

REPORT NUMBER TR-P28059-04-NC

**SIDE AIRBAG OCCUPANT RISK PROGRAM
OCCUPANT OUT-OF-POSITION TESTS**

**DAIMLER CHRYSLER CORPORATION
2008 DODGE AVENGER
4-DOOR SEDAN**

NHTSA NUMBER: M80303TWG2

**PREPARED BY:
KARCO ENGINEERING, LLC
9270 HOLLY ROAD
ADELANTO, CALIFORNIA 92301**



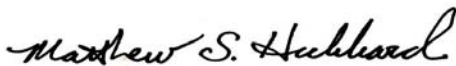
JULY 29, 2008

FINAL REPORT

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

This final test report was prepared for the U.S. Department of Transportation, National Highway Traffic Safety Administration, in response to Contract Number DTNH22-03-D-32005.

This publication is distributed by the U.S. Department of Transportation, National Highway Traffic Safety Administration, in the interest of information exchange. The opinions, findings and conclusions expressed in this publication are those of the author(s) and not necessarily those of the Department of Transportation or the National Highway Traffic Safety Administration. The United States Government assumes no liability for its contents or use thereof. If trade or manufacturers' names or products are mentioned, it is only because they are considered essential to the object of the publication and should not be construed as an endorsement. The United States Government does not endorse products or manufacturers.



Prepared by:

Mr. Matthew S. Hubbard, Test Engineer
KARCO Engineering, LLC

Date: 07/29/08



Reviewed by:

Mr. Michael L. Dunlap, Director of Operations
KARCO Engineering, LLC

Date: 07/29/08



Approved by:

Mr. Frank D. Richardson, President
KARCO Engineering, LLC

Date: 07/29/08

FINAL REPORT ACCEPTED BY:

Manager, New Car Assessment Program

Date of Acceptance

COTR, NCAP Frontal Impact Program

Date of Acceptance

Technical Report Documentation Page

1. Report No. TR-P28059-04-NC	2. Government Accession No.	3. Recipients Catalog No.	
4. Title and Subtitle Final Report of New Car Assessment Program Technical Working Group Side Airbag Risk Program 2008 Dodge Avenger 4-Door Sedan NHTSA No. MB0303TWG2		5. Report Date July 29, 2008	
		6. Performing Organization Code KAR	
7. Authors Mr. Matthew S. Hubbard, Test Engineer, Karco Mr. Michael L. Dunlap, Director of Operations, Karco		8. Performing Organization Report No. TR-P28059-04-NC	
9. Performing Organization Name and Address KARCO Engineering, LLC 9270 Holly Road Adelanto, CA 92301		10. Work Unit No.	
		11. Contract or Grant No. DTNH22-03-D-32005	
12. Sponsoring Agency Name and Address U.S. Department of Transportation National Highway Traffic Safety Administration Rulemaking Office of Crashworthiness Standards Mail Code: NVS-111 1200 New Jersey Ave SE, Room W43-410 Washington, D.C 20590		13. Type of Report and Period Covered Final Test Report	
		14. Sponsoring Agency Code DOT/NHTSA/NRM/OCS/NVS-111	
15. Supplementary Notes			
16. Abstract A static side airbag deployment was conducted on a 2008 Dodge Avenger 4-Door Sedan at KARCO Engineering, LLC on 7/29/2008. This test was conducted to obtain data indicant of TWG Side Airbag Out-of-Position Injury criteria.			
Measurement Description	Units	Threshold	SID IIs 5th percentile female
Head Injury Criteria (HIC ₁₅)		700	3.3
17. Key Words TWG Occupant Out-of-Position Test Section 3.3.5.3 New Car Assessment Program (NCAP) 2008 Dodge Avenger 4-Door Sedan NHTSA NO. MB0303TWG2		18. Distribution Statement Copies of this report available from: NHTSA Technical Reference Division National Highway Traffic Safety Admin. 1200 New Jersey Ave SE, Room W43-410 Washington, D.C. 20590	
19. Security Classification (this report)	20. Security Classification (this page)	21. No. Pages	22. Price
Unclassified	Unclassified	34	

Form DOT F1700.7 (8-72)

TABLE OF CONTENTS

<u>Section</u>	<u>Description</u>	<u>Page</u>
1	Purpose and Summary of Test M80303TWG2	1
2	Occupant and Vehicle Information	3

<u>Data Sheet</u>	<u>Description</u>	<u>Page</u>
1	Test Summary	4
2	General Test and Vehicle Parameter Data	5
3	Test Vehicle Information	6
4	Dummy Positioning Information	7
5	Hybrid III ATD Injury Criteria and Sensor Data	8
6	Camera Locations	10

<u>Appendix</u>	<u>Description</u>	<u>Appendix</u>
A	Photographs	A
B	Data Plots	B
C	Instrumentation Data Channel Assignments	C

LIST OF PHOTOGRAPHS

<u>Figure</u>	<u>Description</u>	<u>Page</u>
A-1	Right Front $\frac{3}{4}$ View, As Received	A-1
A-2	Vehicle Certification Label	A-2
A-3	Post-Test Right Front $\frac{3}{4}$ View of Frontal NCAP Test	A-3
A-4	Post-Test Right Side View of Frontal NCAP Test	A-4
A-5	Pre-Test Dummy Position, Left Side View	A-5
A-6	Pre-Test Dummy Position, $\frac{3}{4}$ View	A-6
A-7	Pre-Test Dummy Position, Front View	A-7
A-8	Post-Test Dummy Position and Airbag, Left Side View	A-8
A-9	Post-Test Airbags, Left Side View	A-9
A-10	Post-Test Airbags, Close-up View	A-10

LIST OF DATA PLOTS

Data Plot	Page	
B-1	Pass. (SID IIs) Head X	B-1
	Pass. (SID IIs) Head Y	B-1
	Pass. (SID IIs) Head Z	B-1
	Pass. (SID IIs) Head Resultant	B-1
B-2	Pass. (SID IIs) Upper Neck Force X	B-2
	Pass. (SID IIs) Upper Neck Force Y	B-2
	Pass. (SID IIs) Upper Neck Force Z	B-2
	Pass. (SID IIs) Upper Neck Force Resultant	B-2
B-3	Pass. (SID IIs) Upper Neck Moment X	B-3
	Pass. (SID IIs) Upper Neck Moment Y	B-3
	Pass. (SID IIs) Upper Neck Moment Z	B-3
	Pass. (SID IIs) Upper Neck Moment Resultant	B-3
B-4	Pass. (SID IIs) Lower Neck Force X	B-4
	Pass. (SID IIs) Lower Neck Force Y	B-4
	Pass. (SID IIs) Lower Neck Force Z	B-4
	Pass. (SID IIs) Lower Neck Force Resultant	B-4
B-5	Pass. (SID IIs) Lower Neck Moment X	B-5
	Pass. (SID IIs) Lower Neck Moment Y	B-5
	Pass. (SID IIs) Lower Neck Moment Z	B-5
	Pass. (SID IIs) Lower Neck Moment Resultant	B-5

SECTION 1

PURPOSE AND SUMMARY OF TEST M80303TWG2

1.1 PURPOSE

This occupant out-of-position static side airbag deployment test is part of the Technical Working Group Occupant Injury Risk from Deploying Side Airbags Testing Program sponsored by the National Highway Traffic Safety Administration (NHTSA) under Contract No. DTNH22-03-D-32005. The purpose of this test was to obtain occupant injury data for a side airbag deployment.

The occupant out-of-position side airbag test was conducted in accordance with the Technical Working Group Recommended Procedures for Evaluating Occupant Injury Risk from Deploying Side Airbags.

1.2 SUMMARY

The effects of a roof mounted curtain airbag and a torso airbag deployment in a 2008 Dodge Avenger 4-Door Sedan with an out-of-position SID IIs 5th percentile adult female dummy were evaluated. The test was performed at Karco Engineering, LLC on July 29, 2008. Pre- and post-test photographs of the vehicle and dummy can be found in Appendix A.

Two high-speed digital cameras were used to document the curtain and airbag deployment. Camera locations and other pertinent camera information can be found on Data Sheet No.1 and Data Sheet No.6.

A SID IIs 5th percentile adult female anthropomorphic test device (ATD) was placed in the right front passenger seating position facing inboard according to the dummy placement instructions (3.3.5.3) in the July 2003 Revision of the Technical Working Group's 'Recommended Procedures for Evaluating Occupant Injury Risk from Deploying Side Airbags'.

The SID IIs 5th percentile adult female ATD was instrumented with head tri-axial accelerometers, and upper and lower neck transducers.

Fifteen (15) channels of data were recorded using an on-board data acquisition system. Appendix A contains Photographs. Appendix B contains dummy response data traces. Appendix C contains the Instrumentation Data Channel assignments.

The front passenger side door remained closed during the deployment and was operable after the deployment.

The SID IIs 5th percentile adult female dummy's visible contact points were as follows: The curtain airbag contacted the ATD's head and the torso airbag contacted the ATD's back.

OUT OF POSITION OCCUPANT DATA SUMMARY

ATD Position	HIC ₁₅
Passenger	3.3

Orientation of the SID IIs 5th percentile adult female dummy was in the inboard facing position leaning against the front passenger door. The dummy's spine was aligned with the deploying trajectory of the curtain airbag. The lower legs were extended. This orientation complies with section 3.3.5.3 of the Technical Working Group (TWG) recommendation in the Recommended Procedures for Evaluating Occupant Injury Risk from Deploying Side Airbags.

SECTION 2

OCCUPANT AND VEHICLE INFORMATION/DATA SHEETS

Test Vehicle: 2008 Dodge Avenger 4-Door Sedan NHTSA No.: M80303TWG2
Test Program: TWG 3.3.5.3 Test Date: 07/29/08

CONVERSION FACTORS USED IN THIS REPORT*

Quantity	Typical Application	Std Units	Metric Unit	Multiply By
Mass	Vehicle Weight	lb	kg	0.4536
Linear Velocity	Impact Velocity	mile/h	km/h	1.609
Length or Distance	Measurements	in	mm	25.4
Volume	Fuel Systems	gal	liter	3.785
Volume	Small Fluids	oz	mL	29.573
Pressure	Tire Pressures	lbf/in ²	kPa	7.0
Volume	Liquid	gal	liter	3.785
Temperature	General Use	°F	°C	$=(tf - 32)/1.8$
Force	Dynamic Forces	lbf	N	4.448
Moment	Torque	lbf/ft	Nm	1.355

* Based on the Recommended Practice in SAE J916, May 85

DATA SHEET NO. 1

TEST SUMMARY

Test Vehicle: 2008 Dodge Avenger 4-Door Sedan NHTSA No.: M80303TWG2

Test Program: TWG 3.3.5.3 Test Date: 07/29/08

TEST DUMMY INFORMATION

Description	Passenger Seat Forward Facing
Dummy Type / Serial No.	SID IIs / 294
Head Contact	Yes
Chest Contact	None
Abdomen Contact	None
Pelvis	None
Left Knee Contact	None
Right Knee Contact	None

MOVIE COVERAGE

High Speed Digital	2
Total	2

DATA CHANNELS

SID IIs ATD Sensors	15
Belt Assessment Sensors	0
Vehicle Structure Accelerometers	0
Total	15

DATA SHEET NO. 2

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2008 Dodge Avenger 4-Door Sedan NHTSA No.: M80303TWG2
 Test Program: TWG 3.3.5.3 Test Date: 07/29/08

TEST VEHICLE INFORMATION

Make	Dodge
Model	Avenger
Body Style	4-Door Sedan
NHTSA No.	M80303TWG2
VIN	1B3LC46K18N571937
Color	White
Delivery Date	August 24, 2007
Odometer Reading (mile)	71
Dealer	Victorville Motors
Transmission	Automatic
Final Drive	Front
Type/Number Cylinders	Inline 4
Engine Displacement (L)	2.4
Engine Placement	Transverse

TEST VEHICLE OPTIONS

Driver Front Airbag	Yes
Driver Side Airbag	Yes
Driver Side Curtain Airbag	Yes
Pass. Front Airbag	Yes
Pass.Side Airbag	Yes
Pass. Curtain Airbag	Yes
Power Brakes	Yes
Power Steering	Yes
Disc Brakes, Front	Yes
Disc Brakes, Rear	No
Anti-lock Brakes	Yes
Tilt Steering Wheel	Yes
Power Windows	Yes
Power Seats	No

DATA FROM CERTIFICATION LABEL

Manufactured By	DaimlerChrysler Corp.	GVWR (kg)	2019
Date of Manufacture	March-07	GAWR Front (kg)	1180
		GAWR Rear (kg)	1007

DATA FROM TIRE PLACARD

Measured Parameter	Front	Rear
Maximum Tire Pressure (kPa)	308	308
Cold Pressure (kPa)	220	220
Recommend Tire Size	P215/65R16	P215/65R16
Tire Size on Vehicle	P215/65R16	P215/65R16
Tire Manufacturer	Firestone	Firestone

Measured Parameter	Front	Rear	Third	Total
Type of Seats	Bucket	Bench		
Number of Occupants	2	3		5
Capacity Wt. (VCW) (kg)				392

* Vehicle had undergone New Car Assessment Program Frontal Impact Testing on September 18, 2007

DATA SHEET NO. 3

TEST VEHICLE INFORMATION

Test Vehicle: 2008 Dodge Avenger 4-Door Sedan NHTSA No.: M80303TWG2
Test Program: TWG 3.3.5.3 Test Date: 07/29/08

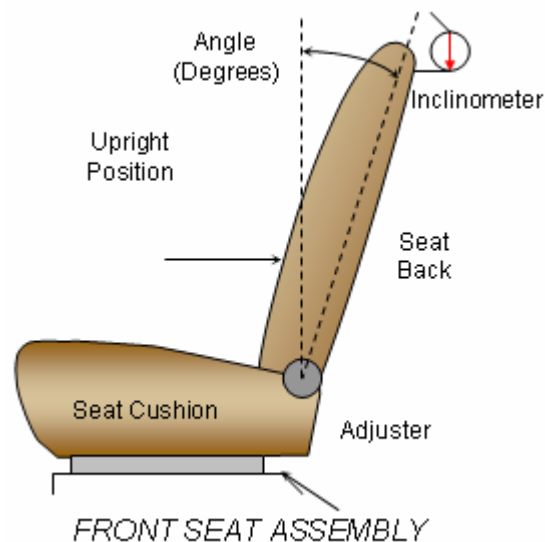
NOMINAL DESIGN RIDING POSITION

The passenger seat back is positioned to section 3.3.5.3 of the Technical Working Group (TWG) recommendation in the Recommended Procedures for Evaluating Occupant Injury Risk from Deploying Side Airbags.

SEAT BACK ANGLES

Position	Deg.
Passenger w/ Dummy	2

Seat upright is 0 degrees. Measurement is taken off of head rest support.



SEAT FORE/AFT POSITIONS

The first or forward most position is counted as number one (1). The fore/aft position is set aft of the middle position for the passenger seat.

SEAT FORE/AFT POSITIONING

	Total Fore/Aft Travel	Placed in Position #
Passenger Seat	28 detents	14th detent

DATA SHEET NO. 4

DUMMY POSITIONING INFORMATION

Test Vehicle: 2008 Dodge Avenger 4-Door Sedan NHTSA No.: M80303TWG2
 Test Program: TWG 3.3.5.3 Test Date: 07/29/08

TEST DUMMY POSITION MEASUREMENTS

Code	Measurement Description	SID IIs 5th percentile female	
		Length (mm)	Angle (°)
SA	Seat Back Angle		2
AMW	Side Airbag Module Width (Torso / Curtain)	30 / 30	
ABW	Side Airbag Width (Torso / Curtain)	340 / 400	
AML	Side Airbag Module Length (Torso / Curtain)	210 / 340	
ABL	Side Airbag Length (Torso / Curtain)	330 / 1500	
AN	Top of Airbag Module to Head/Neck Junction	235	
HD	Head CG to Door Panel/ Window	203	
HSC	Head to Seat Back Centerline	238	
HB	Head to B-Pillar (first contact)	182	
HZ	Head to Roof (Z)	80	
HHD	Head to Header	371	
ND	Nose to Dash	620	
NS	Nose to Seat Back	236	
NR	Nose to Header	420	
CD	Chest to Dash	560	
CS	Chest to Seat Back	217	
RACL	Right Arm to Seat Back Centerline	N/A	
LACL	Left Arm to Seat Back Centerline	206	
RA	Right Arm to Door Panel	N/A	
LA	Left Arm to Door Panel	153	
KK	Knee to Knee	123	
TT	Toe to Toe	105	
KSCR	Right Knee to Seat Cushion Centerline	256	
KSCL	Left Knee to Seat Cushion Centerline	254	
TSCR	Right Toe to Seat Cushion Centerline	680	
TSCL	Left Toe to Seat Cushion Centerline	675	

DATA SHEET NO. 5
HYBRID III ATD INJURY CRITERIA AND SENSOR DATA

Test Vehicle: 2008 Dodge Avenger 4-Door Sedan

NHTSA No.: M80303TWG2

Test Program: TWG 3.3.5.3

Test Date: 7/29/08

HEAD PEAK ACCELERATIONS

Location	Axis	Units	Pass. SID-IIS			
			Max	Time	Min	Time
Head CG	X	G's	12.9	21.4	-2.5	140.2
Head CG	Y	G's	3.4	21.8	-3.6	11.0
Head CG	Z	G's	17.0	11.0	-4.6	14.1
Head CG Resultant	N/A	G's	19.2	10.9		

UPPER NECK PEAK FORCES AND MOMENTS

Location	Axis	Units	Pass. SID-IIS			
			Max	Time	Min	Time
Neck Force	X	Newtons	97.3	19.0	-68.0	139.3
Neck Force	Y	Newtons	134.6	28.2	-42.5	124.7
Neck Force	Z	Newtons	76.3	10.6	-410.0	14.0
Neck Force Resultant	N/A	Newtons	417.5	14.0		
Neck Moment	X	Nm	11.2	20.3	-7.1	12.2
Neck Moment	Y	Nm	8.3	19.1	-13.1	40.1
Neck Moment	Z	Nm	3.0	139.3	-4.2	72.8
Neck Moment Resultant	N/A	Nm	14.6	39.6		

LOWER NECK PEAK FORCES AND MOMENTS

Location	Axis	Units	Pass. SID-IIS			
			Max	Time	Min	Time
Neck Force	X	Newtons	99.9	17.1	-39.4	141.2
Neck Force	Y	Newtons	90.3	10.1	-24.2	16.8
Neck Force	Z	Newtons	33.6	11.1	-224.0	13.7
Neck Force Resultant	N/A	Newtons	228.6	13.7		
Neck Moment	X	Nm	16.0	29.8	-9.0	126.9
Neck Moment	Y	Nm	15.7	138.3	-9.6	57.6
Neck Moment	Z	Nm	8.5	10.2	-4.0	74.2
Neck Moment Resultant	N/A	Nm	19.5	13.6		

DATA SHEET NO. 5...(CONTINUED)Test Vehicle: 2008 Dodge Avenger 4-Door SedanNHTSA No.: M80303TWG2Test Program: TWG 3.3.5.3Test Date: 7/29/08**HEAD INJURY CRITERIA (HIC 15)**

Location	Pass. SID-IIS			
	HIC15	T ¹	T ²	Avg G
Head CG	3.3	10.6	25.6	8.6

UPPER NECK NIJ VALUES

Location	Pass. SID-IIS			
	Ntf	Nte	Ncf	Nce
Upper Neck	0.05	0.09	0.11	0.22

DATA SHEET NO. 6**CAMERA LOCATIONS**Test Vehicle: 2008 Dodge Avenger 4-Door Sedan NHTSA No.: M80303TWG2Test Program: TWG 3.3.5.3 Test Date: 07/29/08

No.	Camera View	Location (mm)			Angle (Deg.)	Lens (mm)	Speed (fps)
		X	Y	Z			
1	High Speed Digital Side View	0	-3476	-1062	0.0	50	1000
2	High Speed Digital Front View	1941	0	-1374	-11.0	50	1000

* Cameras aligned to the CG of dummy's head as reference.

APPENDIX A

PHOTOGRAPHS



Figure A-1: Right Front $\frac{3}{4}$ View, As Received

MFD BY DAIMLERCHRYSLER CORPORATION

GVWR: 2019 KG

GAHR: 1180 KG

04450 LB

FRONT: 2600 LB

DATE OF MFR: 3-07

GAHR: 1007 KG

REAR: 2220 LB

THIS VEHICLE CONFORMS TO ALL APPLICABLE FEDERAL MOTOR VEHICLE SAFETY, BUMPER AND THEFT PREVENTION STANDARDS IN EFFECT ON THE DATE OF MANUFACTURE SHOWN ABOVE.



VIN: 1B3LC46K18N571937

MDH: 030618 475AA

VEHICLE MADE IN U.S.A.

TYPE: PASSENGER CAR

TRIM: NBJ1

4658843

Figure A-2: Vehicle Certification Label



Figure A-3: Post-Test Right Front $\frac{3}{4}$ View of Frontal NCAP Test



Figure A-4: Post-Test Right Side View of Frontal NCAP Test



Figure A-5: Pre-Test Dummy Position, Left Side View



Figure A-6: Pre-Test Dummy Position, $\frac{3}{4}$ View



Figure A-7: Pre-Test Dummy Position, Front View



Figure A-8: Post-Test Dummy Position and Airbags, Left Side View



Figure A-9: Post-Test Airbags, Left Side View



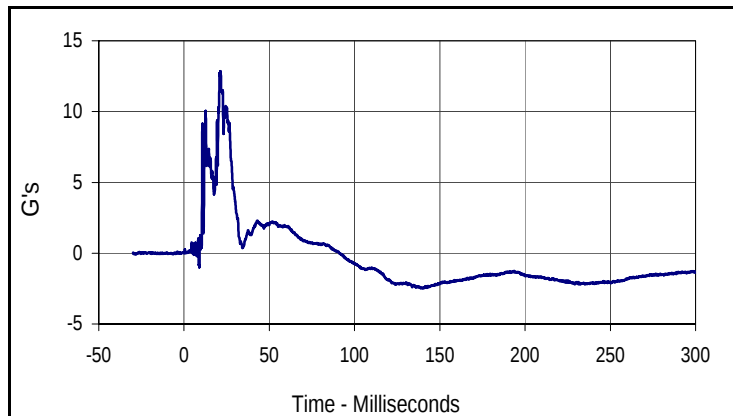
Figure A-10: Post-Test Airbags, Close-up View

APPENDIX B

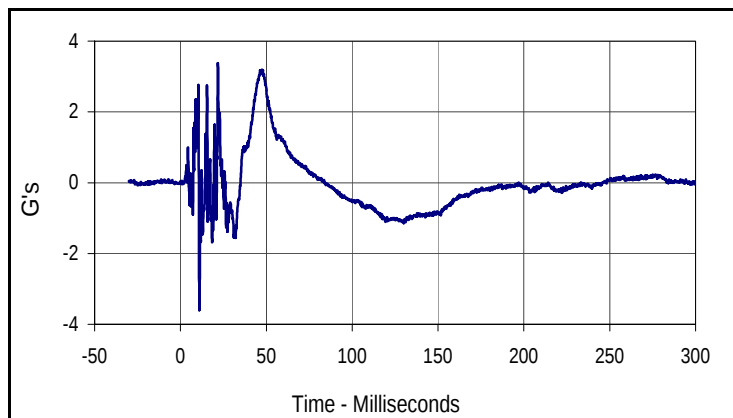
DATA PLOTS

Test Vehicle: 2008 Dodge Avenger 4-Door Sedan
 Test Program: TWG 3.3.5.3

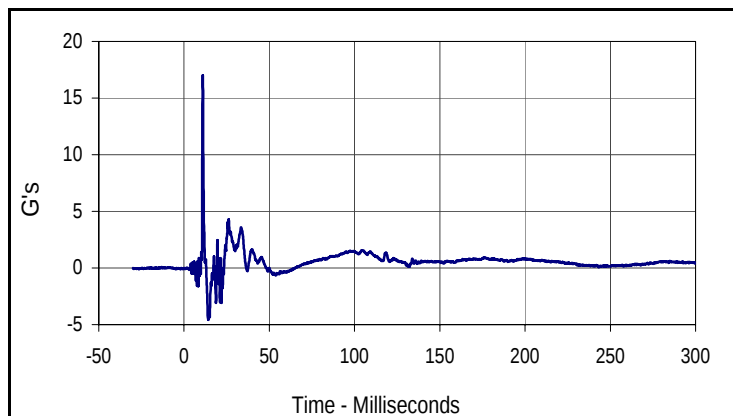
Test Date: 7/29/08
 NHTSA No.: M80303TWG2



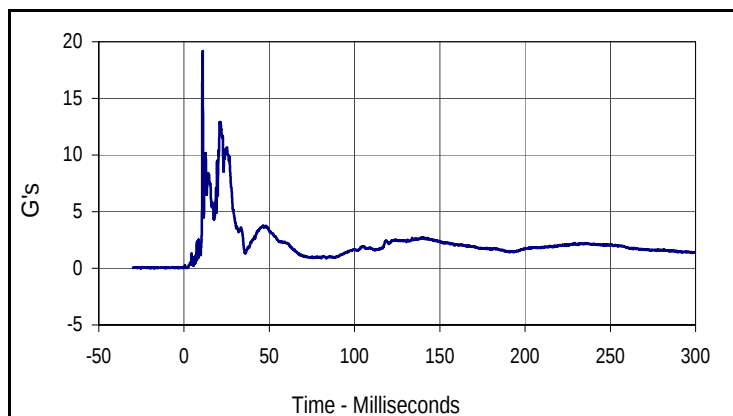
Curve Description			
Pass. SID-IIS Head X Primary			
CURNO	Type	SAE Class	Units
001	FIL	1000	G's
Max	Time	Min	Time
12.9	21.4	-2.5	140.2



Curve Description			
Pass. SID-IIS Head Y Primary			
CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
3.4	21.8	-3.6	11.0



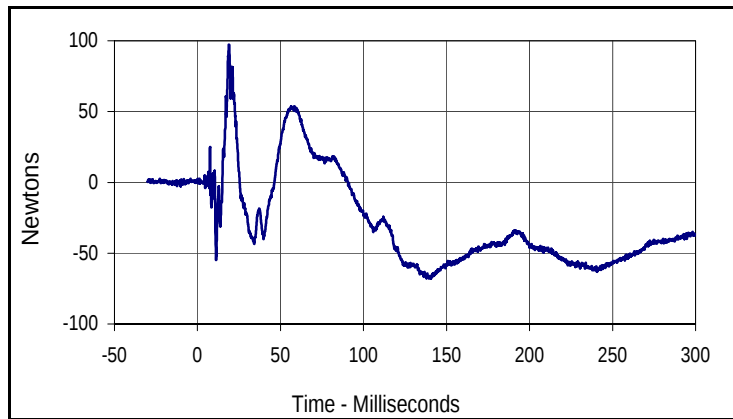
Curve Description			
Pass. SID-IIS Head Z Redundant			
CURNO	Type	SAE Class	Units
003	FIL	1000	G's
Max	Time	Min	Time
17.0	11.0	-4.6	14.1



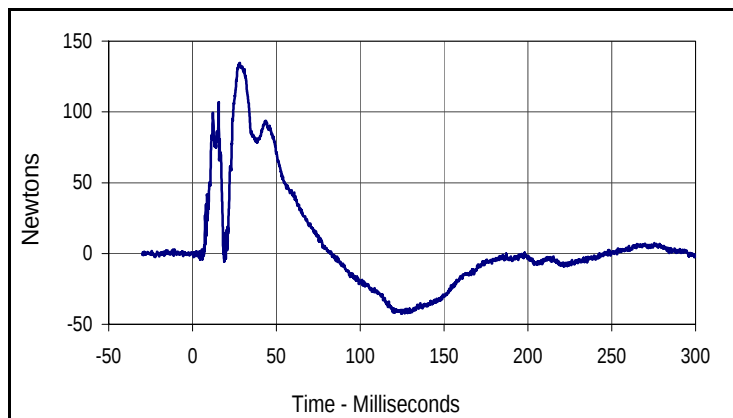
Curve Description			
Pass. SID-IIS Head Primary Resultant			
CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
19.2	10.9	0.0	1.6

Test Vehicle: 2008 Dodge Avenger 4-Door Sedan
 Test Program: TWG 3.3.5.3

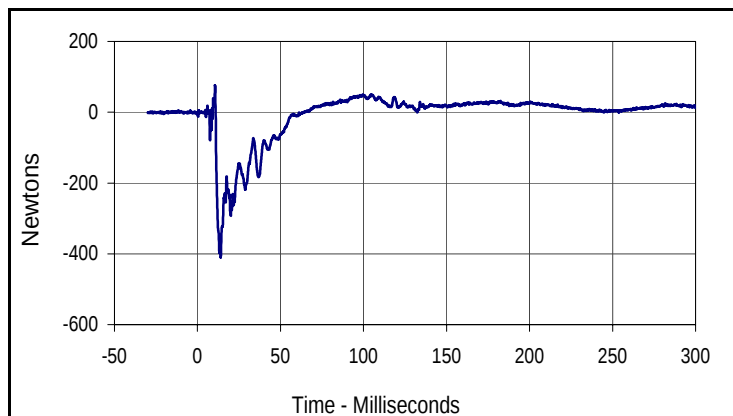
Test Date: 7/29/08
 NHTSA No.: M80303TWG2



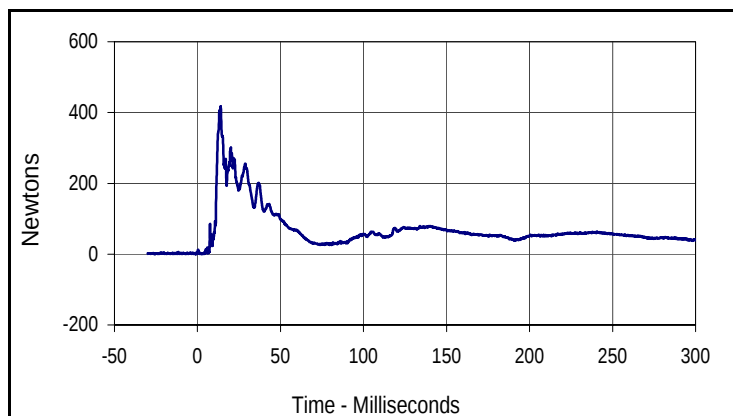
Curve Description			
Pass. SID-IIS Upper Neck Force X			
CURNO	Type	SAE Class	Units
004	FIL	1000	Newtons
Max	Time	Min	Time
97.3	19.0	-68.0	139.3



Curve Description			
Pass. SID-IIS Upper Neck Force Y			
CURNO	Type	SAE Class	Units
005	FIL	1000	Newtons
Max	Time	Min	Time
134.6	28.2	-42.5	124.7



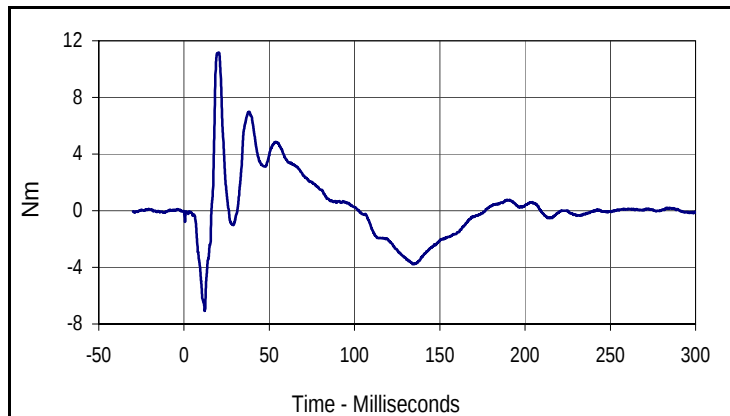
Curve Description			
Pass. SID-IIS Upper Neck Force Z			
CURNO	Type	SAE Class	Units
006	FIL	1000	Newtons
Max	Time	Min	Time
76.3	10.6	-410.0	14.0



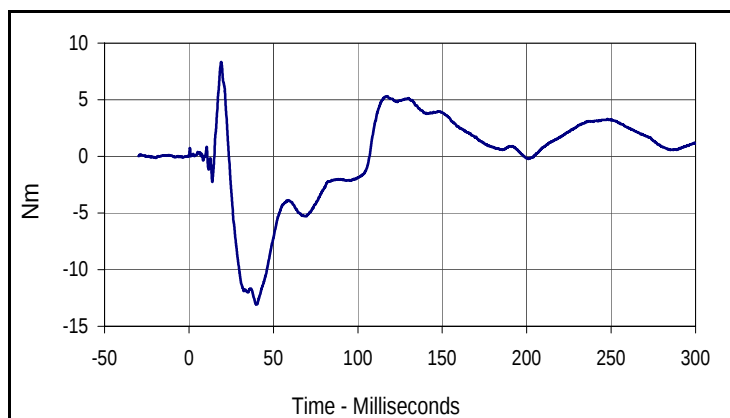
Curve Description			
Pass. SID-IIS Upper Neck Force Resultant			
CURNO	Type	SAE Class	Units
004	RES	1000	Newtons
Max	Time	Min	Time
417.5	14.0	0.2	2.5

Test Vehicle: 2008 Dodge Avenger 4-Door Sedan
 Test Program: TWG 3.3.5.3

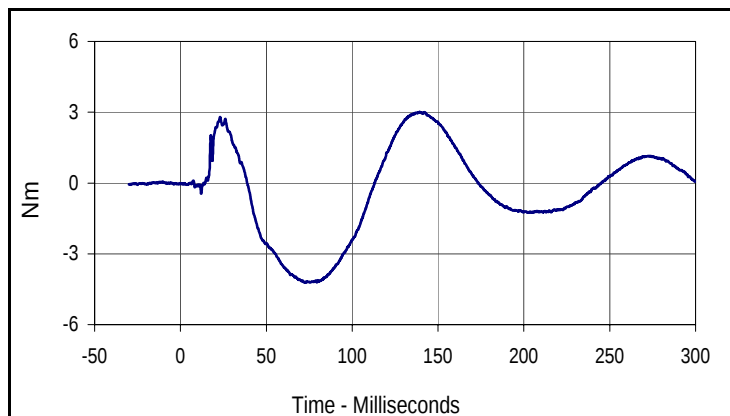
Test Date: 7/29/08
 NHTSA No.: M80303TWG2



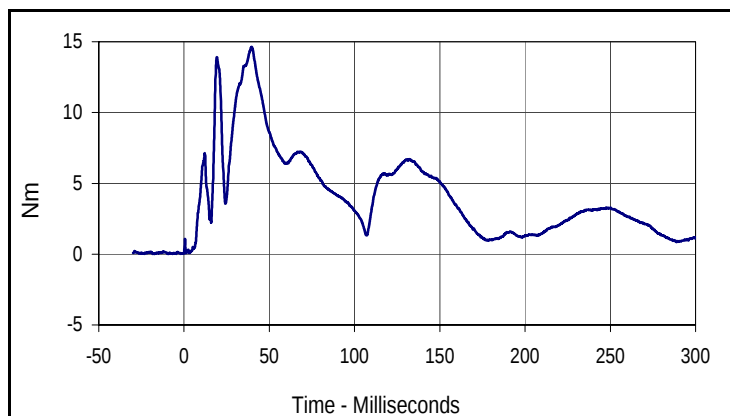
Curve Description			
Pass. SID-IIS Upper Neck Moment X			
CURNO	Type	SAE Class	Units
007	FIL	600	Nm
Max	Time	Min	Time
11.2	20.3	-7.1	12.2



Curve Description			
Pass. SID-IIS Upper Neck Moment Y			
CURNO	Type	SAE Class	Units
008	FIL	600	Nm
Max	Time	Min	Time
8.3	19.1	-13.1	40.1



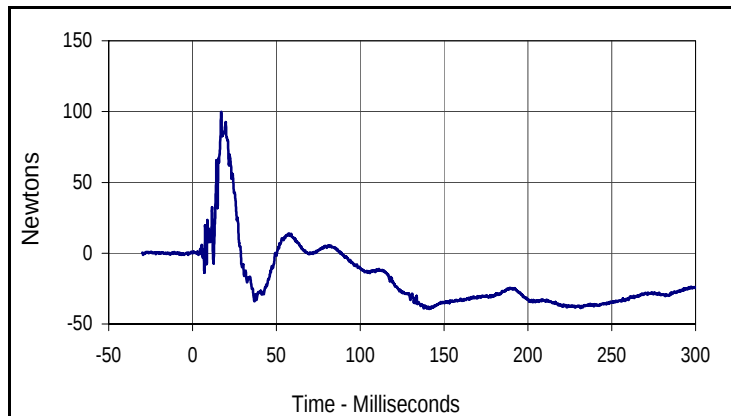
Curve Description			
Pass. SID-IIS Upper Neck Moment Z			
CURNO	Type	SAE Class	Units
009	FIL	600	Nm
Max	Time	Min	Time
3.0	139.3	-4.2	72.8



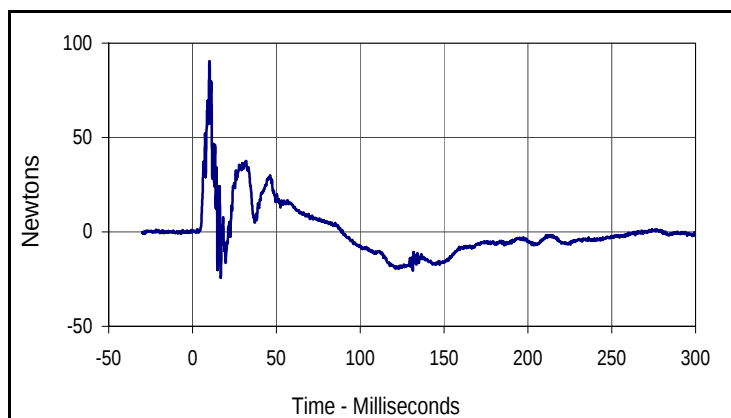
Curve Description			
Pass. SID-IIS Upper Neck Moment Resultant			
CURNO	Type	SAE Class	Units
007	RES	600	Nm
Max	Time	Min	Time
14.6	39.6	0.0	0.0

Test Vehicle: 2008 Dodge Avenger 4-Door Sedan
 Test Program: TWG 3.3.5.3

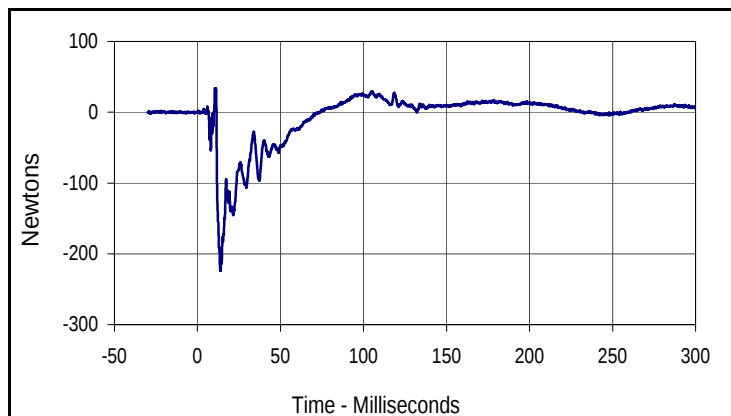
Test Date: 7/29/08
 NHTSA No.: M80303TWG2



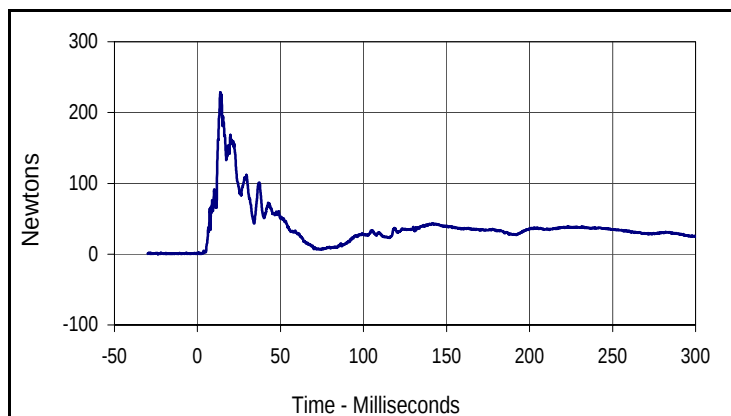
Curve Description			
Pass. SID-IIS Lower Neck Force X			
CURNO	Type	SAE Class	Units
010	FIL	1000	Newtons
Max	Time	Min	Time
99.9	17.1	-39.4	141.2



Curve Description			
Pass. SID-IIS Lower Neck Force Y			
CURNO	Type	SAE Class	Units
011	FIL	1000	Newtons
Max	Time	Min	Time
90.3	10.1	-24.2	16.8



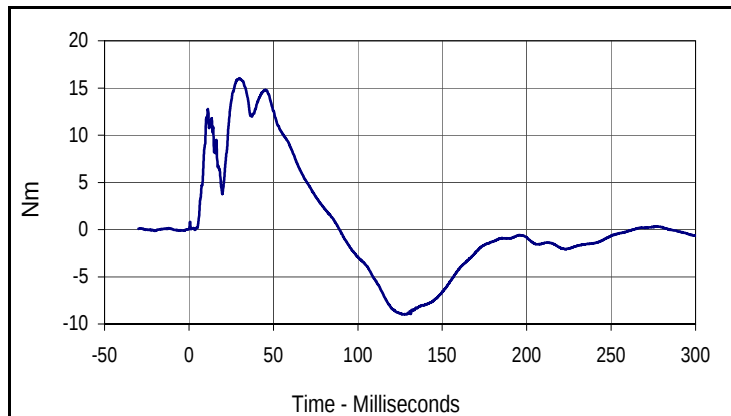
Curve Description			
Pass. SID-IIS Lower Neck Force Z			
CURNO	Type	SAE Class	Units
012	FIL	1000	Newtons
Max	Time	Min	Time
33.6	11.1	-224.0	13.7



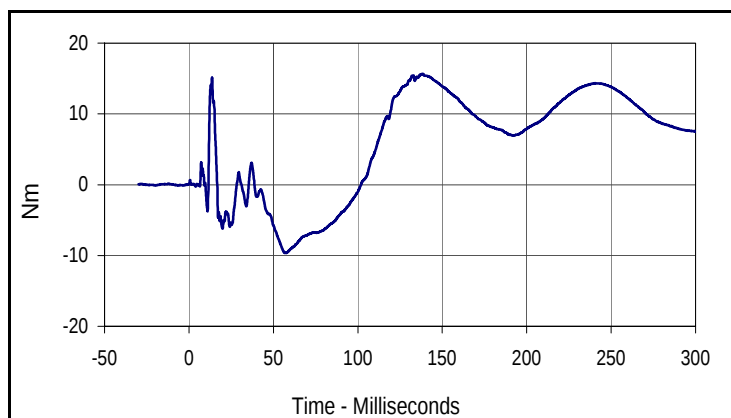
Curve Description			
Pass. SID-IIS Lower Neck Force Resultant			
CURNO	Type	SAE Class	Units
010	RES	1000	Newtons
Max	Time	Min	Time
228.6	13.7	0.1	2.4

Test Vehicle: 2008 Dodge Avenger 4-Door Sedan
 Test Program: TWG 3.3.5.3

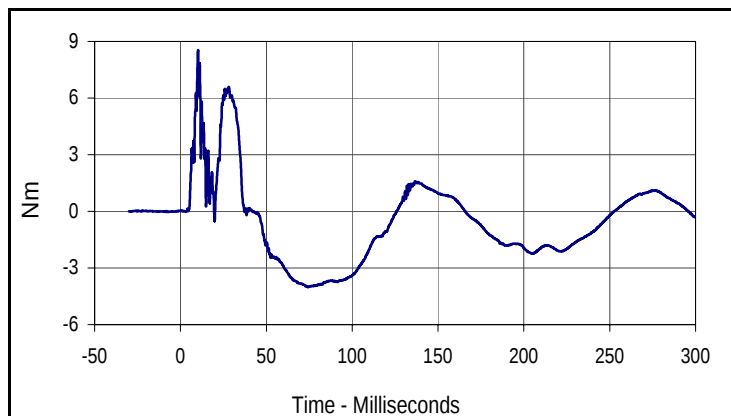
Test Date: 7/29/08
 NHTSA No.: M80303TWG2



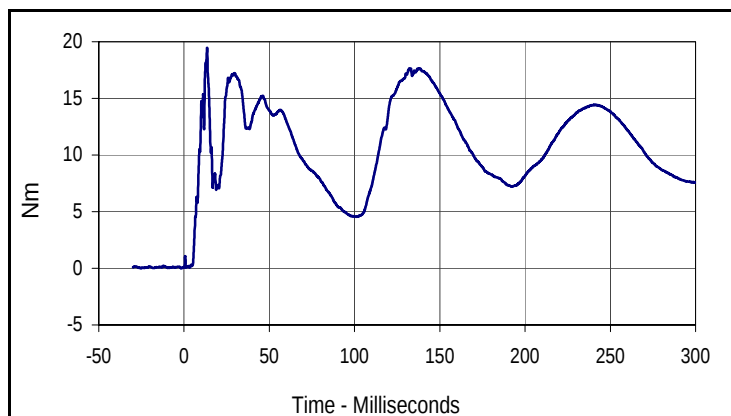
Curve Description			
Pass. SID-IIS Lower Neck Moment X			
CURNO	Type	SAE Class	Units
013	FIL	600	Nm
Max	Time	Min	Time
16.0	29.8	-9.0	126.9



Curve Description			
Pass. SID-IIS Lower Neck Moment Y			
CURNO	Type	SAE Class	Units
014	FIL	600	Nm
Max	Time	Min	Time
15.7	138.3	-9.6	57.6



Curve Description			
Pass. SID-IIS Lower Neck Moment Z			
CURNO	Type	SAE Class	Units
015	FIL	600	Nm
Max	Time	Min	Time
8.5	10.2	-4.0	74.2



Curve Description			
Pass. SID-IIS Lower Neck Moment Resultant			
CURNO	Type	SAE Class	Units
013	RES	600	Nm
Max	Time	Min	Time
19.5	13.6	0.0	3.3

APPENDIX C

INSTRUMENTATION DATA CHANNEL ASSIGNMENTS

TWG 3.3.5.3
Instrumentation Data Channel Assignments
A.T.D. Serial Number 294
7/29/08
2008 Dodge Avenger 4-Door Sedan

CH.	LOCATION	AXIS	IDENT. NO.	DESCRIPTION	MFR	MODEL	UNITS
1	HEAD	X	P45011	Accel.,full bridge	ENDEVCO	7264-2000	G
2	HEAD	Y	P51696	Accel.,full bridge	ENDEVCO	7264-2000	G
3	HEAD	Z	P51708	Accel.,full bridge	ENTRANS	7264-2000	G
4	UPPER NECK FORCE	X	186 FX	Load cell, six axis neck	R. A. Denton	IF-205	N
5	UPPER NECK FORCE	Y	186 FY	Load cell, six axis neck	R. A. Denton	IF-205	N
6	UPPER NECK FORCE	Z	186 FZ	Load cell, six axis neck	R. A. Denton	IF-205	N
7	UPPER NECK MOMENT	X	186 MX	Load cell, six axis neck	R. A. Denton	IF-205	Nm
8	UPPER NECK MOMENT	Y	186 MY	Load cell, six axis neck	R. A. Denton	IF-205	Nm
9	UPPER NECK MOMENT	Z	186 MZ	Load cell, six axis neck	R. A. Denton	IF-205	Nm
10	LOWER NECK FORCE	X	294 FX	Load cell, six axis neck	R. A. Denton	2430	N
11	LOWER NECK FORCE	Y	294 FY	Load cell, six axis neck	R. A. Denton	2430	N
12	LOWER NECK FORCE	Z	294 FZ	Load cell, six axis neck	R. A. Denton	2430	N
13	LOWER NECK MOMENT	X	294 MX	Load cell, six axis neck	R. A. Denton	2430	Nm
14	LOWER NECK MOMENT	Y	294 MY	Load cell, six axis neck	R. A. Denton	2430	Nm
15	LOWER NECK MOMENT	Z	294 MZ	Load cell, six axis neck	R. A. Denton	2430	Nm