FINAL REPORT NUMBER 201UI-MGA-07-02

SAFETY COMPLIANCE TESTING FOR FMVSS 201
Occupant Protection In Interior Impact
Upper Interior Head Impact Protection

FORD MOTOR CO.
2007 Ford Mustang, 2-Door Coupe Deluxe
NHTSA No. C70203

MGA RESEARCH CORPORATION
446 Executive Drive
Troy, Michigan 48083

Test Dates: July 31-August 2, 2007
Report Date: September 19, 2007

FINAL REPORT

PREPARED FOR:

U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
ENFORCEMENT
OFFICE OF VEHICLE SAFETY COMPLIANCE
1200 New Jersey Avenue, SE
West Building
4th Floor
WASHINGTON, D.C. 20590

Prepared By: Helen A. Kaleto
Helen A. Kaleto, Project Engineer

Helen A. Kaleto
Helen A. Kaleto, Project Manager

Approved By: P. Michaelli

Approval Date: October 17, 2007

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15. Supplementary Notes			
16. Abstract A compliance test series was conducted on the subject 2007 Ford Mustang, 2-Door Coupe Deluxe, NHTSA No. C70203, in accordance with the specifications of the Office of Vehicle Safety Compliance Test Procedure No. TP-201U-01 for the determination of FMVSS 201 compliance. The testing was conducted at MGA Research Corporation in Troy, Michigan on July 31-August 2, 2007. Test failures identified were as follows: None The data recorded indicates that the 2007 Ford Mustang, 2-Door Coupe Deluxe, tested appears to comply with the upper interior requirements of FMVSS 201.			
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1.0 PURPOSE OF COMPLIANCE TEST

The purpose of this head impact compliance test was to determine whether the subject vehicle, a 2007 Ford Mustang, 2-Door Coupe Deluxe, meets the performance requirements of FMVSS 201, Occupant Protection in Interior Impact - Upper Interior Head Impact Protection.

Tests were conducted on July 31-August 2, 2007 on a 2007 Ford Mustang, 2-Door Coupe Deluxe, manufactured by Ford Motor Company.

All tests were conducted in accordance with the U. S. Department of Transportation, National Highway Traffic Safety Administration's Laboratory Test Procedure TP-201U-01 dated April 3, 1998 and the corresponding MGA Research Corporation's FMVSS 201U procedure number MGATP201U_FRAME#2 dated July 1, 2005.

All tests were conducted at MGA Research Corporation in Troy, Michigan and were performed by MGA engineers and technicians. The FMVSS 201U impactor test machine was used to conduct the testing. Target locations were determined by using a Coordinate Measurement Machine in conjunction with the MGA EZ-Target™ program and MGA procedure MGATP201U_Test Series dated July 1, 2005.

2.0 COMPLIANCE TEST DATA SUMMARY

The 2007 Ford Mustang, 2-Door Coupe Deluxe, was equipped with A, B, and rear-pillars, a fixed seat belt anchorage on each B-pillar, and an overhead console located in the center of the front upper roof.

Upon completion of targeting the test vehicle, twelve (12) targets were chosen to be impacted based upon engineering judgment and certification test data provided by the manufacturer. The twelve (12) targets chosen were:

AP1	BP1	RP2	UR1@Front Corner
AP2	BP2	SR2(A)	UR3@Mid Side Rail
AP3	BP3	SR2(B)	UR4@BPR

The 2007 Ford Mustang, 2-Door Coupe Deluxe, tested appears to comply with the upper interior performance criteria for FMVSS 201. The HIC(d) measured using the Part 572L (Free Motion Headform) was below 1000 for each tested component.

TABLE 2-1

SUMMARY TABLE OF TEST RESULTS

VEH. MOD YR/MAKE/MODEL/BODY: 2007 Ford Mustang, 2-Door Coupe Deluxe

VEH. NHTSA NO.: C70203 VIN: 1ZVFT80N875197652 COLOR: Blue

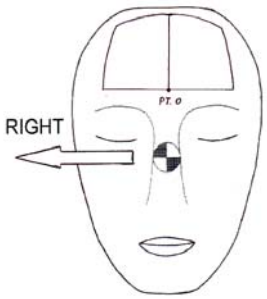
VEH. BUILD DATE: June, 2006 TEST DATES: July 31-August 2, 2007

TEST LABORATORY: MGA Research Corporation

OBSERVERS: Helen A. Kaleto, Louis Campbell

TARGET	VEHICLE SIDE	HORIZONTAL ANGLE (deg)	VERTICAL ANGLE (deg)	VELOCITY (kph)	HIC(d)	FMH HIC	IMPACT ON FMH (mm)	
							Above	Left/Right
AP1	Right	107	30	24.0	404	315	15	10 Left
AP2	Left	206	49	23.9	441	364	11	1 Right
AP3	Right	155	50	24.2	488	427	6	1 Left
BP1	Left	270	48	22.1	617	598	7	2 Right
BP2	Left	270	0	23.6	710	721	6	11 Left
BP3	Right	90	3	23.8	678	679	12	0
RP2	Left	280	13	22.6	286	159	13	0
SR2(A)	Left	270	50	23.6	752	776	13	4 Right
SR2(B)	Left	270	42	24.1	851	908	11	20 Left
UR1@ Front Corner	Left	270	45	23.4	506	450	34	22 Right
UR3 @ Mid Side Rail	Right	90	41	23.3	651	642	12	3 Right
UR4@BPR	Right	90	50	23.8	714	725	4	3 Left

Above and left/right refers to the position relative to reference pt. 0 where the target made contact with the Free Motion Headform. See the diagram below for details.



POST TEST COMMENTS:

The following description lists any post-test damage or other test observations for each target.

AP1 Right: A-Pillar/side rail trim displaced.

AP2 Left: A-Pillar displacement.

AP3 Right: A-Pillar/side rail trim displaced.

BP3 Right: D-ring cover displacement.

SR2(A) Left: A-Pillar/side rail trim displacement.

UR1@Front Corner Left: A-Pillar/side rail trim displacement.

REMARKS:

The targets listed were impacted in the following order:

Left: AP2, UR1@Front Corner, SR2(A), SR2(B), BP2, BP1, RP2

Right: AP3, AP1, UR3@Mid Side Rail, BP3, UR4@BPR

The 150 mm rule was observed for targets horizontal to each other and the 200 mm rule was observed for vertical components.

RECORDED BY: Louis Campbell DATE: August 2, 2007

APPROVED BY: Helen A. Kaleto

TABLE 2-2

GENERAL TEST AND VEHICLE PARAMETER DATA

VEH. MOD YR/MAKE/MODEL/BODY: 2007 Ford Mustang, 2-Door Coupe Deluxe

VEH. NHTSA NO.: C70203 VIN: 1ZVFT80N875197652 COLOR: Blue

VEH. BUILD DATE: June, 2006 TEST DATES: July 31-August 2, 2007

TEST LABORATORY: MGA Research Corporation

OBSERVERS: Helen A. Kaleto, Louis Campbell

INTERIOR TRIM INFORMATION: A, B, and rear-pillars, a fixed seat belt anchorage on each B-pillar, and an overhead console located in the center of the front upper roof.

SUNROOF INFORMATION:

Installed: _____Yes __X__ No

Operation: _____Electric ____ Manual

SIDE RAIL CURTAIN AIRBAG INFORMATION:

Installed: _____Yes __X__ No

ROLL-BAR INFORMATION:

Installed: _____Yes __X__ No

Padded: _____Yes __X__ No

Braces: _____Yes __X__ No

GENERAL INFORMATION:

Date Received: 06/05/07; Odometer Reading 194.8 miles

DATA FROM VEHICLE'S CERTIFICATION LABEL:

Vehicle Manufactured By: Ford Motor Co.

Date of Manufacture: June, 2006; VIN: 1ZVFT80N875197652

GVWR: 4340 lb; GAWR FRONT: 2105 lb;

GAWR REAR: 2275 lb

DATA FROM TIRE PLACARD:

Tire Pressure with Maximum Capacity Vehicle Load:

FRONT: 240 kPa REAR: 240 kPa

Recommended Tire Size: P215/65R16

Recommended Cold Tire Pressure:

FRONT: 240 kPa REAR: 240 kPa

Size of Tire on Test Vehicle: P215/65R16

Type of Spare Tire: T155/70R17; Space Saver: X; Standard_____

VEHICLE CAPACITY DATA:

Type of Front Seats: Bench__; Bucket X; Split Bench __

Number of Occupants: Front 2; Rear 2; TOTAL 4

VEHICLE CAPACITY WEIGHT:

Vehicle Capacity Weight (VCW) = 326 kg

No. of Occupants x 68 kg = 272 kg

Rated Cargo/Luggage Weight (RCLW) = 54 kg (difference)

WEIGHT OF TEST VEHICLE AS DELIVERED AT LABORATORY: (with maximum fluids)

Right Front =	410.0 kg	Right Rear =	344.5 kg
Left Front =	414.5 kg	Left Rear =	341.5 kg
TOTAL FRONT =	824.5 kg	TOTAL REAR =	686.0 kg
% Total Weight =	54.6 %	% Total Weight =	45.4 %

TOTAL DELIVERED WEIGHT = 1510.5 kg

CALCULATION OF VEHICLE'S TARGET TEST WEIGHT:

Total Delivered Weight = 1510.5 kg

Max. Test Cargo/Luggage Weight = 54.0 kg

Target Test Weight = 1564.5 kg

WEIGHT OF TEST VEHICLE FULLY LOADED:

Right Front =	403.5 kg	Right Rear =	377.0 kg
Left Front =	409.5 kg	Left Rear =	374.0 kg
TOTAL FRONT =	813.0 kg	TOTAL REAR =	751.0 kg
% Total Weight =	52.0 %	% Total Weight =	48.0 %

TOTAL TEST WEIGHT = 1564.0 kg

Weight of ballast secured in vehicle's cargo area = 52.8 kg

TEST VEHICLE ATTITUDE:

AS DELIVERED: Right Front 766 mm; Left Front 757 mm;
Right Rear 764 mm; Left Rear 769 mm;
Pitch Angle at Right Door Sill = 1.6 Rear is higher
Pitch Angle at Left Door Sill = 1.0 Rear is higher
Roll Angle at Front Bumper = 0.3 Right is higher
Roll Angle at Rear Bumper = 0.1 Right is higher

FULLY LOADED: Right Front 765 mm; Left Front 758 mm;
Right Rear 751 mm; Left Rear 759 mm;
Pitch Angle at Right Door Sill = 1.3 Rear is higher
Pitch Angle at Left Door Sill = 0.7 Rear is higher
Roll Angle at Front Bumper = 0.3 Right is higher
Roll Angle at Rear Bumper = 0.0

AS TARGETED: Right Front 922 mm; Left Front 920 mm;
Right Rear 916 mm; Left Rear 921 mm;
Pitch Angle at Right Door Sill = 1.3 Rear is higher
Pitch Angle at Left Door Sill = 0.7 Rear is higher
Roll Angle at Front Bumper = 0.3 Right is higher
Roll Angle at Rear Bumper = 0.1 Right is higher

AS TESTED ON RIGHT SIDE:

Pitch Angle at Right Door Sill =	1.3 Rear is higher
Pitch Angle at Left Door Sill =	0.7 Rear is higher
Roll Angle at Front Bumper =	0.3 Right is higher
Roll Angle at Rear Bumper =	0.0

AS TESTED ON LEFT SIDE:

Pitch Angle at Right Door Sill =	1.3 Rear is higher
Pitch Angle at Left Door Sill =	0.7 Rear is higher
Roll Angle at Front Bumper =	0.3 Right is higher
Roll Angle at Rear Bumper =	0.1 Right is higher

VEHICLE WHEELBASE = 2715 mm

REMARKS: The seat travel distance was measured to be 237 mm for the driver front seat and 237 mm for the passenger front seat.

RECORDED BY: Louis Campbell DATE: July 30, 2007

APPROVED BY: Helen A. Kaleto

TABLE 2-3

HORIZONTAL IMPACT ANGLE RANGE FOR A AND B PILLARS

VEH. MOD YR/MAKE/MODEL/BODY: 2007 Ford Mustang, 2-Door Coupe Deluxe

VEH. NHTSA NO.: C70203 VIN: 1ZVFT80N875197652 COLOR: Blue

VEH. BUILD DATE: June, 2006 TEST DATES: July 31-August 2, 2007

TEST LABORATORY: MGA Research Corporation

OBSERVERS: Helen A. Kaleto, Louis Campbell

HORIZONTAL IMPACT ANGLE RANGE FOR A AND B PILLARS

	HORIZONTAL ANGLE SPECIFIED RANGE	MINIMUM HORIZONTAL ANGLE	MAXIMUM HORIZONTAL ANGLE
A-PILLAR	L 195º-255º	L 206.0º	L 253.2º
	R 105º-165º	R 106.8º	R 155.0º
B-PILLAR	L 195º-345º	L 247.6º	L 319.2º
	R 15º-165º	R 40.0º	R 112.1º

AS DETERMINED USING THE PROCEDURES SPECIFIED IN S8.13.4.1

REMARKS:

RECORDED BY: Louis Campbell DATE: July 30,2007

APPROVED BY: Helen A. Kaleto

TABLE 2-4

VERTICAL IMPACT ANGLE RANGES

VEH. MOD YR/MAKE/MODEL/BODY: 2007 Ford Mustang, 2-Door Coupe Deluxe

VEH. NHTSA NO.: C70203 VIN: 1ZVFT80N875197652 COLOR: Blue

VEH. BUILD DATE: June, 2006 TEST DATES: July 31-August 2, 2007

TEST LABORATORY: MGA Research Corporation

OBSERVERS: Helen A. Kaleto, Louis Campbell

VERTICAL IMPACT ANGLE RANGES

		VERTICAL ANGLE SPECIFIED RANGE	MINIMUM VERTICAL ANGLE	MAXIMUM VERTICAL ANGLE
FRONT HEADER	FH1	L 0º-50º	L 0º	L 50º
		R 0º-50º	R 0º	R 50º
	FH2	L 0º-50º	L 0º	L 50º
		R 0º-50º	R 0º	R 50º
SIDE RAIL	SR1	L 0º-50º	L 0º	L 49º
		R 0º-50º	R 0º	R 48º
	SR2A	L 0º-50º	L 0º	L 50º
		R 0º-50º	R 0º	R 49º
	SR2B	L 0º-50º	L 0º	L 42º
		R 0º-50º	R 0º	R 44º
REAR HEADER	RH	L 0º-50º	L 0º	L 50º
		R 0º-50º	R 0º	R 50º
A-PILLAR	AP1	L -5º-50º	L -5º	L 31º
		R -5º-50º	R -5º	R 30º
	AP2	L -5º-50º	L -5º	L 49º
		R -5º-50º	R -5º	R 49º
	AP3	L -5º-50º	L -5º	L 50º
		R -5º-50º	R -5º	R 50º

		VERTICAL ANGLE SPECIFIED RANGE	MINIMUM VERTICAL ANGLE	MAXIMUM VERTICAL ANGLE
B-PILLAR	BP1	L -10º-50º	L -10º	L 48º
		R -10º-50º	R -10º	R 46º
	BP2*	L 0º-50º	L 0º	L 0º
		R 0º-50º	R 0º	R 0º
	BP3	L -10º-50º	L -10º	L 3º
		R -10º-50º	R -10º	R -3º
	BP4	L -10º-50º	L -10º	L 3º
		R -10º-50º	R -10º	R -3º
REAR PILLAR	RP1	L -10º-50º	L -10º	L 37º
		R -10º-50º	R -10º	R 39º
	RP2	L -10º-50º	L -10º	L 13º
		R -10º-50º	R -10º	R 13º
UPPER ROOF 1		0º-50º	0º	45º
UPPER ROOF 2		0º-50º	0º	48º
UPPER ROOF 3		0º-50º	0º	41º
UPPER ROOF 4		0º-50º	0º	50º

As determined using the Procedures specified in S8.13.4.2. *Target BP2 is a seat belt anchorage location.

RECORDED BY: Louis Campbell DATE: July 30, 2007

APPROVED BY: Helen A. Kaleto

TABLE 2-5

TARGET MEASUREMENTS

VEH. MOD YR/MAKE/MODEL/BODY: 2007 Ford Mustang, 2-Door Coupe Deluxe

VEH. NHTSA NO.: C70203 VIN: 1ZVFT80N875197652 COLOR: Blue

VEH. BUILD DATE: June, 2006 TEST DATES: July 31-August 2, 2007

TEST LABORATORY: MGA Research Corporation

OBSERVERS: Helen A. Kaleto, Louis Campbell

Measurement	Description	Left Side	Right Side
M	Seat Fore/Aft Travel (Front seats)	237 mm	237 mm
Tº	Horizontal < {CG-F1 (Left Seat) to (Right A-Pillar)}	106.8 º	--
A1º	360º - Tº	253.2º	--
Wº	Horizontal < {CG-2 (Left Seat) to (Left A-Pillar)}	206.0º	--
A2º	A2º = Wº	206.0º	--
Uº	Horizontal < {CG-2 (Left Seat) to (Left B-Pillar)}	319.2º	--
B1º	B1º = Uº	319.2º	--
Vº	Horizontal < {CG-R (Left Seat) to (Left B-Pillar)}	247.6º	--
B2º	B2º = Vº	247.6º	--
Wº (right)	Horizontal < {CG-F2 (Right Seat) to (Right A-Pillar)}	--	155.0º
A1º (right)	A1º (right) = Wº (right)	--	155.0º
T º (right)	Horizontal < {CG-F1 (Right Seat) to (Left A-Pillar)}	--	253.2º
A2º (right)	360º-Tº (right)	--	106.8º
V º (right)	Horizontal < {CG-R (Right Seat) to (Right B-Pillar)}	--	112.1º
B1º (right)	B1º (right) = Vº (right)	--	112.1º
U º (right)	Horizontal < {CG-F2 (Right Seat) to (Right B-Pillar)}	--	40.0º
B2º (right)	B2º (right) = Uº (right)	--	40.0º
J	A-Pillar {(Plane 3) - (Plane 5)}	260.8 mm	260.4 mm
J/2	J ÷ 2	130.4 mm	130.2 mm
D1	Upper Roof {(Plane A) - (Plane B)}	1206.9 mm	
D1/2	D1 ÷ 2	603.5 mm	
D2	Upper Roof {(Plane C) - (Plane D)}	1311.1 mm	

Measurement	Description	Left Side	Right Side
D2/2	D2 ÷ 2	655.6 mm	
.35D1	.35 x D1	422.4 mm	
.35D2	.35 x D2	458.9 mm	
N	B-Pillar {(BPR) - (lowest point on daylight opening forward of B-Pillar)}	297.1 mm	296.4 mm
N/2	B-Pillar {(BP3) - (lowest point on daylight opening forward of B-Pillar)}	148.6 mm	148.2 mm
N/4	B-Pillar {(BP4) - (lowest point on daylight opening forward of B-Pillar)}	74.3 mm	74.1 mm
D	R-Pillar (Point 7 – Point M)	635.0 mm	630.0 mm
3D/7	3*D / 7	272.1 mm	270.0 mm

As determined using the Procedures specified in S10.1-10.13.

SgRP Locations (world coordinates)						
	Left (mm)			Right (mm)		
	x	y	z	x	y	z
Front	1994.9	-370.0	760.5	1994.3	370.0	760.0
Rear	2687.5	-287.0	785.7	2687.0	289.0	785.3

SgRP Locations (vehicle coordinates)						
	Left (mm)			Right (mm)		
	x	y	z	x	y	z
Front	3042.7	-370.0	615.7	3042.7	370.0	615.7
Rear	3735.7	-288.0	640.3	3735.7	288.0	640.3

CG Locations (world coordinates)						
	Left (mm)			Right (mm)		
	x	y	z	x	y	z
CGF1	1917.9	-370.0	1420.5	1917.3	370.0	1420.0
CGF2	2154.9	-370.0	1420.5	2154.3	370.0	1420.0
CGR	2847.5	-287.0	1445.7	2847.0	289.0	1445.3

REFERENCE FOR VEHICLE COORDINATE SYSTEM (measured in millimeters):

Passenger side upper door striker (x, y, z) = 3466.9, 778.6, 843.9

Driver side upper door striker (x, y, z) = 3466.9, -778.6, 843.9

Driver front outboard seat bolt hole (x, y, z) = 2712.5, -585.6, 410.4

REMARKS:

RECORDED BY: Louis Campbell DATE: July 30, 2007

APPROVED BY: Helen A. Kaleto

TABLE 2-6

SUMMARY OF TARGETING RESULTS

VEH. MOD YR/MAKE/MODEL/BODY: 2007 Ford Mustang, 2-Door Coupe Deluxe

VEH. NHTSA NO.: C70203 VIN: 1ZVFT80N875197652 COLOR: Blue

VEH. BUILD DATE: June, 2006 TEST DATES: July 31-August 1-2, 2007

TEST LABORATORY: MGA Research Corporation

OBSERVERS: Helen A. Kaleto, Louis Campbell

SUMMARY OF TARGETING RESULTS								
Target	**Location (mm)**			**Horizontal Angle (deg)**	**Vertical Angle (deg)**	**Relocation (Yes/No)**	**Extension (# of 25 mm Spheres)**	**Impact (Yes/No)**
	x	**y**	**Z**					
A-Pillar Left Side								
AP1	2809.4	-554.5	1384.2	--	--	Yes	--	--
REL	2808.3	-571.7	1342.3	253	31	--	2	No
AP2	2715.7	-605.9	1296.9	206	49	No	--	Yes
AP3	2624.6	-624.1	1254.4	206	50	No	--	No
A-Pillar Right Side								
AP1	2806.7	556.1	1382.1	--	--	Yes	--	--
REL	2855.6	569.3	1353.9	107	30	--	2	Yes
AP2	2714.5	605.3	1295.1	155	49	No	--	No
AP3	2624.7	627.0	1252.2	155	50	No	--	Yes
B-Pillar Left Side								
BP1	3711.2	-466.3	1391.1	270	48	No	--	Yes
BP2	3599.8	-613.5	1237.6	270	0	No	--	Yes
BP3	3523.9	-662.2	1241.8	--	--	Yes	--	--
REL	3579.2	-612.5	1240.8	270	3	--	3	No
BP4	3713.7	-671.1	1168.2	270	-3	No	--	No
B-Pillar Right Side								
BP1	3707.8	470.4	1388.6	90	46	No	--	No
BP2	3599.3	614.9	1235.9	90	0	No	--	No
BP3	3525.8	662.9	1240.7	--	--	Yes	--	--

SUMMARY OF TARGETING RESULTS								
Target	Location (mm)			Horizontal Angle (deg)	Vertical Angle (deg)	Relocation (Yes/No)	Extension (# of 25 mm Spheres)	Impact (Yes/No)
	x	y	Z					
REL	3581.5	614.4	1239.3	90	3	--	3	Yes
BP4	3711.8	672.2	1167.1	90	-3	No	--	No
Rear Pillar Left Side								
RP1	3760.0	-539.3	1363.0	--	--	Yes	--	--
REL	3762.3	-515.3	1364.9	270	37	--	1	No
RP2	4192.3	-600.1	1214.4	--	--	Yes	--	--
REL	4030.6	-576.3	1284.7	280	13	--	7	Yes
Rear Pillar Right Side								
RP1	3777.8	551.6	1354.7	--	--	Yes	--	--
REL	3783.1	532.0	1347.7	90	39	--	1	No
RP2	4200.5	607.2	1205.1	--	--	Yes	--	--
REL	4047.2	578.9	1278.2	80	13	--	7	No
Front Header Left Side								
FH1	2753.1	-439.7	1410.8	180	50	--	--	No
FH2	2745.8	-290.2	1421.3	180	50	--	--	No
Front Header Right Side								
FH1	2756.1	447.8	1406.5	180	50	--	--	No
FH2	2744.1	297.6	1418.8	180	50	--	--	No
Side Rail Left Side								
SR1	2959.0	-530.1	1411.1	270	49	No	--	No
SR2A	3110.0	-532.6	1421.3	270	50	No	--	Yes
SR2B	3410.9	-543.9	1397.5	--	--	Yes	--	--
REL	3115.2	-553.7	1402.3	270	42	--	1	Yes
Side Rail Right Side								
SR1	2956.0	534.8	1407.8	90	48	No	--	No
SR2A	3106.2	537.3	1416.8	90	49	No	--	No
SR2B	3407.2	544.8	1396.2	--	--	Yes	--	--
REL	3105.5	556.3	1399.7	90	44	--	1	No

SUMMARY OF TARGETING RESULTS								
Target	**Location (mm)**			**Horizontal Angle (deg)**	**Vertical Angle (deg)**	**Relocation (Yes/No)**	**Extension (# of 25 mm Spheres)**	**Impact (Yes/No)**
	x	**y**	**Z**					
Rear Header Left Side								
RH	3766.7	-287.6	1426.3	0	50	No	--	No
Rear Header Right Side								
RH	3769.6	289.5	1423.4	0	50	No	--	No
Upper Roof Left Side								
UR1@ Front Corner	2874.7	-429.7	1443.2	270	45	No	--	Yes
UR2 Fore of B-Pillar	3524.9	-445.2	1448.6	270	48	No	--	No
Upper Roof Right Side								
UR3@ Mid Side Rail	3272.8	451.4	1455.4	90	41	No	--	Yes
UR4@BPR	3687.0	445.5	1403.9	90	50	No	--	Yes

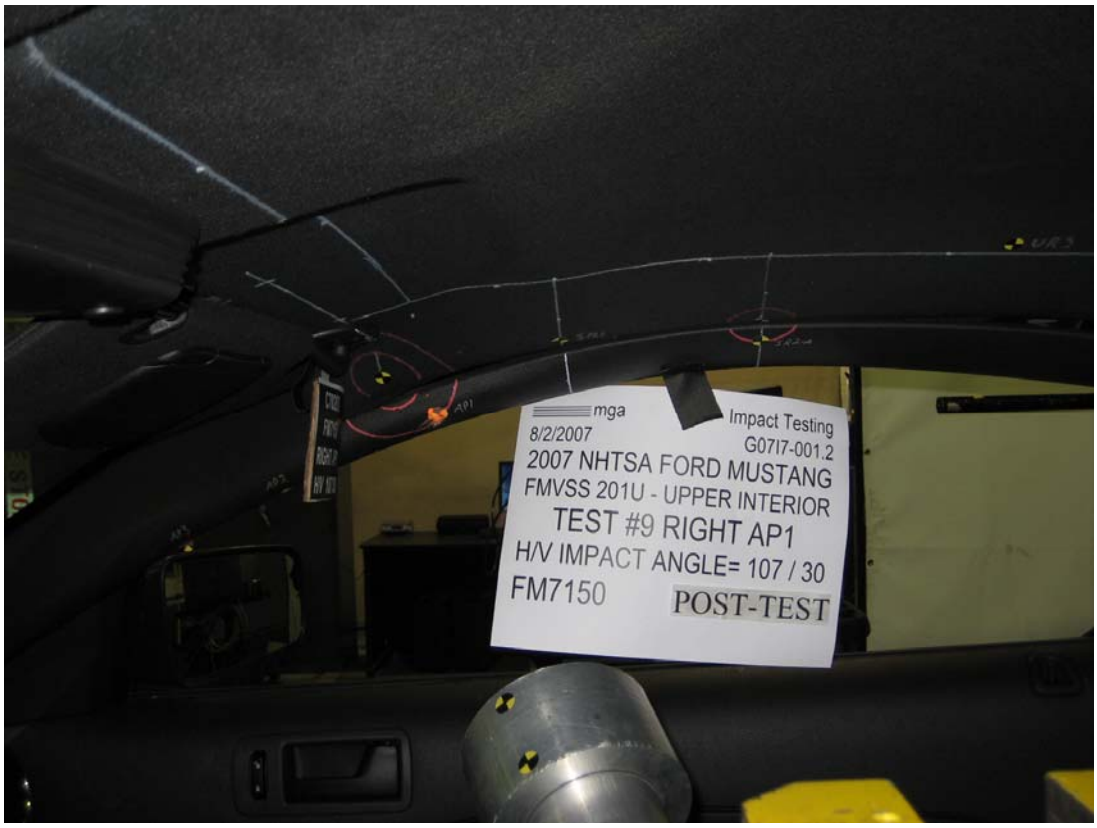
As determined using the Procedures specified in S10.1-10.13.

REMARKS:

RECORDED BY: Louis Campbell DATE: July 30, 2007

APPROVED BY: Helen A. Kaleto

3.0 TEST DATA (Including Acceleration and Velocity Plots)


mga
Impact Testing
8/2/2007
G07I7-001.2
2007 NHTSA FORD MUSTANG
FMVSS 201U - UPPER INTERIOR
TEST #9 RIGHT AP1
H/V IMPACT ANGLE= 107 / 30
FM7150
POST-TEST


mga
Impact Testing
8/2/2007
G07I7-001.2
2007 NHTSA FORD MUSTANG
FMVSS 201U - UPPER INTERIOR
TEST #9 RIGHT AP1
H/V IMPACT ANGLE= 107 / 30
FM7150
POST-TEST

SUMMARY OF FMVSS 201U TEST

JOB/NHTSA NO: G07I7-001.2 VEHICLE YR/MAKE/MODEL:2007/NHTSA/Ford Mustang

GENERAL TEST PARAMETERS:

Test Number:#9

Target (Vehicle Side): AP1 Right

Temperature:22C

MGA Test Reference No.:FM7150

Humidity:53%

Approach Horizontal Angles:107º

Time of Test:9:05:52 AM

Approach Vertical Angles:30º

FMH Serial No:[035]

Additional Description: 2 Relocations

TEST RESULTS:

HIC(d)	HIC	Δt (msec)	Velocity (kph)	Impact location on FMH (mm)	
				Above Pt. O	Left/Right Pt. O
404	315	7.7	24.0	15	10 Left

INSTRUMENTATION INFORMATION: (all accelerometers are Endevco 7264-2000)

Axis	Channel	Serial No.	DLR Value	ΔV Pre-Test	ΔV Post-Test
X	5	J22664	-94.161	0.78	0.78
Y	6	J35919	97.442	0.80	0.80
Z	7	J35924	93.891	0.81	0.81

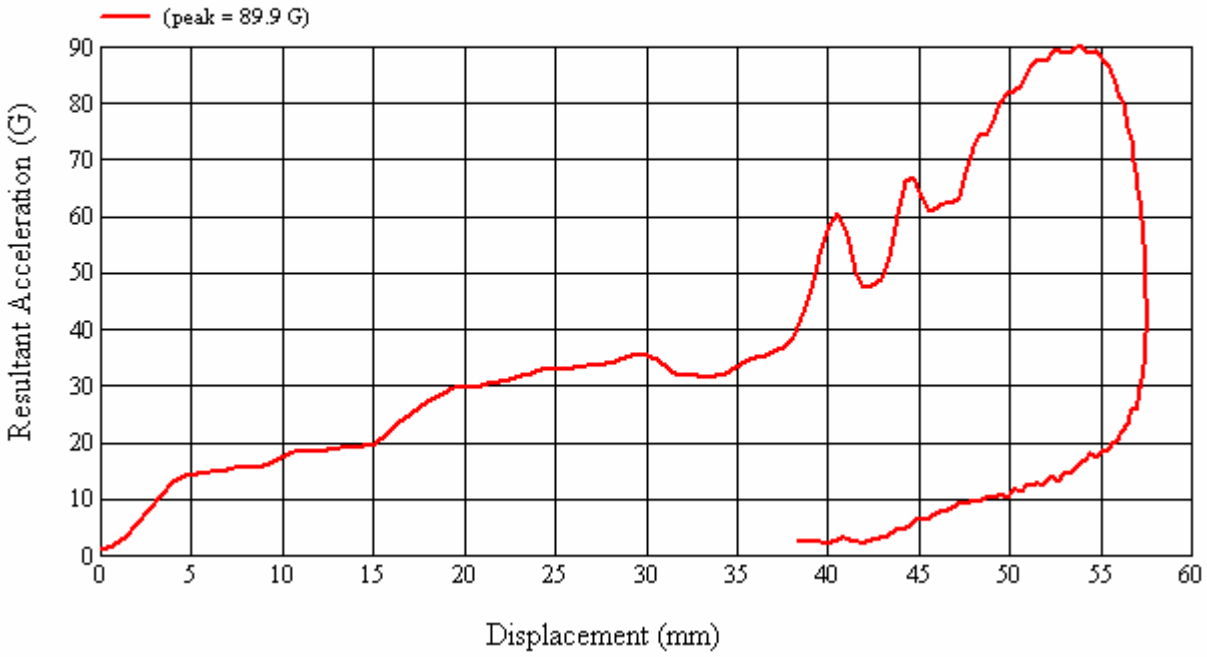
REMARKS (Summary of test, damage, non-compliance, invalid test, etc.):

A-pillar/side rail trim displaced.

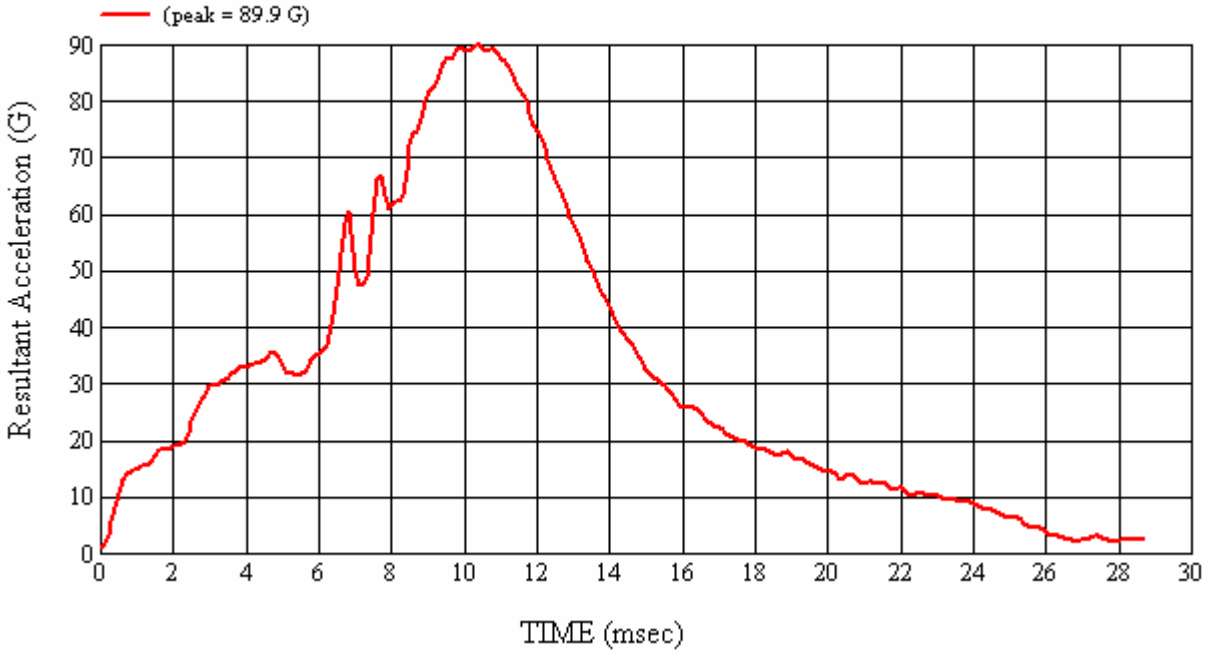
Recorded By: _____ Approved By*: _____ Date: 8/2/2007

*Only necessary for NHTSA (Government) Compliance testing.

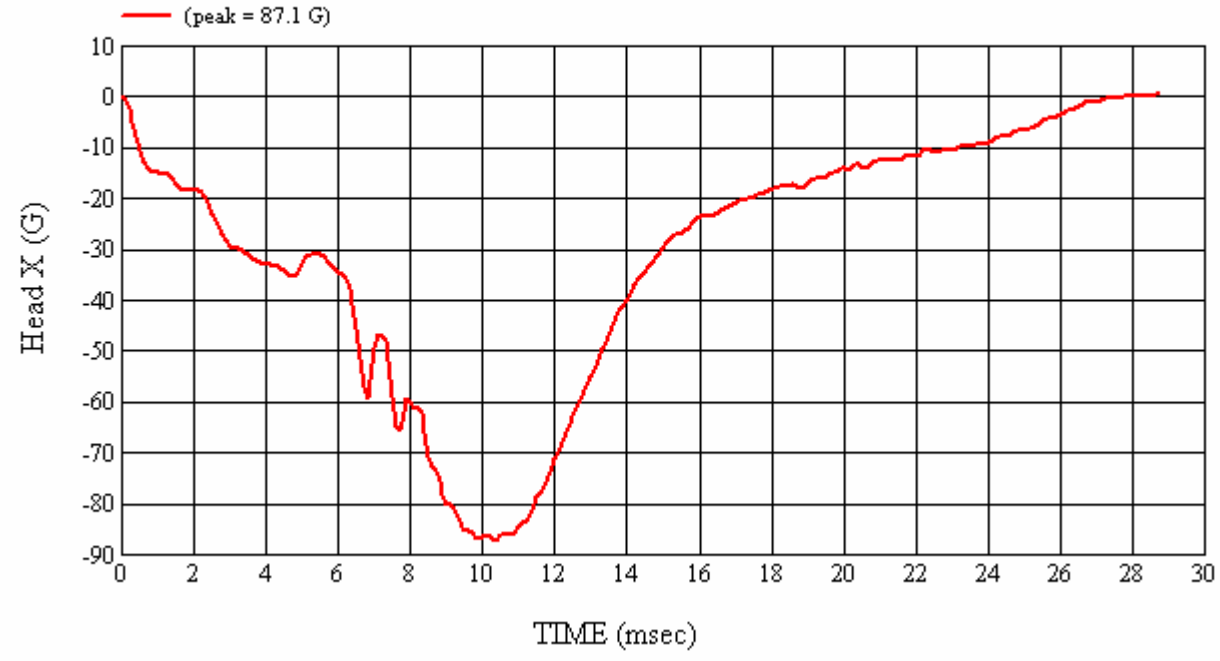
MGA Test #: FM7150 Target Location: AP1, Right Side Test Date: 8/2/2007



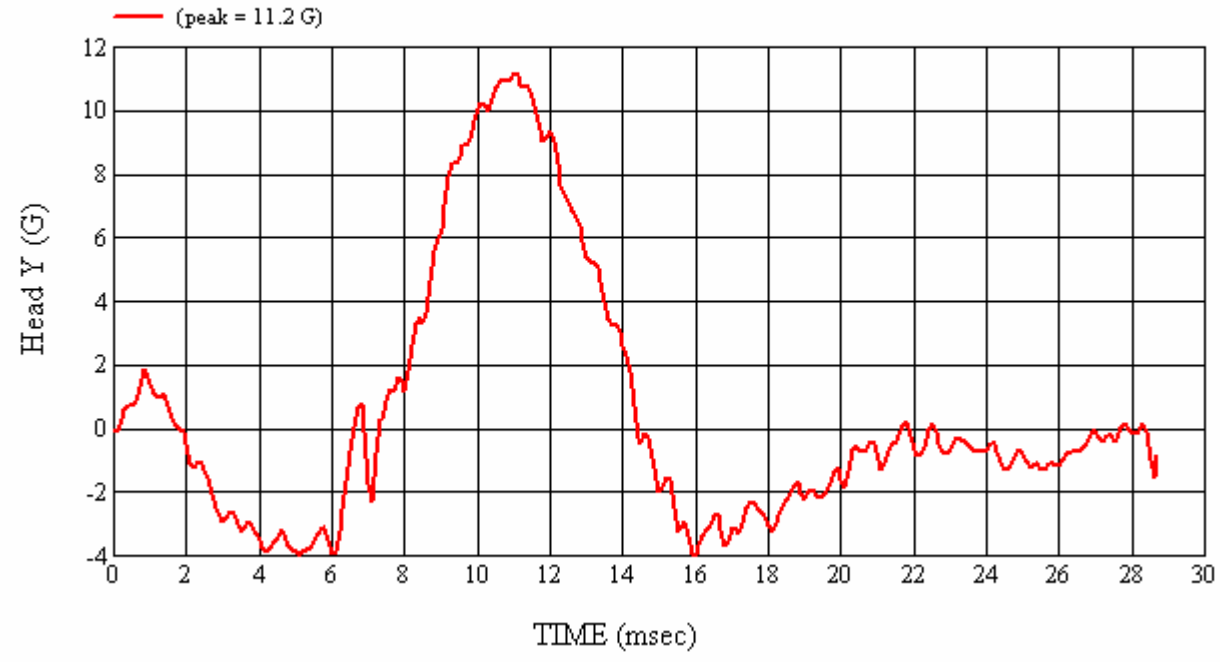
Test #FM7150



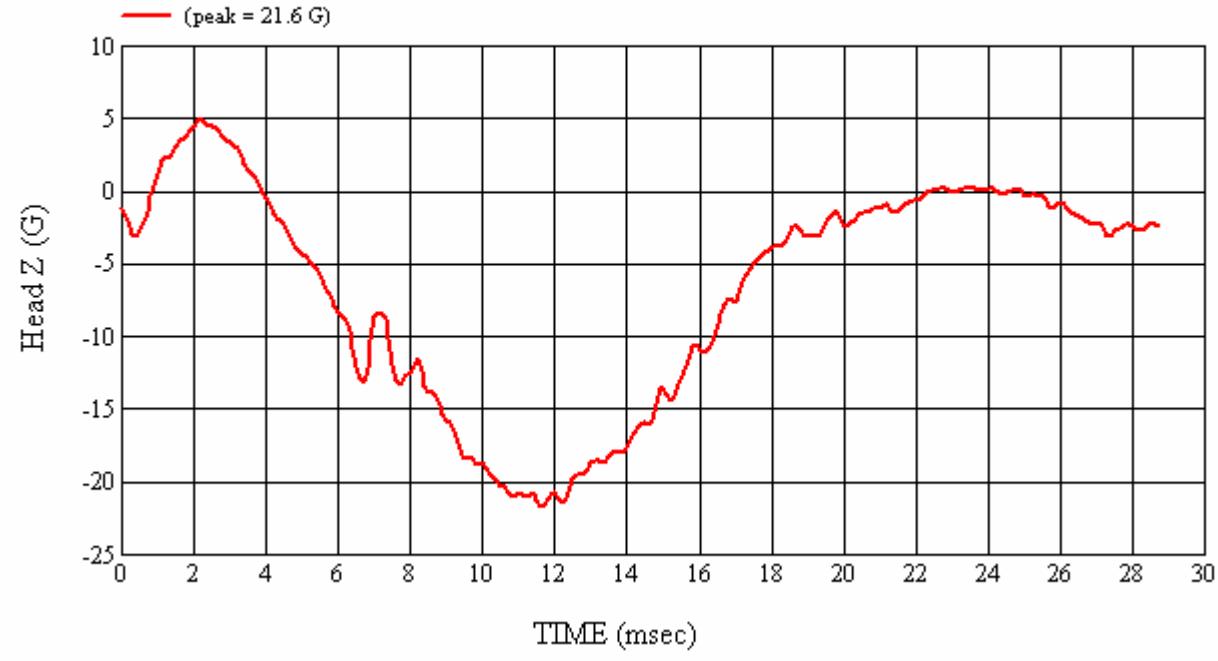
Test #FM7150



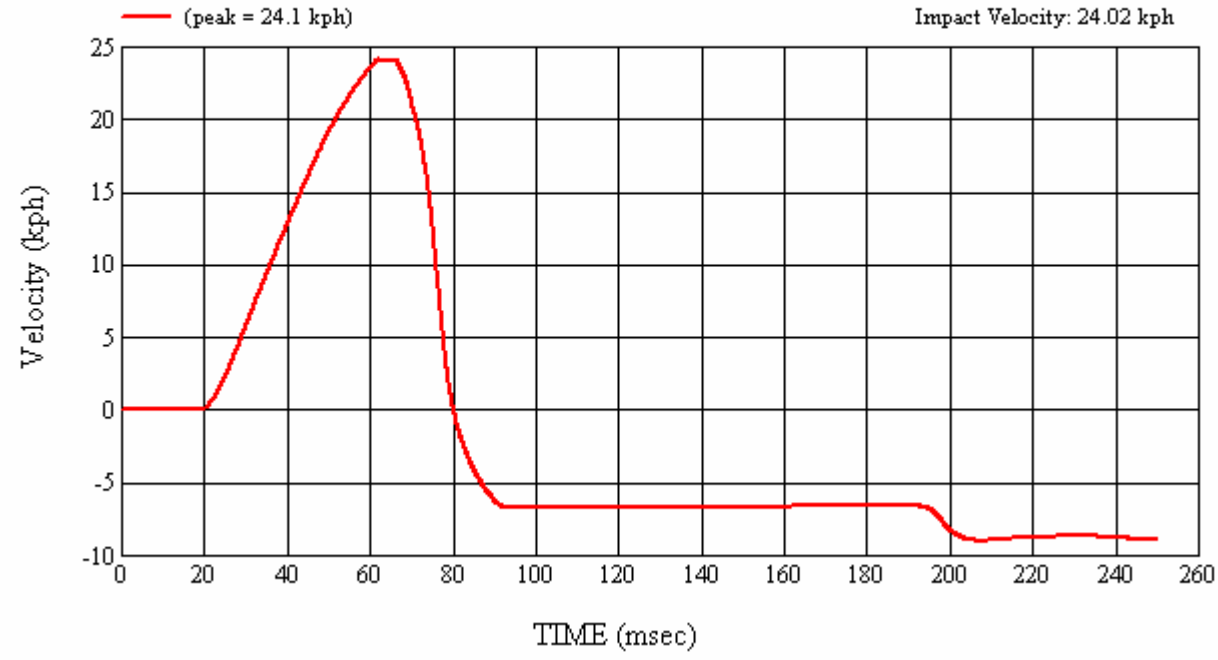
Test #FM7150



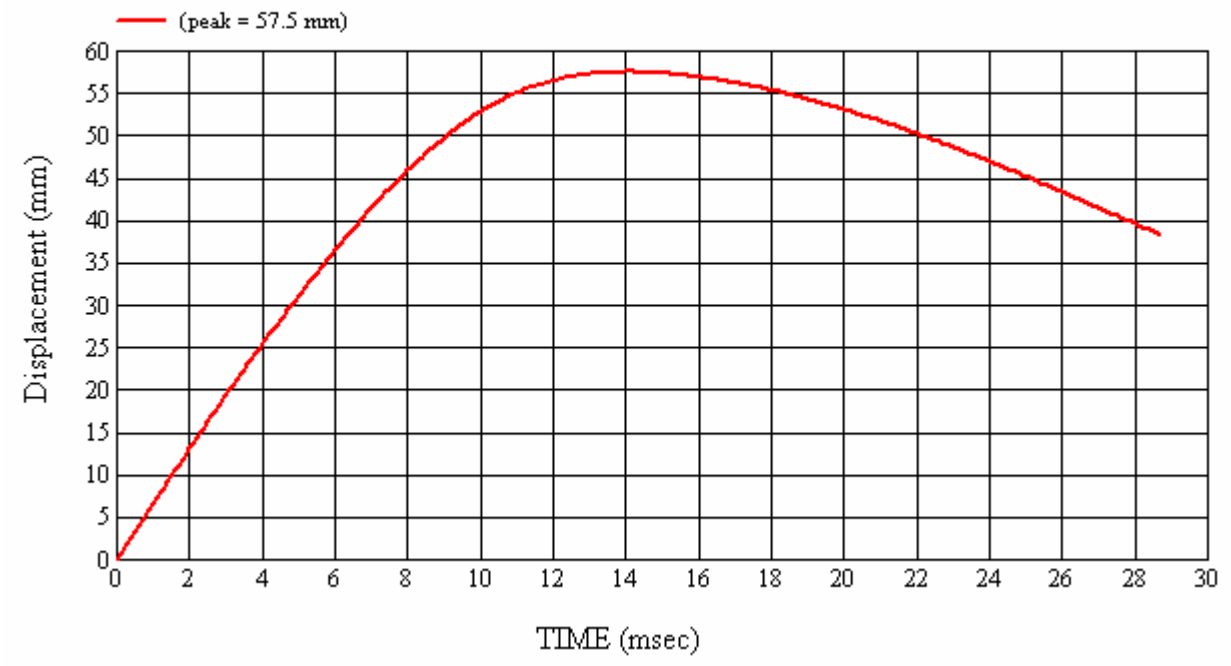
Test #FM7150



Test #FM7150



Test #FM7150


(peak = 57.5 mm)
Displacement (mm)
60
55
50
45
40
35
30
25
20
15
10
5
0
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
TIME (msec)

Test #FM7150


mga
Impact Testing
7/31/2007
G07I7-001.2
2007 NHTSA FORD MUSTANG
FMVSS 201U - UPPER INTERIOR
TEST #1 LEFT AP2
H/V IMPACT ANGLE= 206 / 49
FM7142
PRE TEST


mga
7/31/2007
Impact Testing
G07I7-001.2
2007 NHTSA FORD MUSTANG
FMVSS 201U - UPPER INTERIOR
TEST #1 LEFT AP2
H/V IMPACT ANGLE= 206 / 49
FM7142
POST-TEST


mga
7/31/2007
Impact Testing
G07I7-001.2
2007 NHTSA FORD MUSTANG
FMVSS 201U - UPPER INTERIOR
TEST #1 LEFT AP2
H/V IMPACT ANGLE= 206 / 49
FM7142
POST-TEST

SUMMARY OF FMVSS 201U TEST

JOB/NHTSA NO: G07I7-001.2 VEHICLE YR/MAKE/MODEL:2007/NHTSA/Ford Mustang

GENERAL TEST PARAMETERS:

Test Number:#1

Target (Vehicle Side): AP2 Left

Temperature:22C

MGA Test Reference No.:FM7142

Humidity:54%

Approach Horizontal Angles:206º

Time of Test:12:13:46 PM

Approach Vertical Angles:49º

FMH Serial No:[035]

Additional Description:

TEST RESULTS:

HIC(d)	HIC	Δt (msec)	Velocity (kph)	Impact location on FMH (mm)	
				Above Pt. O	Left/Right Pt. O
441	364	14.7	23.9	11	1 Right

INSTRUMENTATION INFORMATION: (all accelerometers are Endevco 7264-2000)

Axis	Channel	Serial No.	DLR Value	ΔV Pre-Test	ΔV Post-Test
X	5	J22664	-94.161	0.78	0.77
Y	6	J35919	97.442	0.80	0.80
Z	7	J35924	93.891	0.81	0.81

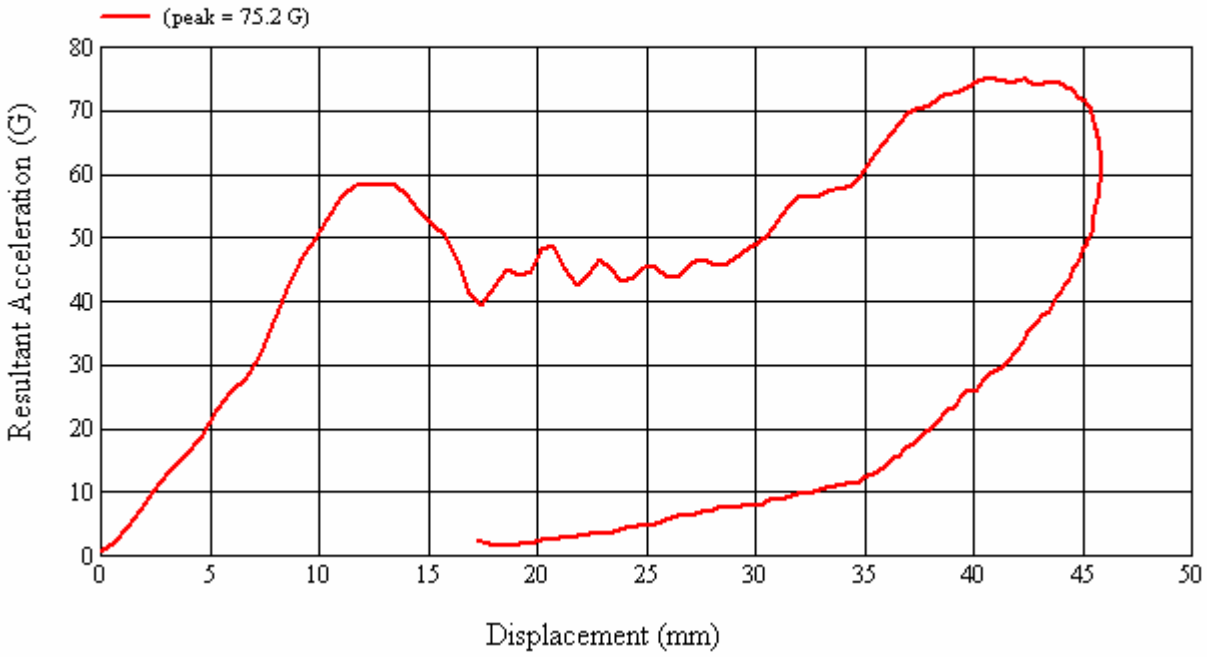
REMARKS (Summary of test, damage, non-compliance, invalid test, etc.):

A-pillar displacement

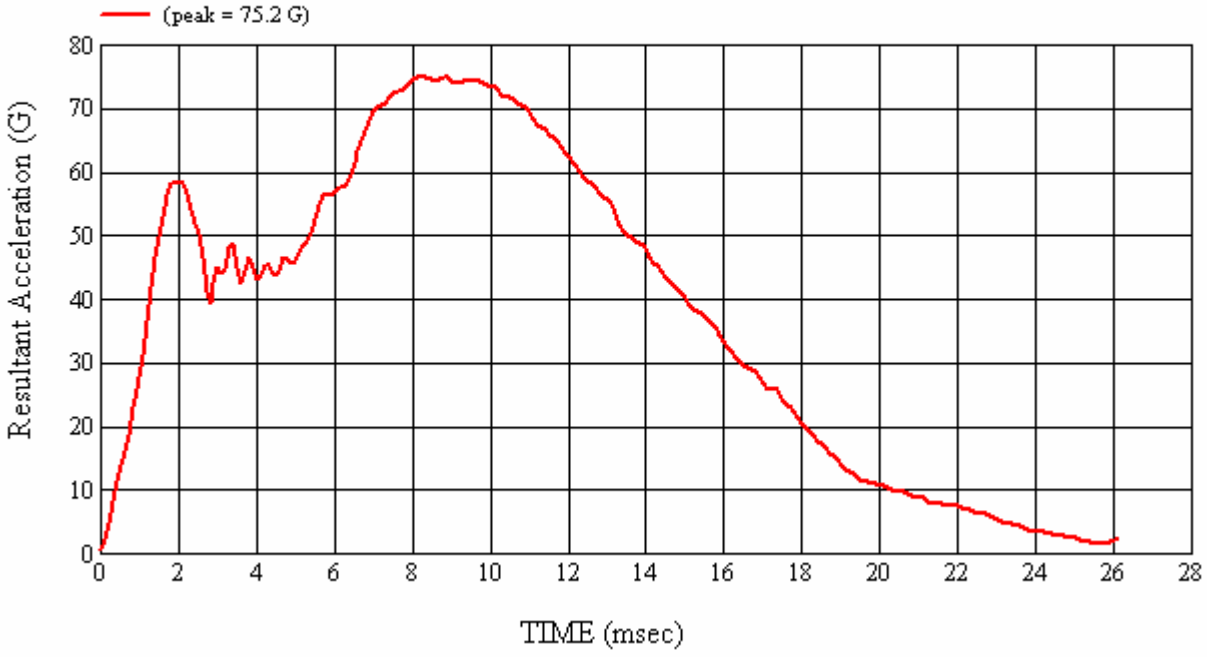
Recorded By: Travis Campbell Approved By*: Helen A. Valeto Date: 7/31007

*Only necessary for NHTSA (Government) Compliance testing.

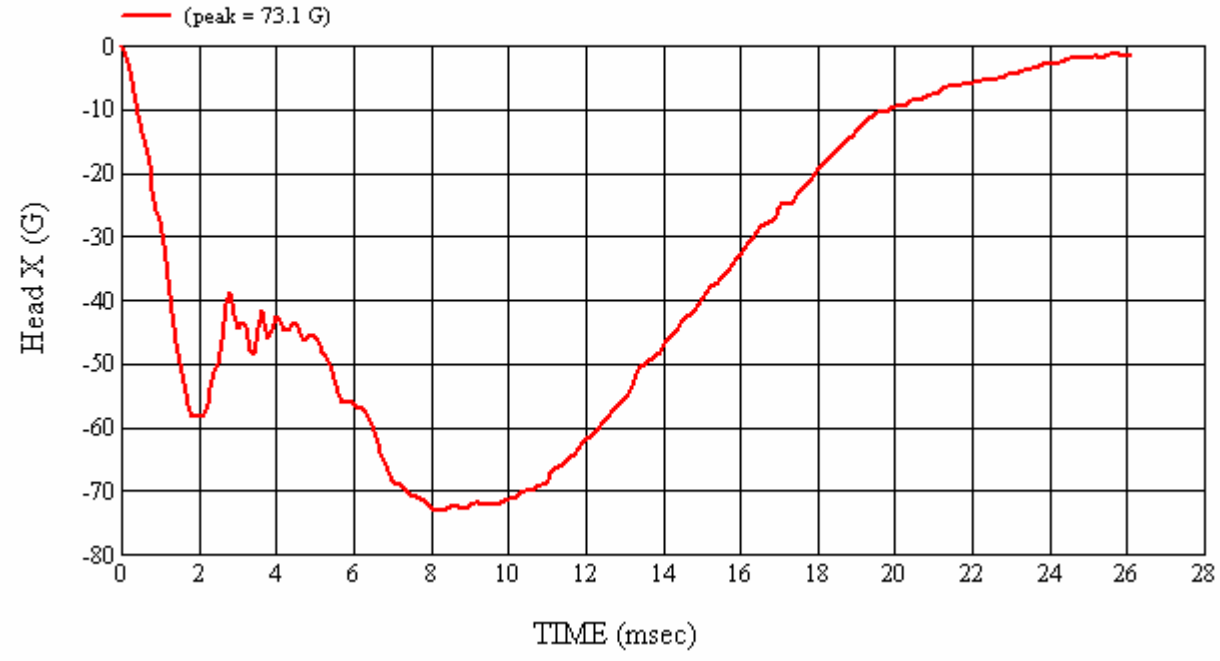
MGA Test #: FM7142 Target Location: AP2, Left Side Test Date: 7/31/2007



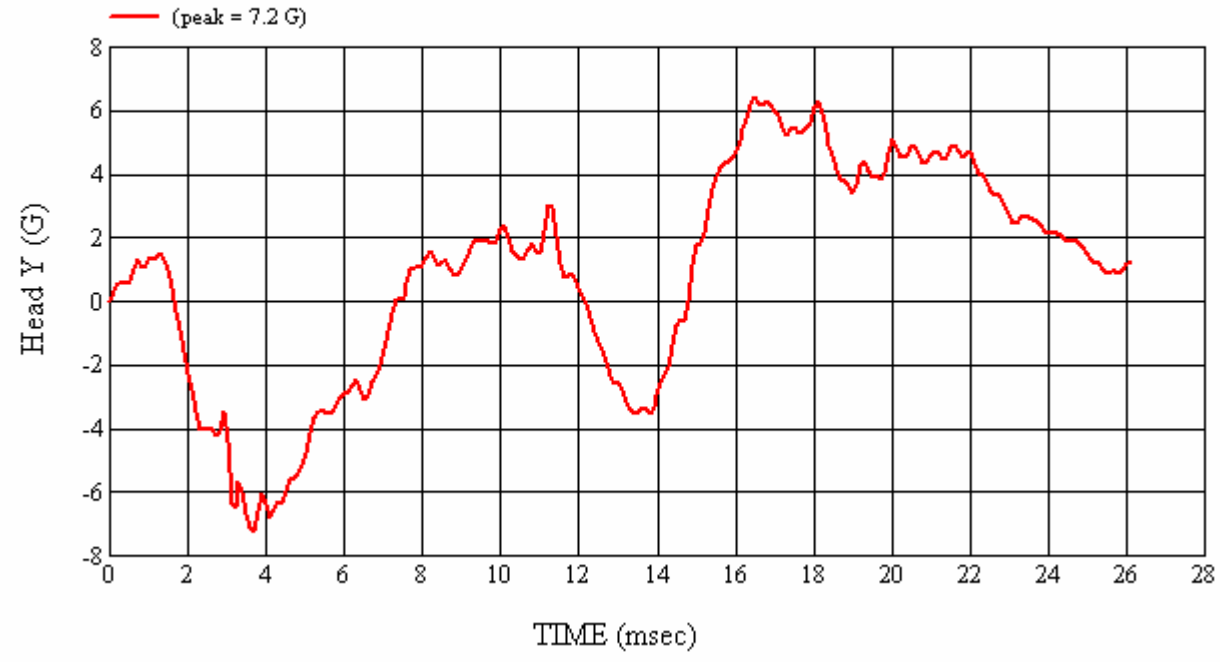
Test #FM7142



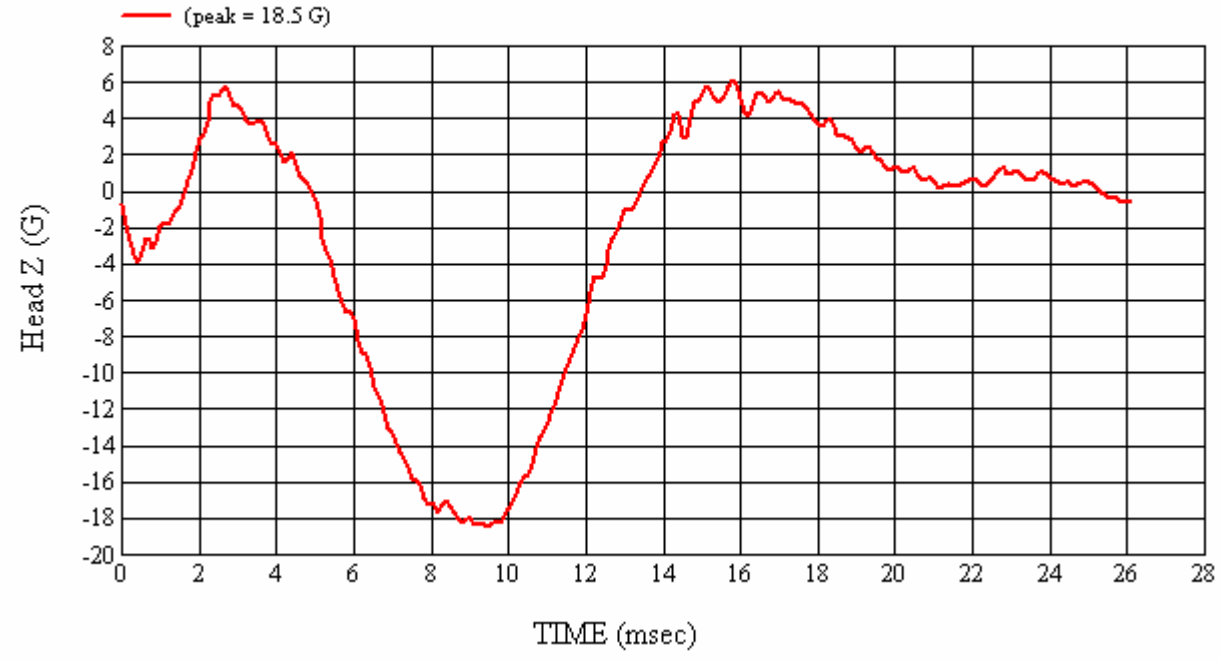
Test #FM7142



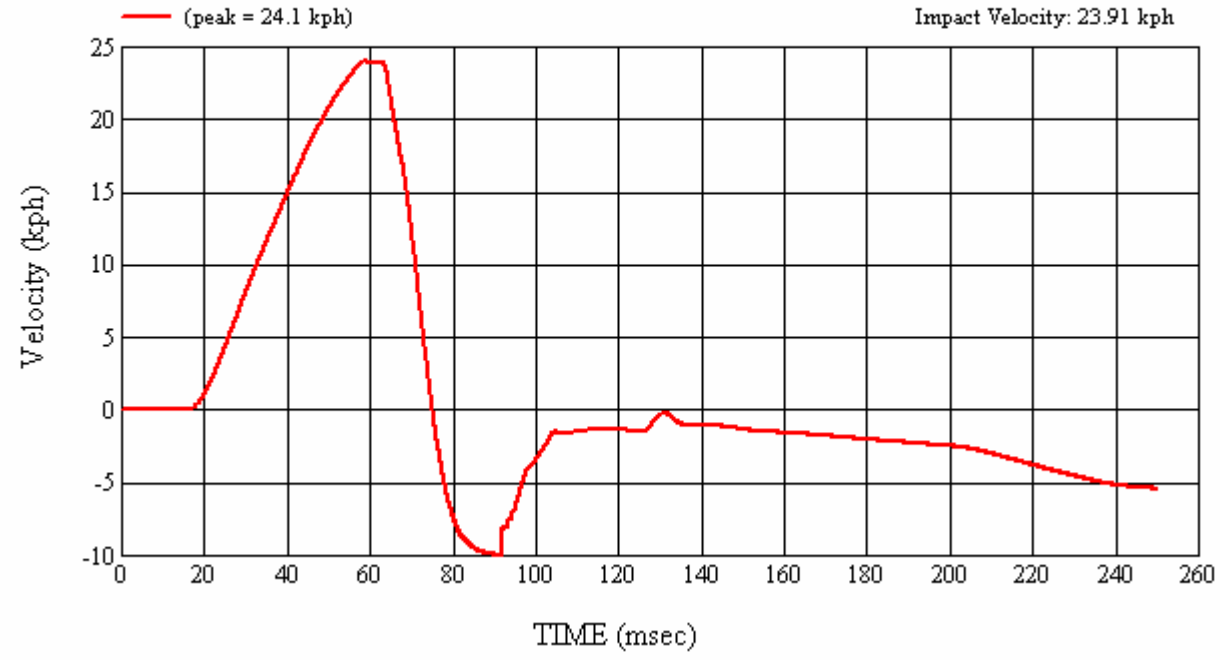
Test #FM7142



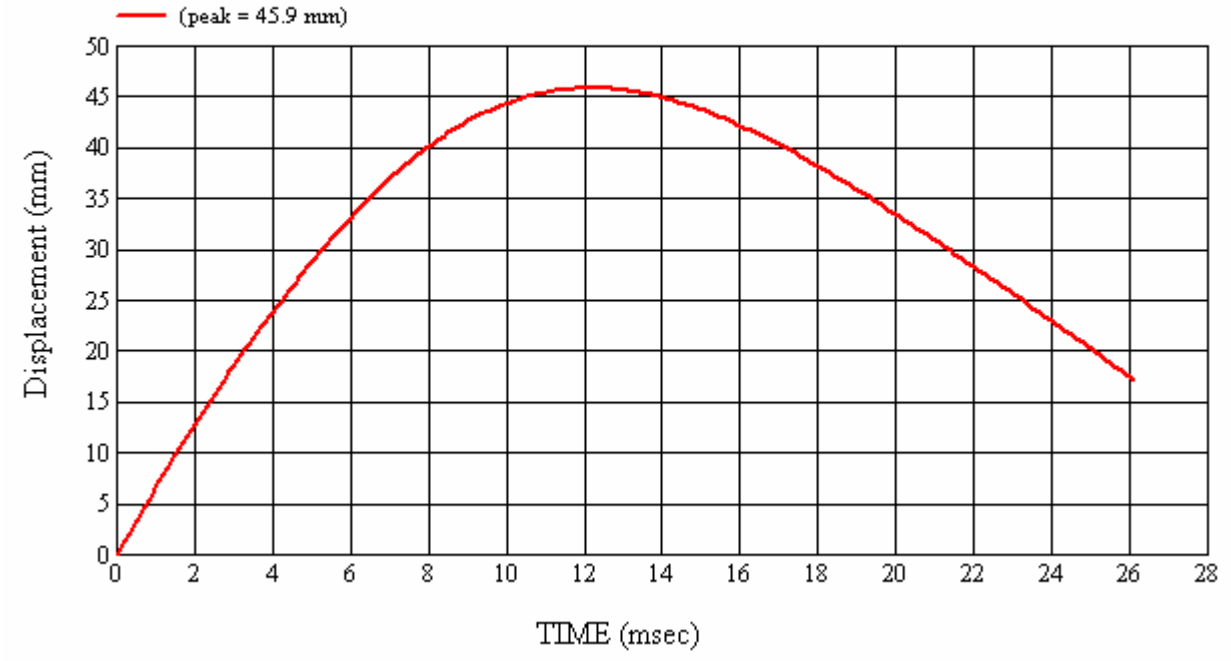
Test #FM7142



Test #FM7142



Test #FM7142


(peak = 45.9 mm)
Displacement (mm)
0
5
10
15
20
25
30
35
40
45
50
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
TIME (msec)

Test #FM7142


mga
Impact Testing
8/1/2007
G07I7-001.2
2007 NHTSA FORD MUSTANG
FMVSS 201U - UPPER INTERIOR
TEST #8 RIGHT AP3
H/V IMPACT ANGLE= 155 / 50
FM7149
PRE TEST


mga
Impact Testing
8/1/2007
G07I7-001.2
2007 NHTSA FORD MUSTANG
FMVSS 201U - UPPER INTERIOR
TEST #8 RIGHT AP3
H/V IMPACT ANGLE= 155 / 50
FM7149
POST-TEST


mga
Impact Testing
8/1/2007
G07I7-001.2
2007 NHTSA FORD MUSTANG
FMVSS 201U - UPPER INTERIOR
TEST #8 RIGHT AP3
H/V IMPACT ANGLE= 155 / 50
FM7149
POST-TEST

SUMMARY OF FMVSS 201U TEST

JOB/NHTSA NO: G07I7-001.2 VEHICLE YR/MAKE/MODEL:2007/NHTSA/Ford Mustang

GENERAL TEST PARAMETERS:

Test Number:#8

Target (Vehicle Side): AP3 Right

Temperature:22C

MGA Test Reference No.:FM7149

Humidity:53%

Approach Horizontal Angles:155º

Time of Test:5:03:43 PM

Approach Vertical Angles:50º

FMH Serial No:[038]

Additional Description:

TEST RESULTS:

HIC(d)	HIC	Δt (msec)	Velocity (kph)	Impact location on FMH (mm)	
				Above Pt. O	Left/Right Pt. O
488	427	14.8	24.2	6	1 Left

INSTRUMENTATION INFORMATION: (all accelerometers are Endevco 7264-2000)

Axis	Channel	Serial No.	DLR Value	ΔV Pre-Test	ΔV Post-Test
X	5	J14103	-94.598	0.78	0.78
Y	6	J36197	110.692	0.80	0.80
Z	7	J36353	99.391	0.81	0.81

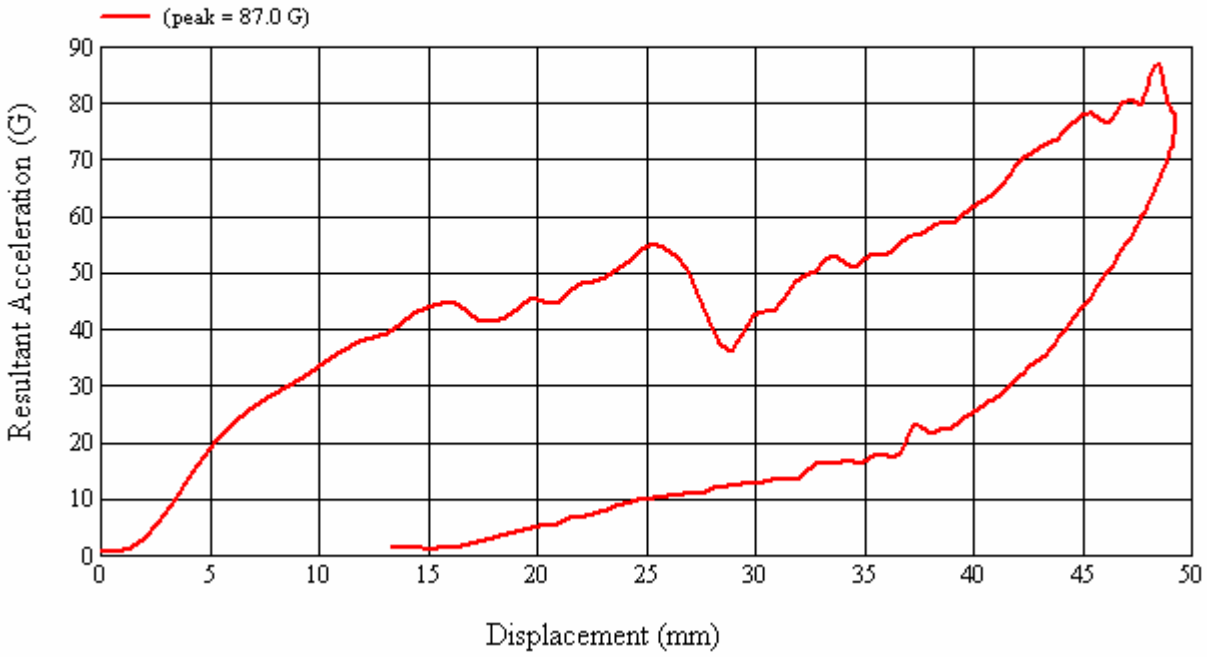
REMARKS (Summary of test, damage, non-compliance, invalid test, etc.):

A-pillar/side rail trim displaced.

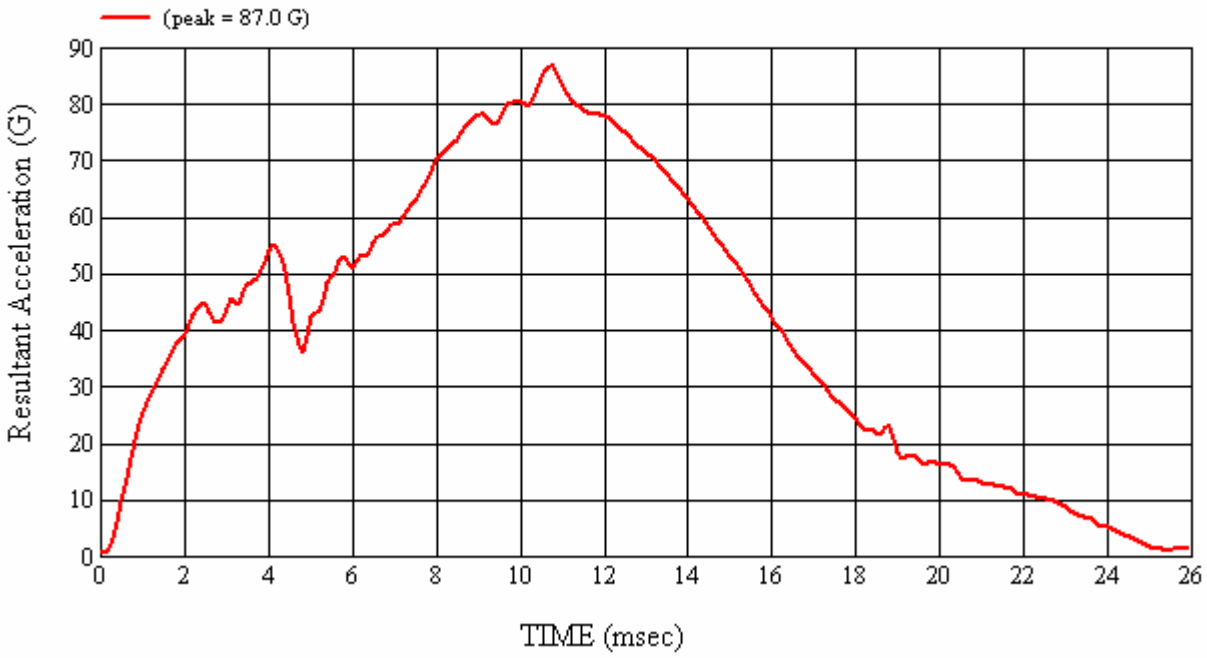
Recorded By: _____ Approved By*: _____ Date: 8/1/2007

*Only necessary for NHTSA (Government) Compliance testing.

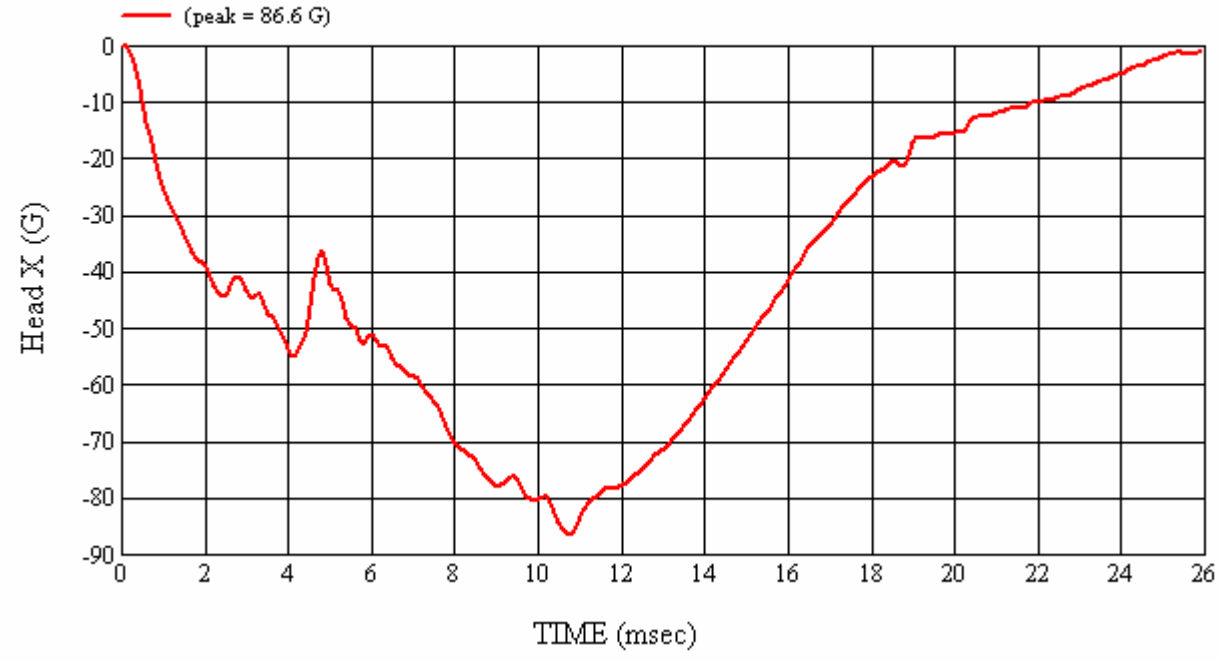
MGA Test #: FM7149 Target Location: AP3, Right Side Test Date: 8/1/2007



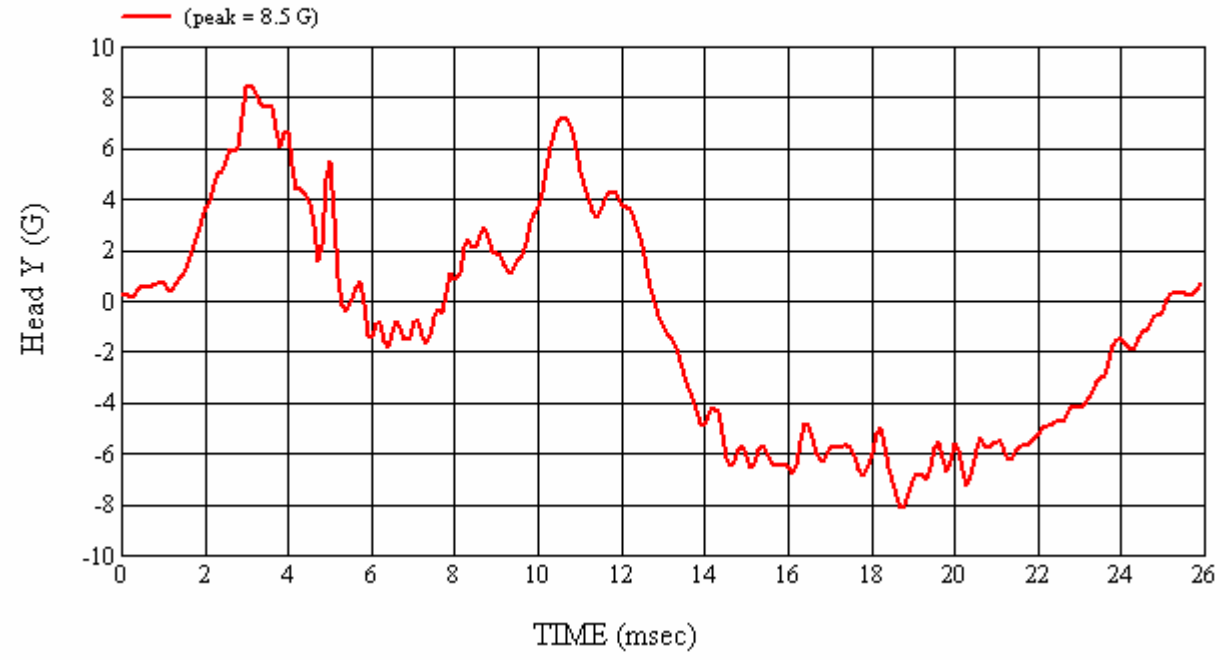
Test #FM7149



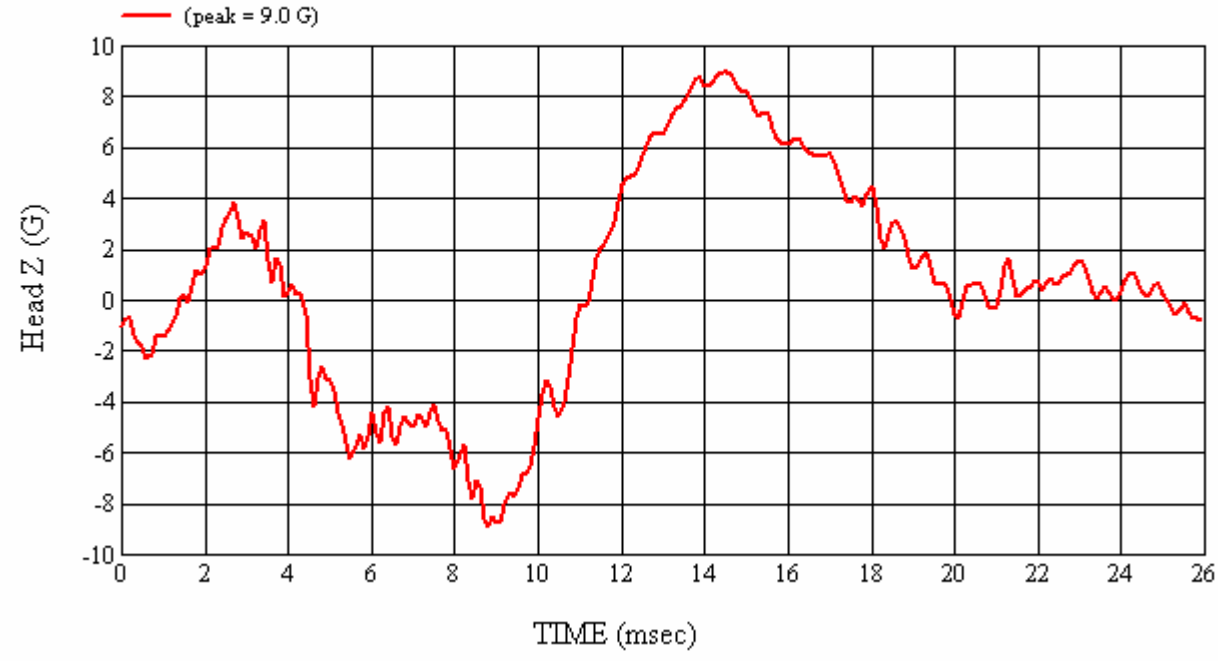
Test #FM7149



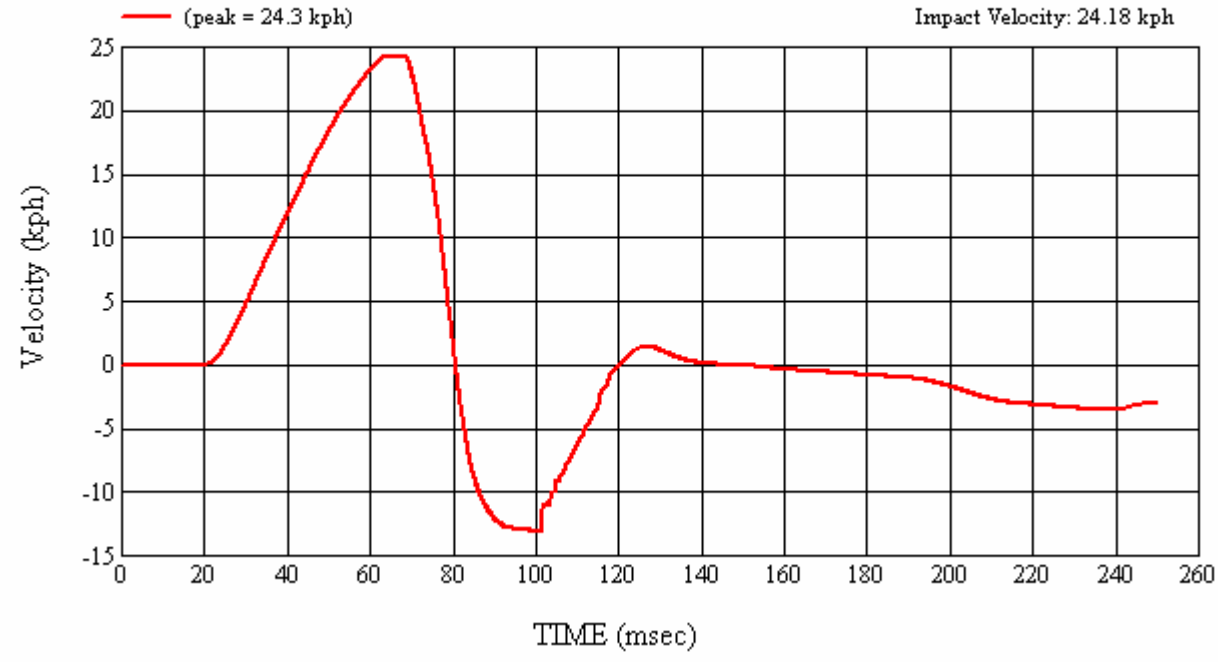
Test #FM7149



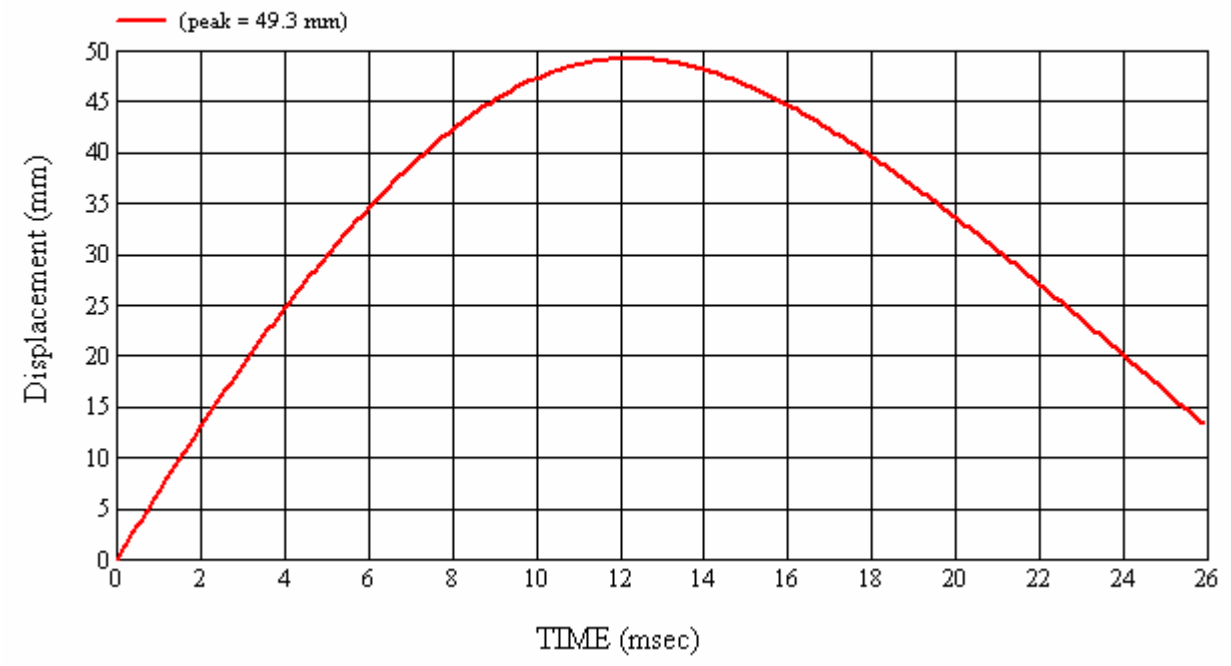
Test #FM7149



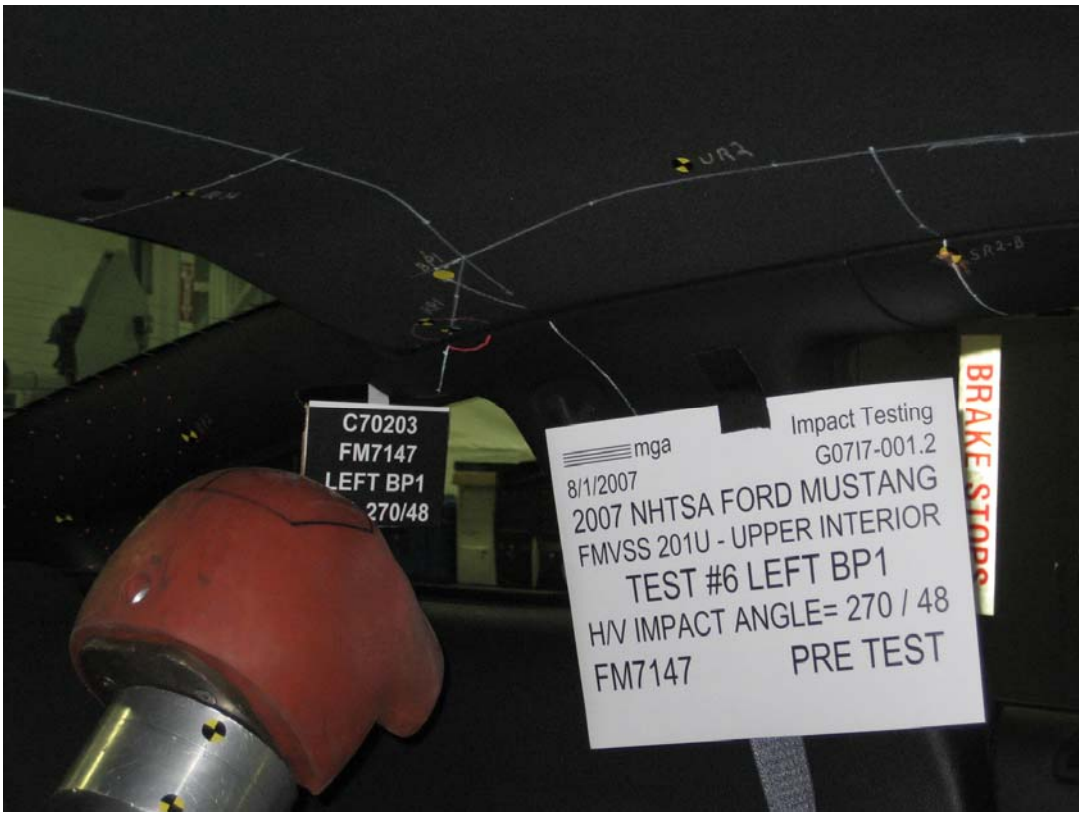
Test #FM7149



Test #FM7149


(peak = 49.3 mm)
Displacement (mm)
0
5
10
15
20
25
30
35
40
45
50
0
2
4
6
8
10
12
14
16
18
20
22
24
26
TIME (msec)

Test #FM7149


C70203
FM7147
LEFT BP1
270/48
mga
Impact Testing
G07I7-001.2
8/1/2007
2007 NHTSA FORD MUSTANG
FMVSS 201U - UPPER INTERIOR
TEST #6 LEFT BP1
H/V IMPACT ANGLE= 270 / 48
FM7147
PRE TEST
BRAKE STOPS


C70203
FM7147
LEFT BP1
H/V 270/48
mga
Impact Testing
G07I7-001.2
8/1/2007
2007 NHTSA FORD MUSTANG
FMVSS 201U - UPPER INTERIOR
TEST #6 LEFT BP1
H/V IMPACT ANGLE= 270 / 48
FM7147
POST-TEST


mga
Impact Testing
8/1/2007
G07I7-001.2
2007 NHTSA FORD MUSTANG
FMVSS 201U - UPPER INTERIOR
TEST #6 LEFT BP1
H/V IMPACT ANGLE= 270 / 48
FM7147
POST-TEST

SUMMARY OF FMVSS 201U TEST

JOB/NHTSA NO: G07I7-001.2 VEHICLE YR/MAKE/MODEL:2007/NHTSA/Ford Mustang

GENERAL TEST PARAMETERS:

Test Number:#6

Target (Vehicle Side): BP1 Left

Temperature:22C

MGA Test Reference No.:FM7147

Humidity:48%

Approach Horizontal Angles:270º

Time of Test:10:56:34 AM

Approach Vertical Angles:48º

FMH Serial No:[036]

Additional Description:

TEST RESULTS:

HIC(d)	HIC	Δt (msec)	Velocity (kph)	Impact location on FMH (mm)	
				Above Pt. O	Left/Right Pt. O
617	598	7.7	22.1	7	2 Right

INSTRUMENTATION INFORMATION: (all accelerometers are Endevco 7264-2000)

Axis	Channel	Serial No.	DLR Value	ΔV Pre-Test	ΔV Post-Test
X	5	J21969	-90.883	0.78	0.78
Y	6	J35916	103.15	0.80	0.80
Z	7	J35918	99.409	0.81	0.82

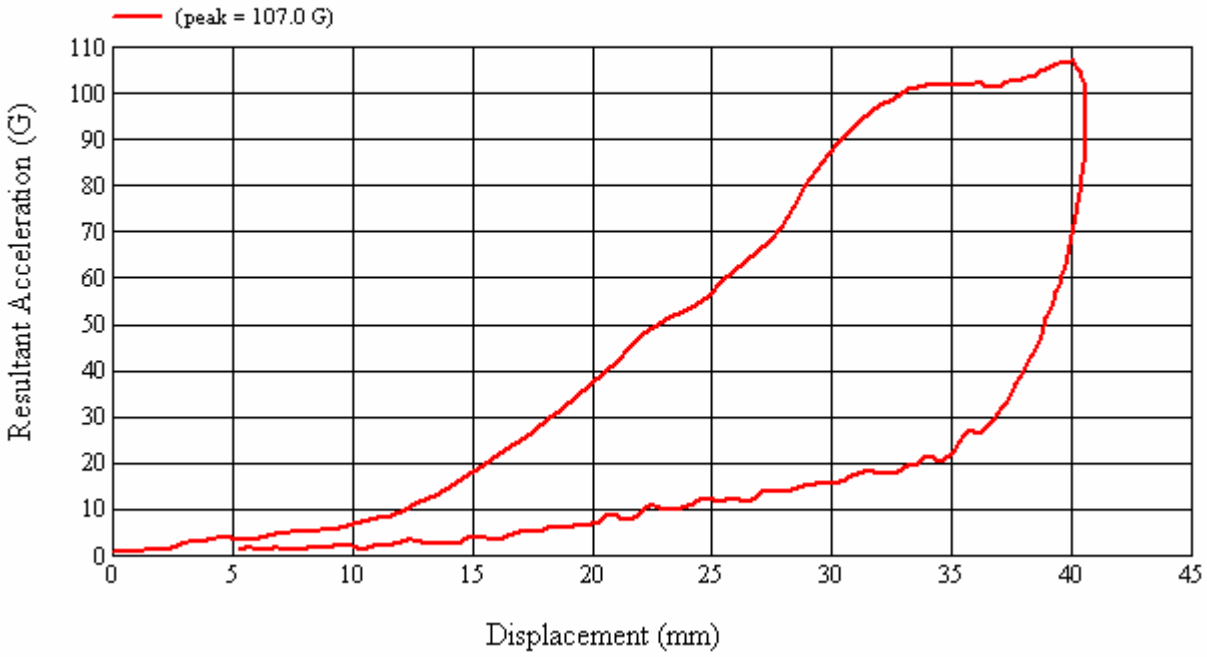
REMARKS (Summary of test, damage, non-compliance, invalid test, etc.):

No visible damage.

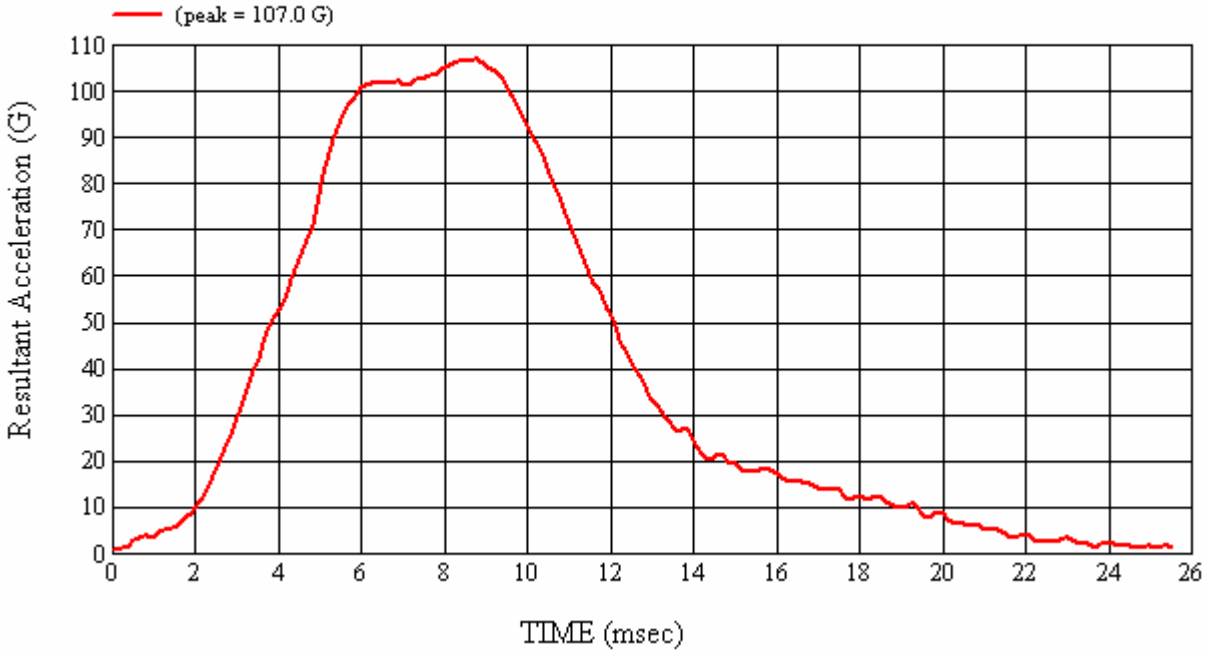
Recorded By: ______________ Approved By*: ______________ Date: 8/1/2007

*Only necessary for NHTSA (Government) Compliance testing.

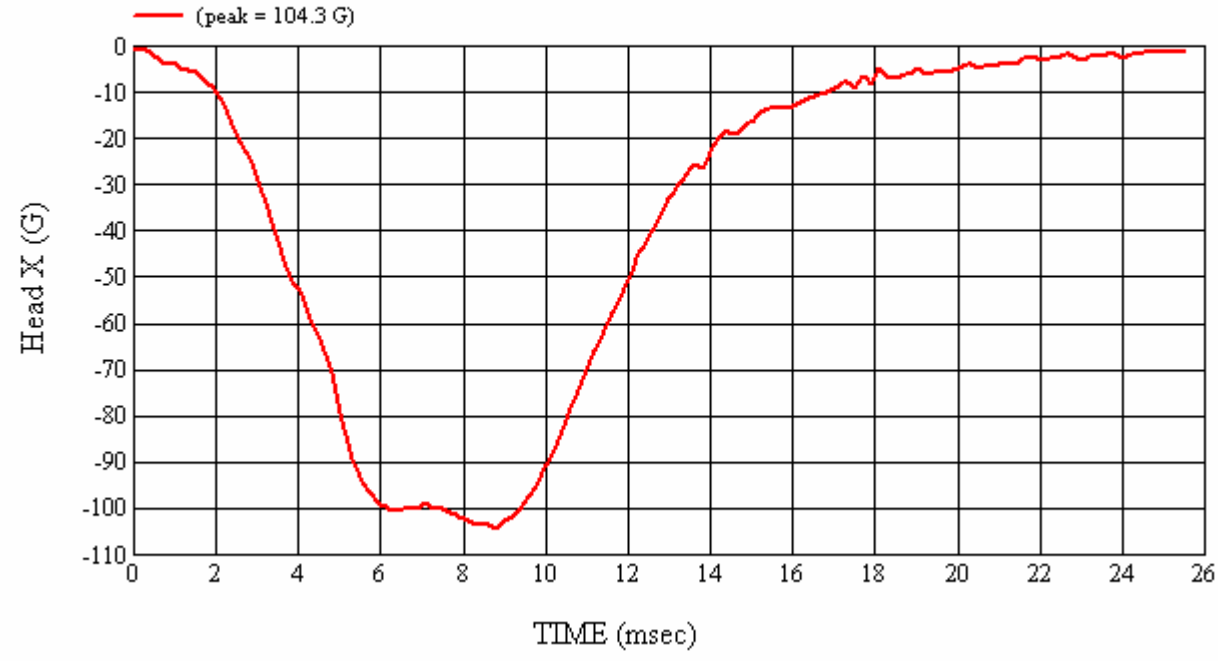
MGA Test #: FM7147 Target Location: BP1, Left Side Test Date: 8/1/2007



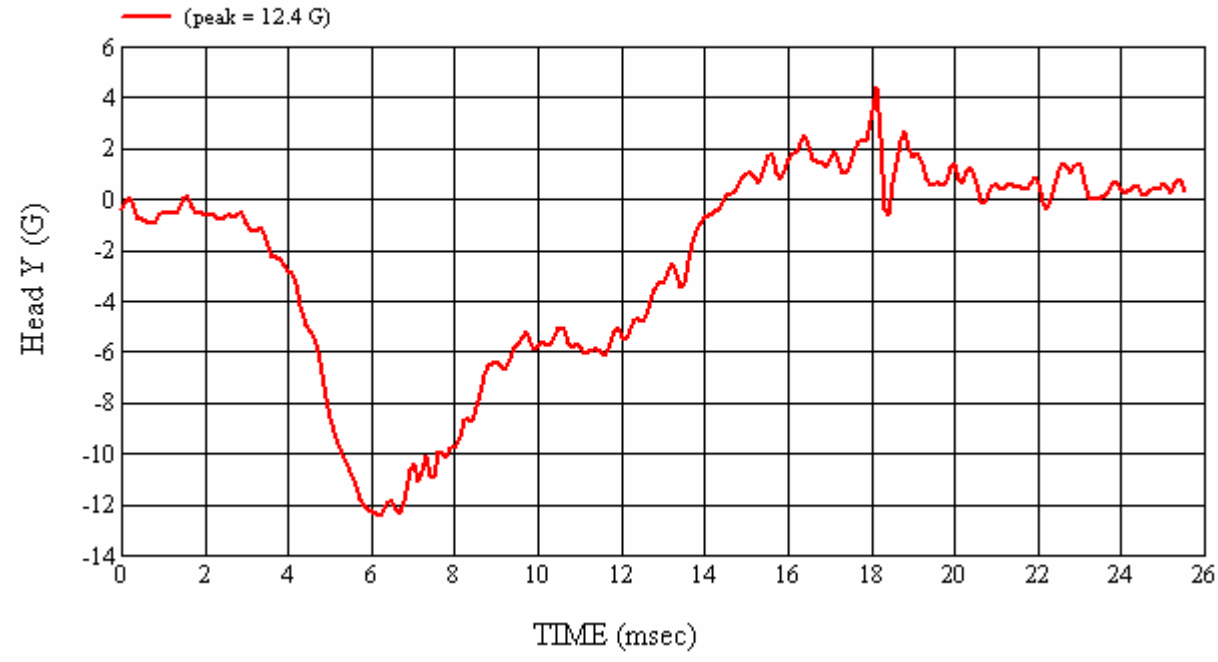
Test #FM7147



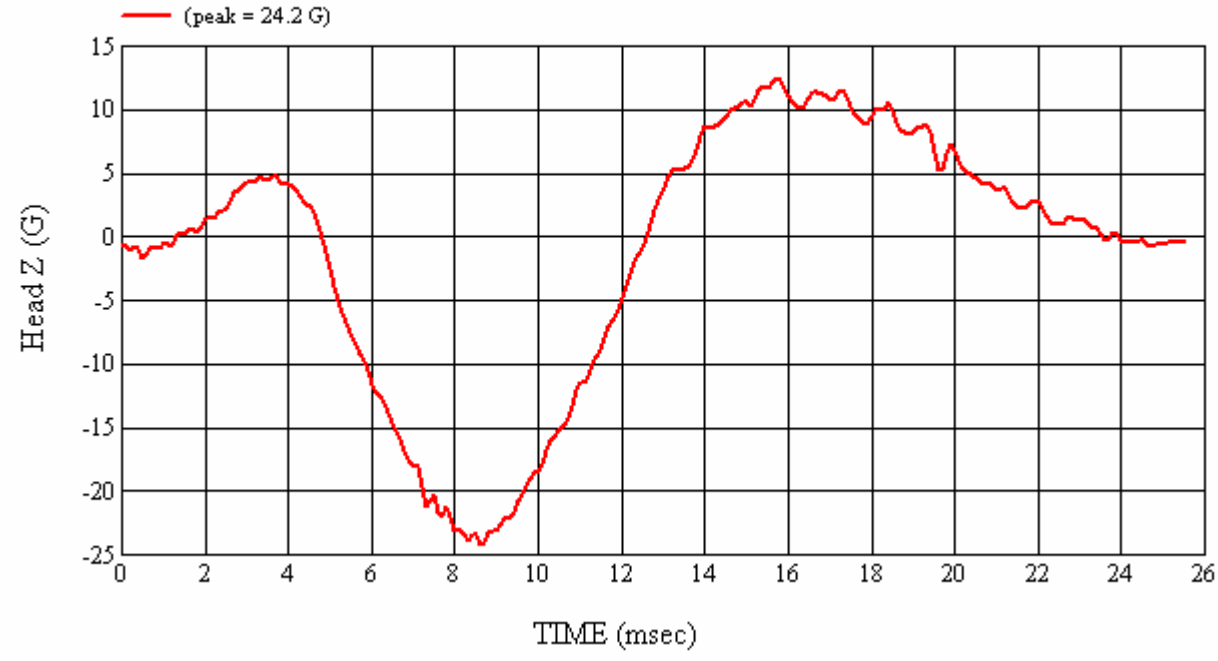
Test #FM7147



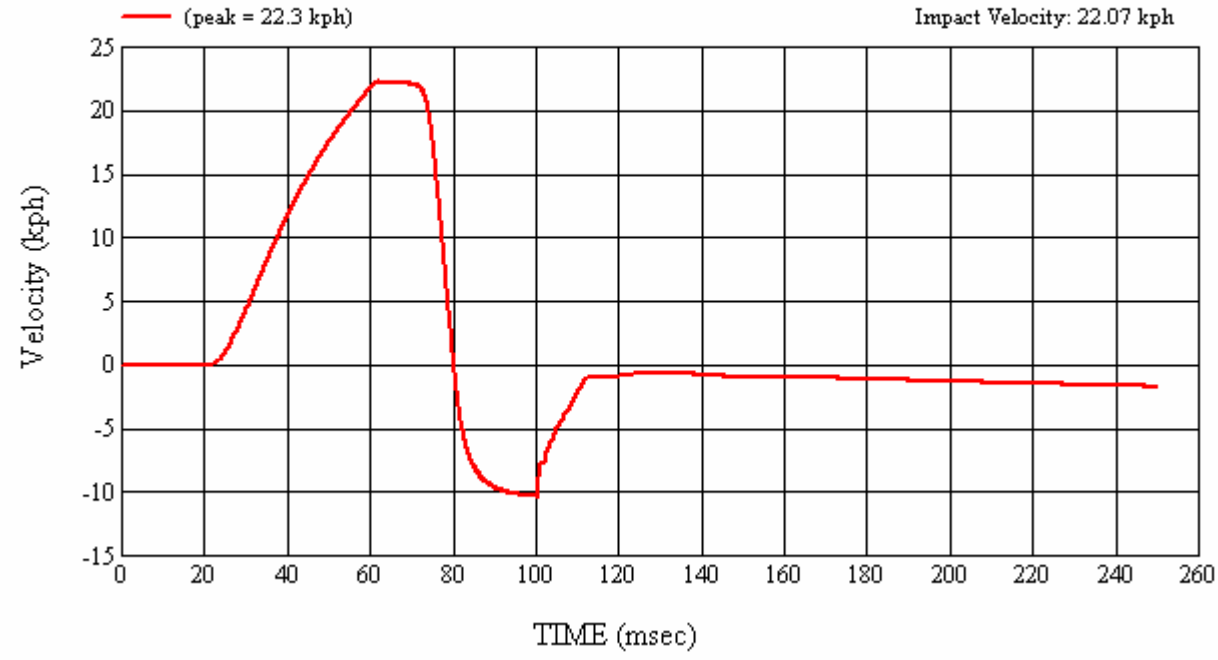
Test #FM7147



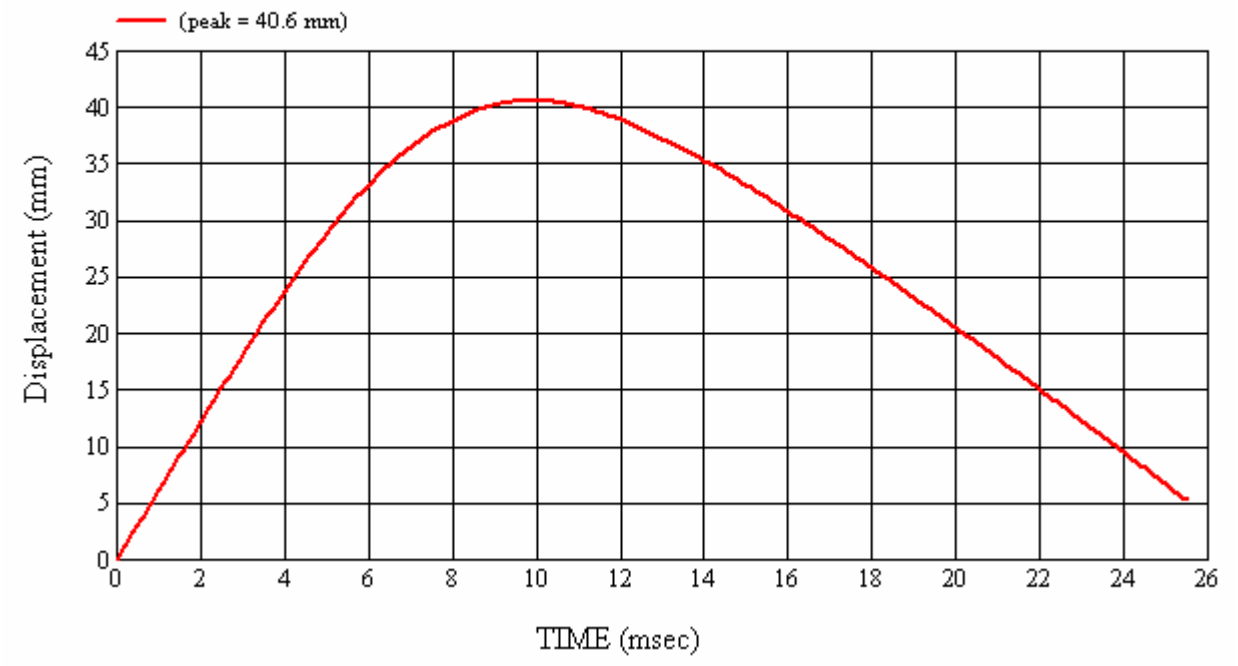
Test #FM7147



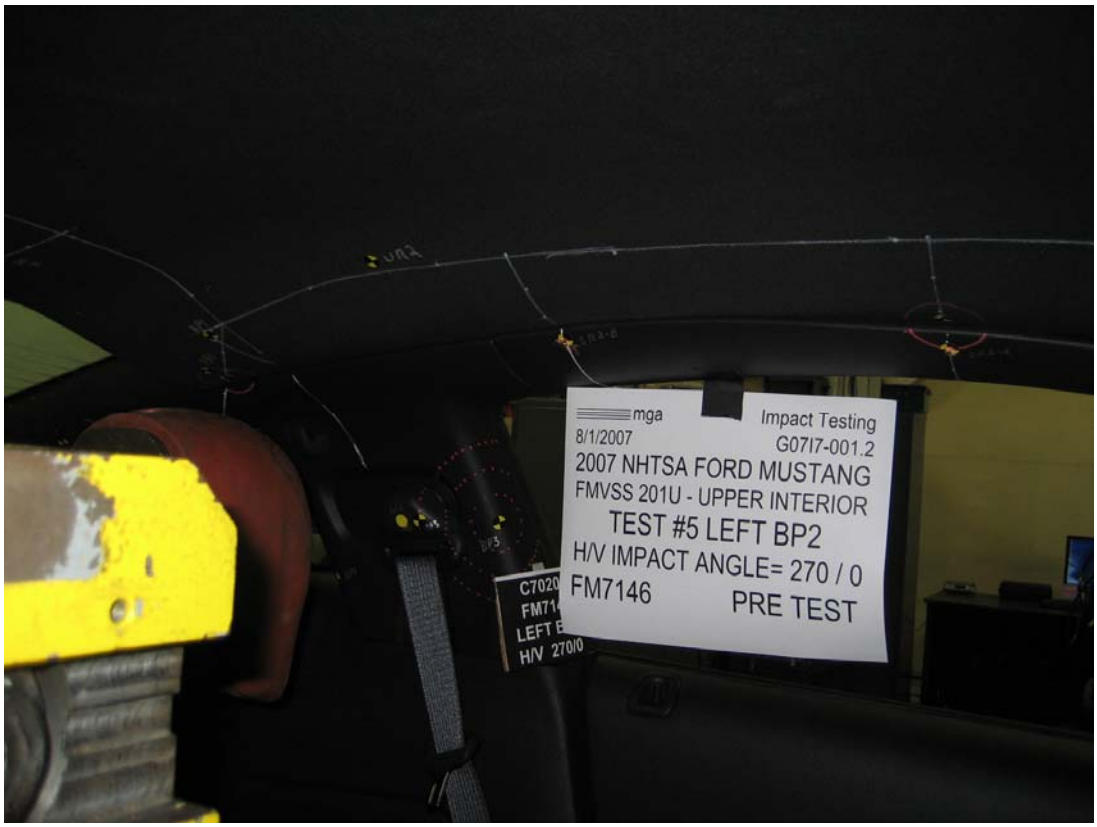
Test #FM7147



Test #FM7147


(peak = 40.6 mm)
Displacement (mm)
0
5
10
15
20
25
30
35
40
45
0
2
4
6
8
10
12
14
16
18
20
22
24
26
TIME (msec)

Test #FM7147


mga
Impact Testing
8/1/2007
G07I7-001.2
2007 NHTSA FORD MUSTANG
FMVSS 201U - UPPER INTERIOR
TEST #5 LEFT BP2
H/V IMPACT ANGLE= 270 / 0
FM7146
PRE TEST


mga
Impact Testing
8/1/2007
G07I7-001.2
2007 NHTSA FORD MUSTANG
FMVSS 201U - UPPER INTERIOR
TEST #5 LEFT BP2
H/V IMPACT ANGLE= 270 / 0
FM7146
POST-TEST


mga
Impact Testing
8/1/2007
G07I7-001.2
2007 NHTSA FORD MUSTANG
FMVSS 201U - UPPER INTERIOR
TEST #5 LEFT BP2
H/V IMPACT ANGLE= 270 / 0
FM7146
POST-TEST

SUMMARY OF FMVSS 201U TEST

JOB/NHTSA NO: G07I7-001.2 VEHICLE YR/MAKE/MODEL:2007/NHTSA/Ford Mustang

GENERAL TEST PARAMETERS:

Target (Vehicle Side): BP2 Left

MGA Test Reference No.:FM7146

Approach Horizontal Angles:270º

Approach Vertical Angles:0º

Additional Description:

Test Number:#5

Temperature:22C

Humidity:44%

Time of Test:9:15:32 AM

FMH Serial No:[035]

TEST RESULTS:

HIC(d)	HIC	Δt (msec)	Velocity (kph)	Impact location on FMH (mm)	
				Above Pt. O	Left/Right Pt. O
710	721	7.1	23.6	6	11 Left

INSTRUMENTATION INFORMATION: (all accelerometers are Endevco 7264-2000)

Axis	Channel	Serial No.	DLR Value	ΔV Pre-Test	ΔV Post-Test
X	5	J22664	-94.161	0.78	0.78
Y	6	J35919	97.442	0.80	0.80
Z	7	J35924	93.891	0.81	0.81

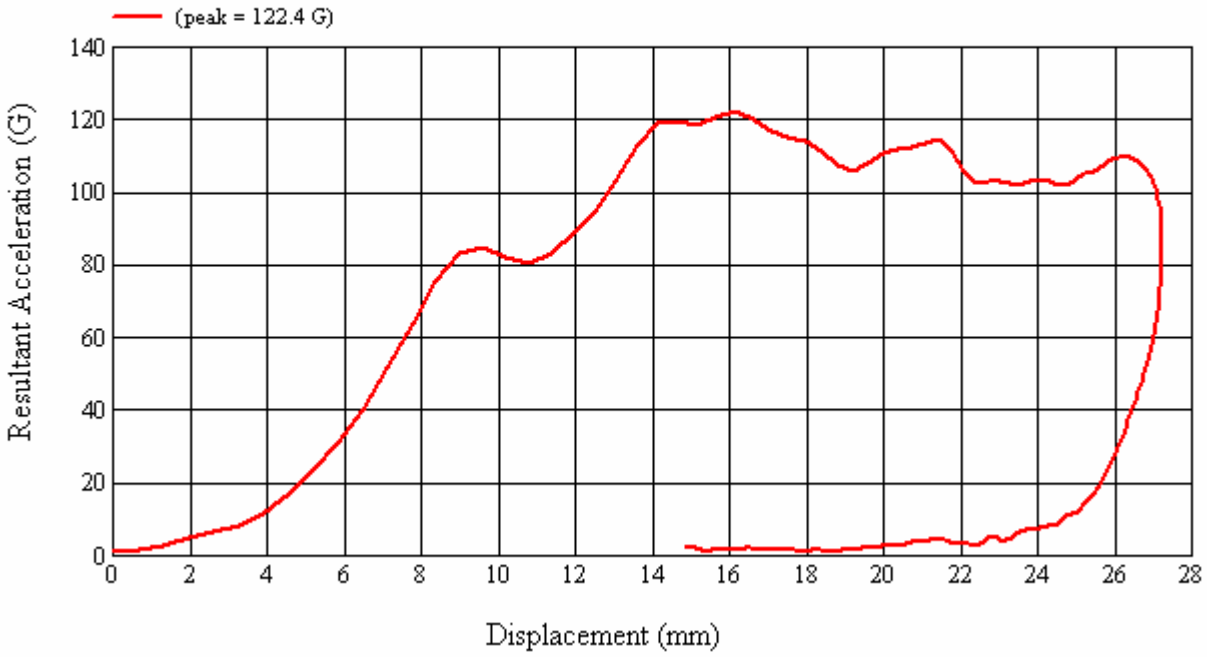
REMARKS (Summary of test, damage, non-compliance, invalid test, etc.):

No visible damage.

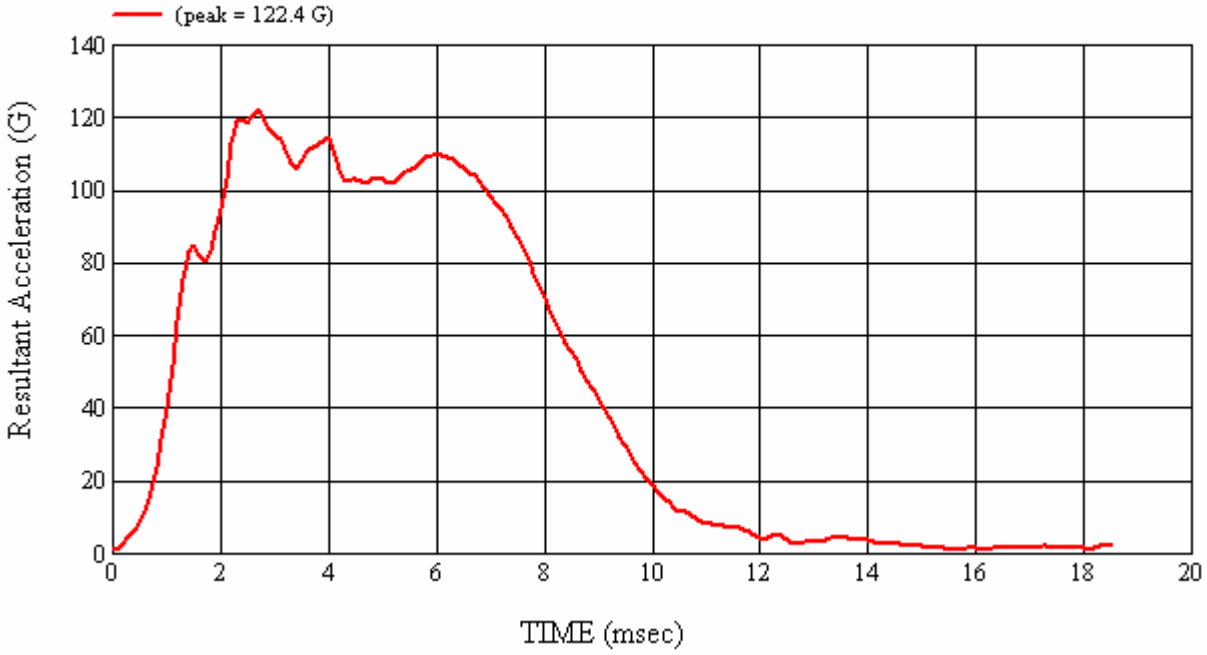
Recorded By: [signature] Approved By*: [signature] Date: 8/1/2007

*Only necessary for NHTSA (Government) Compliance testing.

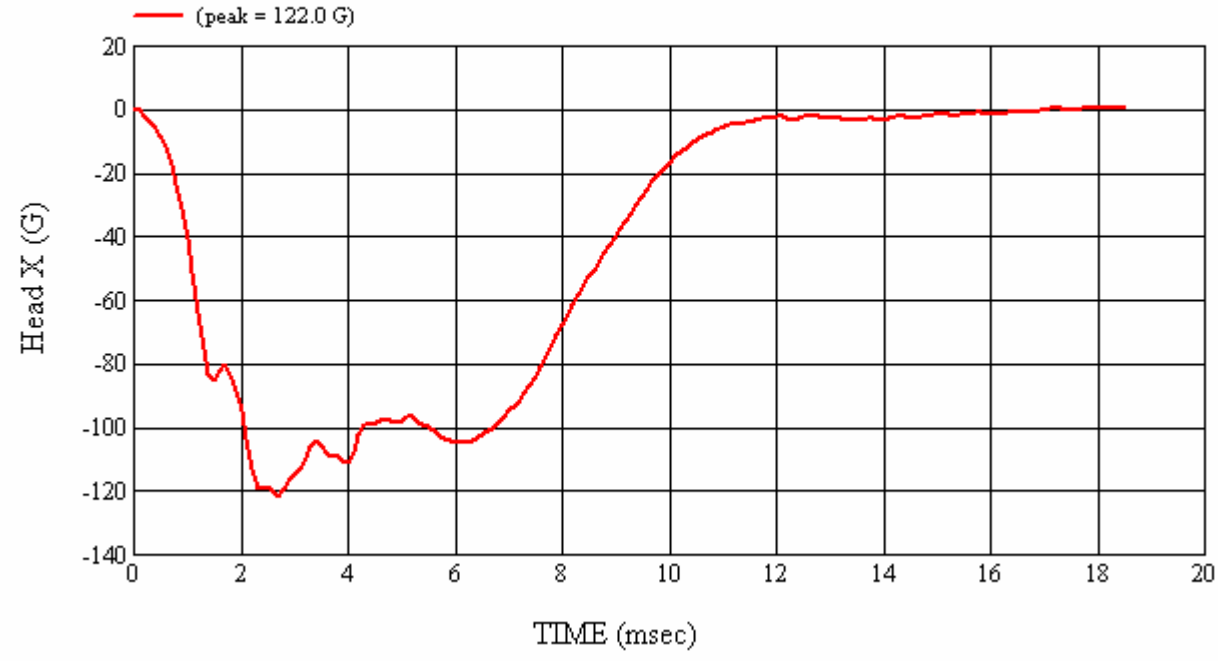
MGA Test #: FM7146 Target Location: BP2, Left Side Test Date: 8/1/2007



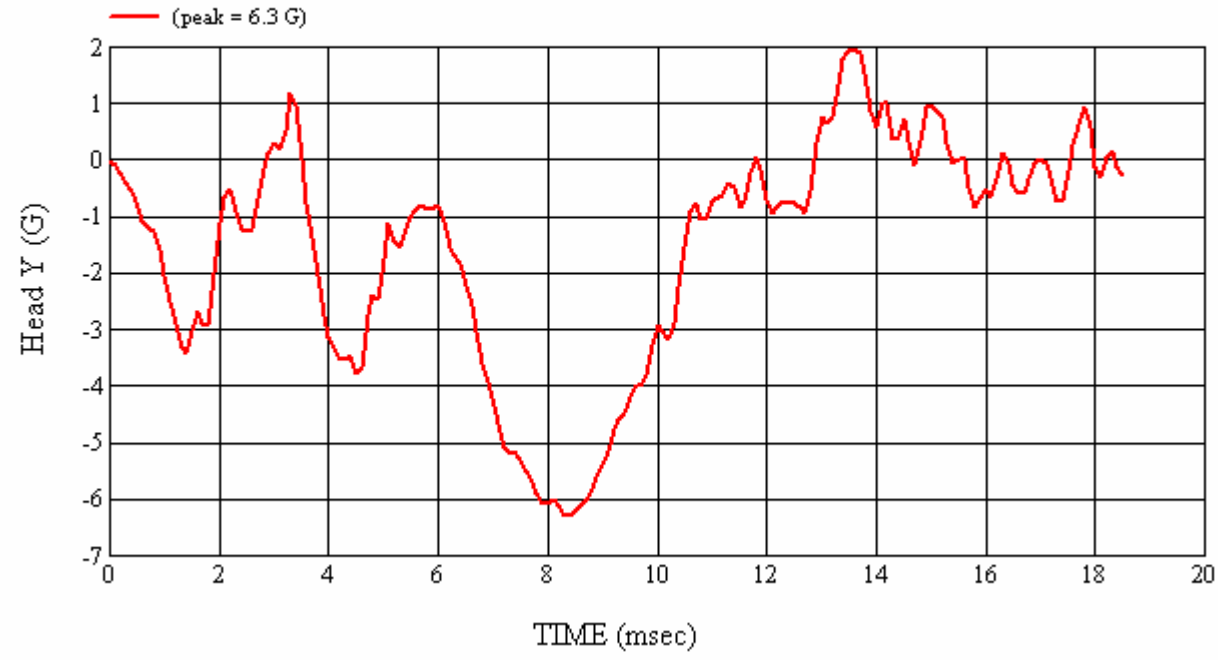
Test #FM7146



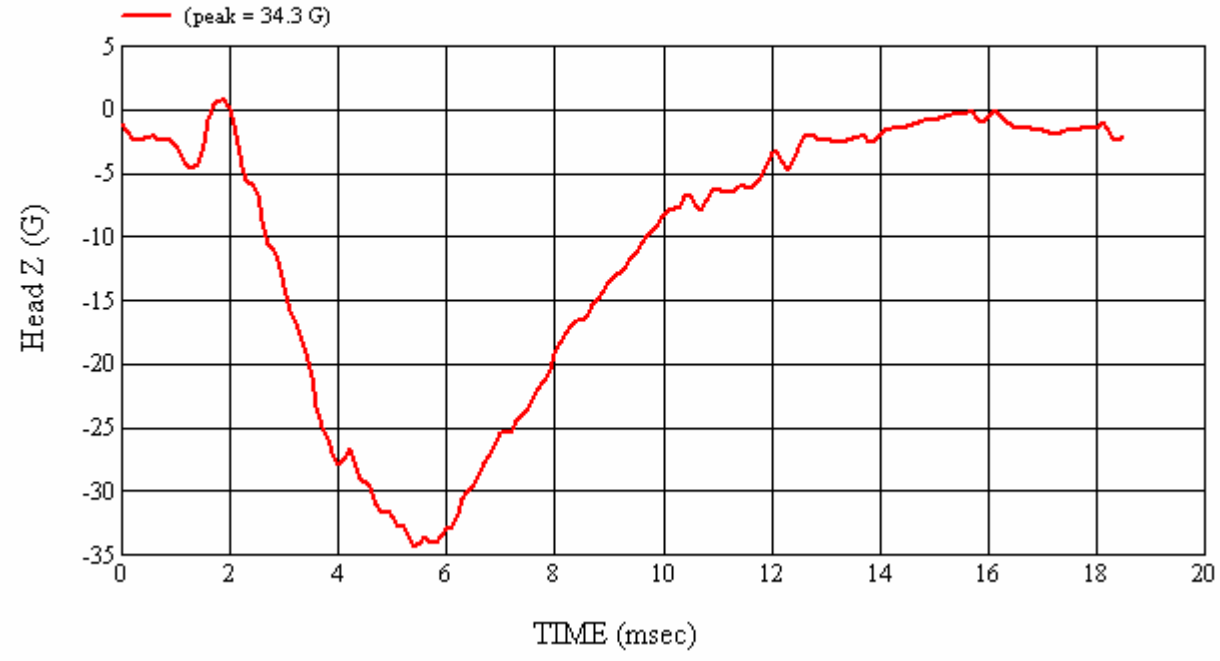
Test #FM7146



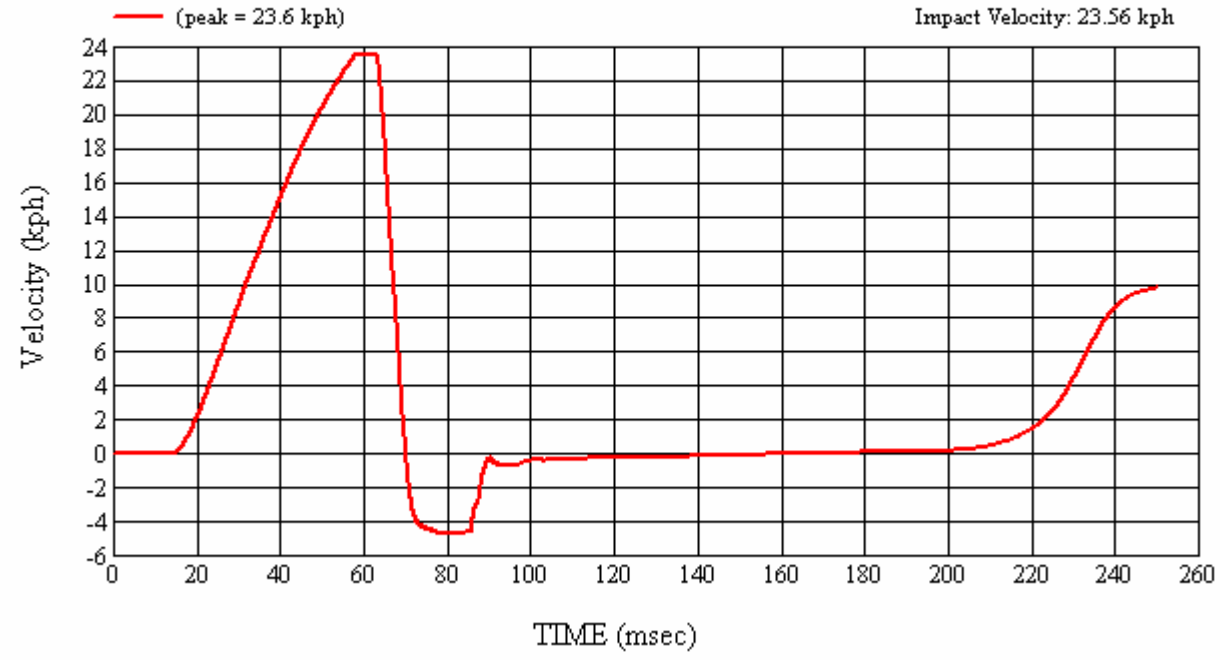
Test #FM7146



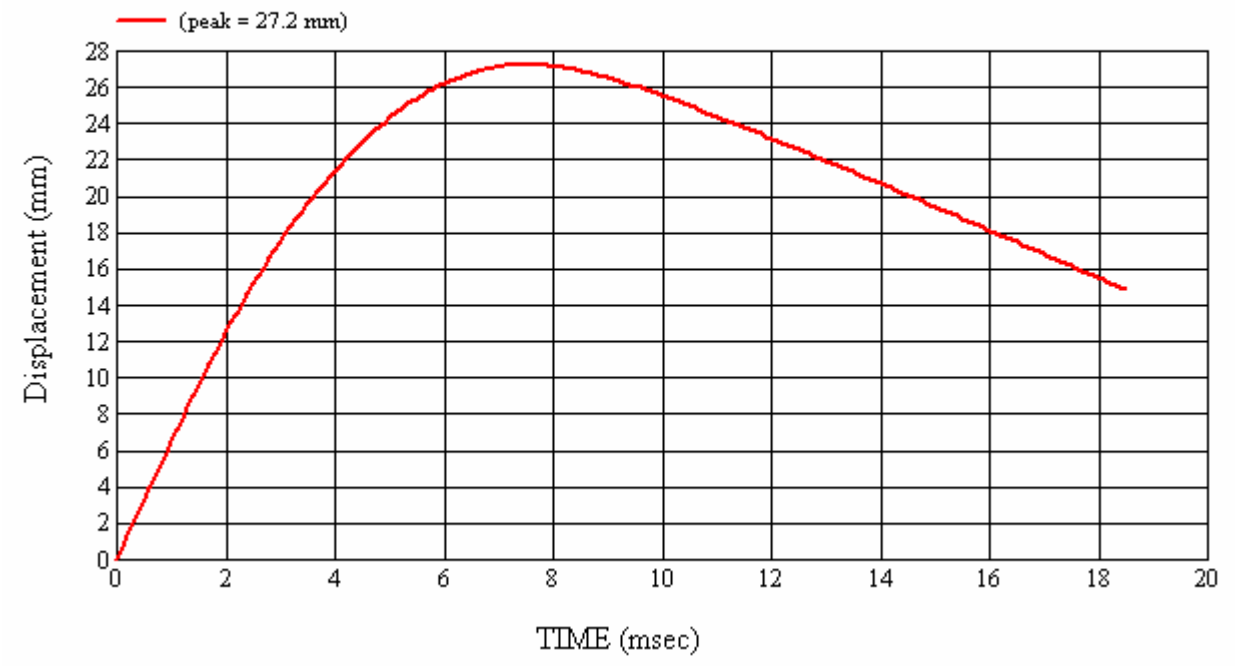
Test #FM7146



Test #FM7146



Test #FM7146


(peak = 27.2 mm)
Displacement (mm)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
0
2
4
6
8
10
12
14
16
18
20
TIME (msec)

Test #FM7146


mga
8/2/2007
Impact Testing
G07I7-001.2
2007 NHTSA FORD MUSTANG
FMVSS 201U - UPPER INTERIOR
TEST #11 RIGHT BP3
H/V IMPACT ANGLE= 90 / 3
FM7152
PRE TEST


mga
Impact Testing
8/2/2007
G07I7-001.2
2007 NHTSA FORD MUSTANG
FMVSS 201U - UPPER INTERIOR
TEST #11 RIGHT BP3
H/V IMPACT ANGLE= 90 / 3
FM7152
POST-TEST


mga
Impact Testing
8/2/2007
G07I7-001.2
2007 NHTSA FORD MUSTANG
FMVSS 201U - UPPER INTERIOR
TEST #11 RIGHT BP3
H/V IMPACT ANGLE= 90 / 3
FM7152
POST-TEST

SUMMARY OF FMVSS 201U TEST

JOB/NHTSA NO: G07I7-001.2 VEHICLE YR/MAKE/MODEL:2007/NHTSA/Ford Mustang

GENERAL TEST PARAMETERS:

Test Number:#11

Target (Vehicle Side): BP3 Right

Temperature:22C

MGA Test Reference No.:FM7152

Humidity:53%

Approach Horizontal Angles:90º

Time of Test:10:33:15 AM

Approach Vertical Angles:3º

FMH Serial No:[037]

Additional Description: 3 Relocations

TEST RESULTS:

HIC(d)	HIC	Δt (msec)	Velocity (kph)	Impact location on FMH (mm)	
				Above Pt. O	Left/Right Pt. O
678	679	6.9	23.8	12	0

INSTRUMENTATION INFORMATION: (all accelerometers are Endevco 7264-2000)

Axis	Channel	Serial No.	DLR Value	ΔV Pre-Test	ΔV Post-Test
X	5	J22696	-100.013	0.78	0.78
Y	6	J35791	91.856	0.80	0.80
Z	7	J35800	97.996	0.81	0.81

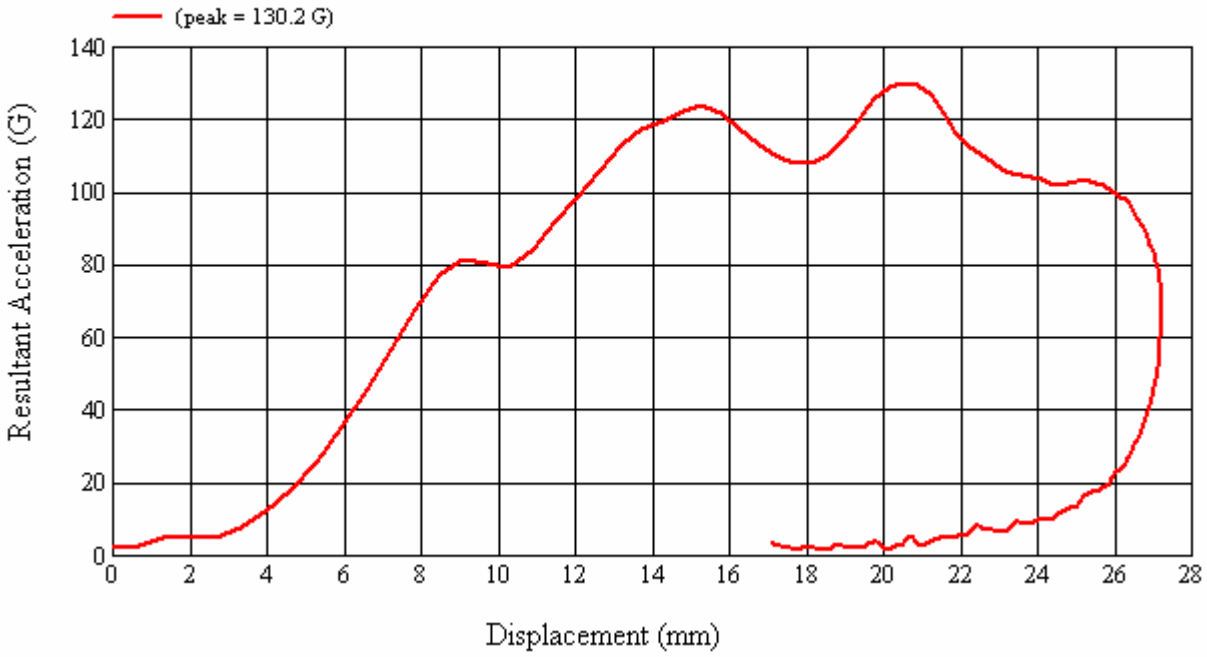
REMARKS (Summary of test, damage, non-compliance, invalid test, etc.):

D-ring cover displacement

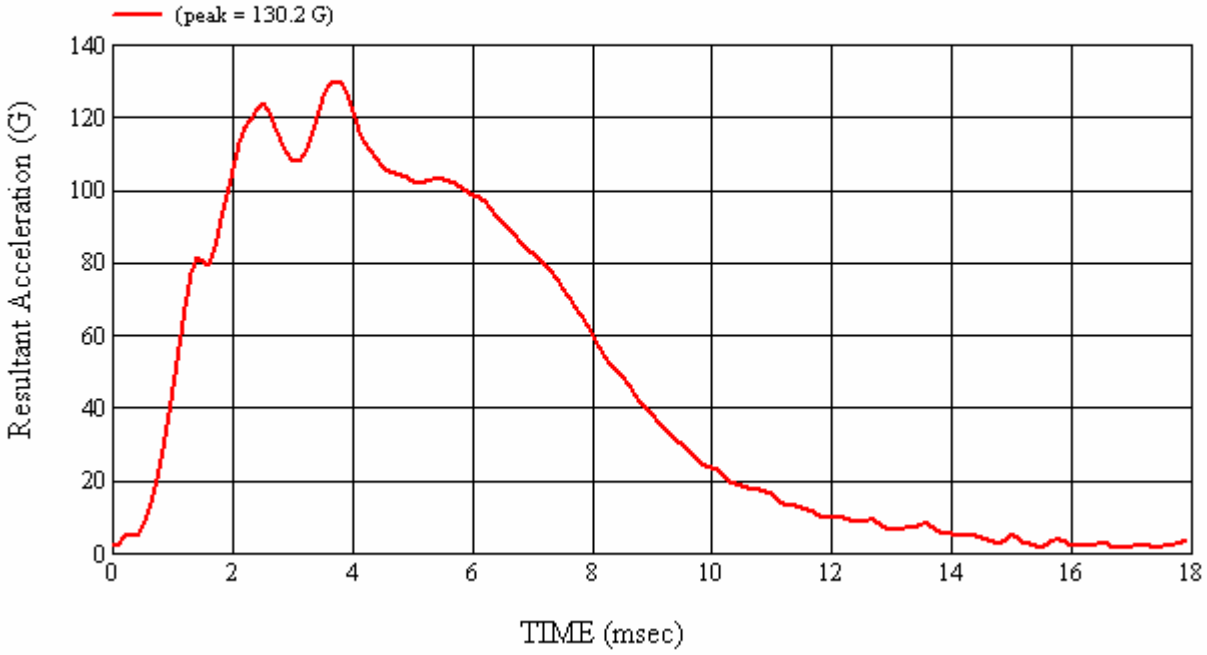
Recorded By: _____ Approved By*: _____ Date: 8/2/2007

*Only necessary for NHTSA (Government) Compliance testing.

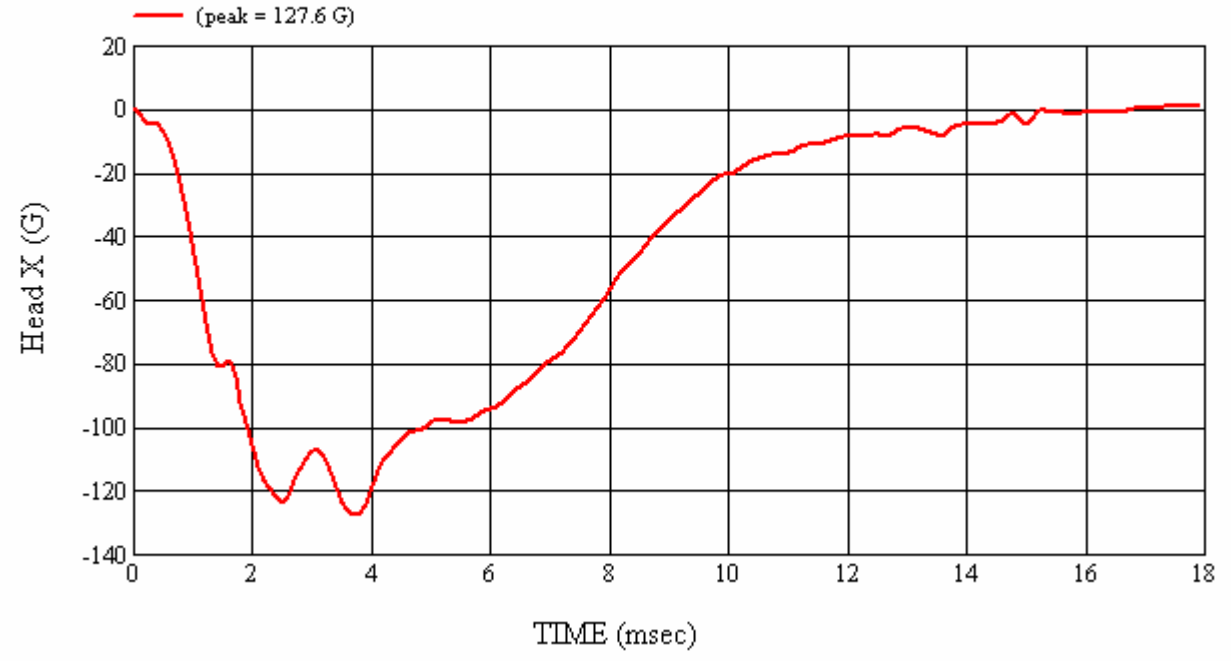
MGA Test #: FM7152 Target Location: BP3, Right Side Test Date: 8/2/2007



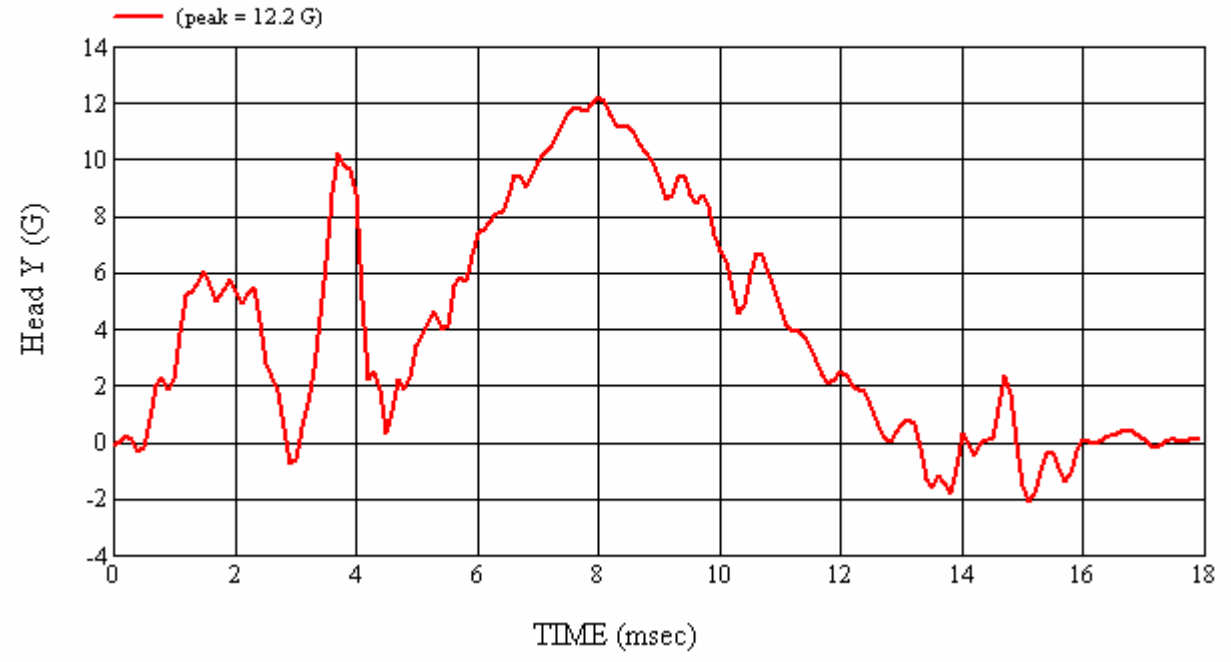
Test #FM7152



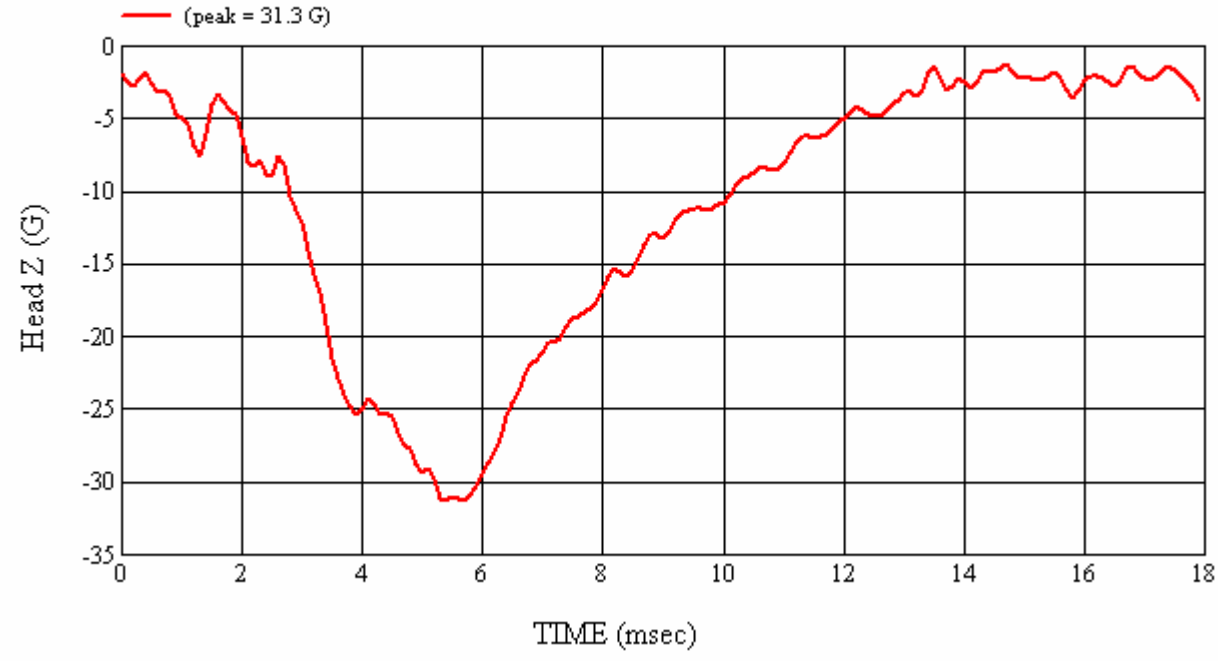
Test #FM7152



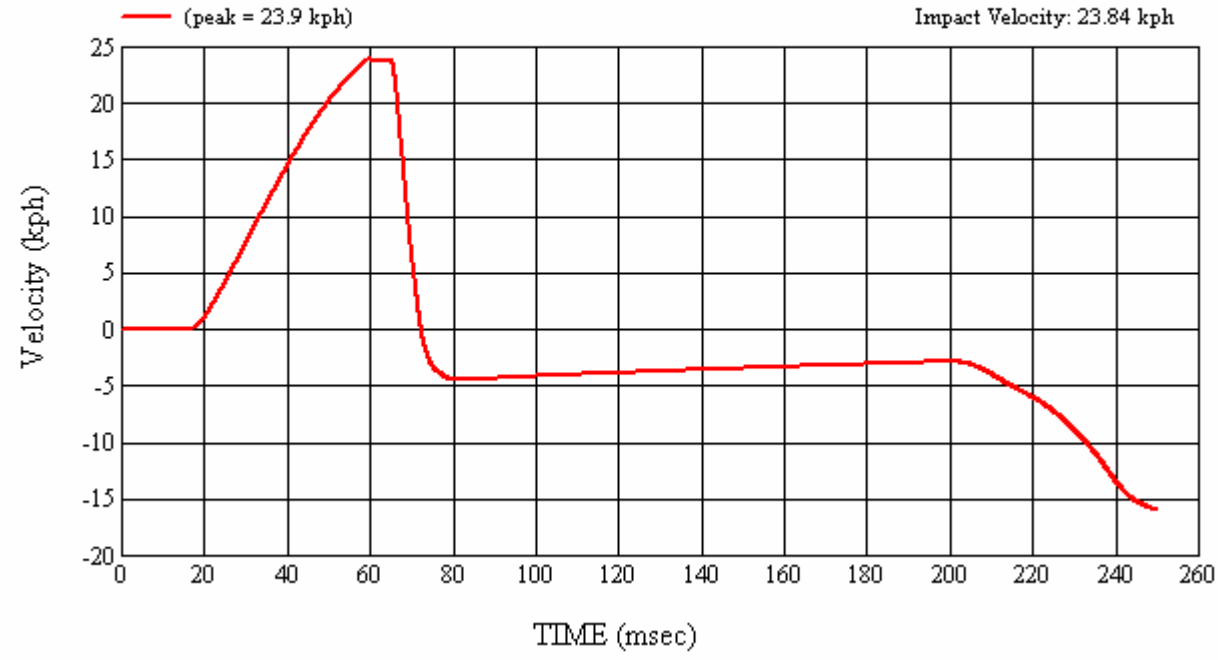
Test #FM7152



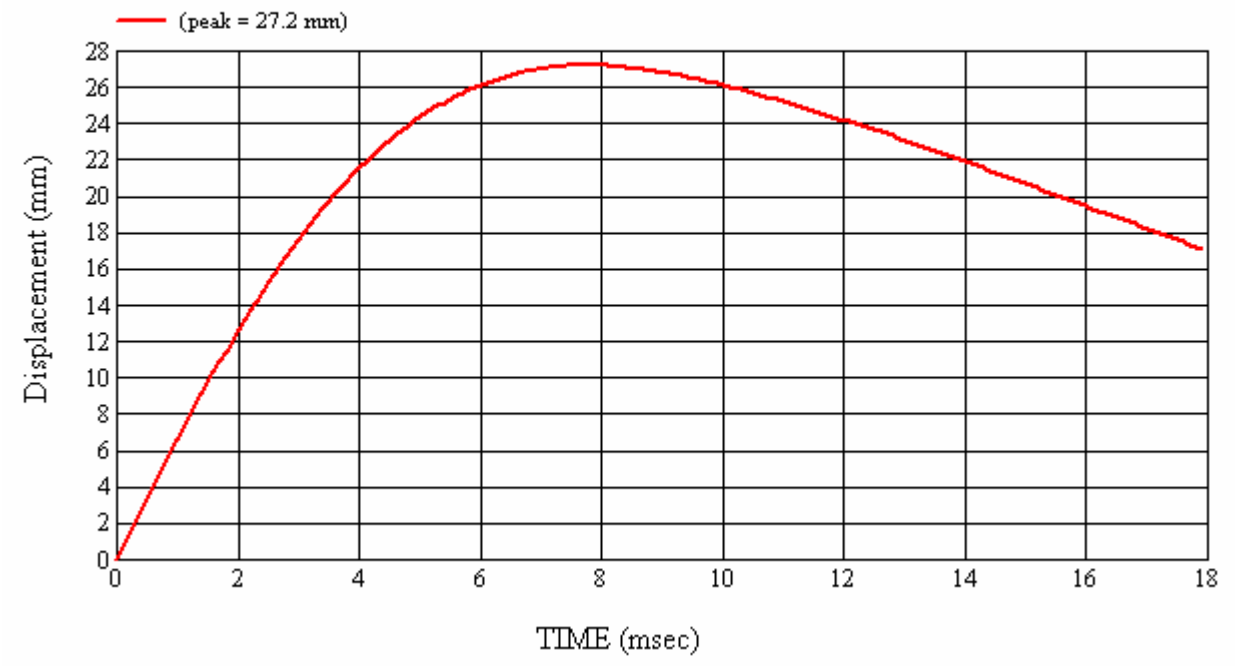
Test #FM7152



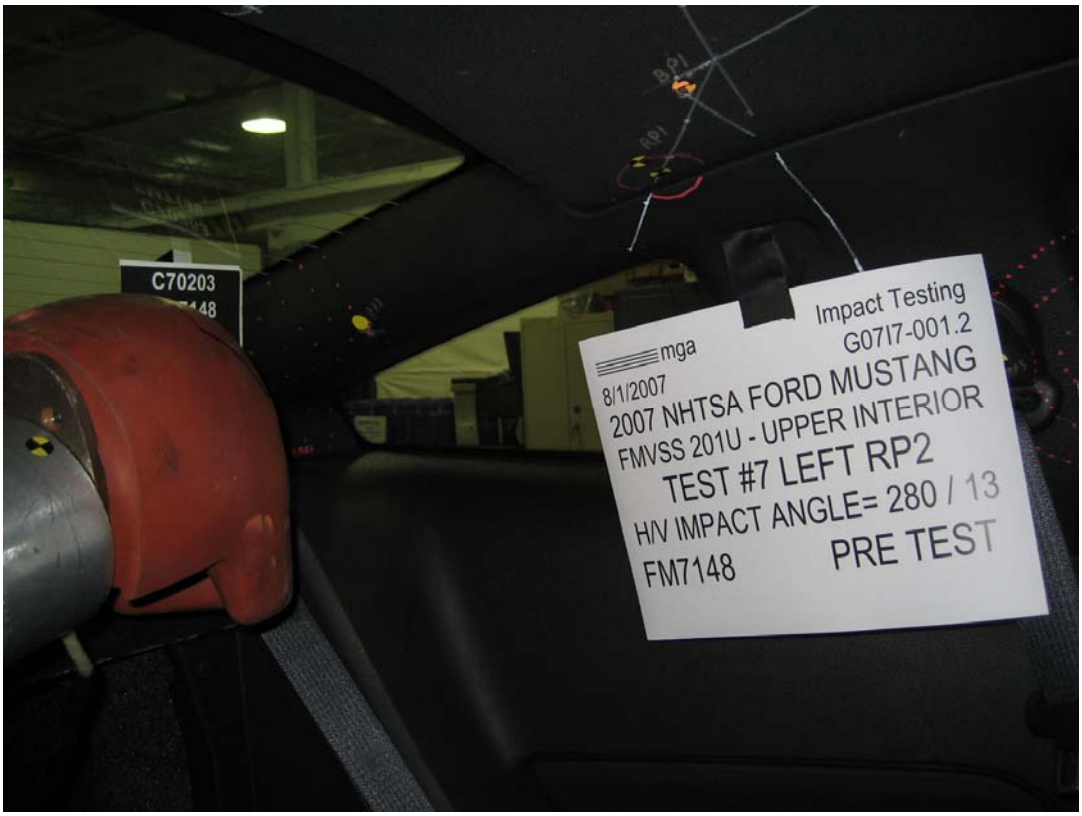
Test #FM7152



Test #FM7152


(peak = 27.2 mm)
Displacement (mm)
TIME (msec)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28

Test #FM7152


C70203
mga
Impact Testing
G07I7-001.2
8/1/2007
2007 NHTSA FORD MUSTANG
FMVSS 201U - UPPER INTERIOR
TEST #7 LEFT RP2
H/V IMPACT ANGLE= 280 / 13
FM7148
PRE TEST


C70203
FM7148
LEFT RP2
H/V 280/13
mga
Impact Testing
G07I7-001.2
8/1/2007
2007 NHTSA FORD MUSTANG
FMVSS 201U - UPPER INTERIOR
TEST #7 LEFT RP2
H/V IMPACT ANGLE= 280 / 13
FM7148
POST-TEST


mga
Impact Testing
8/1/2007
G07I7-001.2
2007 NHTSA FORD MUSTANG
FMVSS 201U - UPPER INTERIOR
TEST #7 LEFT RP2
H/V IMPACT ANGLE= 280 / 13
FM7148
POST-TEST

SUMMARY OF FMVSS 201U TEST

JOB/NHTSA NO: G07I7-001.2 VEHICLE YR/MAKE/MODEL:2007/NHTSA/Ford Mustang

GENERAL TEST PARAMETERS:

Target (Vehicle Side): RP2 Left

MGA Test Reference No.:FM7148

Approach Horizontal Angles:280º

Approach Vertical Angles:13º

Additional Description:Extension #1

Test Number:#7

Temperature:22C

Humidity:49%

Time of Test:12:19:25 PM

FMH Serial No:[037]

TEST RESULTS:

HIC(d)	HIC	Δt (msec)	Velocity (kph)	Impact location on FMH (mm)	
				Above Pt. O	Left/Right Pt. O
286	159	18.3	22.6	13	0

INSTRUMENTATION INFORMATION: (all accelerometers are Endevco 7264-2000)

Axis	Channel	Serial No.	DLR Value	ΔV Pre-Test	ΔV Post-Test
X	5	J22696	-100.013	0.78	0.78
Y	6	J35791	91.856	0.80	0.80
Z	7	J35800	97.996	0.81	0.81

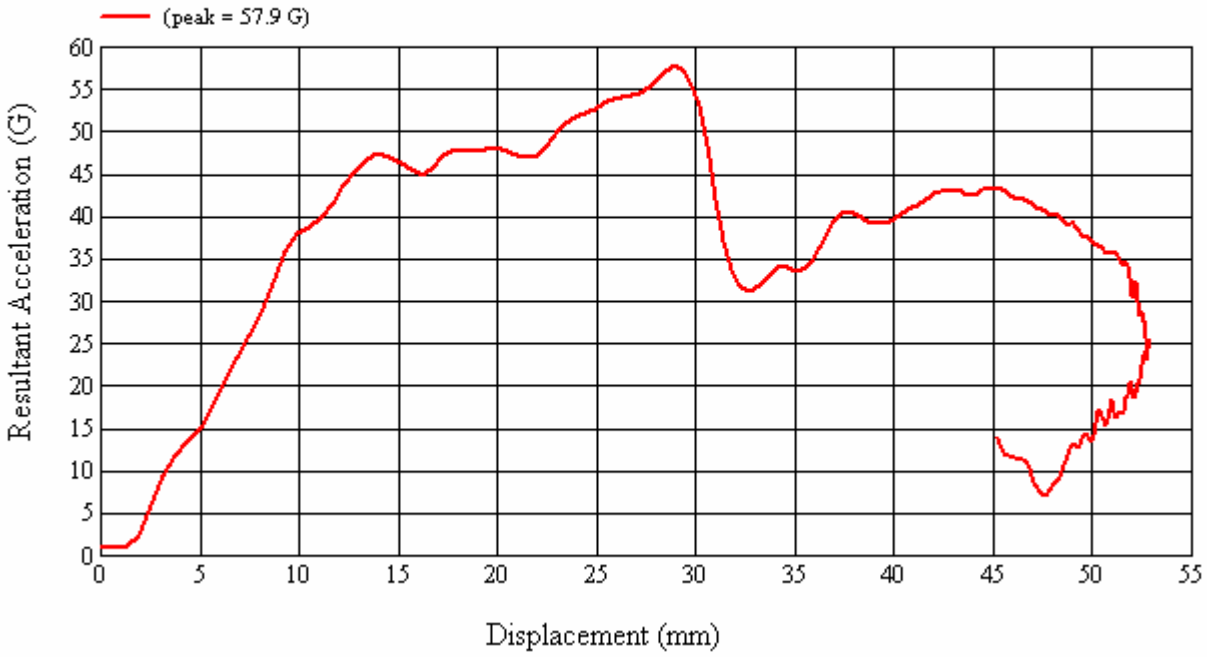
REMARKS (Summary of test, damage, non-compliance, invalid test, etc.):

No visible damage.

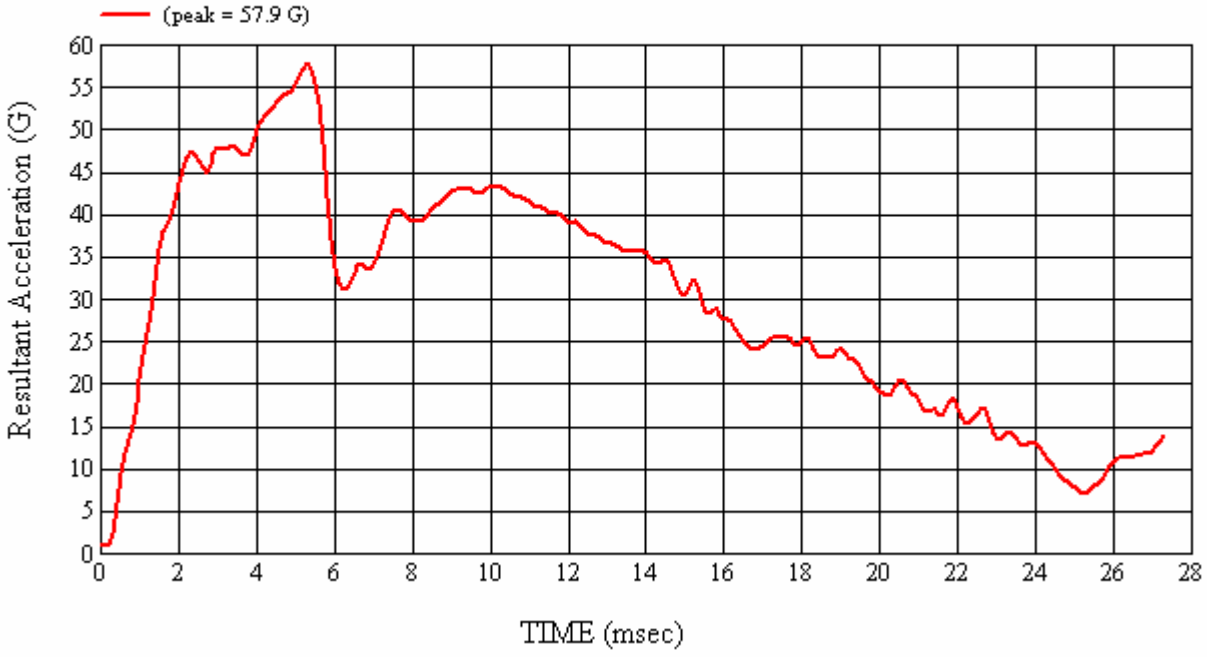
Recorded By: ____________ Approved By*: ____________ Date: 8/1/2007

*Only necessary for NHTSA (Government) Compliance testing.

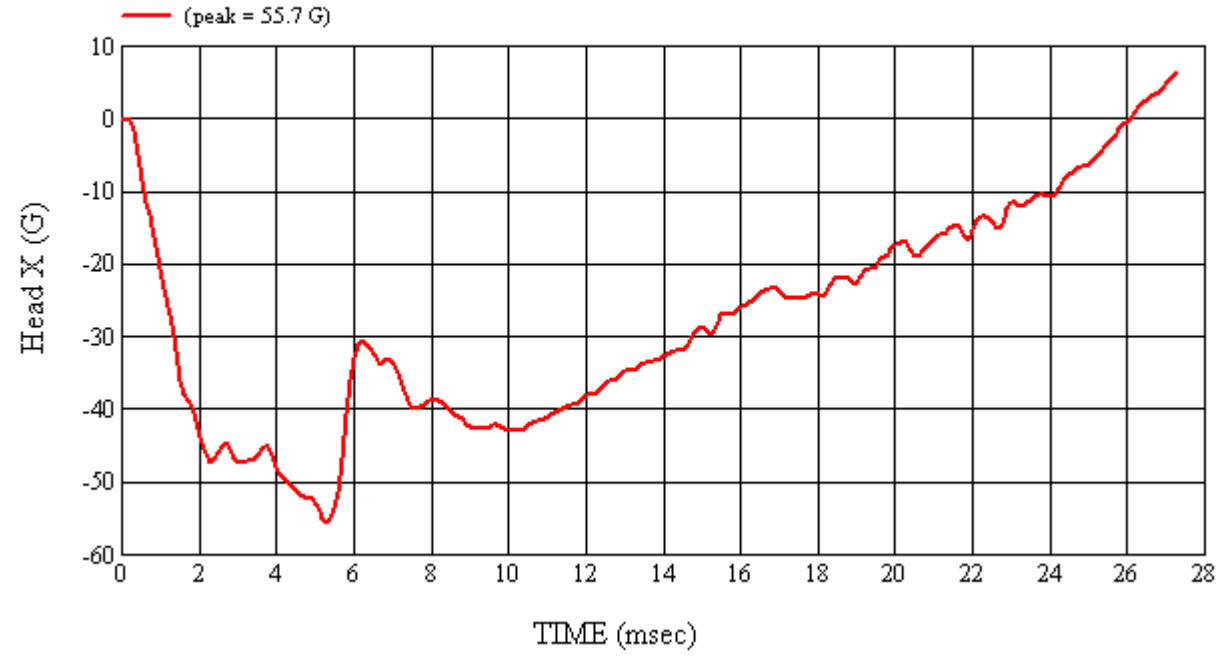
MGA Test #: FM7148 Target Location: RP2, Left Side Test Date: 8/1/2007



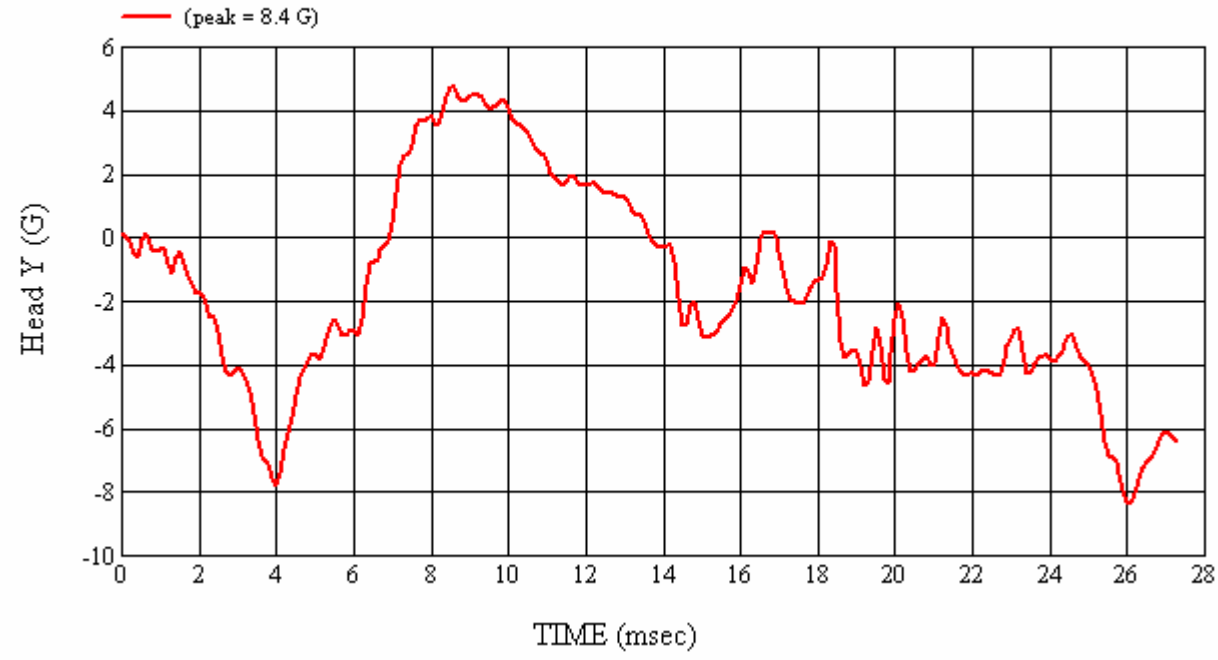
Test #FM7148



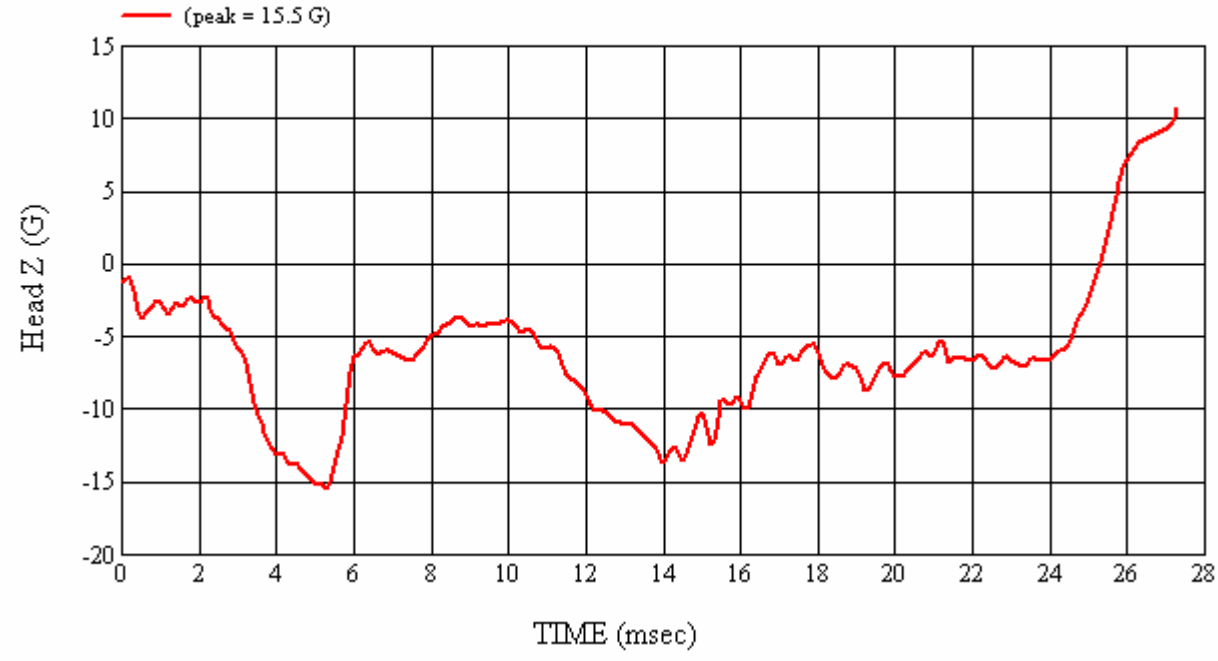
Test #FM7148



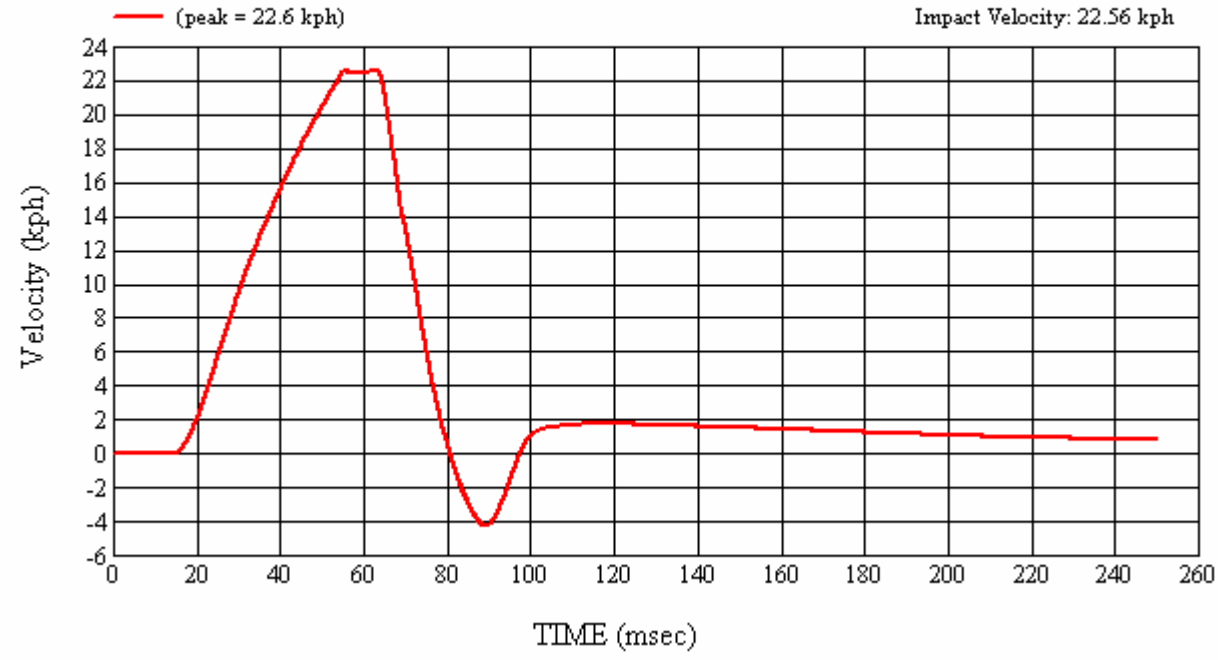
Test #FM7148



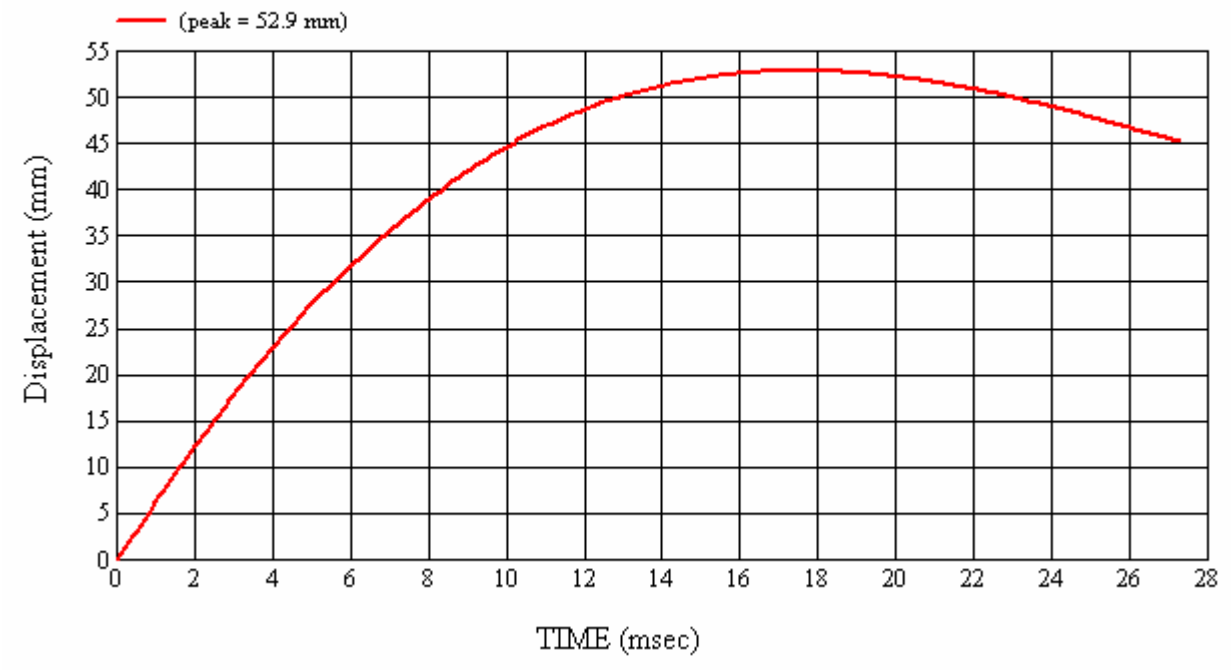
Test #FM7148



Test #FM7148



Test #FM7148


(peak = 52.9 mm)
Displacement (mm)
55
50
45
40
35
30
25
20
15
10
5
0
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
TIME (msec)

Test #FM7148


mga
Impact Testing
7/31/2007
G07I7-001.2
2007 NHTSA FORD MUSTANG
FMVSS 201U - UPPER INTERIOR
TEST #3 LEFT SR2(A)
H/V IMPACT ANGLE= 270 / 50
FM7144
PRE TEST
C70203
FM7144
LEFT SR2-A
H/V 270/50


mga
Impact Testing
7/31/2007
G07I7-001.2
2007 NHTSA FORD MUSTANG
FMVSS 201U - UPPER INTERIOR
TEST #3 LEFT SR2(A)
H/V IMPACT ANGLE= 270 / 50
FM7144
POST-TEST


mga
Impact Testing
7/31/2007
G07I7-001.2
2007 NHTSA FORD MUSTANG
FMVSS 201U - UPPER INTERIOR
TEST #3 LEFT SR2(A)
H/V IMPACT ANGLE= 270 / 50
FM7144
POST-TEST

SUMMARY OF FMVSS 201U TEST

JOB/NHTSA NO: G07I7-001.2 VEHICLE YR/MAKE/MODEL:2007/NHTSA/Ford Mustang

GENERAL TEST PARAMETERS:

Test Number:#3

Target (Vehicle Side): SR2(a) Left

Temperature:22C

MGA Test Reference No.:FM7144

Humidity:52%

Approach Horizontal Angles:270º

Time of Test:3:52:11 PM

Approach Vertical Angles:50º

FMH Serial No:[037]

Additional Description: 1 Relocation (25mm)

TEST RESULTS:

HIC(d)	HIC	Δt (msec)	Velocity (kph)	Impact location on FMH (mm)	
				Above Pt. O	Left/Right Pt. O
752	776	8.1	23.6	13	4 Right

INSTRUMENTATION INFORMATION: (all accelerometers are Endevco 7264-2000)

Axis	Channel	Serial No.	DLR Value	ΔV Pre-Test	ΔV Post-Test
X	5	J22696	-100.013	0.78	0.78
Y	6	J35791	91.856	0.80	0.80
Z	7	J35800	97.996	0.81	0.81

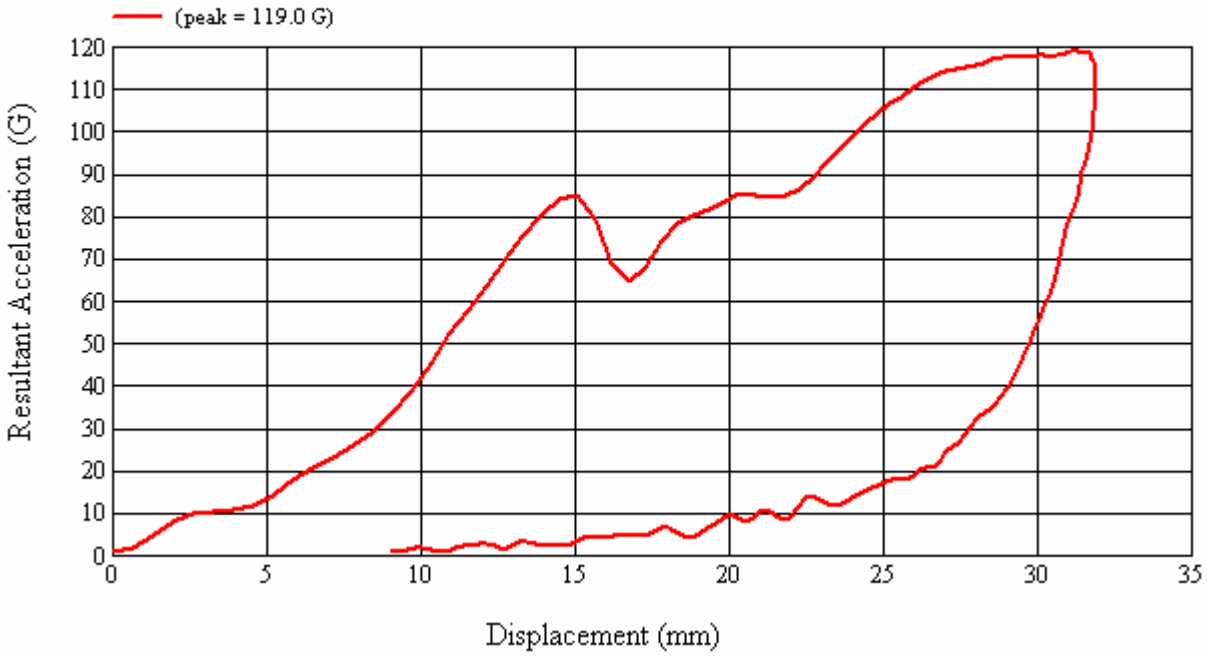
REMARKS (Summary of test, damage, non-compliance, invalid test, etc.):

A-pillar/side rail trim displacement.

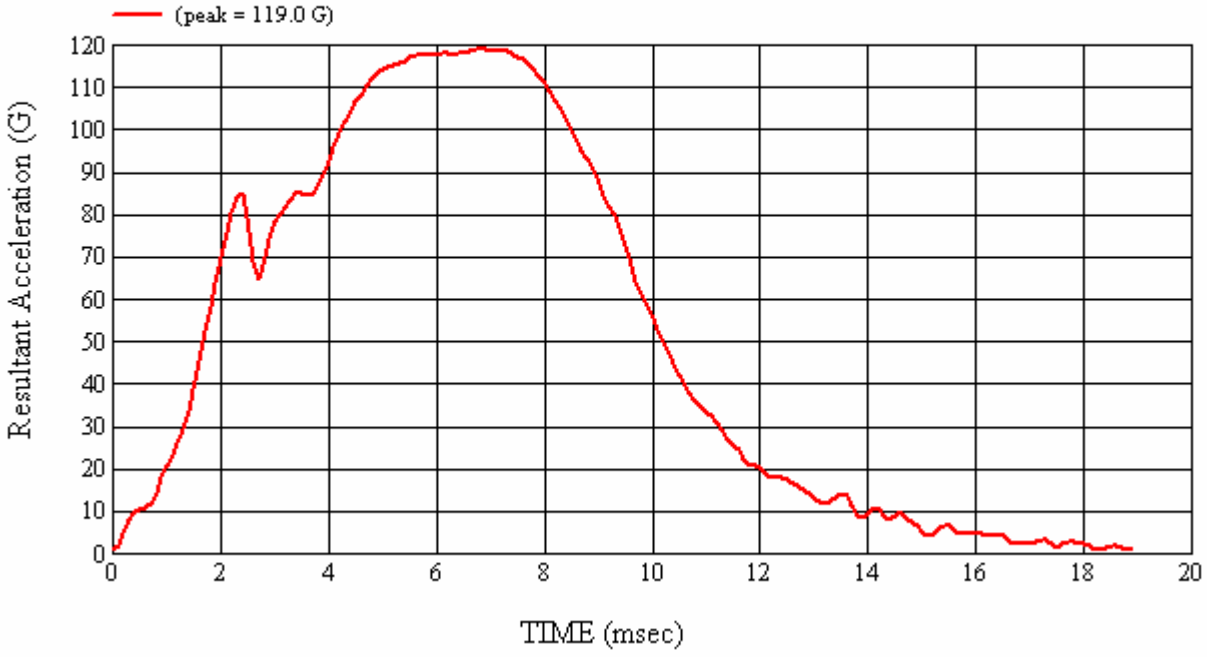
Recorded By: _____ Approved By*: _____ Date: 7/31/2007

*Only necessary for NHTSA (Government) Compliance testing.

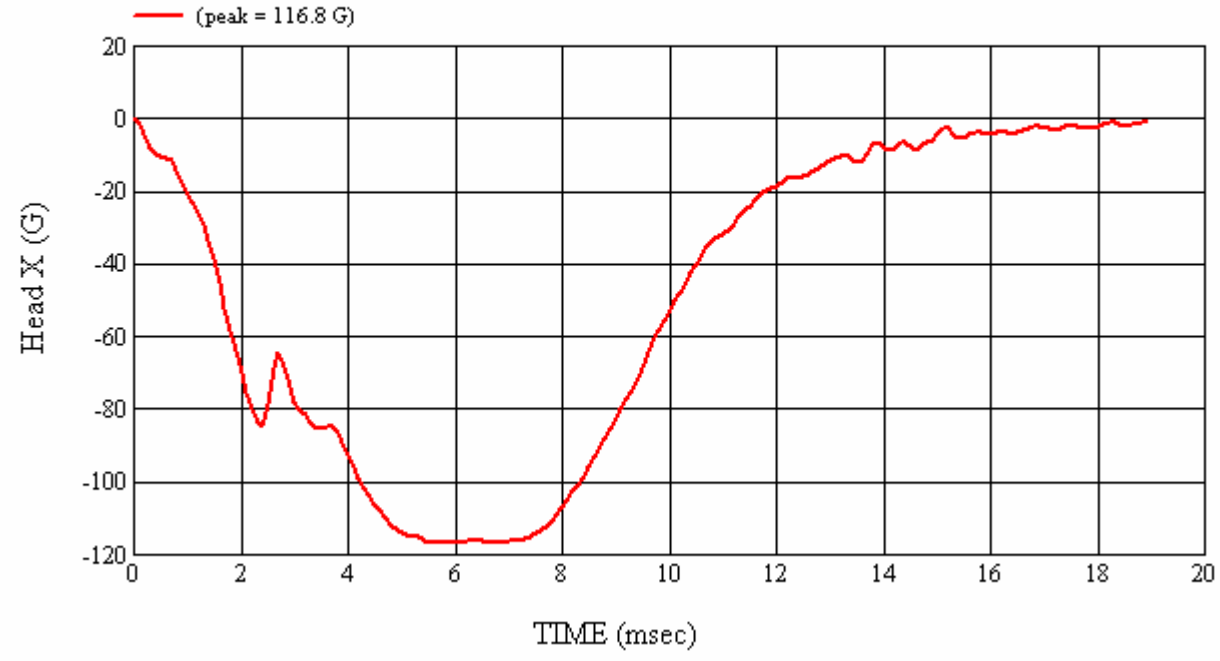
MGA Test #: FM7144 Target Location: SR2(a), Left Side Test Date: 7/31/2007



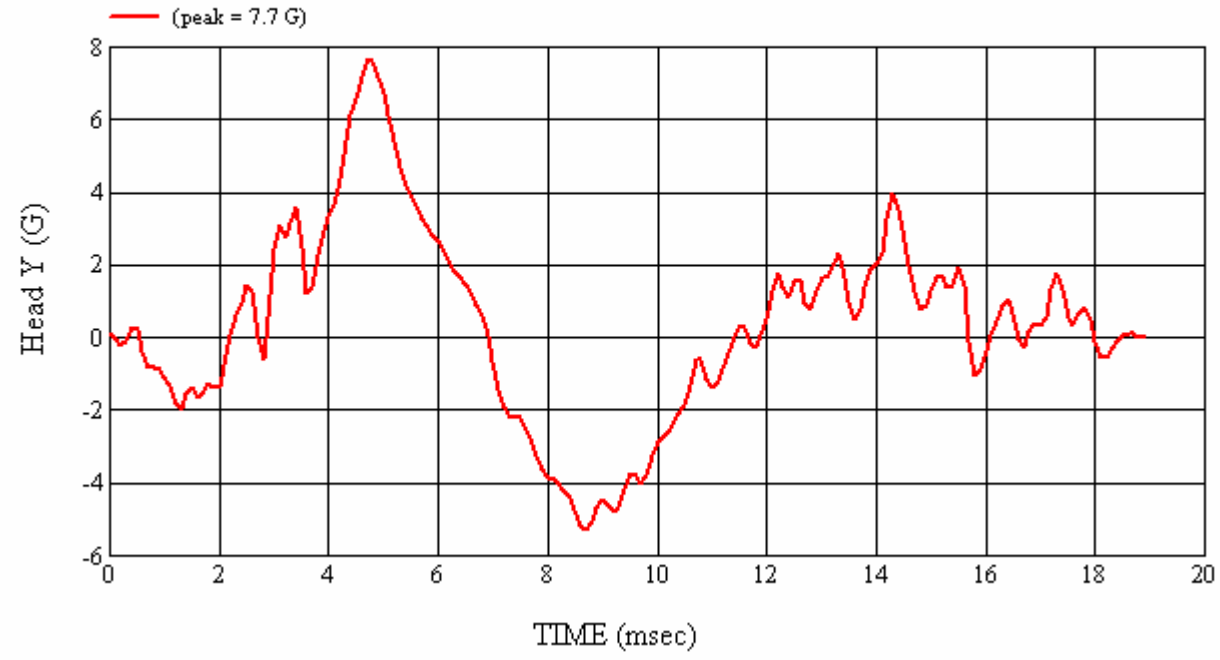
Test #FM7144



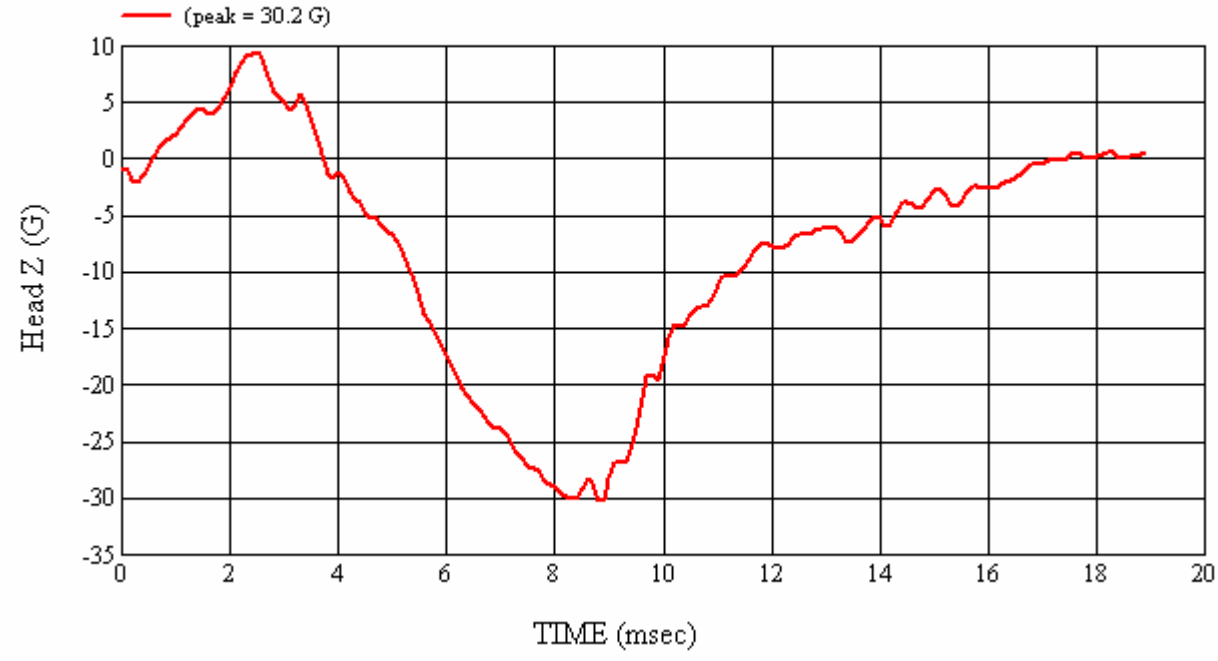
Test #FM7144



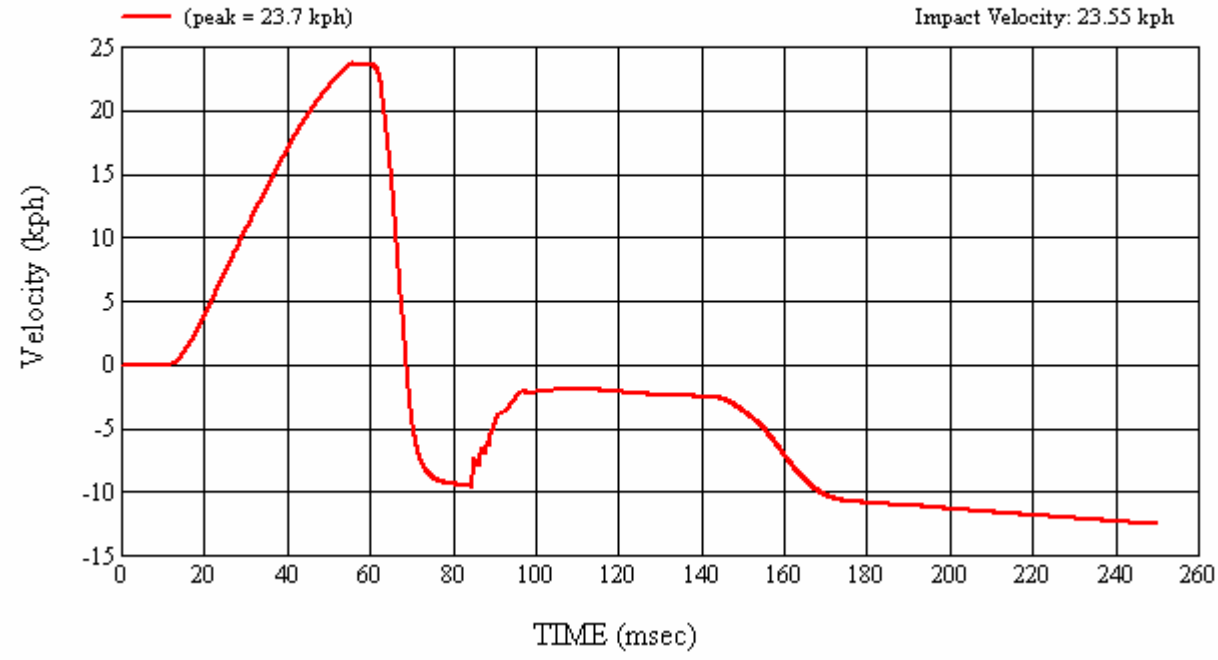
Test #FM7144



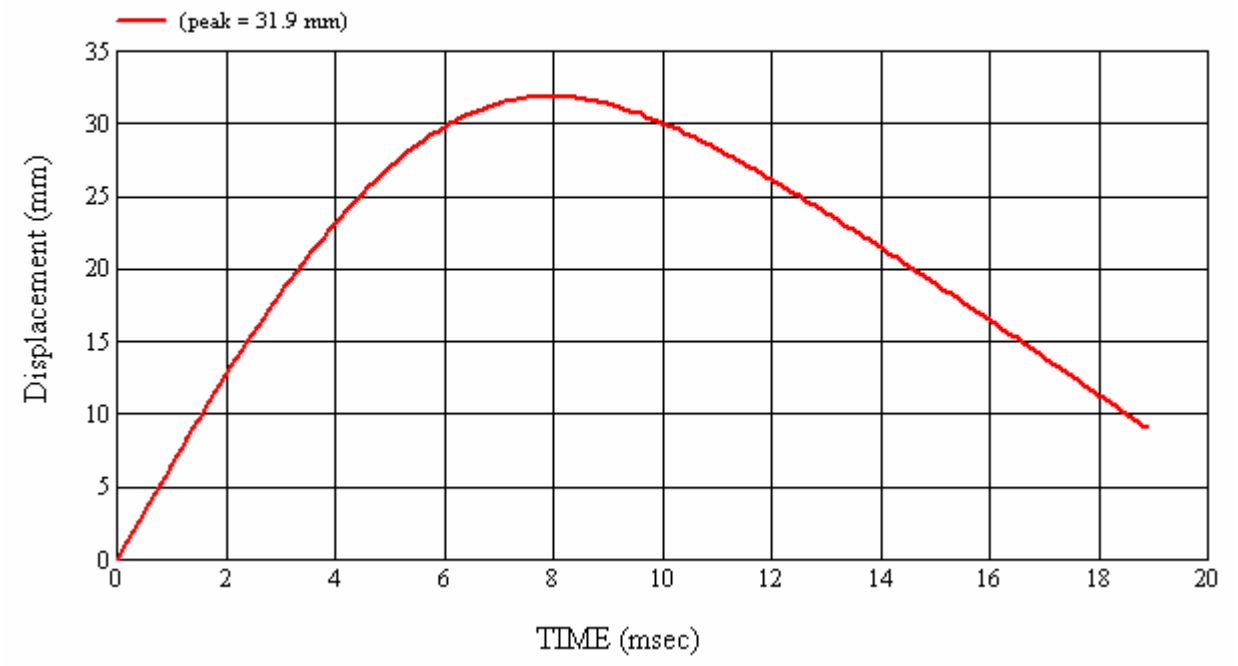
Test #FM7144



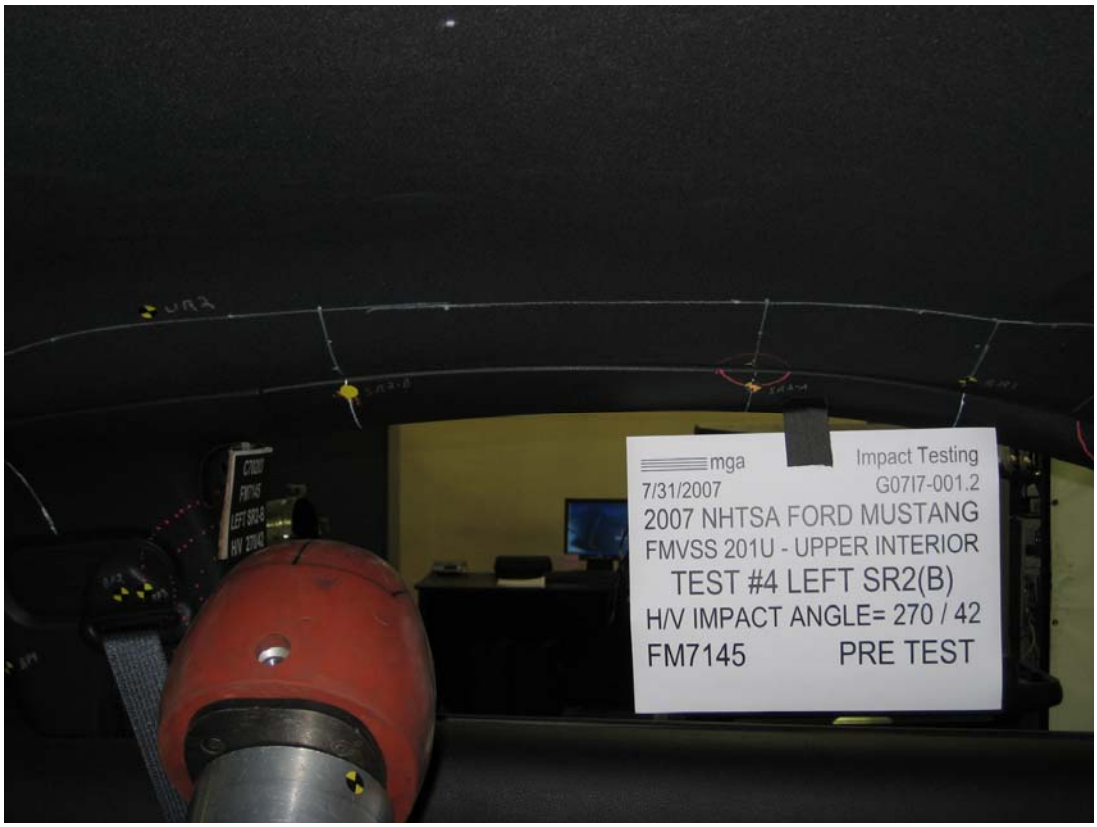
Test #FM7144



Test #FM7144


(peak = 31.9 mm)
Displacement (mm)
TIME (msec)
0
5
10
15
20
25
30
35
0
2
4
6
8
10
12
14
16
18
20

Test #FM7144


mga
Impact Testing
7/31/2007
G07I7-001.2
2007 NHTSA FORD MUSTANG
FMVSS 201U - UPPER INTERIOR
TEST #4 LEFT SR2(B)
H/V IMPACT ANGLE= 270 / 42
FM7145
PRE TEST


mga
7/31/2007
Impact Testing
G07I7-001.2
2007 NHTSA FORD MUSTANG
FMVSS 201U - UPPER INTERIOR
TEST #4 LEFT SR2(B)
H/V IMPACT ANGLE= 270 / 42
FM7145
POST-TEST


mga
7/31/2007
Impact Testing
G07I7-001.2
2007 NHTSA FORD MUSTANG
FMVSS 201U - UPPER INTERIOR
TEST #4 LEFT SR2(B)
H/V IMPACT ANGLE= 270 / 42
FM7145
POST-TEST

SUMMARY OF FMVSS 201U TEST

JOB/NHTSA NO: G07I7-001.2 VEHICLE YR/MAKE/MODEL:2007/NHTSA/Ford Mustang

GENERAL TEST PARAMETERS:

Target (Vehicle Side): SR2(b) Left

MGA Test Reference No.:FM7145

Approach Horizontal Angles:270º

Approach Vertical Angles:42º

Additional Description:

Test Number:#4

Temperature:22C

Humidity:53%

Time of Test:5:06:07 PM

FMH Serial No:[038]

TEST RESULTS:

HIC(d)	HIC	Δt (msec)	Velocity (kph)	Impact location on FMH (mm)	
				Above Pt. O	Left/Right Pt. O
851	908	6.1	24.1	11	20 Left

INSTRUMENTATION INFORMATION: (all accelerometers are Endevco 7264-2000)

Axis	Channel	Serial No.	DLR Value	ΔV Pre-Test	ΔV Post-Test
X	5	J14103	-94.598	0.78	0.78
Y	6	J36197	110.692	0.80	0.80
Z	7	J36353	99.391	0.81	0.81

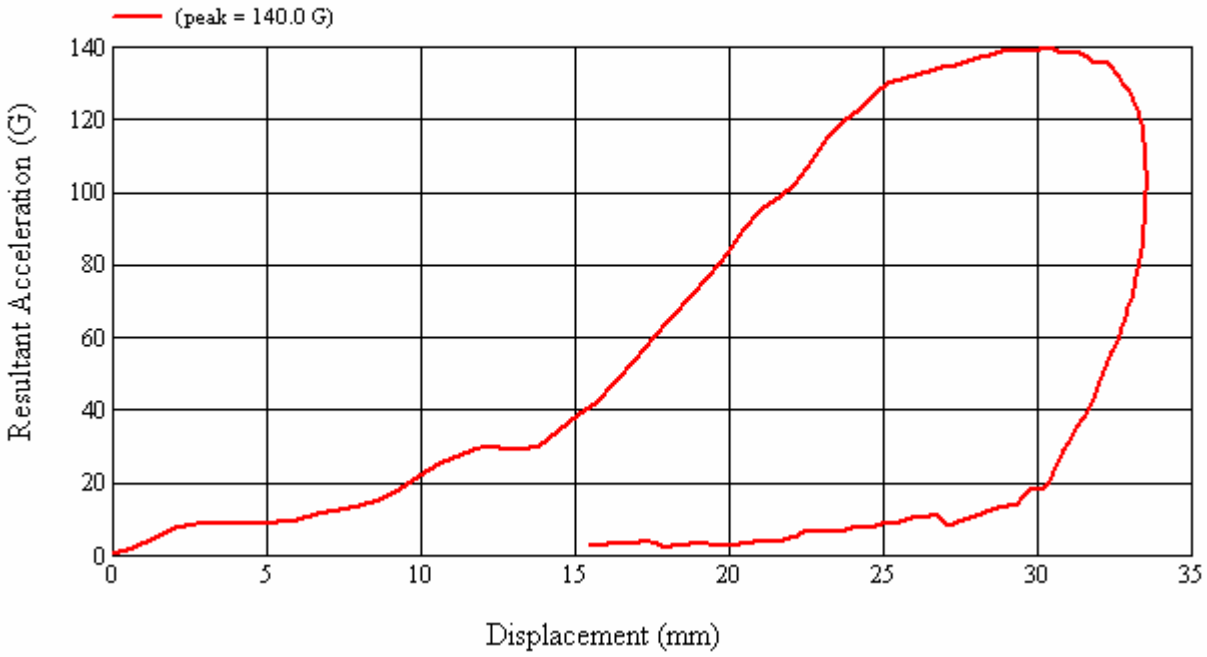
REMARKS (Summary of test, damage, non-compliance, invalid test, etc.):

No visible damage.

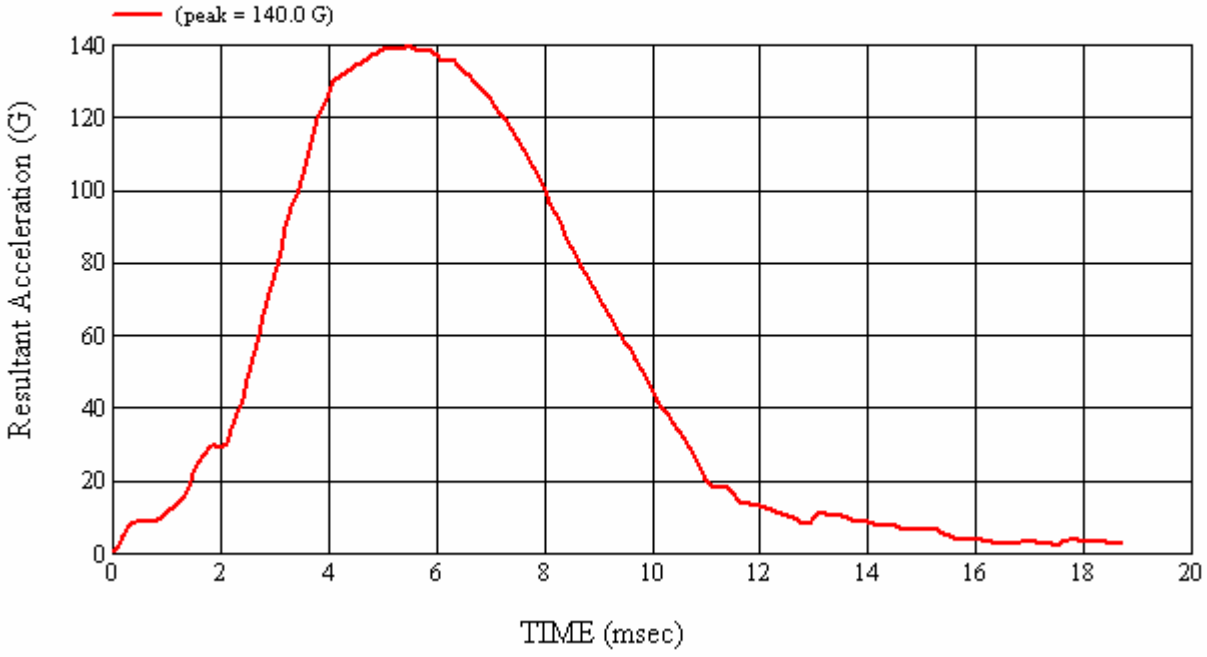
Recorded By: [signature] Approved By*: [signature] Date: 7/31/2007

*Only necessary for NHTSA (Government) Compliance testing.

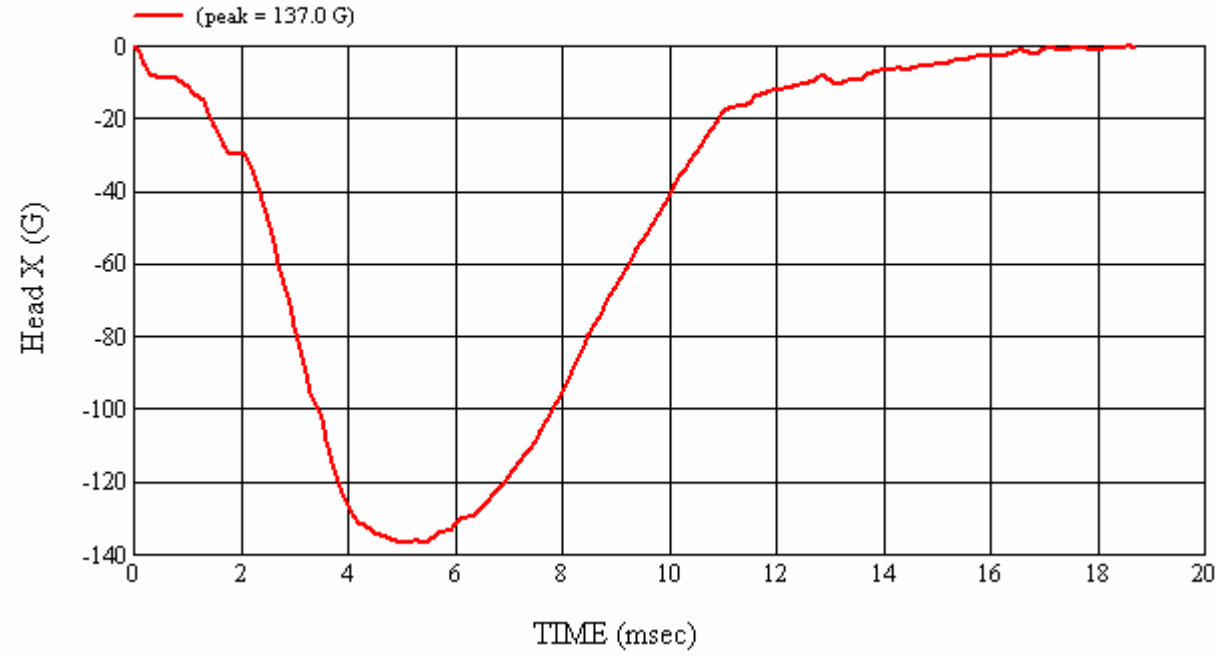
MGA Test #: FM7145 Target Location: SR2(b), Left Side Test Date: 7/31/2007



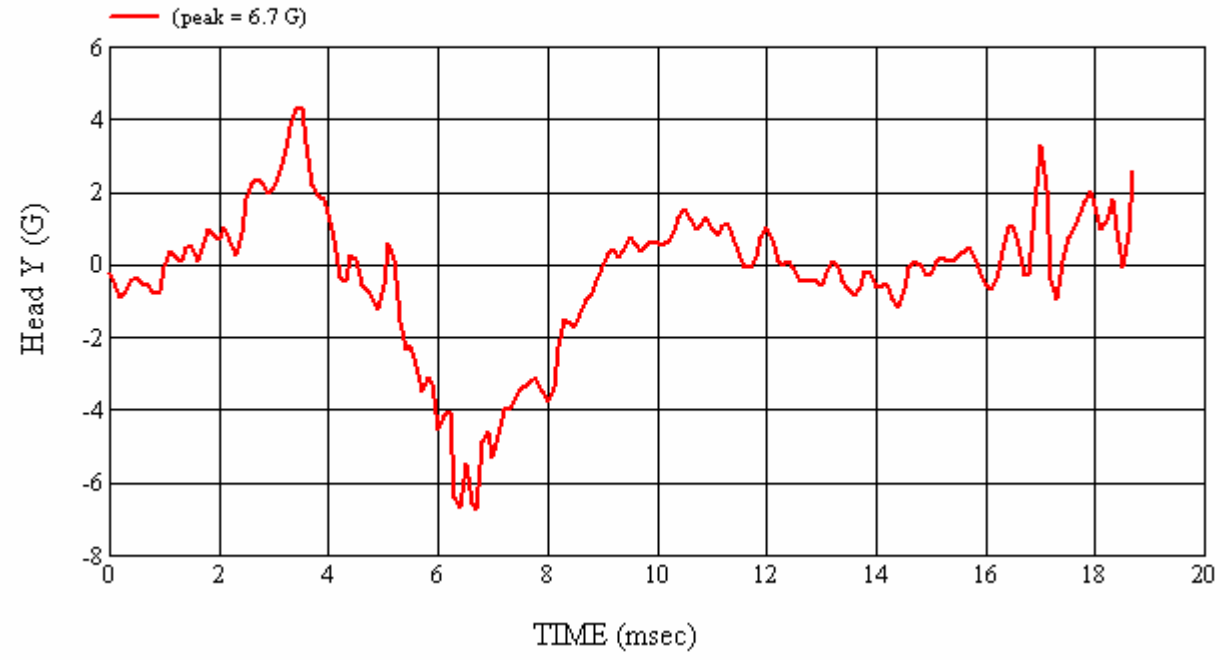
Test #FM7145



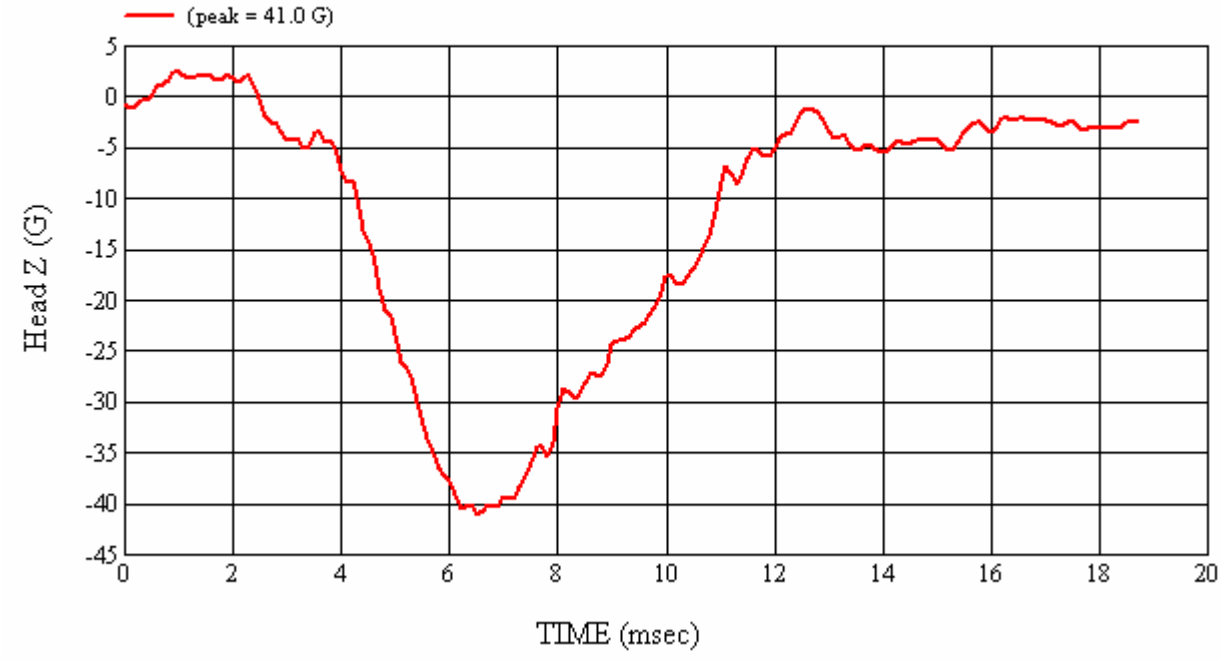
Test #FM7145



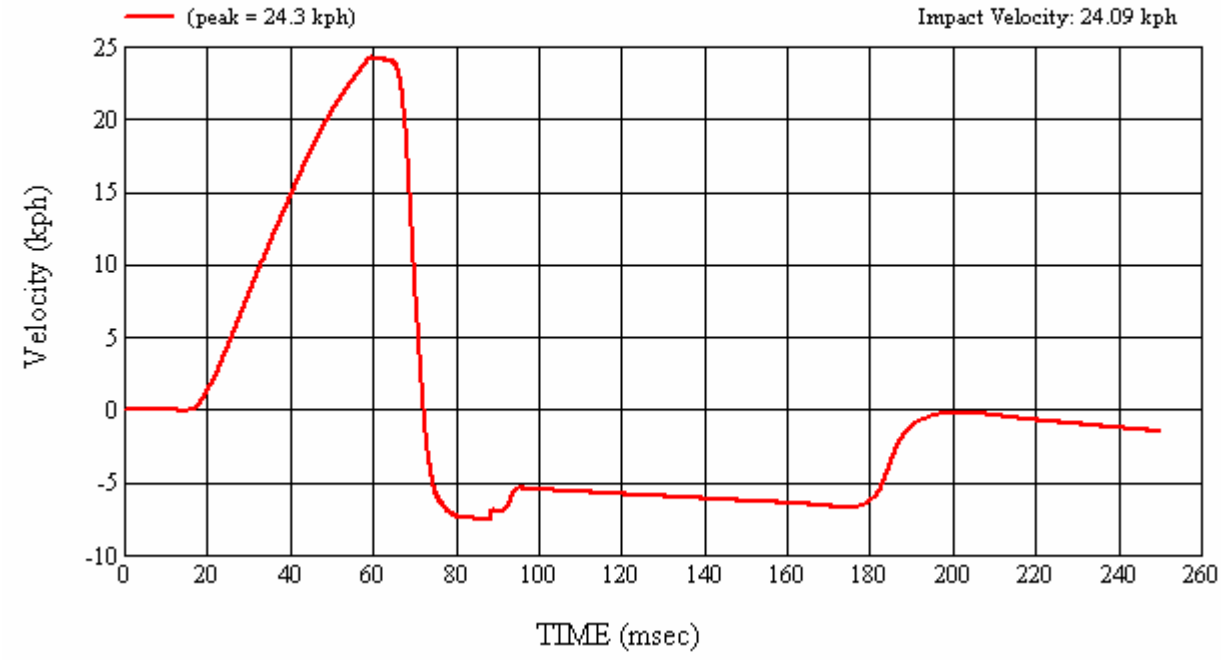
Test #FM7145



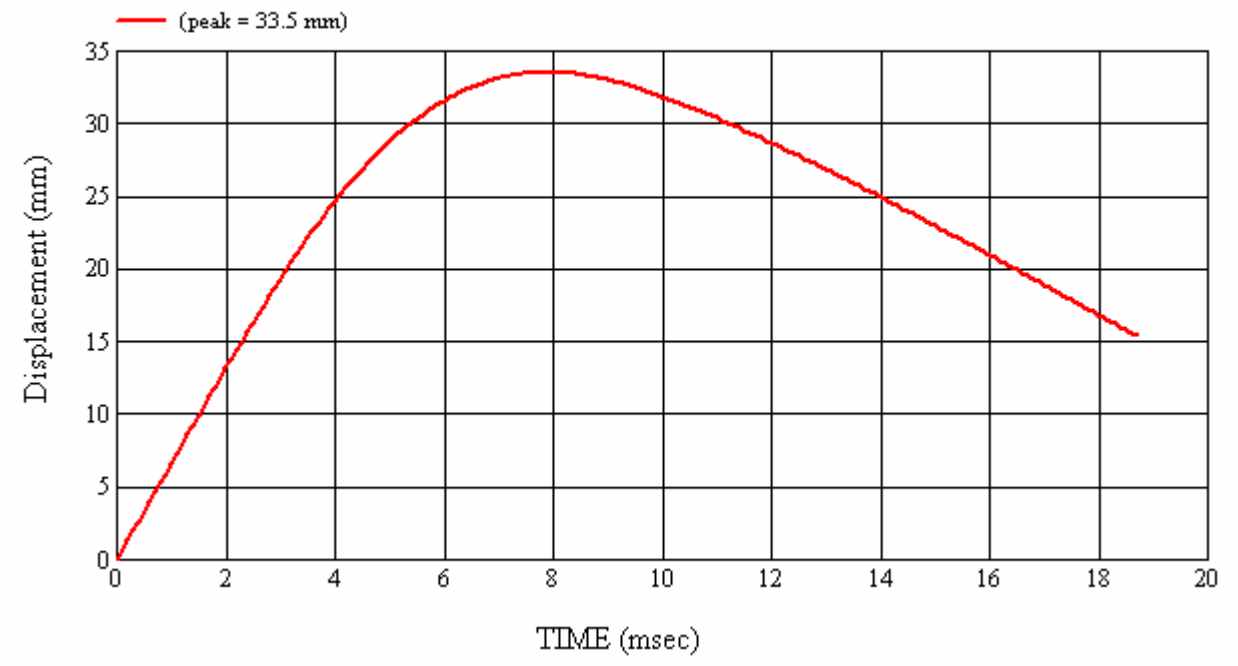
Test #FM7145



Test #FM7145

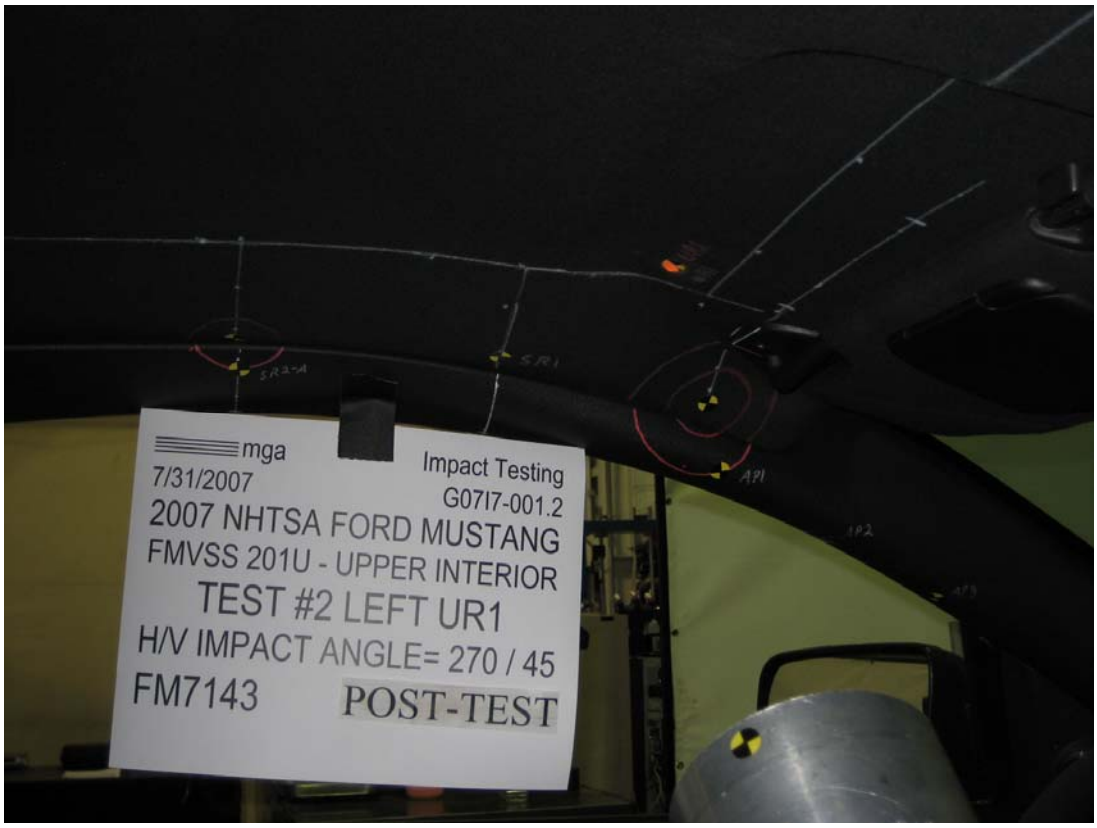


Test #FM7145


(peak = 33.5 mm)
Displacement (mm)
0
5
10
15
20
25
30
35
0
2
4
6
8
10
12
14
16
18
20
TIME (msec)

Test #FM7145


mga
Impact Testing
7/31/2007
G07I7-001.2
2007 NHTSA FORD MUSTANG
FMVSS 201U - UPPER INTERIOR
TEST #2 LEFT UR1
H/V IMPACT ANGLE= 270 / 45
FM7143
PRE TEST


mga
7/31/2007
Impact Testing
G07I7-001.2
2007 NHTSA FORD MUSTANG
FMVSS 201U - UPPER INTERIOR
TEST #2 LEFT UR1
H/V IMPACT ANGLE= 270 / 45
FM7143
POST-TEST


mga
7/31/2007
Impact Testing
G07I7-001.2
2007 NHTSA FORD MUSTANG
FMVSS 201U - UPPER INTERIOR
TEST #2 LEFT UR1
H/V IMPACT ANGLE= 270 / 45
FM7143
POST-TEST

SUMMARY OF FMVSS 201U TEST

JOB/NHTSA NO: G07I7-001.2 VEHICLE YR/MAKE/MODEL:2007/NHTSA/Ford Mustang

GENERAL TEST PARAMETERS:

Test Number:#2

Target (Vehicle Side): UR1 Left

Temperature:22C

MGA Test Reference No.:FM7143

Humidity:54%

Approach Horizontal Angles:270º

Time of Test:2:56:57 PM

Approach Vertical Angles:45º

FMH Serial No:[036]

Additional Description: Front corner of upper roof zone.

TEST RESULTS:

HIC(d)	HIC	Δt (msec)	Velocity (kph)	Impact location on FMH (mm)	
				Above Pt. O	Left/Right Pt. O
506	450	10.1	23.4	34	22 Right

INSTRUMENTATION INFORMATION: (all accelerometers are Endevco 7264-2000)

Axis	Channel	Serial No.	DLR Value	ΔV Pre-Test	ΔV Post-Test
X	5	J21969	-90.883	0.78	0.78
Y	6	J35916	103.15	0.80	0.80
Z	7	J35918	99.409	0.81	0.81

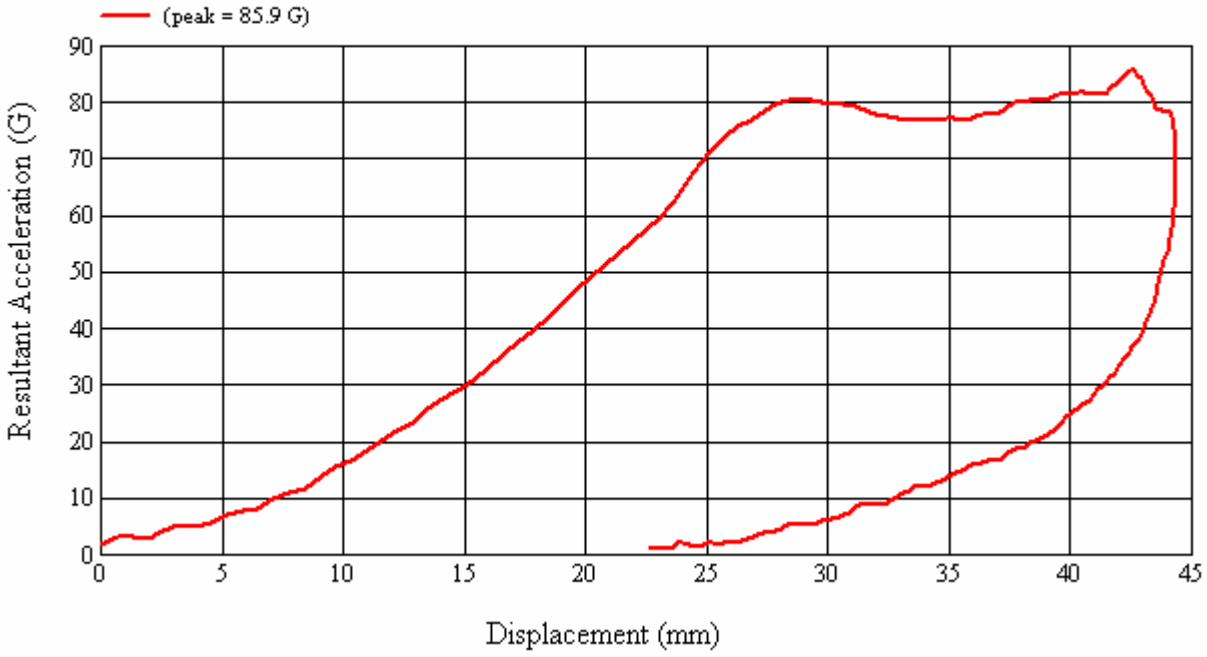
REMARKS (Summary of test, damage, non-compliance, invalid test, etc.):

A-pillar/side rail trim displacement.

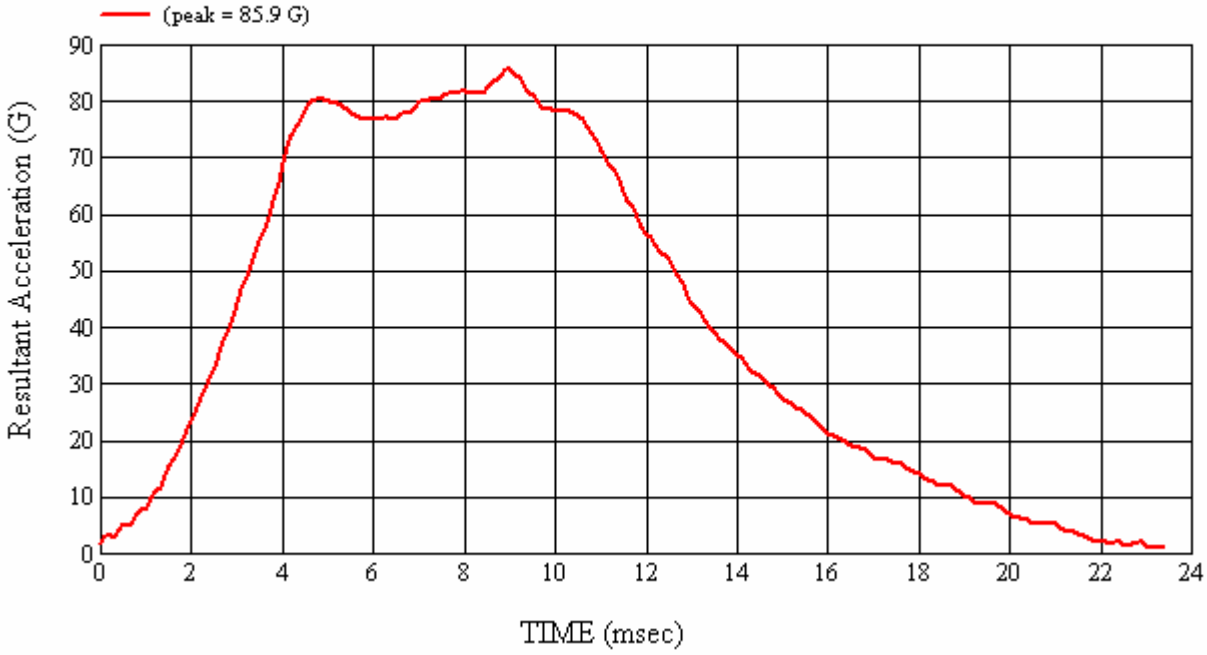
Recorded By: _____ Approved By*: _____ Date: 7/31/2007

*Only necessary for NHTSA (Government) Compliance testing.

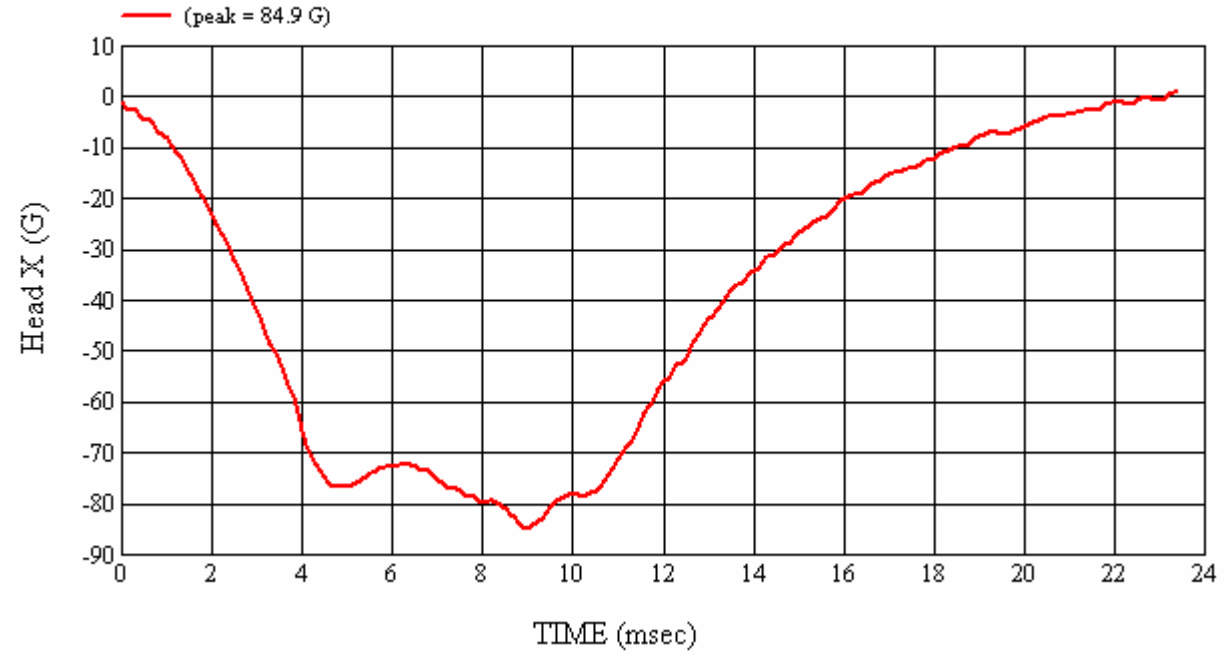
MGA Test #: FM7143 Target Location: UR1, Left Side Test Date: 7/31/2007



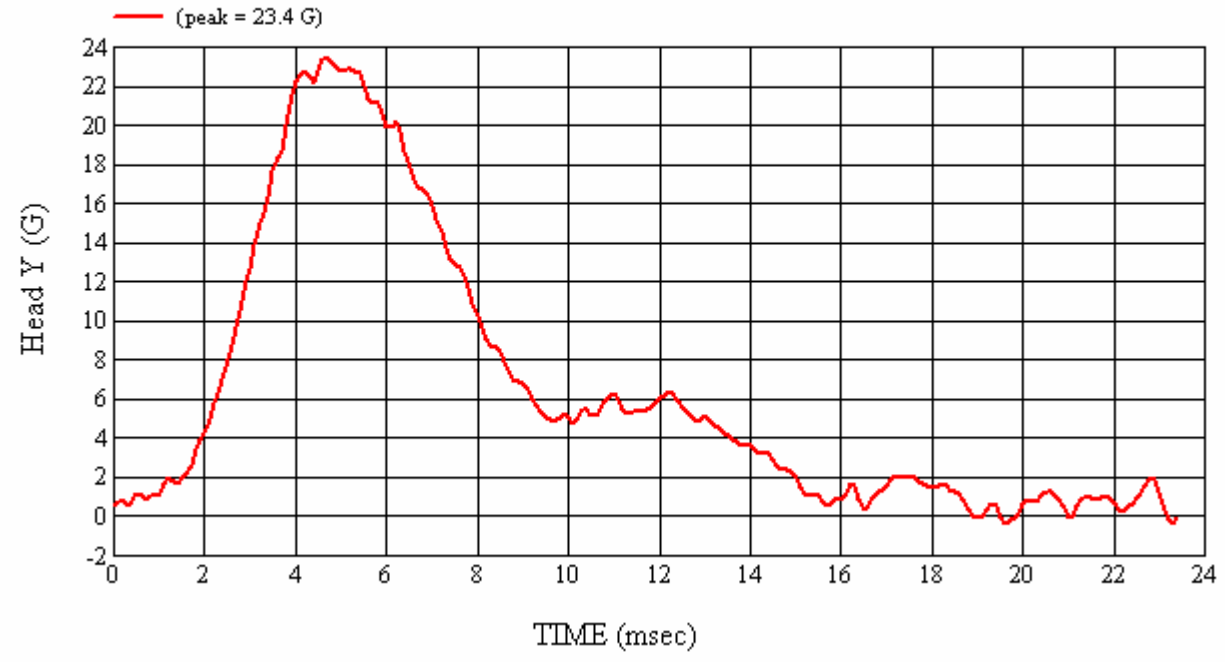
Test #FM7143



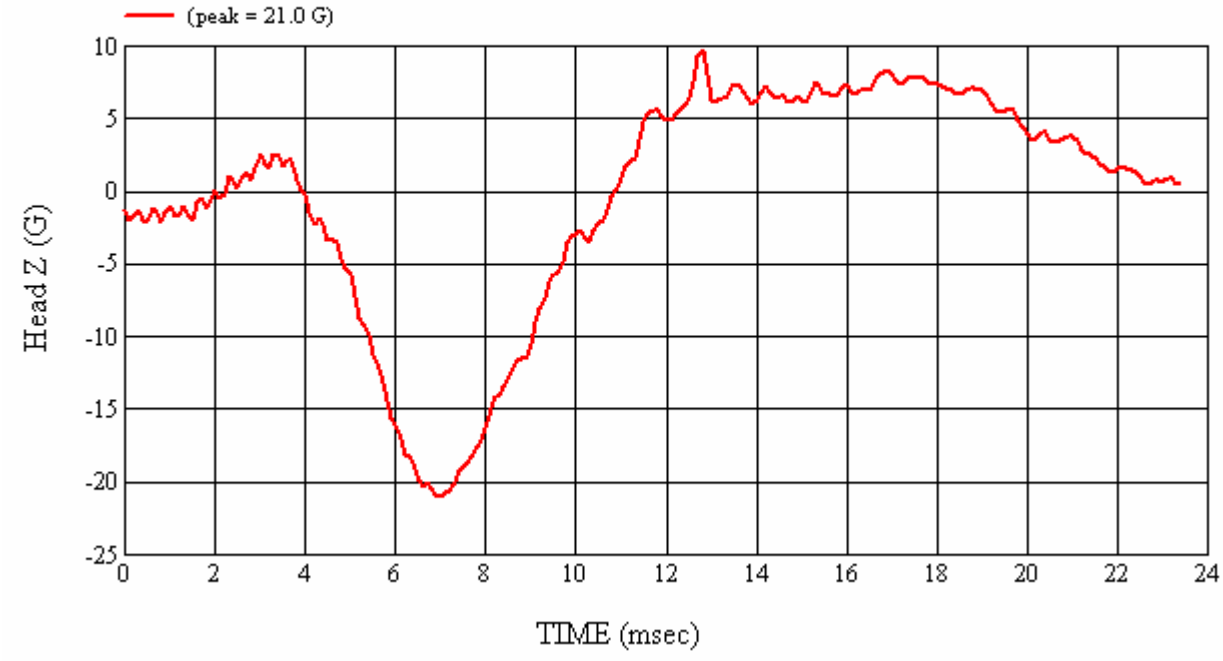
Test #FM7143



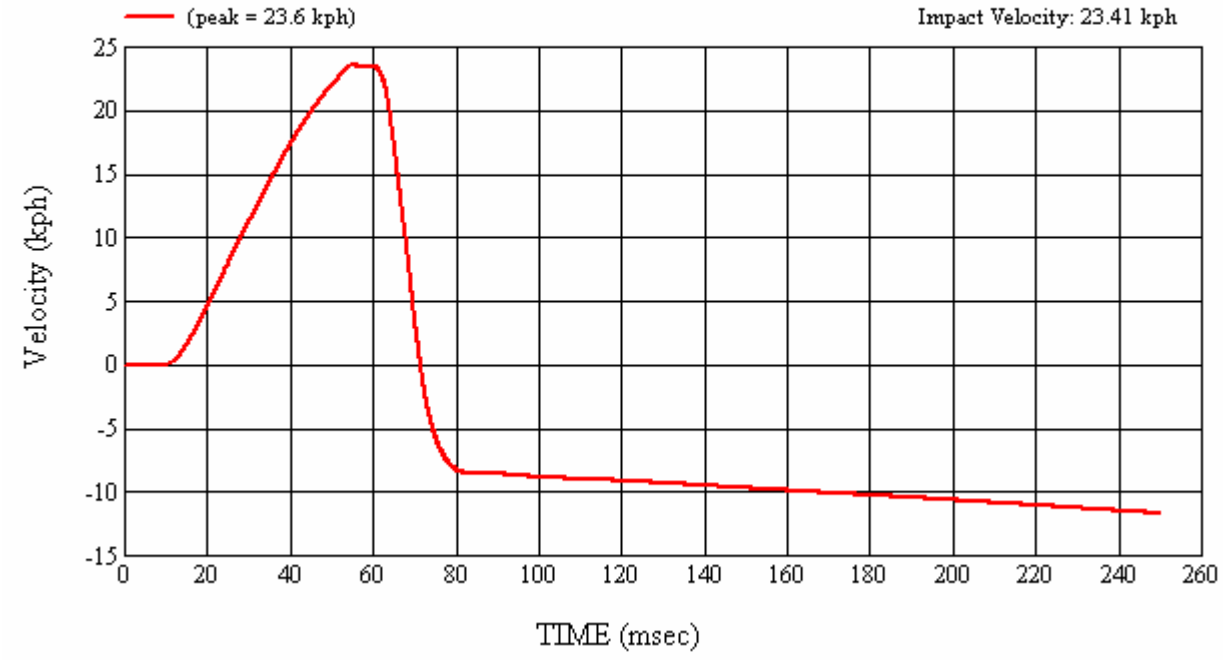
Test #FM7143



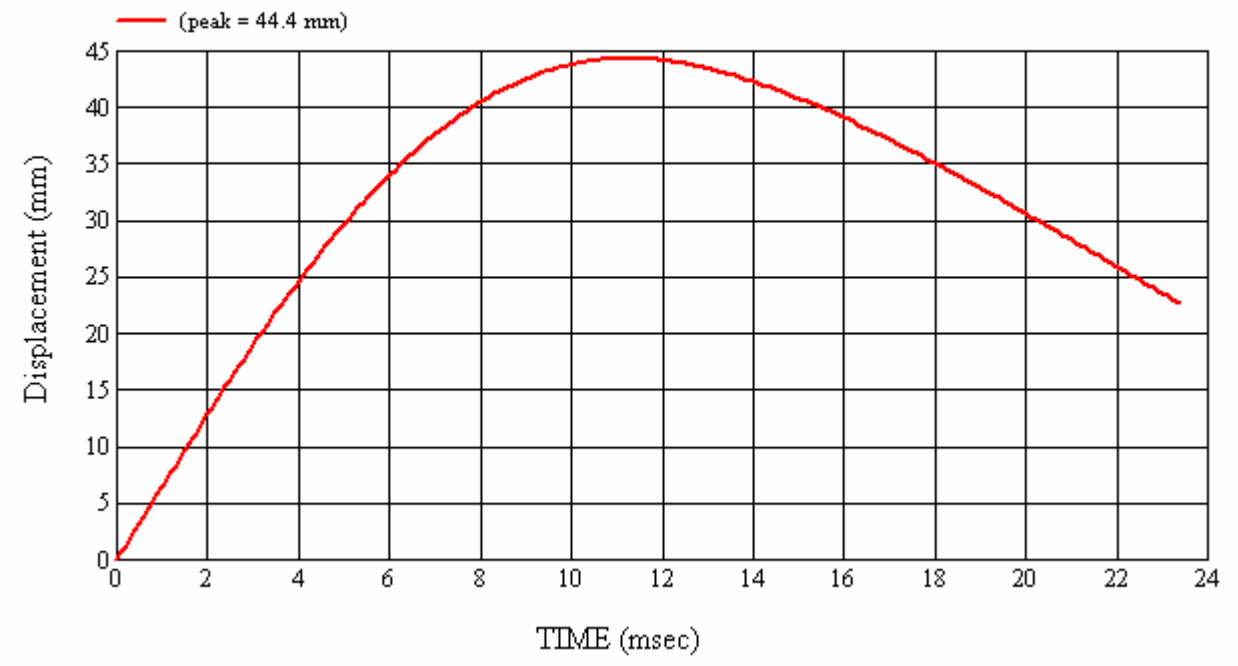
Test #FM7143



Test #FM7143



Test #FM7143


(peak = 44.4 mm)
Displacement (mm)
0
5
10
15
20
25
30
35
40
45
0
2
4
6
8
10
12
14
16
18
20
22
24
TIME (msec)

Test #FM7143


mga
8/2/2007
2007 NHTSA FORD MUSTANG
FMVSS 201U - UPPER INTERIOR
TEST #10 RIGHT UR3
H/V IMPACT ANGLE= 90 / 41
FM7151
PRE TEST


mga
Impact Testing
8/2/2007
G07I7-001.2
2007 NHTSA FORD MUSTANG
FMVSS 201U - UPPER INTERIOR
TEST #10 RIGHT UR3
H/V IMPACT ANGLE= 90 / 41
FM7151
POST-TEST


mga
Impact Testing
8/2/2007
G07I7-001.2
2007 NHTSA FORD MUSTANG
FMVSS 201U - UPPER INTERIOR
TEST #10 RIGHT UR3
H/V IMPACT ANGLE= 90 / 41
FM7151
POST-TEST

SUMMARY OF FMVSS 201U TEST

JOB/NHTSA NO: G07I7-001.2 VEHICLE YR/MAKE/MODEL:2007/NHTSA/Ford Mustang

GENERAL TEST PARAMETERS:

Test Number:#10

Target (Vehicle Side): UR3 Right

Temperature:22C

MGA Test Reference No.:FM7151

Humidity:52%

Approach Horizontal Angles:90º

Time of Test:9:55:15 AM

Approach Vertical Angles:41º

FMH Serial No:[036]

Additional Description: Mid side rail

TEST RESULTS:

HIC(d)	HIC	Δt (msec)	Velocity (kph)	Impact location on FMH (mm)	
				Above Pt. O	Left/Right Pt. O
651	642	6.4	23.3	12	3 Right

INSTRUMENTATION INFORMATION: (all accelerometers are Endevco 7264-2000)

Axis	Channel	Serial No.	DLR Value	ΔV Pre-Test	ΔV Post-Test
X	5	J21969	-90.883	0.78	0.78
Y	6	J35916	103.15	0.80	0.80
Z	7	J35918	99.409	0.81	0.81

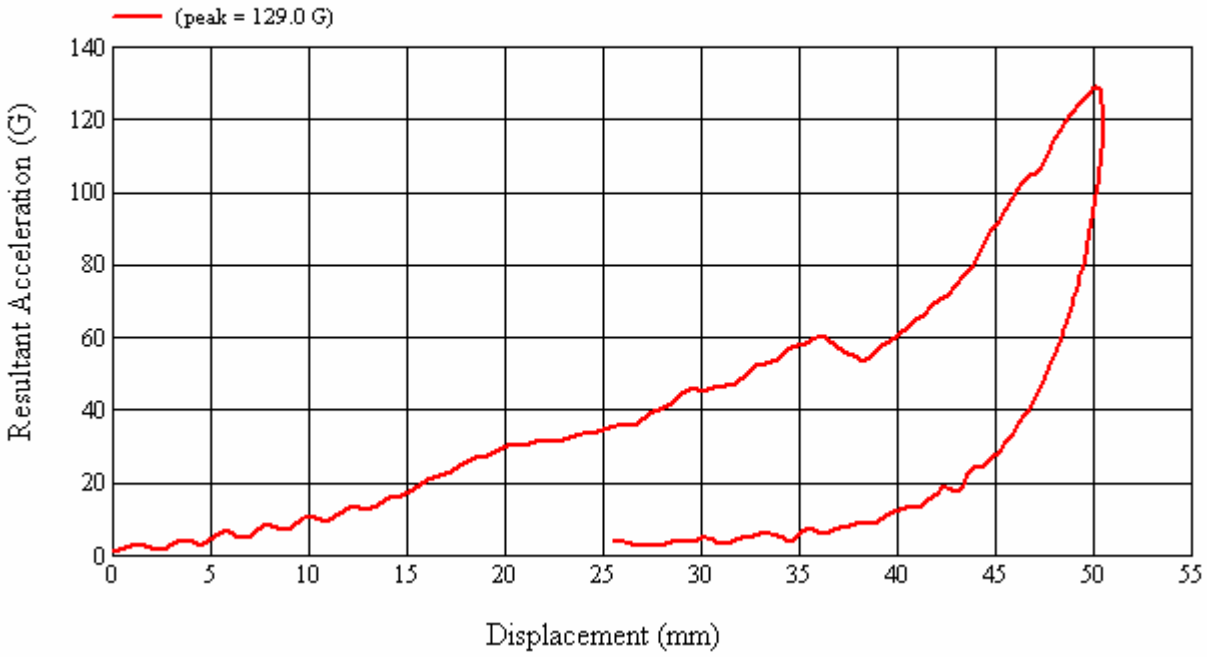
REMARKS (Summary of test, damage, non-compliance, invalid test, etc.):

No visible damage

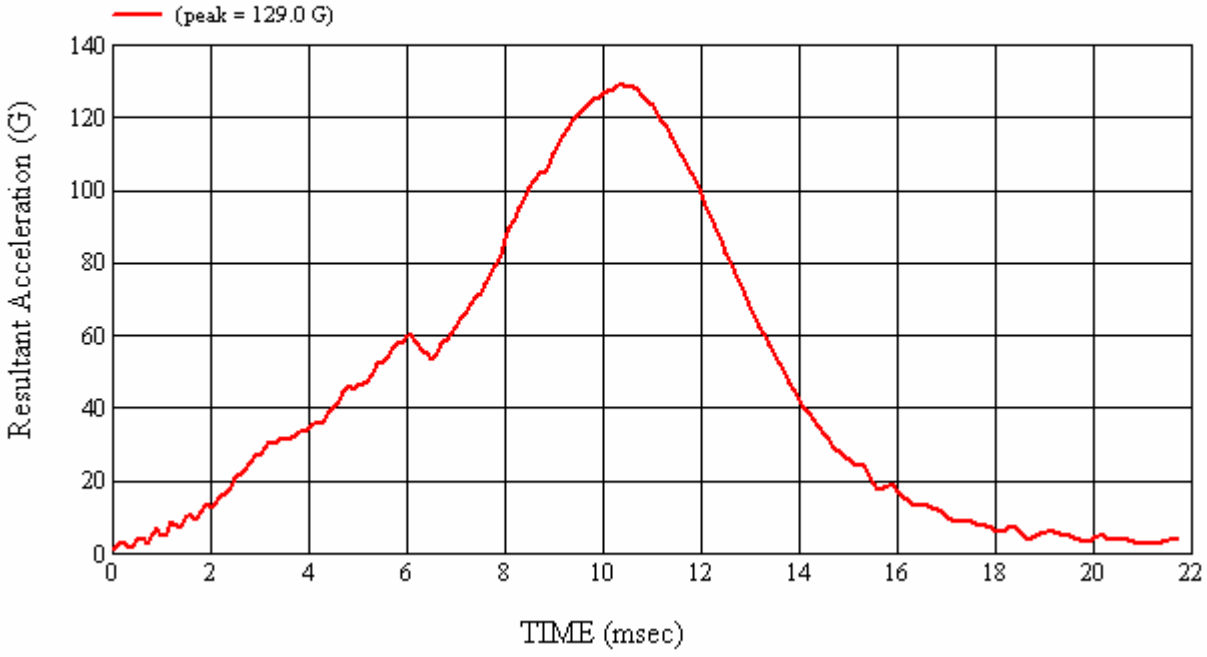
Recorded By: ______________ Approved By*: ______________ Date: 8/2/2007

*Only necessary for NHTSA (Government) Compliance testing.

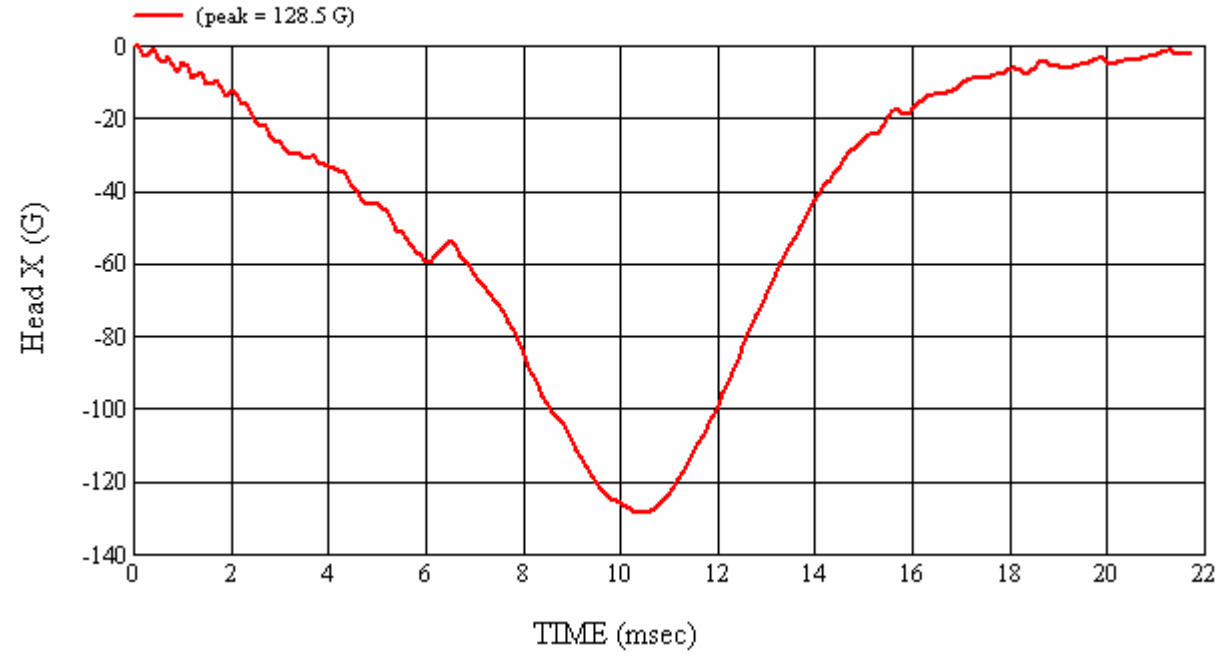
MGA Test #: FM7151 Target Location: UR3, Right Side Test Date: 8/2/2007



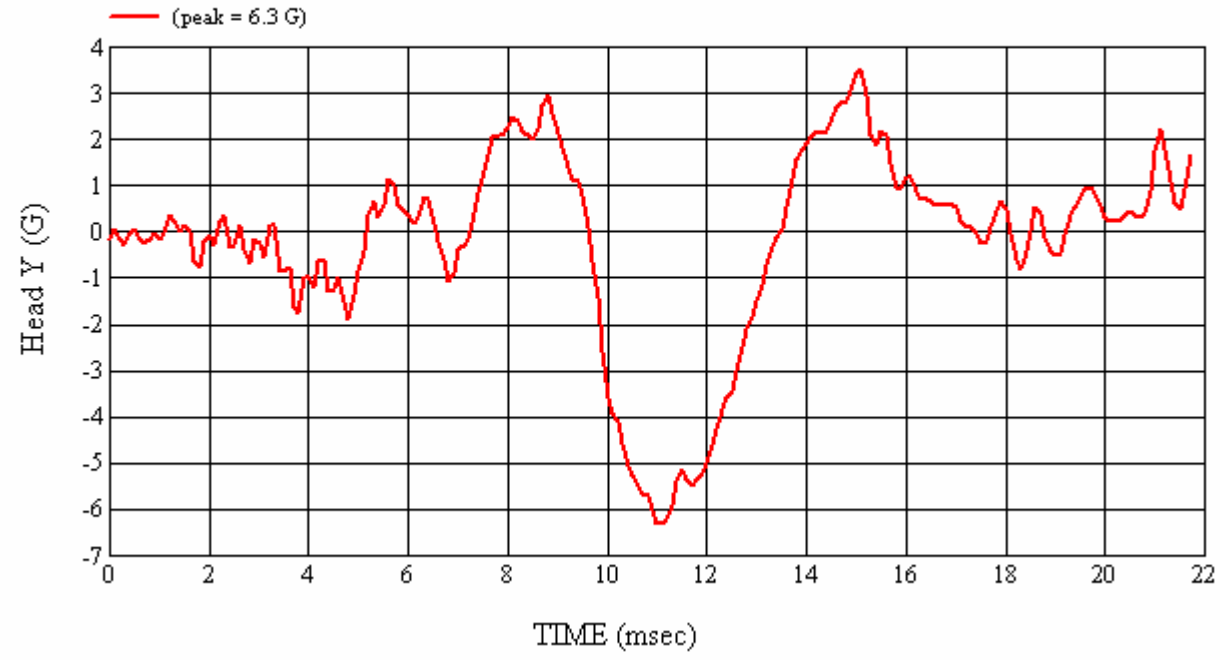
Test #FM7151



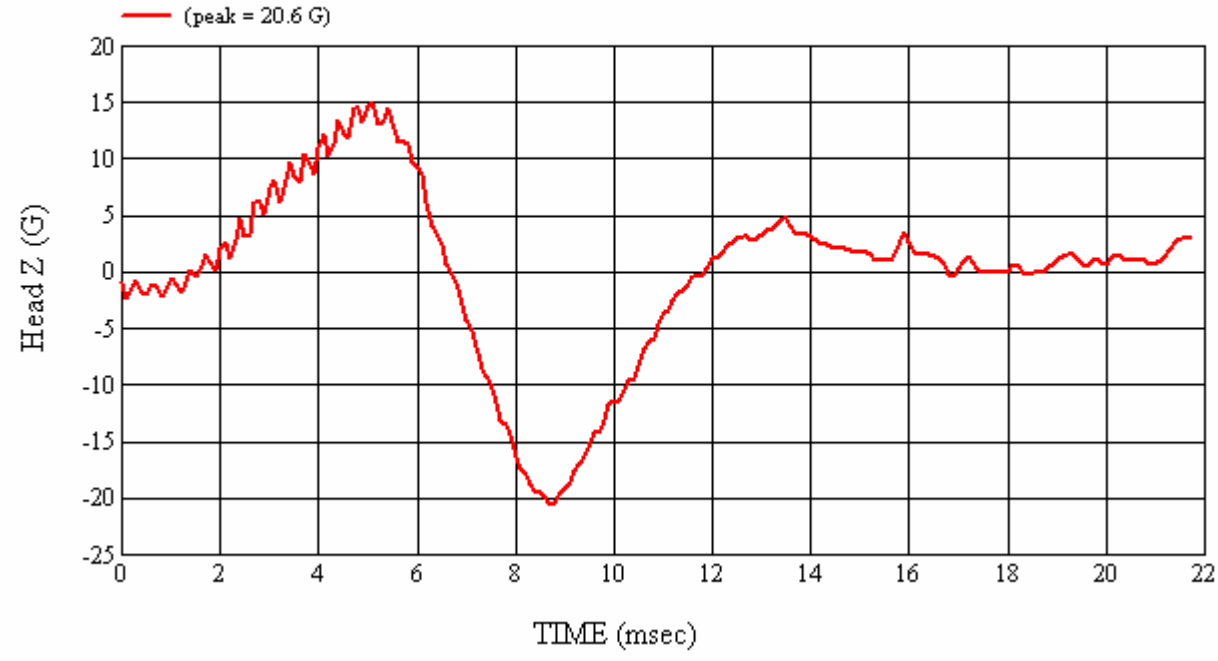
Test #FM7151



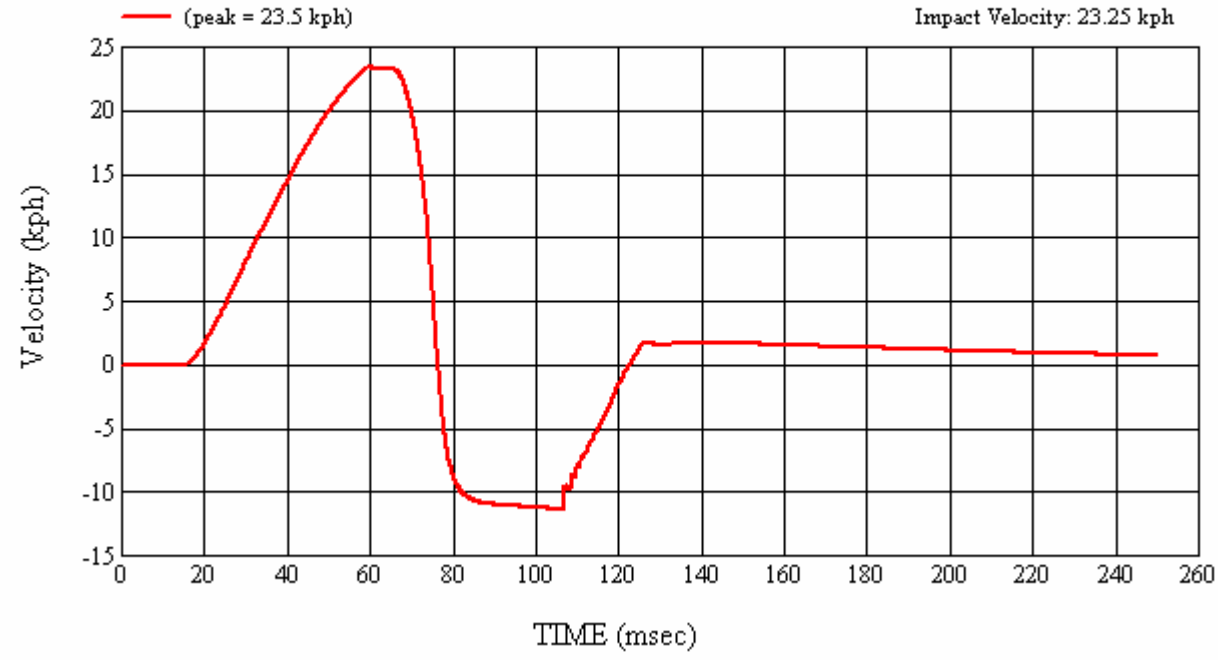
Test #FM7151



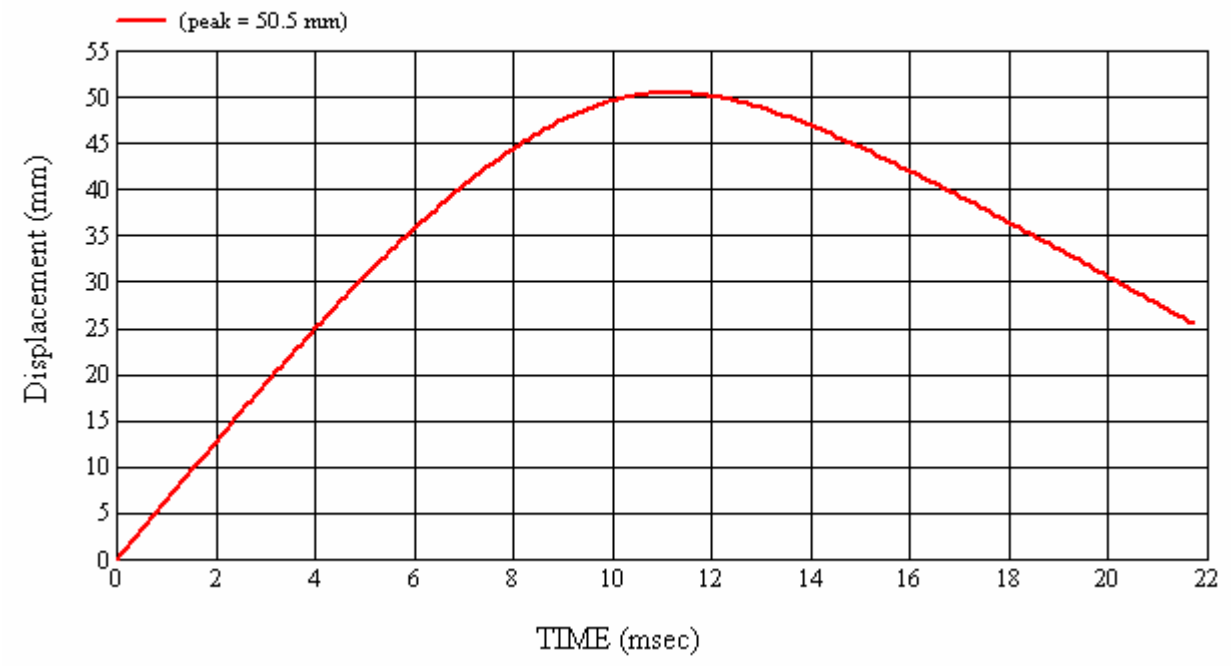
Test #FM7151



Test #FM7151



Test #FM7151


(peak = 50.5 mm)
Displacement (mm)
55
50
45
40
35
30
25
20
15
10
5
0
0
2
4
6
8
10
12
14
16
18
20
22
TIME (msec)

Test #FM7151


mga
Impact Testing
8/2/2007
G07I7-001.2
2007 NHTSA FORD MUSTANG
FMVSS 201U - UPPER INTERIOR
TEST #12 RIGHT UR4
H/V IMPACT ANGLE= 90 / 50
FM7153
PRE TEST
C70203
FM7153


mga
8/2/2007
Impact Testing
G07I7-001.2
2007 NHTSA FORD MUSTANG
FMVSS 201U - UPPER INTERIOR
TEST #12 RIGHT UR4
H/V IMPACT ANGLE= 90 / 50
FM7153
POST-TEST
C70203
FM7153
RIGHT UR4
H/V 90/50


mga
8/2/2007
Impact Testing
G07I7-001.2
2007 NHTSA FORD MUSTANG
FMVSS 201U - UPPER INTERIOR
TEST #12 RIGHT UR4
H/V IMPACT ANGLE= 90 / 50
FM7153
POST-TEST

SUMMARY OF FMVSS 201U TEST

JOB/NHTSA NO: G07I7-001.2 VEHICLE YR/MAKE/MODEL:2007/NHTSA/Ford Mustang

GENERAL TEST PARAMETERS:

Test Number:#12

Target (Vehicle Side): UR4 Right

Temperature:22C

MGA Test Reference No.:FM7153

Humidity:53%

Approach Horizontal Angles:90º

Time of Test:11:40:56 AM

Approach Vertical Angles:50º

FMH Serial No:[038]

Additional Description:UR4 @ BPR

TEST RESULTS:

HIC(d)	HIC	Δt (msec)	Velocity (kph)	Impact location on FMH (mm)	
				Above Pt. O	Left/Right Pt. O
714	725	7.8	23.8	4	3 Left

INSTRUMENTATION INFORMATION: (all accelerometers are Endevco 7264-2000)

Axis	Channel	Serial No.	DLR Value	ΔV Pre-Test	ΔV Post-Test
X	5	J14103	-94.598	0.78	0.78
Y	6	J36197	110.692	0.80	0.80
Z	7	J36353	99.391	0.81	0.81

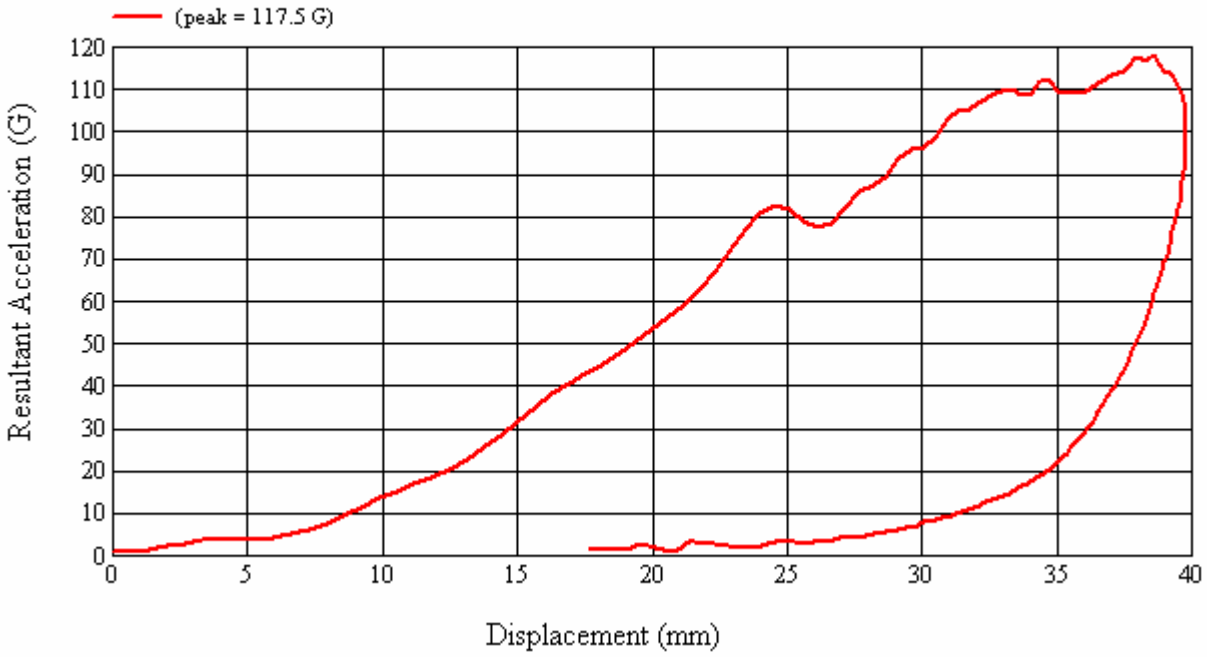
REMARKS (Summary of test, damage, non-compliance, invalid test, etc.):

No visible damage.

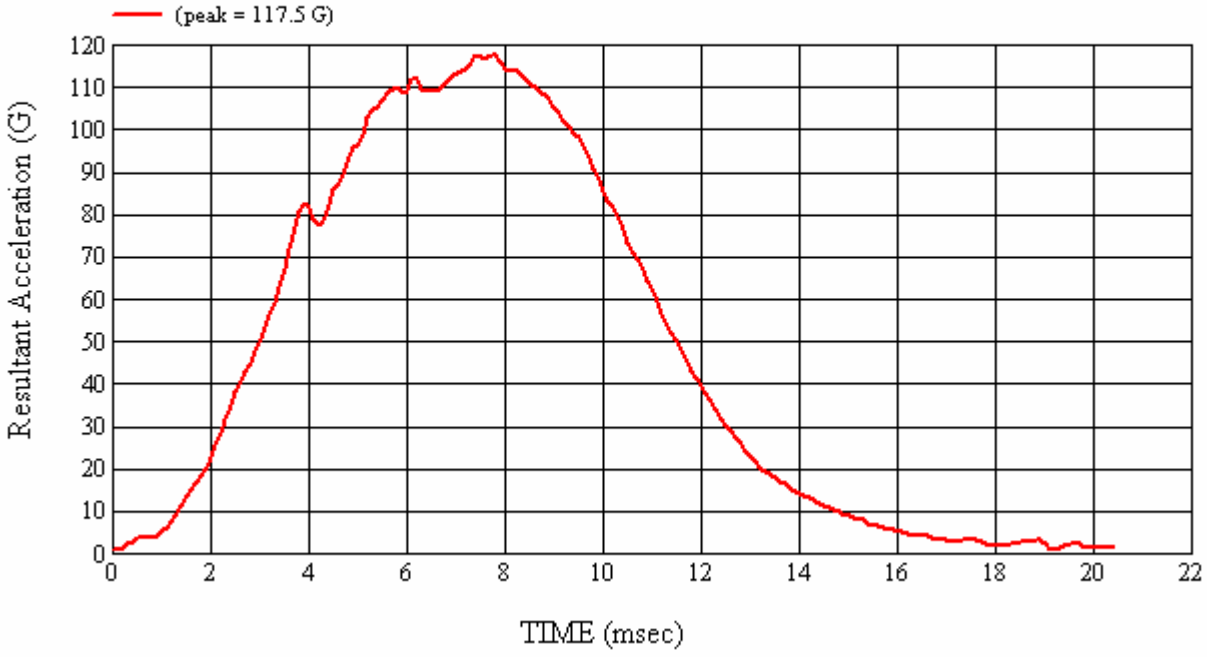
Recorded By: _____ Approved By*: _____ Date: 8/2/2007

*Only necessary for NHTSA (Government) Compliance testing.

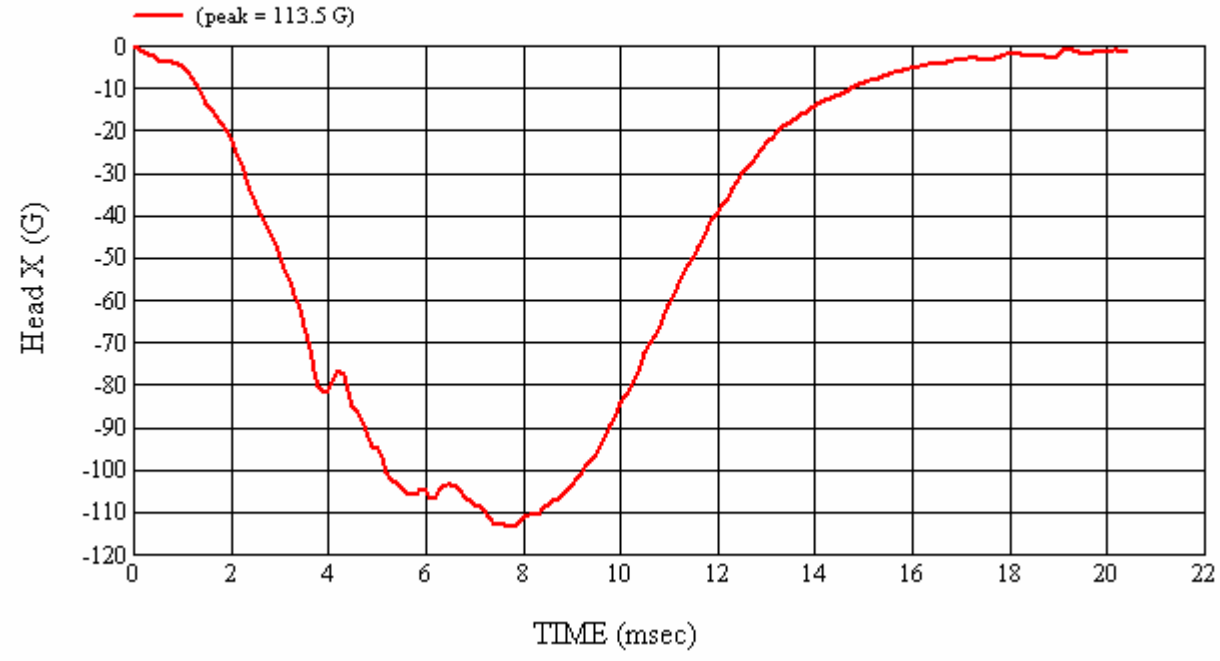
MGA Test #: FM7153 Target Location: UR4, Right Side Test Date: 8/2/2007



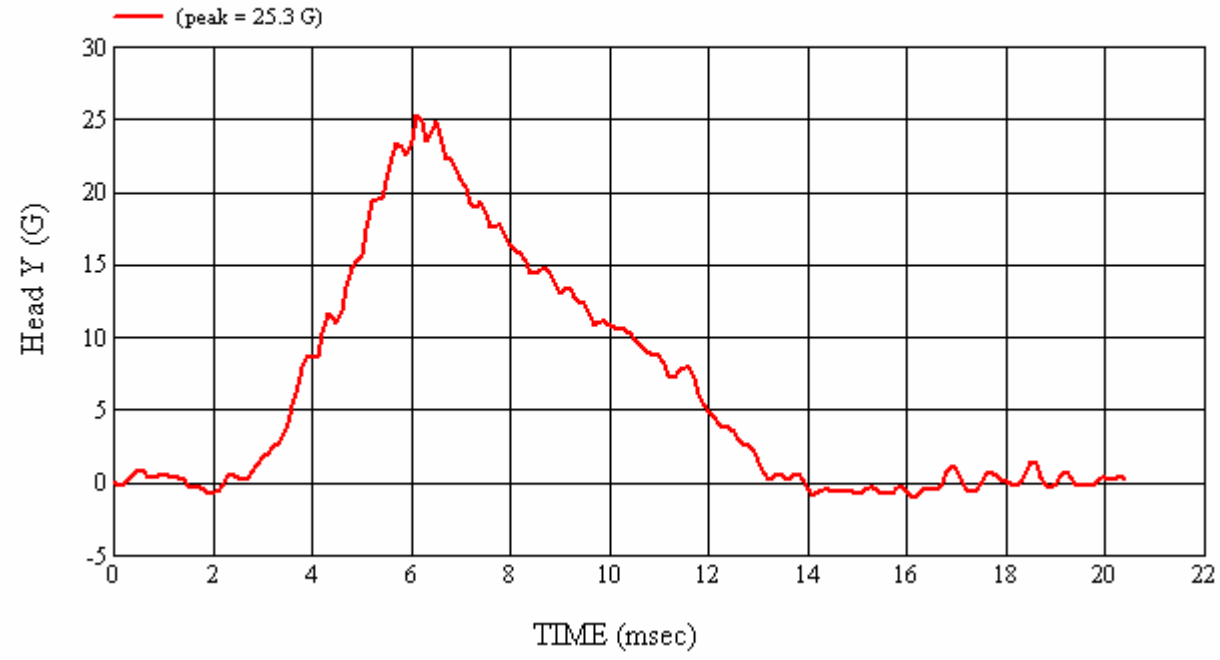
Test #FM7153



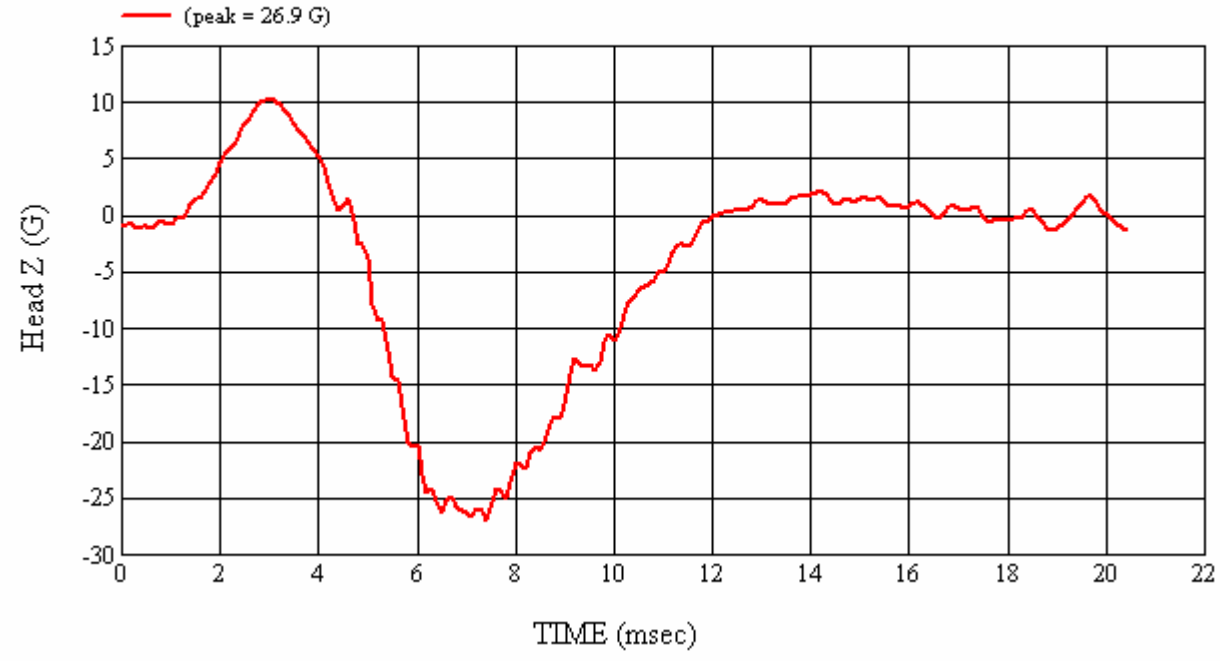
Test #FM7153



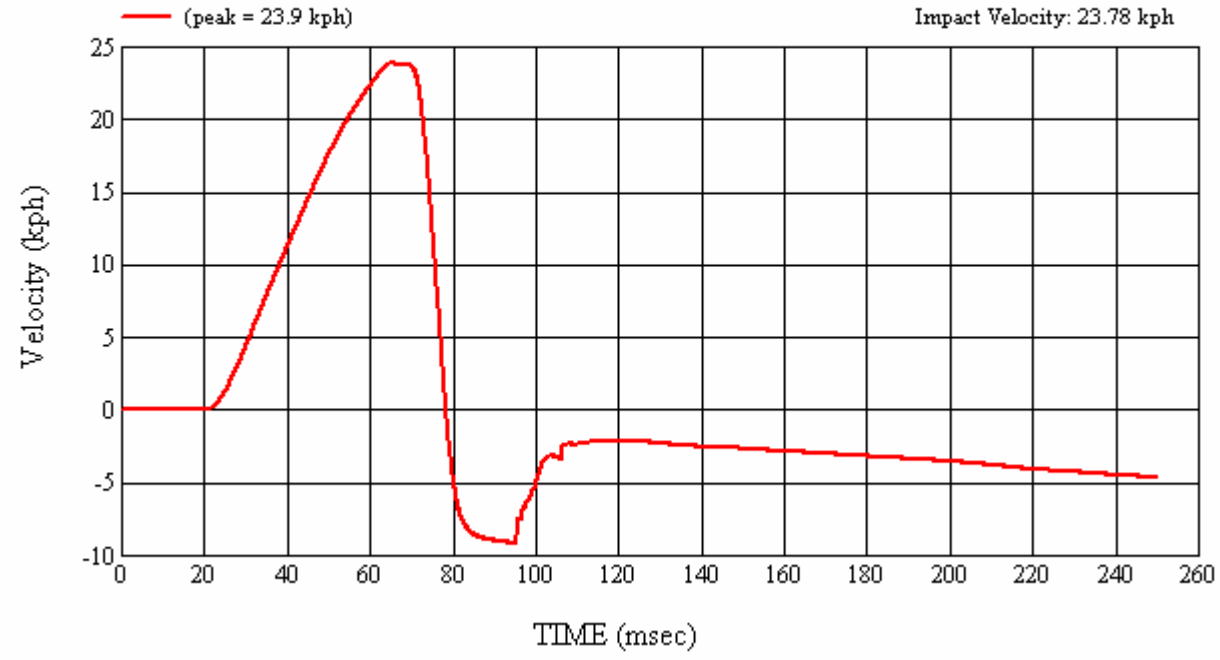
Test #FM7153



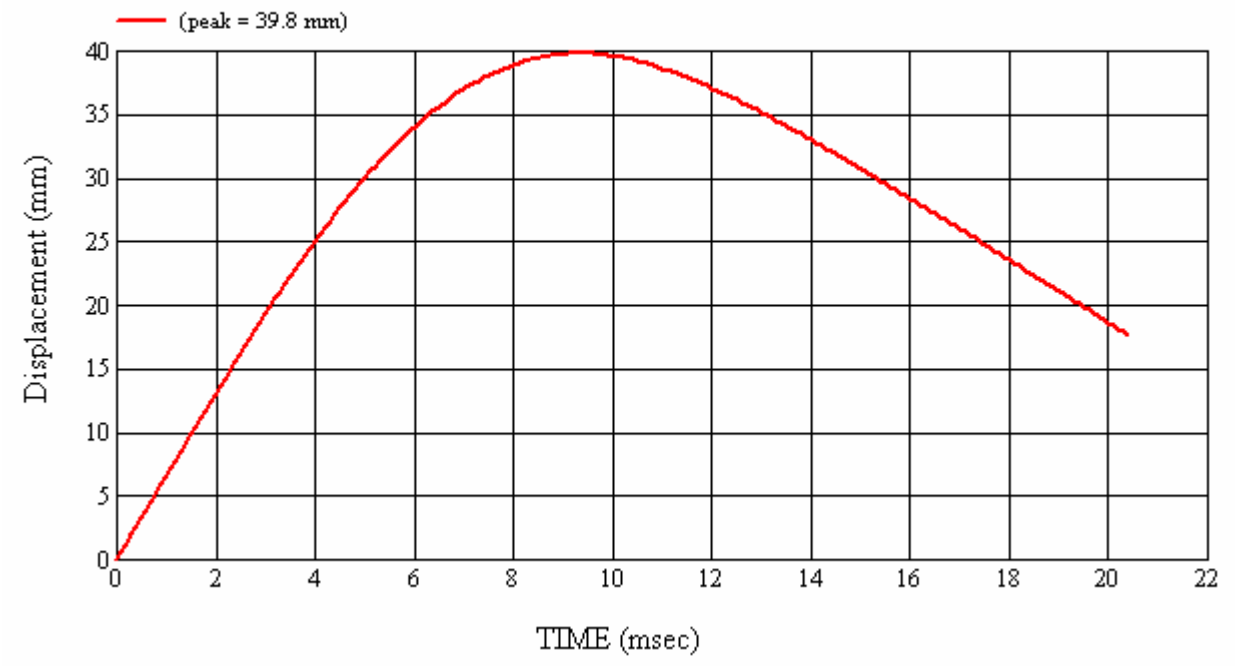
Test #FM7153



Test #FM7153



Test #FM7153


(peak = 39.8 mm)
Displacement (mm)
0
5
10
15
20
25
30
35
40
0
2
4
6
8
10
12
14
16
18
20
22
TIME (msec)

Test #FM7153

4.0 TEST EQUIPMENT LIST AND CALIBRATION INFORMATION

The following section lists the test equipment for the compliance test series. Items marked with an asterisk are calibrated by an external lab. An additional summary table is given for the pre and post-test calibration data for the Free Motion Headforms. The temperature trace to confirm testing was conducted between 66ºF and 78ºF (19ºC - 26ºC) is included in Appendix A. Calibration certificates can be found in Appendix B.

TABLE 4-1 LIST OF ITEMS USED

ITEM	MANUFACTURER NAME	MODEL #	FUNCTION OF ITEM	ACCURACY	CAL. INTERNAL
Head Drop Tower (includes test frame and DAS)	MGA Research Corp.	MGA-100-DC	FMH Calibration	N/A	N/A
Accelerometers	Endevco	7264-2000	Acceleration Data	±0.5%	6 months
*Digital Inclinometer	Macklanburg-Duncan	PRO 360 (MGA00048)	Set Angle of FMH/Targeting	0.1°	Annual
FMVSS 201U Test Frame (includes the propulsion control system, actuator, test frame, and DAS)	MGA Research Corp.	MGA-100-FMH	Test System	N/A	N/A
Free Motion Headforms	UTAMA UTAMA UTAMA UTAMA	035 036 037 038	Test Device	N/A	Pre and Post-Test Series
High Speed Video	Redlake	HGLE	Record Event	N/A	N/A
*FARO™	Faro Technologies	S08059801273	Targeting	0.1 mm	Annual
Measuring Devices: - Tape Measure - Plumb Bobs - Digital Protractor	 Stanley N/A Macklanburg-Duncan	 TPM039 -- MGA00048	 Measurement Targeting FMH setup Horizontal Measurement	 1 mm N/A 0.5°	Annual
*Temperature Recorder	Dickson	FH125	Record Temperature and Humidity	± 1°C ± 1% RH	Annual

ITEM	MANUFACTURER NAME	MODEL #	FUNCTION OF ITEM	ACCURACY	CAL. INTERNAL
* Scale	Detecto	MGA00081	Weigh FMH Head	± 0.01 lb	Annual
*Vehicle Scale	Sterling Scale Co.	26032389	Weighing Vehicle	± .5 kg	Annual

Each headform was calibrated by an engineer after the headform had soaked in an environment of 66ºF to 78ºF (19ºC to 26ºC) for a period of at least four hours.

Each headform was found to comply with the performance criteria under Part 572L for pre and post-test calibrations. That is, the peak resultant acceleration was between 225 and 275 G's, the peak lateral acceleration was less than 15 G's, the headform weighed between 9.9 and 10.1 lbs., the pulse was determined to be unimodal, and there was no major damage to the headform.

TABLE 4-2 DATA SUMMARY TABLE

FMH Serial #		Headform Calibration Date	Weight (lbs)	Temp (ºC)	% Humidity	Peak Resultant Acceleration (G's)	Peak Lateral Acceleration (G's)	Unimodal
Pre	#035	7/30/2007	10.08	23.0	40.0	237.1	1.9	Yes
Post	#035	8/2/2007	10.08	24.0	44.0	243.2	5.1	Yes
Pre	#036	7/30/2007	9.97	23.0	40.0	268.4	8.9	Yes
Post	#036	8/2/2007	9.97	24.0	44.0	272.1	11.0	Yes
Pre	#037	7/30/2007	9.96	23.0	39.0	238.3	4.5	Yes
Post	#037	8/2/2007	9.96	24.0	44.0	237.8	2.3	Yes
Pre	#038	7/30/2007	9.90	25.0	36.0	255.1	8.1	Yes
Post	#038	8/2/2007	9.90	24.0	44.0	257.5	6.0	Yes

4.1 Pre-Test Calibration

HEAD DROP TEST SUMMARY
PART 572L

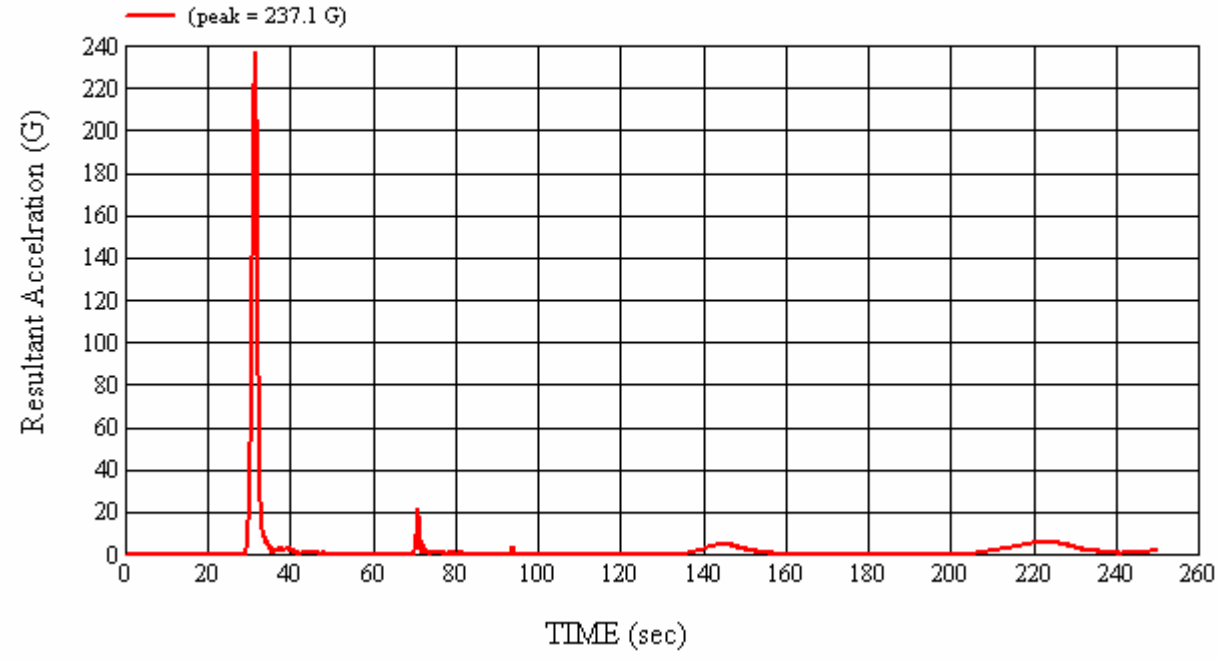
HEADFORM SERIAL NUMBER: 035	CALIBRATION DATE: 7/30/2007 CALIBRATION TIME: 7:03:11 PM	
TEST PARAMETER	**SPECIFICATION**	**TEST RESULTS**
Weight	9.90 to 10.10 lbs.	10.08
Temperature	19° C to 26° C	23
Relative Humidity	10% to 70%	40
Peak Resultant Acceleration	225 G's to 275 G's	237.1
Peak Lateral Acceleration	15 G's Maximum	1.9
Unimodal Acceleration Curve	YES	YES

FMH INSTRUMENTATION					
HEAD ACCELEROMETERS					
Channel Number	**Manufacturer**	**Model Number**	**Serial Number**	**Date of Last Calibration**	**Date of Next Calibration**
1	ENDEVCO	7264-2000	J22664	04/30/07	10/30/07
2	ENDEVCO	7264-2000	J35919	04/30/07	10/30/07
3	ENDEVCO	7264-2000	J35924	04/30/07	10/30/07

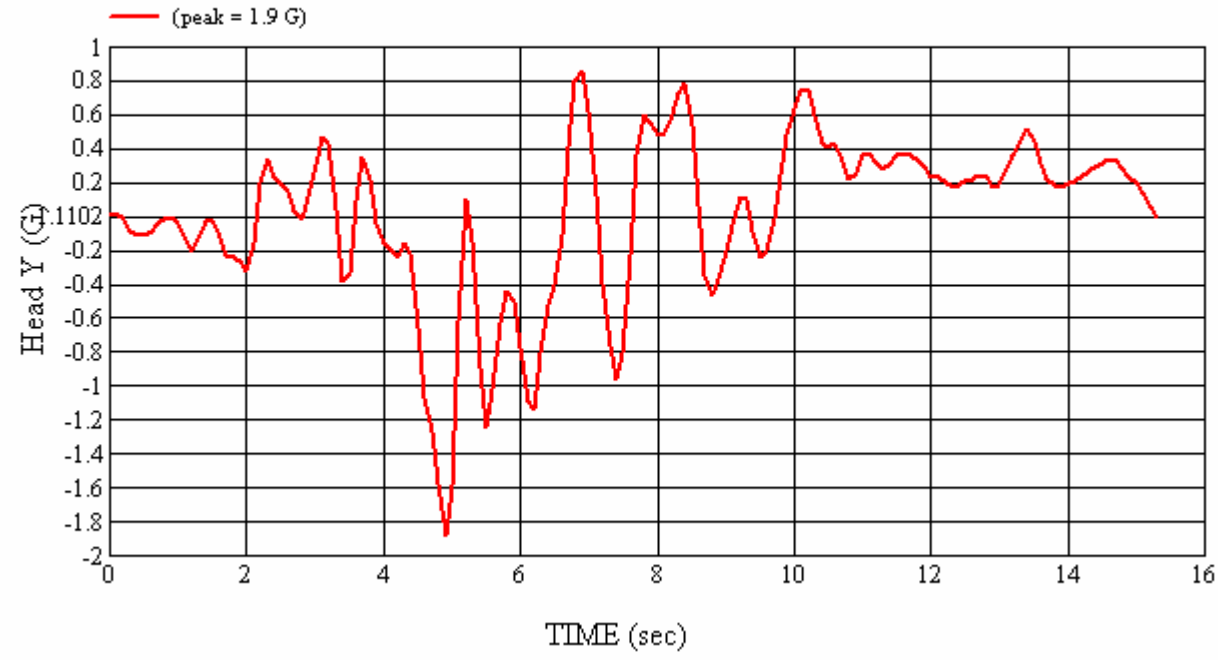
REMARKS:

RECORDED BY: Kaitlin Campbell DATE: 7/30/2007

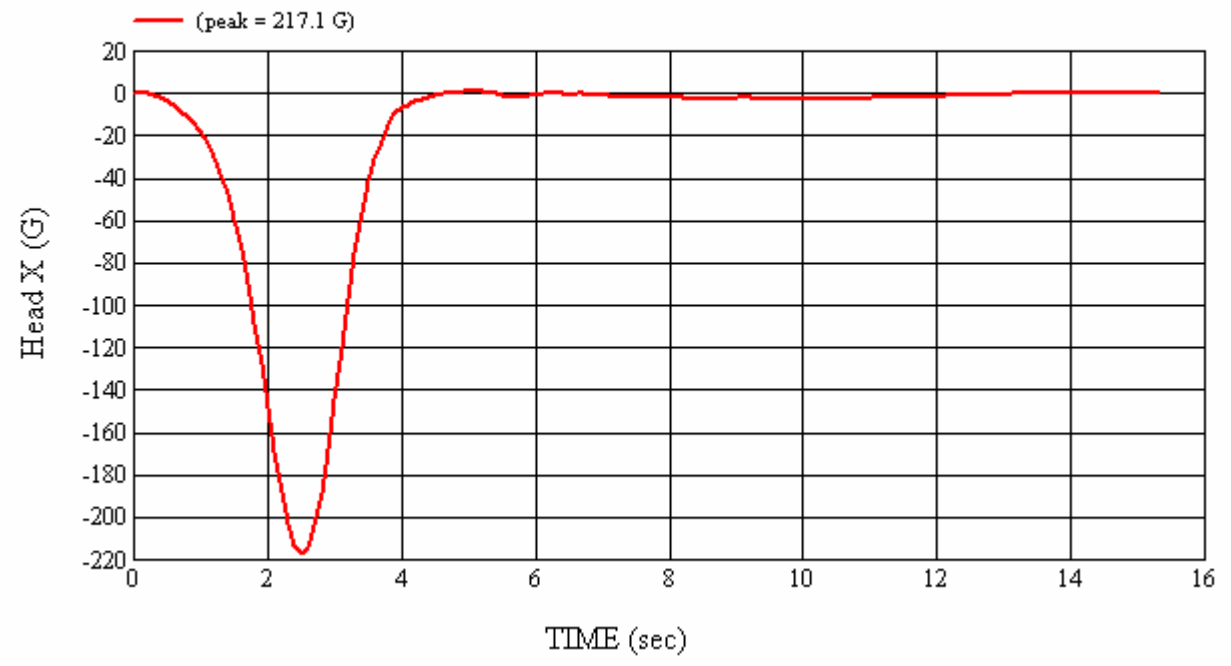
APPROVED BY: Helen A. Kalafut



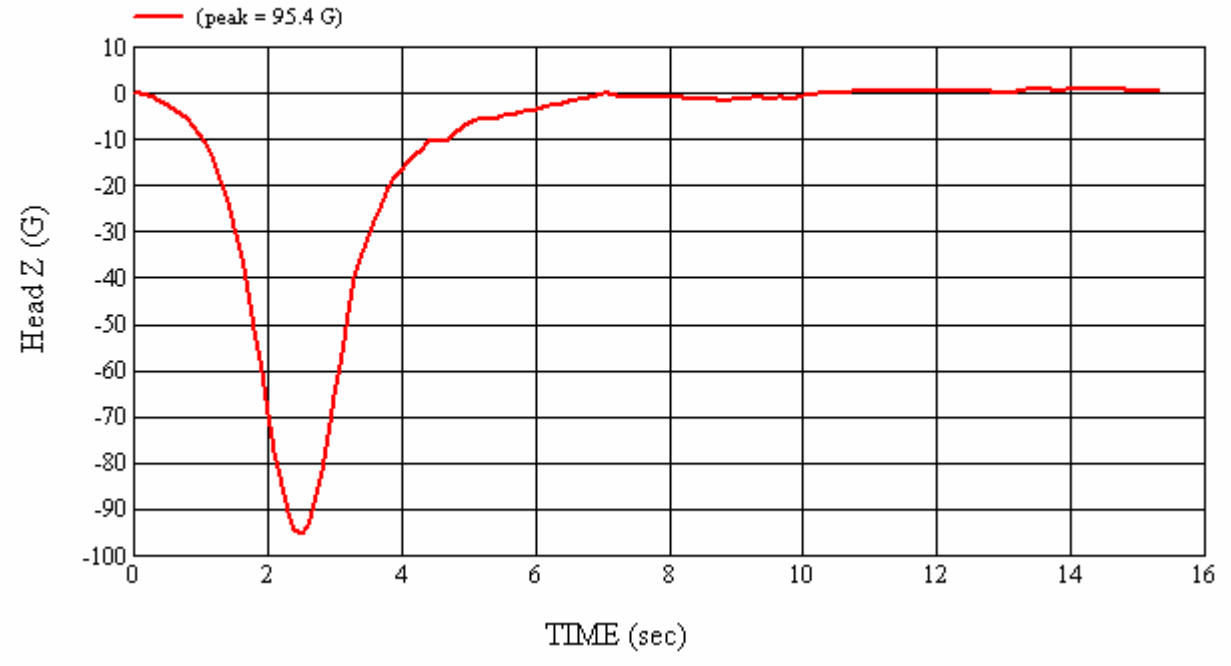
Head 035 (Pre) Calibration #H35003



Head 035 (Pre) Calibration #H35003



Head 035 (Pre) Calibration #H35003



Head 035 (Pre) Calibration #H35003

4.2 Post-Test Calibration

HEAD DROP TEST SUMMARY
PART 572L

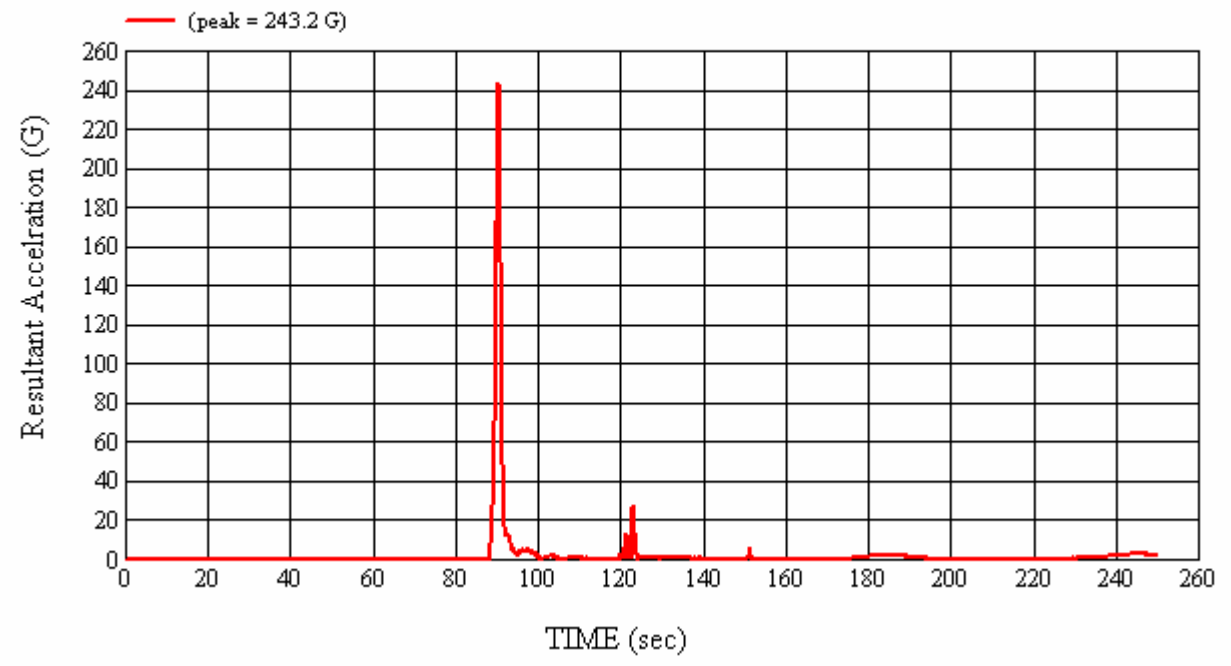
HEADFORM SERIAL NUMBER: 035	CALIBRATION DATE: 8/2/2007 CALIBRATION TIME: 9:33:21 AM	
TEST PARAMETER	**SPECIFICATION**	**TEST RESULTS**
Weight	9.90 to 10.10 lbs.	10.08
Temperature	19° C to 26° C	24
Relative Humidity	10% to 70%	44
Peak Resultant Acceleration	225 G's to 275 G's	243.2
Peak Lateral Acceleration	15 G's Maximum	5.1
Unimodal Acceleration Curve	YES	YES

FMH INSTRUMENTATION					
HEAD ACCELEROMETERS					
Channel Number	**Manufacturer**	**Model Number**	**Serial Number**	**Date of Last Calibration**	**Date of Next Calibration**
1	ENDEVCO	7264-2000	J22664	04/30/07	10/30/07
2	ENDEVCO	7264-2000	J35919	04/30/07	10/30/07
3	ENDEVCO	7264-2000	J35924	04/30/07	10/30/07

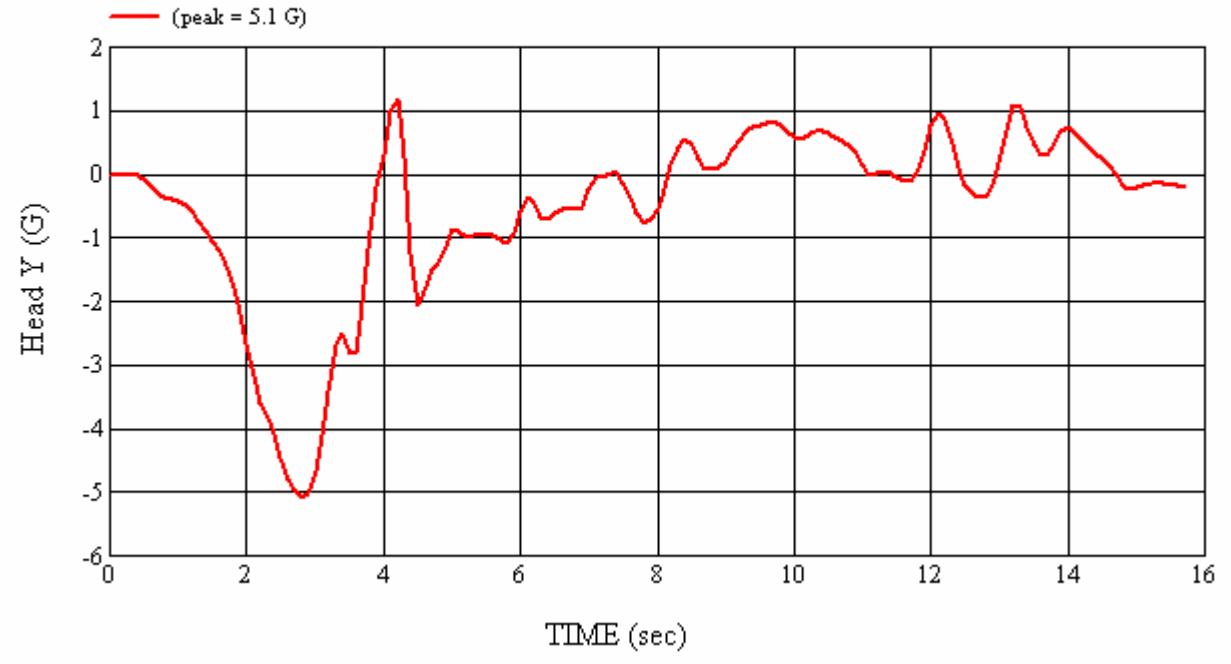
REMARKS:

RECORDED BY: Kaitlin Campbell DATE: 8/2/2007

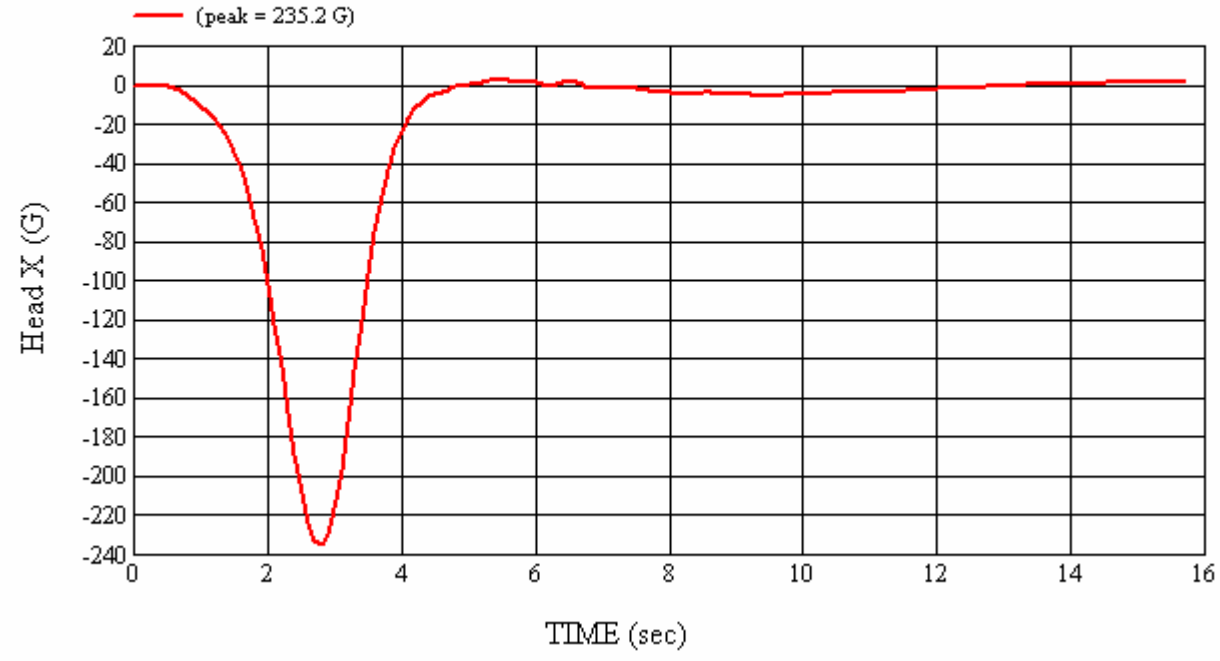
APPROVED BY: Helen A. Kaleto



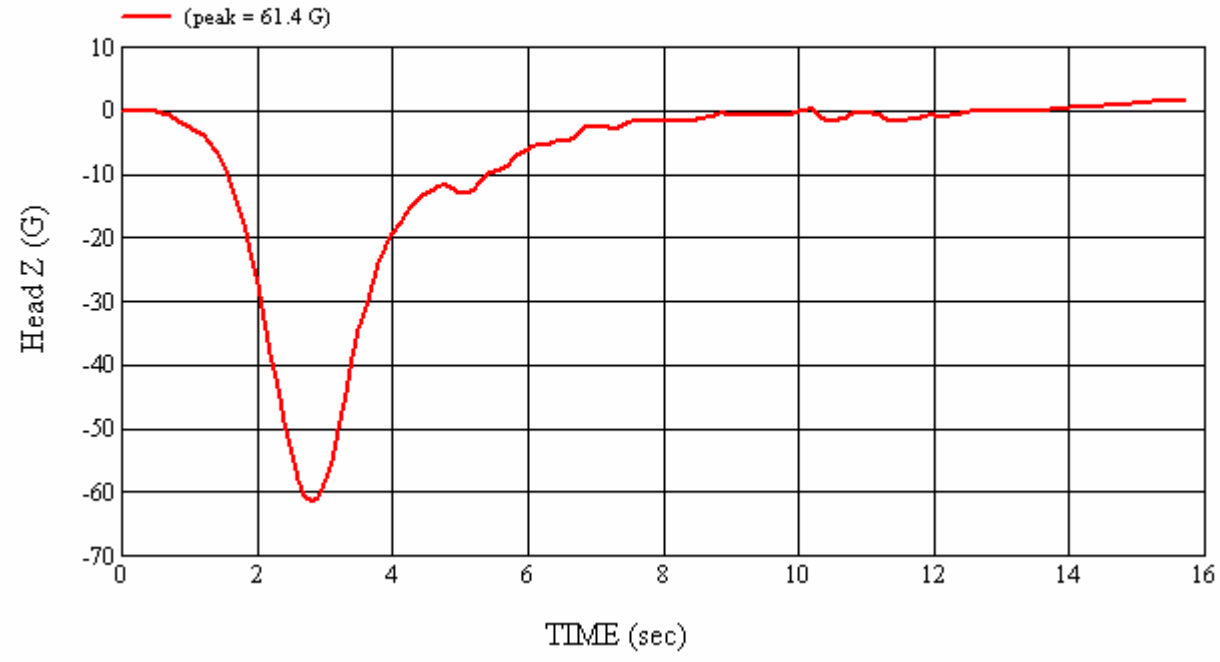
Head 035 (Post) Calibration #H35004



Head 035 (Post) Calibration #H35004



Head 035 (Post) Calibration #H35004



Head 035 (Post) Calibration #H35004

4.3 Pre-Test Calibration

HEAD DROP TEST SUMMARY
PART 572L

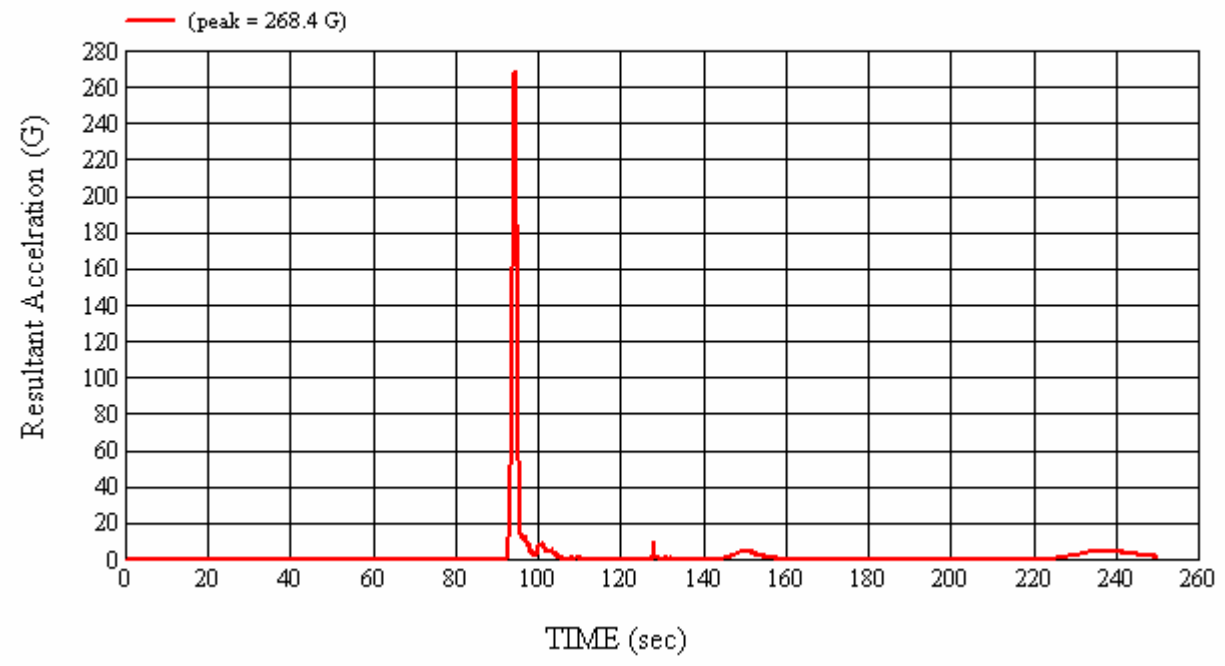
HEADFORM SERIAL NUMBER: 036	CALIBRATION DATE: 7/30/2007 CALIBRATION TIME: 6:29:49 PM	
TEST PARAMETER	**SPECIFICATION**	**TEST RESULTS**
Weight	9.90 to 10.10 lbs.	9.97
Temperature	19° C to 26° C	23
Relative Humidity	10% to 70%	40
Peak Resultant Acceleration	225 G's to 275 G's	268.4
Peak Lateral Acceleration	15 G's Maximum	8.9
Unimodal Acceleration Curve	YES	YES

FMH INSTRUMENTATION					
HEAD ACCELEROMETERS					
Channel Number	**Manufacturer**	**Model Number**	**Serial Number**	**Date of Last Calibration**	**Date of Next Calibration**
1	ENDEVCO	7264-2000	J21969	04/30/07	10/30/07
2	ENDEVCO	7264-2000	J35916	04/30/07	10/30/07
3	ENDEVCO	7264-2000	J35918	04/30/07	10/30/07

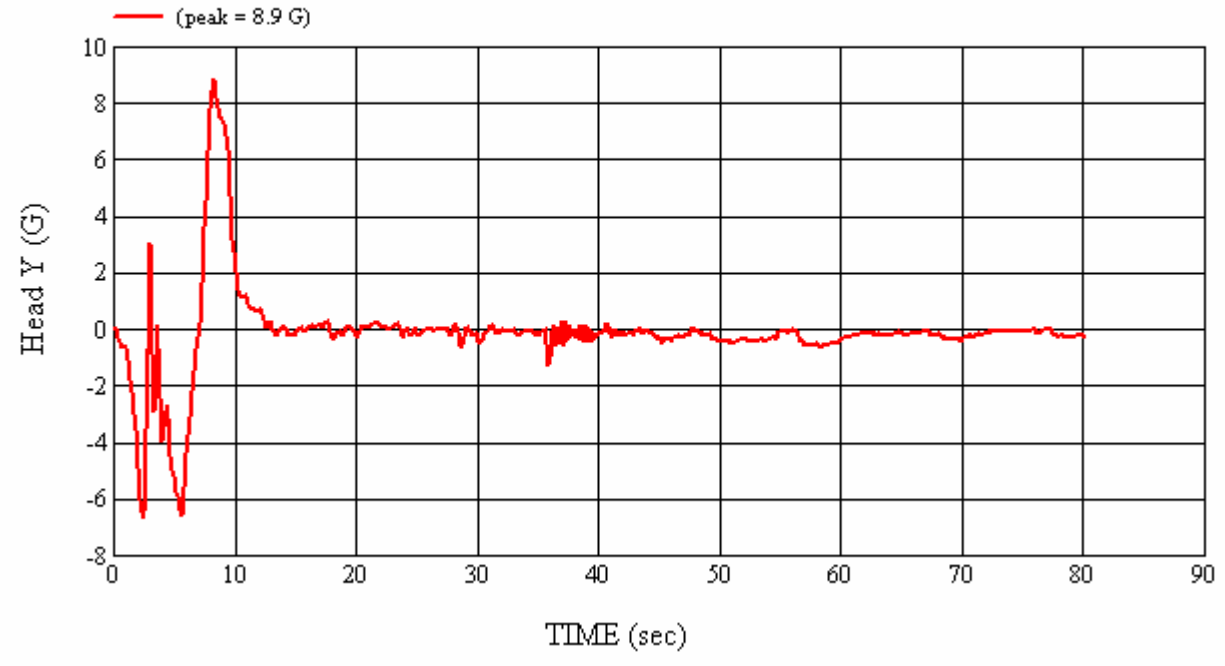
REMARKS:

RECORDED BY: Kaitlin Campbell DATE: 7/30/2007

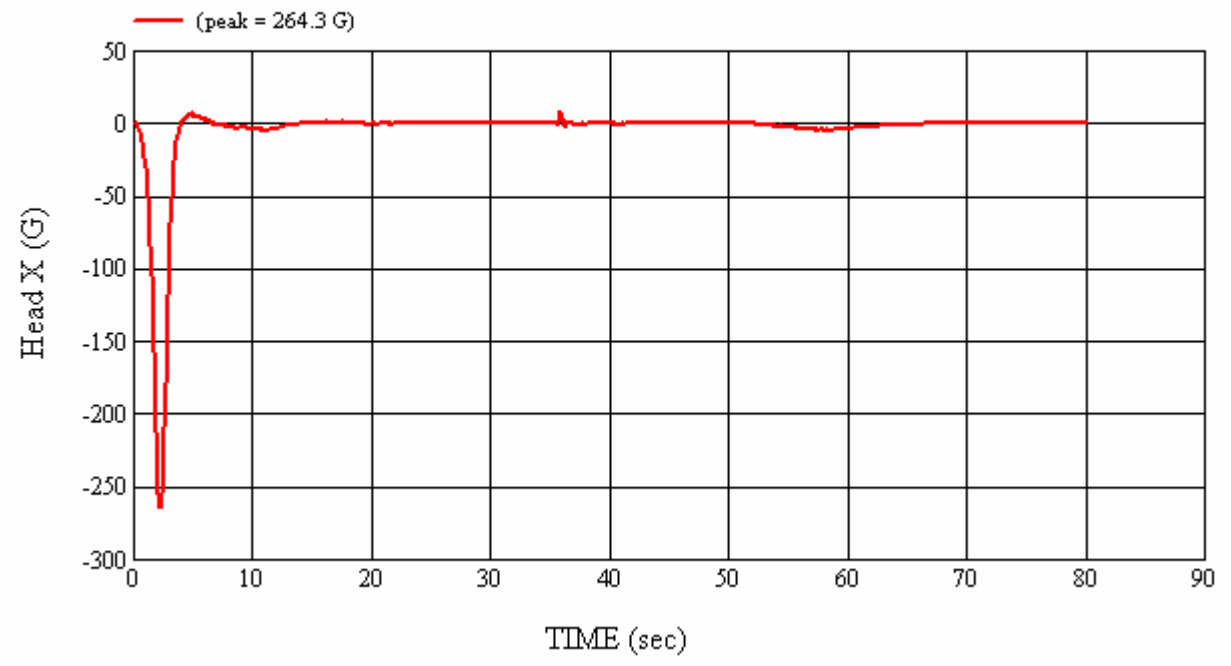
APPROVED BY: Helen A. Kalafut



Head 036 (Pre) Calibration #H36009



Head 036 (Pre) Calibration #H36009



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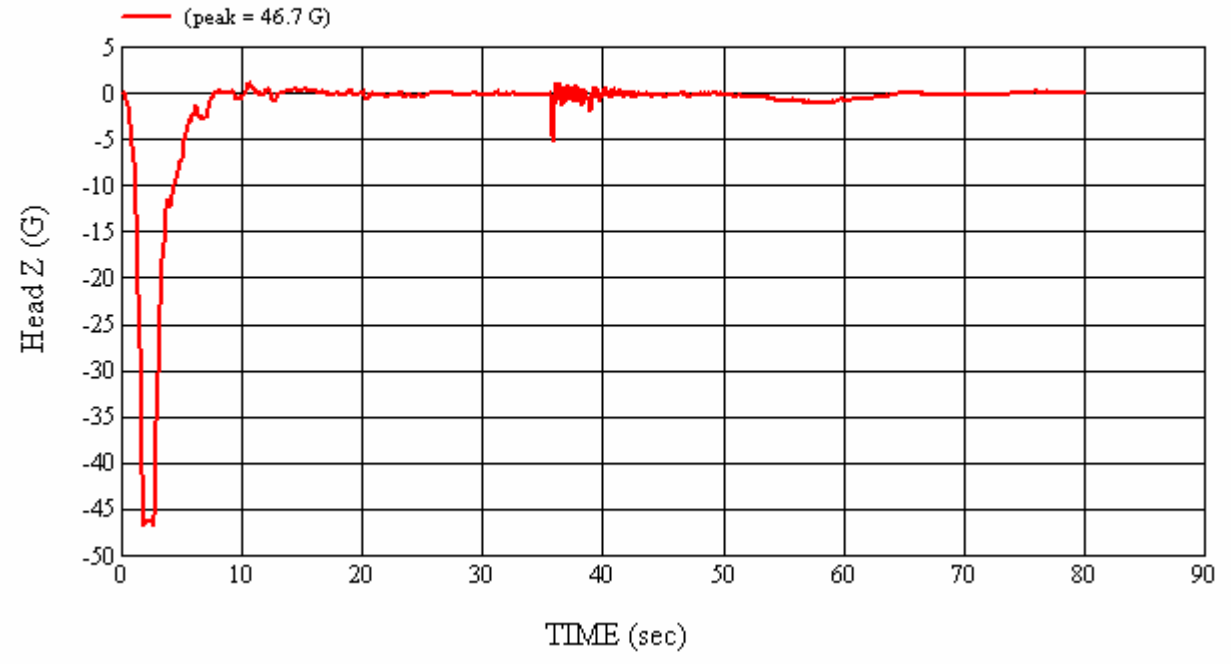


Head 036 (Pre) Calibration #H36009

4.4 Post-Test Calibration

HEAD DROP TEST SUMMARY
PART 572L

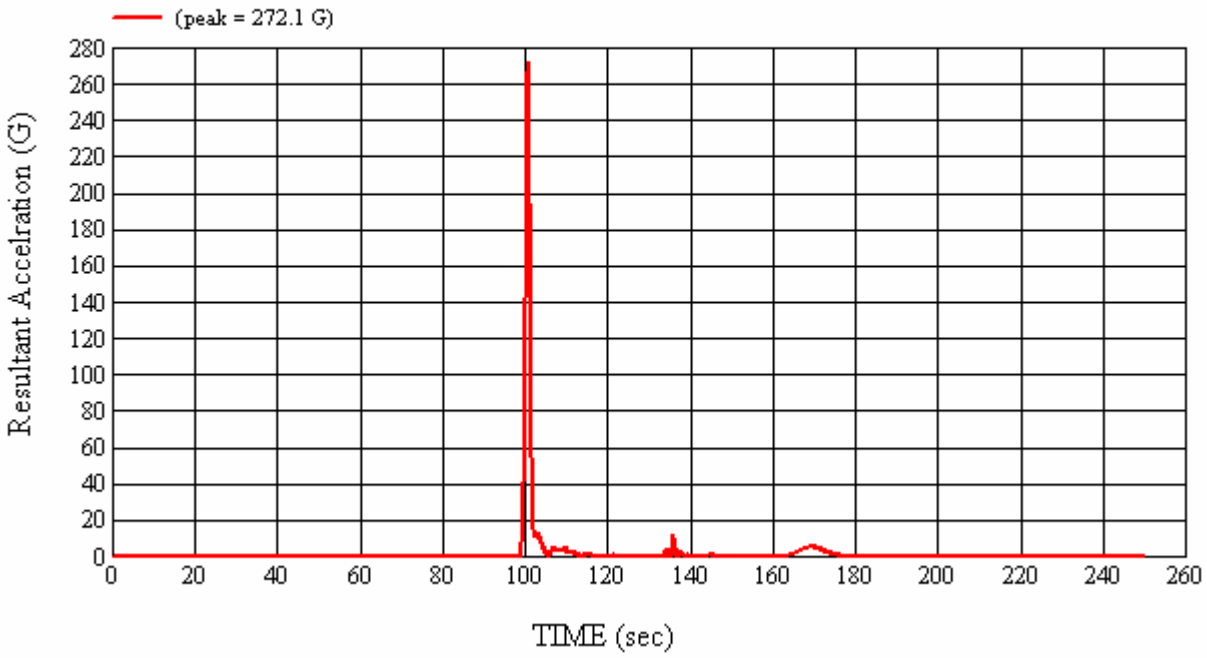
HEADFORM SERIAL NUMBER: 036	CALIBRATION DATE: 8/2/2007 CALIBRATION TIME: 3:48:44 PM	
TEST PARAMETER	**SPECIFICATION**	**TEST RESULTS**
Weight	9.90 to 10.10 lbs.	9.97
Temperature	19° C to 26° C	24
Relative Humidity	10% to 70%	44
Peak Resultant Acceleration	225 G's to 275 G's	272.1
Peak Lateral Acceleration	15 G's Maximum	11.1
Unimodal Acceleration Curve	YES	YES

FMH INSTRUMENTATION					
HEAD ACCELEROMETERS					
Channel Number	**Manufacturer**	**Model Number**	**Serial Number**	**Date of Last Calibration**	**Date of Next Calibration**
1	ENDEVCO	7264-2000	J21969	04/30/07	10/30/07
2	ENDEVCO	7264-2000	J35916	04/30/07	10/30/07
3	ENDEVCO	7264-2000	J35918	04/30/07	10/30/07

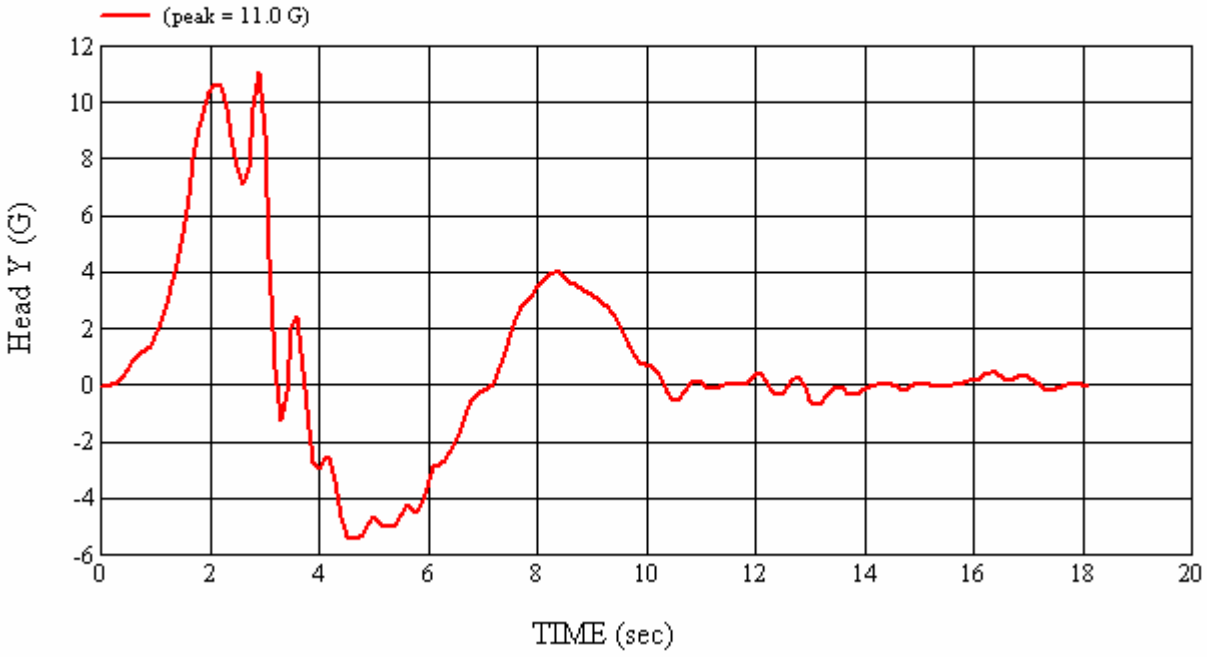
REMARKS:

RECORDED BY: Kaitlin Campbell DATE: 8/2/2007

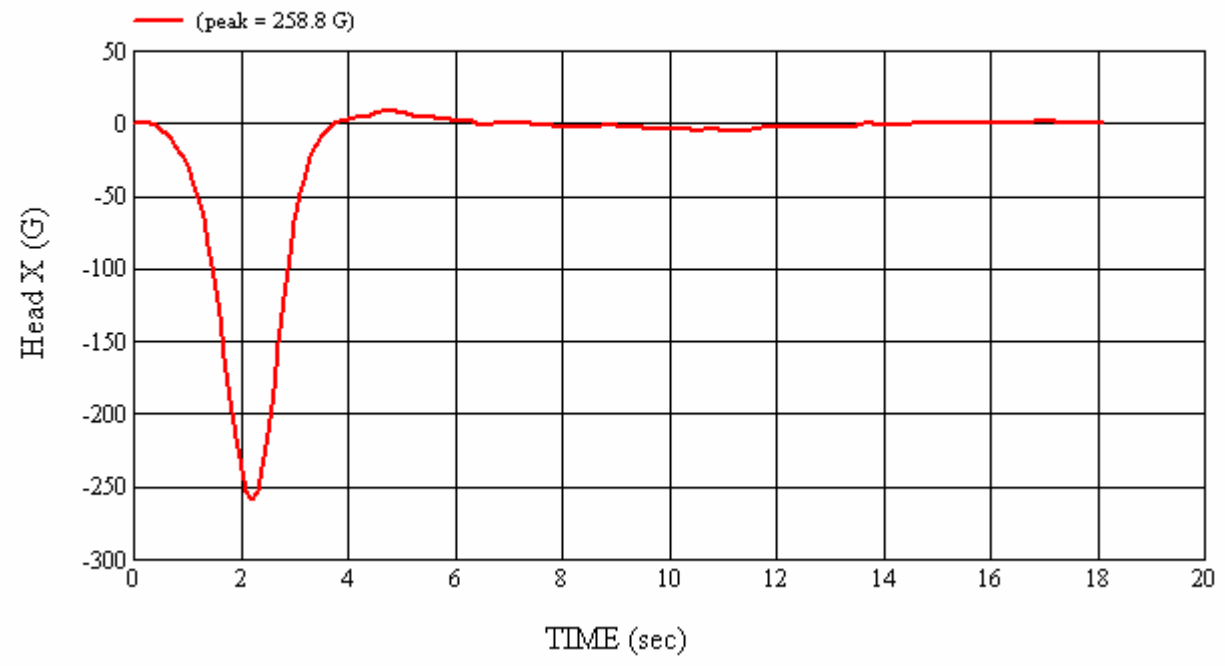
APPROVED BY: Helen A. Kalafut



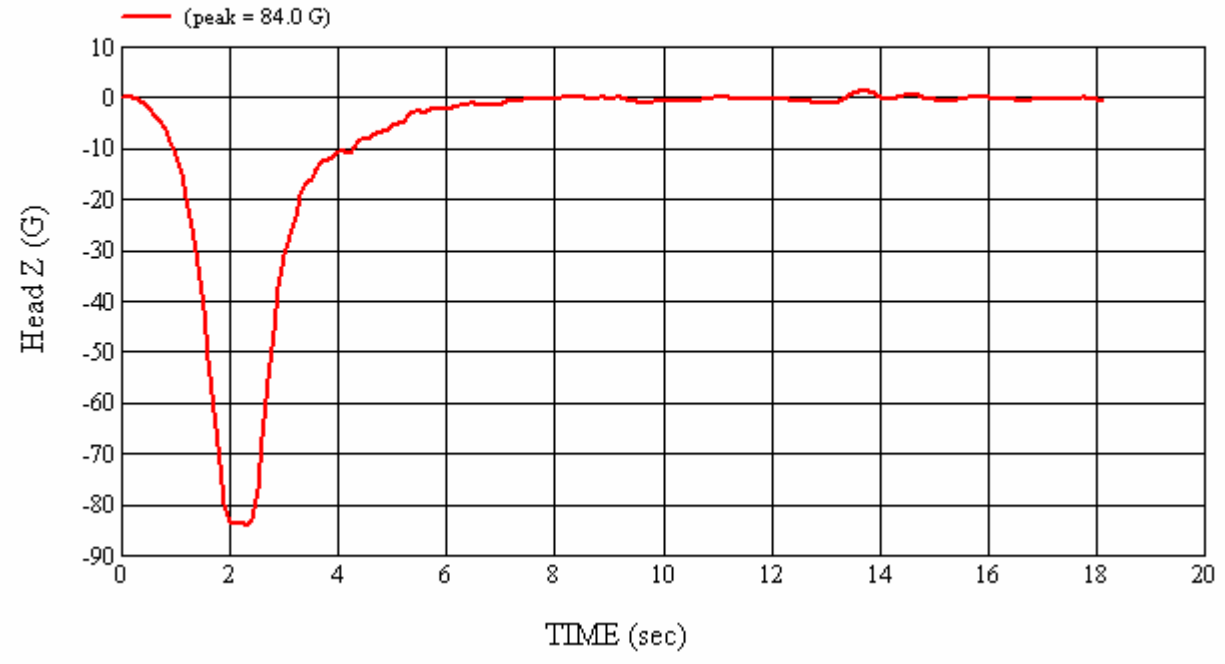
Head 036 (Post) Calibration #H36010



Head 036 (Post) Calibration #H36010



Head 036 (Post) Calibration #H36010



Head 036 (Post) Calibration #H36010

4.5 Pre-Test Calibration

HEAD DROP TEST SUMMARY
PART 572L

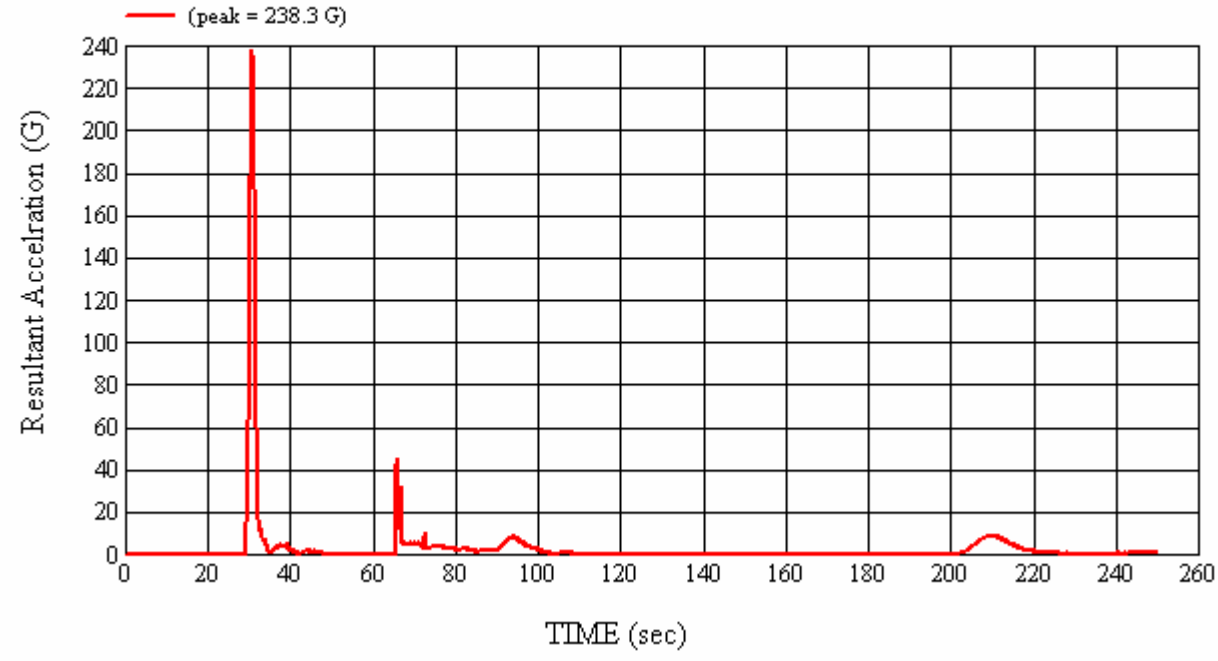
HEADFORM SERIAL NUMBER: 037	CALIBRATION DATE: 7/30/2007 CALIBRATION TIME: 9:01:32 AM	
TEST PARAMETER	**SPECIFICATION**	**TEST RESULTS**
Weight	9.90 to 10.10 lbs.	9.96
Temperature	19° C to 26° C	23
Relative Humidity	10% to 70%	39
Peak Resultant Acceleration	225 G's to 275 G's	238.3
Peak Lateral Acceleration	15 G's Maximum	4.5
Unimodal Acceleration Curve	YES	YES

FMH INSTRUMENTATION					
HEAD ACCELEROMETERS					
Channel Number	**Manufacturer**	**Model Number**	**Serial Number**	**Date of Last Calibration**	**Date of Next Calibration**
1	ENDEVCO	7264-2000	J22696	04/30/07	10/30/07
2	ENDEVCO	7264-2000	J35791	04/30/07	10/30/07
3	ENDEVCO	7264-2000	J35800	04/30/07	10/30/07

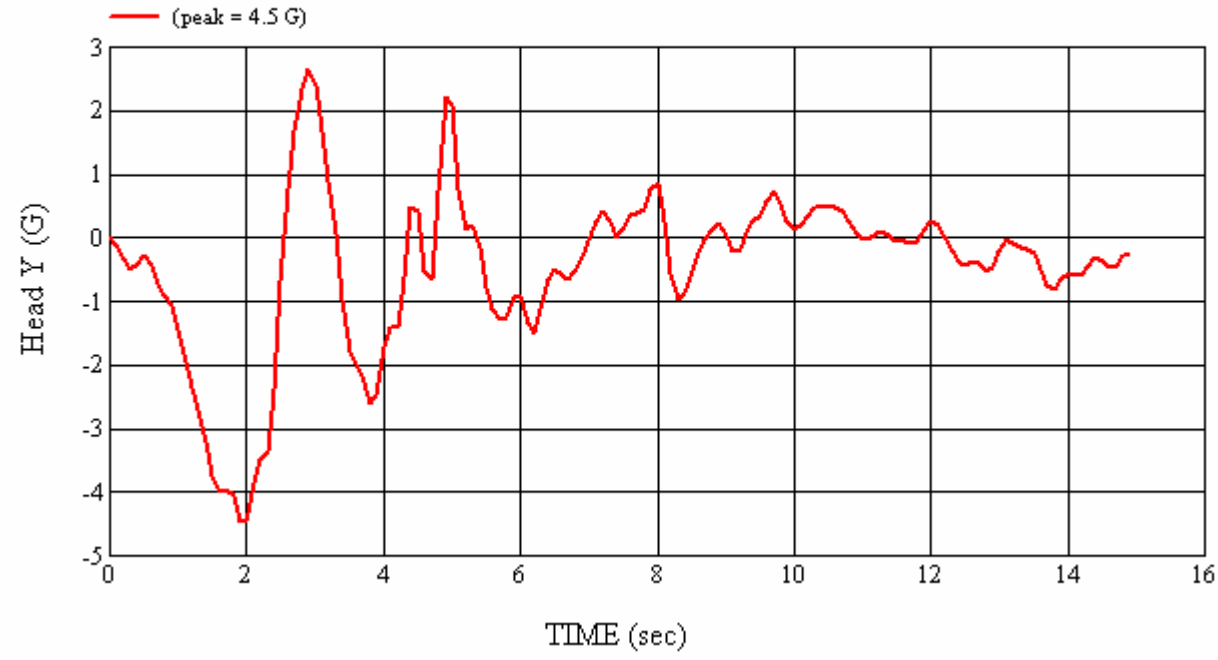
REMARKS:

RECORDED BY: Kaitlin Campbell DATE: 7/30/2007

APPROVED BY: Helen A. Kalista



Head 037 (Pre) Calibration #H37007



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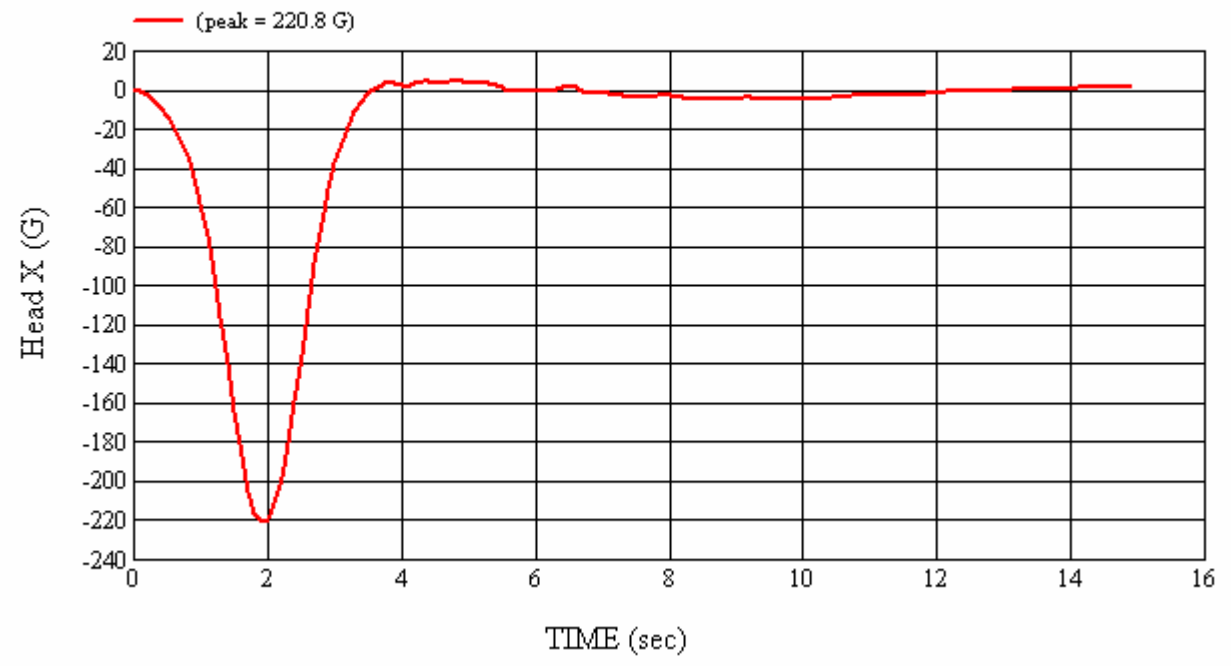
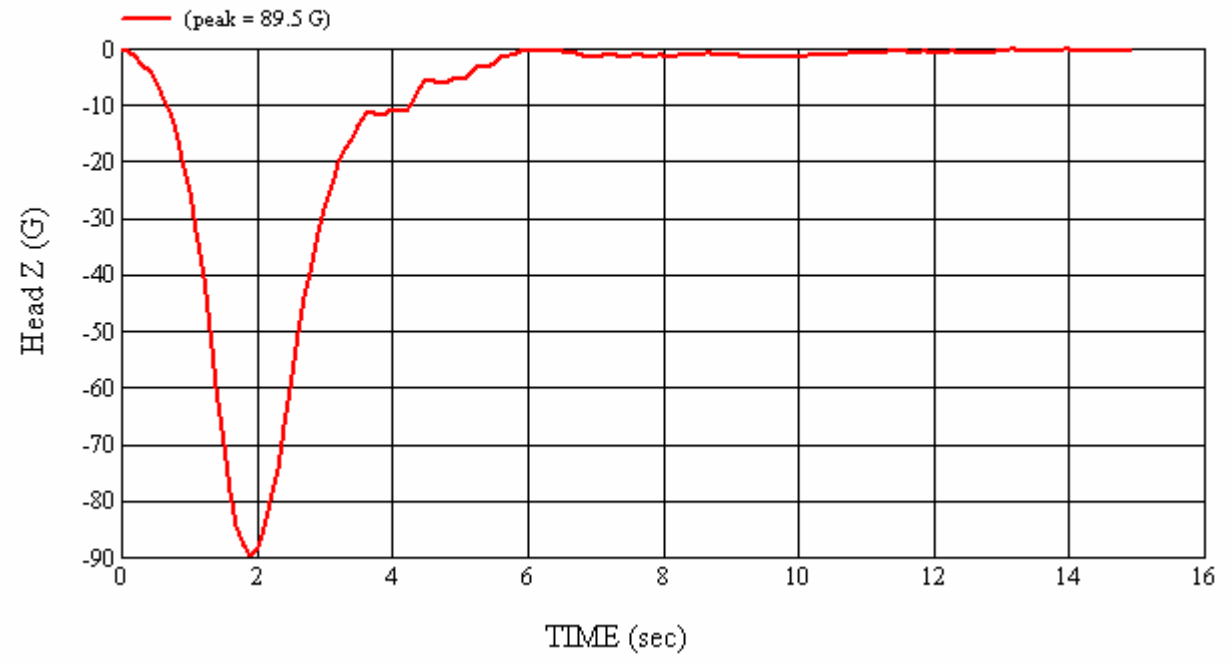


Head 037 (Pre) Calibration #H37007



Head 037 (Pre) Calibration #H37007

4.6 Post-Test Calibration

HEAD DROP TEST SUMMARY
PART 572L

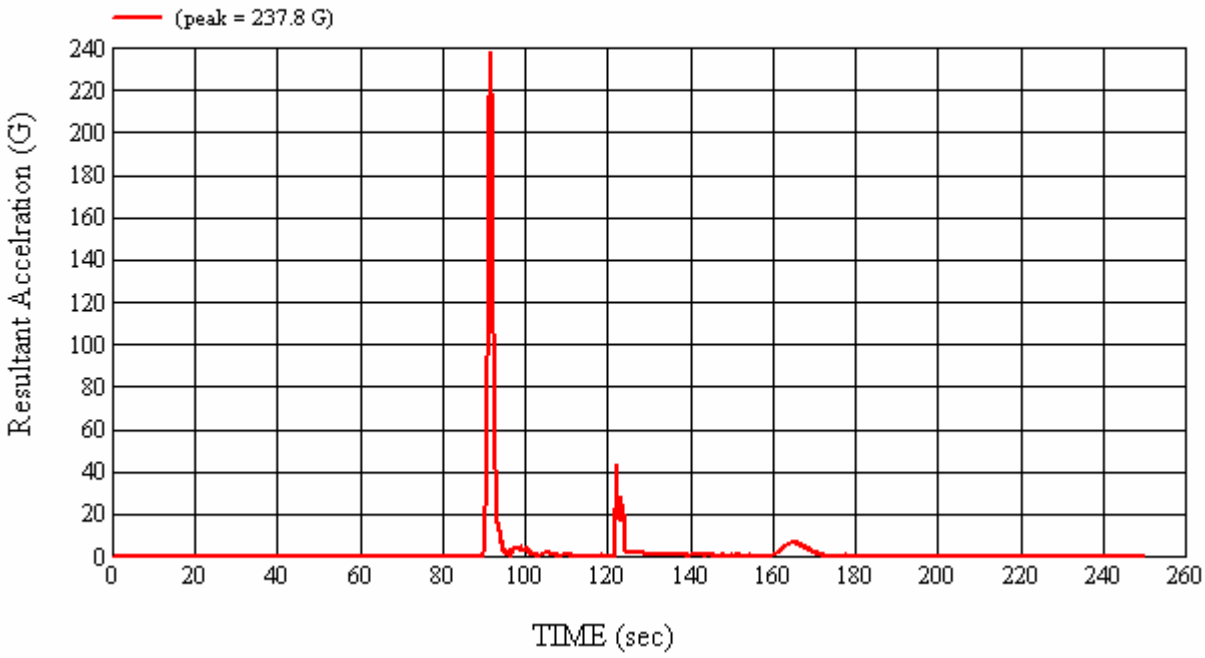
HEADFORM SERIAL NUMBER: 037	CALIBRATION DATE: 8/2/2007 CALIBRATION TIME: 9:34:43 AM	
TEST PARAMETER	**SPECIFICATION**	**TEST RESULTS**
Weight	9.90 to 10.10 lbs.	9.96
Temperature	19° C to 26° C	24
Relative Humidity	10% to 70%	44
Peak Resultant Acceleration	225 G's to 275 G's	237.8
Peak Lateral Acceleration	15 G's Maximum	2.3
Unimodal Acceleration Curve	YES	YES

FMH INSTRUMENTATION					
HEAD ACCELEROMETERS					
Channel Number	**Manufacturer**	**Model Number**	**Serial Number**	**Date of Last Calibration**	**Date of Next Calibration**
1	ENDEVCO	7264-2000	J22696	04/30/07	10/30/07
2	ENDEVCO	7264-2000	J35791	04/30/07	10/30/07
3	ENDEVCO	7264-2000	J35800	04/30/07	10/30/07

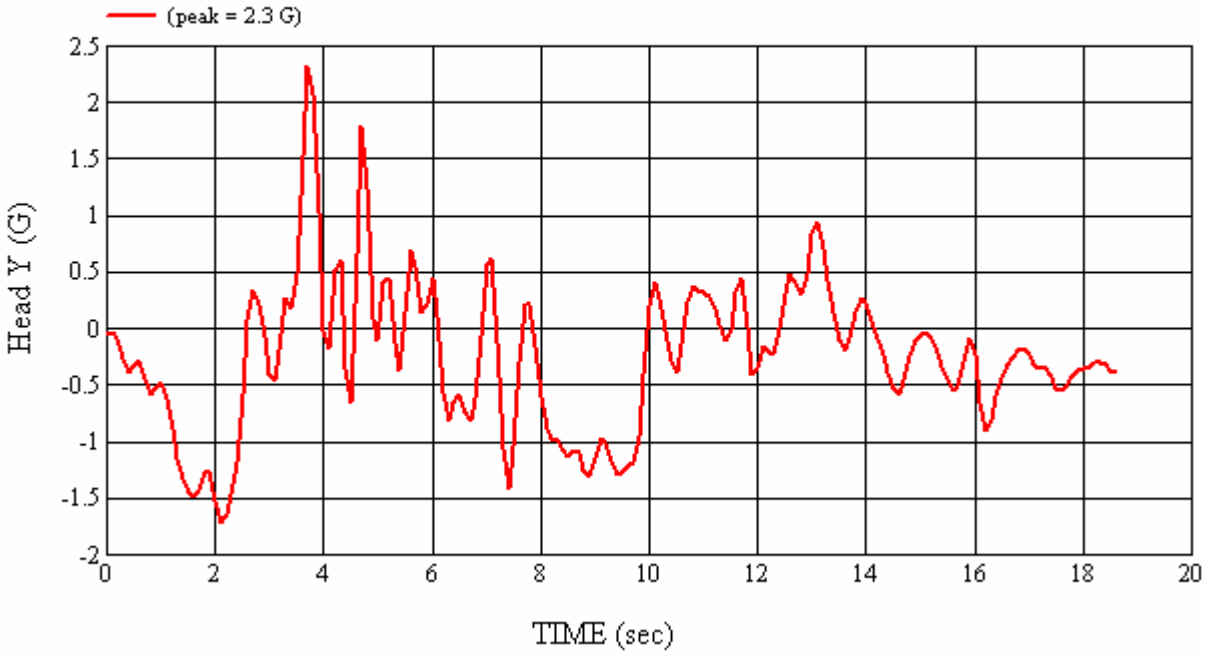
REMARKS:

RECORDED BY: Travis Campbell DATE: 8/2/2007

APPROVED BY: Helen A. Kaleto



Head 037 (Post) Calibration #H37008



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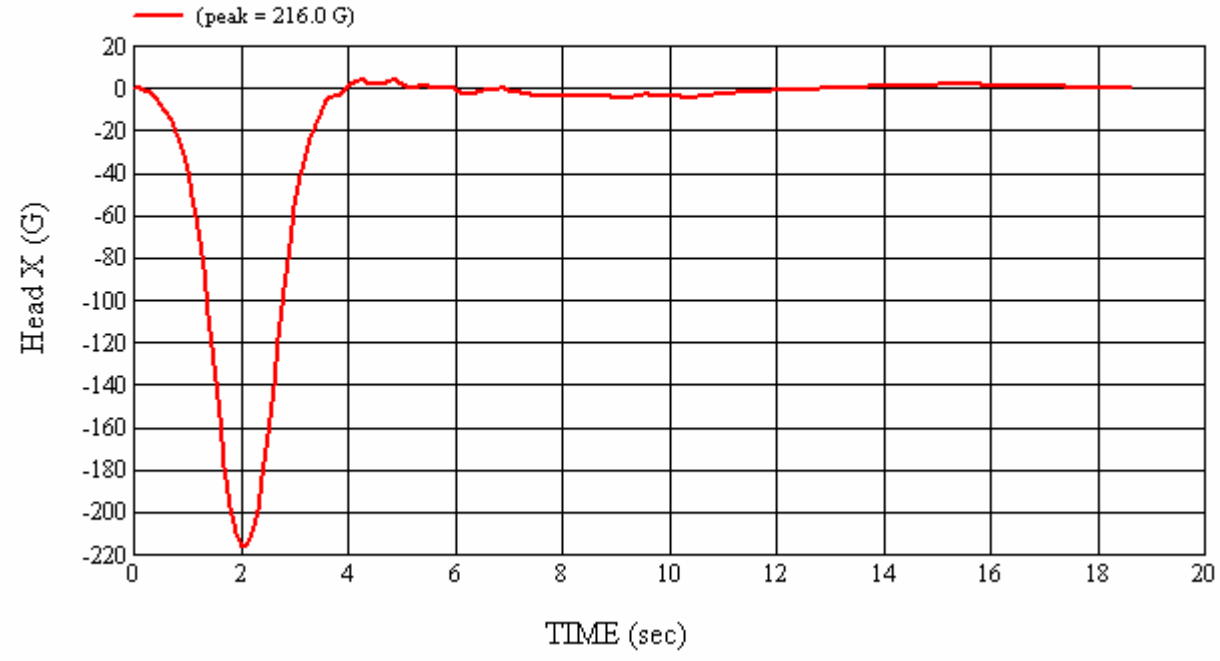

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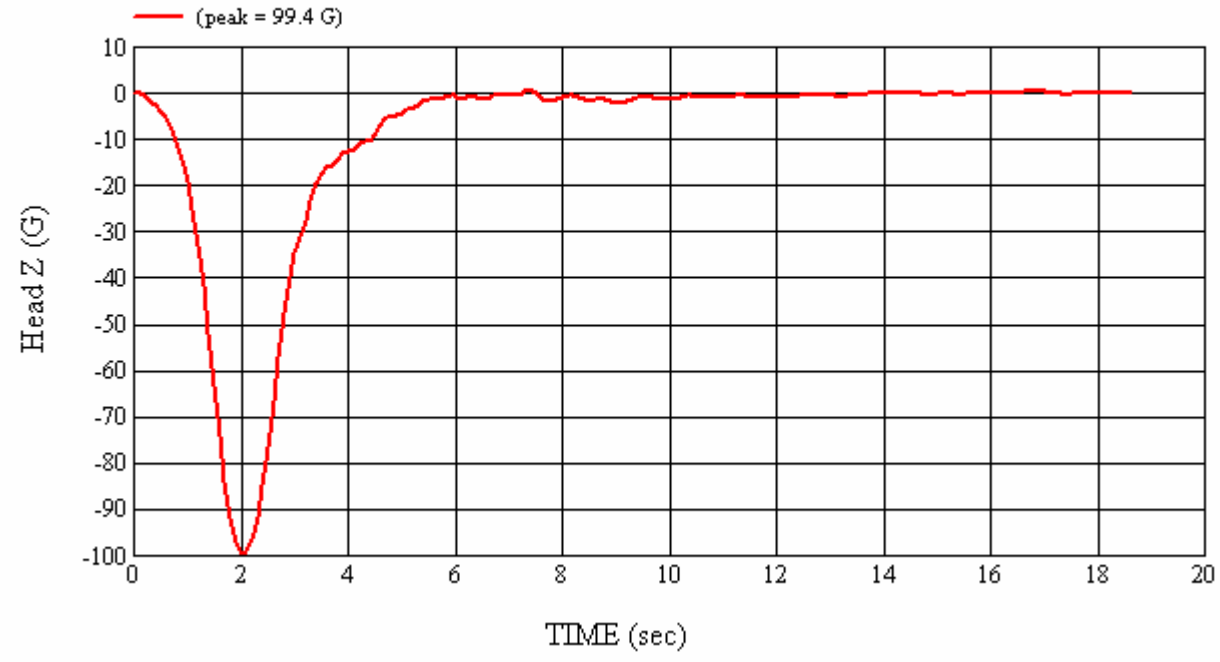


Head 037 (Post) Calibration #H37008

4.7 Pre-Test Calibration

HEAD DROP TEST SUMMARY
PART 572L

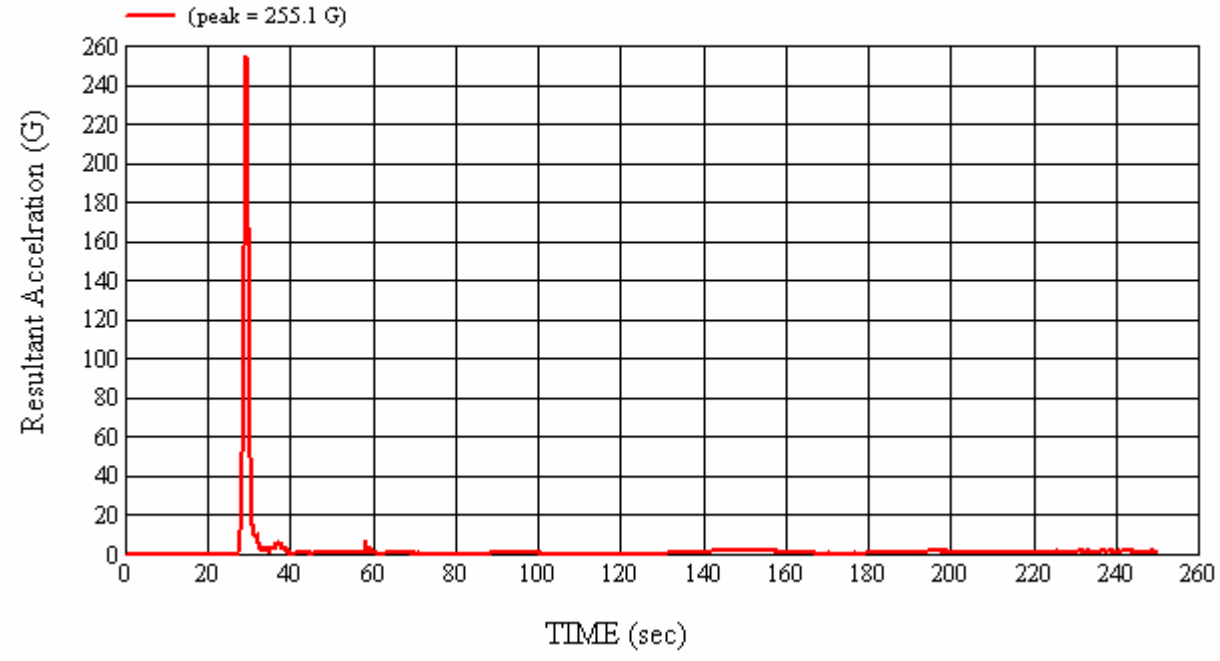
HEADFORM SERIAL NUMBER: 038	CALIBRATION DATE: 7/30/2007 CALIBRATION TIME: 5:15:32 PM	
TEST PARAMETER	**SPECIFICATION**	**TEST RESULTS**
Weight	9.90 to 10.10 lbs.	9.90
Temperature	19° C to 26° C	25
Relative Humidity	10% to 70%	36
Peak Resultant Acceleration	225 G's to 275 G's	255.1
Peak Lateral Acceleration	15 G's Maximum	8.1
Unimodal Acceleration Curve	YES	YES

FMH INSTRUMENTATION					
HEAD ACCELEROMETERS					
Channel Number	**Manufacturer**	**Model Number**	**Serial Number**	**Date of Last Calibration**	**Date of Next Calibration**
1	ENDEVCO	7264-2000	J14103	04/30/07	10/30/07
2	ENDEVCO	7264-2000	J36197	04/30/07	10/30/07
3	ENDEVCO	7264-2000	J36353	04/30/07	10/30/07

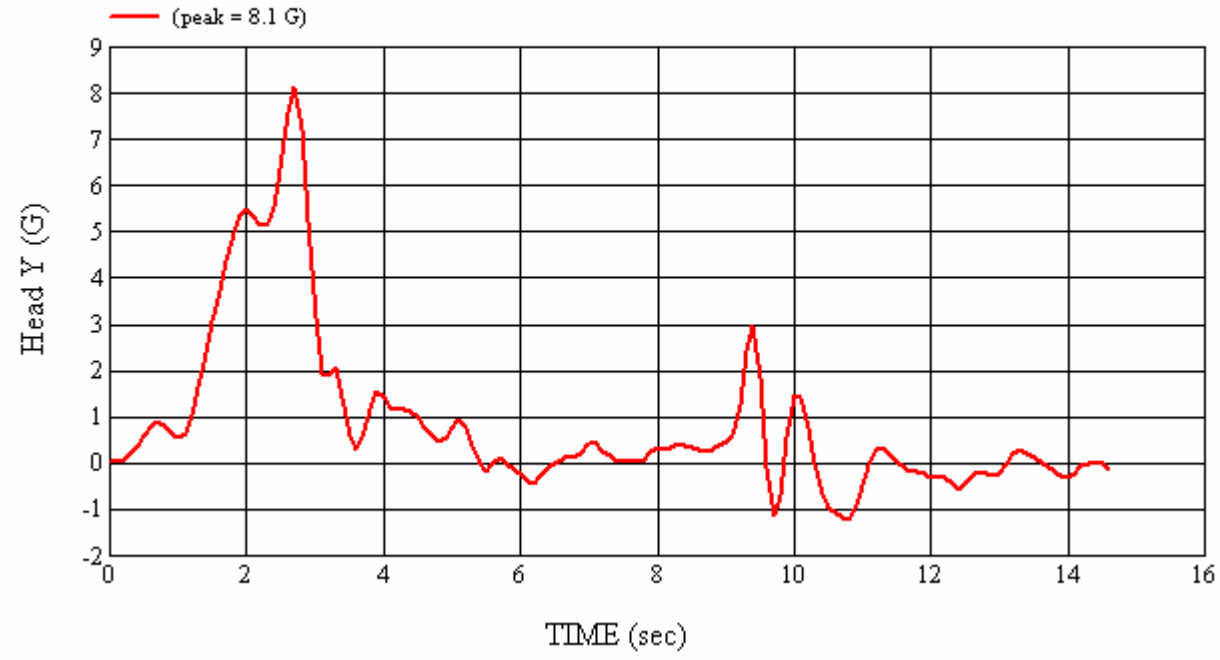
REMARKS:

RECORDED BY: Kaitlin Campbell DATE: 7/30/2007

APPROVED BY: Helen A. Kalafut



Head 038 (Pre) Calibration #H38007



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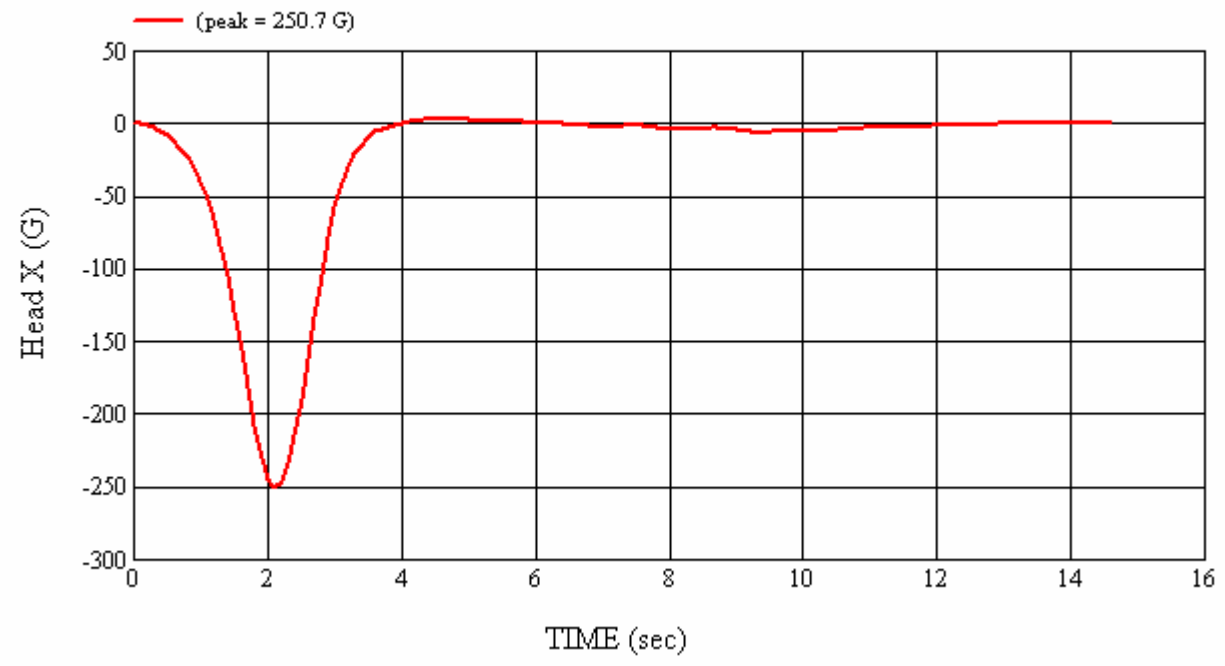
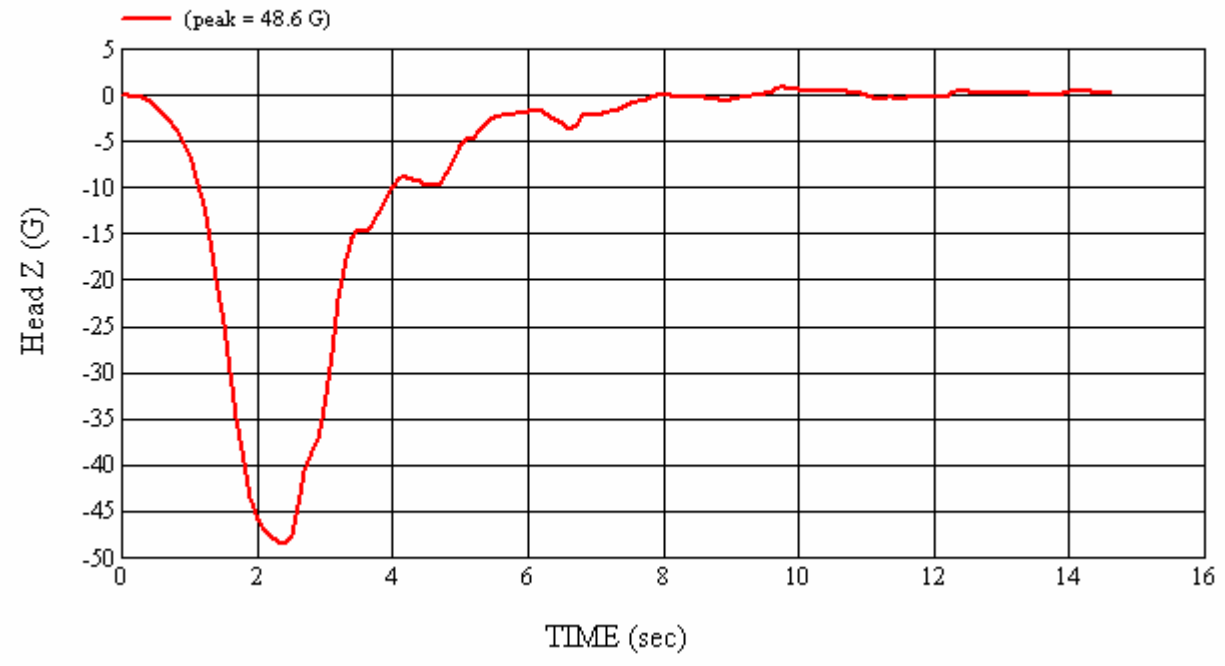


Head 038 (Pre) Calibration #H38007



Head 038 (Pre) Calibration #H38007

4.8 Post-Test Calibration

HEAD DROP TEST SUMMARY
PART 572L

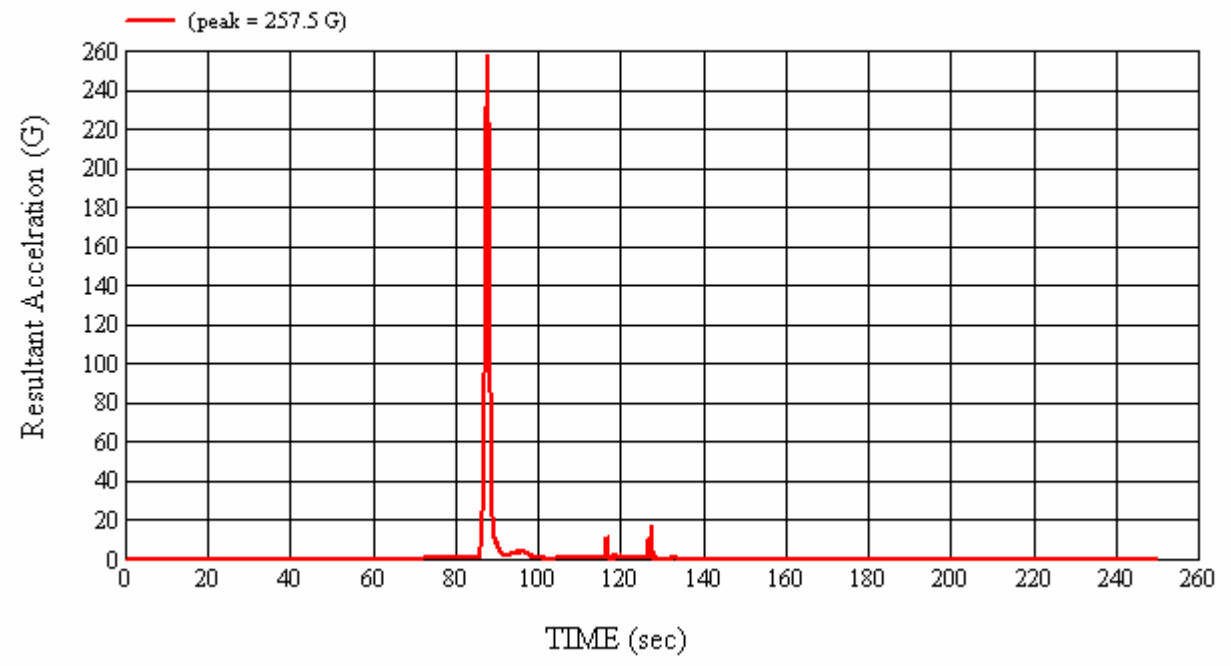
HEADFORM SERIAL NUMBER: 038	CALIBRATION DATE: 8/2/2007 CALIBRATION TIME: 9:35:21 AM	
TEST PARAMETER	**SPECIFICATION**	**TEST RESULTS**
Weight	9.90 to 10.10 lbs.	9.90
Temperature	19° C to 26° C	24
Relative Humidity	10% to 70%	44
Peak Resultant Acceleration	225 G's to 275 G's	257.5
Peak Lateral Acceleration	15 G's Maximum	6.0
Unimodal Acceleration Curve	YES	YES

FMH INSTRUMENTATION					
HEAD ACCELEROMETERS					
Channel Number	**Manufacturer**	**Model Number**	**Serial Number**	**Date of Last Calibration**	**Date of Next Calibration**
1	ENDEVCO	7264-2000	J14103	04/30/07	10/30/07
2	ENDEVCO	7264-2000	J36197	04/30/07	10/30/07
3	ENDEVCO	7264-2000	J36353	04/30/07	10/30/07

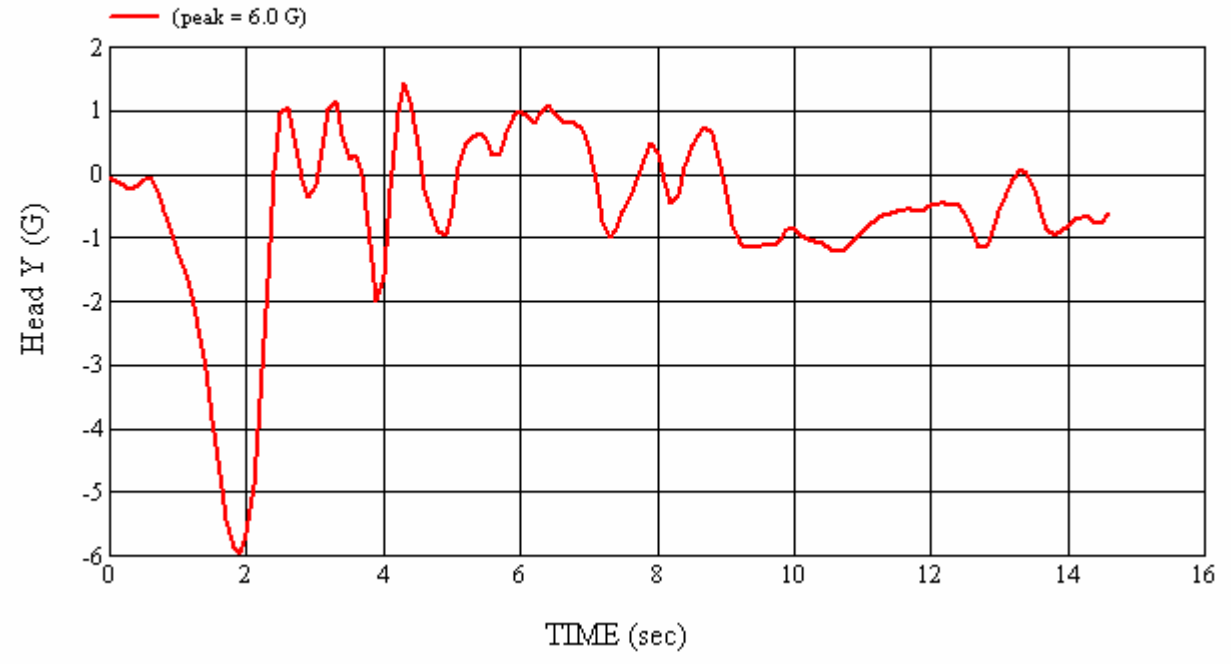
REMARKS:

RECORDED BY: Kaitlin Campbell DATE: 8/2/2007

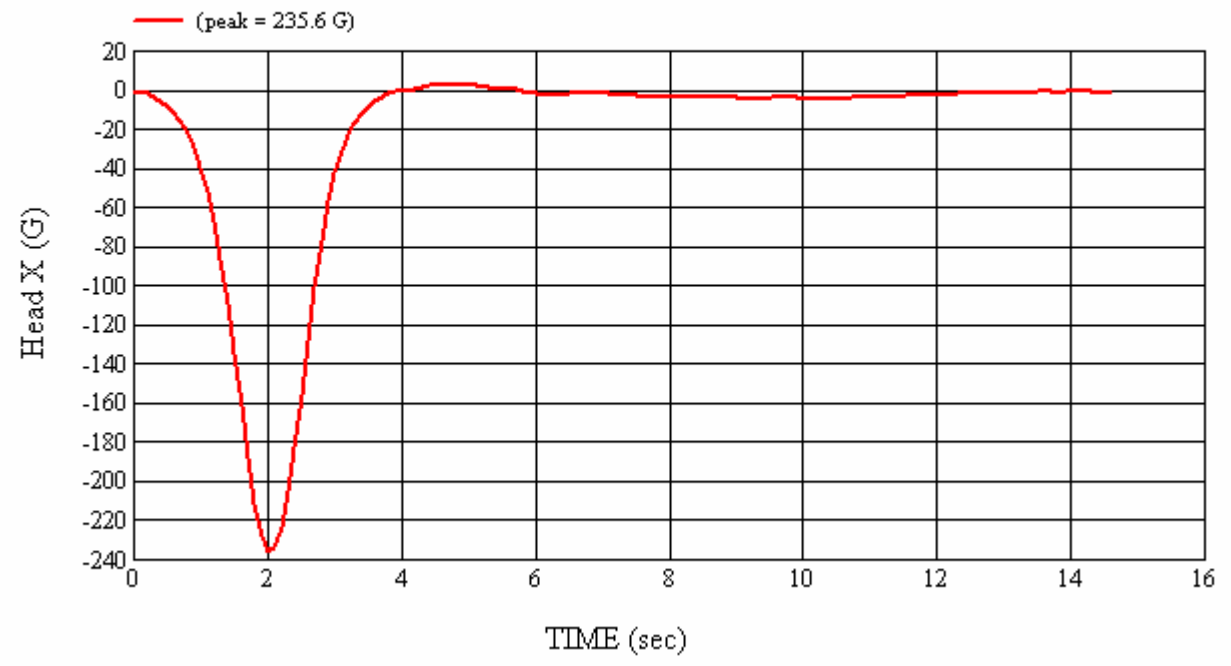
APPROVED BY: Helen A. Kalesto



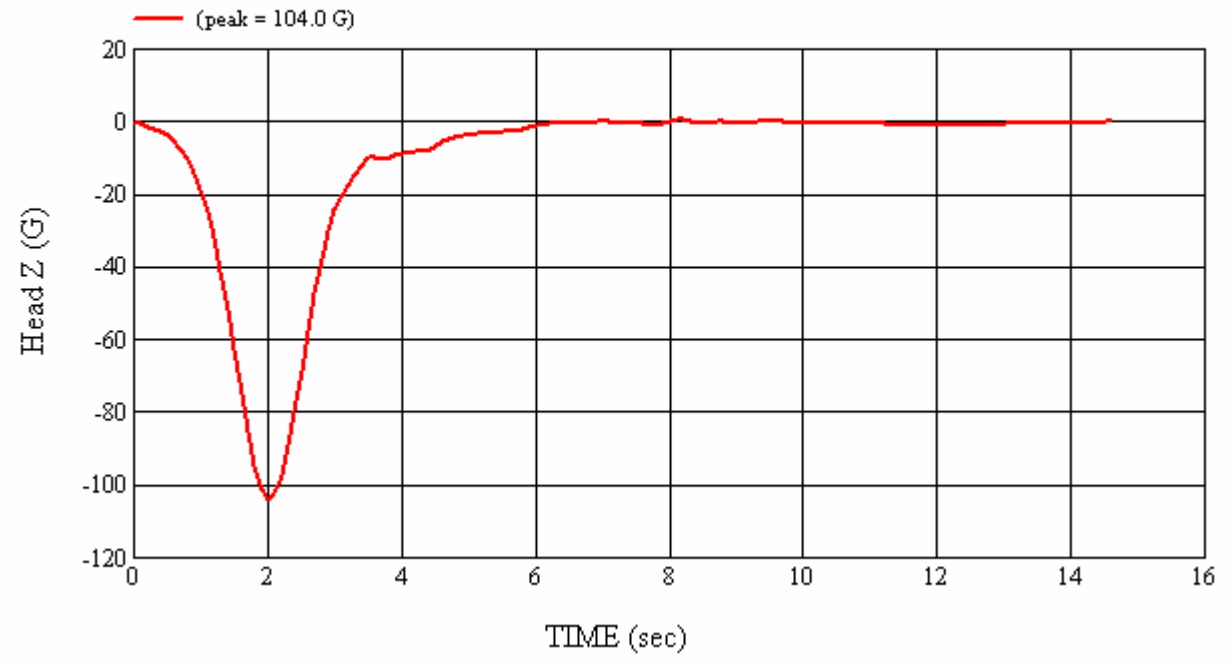
Head 038 (Post) Calibration #H38008



Head 038 (Post) Calibration #H38008



Head 038 (Post) Calibration #H38008



Head 038 (Post) Calibration #H38008

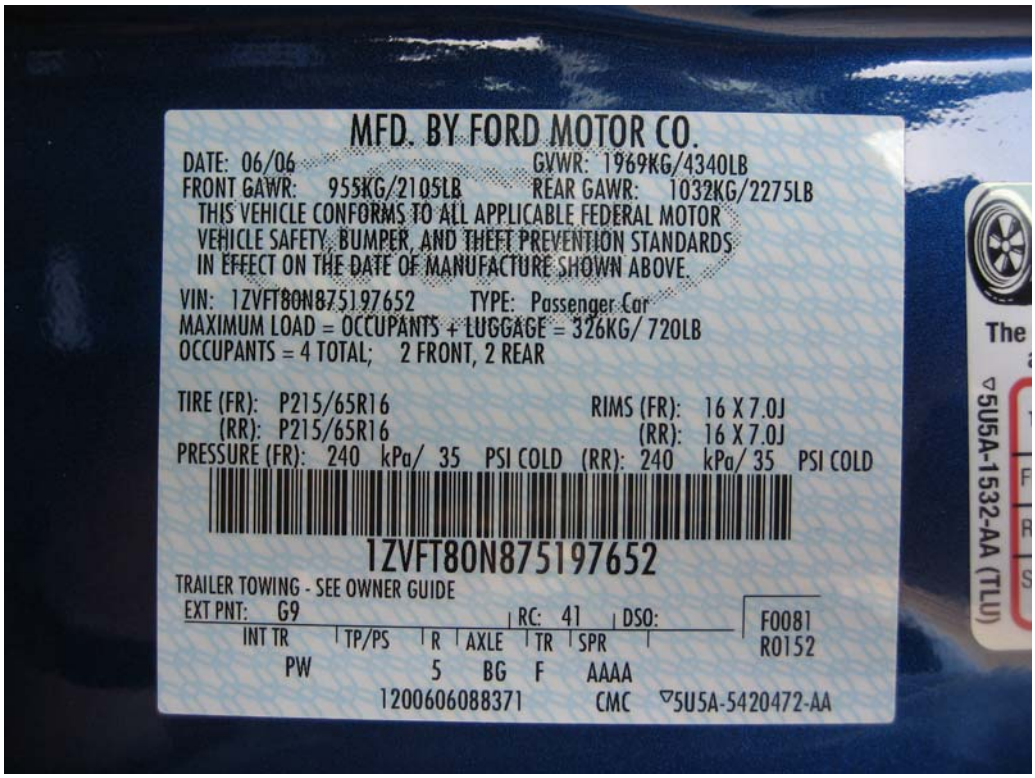
5.0 PHOTOGRAPHS

As Delivered – Left Side View

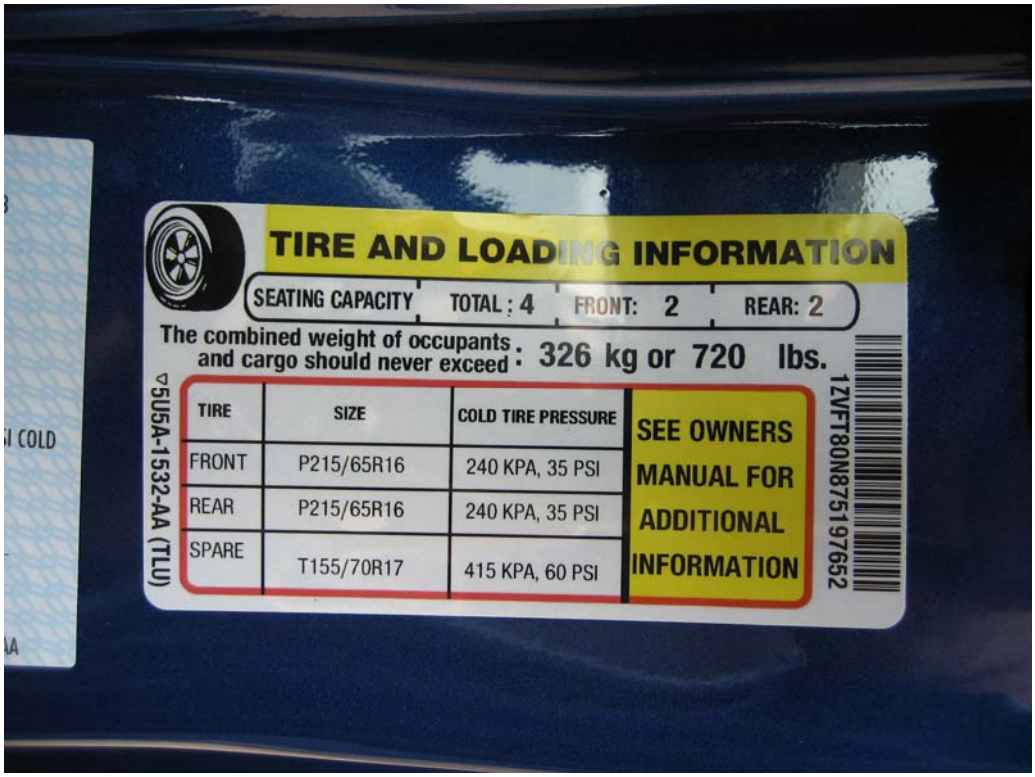
As Delivered – Right Side View

As Delivered – ¾ Front View From Left Side

As- Delivered – Rear View From Right Side



As Delivered – Vehicle's Certification Label

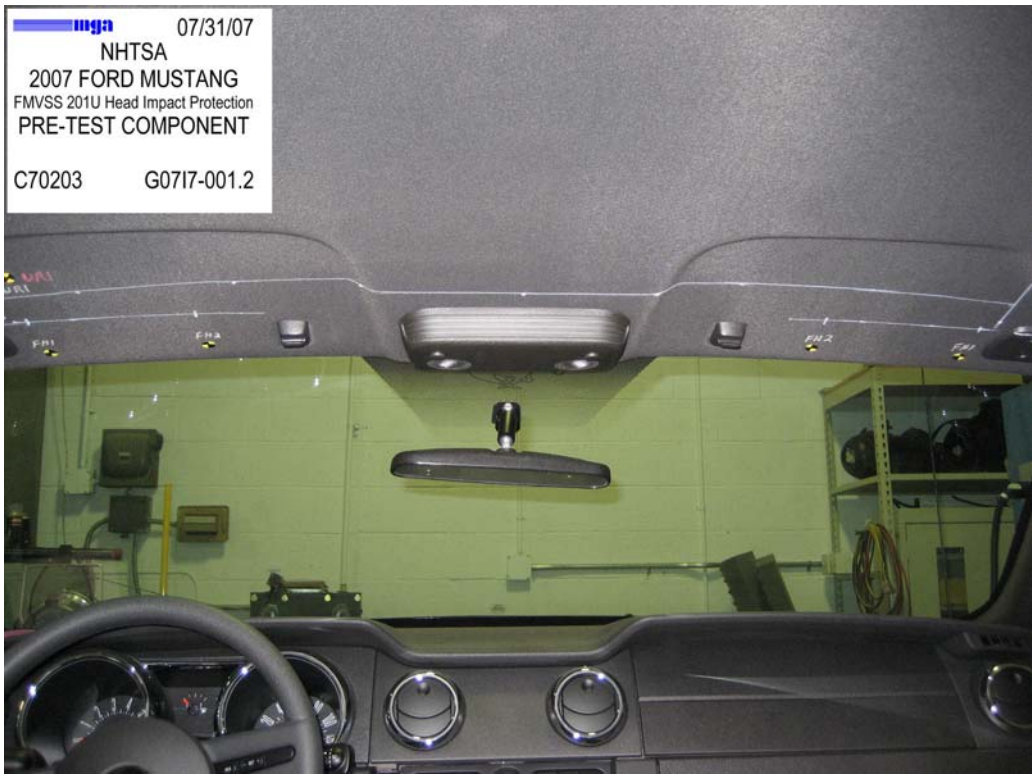


As Delivered – Vehicle's Tire Information Label

Pre-Test Component Photographs


mga
07/31/07
NHTSA
2007 FORD MUSTANG
FMVSS 201U Head Impact Protection
PRE-TEST COMPONENT
C70203
G07I7-001.2


mga
07/31/07
NHTSA
2007 FORD MUSTANG
FMVSS 201U Head Impact Protection
PRE-TEST COMPONENT
C70203
G07I7-001.2


07/31/07
NHTSA
2007 FORD MUSTANG
FMVSS 201U Head Impact Protection
PRE-TEST COMPONENT
C70203
G07I7-001.2

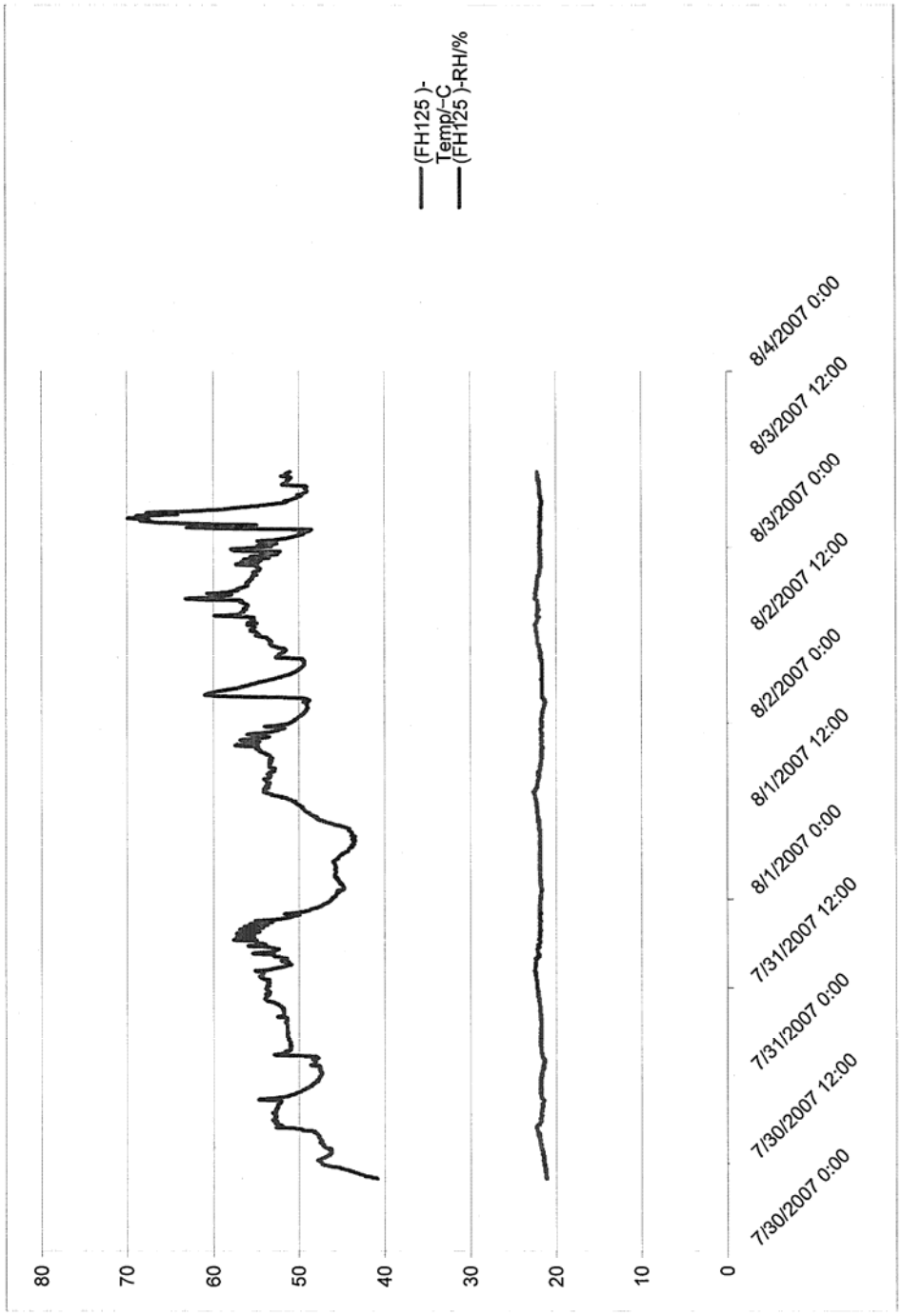
Post-Test Component Photographs


08/02/07
NHTSA
2007 FORD MUSTANG
FMVSS 201U Head Impact Protection
POST-TEST COMPONENT
C70203
G07I7-001.2


08/02/07
NHTSA
2007 FORD MUSTANG
FMVSS 201U Head Impact Protection
POST-TEST COMPONENT
C70203
G07I7-001.2


mga
08/02/07
NHTSA
2007 FORD MUSTANG
FMVSS 201U Head Impact Protection
POST-TEST COMPONENT
C70203
G07I7-001.2

Appendix A - Temperature Trace



Appendix B - Calibration Certificates

Interim Certification Document

art Description: Silver **Certification Date:** 12/20/06 **Serial#:** S08-05-98-01273

Single Point 2 Sigma: S08-05 +/-.076mm (+/-.0030") **Certificate#:** S0127339071

Linear Displacement 2 Sigma: S08-05 +/-.108mm (+/-.0042") **Temperature:** See attached data

Measurement Standards Traceability

Ball Bar Kit	Asset Number: 606	Calibration Date: 11/30/06	*SI Traceability: NPL-LL0101/0501
10mm Step Gauge, Mitutoyo Code No.: 515-744 Measuring range: 1.5m	Asset Number: 773	Calibration Date: 04/03/06 Calibration Date: 04/03/06	*SI Traceability: NIST-821/267216-02 *SI Traceability: UKAS-174978

*The artifact above has been calibrated with a device traceable to the International System of Units (SI) through a National Metrological Institute (NMI) or through an ISO17025 Accredited Laboratory. Expanded measurement uncertainty is 3.9 + 5.9X micrometers, where X=measured value in meters. Uncertainty is expressed at approximately the 95% Level of Confidence using k=2.00.

Certification Results

A basic four quadrant certification included with all FARO Arms and comprised of: 2 vertical level single point repeatability test in 4 quadrants with 5 repeats from 4 directions	PASSED
Step Gauge Test in 4 quadrants, 3 orientations per quadrant	PASSED
3 Length, 3 position free ball bar test in 4 quadrants	PASSED

Calibration and certification conforms to procedures developed in accordance with ASME B89.4.22-200X.

Instrument condition as received **Instrument condition outgoing**

Inoperative Within specifications

Technician: Harry Van Horn Date: 12/20/06

FARO Technologies, Inc.
PH1:1-800-736-2771
PH2:407-333-9911
FAX:407-333-8056
L-A-B Cert Number: L1147

125 Technology Park
Lake Mary, FL 32746
USA

FARO®

LABORATORY ACCREDITATION BUREAU
ISO/IEC 17025 Accredited

Revised: November 22, 2006

f:\control\records\05manufa\partspec\XH08-0495.eps Rev1 RevDate: 12/08/04

MetroCal inc.
#0513.01
4700 Barden Court S.E. • Kentwood, MI 49512 • Telephone: 616.698.3124 • Fax: 616.698.2364

Certificate of Calibration

MGA Research
446 Executive Drive
Troy, MI 48083

Order Number: **51186**
Report Number: **060926810**
Page: **1 of 1**

Gauge Number: **MGA00048**
Gauge Desc: **Digital Protractor**
Manufacturer: **N/A**
Model Number: **Pro 360**
Serial Number: **N/A**

Customer PO: **07-06-0081**
Last Calibration: **8/29/05**
Calibration Date: **9/26/06**
Next Calibration: **9/26/07**

As Found Condition: **In Tolerance**

As Left Condition: **In Tolerance**

MetroCal Inc. maintains reference standards of measurement which are traceable to the National Institute of Standards and Technology, or other authorized National Standards. Calibration was performed in accordance with MetroCal Proc. No. CP045 and complies with the ANSI/NCSL Z540-1 and ISO/IEC 17025 Standards. Results shall not be reproduced except in full without the written approval of MetroCal, Inc. Results relate only to the item(s) calibrated. Any number of factors may cause the calibration Item to drift out of calibration before the recommended interval has expired. Statements of compliance made using simple acceptance rule.

Standard Used	Cal Date	Due Date	Traceable No.	Calibration Procedure Uncertainty Expressed at 95% confidence (K=2)
Gage Blk Set ID# 105	6/14/06	6/14/07	821/271641-05	0.0015 Decimal Deg.
DoAll Sine Bar ID#1879	12/6/05	12/6/06	821/270003-04 & 3600042619	

Results:

As Found Readings

Units	Nominal	Actual	Deviation
Decimal Deg.	5.0	5.0	0.0
	10.0	10.0	0.0
	20.0	20.0	0.0
Tolerance	30.0	30.1	0.1
± 0.1°	40.0	40.0	0.0

Reference Level Check: Within +/- 0.1 degrees

As Left Readings

Nominal	Actual	Deviation
5.0	5.0	0.0
10.0	10.0	0.0
20.0	20.0	0.0
30.0	30.1	0.1
40.0	40.0	0.0

Reference Level Check: Within +/- 0.1 degrees

Comments: Environmental conditions during calibraiton: 68 deg. F., 37 % RH.

Shannon Kubicek
Calibration Technician
issued: 9.26.06

☐ Checked box indicate this calibration was performed at the customers facility.

9/27/06

MICHIGAN OPERATIONS
DATE: 2/7/04
SUPERCEDES: MGATPTMC.5

DOC. NO.: MGATPTMC
REVISION NO.: 6
PAGE 3 OF 3

Tape Measure Calibration Certificate

Reference Steel Rule
Brand: GSI SYRACUSE
S/N: MGA000067
Calibration Date: 8.30.05

Subject Tape Measure
Brand: STANLEY
S/N: TPM030
Calibration Date: 8.21.06

Reference in (mm)	Subject Tape Measure	Difference	Reference in (mm)	Subject Tape Measure	Difference
0 (0)	0	0	18 (450)	450	0
1 (25)	25	0	19 (475)	475	0
2 (50)	50	0	20 (500)	500	0
3 (75)	75	0	21 (525)	525	0
4 (100)	100	0	22 (550)	550	0
5 (125)	125	0	23 (575)	575	0
6 (150)	150	0	24 (600)	600	0
7 (175)	175	0	25 (625)	625	0
8 (200)	200	0	26 (650)	650	0
9 (225)	225	0	27 (675)	675	0
10 (250)	250	0	28 (700)	700	0
11 (275)	275	0	29 (725)	725	0
12 (300)	300	0	30 (750)	750	0
13 (325)	325	0	31 (775)	775	0
14 (350)	350	0	32 (800)	800	0
15 (375)	375	0	33 (825)	825	0
16 (400)	400	0	34 (850)	850	0
17 (425)	425	0	35 (875)	875	0

If all differences are ± 1/32 of an inch (1 mm), then the tape measure is acceptable.
Pass X Fail ____ Maximum Difference = 0

Date: 8.21.06 Performed By: [signature]

All calibrations are traceable to the National Institute of Standards and Technology. Estimated uncertainty of the measurement is ± 0.2%. All certification data and equipment are on file for inspection at your request. Best uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor k=2.

[signature] 8/22/06

Certificate of Instrument Calibration and Testing

Customer Instrument

Dickson Model Number: FH125

Serial Number: 06018122

Calibration Technician Dan Gawel

Calibration Date: 05/01/2007

Calibration Standards

ACCREDITED Cert # 1621.01

General Eastern: Model # M3
Ser. # 0850800 / 2360502
Accuracy: ± .4% FS RH and ± .4 °F
Certified April, 2006

Azonix Model # A1011 Ser. # T2513-9027
RTD Platinum Probe Ser. # 496013 Accuracy: ± .2 °F
Certified April, 2006

The calibration standards are traceable through the National Institute of Standards and Technology.

Calibration Procedure P1130

The customer instrument was compared to the calibration standard. Drifts and faults were determined, and any necessary mechanical or electronic adjustments were taken. The Dickson calibration system conforms to the requirements of MIL-STD-45662A, ANSI/NCSL Z540, and ISO 17025 as appropriate. Recalibration of the customer instrument is recommended within 6-12 months after the unit is placed into service. Any number of factors may cause the calibration item to drift before the recomended interval has expired.
This certificate only relates to this specific unit.

Environmental Conditions

72 °F 41 %RH

Calibration Standard Reading	Customer Instrument Reading	Unit Specification
Humidity (%RH)	Humidity (%RH)	Humidity
14.9	16.6	± 2% RH
67.8	68.5	± 2% RH
85.3	86.4	± 3% RH
Temperature °F (°C)	Temperature °F (°C)	Temperature
12.8 (-10.7)	13.1 (-10.5)	± 1.8 ° F (± 1.0 ° C)
73.3 (22.9)	73.2 (22.9)	
112.3 (44.6)	112.1 (44.5)	

The FH125 has an ISO/IEC 17025 required NIST Technical note 1297, Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Results, estimated measurement uncertainty at 95% CL (K=2) of ±0.7°F and ±1 1 %RH

FOR YOUR NEXT CALIBRATION NO PHONE CALLS REQUIRED

Fill out and send this form along with your instrument to Dickson. Label the outside of the box with **"CCM"** - that is your RA#.

That's all there is to it!

1. Purchase Order #: _____
   Name: _____
   Phone: _____
   Model #: FH125
   Serial #: 06018122

A 3-pt Deluxe NIST will be performed unless otherwise requested

2. ☐ 1-Point Deluxe NIST Calibration $149.00
   ☐ 3-Point Deluxe NIST Calibration $199.00
   ☐ 3-Point Ultima Deluxe A2LA NIST $299.00 (with incoming reading)
   ☐ N995 - User selectable NIST Temperature points $50.00 each
   (to be selected in addition to one of the above calibration options)
   ☐ N997- Next Day Service $50.00 (Not available for ULTIMA service)

Charts/Pens
(Order now and receive them with your calibrated unit)

	Order No.	Qty.	Price Ea.
☐ 6 Red Pens	P222	____	$36 pk.
☐ 3 Red/3 Blue Pens	P246	____	$36 pk.
☐ Charts* (60 per box)	C_ _ _	____	$24 box

*Please fill in the chart order number. For a listing of available charts got to www.dicksonweb.com, click on "product search" and select the product type, "Parts ,Accessories."

Prices are subject to change

3. Please return via:
   ☐ Ground Freight*
   ☐ 2nd Day Air*
   ☐ Next Day Air*
   ***Charges added at factory**

Returned UPS 2nd Day unless otherwise requested

4. Ship To: _____

Bill To: _____

Let Dickson remind you the next time your unit is due for calibration. Register for our FREE Calibration Club now at www.dicksonweb.com

Dickson Calibration Services
930 South Westwood Avenue Addison, Illinois 60101 630-543-3747 Fax 630-543-0498

5/5/07

ULTIMA (Data as Received)

Customer Instrument

Dickson Model Number: FH125
Serial Number: 06018122
Calibration Technician Dan Gawel
Calibration Date: 05/01/2007

Unit was received in working condition, or received repairs not related to it's calibration or accuracy.

Calibration Procedure P1130

The customer instrument was compared to the calibration standard. The Dickson calibration system conforms to the requirements of MIL-STD-45662A and ANSI/NCSL Z540, and ISO 17025 as appropriate. Recalibration of the customer instrument is recommended within 6-12 months after the unit is placed into service.

Environmental Conditions

72 °F 41 %RH

Calibration Standard Reading	Customer Instrument Reading	Unit Specification
Humidity (%RH)	Humidity (%RH)	Humidity
16.4	18.8	± 2% RH
62.4	58.3	± 2% RH
84	79	± 3% RH
Temperature °F	Temperature °F	Temperature
13.1	13.9	± 1.8 °F (± 1.0 °C)
71.3	71	
110.5	110.8	

FOR YOUR NEXT CALIBRATION NO PHONE CALLS REQUIRED

Fill out and send this form along with your instrument to Dickson. Label the outside of the box with **"CCM"** - that is your RA#

That's all there is to it!

1. Purchase Order #: _____
   Name: _____
   Phone: _____
   Model #: FH125
   Serial #: 06018122

A 3-pt Deluxe NIST will be performed unless otherwise requested

2. ☐ 1-Point Deluxe NIST Calibration $149.00
   ☐ 3-Point Deluxe NIST Calibration $199.00
   ☐ 3-Point Ultima Deluxe A2LA NIST $299.00 (with incoming reading)
   ☐ N995 - User selectable NIST Temperature points $50.00 each
   (to be selected in addition to one of the above calibration options)
   ☐ N997- Next Day Service $50.00 (Not available for ULTIMA service)

3. Please return via:
   ☐ Ground Freight*
   ☐ 2nd Day Air*
   ☐ Next Day Air*

***Charges added at factory**

Returned UPS 2nd Day unless otherwise requested

4. Ship To: _____

Bill To: _____

Charts/Pens
(Order now and receive them with your calibrated unit)

	Order No	Qty	Price Ea
☐ 6 Red Pens	P222	____	$36 pk
☐ 3 Red/3 Blue Pens	P246	____	$36 pk
☐ Charts* (60 per box)	C_ _ _	____	$24 box

*Please fill in the chart order number. For a listing of available charts got to www.dicksonweb.com, click on "product search" and select the product type, "Parts ,Accessories."

Prices are subject to change

Let Dickson remind you the next time your unit is due for calibration. Register for our FREE Calibration Club now at www.dicksonweb.com

Dickson Calibration Services
930 South Westwood Avenue Addison, Illinois 60101 630-543-3747 Fax 630-543-0498

MetroCal inc
#0512.01
4700 Barden Court S.E. • Kentwood, MI 49512 • Telephone: 616.698.3124 • Fax: 616.698.2364

Certificate of Calibration

MGA Research
446 Executive Drive
Troy, MI 48083

Order Number: 55304
Certificate Number: 070709906
Page: 1 of 1

Gauge Number: MGA00081
Gauge Desc: 0 to 20.00lb x 0.01lb Digital Scale
Manufacturer: Detecto
Model Number: AP-20
Serial Number: E33603-0213

Customer PO: N/A
Last Calibration: 7/7/06
Calibration Date: 7/9/07
Next Calibration: 7/9/08

As Found Condition: In Tolerance

As Left Condition: In Tolerance

MetroCal Inc. maintains reference standards of measurement which traceable to the National Institute of Standards and Technology, or other authorized National Standards. Calibration was performed in accordance with MetroCal's Procedure No CP-042 and the relevant sections of the manufacturers manual. This Calibration complies with the ISO/IEC 17025 and ANSI/NCSL Z540-1 Standards. Results shall not be reproduced except in full without the written approval of MetroCal Inc. Results relate only to the item(s) calibrated. Any number of factors may cause the calibration item to drift out of calibration before the recommended interval has expired. Statements of compliance made using simple acceptance rule.

Standard Used	Cal. Date	Due Date	Traceable No.	Calibration Procedure Uncertainty Expressed at 95% confidence , (K=2)
Dead Weight Set ID#2463	8/10/06	8/10/08	MI-04-06-8325	+/-0.001% of Load

Results:
Tolerance used: ± 0.02

Units: lbs TI Division/Increment: 0.01

	As Found				As Left		
Weight Test	Nominal	Indication	Deviation		Nominal	Indication	Deviation
0-25% fs	5.00	5.00	0.00		5.00	5.00	0.00
26-50% fs	10.00	9.99	-0.01		10.00	9.99	-0.01
51-75% fs	15.00	14.99	-0.01		15.00	14.99	-0.01
76-100% fs	20.00	19.99	-0.01		20.00	19.99	-0.01
Beam 2							
0-25% fs							
26-50% fs							
51-75% fs							
76-100% fs							
Beam 3							
0-25% fs							
26-50% fs							
51-75% fs							
76-100% fs							
Shift Test:	Pass			Shift Test:	Pass		
Half Load Test:	Pass			Half Load Test:	Pass		

Comments: Environmental conditions during calibration: 87 deg F., 47 % RH

Chad Rosema issued: 7/9/07
Chad Rosema/bjk
Calibration Technician

☐ Checked box indicate this calibration was performed at the customers facility

7/24/07

Sterling Scale Co., Inc.
20950 Boening St.
Southfield, MI 48075

Certificate of Calibration

F410/12-3
Rev. Date 11/23/05

calibration cert. 1448.01

Customer: MGA Research ***Cert#*** O7-3173 ***Temp/Humidity:*** 78/40
Location of Calibration: 2839 Elliott Troy MI 48083
Calibration Date: 7/17/2007 ***Cal Due:*** Jul-08 ***Condition of Item:*** GOOD
Equipment Make: SW Scales ***Model:*** SW Deluxe ***Serial/ID:*** 26032389 ***Capacity:*** 8800x1lb

Applied Test Wt	*Before Adustment*	*Tolerance*	*In-Tolerance Y/N*	*After Adjustment*	*In-Tolerance Y/N*	*Unc*
LF 0lb	0lb	1lb	y	0lb	y	0.5
LF 50lb	50lb	1lb	y	50lb	y	0.5
LF 1000lb	1000lb	2lb	y	1000lb	y	0.5
LF 2200lb	2199lb	2lb	y	2199lb	y	0.5
LR 0lb	0lb	1lb	y	0lb	y	0.5
LR 50lb	50lb	1lb	y	50lb	y	0.5
LR 1000lb	1000lb	2lb	y	1000lb	y	0.5
LR 2200lb	2200lb	2lb	y	2200lb	y	0.5

shift test
N/A
PADS

	Platform #1	***Platform #2***	***Platform #3***
	☑ Pass	☐ Pass	☐ Pass
	☐ Fail	☐ Fail	☐ Fail

Tests performed: ☑ Repeatability ☑ Linearity ☐ Sensitivity ☑ Discrimination

Page 1 of 2

Technician COMMENTS/ weights used
The scale is accurate and working fine. The scale holds a good zero,also the system is in a storage trunk.
Sterling House Weights

☑ Scale Certified ☐ Scale Rejected

Sterling Scale Service Rep: Larry V. **Date:** **7/17/2007** **1 of 1**

The above item has been calibrated using the relevant EPO or OEM procedures utilizing test weights
Traceable to International Systems of Units (SI), through the Michigan Department of Agriculture.
Test numbers on file. Expanded uncertainty(k=2) confidence level of 95% as reported.
Results relate only to items listed.
The reported uncertainty is valid only for the environment in which it is determined.
Any number of factors may cause the item to drift out of calibration before recommended interval has expired
This report shall not be reproduced, except in full without approval of the laboratory
Tolerances followed are maintenance/acceptance per HB 44 or as detremined by the customer

mga research corporation

CALIBRATION CERTIFICATE

Sensor Information	Reference Sensor Information
Name: 2000 G Accelerometer	**Name:** *Reference Accelerometer*
Model: 7264-2000	**Model:** *301M09/484B*
S/N: J22664	**S/N:** *862/247*
Capacity: 2000 G	**Capacity:** *170 G*
Calibration Date: 4/30/2007	**Calibration Date:** *7/27/2006*
	Calibrated By: *Chuck DiMaggio*

Test Reference Number: A0712

New DLR (100k **, Units:G):** 94.2

StdDeviation (%) 0.496

% Difference in DLR (New vs. Old): -1.807

Temperature (°F): 74

Humidity (%): 36

Performed By: 

Approved By: 

All calibrations are traceable to the National Institute of Standards and Technology. Estimated uncertainty of the measurement is ±3.7%. All certification data and equipment are on file for inspection at your request. Best uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor k=2.

446 executive drive • troy, mi 48083
248 / 577-5001 • fax 248 / 577-5025
www.mgaresearch.com

mga research corporation

CALIBRATION CERTIFICATE

Sensor Information	Reference Sensor Information
Name: 2000 G Accelerometer	**Name:** *Reference Accelerometer*
Model: 7264-2000	**Model:** *301M09/484B*
S/N: J35919	**S/N:** *862/247*
Capacity: 2000 G	**Capacity:** *170 G*
Calibration Date: 4/30/2007	**Calibration Date:** *7/27/2006*
	Calibrated By: *Chuck DiMaggio*

Test Reference Number: A0712

New DLR (100k **, Units:G):** 97.4

StdDeviation (%) 0.299

% Difference in DLR (New vs. Old): -1.589

Temperature (°F): 74

Humidity (%): 36

Performed By: 

Approved By: 

All calibrations are traceable to the National Institute of Standards and Technology. Estimated uncertainty of the measurement is ±3.7%. All certification data and equipment are on file for inspection at your request. Best uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor k=2.

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CALIBRATION CERTIFICATE

Sensor Information	Reference Sensor Information
Name: 2000 G Accelerometer	**Name:** *Reference Accelerometer*
Model: 7264-2000	**Model:** *301M09/484B*
S/N: J35924	**S/N:** *862/247*
Capacity: 2000 G	**Capacity:** *170 G*
Calibration Date: 4/30/2007	**Calibration Date:** *7/27/2006*
	Calibrated By: *Chuck DiMaggio*

Test Reference Number: A0712

New DLR (100k **, Units:G):** 93.9

StdDeviation (%) 0.188

% Difference in DLR (New vs. Old): 0.228

Temperature (°F): 74

Humidity (%): 36

Performed By: 

Approved By: 

All calibrations are traceable to the National Institute of Standards and Technology. Estimated uncertainty of the measurement is ±3.7%. All certification data and equipment are on file for inspection at your request. Best uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor k=2.

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CALIBRATION CERTIFICATE

Sensor Information	Reference Sensor Information
Name: 2000 G Accelerometer	**Name:** *Reference Accelerometer*
Model: 7264-2000	**Model:** *301M09/484B*
S/N: J21969	**S/N:** *862/247*
Capacity: 2000 G	**Capacity:** *170 G*
Calibration Date: 4/30/2007	**Calibration Date:** *7/27/2006*
	Calibrated By: *Chuck DiMaggio*

Test Reference Number: A0712

New DLR (100k **, Units:G):** 90.9

StdDeviation (%) 0.113

% Difference in DLR (New vs. Old): -0.839

Temperature (°F): 74

Humidity (%): 36

Performed By: 

Approved By: 

All calibrations are traceable to the National Institute of Standards and Technology. Estimated uncertainty of the measurement is ±3.7%. All certification data and equipment are on file for inspection at your request. Best uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor k=2.

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CALIBRATION CERTIFICATE

Sensor Information	Reference Sensor Information
Name: 2000 G Accelerometer	**Name:** *Reference Accelerometer*
Model: 7264-2000	**Model:** *301M09/484B*
S/N: J35916	**S/N:** *862/247*
Capacity: 2000 G	**Capacity:** *170 G*
Calibration Date: 4/30/2007	**Calibration Date:** *7/27/2006*
	Calibrated By: *Chuck DiMaggio*

Test Reference Number: A0712

New DLR (100k **, Units:G):** 103.2

StdDeviation (%) 0.19

% Difference in DLR (New vs. Old): 0.033

Temperature (°F): 74

Humidity (%): 36

Performed By: 

Approved By: 

All calibrations are traceable to the National Institute of Standards and Technology. Estimated uncertainty of the measurement is ±3.7%. All certification data and equipment are on file for inspection at your request. Best uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor k=2.

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CALIBRATION CERTIFICATE

Sensor Information	Reference Sensor Information
Name: 2000 G Accelerometer	**Name:** *Reference Accelerometer*
Model: 7264-2000	**Model:** *301M09/484B*
S/N: J35918	**S/N:** *862/247*
Capacity: 2000 G	**Capacity:** *170 G*
Calibration Date: 4/30/2007	**Calibration Date:** *7/27/2006*
	Calibrated By: *Chuck DiMaggio*

Test Reference Number: A0712

New DLR (100k **, Units:G):** 99.4

StdDeviation (%) 0.149

% Difference in DLR (New vs. Old): -1.369

Temperature (°F): 74

Humidity (%): 36

Performed By: 

Approved By: 

All calibrations are traceable to the National Institute of Standards and Technology. Estimated uncertainty of the measurement is ±3.7%. All certification data and equipment are on file for inspection at your request. Best uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor k=2.

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CALIBRATION CERTIFICATE

Sensor Information	Reference Sensor Information
Name: 2000 G Accelerometer	**Name:** *Reference Accelerometer*
Model: 7264-2000	**Model:** *301M09/484B*
S/N: J22696	**S/N:** *862/247*
Capacity: 2000 G	**Capacity:** *170 G*
Calibration Date: 4/30/2007	**Calibration Date:** *7/27/2006*
	Calibrated By: *Chuck DiMaggio*

Test Reference Number: A0713

New DLR (100k **, Units:G):** 100.0

StdDeviation (%) 0.559

% Difference in DLR (New vs. Old): -1.242

Temperature (°F): 74

Humidity (%): 36

Performed By: 

Approved By: 

All calibrations are traceable to the National Institute of Standards and Technology. Estimated uncertainty of the measurement is ±3.7%. All certification data and equipment are on file for inspection at your request. Best uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor k=2.

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CALIBRATION CERTIFICATE

Sensor Information	Reference Sensor Information
Name: 2000 G Accelerometer	**Name:** *Reference Accelerometer*
Model: 7264-2000	**Model:** *301M09/484B*
S/N: J35791	**S/N:** *862/247*
Capacity: 2000 G	**Capacity:** *170 G*
Calibration Date: 4/30/2007	**Calibration Date:** *7/27/2006*
	Calibrated By: *Chuck DiMaggio*

Test Reference Number: A0713

New DLR (100k **, Units:G):** 91.9

StdDeviation (%) 0.194

% Difference in DLR (New vs. Old): 1.127

Temperature (°F): 74

Humidity (%): 36

Performed By: 

Approved By: 

All calibrations are traceable to the National Institute of Standards and Technology. Estimated uncertainty of the measurement is ±3.7%. All certification data and equipment are on file for inspection at your request. Best uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor k=2.

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CALIBRATION CERTIFICATE

Sensor Information	Reference Sensor Information
Name: 2000 G Accelerometer	**Name:** *Reference Accelerometer*
Model: 7264-2000	**Model:** *301M09/484B*
S/N: J35800	**S/N:** *862/247*
Capacity: 2000 G	**Capacity:** *170 G*
Calibration Date: 4/30/2007	**Calibration Date:** *7/27/2006*
	Calibrated By: *Chuck DiMaggio*

Test Reference Number: A0713

New DLR (100k **, Units:G):** 98.0

StdDeviation (%) 0.78

% Difference in DLR (New vs. Old): -1.192

Temperature (°F): 74

Humidity (%): 36

Performed By: 

Approved By: 

All calibrations are traceable to the National Institute of Standards and Technology. Estimated uncertainty of the measurement is ±3.7%. All certification data and equipment are on file for inspection at your request. Best uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor k=2.

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CALIBRATION CERTIFICATE

Sensor Information	Reference Sensor Information
Name: 2000 G Accelerometer	**Name:** *Reference Accelerometer*
Model: 7264-2000	**Model:** *301M09/484B*
S/N: J14103	**S/N:** *862/247*
Capacity: 2000 G	**Capacity:** *170 G*
Calibration Date: 4/30/2007	**Calibration Date:** *7/27/2006*
	Calibrated By: *Chuck DiMaggio*

Test Reference Number: A0713

New DLR (100k **, Units:G):** 94.6

StdDeviation (%) 0.172

% Difference in DLR (New vs. Old): 1.175

Temperature (°F): 74

Humidity (%): 36

Performed By: 

Approved By: 

All calibrations are traceable to the National Institute of Standards and Technology. Estimated uncertainty of the measurement is ±3.7%. All certification data and equipment are on file for inspection at your request. Best uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor k=2.

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CALIBRATION CERTIFICATE

Sensor Information	Reference Sensor Information
Name: 2000 G Accelerometer	**Name:** *Reference Accelerometer*
Model: 7264-2000	**Model:** *301M09/484B*
S/N: J36197	**S/N:** *862/247*
Capacity: 2000 G	**Capacity:** *170 G*
Calibration Date: 4/30/2007	**Calibration Date:** *7/27/2006*
	Calibrated By: *Chuck DiMaggio*

Test Reference Number: A0713

New DLR (100k **, Units:G):** 110.7

StdDeviation (%) 0.159

% Difference in DLR (New vs. Old): 0.612

Temperature (°F): 74

Humidity (%): 36

Performed By: 

Approved By: 

All calibrations are traceable to the National Institute of Standards and Technology. Estimated uncertainty of the measurement is ±3.7%. All certification data and equipment are on file for inspection at your request. Best uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor k=2.

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CALIBRATION CERTIFICATE

Sensor Information	Reference Sensor Information
Name: 2000 G Accelerometer	**Name:** *Reference Accelerometer*
Model: 7264-2000	**Model:** *301M09/484B*
S/N: J36353	**S/N:** *862/247*
Capacity: 2000 G	**Capacity:** *170 G*
Calibration Date: 4/30/2007	**Calibration Date:** *7/27/2006*
	Calibrated By: *Chuck DiMaggio*

Test Reference Number: A0713

New DLR (100k **, Units:G):** 99.4

StdDeviation (%) 0.346

% Difference in DLR (New vs. Old): 1.014

Temperature (°F): 74

Humidity (%): 36

Performed By: 

Approved By: 

All calibrations are traceable to the National Institute of Standards and Technology. Estimated uncertainty of the measurement is ±3.7%. All certification data and equipment are on file for inspection at your request. Best uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor k=2.

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~ Calibration Certificate ~

Per ISO 16063-21

Model Number: 301M09/484B (394M17 SYSTEM)

Serial Number: 862/2470

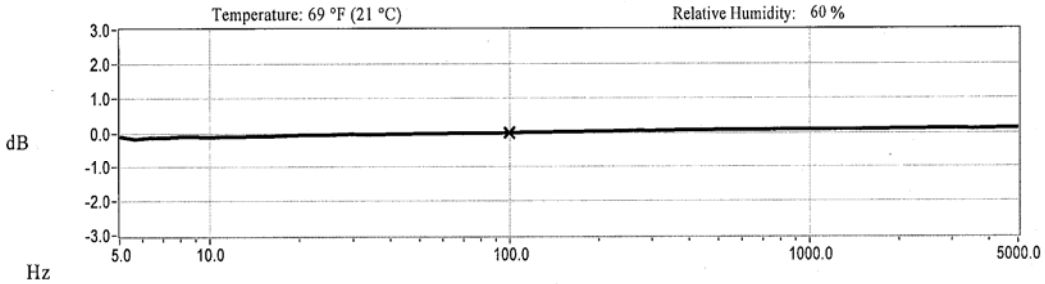
Description: ICP® Accelerometer Method: Back-to-Back Comparison Calibration

Manufacturer: PCB

Calibration Data

Sensitivity @ 100.0 Hz	**31.03**	**mV/g**	Output Bias	8.6	VDC
	(3.16	**mV/m/s²)**	Transverse Sensitivity	3.0	%

Sensitivity Plot



Data Points

Frequency (Hz)	Dev. (%)	Frequency (Hz)	Dev. (%)	Frequency (Hz)	Dev. (%)
5.0	-1.2	REF. FREQ.	0.0	5000.0	1.5
10.0	-1.4	300.0	0.6		
15.0	-1.0	500.0	0.9		
30.0	-0.4	1000.0	1.0		
50.0	-0.3	3000.0	1.4		

Mounting Surface: Stainless Steel w/Silicone Grease Coating Fastener: Stud Mount Fixture Orientation: Vertical
Acceleration Level (rms)[1]: 10.0 g (98.1 m/s²)[2]
[1]The acceleration level may be limited by shaker displacement at low frequencies. If the listed level cannot be obtained, the calibration system uses the following formula to set the vibration amplitude; Acceleration Level (g) = 0.010 x (freq)².
[2]The gravitational constant used for calculations by the calibration system is; 1 g = 9.80665 m/s².

Condition of Unit

As Found: In Tolerance, No Adjustment Necessary

As Left: In Tolerance

Notes

1. Calibration is NIST Traceable thru Project 822/271196 and PTB Traceable thru Project 5399.
2. This certificate shall not be reproduced, except in full, without written approval from PCB Piezotronics, Inc.
3. Calibration is performed in compliance with ISO 9001, ISO 10012-1, ANSI/NCSL Z540-1-1994 and ISO 17025.
4. See Manufacturer's Specification Sheet for a detailed listing of performance specifications.
5. Measurement uncertainty (95% confidence level with coverage factor of 2) for frequency ranges tested during calibration are as follows: 5-9 Hz; +/- 2.0%, 10-99 Hz; +/- 1.5%, 100-1999 Hz; +/- 1.0%, 2-10 kHz; +/- 2.5%.

Technician: Chuck DiMaggio CD 7/27/06 Date: 07/27/06

ACCREDITED
Cert No 1862.01

PCB PIEZOTRONICS INC.
VIBRATION DIVISION
3425 Walden Avenue · Depew, NY 14043
TEL: 888-684-0013 · FAX: 716-685-3886 · www.pcb.com

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~Certificate of Calibration~

Model Number: 484B
Serial Number: 2470
Description: Signal Conditioner
Test Procedure: AT-106-1
Temperature: 70° F

PCB Control #: QC214/QC184/QC198/CA514
Calibration Date: 07/22/2006
Recalibration Date:
Calibration Technician: James Higbee 2b 7/27/06
Relative Humidity: 58%

Volts	*Current (mA)*	*Gain**
24.0	3.9	1.000

As Received: In tolerance, no adjustment required.

As Left: In tolerance.

Special Notes:

This document certifies that the equipment referenced above meets published specifications. The calibration procedure is in compliance with ISO 10012-1, and former MIL-STD-45662A and is traceable to NIST. *Measurement uncertainty (95% confidence level w\coverage factor of 2) for scale factors is +/- 0.2%.

ACCREDITED
Cert. No. 1862.01

PCB PIEZOTRONICS INC.

3425 Walden Avenue Depew, New York, USA 14043-2495

For any questions concerning this certificate, please call PCB at (716) 684-0001 and ask for an application engineer.