

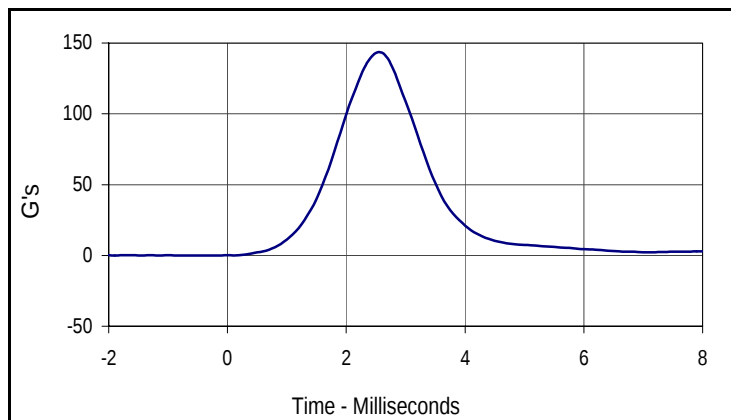
APPENDIX C
PRE-TEST CONFIGURATION AND PERFORMANCE VERIFICATION DATA

Test Program: ES2re Lateral Head Drop Calibration
 ATD Serial No.: F035

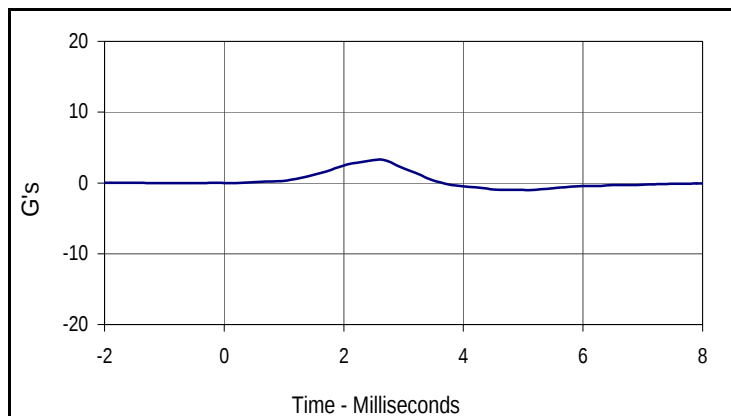
Test Date: 4/16/09
 Test I.D.: HD04A



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Peak Resultant Acceleration	G's	125 to 155	143.3	Pass
Peak Longitudinal Acceleration	G's	≤15	3.3	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Oscillations After Main Pulse	%	<15	5.2	Pass
Overall Test Results			Pass	



Curve Description			
Head Resultant			
CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
143.3	2.6	0.0	-0.2



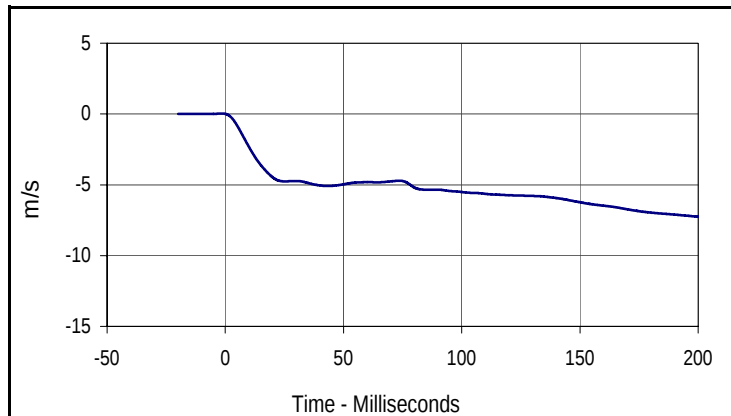
Curve Description			
Head X			
CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
3.3	2.6	-1.0	5.1

Test Program: ES2re Neck Calibration
 ATD Serial No.: F035

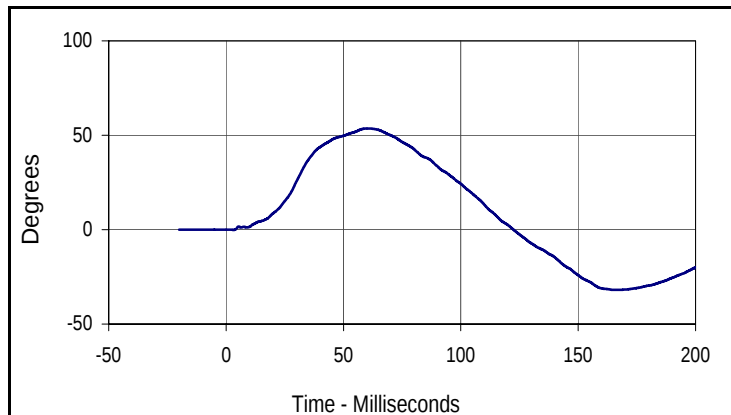
Test Date: 4/16/09
 Test I.D.: NB04A



Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	3.30 to 3.50	3.38	Pass
Pendulum Deceleration	1 msec	m/s	0.0 to -.050	-0.048	Pass
	3 msec	m/s	-.250 to -.375	-0.330	Pass
	14 msec	m/s	-3.20 to -3.70	-3.39	Pass
Headform Rotation	Max	Degrees	49.0 to 58.0	53.6	Pass
	Time	msec	54.0 to 66.0	61.0	Pass
Maximum Rotation To Time Zero Crossing		msec	53.0 to 88.0	61.5	Pass
			Overall Test Results		Pass



Curve Description			
Pendulum Velocity			
CURNO	Type	SAE Class	Units
001	FIL	180	m/s
Max	Time	Min	Time
0.0	-1.4	-7.3	200.0



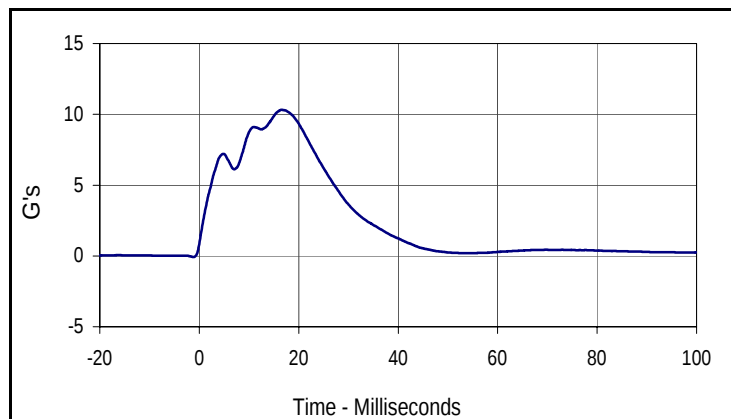
Curve Description			
Headform Rotation			
CURNO	Type	SAE Class	Units
002	FIL	180	Degrees
Max	Time	Min	Time
53.6	61.0	-31.9	164.9

Test Program: ES2re Shoulder Calibration
 ATD Serial No.: F035

Test Date: 4/16/09
 Test I.D.: SH04A



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	4.20 to 4.40	4.25	Pass
Peak Impactor Acceleration	G's	7.5 to 10.5	10.3	Pass
Overall Test Results			Pass	



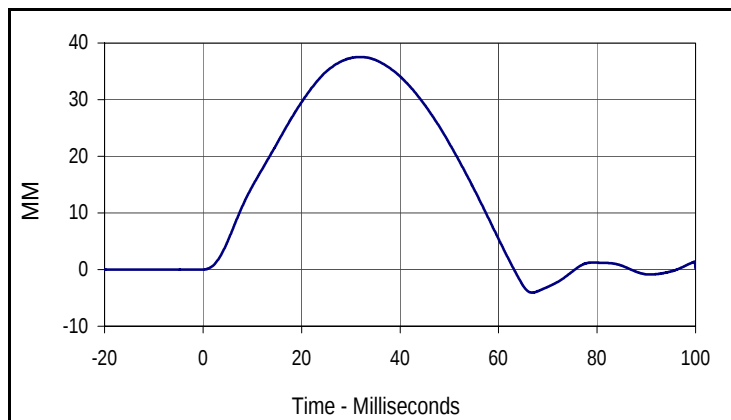
Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
001	FIL	180	G's
Max	Time	Min	Time
10.3	16.6	-0.1	-1.2

Test Program: ES2re Rib Module Calibration
 ATD Serial No.: F035 Rib #1

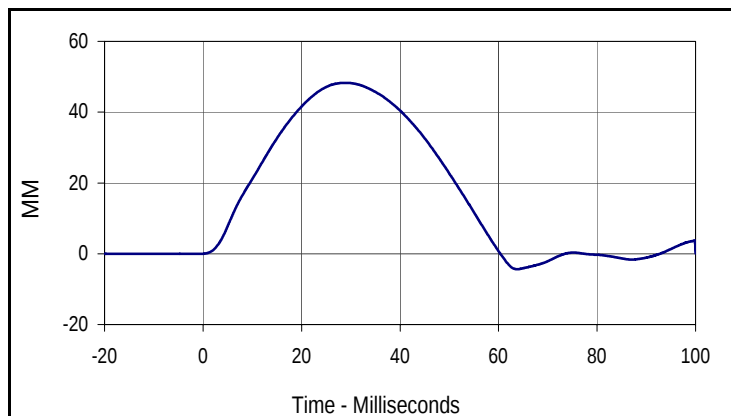
Test Date: 4/16/09
 Test I.D.: RIB04A, RIB04B



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Peak Rib Deflection at 459 MM Drop Height	MM	36 to 40	37.5	Pass
Peak Rib Deflection at 815 MM Drop Height	MM	46 to 51	48.3	Pass
Overall Test Results			Pass	



Curve Description			
Upper Rib Deflection (459 MM Drop Height)			
CURNO	Type	SAE Class	Units
001	FIL	180	MM
Max	Time	Min	Time
37.5	32.0	-4.1	66.8



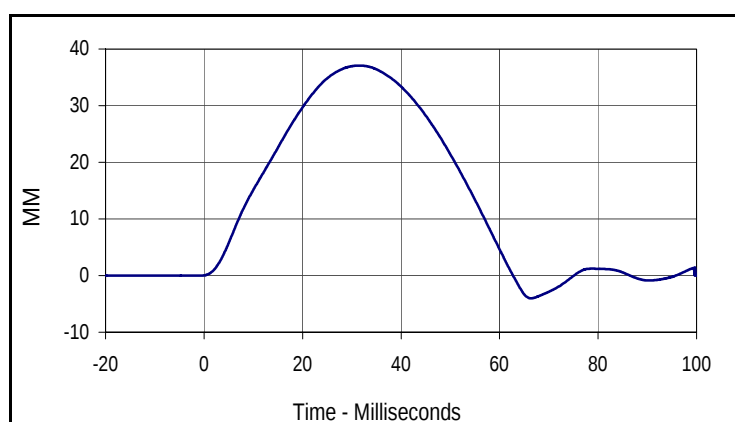
Curve Description			
Upper Rib Deflection (815 MM Drop Height)			
CURNO	Type	SAE Class	Units
001	FIL	180	MM
Max	Time	Min	Time
48.3	28.9	-4.4	63.7

Test Program: ES2re Rib Module Calibration
 ATD Serial No.: F035 Rib #2

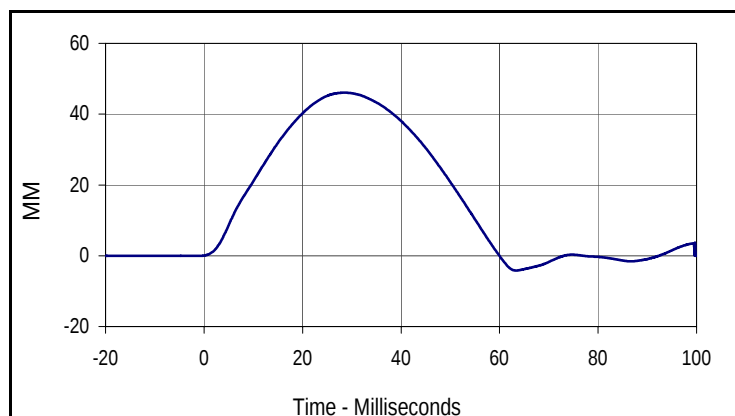
Test Date: 4/16/09
 Test I.D.: RIB04C, RIB04D



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Peak Rib Deflection at 459 MM Drop Height	MM	36 to 40	37.1	Pass
Peak Rib Deflection at 815 MM Drop Height	MM	46 to 51	46.1	Pass
Overall Test Results			Pass	



Curve Description			
Upper Rib Deflection (459 MM Drop Height)			
CURNO	Type	SAE Class	Units
001	FIL	180	MM
Max	Time	Min	Time
37.1	31.8	-4.0	66.6



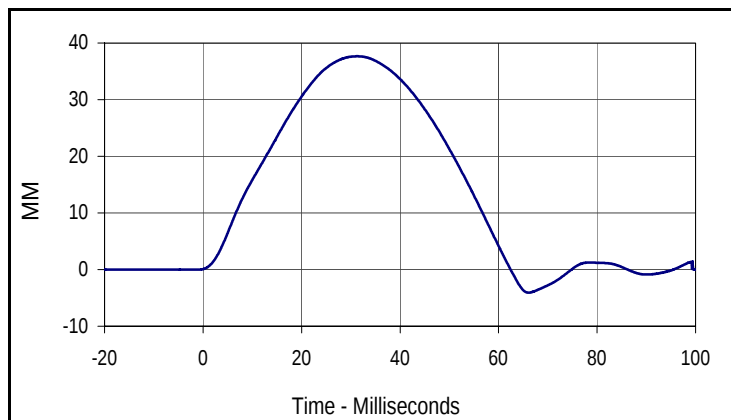
Curve Description			
Upper Rib Deflection (815 MM Drop Height)			
CURNO	Type	SAE Class	Units
001	FIL	180	MM
Max	Time	Min	Time
46.1	28.7	-4.2	63.5

Test Program: ES2re Rib Module Calibration
 ATD Serial No.: F035 Rib #3

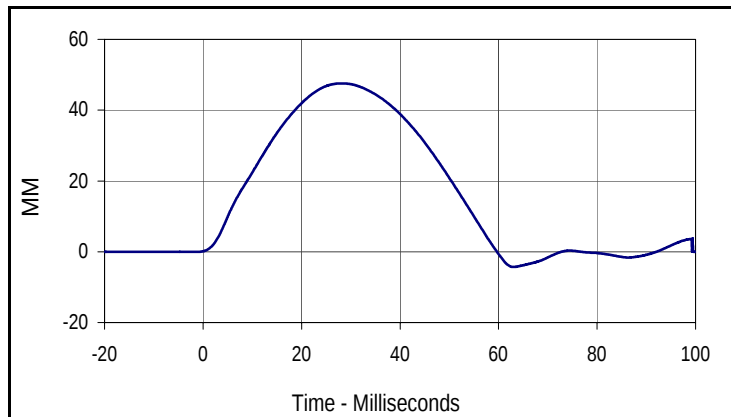
Test Date: 4/16/09
 Test I.D.: RIB04E, RIB04F



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Peak Rib Deflection at 459 MM Drop Height	MM	36 to 40	37.7	Pass
Peak Rib Deflection at 815 MM Drop Height	MM	46 to 51	47.6	Pass
Overall Test Results			Pass	



Curve Description			
Upper Rib Deflection (459 MM Drop Height)			
CURNO	Type	SAE Class	Units
001	FIL	180	MM
Max	Time	Min	Time
37.7	31.5	-4.1	66.3



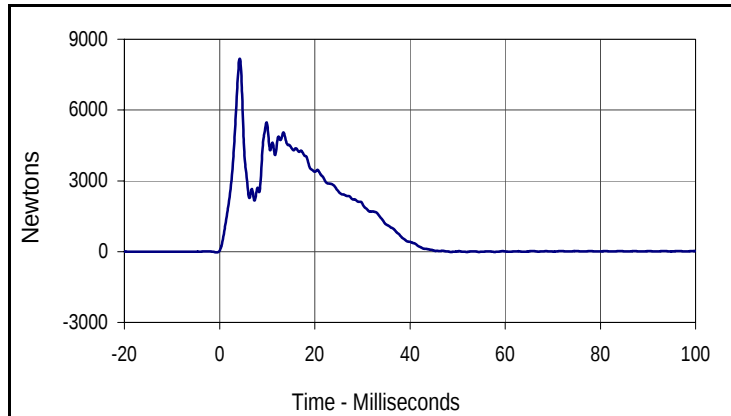
Curve Description			
Upper Rib Deflection (815 MM Drop Height)			
CURNO	Type	SAE Class	Units
001	FIL	180	MM
Max	Time	Min	Time
47.6	28.4	-4.3	63.2

Test Program: ES2re Thorax Calibration
 ATD Serial No.: F035

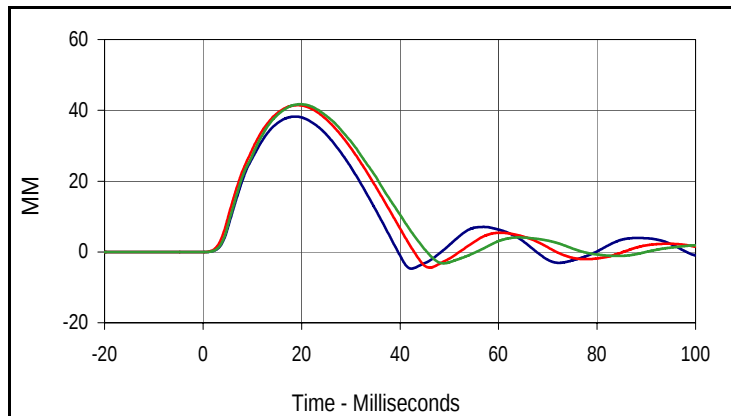
Test Date: 4/16/09
 Test I.D.: TH04A



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	5.40 to 5.60	5.50	Pass
Impactor Force	N	5100 to 6200	5476.5	Pass
	msec	> 6.0 msec	9.9	Pass
Upper Rib Deflection	MM	34 to 41	38.2	Pass
Middle Rib Deflection	MM	37 to 45	41.4	Pass
Lower Rib Deflection	MM	37 to 44	41.7	Pass
Overall Test Results			Pass	



Curve Description			
Impactor Force			
CURNO	Type	SAE Class	Units
001	FIL	180	Newtons
Max	Time	Min	Time
8178.0	4.2	-33.6	-0.6



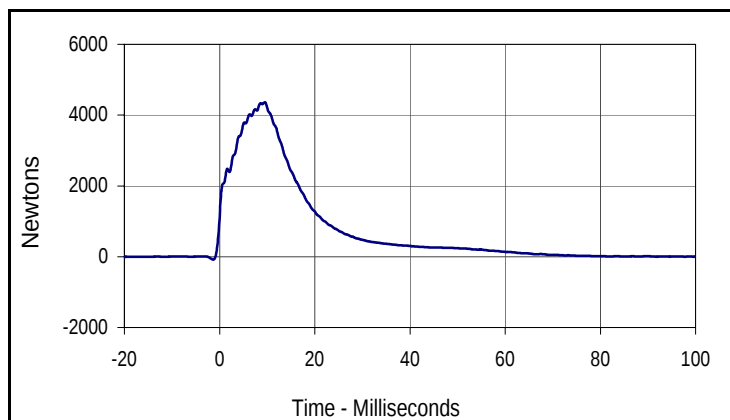
Curve Description			
Upper, Middle, Lower Rib Deflections			
CURNO(s)	Type	SAE Class	Units
002-003-004	FIL	180	MM
Max (Upper)	Time	Min (Upper)	Time
38.2	18.7	-4.7	42.3
Max (Middle)	Time	Min (Middle)	Time
41.4	19.3	-4.4	46.0
Max (Lower)	Time	Min (Lower)	Time
41.7	19.8	-3.2	48.8

Test Program: ES2re Abodomen Calibration
 ATD Serial No.: F035

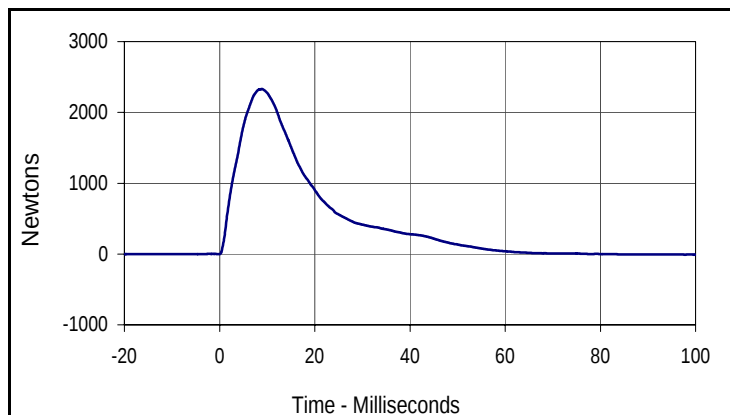
Test Date: 4/16/09
 Test I.D.: AB04A



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	3.90 to 4.10	3.92	Pass
Impactor Force	N	4000 to 4800	4366.3	Pass
	msec	10.6 to 13.0	10.7	Pass
Abdominal Force	N	2200 to 2700	2330.5	Pass
	msec	10.0 to 12.3	10.1	Pass
Overall Test Results				Pass



Curve Description			
Impactor Force			
CURNO	Type	SAE Class	Units
001	FIL	180	Newtons
Max	Time	Min	Time
4366.3	10.7	-80.4	-0.1



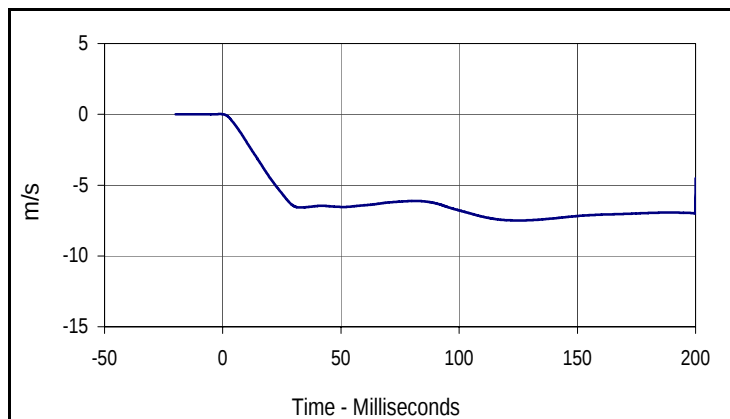
Curve Description			
Abdominal Force			
CURNO	Type	SAE Class	Units
002	RES	600	Newtons
Max	Time	Min	Time
2330.5	10.1	-8.5	99.1

Test Program: ES2re Lumbar Spine Calibration
 ATD Serial No.: F035

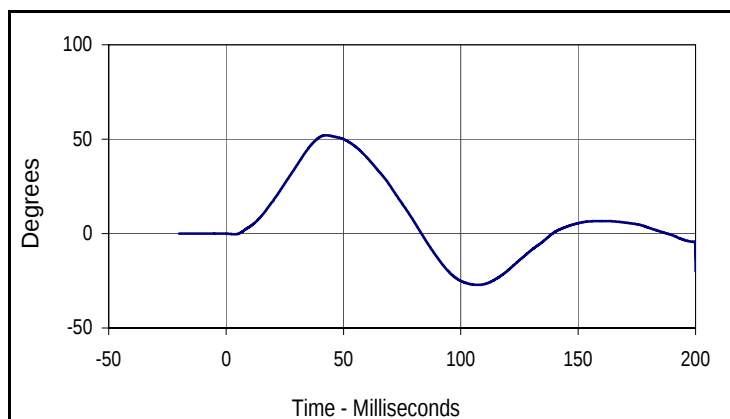
Test Date: 4/16/09
 Test I.D.: LS04A



Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	5.95 to 6.15	6.08	Pass
Pendulum Deceleration	1 msec	m/s	0.0 to -.050	-0.031	Pass
	3.7 msec	m/s	-.240 to -.425	-0.419	Pass
	27 msec	m/s	-5.80 to -6.50	-5.99	Pass
	30 msec	m/s	< -6.50	-6.47	Pass
Headform Rotation	Max	Degrees	45.0 to 55.0	52.1	Pass
	Time	msec	39.0 to 53.0	42.6	Pass
Maximum Rotation To Time Zero Crossing		msec	37.0 to 57.0	40.7	Pass
			Overall Test Results		Pass



Curve Description			
Pendulum Velocity			
CURNO	Type	SAE Class	Units
001	FIL	180	m/s
Max	Time	Min	Time
0.0	-1.0	-7.5	125.4



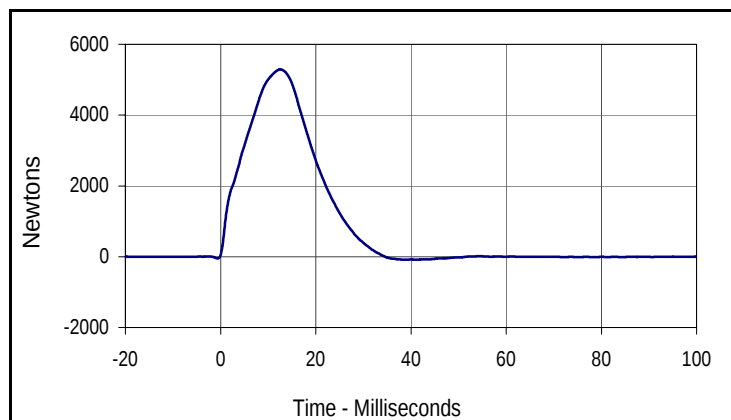
Curve Description			
Headform Rotation			
CURNO	Type	SAE Class	Units
002	FIL	180	Degrees
Max	Time	Min	Time
52.1	42.6	-27.2	107.0

Test Program: ES2re Pelvis Calibration
 ATD Serial No.: F035

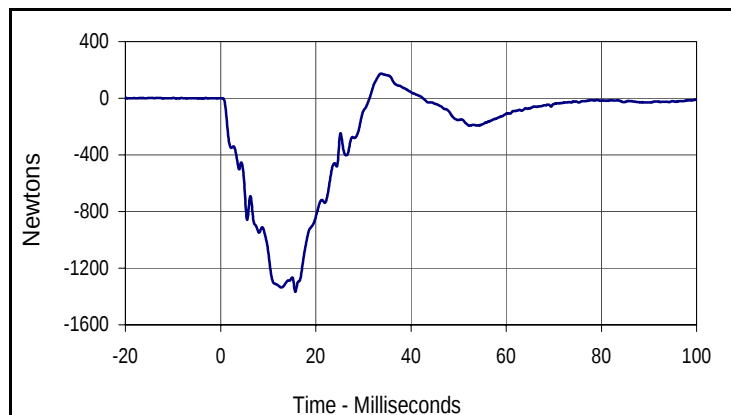
Test Date: 4/16/09
 Test I.D.: PL04A



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	4.20 to 4.40	4.25	Pass
Impactor Force	N	4700 to 5400	5291.7	Pass
	msec	11.8 to 16.1	12.6	Pass
Pubic Symphysis Load	N	-1230 to -1590	-1366.7	Pass
	msec	12.2 to 17.0	15.7	Pass
Overall Test Results				Pass



Curve Description			
Impactor Force			
CURNO	Type	SAE Class	Units
001	FIL	180	Newtons
Max	Time	Min	Time
5291.7	12.6	-86.6	38.4



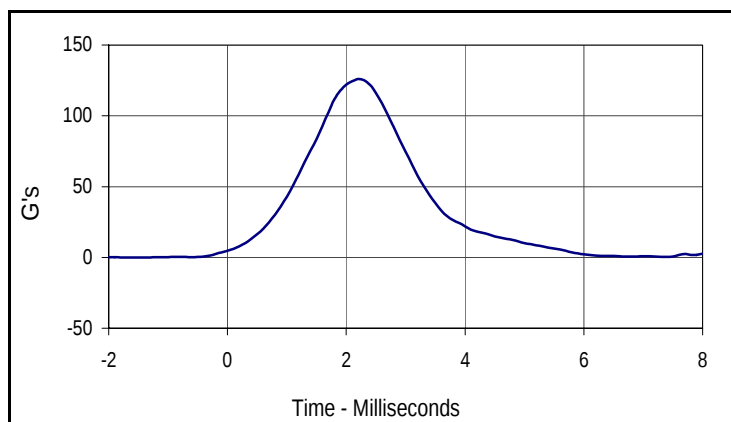
Curve Description			
Pubic Symphysis Load			
CURNO	Type	SAE Class	Units
002	FIL	600	Newtons
Max	Time	Min	Time
173.8	33.7	-1366.7	15.7

Test Program: SID IIs Lateral Head Drop Calibration
 ATD Serial No.: 299

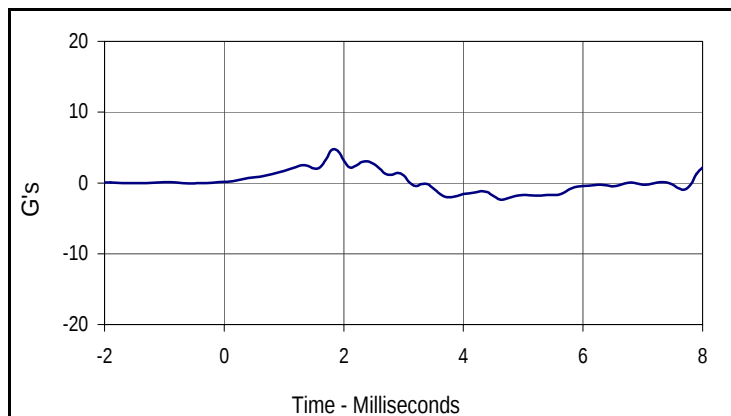
Test Date: 4/16/09
 Test I.D.: HDS4A



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Peak Resultant Acceleration	G's	115 to 137	125.9	Pass
Peak Longitudinal Acceleration	G's	≤15	4.7	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Oscillations After Main Pulse	%	<15	8.1	Pass
Overall Test Results			Pass	



Curve Description			
Head Resultant			
CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
125.9	2.2	0.0	-1.6



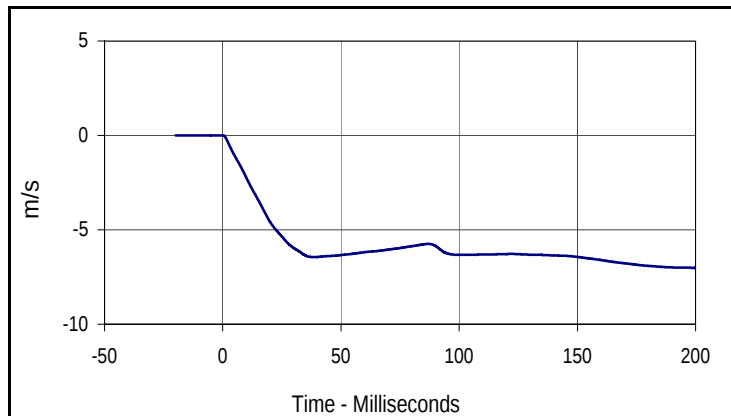
Curve Description			
Head X			
CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
4.7	1.8	-2.3	4.6

Test Program: SID IIs Neck Calibration
 ATD Serial No.: 299

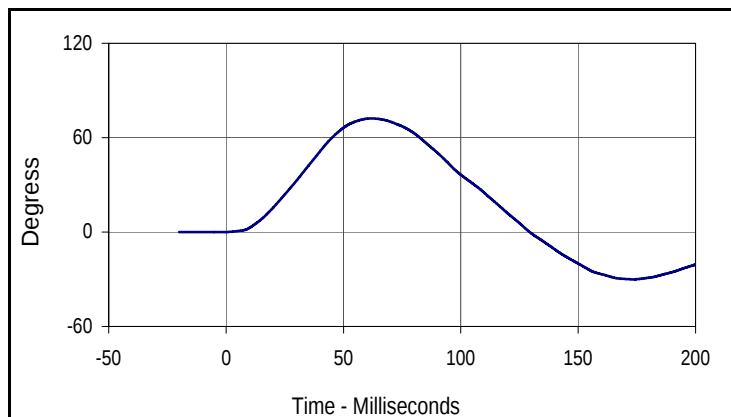
Test Date: 4/17/09
 Test I.D.: NB04B



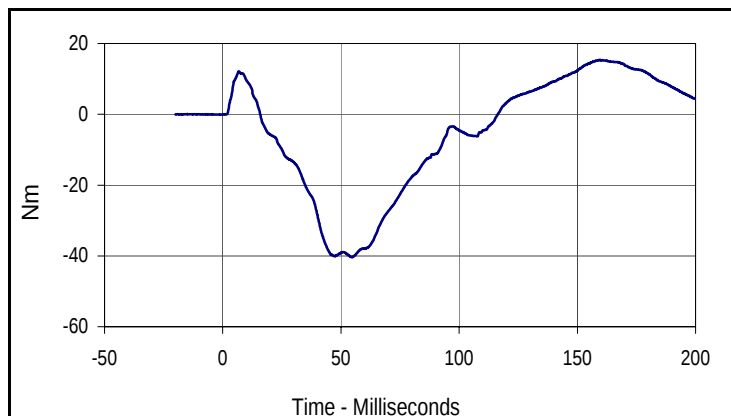
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	5.51 to 5.63	5.54	Pass
Pendulum Deceleration	10 msec	m/s	-2.20 to -2.80	-2.2	Pass
	15 msec	m/s	-3.30 to -4.10	-3.4	Pass
	20 msec	m/s	-4.40 to -5.40	-4.6	Pass
	25 msec	m/s	-5.40 to -6.10	-5.4	Pass
	25-100 msec	m/s	-5.50 to -6.20	-6.18	Pass
Translation-Rotation	Max	Degrees	71.0 to 81.0	72.2	Pass
	Time	msec	50.0 to 70.0	61.9	Pass
Peak Occipital Condyle Moment		Nm	-36.0 to -44.0	-40.4	Pass
Decaying Moment Time to Cross 0 Nm		msec	102.0 to 126.0	116.4	Pass
			Overall Test Results		Pass



Curve Description			
Pendulum Velocity			
CURNO	Type	SAE Class	Units
001	FIL	180	m/s
Max	Time	Min	Time
0.0	-0.3	-7.0	200.0



Curve Description			
Maximum Translation Rotation			
CURNO	Type	SAE Class	Units
002	FIL	60	Degress
Max	Time	Min	Time
72.2	61.9	-30.0	173.4



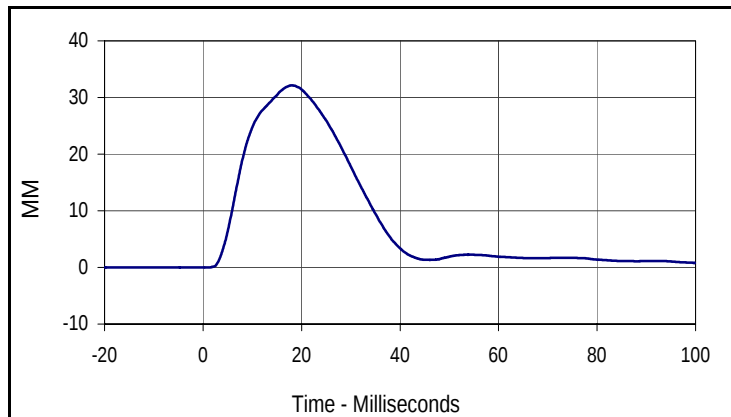
Curve Description			
Moment About Occipital Condyle			
CURNO	Type	SAE Class	Units
003	FIL	600	Nm
Max	Time	Min	Time
15.4	159.3	-40.4	54.7

Test Program: SID IIs Shoulder Calibration
 ATD Serial No.: 299

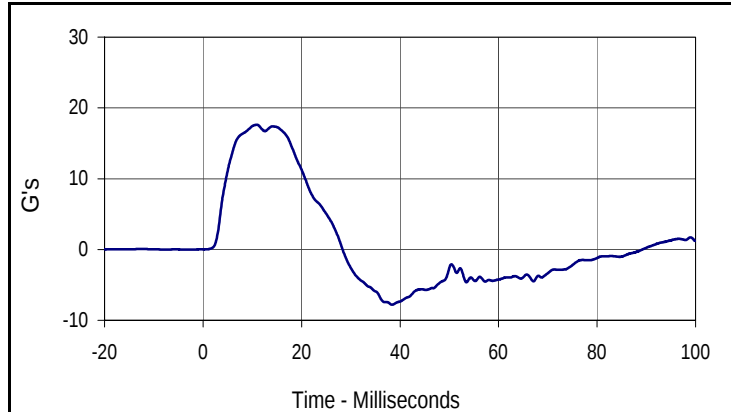
Test Date: 4/17/09
 Test I.D.: SH04A



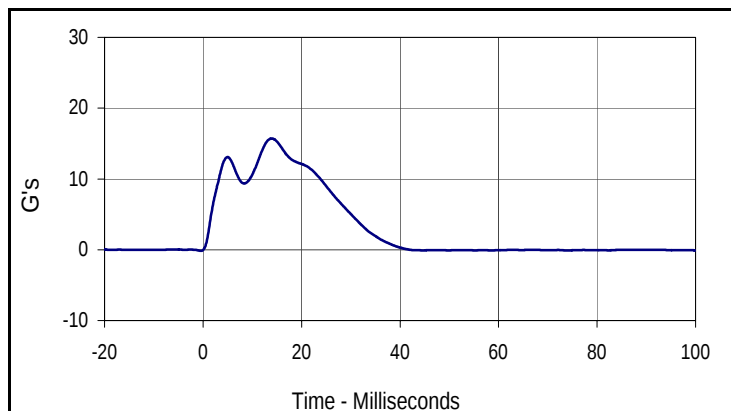
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity	m/s	4.20 to 4.40	4.22	Pass
Shoulder Deflection	MM	28 to 37	32.1	Pass
Peak Upper Spine Y Acceleration	G's	17 to 22	17.6	Pass
Peak Impactor Acceleration	G's	13 to 18	15.7	Pass
Overall Test Results			Pass	



Curve Description			
Shoulder Deflection			
CURNO	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
32.1	18.0	0.0	-11.1



Curve Description			
Upper Spine Y Acceleration			
CURNO	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
17.6	10.9	-7.8	38.4



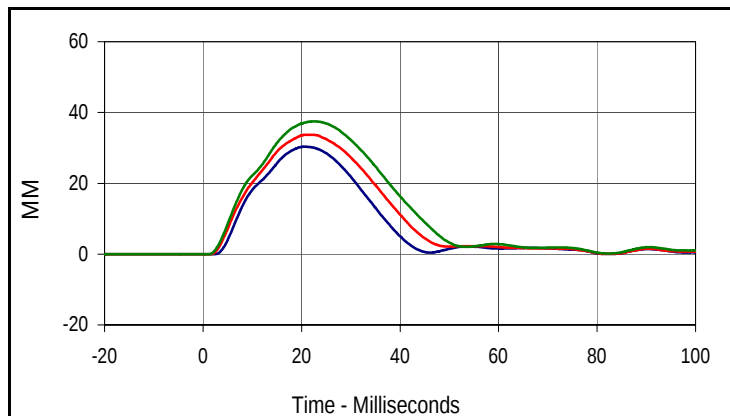
Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
15.7	13.9	-0.1	-0.4

Test Program: SID IIs Thorax with Arm Calibration
 ATD Serial No.: 299

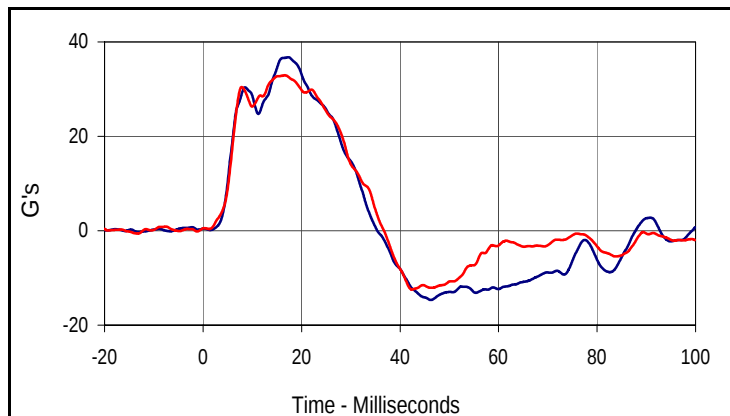
Test Date: 4/17/09
 Test I.D.: TH04A



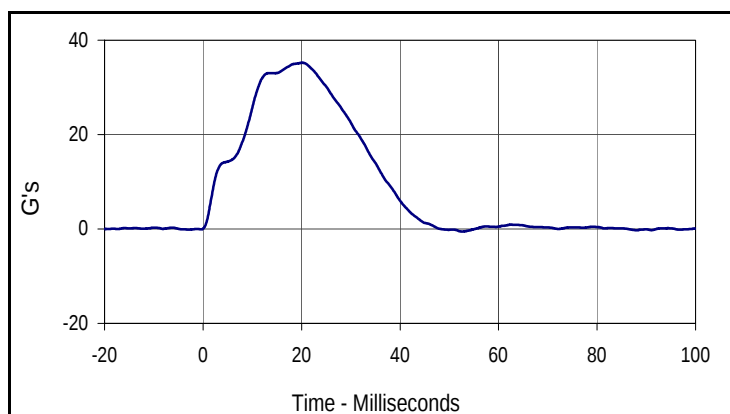
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity	m/s	6.60 to 6.80	6.71	Pass
Shoulder Deflection	MM	31 to 40	37.5	Pass
Upper Thorax Rib Deflection	MM	26 to 32	30.3	Pass
Middle Abdominal Rib Deflection	MM	30 to 36	33.7	Pass
Lower Abdominal Rib Deflection	MM	32 to 38	37.5	Pass
Peak Upper Spine Y Acceleration	G's	34 to 43	36.8	Pass
Peak Lower Spine Y Acceleration	G's	28 to 35	32.9	Pass
Peak Impactor Acceleration	G's	31 to 36	35.2	Pass
Overall Test Results			Pass	



Curve Description			
Upper Thorax Deflection			
CURNO	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
30.3	20.7	0.0	-20.0
Middle Thorax Deflection			
Max	Time	Min	Time
33.7	21.5	0.0	-3.3
Lower Thorax Deflection			
Max	Time	Min	Time
37.5	22.4	0.0	-19.4



Curve Description			
Upper Spine Y Acceleration			
CURNO	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
36.8	17.3	-14.7	46.2
Lower Spine Y Acceleration			
CURNO	Type	SAE Class	Units
005	FIL	180	G's
Max	Time	Min	Time
32.9	16.6	-12.4	42.4



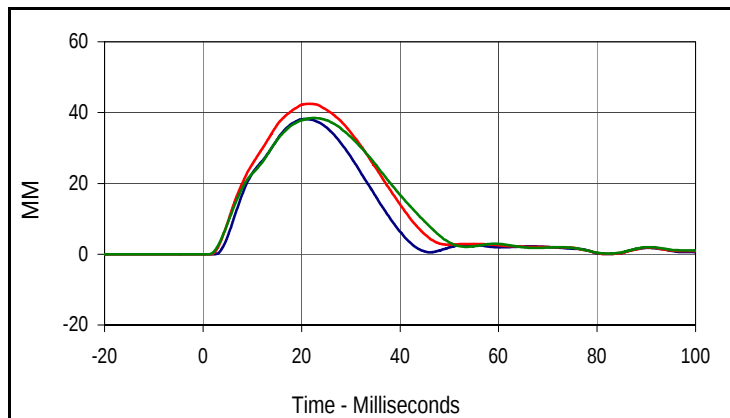
Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
006	FIL	180	G's
Max	Time	Min	Time
35.2	20.2	-0.6	52.6

Test Program: SID IIs Thorax w/o Arm Calibration
 ATD Serial No.: 299

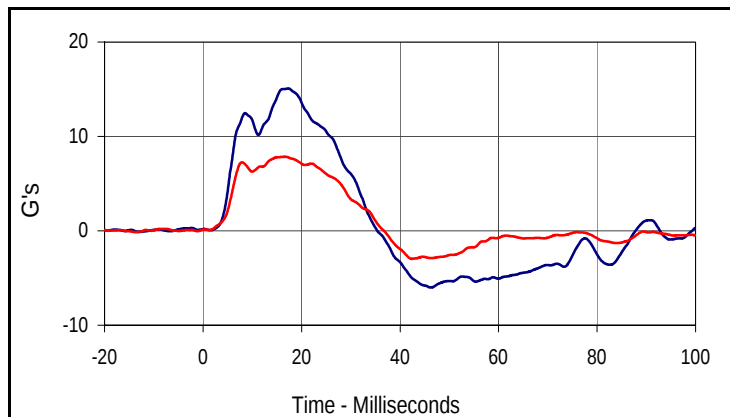
Test Date: 4/17/09
 Test I.D.: TH04B



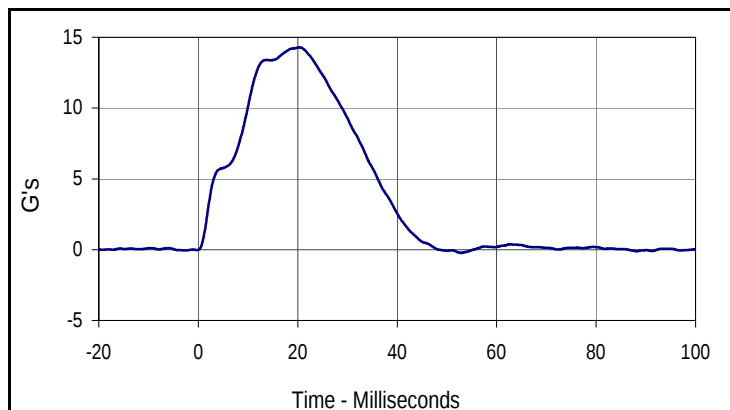
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity	m/s	4.20 to 4.40	4.22	Pass
Upper Thorax Rib Deflection	MM	33 to 40	38.2	Pass
Middle Abdominal Rib Deflection	MM	39 to 45	42.5	Pass
Lower Abdominal Rib Deflection	MM	36 to 43	38.5	Pass
Peak Upper Spine Y Acceleration	G's	14 to 17	15.1	Pass
Peak Lower Spine Y Acceleration	G's	7 to 10	7.8	Pass
Peak Impactor Acceleration	G's	12 to 16	14.3	Pass
Overall Test Results			Pass	



Curve Description			
Upper Thorax Deflection			
CURNO	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
38.2	20.7	0.0	-20.0
Middle Thorax Deflection			
Max	Time	Min	Time
42.5	21.5	0.0	-3.3
Lower Thorax Deflection			
Max	Time	Min	Time
38.5	22.4	0.0	-19.4



Curve Description			
Upper Spine Y Acceleration			
CURNO	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
15.1	17.3	-6.0	46.2
Lower Spine Y Acceleration			
CURNO	Type	SAE Class	Units
005	FIL	180	G's
Max	Time	Min	Time
7.8	16.6	-3.0	42.4



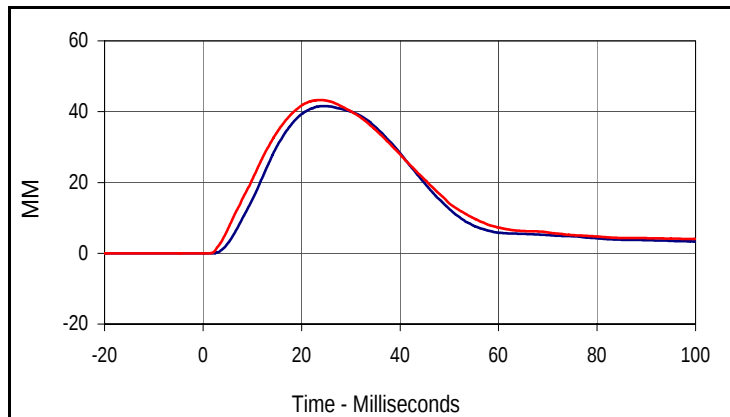
Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
006	FIL	180	G's
Max	Time	Min	Time
14.3	20.4	-0.2	52.8

Test Program: SID IIs Abdomen Calibration
 ATD Serial No.: 299

Test Date: 4/17/09
 Test I.D.: AB04A

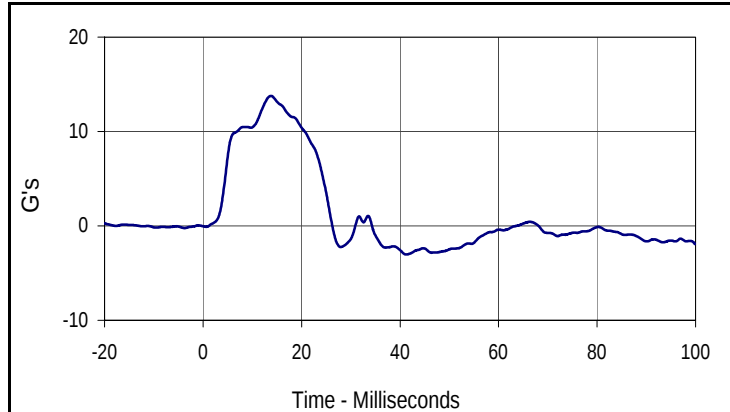


Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity	m/s	4.30 to 4.50	4.31	Pass
Upper Abdominal Rib Deflection	MM	39 to 47	41.6	Pass
Lower Abdominal Rib Deflection	MM	37 to 46	43.3	Pass
Peak Lower Spine Y Acceleration	G's	11 to 14	13.8	Pass
Peak Impactor Acceleration	G's	12 to 16	13.8	Pass
Overall Test Results			Pass	

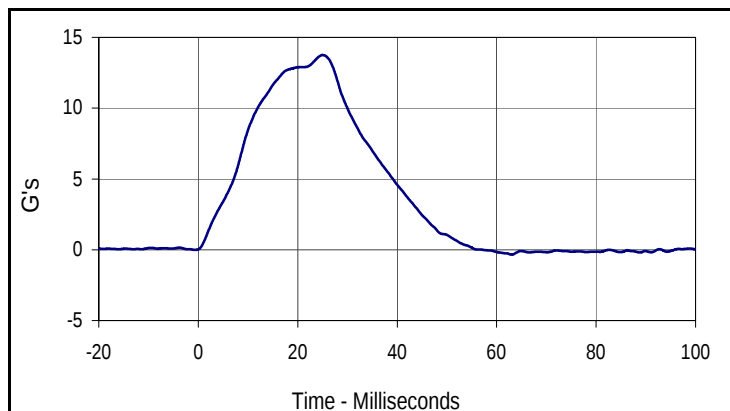


Curve Description			
Upper Abdominal Rib Deflection			
CURNO	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
41.6	24.6	0.0	1.3

Curve Description			
Lower Abdominal Rib Deflection			
CURNO	Type	SAE Class	Units
002	FIL	600	MM
Max	Time	Min	Time
43.3	24.0	0.0	-20.0



Curve Description			
Lower Spine Y Acceleration			
CURNO	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
13.8	13.8	-3.0	41.3



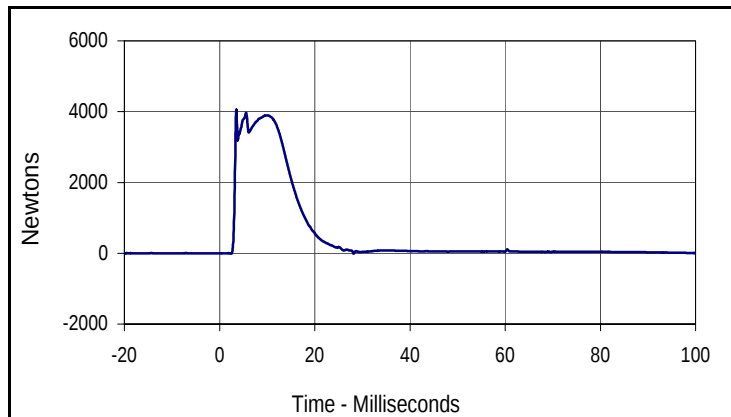
Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
13.8	25.0	-0.3	63.0

Test Program: SID IIs Pelvis Acetabulum Calibration
 ATD Serial No.: 299

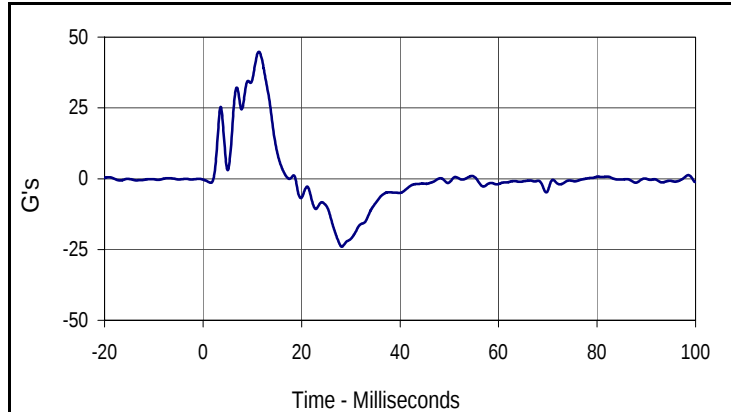
Test Date: 4/17/09
 Test I.D.: PA04A



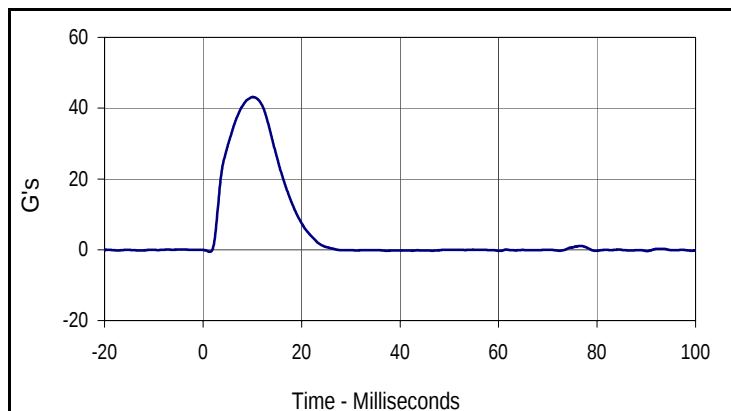
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity	m/s	6.60 to 6.80	6.71	Pass
Peak Acetabulum Force	Newtons	3800 to 4600	4056.7	Pass
Peak Pelvis Y Acceleration	G's	41 to 50	44.9	Pass
Peak Impactor Acceleration	G's	38 to 47	43.1	Pass
Overall Test Results			Pass	



Curve Description			
Pelvis Acetabulum Force			
CURNO	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
4056.7	3.5	-15.2	2.4



Curve Description			
Pelvis Y Acceleration			
CURNO	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
44.9	11.3	-24.0	28.2



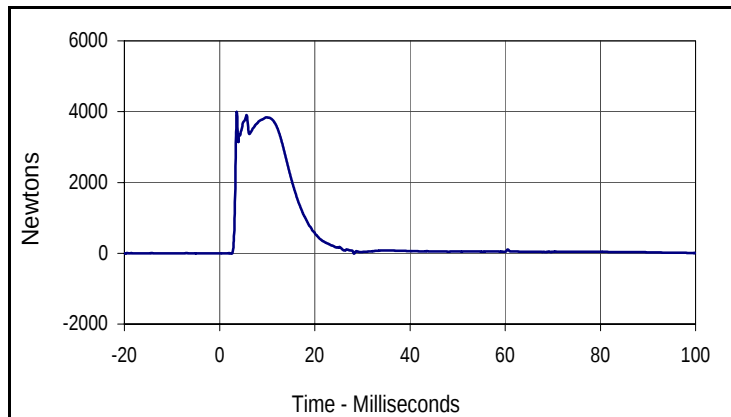
Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
43.1	10.1	-0.6	1.4

Test Program: SID IIs Pelvis Iliac Calibration
 ATD Serial No.: 299

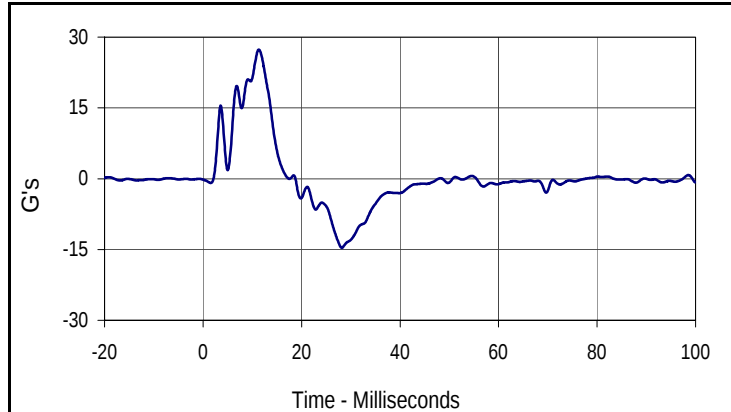
Test Date: 4/17/09
 Test I.D.: PI04A



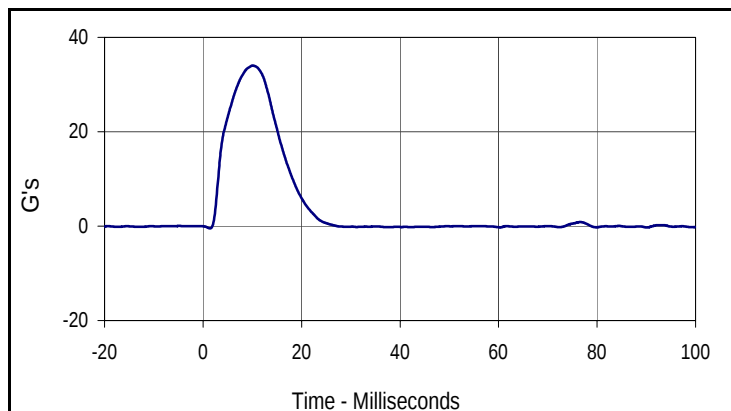
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity	m/s	4.2 to 4.4	4.22	Pass
Peak Iliac Force	Newtons	3700 to 4500	3996.8	Pass
Peak Pelvis Y Acceleration	G's	27 to 33	27.3	Pass
Peak Impactor Acceleration	G's	34 to 40	34.0	Pass
Overall Test Results			Pass	



Curve Description			
Pelvis Iliac Force			
CURNO	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
3996.8	3.6	-15.0	2.5



Curve Description			
Pelvis Y Acceleration			
CURNO	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
27.3	11.3	-14.6	28.2



Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
34.0	10.1	-0.5	1.4

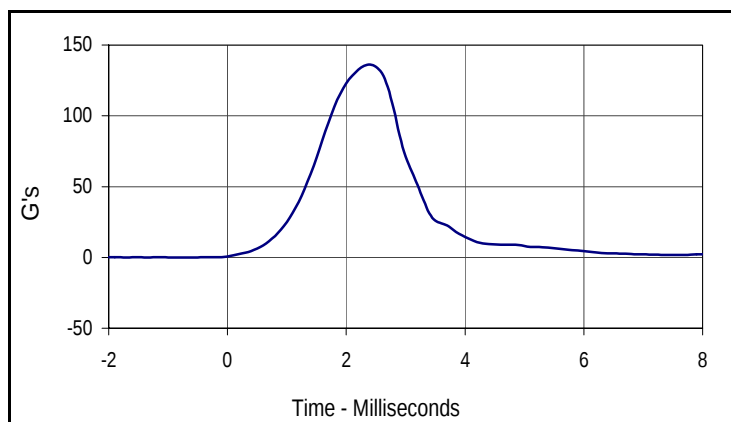
APPENDIX C
POST-TEST CONFIGURATION AND PERFORMANCE VERIFICATION DATA

Test Program: ES2re Lateral Head Drop Calibration
 ATD Serial No.: F035

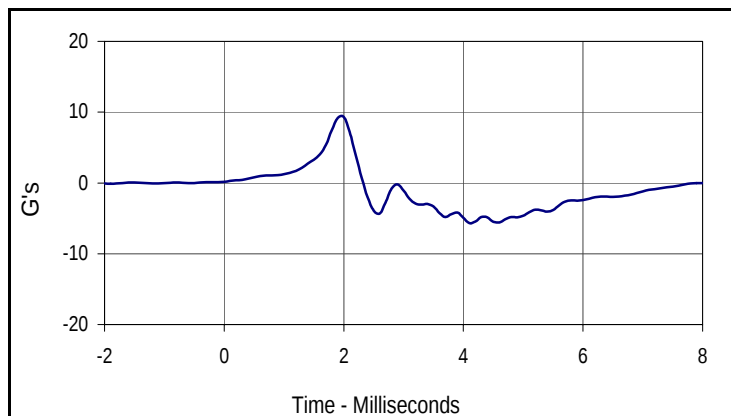
Test Date: 4/25/09
 Test I.D.: HD04C



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Peak Resultant Acceleration	G's	125 to 155	136.1	Pass
Peak Longitudinal Acceleration	G's	≤15	9.3	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Oscillations After Main Pulse	%	<15	5.9	Pass
Overall Test Results			Pass	



Curve Description			
Head Resultant			
CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
136.1	2.4	0.0	-1.0



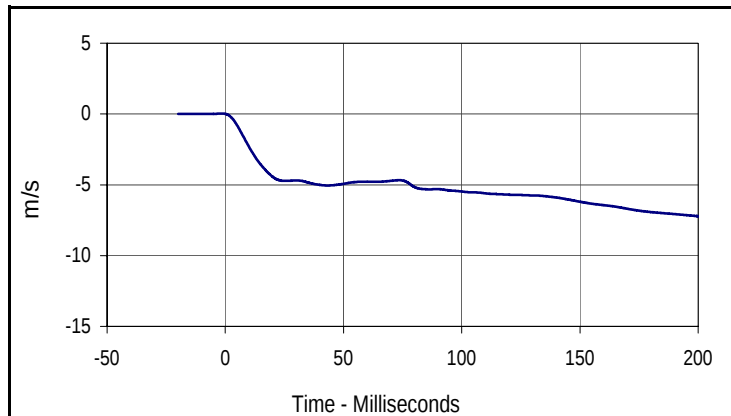
Curve Description			
Head X			
CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
9.3	2.0	-5.7	4.1

Test Program: ES2re Neck Calibration
 ATD Serial No.: F035

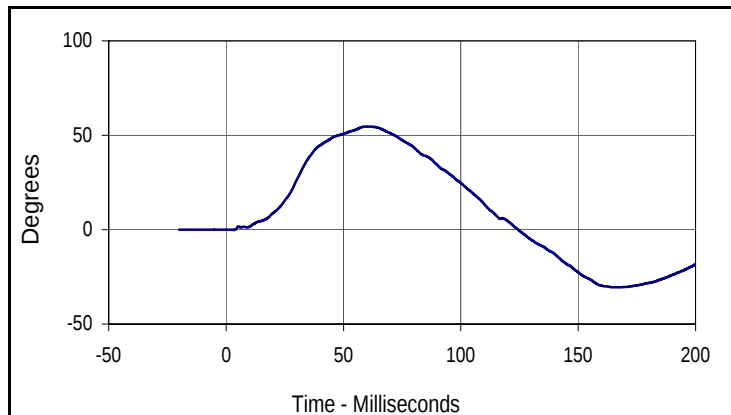
Test Date: 4/25/09
 Test I.D.: NB04B



Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	3.30 to 3.50	3.50	Pass
Pendulum Deceleration	1 msec	m/s	0.0 to -.050	-0.047	Pass
	3 msec	m/s	-.250 to -.375	-0.326	Pass
	14 msec	m/s	-3.20 to -3.70	-3.36	Pass
Headform Rotation	Max	Degrees	49.0 to 58.0	54.6	Pass
	Time	msec	54.0 to 66.0	61.0	Pass
Maximum Rotation To Time Zero Crossing		msec	53.0 to 88.0	63.4	Pass
			Overall Test Results		Pass



Curve Description			
Pendulum Velocity			
CURNO	Type	SAE Class	Units
001	FIL	180	m/s
Max	Time	Min	Time
0.0	-1.4	-7.2	200.0



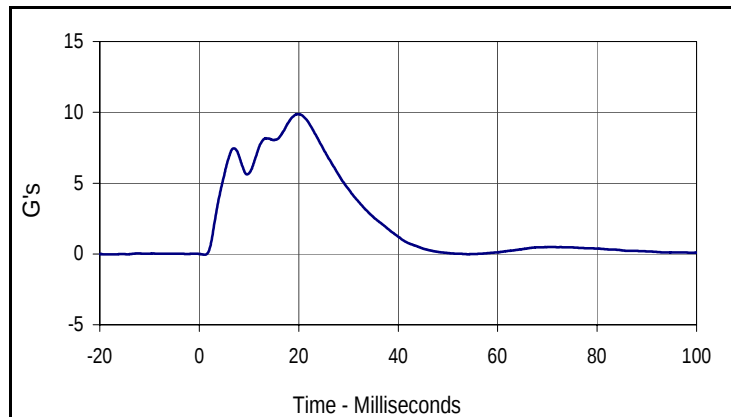
Curve Description			
Headform Rotation			
CURNO	Type	SAE Class	Units
002	FIL	180	Degrees
Max	Time	Min	Time
54.6	61.0	-30.5	164.9

Test Program: ES2re Shoulder Calibration
 ATD Serial No.: F035

Test Date: 4/25/09
 Test I.D.: SH04B



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	4.20 to 4.40	4.22	Pass
Peak Impactor Acceleration	G's	7.5 to 10.5	9.9	Pass
Overall Test Results			Pass	



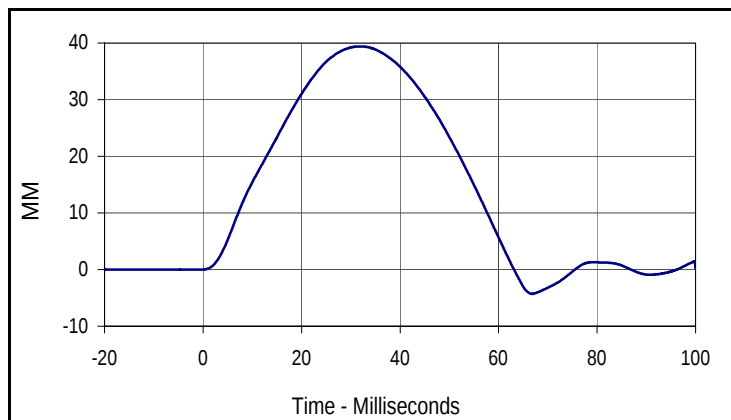
Curve Description			
Probe Impactor Acceleration			
CURNO	Type	SAE Class	Units
001	FIL	180	G's
Max	Time	Min	Time
9.9	19.8	-0.1	1.1

Test Program: ES2re Rib Module Calibration
 ATD Serial No.: F035 Rib #1

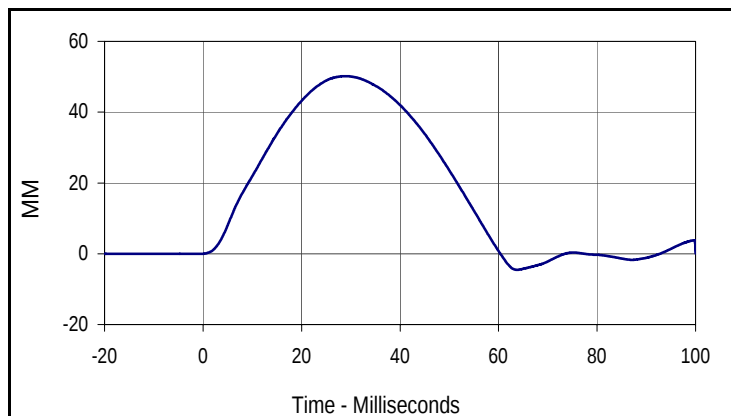
Test Date: 4/25/09
 Test I.D.: RIB04G, RIB04H



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Peak Rib Deflection at 459 MM Drop Height	MM	36 to 40	39.4	Pass
Peak Rib Deflection at 815 MM Drop Height	MM	46 to 51	50.2	Pass
Overall Test Results			Pass	



Curve Description			
Upper Rib Deflection (459 MM Drop Height)			
CURNO	Type	SAE Class	Units
001	FIL	180	MM
Max	Time	Min	Time
39.4	32.2	-4.3	67.0



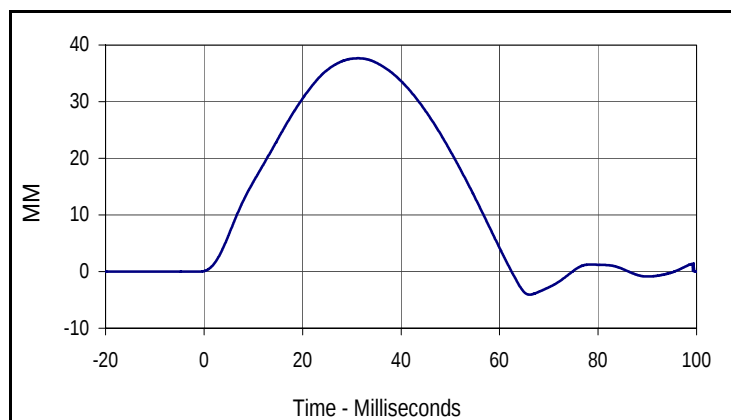
Curve Description			
Upper Rib Deflection (815 MM Drop Height)			
CURNO	Type	SAE Class	Units
001	FIL	180	MM
Max	Time	Min	Time
50.2	29.1	-4.5	63.9

Test Program: ES2re Rib Module Calibration
 ATD Serial No.: F035 Rib #2

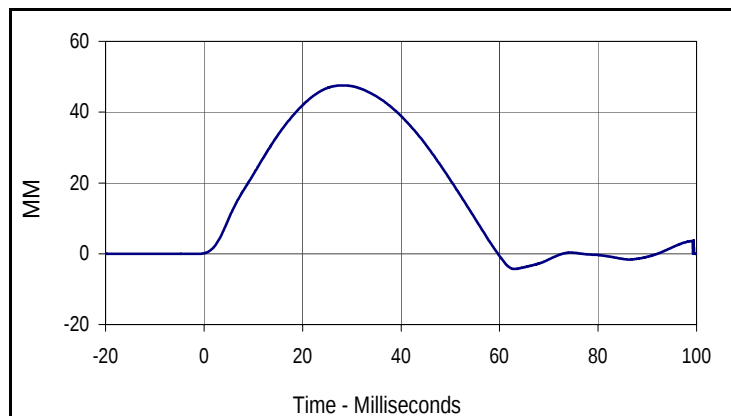
Test Date: 4/25/09
 Test I.D.: RIB04I, RIB04J



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Peak Rib Deflection at 459 MM Drop Height	MM	36 to 40	37.7	Pass
Peak Rib Deflection at 815 MM Drop Height	MM	46 to 51	47.6	Pass
Overall Test Results			Pass	



Curve Description			
Upper Rib Deflection (459 MM Drop Height)			
CURNO	Type	SAE Class	Units
001	FIL	180	MM
Max	Time	Min	Time
37.7	31.5	-4.1	66.3



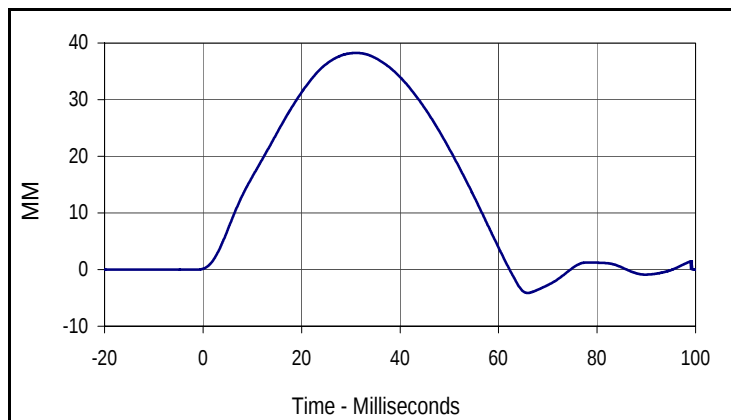
Curve Description			
Upper Rib Deflection (815 MM Drop Height)			
CURNO	Type	SAE Class	Units
001	FIL	180	MM
Max	Time	Min	Time
47.6	28.4	-4.3	63.2

Test Program: ES2re Rib Module Calibration
 ATD Serial No.: F035 Rib #3

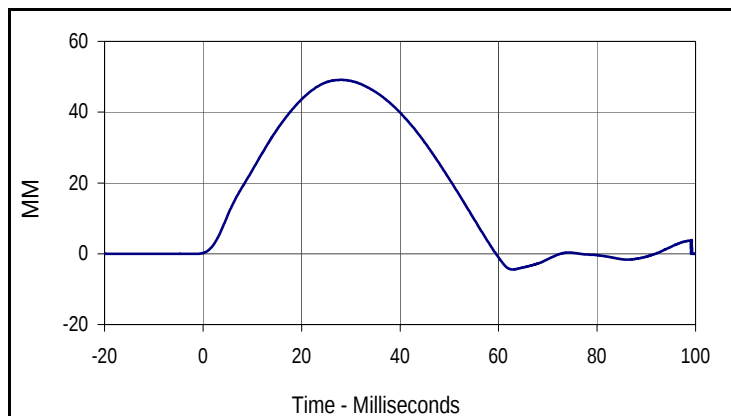
Test Date: 4/25/09
 Test I.D.: RIB04K, RIB04L



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Peak Rib Deflection at 459 MM Drop Height	MM	36 to 40	38.2	Pass
Peak Rib Deflection at 815 MM Drop Height	MM	46 to 51	49.1	Pass
Overall Test Results			Pass	



Curve Description			
Upper Rib Deflection (459 MM Drop Height)			
CURNO	Type	SAE Class	Units
001	FIL	180	MM
Max	Time	Min	Time
38.2	31.3	-4.1	66.1



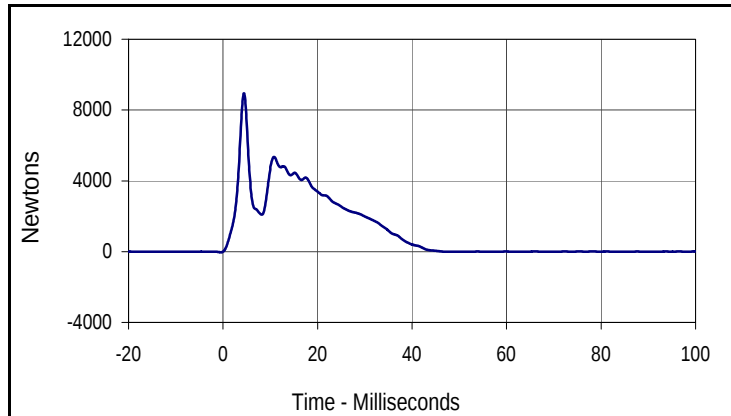
Curve Description			
Upper Rib Deflection (815 MM Drop Height)			
CURNO	Type	SAE Class	Units
001	FIL	180	MM
Max	Time	Min	Time
49.1	28.2	-4.4	63.0

Test Program: ES2re Thorax Calibration
 ATD Serial No.: F035

Test Date: 4/25/09
 Test I.D.: TH04B



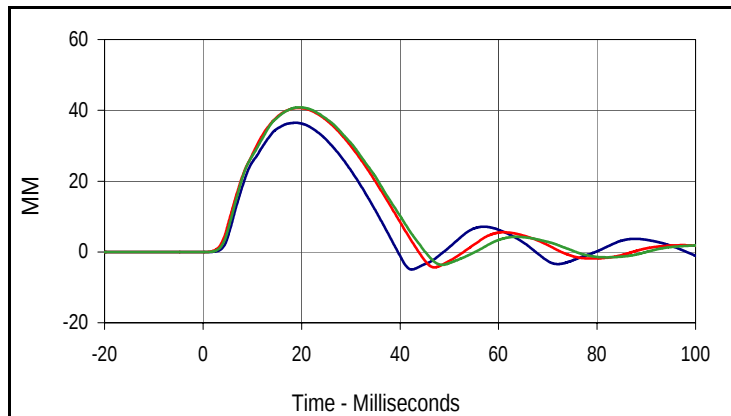
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	5.40 to 5.60	5.52	Pass
Impactor Force	N	5100 to 6200	5351.8	Pass
	msec	> 6.0 msec	10.8	Pass
Upper Rib Deflection	MM	34 to 41	36.5	Pass
Middle Rib Deflection	MM	37 to 45	40.7	Pass
Lower Rib Deflection	MM	37 to 44	40.8	Pass
Overall Test Results			Pass	



Curve Description

Impactor Force

CURNO	Type	SAE Class	Units
001	FIL	180	Newtons
Max	Time	Min	Time
8944.0	4.4	-36.1	-0.5



Curve Description

Upper, Middle, Lower Rib Deflections

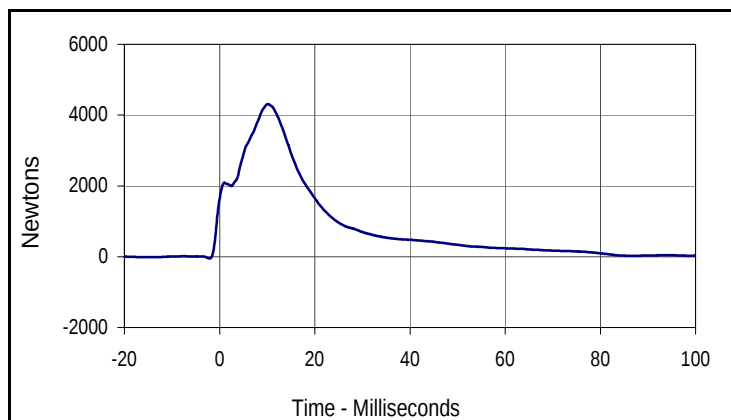
CURNO(s)	Type	SAE Class	Units
002-003-004	FIL	180	MM
Max (Upper)	Time	Min (Upper)	Time
36.5	18.8	-5.0	42.4
Max (Middle)	Time	Min (Middle)	Time
40.7	19.5	-4.4	47.0
Max (Lower)	Time	Min (Lower)	Time
40.8	19.6	-3.6	48.6

Test Program: ES2re Abodomen Calibration
 ATD Serial No.: F035

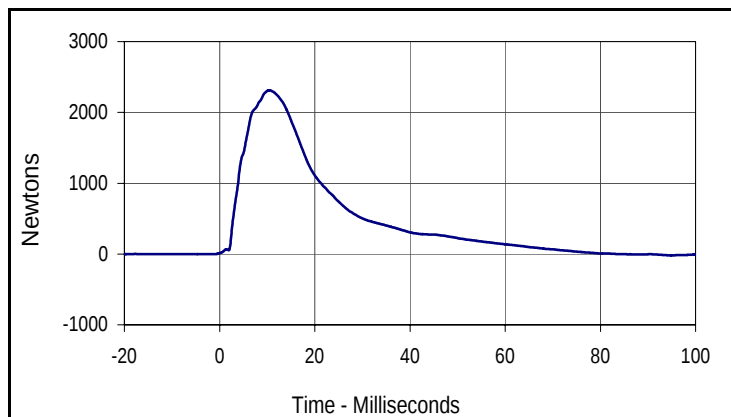
Test Date: 4/25/09
 Test I.D.: Ab04B



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	3.90 to 4.10	3.94	Pass
Impactor Force	N	4000 to 4800	4312.5	Pass
	msec	10.6 to 13.0	11.1	Pass
Abdominal Force	N	2200 to 2700	2313.0	Pass
	msec	10.0 to 12.3	11.7	Pass
Overall Test Results				Pass



Curve Description			
Impactor Force			
CURNO	Type	SAE Class	Units
001	FIL	180	Newtons
Max	Time	Min	Time
4312.5	11.1	-51.1	-1.1



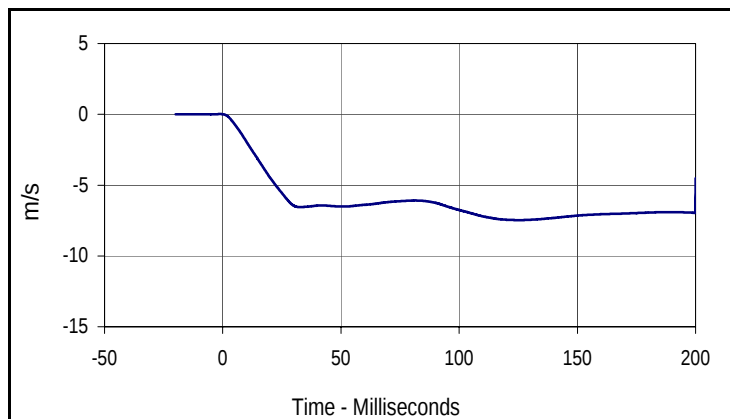
Curve Description			
Abdomen Sum Resultant			
CURNO	Type	SAE Class	Units
002	RES	600	Newtons
Max	Time	Min	Time
2313.0	11.7	-19.0	96.1

Test Program: ES2re Lumbar Spine Calibration
 ATD Serial No.: F035

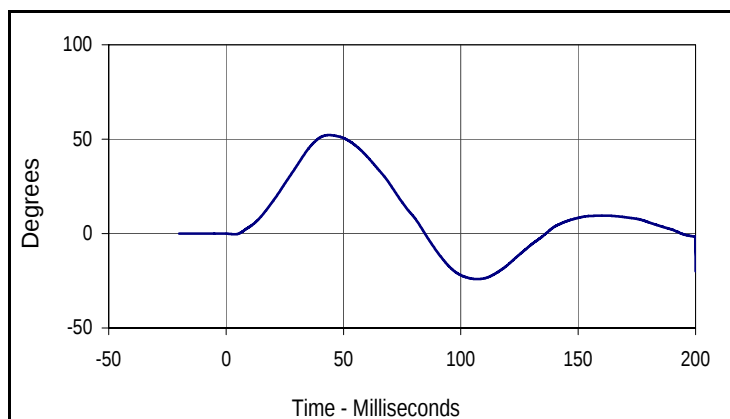
Test Date: 4/25/09
 Test I.D.: LS04B



Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	5.95 to 6.15	6.10	Pass
Pendulum Deceleration	1 msec	m/s	0.0 to -.050	-0.031	Pass
	3.7 msec	m/s	-.240 to -.425	-0.417	Pass
	27 msec	m/s	-5.80 to -6.50	-5.97	Pass
	30 msec	m/s	< -6.50	-6.45	Pass
Headform Rotation	Max	Degrees	45.0 to 55.0	52.2	Pass
	Time	msec	39.0 to 53.0	43.9	Pass
Maximum Rotation To Time Zero Crossing		msec	37.0 to 57.0	40.9	Pass
			Overall Test Results		Pass



Curve Description			
Pendulum Velocity			
CURNO	Type	SAE Class	Units
001	FIL	180	m/s
Max	Time	Min	Time
0.0	-1.0	-7.5	125.4



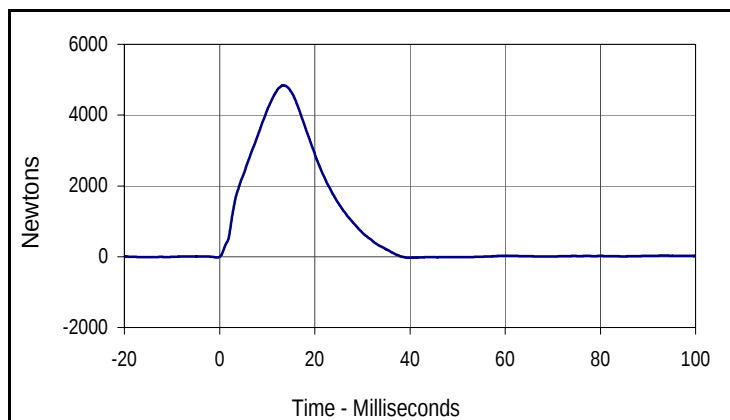
Curve Description			
Headform Rotation			
CURNO	Type	SAE Class	Units
002	FIL	180	Degrees
Max	Time	Min	Time
52.2	43.9	-24.1	107.0

Test Program: ES2re Pelvis Calibration
 ATD Serial No.: 299

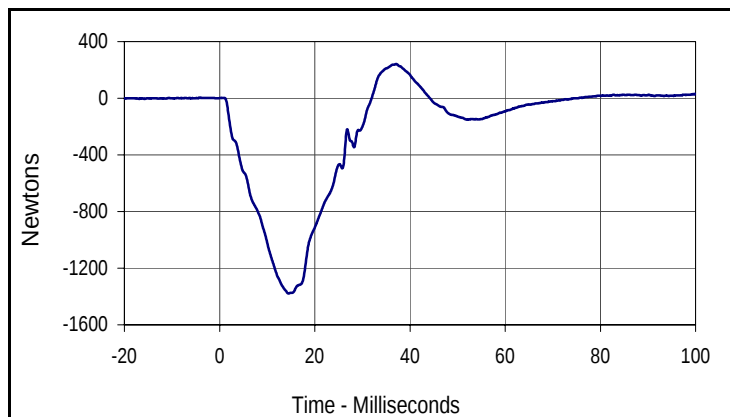
Test Date: 4/26/09
 Test I.D.: PL04B



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	4.20 to 4.40	4.22	Pass
Impactor Force	N	4700 to 5400	4842.1	Pass
	msec	11.8 to 16.1	13.4	Pass
Pubic Symphysis Load	N	-1230 to -1590	-1379.4	Pass
	msec	12.2 to 17.0	14.5	Pass
Overall Test Results				Pass



Curve Description			
Impactor Force			
CURNO	Type	SAE Class	Units
001	FIL	180	Newtons
Max	Time	Min	Time
4842.1	13.4	-29.5	40.2



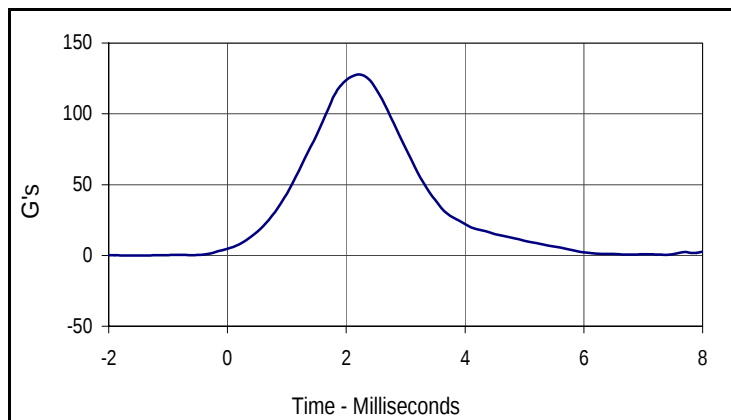
Curve Description			
Pubic FY			
CURNO	Type	SAE Class	Units
002	FIL	600	Newtons
Max	Time	Min	Time
242.0	37.1	-1379.4	14.5

Test Program: SID IIs Lateral Head Drop Calibration
 ATD Serial No.: 299

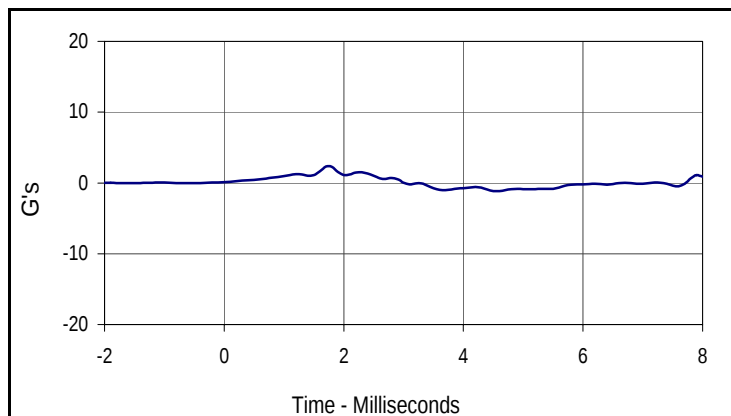
Test Date: 4/26/09
 Test I.D.: HDS04B



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Peak Resultant Acceleration	G's	115 to 137	127.8	Pass
Peak Longitudinal Acceleration	G's	≤15	2.3	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Oscillations After Main Pulse	%	<15	8.1	Pass
Overall Test Results			Pass	



Curve Description			
Head Resultant			
CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
127.8	2.2	0.0	-1.6



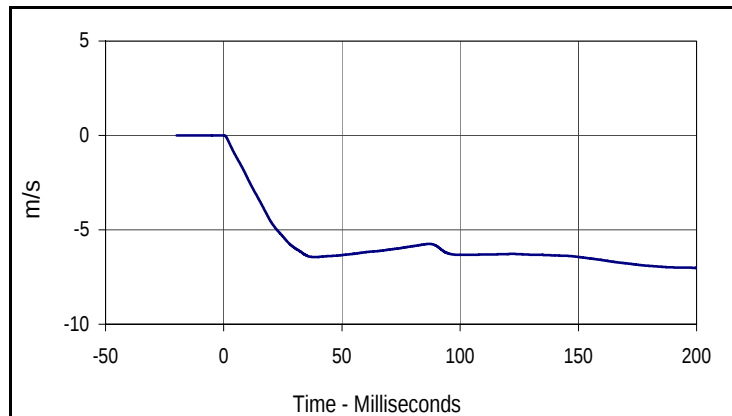
Curve Description			
Head X			
CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
2.3	1.7	-1.2	4.5

Test Program: SID IIs Neck Calibration
 ATD Serial No.: 299

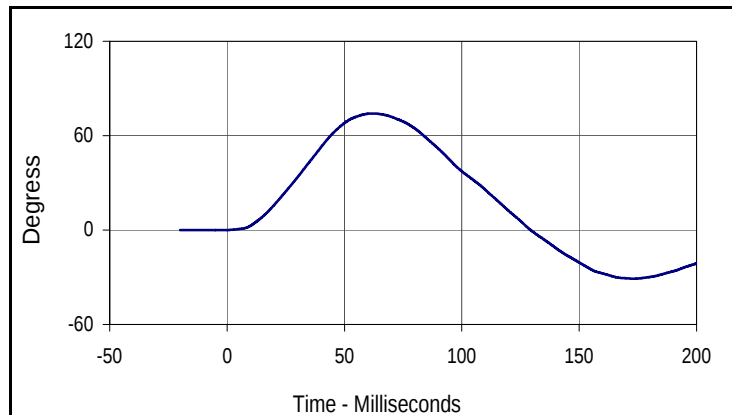
Test Date: 4/26/09
 Test I.D.: NB04C



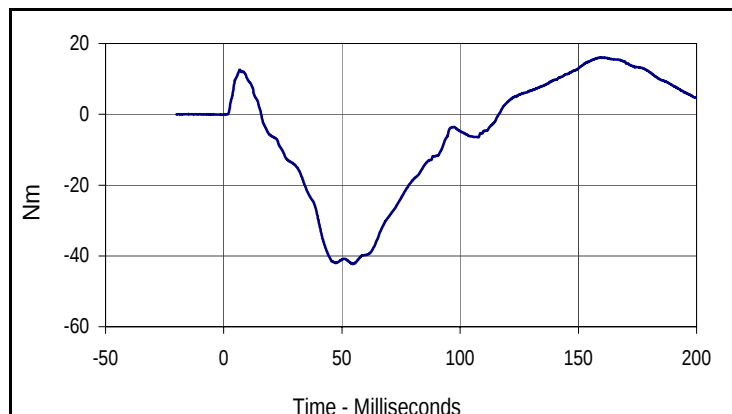
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	5.51 to 5.63	5.58	Pass
Pendulum Deceleration	10 msec	m/s	-2.20 to -2.80	-2.2	Pass
	15 msec	m/s	-3.30 to -4.10	-3.4	Pass
	20 msec	m/s	-4.40 to -5.40	-4.5	Pass
	25 msec	m/s	-5.40 to -6.10	-5.8	Pass
	25-100 msec	m/s	-5.50 to -6.20	-6.18	Pass
Translation-Rotation	Max	Degrees	71.0 to 81.0	74.1	Pass
	Time	msec	50.0 to 70.0	61.9	Pass
Peak Occipital Condyle Moment		Nm	-36.0 to -44.0	-42.3	Pass
Decaying Moment Time to Cross 0 Nm		msec	102.0 to 126.0	117.5	Pass
Overall Test Results					Pass



Curve Description			
Pendulum Velocity			
CURNO	Type	SAE Class	Units
001	FIL	180	m/s
Max	Time	Min	Time
0.0	-0.3	-7.0	200.0



Curve Description			
Maximum Translation Rotation			
CURNO	Type	SAE Class	Units
002	FIL	60	Degress
Max	Time	Min	Time
74.1	61.9	-30.9	173.4



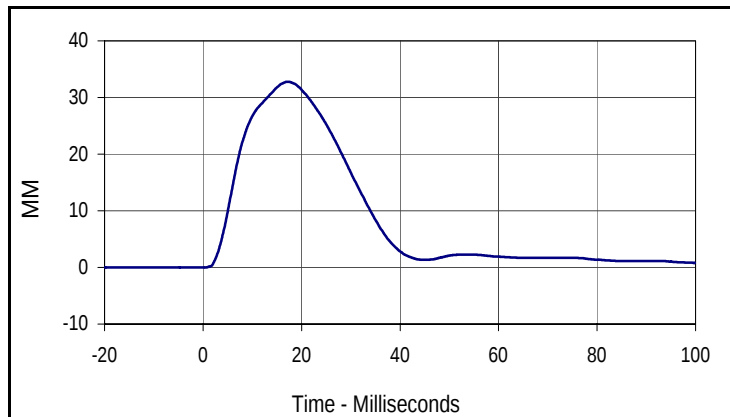
Curve Description			
Moment About Occipital Condyle			
CURNO	Type	SAE Class	Units
003	FIL	600	Nm
Max	Time	Min	Time
16.1	159.3	-42.3	54.7

Test Program: SID IIs Shoulder Calibration
 ATD Serial No.: 299

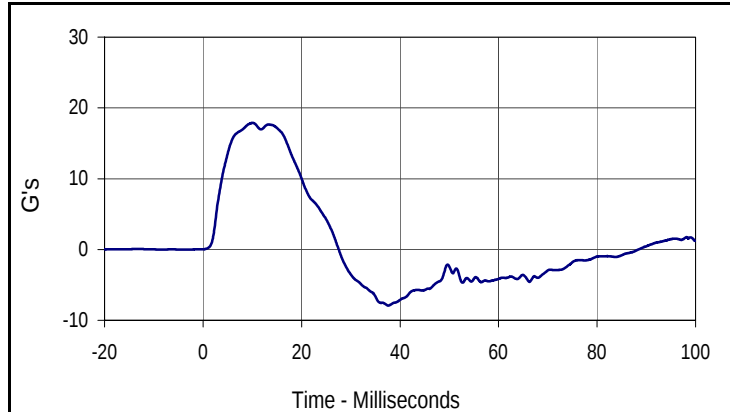
Test Date: 4/26/09
 Test I.D.: SH04B



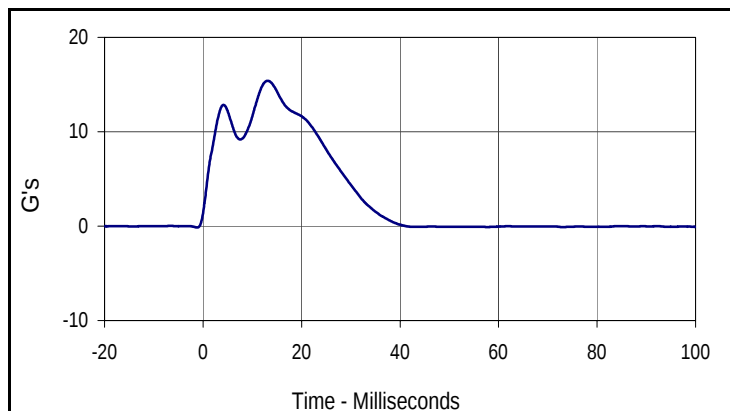
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity	m/s	4.20 to 4.40	4.28	Pass
Shoulder Deflection	MM	28 to 37	32.8	Pass
Peak Upper Spine Y Acceleration	G's	17 to 22	17.9	Pass
Peak Impactor Acceleration	G's	13 to 18	15.4	Pass
Overall Test Results			Pass	



Curve Description			
Shoulder Deflection			
CURNO	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
32.8	17.2	0.0	-11.9



Curve Description			
Upper Spine Y Acceleration			
CURNO	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
17.9	10.1	-7.9	37.6



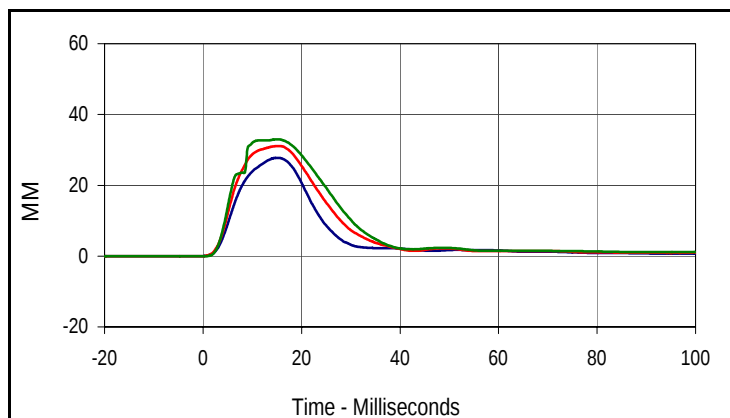
Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
15.4	13.1	-0.1	-1.2

Test Program: SID IIs Thorax with Arm Calibration
 ATD Serial No.: 299

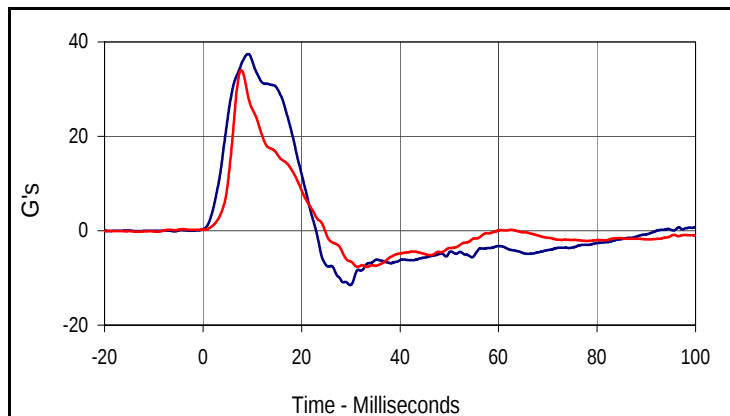
Test Date: 4/26/09
 Test I.D.: TH04C



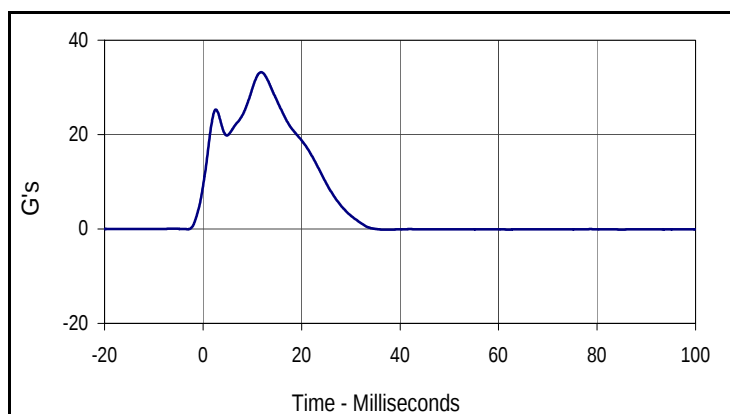
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity	m/s	6.60 to 6.80	6.64	Pass
Shoulder Deflection	MM	31 to 40	32.9	Pass
Upper Thorax Rib Deflection	MM	26 to 32	27.7	Pass
Middle Abdominal Rib Deflection	MM	30 to 36	31.1	Pass
Lower Abdominal Rib Deflection	MM	32 to 38	33.0	Pass
Peak Upper Spine Y Acceleration	G's	34 to 43	37.5	Pass
Peak Lower Spine Y Acceleration	G's	28 to 35	34.0	Pass
Peak Impactor Acceleration	G's	31 to 36	33.2	Pass
Overall Test Results			Pass	



Curve Description			
Upper Thorax Deflection			
CURNO	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
27.7	15.1	0.0	-3.4
Middle Thorax Deflection			
Max	Time	Min	Time
31.1	15.2	0.0	-3.6
Lower Thorax Deflection			
Max	Time	Min	Time
33.0	15.3	0.0	-2.7



Curve Description			
Upper Spine Y Acceleration			
CURNO	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
37.5	9.1	-11.5	29.9
Lower Spine Y Acceleration			
CURNO	Type	SAE Class	Units
005	FIL	180	G's
Max	Time	Min	Time
34.0	7.7	-7.7	31.3



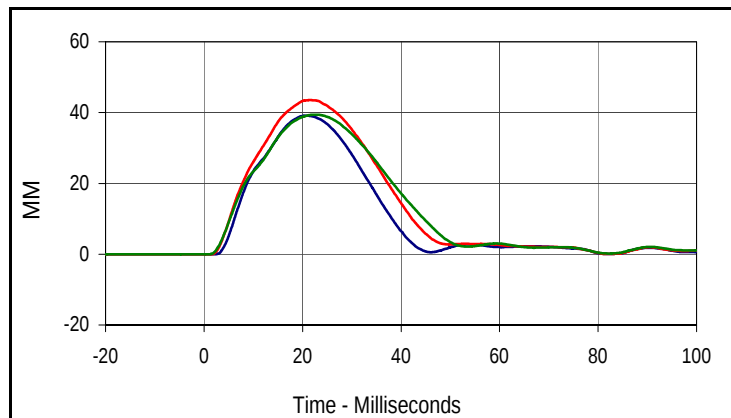
Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
006	FIL	180	G's
Max	Time	Min	Time
33.2	11.8	-0.1	36.7

Test Program: SID IIs Thorax w/o Arm Calibration
 ATD Serial No.: 299

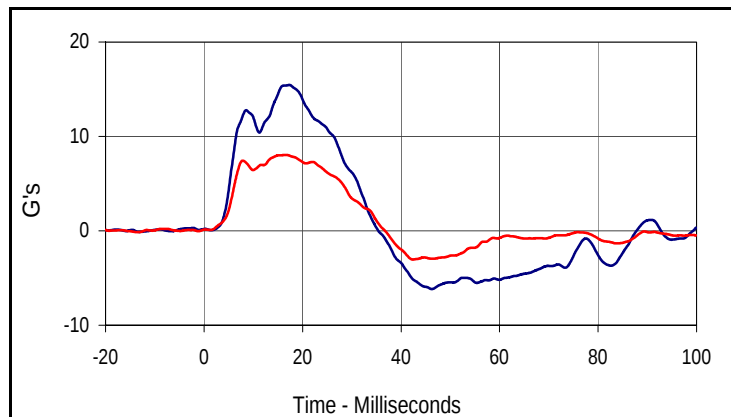
Test Date: 4/26/09
 Test I.D.: TH04D



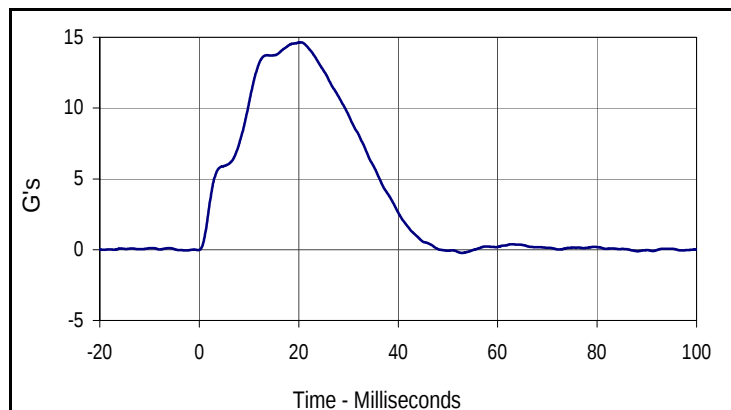
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity	m/s	4.20 to 4.40	4.24	Pass
Upper Thorax Rib Deflection	MM	33 to 40	39.1	Pass
Middle Abdominal Rib Deflection	MM	39 to 45	43.5	Pass
Lower Abdominal Rib Deflection	MM	36 to 43	39.4	Pass
Peak Upper Spine Y Acceleration	G's	14 to 17	15.4	Pass
Peak Lower Spine Y Acceleration	G's	7 to 10	8.0	Pass
Peak Impactor Acceleration	G's	12 to 16	14.6	Pass
Overall Test Results			Pass	



Curve Description			
Upper Thorax Deflection			
CURNO	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
39.1	20.7	0.0	-20.0
Middle Thorax Deflection			
Max	Time	Min	Time
43.5	21.5	0.0	-3.3
Lower Thorax Deflection			
Max	Time	Min	Time
39.4	22.4	0.0	-19.4



Curve Description			
Upper Spine Y Acceleration			
CURNO	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
15.4	17.3	-6.2	46.2
Lower Spine Y Acceleration			
CURNO	Type	SAE Class	Units
005	FIL	180	G's
Max	Time	Min	Time
8.0	16.6	-3.0	42.4



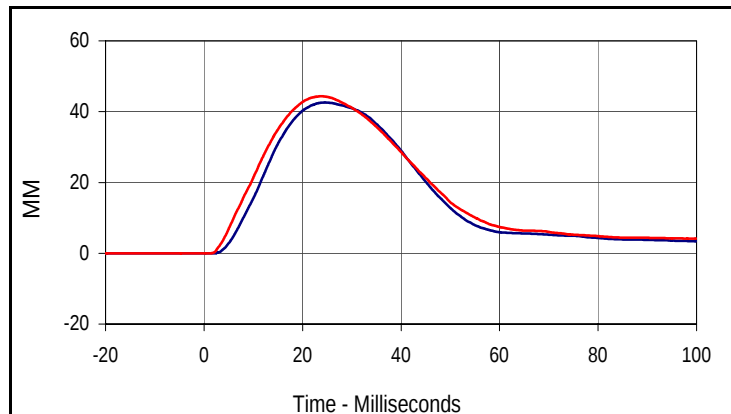
Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
006	FIL	180	G's
Max	Time	Min	Time
14.6	20.4	-0.2	52.8

Test Program: SID IIs Abdomen Calibration
 ATD Serial No.: 299

Test Date: 4/26/09
 Test I.D.: AB04B

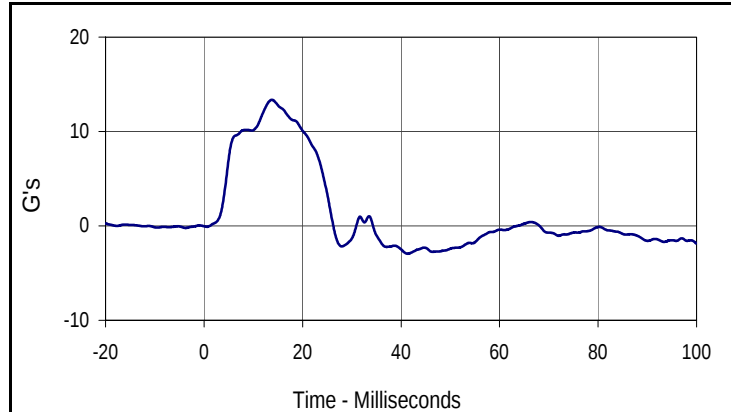


Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity	m/s	4.30 to 4.50	4.40	Pass
Upper Abdominal Rib Deflection	MM	39 to 47	42.6	Pass
Lower Abdominal Rib Deflection	MM	37 to 46	44.3	Pass
Peak Lower Spine Y Acceleration	G's	11 to 14	13.4	Pass
Peak Impactor Acceleration	G's	12 to 16	13.5	Pass
Overall Test Results			Pass	

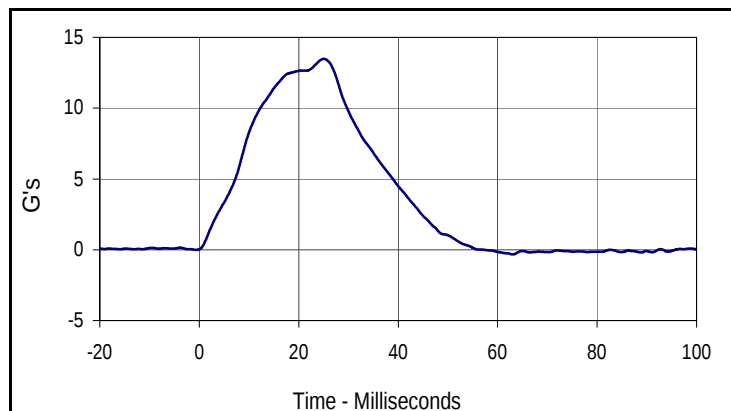


Curve Description			
Upper Abdominal Rib Deflection			
CURNO	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
42.6	24.6	0.0	1.3

Curve Description			
Lower Abdominal Rib Deflection			
CURNO	Type	SAE Class	Units
002	FIL	600	MM
Max	Time	Min	Time
44.3	24.0	0.0	-20.0



Curve Description			
Lower Spine Y Acceleration			
CURNO	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
13.4	13.8	-2.9	41.3



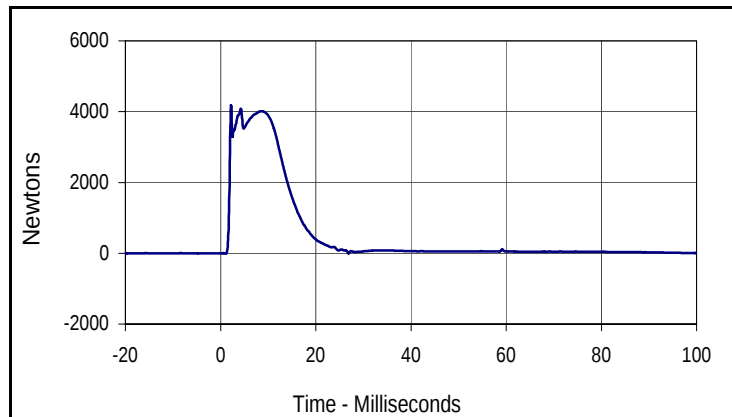
Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
13.5	25.0	-0.3	63.0

Test Program: SID IIs Pelvis Acetabulum Calibration
 ATD Serial No.: 299

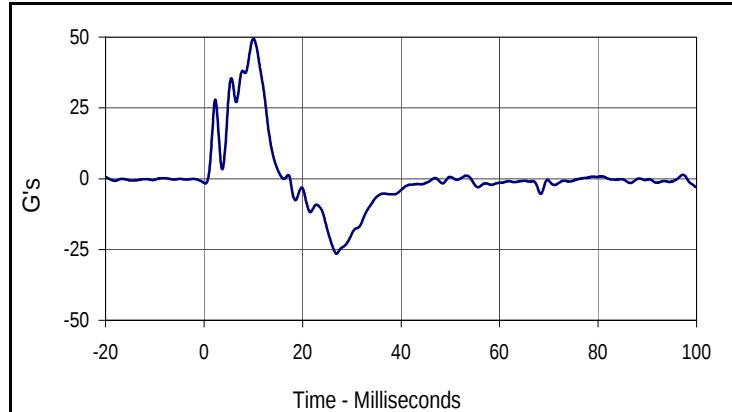
Test Date: 4/26/09
 Test I.D.: PA04B



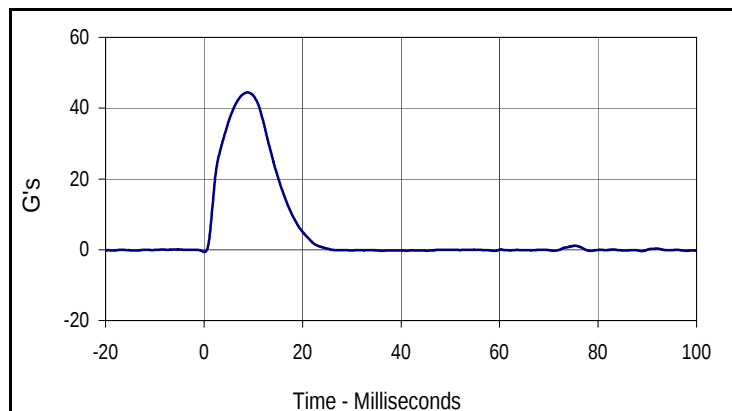
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity	m/s	6.60 to 6.80	6.61	Pass
Peak Acetabulum Force	Newtons	3800 to 4600	4179.3	Pass
Peak Pelvis Y Acceleration	G's	41 to 50	49.4	Pass
Peak Impactor Acceleration	G's	38 to 47	44.5	Pass
Overall Test Results			Pass	



Curve Description			
Pelvis Acetabulum Force			
CURNO	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
4179.3	2.2	-15.7	1.1



Curve Description			
Pelvis Y Acceleration			
CURNO	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
49.4	10.0	-26.5	26.9



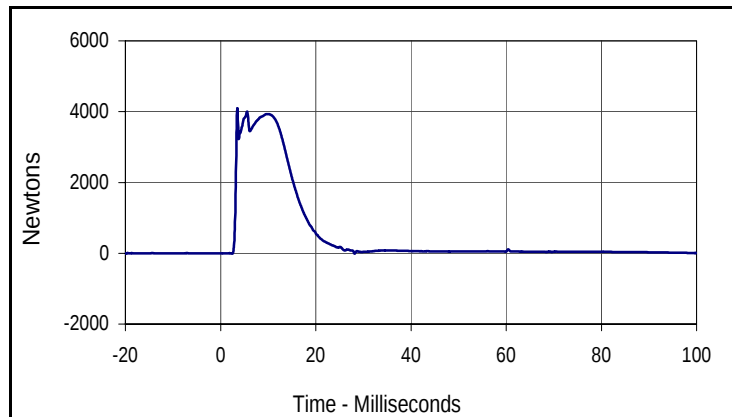
Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
44.5	8.8	-0.6	0.1

Test Program: SID IIs Pelvis Iliac Calibration
 ATD Serial No.: 299

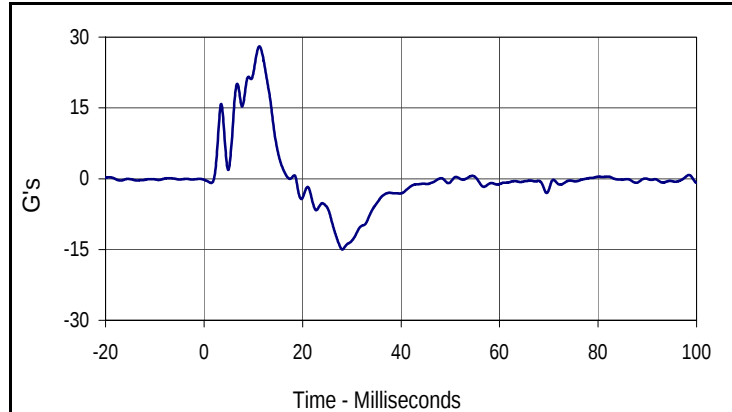
Test Date: 4/26/09
 Test I.D.: PI04B



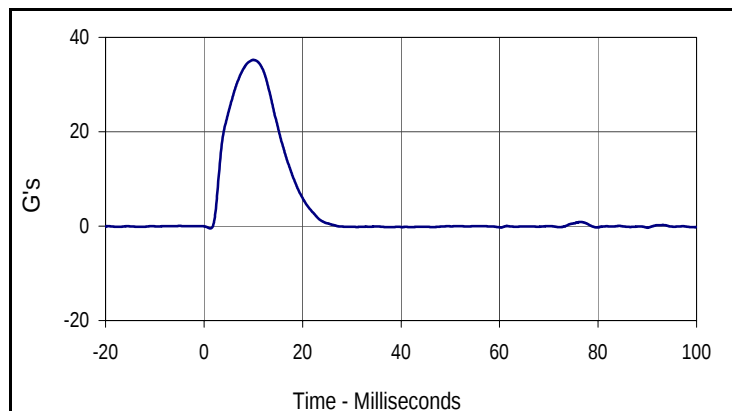
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity	m/s	4.2 to 4.4	4.36	Pass
Peak Iliac Force	Newtons	3700 to 4500	4096.7	Pass
Peak Pelvis Y Acceleration	G's	27 to 33	28.0	Pass
Peak Impactor Acceleration	G's	34 to 40	35.2	Pass
Overall Test Results			Pass	



Curve Description			
Pelvis Iliac Force			
CURNO	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
4096.7	3.5	-15.3	2.4



Curve Description			
Pelvis Y Acceleration			
CURNO	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
28.0	11.2	-15.0	28.1



Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
35.2	10.0	-0.5	1.3