LABORATORY TEST REPORT

FOR SLED IMPACT TESTING

1995 Ford Taurus 4-Door 'Buck'

Prepared for:

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Test Report No. TR-P26065-01-A

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1. INTRODUCTION

On February 22, 2006, an impact test was conducted on a 1994 Ford Taurus 4-Door passenger compartment. The purpose of this experimental study was to examine the probability for injury with an airbag. The test was conducted with the specimen mounted 0 degrees to the path of travel. One (1) unbelted instrumented Hybrid III 50% male Anthropomorphic Test Device (crash test dummy) was placed in the left front seating position (P1). The Hybrid III 50% male dummy was modified to simulate a 95% male dummy. The dummy's seating height was increased 2 inches by installing a spacer into the lumbar-torso interface. The dummy was ballasted to approximately two hundred and twenty-four pounds (224 lbs.). The seat track was full rearward and the seat back angle was 12.7 @ headrest. The vehicle was instrumented with a tri-axial accelerometer placed at the approximate center of gravity.

This report is organized in sections containing pertinent Test information and data tables as follows:

Section 2 - Test Procedure and Summary

Section 3 - Test Results and Data Sheets

Appendix A - Photographs

Appendix B - Vehicle and Belt Response Data Traces

Appendix C - Sensor Data Tables

Appendix D - Dummy Calibration Data

2. TEST PROCEDURE AND SUMMARY

This 1995 Ford Taurus 4-Door 'Buck' sled test was conducted on February 22, 2006 at a velocity of 25.19 miles per hour (mph).

The test procedure is comprised of the following steps:

1. Mounting of vehicle on test sled
2. Test sled preparation
3. Instrumentation and photography preparation
4. Dummy installation and positioning
5. Test conduct
6. Post-test measurements and data reduction

The test was conducted following the above steps.

3. TEST RESULTS AND DATA SHEETS

The results of the 1995 Ford Taurus 4-Door test are presented in this section. The test ‘Buck’ was prepared and mounted to the sled by Karco Engineering. The results of the 1995 Ford Taurus 4-Door test are presented in this section. The original steering column, aluminum mounting plate and sun visor were replaced with ones from another 1995 Ford Taurus with VIN 1FALP52U3RG212682. The driver front seat was replaced with one from a 1993 Ford Taurus with VIN 1FALP5743PG168351. All replacement parts were obtained from Ajax Auto Wreckers located in Coachella, California. The seat track shifted 1 inch forward during the impact. Photographic documentation and plots of the impact event are presented in Appendices A and B.

DATA SHEET NO. 1

TEST VEHICLE INFORMATION

Test Vehicle: 1995 Ford Taurus 4-Door 'Buck' Project No.: P26065-01

Test Program: Sled Impact Testing Test Date: 02/22/06

TEST VEHICLE INFORMATION			
Manufacturer (Basic Vehicle)	Ford Motor Company	VIN	1FALP52455G163555
Manufacturer (Modifier)	None	Manufacturing Date	1995
Odometer Reading	112312.8	Fuel Type	Gas
Engine Displacement	3.8 L	Cylinders	V6
Transmission	Automatic	Final Drive	Front
Engine Placement	Transverse	Color	White
GVWR (Basic Vehicle)	4635	Cargo Capacity (Basic Vehicle)	1100 lbs
GAWR Front (Basic Vehicle)	2495	GAWR Rear (Basic Vehicle)	2170
Driver Airbag	Yes	Passenger Airbag	Yes

TEST WEIGHT OF VEHICLE (lbs.)						
WEIGHT OF VEHICLE AS RECEIVED				WEIGHT OF TEST ASSEMBLY		
	FRONT	REAR	TOTAL	FRONT	REAR	TOTAL
Right	1058	558	716	1586	1114	2700
Left	1040	538	1578	1498	1366	2864
Total	2098	1096	3194	3084	2480	5564
Percent of Total	65.68%	34.32%	100%	55.42%	45.58%	100%

DATA SHEET NO. 2

TEST VEHICLE SEATING INFORMATION

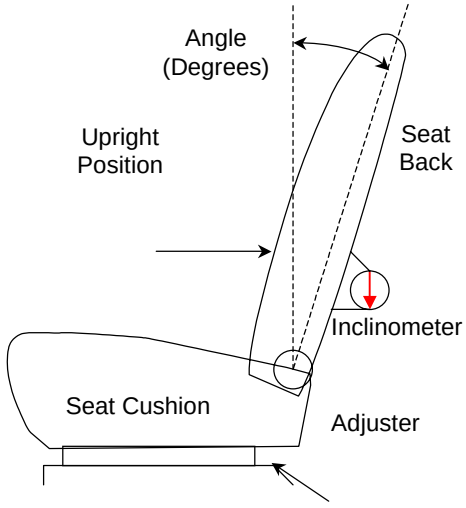
Test Vehicle: 1995 Ford Taurus 4-Door 'Buck' Project No.: P26065-01

Test Program: Sled Impact Testing Test Date: 02/22/06

NOMINAL DESIGN RIDING POSITION

The driver seat back was positioned as follows: An inclinometer is placed against the rigid portion of the lower seat frame assembly, approximately 12 inches above the pivot point of the seat back. The seat back angle is measured directly from the dial face.

Driver seat back angle: 12.5° at headrest

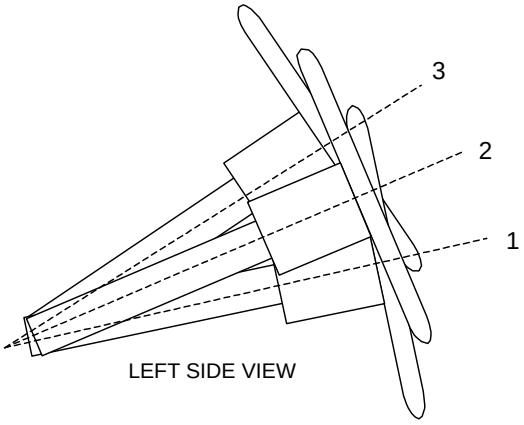


FRONT SEAT ASSEMBLY

STEERING COLUMN ADJUSTMENT

An aluminum plate is placed across the rim of the steering wheel, an inclinometer is placed onto the plate and the angle is measured.

Steering Column angle: 23°



STEERING COLUMN ASSEMBLY

DATA SHEET NO. 3

DUMMY POSITIONING IN VEHICLE

Test Vehicle: 1995 Ford Taurus 4-Door 'Buck' Project No.: P26065-01

Test Program: Sled Impact Testing Test Date: 02/22/06

PRE-TEST TEST DUMMY POSITION MEASUREMENTS

Code	Measurement Description	Driver	
		Length (mm)	Angle (^{o})
SWA	Steering Wheel Angle		23.0
SCA	Steering Column Angle		67.0
SA	Seat Back Angle		12.5@headrest
HZ	Head to Roof (Z)	210	90.0
HH	Head to Header	400	
HW	Head to Windshield	578	
HR	Head to Side Header (Y)	211	
NR	Nose to Rim	445	17.0
CD	Chest to Dash	680	
CS	Chest to Steering Hub	380	
RA	Rim to Abdomen	300	
KDL	Left Knee to Dash	300	0.8
KDR	Right Knee to Dash	290	
PA	Pelvic Angle		21.0
TA	Tibia Angle		49.0
KK	Knee to Knee (Y)	267	
ST	Striker to Outboard Knee	485	2.7
SK	Striker to Head	495	83.8
HHX	Head to Headrest	345	3.5
HHZ	Head to top of Headrest	315	6.0

DATA SHEET NO. 4

SUMMARY OF TESTS

Test Vehicle: 1995 Ford Taurus 4-Door 'Buck' Project No.: P26065-01

Test Program: Sled Impact Testing Test Date: 02/22/06

TEST DATE:	02/22/06	TIME:	11:49 AM	TEMPERATURE:	55° F
WIND SPEED and DIRECTION:			4 mph North		
IMPACT VELOCITY:		25.19 mph	CONTRACT NO.		P26065-01
TEST WEIGHT OF DUMMIES:			SERIAL NUMBER OF DUMMIES:		
DRIVER (P1)		224 lbs.	DRIVER (P1)		002
RF PASSENGER (P2)			RF PASSENGER (P2)		
LR PASSENGER (P4)			LR PASSENGER (P4)		
RR PASSENGER (P3)			RR PASSENGER (P3)		
SEAT TYPE:					
DRIVER (P1)			FORD TAURUS OEM		
RF PASSENGER (P2)					
LR PASSENGER (P4)					
RR PASSENGER (P3)					

DATA SHEET NO. 5

STEERING COLUMN MOVEMENT

Test Vehicle: 1995 Ford Taurus 4-Door 'Buck' Project No.: P26065-01

Test Program: Sled Impact Testing Test Date: 02/22/06

X-axis	Pre-Test	Post-Test	Difference
Center of Steering Wheel	670	520	-150
Top of Steering Wheel	715	550	-165
Bottom Side of Steering Wheel	636	498	-138
Right Side of Steering Wheel	779	590	-189
Left Side of Steering Wheel	564	400	-164

All measurement in MM. Measurements made relative to the top striker bolt.

DATA SHEET NO. 6 - HYBRID III ATD INJURY CRITERIA AND SENSOR DATA

Test Vehicle: 1995 Ford Taurus 4-Door Buck Project No.: P26065-01

Test Program: Sled Testing Test Date: 2/22/06

HEAD PEAK ACCELERATIONS

Location	Axis	Units	Driver (Modified 50th Male)			
			Max	Time	Min	Time
Head CG	X	G's	4.8	145.2	-57.4	88.9
Head CG	Y	G's	21.3	91.0	-9.3	70.3
Head CG	Z	G's	52.6	97.9	-21.1	119.9
Head CG Resultant	N/A	G's	61.5	89.4		

CHEST PEAK ACCELERATIONS

Location	Axis	Units	Driver (Modified 50th Male)			
			Max	Time	Min	Time
Chest CG	X	G's	3.4	183.9	-32.8	106.9
Chest CG	Y	G's	6.7	115.8	-2.9	181.9
Chest CG	Z	G's	26.0	100.8	-7.2	66.9
Chest CG Resultant	N/A	G's	40.5	106.4		

FEMUR PEAK FORCES

Location	Axis	Units	Driver (Modified 50th Male)			
			Max	Time	Min	Time
Left Femur Force	Z	Newtons	732.7	73.1	-3818.0	81.4
Right Femur Force	Z	Newtons	439.1	77.2	-5997.4	102.5

HEAD INJURY CRITERIA (HIC36)

Location	Driver (Modified 50th Male)			
	HIC	T^1	T^2	Avg G
Head CG	336.9	73.6	103.4	41.8

CHEST CLIP (3MSEC)

Location	Driver (Modified 50th Male)		
	CLIP	T^1	T^2
Chest CG	16.6	102.4	105.4

AIRBAG TRIGGER

Location	Axis	Units	Driver (Modified 50th Male)			
			Max	Time	Min	Time
Airbag Trigger	N/A	%	104.9	40.2	-2.9	39.6

Test Vehicle: 1995 Ford Taurus 4-Door Buck Project No.: P26065-01

Test Program: Sled Testing Test Date: 2/22/06

UPPER NECK PEAK FORCES AND MOMENTS

Location	Axis	Units	Driver (Modified 50th Male)			
			Max	Time	Min	Time
Upper Neck Force	X	Newtons	2525.1	106.4	-337.3	155.0
Upper Neck Force	Y	Newtons	61.1	226.3	-1028.9	113.9
Upper Neck Force	Z	Newtons	410.7	73.6	-4254.4	101.2
Upper Neck Force Res.	N/A	Newtons	4826.7	101.3		
Upper Neck Moment	X	Nm	43.3	131.7	-13.0	85.5
Upper Neck Moment	Y	Nm	186.0	105.3	-35.9	154.7
Upper Neck Moment	Z	Nm	1.0	252.5	-15.9	121.2
Upper Neck Moment Res.	N/A	Nm	189.4	105.4		

NIJ VALUES

Location	Driver (Modified 50th Male)			
	NTF	NTE	NCF	NCE
Upper Neck	0.20	0.08	0.86	0.21 *

*95th percentile critical values were used in these calculations

DATA SHEET NO. 7 - VEHICLE ACCELEROMETER DATA

Test Vehicle: 1995 Ford Taurus 4-Door Buck Project No.: P26065-01

Test Program: Sled Testing Test Date: 2/22/06

VEHICLE ACCELEROMETER PEAK ACCELERATIONS

Location	Axis	Units	Vehicle			
			Max	Time	Min	Time
Center Tunnel	X	G's	0.3	190.1	-16.7	73.9
Center Tunnel	Y	G's	1.8	75.9	-0.9	79.6
Center Tunnel	Z	G's	5.5	73.8	-6.8	89.5
Center Tunnel Res.	N/A	G's	17.6	73.9		

CAMERA VIEWS AND FILM SPEEDS

Test Vehicle: 1995 Ford Taurus 4-Door 'Buck' Project No.: P26065-01

Test Program: Sled Impact Testing Test Date: 02/22/06

No.	Camera View	Location (mm)			Angle (Deg.)	Lens (mm)	Speed (fps)
		X	Y	Z			
1	Real Time Inrun	-12372	29175	3072	-1		30
2	Real Time Right Side	81541	36340	3535	-1		30
3	Driver Side Overall	-1219	-9174	-1493	0	20mm	1000
4	Driver Side Closeup	-1310	-9144	-1768	0	50mm	1000
5	Passenger Side Overall	-1314	9631	-1493	0	20mm	1000
6	Passenger Side Closeup	-1341	9601	-1768	0	50mm	1000
7	Onboard 1	-1828	762	-1584	-2	12mm	1000
8	Onboard 2	-1676	762	-1584	-2	12mm	1000
9	Onboard 3	-457	-304	-1706	-1	25mm	1000
10	Onboard 4	-3322	731	-1554	0	25mm	1000

APPENDIX A

PHOTOGRAPHS

FIGURE 1. Left Front ¾ View, As Received

FIGURE 2. Right Rear ¾ View, As Received

FIGURE 3. Test Set-Up Left Side View

FIGURE 4. Pre-Test Impact Area

FIGURE 5. Pre-Test Left Side View

FIGURE 6. Post-Test Left Side View

FIGURE 7. Pre-Test Driver Dummy

FIGURE 8. Post-Test Driver Dummy

FIGURE 9. Post-Test Driver Dummy Contact

FIGURE 10. Post-Test Driver Dummy Contact

FIGURE 11. Pre-Test Impact Area

FIGURE 12. Post-Test Impact Area

FIGURE 13. Dummy On Scale

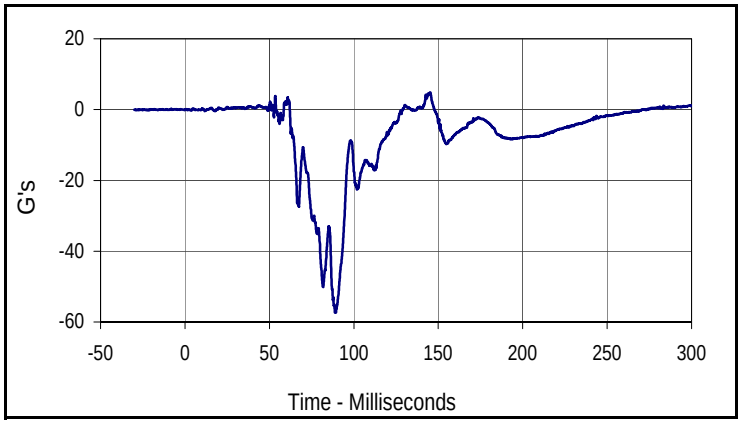
FIGURE 14. Total Weight Of Dummy

FIGURE 15. Manufacturer’s Label

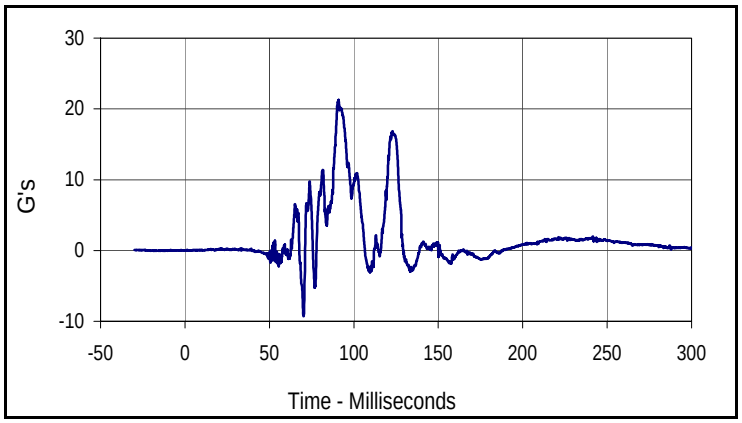
APPENDIX B

DUMMY AND VEHICLE RESPONSE DATA TRACES

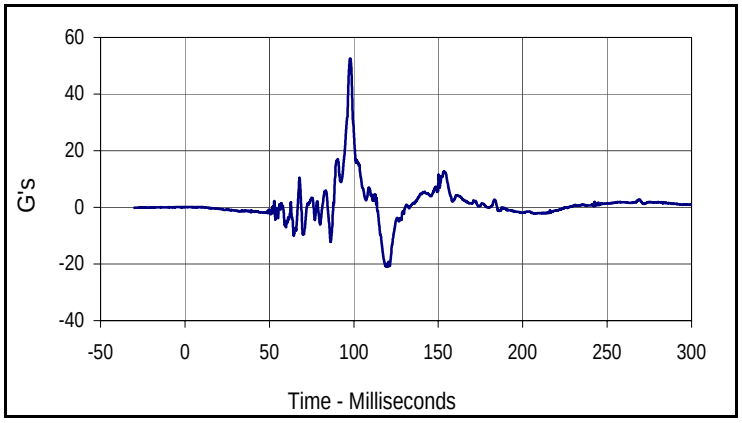
Test Vehicle:	1995 Ford Taurus 4-Door Buck	Test Date:	2/22/06
Test Program:	Sled Testing	Project No.:	P26065-01



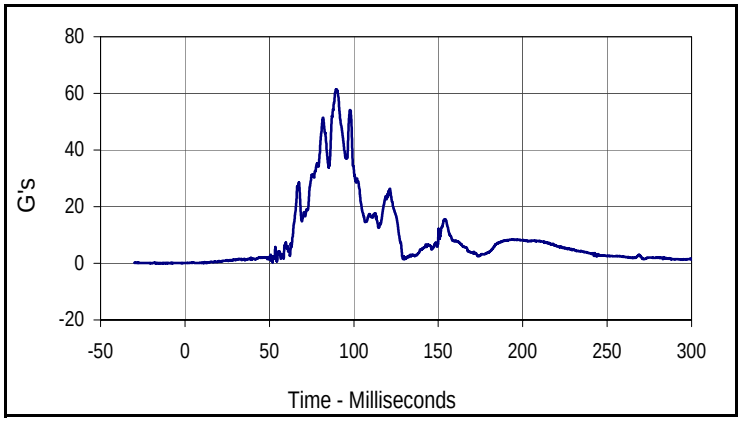
Curve Description			
Driver (Modified 50th) Head X			
CURNO	Type	SAE Class	Units
001	FIL	1000	G's
Max	Time	Min	Time
4.8	145.2	-57.4	88.9



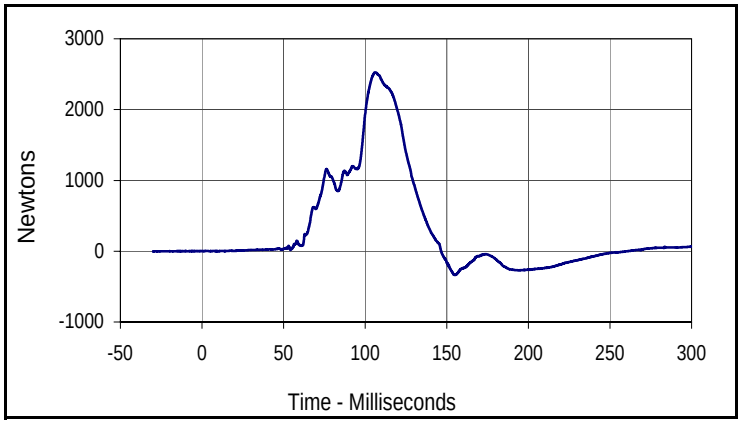
Curve Description			
Driver (Modified 50th) Head Y			
CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
21.3	91.0	-9.3	70.3



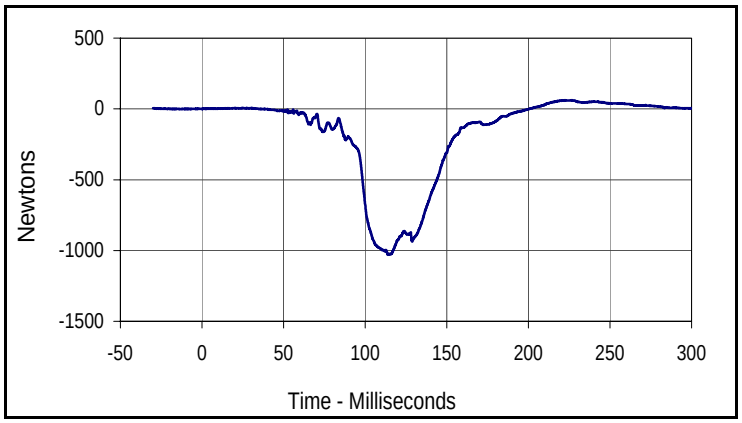
Curve Description			
Driver (Modified 50th) Head Z			
CURNO	Type	SAE Class	Units
003	FIL	1000	G's
Max	Time	Min	Time
52.6	97.9	-21.1	119.9



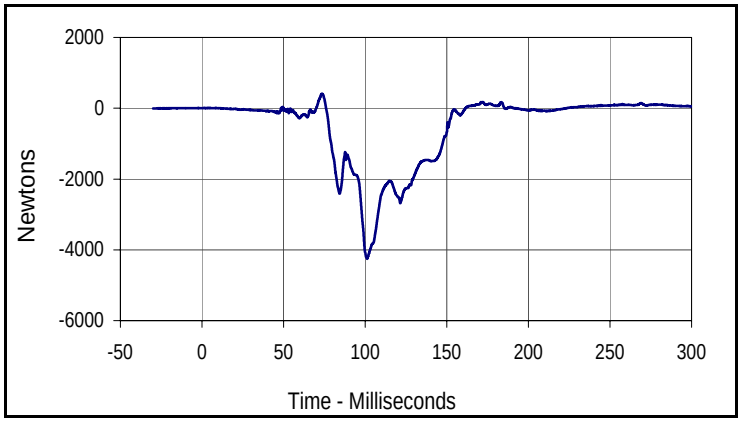
Curve Description			
Driver (Modified 50th) Head Resultant			
CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
61.5	89.4	0.0	11.2



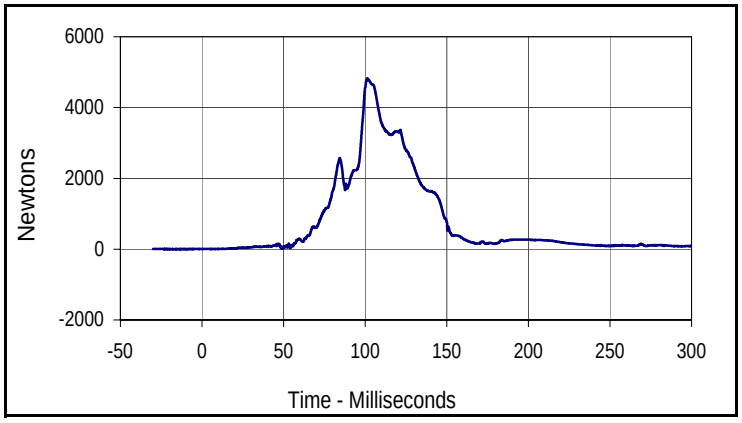
Curve Description			
Driver (Modified 50th) Upper Neck Force X			
CURNO	Type	SAE Class	Units
004	FIL	1000	Newtons
Max	Time	Min	Time
2525.1	106.4	-337.3	155.0



Curve Description			
Driver (Modified 50th) Upper Neck Force Y			
CURNO	Type	SAE Class	Units
005	FIL	1000	Newtons
Max	Time	Min	Time
61.1	226.3	-1028.9	113.9

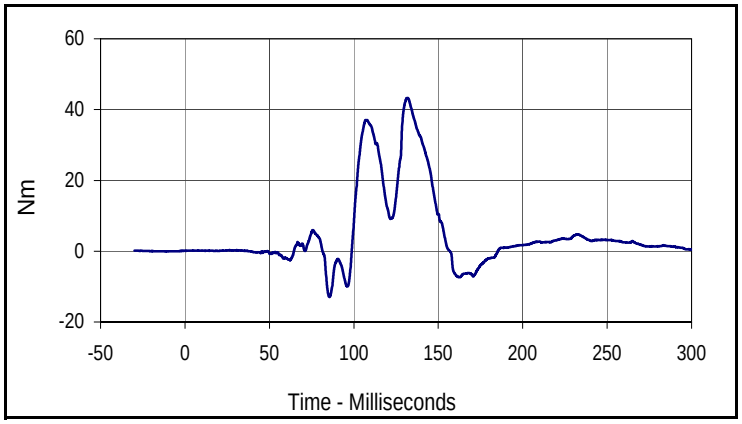


Curve Description			
Driver (Modified 50th) Upper Neck Force Z			
CURNO	Type	SAE Class	Units
006	FIL	1000	Newtons
Max	Time	Min	Time
410.7	73.6	-4254.4	101.2

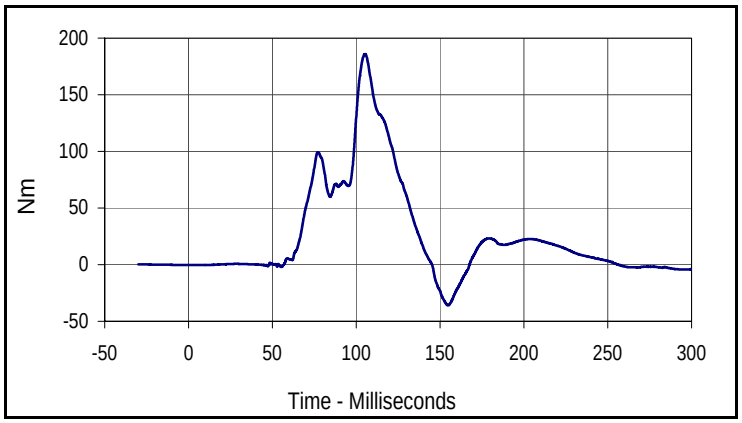


Curve Description			
Driver (Modified 50th) Upper Neck Force Res.			
CURNO	Type	SAE Class	Units
004	RES	1000	Newtons
Max	Time	Min	Time
4826.7	101.3	1.5	5.3

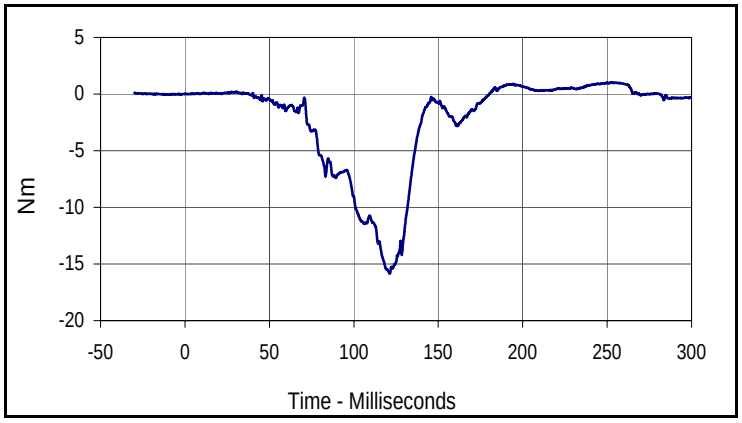
Test Vehicle:	1995 Ford Taurus 4-Door Buck	Test Date:	2/22/06
Test Program:	Sled Testing	Project No.:	P26065-01



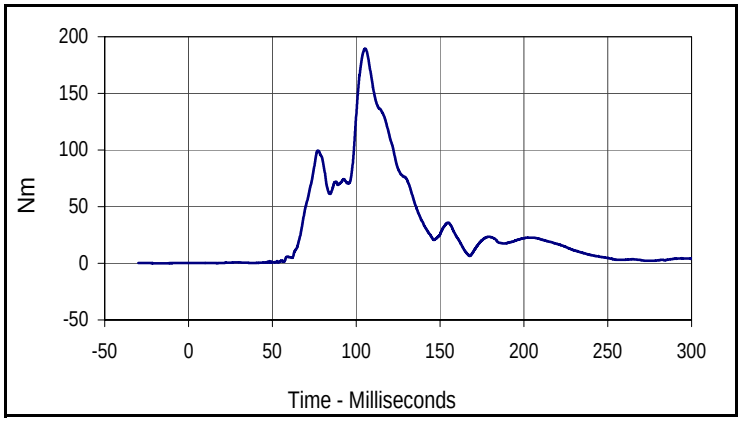
Curve Description			
Driver (Modified 50th) Upper Neck Moment X			
CURNO	Type	SAE Class	Units
007	FIL	600	Nm
Max	Time	Min	Time
43.3	131.7	-13.0	85.5



Curve Description			
Driver (Modified 50th) Upper Neck Moment Y			
CURNO	Type	SAE Class	Units
008	FIL	600	Nm
Max	Time	Min	Time
186.0	105.3	-35.9	154.7

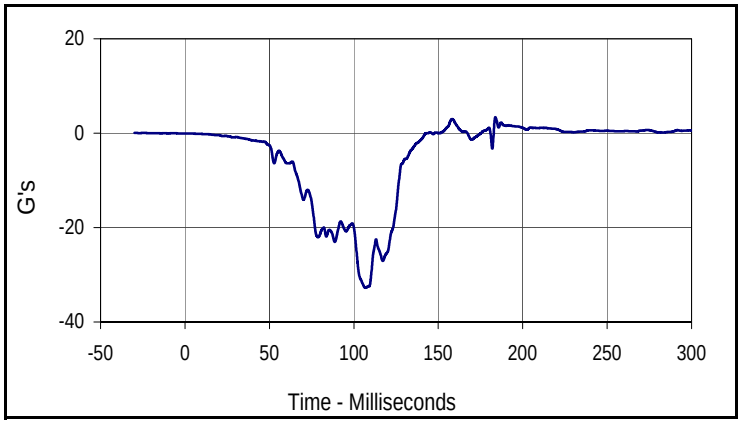


Curve Description			
Driver (Modified 50th) Upper Neck Moment Z			
CURNO	Type	SAE Class	Units
009	FIL	600	Nm
Max	Time	Min	Time
1.0	252.5	-15.9	121.2

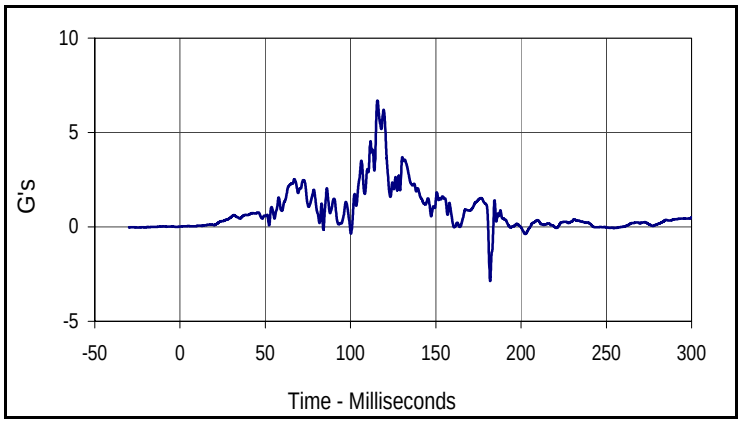


Curve Description			
Driver (Modified 50th) Upper Neck Moment Res.			
CURNO	Type	SAE Class	Units
007	RES	600	Nm
Max	Time	Min	Time
189.4	105.4	0.1	17.0

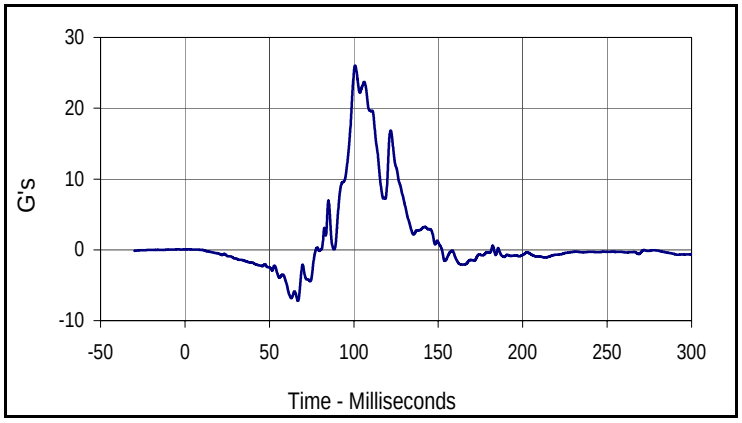
Test Vehicle:	1995 Ford Taurus 4-Door Buck	Test Date:	2/22/06
Test Program:	Sled Testing	Project No.:	P26065-01



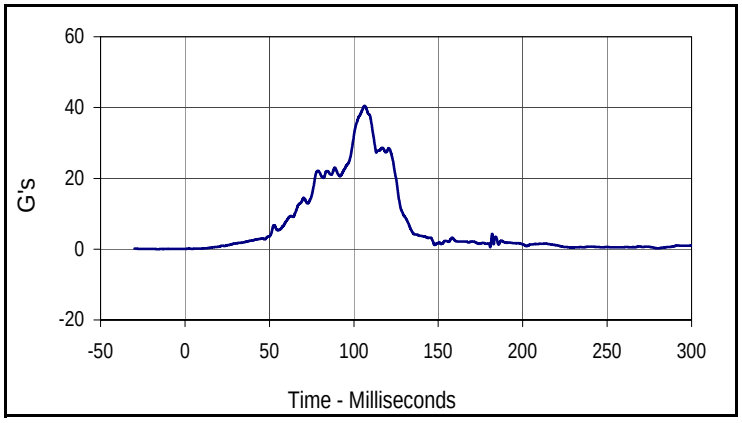
Curve Description			
Driver (Modified 50th) Chest X			
CURNO	Type	SAE Class	Units
010	FIL	180	G's
Max	Time	Min	Time
3.4	183.9	-32.8	106.9



Curve Description			
Driver (Modified 50th) Chest Y			
CURNO	Type	SAE Class	Units
011	FIL	180	G's
Max	Time	Min	Time
6.7	115.8	-2.9	181.9

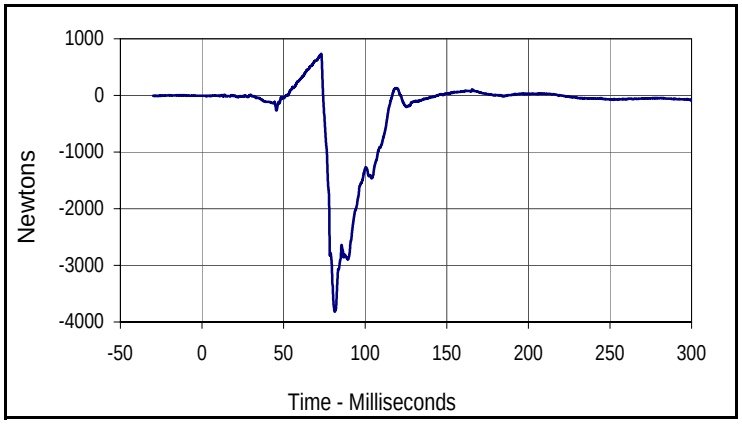


Curve Description			
Driver (Modified 50th) Chest Z			
CURNO	Type	SAE Class	Units
012	FIL	180	G's
Max	Time	Min	Time
26.0	100.8	-7.2	66.9

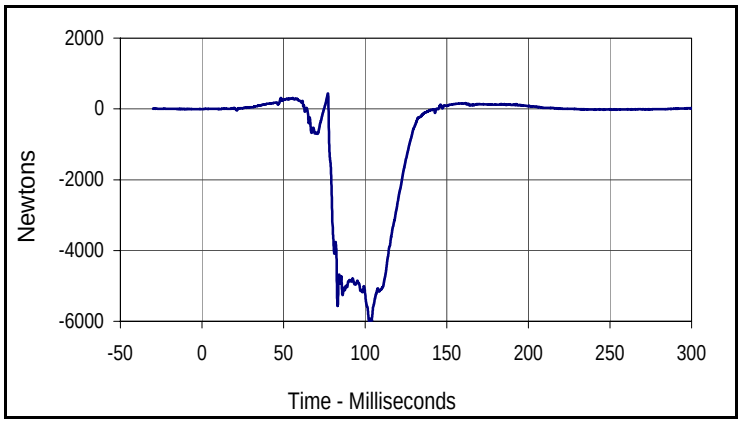


Curve Description			
Driver (Modified 50th) Chest Resultant			
CURNO	Type	SAE Class	Units
010	RES	180	G's
Max	Time	Min	Time
40.5	106.4	0.1	0.6

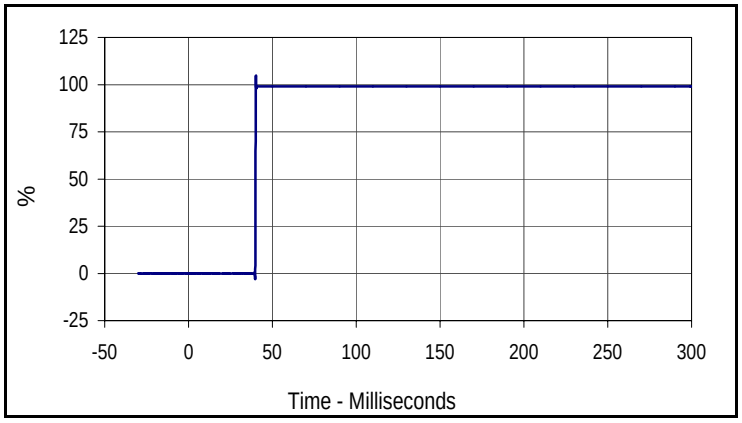
Test Vehicle:	1995 Ford Taurus 4-Door Buck	Test Date:	2/22/06
Test Program:	Sled Testing	Project No.:	P26065-01



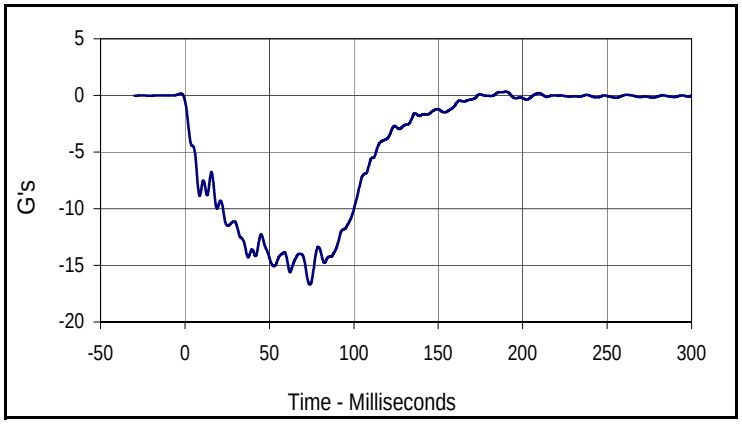
Curve Description			
Driver (Modified 50th) Left Femur Force			
CURNO	Type	SAE Class	Units
013	FIL	600	Newtons
Max	Time	Min	Time
732.7	73.1	-3818.0	81.4



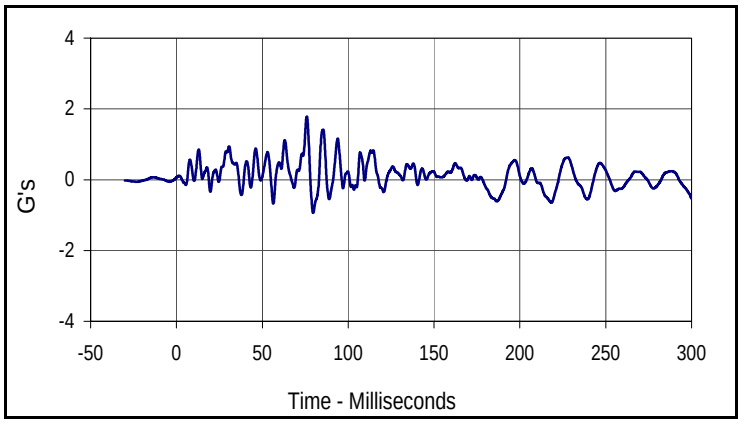
Curve Description			
Driver (Modified 50th) Right Femur Force			
CURNO	Type	SAE Class	Units
014	FIL	600	Newtons
Max	Time	Min	Time
439.1	77.2	-5997.4	102.5



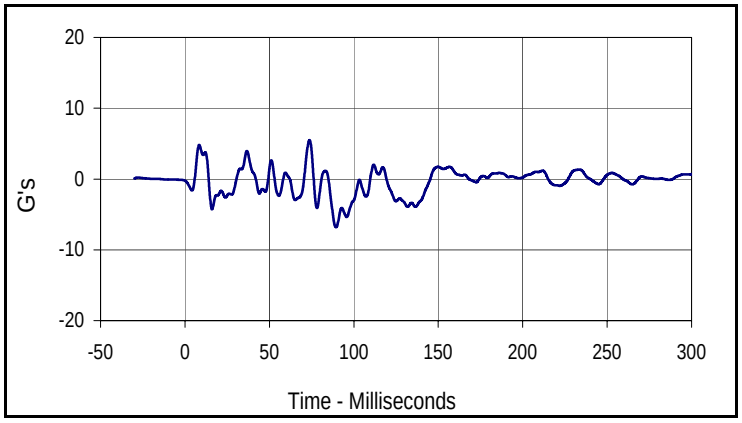
Curve Description			
Driver (Modified 50th) Airbag Trigger Signal			
CURNO	Type	SAE Class	Units
018	FIL	1000	%
Max	Time	Min	Time
104.9	40.2	-2.9	39.6



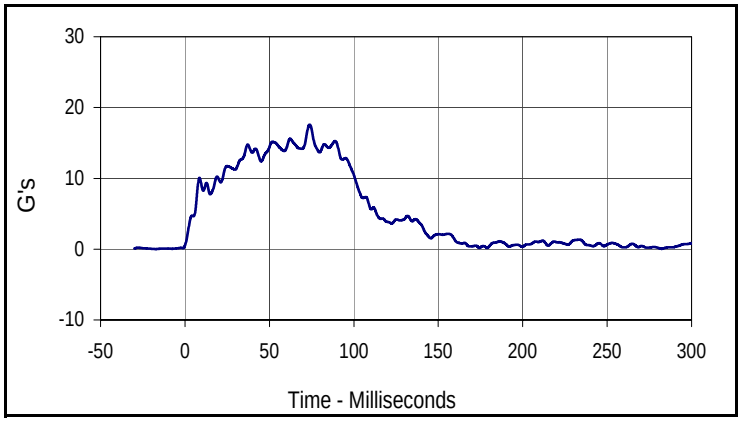
Curve Description			
Vehicle Center Tunnel X			
CURNO	Type	SAE Class	Units
015	FIL	60	G's
Max	Time	Min	Time
0.3	190.1	-16.7	73.9



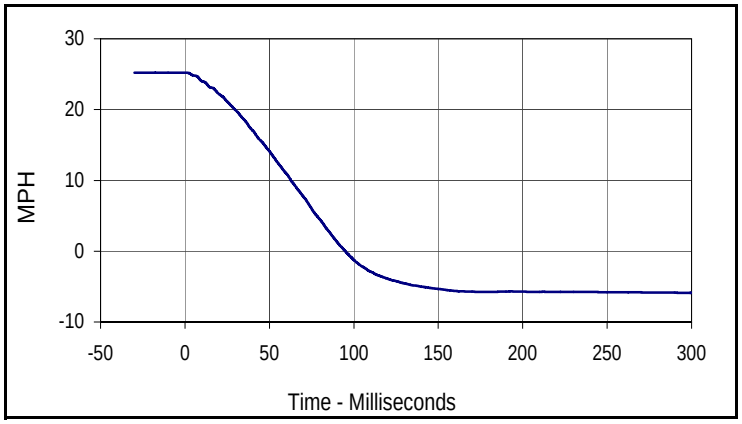
Curve Description			
Vehicle Center Tunnel Y			
CURNO	Type	SAE Class	Units
016	FIL	60	G's
Max	Time	Min	Time
1.8	75.9	-0.9	79.6



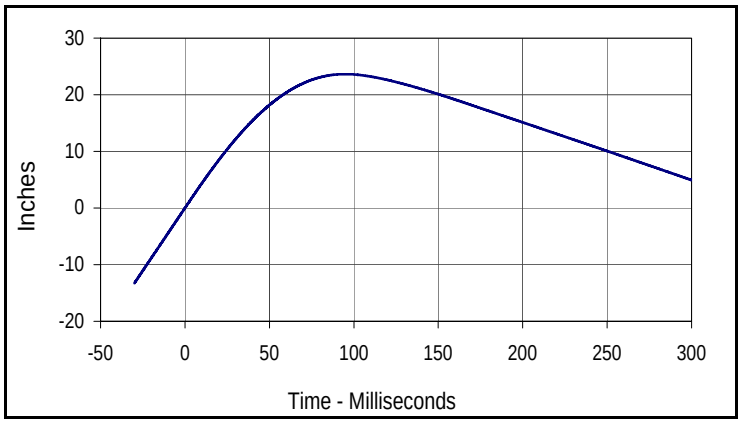
Curve Description			
Vehicle Center Tunnel Z			
CURNO	Type	SAE Class	Units
017	FIL	60	G's
Max	Time	Min	Time
5.5	73.8	-6.8	89.5



Curve Description			
Vehicle Center Tunnel Resultant			
CURNO	Type	SAE Class	Units
015	RES	60	G's
Max	Time	Min	Time
17.6	73.9	0.1	282.3



Curve Description			
Vehicle Center Tunnel X Velocity			
CURNO	Type	SAE Class	Units
015	IN1	180	MPH
Max	Time	Min	Time
25.2	1.1	-5.9	299.7



Curve Description			
Vehicle Center Tunnel X Displacement			
CURNO	Type	SAE Class	Units
015	IN2	180	Inches
Max	Time	Min	Time
23.6	95.0	0.0	0.0

APPENDIX C

SENSOR DATA TABLES

Sled Testing
Instrumentation Data Channel Assignments
Driver (Modified 50th) Percentile Male A.T.D. Serial Number 002
2/22/06
1995 Ford Taurus 4-Door Buck

CH.	LOCATION	AXIS	IDENT. NO.	DESCRIPTION	MFR	MODEL	UNITS
1	HEAD CG	X	KEAC086	Accel., 1/2 bridge	Endevco	7264-2000	G
2	HEAD CG	Y	KEAC087	Accel., 1/2 bridge	Endevco	7264-2000	G
3	HEAD CG	Z	KEAC088	Accel., 1/2 bridge	Endevco	7264-2000	G
4	UPPER NECK FORCE	X	GPUN02FX	Load cell, six axis neck	R. A. Denton	1716A	N
5	UPPER NECK FORCE	Y	GPUN02FY	Load cell, six axis neck	R. A. Denton	1716A	N
6	UPPER NECK FORCE	Z	GPUN02FZ	Load cell, six axis neck	R. A. Denton	1716A	N
7	UPPER NECK MOMENT	X	GPUN02MX	Load cell, six axis neck	R. A. Denton	1716A	Nm
8	UPPER NECK MOMENT	Y	GPUN02MY	Load cell, six axis neck	R. A. Denton	1716A	Nm
9	UPPER NECK MOMENT	Z	GPUN02MZ	Load cell, six axis neck	R. A. Denton	1716A	Nm
10	CHEST CG	X	KEAC014	Accel., 1/2 bridge	Endevco	7264-2000	G
11	CHEST CG	Y	KEAC010	Accel., 1/2 bridge	Endevco	7264-2000	G
12	CHEST CG	Z	KEAC017	Accel., 1/2 bridge	Endevco	7264-2000	G
13	LEFT FEMUR FORCE	N/A	FF1348	Load cell, Femur	R. A. Denton	2021A	N
14	RIGHT FEMUR FORCE	N/A	FF1347	Load cell, Femur	R. A. Denton	2021A	N
18	AIRBAG TRIGGER	N/A	TRIGG	Airbag Trigger	Karco	Trig01	%

Sled Testing
Instrumentation Data Channel Assignments
Vehicle Accelerometers
2/22/06
1995 Ford Taurus 4-Door Buck

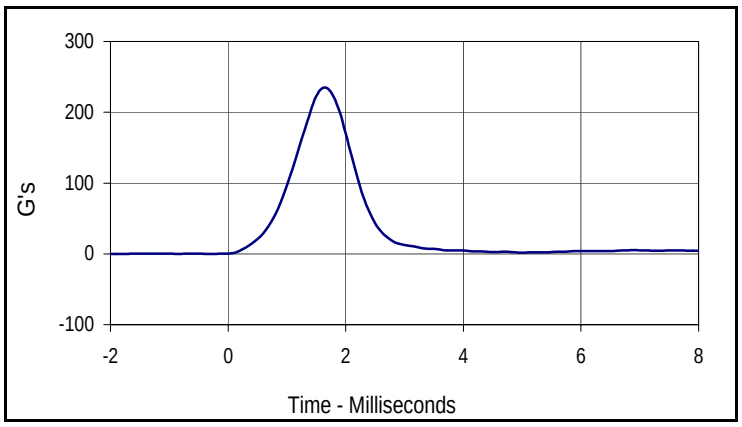
CH.	LOCATION	AXIS	IDENT. NO.	DESCRIPTION	MFR	MODEL	UNITS
15	CENTER TUNNEL	X	KETX5A	Accel., Vehicle block	I.C. Sensor	3031-500	G
16	CENTER TUNNEL	Y	KETX5B	Accel., Vehicle block	I.C. Sensor	3031-500	G
17	CENTER TUNNEL	Z	KETX5C	Accel., Vehicle block	I.C. Sensor	3031-500	G

APPENDIX D

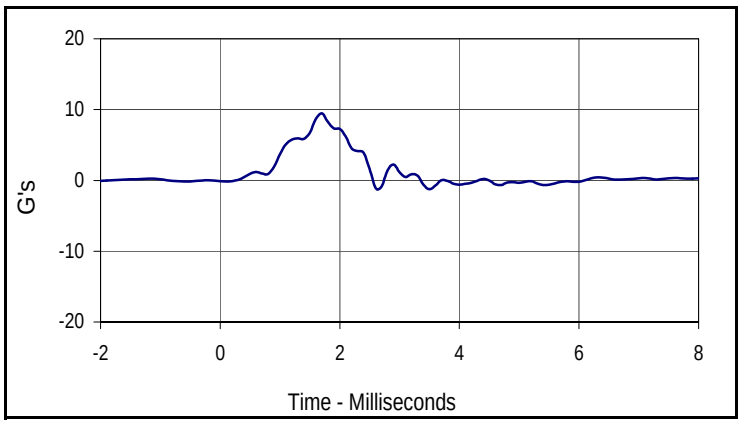
DUMMY CALIBRATION DATA

Test Program:	Hybrid III 50th Percentile Male Head Drop Test	Test Date:	2/8/06
ATD Serial No.:	002	Test I.D.:	HD02A

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	225.0 to 275.0	234.1	Pass
Peak Lateral Acceleration	G's	≤15.0	9.5	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
		Overall Test Results		Pass



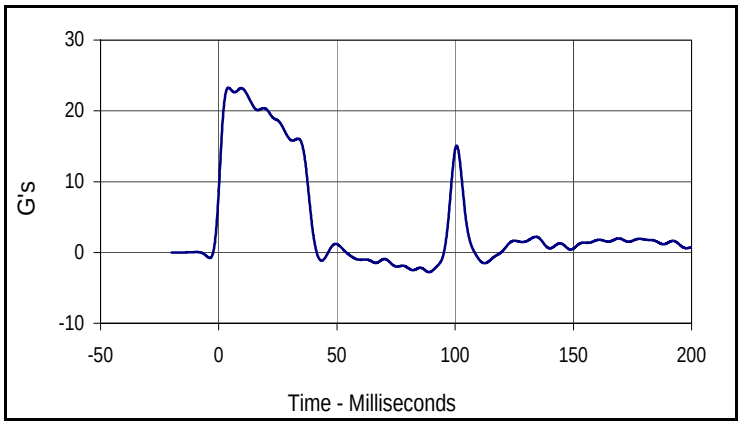
Curve Description			
Head Resultant			
CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
234.1	1.6	0.0	-1.9



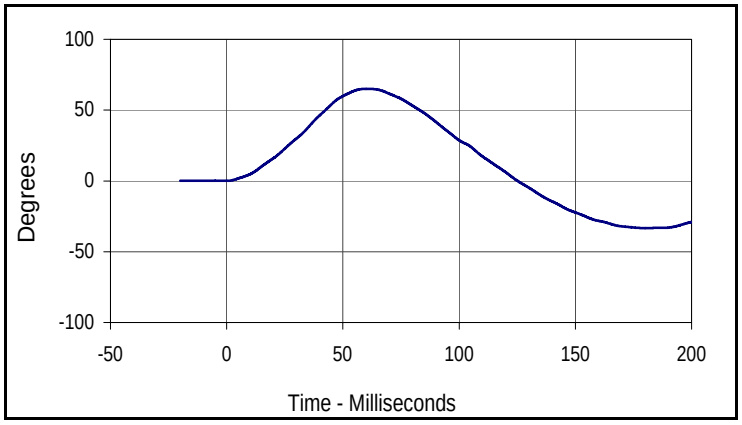
Curve Description			
Head Y			
CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
9.5	1.7	-1.3	3.5

Test Program:	Hybrid III 50th Percentile Male Neck Flexion Test	Test Date:	2/8/06
ATD Serial No.:	002	Test I.D.:	NF02A

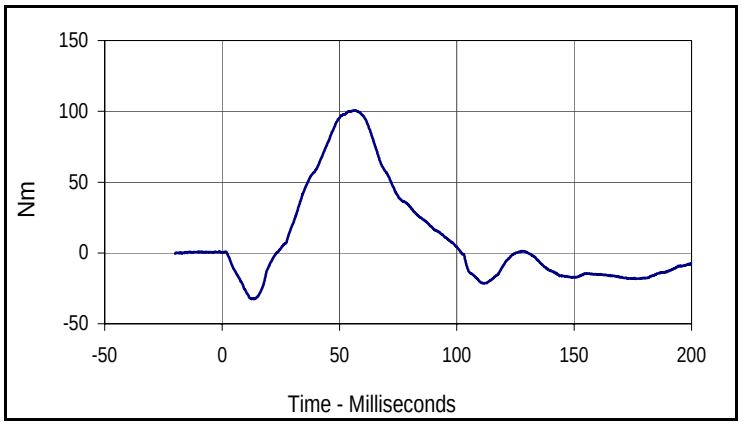
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	6.89 to 7.13	7.04	Pass
Pendulum Deceleration	10 Msec.	G's	22.5 to 27.5	23.2	Pass
	20 Msec.	G's	17.6 to 22.6	20.3	Pass
	30 Msec.	G's	12.5 to 18.5	16.0	Pass
Peak Pendulum Decel. after 30 Msec.		G's	≤ 29.0	16.1	Pass
Deceleration Decay, Time to Cross 5 G's		Msec.	34.0 to 42.0	39.1	Pass
Maximum "D" Plane Rotation	Max	Degrees	64.0 to 78.0	65.0	Pass
	Time	Msec.	57.0 to 64.0	60.3	Pass
"D" Plane Rotation Decay, Time To Zero Crossing		Msec.	113.0 to 128.0	125.2	Pass
Moment About Occ. Condyle	Max	Nm	84.1 to 108.5	100.6	Pass
	Time	Msec.	47.0 to 58.0	56.5	Pass
Positive Moment Decay, Time To Zero Crossing		Msec.	97.0 to 107.0	102.0	Pass
			Overall Test Results		Pass



Curve Description			
Pendulum Deceleration			
CURNO	Type	SAE Class	Units
001	FIL	60	G's
Max	Time	Min	Time
23.3	4.1	-2.8	89.0



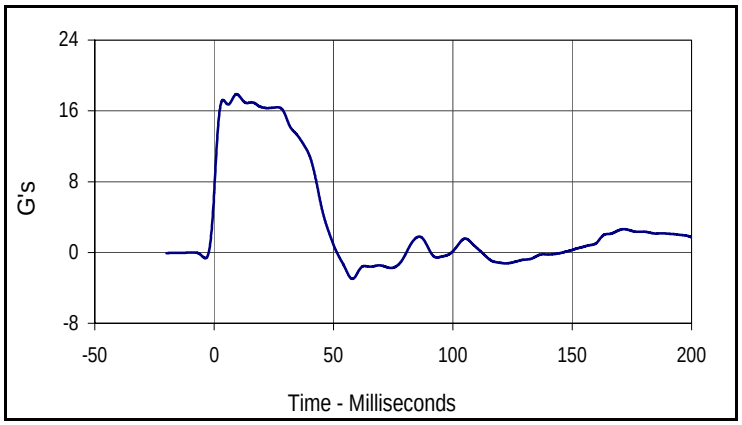
Curve Description			
"D" Plane Rotation			
CURNO	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
65.0	60.3	-33.3	180.4



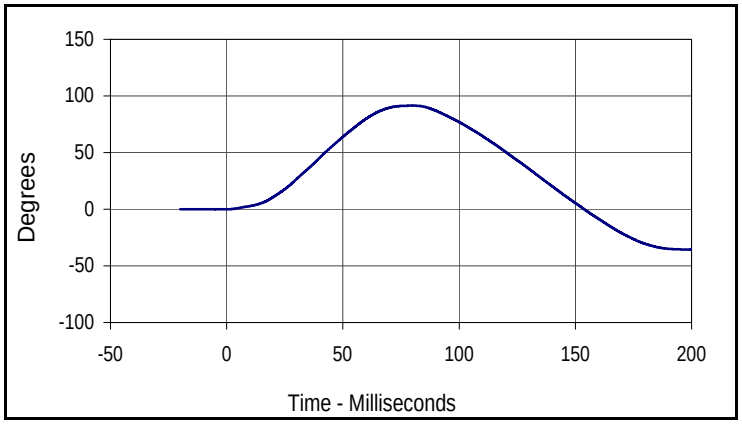
Curve Description			
Moment About Occipital Condyle			
CURNO	Type	SAE Class	Units
004	FIL	600	Nm
Max	Time	Min	Time
100.6	56.5	-32.6	12.7

Test Program:	Hybrid III 50th Percentile Male Neck Extension Test	Test Date:	2/8/06
ATD Serial No.:	002	Test I.D.:	NE02A

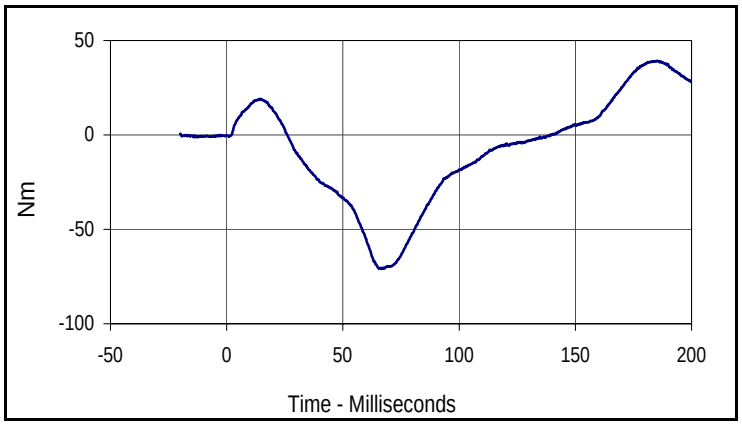
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	5.94 to 6.19	6.08	Pass
Pendulum Deceleration	10 Msec.	G's	17.2 to 21.2	17.8	Pass
	20 Msec.	G's	14.0 to 19.0	16.4	Pass
	30 Msec.	G's	11.0 to 16.0	15.4	Pass
Peak Pendulum Decel. after 30 Msec.		G's	≤ 22.0	15.4	Pass
Deceleration Decay, Time to Cross 5 G's		Msec.	38.0 to 46.0	45.2	Pass
Maximum "D" Plane Rotation	Max	Degrees	81.0 to 106.0	91.4	Pass
	Time	Msec.	72.0 to 82.0	80.1	Pass
"D" Plane Rotation Decay, Time To Zero Crossing		Msec.	147.0 to 174.0	153.8	Pass
Moment About Occ. Condyle	Max	Nm	-52.9 to- 79.9	-71.0	Pass
	Time	Msec.	65.0 to 79.0	66.7	Pass
Positive Moment Decay, Time To Zero Crossing		Msec.	120.0 to 148.0	139.2	Pass
			Overall Test Results		Pass



Curve Description			
Pendulum Deceleration			
CURNO	Type	SAE Class	Units
001	FIL	60	G's
Max	Time	Min	Time
17.9	9.4	-3.0	57.9



Curve Description			
"D" Plane Rotation			
CURNO	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
91.4	80.1	-35.5	200.0



Curve Description			
Moment About Occipital Condyle			
CURNO	Type	SAE Class	Units
004	FIL	600	Nm
Max	Time	Min	Time
39.4	185.2	-71.0	66.7

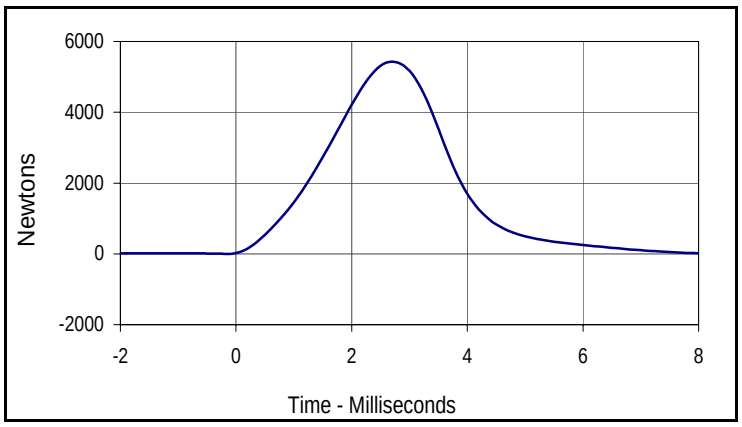
Test Program:	Hybrid III 50th Percentile Male Knee Impact Test	Test Date:	2/9/06
ATD Serial No.:	002	Test I.D.:	LK02A , RK02A

Left Knee

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
Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.09	Pass
Peak Probe Force	Newtons	4715 to 5782	5434	Pass
		Overall Test Results		Pass

Right Knee

Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.08	Pass
Peak Probe Force	Newtons	4715 to 5782	5533	Pass
		Overall Test Results		Pass



Curve Description			
Left Knee Probe Force			
CURNO	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
5434.0	2.7	-8.6	8.7

Curve Description			
Right Knee Probe Force			
CURNO	Type	SAE Class	Units
002	FIL	600	Newtons
Max	Time	Min	Time
5532.8	2.7	-10.3	8.7