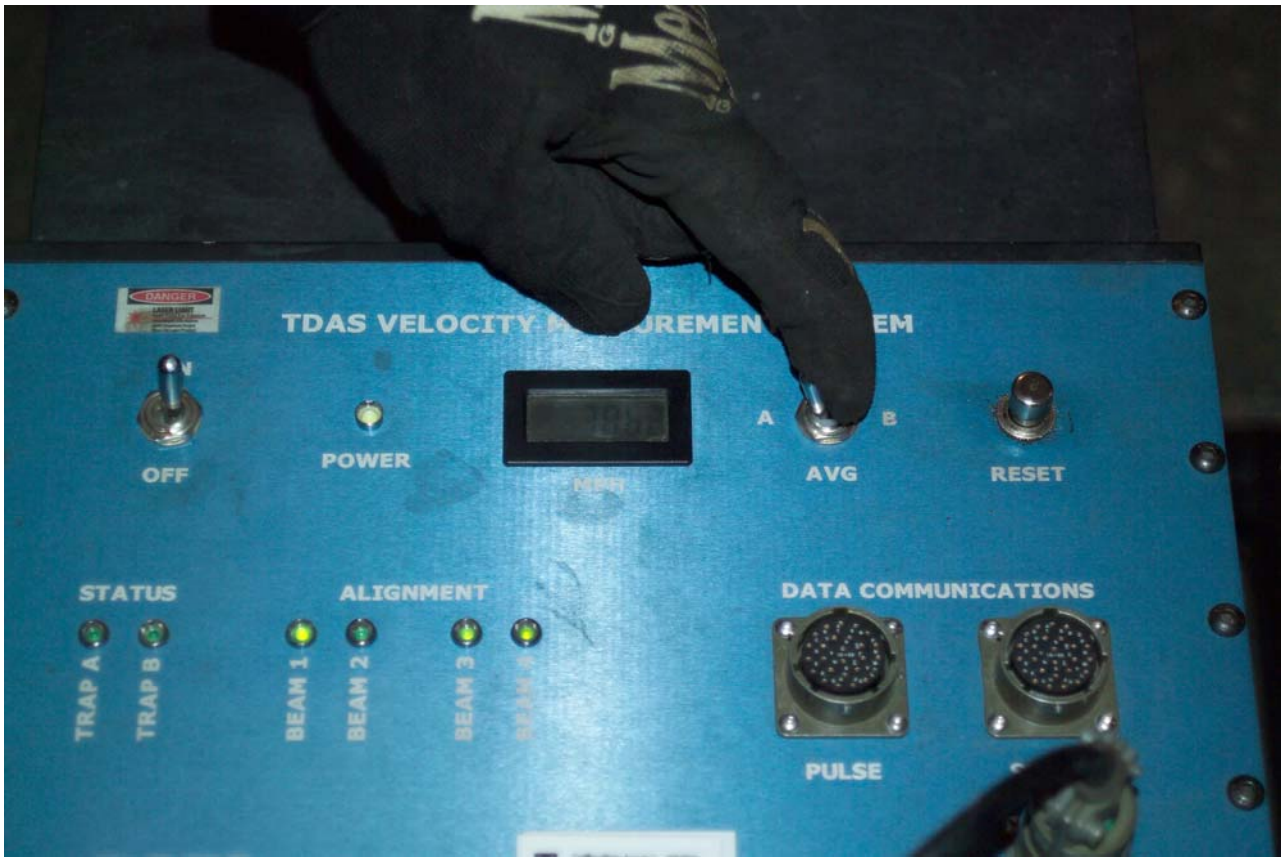


Figure A-81 Post-Test Digital Light Trap Read-out - View 1

Figure A-82 Post-Test Digital Light Trap Read-out - View 2

APPENDIX B

SID/HIII, VEHICLE AND MDB RESPONSE DATA

Data Plot	LIST OF DATA PLOTS PROVIDED IN THE TEST REPORT	Page
B-1	Driver Upper Rib Primary Y	B-5
B-1	Driver Lower Rib Primary Y	B-5
B-1	Driver Lower Spine Primary Y	B-5
B-1	Driver Pelvis Primary Y	B-5

The following dummy and vehicle response data can be found in the R&D section of the NHTSA website at: www.nhtsa.dot.gov.

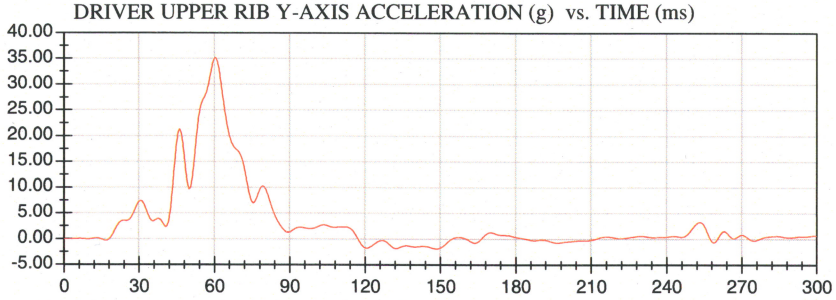
Data Plot	LIST OF DATA PLOTS (CONTINUED)
	Driver Head X Primary
	Driver Head Y Primary
	Driver Head Z Primary
	Driver Head X Redundant
	Driver Head Y Redundant
	Driver Head Z Redundant
	Driver Upper Neck Force X
	Driver Upper Neck Force Y
	Driver Upper Neck Force Z
	Driver Upper Neck Moment X
	Driver Upper Neck Moment Y
	Driver Upper Neck Moment Z
	Driver Upper Rib Redundant Y
	Driver Lower Rib Redundant Y
	Driver Lower Spine Redundant Y
	Driver Pelvis Redundant Y
	Driver Thorax Contact
	Driver Pelvis Contact
	Vehicle Right Sill at Front Seat X
	Vehicle Right Sill at Front Seat Y
	Vehicle Right Sill at Front Seat Z
	Vehicle Right Sill at Rear Seat X
	Vehicle Right Sill at Rear Seat Y
	Vehicle Right Sill at Rear Seat Z
	Vehicle Rear Floor Above Axle X
	Vehicle Rear Floor Above Axle Y
	Vehicle Rear Floor Above Axle Z
	Vehicle Left Sill at Front Seat Y
	Vehicle Left Sill at Rear Seat Y
	Vehicle Right Rear Occupant Compartment

Data Plot	LIST OF DATA PLOTS (CONTINUED)
	Vehicle B-Post Lower Y
	Vehicle B-Post Middle Y
	Vehicle A-Post Lower Y
	Vehicle A-Post Middle Y
	Vehicle Left Front Seat Track Y
	Vehicle Left Rear Seat Track Y
	Vehicle CG X
	Vehicle CG Y
	Vehicle CG Z
	MDB CG X
	MDB CG Y
	MDB CG Z
	MDB Rear X
	MDB Rear Y
	MDB Right Bumper Contact
	MDB Left Bumper Contact

NHTSA Position #1 - HIII/SID (059) Test Date: 04/18/2006

Test Lab: CTF
Test Number: 060418 (N65200)

DRIVER UPPER RIB Y-AXIS ACCELERATION (g) vs. TIME (ms)

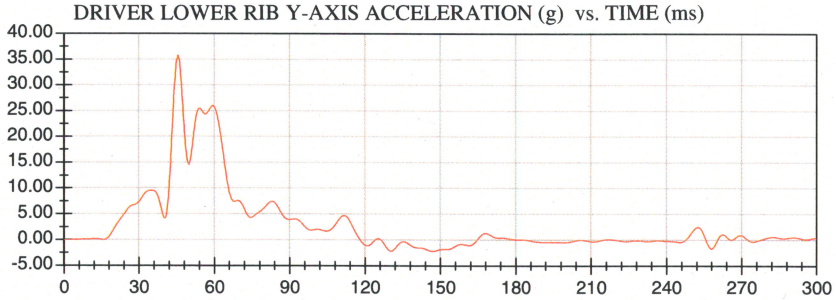


<Max>
35.14 g at 60.60 ms

<Min>
-1.91 g at 148.70 ms

FIR 100

DRIVER LOWER RIB Y-AXIS ACCELERATION (g) vs. TIME (ms)

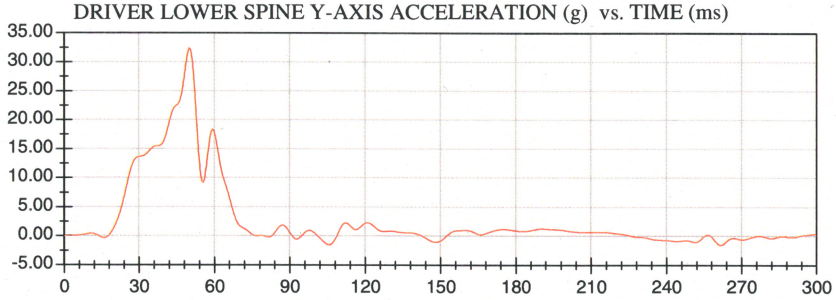


<Max>
35.76 g at 45.60 ms

<Min>
-2.28 g at 146.90 ms

FIR 100

DRIVER LOWER SPINE Y-AXIS ACCELERATION (g) vs. TIME (ms)

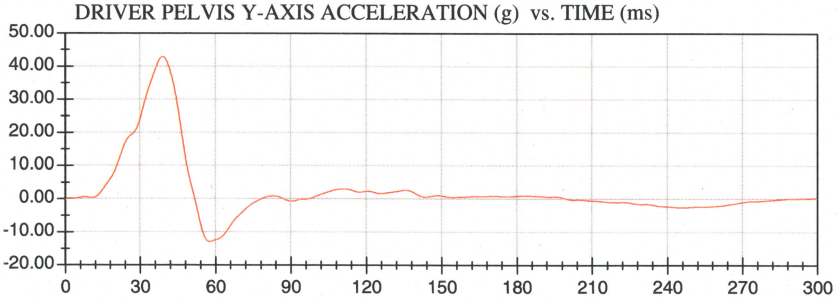


<Max>
32.34 g at 50.00 ms

<Min>
-1.59 g at 105.70 ms

FIR 100

DRIVER PELVIS Y-AXIS ACCELERATION (g) vs. TIME (ms)



<Max>
42.72 g at 38.80 ms

<Min>
-13.03 g at 57.50 ms

FIR 100

APPENDIX C
DUMMY CALIBRATION DATA

CALIBRATION TEST RESULTS

PRE-TEST

SID/HIII: 059

Transportation Research Center Inc.
SID/HIII Dummy Pre-Test
External Dimensions
Serial No. 059 Calibration No. 13

Test Parameter	Dimension	Specification	Results	Pass
Seated Height	SH	889.0 - 909.3 mm	902 mm	Yes
Rib Height	RH	501.7 - 520.7 mm	512 mm	Yes
Hip Pivot Height	HP	99.1 REF mm	99.1 mm	
Knee Pivot From Backline	KH	510.5 - 525.8 mm	520 mm	Yes
Knee Pivot From Floor	KV	490.2 - 505.5 mm	494 mm	Yes
Hip Width	HW	355.6 - 391.2 mm	364 mm	Yes
Top Rib Width From C\L	RW-1	165.1 - 180.3 mm	177 mm	Yes
Bottom Rib Width From C\L	RW-2	165.1 - 180.3 mm	178 mm	Yes
Difference Between Top & Bottom Rib Width from C\L		<= 2.5 mm	1.0 mm	Yes

Technician

Approved

Transportation Research Center Inc.

Left Lateral Head Drop
SID-HIII Serial No. 059 Certification No. 13-2
Test Date: 04/13/2006

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.6 °C	21.6 °C	Yes
Relative Humidity	10 - 70 %	46 %	Yes
Peak Head Resultant Acceleration	120 - 150 g	148.9 g	Yes
Peak Head Longitudinal Acceleration	(-15) - 15 g	4.9 g	Yes
Is Head Resultant Acceleration Curve Unimodal Within 15% of Peak?	Yes	Yes	Yes

Test meets specifications.

Comments:

Technician

Approved

Specification Source: CFR49 Part 572 Subpart M
with Polarity in accordance with J211

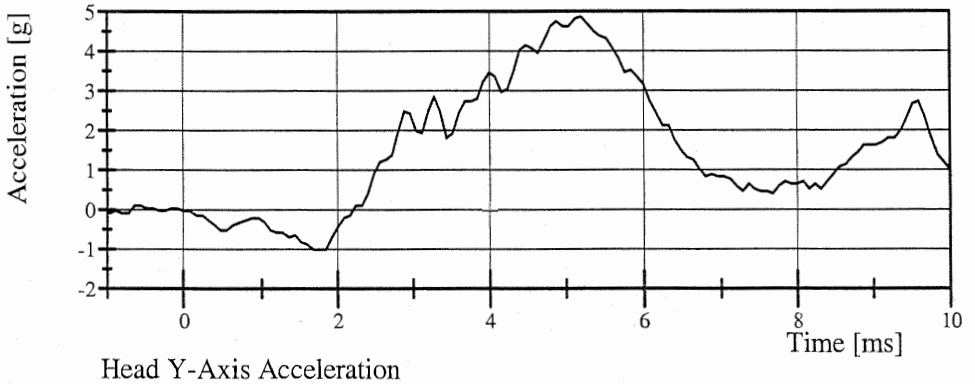
04.13.2006 11:13:46 609

060418

Transportation Research Center Inc.

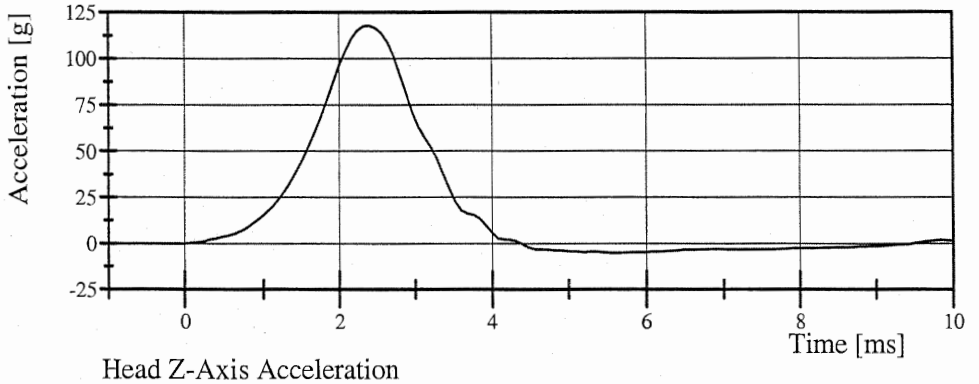
Left Lateral Head Drop
SID-HIII Serial No. 059 Certification No. 13-2
Test Date: 04/13/2006

Head X-Axis Acceleration



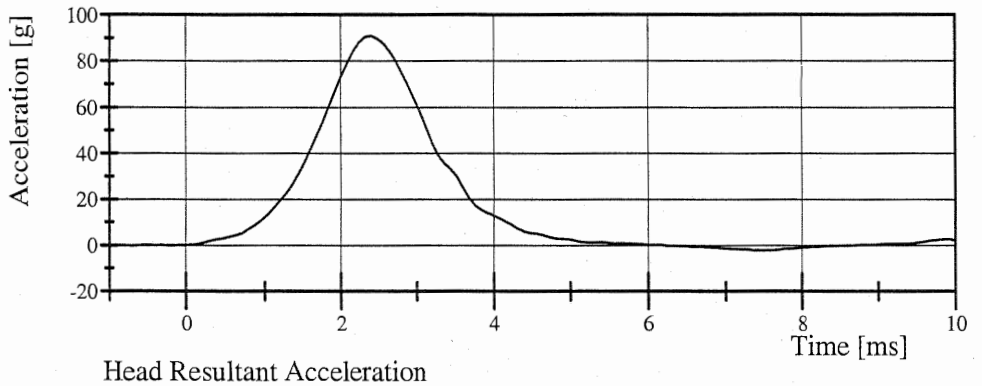
Filter Class: CFC_1000
Max: 4.9 g at 5.2 ms
Min: -1.0 g at 1.7 ms

Head Y-Axis Acceleration



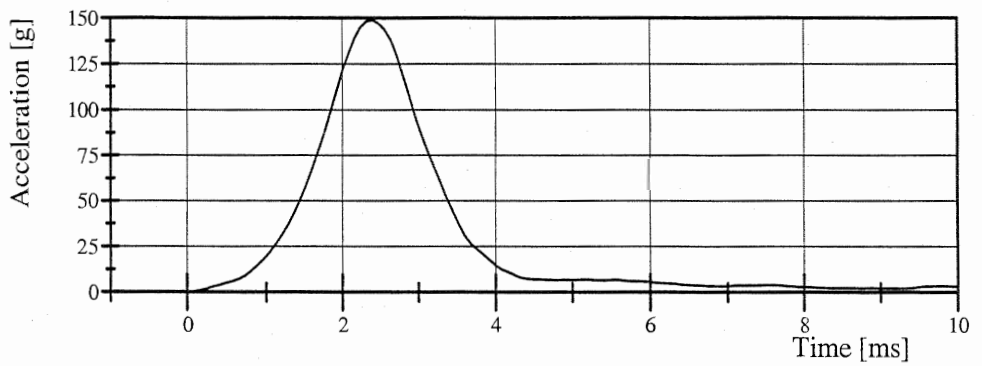
Filter Class: CFC_1000
Max: 117.9 g at 2.4 ms
Min: -5.3 g at 5.6 ms

Head Z-Axis Acceleration



Filter Class: CFC_1000
Max: 90.9 g at 2.4 ms
Min: -2.1 g at 7.4 ms

Head Resultant Acceleration



Filter Class: CFC_1000
Max: 148.9 g at 2.4 ms
Min: 0.0 g at -0.2 ms

Specification Source: CFR49 Part 572 Subpart M
with Polarity in accordance with J211

04.13.2006 11:14:05 609

060418

Transportation Research Center Inc.

Left Lateral Neck
SID-HIII Serial No. 059 Certification No. 13-1
Test Date: 03/18/2006

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.1 °C	Yes
Relative Humidity	10 - 70 %	29 %	Yes
Pendulum Velocity	(-6.89) - (-7.13) m/s	-7.005 m/s	Yes
Pendulum Integrated Velocity Change at 10 ms	1.96 - 2.55 m/s	2.266 m/s	Yes
Pendulum Integrated Velocity Change at 20 ms	4.12 - 5.10 m/s	4.520 m/s	Yes
Pendulum Integrated Velocity Change at 30 ms	5.73 - 7.01 m/s	6.438 m/s	Yes
Pendulum Integrated Velocity Change at 40 to 70 ms	6.27 - 7.64 m/s	7.251 m/s	Yes
Total Head D-Plane Rotation	(-66) - (-82) °	-69.0 °	Yes
Total Head D-Plane Rotation Time to 0° after Peak Rotation	58 - 67 ms	61.4 ms	Yes
Total Neck Occipital Condyle Moment	73 - 88 N·m	81.9 N·m	Yes
Total Neck Occipital Condyle Moment Time to 0 N·m after Peak Moment	49 - 64 ms	56.2 ms	Yes
Time from Peak Moment to Peak Rotation	2 - 16 ms	8.9 ms	Yes

Test meets specifications.

Comments:

Technician

Approved

Specification Source: CFR49 Part 572 Subpart M with Polarity in accordance with J211

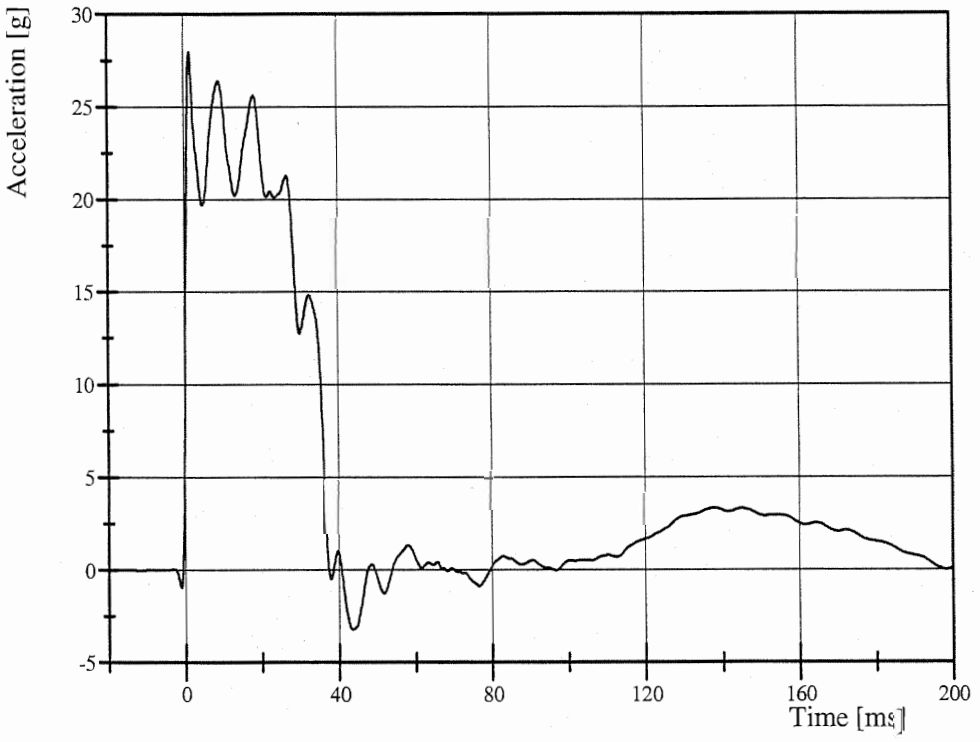
03.18.2006 07:38:20 3014

060418

Transportation Research Center Inc.

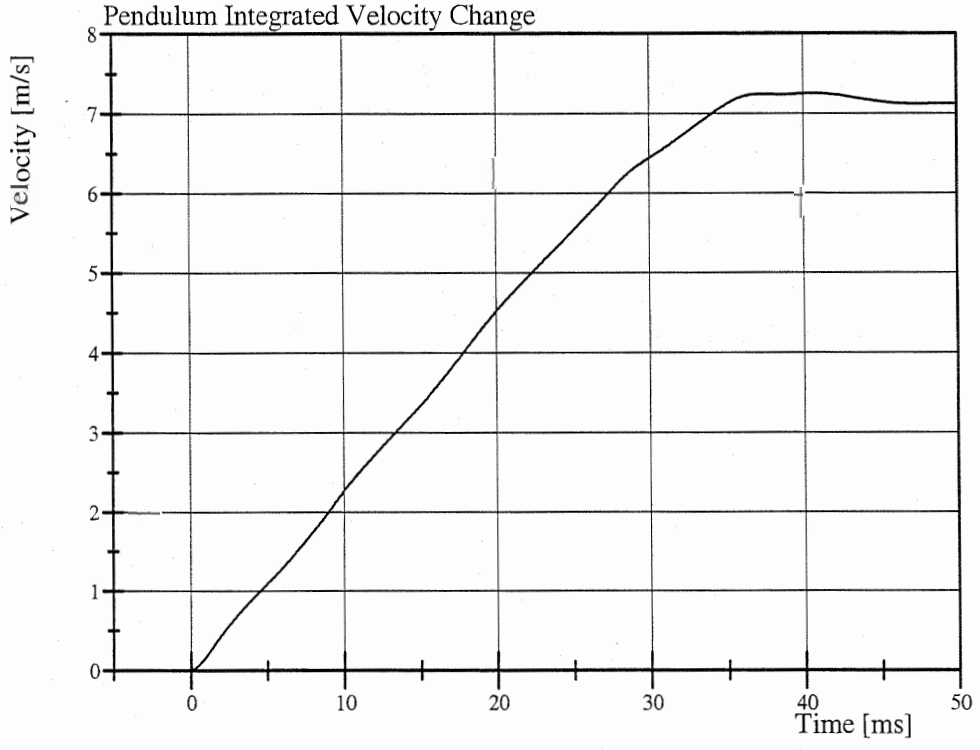
Left Lateral Neck
SID-HIII Serial No. 059 Certification No. 13-1
Test Date: 03/18/2006

Pendulum Acceleration



Filter Class: CFC_180
Max: 28.0 g at 1.6 ms
Min: -3.2 g at 43.4 ms

Pendulum Integrated Velocity Change



Filter Class: CFC_180
Max: 7.3 m/s at 40.7 ms
Min: 0.0 m/s at 0.0 ms

Specification Source: CFR49 Part 572 Subpart M
with Polarity in accordance with J211

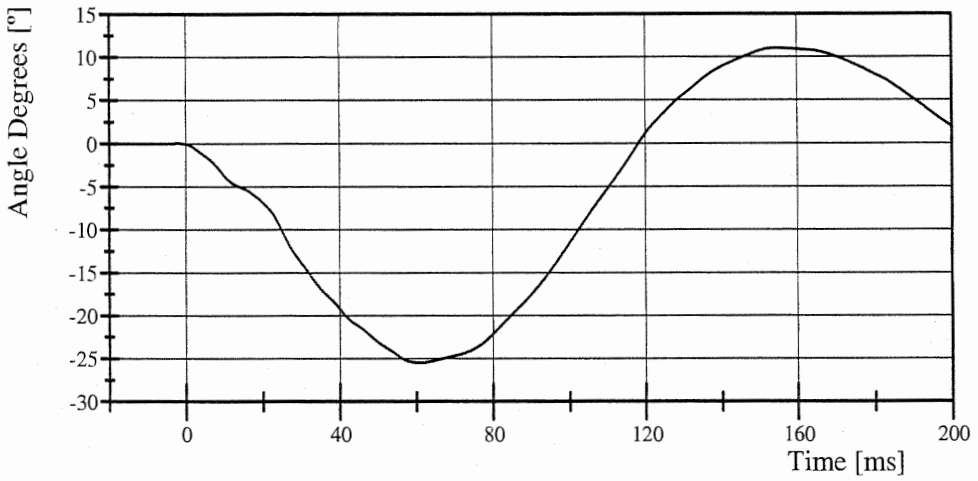
03.18.2006 07:38:36 3014

060418

Transportation Research Center Inc.

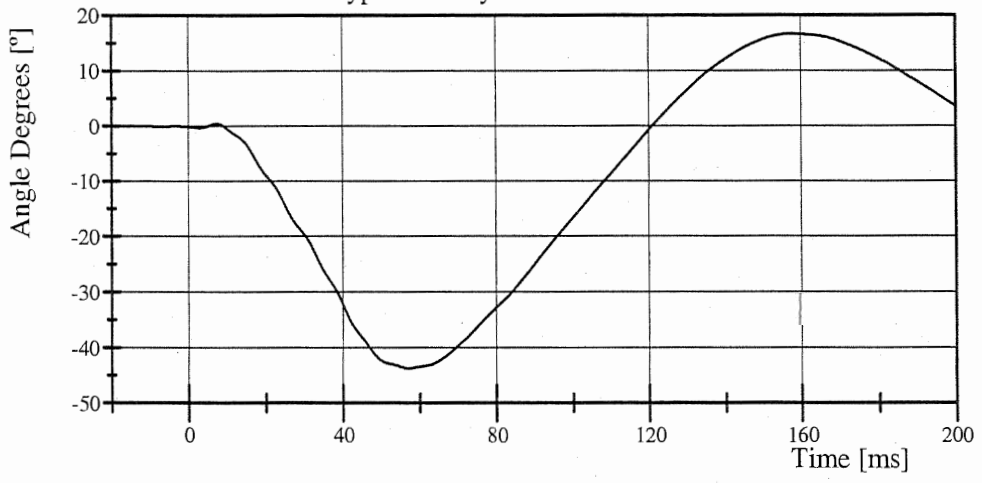
Left Lateral Neck
SID-HIII Serial No. 059 Certification No. 13-1
Test Date: 03/18/2006

Pot Rotation at the Base of Neck



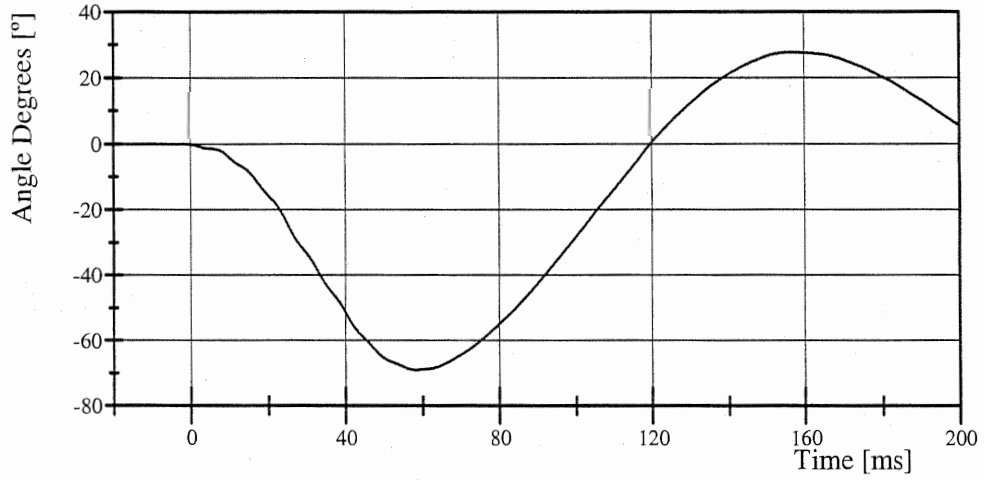
Filter Class: CFC_60
Max: 11.0 ° at 154.9 ms
Min: -25.5 ° at 61.0 ms

Head Rotation at Occypital Condyles



Filter Class: CFC_60
Max: 16.7 ° at 157.6 ms
Min: -43.7 ° at 57.1 ms

Total Head D-Plane Rotation



Filter Class: CFC_60
Max: 27.6 ° at 156.6 ms
Min: -69.0 ° at 58.2 ms

Specification Source: CFR49 Part 572 Subpart M
with Polarity in accordance with J211

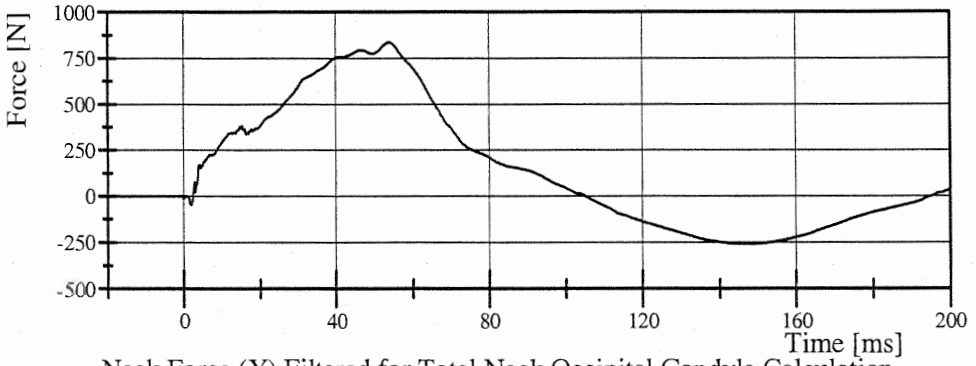
03.18.2006 07:38:37 3014

060418

Transportation Research Center Inc.

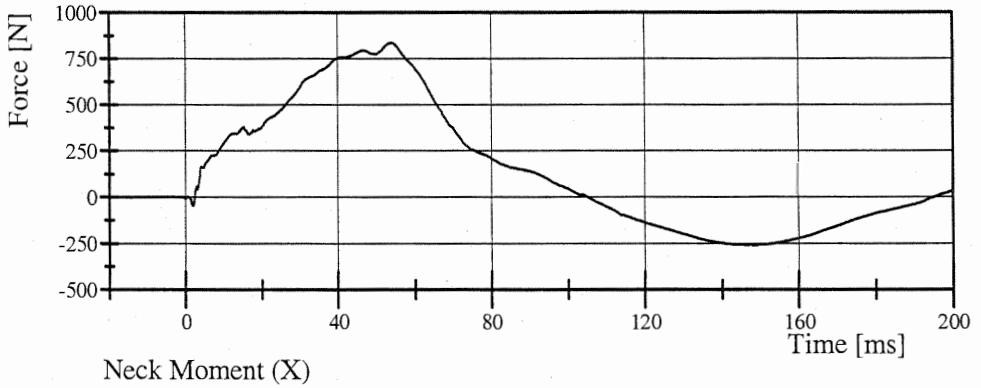
Left Lateral Neck
SID-HIII Serial No. 059 Certification No. 13-1
Test Date: 03/18/2006

Neck Force (Y)



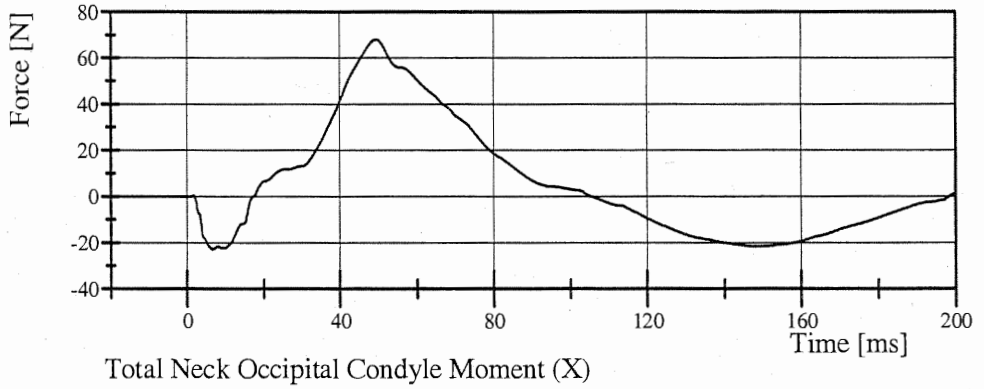
Filter Class: CFC_1000
Max: 835.9 N at 53.8 ms
Min: -259.1 N at 148.3 ms

Neck Force (Y) Filtered for Total Neck Occipital Condyle Calculation



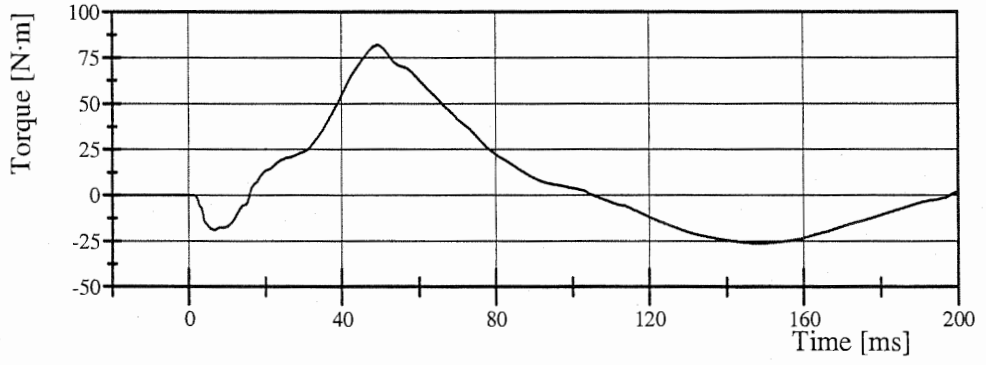
Filter Class: CFC_600
Max: 835.7 N at 54.0 ms
Min: -258.7 N at 148.2 ms

Neck Moment (X)



Filter Class: CFC_600
Max: 68.1 N at 49.4 ms
Min: -22.8 N at 6.6 ms

Total Neck Occipital Condyle Moment (X)



Filter Class: CFC_600
Max: 81.9 N·m at 49.4 ms
Min: -26.2 N·m at 147.9 ms

Transportation Research Center Inc.

Left Lateral Thorax
SID-HIII Serial No. 059 Certification No. 13-4
Test Date: 04/13/2006

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.6 °C	21.7 °C	Yes
Relative Humidity	10 - 70 %	43 %	Yes
Impactor Velocity	4.27 - 4.33 m/s	4.291 m/s	Yes
Upper Rib Lateral Acceleration	37 - 46 g	39.3 g	Yes
Lower Rib Lateral Acceleration	37 - 46 g	37.7 g	Yes
Lower Spine Lateral Acceleration	15 - 22 g	17.2 g	Yes

Test meets specifications.

Comments:

Technician

Approved

Specification Source: CFR49 Part 572 Subpart M
with Polarity in accordance with J211

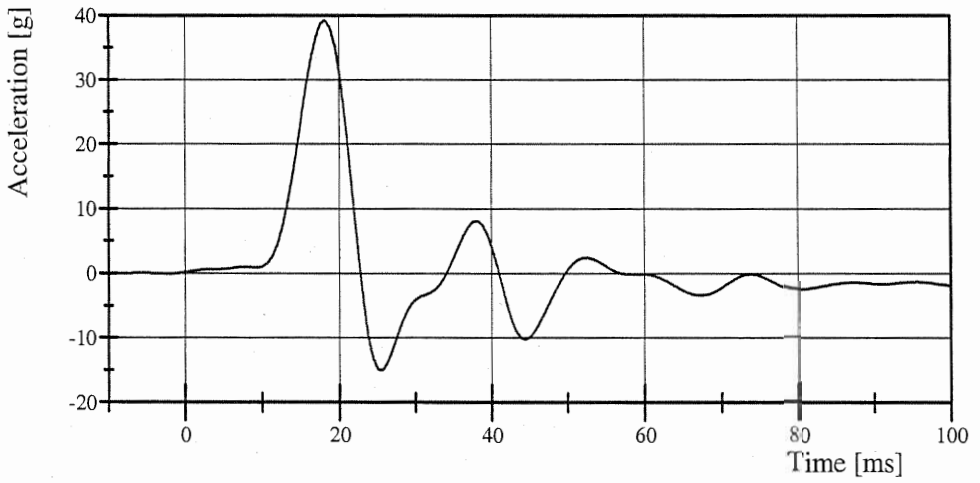
04.13.2006 13:13:27 609

060418

Transportation Research Center Inc.

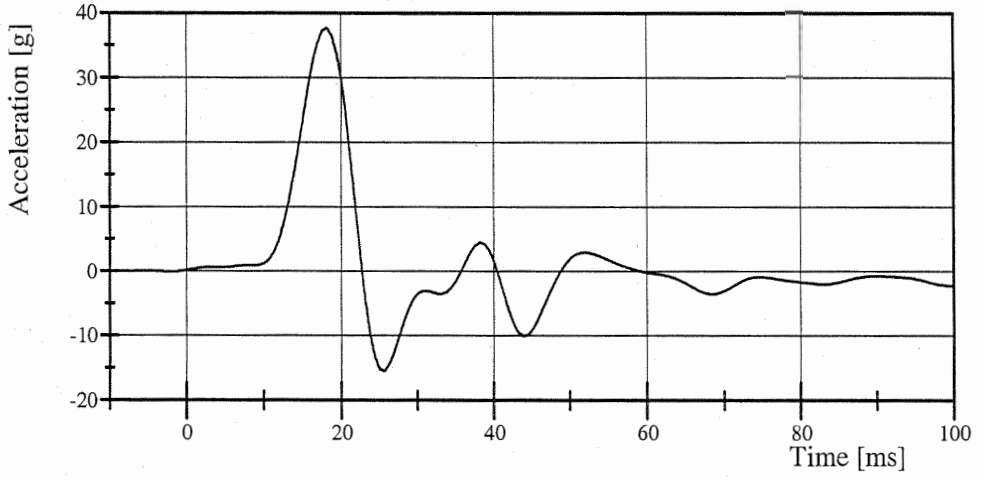
Left Lateral Thorax
SID-HIII Serial No. 059 Certification No. 13-4
Test Date: 04/13/2006

Upper Rib Acceleration (Y)



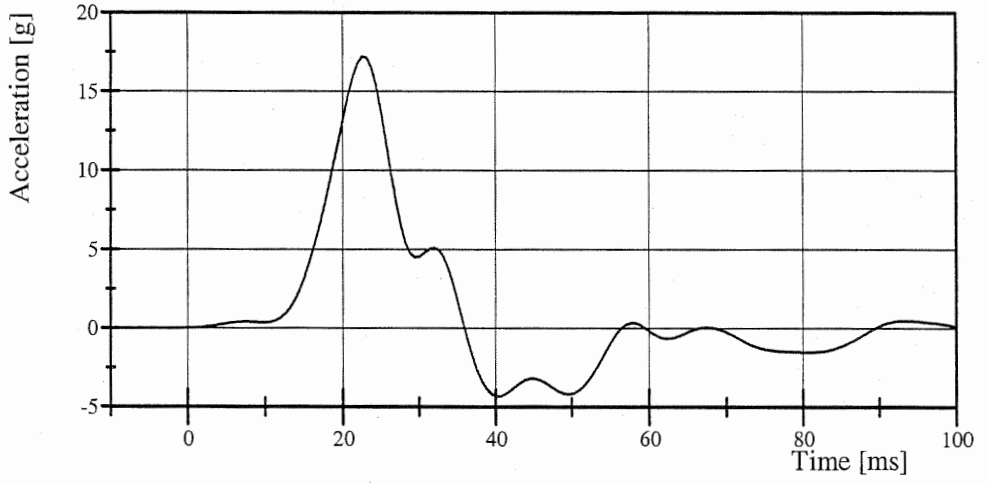
Filter Class: FIR_100
Max: 39.3 g at 18.2 ms
Min: -15.0 g at 25.7 ms

Lower Rib Acceleration (Y)



Filter Class: FIR_100
Max: 37.7 g at 18.2 ms
Min: -15.4 g at 25.7 ms

Lower Spine Acceleration (Y)



Filter Class: FIR_100
Max: 17.2 g at 22.6 ms
Min: -4.3 g at 40.2 ms

Transportation Research Center Inc.

3.05 m/s Thoracic Shock Absorber Compression
SID-HIII Serial No. 059 Certification No. 13-3
Test Date: 03/17/2006

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.5 °C	21.1 °C	Yes
Relative Humidity	10 - 70 %	31 %	Yes
Maximum Force at Test Velocity	854 - 1,143 N	1,010.0 N	Yes
Maximum Displacement at Test Velocity	30.2 - 35.18 mm	30.406 mm	Yes

Test meets specifications.

Comments:

Actual Impactor Velocity (m/s): 3.073

Damper Setting: 5.5

Technician

Approved

Specification Source: TP214D-07 Appendix A

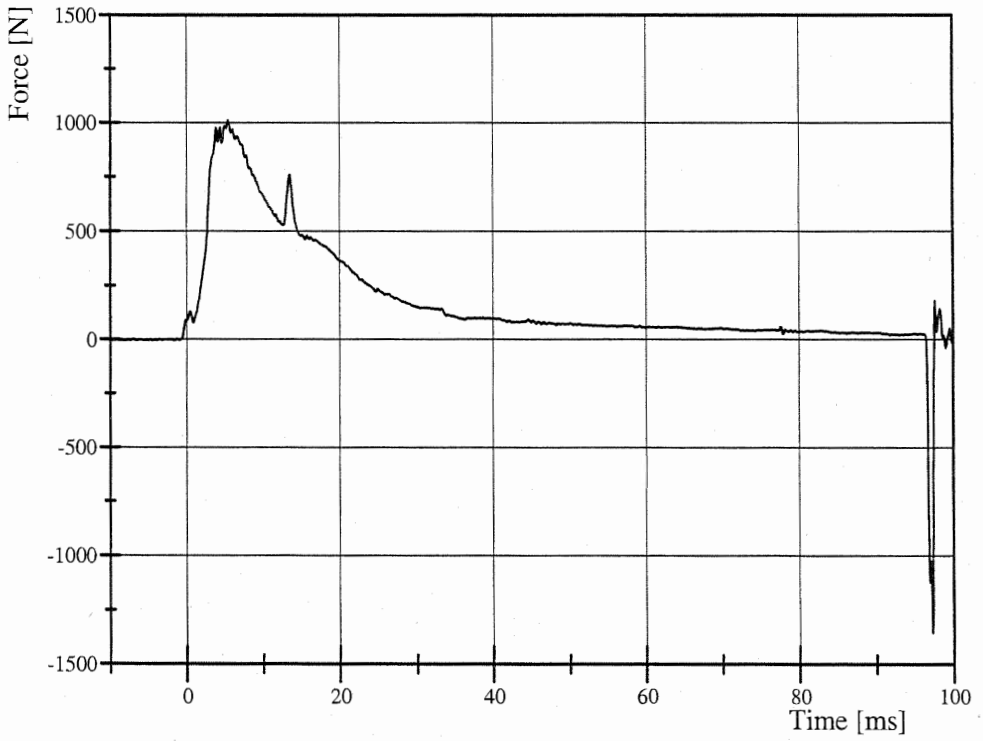
03.17.2006 18:29:19 2003

060418

Transportation Research Center Inc.

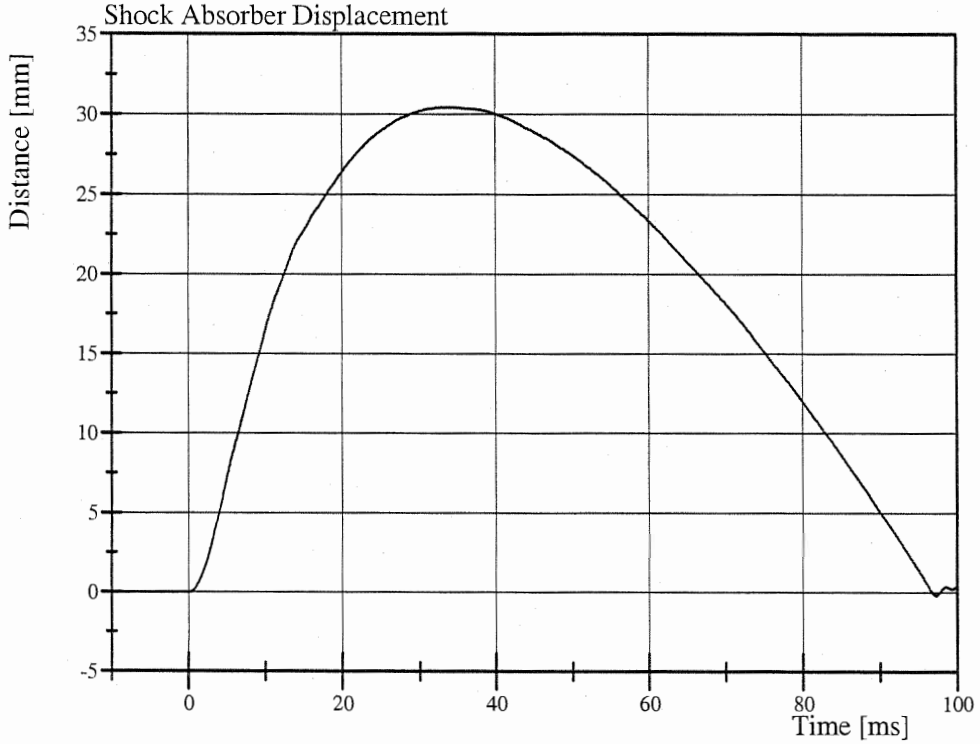
3.05 m/s Thoracic Shock Absorber Compression
SID-HIII Serial No. 059 Certification No. 13-3
Test Date: 03/17/2006

Shock Absorber Resistive Force



Filter Class: CFC_1000
Max: 1,010.0 N at 5.5 ms
Min: -1,354.1 N at 97.3 ms

Shock Absorber Displacement



Filter Class: CFC_1000
Max: 30.4 mm at 33.9 ms
Min: -0.2 mm at 97.3 ms

Specification Source: TP214D-07 Appendix A

03.17.2006 18:30:08 2003

060418

Transportation Research Center Inc.

4.27 m/s Thoracic Shock Absorber Compression
SID-HIII Serial No. 059 Certification No. 13-1
Test Date: 03/17/2006

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.5 °C	21.1 °C	Yes
Relative Humidity	10 - 70 %	32 %	Yes
Maximum Force at Test Velocity	1,749 - 2,115 N	2,025.5 N	Yes
Maximum Displacement at Test Velocity	31.69 - 37.25 mm	33.030 mm	Yes

Test meets specifications.

Comments:

Actual Impactor Velocity (m/s): 4.284

Damper Setting: 5.5

Technician

Approved

Specification Source: TP214D-07 Appendix A

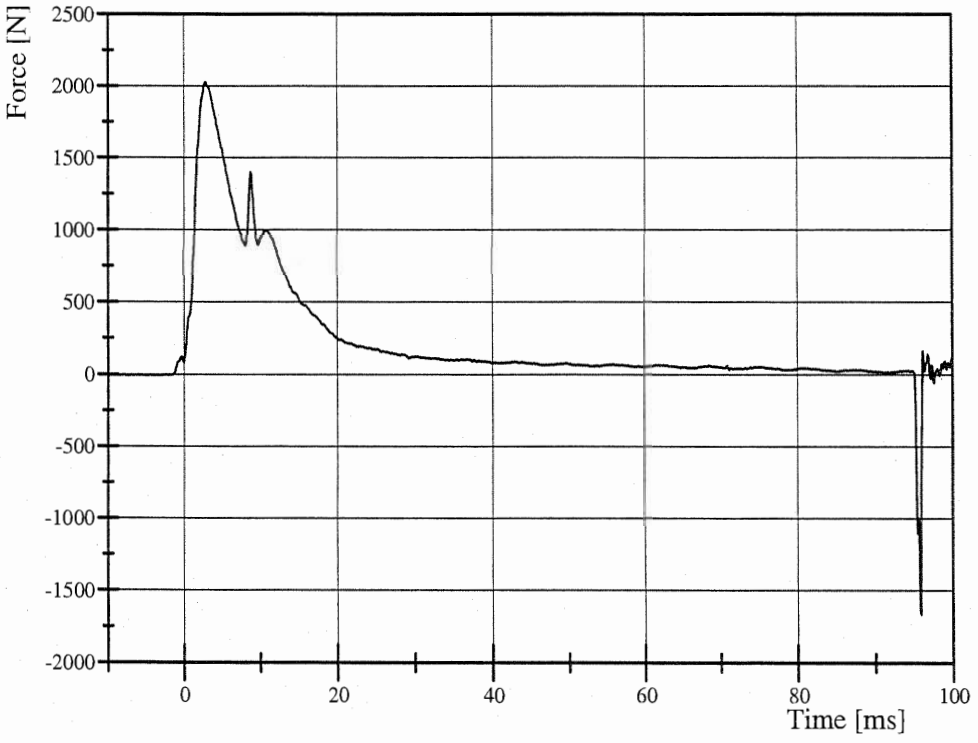
03.17.2006 15:51:39 1796

060418

Transportation Research Center Inc.

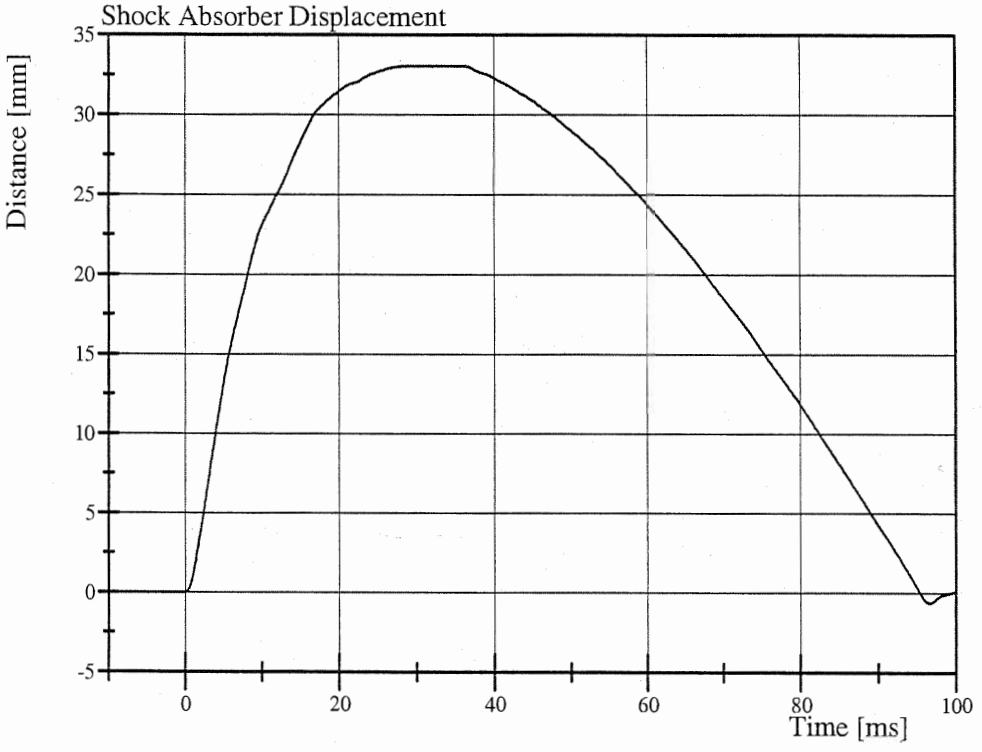
4.27 m/s Thoracic Shock Absorber Compression
SID-HIII Serial No. 059 Certification No. 13-1
Test Date: 03/17/2006

Shock Absorber Resistive Force



Filter Class: CFC_1000
Max: 2,025.5 N at 2.8 ms
Min: -1,664.8 N at 95.8 ms

Shock Absorber Displacement



Filter Class: CFC_1000
Max: 33.0 mm at 36.0 ms
Min: -0.6 mm at 96.6 ms

Specification Source: TP214D-07 Appendix A

03.17.2006 15:51:52 1796

060418

Transportation Research Center Inc.

6.10 m/s Thoracic Shock Absorber Compression
SID-HIII Serial No. 059 Certification No. 13-2
Test Date: 03/17/2006

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.5 °C	21.3 °C	Yes
Relative Humidity	10 - 70 %	31 %	Yes
Maximum Force at Test Velocity	3,766 - 4,464 N	4,391.9 N	Yes
Maximum Displacement at Test Velocity	33.38 - 39.59 mm	37.172 mm	Yes

Test meets specifications.

Comments:

Actual Impactor Velocity (m/s): 6.112

Damper Setting: 5.5

Technician

Approved

Specification Source: TP214D-07 Appendix A

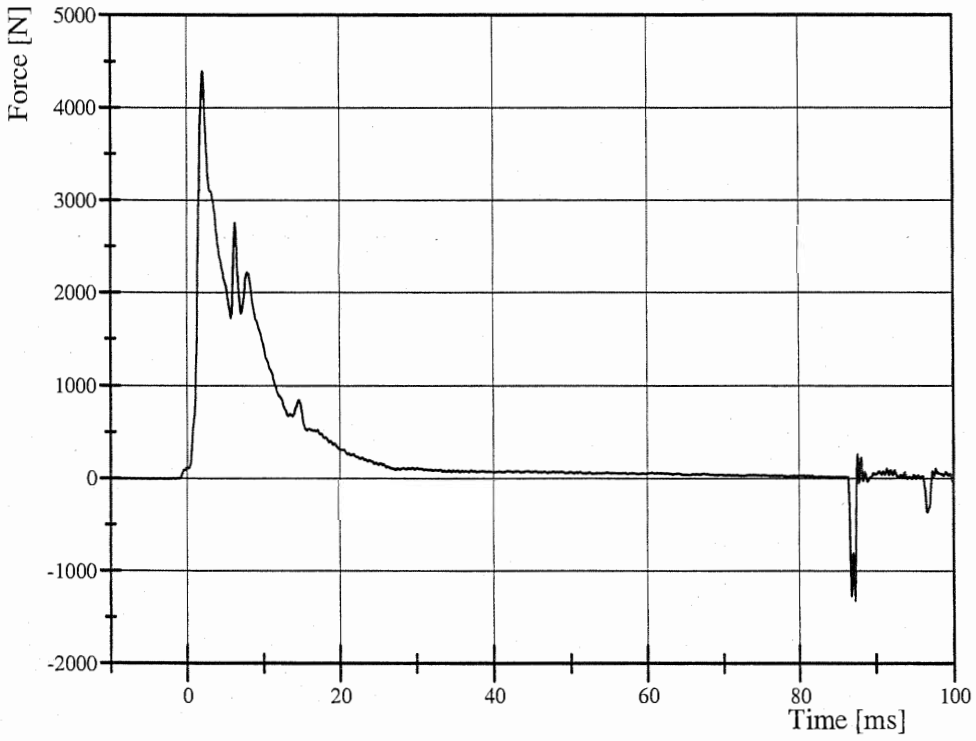
03.17.2006 15:40:58 1626

060418

Transportation Research Center Inc.

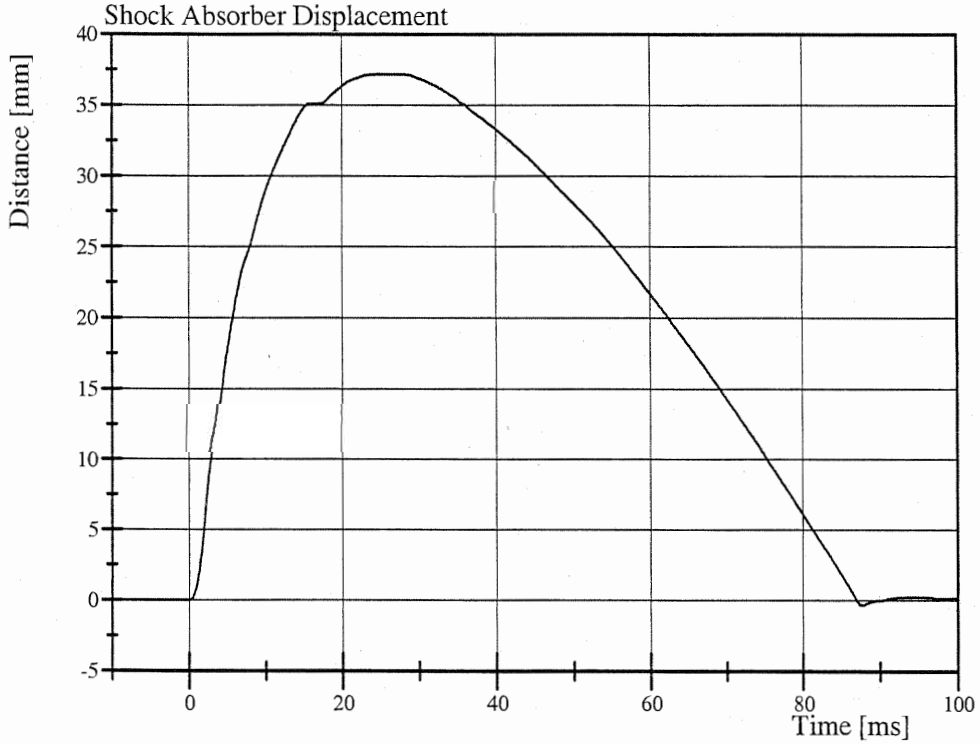
6.10 m/s Thoracic Shock Absorber Compression
SID-HIII Serial No. 059 Certification No. 13-2
Test Date: 03/17/2006

Shock Absorber Resistive Force



Filter Class: CFC_1000
Max: 4,391.9 N at 2.1 ms
Min: -1,315.0 N at 87.3 ms

Shock Absorber Displacement



Filter Class: CFC_1000
Max: 37.2 mm at 24.8 ms
Min: -0.3 mm at 87.9 ms

Specification Source: TP214D-07 Appendix A

03.17.2006 15:41:10 1626

060418

TRANSPORTATION RESEARCH CENTER INC.

PART 572B LUMBAR FLEXION TEST

SID HIII

CAL DATE: 18-Mar-06

TRC, INC. TEST NO: 059C13TF1 572M SN 059 TORSO FLEX CAL 13

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9 – 25.6° C	21.6 °C
RELATIVE HUMIDITY	10 – 70 %	28 %
FORCE AT 0 DEG. FLEXION	-27 – 27 N	0 N
FORCE AT 20 DEG OF FLEXION	98 – 151 N	133.4 N
FORCE AT 30 DEG OF FLEXION	151 – 205 N	195.7 N
FORCE AT 40 DEG OF FLEXION	205 – 258 N	249.1 N
NET RETURN ANGLE AFTER 3 MINUTES	< 12 °	8.2 °

TEST MEETS SPECIFICATIONS

TECHNICIAN 

Transportation Research Center Inc.

Abdomen Compression
SID-HIII Serial No. 059 Certification No. 13-6
Test Date: 03/17/2006

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.5 °C	21.6 °C	Yes
Relative Humidity	10 - 70 %	29 %	Yes
Probe Force within Corridor	Yes	Yes	Yes
Probe Velocity	6.35 - 8.89 mm/s	7.928 mm/s	Yes

Test meets specifications.

Comments:

Technician

Approved

Specification Source: CFR49 Part 572 Subpart B
with Polarity in accordance with J211

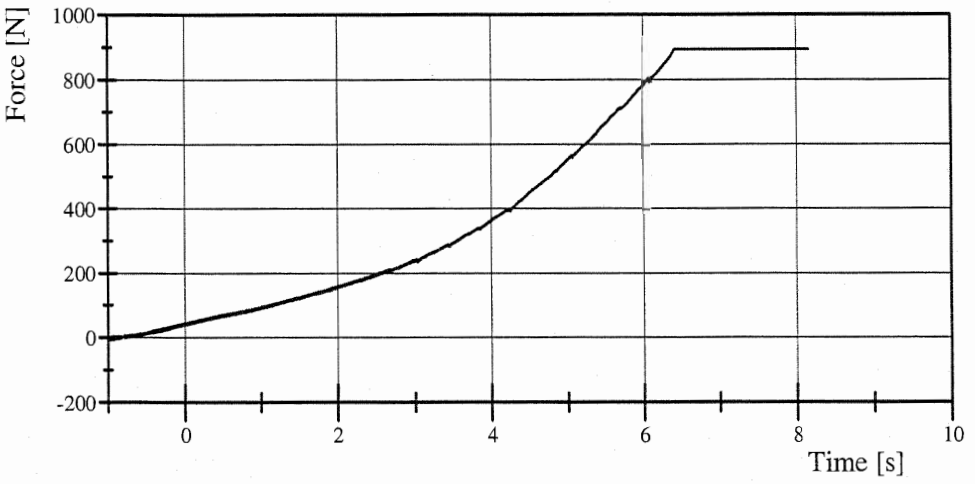
03.17.2006 18:50:25 23550

060418

Transportation Research Center Inc.

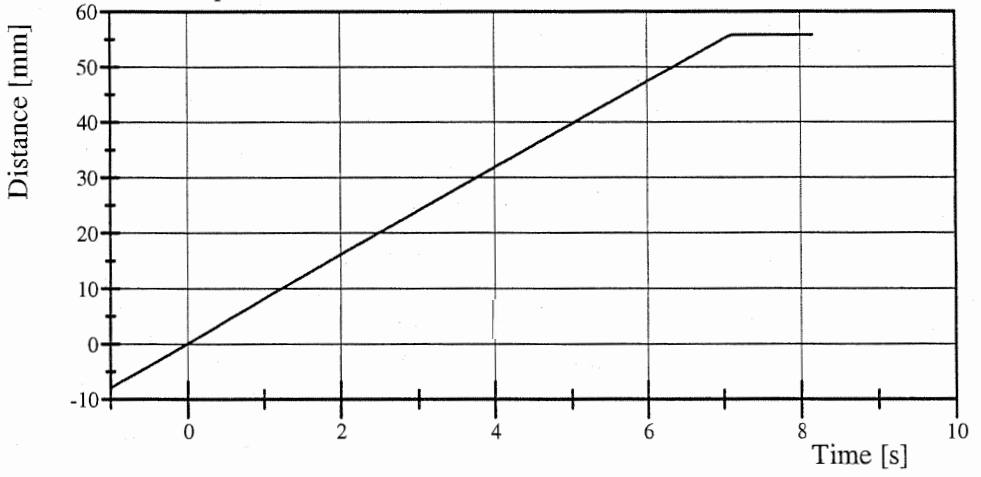
Abdomen Compression
SID-HIII Serial No. 059 Certification No. 13-6
Test Date: 03/17/2006

Probe Force



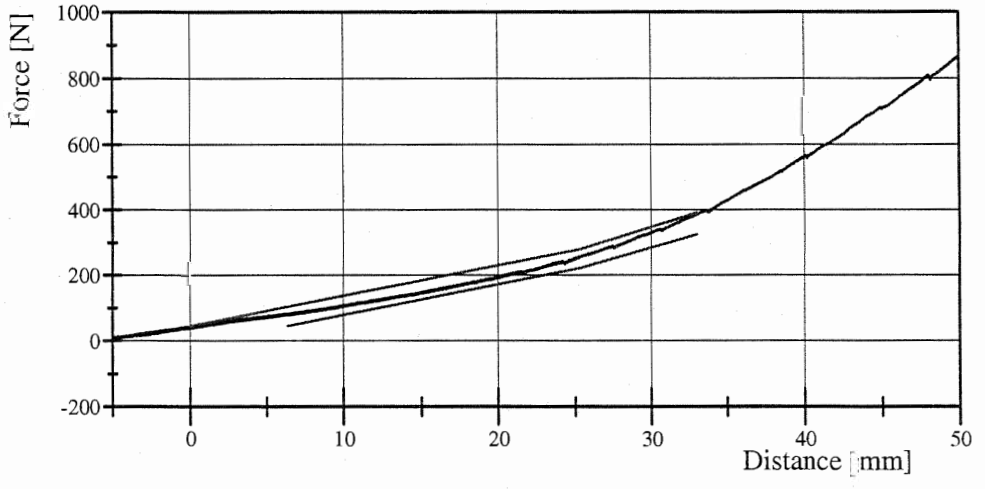
Filter Class: CFC_600
Max: 893.1 N at 6.4 s
Min: -8.5 N at -1.0 s

Probe Displacement



Filter Class: CFC_180
Max: 55.9 mm at 8.1 s
Min: -8.0 mm at -1.0 s

Probe Force vs Displacement



Filter Class: CFC_600
Max: 893.1 N at 50.6 mm
Min: -8.5 N at -7.7 mm

Transportation Research Center Inc.

Left Lateral Pelvis
SID-HIII Serial No. 059 Certification No. 13-1
Test Date: 03/18/2006

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.5 °C	21.1 °C	Yes
Relative Humidity	10 - 70 %	27 %	Yes
Impactor Velocity	4.27 - 4.33 m/s	4.303 m/s	Yes
Pelvis Lateral Acceleration Duration above 20g	3 - 7 ms	6.5 ms	Yes
Pelvis Lateral Acceleration	40 - 60 g	42.8 g	Yes
Is Acceleration Curve Unimodal Above 20g?	Yes	Yes	Yes

Test meets specifications.

Comments:

Technician

Approved

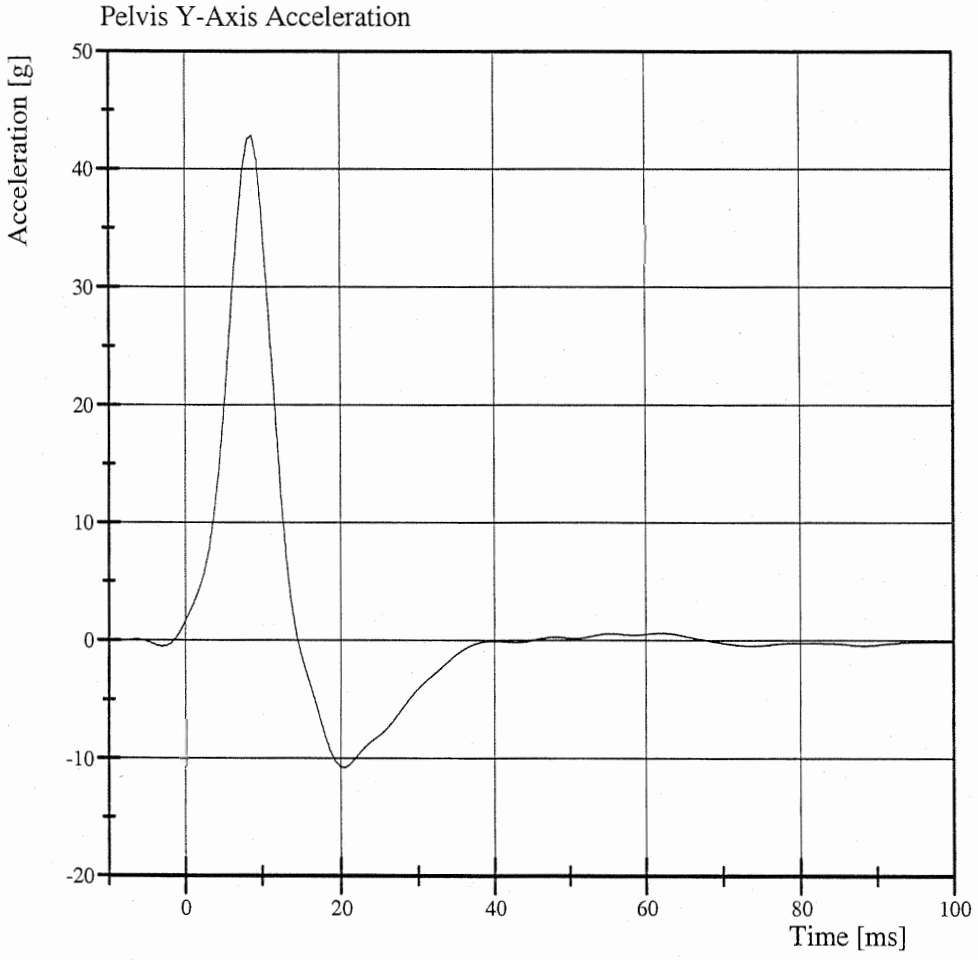
Specification Source: CFR49 Part 572 Subpart M
with Polarity in accordance with J211

03.18.2006 12:38:50 595

060418

Transportation Research Center Inc.

Left Lateral Pelvis
SID-HIII Serial No. 059 Certification No. 13-1
Test Date: 03/18/2006



Filter Class: FIR_100
Max: 42.8 g at 8.7 ms
Min: -10.8 g at 20.6 ms

Specification Source: CFR49 Part 572 Subpart M
with Polarity in accordance with J211

03.18.2006 12:38:59 595

060418

CALIBRATION TEST RESULTS

POST-TEST

SID/HIII: 059

Transportation Research Center Inc.
SID/HIII Dummy Pre-Test
External Dimensions
Serial No. 059 Calibration No. 14

Test Parameter	Dimension	Specification	Results	Pass
Seated Height	SH	889.0 - 909.3 mm	903 mm	Yes
Rib Height	RH	501.7 - 520.7 mm	510 mm	Yes
Hip Pivot Height	HP	99.1 REF mm	99.1 mm	
Knee Pivot From Backline	KH	510.5 - 525.8 mm	520 mm	Yes
Knee Pivot From Floor	KV	490.2 - 505.5 mm	494 mm	Yes
Hip Width	HW	355.6 - 391.2 mm	366 mm	Yes
Top Rib Width From C\L	RW-1	165.1 - 180.3 mm	176 mm	Yes
Bottom Rib Width From C\L	RW-2	165.1 - 180.3 mm	177 mm	Yes
Difference Between Top & Bottom Rib Width from C\L		<= 2.5 mm	1.0 mm	Yes

Technician

Approved

Transportation Research Center Inc.

Left Lateral Head Drop
SID-HIII Serial No. 059 Certification No. 14-2
Test Date: 04/28/2006

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.6 °C	21.3 °C	Yes
Relative Humidity	10 - 70 %	27 %	Yes
Peak Head Resultant Acceleration	120 - 150 g	135.9 g	Yes
Peak Head Longitudinal Acceleration	(-15) - 15 g	4.3 g	Yes
Is Head Resultant Acceleration Curve Unimodal Within 15% of Peak?	Yes	Yes	Yes

Test meets specifications.

Comments:

Technician

Approved

Specification Source: CFR49 Part 572 Subpart M with Polarity in accordance with J211

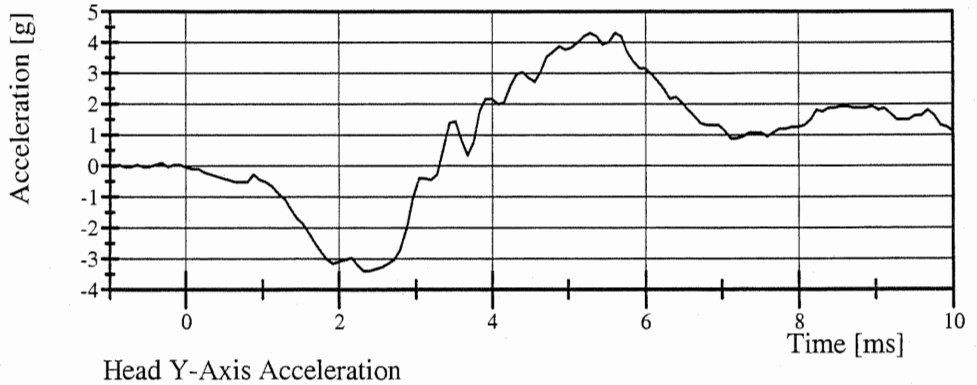
04.28.2006 12:00:30 608

060418

Transportation Research Center Inc.

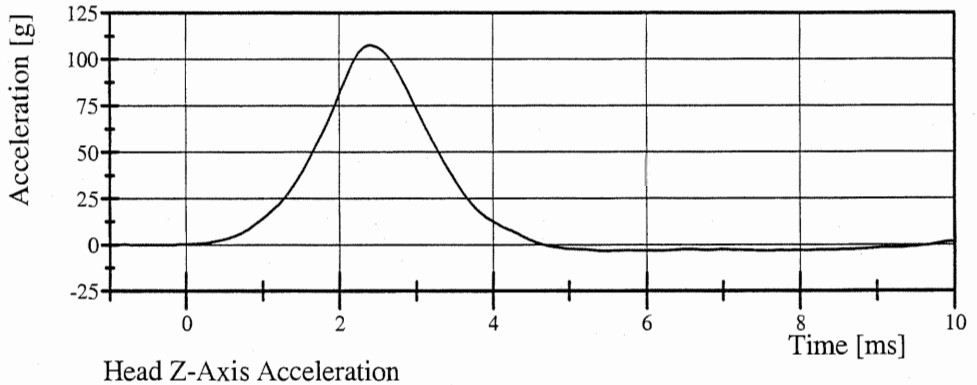
Left Lateral Head Drop
SID-HIII Serial No. 059 Certification No. 14-2
Test Date: 04/28/2006

Head X-Axis Acceleration



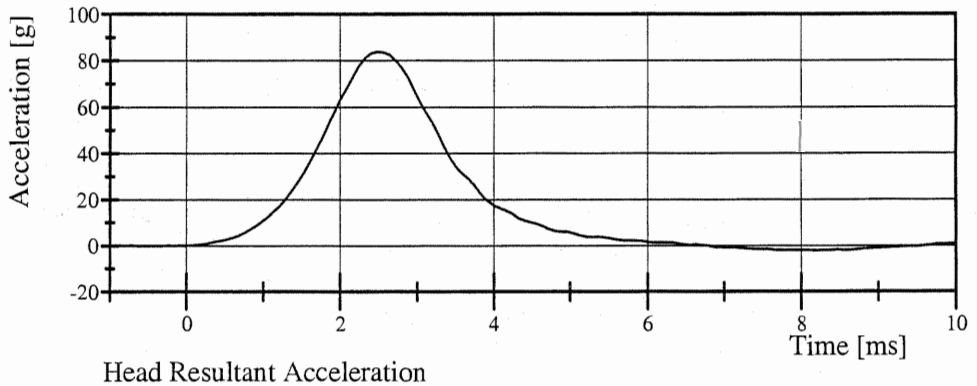
Filter Class: CFC_1000
Max: 4.3 g at 5.3 ms
Min: -3.4 g at 2.3 ms

Head Y-Axis Acceleration



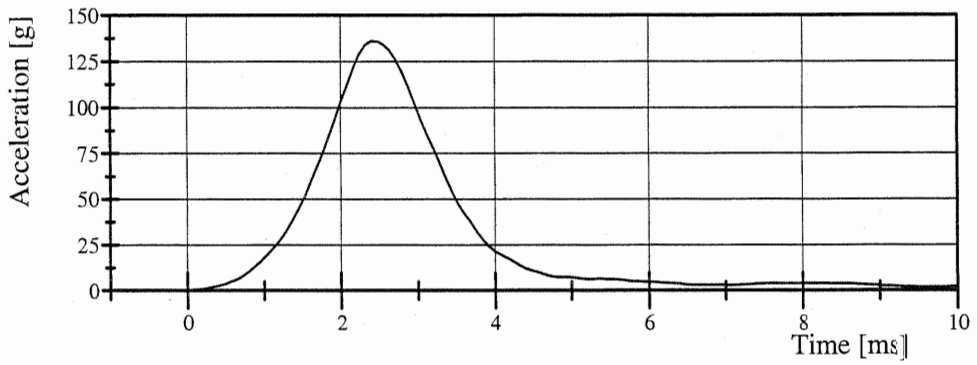
Filter Class: CFC_1000
Max: 107.6 g at 2.4 ms
Min: -3.5 g at 5.5 ms

Head Z-Axis Acceleration



Filter Class: CFC_1000
Max: 83.9 g at 2.5 ms
Min: -2.1 g at 8.2 ms

Head Resultant Acceleration



Filter Class: CFC_1000
Max: 135.9 g at 2.4 ms
Min: 0.0 g at -0.2 ms

Specification Source: CFR49 Part 572 Subpart M
with Polarity in accordance with J211

04.28.2006 12:00:54 608

060418

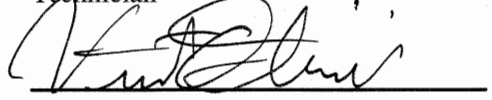
Transportation Research Center Inc.

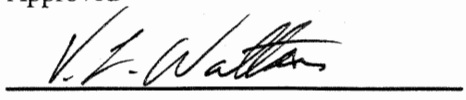
Left Lateral Neck
SID-HIII Serial No. 059 Certification No. 14-1
Test Date: 04/28/2006

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.2 °C	Yes
Relative Humidity	10 - 70 %	26 %	Yes
Pendulum Velocity	(-6.89) - (-7.13) m/s	-7.019 m/s	Yes
Pendulum Integrated Velocity Change at 10 ms	1.96 - 2.55 m/s	2.273 m/s	Yes
Pendulum Integrated Velocity Change at 20 ms	4.12 - 5.10 m/s	4.516 m/s	Yes
Pendulum Integrated Velocity Change at 30 ms	5.73 - 7.01 m/s	6.356 m/s	Yes
Pendulum Integrated Velocity Change at 40 to 70 ms	6.27 - 7.64 m/s	7.262 m/s	Yes
Total Head D-Plane Rotation	(-66) - (-82) °	-69.1 °	Yes
Total Head D-Plane Rotation Time to 0° after Peak Rotation	58 - 67 ms	60.4 ms	Yes
Total Neck Occipital Condyle Moment	73 - 88 N·m	79.7 N·m	Yes
Total Neck Occipital Condyle Moment Time to 0 N·m after Peak Moment	49 - 64 ms	51.6 ms	Yes
Time from Peak Moment to Peak Rotation	2 - 16 ms	6.5 ms	Yes

Test meets specifications.

Comments:

Technician 

Approved 

Specification Source: CFR49 Part 572 Subpart M
with Polarity in accordance with J211

04.28.2006 14:40:10 3012

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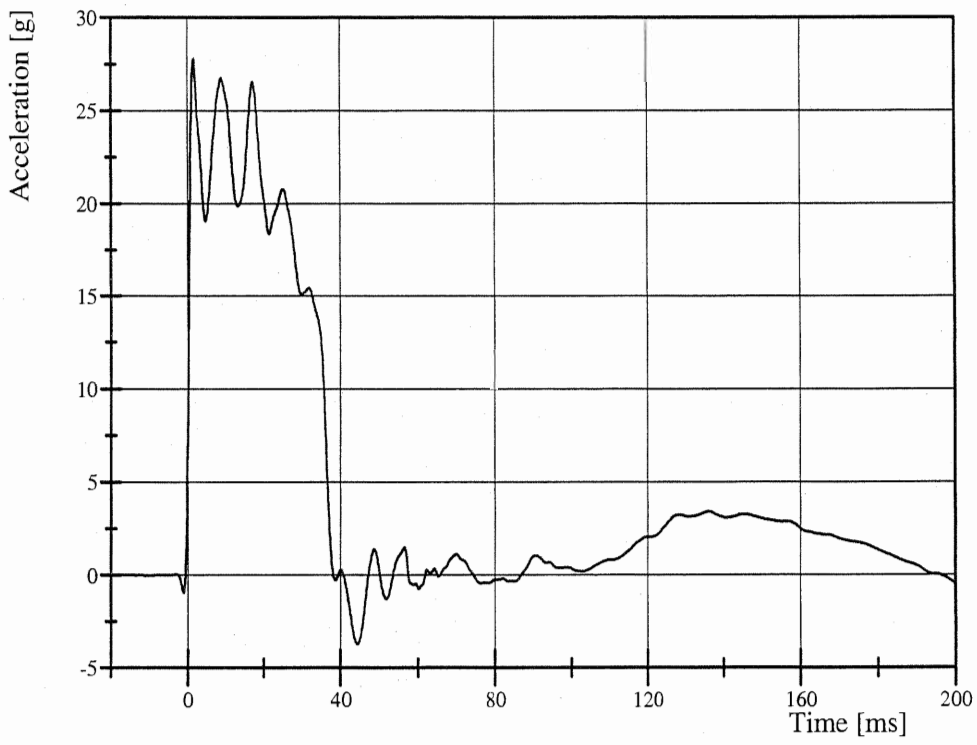
Transportation Research Center Inc.

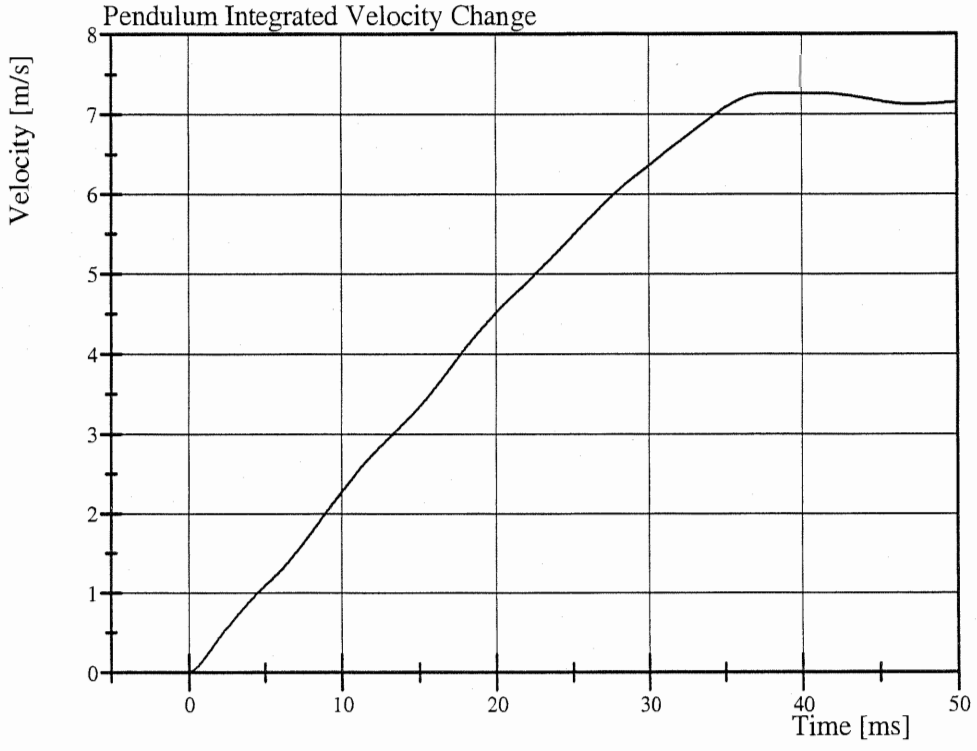
Left Lateral Neck
SID-HIII Serial No. 059 Certification No. 14-1
Test Date: 04/28/2006

Pendulum Acceleration



Filter Class: CFC_180
Max: 27.8 g at 1.6 ms
Min: -3.7 g at 44.5 ms

Pendulum Integrated Velocity Change



Filter Class: CFC_180
Max: 7.3 m/s at 40.8 ms
Min: 0.0 m/s at 0.0 ms

Specification Source: CFR49 Part 572 Subpart M
with Polarity in accordance with J211

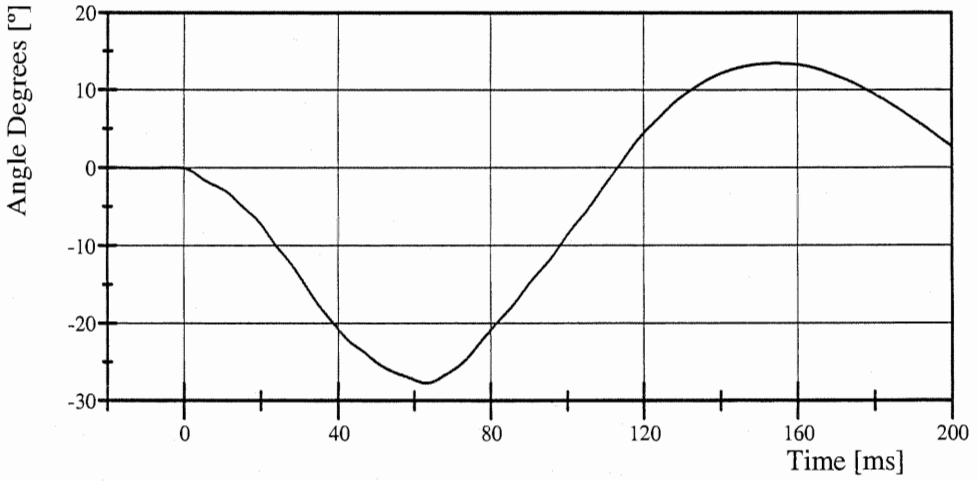
04.28.2006 14:40:32 3012

060418

Transportation Research Center Inc.

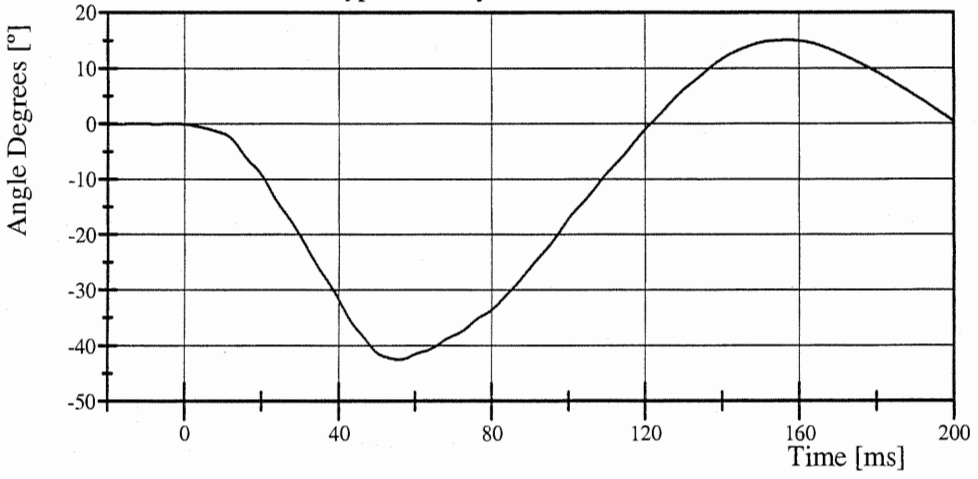
Left Lateral Neck
SID-HIII Serial No. 059 Certification No. 14-1
Test Date: 04/28/2006

Pot Rotation at the Base of Neck



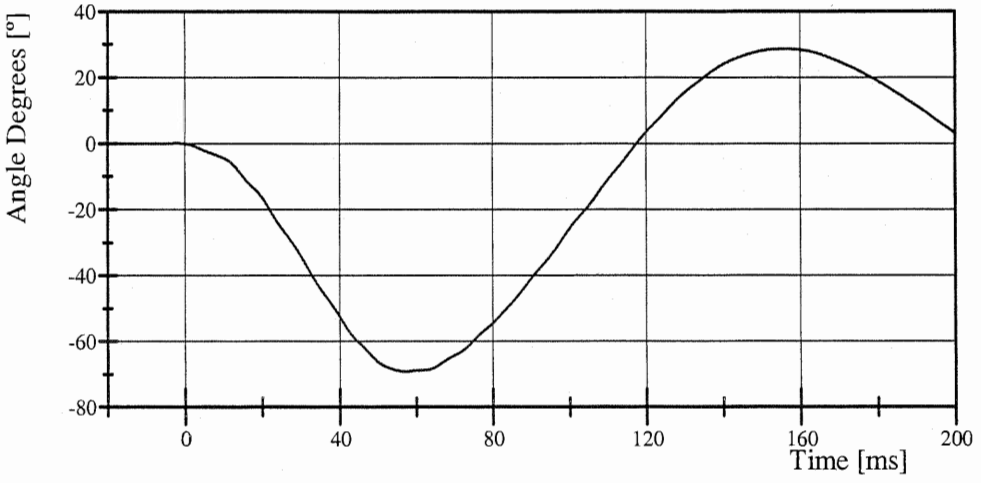
Filter Class: CFC_60
Max: 13.5 ° at 154.4 ms
Min: -27.7 ° at 63.1 ms

Head Rotation at Occypital Condyles



Filter Class: CFC_60
Max: 15.1 ° at 157.3 ms
Min: -42.5 ° at 55.8 ms

Total Head D-Plane Rotation

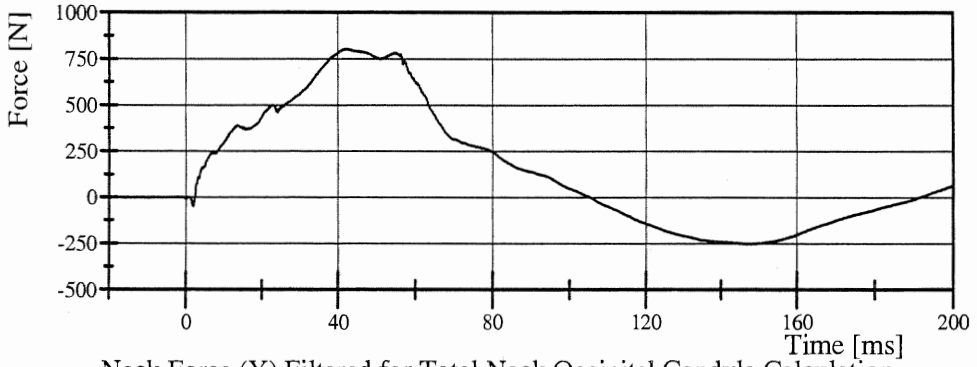


Filter Class: CFC_60
Max: 28.5 ° at 156.2 ms
Min: -69.1 ° at 57.2 ms

Transportation Research Center Inc.

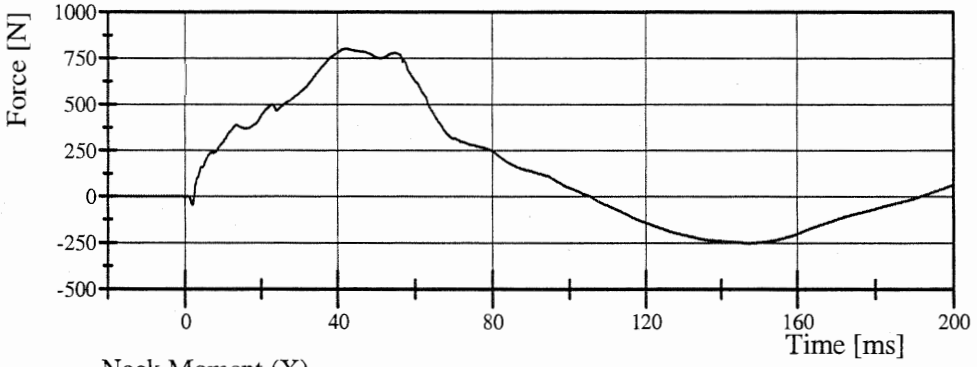
Left Lateral Neck
SID-HIII Serial No. 059 Certification No. 14-1
Test Date: 04/28/2006

Neck Force (Y)



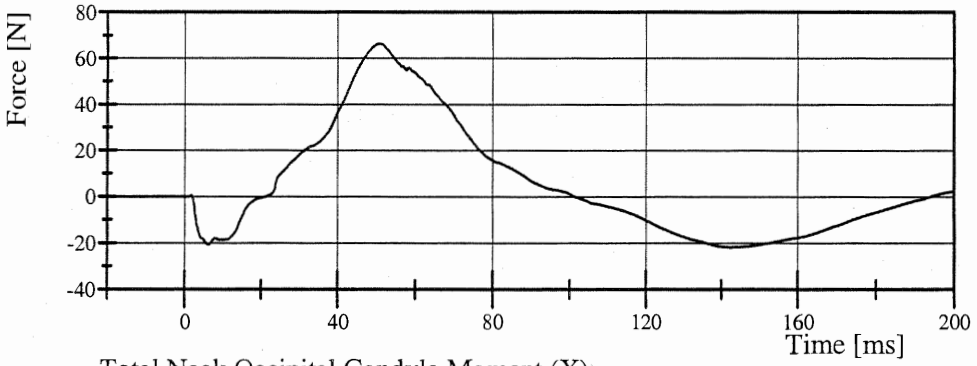
Filter Class: CFC_1000
Max: 803.2 N at 41.9 ms
Min: -252.1 N at 147.1 ms

Neck Force (Y) Filtered for Total Neck Occipital Condyle Calculation



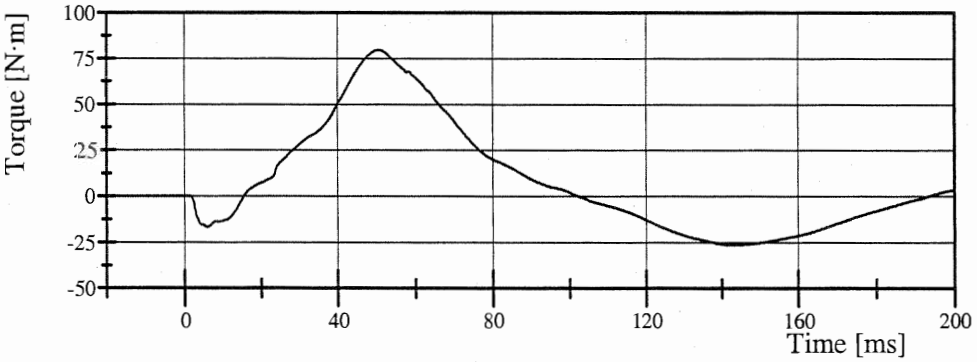
Filter Class: CFC_600
Max: 802.1 N at 42.4 ms
Min: -251.6 N at 147.2 ms

Neck Moment (X)



Filter Class: CFC_600
Max: 66.4 N at 50.8 ms
Min: -21.8 N at 142.4 ms

Total Neck Occipital Condyle Moment (X)



Filter Class: CFC_600
Max: 79.7 N·m at 50.7 ms
Min: -26.2 N·m at 142.5 ms

TRANSPORTATION RESEARCH CENTER INC.

PART 572B LUMBAR FLEXION TEST

SID HIII

CAL DATE: 28-Apr-06

TRC, INC. TEST NO: 059C14TF1 572M SN 059 TORSO FLEX CAL 14

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9 – 25.6° C	21.3 °C
RELATIVE HUMIDITY	10 – 70 %	25 %
FORCE AT 0 DEG. FLEXION	-27 – 27 N	0 N
FORCE AT 20 DEG OF FLEXION	98 – 151 N	146.8 N
FORCE AT 30 DEG OF FLEXION	151 – 205 N	204.6 N
FORCE AT 40 DEG OF FLEXION	205 – 258 N	253.5 N
NET RETURN ANGLE AFTER 3 MINUTES	< 12 °	7.4 °

TEST MEETS SPECIFICATIONS

TECHNICIAN 

Transportation Research Center Inc.

Abdomen Compression
SID-HIII Serial No. 059 Certification No. 14-20
Test Date: 05/01/2006

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.5 °C	21.3 °C	Yes
Relative Humidity	10 - 70 %	48 %	Yes
Probe Force within Corridor	Yes	Yes	Yes
Probe Velocity	6.35 - 8.89 mm/s	7.825 mm/s	Yes

Test meets specifications.

Comments:

Technician

Approved

Specification Source: CFR49 Part 572 Subpart B
with Polarity in accordance with J211

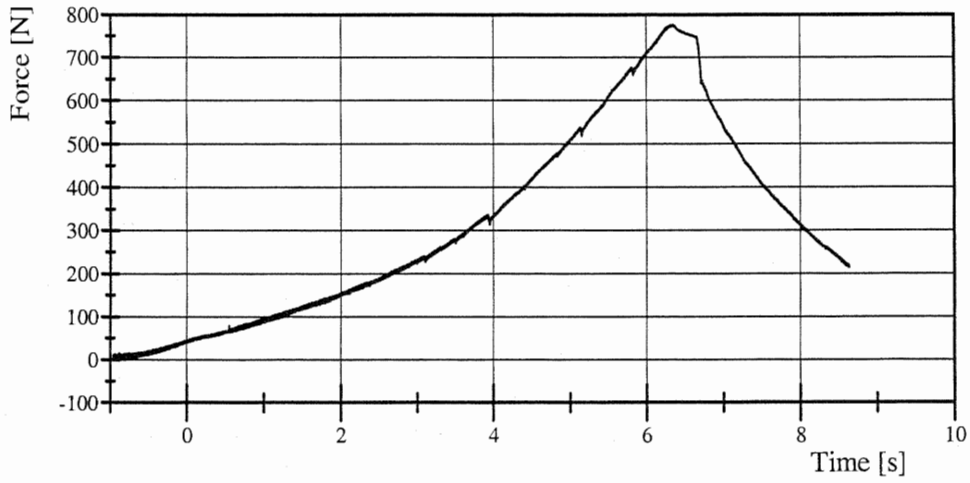
05.01.2006 08:54:02 17711

060418

Transportation Research Center Inc.

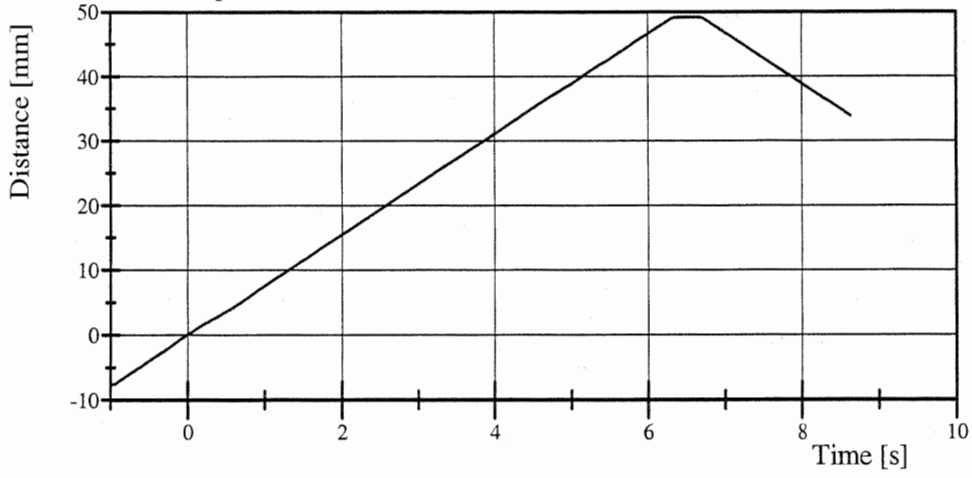
Abdomen Compression
SID-HIII Serial No. 059 Certification No. 14-20
Test Date: 05/01/2006

Probe Force



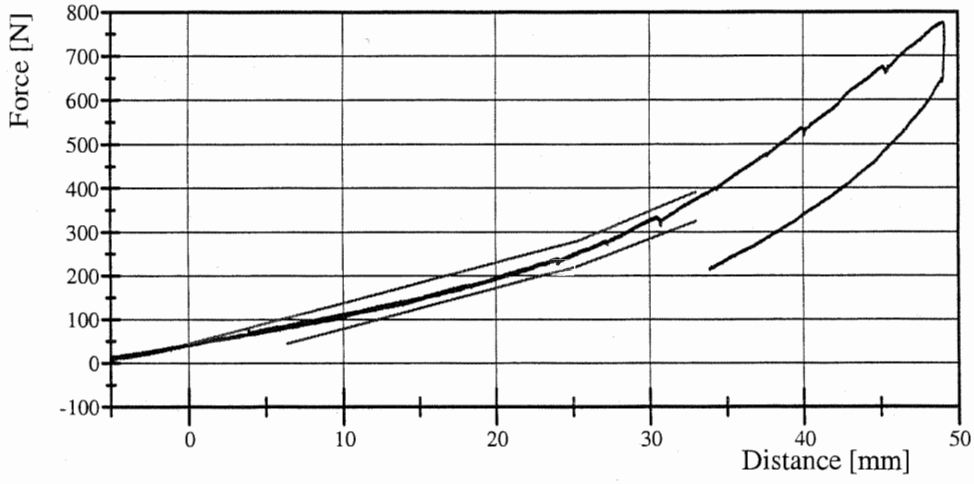
Filter Class: CFC_600
Max: 775.4 N at 6.3 s
Min: -2.2 N at -0.9 s

Probe Displacement



Filter Class: CFC_180
Max: 49.2 mm at 6.7 s
Min: -7.6 mm at -1.0 s

Probe Force vs Displacement



Filter Class: CFC_600
Max: 775.4 N at 49.1 mm
Min: -2.2 N at -7.1 mm

Specification Source: CFR49 Part 572 Subpart B
with Polarity in accordance with J211

05.01.2006 08:56:08 17711

060418

Transportation Research Center Inc.

Left Lateral Thorax
SID-HIII Serial No. 059 Certification No. 14-2
Test Date: 05/01/2006

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.6 °C	21.1 °C	Yes
Relative Humidity	10 - 70 %	42 %	Yes
Impactor Velocity	4.27 - 4.33 m/s	4.297 m/s	Yes
Upper Rib Lateral Acceleration	37 - 46 g	42.1 g	Yes
Lower Rib Lateral Acceleration	37 - 46 g	38.8 g	Yes
Lower Spine Lateral Acceleration	15 - 22 g	19.0 g	Yes

Test meets specifications.

Comments:

Technician

Approved

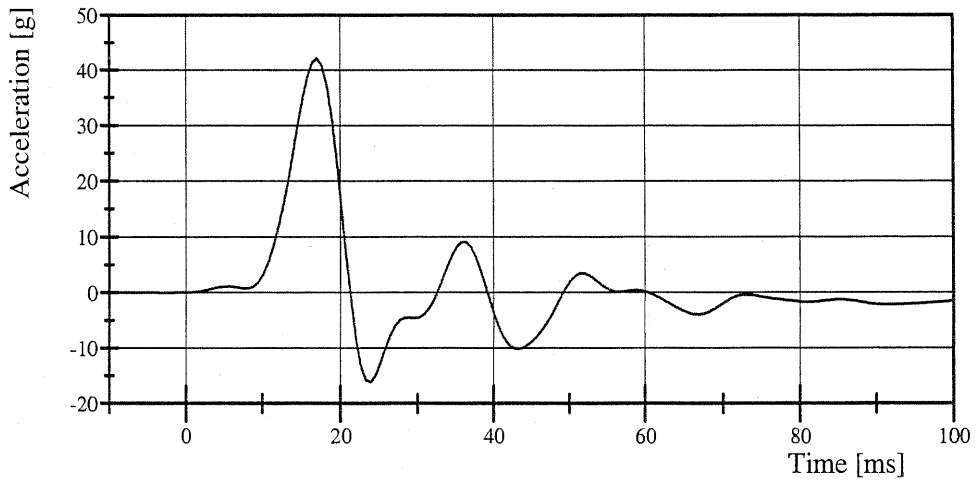
Specification Source: CFR49 Part 572 Subpart M
with Polarity in accordance with J211

05.01.2006 15:14:30 593

Transportation Research Center Inc.

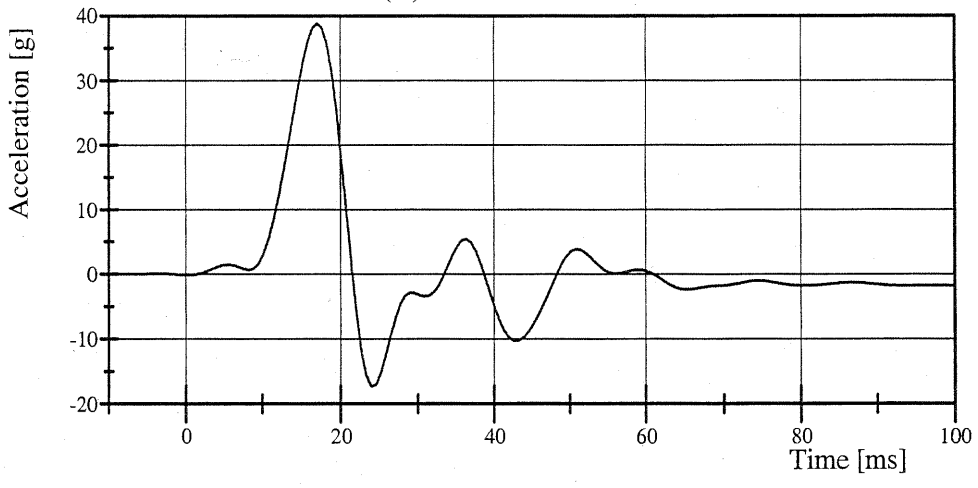
Left Lateral Thorax
SID-HIII Serial No. 059 Certification No. 14-2
Test Date: 05/01/2006

Upper Rib Acceleration (Y)



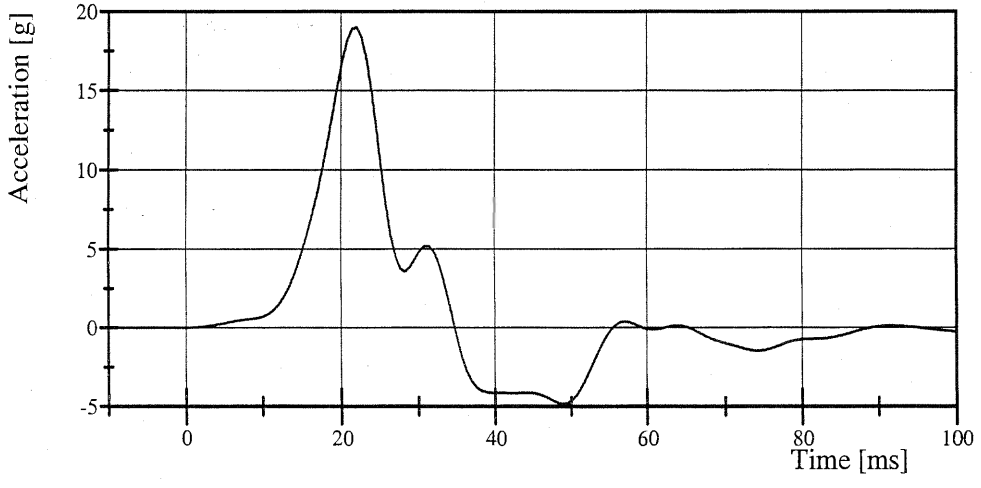
Filter Class: FIR_100
Max: 42.1 g at 17.0 ms
Min: -16.1 g at 23.8 ms

Lower Rib Acceleration (Y)



Filter Class: FIR_100
Max: 38.8 g at 17.0 ms
Min: -17.3 g at 23.9 ms

Lower Spine Acceleration (Y)



Filter Class: FIR_100
Max: 19.0 g at 22.0 ms
Min: -4.8 g at 48.9 ms

Specification Source: CFR49 Part 572 Subpart M
with Polarity in accordance with J211

05.01.2006 15:14:39 593

Transportation Research Center Inc.

Left Lateral Pelvis
SID-HIII Serial No. 059 Certification No. 14-1
Test Date: 05/01/2006

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.5 °C	21.5 °C	Yes
Relative Humidity	10 - 70 %	42 %	Yes
Impactor Velocity	4.27 - 4.33 m/s	4.295 m/s	Yes
Pelvis Lateral Acceleration Duration above 20g	3 - 7 ms	6.4 ms	Yes
Pelvis Lateral Acceleration	40 - 60 g	43.3 g	Yes
Is Acceleration Curve Unimodal Above 20g?	Yes	Yes	Yes

Test meets specifications.

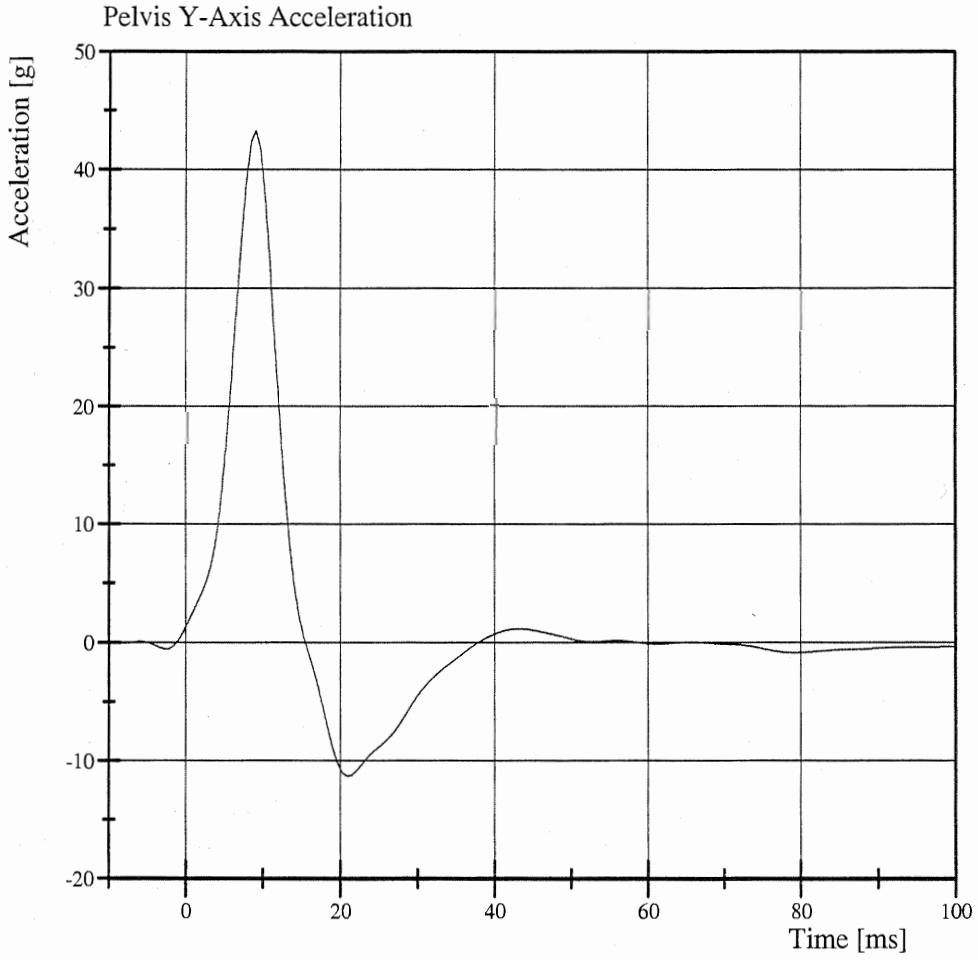
Comments:

Technician

Approved

Transportation Research Center Inc.

Left Lateral Pelvis
SID-HIII Serial No. 059 Certification No. 14-1
Test Date: 05/01/2006



Filter Class: FIR_100
Max: 43.3 g at 9.0 ms
Min: -11.3 g at 21.0 ms

Specification Source: CFR49 Part 572 Subpart M
with Polarity in accordance with J211

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