FINAL REPORT NUMBER 201UI-MGA-07-07

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

TOYOTA MOTOR COMPANY
2007 Toyota FJ Cruiser, 4-Door SUV
NHTSA No. C75106

MGA RESEARCH CORPORATION
446 Executive Drive
Troy, Michigan 48083

Test Dates: October 16-18, 2007
Report Date: December 21, 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
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16. Abstract A compliance test series was conducted on the subject 2007 Toyota FJ Cruiser, 4-Door SUV, NHTSA No. C75106, 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 October 16-18, 2007. Test failures identified were as follows: None The data recorded indicates that the 2007 Toyota FJ Cruiser, 4-Door SUV, tested appears to comply with the upper interior requirements of FMVSS 201.			
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TABLE OF CONTENTS

LIST OF TABLES

1.0 PURPOSE OF COMPLIANCE TEST

The purpose of this head impact compliance test was to determine whether the vehicle, a 2007 Toyota FJ Cruiser, 4-Door SUV, meets the performance requirements of FMVSS 201, Occupant Protection in Interior Impact - Upper Interior Head Impact Protection.

Tests were conducted on October 16-18, 2007 on a 2007 Toyota FJ Cruiser, manufactured by Toyota Motor Corporation.

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 Toyota FJ Cruiser, 4-Door SUV, was equipped with A, O (Other), DF (Door Frame), and rear-pillars, an adjustable seat belt anchorage on each DF pillar, a fixed seat belt anchorage on each O-pillar, and a grab assist handle on the front driver and passenger side rail as well as each A-pillar.

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	DF2	SR3-1 Left	UR3@ Fwd. of Other Pillar
AP2	SR1	SR3-1 Right	UR4@Rear of Grab Handle
AP3	SR2A	UR2@DF1	UR5@Middle of Other Pillar

The Toyota FJ Cruiser, 4-Door SUV, 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 Toyota FJ Cruiser, 4-Door SUV

VEH. NHTSA NO.: C75106 VIN: JTEZU11F070018119 COLOR: Titanium

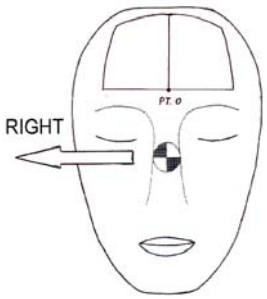
VEH. BUILD DATE: June, 2007 TEST DATES: October 16-18, 2007

TEST LABORATORY: MGA Research Corporation

OBSERVERS: Helen A. Kaleto, Louis Campbell, Matt Whyte

TARGET	VEHICLE SIDE	HORIZONTAL ANGLE (deg)	VERTICAL ANGLE (deg)	VELOCITY (kph)	HIC(d)	FMH HIC	IMPACT ON FMH (mm)	
							Above	Left/Right
AP1	Left	243	18	23.9	788	824	15	27 Left
AP2	Right	135	7	24.5	593	566	15	10 Right
AP3	Left	199	-2	22.8	481	417	8	3 Right
DF2	Right	90	6	23.6	543	499	10	4 Left
SR1	Right	90	10	23.3	605	582	30	5 Left
SR2A	Left	270	24	23.8	699	705	15	0
SR3-1	Left	270	15	22.7	560	521	23	0
SR3-1	Right	90	15	23.6	624	606	20	4 Left
UR2@DF1	Left	270	27	23.5	454	381	35	8 Left
UR3@Fwd. of Other Pillar	Left	270	34	23.3	436	357	39	8 Left
UR4@Rear of Grab handle	Right	90	35	23.7	834	885	41	5 Left
UR5@Middle of Other Pillar	Right	90	33	23.4	559	521	39	10 Right

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 Left: Headliner deformation.

AP2 Right: A-Pillar deformed inward.

DF2 Right: D-ring trim is slightly displaced.

SR2A Left: Headliner deformation.

SR3-1 Left: Headliner deformation.

SR3-1 Right: Headliner deformation.

UR2@DF1 Left: Headliner deformation.

UR3@Fwd. of Other Pillar: Headliner deformation.

UR5@Middle of Other Pillar: Headliner deformation.

REMARKS:

The targets listed were impacted in the following order:

Left: AP1, AP3, SR2A, UR2@DF1, UR3@Fwd. of Other Pillar, SR3-1

Right: AP2, SR1, UR4@Rear of Grab Handle, DF2, UR5@Middle of Other Pillar, SR3-1

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

RECORDEBY: Louis Campbell DATE: October 17, 2007

APPROVED BY: Helen A. Kaleto

TABLE 2-2

GENERAL TEST AND VEHICLE PARAMETER DATA

VEH. MOD YR/MAKE/MODEL/BODY: 2007 Toyota FJ Cruiser, 4-Door SUV

VEH. NHTSA NO.: C75106 VIN: JTEZU11F070018119 COLOR: Titanium

VEH. BUILD DATE: June, 2007 TEST DATES: October 16-18, 2007

TEST LABORATORY: MGA Research Corporation

OBSERVERS: Helen A. Kaleto, Louis Campbell, Matt Whyte

INTERIOR TRIM INFORMATION: A, O (Other), DF (Door Frame), and rear-pillars, an adjustable seat belt anchorage on each DF pillar, a fixed seat belt anchorage on each O-pillar, and a grab assist handle on the front driver and passenger side rail as well as each A-pillar.

SUNROOF INFORMATION:

Installed:	_____Yes	_X_ No
Operation:	_____Electric	____ Manual

SIDE RAIL CURTAIN AIRBAG INFORMATION:

Installed:	_X_Yes	___ No

ROLL-BAR INFORMATION:

Installed:	_____Yes	_X_ No
Padded:	_____Yes	_X_ No
Braces:	_____Yes	_X_ No

GENERAL INFORMATION:

Date Received: 09/21/2007; Odometer Reading: 40 miles

DATA FROM VEHICLE'S CERTIFICATION LABEL:

Vehicle Manufactured By: Toyota Motor Corporation

Date of Manufacture: June, 2007; VIN: JTEZU11F070018119

GVWR: 2420 kg; GAWR FRONT: 1085 kg;

GAWR REAR: 1365 kg

DATA FROM TIRE PLACARD:

Tire Pressure with Maximum Capacity Vehicle Load:

FRONT: 220 kPa REAR: 220 kPa

Recommended Tire Size: P265/70R17

Recommended Cold Tire Pressure:

FRONT: 220 kPa REAR: 220 kPa

Size of Tire on Test Vehicle: P265/70R17

Type of Spare Tire: P265/70R17; Space Saver:__; Standard X

VEHICLE CAPACITY DATA:

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

Number of Occupants: Front 2; Rear 3; TOTAL 5

VEHICLE CAPACITY WEIGHT:

Vehicle Capacity Weight (VCW) = 540 kg

No. of Occupants x 68 kg = 340 kg

Rated Cargo/Luggage Weight (RCLW) =200 kg (difference)

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

Right Front =	440.0 kg	Right Rear =	439.0 kg
Left Front =	504.5 kg	Left Rear =	432.0 kg
TOTAL FRONT =	944.5 kg	TOTAL REAR =	871.0 kg
% Total Weight =	52.0 %	% Total Weight =	48.0 %

TOTAL DELIVERED WEIGHT = 1815.5 kg

CALCULATION OF VEHICLE'S TARGET TEST WEIGHT:

Total Delivered Weight = 1815.5 kg

Max. Test Cargo/Luggage Weight = 136.0 kg (maximum allowed)

Target Test Weight = 1951.5 kg

WEIGHT OF TEST VEHICLE FULLY LOADED:

Right Front =	388.0 kg	Right Rear =	530.0 kg
Left Front =	495.5 kg	Left Rear =	538.0 kg
TOTAL FRONT =	883.5 kg	TOTAL REAR =	1068.0 kg
% Total Weight =	45.3 %	% Total Weight =	54.7 %

TOTAL TEST WEIGHT = 1951.5 kg

Weight of ballast secured in vehicle's cargo area = 136.0 kg (maximum allowed)

TEST VEHICLE ATTITUDE:

AS DELIVERED:
Right Front 875 mm; Left Front 860 mm;
Right Rear 937 mm; Left Rear 920 mm;
Pitch Angle at Right Door Sill = 0.1 Rear is higher
Pitch Angle at Left Door Sill = 0.5 Rear is higher
Roll Angle at Front Bumper = 0.3 Right is higher
Roll Angle at Rear Bumper = 0.4 Right is higher

FULLY LOADED:
Right Front 883 mm; Left Front 860 mm;
Right Rear 906 mm; Left Rear 880 mm;
Pitch Angle at Right Door Sill = 0.1 Rear is higher
Pitch Angle at Left Door Sill = 0.4 Rear is higher
Roll Angle at Front Bumper = 0.3 Right is higher
Roll Angle at Rear Bumper = 0.4 Right is higher

AS TARGETED:
Right Front 1072 mm; Left Front 1050 mm;
Right Rear 1173 mm; Left Rear 1061 mm;
Pitch Angle at Right Door Sill = 0.1 Rear is higher
Pitch Angle at Left Door Sill = 0.5 Rear is higher
Roll Angle at Front Bumper = 0.3 Right is higher
Roll Angle at Rear Bumper = 0.4 Right is higher

AS TESTED ON RIGHT SIDE:

Pitch Angle at Right Door Sill =	0.1 Rear is higher
Pitch Angle at Left Door Sill =	0.4 Rear is higher
Roll Angle at Front Bumper =	0.3 Right is higher
Roll Angle at Rear Bumper =	0.4 Right is higher

AS TESTED ON LEFT SIDE:

Pitch Angle at Right Door Sill =	0.1 Rear is higher
Pitch Angle at Left Door Sill =	0.5 Rear is higher
Roll Angle at Front Bumper =	0.3 Right is higher
Roll Angle at Rear Bumper =	0.4 Right is higher

VEHICLE WHEELBASE =2705 mm

REMARKS: The seat travel distance was measured to be 240 mm for the driver front seat and 240 mm for the passenger front seat.

RECORDED BY: Louis Campbell DATE: October 15, 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 Toyota FJ Cruiser, 4-Door SUV

VEH. NHTSA NO.: C75106 VIN: JTEZU11F070018119 COLOR: Titanium

VEH. BUILD DATE: June, 2007 TEST DATES: October 16-18, 2007

TEST LABORATORY: MGA Research Corporation

OBSERVERS: Helen A. Kaleto, Louis Campbell, Matt Whyte

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 199.2º	L 243.0º
	R 105º-165º	R 116.8º	R 161.1º
B-PILLAR	L 195º-345º	L 207.8º	L 276.8º
	R 15º-165º	R 83.9º	R 153.0º

AS DETERMINED USING THE PROCEDURES SPECIFIED IN S8.13.4.1

REMARKS:

RECORDED BY: Louis Campbell DATE: October 15, 2007

APPROVED BY: Helen A. Kaleto

TABLE 2-4

VERTICAL IMPACT ANGLE RANGES

VEH. MOD YR/MAKE/MODEL/BODY: 2007 Toyota FJ Cruiser, 4-Door SUV

VEH. NHTSA NO.: C75106 VIN: JTEZU11F070018119 COLOR: Titanium

VEH. BUILD DATE: June, 2007 TEST DATES: October 16-18, 2007

TEST LABORATORY: MGA Research Corporation

OBSERVERS: Helen A. Kaleto, Louis Campbell, Matt Whyte

VERTICAL IMPACT ANGLE RANGES

		VERTICAL ANGLE SPECIFIED RANGE	MINIMUM VERTICAL ANGLE	MAXIMUM VERTICAL ANGLE
FRONT HEADER	FH1	L 0º-50º	L 0º	L 44º
		R 0º-50º	R 0º	R 44º
	FH2	L 0º-50º	L 0º	L 46º
		R 0º-50º	R 0º	R 48º
SIDE RAIL	SR1	L 0º-50º	L 0º	L 10º
		R 0º-50º	R 0º	R 10º
	SR2A	L 0º-50º	L 0º	L 24º
		R 0º-50º	R 0º	R 24º
	SR2B	L 0º-50º	L 0º	L N/A
		R 0º-50º	R 0º	R N/A
	SR3-1	L 0º-50º	L 0º	L 15º
		R 0º-50º	R 0º	R 15º
A-PILLAR	AP1	L -5º-50º	L -5º	L 17º
		R -5º-50º	R -5º	R 18º
	AP2	L -5º-50º	L -5º	L 7º
		R -5º-50º	R -5º	R 7º
	AP3	L -5º-50º	L -5º	L -2º
		R -5º-50º	R -5º	R -3º

		VERTICAL ANGLE SPECIFIED RANGE	MINIMUM VERTICAL ANGLE	MAXIMUM VERTICAL ANGLE
DOOR FRAME	DF1	L -10º-50º	L -10º	L 15º
		R -10º-50º	R -10º	R 19º
	DF2*	L 0º-50º	L 0º	L 5º
		R 0º-50º	R 0º	R 6º
	DF3	L -10º-50º	L -10º	L 5º
		R -10º-50º	R -10º	R 6º
	DF4	L -10º-50º	L -10º	L -10º
		R -10º-50º	R -10º	R -10º
OTHER PILLAR	OP1*	L -10º-50º	L -10º	L -5º
		R -10º-50º	R -10º	R -6º
	OP2	L -10º-50º	L -10º	L -5º
		R -10º-50º	R -10º	R -5º
REAR PILLAR	RP1	L -10º-50º	L -10º	L N/A
		R -10º-50º	R -10º	R N/A
	RP2	L -10º-50º	L -10º	L N/A
		R -10º-50º	R -10º	R N/A
REAR HEADER	RH	L 0º-50º	L 0º	L N/A
		R 0º-50º	R 0º	R N/A
UPPER ROOF 1		0º-50º	0º	25º
UPPER ROOF 2		0º-50º	0º	27º
UPPER ROOF 3		0º-50º	0º	34º
UPPER ROOF 4		0º-50º	0º	35º
UPPER ROOF 5		0º-50º	0º	33º
UPPER ROOF 6		0º-50º	0º	35º

As determined using the Procedures specified in S8.13.4.2. *Target DF2 and OP1 are seat belt anchorage locations.

RECORDED BY: Louis Campbell DATE: October 15, 2007

APPROVED BY: Helen A. Kaleto

TABLE 2-5

TARGET MEASUREMENTS

VEH. MOD YR/MAKE/MODEL/BODY: 2007 Toyota FJ Cruiser, 4-Door SUV

VEH. NHTSA NO.: C75106 VIN: JTEZU11F070018119 COLOR: Titanium

VEH. BUILD DATE: June, 2007 TEST DATES: October 16-18, 2007

TEST LABORATORY: MGA Research Corporation

OBSERVERS: Helen A. Kaleto, Louis Campbell, Matt Whyte

Measurement	Description	Left Side	Right Side
M	Seat Fore/Aft Travel (Front seats)	240 mm	240 mm
Tº	Horizontal < {CG-F1 (Left Seat) to (Right A-Pillar)}	117.0º	--
A1º	360º - Tº	243.0º	--
Wº	Horizontal < {CG-2 (Left Seat) to (Left A-Pillar)}	199.2º	--
A2º	A2º = Wº	199.2º	--
Uº	Horizontal < {CG-2 (Left Seat) to (Left B-Pillar)}	276.8º	--
B1º	B1º = Uº	276.8º	--
Vº	Horizontal < {CG-R (Left Seat) to (Left B-Pillar)}	207.8º	--
B2º	B2º = Vº	207.8	--
Wº (right)	Horizontal < {CG-F2 (Right Seat) to (Right A-Pillar)}	--	161.1º
A1º (right)	A1º (right) = Wº (right)	--	161.1º
T º (right)	Horizontal < {CG-F1 (Right Seat) to (Left A-Pillar)}	--	243.2º
A2º (right)	360º-Tº (right)	--	116.8º
V º (right)	Horizontal < {CG-R (Right Seat) to (Right B-Pillar)}	--	153.0º
B1º (right)	B1º (right) = Vº (right)	--	153.0º
U º (right)	Horizontal < {CG-F2 (Right Seat) to (Right B-Pillar)}	--	83.9º
B2º (right)	B2º (right) = Uº (right)	--	83.9º
J	A-Pillar {(Plane 3) - (Plane 5)}	341.4 mm	354.1 mm
J/2	J ÷ 2	170.7 mm	177.1 mm
D1	Upper Roof {(Plane A) - (Plane B)}	2510.0 mm	
D1/2	D1 ÷ 2	1255.0 mm	
D2	Upper Roof {(Plane C) - (Plane D)}	1376.9 mm	

Measurement	Description	Left Side	Right Side
D2/2	D2 ÷ 2	688.5 mm	
.35D1	.35 x D1	878.5 mm	
.35D2	.35 x D2	481.9 mm	
Q	O-Pillar (Plane 13 – Plane 14)	382.3 mm	378.6 mm
Q/2	Q ÷ 2	191.2 mm	189.3 mm
D	R-Pillar (Point 7 – Point M)	1007.0 mm	1007.0 mm
3D/7	3*D / 7	431.6 mm	431.6 mm
DN	Door Frame (Plant D8 – Plant D9)	405.5 mm	401.3 mm
DN/2	DN / 2 for Door Frame	202.8 mm	200.7 mm
DN/4	DN / 4 for Door Frame	101.4 mm	100.3 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	2345.8	-394.5	641.4	2346.1	405.4	646.9
Rear	3088.6	-370.3	677.7	3089.0	379.6	682.8

SgRP Locations (vehicle coordinates)						
	Left (mm)			Right (mm)		
	x	y	z	x	y	Z
Front	2479.4	-400.0	1311.8	2479.4	400.0	1311.8
Rear	3222.0	-375.0	1351.0	3222.0	375.0	1351.0

CG Locations (world coordinates)						
	Left (mm)			Right (mm)		
	x	y	z	x	y	Z
CGF1	2265.8	-394.5	1301.4	2266.1	405.4	1306.9
CGF2	2505.8	-394.5	1301.4	2506.1	405.4	1306.9
CGR	3248.6	-370.3	1337.7	3249.0	379.6	1342.8

REFERENCE FOR VEHICLE COORDINATE SYSTEM (measured in millimeters):

Passenger upper door striker bolt hole (x, y, z) = 2673.6, 836.3, 1522.7

Driver upper door striker bolt hole (x, y, z) = 2673.6, -836.3, 1522.7

Driver front outboard seat bolt hole (x, y, z) = 2075.4, -602.2, 1082.2

REMARKS:

RECORDED BY: Louis Campbell DATE: October 15, 2007

APPROVED BY: Helen A. Kaleto

TABLE 2-6

SUMMARY OF TARGETING RESULTS

VEH. MOD YR/MAKE/MODEL/BODY: 2007 Toyota FJ Cruiser, 4-Door SUV

VEH. NHTSA NO.: C75106 VIN: JTEZU11F070018119 COLOR: Titanium

VEH. BUILD DATE: June, 2007 TEST DATES: October 16-18, 2007

TEST LABORATORY: MGA Research Corporation

OBSERVERS: Helen A. Kaleto, Louis Campbell, Matt Whyte

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	1823.8	-588.4	2151.8	--	--	Yes	--	--
REL	1867.0	-596.0	2132.9	243	18	--	2	Yes
AP2	1832.2	-637.2	2065.1	--	--	Yes	--	--
REL	1828.6	-619.6	2080.3	225	7	--	1	No
AP3	1862.0	-666.2	1981.6	199	-2	No	--	Yes
A-Pillar Right Side								
AP1	1826.7	578.7	2165.0	--	--	Yes	--	--
REL	1866.6	590.0	2138.7	117	17	--	2	No
AP2	1837.0	628.2	2077.3	--	--	Yes	--	--
REL	1822.3	627.2	2057.8	135	7	--	1	Yes
AP3	1859.2	659.5	1986.5	161	-3	No	--	No
Door Frame Left Side								
DF1	2715.5	-526.2	2162.6	270	15	No	--	No
DF2	2670.7	-665.6	1968.7	270	5	No	--	No
DF3	2666.9	-670.5	1961.0	--	--	Yes	--	--
REL	2671.4	-665.4	1968.4	270	5	--	1	No
DF4	2787.4	-705.2	1860.3	207	-10	No	--	No
Door Frame Right Side								
DF1	2713.9	520.7	2162.4	90	19	No	--	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**					
DF2	2670.1	662.1	1968.8	90	6	No	--	Yes
DF3	2664.8	667.0	1960.8	--	--	Yes	--	--
REL	2669.8	662.1	1968.3	90	6	--	1	No
DF4	2787.9	704.4	1861.5	153	-10	No	--	No
Other Pillar Left Side								
OPR	3489.3	-539.7	2188.3	270	-5	No	--	No
OP1	3441.7	-635.1	2012.4	270	-5	No	--	No
OP2	3514.7	-639.8	1997.1	270	-5	No	--	No
Other Pillar Right Side								
OPR	3493.2	541.3	2184.3	90	-6	No	--	No
OP1	3446.4	638.3	2006.7	90	-6	No	--	No
OP2	3518.7	639.1	1994.4	90	-5	No	--	No
Rear Pillar Left Side								
RP1	3929.8	-572.0	2106.9	Target exempt from testing per S6.3(b).				No
RP2	4152.6	-627.0	1959.1	Target exempt from testing per S6.3(b).				No
Rear Pillar Right Side								
RP1	3932.9	571.4	2103.3	Target exempt from testing per S6.3(b).				No
RP2	4152.8	640.3	1954.2	Target exempt from testing per S6.3(b).				No
Front Header Left Side								
FH1	1729.1	-476.1	2146.3	180	44	No	--	No
FH2	1703.9	-326.9	2147.4	180	46	No	--	No
Front Header Right Side								
FH1	1727.5	461.0	2147.4	180	44	No	--	No
FH2	1704.2	314.0	2147.6	180	48	No	--	No
Side Rail Left Side								
SR1	1973.6	-569.3	2175.3	--	--	Yes	--	--
REL	1974.7	-574.3	2148.9	270	10	--	1	No
SR2A	2124.0	-563.9	2174.5	270	24	No	--	Yes
SR3-1	3638.9	-562.4	2154.3	270	15	No	--	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**					
Side Rail Right Side								
SR1	1976.2	566.0	2174.9	--	--	Yes	--	--
REL	1974.2	579.9	2152.6	90	10	--	1	Yes
SR2A	2125.7	561.0	2173.4	90	24	No	--	No
SR3-1	3643.4	562.7	2149.7	270	15	No	--	Yes
Rear Header Left Side								
RH	4011.5	-369.7	2134.6	Target exempt from testing per S6.3(b).				No
Rear Header Right Side								
RH	4012.2	379.1	2131.8	Target exempt from testing per S6.3(b).				No
Upper Roof Left Side								
UR1@FGH	2418.9	-432.7	2241.1	270	25	No	--	No
UR2@DF1	2716.1	-475.2	2208.6	270	27	No	--	Yes
UR3@Fwd. of Other Pillar	3171.8	-473.9	2243.3	270	34	No	--	Yes
Upper Roof Right Side								
UR4@Rear of Grab Handle	2505.2	470.9	2232.2	90	35	No	--	Yes
UR5@MOP	3358.3	472.6	2240.0	90	33	No	--	Yes
UR6@Middle of Other Pillar	3657.8	470.4	2215.4	90	35	No	--	No

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

REMARKS: No targets are located in the curtain airbag zone.

RECORDED BY: Louis Campbell DATE: October 15, 2007

APPROVED BY: Helen A. Kaleto

3.0 TEST DATA (Including Acceleration and Velocity Plots)


mga
10/16/2007
Impact Testing
G07I7-001.7
2007 NHTSA TOYOTA FJ CRUISER - C75106
FMVSS 201U - UPPER INTERIOR
TEST #2 LEFT AP1
H/V IMPACT ANGLE= 243 / 18
FM7235
POST TEST
C75106
FM7235
LEFT AP1
H/V 243/18


mga
Impact Testing
10/16/2007
G07I7-001.7
2007 NHTSA TOYOTA FJ CRUISER - C75106
FMVSS 201U - UPPER INTERIOR
TEST #2 LEFT AP1
H/V IMPACT ANGLE= 243 / 18
FM7235
POST TEST

SUMMARY OF FMVSS 201U TEST

JOB/NHTSA NO: G07I7-001.7

VEHICLE YR/MAKE/MODEL:2007/NHTSA/Toyota FJ Cruiser - C75106

GENERAL TEST PARAMETERS:

Test Number:#2

Target (Vehicle Side): AP1 Left

Temperature:21C

MGA Test Reference No.:FM7235

Humidity:58%

Approach Horizontal Angles:243º

Time of Test:3:12:11 PM

Approach Vertical Angles:18º

FMH Serial No:[037]

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
788	824	6.5	23.9	15	27 Left

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	1.32	1.33
Y	6	J35791	91.856	1.89	1.89
Z	7	J35800	97.996	1.83	1.83

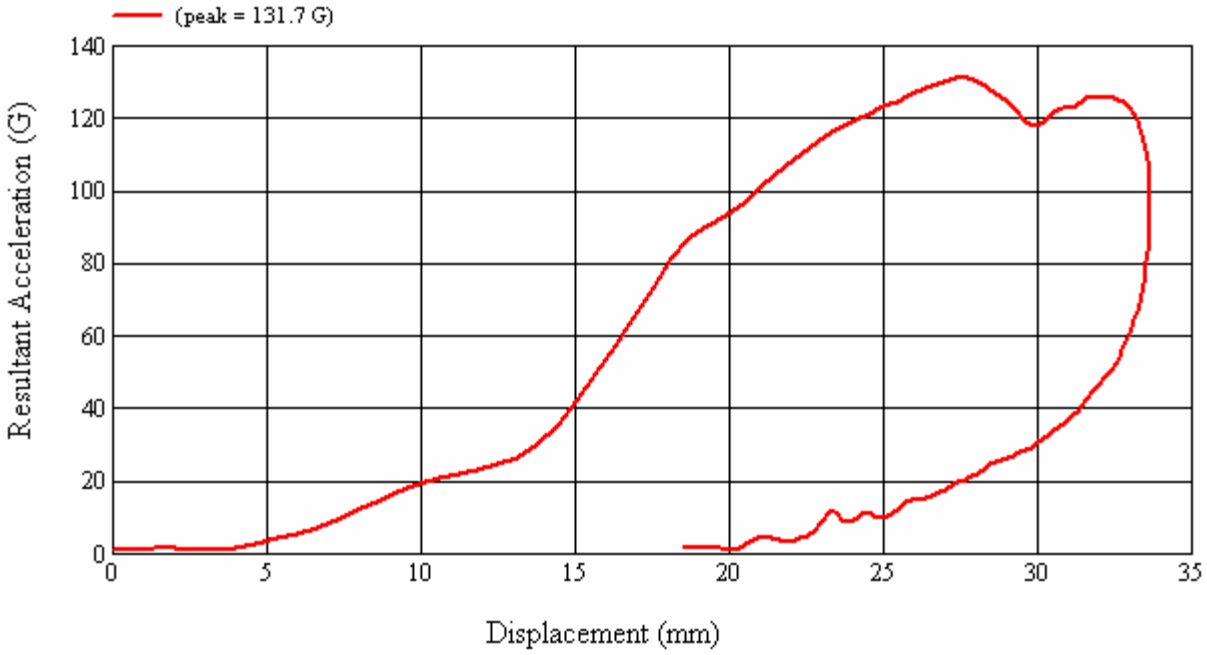
REMARKS (Summary of test, damage, non-compliance, invalid test, etc.):

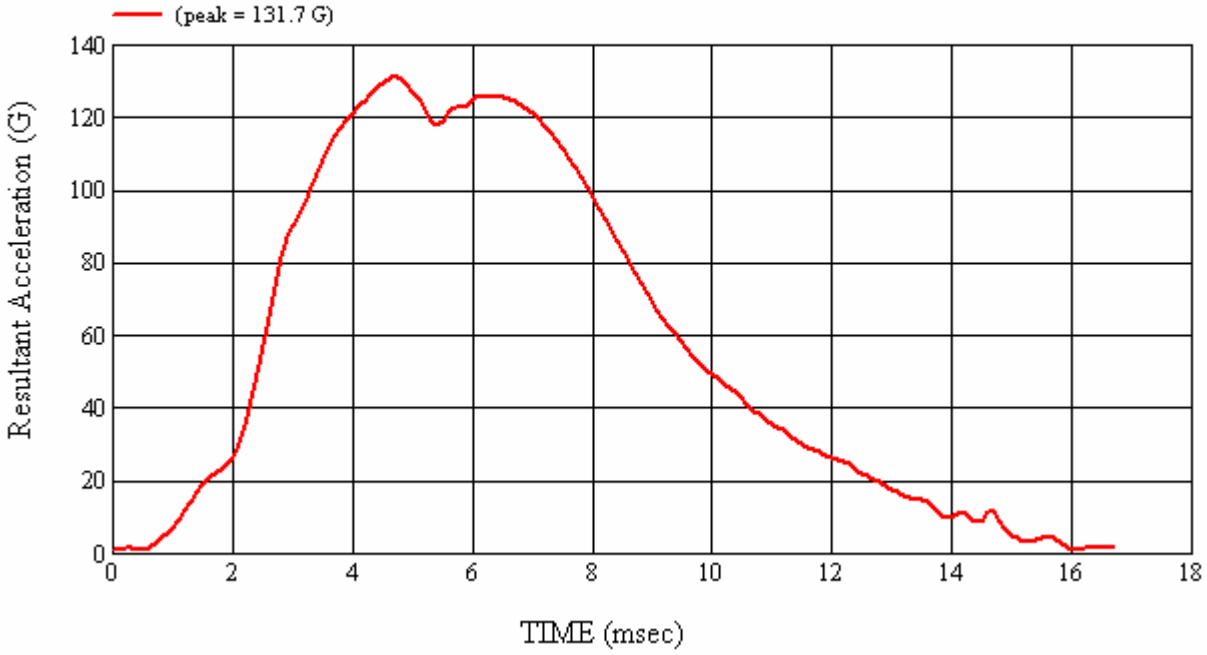
Headliner deformation.

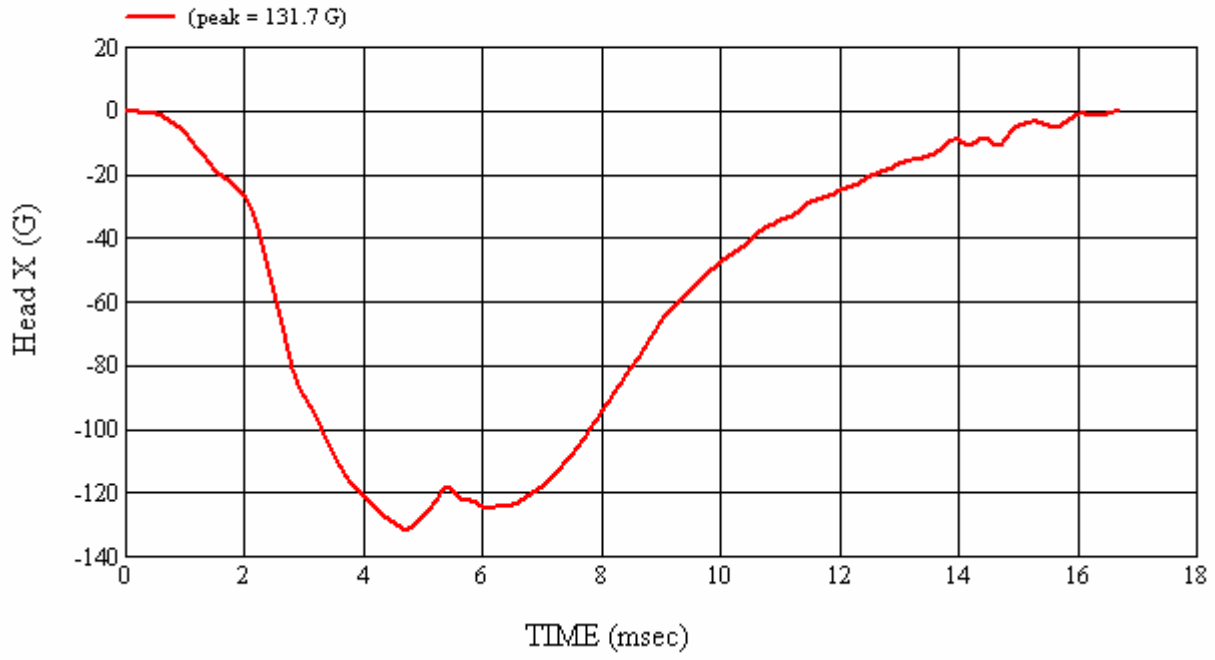
Recorded By: _____ Approved By*: _____ Date: 10/16/2007

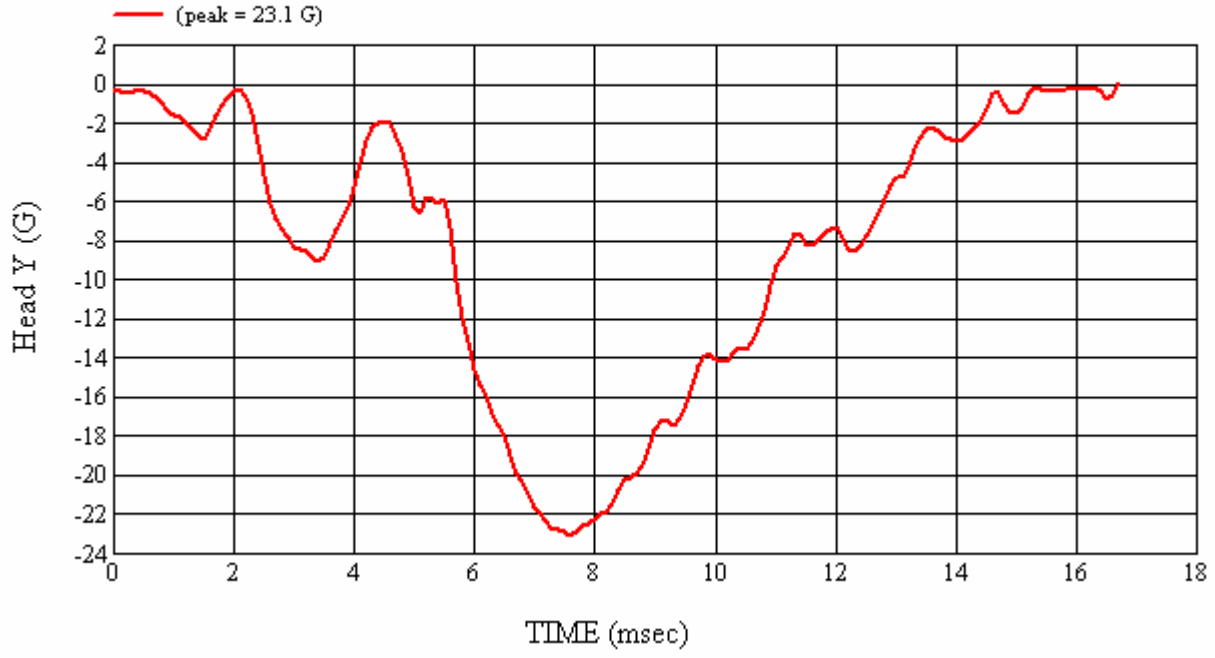
*Only necessary for NHTSA (Government) Compliance testing.

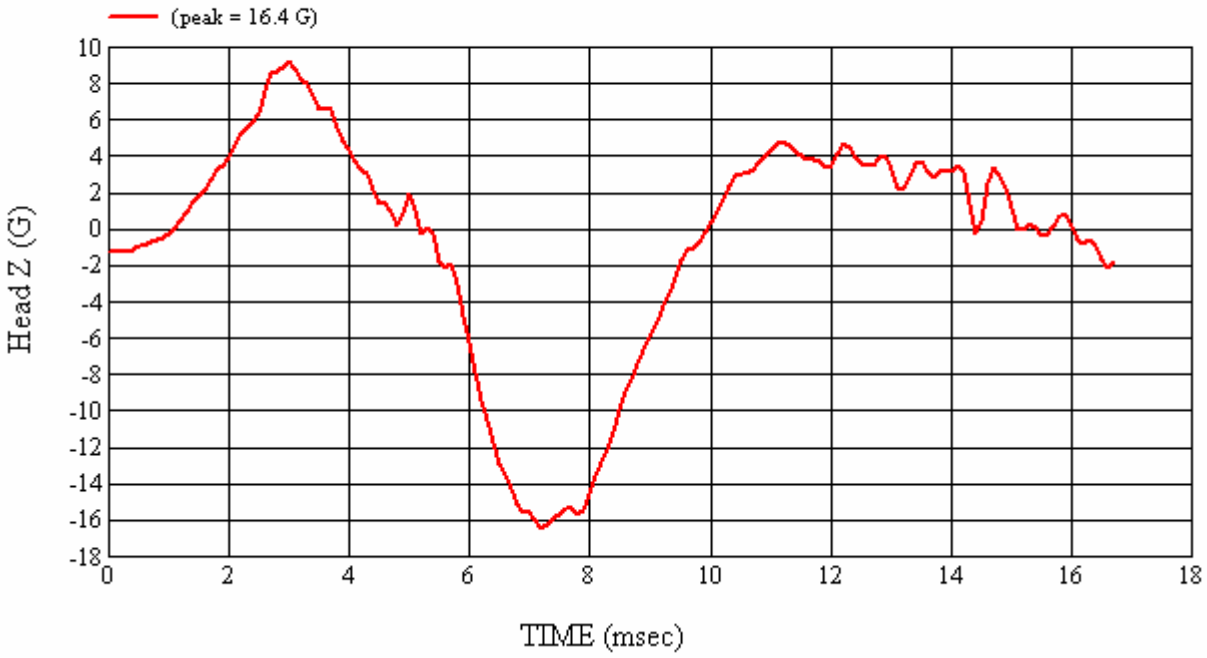
MGA Test #: FM7235 Target Location: AP1, Left Side Test Date: 10/16/2007

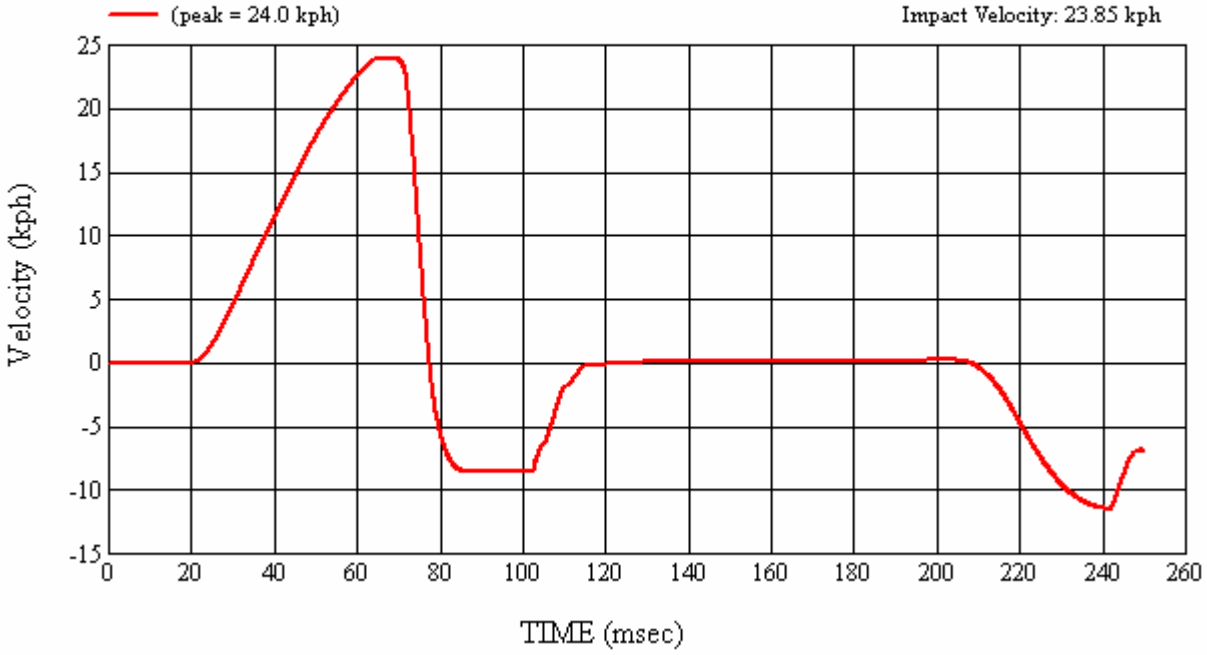


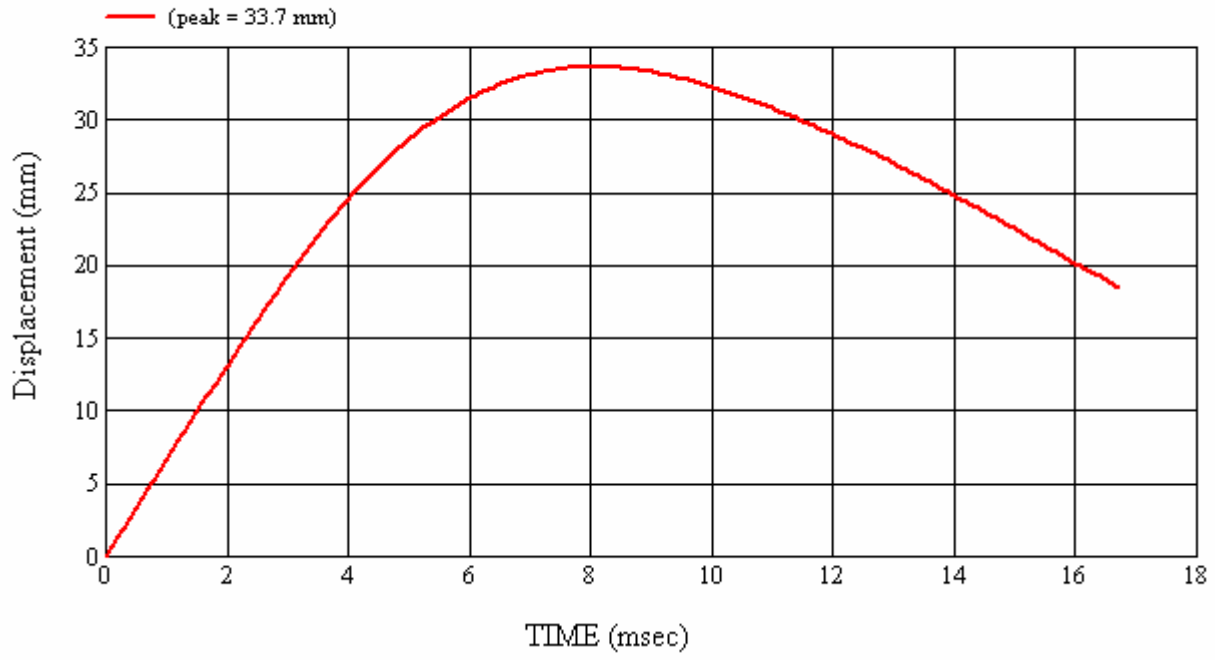



(peak = 131.7 G)
Head X (G)
20
0
-20
-40
-60
-80
-100
-120
-140
0
2
4
6
8
10
12
14
16
18
TIME (msec)


(peak = 23.1 G)
Head Y (G)
2
0
-2
-4
-6
-8
-10
-12
-14
-16
-18
-20
-22
-24
0
2
4
6
8
10
12
14
16
18
TIME (msec)

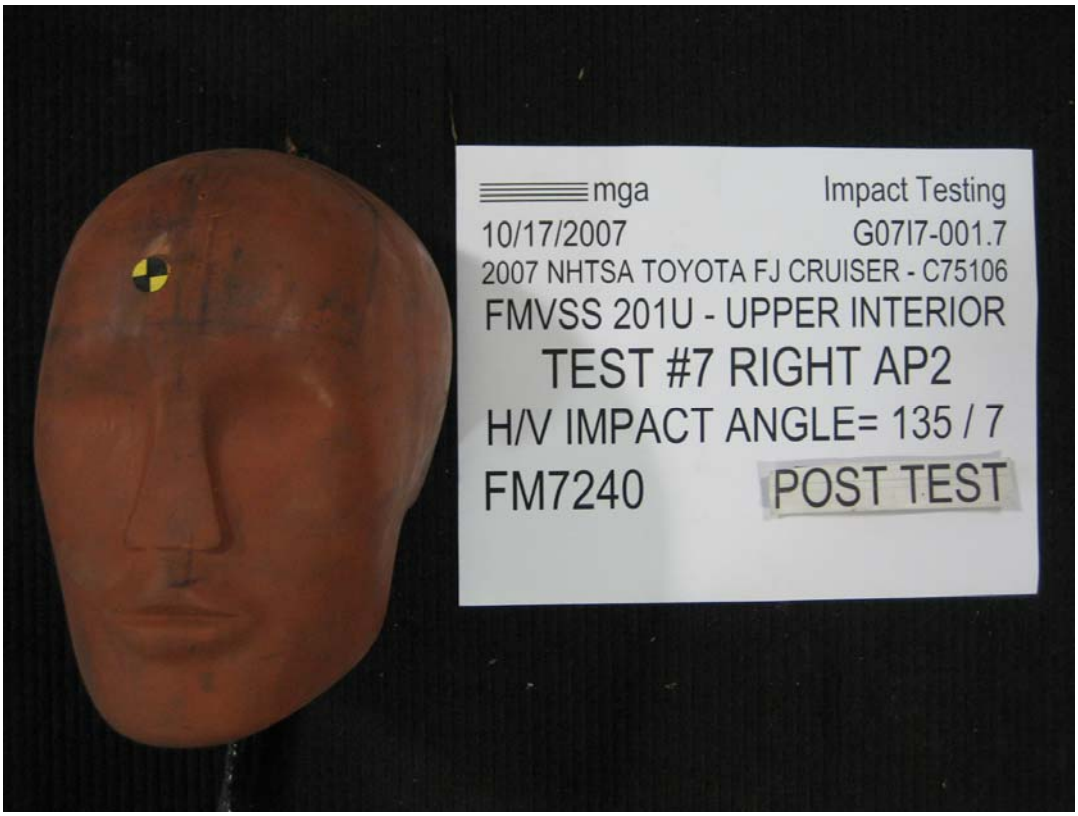

(peak = 16.4 G)
Head Z (G)
10
8
6
4
2
0
-2
-4
-6
-8
-10
-12
-14
-16
-18
0
2
4
6
8
10
12
14
16
18
TIME (msec)


(peak = 24.0 kph)
Impact Velocity: 23.85 kph
Velocity (kph)
25
20
15
10
5
0
-5
-10
-15
0
20
40
60
80
100
120
140
160
180
200
220
240
260
TIME (msec)


(peak = 33.7 mm)
Displacement (mm)
35
30
25
20
15
10
5
0
0
2
4
6
8
10
12
14
16
18
TIME (msec)


AP2
AP3
mga
Impact Testing
10/17/2007
G07I7-001.7
2007 NHTSA TOYOTA FJ CRUISER - C75106
FMVSS 201U - UPPER INTERIOR
TEST #7 RIGHT AP2
H/V IMPACT ANGLE= 135 / 7
FM7240
PRE TEST


mga
Impact Testing
10/17/2007
G07I7-001.7
2007 NHTSA TOYOTA FJ CRUISER - C75106
FMVSS 201U - UPPER INTERIOR
TEST #7 RIGHT AP2
H/V IMPACT ANGLE= 135 / 7
FM7240
POST TEST


mga
Impact Testing
10/17/2007
G07I7-001.7
2007 NHTSA TOYOTA FJ CRUISER - C75106
FMVSS 201U - UPPER INTERIOR
TEST #7 RIGHT AP2
H/V IMPACT ANGLE= 135 / 7
FM7240
POST TEST

SUMMARY OF FMVSS 201U TEST

JOB/NHTSA NO: G07I7-001.7

VEHICLE YR/MAKE/MODEL:2007/NHTSA/Toyota FJ Cruiser - C75106

GENERAL TEST PARAMETERS:

Test Number:#7

Target (Vehicle Side): AP2 Right

Temperature:21C

MGA Test Reference No.:FM7240

Humidity:60%

Approach Horizontal Angles:135º

Time of Test:12:10:32 PM

Approach Vertical Angles:7º

FMH Serial No:[035]

Additional Description:1 Relocation

TEST RESULTS:

HIC(d)	HIC	Δt (msec)	Velocity (kph)	Impact location on FMH (mm)	
				Above Pt. O	Left/Right Pt. O
593	566	9.4	24.5	15	10 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	1.32	1.32
Y	6	J35919	97.442	1.89	1.89
Z	7	J35924	93.891	1.83	1.83

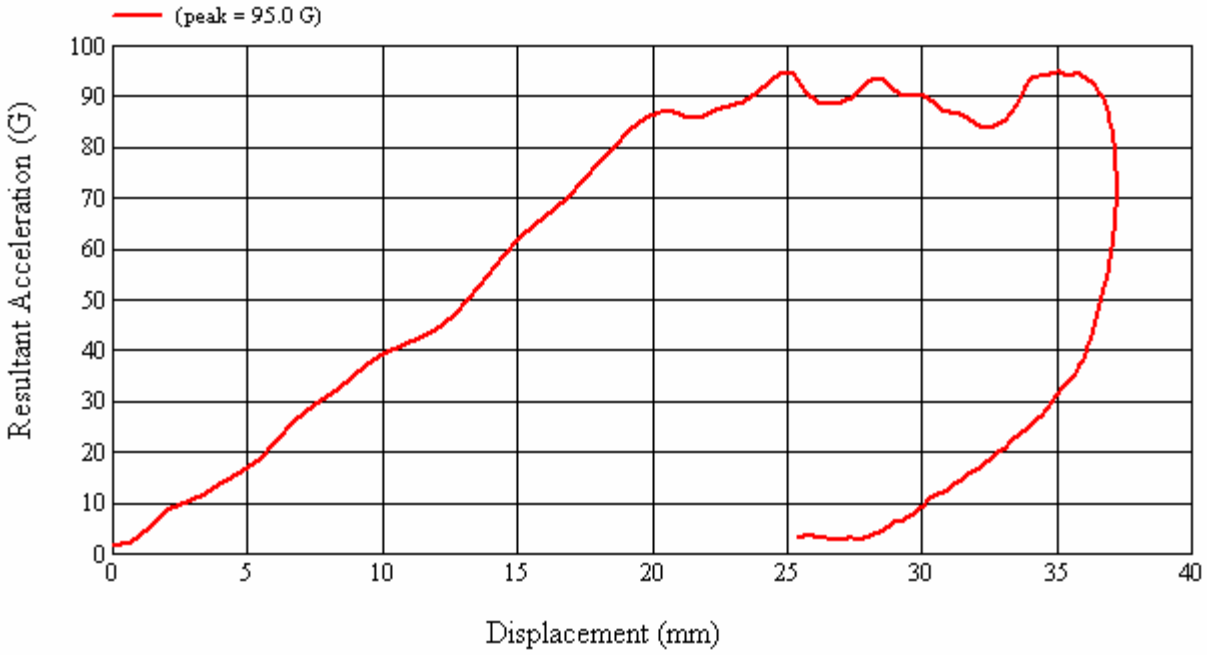
REMARKS (Summary of test, damage, non-compliance, invalid test, etc.):

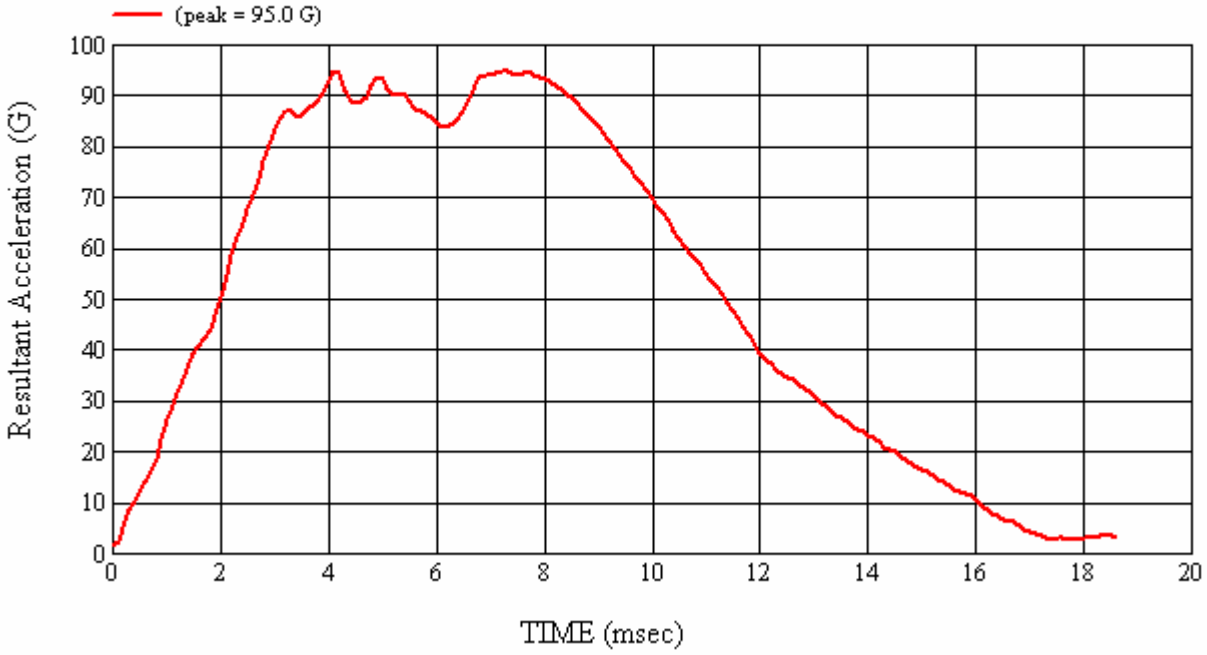
A-pillar deformed inward.

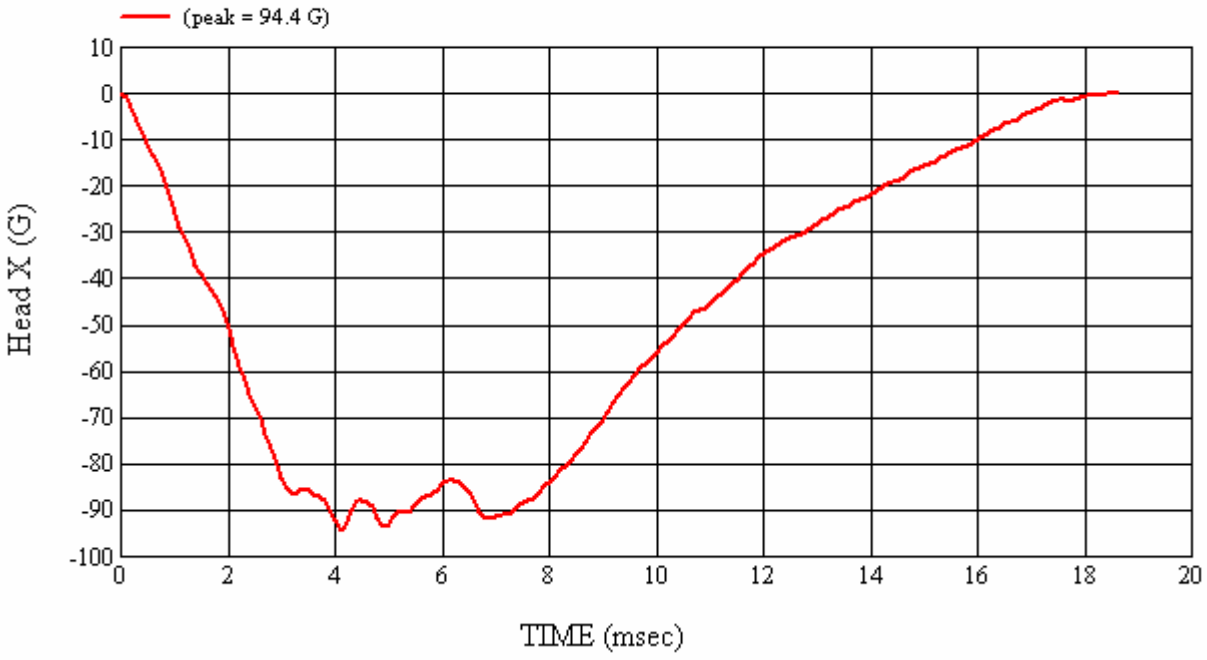
Recorded By: _____ Approved By*: _____ Date: 10/17/2007

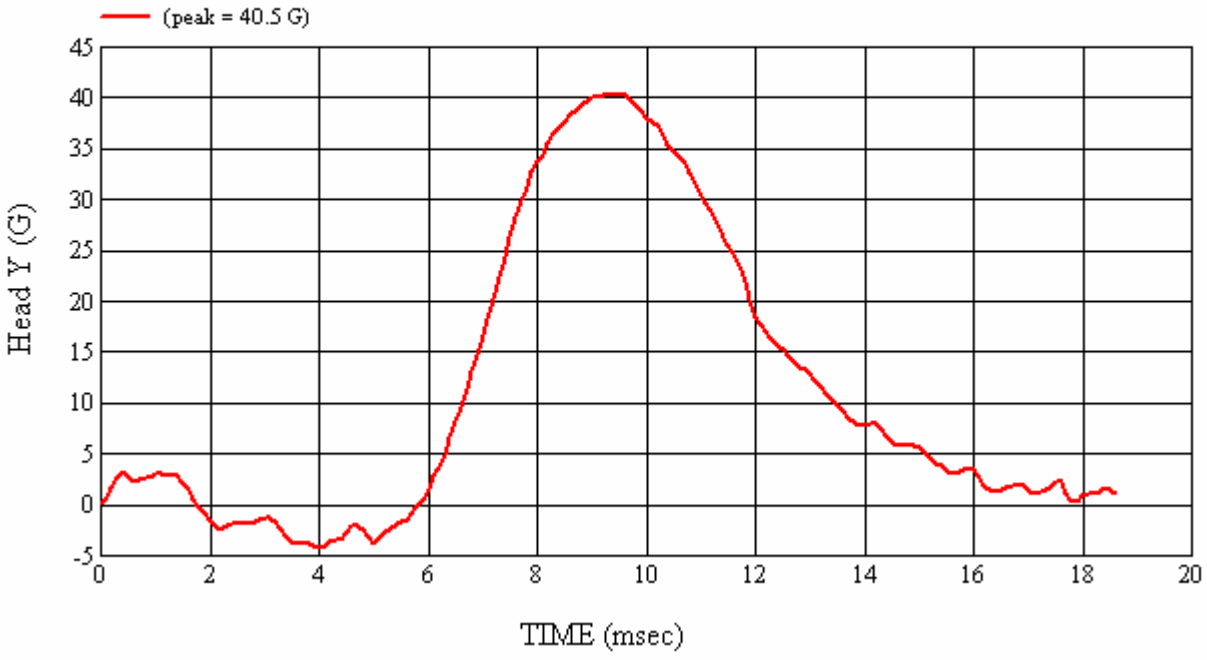
*Only necessary for NHTSA (Government) Compliance testing.

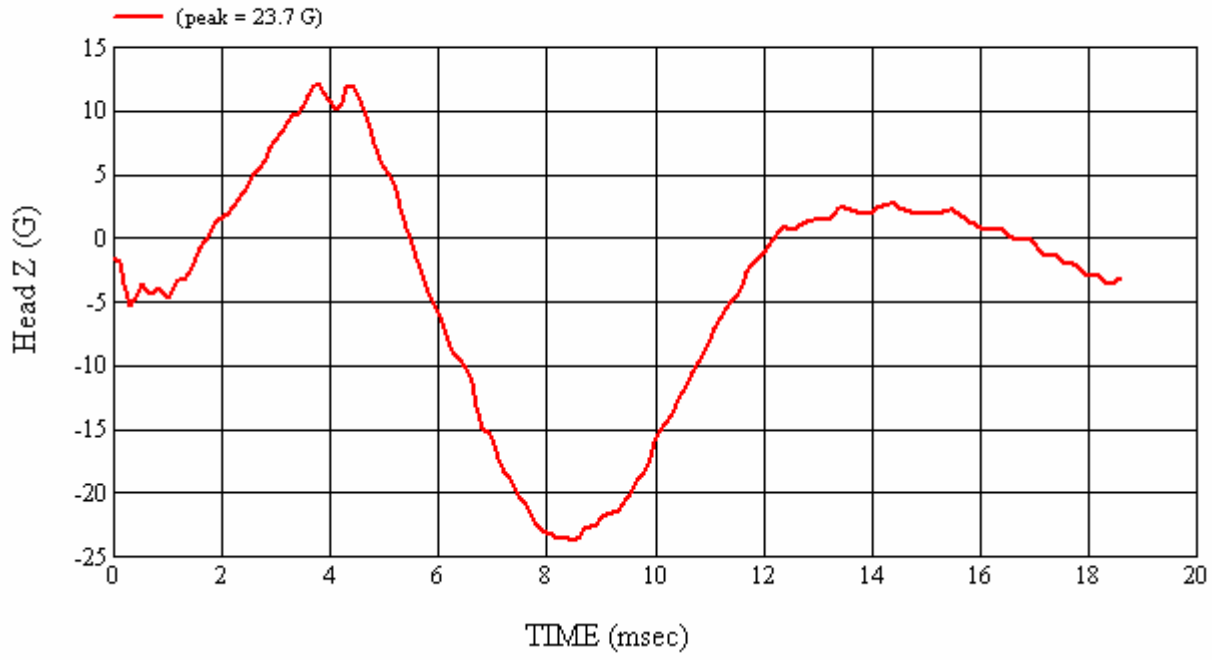
MGA Test #: FM7240 Target Location: AP2, Right Side Test Date: 10/17/2007

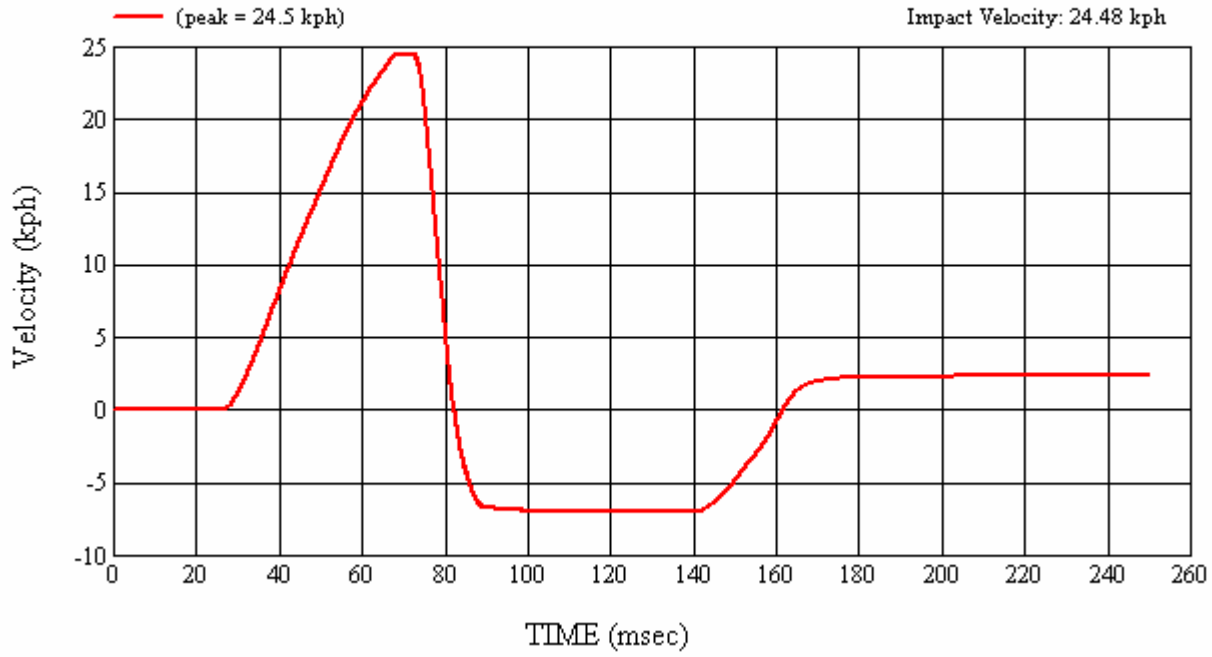


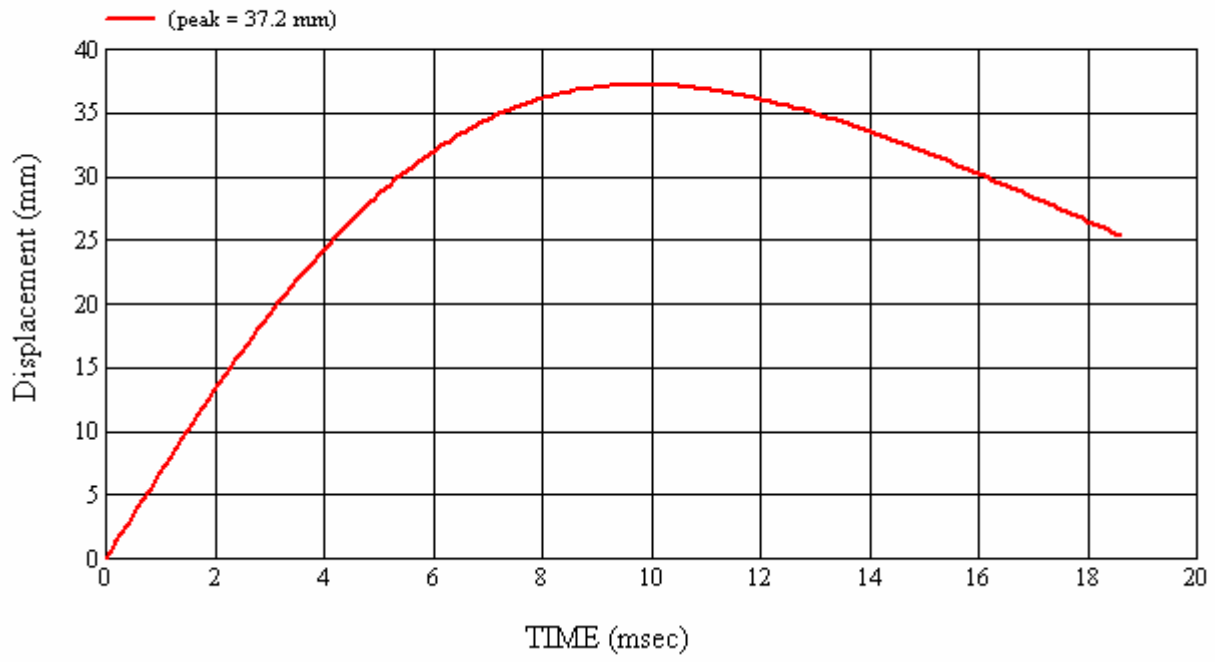



(peak = 94.4 G)
Head X (G)
10
0
-10
-20
-30
-40
-50
-60
-70
-80
-90
-100
0
2
4
6
8
10
12
14
16
18
20
TIME (msec)


(peak = 40.5 G)
Head Y (G)
45
40
35
30
25
20
15
10
5
0
-5
0
2
4
6
8
10
12
14
16
18
20
TIME (msec)


(peak = 23.7 G)
Head Z (G)
15
10
5
0
-5
-10
-15
-20
-25
0
2
4
6
8
10
12
14
16
18
20
TIME (msec)


(peak = 24.5 kph)
Impact Velocity: 24.48 kph
Velocity (kph)
25
20
15
10
5
0
-5
-10
0
20
40
60
80
100
120
140
160
180
200
220
240
260
TIME (msec)


(peak = 37.2 mm)
Displacement (mm)
0
5
10
15
20
25
30
35
40
0
2
4
6
8
10
12
14
16
18
20
TIME (msec)


SR1
APR
AP3
mga
Impact Testing
G07I7-001.7
10/16/2007
2007 NHTSA TOYOTA FJ CRUISER - C75106
FMVSS 201U - UPPER INTERIOR
TEST #1 LEFT AP3
H/V IMPACT ANGLE= 199 / -2
FM7234
PRE TEST


mga
Impact Testing
10/16/2007
G07I7-001.7
2007 NHTSA TOYOTA FJ CRUISER - C75106
FMVSS 201U - UPPER INTERIOR
TEST #1 LEFT AP3
H/V IMPACT ANGLE= 199 / -2
FM7234
POST TEST


mga
Impact Testing
10/16/2007
G07I7-001.7
2007 NHTSA TOYOTA FJ CRUISER - C75106
FMVSS 201U - UPPER INTERIOR
TEST #1 LEFT AP3
H/V IMPACT ANGLE= 199 / -2
FM7234
POST TEST

SUMMARY OF FMVSS 201U TEST

JOB/NHTSA NO: G07I7-001.7

VEHICLE YR/MAKE/MODEL:2007/NHTSA/Toyota FJ Cruiser - C75106

GENERAL TEST PARAMETERS:

Test Number:#1

Target (Vehicle Side): AP3 Left

Temperature:21C

MGA Test Reference No.:FM7234

Humidity:58%

Approach Horizontal Angles:199º

Time of Test:1:04:22 PM

Approach Vertical Angles:-2º

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
481	417	9.6	22.8	8	3 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	1.32	1.32
Y	6	J35919	97.442	1.88	1.89
Z	7	J35924	93.891	1.83	1.83

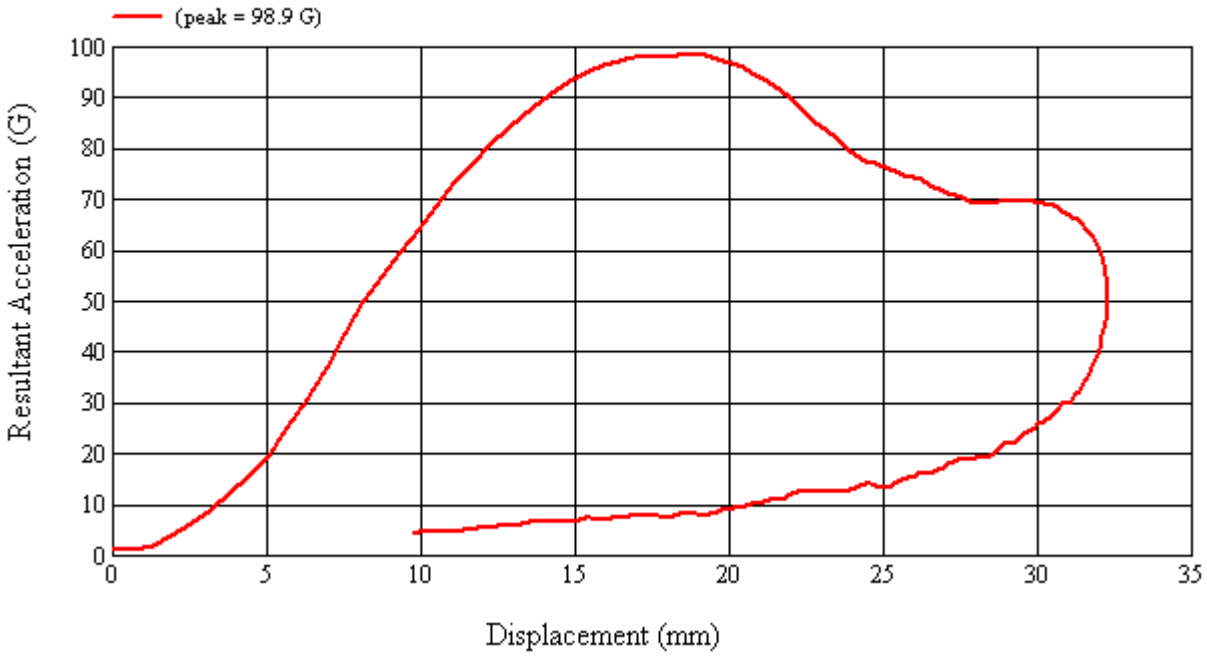
REMARKS (Summary of test, damage, non-compliance, invalid test, etc.):

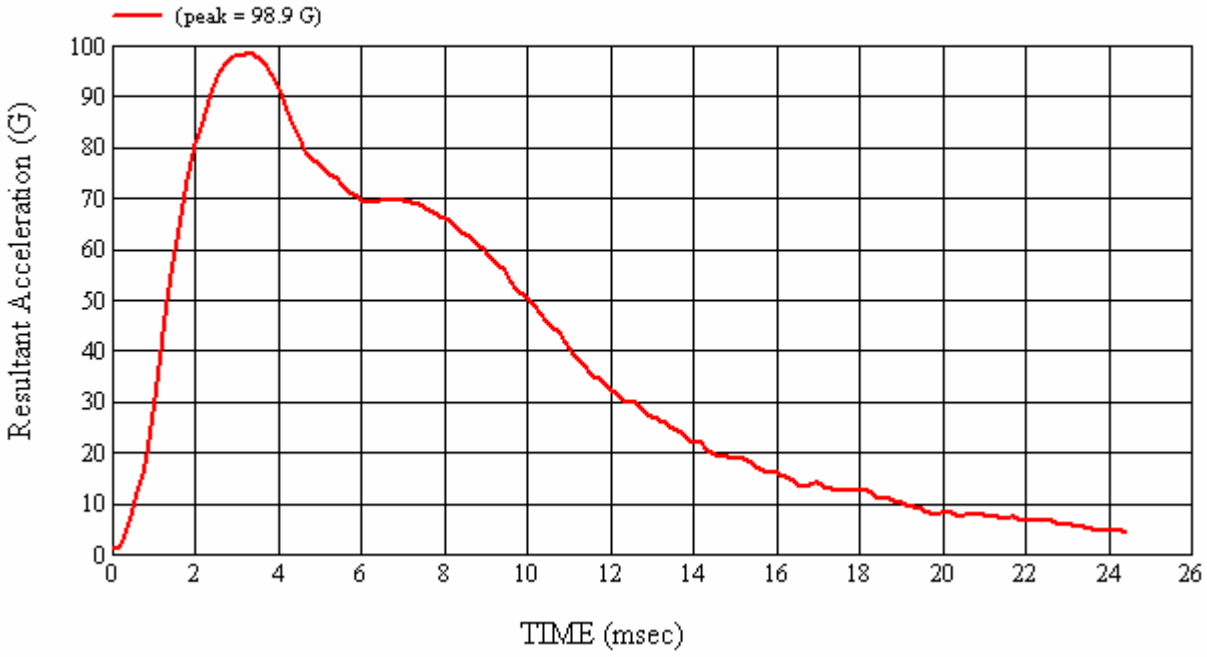
No visible damage.

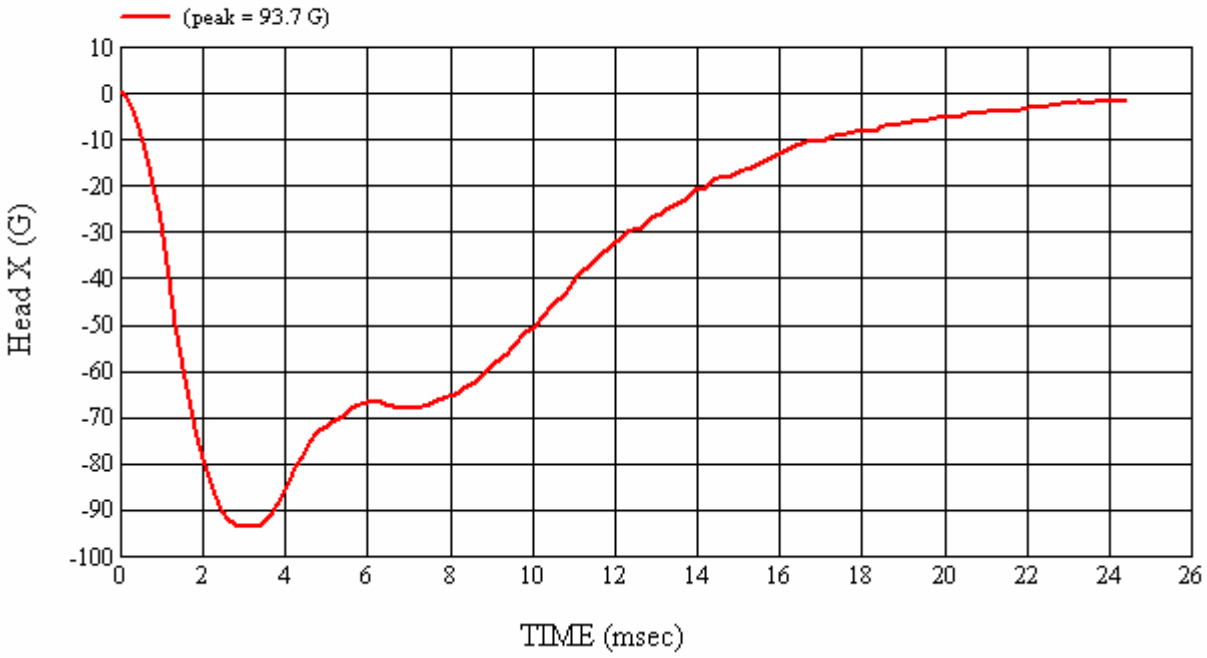
Recorded By: _____ Approved By*: _____ Date: 10/16/2007

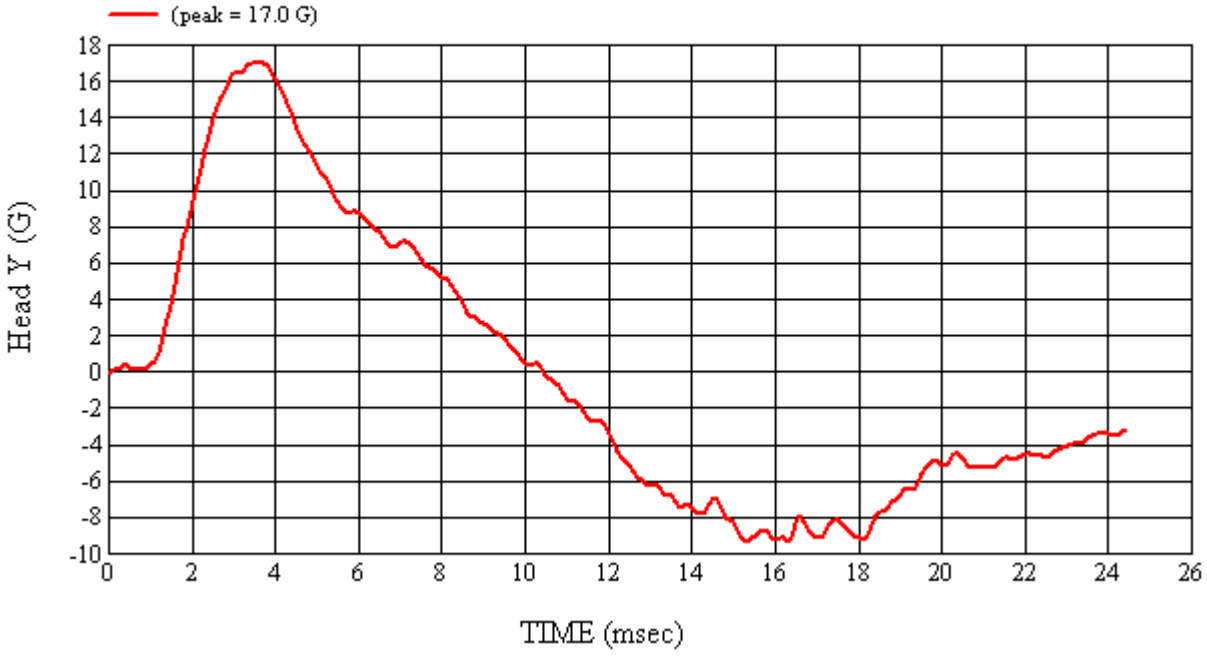
*Only necessary for NHTSA (Government) Compliance testing.

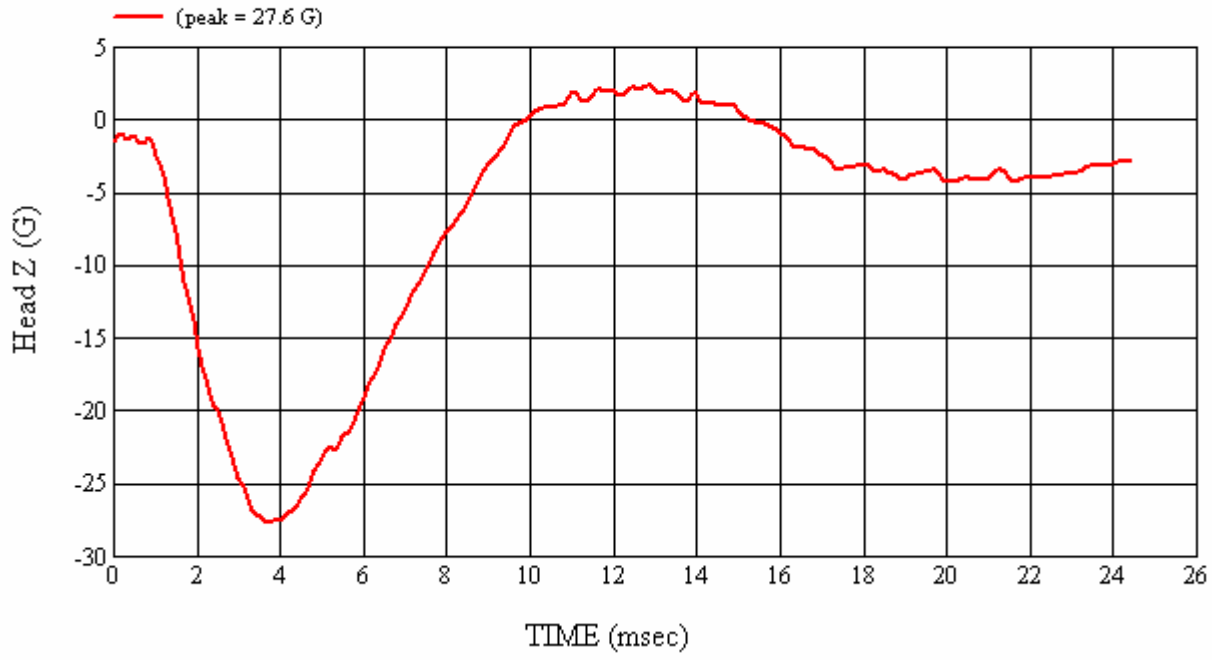
MGA Test #: FM7234 Target Location: AP3, Left Side Test Date: 10/16/2007

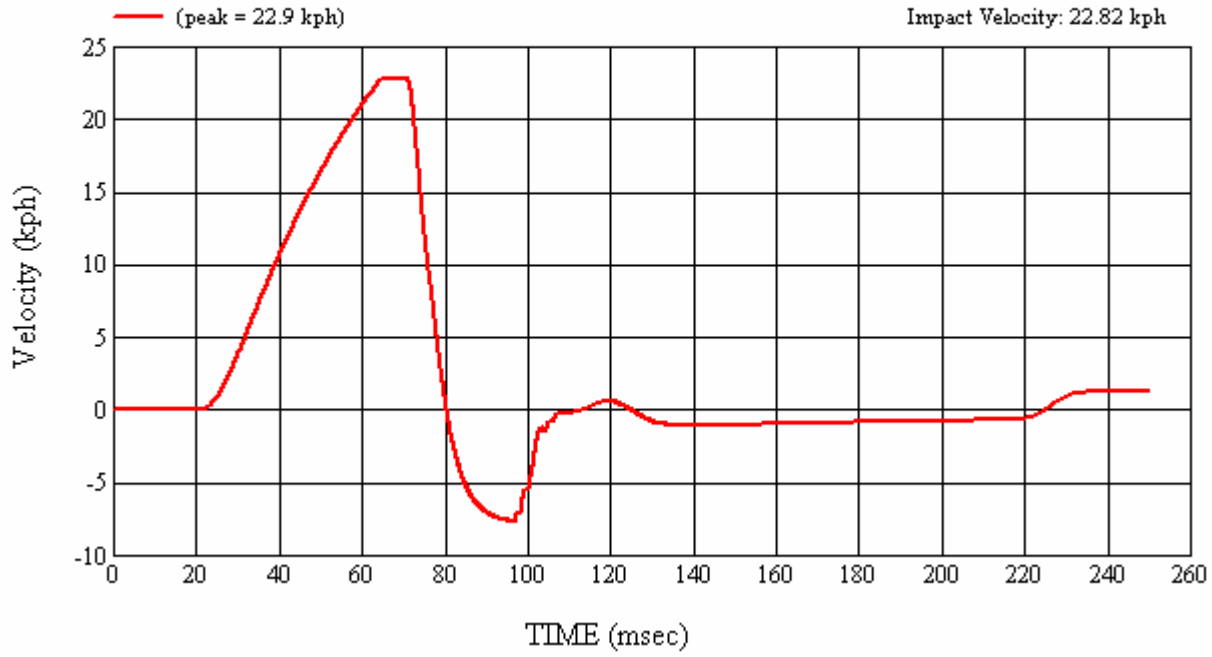


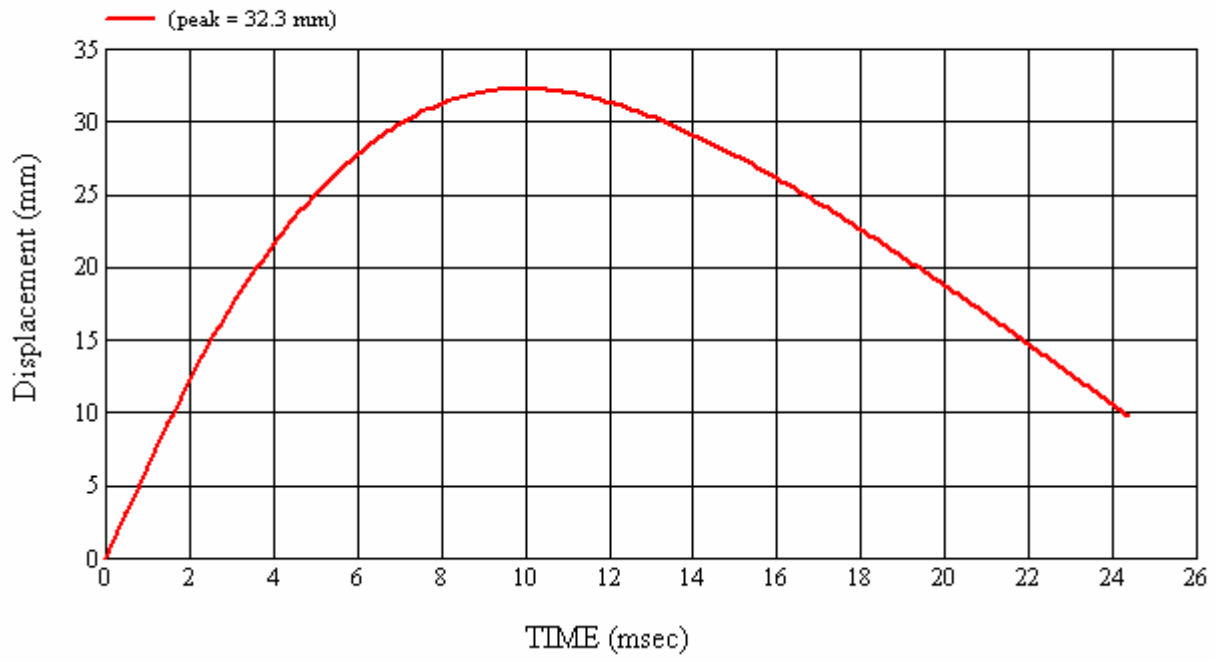



(peak = 93.7 G)
Head X (G)
10
0
-10
-20
-30
-40
-50
-60
-70
-80
-90
-100
0
2
4
6
8
10
12
14
16
18
20
22
24
26
TIME (msec)


(peak = 17.0 G)
Head Y (G)
18
16
14
12
10
8
6
4
2
0
-2
-4
-6
-8
-10
0
2
4
6
8
10
12
14
16
18
20
22
24
26
TIME (msec)


(peak = 27.6 G)
Head Z (G)
5
0
-5
-10
-15
-20
-25
-30
0
2
4
6
8
10
12
14
16
18
20
22
24
26
TIME (msec)


(peak = 22.9 kph)
Impact Velocity: 22.82 kph
Velocity (kph)
25
20
15
10
5
0
-5
-10
0
20
40
60
80
100
120
140
160
180
200
220
240
260
TIME (msec)


(peak = 32.3 mm)
Displacement (mm)
35
30
25
20
15
10
5
0
0
2
4
6
8
10
12
14
16
18
20
22
24
26
TIME (msec)


DF2
mga
Impact Testing
G07I7-001.7
10/17/2007
2007 NHTSA TOYOTA FJ CRUISER - C75106
FMVSS 201U - UPPER INTERIOR
TEST #10 RIGHT DF2
H/V IMPACT ANGLE= 90 / 6
FM7243
PRE TEST


DF1
DF2
mga
Impact Testing
10/17/2007
G07I7-001.7
2007 NHTSA TOYOTA FJ CRUISER - C75106
FMVSS 201U - UPPER INTERIOR
TEST #10 RIGHT DF2
H/V IMPACT ANGLE= 90 / 6
FM7243
POST TEST


mga
Impact Testing
10/17/2007
G07I7-001.7
2007 NHTSA TOYOTA FJ CRUISER - C75106
FMVSS 201U - UPPER INTERIOR
TEST #10 RIGHT DF2
H/V IMPACT ANGLE= 90 / 6
FM7243
POST TEST

SUMMARY OF FMVSS 201U TEST

JOB/NHTSA NO: G07I7-001.7

VEHICLE YR/MAKE/MODEL:2007/NHTSA/Toyota FJ Cruiser - C75106

GENERAL TEST PARAMETERS:

Test Number:#10

Target (Vehicle Side): DF2 Right

Temperature:21C

MGA Test Reference No.:FM7243

Humidity:56%

Approach Horizontal Angles:90º

Time of Test:2:54:05 PM

Approach Vertical Angles:6º

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
543	499	8.9	23.6	10	4 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	1.32	1.32
Y	6	J35919	97.442	1.89	1.89
Z	7	J35924	93.891	1.83	1.83

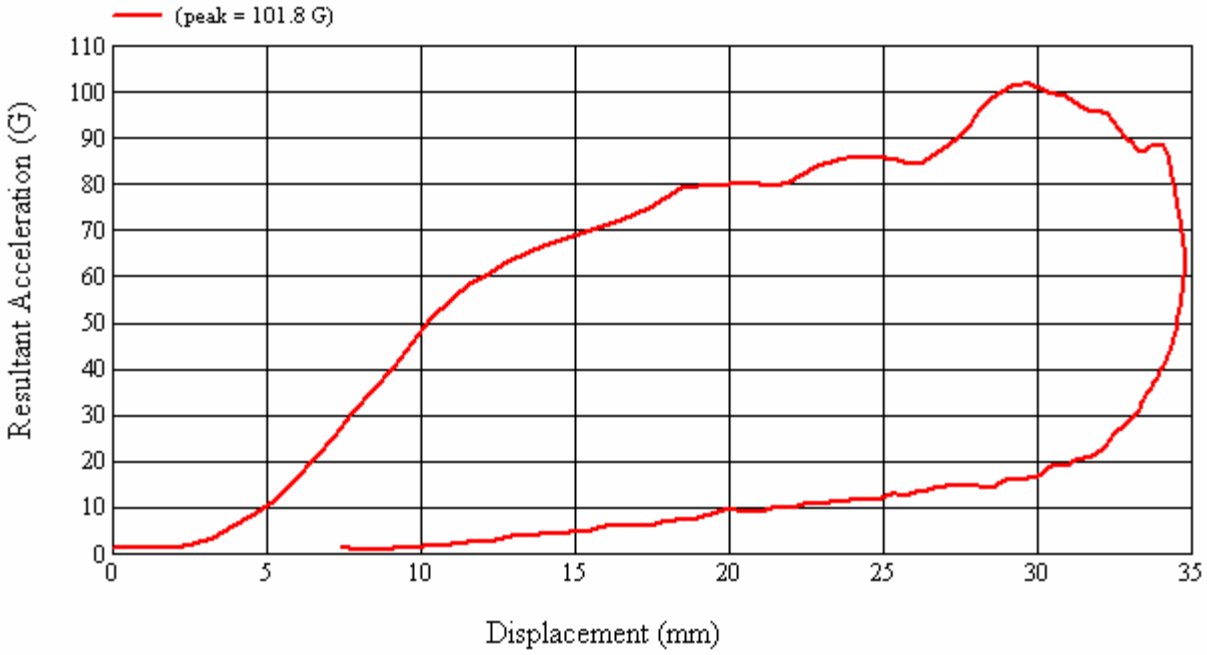
REMARKS (Summary of test, damage, non-compliance, invalid test, etc.):

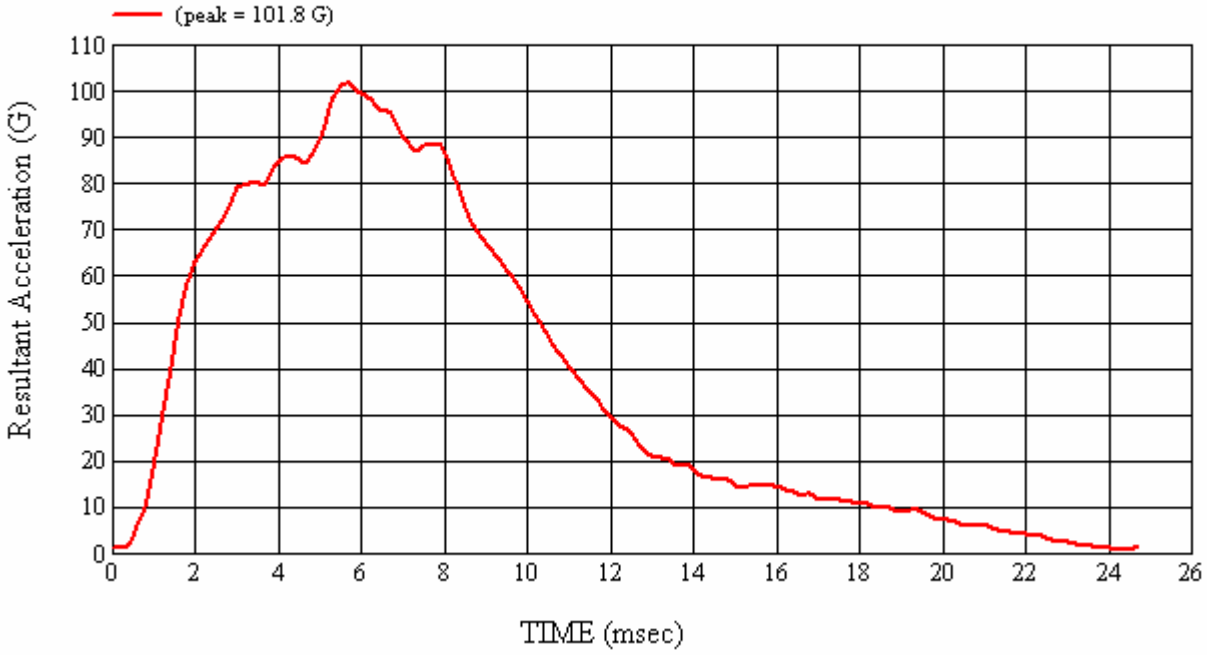
D-ring trim is slightly displaced.

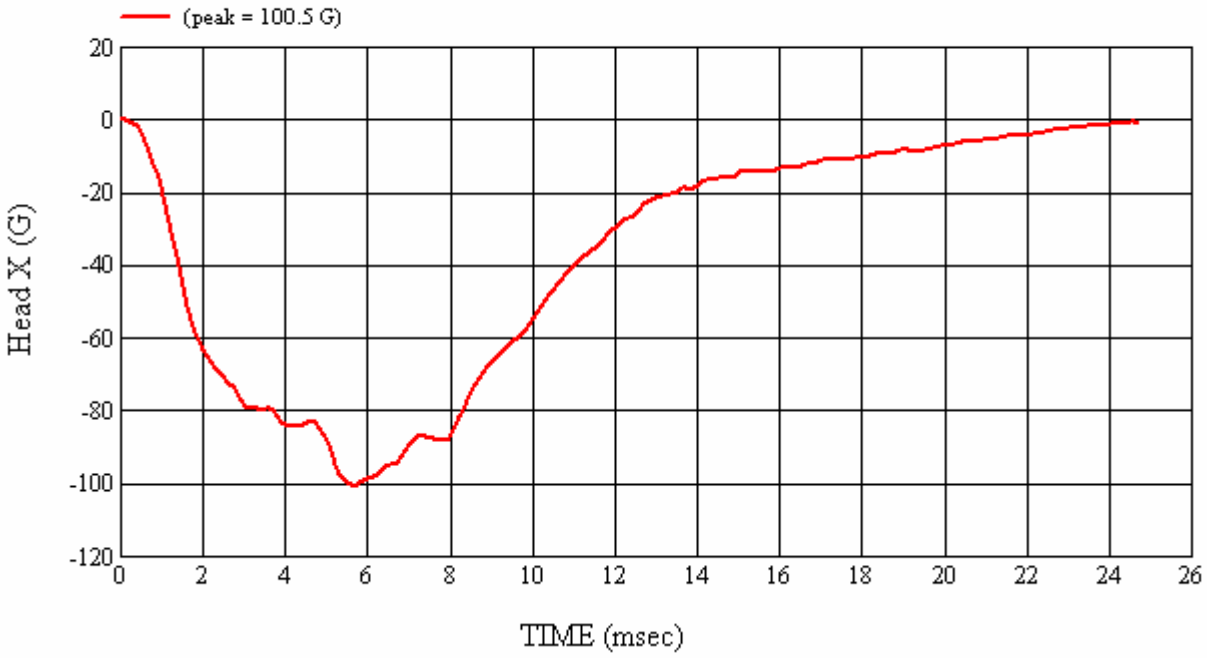
Recorded By: Jamie Campbell Approved By*: Helen A. Kaleto Date: 10/17/2007

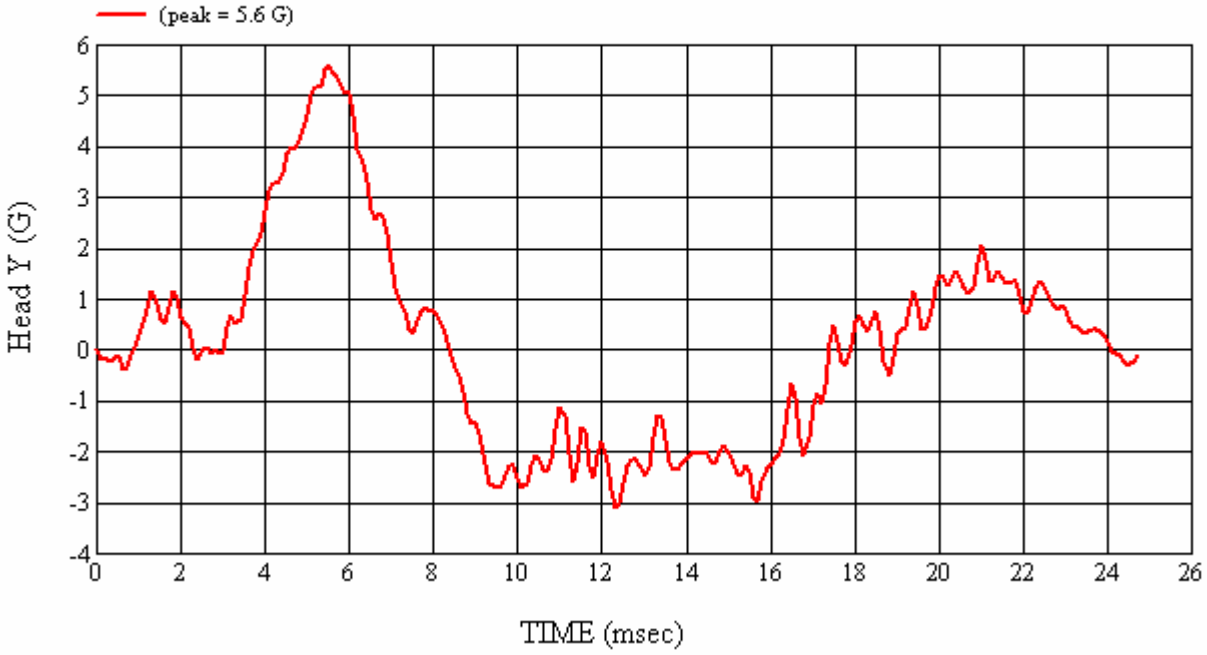
*Only necessary for NHTSA (Government) Compliance testing.

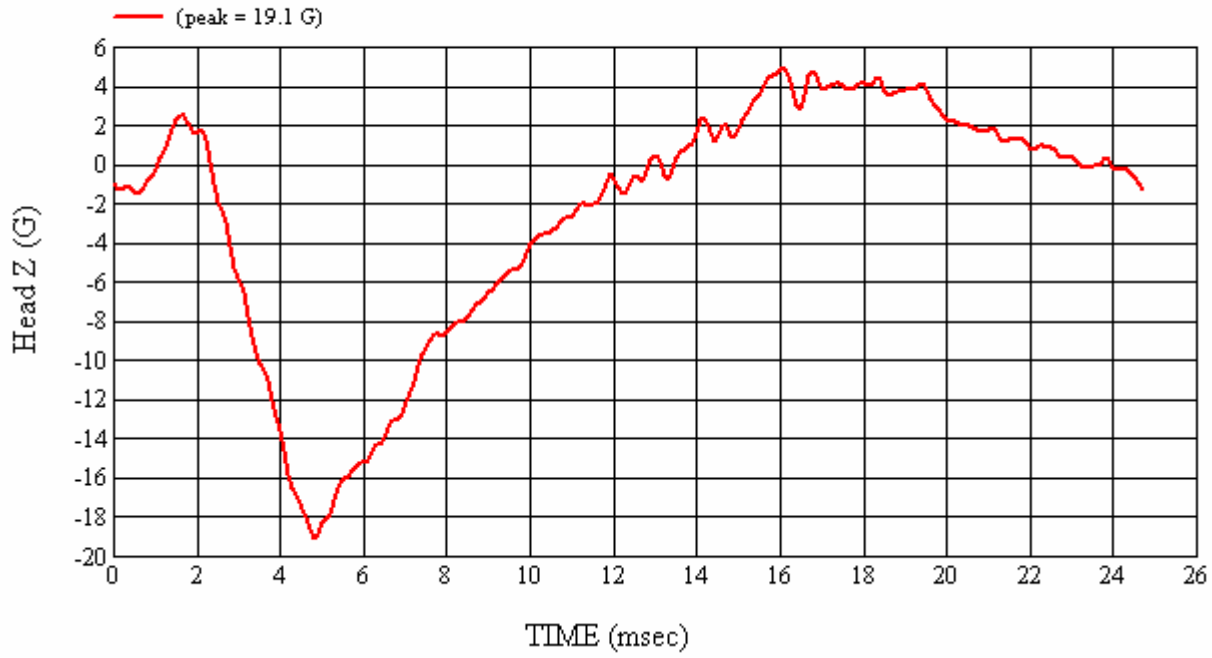
MGA Test #: FM7243 Target Location: DF2, Right Side Test Date: 10/17/2007

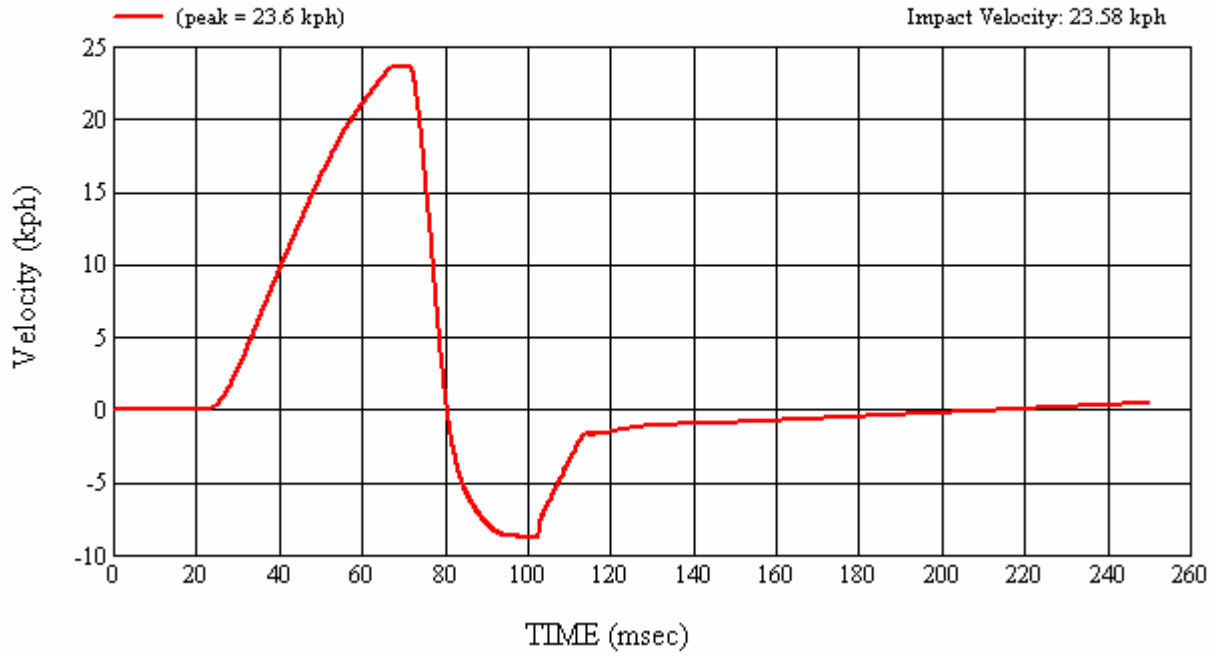


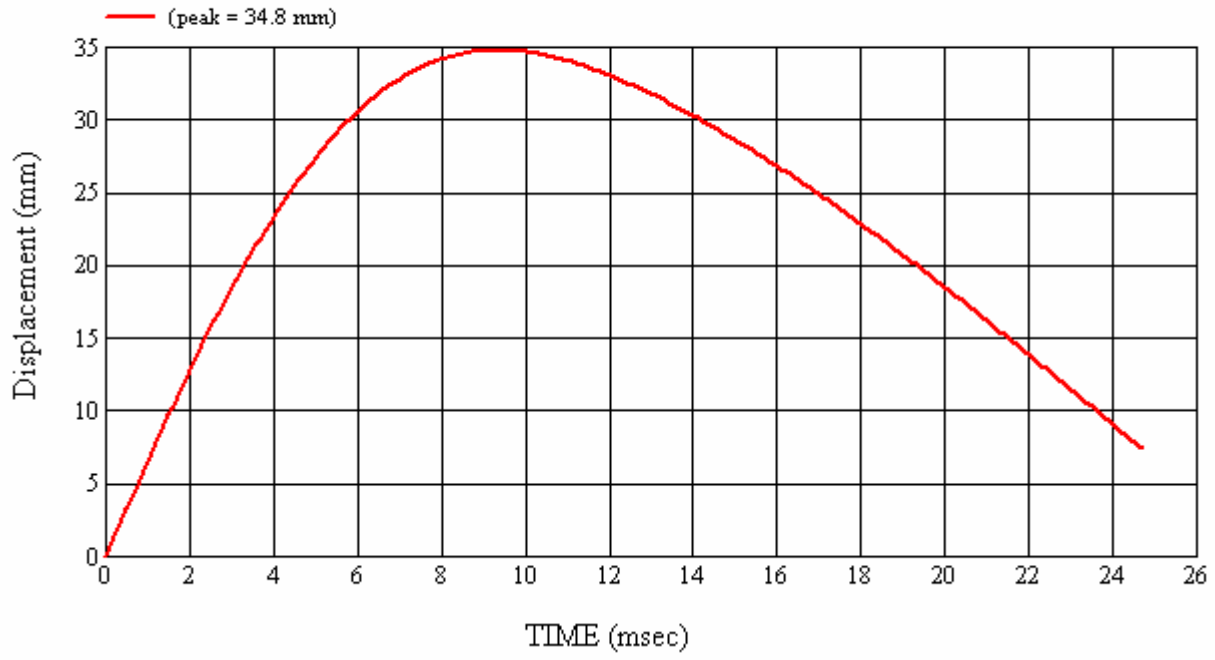


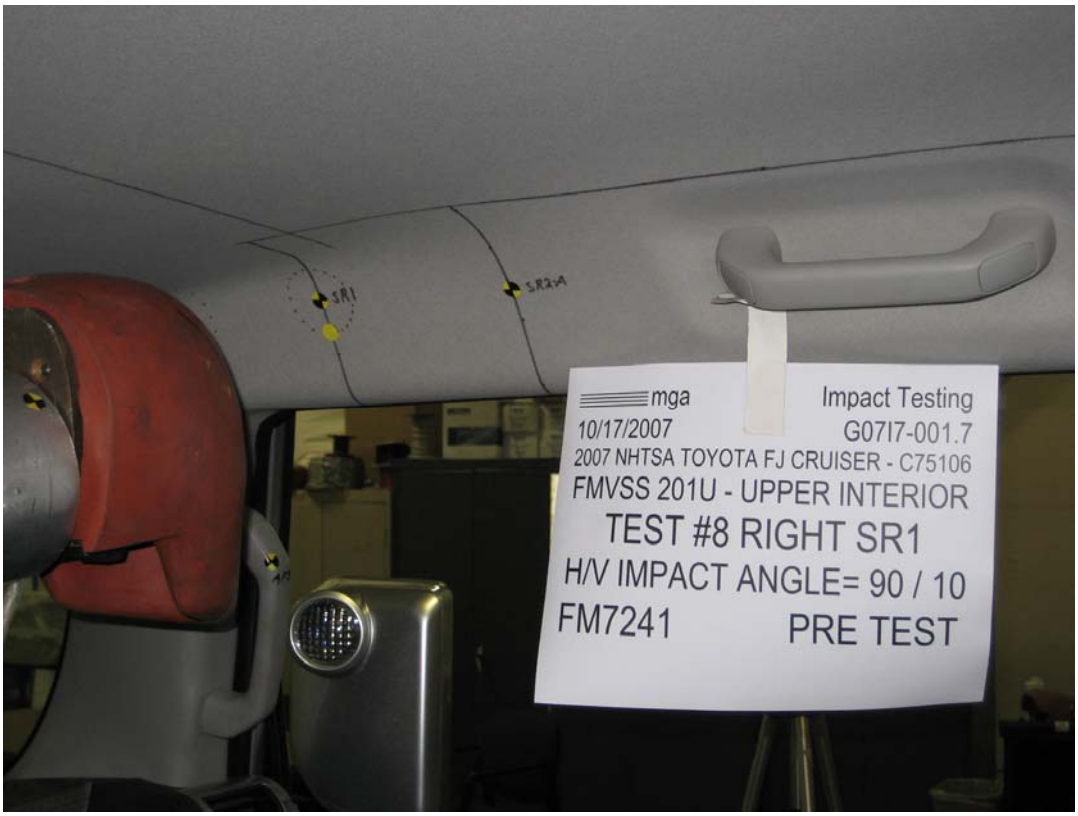

(peak = 100.5 G)
Head X (G)
20
0
-20
-40
-60
-80
-100
-120
0
2
4
6
8
10
12
14
16
18
20
22
24
26
TIME (msec)


(peak = 5.6 G)
Head Y (G)
6
5
4
3
2
1
0
-1
-2
-3
-4
0
2
4
6
8
10
12
14
16
18
20
22
24
26
TIME (msec)


(peak = 19.1 G)
Head Z (G)
6
4
2
0
-2
-4
-6
-8
-10
-12
-14
-16
-18
-20
0
2
4
6
8
10
12
14
16
18
20
22
24
26
TIME (msec)


(peak = 23.6 kph)
Impact Velocity: 23.58 kph
Velocity (kph)
25
20
15
10
5
0
-5
-10
0
20
40
60
80
100
120
140
160
180
200
220
240
260
TIME (msec)


(peak = 34.8 mm)
Displacement (mm)
35
30
25
20
15
10
5
0
0
2
4
6
8
10
12
14
16
18
20
22
24
26
TIME (msec)


SR1
SR2+1
mga
Impact Testing
10/17/2007
G07I7-001.7
2007 NHTSA TOYOTA FJ CRUISER - C75106
FMVSS 201U - UPPER INTERIOR
TEST #8 RIGHT SR1
H/V IMPACT ANGLE= 90 / 10
FM7241
PRE TEST


mga
Impact Testing
10/17/2007
G07I7-001.7
2007 NHTSA TOYOTA FJ CRUISER - C75106
FMVSS 201U - UPPER INTERIOR
TEST #8 RIGHT SR1
H/V IMPACT ANGLE= 90 / 10
FM7241
POST TEST


mga
Impact Testing
10/17/2007
G07I7-001.7
2007 NHTSA TOYOTA FJ CRUISER - C75106
FMVSS 201U - UPPER INTERIOR
TEST #8 RIGHT SR1
H/V IMPACT ANGLE= 90 / 10
FM7241
POST TEST

SUMMARY OF FMVSS 201U TEST

JOB/NHTSA NO: G07I7-001.7

VEHICLE YR/MAKE/MODEL:2007/NHTSA/Toyota FJ Cruiser - C75106

GENERAL TEST PARAMETERS:

Test Number:#8

Target (Vehicle Side): SR1 Right

Temperature:21C

MGA Test Reference No.:FM7241

Humidity:56%

Approach Horizontal Angles:90º

Time of Test:1:55:44 PM

Approach Vertical Angles:10º

FMH Serial No:[037]

Additional Description:1 Relocation

TEST RESULTS:

HIC(d)	HIC	Δt (msec)	Velocity (kph)	Impact location on FMH (mm)	
				Above Pt. O	Left/Right Pt. O
605	582	5.7	23.3	30	5 Left

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	1.33	1.33
Y	6	J35791	91.856	1.91	1.89
Z	7	J35800	97.996	1.83	1.83

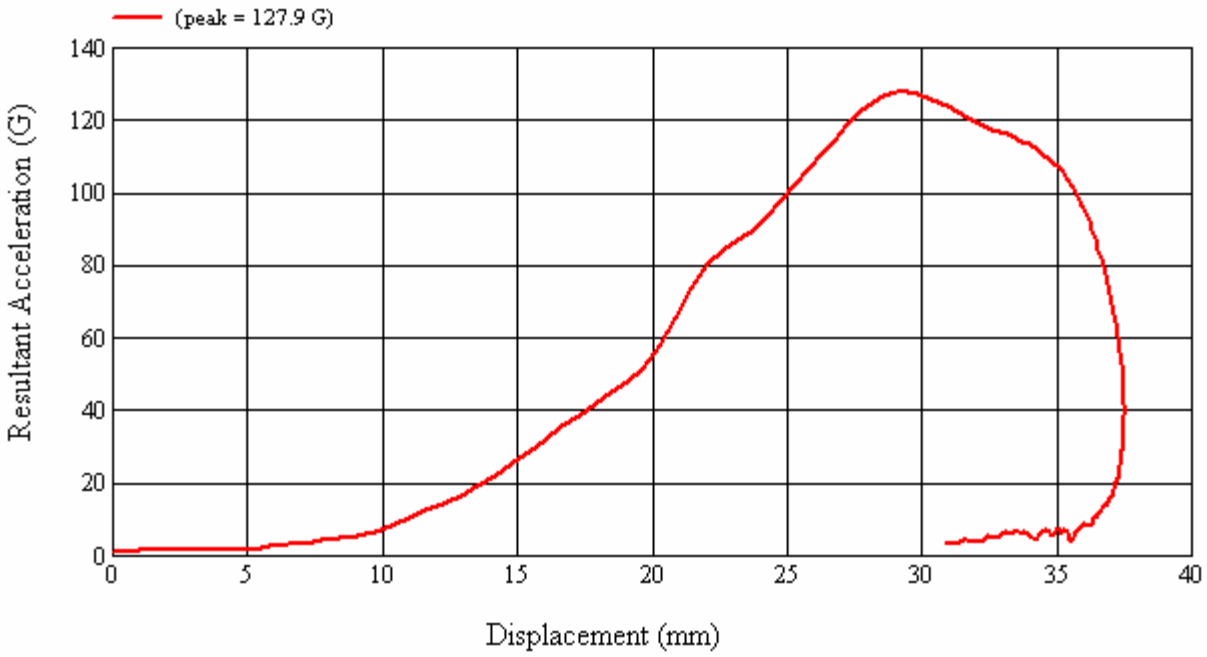
REMARKS (Summary of test, damage, non-compliance, invalid test, etc.):

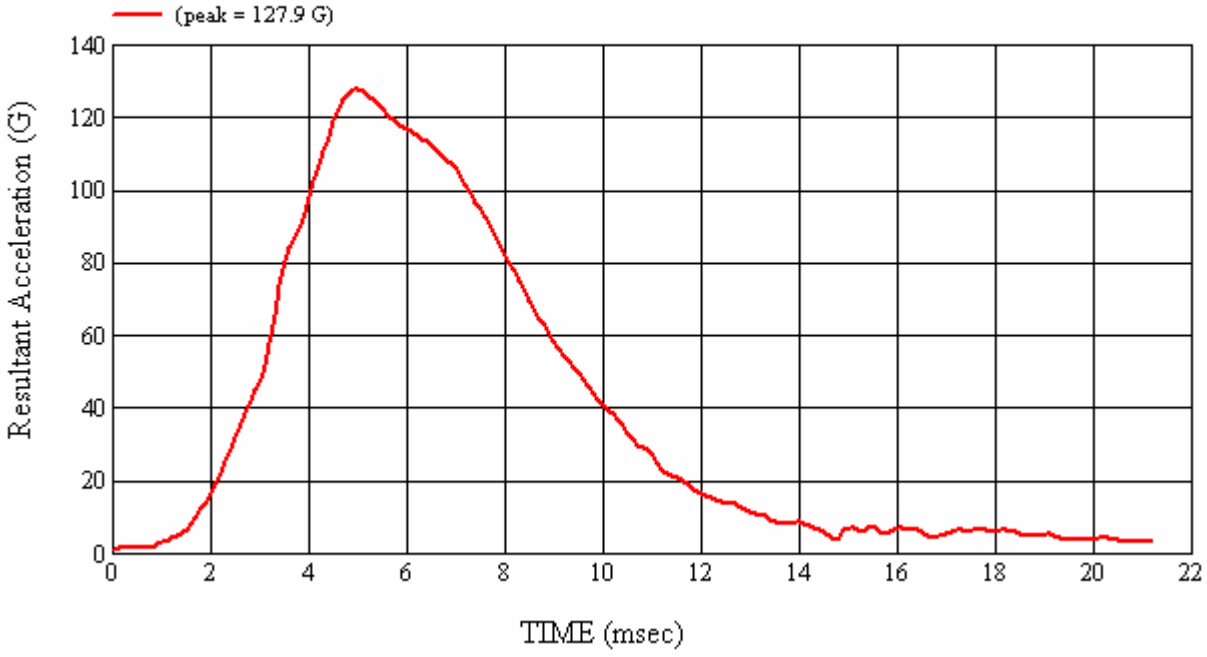
No visible damage.

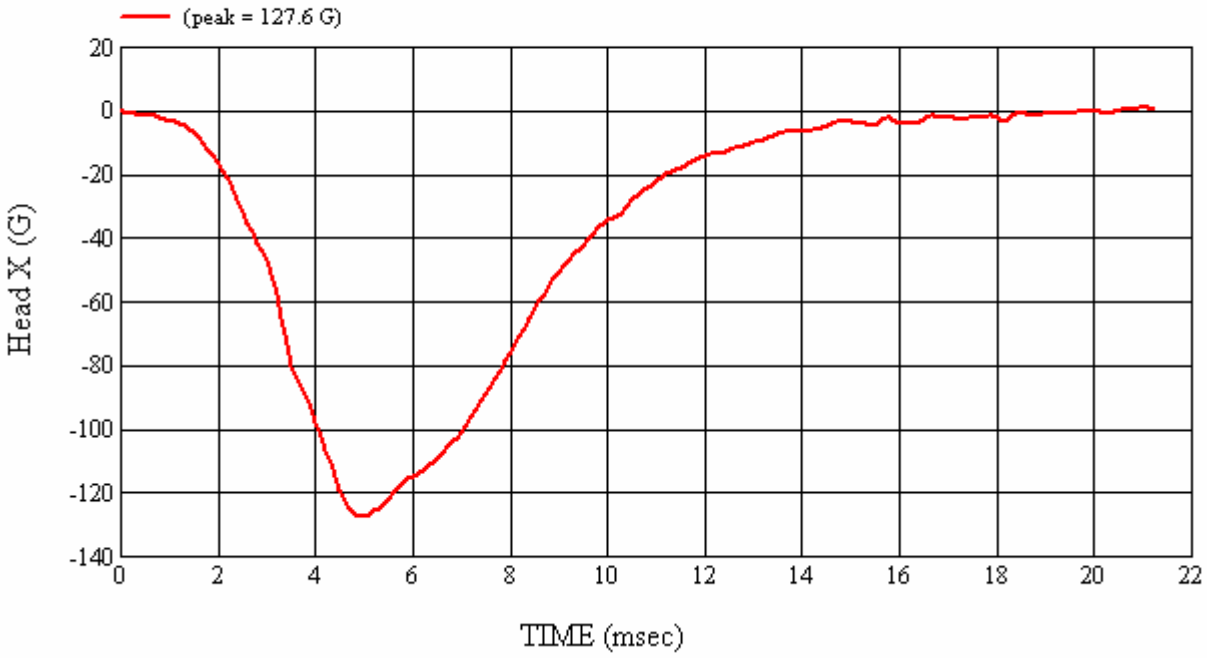
Recorded By: ______ Approved By*: ______ Date: 10/17/2007

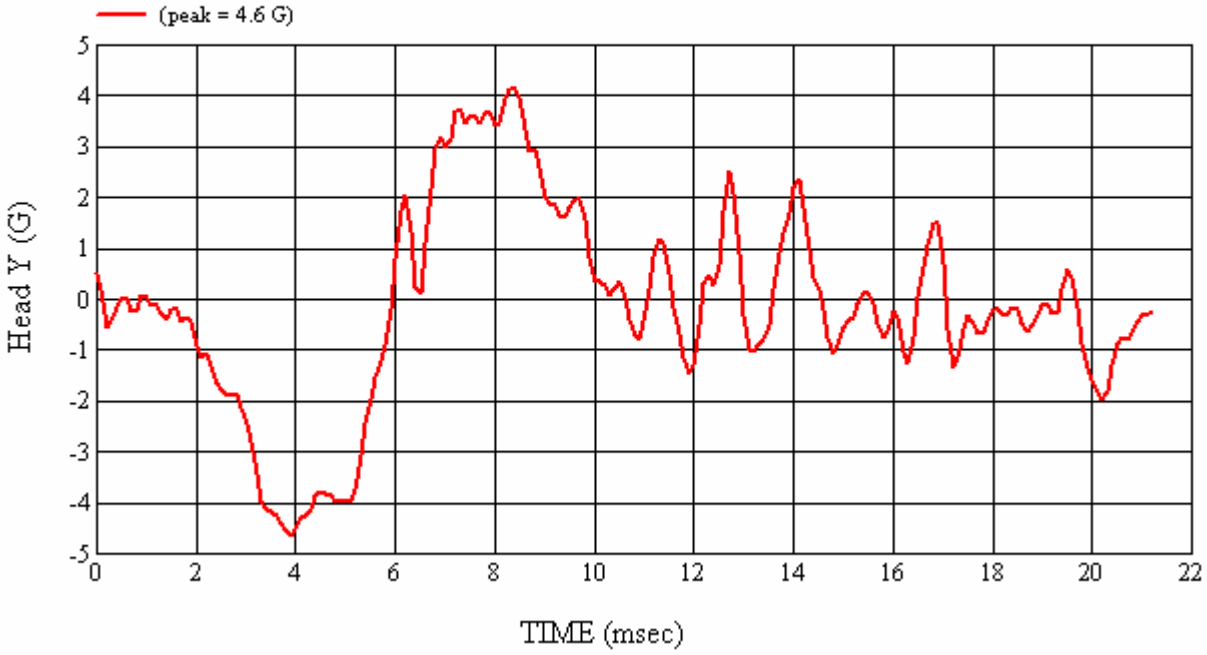
*Only necessary for NHTSA (Government) Compliance testing.

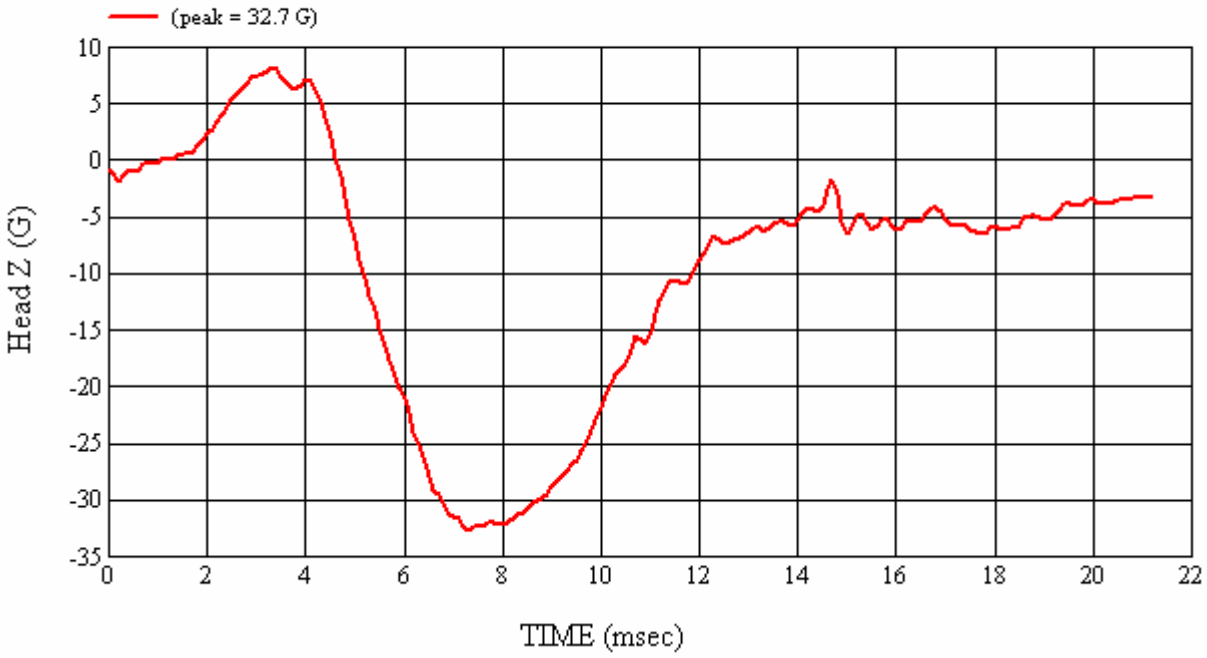
MGA Test #: FM7241 Target Location: SR1, Right Side Test Date: 10/17/2007

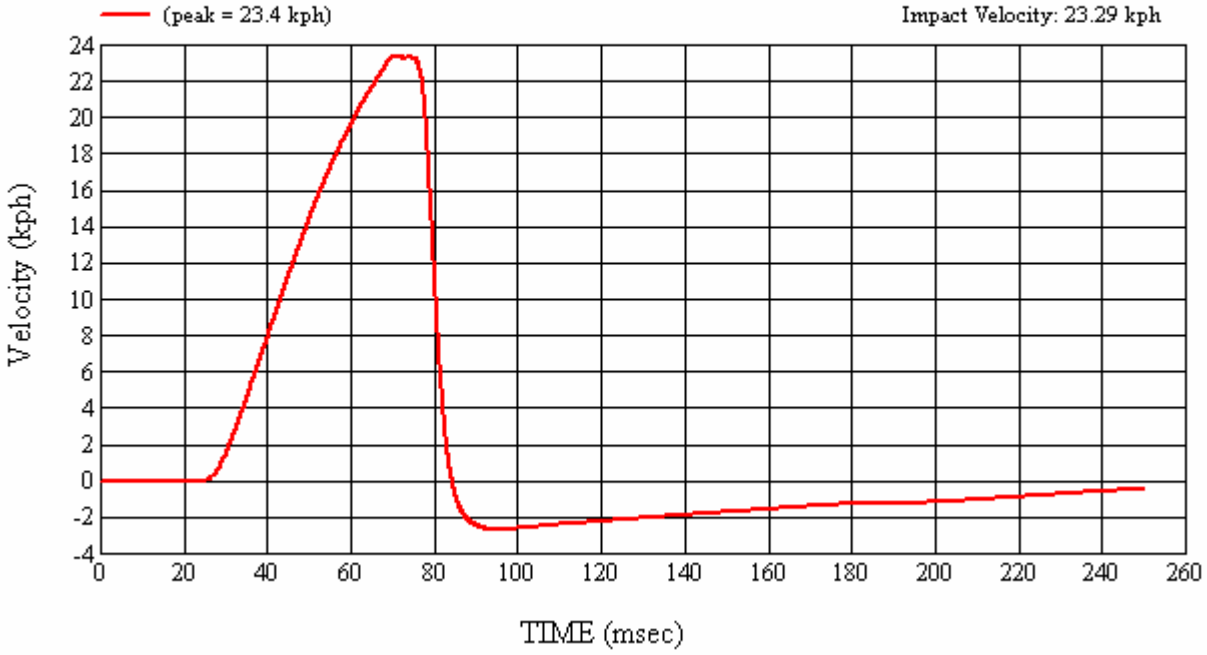


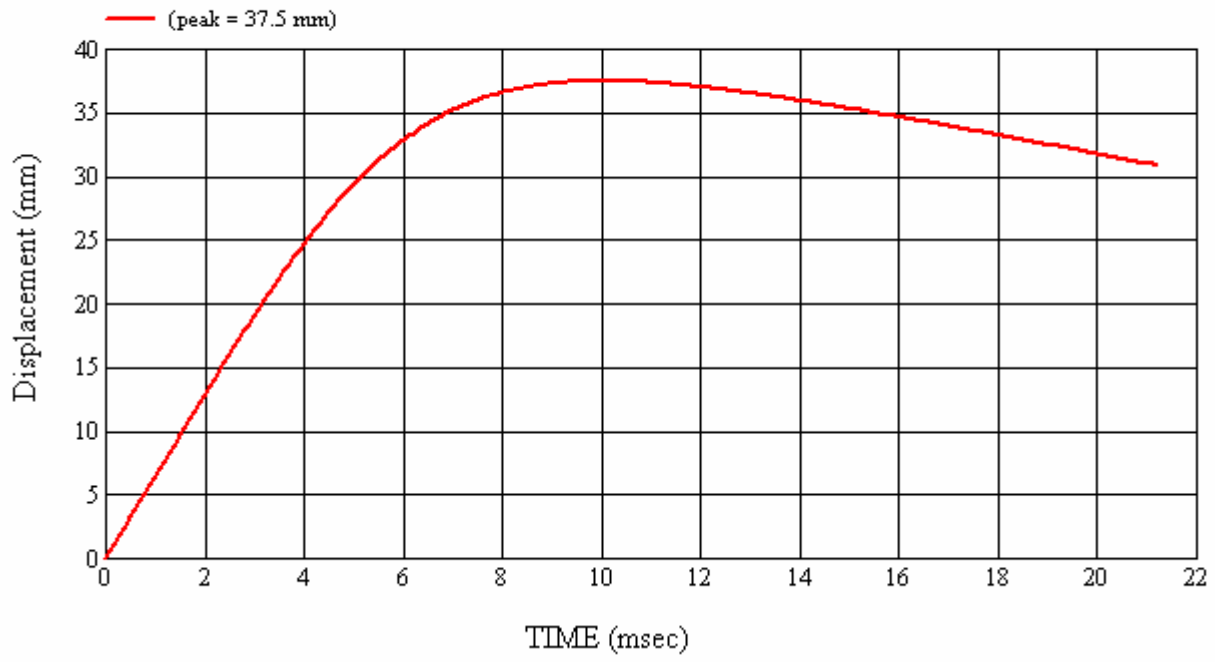


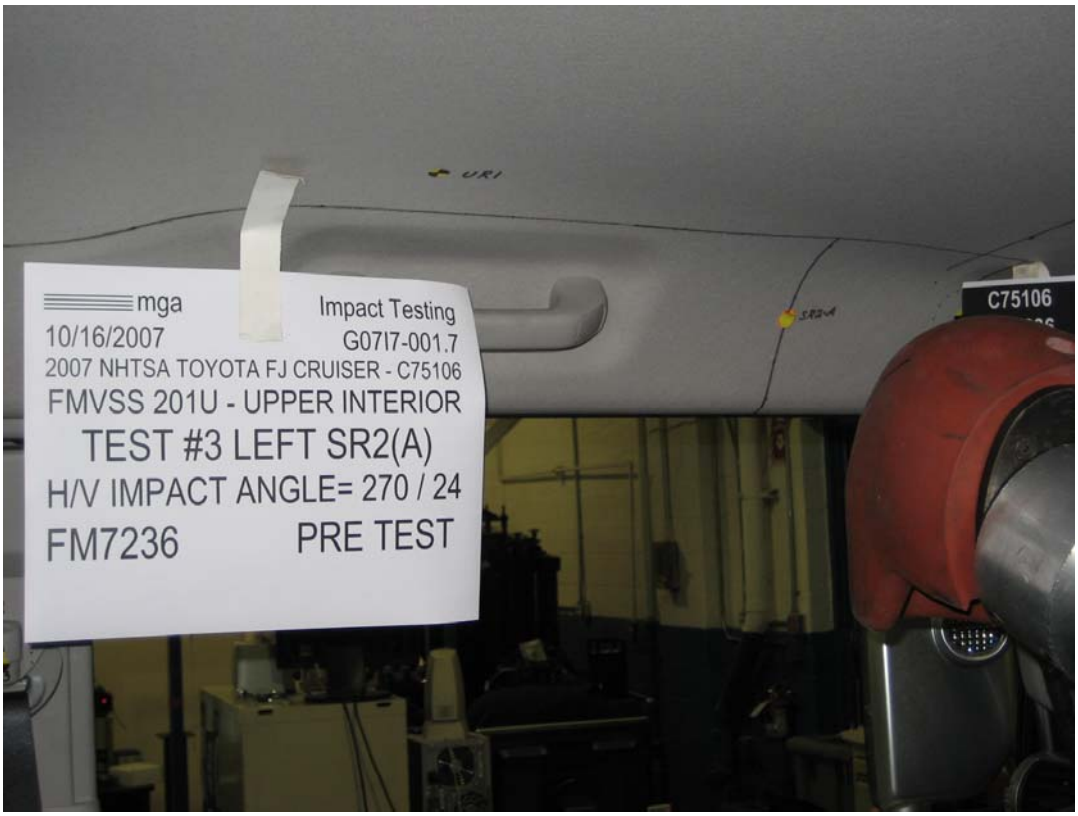

(peak = 127.6 G)
Head X (G)
20
0
-20
-40
-60
-80
-100
-120
-140
0
2
4
6
8
10
12
14
16
18
20
22
TIME (msec)


(peak = 4.6 G)
Head Y (G)
5
4
3
2
1
0
-1
-2
-3
-4
-5
0
2
4
6
8
10
12
14
16
18
20
22
TIME (msec)


(peak = 32.7 G)
Head Z (G)
10
5
0
-5
-10
-15
-20
-25
-30
-35
0
2
4
6
8
10
12
14
16
18
20
22
TIME (msec)


(peak = 23.4 kph)
Impact Velocity: 23.29 kph
Velocity (kph)
24
22
20
18
16
14
12
10
8
6
4
2
0
-2
-4
0
20
40
60
80
100
120
140
160
180
200
220
240
260
TIME (msec)


(peak = 37.5 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)


mga
Impact Testing
10/16/2007
G07I7-001.7
2007 NHTSA TOYOTA FJ CRUISER - C75106
FMVSS 201U - UPPER INTERIOR
TEST #3 LEFT SR2(A)
H/V IMPACT ANGLE= 270 / 24
FM7236
PRE TEST
C75106


mga
Impact Testing
10/16/2007
G07I7-001.7
2007 NHTSA TOYOTA FJ CRUISER - C75106
FMVSS 201U - UPPER INTERIOR
TEST #3 LEFT SR2(A)
H/V IMPACT ANGLE= 270 / 24
FM7236
POST TEST


mga
Impact Testing
10/16/2007
G07I7-001.7
2007 NHTSA TOYOTA FJ CRUISER - C75106
FMVSS 201U - UPPER INTERIOR
TEST #3 LEFT SR2(A)
H/V IMPACT ANGLE= 270 / 24
FM7236
POST TEST

SUMMARY OF FMVSS 201U TEST

JOB/NHTSA NO: G07I7-001.7

VEHICLE YR/MAKE/MODEL:2007/NHTSA/Toyota FJ Cruiser - C75106

GENERAL TEST PARAMETERS:

Test Number:#3

Target (Vehicle Side): SR2A Left

Temperature:21C

MGA Test Reference No.:FM7236

Humidity:58%

Approach Horizontal Angles:270º

Time of Test:3:42:24 PM

Approach Vertical Angles:24º

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
699	705	7.1	23.8	15	0

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	1.32	1.32
Y	6	J36197	110.692	1.87	1.89
Z	7	J36353	99.391	1.83	1.83

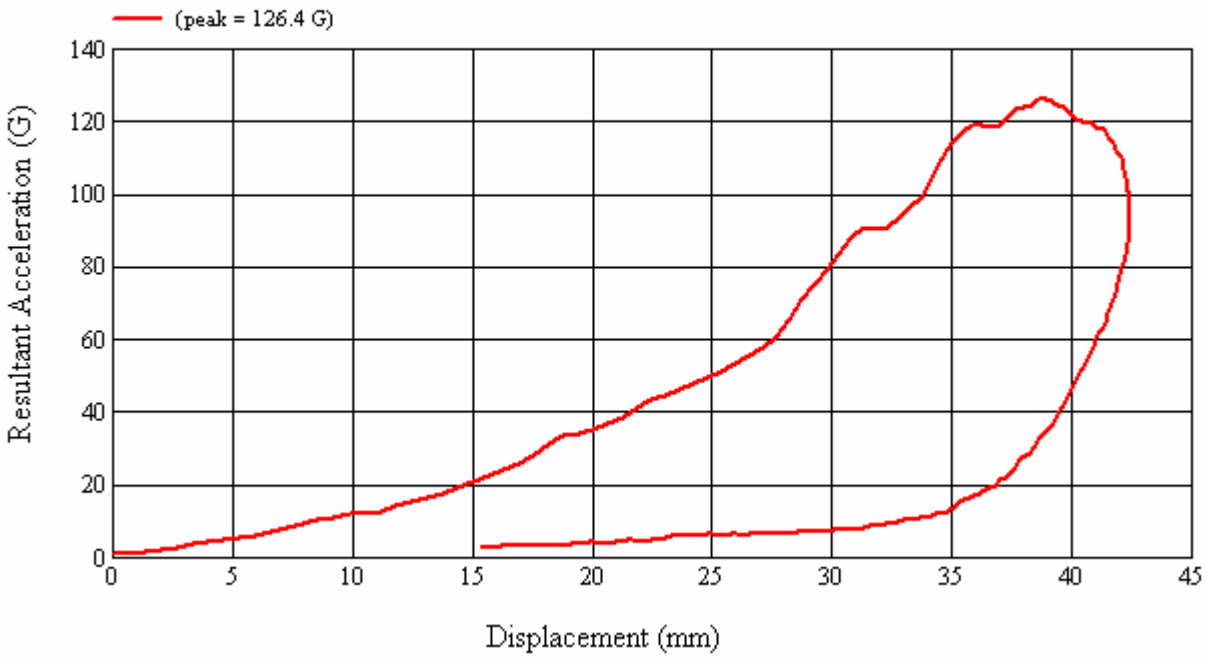
REMARKS (Summary of test, damage, non-compliance, invalid test, etc.):

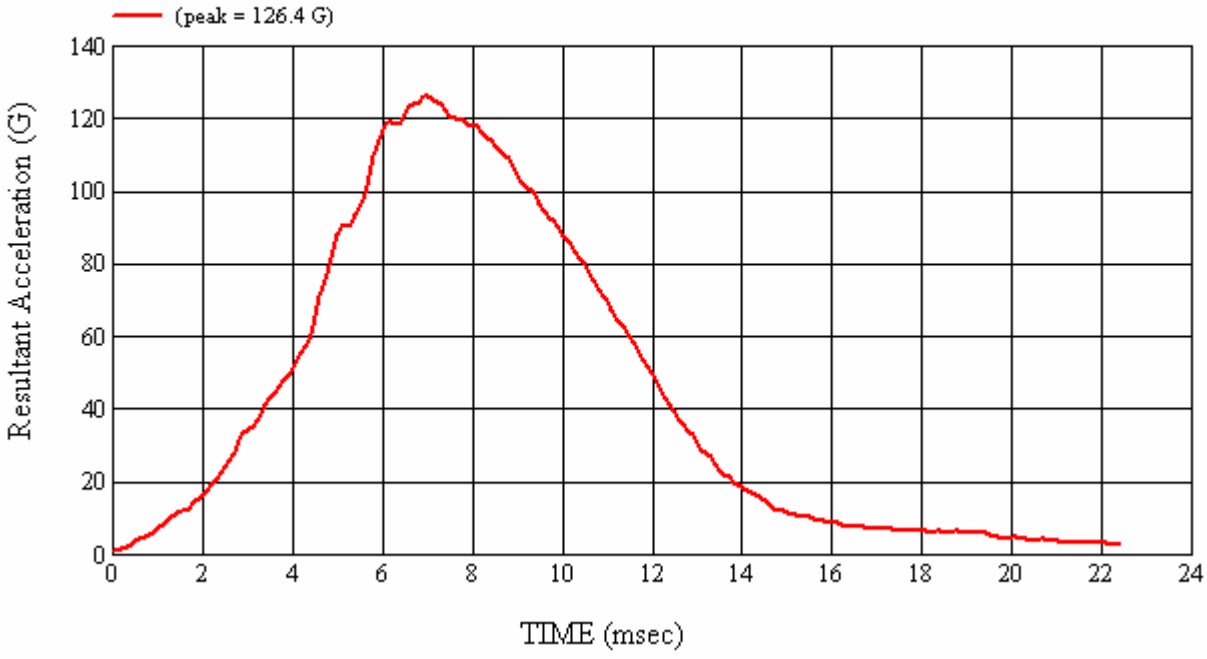
Headliner deformation.

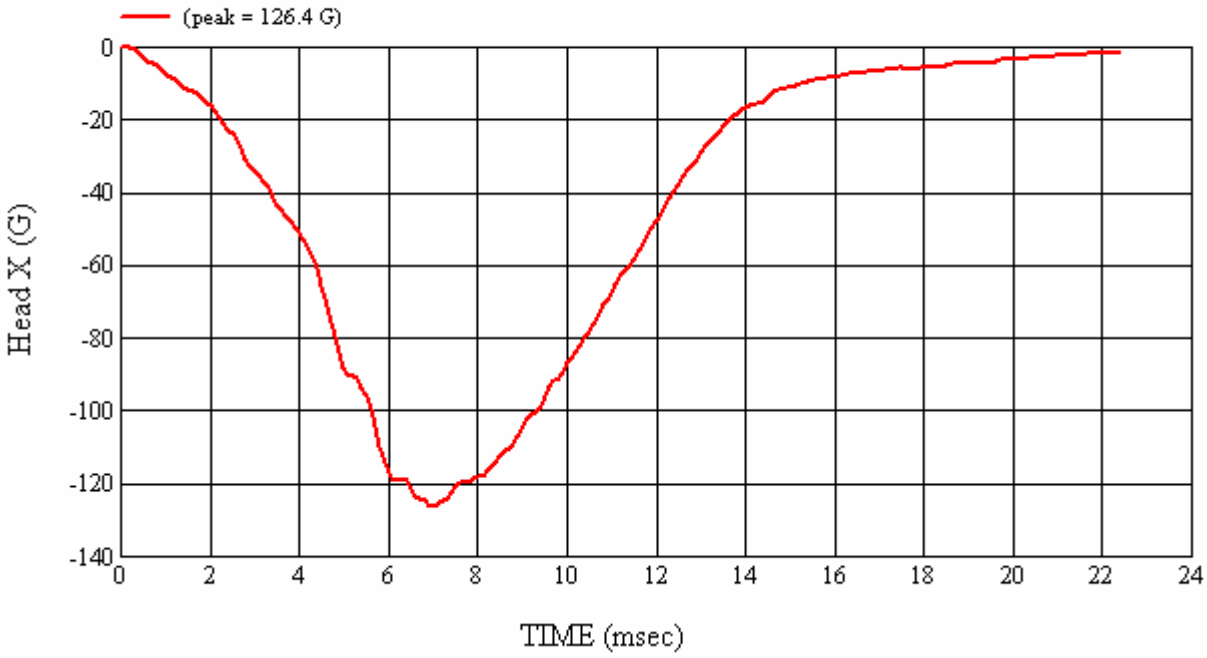
Recorded By: _____ Approved By*: _____ Date: 10/16/2007

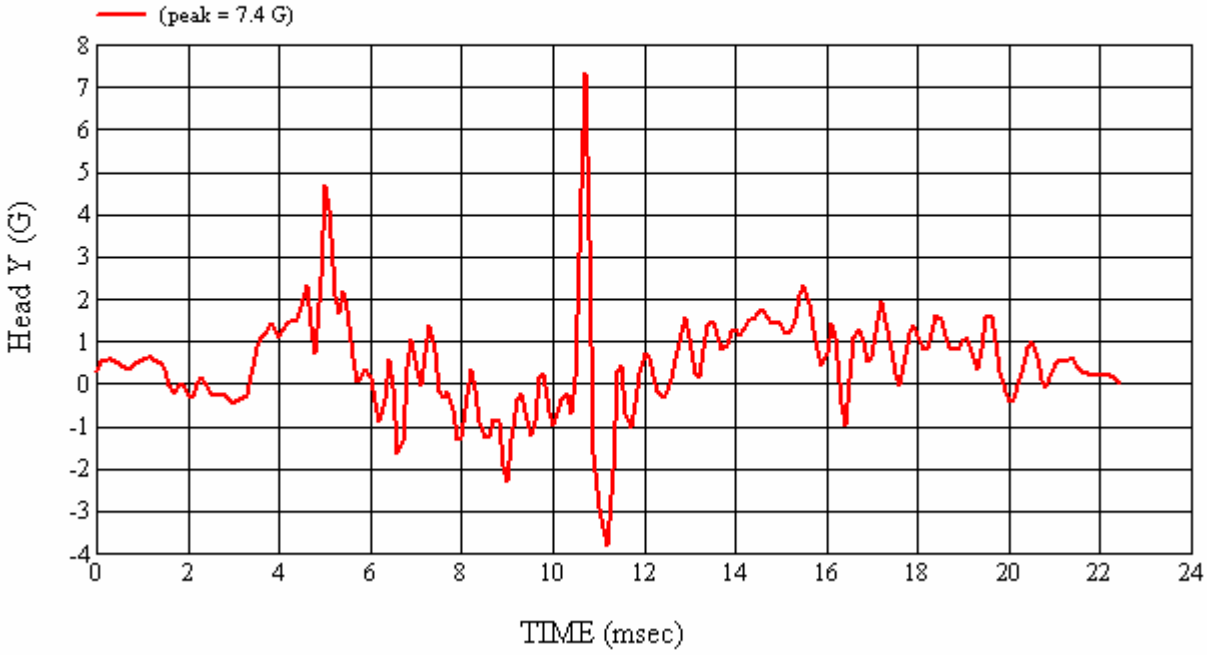
*Only necessary for NHTSA (Government) Compliance testing.

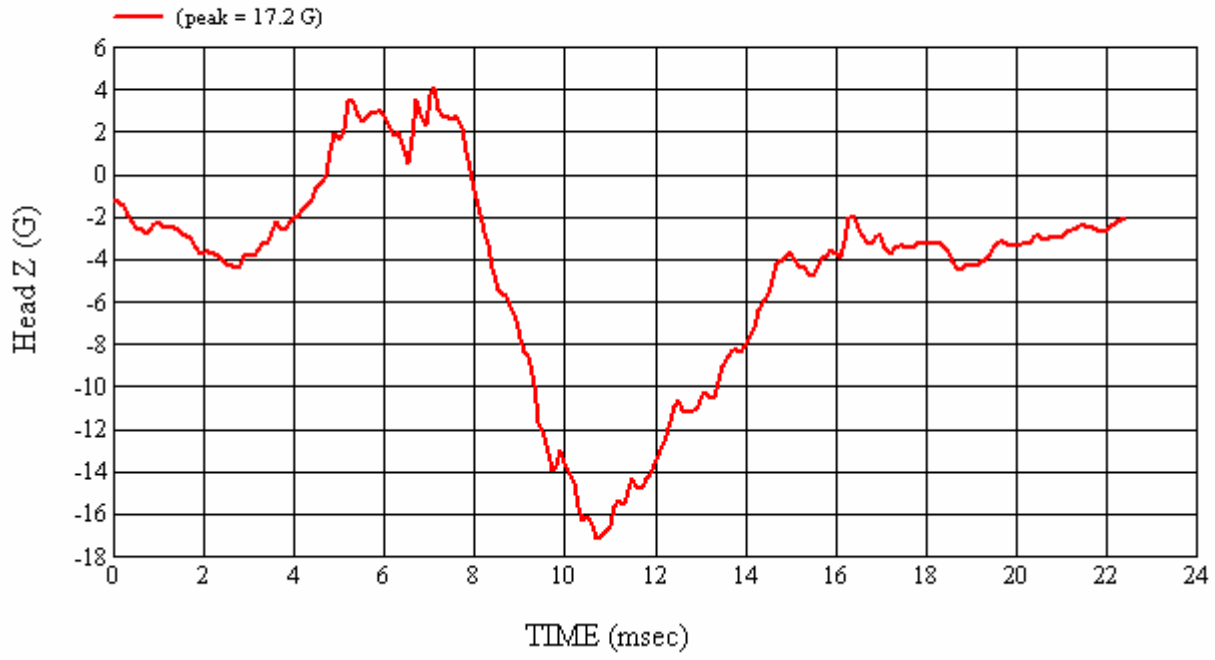
MGA Test #: FM7236 Target Location: SR2A, Left Side Test Date: 10/16/2007

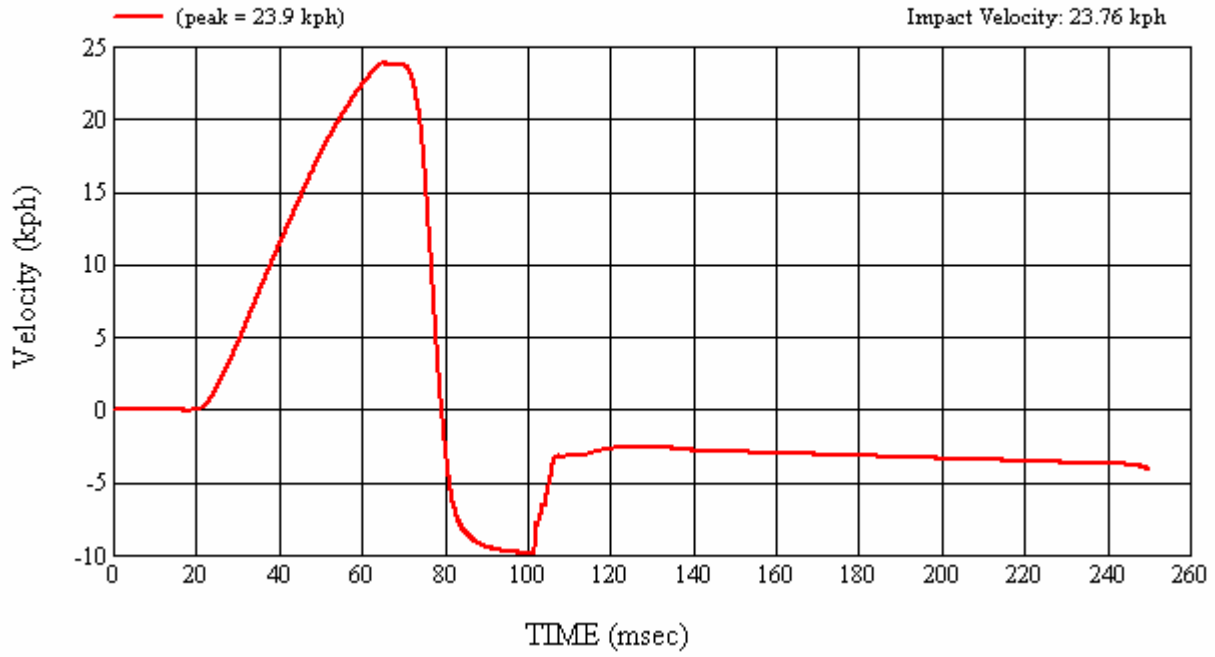


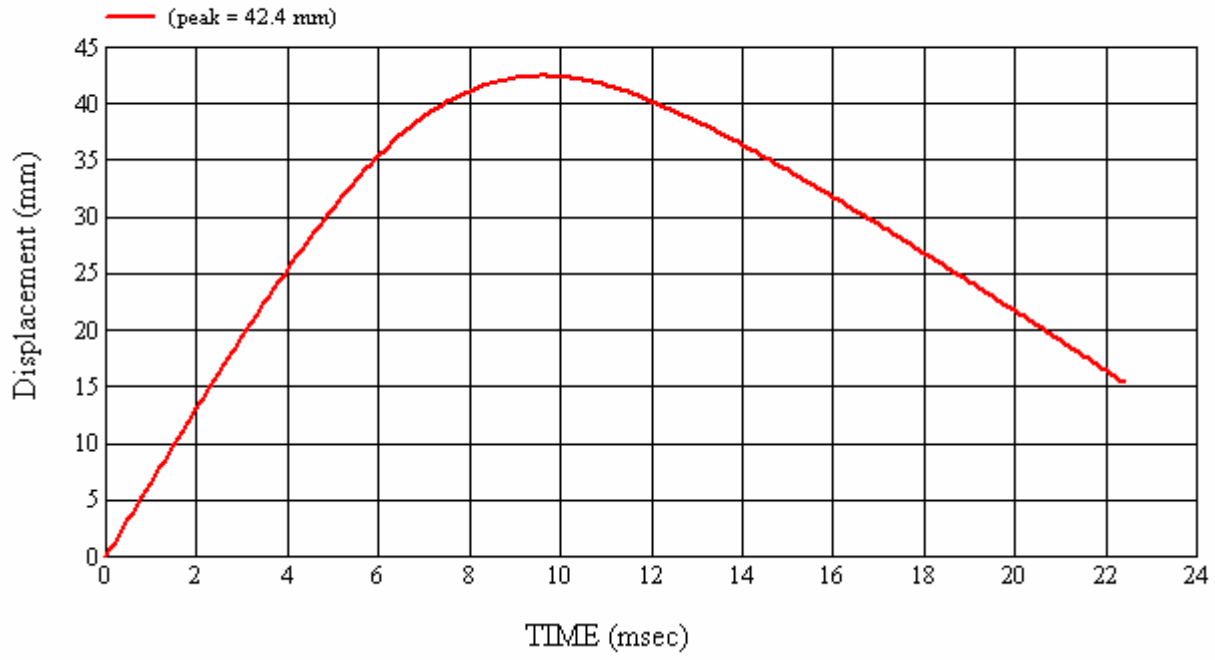


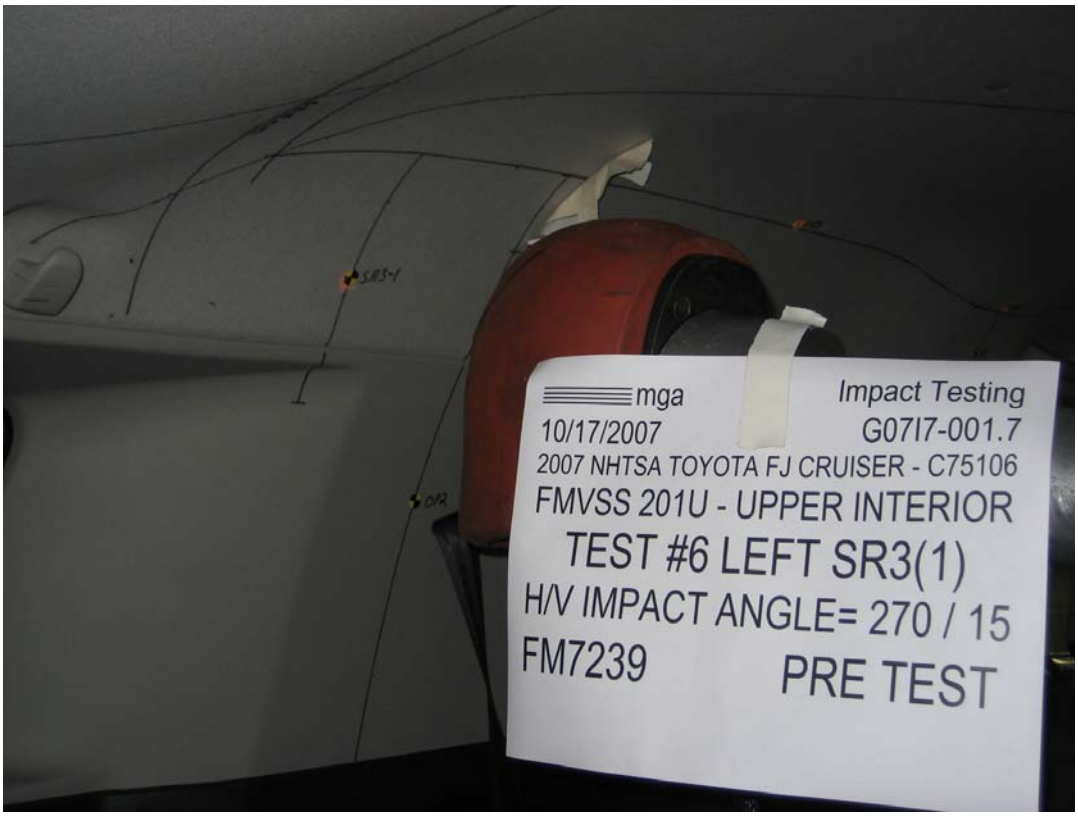

(peak = 126.4 G)
Head X (G)
0
-20
-40
-60
-80
-100
-120
-140
0
2
4
6
8
10
12
14
16
18
20
22
24
TIME (msec)

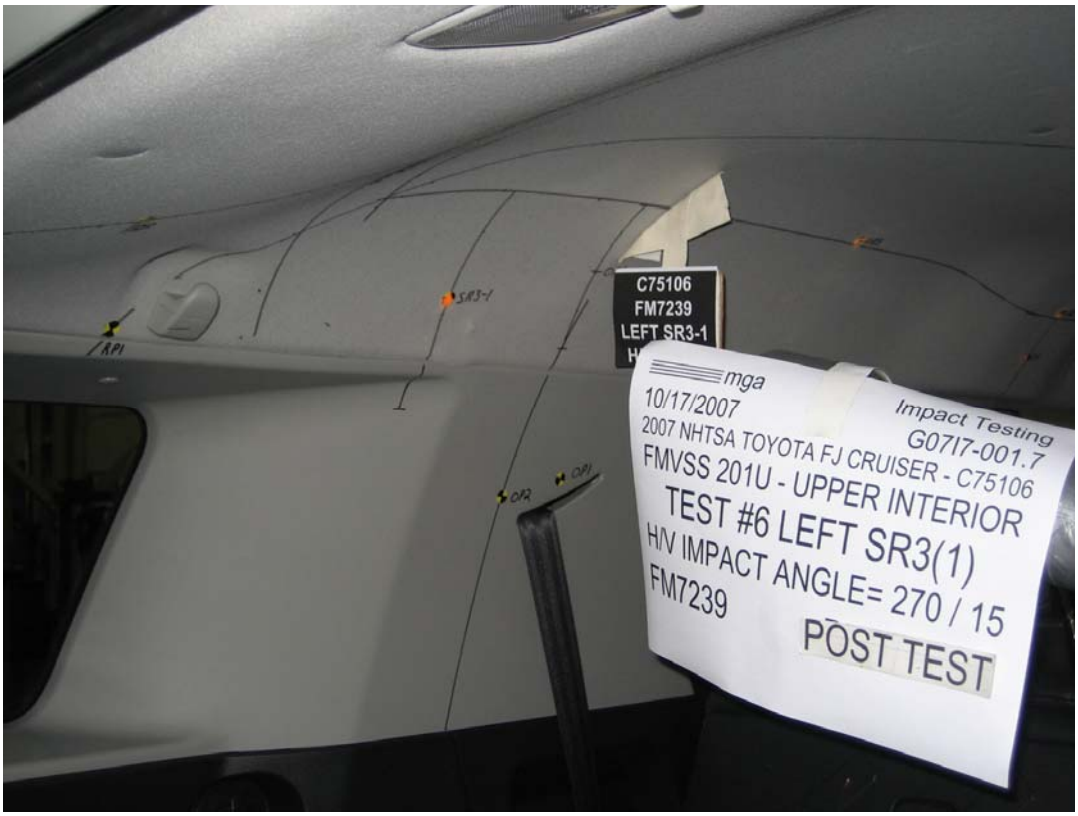

(peak = 7.4 G)
Head Y (G)
8
7
6
5
4
3
2
1
0
-1
-2
-3
-4
0
2
4
6
8
10
12
14
16
18
20
22
24
TIME (msec)

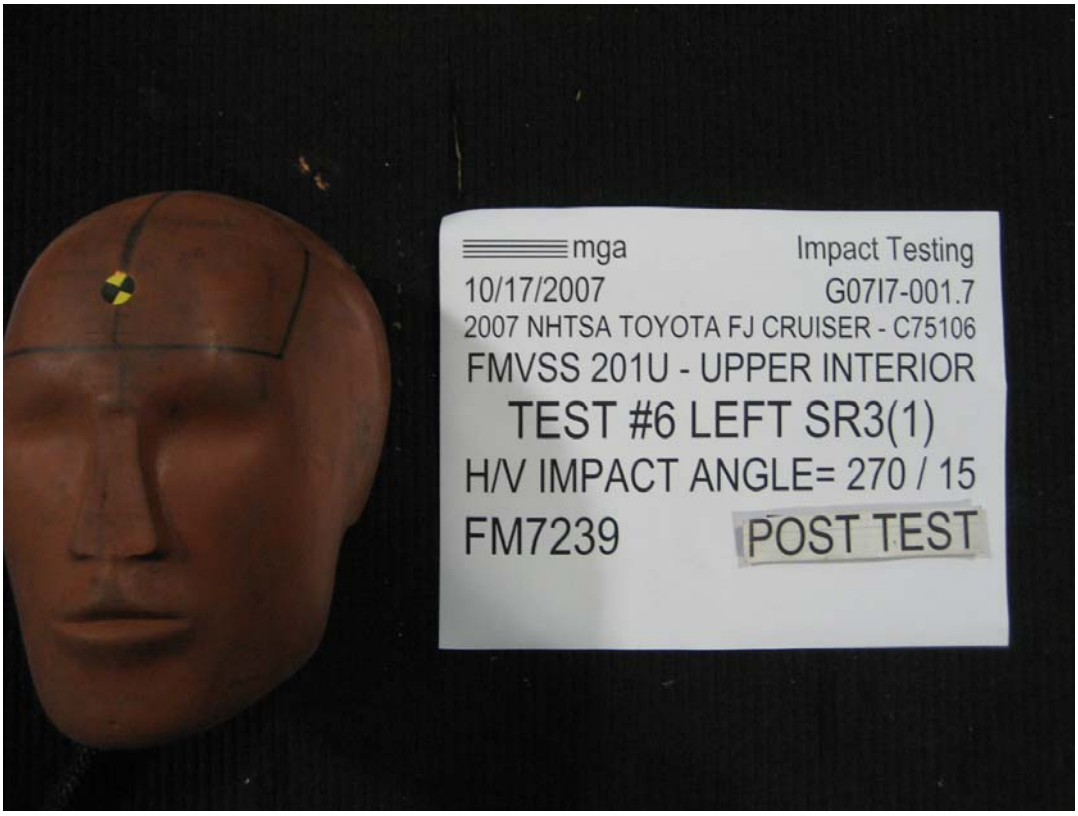

(peak = 17.2 G)
Head Z (G)
6
4
2
0
-2
-4
-6
-8
-10
-12
-14
-16
-18
0
2
4
6
8
10
12
14
16
18
20
22
24
TIME (msec)


(peak = 23.9 kph)
Impact Velocity: 23.76 kph
Velocity (kph)
25
20
15
10
5
0
-5
-10
0
20
40
60
80
100
120
140
160
180
200
220
240
260
TIME (msec)


(peak = 42.4 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)


mga
Impact Testing
10/17/2007
G07I7-001.7
2007 NHTSA TOYOTA FJ CRUISER - C75106
FMVSS 201U - UPPER INTERIOR
TEST #6 LEFT SR3(1)
H/V IMPACT ANGLE= 270 / 15
FM7239
PRE TEST


C75106
FM7239
LEFT SR3-1
mga
10/17/2007
Impact Testing
G07I7-001.7
2007 NHTSA TOYOTA FJ CRUISER - C75106
FMVSS 201U - UPPER INTERIOR
TEST #6 LEFT SR3(1)
H/V IMPACT ANGLE= 270 / 15
FM7239
POST TEST


mga
Impact Testing
10/17/2007
G07I7-001.7
2007 NHTSA TOYOTA FJ CRUISER - C75106
FMVSS 201U - UPPER INTERIOR
TEST #6 LEFT SR3(1)
H/V IMPACT ANGLE= 270 / 15
FM7239
POST TEST

SUMMARY OF FMVSS 201U TEST

JOB/NHTSA NO: G07I7-001.7

VEHICLE YR/MAKE/MODEL:2007/NHTSA/Toyota FJ Cruiser - C75106

GENERAL TEST PARAMETERS:

Test Number:#6

Target (Vehicle Side): SR3-1 Left

Temperature:21C

MGA Test Reference No.:FM7239

Humidity:58%

Approach Horizontal Angles:270º

Time of Test:10:45:58 AM

Approach Vertical Angles:15º

FMH Serial No:[038]

Additional Description: Extension #1

TEST RESULTS:

HIC(d)	HIC	Δt (msec)	Velocity (kph)	Impact location on FMH (mm)	
				Above Pt. O	Left/Right Pt. O
560	521	9.1	22.7	23	0

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	1.32	1.32
Y	6	J36197	110.692	1.89	1.89
Z	7	J36353	99.391	1.83	1.83

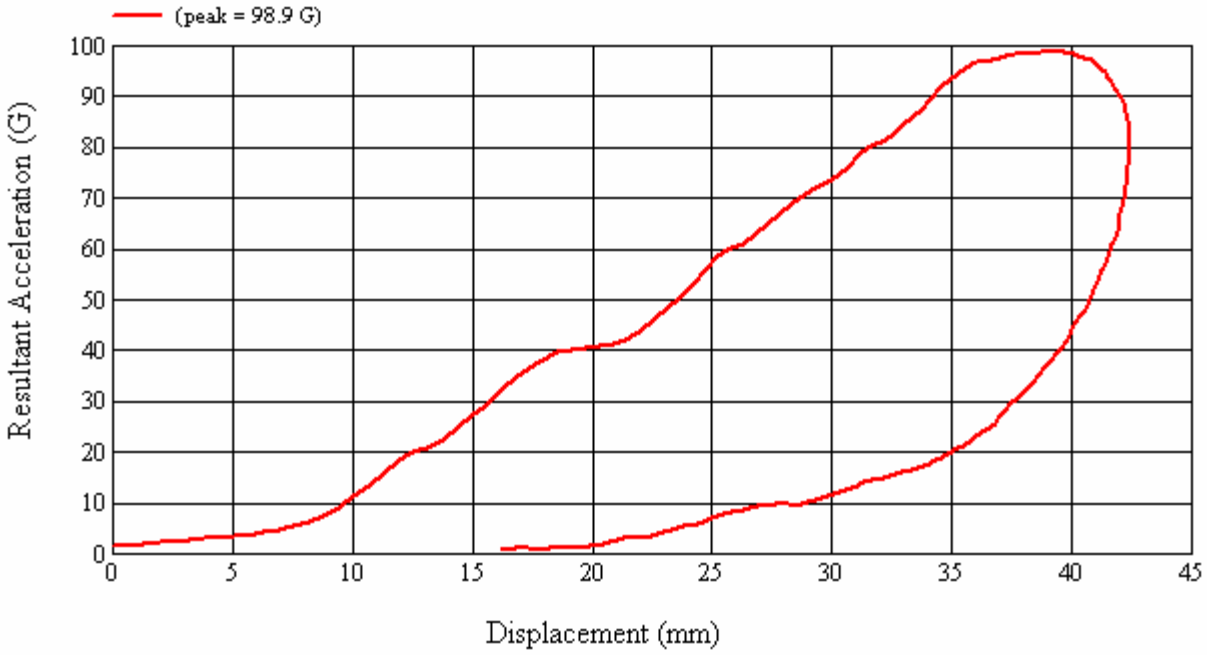
REMARKS (Summary of test, damage, non-compliance, invalid test, etc.):

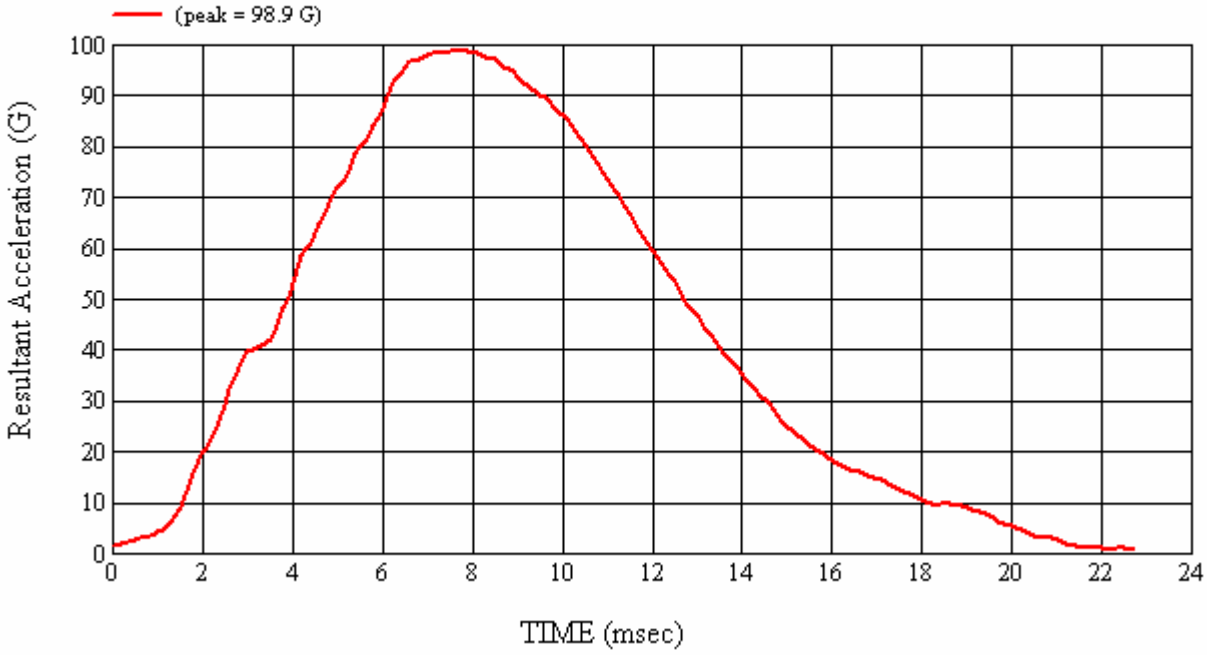
Headliner deformation.

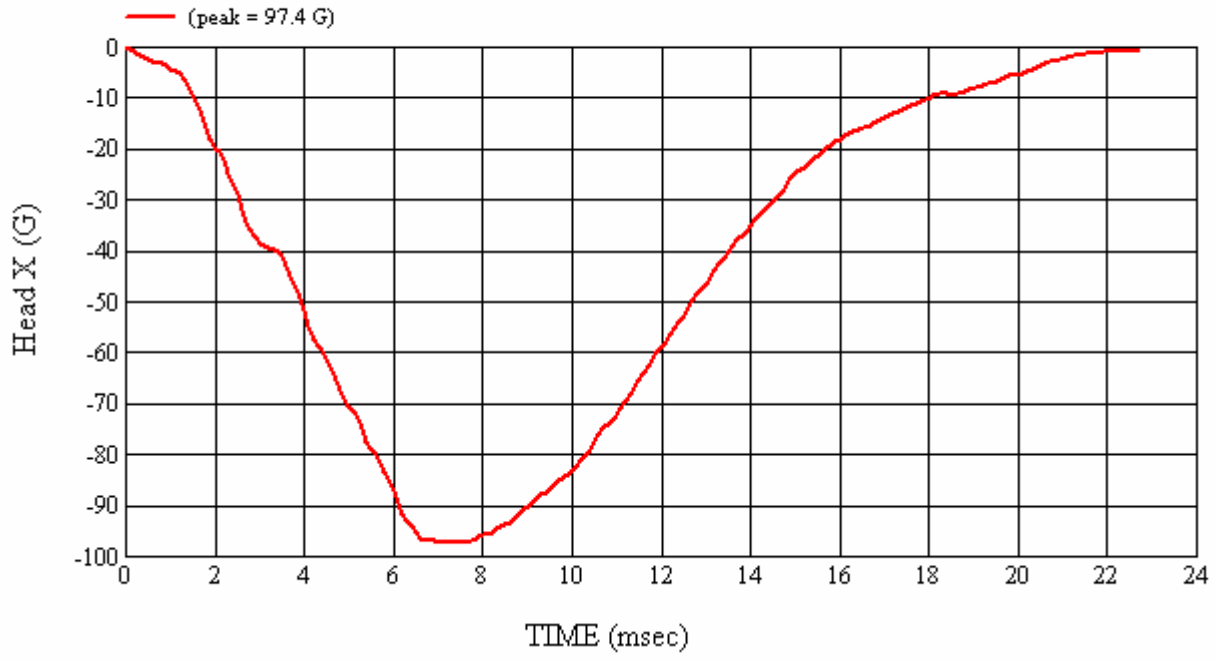
Recorded By: _____ Approved By*: _____ Date: 10/17/2007

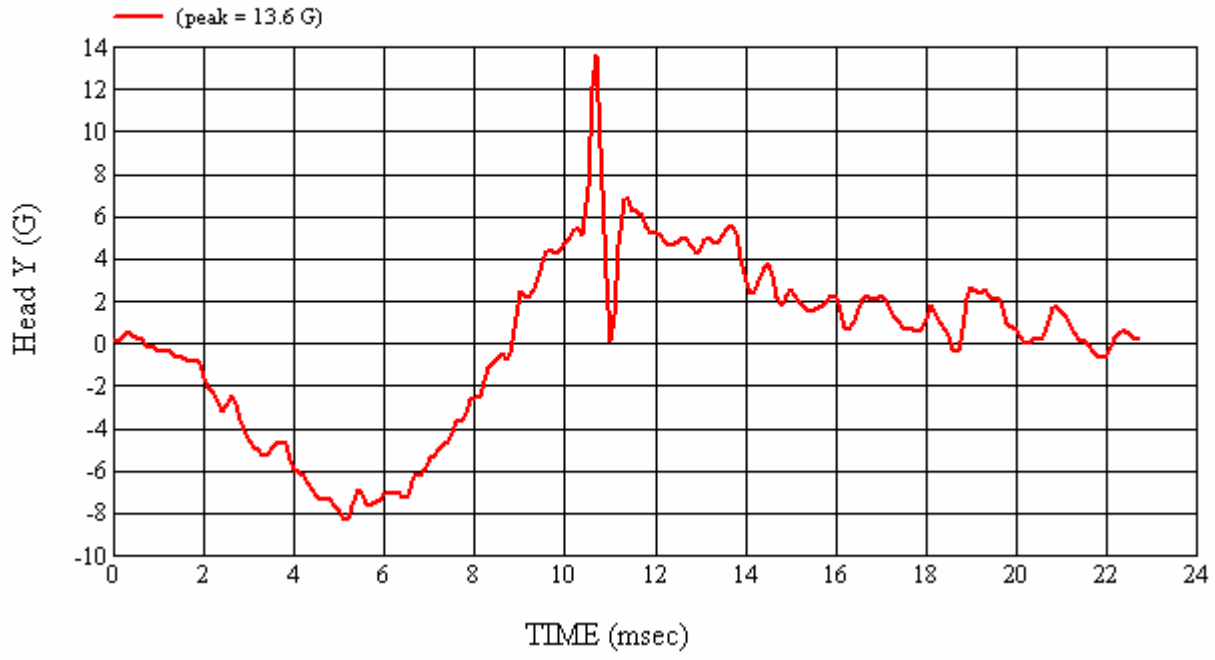
*Only necessary for NHTSA (Government) Compliance testing.

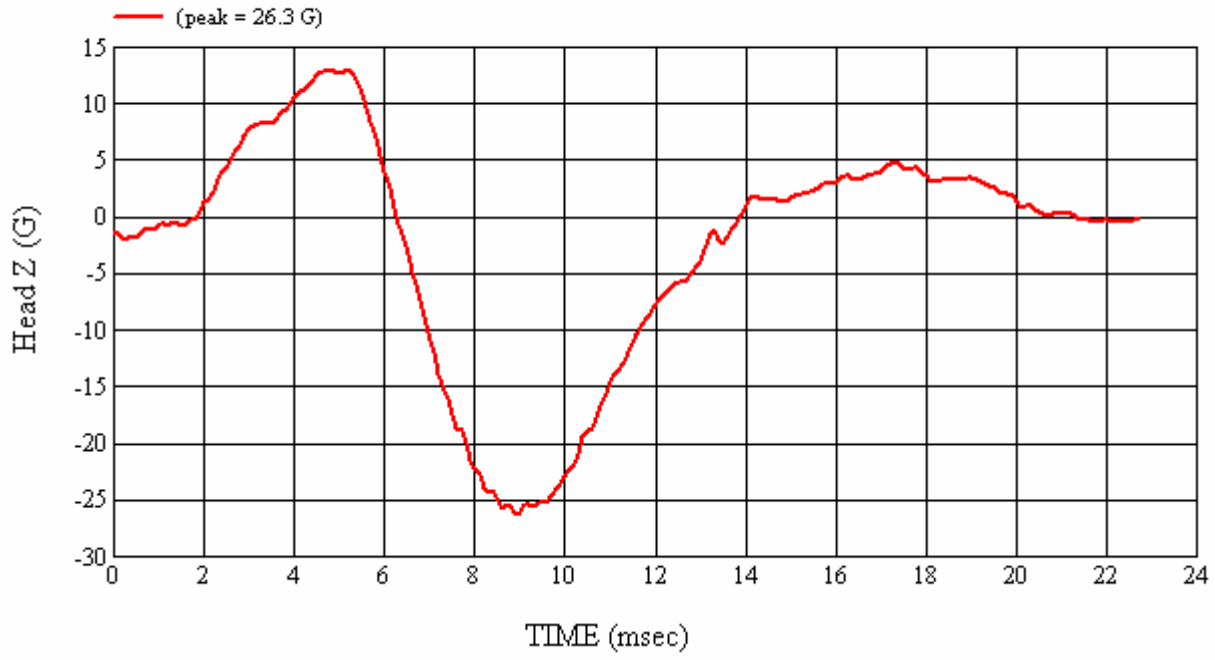
MGA Test #: FM7239 Target Location: SR3-1, Left Side Test Date: 10/17/2007

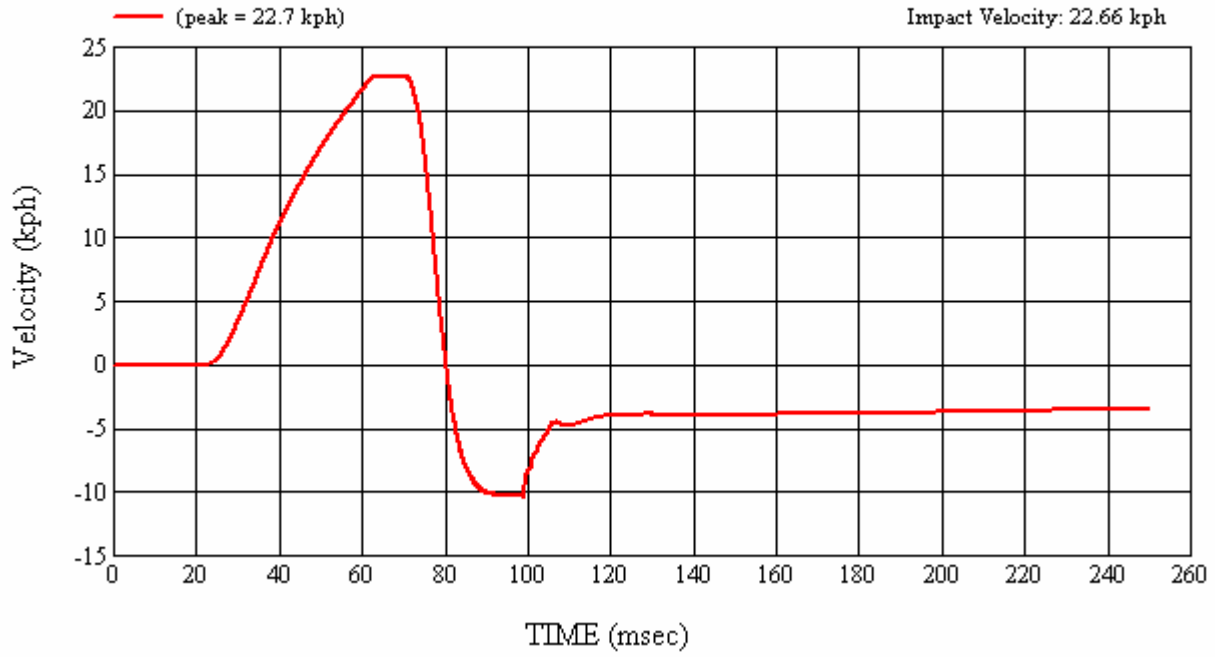


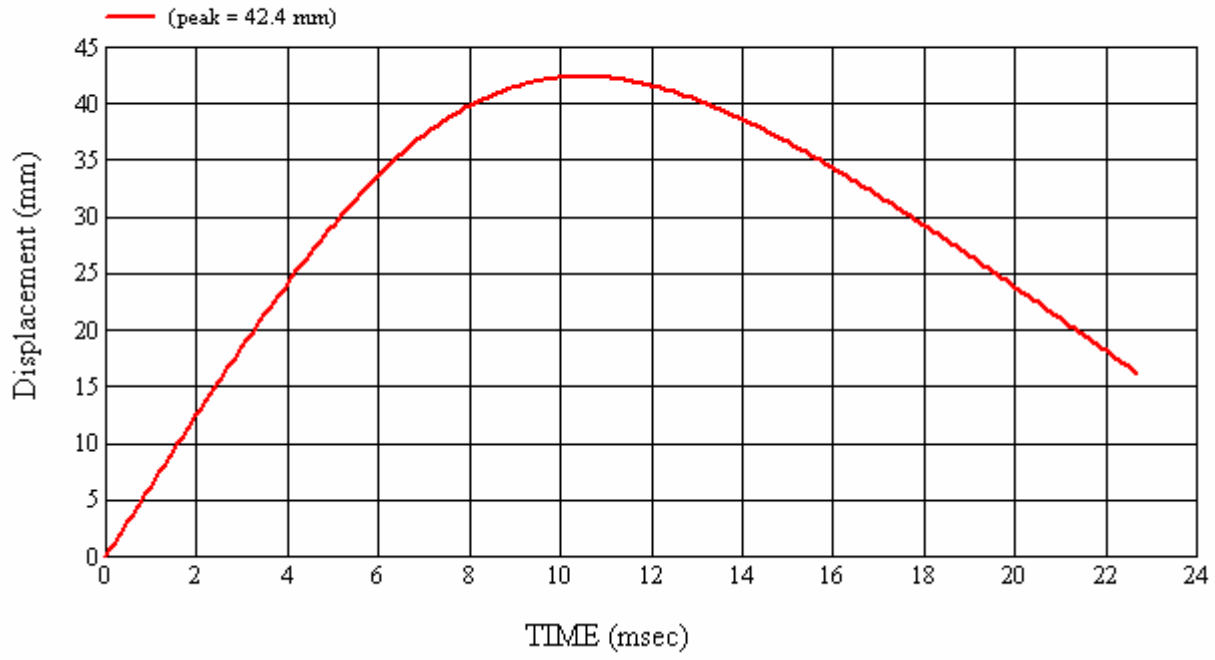



(peak = 97.4 G)
Head X (G)
0
-10
-20
-30
-40
-50
-60
-70
-80
-90
-100
0
2
4
6
8
10
12
14
16
18
20
22
24
TIME (msec)

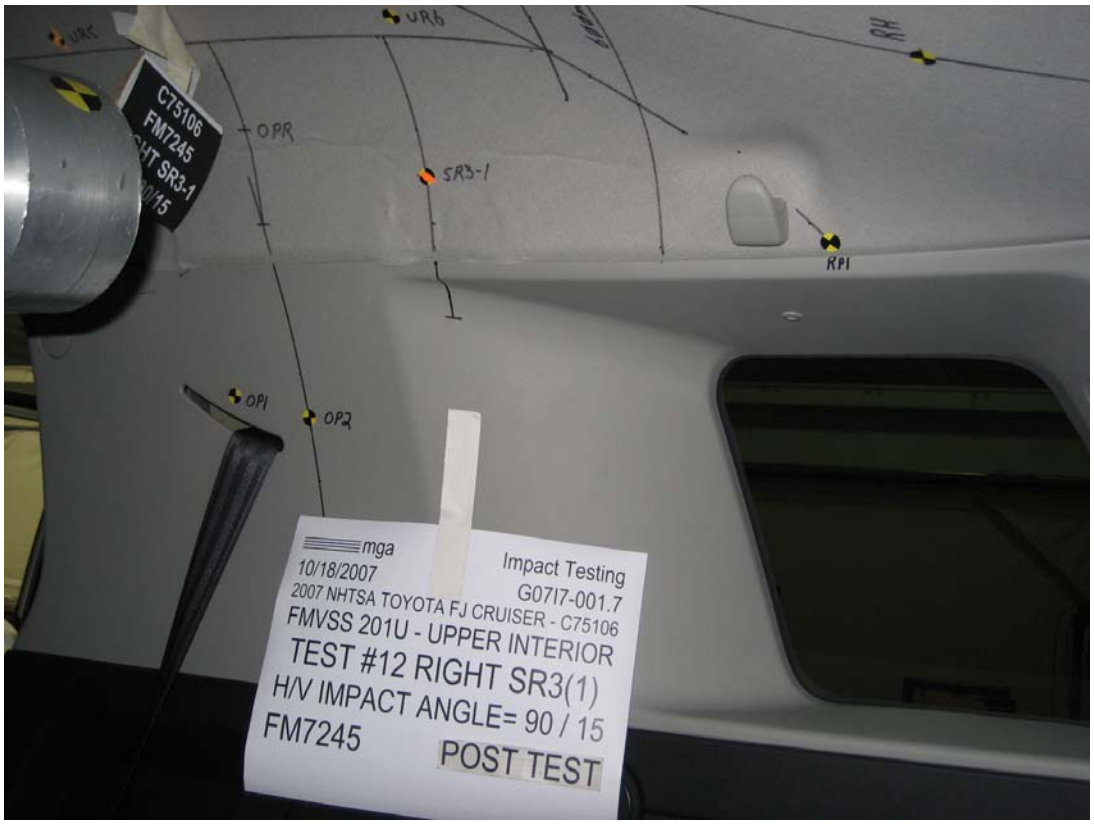

(peak = 13.6 G)
Head Y (G)
14
12
10
8
6
4
2
0
-2
-4
-6
-8
-10
0
2
4
6
8
10
12
14
16
18
20
22
24
TIME (msec)


(peak = 26.3 G)
Head Z (G)
15
10
5
0
-5
-10
-15
-20
-25
-30
0
2
4
6
8
10
12
14
16
18
20
22
24
TIME (msec)


(peak = 22.7 kph)
Impact Velocity: 22.66 kph
Velocity (kph)
25
20
15
10
5
0
-5
-10
-15
0
20
40
60
80
100
120
140
160
180
200
220
240
260
TIME (msec)


(peak = 42.4 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)


OPR
SR3-1
RP1
OP1
OP2
mga
Impact Testing
10/18/2007
G07I7-001.7
2007 NHTSA TOYOTA FJ CRUISER - C75106
FMVSS 201U - UPPER INTERIOR
TEST #12 RIGHT SR3(1)
H/V IMPACT ANGLE= 90 / 15
FM7245
PRE TEST


C75106
FM7245
OPR
SR3-1
RPI
OP1
OP2
mga
10/18/2007
Impact Testing
G07I7-001.7
2007 NHTSA TOYOTA FJ CRUISER - C75106
FMVSS 201U - UPPER INTERIOR
TEST #12 RIGHT SR3(1)
H/V IMPACT ANGLE= 90 / 15
FM7245
POST TEST


mga
Impact Testing
10/18/2007
G07I7-001.7
2007 NHTSA TOYOTA FJ CRUISER - C75106
FMVSS 201U - UPPER INTERIOR
TEST #12 RIGHT SR3(1)
H/V IMPACT ANGLE= 90 / 15
FM7245
POST TEST

SUMMARY OF FMVSS 201U TEST

JOB/NHTSA NO: G07I7-001.7

VEHICLE YR/MAKE/MODEL:2007/NHTSA/Toyota FJ Cruiser - C75106

GENERAL TEST PARAMETERS:

Test Number:#12

Target (Vehicle Side): SR3-1 Right

Temperature:21C

MGA Test Reference No.:FM7245

Humidity:69%

Approach Horizontal Angles:90º

Time of Test:10:45:39 AM

Approach Vertical Angles:15º

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
624	606	9.1	23.6	20	4 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	1.32	1.32
Y	6	J36197	110.692	1.89	1.89
Z	7	J36353	99.391	1.83	1.83

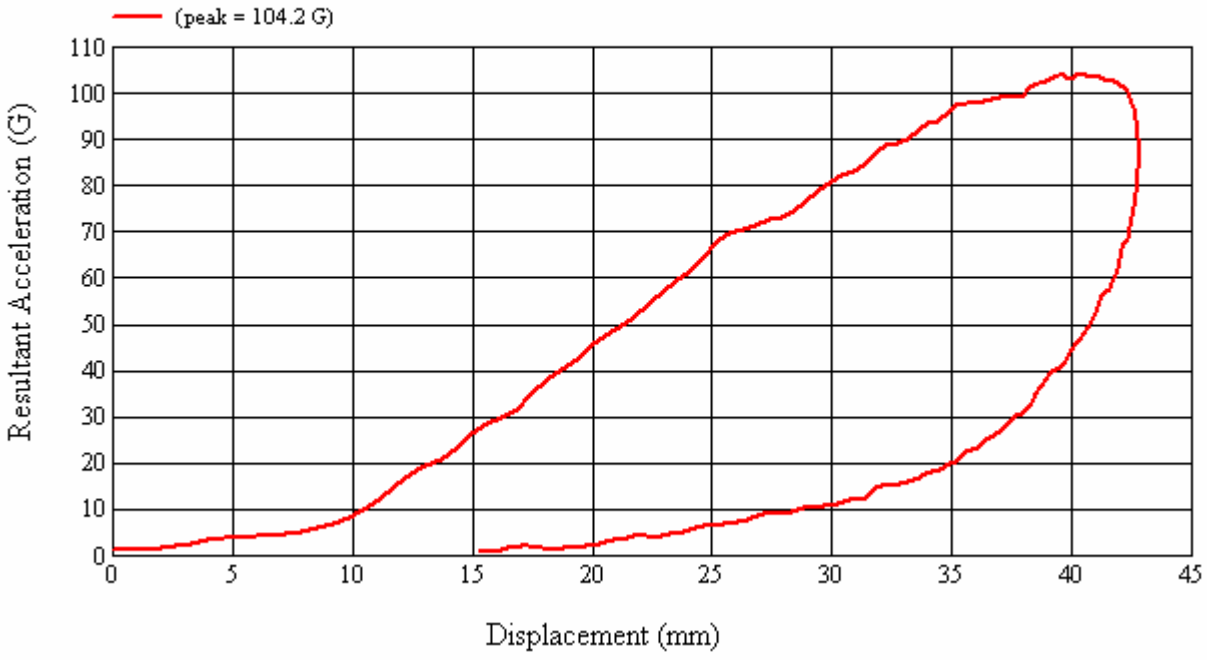
REMARKS (Summary of test, damage, non-compliance, invalid test, etc.):

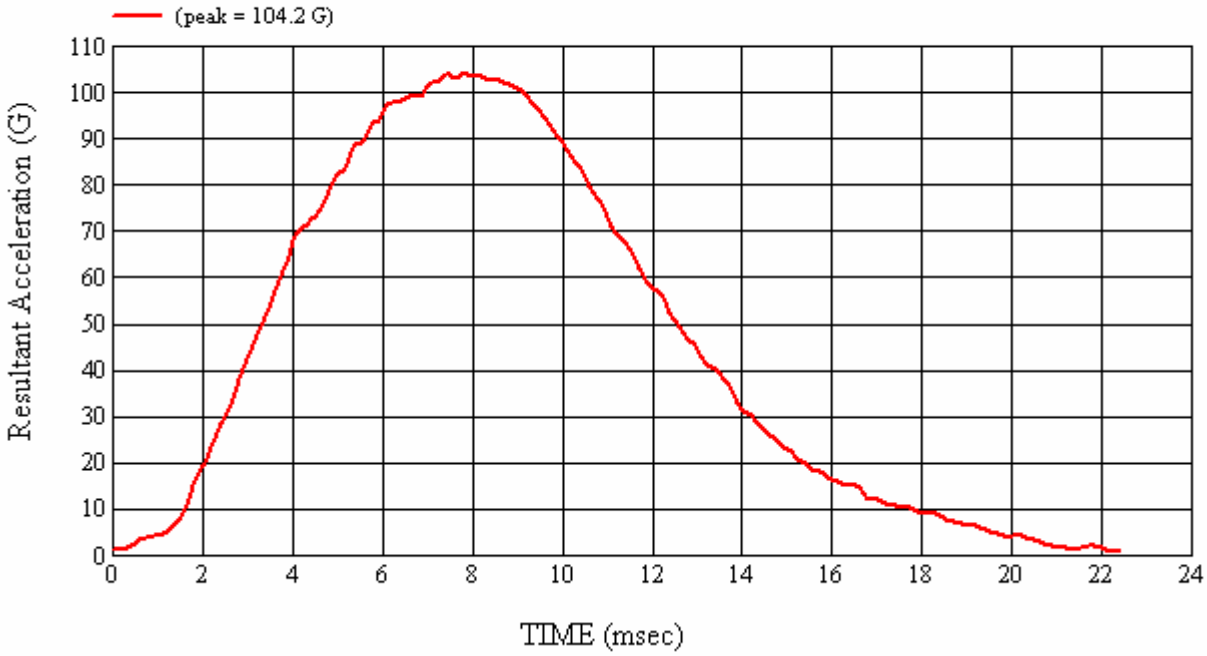
Headliner deformation.

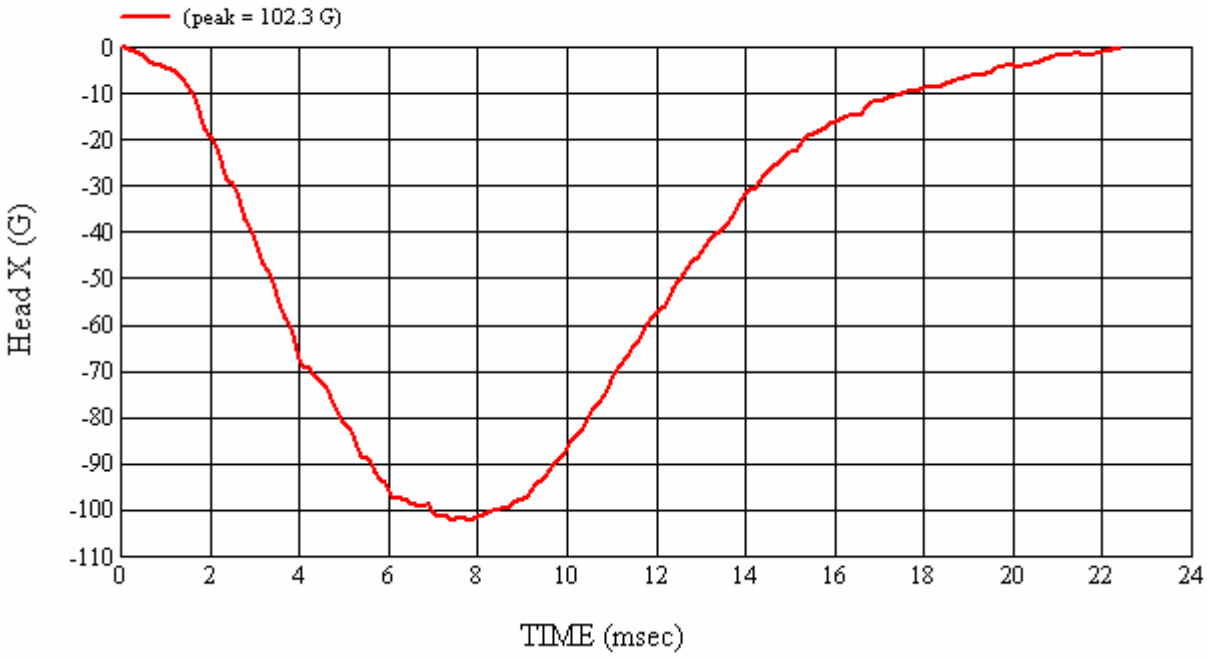
Recorded By: [signature] Approved By*: [signature] Date: 10/18/2007

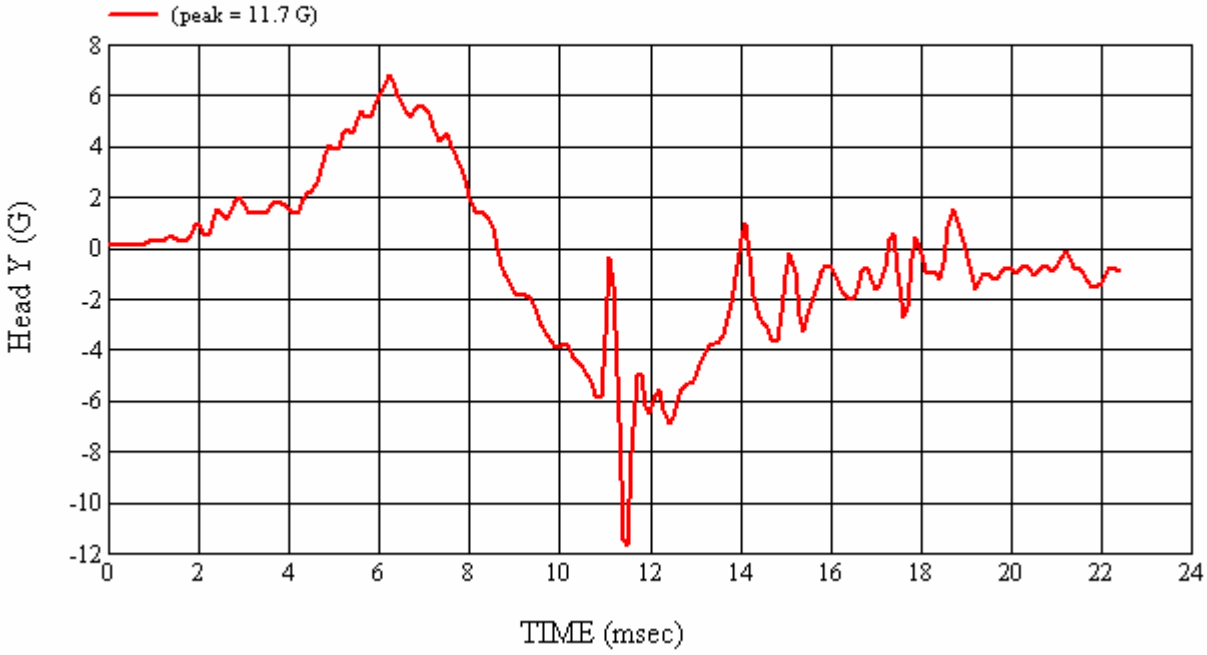
*Only necessary for NHTSA (Government) Compliance testing.

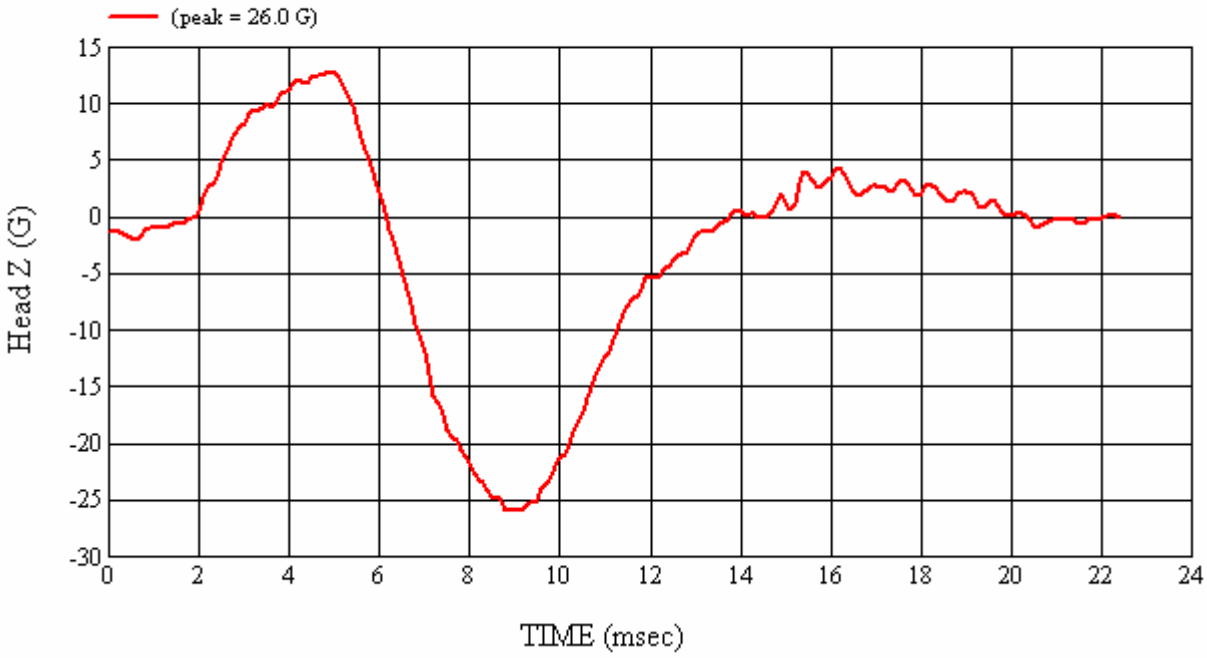
MGA Test #: FM7245 Target Location: SR3-1, Right Side Test Date: 10/18/2007

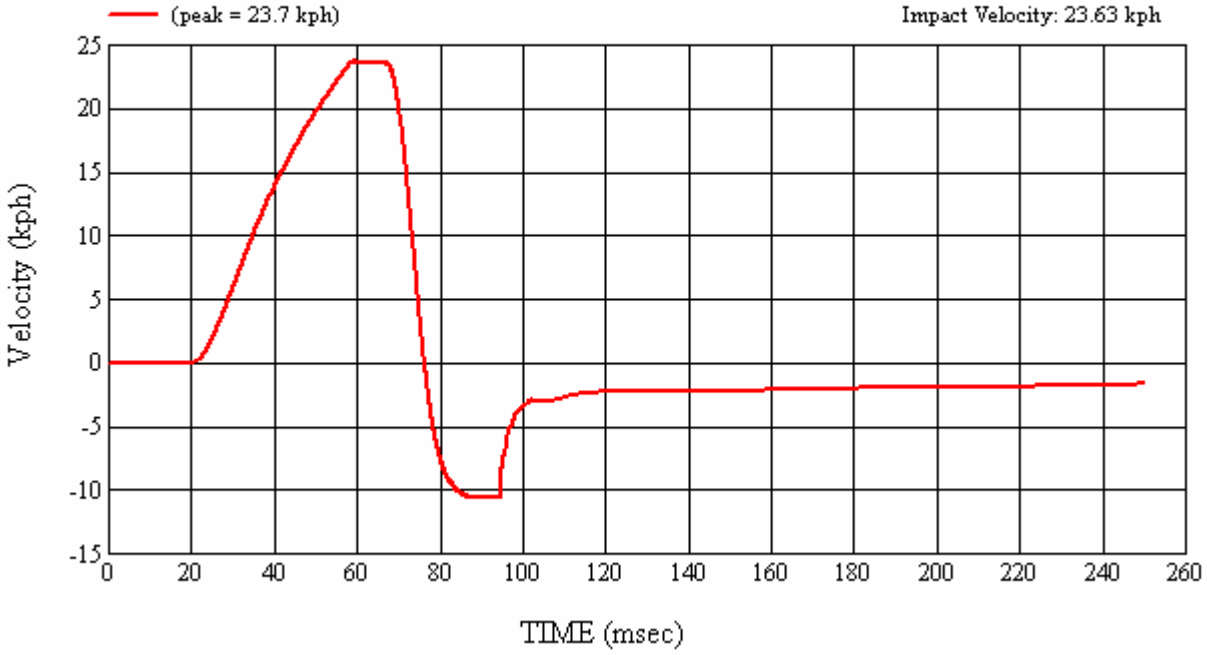


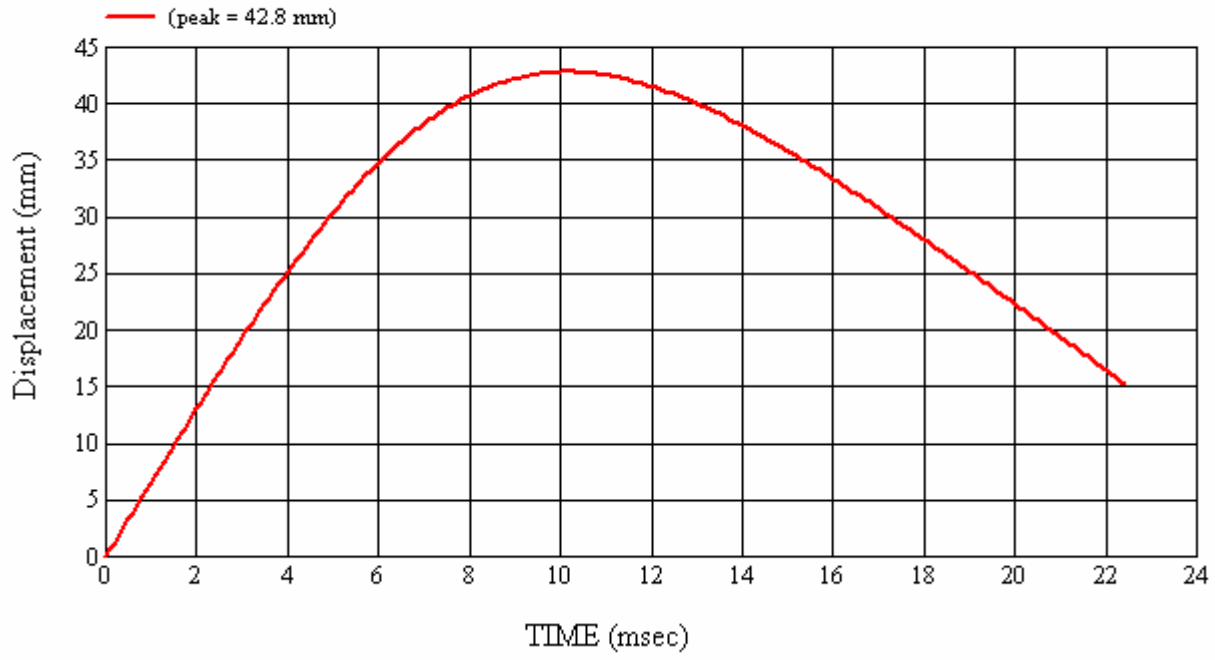



(peak = 102.3 G)
Head X (G)
0
-10
-20
-30
-40
-50
-60
-70
-80
-90
-100
-110
0
2
4
6
8
10
12
14
16
18
20
22
24
TIME (msec)

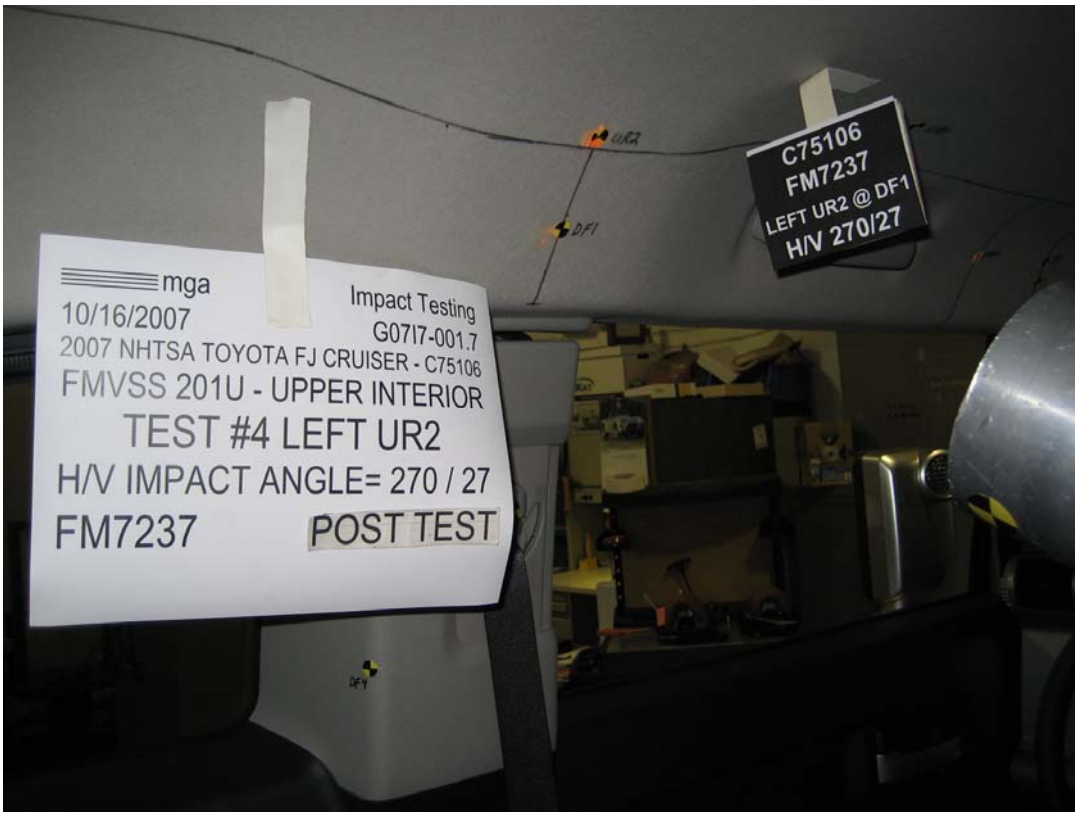

(peak = 11.7 G)
Head Y (G)
8
6
4
2
0
-2
-4
-6
-8
-10
-12
0
2
4
6
8
10
12
14
16
18
20
22
24
TIME (msec)


(peak = 26.0 G)
Head Z (G)
15
10
5
0
-5
-10
-15
-20
-25
-30
0
2
4
6
8
10
12
14
16
18
20
22
24
TIME (msec)


(peak = 23.7 kph)
Impact Velocity: 23.63 kph
Velocity (kph)
25
20
15
10
5
0
-5
-10
-15
0
20
40
60
80
100
120
140
160
180
200
220
240
260
TIME (msec)


(peak = 42.8 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)


UR3
C75106
FM7237
mga
Impact Testing
10/16/2007
G07I7-001.7
2007 NHTSA TOYOTA FJ CRUISER - C75106
FMVSS 201U - UPPER INTERIOR
TEST #4 LEFT UR2
H/V IMPACT ANGLE= 270 / 27
FM7237
PRE TEST


C75106
FM7237
LEFT UR2 @ DF1
H/V 270/27
mga
10/16/2007
Impact Testing
G07I7-001.7
2007 NHTSA TOYOTA FJ CRUISER - C75106
FMVSS 201U - UPPER INTERIOR
TEST #4 LEFT UR2
H/V IMPACT ANGLE= 270 / 27
FM7237
POST TEST


mga
10/16/2007
Impact Testing
G07I7-001.7
2007 NHTSA TOYOTA FJ CRUISER - C75106
FMVSS 201U - UPPER INTERIOR
TEST #4 LEFT UR2
H/V IMPACT ANGLE= 270 / 27
FM7237
POST TEST

SUMMARY OF FMVSS 201U TEST

JOB/NHTSA NO: G07I7-001.7

VEHICLE YR/MAKE/MODEL:2007/NHTSA/Toyota FJ Cruiser - C75106

GENERAL TEST PARAMETERS:

Test Number:#4

Target (Vehicle Side): UR2 Left

Temperature:21C

MGA Test Reference No.:FM7237

Humidity:61%

Approach Horizontal Angles:270º

Time of Test:4:25:36 PM

Approach Vertical Angles:27º

FMH Serial No:[035]

Additional Description: @ DF1

TEST RESULTS:

HIC(d)	HIC	Δt (msec)	Velocity (kph)	Impact location on FMH (mm)	
				Above Pt. O	Left/Right Pt. O
454	381	11	23.5	35	8 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	1.32	1.32
Y	6	J35919	97.442	1.89	1.89
Z	7	J35924	93.891	1.83	1.83

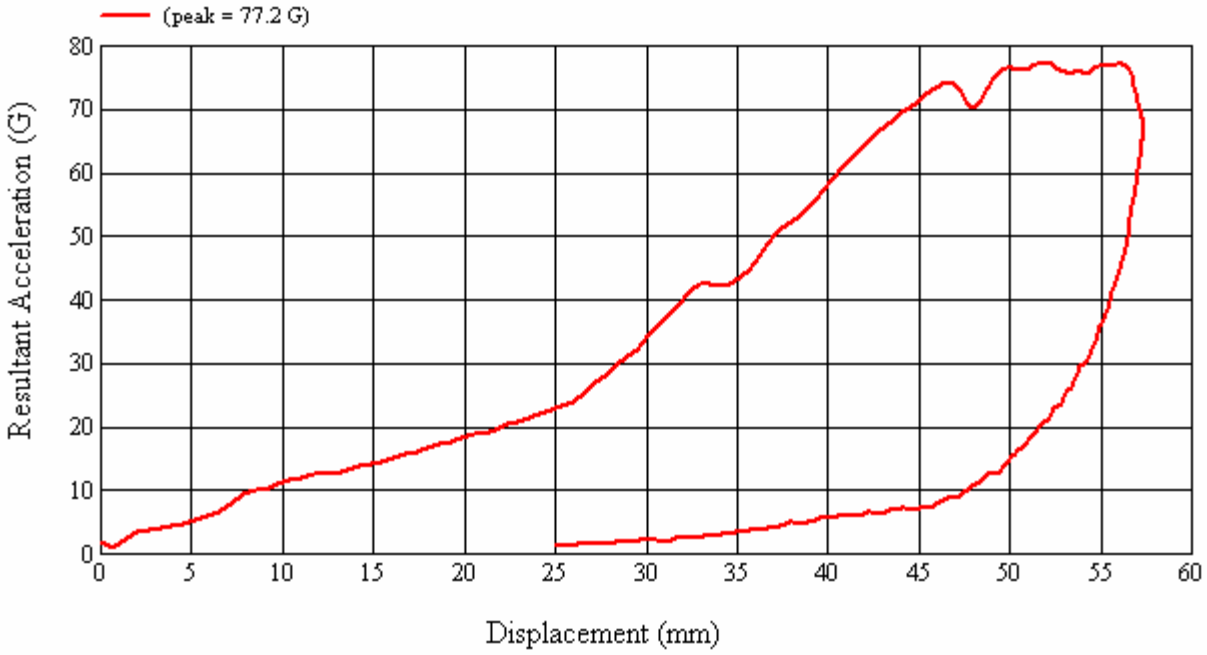
REMARKS (Summary of test, damage, non-compliance, invalid test, etc.):

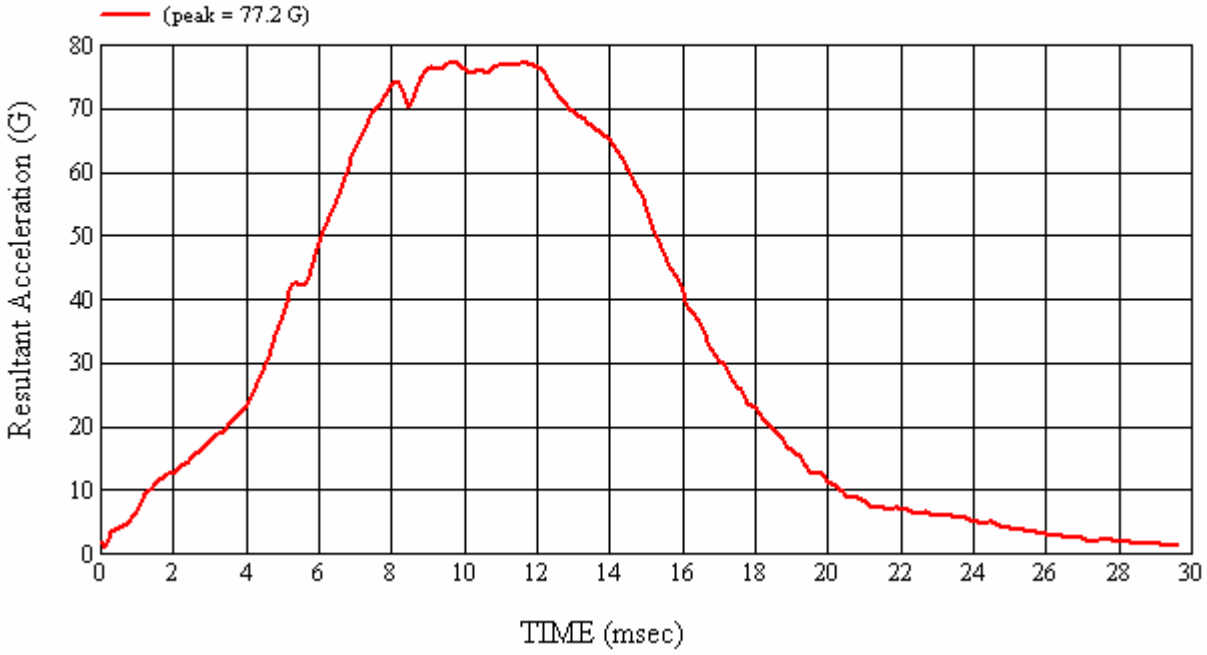
Headliner deformation.

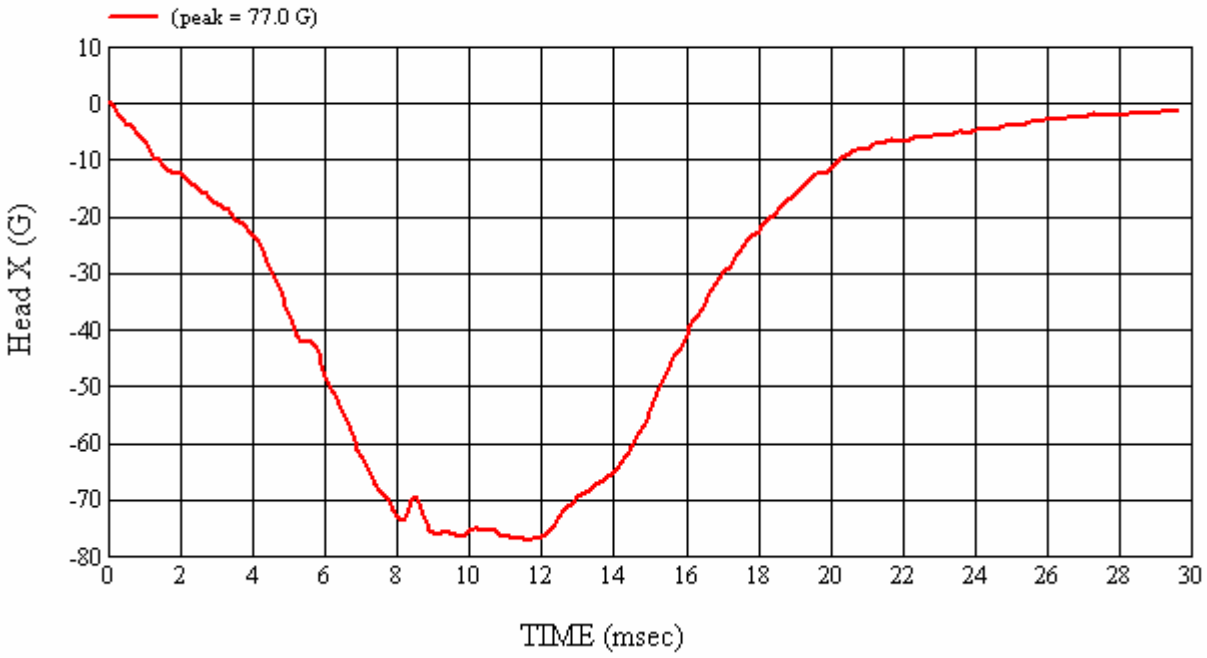
Recorded By: _____ Approved By*: _____ Date: 10/16/2007

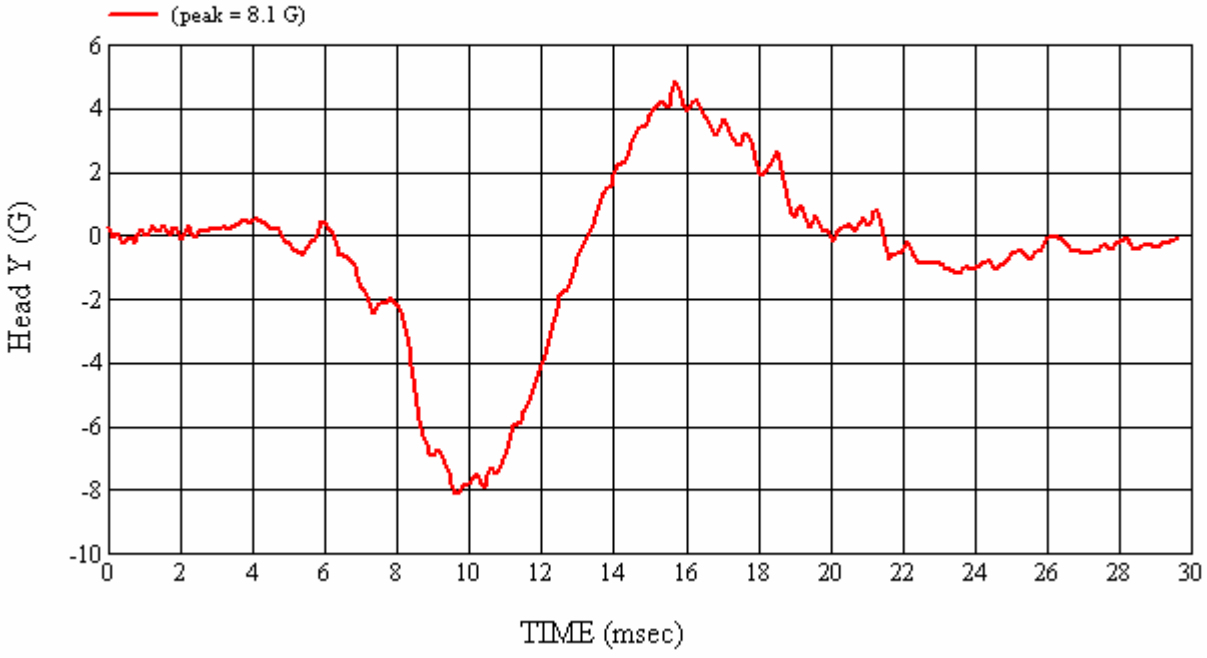
*Only necessary for NHTSA (Government) Compliance testing.

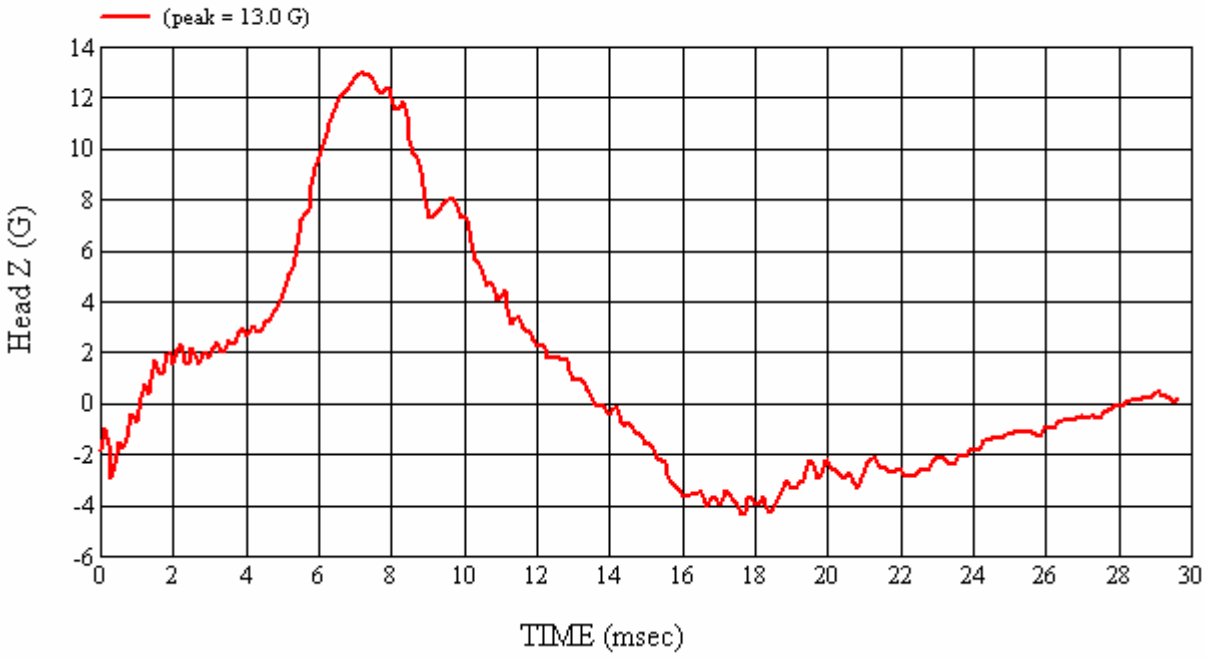
MGA Test #: FM7237 Target Location: UR2, Left Side Test Date: 10/16/2007

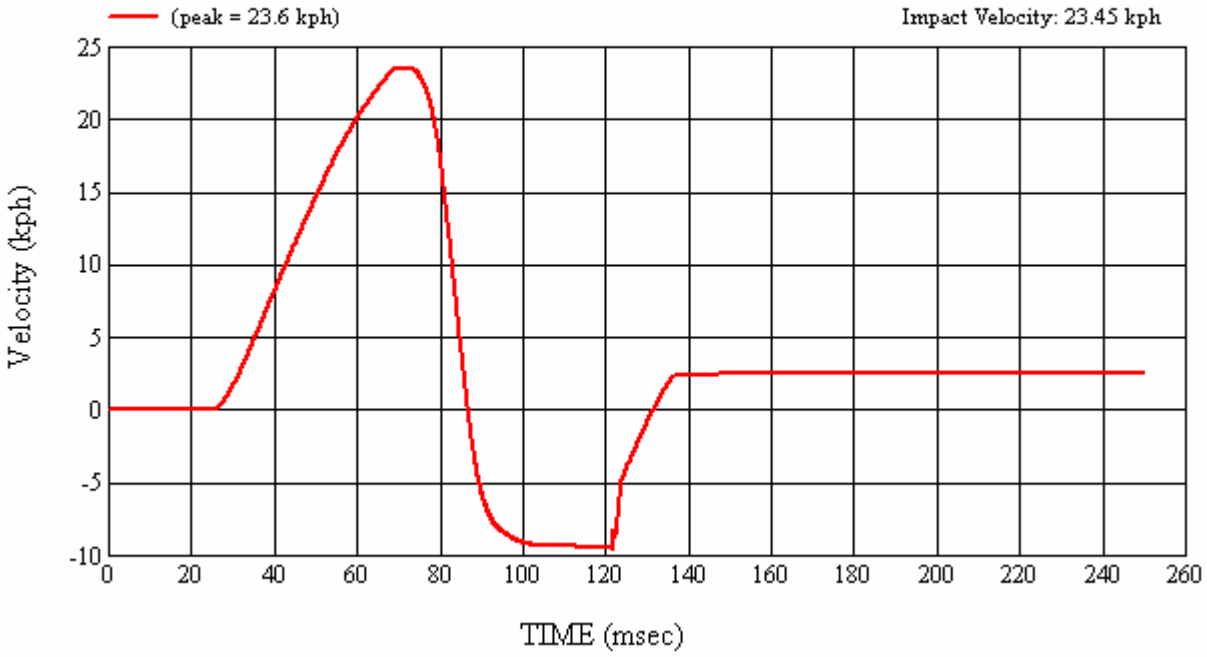


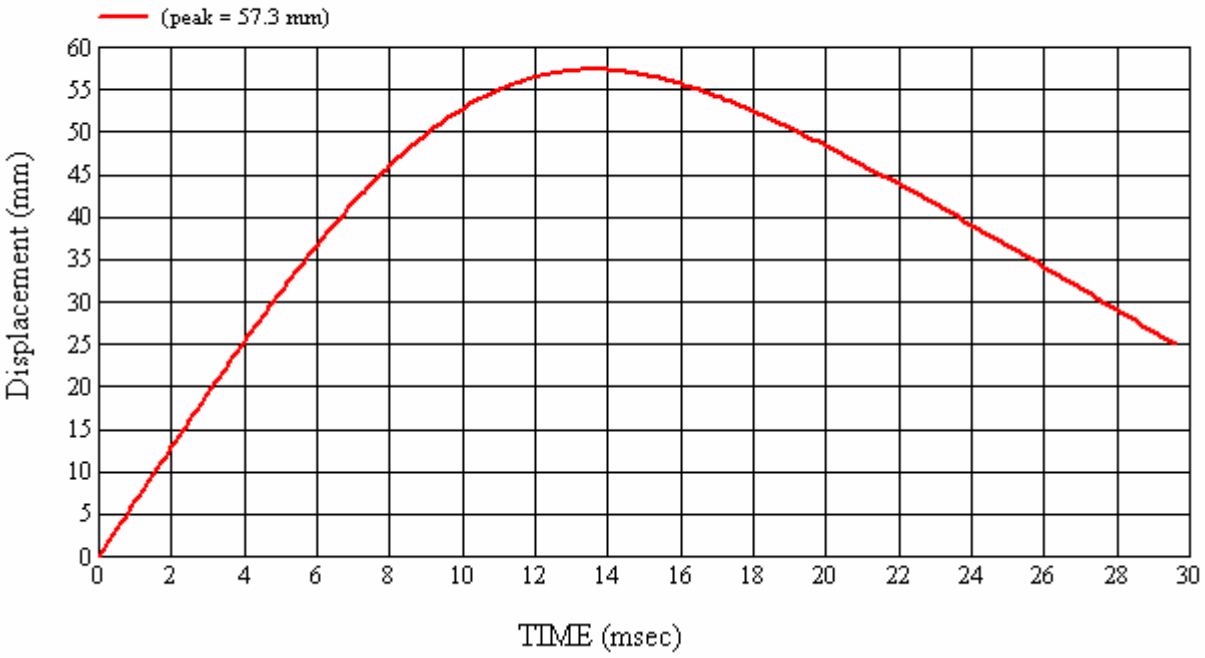



(peak = 77.0 G)
Head X (G)
10
0
-10
-20
-30
-40
-50
-60
-70
-80
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
TIME (msec)


(peak = 8.1 G)
Head Y (G)
6
4
2
0
-2
-4
-6
-8
-10
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
TIME (msec)


(peak = 13.0 G)
Head Z (G)
14
12
10
8
6
4
2
0
-2
-4
-6
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
TIME (msec)


(peak = 23.6 kph)
Impact Velocity: 23.45 kph
Velocity (kph)
25
20
15
10
5
0
-5
-10
0
20
40
60
80
100
120
140
160
180
200
220
240
260
TIME (msec)


(peak = 57.3 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)


mga
10/17/2007
Impact Testing
G07I7-001.7
2007 NHTSA TOYOTA FJ CRUISER - C75106
FMVSS 201U - UPPER INTERIOR
TEST #5 LEFT UR3
H/V IMPACT ANGLE= 270 / 34
FM7238
PRE TEST
C75106
FM7238


mga
Impact Testing
10/17/2007
G07I7-001.7
2007 NHTSA TOYOTA FJ CRUISER - C75106
FMVSS 201U - UPPER INTERIOR
TEST #5 LEFT UR3
H/V IMPACT ANGLE= 270 / 34
FM7238
POST TEST


mga
Impact Testing
10/17/2007
G07I7-001.7
2007 NHTSA TOYOTA FJ CRUISER - C75106
FMVSS 201U - UPPER INTERIOR
TEST #5 LEFT UR3
H/V IMPACT ANGLE= 270 / 34
FM7238
POST TEST

SUMMARY OF FMVSS 201U TEST

JOB/NHTSA NO: G07I7-001.7

VEHICLE YR/MAKE/MODEL:2007/NHTSA/Toyota FJ Cruiser - C75106

GENERAL TEST PARAMETERS:

Test Number:#5

Target (Vehicle Side): UR3 Left

Temperature:21C

MGA Test Reference No.:FM7238

Humidity:58%

Approach Horizontal Angles:270º

Time of Test:9:35:02 AM

Approach Vertical Angles:34º

FMH Serial No:[037]

Additional Description: @ Forward of Other Pillar

TEST RESULTS:

HIC(d)	HIC	Δt (msec)	Velocity (kph)	Impact location on FMH (mm)	
				Above Pt. O	Left/Right Pt. O
436	357	9.6	23.3	39	8 Left

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	1.32	1.33
Y	6	J35791	91.856	1.91	1.89
Z	7	J35800	97.996	1.83	1.83

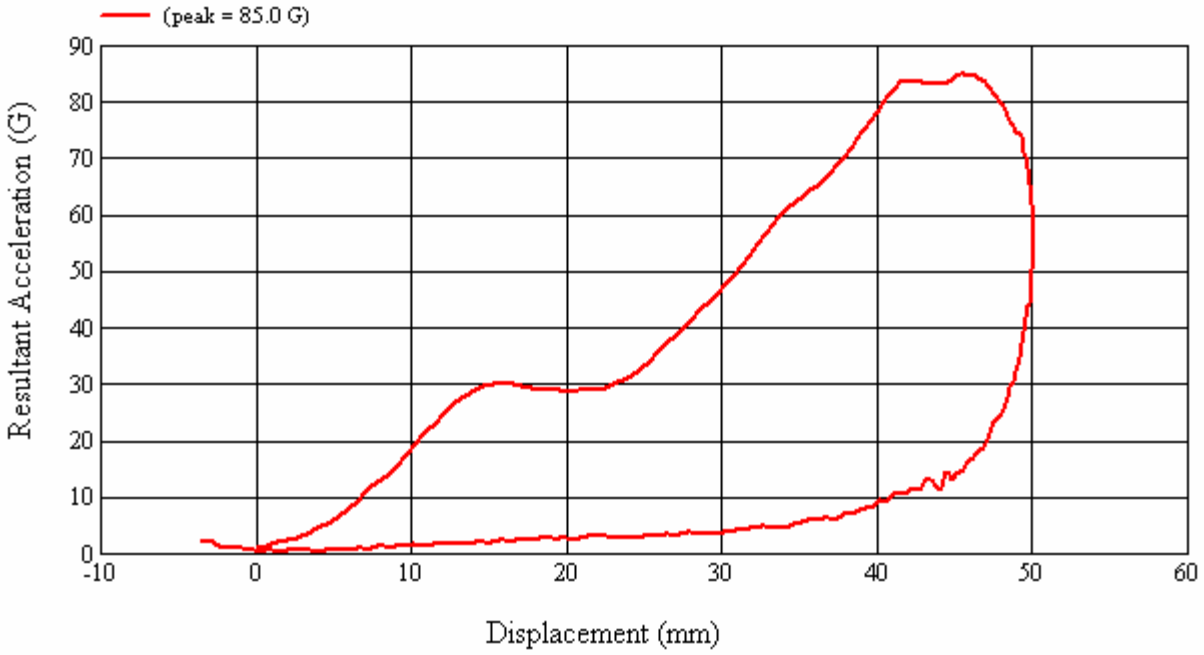
REMARKS (Summary of test, damage, non-compliance, invalid test, etc.):

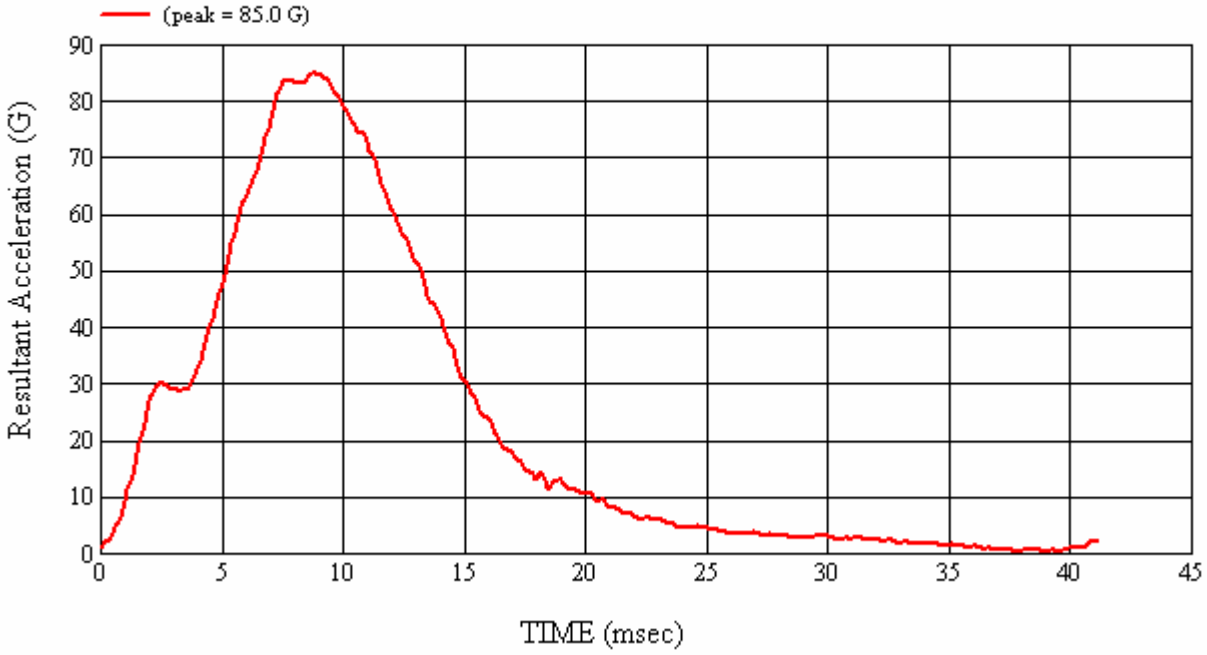
Headliner deformation.

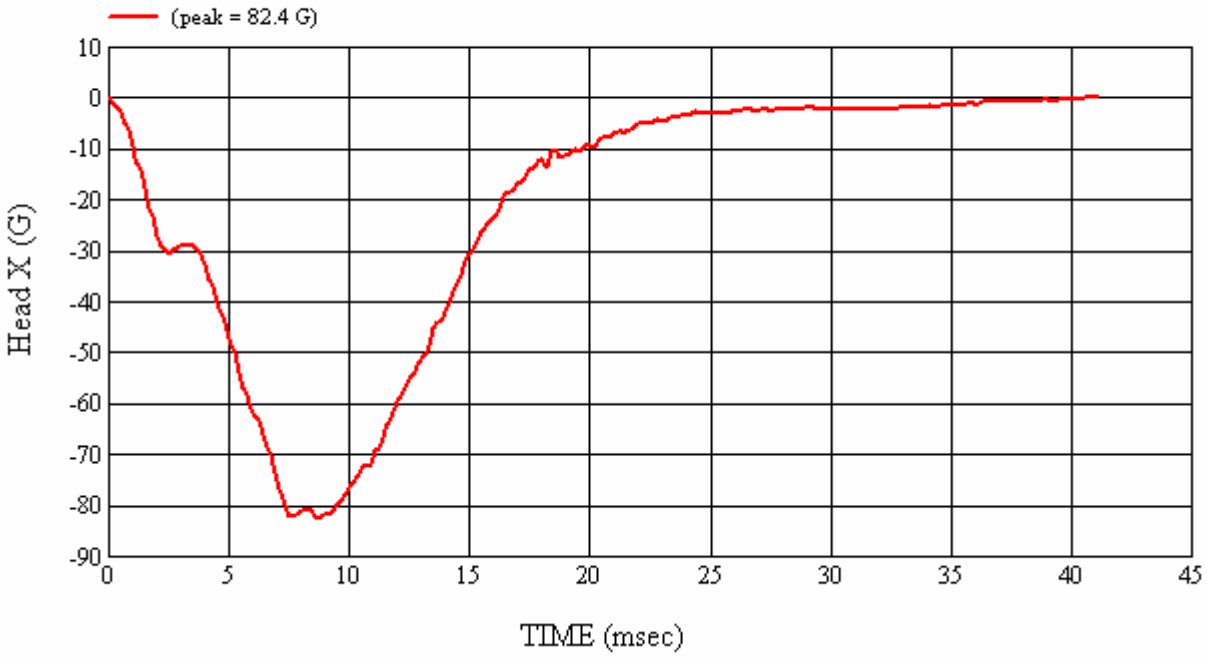
Recorded By: _____ Approved By*: _____ Date: 10/17/2007

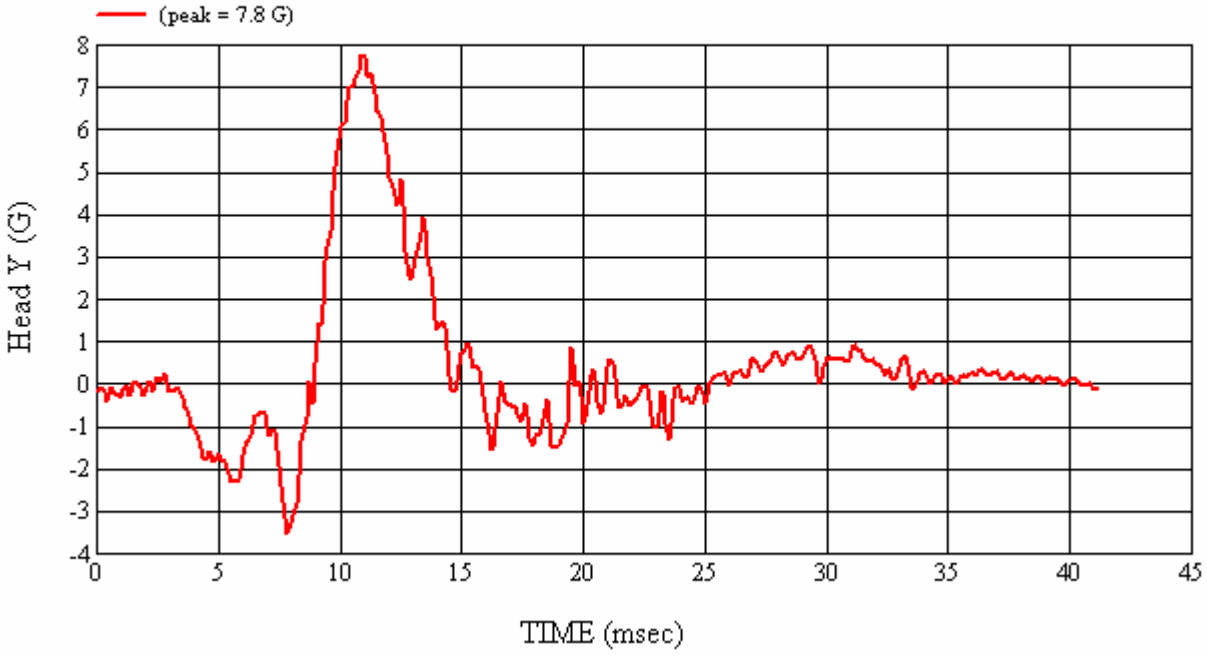
*Only necessary for NHTSA (Government) Compliance testing.

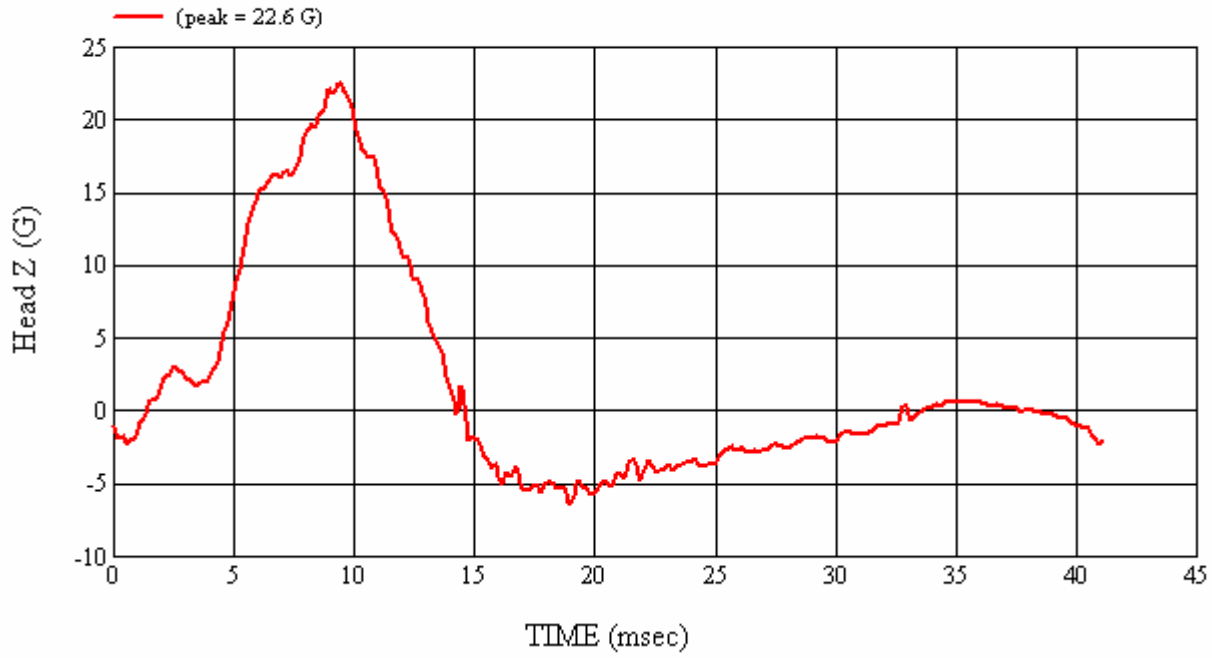
MGA Test #: FM7238 Target Location: UR3, Left Side Test Date: 10/17/2007

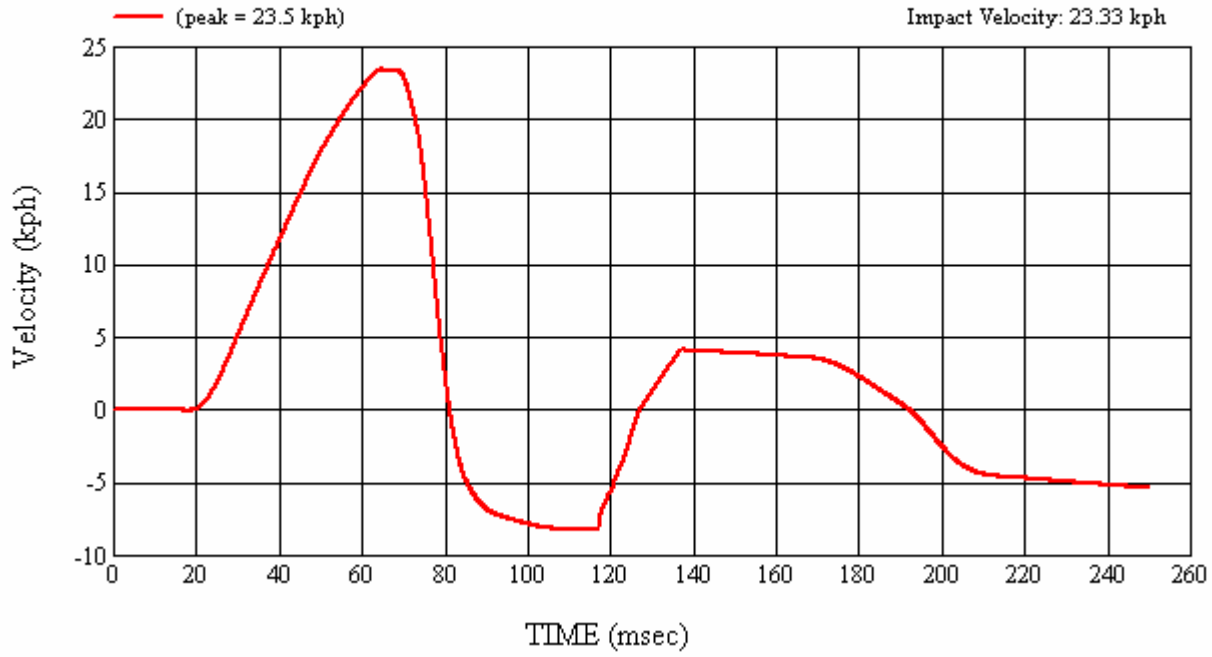


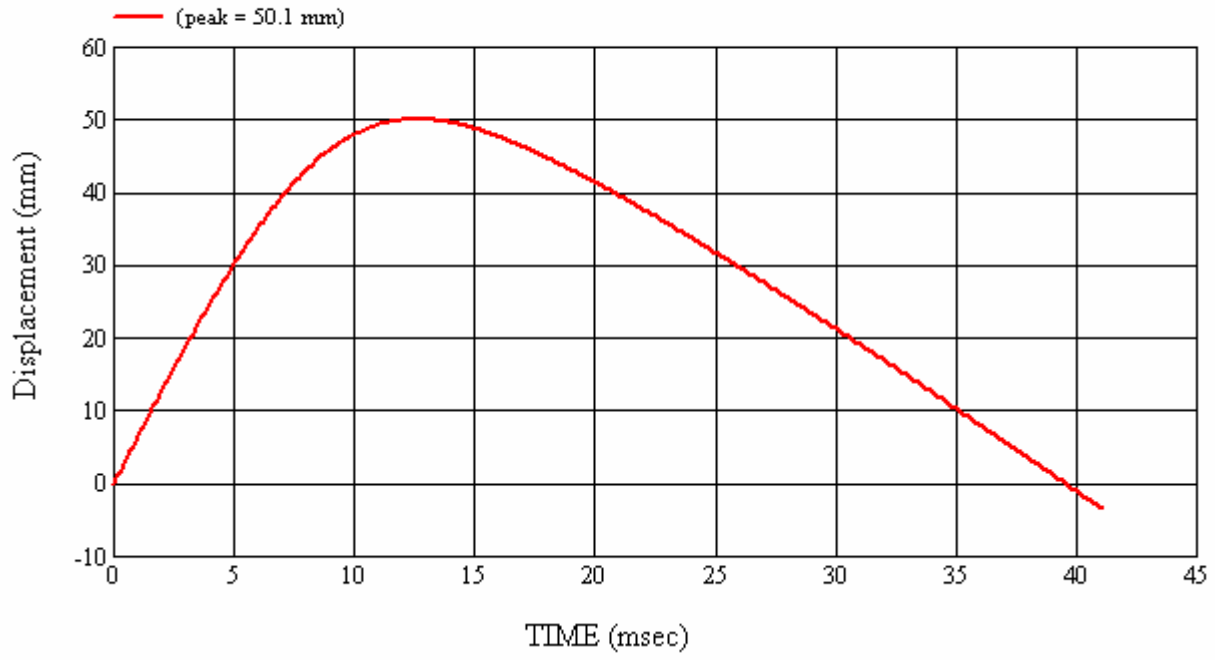



(peak = 82.4 G)
Head X (G)
10
0
-10
-20
-30
-40
-50
-60
-70
-80
-90
0
5
10
15
20
25
30
35
40
45
TIME (msec)

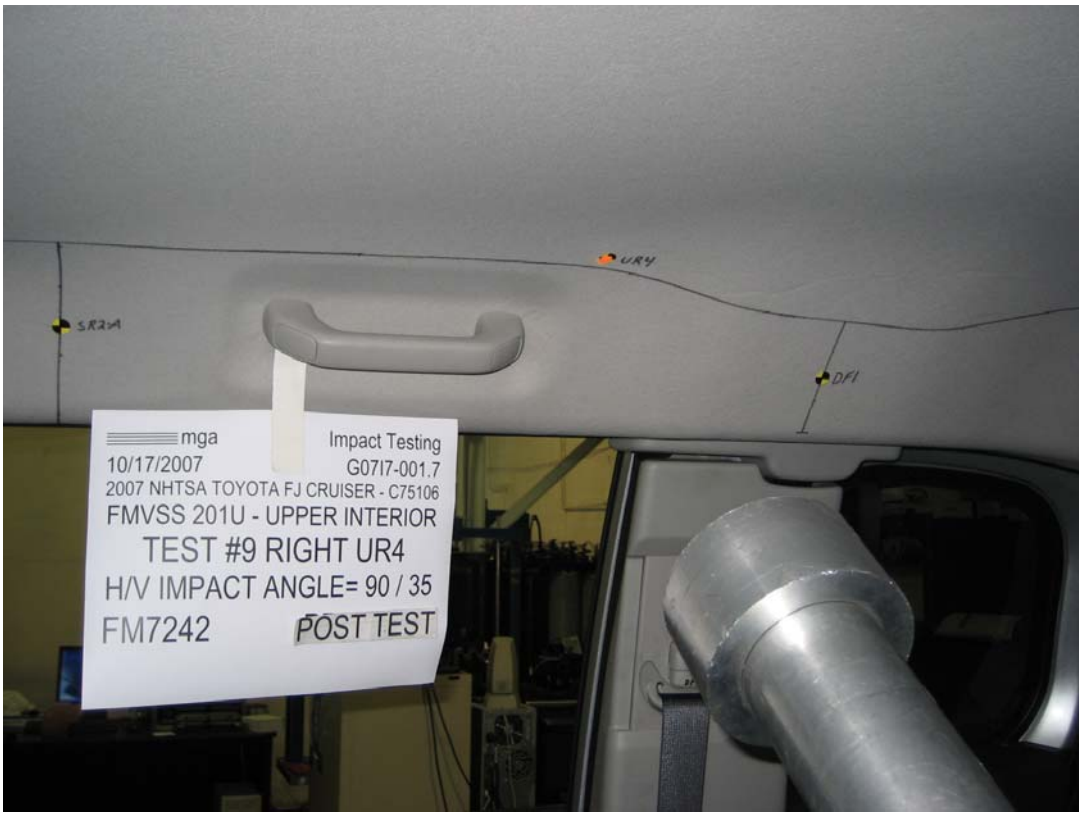

(peak = 7.8 G)
Head Y (G)
8
7
6
5
4
3
2
1
0
-1
-2
-3
-4
0
5
10
15
20
25
30
35
40
45
TIME (msec)


(peak = 22.6 G)
Head Z (G)
25
20
15
10
5
0
-5
-10
0
5
10
15
20
25
30
35
40
45
TIME (msec)


(peak = 23.5 kph)
Impact Velocity: 23.33 kph
Velocity (kph)
25
20
15
10
5
0
-5
-10
0
20
40
60
80
100
120
140
160
180
200
220
240
260
TIME (msec)


(peak = 50.1 mm)
Displacement (mm)
60
50
40
30
20
10
0
-10
0
5
10
15
20
25
30
35
40
45
TIME (msec)


SR2A
UR4
mga
Impact Testing
10/17/2007
G07I7-001.7
2007 NHTSA TOYOTA FJ CRUISER - C75106
FMVSS 201U - UPPER INTERIOR
TEST #9 RIGHT UR4
H/V IMPACT ANGLE= 90 / 35
FM7242
PRE TEST


SR2A
UR4
DF1
mga
Impact Testing
10/17/2007
G07I7-001.7
2007 NHTSA TOYOTA FJ CRUISER - C75106
FMVSS 201U - UPPER INTERIOR
TEST #9 RIGHT UR4
H/V IMPACT ANGLE= 90 / 35
FM7242
POST TEST


mga
Impact Testing
10/17/2007
G07I7-001.7
2007 NHTSA TOYOTA FJ CRUISER - C75106
FMVSS 201U - UPPER INTERIOR
TEST #9 RIGHT UR4
H/V IMPACT ANGLE= 90 / 35
FM7242
POST TEST

SUMMARY OF FMVSS 201U TEST

JOB/NHTSA NO: G07I7-001.7

VEHICLE YR/MAKE/MODEL:2007/NHTSA/Toyota FJ Cruiser - C75106

GENERAL TEST PARAMETERS:

Test Number:#9

Target (Vehicle Side): UR4 Right

Temperature:21C

MGA Test Reference No.:FM7242

Humidity:56%

Approach Horizontal Angles:90º

Time of Test:2:25:39 PM

Approach Vertical Angles:35º

FMH Serial No:[038]

Additional Description: @ Rear of Grab Handle

TEST RESULTS:

HIC(d)	HIC	Δt (msec)	Velocity (kph)	Impact location on FMH (mm)	
				Above Pt. O	Left/Right Pt. O
834	885	5.3	23.7	41	5 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	1.32	1.32
Y	6	J36197	110.692	1.87	1.89
Z	7	J36353	99.391	1.83	1.83

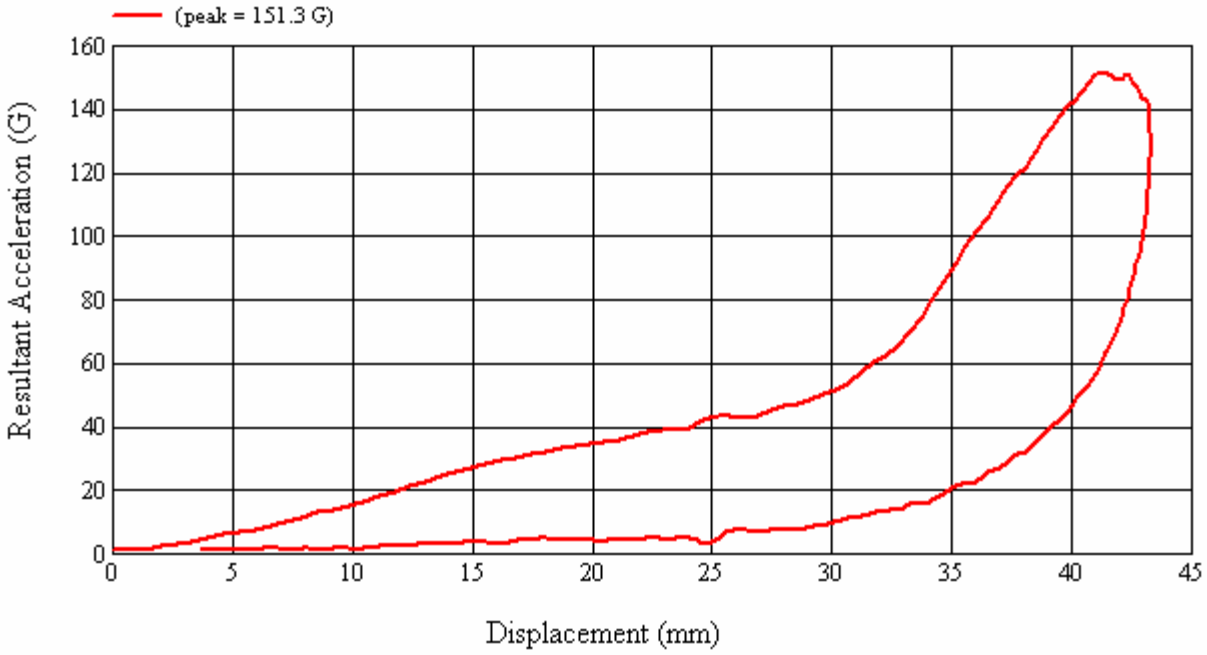
REMARKS (Summary of test, damage, non-compliance, invalid test, etc.):

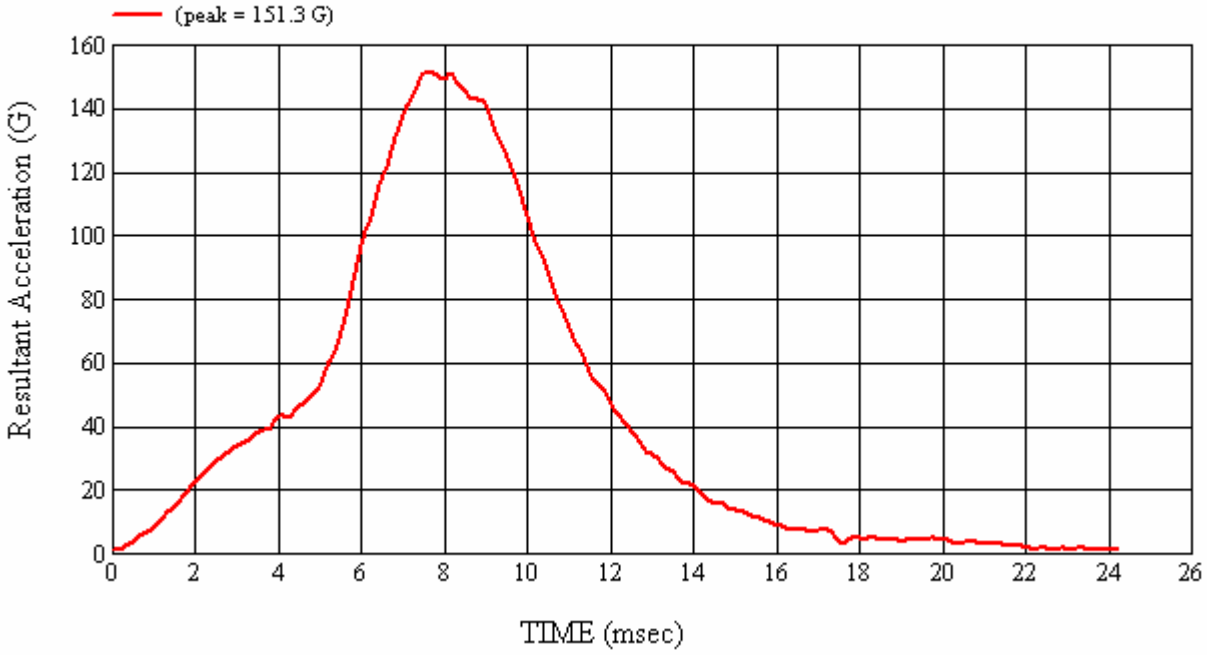
No visible damage.

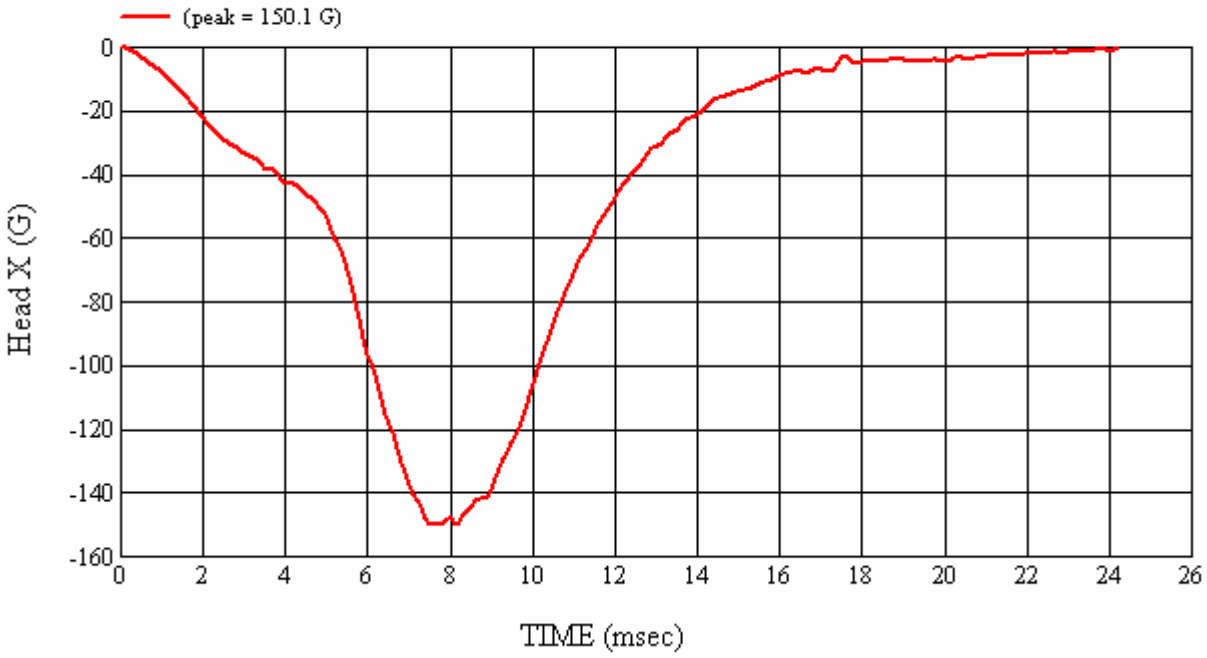
Recorded By: ____________ Approved By*: ____________ Date: 10/17/2007

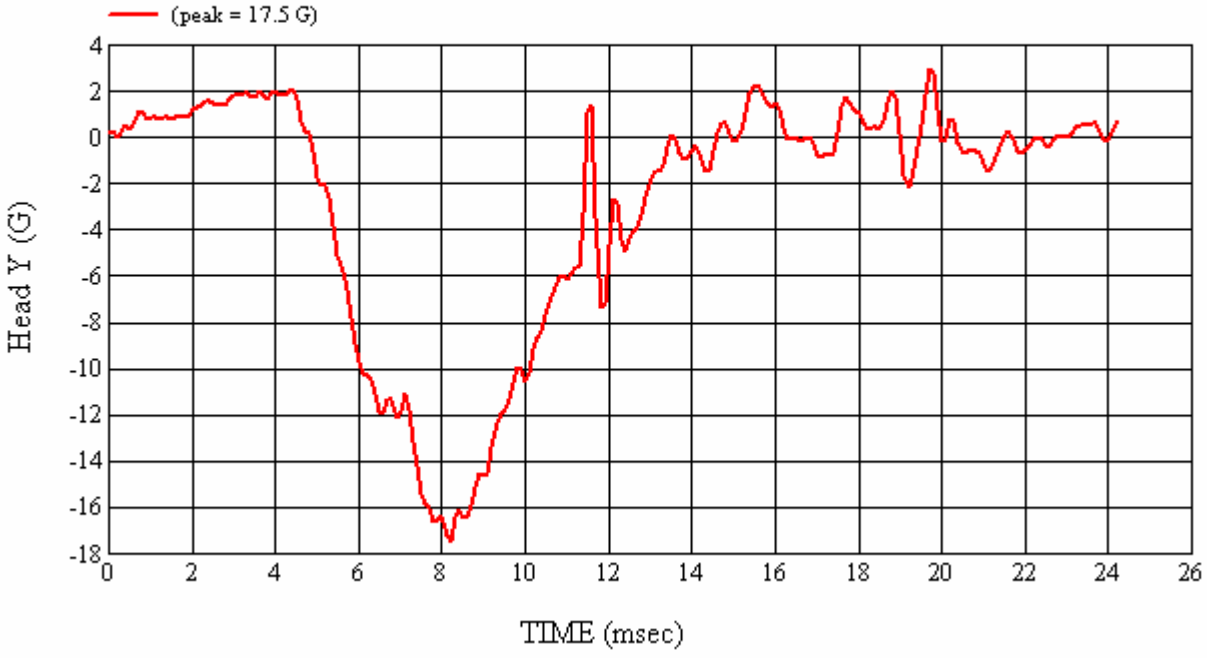
*Only necessary for NHTSA (Government) Compliance testing.

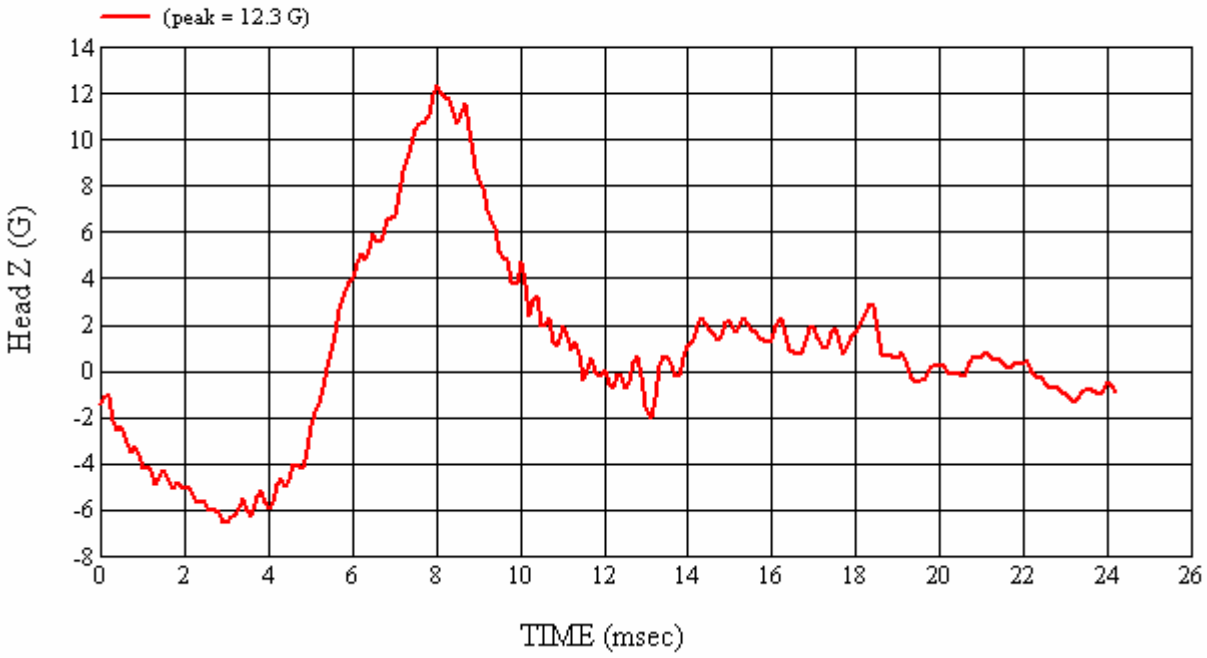
MGA Test #: FM7242 Target Location: UR4, Right Side Test Date: 10/17/2007

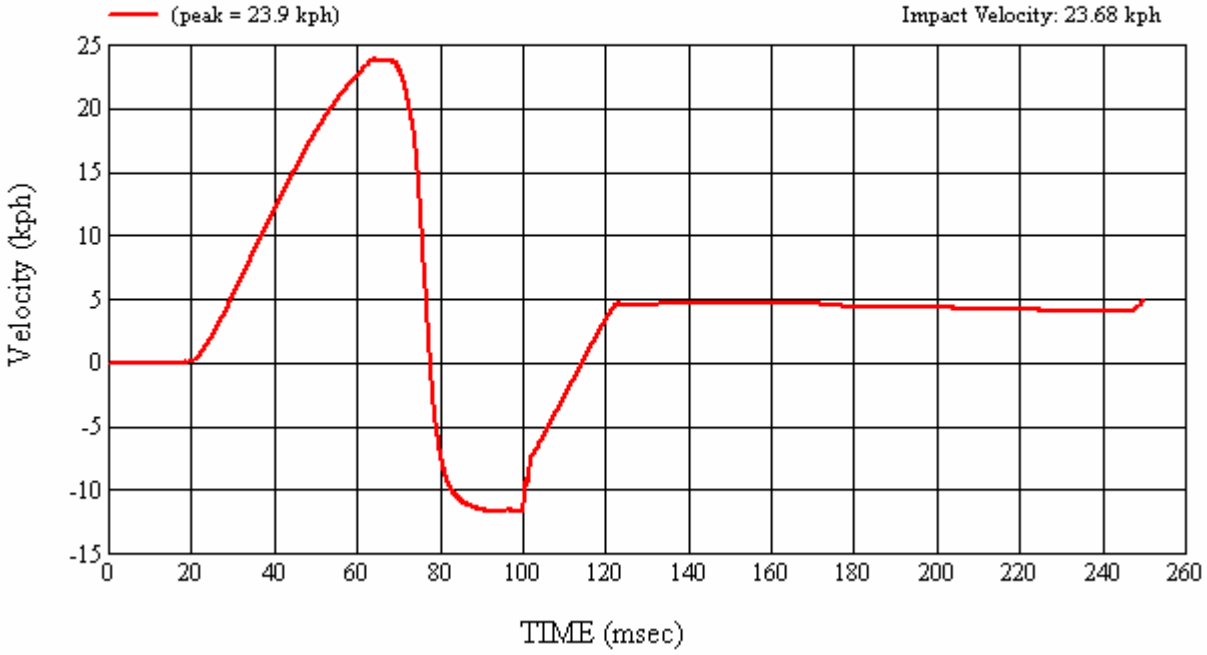


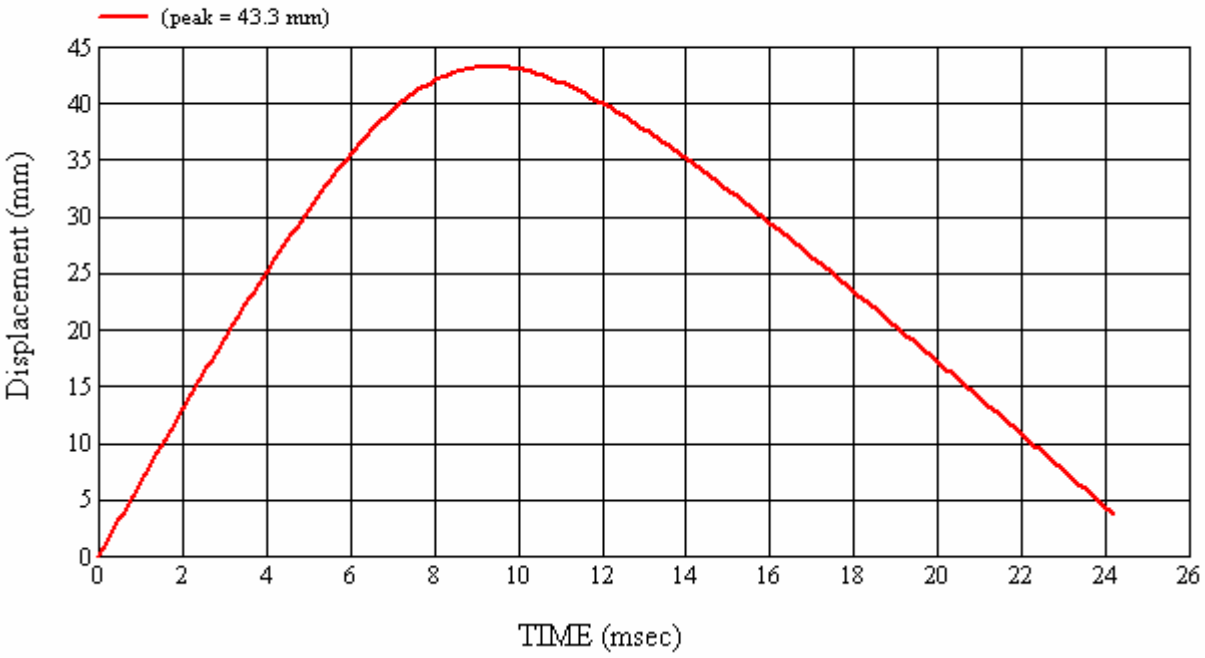



(peak = 150.1 G)
Head X (G)
0
-20
-40
-60
-80
-100
-120
-140
-160
0
2
4
6
8
10
12
14
16
18
20
22
24
26
TIME (msec)


(peak = 17.5 G)
Head Y (G)
4
2
0
-2
-4
-6
-8
-10
-12
-14
-16
-18
0
2
4
6
8
10
12
14
16
18
20
22
24
26
TIME (msec)


(peak = 12.3 G)
Head Z (G)
14
12
10
8
6
4
2
0
-2
-4
-6
-8
0
2
4
6
8
10
12
14
16
18
20
22
24
26
TIME (msec)


(peak = 23.9 kph)
Impact Velocity: 23.68 kph
Velocity (kph)
25
20
15
10
5
0
-5
-10
-15
0
20
40
60
80
100
120
140
160
180
200
220
240
260
TIME (msec)


(peak = 43.3 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)


UR6
UR5
OPR
SR3-1
mga
Impact Testing
10/18/2007
G07I7-001.7
2007 NHTSA TOYOTA FJ CRUISER - C75106
FMVSS 201U - UPPER INTERIOR
TEST #11 RIGHT UR5
H/V IMPACT ANGLE= 90 / 33
FM7244
PRE TEST


UR6
UR5
OPR
SR3-1
C75106
FM7244
RIGHT UR5 @
mga
Impact Testing
10/18/2007
G07I7-001.7
2007 NHTSA TOYOTA FJ CRUISER - C75106
FMVSS 201U - UPPER INTERIOR
TEST #11 RIGHT UR5
H/V IMPACT ANGLE= 90 / 33
FM7244
POST TEST


mga
Impact Testing
10/18/2007
G07I7-001.7
2007 NHTSA TOYOTA FJ CRUISER - C75106
FMVSS 201U - UPPER INTERIOR
TEST #11 RIGHT UR5
H/V IMPACT ANGLE= 90 / 33
FM7244
POST TEST

SUMMARY OF FMVSS 201U TEST

JOB/NHTSA NO: G07I7-001.7

VEHICLE YR/MAKE/MODEL:2007/NHTSA/Toyota FJ Cruiser - C75106

GENERAL TEST PARAMETERS:

Test Number:#11

Target (Vehicle Side): UR5 Right

Temperature:21C

MGA Test Reference No.:FM7244

Humidity:57%

Approach Horizontal Angles:90º

Time of Test:8:57:46 AM

Approach Vertical Angles:33º

FMH Serial No:[037]

Additional Description: @ Middle of Other Pillar

TEST RESULTS:

HIC(d)	HIC	Δt (msec)	Velocity (kph)	Impact location on FMH (mm)	
				Above Pt. O	Left/Right Pt. O
559	521	8.4	23.4	39	10 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	1.32	1.32
Y	6	J35791	91.856	1.89	1.89
Z	7	J35800	97.996	1.83	1.83

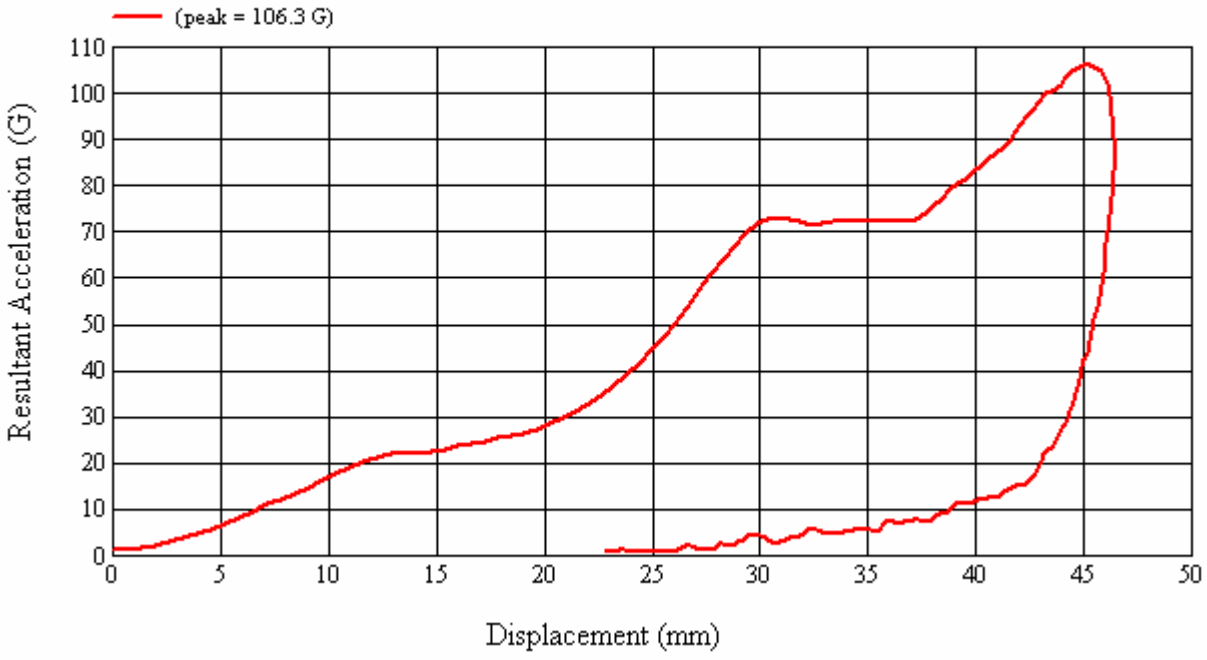
REMARKS (Summary of test, damage, non-compliance, invalid test, etc.):

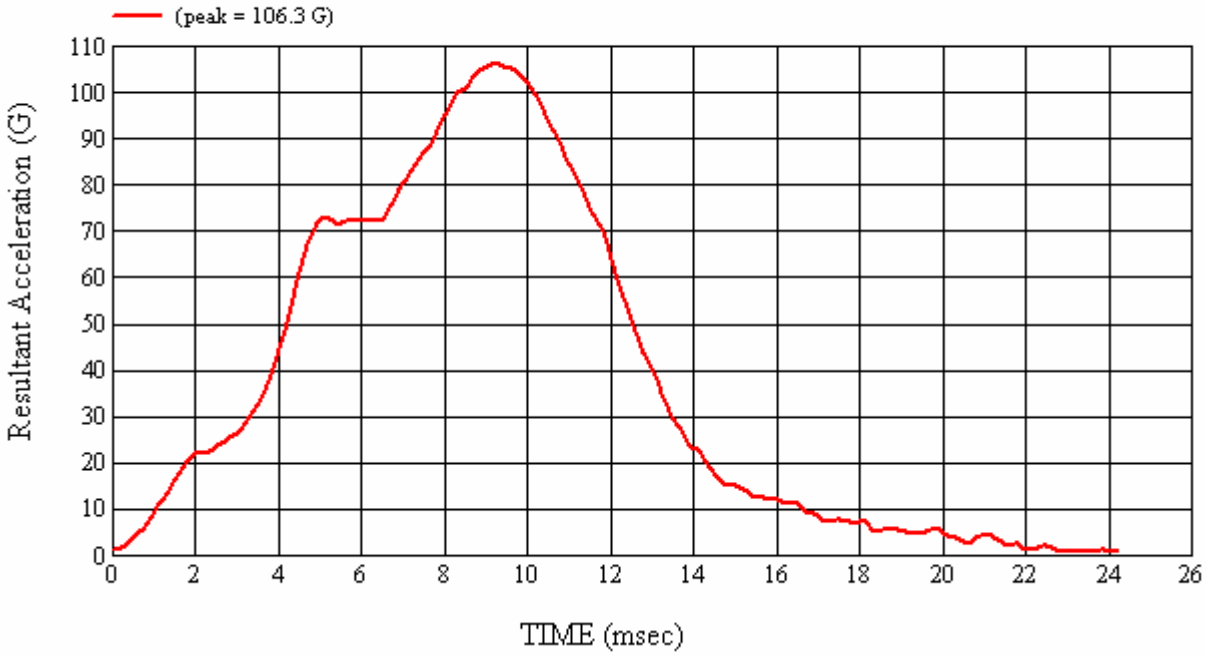
Headliner deformation.

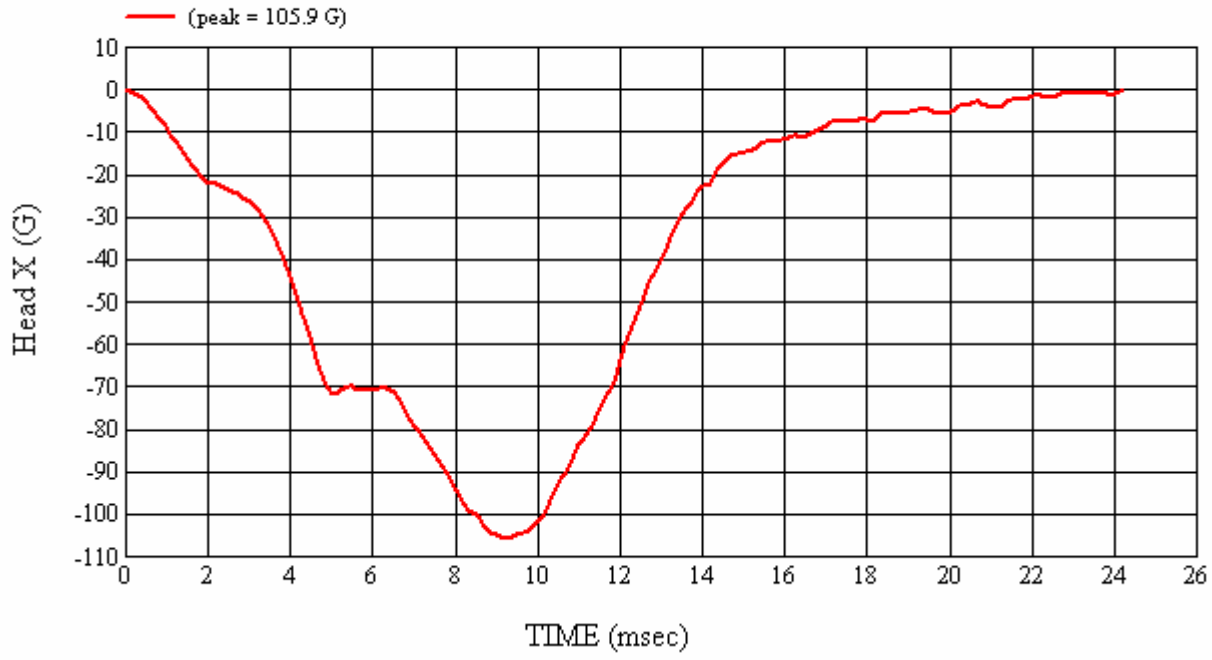
Recorded By: _____ Approved By*: _____ Date: 10/18/2007

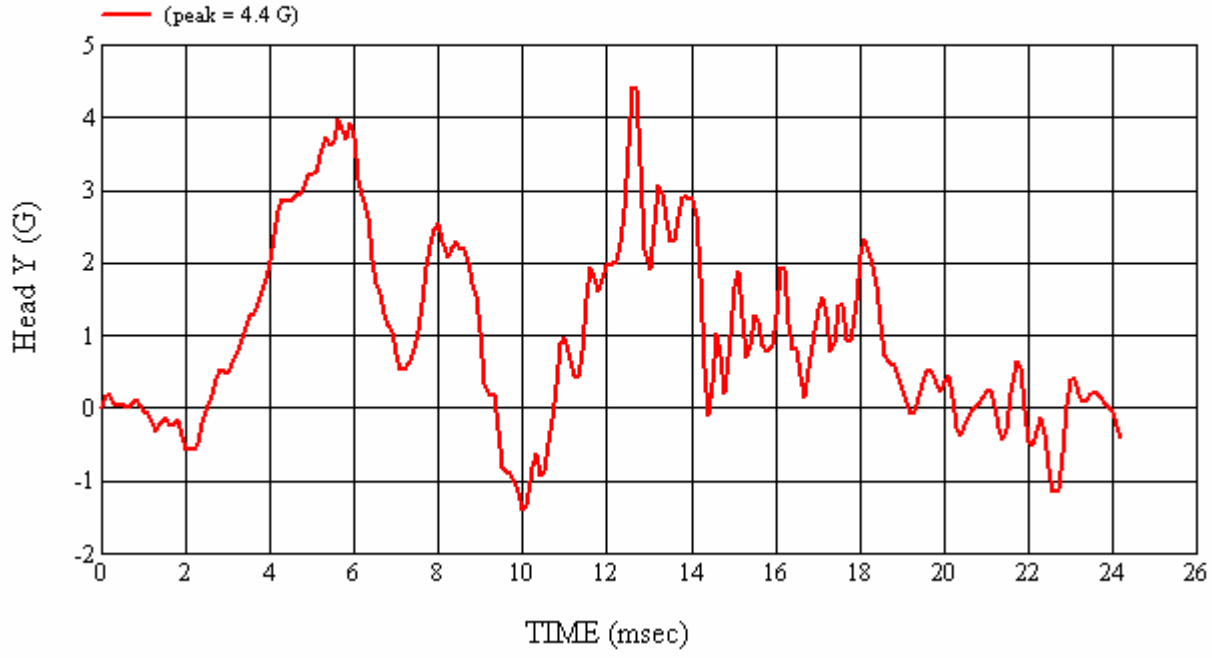
*Only necessary for NHTSA (Government) Compliance testing.

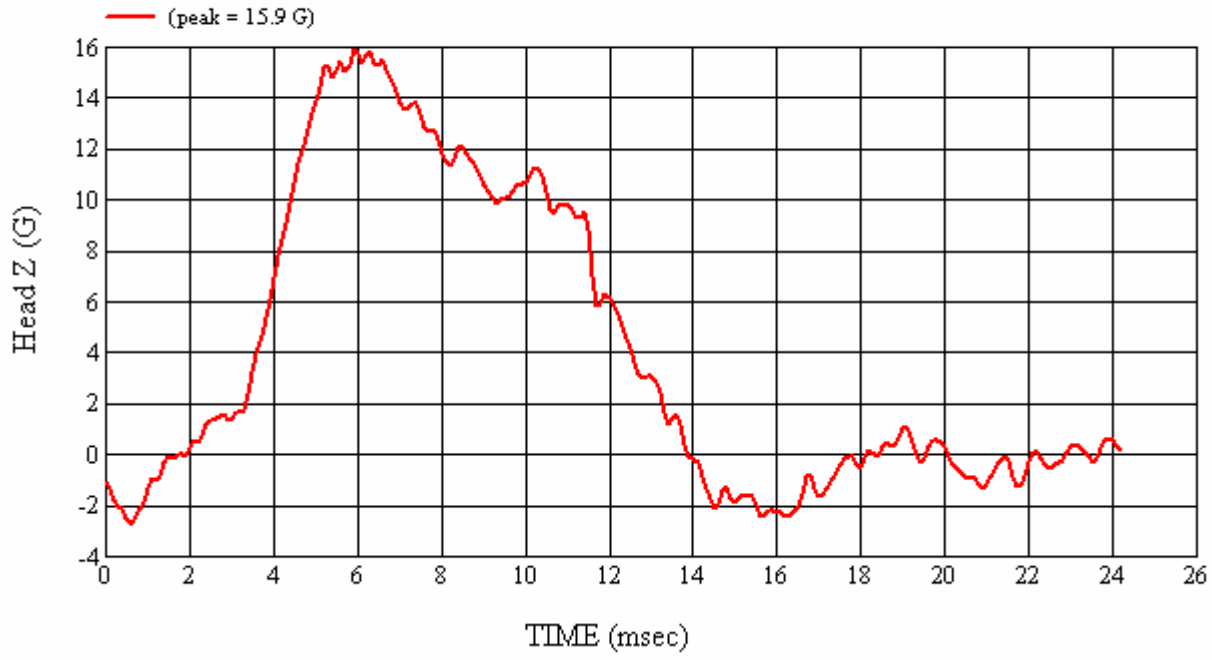
MGA Test #: FM7244 Target Location: UR5, Right Side Test Date: 10/18/2007

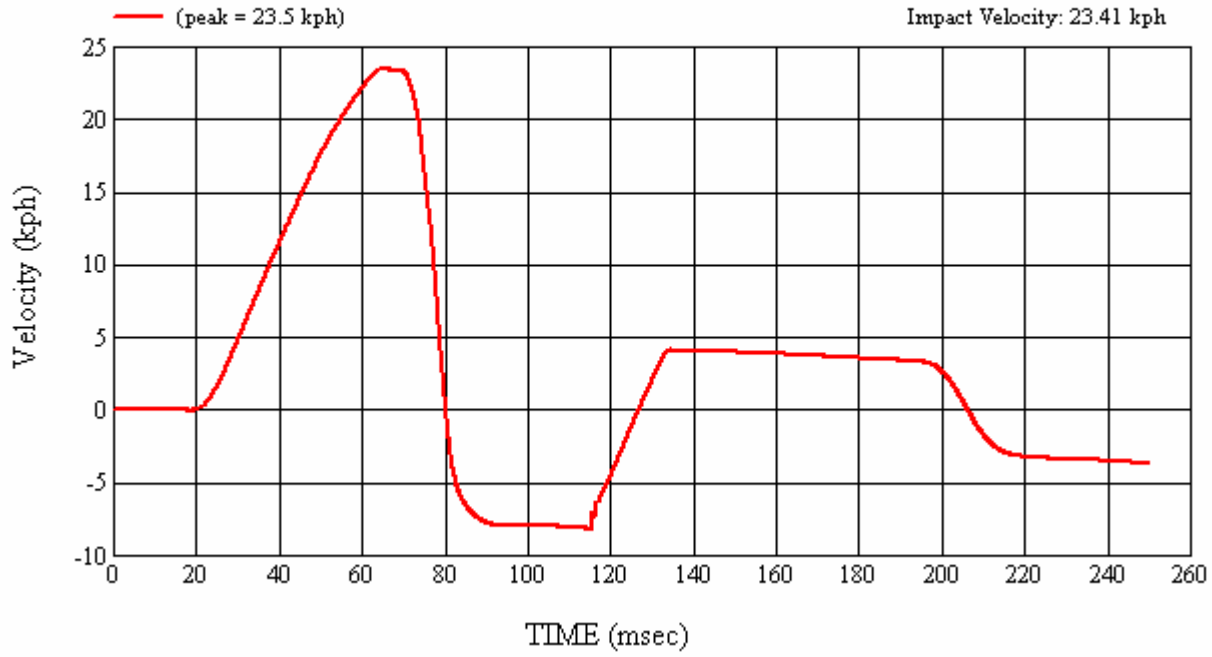


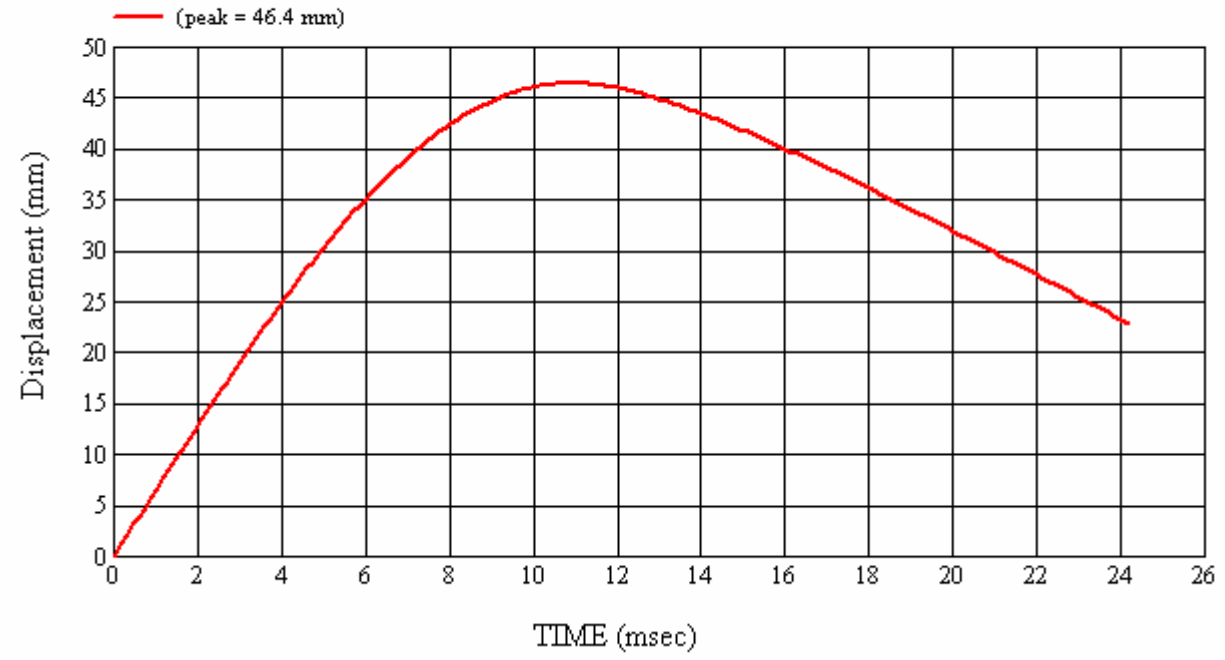



(peak = 105.9 G)
Head X (G)
10
0
-10
-20
-30
-40
-50
-60
-70
-80
-90
-100
-110
0
2
4
6
8
10
12
14
16
18
20
22
24
26
TIME (msec)


(peak = 4.4 G)
Head Y (G)
5
4
3
2
1
0
-1
-2
0
2
4
6
8
10
12
14
16
18
20
22
24
26
TIME (msec)


(peak = 15.9 G)
Head Z (G)
16
14
12
10
8
6
4
2
0
-2
-4
0
2
4
6
8
10
12
14
16
18
20
22
24
26
TIME (msec)


(peak = 23.5 kph)
Impact Velocity: 23.41 kph
Velocity (kph)
25
20
15
10
5
0
-5
-10
0
20
40
60
80
100
120
140
160
180
200
220
240
260
TIME (msec)


(peak = 46.4 mm)
Displacement (mm)
TIME (msec)
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

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	035 037 038	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	 TPM741 -- 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
* 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 FMH CALIBRATION SUMMARY

FMH Serial #		Headform Calibration Date	Weight (lbs)	Temp (ºC)	% Humidity	Peak Resultant Acceleration (G's)	Peak Lateral Acceleration (G's)	Unimodal
Pre	#035	10/15/2007	10.08	20.0	60.0	247.0	5.5	Yes
Post	#035	10/18/2007	10.08	22.0	69.0	251.5	4.2	Yes
Pre	#037	10/15/2007	9.96	22.0	69.0	243.2	10.2	Yes
Post	#037	10/18/2007	9.96	22.0	69.0	259.0	4.0	Yes
Pre	#038	10/15/2007	9.90	22.0	69.0	273.1	12.9	Yes
Post	#038	10/18/2007	9.90	22.0	69.0	262.1	6.6	Yes

HEAD DROP TEST SUMMARY
PART 572L

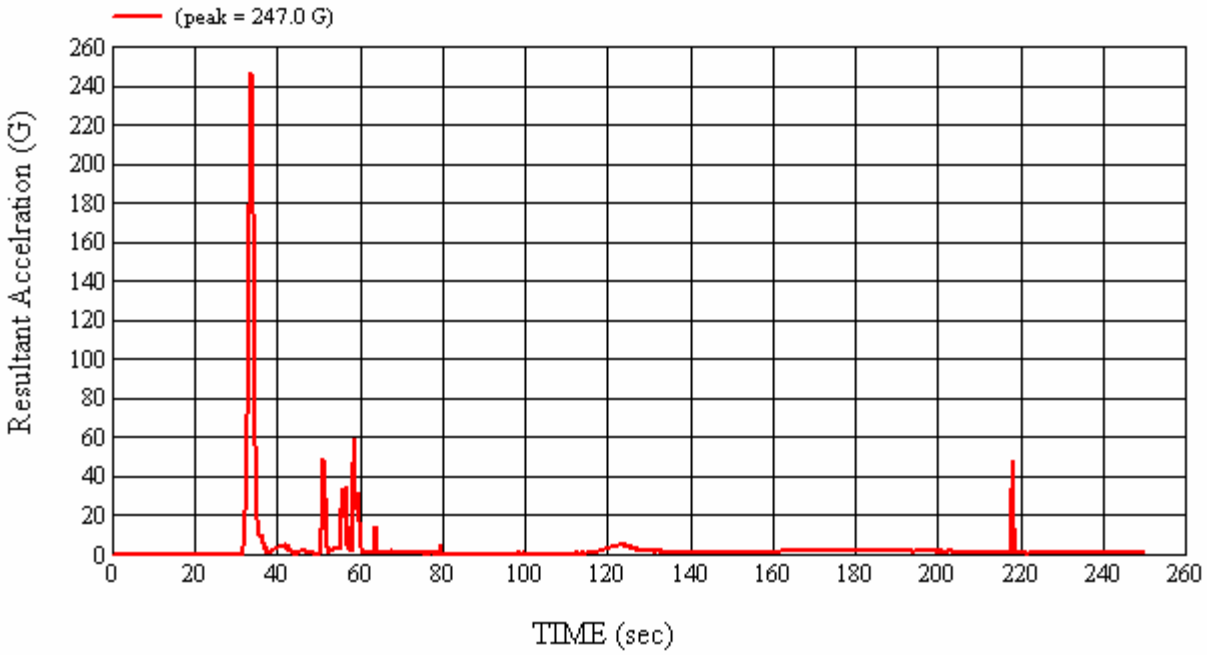
HEADFORM SERIAL NUMBER: 035	CALIBRATION DATE: 10/15/2007 CALIBRATION TIME: 2:52:29 PM	
TEST PARAMETER	**SPECIFICATION**	**TEST RESULTS**
Weight	9.90 to 10.10 lbs.	10.08
Temperature	19° C to 26° C	20
Relative Humidity	10% to 70%	60
Peak Resultant Acceleration	225 G's to 275 G's	247.0
Peak Lateral Acceleration	15 G's Maximum	5.5
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	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

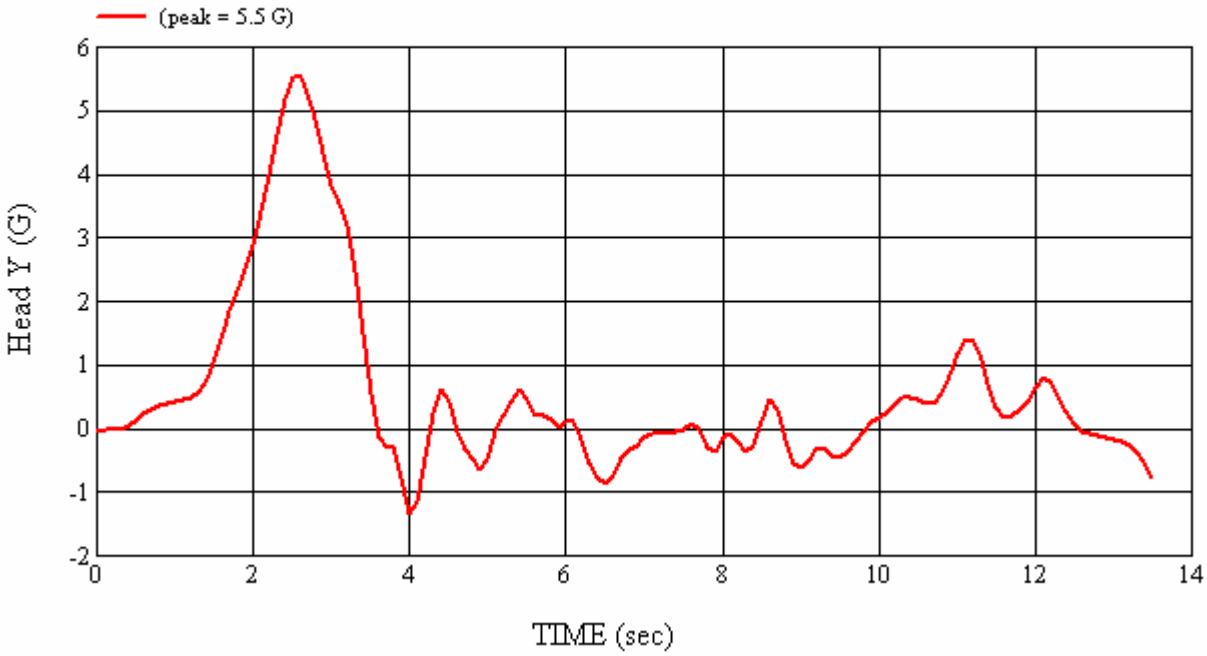
REMARKS:

RECORDED BY: Kaitlin Campbell DATE: 10/15/2007

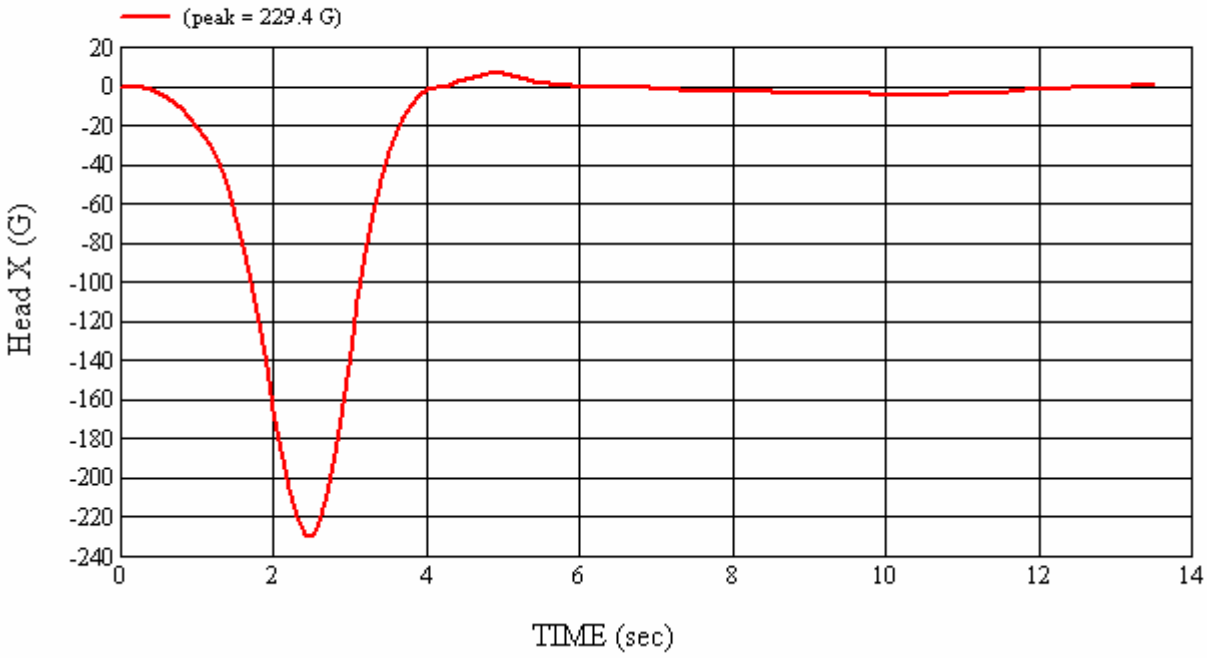
APPROVED BY: Helen A. Kalafus



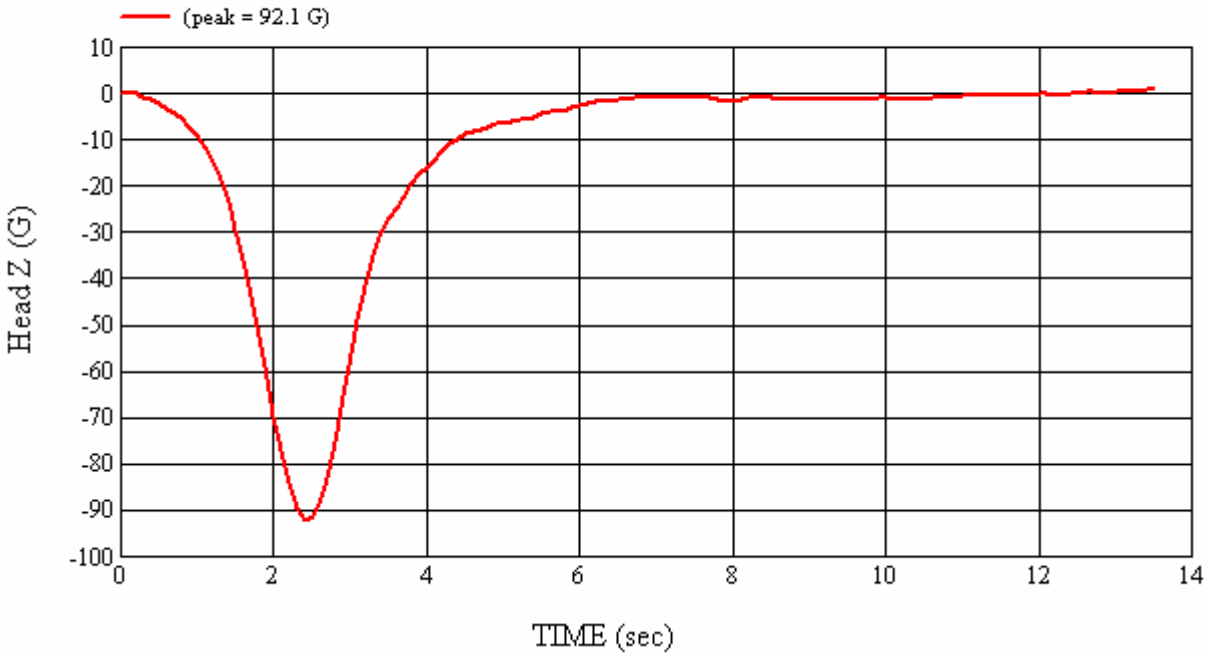
Head 035 (Pre) Calibration #H35015



Head 035 (Pre) Calibration #H35015



Head 035 (Pre) Calibration #H35015



Head 035 (Pre) Calibration #H35015

HEAD DROP TEST SUMMARY
PART 572L

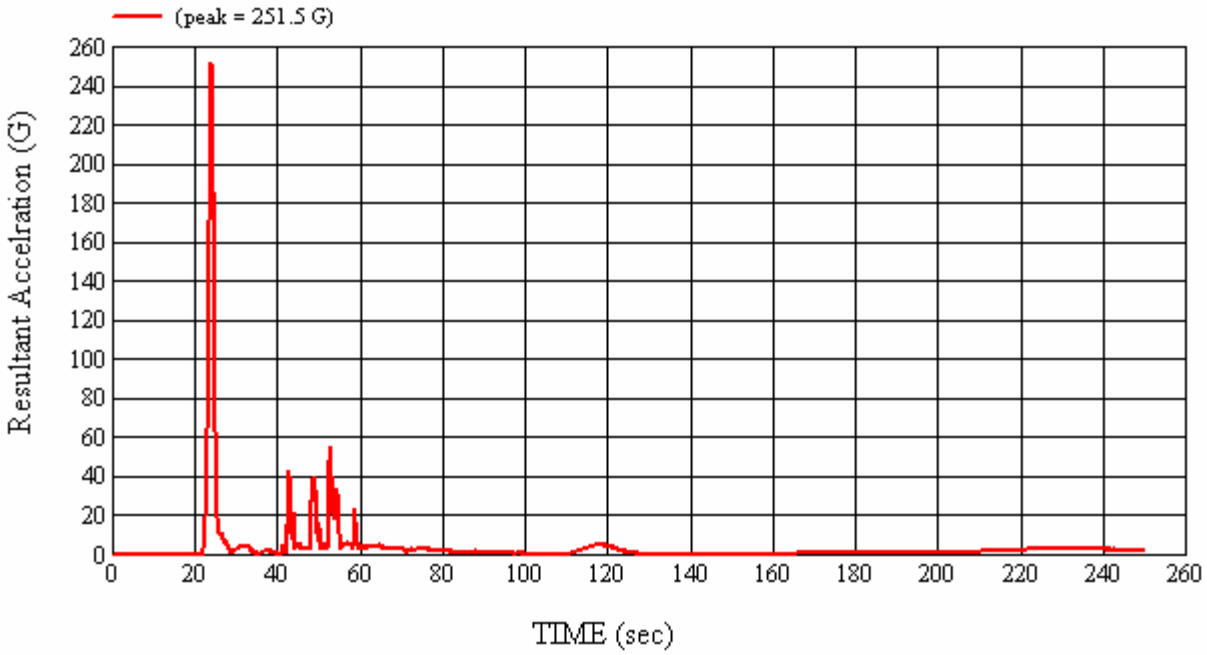
HEADFORM SERIAL NUMBER: 035	CALIBRATION DATE: 10/18/2007 CALIBRATION TIME: 2:57:22 PM	
TEST PARAMETER	**SPECIFICATION**	**TEST RESULTS**
Weight	9.90 to 10.10 lbs.	10.08
Temperature	19° C to 26° C	22
Relative Humidity	10% to 70%	69
Peak Resultant Acceleration	225 G's to 275 G's	251.5
Peak Lateral Acceleration	15 G's Maximum	4.2
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

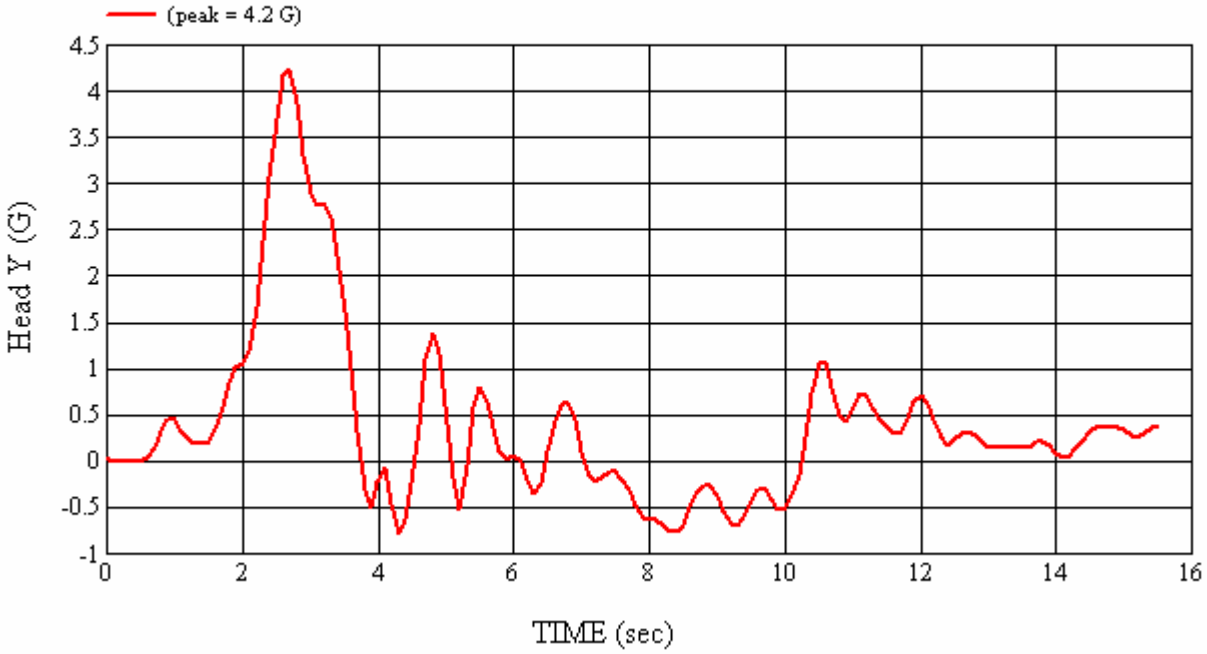
REMARKS:

RECORDED BY: Kaitlin Campbell DATE: 10/18/2007

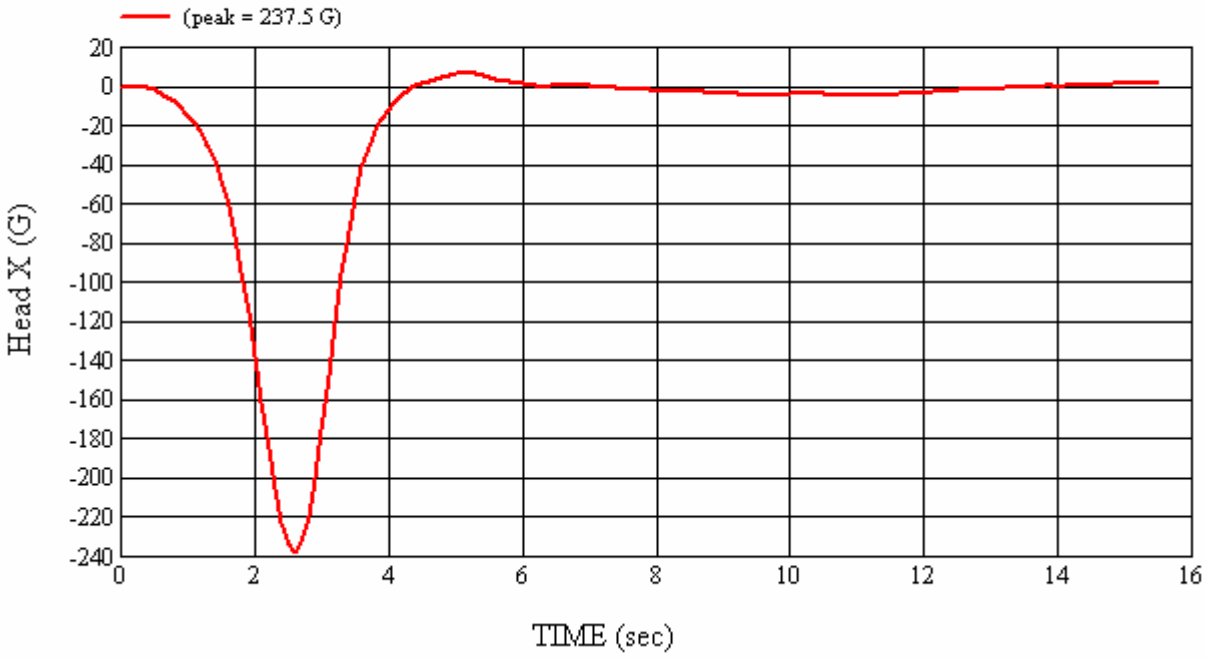
APPROVED BY: Helen A. Kalata



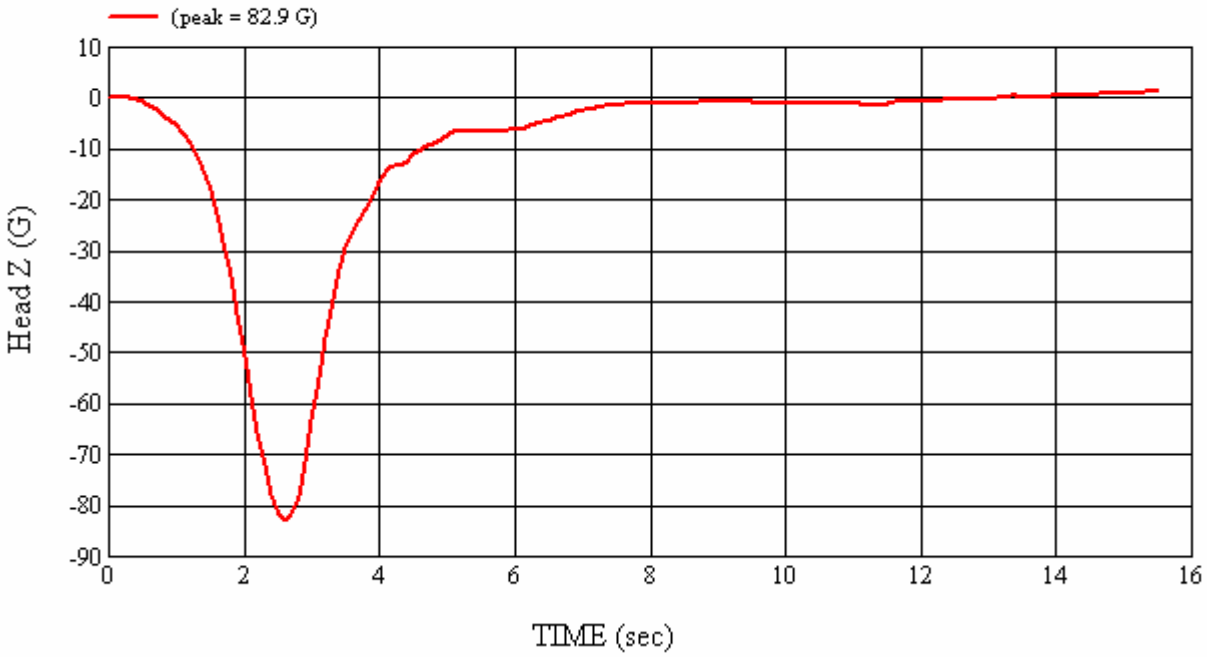
Head 035 (Post) Calibration #H35016



Head 035 (Post) Calibration #H35016



Head 035 (Post) Calibration #H35016



Head 035 (Post) Calibration #H35016

HEAD DROP TEST SUMMARY
PART 572L

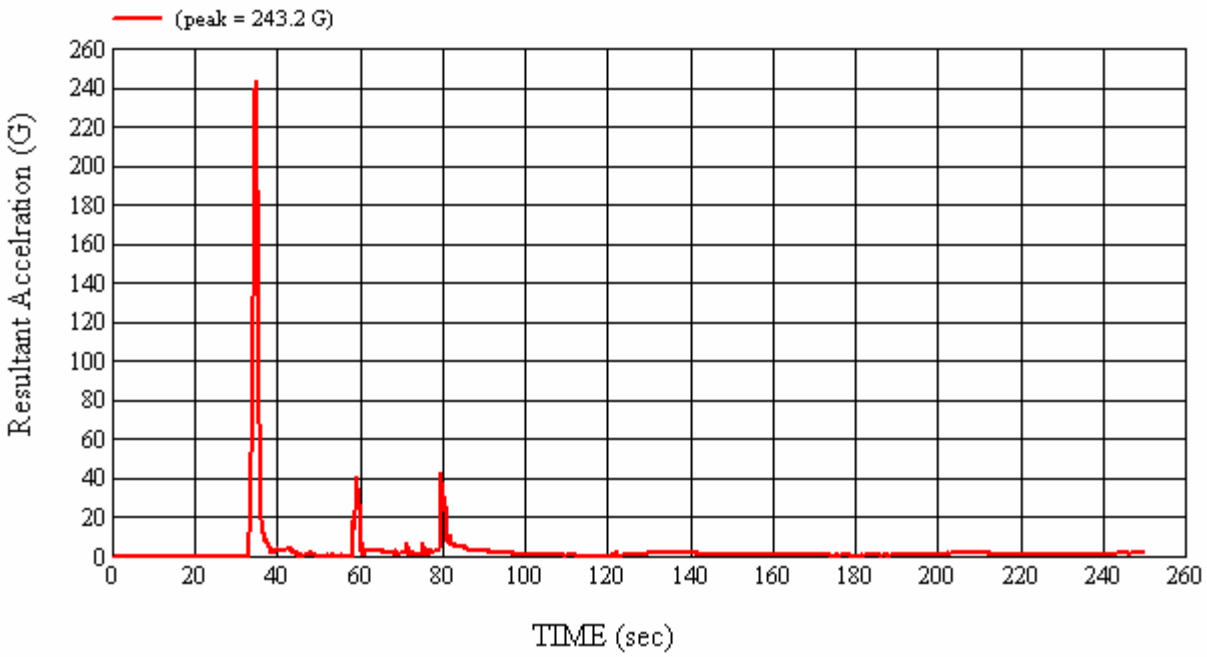
HEADFORM SERIAL NUMBER: 037	CALIBRATION DATE: 10/15/2007 CALIBRATION TIME: 3:22:13 PM	
TEST PARAMETER	**SPECIFICATION**	**TEST RESULTS**
Weight	9.90 to 10.10 lbs.	9.96
Temperature	19° C to 26° C	22
Relative Humidity	10% to 70%	69
Peak Resultant Acceleration	225 G's to 275 G's	243.2
Peak Lateral Acceleration	15 G's Maximum	10.2
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

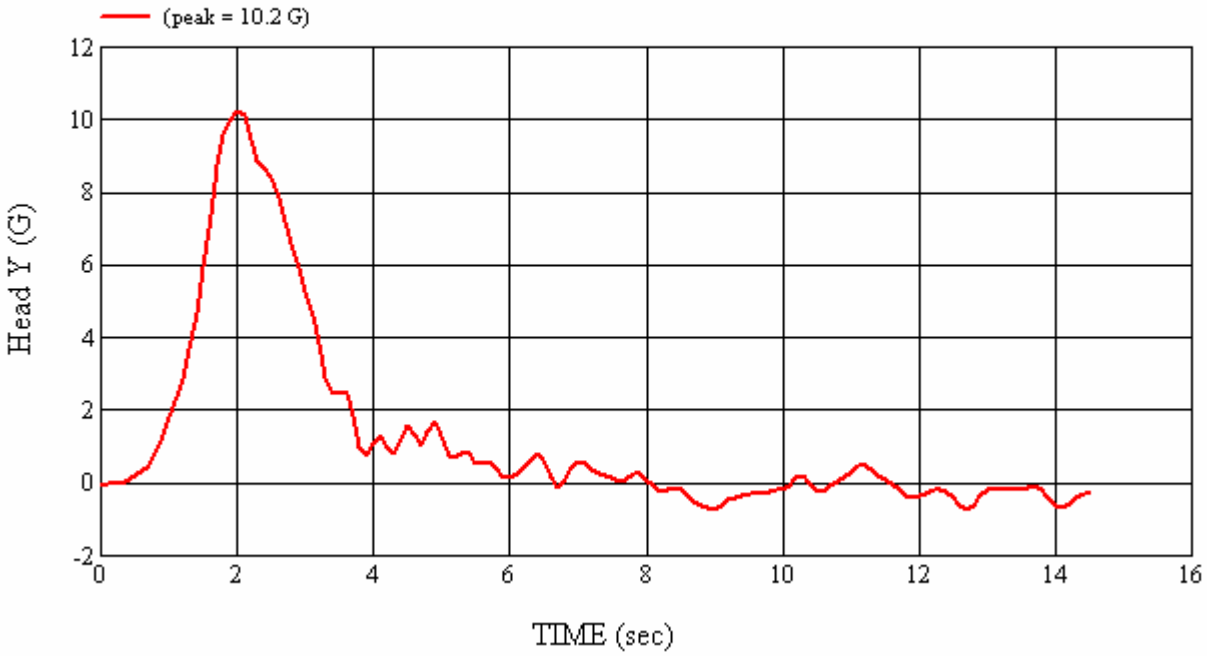
REMARKS:

RECORDED BY: Travis Campbell DATE: 10/15/2007

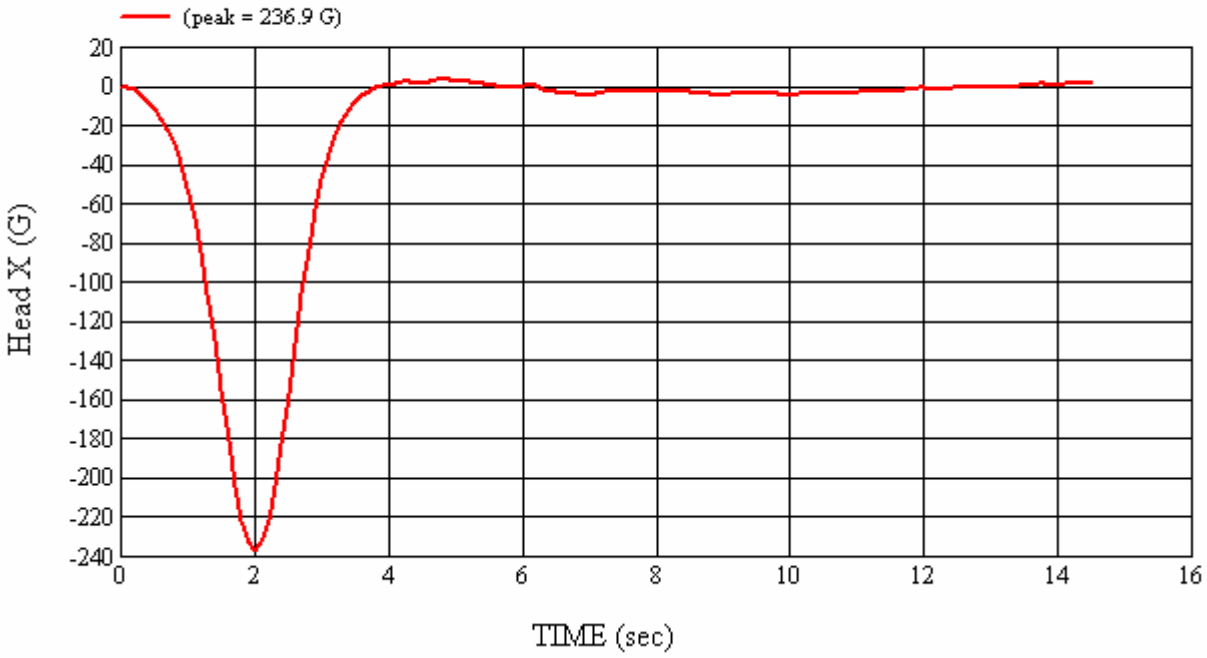
APPROVED BY: Helen A. Kaleto



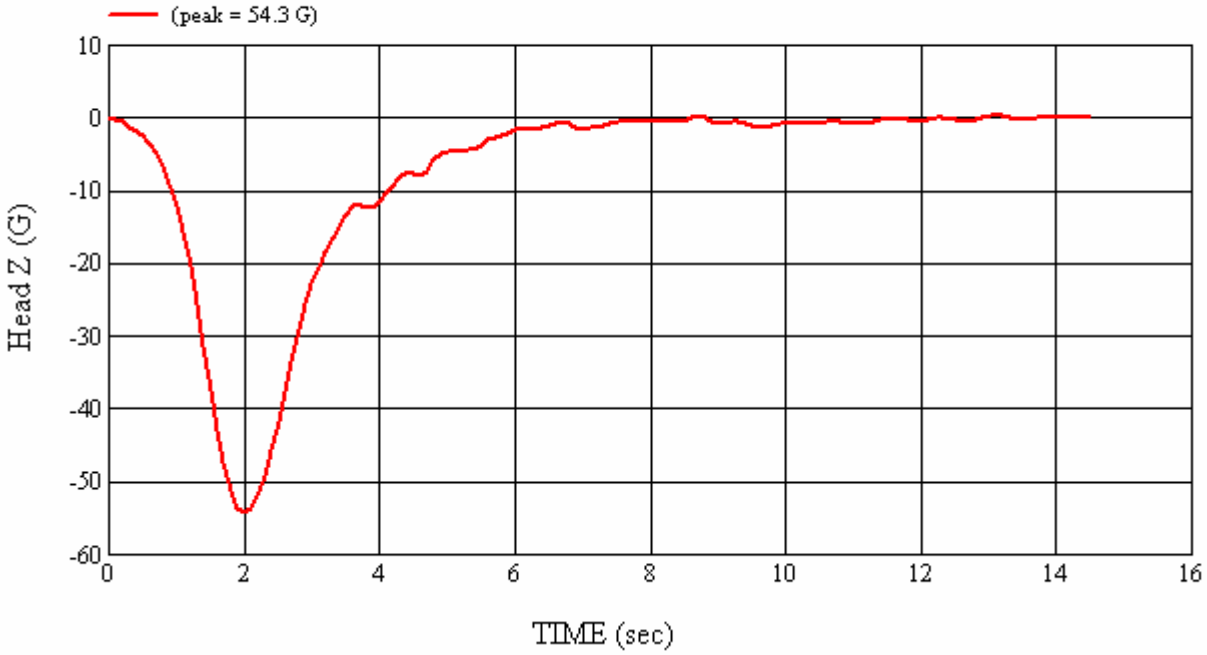
Head 037 (Pre) Calibration #H37019



Head 037 (Pre) Calibration #H37019



Head 037 (Pre) Calibration #H37019



Head 037 (Pre) Calibration #H37019

HEAD DROP TEST SUMMARY
PART 572L

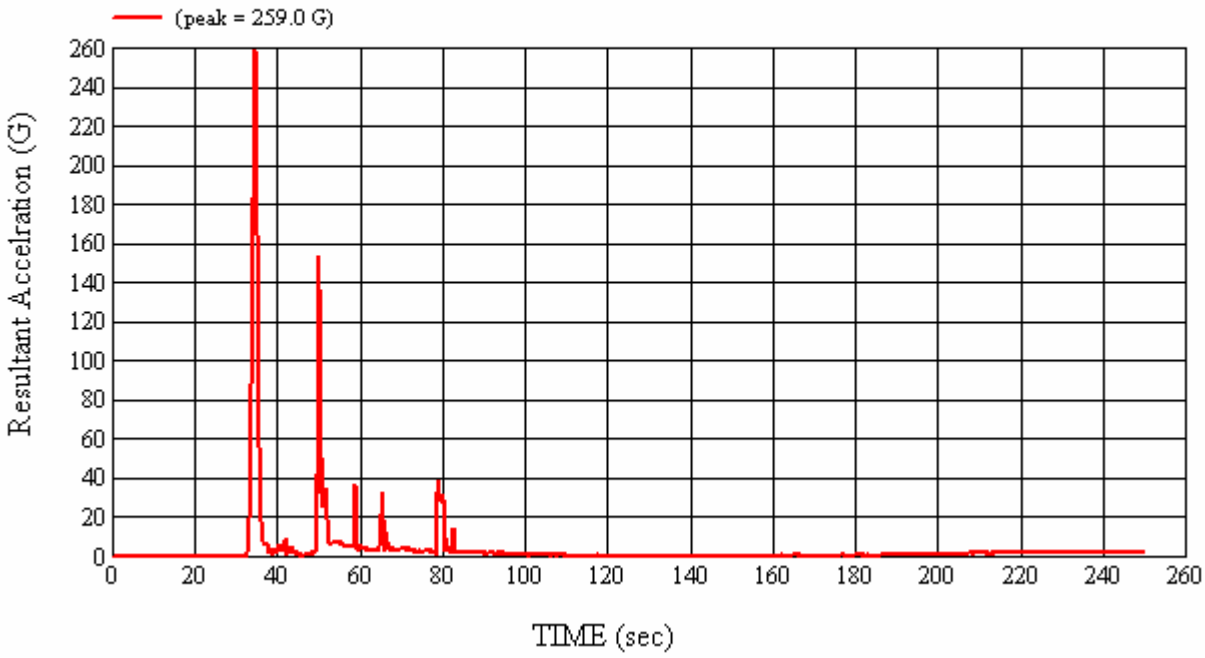
HEADFORM SERIAL NUMBER: 037	CALIBRATION DATE: 10/18/2007 CALIBRATION TIME: 3:25:09 PM	
TEST PARAMETER	**SPECIFICATION**	**TEST RESULTS**
Weight	9.90 to 10.10 lbs.	9.96
Temperature	19° C to 26° C	22
Relative Humidity	10% to 70%	69
Peak Resultant Acceleration	225 G's to 275 G's	259.0
Peak Lateral Acceleration	15 G's Maximum	4.0
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	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

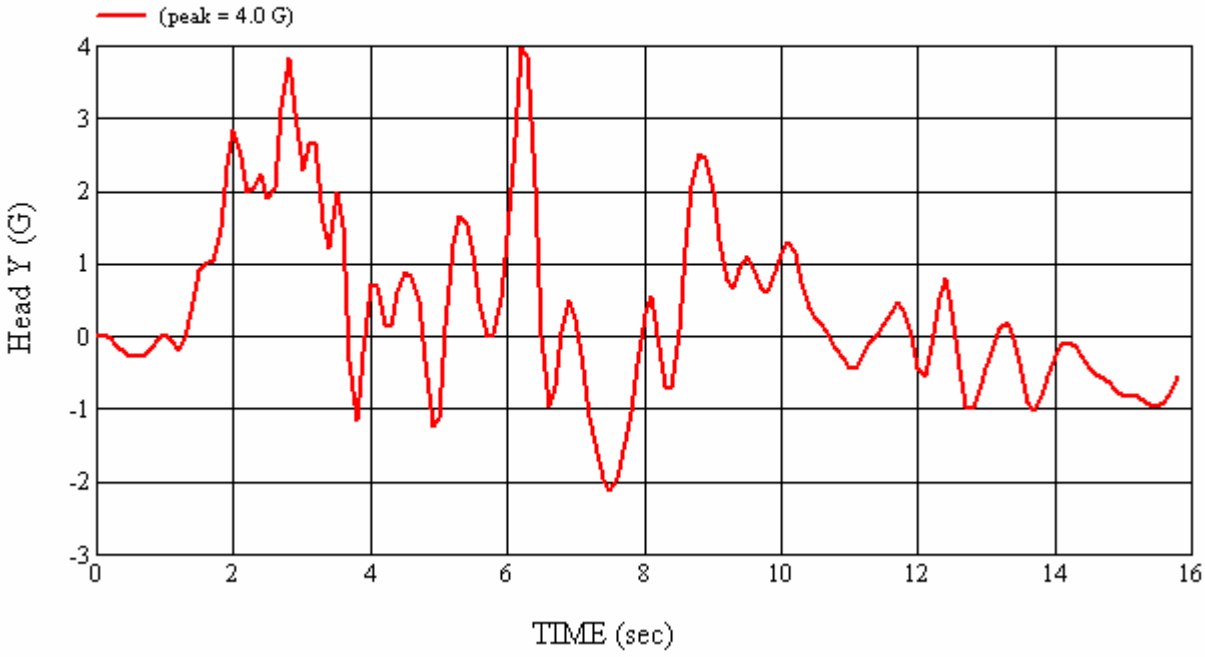
REMARKS:

RECORDED BY: Kaitlin Campbell DATE: 10/18/2007

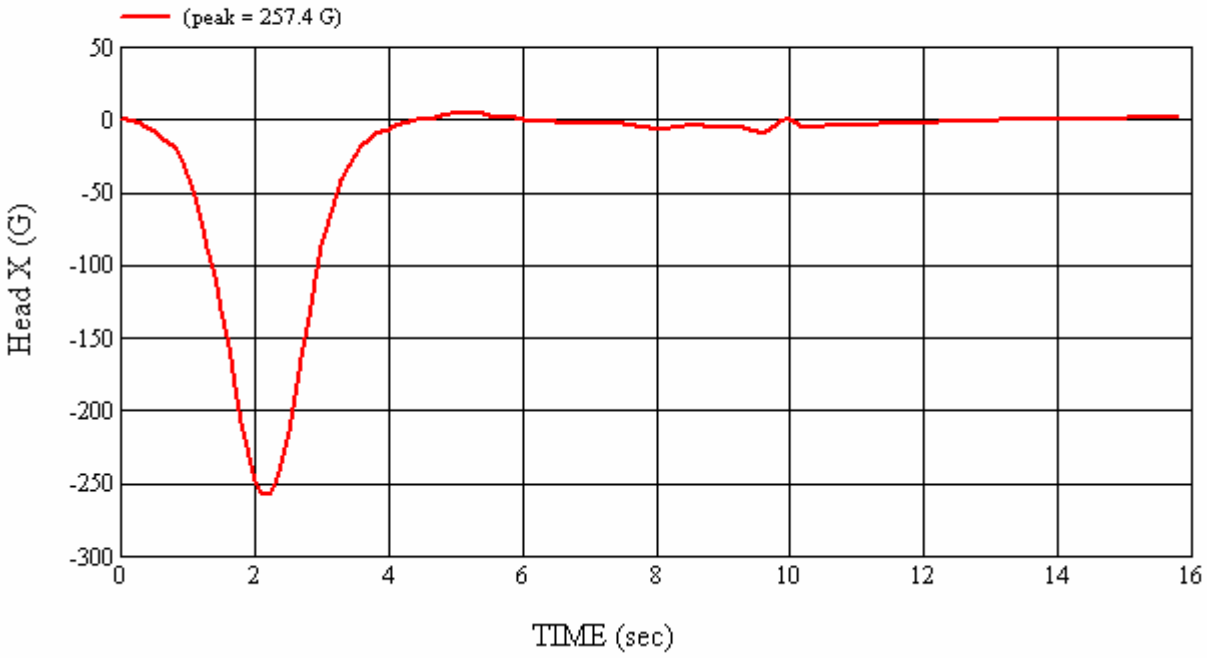
APPROVED BY: Helen A. Kalata



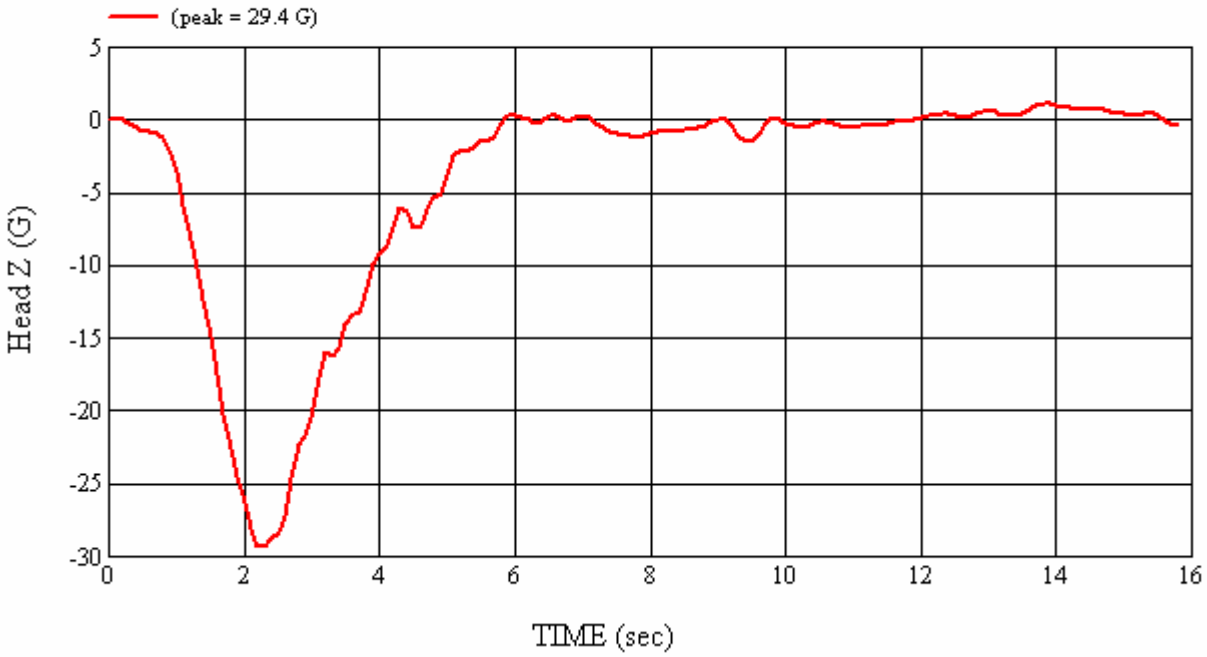
Head 037 (Post) Calibration #H37020



Head 037 (Post) Calibration #H37020



Head 037 (Post) Calibration #H37020



Head 037 (Post) Calibration #H37020

HEAD DROP TEST SUMMARY
PART 572L

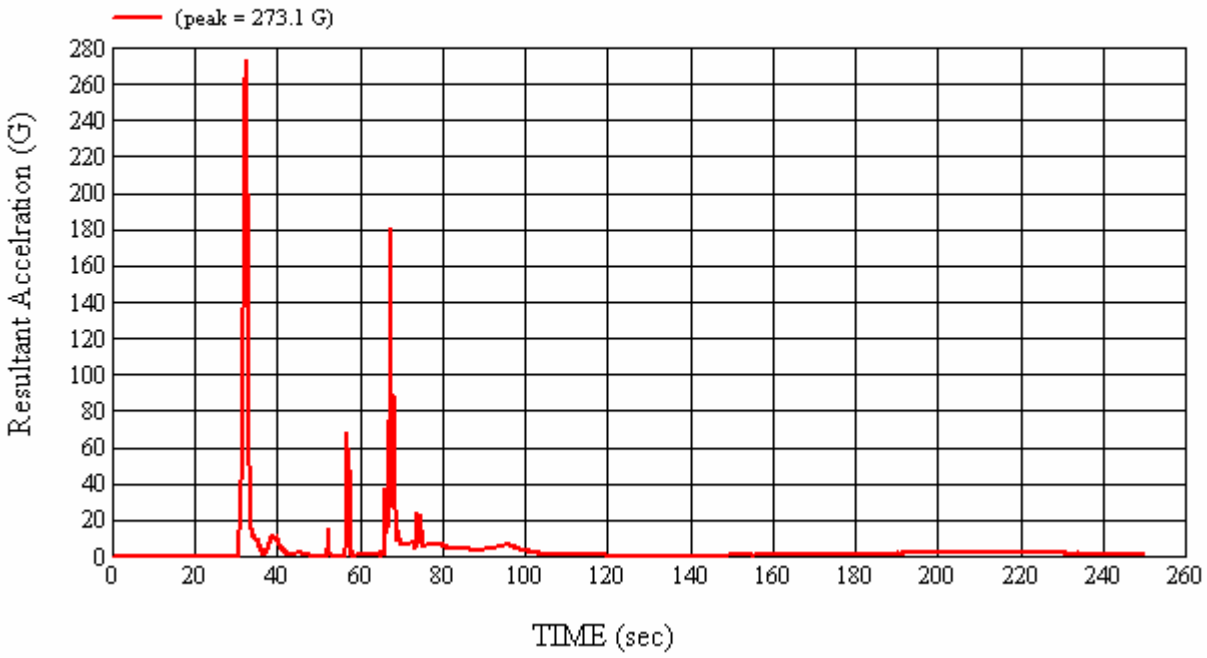
HEADFORM SERIAL NUMBER: 038	CALIBRATION DATE: 10/15/2007 CALIBRATION TIME: 3:29:12 PM	
TEST PARAMETER	**SPECIFICATION**	**TEST RESULTS**
Weight	9.90 to 10.10 lbs.	9.90
Temperature	19° C to 26° C	22
Relative Humidity	10% to 70%	69
Peak Resultant Acceleration	225 G's to 275 G's	273.1
Peak Lateral Acceleration	15 G's Maximum	12.9
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	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

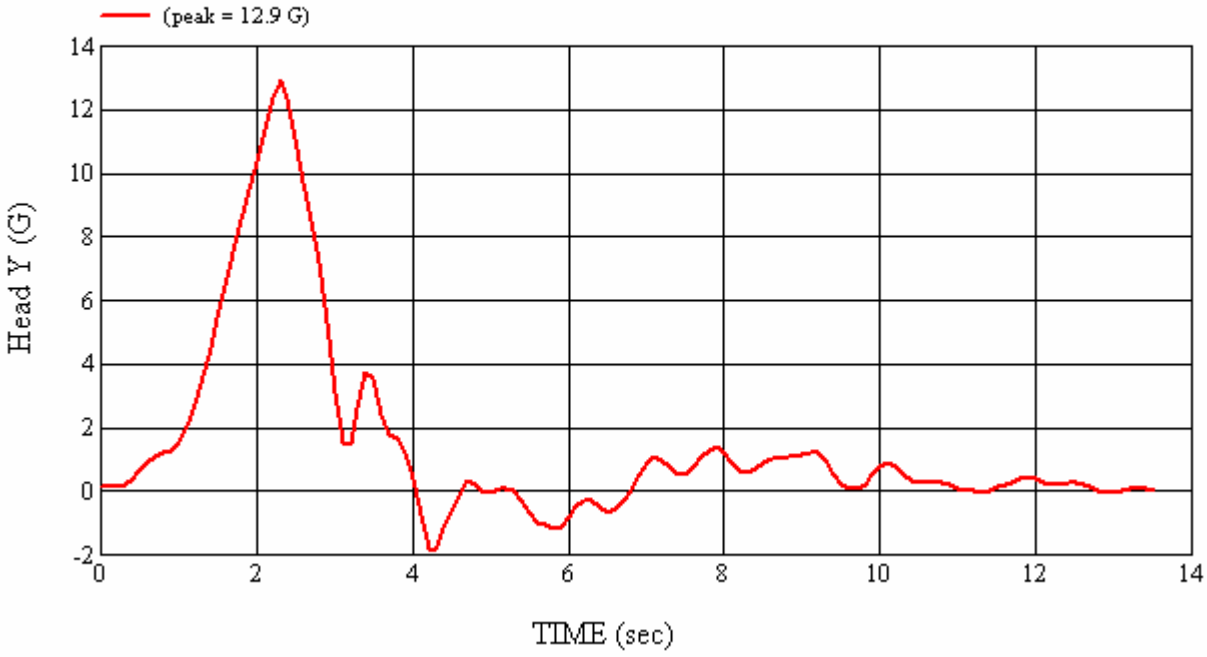
REMARKS:

RECORDED BY: Kaitlin Campbell DATE: 10/15/2007

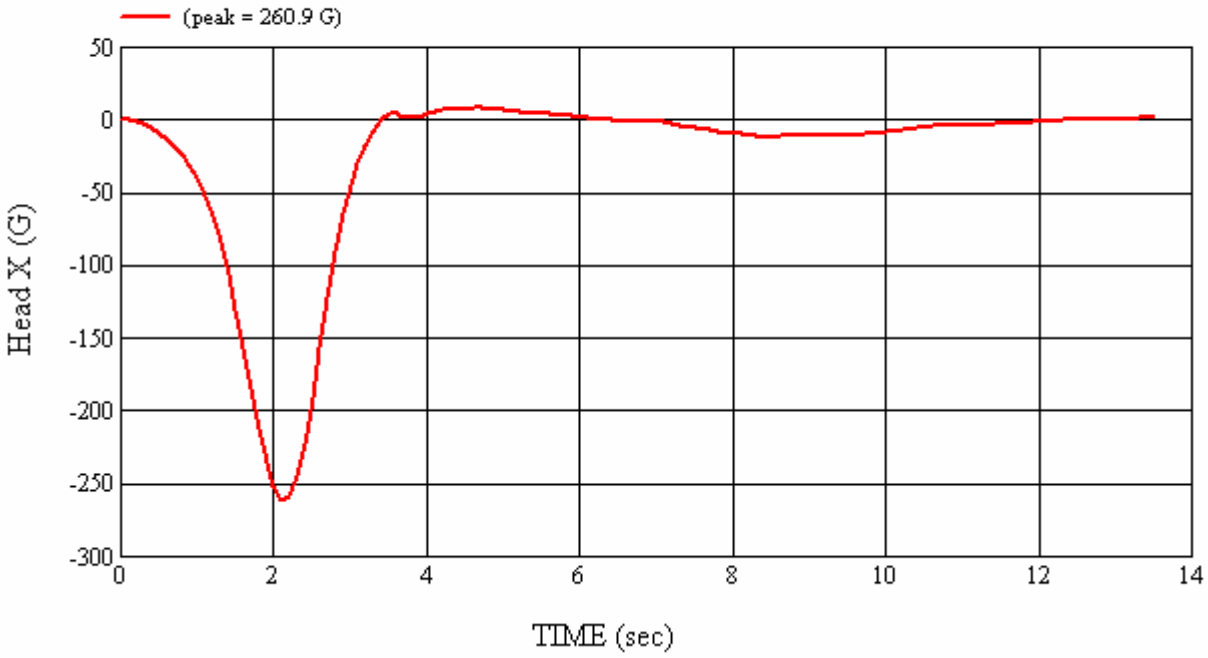
APPROVED BY: Helen A. Kalafut



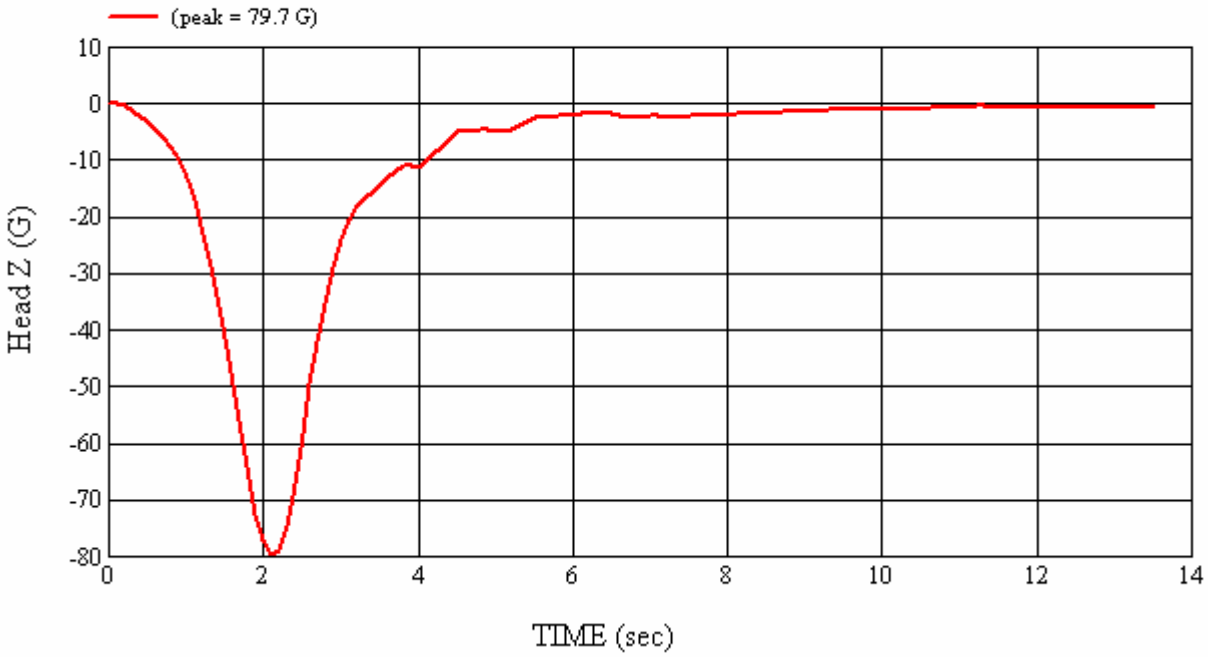
Head 038 (Pre) Calibration #H38019



Head 038 (Pre) Calibration #H38019



Head 038 (Pre) Calibration #H38019



Head 038 (Pre) Calibration #H38019

HEAD DROP TEST SUMMARY
PART 572L

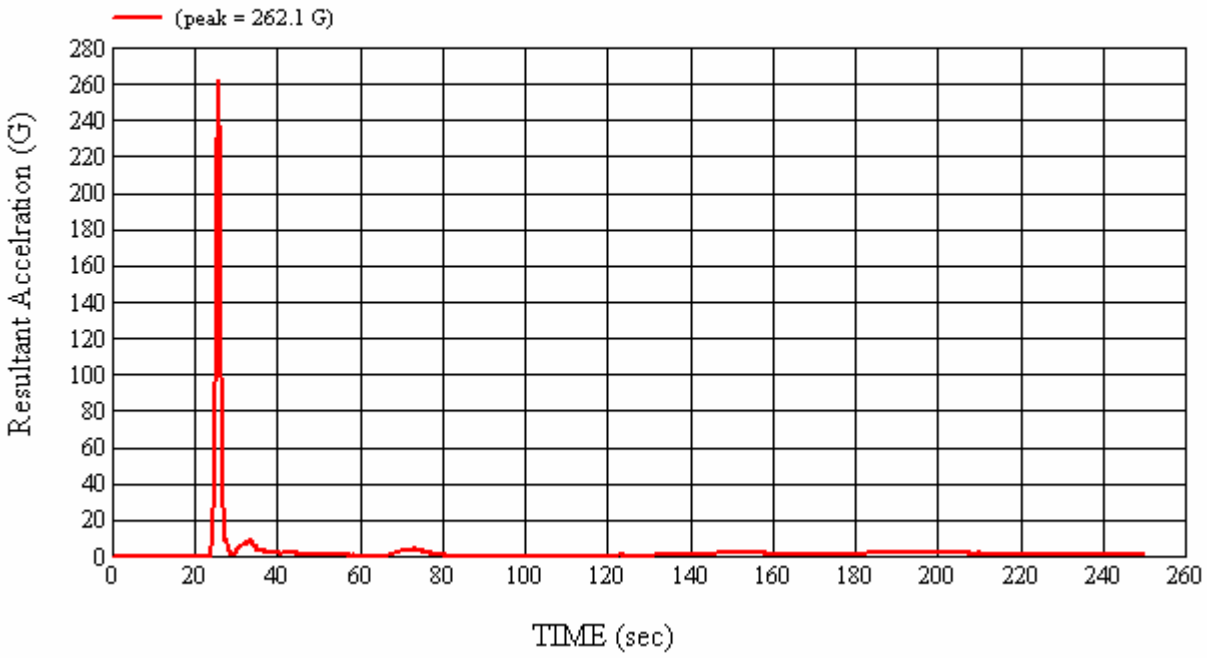
HEADFORM SERIAL NUMBER: 038	CALIBRATION DATE: 10/18/2007 CALIBRATION TIME: 3:49:07 PM	
TEST PARAMETER	**SPECIFICATION**	**TEST RESULTS**
Weight	9.90 to 10.10 lbs.	9.90
Temperature	19° C to 26° C	22
Relative Humidity	10% to 70%	69
Peak Resultant Acceleration	225 G's to 275 G's	262.1
Peak Lateral Acceleration	15 G's Maximum	6.6
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

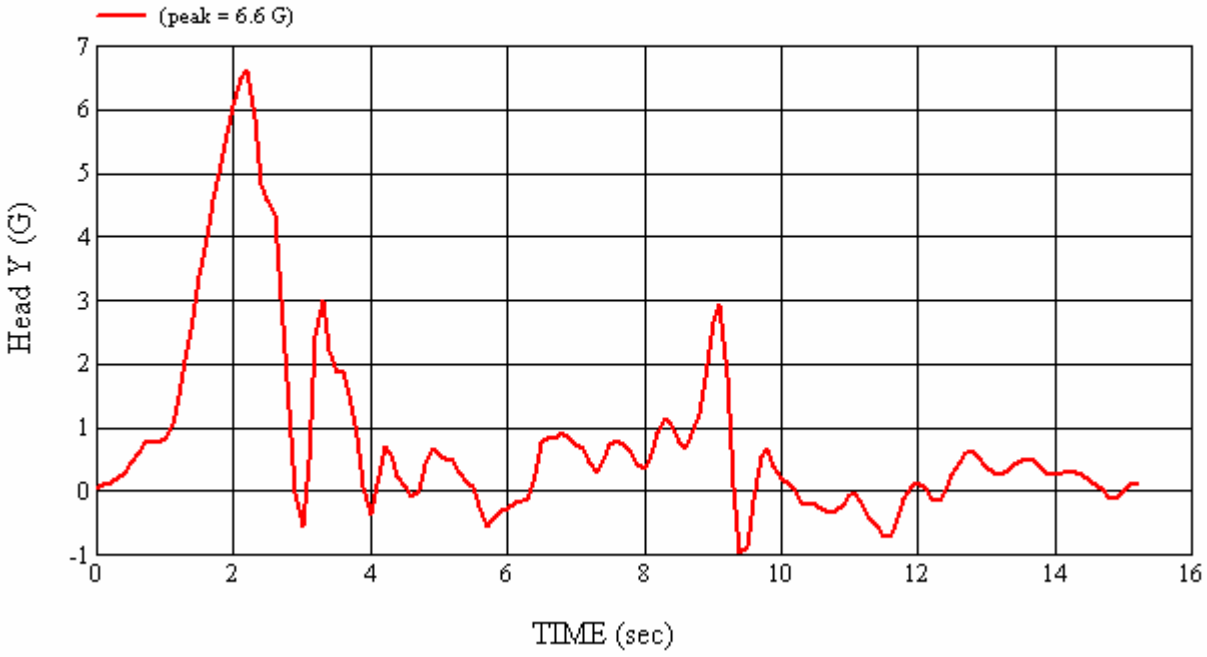
REMARKS:

RECORDED BY: Kaitlin Campbell DATE: 10/18/2007

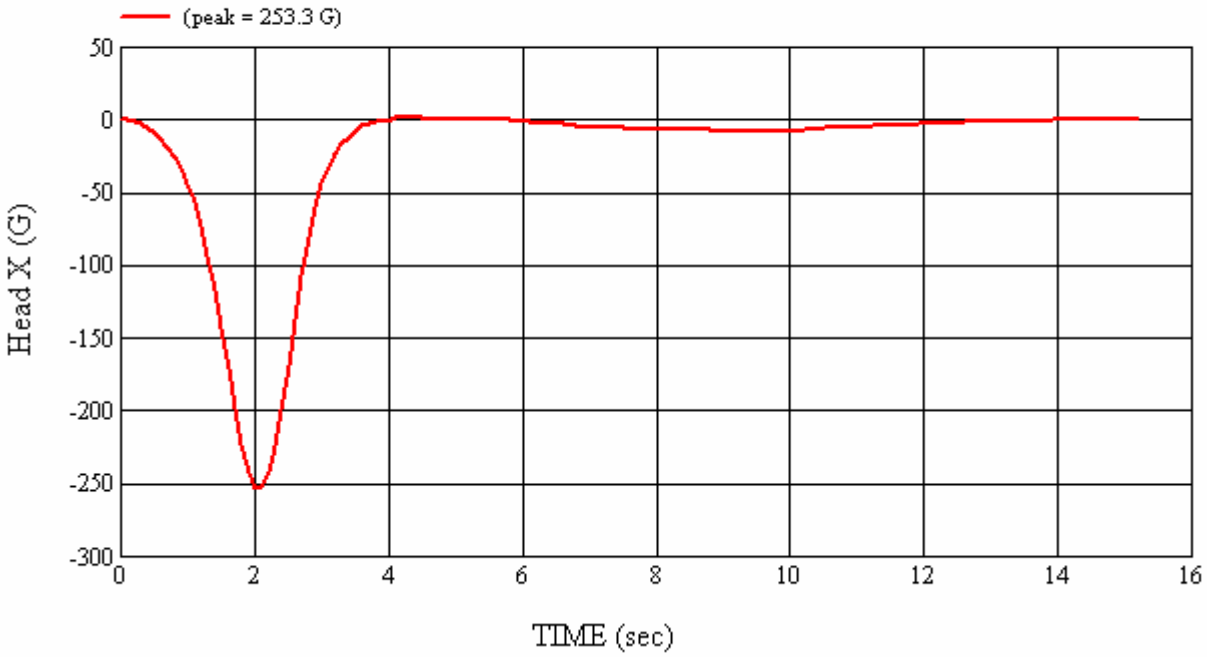
APPROVED BY: Helen A. Kalafus



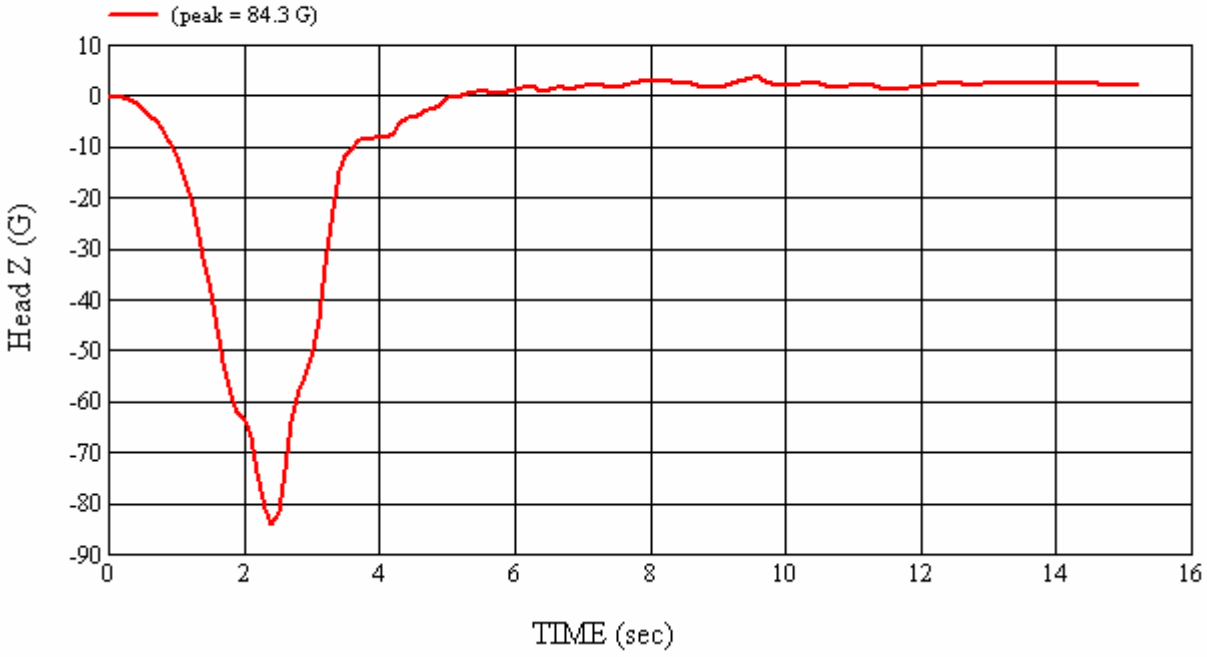
Head 038 (Post) Calibration #H38020



Head 038 (Post) Calibration #H38020



Head 038 (Post) Calibration #H38020



Head 038 (Post) Calibration #H38020

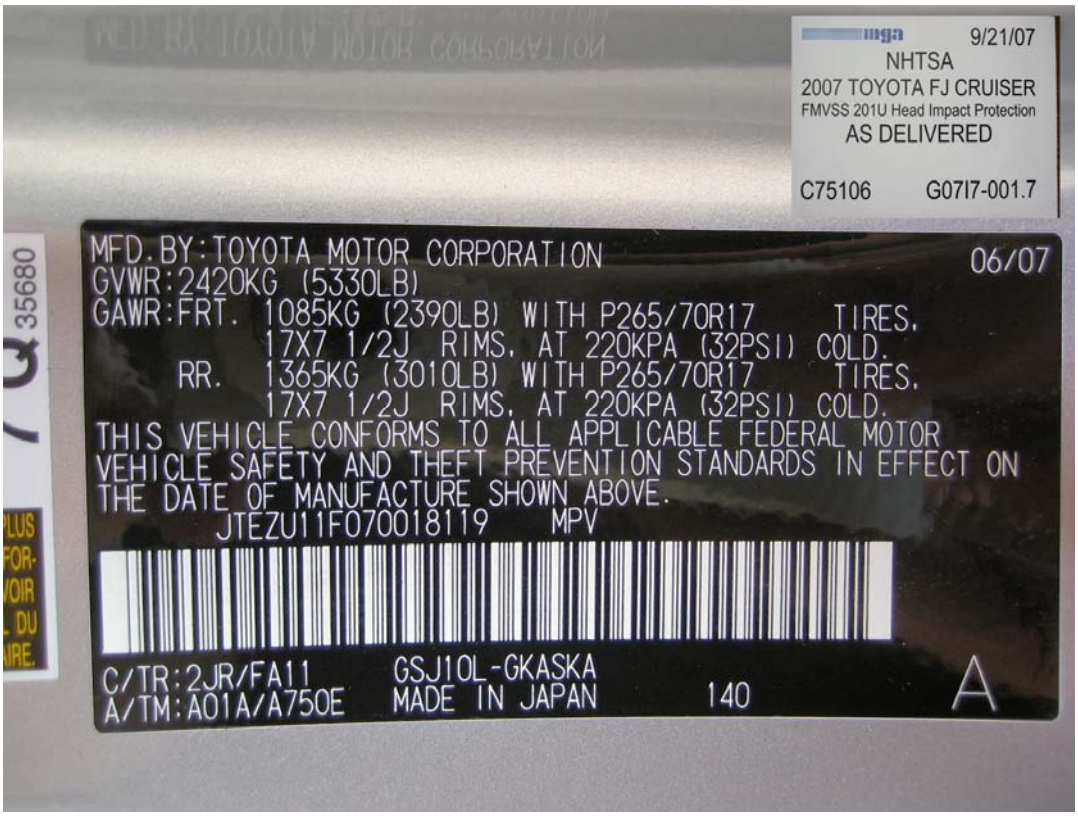
5.0 PHOTOGRAPHS

As Delivered – Left Side View

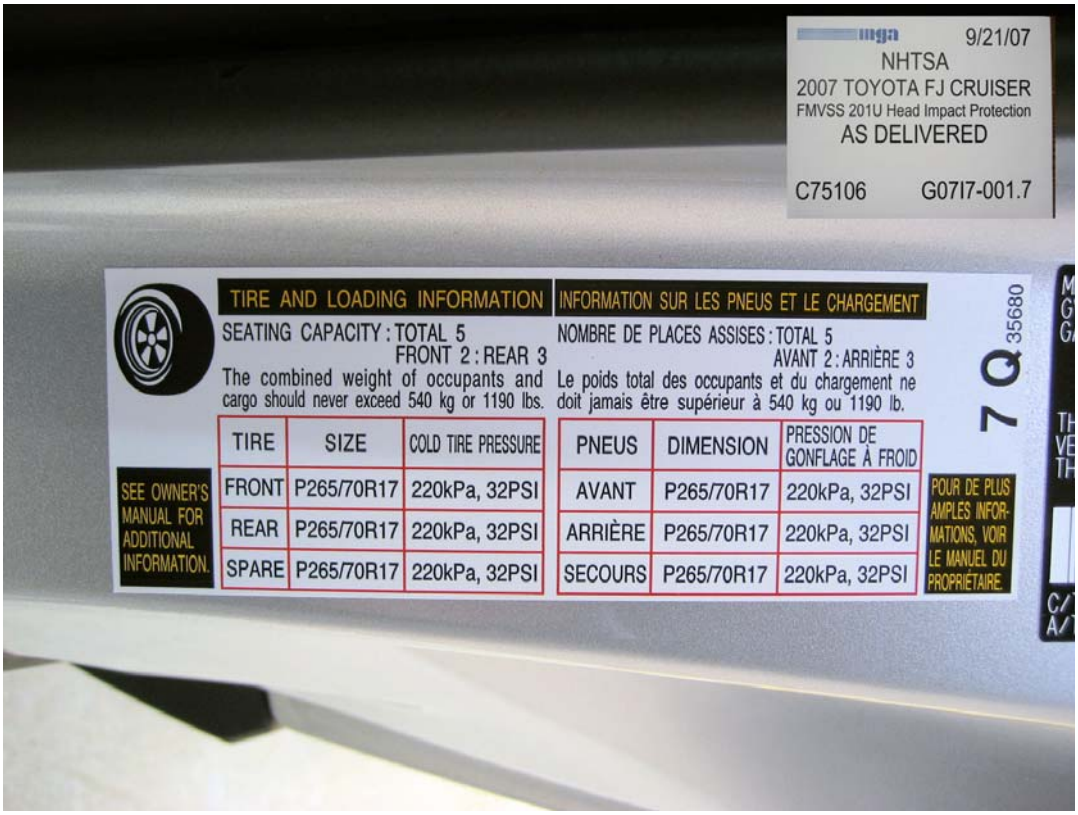
As Delivered – Right Side View

As Delivered – ¾ Front View From Left Side

As- Delivered – Rear View From Right Side



As Delivered – Vehicle's Certification Label

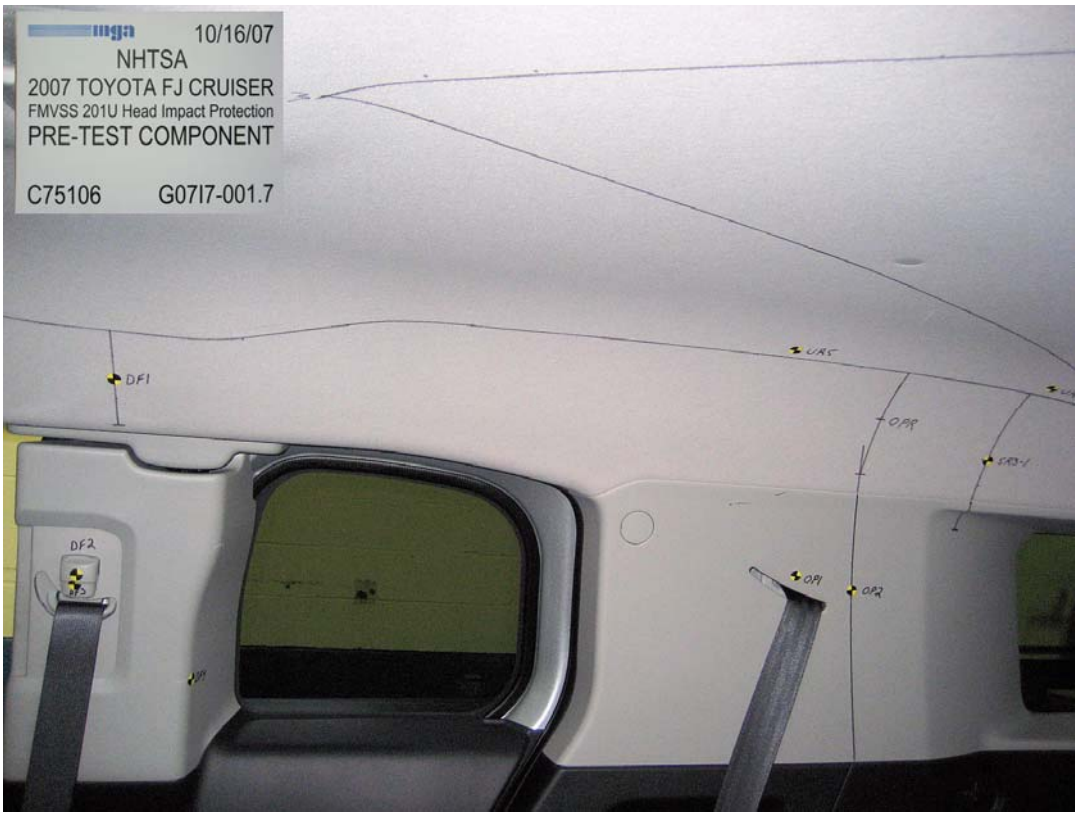


As Delivered – Vehicle's Tire Information Label

Pre-Test Component Photographs


mga
10/16/07
NHTSA
2007 TOYOTA FJ CRUISER
FMVSS 201U Head Impact Protection
PRE-TEST COMPONENT
C75106
G07I7-001.7


mga
10/16/07
NHTSA
2007 TOYOTA FJ CRUISER
FMVSS 201U Head Impact Protection
PRE-TEST COMPONENT
C75106
G07I7-001.7


10/16/07
NHTSA
2007 TOYOTA FJ CRUISER
FMVSS 201U Head Impact Protection
PRE-TEST COMPONENT
C75106 G07I7-001.7
DF1
DF2
OP1
OP2


10/16/07
NHTSA
2007 TOYOTA FJ CRUISER
FMVSS 201U Head Impact Protection
PRE-TEST COMPONENT
C75106 G07I7-001.7

Post-Test Component Photographs

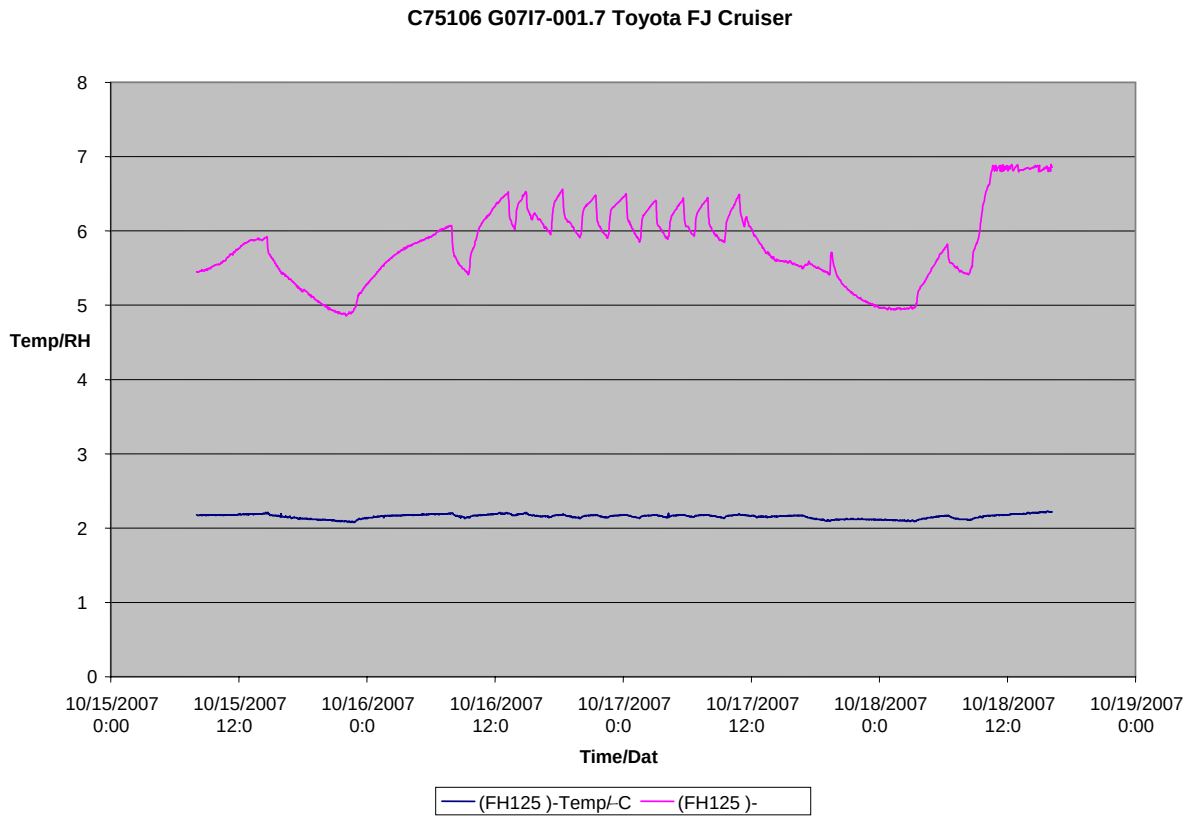

10/18/07
NHTSA
2007 TOYOTA FJ CRUISER
FMVSS 201U Head Impact Protection
POST-TEST COMPONENT
C75106
G07I7-001.7


10/18/07
NHTSA
2007 TOYOTA FJ CRUISER
FMVSS 201U Head Impact Protection
POST-TEST COMPONENT
C75106
G07I7-001.7


mga
10/18/07
NHTSA
2007 TOYOTA FJ CRUISER
FMVSS 201U Head Impact Protection
POST-TEST COMPONENT
C75106
G07I7-001.7


mga
10/18/07
NHTSA
2007 TOYOTA FJ CRUISER
FMVSS 201U Head Impact Protection
POST-TEST COMPONENT
C75106
G07I7-001.7

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: Henry 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

LABORATORY ACCREDITATION BUREAU
ISO/IEC 17025 Accredited

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: **57208**
Certificate Number: **071126703**
Page: **1 of 1**

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

Customer PO: **A070457**
Last Calibration: **9/26/06**
Calibration Date: **11/26/07**
Next Calibration: **11/26/08**

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 Procedure 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	6/12/07	6/12/08	821/273187-06	0.0015°
DoAll Sine Bar ID#1879	12/29/06	12/29/07	061229125	0.0015°

Results:

As Found Readings

Units	Nominal	Actual	Deviation
Decimal Deg.	5.00	5.0	0.00
	10.00	9.9	-0.10
	20.00	20.0	0.00
Tolerance	30.00	30.1	0.10
± 0.1 degrees	40.00	40.0	0.00

Reference Level Check: Within ± 0.1 degrees

As Left Readings

Nominal	Actual	Deviation
5.00	5.0	0.00
10.00	9.9	-0.10
20.00	20.0	0.00
30.00	30.1	0.10
40.00	40.0	0.00

Reference Level Check: Within ± 0.1 degrees

Comments: Environmental conditions during calibration: 68 °F, 39% RH.
No adjustments required.

Bill Rinzema issued: 11-26-07
Bill Rinzema
Calibration Technician

☐ Checked box indicate this calibration was performed at the customers facility. 12/3/07

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

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: JOHNSON LEVEL & TOOL
S/N: MGA 06122
Calibration Date: 9.21.06

Subject Tape Measure

Brand: STANLEY
S/N: TPM 741
Calibration Date: 1.2.07

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

If all differences are ± 1/32 of an inch (1 mm), then the tape measure is acceptable.

Pass ✓ Fail ____ Maximum Difference = 0

Date: 1.2.07 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.

1/3/07

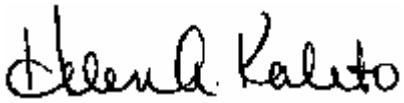
mga research corporation

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.

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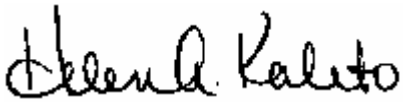
CALIBRATION CERTIFICATE

Sensor Information	Reference Sensor Information
Name: 2000 G Accelerometer	**Name:** *Reference Accelerometer*
Model: 7264-2000	**Model:** *301M09/484B*
S/N: 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: 

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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

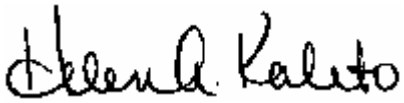
StdDeviation (%) 0.188

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

Temperature (°F): 74

Humidity (%): 36

Performed By: 

Approved By: 

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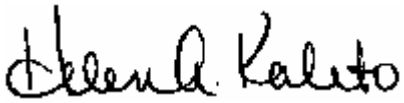
CALIBRATION CERTIFICATE

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: 

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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

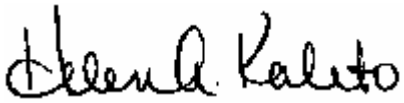
StdDeviation (%) 0.159

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

Temperature (°F): 74

Humidity (%): 36

Performed By: 

Approved By: 

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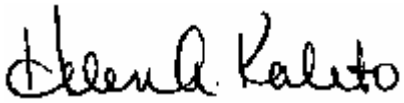
CALIBRATION CERTIFICATE

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: 

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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

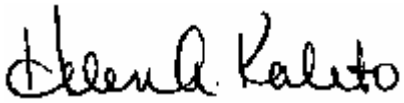
StdDeviation (%) 0.559

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

Temperature (°F): 74

Humidity (%): 36

Performed By: 

Approved By: 

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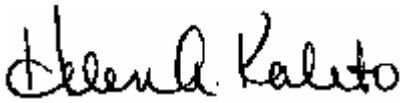
CALIBRATION CERTIFICATE

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: 

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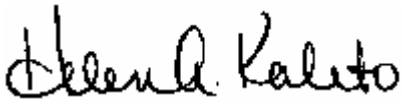
CALIBRATION CERTIFICATE

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: 

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~ Calibration Certificate ~

Per ISO 16063-21

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

Serial Number: 862/2470

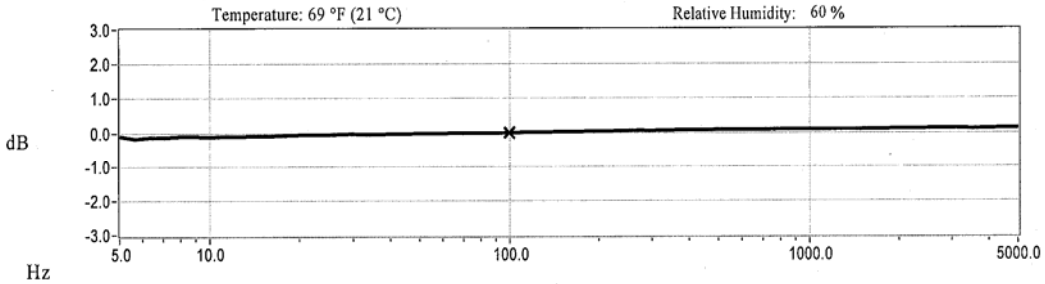
Description: ICP® Accelerometer Method: Back-to-Back Comparison Calibration

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

PAGE 1 of 1

cal3 - 3236847234.40

~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

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.