

V3081

**RAPPORT D'ESSAI - TEST REPORT**

**COLLISION FRONTALE DÉCALÉE DE RECHERCHE  
RESEARCH OFFSET FRONTAL IMPACT**

**VEHICULE D'ESSAI / TEST VEHICLE  
PLYMOUTH BREEZE TC # 99-213**

**FACE DÉFORMABLE / DEFORMABLE FACE  
ETUDE DE BLESSURES AVEC COUSSINS GONFLABLES  
AIR BAG AGGRESSIVENESS STUDY  
PHASE II**

Préparé par :  
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CENTRE D'ESSAIS ET DE RECHERCHE  
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Blainville (Québec) J7C 5C9

N° de contrat : 99-5001  
Rapport N°: RR 99-139

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

Prepared by :  
PMG TECHNOLOGIES  
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SAFETY AND SECURITY  
Research Engineering and  
Vehicle Testing  
Ottawa (Ontario)

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	1998-01-11	Véhicule Vehicle	PLYMOUTH BREEZE 1999	T.C. N° T.C.No	99-213
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**VÉHICULE D'ESSAI - TEST VEHICLE**

Année du modèle - Model Year <b>1999</b>	Fabricant - Manufacturer <b>CHRYSLER LTD.</b>	Modèle - Model <b>Plymouth Breeze</b>
Type de carrosserie - Body Style <b>Berline 4P/4D Sedan</b>	Boîte de vitesse - Transmission Type <b>Automatique / Automatic</b>	Moteur - Engine <b>2.4 l</b>
Date de fabrication - Date of Manufacture <b>10-98</b>	Cylindres - Cylinders <b>4 cyl.</b>	N° d'ident. du véhicule - Vehicle Ident. No. <b>1P3EJ46X5XN569129</b>
Lecture de l'odomètre - Odometer Reading <b>109 km</b>	Nombre de places assises désignées Number of Designated Seating Positions <b>5</b>	Numéro d'ident. PMG - PMG Ident. Number <b>UN9-626</b>
PNBV - GVWR <b>1825 kg</b>	PNBE (Avant) - GAWR (Front) <b>1018 kg</b>	PNBE (Arrière) - GAWR (Rear) <b>830 kg</b>

**CONFIGURATION D'ESSAI - TEST CONFIGURATION**

Type d'essai - Test type <b>Véh. vs barrière - Veh. vs barrier</b>	Vitesse d'impact** Impact velocity** <b>35.6 km/h</b>	Angle d'impact Impact angle <b>0 °</b>	Masse du véhicule d'essai Test vehicle mass <b>1598 kg</b>	Pourcentage d'impact sur véhicule d'essai Impact percentage on test vehicle <b>44.2 %</b>
Coussins gonflables (Frontaux) - Air bags (Frontal) Activés-Activated <input checked="" type="checkbox"/> Désactivés-Deactivated <input type="checkbox"/> Normal <input type="checkbox"/> Puiss. réduite-Depowered <input type="checkbox"/> Second or New Generation - Seconde ou Nouvelle Génération <input type="checkbox"/> Autre (spécifier) - Other (specify) <input type="checkbox"/>		Coussins gonflables (Latéraux) - Air bags (Lateral) Activés-Activated <input type="checkbox"/> Désactivés-Deactivated <input type="checkbox"/> Normal <input type="checkbox"/> Puiss. réduite-Depowered <input type="checkbox"/> Second or New Generation - Seconde ou Nouvelle Génération <input type="checkbox"/> Autre (spécifier) - Other (specify) <b>N/A</b> <input checked="" type="checkbox"/>		
Description et position du mannequin (Conducteur) Dummy description and position (Driver) DESCRIPTION POSITION <input type="checkbox"/> 50% <input checked="" type="checkbox"/> avancée / near <input checked="" type="checkbox"/> 5% <input type="checkbox"/> mi-course / mid-travel <input type="checkbox"/> autre / other <input type="checkbox"/> autre / other		Description et position du mannequin (Passager avant) Dummy description and position (Front Passenger) DESCRIPTION POSITION <input type="checkbox"/> 50% <input checked="" type="checkbox"/> avancée / near <input checked="" type="checkbox"/> 5% <input type="checkbox"/> mi-course / mid-travel <input type="checkbox"/> autre / other <input type="checkbox"/> autre / other		
Description du mannequin (Passager arrière gauche) Dummy description (Left Rear Passenger) <input type="checkbox"/> 50% <input type="checkbox"/> N/A <input type="checkbox"/> 5% <input checked="" type="checkbox"/> 18 mois <input type="checkbox"/> 9 mois <input type="checkbox"/> 3 ans <input type="checkbox"/> 6 ans		Description du mannequin (Passager arrière droit) Dummy description (Right Rear Passenger) <input type="checkbox"/> 50% <input type="checkbox"/> N/A <input type="checkbox"/> 5% <input checked="" type="checkbox"/> 18 mois <input type="checkbox"/> 9 mois <input type="checkbox"/> 3 ans <input type="checkbox"/> 6 ans		

\*\* Tel que mesuré durant les derniers 3.7 mètres de trajet. / \*\* As measured over final 3.7 meters of travel.

**DONNÉES DU VÉHICULE D'ESSAI / TEST VEHICLE DATA**

Capacité du véhicule - Vehicle Capacity <b>392 kg</b>	Masse des bagages - Cargo Load <b>42 kg</b>	Type de sièges - Type of seats		Types de dossiers - Type of seat back			
			Avt - Frt	Arr - Rr		Avt - Frt	Arr - Rr
Nombre d'occupants (places assises désignées) Number of Occupants (Designated Seating Positions) Avant - Front <b>2</b> Arrière - Rear <b>3</b> Total <b>5</b>		Banquette Bench	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Dossier ajustable Adjustable Seat Back	<input checked="" type="checkbox"/>	<input type="checkbox"/>
		Baquet Bucket	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Dossier non-ajustable Non-adjustable Seat Back	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Pression à froid - Cold Tire Pressure Avant - Front <b>210 kPa</b> Arrière - Rear <b>210 kPa</b> Secours - Spare <b>N/A kPa</b>					Dimension - Size <b>P195/70R14 90S</b>		

Essai réalisé selon la procédure de PMG: Collision frontale décalée de recherche, version 2, révision 21 décembre 1998.  
Test performed according to PMG procedure: Research offset frontal impact, version 2, revised December 21<sup>st</sup>, 1998.

Préparé par : Prepared by : <b>Jean Melançon</b>	Date : <b>25/02/99</b>
Vérifié par : Verified by : <b>Alain Bussièrès</b>	Date : <b>25/2/99</b>
Rapport approuvé par : Report approved by : <b>Alain Bussièrès</b>	Date : <b>25/2/99</b>
Rapport accepté par le client : Report accepted by the client :	Date :

Date de collision Crash date	1998-01-11	Véhicule Vehicle	PLYMOUTH BREEZE 1999	T.C. N° T.C.No	99-213
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**PREMIÈRE PESÉE : VÉHICULE TEL QUE LIVRÉ (AVEC LIQUIDES AU MAXIMUM)**  
**FIRST WEIGHT : VEHICLE AS RECEIVED (WITH MAXIMUM FLUIDS)**

Avant gauche - Left front 447.7 kg	Avant droit - Right front 432.7 kg	Masse avant totale - Total front weight 880.4 kg
Arrière gauche - Left rear 252.9 kg	Arrière droit - Right rear 251.5 kg	Masse arrière totale - Total rear weight 504.4 kg
Masse totale côté gauche - Total left side weight 700.6 kg	Masse totale côté droit - Total right side weight 684.2 kg	Masse totale - Total weight 1384.8 kg

**TROISIÈME PESÉE : VÉHICULE PRÊT POUR L'ESSAI**  
**THIRD WEIGHT : VEHICLE READY FOR TEST**

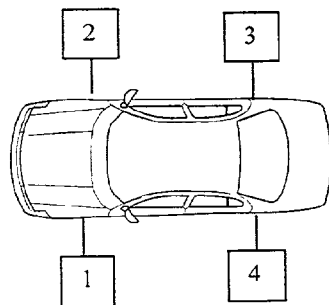
Avant gauche - Left front 478.6 kg	Avant droit - Right front 458.3 kg	Masse avant totale - Total front weight 936.9 kg
Arrière gauche - Left rear 340.4 kg	Arrière droit - Right rear 320.7 kg	Masse arrière totale - Total rear weight 661.1 kg
Masse totale côté gauche - Total left side weight 819.0 kg	Masse totale côté droit - Total right side weight 779.0 kg	Masse totale - Total weight 1598.0 kg

**ATTITUDE DU VÉHICULE / VEHICLE ATTITUDE**

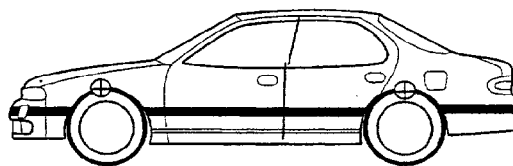
		Attitude tel que livré Attitude on delivery	Attitude chargé Attitude loaded	Attitude tel que testé Attitude as tested
1	Roue avant gauche* Left front wheel*	708 mm	697 mm	699 mm
2	Roue avant droite* Front right wheel*	706 mm	694 mm	705 mm
3	Roue arrière droite* Rear right wheel*	723 mm	692 mm	686 mm
4	Roue arrière gauche* Rear left wheel*	723 mm	693 mm	682 mm

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

**Vue de plan / Plan view**



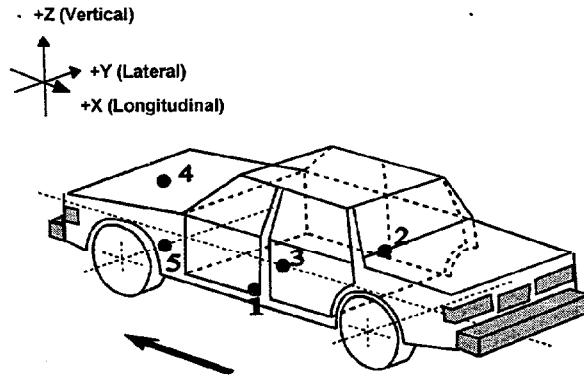
**Vue de côté / Side view**



⊕ Points de mesure / Mesure points

Date de collision Crash date	1998-01-11	Véhicule Vehicle	PLYMOUTH BREEZE 1999	T.C. N° T.C.No	99-213
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**EMPLACEMENT DES ACCÉLÉROMÈTRES  
ACCELEROMETER LOCATIONS**



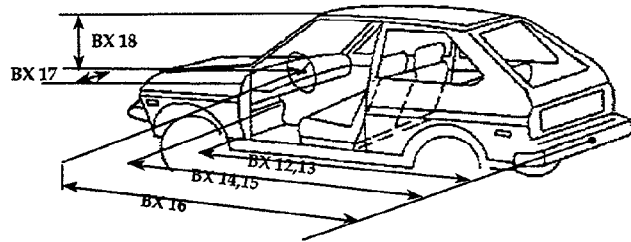
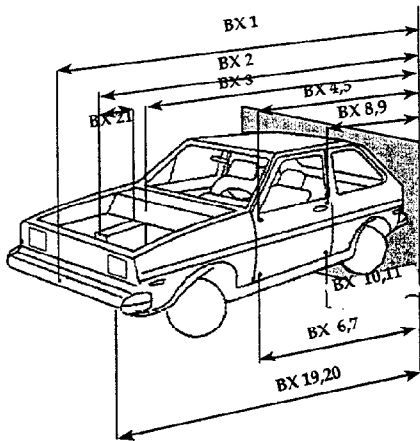
Direction de l'impact du véhicule d'essai  
Test Vehicle Impact Direction

**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		
		X	Y	Z
#1	Seuil de la porte gauche @ pilier "B" Left door sill @ pillar "B"	2534	-630	238
#2	Seuil de la porte droite @ pilier "B" Right door sill @ pillar "B"	2534	603	247
#3	Centre de gravité Centre of gravity	2053	-25	346
#4	Le dessus du moteur Top of engine	721	146	811
#5	Le dessous du moteur Bottom of engine	661	9	220

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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 supérieur avant porte avant droite  
Rear surface of front superior part of right front door
- 5 - Surface arrière à la partie supérieur avant porte avant gauche  
Rear surface of front superior part of left front door
- 6 - Surface arrière à la partie inférieur avant porte avant droite  
Rear surface of front inferior part of right front door
- 7 - Surface arrière à la partie inférieur avant porte avant gauche  
Rear surface of front inferior part of left front door
- 8 - Surface arrière à la partie supérieur arrière porte avant droite  
Rear surface of rear superior part of right rear door
- 9 - Surface arrière à la partie supérieur arrière porte avant gauche  
Rear surface of rear superior part of left rear door
- 10 - Surface arrière à la partie inférieur arrière porte avant droite  
Rear surface of rear inferior part of right rear door
- 11 - Surface arrière à la partie inférieur arrière porte avant gauche  
Rear surface of rear inferior part of left rear door
- 12 - Surface arrière à la partie inférieur du pilier "A" droit  
Rear surface of rear inferior part of right pillar "A"
- 13 - Surface arrière à la partie inférieur 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" droit  
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**		BX*	AX**
1	4740	4634	12	3240	3241
2	4240	4236	13	3252	3250
3	3800	3798	14	3540	3539
4	3331	3327	15	3572	3547
5	3329	3329	16	2823	2847
6	3295	3283	17	394	390
7	3307	3307	18	440	412
8	2237	2236	19	4552	4596
9	2249	2251	20	4558	4303
10	2246	2234	21	397	405
11	2251	2253			

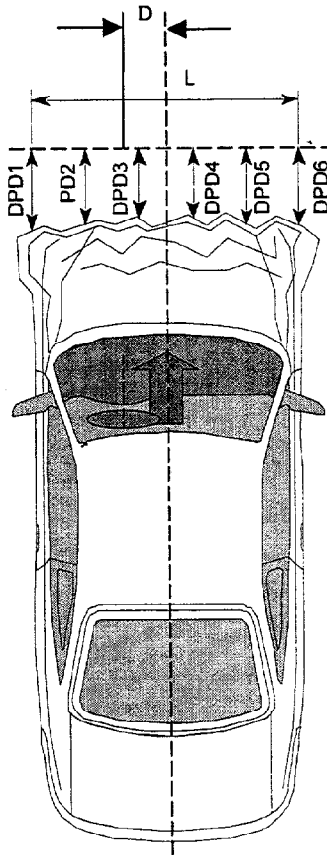
\* BX : Mesures du véhicule avant-essai. / Pre-test vehicle measurements data.

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

REMARQUES / COMMENTS :

Date de collision Crash date	1998-01-11	Véhicule Vehicle	PLYMOUTH BREEZE 1999	T.C. N° T.C.No	99-213
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MESURES DES DPD / DPP'S MEASUREMENTS



DPD 1:

DPD 2:

DPD 3:

DPD 4:

DPD 5:

DPD 6:

MESURE L:

MESURE D:

	AVANT ESSAI PRE-TEST	APRÈS ESSAI POST-TEST
DPD 1:	275	436
DPD 2:	92	264
DPD 3:	10	133
DPD 4:	11	85
DPD 5:	91	111
DPD 6:	267	248
MESURE L:		1500
MESURE D:		0

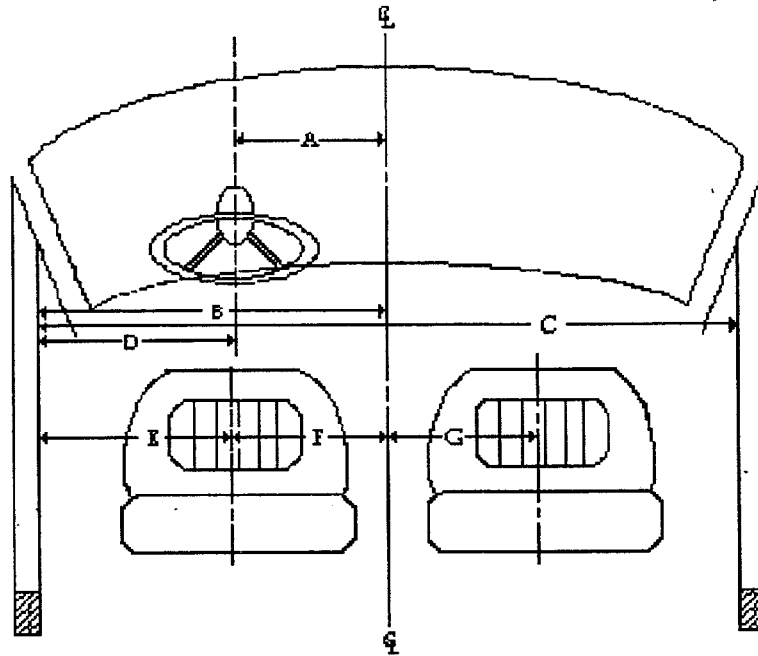
L : Longueur de la région endommagée  
Length of damaged region

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

REMARQUES / COMMENTS :

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**POSITION DES SIÈGES AVANT  
FRONT SEAT POSITION**



Code	Description	mm	Code	Description	mm
A	Centre du volant à la ligne de centre du véhicule Steering wheel center to center line of car	369	E	Seuil de la fenêtre au centre du siège (conducteur) Window edge to seat midline (driver)	484
B	Seuil de fenêtre à la ligne de centre du véhicule Window edge to center line of the vehicle	829	F	Centre du siège à la ligne de centre du véhicule (conducteur) Seat midline to center line of vehicle (driver)	345
C	Fenêtre à fenêtre Window to window	1644	G	Centre du siège à la ligne de centre du véhicule (passager) Seat midline to center line of vehicle (passenger)	343
D	Centre du volant au seuil de la fenêtre Steering wheel center to window edge	460			

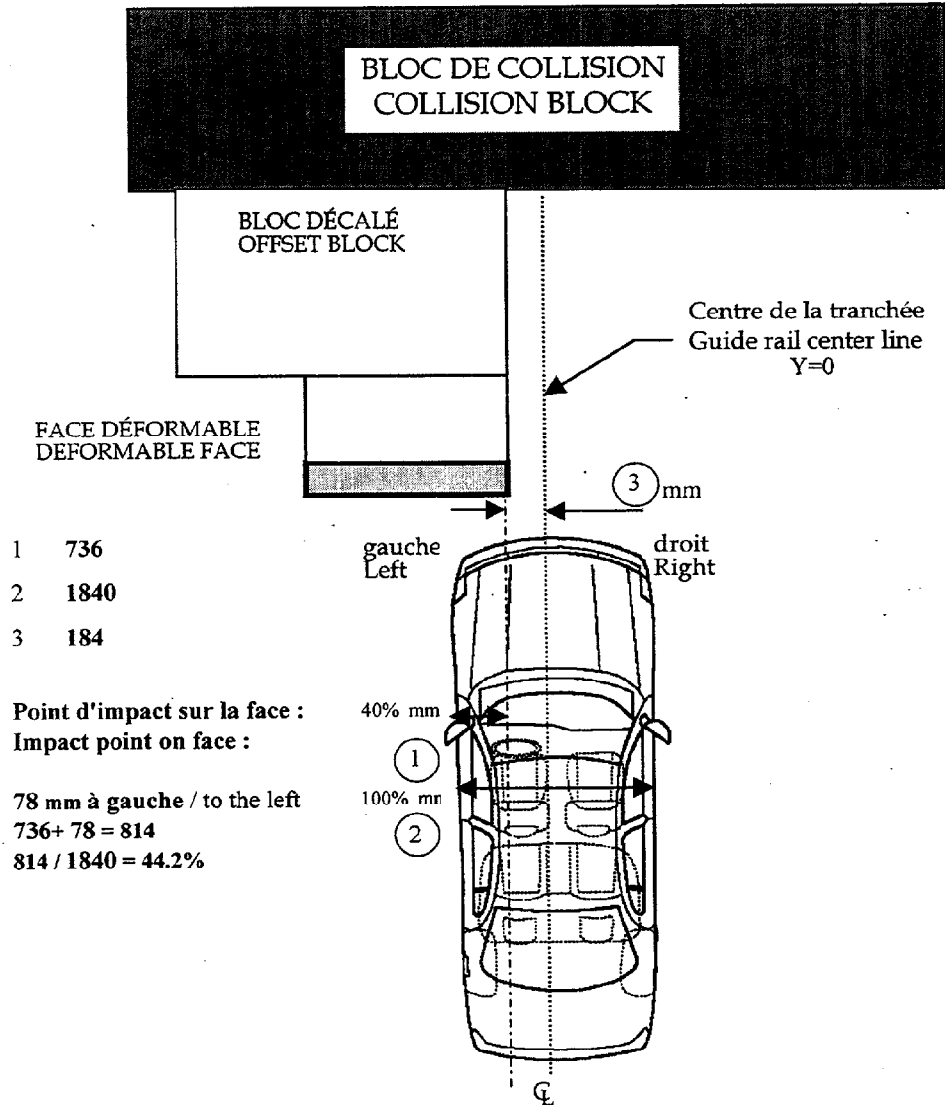
**Point de référence :** Centre transversal du véhicule, au point le plus avancé, au niveau du sol. Selon SAE J182a.  
**Reference point :** Transversal center of the vehicle, at the foremost point and at ground level. As per SAE J182a.

**Remarques - Comments:** Sièges avec ajustement avant/arrière conventionnel. Ceinture baudrier ajustable. Appuie-tête ajustable. Volant ajustable. Pas d'ajustement lombaire et de coussin du siège en hauteur. Dossier ajustable.

Seat with conventionnal fore/aft adjustment. Upper torso belt adjustable. Adjustable headrest. Adjustable steering wheel. Adjustable seat back. No lumbar or seat cushion height adjustment.

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POSITION INITIALE VÉHICULE/FACE DÉFORMABLE - VEHICLE INITIAL POSITION/DEFORMABLE FACE

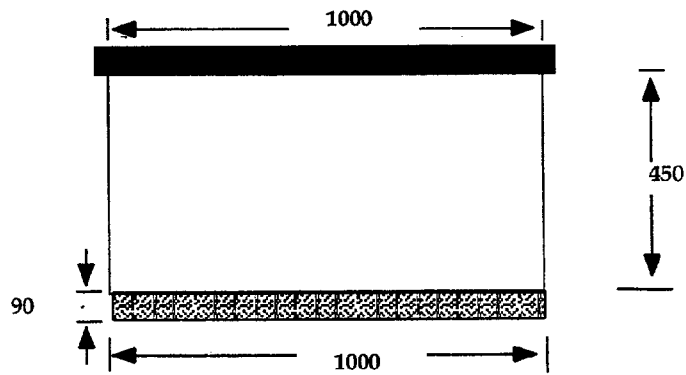
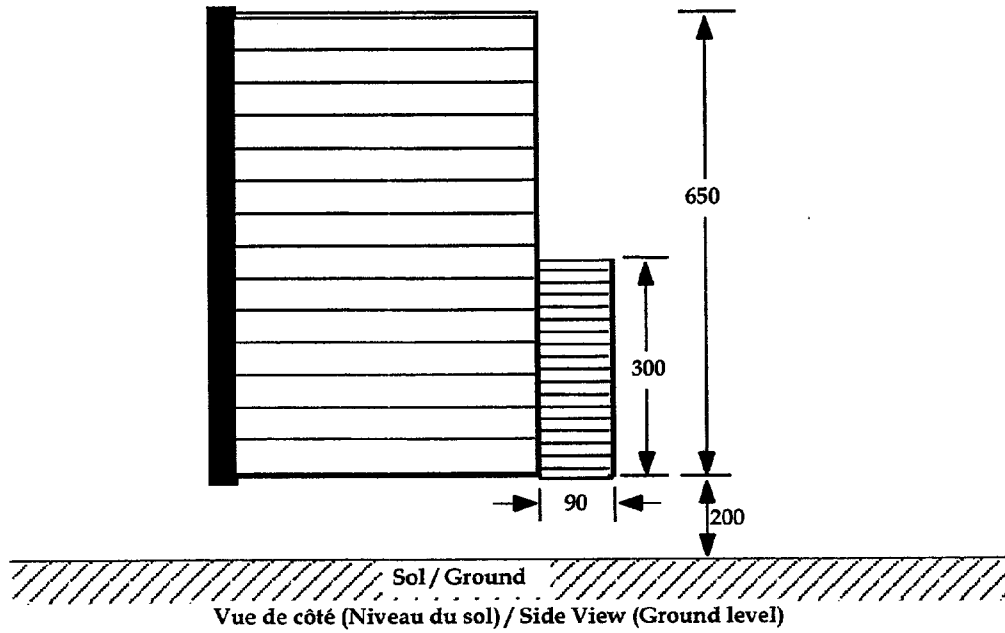


NOTE: La largeur maximale du véhicule est mesurée au pilier "B".  
NOTE: The maximum width of the vehicle is measured at the "B" pillar.

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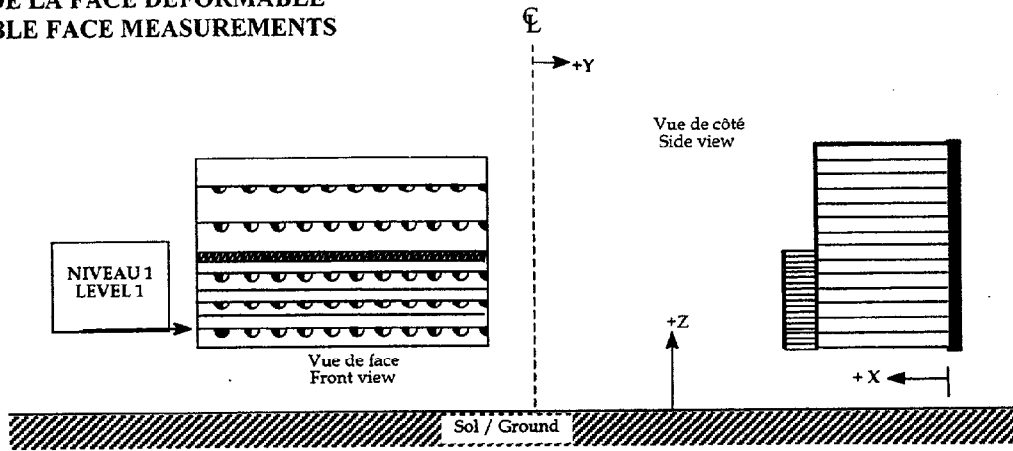
**DIMENSIONS DE LA FACE DÉFORMABLE - DEFORMABLE FACE DIMENSIONS**

(Toutes les mesures sont en mm / All measurements are in mm)



Date de collision Crash date	1999-01-11	Véhicule Vehicle	PLYMOUTH BREEZE 1999	T.C. N° T.C.No	99-213
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MESURES DE LA FACE DÉFORMABLE  
DEFORMABLE FACE MEASUREMENTS

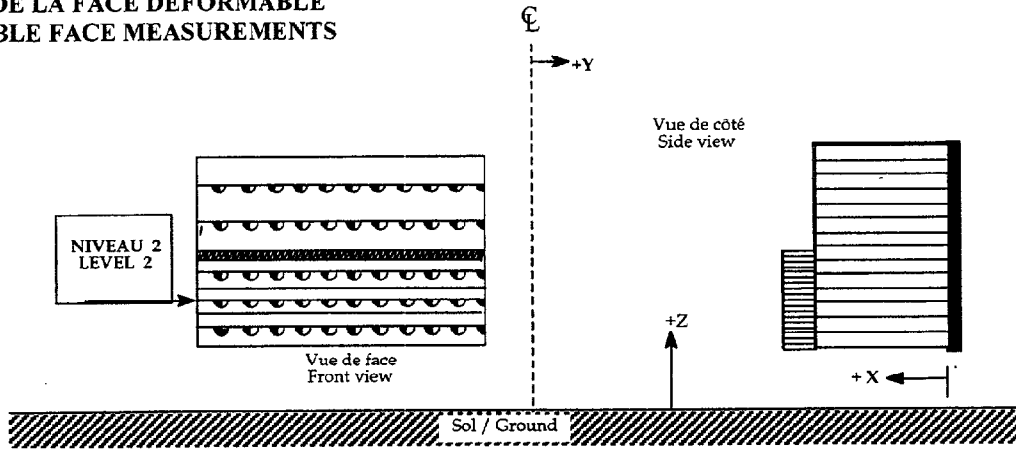


PRE-TEST			POST-TEST			Δ DIFFERENCE		
X	Y	Z	X	Y	Z	X	Y	Z
547	-1091	245	589	-1091	244	-42	0	1
547	-991	245	574	-994	245	-27	3	0
548	-892	244	552	-891	244	-4	-1	0
548	-793	244	504	-791	243	44	-2	1
548	-691	244	444	-691	245	104	0	-1
549	-592	244	386	-591	244	163	-1	0
548	-493	244	347	-491	244	201	-2	0
549	-391	244	313	-389	242	236	-2	2
550	-292	243	265	-292	243	285	0	0
550	-192	244	229	-192	244	321	0	0

Point (0,0,0): Plan vertical avant du support de face en X, centre latéral du système de guidage ou centre du véhicule en Y et niveau du sol en Z.  
Front vertical plane of face holder in X axis, lateral center of the guiding system or vehicle longitudinal centreline in the Y axis and ground level in the Z axis.

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MESURES DE LA FACE DÉFORMABLE  
DEFORMABLE FACE MEASUREMENTS

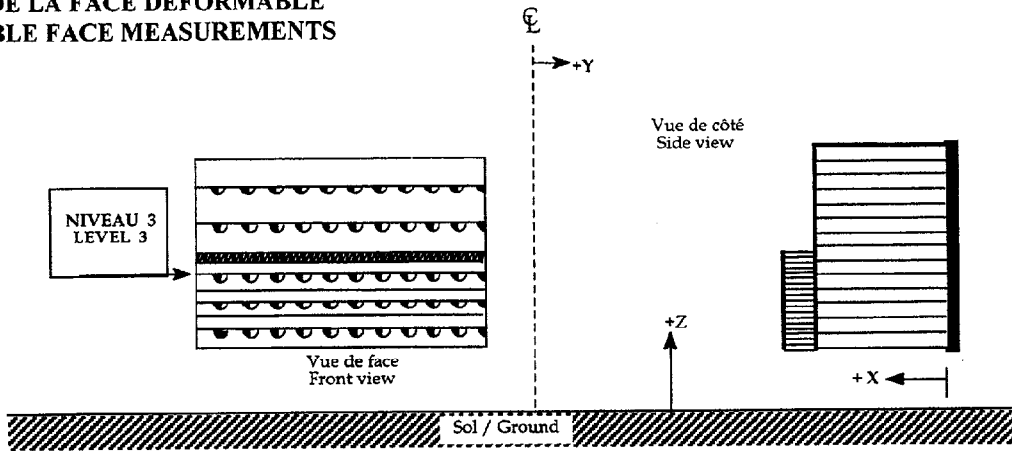


PRE-TEST			POST-TEST			Δ DIFFERENCE		
X	Y	Z	X	Y	Z	X	Y	Z
547	-1091	356	585	-1092	354	-38	1	2
547	-991	355	549	-990	355	-2	-1	0
547	-891	355	512	-890	355	35	-1	0
548	-791	355	471	-792	354	77	1	1
548	-691	355	419	-691	356	129	0	-1
548	-591	355	339	-591	355	209	0	0
548	-492	355	297	-493	355	251	1	0
549	-391	354	242	-392	354	307	1	0
549	-292	354	188	-293	352	361	1	2
550	-192	354	97	-191	354	453	-1	0

Point (0,0,0): Plan vertical avant du support de face en X, centre latéral du système de guidage ou centre du véhicule en Y et niveau du sol en Z.  
Front vertical plane of face holder in X axis, lateral center of the guiding system or vehicle longitudinal centreline in the Y axis and ground level in the Z axis.

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MESURES DE LA FACE DÉFORMABLE  
DEFORMABLE FACE MEASUREMENTS

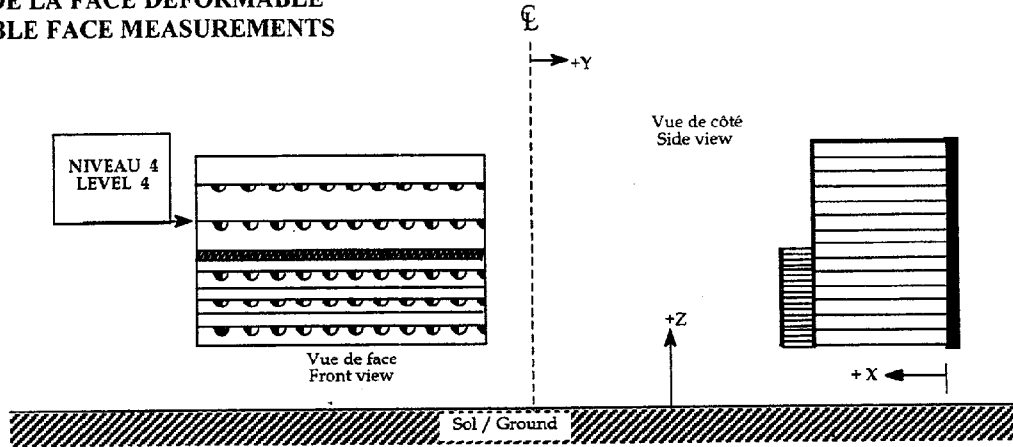


PRE-TEST			POST-TEST			Δ DIFFERENCE		
X	Y	Z	X	Y	Z	X	Y	Z
546	-1091	465	608	-1091	467	-62	0	-2
547	-990	465	557	-990	464	-10	0	1
547	-890	467	508	-890	467	39	0	0
547	-790	467	465	-790	466	82	0	1
548	-690	468	373	-690	468	175	0	0
548	-590	468	292	-592	469	256	2	-1
548	-491	468	220	-490	468	328	-1	0
548	-392	468	162	-391	470	386	-1	-2
548	-290	468	101	-290	468	447	0	0
549	-191	470	12	-192	473	537	1	-3

Point (0,0,0): Plan vertical avant du support de face en X, centre latéral du système de guidage ou centre du véhicule en Y et niveau du sol en Z.  
Front vertical plane of face holder in X axis, lateral center of the guiding system or vehicle longitudinal centreline in the Y axis and ground level in the Z axis.

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MESURES DE LA FACE DÉFORMABLE  
DEFORMABLE FACE MEASUREMENTS

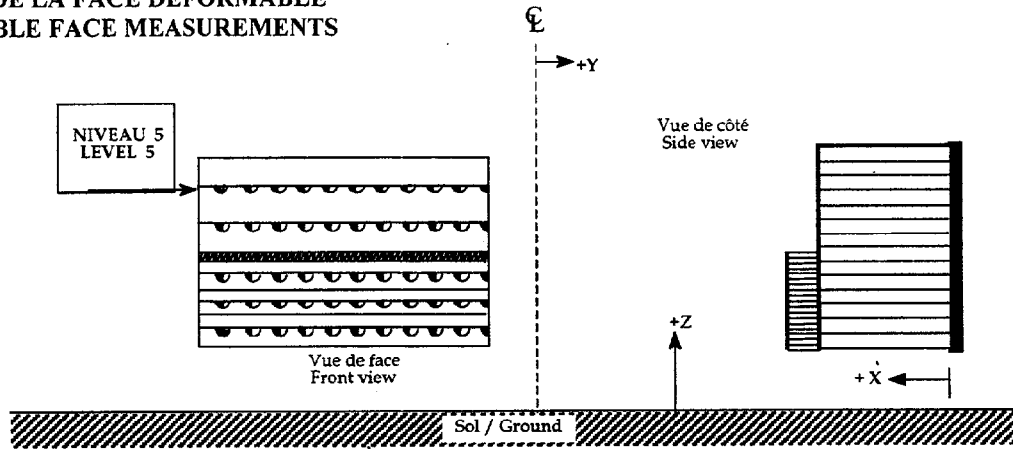


PRE-TEST			POST-TEST			Δ DIFFERENCE		
X	Y	Z	X	Y	Z	X	Y	Z
456	-1090	627	525	-1090	627	-69	0	0
456	-990	628	497	-990	630	-41	0	-2
456	-890	628	471	-889	628	-15	-1	0
457	-790	628	417	-790	628	40	0	0
458	-689	628	396	-690	627	62	1	1
458	-591	627	397	-589	628	61	-2	-1
458	-489	628	360	-490	628	98	1	0
458	-389	628	300	-389	627	158	0	1
457	-290	627	236	-290	627	221	0	0
459	-191	628	168	-191	628	291	0	0

Point (0,0,0): Plan vertical avant du support de face en X, centre latéral du système de guidage ou centre du véhicule en Y et niveau du sol en Z.  
Front vertical plane of face holder in X axis, lateral center of the guiding system or vehicle longitudinal centreline in the Y axis and ground level in the Z axis.

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MESURES DE LA FACE DÉFORMABLE  
DEFORMABLE FACE MEASUREMENTS



PRE-TEST			POST-TEST			Δ DIFFERENCE		
X	Y	Z	X	Y	Z	X	Y	Z
455	-1090	734	484	-1092	735	-29	2	-1
455	-988	735	466	-987	735	-11	-1	0
456	-889	736	460	-891	735	-4	2	1
457	-790	735	444	-791	734	13	1	1
457	-690	735	420	-690	735	37	0	0
457	-589	734	389	-591	733	68	2	1
457	-490	735	345	-491	736	112	1	-1
458	-389	735	276	-391	734	182	2	1
459	-290	735	291	-290	737	168	0	-2
459	-191	735	258	-191	736	201	0	-1

Point (0,0,0): Plan vertical avant du support de face en X, centre latéral du système de guidage ou centre du véhicule en Y et niveau du sol en Z.  
Front vertical plane of face holder in X axis, lateral center of the guiding system or vehicle longitudinal centreline in the Y axis and ground level in the Z axis.

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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 <input checked="" type="checkbox"/>	banquette / bench <input type="checkbox"/>	banquette 60-40 / bench 60-40 <input type="checkbox"/>		
Type de ceinture Belt system	3 points <input checked="" type="checkbox"/>	passive <input type="checkbox"/>	active <input checked="" type="checkbox"/>	automatique / automatic <input type="checkbox"/>	motorisée / motorised <input type="checkbox"/>
Localisation du siège Seat location	Av-G / F-L <input checked="" type="checkbox"/>	Av-D / F-R <input type="checkbox"/>	Arr-G / R-L <input type="checkbox"/>	Arr-D / R-R <input type="checkbox"/>	
Espacement du genou gauche Left knee spacing	105 mm		Espacement du genou droit Right knee spacing	102 mm	

Essai no: / Trial no:	1	2	3
Angle du dossier BTD Back pan angle	24.4 deg.	24.5 deg.	24.4 deg.
Angle de la cuvette BTD Seat pan angle	16.9 deg.	17.2 deg.	17.5 deg.
Angle du pied Foot angle	gauche / left 130 deg.	130 deg.	130 deg.
	droit / right 133 deg.	132 deg.	132 deg.
Angle du genou Knee angle	gauche / left 120 deg.	119 deg.	119 deg.
	droit / right 122 deg.	121 deg.	121 deg.
Mesure sous-abdominale Lap belt score	gauche / left 47 mm / 0 mm	46 mm / 0 mm	46 mm / 0 mm
	droit / right 46 mm / 0 mm	45 mm / 0 mm	45 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 192 mm / - *	188 mm / - *	186 mm / - *
	Clavicule 131 mm / 0 mm	129 mm / 0 mm	127 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 :** 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.

Siège à la position mi-course. Ceinture baudrier à la mi-hauteur.  
Seat at mid-travel position. Upper torso belt at mid-height position.

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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       - motorisé / 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: 70 mm      Espacement du genou droit / Right knee spacing: 102 mm

Essai no: / Trial no:		1	2	3
Angle du dossier BTD Back pan angle		24.0 deg.	23.3 deg.	23.1 deg.
Angle de la cuvette BTD Seat pan angle		16.0 deg.	16.3 deg.	16.9 deg.
Angle du pied Foot angle	gauche / left	120 deg.	121 deg.	123 deg.
	droit / right	124 deg.	124 deg.	125 deg.
Angle du genou Knee angle	gauche / left	121 deg.	121 deg.	118 deg.
	droit / right	122 deg.	122 deg.	119 deg.
Mesure sous-abdominale Lap belt score	gauche / left	43 mm / 0 mm	44 mm / 0 mm	43 mm / 0 mm
	droit / right	43 mm / 0 mm	44 mm / 0 mm	43 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	176 mm / - *	172 mm / - *	177 mm / - *
	Clavicule	119 mm / 0 mm	115 mm / 0 mm	118 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 : 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.

Siège à la position mi-course. Ceinture baudrier à la mi-hauteur.  
Seat at mid-travel position. Upper torso belt at mid-height position.

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DÉTERMINATION DU POINT "H" AVEC LE MANNEQUIN "3-D", MESURES PROVENANT DU BRAS ARTICULÉ MÉCANIQUE  
SEAT "H" POINT DETERMINED WITH THE H-POINT MACHINE, MEASURES FROM AN ARTICULATED MECHANICAL ARM

DESCRIPTION / DESCRIPTION	CONDUCTEUR / DRIVER			PASSAGER / PASSENGER			PASSAGER ARRIÈRE REAR PASSENGER		
Type de siège / Seat type	BAQUET/BUCKET			BAQUET/BUCKET					
Nombre de crans d'ajustement du siège * Number of notches for adjustable seat *	22 de/of 22 crans/notches			22 de/of 22 crans/notches			de/of crans/notches		
Nombre de crans d'ajustement du dossier * Number of notches for adjustable seat back *	N/A crans/notches			N/A crans/notches			N/A crans/notches		
Axes	X	Y	Z	X	Y	Z	X	Y	Z
Loquet de porte / Door latch	2446	-802	604	2452	783	615			
Point-H / H-Point	2315	-432	482	2297	426	501			
Rotule / Knee joint	1875	-581	607	1855	563	620			
PRS / SRP	2315	-433	482	2298	427	500			

\* La position la plus avancée est au 1<sup>er</sup> cran / \* The foremost position is at the 1<sup>st</sup> notch.

Ajustement du 3D / 3D adjustment

MESURES DE RÉFÉRENCE DU MANNEQUIN "3-D"  
REFERENCE MEASUREMENTS OF "3-D" MACHINE

95 %

95 %

DESCRIPTION / DESCRIPTION	CONDUCTEUR / DRIVER	PASSAGER / PASSENGER	PASSAGER ARRIÈRE REAR PASSENGER
Espacement du genou gauche Left knee spacing	177 mm	67 mm	
Espacement du genou droit Right knee spacing	123 mm	134 mm	
Cheville à cheville (c-c) Ankle to ankle (a-a)	298 mm	189 mm	
Angle du dossier du "3-D" Back pan angle	23.9 deg	24.8 deg	
Angle de la cuvette de siège du "3-D" Seat pan angle	15.8 deg	15.4 deg	
Angle du genou gauche Left knee angle	129 deg	129 deg	
Angle du genou droit Right knee angle	130 deg	132 deg	
Angle de la cheville gauche Left ankle angle	134 deg	124 deg	
Angle de la cheville droite Right ankle angle	107 deg	124 deg	

Remarques – Comments : Sièges du conducteur et du passager à la position la plus reculée.  
Driver and passenger seats at the rearmost position.

Le mannequin 3D a été installé selon la procédure suivante :

"Anthropomorphic test dummy seating procedure for frontal impact test"  
version 3, 10/23/85.

The 3D machine was installed as per the following procedure :

"Anthropomorphic test dummy seating procedure for frontal impact test"  
version 3, 10/23/85.

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**POSITIONNEMENT DES MANNEQUINS / MEASUREMENTS OF DUMMY POSITIONS**

		<b>MESURES / MEASUREMENTS :</b>					
<b>Conducteur/Driver :</b> <b>HYBRID III 5% Femelle/Female</b>		Toutes les mesures sont en mm / All measurements are in mm					
Angle du pelvis - Pelvic angle :	<b>19.8°</b>						
Angle transversal - Transversal angle :	<b>0.06°</b>	<b>Conducteur / Driver -</b>			<b>Passager / Passenger</b>		
Angle de la tête - Head angle :	<b>0.1°</b>	Ajustement du siège : Seat adjustment :			Ajustement du siège : Seat adjustment :		
Seuil de porte - Door sill :	<b>0°</b>	<b>1 de 22 crans/notches</b>			<b>1 de 22 crans/notches</b>		
Angle du coussin - Skew angle :	<b>1.28°</b>	Ajustement du dossier : Seat back adjustment :			Ajustement du dossier : Seat back adjustment :		
<b>Passager avant/Front Passenger:</b> <b>HYBRID III 5% Femelle/Female</b>		<b>N/A crans/notches</b>			<b>N/A crans/notches</b>		
Angle du pelvis - Pelvic angle :	<b>17.7°</b>	X	Y	Z	X	Y	Z
Angle transversal - Transversal angle :	<b>0.2°</b>						
Angle de la tête - Head angle :	<b>0°</b>						
Seuil de porte - Door sill :	<b>0.2°</b>						
Angle du coussin - Skew angle :	<b>-0.40°</b>						
Fenêtre à fenêtre / Window to window :			<b>1644</b>			<b>1644</b>	
Centre du véhicule / Vehicle center :			<b>0</b>			<b>0</b>	
Seuil de la portière au centre du loquet / Door sill to latch center :				<b>286</b>			<b>295</b>
Centre du volant / Steering wheel center :		<b>1917</b>	<b>-369</b>	<b>845</b>			
Mouvement du lacet / Yaw movement :		<b>2</b>			<b>1</b>		
Cible de tête / Head target :		<b>2192</b>	<b>-430</b>	<b>1072</b>	<b>2192</b>	<b>415</b>	<b>1086</b>
Point-H / H-Point :		<b>2082</b>	<b>-505</b>	<b>506</b>	<b>2086</b>	<b>491</b>	<b>516</b>
Rotule / Knee joint :		<b>1750</b>	<b>-476</b>	<b>583</b>	<b>1752</b>	<b>452</b>	<b>587</b>

**Remarques – Comments :** Les sièges du conducteur et du passager sont à la position la plus avancée.  
The driver and the passenger seats are at the foremost position.

Selon la procédure de positionnement de mannequin 5<sup>e</sup> percentile Hybrid III côté conducteur, Biokinetics, 29/11/98, rapport n° D98-15 et côté passager, Biokinetics, 20/11/98, rapport n° D98-17.

As per procedure for placement of a 5<sup>th</sup> percentile Hybrid III ATD driver's side, Biokinetics, 29/11/98, report no D98-15 and passenger's side, Biokinetics, 20/11/98, report no D98-17.

**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 :		Toutes les mesures sont en mm / All measurements are in mm					
Angle du pelvis - Pelvic angle : Angle transversal - Transversal angle :		Passager arrière gauche Rear left passenger			Passager arrière droit Rear right passenger		
Angle de la tête - Head angle : Angle du coussin - Skew angle :		Ajustement du siège : Seat adjustment :			Ajustement du siège : Seat adjustment :		
Passager arrière droit : Rear right passenger :		N/A crans/notches			N/A crans/notches		
Angle du pelvis - Pelvic angle : Angle transversal - Transversal angle :		Ajustement du dossier : Seat back adjustment :			Ajustement du dossier : Seat back adjustment :		
Angle de la tête - Head angle : Angle du coussin - Skew angle :		N/A crans/notches			N/A crans/notches		
Mouvement du lacet / Yaw movement :		X	Y	Z	X	Y	Z
Cible de tête / Head target :		3302	-416	930	3338	356	939
Point-H / H-Point :							
Rotule / Knee joint :							

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

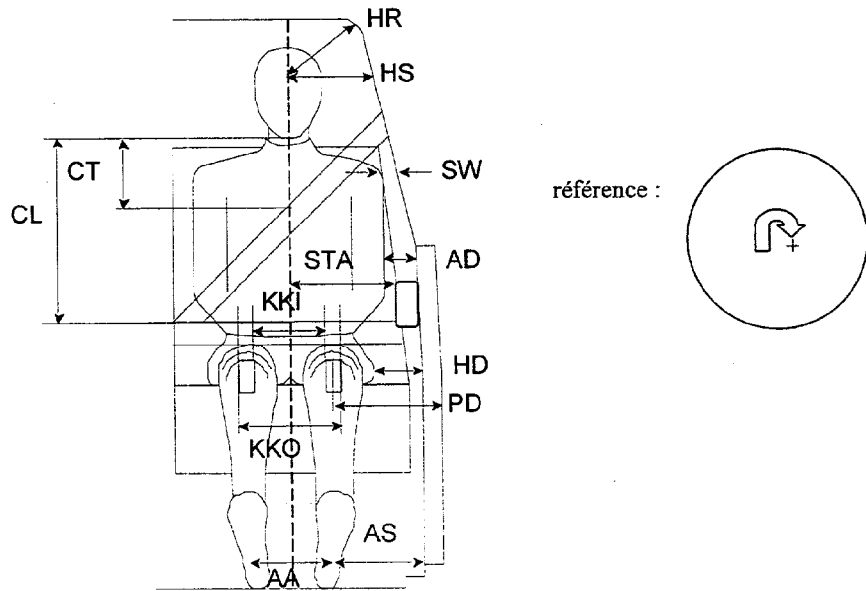
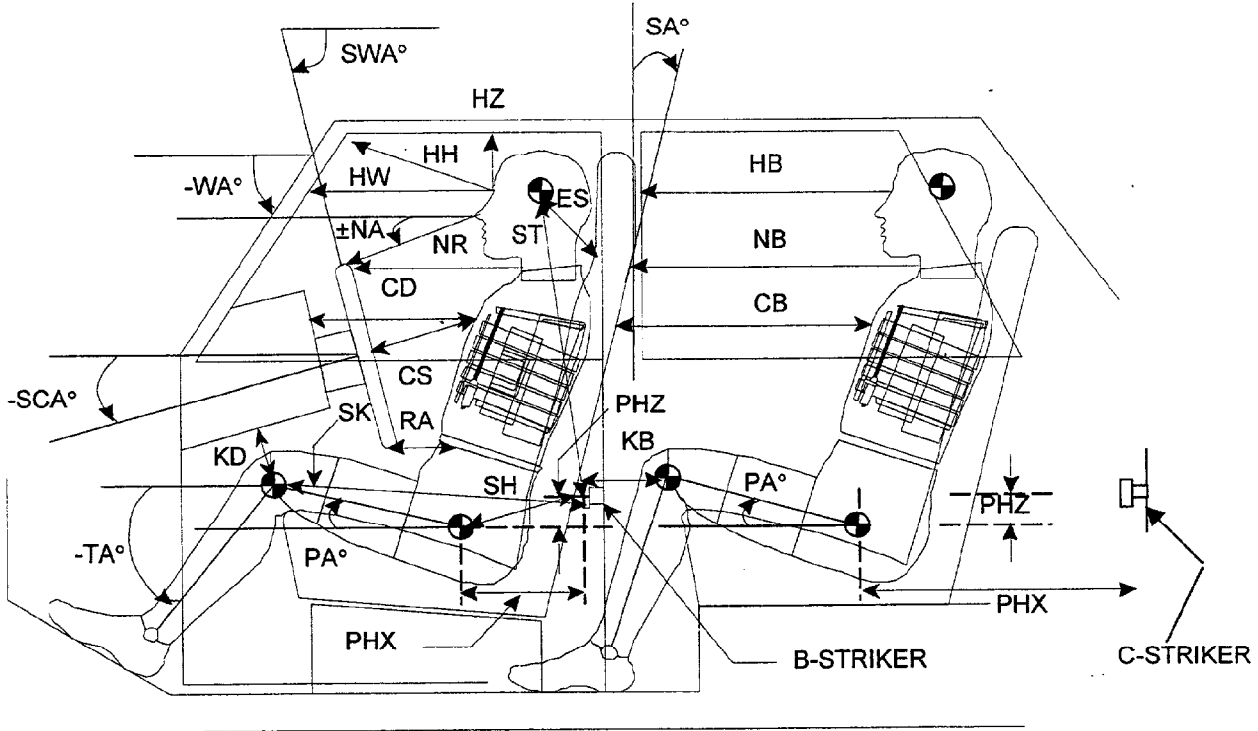
**Reference point :** Transversal center of the vehicle, at the foremost point and at ground level. As per SAE J182a.

Passager arrière gauche : Rear left passenger :	Hybrid III 18 mois, assis dans un siège pour enfant faisant face vers l'avant. Hybrid III 18 month, seated in a child's car seat facing front.	
	Manufacturier du siège : Seat manufacturer :	Cosco
	Modèle du siège : Seat model :	Regal Ride
	No. de série du siège : Seat serial number :	02C32CHA
	Date de fabrication du siège : Seat fabrication date :	98-09-22

Passager arrière droit : Rear right passenger :	Hybrid III 3 ans, assis dans un siège pour enfant faisant face vers l'avant. Hybrid III 3 yrs, seated in a child's car seat facing front.	
	Manufacturier du siège : Seat manufacturer :	Evenflo
	Modèle du siège : Seat model :	Two in One
	No. de série du siège : Seat serial number :	636210C P1
	Date de fabrication du siège : Seat fabrication date :	98-11-03

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COTES DE LOCALISATION DES MANNEQUINS  
DUMMY LOCATION DATA



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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	265	225		
Genou à genou (plaque) Intérieur / Interior Knee to knee (plate) Extérieur / Extérieur	KKI	105	90		
	KKO	245	230		
De la cheville jusqu'au seuil de porte (horizontalement) Ankle to door sill (horizontal)	AS	258	272		
Centre du genou au tableau de bord ou siège horizontalement (minimum) Knees centre to dash or seat back horizontal (minimum)	KDL	20	63		
	KDR	27	65		
Sternum au tableau de bord (horizontalement) Chest to dash (horizontal)	CD		366		
Milieu du sternum au centre du moyeu du volant ou siège avant Mid sternum to steering hub center or front seat	CS/CB	192			
Milieu du front jusqu'au pare-brise (horizontalement) Mid forehead to windshield (horizontal)	HW	563	576		
Milieu du front jusqu'au haut du pare-brise Mid forehead to windshield header	HH	250	234		
Nez à la jante du volant de direction (haut) ou siège avant Nose to steering wheel rim (top) or front seat	NR/HB	240			
Milieu du front jusqu'au début du toit Mid forehead to edge roof	HR	273	263		
Haut de l'oreille au haut du siège avant Ear top to front seat top	ES	225	235		
Menton au haut de la ceinture sous-abdominale (verticalement) Chin to lap belt upper edge (vertical)	CL	350	332		
Menton au haut de la ceinture baudrier (verticalement) Chin to thorax belt upper edge (vertical)	CT	94	111		
Milieu du front à la fenêtre latérale (horizontalement) Mid forehead to side window (horizontal)	HS	338	342		
La rotule à la porte (horizontalement) Patella to door (horizontal)	PD	239	244		
Du point-H à la porte (horizontalement) H-point to door (horizontal)	HD	238	236		
Du milieu du bras à la porte (horizontalement) Mid upper arm to door (horizontal)	AD	145	150		
Cou jusqu'au volant ou tableau de bord (horizontalement) ou siège avant Neck to steering wheel or dash board (horizontal) or front seat	NB	334	483		
Épaule à la fenêtre de côté Shoulder to side window	SW	155	164		
Abdomen à l'appui-bras Abdomen to armrest	STA	176	169		
Milieu du front au toit (verticalement) Mid forehead to roof (vertical)	HZ	175	184		
Tête au loquet (plan (x,z)) Striker to head ( (x,z) plan)	ST	532	538		
Abdomen à la jante du volant de direction (bas) Steering wheel rim to abdomen (bottom)	RA	78			
Genou au loquet (plan (x,z)) Striker to knee ( (x,z) plan)	SK	696	702		
Point-H au loquet (plan (x,z)) Striker to H-Point ( (x,z) plan)	SH	376	379		
Point-H au loquet en X (horizontalement) Striker to H-Point in X (horizontal)	PHX	363	366		
Point-H au loquet en Z (verticalement) Striker to H-Point in Z (vertical)	PHZ	98	99		

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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	68.1°			
Angle du pare-brise Windshield angle	-WA	-23.5°			
Angle de la colonne de direction Steering column angle	-SCA	-24.4°			
Angle du tibia gauche Left tibial angle	-TA	-51.5°	-42.6°		
Angle du tibia droit Right tibial angle	-TA	-52.2	-42.6		
Angle pelvis Pelvic angle	+PA	19.8°	17.7°		
Angle du nez à la jante de direction (haut) Nose to steering wheel rim (top) angle	±NA	-3.9°			
Angle du dossier Seat back angle	+SA	20.3°	20.8°		
Angle ST (horizontalement) ST angle (horizontal)	+ST-A	61.5°	61.1°		
Angle SK (horizontalement) SK angle (horizontal)	±SK-A	-1.7°	-2.3°		
Angle SH (horizontalement) SH angle (horizontal)	-SH-A	-15.1°	-15.2°		

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**MESURES DU VÉHICULE, POINT "H" (MANNEQUIN 3D) ET MANNEQUIN DAE  
VEHICLE, H-POINT MANIKIN AND TEST DUMMY MEASUREMENTS**

Mannequin 3D Point "H" - H-Point Manikin

Conducteur / Driver 95%

DESCRIPTION	X(mm)	Y(mm)	Z(mm)
Point "H" extérieur mesure initiale - H-Point, outboard initial measurement	2314	-432	482
Point "H" extérieur mesure finale - H-Point, outboard final measurement	2315	-432	482
Rotule, extérieure - Knee pivot, outboard	1875	-581	607
Cheville, extérieure - Ankle pivot, outboard	1495	-516	348
Talon du pied en contact avec sol - Accomodation heel point (AHP)	1537	-513	219
Plante du pied en contact avec sol - Accomodation ball of foot point (ABFP)	1333	-549	290
Ligne médiane du véhicule - Vehicle centreline		0	
Centre du moyeu latéral - Lateral hub centre location (W20)		369	
Support poids du sternum, extérieur - Torso weigh hanger, outboard	2458	-521	808
PRS / SRP	2315	-433	482
Ligne médiane du coussin du siège (avant/milieu/arr.) - Seat cushion centreline (front/mid/rear)		-338 / -345 / -348	
Ligne médiane du dossier du siège (avant/milieu/arr.) - Seat back centreline (front/mid/rear)		-348 / -345 / -340	
Hauteur Point "H" - H-Point height (H30 = Z H-POINT - Z AHP)		263	
Position du siège vs sa position la plus reculée - Seat position vs its rearmost position		0	
Angle dossier du siège - Seat back angle (deg) (L40)		24.0°	
Angle du coussin du siège - Skew angle		1.28°	
Diamètre extérieur du volant - Steering wheel dia., outside (W9)		380	

Véhicule et Mannequin - Vehicle and Dummy

Femelle 5<sup>e</sup> percentile conducteur / 5<sup>th</sup> percentile female driver

DESCRIPTION	X(mm)	Y(mm)	Z(mm)
Boulon siège avant, extérieur - Front seat bolt, outboard	1992	-536	246
Jante du volant, centre haut - Steering wheel rim, top centre	1836	-369	1023
Jante du volant, centre bas - Steering wheel rim, bottom centre	1971	-369	666
Jante du volant, centre gauche - Steering wheel rim, left centre	1905	-559	845
Jante du volant, centre droit - Steering wheel rim, right centre	1907	-179	843
Moyeu du volant, centre haut - Steering wheel hub, top centre	1874	-369	891
Moyeu du volant, centre - Steering wheel hub, centre	1927	-368	830
Moyeu du volant, centre bas - Steering wheel hub, bottom centre	1939	-368	768
Position du siège vs sa position la plus reculée - Seat position vs its rearmost position		220	
Angle de dossier du siège - Seat back angle (deg)		20.3°	
Genou au tableau de bord, minimum - Knee to dash, minimum		G/L : 20	D/R : 27
Menton au haut du moyeu du volant - Chin to steering wheel hub top		254	

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**MESURES DU VÉHICULE, POINT "H" (MANNEQUIN 3D) ET MANNEQUIN DAE (suite)**  
**VEHICLE, H-POINT MANIKIN AND TEST DUMMY MEASUREMENTS (cont'd)**

Description et emplacement du Mannequin  
ATD description and location :

**Femelle 5<sup>e</sup> percentile conducteur / 5<sup>th</sup> percentile female driver**

DESCRIPTION	X(mm)	Y(mm)	Z(mm)
Centre de gravité de la tête, extérieur - Head CG, outboard	2192	-430	1072
Base du nez - Glabella (root of nose)	2109	-362	1079
Menton - Chin (bottom)	2102	-366	976
Jonction menton et cou - Chin / neck junction	2172	-366	977
Thorax au niveau des côtes supérieures - Chest at upper rib level	2098	-359	815
Thorax au niveau des côtes inférieures - Chest at lower rib level	2071	-362	704
Boulon supérieur avant de l'épaule, ext. - Shoulder bolt, top front outboard	2223	-521	848
Boulon supérieur avant de l'épaule, int. - Shoulder bolt, top front inboard	2232	-209	838
Boulon du coude, extérieur - Elbow bolt, outboard	2098	-555	668
Boulon du coude, intérieur - Elbow bolt, inboard	2111	-142	667
Boulon du poignet, extérieur - Wrist bolt, outboard	1956	-588	828
Boulon du poignet, intérieur - Wrist bolt, inboard	1961	-161	824
Point d'articulation de la hanche, extérieur - Hip point, outboard	2169	-487	549
Boulon du genou gauche, côté gauche - Knee bolt, left leg, left side	1751	-477	582
Boulon de la cheville gauche, côté gauche - Ankle bolt, left leg, left side	1552	-446	412
Point du talon gauche - Heel point, left leg	1569	-452	227
Plante du pied gauche vs plancher - Ball of foot at toeboard contact, left leg	1436	-496	271
Boulon du genou droit, côté gauche - Knee bolt, right leg, left side	1749	-293	581
Boulon de la cheville droite, côté gauche - Ankle bolt, right leg, left side	1553	-250	409
Point du talon droit - Heel point, right leg	1532	-247	224
Plante du pied droit vs plancher - Ball of foot at toeboard contact, right leg	1416	-259	309
Espacement de genoux (centre) - Knee spacing (centre)		175	
Ajustement du support de cou - Neck bracket adjustment (deg.)			

Remarques – Comments :

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**MESURES DU VÉHICULE, POINT "H" (MANNEQUIN 3D) ET MANNEQUIN DAE  
VEHICLE, H-POINT MANIKIN AND TEST DUMMY MEASUREMENTS**

Mannequin 3D Point "H" - H-Point

Passager avant /Front passenger 95%

DESCRIPTION	X(mm)	Y(mm)	Z(mm)
Point "H" extérieur mesure initiale - H-Point, outboard initial measurement	2298	427	500
Point "H" extérieur mesure finale - H-Point, outboard final measurement	2297	426	501
Rotule, extérieure - Knee pivot, outboard	1855	563	620
Cheville, extérieure - Ankle pivot, outboard	1477	457	363
Talon du pied en contact avec sol - Accomodation heel point (AHP)	1498	456	233
Plante du pied en contact avec sol - Accomodation ball of foot point (ABFP)	1309	485	333
Ligne médiane du véhicule - Vehicle centreline		0	
Support poids du sternum, extérieur - Torso weigh hanger, outboard	2449	508	823
PRS / SRP	2298	427	500
Ligne médiane du coussin du siège (avant/milieu/arr.) - Seat cushion centreline (front/mid/rear)		342 / 343 / 345	
Ligne médiane du dossier du siège (avant/milieu/arr.) - Seat back centreline (front/mid/rear)		346 / 344 / 346	
Hauteur Point "H" - H-Point height (H30 = Z H-POINT - Z AHP)		268	
Position du siège vs sa position la plus reculée - Seat position vs its rearmost position		0	
Angle dossier du siège - Seat back angle (deg) (L40)		25°	
Angle du coussin du siège - Skew angle		-0.40°	

Véhicule et Mannequin - Vehicle and Dummy

Femelle 5e percentile passager avant / 5<sup>th</sup> percentile female front passenger

DESCRIPTION	X(mm)	Y(mm)	Z(mm)
Boulon siège avant, extérieur - Front seat bolt, outboard	1982	522	257
Position du siège vs sa position la plus reculée - Seat position vs its rearmost position		220	
Angle dossier du siège - Seat back angle		20.8°	
Genou au tableau de bord, minimum - Knee to dash, minimum		G/L : 63	D/R : 65
Menton au tableau de bord - Chin to dash		422	

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MESURES DU VÉHICULE, POINT "H" (MANNEQUIN 3D) ET MANNEQUIN DAE (suite)  
VEHICLE, H-POINT MANIKIN AND TEST DUMMY MEASUREMENTS (cont'd)

Description et emplacement du Mannequin  
ATD description and location:

**Femelle 5<sup>e</sup> percentile passager avant / 5<sup>th</sup> percentile female front passenger**

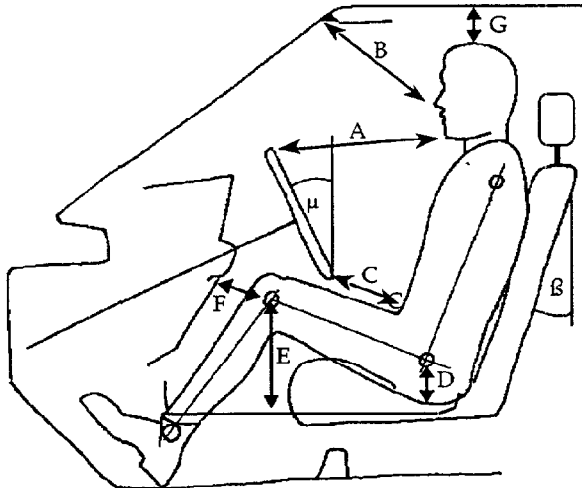
DESCRIPTION	X(mm)	Y(mm)	Z(mm)
Centre de gravité de la tête, extérieur - Head CG, outboard	2192	415	1086
Base du nez - Glabella (root of nose)	2103	350	1089
Menton - Chin (bottom)	2097	348	981
Jonction menton et cou - Chin / neck junction	2167	349	986
Thorax au niveau des côtes supérieures - Chest at upper rib level	2095	345	820
Thorax au niveau des côtes inférieures - Chest at lower rib level	2071	346	712
Boulon supérieur avant de l'épaule, ext. - Shoulder bolt, top front outboard	2222	504	850
Boulon supérieur avant de l'épaule, int. - Shoulder bolt, top front inboard	2226	192	851
Boulon du coude, extérieur - Elbow bolt, outboard	2113	562	664
Boulon du coude, intérieur - Elbow bolt, inboard	2124	152	661
Boulon du poignet, extérieur - Wrist bolt, outboard	1911	498	609
Boulon du poignet, intérieur - Wrist bolt, inboard	1912	163	615
Point d'articulation de la hanche, extérieur - Hip point, outboard	2172	471	559
Boulon du genou gauche, intérieur - Knee bolt, left leg, right side	1752	451	584
Boulon de la cheville gauche, intérieur - Ankle bolt, left leg, right side	1550	421	420
Point du talon gauche - Heel point, left leg	1561	436	233
Plante du pied gauche vs plancher - Ball of foot at toeboard contact, left leg	1426	473	277
Boulon du genou droit, intérieur - Knee bolt, right leg, right side	1751	288	587
Boulon de la cheville droite, intérieur - Ankle bolt, right leg, right side	1555	255	420
Point du talon droit - Heel point, right leg	1568	264	235
Plante du pied droit vs plancher - Ball of foot at toeboard contact, right leg	1434	291	273
Espacement de genoux (centre) - Knee spacing (centre)		160	
Ajustement du support de cou - Neck bracket adjustment (deg.)			

Remarques – Comments :

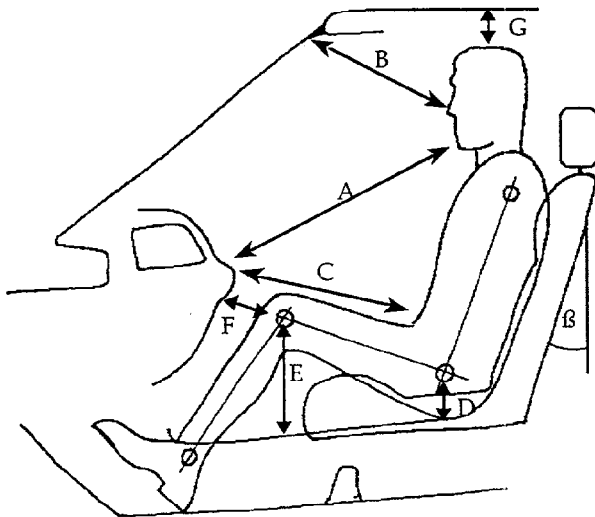
Date de collision Crash date	1999-01-11	Véhicule Vehicle	PLYMOUTH BREEZE 1999	T.C. N° T.C. No	99-213
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EUROPEAN EXPERIMENTAL VEHICLES COMMITTEE:

MESURES DE POSITIONNEMENT DES MANNEQUINS /  
DUMMY POSITIONING MEASUREMENTS



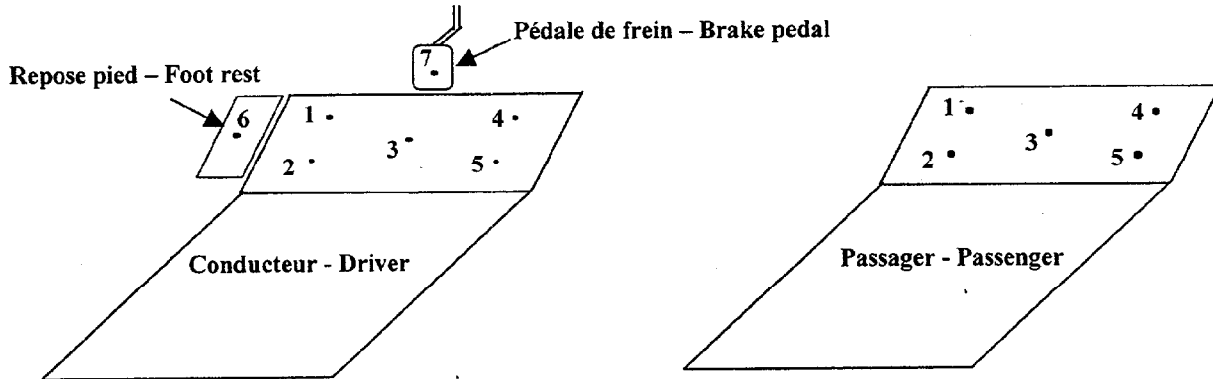
CONDUCTEUR DRIVER	mm
A	258
B	250
C	110
D	220
E	297
F	24
G	98
$\beta$	3.6
$\mu$	21.9



PASSAGER PASSENGER	mm
A	422
B	254
C	323
D	221
E	292
F	64
G	108
$\beta$	4.0

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MESURES PLANCHER / FOOTWELL MEASUREMENTS

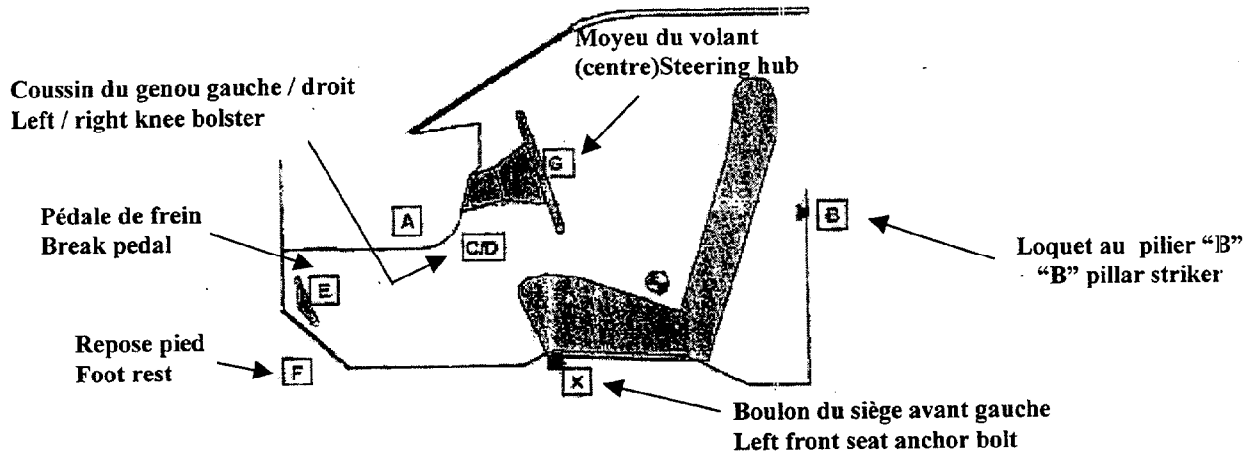


N° Cible		AVANT ESSAI	APRÈS ESSAI	
Target No.		PRE-TEST	POST-TEST	$\Delta$ mm
1	x	1250	1259	-9
	y	-496	-486	-10
	z	329	338	-9
2	x	1407	1409	-2
	y	-515	-510	-5
	z	227	225	2
3	x	1333	1346	-13
	y	-353	-348	-5
	z	262	272	-10
4	x	1260	1266	-6
	y	-185	-179	-6
	z	311	316	-5
5	x	1396	1398	-2
	y	-188	-183	-5
	z	221	221	0
6	x	1388	1393	-5
	y	-633	-628	-5
	z	367	372	-5
7	x	1395	1390	5
	y	-374	-373	-1
	z	401	400	1

N° Cible		AVANT ESSAI	APRÈS ESSAI	
Target No.		PRE-TEST	POST-TEST	$\Delta$ mm
1	x	1265	1265	0
	y	247	244	3
	z	329	332	-3
2	x	1411	1411	0
	y	224	223	1
	z	236	238	-2
3	x	1324	1325	-1
	y	373	370	3
	z	283	286	-3
4	x	1250	1250	0
	y	504	503	1
	z	350	352	-2
5	x	1394	1394	0
	y	530	529	1
	z	246	248	-2

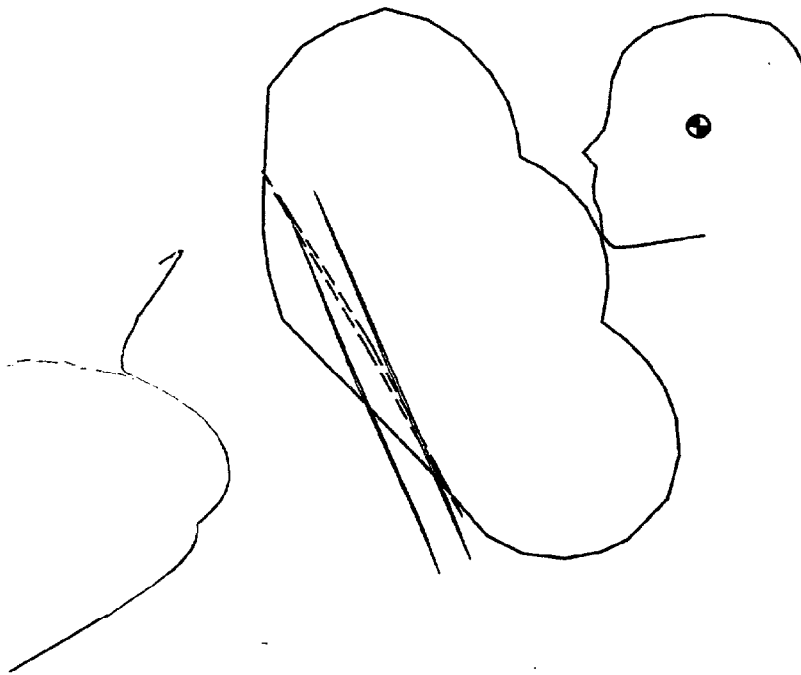
Date de collision Crash date	1999-01-11	Véhicule Vehicle	PLYMOUTH BREEZE 1999	T.C. N° T.C. No	99-213
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**PÉNÉTRATION DE L'HABITACLE DU CONDUCTEUR (Distances en mm)**  
**DRIVER COMPARTMENT INTRUSION (Distances in mm)**

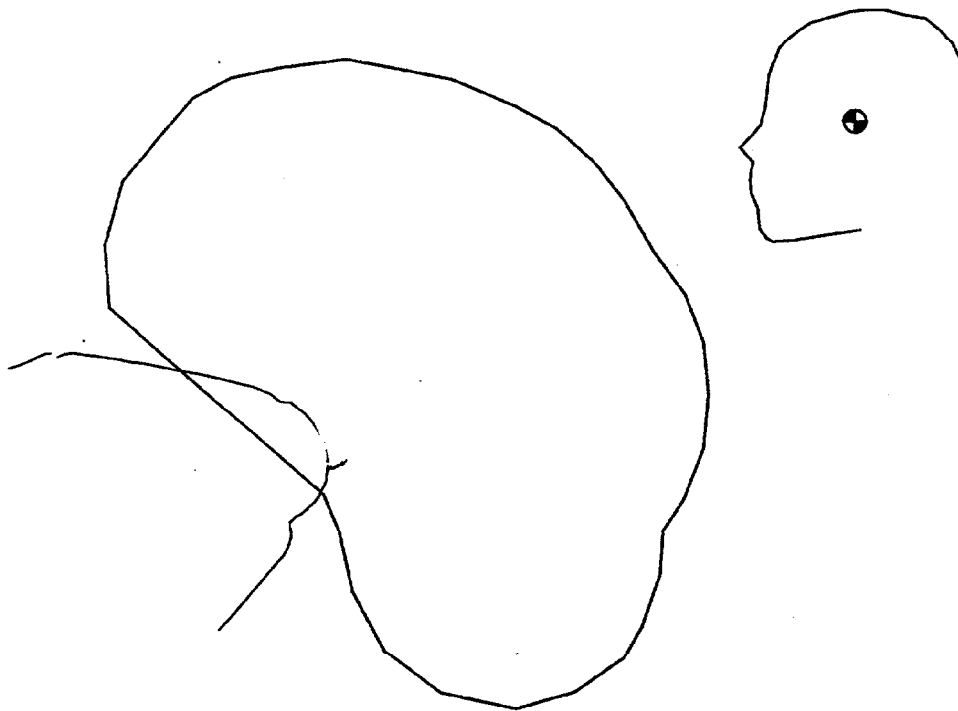


**Habitacle du conducteur**  
**Driver's compartment**

	DESCRIPTION	Avant essai / Pre-test			Après essai / Post-test		
		X	Y	Z	X	Y	Z
A	Ouverture de porte Door opening	1653	-813	859	1653	-815	857
B	Loquet au pilier "B" "B" pillar striker	2446	-802	604	2445	-802	605
C	Coussin du genou gauche Left knee bolster	1694	-442	629	1694	-437	628
D	Coussin du genou droit Right knee bolster	1682	-275	637	1684	-268	637
E	Pédale de frein Break pedal	1395	-374	401	1390	-373	400
F	Repose pied Foot rest	1388	-633	367	1393	-628	372
G	Moyeu du volant (centre) Steering hub (centre)	1927	-368	830	1897	-364	867
X	Boulon du siège avant gauche Left front seat anchor bolt	1992	-536	246	1993	-536	247



	PRE-TEST	POST-TEST	No. TC. : 99-213
DASHBOARD / TABLEAU DE BORD	_____	_____	PLYMOUTH BREEZE
MODULE	_____	_____	DRIVER'S SIDE / COTÉ CONDUCTEUR
STEERING WHEEL / VOLANT	_____	_____	Project / Projet : 99-5001
AIRBAG / COUSSIN GONFLABLE	_____	_____	



	PRE-TEST	POST-TEST	No. TC. : 99-213
DASHBOARD / TABLEAU DE BORD	_____	_____	PLYMOUTH BREEZE
MODULE	_____	_____	PASSENGER'S SIDE / COTÉ PASSAGER
STEERING WHEEL / VOLANT	_____	_____	Project / Projet : 99-5001
AIRBAG / COUSSIN GONFLABLE	_____	_____	

**APPENDICE / APPENDIX A**

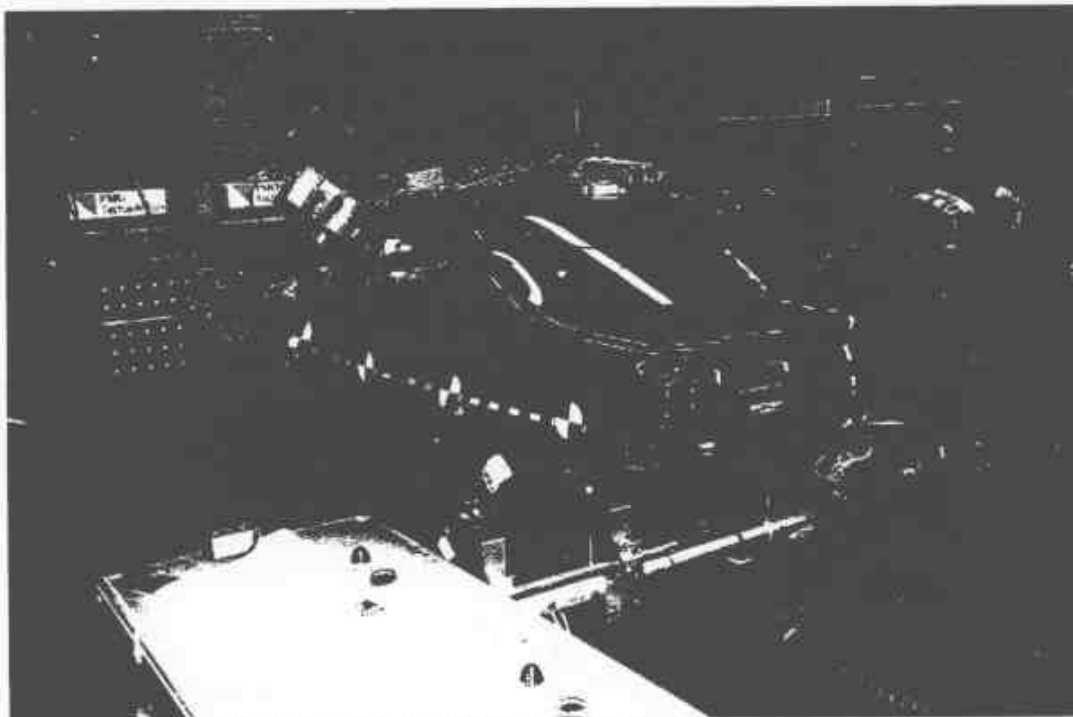
**PHOTOGRAPHIES DE L'ESSAI  
TEST PHOTOGRAPHS**



Date de collision Crash date	1999-01-11	Véhicule Vehicle	PLYMOUTH BREEZE 1999	T.C. N° T.C.No	99-213
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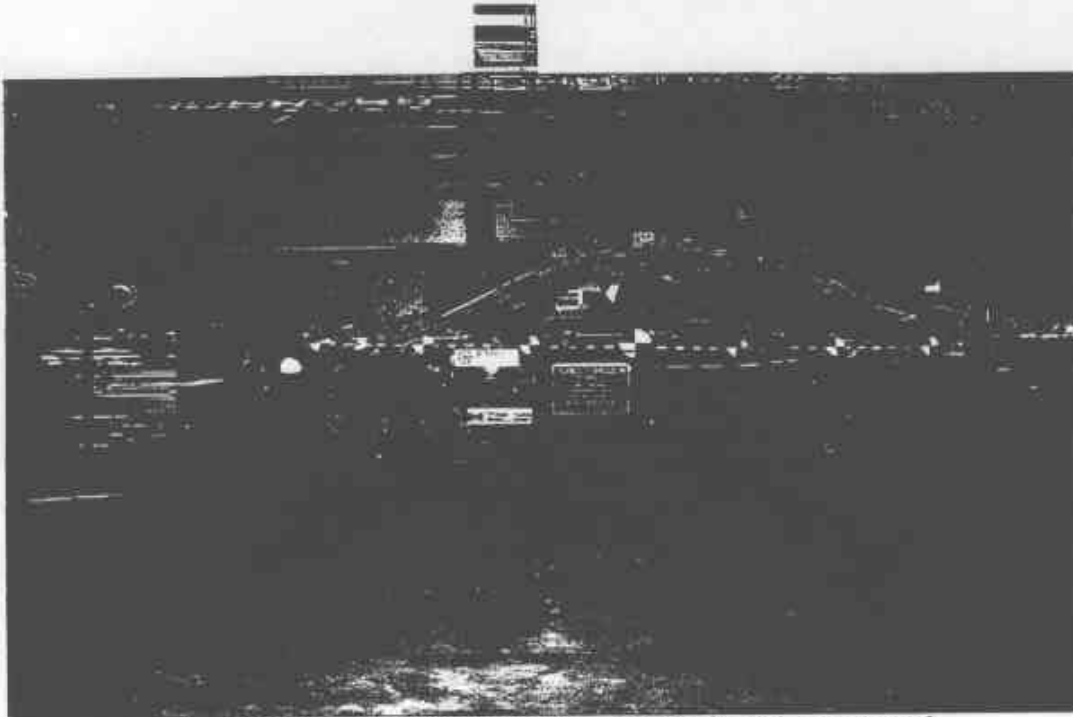


3. Vue ¾ avant du véhicule d'essai.  
¾ front view of the test vehicle.

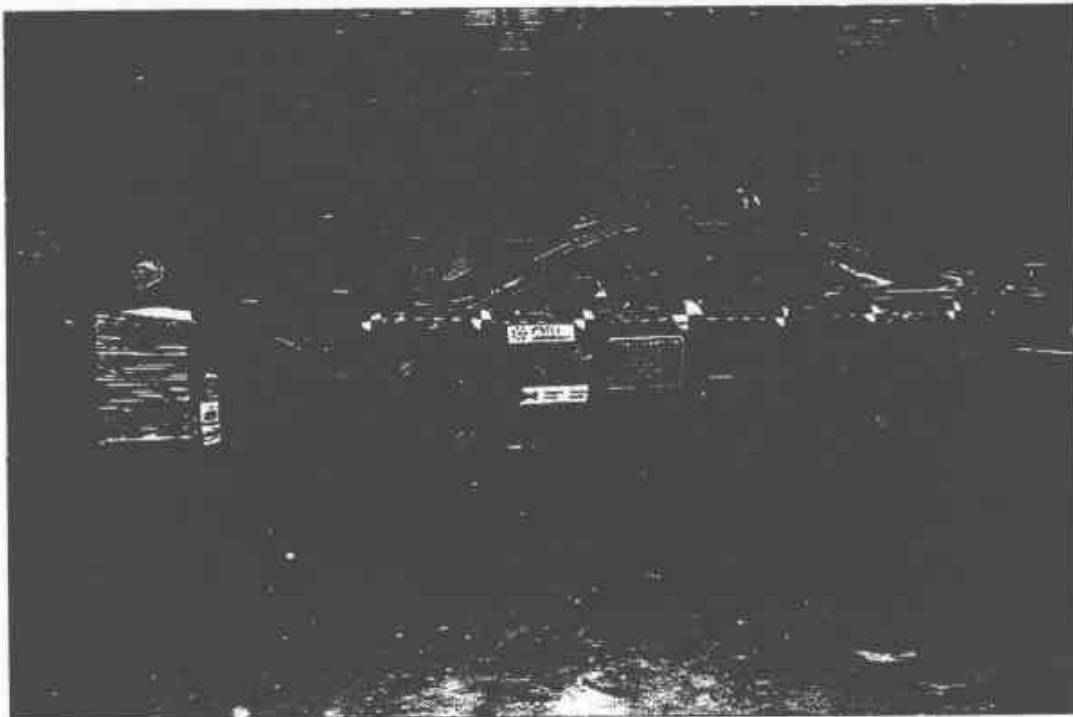


4. Vue ¾ arrière du véhicule d'essai.  
¾ rear view of the test vehicle.

Date de collision Crash date	1999-01-11	Véhicule Vehicle	PLYMOUTH BREEZE 1999	T.C.N° T.C.No	99-213
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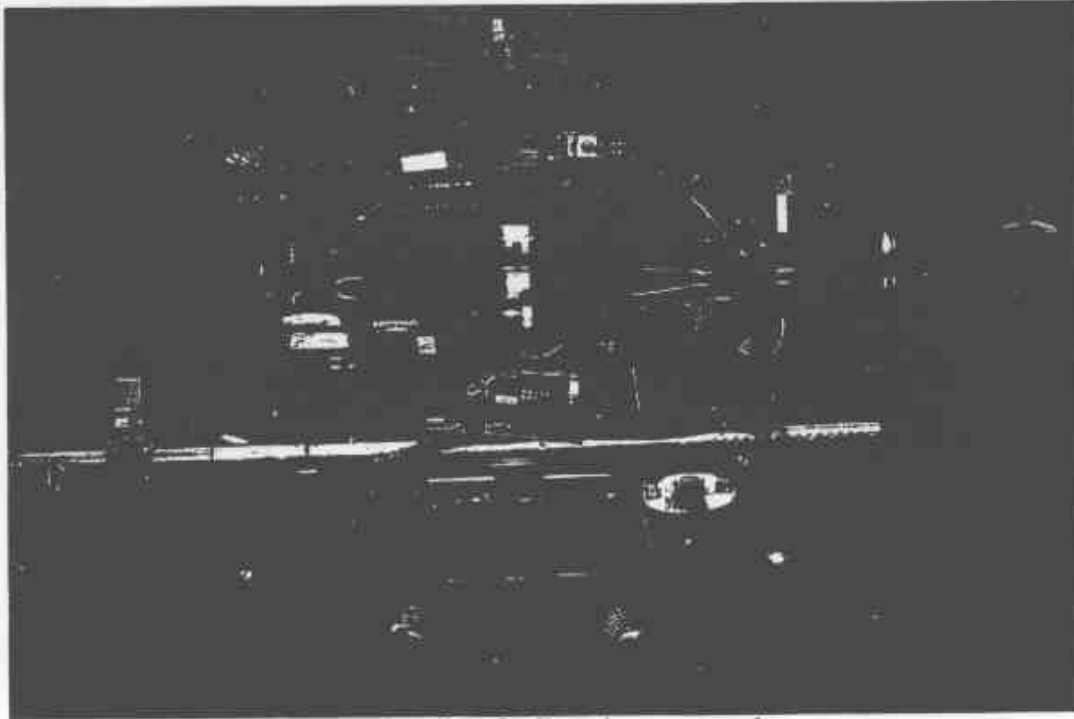


5. Vue générale côté gauche du véhicule d'essai, avant essai.  
Left side view of the test vehicle, pre-test.

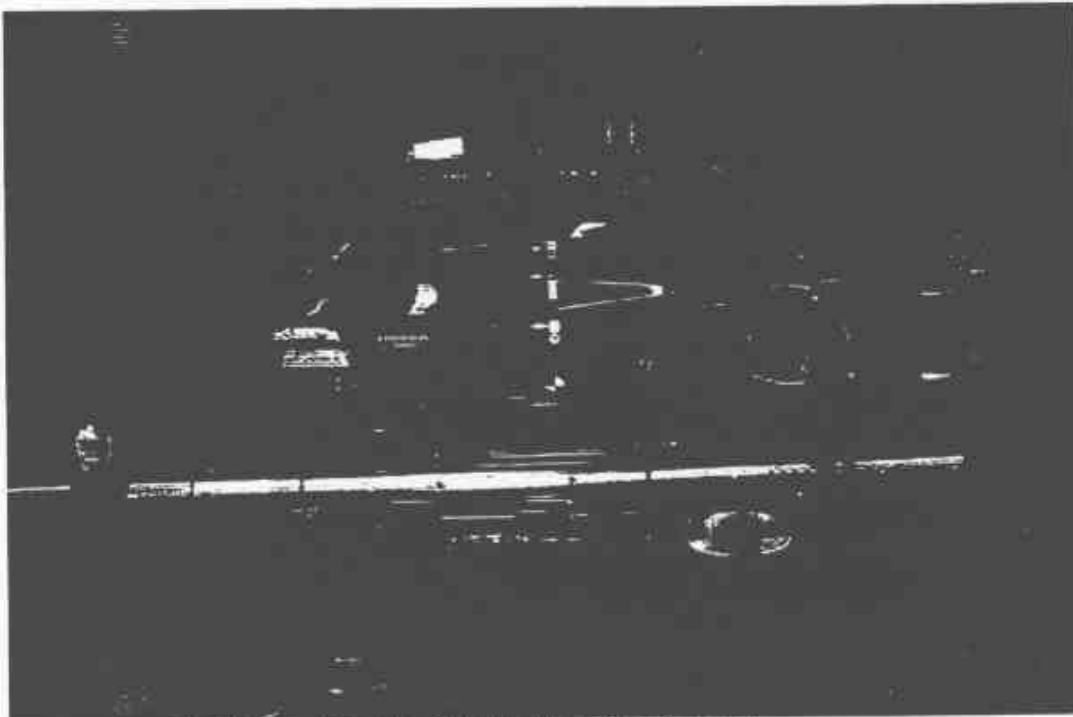


6. Vue générale côté gauche du véhicule d'essai, après essai.  
Left side view of the test vehicle, post-test.

Date de collision Crash date	1999-01-11	Véhicule Vehicle	PLYMOUTH BREEZE 1999	T.C. N° T.C.No	99-213
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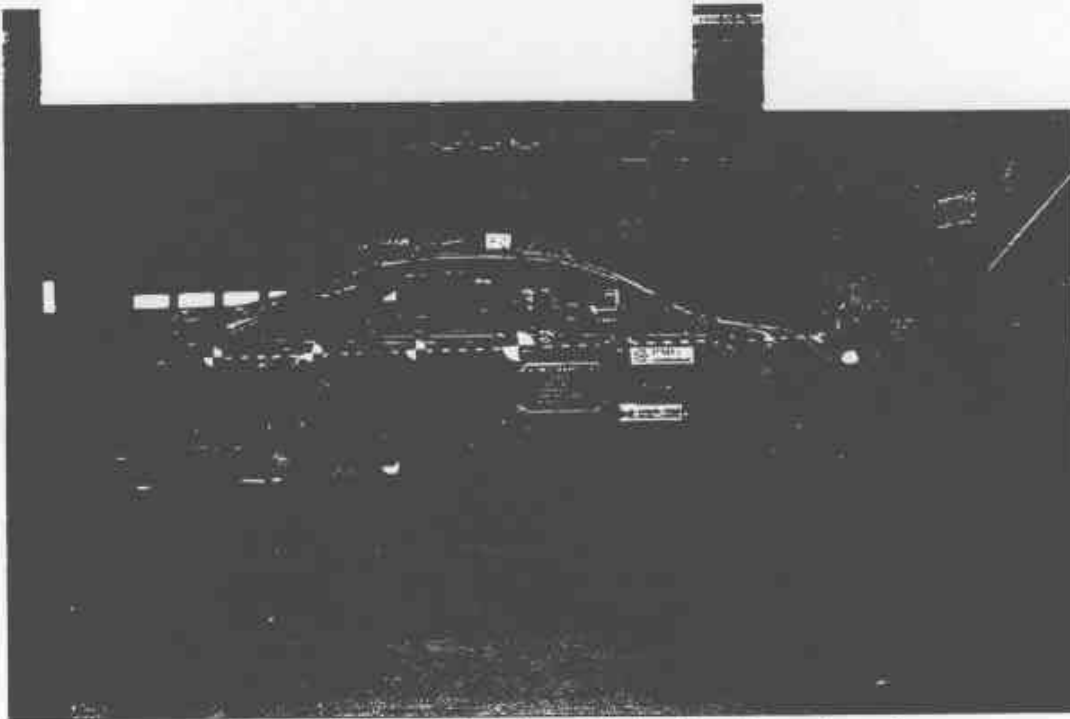


7. Vue arrière du véhicule d'essai, avant essai.  
Rear view of the test vehicle, pre-test.

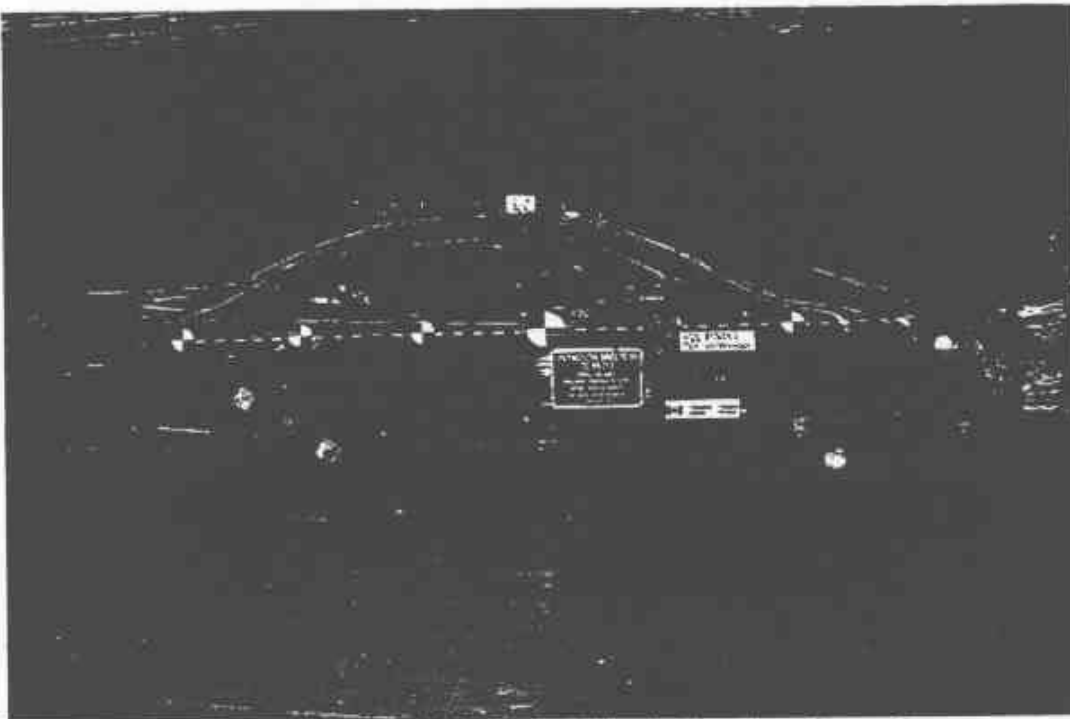


8. Vue arrière du véhicule d'essai, après essai.  
Rear view of the test vehicle, post-test.

Date de collision Crash date	1999-01-11	Véhicule Vehicle	PLYMOUTH BREEZE 1999	T.C N° T.C.No	99-213
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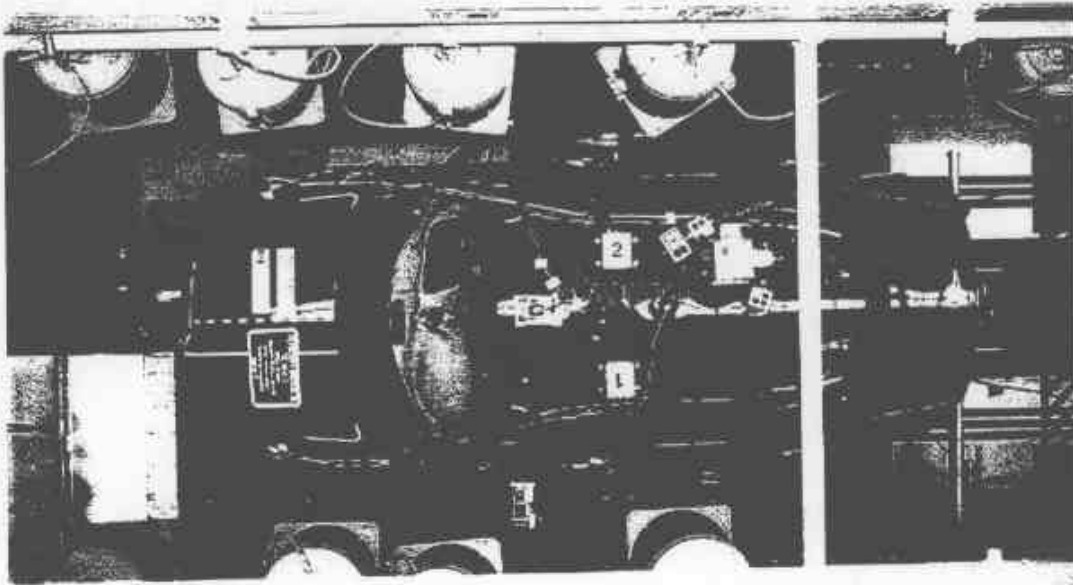


9. Vue générale côté droit du véhicule d'essai, avant essai.  
General right side view of the test vehicle, pre-test.

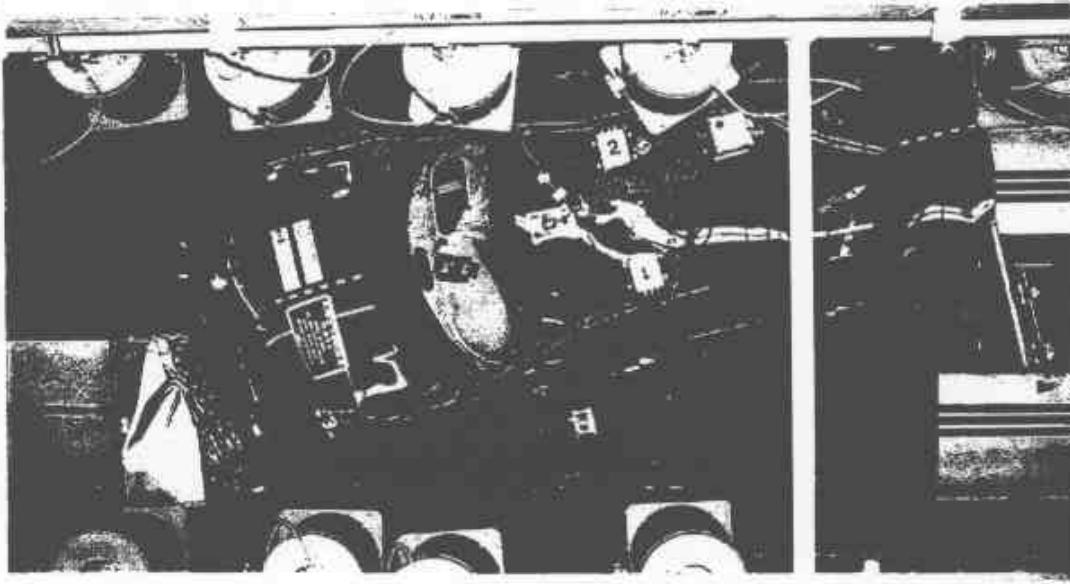


10. Vue générale côté droit du véhicule d'essai, après essai.  
General right side view of the test vehicle, post-test.

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



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

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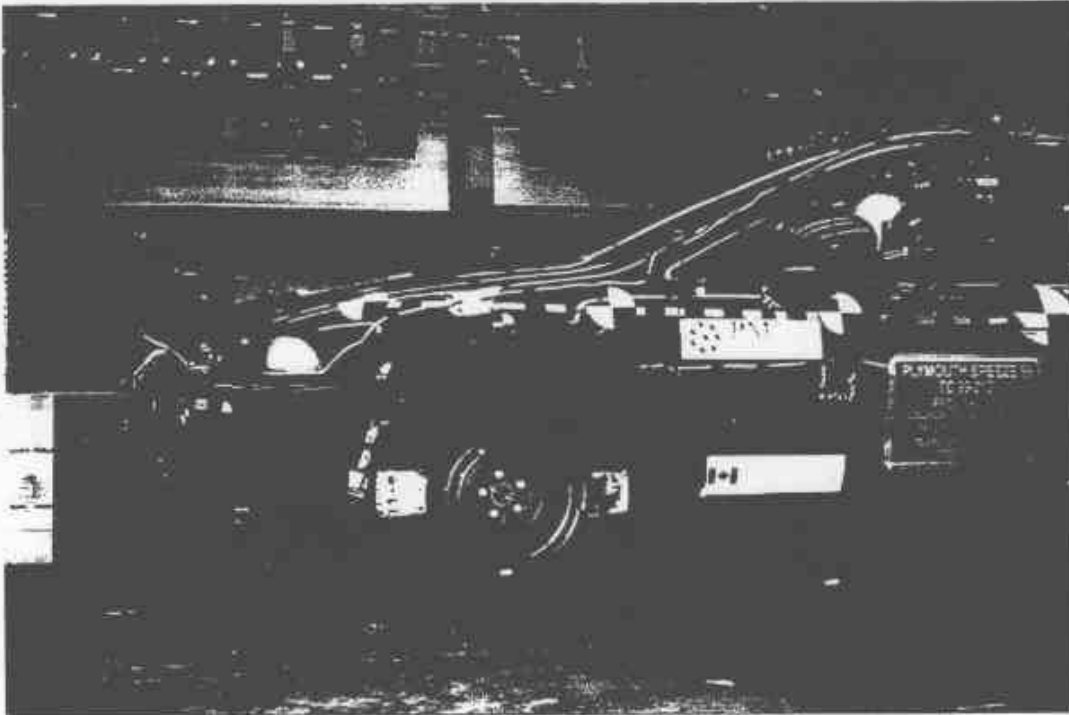


13. Vue avant du véhicule d'essai, avant essai.  
Front view of the test vehicle, pre-test.

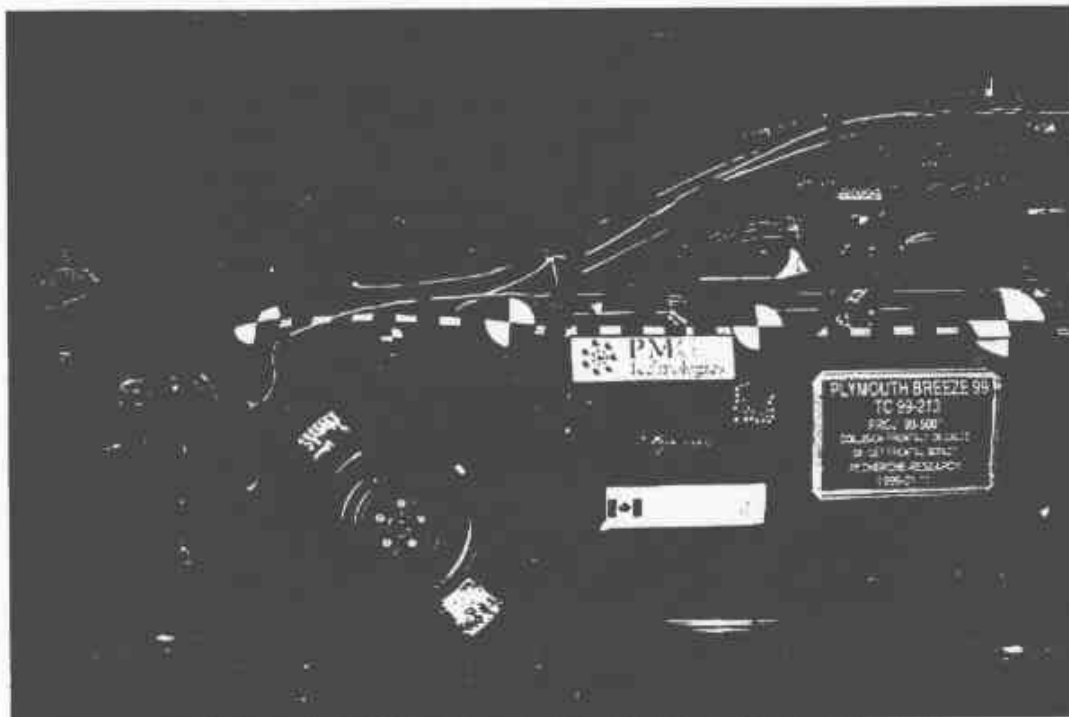


14. Vue avant du véhicule d'essai, après essai.  
Front view of the test vehicle, post-test.

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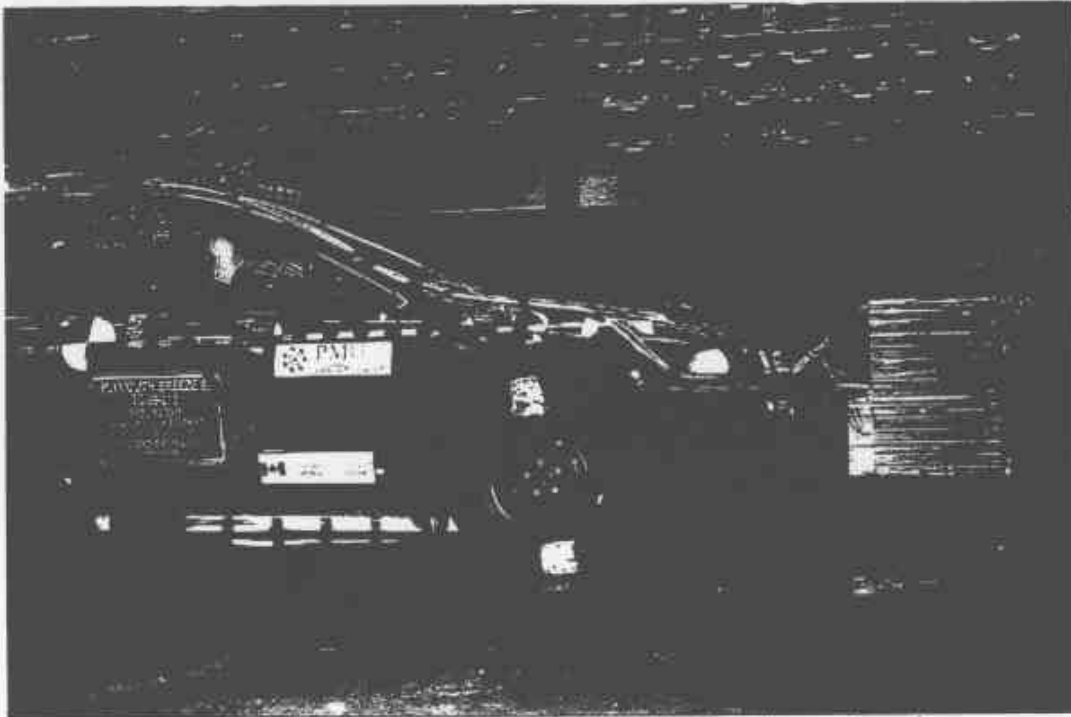


15. Vue côté gauche de l'avant du véhicule d'essai, avant essai.  
Left side view of front of test vehicle, pre-test.

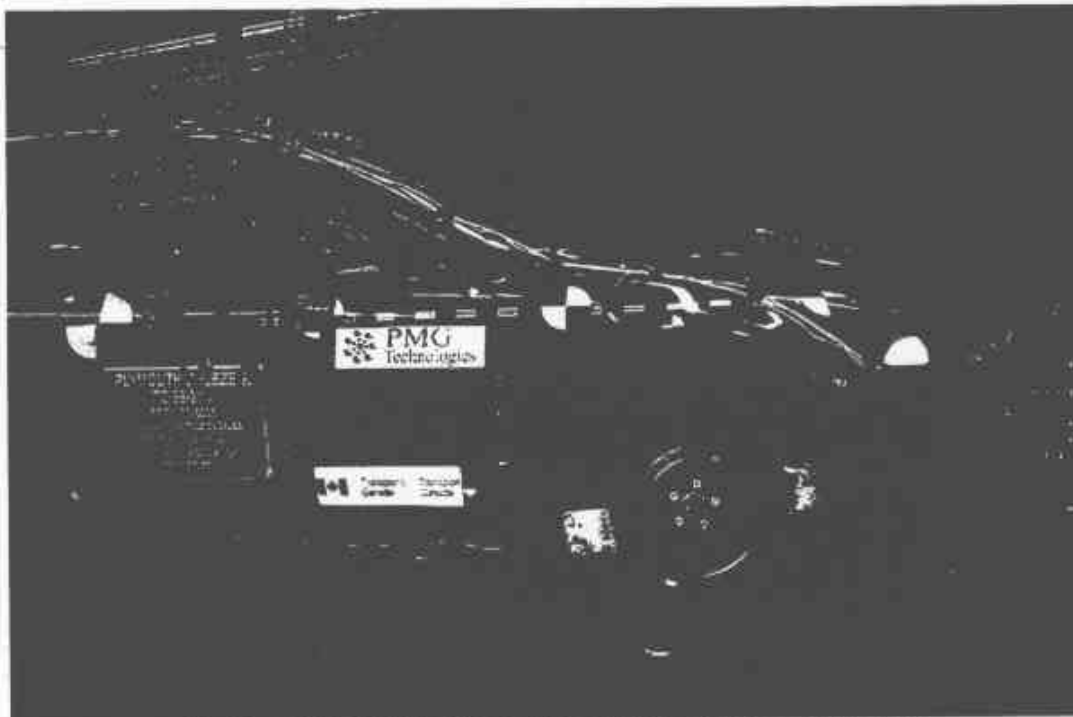


16. Vue côté gauche de l'avant du véhicule d'essai, après essai.  
Left side view of front of test vehicle, post-test.

Date de collision Crash date	1999-01-11	Véhicule Vehicle	PLYMOUTH BREEZE 1999	T.C. N° T.C.No	99-213
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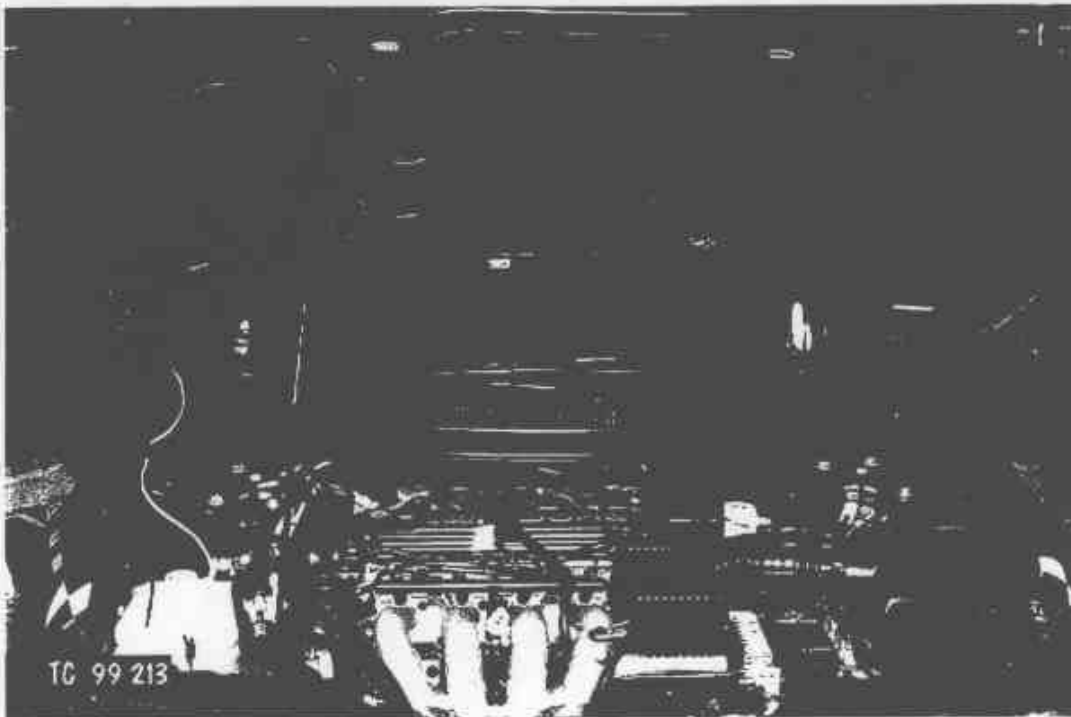


17. Vue côté droit de l'avant du véhicule d'essai, avant essai.  
Right side view of front of test vehicle, pre-test.

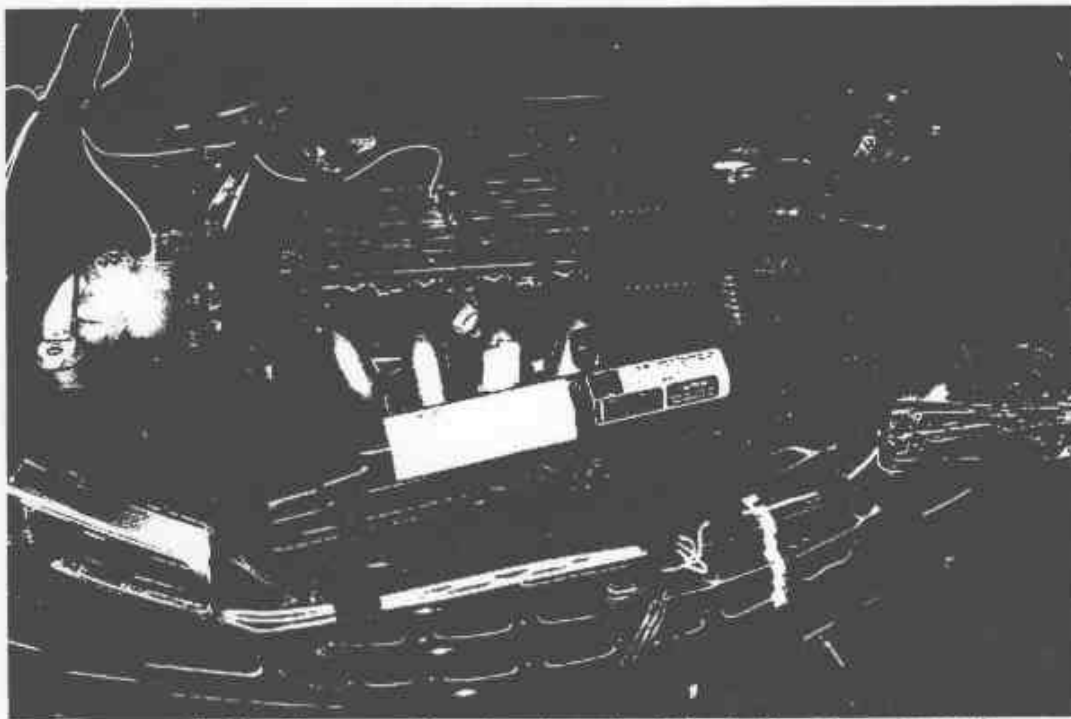


18. Vue côté droit de l'avant du véhicule d'essai, après essai.  
Right side view of front of test vehicle, post-test.

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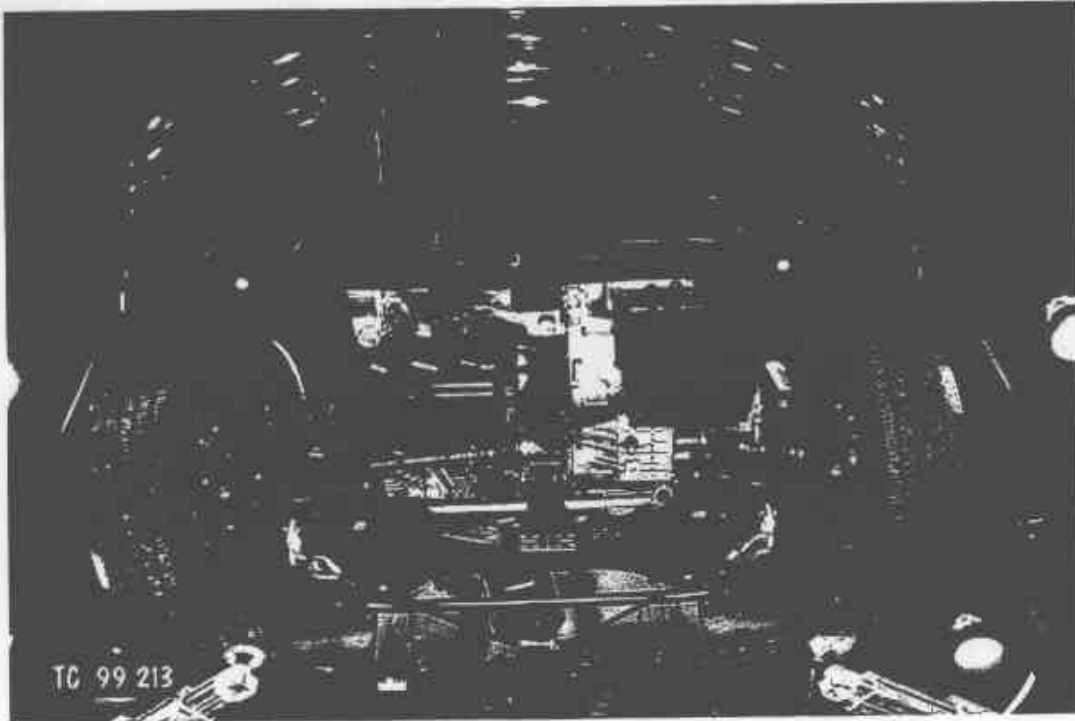


19. Vue du compartiment moteur du véhicule d'essai, avant essai.  
Engine compartment view of the test vehicle, pre-test.

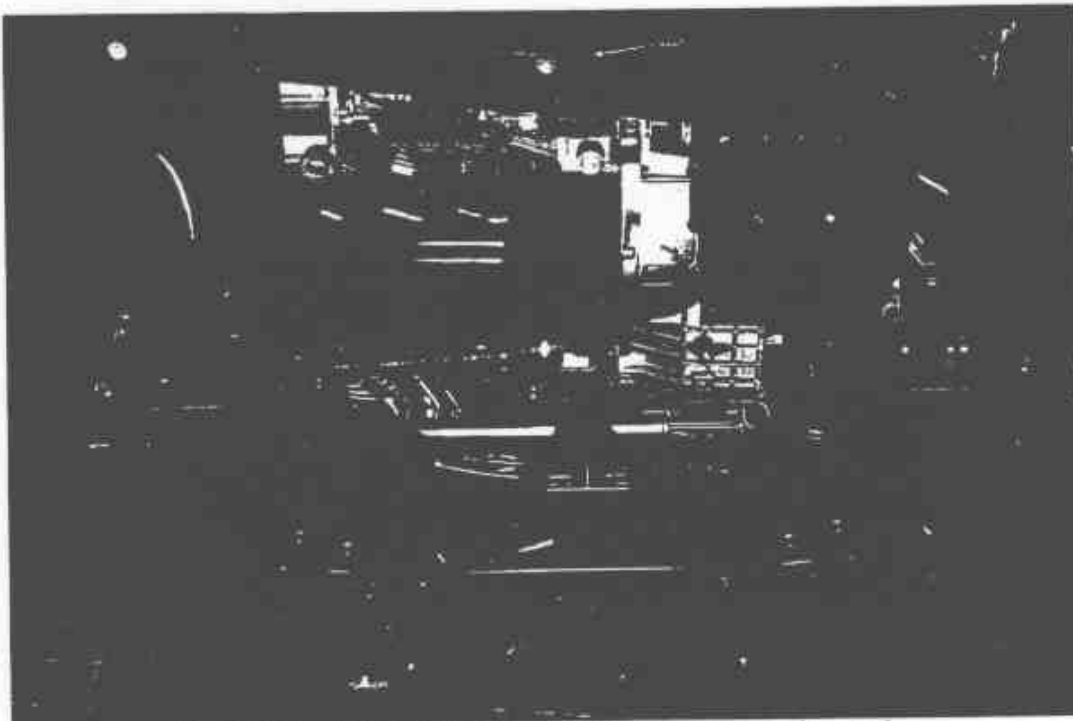


20. Vue du compartiment moteur du véhicule d'essai, après essai.  
Engine compartment view of the test vehicle, post-test.

Date de collision Crash date	1999-01-11	Véhicule Vehicle	PLYMOUTH BREEZE 1999	T.C. N° T.C.No	99-213
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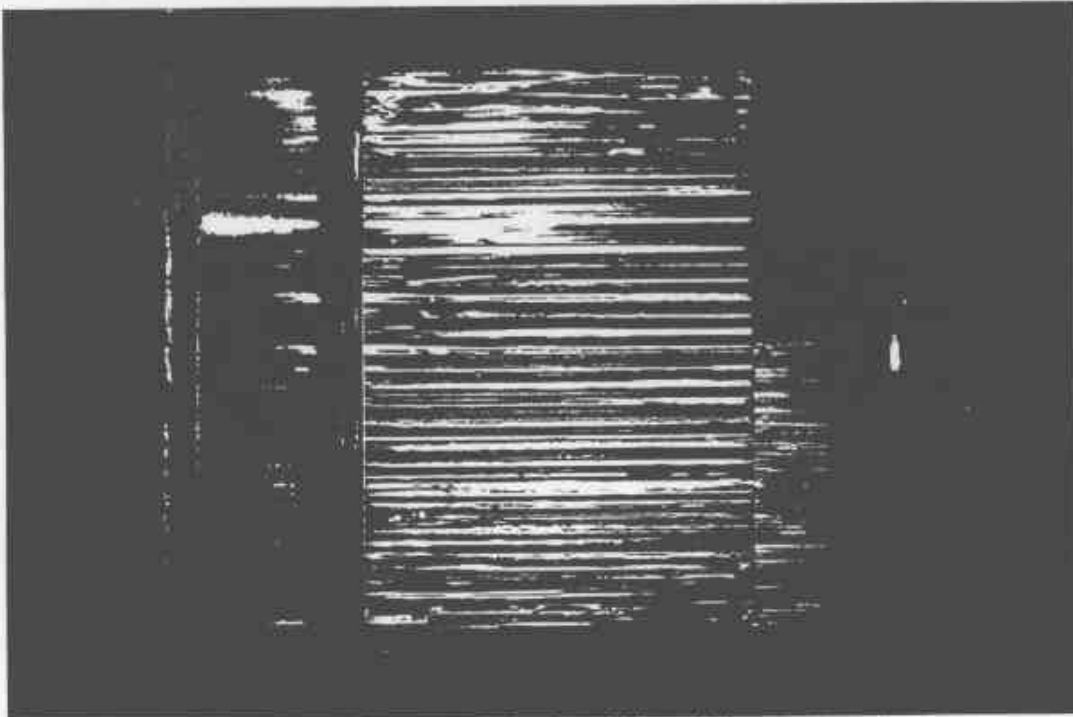


21. Vue du dessous du compartiment moteur, avant essai.  
Front underbody view of the test vehicle, pre-test.

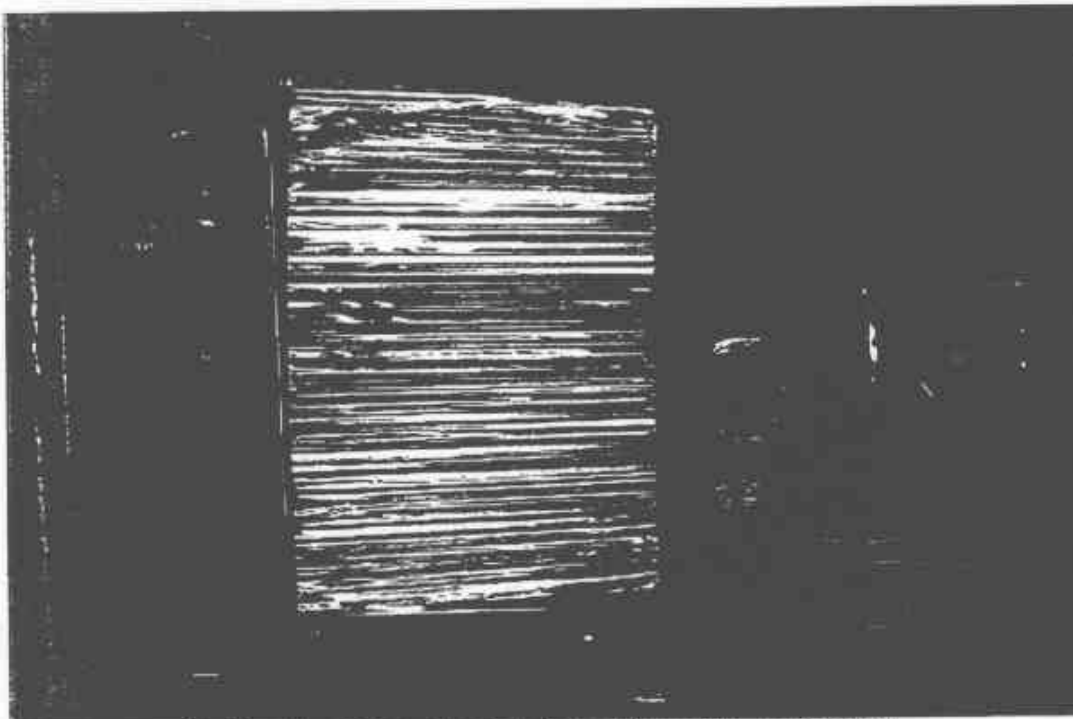


22. Vue du dessous du compartiment moteur, après essai.  
Front underbody view of the test vehicle, post-test.

Date de collision Crash date	1999-01-11	Véhicule Vehicle	PLYMOUTH BREEZE 1999	T.C. N° T.C.No	99-213
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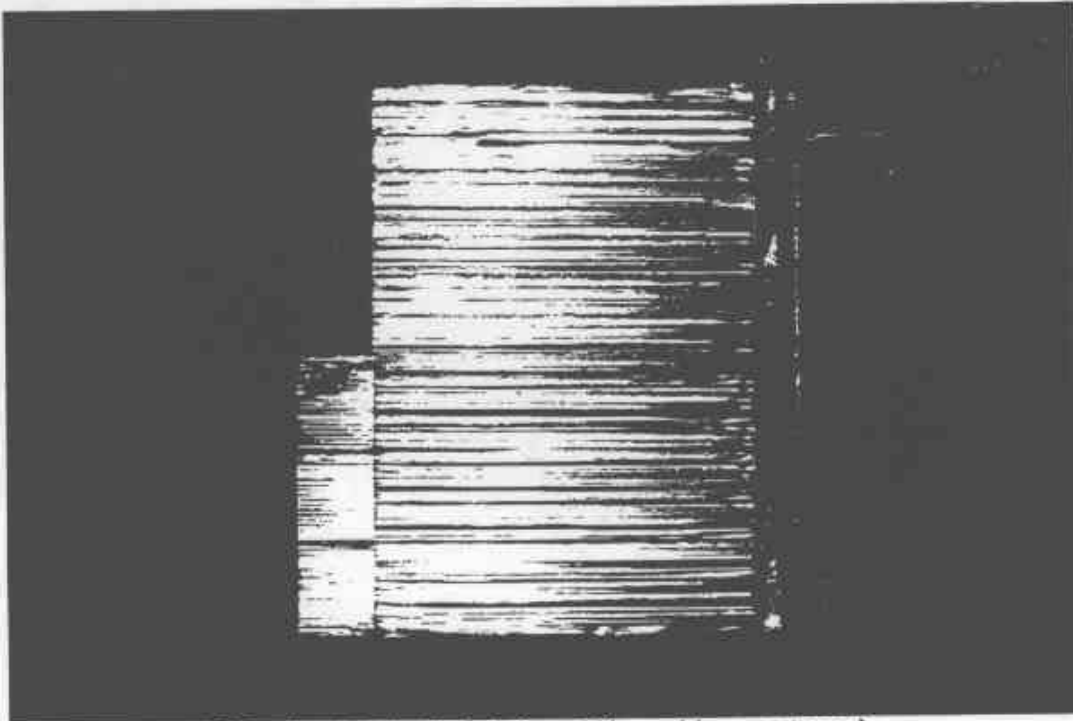


23. Vue du côté gauche de la face déformable, avant essai.  
Left side view of the deformable face, pre-test.

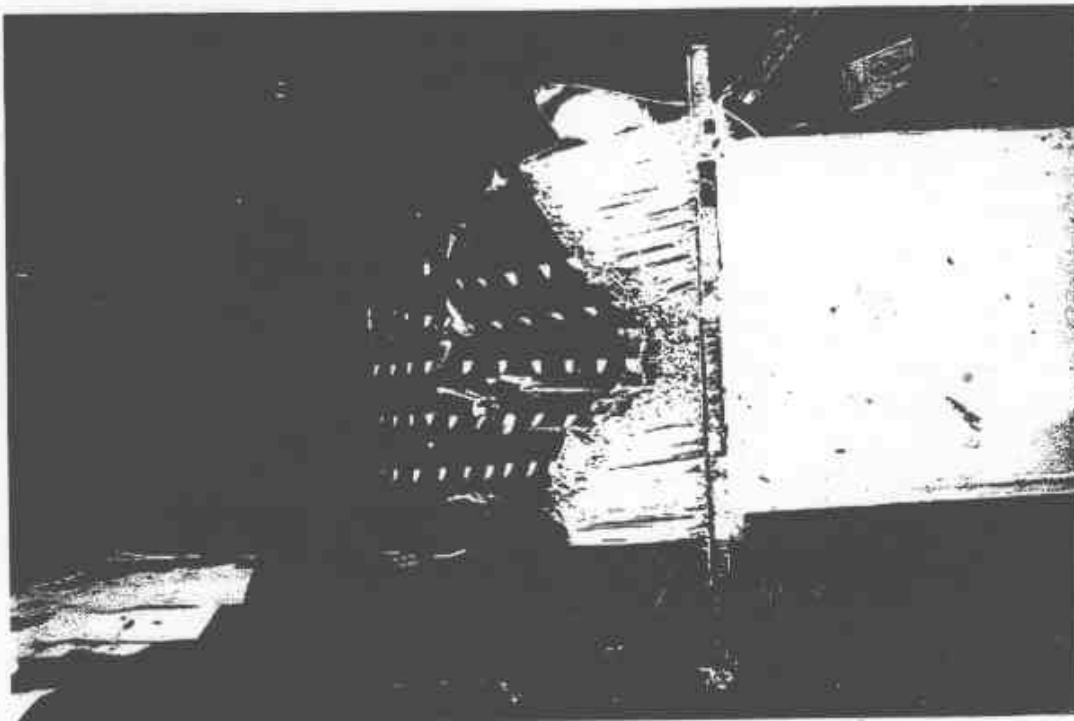


24. Vue du côté gauche de la face déformable, après essai.  
Left side view of the deformable face, post-test.

Date de collision Crash date	1999-01-11	Véhicule Vehicle	PLYMOUTH BREEZE 1999	T.C. N° T.C.No	99-213
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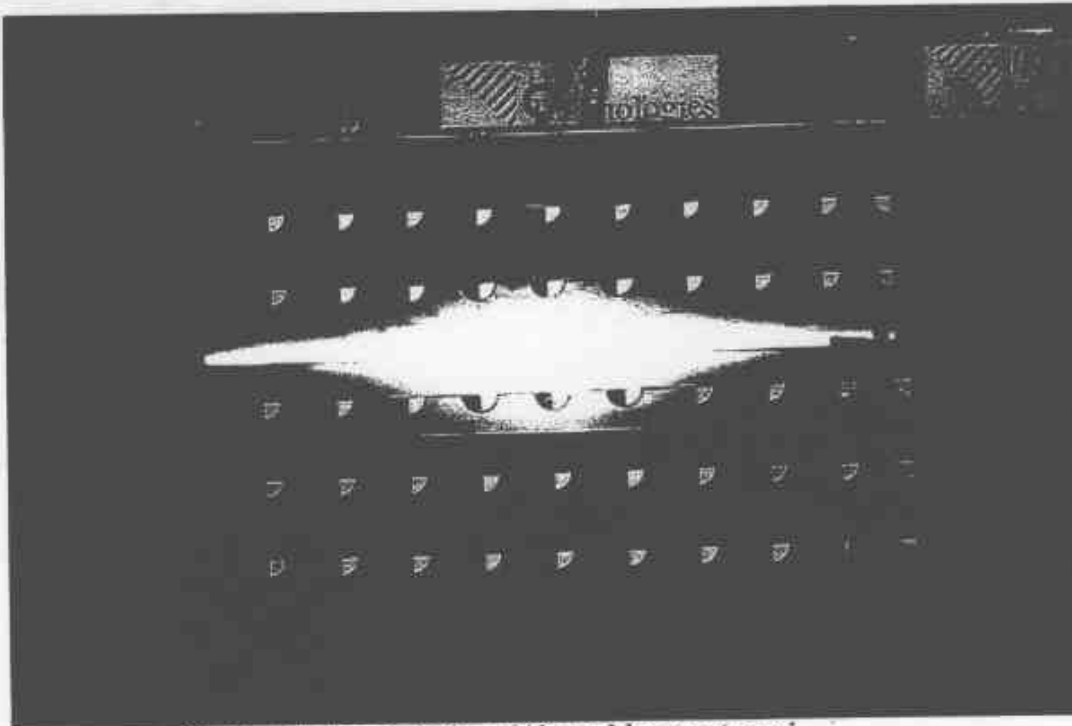


25. Vue du côté droit de la face déformable, avant essai.  
Right side view of the deformable face, pre-test.

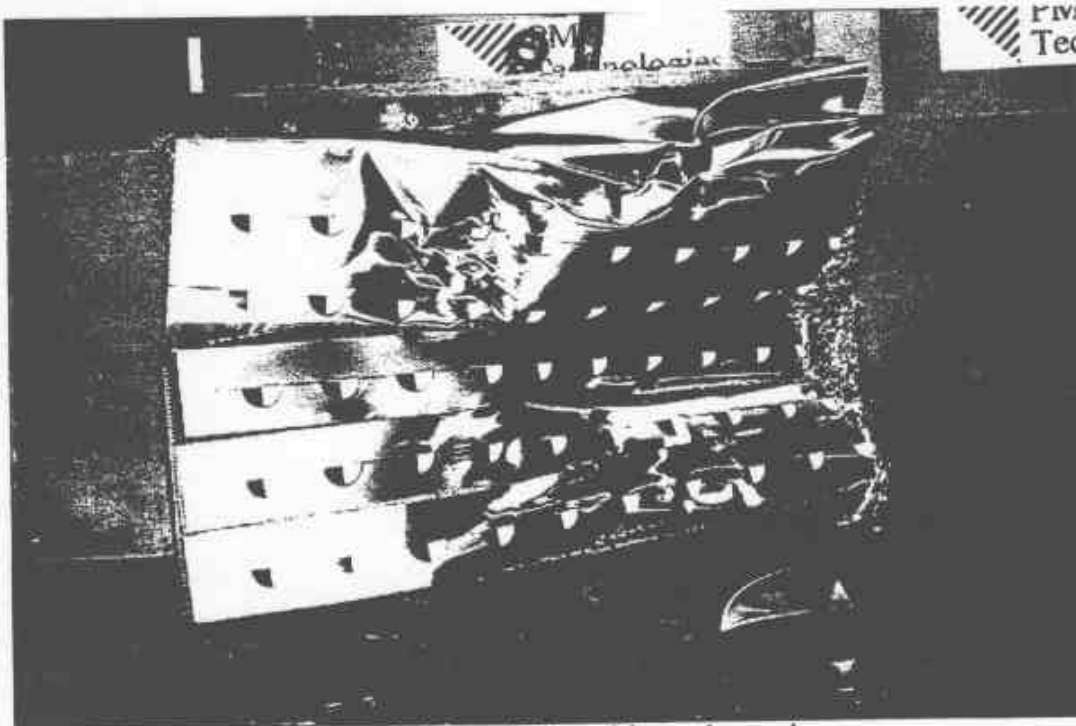


26. Vue du côté droit de la face déformable, après essai.  
Right side view of the deformable face, post-test.

Date de collision Crash date	1999-01-11	Véhicule Vehicle	PLYMOUTH BREEZE 1999	T.C. N° T.C.No	99-213
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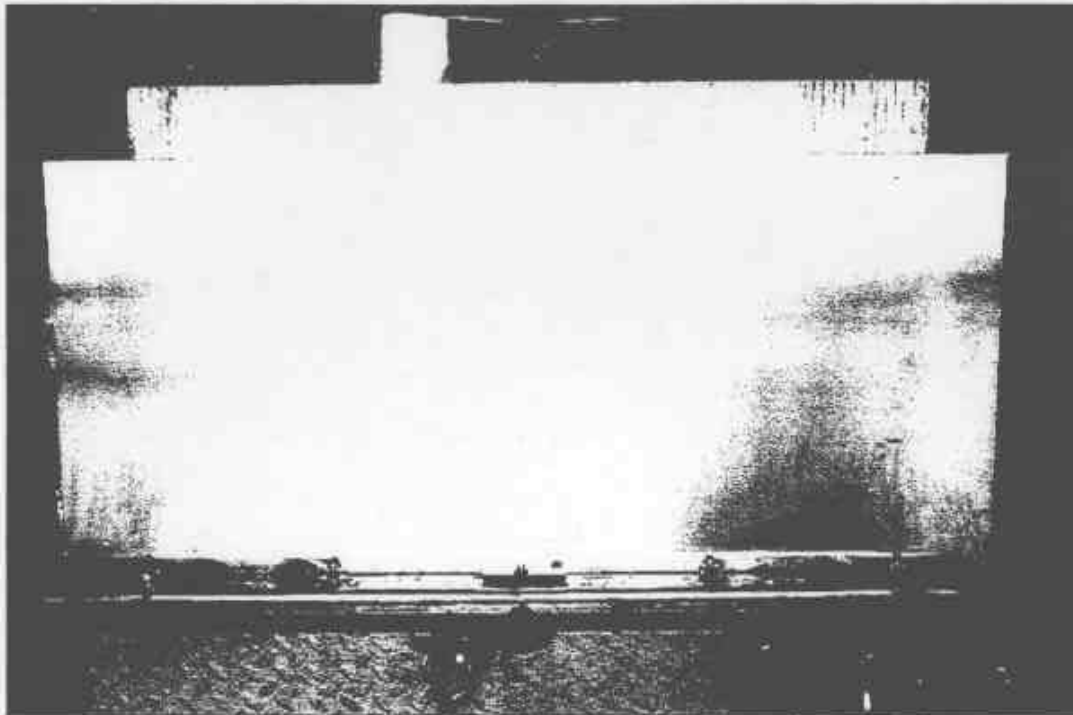


27. Vue de face de la face déformable, avant essai.  
Front view of the deformable face, pre-test.

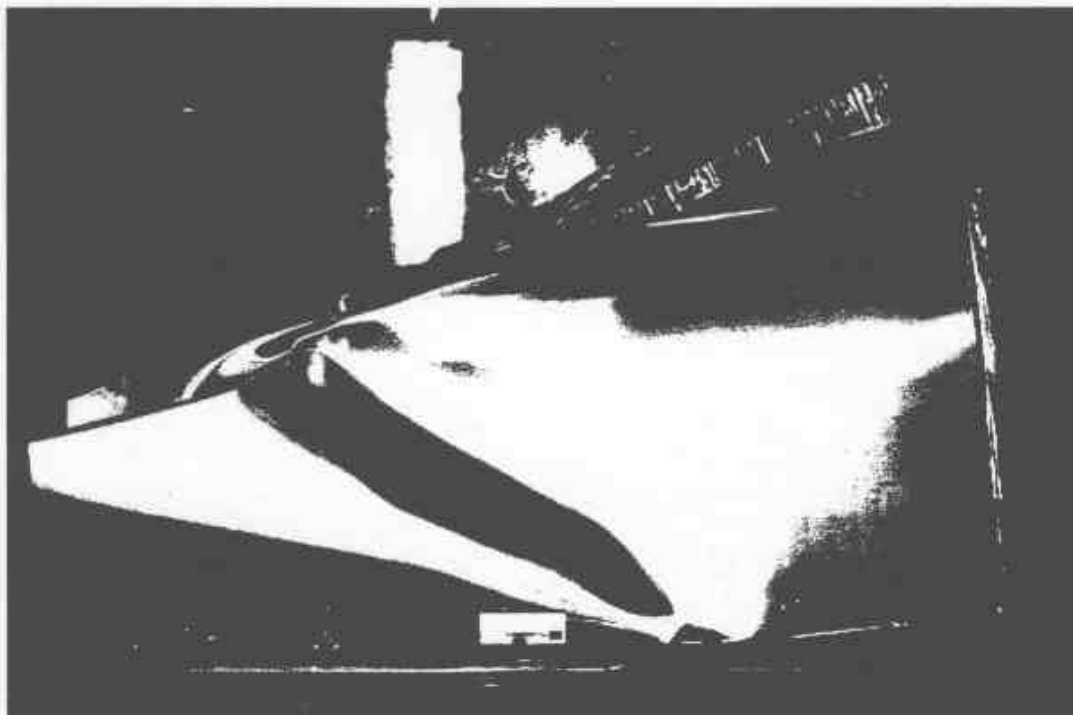


28. Vue de face de la face déformable, après essai.  
Front view of the deformable face, post-test.

Date de collision Crash date	1999-01-11	Véhicule Vehicle	PLYMOUTH BREEZE 1999	T.C. N° T.C.No	99-213
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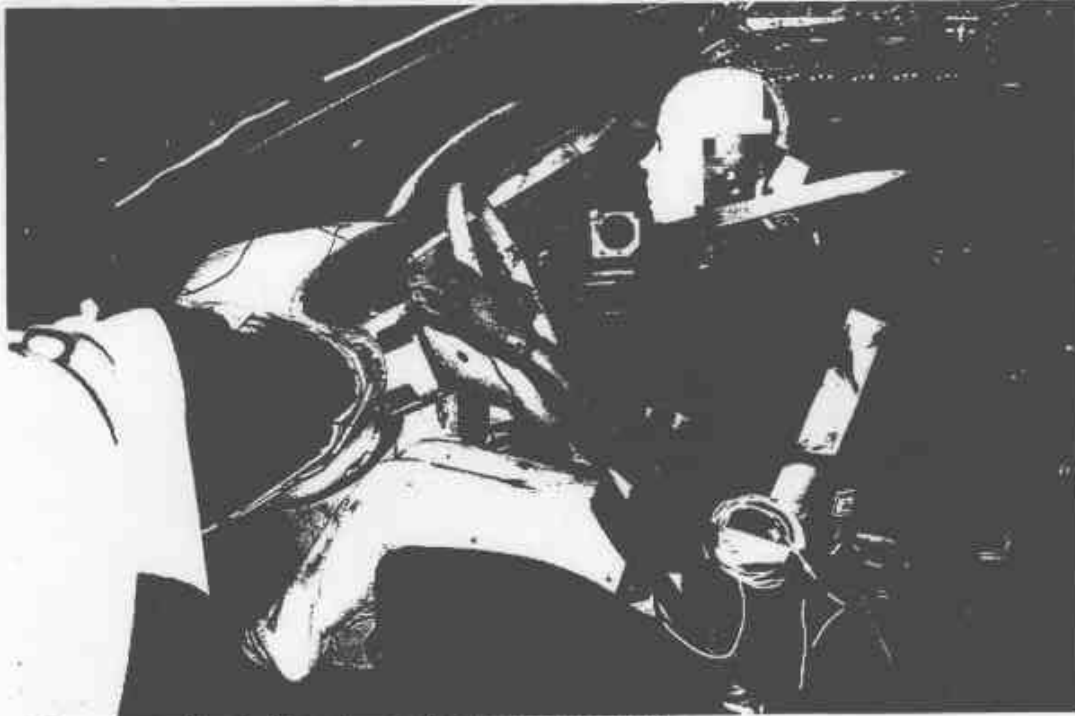


29. Vue de plan de la face déformable, avant essai.  
Plan view of the deformable face, pre-test.

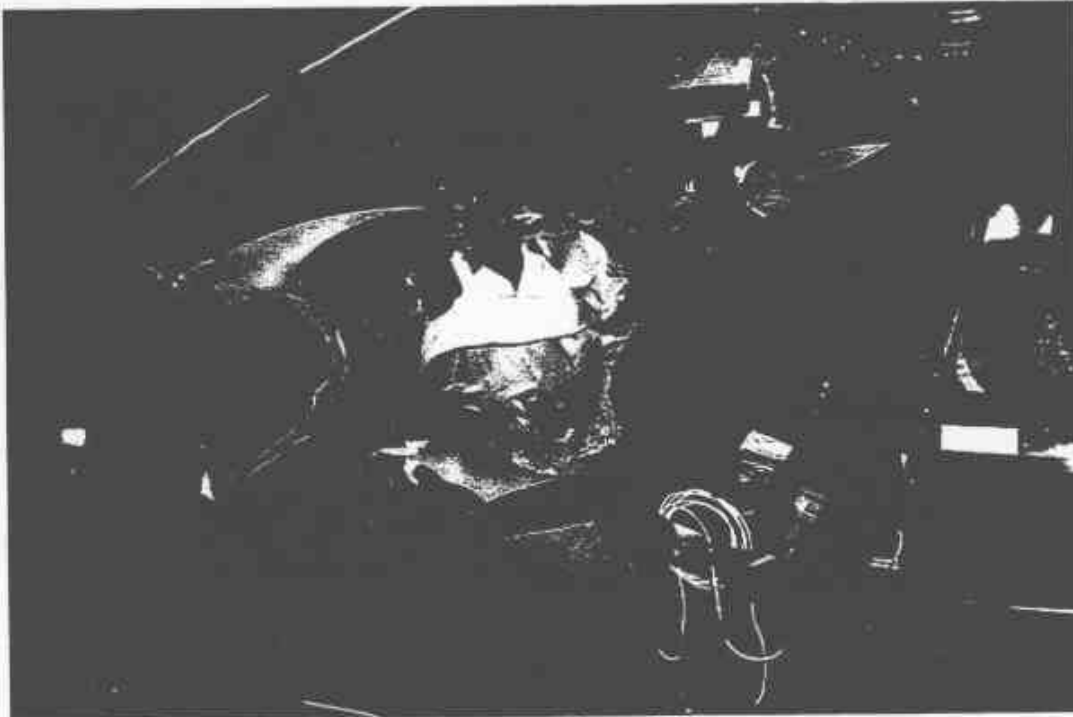


30. Vue de plan de la face déformable, après essai.  
Plan view of the deformable face, post-test.

Date de collision Crash date	1999-01-11	Véhicule Vehicle	PLYMOUTH BREEZE 1999	T.C.N° T.C.No	99-213
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31. Position du conducteur, avant essai.  
Driver's position, pre-test.



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

Date de collision Crash date	1999-01-11	Véhicule Vehicle	PLYMOUTH BREEZE 1999	T.C. N° T.C.No	99-213
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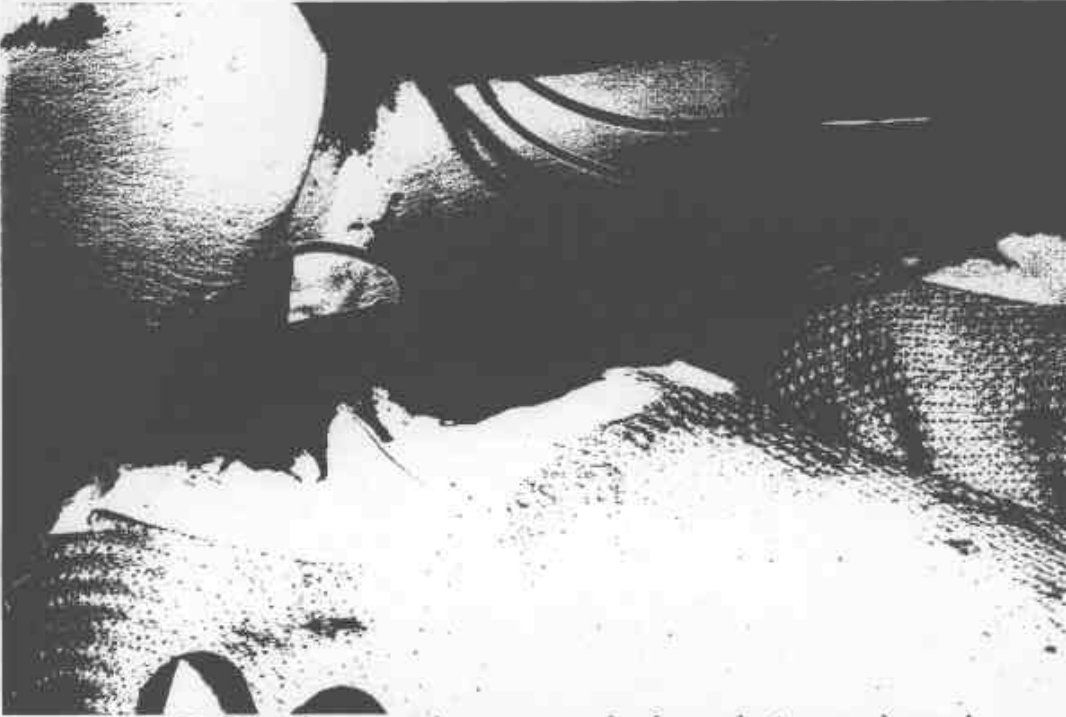


33. Point de contact de tête du conducteur, après essai.  
Driver's head contact point, post-test.

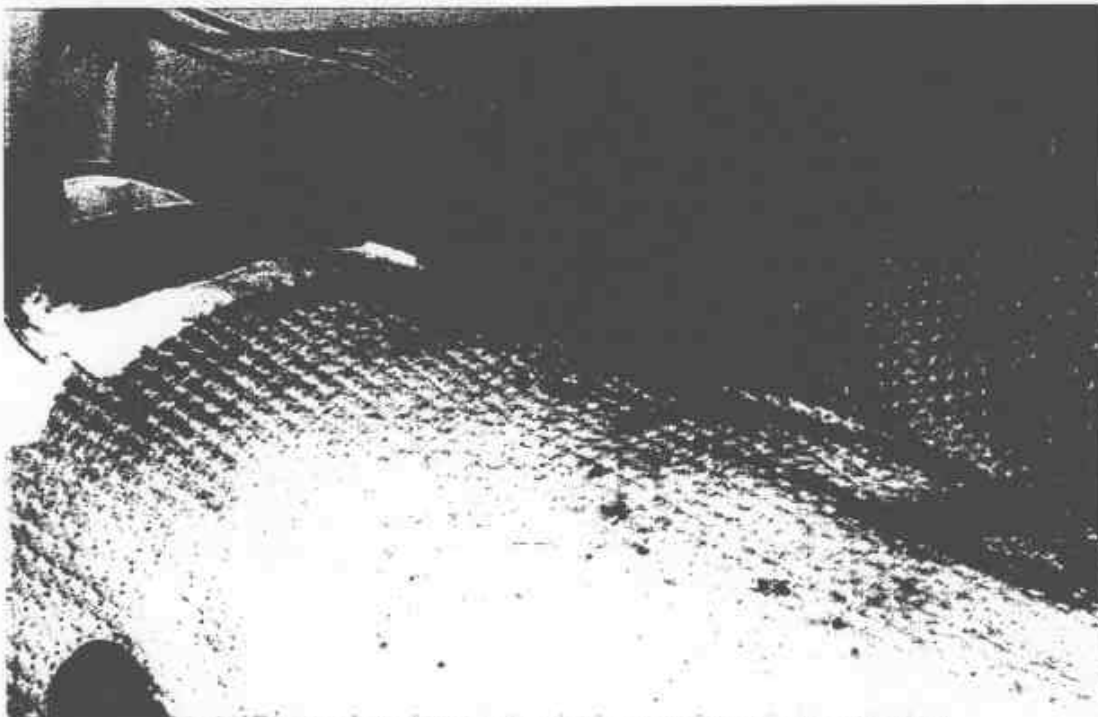


34. Point de contact de tête du conducteur, après essai.  
Driver's head contact point, post-test.

Date de collision Crash date	1999-01-11	Véhicule Vehicle	PLYMOUTH BREEZE 1999	T.C. N° T.C.No	99-213
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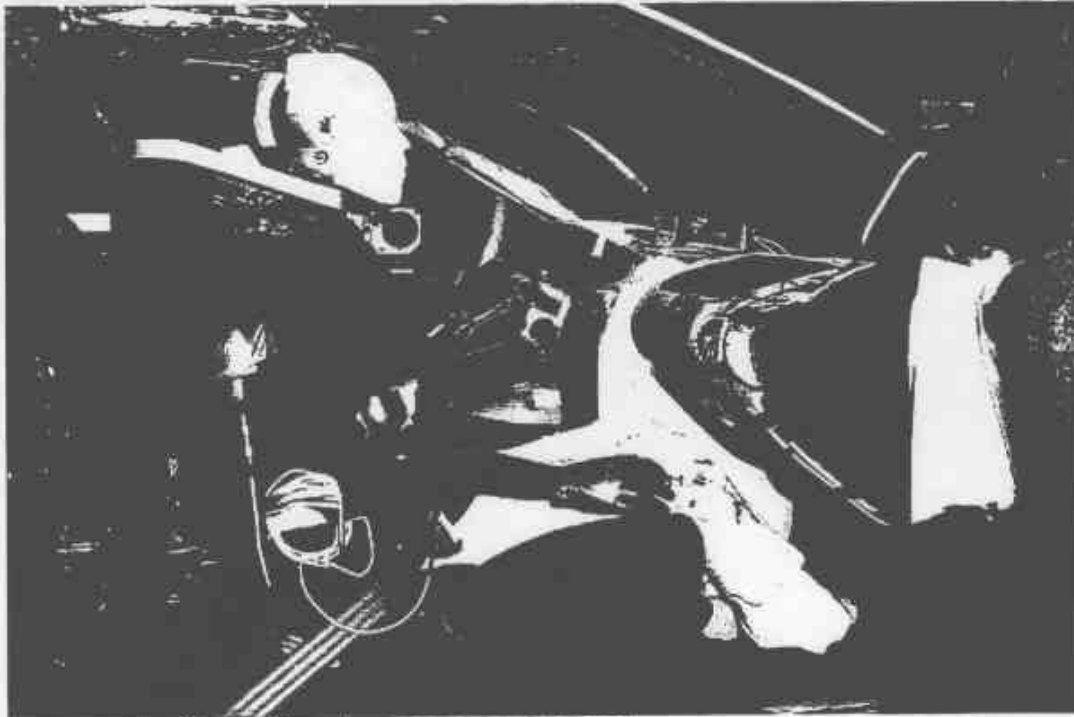


35. Point de contact du genou gauche du conducteur, après essai.  
Driver's left knee contact point, post-test.

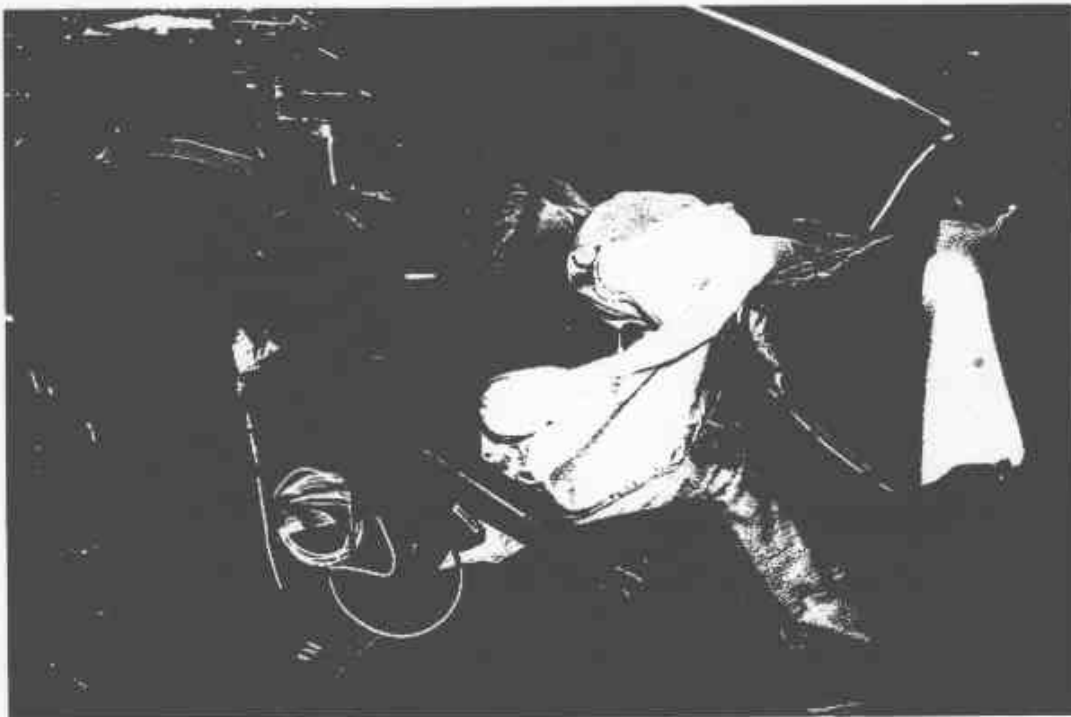


36. Point de contact du genou droit du conducteur, après essai.  
Driver's right knee contact point, post-test.

Date de collision Crash date	1999-01-11	Véhicule Vehicle	PLYMOUTH BREEZE 1999	T.C. N° T.C.No	99-213
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37. Position du passager, avant essai.  
Passenger's position, pre-test.

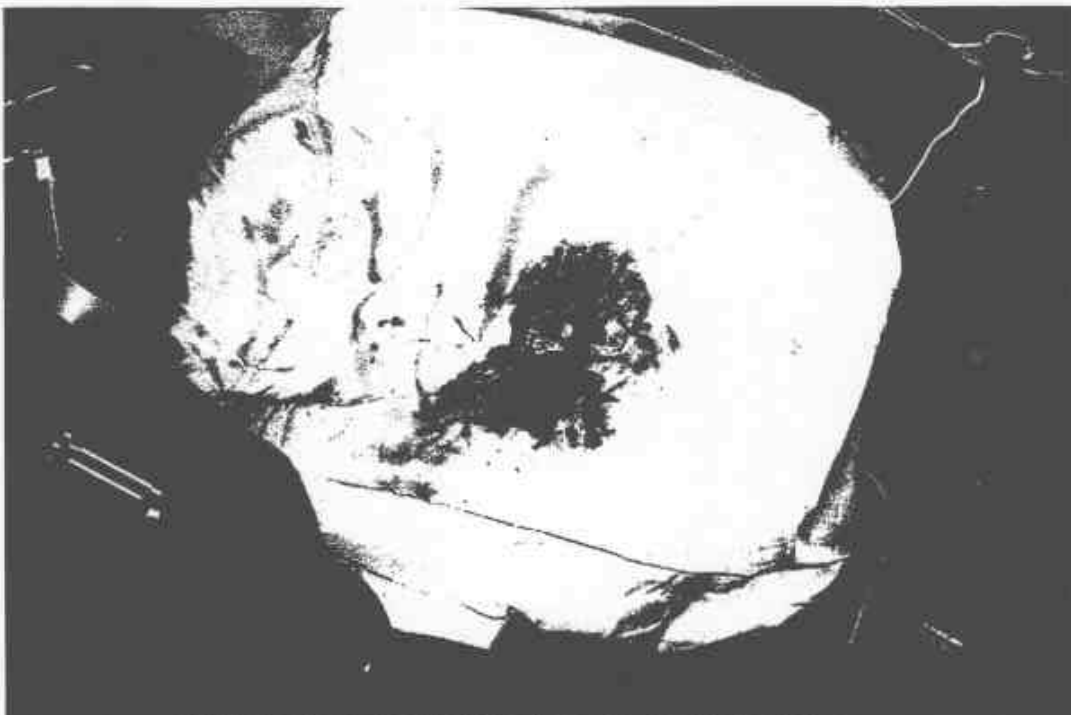


38. Position du passager, après essai.  
Passenger's position, post-test.

Date de collision Crash date	1999-01-11	Véhicule Vehicle	PLYMOUTH BREEZE 1999	T.C. N° T.C.No	99-213
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39. Point de contact de tête du passager, après essai.  
Passenger's head contact point, post-test.



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

Date de collision Crash date	1999-01-11	Véhicule Vehicle	PLYMOUTH BREEZE 1999	T.C. N° T.C.No	99-213
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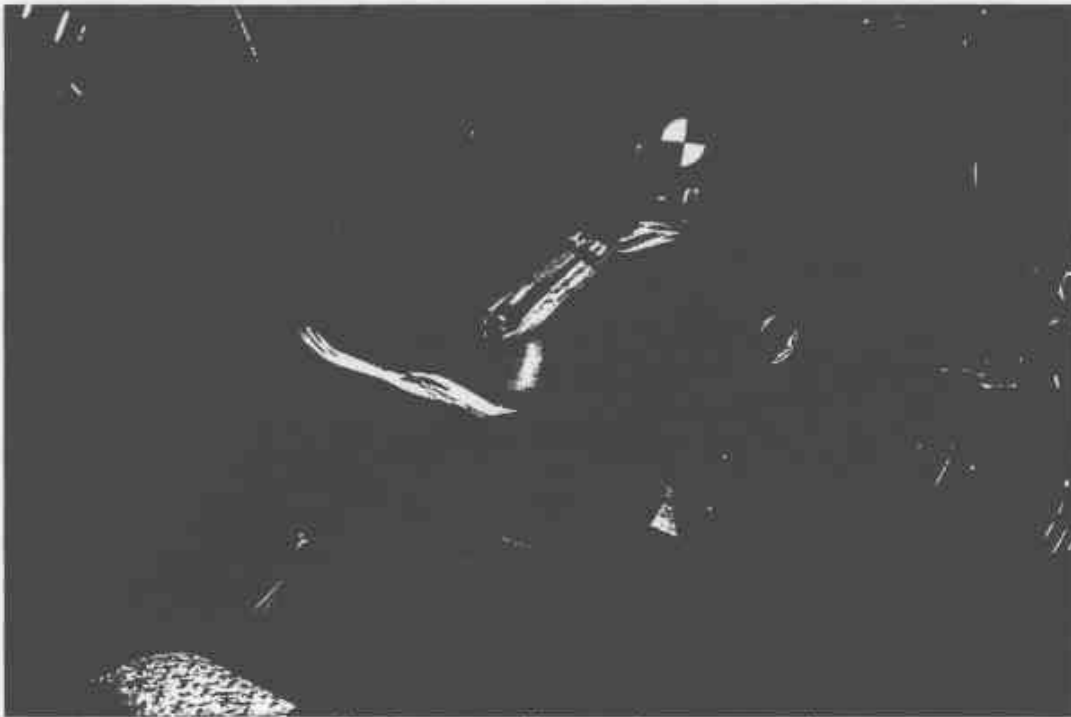


41. Point de contact du genou gauche du passager, après essai.  
Passenger's left knee contact point, post-test.

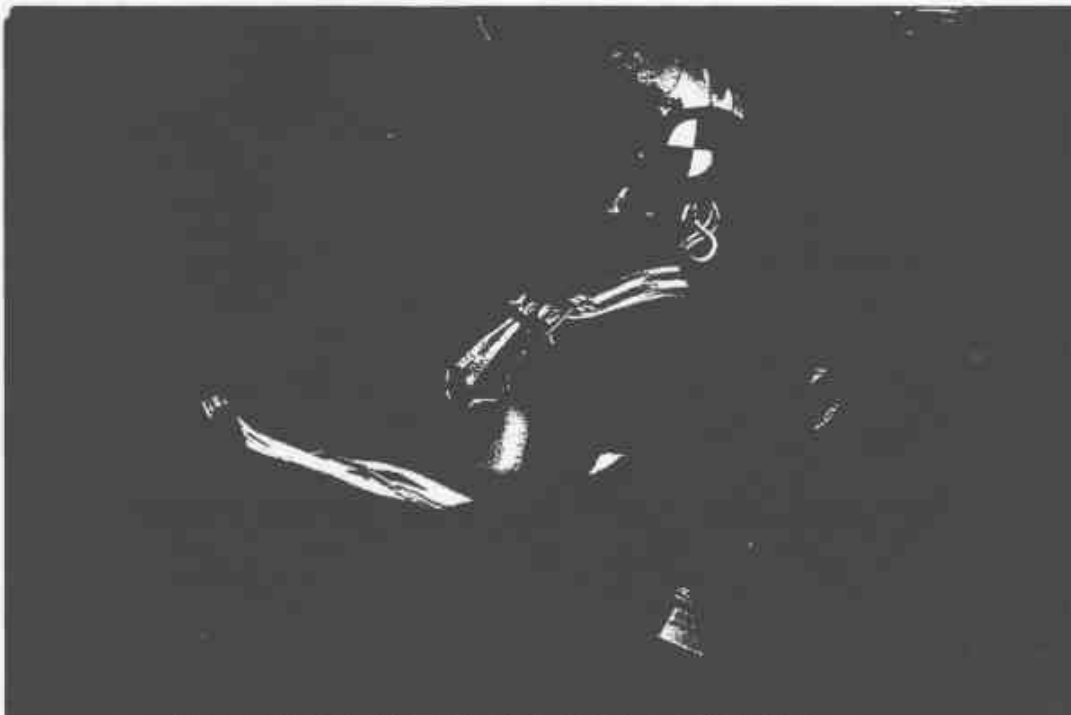


42. Point de contact du genou droit du passager, après essai.  
Passenger's right knee contact point, post-test.

Date de collision Crash date	1999-01-11	Véhicule Vehicle	PLYMOUTH BREEZE 1999	T.C. N° T.C.No	99-213
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43. Position du passager arrière gauche, avant essai.  
Left rear passenger's position, pre-test.



44. Position du passager arrière gauche, après essai.  
Left rear passenger's position, post-test.

Date de collision Crash date	1999-01-11	Véhicule Vehicle	PLYMOUTH BREEZE 1999	T.C. N° T.C.No	99-213
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45. Position du passager arrière droit, avant essai.  
Right rear passenger's position, pre-test.



46. Position du passager arrière droit, après essai.  
Right rear passenger's position, post-test.

Date de collision Crash date	1999-01-11	Véhicule Vehicle	PLYMOUTH BREEZE 1999	T.C. N° T.C.No	99-213
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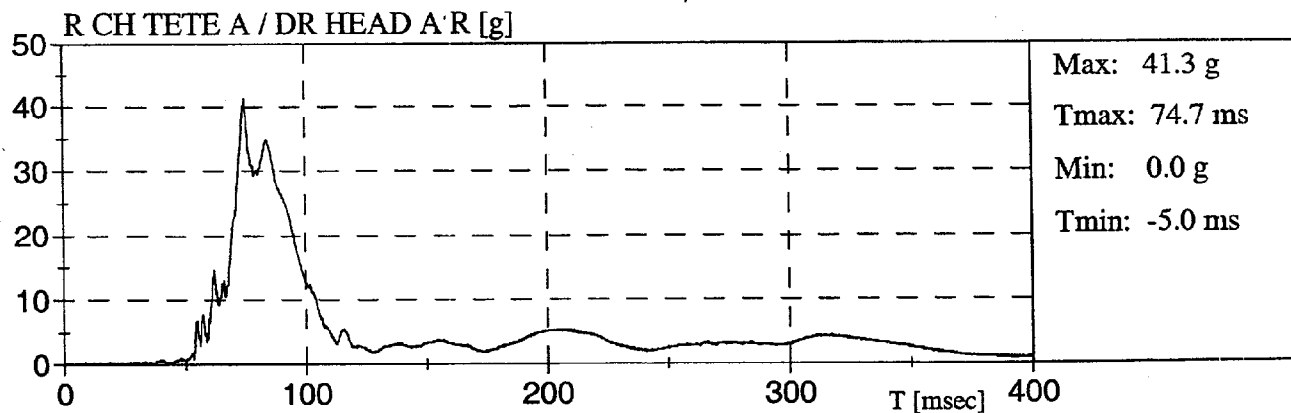
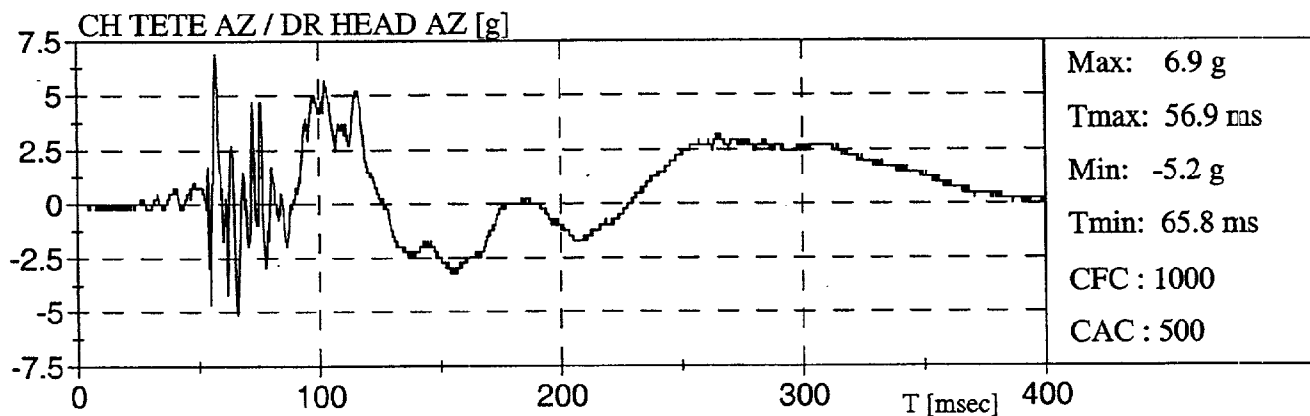
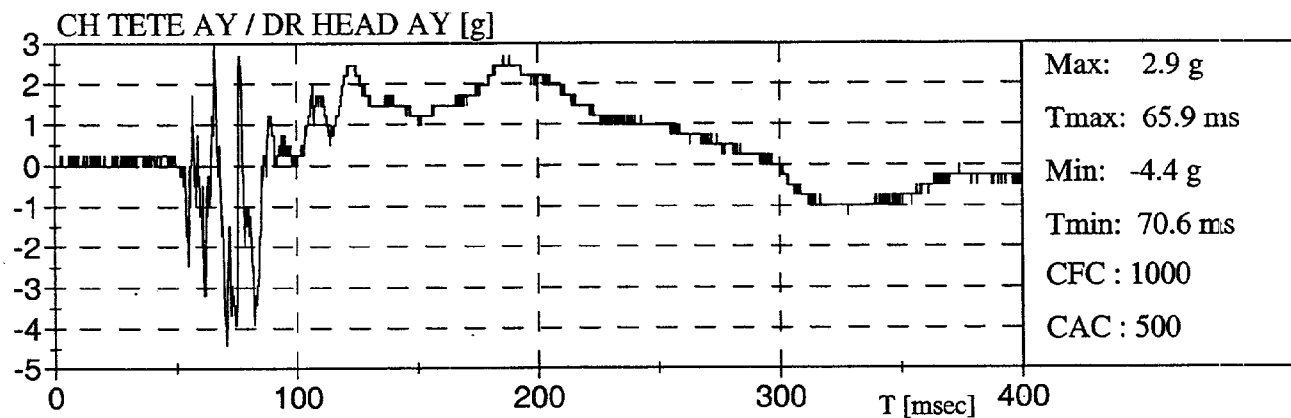
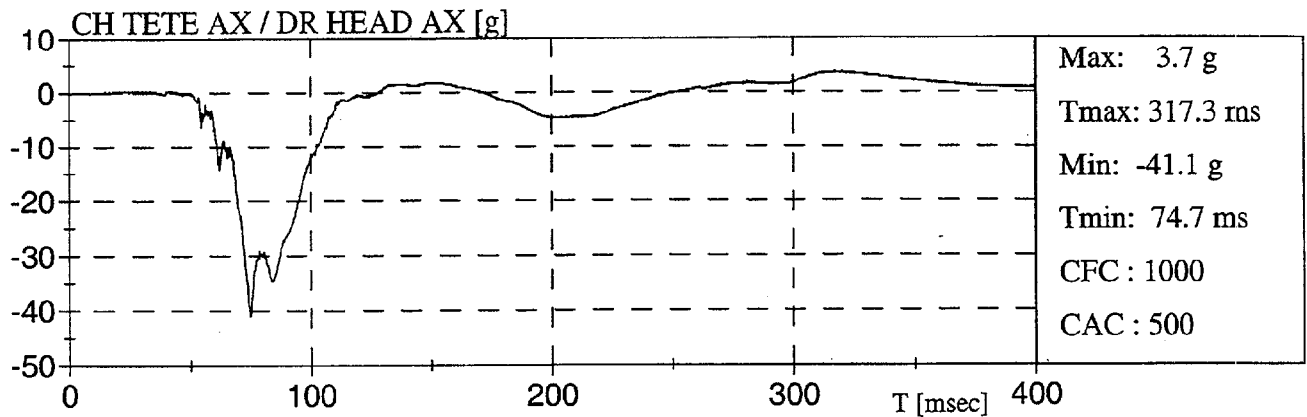


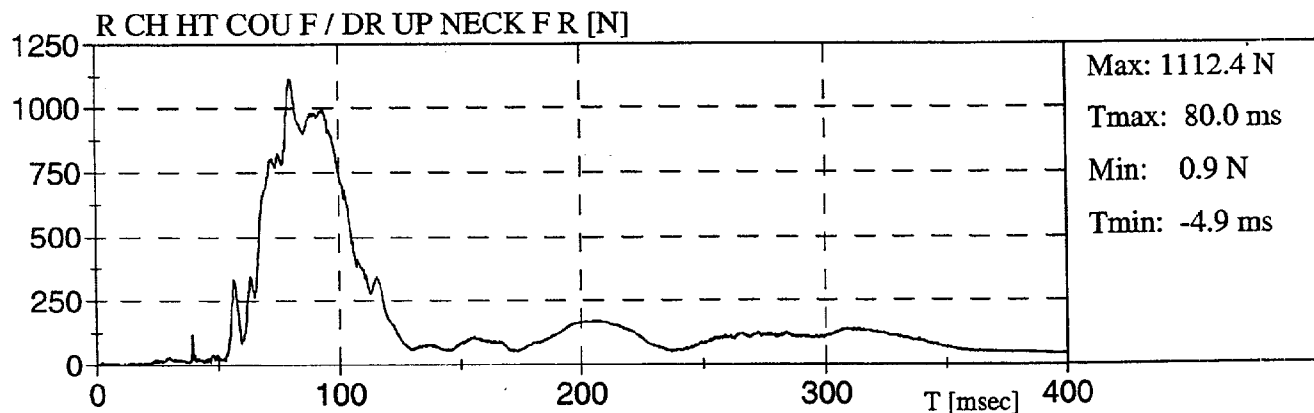
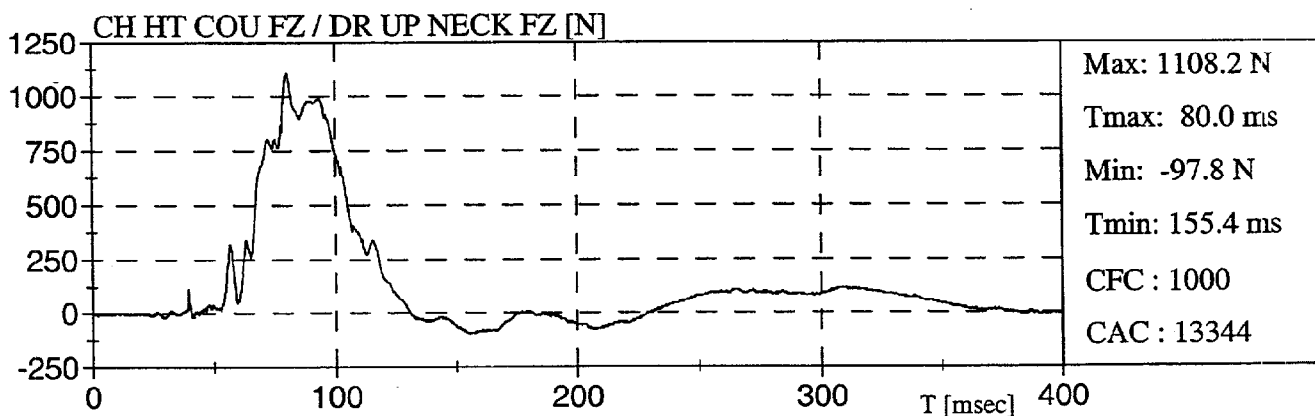
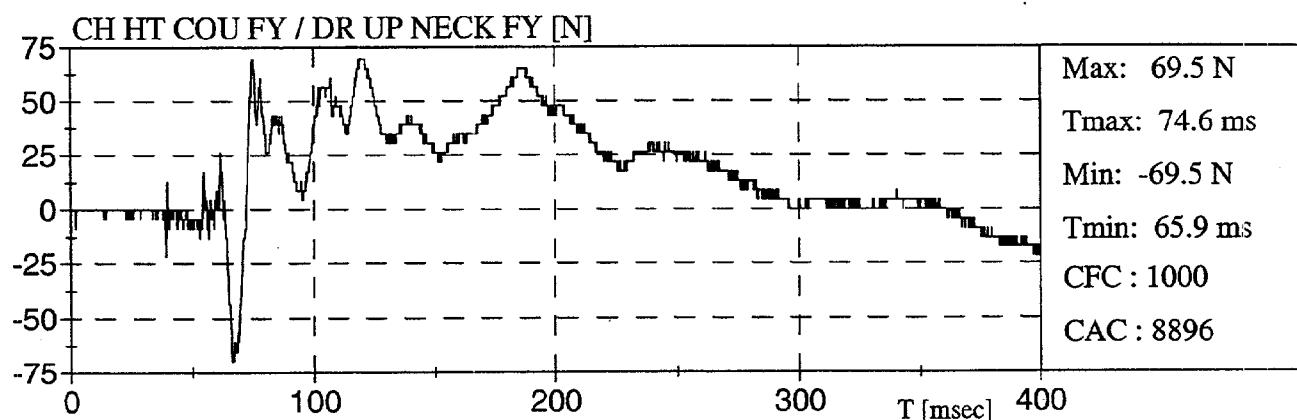
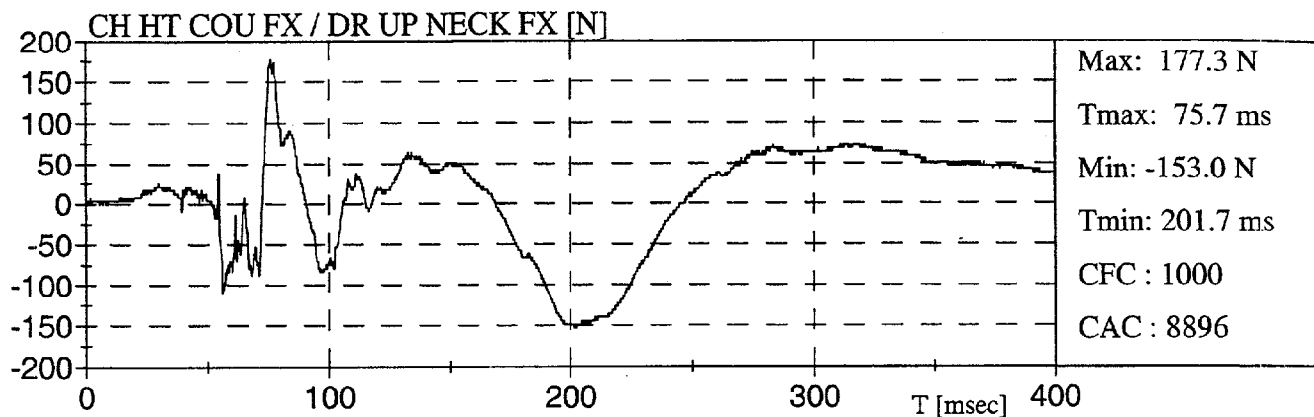
47. Affichage du lecteur de vitesse.  
Speed trap reading.

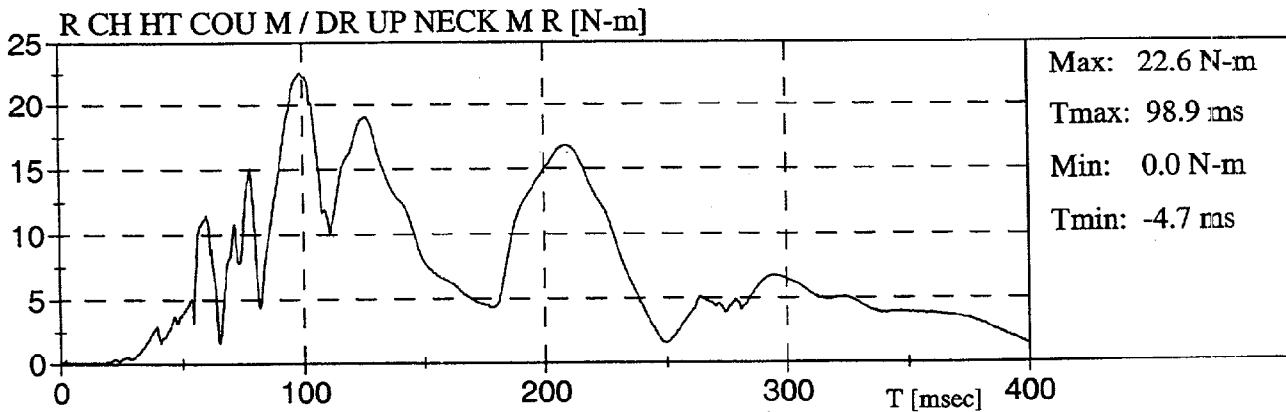
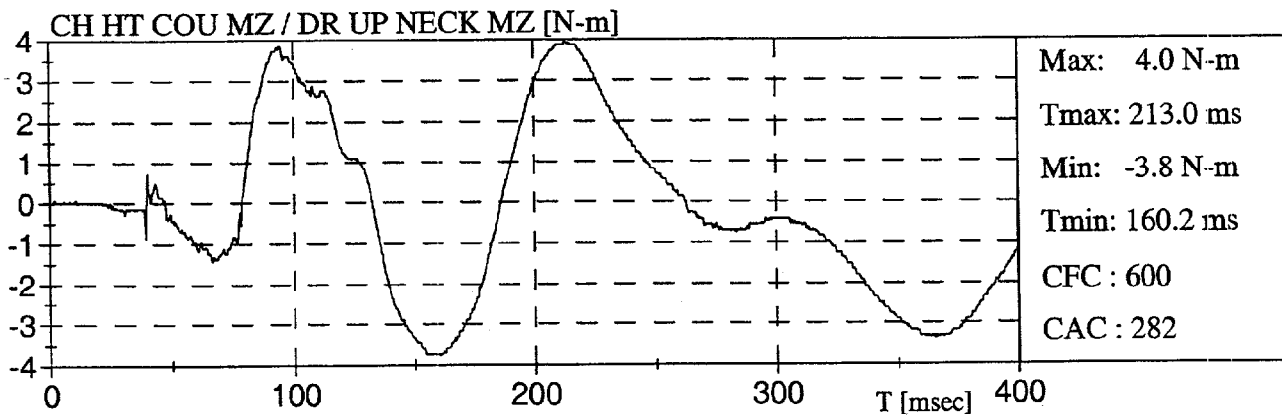
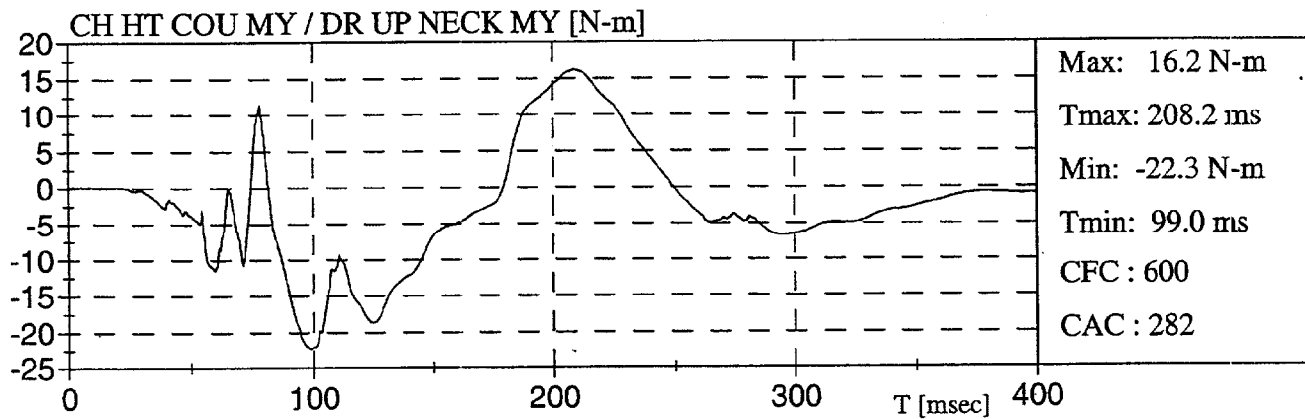
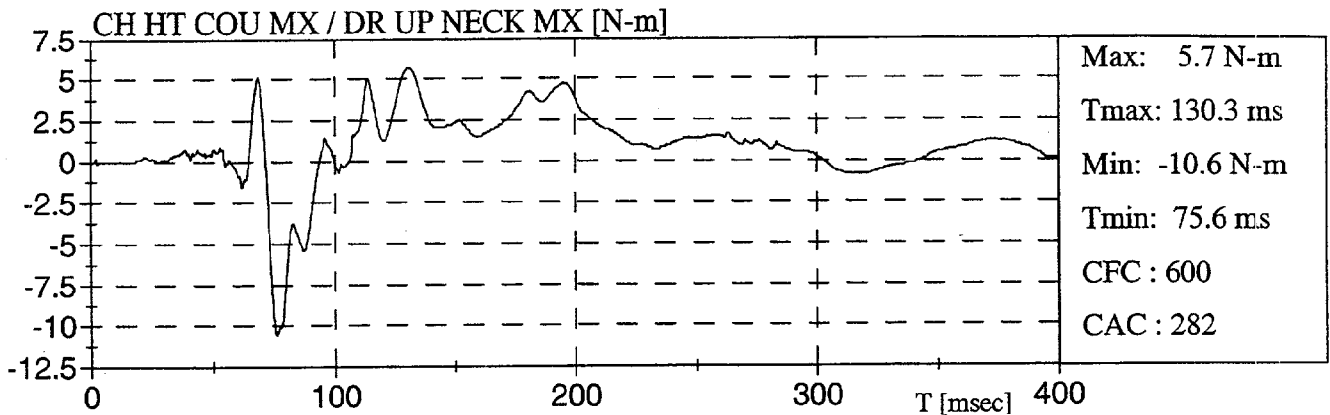
**APPENDICE / APPENDIX B**

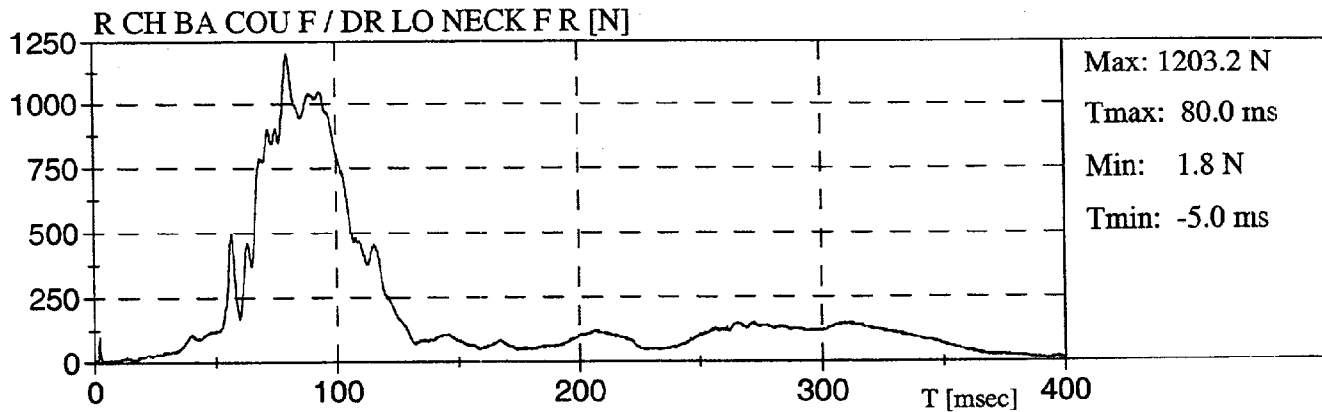
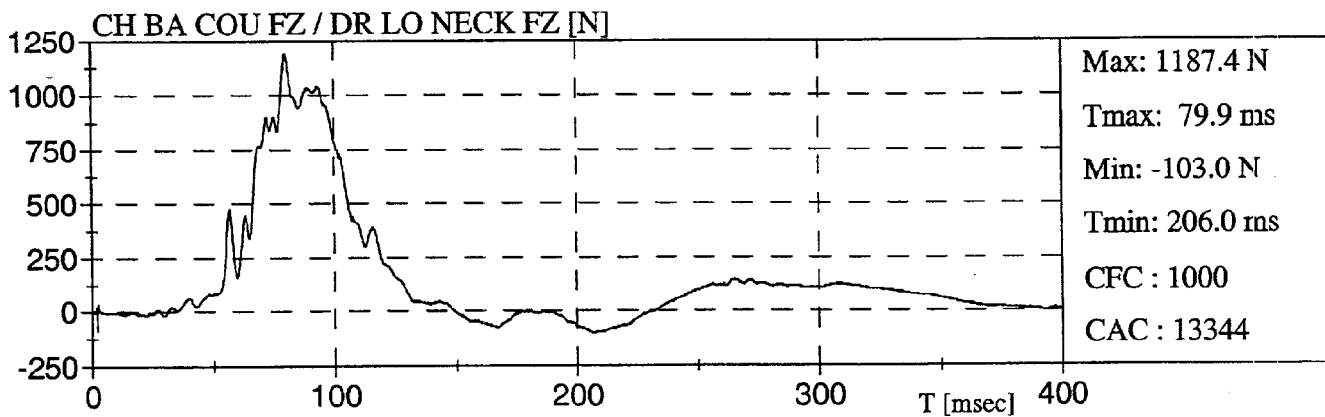
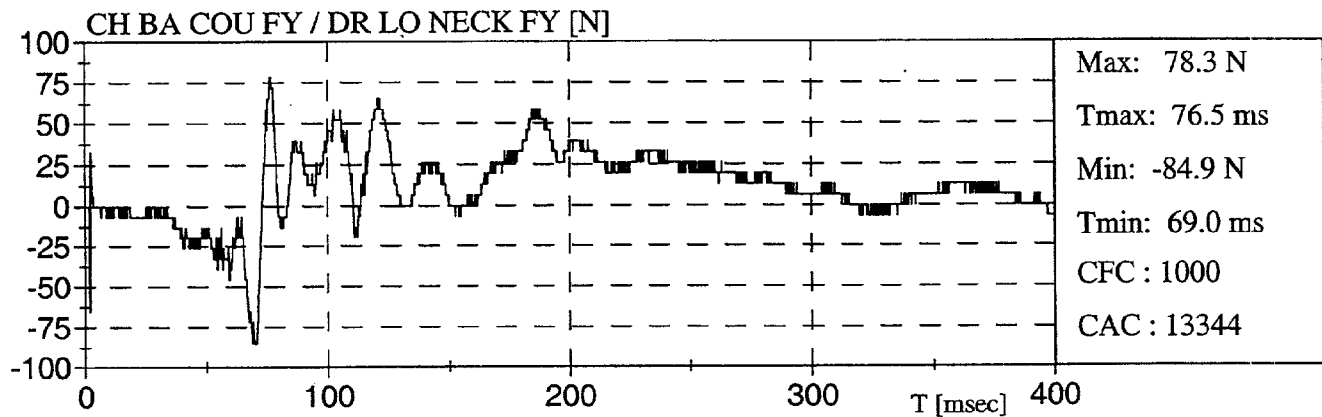
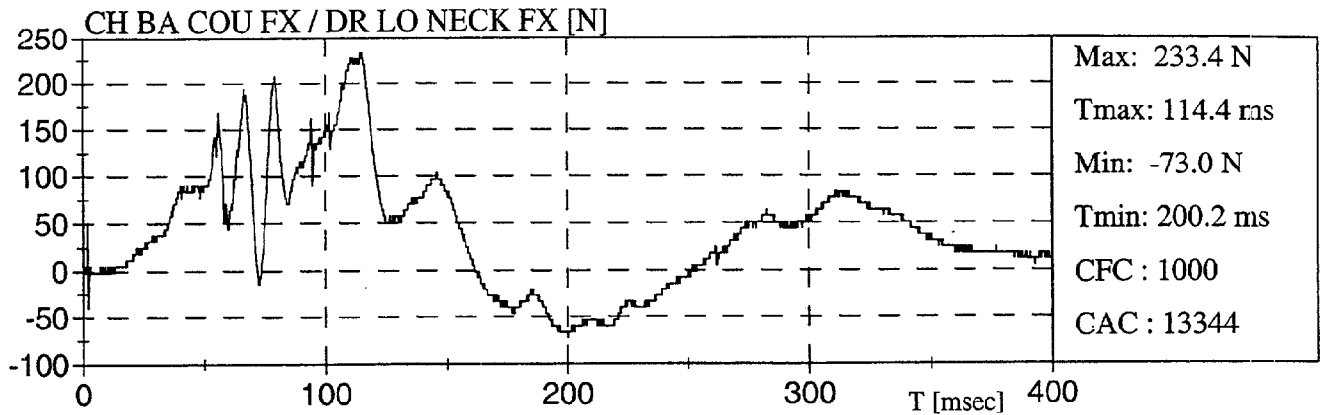
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GRAPHICAL DATA**

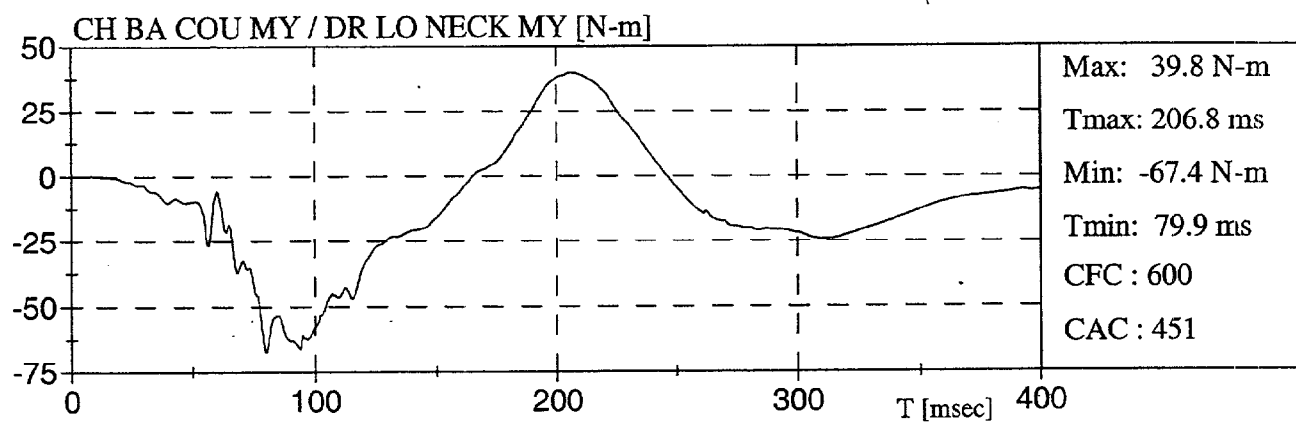
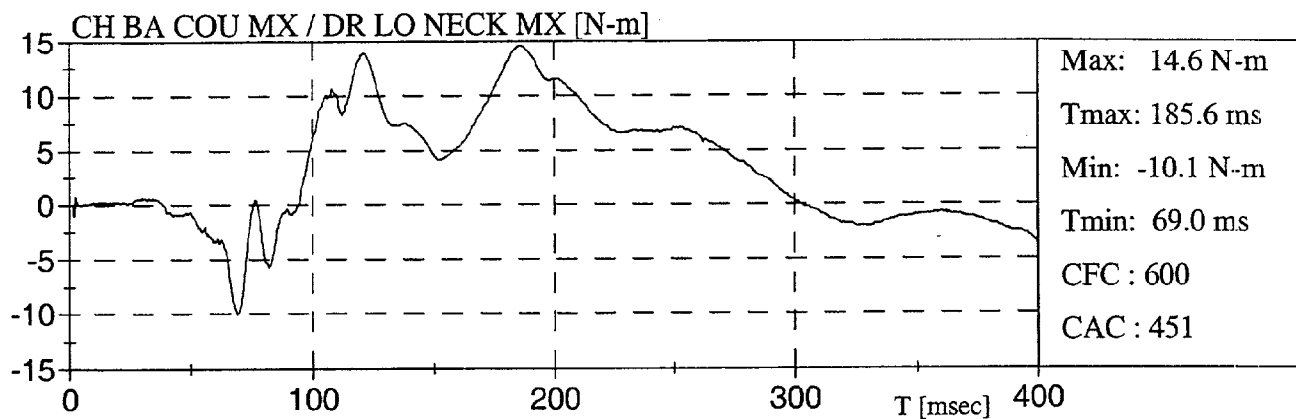
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<b>Type de véhicule</b> <b>Type of Vehicle</b>	<b>PLYMOUTH BREEZE 99</b>
<b>Numéro de TC</b> <b>Tc Number</b>	<b>TC99-213</b>
<b>Numéro de contrat</b> <b>Contract No</b>	<b>99-5001</b>
<b>Acquisition de données selon</b> <b>Data Acquisition according to</b>	<b>SAE J211/1 MAR 95</b>
<b>Date de l'essai</b> <b>Test date</b>	<b>1999-01-11</b>
<b>Titre du projet</b> <b>Project Title</b>	<b>COLLISIONS DE RECHERCHE CONJOINTE TC/NHTSA 98/99</b> <b>FRONTALE DÉCALÉE 36 KM/H - 40% GAUCHE</b> <b>98/99 TC/NHTSA JOINT RESEARCH COLLISION TESTS</b> <b>OFFSET FRONTAL 36 KM/H - 40% LEFT</b>
<b>MANNEQUIN / DUMMY</b>	
<b>Chauffeur</b> <b>Driver</b>	<b>HYBRID III 5% Femelle / Female</b>
<b>Passager</b> <b>Passenger</b>	<b>HYBRID III 5% Femelle / Female</b>
<b>Passager 1</b> <b>Passenger 1</b>	<b>HYBRID III 18M</b>
<b>Passager 2</b> <b>Passenger 2</b>	<b>HYBRID III 3Y</b>

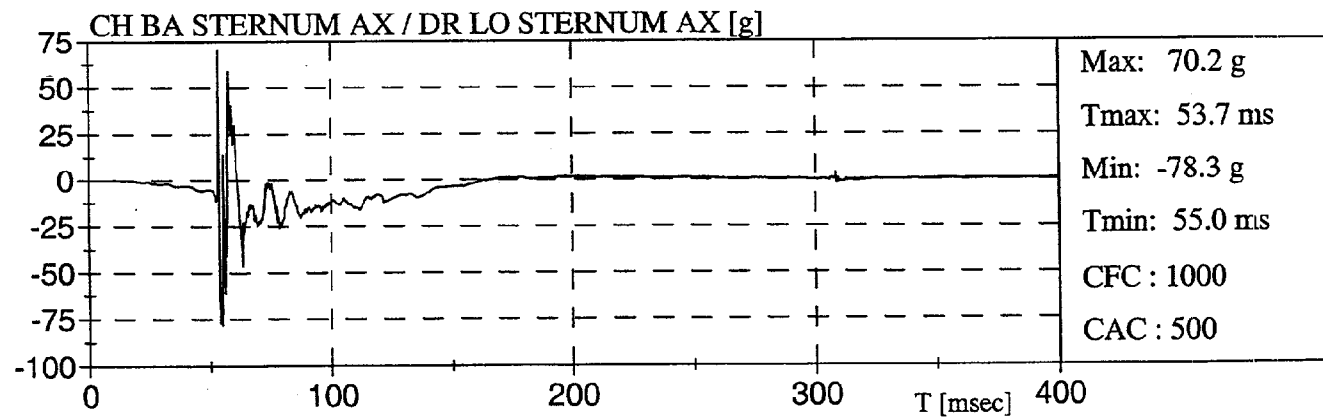
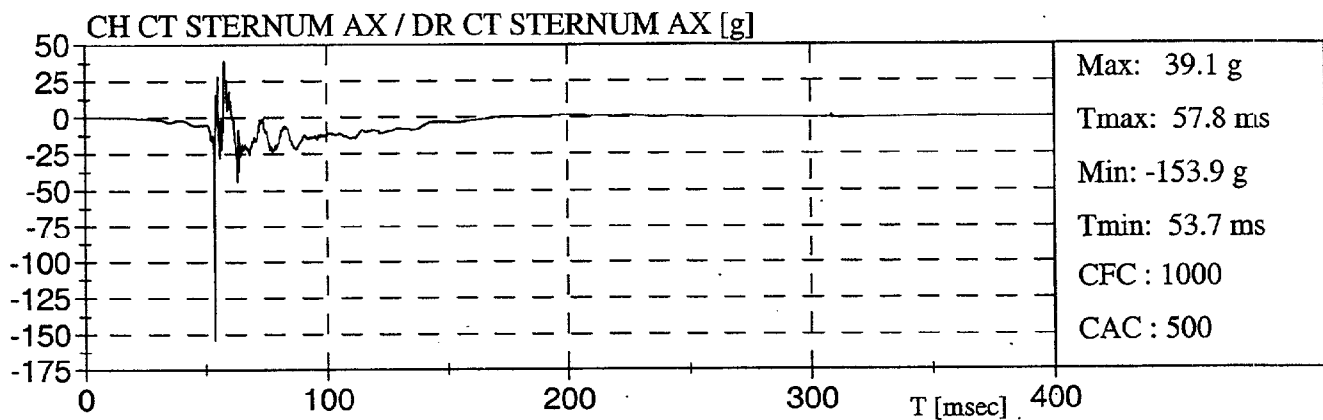
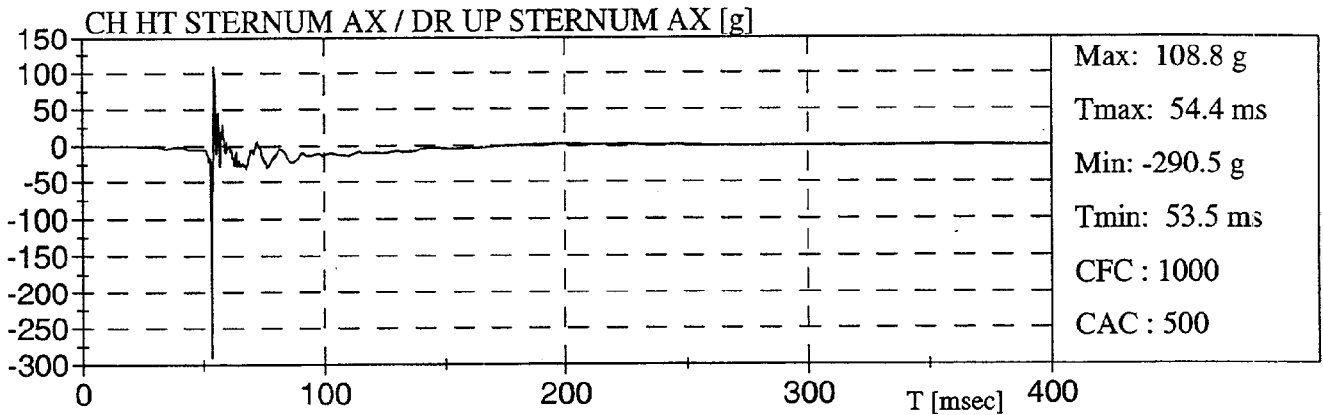


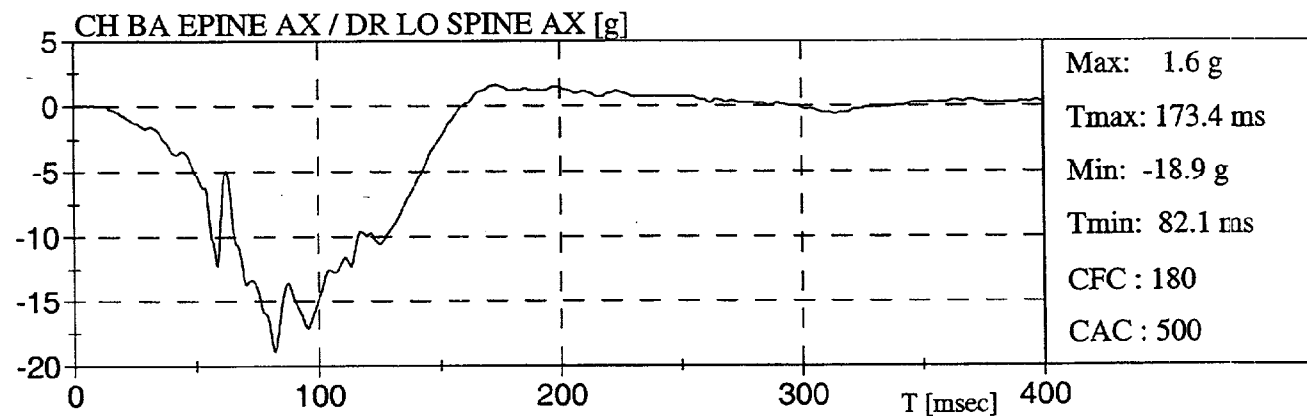
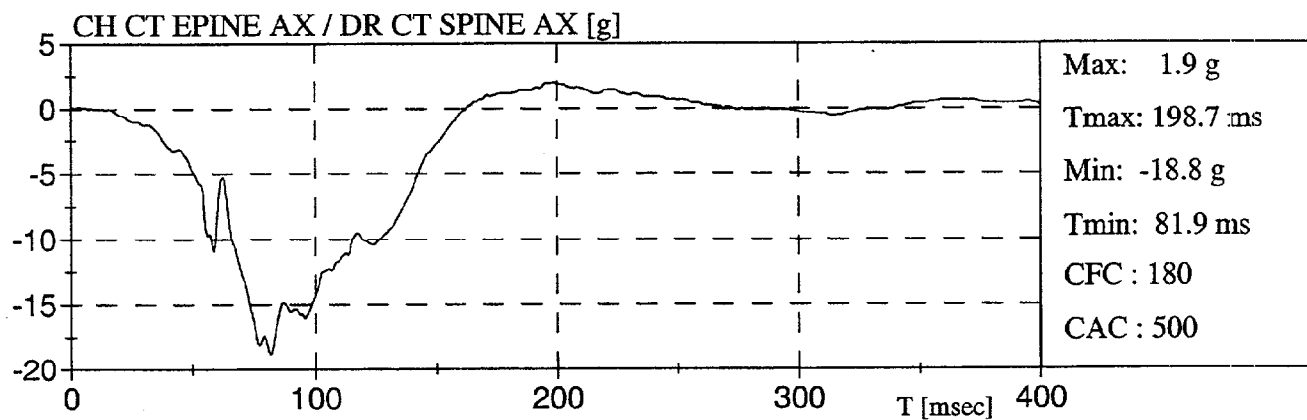
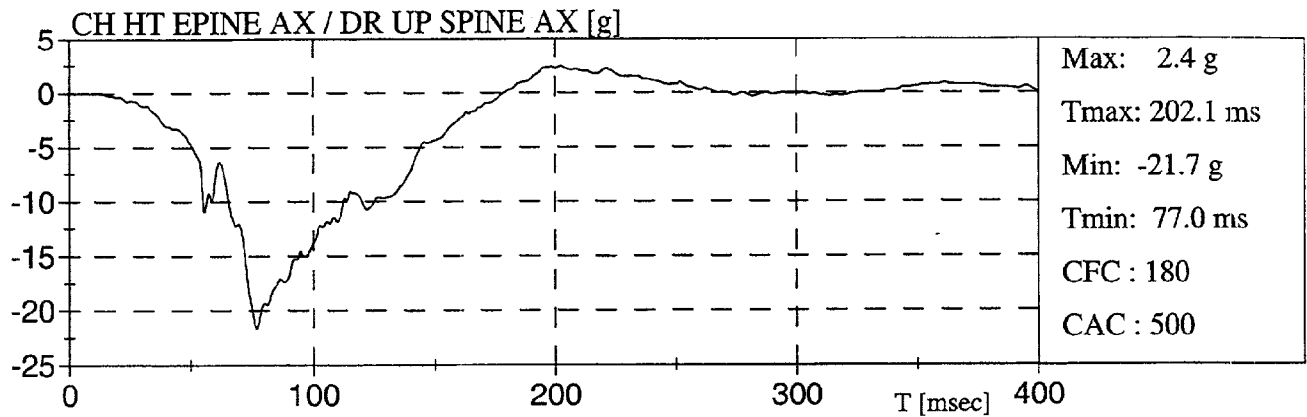


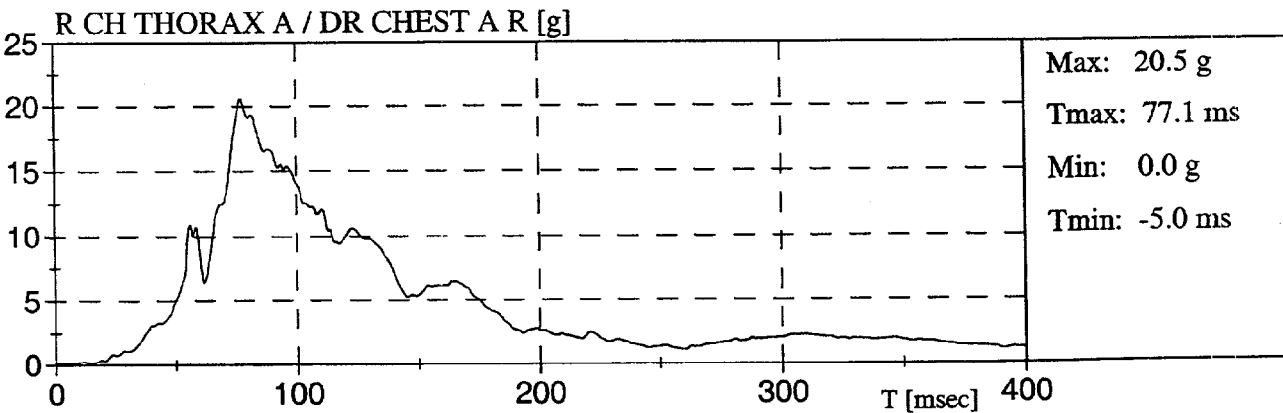
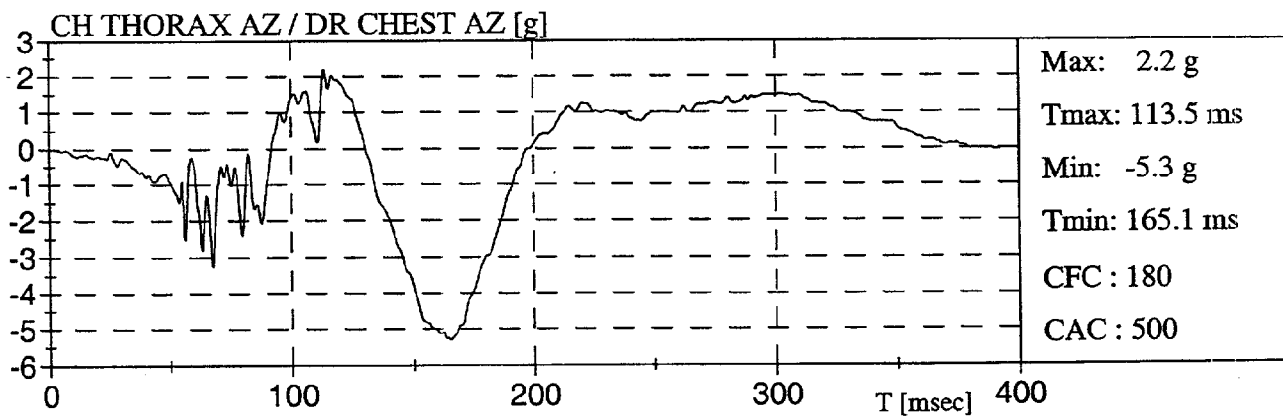
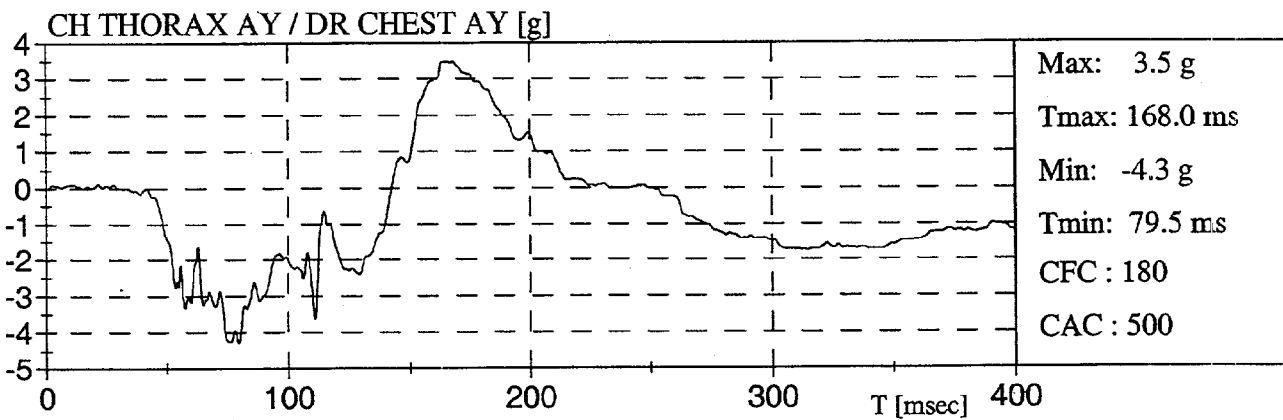
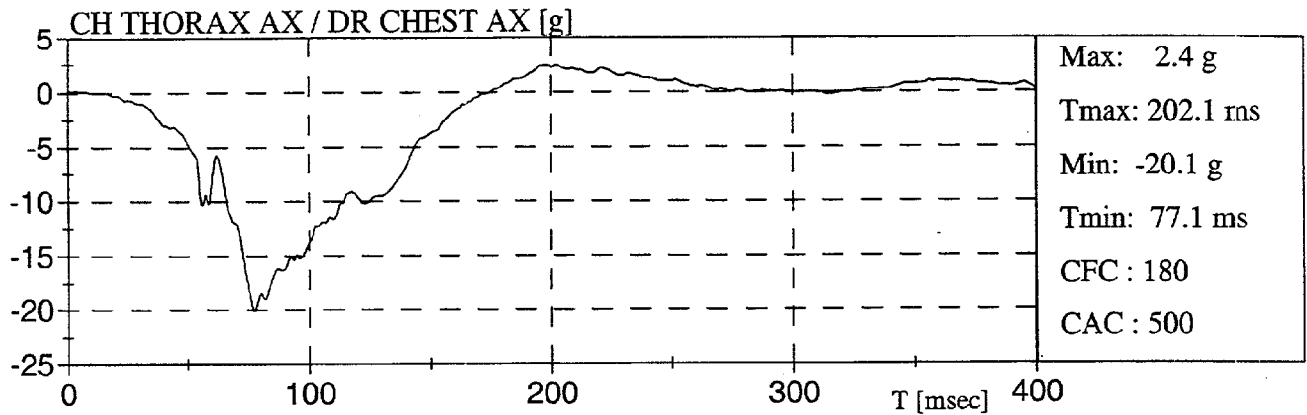


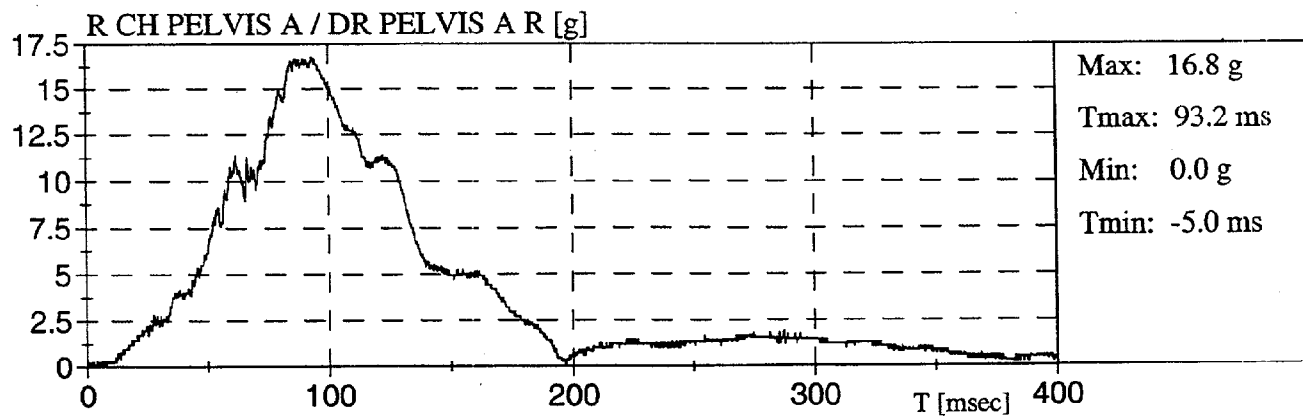
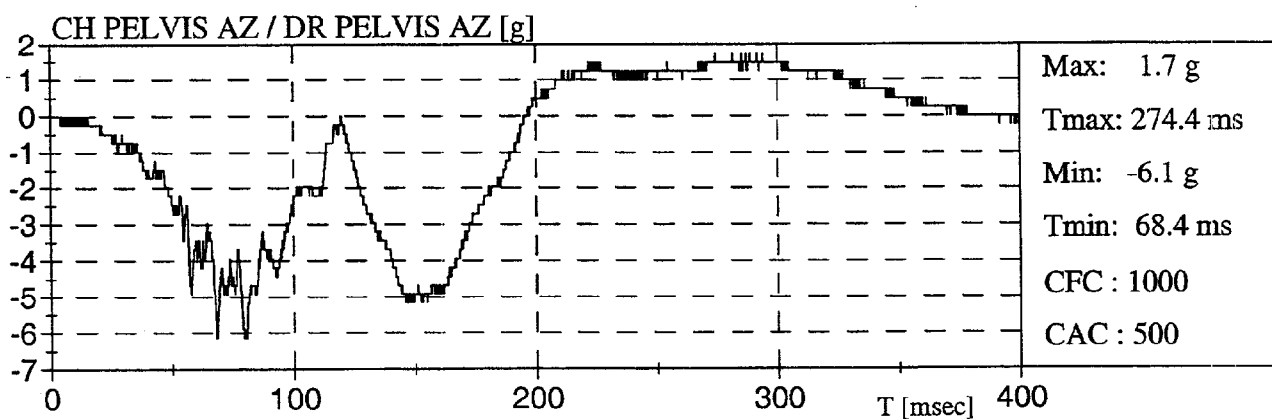
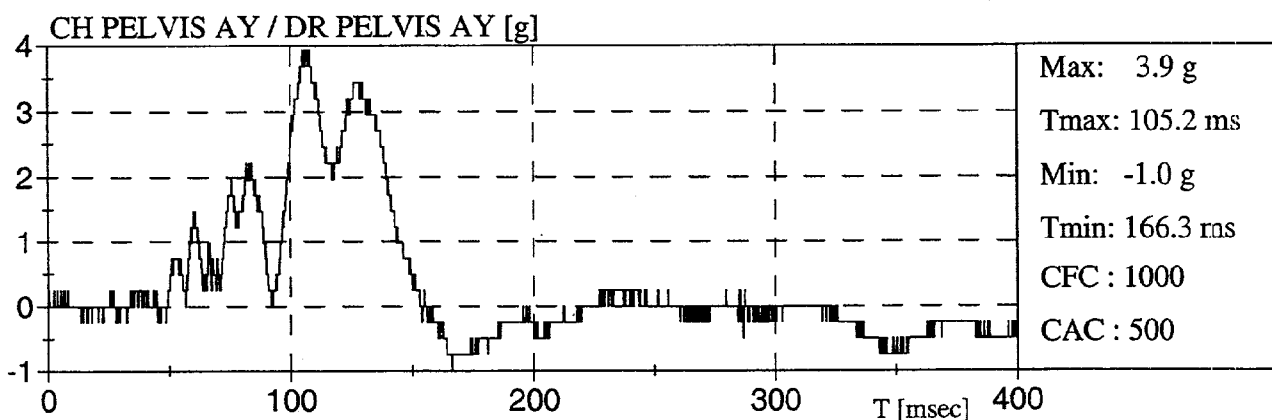
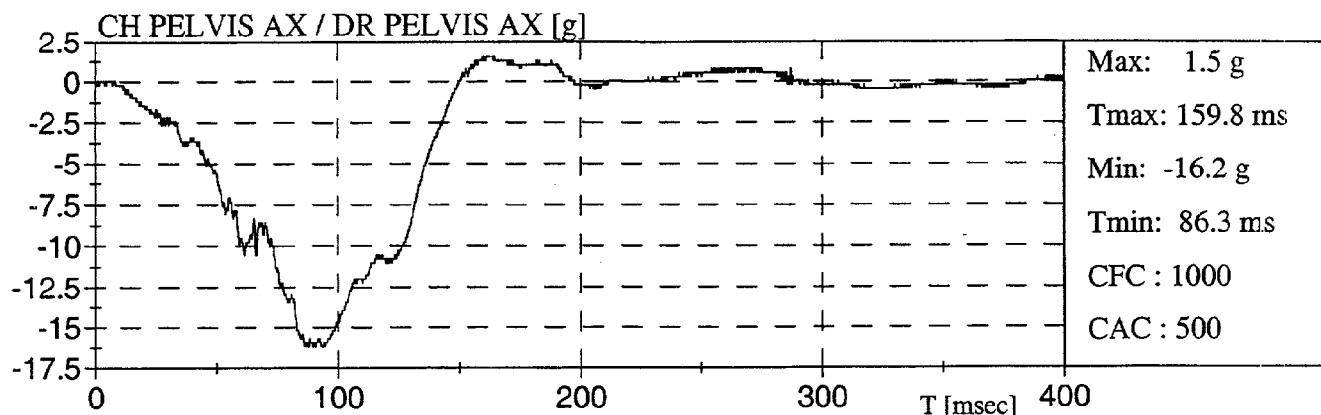














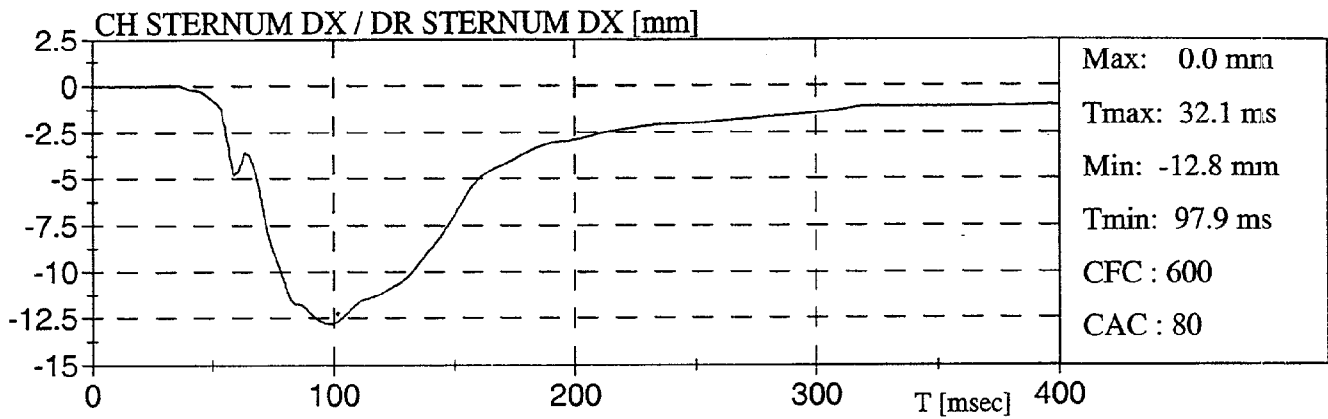
PMG  
Technologies

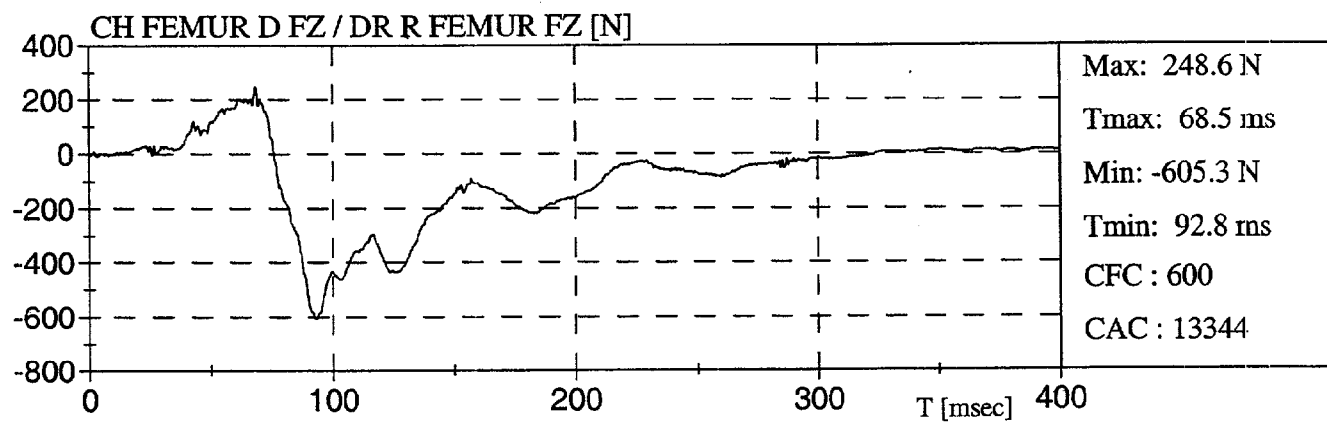
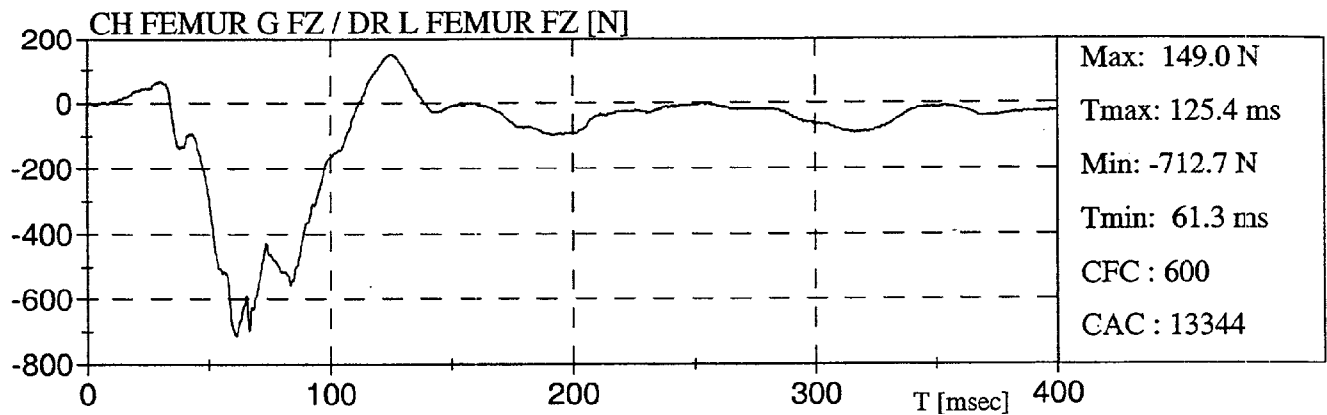
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OFFSET FRONTAL 36 KM/H - 40% LEFT

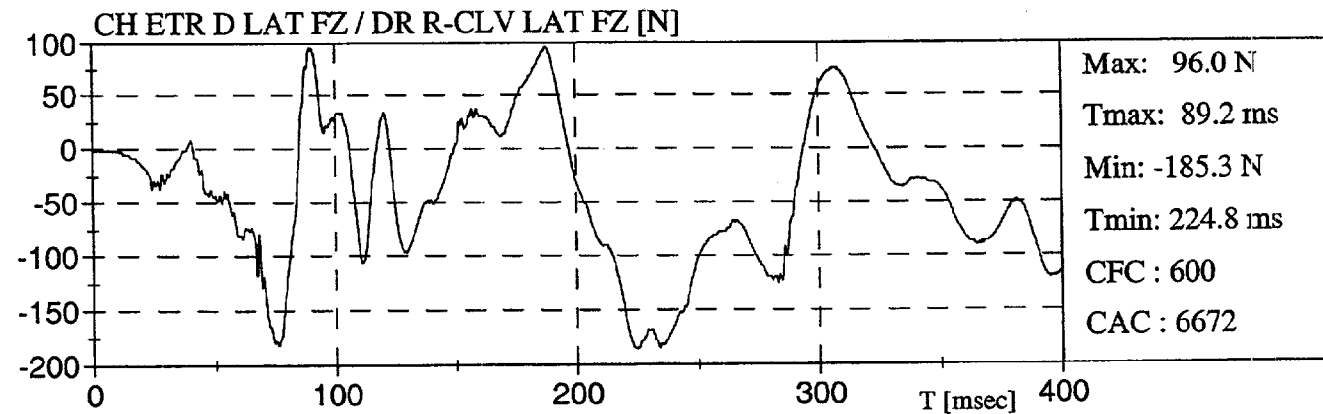
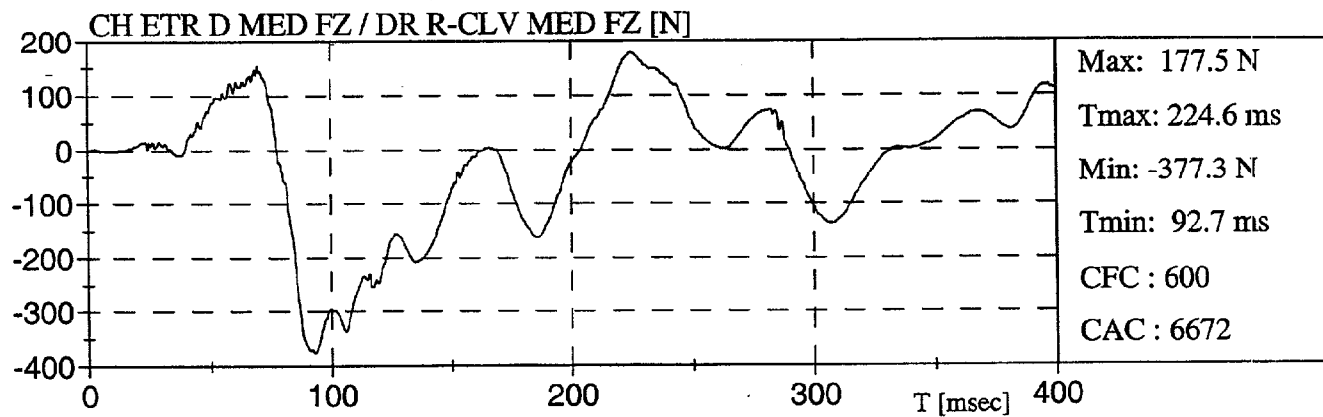
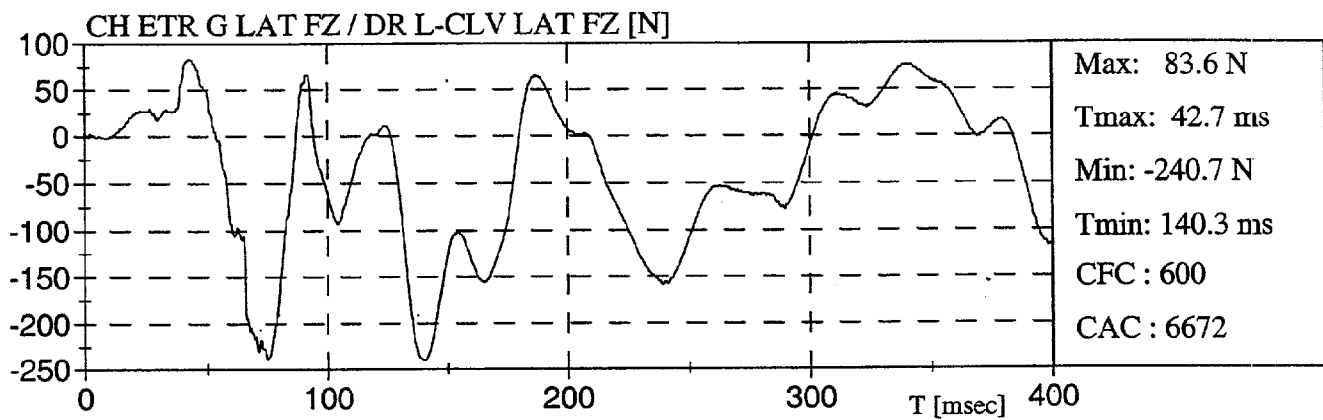
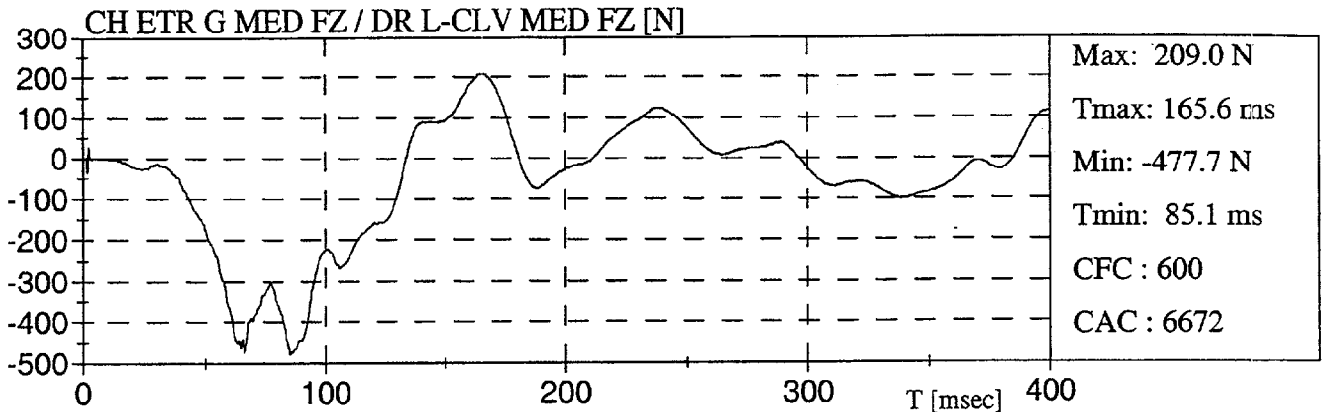
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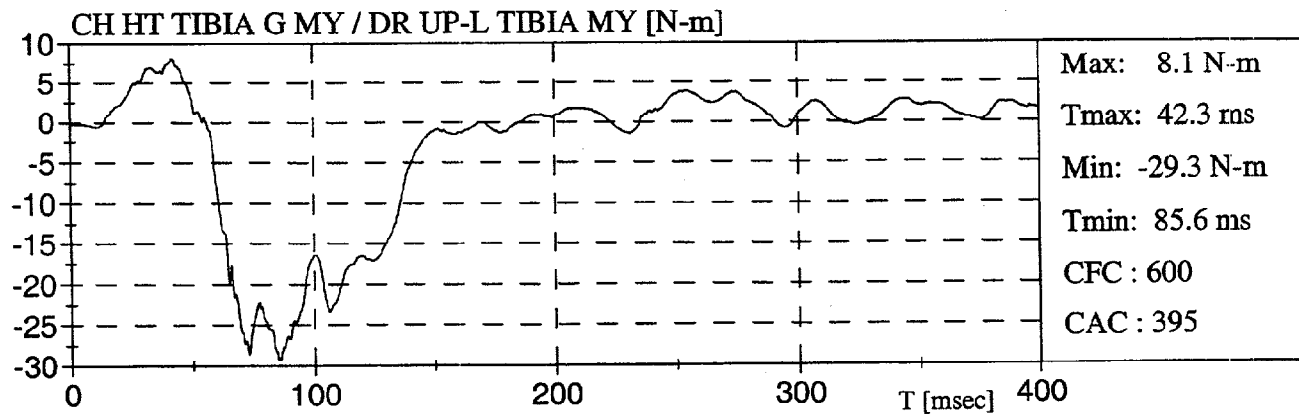
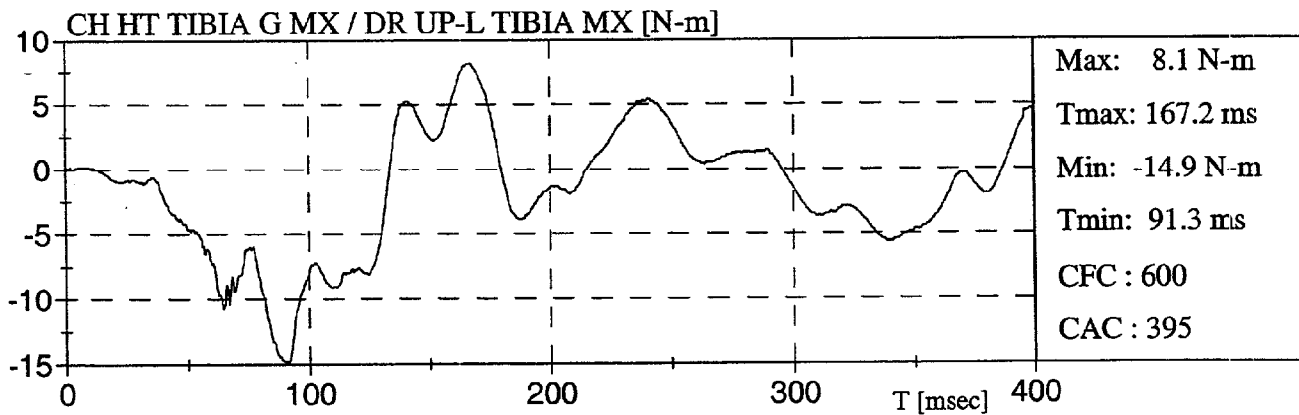
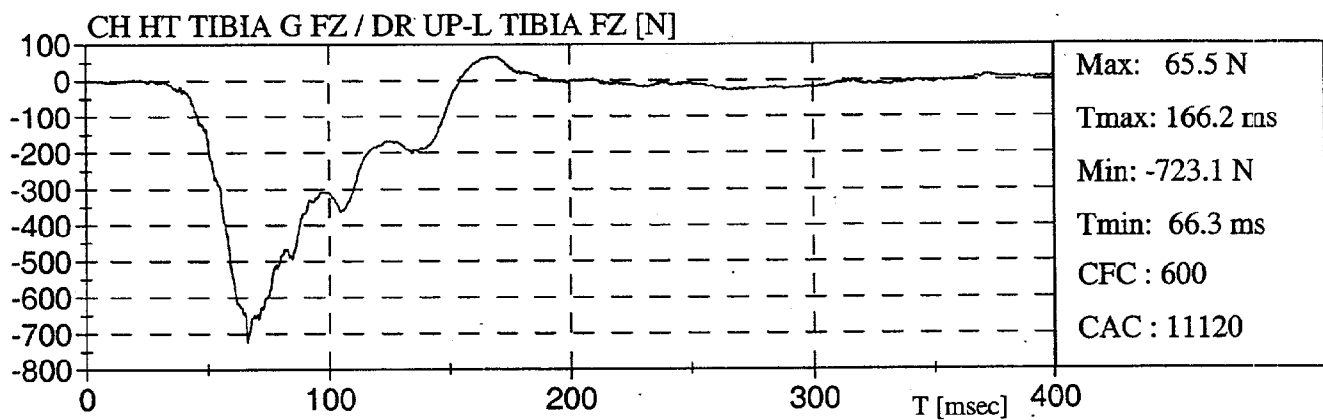
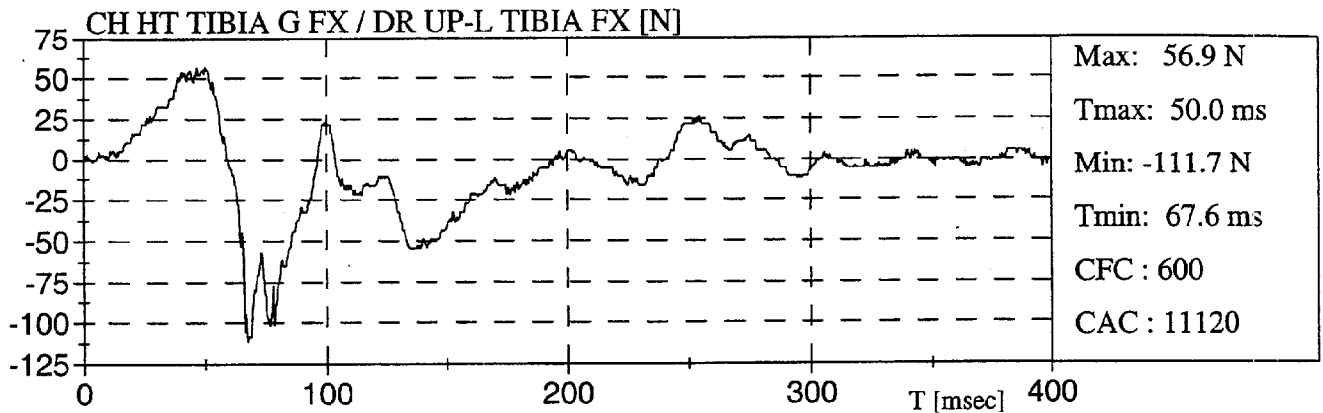
PLYMOUTH BREEZE 99

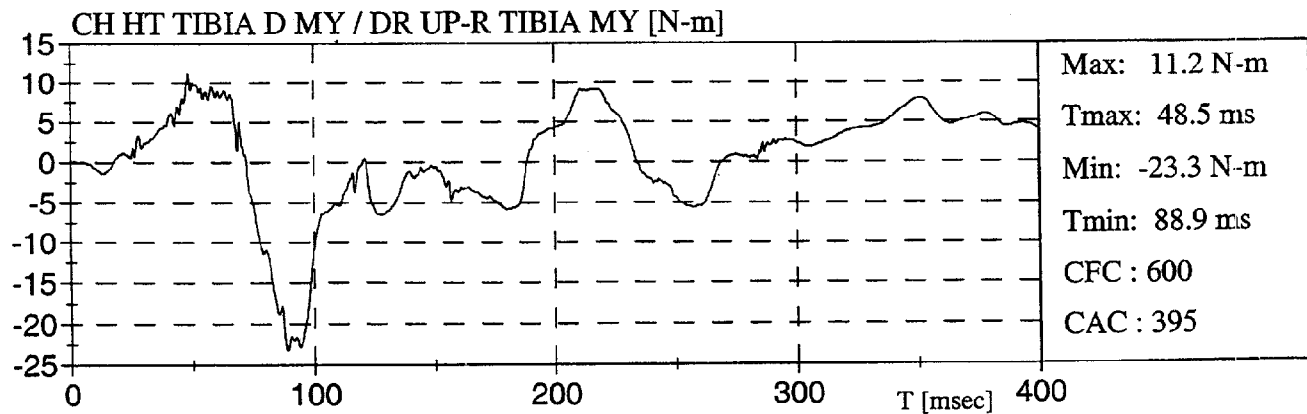
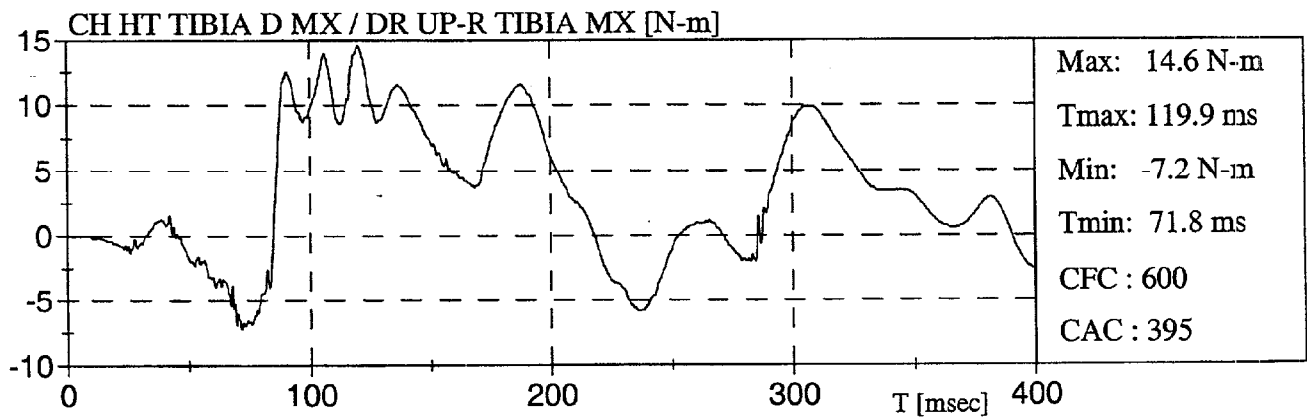
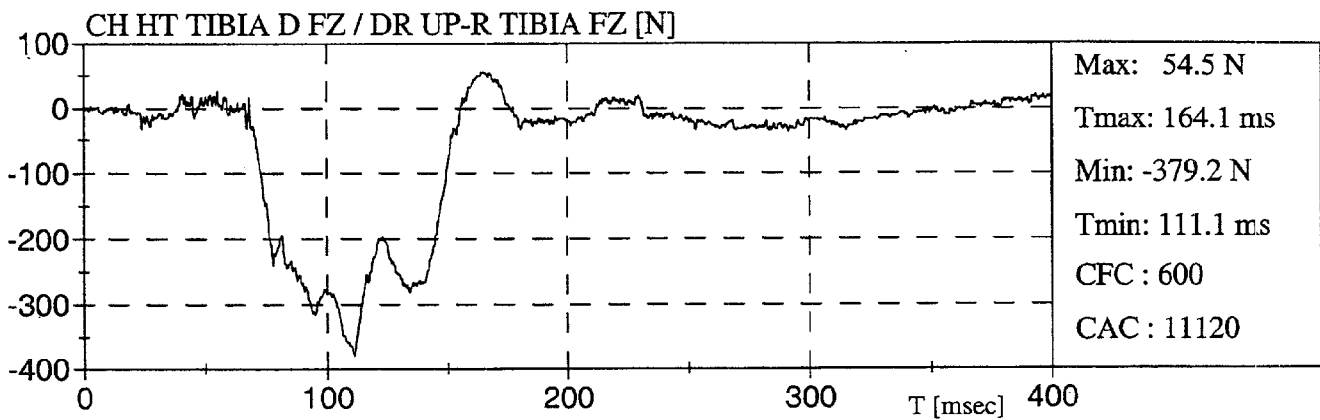
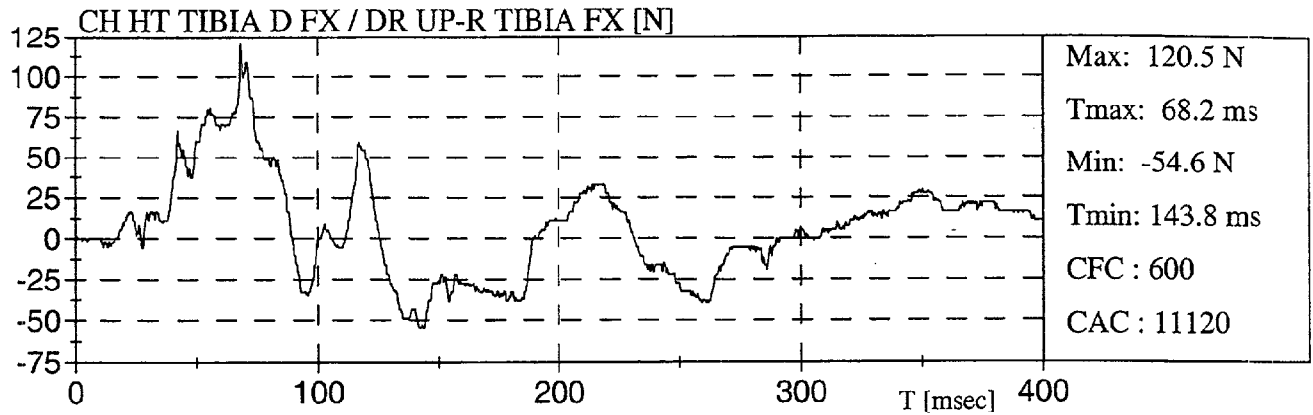
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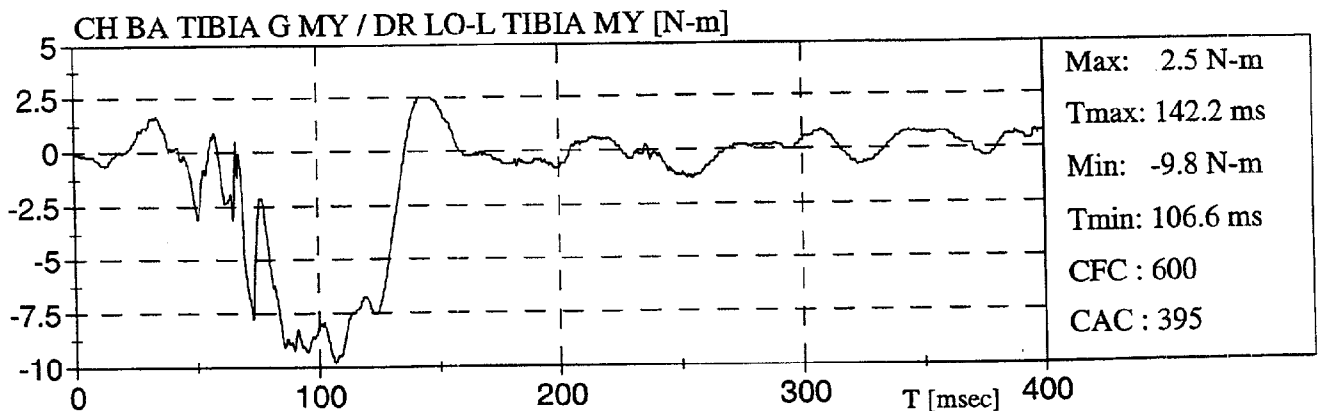
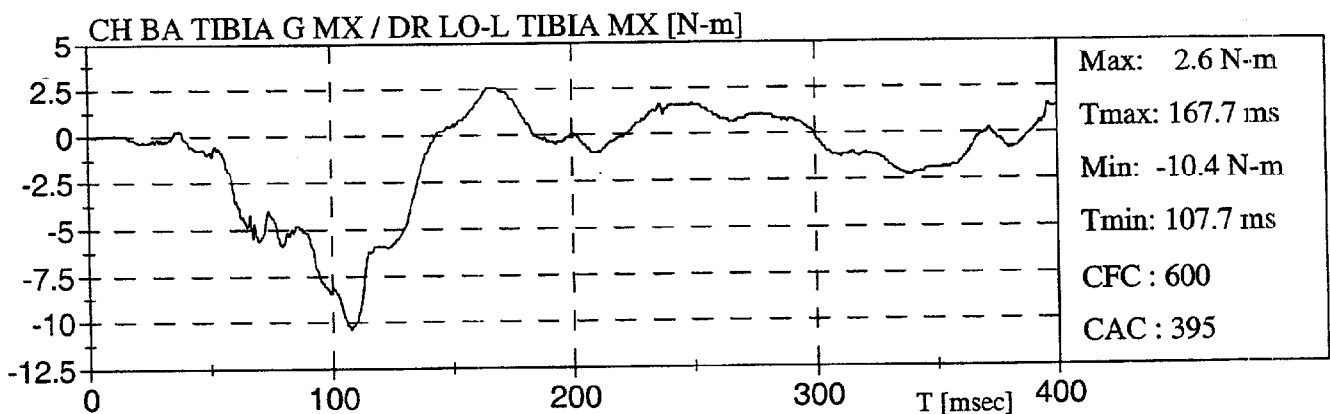
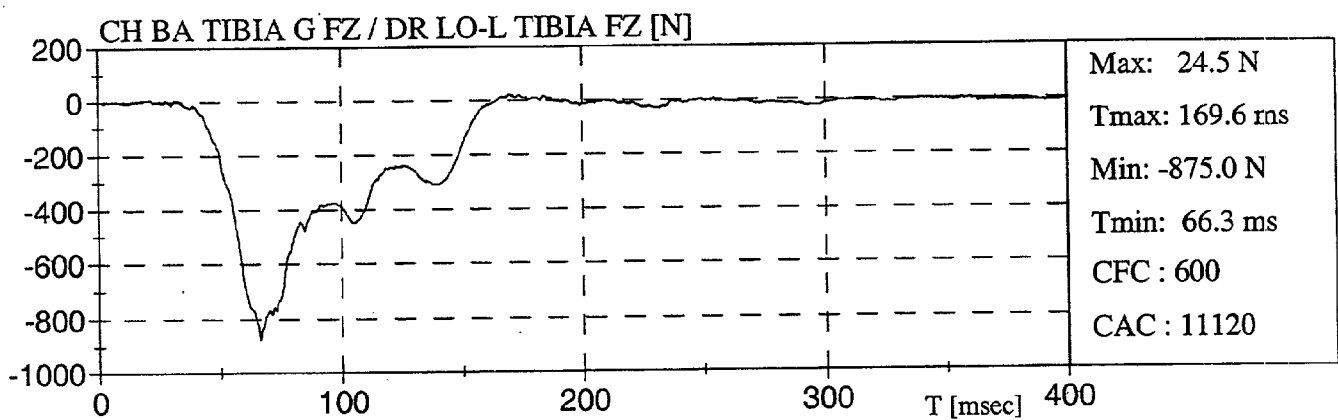
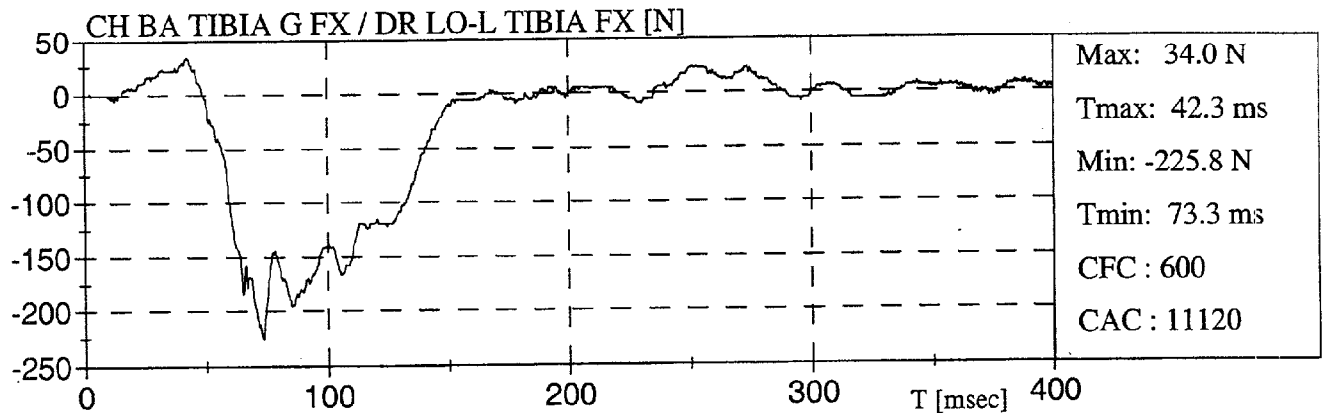


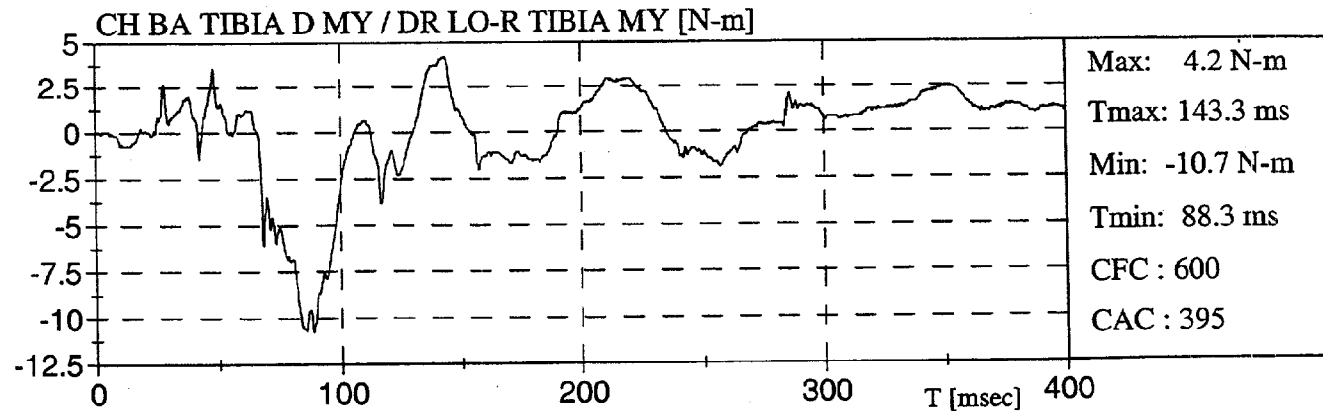
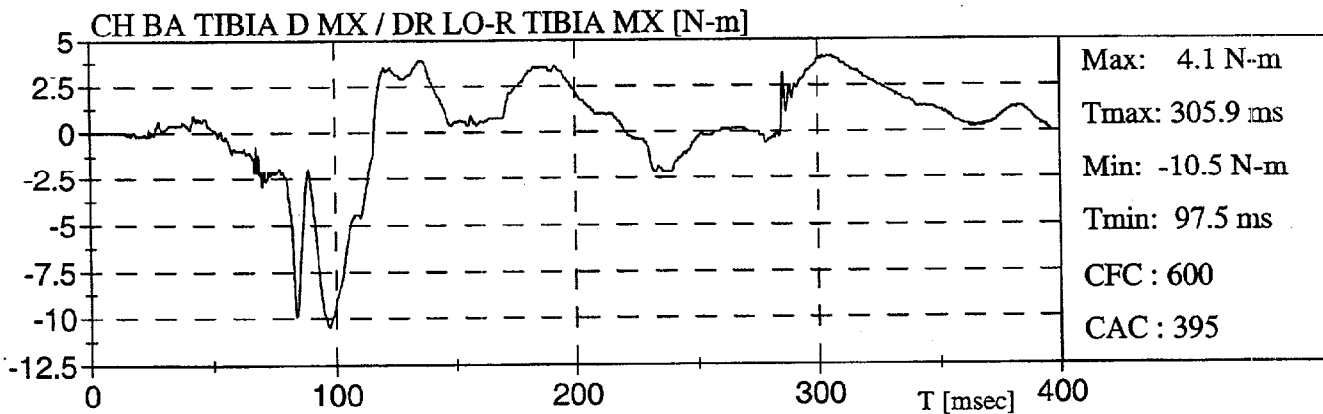
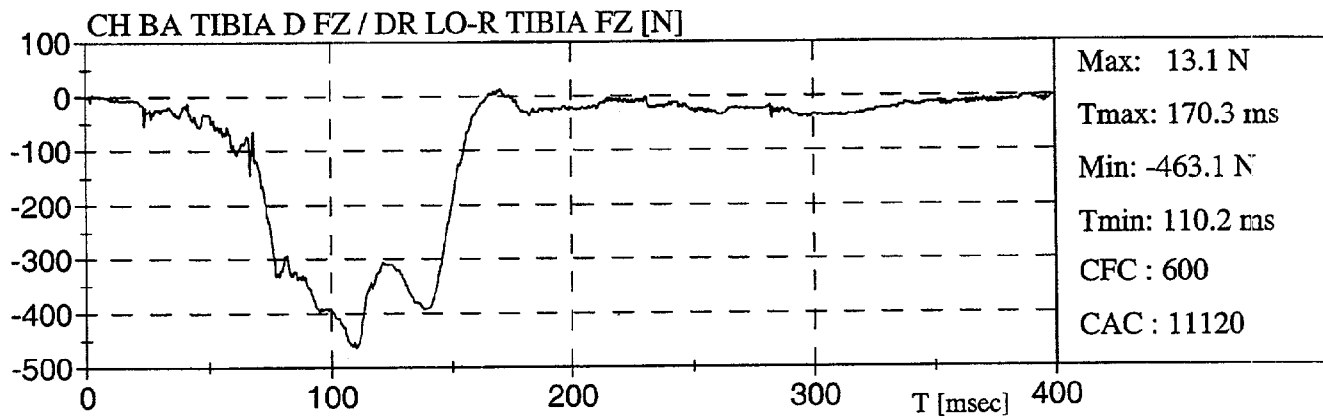
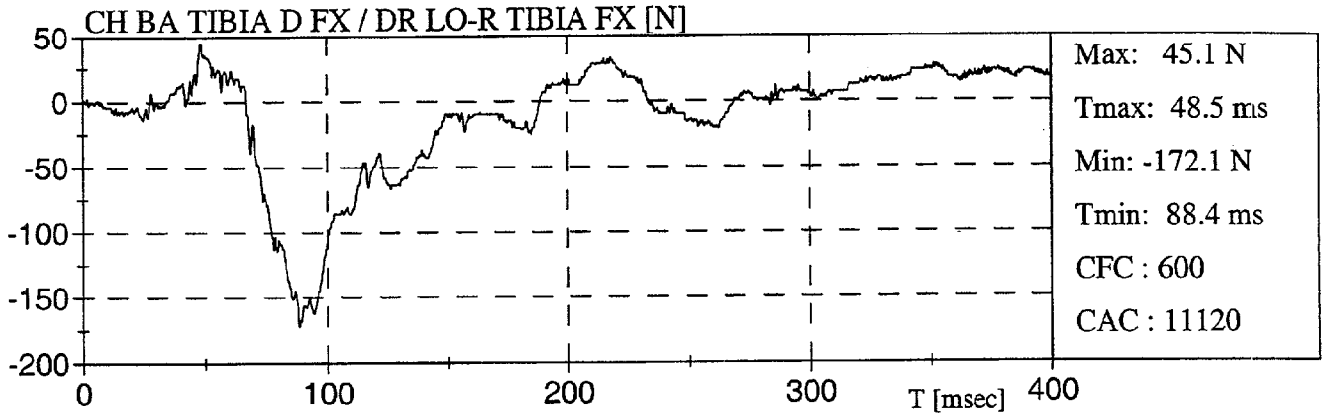




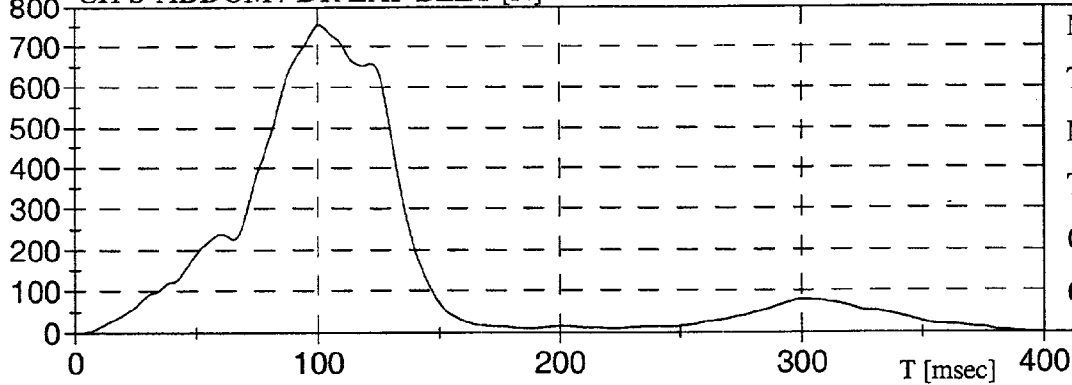




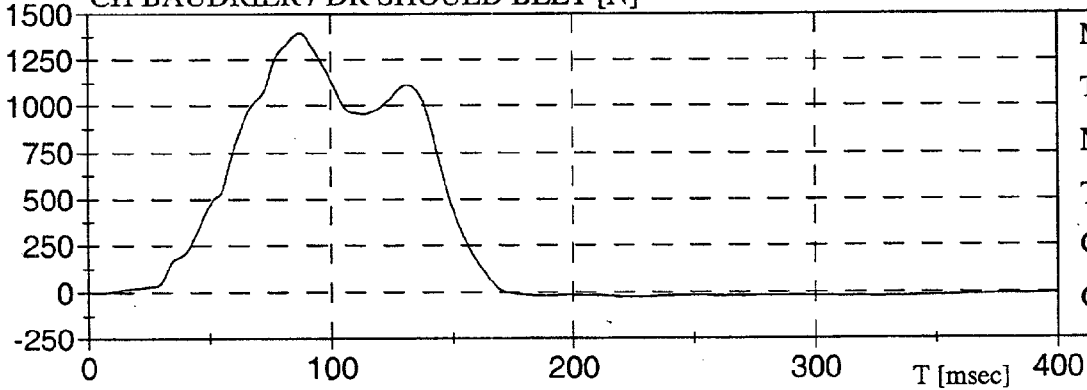


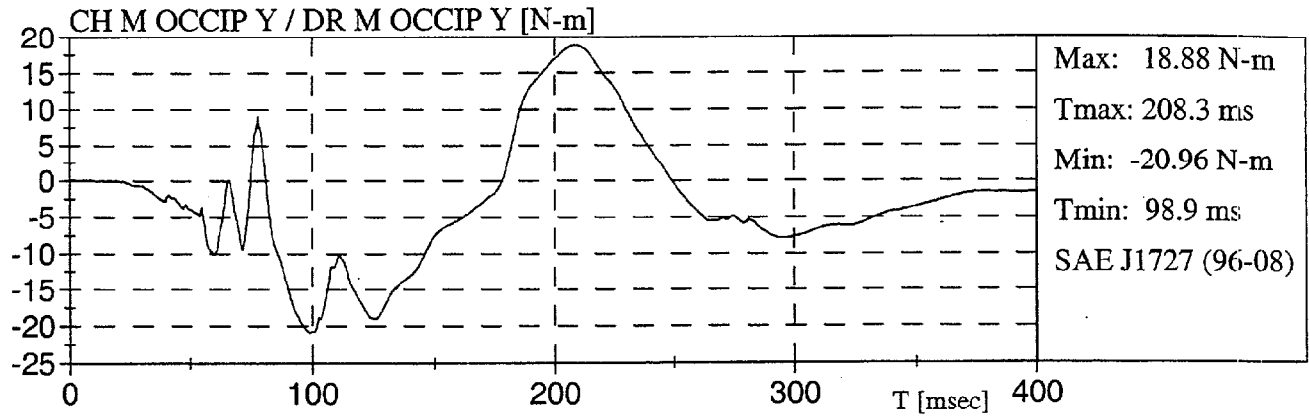


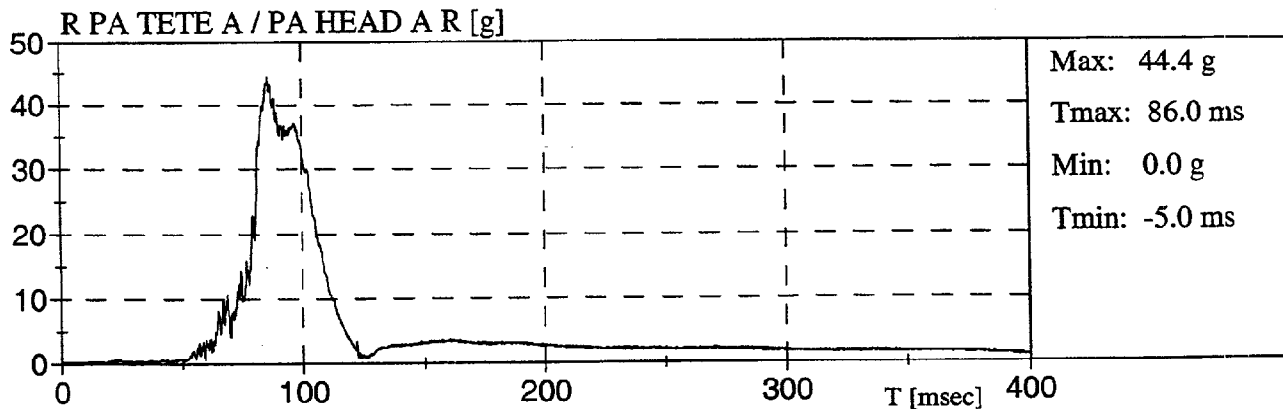
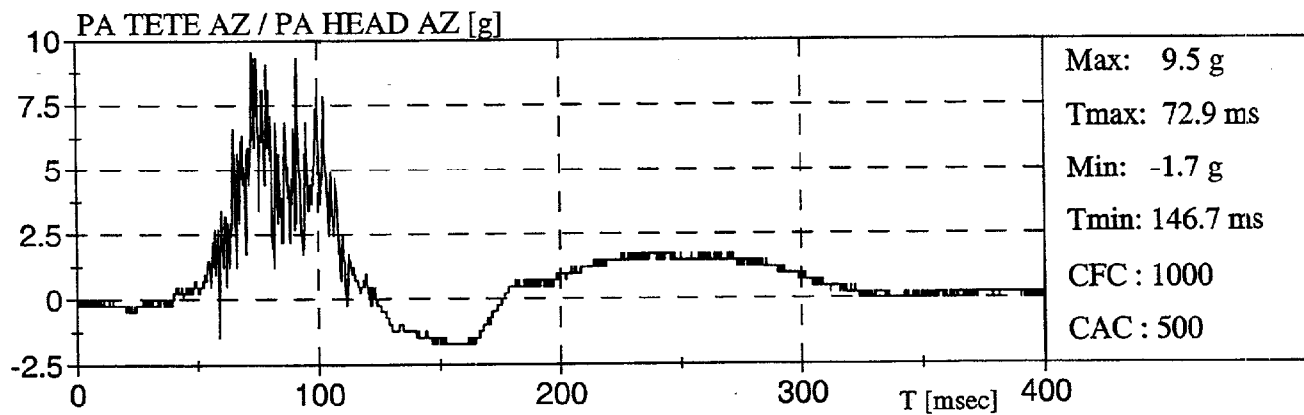
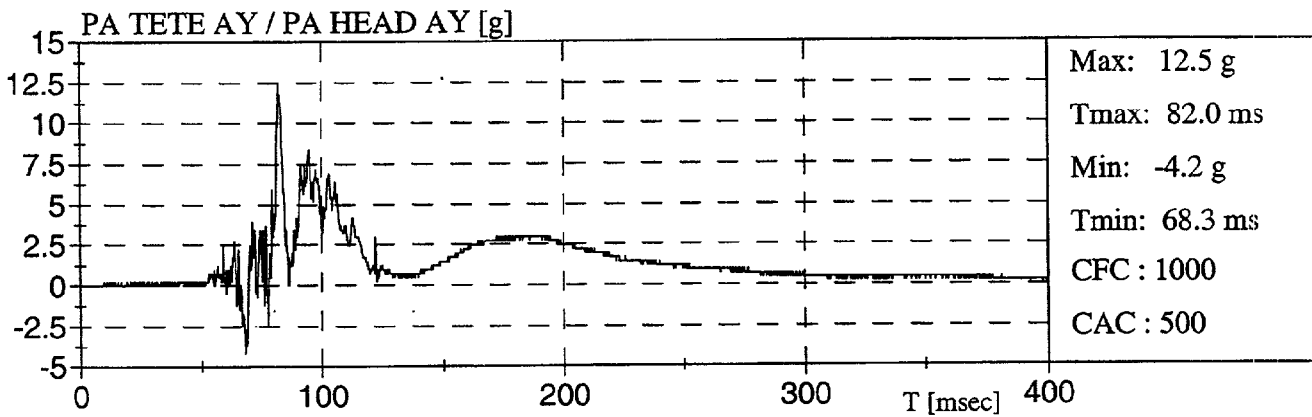
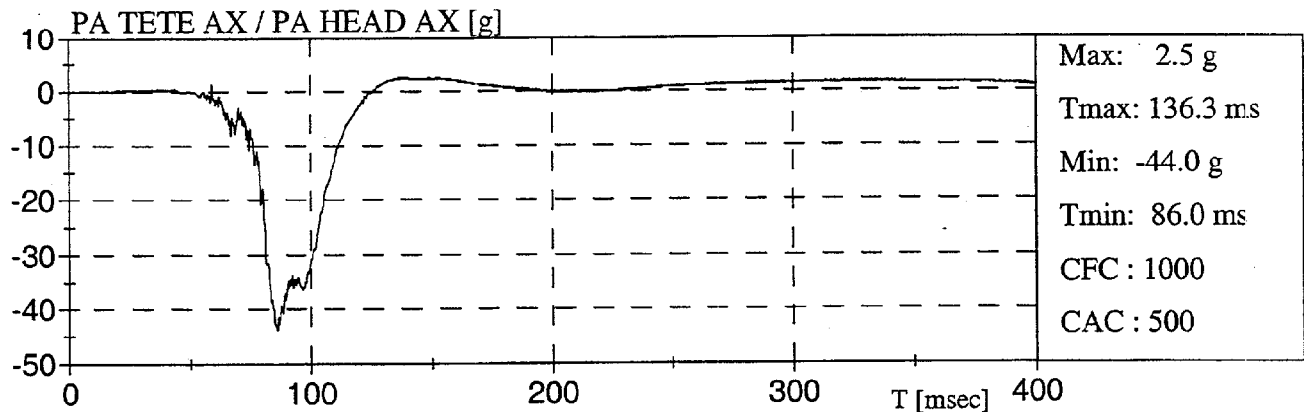
CH S-ABDOM / DR LAP BELT [N]

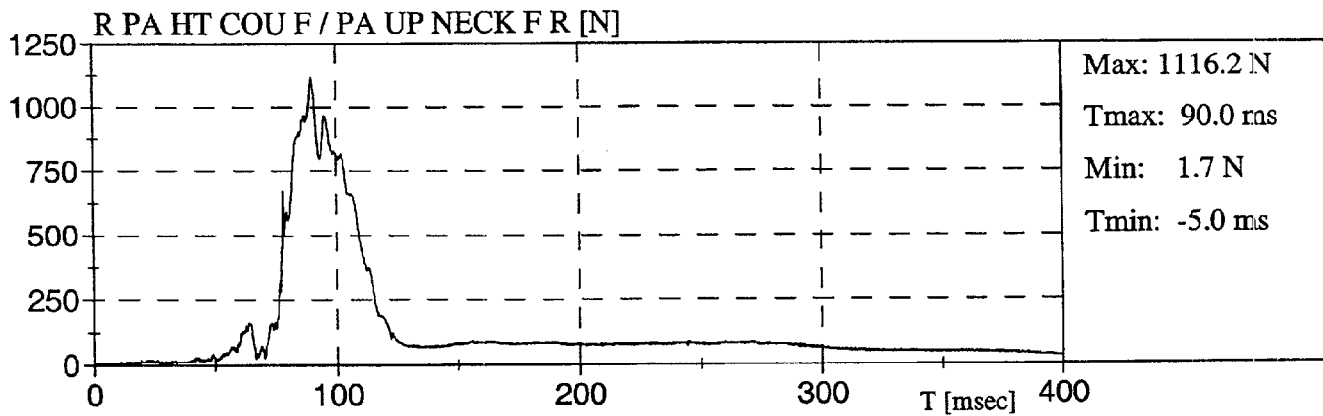
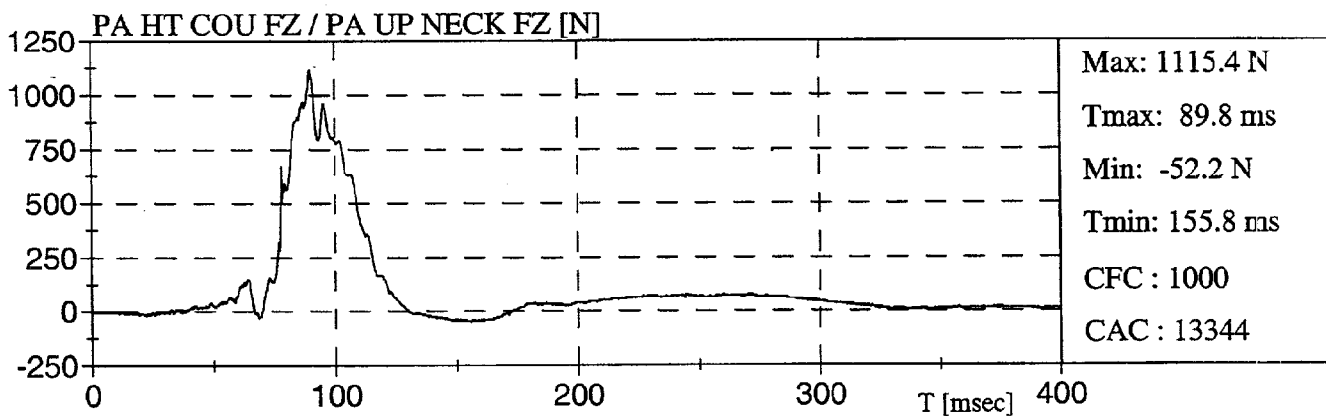
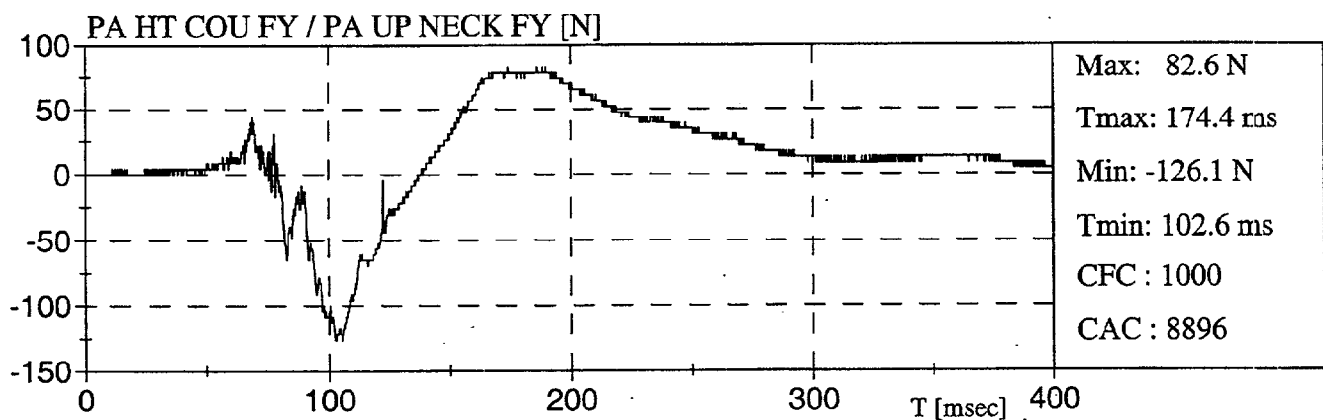
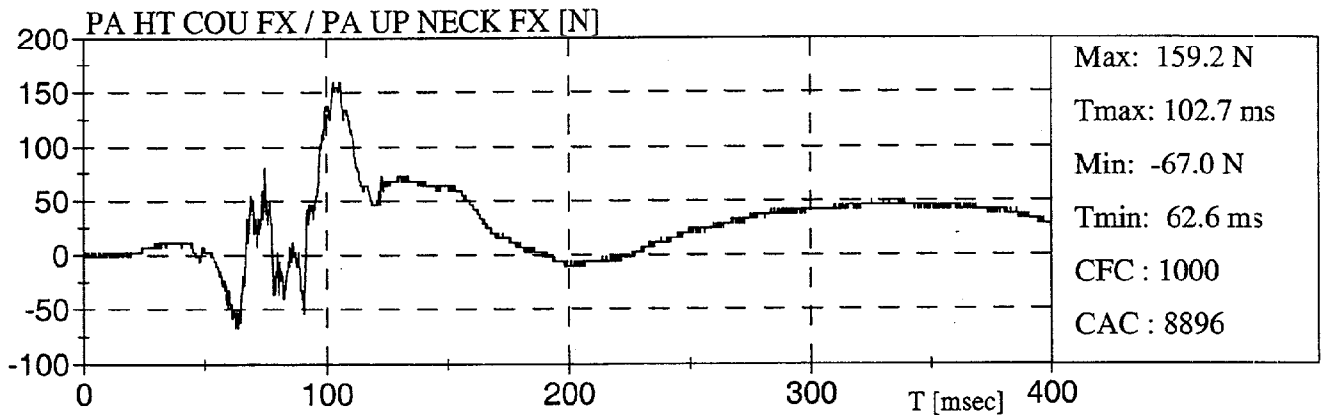


CH BAUDRIER / DR SHOULD BELT [N]

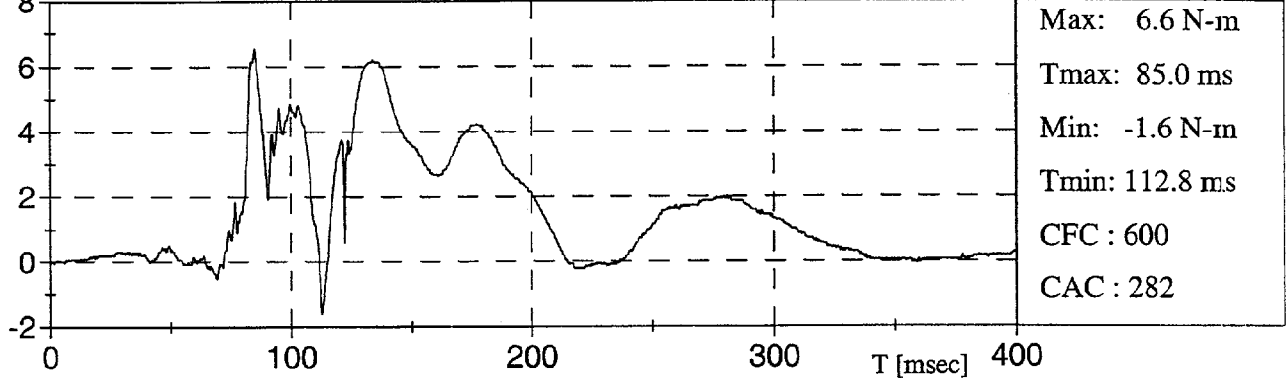




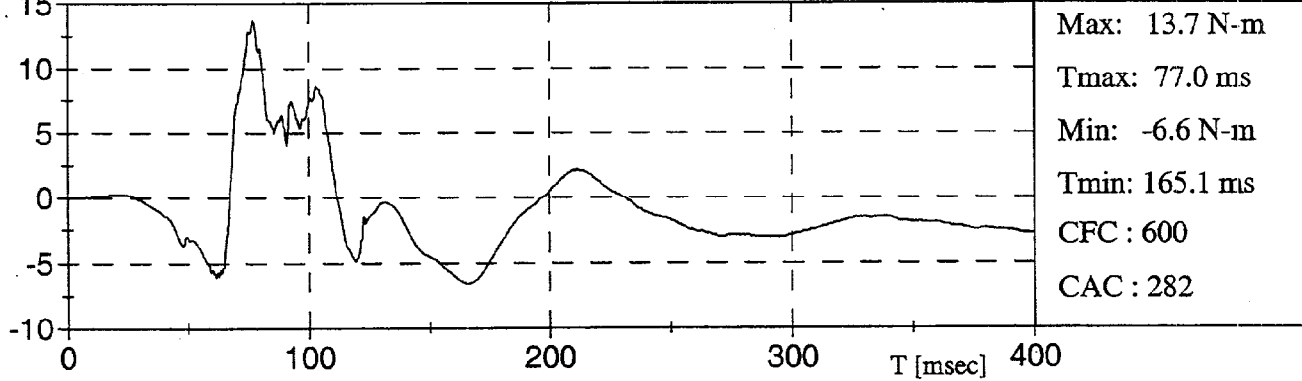




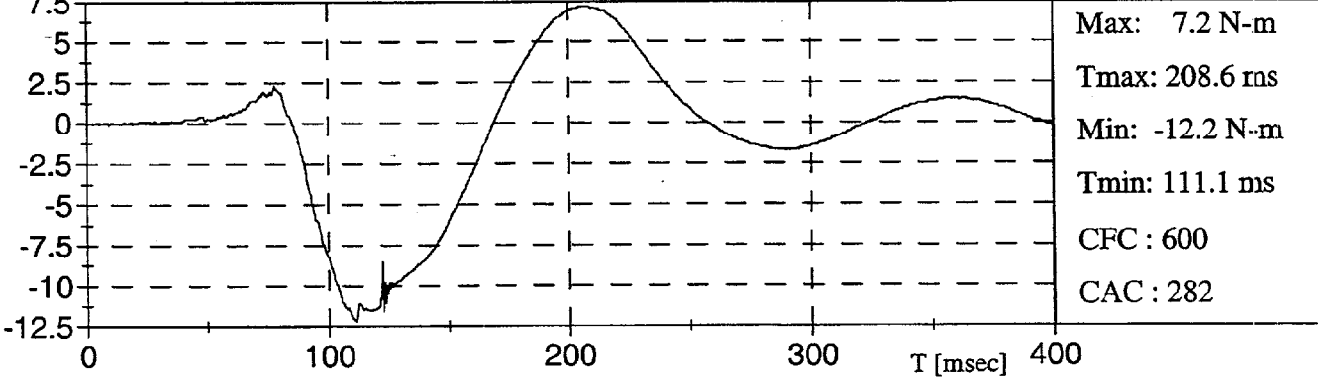
PA HT COU MX / PA UP NECK MX [N-m]



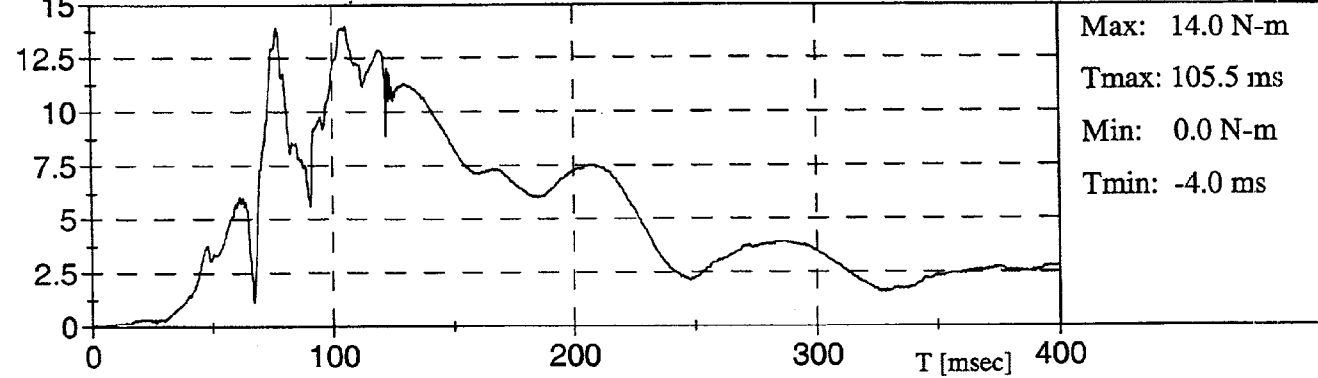
PA HT COU MY / PA UP NECK MY [N-m]

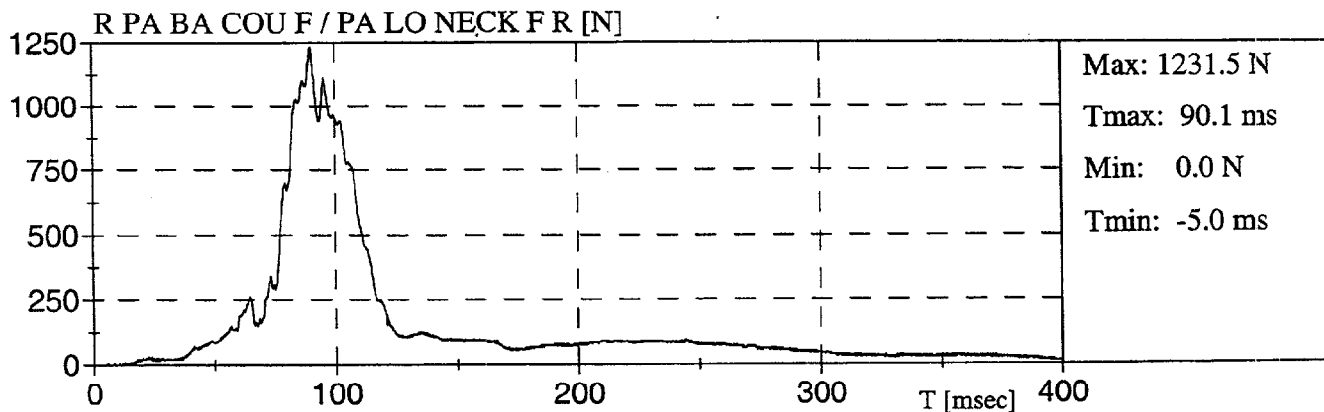
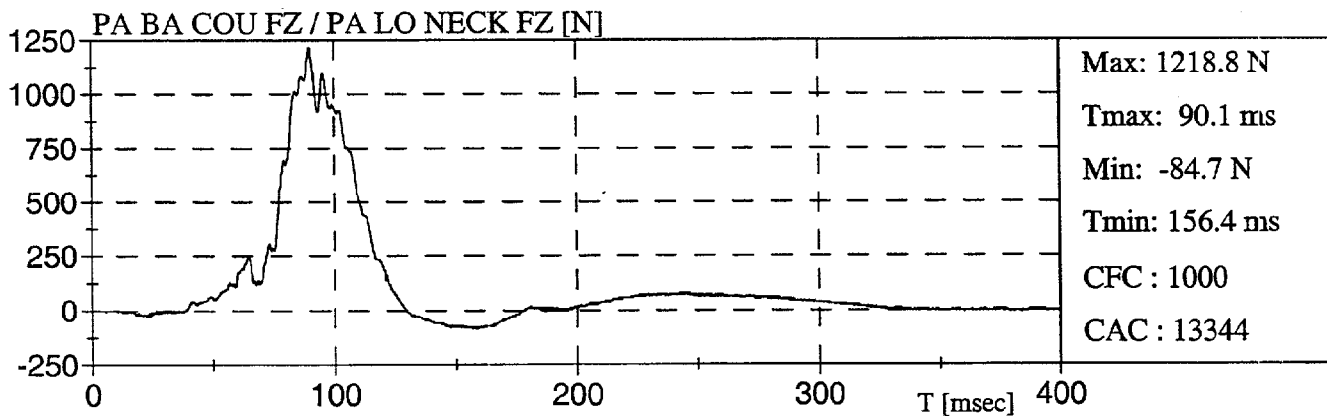
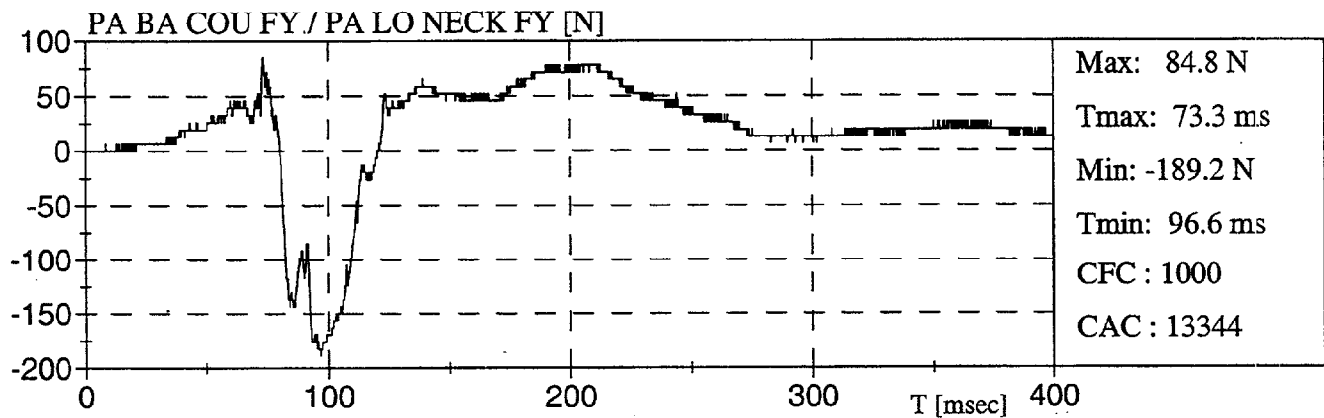
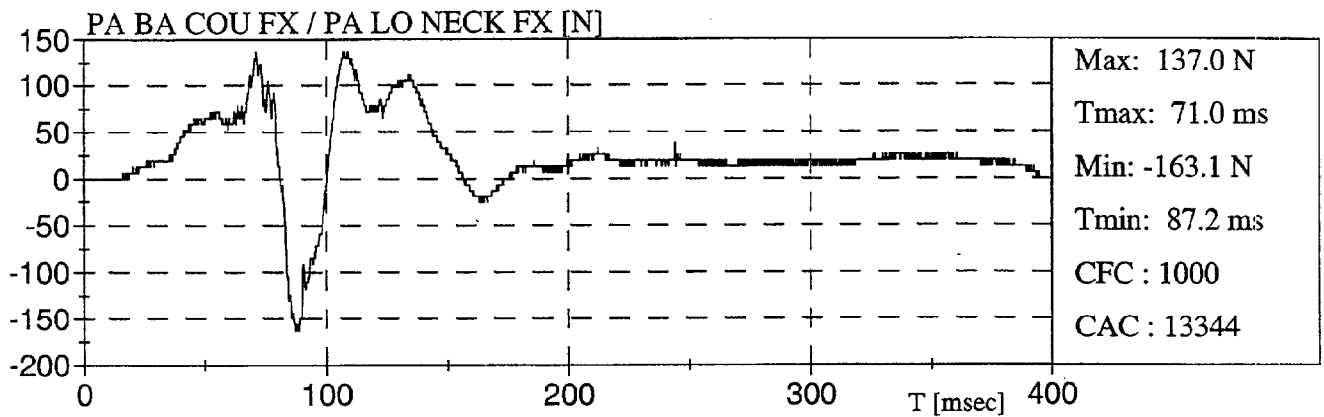


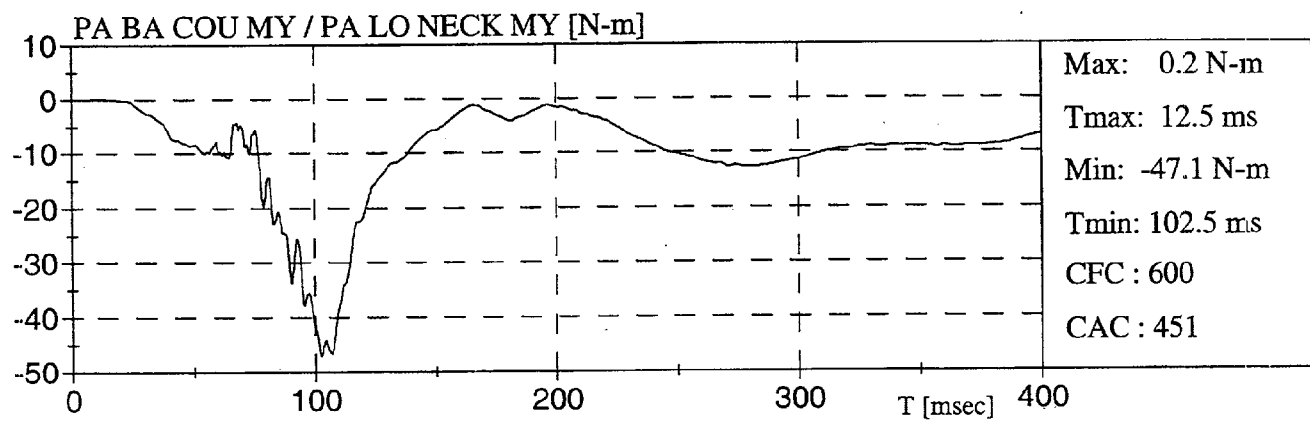
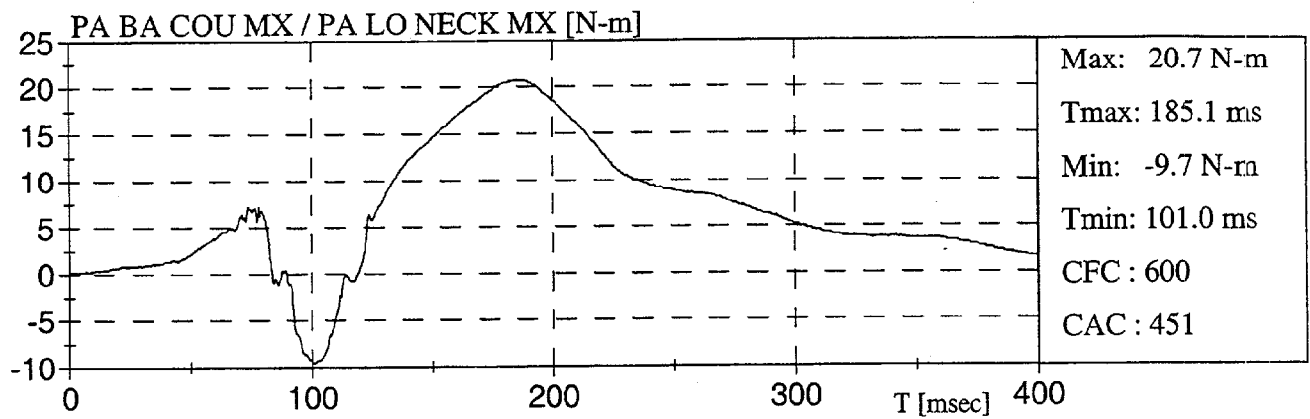
PA HT COU MZ / PA UP NECK MZ [N-m]

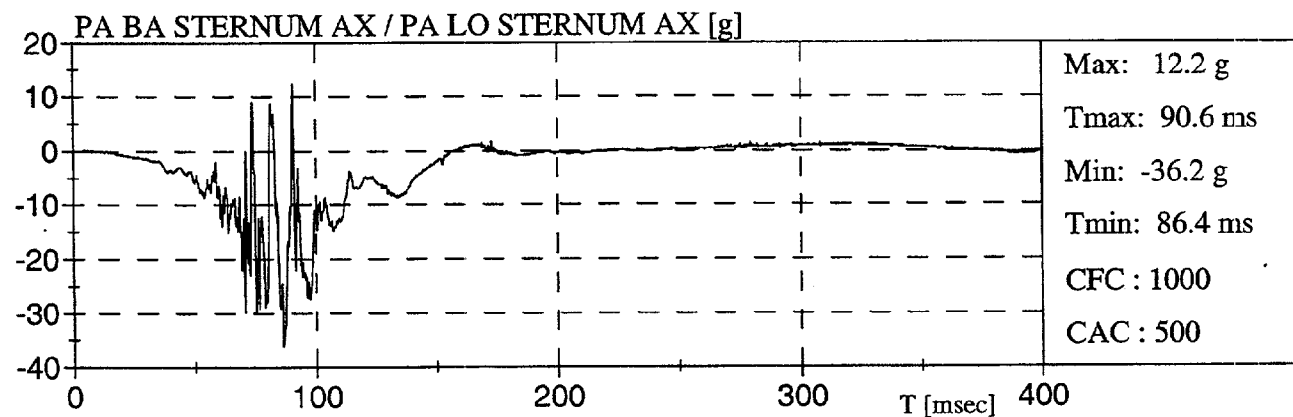
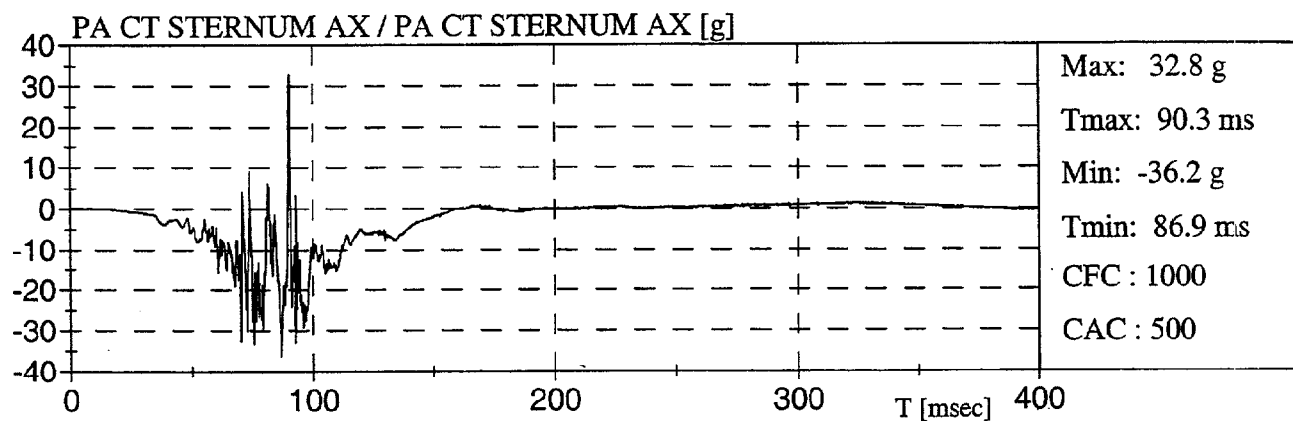
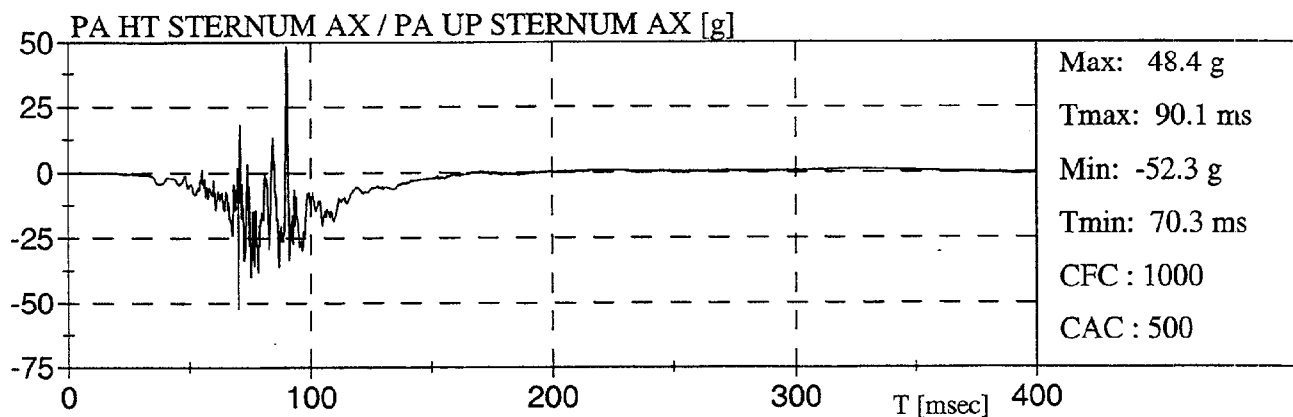


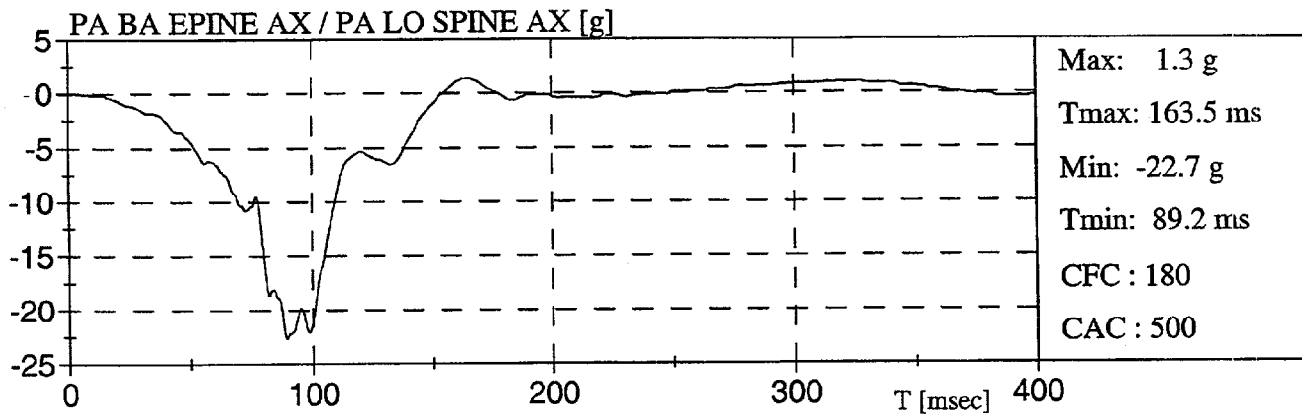
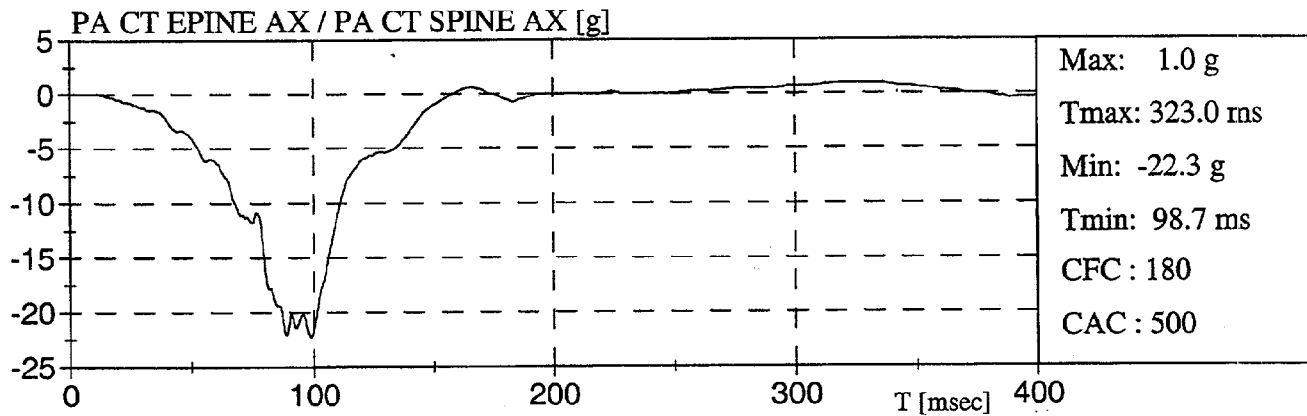
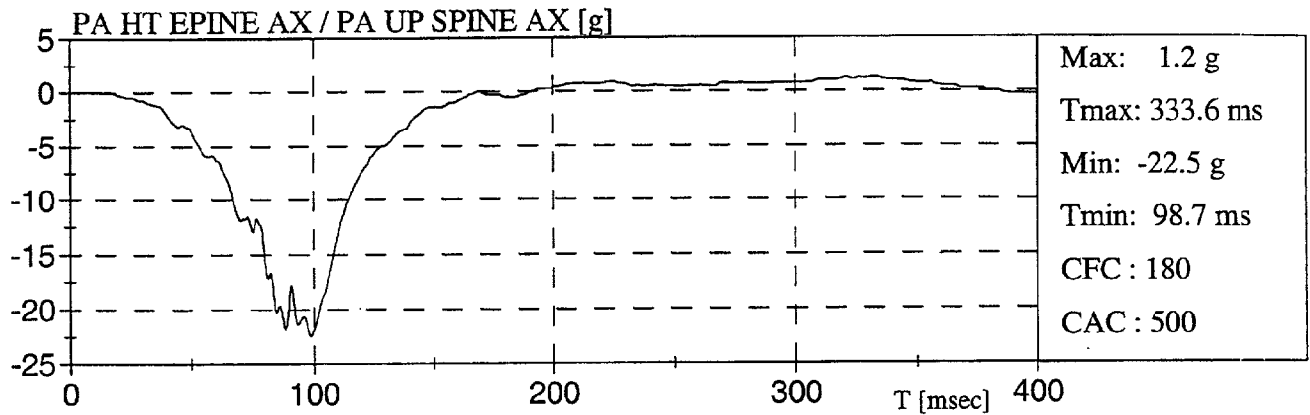
R PA HT COU M / PA UP NECK M R [N-m]

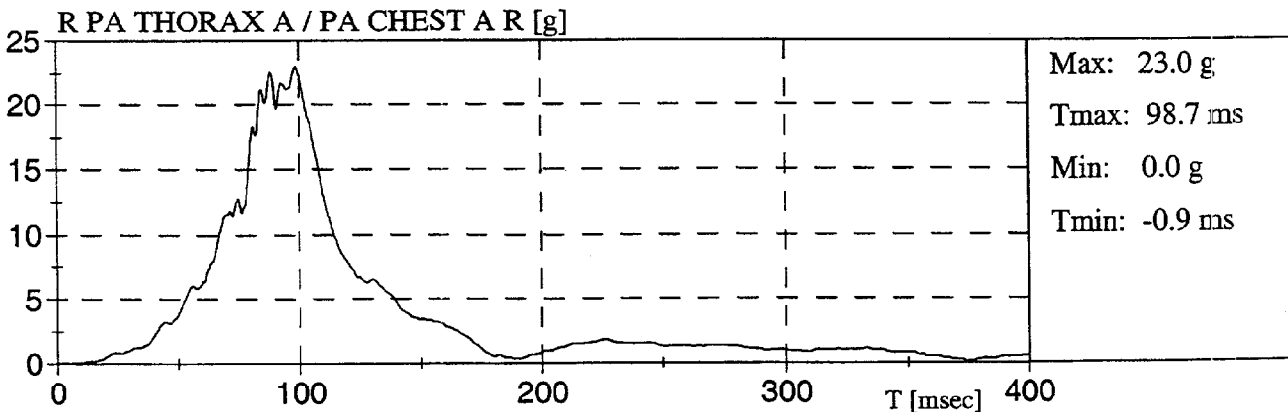
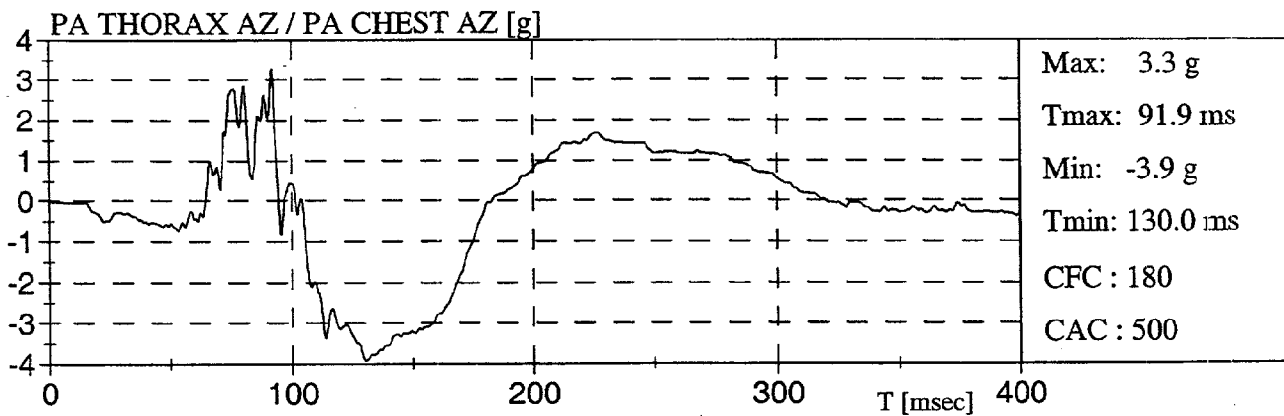
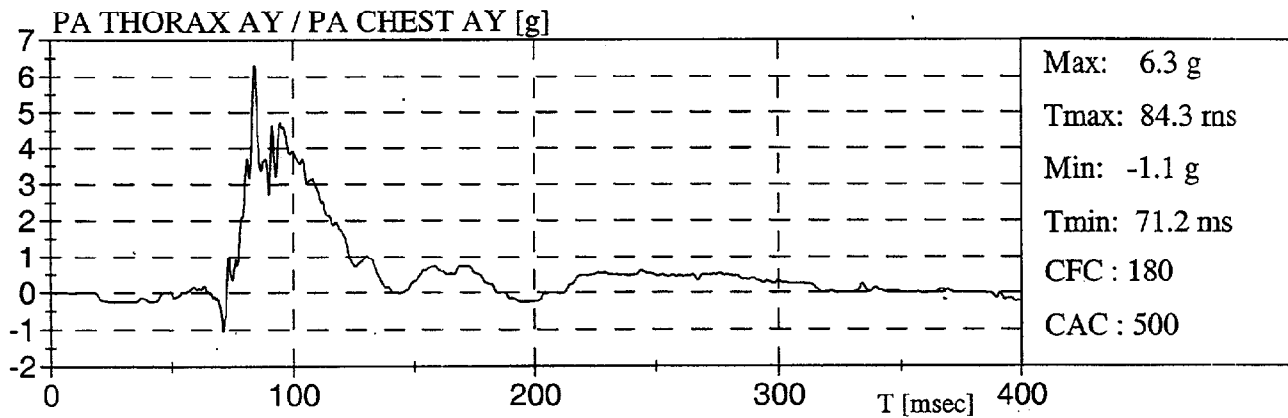
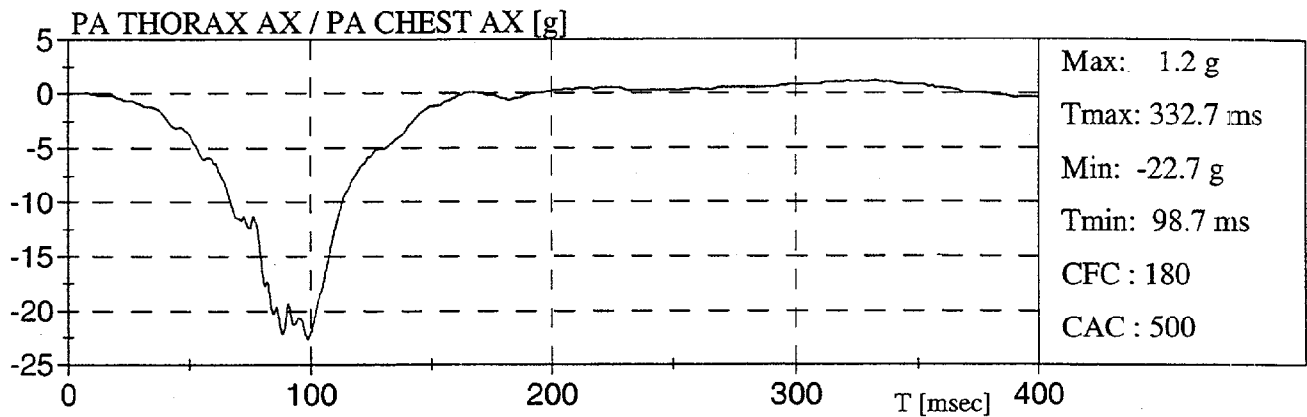


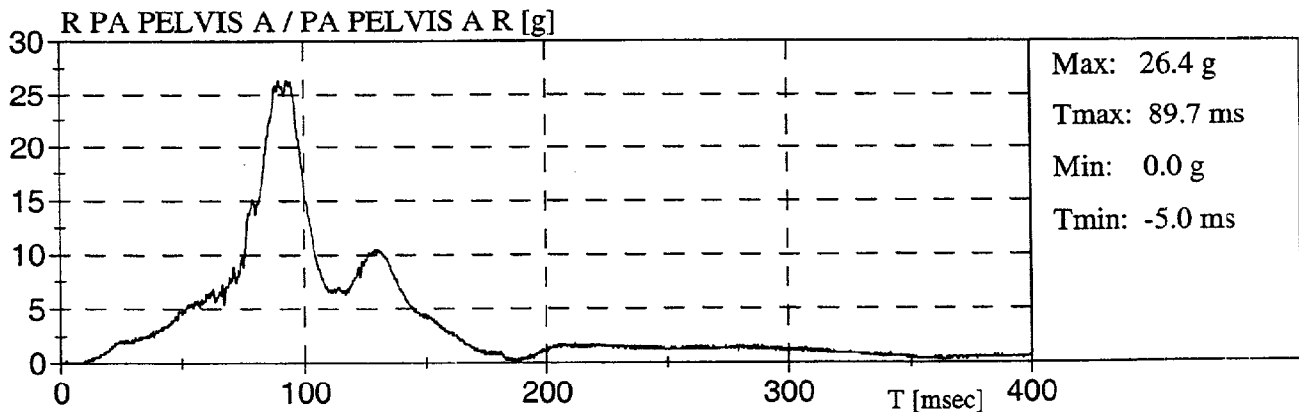
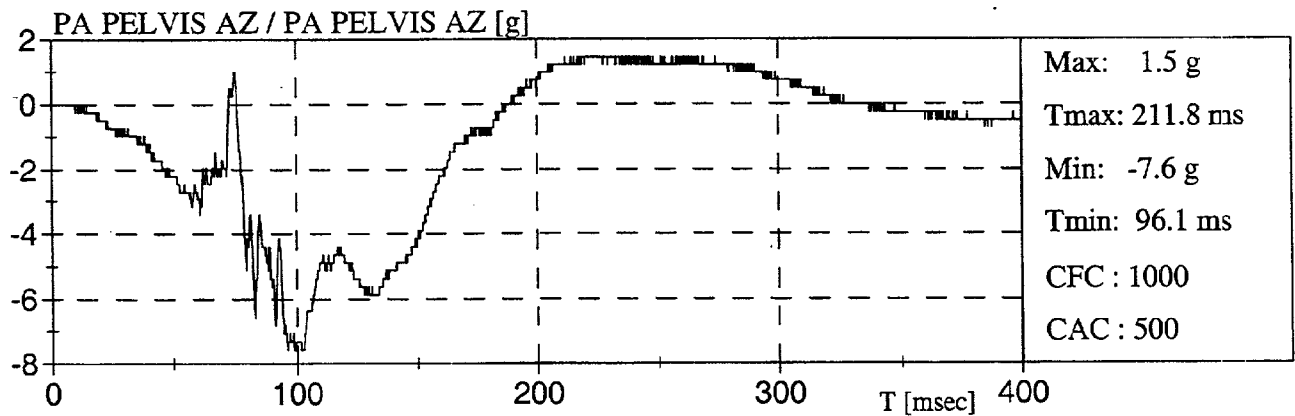
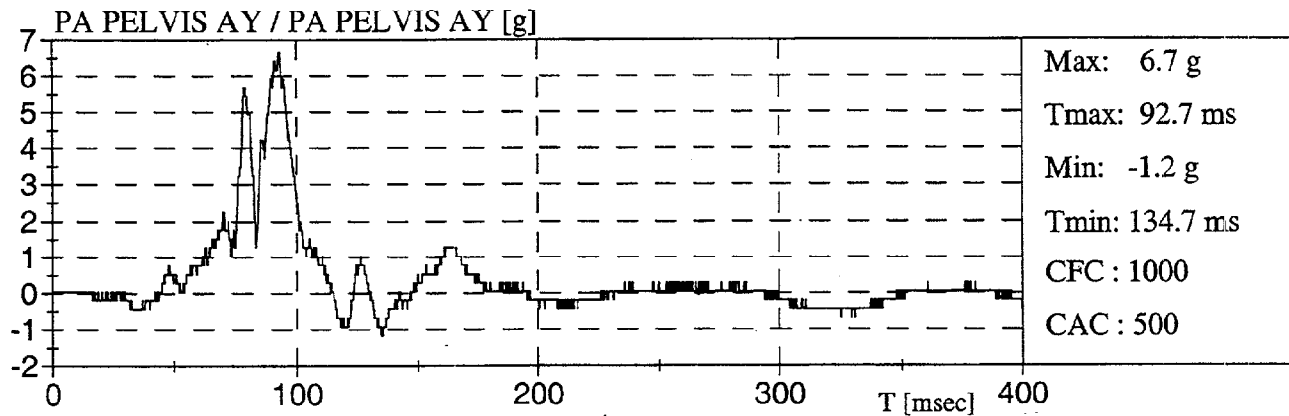
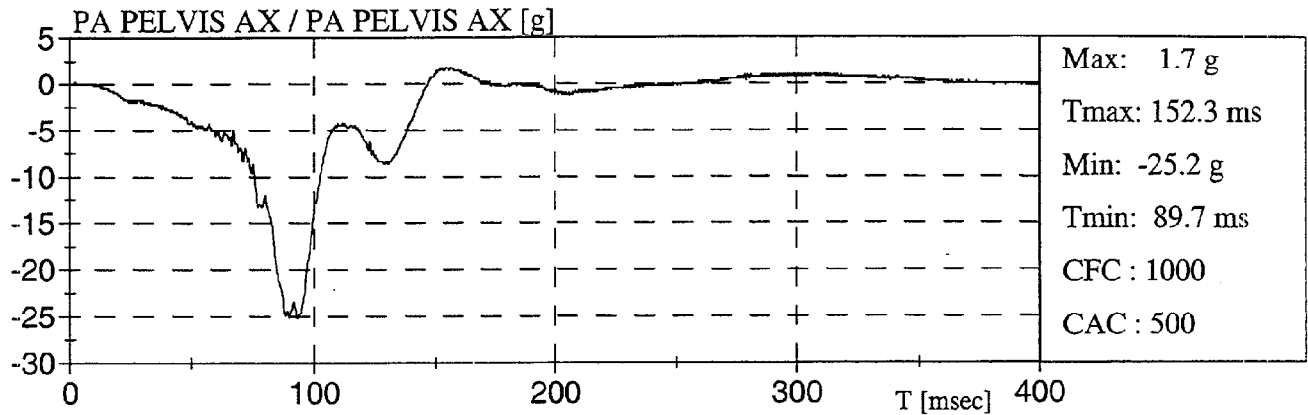


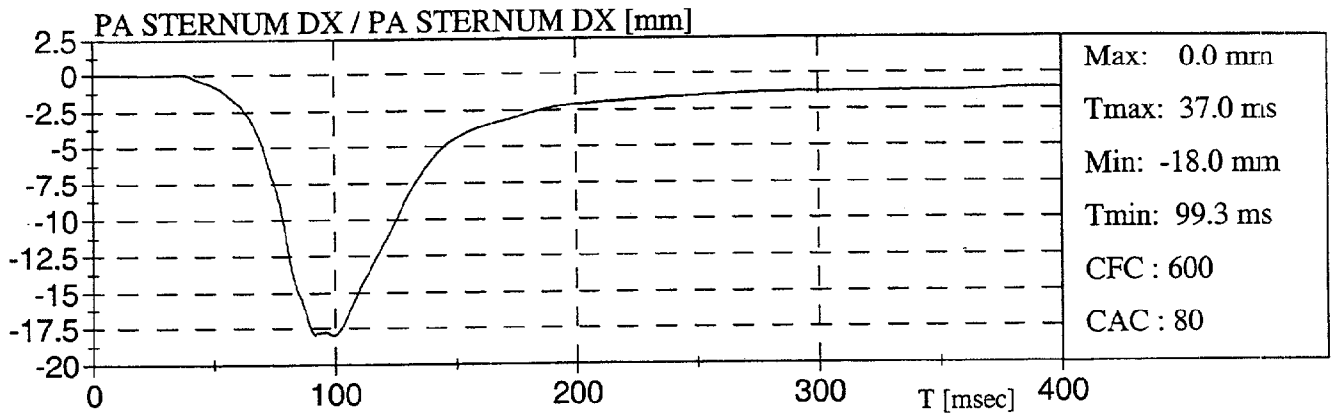


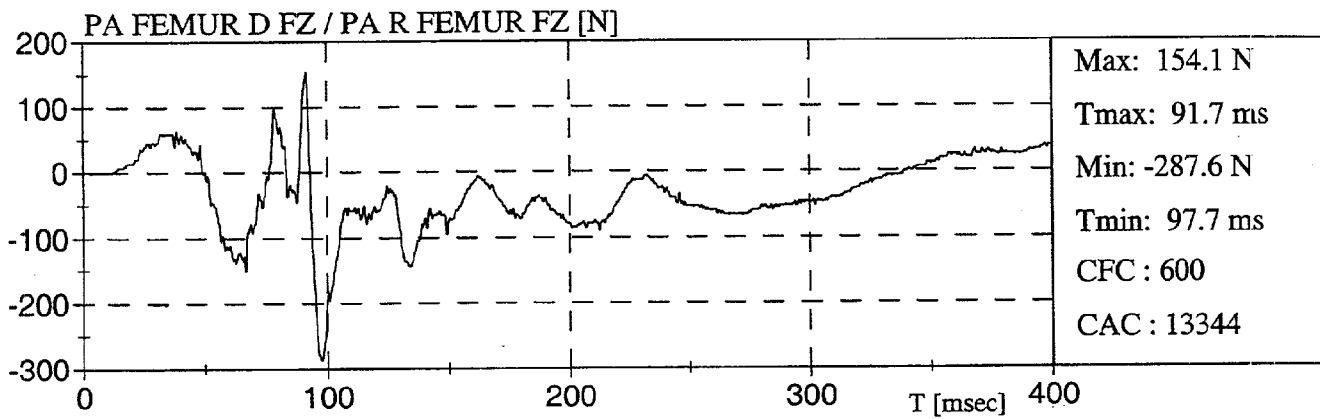
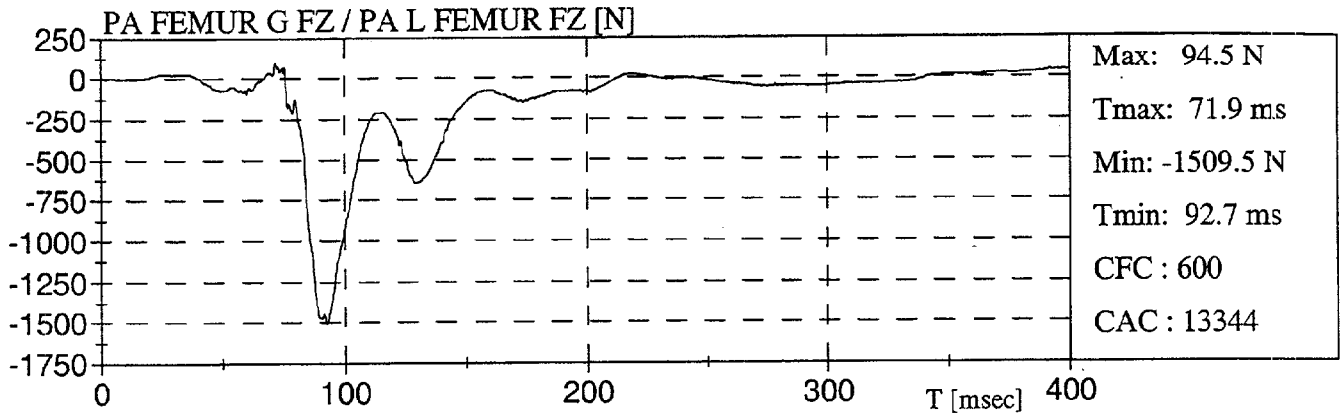


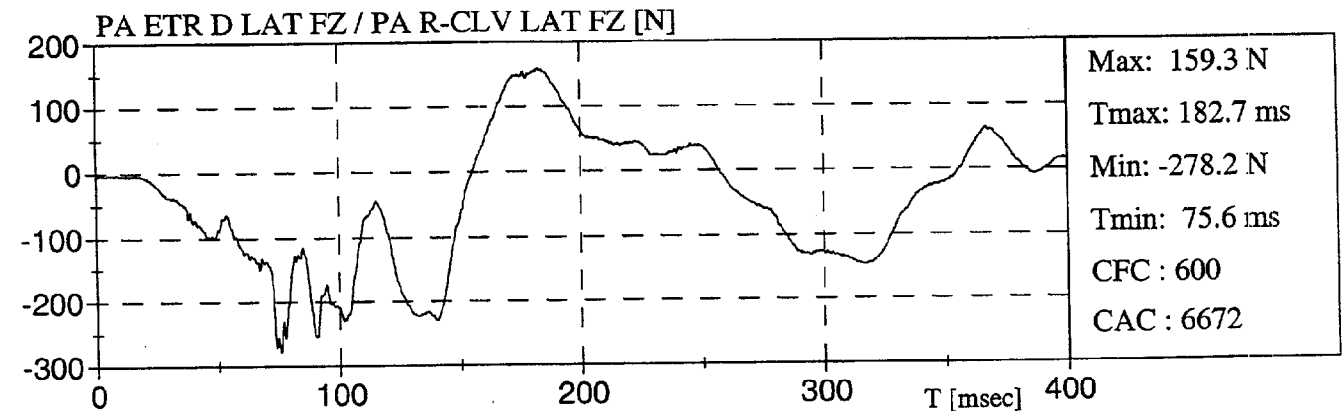
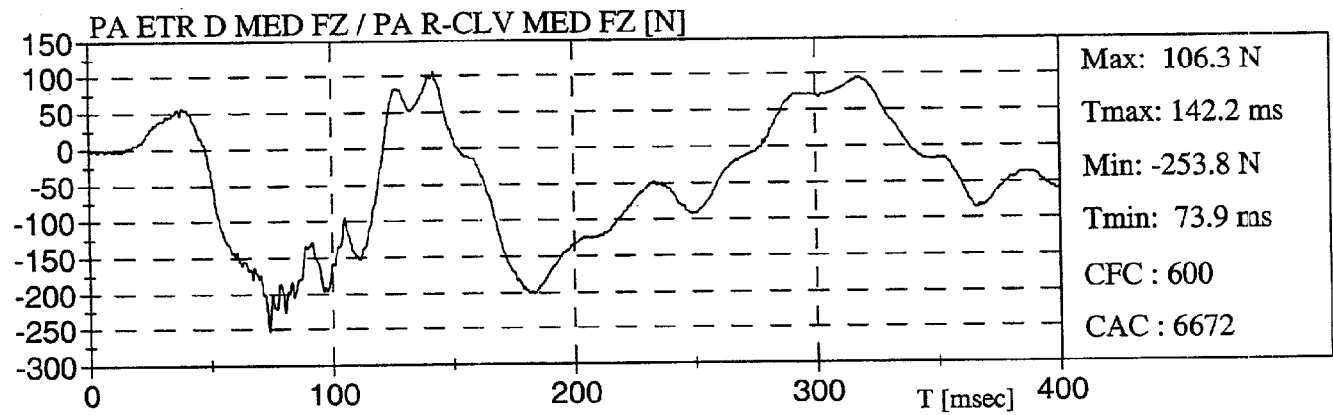
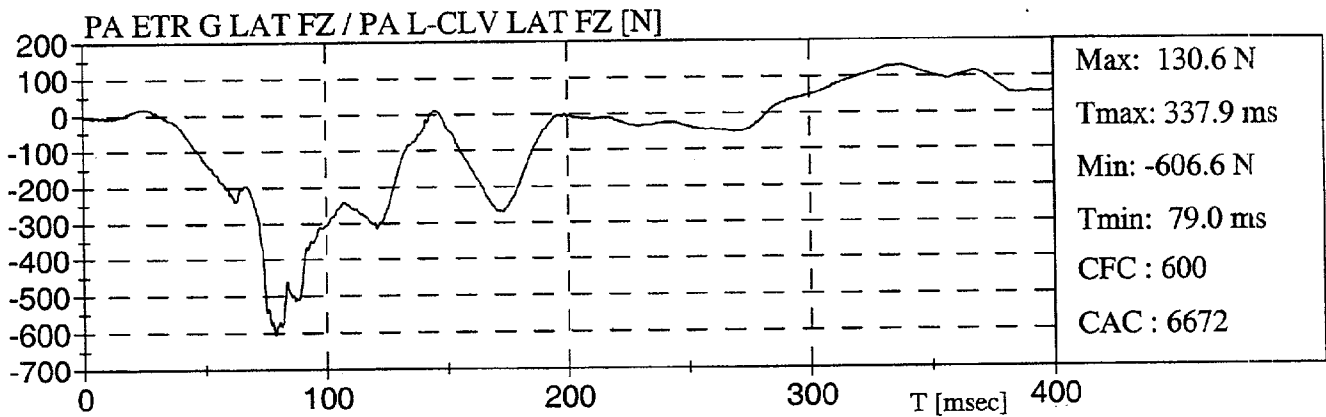
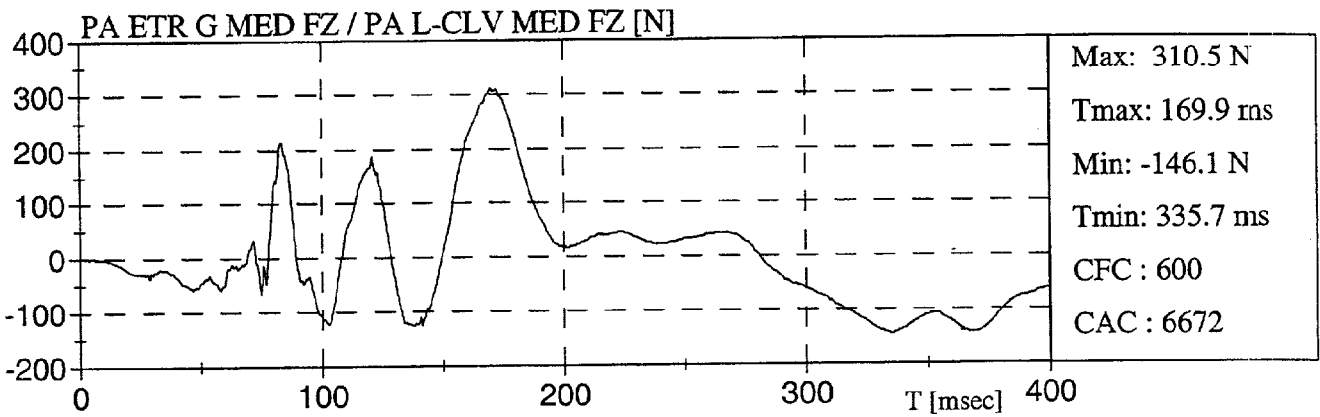


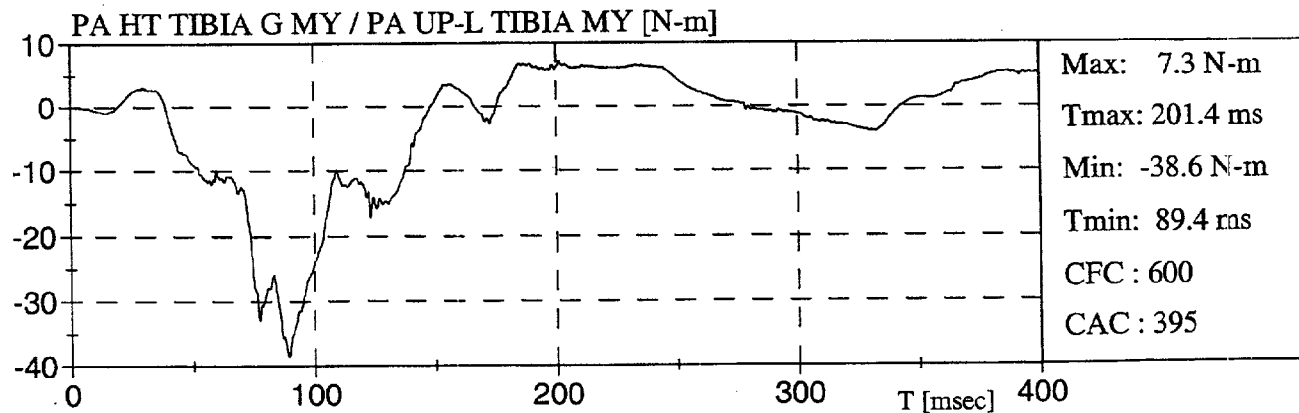
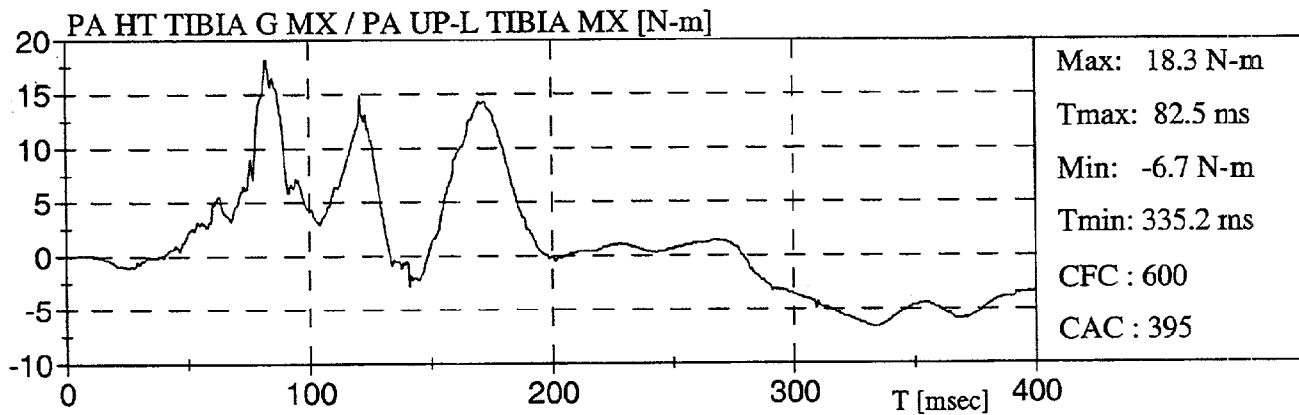
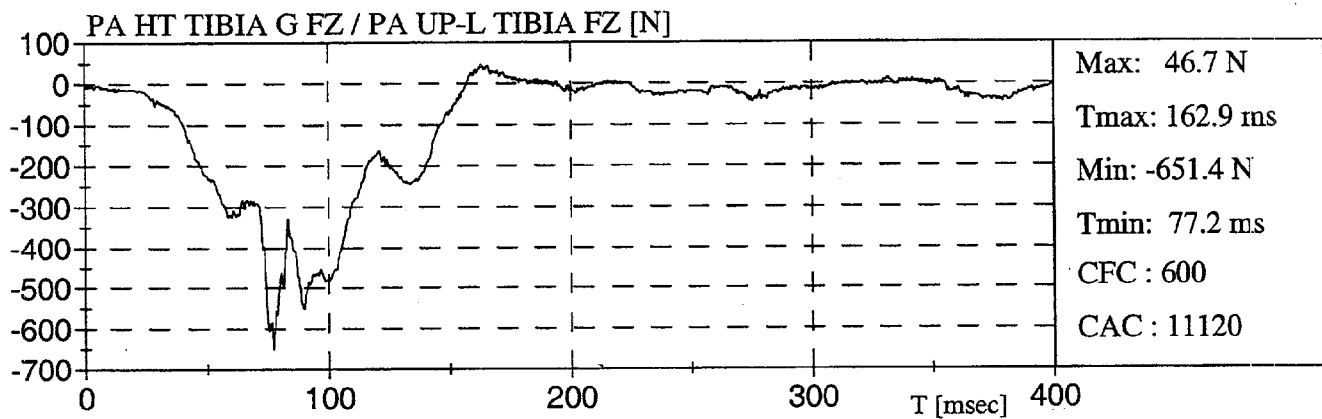
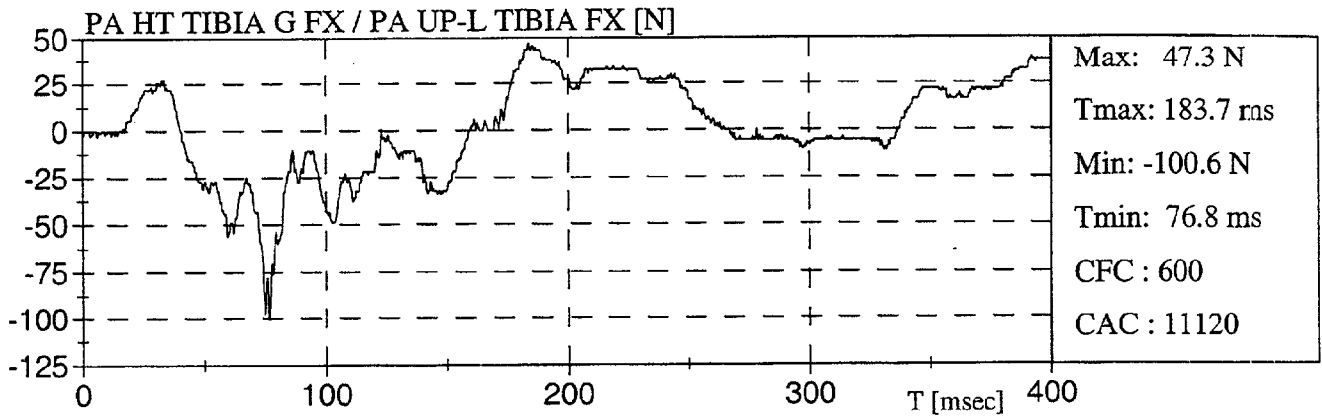


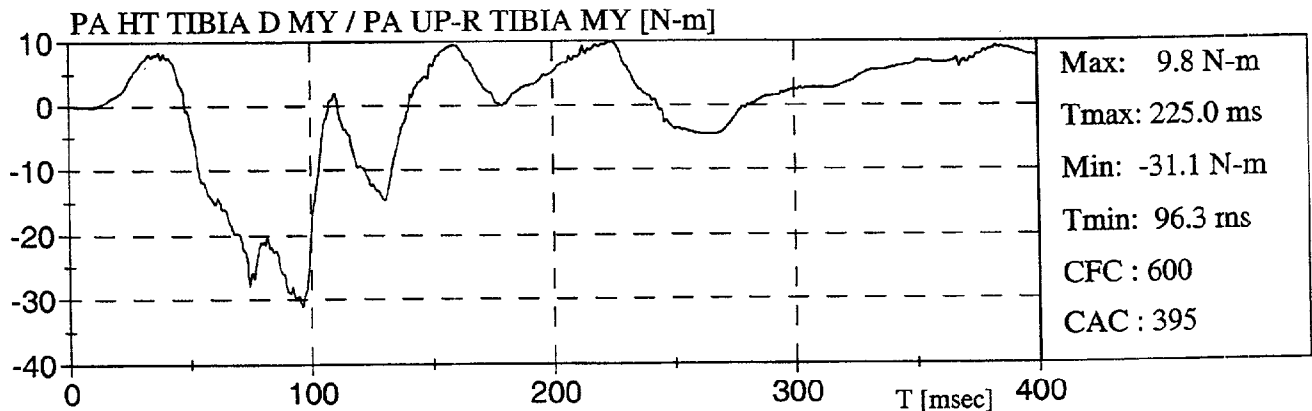
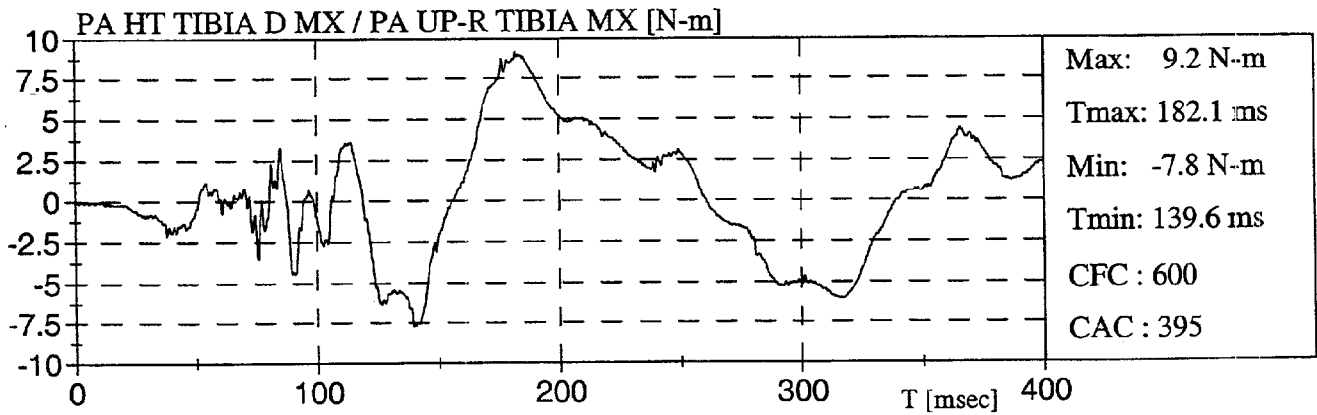
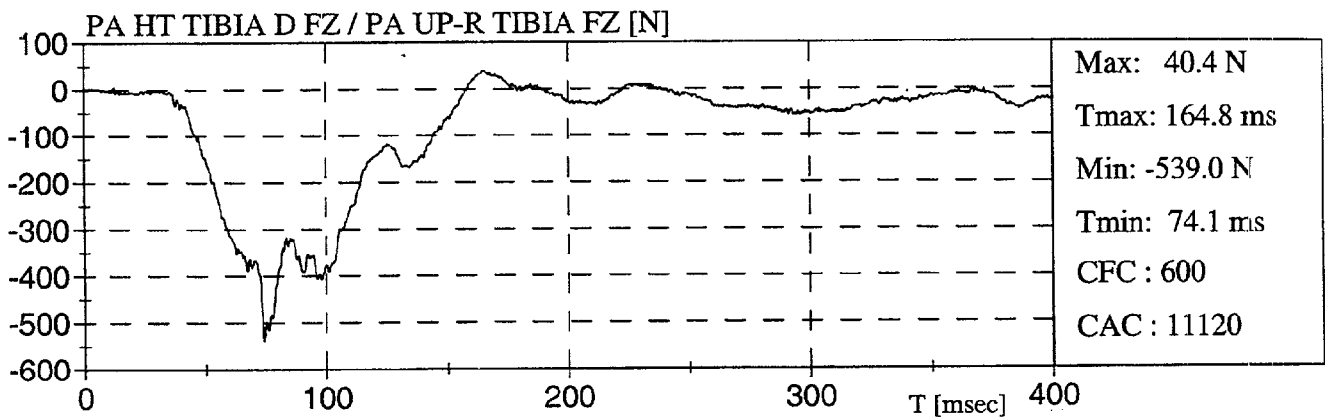
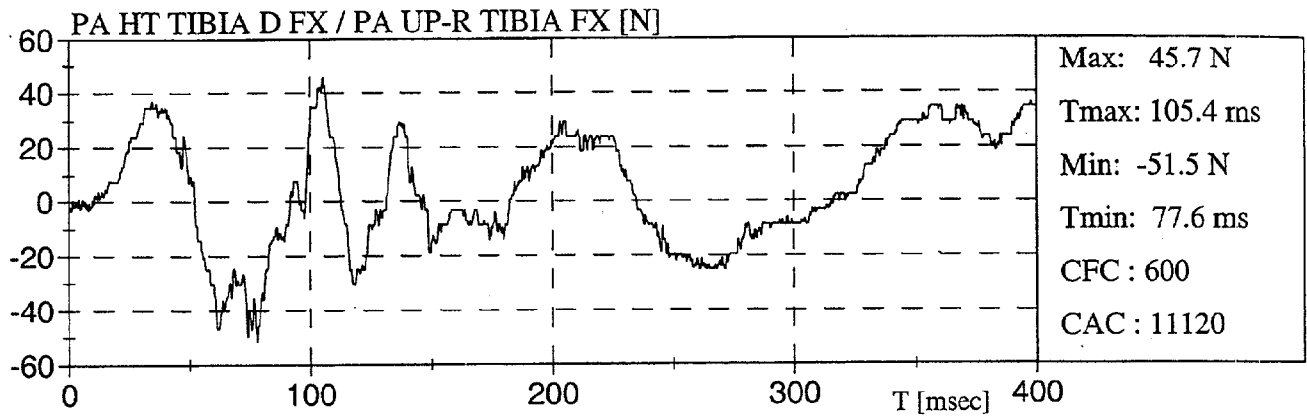


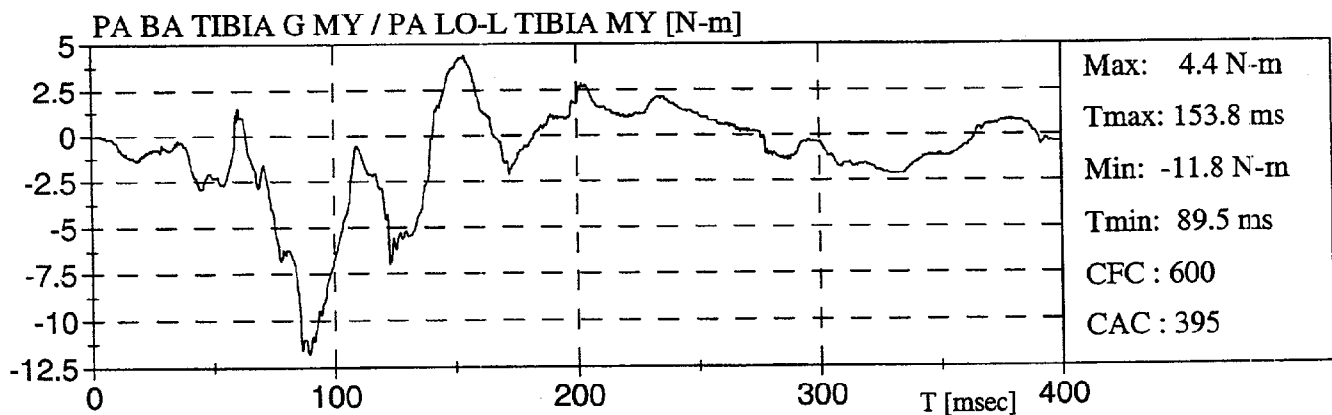
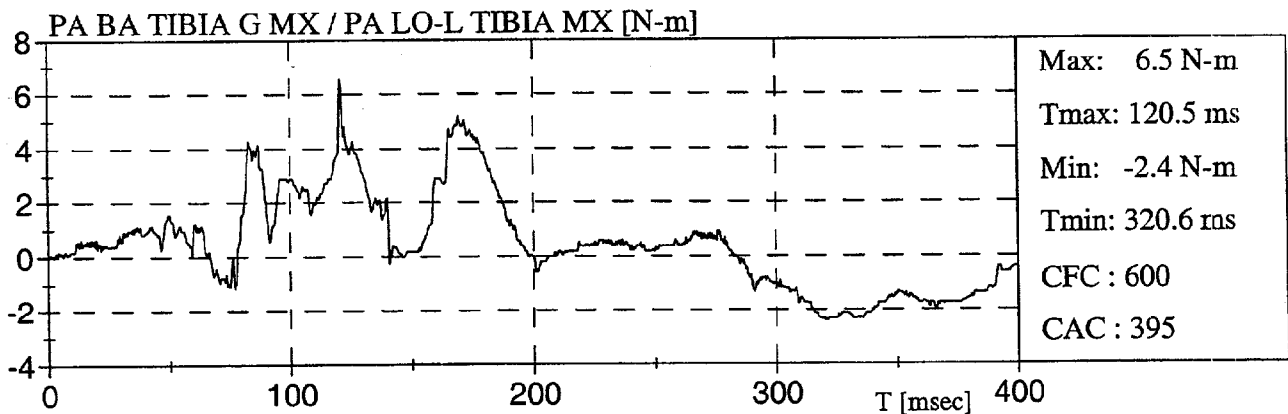
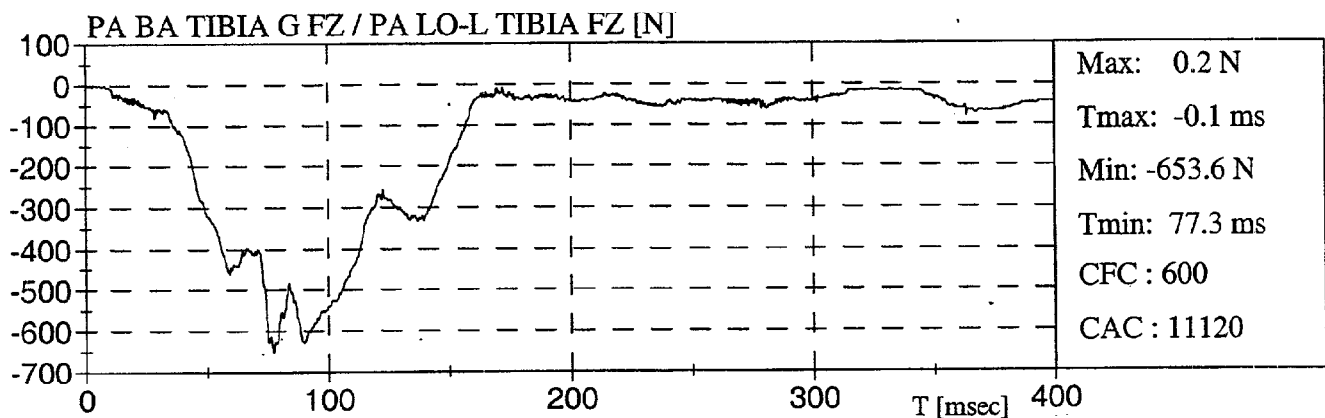
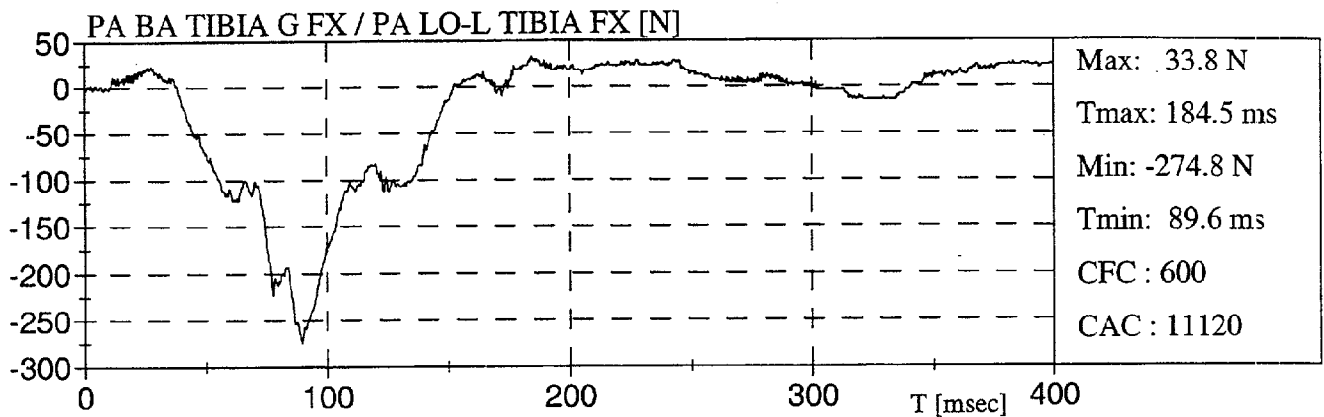


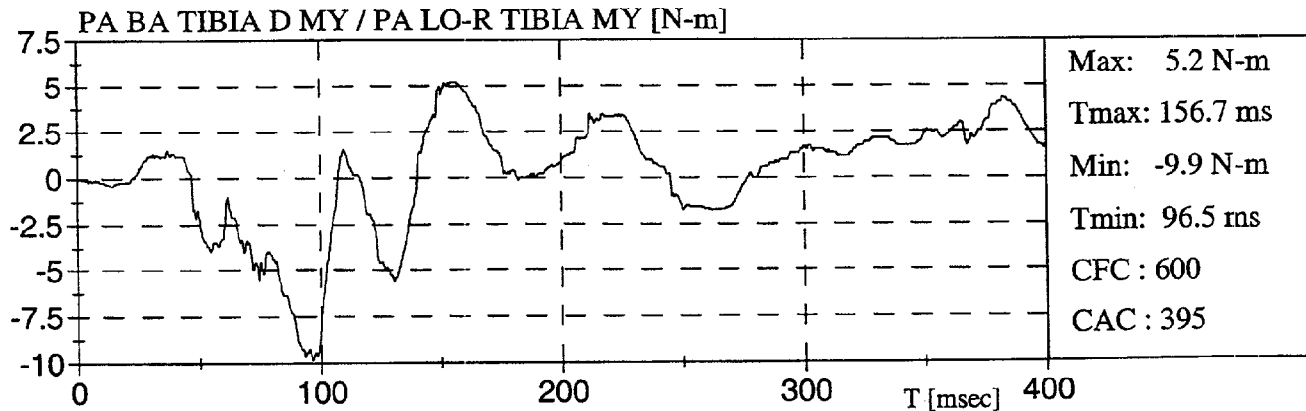
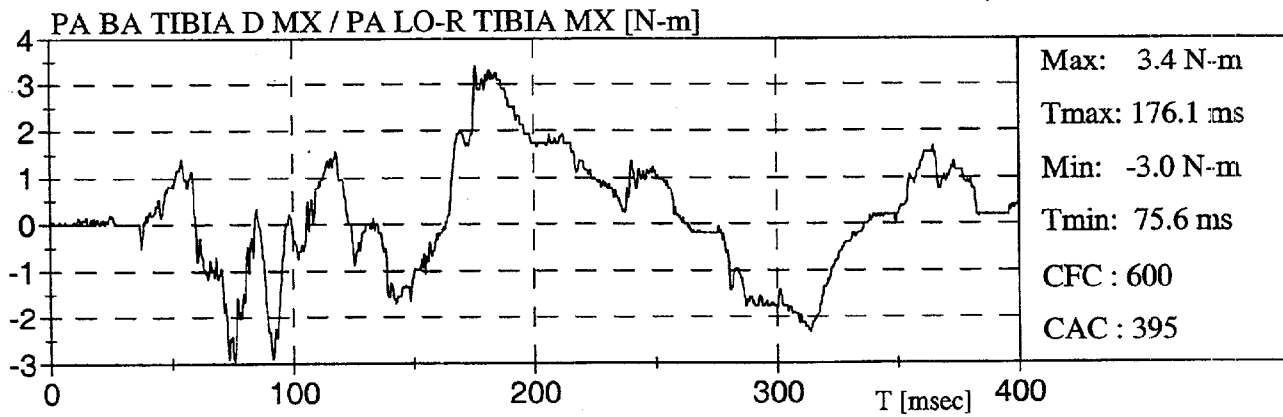
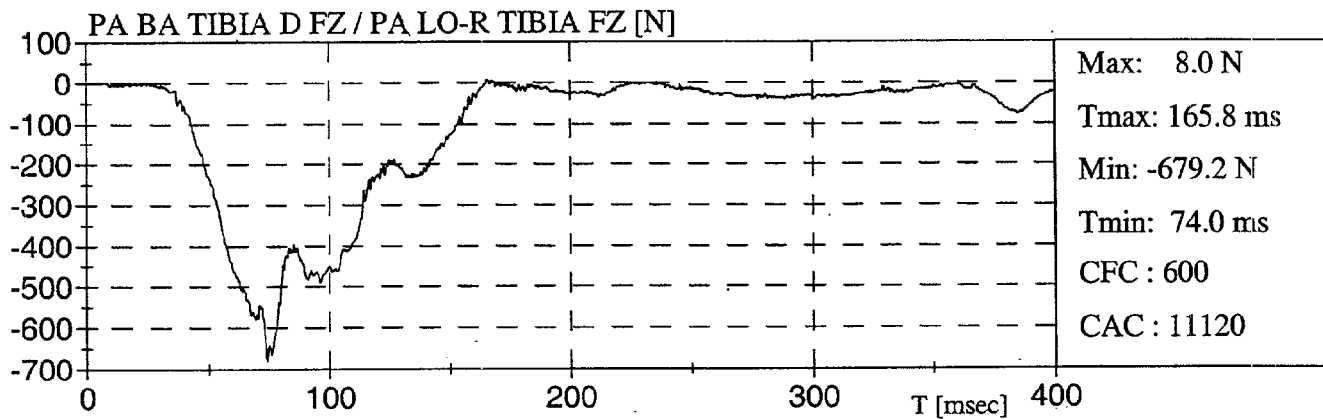
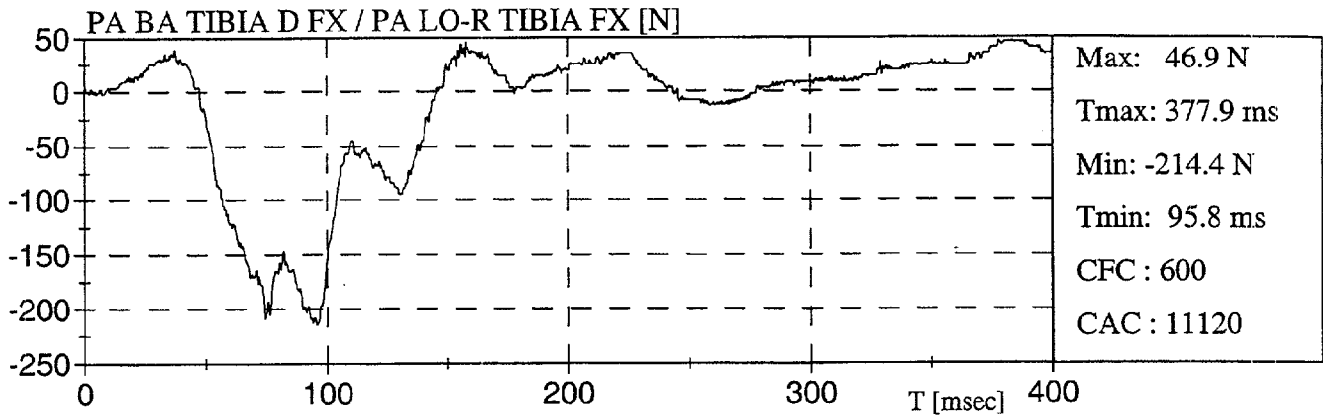


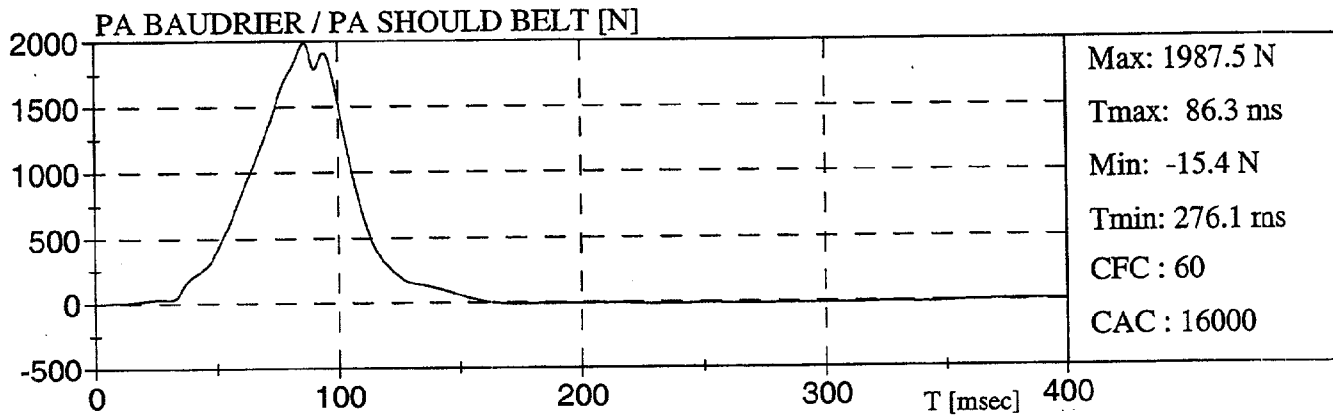
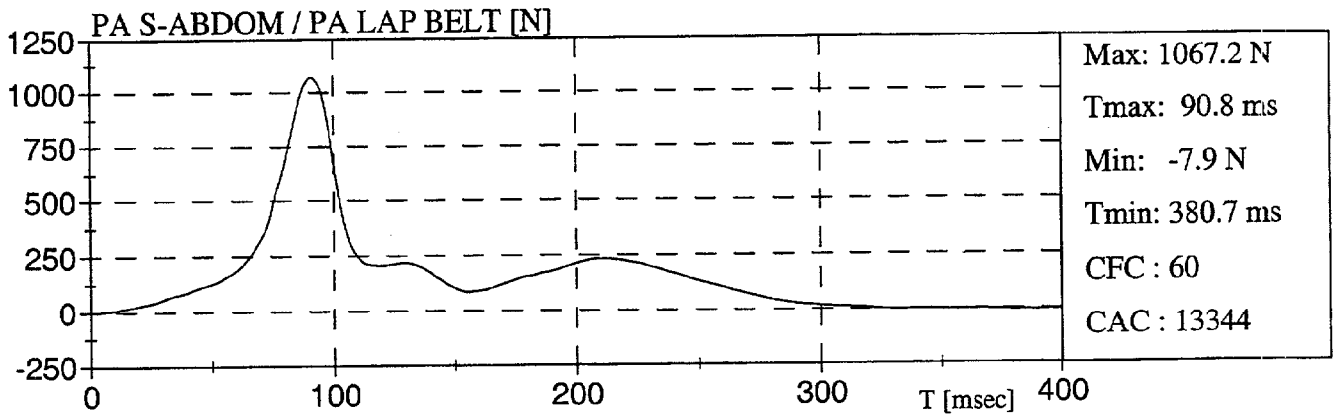


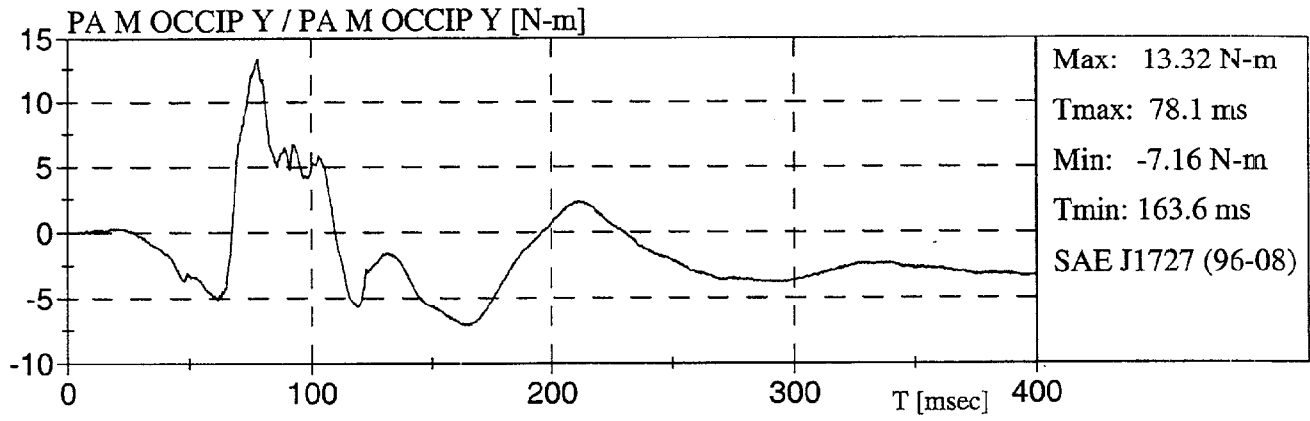


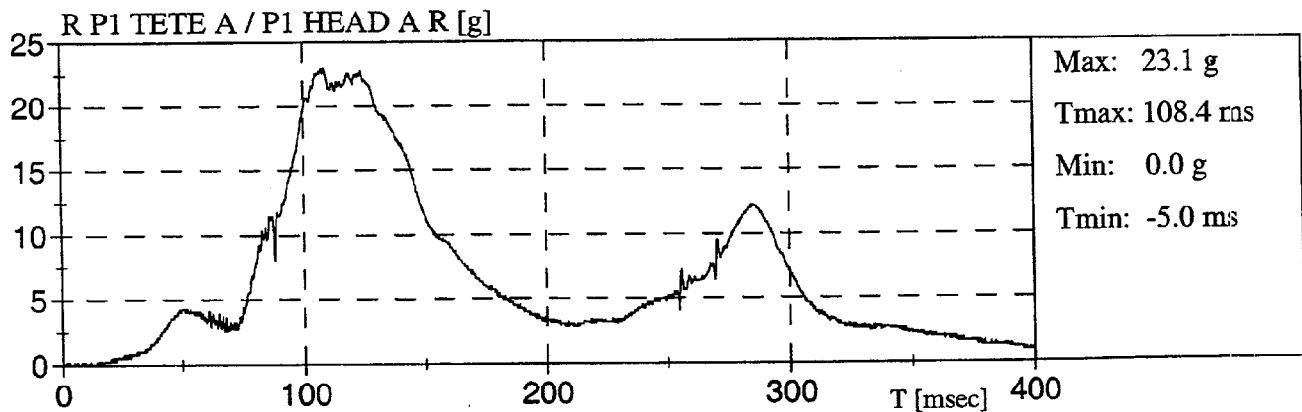
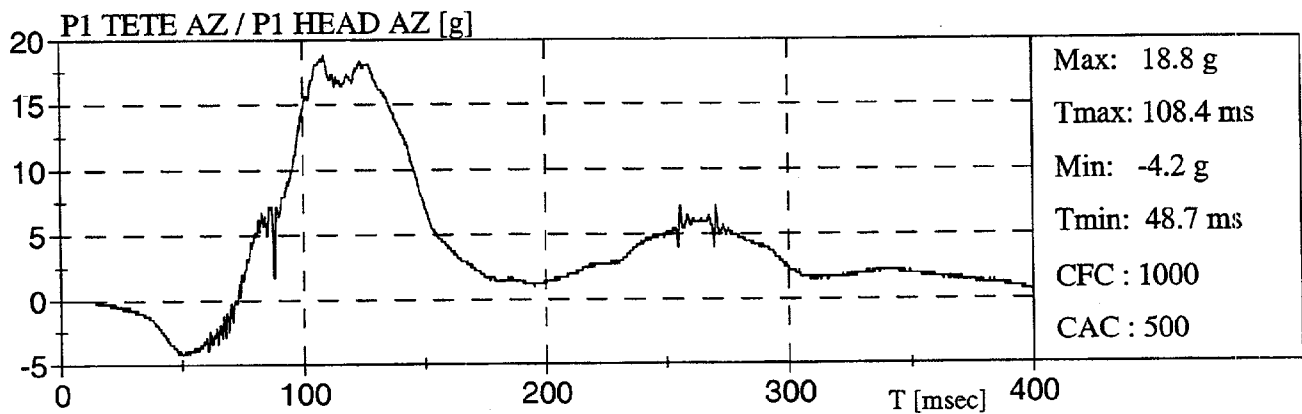
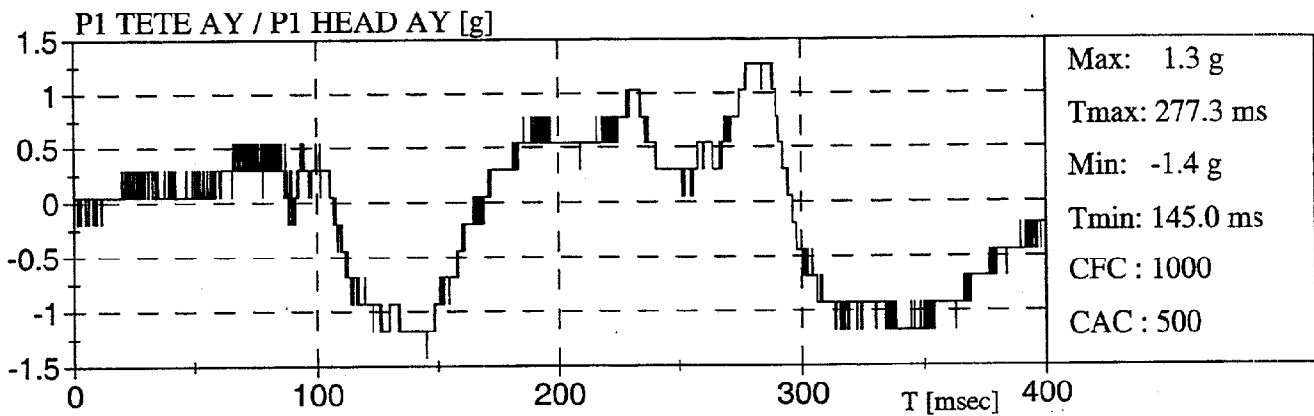
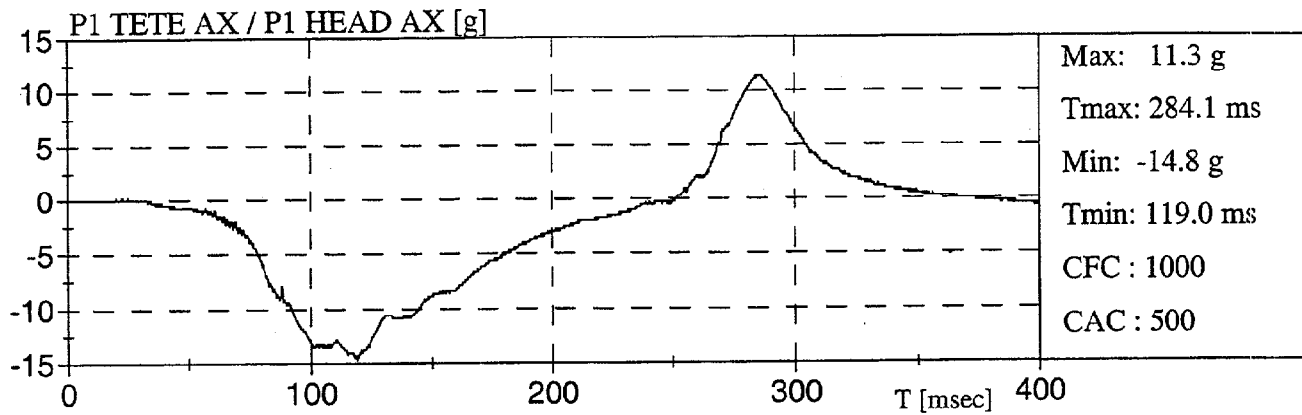


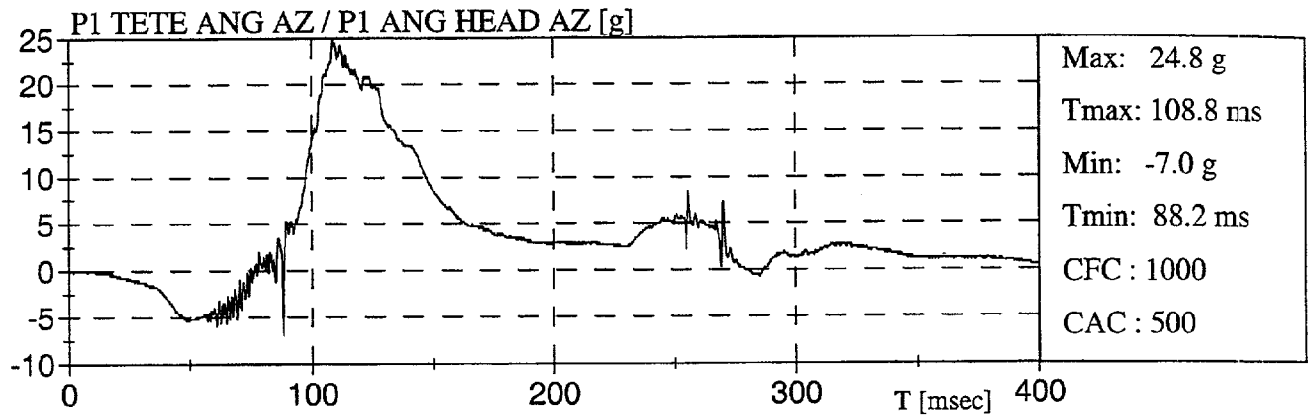


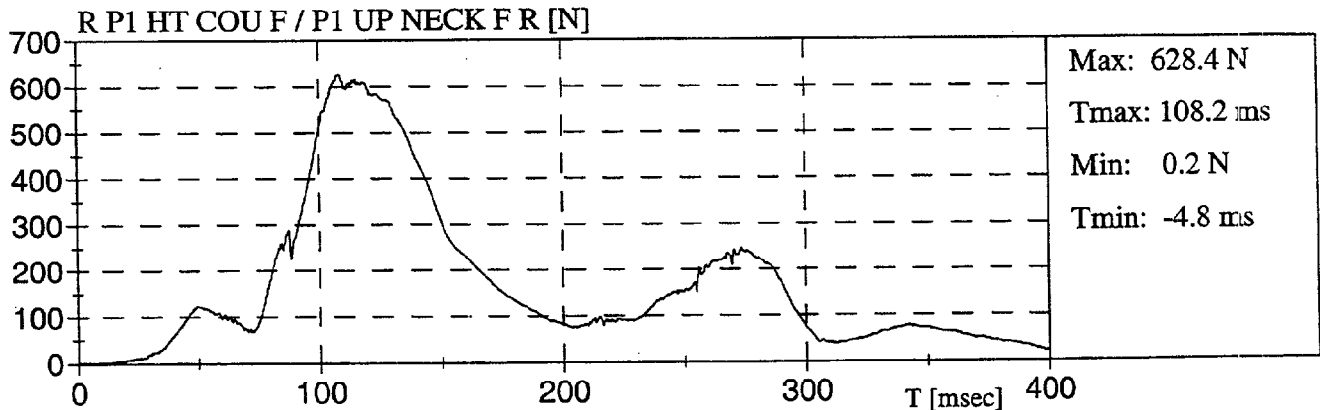
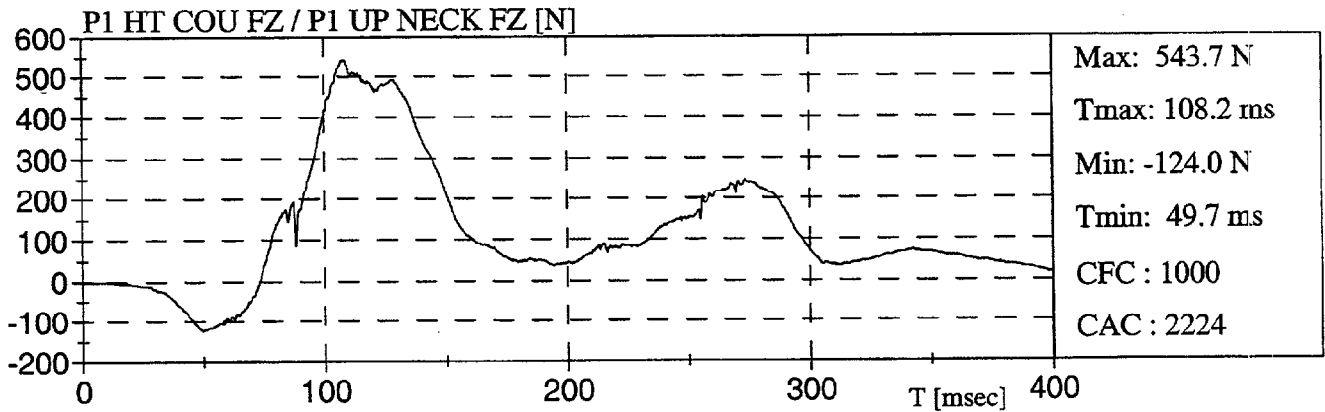
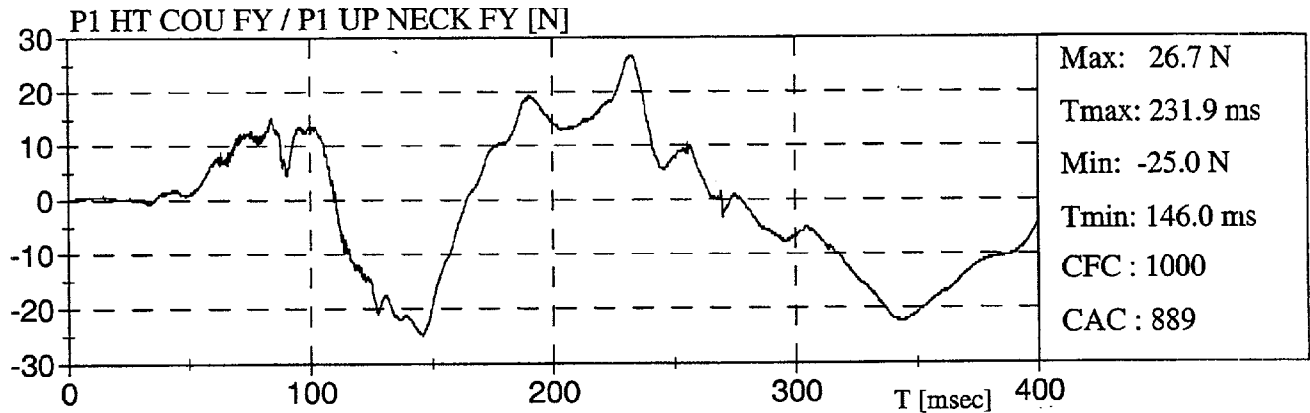
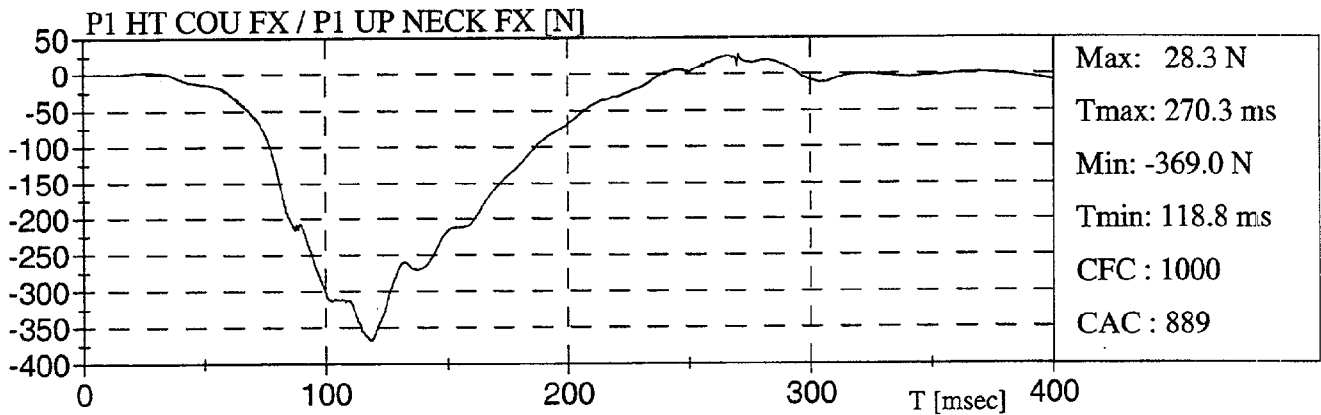


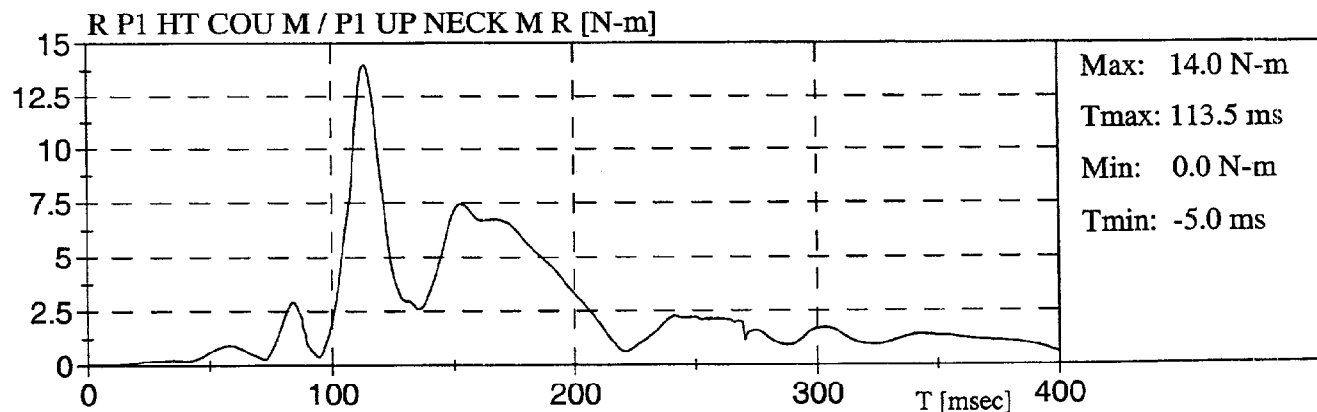
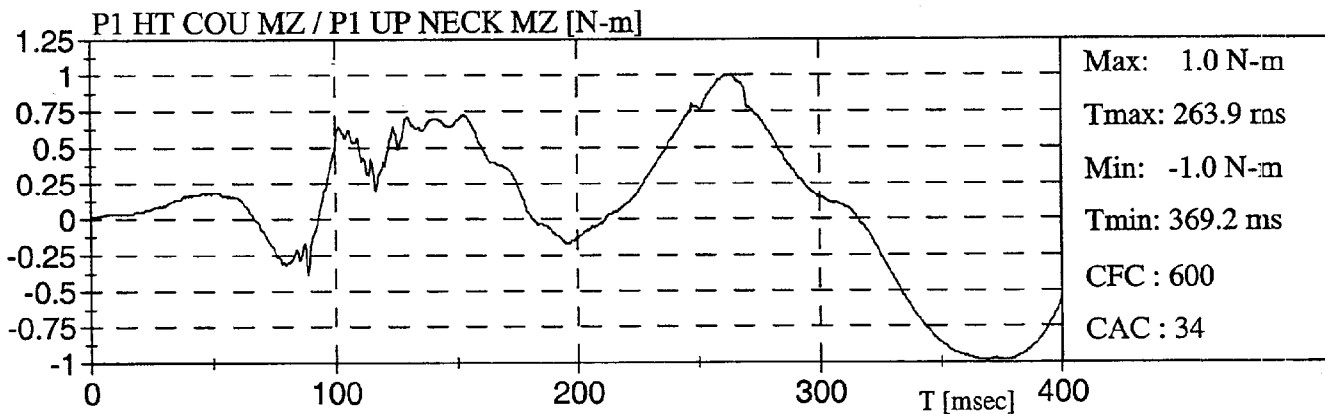
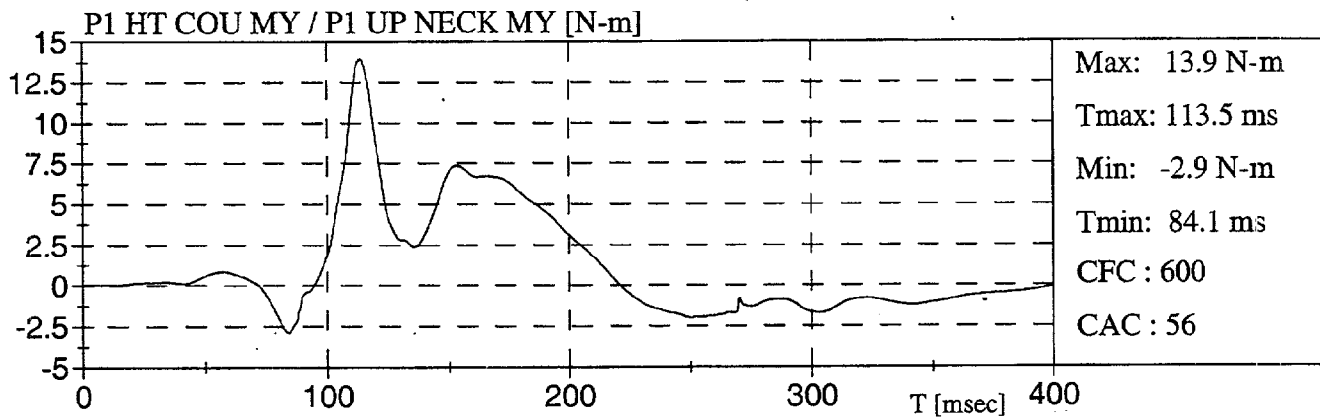
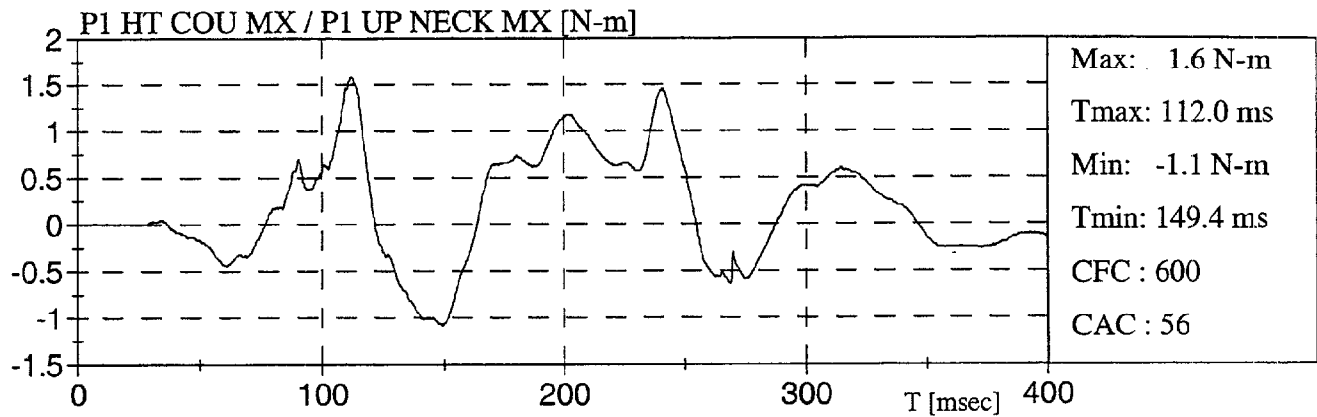


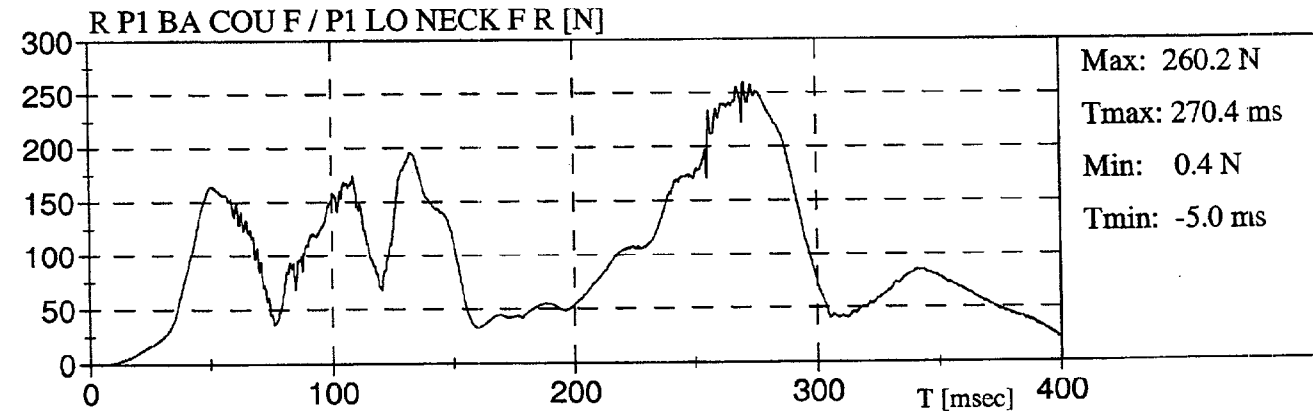
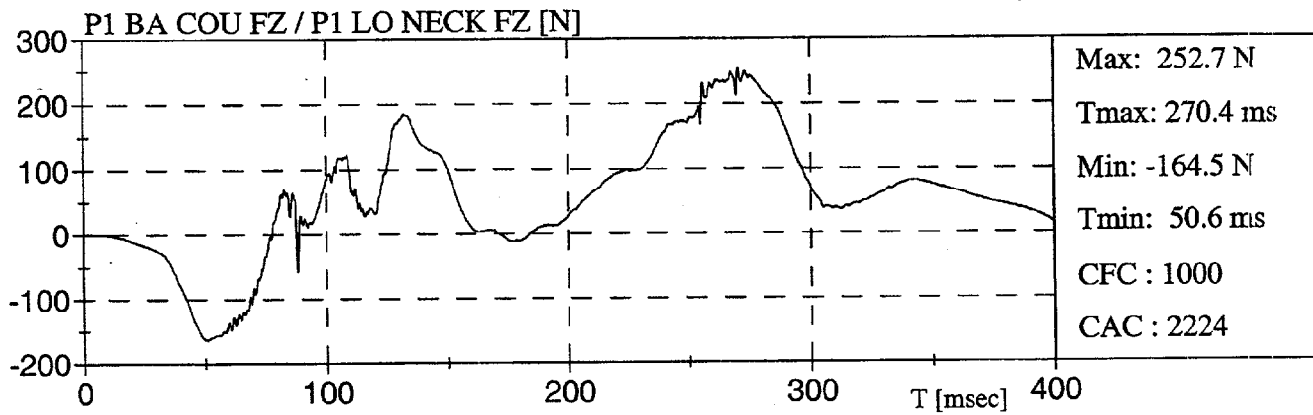
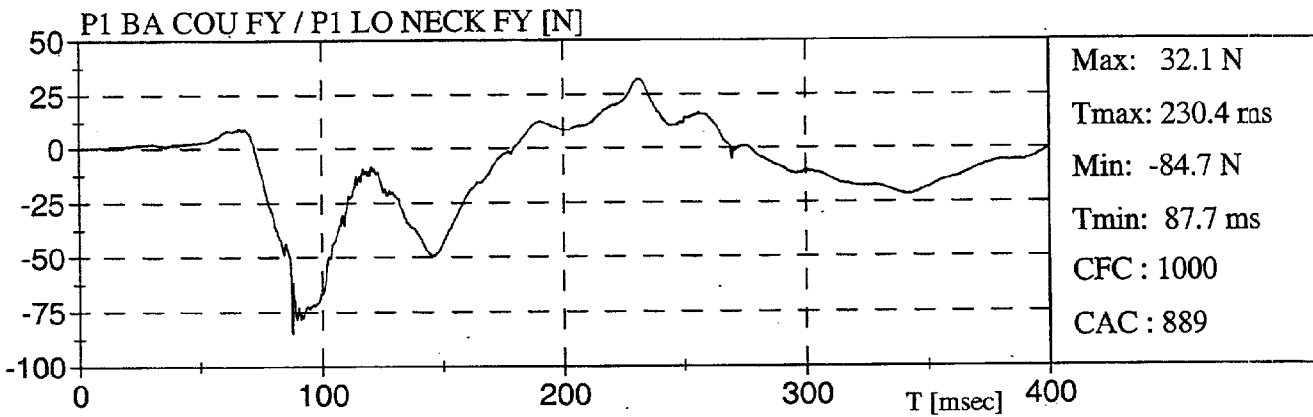
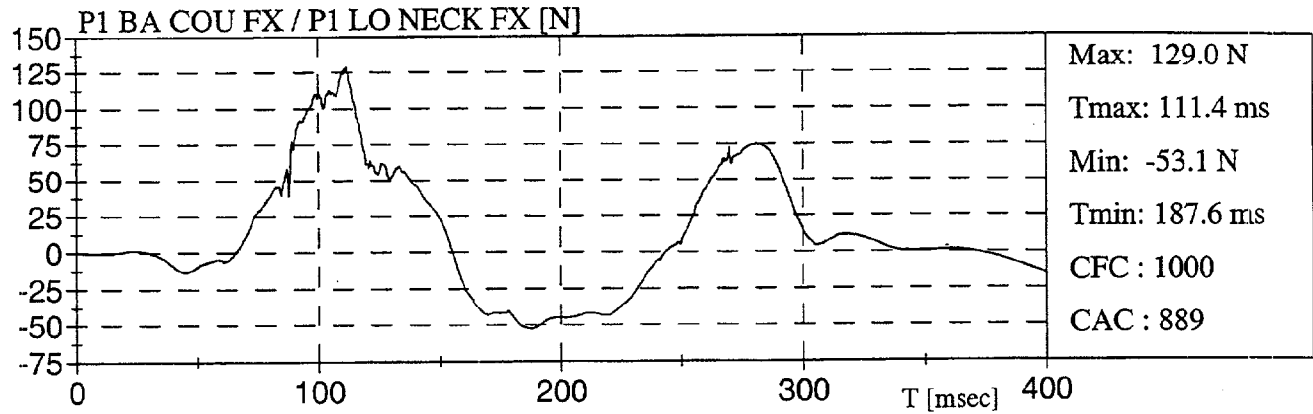


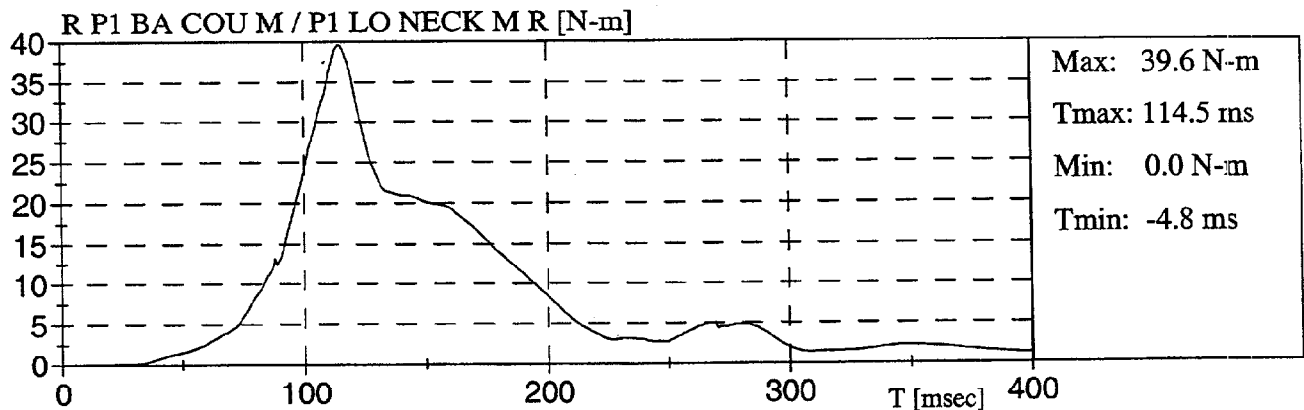
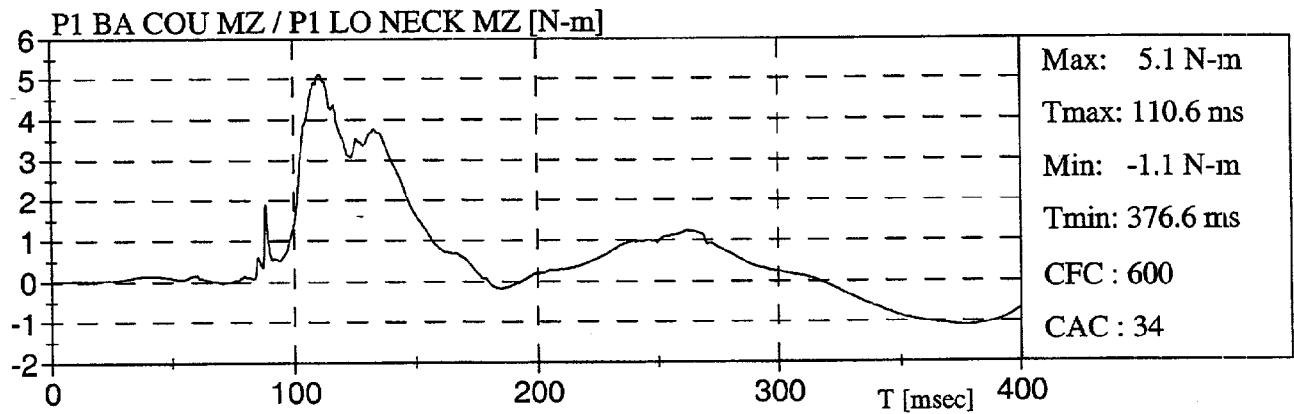
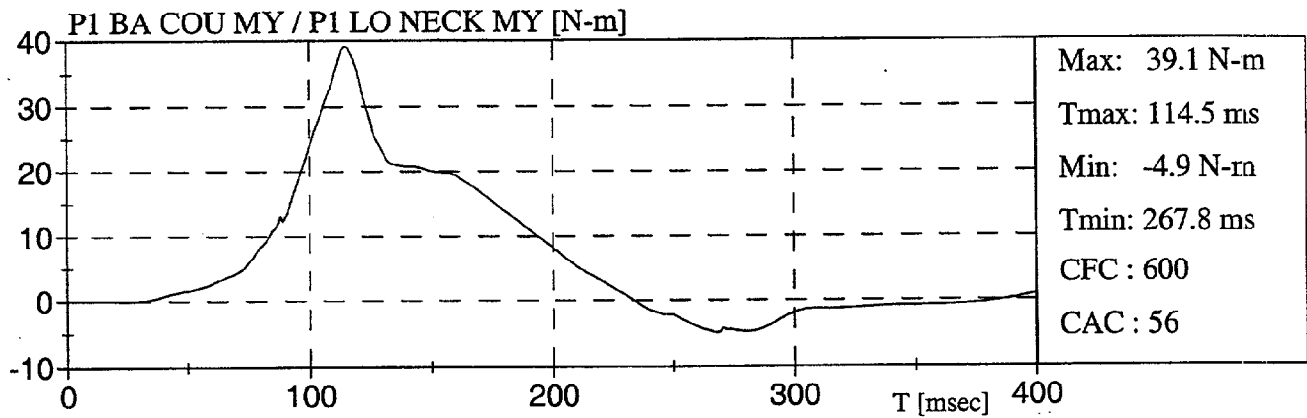
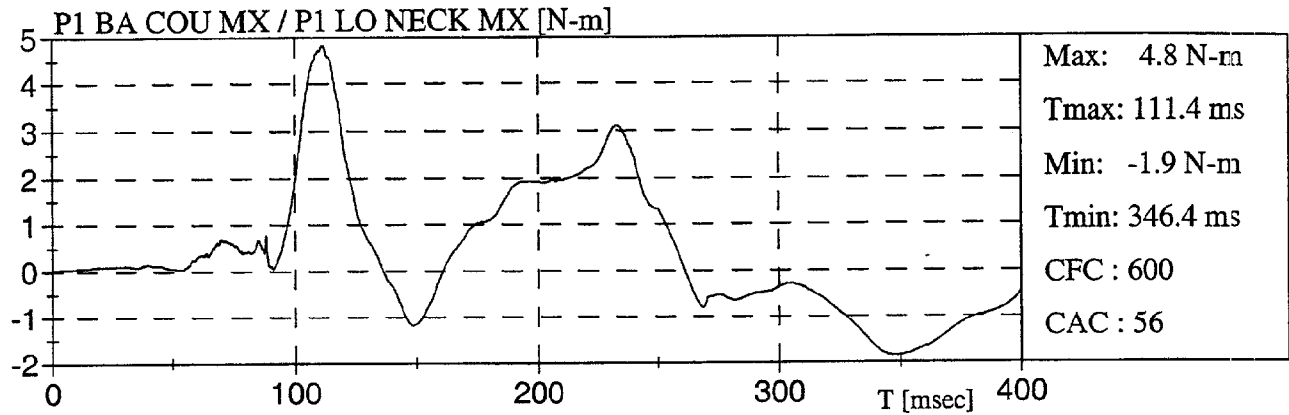


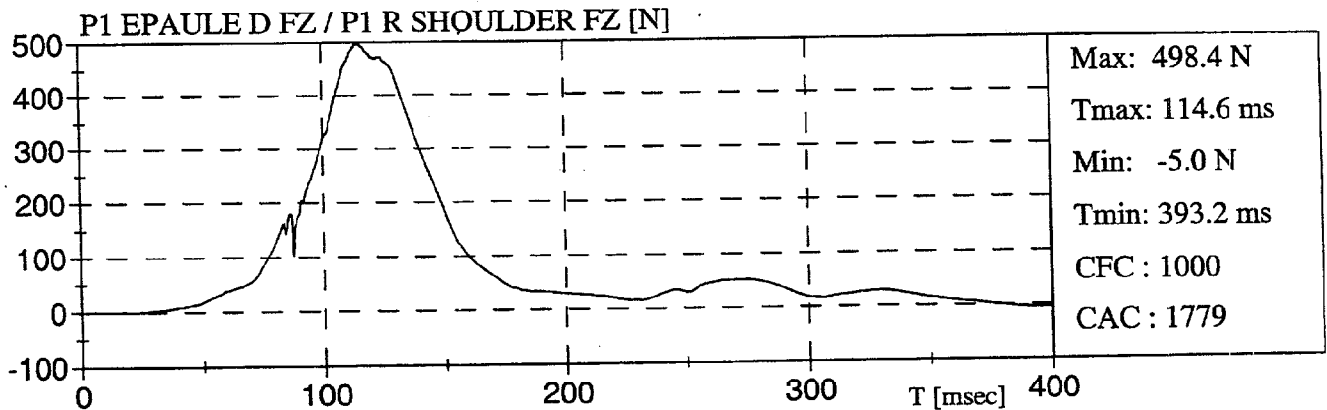
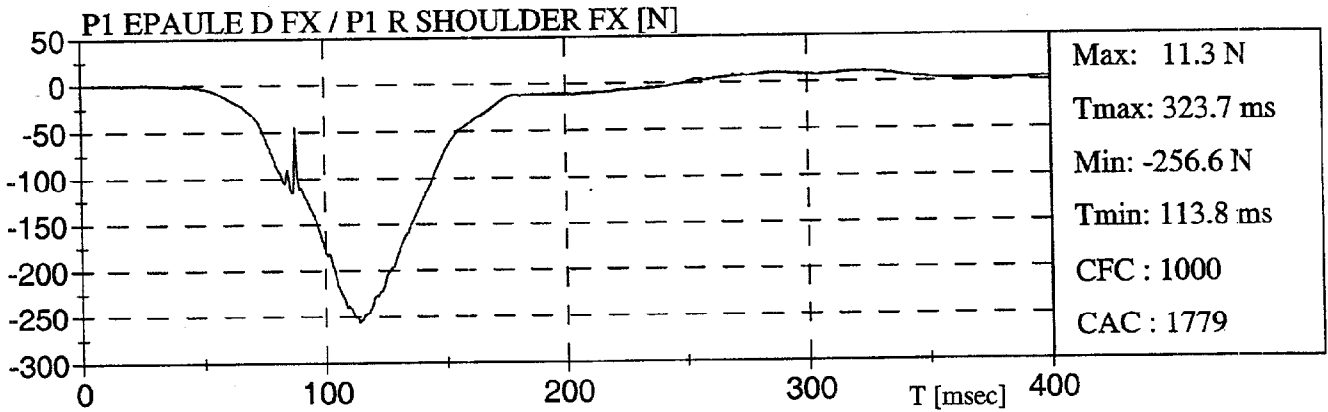
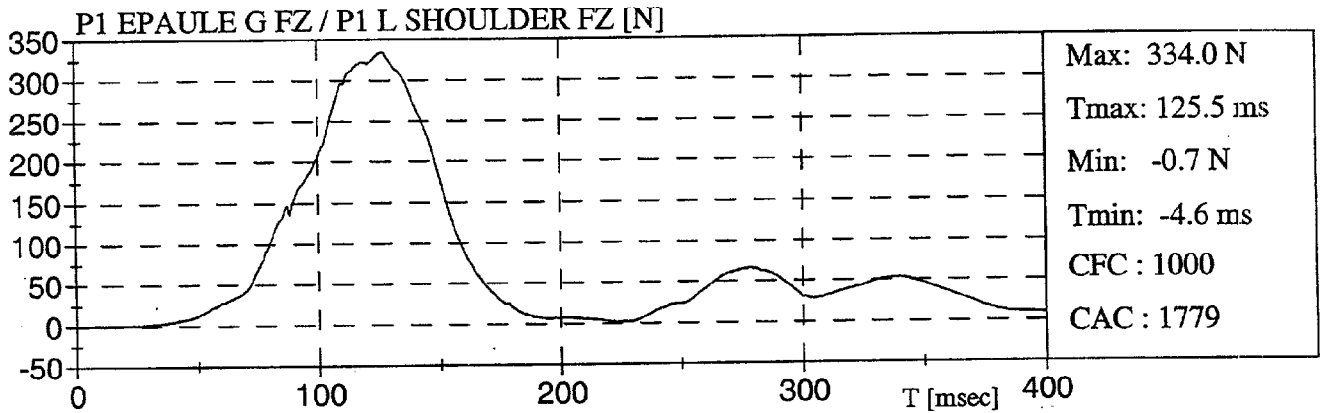
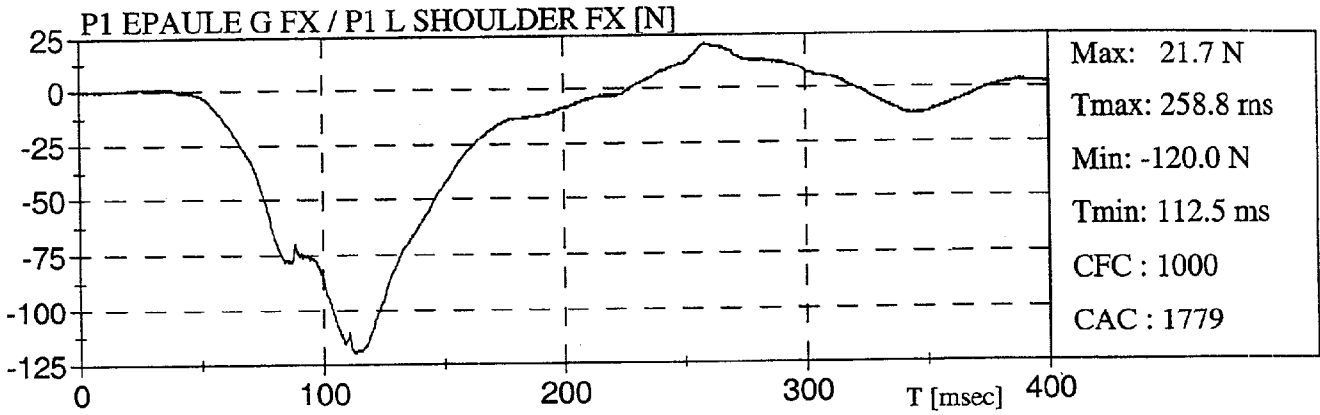


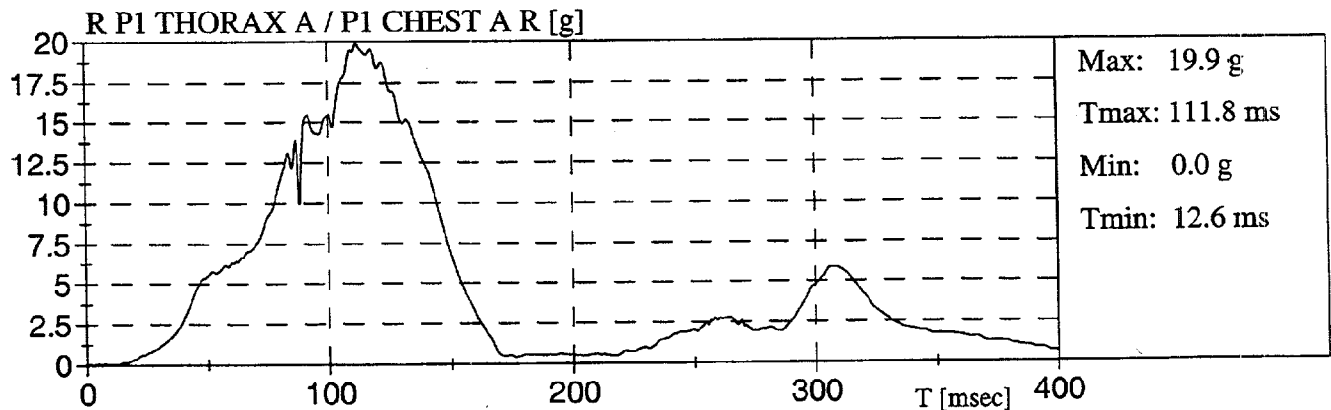
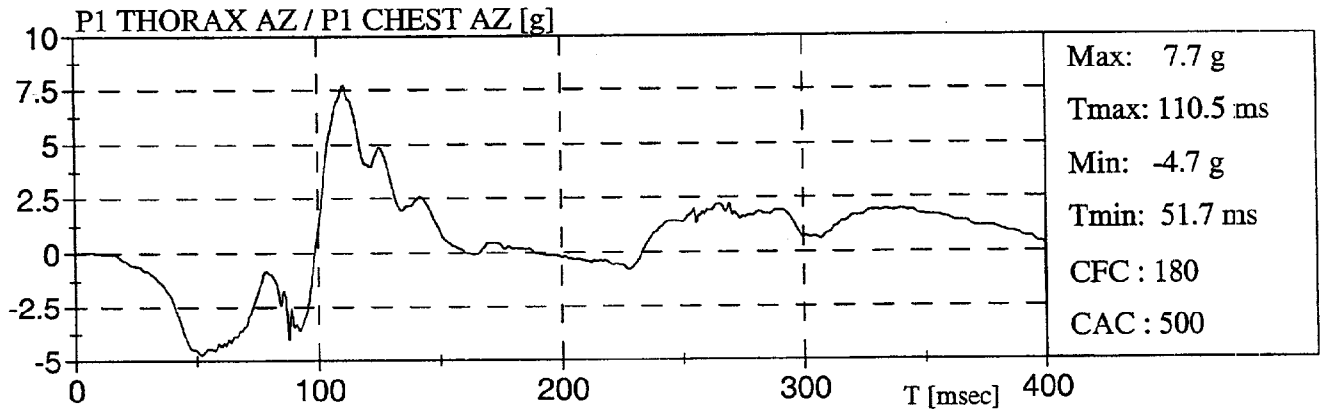
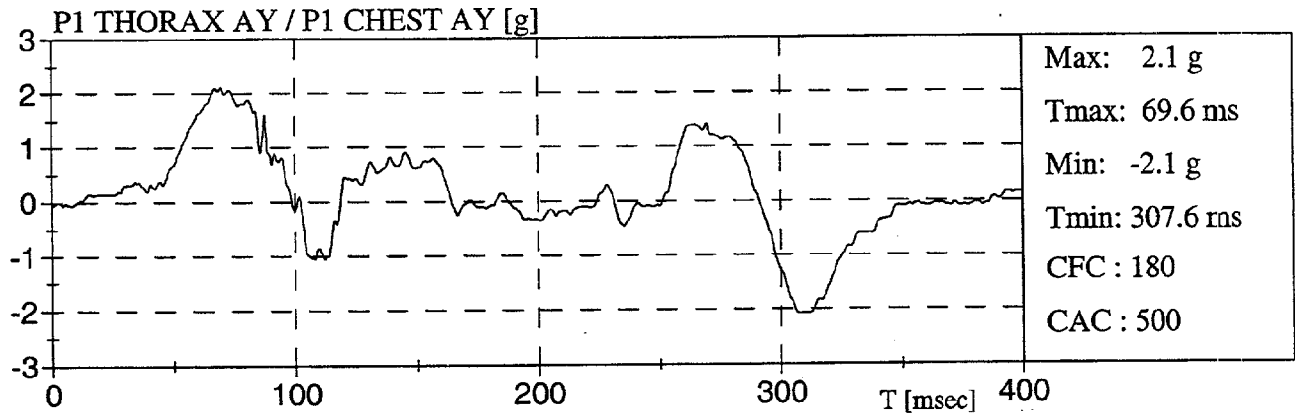
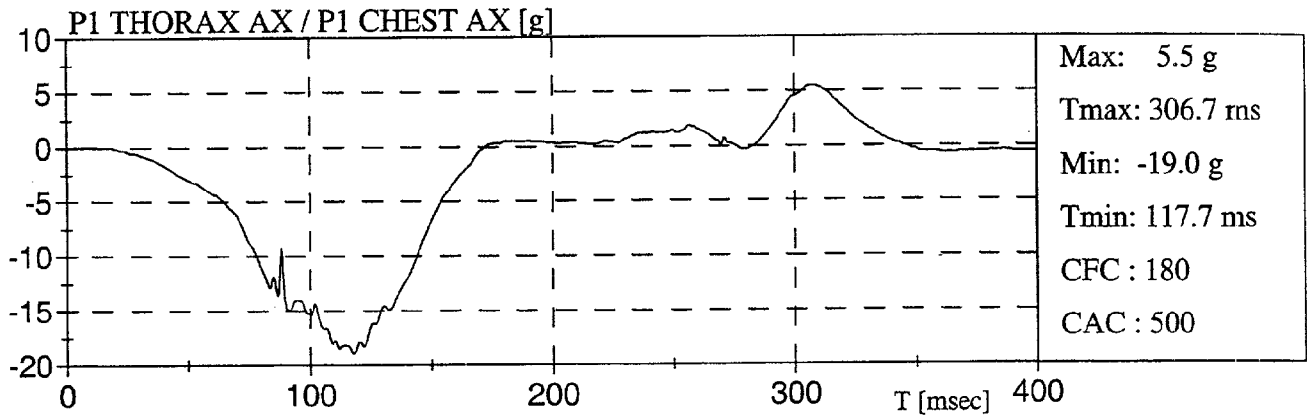


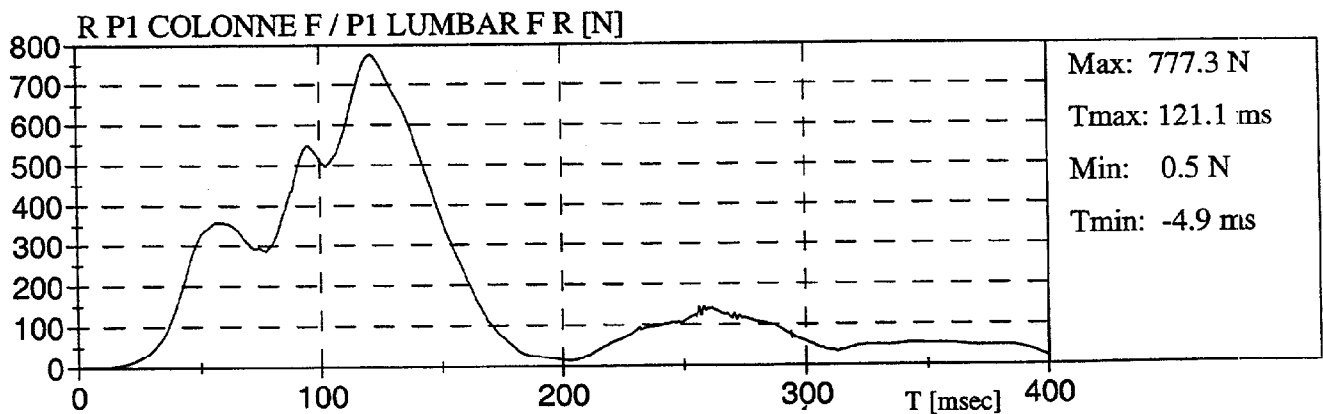
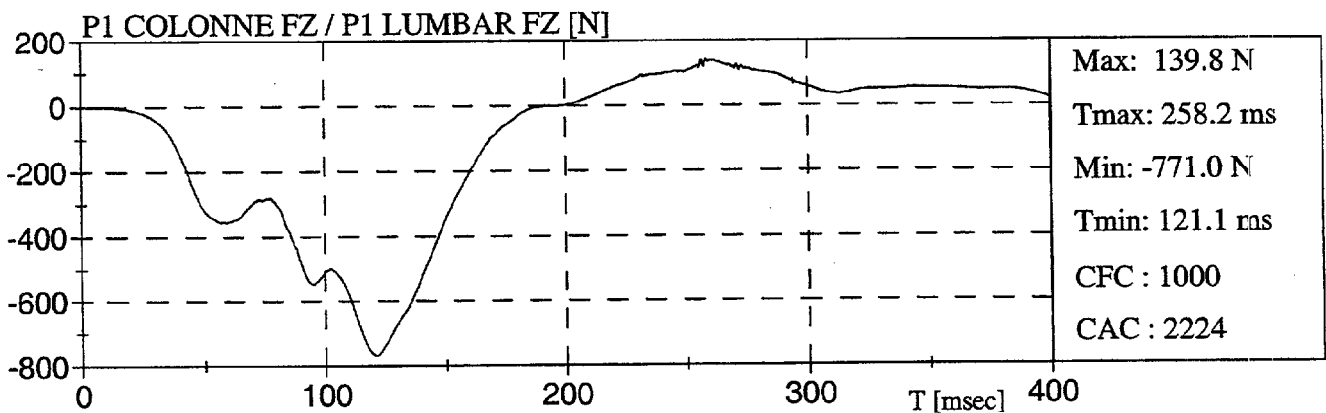
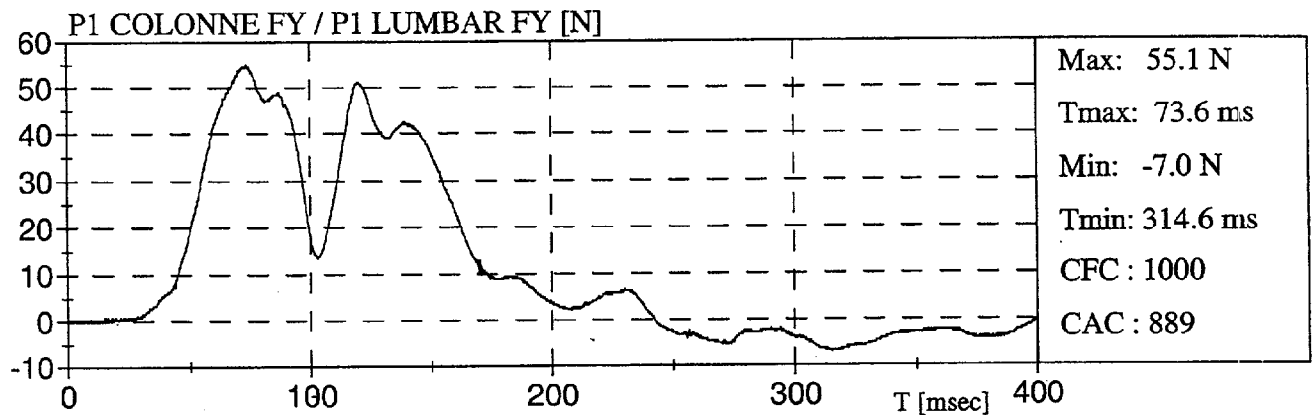
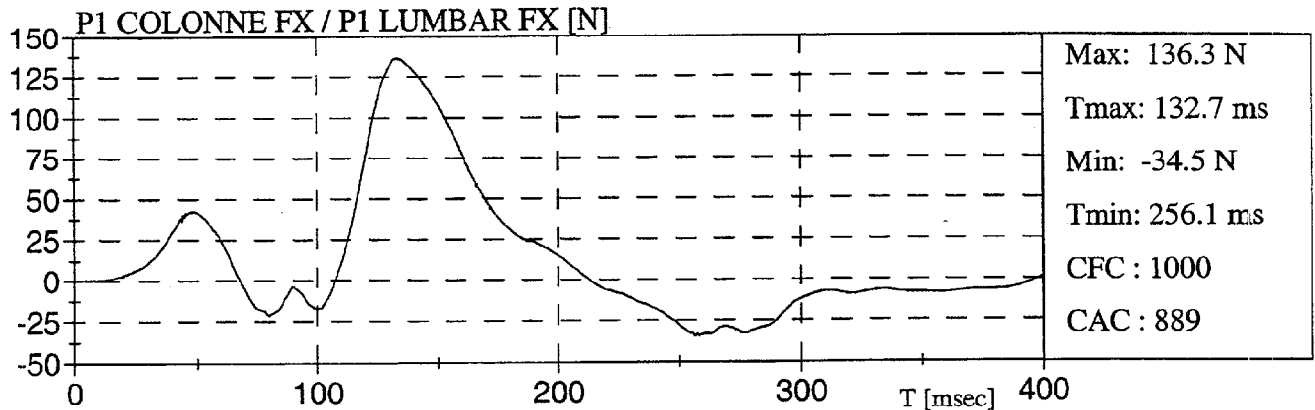






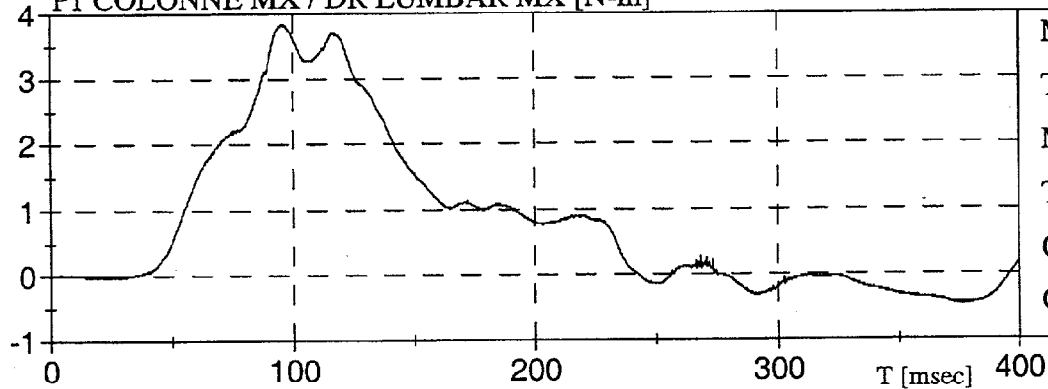




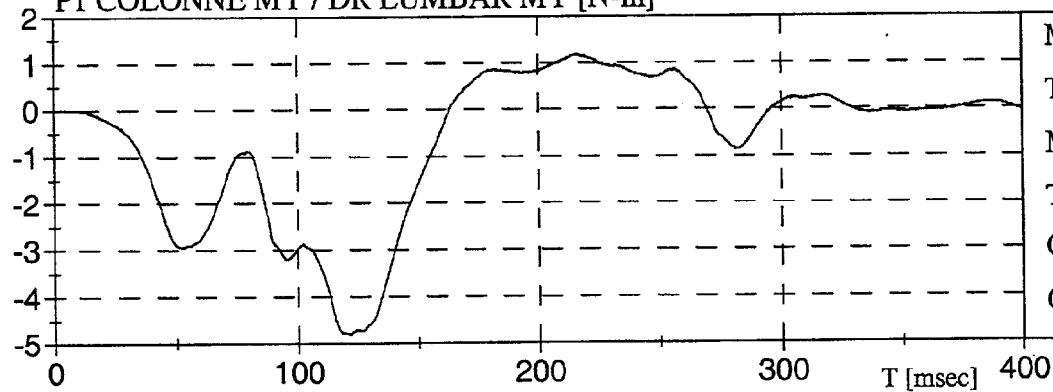




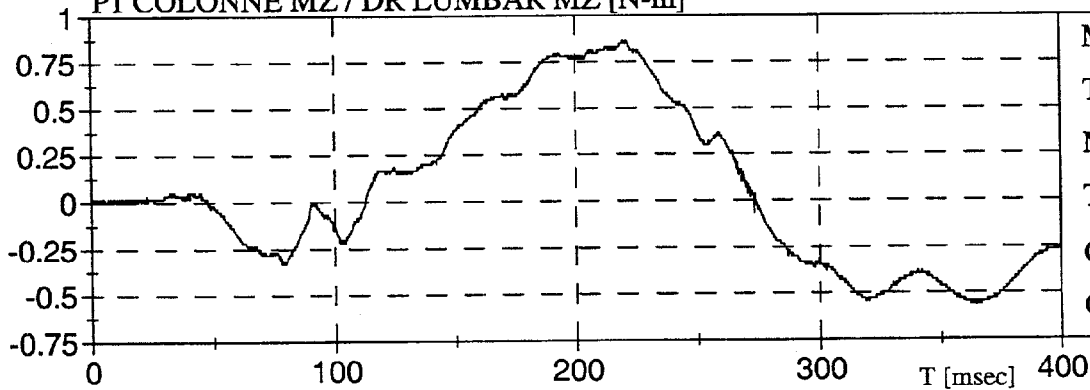
P1 COLONNE MX / DR LUMBAR MX [N-m]



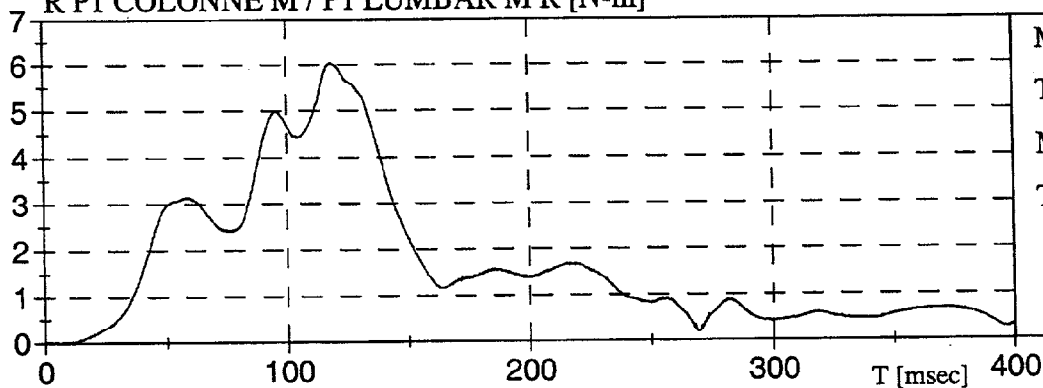
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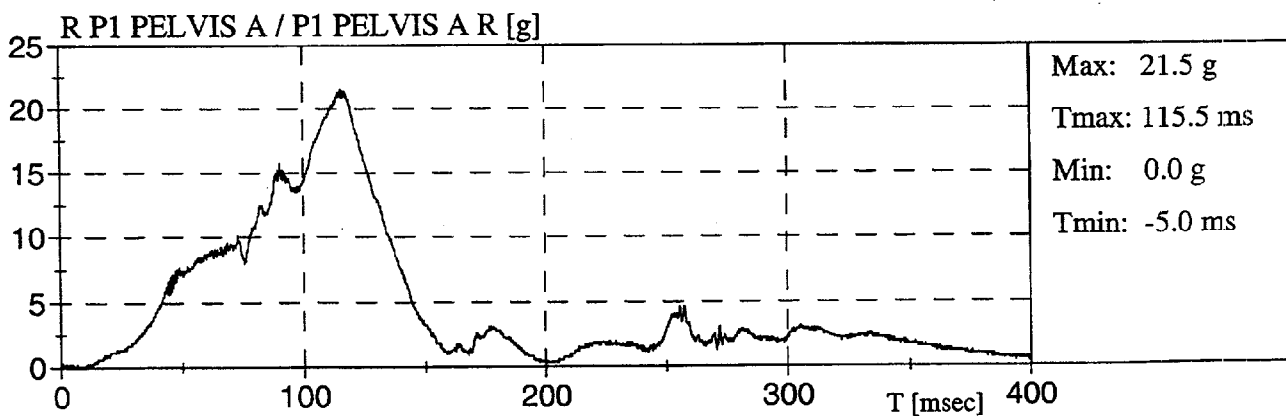
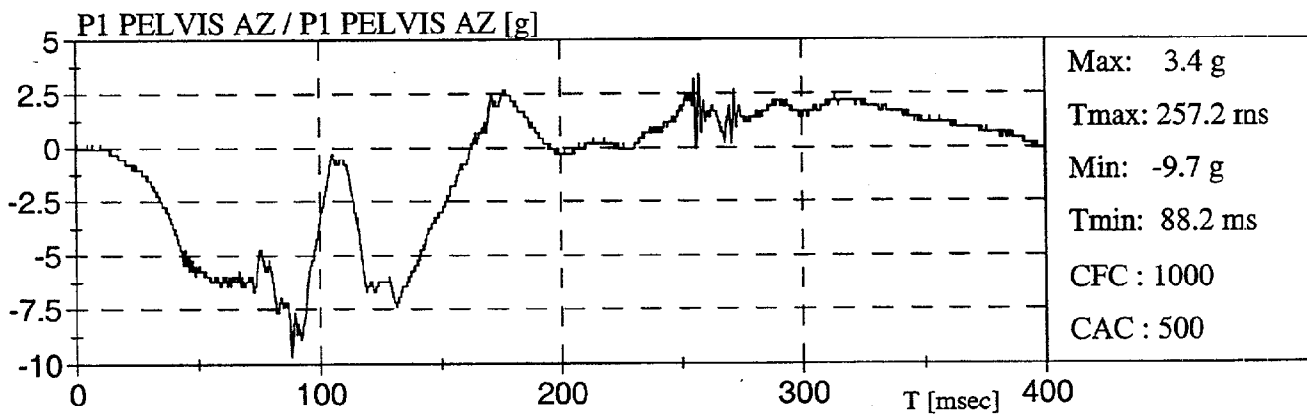
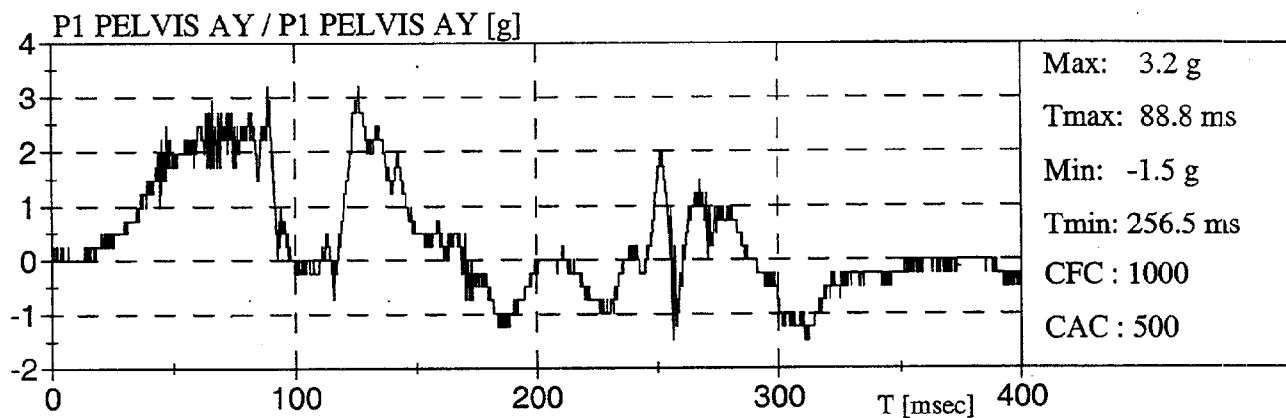
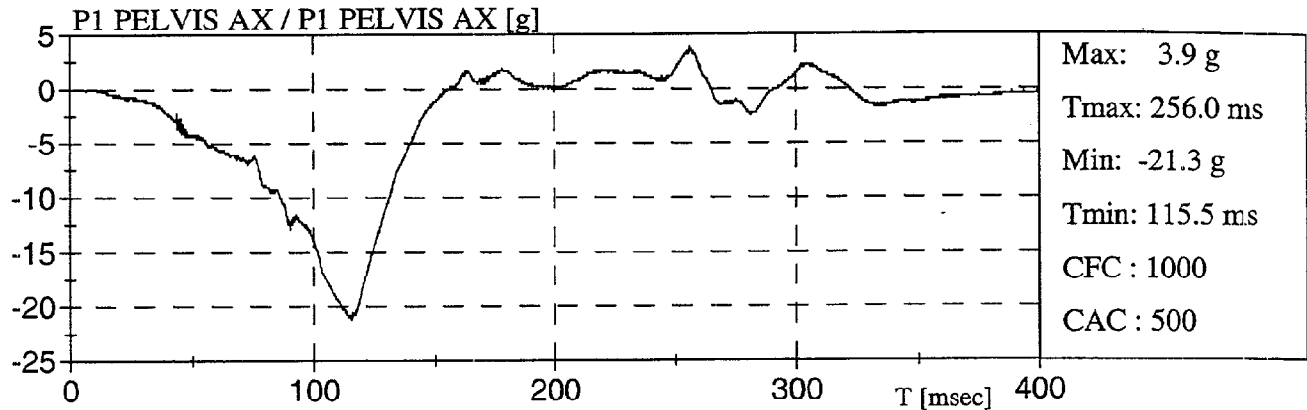


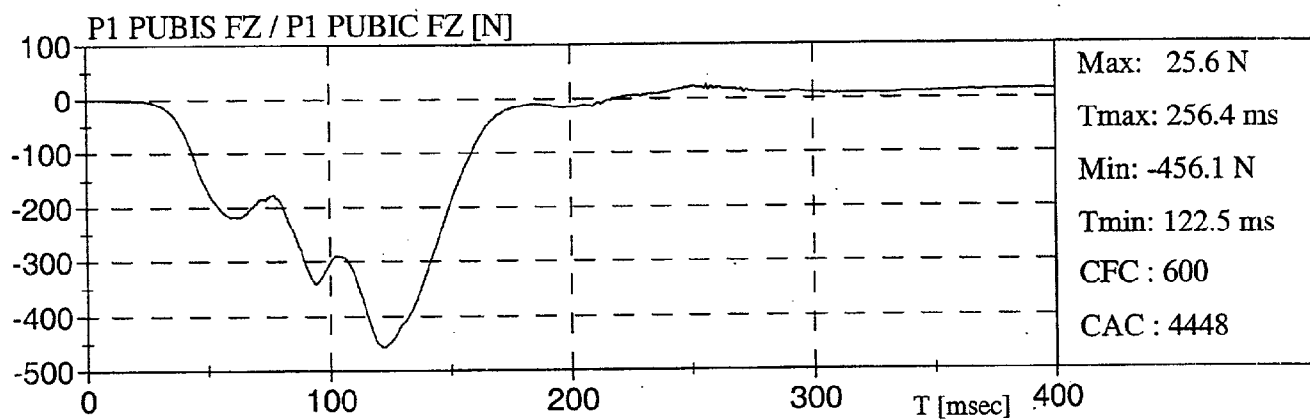
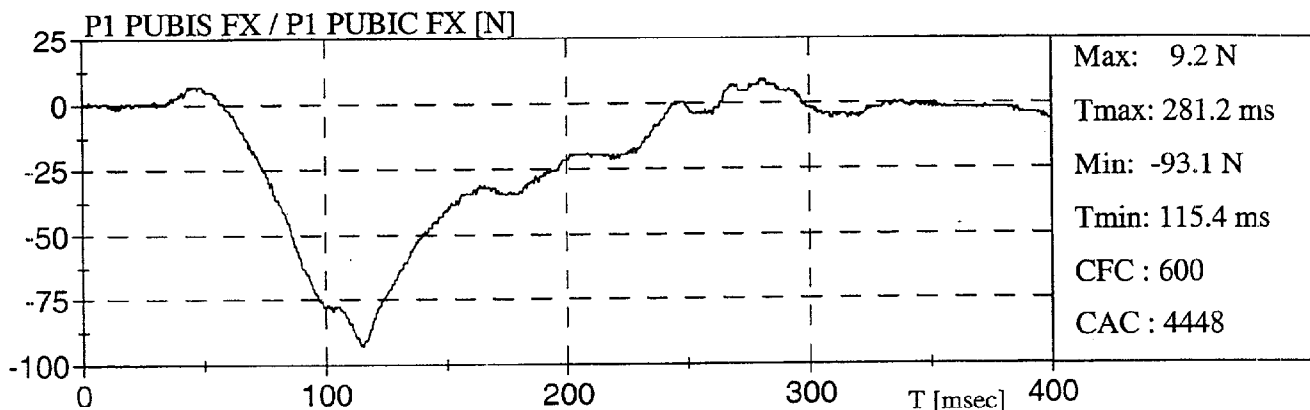
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R P1 COLONNE M / P1 LUMBAR M R [N-m]









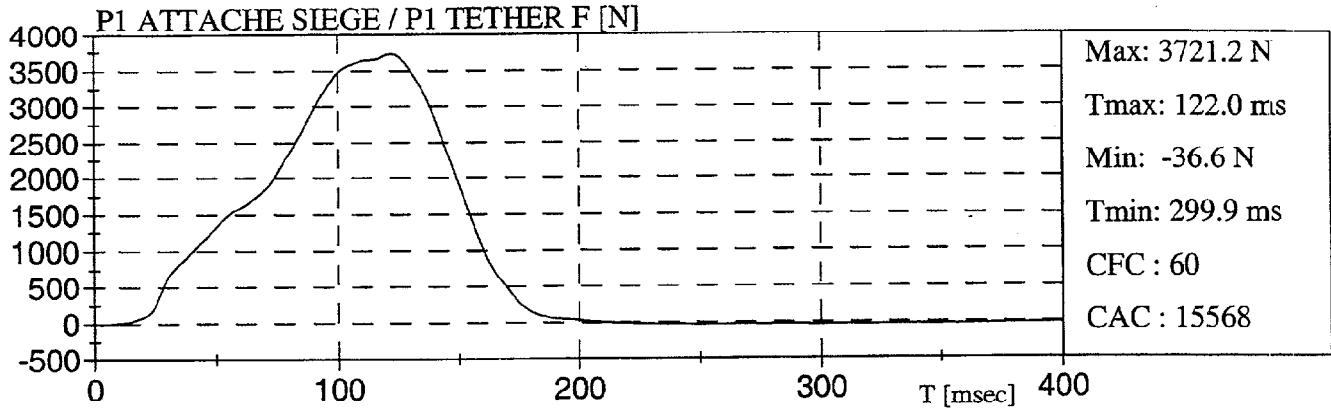
PMG  
Technologies

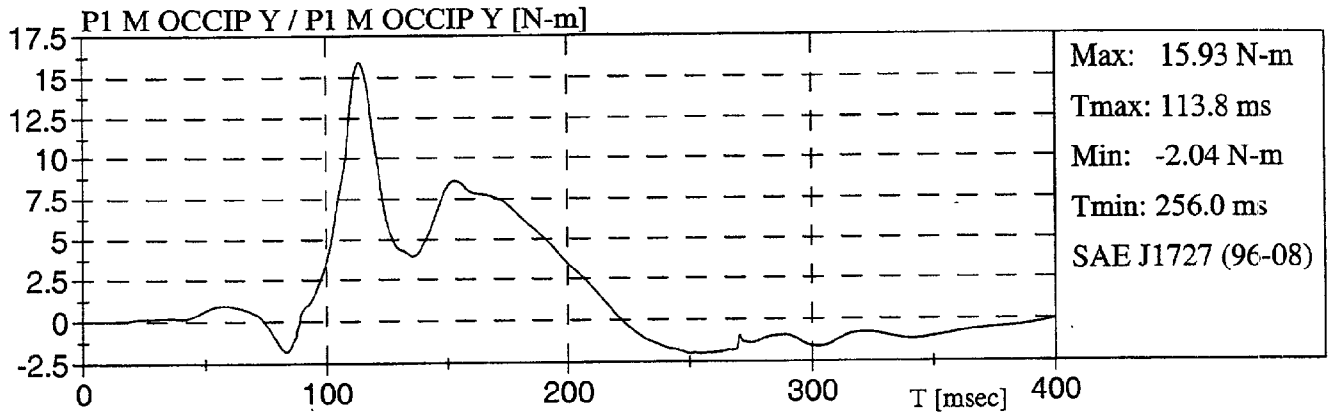
FRONTALE DÉCALÉE 36 KM/H - 40% GAUCHE  
OFFSET FRONTAL 36 KM/H - 40% LEFT

Date: 1999-01-11

PLYMOUTH BREEZE 99

N° TC / TC No.: TC99-213







PMG  
Technologies

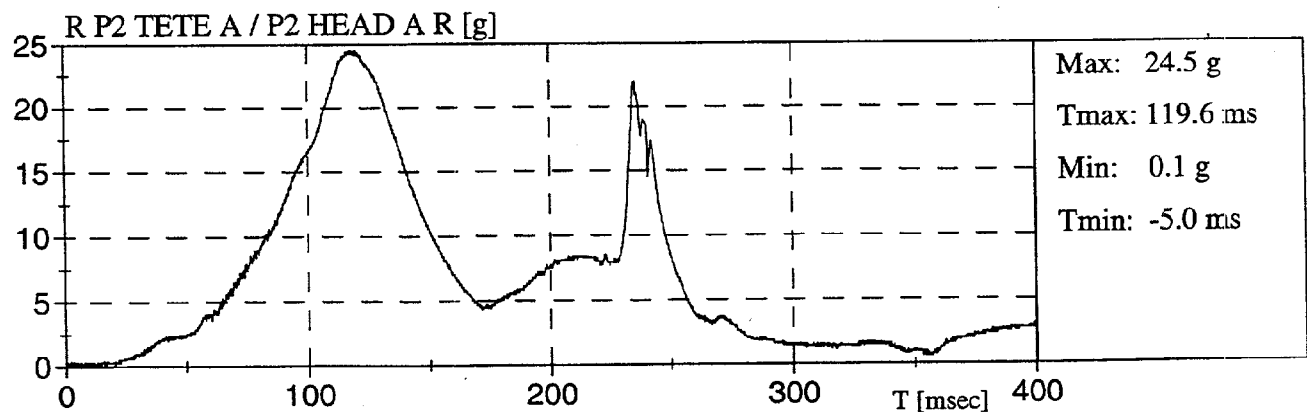
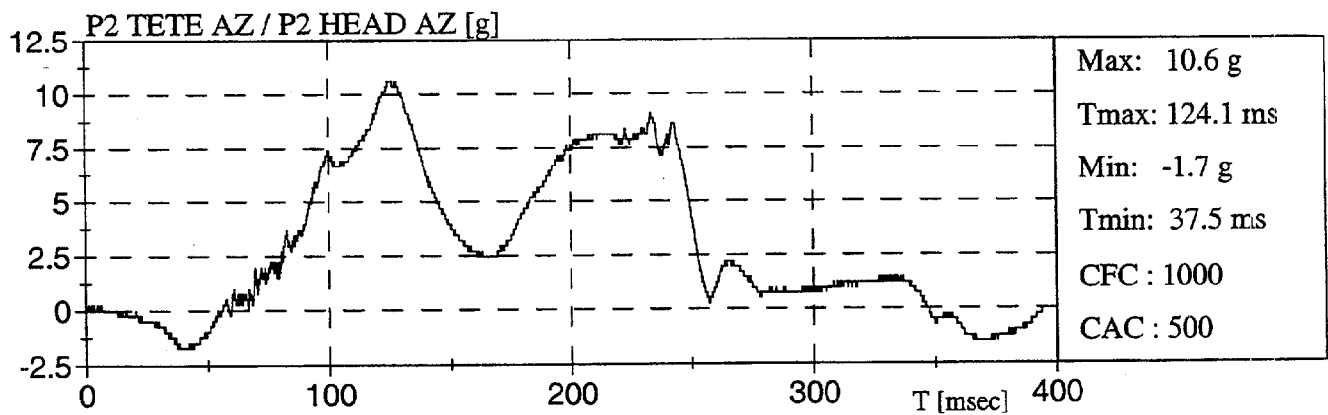
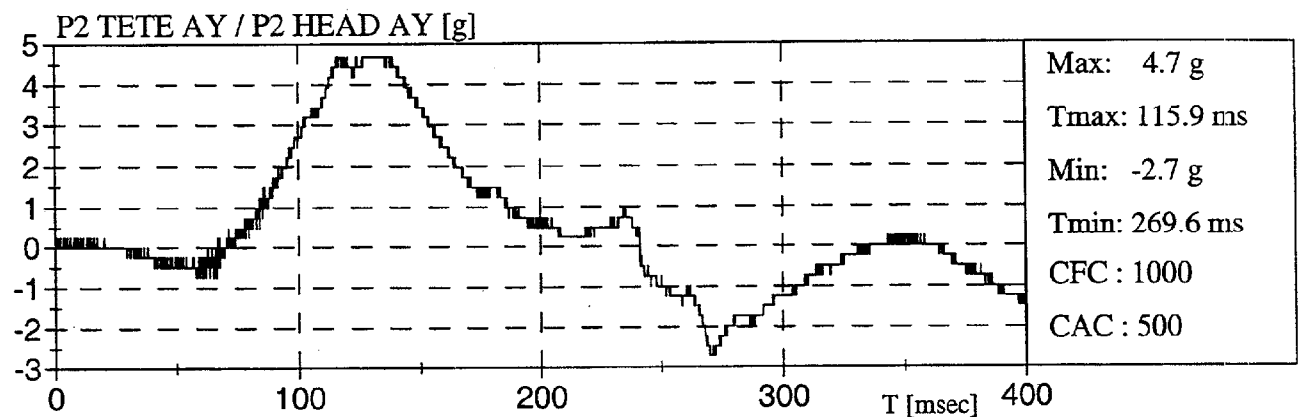
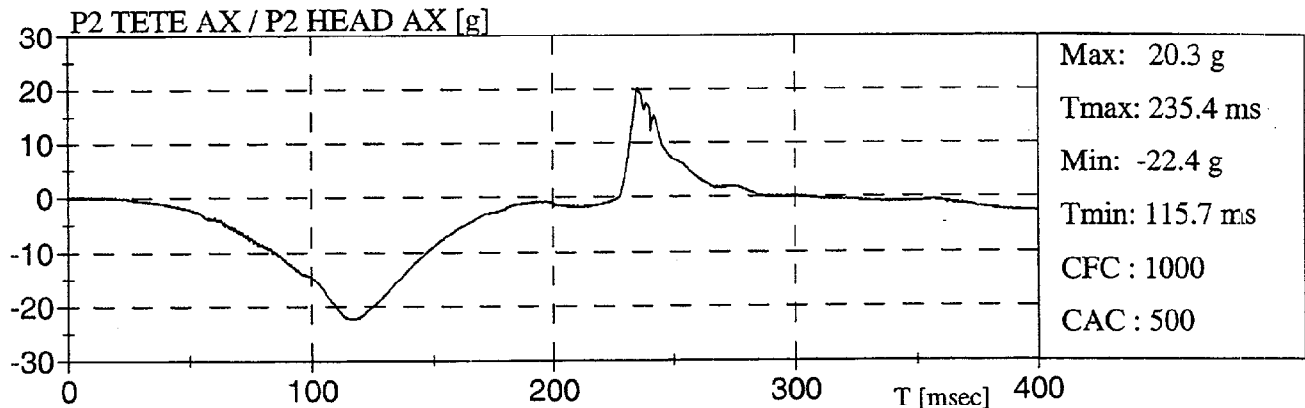
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OFFSET FRONTAL 36 KM/H - 40% LEFT

PLYMOUTH BREEZE 99

Date: 1999-01-11

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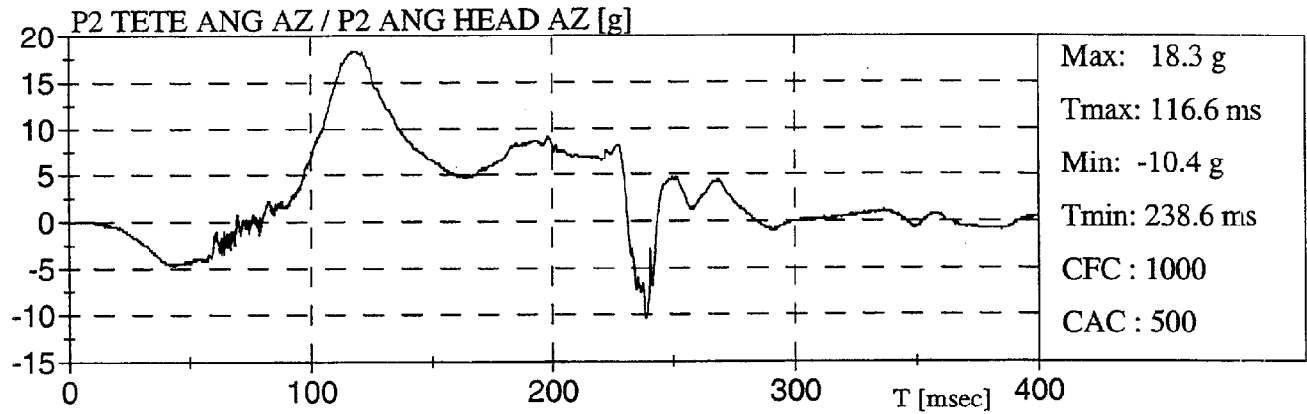
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Technologies

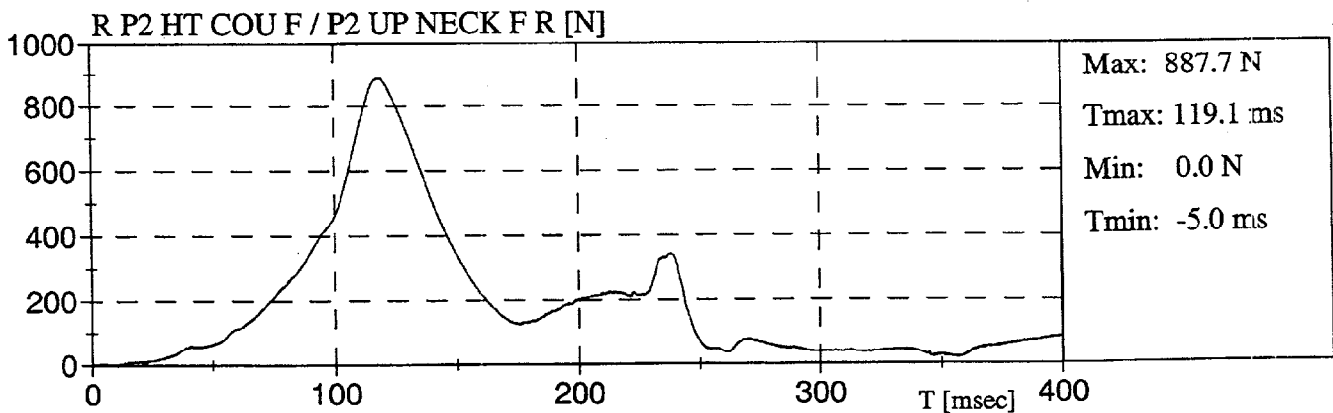
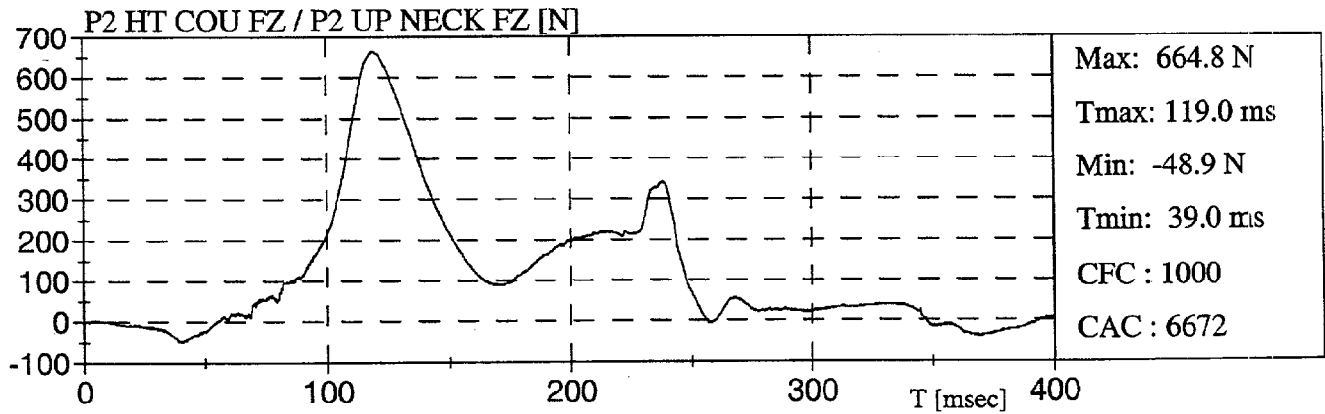
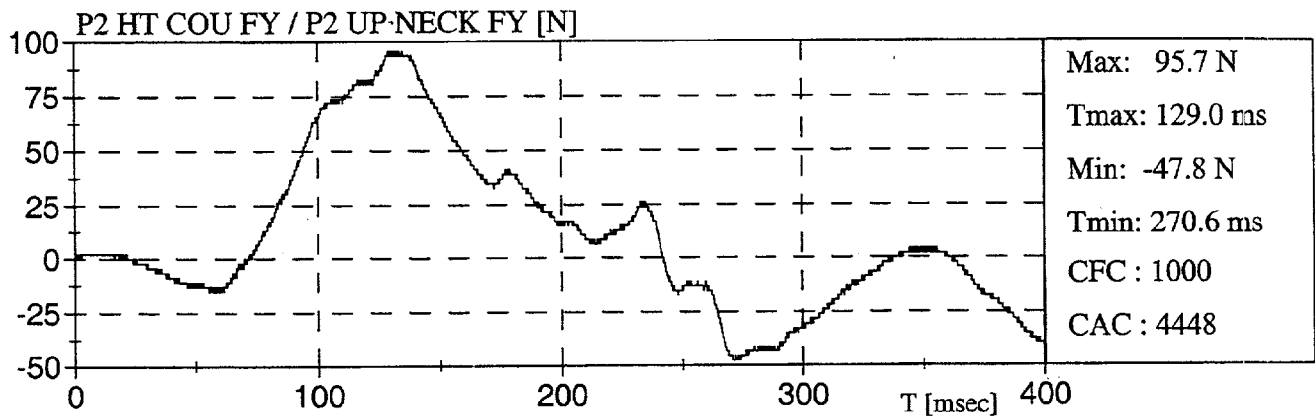
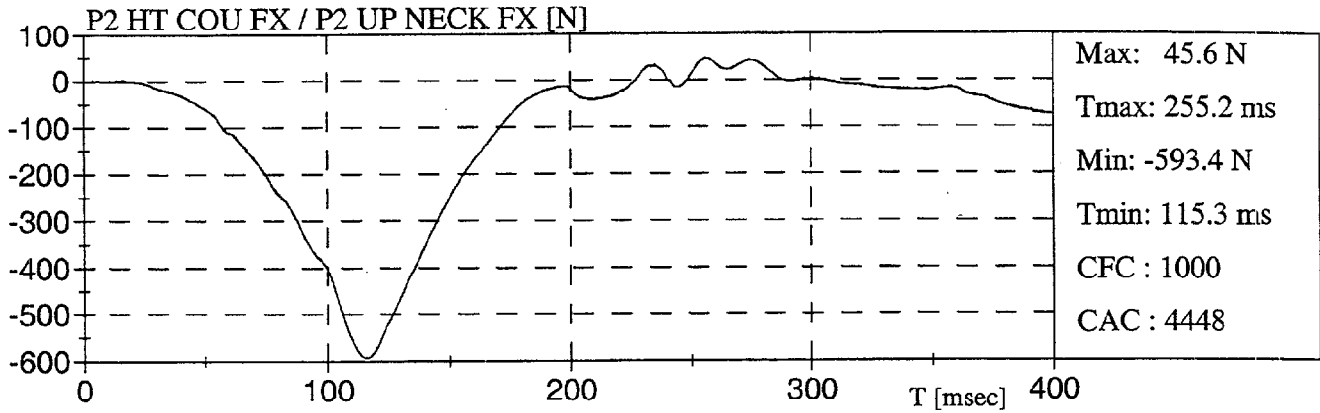
FRONTALE DÉCALÉE 36 KM/H - 40% GAUCHE  
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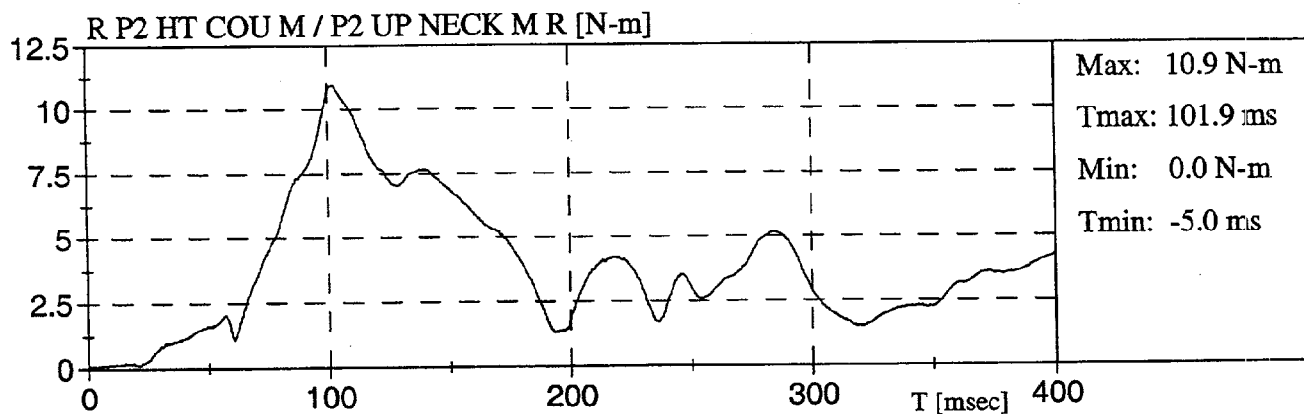
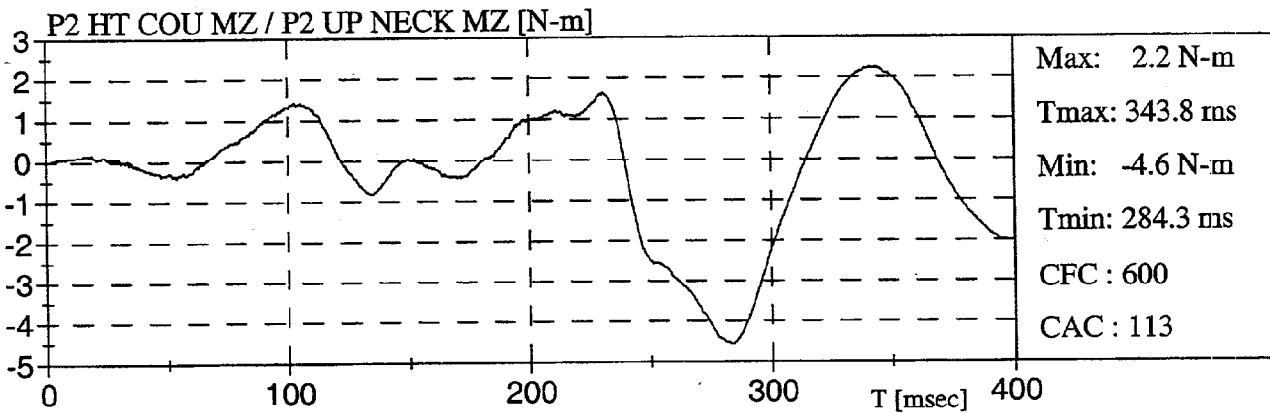
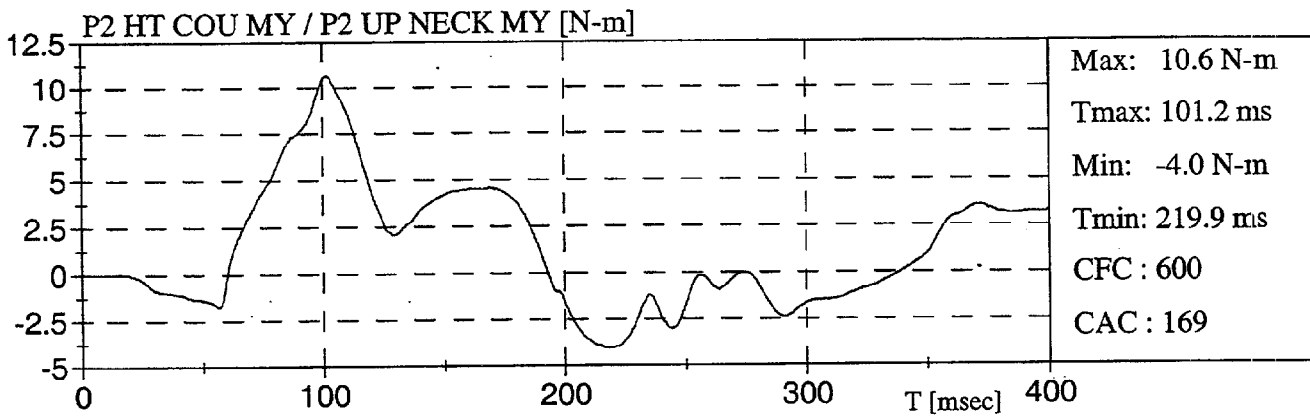
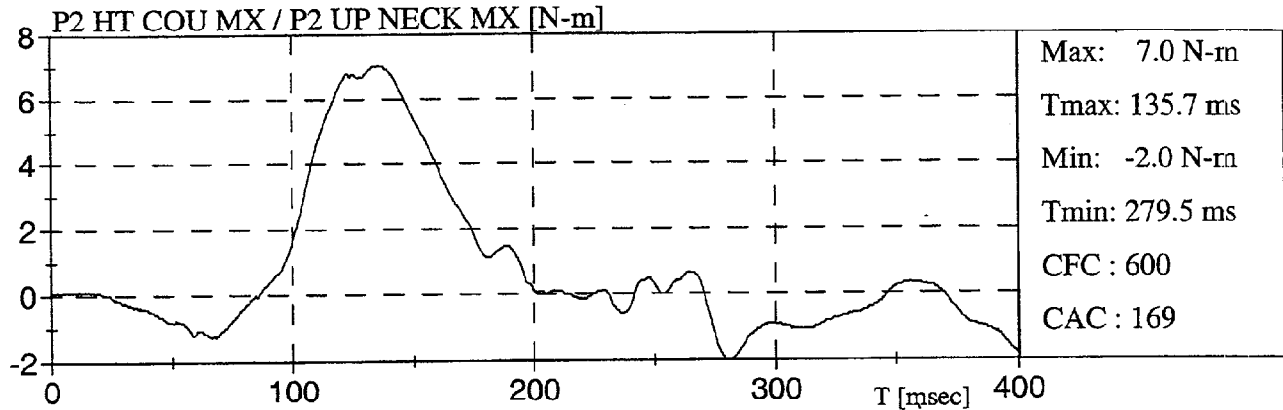
Date: 1999-01-11

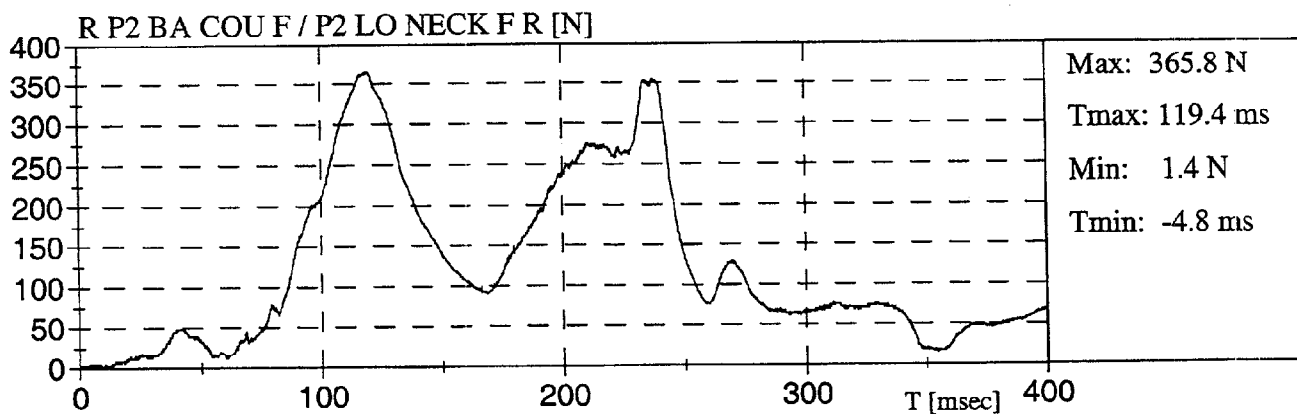
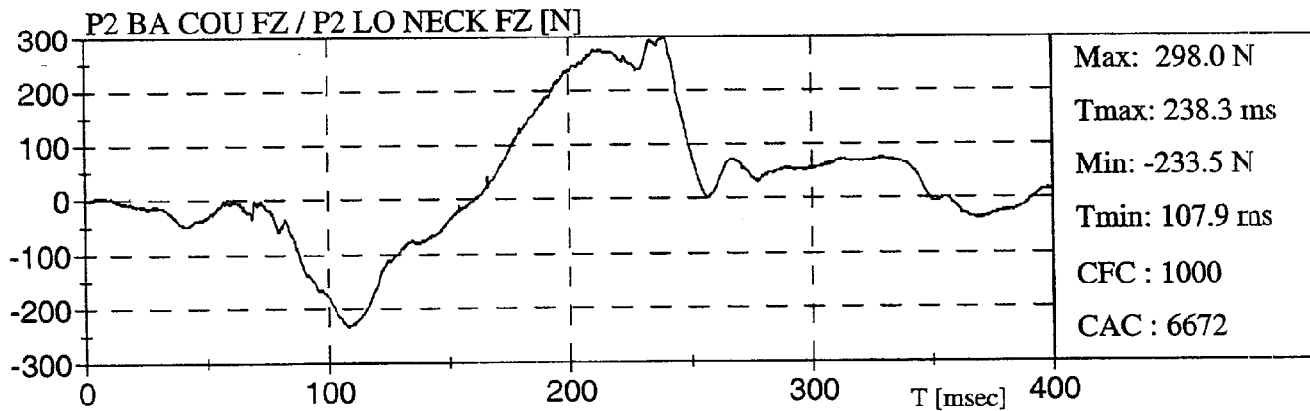
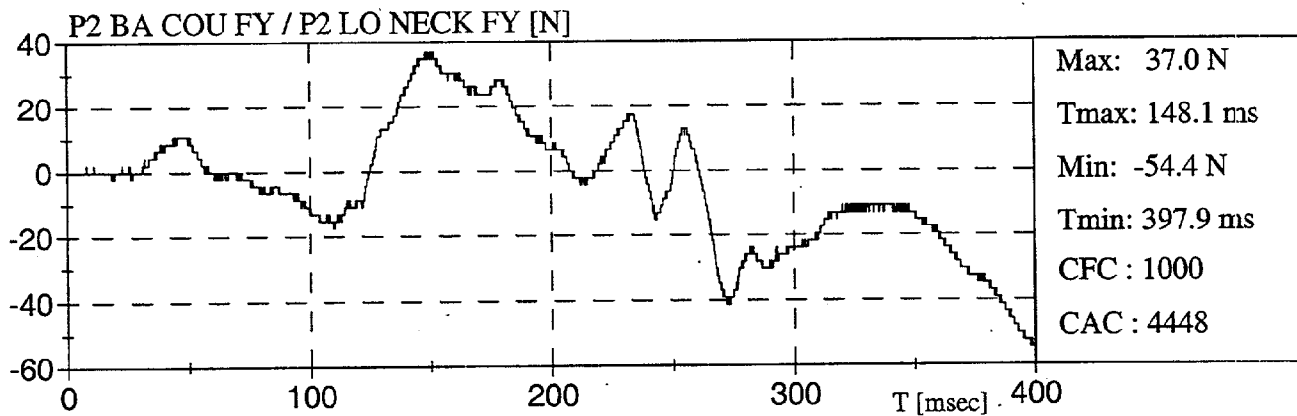
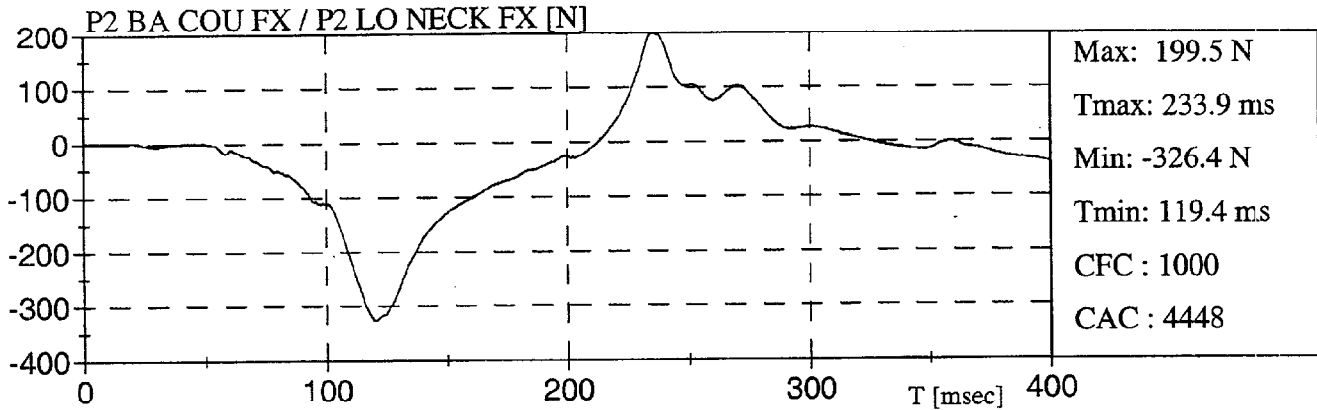
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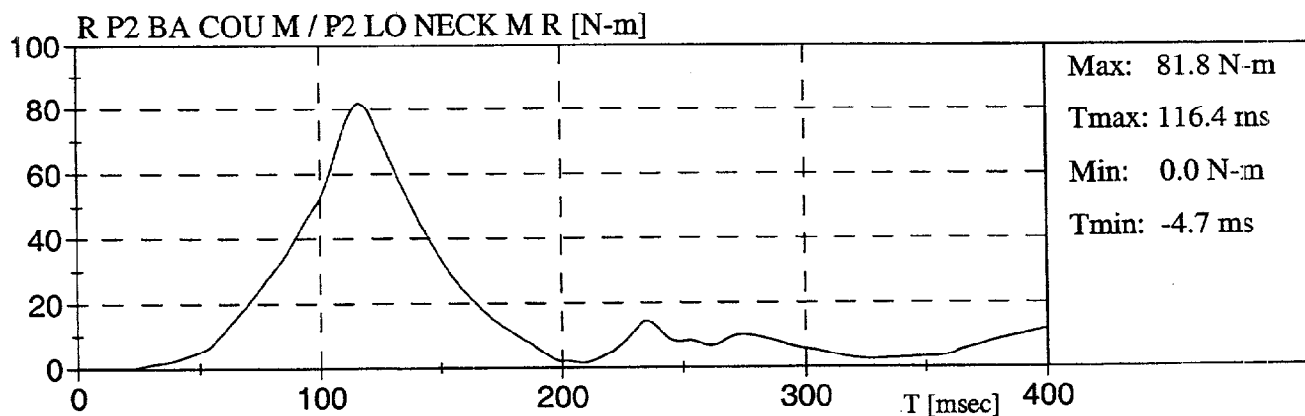
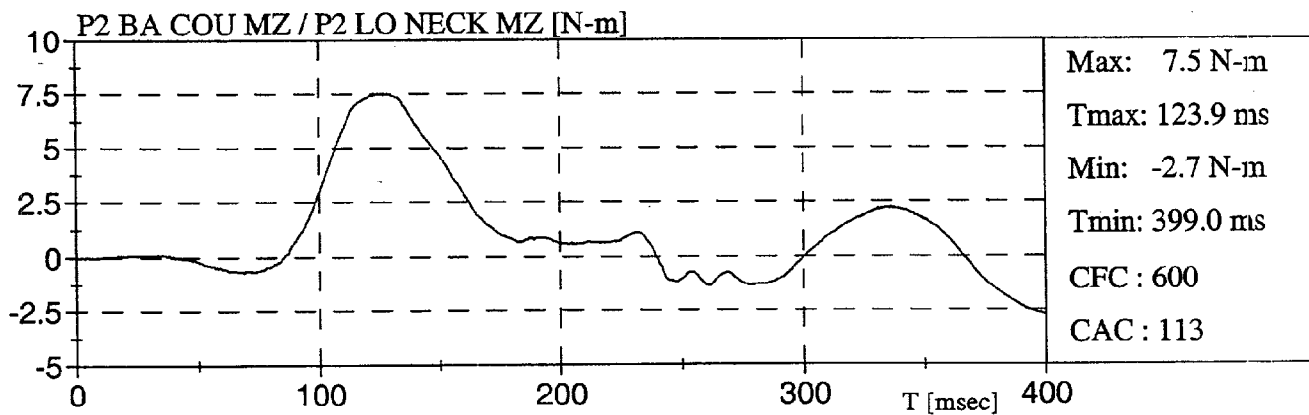
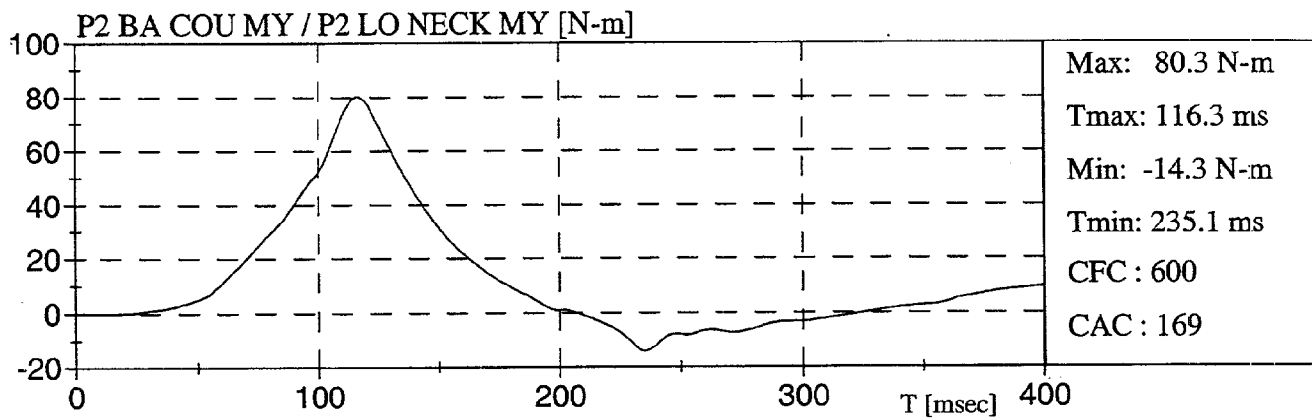
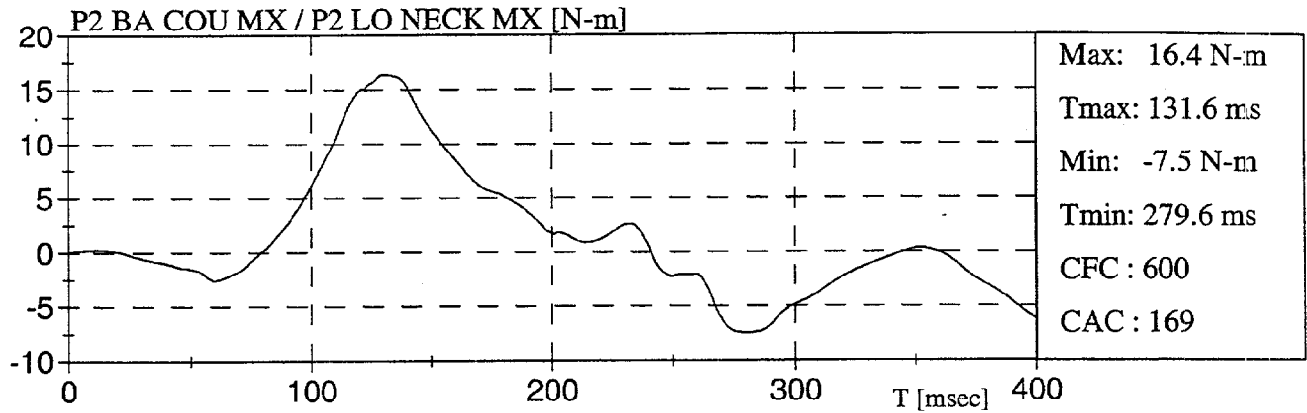
N° TC / TC No.: TC99-213

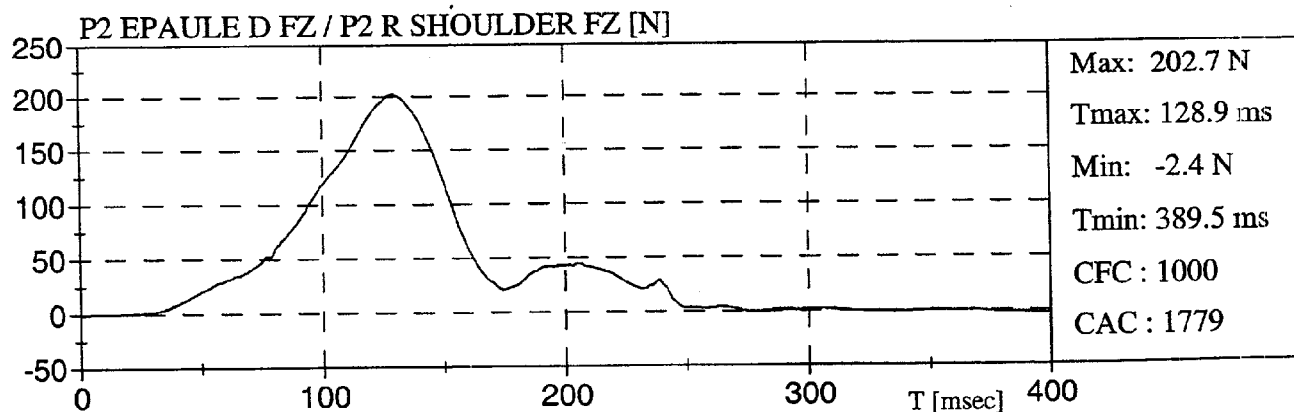
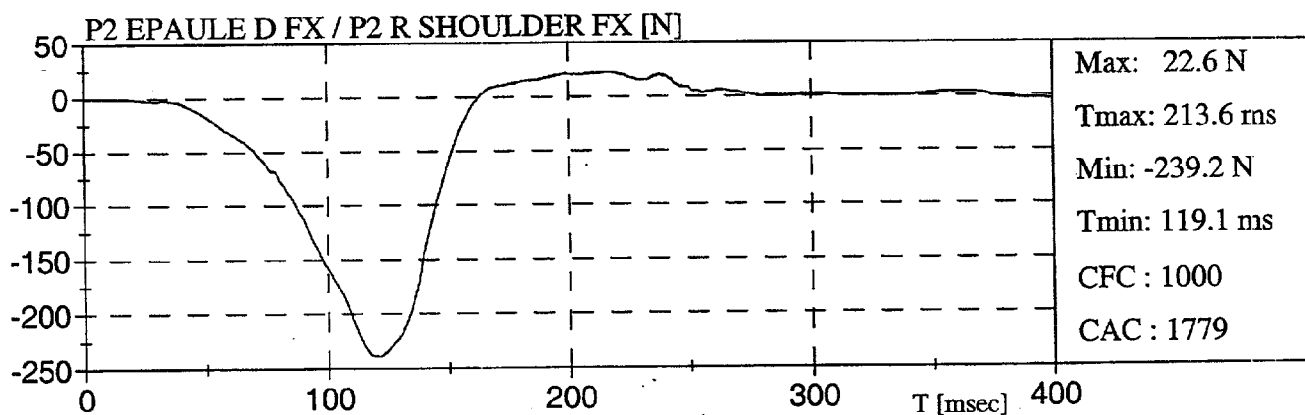
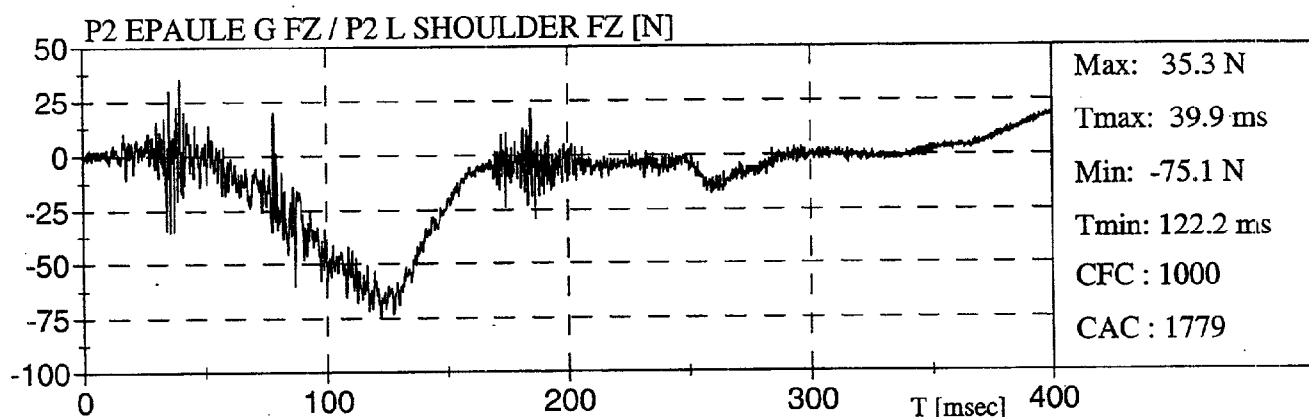
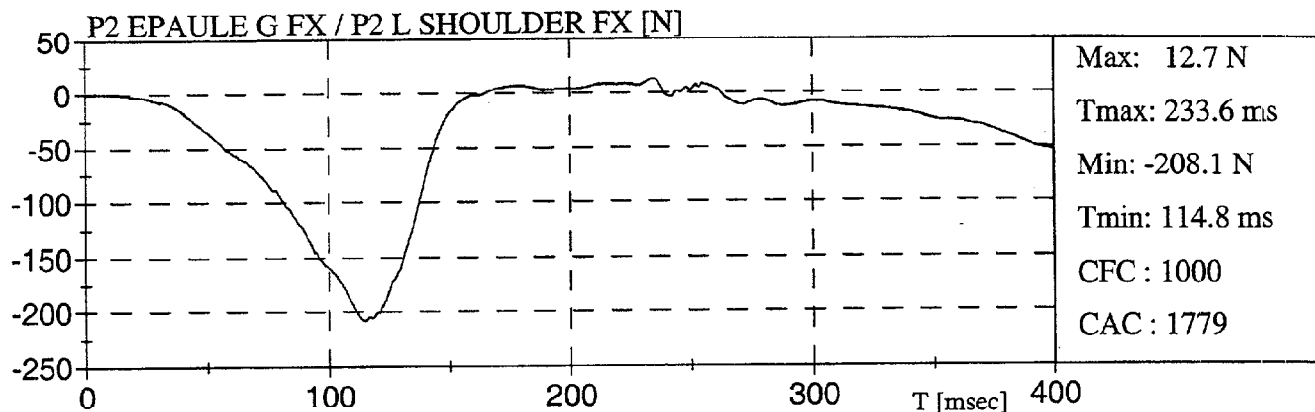


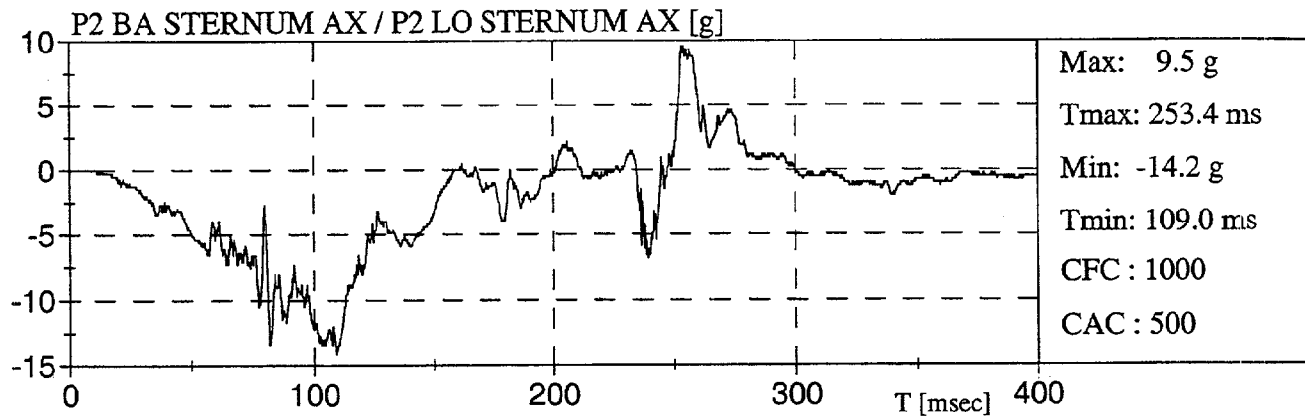
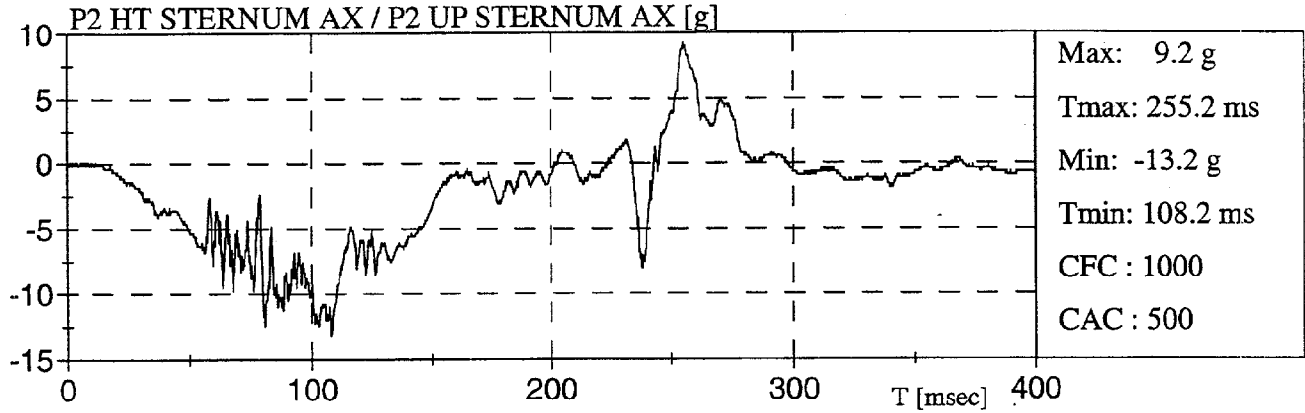


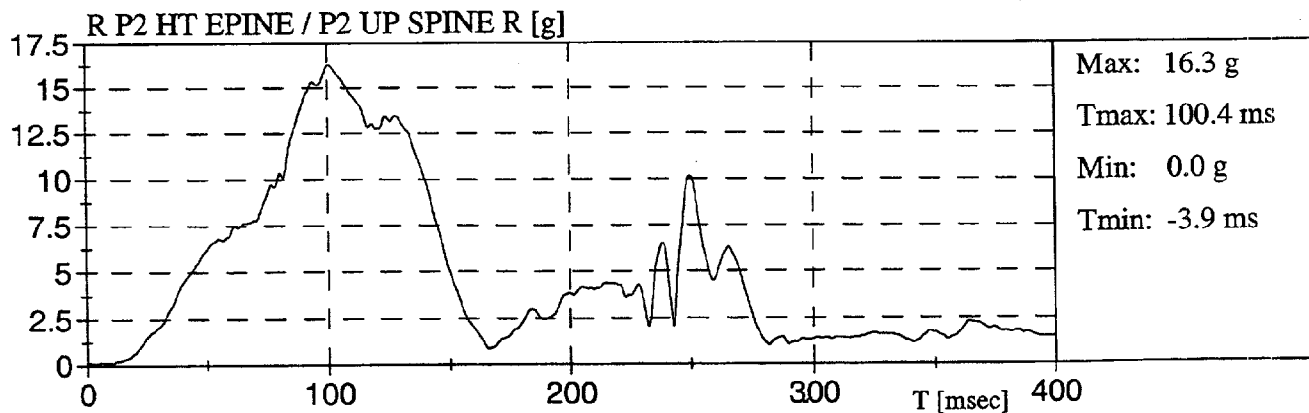
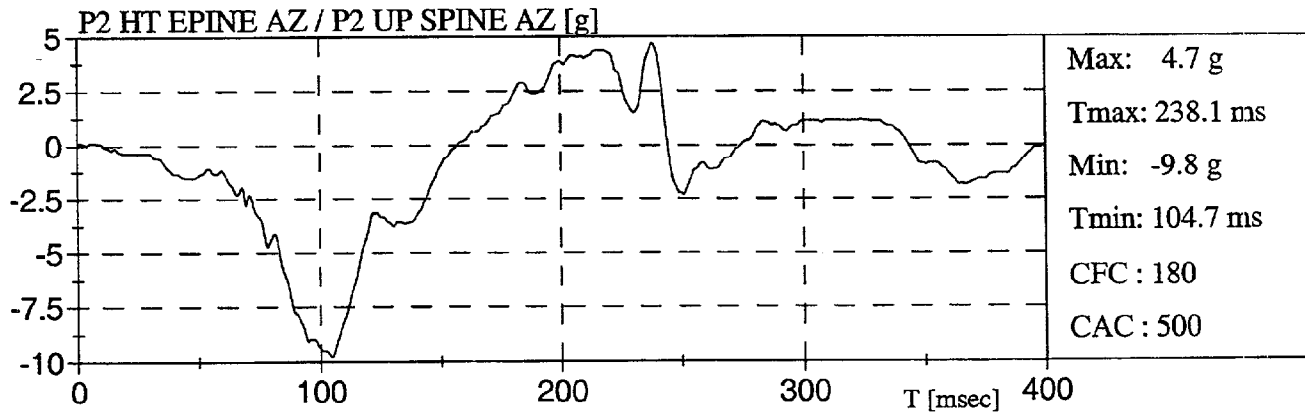
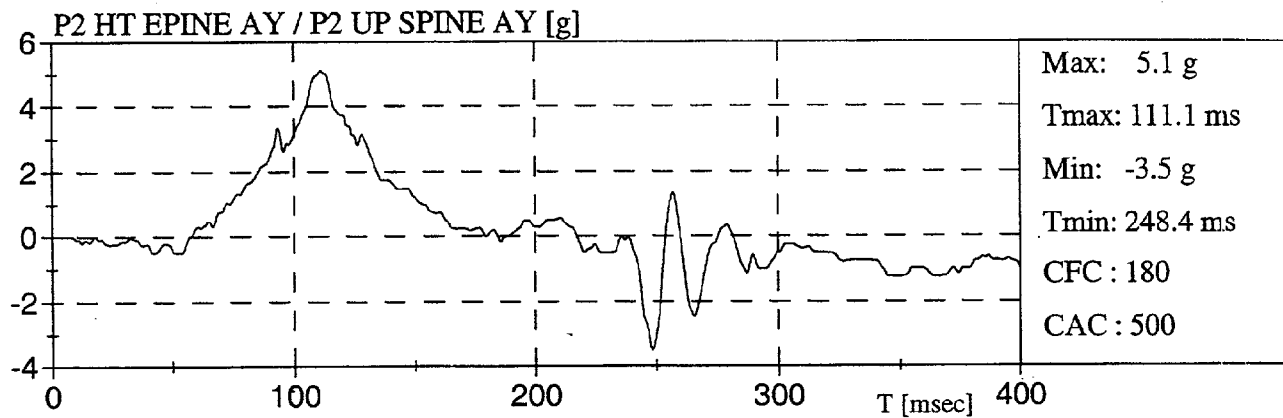
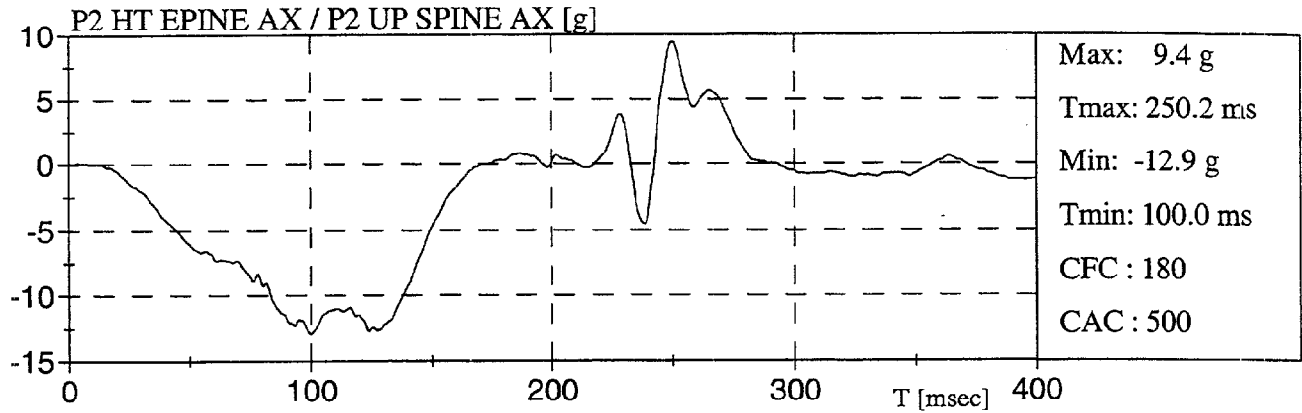


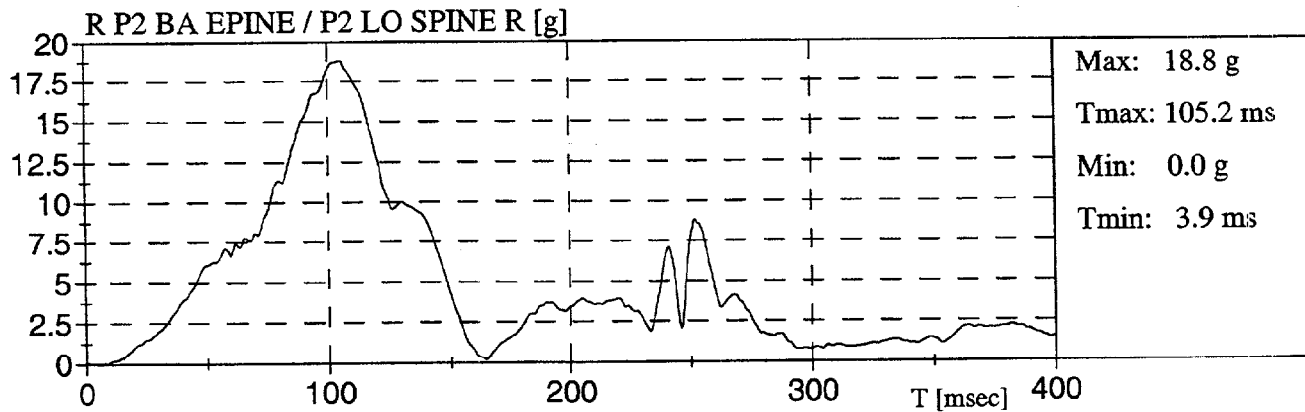
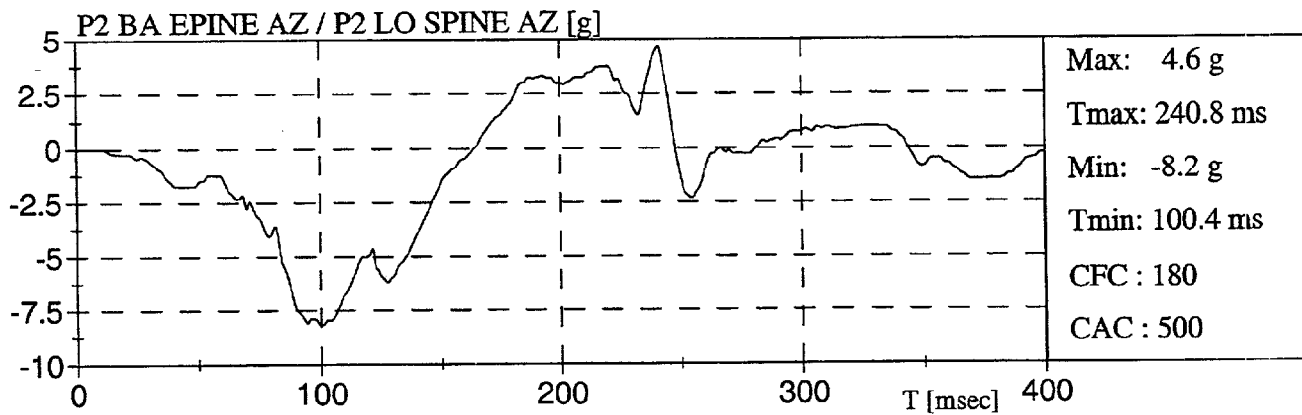
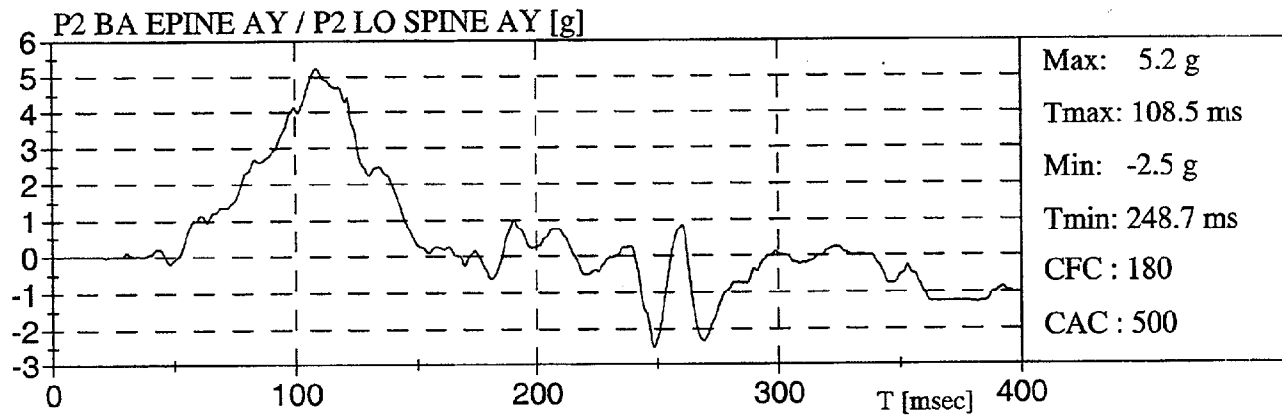
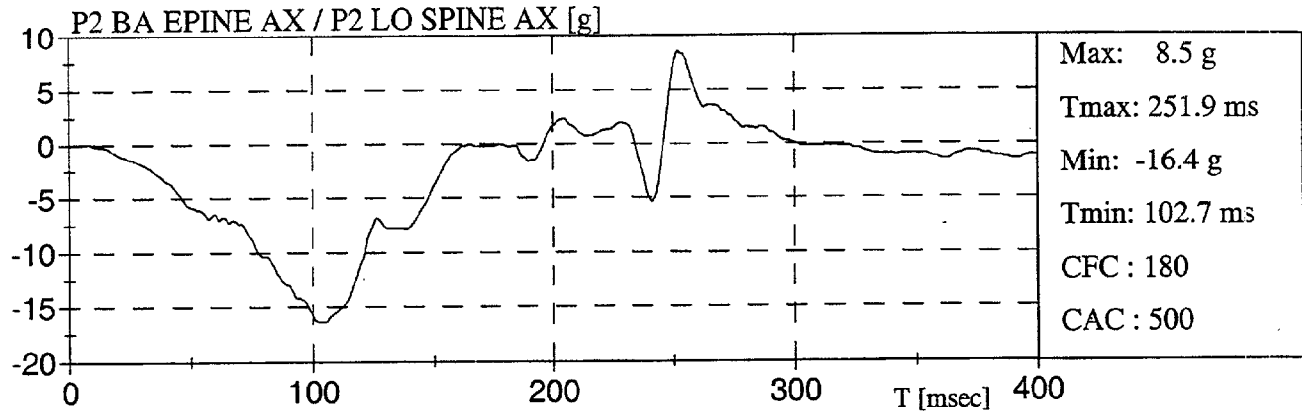


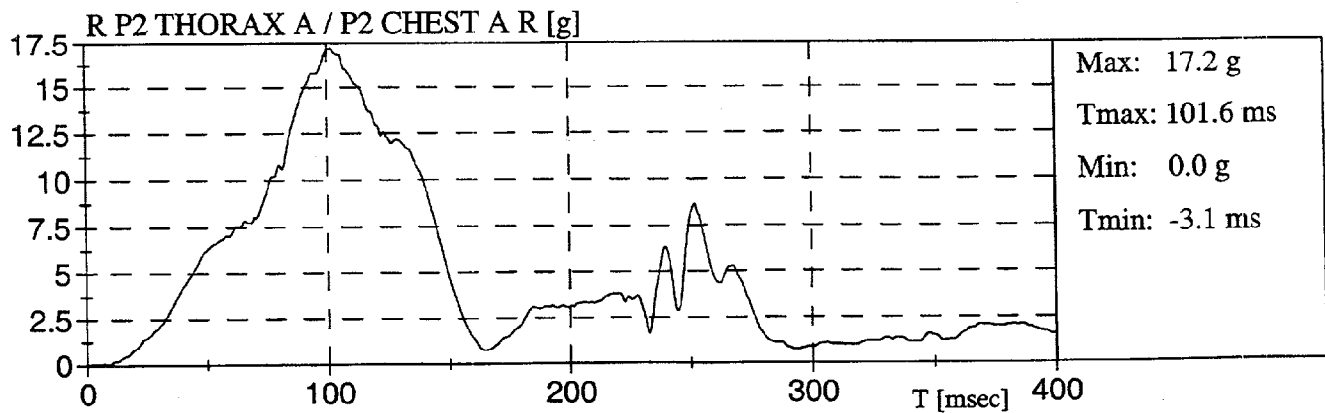
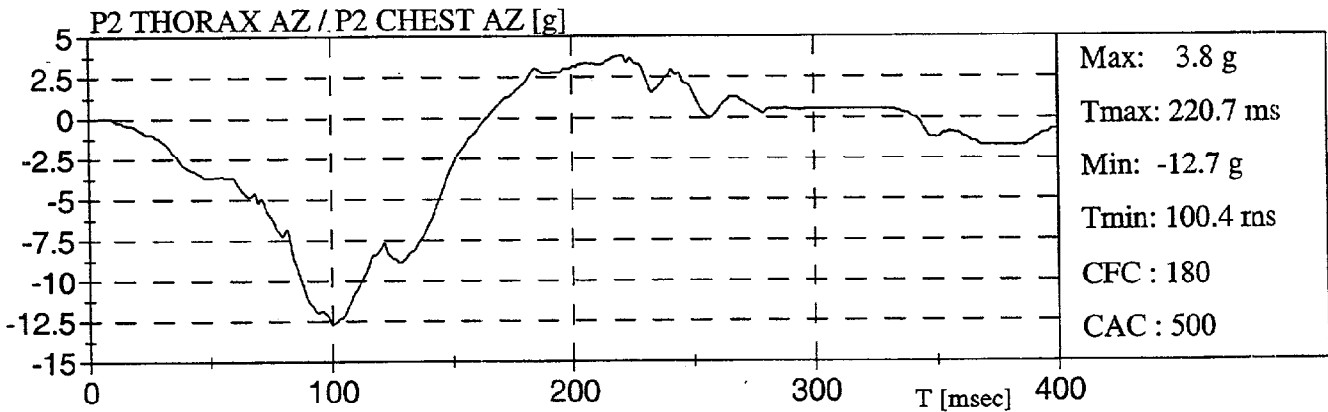
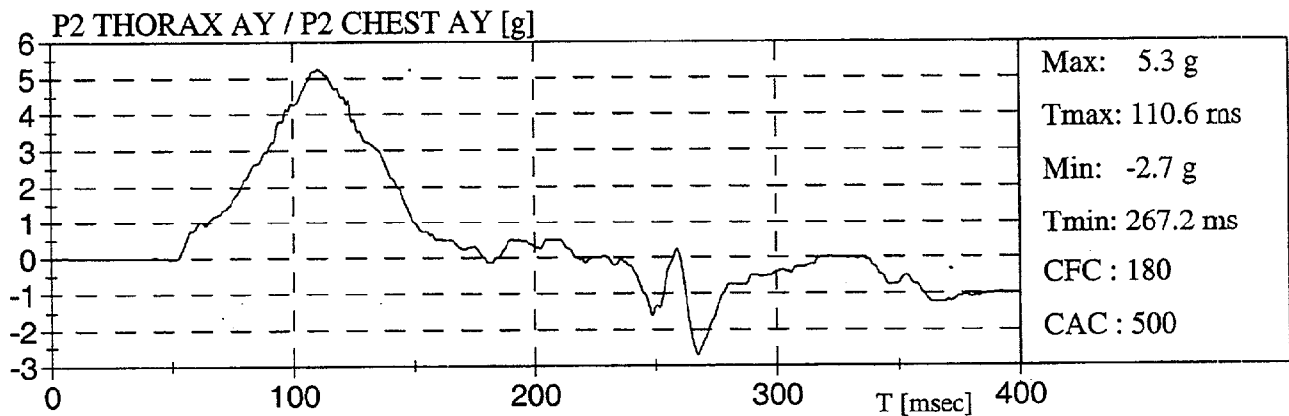
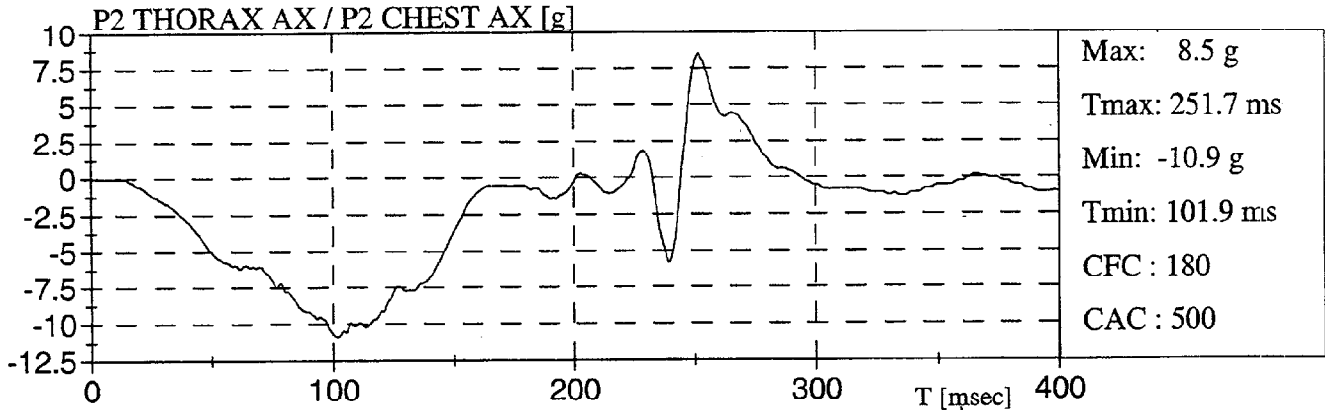


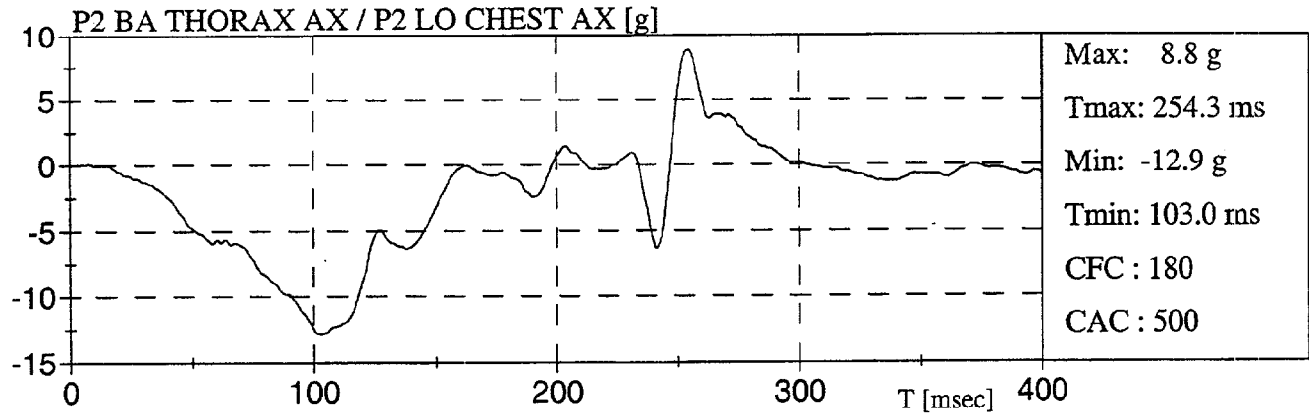














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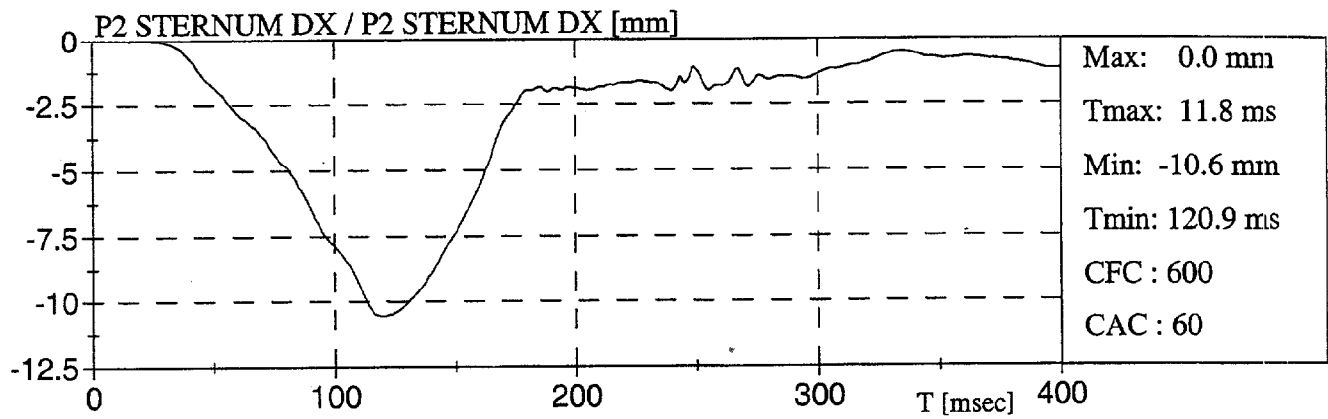
FRONTALE DÉCALÉE 36 KM/H - 40% GAUCHE

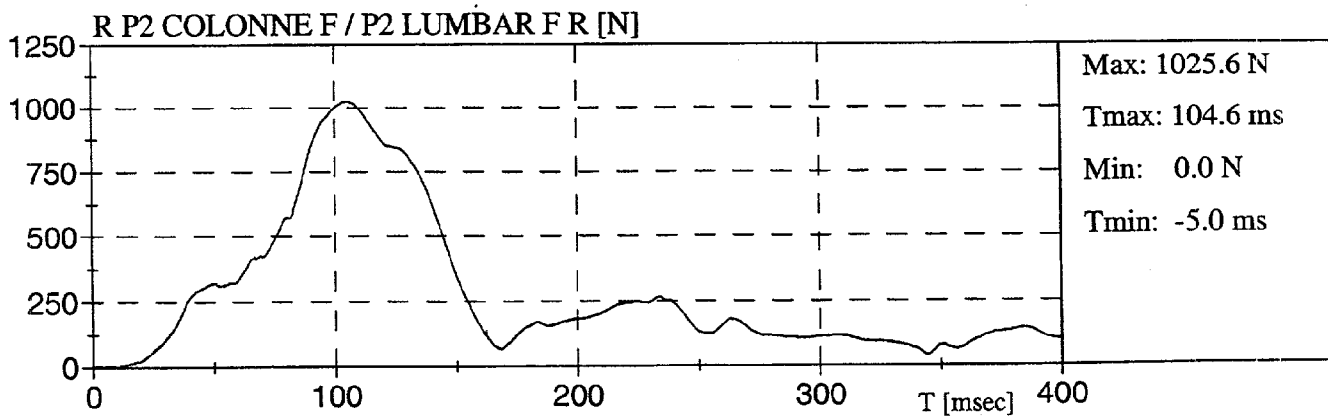
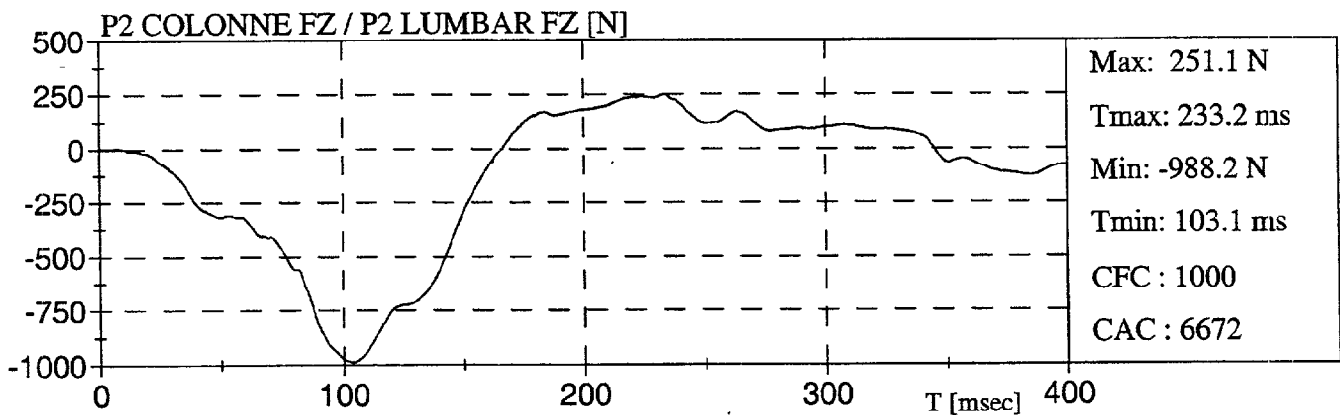
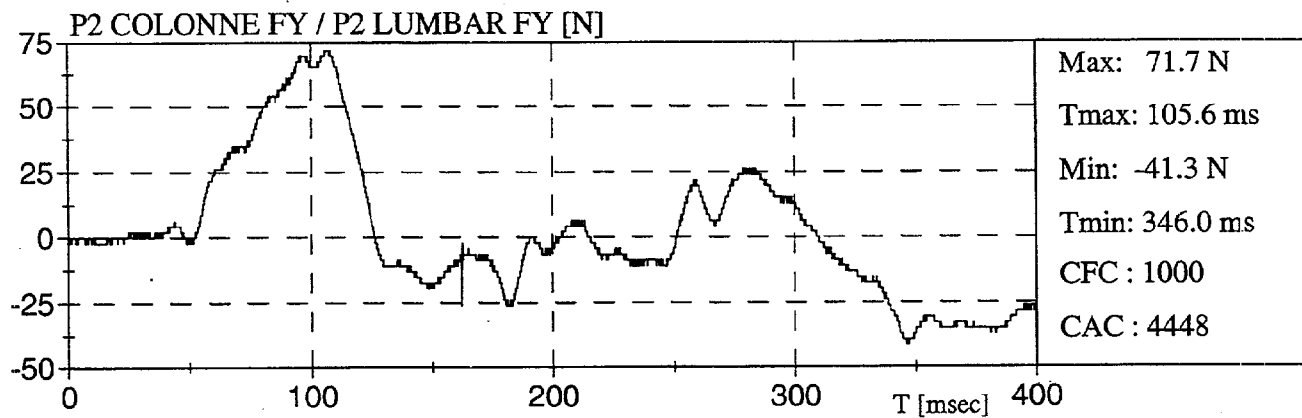
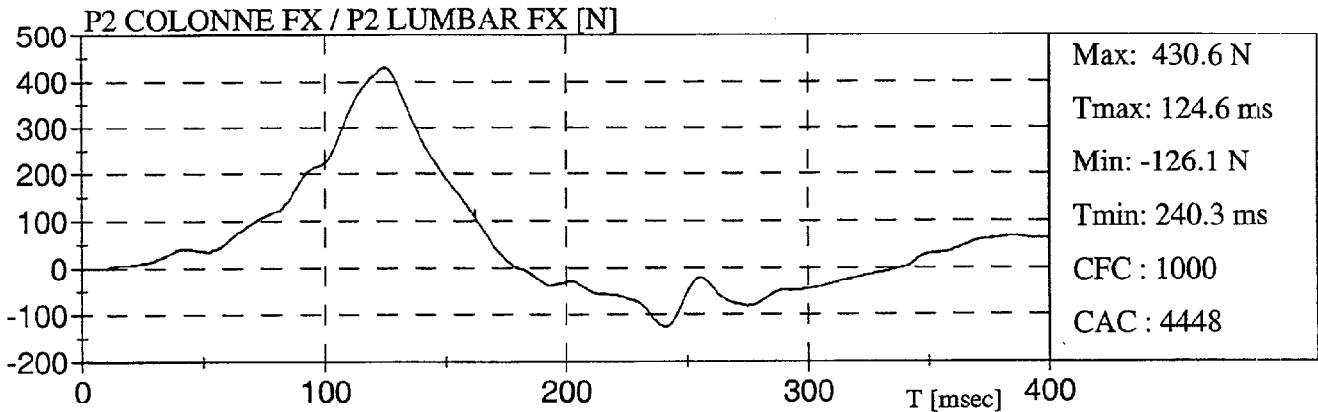
OFFSET FRONTAL 36 KM/H - 40% LEFT

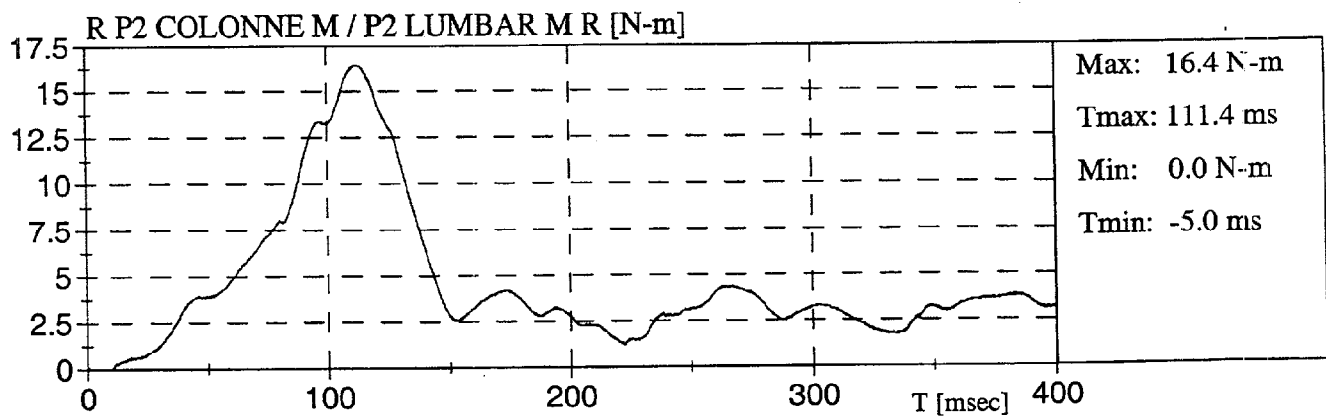
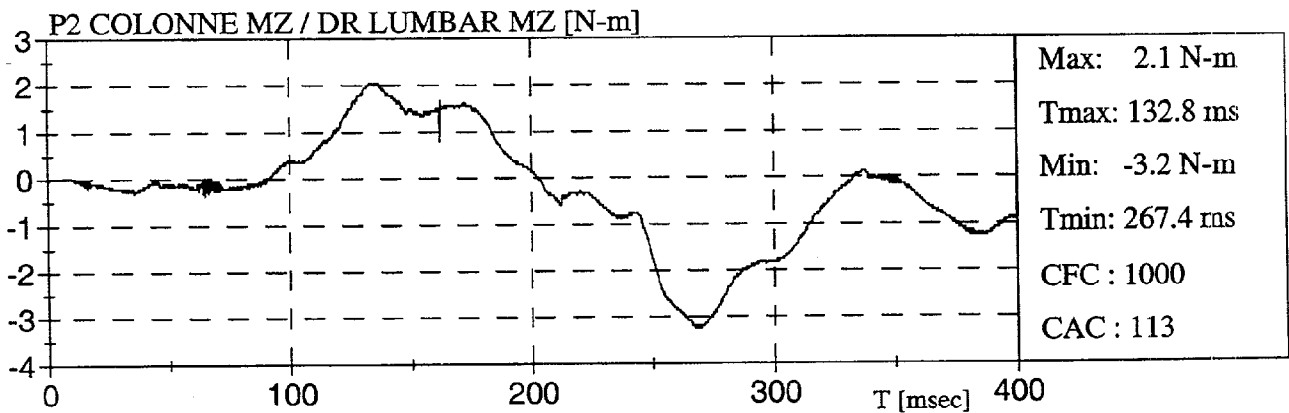
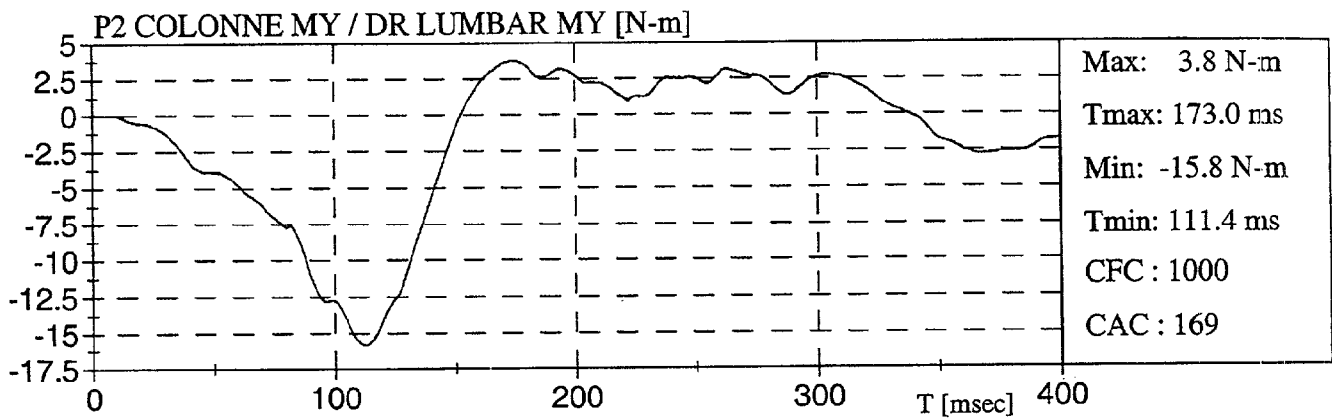
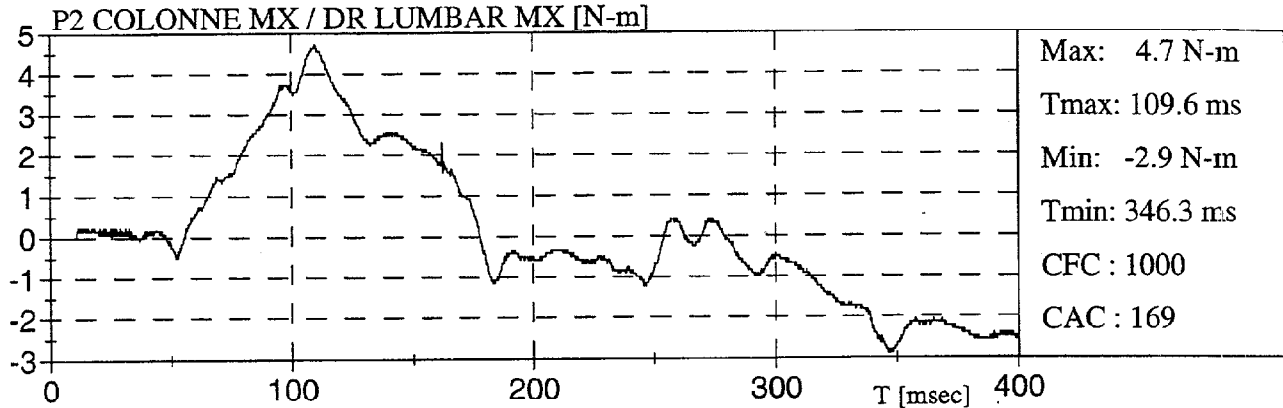
PLYMOUTH BREEZE 99

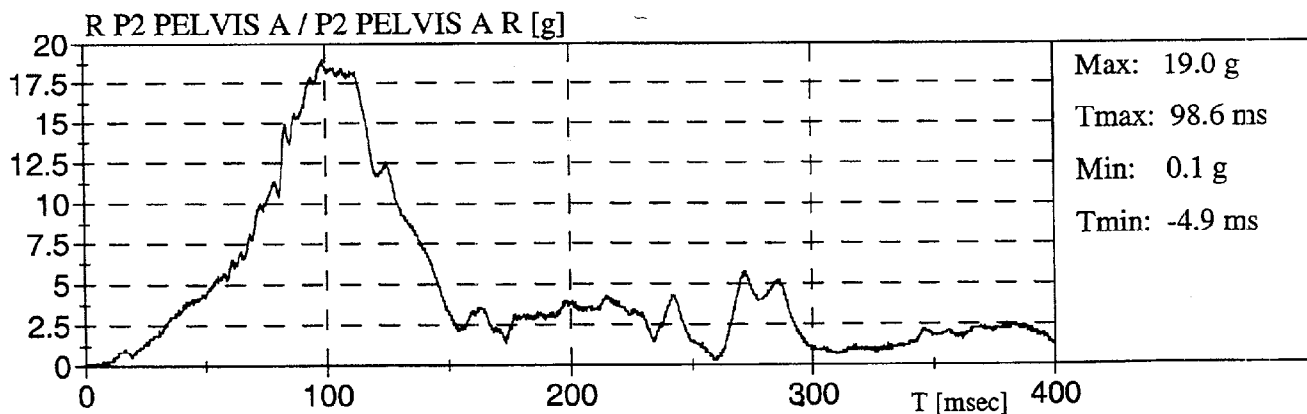
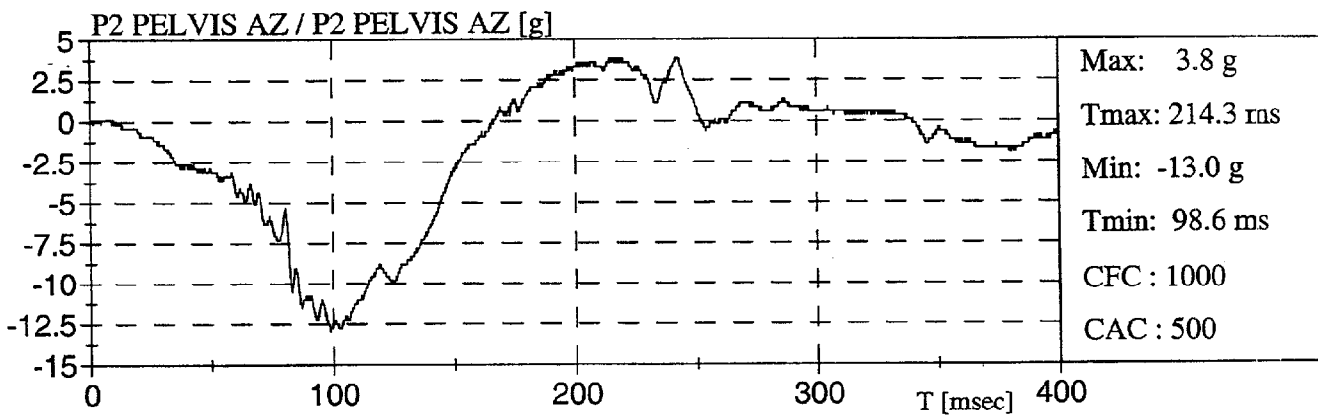
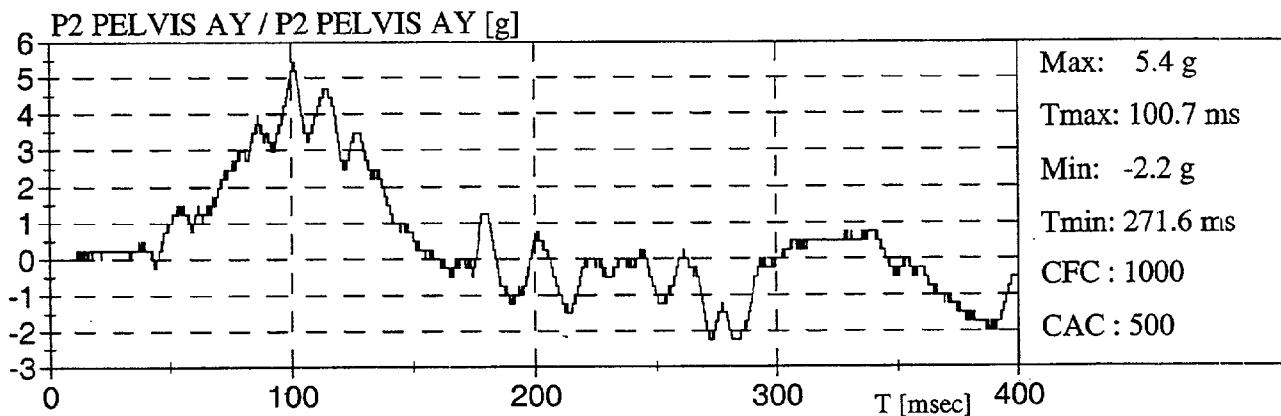
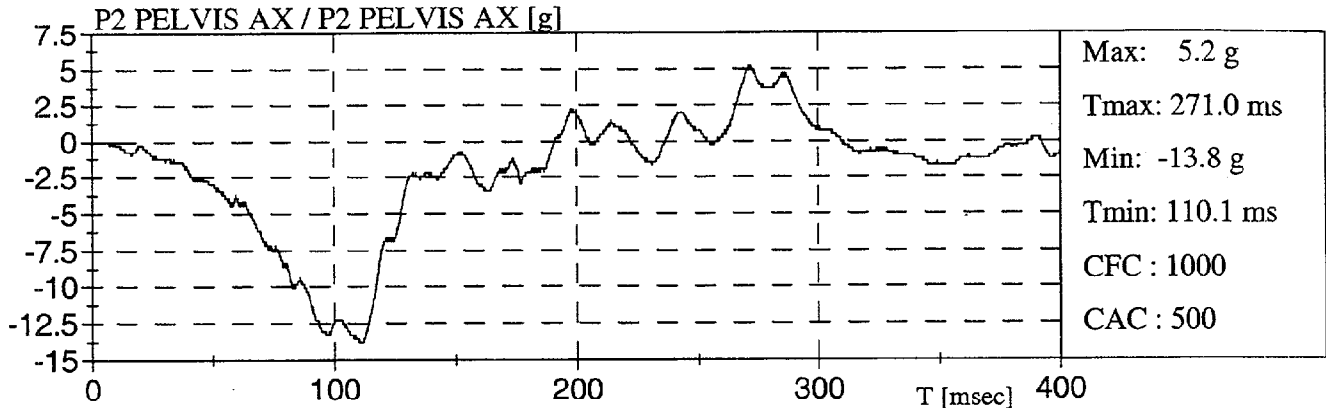
Date: 1999-01-11

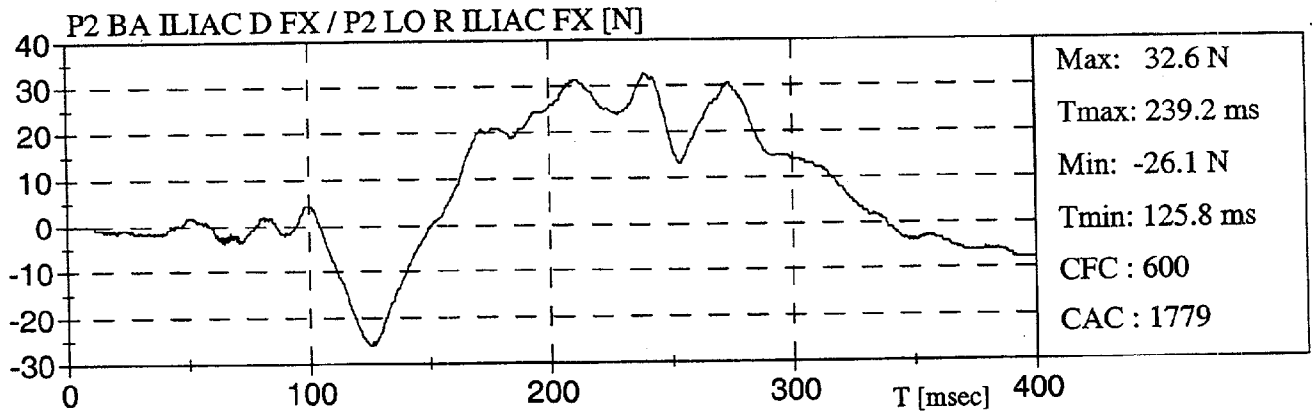
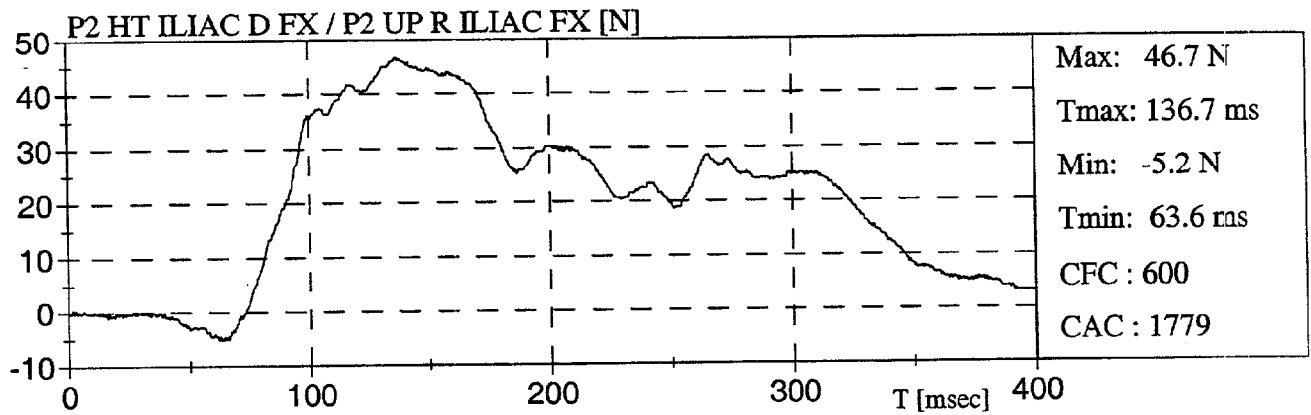
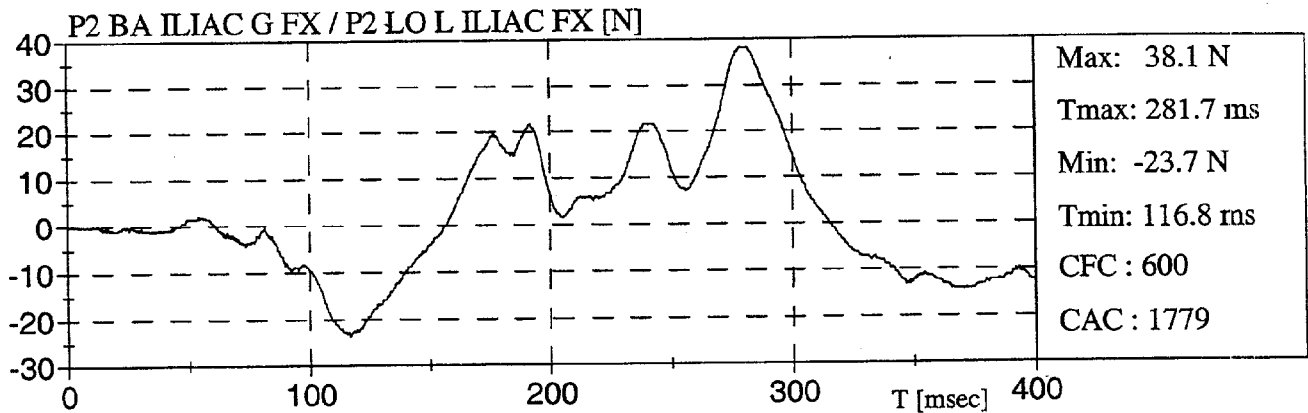
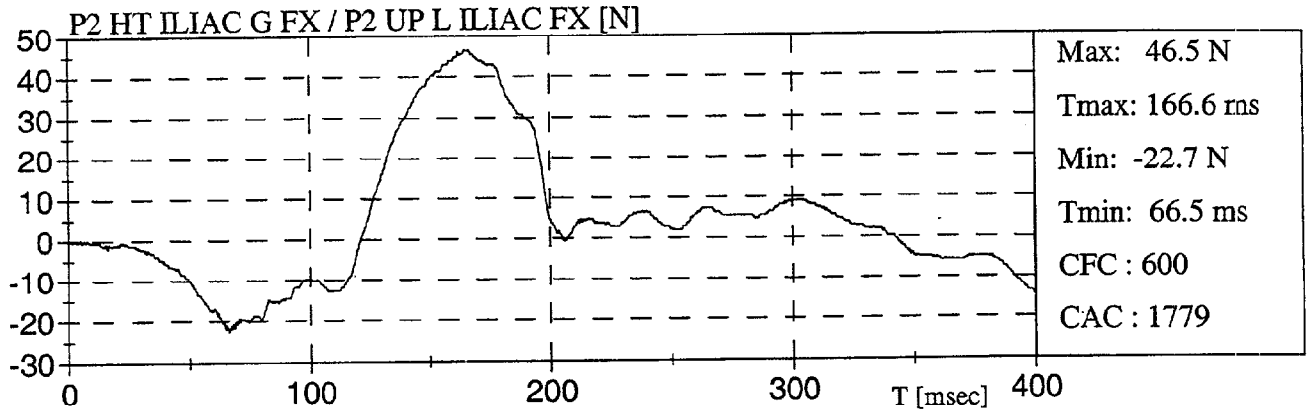
N° TC / TC No.: TC99-213

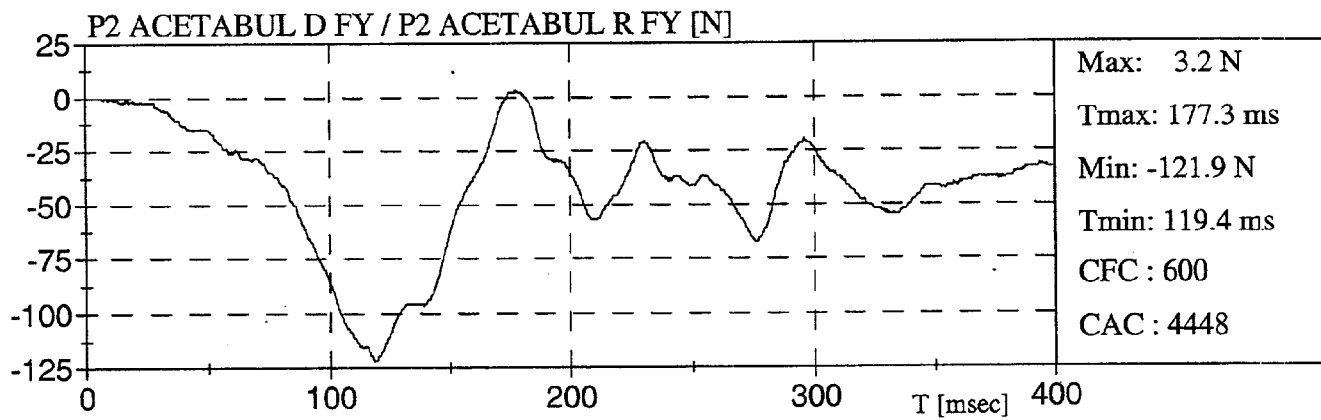
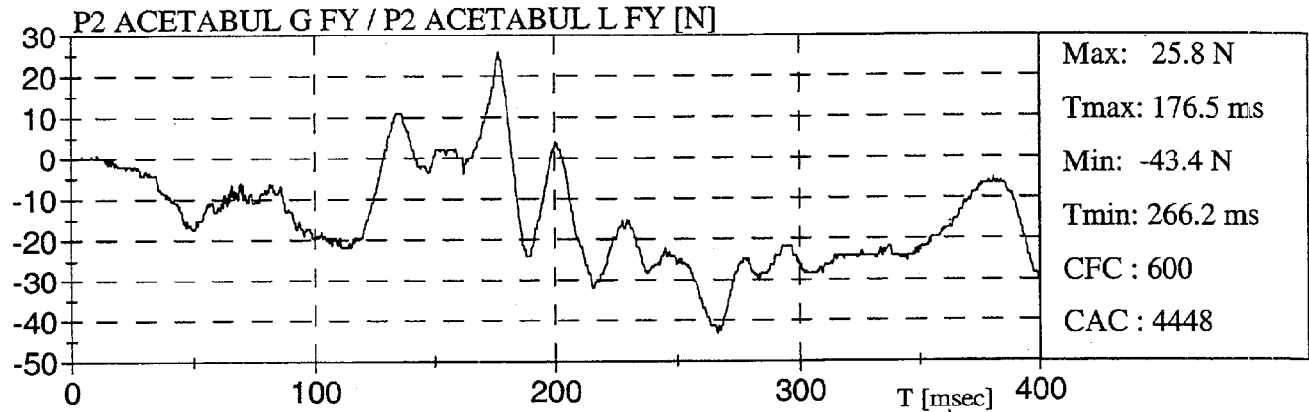


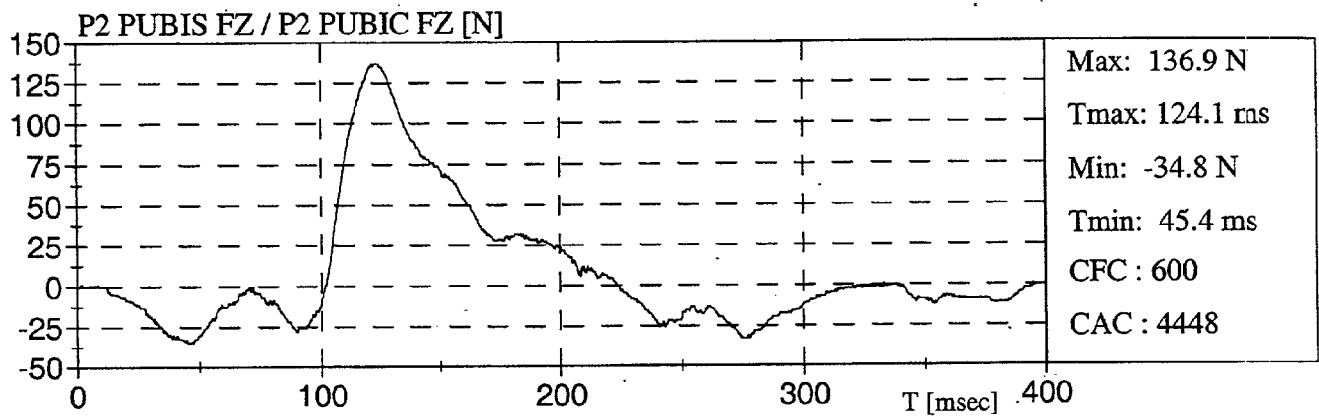
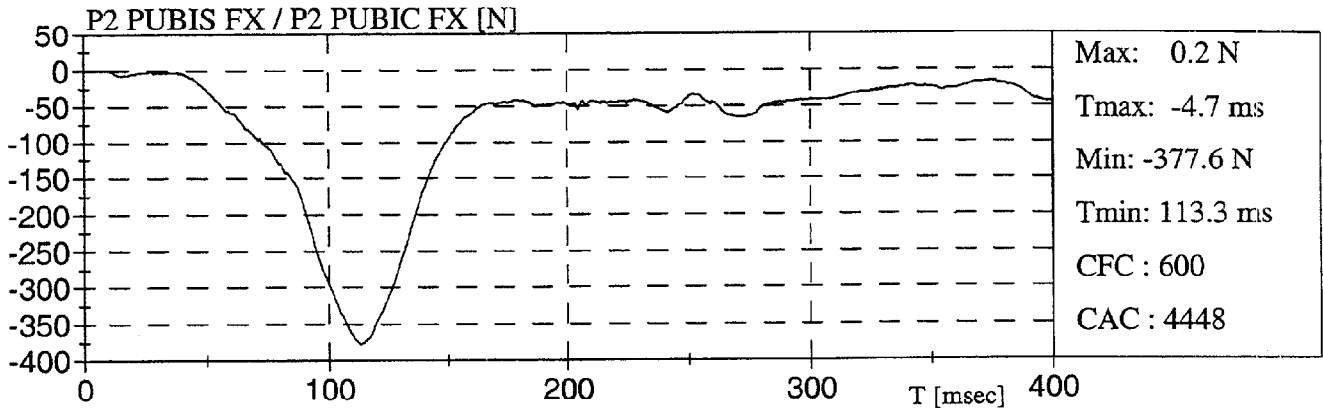














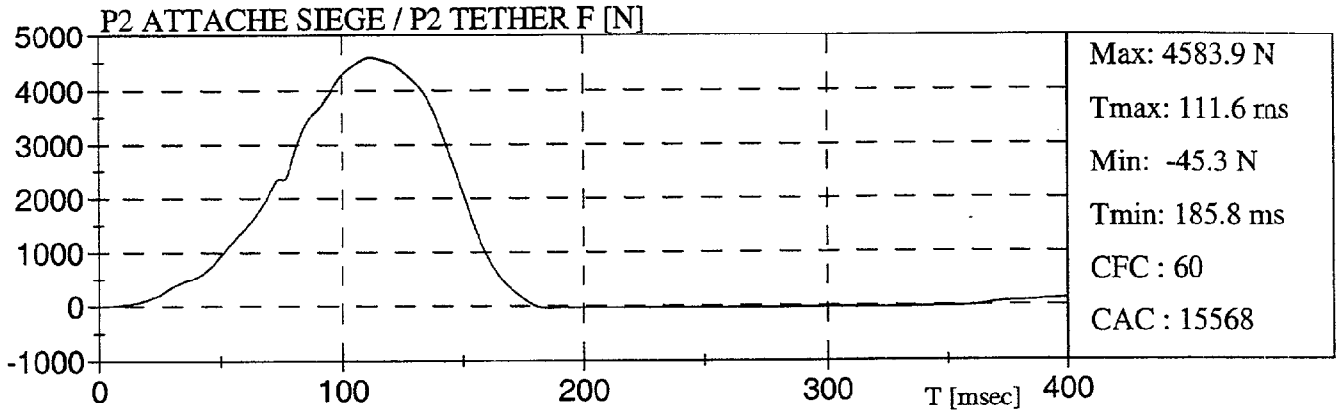
PMG  
Technologies

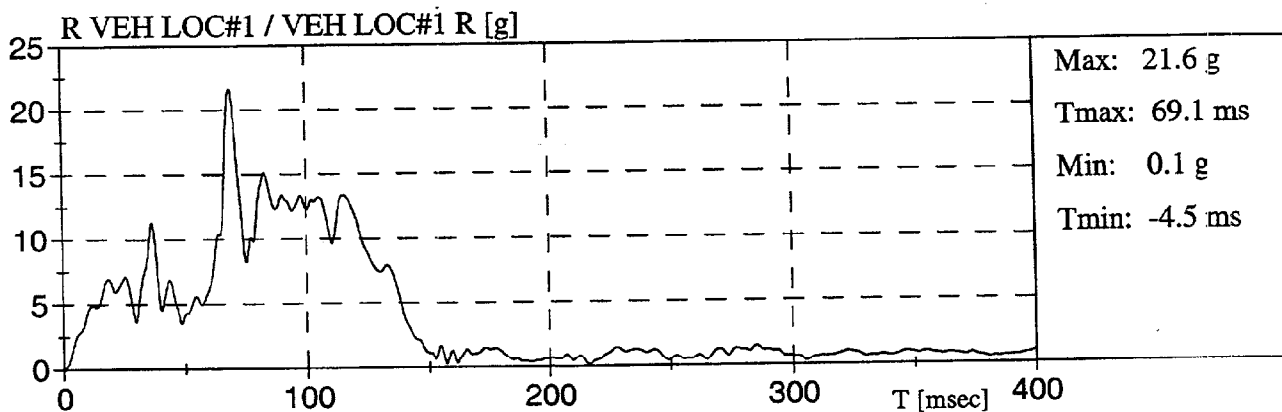
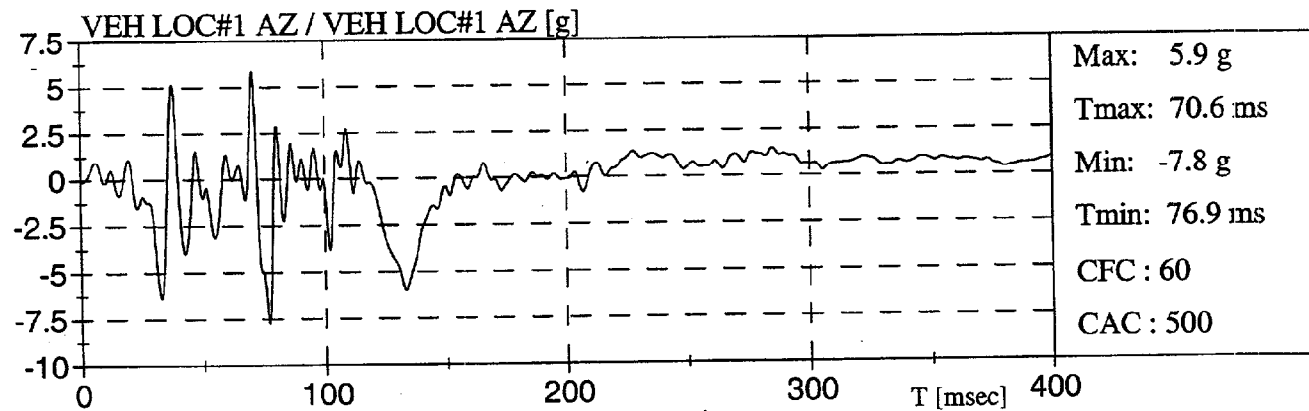
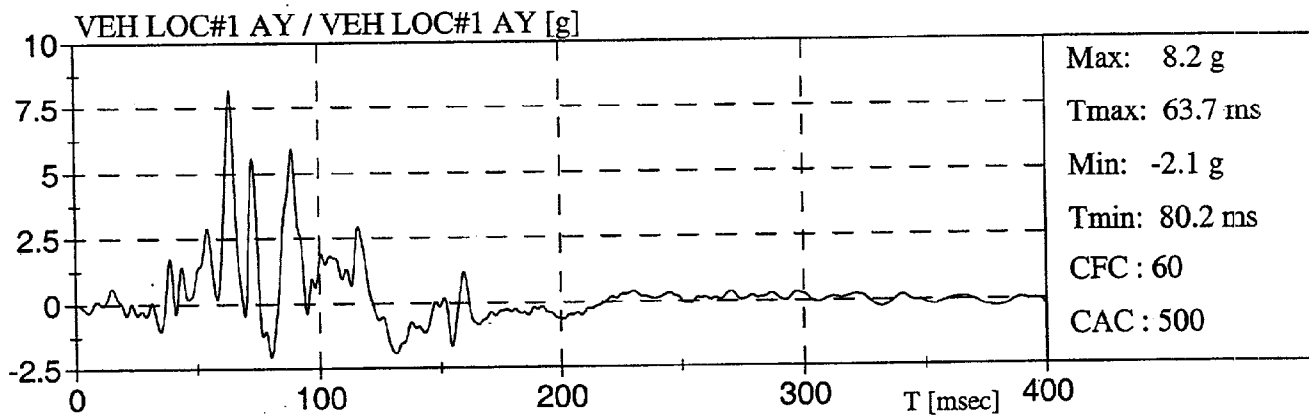
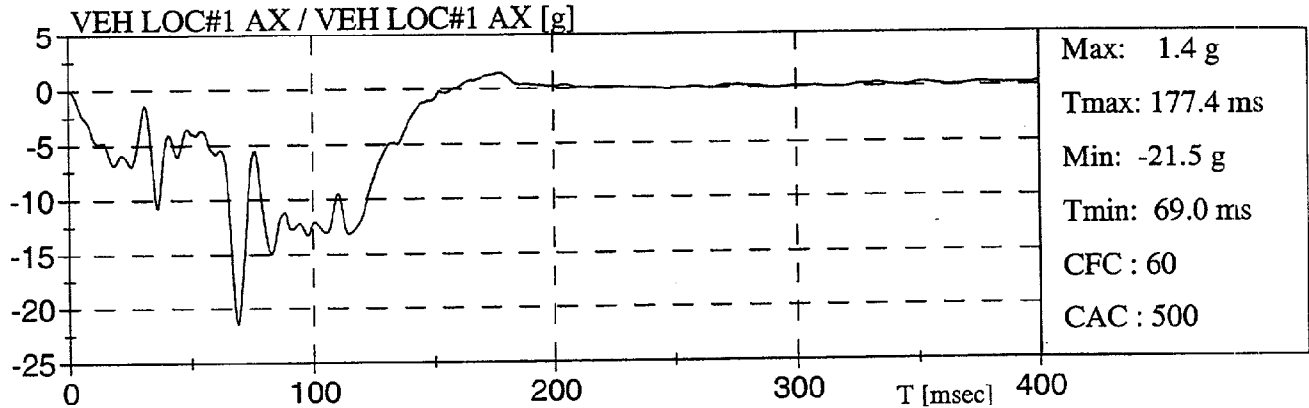
FRONTALE DÉCALÉE 36 KM/H - 40% GAUCHE  
OFFSET FRONTAL 36 KM/H - 40% LEFT

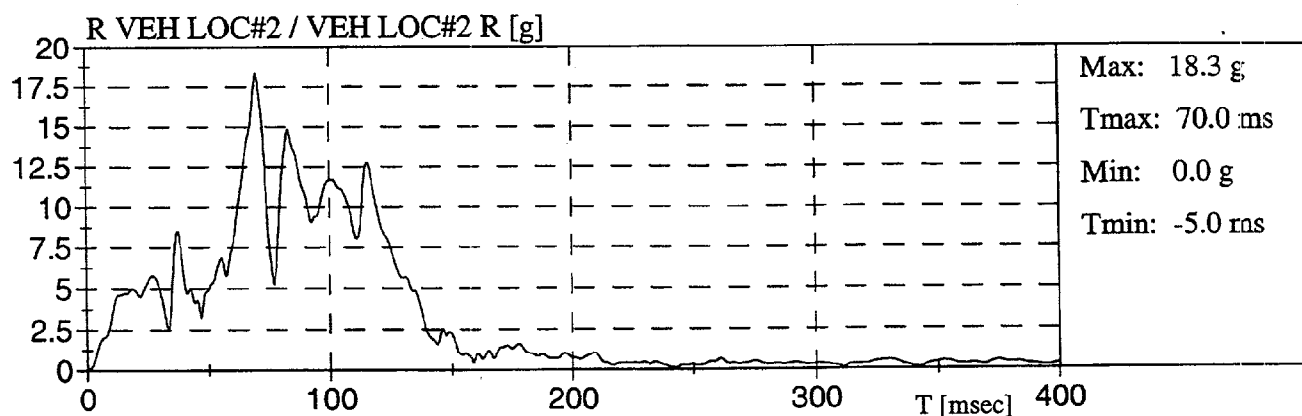
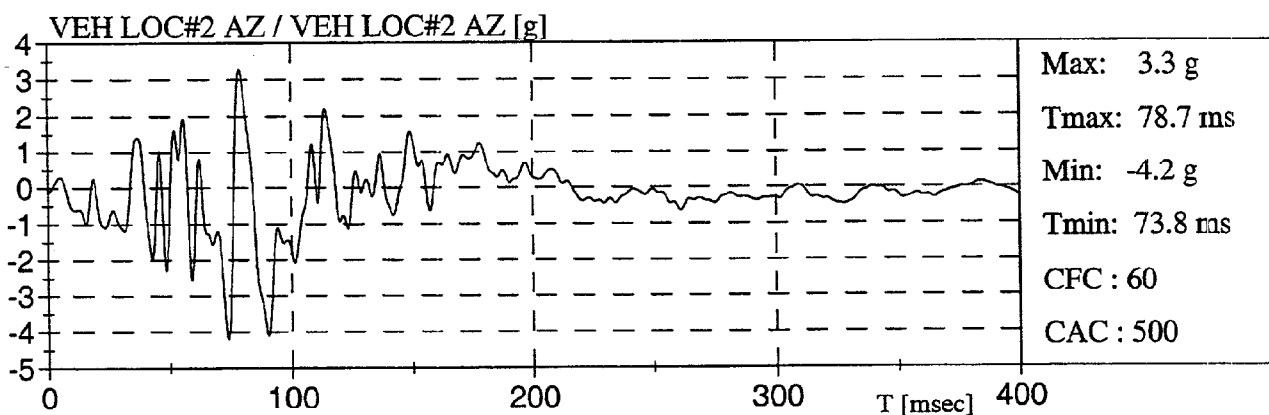
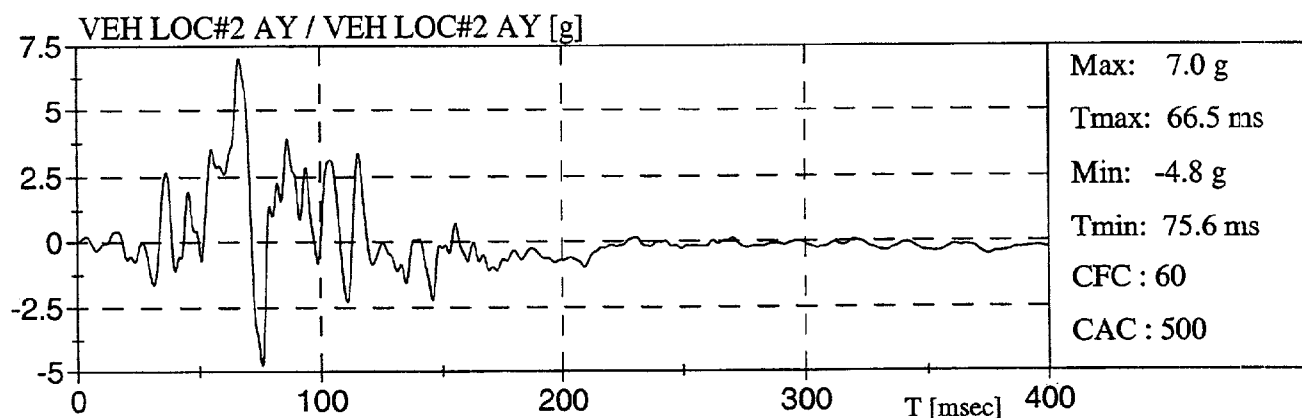
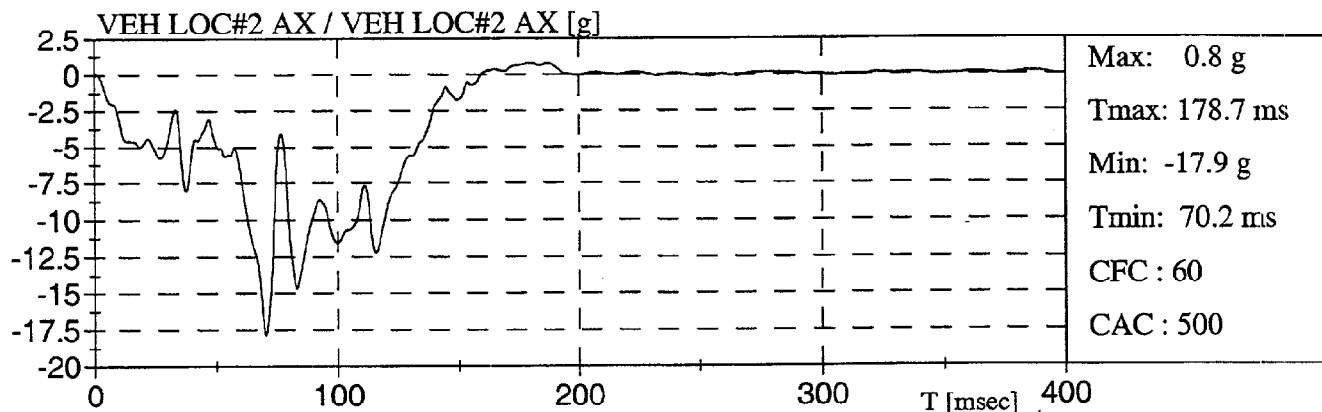
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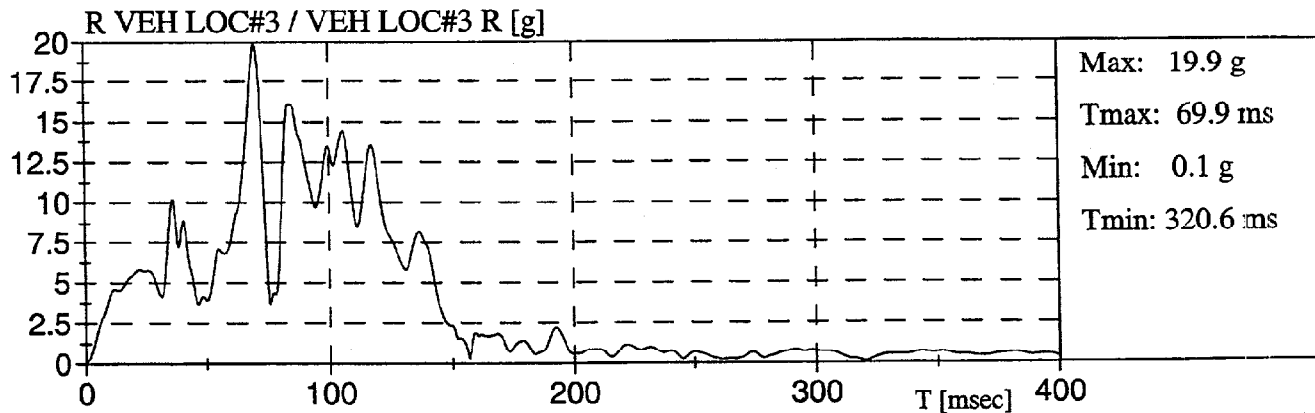
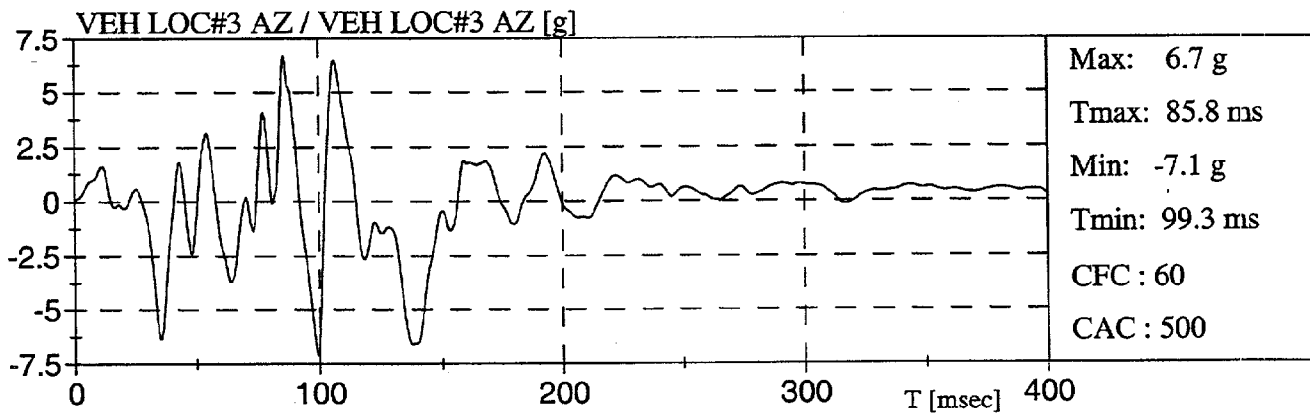
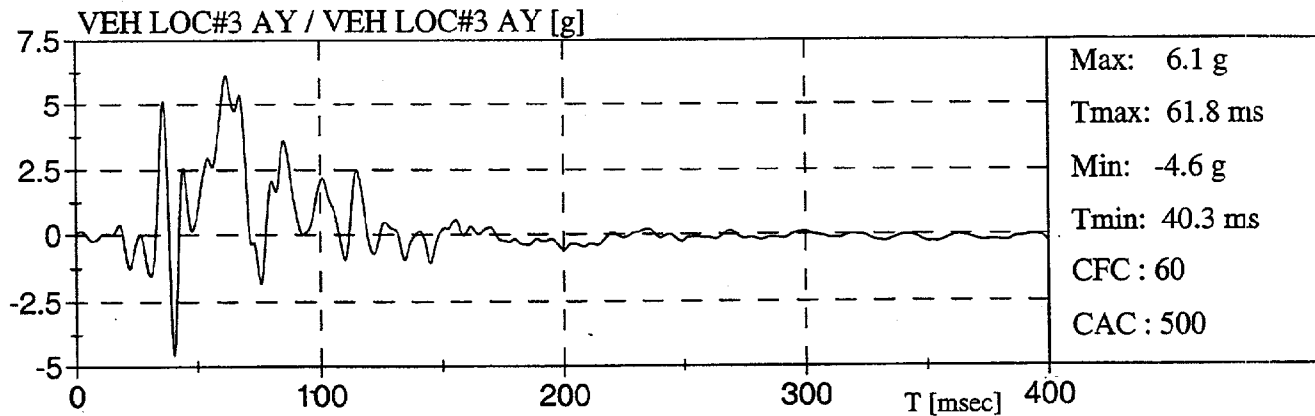
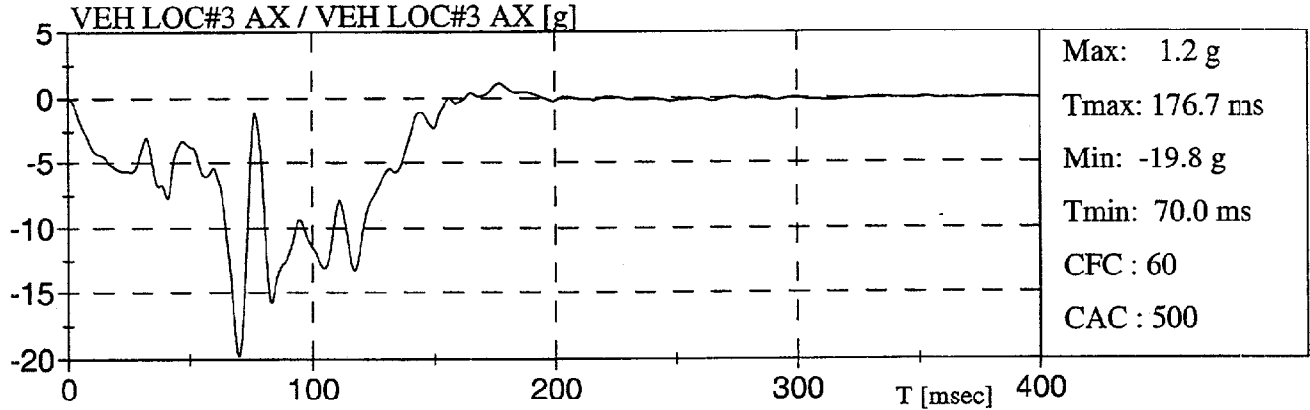
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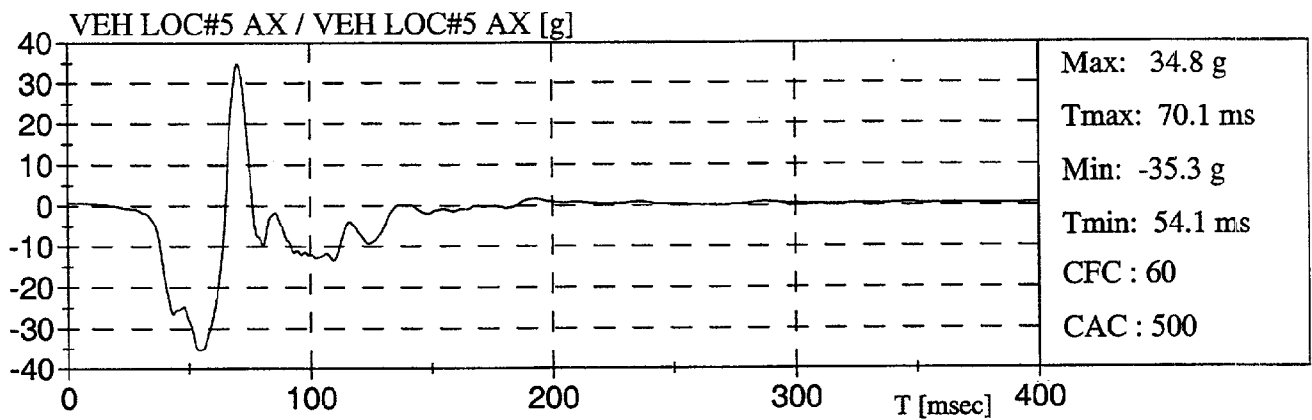
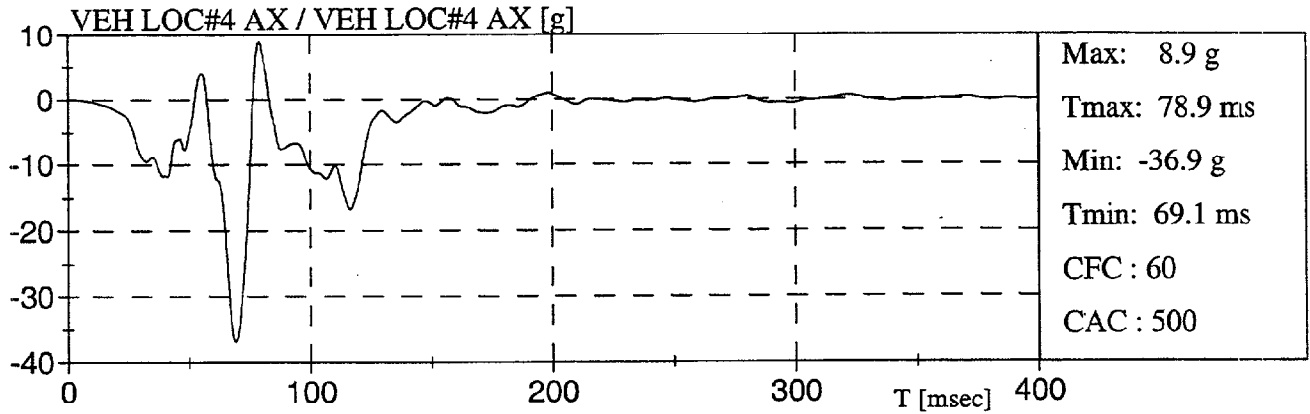
N° TC / TC No.: TC99-213

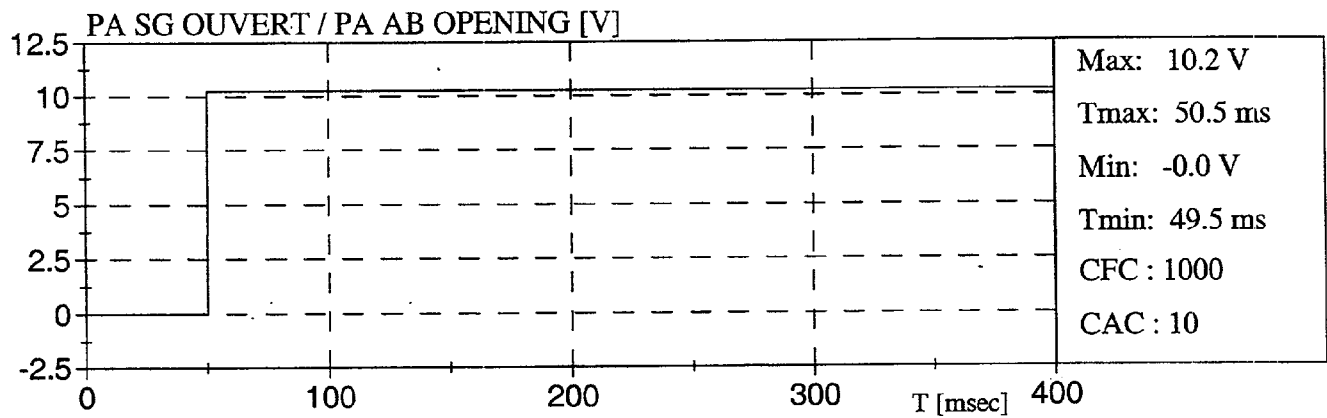
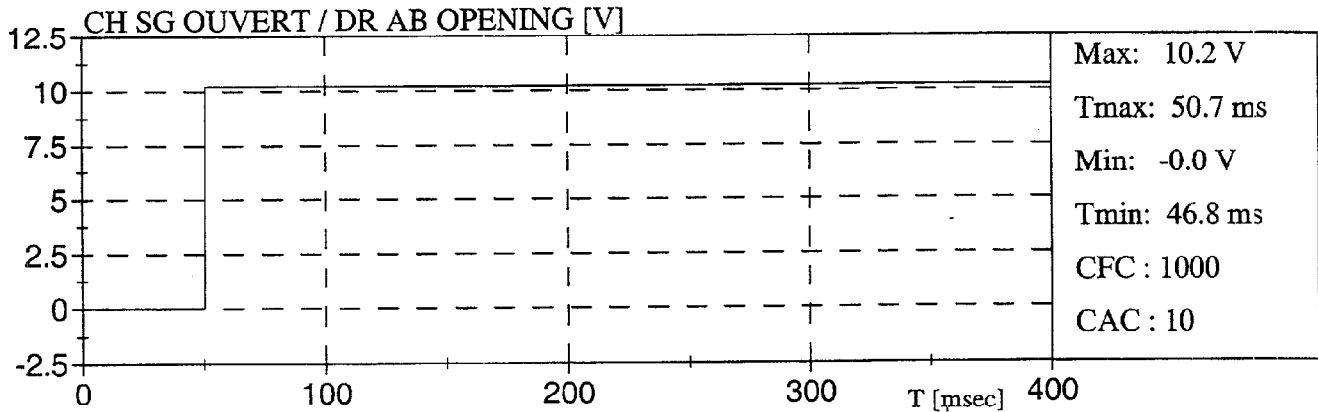


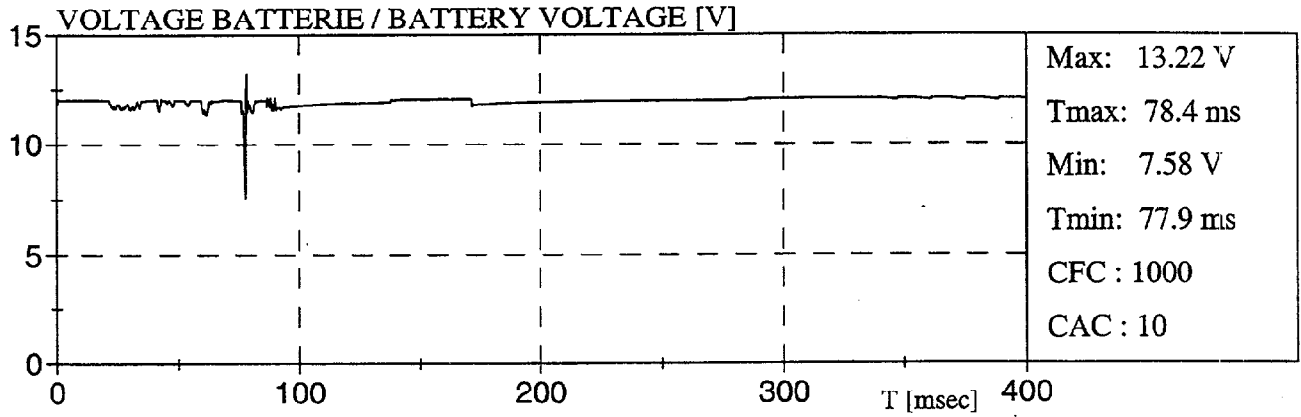


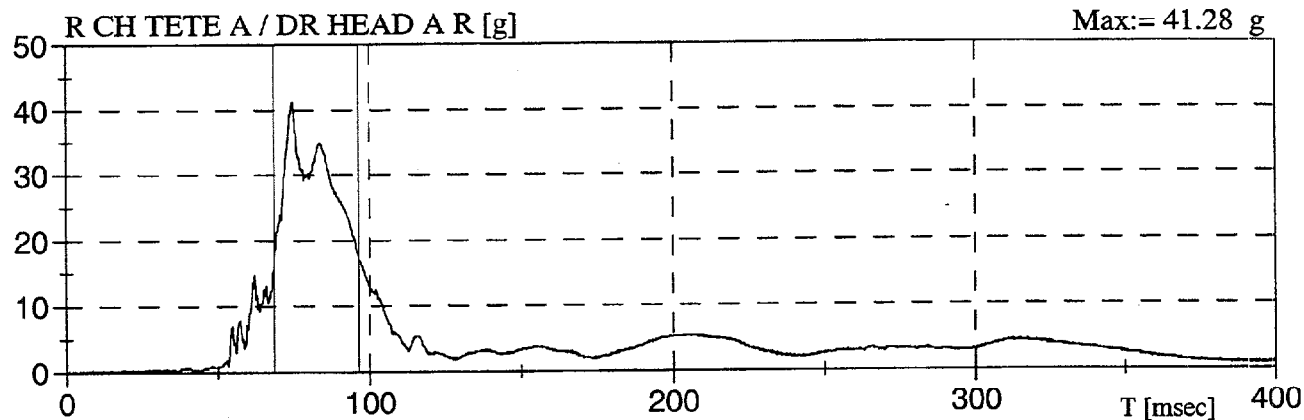








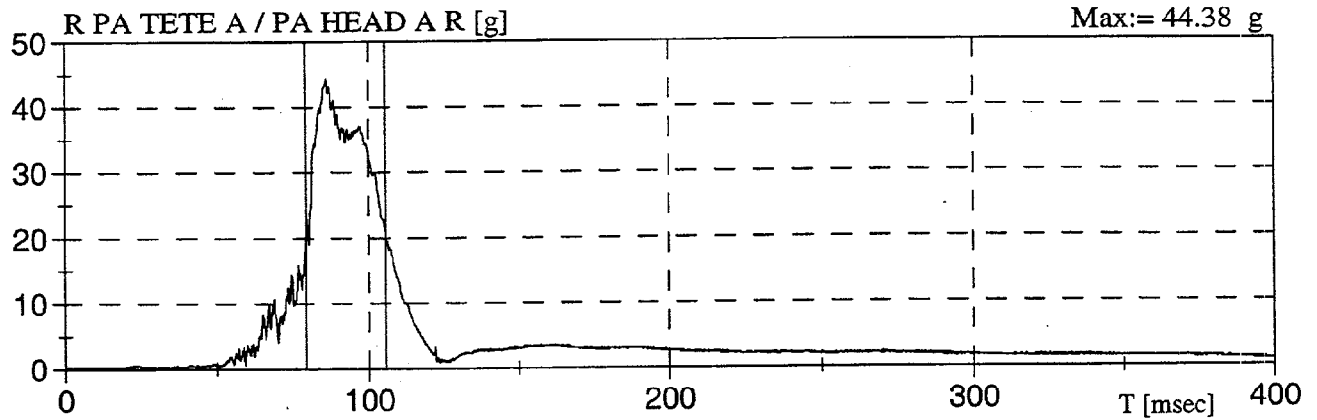




HEAD INJURY CRITERIA (HIC) \*  
CRITÈRE DE BLESSURE DE LA TÊTE

HIC:= 124	HIC(36ms):= 124	HIC(15ms):= 95
T1:= 68.6 ms	T1:= 68.6 ms	T1:= 72.0 ms
T2:= 96.4 ms	T2:= 96.4 ms	T2:= 87.0 ms

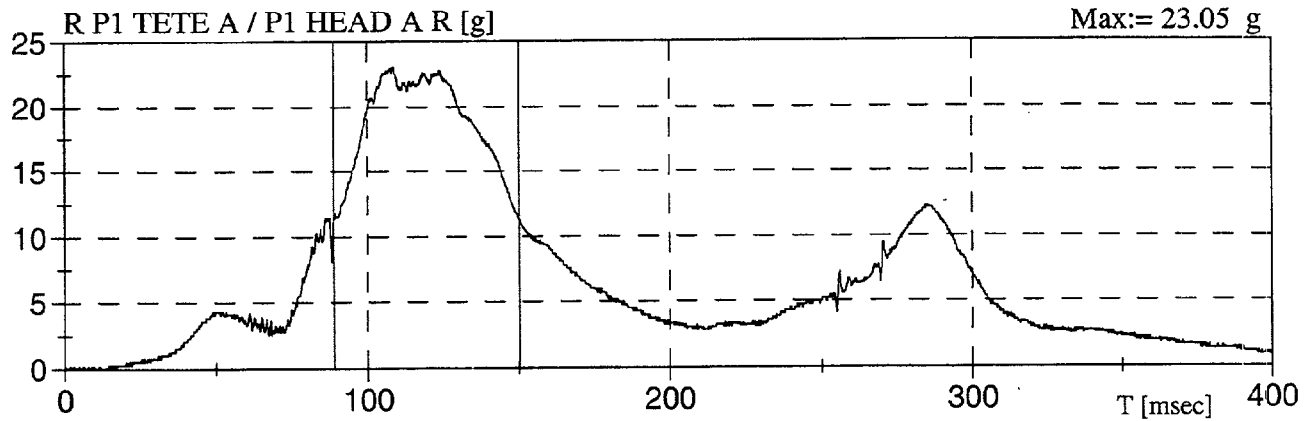
\* Selon / According To: SAE J1727 96-08



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

HIC:= 180	HIC(36ms):= 180	HIC(15ms):= 136
T1:= 79.1 ms	T1:= 79.1 ms	T1:= 82.8 ms
T2:= 105.7 ms	T2:= 105.7 ms	T2:= 97.8 ms

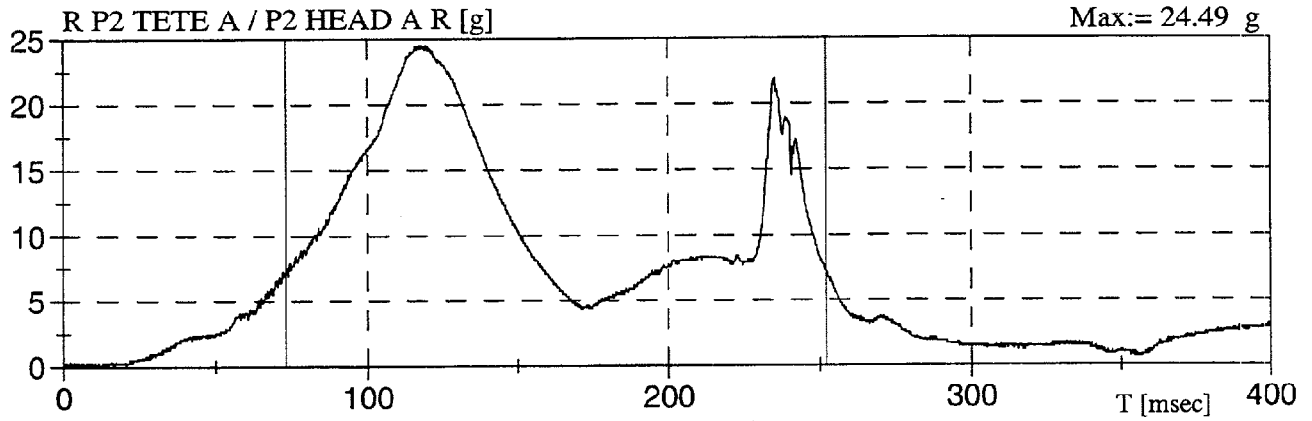
\* Selon / According To: SAE J1727 96-08



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

HIC:= 94	HIC(36ms):= 76	HIC(15ms):= 34
T1:= 88.8 ms	T1:= 98.9 ms	T1:= 104.6 ms
T2:= 150.2 ms	T2:= 134.9 ms	T2:= 119.6 ms

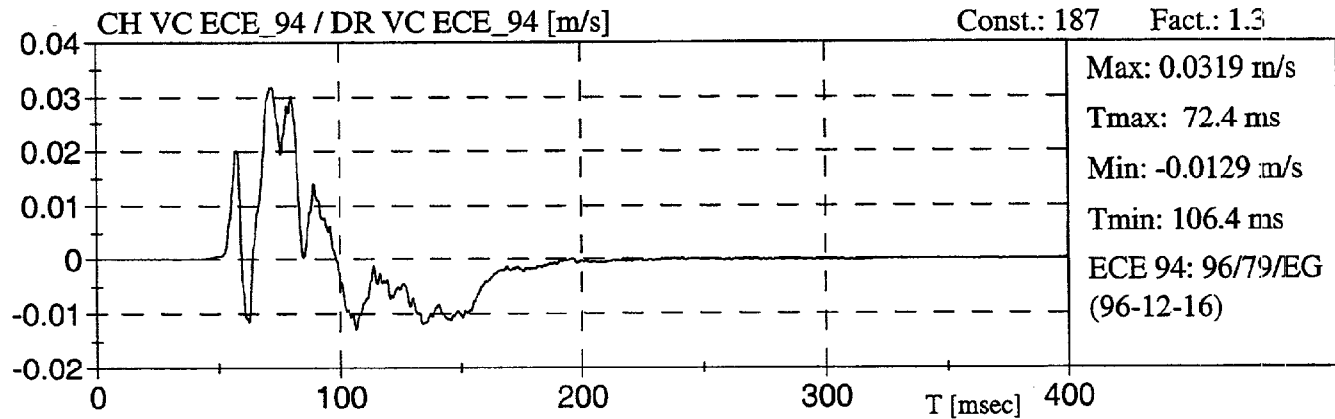
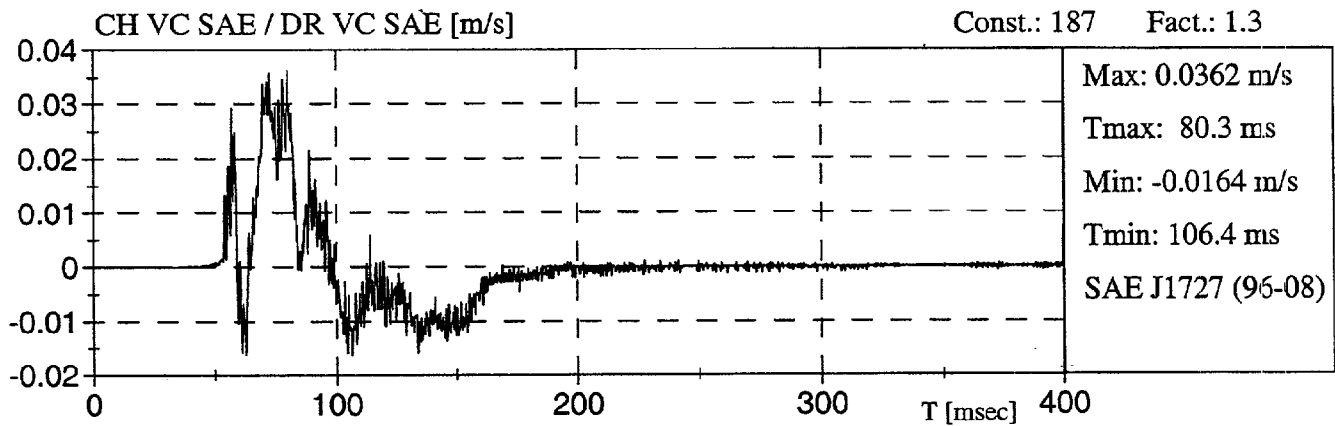
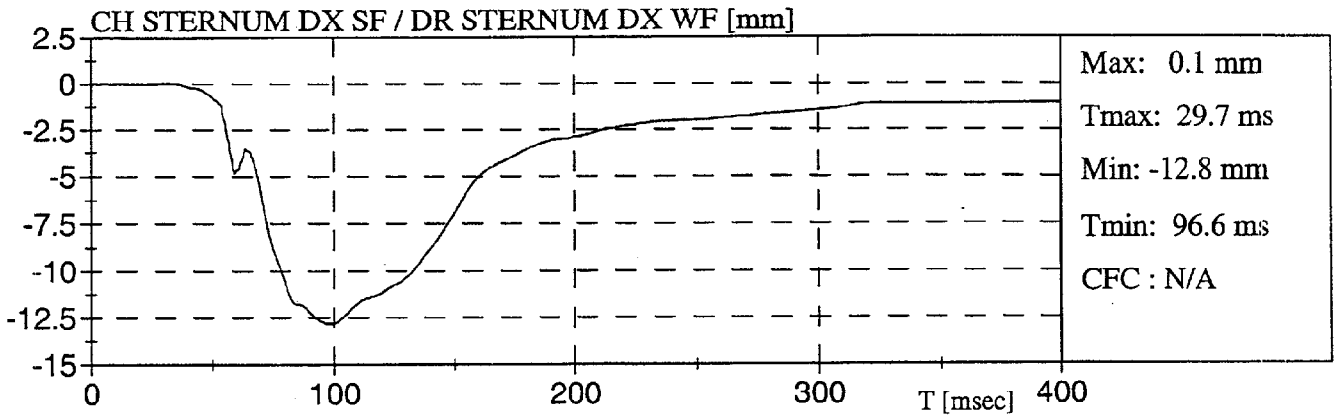
\* Selon / According To: SAE J1727 96-08

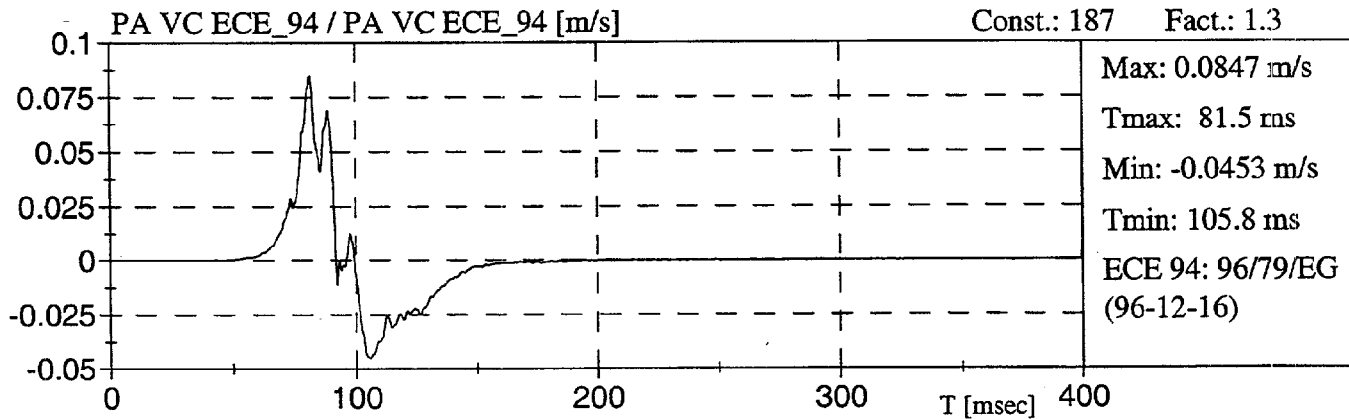
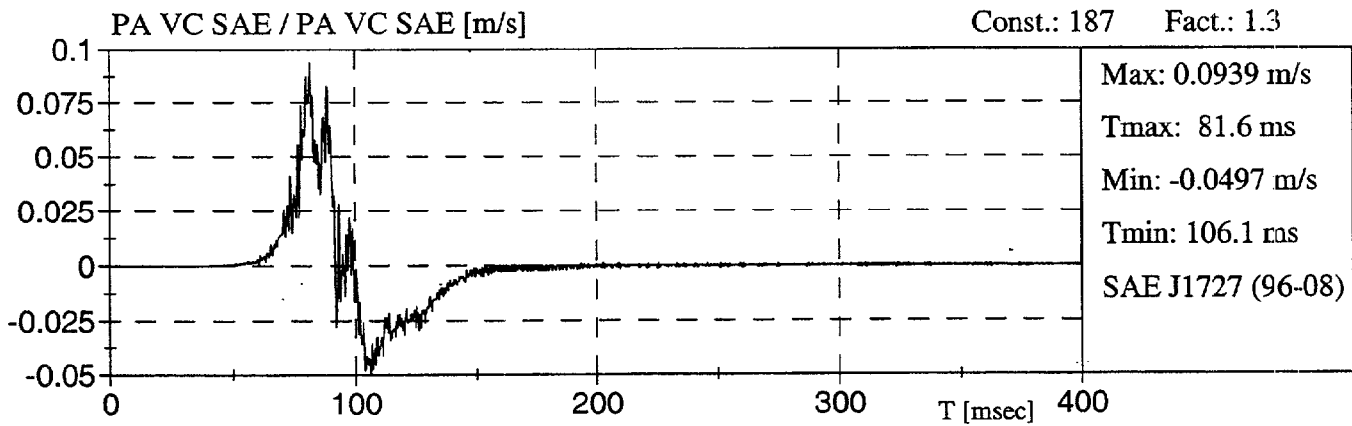
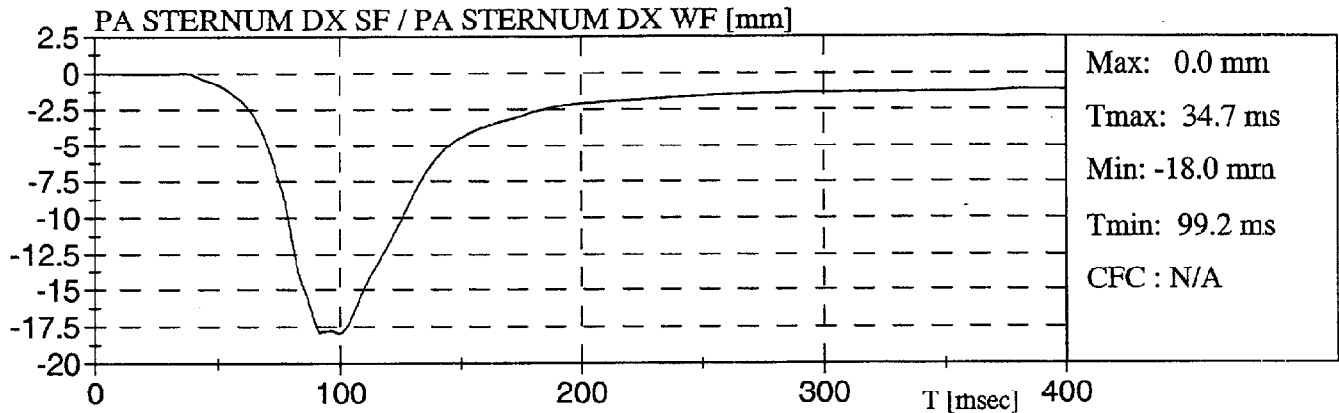


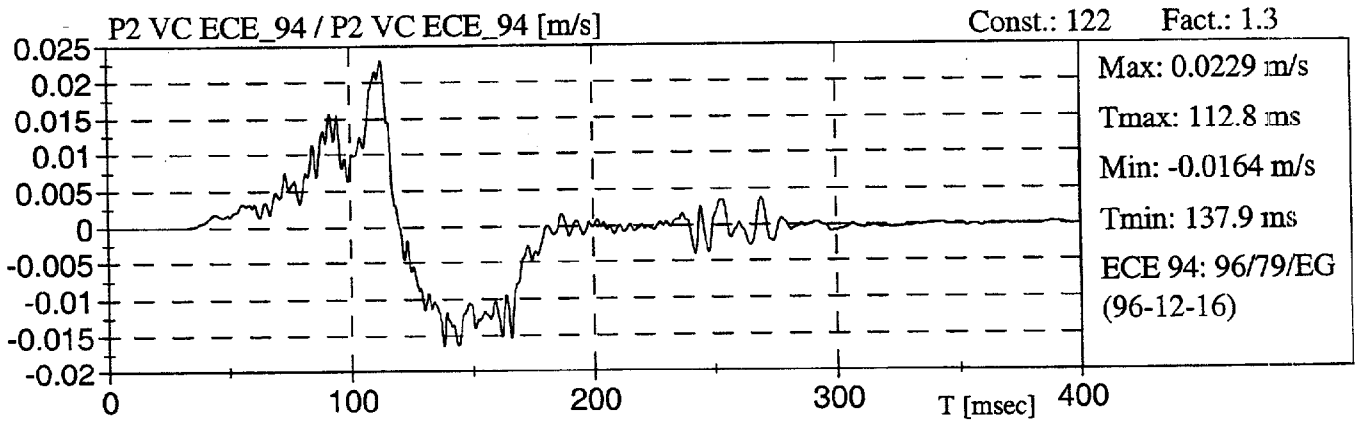
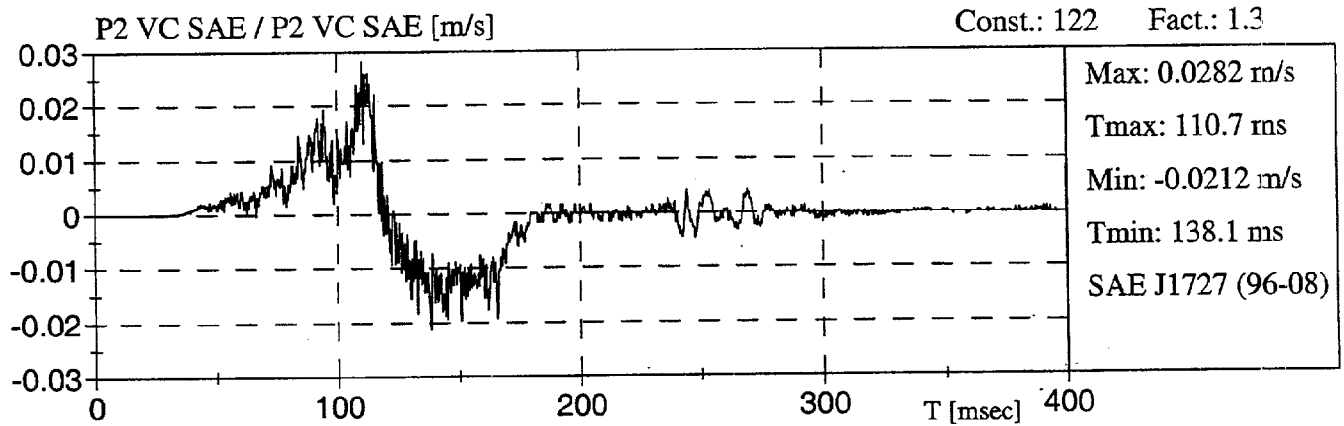
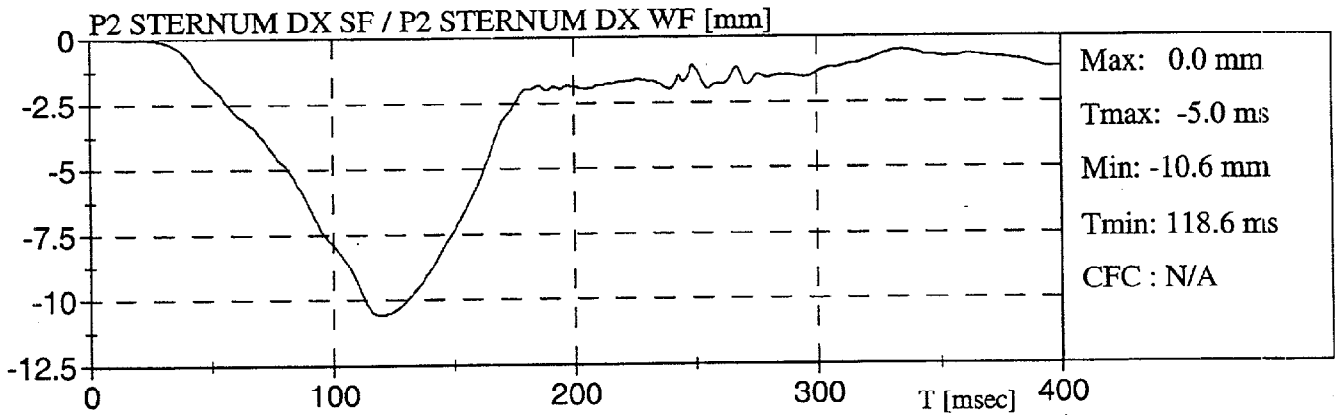
HEAD INJURY CRITERIA (HIC) \*  
CRITÈRE DE BLESSURE DE LA TÊTE

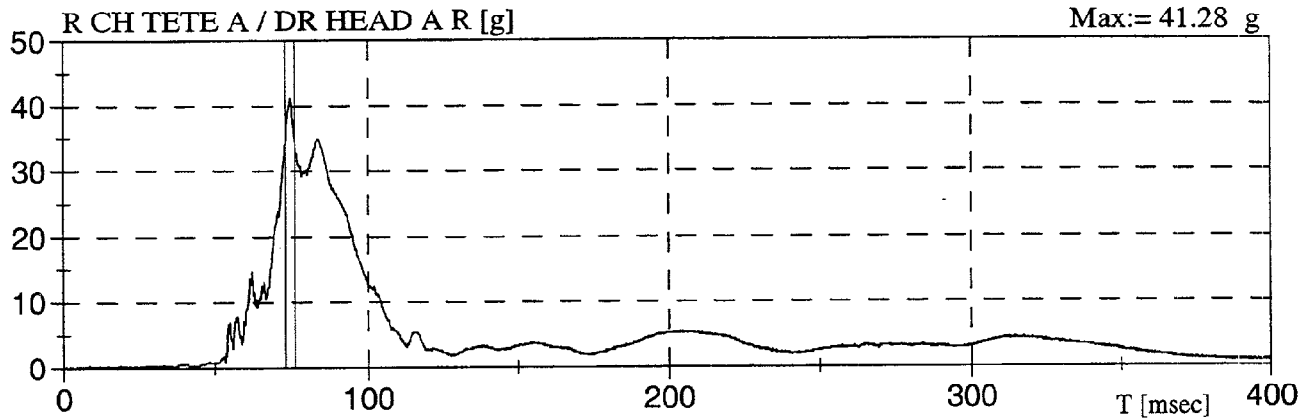
HIC:= 89	HIC(36ms):= 76	HIC(15ms):= 41
T1:= 73.1 ms	T1:= 101.2 ms	T1:= 111.4 ms
T2:= 252.1 ms	T2:= 137.2 ms	T2:= 126.4 ms

\* Selon / According To: SAE J1727 96-08



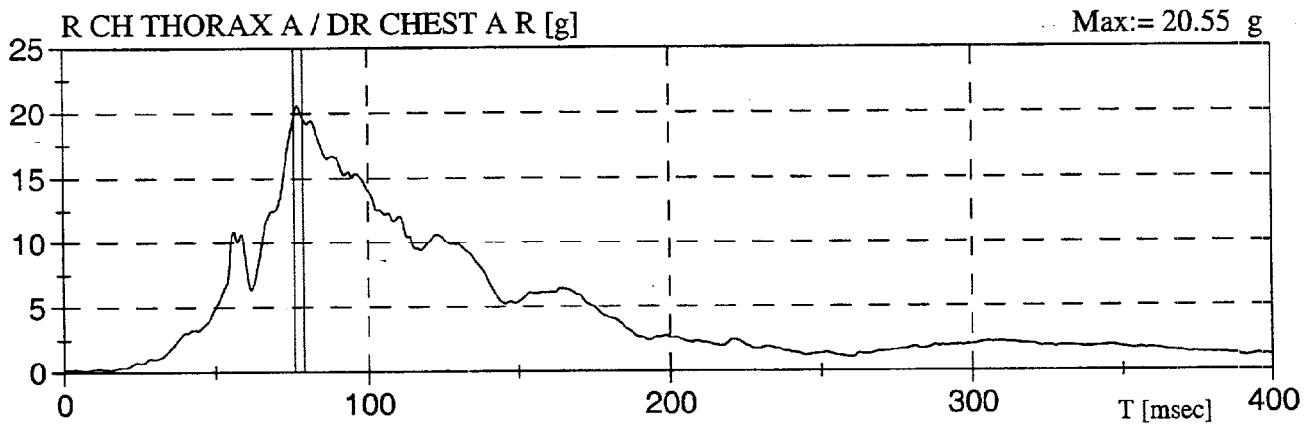






CLIP 3ms \*

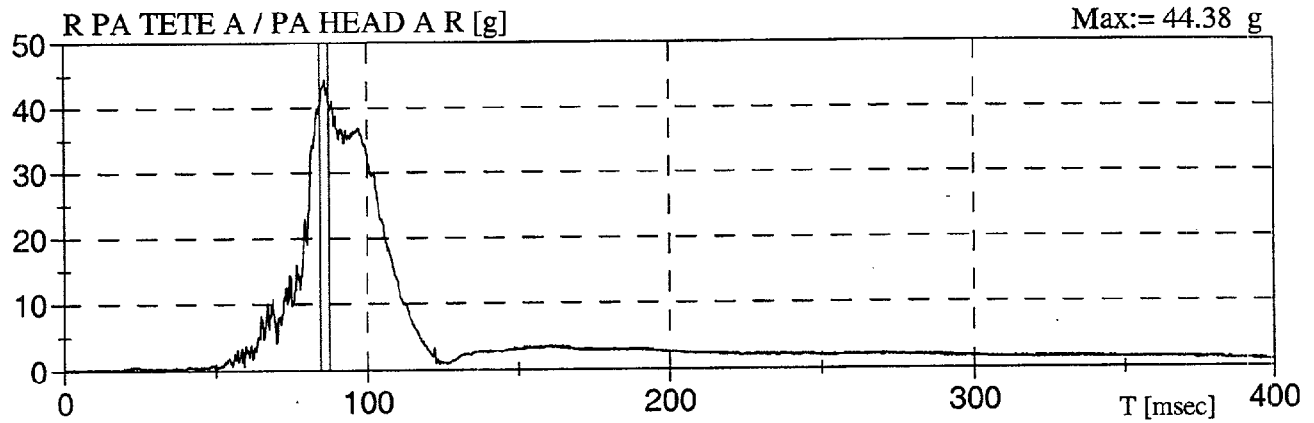
Acc. := 34.17 g	T1:= 73.1 ms	T2:= 76.1 ms
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CLIP 3ms \*

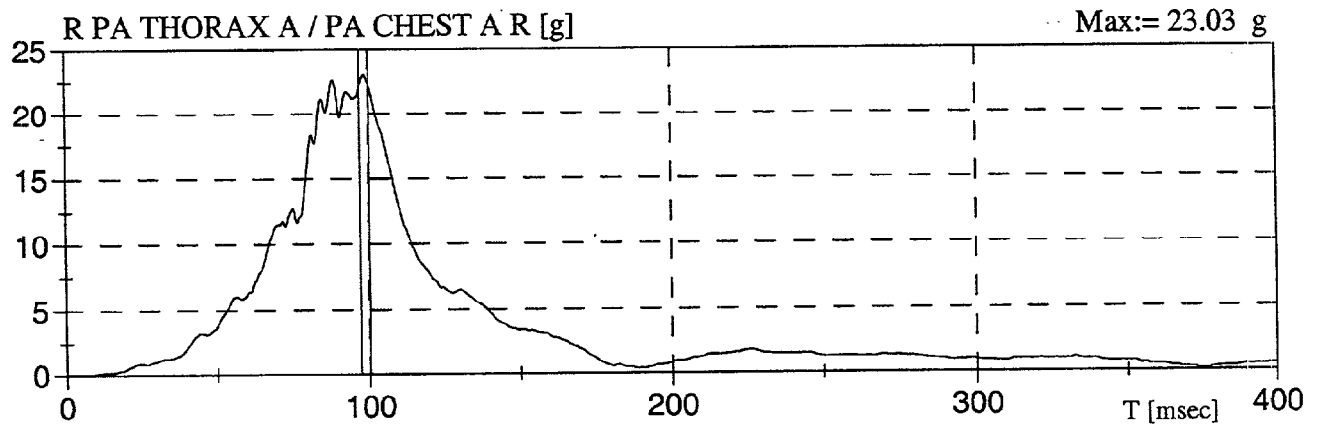
Acc. := 19.61 g	T1:= 75.8 ms	T2:= 78.8 ms
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\* Selon / According To: NHTSA CLIP VERSION 2.1 5/95



CLIP 3ms \*

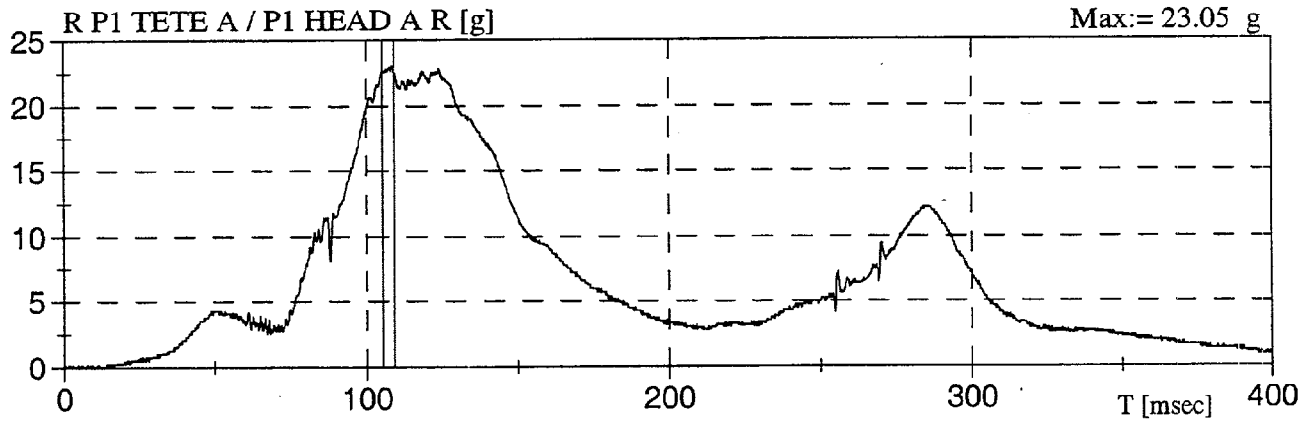
Acc. := 40.56 g	T1:= 84.5 ms	T2:= 87.5 ms
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CLIP 3ms \*

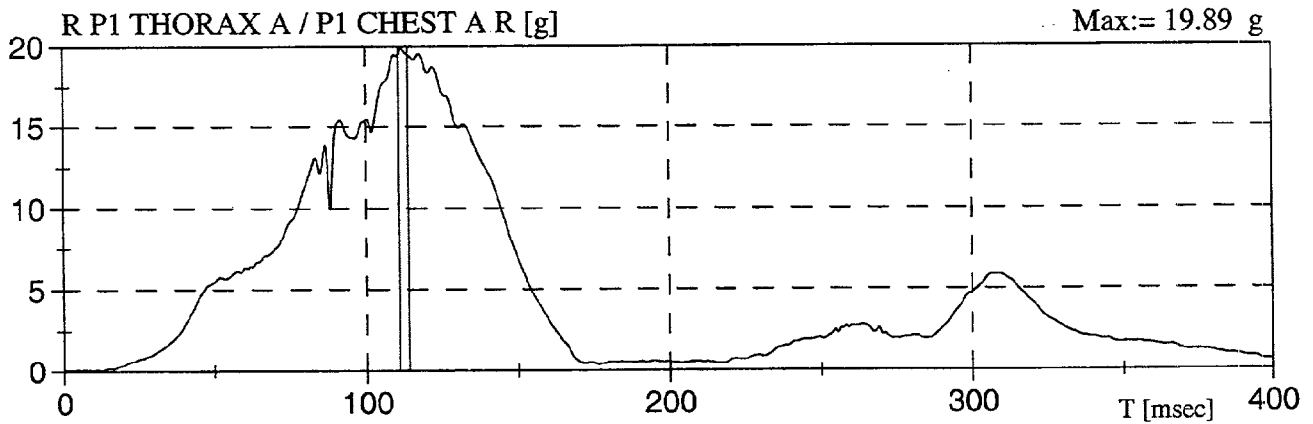
Acc. := 22.21 g	T1:= 97.2 ms	T2:= 100.2 ms
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\* Selon / According To: NHTSA CLIP VERSION 2.1 5/95



CLIP 3ms \*

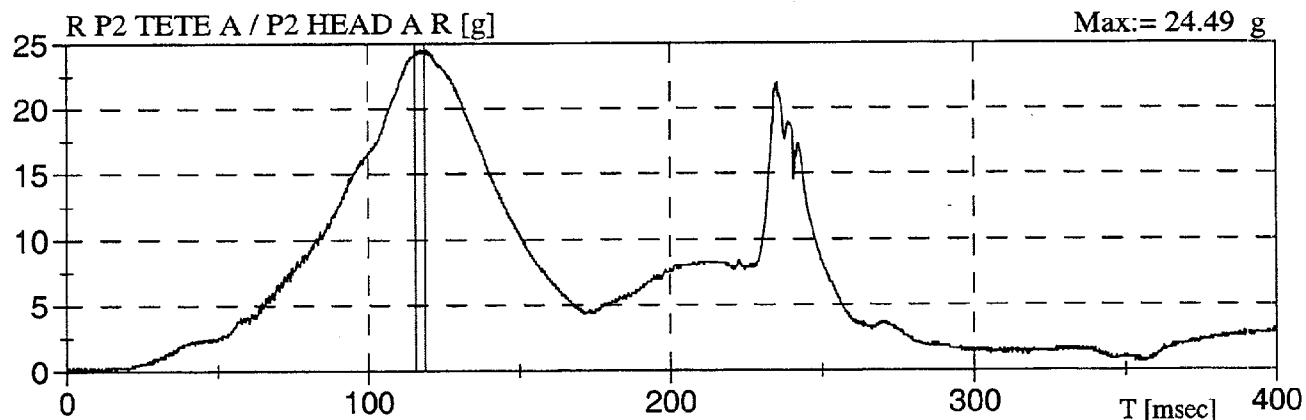
Acc. := 22.59 g	T1:= 105.4 ms	T2:= 109.1 ms
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CLIP 3ms \*

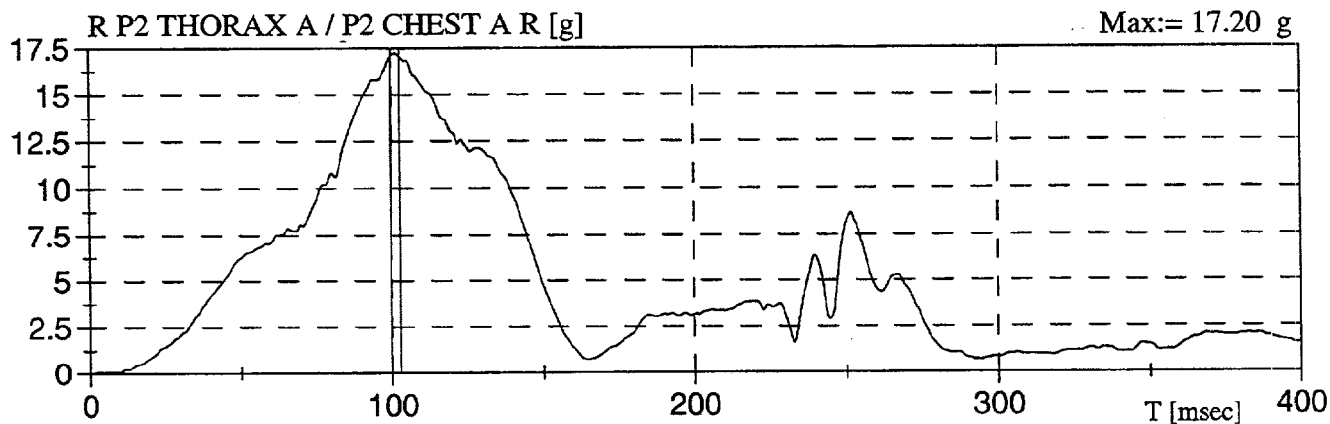
Acc. := 19.49 g	T1:= 110.7 ms	T2:= 113.7 ms
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\* Selon / According To: NHTSA CLIP VERSION 2.1 5/95



CLIP 3ms \*

Acc. := 24.18 g	T1:= 115.8 ms	T2:= 119.0 ms
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CLIP 3ms \*

Acc. := 17.05 g	T1:= 99.7 ms	T2:= 102.7 ms
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\* Selon / According To: NHTSA CLIP VERSION 2.1 5/95

**INDEX DU TIBIA \***  
**TIBIA INDEX \***
**TI Chauffeur / Driver**       $M_c := 115 \text{ N-m}$        $F_c := 22.9 \text{ kN}$ 

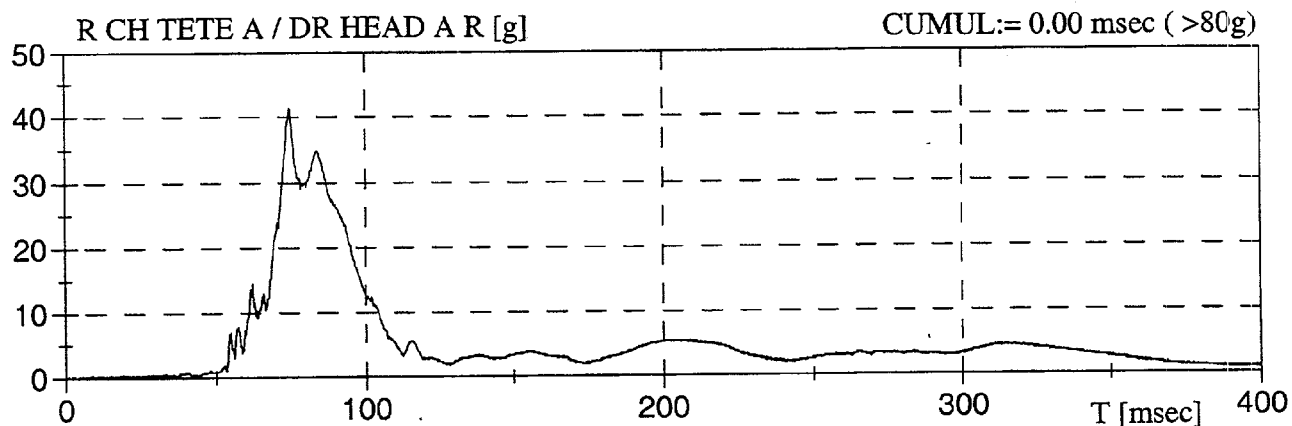
TIBIA	GAUCHE / LEFT	DROIT / RIGHT
HAUT / UPPER	<b>0.301</b>	<b>0.238</b>
BAS / LOWER	<b>0.142</b>	<b>0.140</b>

**TI Passager / Passenger**       $M_c := 115 \text{ N-m}$        $F_c := 22.9 \text{ kN}$ 

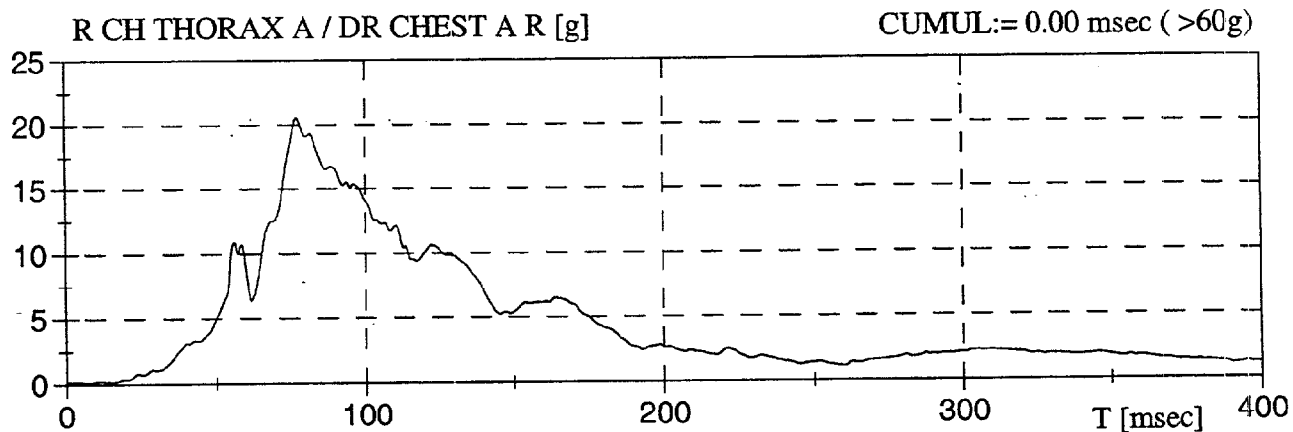
TIBIA	GAUCHE / LEFT	DROIT / RIGHT
HAUT / UPPER	<b>0.372</b>	<b>0.288</b>
BAS / LOWER	<b>0.132</b>	<b>0.107</b>

\* Selon / According To: SAE J1727 AUG 96

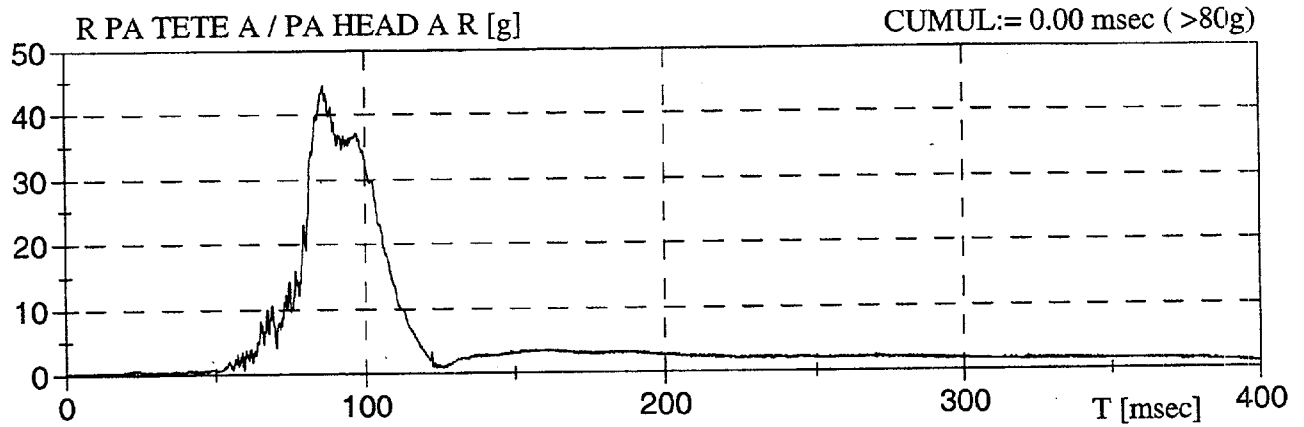
ACCÉLÉRATION DE LA TÊTE >80 g / HEAD ACCELERATION > 80 g



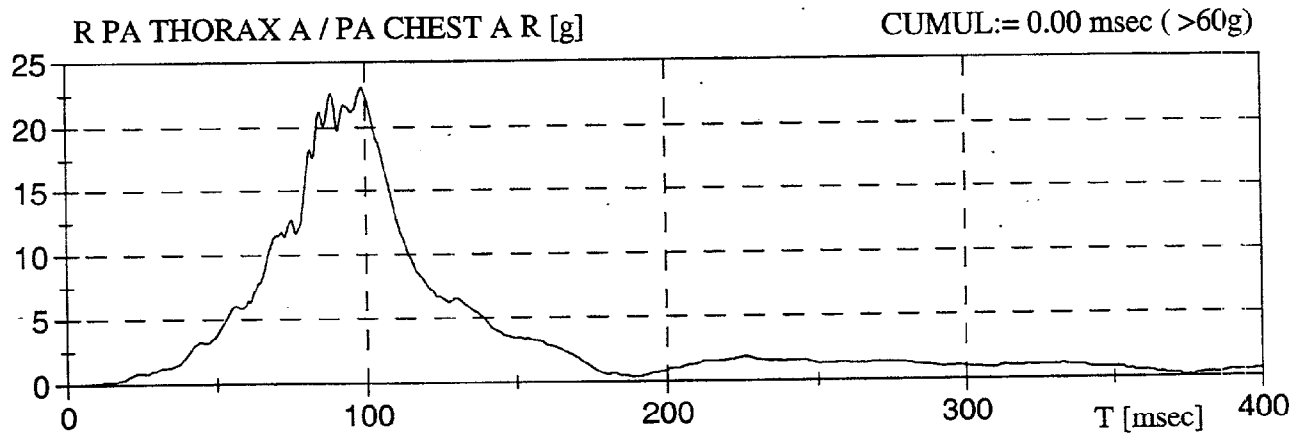
ACCÉLÉRATION DU THORAX >60 g / THORAX ACCELERATION > 60 g



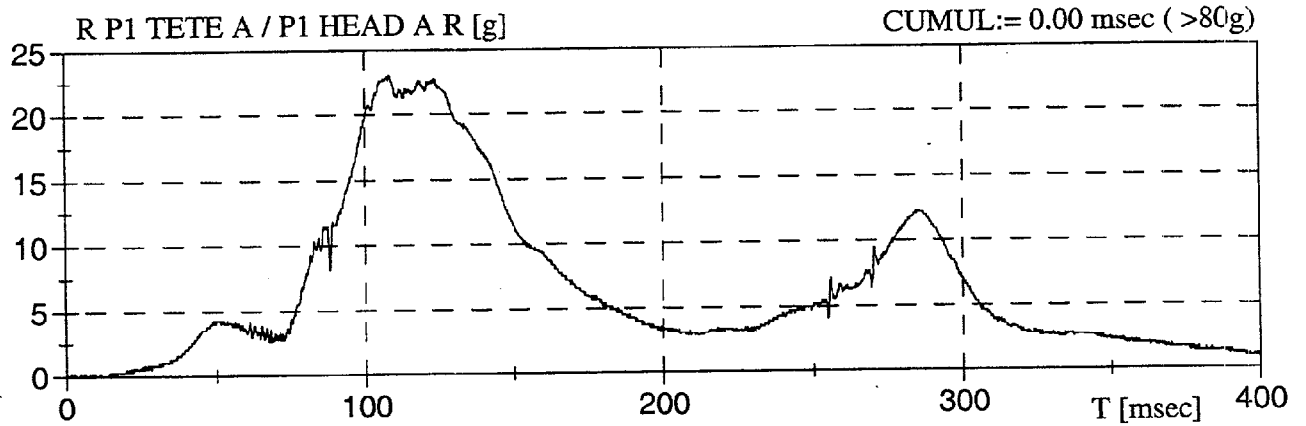
ACCÉLÉRATION DE LA TÊTE >80 g / HEAD ACCELERATION > 80 g



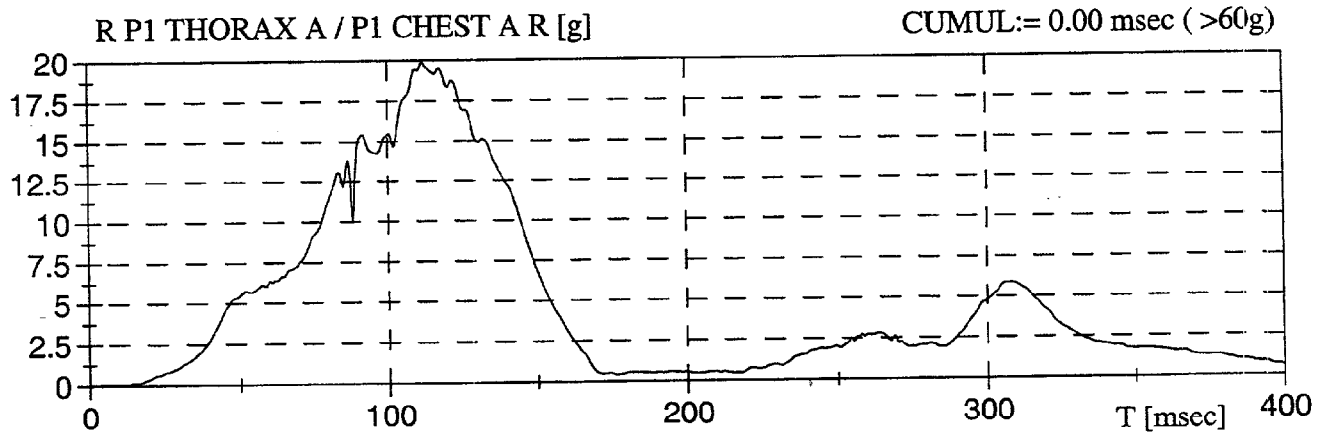
ACCÉLÉRATION DU THORAX >60 g / THORAX ACCELERATION > 60 g



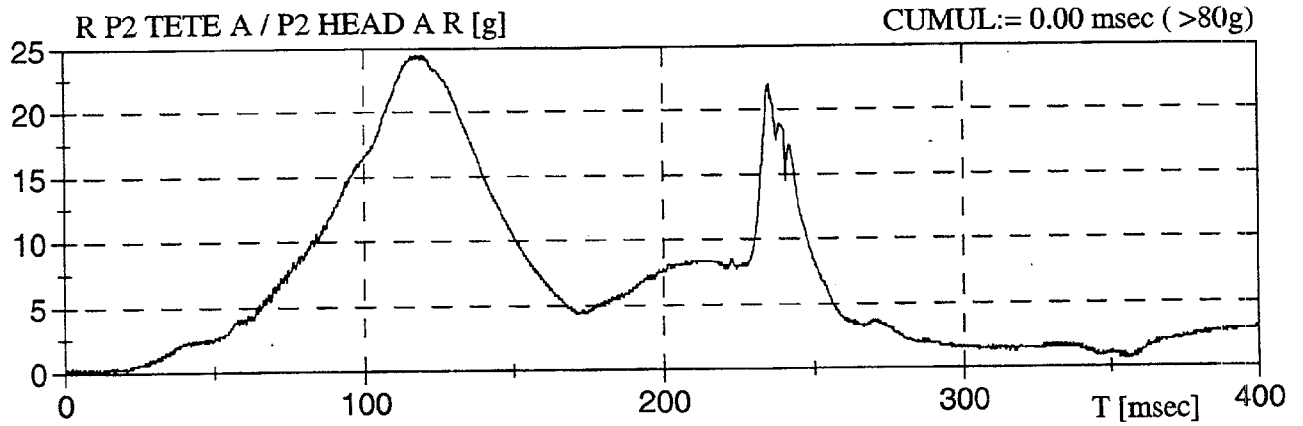
ACCÉLÉRATION DE LA TÊTE >80 g / HEAD ACCELERATION > 80 g



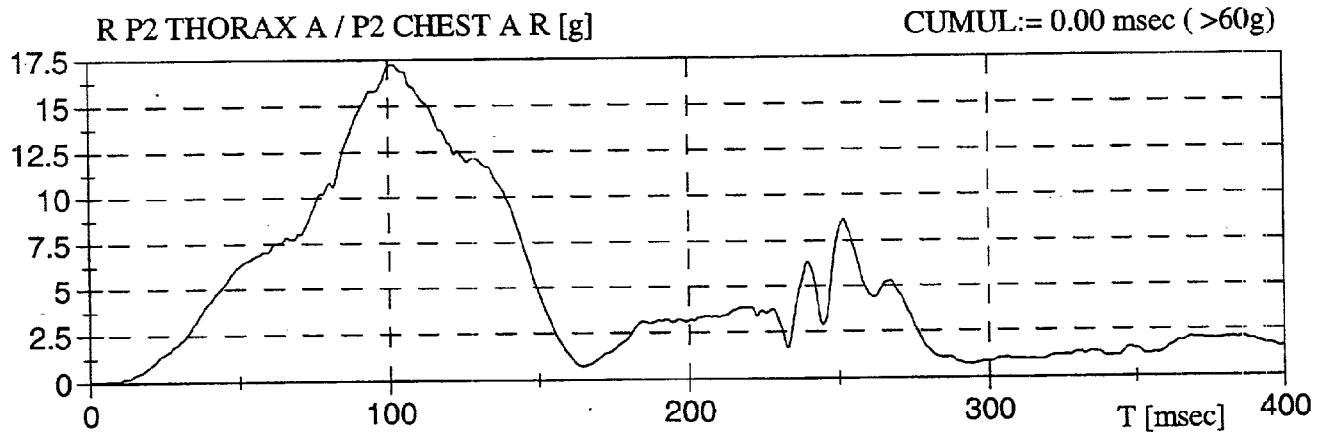
ACCÉLÉRATION DU THORAX >60 g / THORAX ACCELERATION > 60 g



ACCÉLÉRATION DE LA TÊTE >80 g / HEAD ACCELERATION > 80 g



ACCÉLÉRATION DU THORAX >60 g / THORAX ACCELERATION > 60 g





PMG  
Technologies

FRONTALE DÉCALÉE 36 KM/H - 40% GAUCHE  
OFFSET FRONTAL 36 KM/H - 40% LEFT

Date: 1999-01-11

PLYMOUTH BREEZE 99

N° TC / TC No.: TC99-213

## COMMENTAIRES / COMMENTS

CANAL (CH FEMUR G FZ): TRANSITOIRE RÉPARÉ DE 1.7 ms A 3.7 ms.

CHANNEL (DR L FEMUR FZ): GLITCH REMOVED FROM 1.7 ms TO 3.7 ms.

**APPENDICE /APPENDIX C**  
**DONNÉES DES TEMPÉRATURES**  
**TEMPERATURE DATA**

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# Temperature TC99-213

