

REPORT NUMBER: MCW-DOT-08SN05C

DETERMINATION OF CHILD RESTRAINT SYSTEM CRASHWORTHINESS

**NEW CAR ASSESSMENT PROGRAM
SIDE IMPACT TEST**

2008 TOYOTA FJ CRUISER UTILITY VEHICLE

NHTSA NUMBER: M85109

**PREPARED BY:
MEDICAL COLLEGE OF WISCONSIN
5000 WEST NATIONAL AVENUE
RESEARCH 151
MILWAUKEE, WISCONSIN 53295**



TEST DATE: 09 OCTOBER 2007

REPORT DATE: 19 OCTOBER 2007

CRABI REPORT

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

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16. Abstract A 55/28 km/h 90° Moving Deformable Barrier (MDB) New Car Assessment Program (NCAP) side impact was conducted on the subject Child Restraint System (CRS) Graco Snugride in conjunction with side impact testing on a 2008 Toyota FJ Cruiser Utility Vehicle to obtain new car assessment and research data indicant of FMVSS No. 214D performance and in accordance with the specifications of the Office of Crashworthiness Standards Test Procedure for the determination of CRS crashworthiness. The test was conducted at the Medical College of Wisconsin (MCW) in Milwaukee, Wisconsin on 09 October 2008. The test vehicle's occupant performance is as follows: <table border="1" data-bbox="154 1281 1364 1407"> <thead> <tr> <th>Measurement Description</th> <th>Units</th> <th>Threshold</th> <th>Right Rear (P3)</th> </tr> </thead> <tbody> <tr> <td>Head Injury Criteria (HIC15)</td> <td>N/a</td> <td>390</td> <td>14.7</td> </tr> <tr> <td>3 msec. Chest Clip</td> <td>G's</td> <td>50</td> <td>14.8</td> </tr> </tbody> </table> The doors on the struck side of the vehicle did not separate from the body at the hinges or latches and the opposite doors did not open during the side impact event.						Measurement Description	Units	Threshold	Right Rear (P3)	Head Injury Criteria (HIC15)	N/a	390	14.7	3 msec. Chest Clip	G's	50	14.8
Measurement Description	Units	Threshold	Right Rear (P3)														
Head Injury Criteria (HIC15)	N/a	390	14.7														
3 msec. Chest Clip	G's	50	14.8														
17. Key Words New Car Assessment Program (NCAP) Side impact Side Impact Hybrid III Dummy (SID/HIII) Occupant side impact protection Child Restraint Airbag Interaction (CRABI)			18. Distribution Statement Copies of this report are available from: U.S. Department of Transportation National Highway Traffic Safety Administration Rulemaking, Office of Crashworthiness Standards NVS-111 1200 New Jersey Ave, SE, Room W43-410 Washington, D.C. 20590														
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SECTION 1

PURPOSE AND TEST PROCEDURE

PURPOSE

This side impact test was conducted as part of the FY'08 test program sponsored by the National Highway Traffic Safety Administration (NHTSA), under Contract No. DTNH22-03-D-42005. The purpose of this test was to evaluate side impact protection of a manufactured by Toyota Motor Corporation and obtain CRS performance data.

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 of the Office of Crashworthiness Standards Test Procedure for the determination of CRS crashworthiness. The procedures for receiving, inspection, testing, and reporting of test results are described in the test procedures and are not repeated in this report.

SECTION 2

SUMMARY OF NCAP SIDE IMPACT TEST

A 2008 Toyota FJ Cruiser utility vehicle was impacted on the left (driver's) side by a Moving Deformable Barrier (MDB) modeling a 90° impact as if the test vehicle were moving forward at 28 km/h perpendicular to and across the path of the MDB traveling forward at 55 km/h. Here the test vehicle was stationary and positioned 27° from perpendicular to the MDB tow road guidance system and the MDB was towed 27° ("crabbed") from the guidance system. [See p 26.] The 2257.7 kg test vehicle was impacted by the 1362.2 kg MDB traveling at a speed of 61.9 km/h (measured inline with the guidance system.) The test was conducted at the Medical College of Wisconsin on 09 October 2007.

One (1) CRABI 12-month-old Infant Crash Test Dummy was placed in a CRS in a designated seating position within the test vehicle: (1) rearward facing CRS, right rear passenger; serial number 074. The CRABI was instrumented in the following locations:

- Head center of gravity tri-axial (X, Y, Z) accelerometers (primary and redundant)
- Upper neck tri-axial (X, Y, Z) force load cells and tri-axial (X, Y, Z) moment load cells
- Chest tri-axial (X, Y, Z) accelerometers

The CRS was instrumented with six (6) structural accelerometers. All data channels were recorded with a fully self contained on-board DTS TDAS Pro Data Acquisition System. The data were digitally sampled at 12.5 kHz and processed according to SAEJ211-1 (March 1995).

One (1) high-speed video camera was used to document the impact event. Camera location and pertinent camera information are documented in the data sheets. Pre- and post-test photographs of the CRS and dummy can be found in Appendix A.

All of the above was conducted in accordance to the Laboratory Test Procedure for New Car Assessment Program Side Impact Testing dated November 2002 and the Office of Crashworthiness Standards.

2.2 GENERAL COMMENTS

Test summaries, post test observations, vehicle, camera, and occupant measurements are presented in datasheets 1-8. Appendix A contains the still photograph prints. Appendix B contains CRABI and CRS response data traces. Appendix C contains the CRABI's configuration and performance verification data.

OCCUPANT SUMMARY	
Injury criteria	CRABI (P3)
HIC15	14.7
T ₁ (ms)	559.4
T ₂ (ms)	574.4
3 Msec. Chest Clip	14.8

Head Injury Criterion (HIC) is the standardized calculation using resultant head acceleration to assess head injury. Generally, a higher HIC represents an increase in the likelihood of a serious head injury. HIC15 specifies a time 'window' of 15 milliseconds over which the integral is calculated. T₁ and T₂ represent the time of the lower and upper bounds of the window in which the HIC is calculated. Based on this separation, the maximum HIC value for an adult 50th percentile male anthropomorphic test dummy is 700. For a 12 month -old infant the value is reduced to 390.

The 3 msec. Chest Clip is a calculation using the resultant chest acceleration to assess thoracic injury. As the number increases, a greater probability of a serious thoracic injury also increases. The integral is calculated over a time window of 3 milliseconds. The maximum 3 msec. Chest Clip for an adult 50th percentile male anthropomorphic test dummy is 60, and 50 for a 12 month-old.

CHILD RESTRAINT SYSTEM INFORMATION	
Restraint type	Right rear (passenger) occupant Location 03 CRS
Manufacturer	Graco
Model name	Snugride
Model no.	8645FMT3
Type	Infant
Forward/rearward	Rearward

SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION		
Restraint type	Right rear (passenger) occupant Location 03	
	Installed	Operation
Front airbag	No	N/a
Side airbag	No	N/a
Head airbag	No	N/a
Curtain airbag	Yes – side header	Did not deploy
Seat belt pretensioner	Yes	Yes
Seat belt load limiter	Yes	N/a

These test data and report can be found in detail on the NHTSA website at www.nhtsa.dot.gov.

A brief summary of the crash test can be located at www.safercar.gov

TEST NOTES

DATA SHEET NO. 1
GENERAL TEST AND VEHICLE PARAMETER DATA

VEHICLE INFORMATION		VEHICLE OPTIONS	
Year	2008	Air conditioning	Yes
Make	Toyota	Anti-lock brakes	Yes
Model	FJ Cruiser	AM/FM radio	Yes
Body style	Sport Utility Vehicle	All wheel drive	No
NHTSA number	M85109	Combo bag	No
MCW test ID	08SN05	Console	Yes
VIN	JTEBU11F480104956	Cruise/speed control	Yes
Color	White with brick	Disc brakes	Yes – front and rear
Build date	July 2007	Frontal bag	Yes
Engine No. of cylinders	6	Head bag	Yes – front and rear
Engine Displacement (L)	4.0	Power brakes	Yes
Engine Placement	Longitudinal	Power door locks	Yes
Transmission	Manual 6 speed	Power steering	Yes
Final drive	4 wheel drive	Power windows	Yes
Delivery date	September 21, 2007	Roof rack	Yes
Odometer reading	54	Torso bag	Yes – front only

CERTIFICATION LABEL INFORMATION			
Manufacturer	Toyota Motor Corporation	GVWR (kg)	2525
		GAWR front (kg)	1180
Date of manufacture	July 2007	GAWR rear (kg)	1380

SEAT INFORMATION			
	Number of occupants	Seat type	Seat back type
Front	2	Bucket	Adjustable
Back	3	Split bench	Adjustable
Third	0		
Total	5		

CARGO CAPACITY CALCULATION			
	Units	Value	Reference label
Vehicle maximum capacity	kg	540	(A)
Number of occupants (7) X 68.04 kg	kg	340.2	(B)
Cargo capacity (RCLW) †	kg	136.1	(C) = (A)-(B) †

† Note if RCLW is > 136.1 kg (300 lbs), use 136.1 kg

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

TEST VEHICLE MASS INFORMATION				
	Units	As delivered	As tested	Fully loaded
Left front	kg	567.3	612.3	615
Right front	kg	492.3	519.1	518.6
Left rear	kg	451.4	576.4	578.6
Right rear	kg	455.5	550	551.8
Total front	kg	1059.6	1131.4	1133.6
% Total front	%	53.9	50.1	50.1
Total rear	kg	906.9	1126.4	1130.4
%Total rear	%	46.1	49.9	49.9
Total	kg	1966.5	2257.8	2264

As delivered mass is vehicle mass with maximum fluids

Fully loaded mass is the as delivered mass + 1 or 2 ATD's + RCLW

As tested mass is the mass of test vehicle with 1 or 2 ATD's + instrumentation + ballast (if necessary)

CALCULATION OF TEST VEHICLE TARGET MASS			
	Units	Value	Reference label
As delivered test vehicle mass	kg	1966.5	(D)
Maximum cargo capacity (RCLW)	kg	136.1	(C)
Mass of SID HIII's (1 or 2)	kg	161.4	(E)
Test vehicle target mass (TVTW)	kg	2264	(D) + (C) + (E)

As tested mass must be 4.5 kg to 9 kg less than the test vehicle target mass

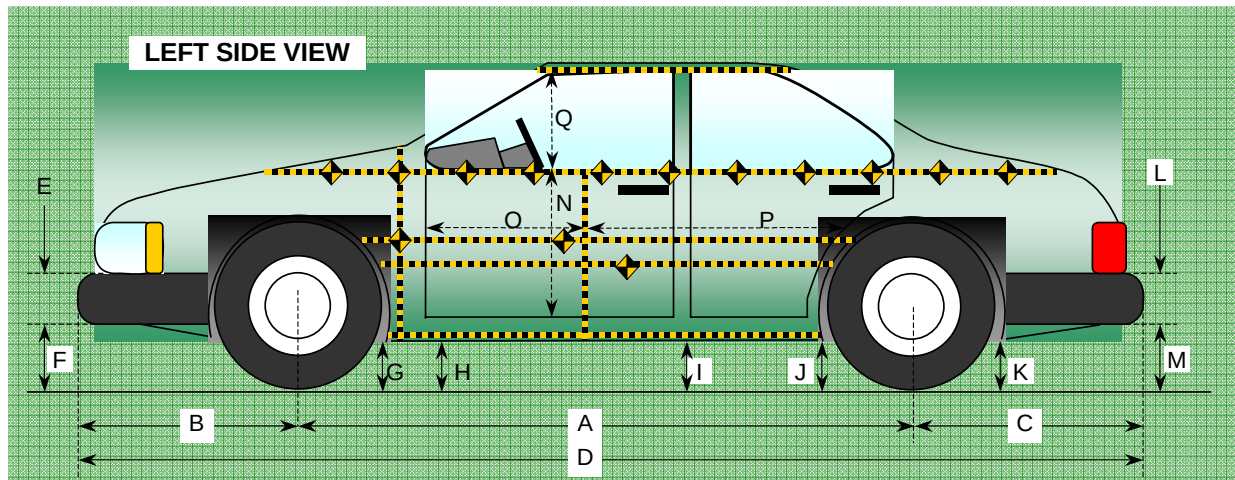
IMPACT LOCATION ON TEST VEHICLE	
Wheelbase	2690 mm
Nominal impact point	405 mm rearward of front axle
Actual impact point	405 mm rearward of front axle

**DATA SHEET NUMBER 2
POST TEST OBSERVATIONS**

TEST DUMMY INFORMATION AND CONTACT POINTS	
Description	Left rear seat
Dummy type / serial no.	CRABI 12-month-old Infant/074
Head contact	Yes – right rear door
Chest contact	None
Abdomen contact	None
Left knee contact	None
Right knee contact	None
Left leg contact	None
Right leg contact	None
Left foot contact	None
Right foot contact	None

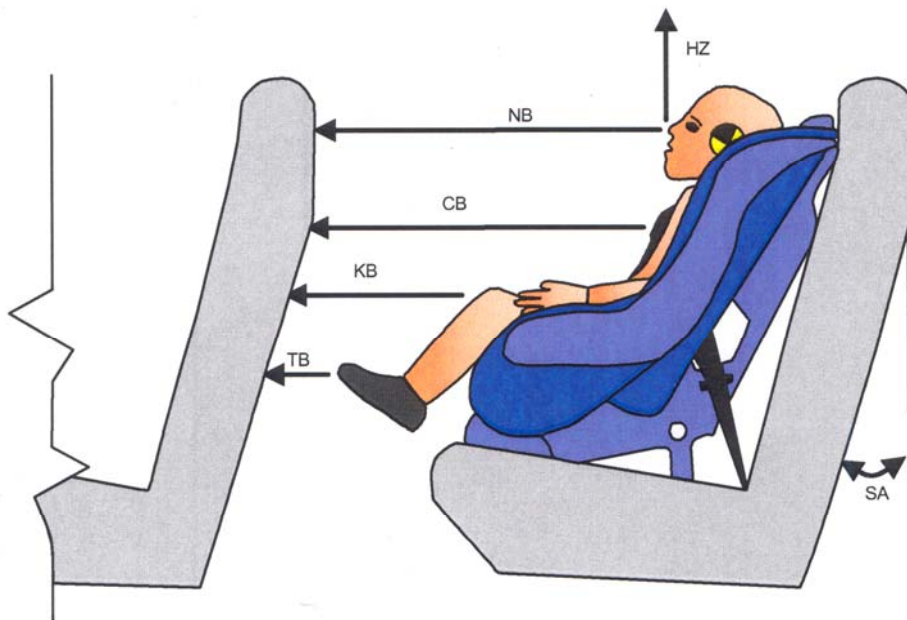
POST TEST DOOR OPENING AND SEAT TRACK INFORMATION	
Description	Rear (03 position)
Locked/unlocked doors	Unlocked
Door opening	None
Seat movement	None
Seat back failure	None

DATA SHEET NUMBER 3
VEHICLE PRE AND POST MEASUREMENTS



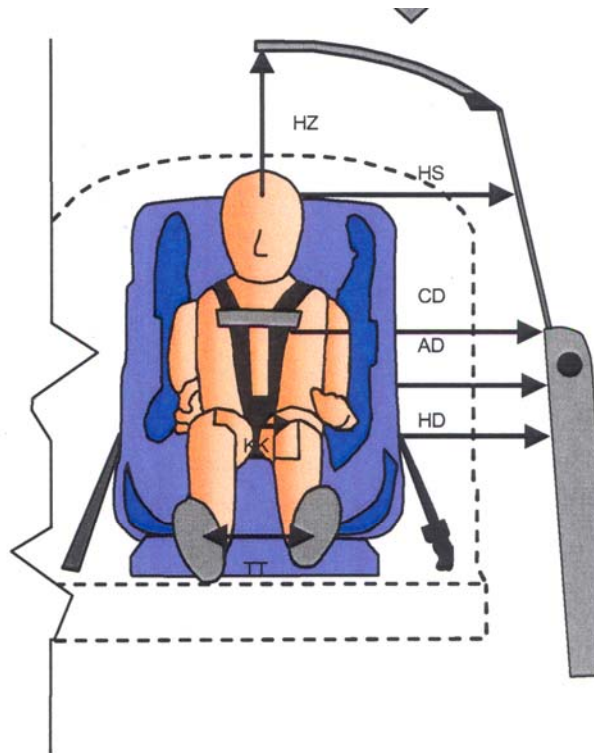
VEHICLE DIMENSIONS				
Code	Description	Pre test	Post test	Change
		mm	mm	mm
A	Wheelbase	2690	2653	-37
B	Front axle to front side of vehicle	704	727	23
C	Rear axle to rear side of vehicle	715	713	-2
D	Total length at centerline	4545	4534	-11
E	Front bumper thickness	277	277	0
F	Front bumper bottom to ground	492	503	11
G	Sill height at front wheel well	485	469	-16
H	Sill height at front door leading edge	463	410	-53
I	Sill height at b-pillar	472	420	-52
J1	Sill height at rear wheel well	448	438	-10
J2	Pinch weld height at rear wheel well	482	505	23
K	Sill height aft of rear wheel well	546	477	-69
L	Rear bumper thickness	210	210	0
M	Rear bumper bottom to ground	454	399	-55
N	Sill height to window bottom sill	771	755	-16
O	Front door leading edge to impact C/L	1138	1124	-14
P	Rear door trailing edge to impact C/L	497	481	-16
Q	Front window opening	452	453	1
R	Right side length	4109	4112	3
S	Left side length	4109	4093	-16
T	Vehicle width at b-pillar	1855	1720	-135

DATA SHEET NUMBER 4
CRABI LONGITUDINAL CLEARANCES



CRABI LONGITUDINAL CLEARANCE MEASUREMENTS			
Code	Measurement description	Units	Left rear seat
	ATD serial number	-	074
CB	Chest to seat back	mm	392
HZ	Head to roof	mm	455
KBL	Left knee to seat back	mm	211
KBR	Right knee to seat back	mm	208
NB	Nose to seat back	mm	478
SA	Seat back angle	°	22
TBL	Left toe to seat back	mm	72
TBR	Right toe to seat back	mm	75

DATA SHEET NUMBER 5
CRABI LATERAL CLEARANCES



CRABI LATERAL CLEARANCE MEASUREMENTS			
Code	Measurement description	Units	Left rear seat
-	ATD serial number	-	074
AD	Arm to door	mm	214
CD	Chest to door	mm	385
HD	H-point to door	mm	252
HS	Head to side window	mm	484
KK	Knee to knee	mm	120
FF	Foot to foot	mm	125

DATA SHEET NUMBER 6
CRS PERFORMANCE CHARACTERISTICS

CRS PERFORMANCE CHARACTERISTICS		
Location	CRS (P3)	
	Damage	Post-Test
Upper tether strap	N/a	N/a
Upper tether buckle	N/a	N/a
Upper tether hook	N/a	N/a
Vehicle upper tether anchor	N/a	N/a
Lower anchor strap	No	None
Lower anchor buckle	No	None
Lower anchor hooks	No	None
Vehicle lower CRS anchors	No	None
5-point harness connections	No	None
Cracks on CRS	No	None
Fabric tears on CRS	No	None
Vehicle seat structure	No	None
Vehicle seat fabric tears	No	None

DATA SHEET 7
CRS ACCELEROMETER LOCATIONS

TEST VEHICLE ACCELEROMETER LOCATIONS				
Loc. no.	Accelerometer location	Measurements (mm)		
		X	Y	Z
1	CRS	1430	226	-641
2	CRS base	1465	251	-606

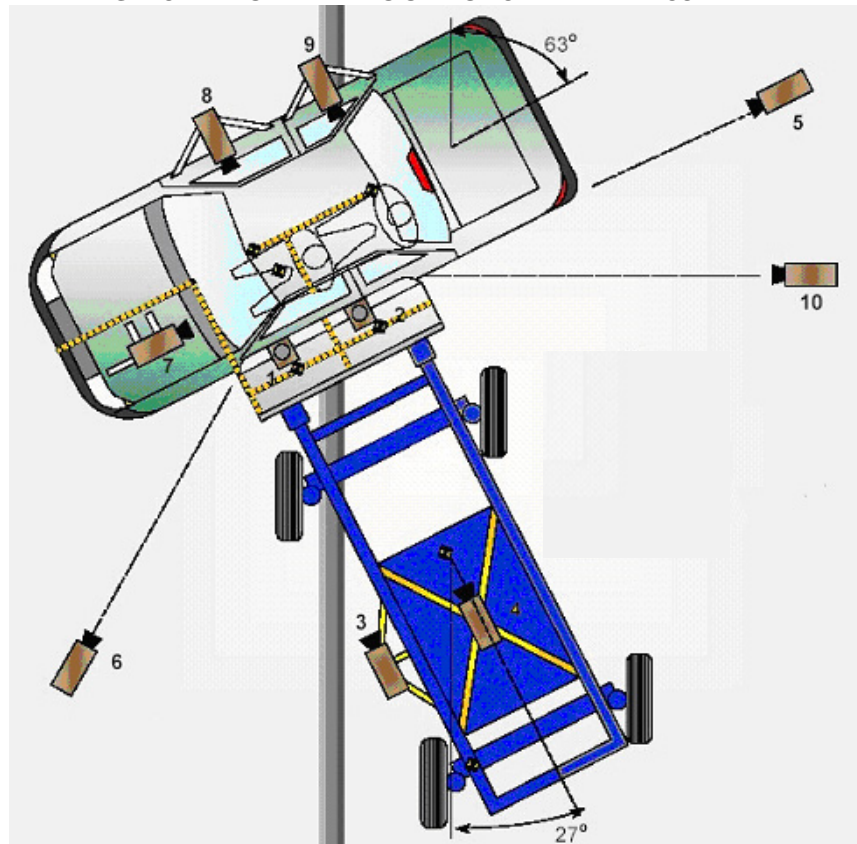
Origin

X Rear bumper
Y Midline of vehicle
Z Top of rear bumper

Orientation

X +(X) Forward
Y +(Y) Right
Z +(Z) Down

DATA SHEET 8
HIGH-SPEED CAMERA LOCATIONS AND DATA SUMMARY



	View	Coordinates †			Angle °	Lens mm	Rate fps
		X	Y	Z			
		mm	mm	mm			
1	Overhead view of test vehicle	-307	-651	-4831	90	12.5	1000
2	Overhead close-up view of impact plane	-608	-136	-4359	90	16	1000
3	MDB onboard close-up view of impact point †	-2117	-88	-53	0.9	25.4	1000
4	MDB onboard view of driver dummy †	-2317	827	-632	3.8	13	1000
5	Right side ground level overall view	-635	11976	-917	4.8	50	1000
6	Left side ground level overall view	-1787	-3811	-906	11.3	25	1000
7	Test vehicle onboard driver front view	484	-271	-441	12.0	25	1000
8	Test vehicle onboard driver side view	1744	752	-365	13.6	12.5	1000
9	Test vehicle onboard passenger side view	1739	1398	-377	14.0	12.5	1000
10	Real-time film coverage of test	-	-	-	-	-	-
11	Test vehicle onboard CRS view	1978	1308	-454	61	12.5	1000

Origin

X

Y

Z

Impact Point

Impact Point

Impact Point

† Cameras triggered pre-impact

Orientation

X

Y

Z

+(X) Forward

+(Y) Right

+(Z) Down

APPENDIX A
PHOTOGRAPHS

LIST OF PHOTOGRAPHS

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A-1	CRS label	A-3
A-2	Pre test frontal view	A-4
A-3	Post test frontal view	A-4
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A-6	Pre test left view	A-6
A-7	Post test left view	A-6
A-8	Pre test right view	A-7
A-9	Post test right view	A-7
A-10	Pre test front view (head and seatbelt)	A-8
A-11	Post test front view (head and seatbelt)	A-8
A-12	Pre test front view (seatbelt)	A-9
A-13	Post test front view (seatbelt)	A-9
A-14	Pre test right side in vehicle view	A-10
A-15	Post test right side in vehicle view	A-10
A-16	Pre test left side in vehicle view	A-11
A-17	Post test left side in vehicle view	A-11
A-18	Post test CRABI head	A-12
A-19	Post test CRABI head contact	A-12

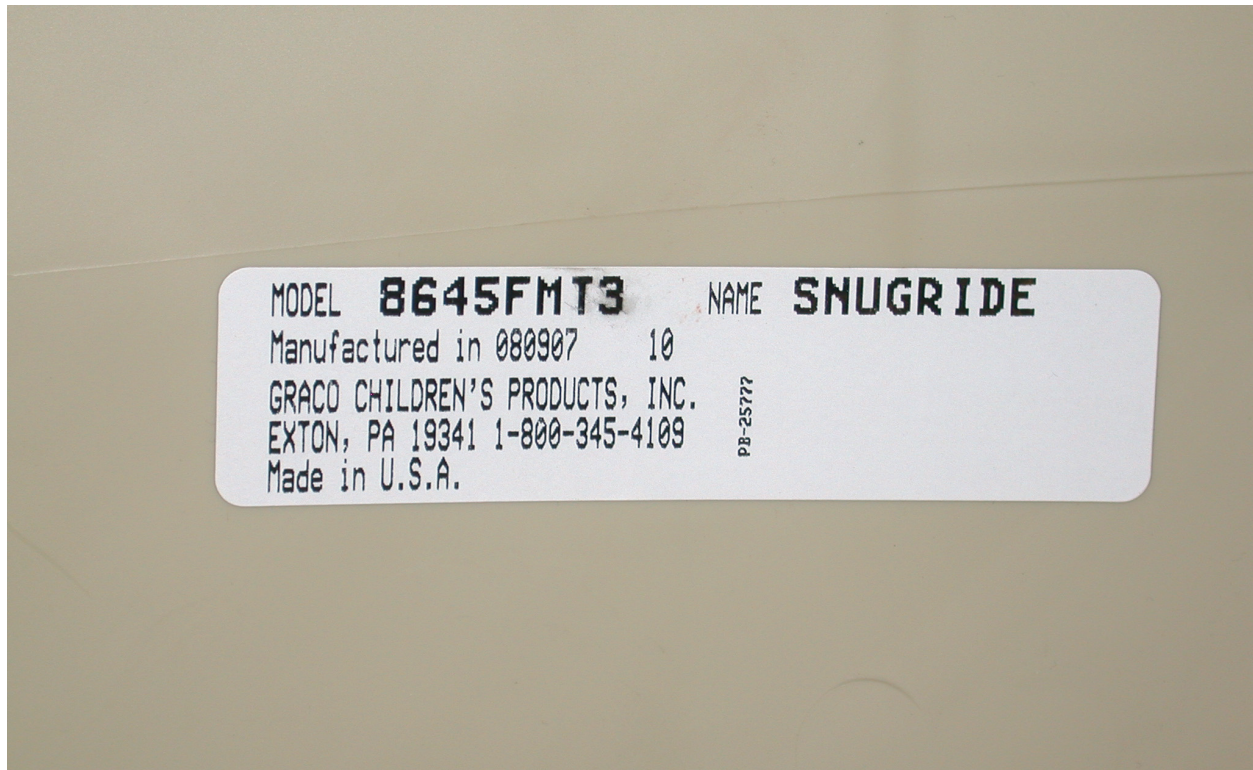


Figure A-1: CRS label



Figure A-2: Pre test frontal view



Figure A-3: Post test frontal view

Figure A-4: Pre test rear view



Figure A-5: Post test rear view



Figure A-6: Pre test left side view



Figure A-7: Post test left side view



Figure A-8: Pre test right side



Figure A-9: Post test right side



Figure A-10: Pre test front view (head and seatbelt)



Figure A-11: Post test front view (head and seatbelt)



Figure A-12: Pre test front view (seatbelt)



Figure A-13: Post test front view (seatbelt)



Figure A-14: Pre test right side in vehicle view



Figure A-15: Post test right side in vehicle view



Figure A-16: Pre test left side in vehicle view



Figure A-17: Post test left side in vehicle view



Figure A-18: Post test CRABI head



Figure A-19: Post test CRABI head contact

APPENDIX B
CRABI RESPONSE DATA

The following plots are provided in the test report

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B-17	Child seat (y)	B-19
B-18	Child seat (z)	B-20

Dummy, vehicle, and MDB response data can be found in the R&D section of the NHTSA website at:

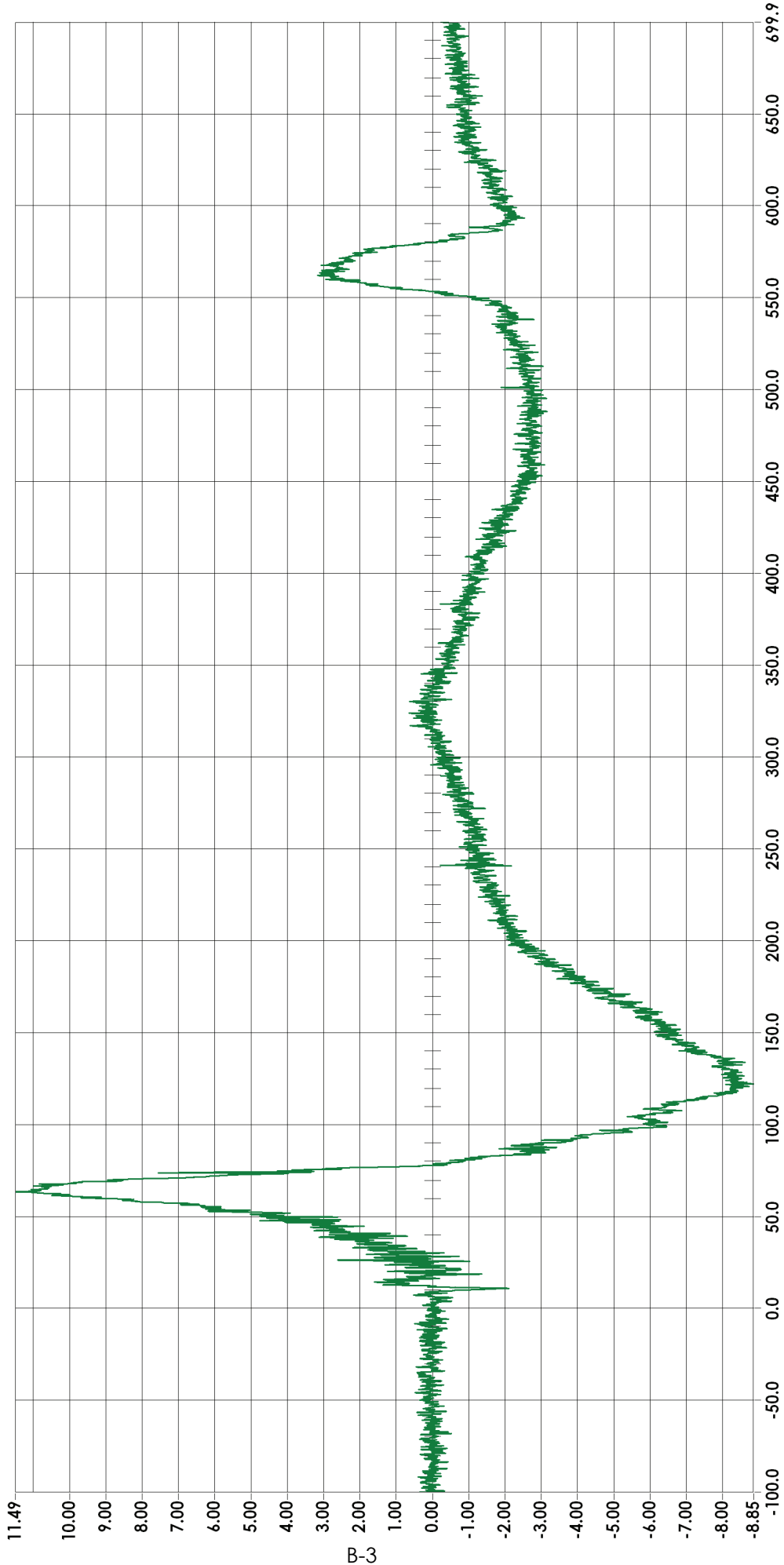
www-nrd.nhtsa.dot.gov/database/nrd-11/veh_db.html.

Test ID	08SN05
Date	10-09-2007
Description	2008 Toyota FJ Cruiser side NCAP test

Filter Class	CFC1000
Sampling Rate (Hz)	12500
Number of Points	10000
Pretrigger Points	1250
Sensor Location	HDCG
Sensor Mnf & Model	ENDEVCO 7264C-2KTZ
Serial Number	P51665



CRABI 074 HEAD CG XL



Max	11.49	G's	at	63.36	msec
Min	-8.85	G's	at	122.16	msec

08SN05 Plot 062

Time (msec)

G's

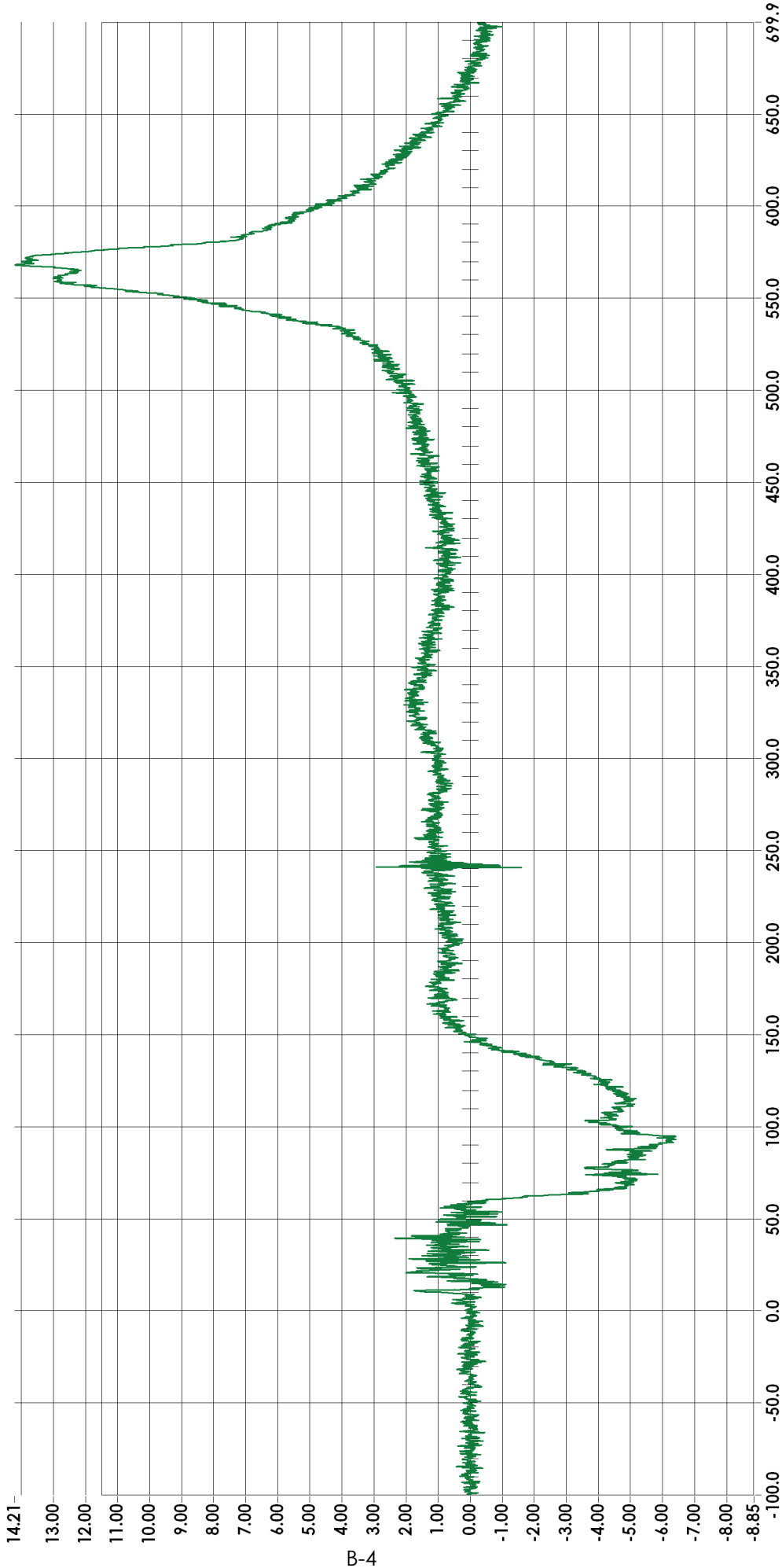
Neuroscience Research Labs
5000 West National Ave
Research 151
Milwaukee, WI 53295

Test ID	08SN05
Date	10-09-2007
Description	2008 Toyota FJ Cruiser side NCAP test

Filter Class	CFC1000	Sensor Location	HDCG
Sampling Rate (Hz)	12500	Sensor Mnf & Model	ENDEVCO 7264C-2KTZ
Number of Points	10000	Serial Number	P51674
Pretrigger Points	1250		



CRABI 074 HEAD CG YL



Max	14.21	G's	at	568.08	msec
Min	-6.42	G's	at	94.80	msec

08SN05 Plot 063

Time (msec)

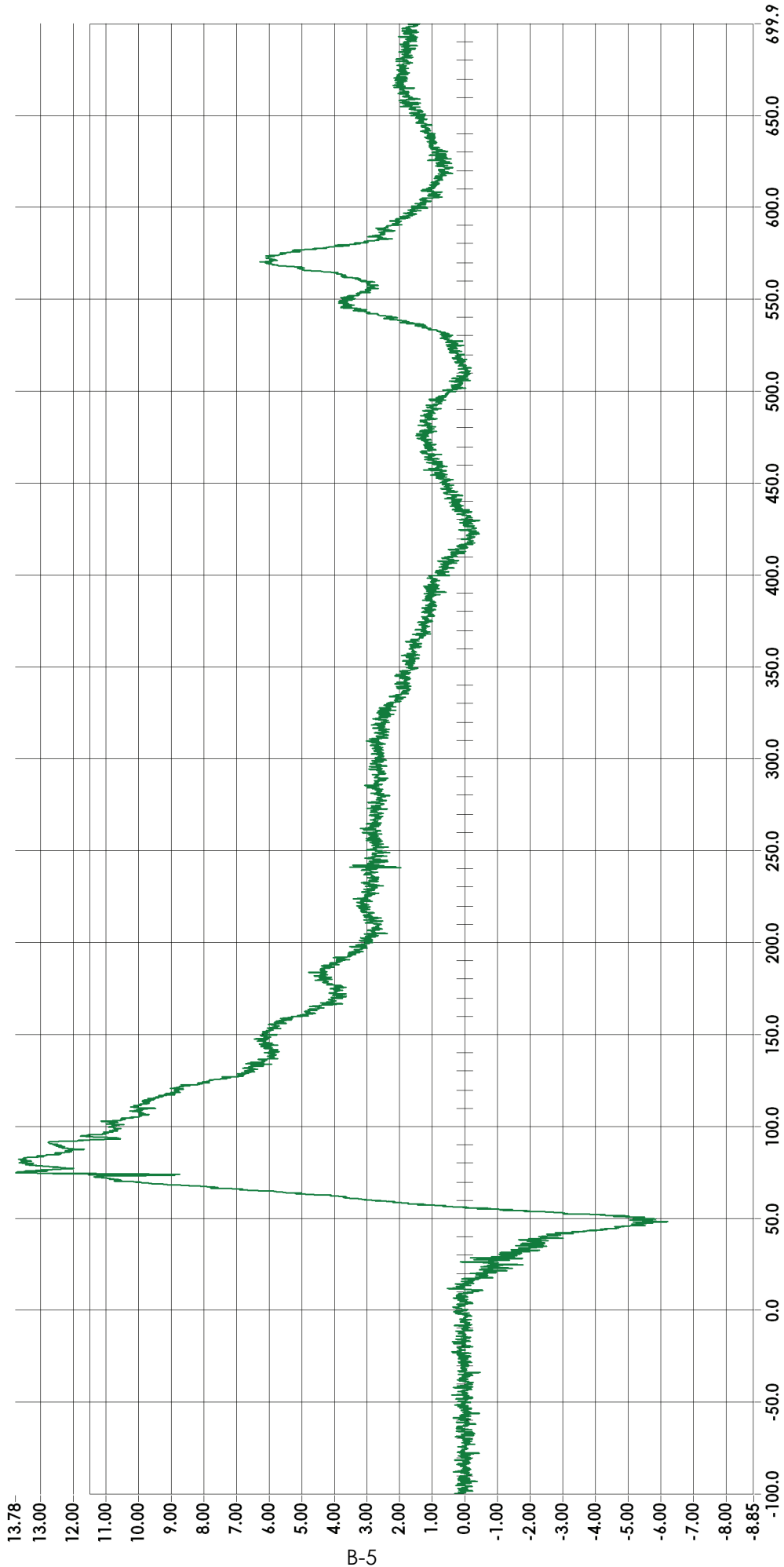
G's

Neuroscience Research Labs
5000 West National Ave
Research 151
Milwaukee, WI 53295

Filter Class	CFC1000
Sampling Rate (Hz)	12500
Number of Points	10000
Pretrigger Points	1250
Sensor Location	HDCG
Sensor Mnf & Model	ENDEVCO 7264C-2KTZ
Serial Number	P51633

Test ID	08SN05
Date	10-09-2007
Description	2008 Toyota FJ Cruiser side NCAP test

CRABI 074 HEAD CG ZL



Max	13.78	G's	at	74.88	msec
Min	-6.21	G's	at	48.16	msec

08SN05 Plot 064

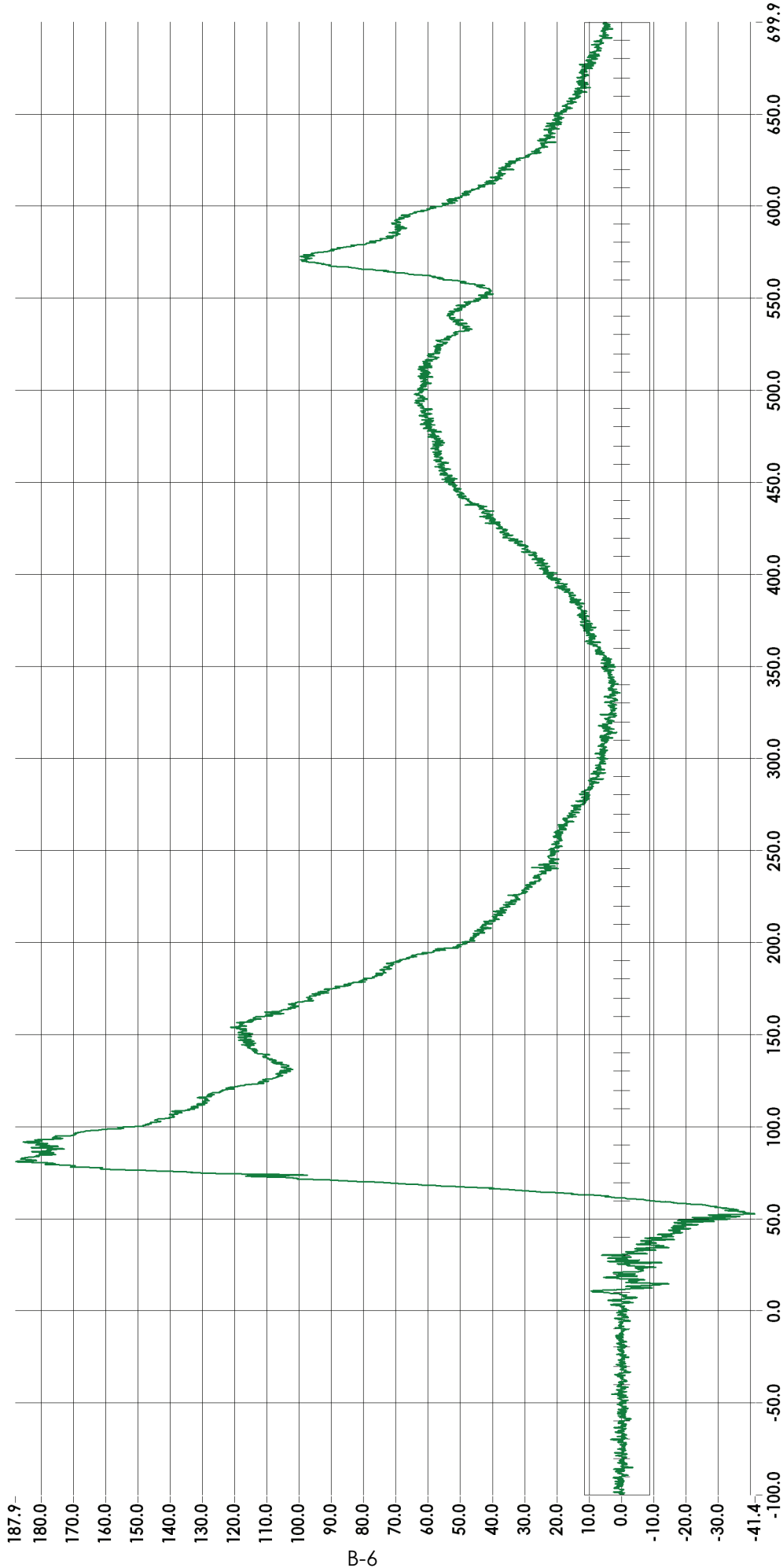
Time (msec)

G's

Filter Class		CFC1000	
Sampling Rate (Hz)	12500	Sensor Location	NEKU
Number of Points	10000	Sensor Mnf & Model	DENTON 2554A_FX
Pretrigger Points	1250	Serial Number	2554A_FX_299

Test ID	08SN05
Date	10-09-2007
Description	2008 Toyota FJ Cruiser side NCAP test

UPPER NECK FORCE XL



Max	187.88	NWT	at	81.04	msec
Min	-41.39	NWT	at	52.72	msec

08SN05 Plot 065

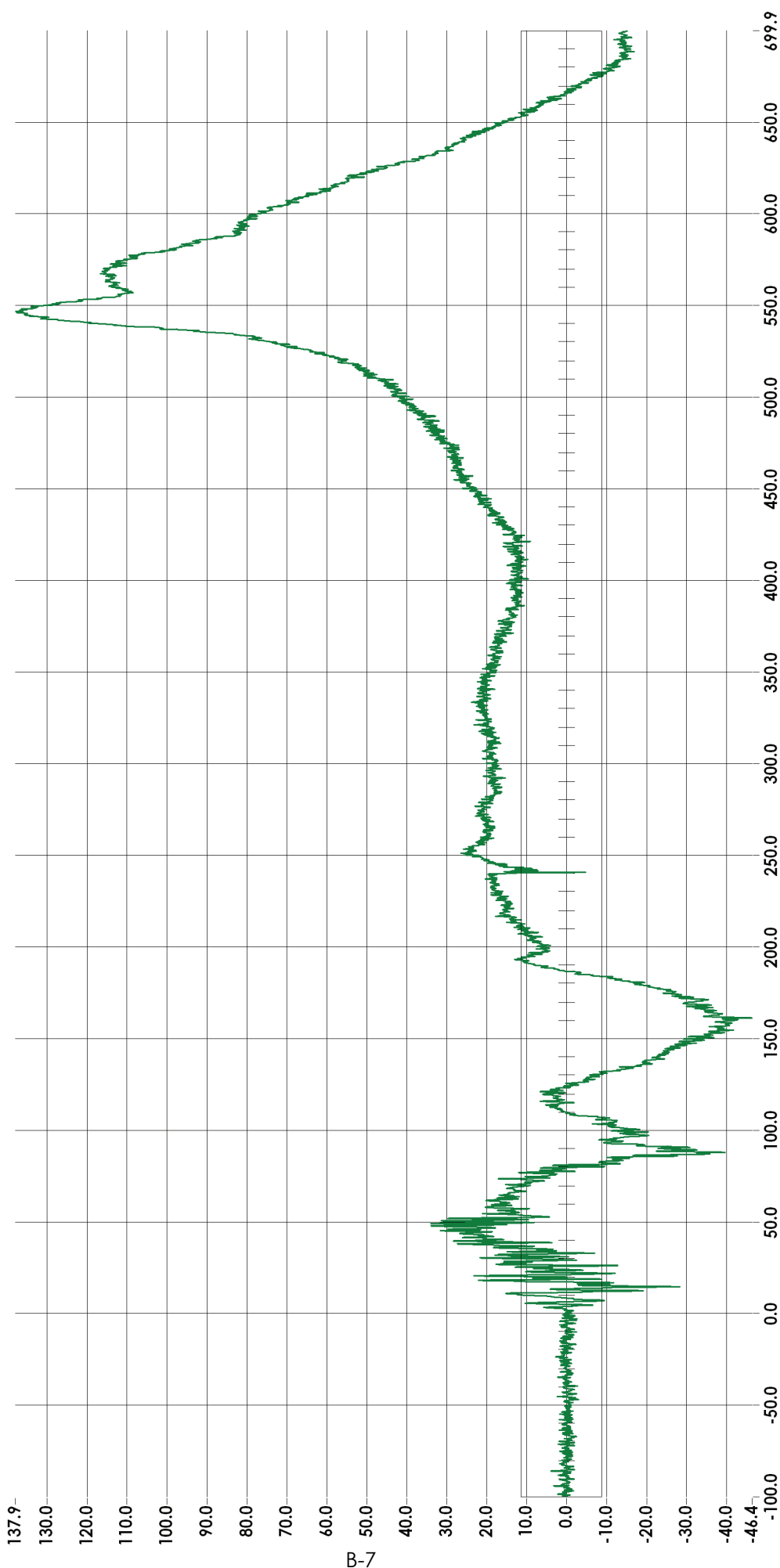
Time (msec)

NWT

Filter Class		CFC1000
Sampling Rate (Hz)	12500	NEKU
Number of Points	10000	Sensor Mnf & Model DENTON 2554A_FY
Pretrigger Points	1250	Serial Number 2554A_FY_299

Test ID	08SN05
Date	10-09-2007
Description	2008 Toyota FJ Cruiser side NCAP test

UPPER NECK FORCE YL



Max	137.91	NWT	at	546.64	msec
Min	-46.40	NWT	at	161.28	msec

08SN05 Plot 066

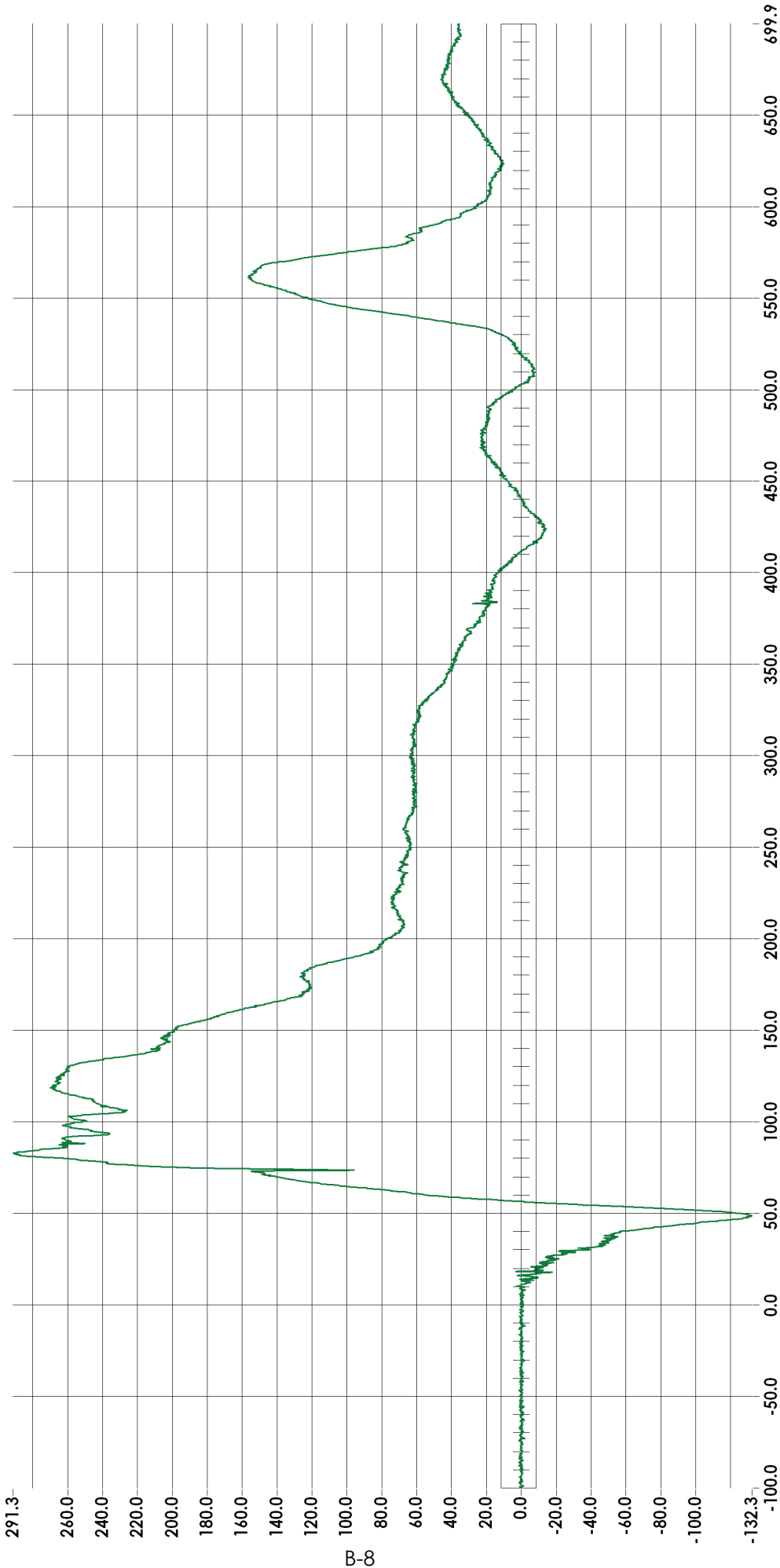
Time (msec)

NWT

Filter Class		CFC1000
Sampling Rate (Hz)	12500	NEKU
Number of Points	10000	Sensor Mnf & Model DENTON 2554A_FZ
Pretrigger Points	1250	Serial Number 2554A_FZ_299

Test ID	08SN05
Date	10-09-2007
Description	2008 Toyota FJ Cruiser side NCAP test

UPPER NECK FORCE ZL



Max	291.31	NWT	at	82.88	msec
Min	-132.31	NWT	at	48.80	msec

08SN05 Plot 067

Time (msec)

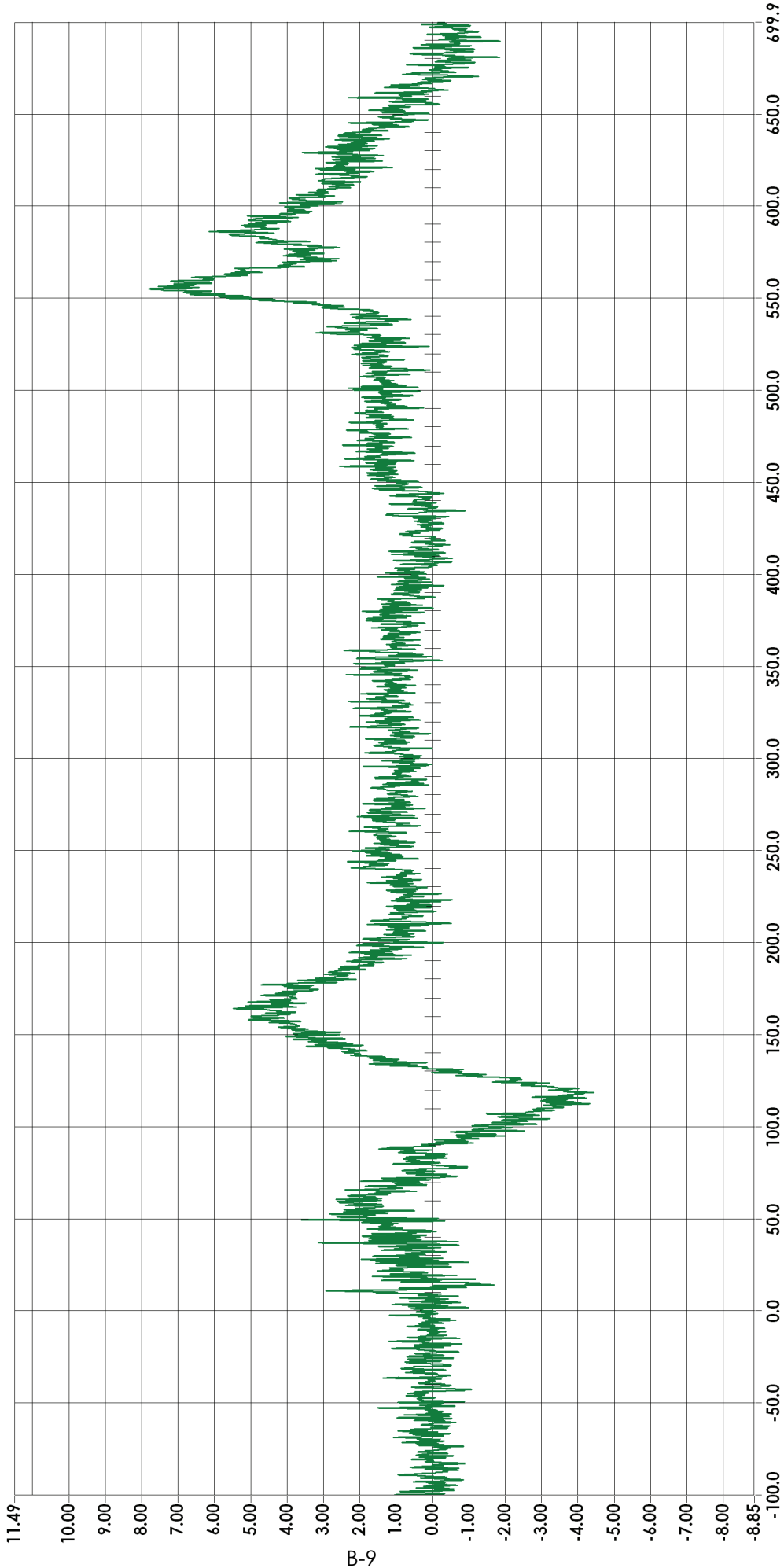
NWT

Test ID	08SN05
Date	10-09-2007
Description	2008 Toyota FJ Cruiser side NCAP test

Filter Class	CFC600
Sampling Rate (Hz)	12500
Number of Points	10000
Pretrigger Points	1250
Sensor Location	NEKU
Sensor Mnf & Model	DENTON 2554A_MX
Serial Number	2554A_MX_299



UPPER NECK MOMENT XL



Max	7.80	NWM	at	554.96	msec
Min	-4.43	NWM	at	118.56	msec

08SN05 Plot 068

Time (msec)

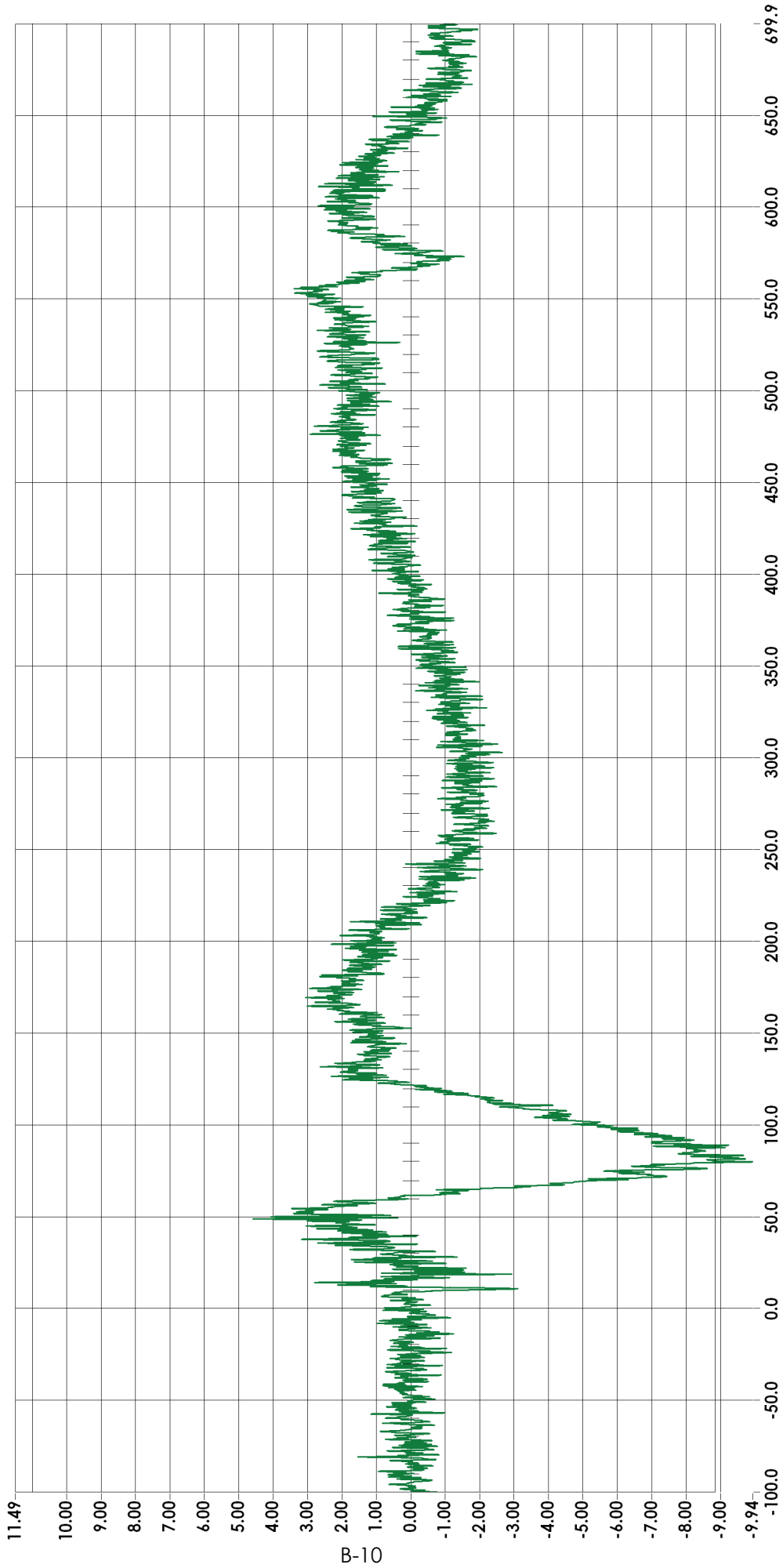
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Milwaukee, WI 53295

Test ID	08SN05
Date	10-09-2007
Description	2008 Toyota FJ Cruiser side NCAP test

Filter Class	CFC600
Sampling Rate (Hz)	12500
Number of Points	10000
Pretrigger Points	1250
Sensor Location	NEKU
Sensor Mnf & Model	DENTON 2554A_MY
Serial Number	2554A_MY_299



UPPER NECK MOMENT YL



Max	4.60	NWM	at	48.80	msec
Min	-9.94	NWM	at	79.84	msec

08SN05 Plot 069

Time (msec)

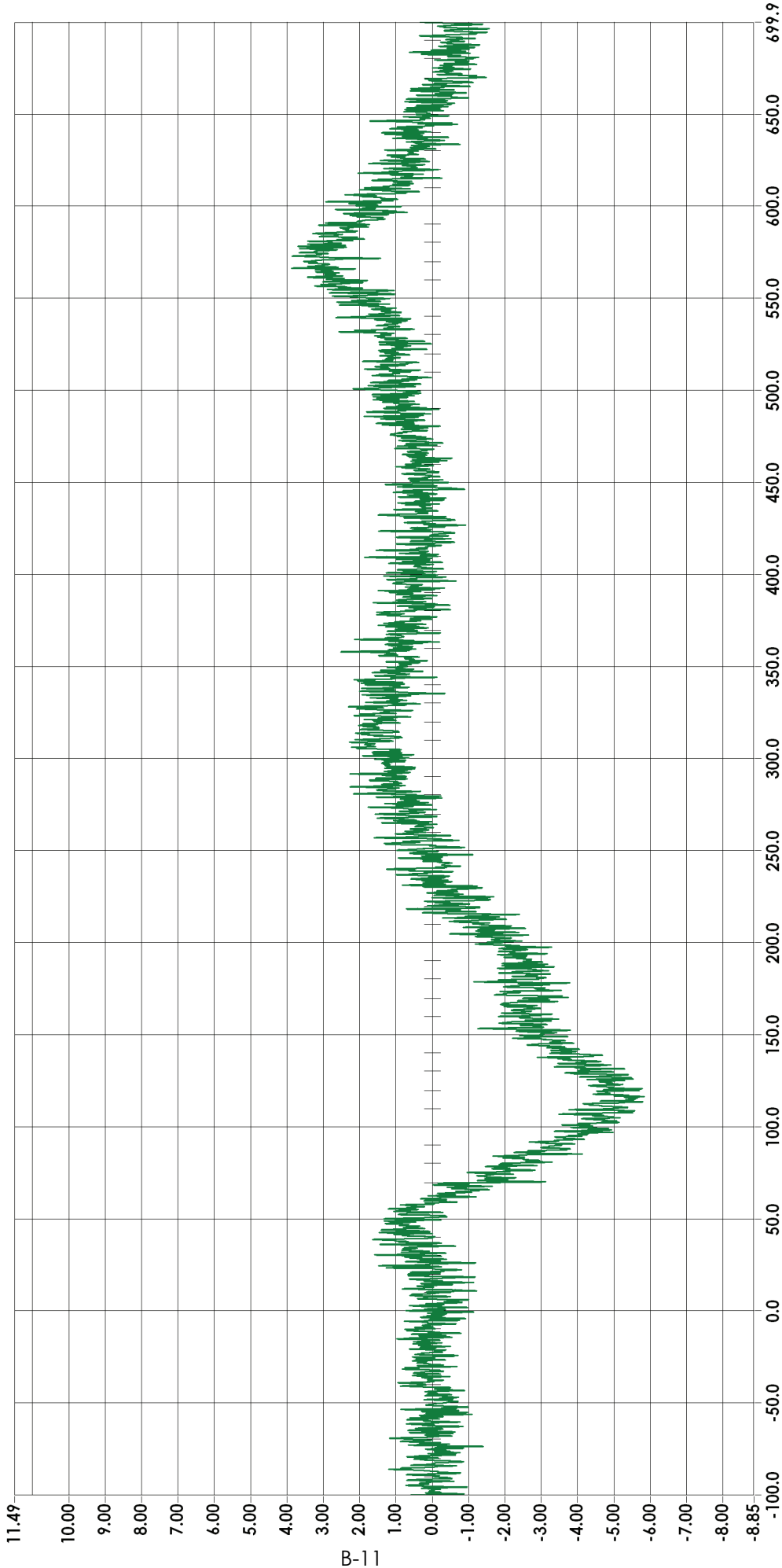
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Milwaukee, WI 53295

Test ID	08SN05
Date	10-09-2007
Description	2008 Toyota FJ Cruiser side NCAP test

Filter Class	CFC600
Sampling Rate (Hz)	12500
Number of Points	10000
Pretrigger Points	1250
Sensor Location	NEKU
Sensor Mnf & Model	DENTON 2554A_MZ
Serial Number	2554A_MZ_299



UPPER NECK MOMENT ZL



NWM	Max	3.87	NWM	at	566.32	msec
	Min	-5.84	NWM	at	116.32	msec

08SN05 Plot 070

Time (msec)

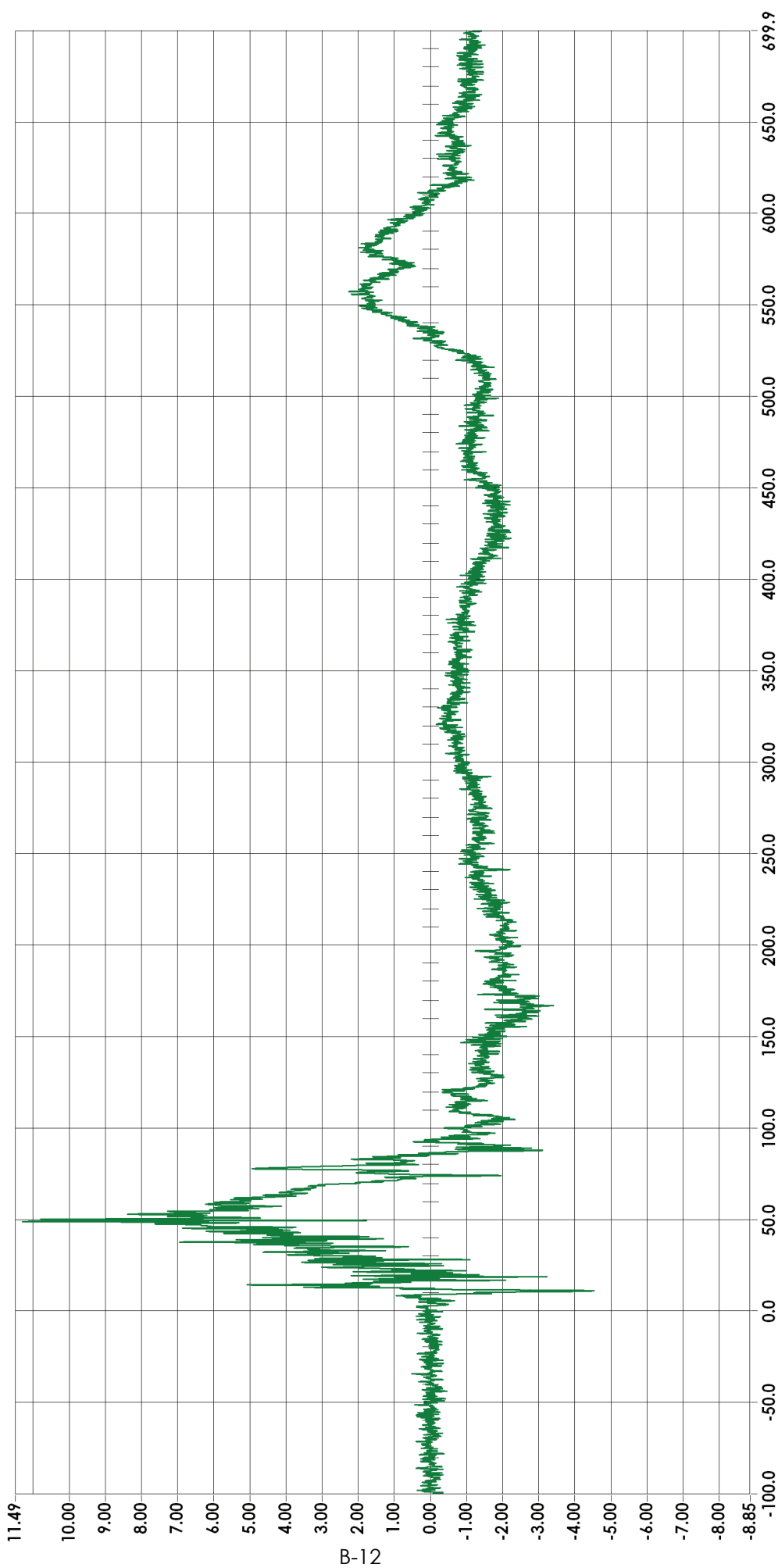
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Milwaukee, WI 53295



Filter Class		CFC1000
Sampling Rate (Hz)	12500	CHST
Number of Points	10000	Sensor Mnf & Model ENDEVCO 7264C-2KTZ
Pretrigger Points	1250	Serial Number P51677

Test ID	08SN05
Date	10-09-2007
Description	2008 Toyota FJ Cruiser side NCAP test

CRABI 074 CHEST XL



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Max	11.29	G's	at	48.88	msec
Min	-4.53	G's	at	11.04	msec

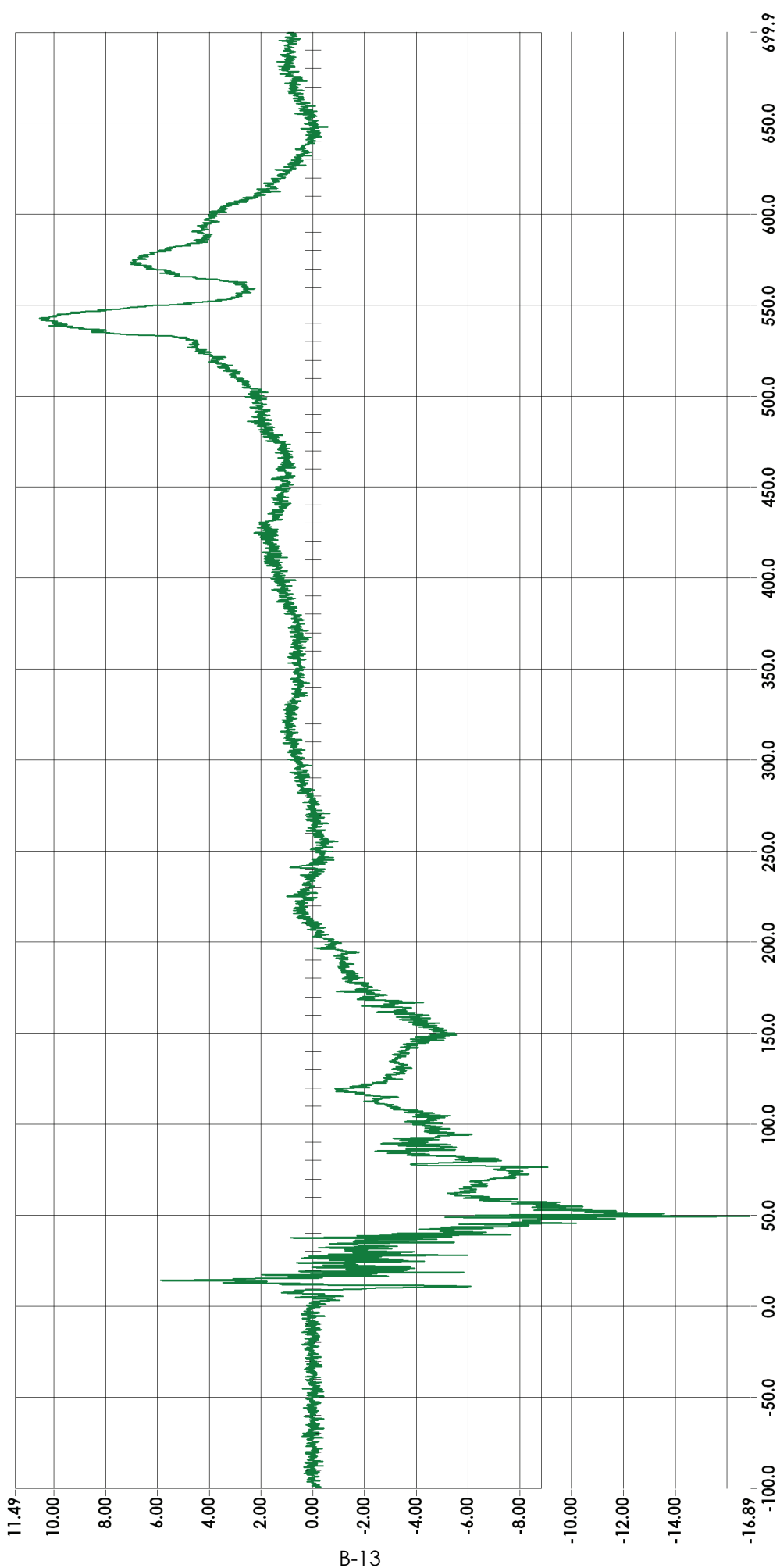
08SN05 Plot 071



Filter Class		CFC1000
Sampling Rate (Hz)	12500	CHST
Number of Points	10000	Sensor Mnf & Model ENDEVCO 7264C-2KTZ
Pretrigger Points	1250	Serial Number P51641

Test ID	08SN05
Date	10-09-2007
Description	2008 Toyota FJ Cruiser side NCAP test

CRABI 074 CHEST YL



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G's	Max	10.55	G's	at	542.72	msec
	Min	-16.89	G's	at	49.44	msec

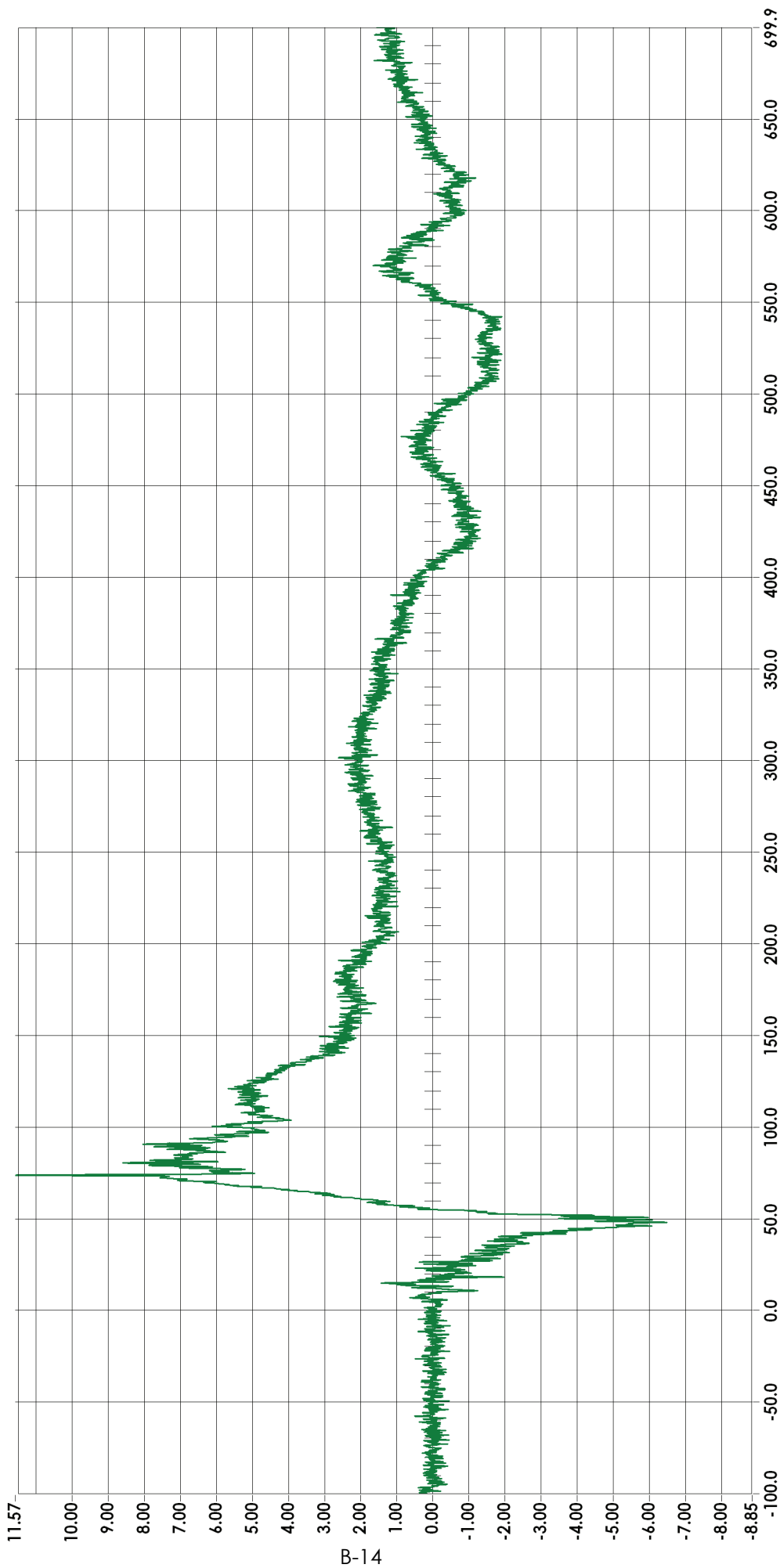
08SN05 Plot 072



Filter Class		CFC1000
Sampling Rate (Hz)	12500	CHST
Number of Points	10000	Sensor Mnf & Model ENDEVCO 7264C-2KTZ
Pretrigger Points	1250	Serial Number P51670

Test ID	08SN05
Date	10-09-2007
Description	2008 Toyota FJ Cruiser side NCAP test

CRABI 074 CHEST ZL



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Max	11.57	G's	at	73.76	msec
Min	-6.50	G's	at	48.08	msec

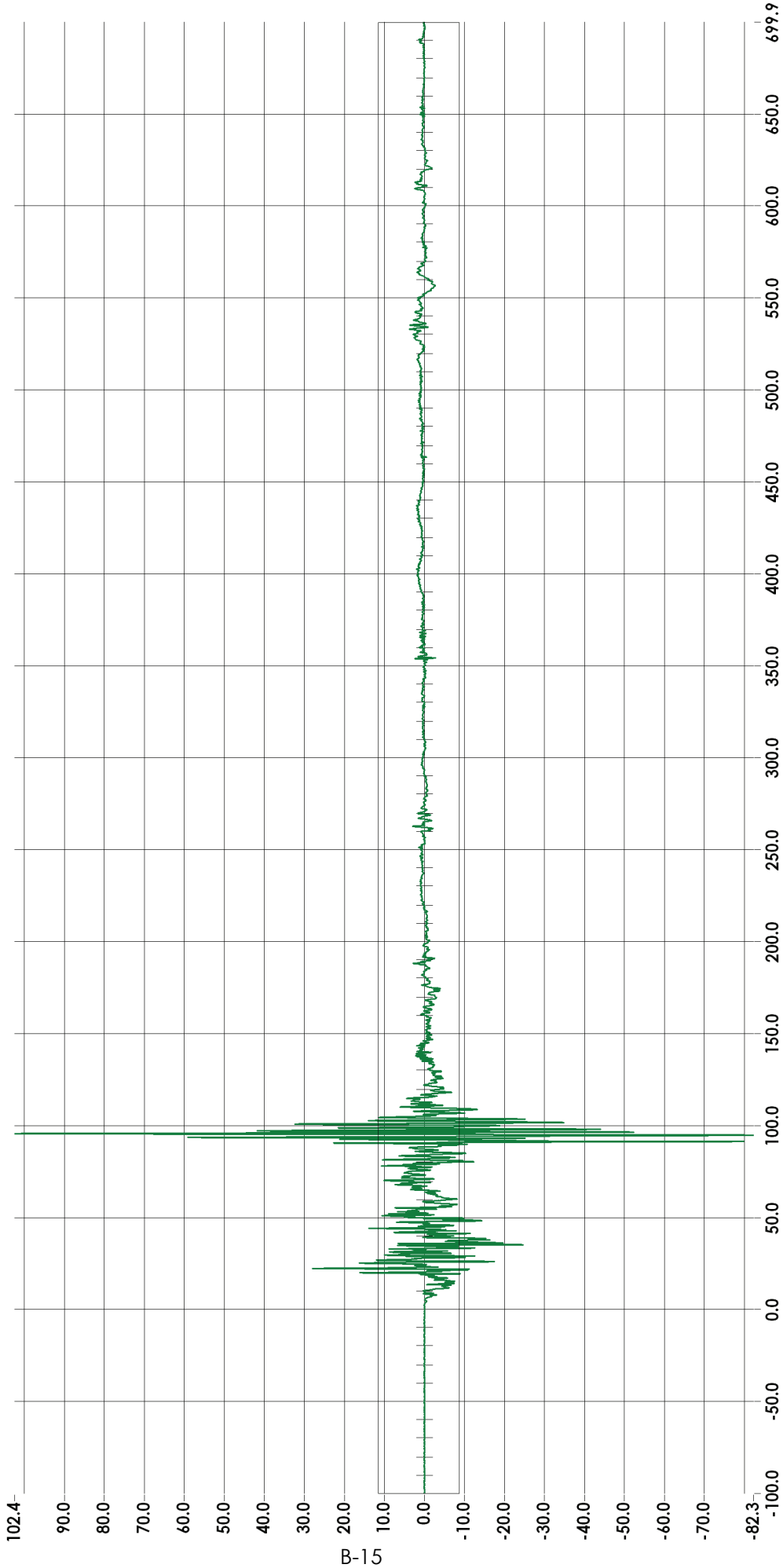
08SN05 Plot 073

Test ID	08SN05
Date	10-09-2007
Description	2008 Toyota FJ Cruiser side NCAP test

Filter Class	CFC1000
Sampling Rate (Hz)	12500
Number of Points	10000
Pretrigger Points	1250
Sensor Location	SEBS
Sensor Mnf & Model	MSI 64-2000-10-360-XY
Serial Number	A011316



Child seat base acceleration XL



Max	102.42	G's	at	95.60	msec
Min	-82.27	G's	at	94.80	msec

08SN05 Plot 074

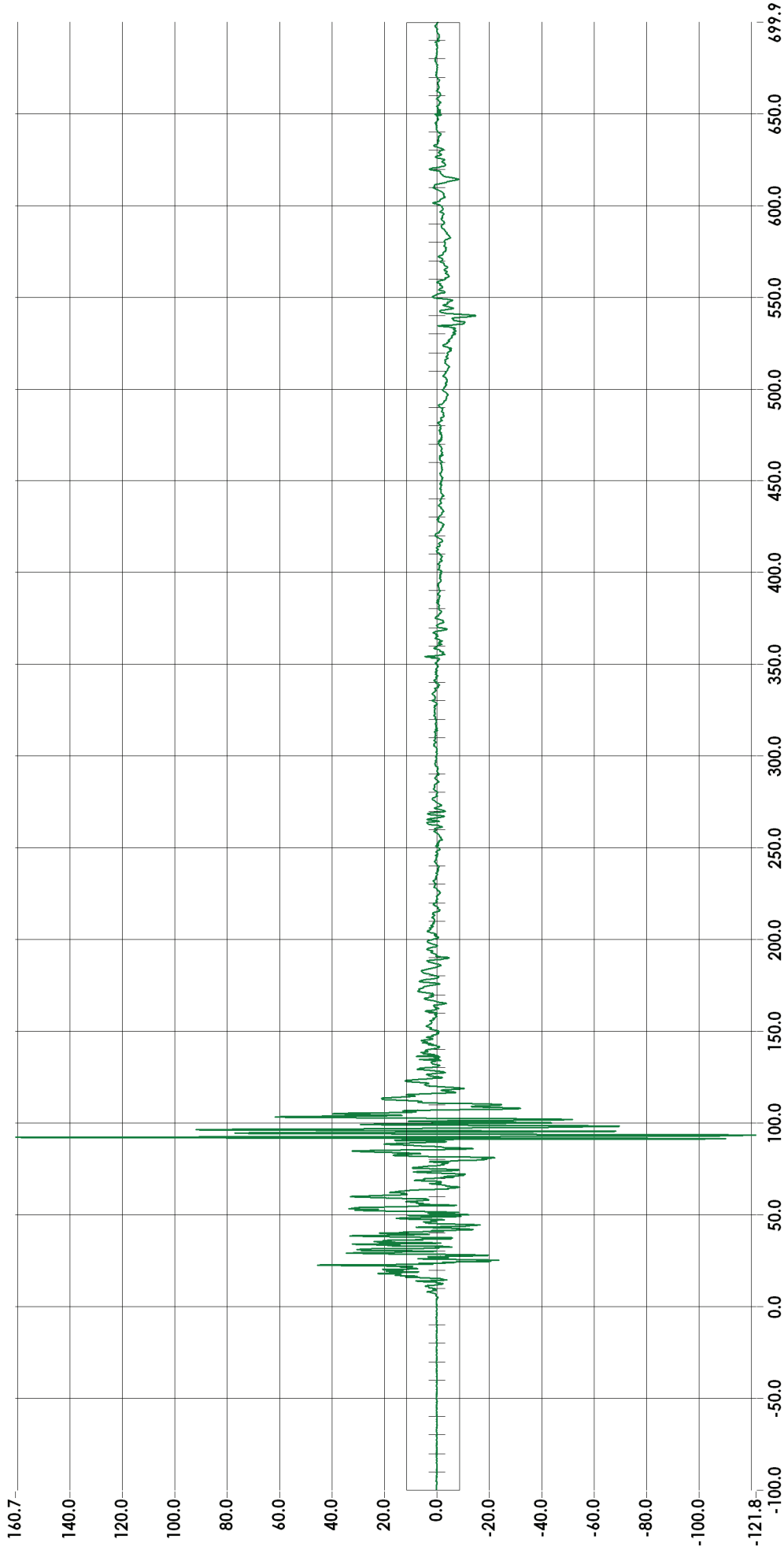
Time (msec)

G's

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Test ID	08SN05	Filter Class	CFC1000
Date	10-09-2007	Sampling Rate (Hz)	12500
Description	2008 Toyota FJ Cruiser side NCAP test	Number of Points	10000
		Pretrigger Points	1250
		Sensor Location	SEBS
		Sensor Mnf & Model	ENDEVCO 7264-2000TZ
		Serial Number	J35981

Child seat base acceleration YL



Max	160.69	G's	at	92.24	msec
Min	-121.81	G's	at	93.44	msec

08SN05 Plot 075

Time (msec)

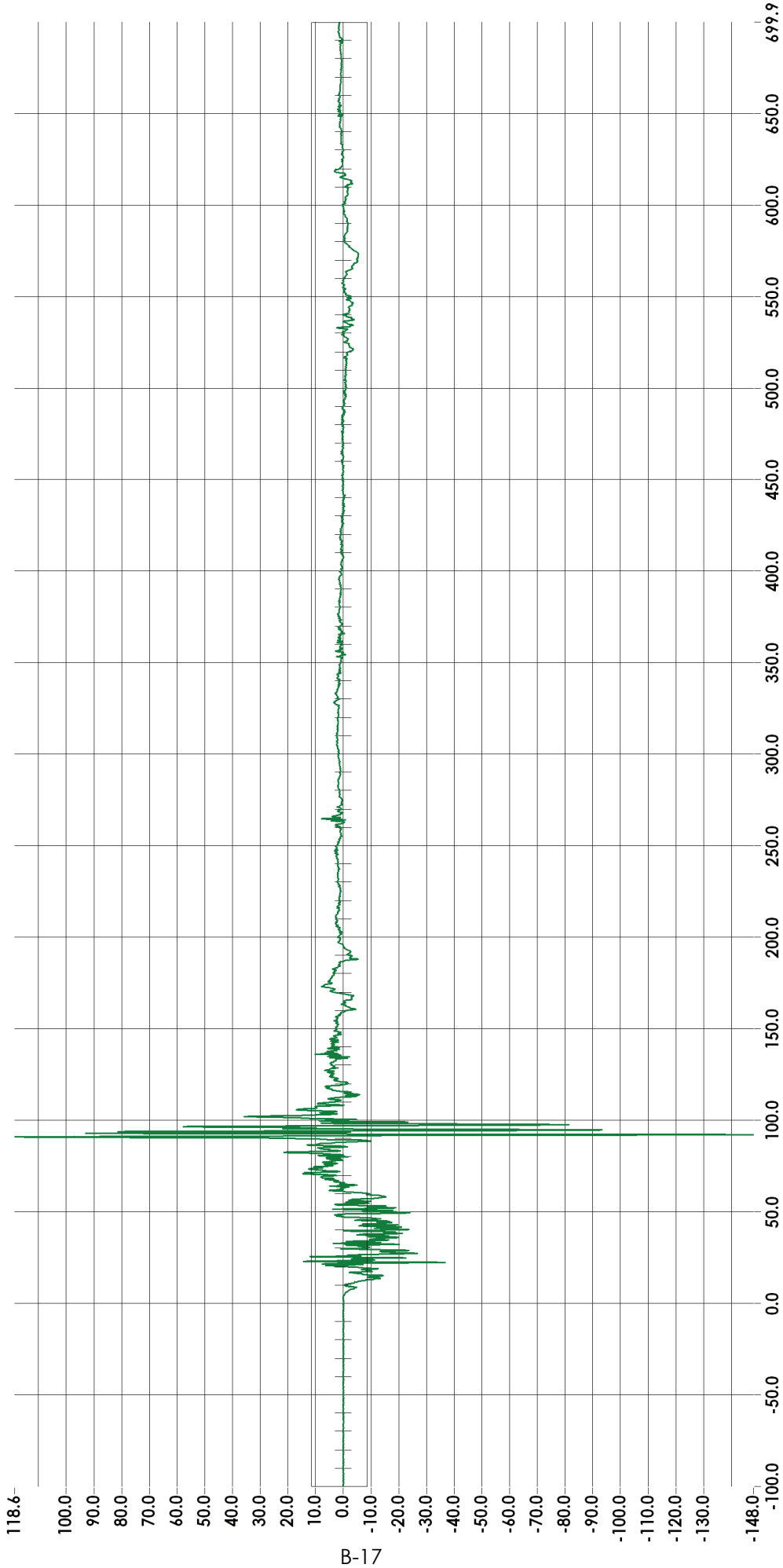
G's

Test ID	08SN05
Date	10-09-2007
Description	2008 Toyota FJ Cruiser side NCAP test

Filter Class	CFC1000
Sampling Rate (Hz)	12500
Number of Points	10000
Pretrigger Points	1250
Sensor Location	SEBS
Sensor Mnf & Model	ENDEVCO 7264C-2KTZ-2-300
Serial Number	P22311



Child seat base acceleration ZL



Max	118.58	G's	at	90.88	msec
Min	-148.00	G's	at	92.16	msec

08SN05 Plot 076

Time (msec)

G's

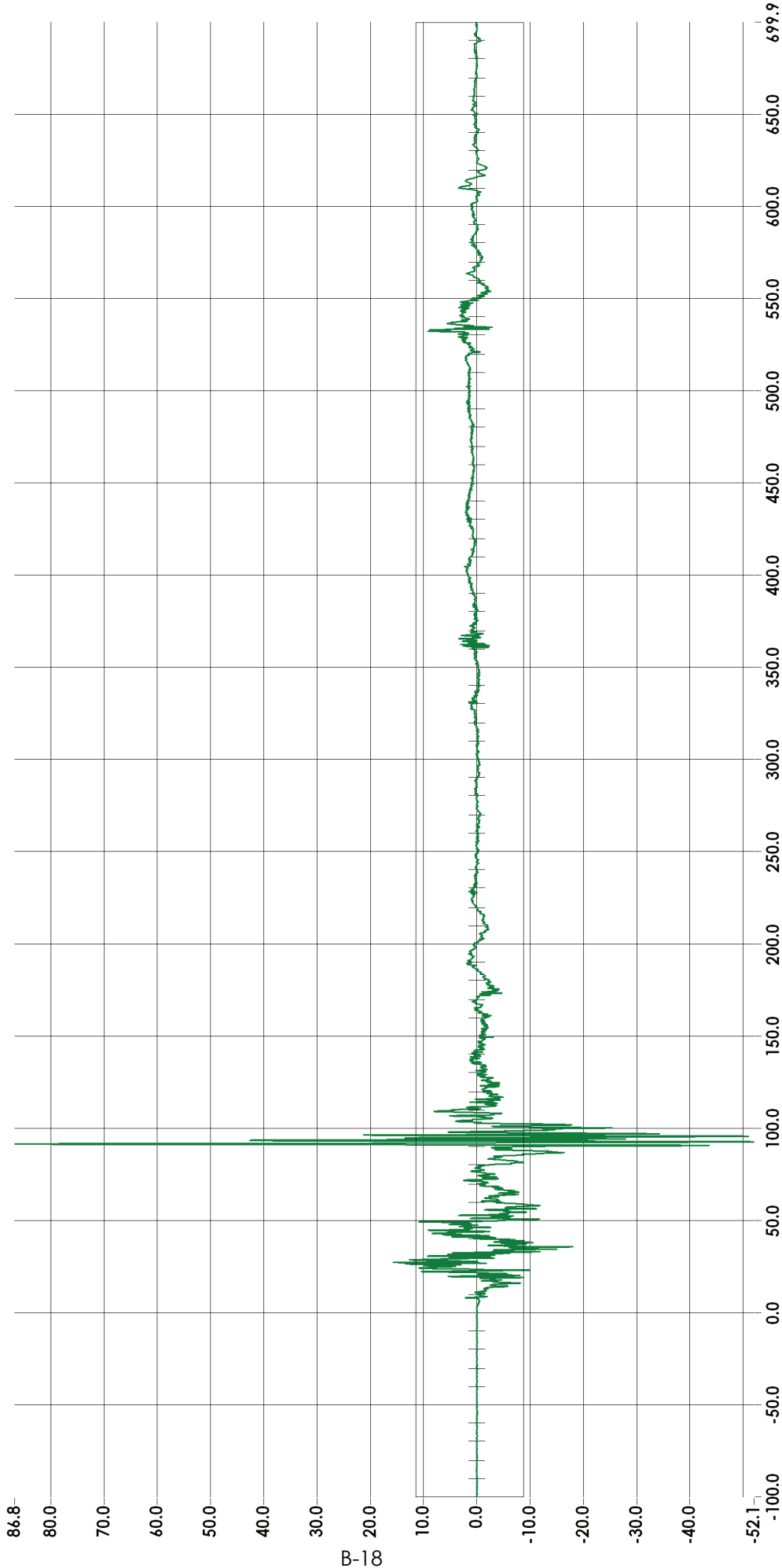
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Test ID	08SN05
Date	10-09-2007
Description	2008 Toyota FJ Cruiser side NCAP test

Filter Class	CFC1000
Sampling Rate (Hz)	12500
Number of Points	10000
Pretrigger Points	1250
Sensor Location	SEAT
Sensor Mnf & Model	ENDEVCO 7264-2000
Serial Number	J44022



Child seat acceleration XL



Max	86.79	G's	at	91.44	msec
Min	-52.05	G's	at	92.64	msec

08SN05 Plot 077

Time (msec)

G's

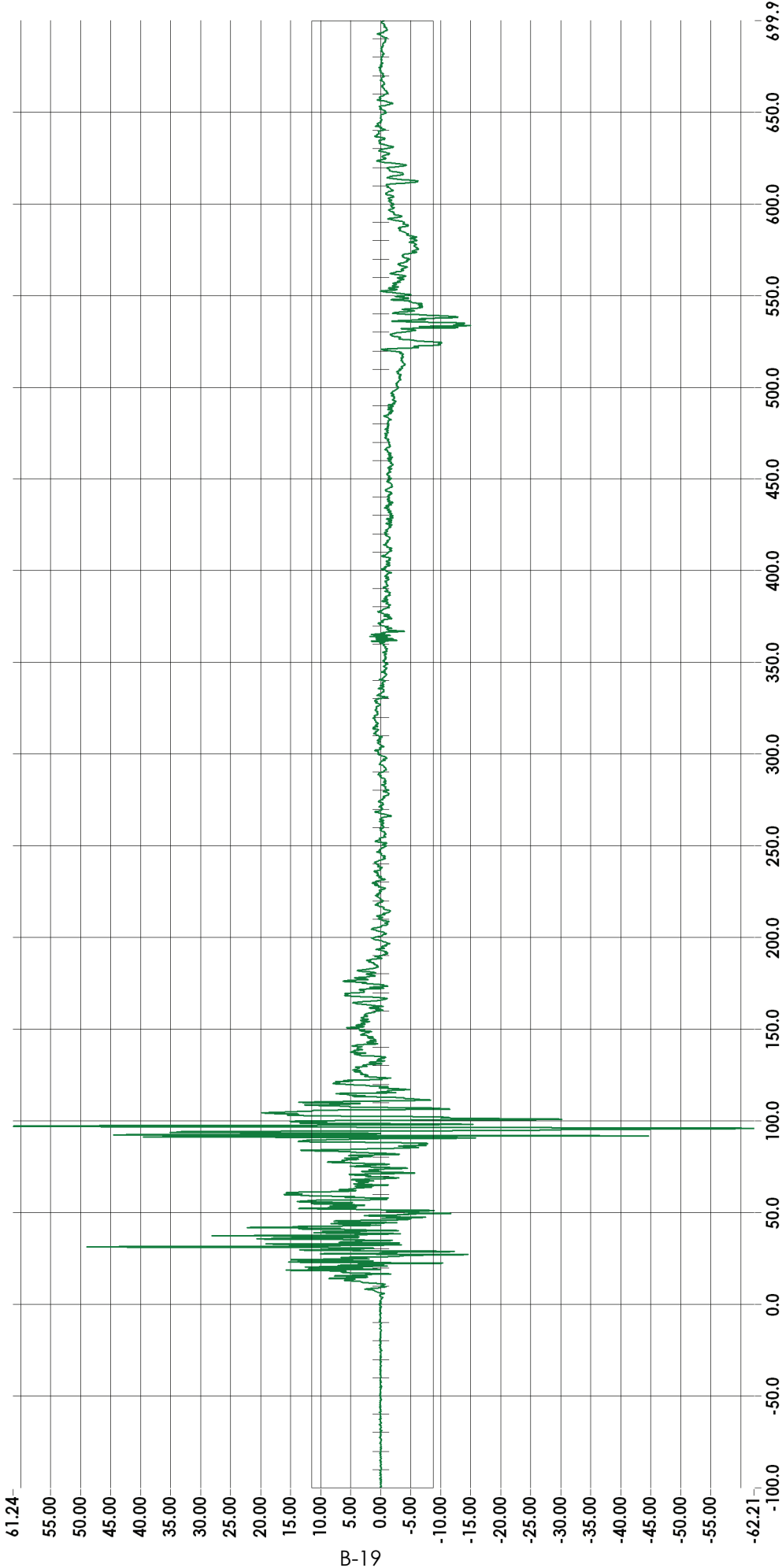
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Milwaukee, WI 53295

Test ID	08SN05
Date	10-09-2007
Description	2008 Toyota FJ Cruiser side NCAP test

Filter Class	CFC1000
Sampling Rate (Hz)	12500
Number of Points	10000
Pretrigger Points	1250
Sensor Location	SEAT
Sensor Mnf & Model	ENDEVCO 7264-2000
Serial Number	ET30J



Child seat acceleration YL



Max	61.24	G's	at	97.12	msec
Min	-62.21	G's	at	95.92	msec

08SN05 Plot 078

Time (msec)

G's

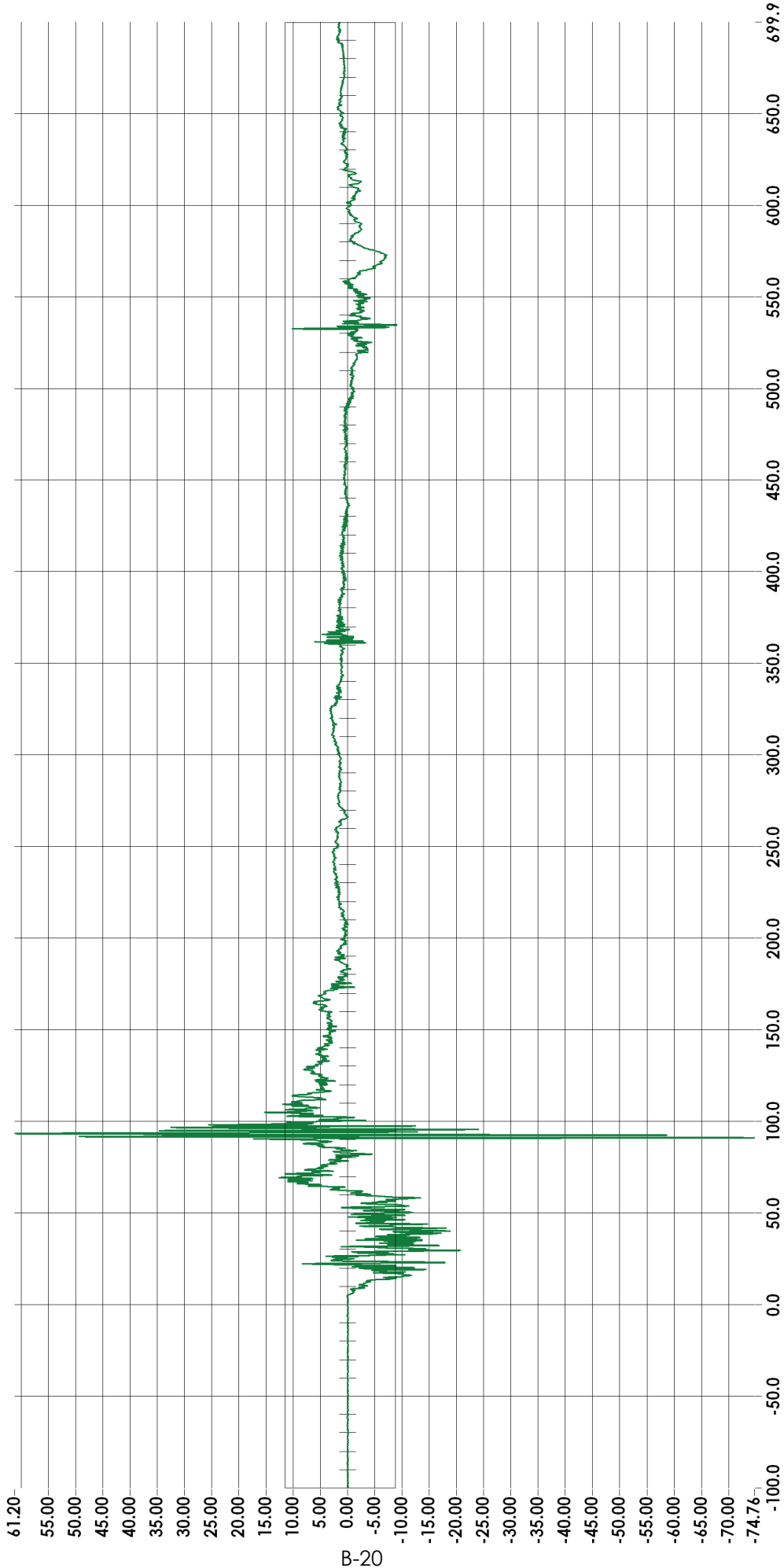
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Test ID	08SN05
Date	10-09-2007
Description	2008 Toyota FJ Cruiser side NCAP test

Filter Class	CFC1000	Sensor Location	SEAT
Sampling Rate (Hz)	12500	Sensor Mnf & Model	ENDEVCO 7264C-2KTZ-2-300
Number of Points	10000	Serial Number	P21898
Pretrigger Points	1250		



Child seat acceleration ZL



Max	61.20	G's	at	93.36	msec
Min	-74.76	G's	at	91.04	msec

08SN05 Plot 079

Time (msec)

G's

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APPENDIX C
DUMMY CALIBRATION DATA

**VERIFICATION TEST RESULTS SUMMARY
PRE AND POST TEST****CONFIGURED FOR LEFT SIDE IMPACT**Serial Number 074Test Sequences 1

TEST	PRE		POST	
	COMMENTS	BY	COMMENTS	BY
FRONT THORAX IMPACT	N/a	N/a	Pass all requirements	TRC
FRONT HEAD DROP	N/a	N/a	Pass all requirements	TRC
REAR HEAD DROP	N/a	N/a	Pass all requirements	TRC
NECK EXTENSION	N/a	N/a	Pass all requirements	TRC
NECK FLEXION	N/a	N/a	Pass all requirements	TRC

SUMMARY
SID H3 PRE AND POST VERIFICATION
CONFIGURED FOR LEFT SIDE IMPACT

TEST PARAMETER	SPEC	CRABI/074	
		PRE	POST
FRONT THORAX IMPACT			
Date	-	-	17Oct07
Sequential Test Number	-	-	1
Temperature (°C)	20.6-22.2	-	21.3
Relative Humidity (%)	10-70	-	61
Probe Speed (m/s)	4.9-5.1	-	5.07
Probe Force (N)	(-1514)-(-1796)	-	-1662.1
FRONT HEAD DROP			
Date	-	-	19Oct07
Sequential Test Number	-	-	1
Temperature (°C)	18.9-25.6	-	21.1
Relative Humidity (%)	10-70	-	55
Peak Head Resultant Acceleration (G's)	100-120	-	107.7
Peak Head Lateral Acceleration (G's)	(-15)-15	-	2.1
Is Acceleration Curve Unimodal w/in 17% of Peak	Yes	-	Yes
REAR HEAD DROP			
Date	-	-	19Oct07
Sequential Test Number	-	-	1
Temperature (°C)	18.9-25.6	-	21.0
Relative Humidity (%)	10-70	-	54
Peak Head Resultant Acceleration (G's)	55-71	-	64.1
Peak Head Lateral Acceleration (G's)	(-15)-15	-	1.5
Is Acceleration Curve Unimodal w/in 17% of Peak	Yes	-	Yes

TEST PARAMETER	SPEC	CRABI/074	
		PRE	POST
NECK EXTENSION			
Date	-	-	17Oct07
Sequential Test Number	-	-	1
Temperature (°C)	-	-	21.1
Relative Humidity (%)	-	-	62
Pendulum Velocity (m/s)	(-2.4)-(-2.6)	-	-2.47
Pendulum Integrated Velocity Change @ 6 ms (m/s)	0.8-1.2	-	0.99
Pendulum Integrated Velocity Change @ 10 ms (m/s)	1.5-2.1	-	1.75
Pendulum Integrated Velocity Change @ 14 ms (m/s)	2.2-2.9	-	2.37
Total Head D-Plane Rotation (°)	80-92	-	88.5
Total Neck Occipital Condyles Moment (Nm)	(-12)-(-23)	-	-14.8
Total Neck Occipital Condyles Moment Decay to -5 ms(Nm)	76-90	-	83.5
NECK FLEXION			
Date	-	-	17Oct07
Sequential Test Number	-	-	1
Temperature (°C)	20.6-22.2	-	21.2
Relative Humidity (%)	10-70	-	63
Pendulum Velocity (m/s)	5.1-5.3	-	5.22
Pendulum Integrated Velocity Change @ 10 ms (m/s)	(-1.6)-(-2.3)	-	-1.90
Pendulum Integrated Velocity Change @ 20 ms (m/s)	(-3.4)-(-4.2)	-	-3.78
Pendulum Integrated Velocity Change @ 25 ms (m/s)	(-4.3)-(-5.2)	-	-4.64
Total Head D-Plane Rotation (°)	(-75)-(-86)	-	-82.9
Total Neck Occipital Condyles Moment (Nm)	36-45	-	41.3
Total Neck Occipital Condyles Moment Decay to 5 ms(Nm)	60-80	-	74.8

**DUMMY INSPECTION LIST
PRE AND POST TEST**

CONFIGURED FOR LEFT SIDE IMPACT

		CRABI 074	
		PRE	POST
	Date	08Oct07	09Oct07
	Performed By	Mike Rawski	Mike Rawski
PART	INSPECTION	RESULT	RESULT
Skin	Visual	Pass	Pass
Head	Visual, Ballast, Accelerometer Mount	Pass	Pass
Neck	Visual and Palpated, Cable Torque	Pass	Pass
Spine Box	Visual, Ballast, Weldment, Accelerometer Mount	Pass	Pass
Rib Cage	Visual, Palpated, Measured, Stiffness	Pass	Pass
Sternum	Visual	Pass	Pass
Lumbar Spine	Visual	Pass	Pass
Abdomen	Visual	Pass	Pass
Pelvis	Visual, Palpated, Accelerometer Mount	Pass	Pass
Upper Legs	Visual	Pass	Pass
Knees	Visual, Stops, Inserts	Pass	Pass
Lower Legs	Visual, Range of Motion	Pass	Pass
Ankles	Visual, Range of Motion	Pass	Pass
Feet	Visual, Range of Motion	Pass	Pass
Joints	1 to 2 G Range	Pass	Pass
Other		N/a	N/a