

**RAPPORT D'ESSAI - TEST REPORT
COLLISION FRONTALE DE RECHERCHE
RESEARCH FRONTAL IMPACT**

VÉHICULE D'ESSAI / TEST VEHICLE TOYOTA CAMRY 2005 TC # 05-202
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**ESSAIS DE RECHERCHE CONJOINTS TC/NHTSA SUR LES
SACS GONFLABLES FRONTAUX
JOINT TC/NHTSA FRONTAL AIRBAGS RESEARCH TESTS**

Préparé par :
PMG TECHNOLOGIES
CENTRE D'ESSAIS ET DE RECHERCHE
100, rue du Landais
Blainville (Québec) J7C 5C9

N° de contrat : **05-6008**
Rapport N°: **RR05-210**

Pour :
TRANSPORTS CANADA
SÉCURITÉ ET SÛRETÉ
Programmes de sécurité routière
Recherche et essais de véhicules
Ottawa (Ontario)

Prepared by :
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SAFETY AND SECURITY
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Vehicle Testing
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Les résultats des essais figurant dans ce compte-rendu ne représentent pas une décision officielle du Ministère des Transports quant à l'acceptation de la performance sécuritaire, de la consommation de carburant ou de la conformité d'un véhicule ou des composantes d'un véhicule aux normes de sécurité et d'antipollution. Le Ministère des Transports ne certifie, n'approuve ou n'endosse aucun produit de véhicule automobile.

The test results presented herein do not, in themselves, represent an official determination by the Department of Transport with fuel consumption or compliance with safety and emission standards of any motor vehicle or motor vehicle component. The Department of Transport does not certify, approve or endorse any motor vehicle product.

Date de collision Crash date	2005-02-04	Véhicule Vehicle	TOYOTA CAMRY 2005	T.C. N° T.C.No	05-202
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VÉHICULE D'ESSAI - TEST VEHICLE

Fabricant - Manufacturer TOYOTA MOTOR MFG., KENTUCKY INC.	Type de carrosserie - Body Style Berline 4P / 4D Sedan	Marque, modèle, Année - Make, model, Year TOYOTA CAMRY 2005
Classe de véhicule - Class of vehicle Tourisme / Passenger car	Boîte de vitesse - Transmission Type Auto. avant / Auto. Front wheel	Moteur - Engine 4 cyl. trans. avant / 4 cyl. trans. front
Date de fabrication - Date of Manufacture 11/04	Cylindres - Cylinders 2.4 Lit.	N° d'ident. du véhicule - Vehicle Ident. No. 4T1BE32K25U517032
Lecture de l'odomètre - Odometer Reading 10 km	Nombre de places assises désignées Number of Designated Seating Positions 5	Numéro d'ident. PMG - PMG Ident. Number UN5-169
PNBV - GVWR 1905 kg	PNBE (Avant) - GAWR (Front) 1210 kg	PNBE (Arrière) - GAWR (Rear) 1035 kg

CONFIGURATION D'ESSAI - TEST CONFIGURATION

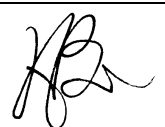
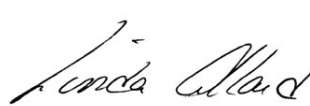
Type d'essai - Test type	Vitesse d'impact- Impact velocity		Angle d'impact Impact angle	Masse du véhicule d'essai Test vehicle mass
Véh. vs barrière - Veh. vs barrier	Prévu / Intended : 40.0 km/h	Obtenu / Obtained : 40.4 km/h	0 °	1767.4 kg
Description et position du mannequin (conducteur) Dummy description and position (driver) Description Hybrid III (5 %)	Position ** 2 mm	Description et position du mannequin (passager avant) Dummy description and position (front passenger) Description Hybrid III (5 %)	Position ** 1 mm	
Description et position du mannequin (passager arrière gauche) Dummy description and position (left rear passenger) Description Hybrid III (6 ans / 6 years old)	Position ** N/A	Description et position du mannequin (passager arrière droit) Dummy description and position (right rear passenger) Description Hybrid III (6 ans / 6 years old)	Position ** N/A	

RÉSULTATS GÉNÉRAUX - GENERAL RESULTS

Déploiement des sacs gonflables - Airbags deployment Coussins frontaux - Frontal airbags		Déploiement des sacs gonflables - Airbags deployment Coussins latéraux - Lateral airbags	
Conducteur / Driver	Passager / Passenger	Conducteur / Driver	Passager / Passenger
Déployé / Deployed 21.5ms	Déployé / Deployed 19.3ms	N/A 0.0	N/A 0.0
Rétracteurs de ceintures-prétensionneurs Seat belts retractors-pretensioners		Limiteur de charge des ceintures de sécurité Seat belts load limiter	
Conducteur / Driver	Passager / Passenger	Conducteur / Driver	Passager / Passenger
Déployé / Deployed	Déployé / Deployed	Non-équipé / Not equipped	Non-équipé / Not equipped

Essai réalisé selon la procédure de PMG : Collision frontale de recherche, version 3, révision 10 avril 2000.

Test performed according to PMG procedure: Research frontal impact, version 3, revised april 10, 2000.

Préparé par : Prepared by : 	Digitally signed by Pierre Beauchamp Date: 2005.09.14	Approuvé par : Approved by : 	Digitally signed by Alain Bussieres Date: 2005.09.16 11:04:06 -04'00'
Vérifié par : Verified by : 	Digitally signed by Linda Allard Date: 2005.09.14	Accepté par : Accepted by :	

* Tel qu'observé avec l'application d'une charge de 12V après l'essai.

* As observed by a 12V application after the test.

** Référence : 0 est la position la plus avancée. / ** Reference : 0 is the foremost position.

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DONNÉES DU VÉHICULE D'ESSAI / TEST VEHICLE DATA

Capacité du véhicule - Vehicle Capacity		Masse des bagages - Cargo Load		Type de sièges – Type of seats			Types de dossiers - Type of seat back		
410 kg					Avt - Frt	Arr - Rr		Avt - Frt	Arr - Rr
Nombre d'occupants (places assises désignées) Number of Occupants (Designated Seating Positions)				Banquette Bench		X	Dossier ajustable Adjustable Seat Back	X	
Avant – Front 2 Arrière – Rear 3 Total 5				Baquet Bucket	X		Dossier non-ajustable Non-adjustable Seat Back		X
Volume de carburant pour l'essai Fuel system test volume		Pression à froid - Cold Tire Pressure					Dimension - Size		
63.70 l		Avant - Front 200 kPa		Arrière - Rear 200 kPa		Secours - Spare 200 kPa		P205/65R15	

PREMIÈRE PESÉE : VÉHICULE TEL QUE LIVRÉ (AVEC LIQUIDES AU MAXIMUM)

FIRST WEIGHT : VEHICLE AS RECEIVED (WITH MAXIMUM FLUIDS)

Avant gauche - Left front	434.7 kg	Avant droit - Right front	424.9 kg	Masse avant totale - Total front weight	859.6 kg
Arrière gauche - Left rear	301.0 kg	Arrière droit - Right rear	291.8 kg	Masse arrière totale - Total rear weight	592.8 kg
Masse totale côté gauche - Total left side weight	735.7 kg	Masse totale côté droit - Total right side weight	716.7 kg	Masse totale - Total weight	1452.4 kg

TROISIÈME PESÉE : VÉHICULE PRÊT POUR L'ESSAI

THIRD WEIGHT : VEHICLE READY FOR TEST

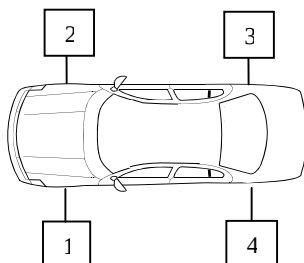
Avant gauche - Left front	462.1 kg	Avant droit - Right front	468.8 kg	Masse avant totale - Total front weight	930.9 kg
Arrière gauche - Left rear	424.1 kg	Arrière droit - Right rear	412.4 kg	Masse arrière totale - Total rear weight	836.5 kg
Masse totale côté gauche - Total left side weight	886.2 kg	Masse totale côté droit - Total right side weight	881.2 kg	Masse totale - Total weight	1767.4 kg

ATTITUDE DU VÉHICULE / VEHICLE ATTITUDE

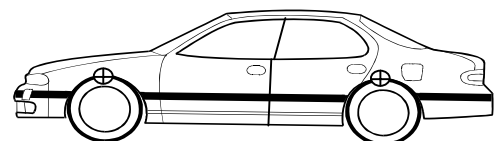
		Attitude tel que livré Attitude on delivery	Attitude tel que testé Attitude as tested
1	Roue avant gauche* Left front wheel*	700 mm	690 mm
2	Roue avant droite* Front right wheel*	710 mm	693 mm
3	Roue arrière droite* Rear right wheel*	712 mm	651 mm
4	Roue arrière gauche* Rear left wheel*	704 mm	646 mm

* Mesures prises aux puits de roues. // *Measurements taken at wheel openings.

Vue de plan / Plan view



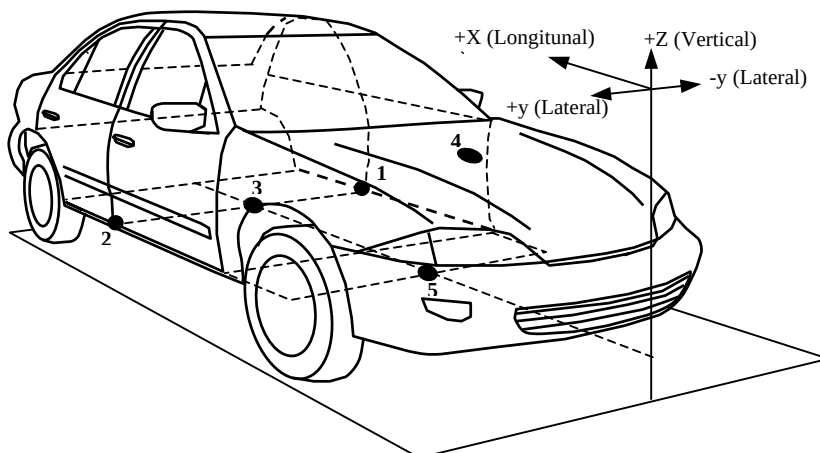
Vue de côté / Side view



⊕ Points de mesure / Measurement points

Date de collision Crash date	2005-02-04	Véhicule Vehicle	TOYOTA CAMRY 2005	T.C. N° T.C.No	05-202
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EMPLACEMENT DES ACCÉLÉROMÈTRES
ACCELEROMETER LOCATIONS

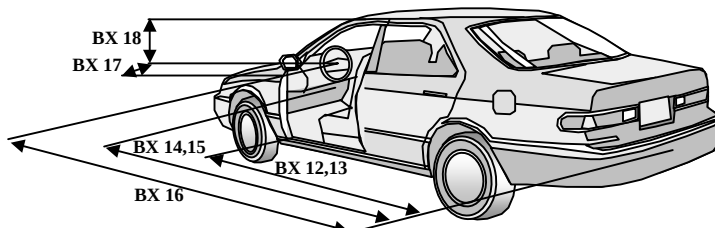
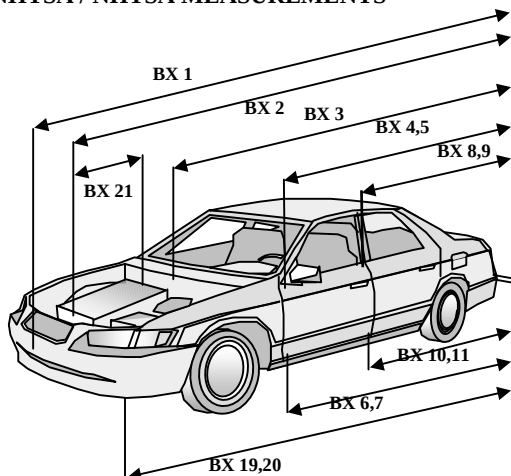


Point de référence : Centre transversal du véhicule, au point le plus avancé, au niveau du sol. Selon SAE J182a.
Reference point : Transversal center of the vehicle, at the foremost point and at ground level. As per SAE J182a.

EMPLACEMENT LOCATION	DESCRIPTIONS	COORDONNÉES / COORDINATES (mm)		
		X	Y	Z
#1	Seuil de la porte gauche @ pilier "B" Left door sill @ pillar "B"	2544	-612	207
#2	Seuil de la porte droite @ pilier "B" Right door sill @ pillar "B"	2528	598	209
#3	Centre de gravité Centre of gravity	2625	-3	335
#4	Le dessus du moteur Top of engine	-	-	-
#5	Le dessous du moteur Bottom of engine	-	-	-

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MESURES NHTSA / NHTSA MEASUREMENTS



- 1 - Longueur totale du véhicule
Total length of vehicle
- 2 - Surface arrière à l'avant du bloc moteur
Rear surface at front of engine block
- 3 - Surface arrière à la cloison pare-feu
Rear surface at fire-wall
- 4 - Surface arrière à la partie supérieure avant porte avant droite
Rear surface of front superior part of right front door
- 5 - Surface arrière à la partie supérieure avant porte avant gauche
Rear surface of front superior part of left front door
- 6 - Surface arrière à la partie inférieure avant porte avant droite
Rear surface of front inferior part of right front door
- 7 - Surface arrière à la partie inférieure avant porte avant gauche
Rear surface of front inferior part of left front door
- 8 - Surface arrière à la partie supérieure arrière porte avant droite
Rear surface of rear superior part of right rear door
- 9 - Surface arrière à la partie supérieure arrière porte avant gauche
Rear surface of rear superior part of left rear door
- 10 - Surface arrière à la partie inférieure arrière porte avant droite
Rear surface of rear inferior part of right rear door
- 11 - Surface arrière à la partie inférieure arrière porte avant gauche
Rear surface of rear inferior part of left rear door
- 12 - Surface arrière à la partie inférieure du pilier "A" droit
Rear surface of rear inferior part of right pillar "A"
- 13 - Surface arrière à la partie inférieure du pilier "A" gauche
Rear surface of rear inferior part of left pillar "A"
- 14 - Surface arrière à la cloison pare-feu côté droit
Rear surface of right side of fire-wall
- 15 - Surface arrière à la cloison pare-feu côté gauche
Rear surface of left side of fire-wall
- 16 - Surface arrière à la colonne de direction
Rear surface of steering column
- 17 - Centre de la colonne de direction au pilier "A"
Centre of steering column to pillar "A"
- 18 - Centre de la colonne de direction au toit
Centre of steering column to roof
- 19 - Surface arrière du véhicule au coin droit du pare-choc avant
Rear surface of vehicle to right corner of front bumper
- 20 - Surface arrière du véhicule au coin gauche du pare-choc avant
Rear surface of vehicle to left corner of front bumper
- 21 - Longueur du bloc moteur
Length of engine block

	BX*	AX**	Δx		BX*	AX**	Δx
1	4805	4376	429	12	3383	3384	-1
2	4088	3968	120	13	3383	3386	-3
3	3667	3663	4	14	3492	3477	15
4	3365	3366	-1	15	3571	3572	-1
5	3370	3373	-3	16	2891	2905	-14
6	3342	3344	-2	17	425	425	0
7	3345	3349	-4	18	467	457	10
8	2298	2299	-1	19	4731	4401	330
9	2297	2301	-4	20	4736	4451	285
10	2295	2299	-4	21	174	172	2
11	2296	2301	-5				

Mesures en mm / Measurements in mm

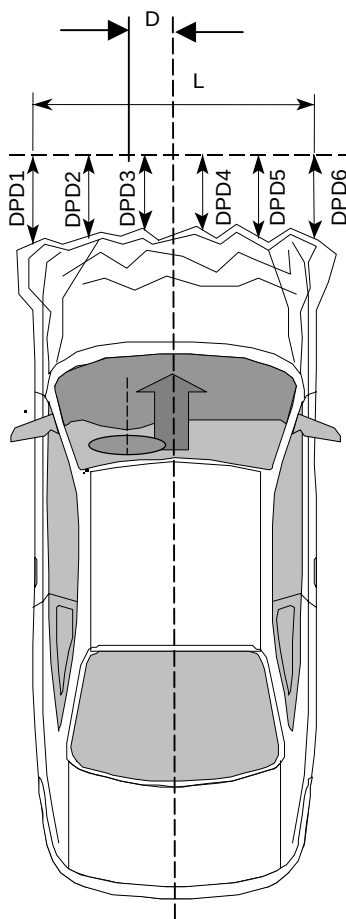
* BX : Mesures du véhicule avant-essai. / Pre-test vehicle measurements data.

** AX : Mesures du véhicule après-essai. / Post-test vehicle measurements data.

REMARQUES / COMMENTS : Aucune / None.

Date de collision Crash date	2005-02-04	Véhicule Vehicle	TOYOTA CAMRY 2005	T.C. N° T.C.No	05-202
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MESURES DES DPD / DPD'S MEASUREMENTS



DPD 1:

DPD 2:

DPD 3:

DPD 4:

DPD 5:

DPD 6:

MESURE L:

MEASUREMENT L:

MESURE D:

MEASUREMENT D:

AVANT ESSAI PRE-TEST	APRÈS ESSAI POST-TEST	Δx
230	402	-172
58	371	-313
6	353	-347
5	424	-419
59	419	-360
234	451	-217
	1561	
	0	

Mesures en mm / Measurements in mm

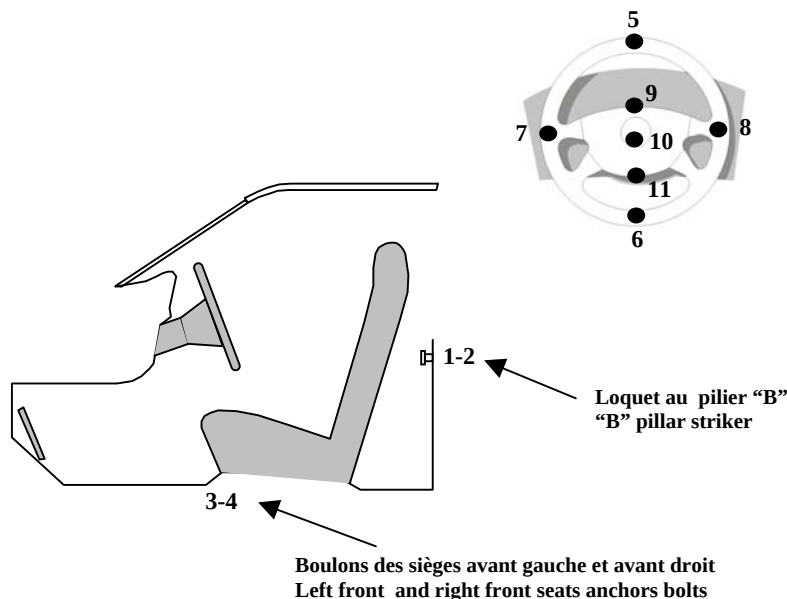
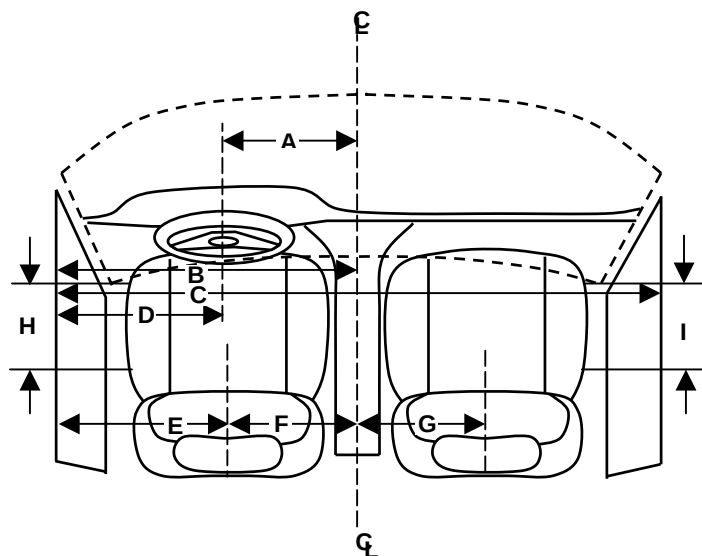
L : Longueur de la région endommagée
Length of damaged region

D : Distance du centre de déformation à la ligne de centre du véhicule
Midpoint of damage to Vehicle Longitudinal Centerline

REMARQUES / COMMENTS : Aucune / None.

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MESURES DE VÉHICULE
VEHICLE MEASUREMENTS



Code	Description	mm
A	Centre du volant à la ligne de centre du véhicule Steering wheel center to center line of vehicle	373
B	Seuil de fenêtre à la ligne de centre du véhicule Window edge to center line of the vehicle	836
C	Fenêtre à fenêtre Window to window	1661
D	Centre du volant au seuil de la fenêtre Steering wheel center to window edge	463
E	Seuil de la fenêtre au centre du siège (conducteur) Window edge to seat midline (driver)	458
F	Centre du siège à la ligne de centre du véhicule (conducteur) Seat midline to center line of vehicle (driver)	378
G	Centre du siège à la ligne de centre du véhicule (passager) Seat midline to center line of vehicle (passenger)	373
H	Course du siège (conducteur) Seat travel (driver)	239
I	Course du siège (passager) Seat travel (passenger)	242
J	Ajustement du volant Steering wheel adjustment	24
K	Ajustement de la ceinture baudrier Upper torso belt adjustment	78

Code	Description	X(mm)	Y(mm)	Z(mm)
1	Loquet au pilier "B" (conducteur) "B" pillar striker (driver)	2434	-816	735
2	Loquet au pilier "B" (passager) "B" pillar striker (passenger)	2436	807	735
3	Boulon siège avant, extérieur (conducteur) Front seat bolt, outboard (driver)	1985	-594	273
4	Boulon siège avant, extérieur (passager) Front seat bolt, outboard (passenger)	1986	588	275
5	Jante du volant, centre haut Steering wheel rim, top centre	1823	-374	1056
6	Jante du volant, centre bas Steering wheel rim, bottom centre	1982	-374	710
7	Jante du volant, centre gauche Steering wheel rim, left centre	1905	-561	885
8	Jante du volant, centre droit Steering wheel rim, right centre	1912	-184	884
9	Moyeu du volant, centre haut Steering wheel hub, top centre	1880	-373	926
10	Moyeu du volant, centre Steering wheel hub, centre	1928	-373	863
11	Moyeu du volant, centre bas Steering wheel hub, bottom centre	1946	-374	800
12	Centre du volant Center of steering wheel	1914	-373	884

Point de référence : Centre transversal du véhicule, au point le plus avancé, au niveau du sol. Selon SAE J182a.
Reference point : Transversal center of the vehicle, at the foremost point and at ground level. As per SAE J182a.

Remarques - Comments: Aucune / None.

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**POINTS DE MESURES DES CEINTURES DE SÉCURITÉ EN UTILISANT L'APPAREIL (BTD)
PASSENGER CAR BELT FIT MEASUREMENTS USING THE BELT DEPLOYMENT TEST DEVICE (BTD)**

Type de siège
Seat type

baquet / bucket ☒ banquette / bench ☐ banquette 60-40 / bench 60-40 ☐

Type de ceinture
Belt system

3 points ☒ passive ☐ active ☒ automatique / automatic ☐ motorisée / motorised ☐

Localisation du siège
Seat location

Av-G / F-L ☒ Av-D / F-R ☐ Arr-G / R-L ☐ Arr-D / R-R ☐

Espacement du genou gauche
Left knee spacing

103 mm

Espacement du genou droit
Right knee spacing

103 mm

Essai no: / Trial no:		1	2	3
Angle du dossier BTD Back pan angle		24.0 deg.	25.0 deg.	23.8 deg.
Angle de la cuvette BTD Seat pan angle		14.7 deg.	14.4 deg.	14.5 deg.
Angle du pied Foot angle	gauche / left	118 deg.	119 deg.	118 deg.
	droit / right	118 deg.	118 deg.	116 deg.
Angle du genou Knee angle	gauche / left	120 deg.	120 deg.	121 deg.
	droit / right	119 deg.	120 deg.	121 deg.
Mesure sous-abdominale Lap belt score	gauche / left	41 mm / 0 mm	40 mm / 0 mm	39 mm / 0 mm
	droit / right	44 mm / 0 mm	43 mm / 0 mm	42 mm / 0 mm
Ceinture en contact Belt in contact	gauche / left	Oui/Yes	Oui/Yes	Oui/Yes
	droit / right	Oui/Yes	Oui/Yes	Oui/Yes
Mesure ceinture baudrier Upper torso belt score	Sternum	171 mm / - *	168 mm / - *	168 mm / - *
	Clavicule	133 mm / 0 mm	133 mm / 0 mm	130 mm / 0 mm
Ceinture en contact Belt in contact	Clavicule	Oui/Yes	Oui/Yes	Oui/Yes

Mesure Score	/	Jeu Slack
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* Mesure ceinture baudrier (jeu sternum) : (-) signifie un jeu causé par l'appareil BTD. Impossible à éliminer.
* Upper torso belt score (sternum slack) : (-) means a slack impossible to eliminate due to BTD machine.

Remarques – Comments : **Aucune / None.**

**Selon le manuel d'opérations pour mesures géométriques des ceintures de sécurité, ébauche,
Transports Canada, janvier 1993.
As per the operational manual for the belt deployment test device,
draft, Transport Canada, January 1993.**

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**POINTS DE MESURES DES CEINTURES DE SÉCURITÉ EN UTILISANT L'APPAREIL (BTD)
PASSENGER CAR BELT FIT MEASUREMENTS USING THE BELT DEPLOYMENT TEST DEVICE (BTD)**

Type de siège
Seat type

baquet / bucket ☒ banquette / bench ☐ banquette 60-40 / bench 60-40 ☐

Type de ceinture
Belt system

3 points ☒ passive ☐ active ☒ automatique / automatic ☐ motorisée / motorised ☐

Localisation du siège
Seat location

Av-G / F-L ☐ Av-D / F-R ☒ Arr-G / R-L ☐ Arr-D / R-R ☐

Espacement du genou gauche
Left knee spacing

102 mm

Espacement du genou droit
Right knee spacing

105 mm

Essai no: / Trial no:		1	2	3
Angle du dossier BTD Back pan angle		24.8 deg.	24.9 deg.	25.0 deg.
Angle de la cuvette BTD Seat pan angle		14.8 deg.	15.3 deg.	14.9 deg.
Angle du pied Foot angle	gauche / left	121 deg.	122 deg.	122 deg.
	droit / right	118 deg.	121 deg.	120 deg.
Angle du genou Knee angle	gauche / left	117 deg.	116 deg.	118 deg.
	droit / right	119 deg.	116 deg.	117 deg.
Mesure sous-abdominale Lap belt score	gauche / left	46 mm / 1 mm	46 mm / 1 mm	46 mm / 1 mm
	droit / right	42 mm / 0 mm	41 mm / 0 mm	41 mm / 0 mm
Ceinture en contact Belt in contact	gauche / left	Oui/Yes	Oui/Yes	Oui/Yes
	droit / right	Oui/Yes	Oui/Yes	Oui/Yes
Mesure ceinture baudrier Upper torso belt score	Sternum	172 mm / - *	171 mm / - *	170 mm / - *
	Clavicule	140 mm / 3 mm	141 mm / 3 mm	141 mm / 3 mm
Ceinture en contact Belt in contact	Clavicule	Oui/Yes	Oui/Yes	Oui/Yes

Mesure Score	/	Jeu Slack
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* Mesure ceinture baudrier (jeu sternum) : (-) signifie un jeu causé par l'appareil BTD. Impossible à éliminer.
* Upper torso belt score (sternum slack) : (-) means a slack impossible to eliminate due to BTD machine.

Remarques - Comments: **Aucune / None.**

**Selon le manuel d'opérations pour mesures géométriques des ceintures de sécurité, ébauche, Transports Canada, janvier 1993.
As per the operational manual for the belt deployment test device, draft, Transport Canada, January 1993.**

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POSITIONNEMENT DES MANNEQUINS / MEASUREMENTS OF DUMMY POSITIONS

		<u>MESURES / MEASUREMENTS :</u>					
Conducteur/Driver : Hybrid III (5 %)		Toutes les mesures sont en mm / All measurements are in mm					
Angle du pelvis - Pelvic angle :	21.0°						
Angle transversal - Transversal angle :	0.3°	Conducteur / Driver			Passager / Passenger		
Angle de la tête - Head angle :	0.0°	Ajustement du siège : Seat adjustment :			Ajustement du siège : Seat adjustment :		
Seuil de porte - Door sill :	0.0°	1 de 15 crans/notches			1 de 15 crans/notches		
Mouvement du lacet / Yaw movement :	3 mm	Angle du dossier : Seat back angle :			Angle du dossier : Seat back angle :		
Position de la rail du siège / Seat track position * :	2 mm	2.6 °			2.6 °		
Passager avant/Front Passenger: Hybrid III (5 %)		X	Y	Z	X	Y	Z
Angle du pelvis - Pelvic angle :	20.5°						
Angle transversal - Transversal angle :	0.3°						
Angle de la tête - Head angle :	0.0°						
Seuil de porte - Door sill :	0.0°						
Mouvement du lacet / Yaw movement :	0 mm						
Position de la rail du siège / Seat track position * :	1 mm						
Cible de tête / Head target :		2226	-453	1093	2221	436	1097
Point-H / H-Point :		2080	-545	540	2078	546	543
Rotule / Knee joint :		1750	-504	625	1744	497	626

Remarques – Comments : **Aucune / None.**

*** Référence : 0 est la position la plus avancée.**

*** Reference : 0 is the foremost position.**

Selon la procédure de positionnement de mannequin 5^e percentile Hybrid III, 49 CFR 552, 571, 585 and 595, Docket No. NHTSA 00-7013; Notice 1, RIN 2127-AG70, Federal Motor Vehicle Safety Standards, Occupant Crash Protection (Paragraphe S16.3).

As per procedure for placement of a 5th percentile Hybrid III 49 CFR 552, 571, 585 and 595, Docket No. NHTSA 00-7013; Notice 1, RIN 2127-AG70, Federal Motor Vehicle Safety Standards, Occupant Crash Protection (Section S16.3).

Point de référence : Centre transversal du véhicule, au point le plus avancé, au niveau du sol. Selon SAE J182a.

Reference point : Transversal center of the vehicle, at the foremost point and at ground level. As per SAE J182a.

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POSITIONNEMENT DES MANNEQUINS / MEASUREMENTS OF DUMMY POSITIONS

		MESURES / MEASUREMENTS :							
Passager arrière gauche : Rear left passenger : Hybrid III (6 ans / 6 years old)		Toutes les mesures sont en mm / All measurements are in mm							
Angle du pelvis - Pelvic angle : Angle transversal - Transversal angle : Angle de la tête - Head angle : Mouvement du lacet / Yaw movement :		N/A N/A N/A N/A		Passager arrière gauche Rear left passenger			Passager arrière droit Rear right passenger		
		Ajustement du siège : Seat adjustment : N/A			Ajustement du siège : Seat adjustment : N/A				
Passager arrière droit : Rear right passenger : Hybrid III (6 ans / 6 years old)		Ajustement du dossier : Seat back adjustment : N/A			Ajustement du dossier : Seat back adjustment : N/A				
Angle du pelvis - Pelvic angle : Angle transversal - Transversal angle : Angle de la tête - Head angle : Mouvement du lacet / Yaw movement :		N/A N/A N/A N/A			N/A N/A N/A N/A				
		X	Y	Z	X	Y	Z		
Cible de tête / Head target :		2226	-453	1093	2221	436	1097		

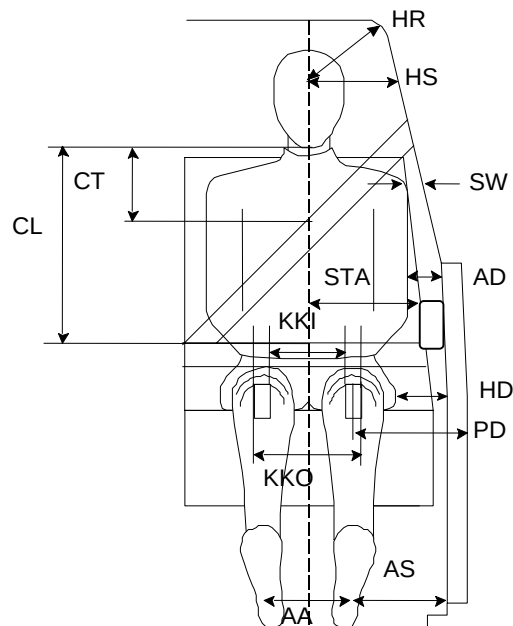
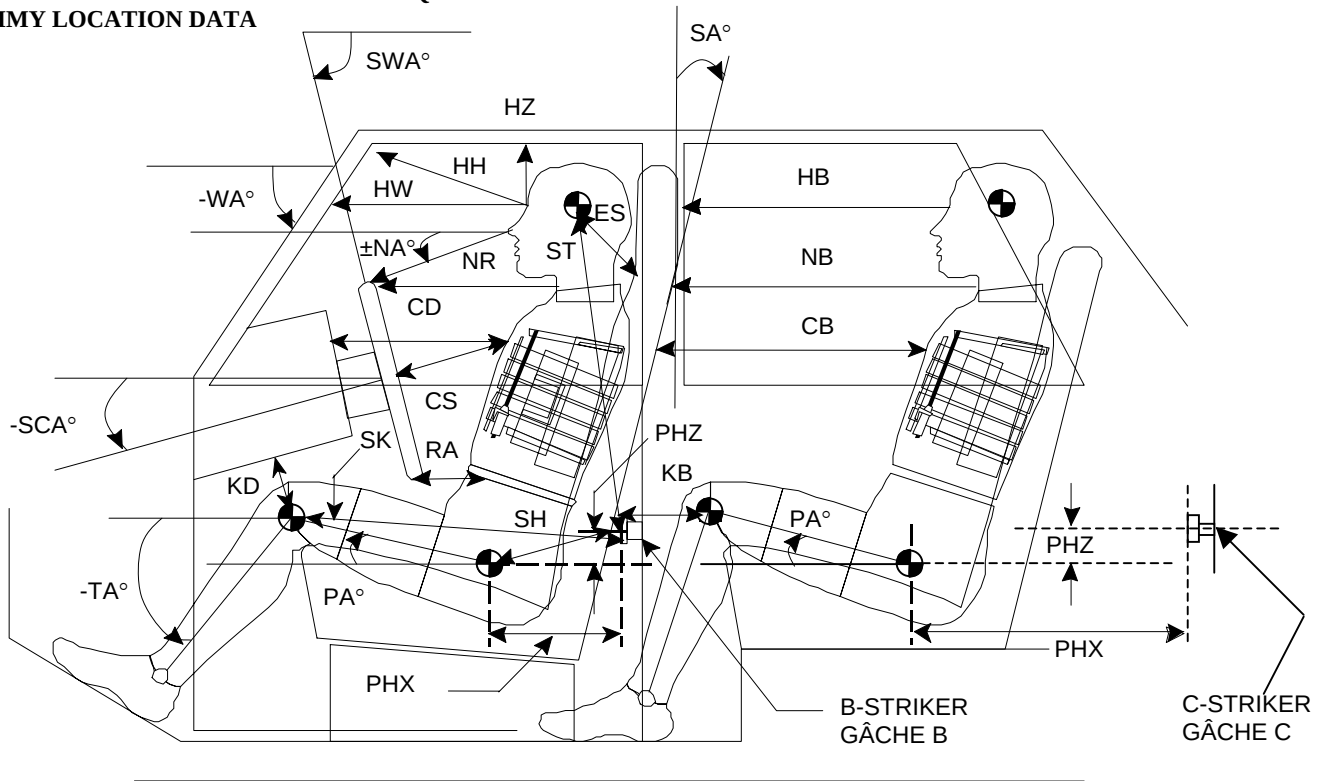
Point de référence : Centre transversal du véhicule, au point le plus avancé, au niveau du sol. Selon SAE J182a.
Reference point : Transversal center of the vehicle, at the foremost point and at ground level. As per SAE J182a.

Passager arrière gauche : Rear left passenger :	Hybrid III (6 ans / 6 years old)	
	Méthodes d'attaches : Attachment methods:	Siège / Seat : ancrage sup. et système d'ancrage univ. / with tether and latch Enfant / Child : ceinture boudrier gauche / left shoulder belt
	Manufacturier du siège : Seat manufacturer :	Evenflo Vision
	Modèle du siège : Seat model :	3271349CP1
	No. de série du siège : Seat serial number :	N/A
	Date de fabrication du siège : Seat fabrication date :	12/29/2004

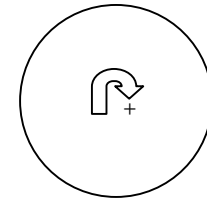
Passager arrière droit : Rear right passenger :	Hybrid III (6 ans / 6 years old)	
	Méthodes d'attaches : Attachment methods:	Siège / Seat : ceinture boudrier droit / right shoulder belt Enfant / Child : ceinture boudrier droit / right shoulder belt
	Manufacturier du siège : Seat manufacturer :	Evenflo Vision
	Modèle du siège : Seat model :	3271349CP1
	No. de série du siège : Seat serial number :	N/A
	Date de fabrication du siège : Seat fabrication date :	12/29/2004

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COTES DE LOCALISATION DES MANNEQUINS
DUMMY LOCATION DATA



référence
reference :



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COTES DE LOCALISATION DES MANNEQUINS (suite)

DUMMY LOCATION DATA (continued)

(Mesures prises en mm / Measurements taken in mm)

DESCRIPTION	CODE	CONDUCTEUR DRIVER	PASSAGER Av. F. PASSENGER	PASSAGER Arr.G. L.R. PASSENGER	PASSAGER Arr.D. R.R. PASSENGER
De cheville à cheville (boulon extérieur) Ankle to ankle (exterior bolt)	AA	290	220		
Genou à genou (plaque) Intérieur / Interior Centre / Center Knee to knee (plate) Extérieur / Extérieur	KKI	100	90		
	KKC	170	160		
	KKO	240	230		
De la cheville jusqu'au seuil de porte (horizontalement) Ankle to door sill (horizontal)	AS	200	190		
Centre du genou au tableau de bord ou siège horizontalement (minimum) Knees centre to dash or seat back horizontal (minimum)	KDL	30	20		
	KDR	30	30		
Sternum au tableau de bord (horizontalement) Chest to dash (horizontal)	CD		360		
Milieu du sternum au centre du moyeu du volant ou siège avant Mid sternum to steering hub center or front seat	CS/CB	200			
Milieu du front jusqu'au pare-brise (horizontalement) Mid forehead to windshield (horizontal)	HW	576	590		
Milieu du front jusqu'au haut du pare-brise Mid forehead to windshield header	HH	285	290		
Nez à la jante du volant de direction (haut) ou siège avant Nose to steering wheel rim (top) or front seat	NR/HB	175			
Milieu du front jusqu'au début du toit Mid forehead to edge roof	HR	275	285		
Haut de l'oreille au haut du siège avant Ear top to front seat top	ES	220	230		
Menton au haut de la ceinture sous-abdominale (verticalement) Chin to lap belt upper edge (vertical)	CL	350	340		
Menton au haut de la ceinture baudrier (verticalement) Chin to thorax belt upper edge (vertical)	CT	135	135		
Milieu du front à la fenêtre latérale (horizontalement) Mid forehead to side window (horizontal)	HS	345	360		
La rotule à la porte (horizontalement) Patella to door (horizontal)	PD	200	210		
Du point-H à la porte (horizontalement) H-point to door (horizontal)	HD	185	175		
Du milieu du bras à la porte (horizontalement) Mid upper arm to door (horizontal)	AD	120	168		
Cou jusqu'au volant ou tableau de bord (horizontalement) ou siège avant Neck to steering wheel or dash board (horizontal) or front seat	NB	370	510		
Épaule à la fenêtre de côté Shoulder to side window	SW	175	185		
Abdomen à l'appui-bras Abdomen to armrest	STA	180	185		
Milieu du front au toit (verticalement) Mid forehead to roof (vertical)	HZ	210	210		
Tête au loquet (plan (x,z)) Striker to head ((x,z) plan)	ST	414	421		
Abdomen à la jante du volant de direction (bas) Steering wheel rim to abdomen (bottom)	RA	90			
Genou au loquet (plan (x,z)) Striker to knee ((x,z) plan)	SK	693	701		
Point-H au loquet (plan (x,z)) Striker to H-Point ((x,z) plan)	SH	404	406		
Point-H au loquet en X (horizontalement) Striker to H-Point in X (horizontal)	PHX	354	358		
Point-H au loquet en Z (verticalement) Striker to H-Point in Z (vertical)	PHZ	195	192		

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COTES DE LOCALISATION DES MANNEQUINS (suite)

DUMMY LOCATION DATA (continued)

(Mesures prises en deg. / Measurements taken in deg.)

DESCRIPTION	CODE	CONDUCTEUR DRIVER	PASSAGER Av. F. PASSENGER	PASSAGER Arr.G. L.R. PASSENGER	PASSAGER Arr.D. R.R. PASSENGER
Angle du volant Steering wheel angle	+SWA	64.5°			
Angle du pare-brise Windshield angle	-WA	-27.4°			
Angle de la colonne de direction Steering column angle	-SCA	-24.6°			
Angle du tibia gauche Left tibial angle	-TA	-30.5°	-31.2°		
Angle du tibia droit Right tibial angle	-TA	-28.2°	-32.1°		
Angle pelvis Pelvic angle	+PA	21.0°	21.5°		
Angle du nez à la jante de direction (haut) Nose to steering wheel rim (top) angle	±NA	-2.9°			
Angle du dossier Seat back angle	+SA	2.6°	2.6°		
Angle ST (horizontalement) ST angle (horizontal)	+ST-A	59.8°	59.3°		
Angle SK (horizontalement) SK angle (horizontal)	±SK-A	-9.1°	-9.0°		
Angle SH (horizontalement) SH angle (horizontal)	-SH-A	-28.8°	-28.2°		

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**MESURES DE MANNEQUIN DAE
TEST DUMMY MEASUREMENTS**

CONDUCTEUR / DRIVER

Description et emplacement du Mannequin
ATD description and location :

DESCRIPTION	X(mm)	Y(mm)	Z(mm)
Centre de gravité de la tête, extérieur - Head CG, outboard	2226	-453	1093
Base du nez - Glabella (root of nose)	2137	-387	1109
Menton - Chin (bottom)	2132	-388	1001
Jonction menton et cou - Chin / neck junction	2201	-387	1012
Thorax au niveau des côtes supérieures - Chest at upper rib level	2116	-385	838
Thorax au niveau des côtes inférieures - Chest at lower rib level	2087	-383	732
Boulon supérieur avant de l'épaule, ext. - Shoulder bolt, top front outboard	2252	-541	872
Boulon supérieur avant de l'épaule, int. - Shoulder bolt, top front inboard	2256	-223	872
Boulon du coude, extérieur - Elbow bolt, outboard	2105	-682	798
Boulon du coude, intérieur - Elbow bolt, inboard	2097	-86	794
Boulon du poignet, extérieur - Wrist bolt, outboard	1934	-608	907
Boulon du poignet, intérieur - Wrist bolt, inboard	1923	-139	916
Point d'articulation de la hanche, extérieur - Hip point, outboard	2168	-502	577
Boulon du genou gauche, extérieur - Knee bolt, left leg, outboard	1749	-503	624
Boulon de la cheville gauche, extérieur - Ankle bolt, left leg , outboard	1537	-475	353
Point du talon gauche - Heel point, left leg	1586	-479	241
Plante du pied gauche vs plancher - Ball of foot at toeboard contact, left leg	1456	-512	287
Boulon du genou droit, intérieur - Knee bolt, right leg , inboard	1749	-331	620
Boulon de la cheville droite, intérieur - Ankle bolt, right leg , inboard	1551	-244	363
Point du talon droit - Heel point, right leg	1555	-236	247
Plante du pied droit vs plancher - Ball of foot at toeboard contact, right leg	1448	-267	331

Remarques – Comments : Aucune / None.

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**MESURES DE MANNEQUIN DAE
TEST DUMMY MEASUREMENTS**

PASSAGER / PASSENGER

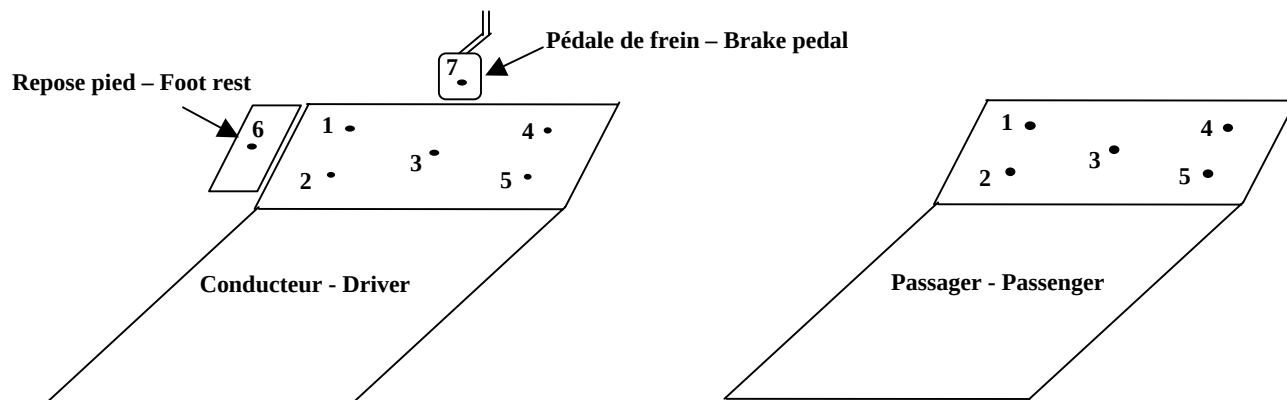
Description et emplacement du Mannequin
ATD description and location:

DESCRIPTION	X(mm)	Y(mm)	Z(mm)
Centre de gravité de la tête, extérieur - Head CG, outboard	2221	436	1097
Base du nez - Glabella (root of nose)	2136	367	1108
Menton - Chin (bottom)	2135	366	1001
Jonction menton et cou - Chin / neck junction	2202	366	1028
Thorax au niveau des côtes supérieures - Chest at upper rib level	2106	374	813
Thorax au niveau des côtes inférieures - Chest at lower rib level	2072	378	702
Boulon supérieur avant de l'épaule, ext. - Shoulder bolt, top front outboard	2243	530	869
Boulon supérieur avant de l'épaule, int. - Shoulder bolt, top front inboard	2241	217	866
Boulon du coude, extérieur - Elbow bolt, outboard	2155	594	674
Boulon du coude, intérieur - Elbow bolt, inboard	2160	176	664
Boulon du poignet, extérieur - Wrist bolt, outboard	1951	534	629
Boulon du poignet, intérieur - Wrist bolt, inboard	1950	199	622
Point d'articulation de la hanche, extérieur - Hip point, outboard	2164	503	582
Boulon du genou gauche, intérieur - Knee bolt, left leg, inboard	1745	340	627
Boulon de la cheville gauche, intérieur - Ankle bolt, left leg, inboard	1536	326	356
Point du talon gauche - Heel point, left leg	1575	330	240
Plante du pied gauche vs plancher - Ball of foot at toeboard contact, left leg	1452	360	293
Boulon du genou droit, extérieur - Knee bolt, right leg, outboard	1745	498	626
Boulon de la cheville droite, extérieur - Ankle bolt, right leg, outboard	1534	467	359
Point du talon droit - Heel point, right leg	1564	478	236
Plante du pied droit vs plancher - Ball of foot at toeboard contact, right leg	1436	515	302

Remarques – Comments : Aucune / None.

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MESURES PLANCHER / FOOTWELL MEASUREMENTS

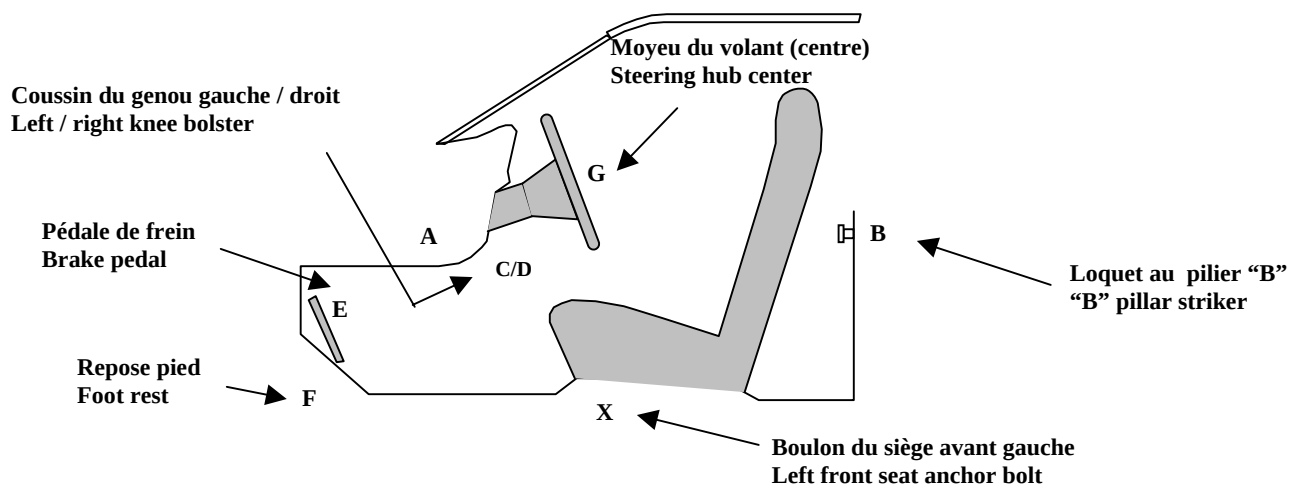


N° Cible	AVANT ESSAI	APRÈS ESSAI	
Target No.	PRE-TEST	POST-TEST	Δ mm
1	x	1279	1280
	y	-457	-459
	z	377	388
2	x	1385	1383
	y	-469	-472
	z	289	293
3	x	1338	1338
	y	-358	-359
	z	330	334
4	x	1287	1287
	y	-249	-250
	z	373	379
5	x	1399	1394
	y	-234	-236
	z	288	290
6	x	1377	1379
	y	-599	-602
	z	360	361
7	x	1412	1410
	y	-363	-362
	z	430	438

N° Cible	AVANT ESSAI	APRÈS ESSAI	
Target No.	PRE-TEST	POST-TEST	Δ mm
1	x	1295	1299
	y		
	z		
2	x	1395	1396
	y		
	z		
3	x	1333	1337
	y		
	z		
4	x	1297	1302
	y	475	475
	z	380	391
5	x	1384	1384
	y	519	519
	z	287	292

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PÉNÉTRATION DE L'HABITACLE DU CONDUCTEUR (Distances en mm)
DRIVER COMPARTMENT INTRUSION (Distances in mm)



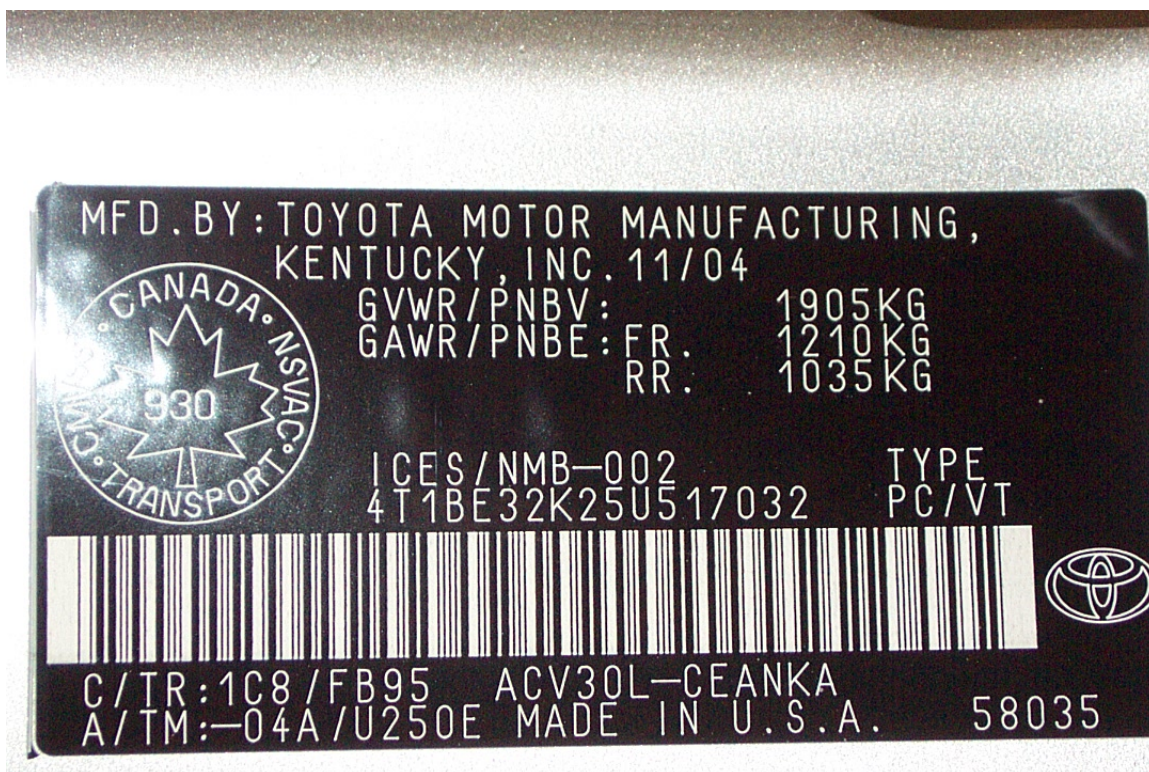
Habitacle du conducteur
Driver's compartment

	DESCRIPTION	Avant essai / Pre-test			Après essai / Post-test		
		X	Y	Z	X	Y	Z
A	Ouverture de porte Door opening	1652	-804	991	1648	-810	991
B	Loquet au pilier "B" "B" pillar striker	2434	-816	735	2433	-816	735
C	Coussin du genou gauche Left knee bolster	1677	-454	667	1674	-455	671
D	Coussin du genou droit Right knee bolster	1677	-280	656	1674	-282	661
E	Pédale de frein Break pedal	1412	-363	430	1410	-362	438
F	Repose pied Foot rest	1377	-599	360	1379	-602	361
G	Moyeu du volant (centre) Steering hub (center)	1928	-373	863	1896	-377	898
X	Boulon du siège avant gauche Left front seat anchor bolt	1985	-594	273	1983	-594	273

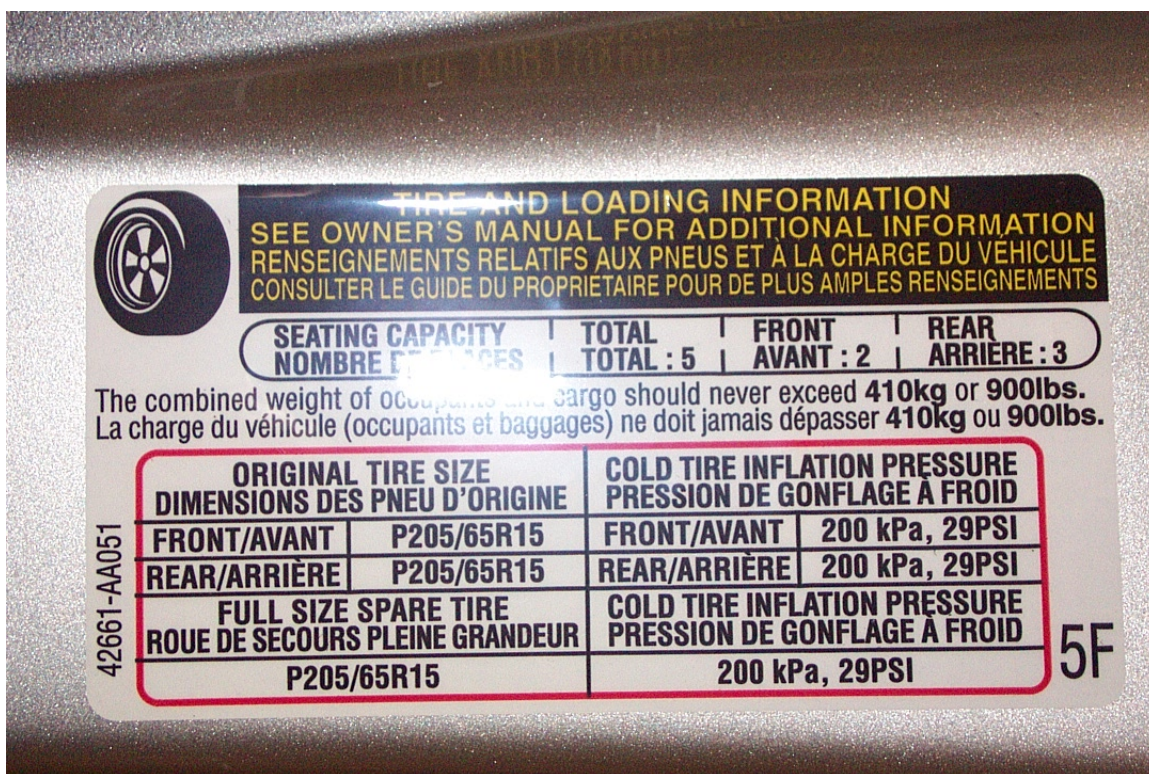
APPENDICE / APPENDIX A

**PHOTOGRAPHIES DE L'ESSAI
TEST PHOTOGRAPHS**

Date de collision Crash date	2005-02-04	Véhicule Vehicle	TOYOTA CAMRY 2005	T.C. N° T.C.No	05-202
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1. Étiquette de déclaration de conformité du véhicule d'essai.
Statement of compliance label of the test vehicle.



2. Étiquette d'information des pneus.
Tire information label.

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3. Vue $\frac{3}{4}$ avant du véhicule d'essai.
 $\frac{3}{4}$ front view of the test vehicle.



4. Vue $\frac{3}{4}$ arrière du véhicule d'essai.
 $\frac{3}{4}$ rear view of the test vehicle.

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5. Vue générale côté gauche du véhicule d'essai, avant essai.
Left side view of the test vehicle, pre-test.



6. Vue générale côté gauche du véhicule d'essai, après essai.
Left side view of the test vehicle, post-test.

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7. Vue arrière du véhicule d'essai, avant essai.
Rear view of the test vehicle, pre-test.



8. Vue arrière du véhicule d'essai, après essai.
Rear view of the test vehicle, post-test.

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9. Vue générale côté droit du véhicule d'essai, avant essai.
General right side view of the test vehicle, pre-test.



10. Vue générale côté droit du véhicule d'essai, après essai.
General right side view of the test vehicle, post-test.

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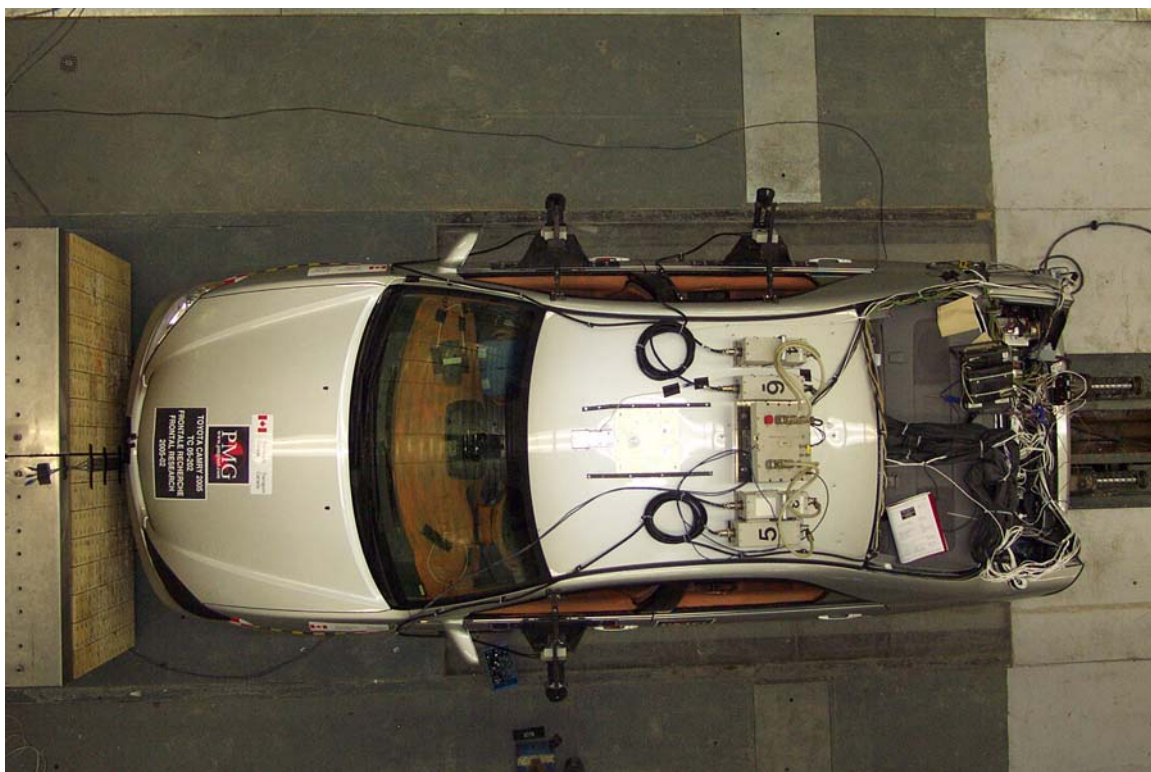


11. Vue avant du véhicule d'essai, avant essai.
Front view of the test vehicle, pre-test.



12. Vue avant du véhicule d'essai, après essai.
Front view of the test vehicle, post-test.

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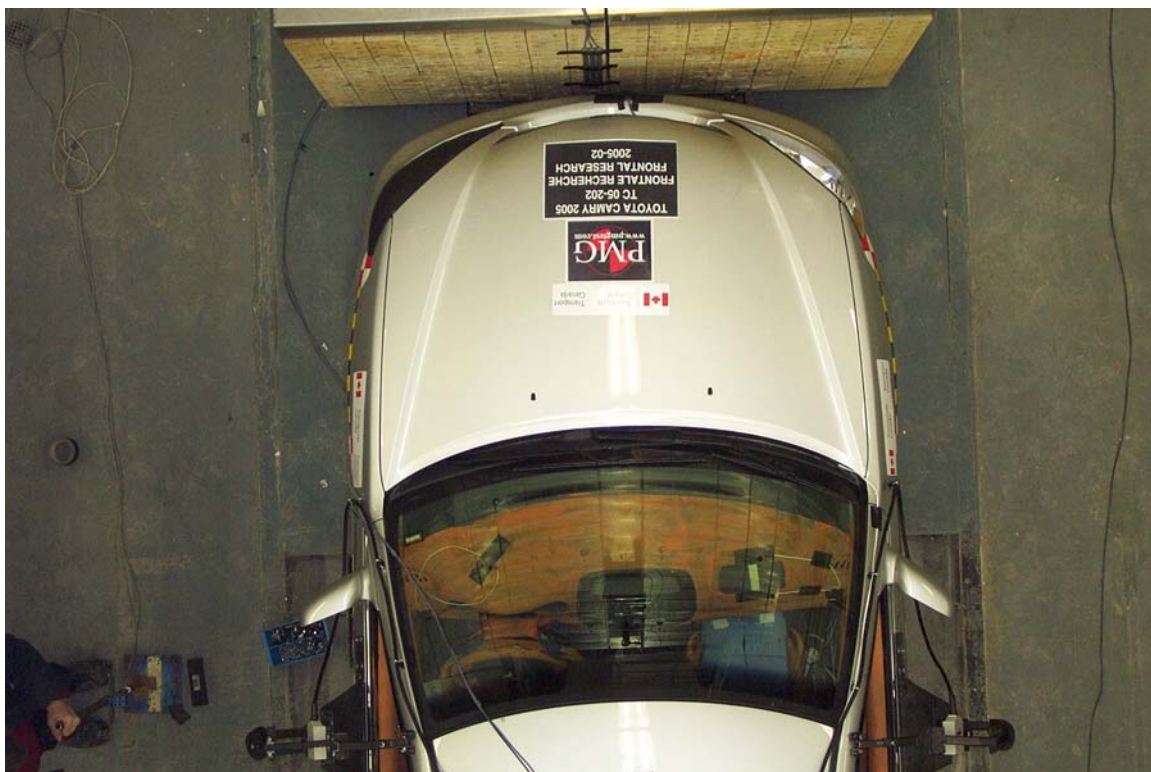


13. Vue de plan du véhicule d'essai, avant essai.
Over view of the test vehicle, pre-test.



14. Vue de plan du véhicule d'essai, après essai.
Over view of the test vehicle, post-test.

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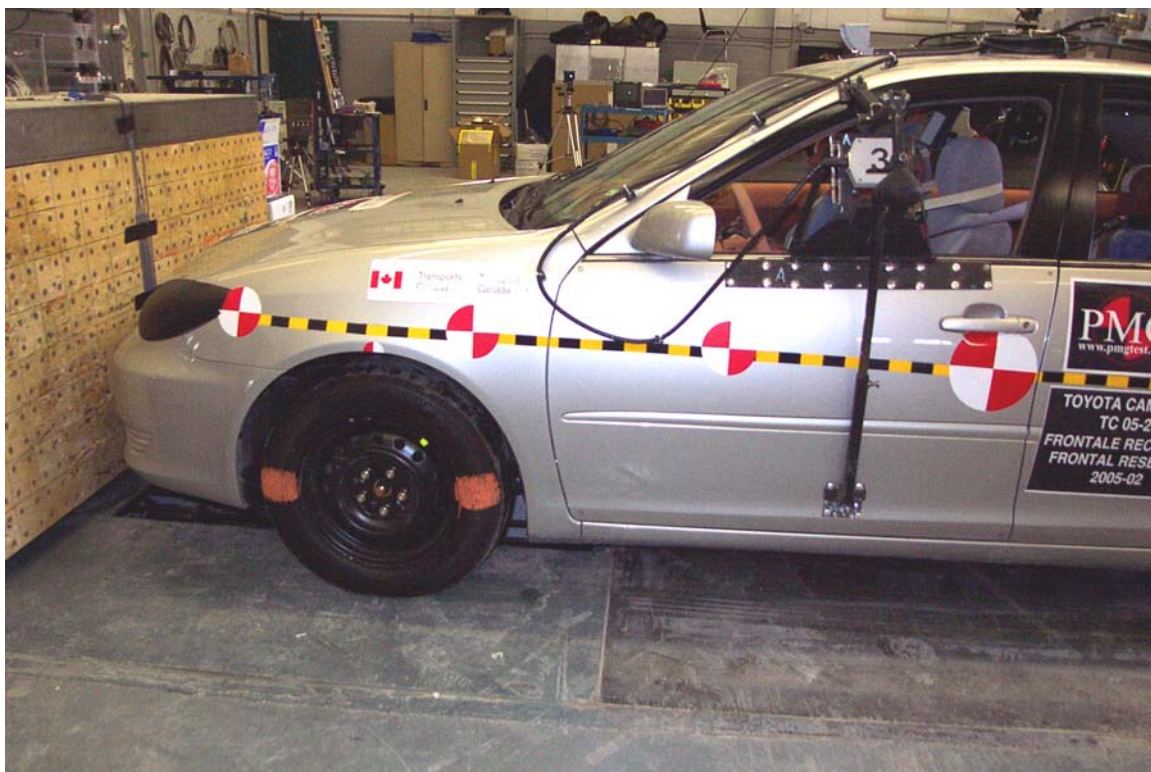


15. Vue de plan du devant du véhicule d'essai, avant essai.
Over view of the front part of the test vehicle, pre-test.



16. Vue de plan du devant du véhicule d'essai, après essai.
Over view of the front part of the test vehicle, post-test.

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17. Vue côté gauche de l'avant du véhicule d'essai, avant essai.
Left side view of front of test vehicle, pre-test.



18. Vue côté gauche de l'avant du véhicule d'essai, après essai.
Left side view of front of test vehicle, post-test.

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19. Vue côté droit de l'avant du véhicule d'essai, avant essai.
Right side view of front of test vehicle, pre-test.

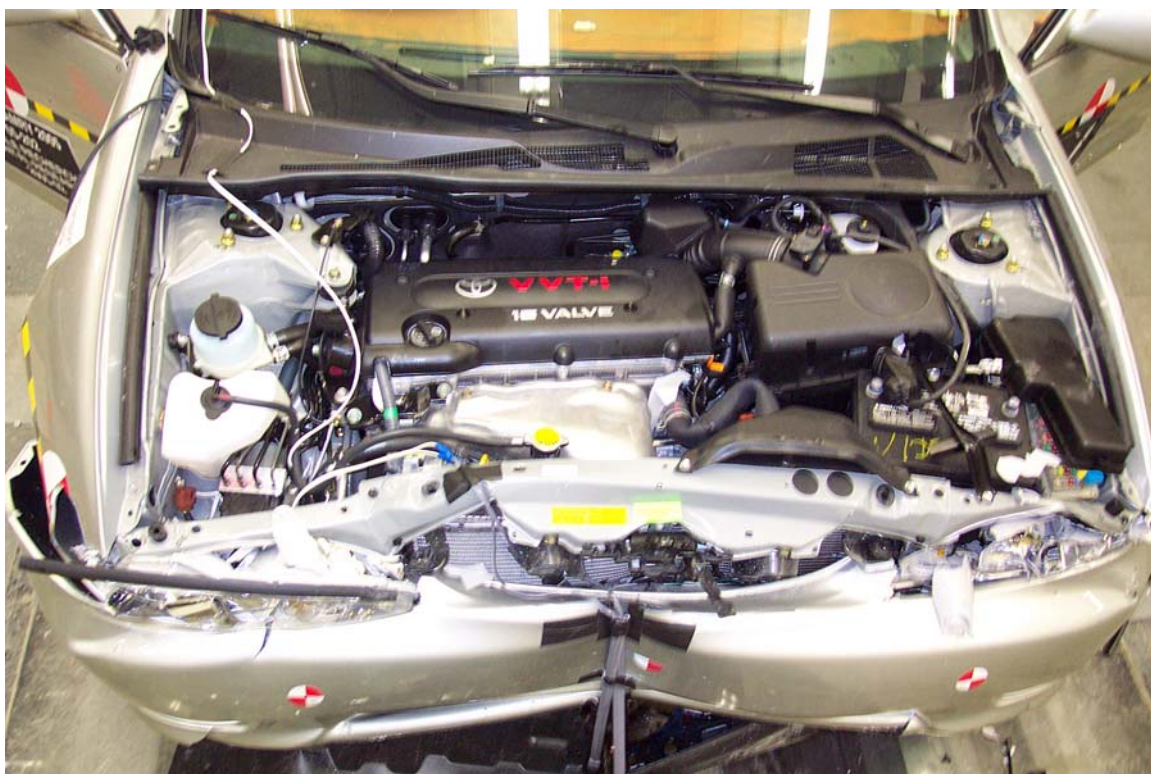


20. Vue côté droit de l'avant du véhicule d'essai, après essai.
Right side view of front of test vehicle, post-test.

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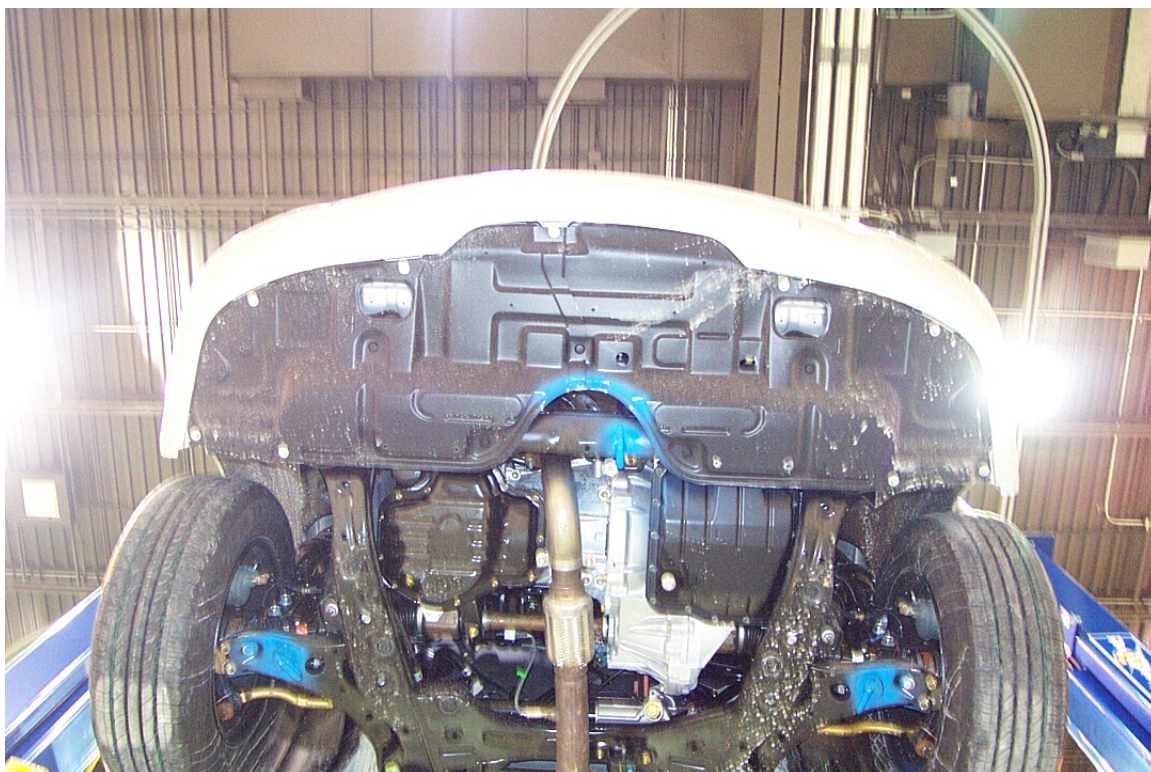


21. Vue du compartiment moteur du véhicule d'essai, avant essai.
Engine compartment view of the vehicle, pre-test.

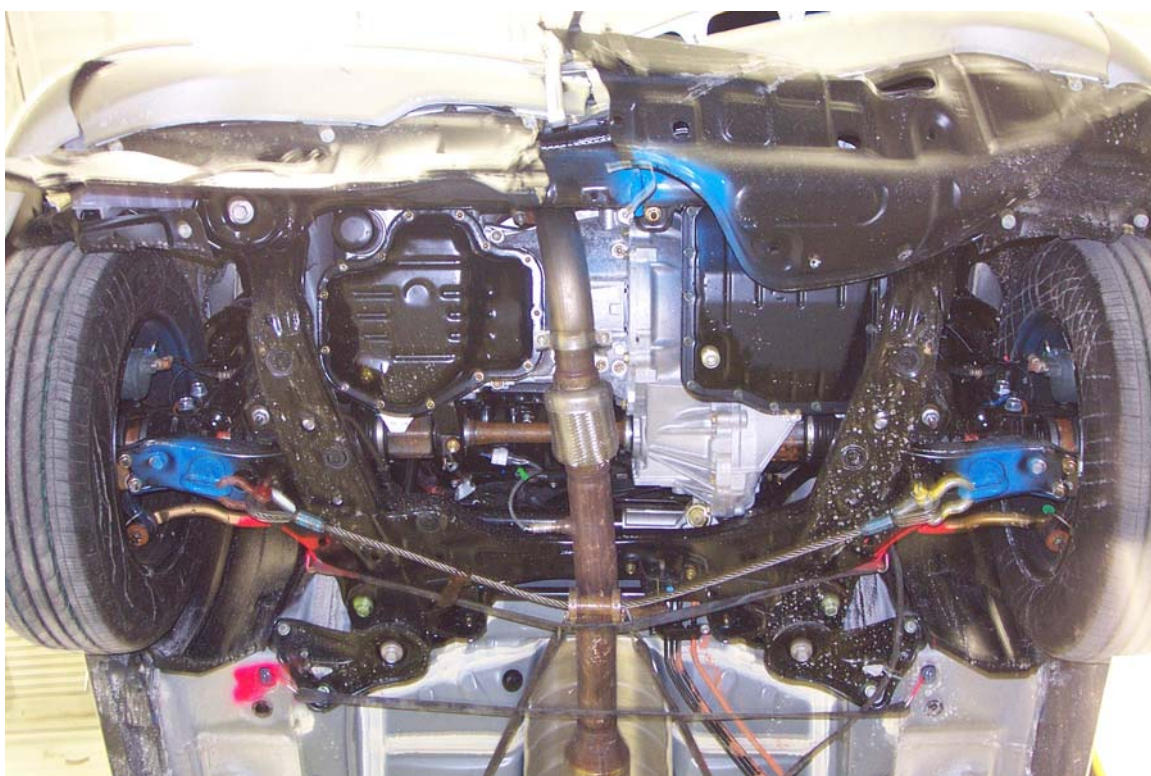


22. Vue du compartiment moteur du véhicule d'essai, après essai.
Engine compartment view of the vehicle, post-test.

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23. Vue du dessous du compartiment moteur, avant essai.
Under view of the engine compartment , pre-test.



24. Vue du dessous du compartiment moteur, après essai.
Under view of the engine compartment , post-test.

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25. Position du conducteur, avant essai.
Driver's position, pre-test.



26. Position du conducteur, après essai.
Driver's position, post-test.

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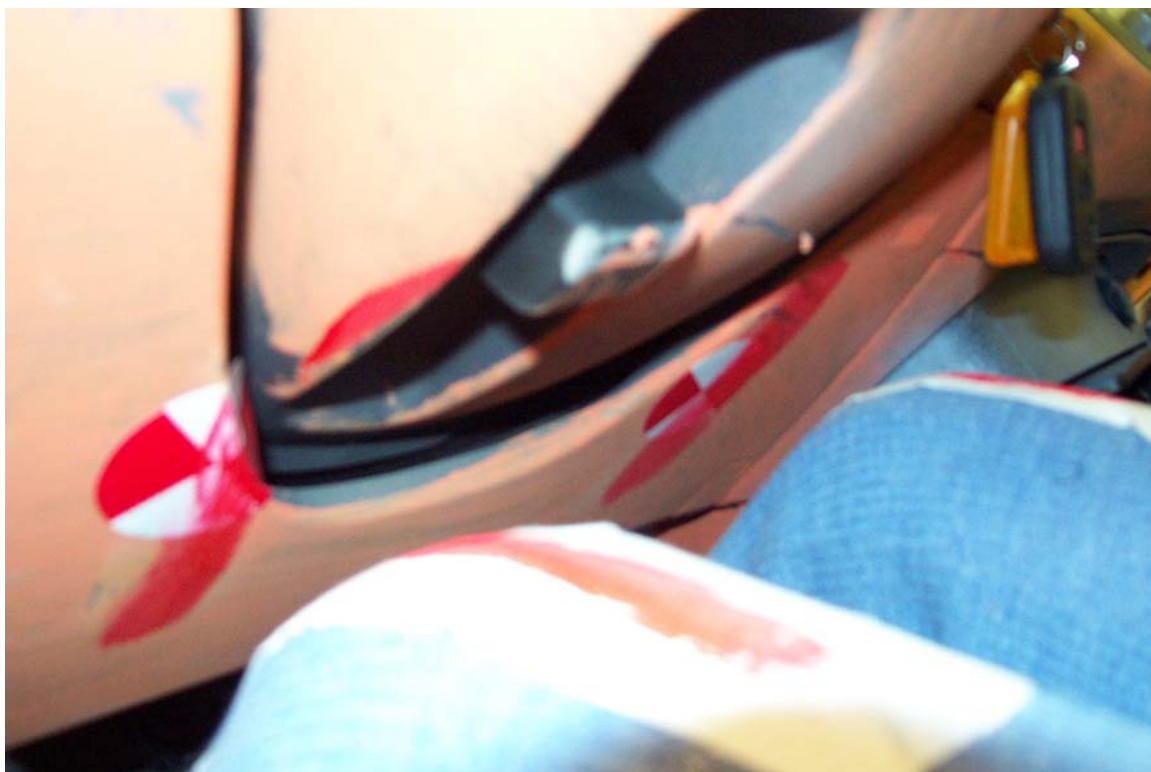


27. Point de contact de tête du conducteur, après essai.
Driver's head contact point, post-test.

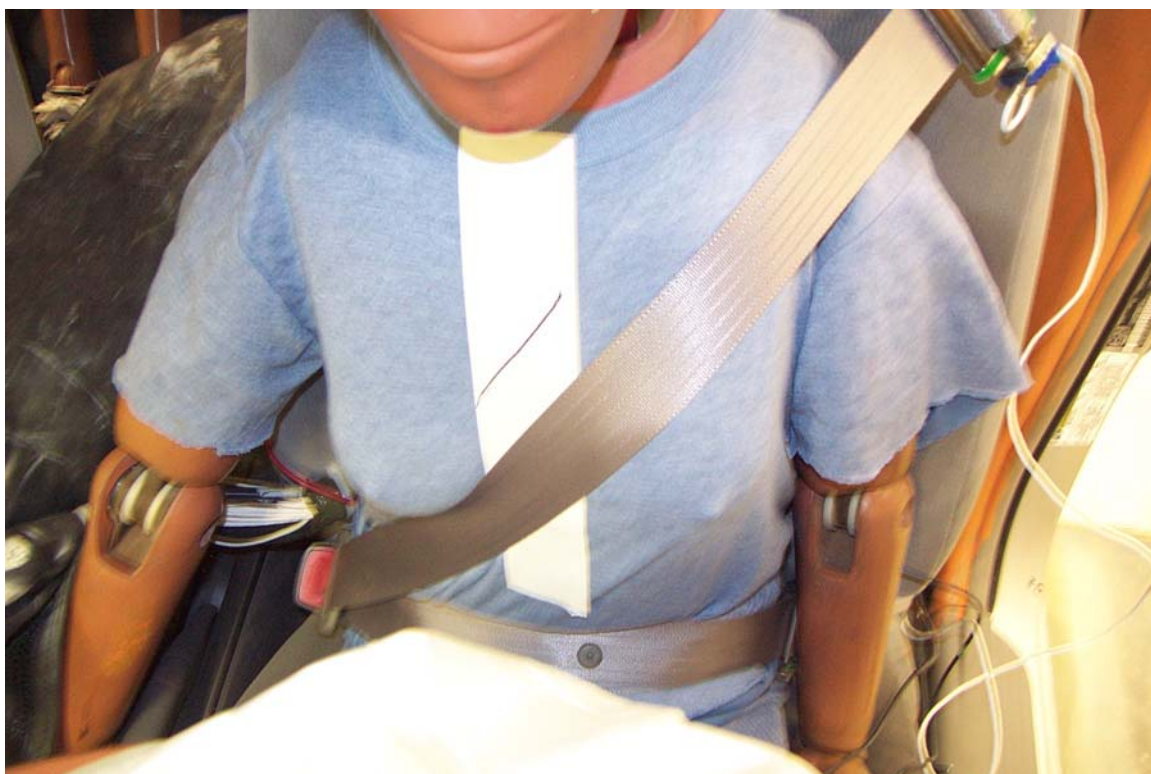


28. Point de contact de tête du conducteur, après essai.
Driver's head contact point, post-test.

Date de collision Crash date	2005-02-04	Véhicule Vehicle	TOYOTA CAMRY 2005	T.C. N° T.C.No	05-202
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29. Point de contact des genoux du conducteur, après essai.
Driver's knees contact point, post-test.



30. Contact du volant sur l'abdomen du conducteur, après essai.
Steering wheel's contact point with driver's abdomen.

Date de collision Crash date	2005-02-04	Véhicule Vehicle	TOYOTA CAMRY 2005	T.C. N° T.C.No	05-202
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31. Position du passager, avant essai.
Passenger's position, pre-test.



32. Position du passager, après essai.
Passenger's position, post-test.

Date de collision Crash date	2005-02-04	Véhicule Vehicle	TOYOTA CAMRY 2005	T.C. N° T.C.No	05-202
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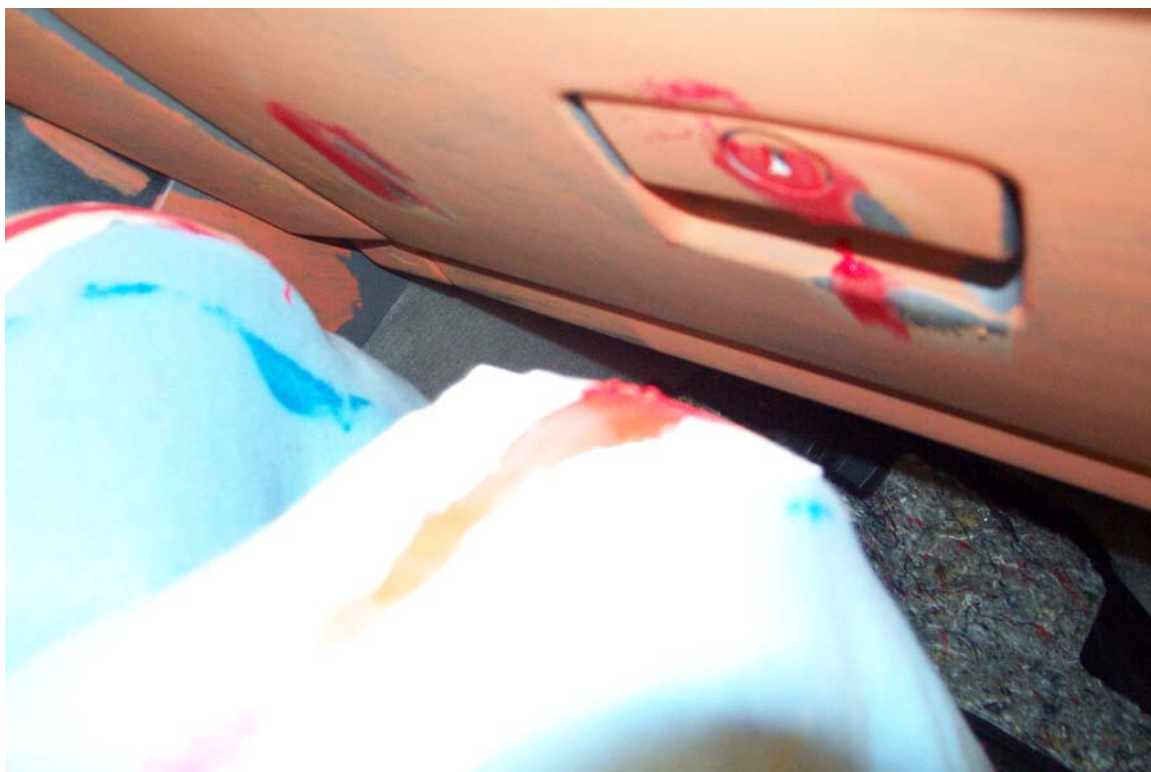


33. Point de contact de tête du passager, après essai.
Passenger's head contact point, post-test.



34. Point de contact de tête du passager, après essai.
Passenger's head contact point, post-test.

Date de collision Crash date	2005-02-04	Véhicule Vehicle	TOYOTA CAMRY 2005	T.C. N° T.C.No	05-202
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35. Point de contact des genoux du passager, après essai.
Passenger's knees contact point, post-test.

Date de collision Crash date	2005-02-04	Véhicule Vehicle	TOYOTA CAMRY 2005	T.C. N° T.C.No	05-202
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36. Position du passager arrière droit, avant essai.
Rear right passenger's position, pre-test.



37. Position du passager arrière droit, après essai.
Rear right passenger's position, post-test.

Date de collision Crash date	2005-02-04	Véhicule Vehicle	TOYOTA CAMRY 2005	T.C. N° T.C.No	05-202
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38. Position du passager arrière gauche, avant essai.
Rear left passenger's position, pre-test.



39. Position du passager arrière gauche, après essai.
Rear left passenger's position, post-test.

Date de collision Crash date	2005-02-04	Véhicule Vehicle	TOYOTA CAMRY 2005	T.C. N° T.C.No	05-202
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40. Affichage du lecteur de vitesse.
Speed trap reading.

APPENDICE / APPENDIX B

**DONNÉES GRAPHIQUES
GRAPHICAL DATA**



Nom du client
Client Name **TRANSPORT CANADA**

Type de véhicule
Type of Vehicle **TOYOTA CAMRY 2005**

Numéro de TC
Tc Number **TC05-202**

Numéro de contrat
Contract No **05-5001**

Acquisition de données selon
Data Acquisition according to **SAE J211/1 MAR 95**

Date de l'essai
Test date **2005-02-04**

Titre du projet
COLLISION DE RECHERCHE
COLLISION FRONTALE

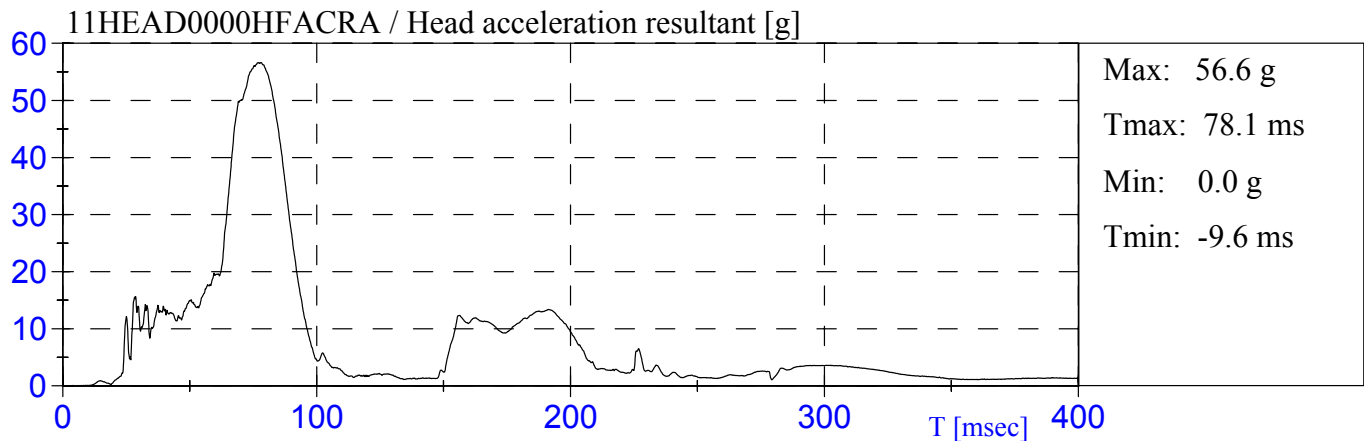
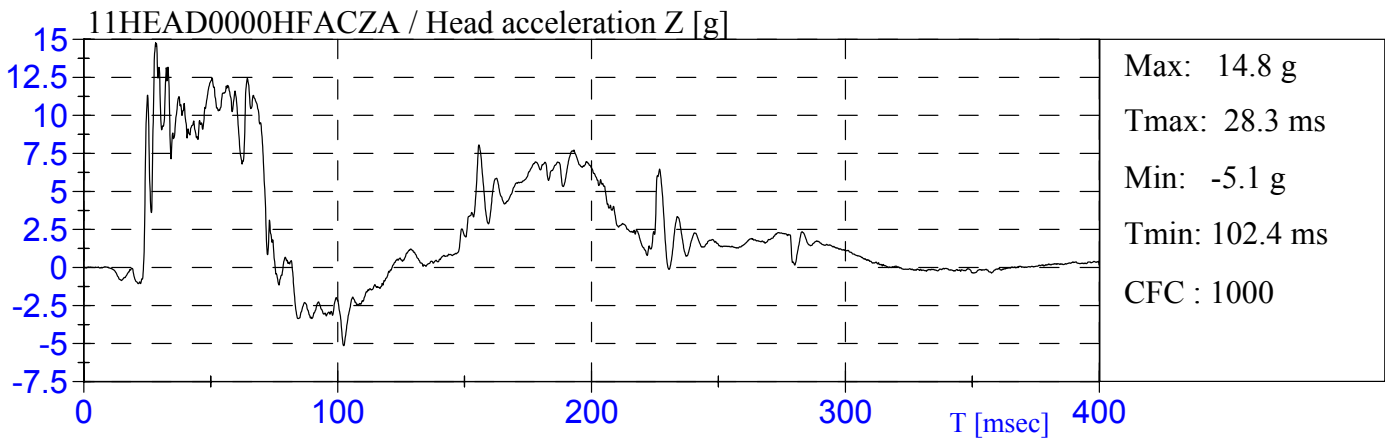
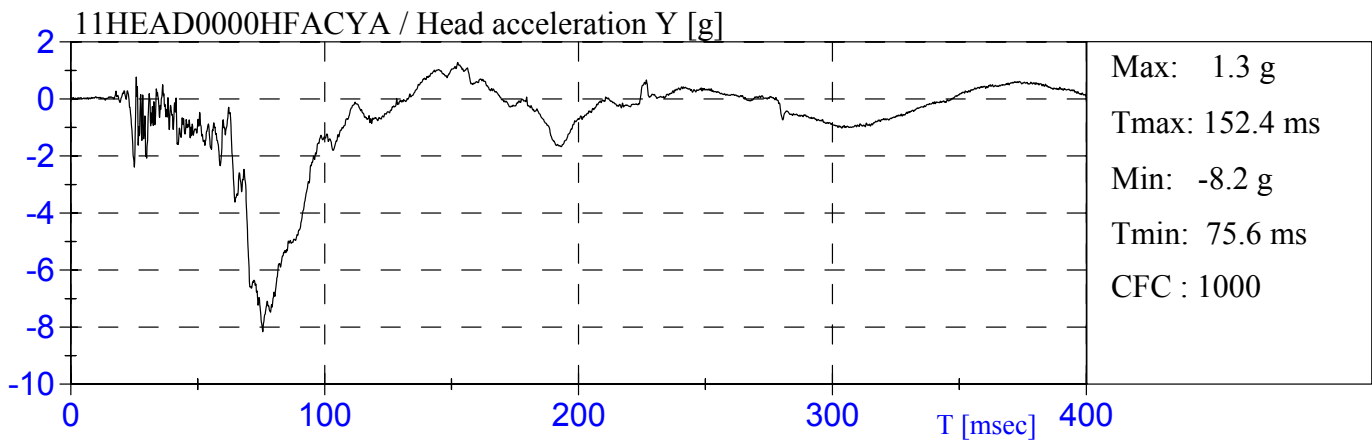
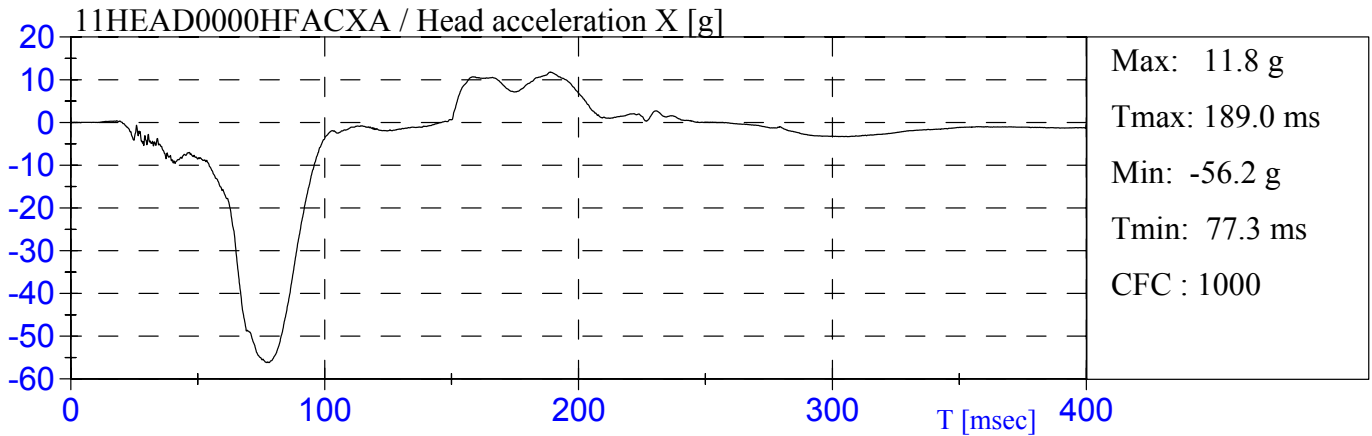
Project Title
RESEARCH COLLISION TEST
FRONTAL CRASH

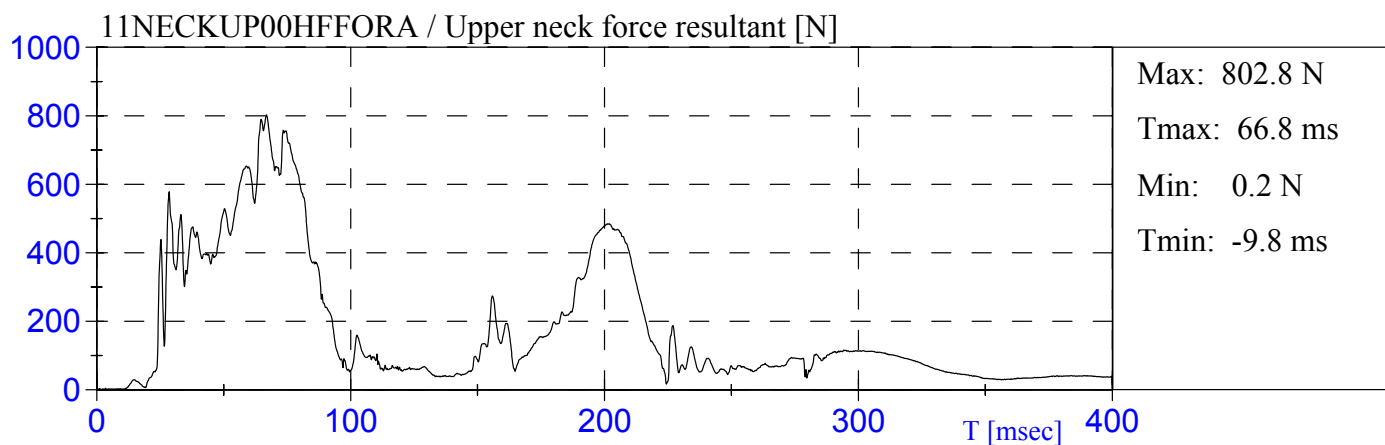
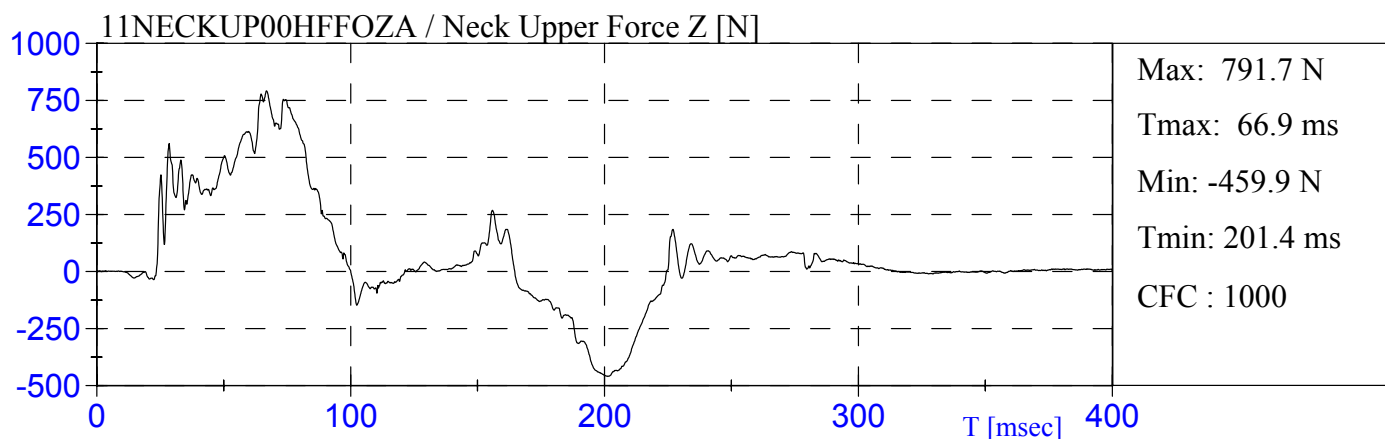
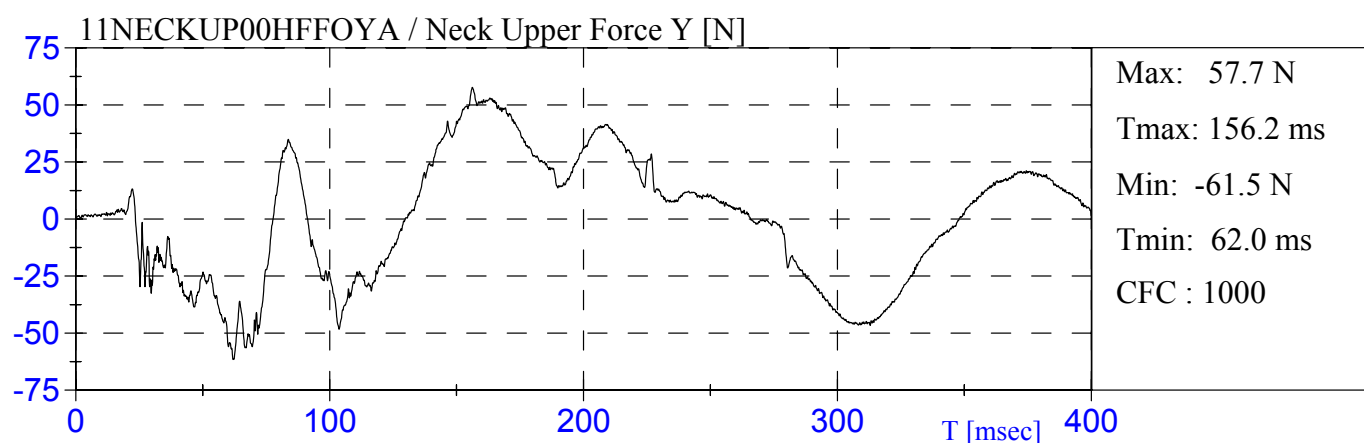
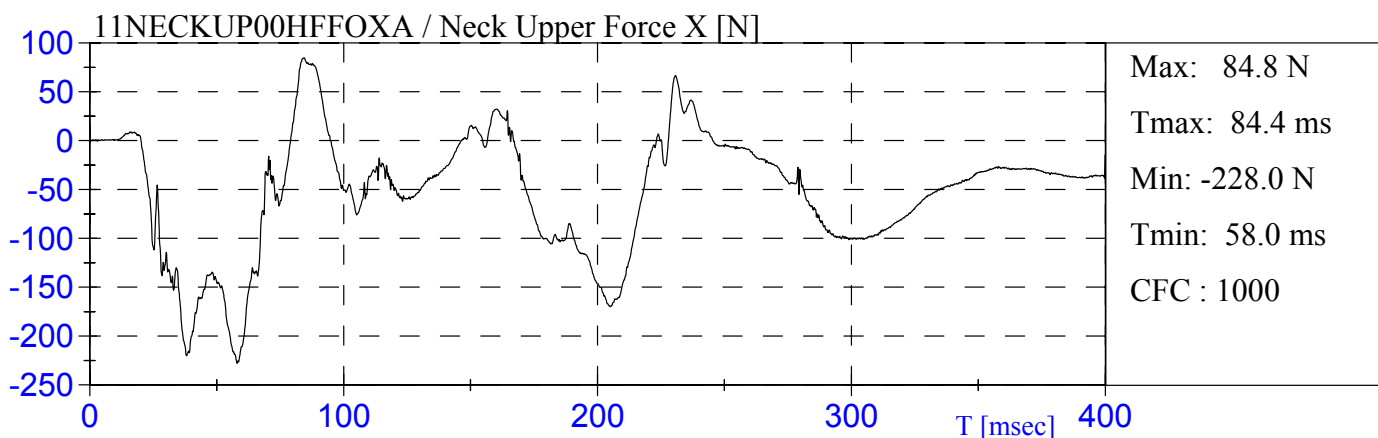
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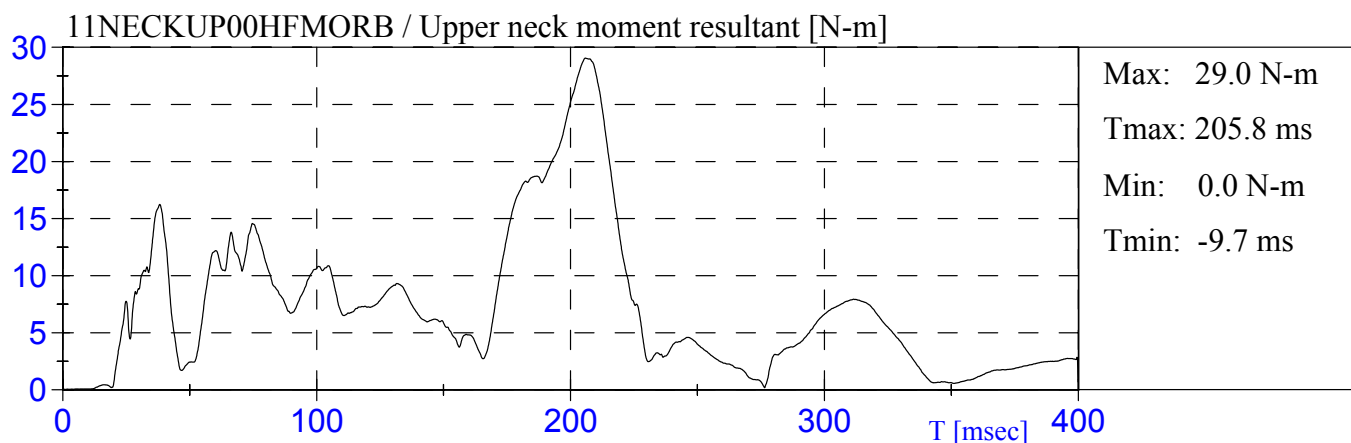
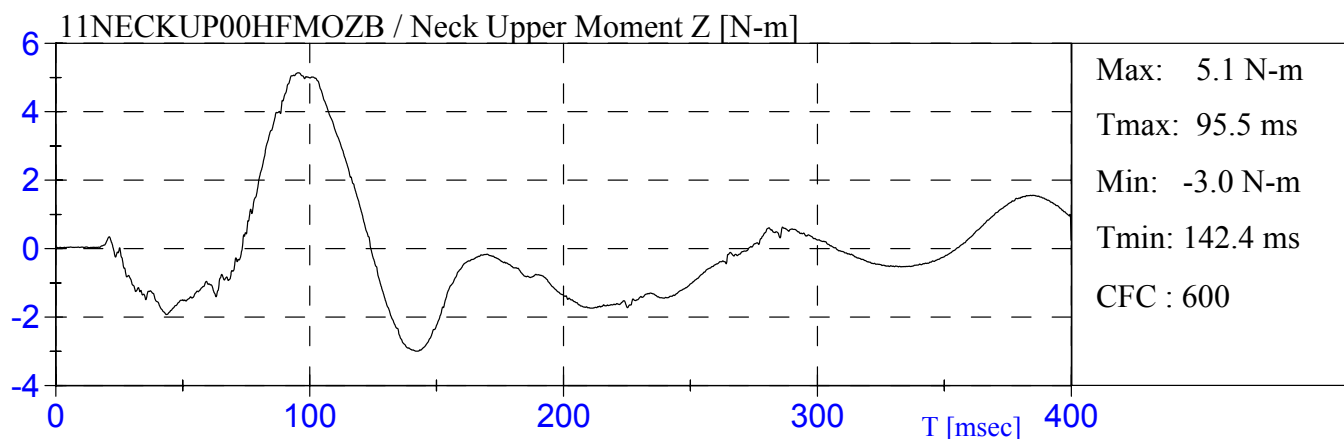
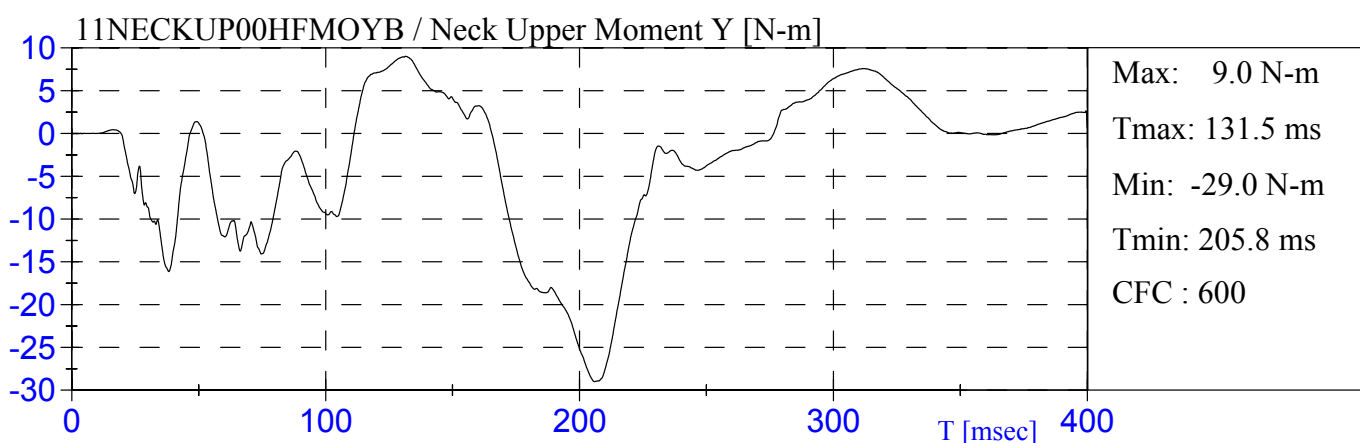
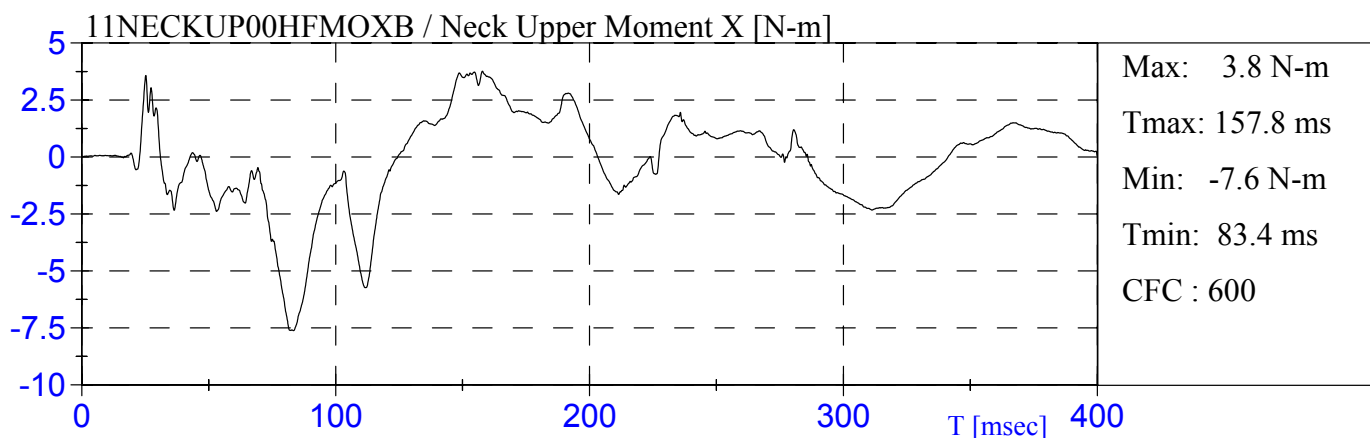
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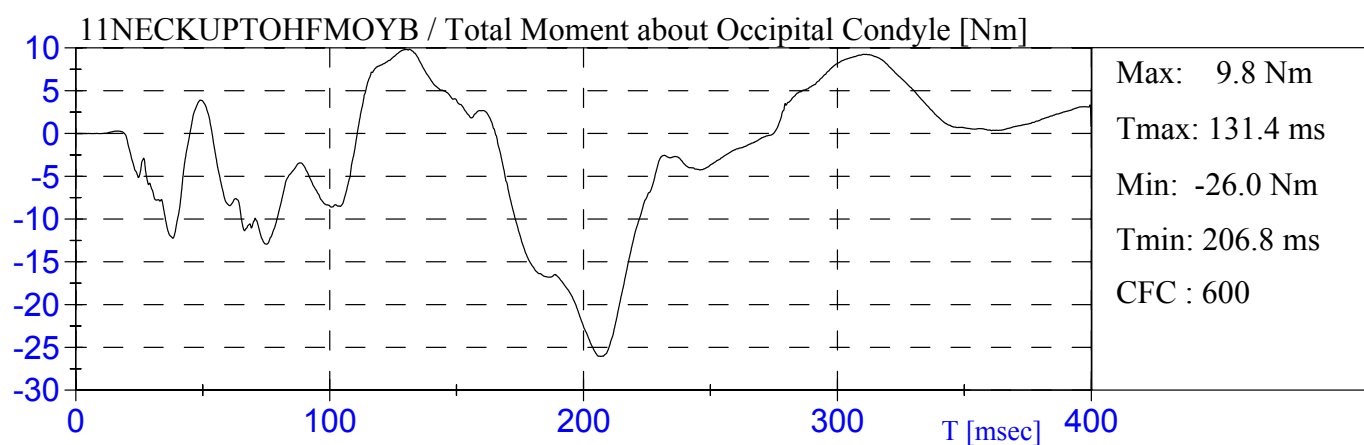
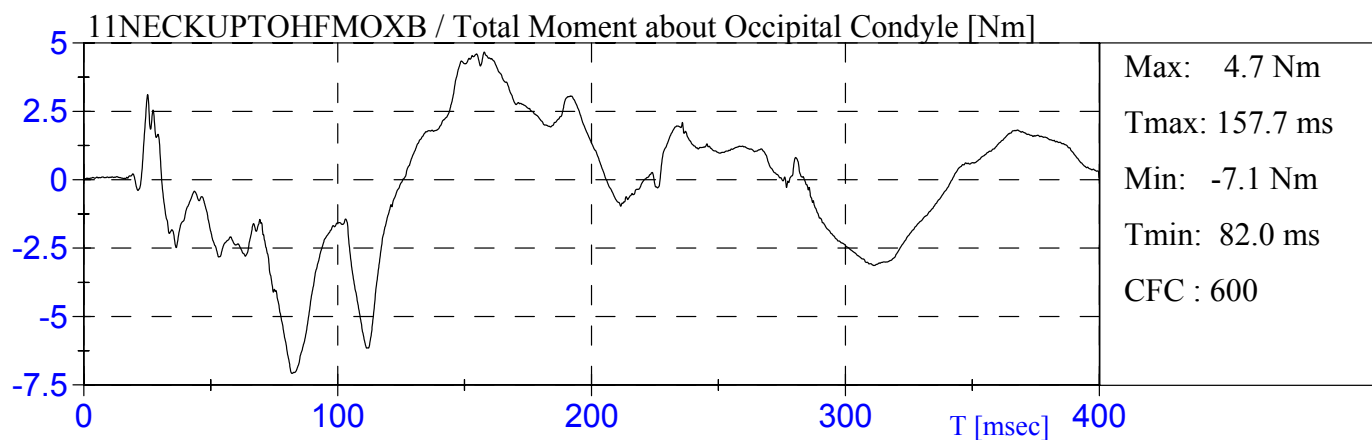
Position 4	Position 5	Position 6
Y7		Y7

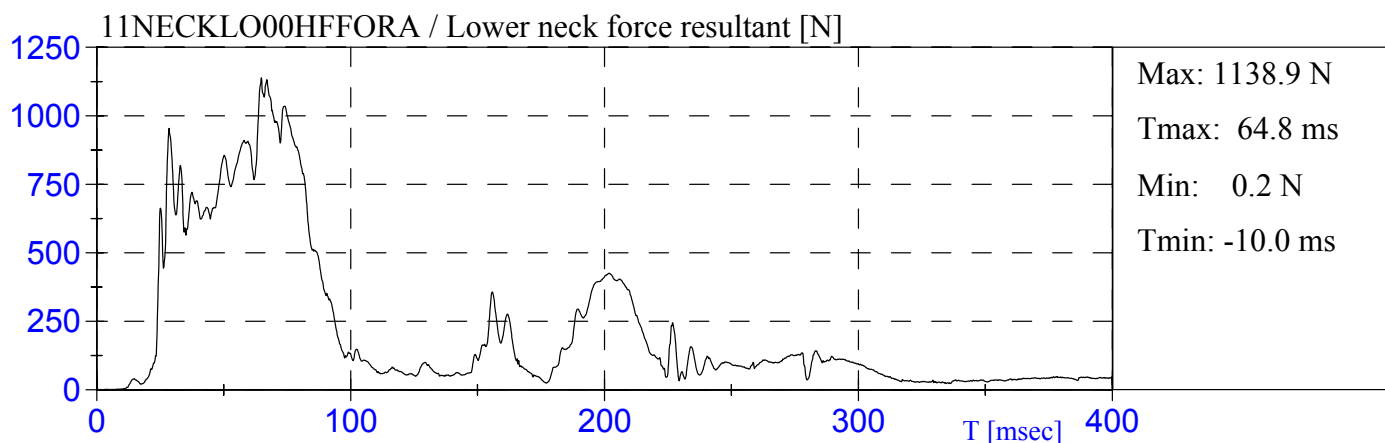
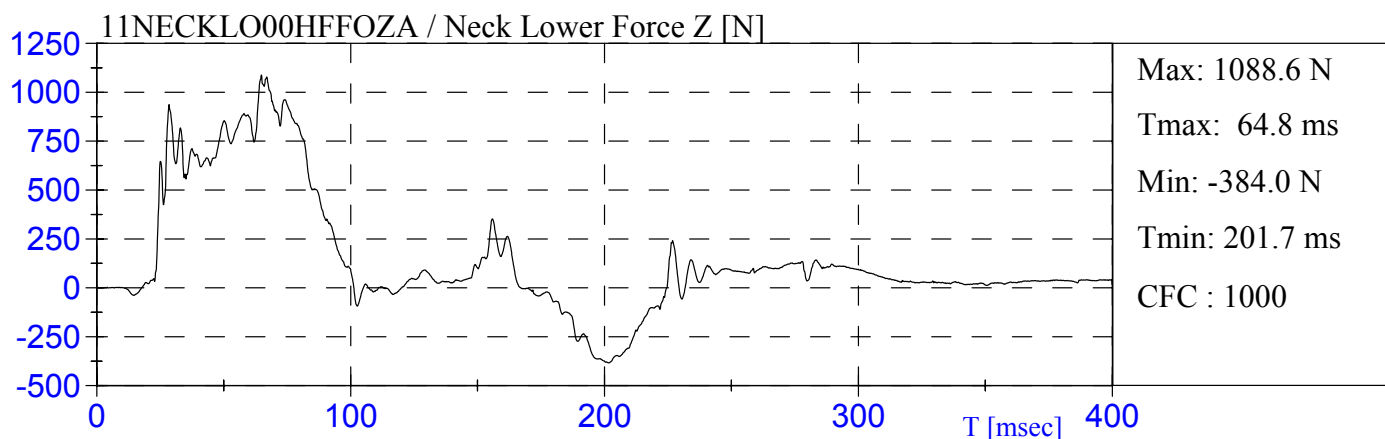
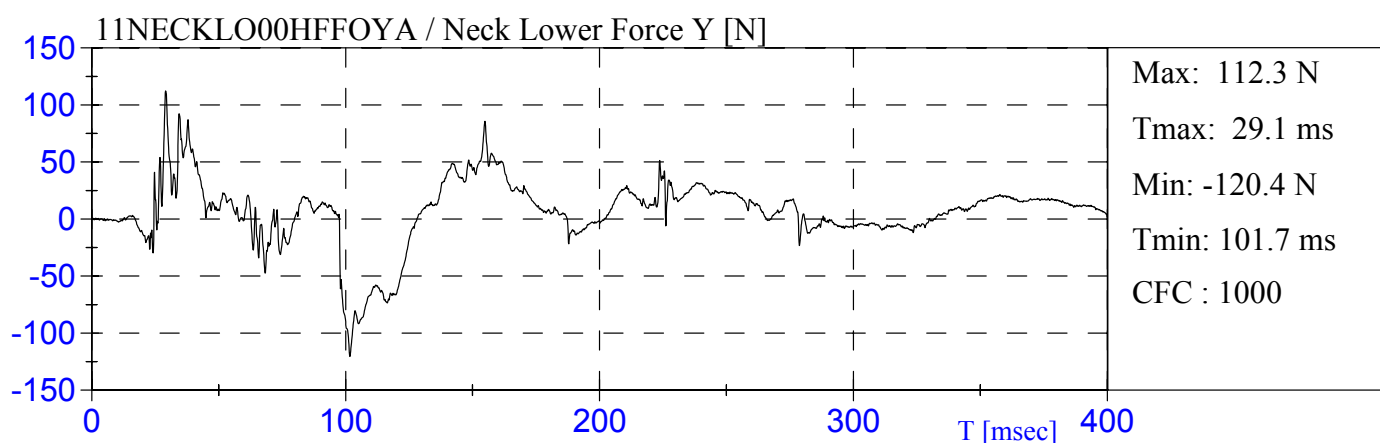
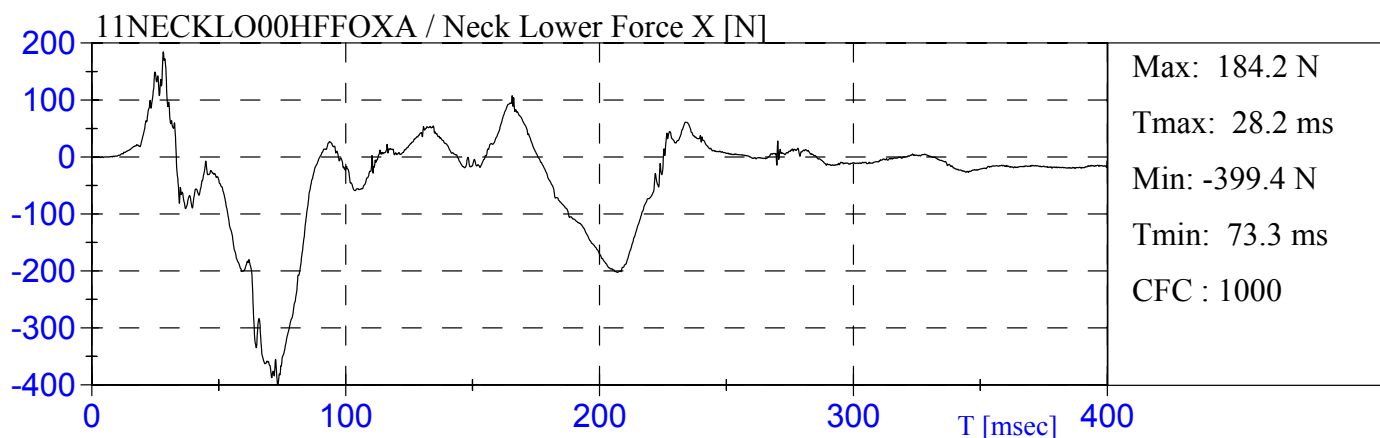
Position 7	Position 8	Position 9
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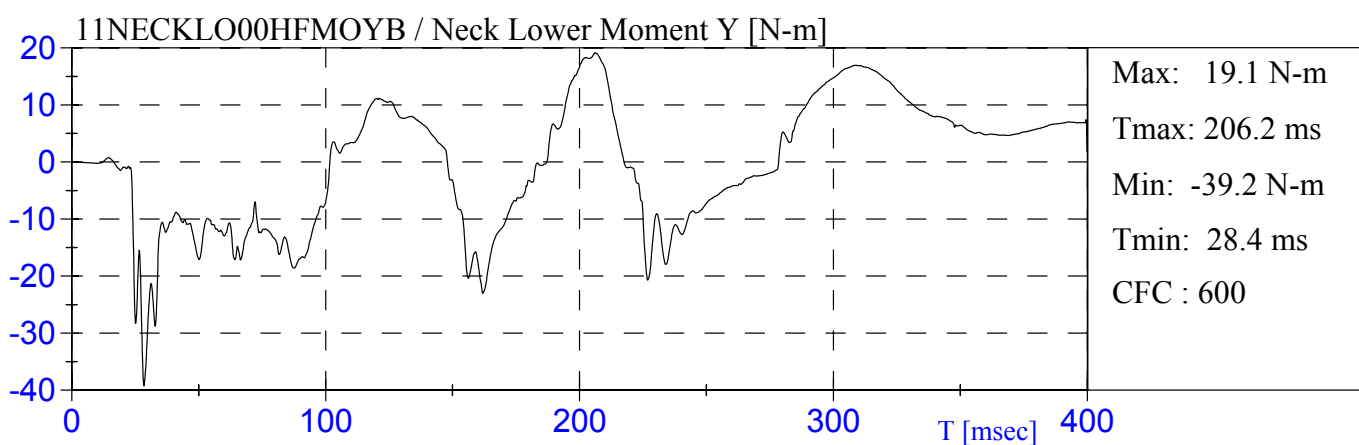
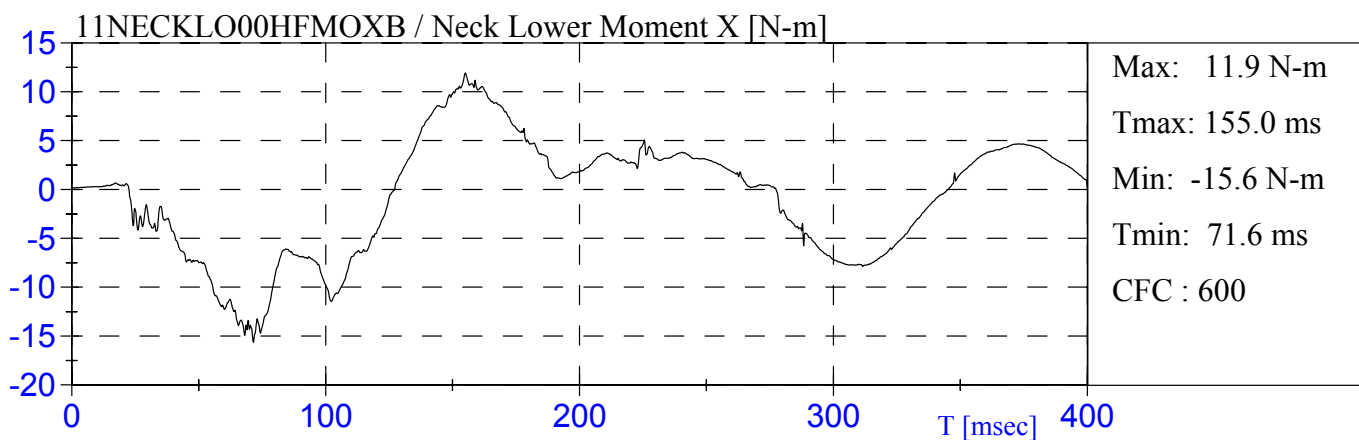


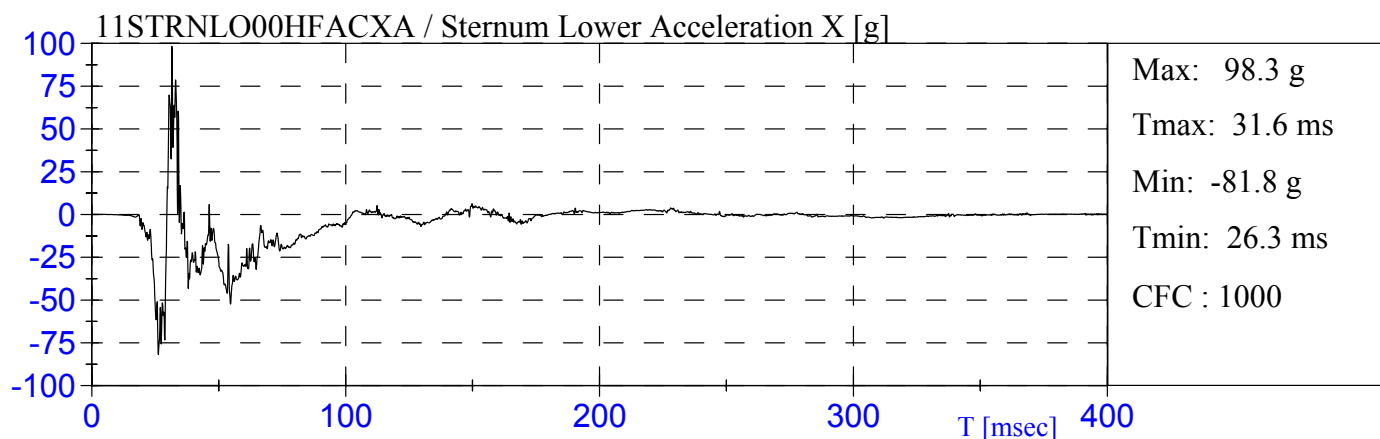
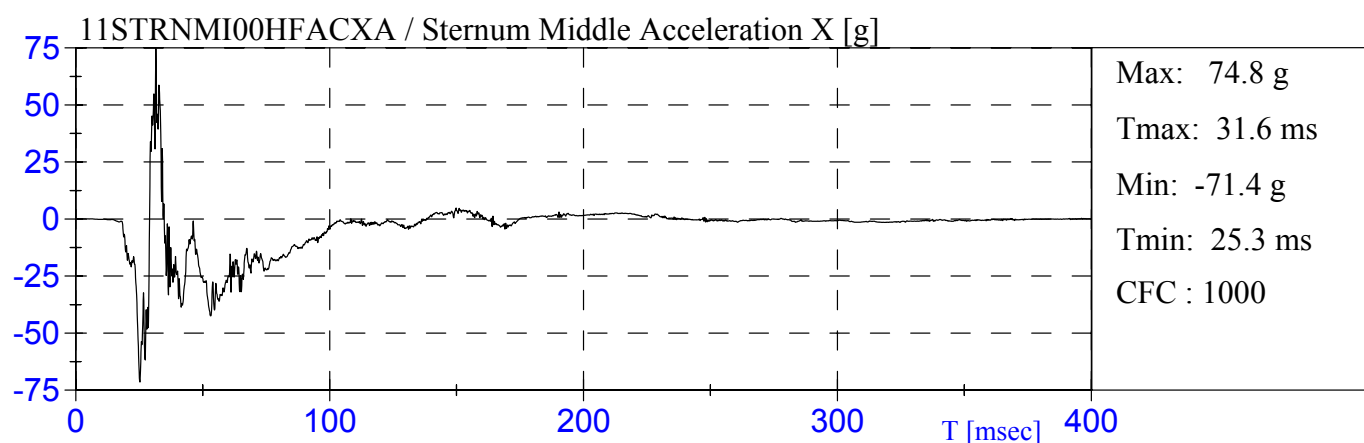
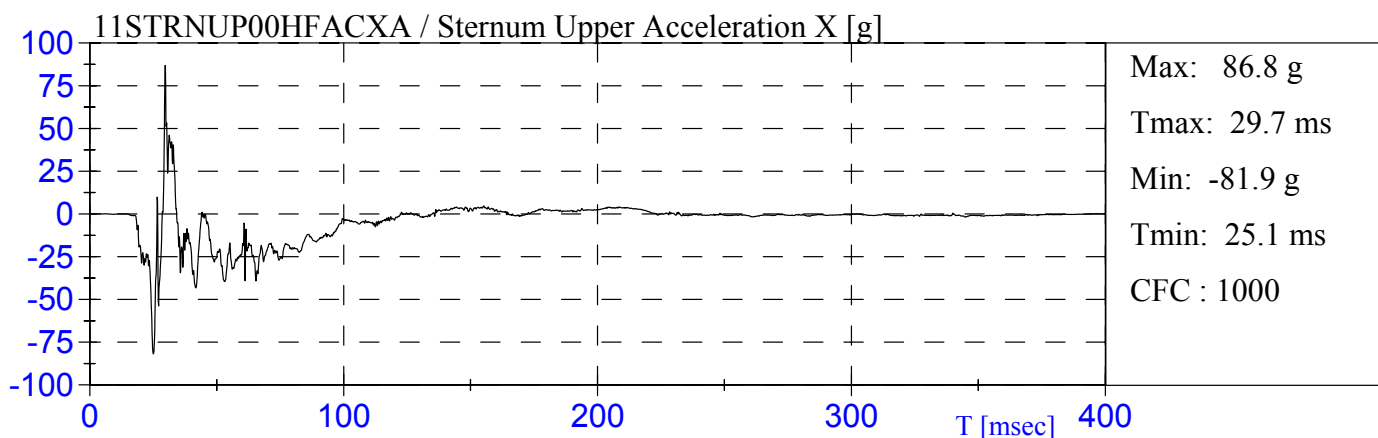


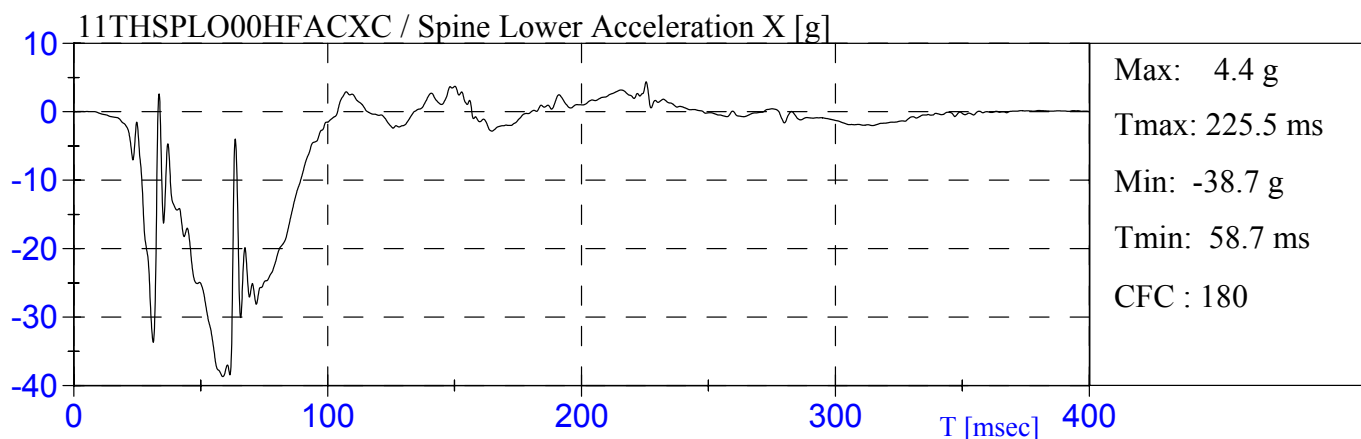
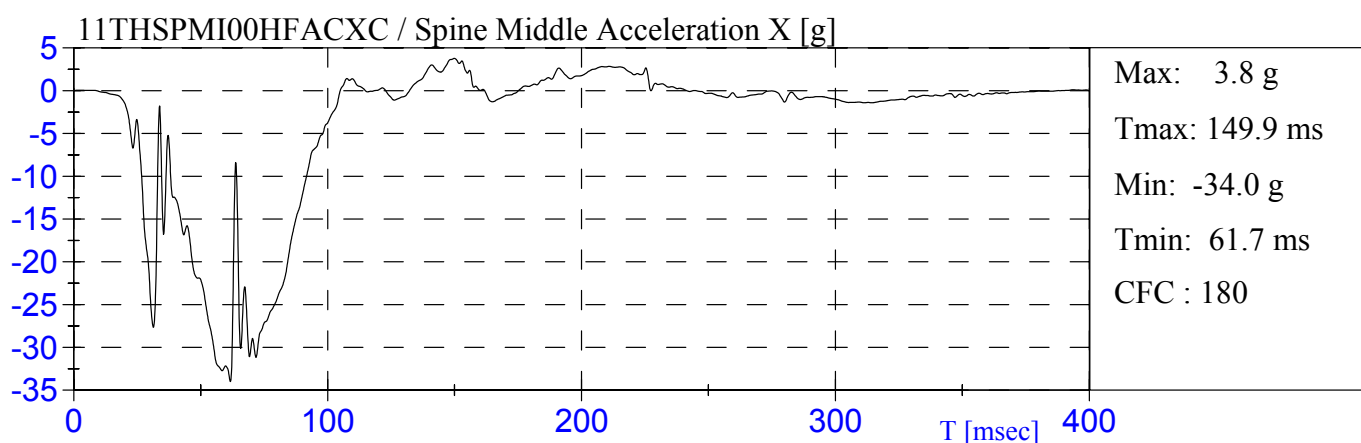
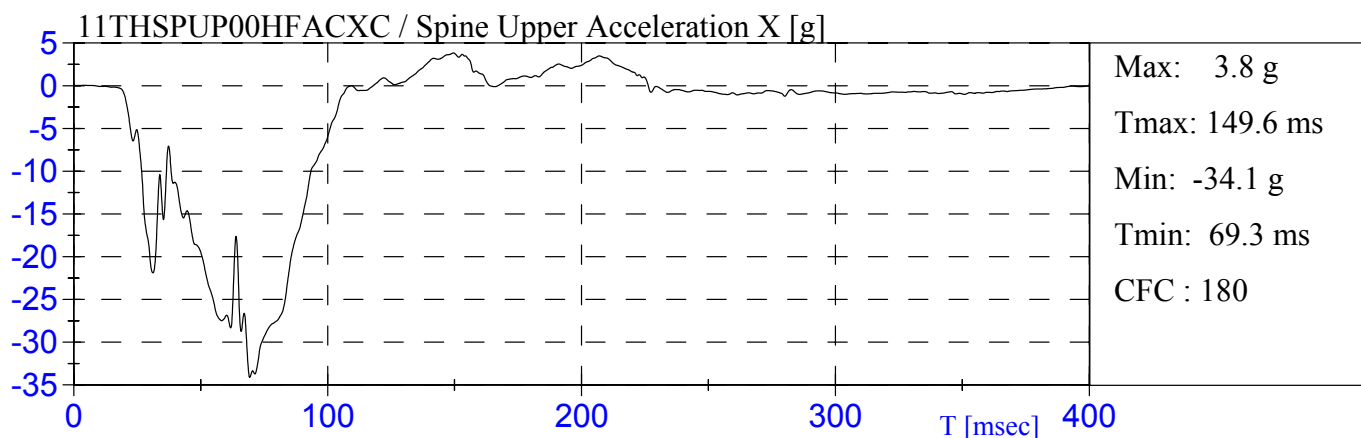


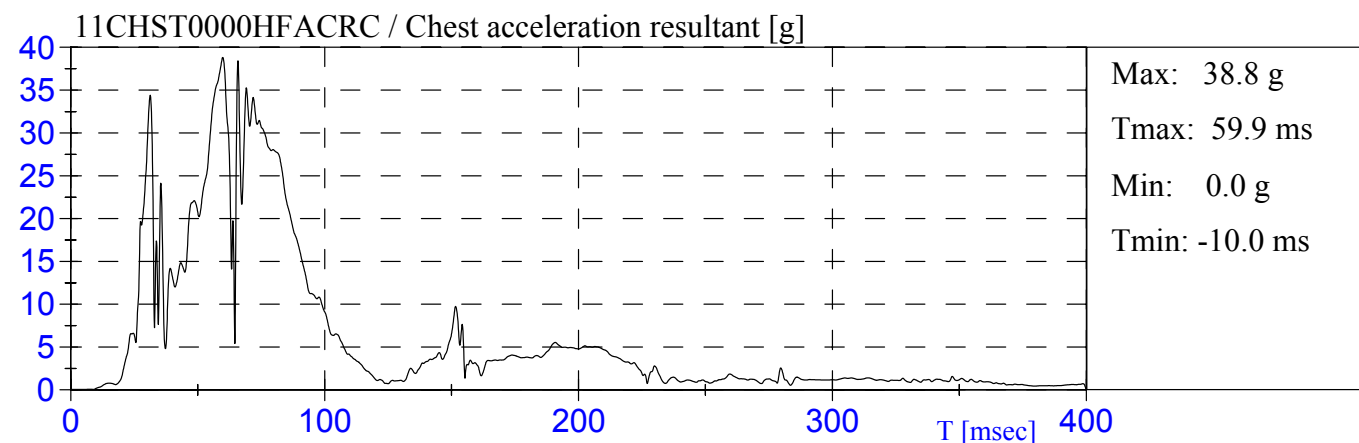
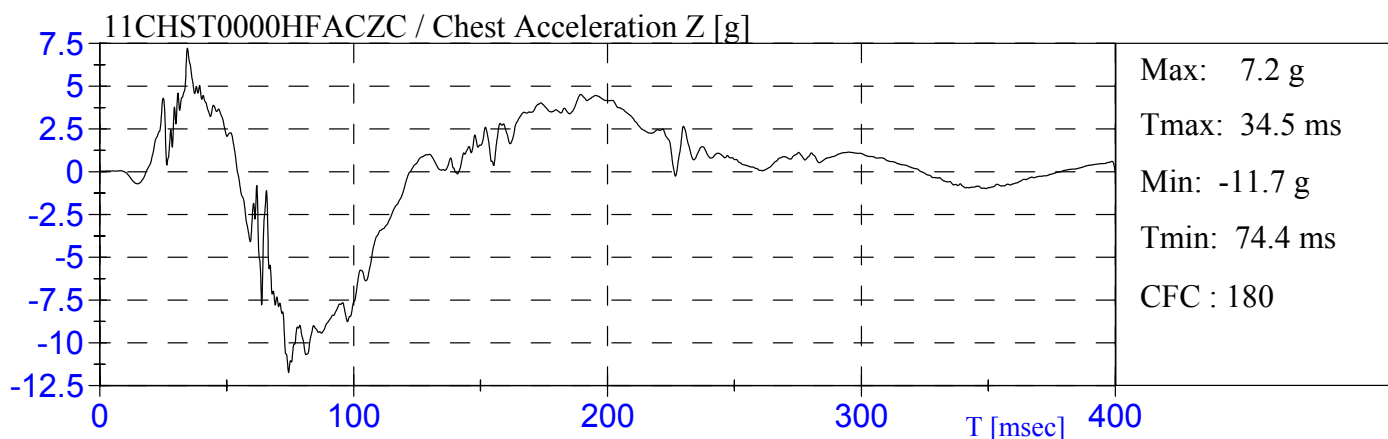
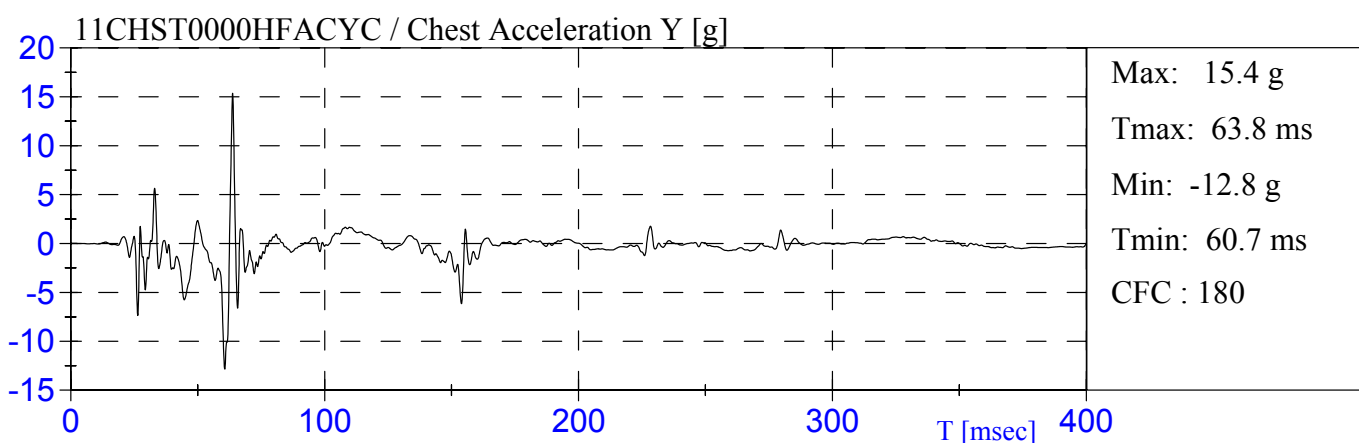
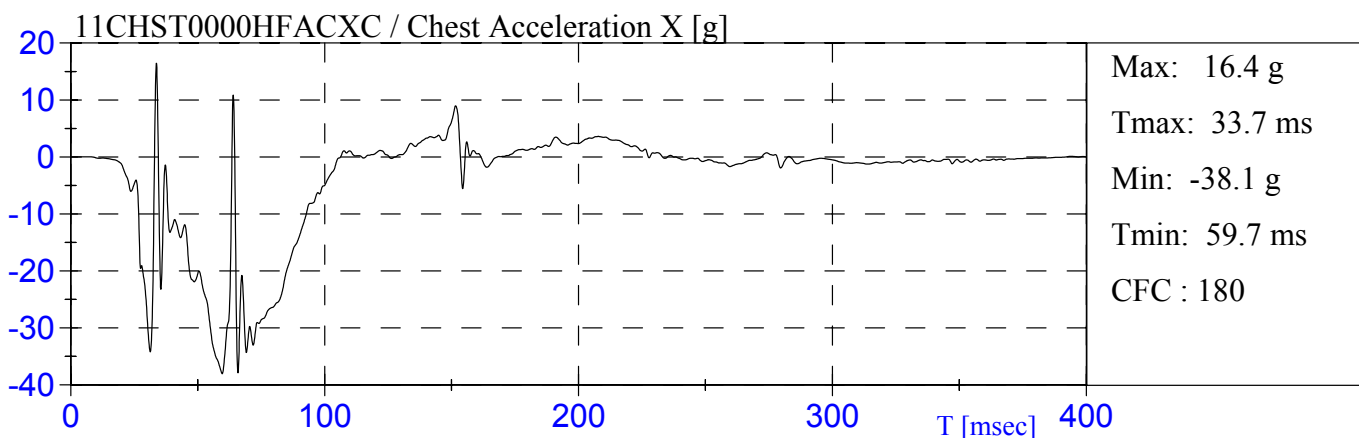


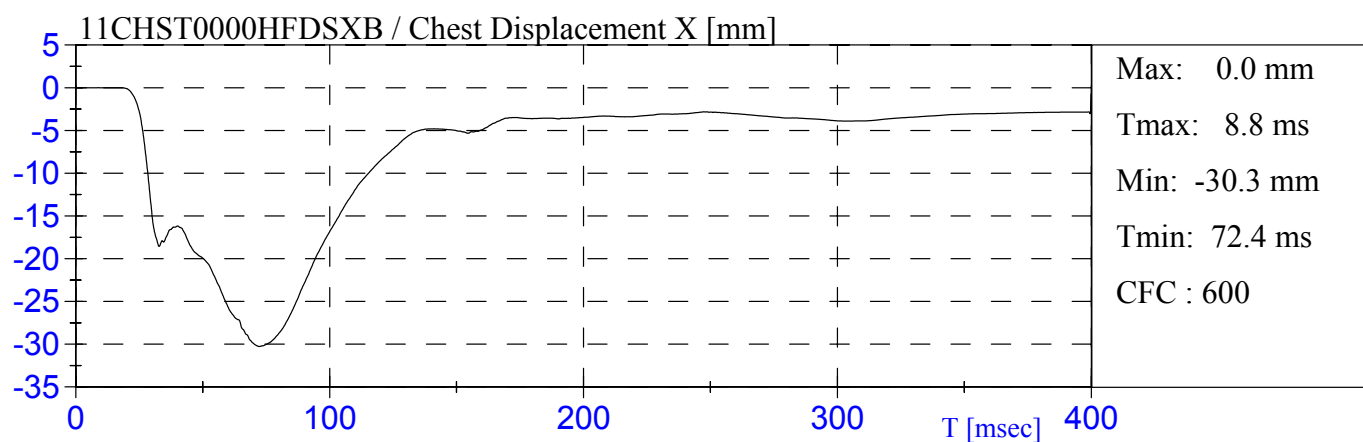


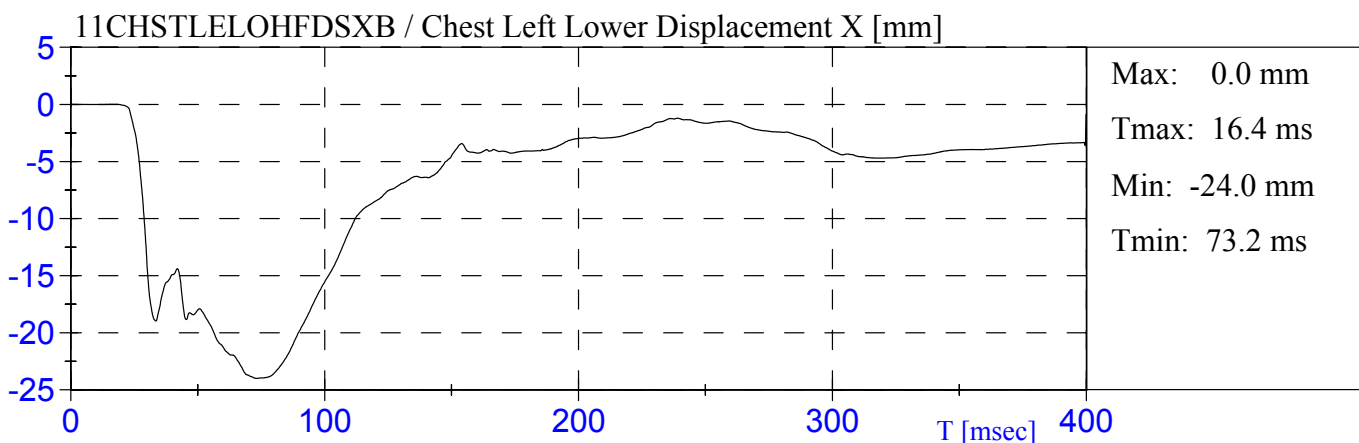
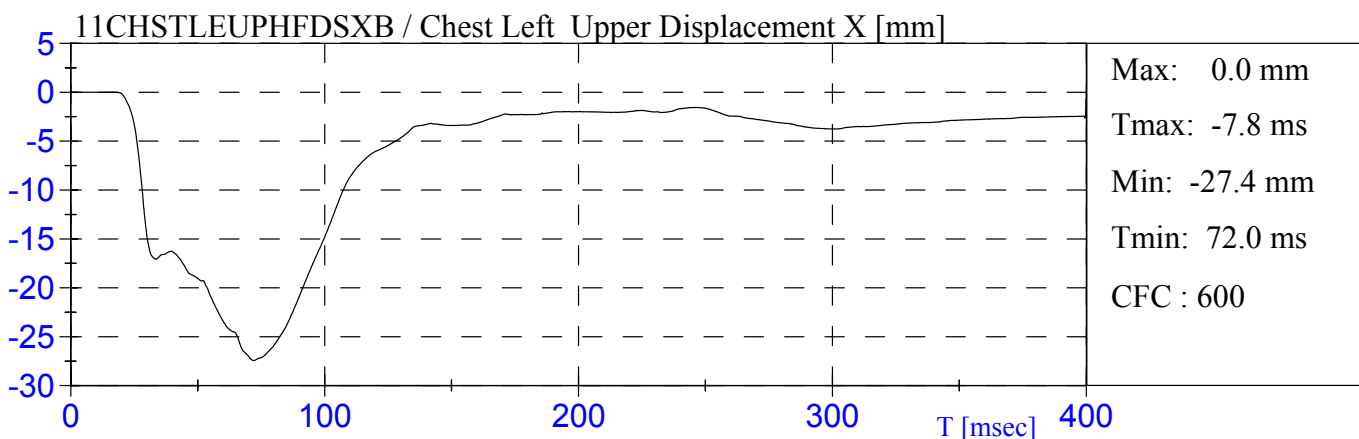
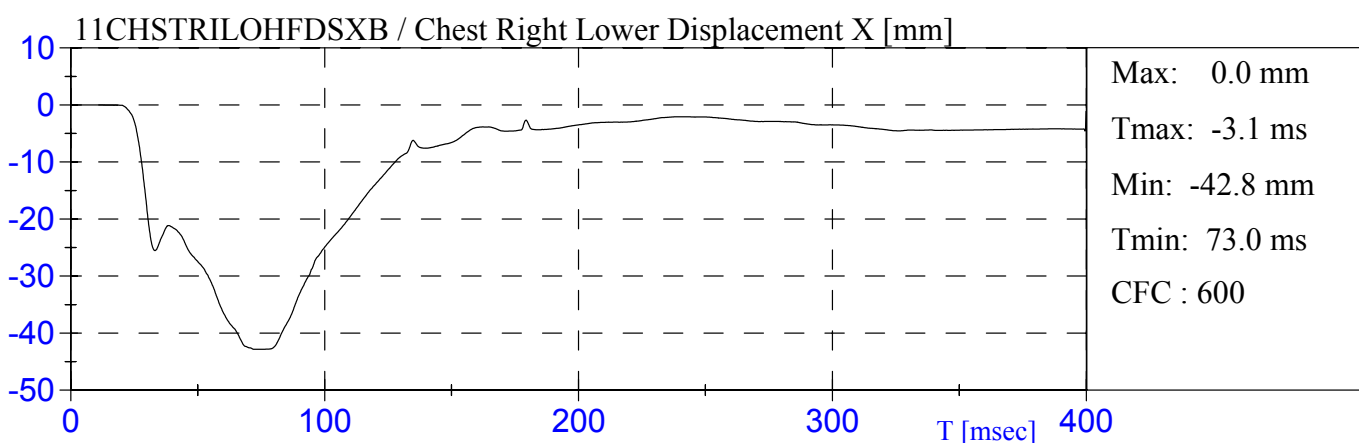
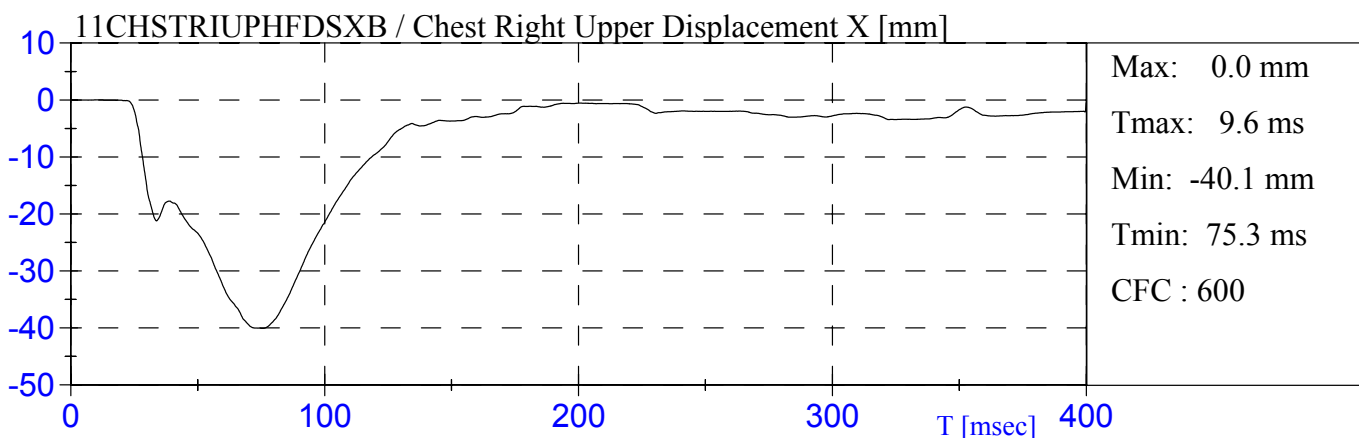


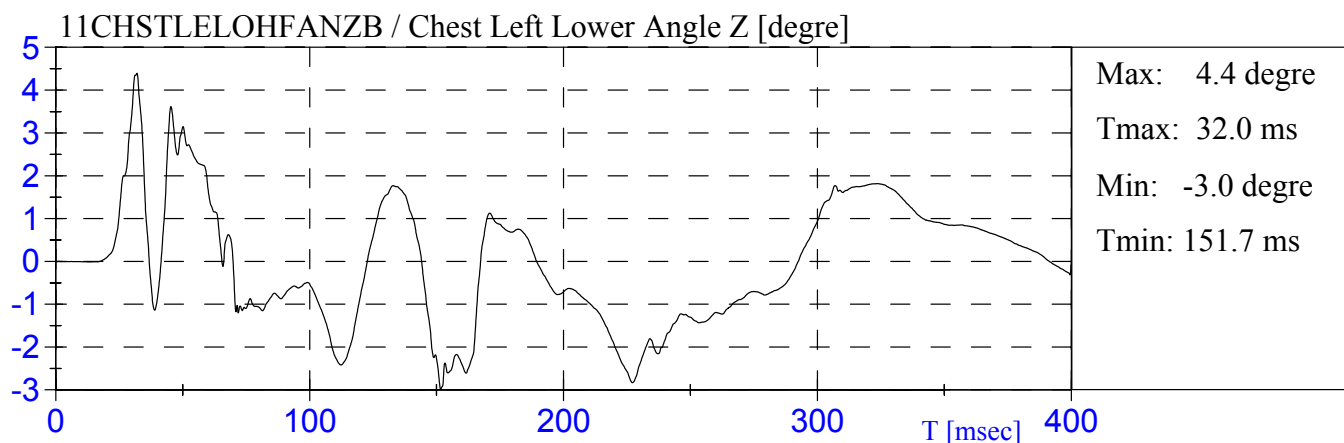
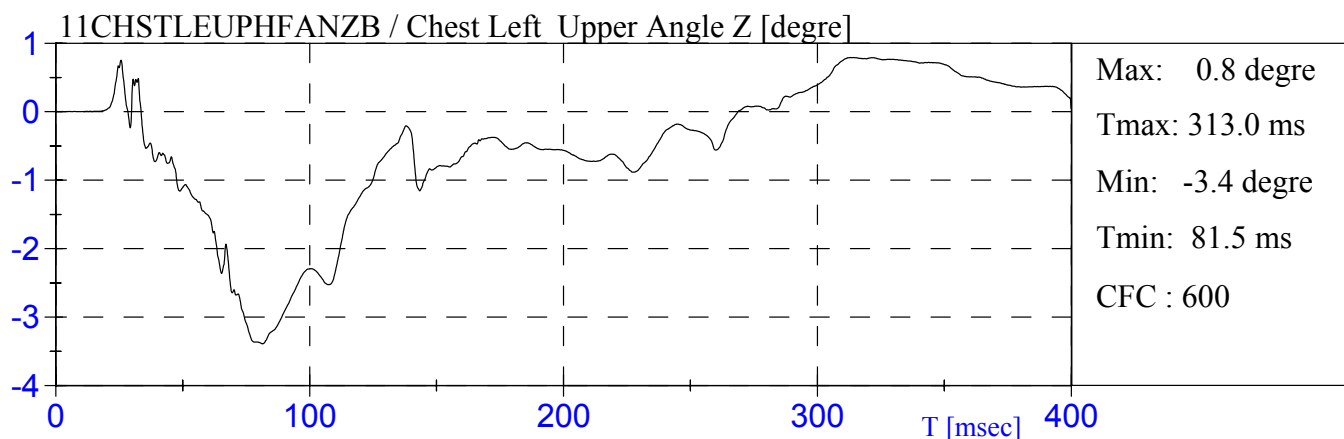
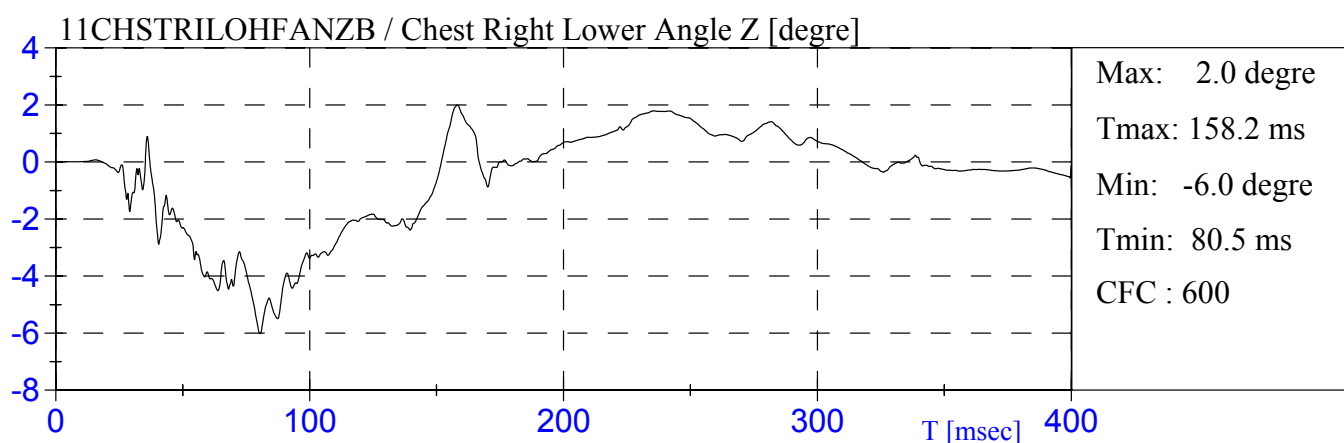
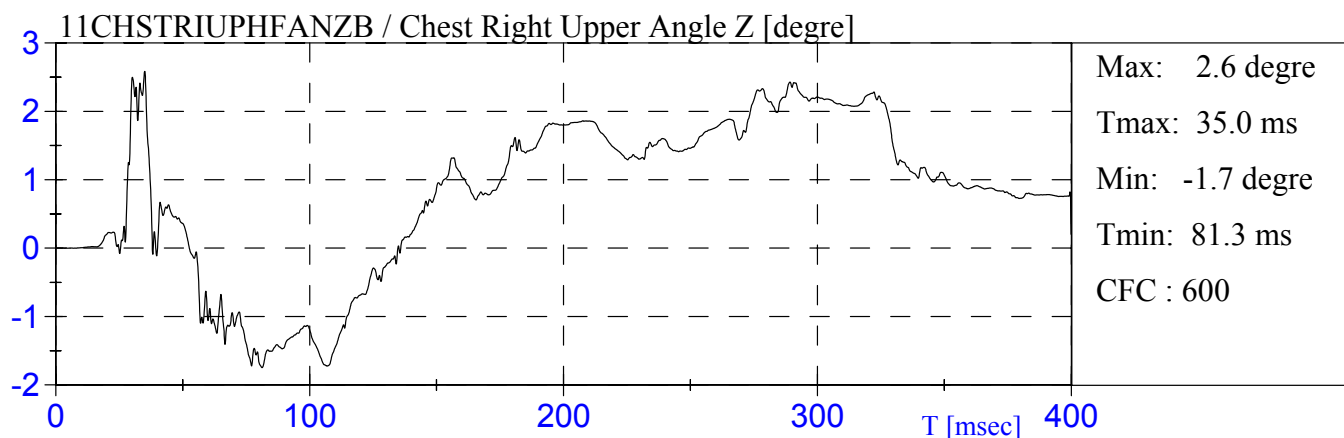


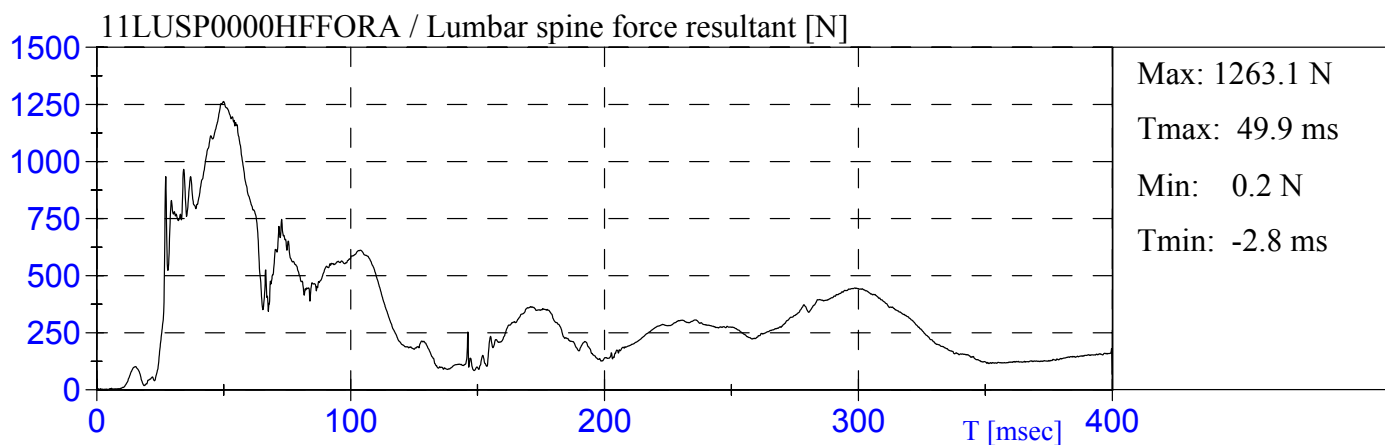
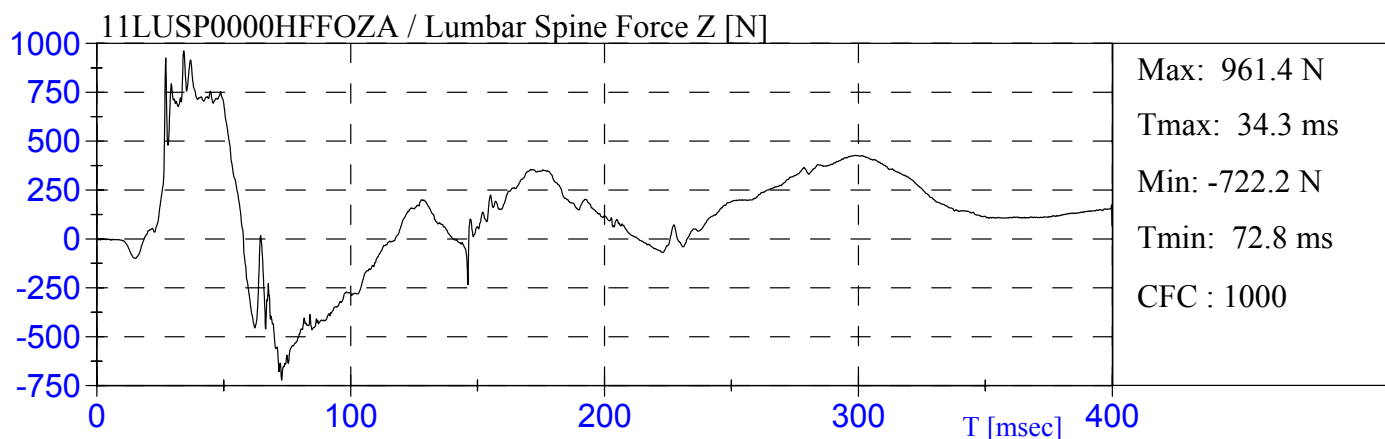
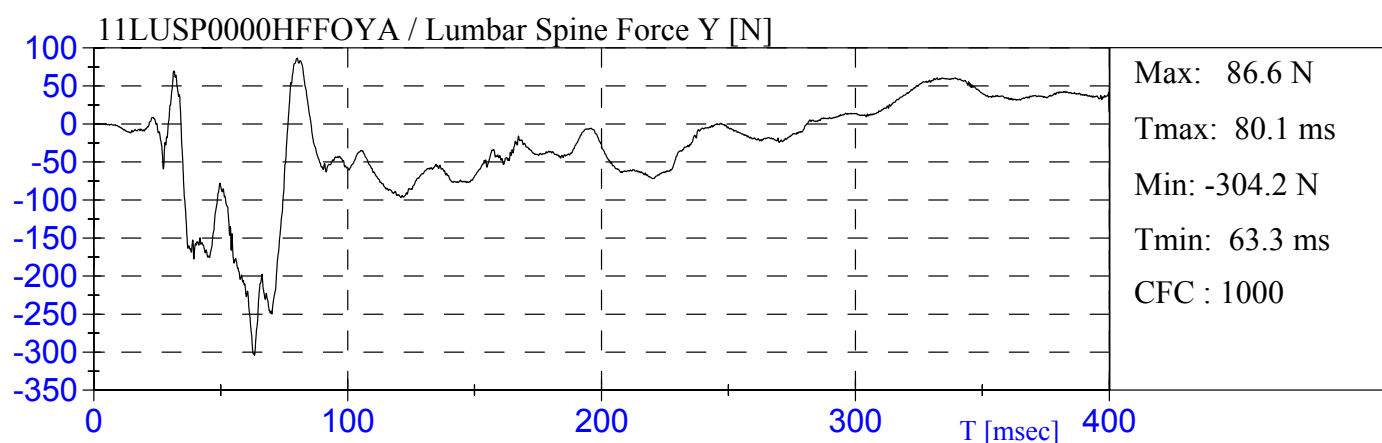
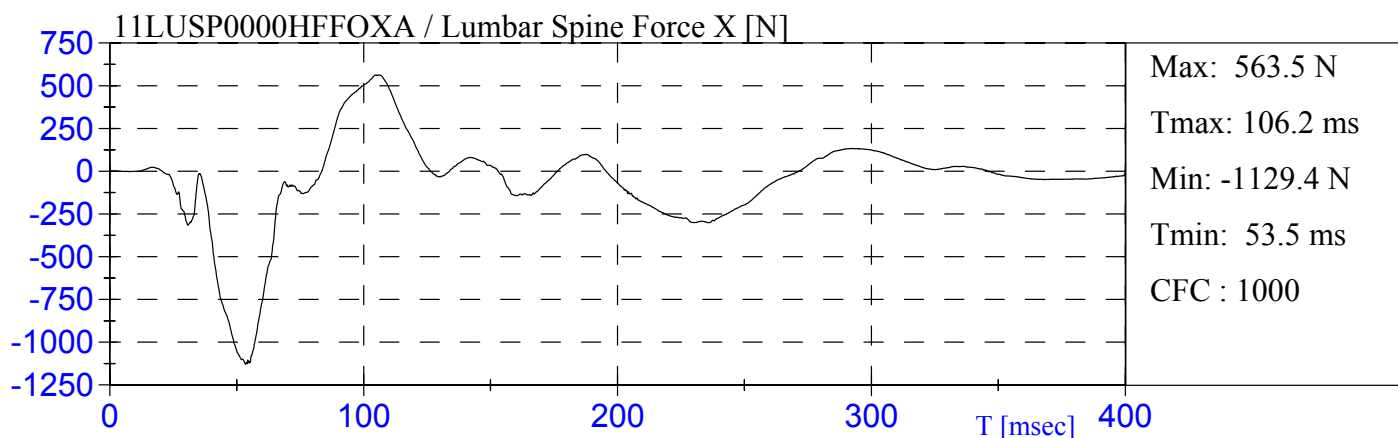


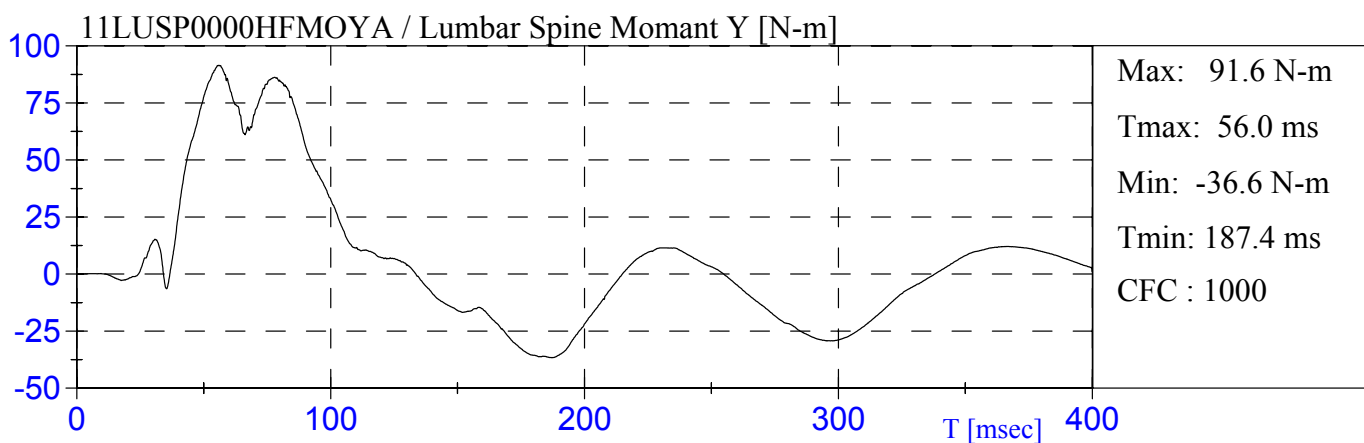
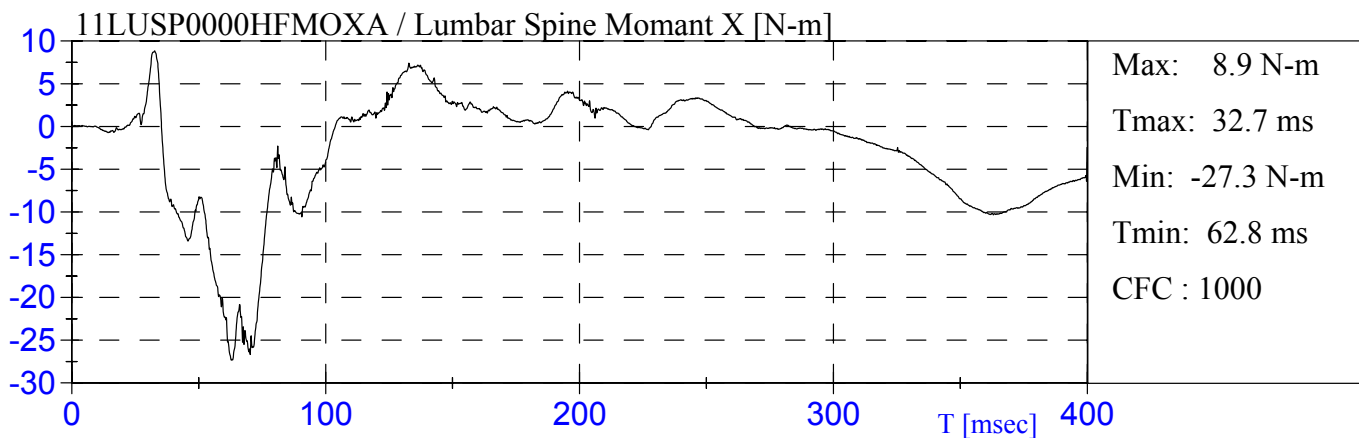


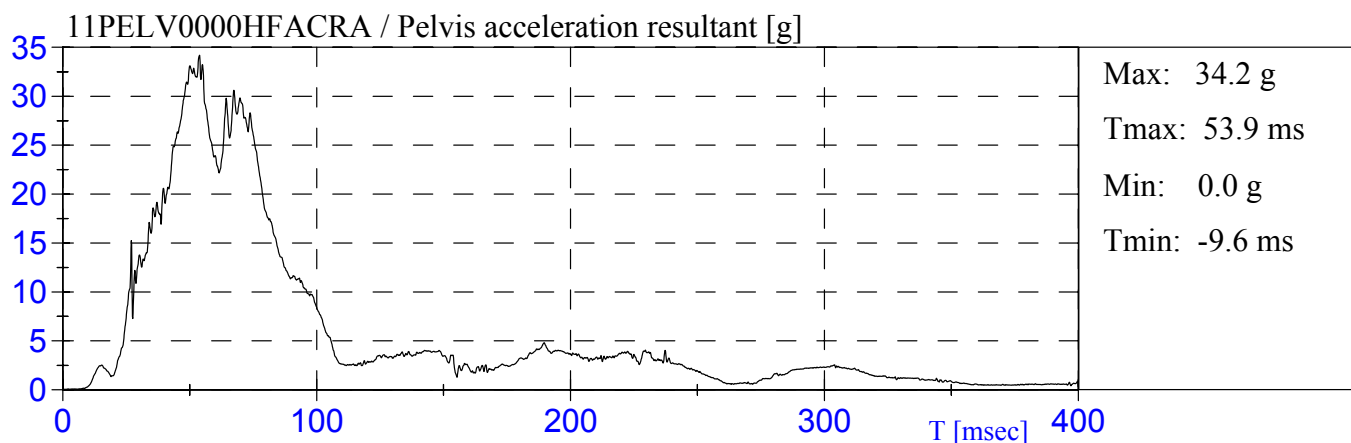
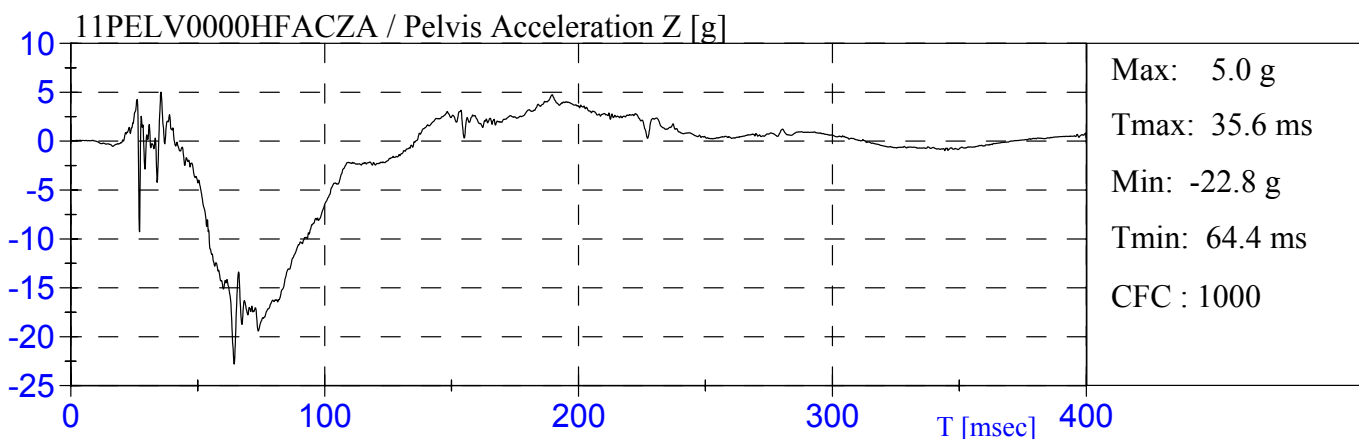
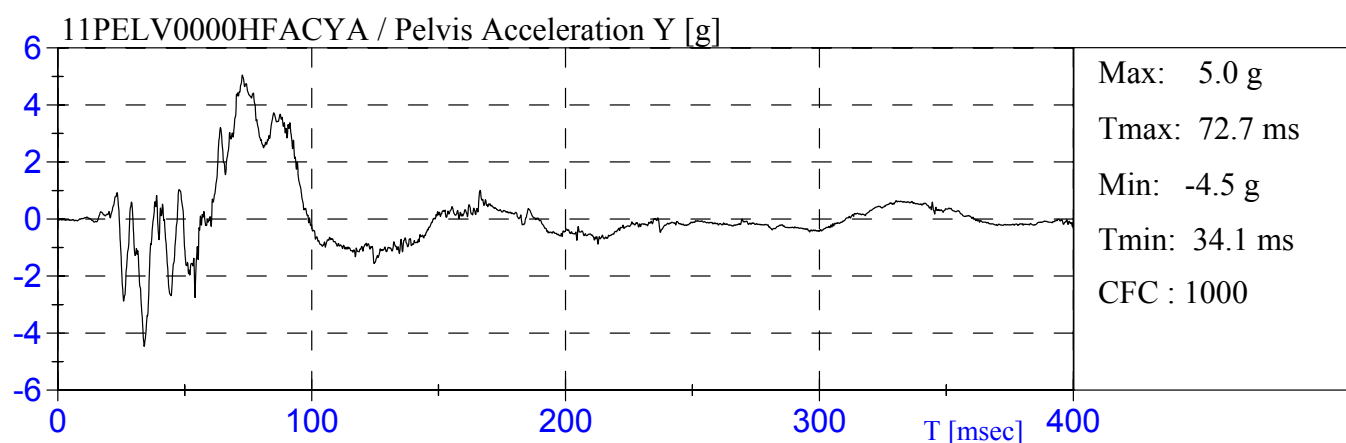
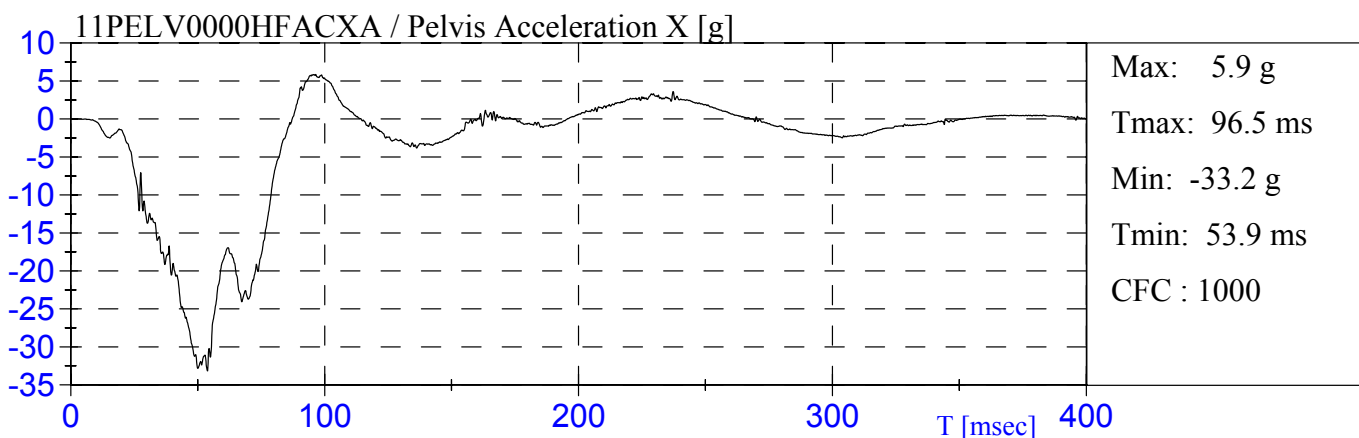


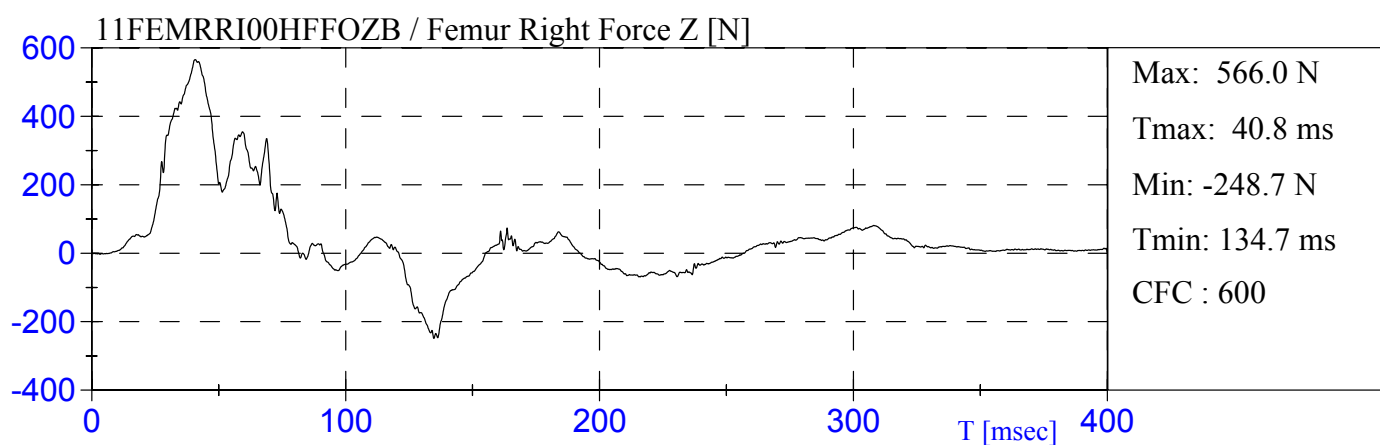
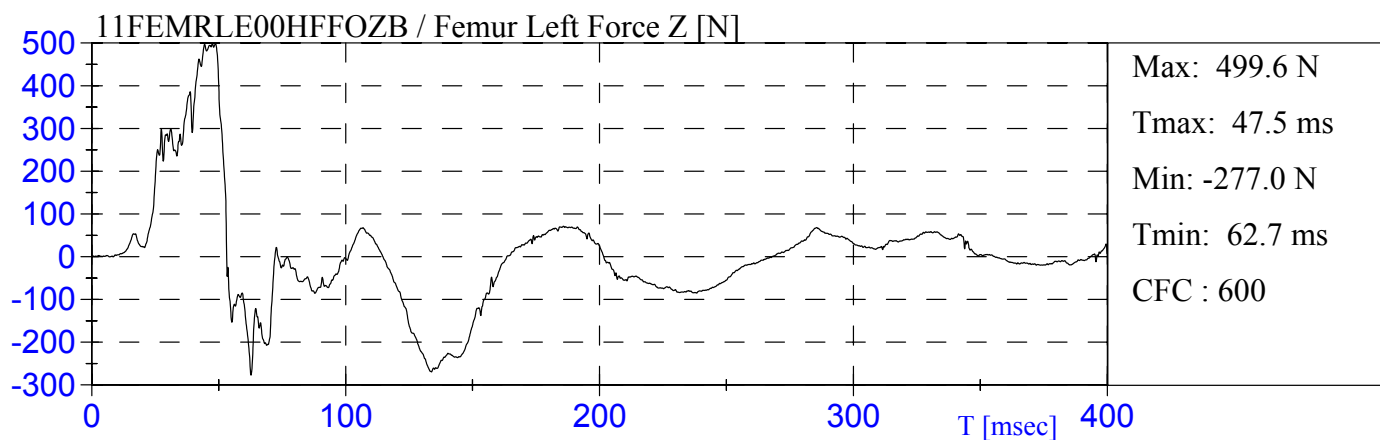


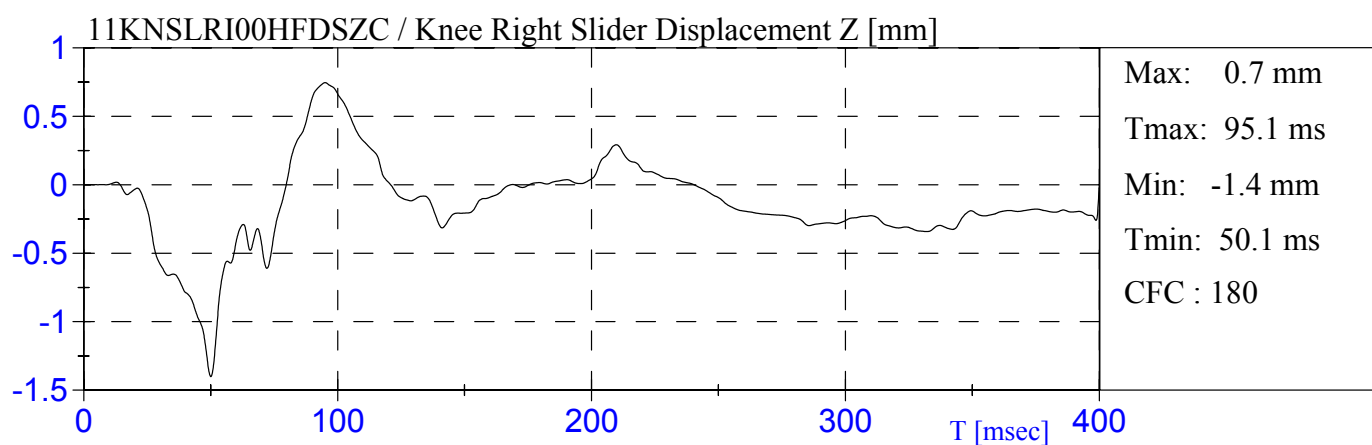
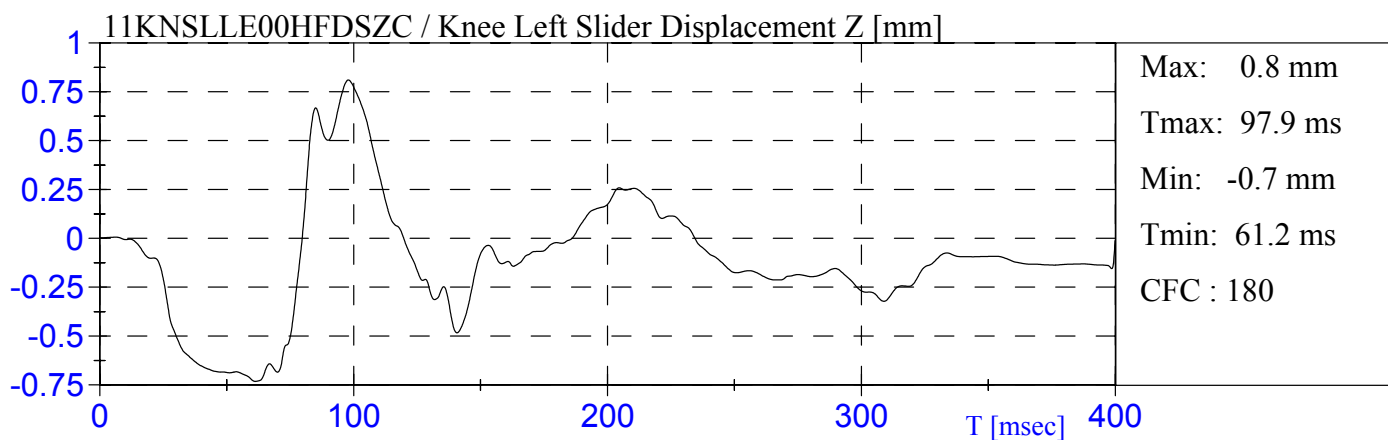


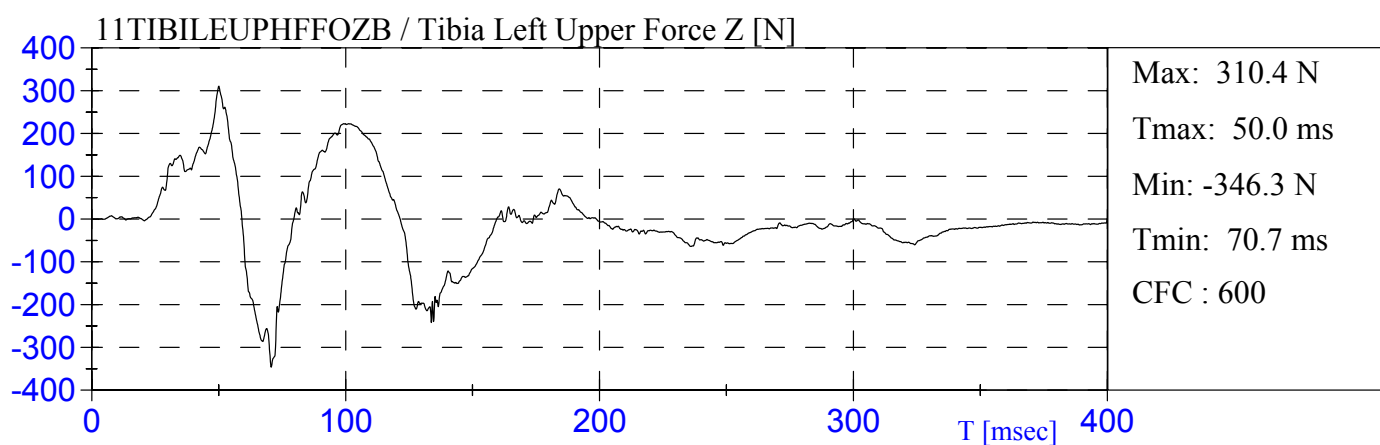
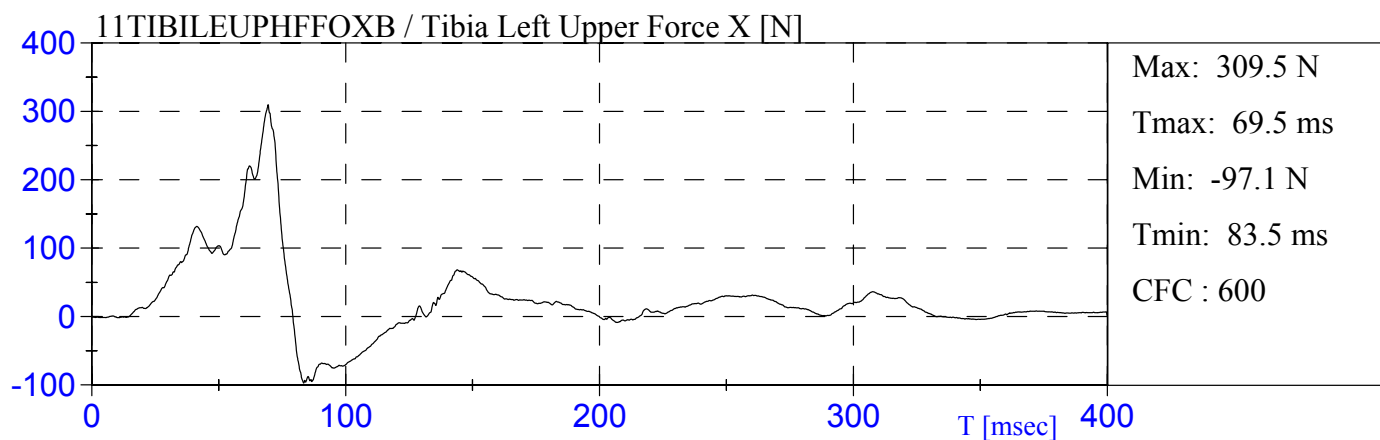


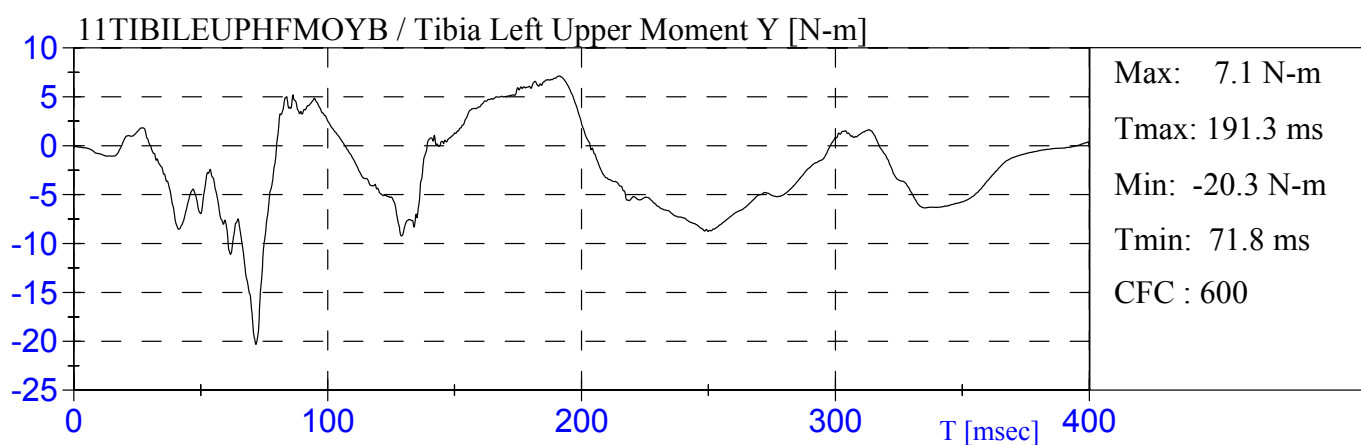
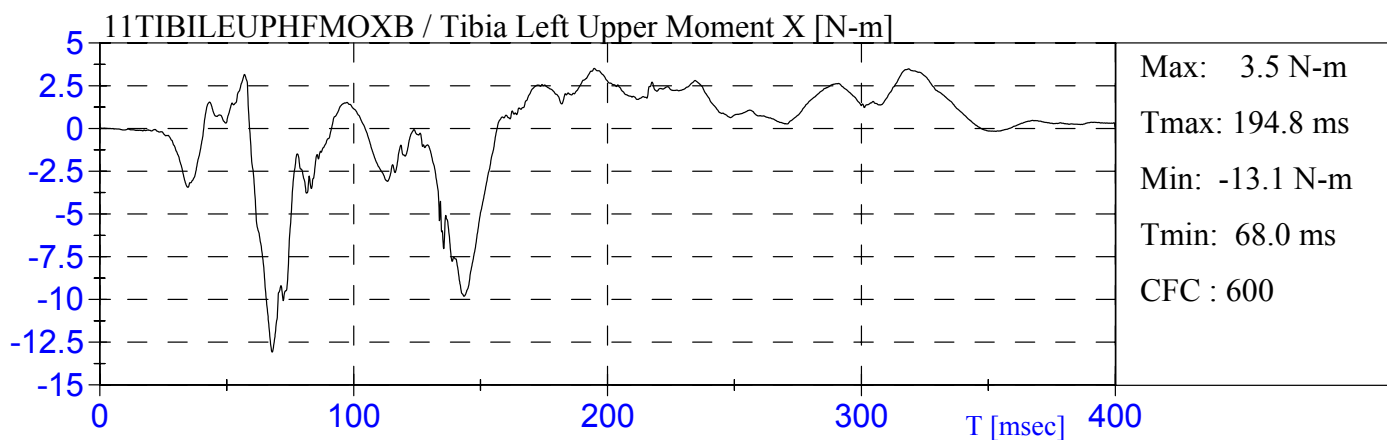


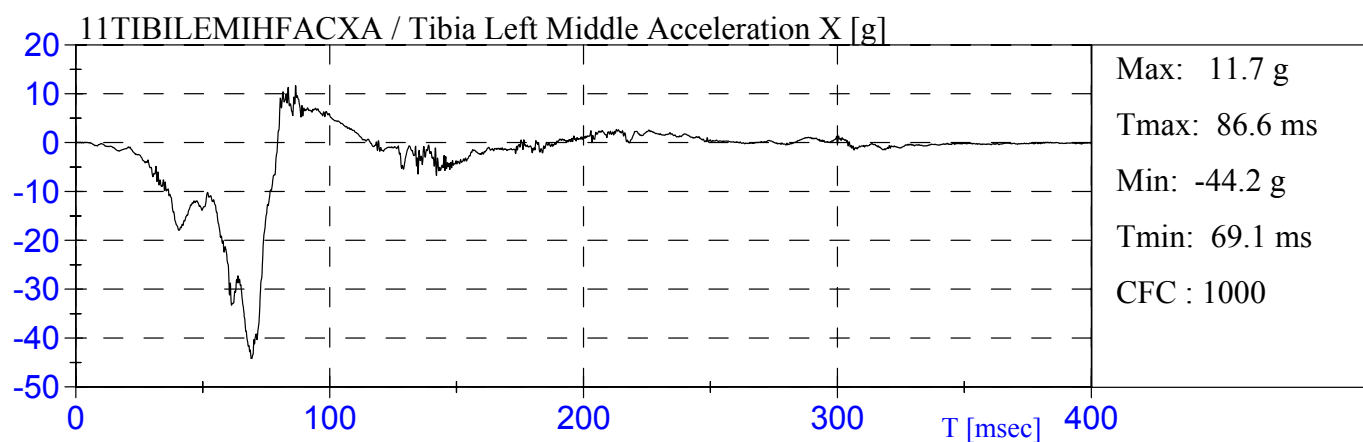


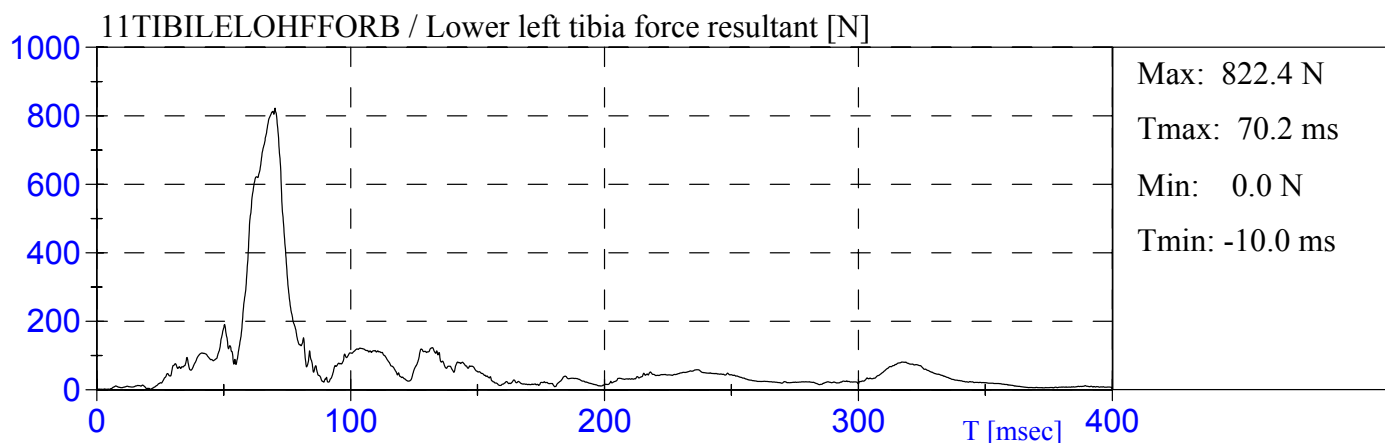
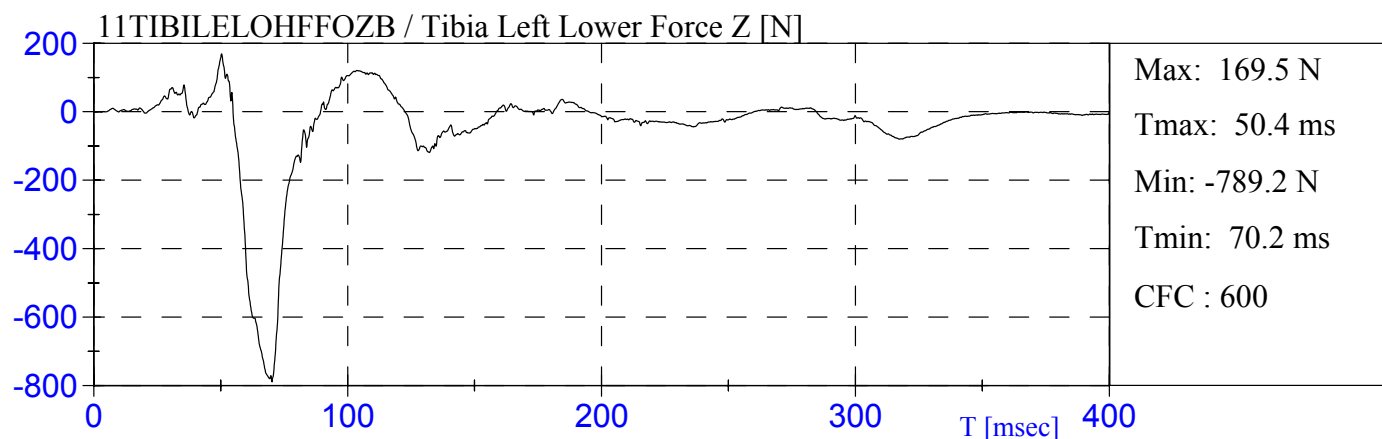
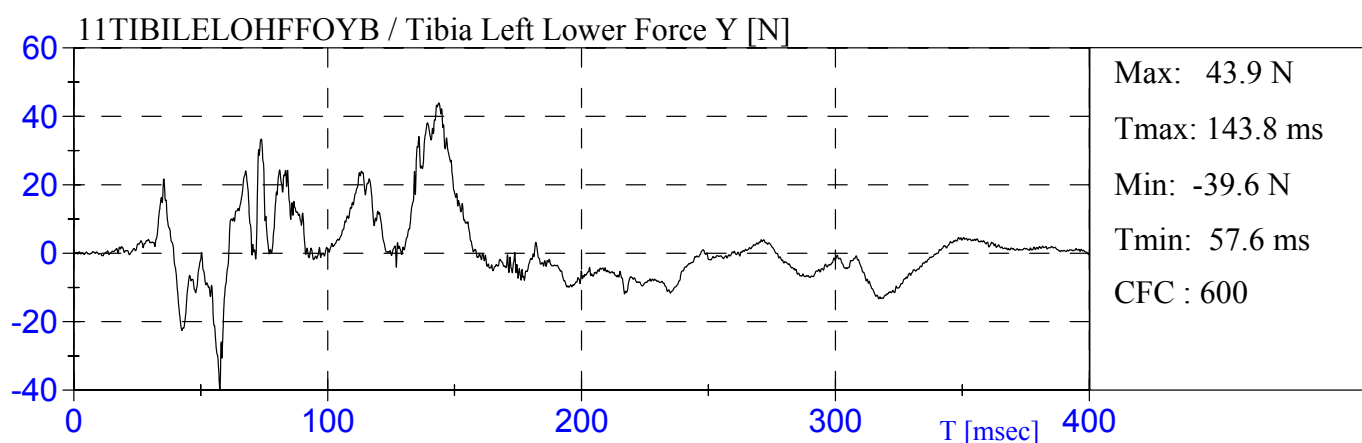
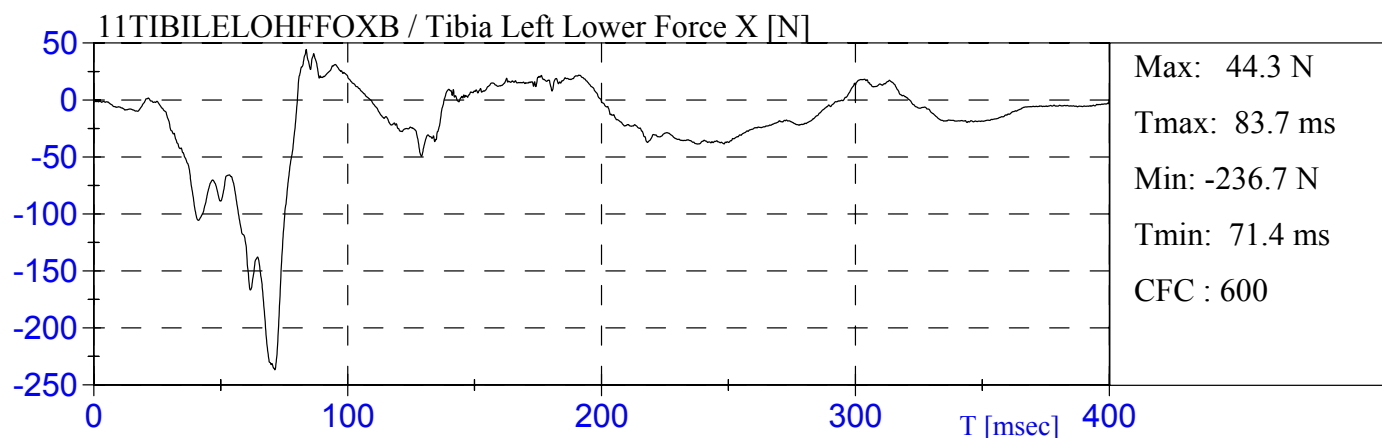


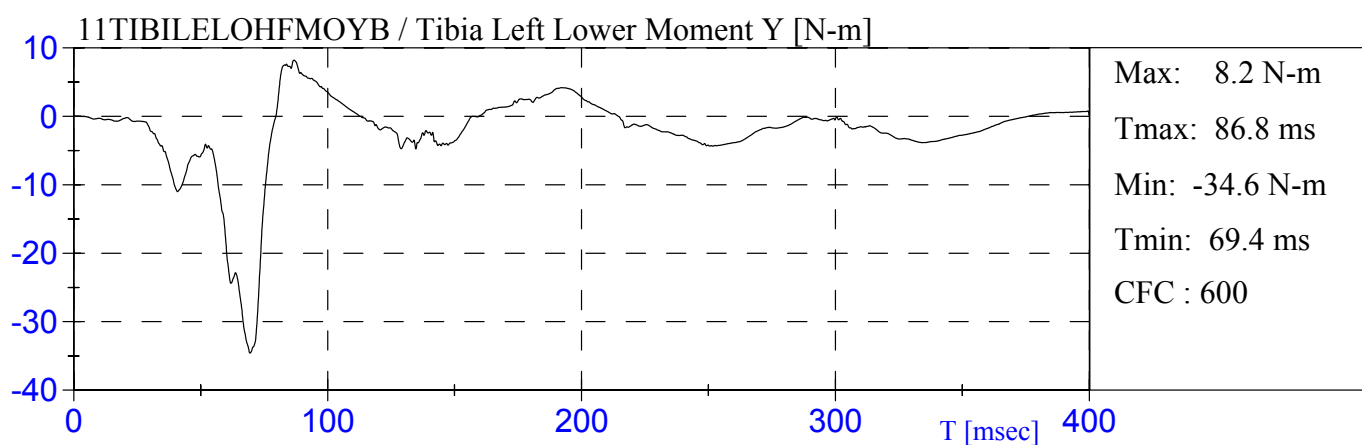
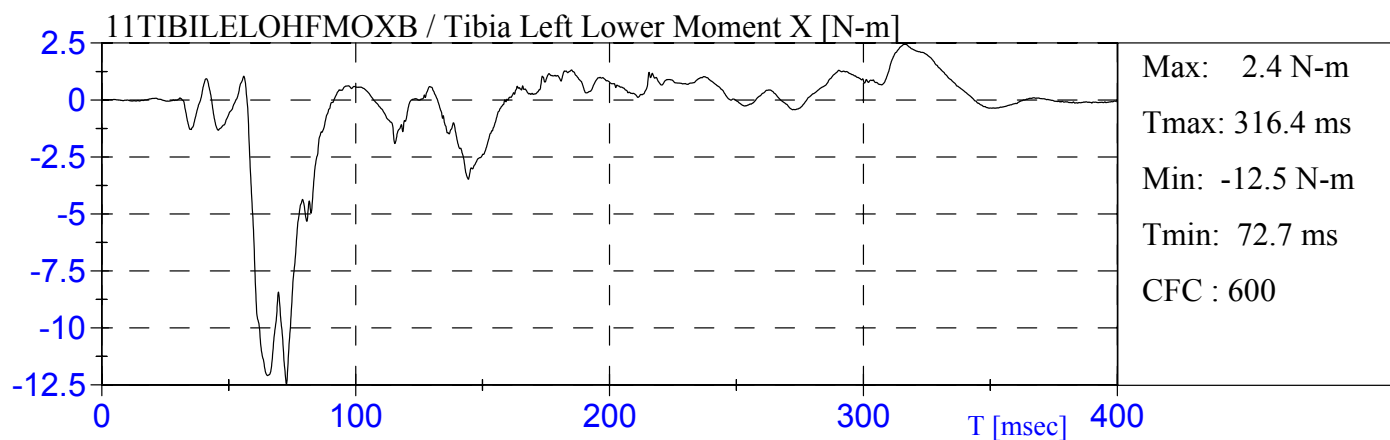


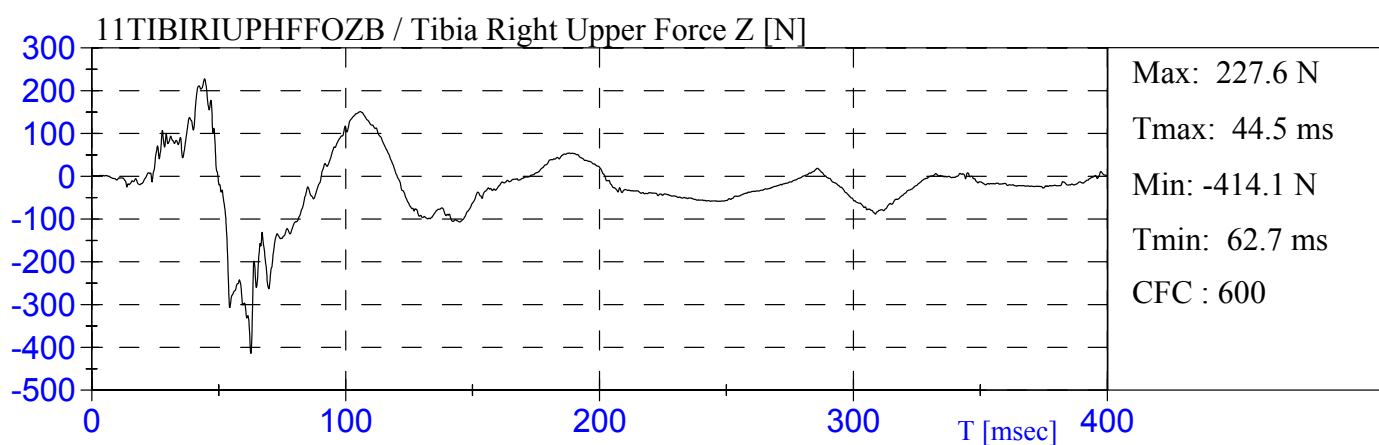
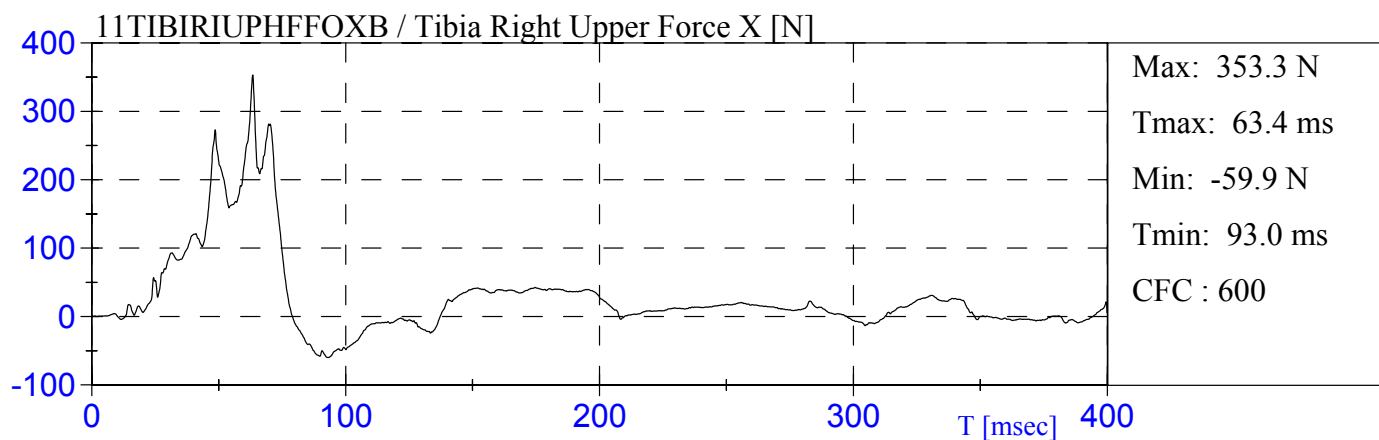


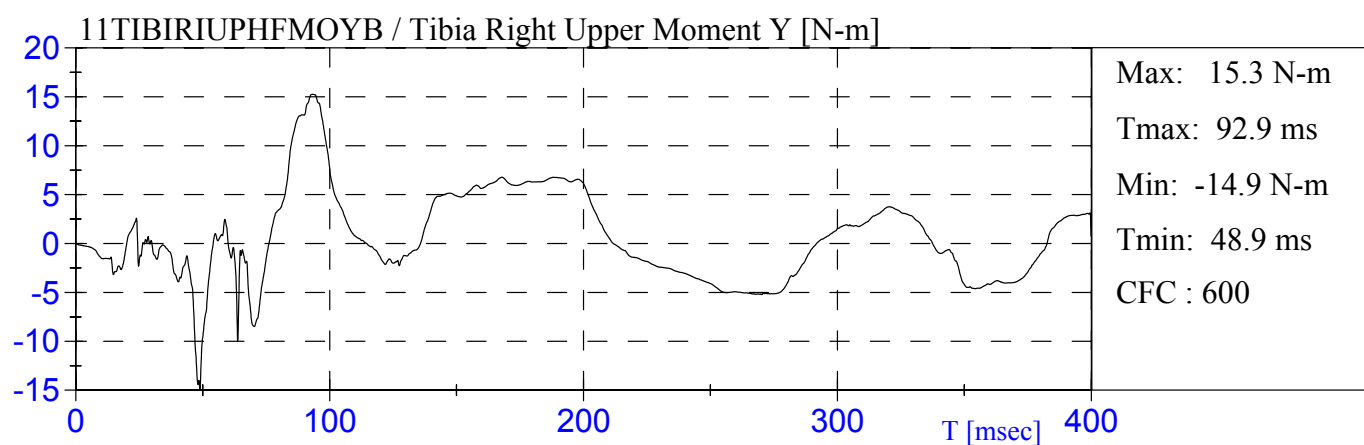
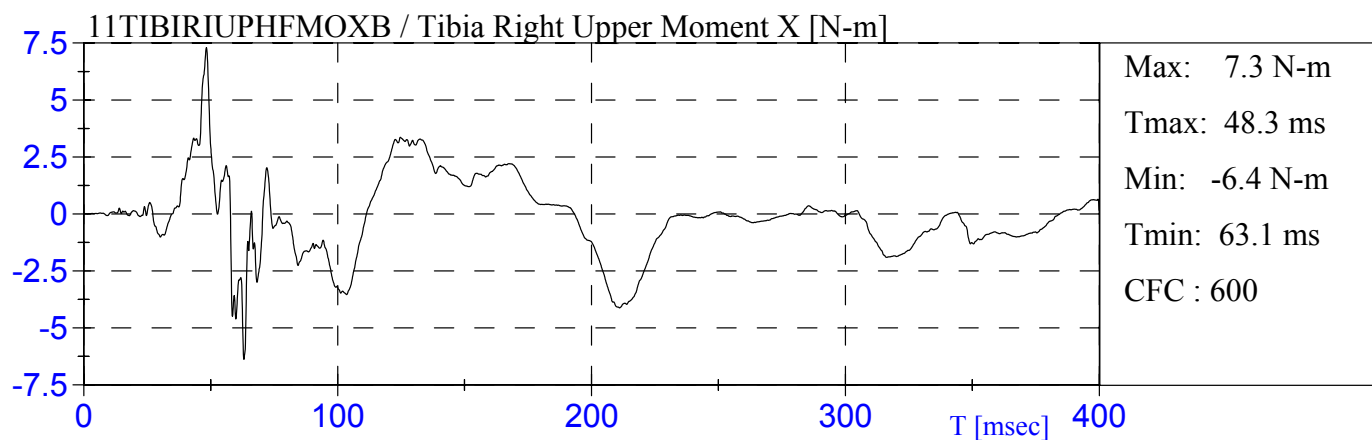


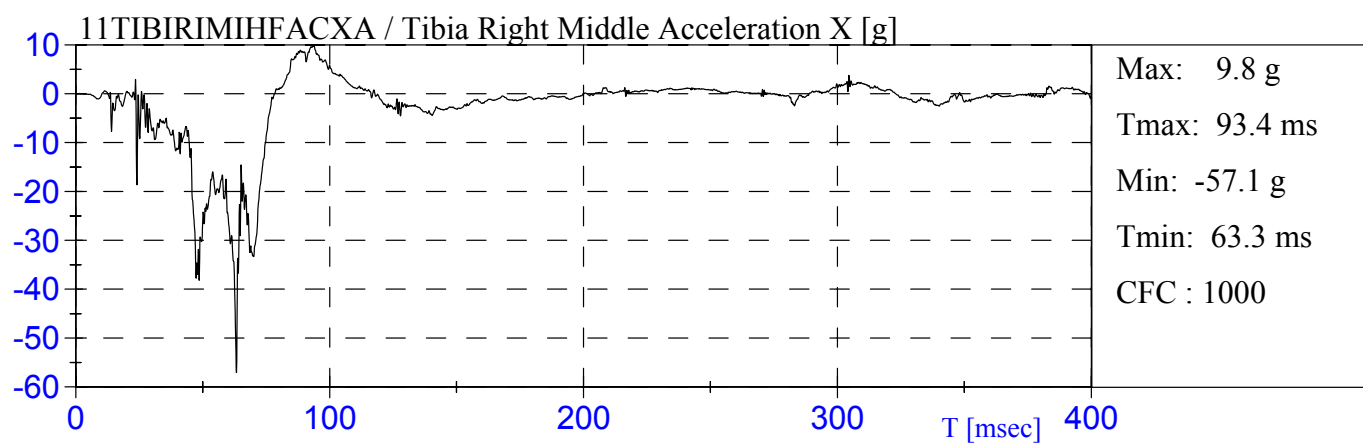


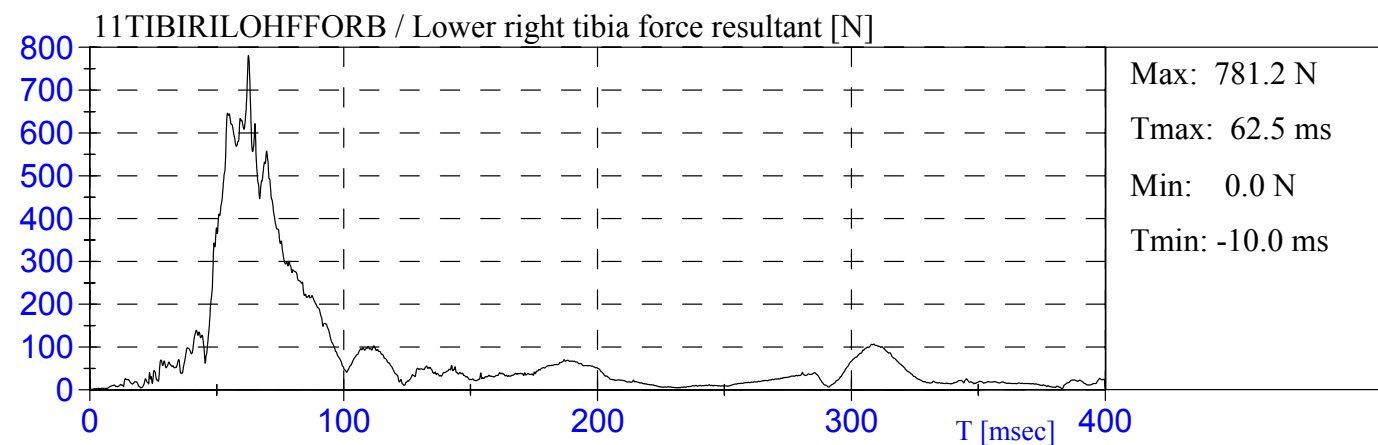
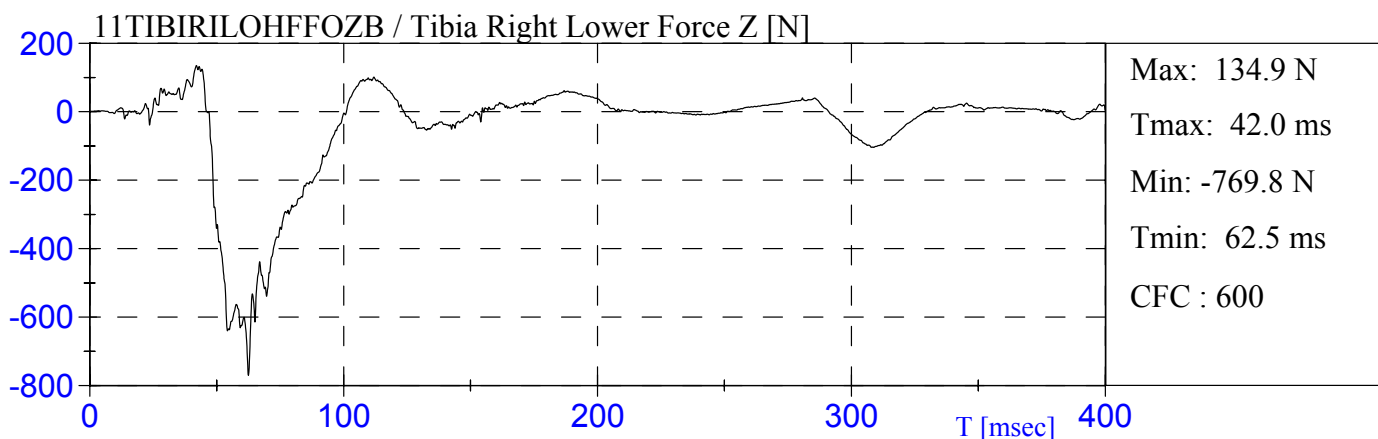
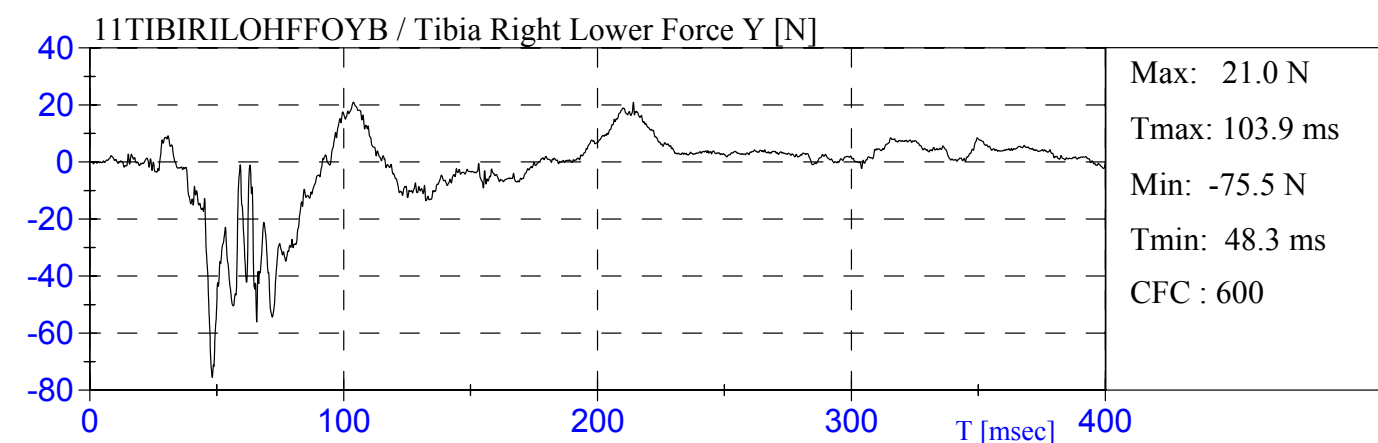
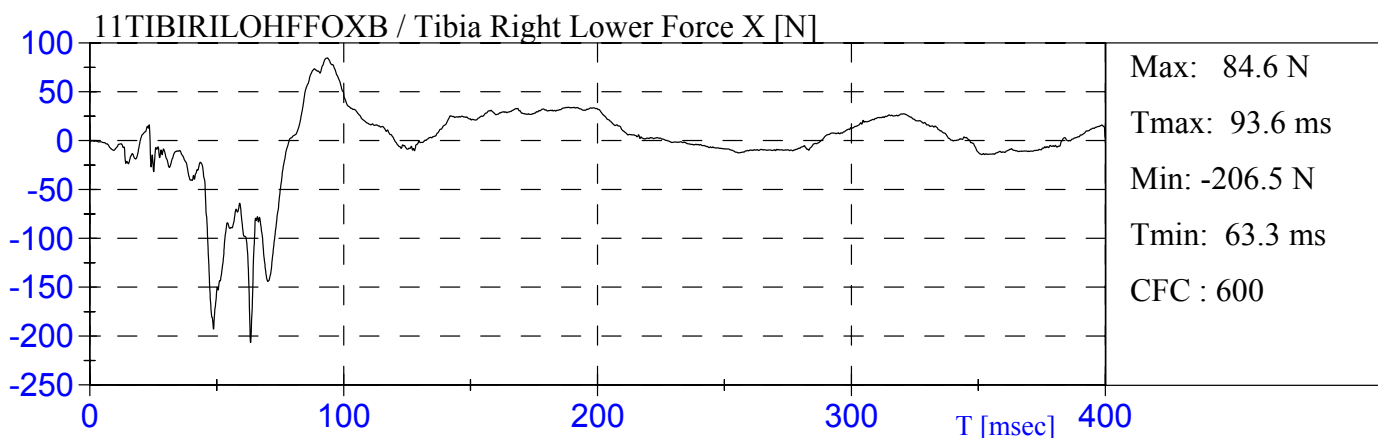


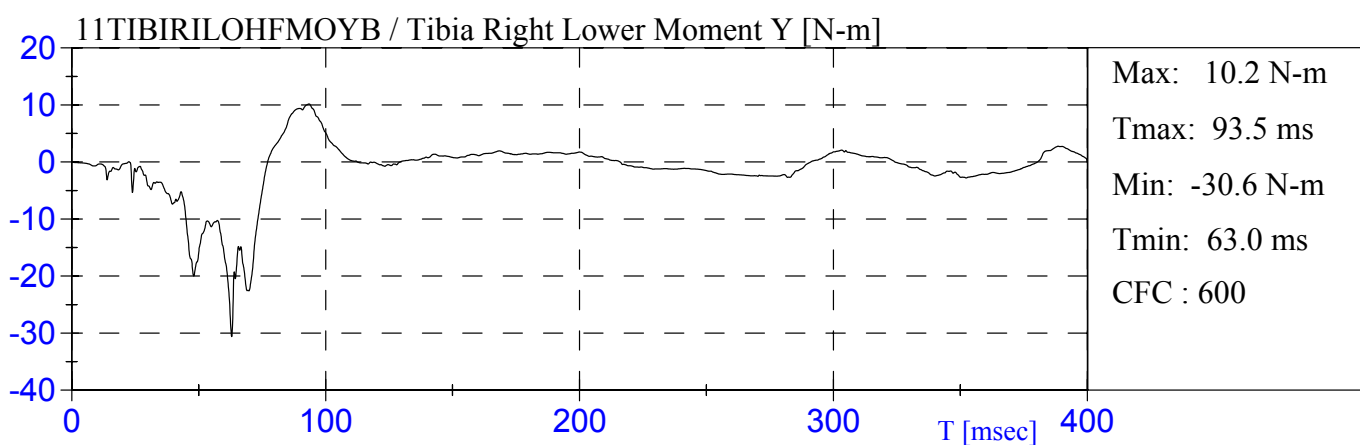
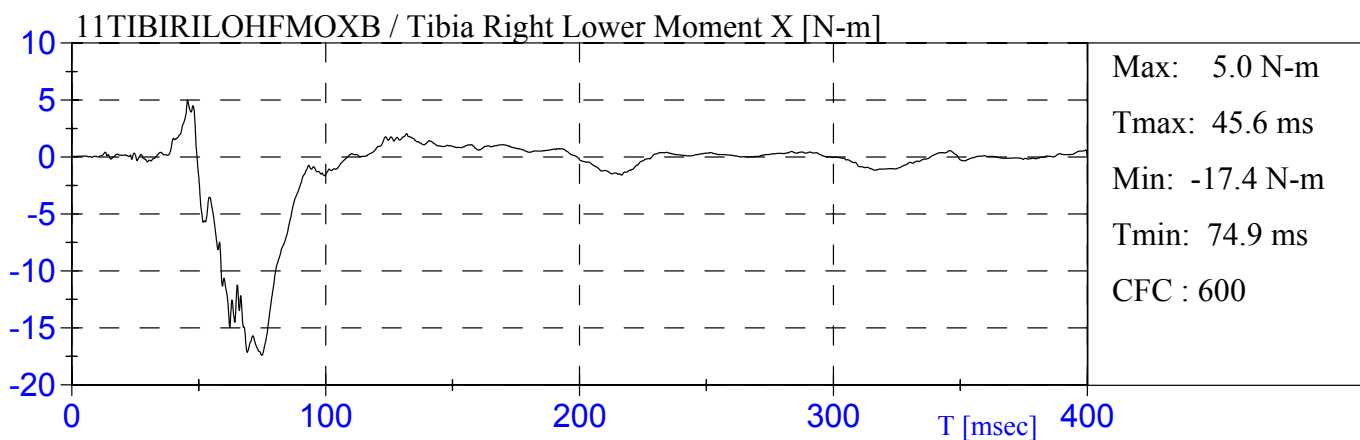


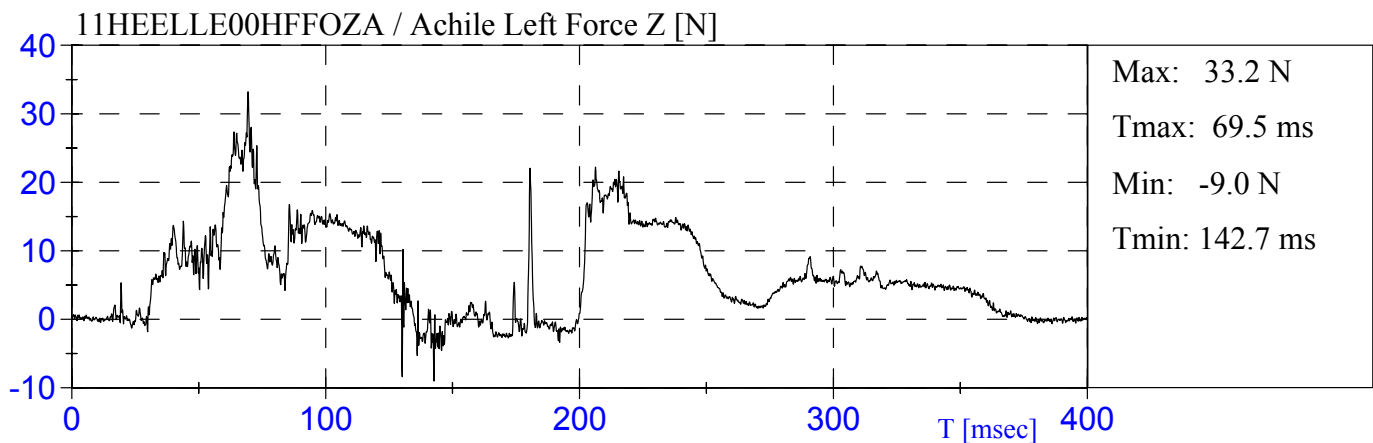
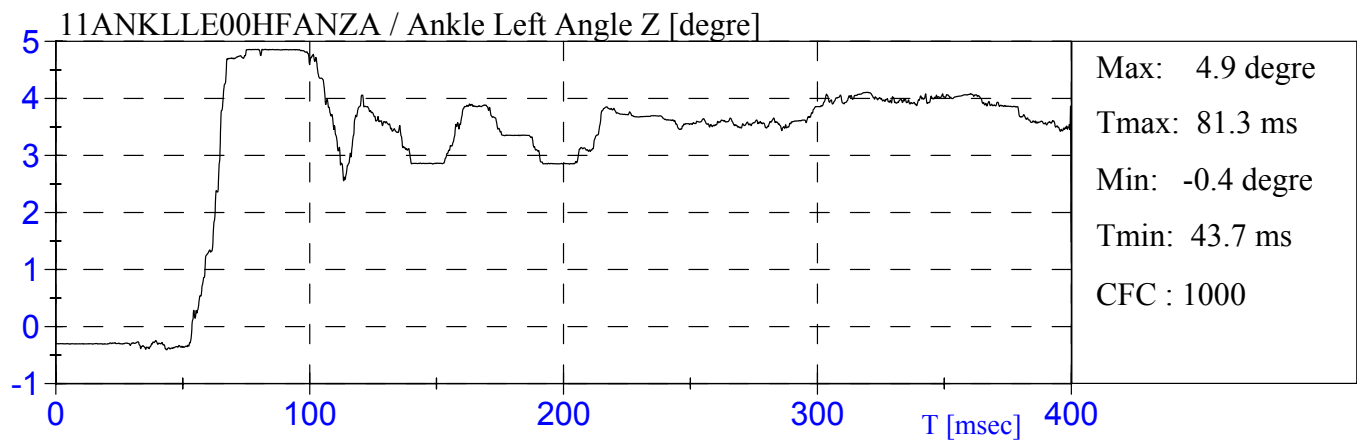
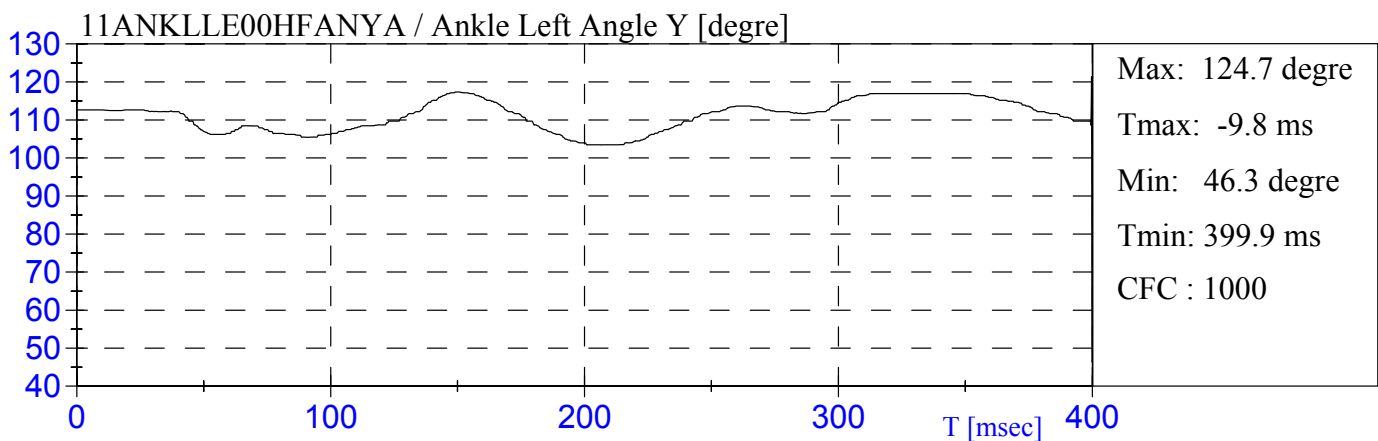
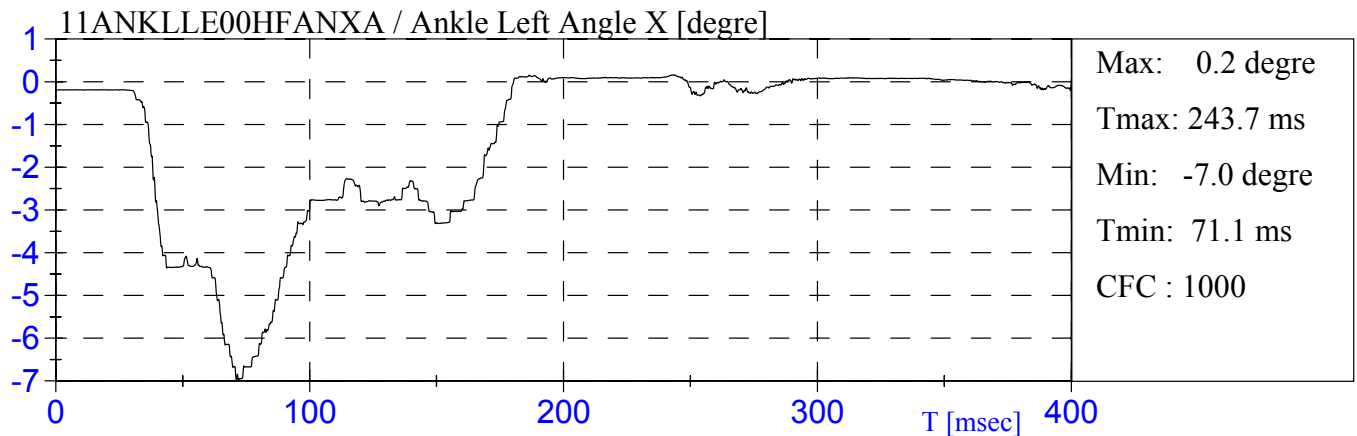


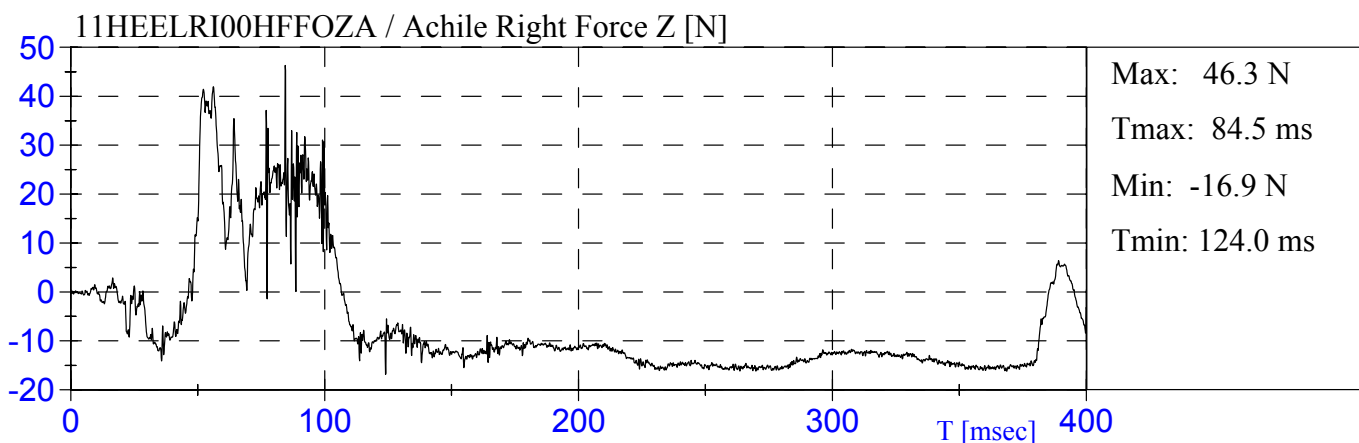
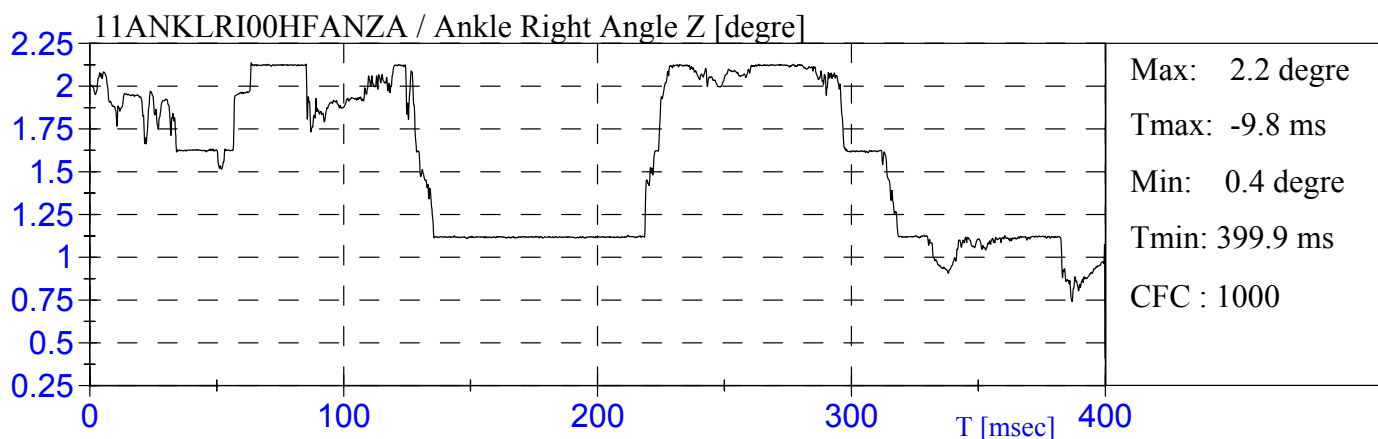
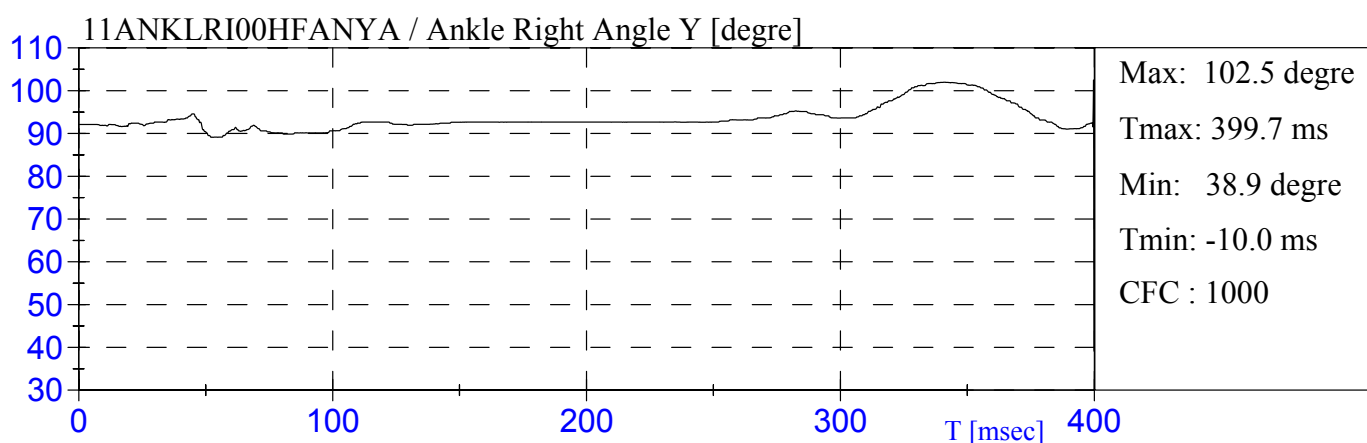
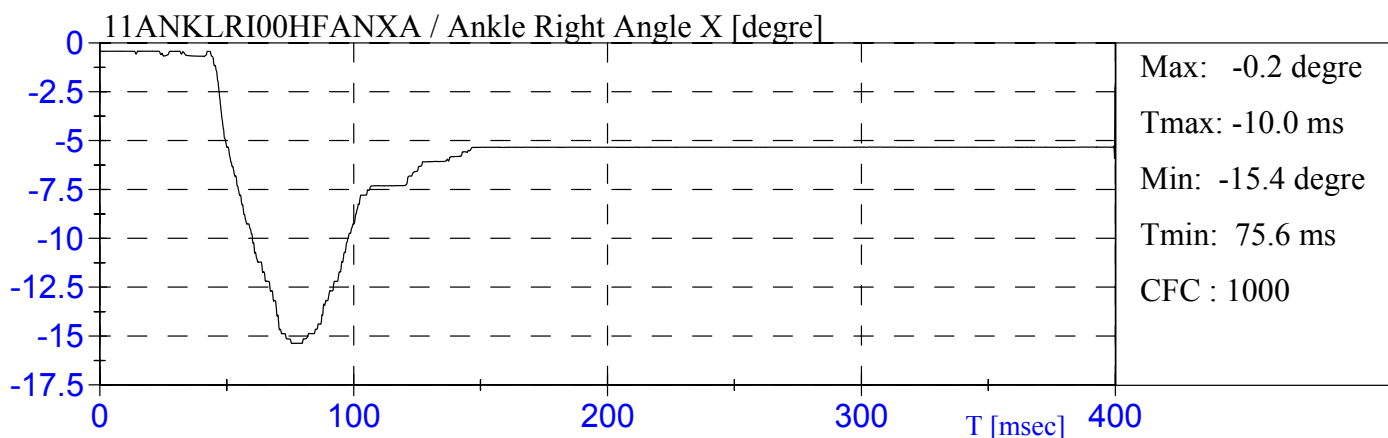


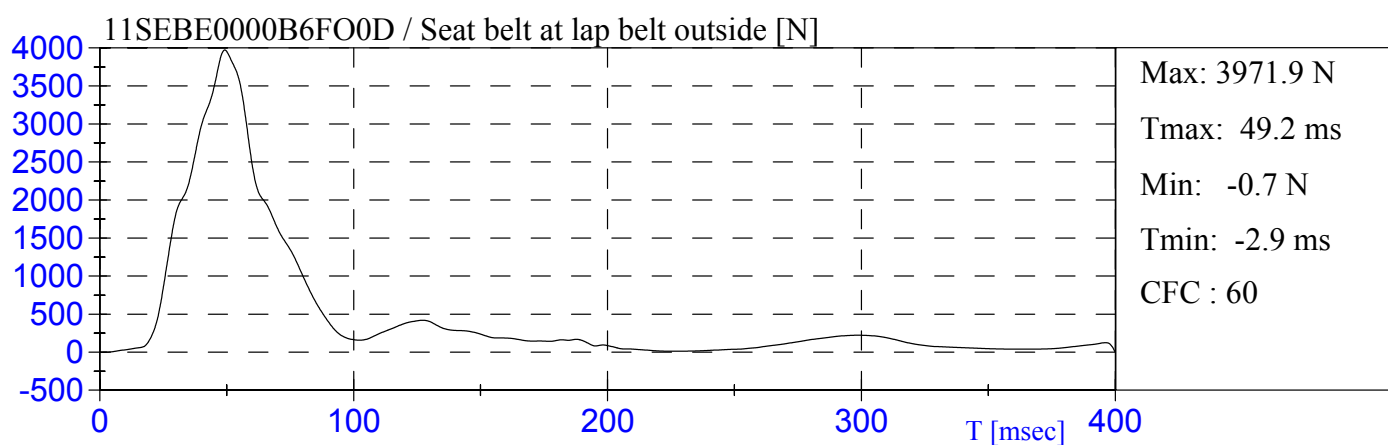
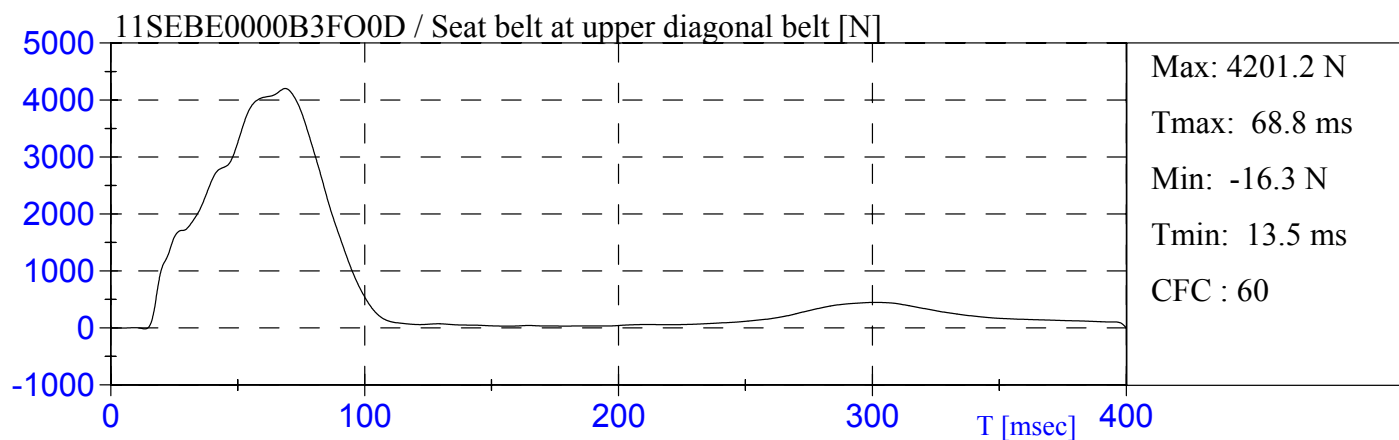


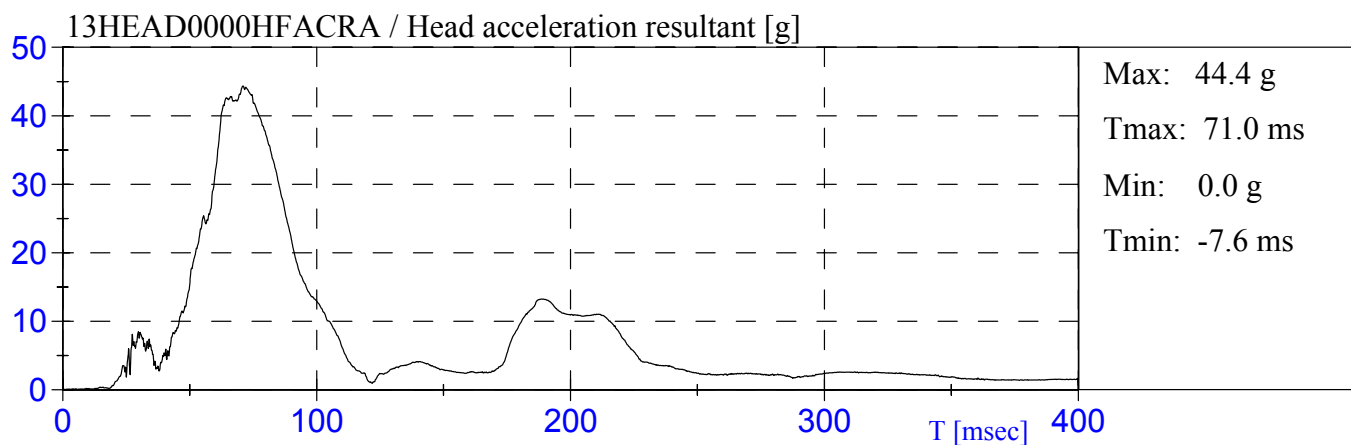
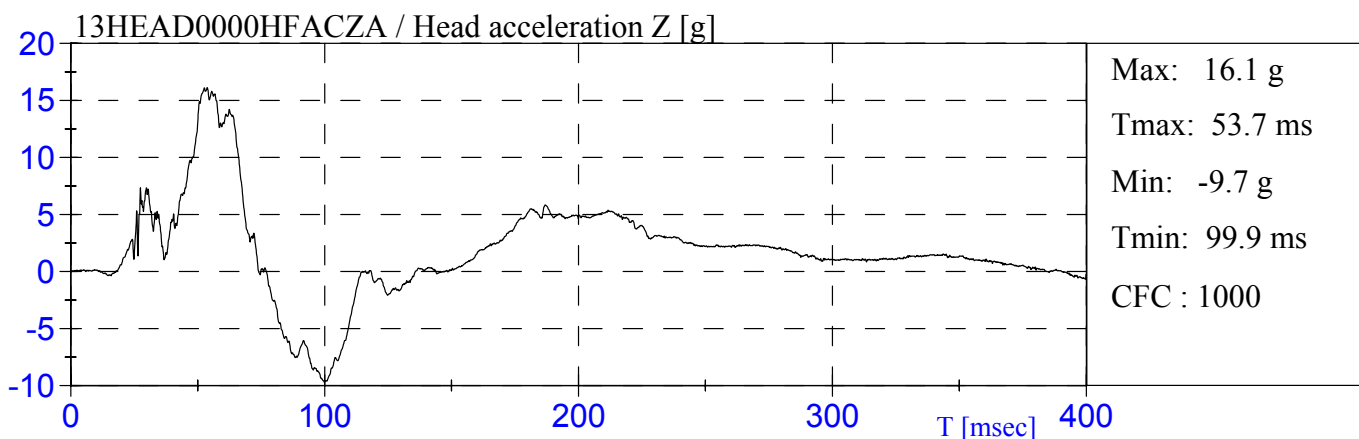
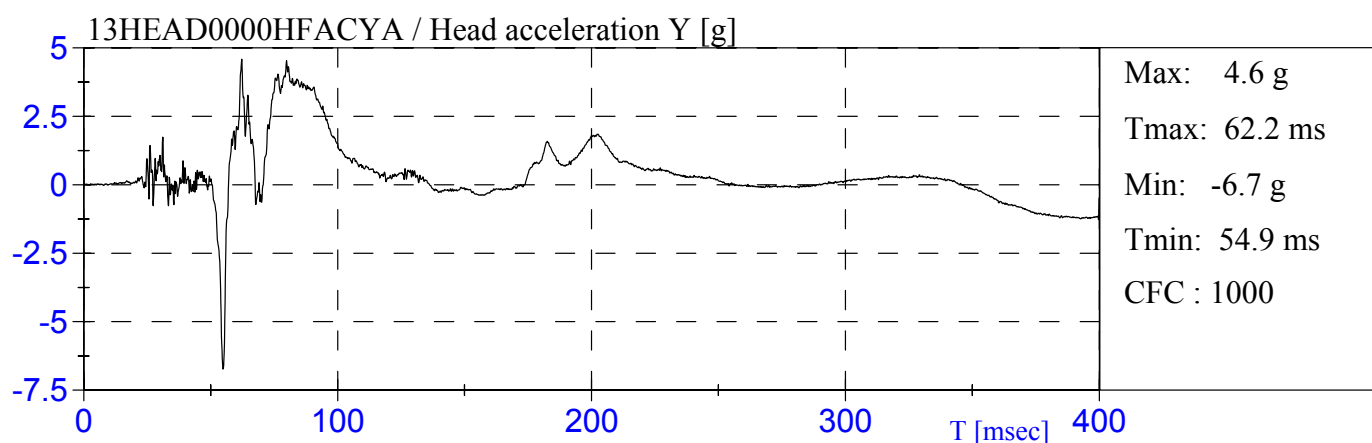
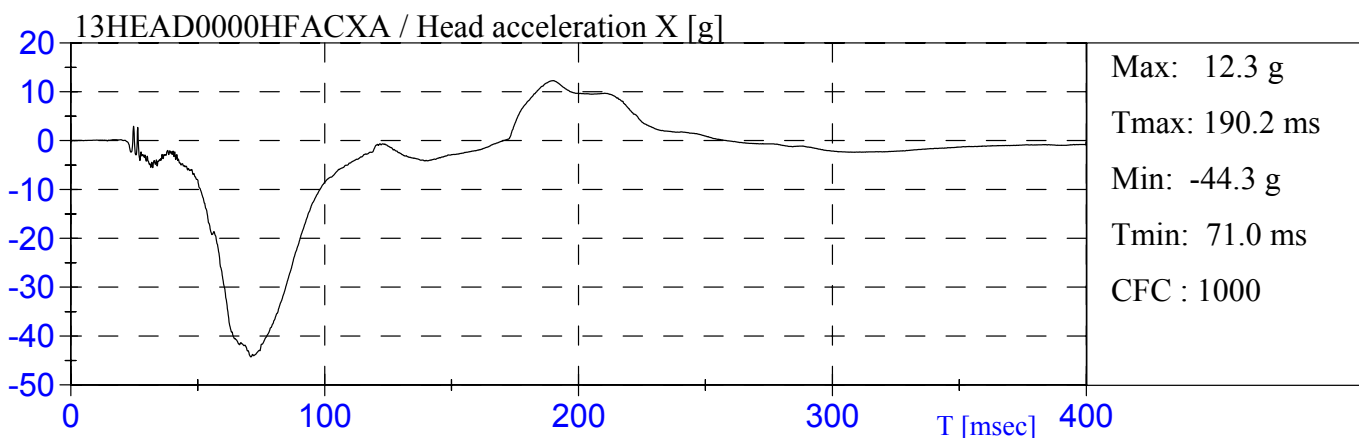


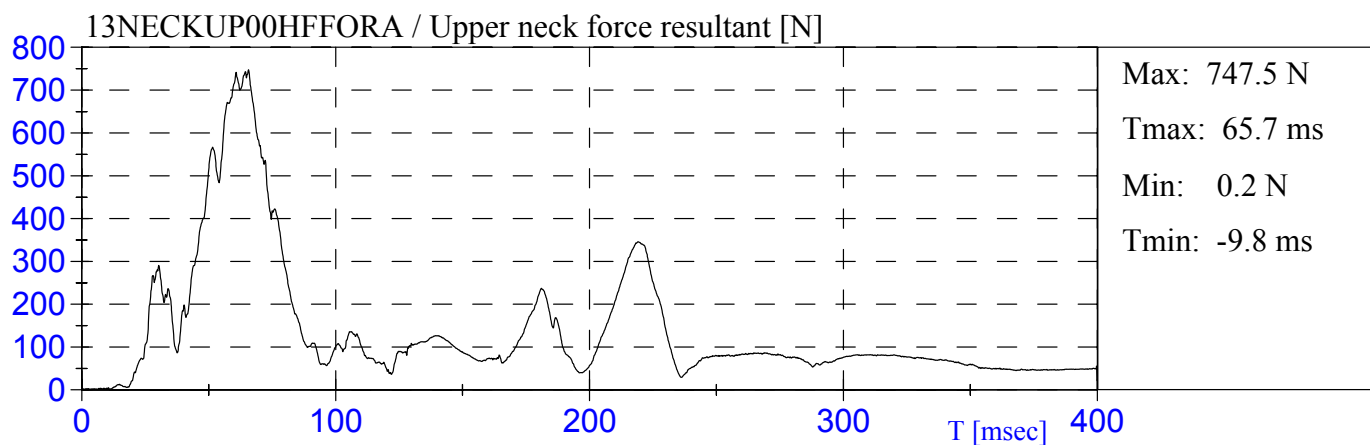
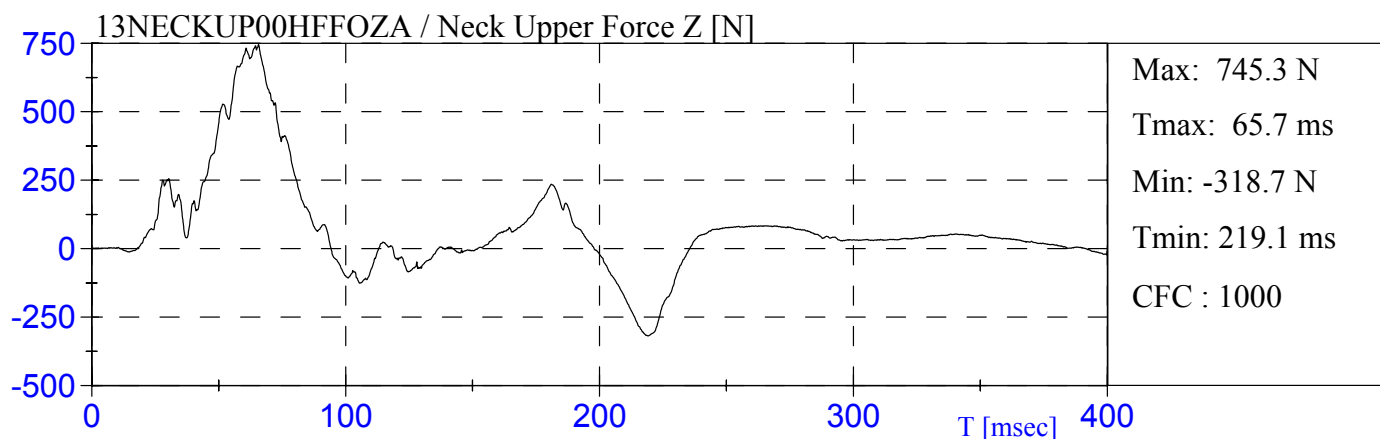
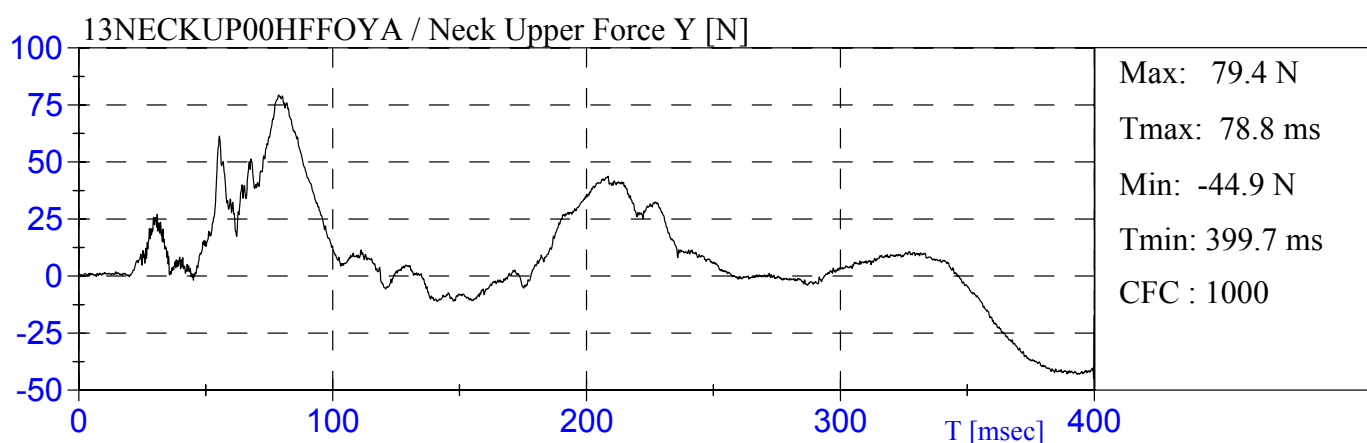
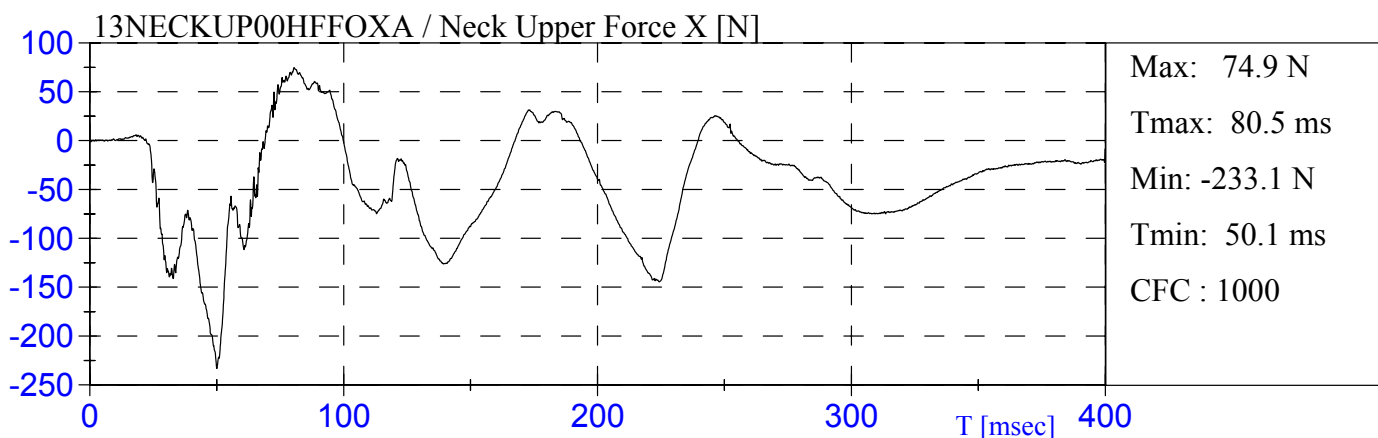


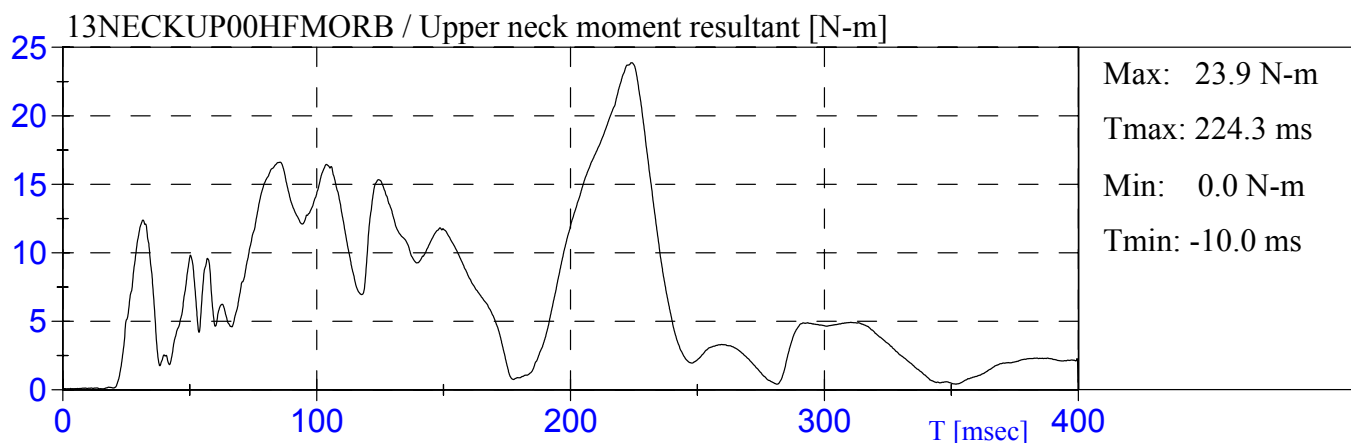
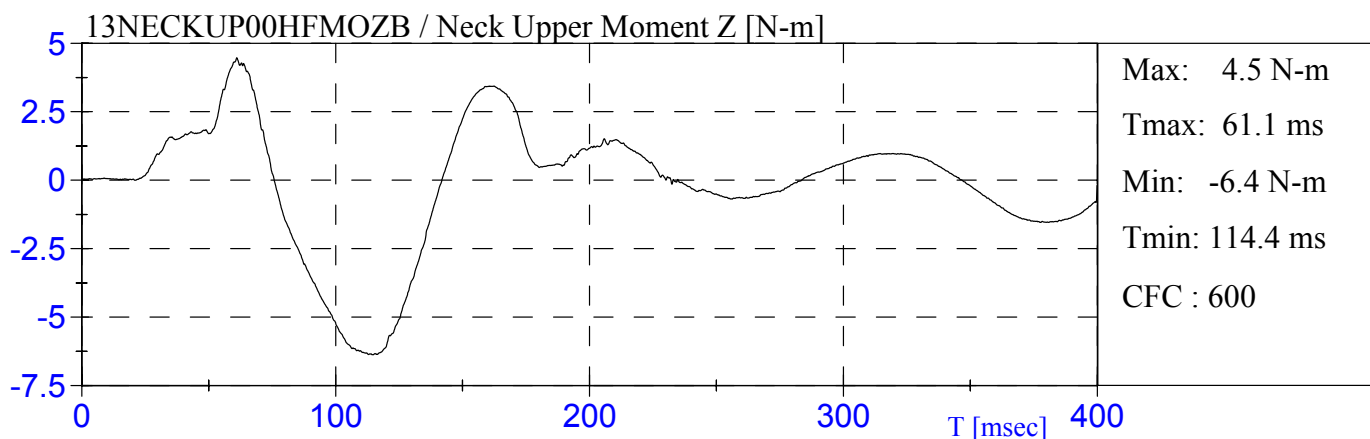
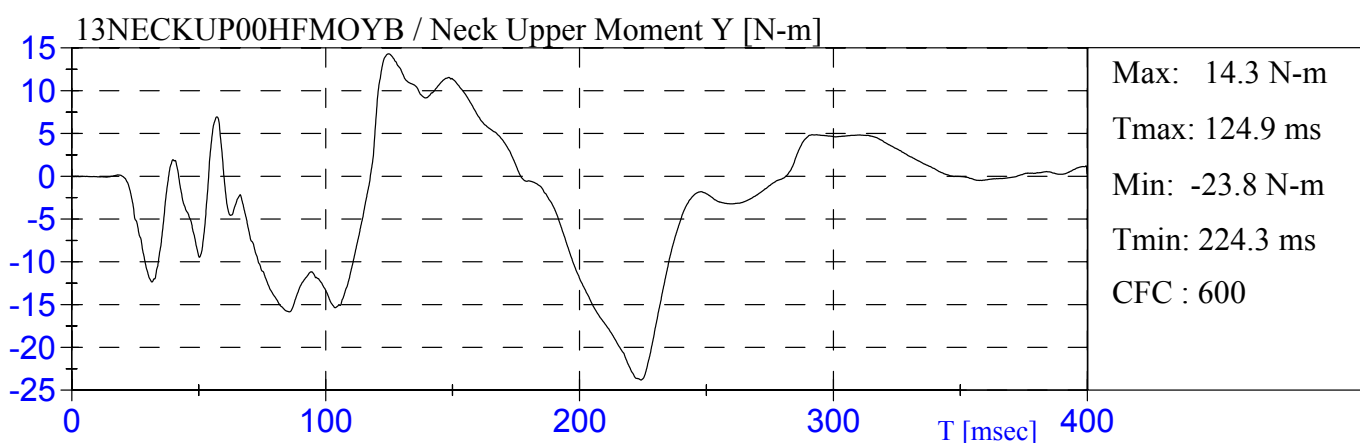
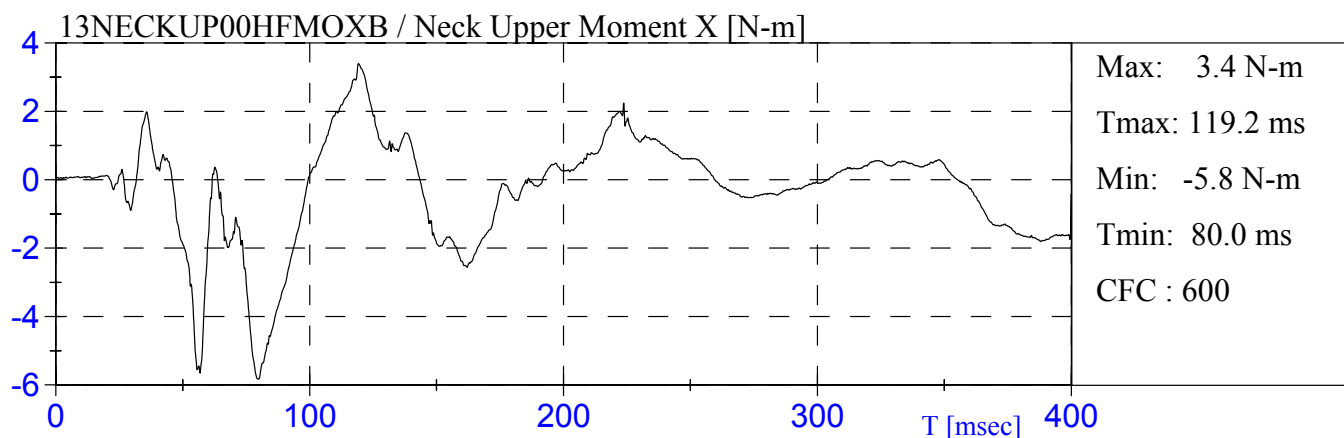


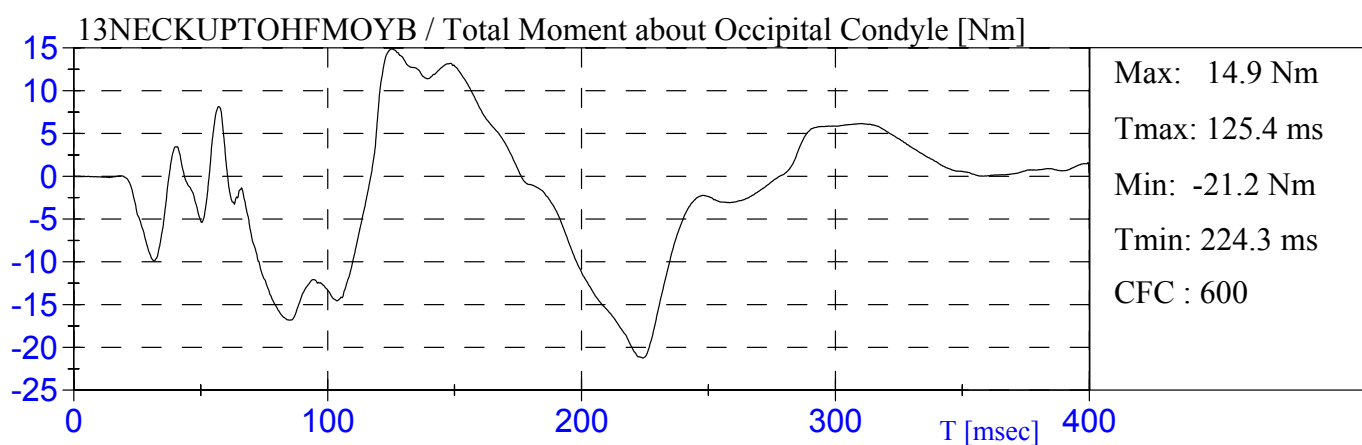
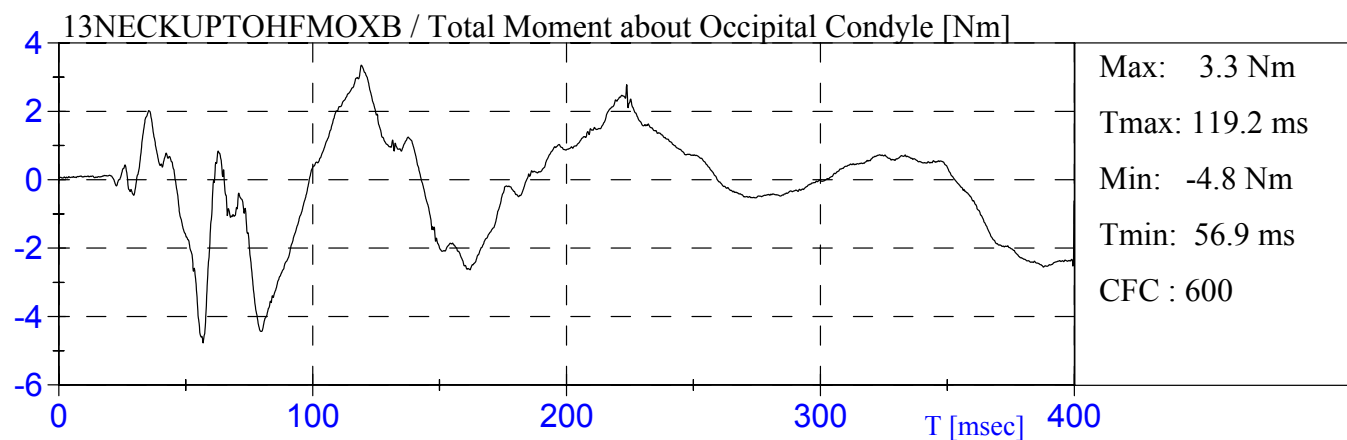


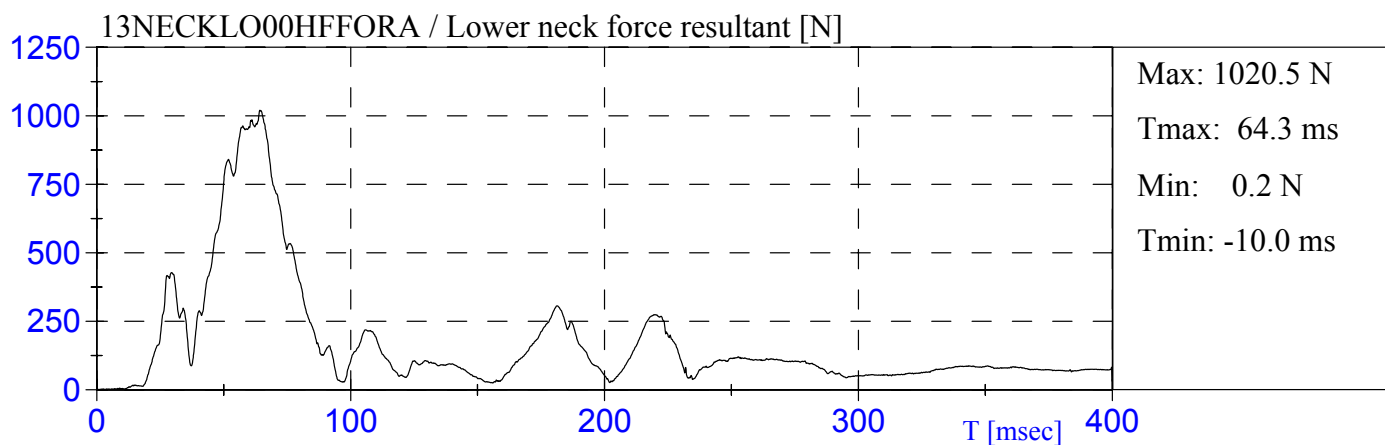
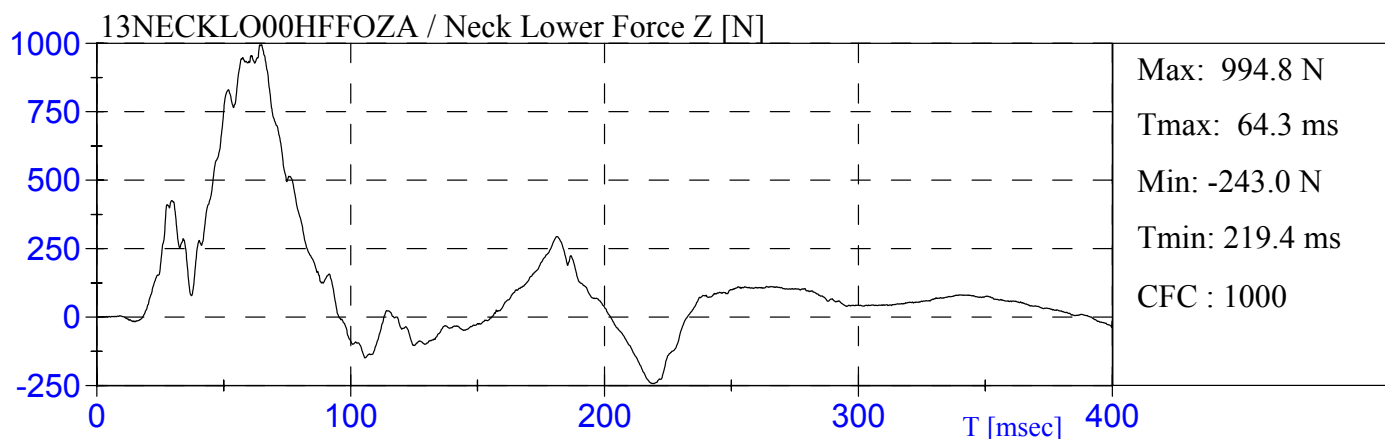
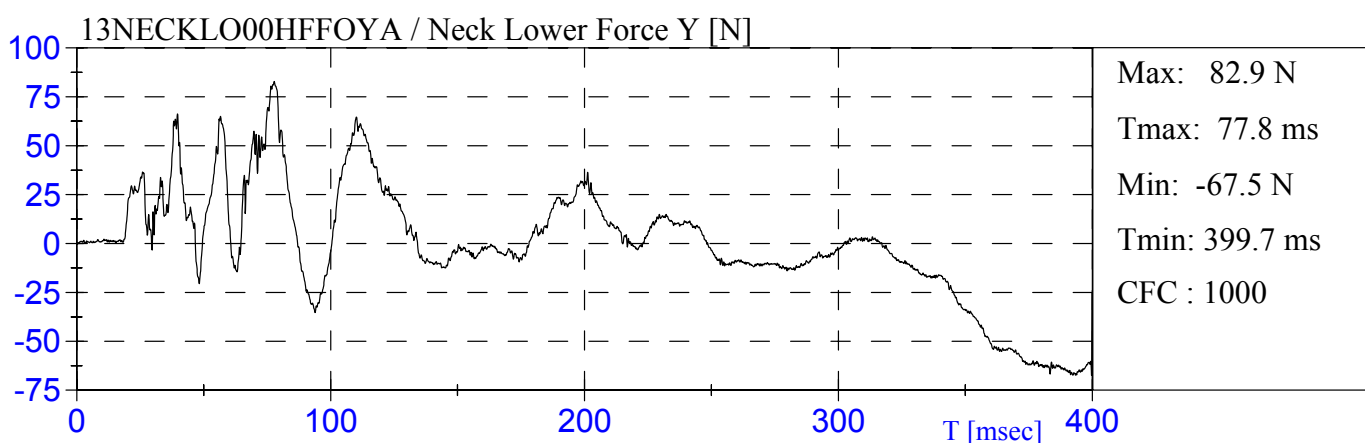
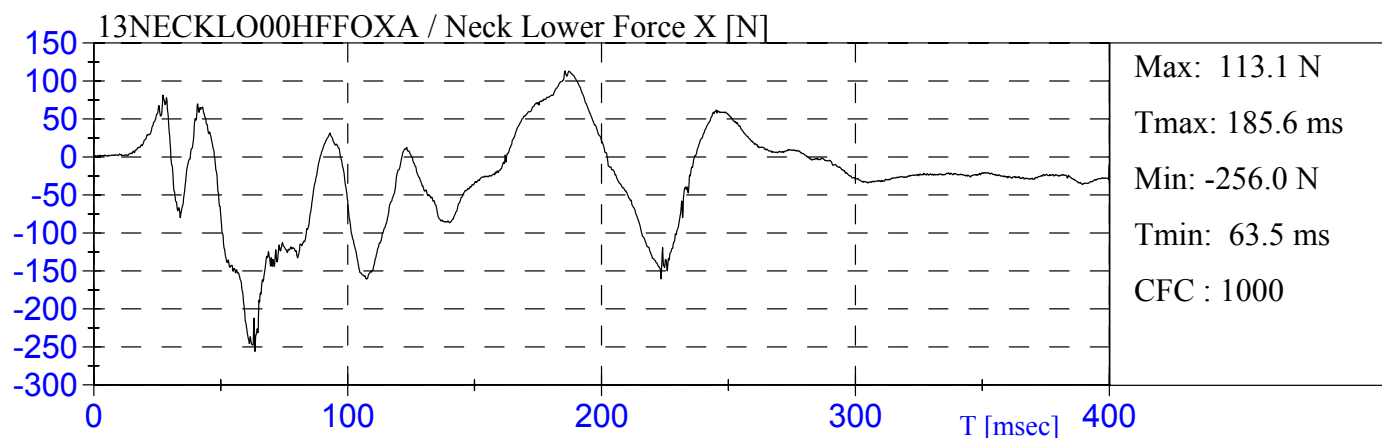


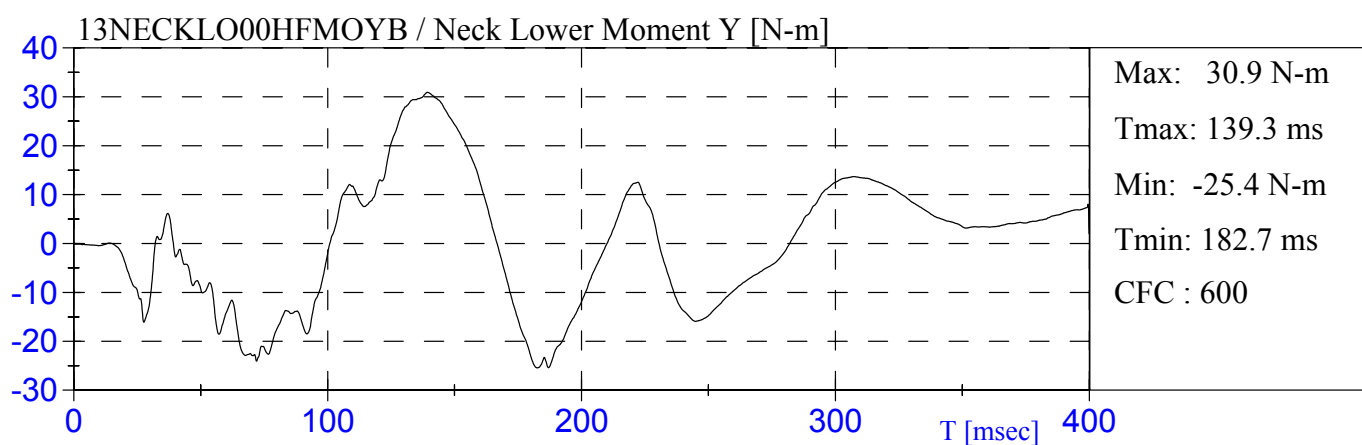
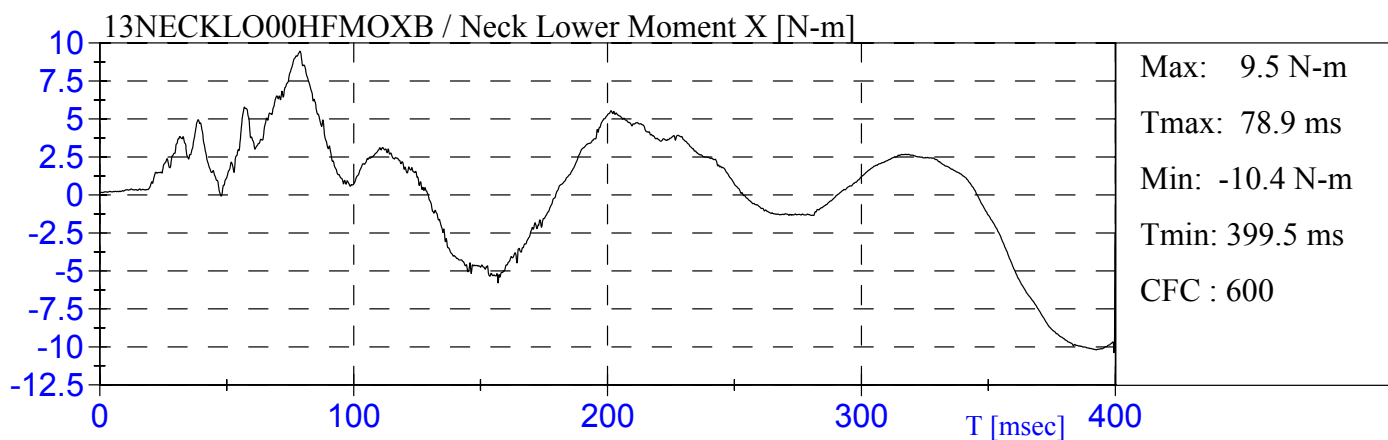


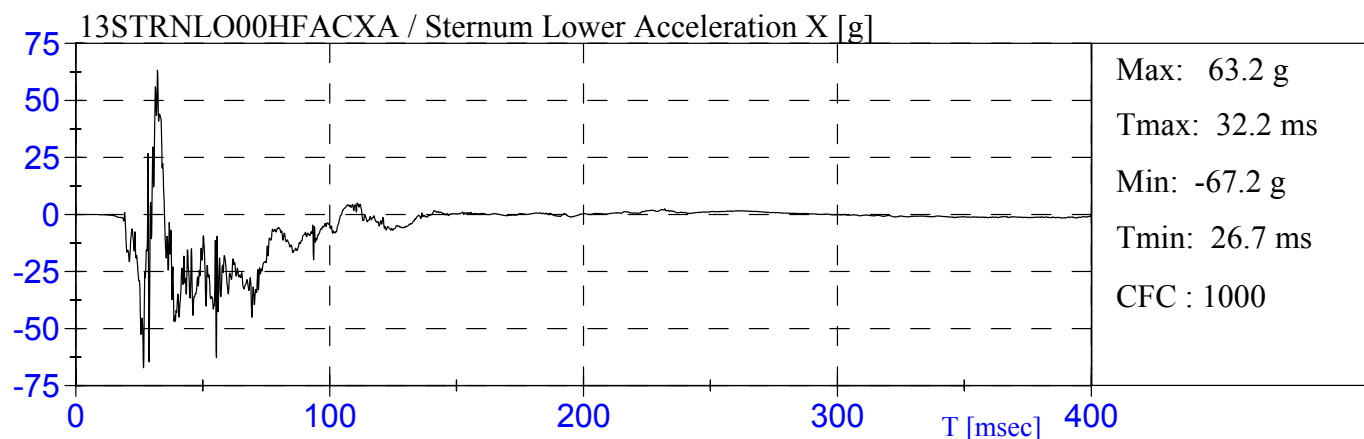
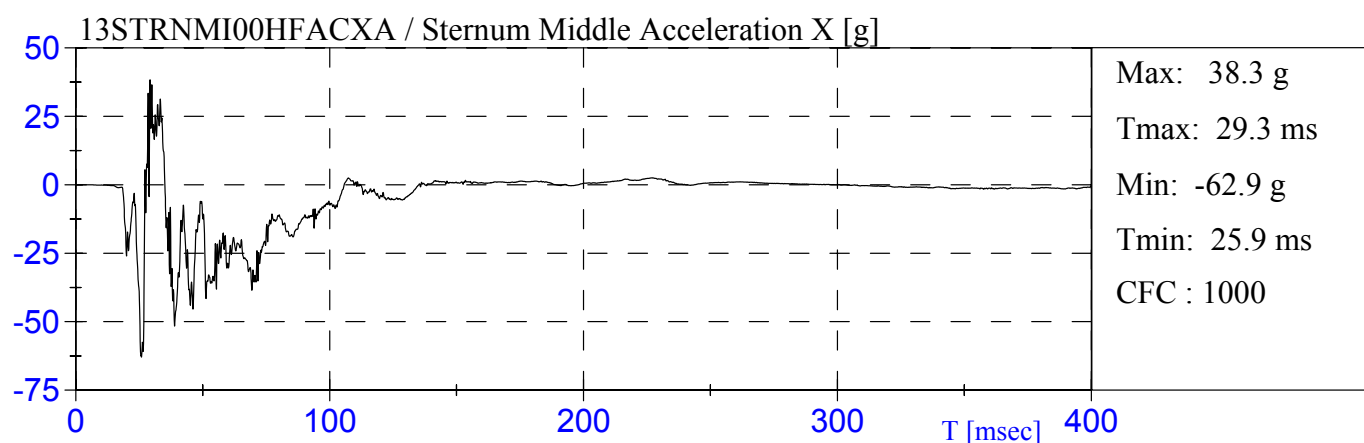
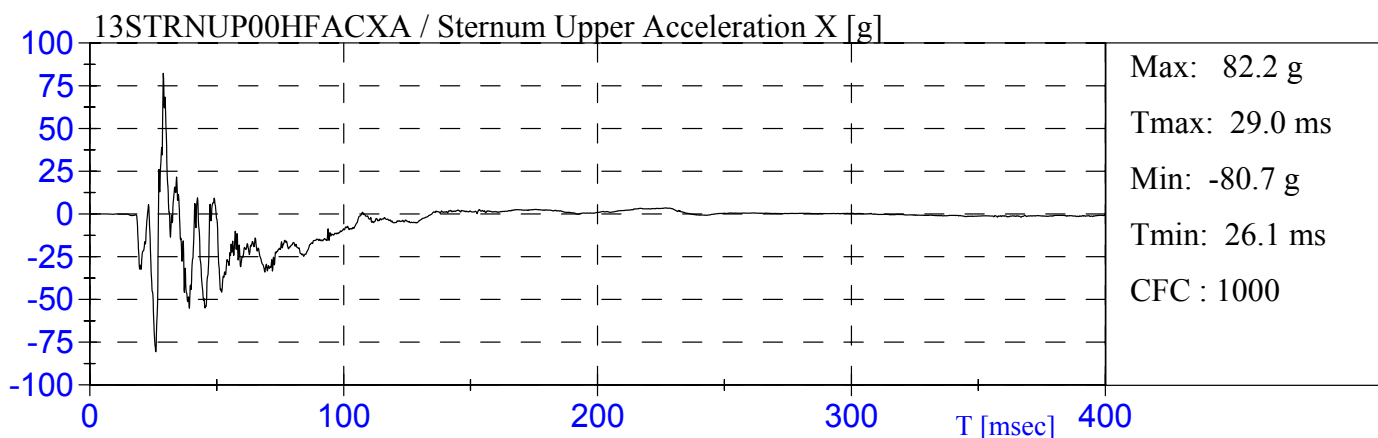


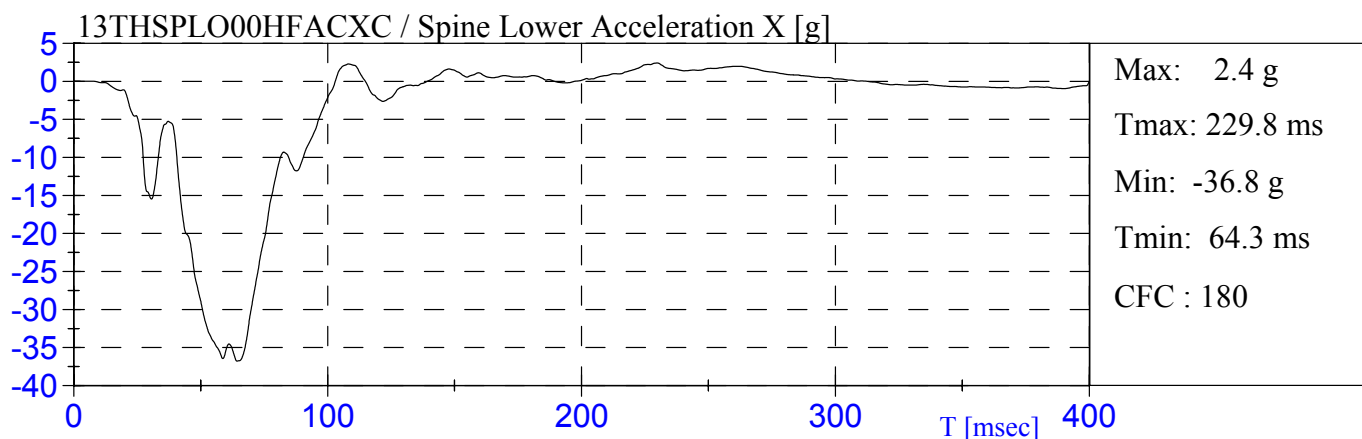
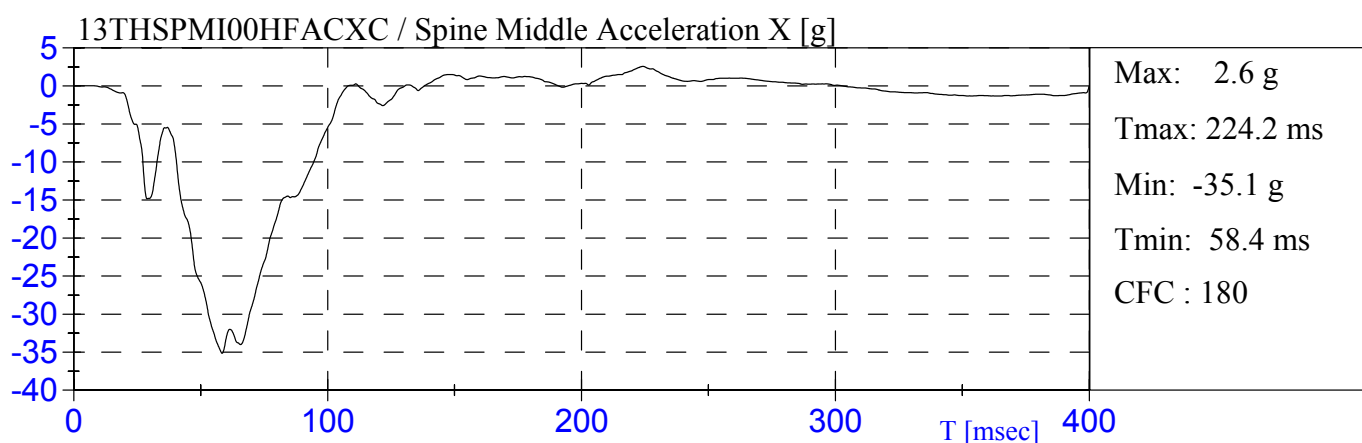
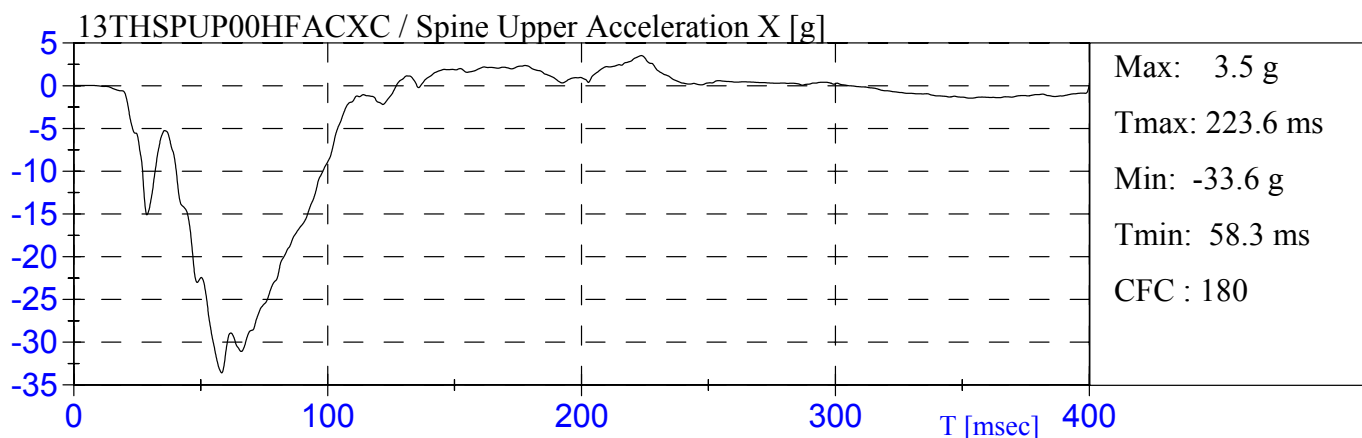


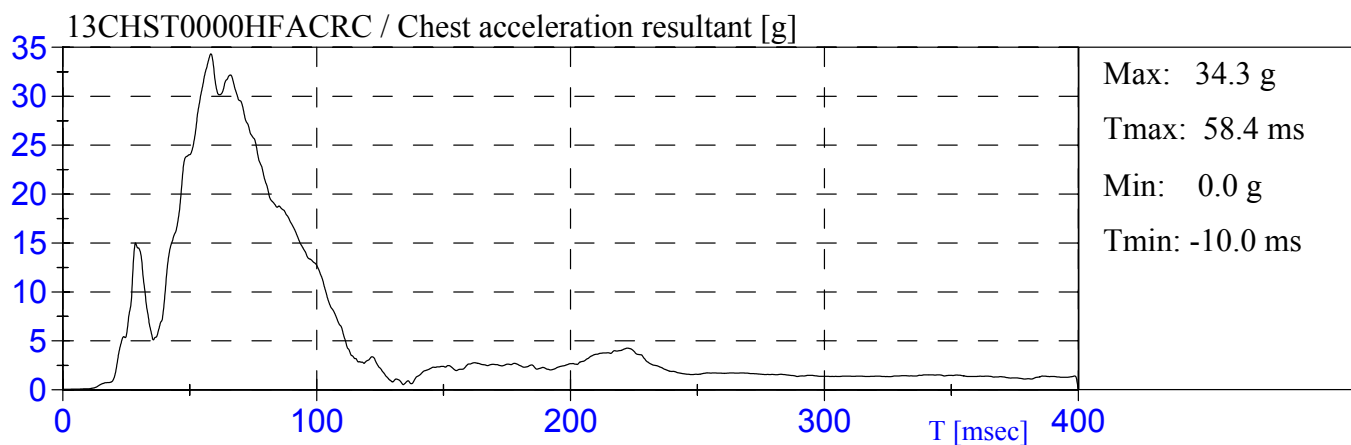
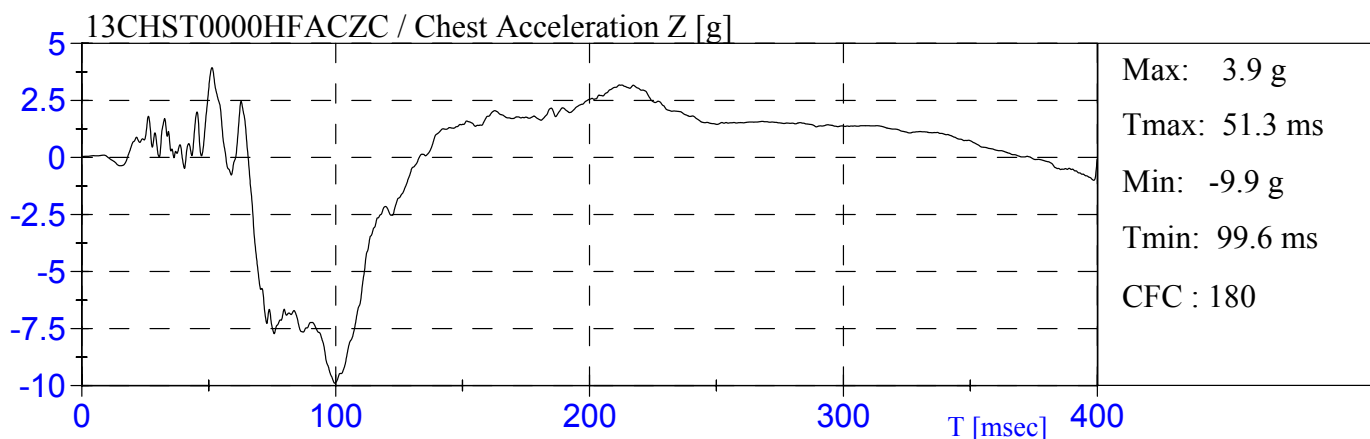
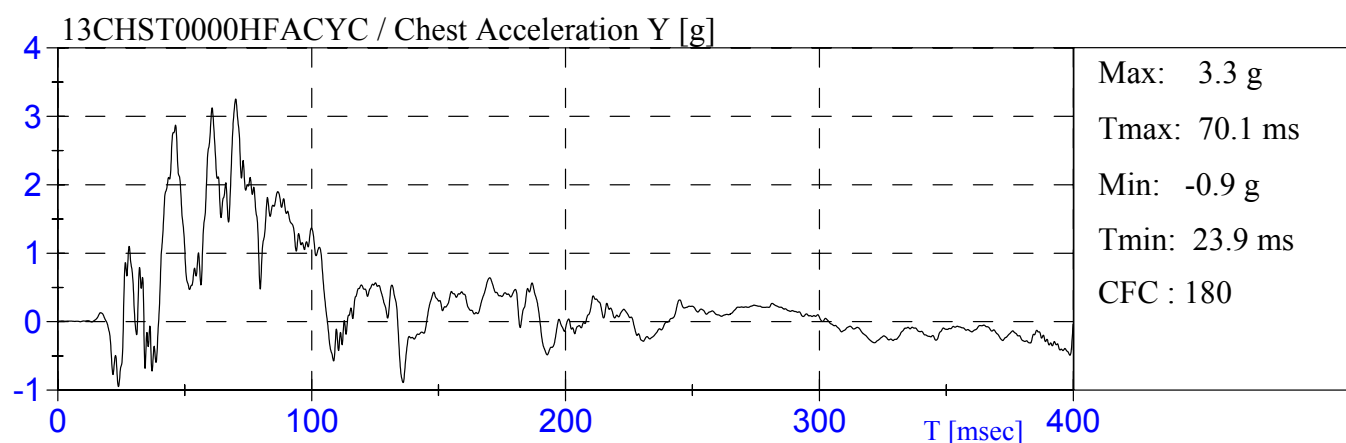
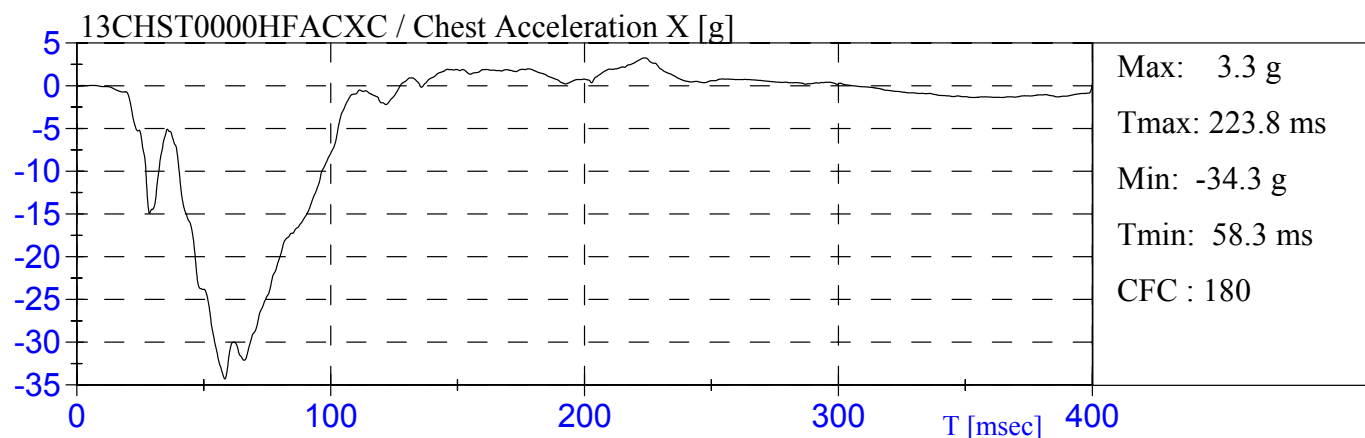


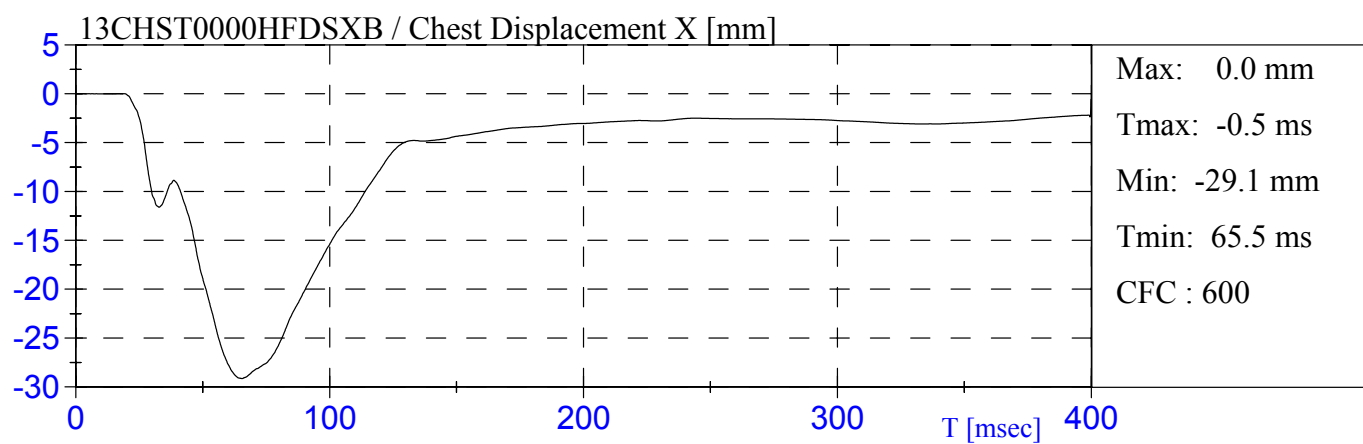


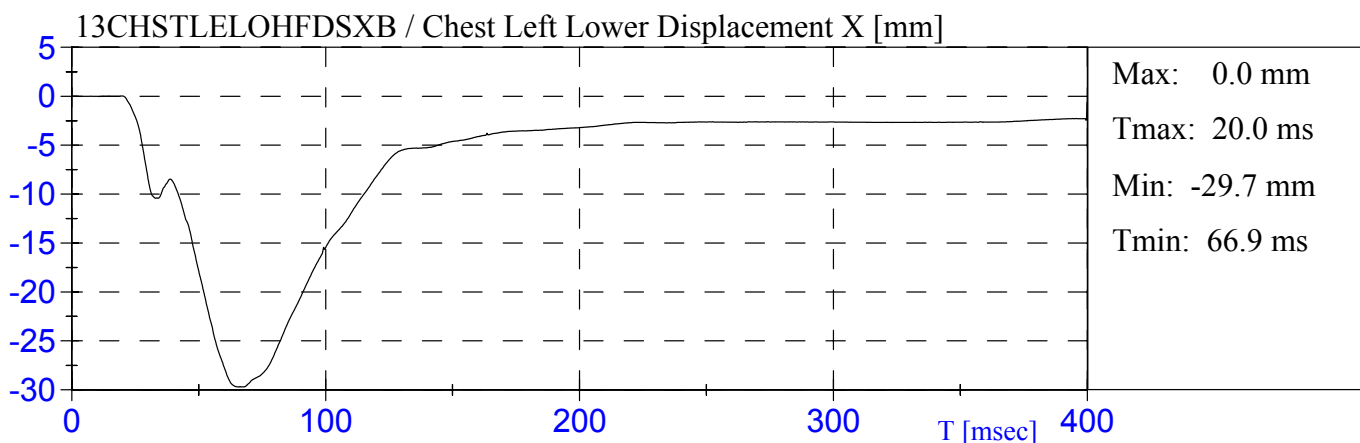
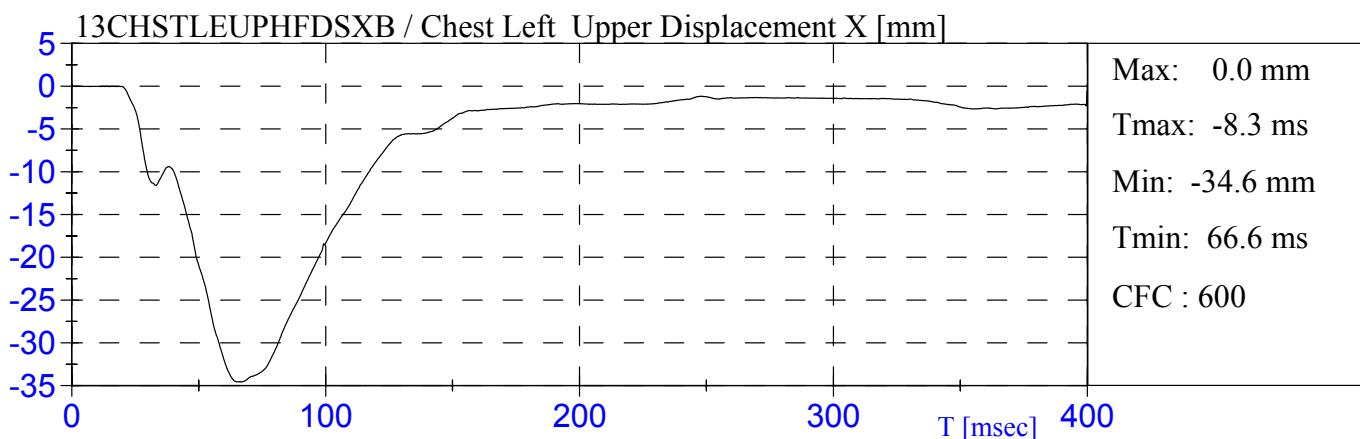
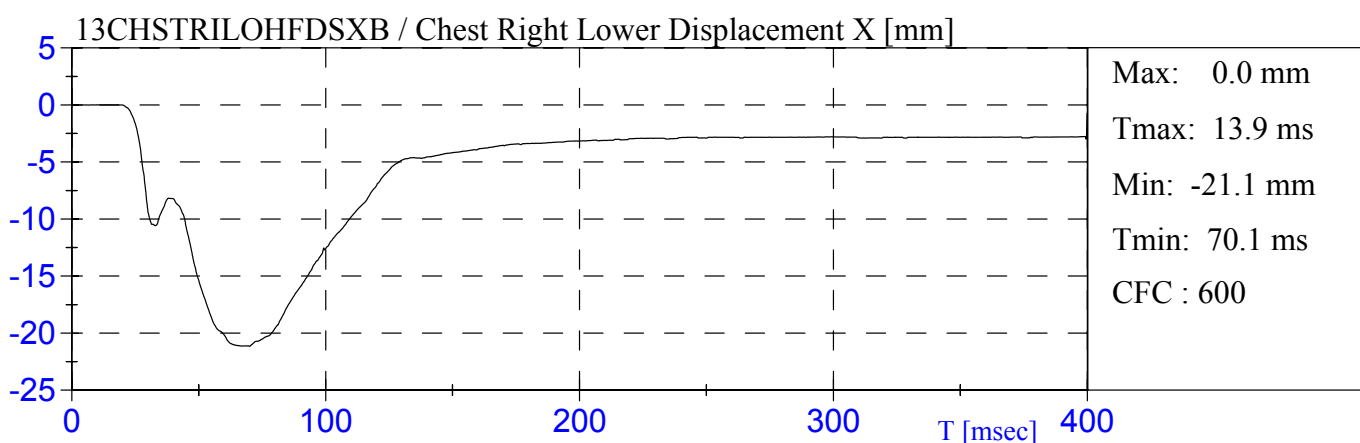
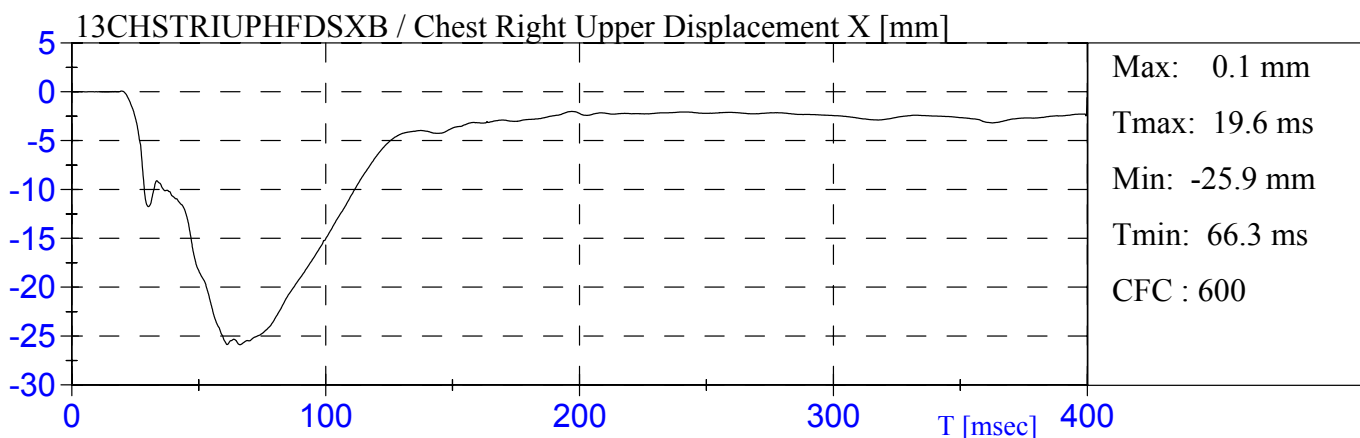


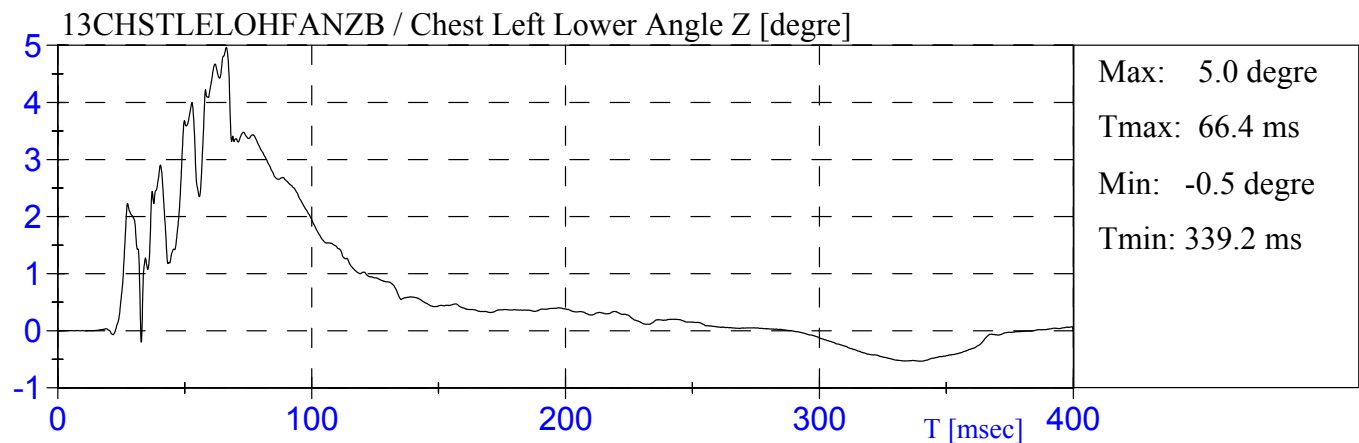
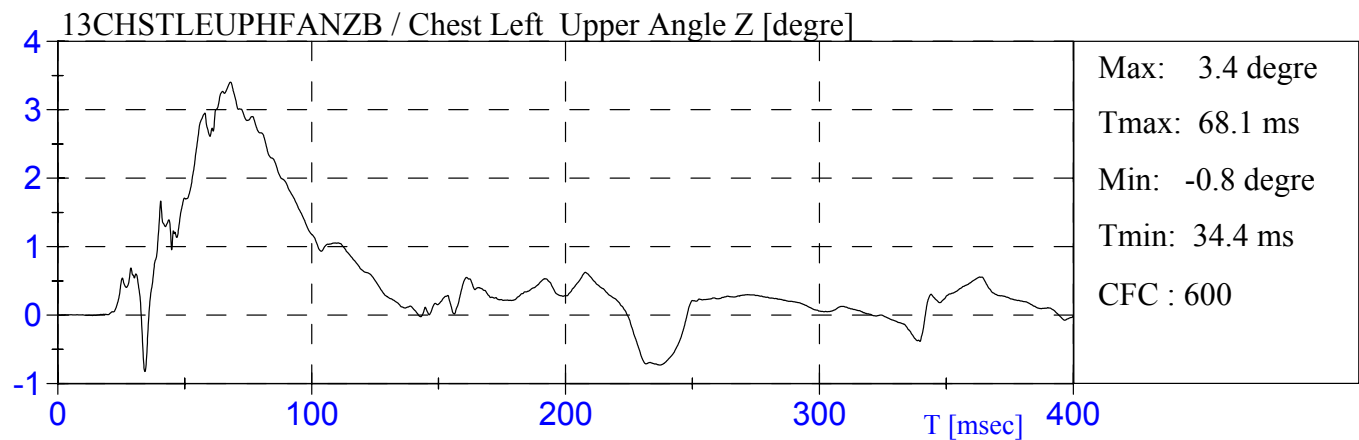
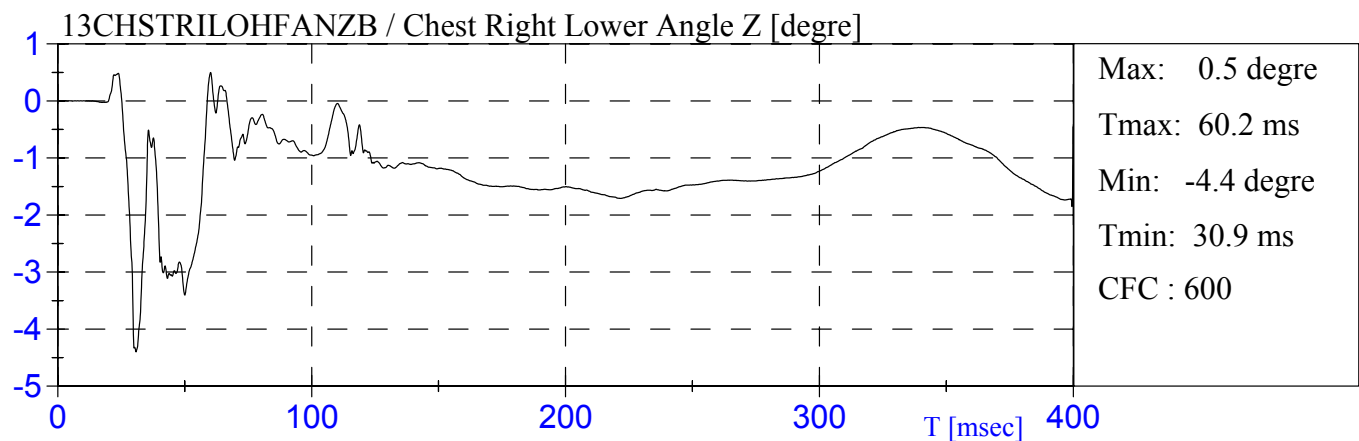
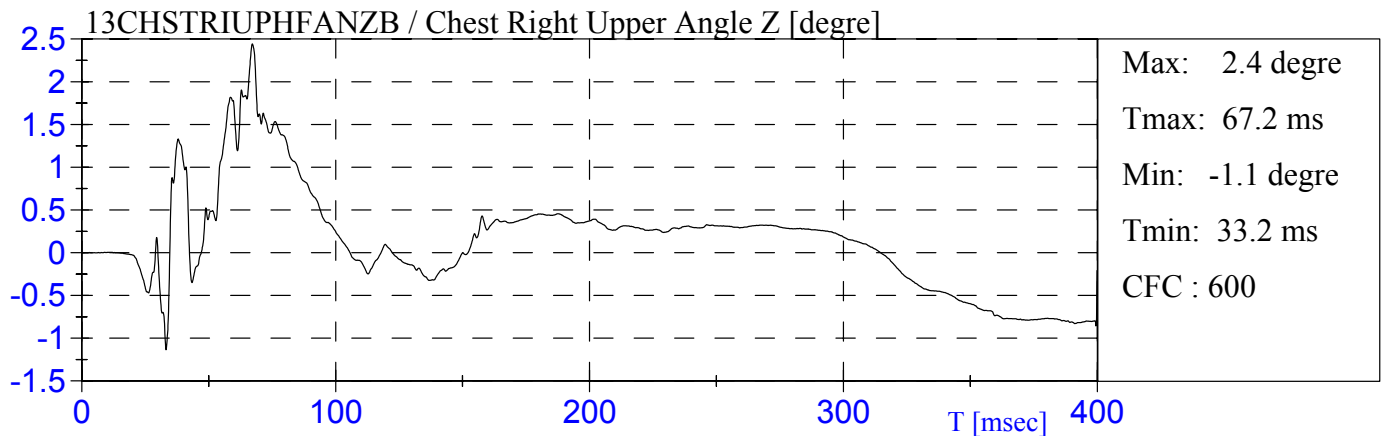


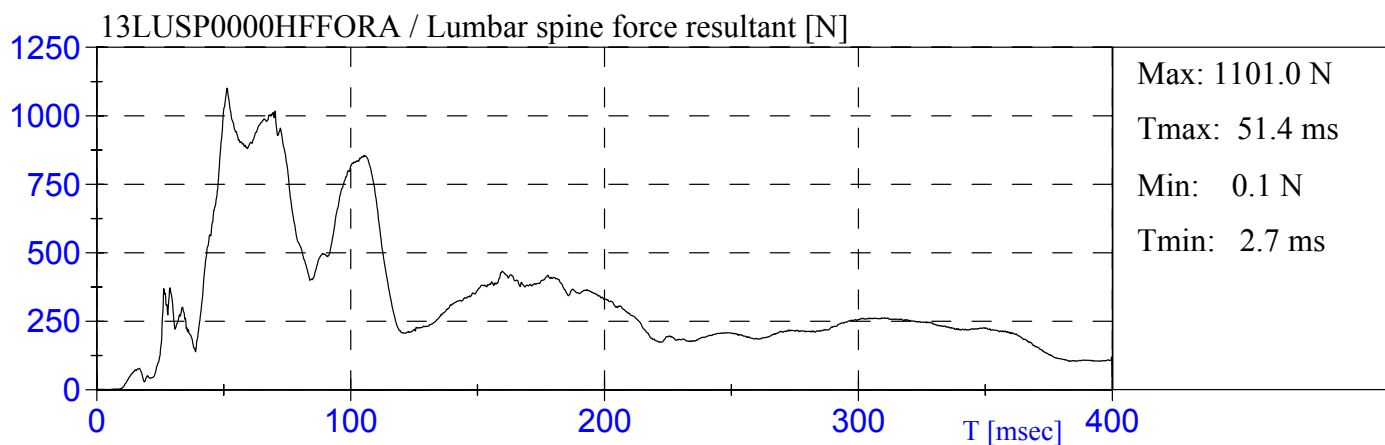
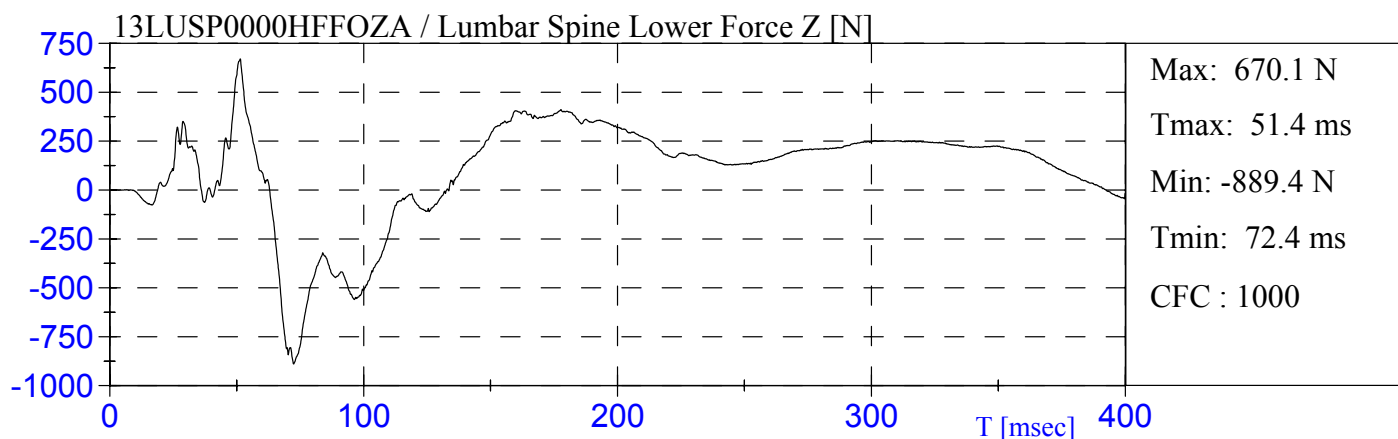
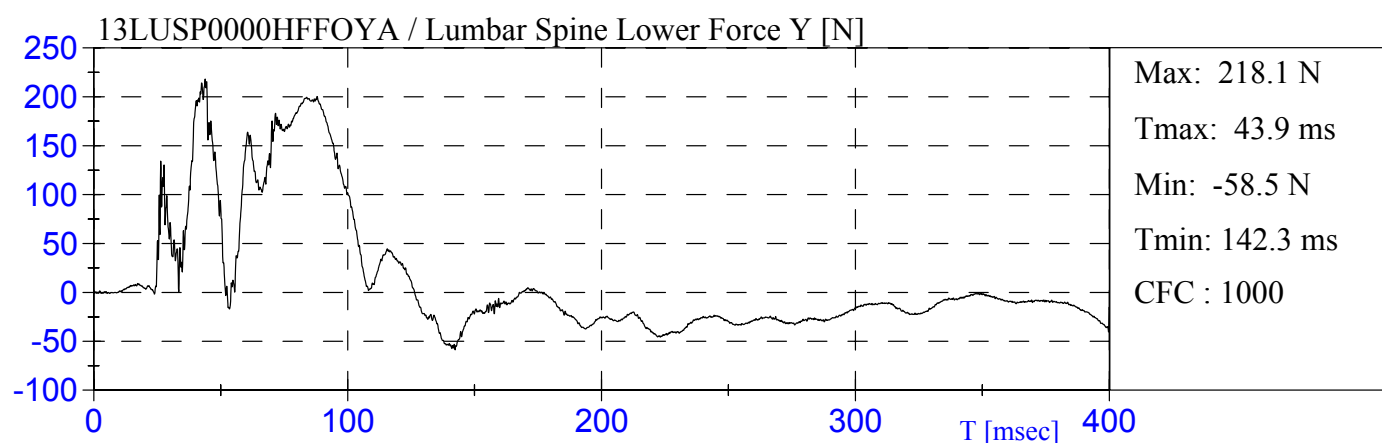
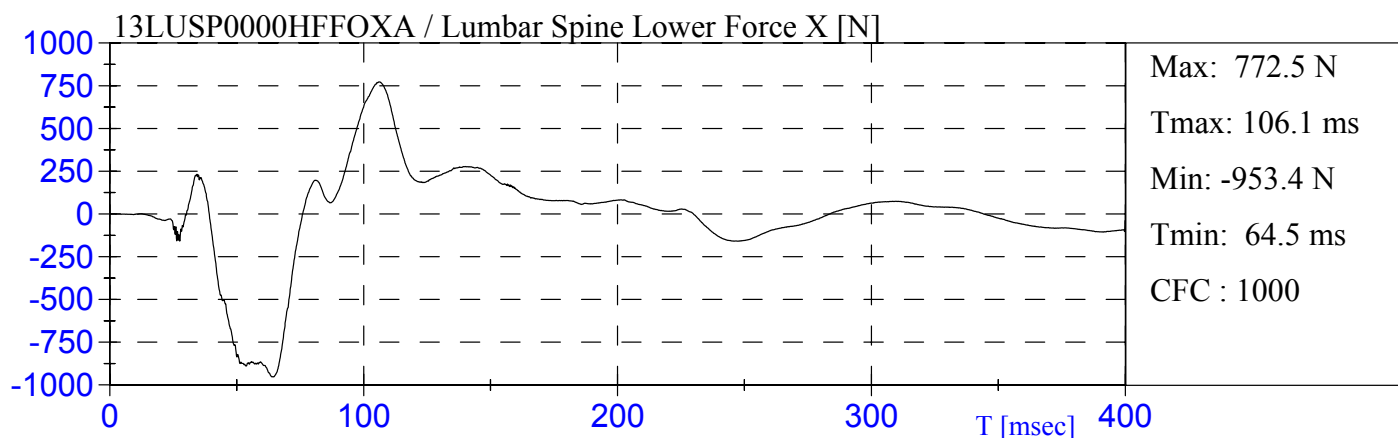


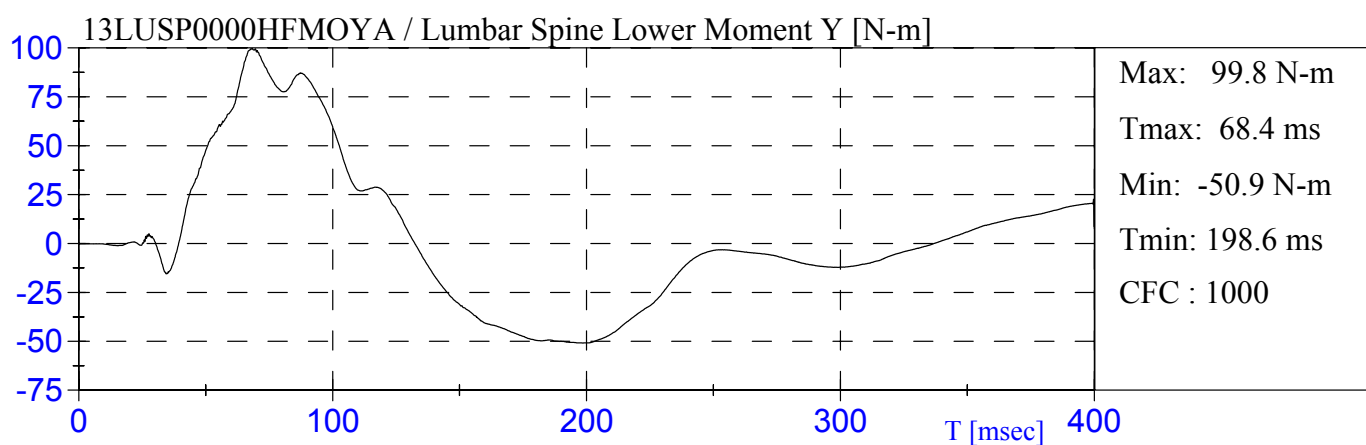
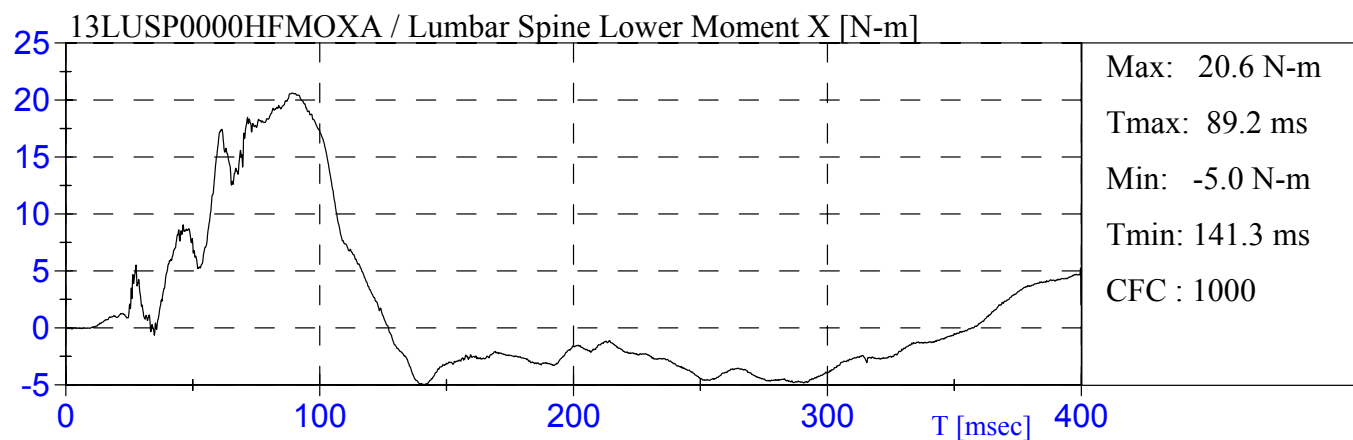


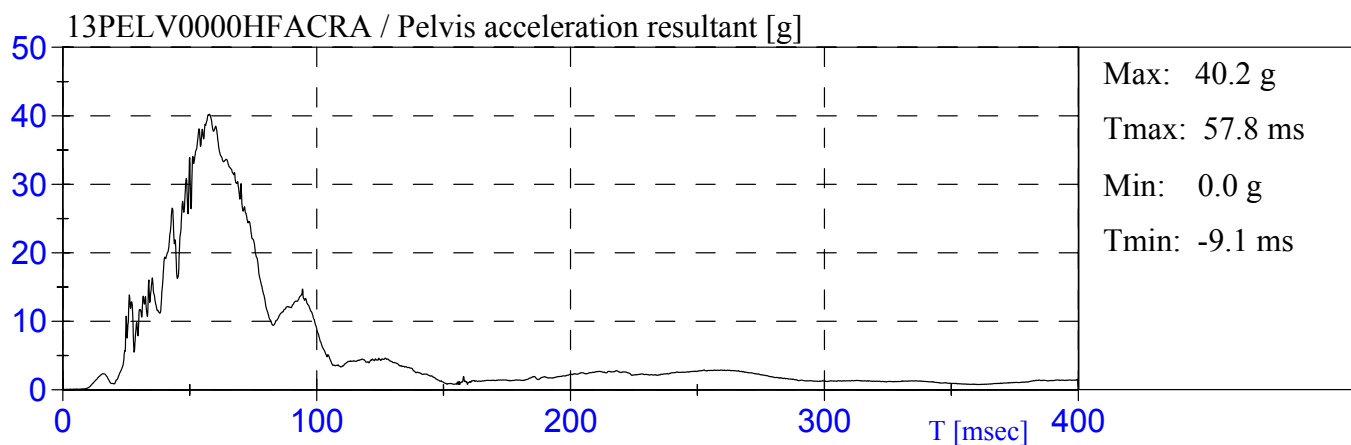
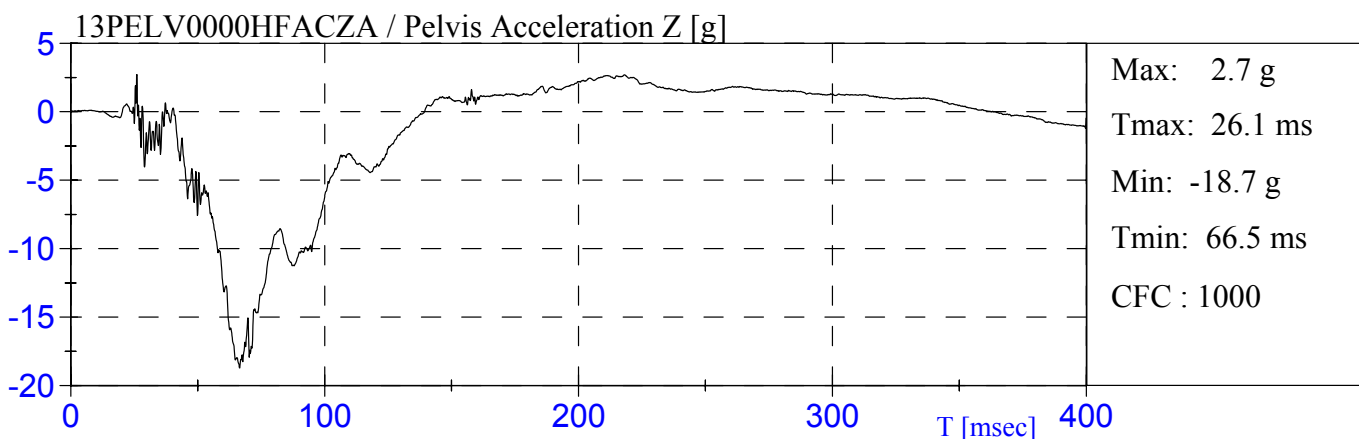
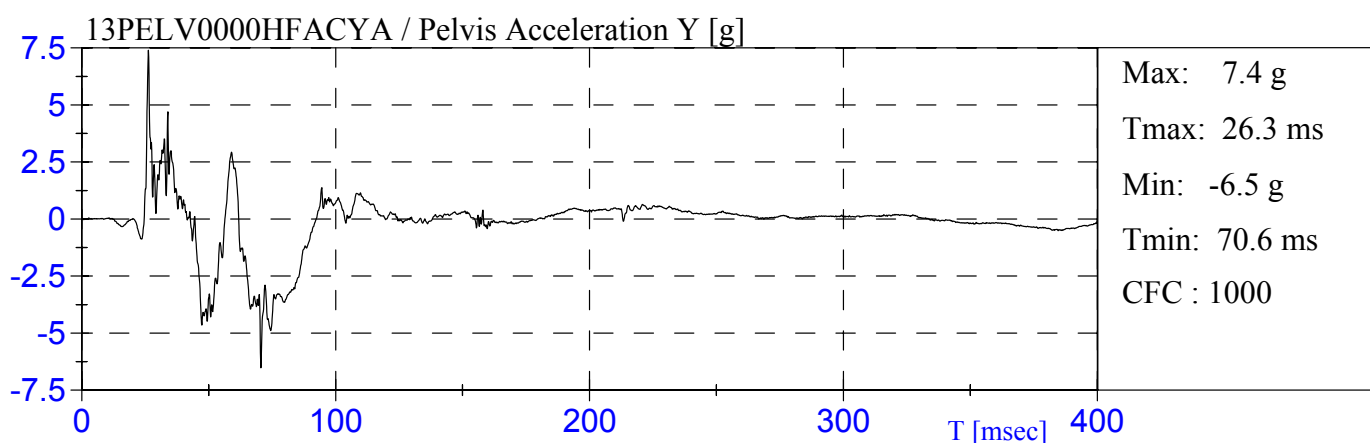
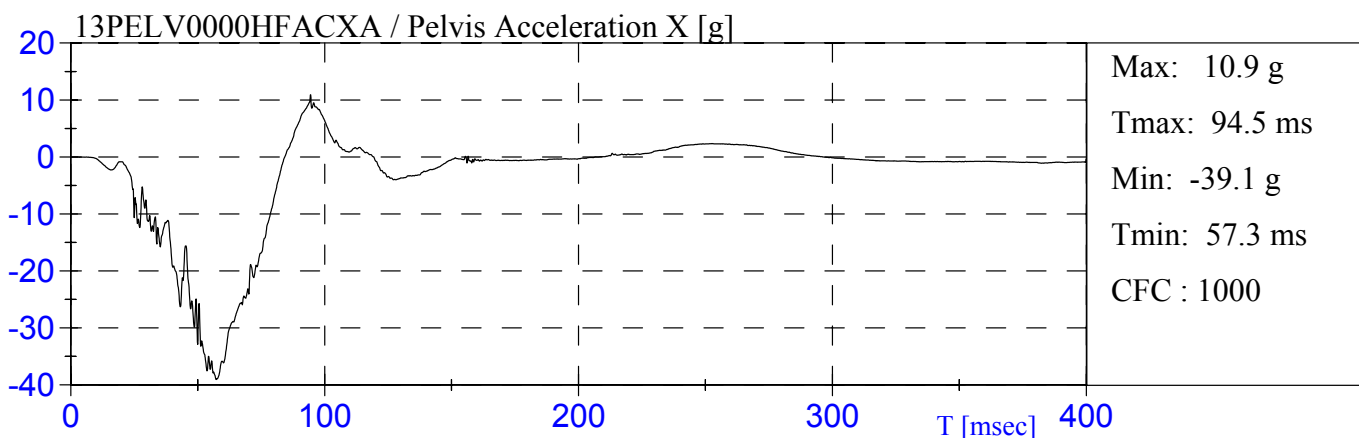


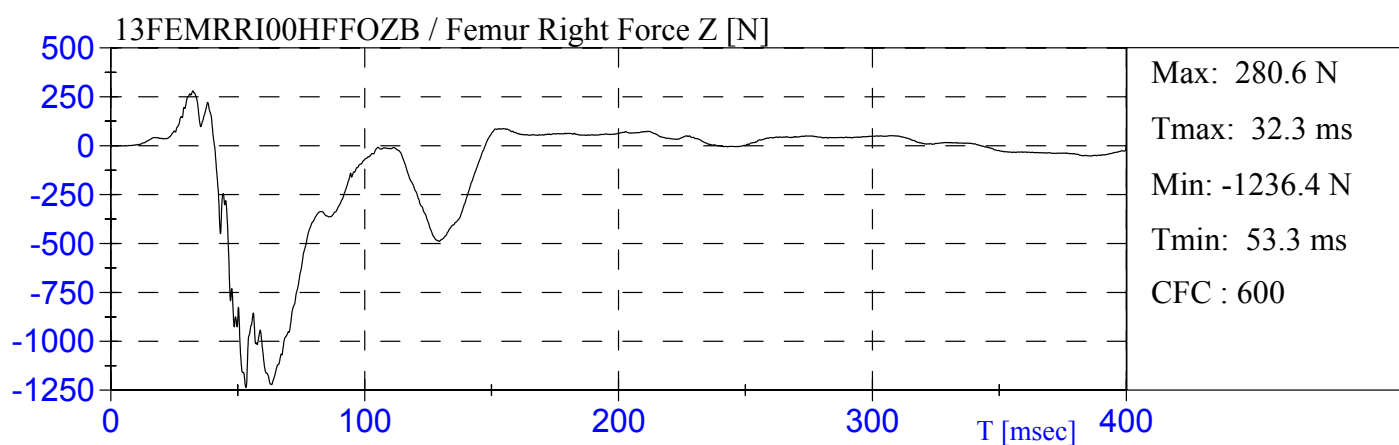
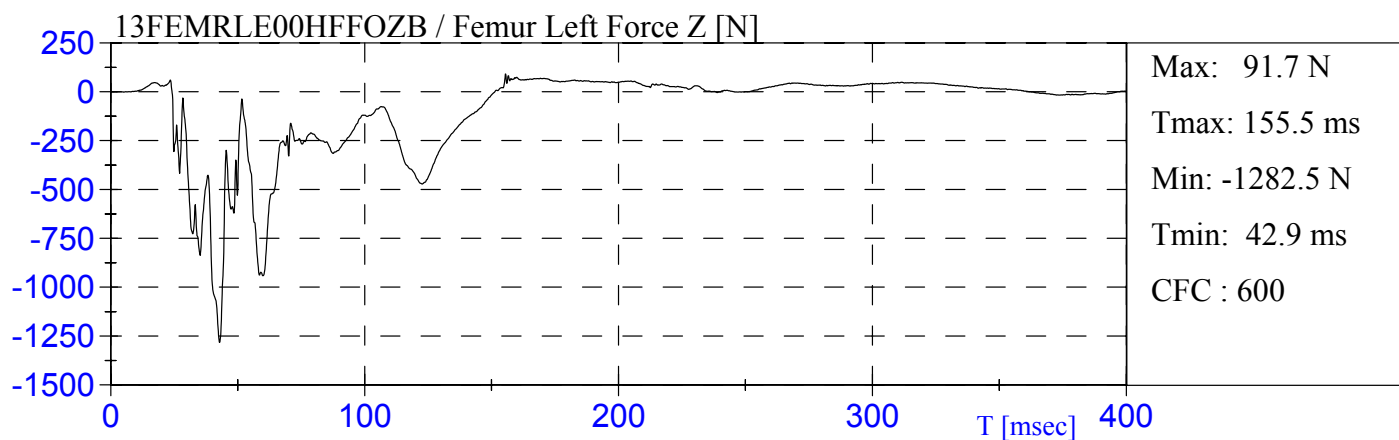


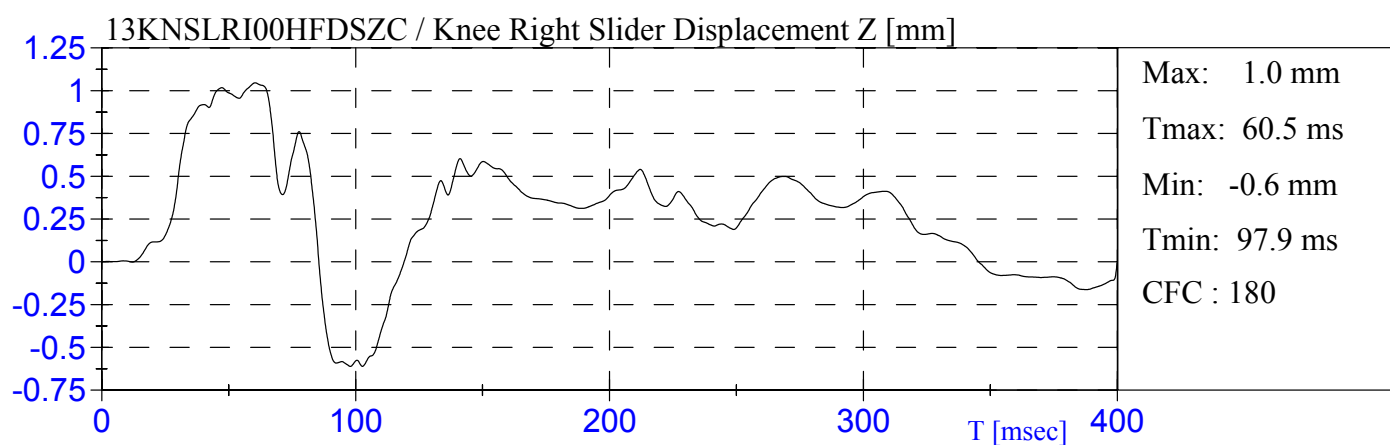
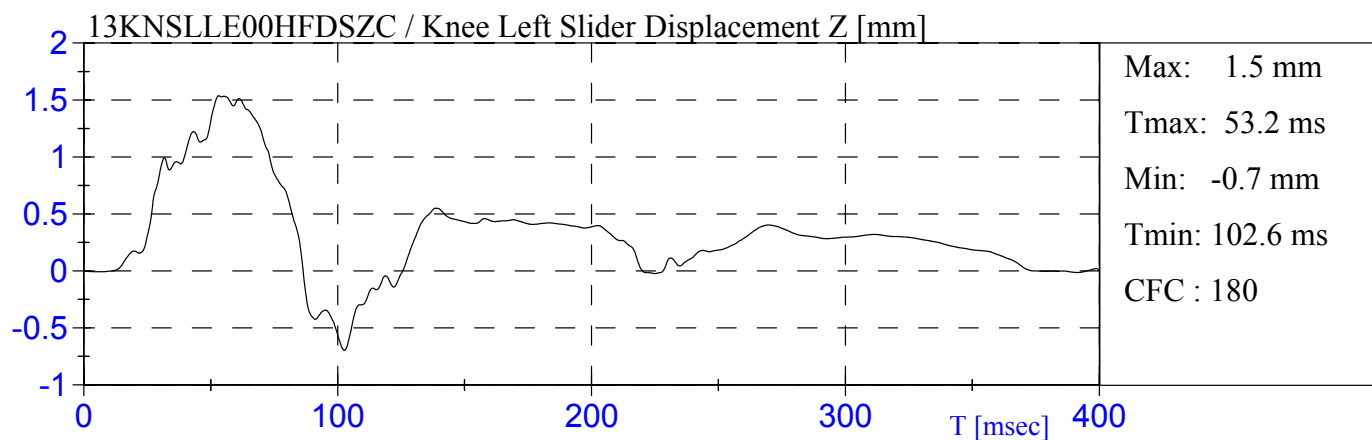


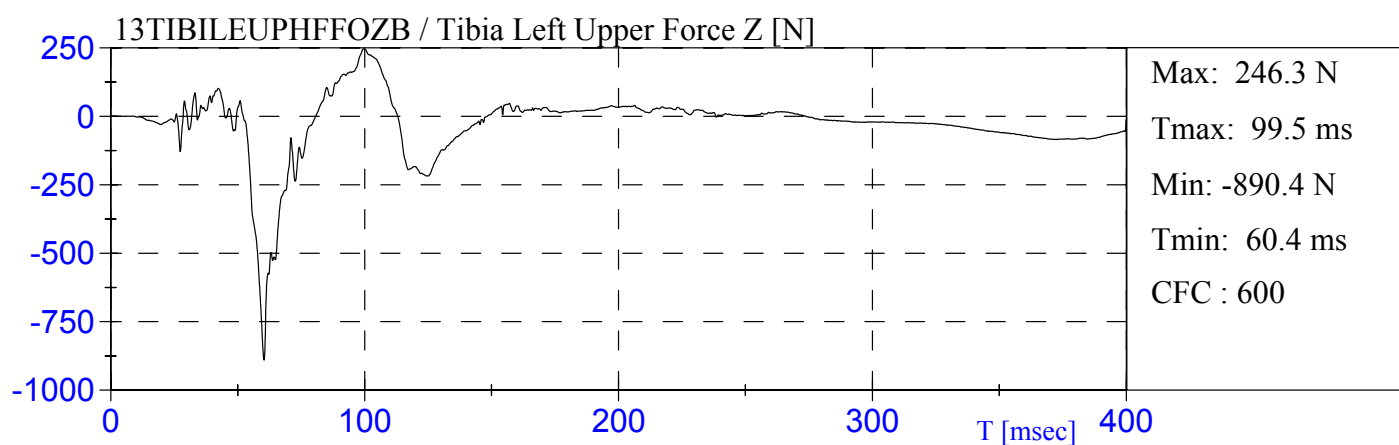
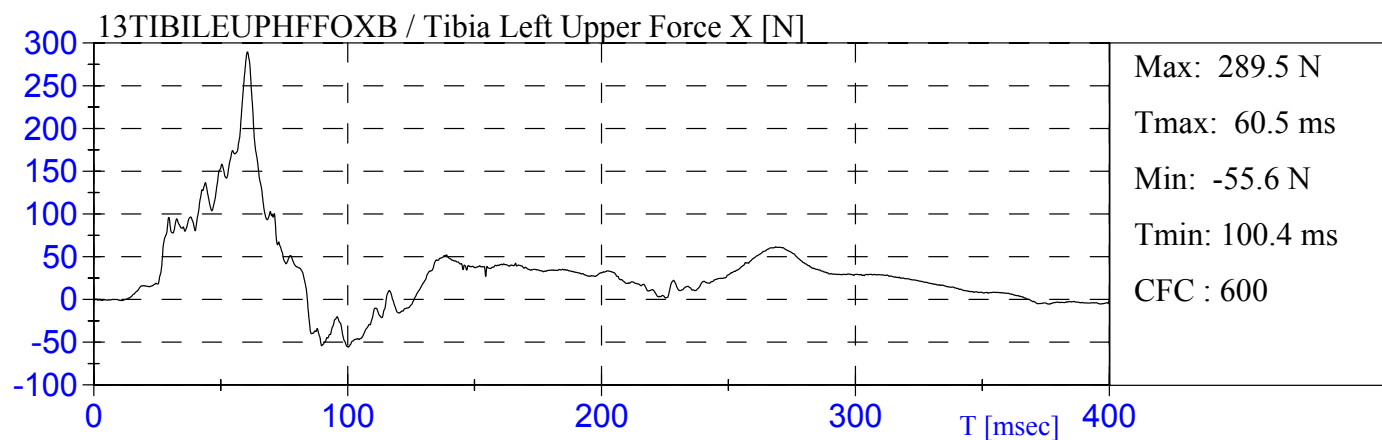


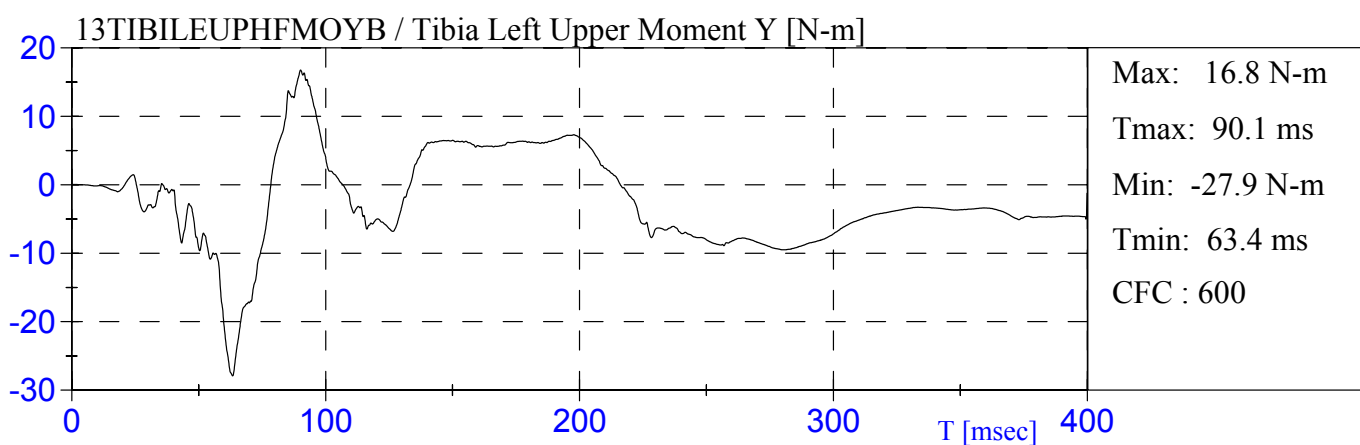
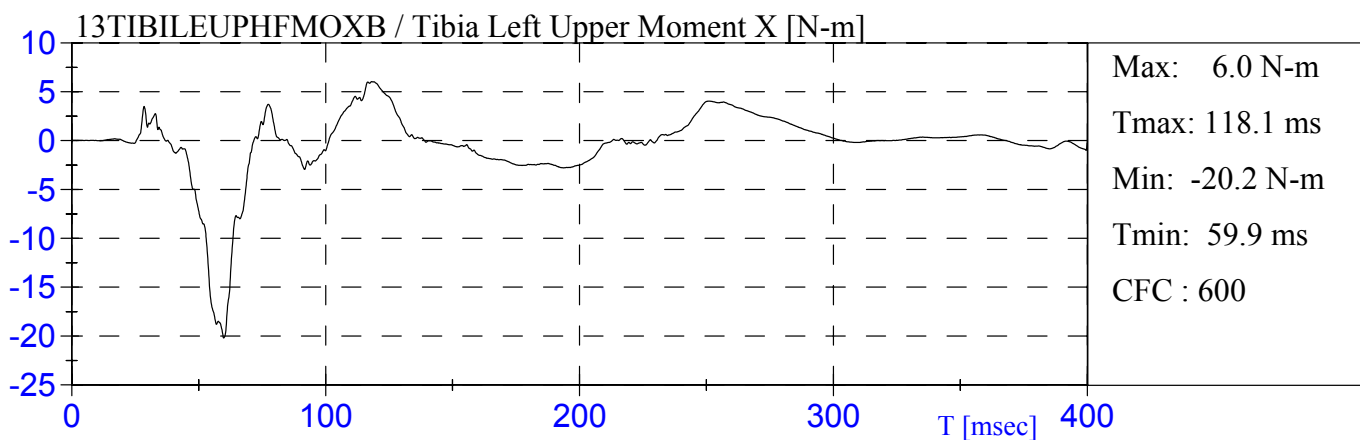


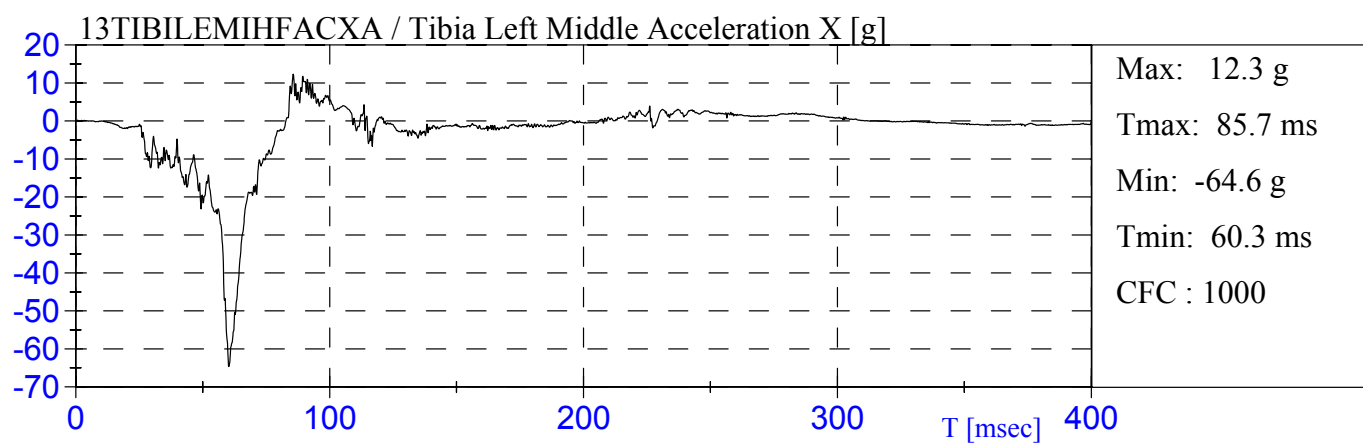


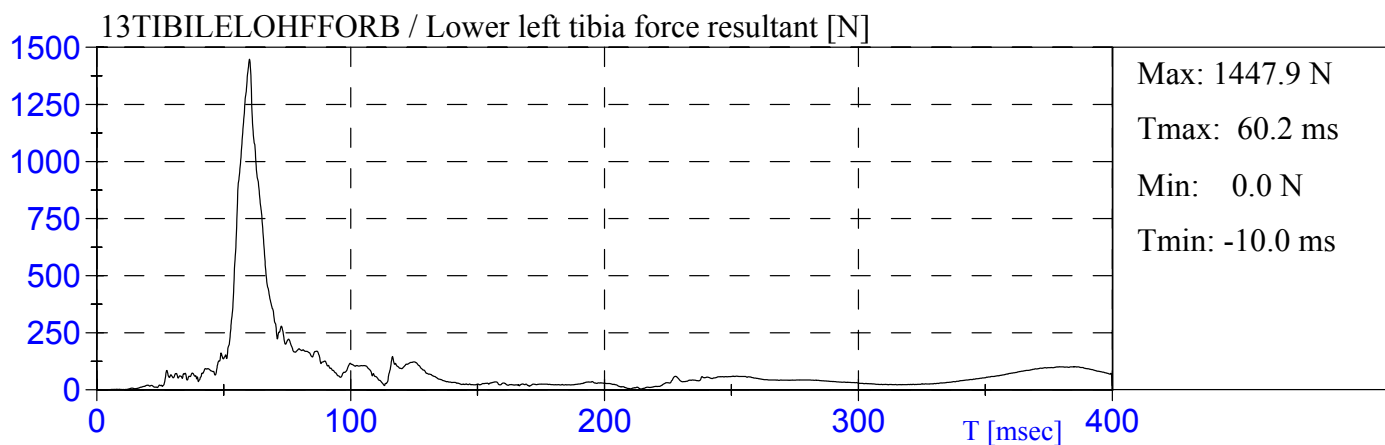
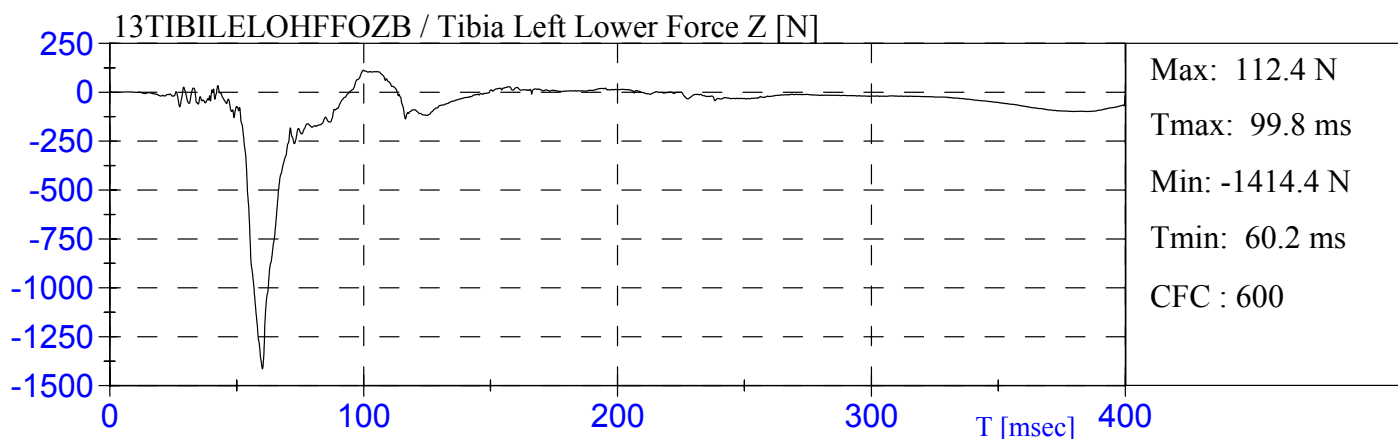
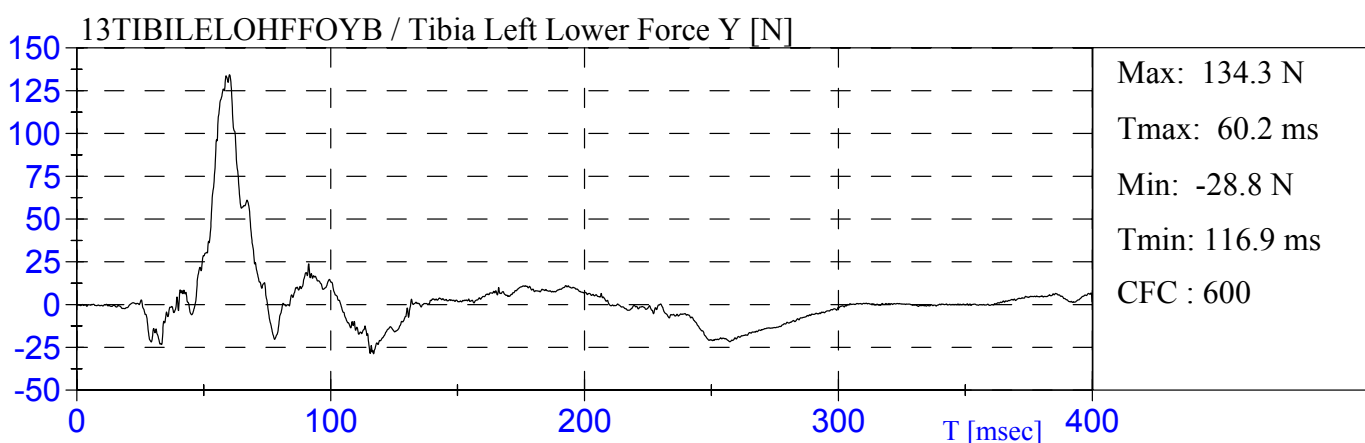
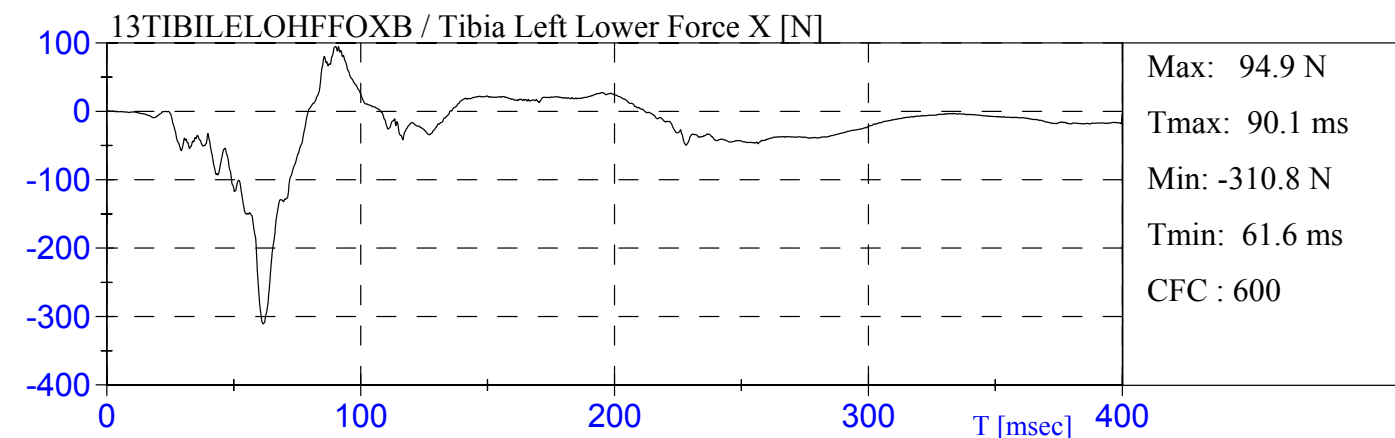


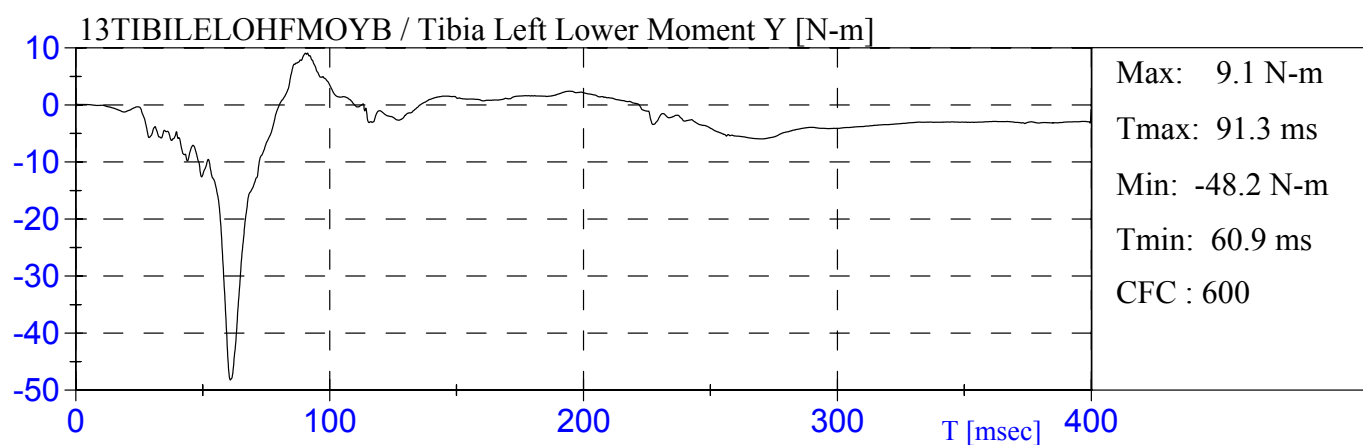
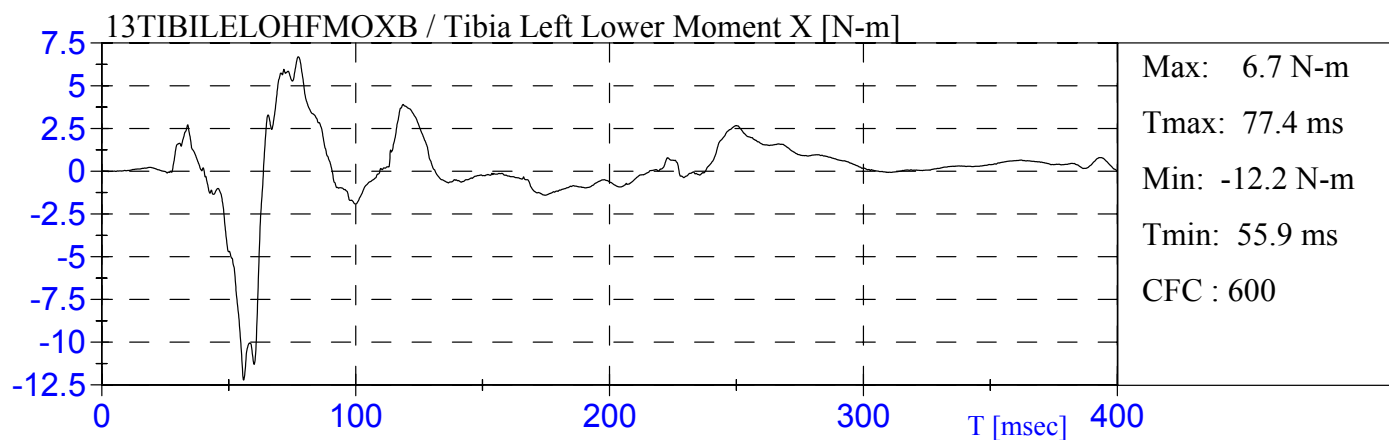


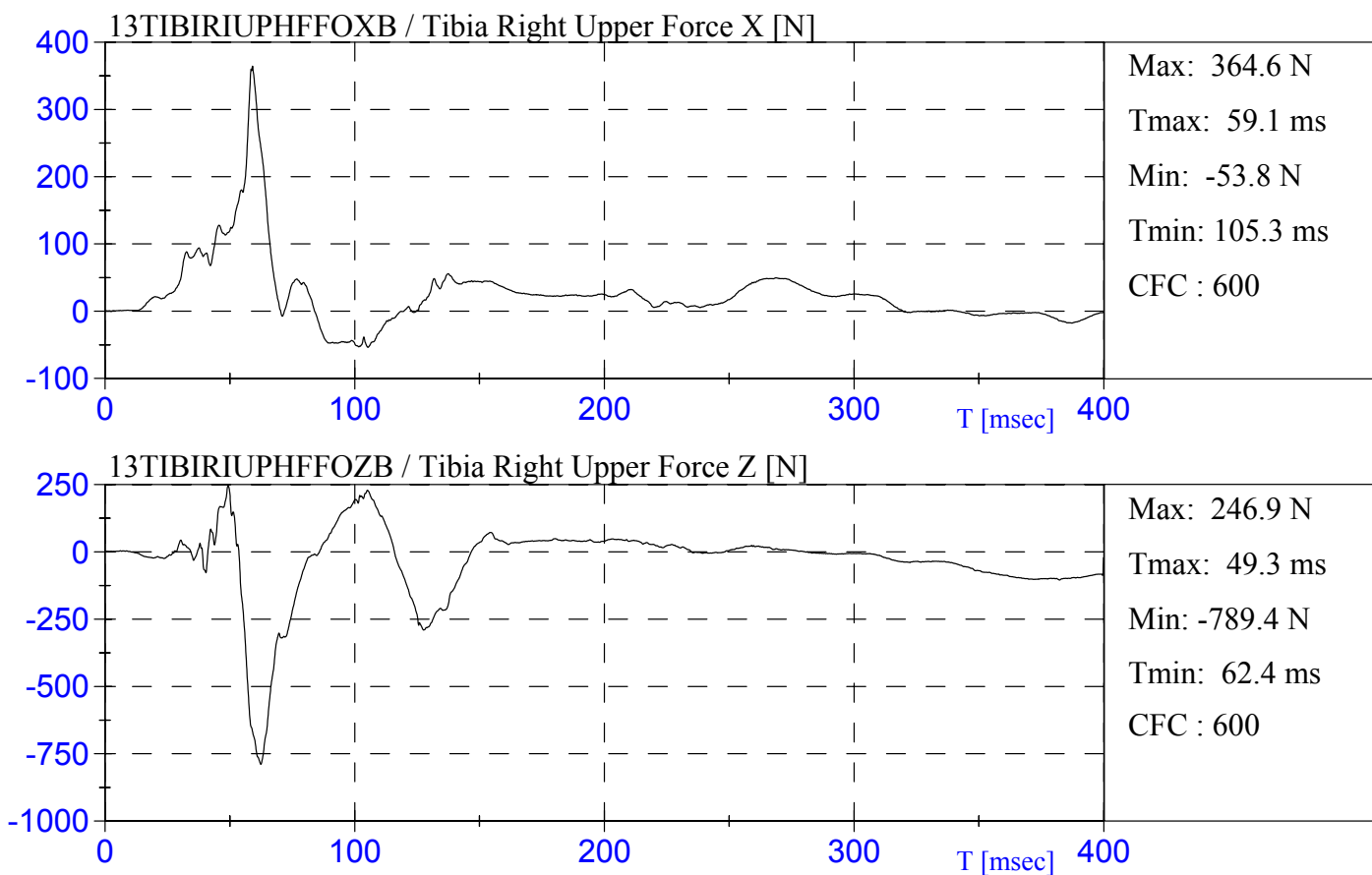


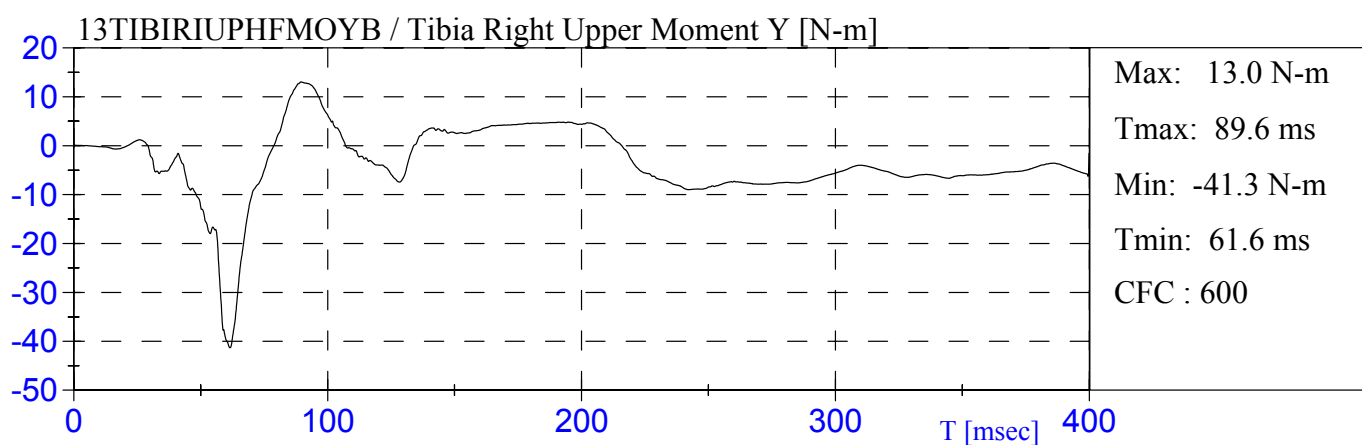
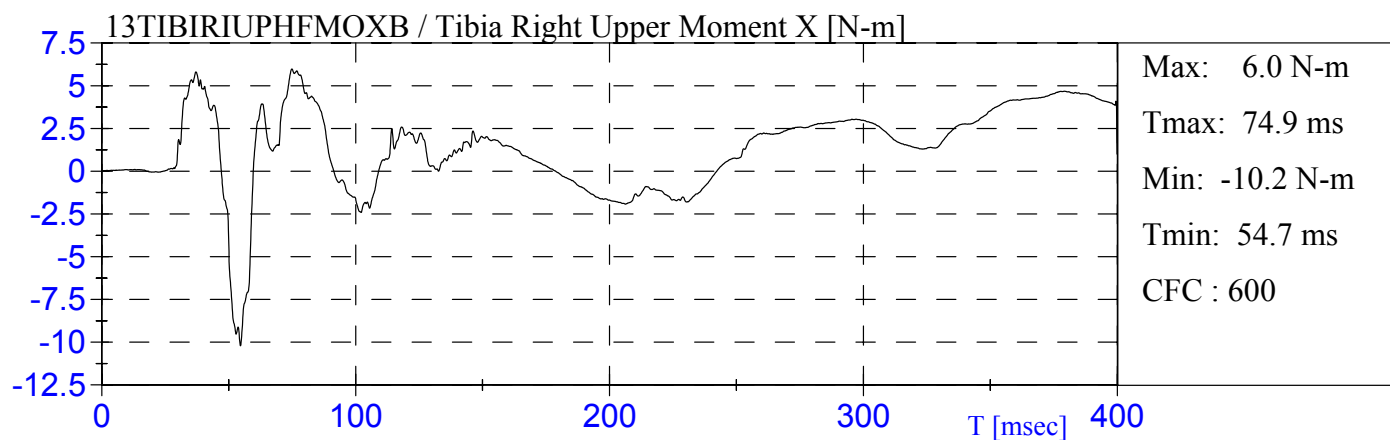


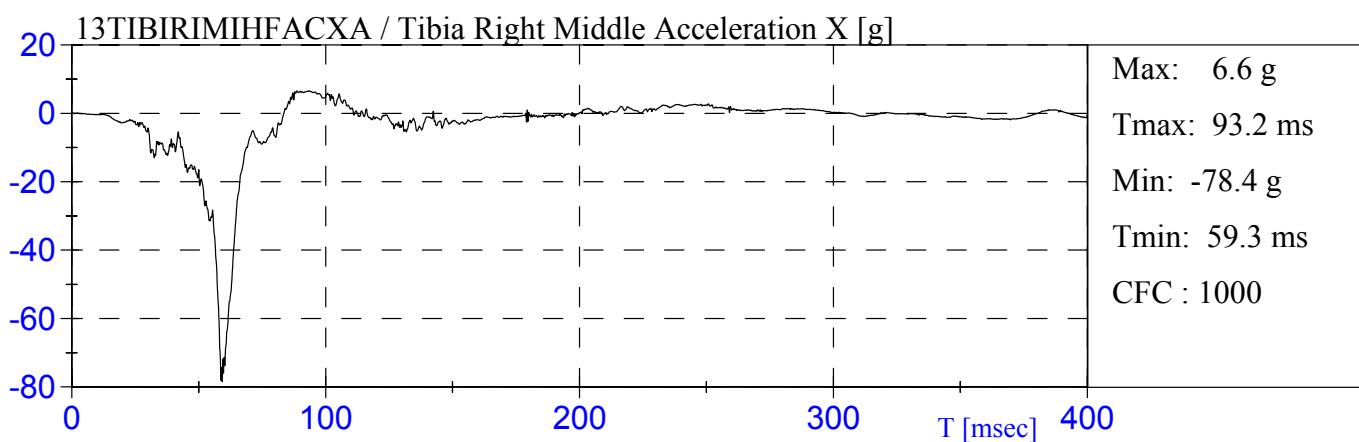


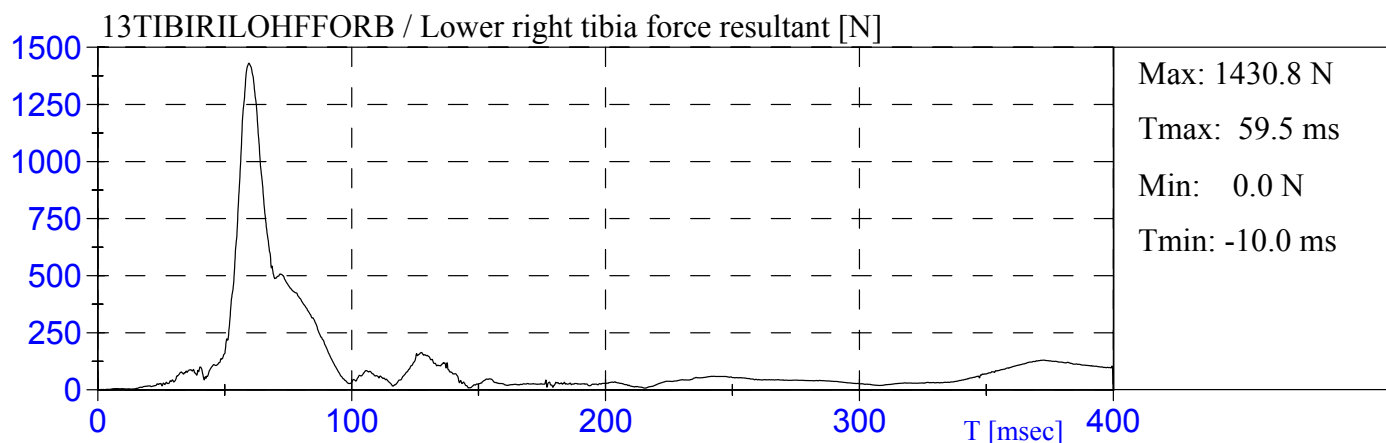
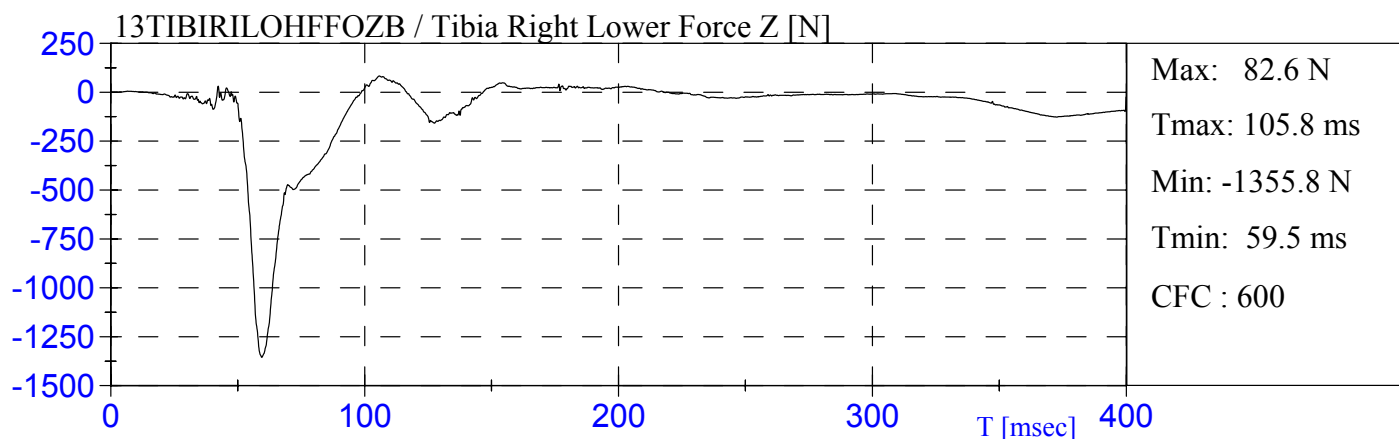
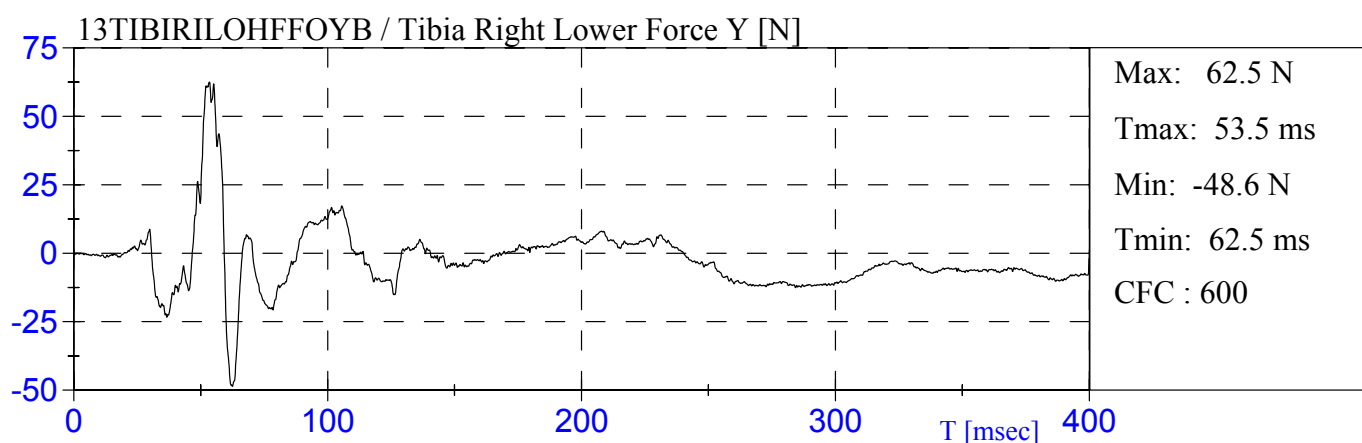
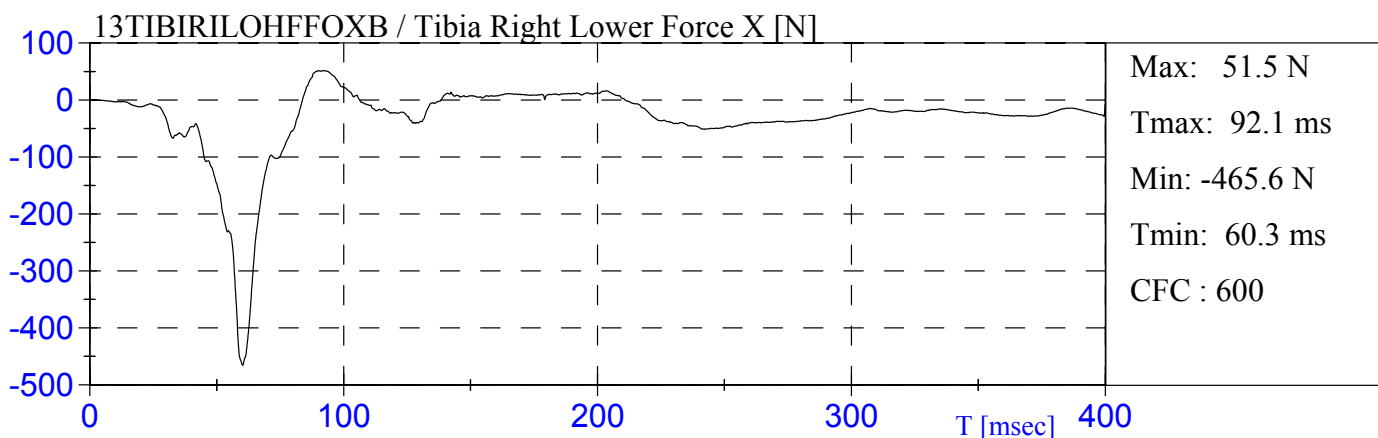


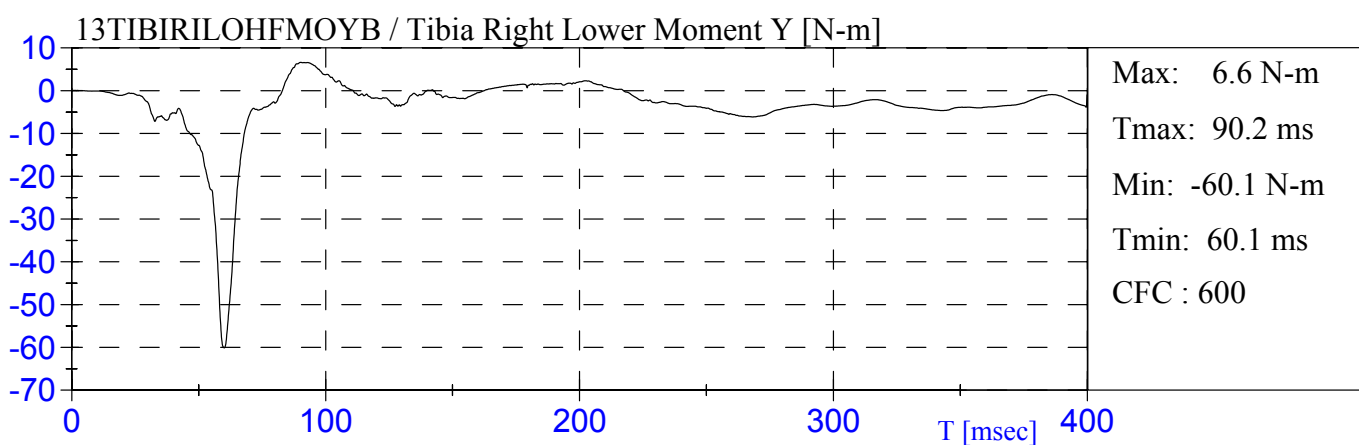
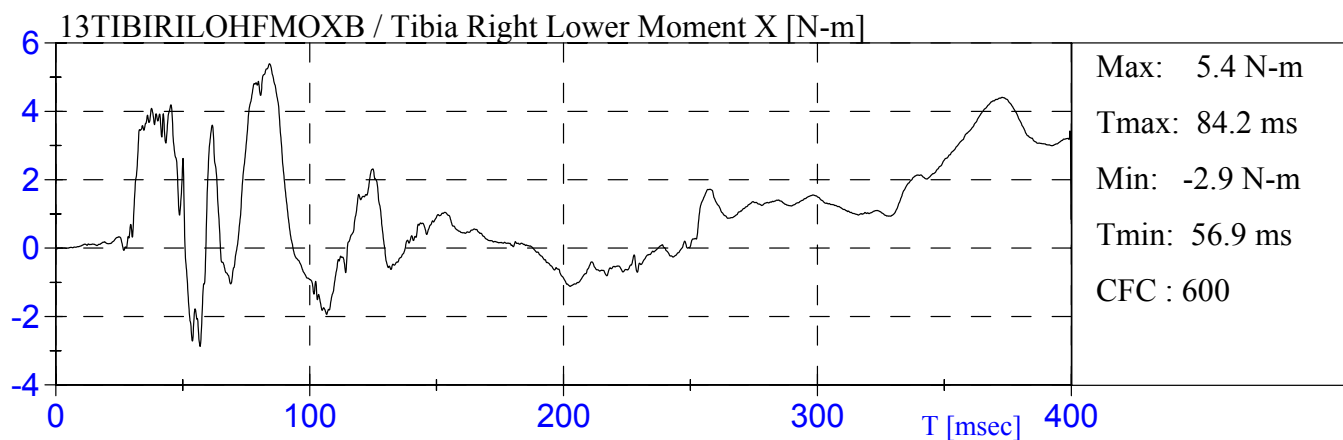


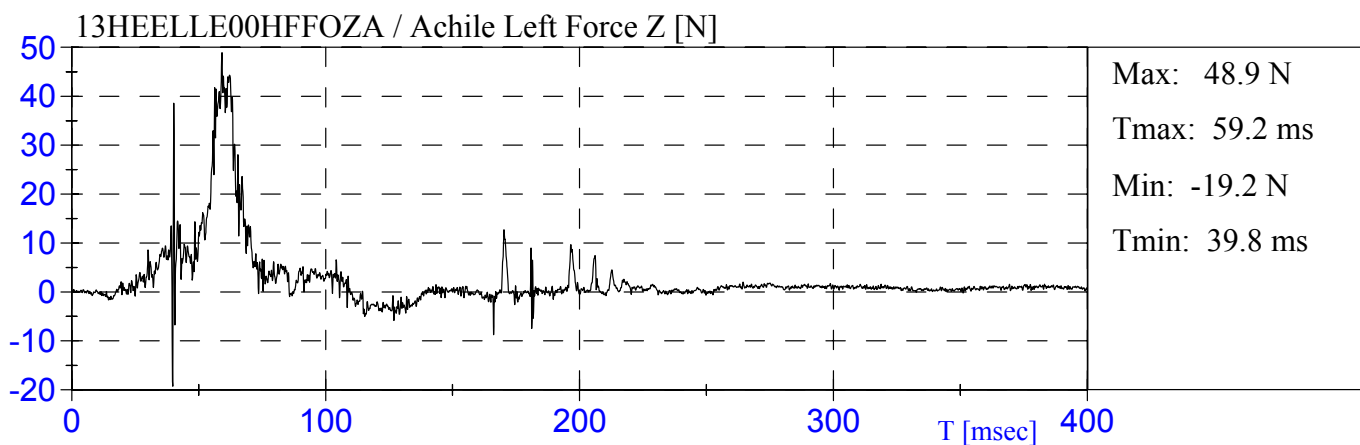
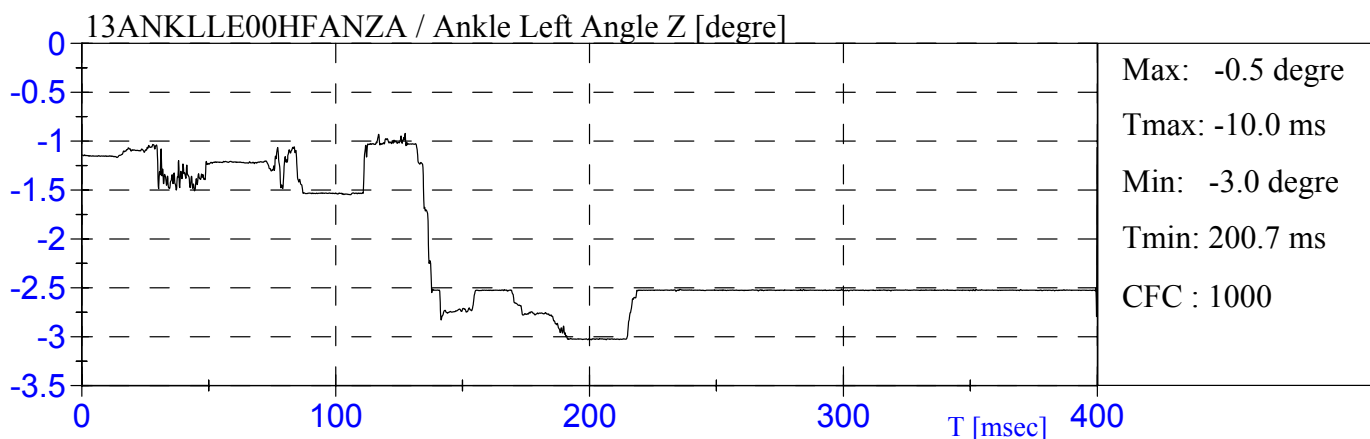
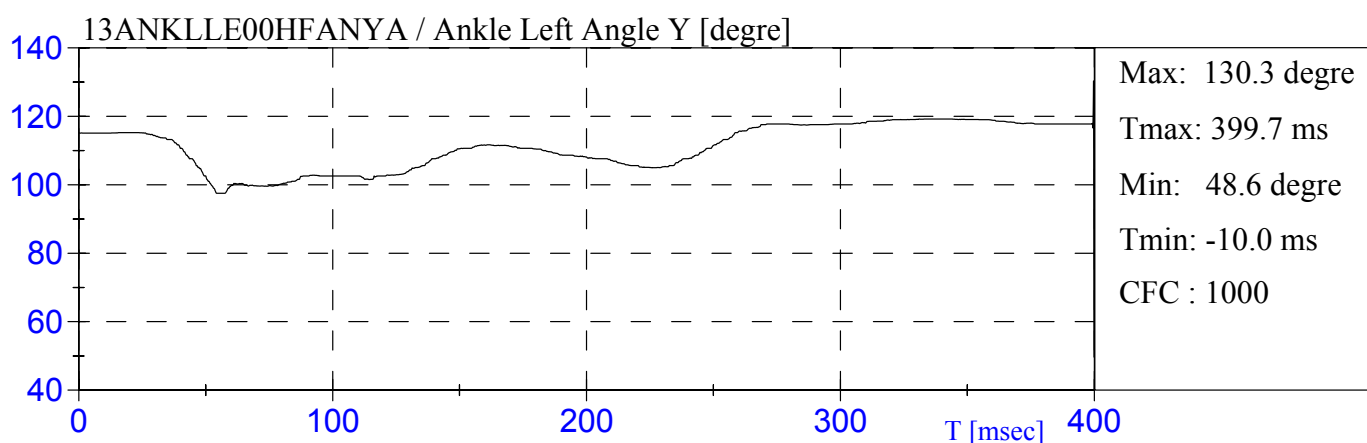
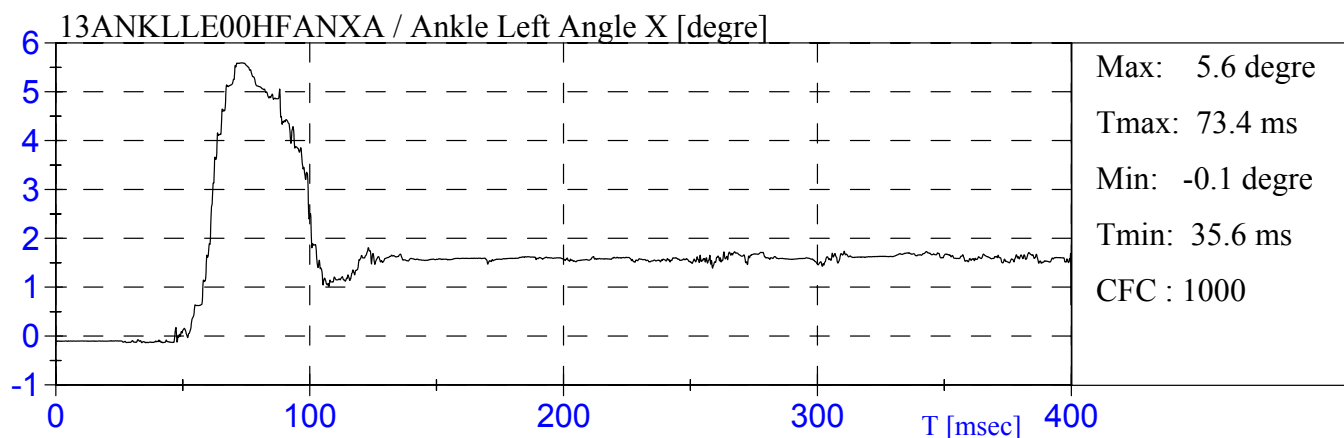


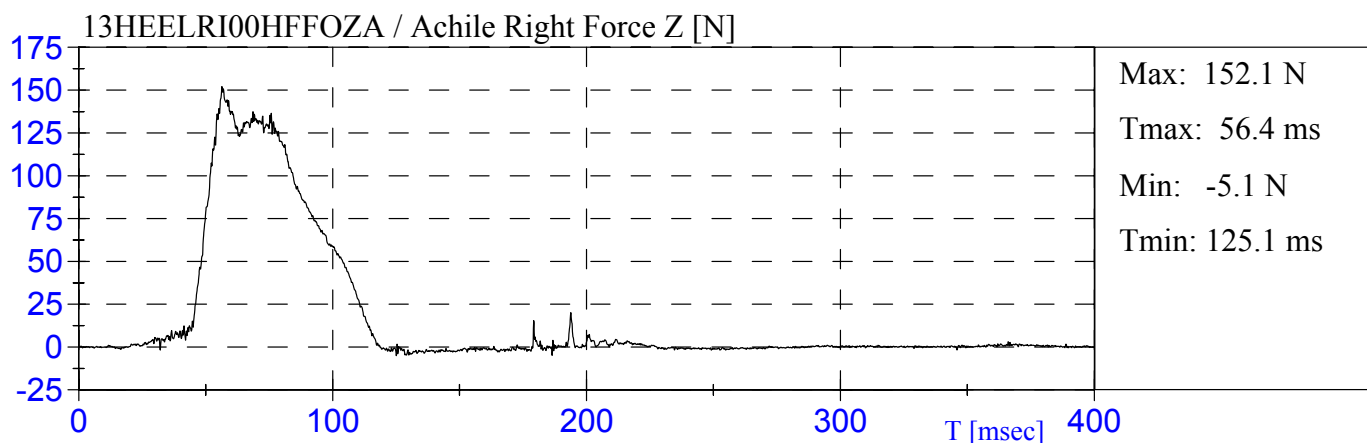
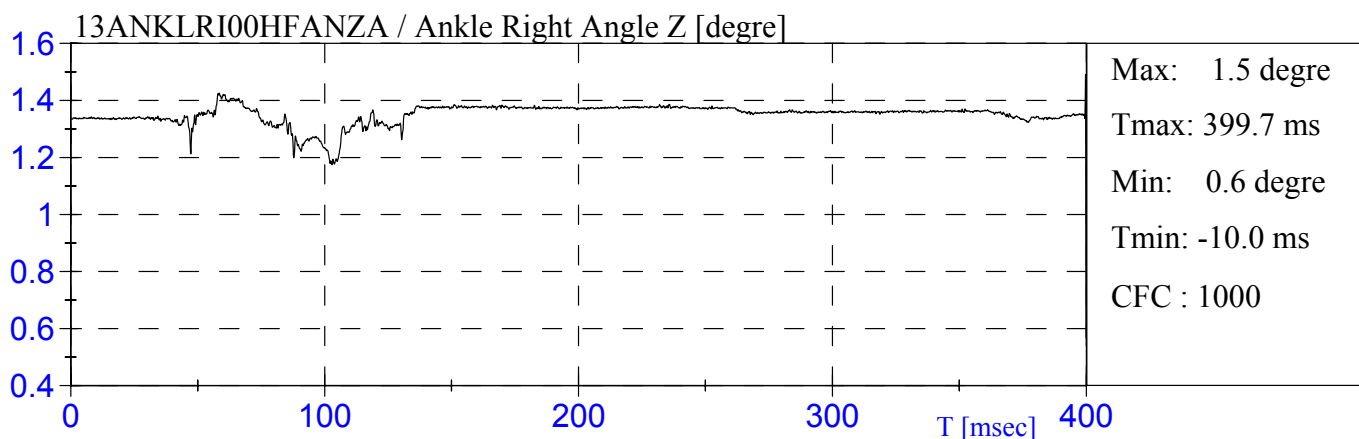
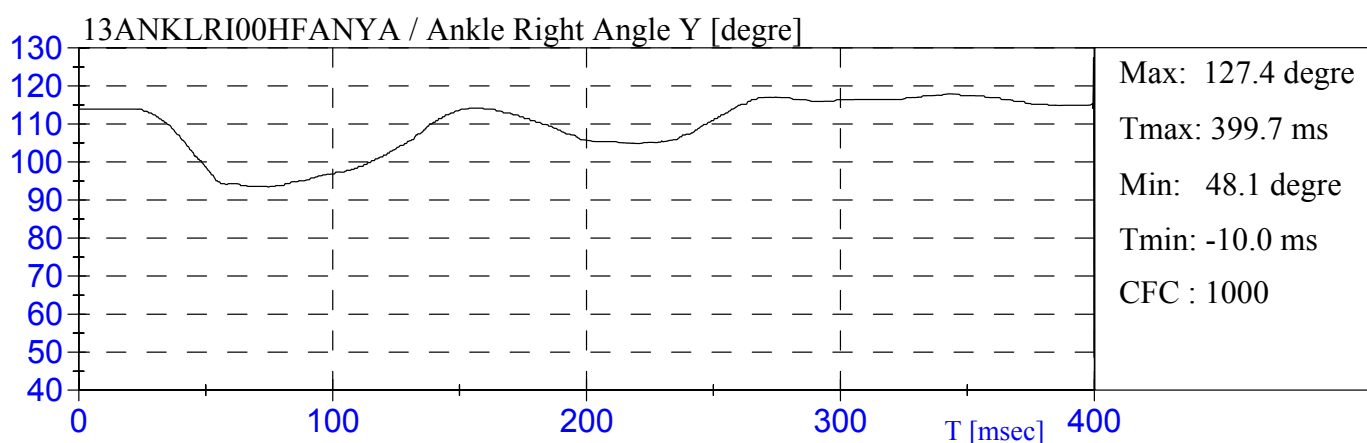
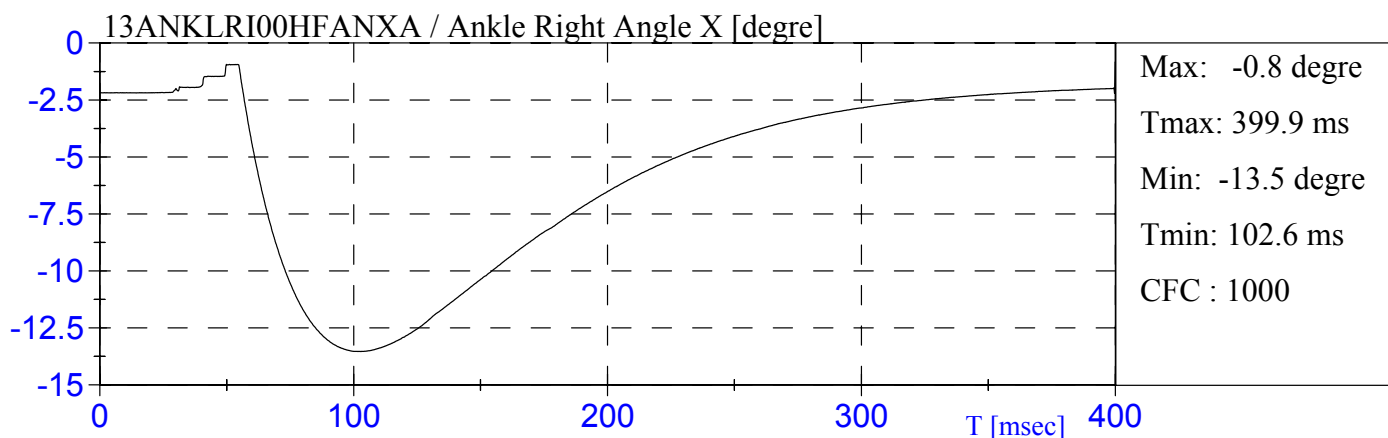


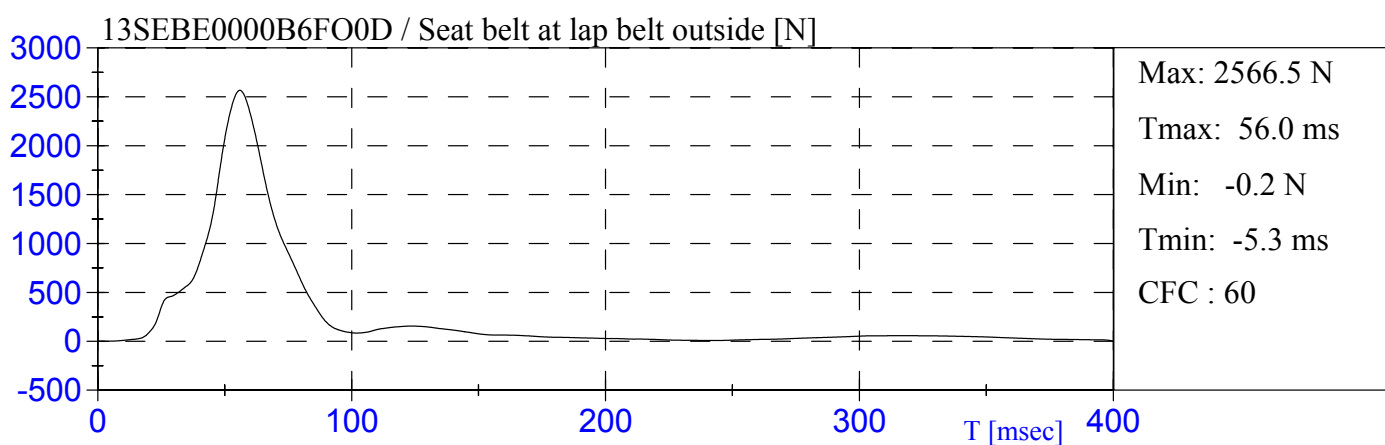
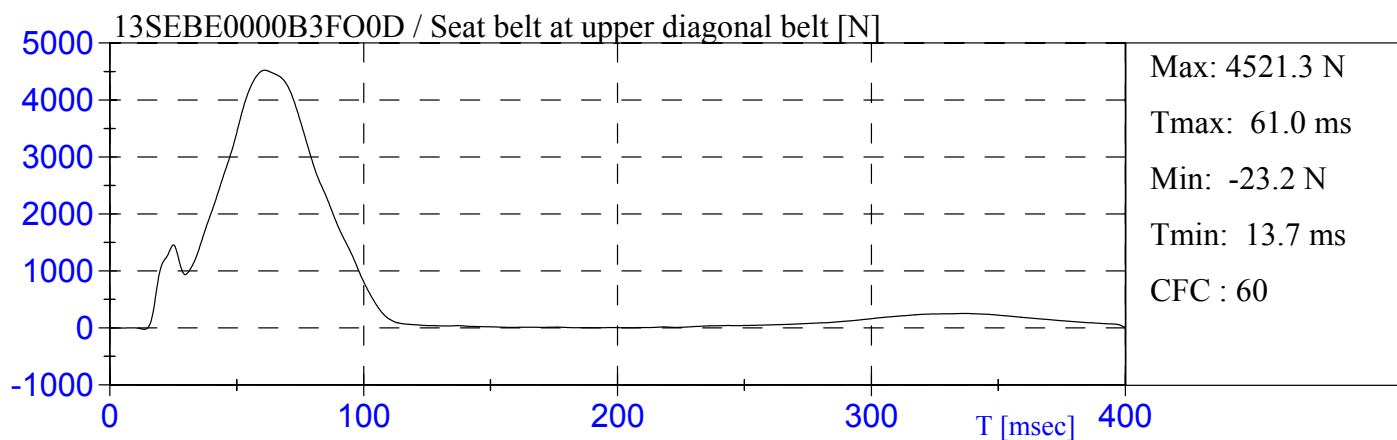


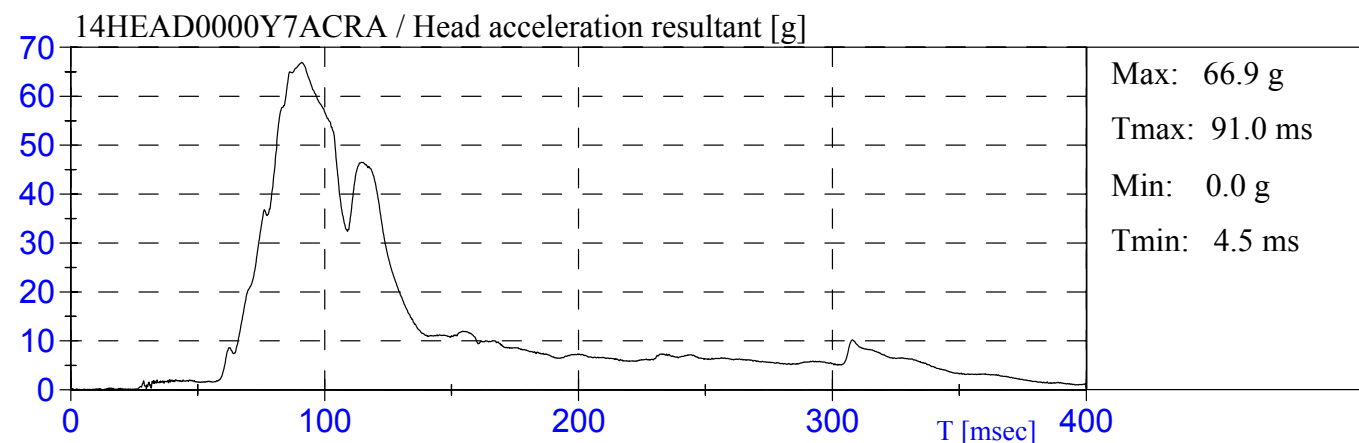
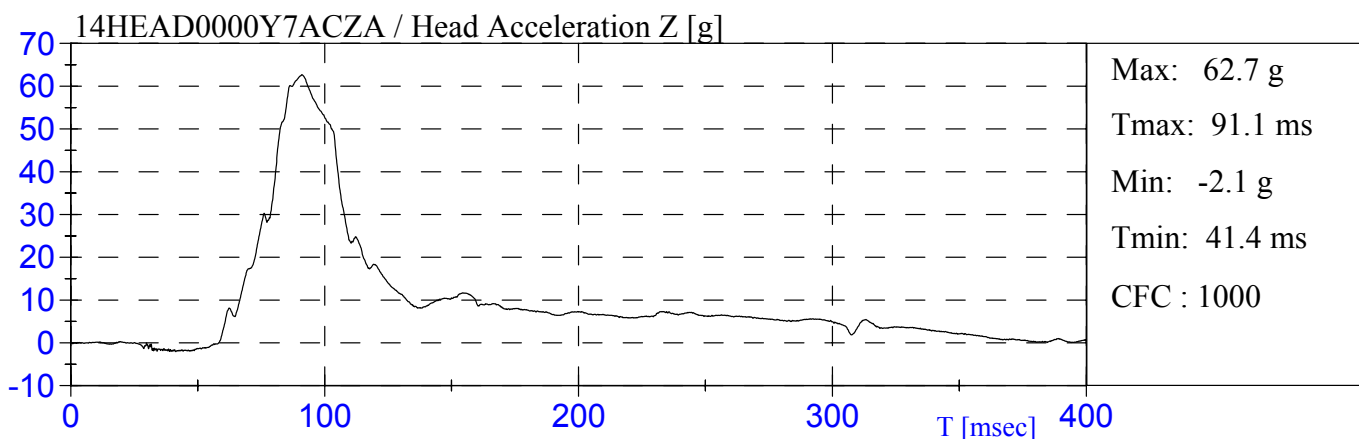
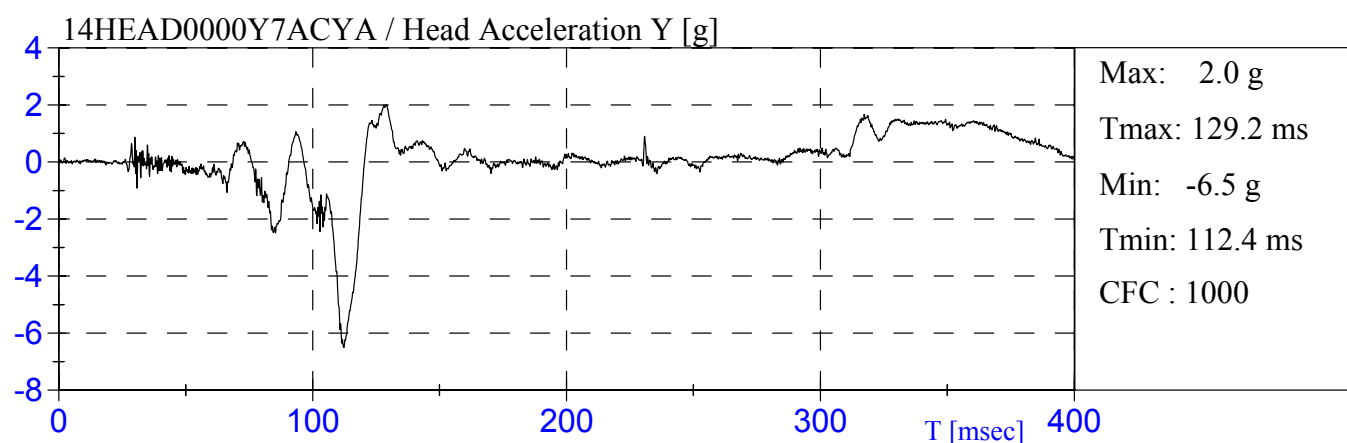
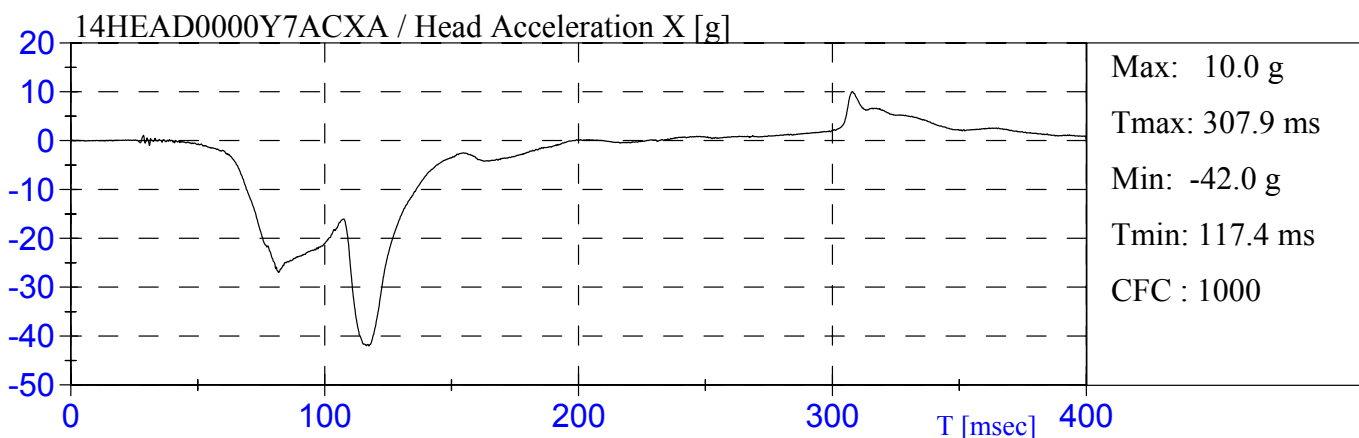


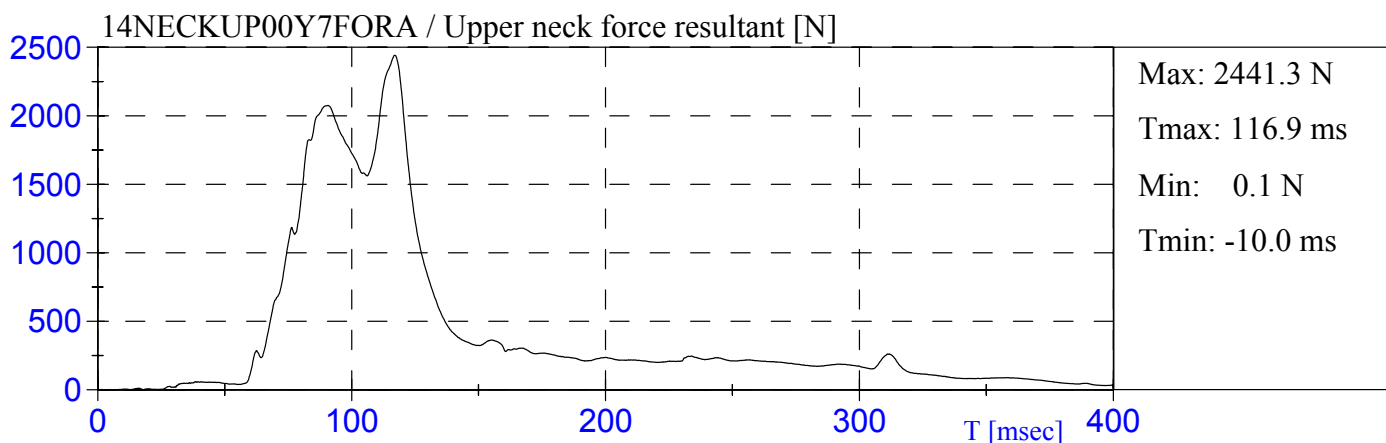
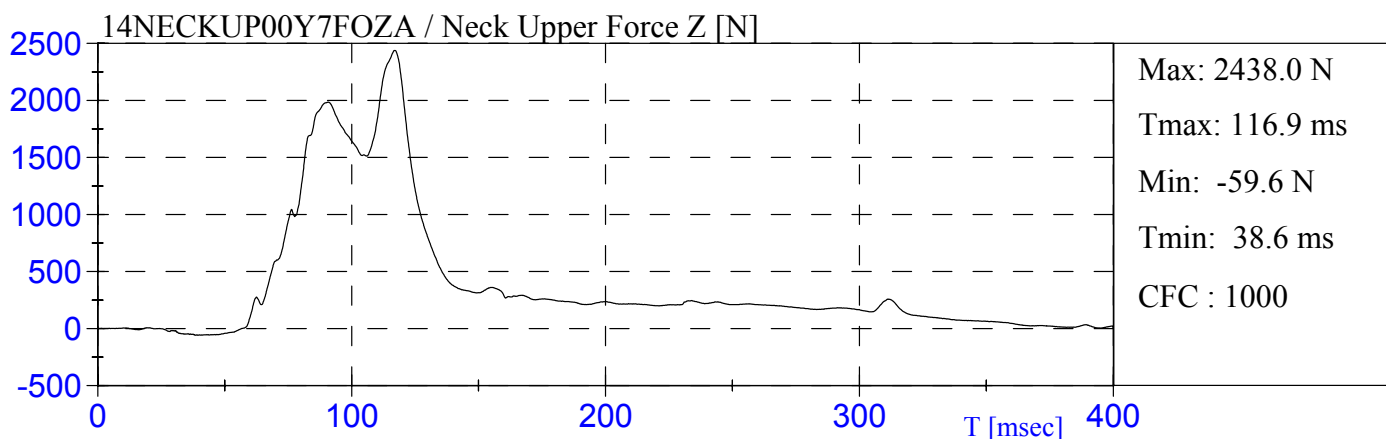
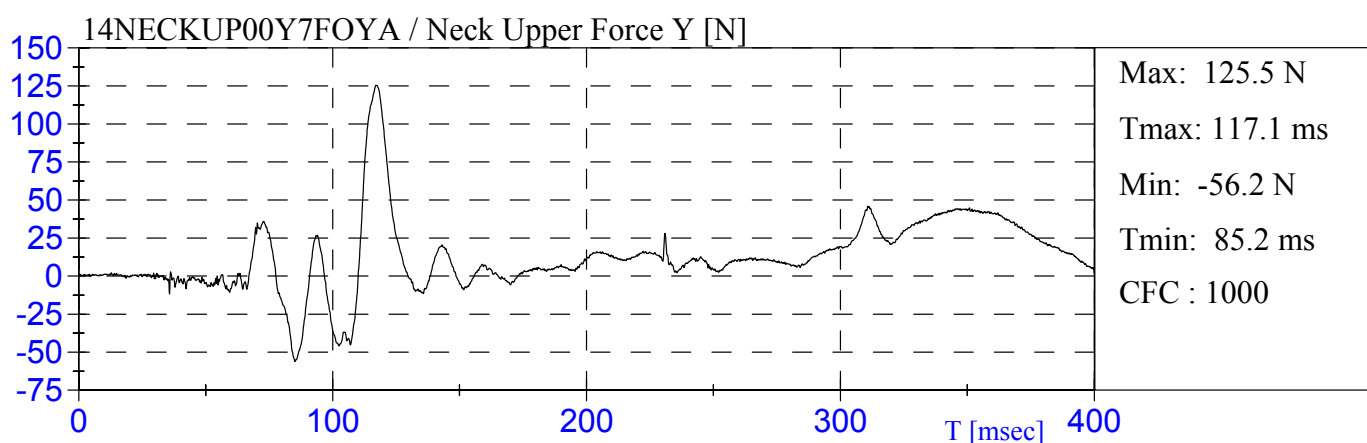
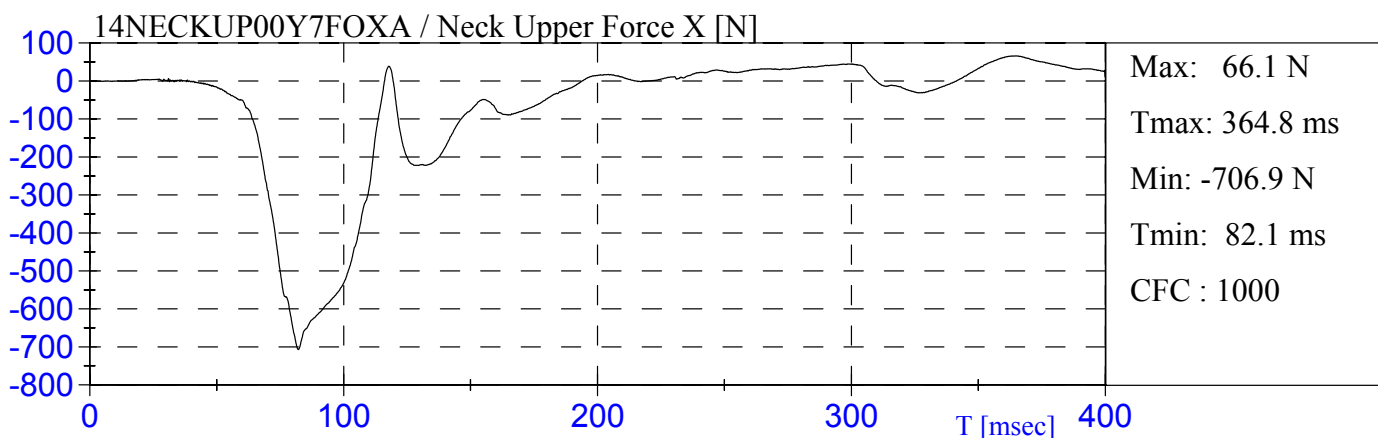


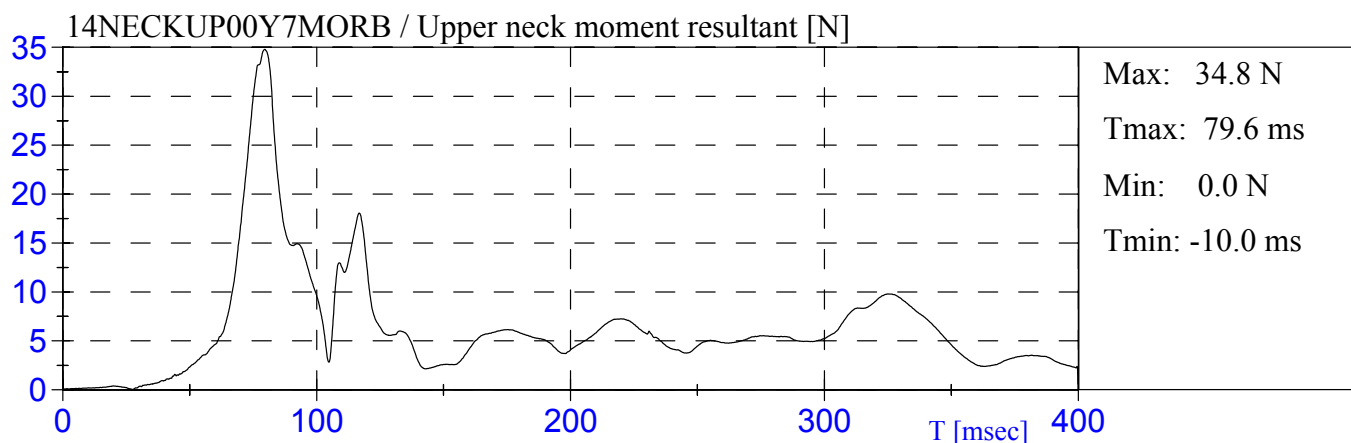
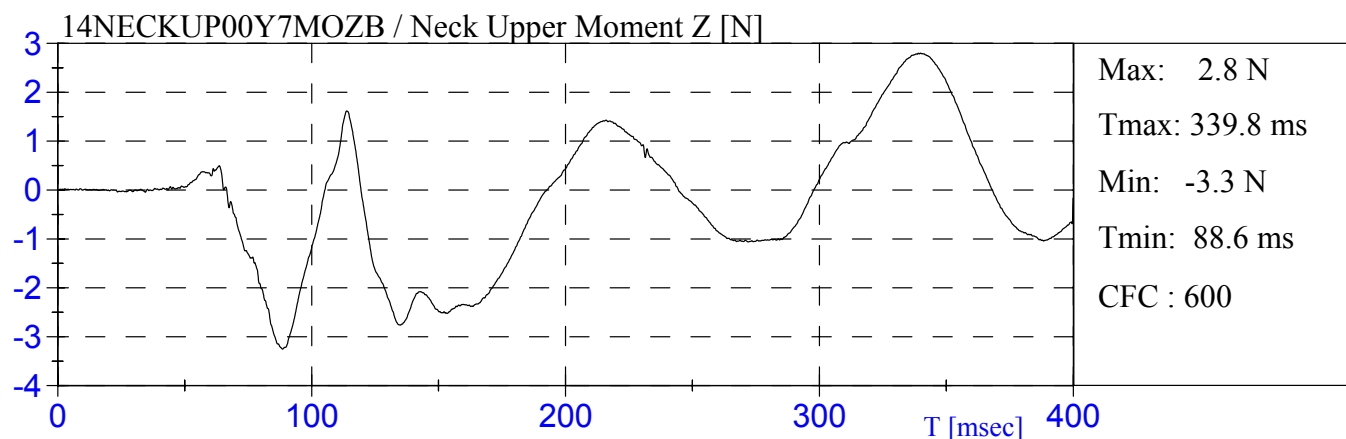
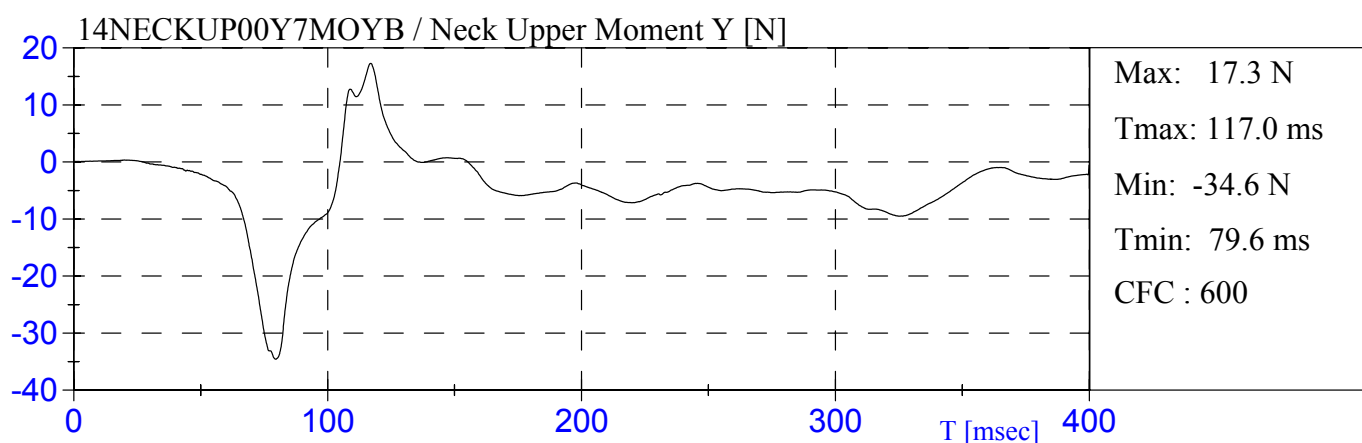
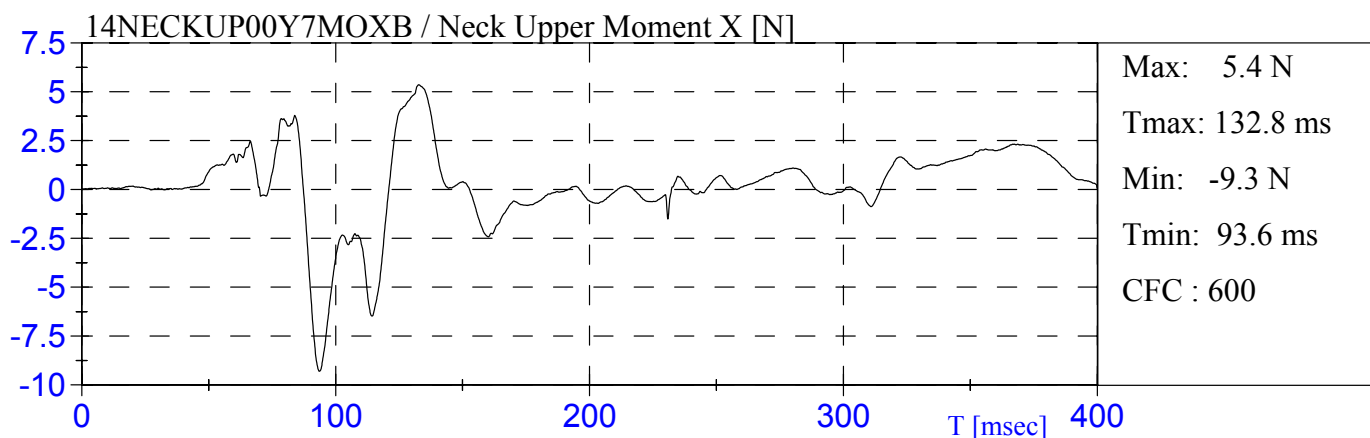


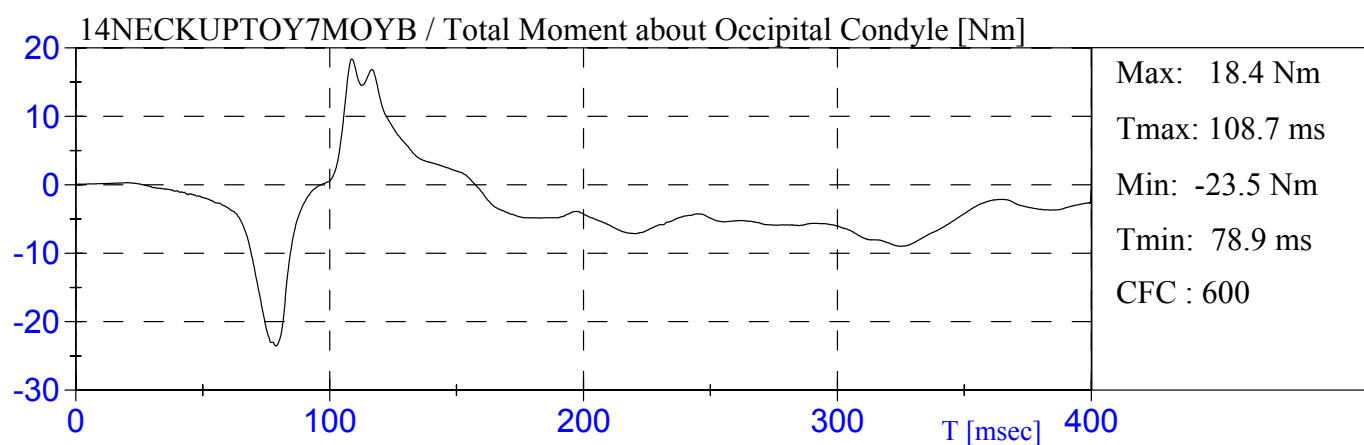
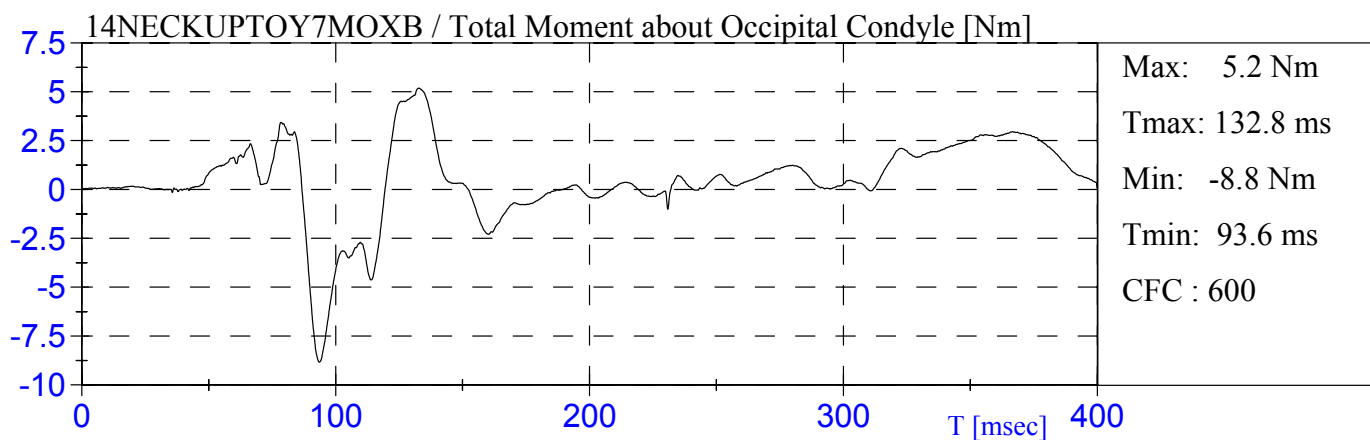


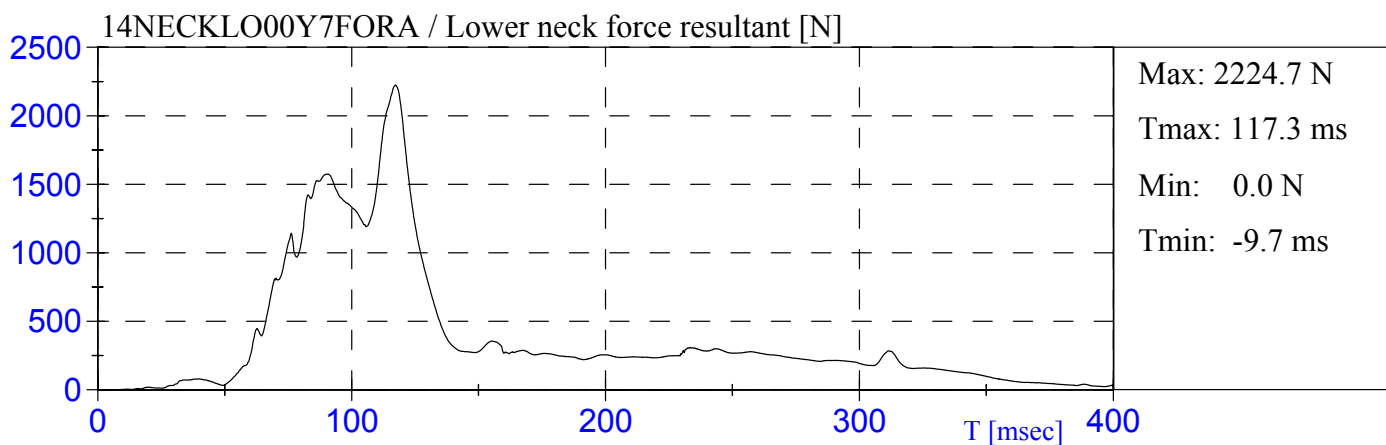
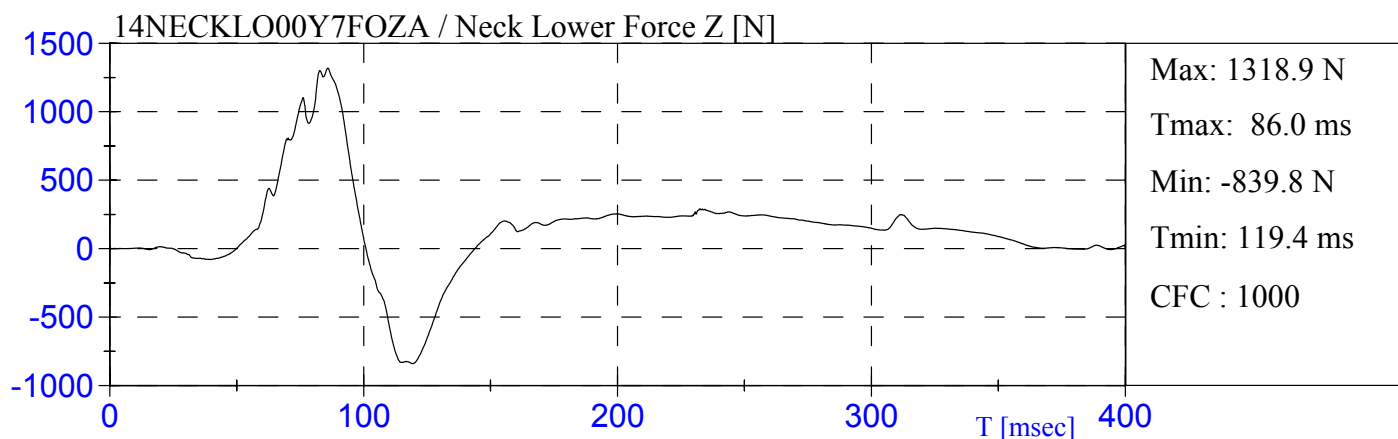
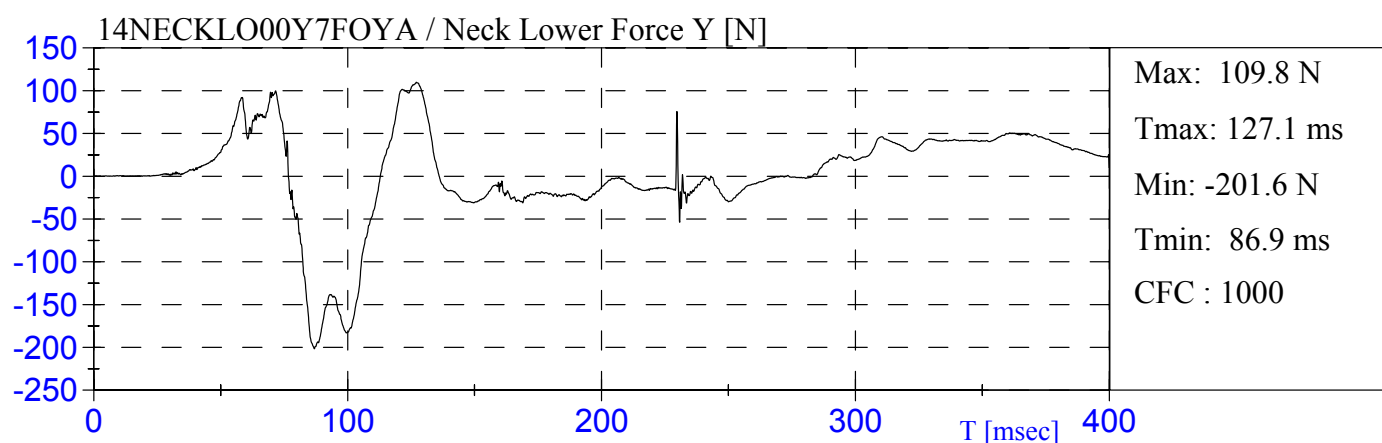
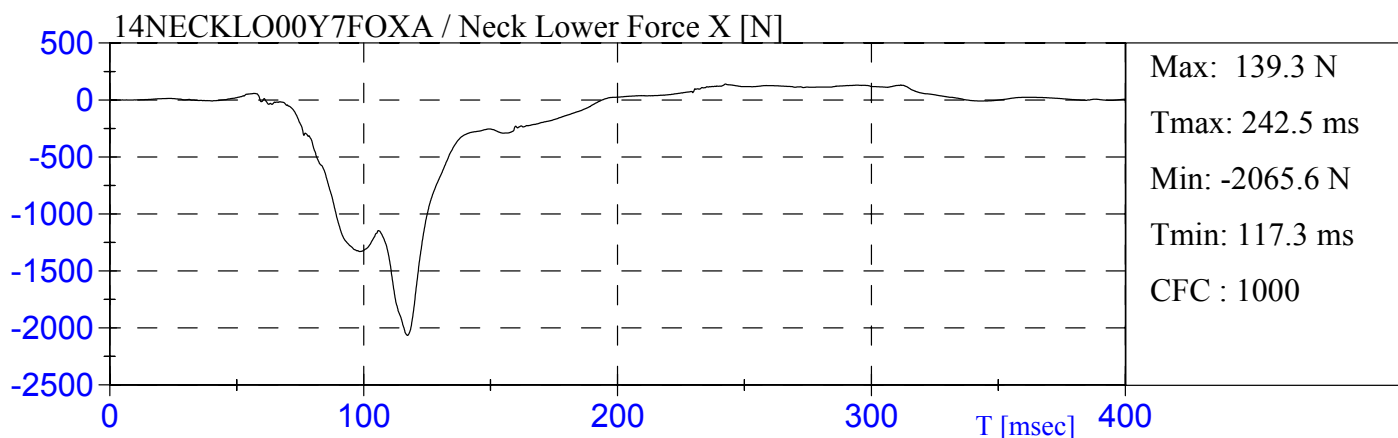


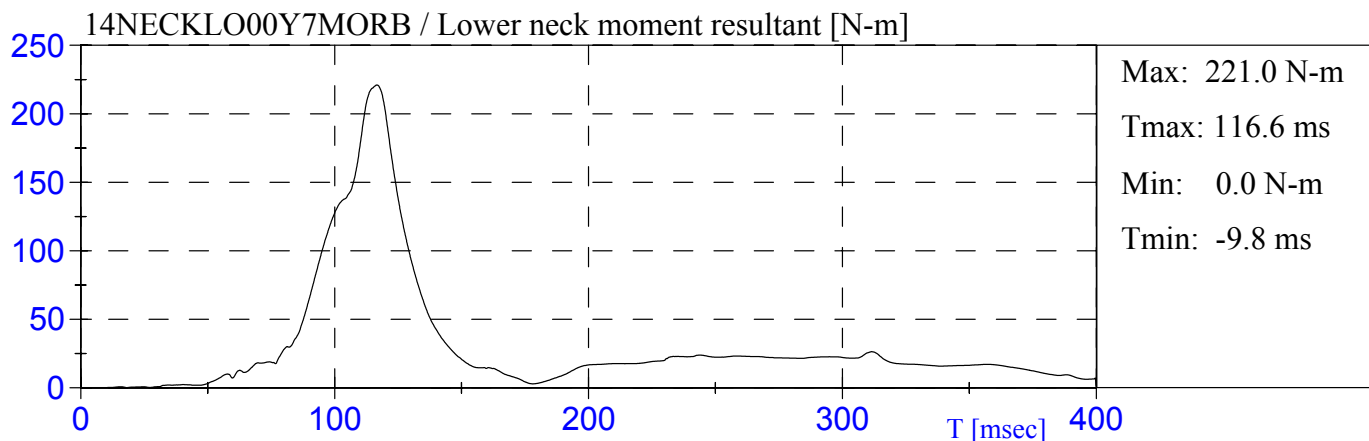
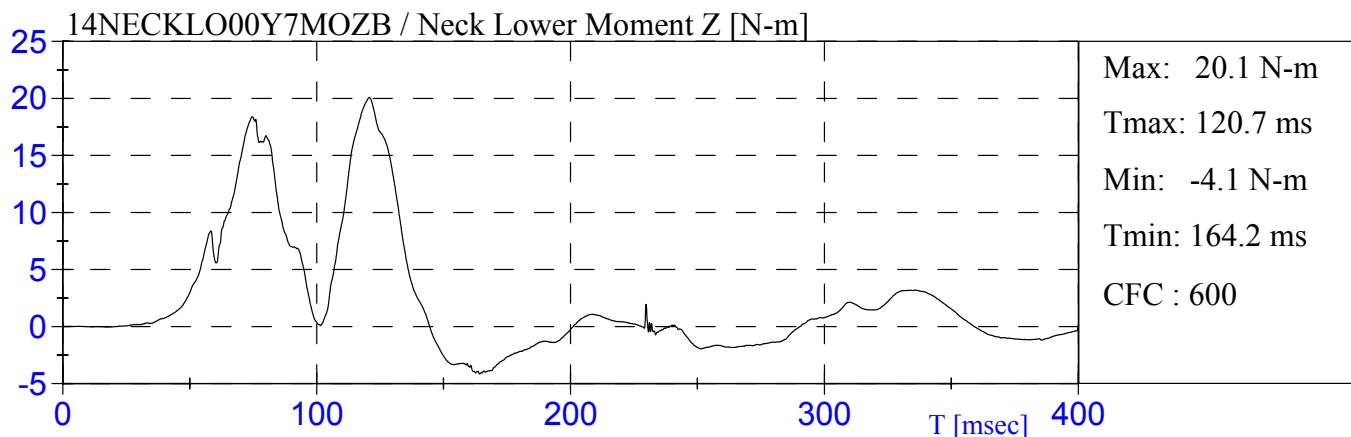
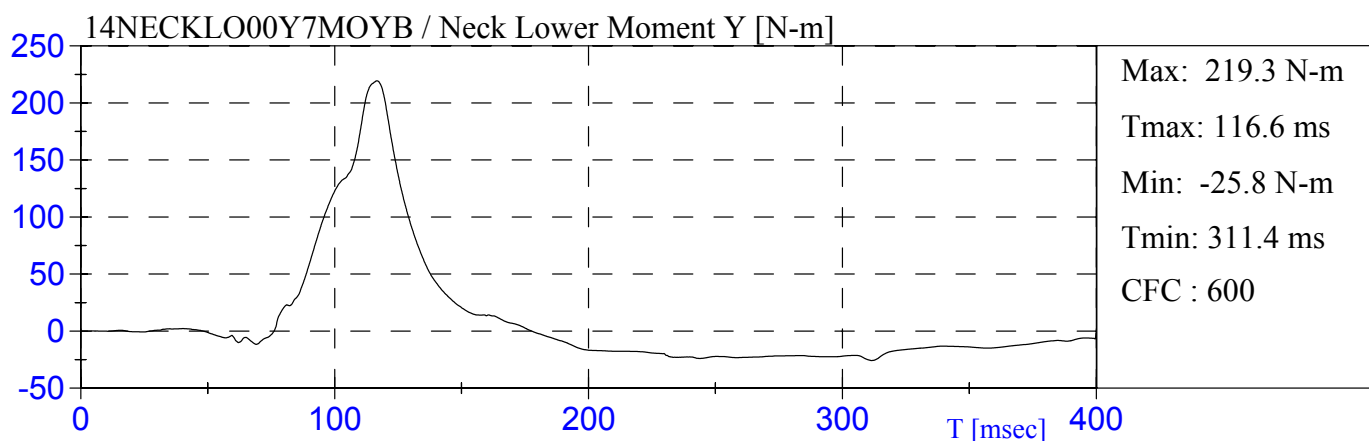
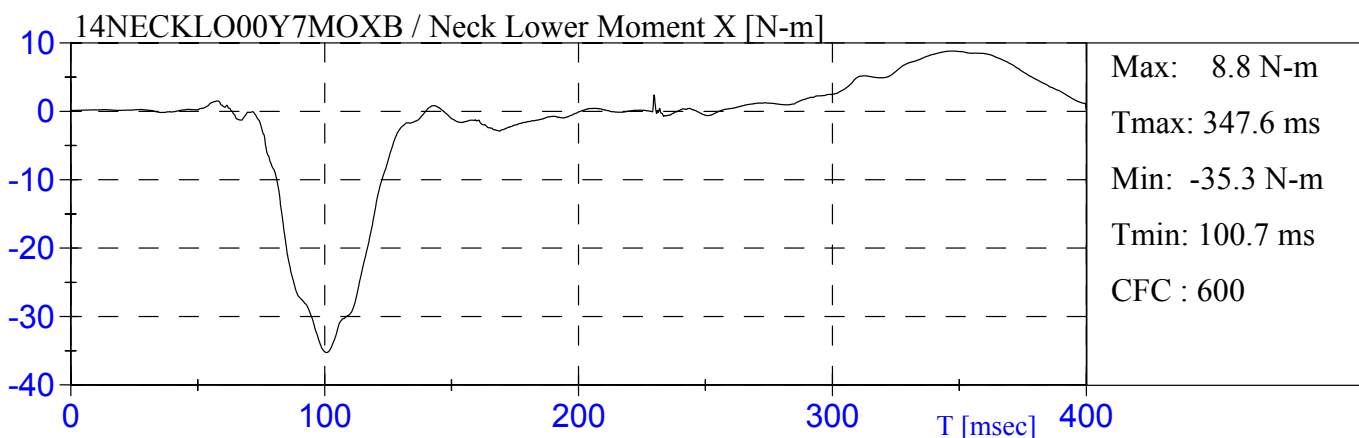


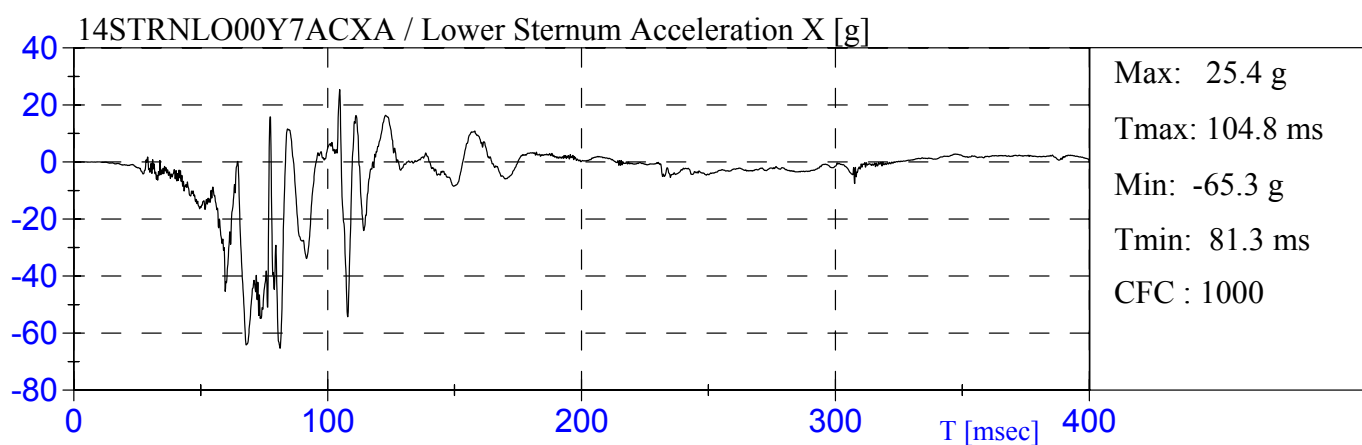
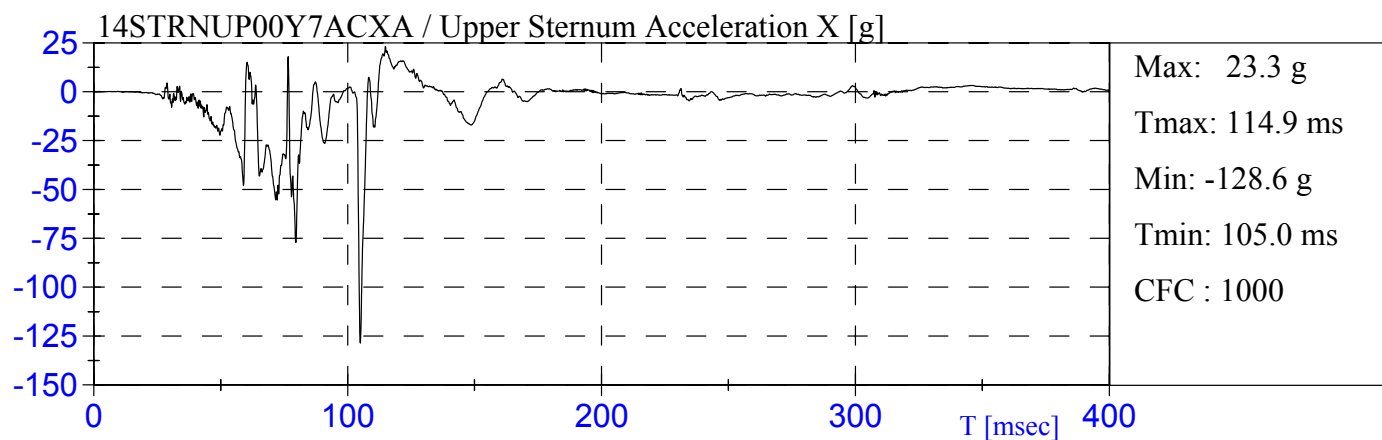


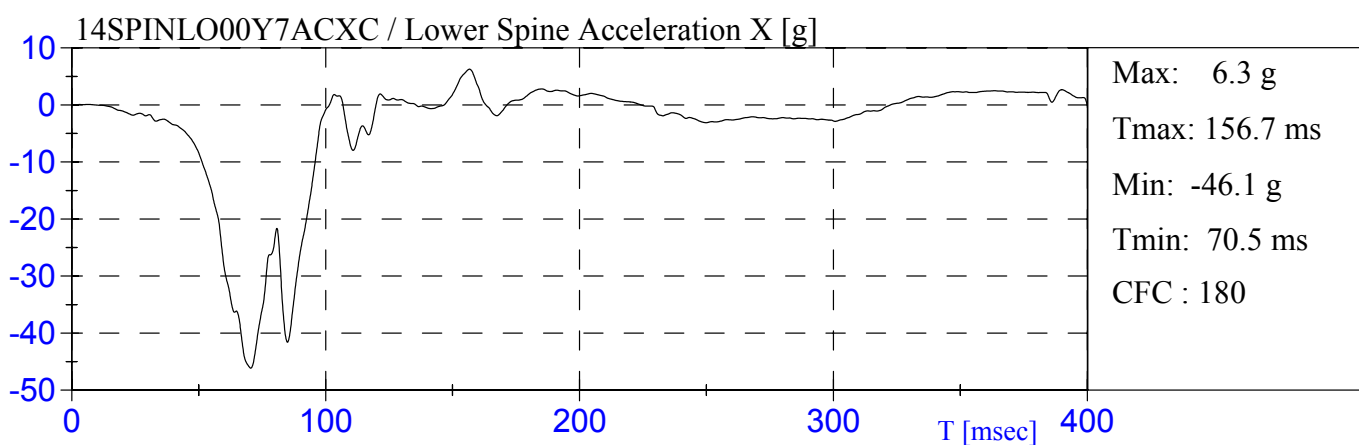
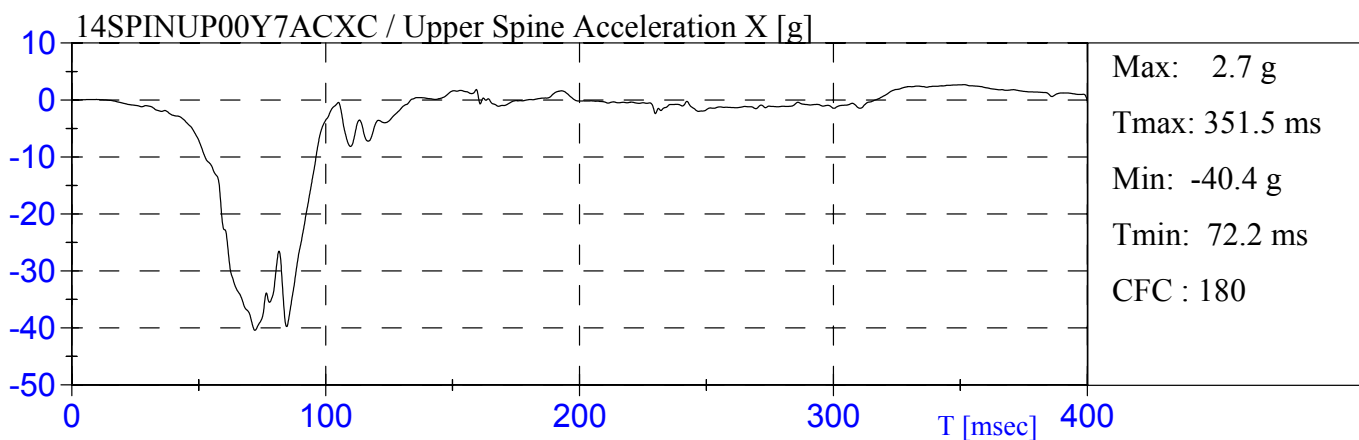


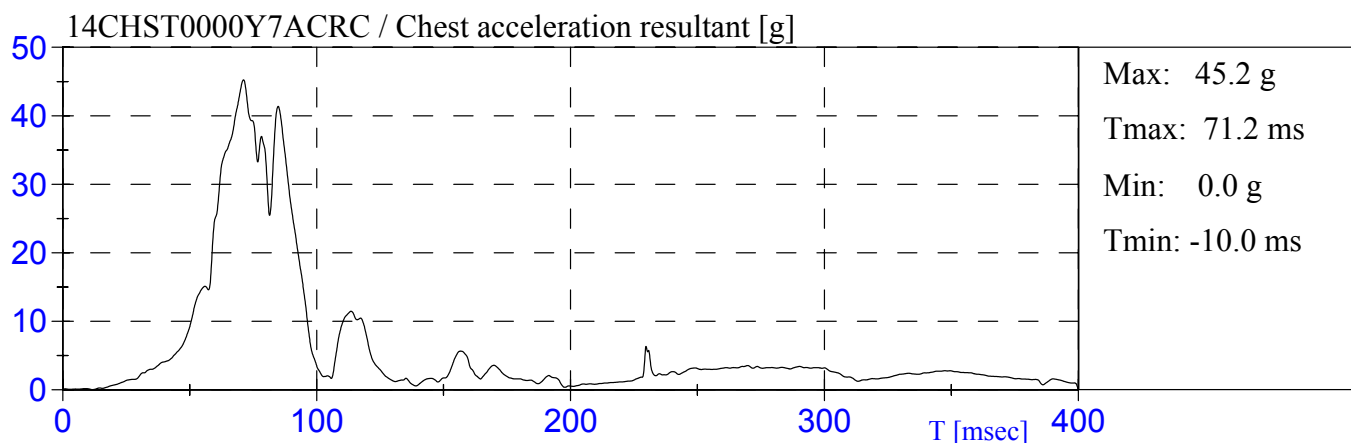
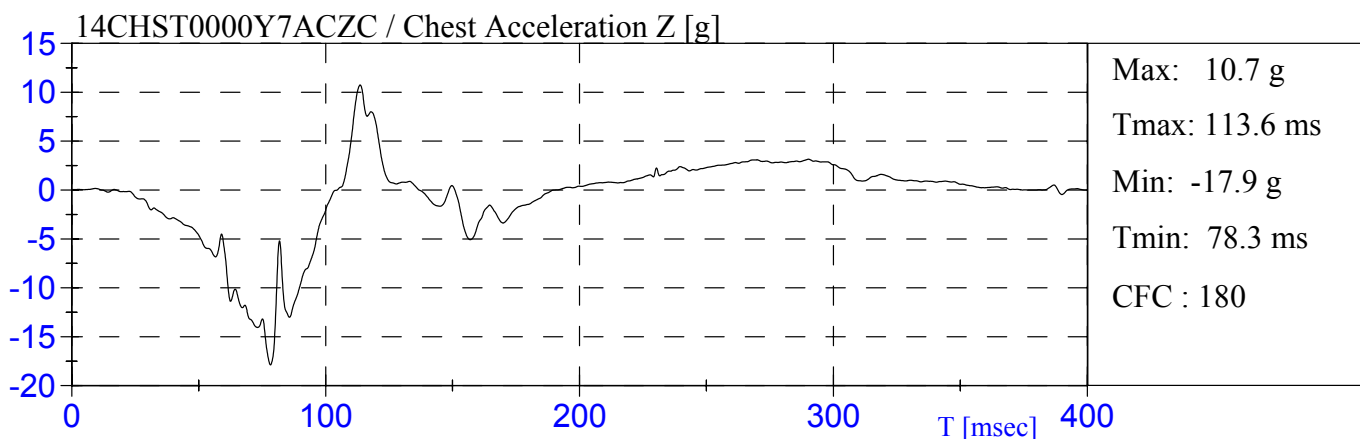
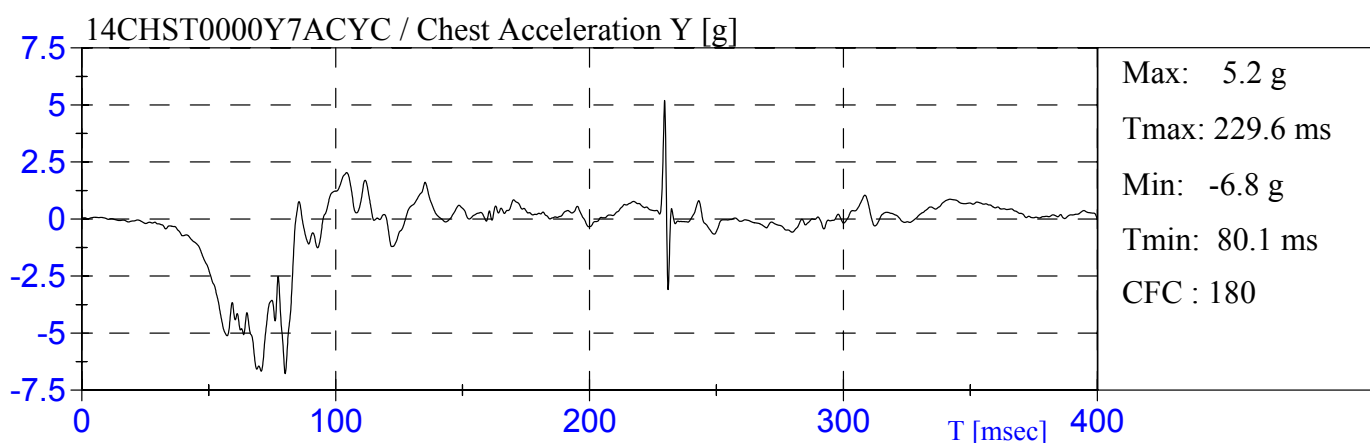
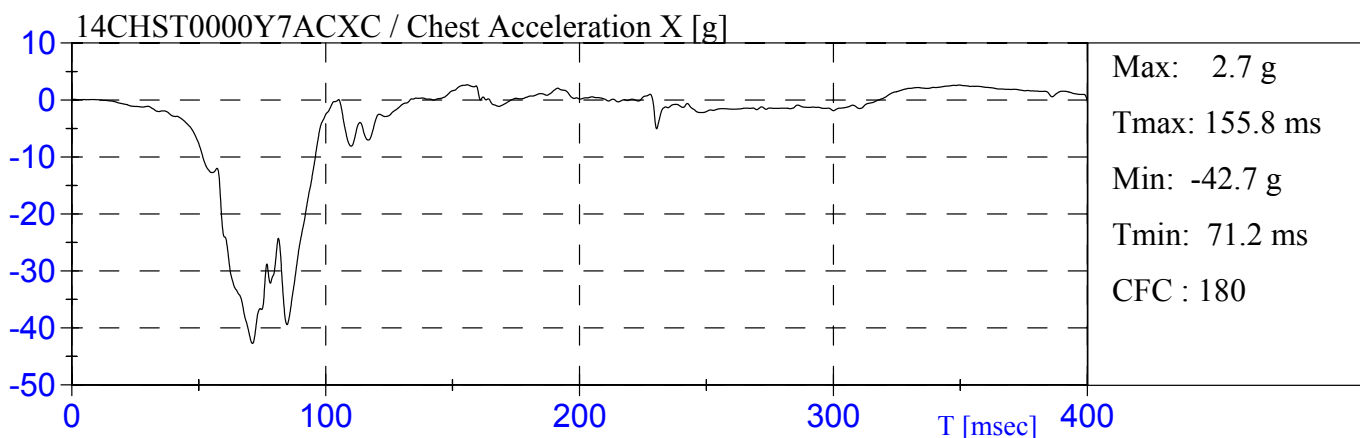


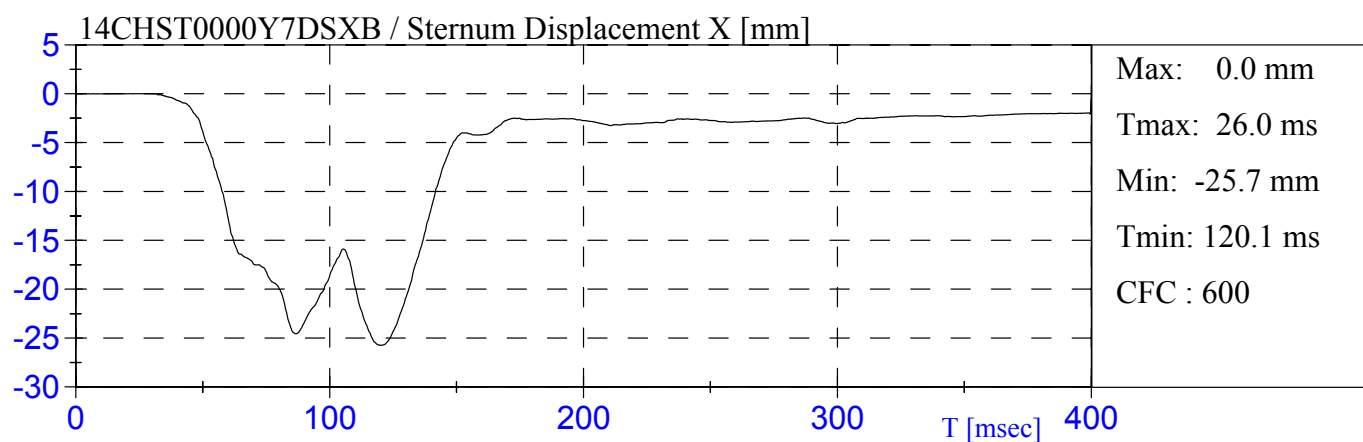


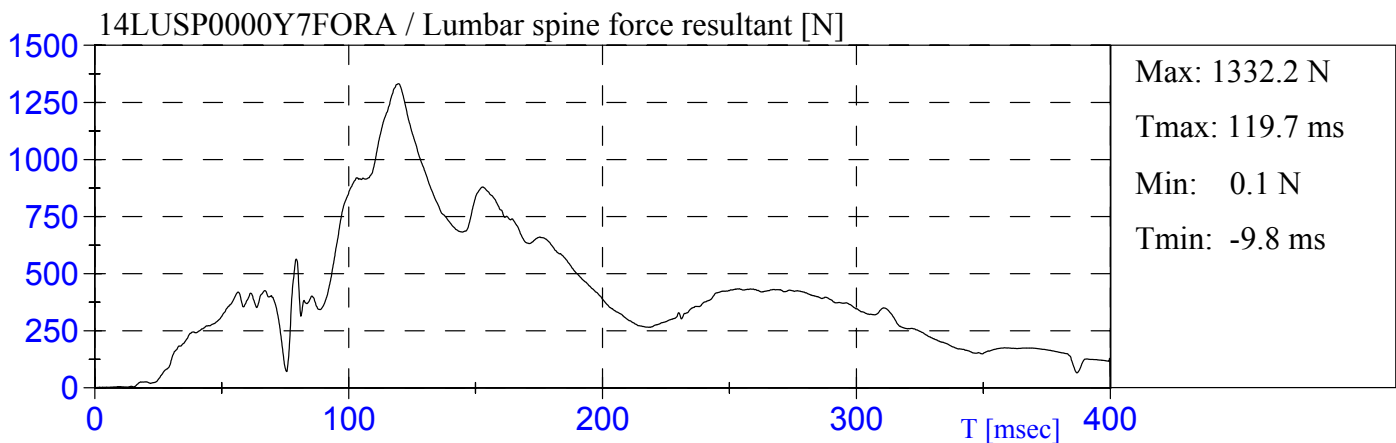
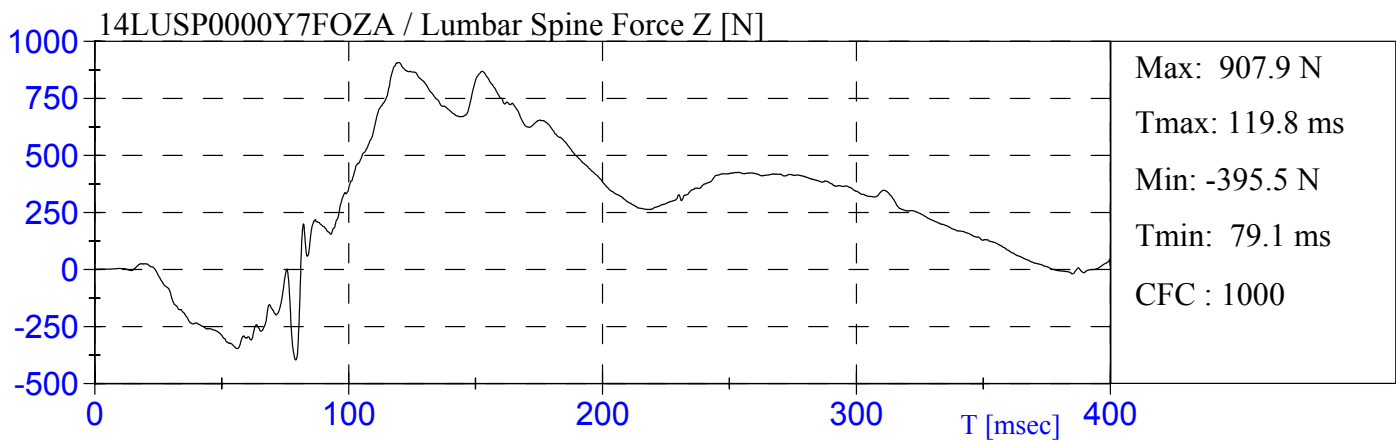
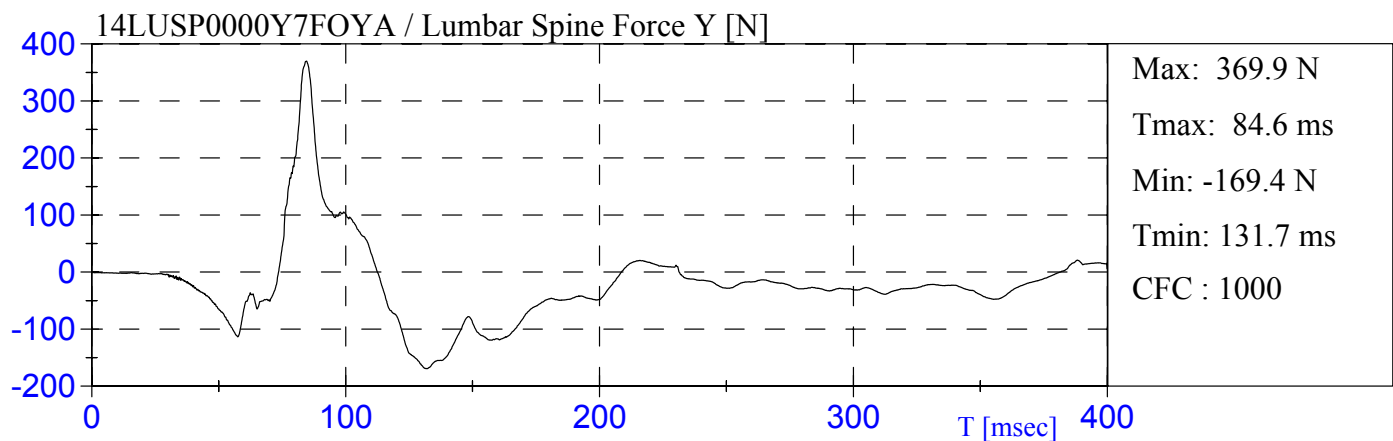
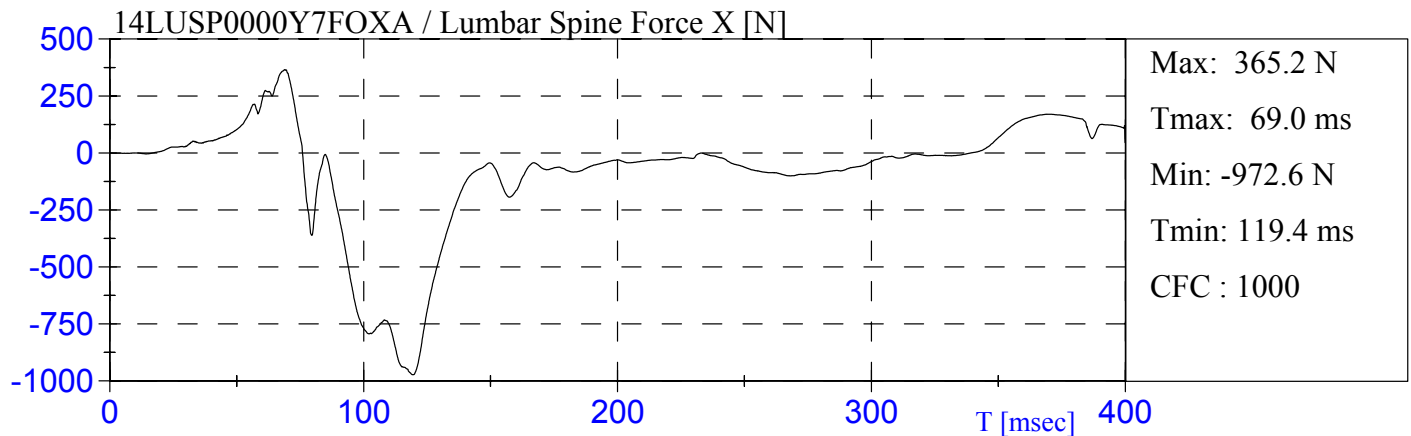


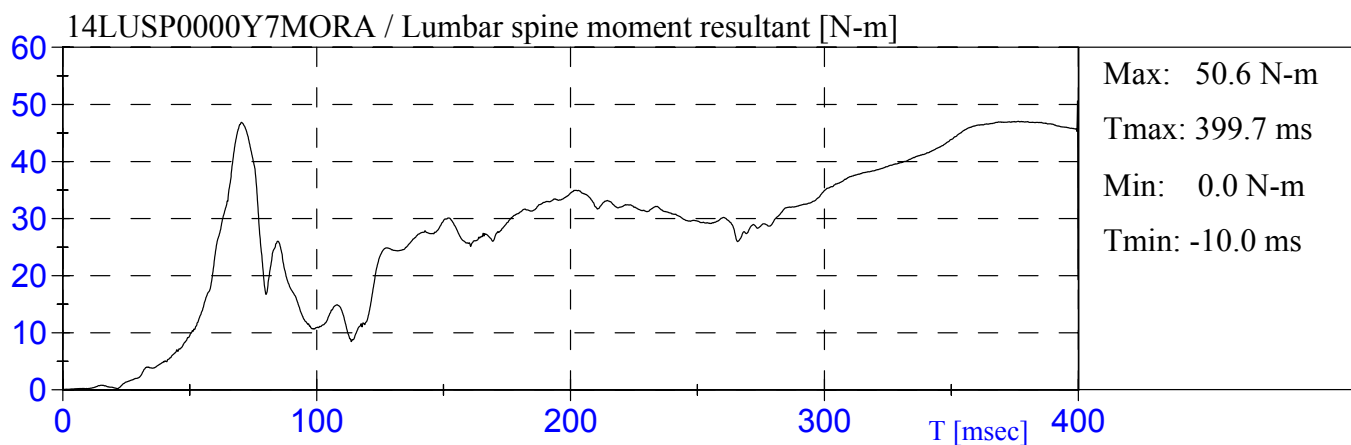
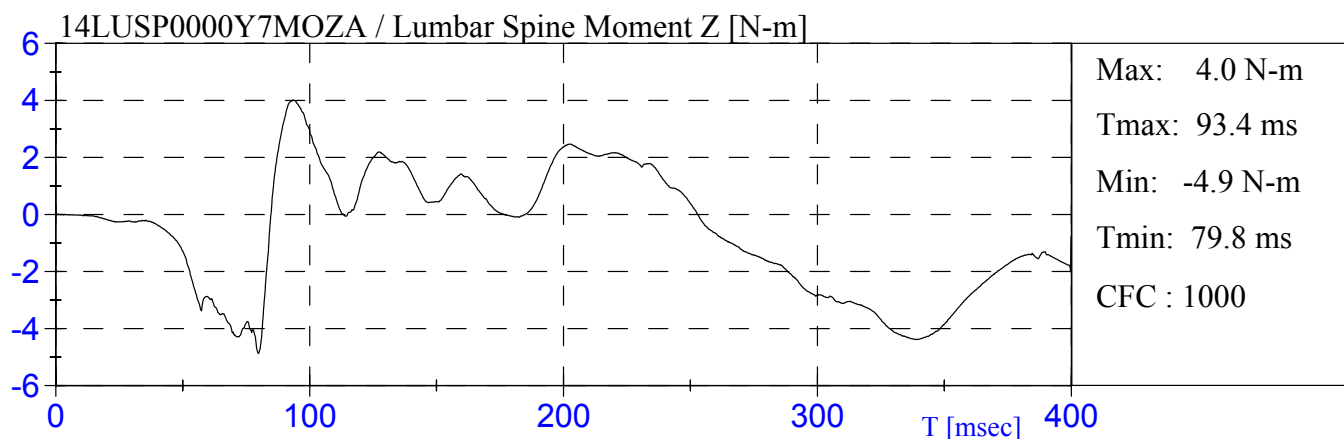
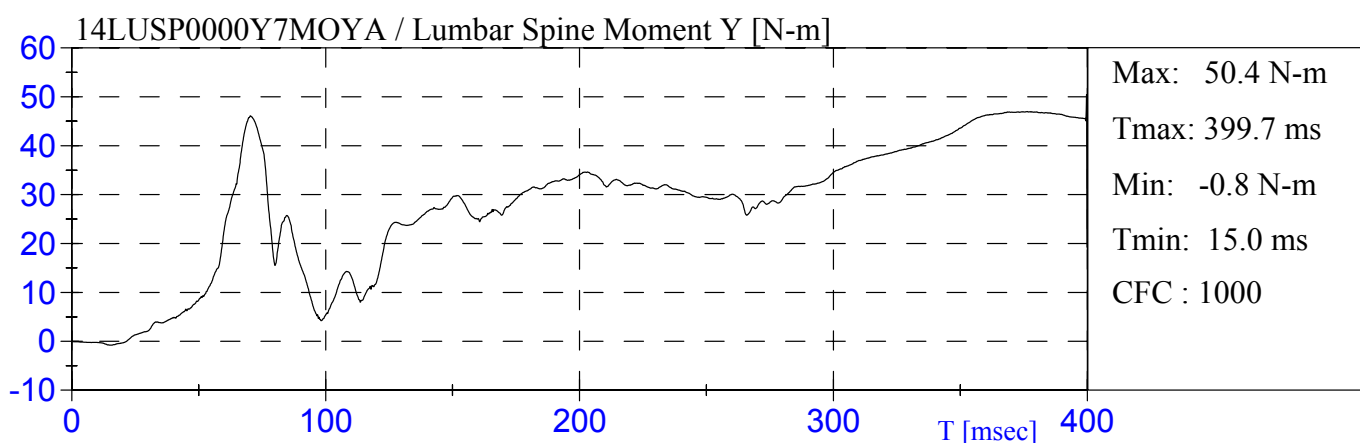
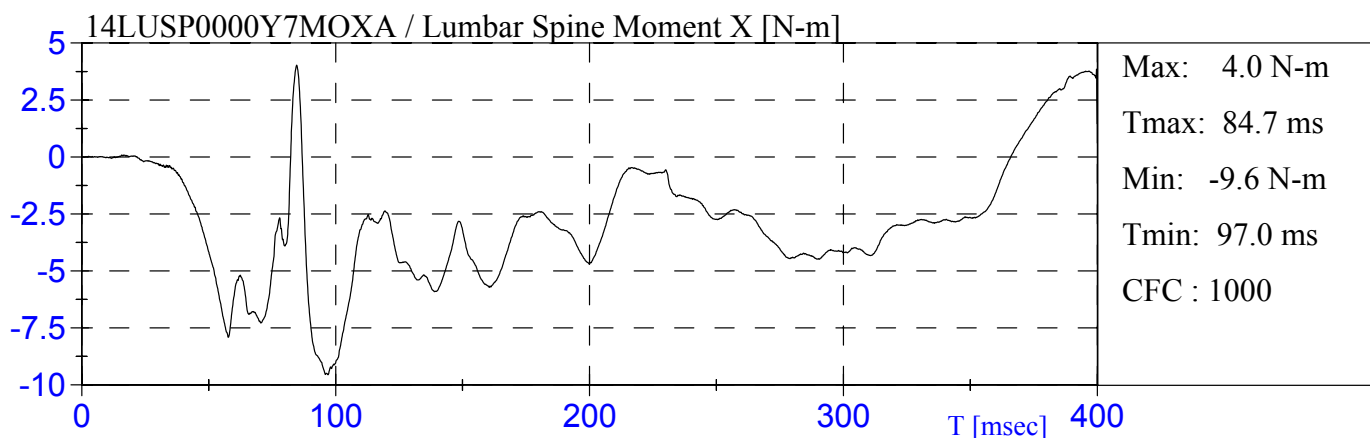


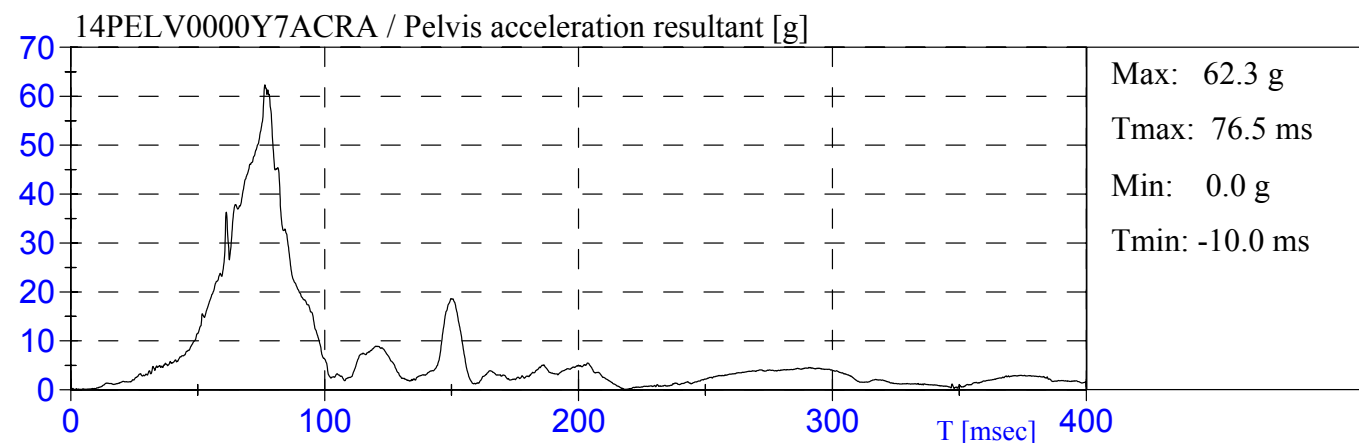
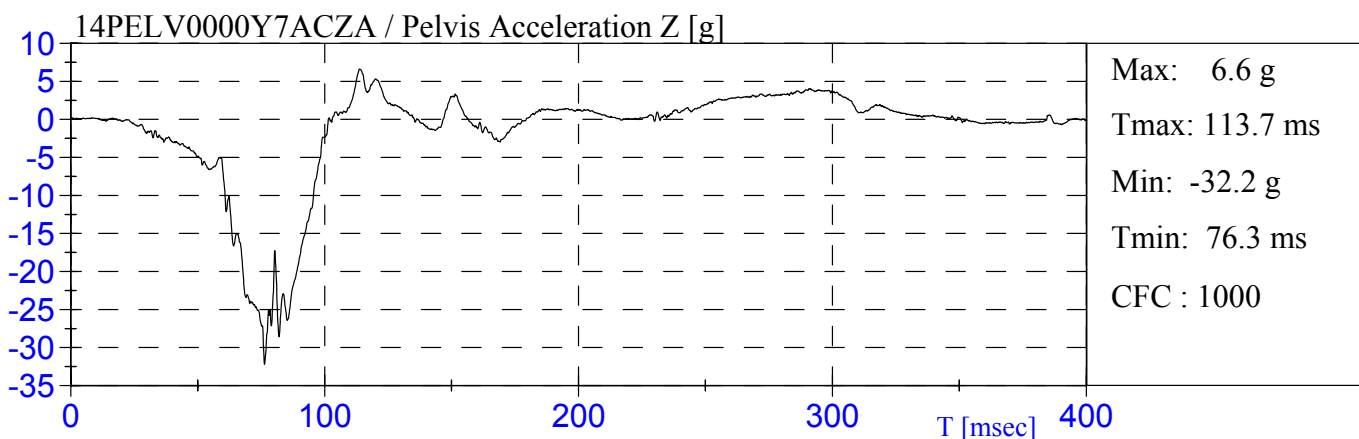
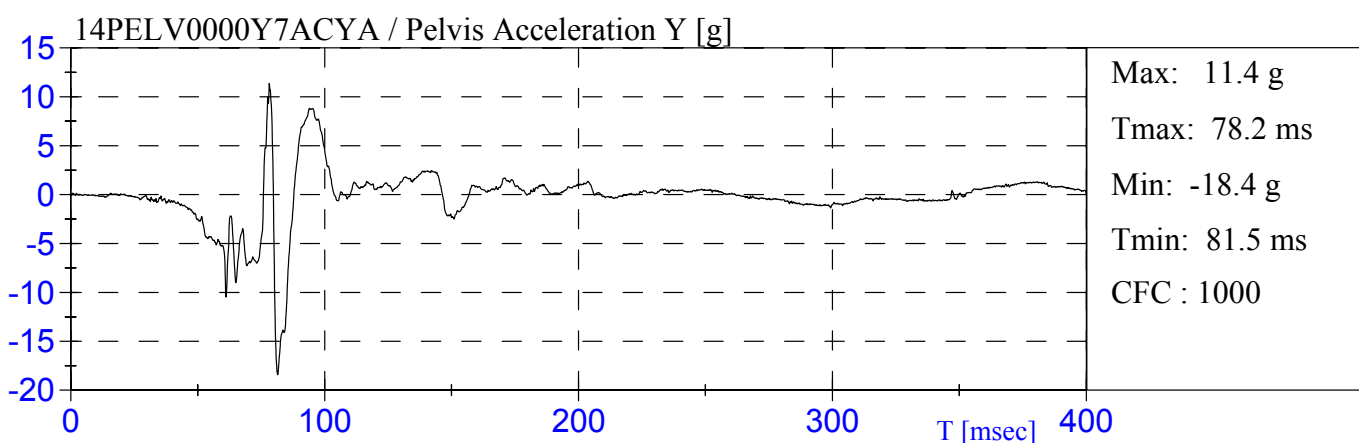
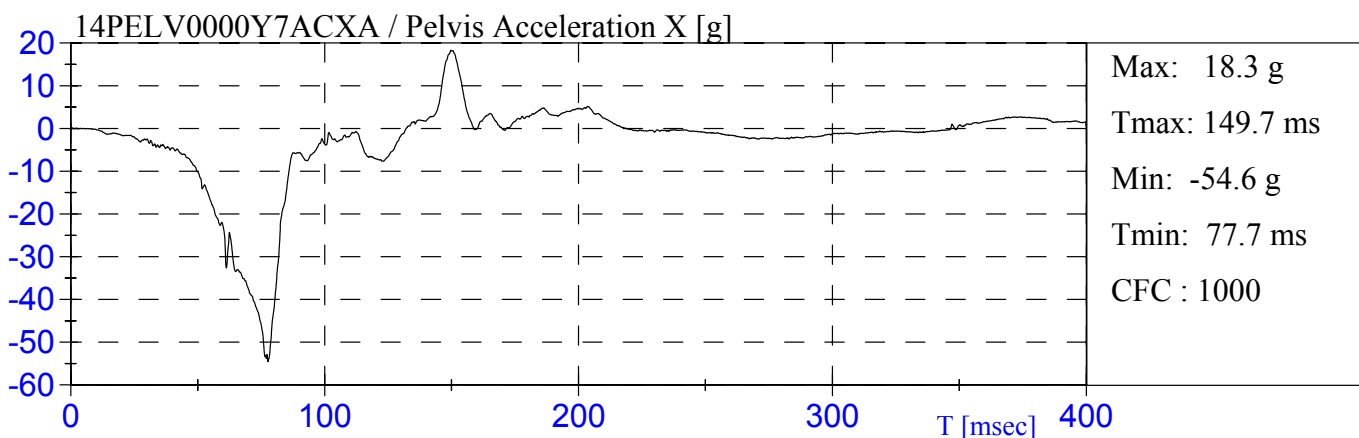


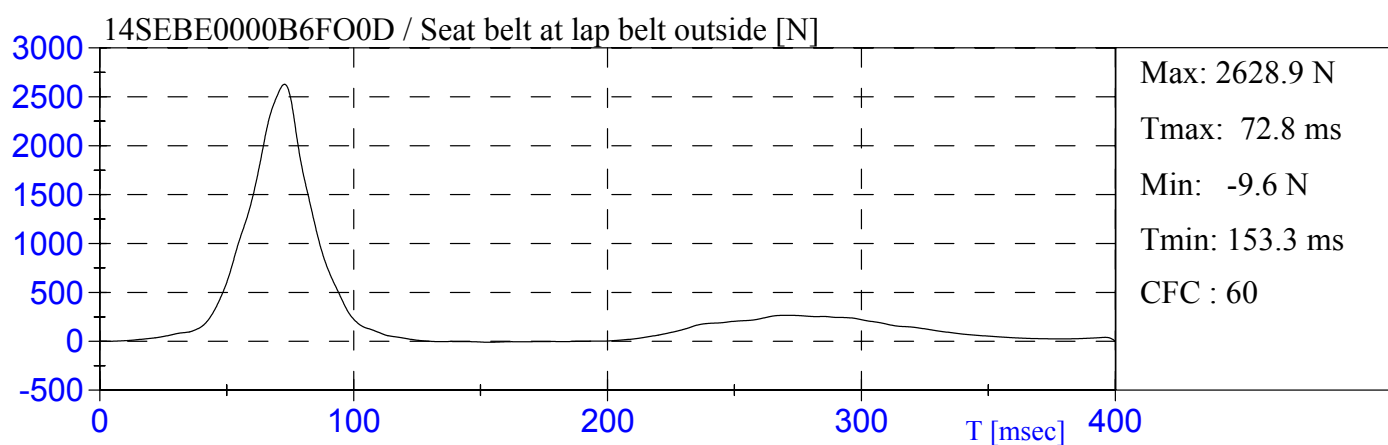
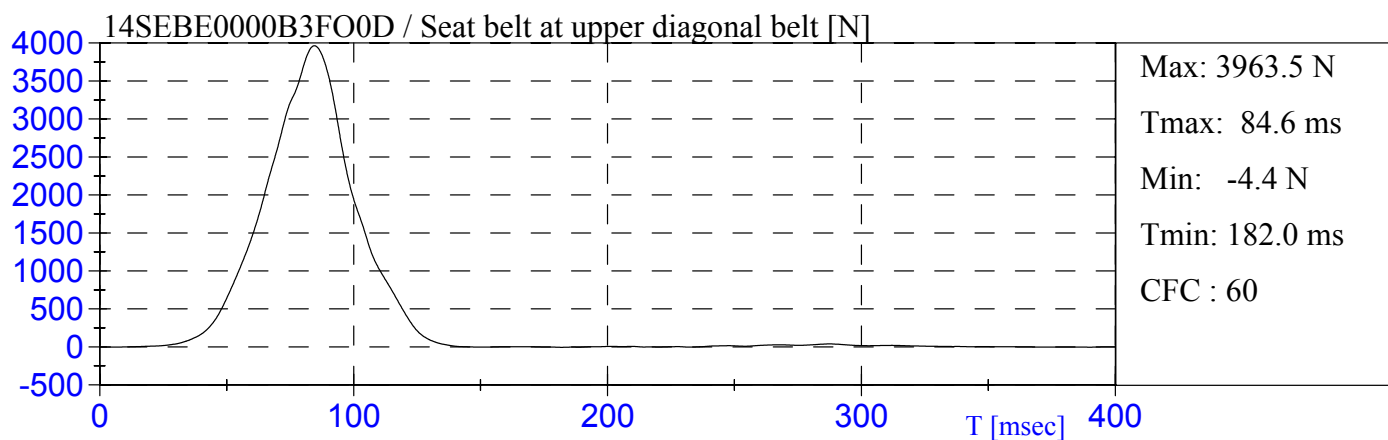


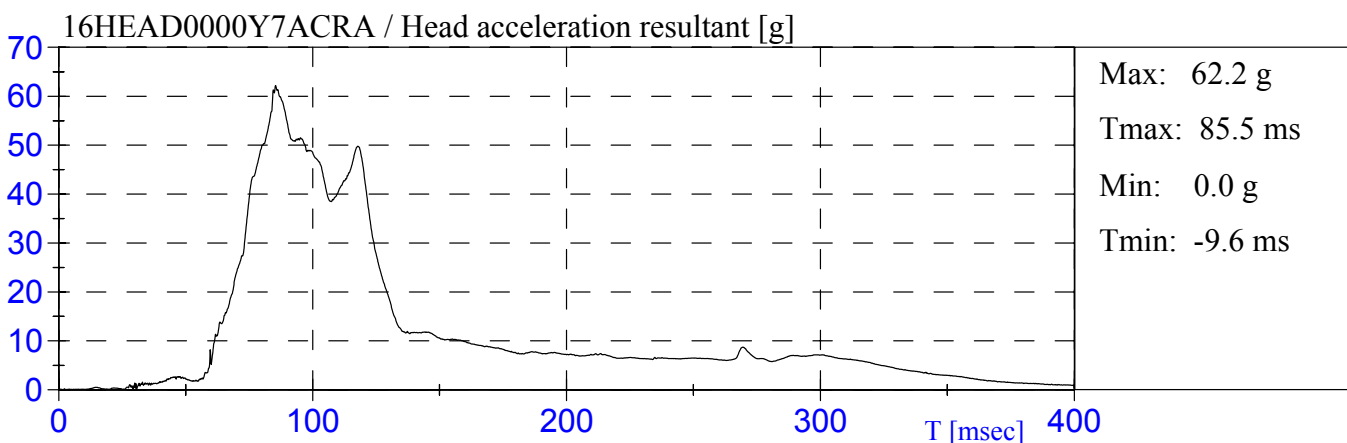
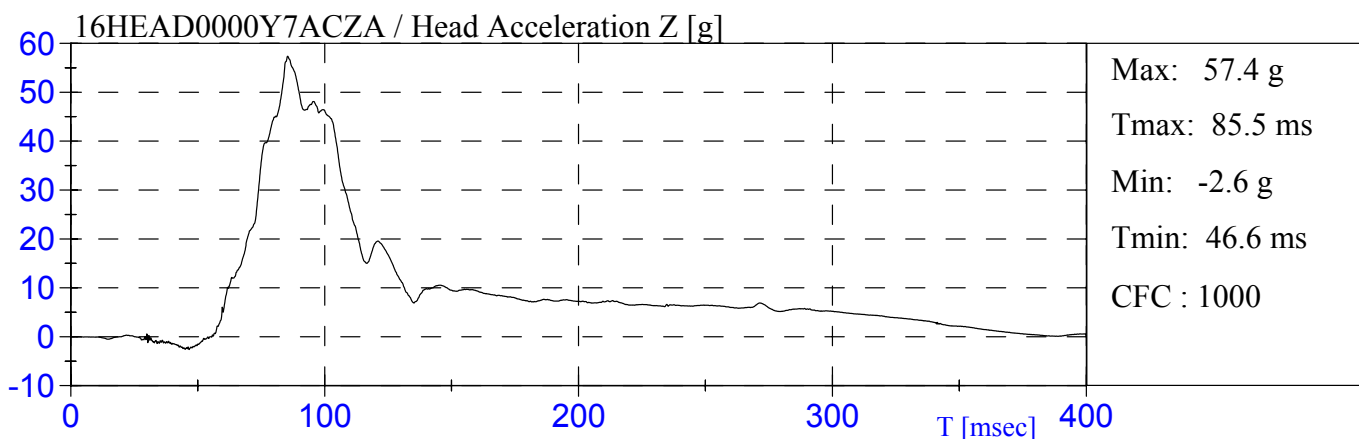
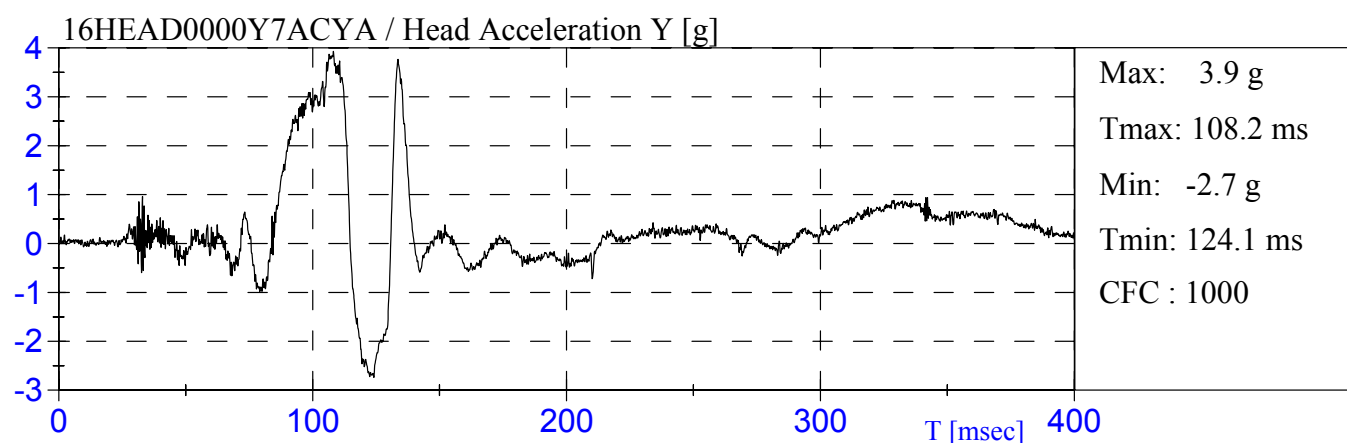
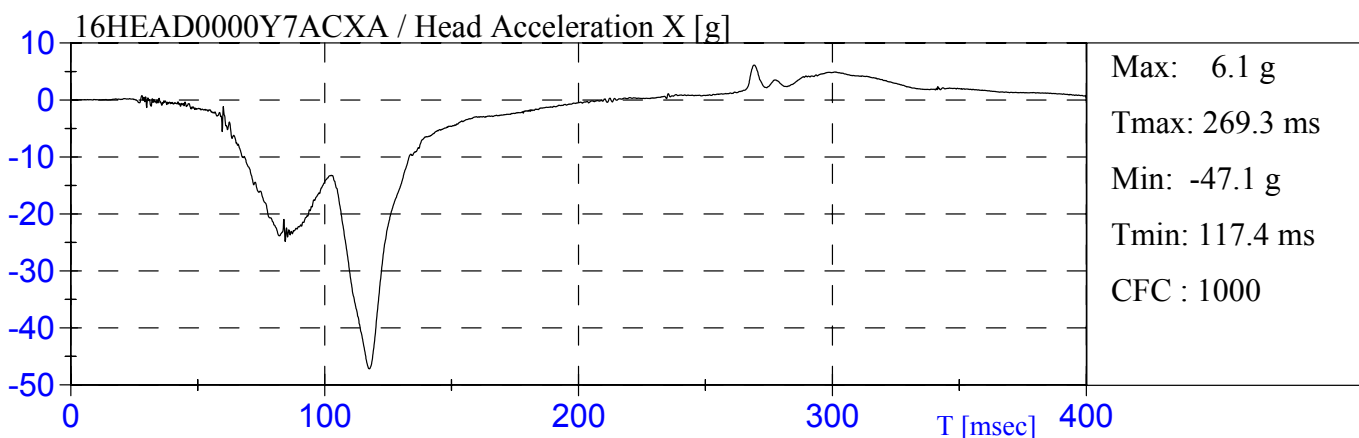


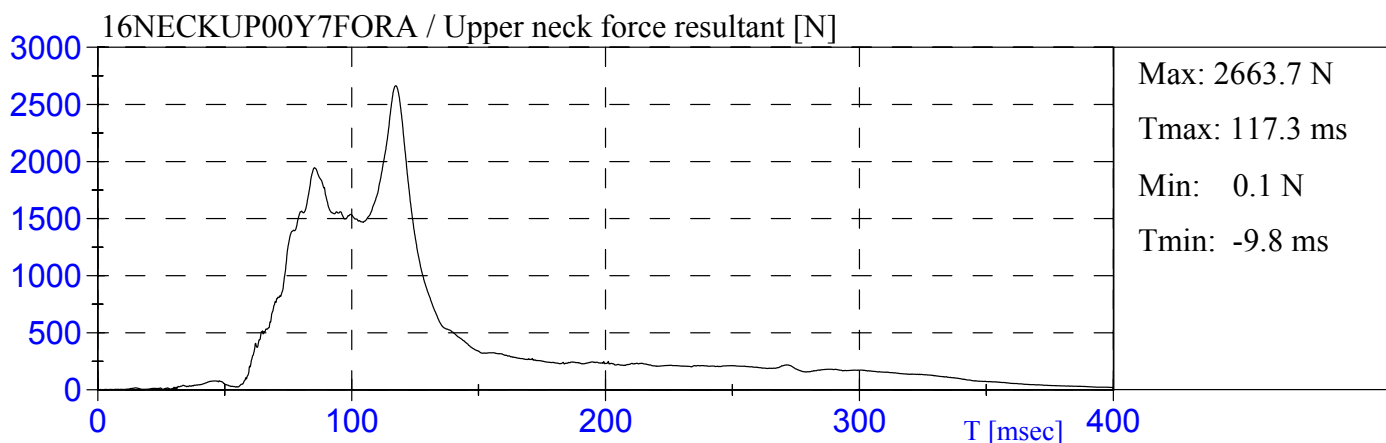
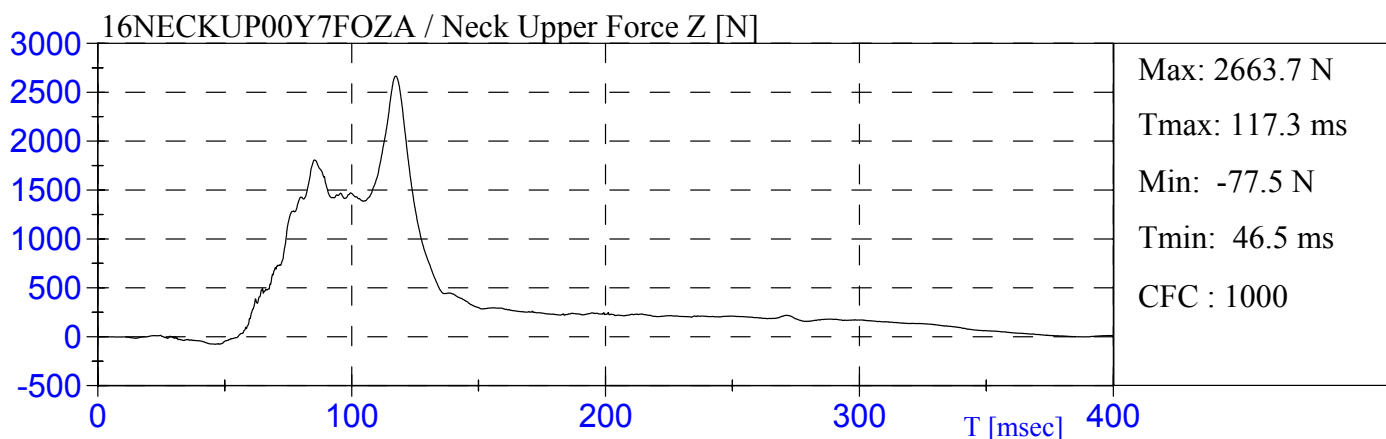
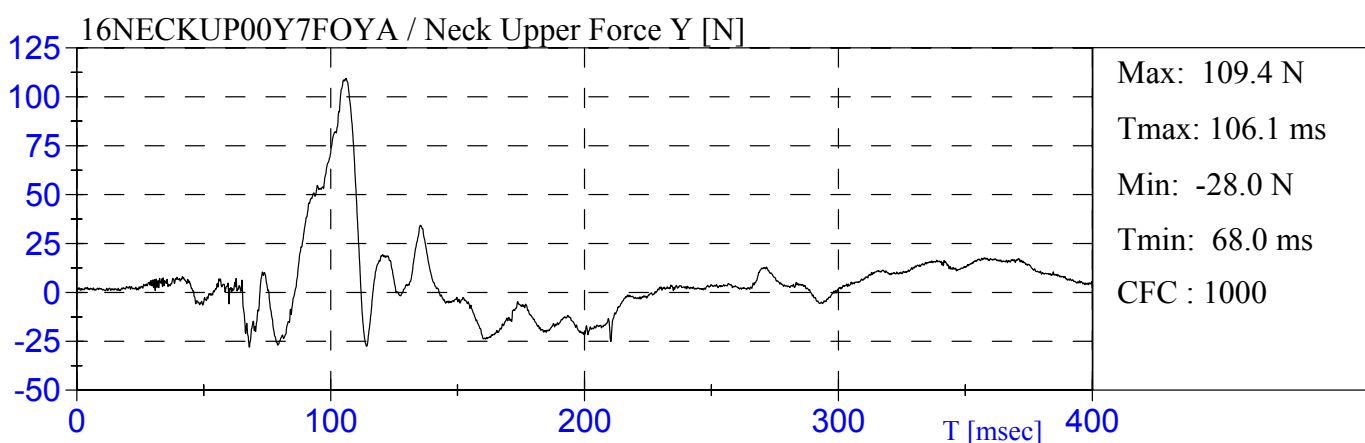
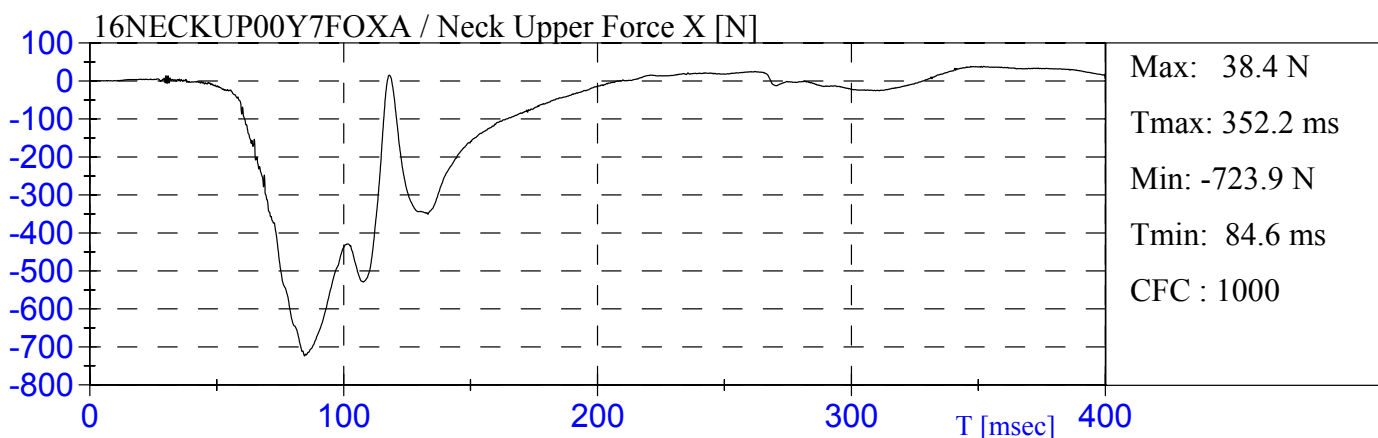


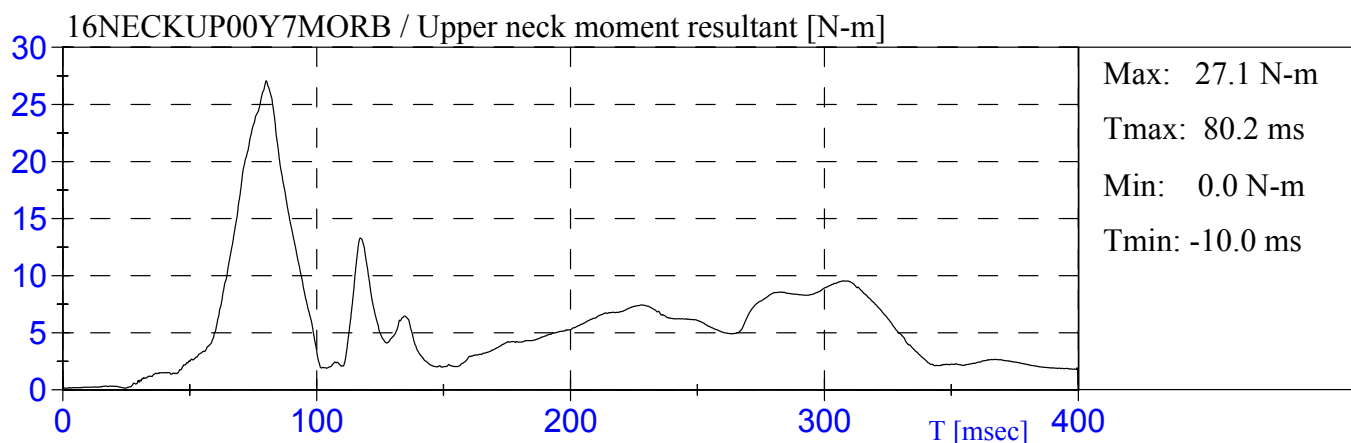
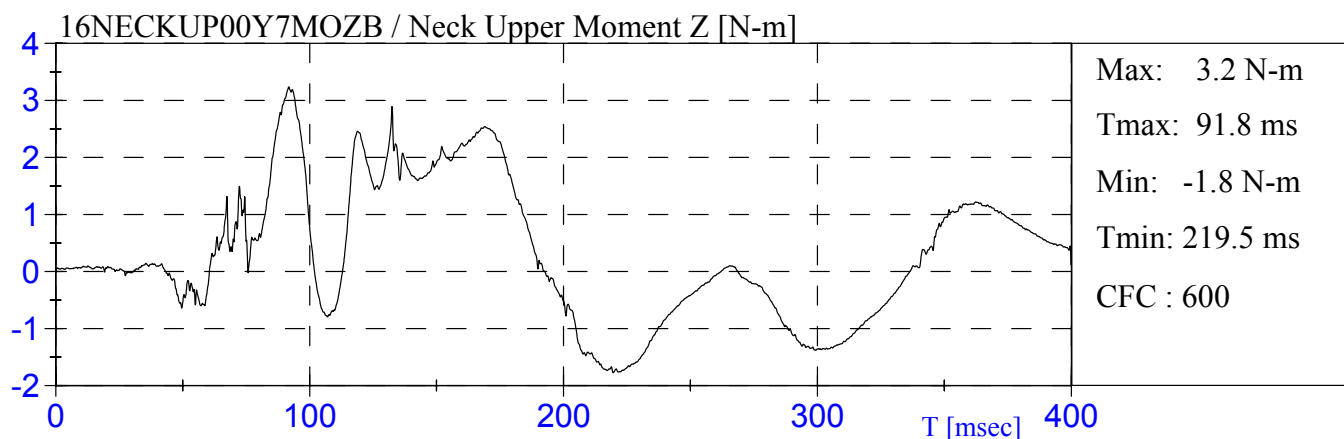
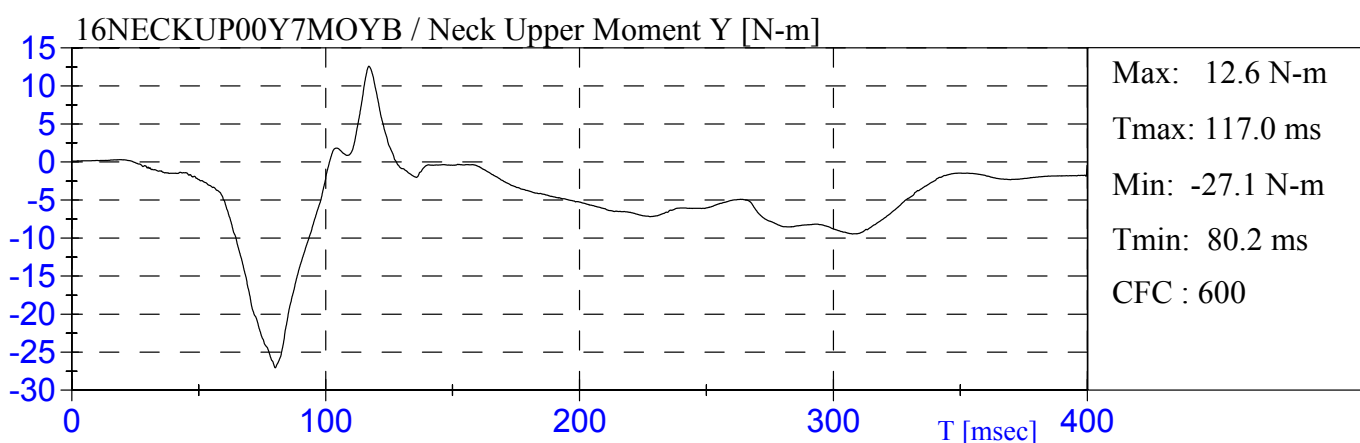
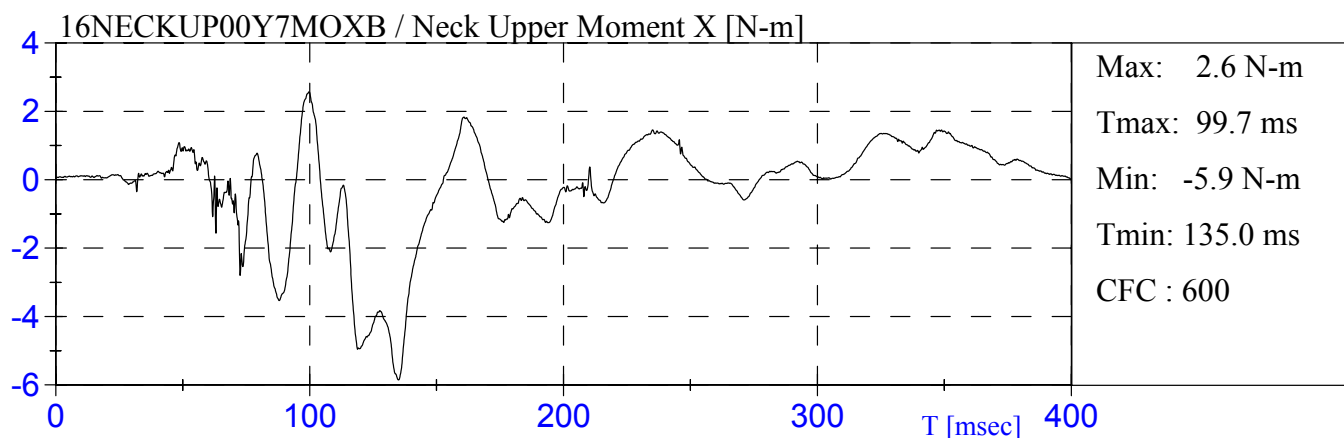


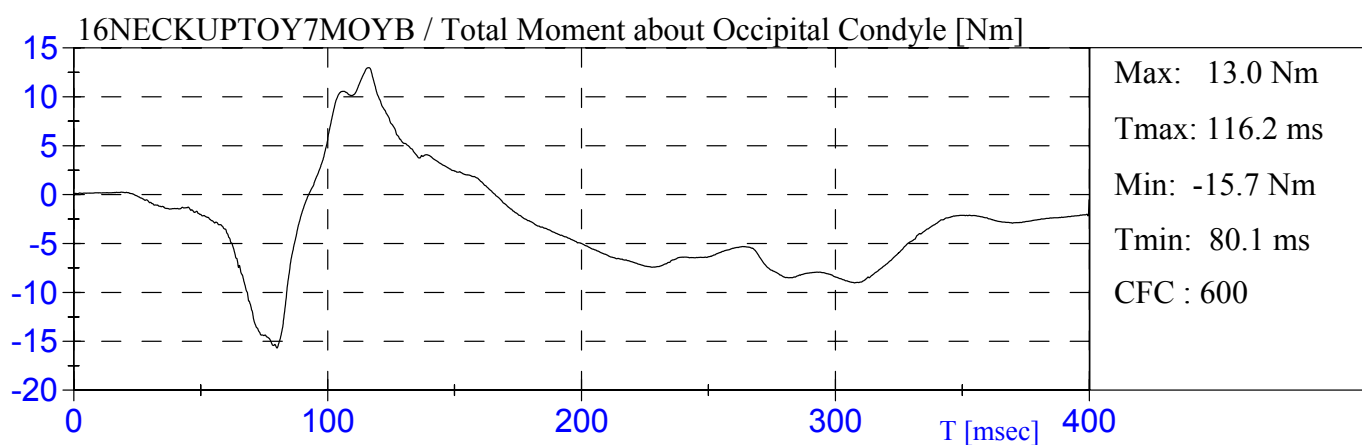
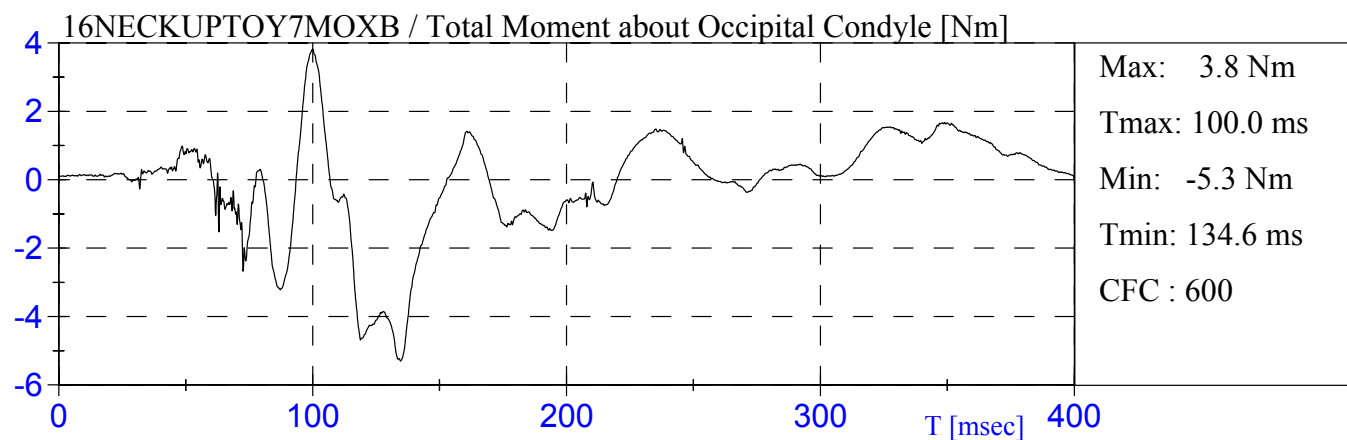


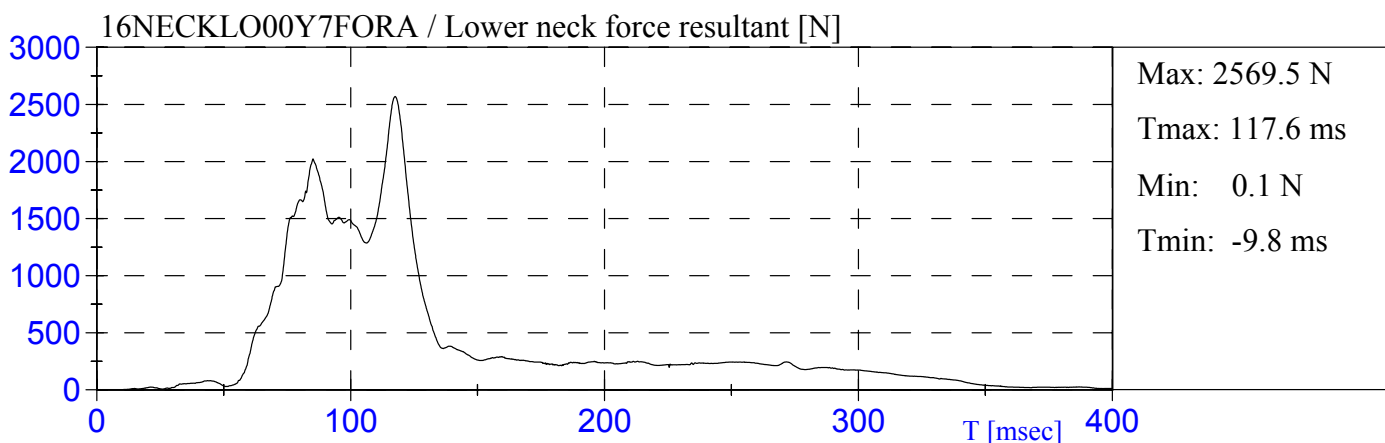
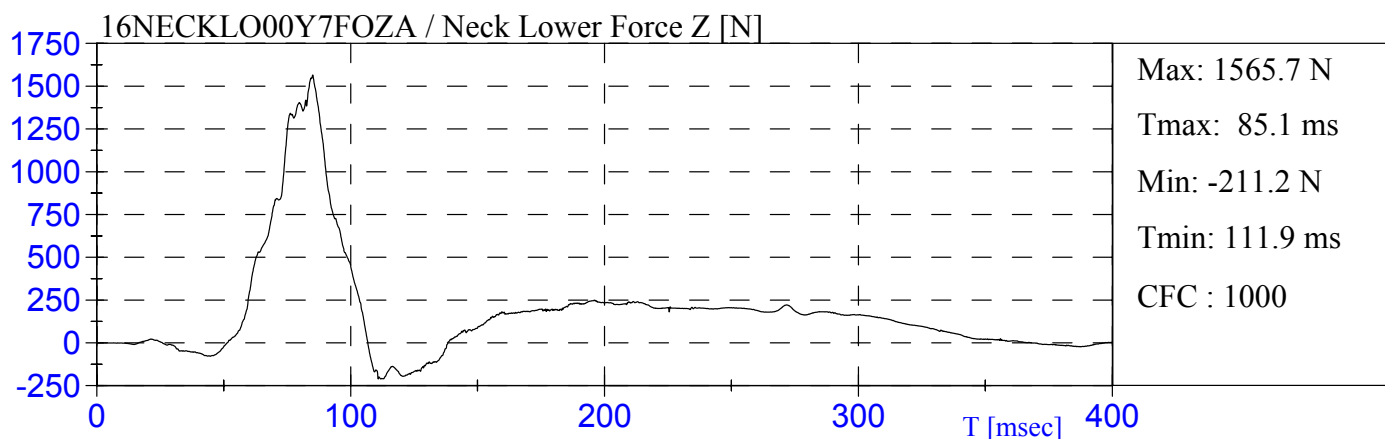
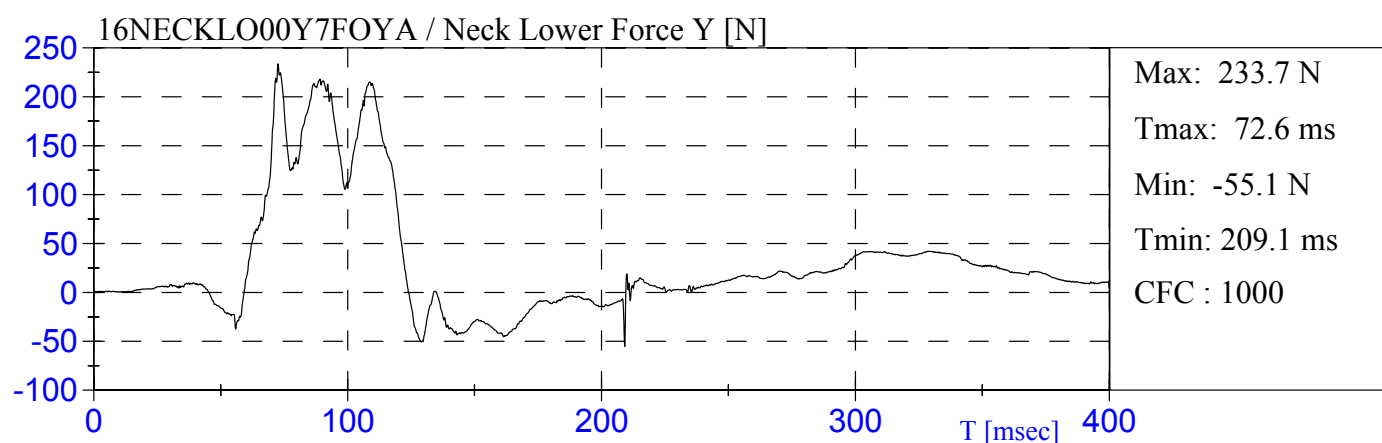
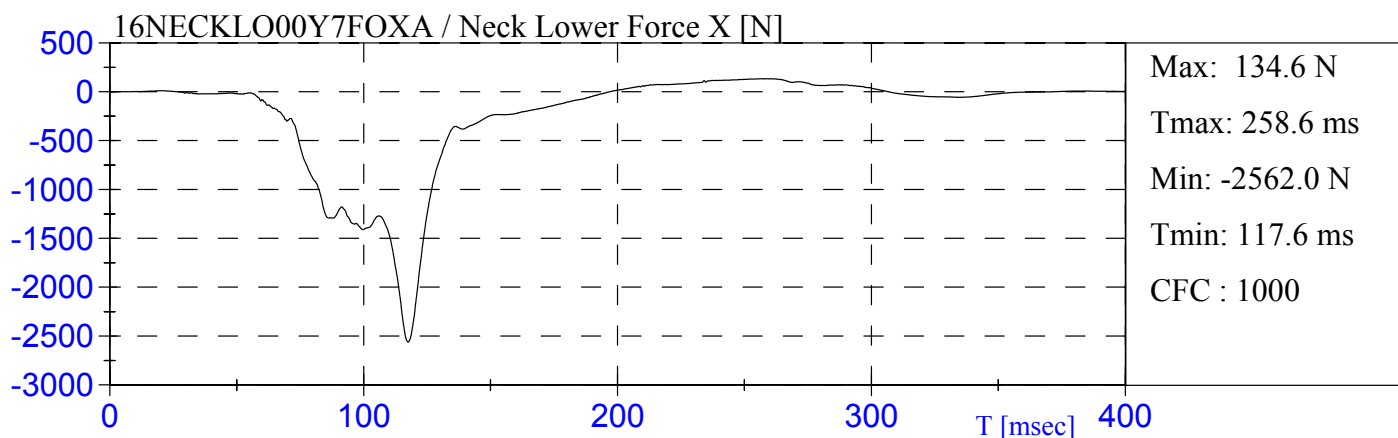


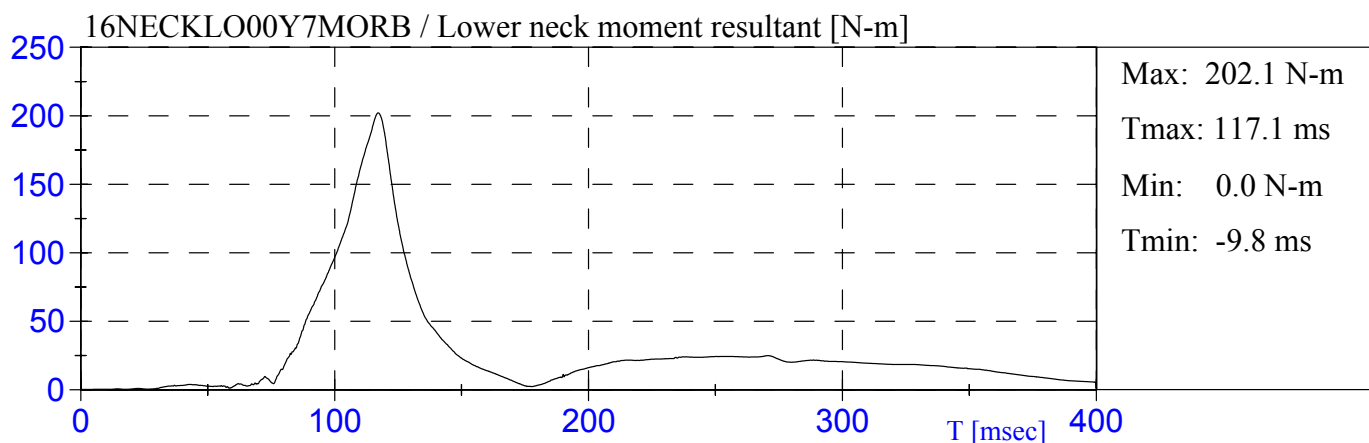
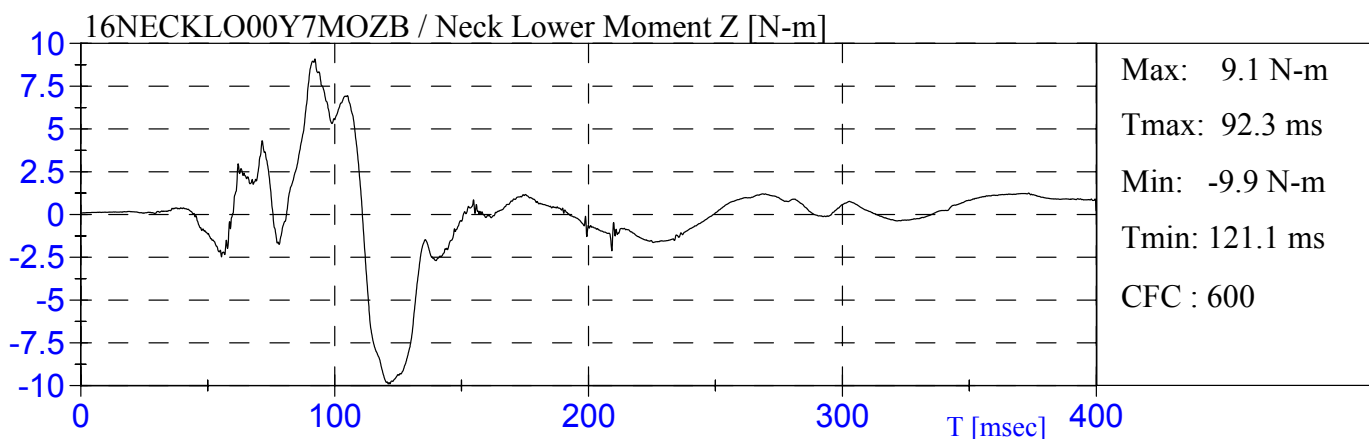
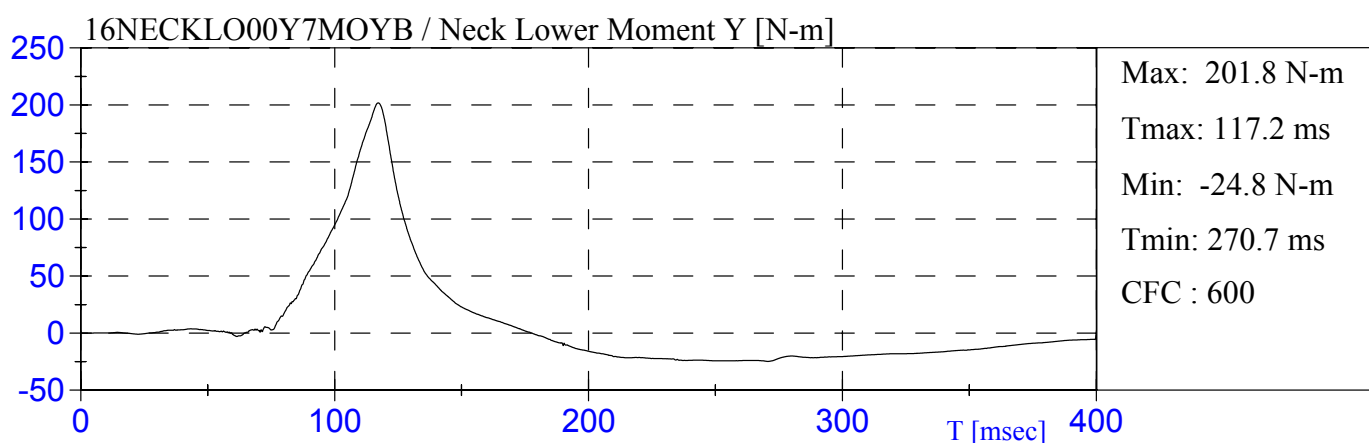
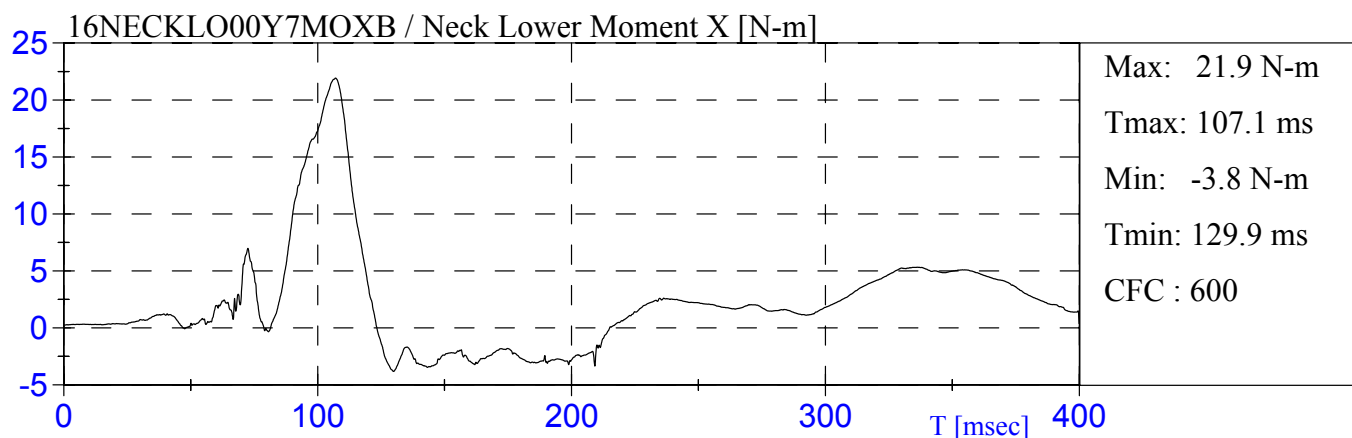


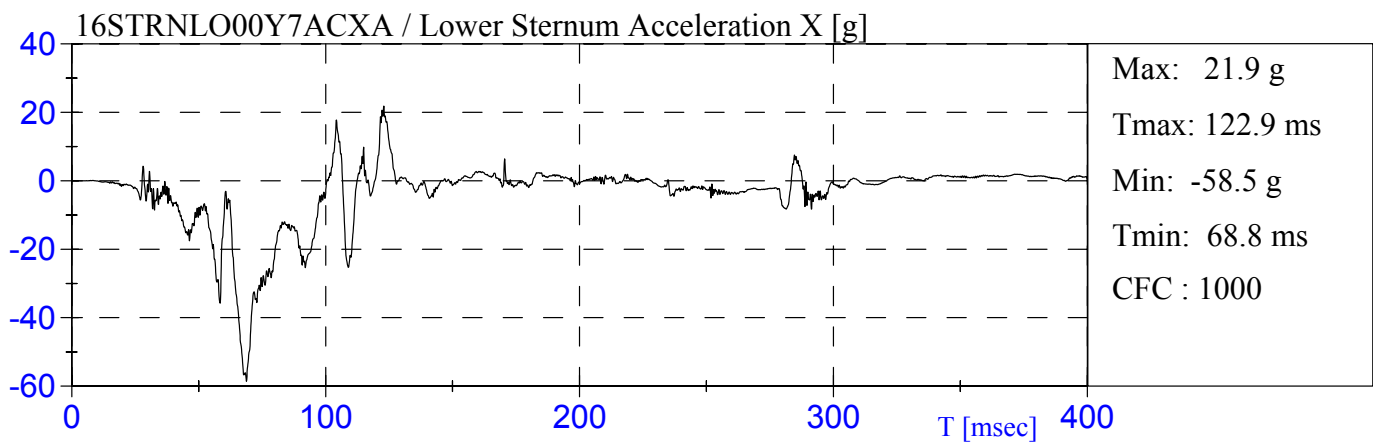
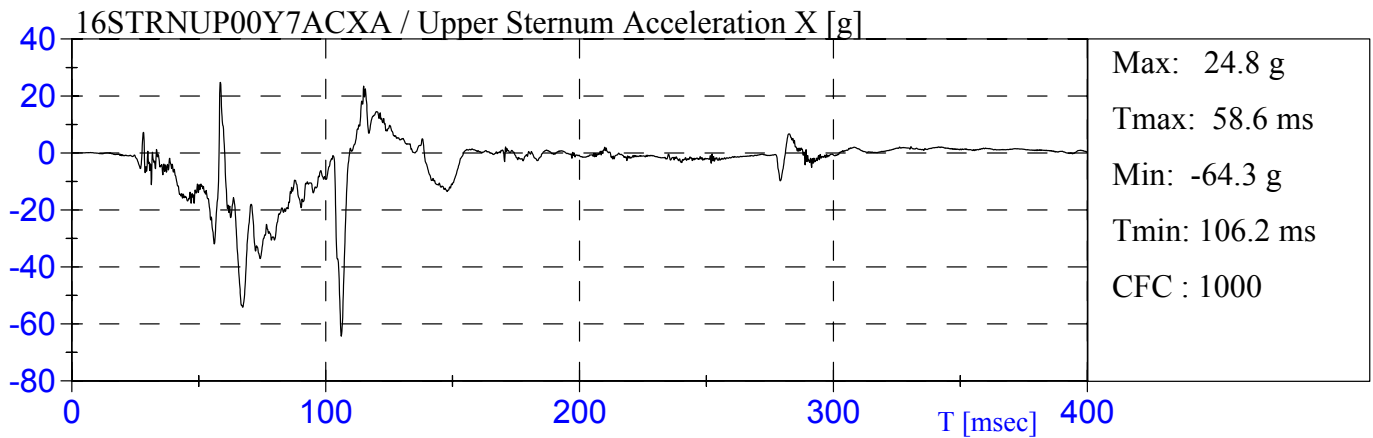


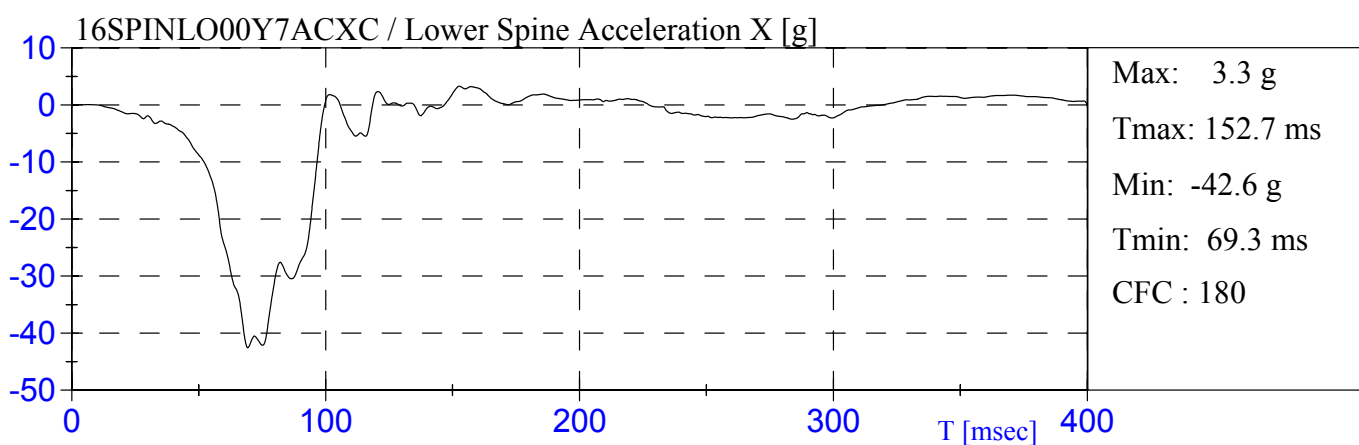
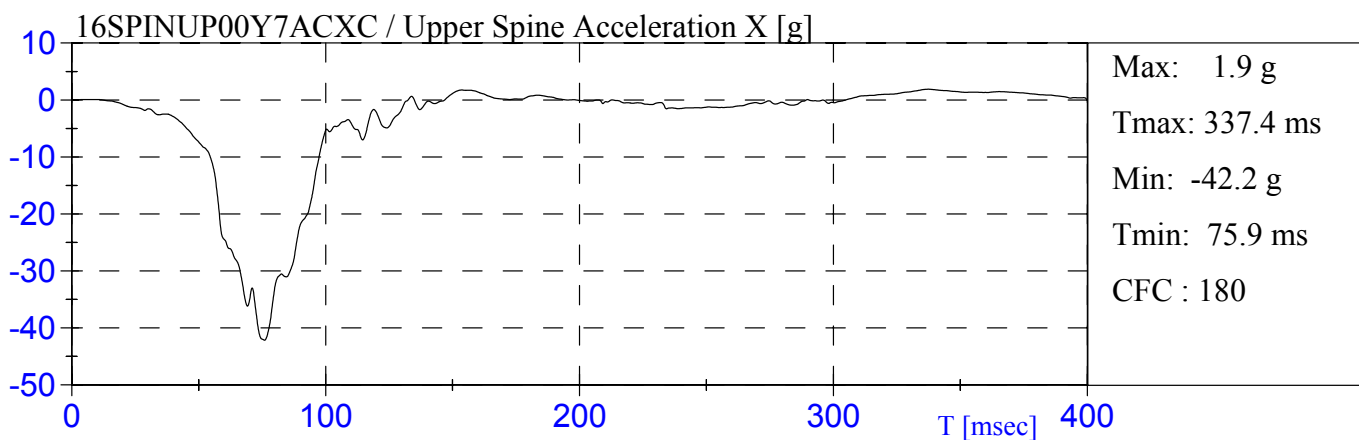




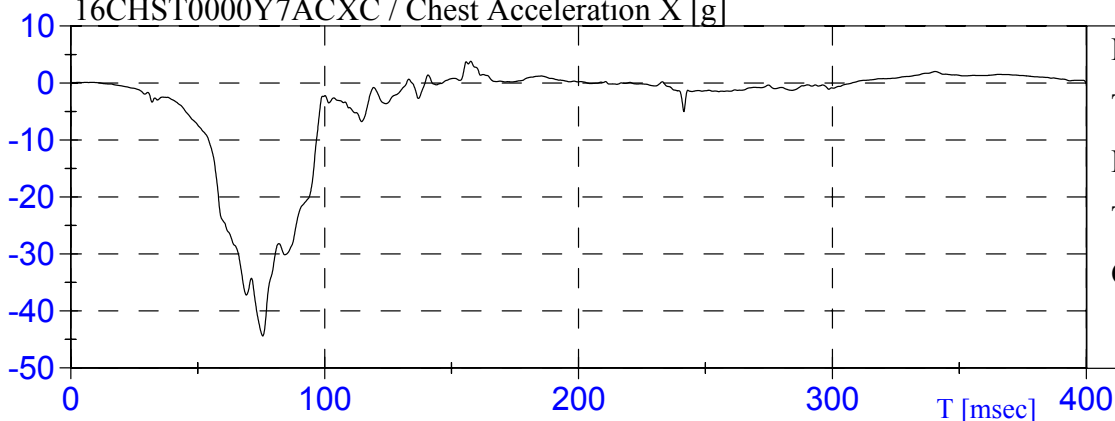






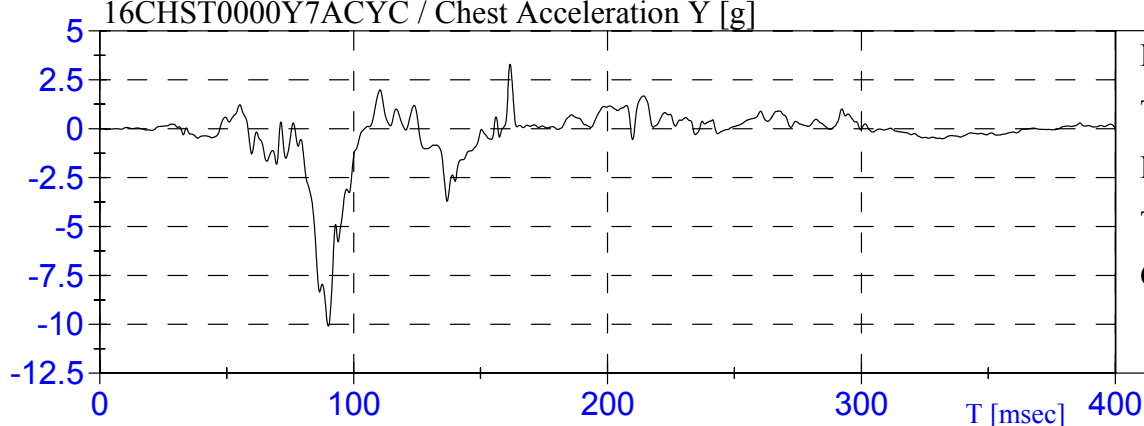


16CHST0000Y7ACXC / Chest Acceleration X [g]



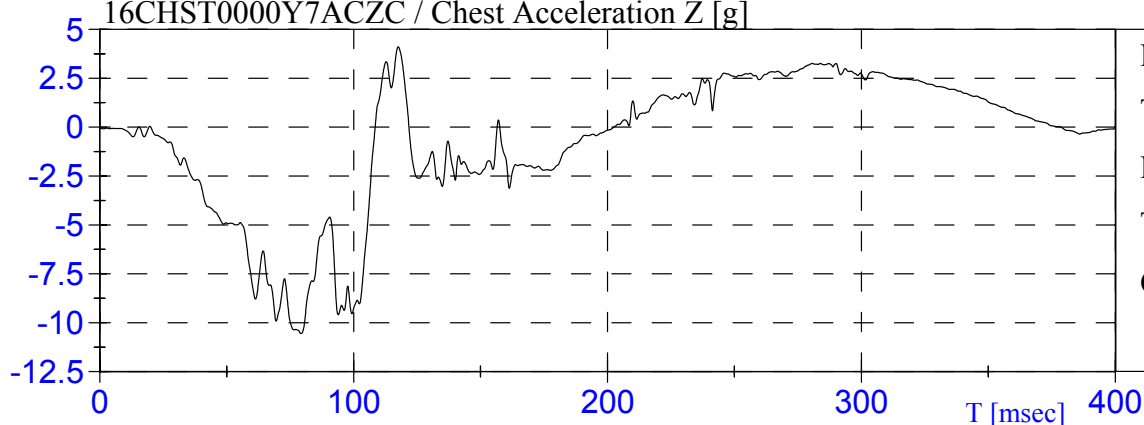
Max: 3.8 g
Tmax: 157.5 ms
Min: -44.4 g
Tmin: 75.6 ms
CFC : 180

16CHST0000Y7ACYC / Chest Acceleration Y [g]



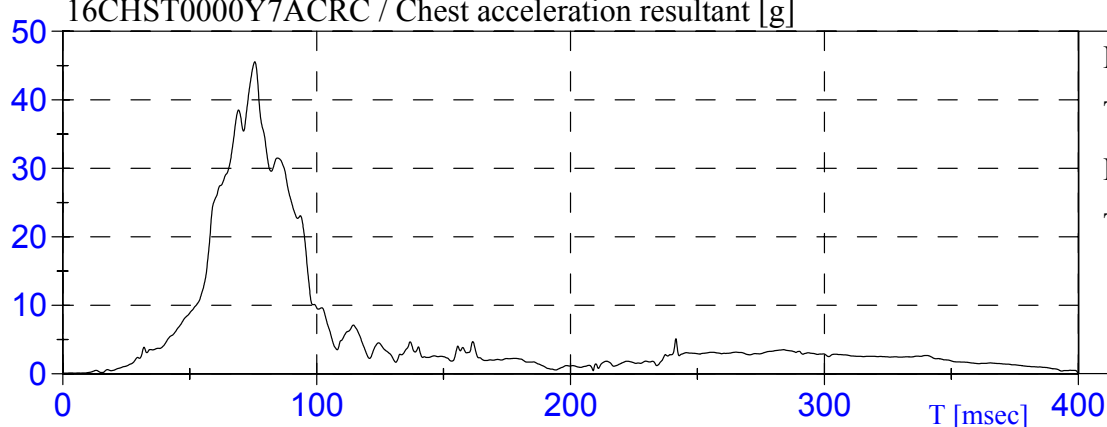
Max: 3.3 g
Tmax: 161.6 ms
Min: -10.1 g
Tmin: 90.0 ms
CFC : 180

16CHST0000Y7ACZC / Chest Acceleration Z [g]

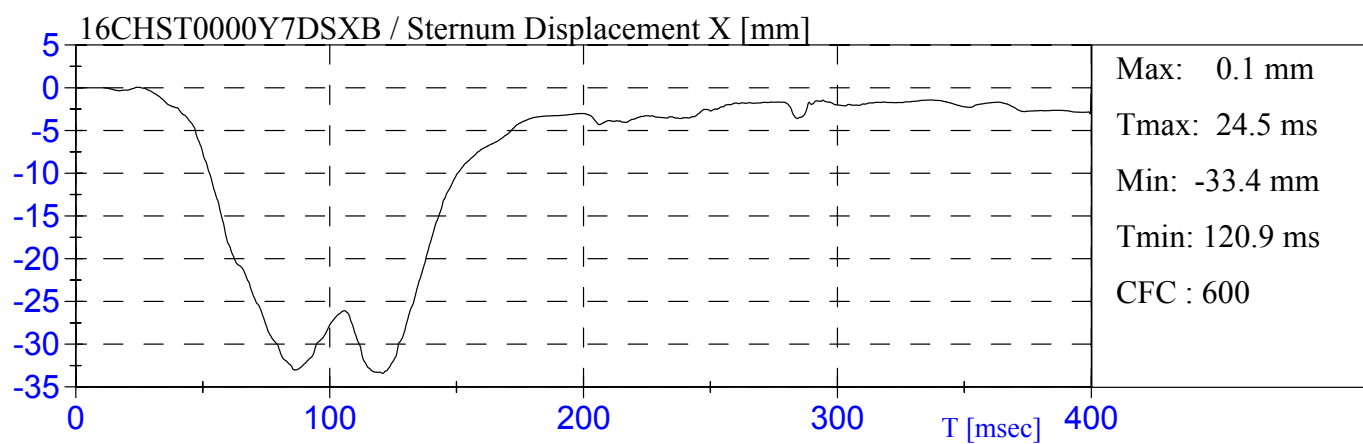


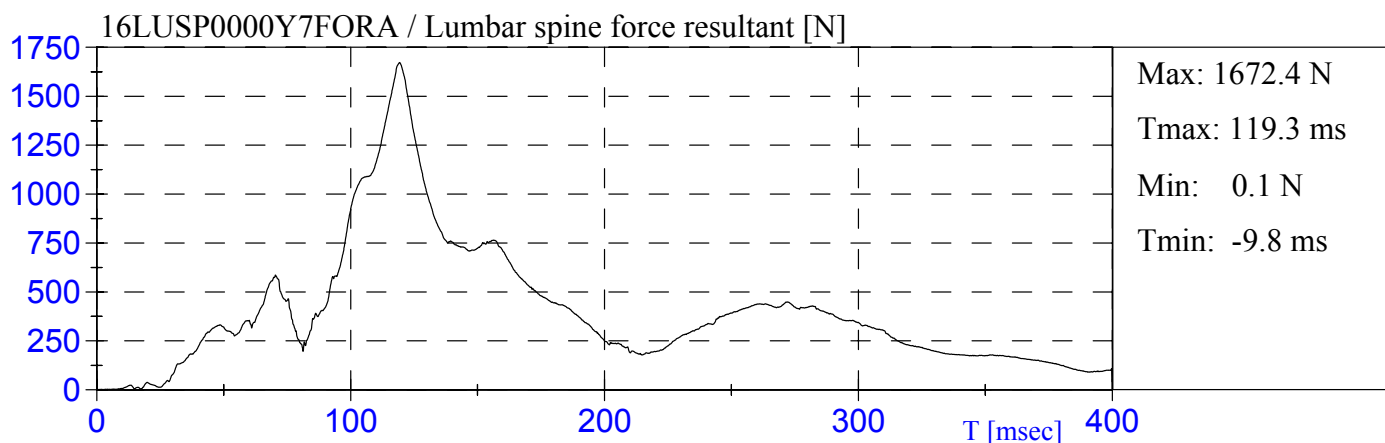
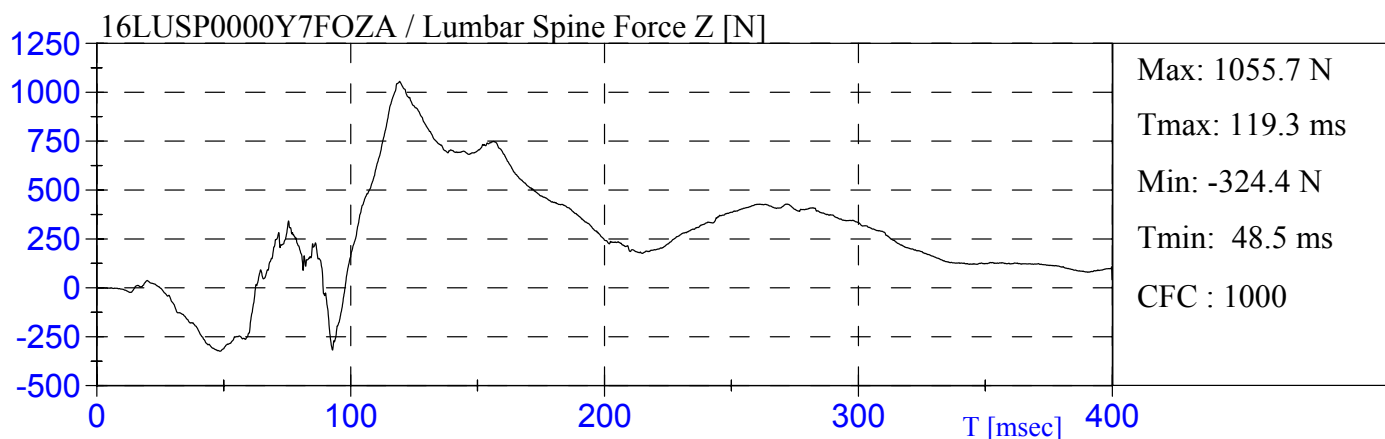
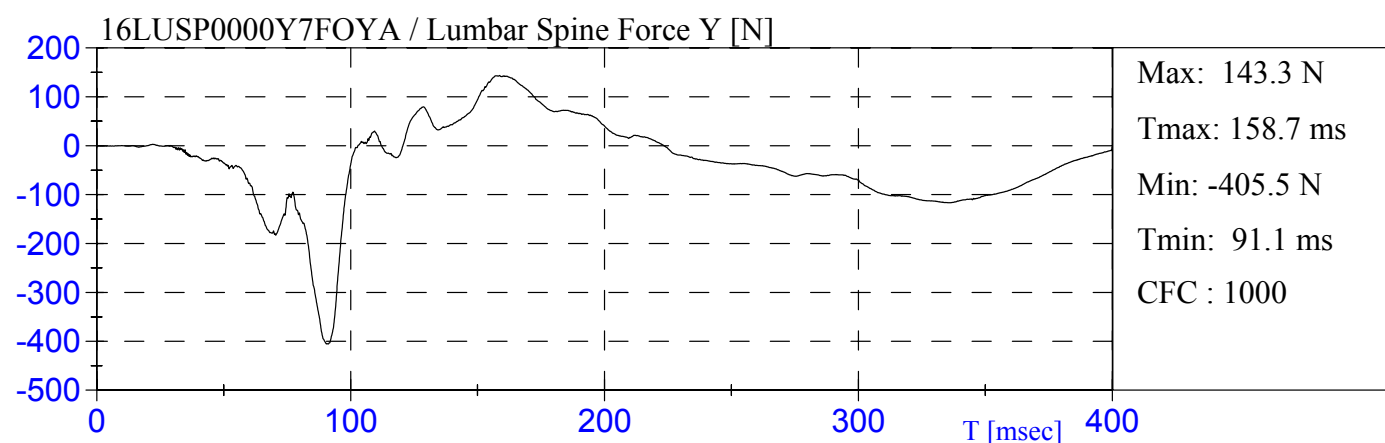
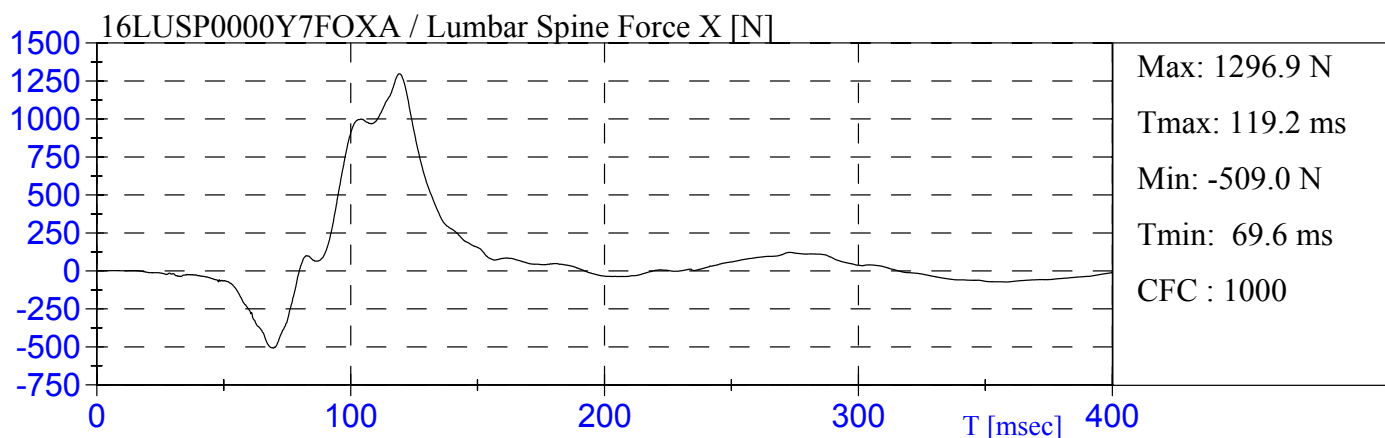
Max: 4.1 g
Tmax: 117.6 ms
Min: -10.6 g
Tmin: 79.2 ms
CFC : 180

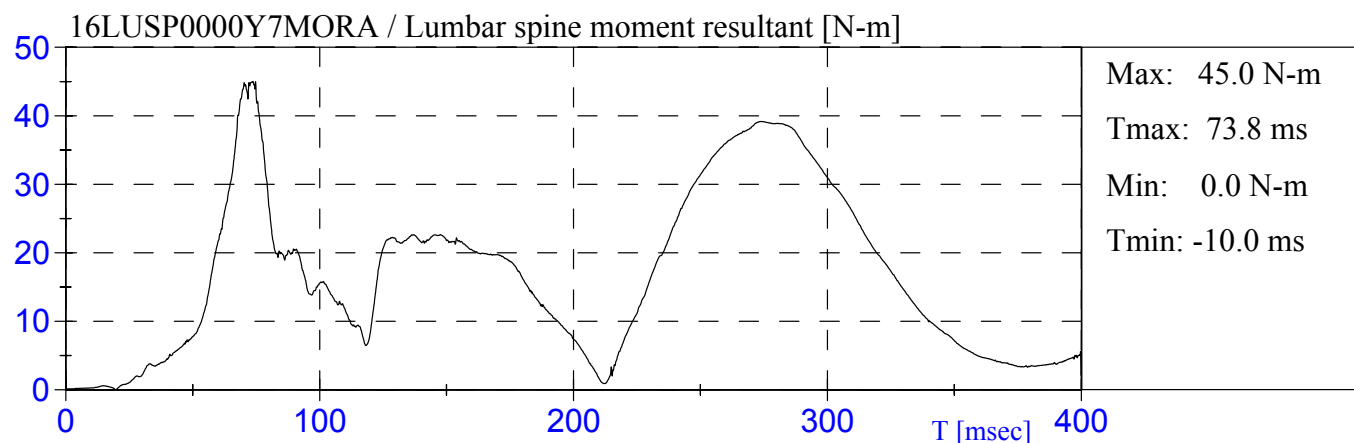
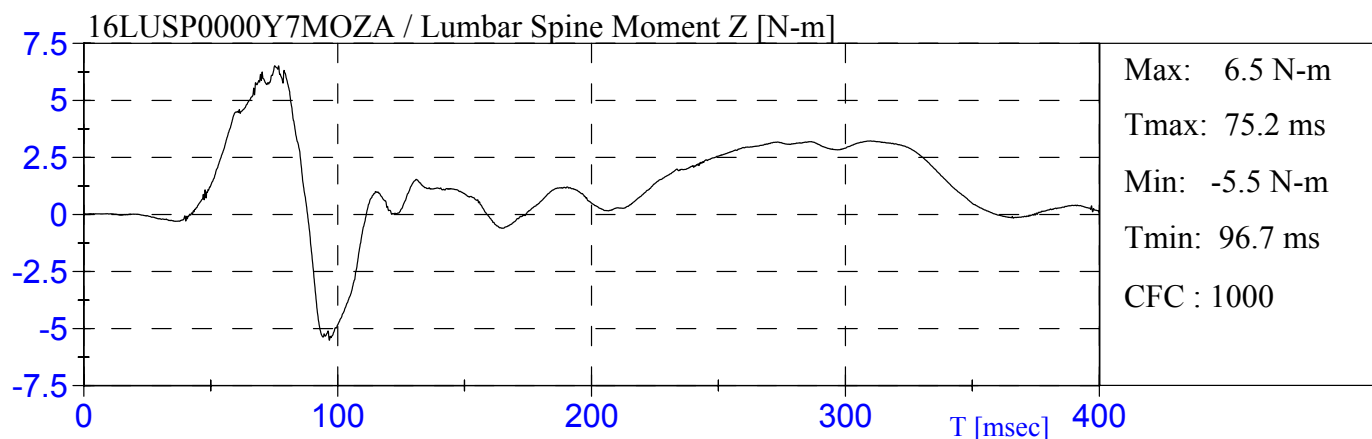
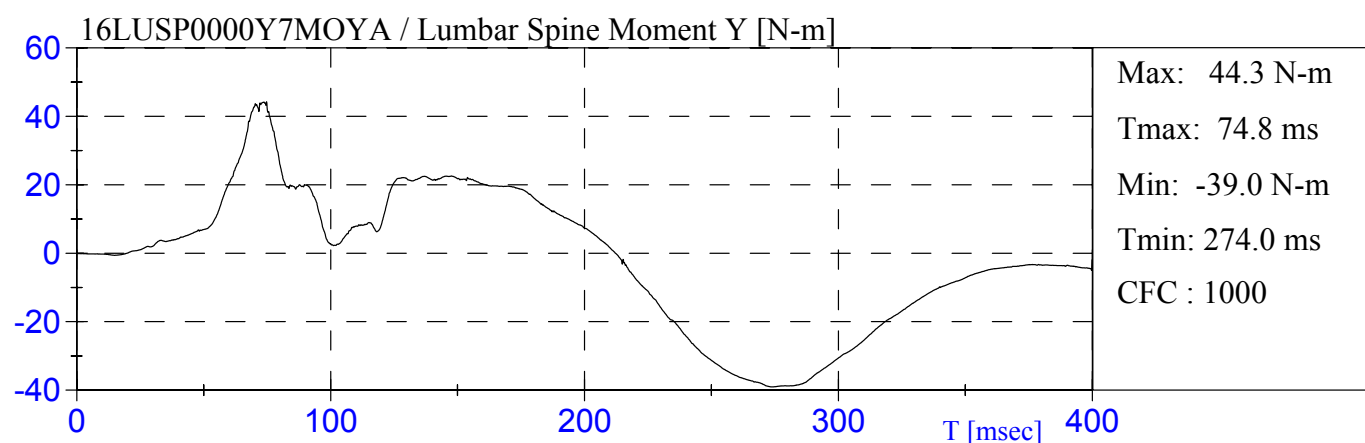
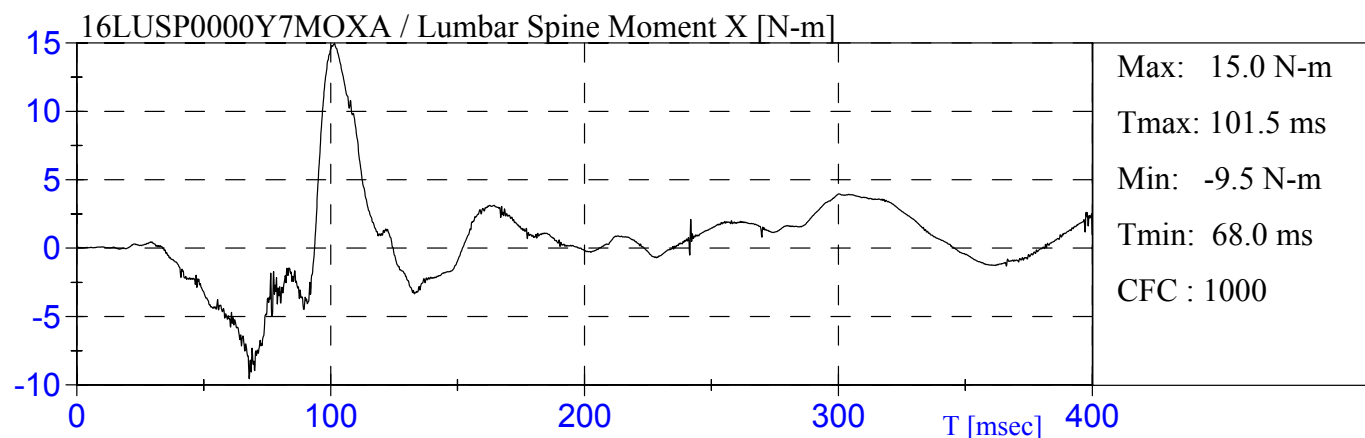
16CHST0000Y7ACRC / Chest acceleration resultant [g]

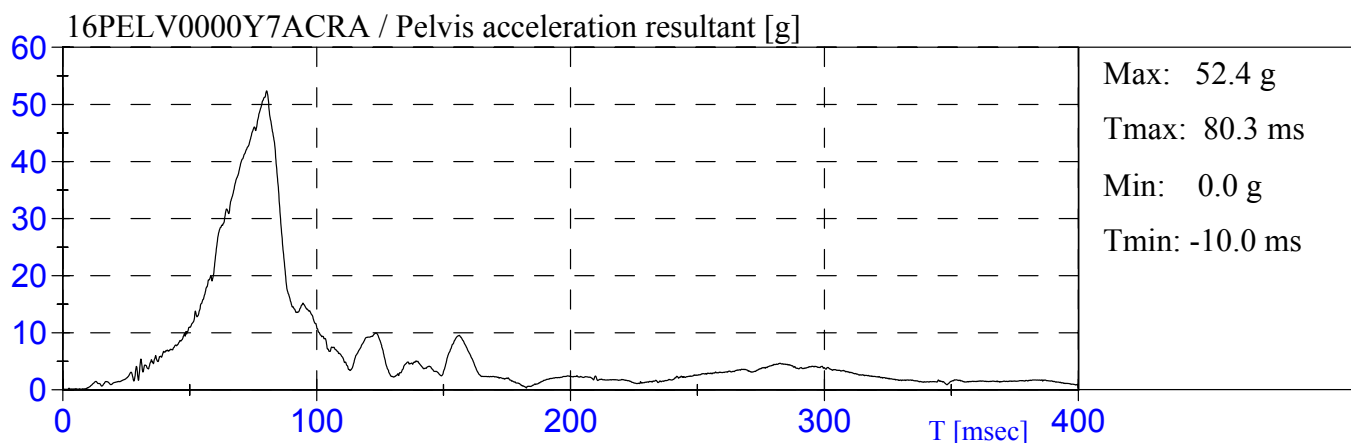
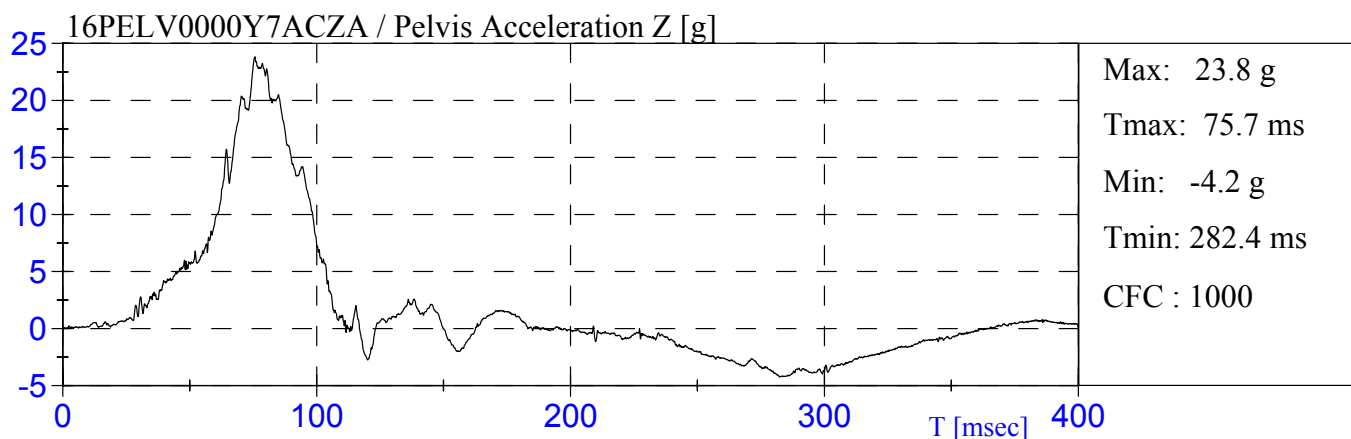
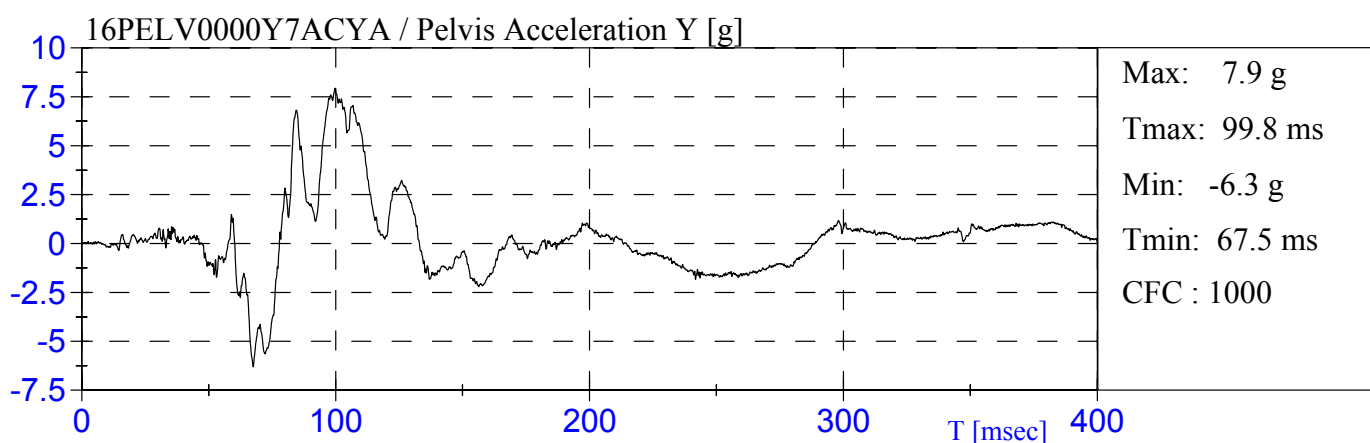
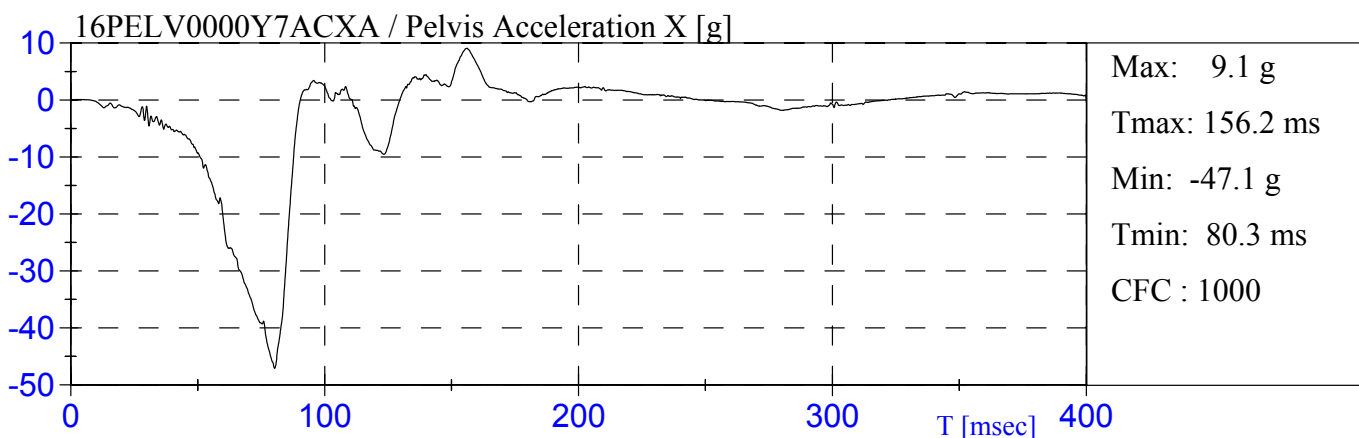


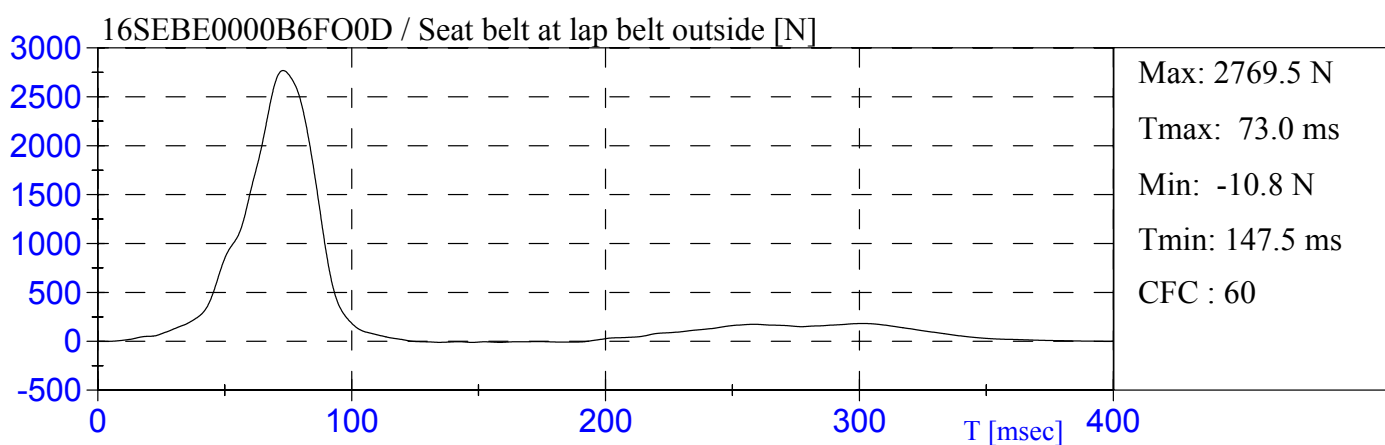
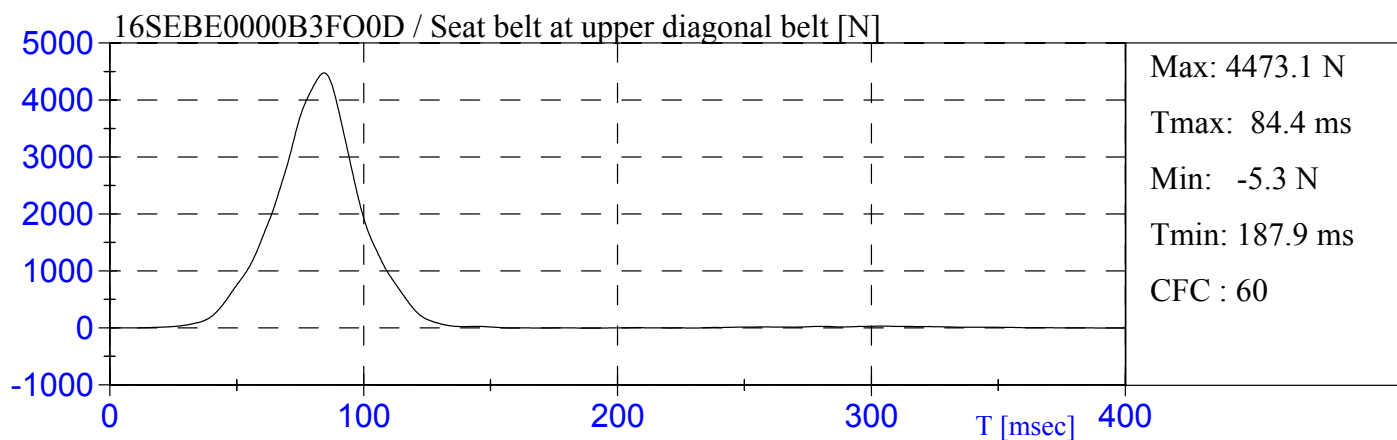
Max: 45.6 g
Tmax: 75.7 ms
Min: 0.0 g
Tmin: -10.0 ms

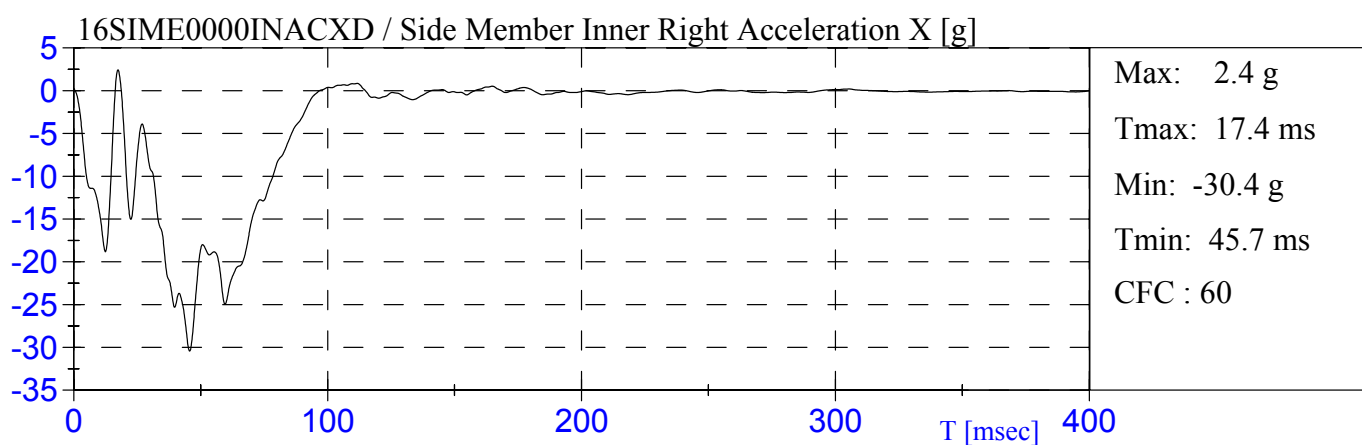
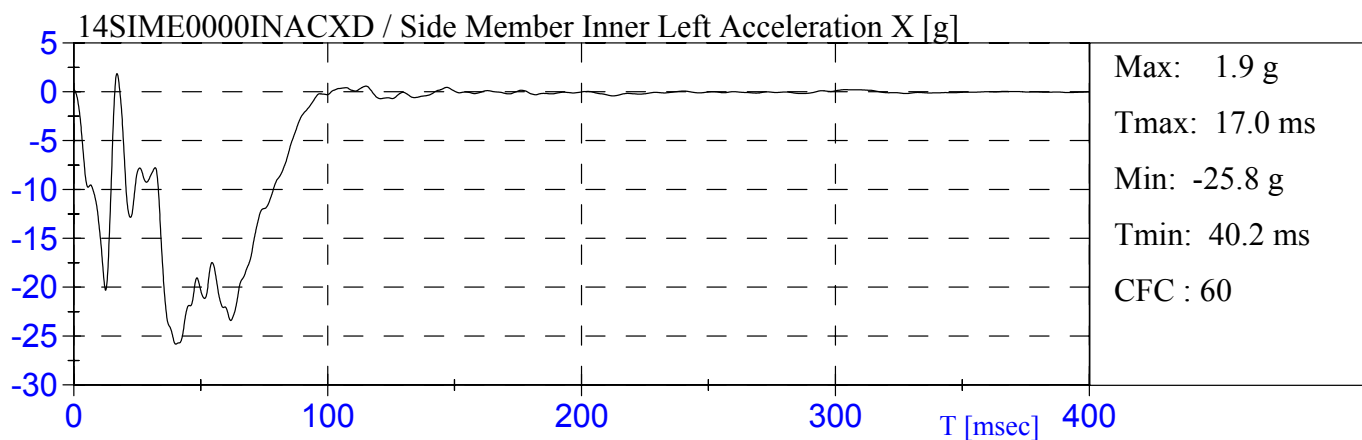


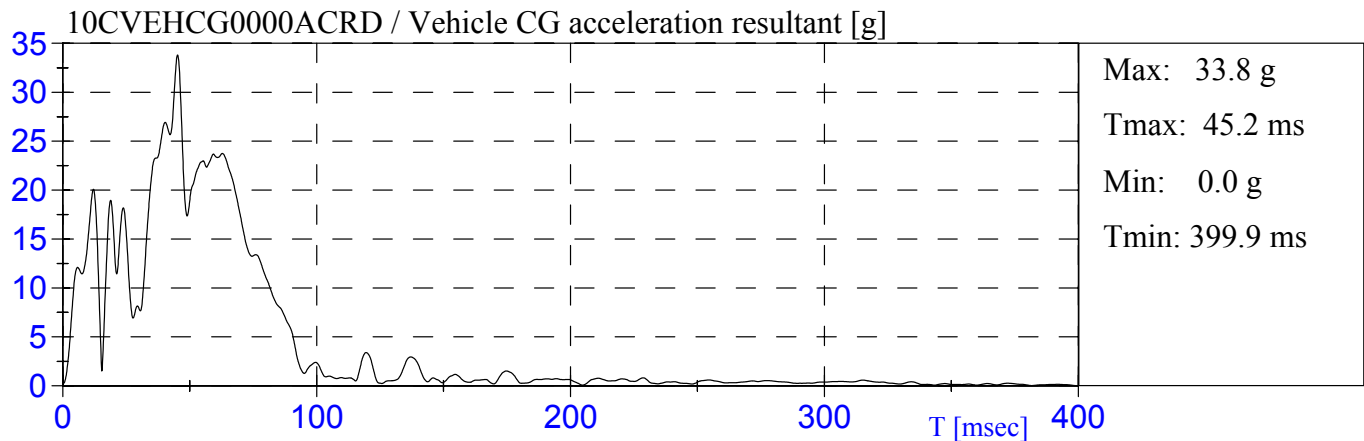
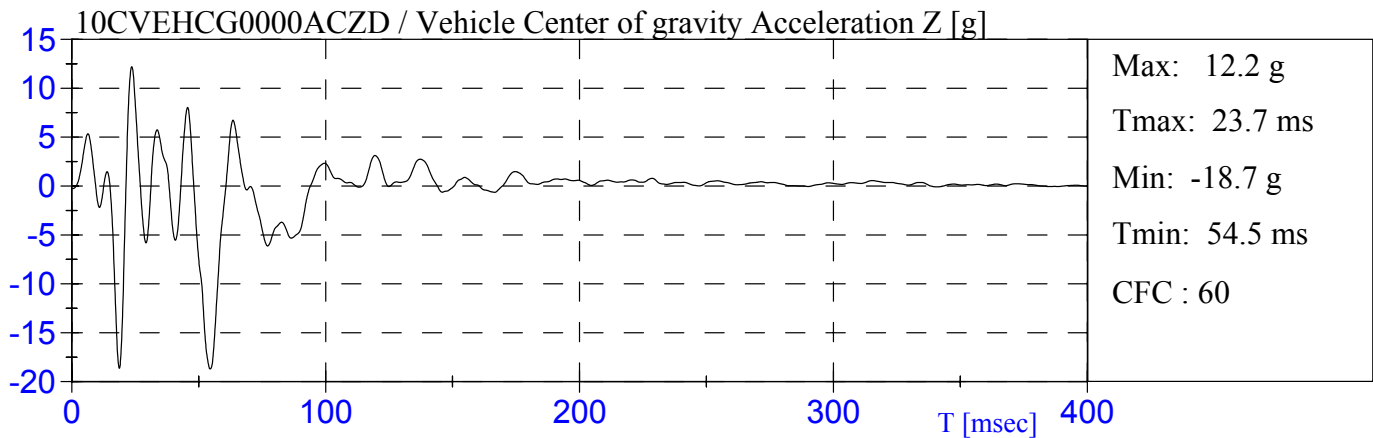
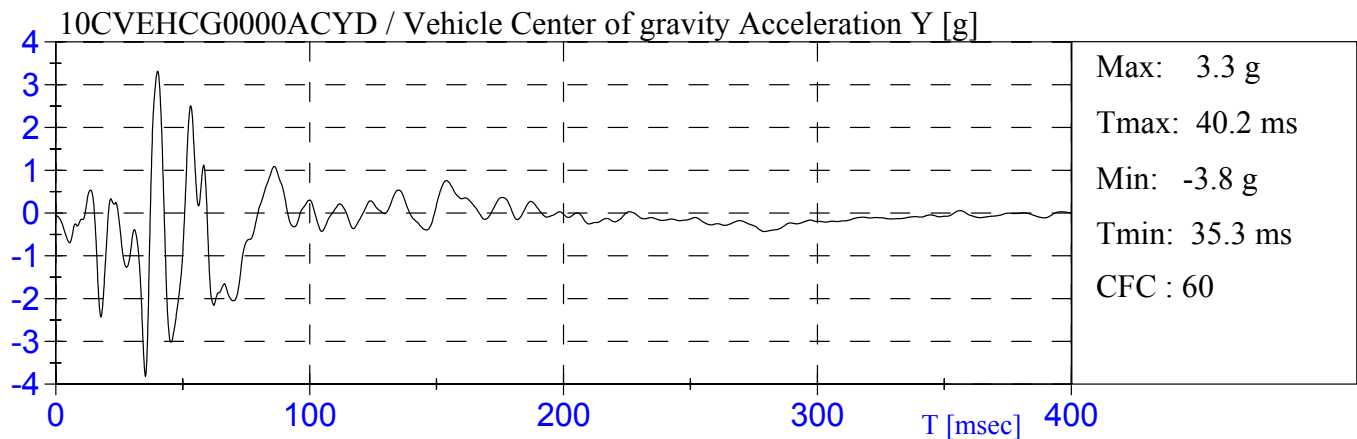
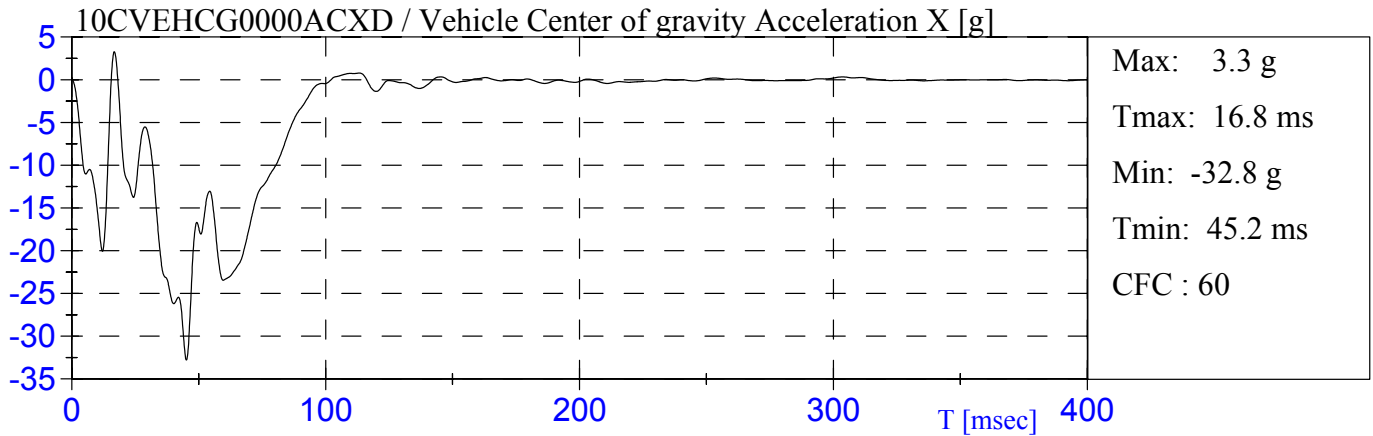


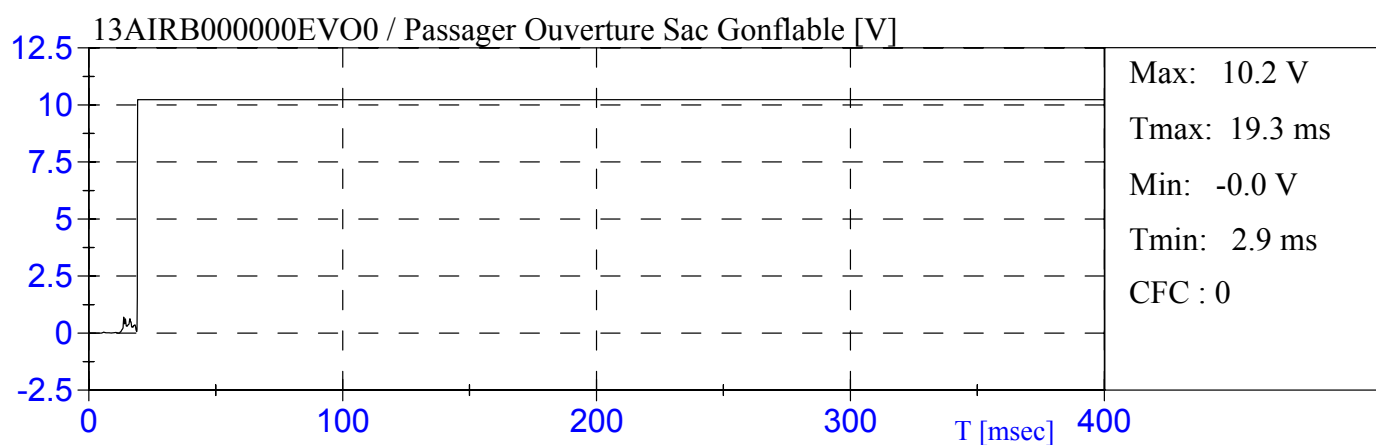
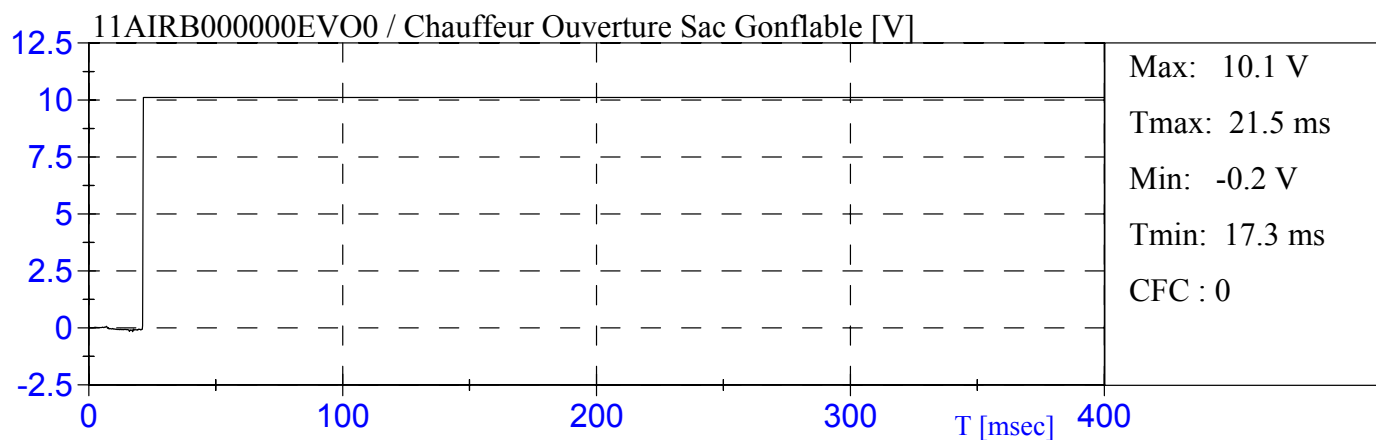


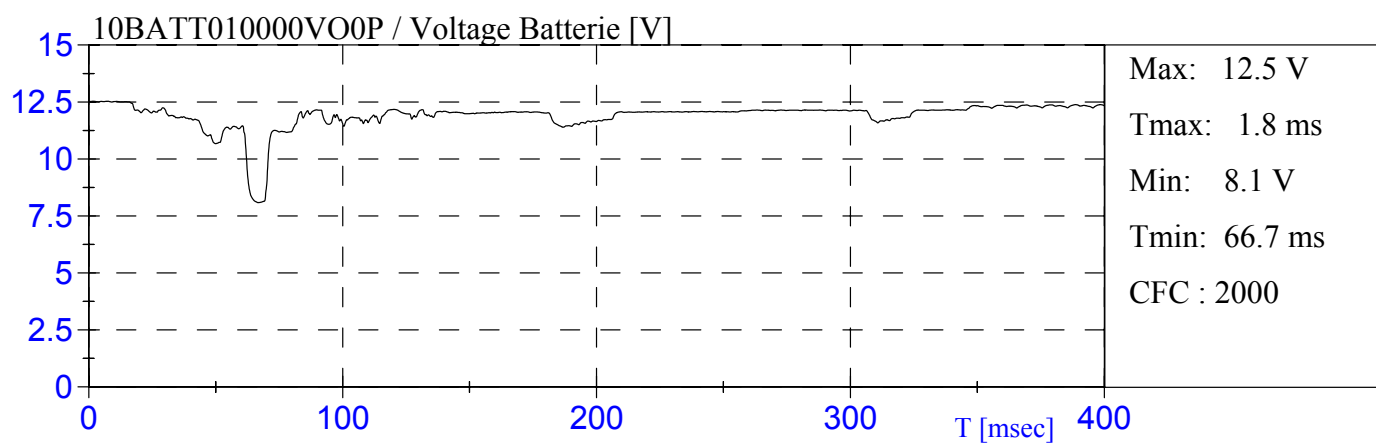


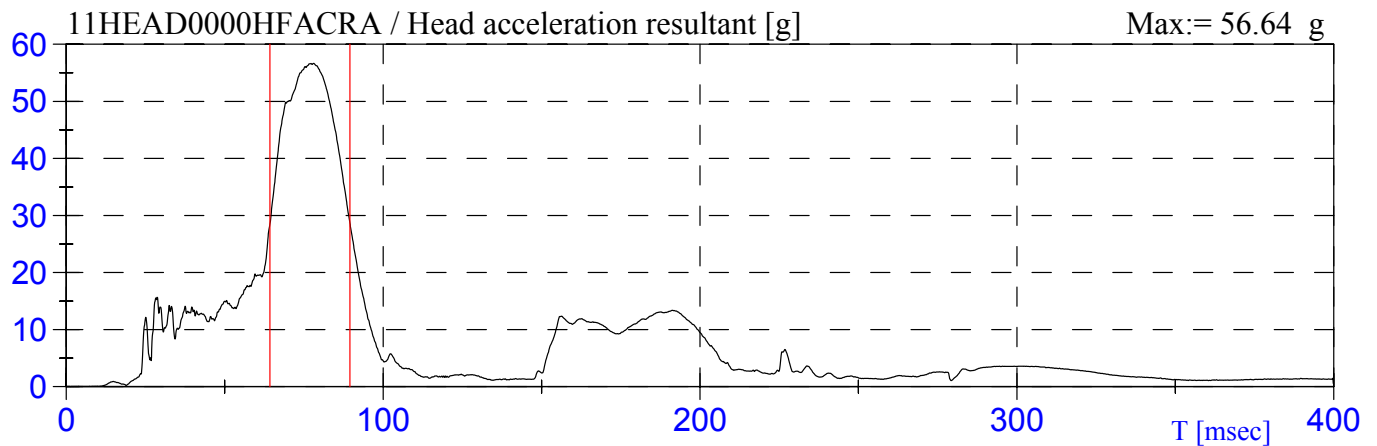








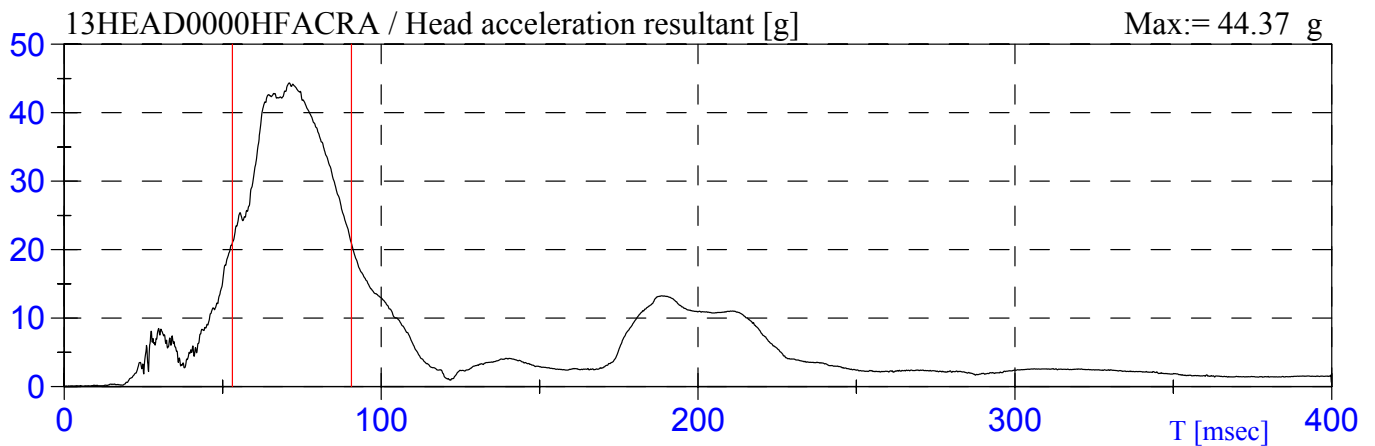




HEAD INJURY CRITERIA (HIC) *
CRITÈRE DE BLESSURE DE LA TÊTE

HIC:= 396	HIC(36ms):= 396	HIC(15ms):= 315
T1:= 64.3 ms	T1:= 64.3 ms	T1:= 68.7 ms
T2:= 89.5 ms	T2:= 89.5 ms	T2:= 83.7 ms

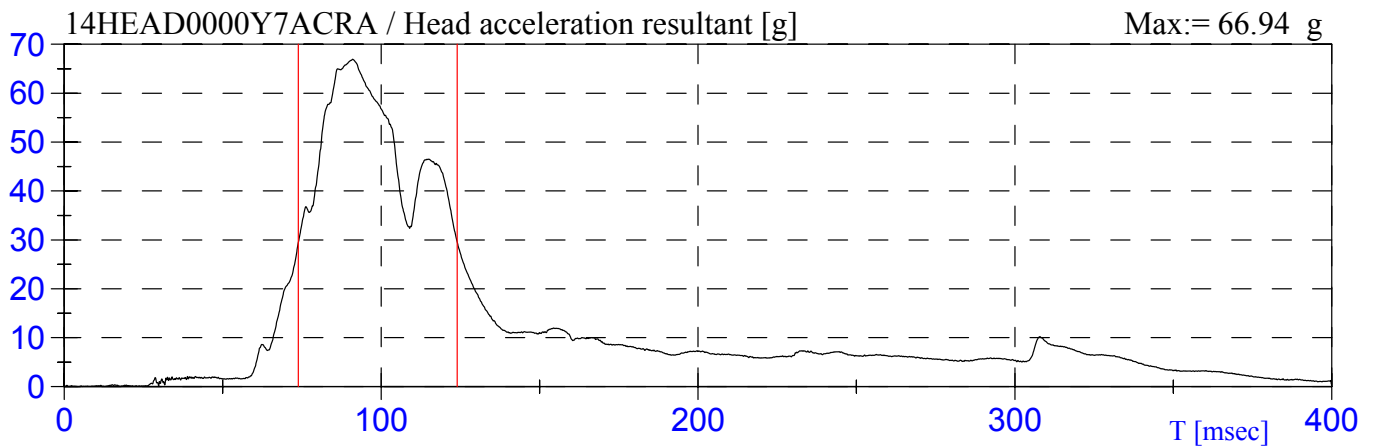
* Selon / According To: SAE J1727 96-08



HEAD INJURY CRITERIA (HIC) *
 CRITÈRE DE BLESSURE DE LA TÊTE

HIC:= 272	HIC(36ms):= 271	HIC(15ms):= 177
T1:= 53.1 ms	T1:= 53.8 ms	T1:= 62.4 ms
T2:= 90.6 ms	T2:= 89.8 ms	T2:= 77.4 ms

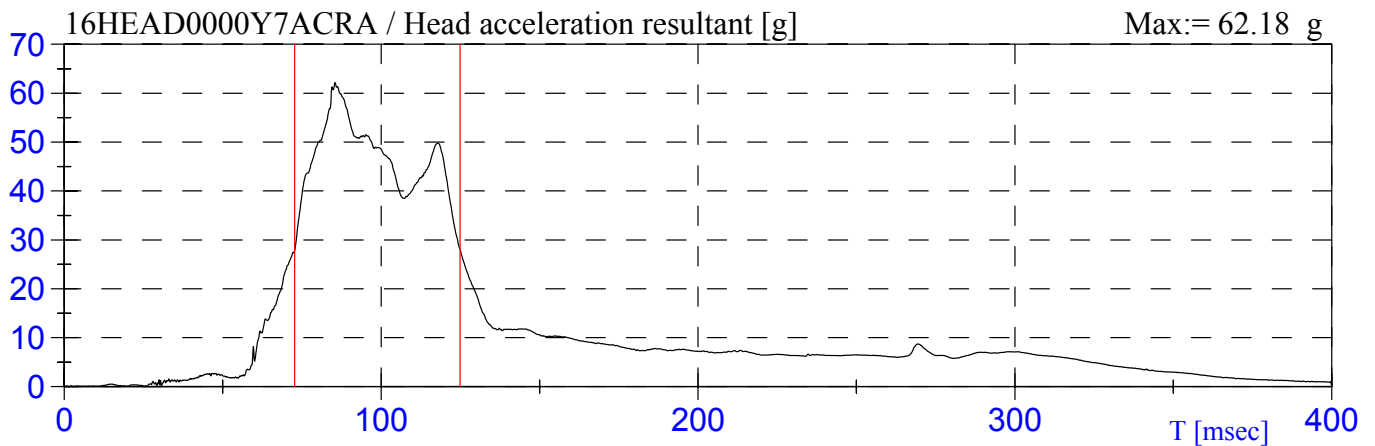
* Selon / According To: SAE J1727 96-08



HEAD INJURY CRITERIA (HIC) *
CRITÈRE DE BLESSURE DE LA TÊTE

HIC:= 855	HIC(36ms):= 755	HIC(15ms):= 477
T1:= 73.9 ms	T1:= 80.5 ms	T1:= 83.9 ms
T2:= 124.0 ms	T2:= 116.5 ms	T2:= 98.9 ms

* Selon / According To: SAE J1727 96-08



HEAD INJURY CRITERIA (HIC) *

CRITÈRE DE BLESSURE DE LA TÊTE

HIC:= 773	HIC(36ms):= 608	HIC(15ms):= 338
T1:= 72.7 ms	T1:= 75.7 ms	T1:= 81.3 ms
T2:= 124.9 ms	T2:= 111.7 ms	T2:= 96.3 ms

* Selon / According To: SAE J1727 96-08

Neck Injury Criteria: 11NIJCIP000000YX

$N_{ij}^* = 0.50$

Valeurs critiques
Criticals Values

N _{tf}	N _{te}	N _{cf}	N _{ce}	Tc	4287
				Cc	3880
0.14	0.37	0.06	0.50	Fc	155
				Ec	67

* Selon / According To: Federal Register 5/2000

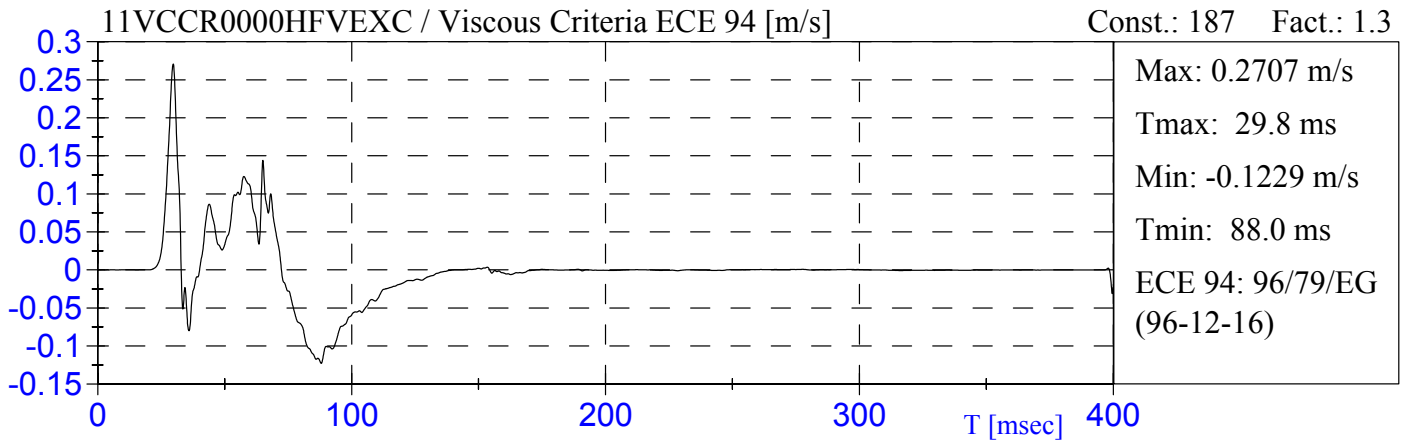
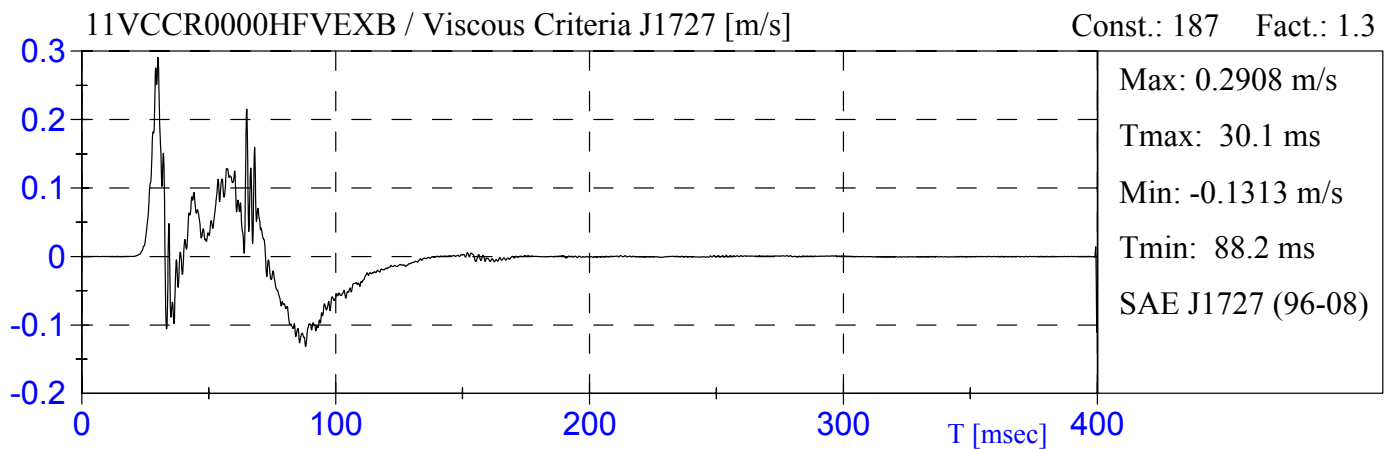
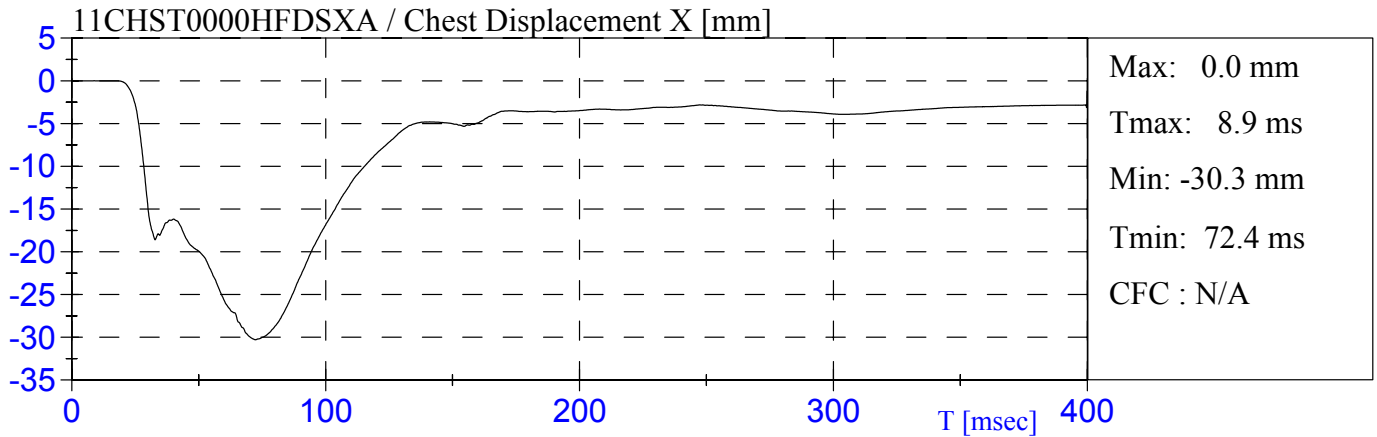
Neck Injury Criteria: 13NIJCIP000000YX

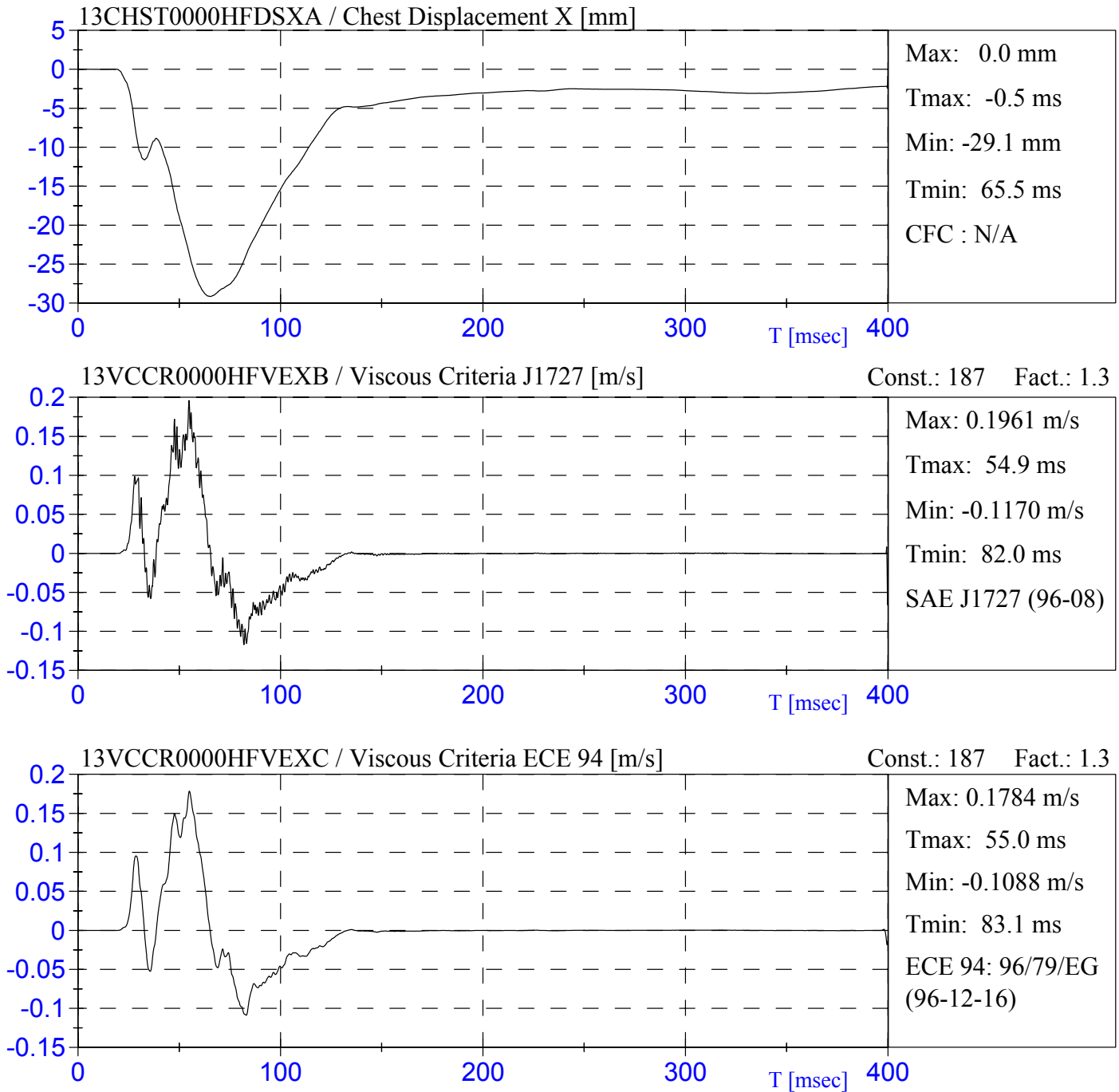
$N_{ij}^* = 0.39$

Valeurs critiques
Criticals Values

N _{tf}	N _{te}	N _{cf}	N _{ce}	Tc	4287
				Cc	3880
0.21	0.30	0.12	0.39	Fc	155
				Ec	67

* Selon / According To: Federal Register 5/2000





APPENDICE /APPENDIX C

**DONNÉES DES TEMPÉRATURES
TEMPERATURE DATA**

Temperature TC05-202

