

REPORT NUMBER TR-P28048-01-NC

**NEW CAR ASSESMENT PROGRAM
FRONTAL BARRIER IMPACT TEST**

**NISSAN MOTOR CO., LTD.
2008 INFINITI EX35 AWD
5-DOOR HATCHBACK**

NHTSA NUMBER: N85202

**Prepared By:
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FEBRUARY 26, 2008

FINAL REPORT

**PREPARED FOR:
U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
OFFICE OF CRASHWORTHINESS STANDARDS
RULEMAKING
MAIL CODE: NVS-111
1200 NEW JERSEY AVE SE, ROOM W43-410
WASHINGTON, D.C. 20590**

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FINAL REPORT ACCEPTED BY:

Manager, New Car Assessment Program

Date of Acceptance

COTR, NCAP Frontal Impact Program

Date of Acceptance

Technical Report Documentation Page

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Form DOT F1700.7 (8-72)

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SECTION D1

PURPOSE AND SUMMARY OF TEST N85202

The purpose of this test is to obtain CRS performance data during 35 mph (56.3 km/h) frontal barrier impact NCAP test.

The frontal barrier impact NCAP test was conducted in accordance with the Office of Crashworthiness Standards (OCS) NCAP Laboratory Test Procedure.

SUMMARY

Two 12-month old CRABI's (P3 & P4) were instrumented with head, chest, and six-axis upper neck load cells. Tri-axial accelerometers were installed on both CRS's and the CRS bases.

The left rear (Serial No. 017) and right rear (Serial No. 022) CRABI's were calibrated prior to this test. CRABI calibration information is found in Section D-4.

CHILD DUMMY VALUES		
Location	HIC 15 Values	3 msec. Chest Clip
CRABI P3	578.5	72.2
CRABI P4	543.8	67.6

DATA SHEET NO. 1
CRASH TEST SUMMARY

Test Vehicle: 2008 Infiniti EX35 AWD 5-Door Hatchback
 Test Program: NHTSA 35mph NCAP

NHTSA No.: N85202
 Test Date: 02/26/08

CHILD RESTRAINT SYSTEM INFORMATION

Description	Position No. 3 CRS	Position No. 4 CRS
Manufacturer	Graco	Combi
Model Name	Snugride	Connection
Serial Number	8F09MRG3	XCC-029363
Type	Infant	Infant
Forward/Rearward	Rearward	Rearward

VISIBLE DUMMY CONTACT POINTS

Description	Position No. 3 CRS	Position No. 4 CRS
Head Contact	Headrest	Driver's Seat
Chest Contact	None	None
Abdoment Contact	None	None
Left Knee Contact	None	None
Right Knee Contact	None	None
Left Toe Contact	Seat Back	Seat Back
Right Toe Contact	Seat Back	None

POST-TEST DOOR OPENINGS

Description	Position No. 3 CRS	Position No. 4 CRS
Rear Door	Remained closed and latched, opened without tools	Remained closed and latched, opened without tools

CAMERA COVERAGE

Description	Standard
High Speed	2
Real Time	0
Total	2

DATA CHANNELS

CRABI P3 & P4 Sensors	26
Belt Sensors	4
CRS Sensors	12
Total	42

DATA SHEET NO. 2**VEHICLE PARAMETER DATA**Test Vehicle: 2008 Infiniti EX35 AWD 5-Door HatchbackNHTSA No.: N85202Test Program: NHTSA 35mph NCAPTest Date: 02/26/08**TEST VEHICLE WEIGHTS**

	Units	As-Delivered Weights (UVW)			As-Tested Weights (ATW)		
		Front	Rear	Total	Front	Rear	Total
Left	kg	486	425	911	522	488	1010
Right	kg	493	416	909	524	483	1007
Ratio	%	53.8	46.2	100.0	51.9	48.1	100.0
Total	kg	979	841	1820	1046	971	2017

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value
Total Delivered Weight (UVW)	kg	2017
Weight of 2 P572 ATD's	kg	152
Rated Cargo/Luggage Weight (RCLW)	kg	50
Calculated Vehicle Target Weight (TVTW)	kg	2031

DATA SHEET NO. 3

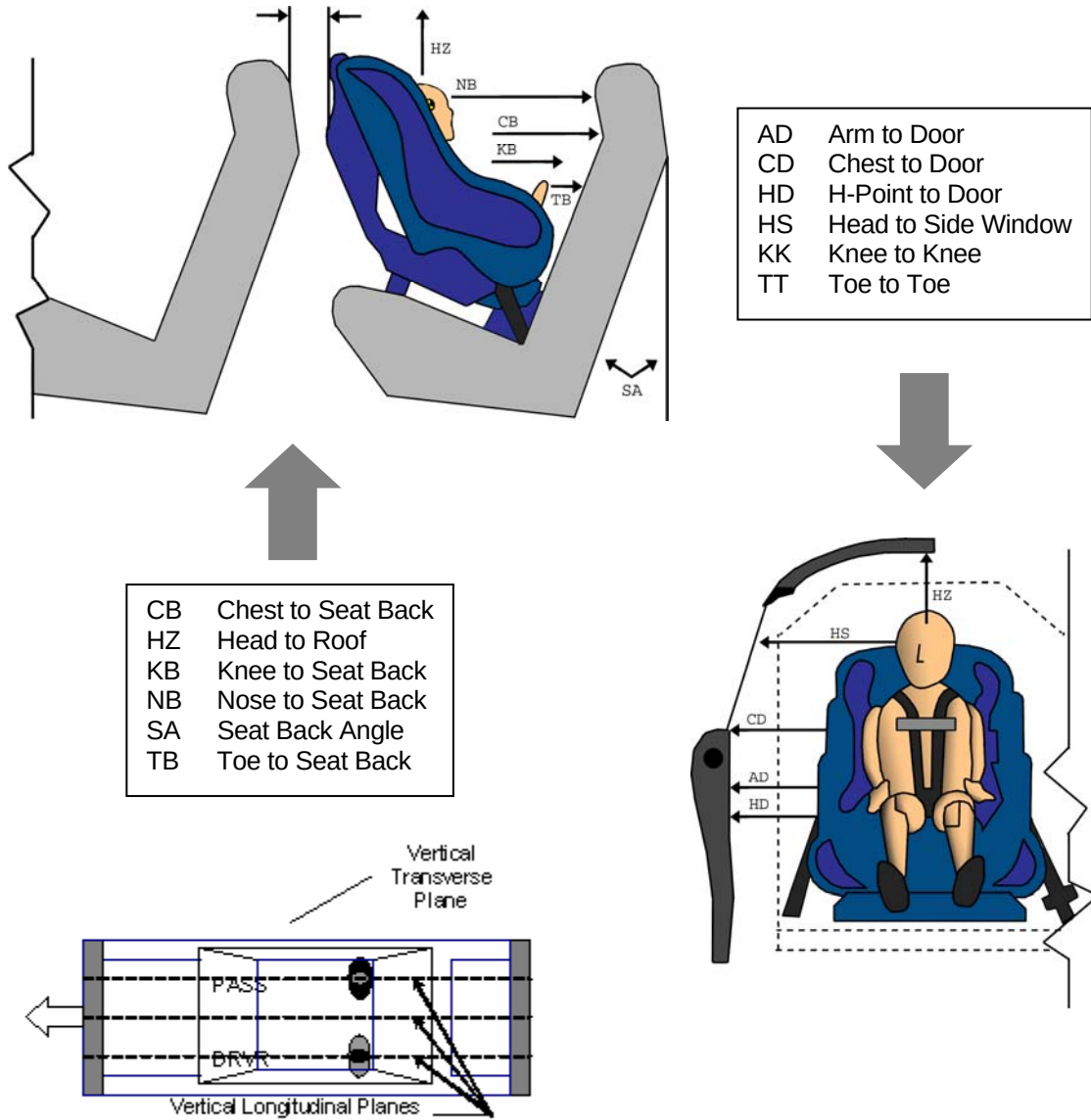
CRABI POSITIONING IN VEHICLE

Test Vehicle: 2008 Infiniti EX35 AWD 5-Door Hatchback

NHTSA No.: N85202

Test Program: NHTSA 35mph NCAP

Test Date: 02/26/08



DUMMY MEASUREMENTS FOR REAR SEAT OCCUPANTS

DATA SHEET NO. 3...(CONTINUED)**CRABI POSITIONING IN VEHICLE**Test Vehicle: 2008 Infiniti EX35 AWD 5-Door HatchbackNHTSA No.: N85202Test Program: NHTSA 35mph NCAPTest Date: 02/26/08**CRABI POSITION MEASUREMENTS**

Code	Measurement	P3 (Passenger's Side)		P4 (Driver's Side)	
		Length (mm)	Angle (°)	Length (mm)	Angle (°)
SA	Seat Back Angle		74.5		74.5
HZ	Head to Roof (Z)	420		390	
CD	Chest to Door	350		360	
KK	Knee to Knee (Y)	140		110	
HS	Head to Side Window	350		380	
HD	Head to Door (Y)	290		300	
AD	Arm to Door	250		250	
NB	Nose to Seat Back	510		540	
CB	Chest to Seat Back	438		452	
FF	Foot to Foot	130		110	
KB-Left	Left Knee to Seat Back	210		200	
KB-Right	Right Knee to Seat Back	210		200	
TB-Left	Left Toe to Seat Back	110		80	
TB-Right	Right Toe to Seat Back	110		78	

DATA SHEET NO. 4**CRS PERFORMANCE DATA**Test Vehicle: 2008 Infiniti EX35 AWD 5-Door HatchbackNHTSA No.: N85202Test Program: NHTSA 35mph NCAPTest Date: 02/26/08**CRS PERFORMANCE DATA**

Location	CRS (P3)		CRS (P4)	
	Pre-Test	Post-Test	Pre-Test	Post-Test
Upper Tether Strap				
Upper Tether Buckle				
Upper Tether Hook				
Veh. Upper Tether Anchor				
Lower Anchor Strap	None		None	
Lower Anchor Buckle	None		None	
Lower Anchor Hooks	None		None	
Veh. Lower CRS Anchors	None		None	
5-Point Harness Connections	None		Crotch strap broke loose	
Cracks on CRS	Yes - CRS Base		Crotch strap retainer broken	
Fabric Tears on CRS	None		None	
Vehicle Seat Structure	Seat back and bottom moved		Seat back and bottom moved	
Vehicle Seat Fabric Tears	None		None	

DATA SHEET NO. 5**CRS ACCELEROMETER LOCATIONS**Test Vehicle: 2008 Infiniti EX35 AWD 5-Door HatchbackNHTSA No.: N85202Test Program: NHTSA 35mph NCAPTest Date: 02/26/08**VEHICLE ACCELEROMETER PRE-TEST LOCATIONS**

No.	Accelerometer Location	Measurement		
		X	Y	Z
1	CRS P3	1781	520	760
2	CRS P3 Base	1532	555	700
3	CRS P4	1715	652	799
4	CRS P4 Base	1580	649	725

Reference Planes: X=From Rear Surface of Vehicle, Y=Vehicle Centerline, Z=Ground Plane

DATA SHEET NO. 6**CRS CAMERA LOCATIONS AND DATA**Test Vehicle: 2008 Infiniti EX35 AWD 5-Door HatchbackNHTSA No.: N85202Test Program: NHTSA 35mph NCAPTest Date: 02/26/08**VEHICLE CAMERA MEASUREMENT TABLE**

No.	Camera View	Location			Angle (deg.)	Film Plane to Head	Lens (mm)	Speed (fps)
		X	Y	Z				
1	Driver Side Upper CRS View	-3320	653	1321	-2	1085	12	1000
2	Passenger Side Upper CRS View	-3264	-627	-1321	-2	1102	12	1000

SECTION D2
PHOTOGRAPHS

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28	Pre-Test Position 4 Front View (Head and Seat Belt Position)	D2-10
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36	Post-Test Position 4 Dummy Legs	D2-18

MODEL **8F09MRG3**

NAME **SNUGRIDE**

Manufactured in 111307 10

GRACO CHILDREN'S PRODUCTS, INC.

EXTON, PA 19341 1-800-345-4109

Made in U.S.A.

PB-25777

Figure D2-1: Position 3 CRS Label



Figure D2-2: Pre-Test Frontal View of Position 3 CRS



Figure D2-3: Post-Test Frontal View of Position 3 CRS



Figure D2-4: Pre-Test Rear View of Position 3 CRS



Figure D2-5: Post-Test Rear View of Position 3 CRS



Figure D2-6: Pre-Test Right Side View of Position 3 CRS



Figure D2-7: Post-Test Right Side View of Position 3 CRS



Figure D2-8: Pre-Test Left Side View of Position 3 CRS



Figure D2-9: Post-Test Left Side View of Position 3 CRS



Figure D2-10: Pre-Test Position 3 Front View (Head and Seat Belt Position)



Figure D2-11: Post-Test Position 3 Front View (Head and Seat Belt Position)



Figure D2-12: Pre-Test Position 3 Front View (Seat Belt Position)



Figure D2-13: Post-Test Position 3 Front View (Seat Belt Position)



Figure D2-14: Pre-Test Position 3 Right Side View



Figure D2-15: Post-Test Position 3 Right Side View



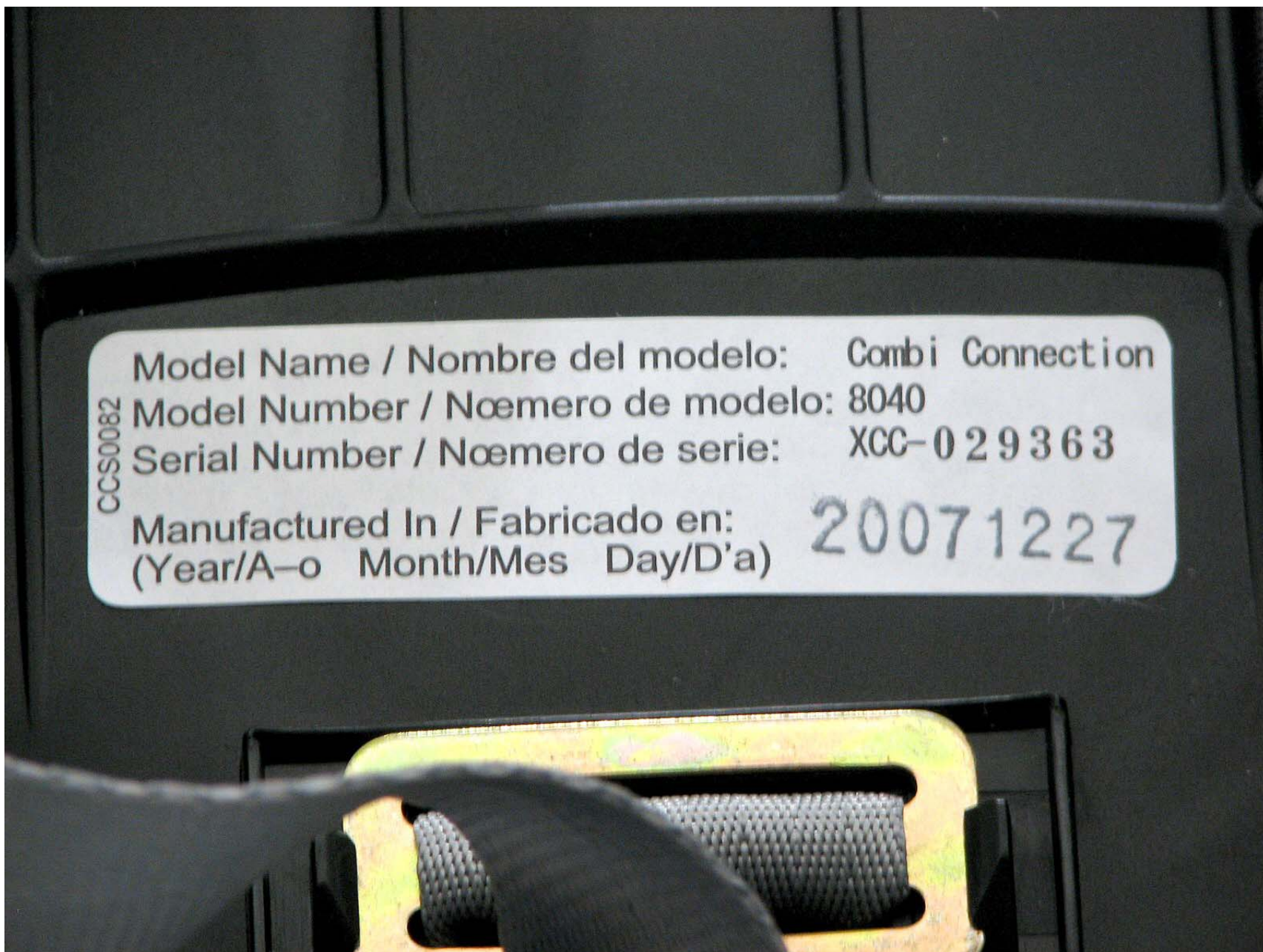
Figure D2-16: Pre-Test Position 3 Right Side View (Through Window)



Figure D2-17: Post-Test Position 3 Right Side View (Through Window)



Figure D2-18: Post-Test Position 3 Dummy Legs



Model Name / Nombre del modelo: Combi Connection
Model Number / No mero de modelo: 8040
Serial Number / No mero de serie: XCC-0 2 9 3 6 3
Manufactured In / Fabricado en: 20071227
(Year/A-o Month/Mes Day/D'a)

Figure D2-19: Position 4 CRS Label



Figure D2-20: Pre-Test Frontal View of Position 4 CRS



Figure D2-21: Post-Test Frontal View of Position 4 CRS



Figure D2-22: Pre-Test Rear View of Position 4 CRS



Figure D2-23: Post-Test Rear View of Position 4 CRS



Figure D2-24: Pre-Test Right Side View of Position 4 CRS



Figure D2-25: Post-Test Right Side View of Position 4 CRS



Figure D2-26: Pre-Test Left Side View of Position 4 CRS



Figure D2-27: Post-Test Left Side View of Position 4 CRS



Figure D2-28: Pre-Test Position 4 Front View (Head & Seat Belt Position)



Figure D2-29: Post-Test Position 4 Front View (Head & Seat Belt Position)



Figure D2-30: Pre-Test Position 4 Front View (Seat Belt Position)



Figure D2-31: Post-Test Position 4 Front View (Seat Belt Position)



Figure D2-32: Pre-Test Position 4 Left Side View



Figure D2-33: Post-Test Position 4 Left Side View



Figure D2-34: Pre-Test Position 4 Left Side View



Figure D2-35: Post-Test Position 4 Left Side View



Figure D2-36: Post-Test Position 4 Dummy Legs

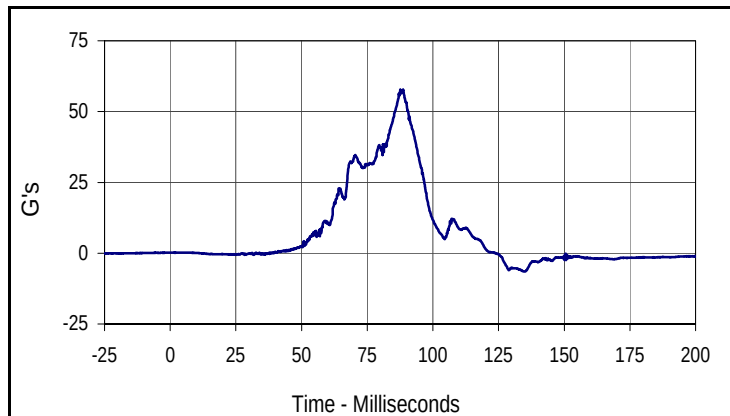
SECTION D3
CRABI RESPONSE AND CRS DATA TRACES

LIST OF DATA PLOTS

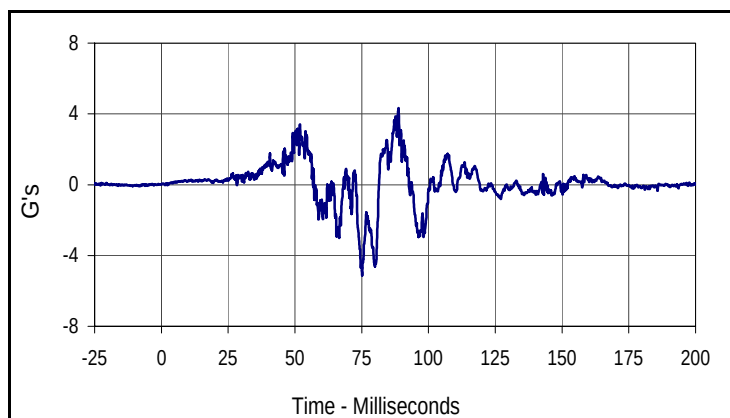
Data Plot		Page
D3-1	Right Rear CRABI (P4) Head X	D3-1
	Right Rear CRABI (P4) Head Y	D3-1
	Right Rear CRABI (P4) Head Z	D3-1
	Right Rear CRABI (P4) Head Resultant	D3-1
D3-2	Right Rear CRABI (P4) Chest X	D3-2
	Right Rear CRABI (P4) Chest Y	D3-2
	Right Rear CRABI (P4) Chest Z	D3-2
	Right Rear CRABI (P4) Chest Resultant	D3-2
D3-3	Right Rear CRABI (P3) Head X	D3-3
	Right Rear CRABI (P3) Head Y	D3-3
	Right Rear CRABI (P3) Head Z	D3-3
	Right Rear CRABI (P3) Head Resultant	D3-3
D3-4	Right Rear CRABI (P3) Chest X	D3-4
	Right Rear CRABI (P3) Chest Y	D3-4
	Right Rear CRABI (P3) Chest Z	D3-4
	Right Rear CRABI (P3) Chest Resultant	D3-4

Test Vehicle: 2008 Infiniti EX35 AWD 5-Door Hatchback
 Test Program: NHTSA 35mph NCAP

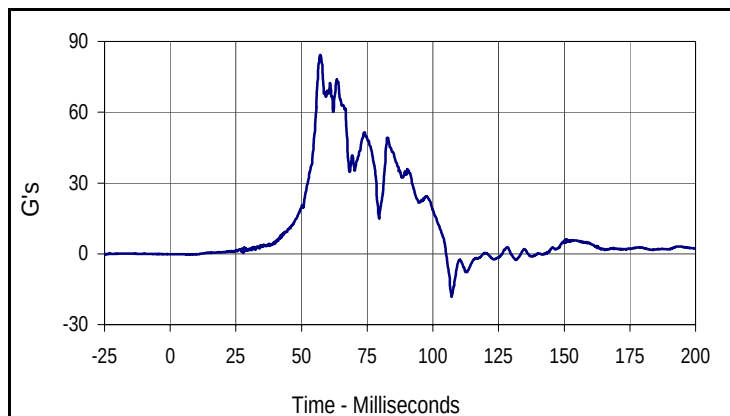
Test Date: 2/26/08
 NHTSA No.: N85202



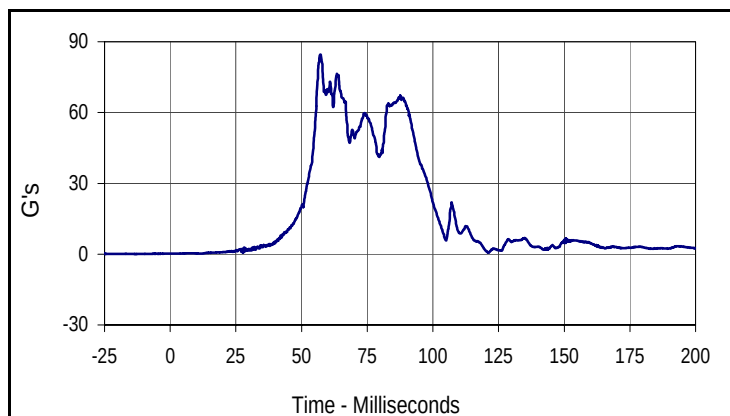
Curve Description			
CRABI Head X (P4)			
CURNO	Type	SAE Class	Units
133	FIL	1000	G's
Max	Time	Min	Time
57.7	87.5	-6.5	135.0



Curve Description			
CRABI Head Y (P4)			
CURNO	Type	SAE Class	Units
134	FIL	1000	G's
Max	Time	Min	Time
4.3	88.8	-5.1	75.1



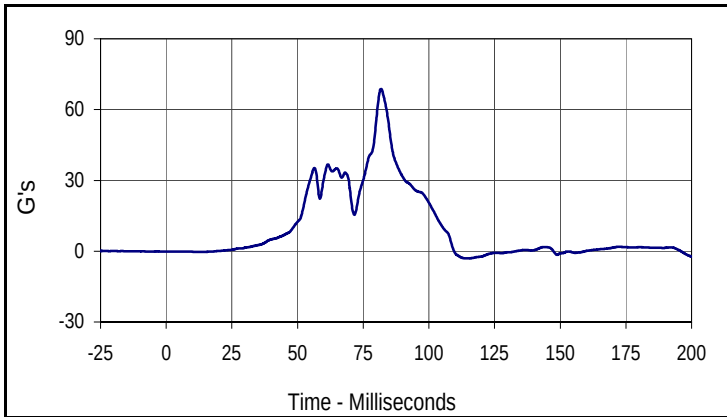
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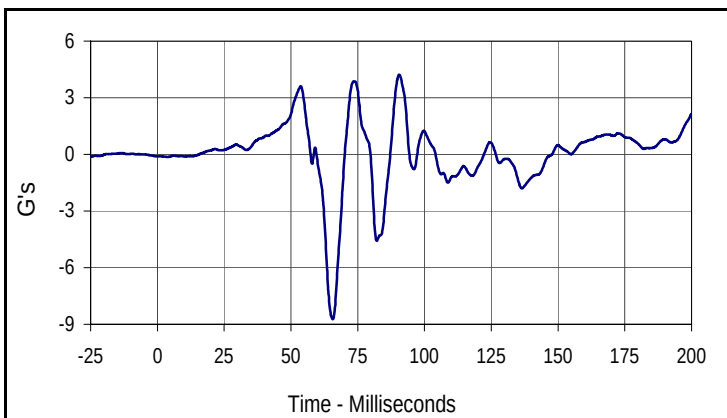
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CRABI Head Resultant (P4)			
CURNO	Type	SAE Class	Units
133	RES	1000	G's
Max	Time	Min	Time
84.6	57.1	0.2	11.6

Test Vehicle: 2008 Infiniti EX35 AWD 5-Door Hatchback
 Test Program: NHTSA 35mph NCAP

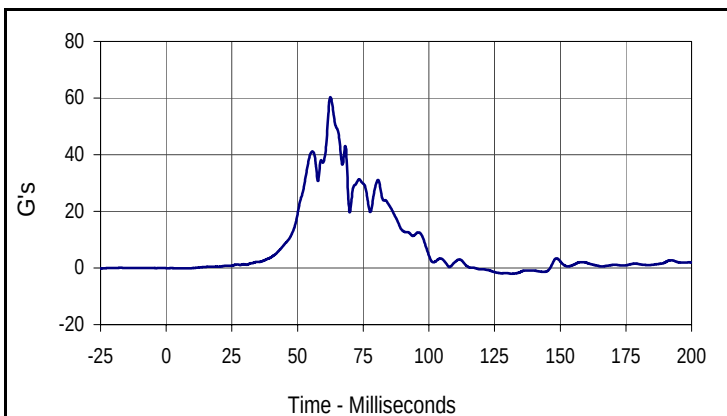
Test Date: 2/26/08
 NHTSA No.: N85202



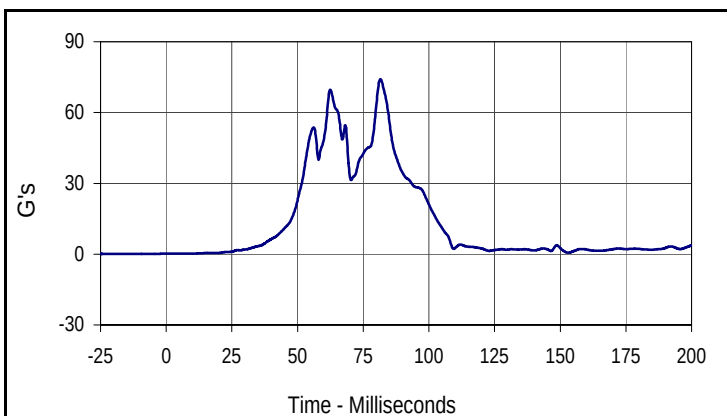
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CRABI Chest X (P4)			
CURNO	Type	SAE Class	Units
143	FIL	180	G's
Max	Time	Min	Time
68.8	81.8	-3.1	114.8



Curve Description			
CRABI Chest Y (P4)			
CURNO	Type	SAE Class	Units
144	FIL	180	G's
Max	Time	Min	Time
4.2	90.5	-8.7	65.7



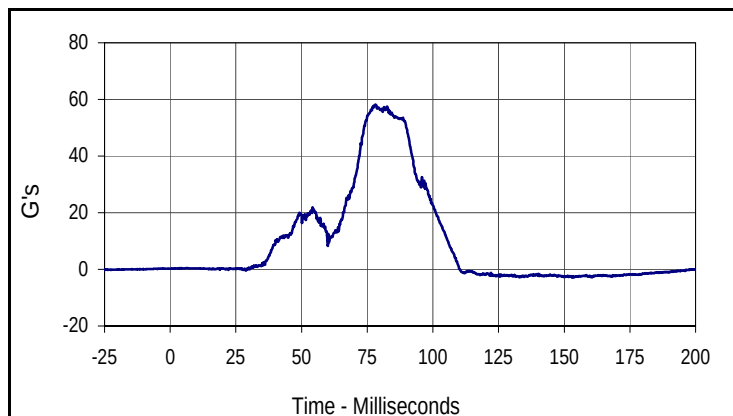
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CRABI Chest Z (P4)			
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Max	Time	Min	Time
60.3	62.5	-2.0	131.4



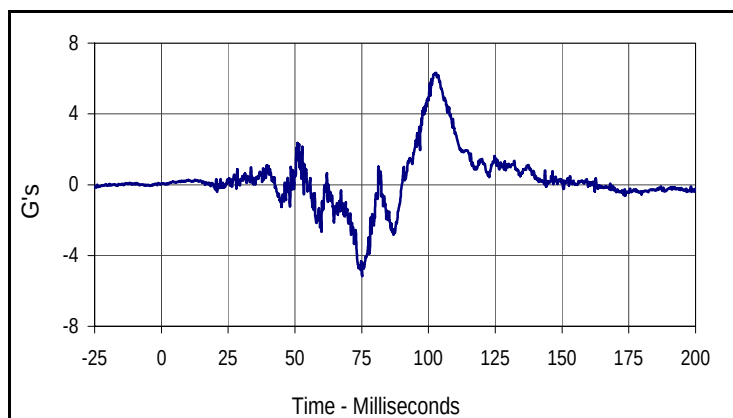
Curve Description			
CRABI Chest Resultant (P4)			
CURNO	Type	SAE Class	Units
143	RES	180	G's
Max	Time	Min	Time
74.1	81.5	0.2	1.5

Test Vehicle: 2008 Infiniti EX35 AWD 5-Door Hatchback
 Test Program: NHTSA 35mph NCAP

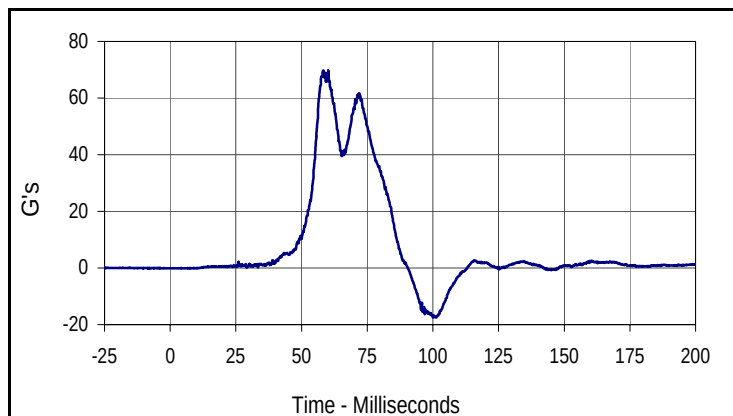
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 NHTSA No.: N85202



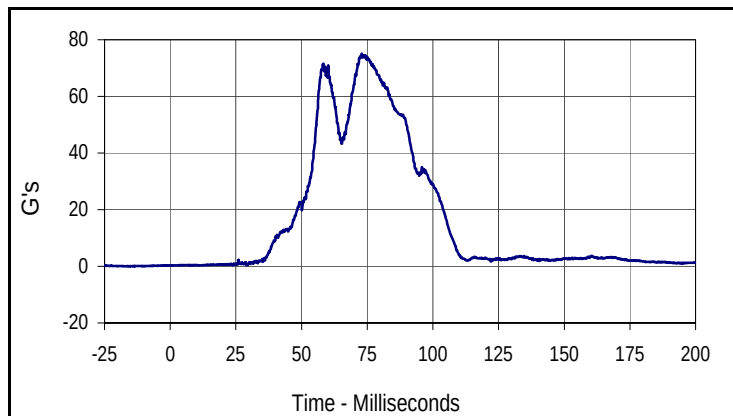
Curve Description			
CRABI Head X (P3)			
CURNO	Type	SAE Class	Units
154	FIL	1000	G's
Max	Time	Min	Time
58.2	78.2	-2.9	153.0



Curve Description			
CRABI Head Y (P3)			
CURNO	Type	SAE Class	Units
155	FIL	1000	G's
Max	Time	Min	Time
6.3	102.7	-5.2	75.1



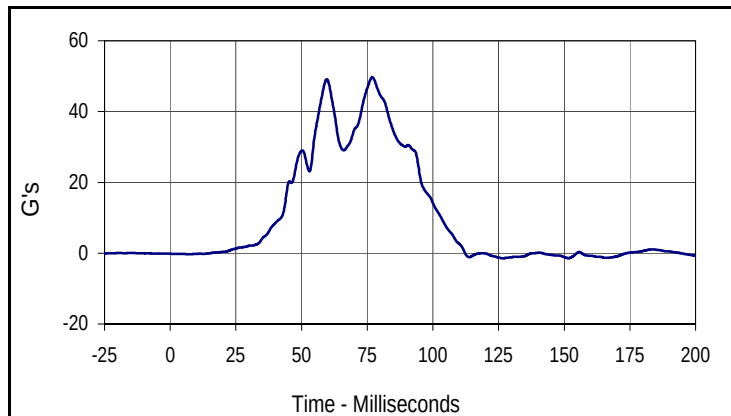
Curve Description			
CRABI Head Z (P3)			
CURNO	Type	SAE Class	Units
156	FIL	1000	G's
Max	Time	Min	Time
69.7	58.2	-17.5	101.2



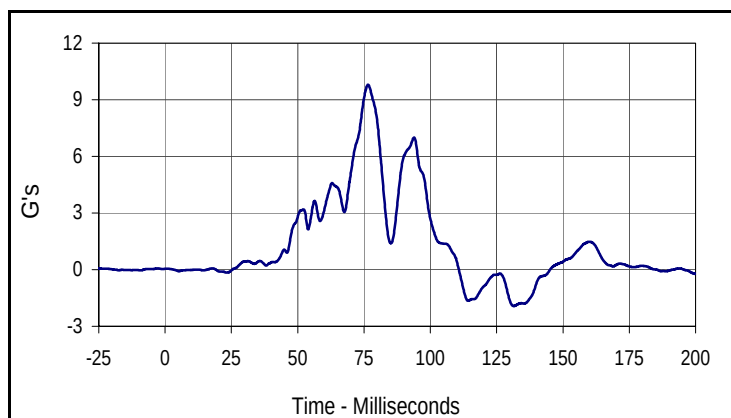
Curve Description			
CRABI Head Resultant (P3)			
CURNO	Type	SAE Class	Units
154	RES	1000	G's
Max	Time	Min	Time
75.0	73.0	0.3	0.2

Test Vehicle: 2008 Infiniti EX35 AWD 5-Door Hatchback
 Test Program: NHTSA 35mph NCAP

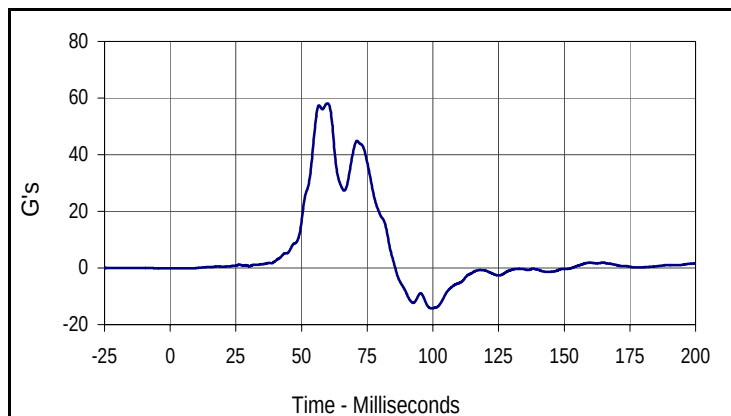
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 NHTSA No.: N85202



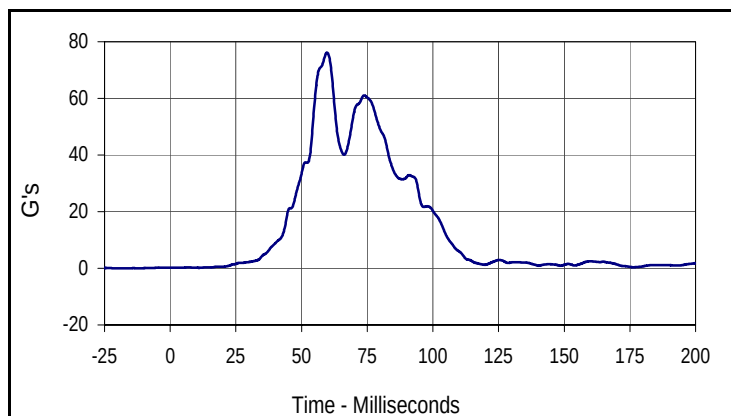
Curve Description			
CRABI Chest X (P3)			
CURNO	Type	SAE Class	Units
164	FIL	180	G's
Max	Time	Min	Time
49.7	76.9	-1.5	126.7



Curve Description			
CRABI Chest Y (P3)			
CURNO	Type	SAE Class	Units
165	FIL	180	G's
Max	Time	Min	Time
9.8	76.5	-1.9	131.5



Curve Description			
CRABI Chest Z (P3)			
CURNO	Type	SAE Class	Units
166	FIL	180	G's
Max	Time	Min	Time
58.1	59.7	-14.3	99.6



Curve Description			
CRABI Chest Resultant (P3)			
CURNO	Type	SAE Class	Units
164	RES	180	G's
Max	Time	Min	Time
76.2	59.7	0.2	11.0

SECTION D4
CRABI CALIBRATION INFORMATION

Test Program: CRABI 12 Month Old Frontal Head Drop Test

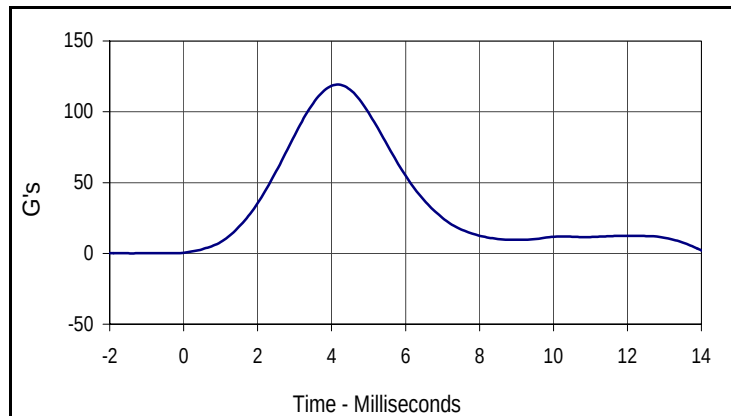
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ATD Serial No.: 022

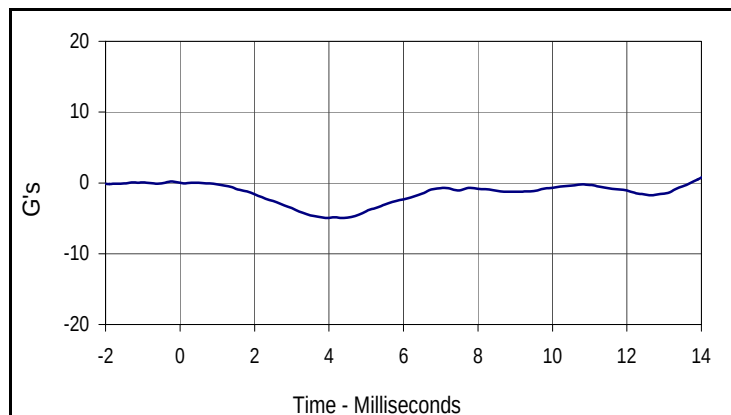
Test I.D.: FHD12D



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Peak Resultant Acceleration	G's	100.0 to 120.0	119.2	Pass
Peak Lateral Acceleration	G's	≤15.0	5.0	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Overall Test Results			Pass	



Curve Description			
Head Resultant			
CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
119.2	4.2	0.0	-1.4



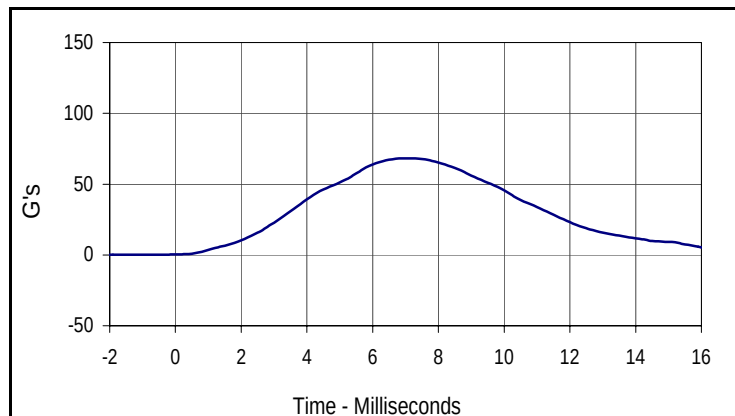
Curve Description			
Head Y			
CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
0.2	-0.2	-5.0	4.4

Test Program: CRABI 12 Month Old Rear Head Drop Test
 ATD Serial No.: 022

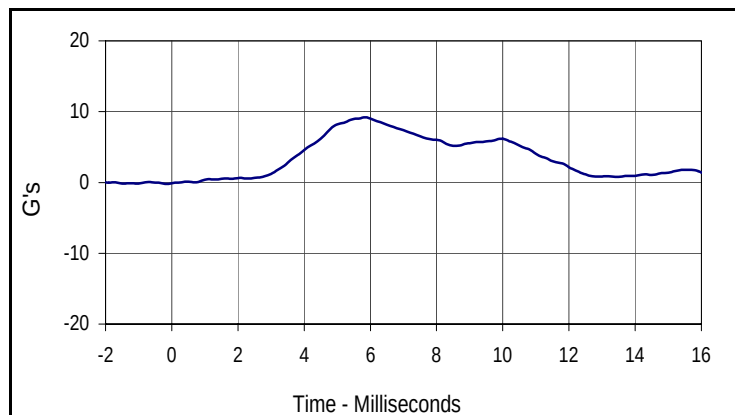
Test Date: 1/16/08
 Test I.D.: RHD12D



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Peak Resultant Acceleration	G's	55.0 to 71.0	63.9	Pass
Peak Lateral Acceleration	G's	≤15.0	9.2	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Overall Test Results				Pass



Curve Description			
Head Resultant			
CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
63.9	6.0	0.1	-0.9



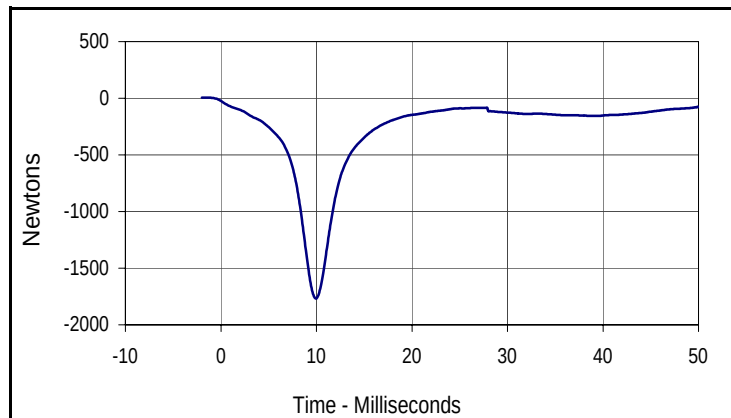
Curve Description			
Head Y			
CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
9.2	5.9	-0.2	-0.2

Test Program: CRABI 12 Month Old Thorax Impact Test
 ATD Serial No.: 022

Test Date: 1/16/08
 Test I.D.: CH12D



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity at T=0	m/sec	4.90 to 5.10	4.97	Pass
Peak Probe Force	Newtons	-1514 to -1796	-1767	Pass
Overall Test Results				Pass



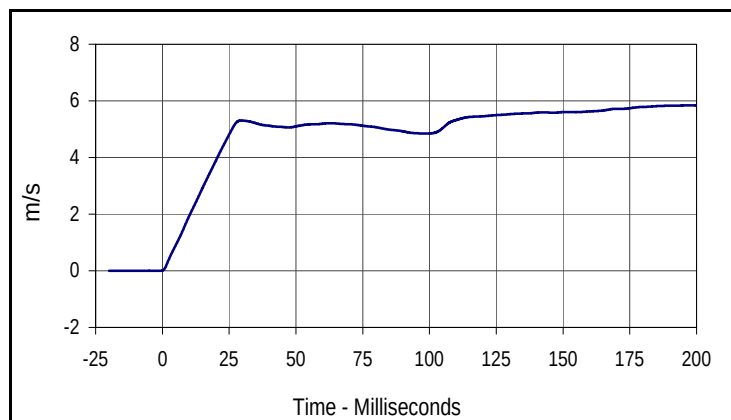
Curve Description			
Probe Force			
CURNO	Type	SAE Class	Units
001	FIL	180	Newtons
Max	Time	Min	Time
6.2	-1.6	-1767.0	10.0

Test Program: CRABI 12 Month Old Neck Flexion Test
 ATD Serial No.: 022

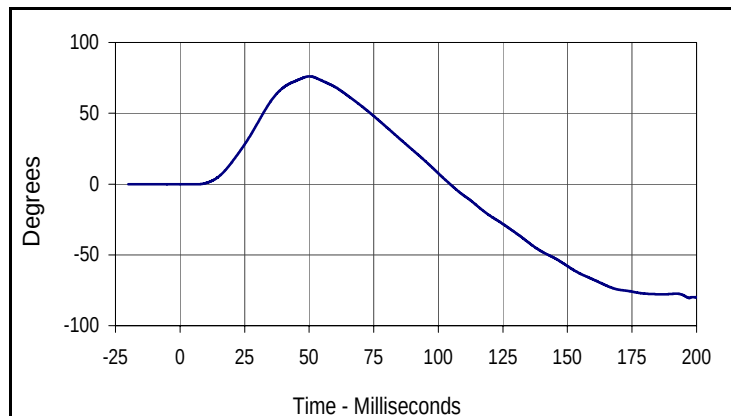
Test Date: 1/16/08
 Test I.D.: NF12D



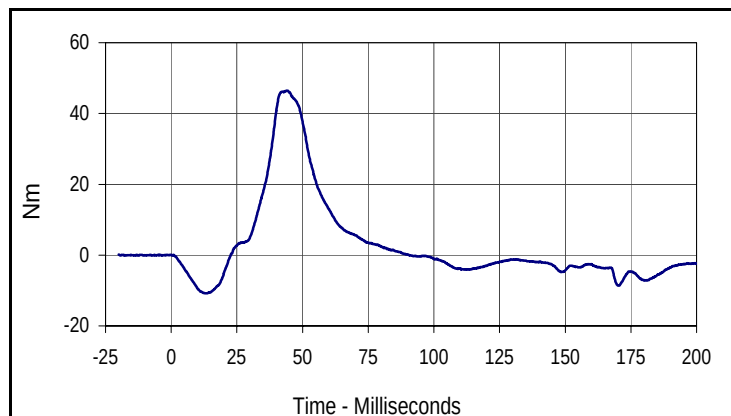
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	5.10 to 5.30	5.11	Pass
Pendulum Deceleration	10 Msec.	m/s	1.6 to 2.3	1.9	Pass
	20 Msec.	m/s	3.4 to 4.2	3.9	Pass
	25 Msec.	m/s	4.3 to 5.2	4.8	Pass
"D" Plane Rotation	Max	Degrees	75.0 to 86.0	76.1	Pass
Peak Moment in Rotation	Max	Nm	36.0 to 45.0	43.4	Pass
Positive Moment Decay, Time To 5 Nm		Msec.	60.0 to 80.0	71.5	Pass
			Overall Test Results		Pass



Curve Description			
Pendulum Velocity			
CURNO	Type	SAE Class	Units
001	FIL	180	m/s
Max	Time	Min	Time
5.8	199.3	0.0	-0.7



Curve Description			
"D" Plane Rotation			
CURNO	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
76.1	50.1	-80.5	197.1



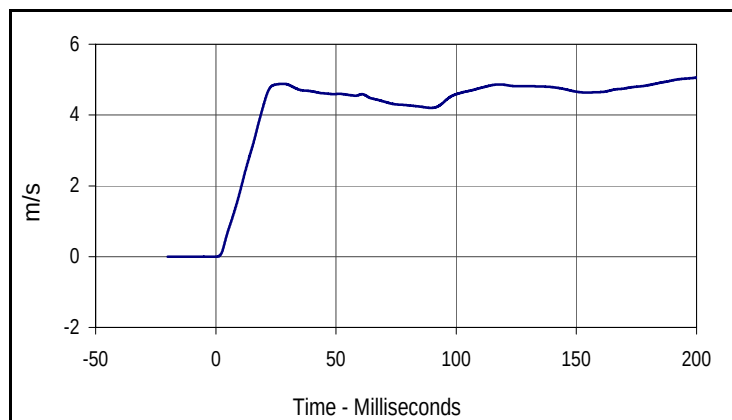
Curve Description			
Upper Neck Force Y			
CURNO	Type	SAE Class	Units
002	FIL	600	Nm
Max	Time	Min	Time
46.4	44.3	-10.8	13.5

Test Program: CRABI 12 Month Old Neck Extension Test
 ATD Serial No.: 022

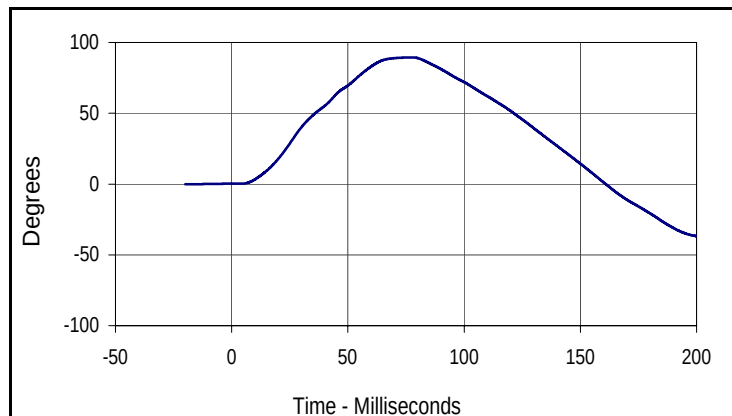
Test Date: 1/15/08
 Test I.D.: NE12D



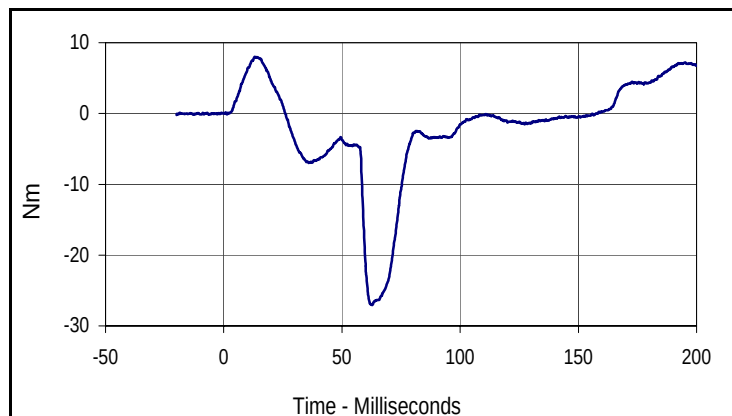
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	2.4 to 2.6	2.47	Pass
Pendulum Deceleration	6 Msec.	m/s	0.8 to 1.2	0.9	Pass
	10 Msec.	m/s	1.5 to 2.1	1.8	Pass
	14 Msec.	m/s	2.2 to 2.9	2.8	Pass
"D" Plane Rotation	Max	Degrees	80.0 to 92.0	89.5	Pass
Peak Moment in Rotation	Max	Nm	-12 to -23	-14.4	Pass
Positive Moment Decay, Time To -5 Nm		Msec.	76.0 to 90.0	78.1	Pass
			Overall Test Results		Pass



Curve Description			
Pendulum Velocity			
CURNO	Type	SAE Class	Units
001	FIL	180	m/s
Max	Time	Min	Time
5.1	200.0	0.0	0.1



Curve Description			
"D" Plane Rotation			
CURNO	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
89.5	77.5	-36.8	200.0



Curve Description			
Upper Neck Moment Y			
CURNO	Type	SAE Class	Units
002	FIL	600	Nm
Max	Time	Min	Time
8.0	13.2	-27.0	62.8

Test Program: CRABI 12 Month Old External Dimensions
 ATD Serial No.: 022

Test Date: 1/15/08
 Test I.D.: N/A



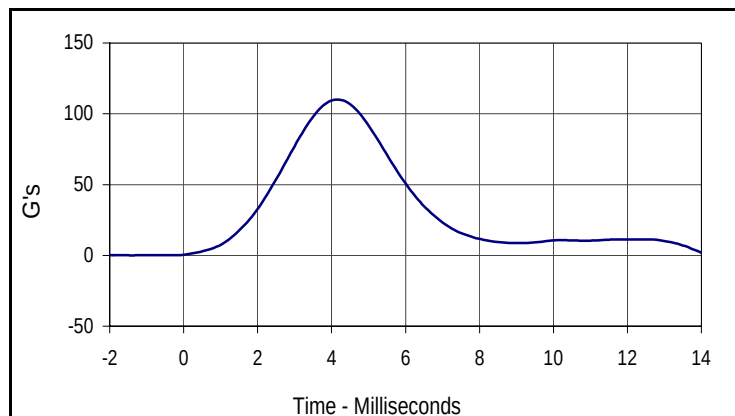
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
A - Total sitting height	mm	456.0 to 471.2	463	Pass
B - Shoulder pivot height	mm	276.6 to 291.8	286	Pass
C - "H" point height	mm	27.9 to 38.1	34	Pass
D - "H" point from backline	mm	40.1 to 50.3	46	Pass
E - Shoulder pivot from back	mm	50.3 to 60.5	58	Pass
F - Thigh clearance	mm	63.0 to 73.2	69	Pass
G - Elbow pivot to fingertip	mm	176.6 to 191.8	182	Pass
I - Shoulder pivot to elbow pivot	mm	99.1 to 114.3	110	Pass
J - Elbow rest height	mm	150.1 to 165.3	155	Pass
K - Buttock to knee length	mm	202.7 to 217.9	204	Pass
L - Popliteal length	mm	138.7 to 153.9	146	Pass
M - Knee pivot height	mm	165.1 to 180.3	172	Pass
N - Buttock popliteal length	mm	144.8 to 160.0	150	Pass
O - Chest depth with jacket	mm	107.5 to 122.7	116	Pass
P - Foot length	mm	92.4 to 102.6	95	Pass
Q- Stature	mm	727.7 to 753.1	N/A	N/A
R - Buttock to knee pivot length	mm	178.5 to 188.7	183	Pass
S - Head Breadth	mm	124.4 to 134.6	127	Pass
T - Head Depth	mm	149.9 to 165.1	152	Pass
U - Hip breadth	mm	158.5 to 173.7	161	Pass
V - Shoulder breadth	mm	200.7 to 215.9	210	Pass
W - Foot breadth	mm	39.1 to 49.3	46	Pass
Y - Chest circumference with jacket	mm	452.4 to 477.8	455	Pass
Z - Waist circumference	mm	447.0 to 472.4	449	Pass
AA - Reference location for dimension Y & O	mm	256.5 to 266.7	263	Pass
BB - Reference Location For dimension Z	mm	106.7 to 116.9	113	Pass
CC - Shoulder Height	mm	299.7 to 314.9	301	Pass
DD - Chin Height	mm	289.6 to 304.8	297	Pass
Overall Test Results				Pass

Test Program: CRABI 12 Month Old Frontal Head Drop Test
 ATD Serial No.: 017

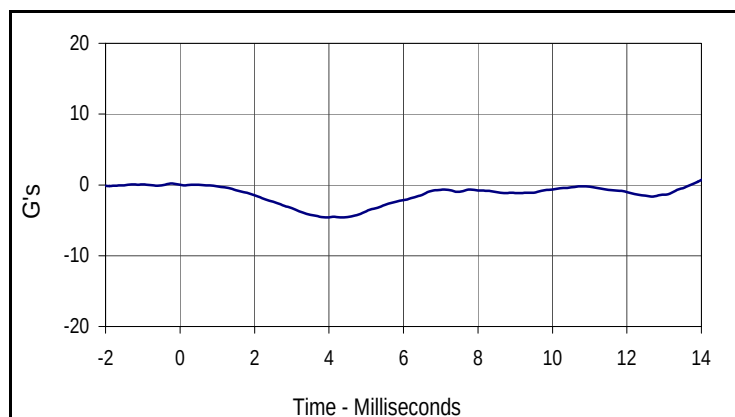
Test Date: 1/15/08
 Test I.D.: FHD12C



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Peak Resultant Acceleration	G's	100.0 to 120.0	110.1	Pass
Peak Lateral Acceleration	G's	≤15.0	4.6	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Overall Test Results				Pass



Curve Description			
Head Resultant			
CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
110.1	4.2	0.0	-1.4



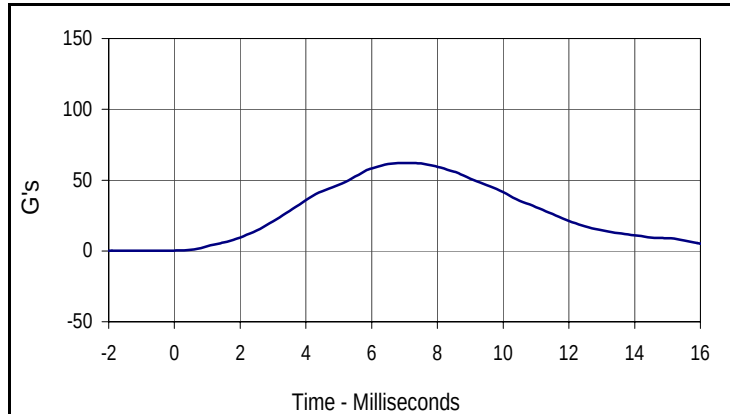
Curve Description			
Head Y			
CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
0.2	-0.2	-4.6	3.9

Test Program: CRABI 12 Month Old Rear Head Drop Test
 ATD Serial No.: 017

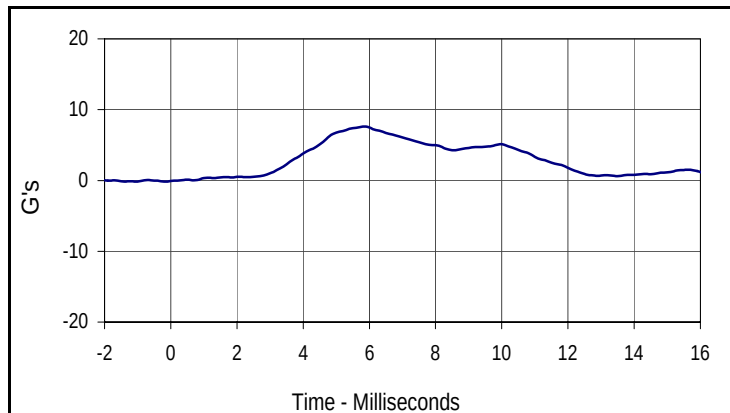
Test Date: 1/16/08
 Test I.D.: RHD12C



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Peak Resultant Acceleration	G's	55.0 to 71.0	58.3	Pass
Peak Lateral Acceleration	G's	≤15.0	7.6	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Overall Test Results			Pass	



Curve Description			
Head Resultant			
CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
58.3	6.0	0.1	-0.9



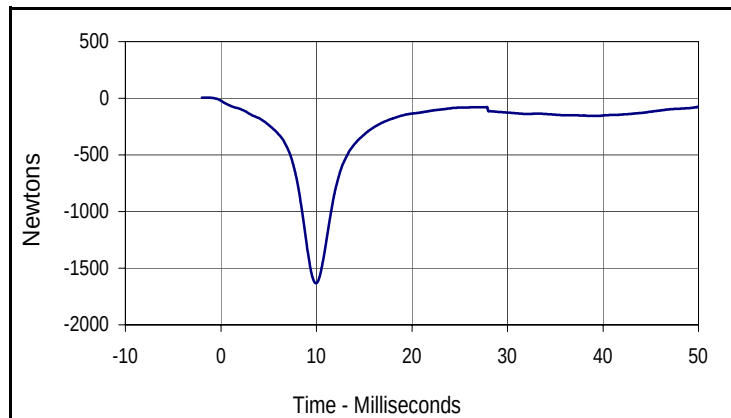
Curve Description			
Head Y			
CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
7.6	5.8	-0.2	-1.4

Test Program: CRABI 12 Month Old Thorax Impact Test
 ATD Serial No.: 017

Test Date: 1/16/08
 Test I.D.: CH12C



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity at T=0	m/sec	4.90 to 5.10	4.95	Pass
Peak Probe Force	Newtons	-1514 to -1796	-1633	Pass
Overall Test Results				Pass



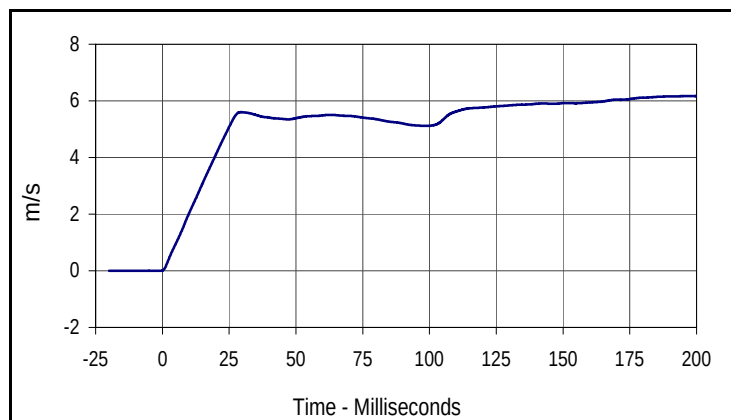
Curve Description			
Probe Force			
CURNO	Type	SAE Class	Units
001	FIL	180	Newtons
Max	Time	Min	Time
6.1	-1.7	-1633.2	10.0

Test Program: CRABI 12 Month Old Neck Flexion Test
 ATD Serial No.: 017

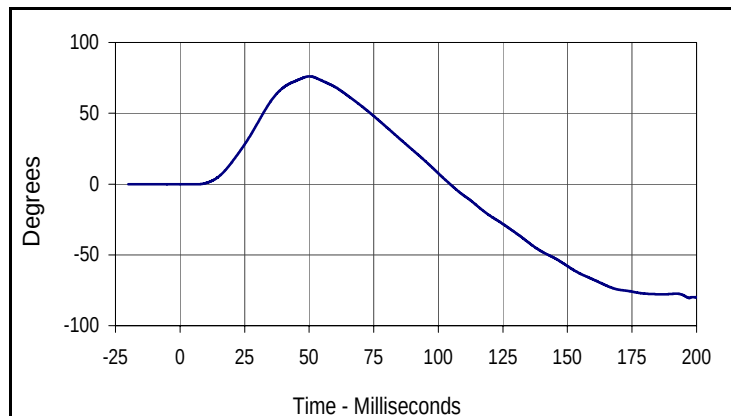
Test Date: 1/16/08
 Test I.D.: NF12C



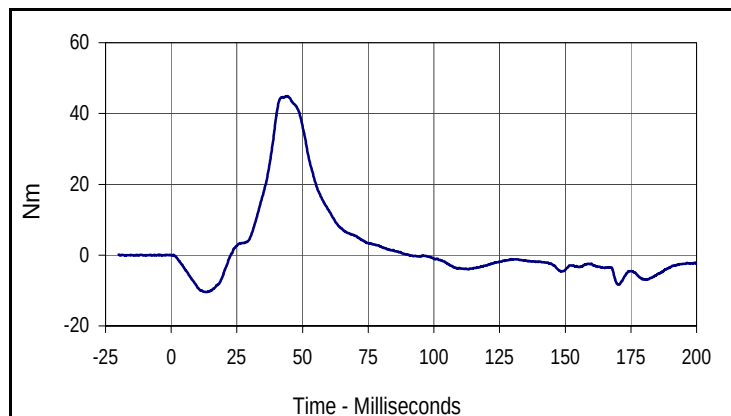
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	5.10 to 5.30	5.13	Pass
Pendulum Deceleration	10 Msec.	m/s	1.6 to 2.3	2.0	Pass
	20 Msec.	m/s	3.4 to 4.2	4.1	Pass
	25 Msec.	m/s	4.3 to 5.2	5.1	Pass
"D" Plane Rotation	Max	Degrees	75.0 to 86.0	76.1	Pass
Peak Moment in Rotation	Max	Nm	36.0 to 45.0	42.0	Pass
Positive Moment Decay, Time To 5 Nm		Msec.	60.0 to 80.0	71.0	Pass
			Overall Test Results		Pass



Curve Description			
Pendulum Velocity			
CURNO	Type	SAE Class	Units
001	FIL	180	m/s
Max	Time	Min	Time
6.2	199.3	0.0	-0.7



Curve Description			
"D" Plane Rotation			
CURNO	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
76.1	50.1	-80.5	197.1



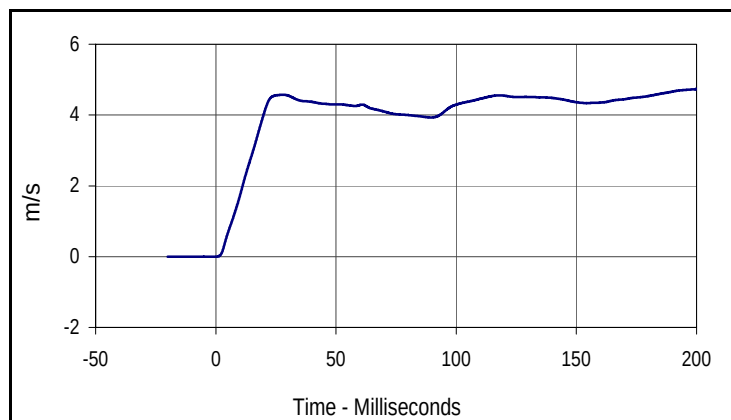
Curve Description			
Upper Neck Force Y			
CURNO	Type	SAE Class	Units
002	FIL	600	Nm
Max	Time	Min	Time
44.9	44.3	-10.4	13.5

Test Program: CRABI 12 Month Old Neck Extension Test
 ATD Serial No.: 017

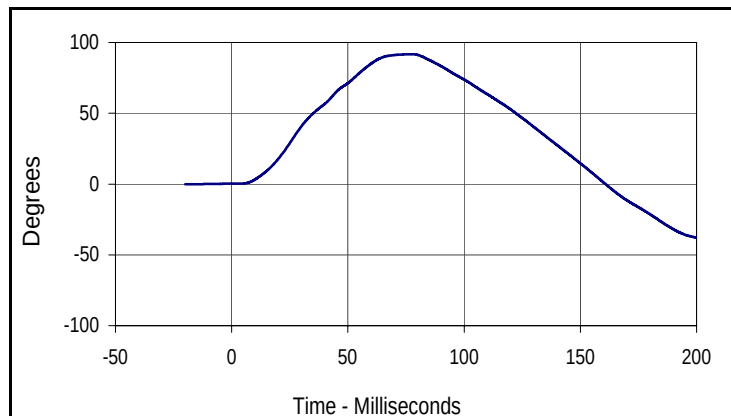
Test Date: 1/15/08
 Test I.D.: NE12C



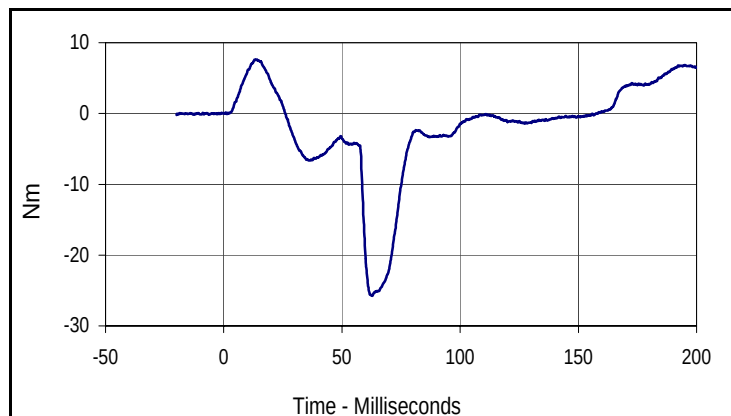
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	2.4 to 2.6	2.40	Pass
Pendulum Deceleration	6 Msec.	m/s	0.8 to 1.2	0.9	Pass
	10 Msec.	m/s	1.5 to 2.1	1.7	Pass
	14 Msec.	m/s	2.2 to 2.9	2.7	Pass
"D" Plane Rotation	Max	Degrees	80.0 to 92.0	91.7	Pass
Peak Moment in Rotation	Max	Nm	-12 to -23	-22.6	Pass
Positive Moment Decay, Time To -5 Nm		Msec.	76.0 to 90.0	77.9	Pass
			Overall Test Results		Pass



Curve Description			
Pendulum Velocity			
CURNO	Type	SAE Class	Units
001	FIL	180	m/s
Max	Time	Min	Time
4.7	200.0	0.0	0.1



Curve Description			
"D" Plane Rotation			
CURNO	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
91.7	77.5	-37.8	200.0



Curve Description			
Upper Neck Moment Y			
CURNO	Type	SAE Class	Units
002	FIL	600	Nm
Max	Time	Min	Time
7.6	13.2	-25.8	62.8

Test Program: CRABI 12 Month Old External Dimensions
 ATD Serial No.: 017

Test Date: 1/15/08
 Test I.D.: N/A



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
A - Total sitting height	mm	456.0 to 471.2	463	Pass
B - Shoulder pivot height	mm	276.6 to 291.8	288	Pass
C - "H" point height	mm	27.9 to 38.1	35	Pass
D - "H" point from backline	mm	40.1 to 50.3	46	Pass
E - Shoulder pivot from back	mm	50.3 to 60.5	58	Pass
F - Thigh clearance	mm	63.0 to 73.2	69	Pass
G - Elbow pivot to fingertip	mm	176.6 to 191.8	188	Pass
I - Shoulder pivot to elbow pivot	mm	99.1 to 114.3	110	Pass
J - Elbow rest height	mm	150.1 to 165.3	160	Pass
K - Buttock to knee length	mm	202.7 to 217.9	210	Pass
L - Popliteal length	mm	138.7 to 153.9	139	Pass
M - Knee pivot height	mm	165.1 to 180.3	171	Pass
N - Buttock popliteal length	mm	144.8 to 160.0	150	Pass
O - Chest depth with jacket	mm	107.5 to 122.7	119	Pass
P - Foot length	mm	92.4 to 102.6	95	Pass
Q- Stature	mm	727.7 to 753.1	N/A	N/A
R - Buttock to knee pivot length	mm	178.5 to 188.7	184	Pass
S - Head Breadth	mm	124.4 to 134.6	130	Pass
T - Head Depth	mm	149.9 to 165.1	160	Pass
U - Hip breadth	mm	158.5 to 173.7	164	Pass
V - Shoulder breadth	mm	200.7 to 215.9	210	Pass
W - Foot breadth	mm	39.1 to 49.3	42	Pass
Y - Chest circumference with jacket	mm	452.4 to 477.8	462	Pass
Z - Waist circumference	mm	447.0 to 472.4	455	Pass
AA - Reference location for dimension Y & O	mm	256.5 to 266.7	260	Pass
BB - Reference Location For dimension Z	mm	106.7 to 116.9	109	Pass
CC - Shoulder Height	mm	299.7 to 314.9	303	Pass
DD - Chin Height	mm	289.6 to 304.8	295	Pass
Overall Test Results				Pass