

**Side Curtain Structure Evaluation
In A Controlled 30 mph Rollover Crash
1994 Ford Explorer
Test No. 010412**

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Section 1.0

Purpose and Test Summary

Purpose and Test Summary

This rollover crash test has the main objective to investigate both vehicle and occupant dynamics during automobile rollover crashes.

This test was conducted with a 1994 Ford Explorer on the FMVSS 208 rollover cart moving at 30 mph, releasing the vehicle with its roll axis perpendicular to the direction of rollover cart motion, and first contacting the driver's side. The test vehicle contained two instrumented Part 572 E dummies.

Section 2.0

Summary of Rollover Crash Test

Summary of Rollover Crash Test

A 1994 Ford Explorer, containing two instrumented Part 572 E test dummies was placed upon the rollover test device at 23 degrees above the horizontal and was released at 30 mph. The device was attached to the tow cable of the drive system. After the vehicle had been released the device was brought to a stop with water filled decelerator tubes. After release the vehicle impacted the ground on its left side. The vehicle made three and one-half rolls and came to rest on its roof. The rollover crash test was conducted by Transportation Research Center Inc. (TRC) in East Liberty, Ohio, on April 12, 2001.

The two Part 572 E 50th percentile adult male anthropomorphic test devices (dummies) were placed in the driver's and passenger's designated seating positions respectively according to the placement procedure specified in Appendix B of Laboratory Procedure TP-208-10. The dummies were instrumented with head, chest, and pelvis triaxial accelerometers, upper six-axis neck load cells, a chest deflection potentiometer, and left and right femur load cells. Both dummies were unbelted. The vehicle was equipped with side air curtains which deployed.

The vehicle was instrumented with eighteen (18) accelerometers, three (3) angular acceleration sensors, two (2) airbag event sensors, and four (4) suspension displacement potentiometers. The rollover test device was instrumented with two (2) accelerometers.

The crash event was recorded by sixty-five (65) channels of data on a K-T box data acquisition system. The analog data was digitally sampled at 8,000 samples per second. The data was digitally filtered as per SAE J211 OCT88.

The crash event was filmed by eleven (11) high-speed motion picture cameras operating at approximately 500 frames per second, and one (1) real-time panning motion picture camera.

Section 3.0 contains the general test and vehicle parameter data. Section 4.0 contains the occupant information. Appendix A contains the pre- and post-test still photographs. Appendix B contains the final test data plots. Appendix C contains the pre- and post-test dummy certification data. Appendix D contains miscellaneous test information.

Data Acquisition Explanations

Only 3000 milliseconds of data was recorded during the roll event.

The driver's chest deflection data channel, CSTXD1, recorded a questionable data spike at approximately 1702 milliseconds.

The right B-pillar Y-axis acceleration data channel, RBPYG1, recorded an anomalous data spike that exceeded the data channel's full scale at approximately 2616 milliseconds. This affected the right B-pillar resultant acceleration calculation, RPBRG1.

The left rear suspension vertical displacement data channel, SRLZD1, recorded questionable data after approximately 2500 milliseconds.

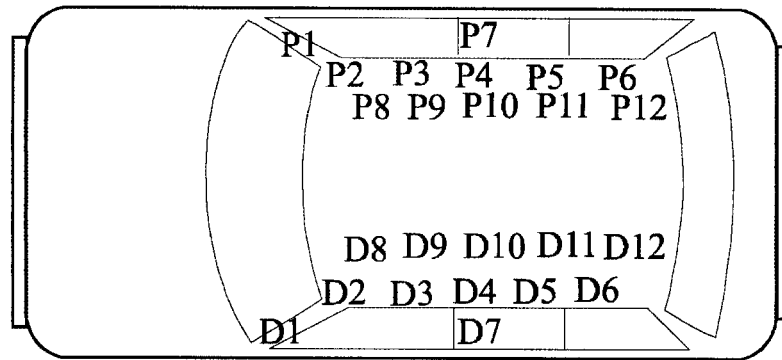
The rollover cart left frame rail primary and redundant X-axis acceleration data channels, CRTXG1 and CRTXG2, lost data after approximately 2067 and 700 milliseconds, respectively. Data for the first 600 milliseconds only is listed in Table 1.

Table 1 Roll Cart Instrumentation Locations and Data Summary

TEST NUMBER: 010412-1 No. LOCATION	POSITIVE DIRECTION		NEGATIVE DIRECTION	
1 LEFT FRAME RAIL LONGITUDINAL ¹	8.6 g	@ 95.0 ms	62.4 g	@ 18.6 ms
2 LEFT FRAME RAIL REDUNDANT LONGITUDINAL ¹	7.4 g	@ 94.6 ms	65.3 g	@ 18.4 ms

¹ See DATA ACQUISITION EXPLANATIONS

Figure 1 Vehicle Roof Crush Measurements



Roof Crush Measurements									
	Pre-Test			Post-Test			Static Crush		
	X	Y	Z	X	Y	Z ¹	X	Y	Z ¹
D1	2898	-656	1535	2882	-577	1461	16	79	74
D2	2793	-621	1615	2782	-511	1510	11	110	105
D3	2553	-601	1656	2559	-481	1552	-6	120	104
D4	2193	-591	1662	2203	-487	1598	-10	104	64
D5	1862	-593	1660	1873	-502	1638	-11	91	22
D6	1533	-591	1655	1542	-515	1668	-9	76	-13
D7	2212	-671	1564	2197	-581	1535	-15	90	29
D8	2808	-381	1647	2809	-287	1533	-1	94	114
D9	2553	-366	1675	2566	-277	1582	-13	89	93
D10	2193	-361	1690	2208	-281	1623	-15	80	67
D11	1858	-356	1697	1873	-283	1676	-15	73	21
D12	1528	-356	1696	1543	-292	1712	-15	64	-16
P1	2903	664	1530	2840	734	1438	63	70	92
P2	2800	624	1604	2758	689	1467	42	65	137
P3	2562	609	1652	2550	669	1524	12	60	128
P4	2203	619	1660	2190	679	1592	13	60	68
P5	1877	619	1660	1863	674	1628	14	55	32
P6	1548	624	1660	1523	679	1667	14	55	-7
P7	2220	1089	1564	2159	799	1530	71	-290	34
P8	2804	514	1634	2783	587	1485	21	73	149
P9	2561	395	1673	2558	459	1543	3	64	130
P10	2200	397	1690	2198	464	1618	2	67	72
P11	1872	397	1691	1870	464	1674	2	67	17
P12	1540	399	1686	1543	459	1709	-3	60	-23

All measurements are in millimeters.

¹ Post-test Z measurements were taken after dummies and test equipment were removed from the vehicle.

+X: Forward from rear bumper

+Y: Right from vehicle centerline

+Z: Up from ground level

Section 3.0

General Test and Vehicle Parameter Data

The following data sheets describe the General Test and Vehicle parameter data.

Table 2 Test Vehicle Information

Vehicle: 1994 Ford Explorer
 Color: Green
 VIN: 1FMDU34X9RUB54464
 Engine data:
 Placement: Inline
 Cylinders: 6
 Displacement: 4.0 liters
 Transmission data: 4 speed, X manual, ___ automatic, ___ overdrive
 Final drive: ___ fwd, ___ rwd, X 4wd
 Date vehicle received: 04/09/01
 Odometer reading: 90,837
 Dealer's name and address: N/A

Accessories:

Power steering	Yes	Automatic transmission	No
Power brakes	Yes	Automatic speed control	Yes
Power seats	No	Tilting steering wheel	Yes
Power windows	Yes	Telescoping steering wheel	No
Tinted glass	Yes	Air conditioning	Yes
Radio	No	Anti-skid brake	Yes
Clock	No	Rear window defroster	Yes
Other	Power mirrors	Power door locks	Yes

Certification data from vehicle's label:

Vehicle manufactured by: Ford Motor Company
 Date of manufacture: 9/94
 VIN: 1FMDU34X9RUB54464
 GVWR: 5280 lbs./2394 kg
 GAWR: Front: 2540 lbs./1152 kg
 Rear: 3000 lbs./1360 kg

Table 2 Test Vehicle Information, Cont'd.

Mfr./Line/Size of tires on vehicle: Firestone, Radial ATX, P235/75R15

Mfr./Line/Size of spare tire: Firestone, Radial ATX, P235/75R15

Type of seats:

Front:	Bucket
Rear:	Split bench

Tire & capacity data from vehicle's label:

Recommended tire size: P235/75R15

Recommended cold tire pressure:

Front: 26 psi

Rear: 26 psi

Designated seating capacity:

Front: 2

Rear: 3

Total: 5

Vehicle capacity weight: N/A

Test vehicle attitudes:

Delivered attitude:	LF: 848 mm	RF: 855 mm	LR: 817 mm	RR: 820 mm
Fully loaded attitude:	LF: 841 mm	RF: 843 mm	LR: 792 mm	RR: 790 mm
Pre-test attitude:	LF: 822 mm	RF: 828 mm	LR: 785 mm	RR: 793 mm

Table 2 Test Vehicle Information, Cont'd.

Weight of test vehicle as received (with maximum fluids):

Right front	483.0 kg	Right rear	442.5 kg
Left front	512.0 kg	Left rear	431.5 kg
Total front weight	995.0 kg	(53.2% of total vehicle weight)	
Total rear weight	874.0 kg	(46.8% of total vehicle weight)	
Total delivered weight	1869.0 kg		

Calculation of test vehicle's target test weight:

RCLW¹ = Rated Cargo and Luggage Weight

GVWR = Gross Vehicle Weight Rating (2394 kg)

UDW = Unloaded Delivered Weight (1869.0 kg)

VCW¹ = Vehicle Capacity Weight = 2394 – 1869 = 525 kg

DSC = Designated Seating Capacity (5)

RCLW¹ = GVWR – UDW – 150 (DSC) = 2394 – 1869 – 68(5) = 185 kg

Target Test Weight = UDW + RCLW¹ + (No. of Hybrid III dummies X 75.8 kg per dummy)

Target Test Weight = 1869.0 + 136.0 + 151.5 = 2156.5 kg

Weight of test vehicle with required dummies and 135.5 kg of cargo weight:

Right front	526.8 kg	Right rear	550.4 kg
Left front	522.8 kg	Left rear	556.0 kg
Total front weight	1049.6 kg	(48.7% total vehicle weight)	
Total rear weight	1106.4 kg	(51.3 % total vehicle weight)	
Total test weight	2156.0 kg	(0.0% over target test weight)	

Weight of ballast secured in vehicle cargo area: None

Components removed to meet target test weight: None

CG rearward of front wheel centerline: 1463 mm

¹ Cargo weight for multi-purpose passenger vehicles, trucks, and buses is the vehicle's rated cargo and luggage weight or 136 kg, whichever is less.

Table 3 Test Conditions

Test Number: 010412
Date of Test: 04/12/01
Time of Test: 1330

Ambient Temperature at Impact Area: 23° C
Temperature in Occupant Compartment: 23° C
Driver Dummy Temperature: 23° C

Vehicle and Roll Cart Data

	<u>Actual</u>	<u>Intended</u>
Vehicle Test Weight (kg.):	2156.0	2156.5
Vehicle Orientation (deg.) ¹ :	23	23
Impact Side:	Left	Left
Roll Cart Crabbed Angle (deg.) ² :	0	0
Roll Cart Velocity (km/h) ³ :	48.3	48.1

Vehicle Measurements:

Maximum Length:	N/A
Maximum Width:	1730 mm
Wheelbase:	2850 mm
Top Width:	N/A
C.G. Rearward of Front Wheel Centerline:	1463 mm
C.G. Height Above Ground Level:	N/A

¹ As measured on the roll cart.

² As measured from roll cart's centerline to direction of travel (positive is clockwise).

³ As measured over final 300 mm of travel.

Table 3 Test Conditions, Cont'd.

Vehicle Information:

Left Front:	Door	-	Unlocked	Window	-	Open
Left Rear:	Door	-	N/A	Window	-	N/A
Right Front	Door	-	Unlocked	Window	-	Open
Right Rear	Door	-	N/A	Window	-	N/A
Emergency Brake:	Released					
Transmission:	Neutral					
Headrests:	Driver	-	Non-adjustable	Passenger	-	Non-adjustable
Tire Pressure:	Front	-	26 psi	Rear	-	26 psi

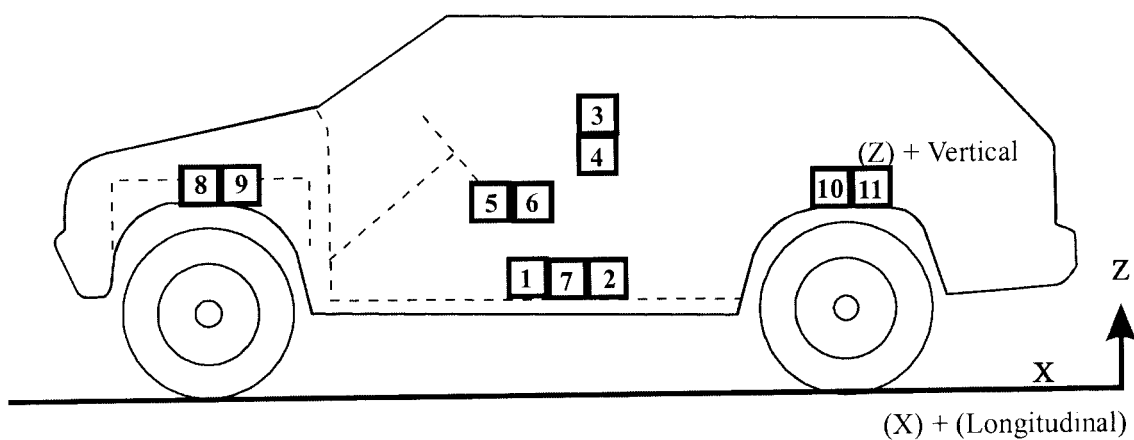
Dummy Information:

Type:	Driver:	Passenger:
Position:	Part 572 E	Part 572 E
Serial No.:	Left Front	Right Front
	617	616

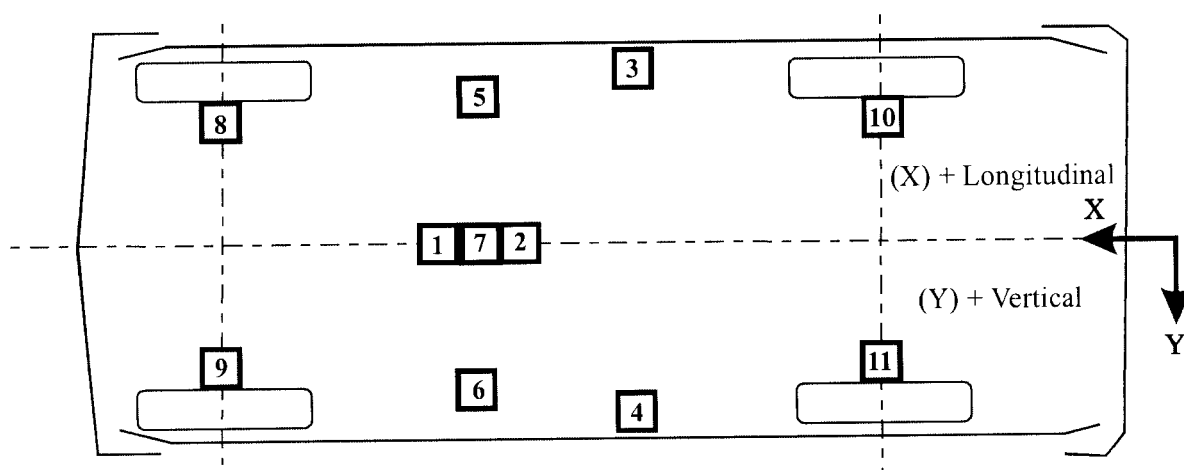
Instrumentation:

Head Accelerometers:	3	3
Neck Load Cells:		
Upper:	6	6
Lower:	0	0
Chest Accelerometers:	3	3
Chest Deflection Potentiometers:	1	1
Pelvis Accelerometers:	3	3
Femur Load Cells:	2	2
Restraint System:	Side Airbag ^{curtain}	Side Airbag ^{curtain}

Figure 2 Vehicle Instrumentation Locations



Side View



Bottom View

Table 4 Vehicle Instrumentation Locations and Data Summary

TEST NUMBER: 010412-1 No. LOCATION	X	Y	Z	POSITIVE DIRECTION	NEGATIVE DIRECTION
1 VEHICLE CENTER OF GRAVITY	2840 mm	0 mm	606 mm		
LONGITUDINAL			3.3 g	@ 2599.6 ms	3.0 g @ 1717.4 ms
LATERAL			6.3 g	@ 376.4 ms	8.3 g @ 1188.2 ms
VERTICAL			10.3 g	@ 887.0 ms	7.0 g @ 101.0 ms
RESULTANT			10.6 g	@ 887.0 ms	
2 FLOOR TUNNEL	2560 mm	0 mm	538 mm		
LONGITUDINAL			2.9 g	@ 868.2 ms	3.7 g @ 884.4 ms
LATERAL			6.0 g	@ 379.8 ms	7.2 g @ 1191.4 ms
VERTICAL			14.1 g	@ 887.8 ms	7.9 g @ 1186.5 ms
RESULTANT			14.3 g	@ 887.8 ms	
3 LEFT B-PILLAR	2680 mm	-705 mm	1015 mm		
LONGITUDINAL			5.7 g	@ 1696.7 ms	4.2 g @ 1164.6 ms
LATERAL			34.0 g	@ 1683.3 ms	10.9 g @ 694.5 ms
VERTICAL			19.0 g	@ 1683.3 ms	3.3 g @ 1195.3 ms
RESULTANT			39.0 g	@ 1683.3 ms	
4 RIGHT B-PILLAR	2680 mm	705 mm	1010 mm		
LONGITUDINAL			12.1 g	@ 866.1 ms	11.6 g @ 870.2 ms
LATERAL ¹			---	---	---
VERTICAL			14.3 g	@ 857.8 ms	3.9 g @ 373.8 ms
RESULTANT ¹			---	---	

Table 4 Vehicle Instrumentation Locations and Data Summary, Cont'd.

TEST NUMBER: 010412-1 No. LOCATION	X	Y	Z	POSITIVE DIRECTION		NEGATIVE DIRECTION	
5 LEFT INNER DOOR PANEL	2810 mm	-710 mm	890 mm				
LONGITUDINAL			7.1 g	@ 1629.5 ms	10.5 g	@ 1692.2 ms	
LATERAL			31.9 g	@ 1684.2 ms	20.1 g	@ 1639.8 ms	
VERTICAL			17.0 g	@ 1682.4 ms	6.0 g	@ 2199.7 ms	
RESULTANT			35.6 g	@ 1684.0 ms			
6 RIGHT INNER DOOR PANEL	2815 mm	710 mm	900 mm				
LONGITUDINAL			8.9 g	@ 869.0 ms	7.4 g	@ 858.0 ms	
LATERAL			26.8 g	@ 864.6 ms	19.1 g	@ 898.9 ms	
VERTICAL			33.1 g	@ 859.4 ms	25.7 g	@ 1920.6 ms	
RESULTANT			33.9 g	@ 859.3 ms			
7 VEHICLE CENTER OF GRAVITY	2840 mm	0 mm	606 mm				
ROLL			259.9 deg/	@ 473.5 ms	215.8 deg/	@ 2208.0 ms	
PITCH			273.1 deg/	@ 1171.8 ms	286.1 deg/	@ 1173.3 ms	
YAW			65.6 deg/	@ 2627.9 ms	47.6 deg/	@ 2842.6 ms	
8 LEFT FRONT SUSPENSION VERTICAL			99.4 mm	@ 452.1 ms	53.4 mm	@ 355.9 ms	
9 RIGHT FRONT SUSPENSION VERTICAL			76.5 mm	@ 1311.8 ms	92.9 mm	@ 1213.9 ms	
10 LEFT REAR SUSPENSION VERTICAL ¹			---	---	16.3 mm	@ 436.2 ms	

Table 4 Vehicle Instrumentation Locations and Data Summary, Cont'd.

TEST NUMBER: 010412-1					
No. LOCATION	X	Y	Z	POSITIVE DIRECTION	NEGATIVE DIRECTION
11 RIGHT REAR SUSPENSION					
RIGHT REAR				140.2 mm @ 2069.8 ms	39.2 mm @ 1312.5 ms

REFERENCE: X: + FORWARD FROM REAR BUMPER
Y: + LEFTWARD FROM VEHICLE CENTERLINE
Z: + UPWARD FROM GROUND LEVEL

¹ See DATA ACQUISITION EXPLANATIONS

Figure 3 Camera Locations

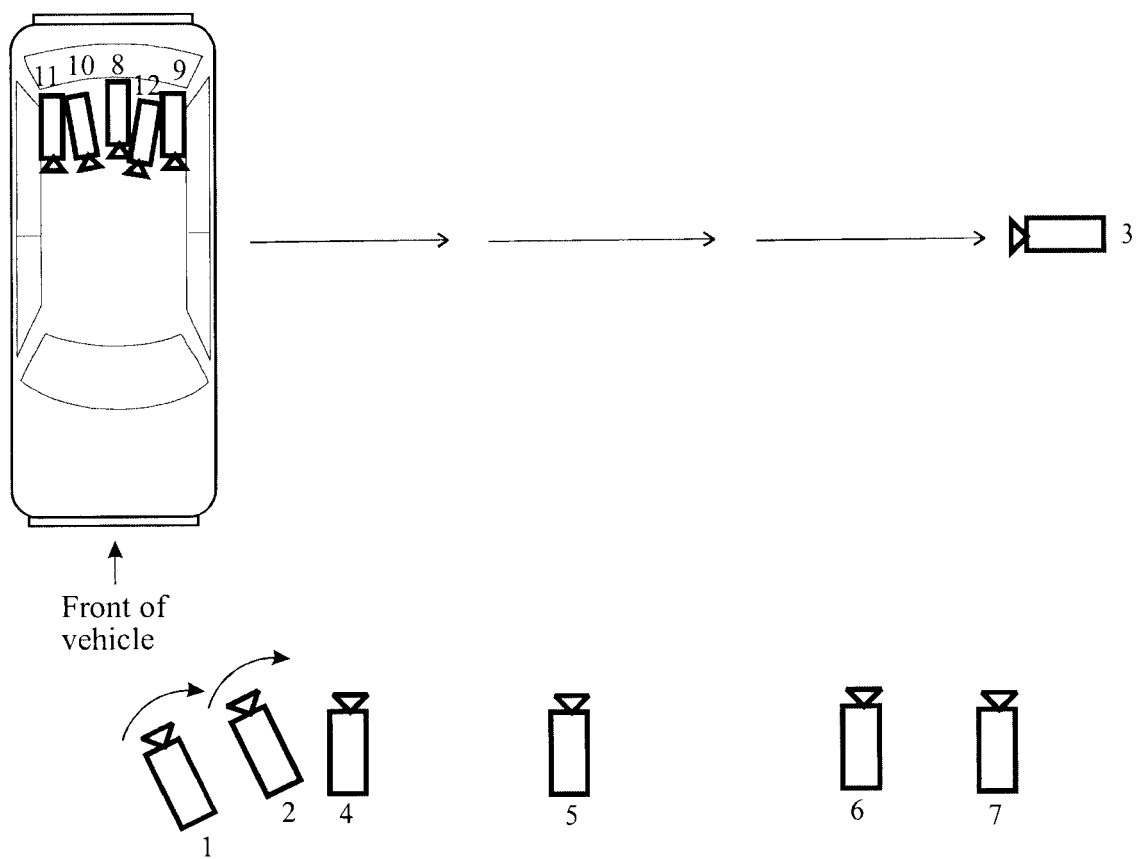


Table 5 Motion Picture Camera Information

Camera Number	Location	Type	Lens (mm)	Speed (fps)	Purpose of Camera Data
1	Real-time panning	Bolex	12-120	24	Real-time documentation
2	High speed panning	Photosonic	13	505	Vehicle dynamics
3	Perpendicular to rollover	Photosonic	13	510	Vehicle dynamics
4	1 st Rollover	Photosonic	13	502	Vehicle dynamics
5	2 nd Rollover	Photosonic	13	507	Vehicle dynamics
6	3 rd Rollover	Photosonic	13	505	Vehicle dynamics
7	4 th Rollover	Photosonic	13	502	Vehicle dynamics
8	Onboard rear center	Photosonic	8	505	Dummy kinematics
9	Onboard rear driver	Photosonic	8	502	Dummy kinematics
10	Onboard angled driver	Photosonic	8	502	Dummy kinematics
11	Onboard rear passenger	Photosonic	8	505	Dummy kinematics
12	Onboard angled passenger	Photosonic	8	507	Dummy kinematics

Section 4.0

Occupant Information

Table 6 Dummy Data Summary

TEST NUMBER: 010412-1

DRIVER DUMMY SERIAL NUMBER: 617

POSITIVE
DIRECTION

NEGATIVE
DIRECTION

HEAD ACCELERATION

LONGITUDINAL	14.2 g	@	1389.3 ms	8.1 g	@	2487.0 ms
LATERAL	29.4 g	@	1691.1 ms	5.3 g	@	506.2 ms
VERTICAL	13.0 g	@	1391.1 ms	1.4 g	@	421.1 ms
RESULTANT	33.1 g	@	1389.1 ms			
HIC	55 from 1677.6 to 1713.6 ms					

NECK FORCE

LONGITUDINAL	410.5 N	@	1147.4 ms	206.1 N	@	1712.5 ms
LATERAL	16.9 N	@	26.6 ms	916.6 N	@	1709.7 ms
VERTICAL	645.4 N	@	2854.8 ms	1875.7 N	@	961.4 ms

NECK MOMENT

ABOUT LONG.	55.3 N-m	@	1707.0 ms	27.6 N-m	@	549.7 ms
ABOUT LATERAL	11.9 N-m	@	1392.6 ms	22.6 N-m	@	1714.0 ms
ABOUT VERTICAL	4.4 N-m	@	1831.8 ms	13.4 N-m	@	1748.2 ms
OCC. CONDYLE	11.5 N-m	@	1392.6 ms	19.0 N-m	@	1714.2 ms

CHEST ACCELERATION

LONGITUDINAL	3.3 g	@	1918.5 ms	4.7 g	@	2777.0 ms
LATERAL	19.9 g	@	1699.8 ms	5.9 g	@	485.3 ms
VERTICAL	12.6 g	@	1701.0 ms	1.4 g	@	2268.4 ms
RESULTANT	21.5 g	@	1699.9 ms			
3 MSEC	15.2 g from 1698.9 to 1701.8 ms					

CHEST DEFLECTION

LONGITUDINAL ¹	4.8 mm	@	417.4 ms	2.9 mm	@	1701.8 ms
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PELVIS ACCELERATION

LONGITUDINAL	2.3 g	@	951.0 ms	3.7 g	@	951.3 ms
LATERAL	14.0 g	@	395.2 ms	2.0 g	@	504.8 ms
VERTICAL	10.2 g	@	1702.5 ms	1.9 g	@	1820.0 ms
RESULTANT	14.2 g	@	397.4 ms			

FEMUR FORCES

LEFT	273.1 N	@	1700.8 ms	396.4 N	@	2206.6 ms
RIGHT	283.3 N	@	399.8 ms	746.7 N	@	2225.4 ms

¹See DATA ACQUISITION EXPLANATIONS

Table 6 Dummy Data Summary, Cont'd.

TEST NUMBER: 010412-1

PASSENGER DUMMY SERIAL NUMBER: 616

POSITIVE
DIRECTION

NEGATIVE
DIRECTION

HEAD ACCELERATION

LONGITUDINAL	48.0 g	@	832.4 ms	10.5 g	@	533.6 ms
LATERAL	7.6 g	@	764.2 ms	55.6 g	@	831.4 ms
VERTICAL	23.6 g	@	845.1 ms	5.3 g	@	1129.5 ms
RESULTANT	73.7 g	@	831.8 ms			
HIC	244 from 827.8 to 837.8 ms					

NECK FORCE

LONGITUDINAL	897.4 N	@	551.8 ms	293.2 N	@	2278.5 ms
LATERAL	319.3 N	@	555.5 ms	454.3 N	@	868.9 ms
VERTICAL	701.1 N	@	970.7 ms	1964.5 N	@	549.5 ms

NECK MOMENT

ABOUT LONG.	30.2 N-m	@	866.3 ms	37.8 N-m	@	557.9 ms
ABOUT LATERAL	34.8 N-m	@	555.5 ms	36.0 N-m	@	2129.6 ms
ABOUT VERTICAL	10.6 N-m	@	667.2 ms	12.7 N-m	@	561.5 ms
OCC. CONDYLE	31.5 N-m	@	2009.3 ms	32.4 N-m	@	2129.6 ms

CHEST ACCELERATION

LONGITUDINAL	12.9 g	@	871.6 ms	3.8 g	@	1232.0 ms
LATERAL	5.5 g	@	484.3 ms	28.3 g	@	865.4 ms
VERTICAL	7.7 g	@	871.5 ms	7.9 g	@	732.5 ms
RESULTANT	30.3 g	@	865.3 ms			
3 MSEC	28.2 g from 864.0 to 867.0 ms					

CHEST DEFLECTION

LONGITUDINAL	5.7 mm	@	872.4 ms	0.2 mm	@	437.0 ms
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PELVIS ACCELERATION

LONGITUDINAL	15.0 g	@	1898.4 ms	5.1 g	@	1914.9 ms
LATERAL	20.1 g	@	1914.2 ms	27.9 g	@	1899.3 ms
VERTICAL	5.0 g	@	871.5 ms	8.2 g	@	917.0 ms
RESULTANT	31.7 g	@	1899.3 ms			

FEMUR FORCES

LEFT	368.2 N	@	2181.8 ms	748.6 N	@	1899.4 ms
RIGHT	298.7 N	@	1241.3 ms	406.1 N	@	1903.2 ms

Table 7 Post-Impact Dummy/Vehicle Data

Visible Dummy Contact Points:

	<u>Driver #617</u>	<u>Passenger #616</u>
Head	Roof/head air curtain	Roof/driver dummy
Chest/Shoulder	Air curtain/passenger dummy	Driver dummy/air curtain
Abdomen	None	None
Left knee	None	None
Right knee	None	None

Door Opening:

	<u>Left</u>	<u>Right</u>
Front	Easy	Easy
Rear	N/A	Easy

Seat Movement:

	<u>Seat Back Failure</u>	<u>Seat Shift</u>
Front	None	None
Rear	N/A	N/A

Glazing Damage: The entire windshield cracked.

Other Notable Impact Effects: None

Kinematic Summary

During the first roll, the driver dummy initially translated upward and outboard, striking its head on the roof just before the shoulder contacted the inflatable curtain. The dummy jostled between the roof and air curtain. The dummy then returned back into the seat. This pattern was repeated through subsequent rolls, sometimes with the dummy's head contacting the upper air curtain. The dummy remained fairly upright relative to the driver's seat and remained within the driver's seating area.

During the first roll the passenger dummy initially translated towards the driver's side of the vehicle with the passenger's left shoulder contacting the driver's right shoulder. The dummy then moved so that the lower torso was over the passenger seat while the upper torso was at an angle and the head contacted the roof near the centerline of the vehicle. The dummy's right side went into the passenger air curtain as the head hit the roof again. The dummy rebounded so that the upper torso, head, and neck were nearly 90 degrees to the normal seating position. During the next two rolls the dummy stayed more or less in this position with the head contacting the roof again. During the last half roll the dummy moved across the vehicle, still with the upper body at 90 degrees to the seat, and contacted the driver dummy. The legs flew up and the head moved downward (relative to the seat orientation) so that the driver's head was pointed floorward and its feet were on the window sill when the vehicle came to rest on its roof.

Dummy Temperature Control and Positioning

The vehicle and dummies were left inside the temperature controlled building over 24 hours prior to the time of the test. After the vehicle had been positioned on the rollover device it was towed outside for launch.

Two Part 572 E dummies were instrumented for this test. The dummy instrumentation consisted of triaxial accelerometers in the head, chest, and pelvis, a deflection potentiometer in the chest, load cells in the neck, and left and right femur load cells. Prior to seating the dummies, the seats were positioned in the mid-adjustment notch of the seat tracks. The seat back angles were adjusted to 23.8° for the driver and 23.8° for the passenger. The dummies were positioned in the seats according to the dummy placement procedure specified in Appendix B of Laboratory Procedure TP-208-10. The H-point locations of the seats were obtained by using the SAE J826 H-point machine.

Figure 4 Dummy Measurement Locations for Front Seat Occupants

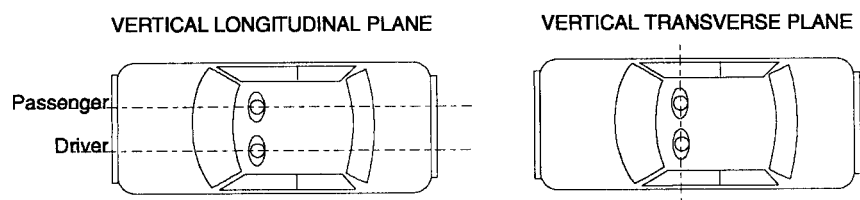
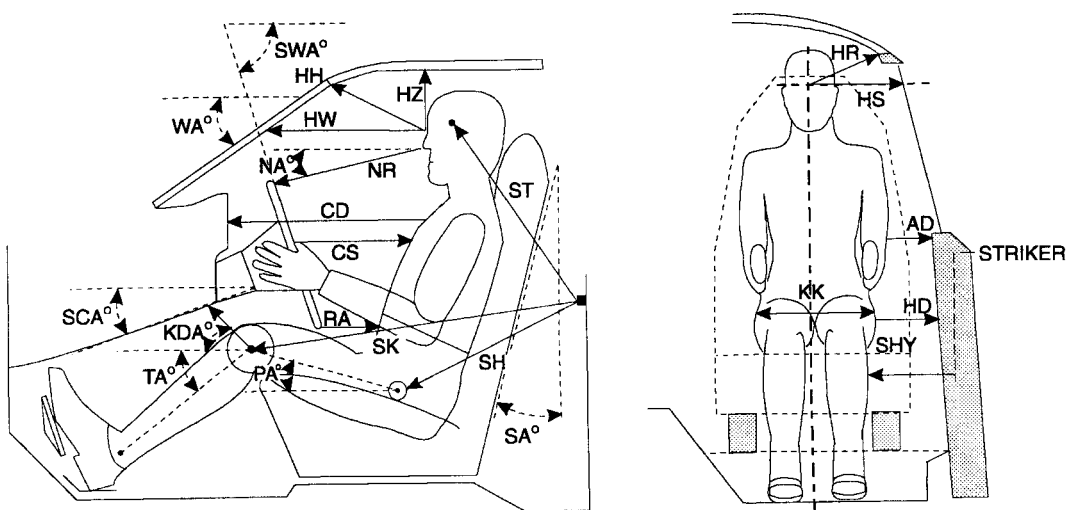


Table 8 Dummy Measurement Data For Front Seat Occupants

Designation	Type of Measurement	Driver (Serial #617)	Passenger (Serial #616)
WA	Windshield angle	37.9°	37.9°
SWA	Steering wheel angle	66.0°	N/A
SCA	Steering column angle	24.0°	N/A
SA	Seat back angle	23.8°	23.8°
HZ	Head to roof	225 mm	250 mm
45HH	Head to header	445 mm	458 mm
HW	Head to windshield	587 mm	638 mm
HR	Head to side header	219 mm	210 mm
NR	Nose to rim	414 mm	N/A
NA	Nose to rim angle	8.6°	N/A
CD	Chest to dash	570 mm	595
CS	Steering wheel to chest	326 mm	N/A
RA	Rim to abdomen	200 mm	N/A
KDL	Left knee to dash	264 mm	260 mm
KDR	Right knee to dash	260 mm	254 mm
KDA	Outboard knee to dash angle	67.9°	69.7°
PA	Pelvic angle	24.9°	24.5°
TA	Tibial angle	33.3°	37.5°
KK	Knee to knee	270 mm	270 mm
ST ¹	Striker to head	480 mm	470 mm
	Striker to head angle	-78.9°	-79.7°
SK ¹	Striker to knee	586 mm	590 mm
	Striker to knee angle	7.5°	8.5°
SH ¹	Striker to H-point	273 mm	260 mm
	Striker to H-point angle	40.4°	44.5°
SHY	Striker to H-point (Y dir.)	225 mm	225 mm
HS	Head to side window	287 mm	302 mm
HD	H-point to door	140 mm	133 mm
AD	Arm to door	123 mm	120 mm

The seat back angle (SA°) is measured relative to vertical, all other angles are measured relative to horizontal.

¹ A negative angle indicates the measurement point was above the striker.

Appendix A

Photographs



Figure A-1 Pre-Test Front View





Figure A-3 Post-Test Front - View 2

Intentionally Left Blank



Figure A-4 Pre-Test Left Front Three-Quarter View





Figure A-6 Post-Test Left Front Three-Quarter - View 2

Intentionally Left Blank



Figure A-7 Pre-Test Left Side View





Figure A-9 Post-Test Left Side - View 2

Intentionally Left Blank



Figure A-17 Post-Test Right Side - View 2

Intentionally Left Blank



Figure A-10 Pre-Test Left Rear Three-Quarter View

Intentionally Left Blank



Figure A-11 Pre-Test Rear View





Figure A-13 Post-Test Rear - View 2





Figure A-15 Pre-Test Right Side View





Figure A-18 Pre-Test Right Front View





Figure A-21 Pre-Test Windshield View





Figure A-23 Pre-Test Engine Compartment View

Intentionally Left Blank



Figure A-23 Pre-Test Engine Compartment View

Intentionally Left Blank



Figure A-24 Pre-Test Front Underbody View





Figure A-26 Pre-Test Rear Underbody View





Figure A-28 Pre-Test Vehicle Certification Label





Figure A-30 Pre-Test Driver Dummy - View 1





Figure A-32 Pre-Test Driver Dummy - View 2



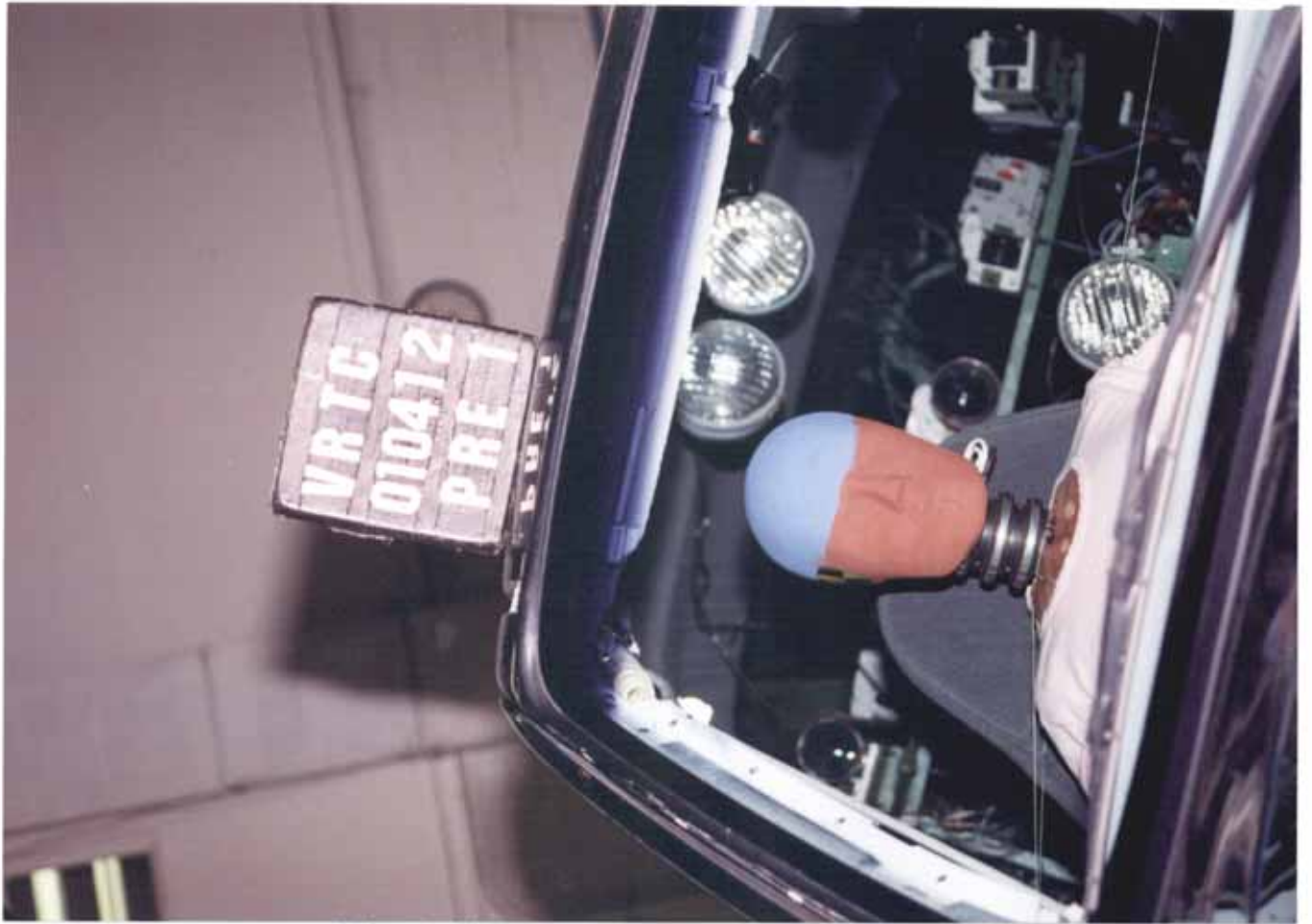


Figure A-36 Pre-Test Passenger Dummy - View 1





Figure A-38 Pre-Test Passenger Dummy - View 2





Figure A-38 Pre-Test Passenger Dummy - View 2



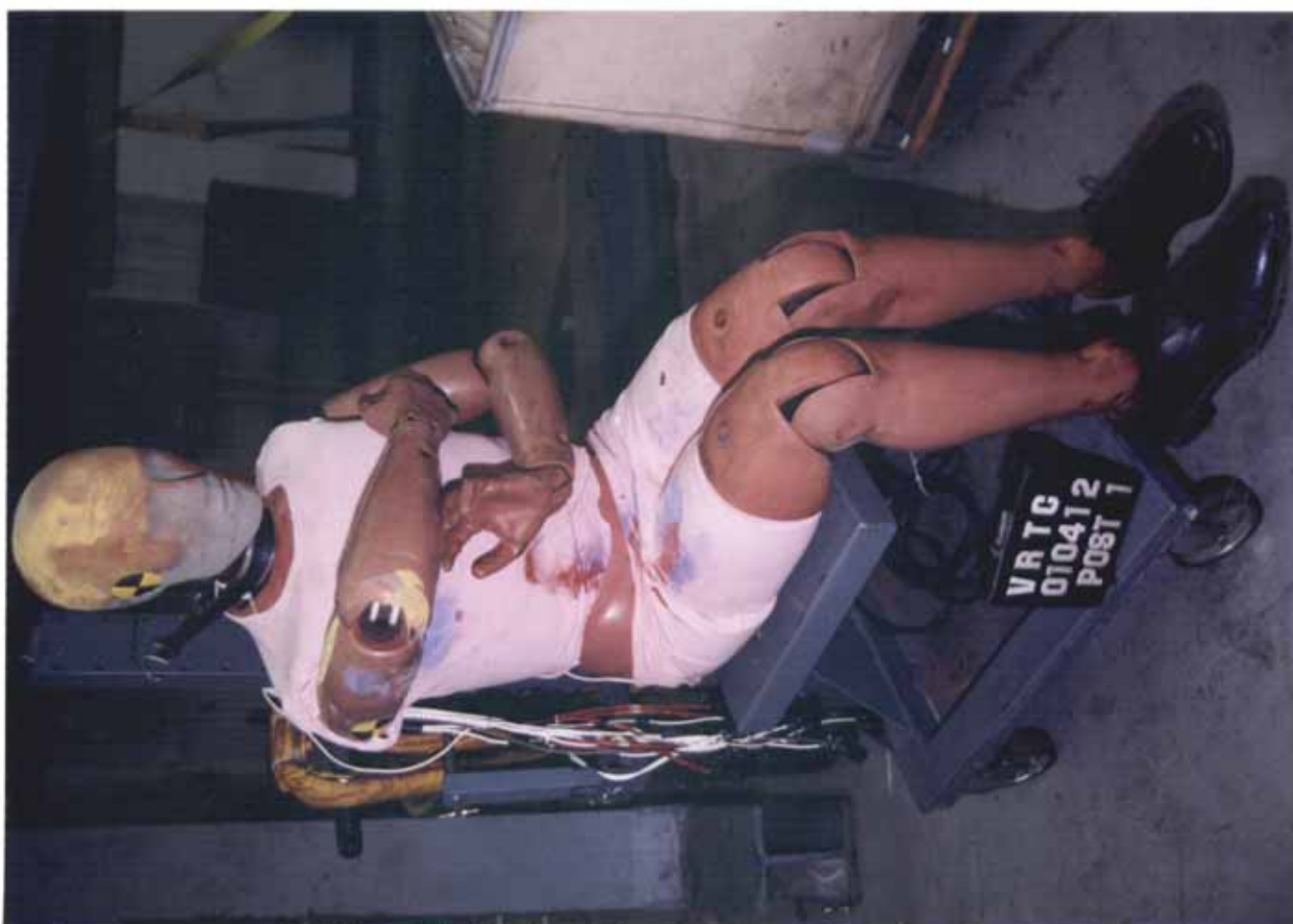


Figure A-40 Post-Test Driver Dummy Overall View





Figure A-42 Post-Test Passenger Dummy Head Contact View

Appendix B

Data Plots

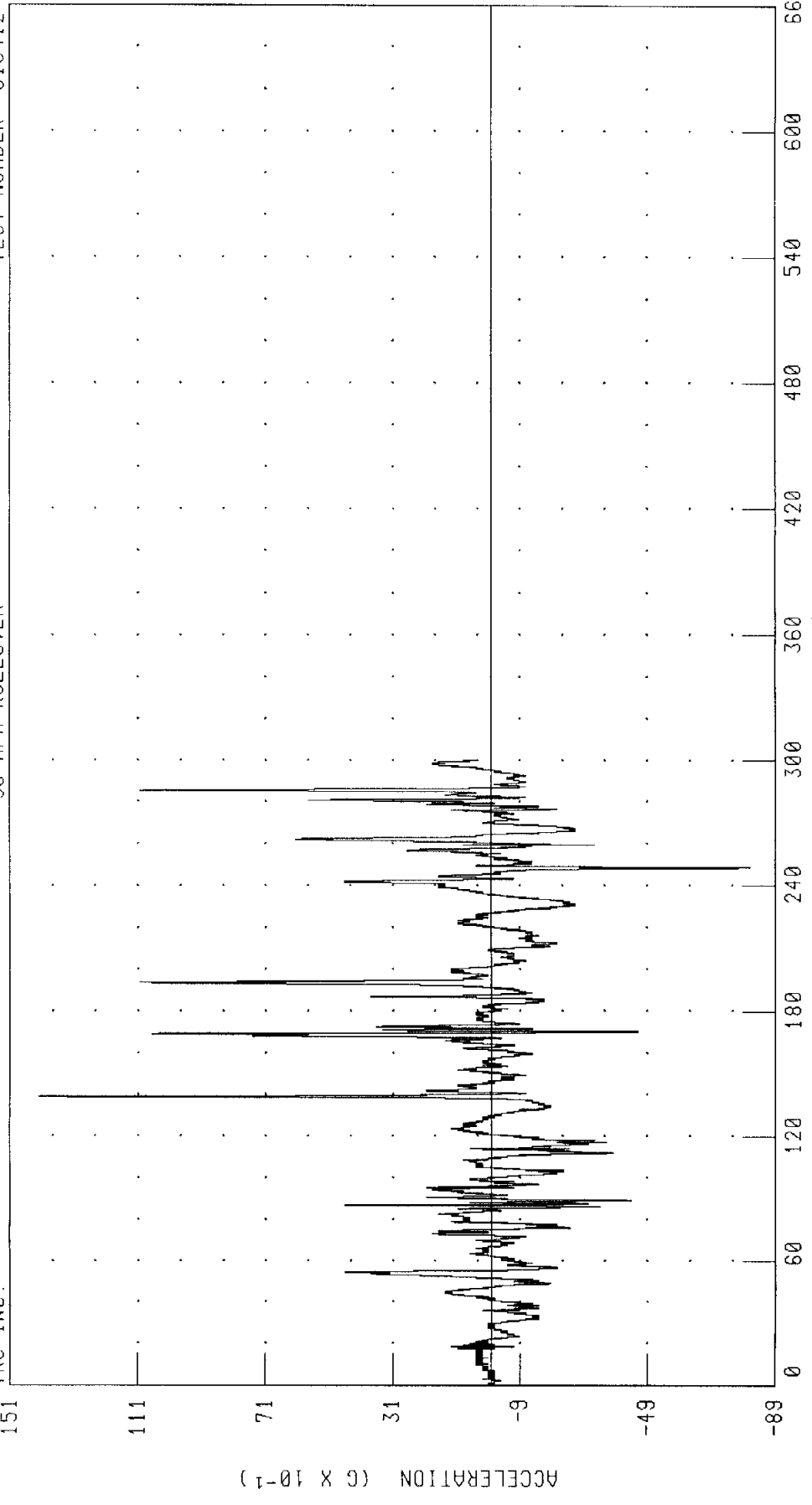
1994 FORD EXPLORER HEAD CURTAIN AIRBAG EVALUATION IN A 30 MPH ROLLOVER CRASH

DRIVER HEAD LONGITUDINAL AXIS ACCELERATION

TEST NUMBER: 010412

30 MPH ROLLOVER

TRC INC.



CHANNEL: HEDXG1 FILTER: CH. CLASS 1000

PEAK DATA: 14.19 G @ 1389.28 MS; -8.13 G @ 2486.96 MS

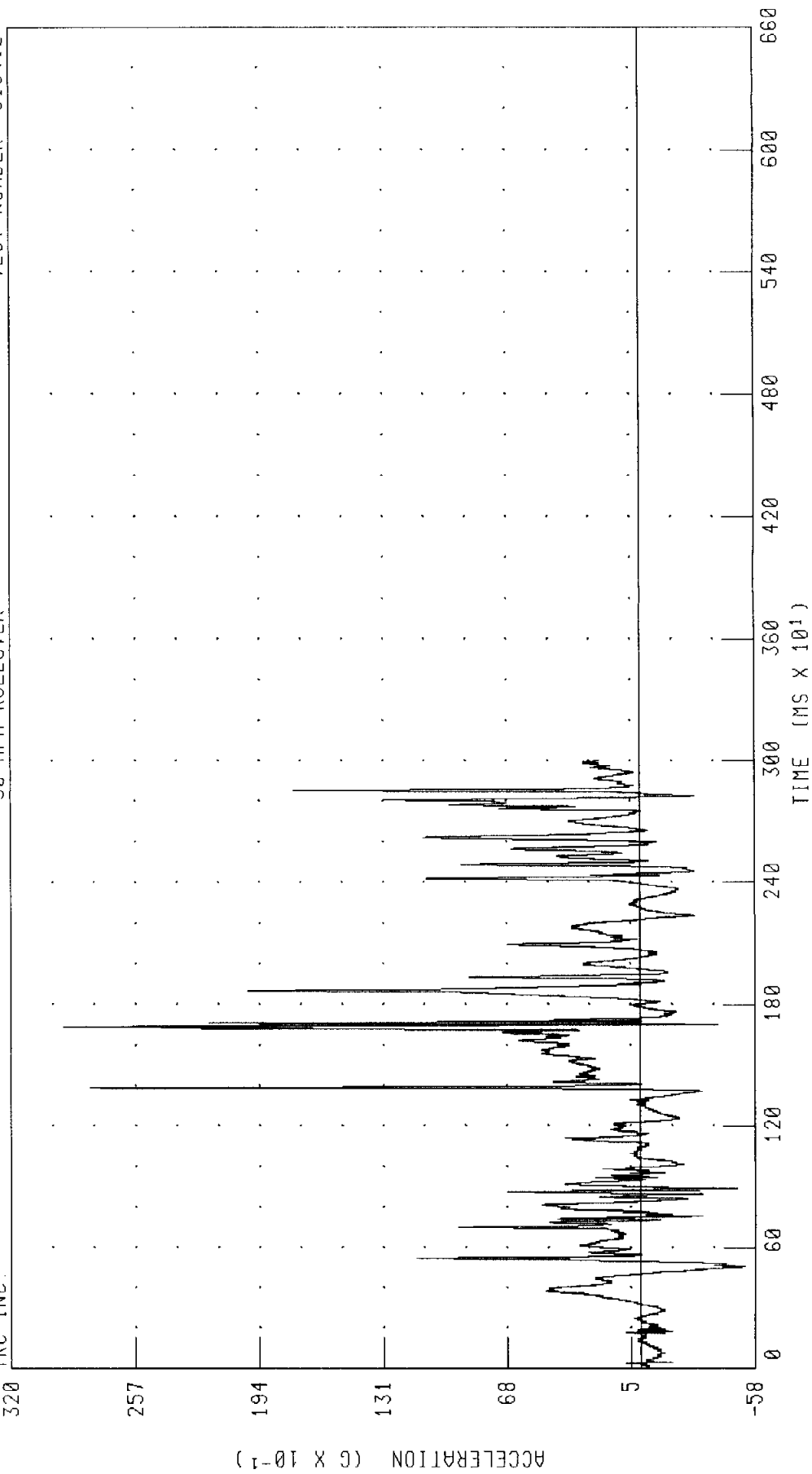
1994 FORD EXPLORER HEAD CURTAIN AIRBAG EVALUATION IN A 30 MPH ROLLOVER CRASH

DRIVER HEAD LATERAL AXIS ACCELERATION

TEST NUMBER: 010412

30 MPH ROLLOVER

TRC INC.



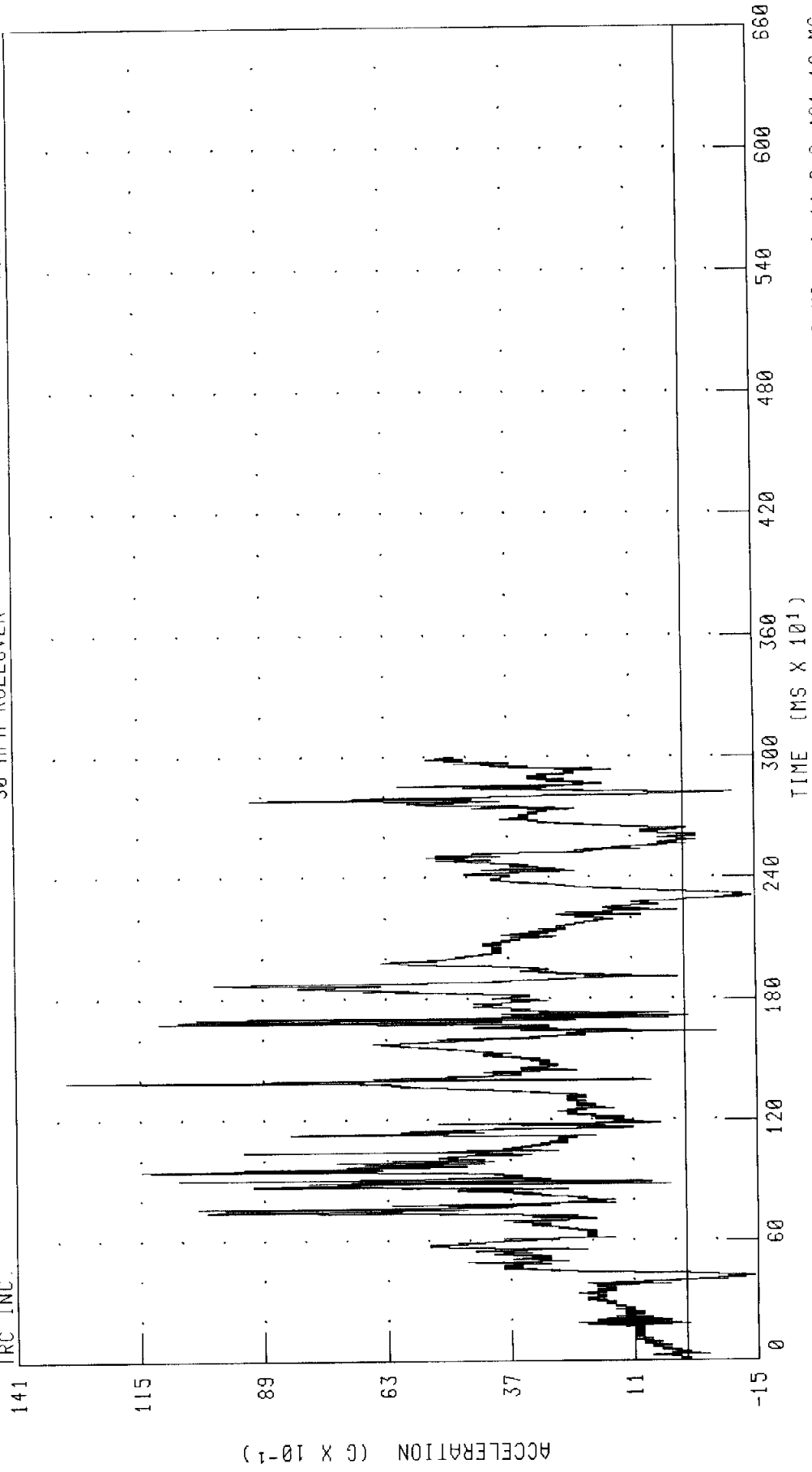
1994 FORD EXPLORER HEAD CURTAIN AIRBAG EVALUATION IN A 30 MPH ROLLOVER CRASH

DRIVER HEAD VERTICAL AXIS ACCELERATION

TEST NUMBER: 010412

30 MPH ROLLOVER

TRC INC.

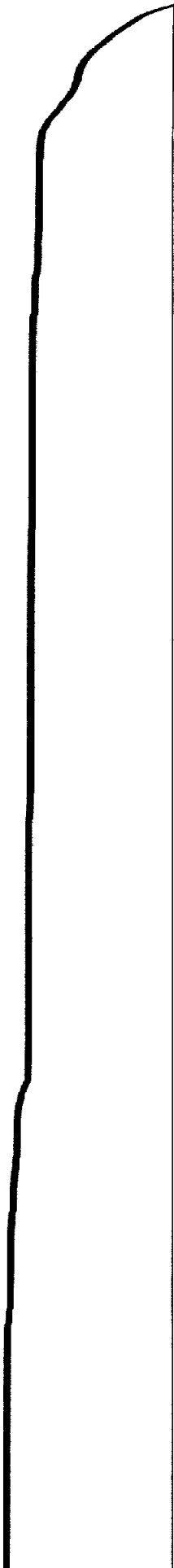


CHANNEL: HEDZC1 FILTER: CH. CLASS 1000

PEAK DATA: 13.05 G @ 1391.12 MS, -1.44 G @ 421.12 MS

511

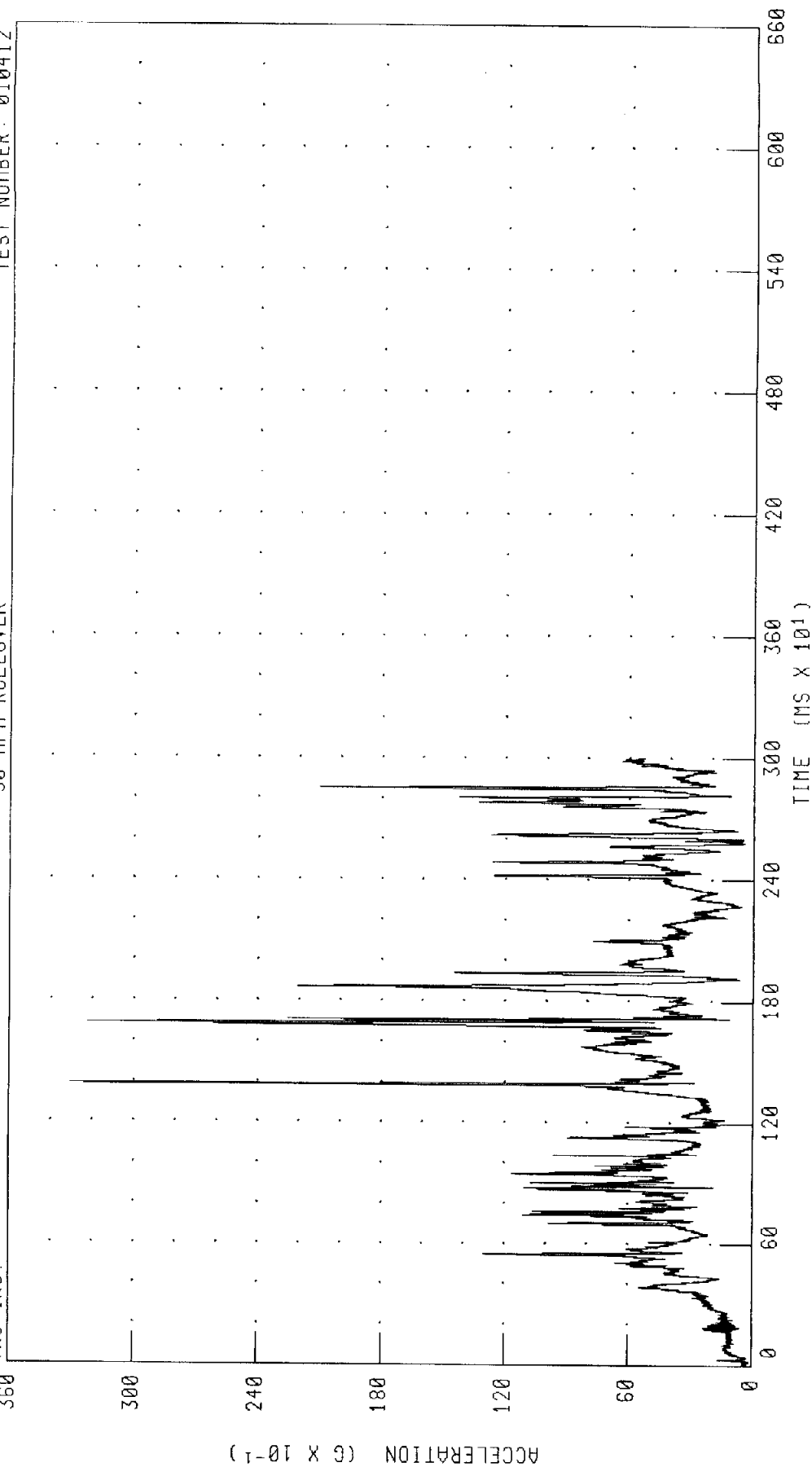
090



1994 FORD EXPLORER HEAD CURTAIN AIRBAG EVALUATION IN A 30 MPH ROLLOVER CRASH
 DRIVER HEAD RESULTANT ACCELERATION
 30 MPH ROLLOVER

TRC INC.

TEST NUMBER: 010412



CHANNEL: HEDRG1 FILTER: CH. CLASS 1000

PEAK DATA: 33.08 G @ 1389.12 MS, 0 17 G @ 12 32 MS

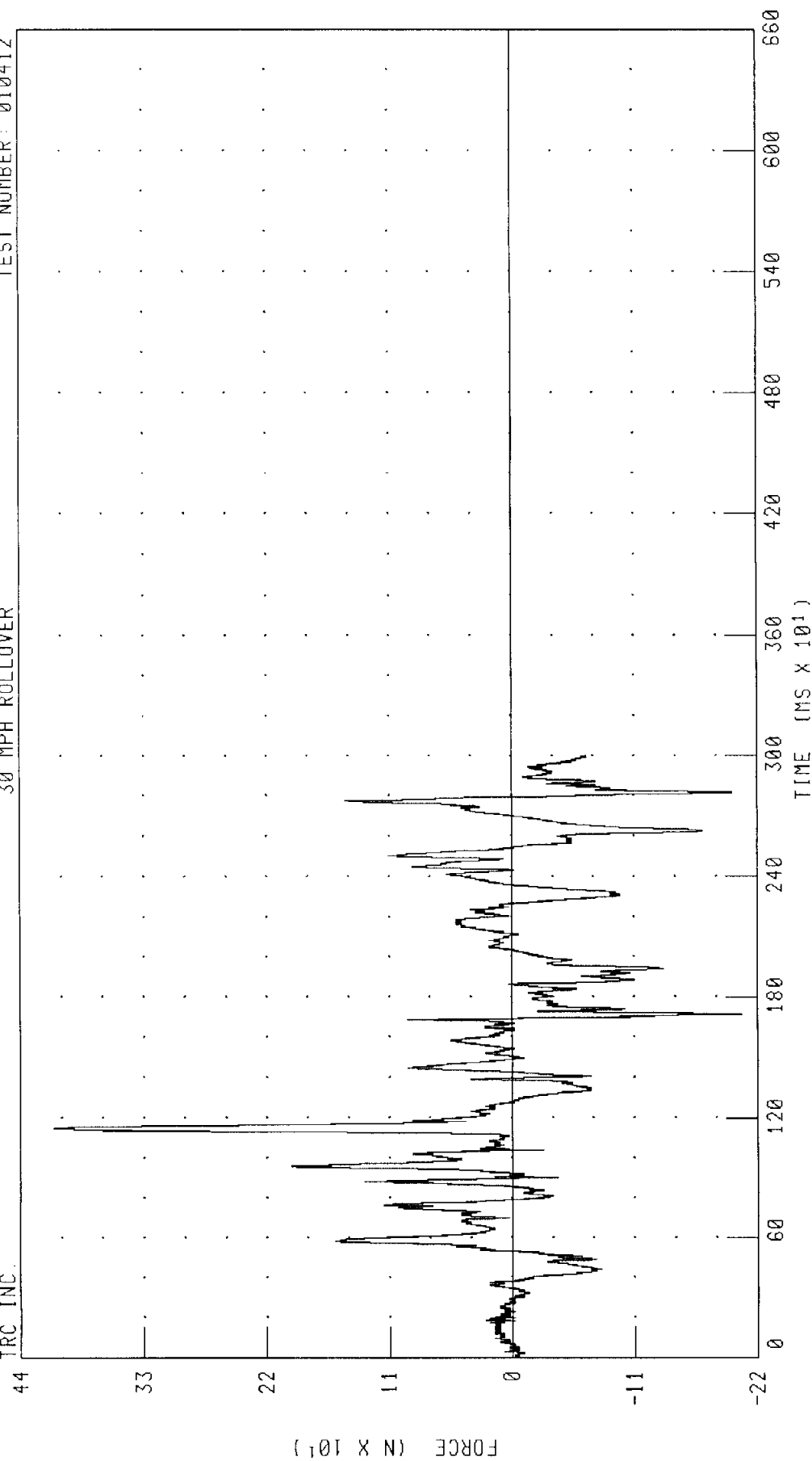
1994 FORD EXPLORER HEAD CURTAIN AIRBAG EVALUATION IN A 30 MPH ROLLOVER CRASH

DRIVER UPPER NECK X-AXIS SHEAR FORCE

TEST NUMBER: 010412

30 MPH ROLLOVER

TRC INC.

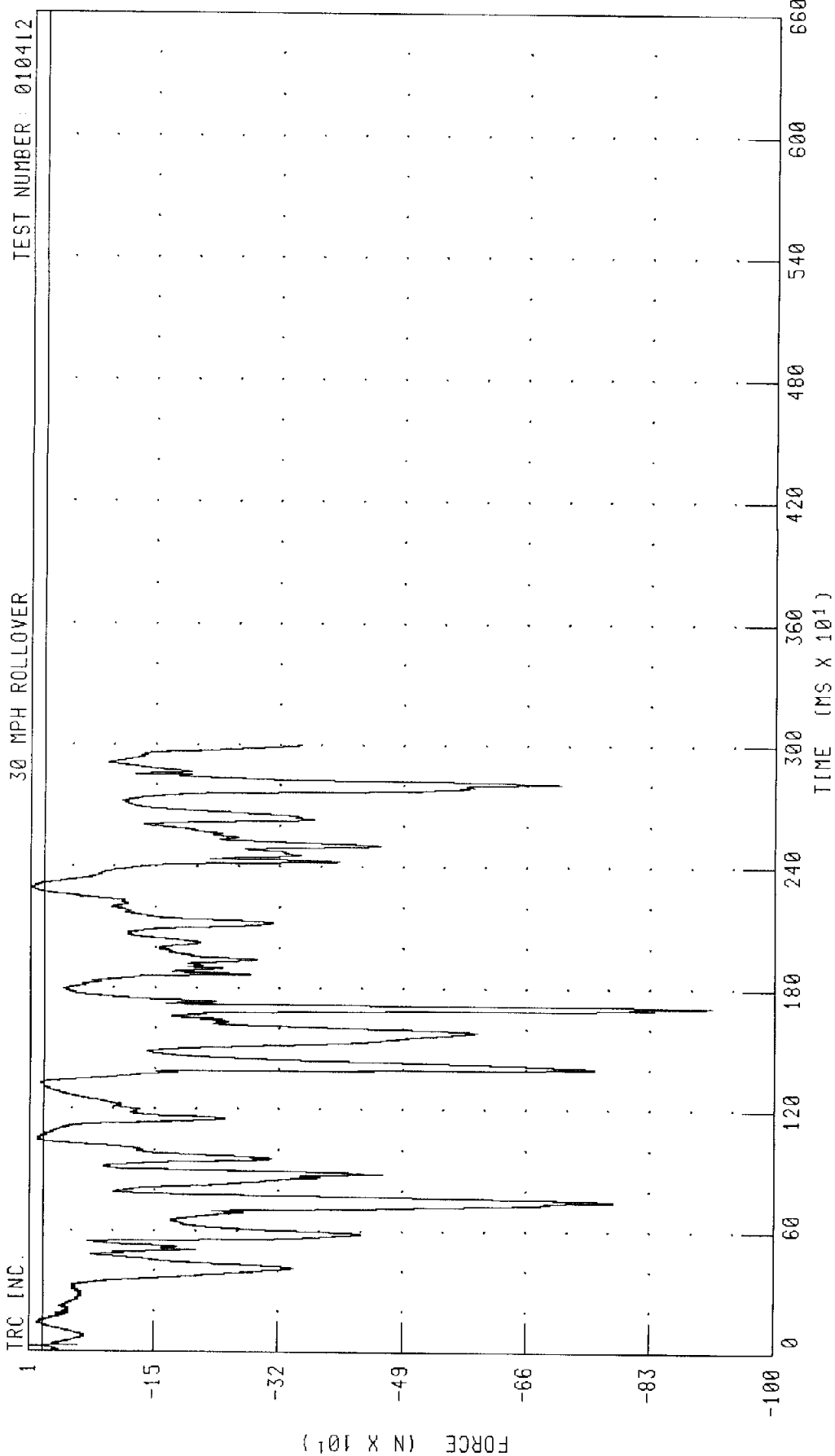


CHANNEL: NEKXF1 FILTER: CH. CLASS 1000

PEAK DATA: 410.53 N @ 1147.44 MS, -206.06 N @ 1712.48 MS

1994 FORD EXPLORER HEAD CURTAIN AIRBAG EVALUATION IN A 30 MPH ROLLOVER CRASH

DRIVER UPPER NECK Y-AXIS SHEAR FORCE



CHANNEL: NEKYF1 FILTER: CH. CLASS 1000

PEAK DATA: 16.86 N @ 26.64 MS, -916.64 N @ 1709.68 MS

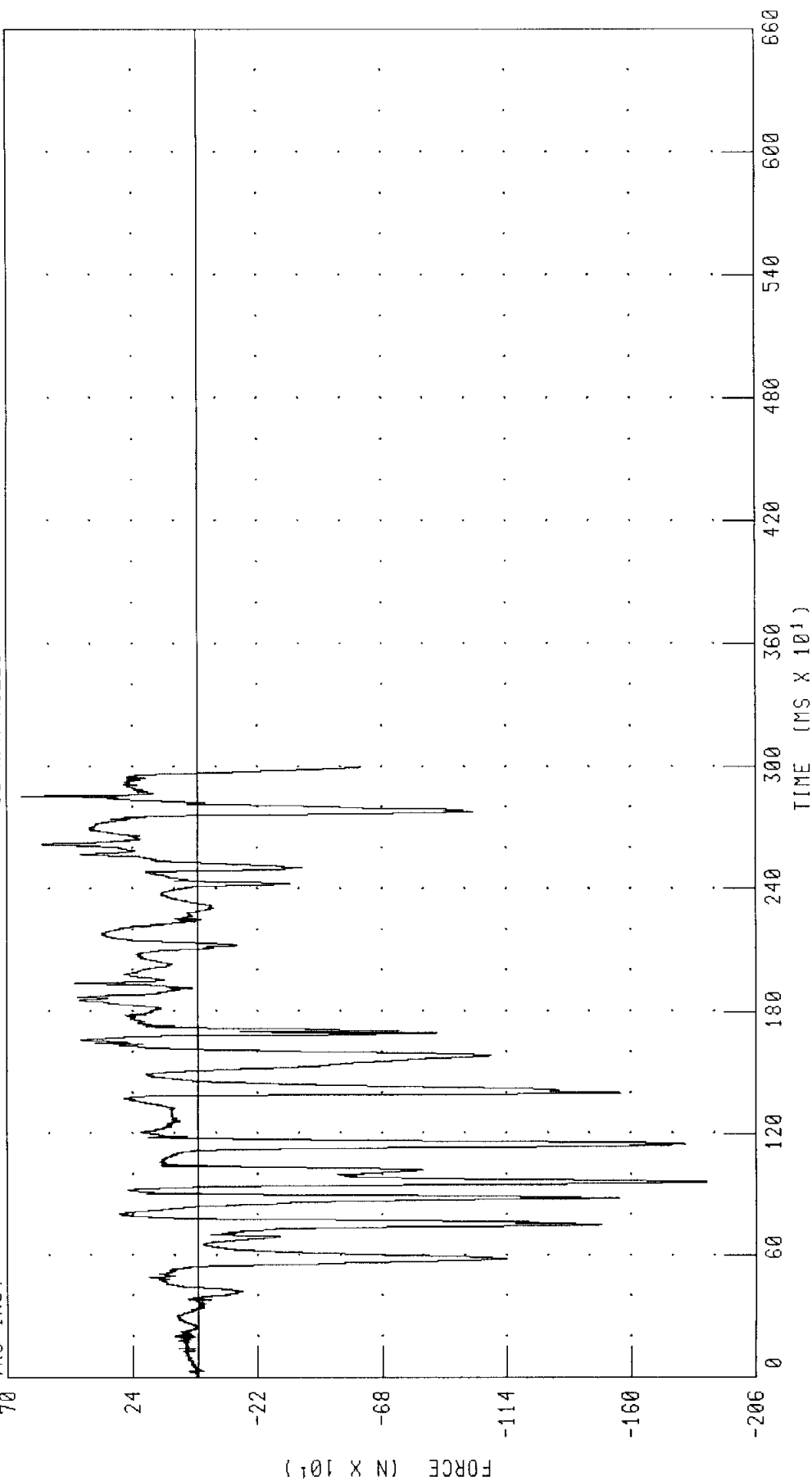
1994 FORD EXPLORER HEAD CURTAIN AIRBAG EVALUATION IN A 30 MPH ROLLOVER CRASH

DRIVER UPPER NECK Z-AXIS AXIAL FORCE

TRC INC.

30 MPH ROLLOVER

TEST NUMBER: 010412



CHANNEL: NEKZF1 FILTER: CH. CLASS 1000

PEAK DATA: 645.43 N @ 2854.80 MS, -1875.71 N @ 961.44 MS

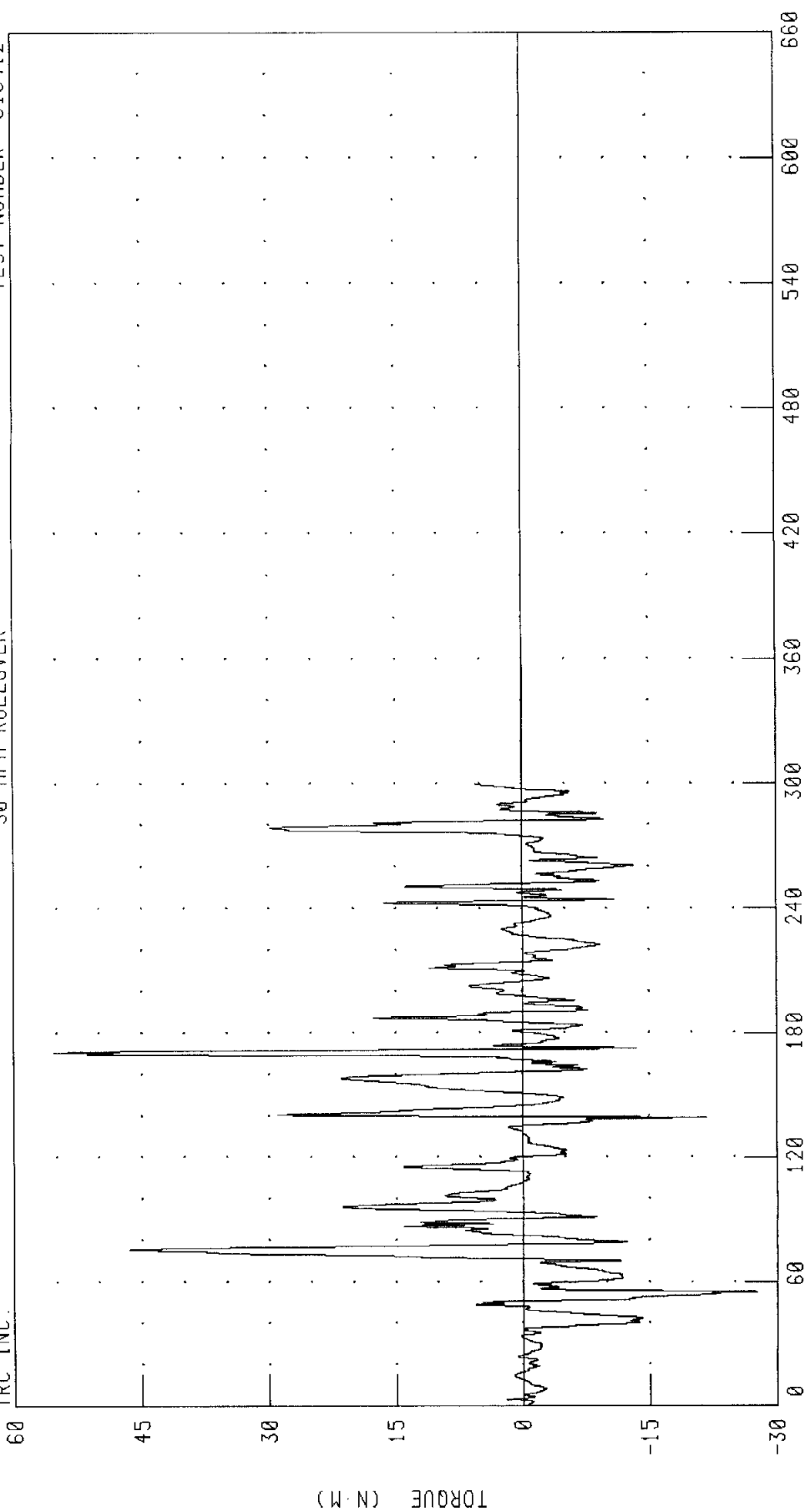
1994 FORD EXPLORER HEAD CURTAIN AIRBAG EVALUATION IN A 30 MPH ROLLOVER CRASH

DRIVER UPPER NECK MOMENT ABOUT X AXIS

TEST NUMBER: 010412

30 MPH ROLLOVER

TRC INC.



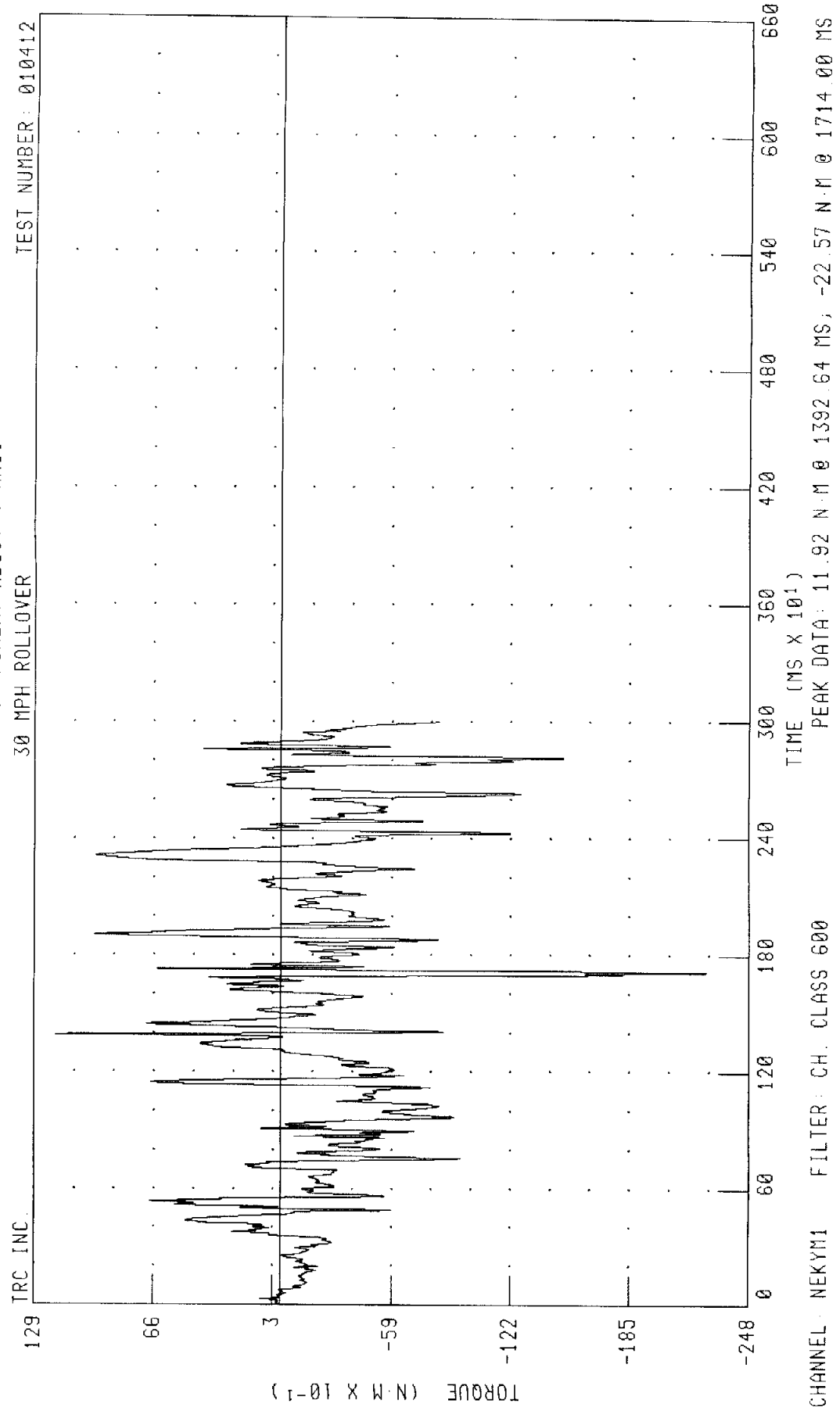
TIME (MS X 10¹)

PEAK DATA: 55.29 N·M @ 1707.04 MS, -27.56 N·M @ 549.68 MS

CHANNEL: NEKXM1 FILTER: CH. CLASS 600

1994 FORD EXPLORER HEAD CURTAIN AIRBAG EVALUATION IN A 30 MPH ROLLOVER CRASH

DRIVER UPPER NECK MOMENT ABOUT Y AXIS



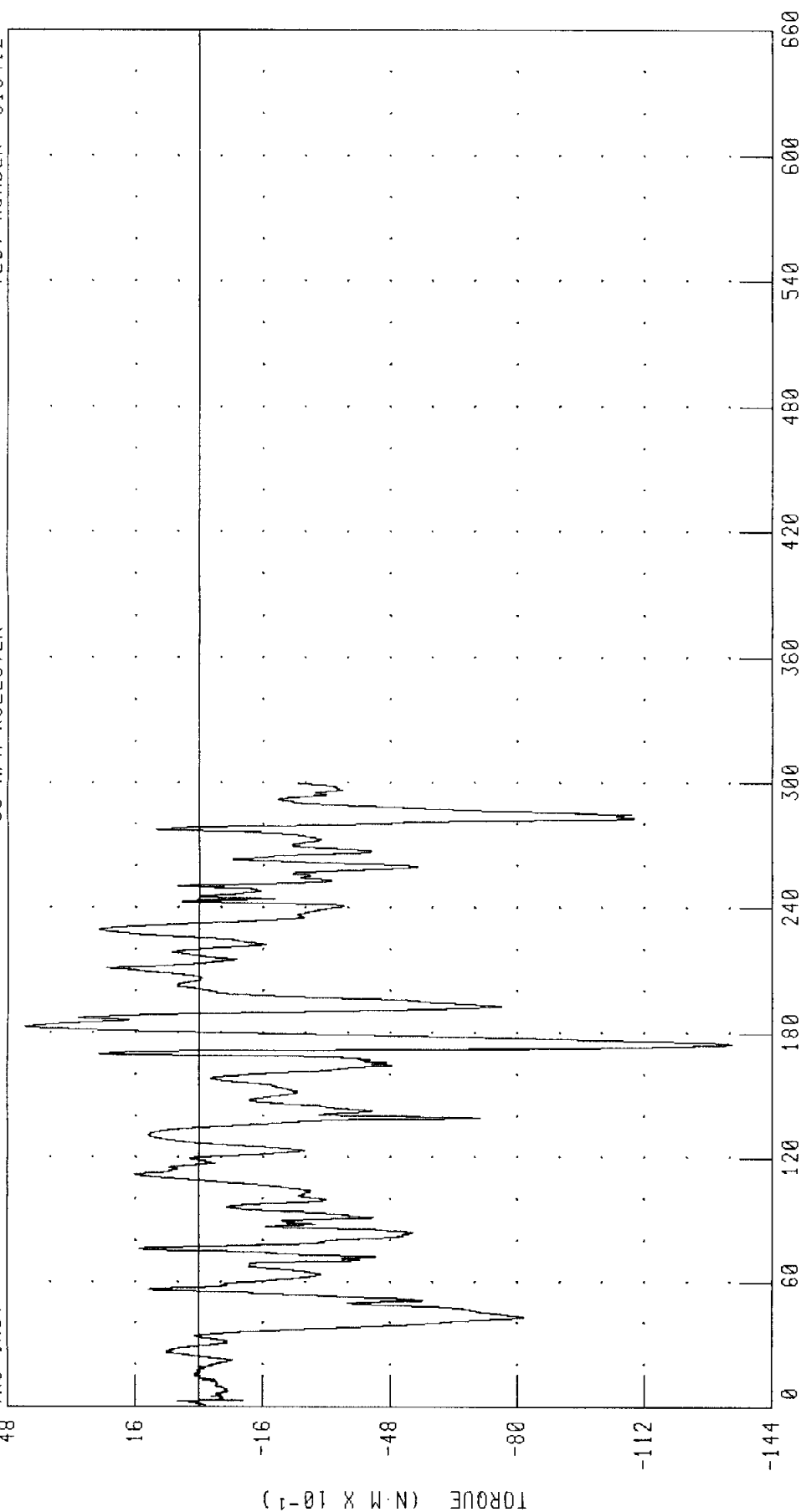
1994 FORD EXPLORER HEAD CURTAIN AIRBAG EVALUATION IN A 30 MPH ROLLOVER CRASH

DRIVER UPPER NECK MOMENT ABOUT Z AXIS

TRC INC.

30 MPH ROLLOVER

TEST NUMBER: 010412



CHANNEL: NEKZM1 FILTER: CH. CLASS 600

PEAK DATA: 4.38 N·M @ 1831.76 MS, -13.41 N·M @ 1748.24 MS

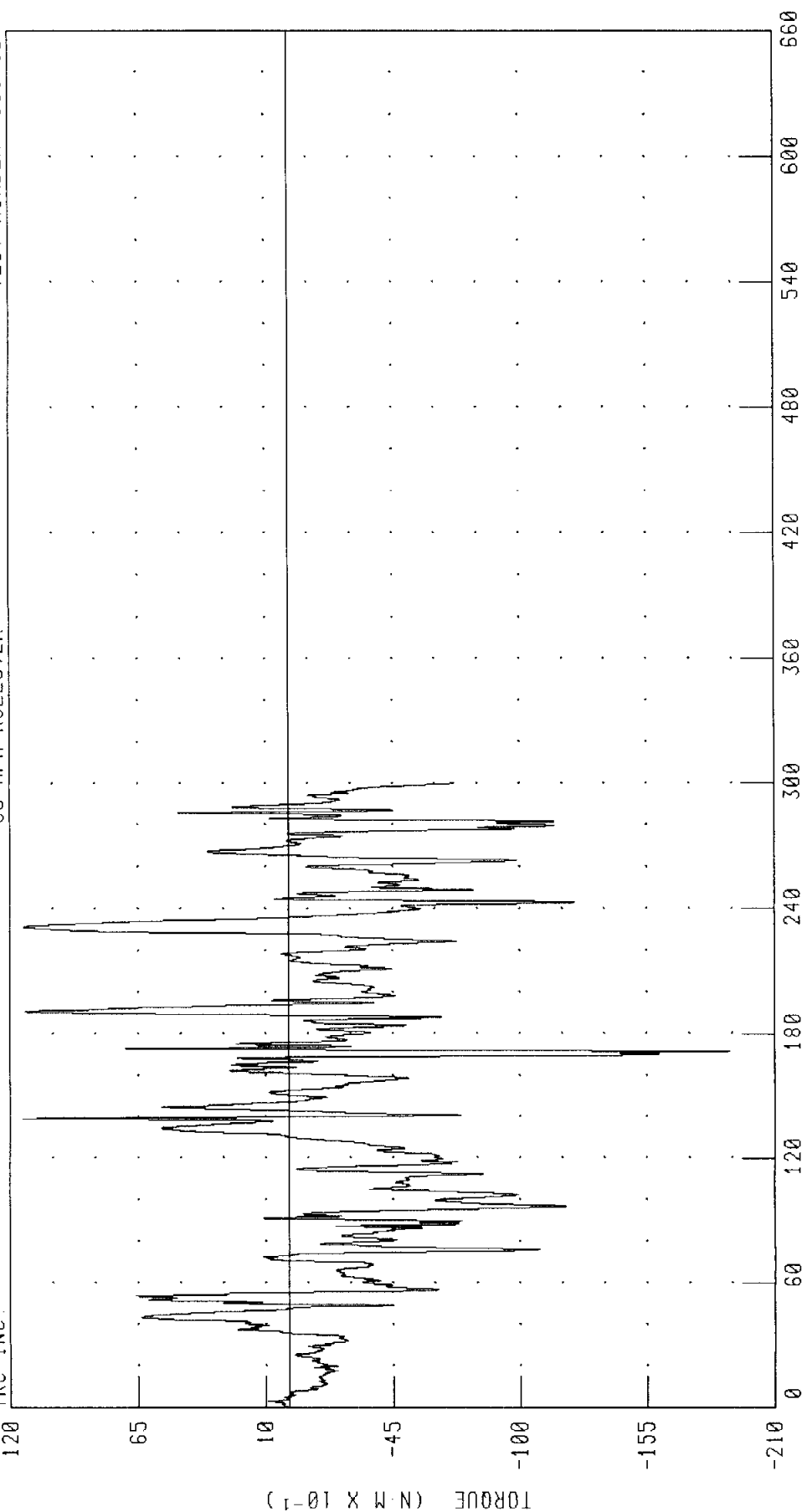
1994 FORD EXPLORER HEAD CURTAIN AIRBAG EVALUATION IN A 30 MPH ROLLOVER CRASH

DRIVER UPPER NECK MOMENT ABOUT Y AXIS OCCIPITAL CONDYLE

TRC INC.

30 MPH ROLLOVER

TEST NUMBER: 010412



TIME (MS X 10¹)

PEAK DATA: 11.46 N·M @ 1392.64 MS, -19.04 N·M @ 1714.16 MS

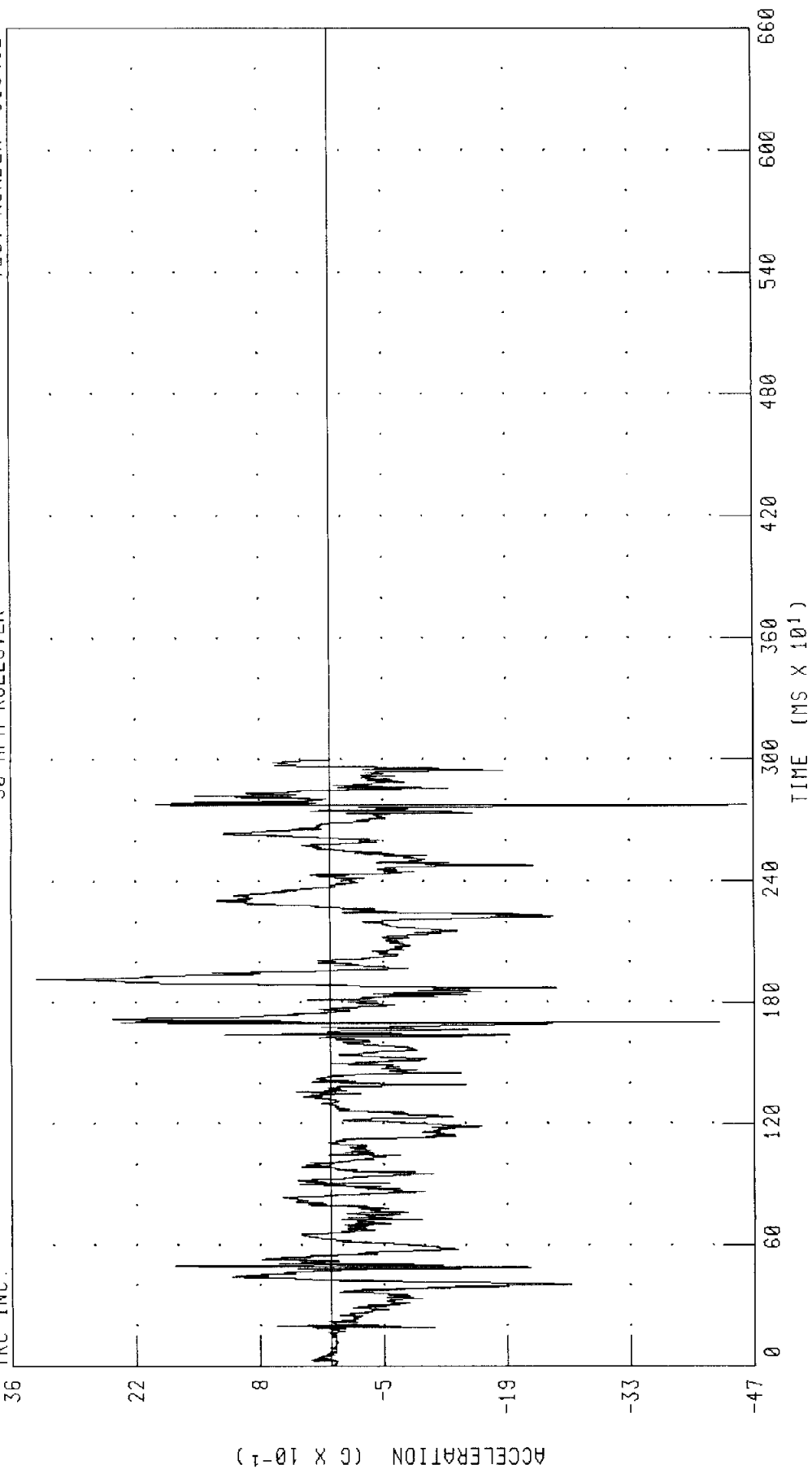
CHANNEL: NEKOM1 FILTER: CH. CLASS 600

1994 FORD EXPLORER HEAD CURTAIN AIRBAG EVALUATION IN A 30 MPH ROLLOVER CRASH
DRIVER CHEST LONGITUDINAL AXIS ACCELERATION

TEST NUMBER: 010412

30 MPH ROLLOVER

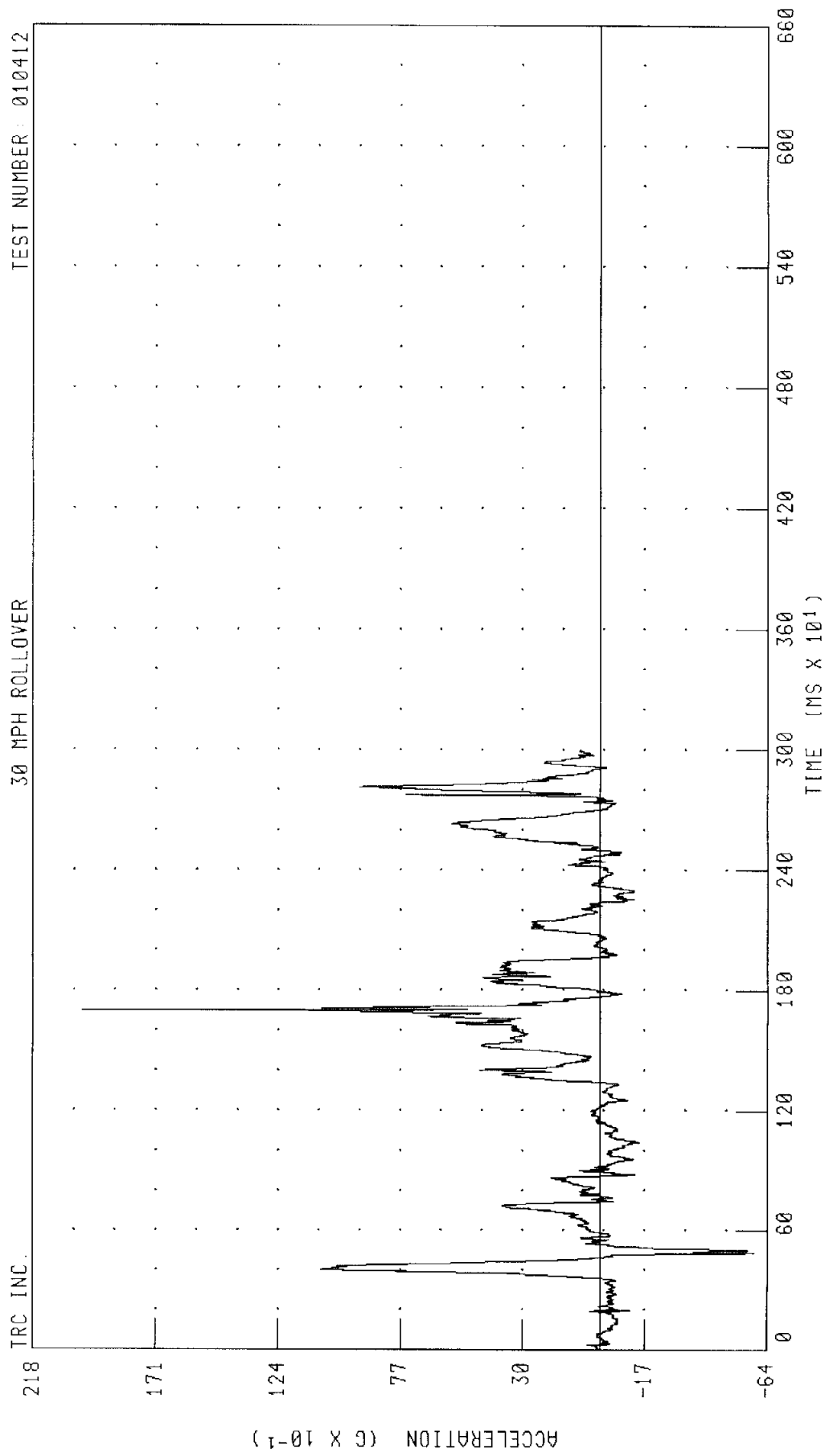
TRC INC.



CHANNEL: CSTXG1 FILTER: CH. CLASS 180

PEAK DATA: 3 32 G @ 1918.48 MS, -4.73 G @ 2776.96 MS

1994 FORD EXPLORER HEAD CURTAIN AIRBAG EVALUATION IN A 30 MPH ROLLOVER CRASH
DRIVER CHEST LATERAL AXIS ACCELERATION



CHANNEL: CSTYG1 FILTER: CH CLASS 180

PEAK DATA: 19.92 G @ 1699.84 MS; -5.91 G @ 485.28 MS

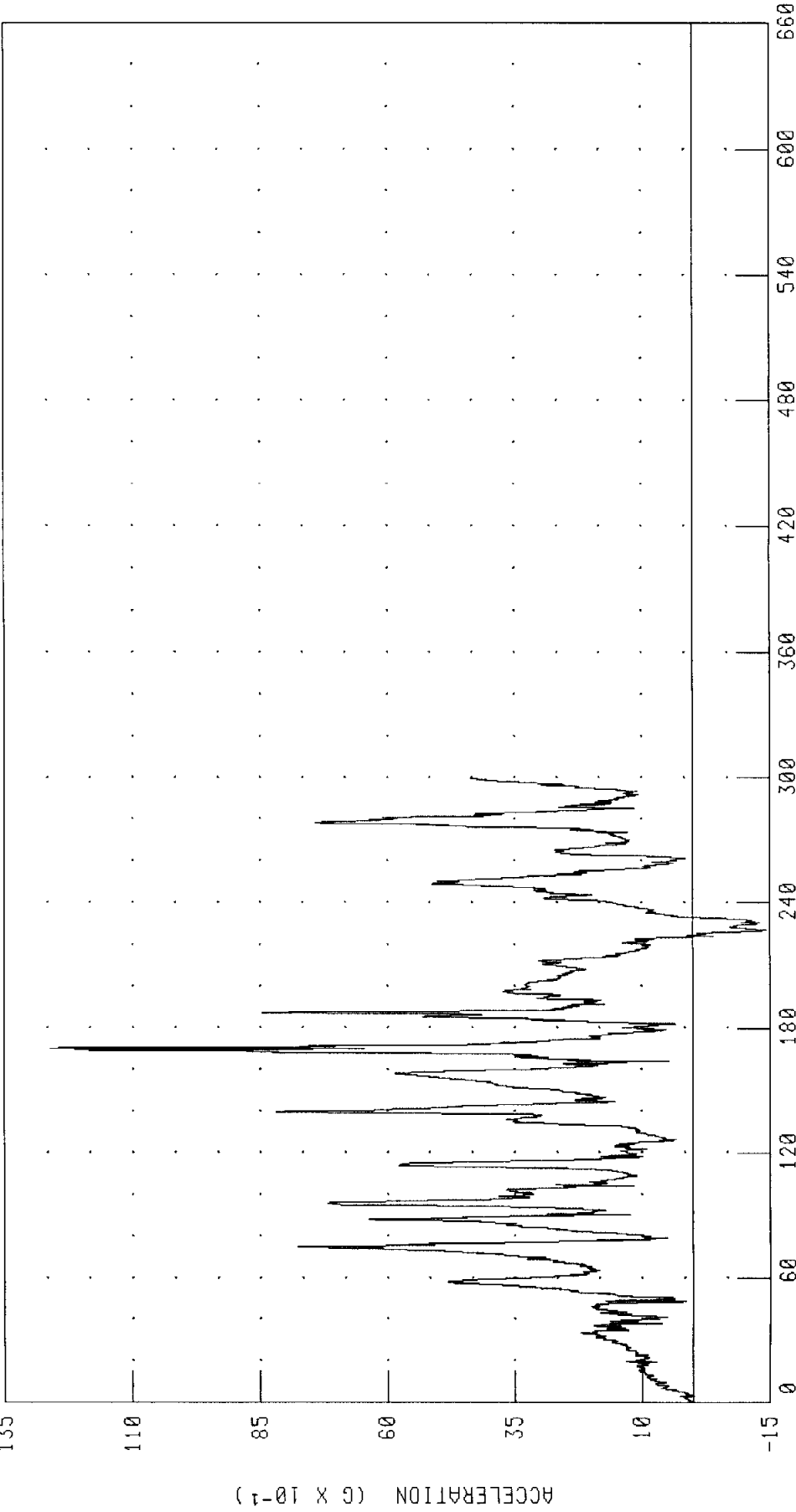
1994 FORD EXPLORER HEAD CURTAIN AIRBAG EVALUATION IN A 30 MPH ROLLOVER CRASH

DRIVER CHEST VERTICAL AXIS ACCELERATION

TRC INC.

30 MPH ROLLOVER

TEST NUMBER: 010412

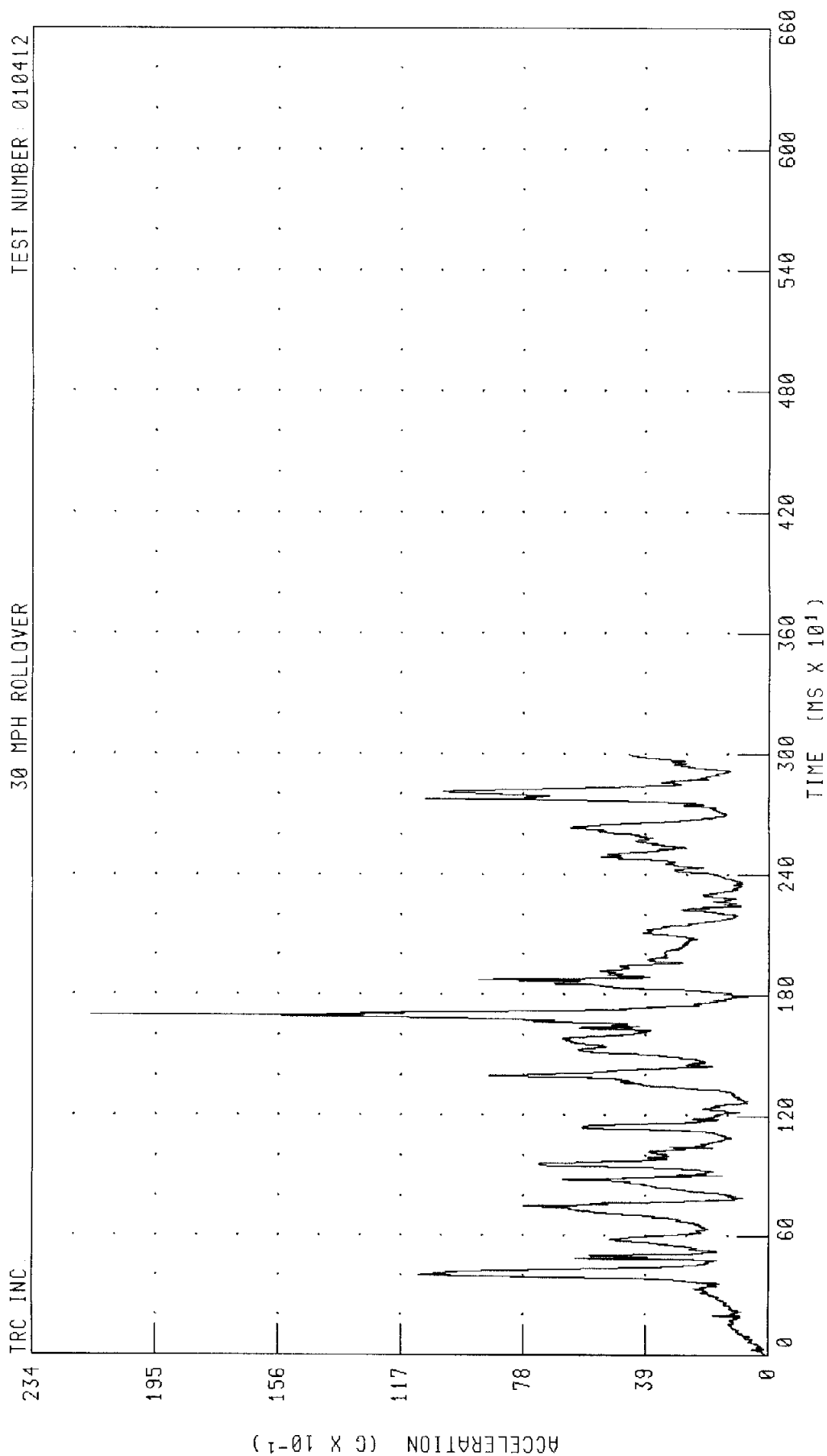


TIME (MS X 10¹)

PEAK DATA: 12.62 G @ 1700.96 MS; -1.44 G @ 2268.40 MS

CHANNEL: CSTZC1 FILTER: CH. CLASS 180

1994 FORD EXPLORER HEAD CURTAIN AIRBAG EVALUATION IN A 30 MPH ROLLOVER CRASH
DRIVER CHEST RESULTANT RESULTANT



CHANNEL: CSTRG1 FILTER: CH CLASS 180

PEAK DATA: 21.55 G @ 1699.92 MS, 0.09 G @ 0.00 MS

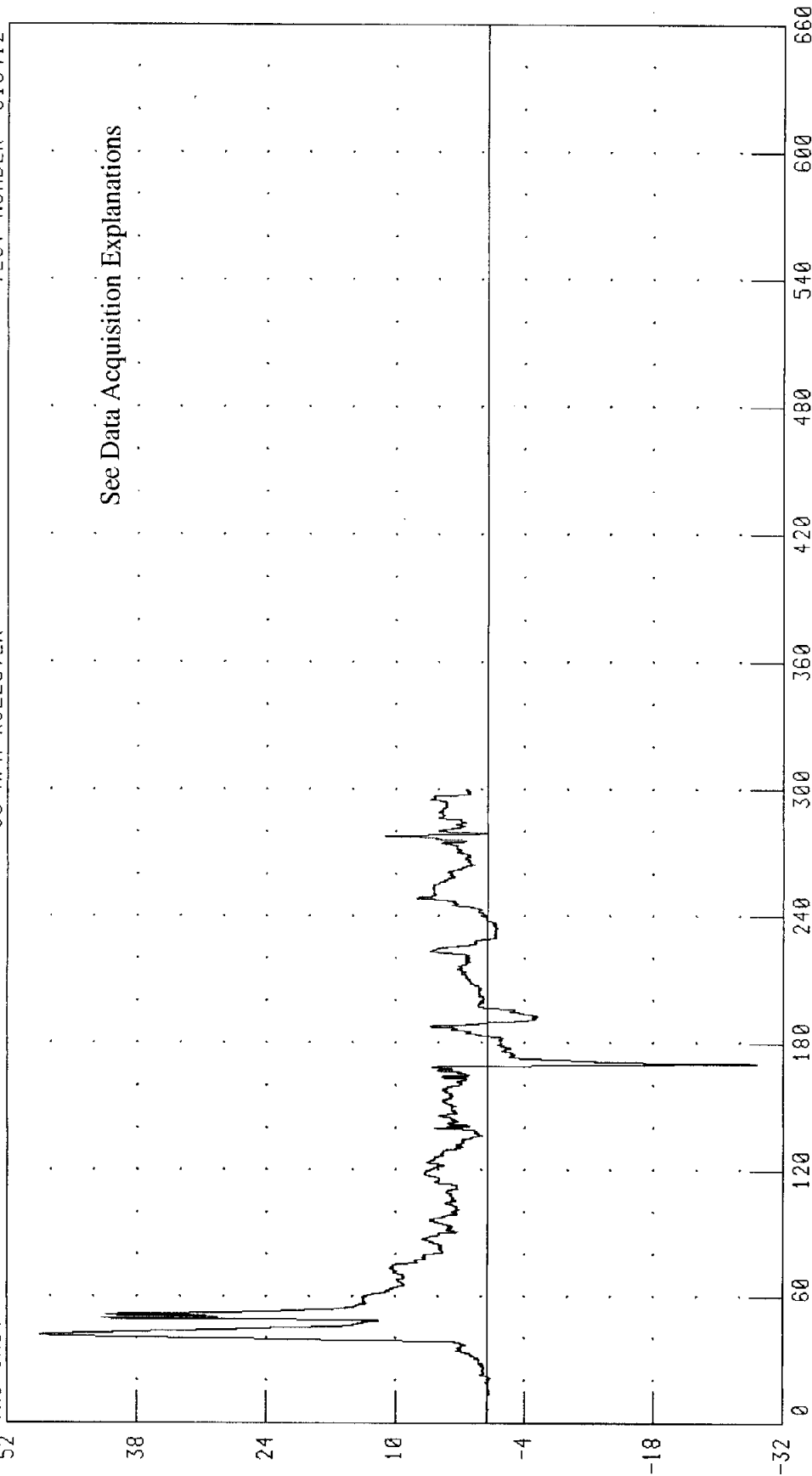
1994 FORD EXPLORER HEAD CURTAIN AIRBAG EVALUATION IN A 30 MPH ROLLOVER CRASH
DRIVER CHEST DEFLECTION
30 MPH ROLLOVER

TRC INC.

TEST NUMBER: 010412

See Data Acquisition Explanations

DISPLACEMENT (MM X 10⁻¹)



TIME (MS X 10¹)

CHANNEL: CSTXD1 FILTER: CH CLASS 600

PEAK DATA: 4 85 MM @ 417.44 MS, -2.91 MM @ 1701.76 MS

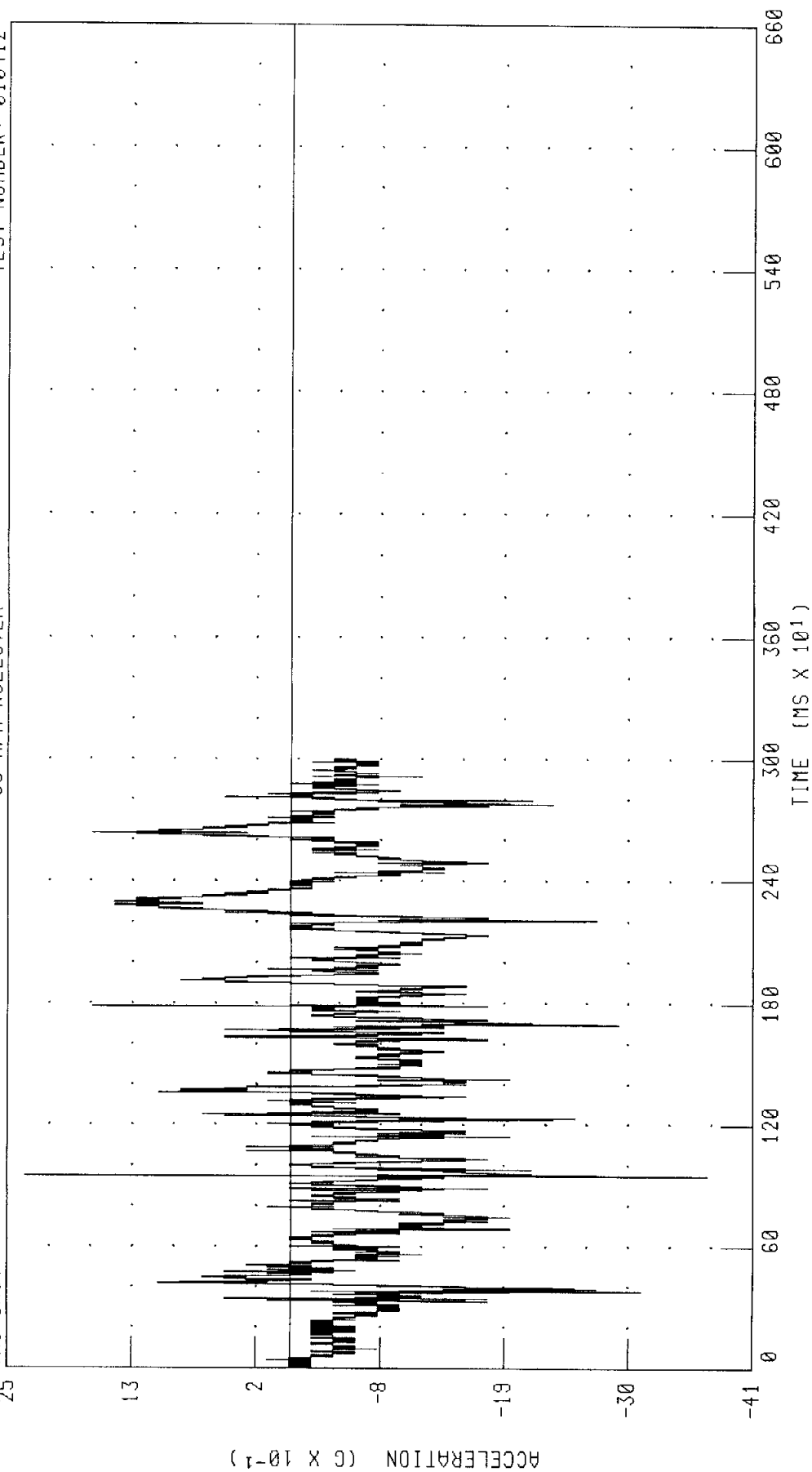
1994 FORD EXPLORER HEAD CURTAIN AIRBAG EVALUATION IN A 30 MPH ROLLOVER CRASH

DRIVER PELVIS LONGITUDINAL AXIS ACCELERATION

TRC INC.

30 MPH ROLLOVER

TEST NUMBER: 010412

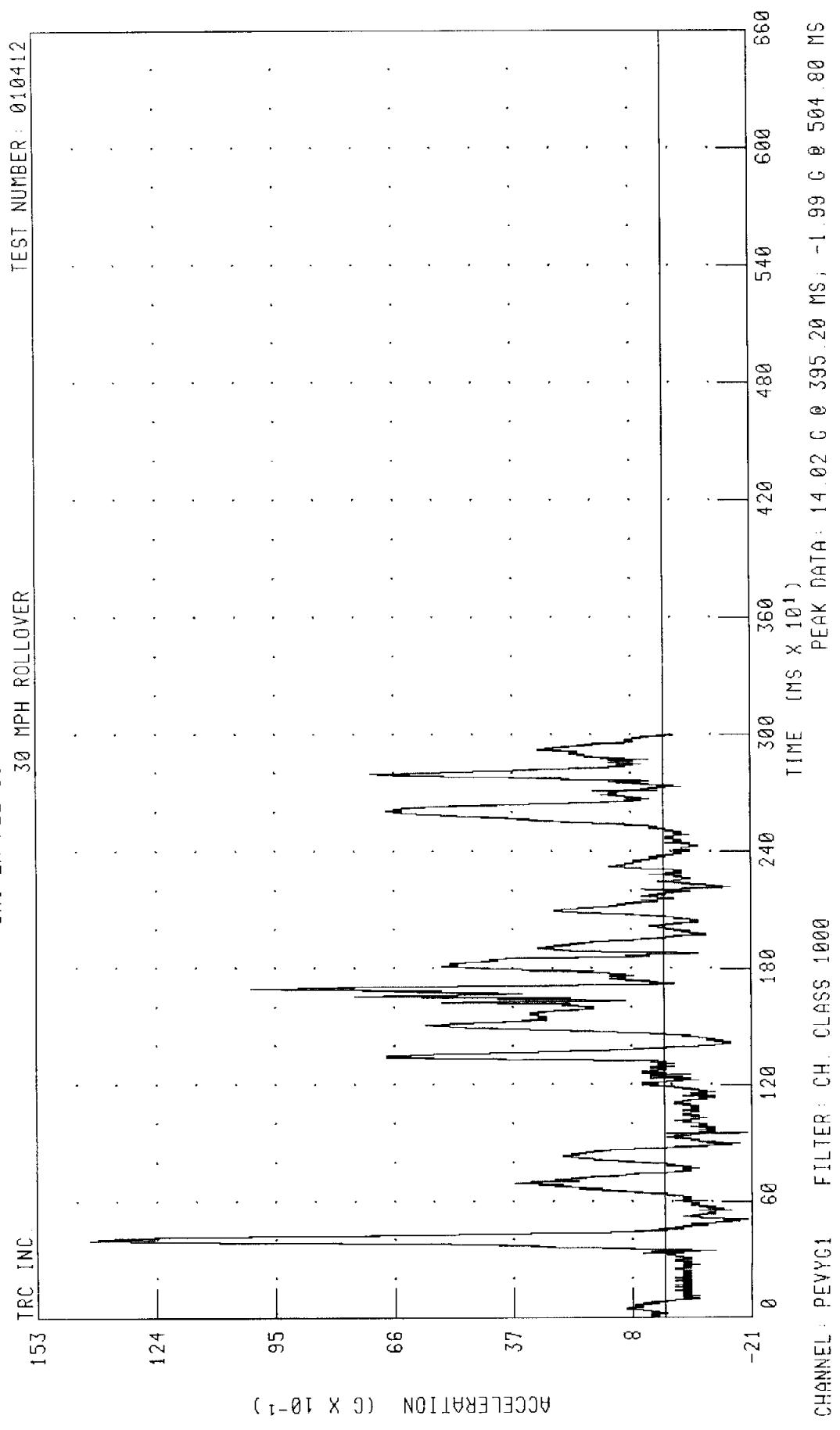


CHANNEL: PEVXG1 FILTER: CH. CLASS 1000

PEAK DATA: 2.34 G @ 950.96 MS; -3.70 G @ 951.28 MS

1994 FORD EXPLORER HEAD CURTAIN AIRBAG EVALUATION IN A 30 MPH ROLLOVER CRASH

DRIVER PELVIS LATERAL AXIS ACCELERATION



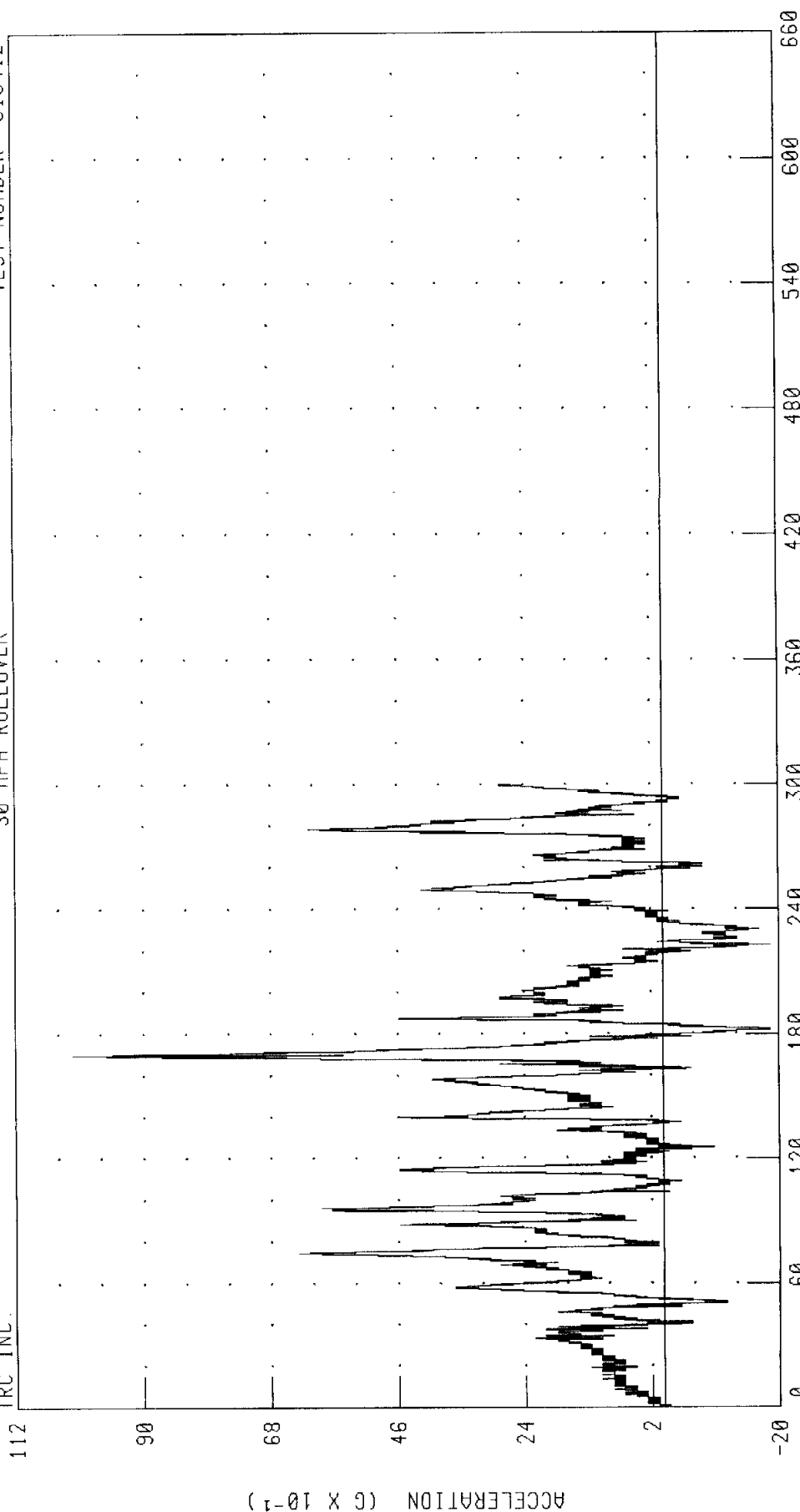
1994 FORD EXPLORER HEAD CURTAIN AIRBAG EVALUATION IN A 30 MPH ROLLOVER CRASH

DRIVER PELVIS VERTICAL AXIS ACCELERATION

TEST NUMBER: 010412

30 MPH ROLLOVER

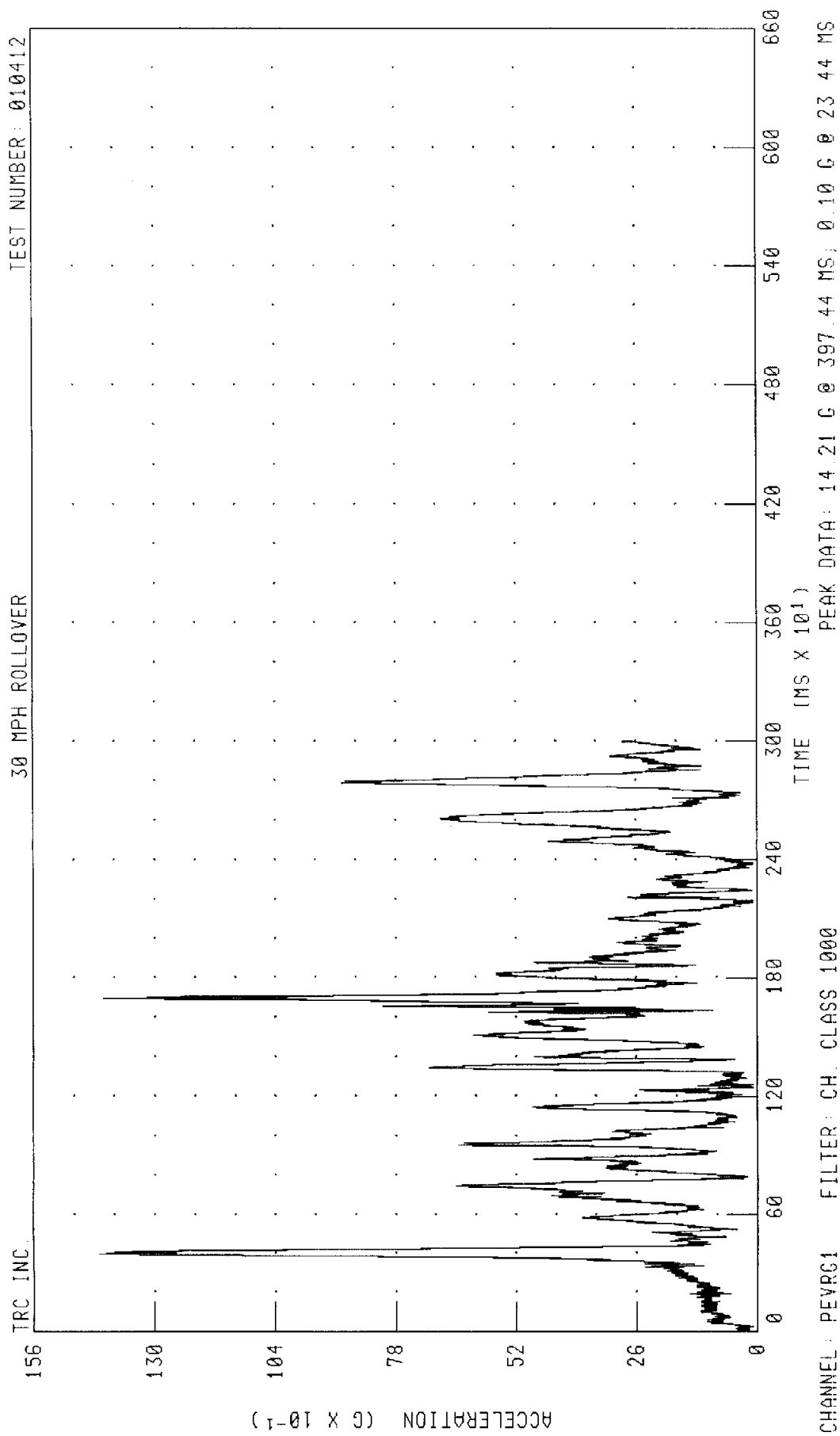
TRC INC.



PEAK DATA: 10 23 G @ 1702.48 MS; -1.86 G @ 1820.00 MS

CHANNEL: PEVZ01 FILTER: CH. CLASS 1000

1994 FORD EXPLORER HEAD CURTAIN AIRBAG EVALUATION IN A 30 MPH ROLLOVER CRASH
DRIVER PELVIS RESULTANT ACCELERATION



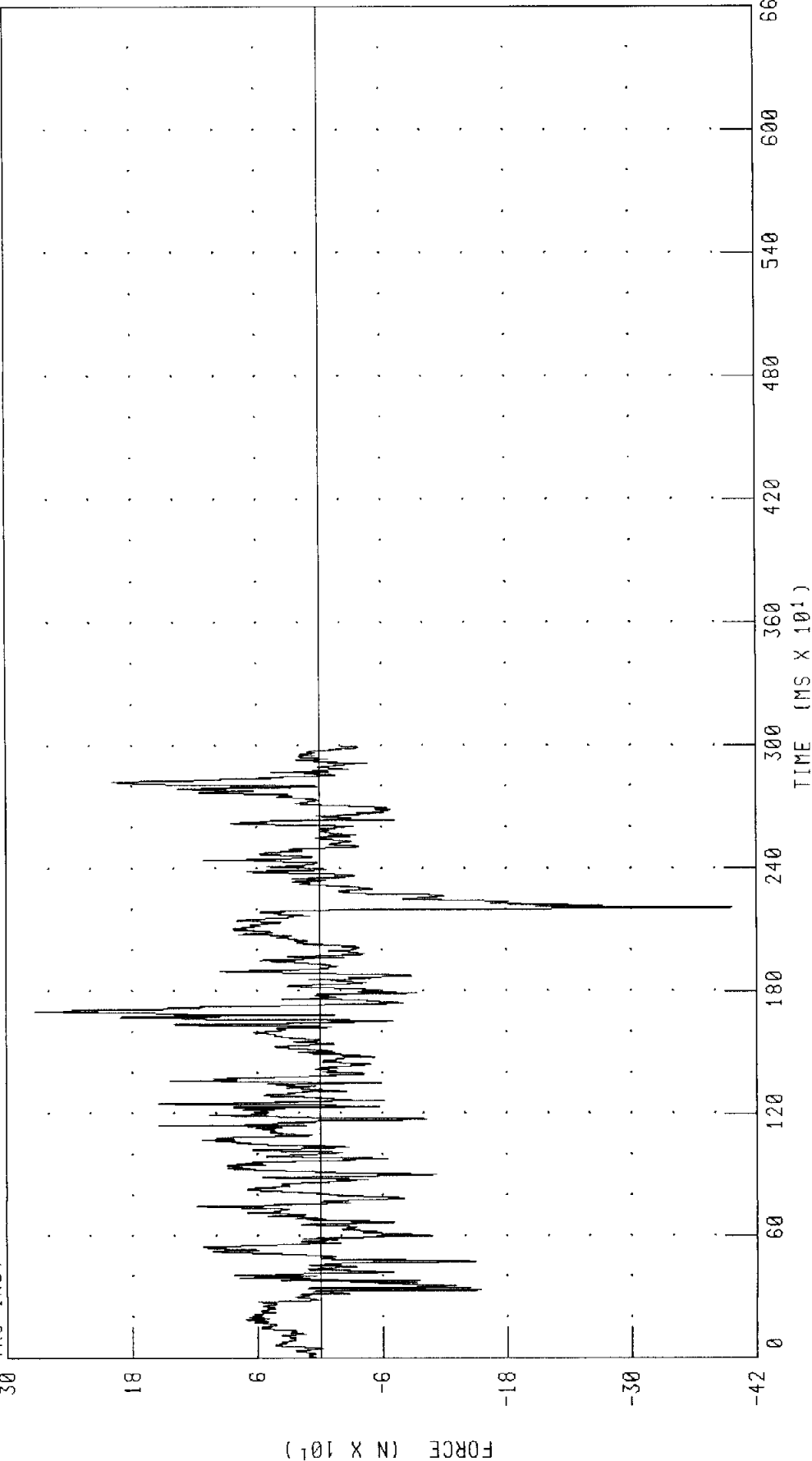
1994 FORD EXPLORER HEAD CURTAIN AIRBAG EVALUATION IN A 30 MPH ROLLOVER CRASH

DRIVER LEFT FEMUR AXIAL FORCE

30 MPH ROLLOVER

TEST NUMBER: 010412

TRC INC.



CHANNEL: LFMZF1 FILTER: CH. CLASS 600

PEAK DATA: 273.13 N @ 1700.80 MS; -396.45 N @ 2206.56 MS

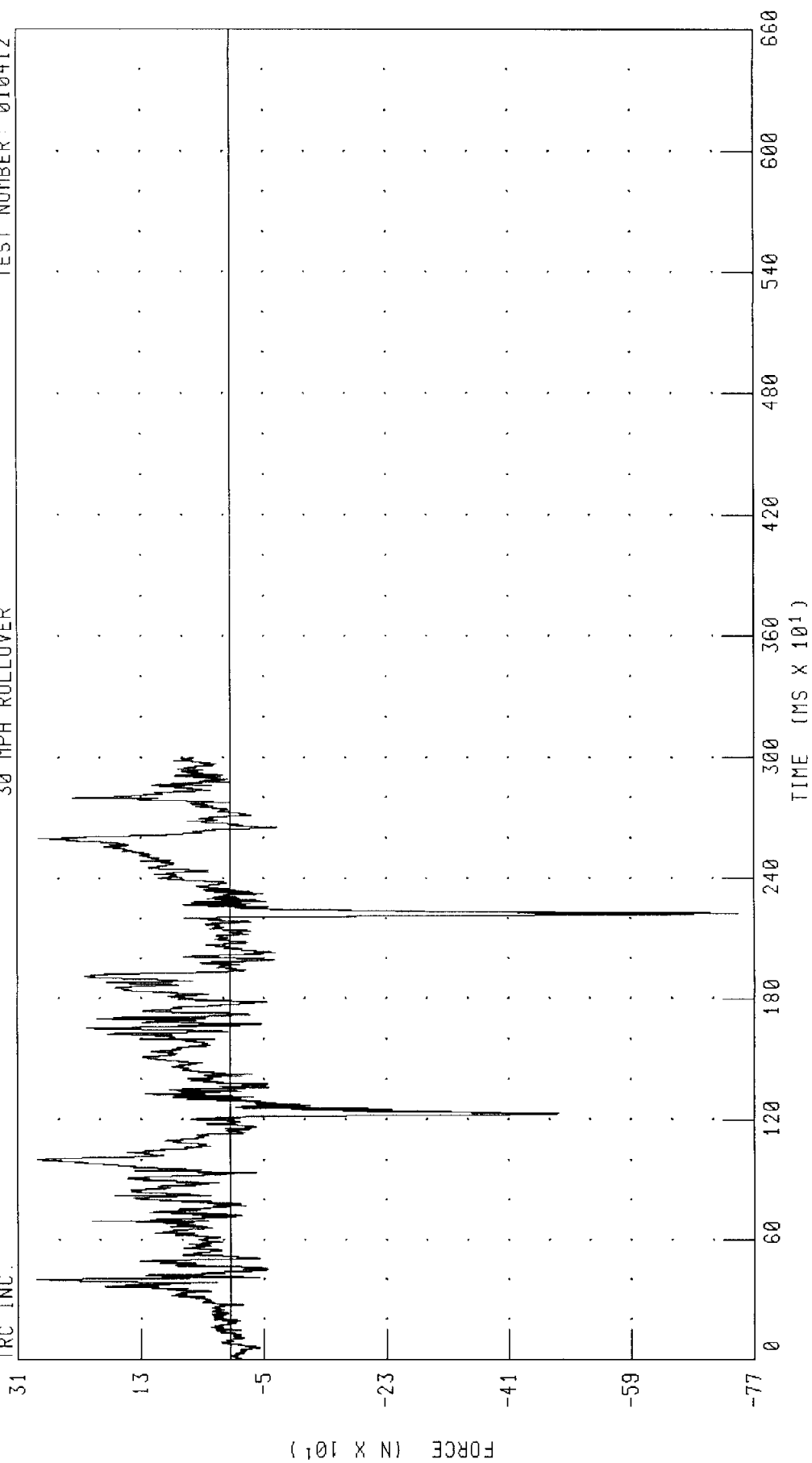
1994 FORD EXPLORER HEAD CURTAIN AIRBAG EVALUATION IN A 30 MPH ROLLOVER CRASH

DRIVER RIGHT FEMUR AXIAL FORCE

TEST NUMBER: 010412

30 MPH ROLLOVER

TRC INC.



CHANF1: RFMZFI FILTER: CH CLASS 600

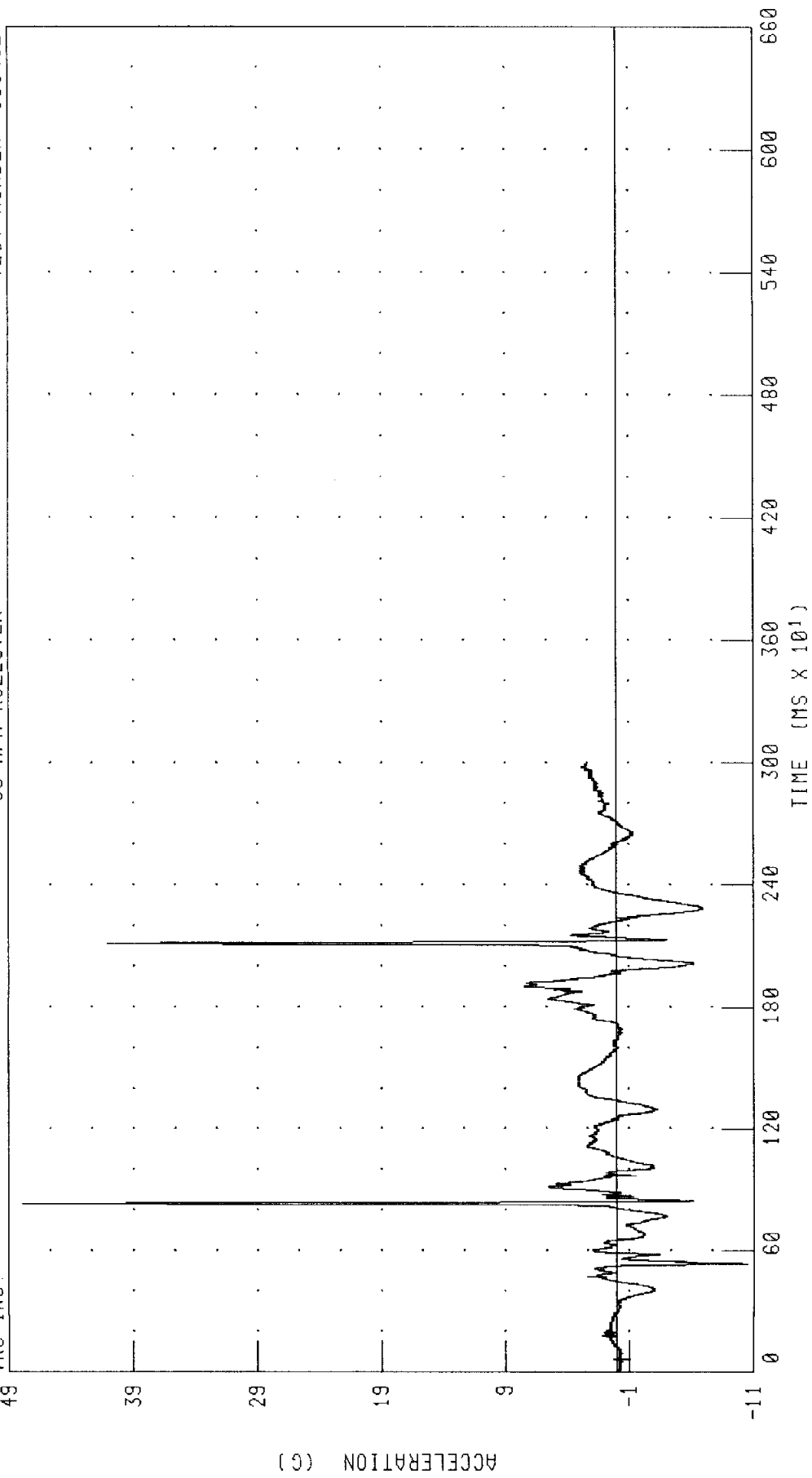
PEAK DATA: 283.28 N @ 399.84 MS; -746.74 N @ 2225.36 MS

1994 FORD EXPLORER HEAD CURTAIN AIRBAG EVALUATION IN A 30 MPH ROLLOVER CRASH
RIGHT FRONT PASSENGER HEAD LONGITUDINAL AXIS ACCELERATION

TRC INC.

30 MPH ROLLOVER

TEST NUMBER: 010412



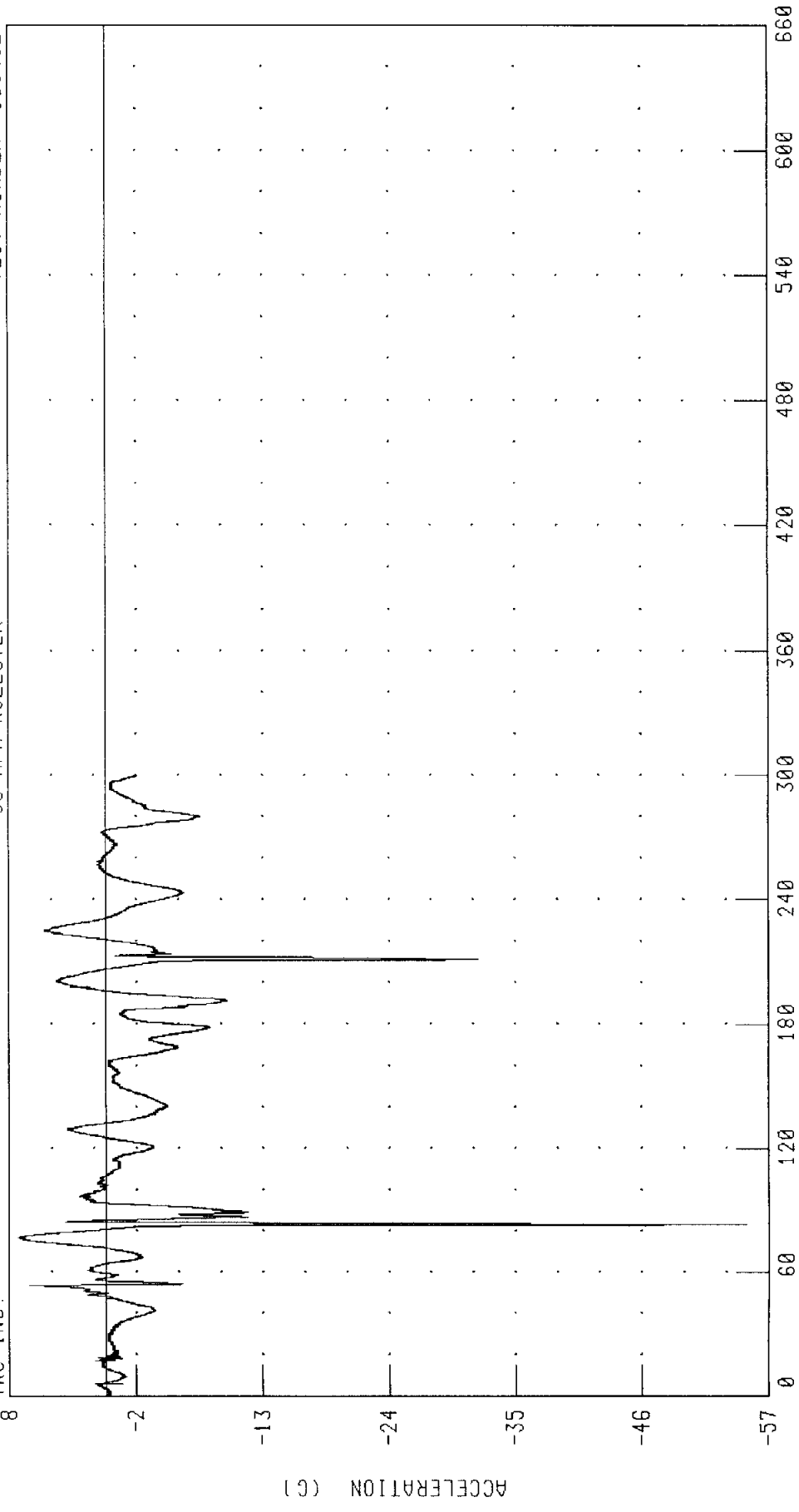
CHANN1: HFDXG2 FILTER: CH CLASS 1000

PEAK DATA: 47.96 G @ 832.40 MS; -10.49 G @ 533.60 MS

1994 FORD EXPLORER HEAD CURTAIN AIRBAG EVALUATION IN A 30 MPH ROLLOVER CRASH
RIGHT FRONT PASSENGER HEAD LATERAL AXIS ACCELERATION
30 MPH ROLLOVER

TEST NUMBER: 010412

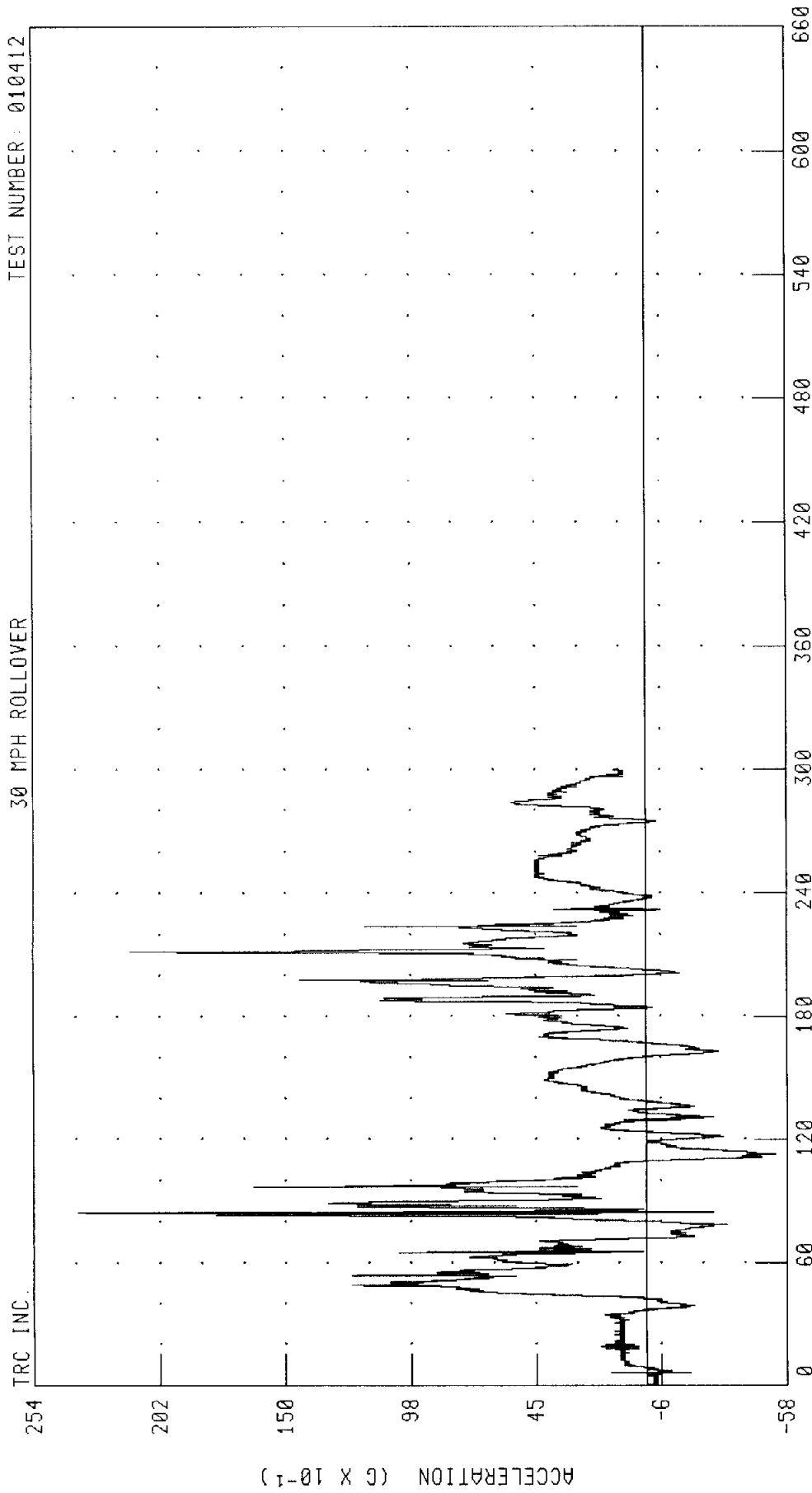
TRC INC.



CHANNEL: HEDYG2 FILTER: CH CLASS 1000 PEAK DATA: 7.64 G @ 764.24 MS, -55.62 G @ 831.44 MS

1994 FORD EXPLORER HEAD CURTAIN AIRBAG EVALUATION IN A 30 MPH ROLLOVER CRASH

RIGHT FRONT PASSENGER HEAD VERTICAL AXIS ACCELERATION



CHANNEL: HEDZG2

FILTER: CH. CLASS 1000

PEAK DATA: 23.55 G @ 845.12 MS, -5.31 G @ 1129.52 MS

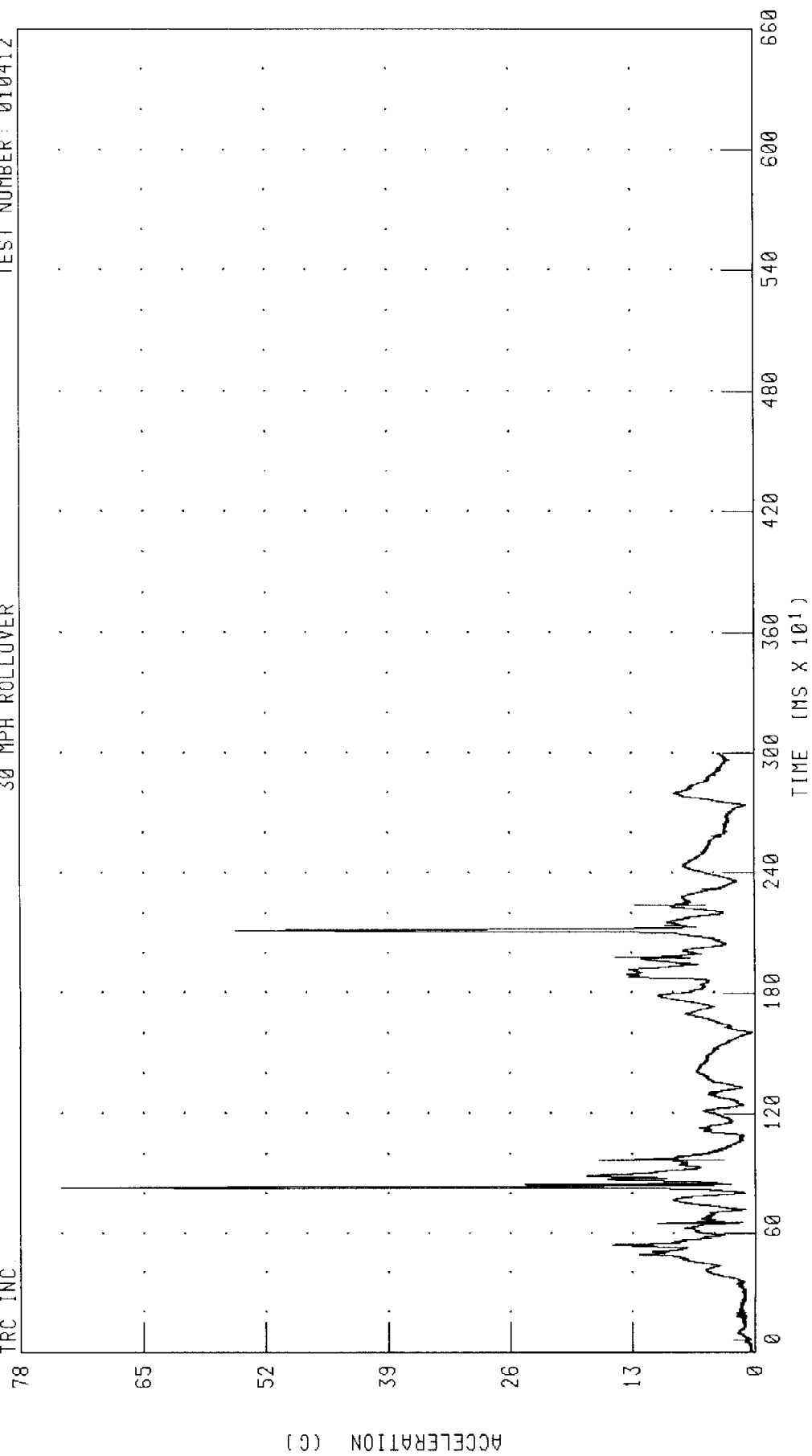
1994 FORD EXPLORER HEAD CURTAIN AIRBAG EVALUATION IN A 30 MPH ROLLOVER CRASH

RIGHT FRONT PASSENGER HEAD RESULTANT ACCELERATION

TRC INC.

30 MPH ROLLOVER

TEST NUMBER: 010412

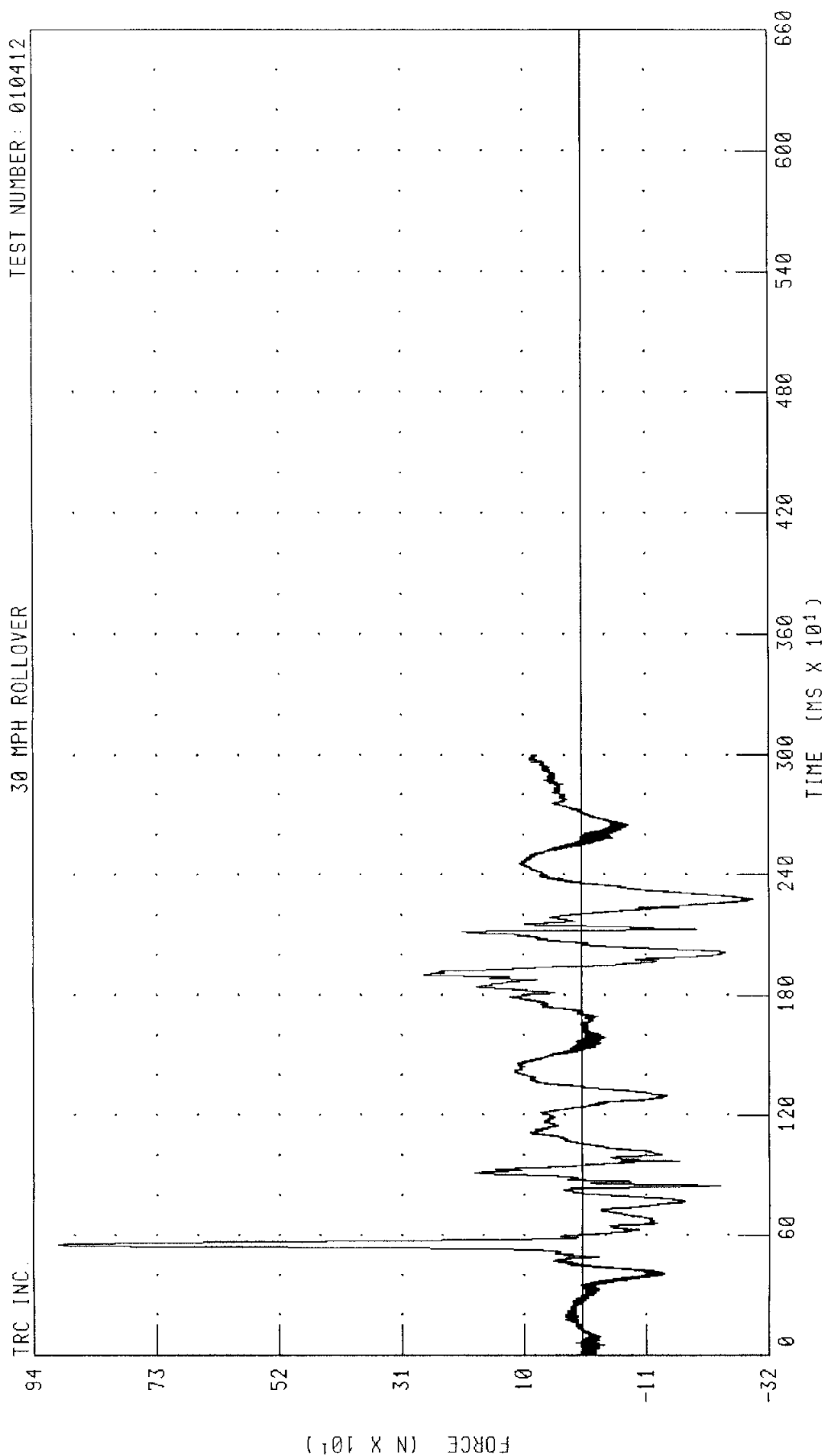


CHANNEL: HEDRG2 FILTER: CH. CLASS 1000

PEAK DATA: 73.70 G @ 831.84 MS, 0.18 G @ 1603.84 MS

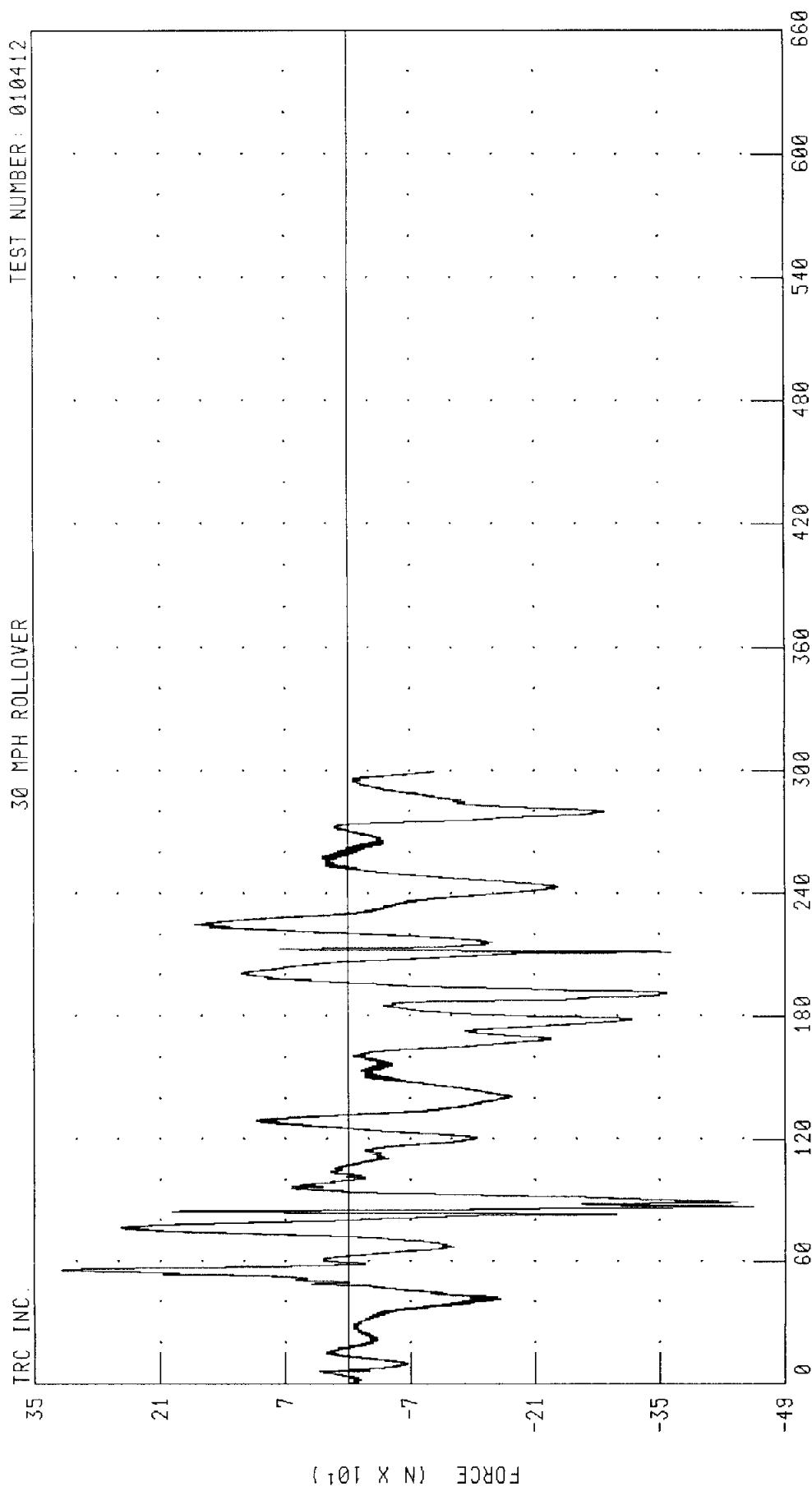
1994 FORD EXPLORER HEAD CURTAIN AIRBAG EVALUATION IN A 30 MPH ROLLOVER CRASH

RIGHT FRONT PASSENGER UPPER NECK X-AXIS SHEAR FORCE



1994 FORD EXPLORER HEAD CURTAIN AIRBAG EVALUATION IN A 30 MPH ROLLOVER CRASH

RIGHT FRONT PASSENGER UPPER NECK Y-AXIS SHEAR FORCE



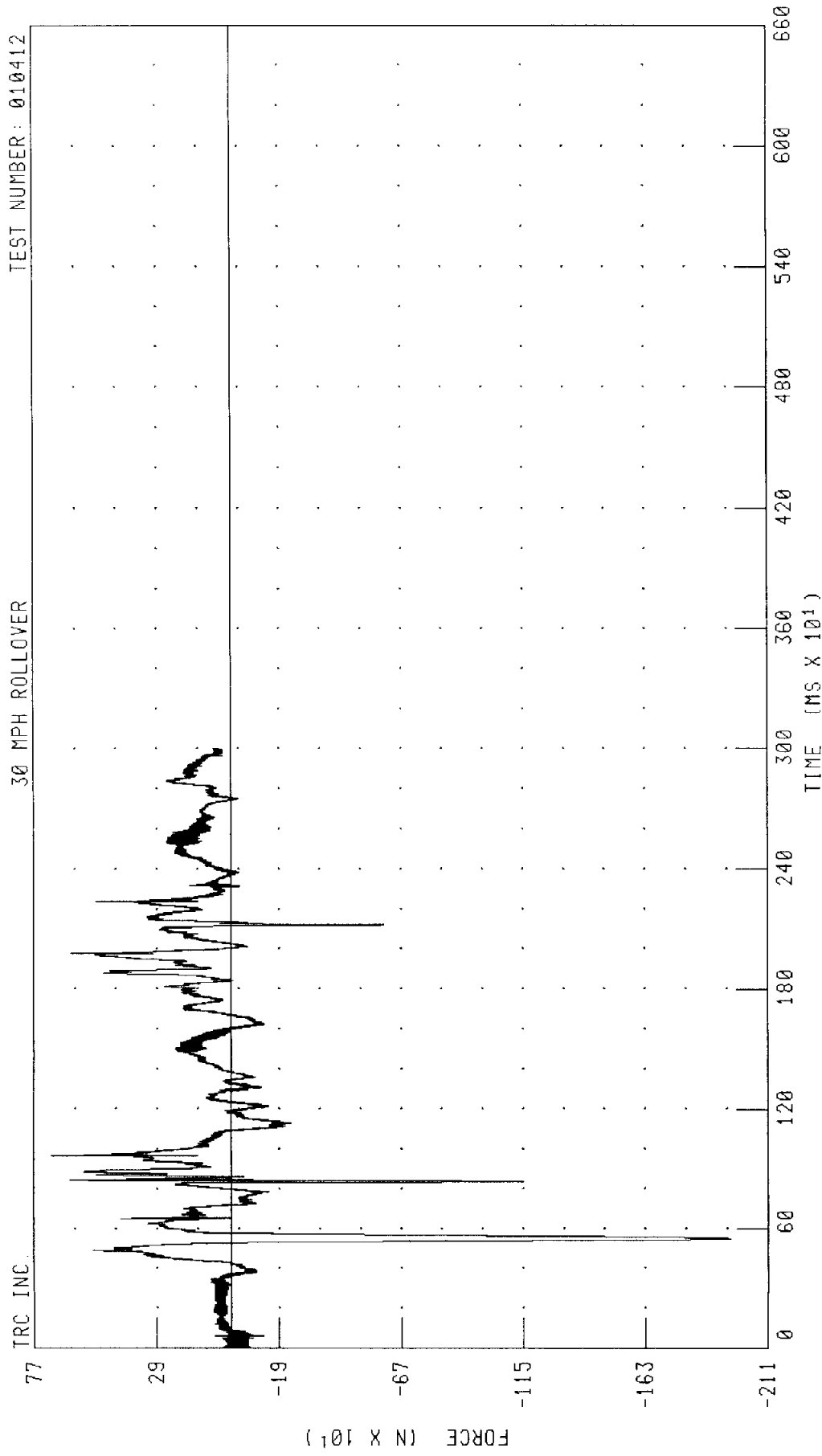
CHANNEL: NEKYF2

FILTER: CH. CLASS 1000

PEAK DATA: 319.31 N @ 555.52 MS; -454.32 N @ 868.88 MS

1994 FORD EXPLORER HEAD CURTAIN AIRBAG EVALUATION IN A 30 MPH ROLLOVER CRASH

RIGHT FRONT PASSENGER UPPER NECK Z-AXIS AXIAL FORCE



CHANNEL: NEKZF2 FILTER: CH. CLASS 1000

PEAK DATA: 701 13 N @ 970.72 MS; -1964.50 N @ 549.52 MS

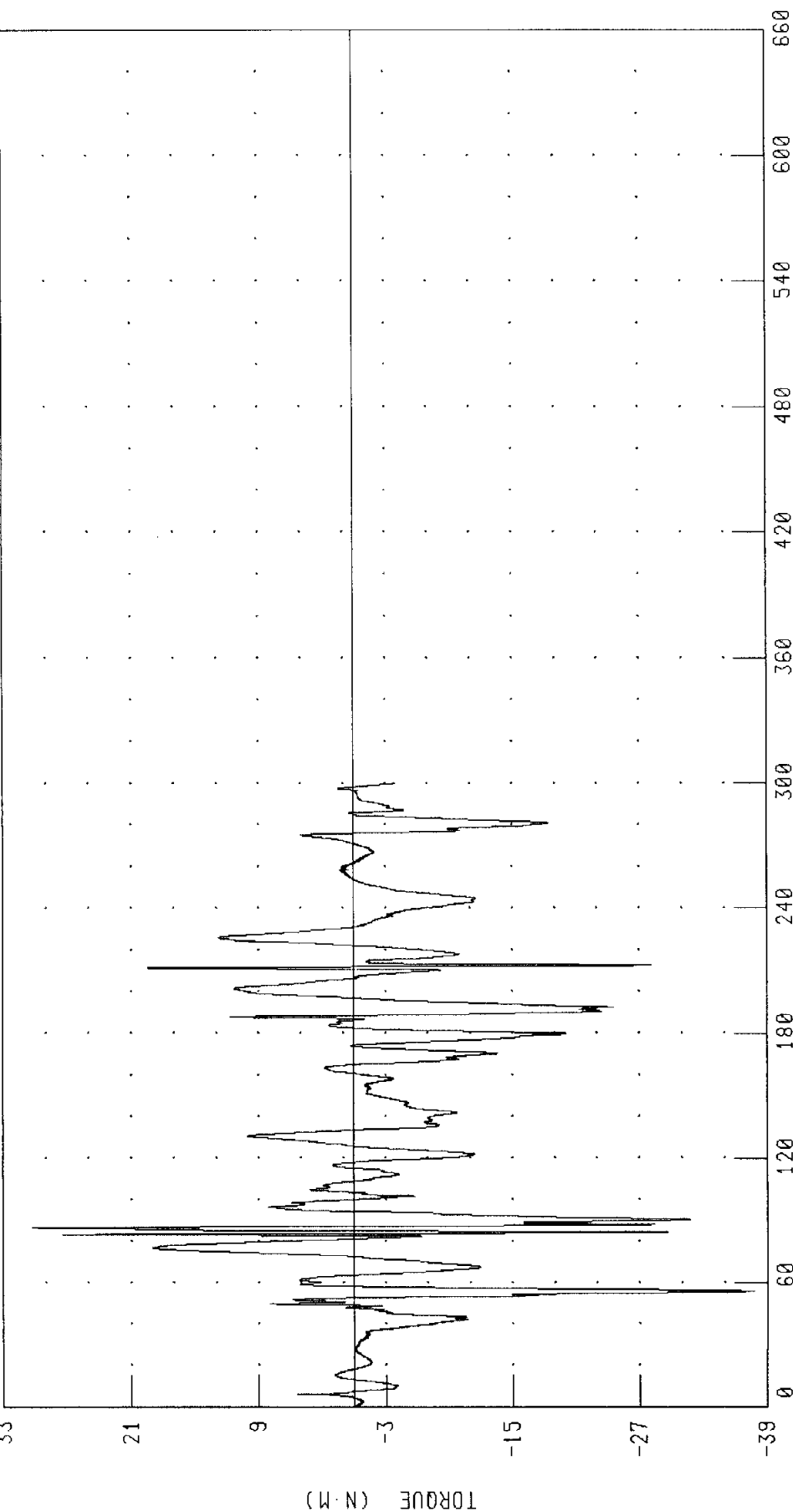
1994 FORD EXPLORER HEAD CURTAIN AIRBAG EVALUATION IN A 30 MPH ROLLOVER CRASH

RIGHT FRONT PASSENGER UPPER NECK MOMENT ABOUT X AXIS

TRC INC.

30 MPH ROLLOVER

TEST NUMBER: 010412



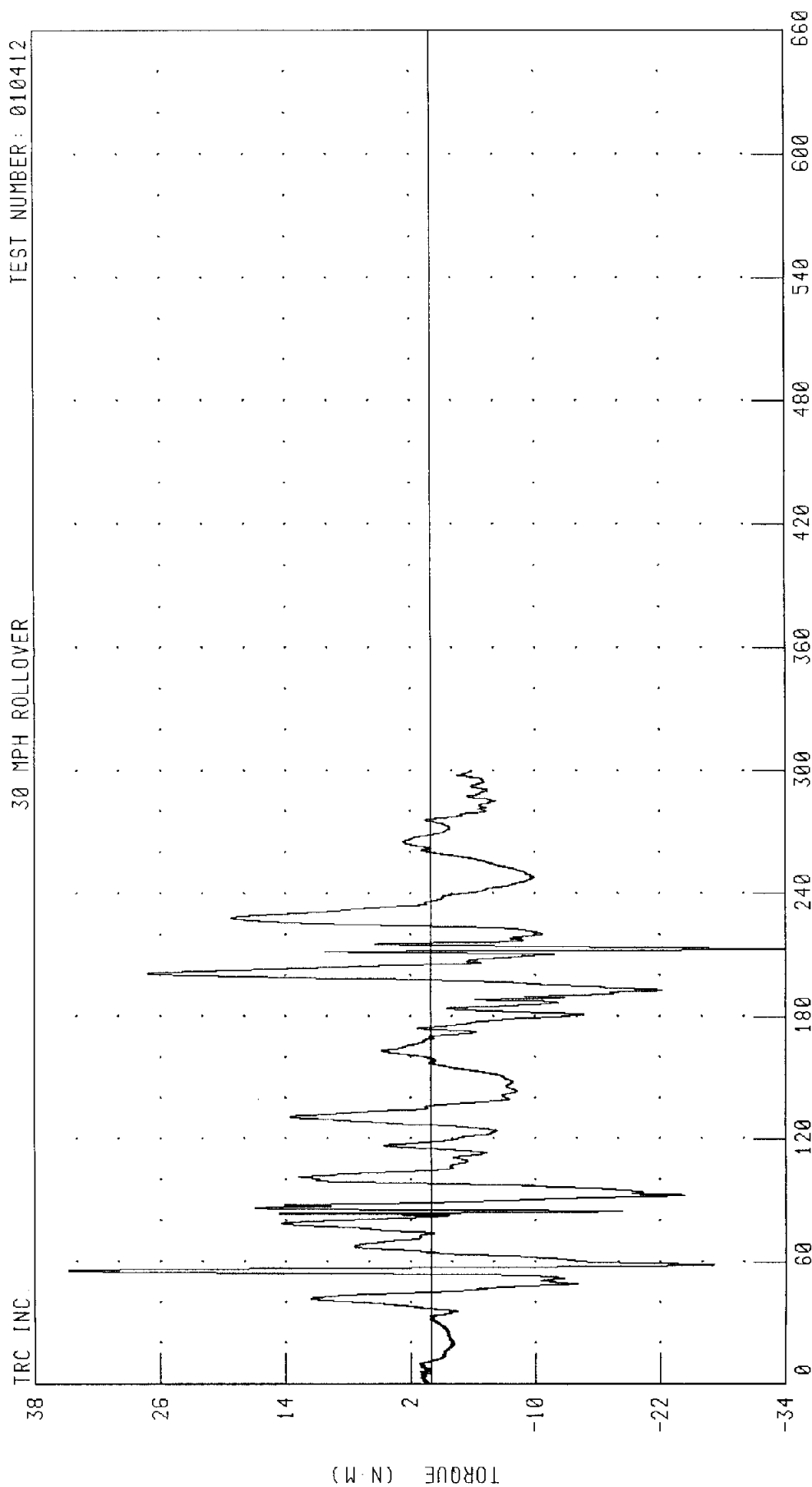
TIME (MS X 10¹)

PEAK DATA: 30.23 N·m @ 866.32 MS, -37.79 N·m @ 557.92 MS

CHANNFI: NFKXM2 FILTER: CH CLASS 600

1994 FORD EXPLORER HEAD CURTAIN AIRBAG EVALUATION IN A 30 MPH ROLLOVER CRASH

RIGHT FRONT PASSENGER UPPER NECK MOMENT ABOUT Y AXIS



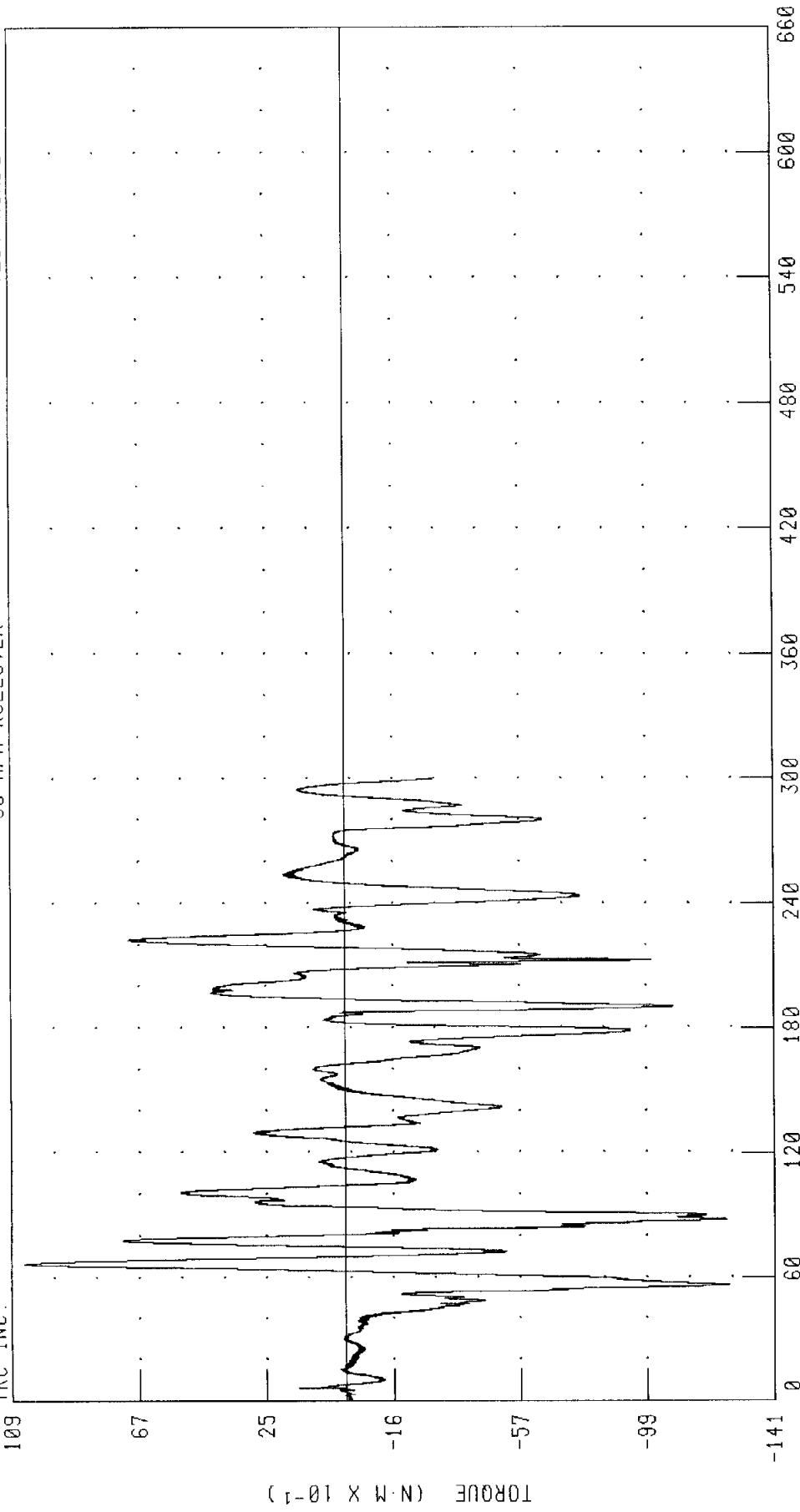
1994 FORD EXPLORER HEAD CURTAIN AIRBAG EVALUATION IN A 30 MPH ROLLOVER CRASH

RIGHT FRONT PASSENGER UPPER NECK MOMENT ABOUT Z AXIS

TEST NUMBER: 010412

30 MPH ROLLOVER

TRC INC.



PEAK DATA: 10.58 N M @ 667.20 MS, -12.70 N M @ 561.52 MS

CHANNEL: NEK7M2 FILTER: CH CLASS 600

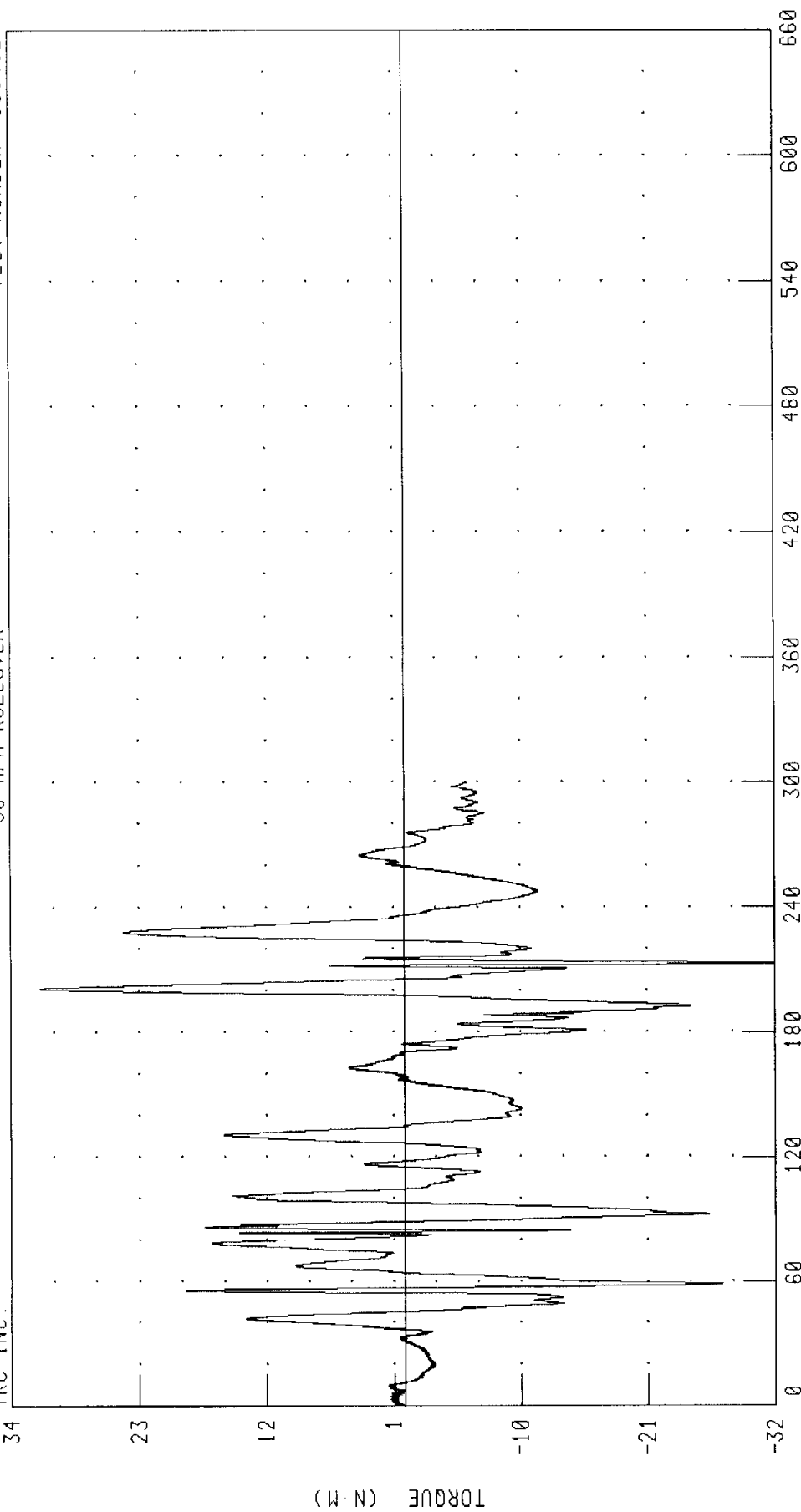
1994 FORD EXPLORER HEAD CURTAIN AIRBAG EVALUATION IN A 30 MPH ROLLOVER CRASH

RIGHT FRONT PASSENGER UPPER NECK MOMENT ABOUT Y AXIS OCCIPITAL CONDYLE

TEST NUMBER: 010412

30 MPH ROLLOVER

TRC INC.



TIME (MS X 10¹)

PEAK DATA: 31.55 N-M @ 2009.28 MS, -32.44 N-M @ 2129.60 MS

CHANNEL: NEKOM2 FILTER: CH CLASS 600

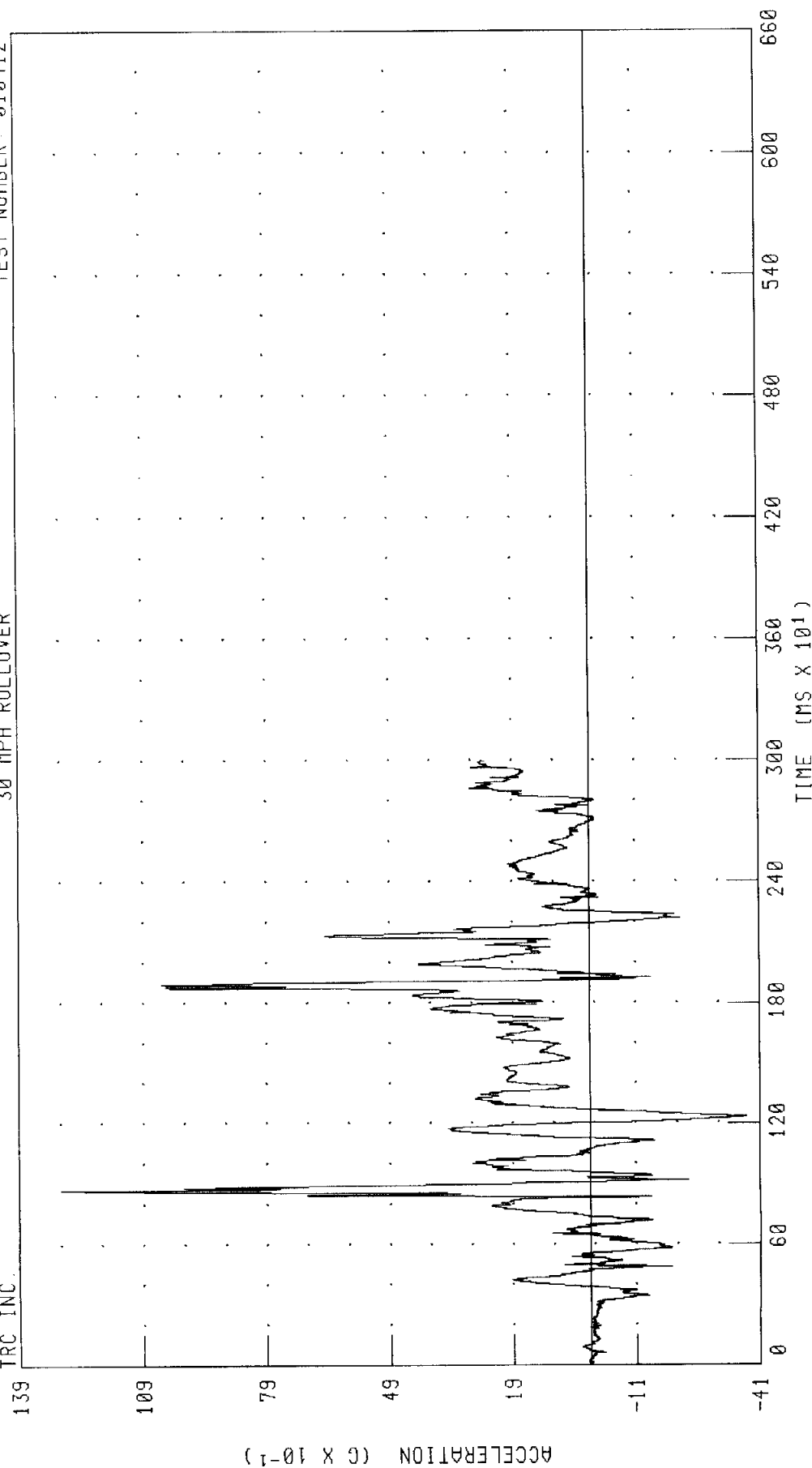
1994 FORD EXPLORER HEAD CURTAIN AIRBAG EVALUATION IN A 30 MPH ROLLOVER CRASH

RIGHT FRONT PASSENGER CHEST LONGITUDINAL AXIS ACCELERATION

TEST NUMBER: 010412

30 MPH ROLLOVER

TRC INC.



CHANNEL: CSTXC2 FILTER: CH. CLASS 180

PEAK DATA: 12.90 G @ 871.60 MS; -3.78 G @ 1232.00 MS

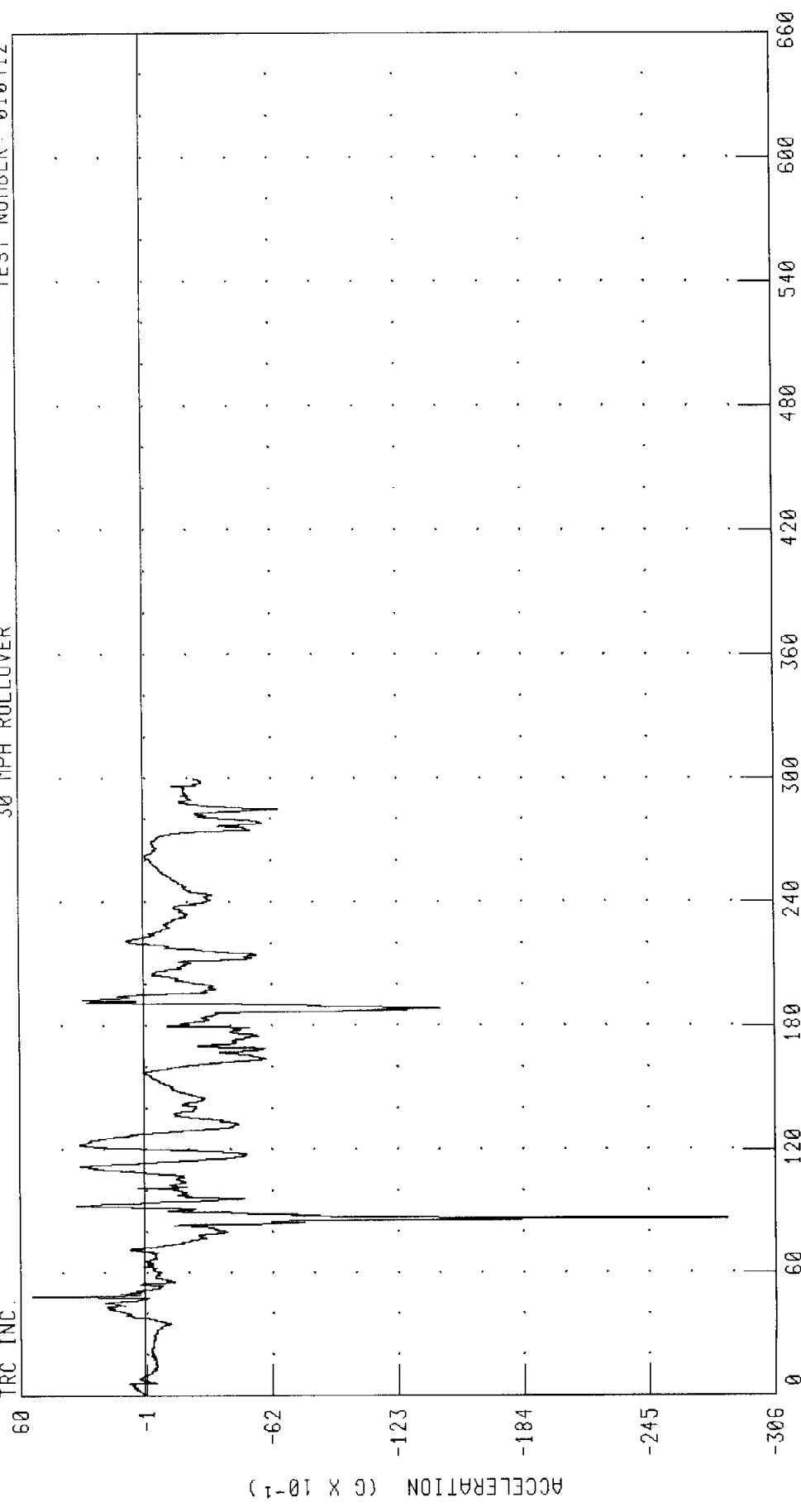
1994 FORD EXPLORER HEAD CURTAIN AIRBAG EVALUATION IN A 30 MPH ROLLOVER CRASH

RIGHT FRONT PASSENGER CHEST LATERAL AXIS ACCELERATION

TEST NUMBER: 010412

30 MPH ROLLOVER

TRC INC.



PEAK DATA: 5.47 G @ 484.32 MS, -28.28 G @ 865.36 MS

CHANNEL: CSTYC2 FILTER: CH. CLASS 180

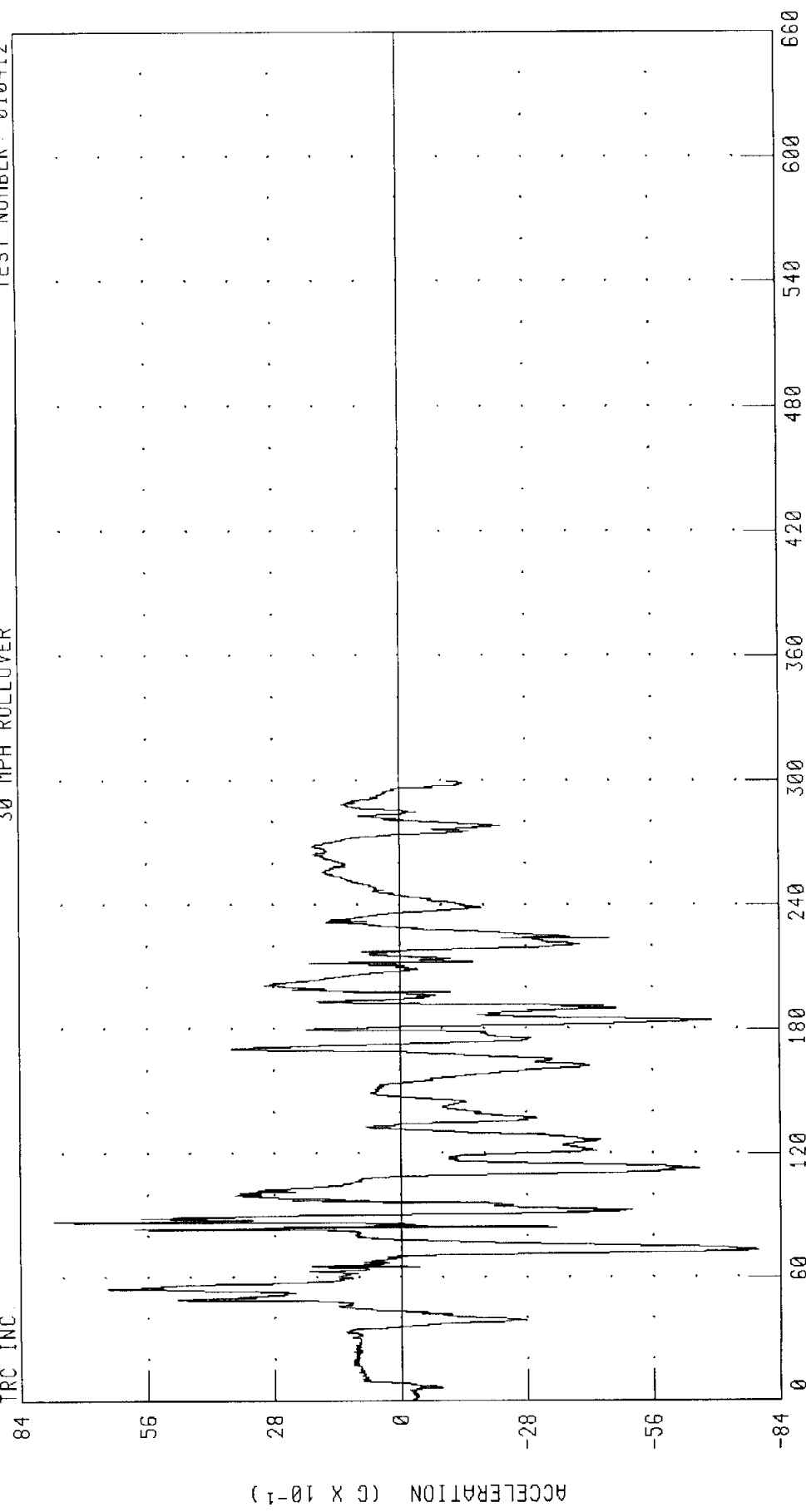
1994 FORD EXPLORER HEAD CURTAIN AIRBAG EVALUATION IN A 30 MPH ROLLOVER CRASH

RIGHT FRONT PASSENGER CHEST VERTICAL AXIS ACCELERATION

TEST NUMBER: 010412

30 MPH ROLLOVER

TRC INC.



TIME (MS X 10¹)

PEAK DATA: 7.68 G @ 871.52 MS, -7.90 G @ 732.48 MS

CHANNEL: CSTZG2 FILTER: CH. CLASS 180

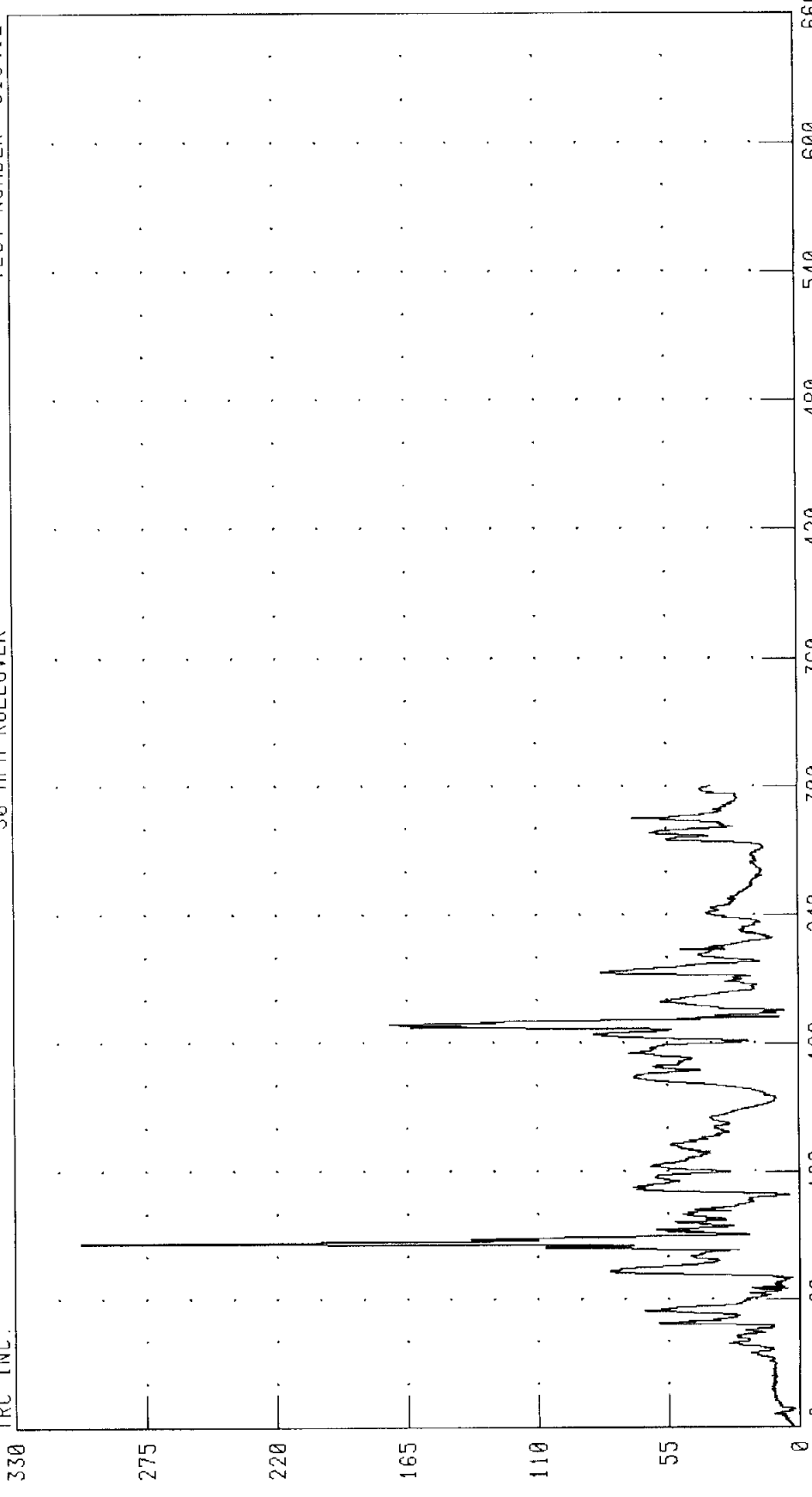
1994 FORD EXPLORER HEAD CURTAIN AIRBAG EVALUATION IN A 30 MPH ROLLOVER CRASH

RIGHT FRONT PASSENGER CHEST RESULTANT ACCELERATION

TEST NUMBER: 010412

30 MPH ROLLOVER

TRC INC.



TIME (MS X 10¹)

PEAK DATA: 30.27 G @ 865.28 MS; 0.19 G @ 85.60 MS

CHANNEL: CSTRG2 FILTER: CH. CLASS 180

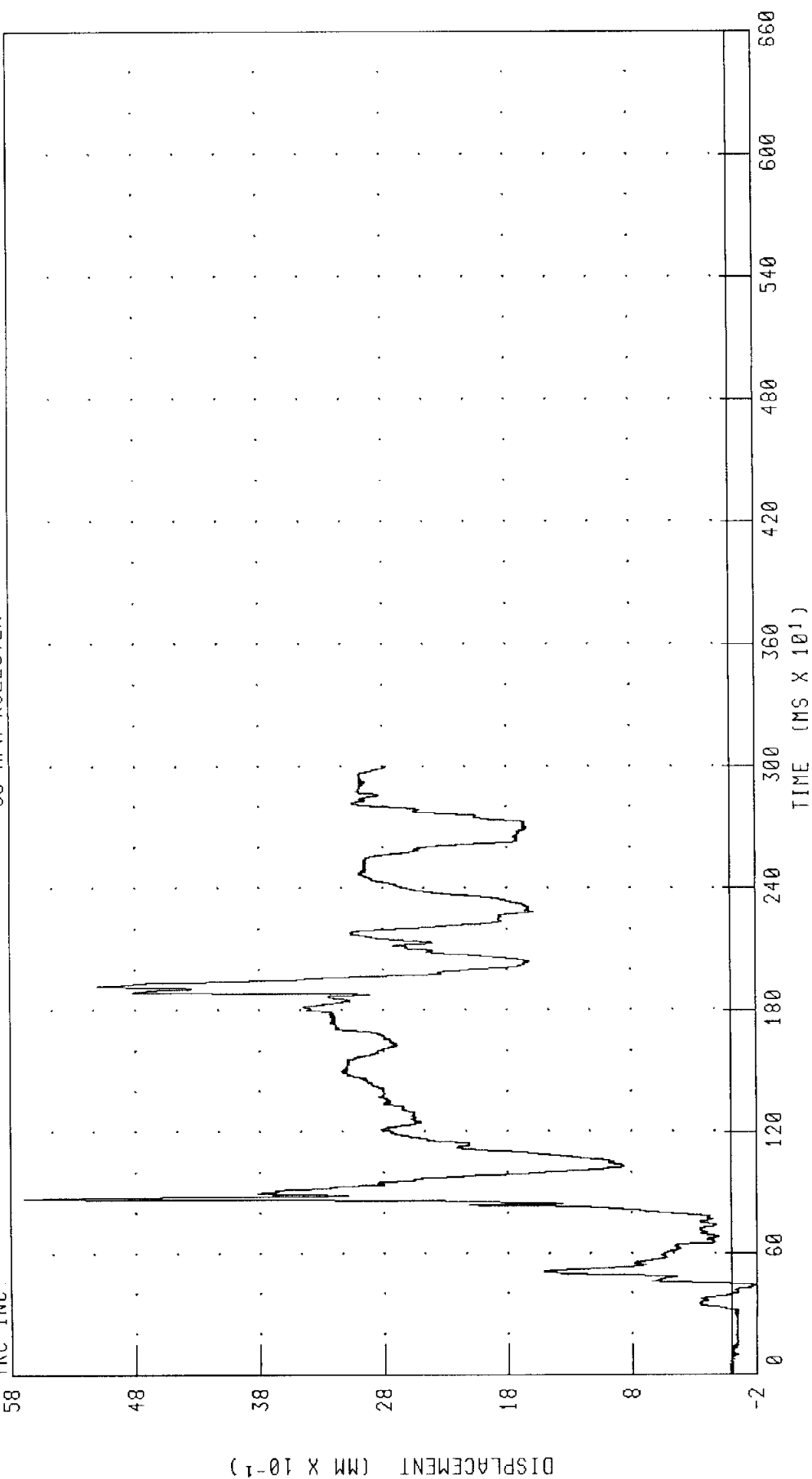
1994 FORD EXPLORER HEAD CURTAIN AIRBAG EVALUATION IN A 30 MPH ROLLOVER CRASH

RIGHT FRONT PASSENGER CHEST DEFLECTION

TEST NUMBER: 010412

30 MPH ROLLOVER

TRC INC.



CHANNEL: CSTXD2

FILTER: CH. CLASS 600

PEAK DATA: 5.69 MM @ 872.40 MS;

-0.21 MM @ 437.04 MS

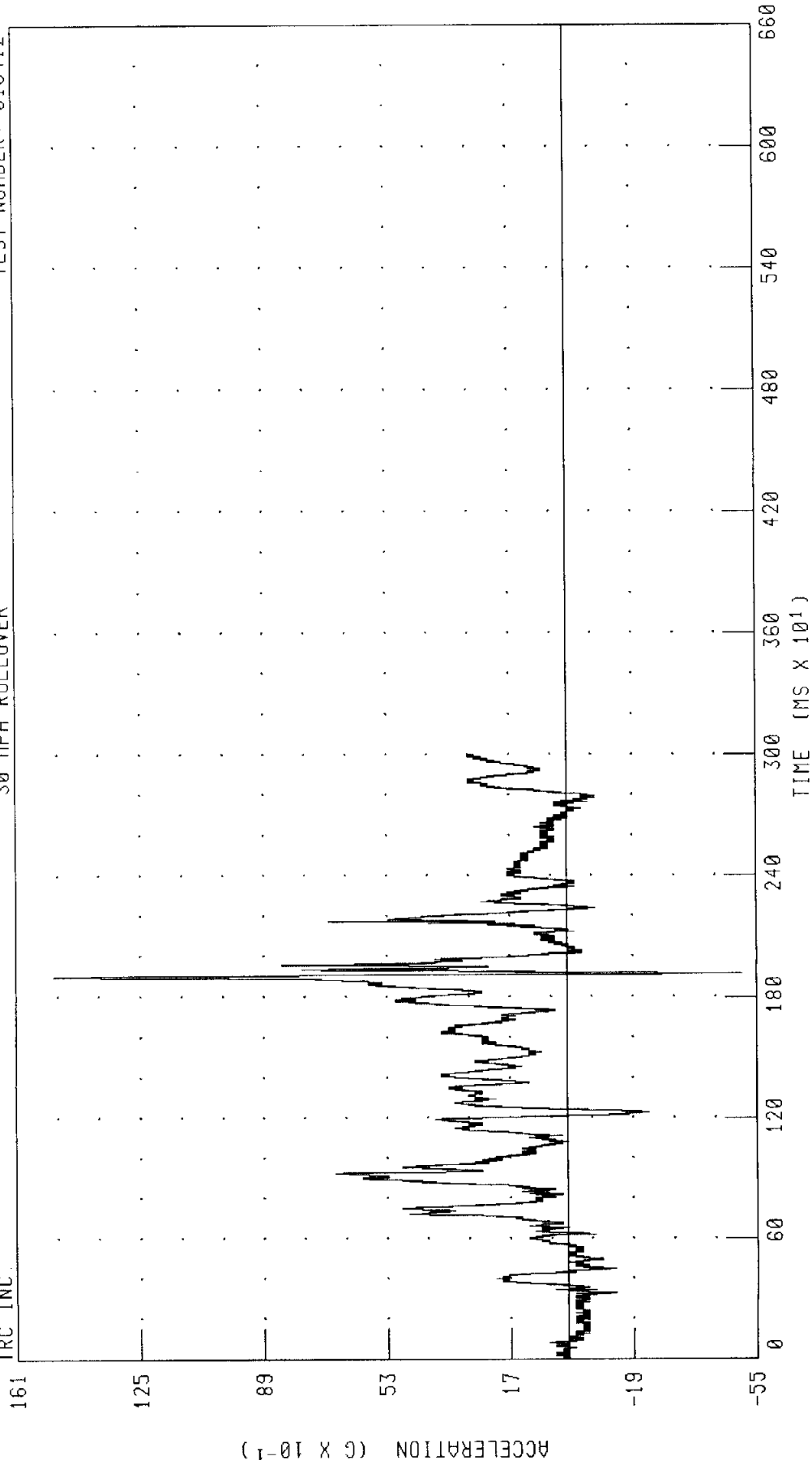
1994 FORD EXPLORER HEAD CURTAIN AIRBAG EVALUATION IN A 30 MPH ROLLOVER CRASH

RIGHT FRONT PASSENGER PELVIS LONGITUDINAL AXIS ACCELERATION

TEST NUMBER: 010412

TRC INC.

30 MPH ROLLOVER



PEAK DATA: 15.00 G @ 1898.40 MS, -5.09 G @ 1914.88 MS

CHANNEL: PFVXG2 FILTER: CH CLASS 1000

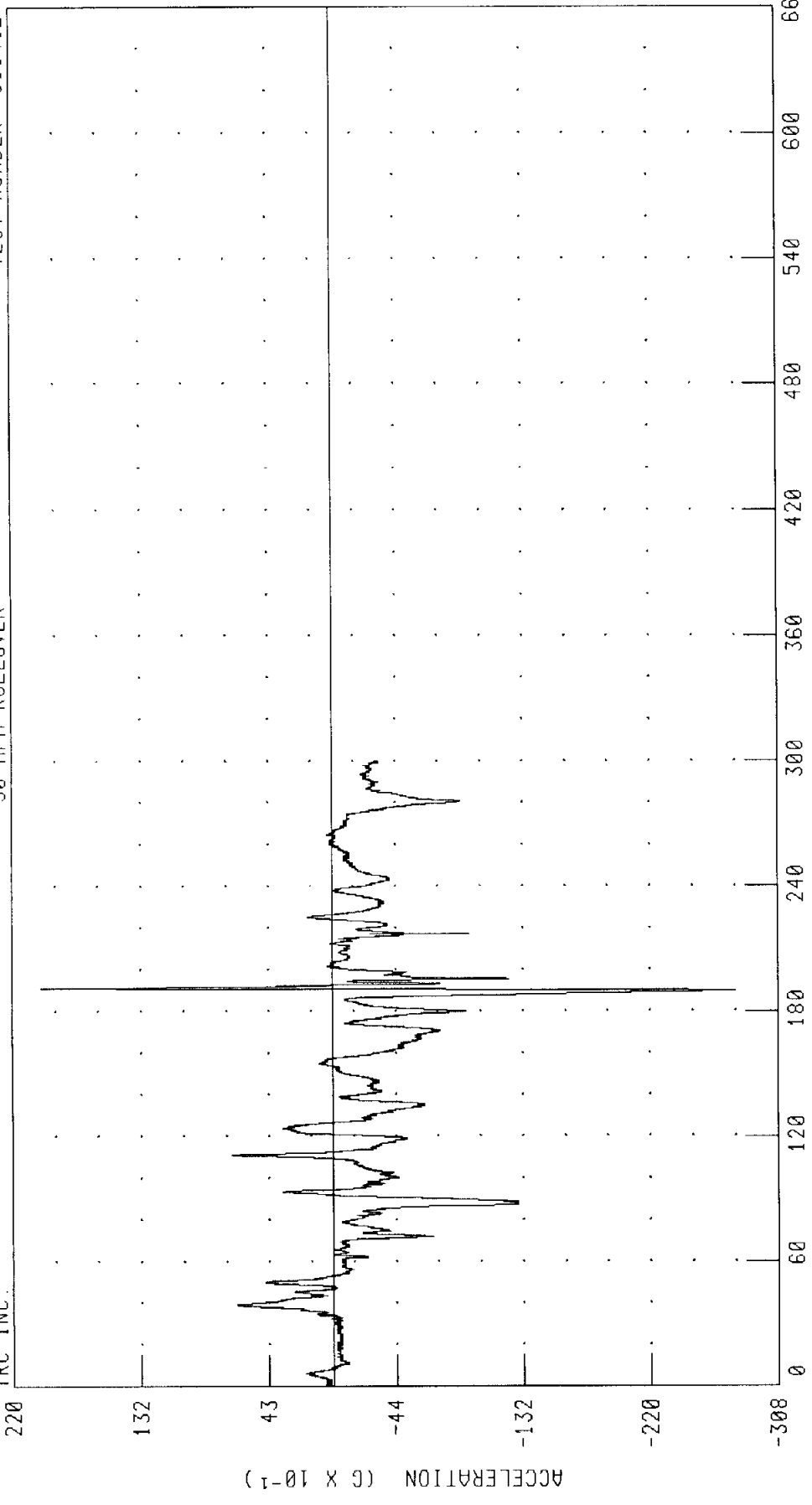
1994 FORD EXPLORER HEAD CURTAIN AIRBAG EVALUATION IN A 30 MPH ROLLOVER CRASH

RIGHT FRONT PASSENGER PELVIS LATERAL AXIS ACCELERATION

TEST NUMBER: 010412

30 MPH ROLLOVER

TRC INC.

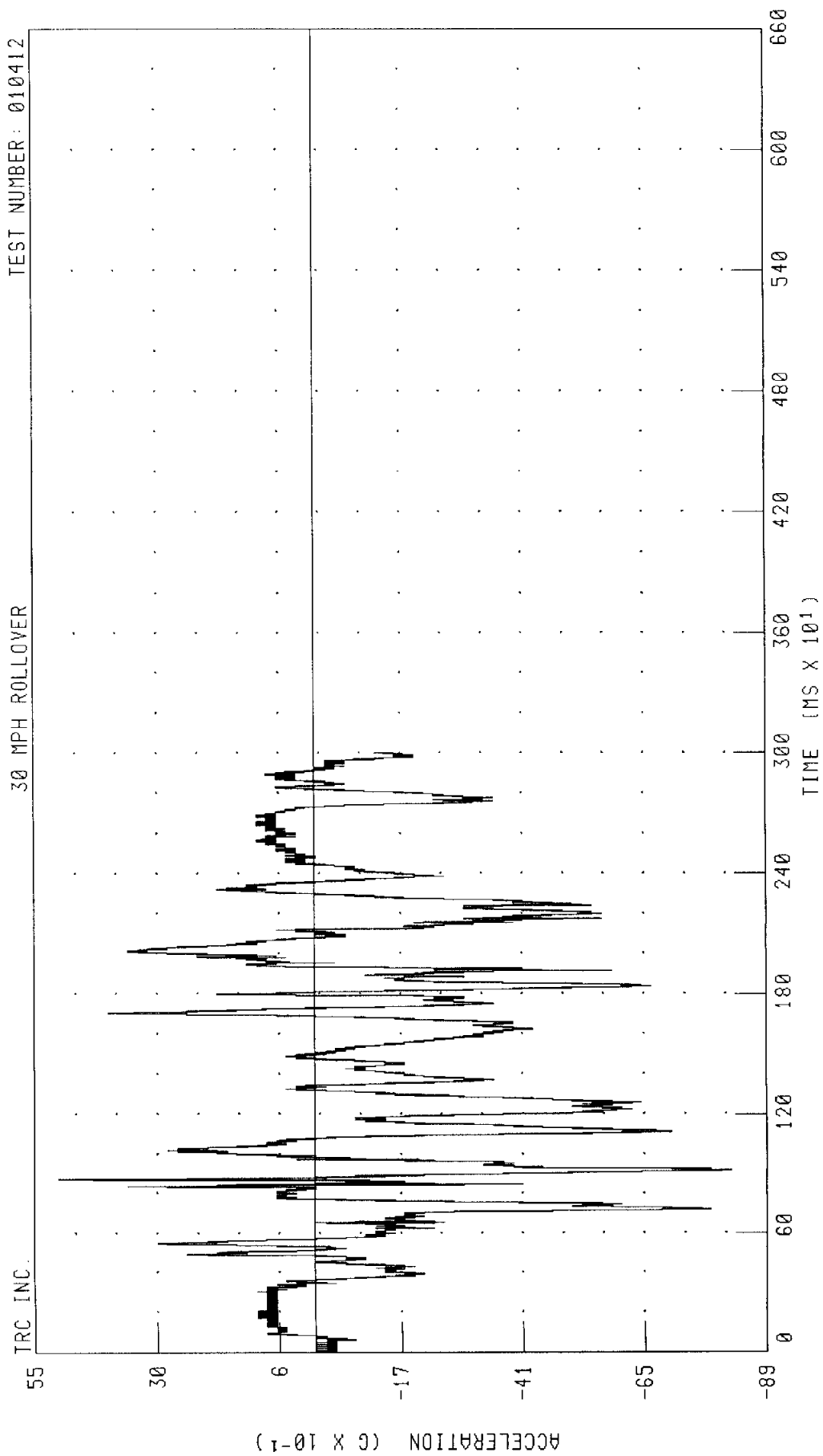


TIME (MS X 10¹)

PEAK DATA: 20.11 G @ 1914.16 MS; -27.90 G @ 1899.28 MS

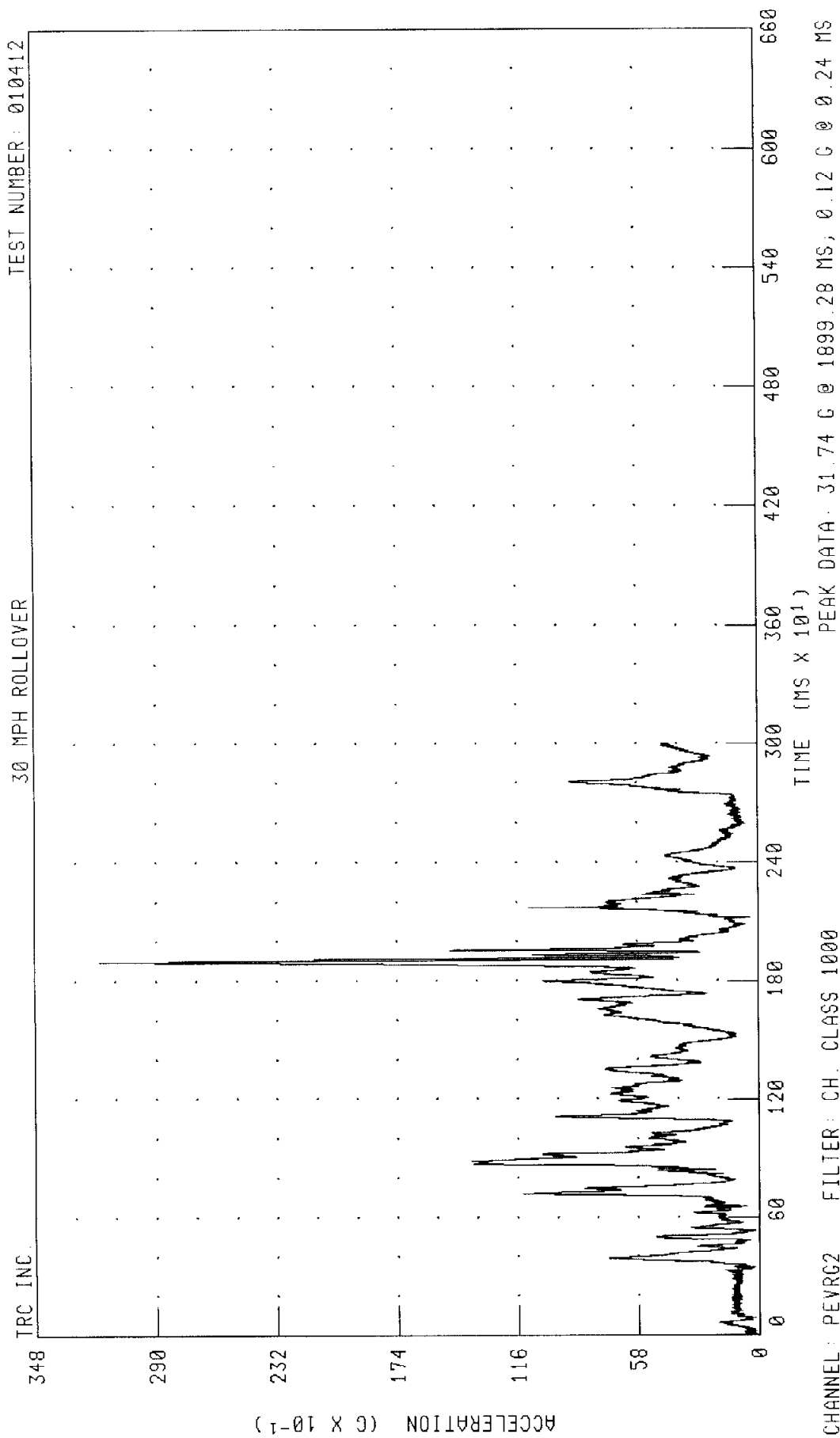
CHANNEL: PEVYG2 FILTER: CH. CLASS 1000

1994 FORD EXPLORER HEAD CURTAIN AIRBAG EVALUATION IN A 30 MPH ROLLOVER CRASH
RIGHT FRONT PASSENGER PELVIS VERTICAL AXIS ACCELERATION



CHANNEL: PEVZG2 FILTER: CH. CLASS 1000

1994 FORD EXPLORER HEAD CURTAIN AIRBAG EVALUATION IN A 30 MPH ROLLOVER CRASH
RIGHT FRONT PASSENGER PELVIS RESULTANT ACCELERATION



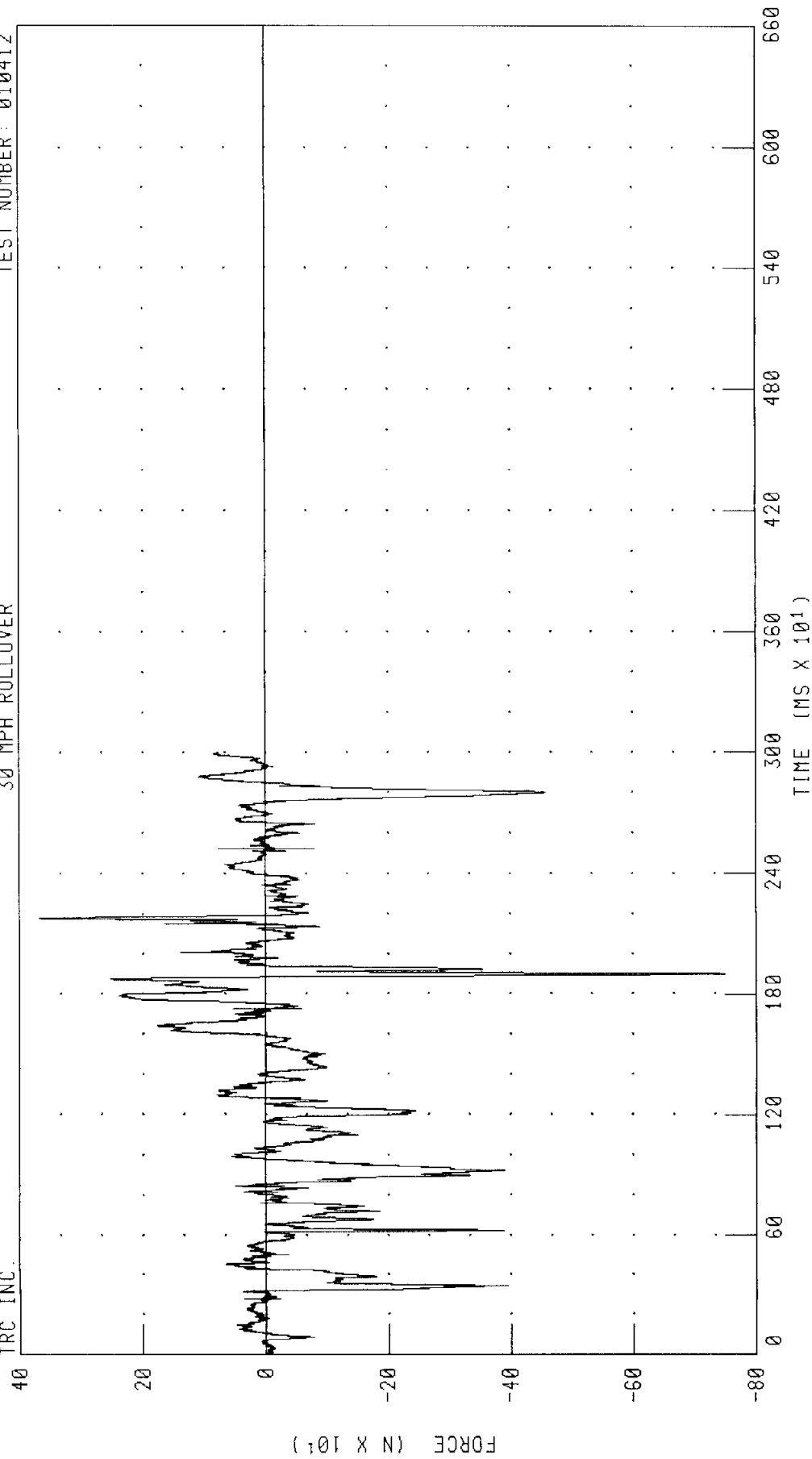
1994 FORD EXPLORER HEAD CURTAIN AIRBAG EVALUATION IN A 30 MPH ROLLOVER CRASH

RIGHT FRONT PASSENGER LEFT FEMUR AXIAL FORCE

TEST NUMBER: 010412

30 MPH ROLLOVER

TRC INC.



CHANNEL: LFMZF2 FILTER: CH. CLASS 600

PEAK DATA: 368.22 N @ 2181.76 MS, -748.55 N @ 1899.36 MS

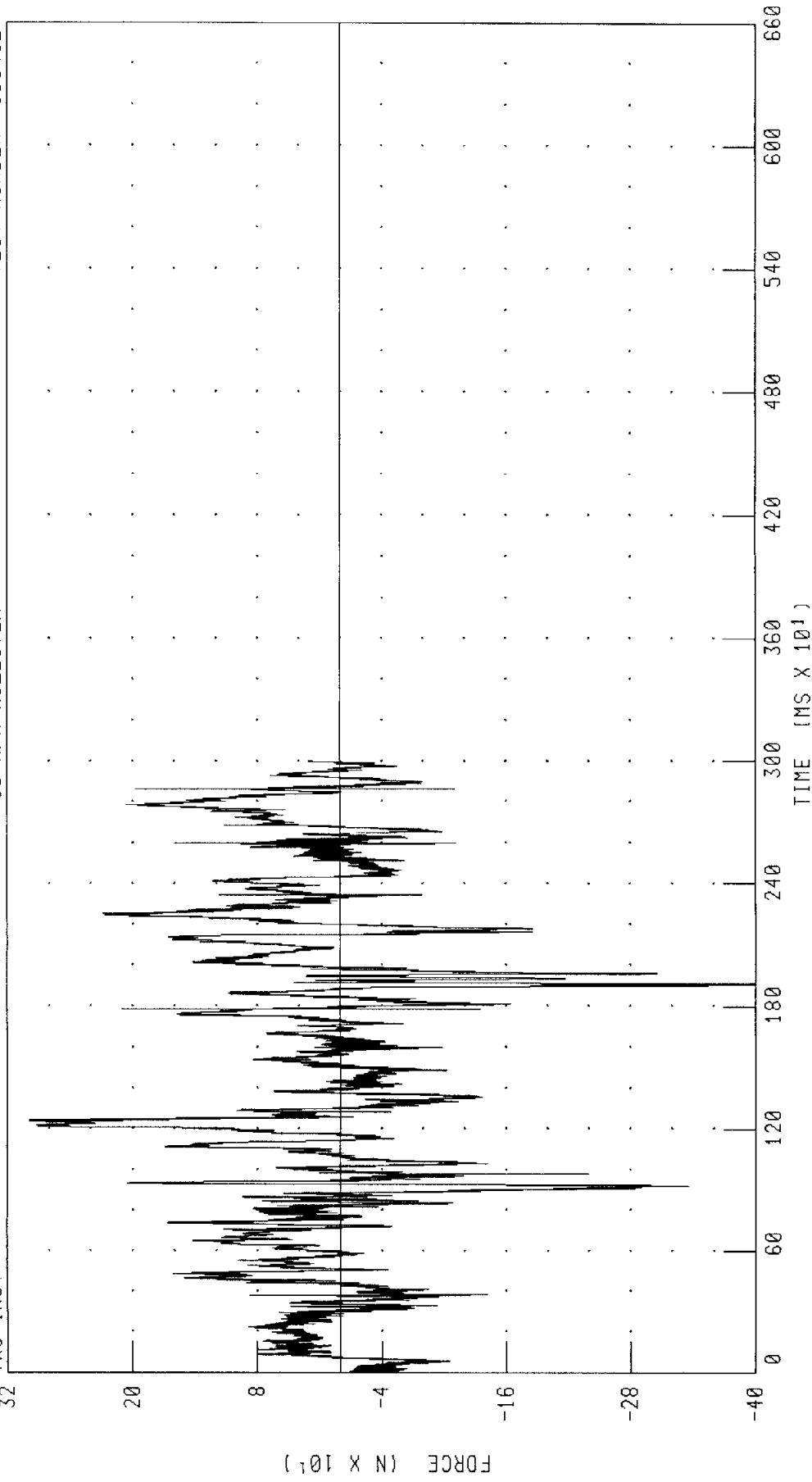
1994 FORD EXPLORER HEAD CURTAIN AIRBAG EVALUATION IN A 30 MPH ROLLOVER CRASH

RIGHT FRONT PASSENGER RIGHT FEMUR AXIAL FORCE

TRC INC.

30 MPH ROLLOVER

TEST NUMBER: 010412



CHANNEL: RFMZ2 FILTER: CH. CLASS 600

PEAK DATA: 298.66 N @ 1241.28 MS, -406.14 N @ 1903.20 MS

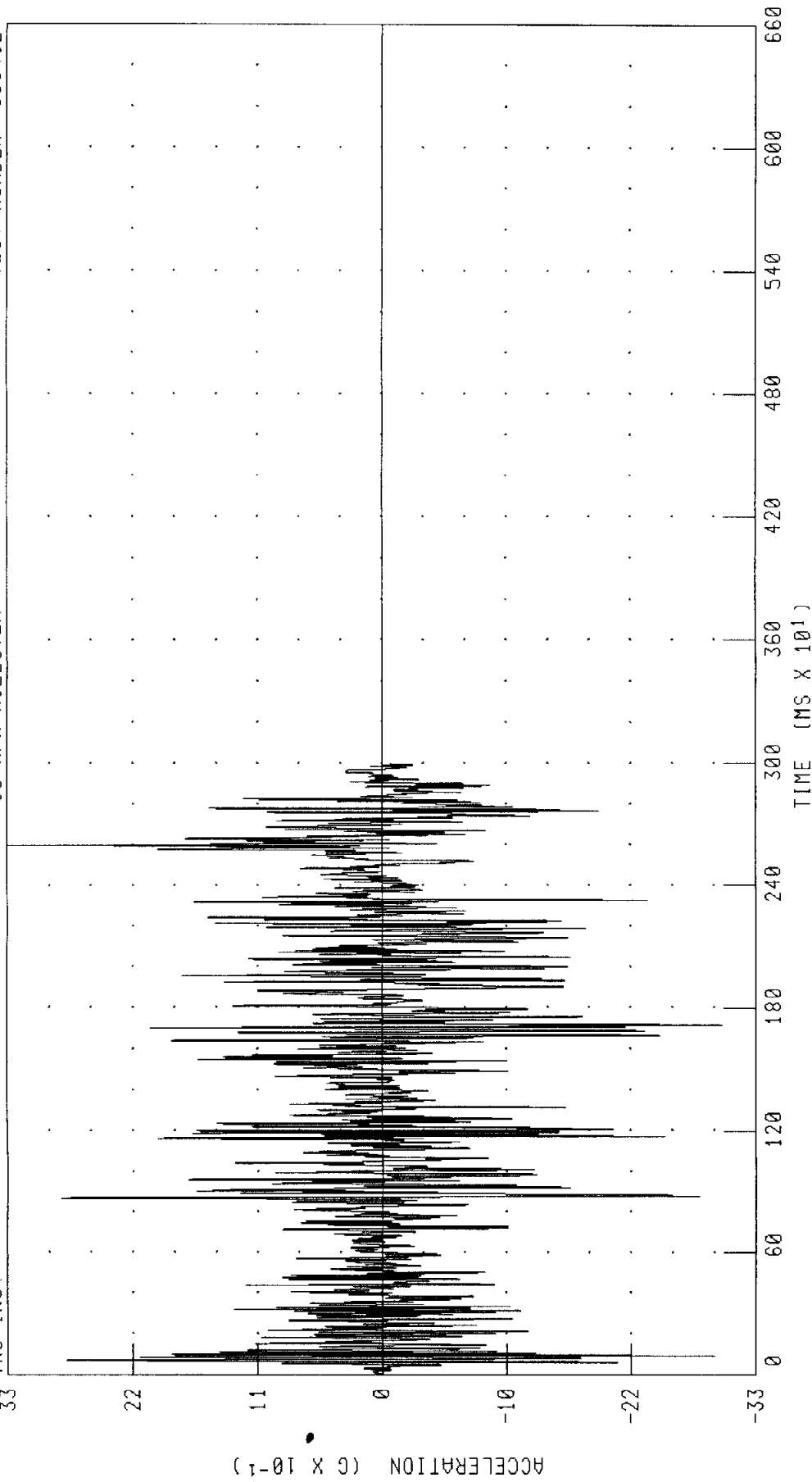
1994 FORD EXPLORER HEAD CURTAIN AIRBAG EVALUATION IN A 30 MPH ROLLOVER CRASH

VEHICLE CENTER OF GRAVITY X-AXIS ACCELERATION

TRC INC.

30 MPH ROLLOVER

TEST NUMBER: 010412



CHANNEL: VCCXG1 FILTER: CH. CLASS 60

PEAK DATA: 3.30 G @ 2599.60 MS, -3.01 G @ 1717.44 MS

1994 FORD EXPLORER HEAD CURTAIN AIRBAG EVALUATION IN A 30 MPH ROLLOVER CRASH

VEHICLE CENTER OF GRAVITY Y-AXIS ACCELERATION

TEST NUMBER: 010412

30 MPH ROLLOVER

TRC INC.

69

43

ACCELERATION (G X 10⁻¹)

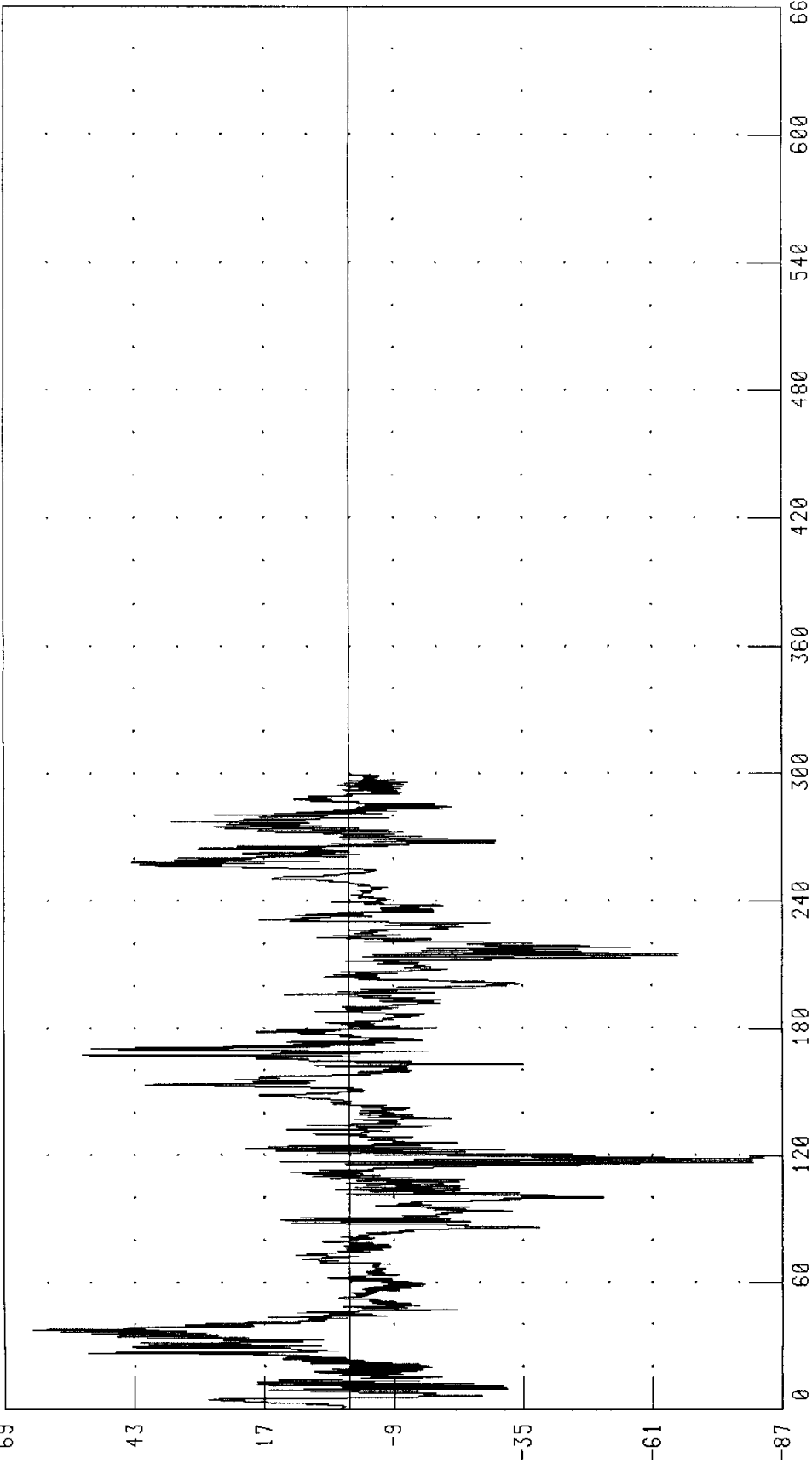
17

-9

-35

-61

-87



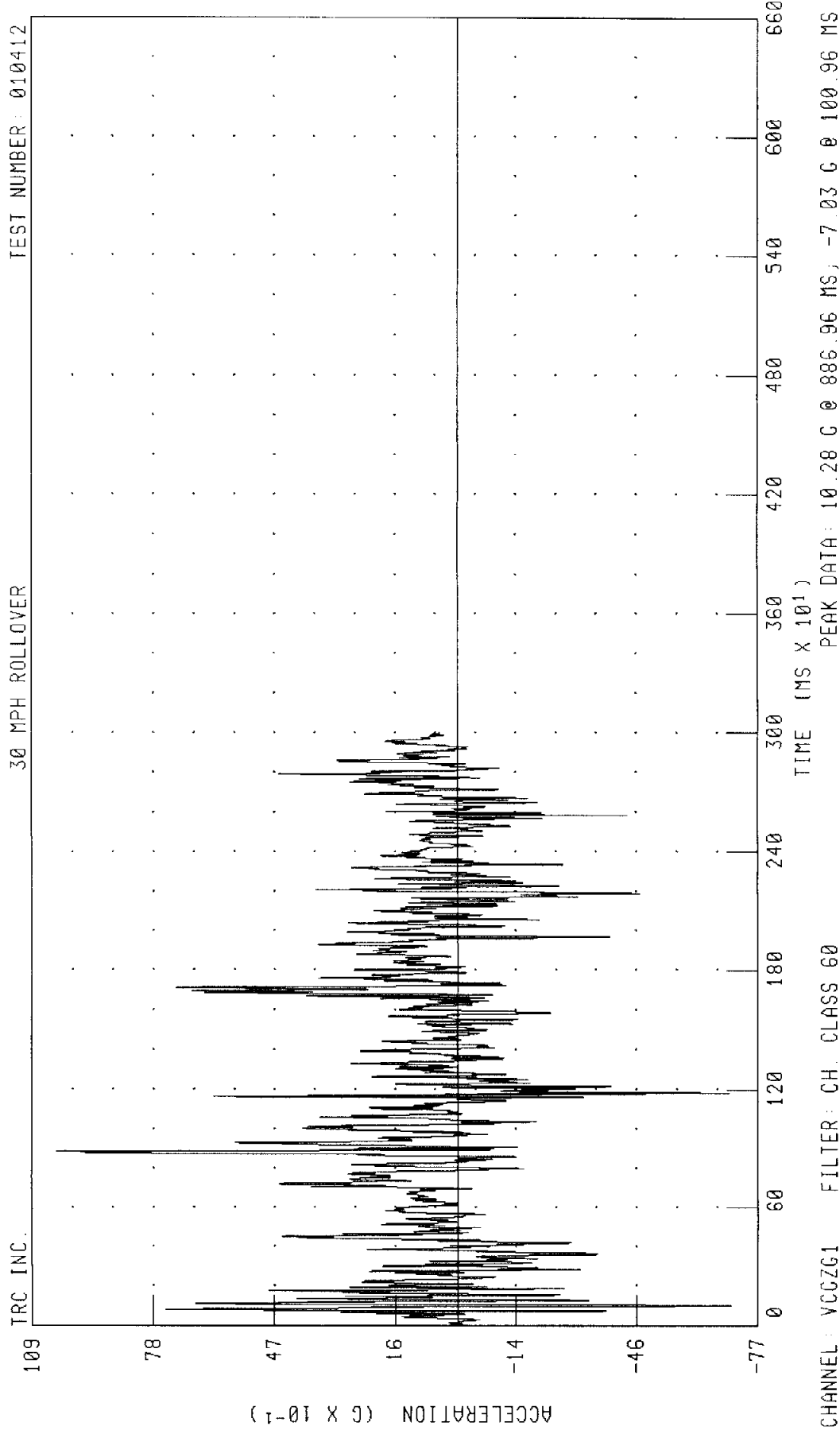
TIME (MS X 10¹)

CHANNEL: VCCYG1 FILTER: CH. CLASS 60

PEAK DATA: 6.33 G @ 376.40 MS, -8.33 G @ 1188.24 MS

1994 FORD EXPLORER HEAD CURTAIN AIRBAG EVALUATION IN A 30 MPH ROLLOVER CRASH

VEHICLE CENTER OF GRAVITY Z-AXIS ACCELERATION



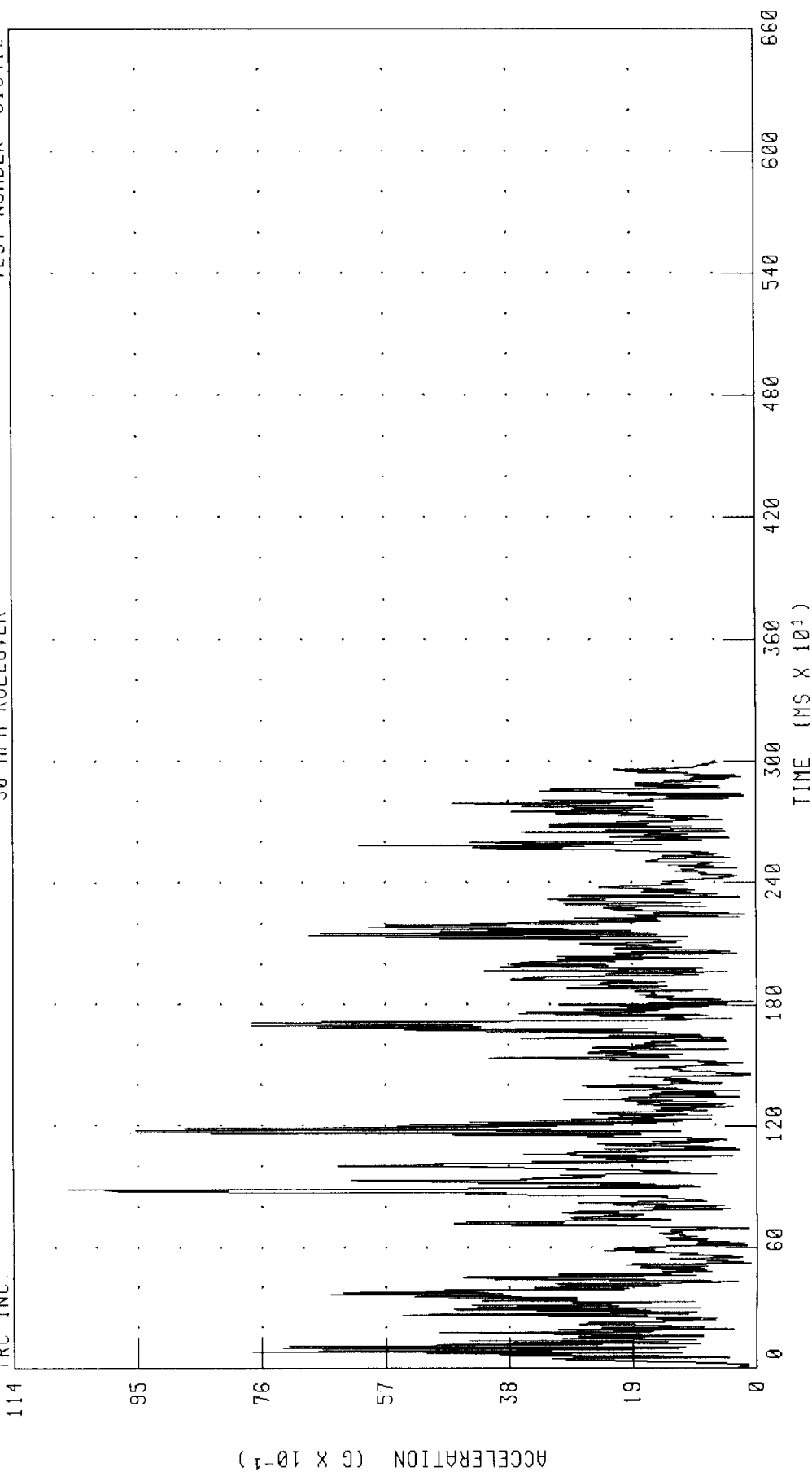
1994 FORD EXPLORER HEAD CURTAIN AIRBAG EVALUATION IN A 30 MPH ROLLOVER CRASH

VEHICLE CENTER OF GRAVITY RESULTANT ACCELERATION

TEST NUMBER: 010412

30 MPH ROLLOVER

TRC INC.



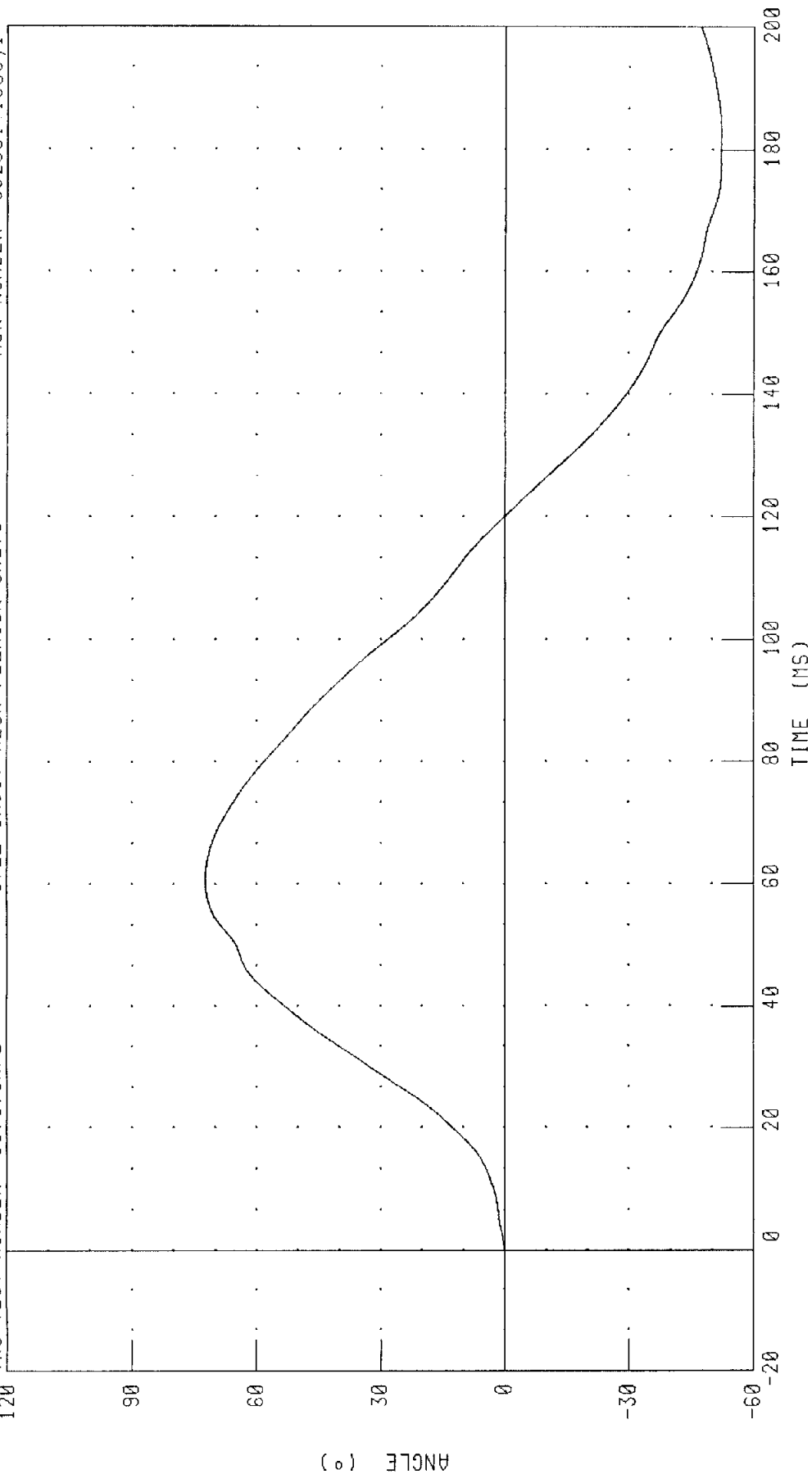
CHANNEL: VCCRG1 FILTER: CH. CLASS 60

PEAK DATA: 10.56 G @ 886.96 MS, 0.04 G @ 1818.00 MS

PART 572-E HYBRID III NECK FLEXION CALIBRATION

TOTAL ROTATION

TRC TEST NUMBER: 617C79NF2 572E SN617 NECK FLEXION CAL79 RUN NUMBER: 092001 1550,1



PEAK DATA 72.41 ° @ 60.88 MS, -52.21 ° @ 183.52 MS

CHANNEL TOTAL FILTER CH. CLASS 60

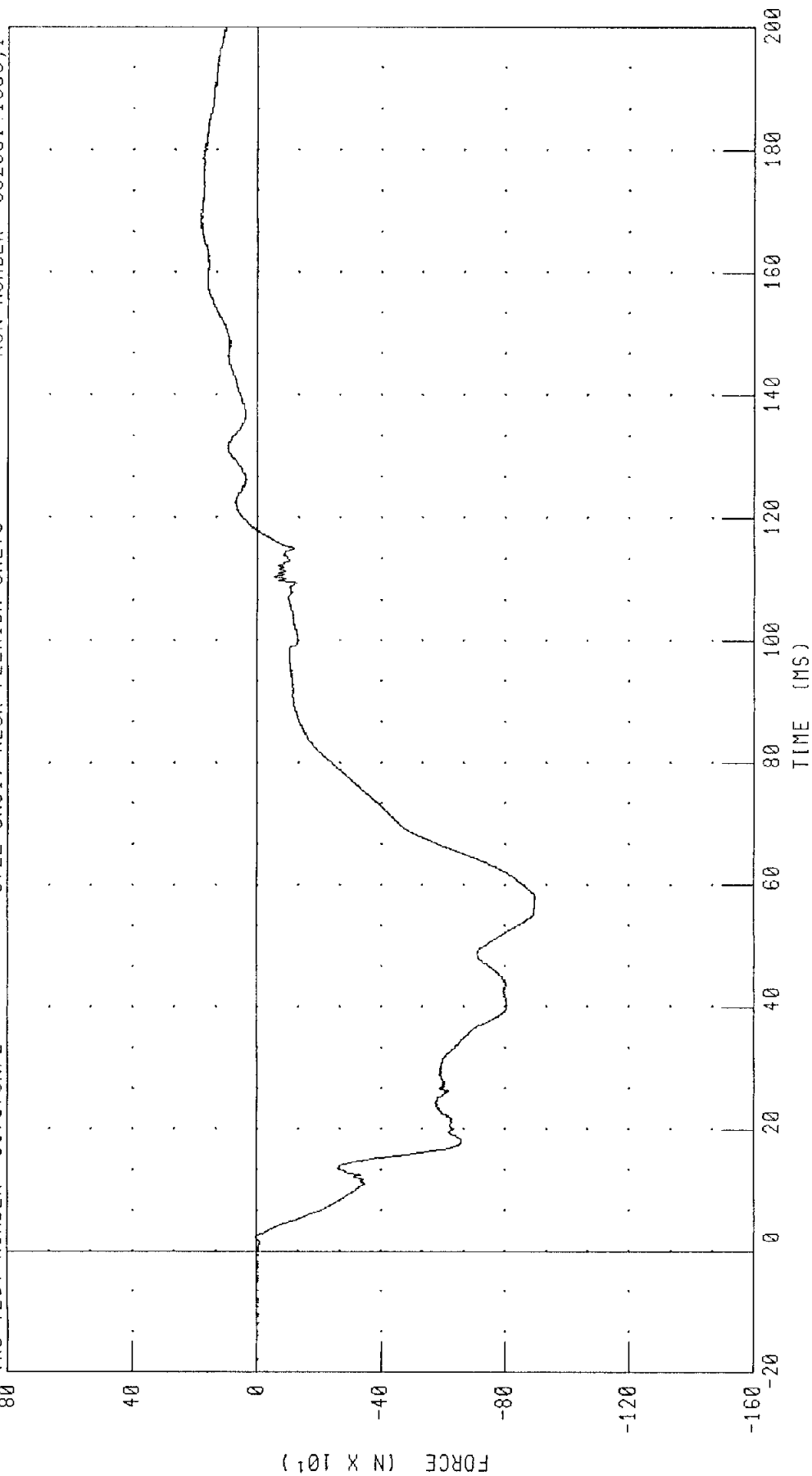
PART 572-E HYBRID III NECK FLEXION CALIBRATION

NECK FORCE X AXIS

TRC TEST NUMBER: 617C79NF2

572E SN617 NECK FLEXION CAL79

RUN NUMBER: 092001.1550.1



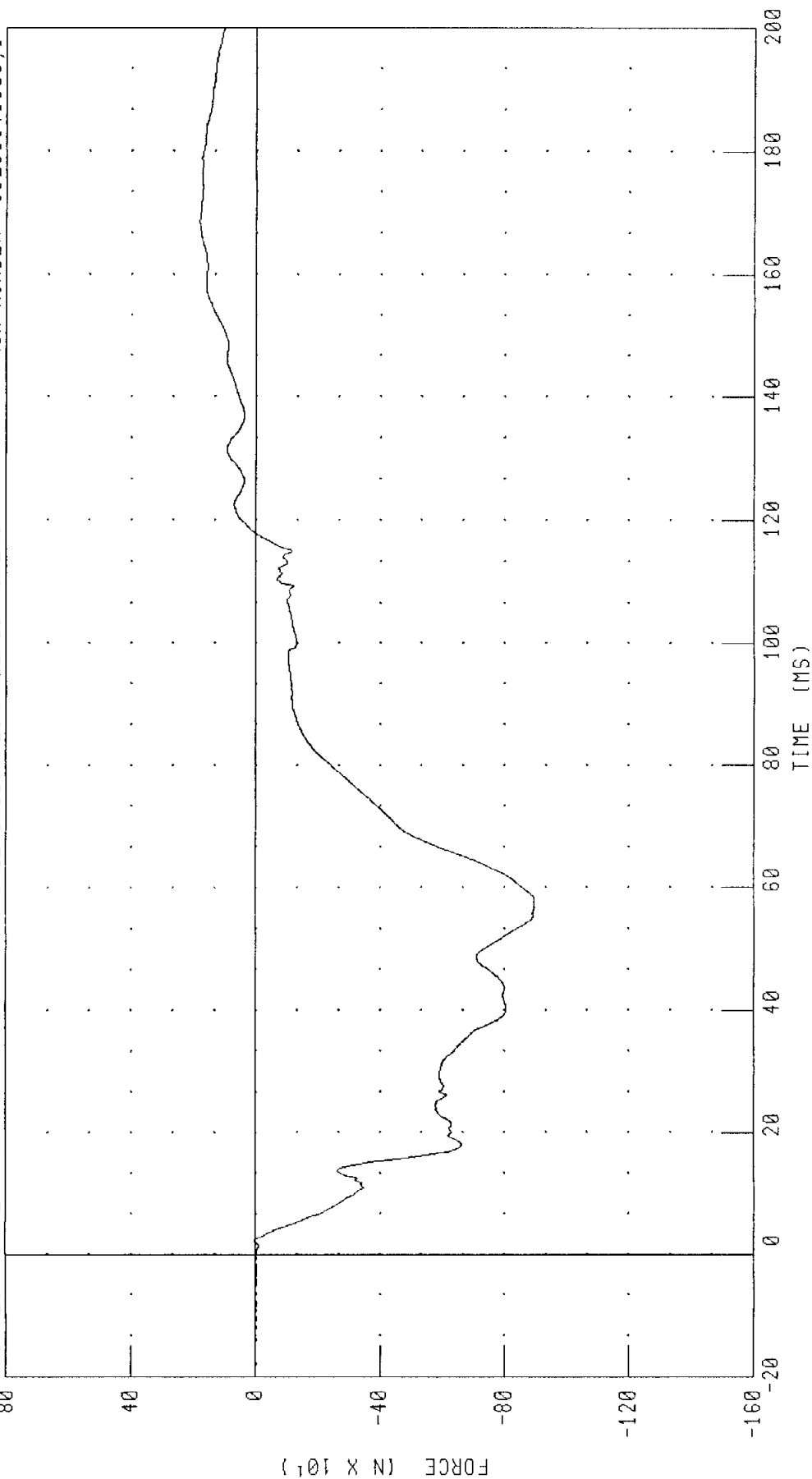
CHANNEL NEKXF FILTER: CH. CLASS 1000

PEAK DATA: 182.84 N @ 167.28 MS, -899.50 N @ 57.68 MS

PART 572-E HYBRID III NECK FLEXION CALIBRATION

NECK FORCE X AXIS FILTERED FOR USE IN OCCIPITAL MOMENT CALCULATION

TRC TEST NUMBER: 617C79NF2 572E SN617 NECK FLEXION CAL79 RUN NUMBER: 092001 1550,1



CHANNEL NEKXFC FILTER CH. CLASS 600

PEAK DATA 183.07 N @ 168.56 MS, -896.22 N @ 58.08 MS

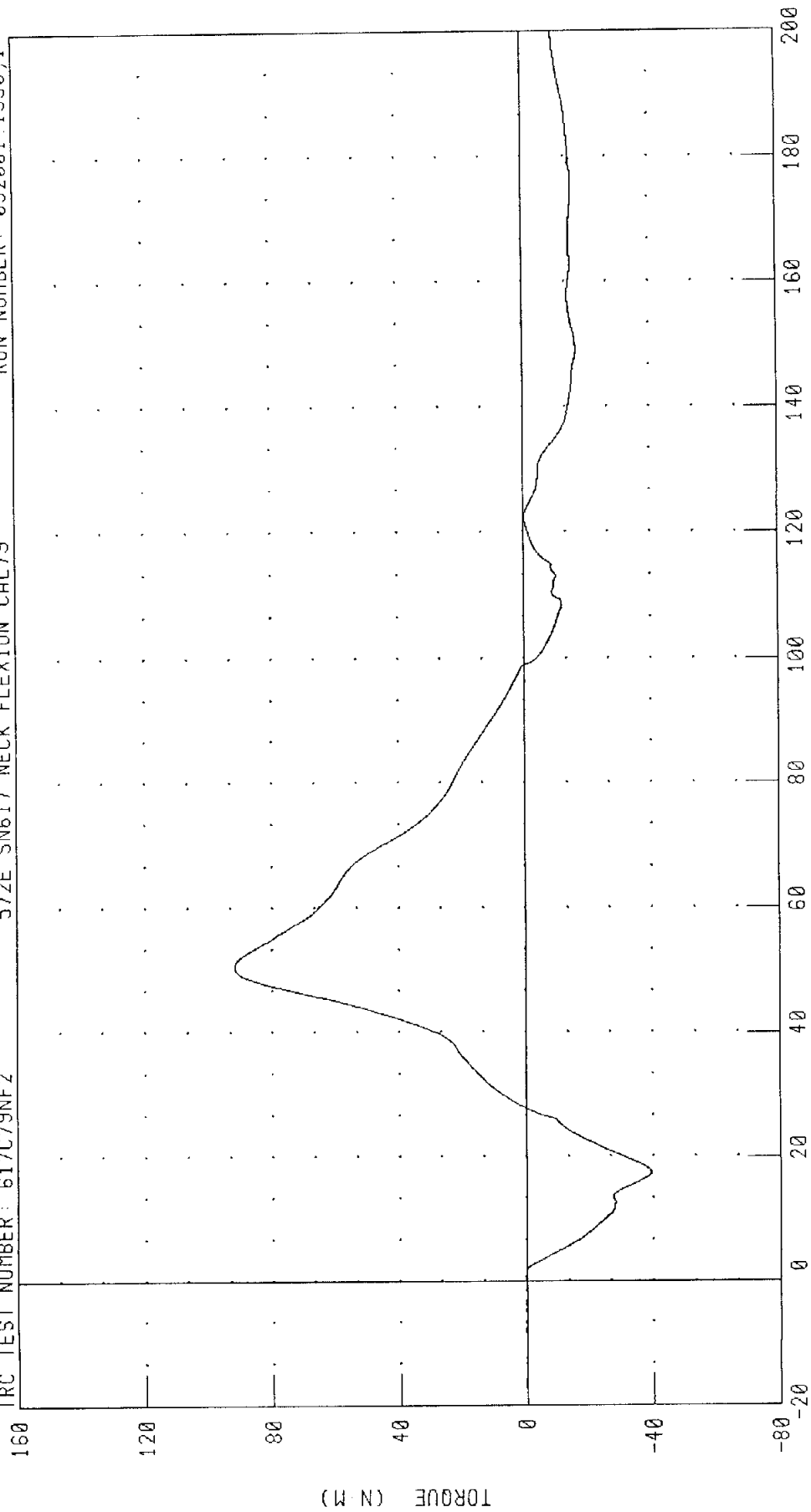
PART 572-E HYBRID III NECK FLEXION CALIBRATION

NECK MOMENT Y AXIS

TRC TEST NUMBER: 617C79NF2

572E SN617 NECK FLEXION CAL79

RUN NUMBER: 092001.1550.1



TIME (MS)

PEAK DATA: 91.69 N M @ 50.48 MS, -39.36 N M @ 17.52 MS

CHANNEL: NEKYM FILTER: CH. CLASS 600

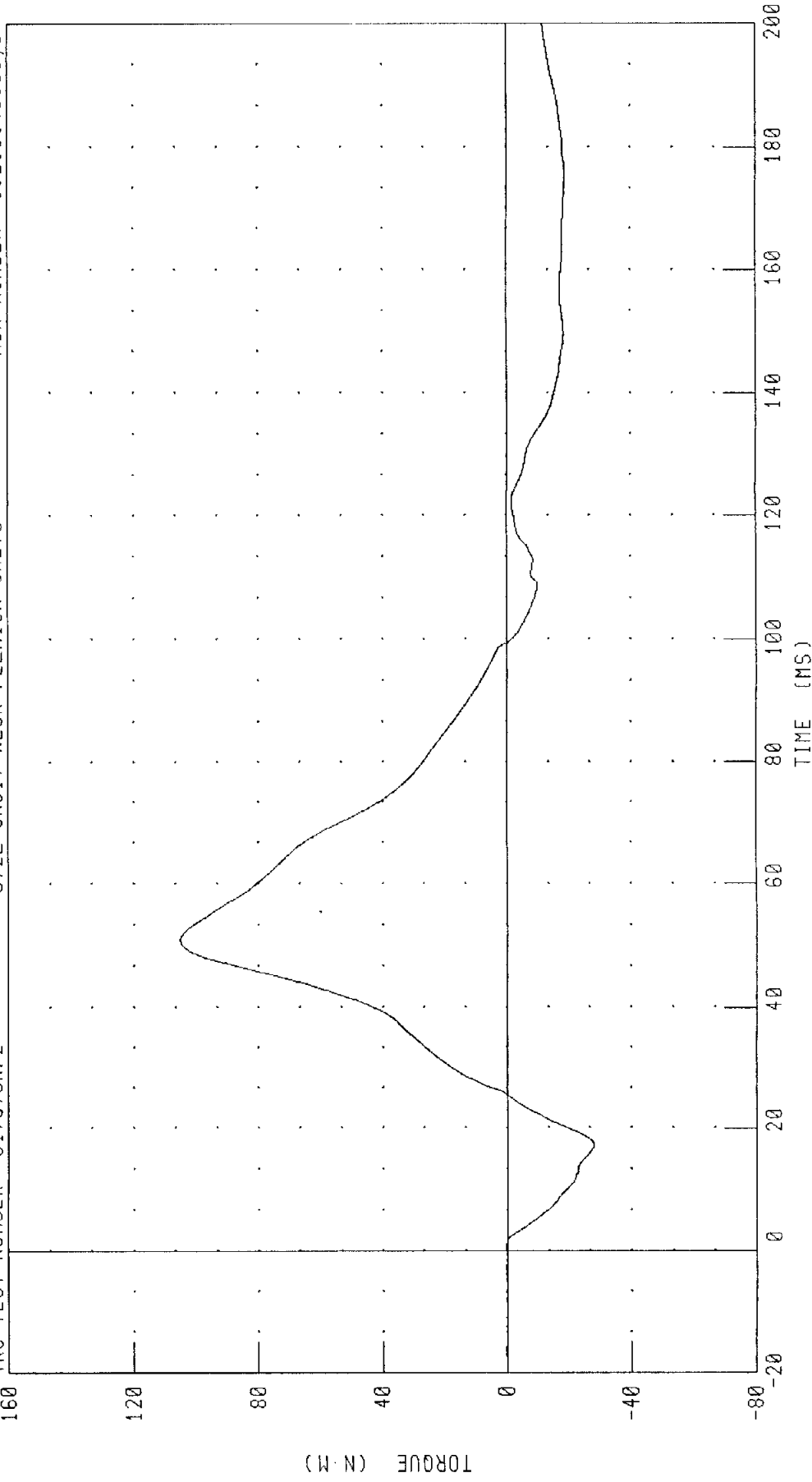
PART 572-E HYBRID III NECK FLEXION CALIBRATION

TOTAL MOMENT ABOUT OCCIPITAL CONDYLE

TRC TEST NUMBER: 617C79NF2

572E SN617 NECK FLEXION CAL79

RUN NUMBER: 092001.1550.1



PEAK DATA: 105.06 N·M @ 50.88 MS, -27.85 N·M @ 17.20 MS

CHANNEL: NEKOM FILTER: CH. CLASS 600

TRANSPORTATION RESEARCH CENTER INC.

HYBRID III 50th

23-MAR-01

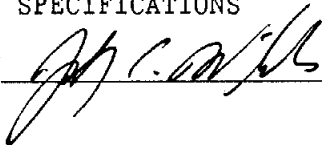
NECK EXTENSION TEST - 6 CHANNEL TRANSDUCER

TRC INC. TEST NO: 617C79NE1 572E SN617 NECK EXT CAL79

TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE		20.6 - 22.2 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY		10 - 70 %	24.0 %
IMPACT VELOCITY		5.95 - 6.19 M/S	6.05 M/S
PENDULUM DECELERATION	10 MS	17.20 - 21.20 G	19.26 G
	20 MS	14.00 - 19.00 G	17.35 G
	30 MS	11.00 - 16.00 G	15.39 G
MAX PENDULUM G		22 G MAX	19.73 G
MAX PENDULUM G ABOVE 30 MS		22 G MAX	15.33 G
DECELERATION-TIME CURVE DECAY TIME TO 5 G		38 - 46 MS	39.04 MS
D PLANE	MAX	81 - 106 DEG.	98.56 DEG.
ROTATION	TIME	72 - 82 MS	73.92 MS
MOMENT ABOUT OCCIPITAL CONDYLE	MIN	-80.0/-52.9 NM	-78.02 NM
	TIME	65 - 79 MS	69.44 MS
ROTATION ANGLE-TIME CURVE DECAY TIME TO ZERO		147 - 174 MS	153.52 MS
NEGATIVE MOMENT-TIME CURVE DECAY TIME TO ZERO		120 - 148 MS	140.32 MS

TEST MEETS SPECIFICATIONS

TECHNICIAN



RUN NUMBER: 040401.0853;4

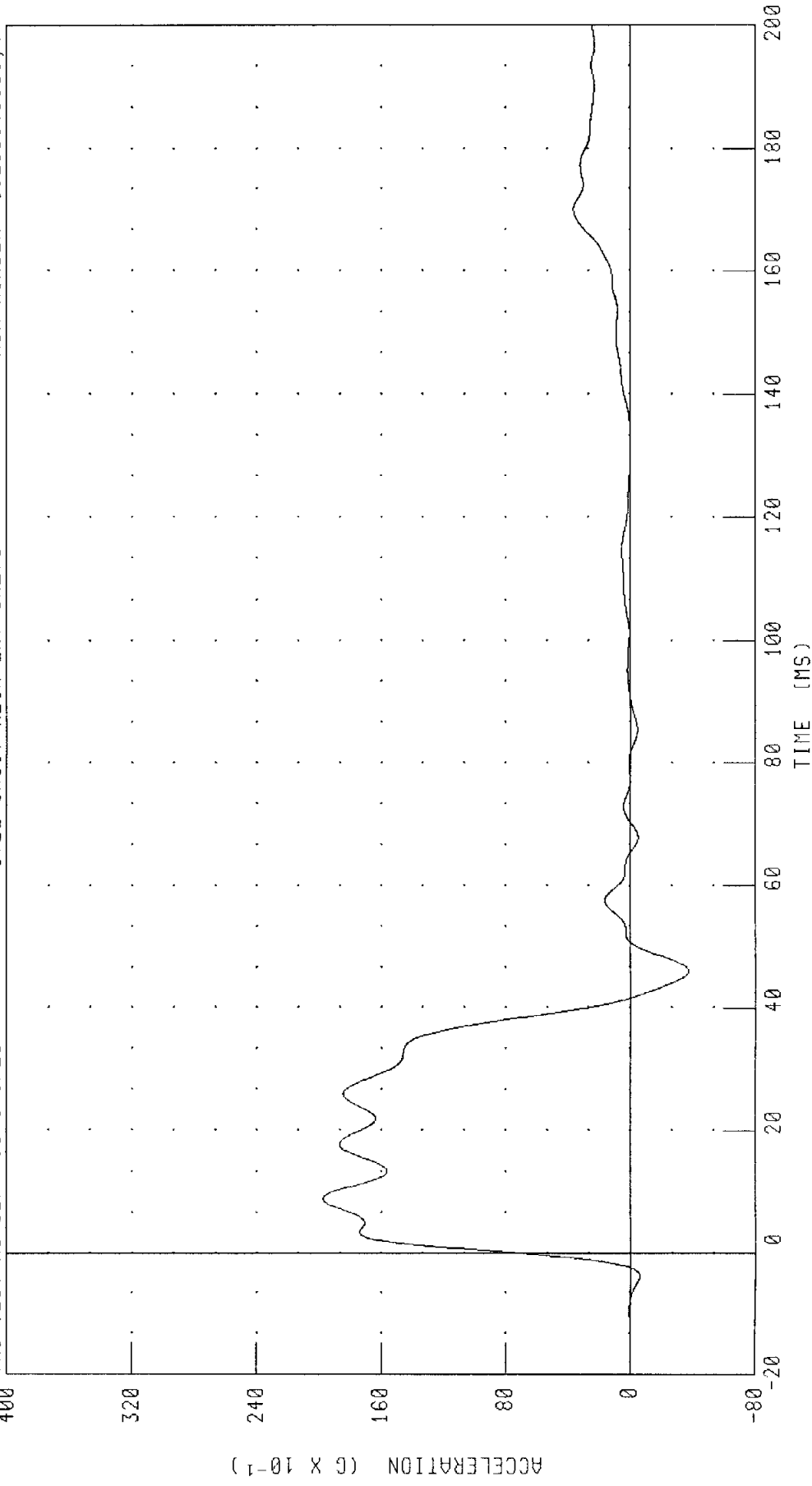
PART 572-E HYBRID III NECK EXTENSION CALIBRATION

PENDULUM DECELERATION

TRC TEST NUMBER: 617C79NE1

572E SN617 NECK EXT CAL79

RUN NUMBER: 092001.1550;4



PEAK DATA: 19.74 G @ 9.04 MS, -3.74 G @ 46.08 MS

CHANNEL: PENXG FILTER: CH. CLASS 60

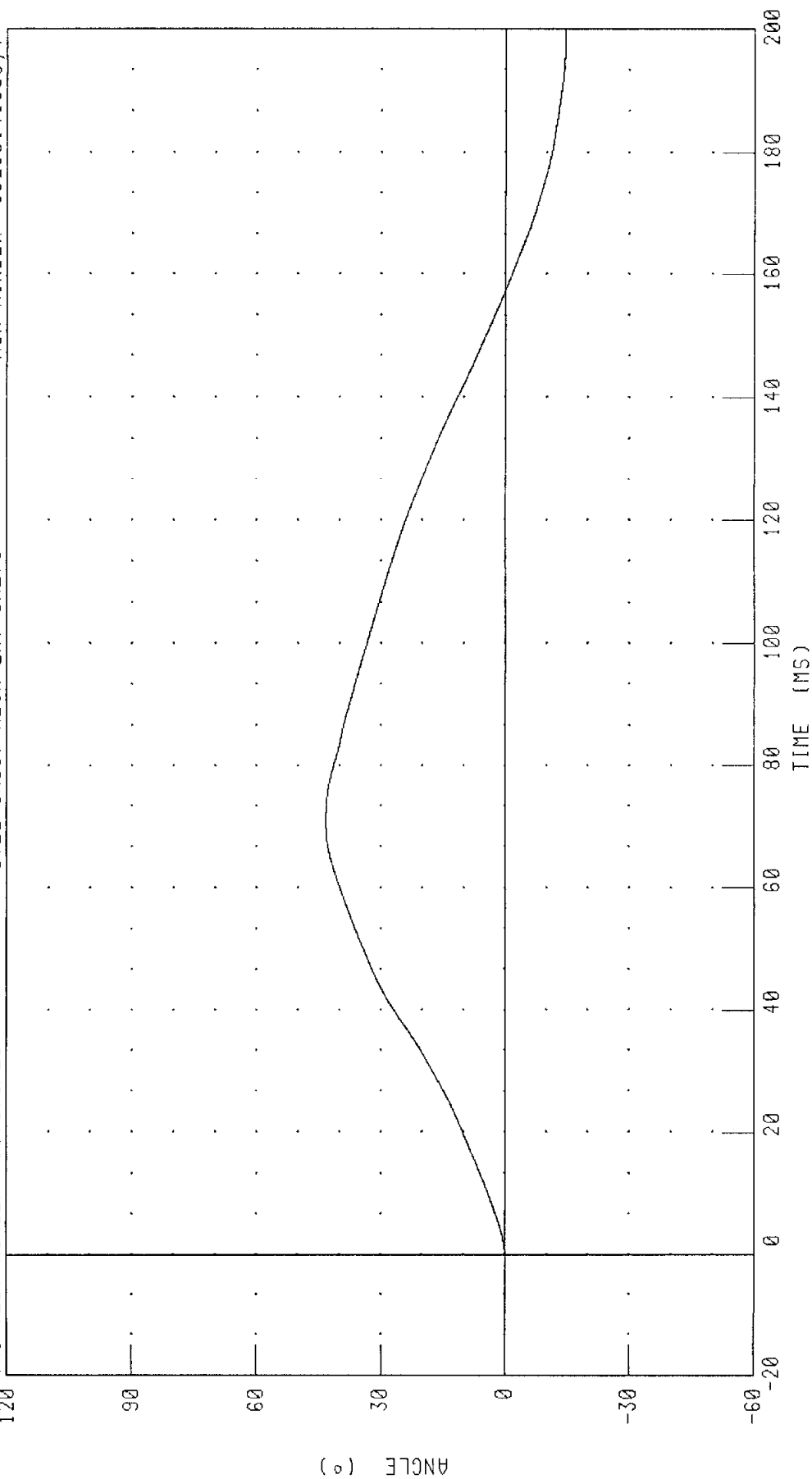
PART 572-E HYBRID III NECK EXTENSION CALIBRATION

ROTATION ABOUT BASE OF NECK

TRC TEST NUMBER: 617C79NE1

572E SN617 NECK EXT CAL79

RUN NUMBER: 092001.1550,4



CHANNEL: BE1A FILTER: CH. CLASS 60

PEAK DATA: 43.26 ° @ 70.96 MS, -14.67 ° @ 200.00 MS

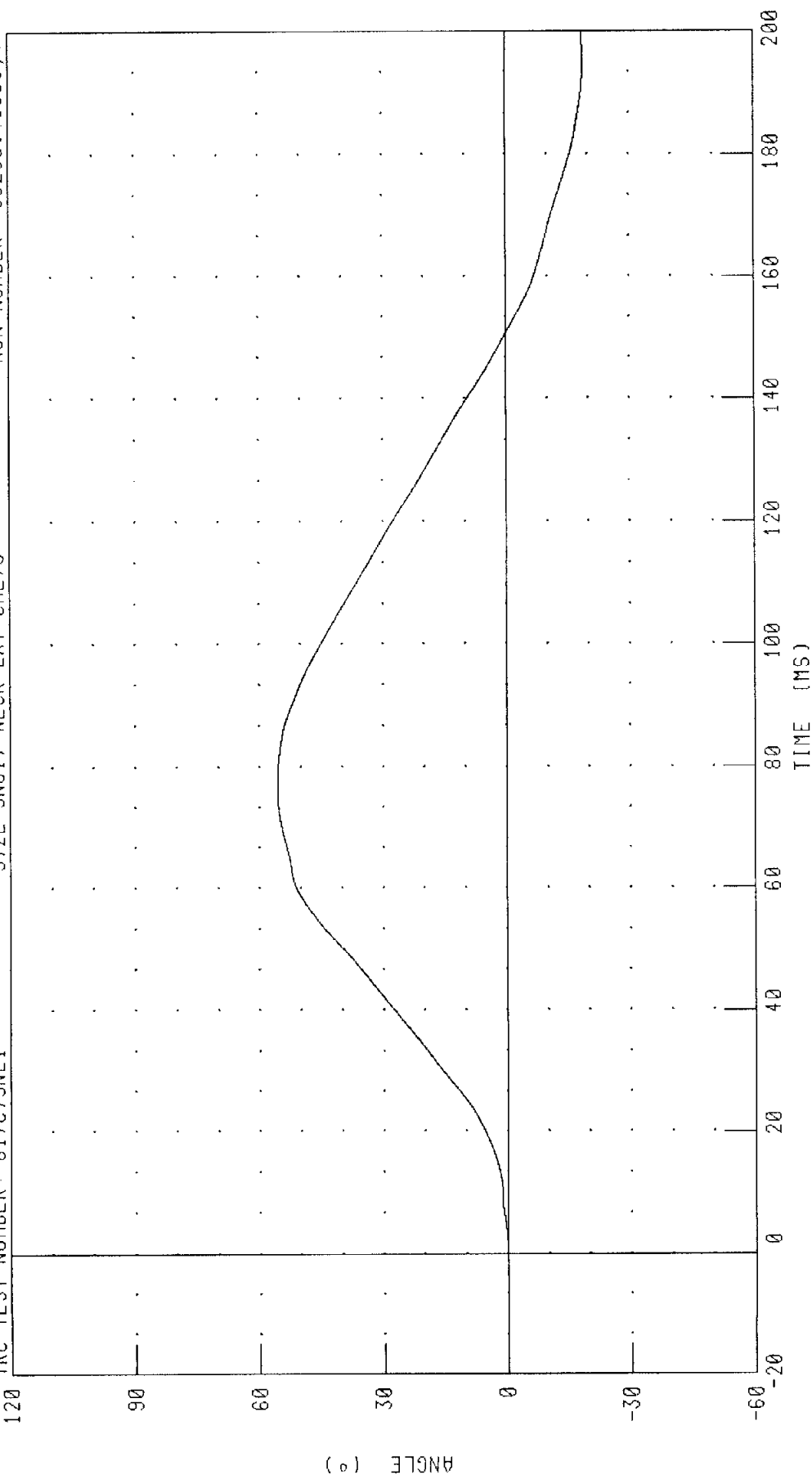
PART 572-E HYBRID III NECK EXTENSION CALIBRATION

ROTATION ABOUT OCCIPITAL CONDYLE

TRC TEST NUMBER: 617C79NE1

572E SN617 NECK EXT CAL79

RUN NUMBER: 092001.1550,4

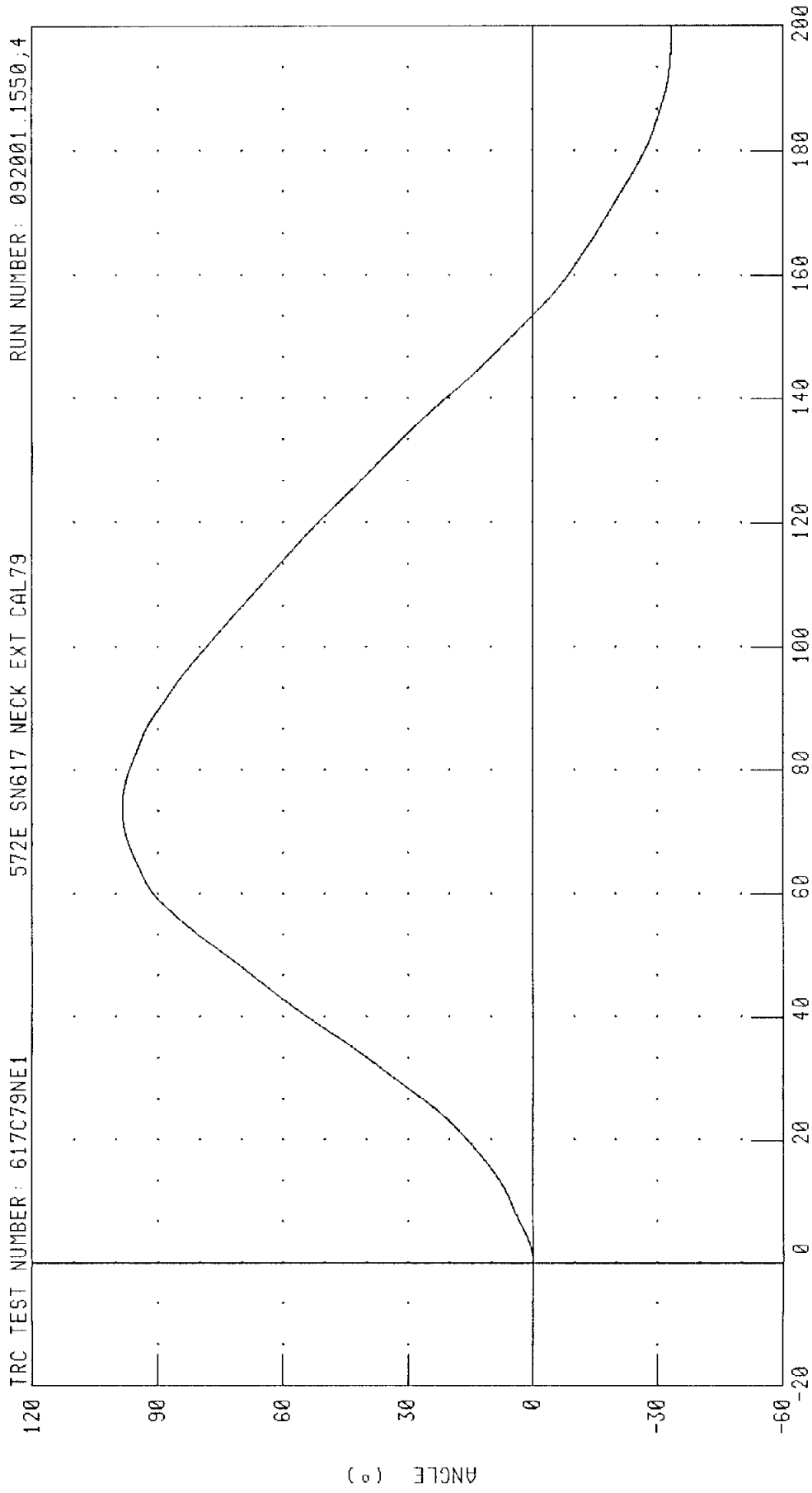


PEAK DATA: 55.62 ° @ 77.04 MS, -18.79 ° @ 195.60 MS

CHANNEL: THETA FILTER: CH. CLASS 60

PART 572-E HYBRID III NECK EXTENSION CALIBRATION

TOTAL ROTATION



TRC TEST NUMBER: 617C79NE1

572E SN617 NECK EXT CAL79

RUN NUMBER: 092001.1550,4

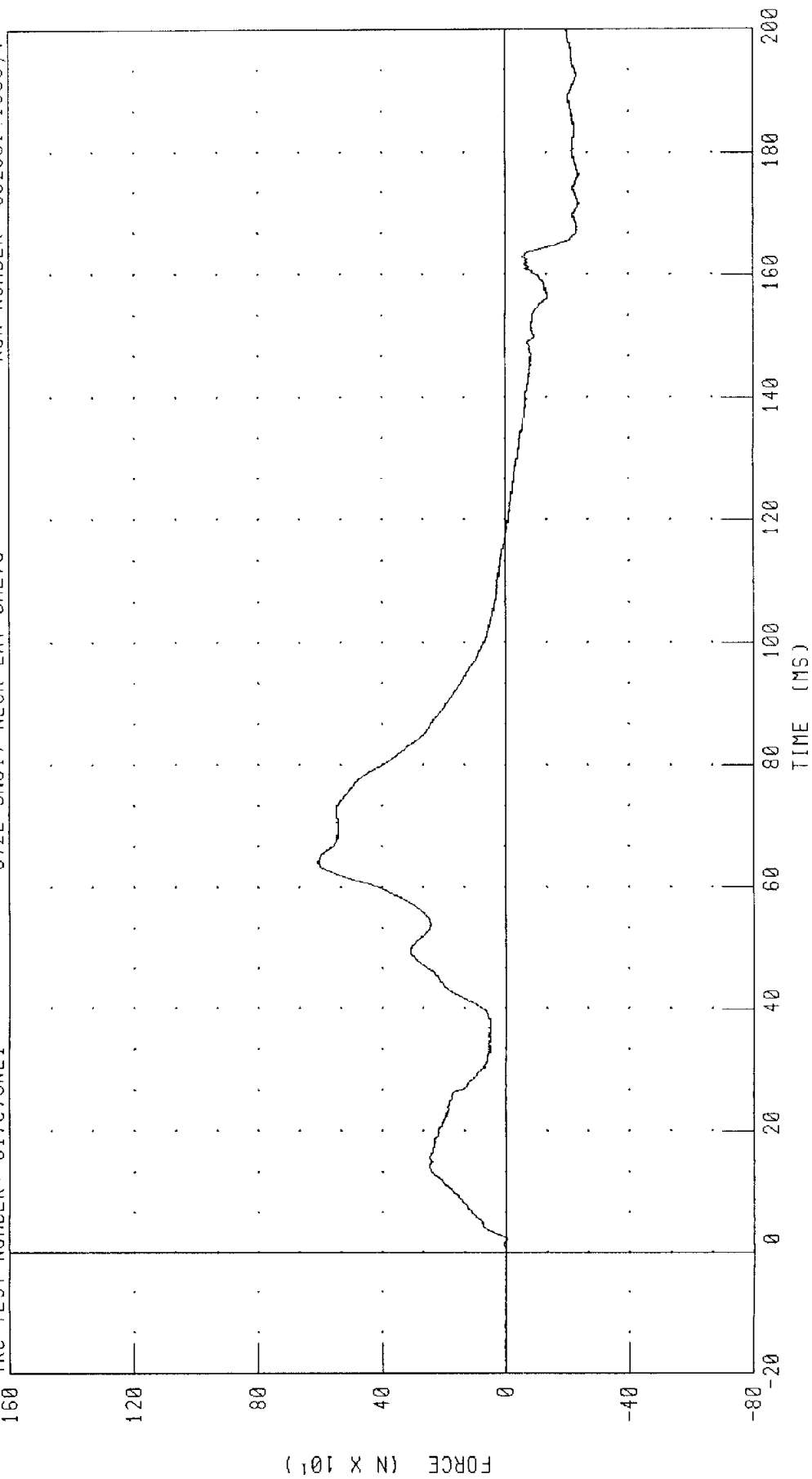
CHANNEL TOTAL FILTER: CH. CLASS 60

PEAK DATA: 98.56 ° @ 73.92 MS, -33.36 ° @ 197.76 MS

PART 572-E HYBRID III NECK EXTENSION CALIBRATION

NECK FORCE X AXIS

TRC TEST NUMBER: 617C79NE1 572E SN617 NECK EXT CAL79 RUN NUMBER: 092001.1550,4

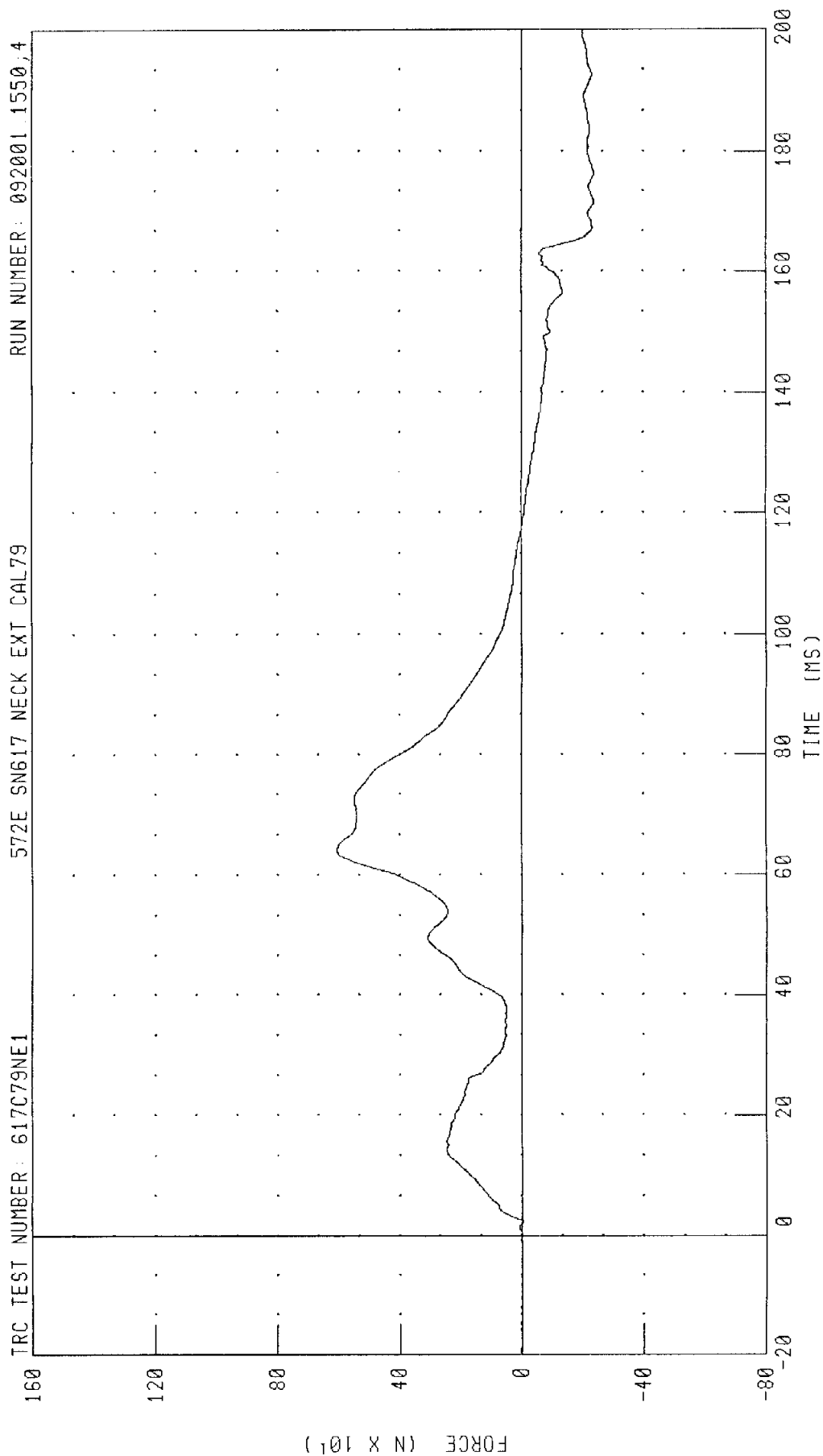


CHANNEL: NEKXF FILTER: CH. CLASS 1000

PEAK DATA 606.97 N @ 64.00 MS, -240.64 N @ 171.52 MS

PART 572-E HYBRID III NECK EXTENSION CALIBRATION

NECK FORCE X AXIS FILTERED FOR USE IN OCCIPITAL MOMENT CALCULATION



CHANNEL: NEKXFC FILTER: CH. CLASS 600

PEAK DATA: 605.58 N @ 64.08 MS, -238.91 N @ 171.60 MS

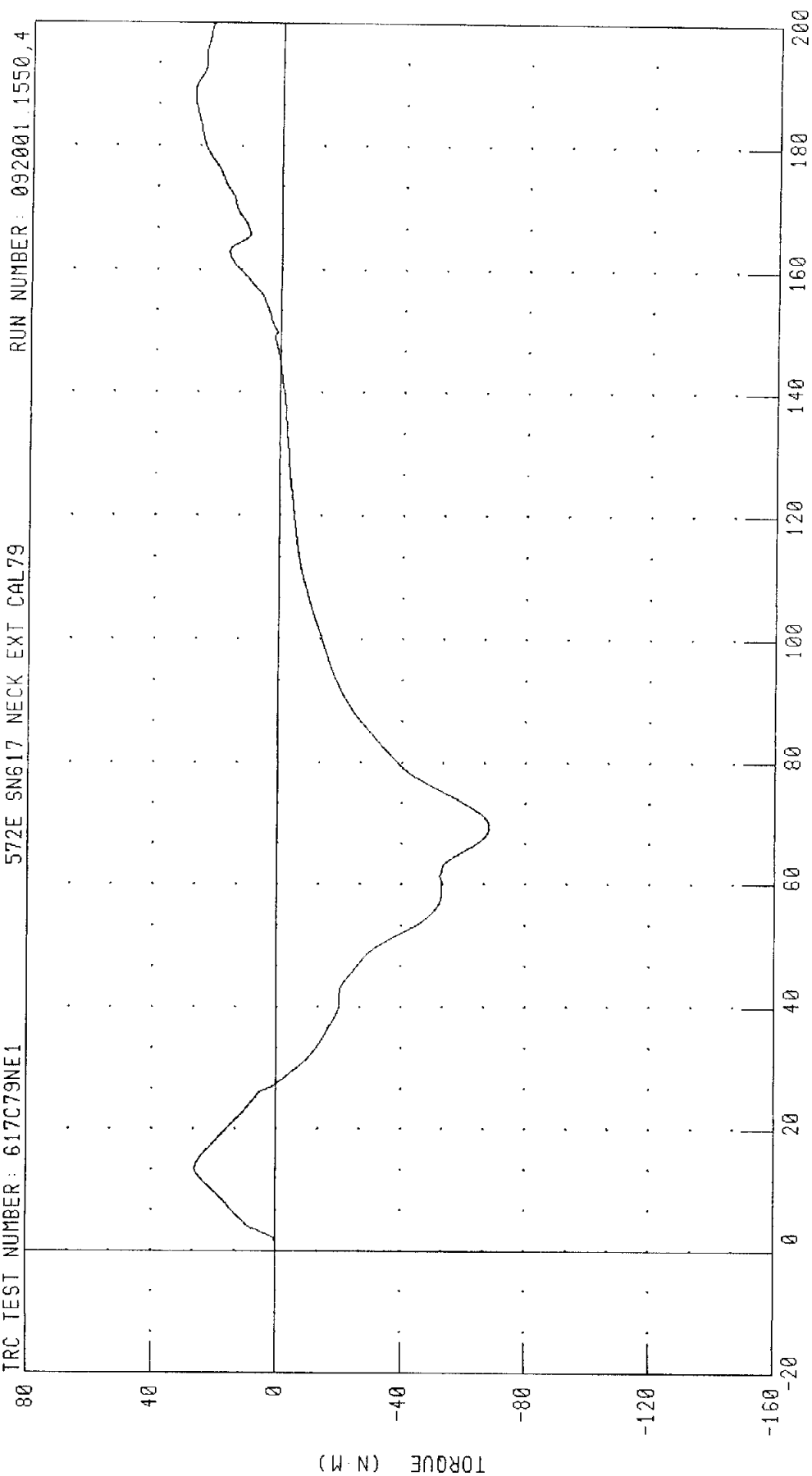
PART 572-E HYBRID III NECK EXTENSION CALIBRATION

NECK MOMENT Y AXIS

TRC TEST NUMBER: 617C79NE1

572E SN617 NECK EXT CAL79

RUN NUMBER: 092001.1550,4



TIME (MS)

CHANNEL NEKYM FILTER: CH. CLASS 600

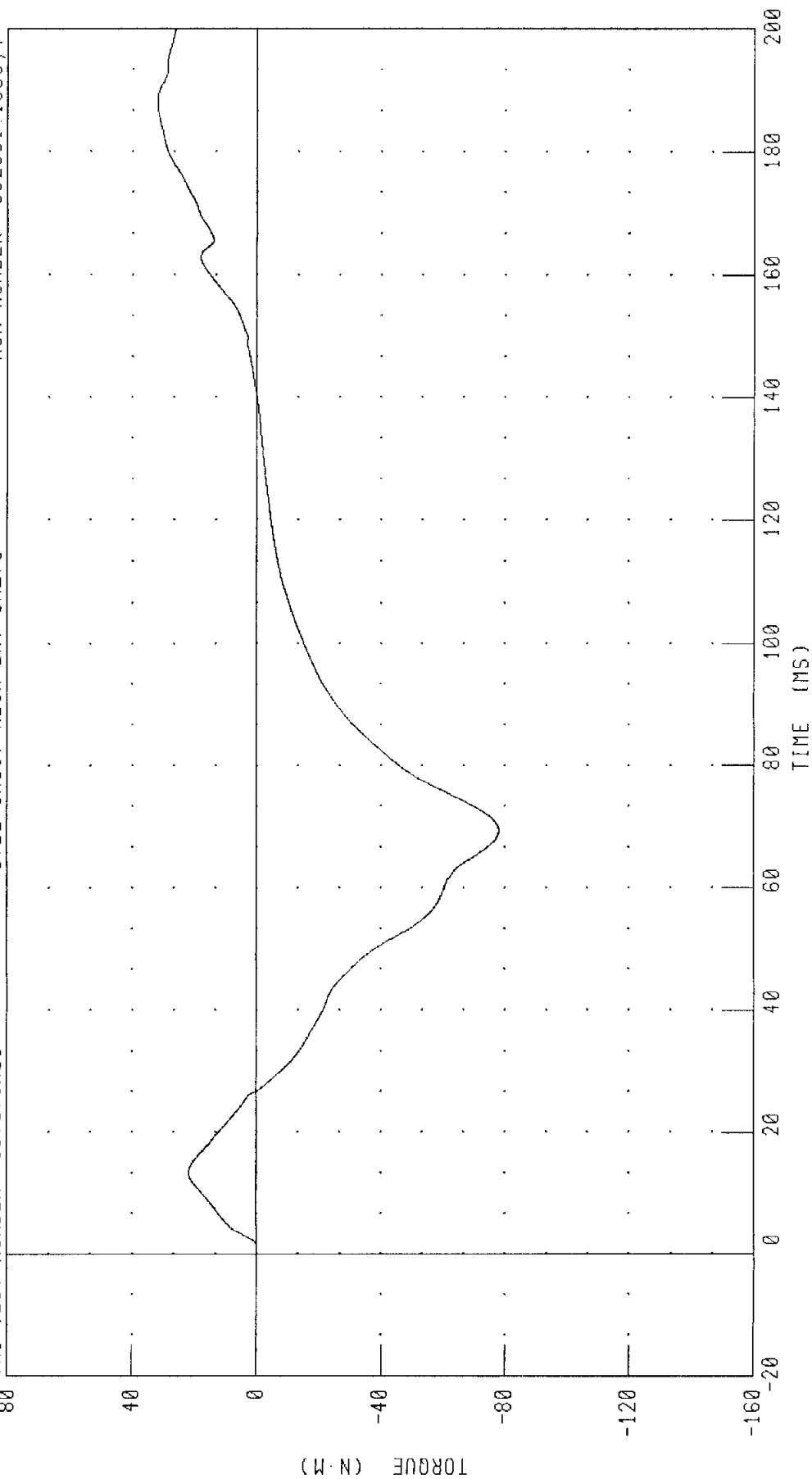
PEAK DATA: 28.42 N-M @ 188.08 MS, -68.38 N-M @ 69.44 MS

PART 572-E HYBRID III NECK EXTENSION CALIBRATION
TOTAL MOMENT ABOUT OCCIPITAL CONDYLE

TRC TEST NUMBER: 617C79NE1

572E SN617 NECK EXT CAL79

RUN NUMBER: 092001.1550,4



CHANNEL NEKOM FILTER CH. CLASS 600

PEAK DATA: 32.15 N·M @ 187.92 MS, -78.02 N·M @ 69.44 MS

TRANSPORTATION RESEARCH CENTER INC.

THORAX IMPACT TEST

HYBRID III 50th

26-MAR-01

TRC INC.

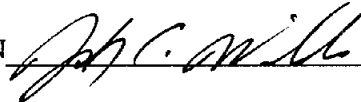
TEST NO: 617C79TH1

572E SN617 H.S.THORAX CAL79

TEST PARAMETER	HIGH SPEED TEST	TEST RESULTS
	SPECIFICATION	
TEMPERATURE	20.6-22.2 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY	10 - 70 %	19.0 %
PENDULUM VELOCITY	6.59 - 6.83 M/S	6.59 M/S
MAXIMUM DEFLECTION	63.5 - 72.6 MM	64.3 MM
MAXIMUM RESISTIVE FORCE	5159 - 5894 N	5859. N
INTERNAL HYSTERESIS	69% - 85%	75.8%

TEST MEETS SPECIFICATIONS

TECHNICIAN



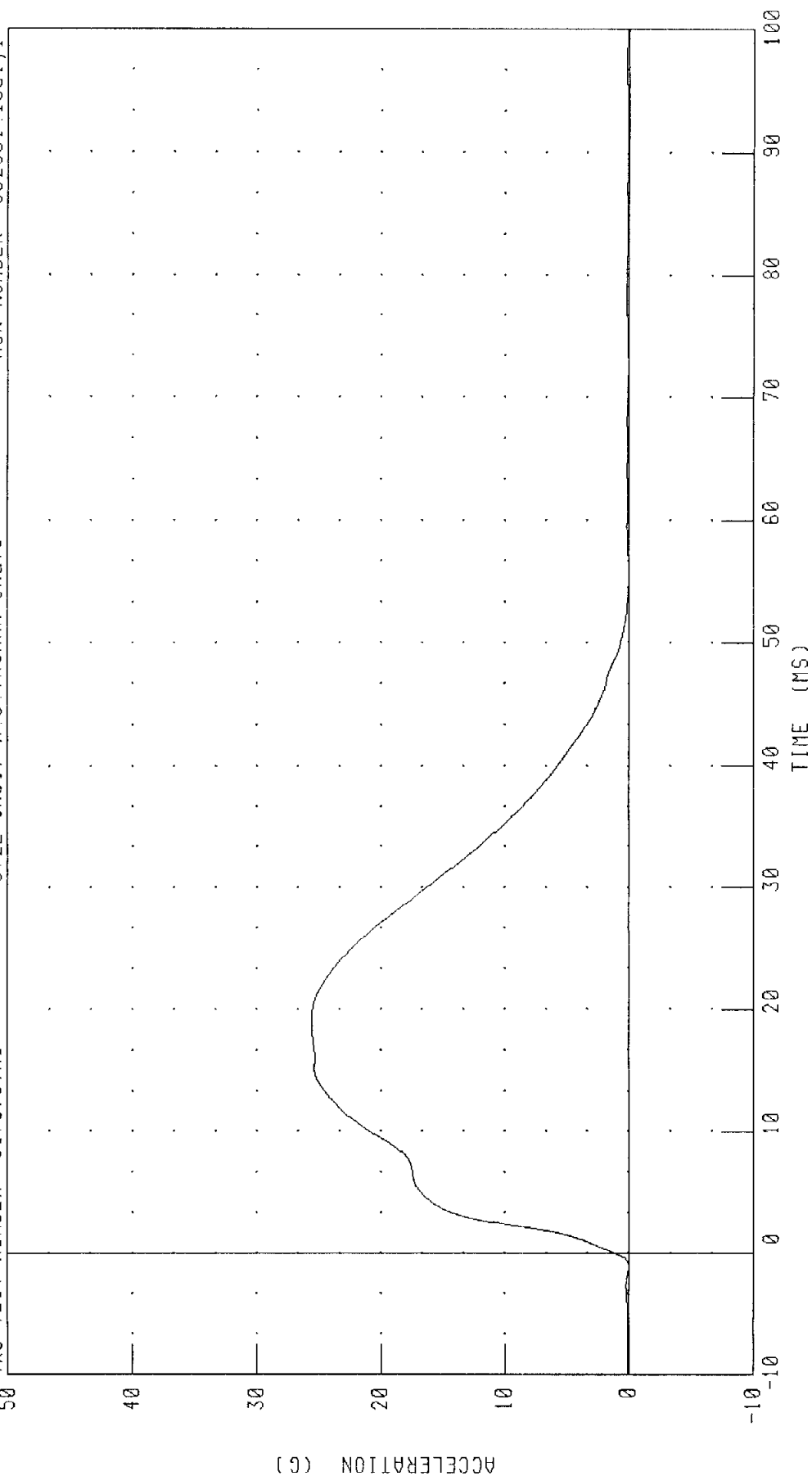
RUN NUMBER: 032601.0740;1

PART 572-E HYBRID III THORAX CALIBRATION
PENDULUM DECELERATION

TRC TEST NUMBER: 617C79TH1

572E SN617 H S THORAX CAL79

RUN NUMBER: 092001.1551;1



CHANNEL PENXC FILTER: CH. CLASS 180

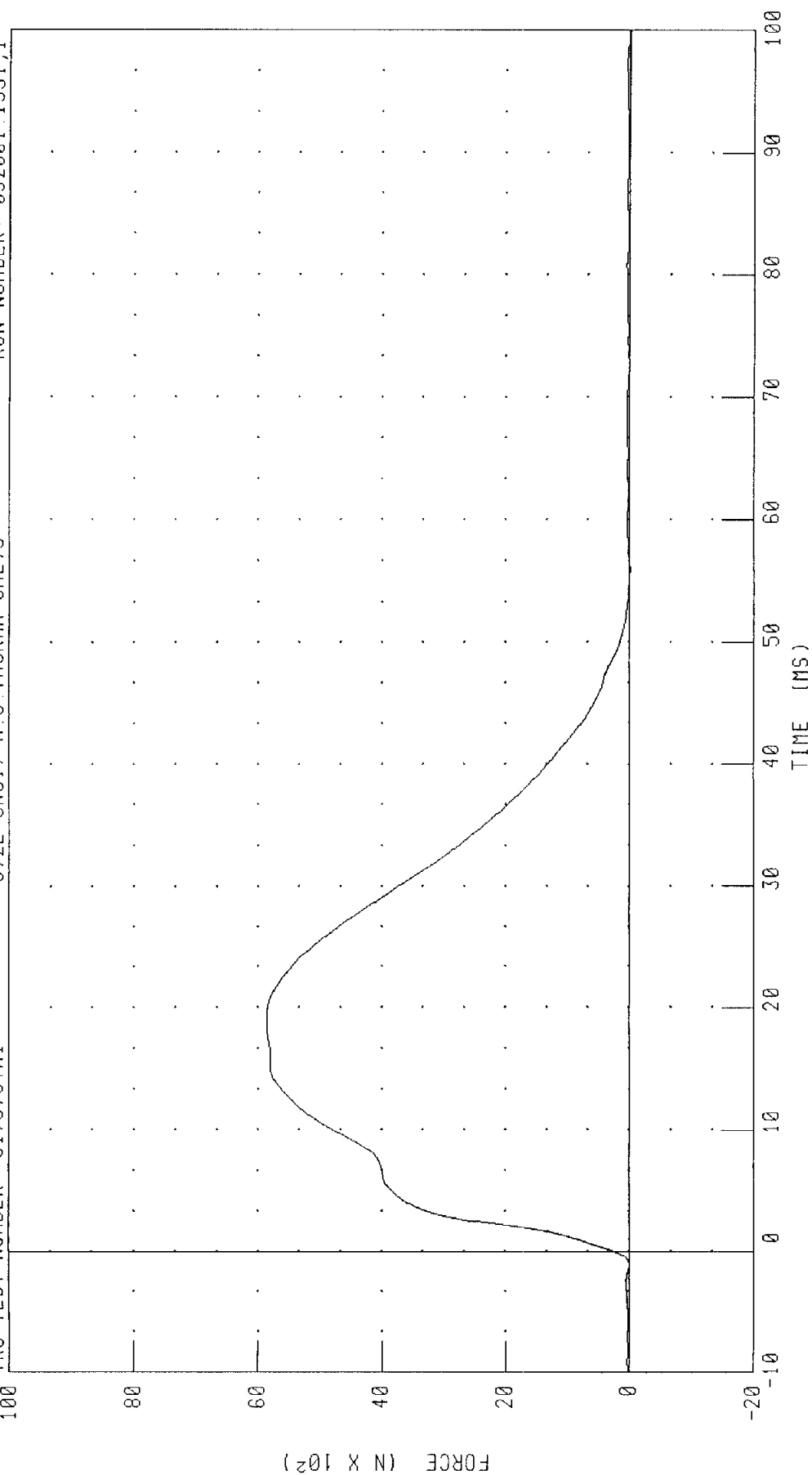
PEAK DATA: 25.58 G @ 18.96 MS, -0.06 G @ 56.00 MS

PART 572-E HYBRID III THORAX CALIBRATION
PENDULUM FORCE

TRC TEST NUMBER: 617C79TH1

572E SN617 H.S THORAX CAL79

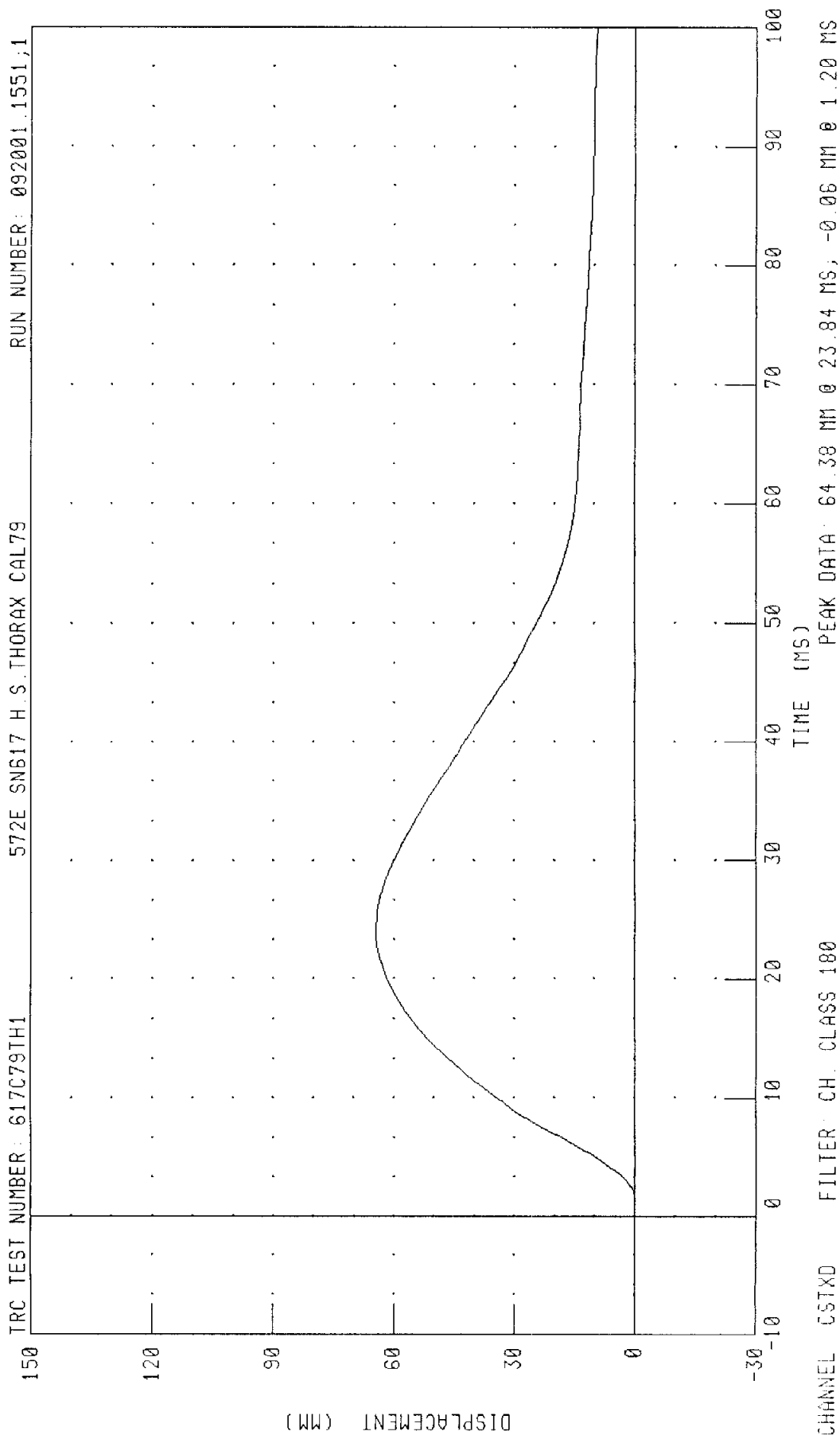
RUN NUMBER: 092001.1551.1



CHANNEL PENXF FILTER: CH. CLASS 180

PEAK DATA: 5859.29 N @ 18.96 MS, -13.93 N @ 56.00 MS

PART 572-E HYBRID III THORAX CALIBRATION STERNUM DISPLACEMENT

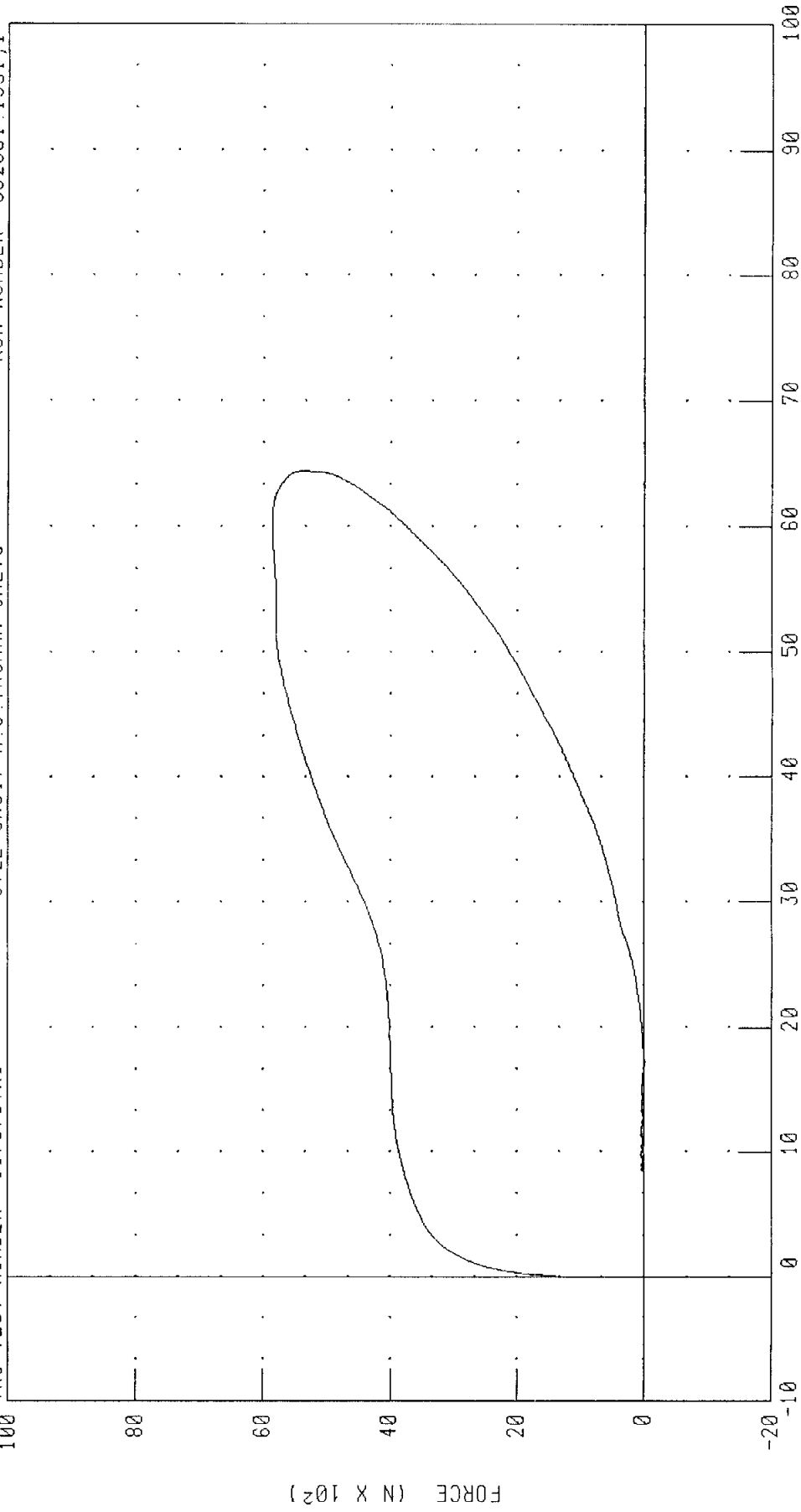


PART 572-E HYBRID III THORAX CALIBRATION
CHEST DISPLACEMENT VS PENDULUM FORCE

TRC TEST NUMBER: 617C79TH1

572E SN617 H.S. THORAX CAL79

RUN NUMBER: 092001.1551.1



CHANNEL CSTXD
PENXF
FILTER: CH: CLASS 180
CH: CLASS 180
PEAK DATA
64.38 MM @ 23.84 MS;
58.59.29 N @ 18.96 MS;
-0.06 MM @ 1.20 MS
-13.93 N @ 56.00 MS

TRANSPORTATION RESEARCH CENTER INC.

LEFT KNEE IMPACT TEST

HYBRID III 50th

23-MAR-01

TRC INC.

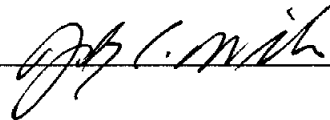
TEST NO: 617C79LK1

572E SN617 LEFT KNEE CAL 79

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9-25.6 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY	10 - 70 %	24.0 %
PROBE VELOCITY	2.07 - 2.13 M/S	2.09 M/S
PEAK KNEE IMPACT FORCE 5.0 KG PENDULUM	4715 - 5782 N	5374.3 N

TEST MEETS SPECIFICATIONS

TECHNICIAN



RUN NUMBER: 032301.1301;1

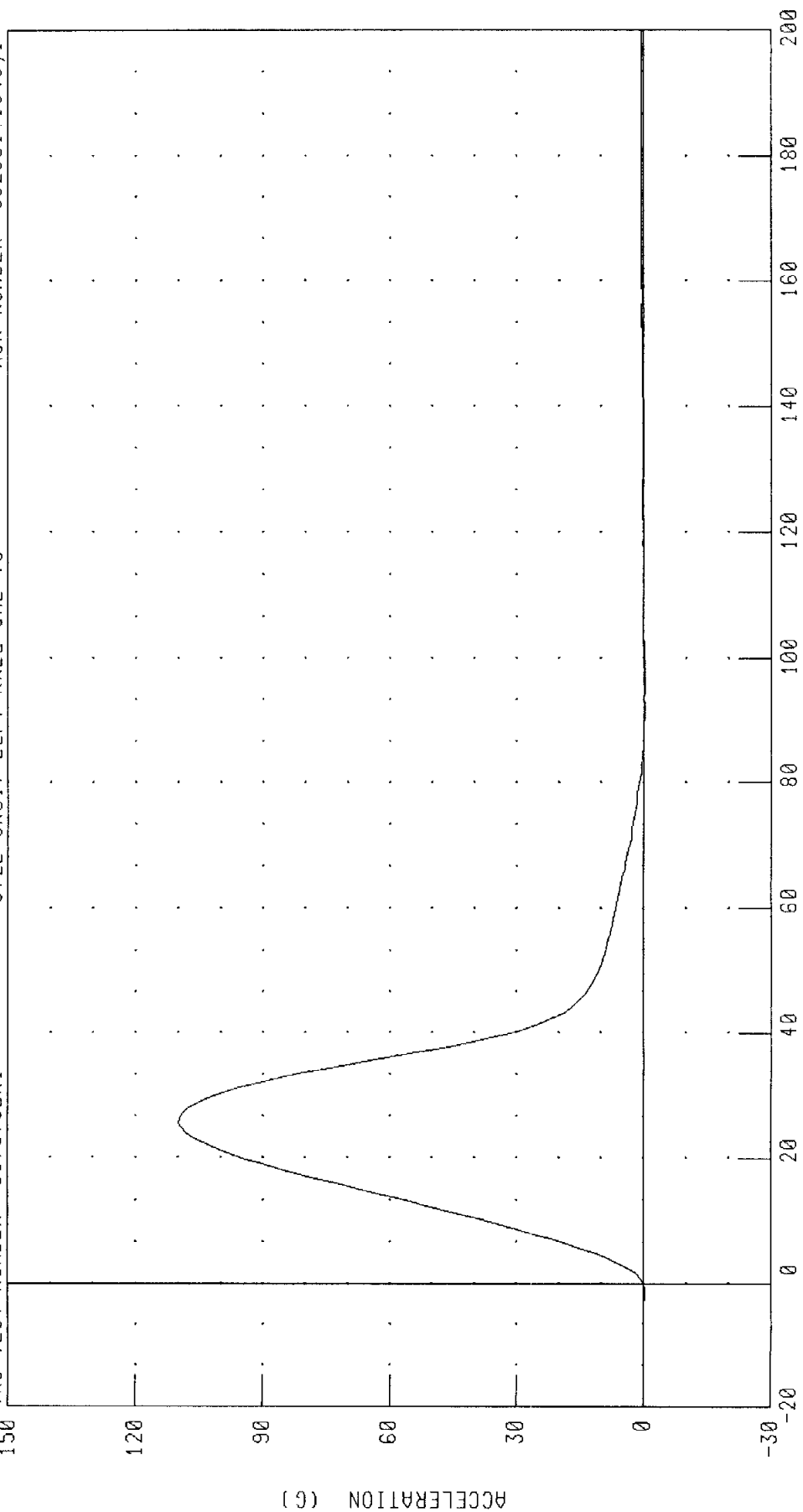
PART 572-E HYBRID III LEFT KNEE CALIBRATION

PENDULUM DECELERATION (5 KG PEND.)

TRC TEST NUMBER: 617C79LK1

572E SN617 LEFT KNEE CAL 79

RUN NUMBER: 092001.1543,1

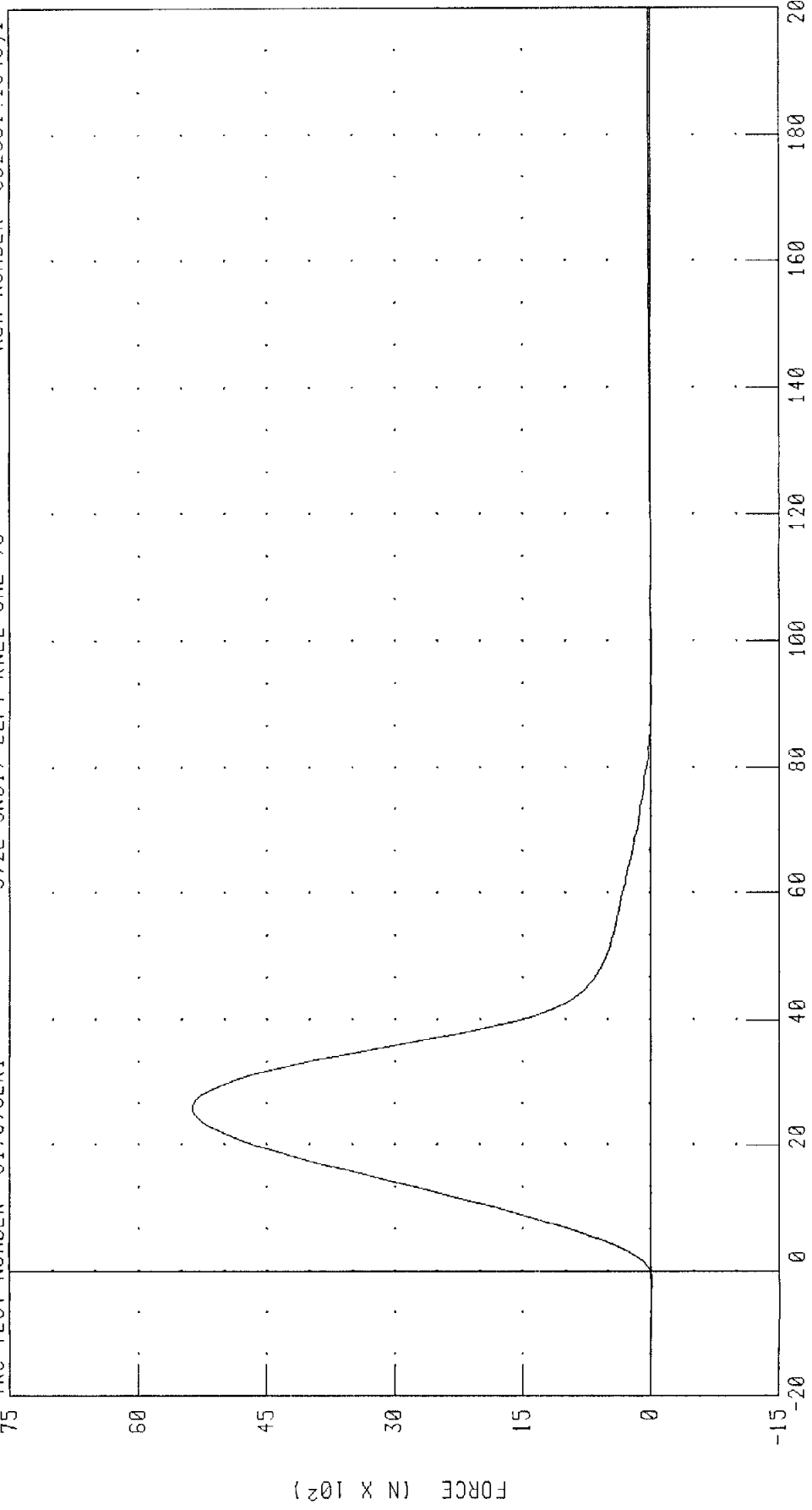


CHANNEL: PENXC FILTER: CH. CLASS 600 PEAK DATA: 109.84 G @ 2.56 MS; -0.29 G @ 9.68 MS

PART 572-E HYBRID III LEFT KNEE CALIBRATION

PENDULUM FORCE (5 KG PEND.)

TRC TEST NUMBER: 617C79LK1 572E SN617 LEFT KNEE CAL 79 RUN NUMBER: 092001.1543.1



CHANNEL: PENXF FILTER: CH. CLASS 600 PEAK DATA: 5374.33 N @ 2.56 MS, -14.07 N @ 9.68 MS

TRANSPORTATION RESEARCH CENTER INC.

RIGHT KNEE IMPACT TEST

HYBRID III 50th

23-MAR-01

TRC INC.

TEST NO: 617C79RK1

572E SN617 RIGHT KNEE CAL 79

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9-25.6 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY	10 - 70 %	24.0 %
PROBE VELOCITY	2.07 - 2.13 M/S	2.07 M/S
PEAK KNEE IMPACT FORCE 5.0 KG PENDULUM	4715 - 5782 N	5774.0 N

TEST MEETS SPECIFICATIONS

TECHNICIAN



RUN NUMBER: 032301.1333;1

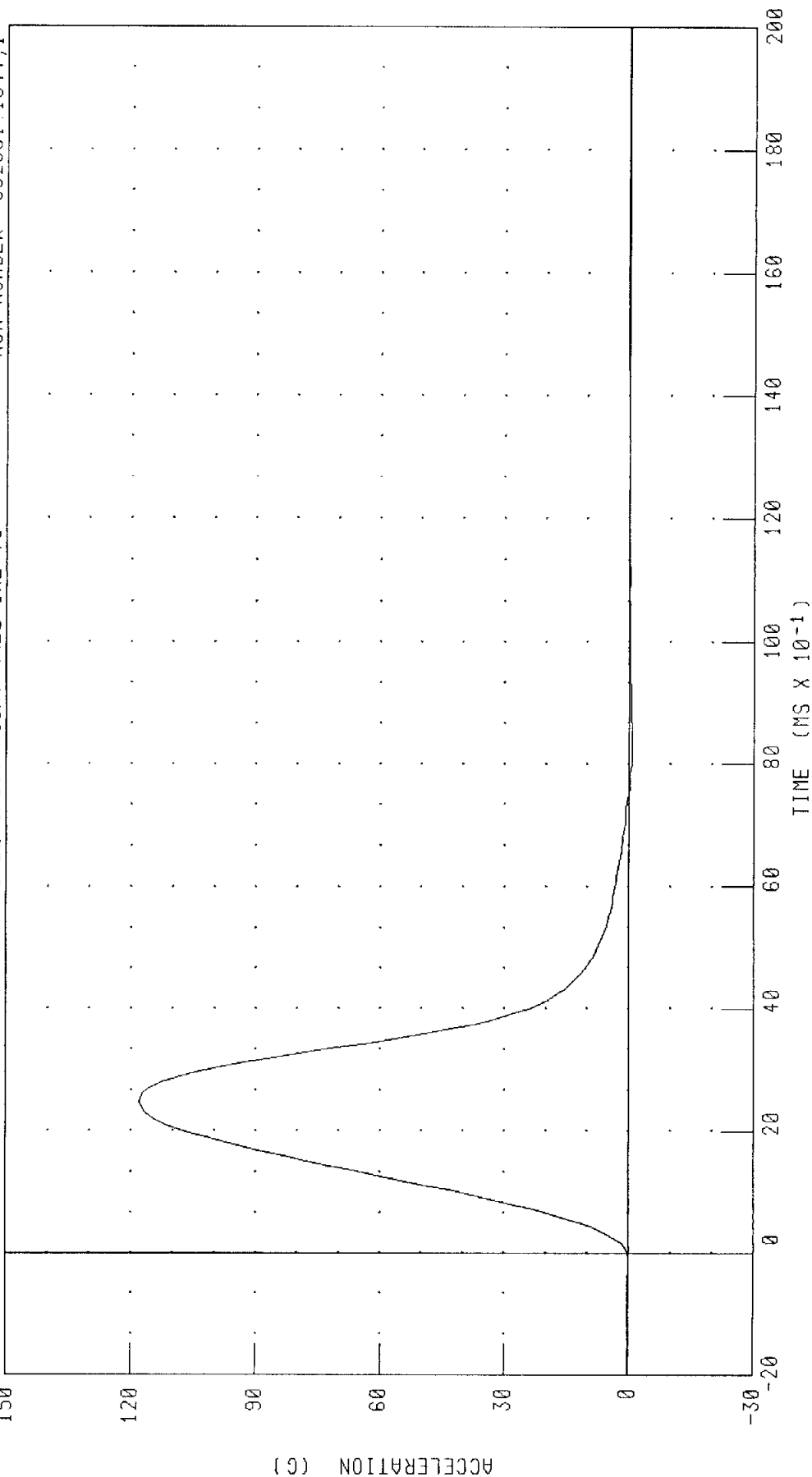
PART 572-E HYBRID III RIGHT KNEE CALIBRATION

PENDULUM DECELERATION (5 KG PEND.)

TRC TEST NUMBER: 617C79RK1

572E SNG17 RIGHT KNEE CAL 79

RUN NUMBER: 092001.1544.1



CHANNEL PENXG FILTER: CH. CLASS 600

PEAK DATA: 118.01 G @ 2.48 MS; -0.92 G @ 8.48 MS

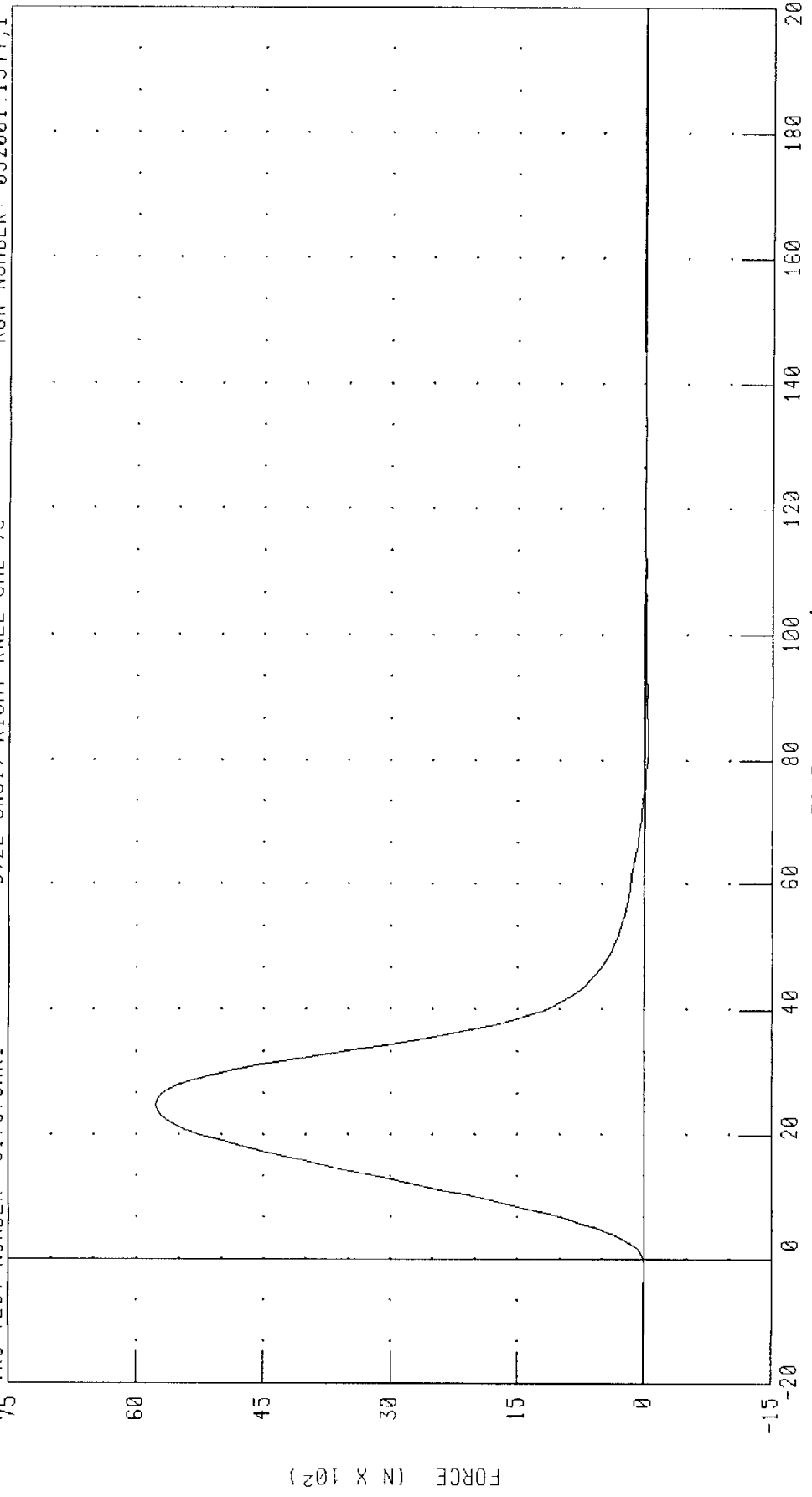
PART 572-E HYBRID III RIGHT KNEE CALIBRATION

PENDULUM FORCE (5 KG PEND.)

TRC TEST NUMBER: 617C79RK1

572E SN617 RIGHT KNEE CAL 79

RUN NUMBER: 092001.1544.1



CHANNEL PENXF FILTER CH. CLASS 600 PEAK DATA: 5774.10 N @ 2.48 MS; -44.88 N @ 8.48 MS

Pre-Test Certification Data

Passenger Dummy Serial Number: 616

External Dimensions:	The dummy passed all external dimension requirements.
Head Drop Test:	The head passed all drop test requirements.
Neck Flexion Test:	The neck passed all flexion test requirements.
Neck Extension Test:	The neck passed all extension test requirements.
Thorax Impact Test:	The thorax passed all impact test requirements.
Knee Impact Tests:	Both knees passed all impact test requirements.
Hip flexion Tests:	Both sides of the hip passed all flexion test requirements. (Copies of the hip flexion data were not available for this report.)

TRANSPORTATION RESEARCH CENTER INC.
HYBRID III EXTERNAL DIMENSIONS

616

06-APR-01

TRC INC. TEST NO: 616C78ED1 572E SN616 EXT.DIMENSION CAL78

TEST PARAMETER	(DIMEN.)	SPECIFICATION	TEST RESULTS
LOCATION FOR CHEST CIRCUMFERENCE (AA)		429 - 434 MM	432. MM
LOCATION FOR WAIST CIRCUMFERENCE (BB)		226 - 231 MM	229. MM
CHEST CIRCUMFERENCE	(Y)	970 -1001 MM	988. MM
WAIST CIRCUMFERENCE	(Z)	836 - 866 MM	856. MM
CHEST DEPTH	(O)	213 - 229 MM	224. MM
H-POINT HEIGHT	(C)	84 - 89 MM	86. MM
H-POINT FROM SEATBACK	(D)	135 - 140 MM	137. MM
SKULL CAP TO BACKLINE	(H)	41 - 46 MM	43. MM
TOTAL SITTING HEIGHT	(A)	879 - 889 MM	886. MM
THIGH CLEARANCE	(F)	140 - 155 MM	150. MM
BUTTOCK KNEE LENGTH	(K)	579 - 605 MM	599. MM
BUTTOCK POPLITEAL LENGTH	(N)	452 - 478 MM	467. MM
POPLITEAL HEIGHT	(L)	429 - 455 MM	445. MM
KNEE PIVOT HEIGHT	(M)	485 - 500 MM	493. MM
FOOT LENGTH	(P)	252 - 267 MM	254. MM
FOOT BREADTH	(W)	91 - 107 MM	102. MM
SHOULDER PIVOT FROM BACKLINE	(E)	84 - 94 MM	89. MM
SHOULDER BREADTH	(V)	422 - 437 MM	434. MM
SHOULDER PIVOT HEIGHT	(B)	506 - 521 MM	516. MM
ELBOW REST HEIGHT	(J)	191 - 211 MM	206. MM
SHOULDER-ELBOW LENGTH	(I)	330 - 345 MM	338. MM
BACK OF ELBOW TO WRIST PIVOT	(G)	290 - 305 MM	297. MM

572E SN616 EXT.DIMENSION CAL78

DUMMY MEETS SPECIFICATIONS

TECHNICIAN

[Signature]

RUN NUMBER: 042501.0723

TRANSPORTATION RESEARCH CENTER INC.

HEAD DROP TEST

HYBRID III 50th

05-APR-01

TRC INC.

TEST NO: 616C78HD1

572E SN616 HEAD DROP CAL 78

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9-25.6 DEG. C	22.2 DEG. C
RELATIVE HUMIDITY	10 - 70 %	25.0 %
PEAK RESULTANT ACCELERATION	225 - 275 G	259.02 G
PEAK LATERAL ACCELERATION	15 G MAX	-1.83 G
IS ACCELERATION CURVE UNIMODAL?	YES	YES

TEST MEETS SPECIFICATIONS

TECHNICIAN



RUN NUMBER: 040501.1103;1

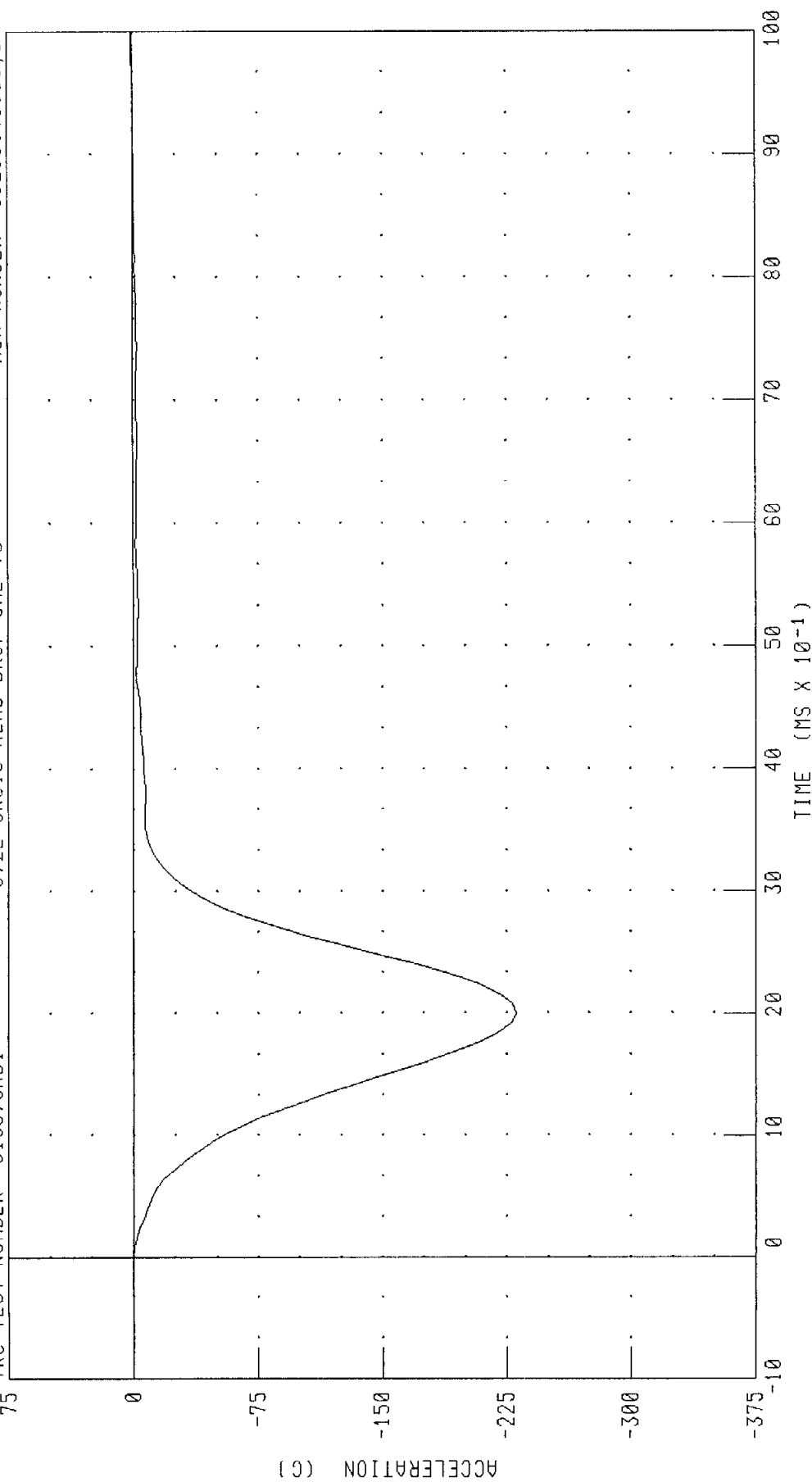
PART 572-E HYBRID III HEAD CALIBRATION

HEAD ACCELERATION X AXIS

TRC TEST NUMBER: 616C78HD1

572E SN616 HEAD DROP CAL 78

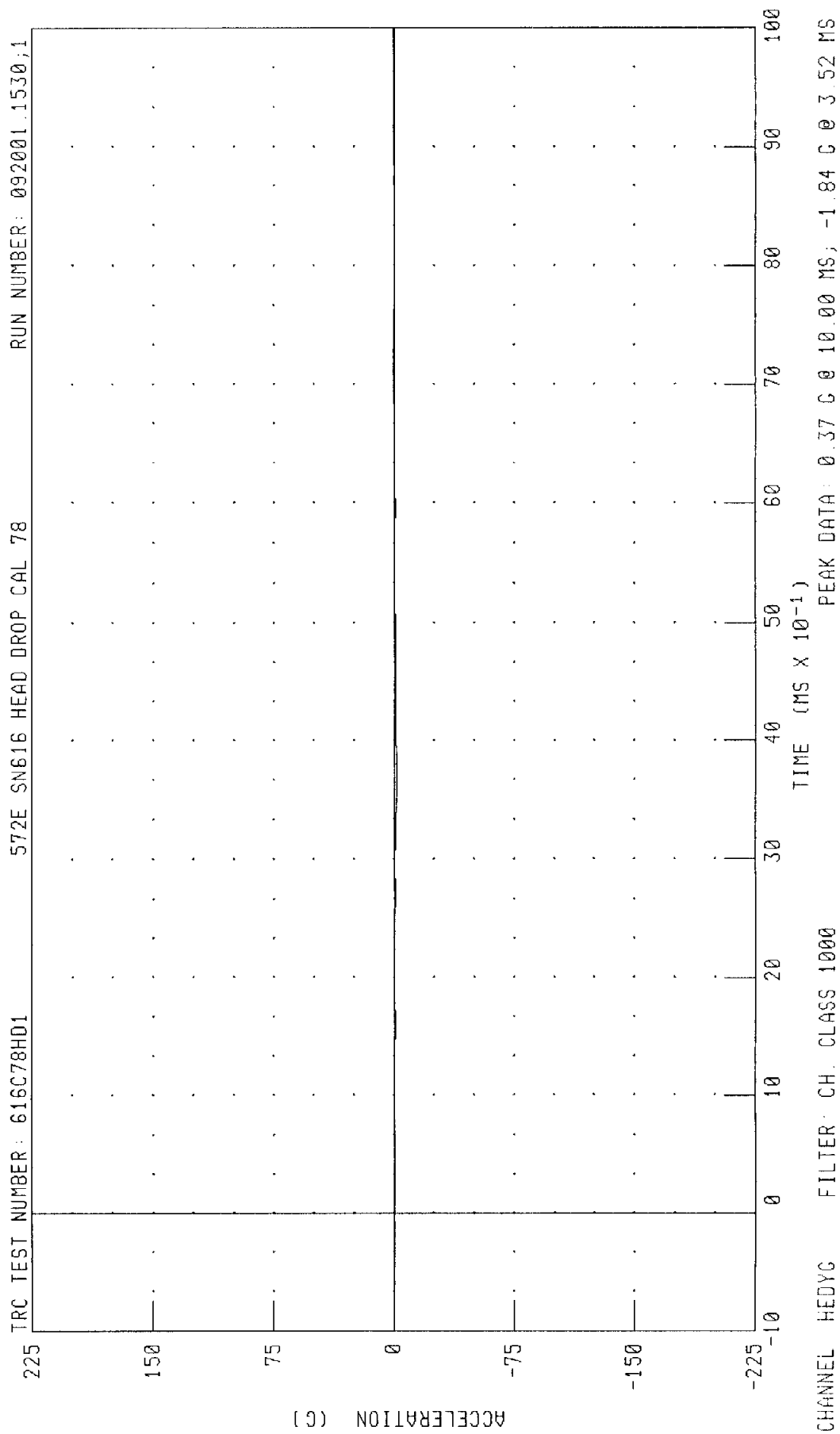
RUN NUMBER: 092001.1530;1



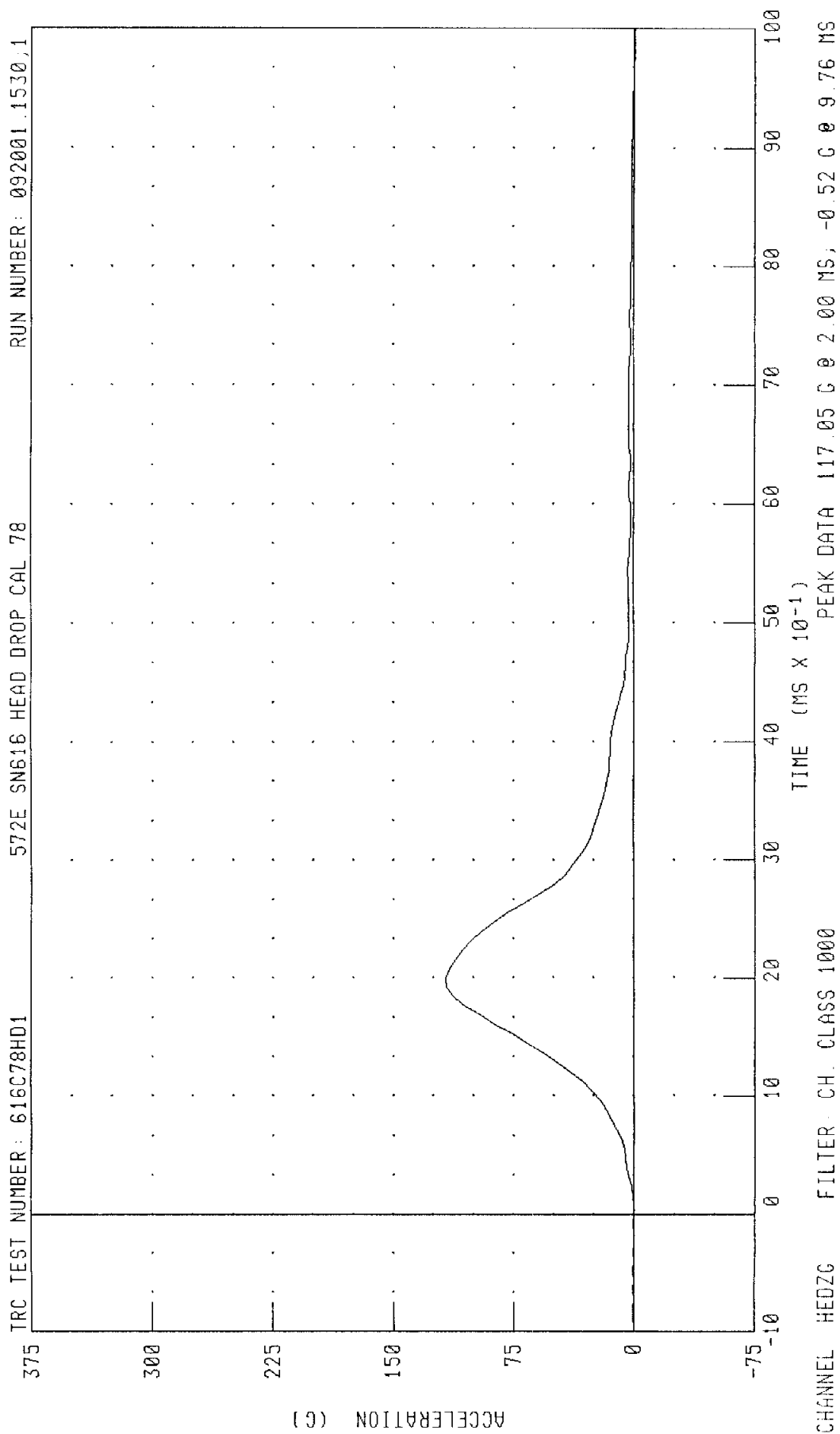
CHANNEL HEDXC FILTER CH CLASS 1000

PEAK DATA: 0.73 G @ 10.00 MS, -231.07 G @ 2.00 MS

PART 572-E HYBRID III HEAD CALIBRATION HEAD ACCELERATION Y AXIS



PART 572-E HYBRID III HEAD CALIBRATION
HEAD ACCELERATION Z AXIS



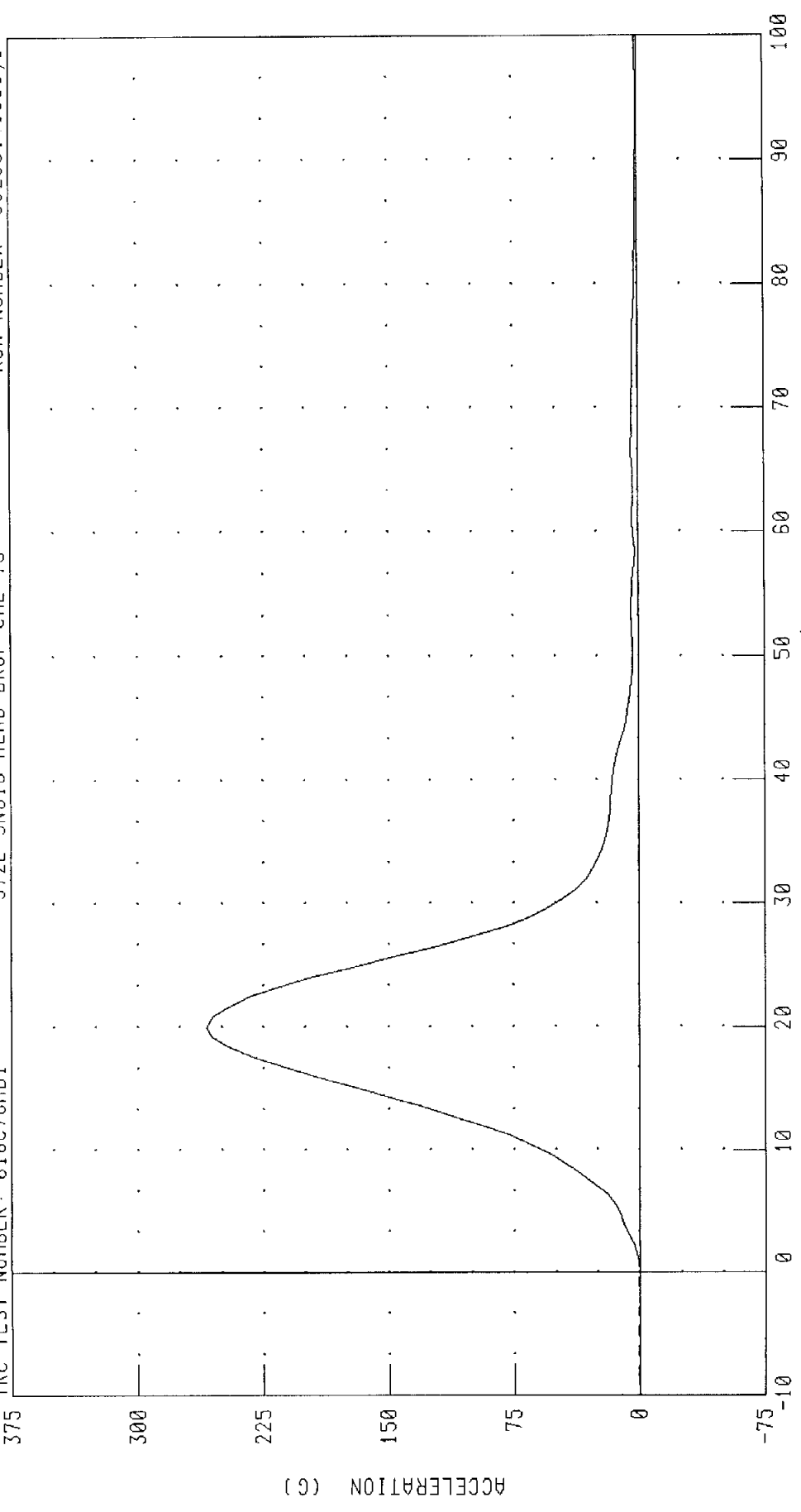
PART 572-E HYBRID III HEAD CALIBRATION

HEAD RESULTANT ACCELERATION

572E SN616 HEAD DROP CAL 78

TRC TEST NUMBER: 616C78HD1

RUN NUMBER: 092001.1530;1



PEAK DATA: 259.02 G @ 2.00 MS, 0.16 G @ -0.96 MS

CHANNEL: HEDRC FILTER: CH. CLASS 1000

TRANSPORTATION RESEARCH CENTER INC.

HYBRID III 50th

06-APR-01

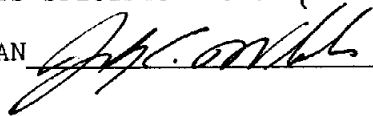
NECK FLEXION TEST - 6 CHANNEL TRANSDUCER

TRC INC. TEST NO: 616C78NF3 572E SN616 NECK FLEXION CAL78

TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE		20.6-22.2 DEG. C	22.2 DEG. C
RELATIVE HUMIDITY		10 - 70 %	58.0 %
IMPACT VELOCITY		6.89 - 7.13 M/S	6.99 M/S
PENDULUM DECELERATION	10 MS	22.50 - 27.50 G	22.57 G
	20 MS	17.60 - 22.60 G	20.79 G
	30 MS	12.50 - 18.50 G	17.34 G
MAX PENDULUM G		29 G MAX	23.05 G
MAX PENDULUM G ABOVE 30 MS		29 G MAX	17.27 G
DECELERATION-TIME CURVE DECAY TIME TO 5 G		34 - 42 MS	39.20 MS
D PLANE ROTATION	MAX	64 - 78 DEG.	71.23 DEG.
	TIME	57 - 64 MS	61.20 MS
MOMENT ABOUT OCCIPITAL CONDYLE	MAX	88.2 - 108.5 NM	98.32 NM
	TIME	47 - 58 MS	51.92 MS
ROTATION ANGLE-TIME CURVE DECAY TIME TO ZERO		113 - 128 MS	119.20 MS
POSITIVE MOMENT-TIME CURVE DECAY TIME TO ZERO		97 - 107 MS	100.56 MS

TEST MEETS SPECIFICATIONS

TECHNICIAN



RUN NUMBER: 040601.1413;1

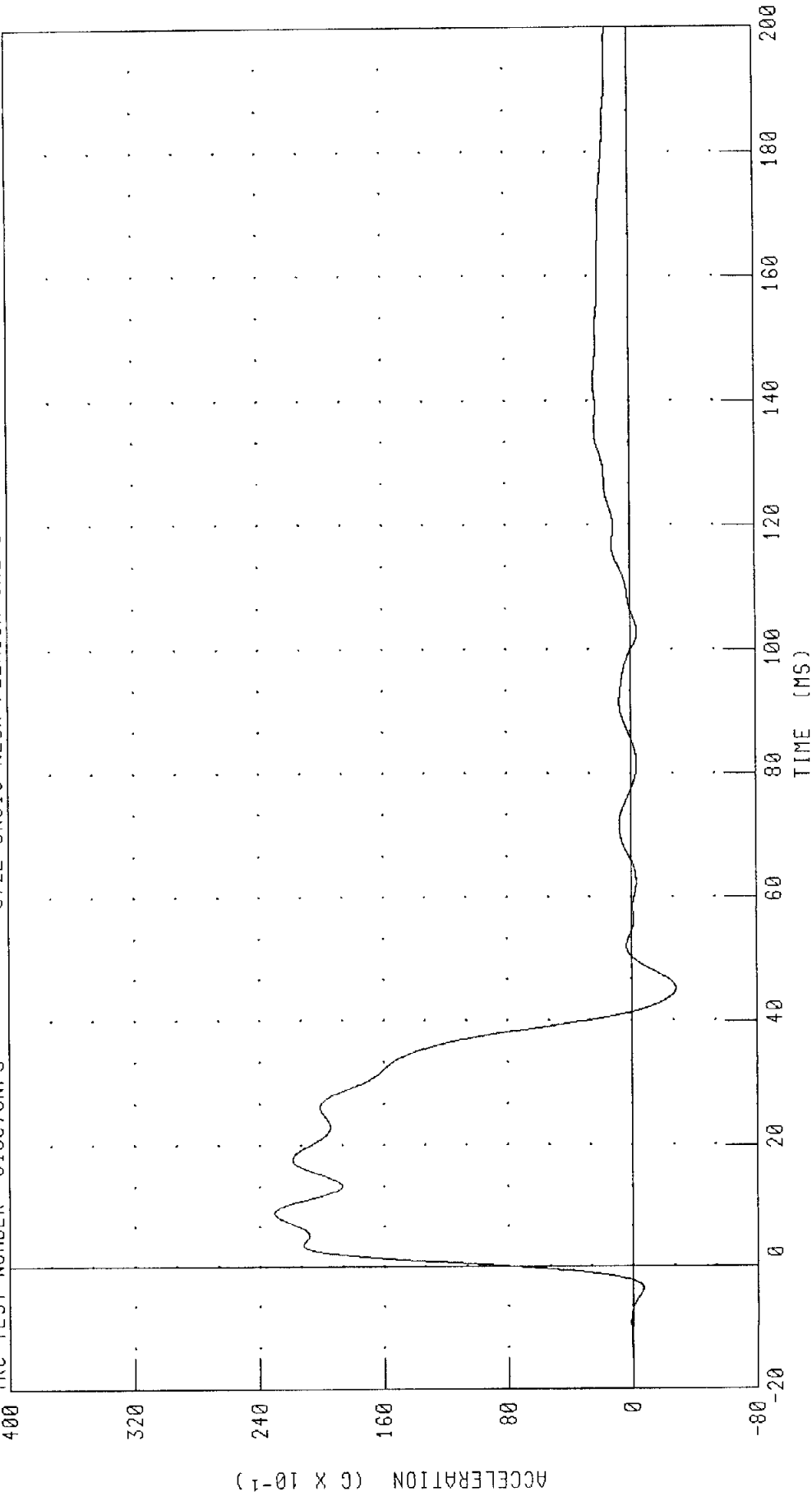
PART 572-E HYBRID III NECK FLEXION CALIBRATION

PENDULUM DECELERATION

TRC TEST NUMBER: 616C78NF3

572E SNG16 NECK FLEXION CAL78

RUN NUMBER: 092001.1532;1



PEAK DATA: 23 06 G @ 8.96 MS, -2.84 G @ 45.20 MS

CHANNEL: PENXG FILTER: CH. CLASS 60

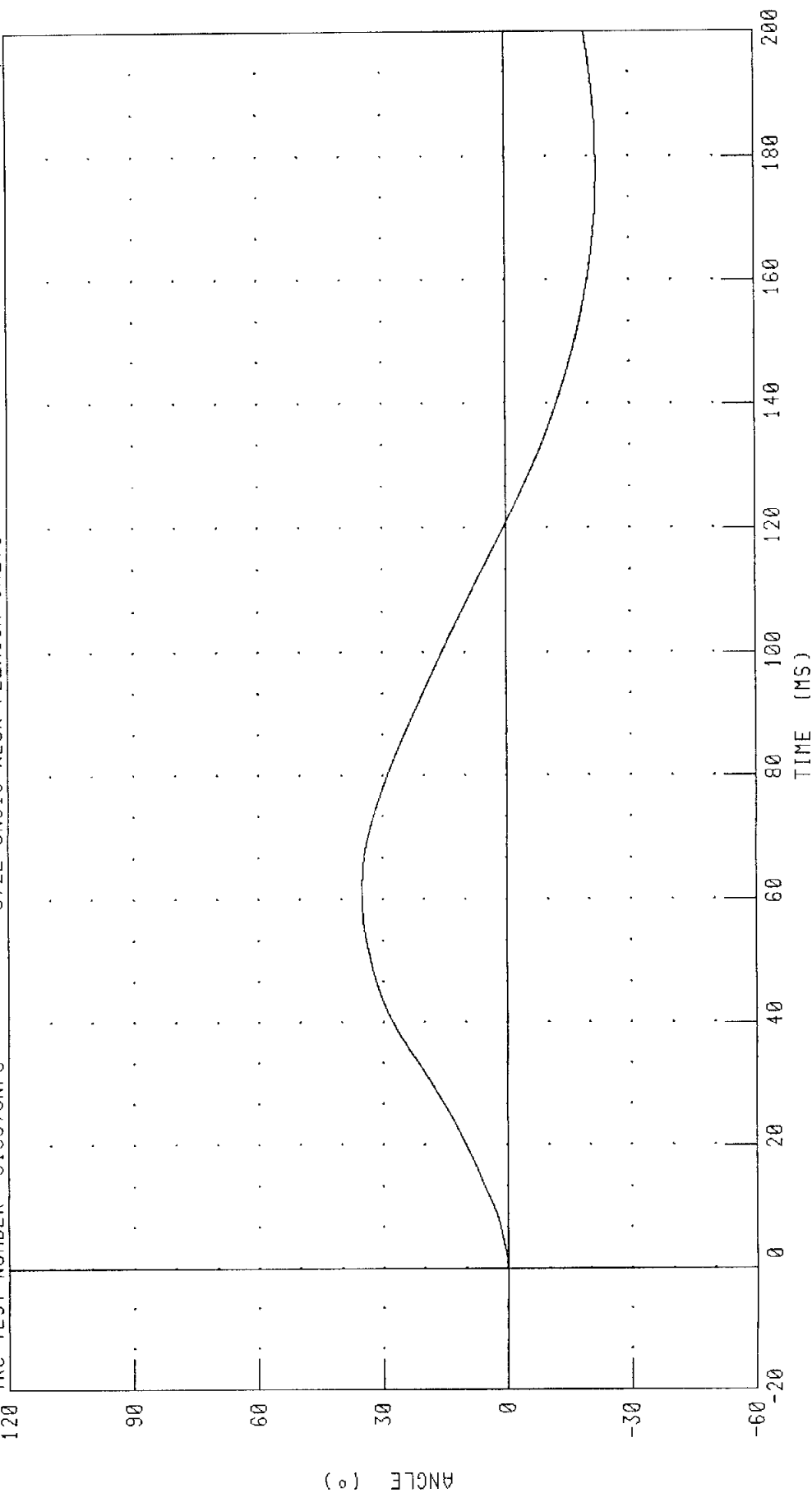
PART 572-E HYBRID III NECK FLEXION CALIBRATION

ROTATION ABOUT BASE OF NECK

572E SN616 NECK FLEXION CAL78

TRC TEST NUMBER: 616C78NF3

RUN NUMBER: 092001.1532.1



PEAK DATA: 34.95 ° @ 60.48 MS, -22.07 ° @ 178.08 MS

CHANNEL: BETA FILTER: CH. CLASS 60

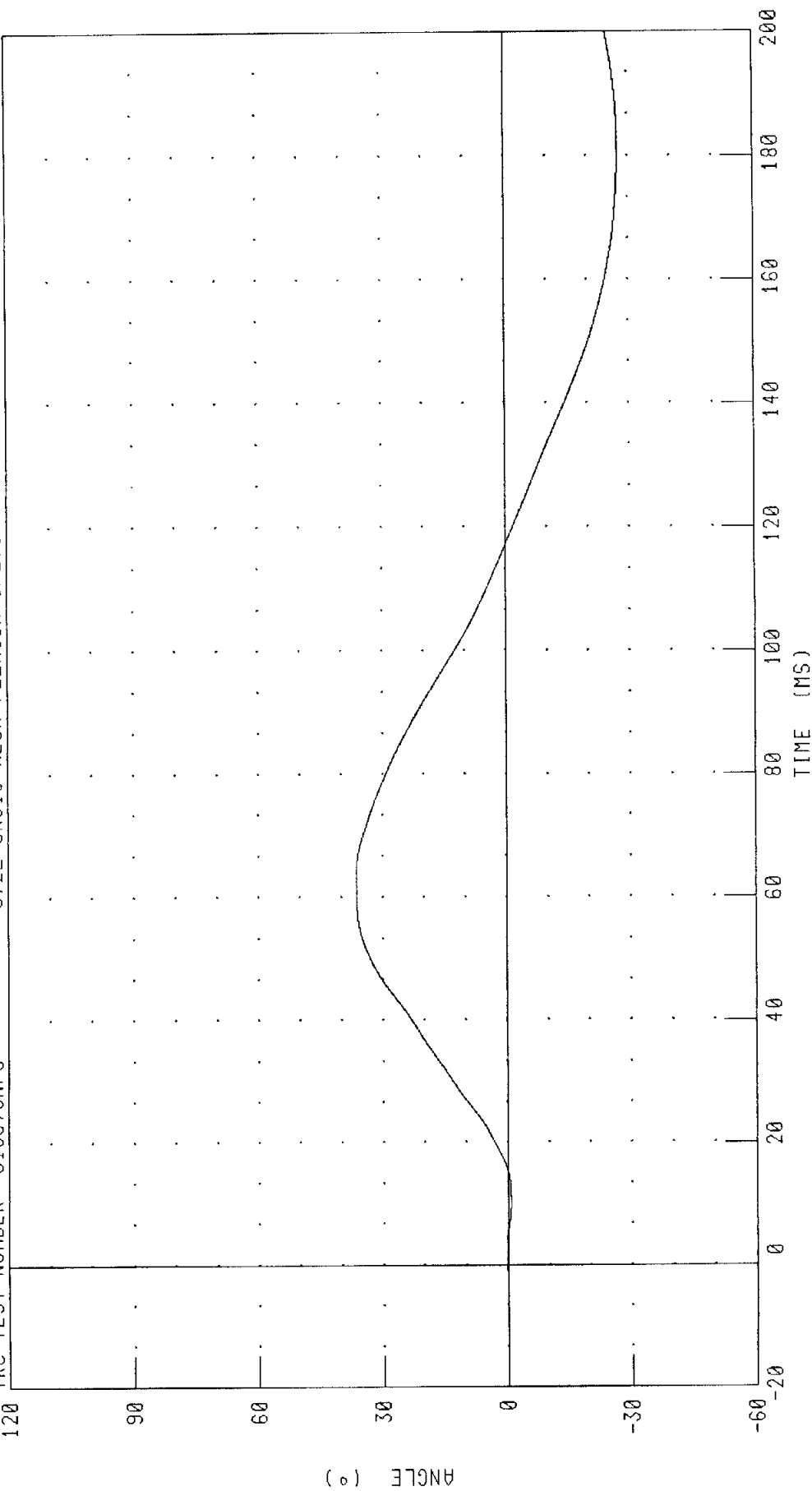
PART 572-E HYBRID III NECK FLEXION CALIBRATION

ROTATION ABOUT OCCIPITAL CONDYLE

572E SN616 NECK FLEXION CAL78

TRC TEST NUMBER: 616C78NF3

RUN NUMBER: 092001.1532;1



PEAK DATA 36.31 ° @ 62.56 MS, -27.51 ° @ 182.64 MS

CHANNEL: THETA FILTER: CH. CLASS 60

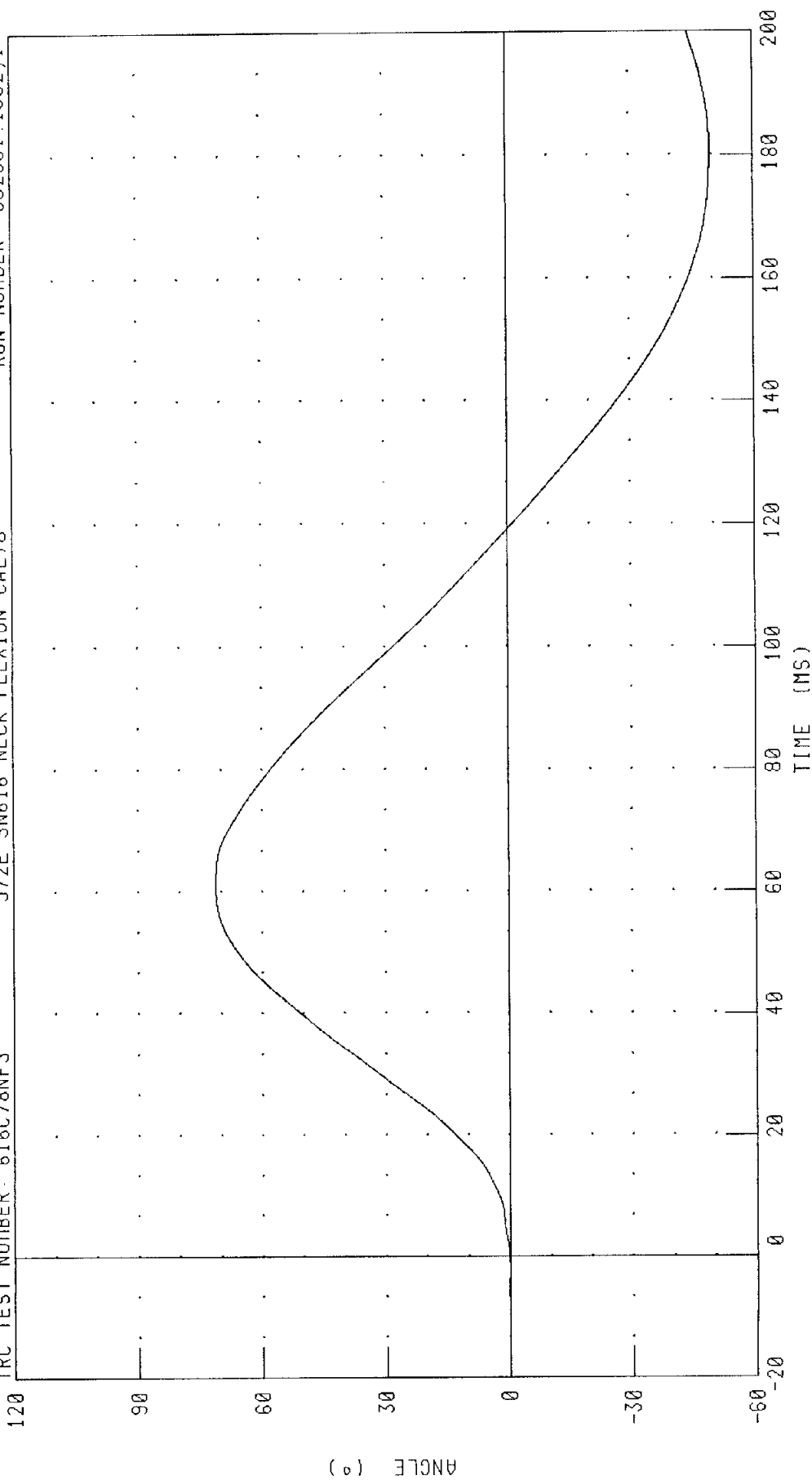
PART 572-E HYBRID III NECK FLEXION CALIBRATION

TOTAL ROTATION

TRC TEST NUMBER: 616C78NF3

572E SN616 NECK FLEXION CAL78

RUN NUMBER: 092001.1532,1



CHANNEL: TOTAL FILTER: CH. CLASS 60

PEAK DATA: 71.23 ° @ 61.20 MS, -49.54 ° @ 180.88 MS

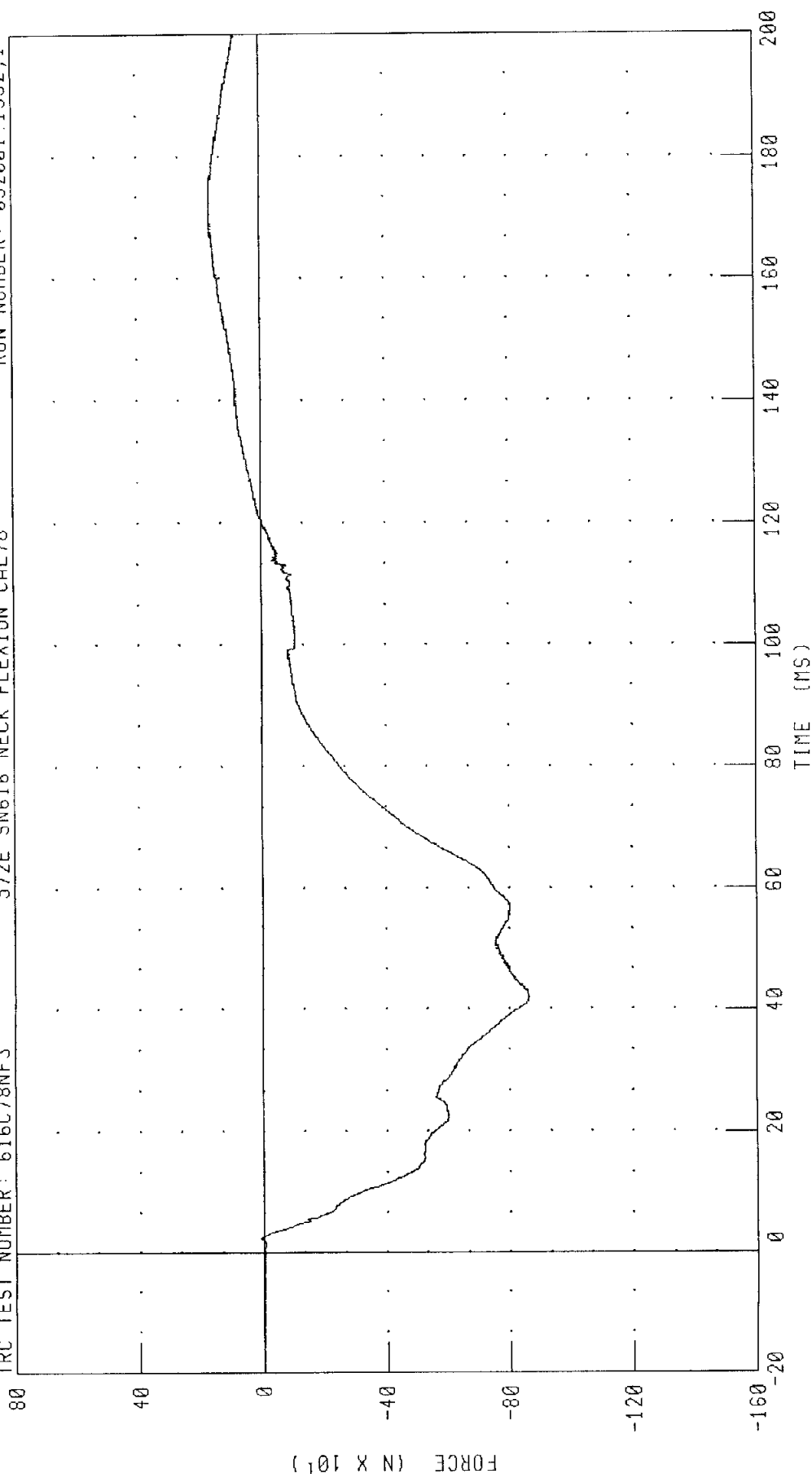
PART 572-E HYBRID III NECK FLEXION CALIBRATION

NECK FORCE X AXIS

TRC TEST NUMBER: 616C78NF3

572E SN616 NECK FLEXION CAL78

RUN NUMBER: 092001.1532,1



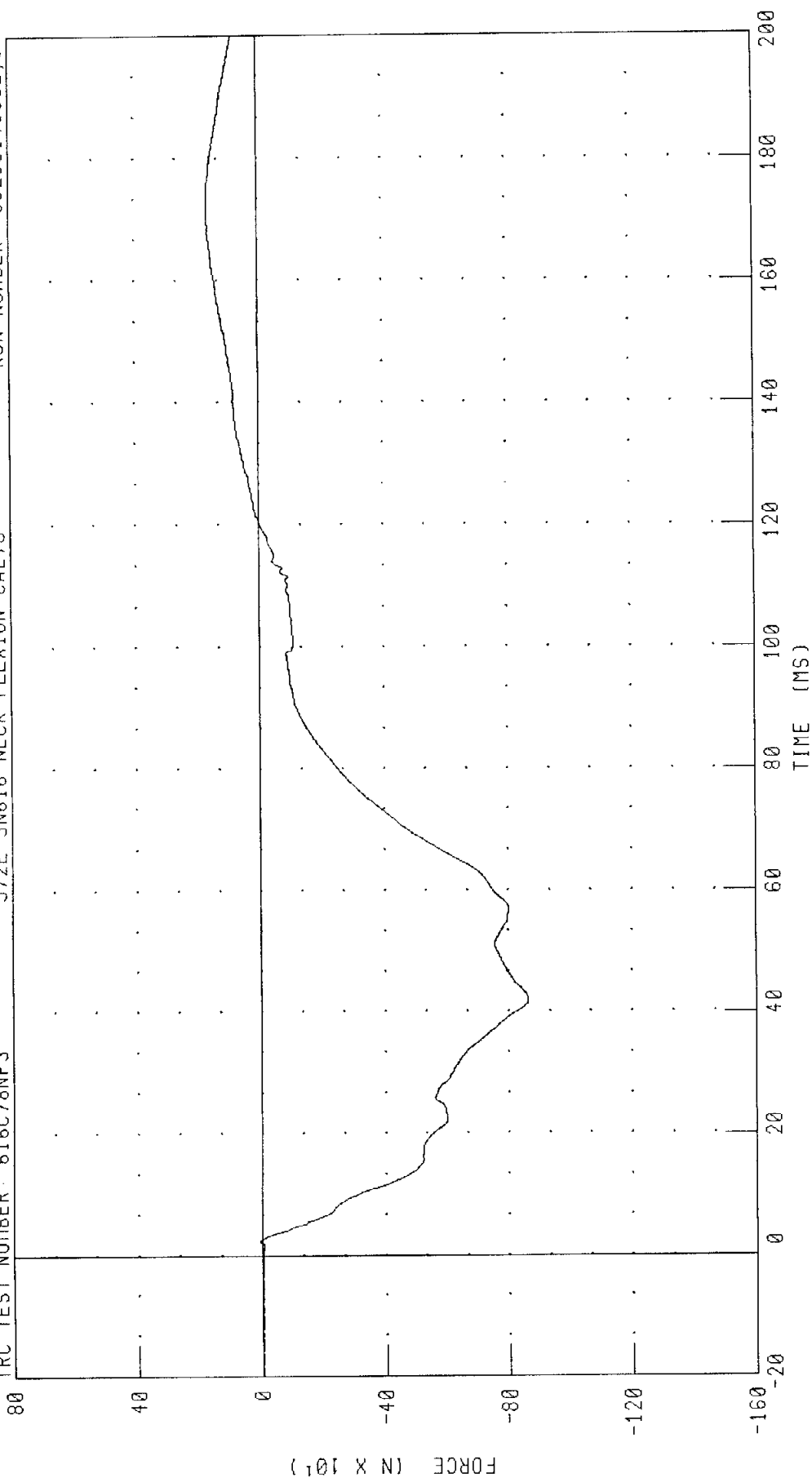
CHANNEL: NEKXF FILTER: CH. CLASS 1000

PEAK DATA: 163.17 N @ 166.88 MS, -867.01 N @ 41.92 MS

PART 572-E HYBRID III NECK FLEXION CALIBRATION

NECK FORCE X AXIS FILTERED FOR USE IN OCCIPITAL MOMENT CALCULATION

TRC TEST NUMBER: 616C78NF3 572E SN616 NECK FLEXION CAL78 RUN NUMBER: 092001.1532.1



PEAK DATA: 163.21 N @ 169.60 MS, -863.62 N @ 42.00 MS

CHANNEL: NEKXFC FILTER: CH. CLASS 600

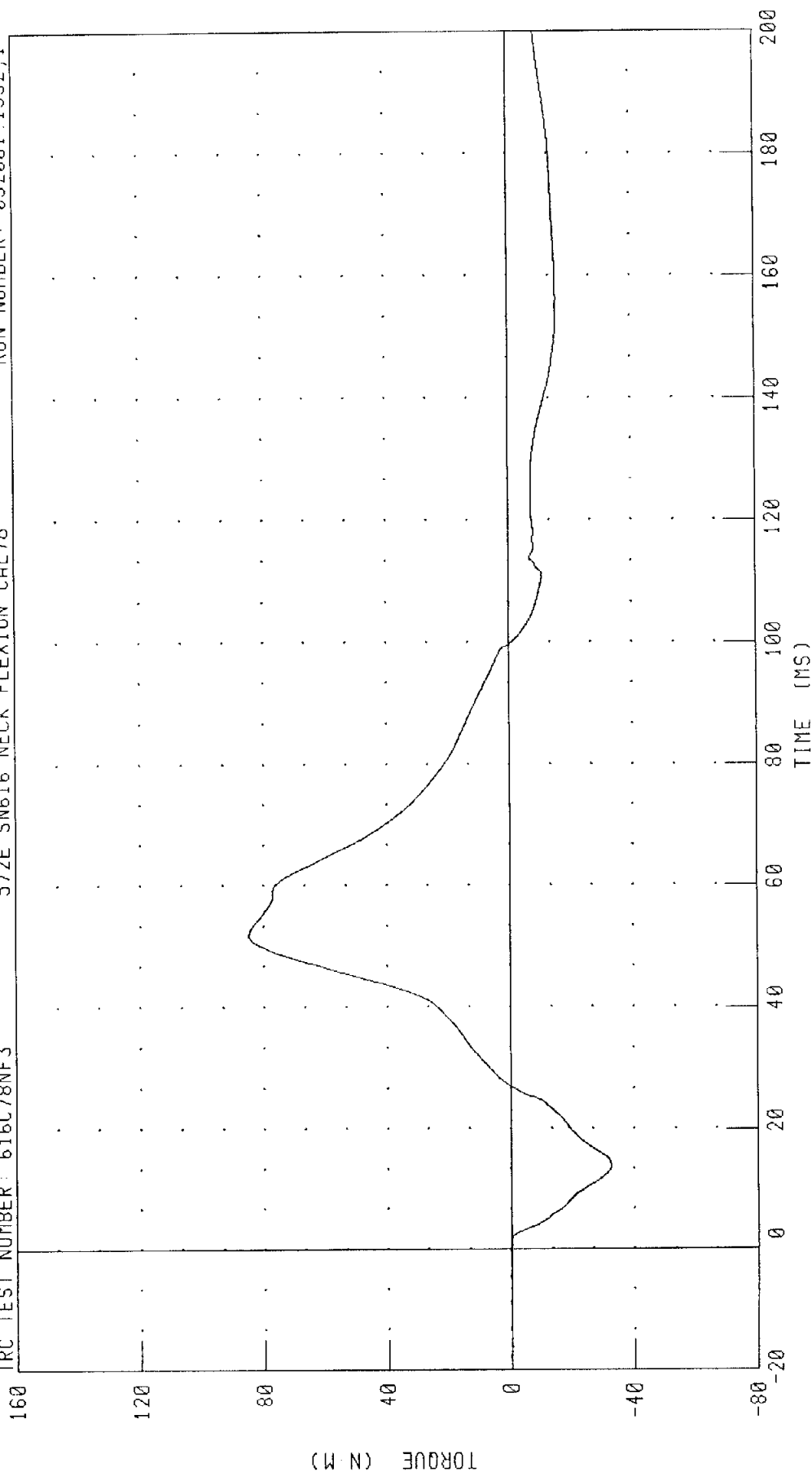
PART 572-E HYBRID III NECK FLEXION CALIBRATION

NECK MOMENT Y AXIS

TRC TEST NUMBER: 616C78NF3

572E SN616 NECK FLEXION CAL78

RUN NUMBER: 092001.1532.1



PEAK DATA: 84.80 N.M @ 51.84 MS, -32.69 N.M @ 13.84 MS

CHANNEL: NEKYM FILTER: CH. CLASS 600

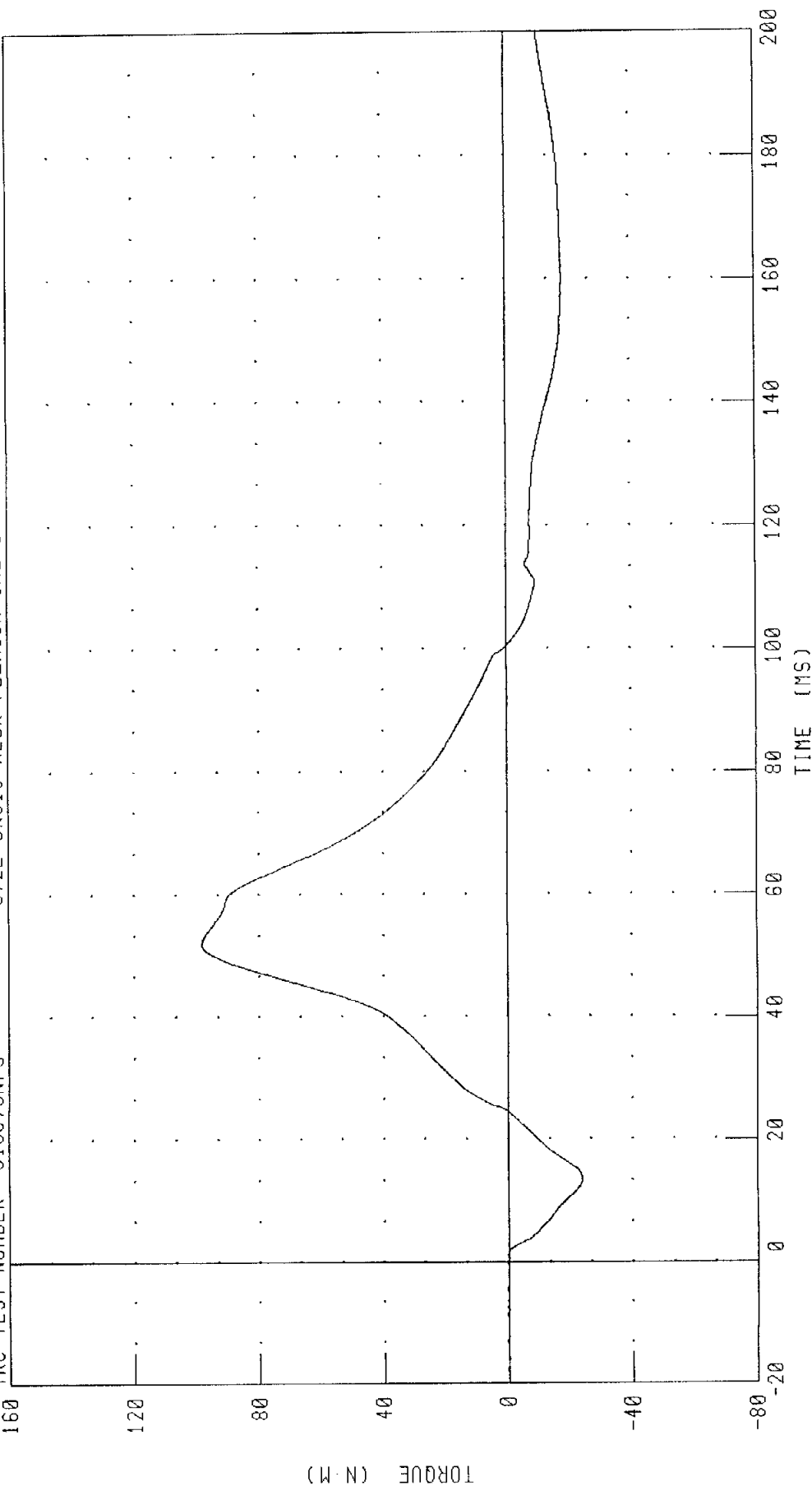
PART 572-E HYBRID III NECK FLEXION CALIBRATION

TOTAL MOMENT ABOUT OCCIPITAL CONDYLE

572E SN616 NECK FLEXION CAL78

TRC TEST NUMBER: 616C78NF3

RUN NUMBER: 092001.1532;1



PEAK DATA: 98.32 N-M @ 51.92 MS, -23.95 N-M @ 13.60 MS

CHANNEL: NEKOM FILTER: CH. CLASS 600

TRANSPORTATION RESEARCH CENTER INC.

HYBRID III 50th

05-APR-01

NECK EXTENSION TEST - 6 CHANNEL TRANSDUCER

TRC INC.

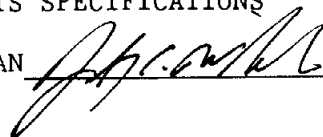
TEST NO: 616C78NE1

572E SN616 NECK EXT CAL78

TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE		20.6 - 22.2 DEG. C	21.7 DEG. C
RELATIVE HUMIDITY		10 - 70 %	25.0 %
IMPACT VELOCITY		5.95 - 6.19 M/S	6.05 M/S
PENDULUM DECELERATION	10 MS	17.20 - 21.20 G	17.86 G
	20 MS	14.00 - 19.00 G	17.68 G
	30 MS	11.00 - 16.00 G	15.81 G
MAX PENDULUM G		22 G MAX	19.04 G
MAX PENDULUM G ABOVE 30 MS		22 G MAX	15.75 G
DECELERATION-TIME CURVE DECAY TIME TO 5 G		38 - 46 MS	38.96 MS
D PLANE	MAX	81 - 106 DEG.	97.67 DEG.
ROTATION	TIME	72 - 82 MS	79.04 MS
MOMENT ABOUT OCCIPITAL CONDYLE	MIN	-80.0/-52.9 NM	-74.30 NM
	TIME	65 - 79 MS	72.24 MS
ROTATION ANGLE-TIME CURVE DECAY TIME TO ZERO		147 - 174 MS	156.64 MS
NEGATIVE MOMENT-TIME CURVE DECAY TIME TO ZERO		120 - 148 MS	141.12 MS

TEST MEETS SPECIFICATIONS

TECHNICIAN



RUN NUMBER: 040501.1311;1

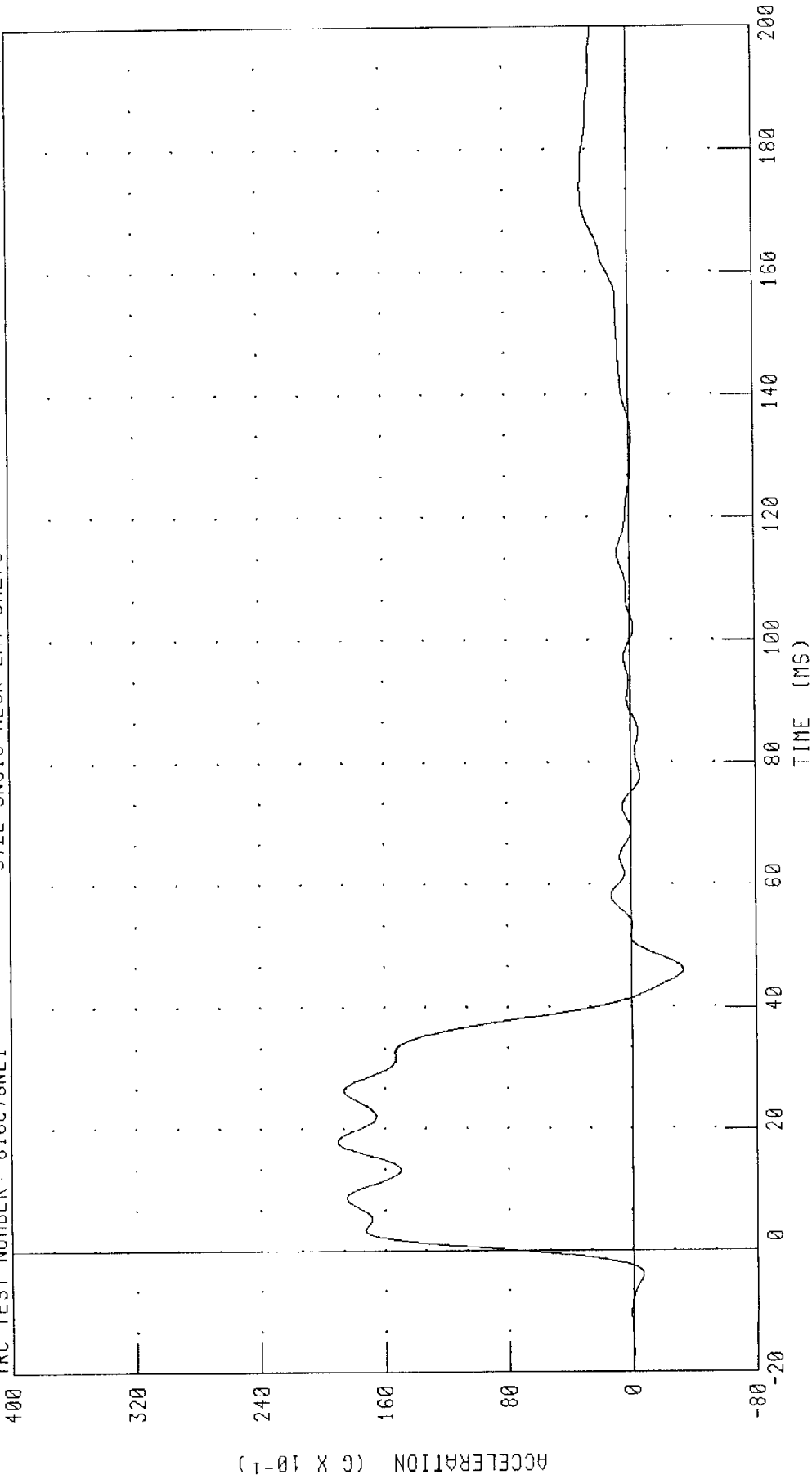
PART 572-E HYBRID III NECK EXTENSION CALIBRATION

PENDULUM DECELERATION

TRC TEST NUMBER: 616C78NE1

572E SN616 NECK EXT CAL78

RUN NUMBER 092001.1531;1



PEAK DATA: 19.04 G @ 17.92 MS, -3.31 G @ 46.16 MS

CHANNEL: PENXC FILTER: CH. CLASS 60

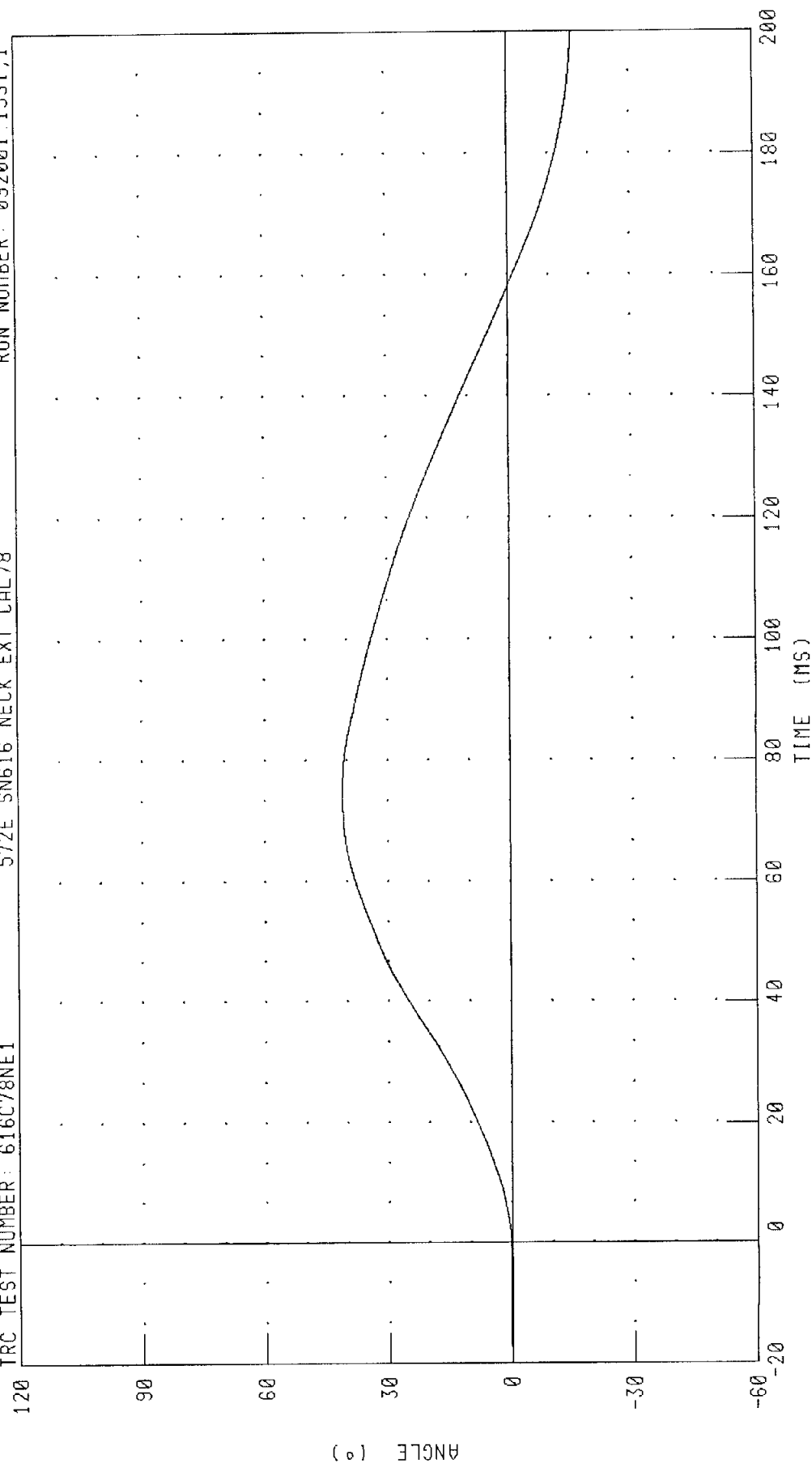
PART 572-E HYBRID III NECK EXTENSION CALIBRATION

ROTATION ABOUT BASE OF NECK

572E SN616 NECK EXT CAL78

RUN NUMBER: 092001.1531;1

TRC TEST NUMBER: 616C78NE1



PEAK DATA: 40.98 ° @ 74.96 MS, -15.80 ° @ 200.00 MS

CHANNEL: BETA FILTER: CH. CLASS 60

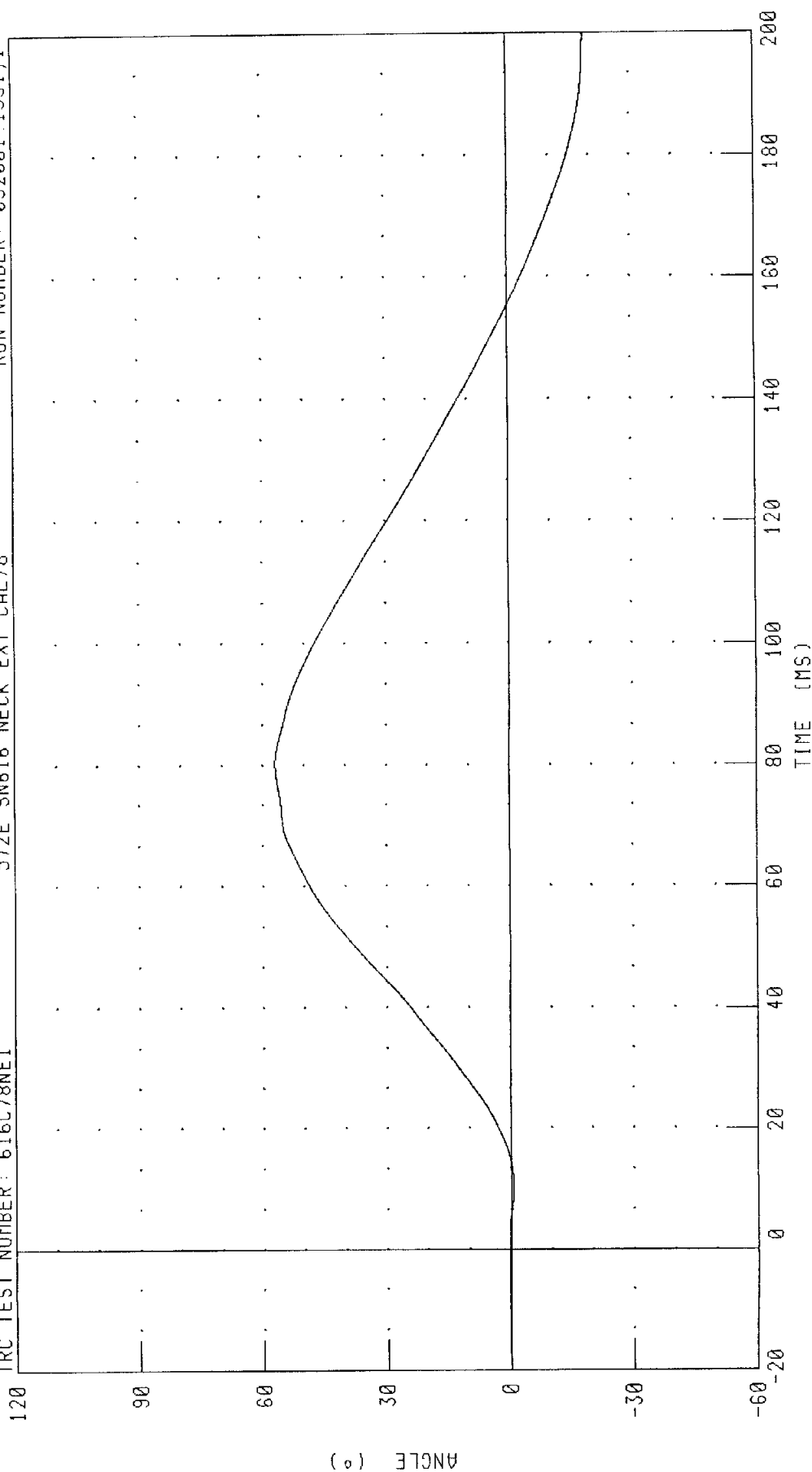
PART 572-E HYBRID III NECK EXTENSION CALIBRATION

ROTATION ABOUT OCCIPITAL CONDYLE

TRC TEST NUMBER: 616C78NE1

572E SN616 NECK EXT CAL78

RUN NUMBER: 092001.1531.1



PEAK DATA: 56.96 ° @ 80.32 MS, -18.75 ° @ 199.12 MS

CHANNEL: THETA FILTER: CH. CLASS 60

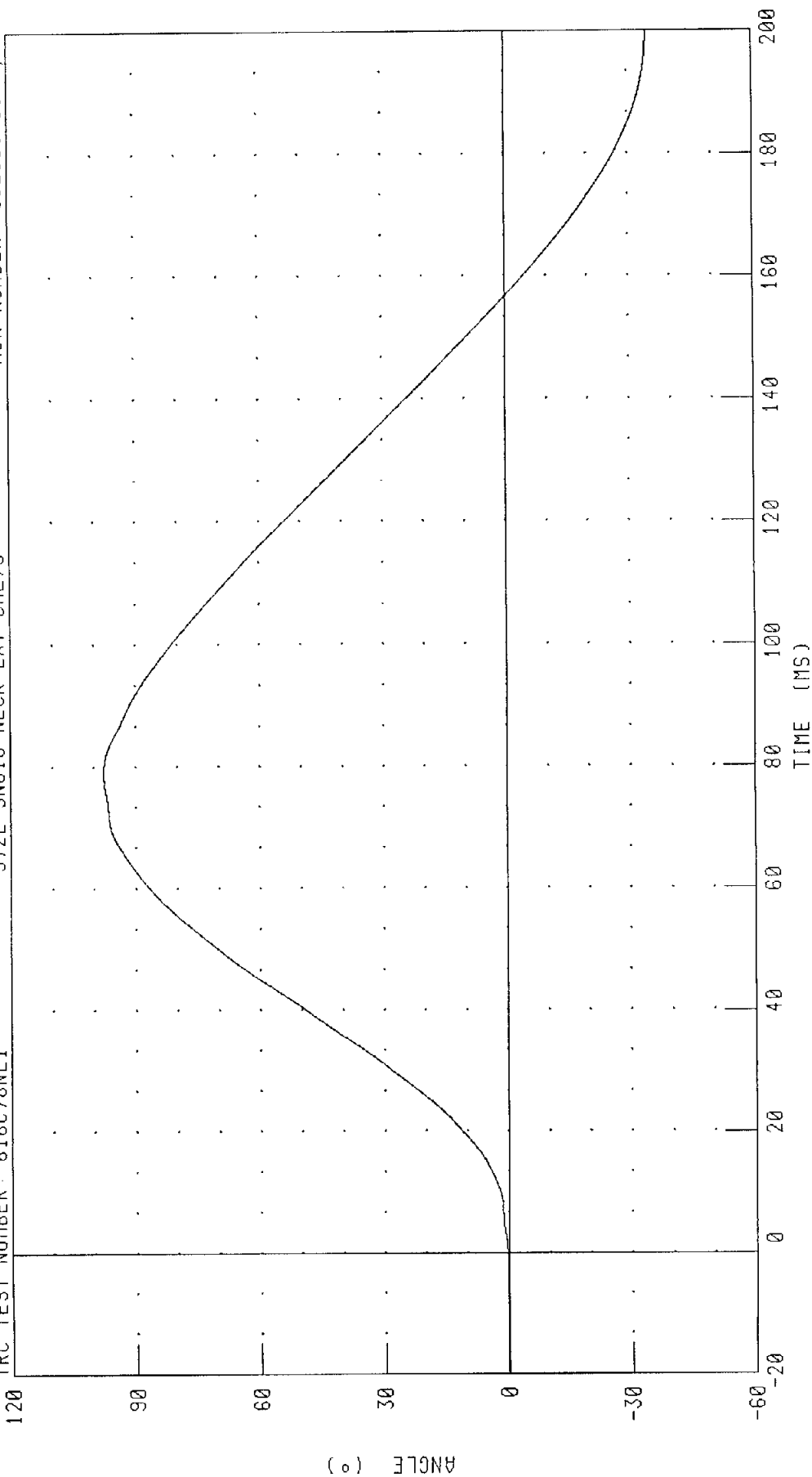
PART 572-E HYBRID III NECK EXTENSION CALIBRATION

TOTAL ROTATION

TRC TEST NUMBER: 616C78NE1

572E SN616 NECK EXT CAL78

RUN NUMBER: 092001.1531;1



PEAK DATA 97.67 ° @ 79.04 MS, -34.55 ° @ 200.00 MS

CHANNEL: TOTAN FILTER: CH. CLASS 60

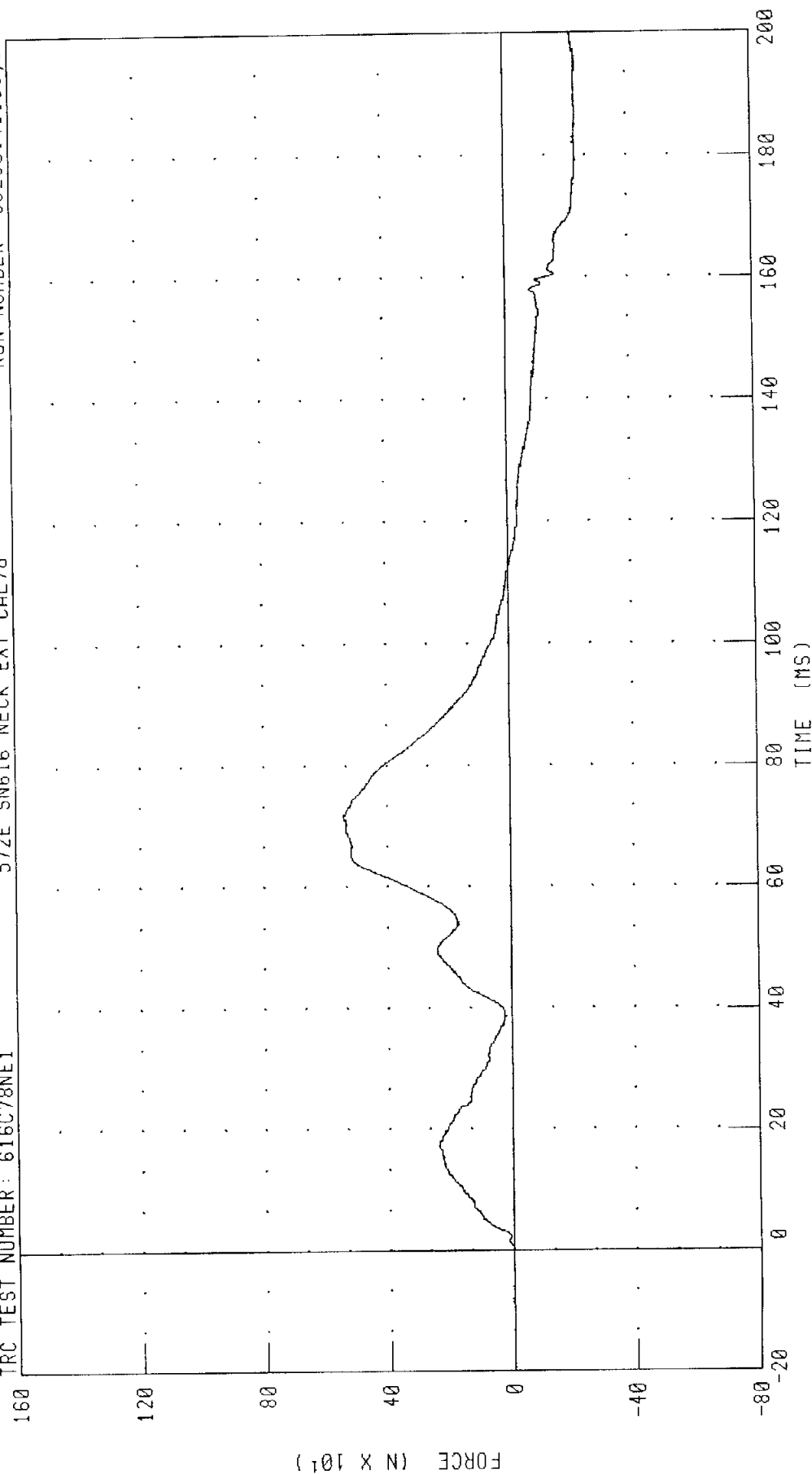
PART 572-E HYBRID III NECK EXTENSION CALIBRATION

NECK FORCE X AXIS

RUN NUMBER: 092001.1531.1

572E SN616 NECK EXT CAL78

TRC TEST NUMBER: 616C78NE1

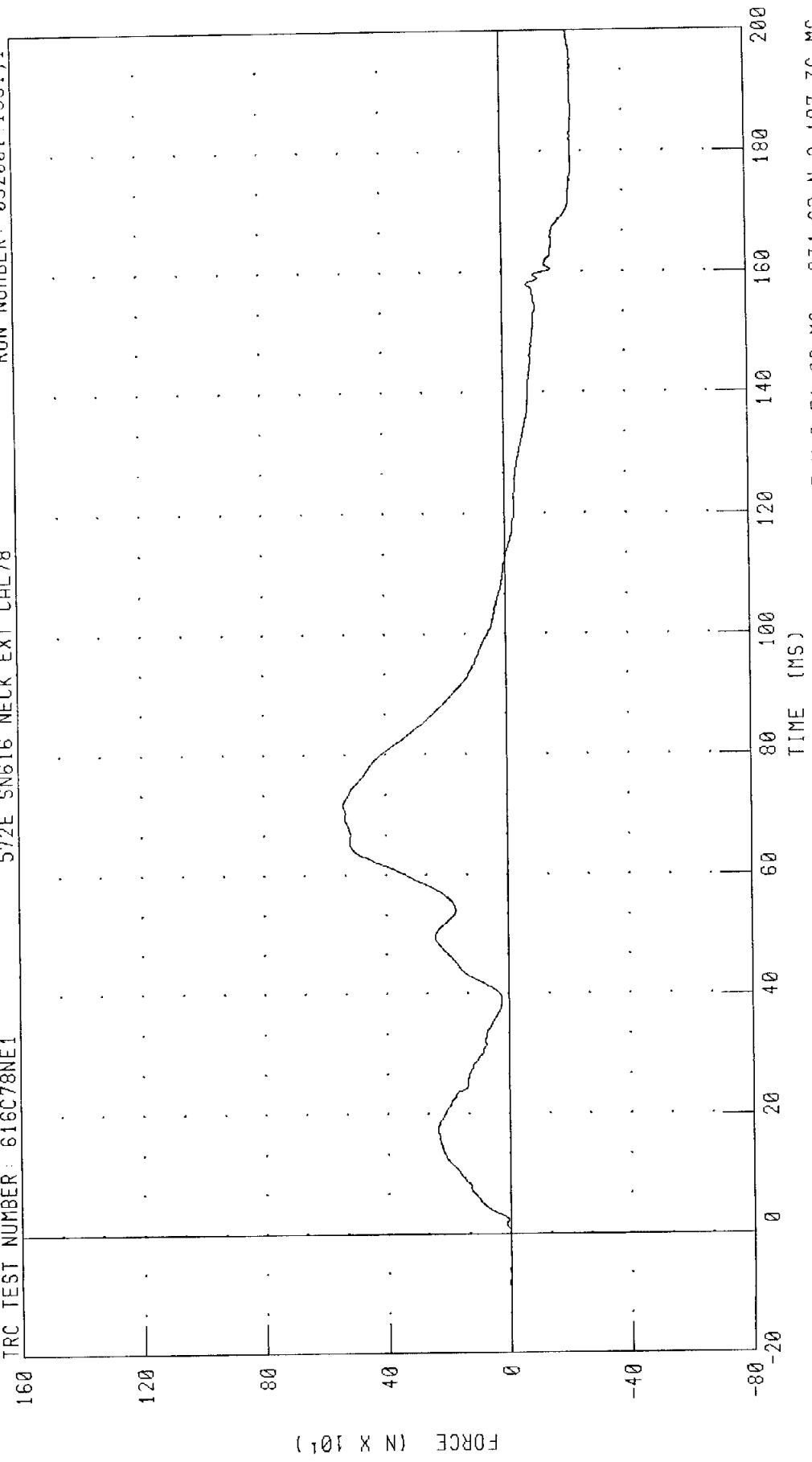


PEAK DATA: 543.53 N @ 71.68 MS, -234.54 N @ 179.04 MS

CHANNEL: NEKXF FILTER: CH. CLASS 1000

PART 572-E HYBRID III NECK EXTENSION CALIBRATION
NECK FORCE X AXIS FILTERED FOR USE IN OCCIPITAL MOMENT CALCULATION

TRC TEST NUMBER: 616C78NE1 572E SNG16 NECK EXT CAL78 RUN NUMBER: 092001 1531;1



CHANNEL: NEKXFC FILTER: CH. CLASS 600 PEAK DATA: 540.15 N @ 71.68 MS; -234.62 N @ 187.36 MS

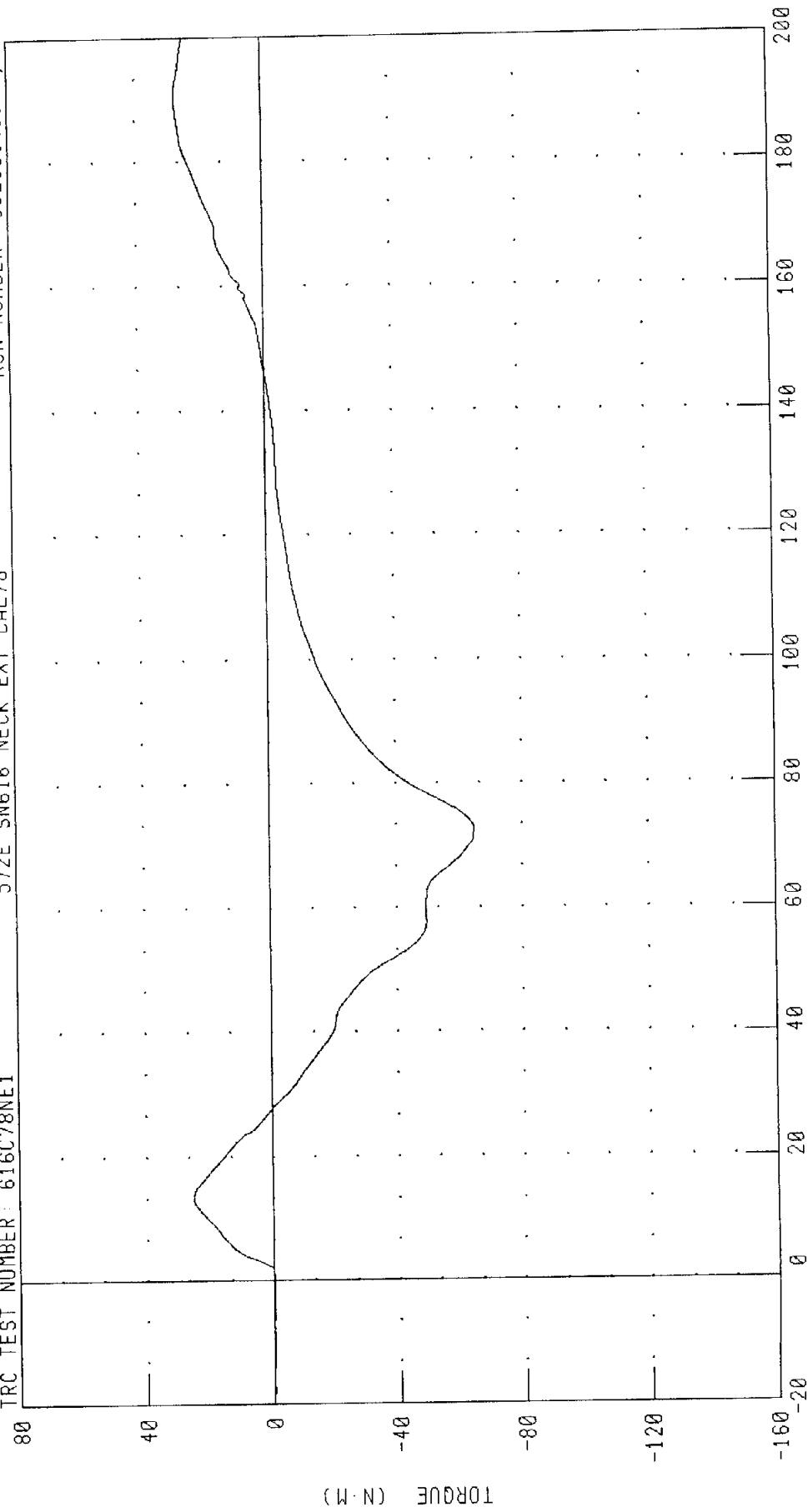
PART 572-E HYBRID III NECK EXTENSION CALIBRATION

NECK MOMENT Y AXIS

RUN NUMBER: 092001.1531.1

572E SN616 NECK EXT CAL78

TRC TEST NUMBER: 616C78NE1



TIME (MS)

PEAK DATA: 27.65 N·M @ 191.04 MS, -64.78 N·M @ 72.72 MS

CHANNEL: NEKYM FILTER: CH CLASS 600

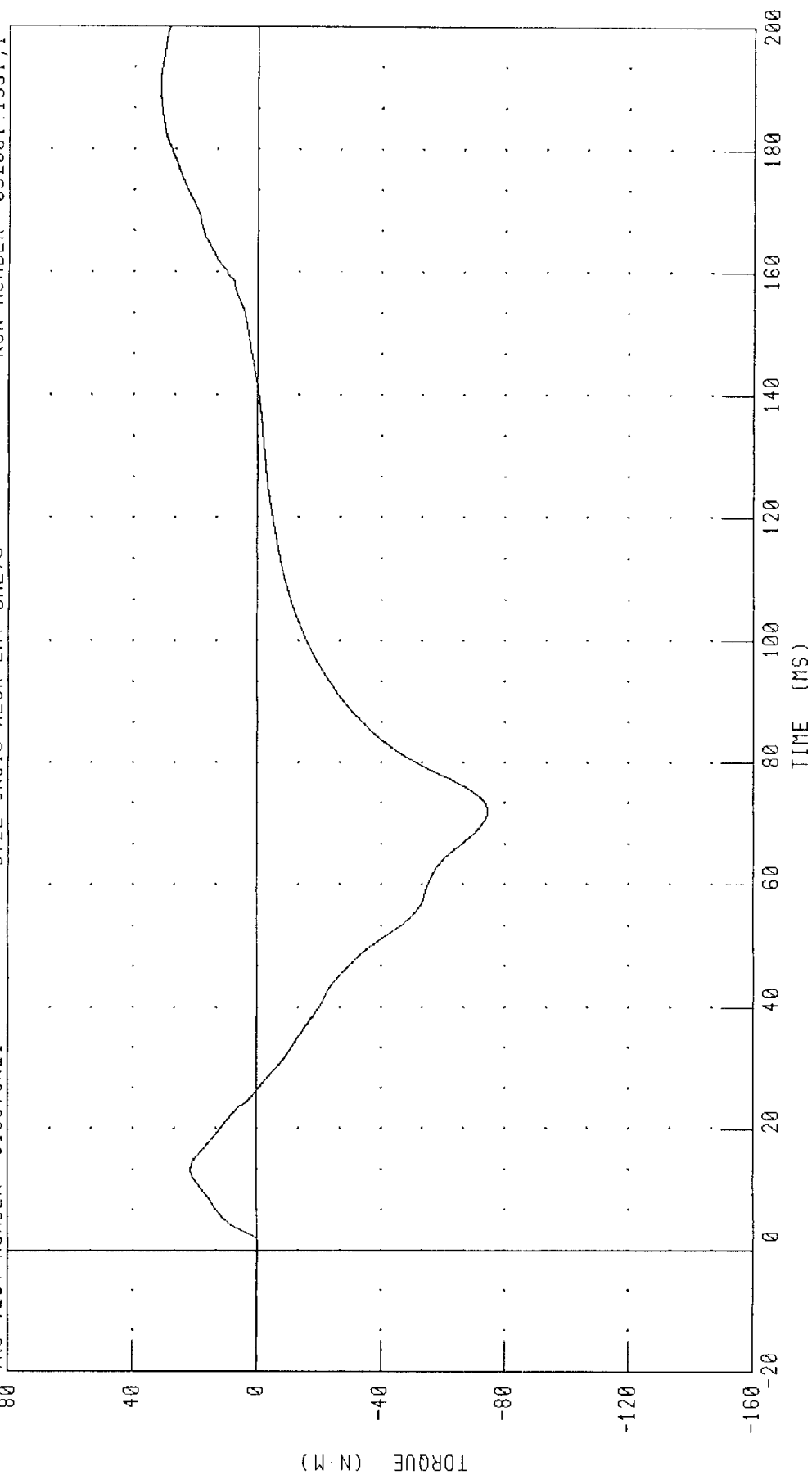
PART 572-E HYBRID III NECK EXTENSION CALIBRATION

TOTAL MOMENT ABOUT OCCIPITAL CONDYLE

TRC TEST NUMBER: 616C78NE1

572E SN616 NECK EXT CAL78

RUN NUMBER: 092001.1531.1



PEAK DATA: 31.74 N M @ 191.04 MS, -74.30 N M @ 72.24 MS

CHANNEL NEKOM FILTER: CH. CLASS 600

TRANSPORTATION RESEARCH CENTER INC.

THORAX IMPACT TEST

HYBRID III 50th

06-APR-01

TRC INC.

TEST NO: 616C78TH1

572E SN616 H.S.THORAX CAL78

TEST PARAMETER	HIGH SPEED TEST	TEST RESULTS
	SPECIFICATION	
TEMPERATURE	20.6-22.2 DEG. C	22.2 DEG. C
RELATIVE HUMIDITY	10 - 70 %	56.0 %
PENDULUM VELOCITY	6.59 - 6.83 M/S	6.59 M/S
MAXIMUM DEFLECTION	63.5 - 72.6 MM	64.5 MM
MAXIMUM RESISTIVE FORCE	5159 - 5894 N	5834. N
INTERNAL HYSTERESIS	69% - 85%	72.3%

TEST MEETS SPECIFICATIONS

TECHNICIAN



RUN NUMBER: 040601.0844;1

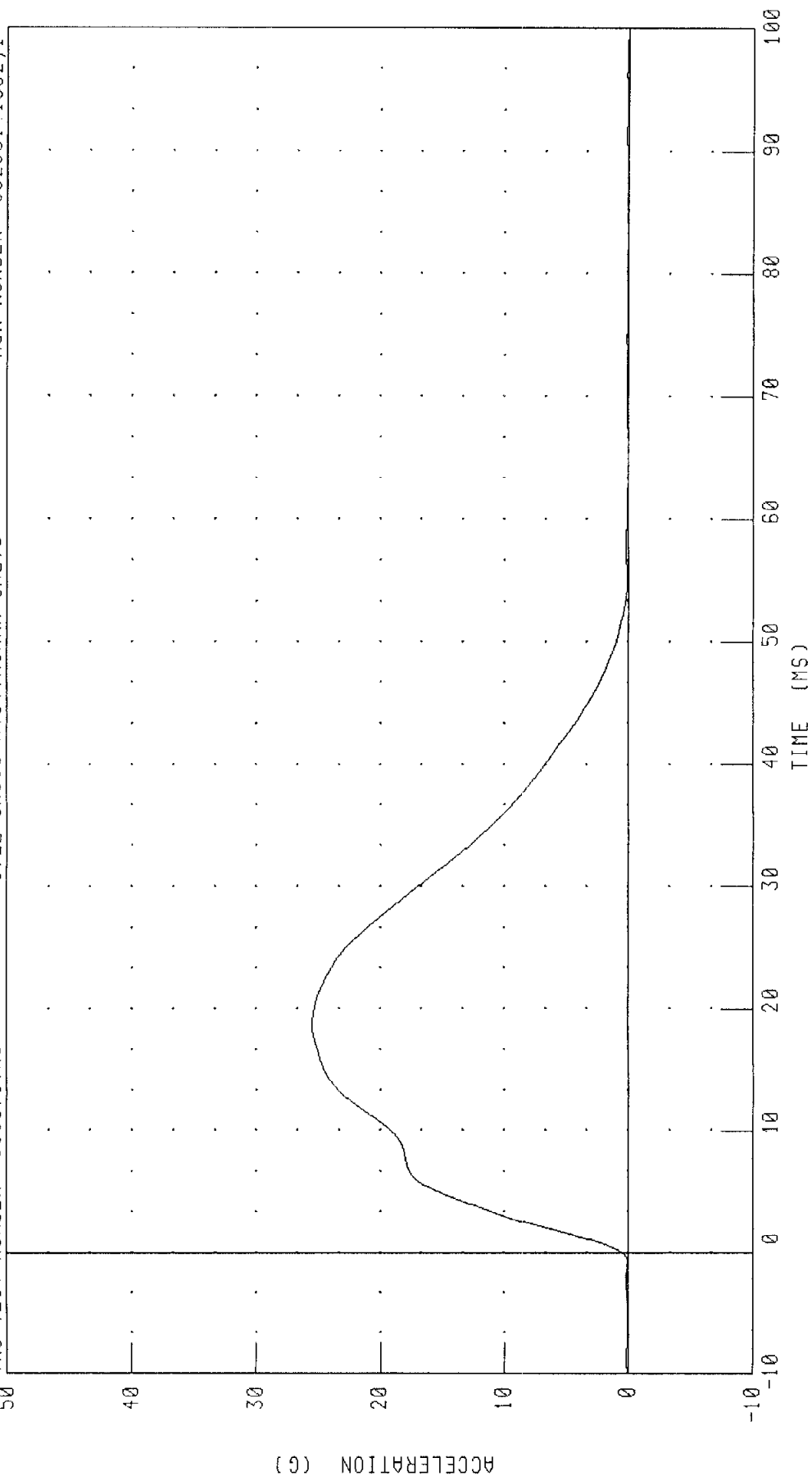
PART 572-E HYBRID III THORAX CALIBRATION

PENDULUM DECELERATION

TRC TEST NUMBER: 616C78TH1

572E SN616 H S THORAX CAL78

RUN NUMBER: 092001.1532.1



CHANNEL PENXC FILTER CH. CLASS 180

PEAK DATA: 25.47 G @ 18.64 MS, -0.04 G @ 66.56 MS

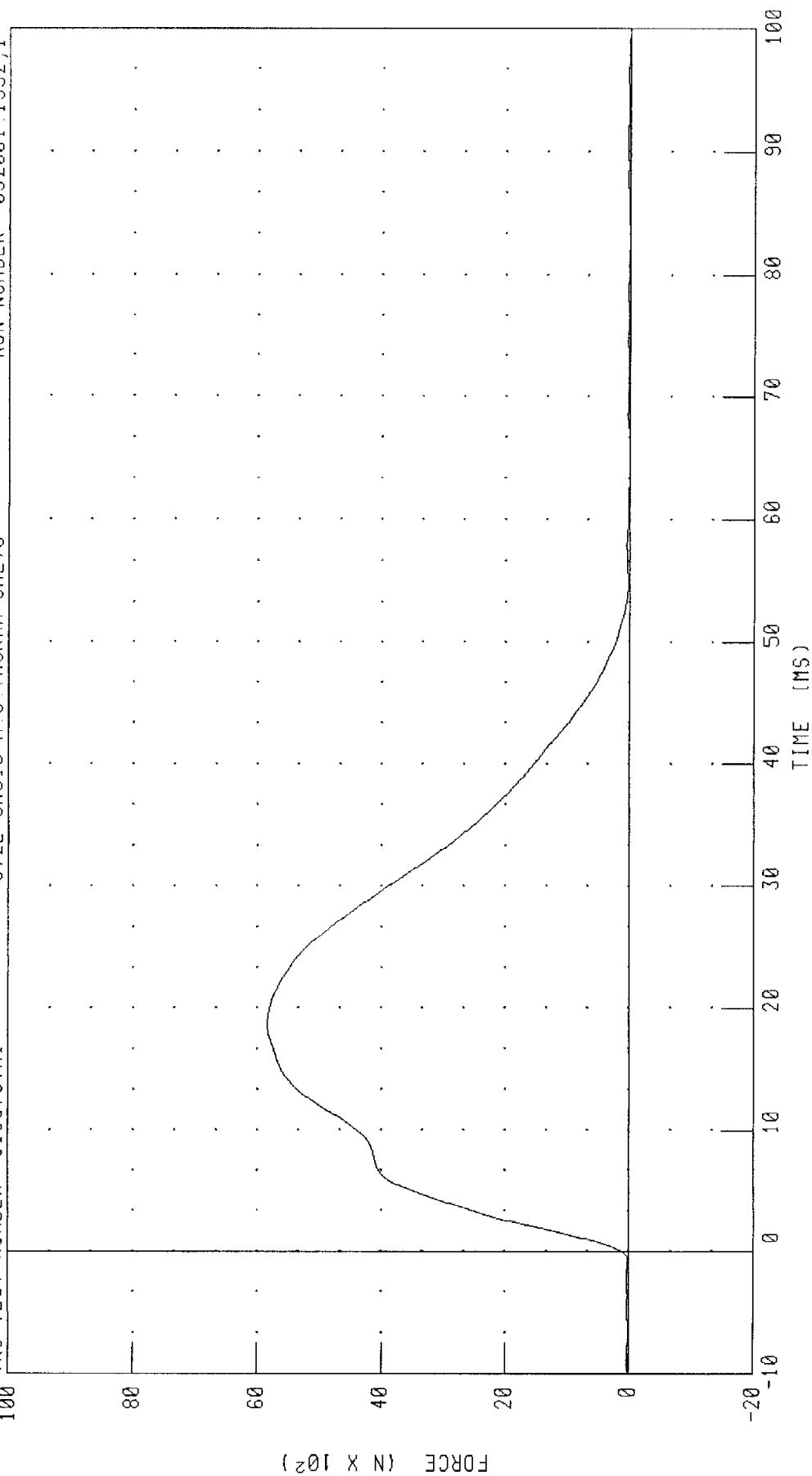
PART 572-E HYBRID III THORAX CALIBRATION

PENDULUM FORCE

TRC TEST NUMBER: 616C78TH1

572E SN616 H.S THORAX CAL78

RUN NUMBER: 092001.1532.1



CHANNEL PENXF FILTER: CH. CLASS 180

PEAK DATA: 5834.86 N @ 18.64 MS, -8.50 N @ 66.56 MS

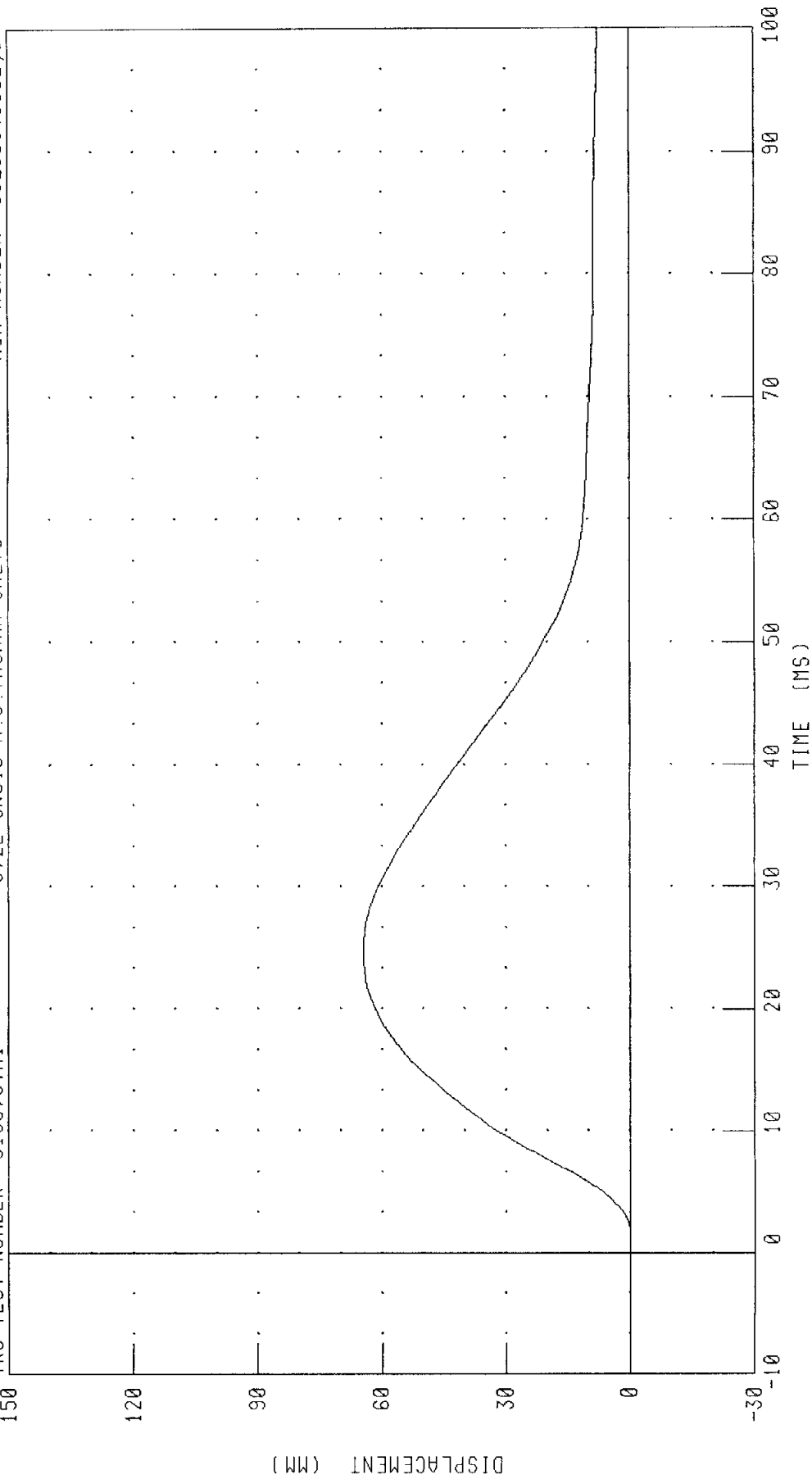
PART 572-E HYBRID III THORAX CALIBRATION

STERNUM DISPLACEMENT

TRC TEST NUMBER: 616C78TH1

572E SN616 H.S. THORAX CAL78

RUN NUMBER: 092001.1532.1



PEAK DATA: 64.58 MM @ 24.64 MS, -0.05 MM @ 1.44 MS

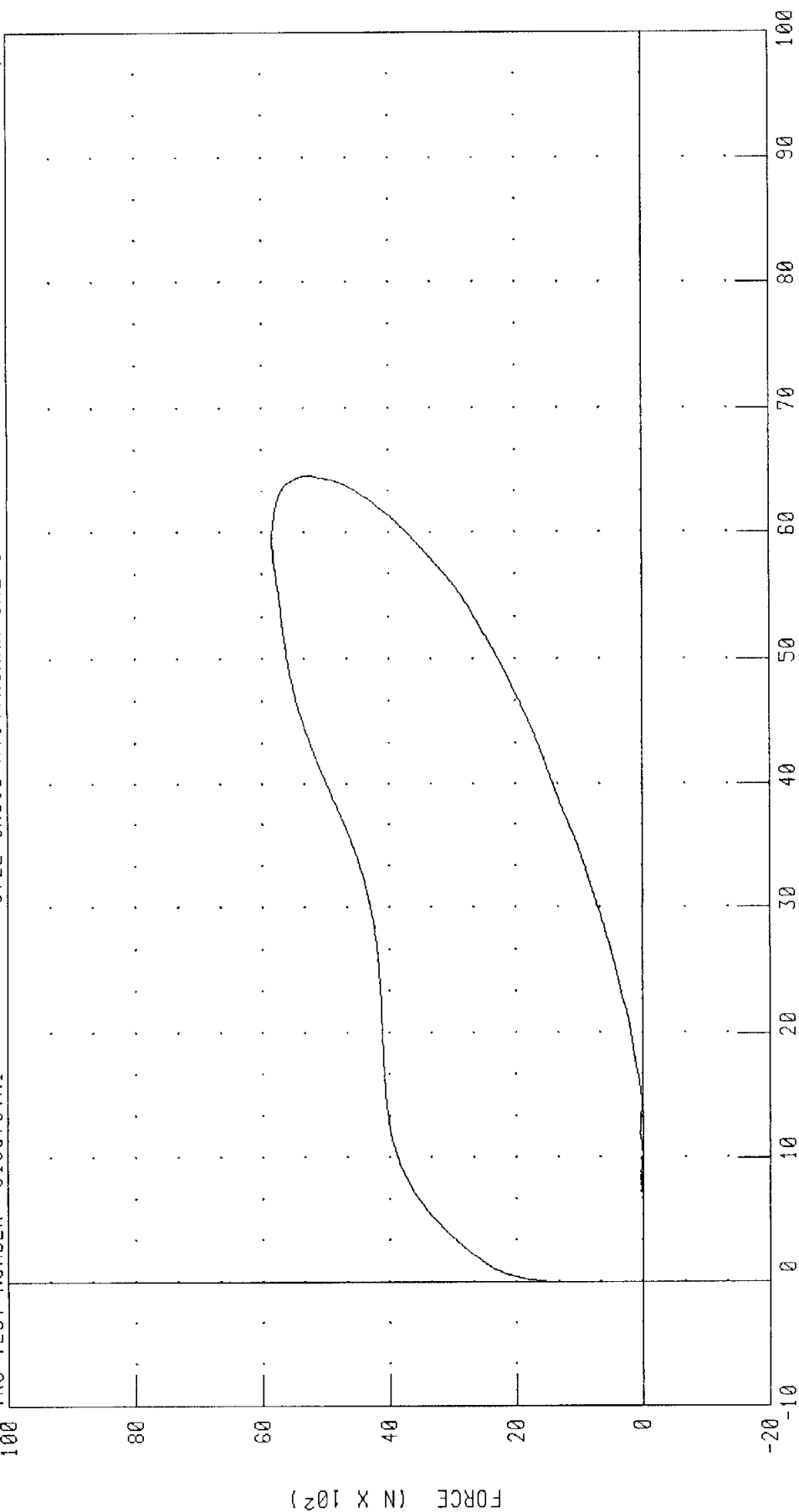
CHANNEL: CSTXD FILTER: CH. CLASS 180

PART 572-E HYBRID III THORAX CALIBRATION
CHEST DISPLACEMENT VS PENDULUM FORCE

TRC TEST NUMBER: 616C78TH1

572E SN616 H.S. THORAX CAL78

RUN NUMBER: 092001.1532;1



CHANNEL: CSTXD
PENXF

FILTER: CH. CLASS 180
CH. CLASS 180

PEAK DATA:

64.58 MM @ 24.64 MS; -0.05 MM @ 1.44 MS
5834.86 N @ 18.64 MS; -8.50 N @ 66.56 MS

TRANSPORTATION RESEARCH CENTER INC.

LEFT KNEE IMPACT TEST

HYBRID III 50th

05-APR-01

TRC INC.

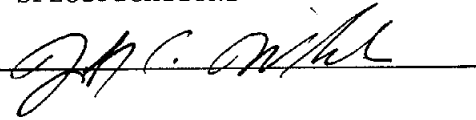
TEST NO: 616C78LK1

572E SN616 LEFT KNEE CAL 78

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9-25.6 DEG. C	22.2 DEG. C
RELATIVE HUMIDITY	10 - 70 %	24.0 %
PROBE VELOCITY	2.07 - 2.13 M/S	2.07 M/S
PEAK KNEE IMPACT FORCE 5.0 KG PENDULUM	4715 - 5782 N	5301.9 N

TEST MEETS SPECIFICATIONS

TECHNICIAN



RUN NUMBER: 040501.0837;1

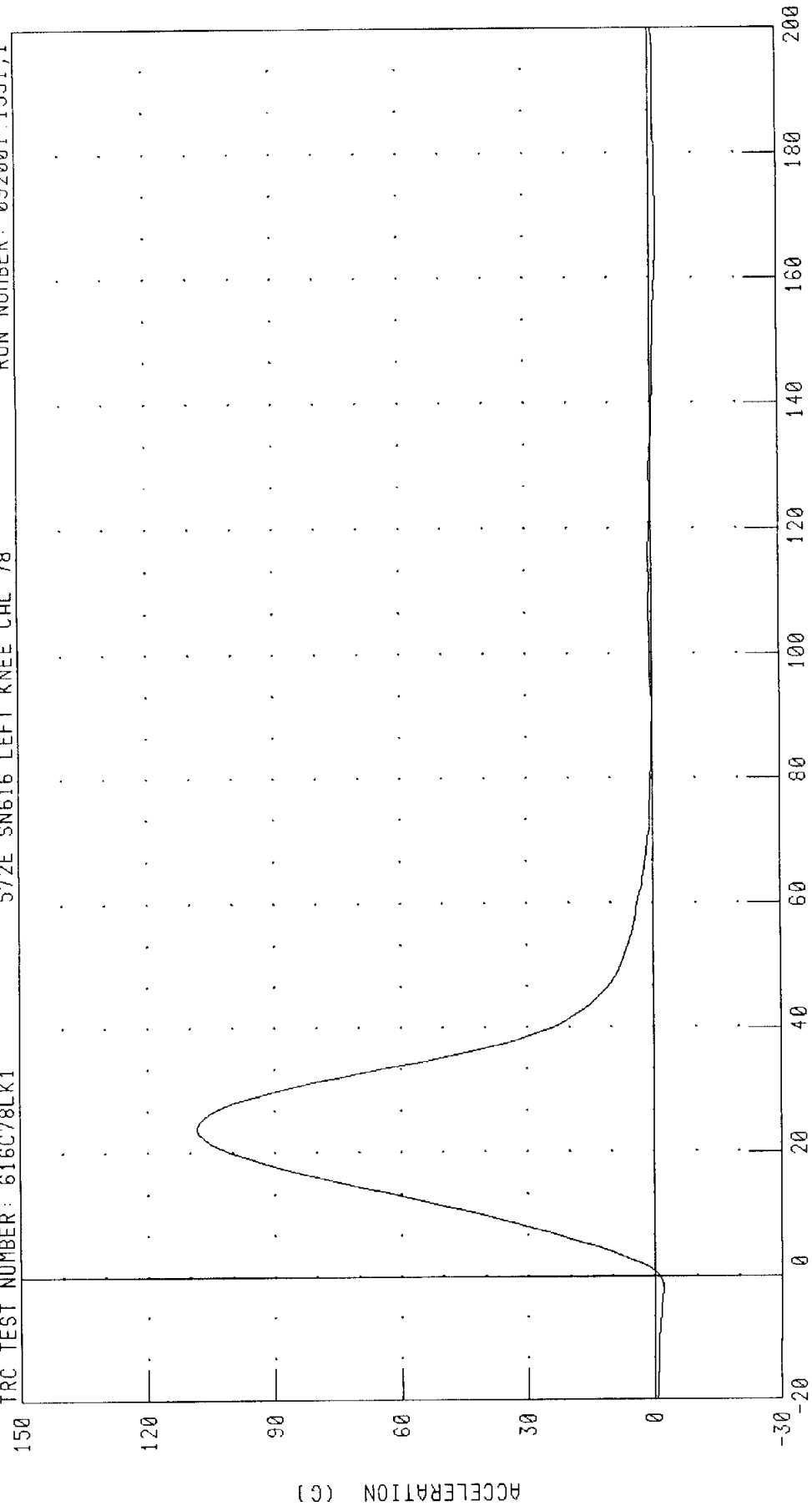
PART 572-E HYBRID III LEFT KNEE CALIBRATION

PENDULUM DECELERATION (5 KG PEND.)

RUN NUMBER: 092001.1531;1

TRC TEST NUMBER: 616C78LK1

572E SN616 LEFT KNEE CAL 78



PEAK DATA: 108.36 G @ 2.40 MS; -1.99 G @ -0.16 MS

CHANNEL: PENXC FILTER: CH. CLASS 600

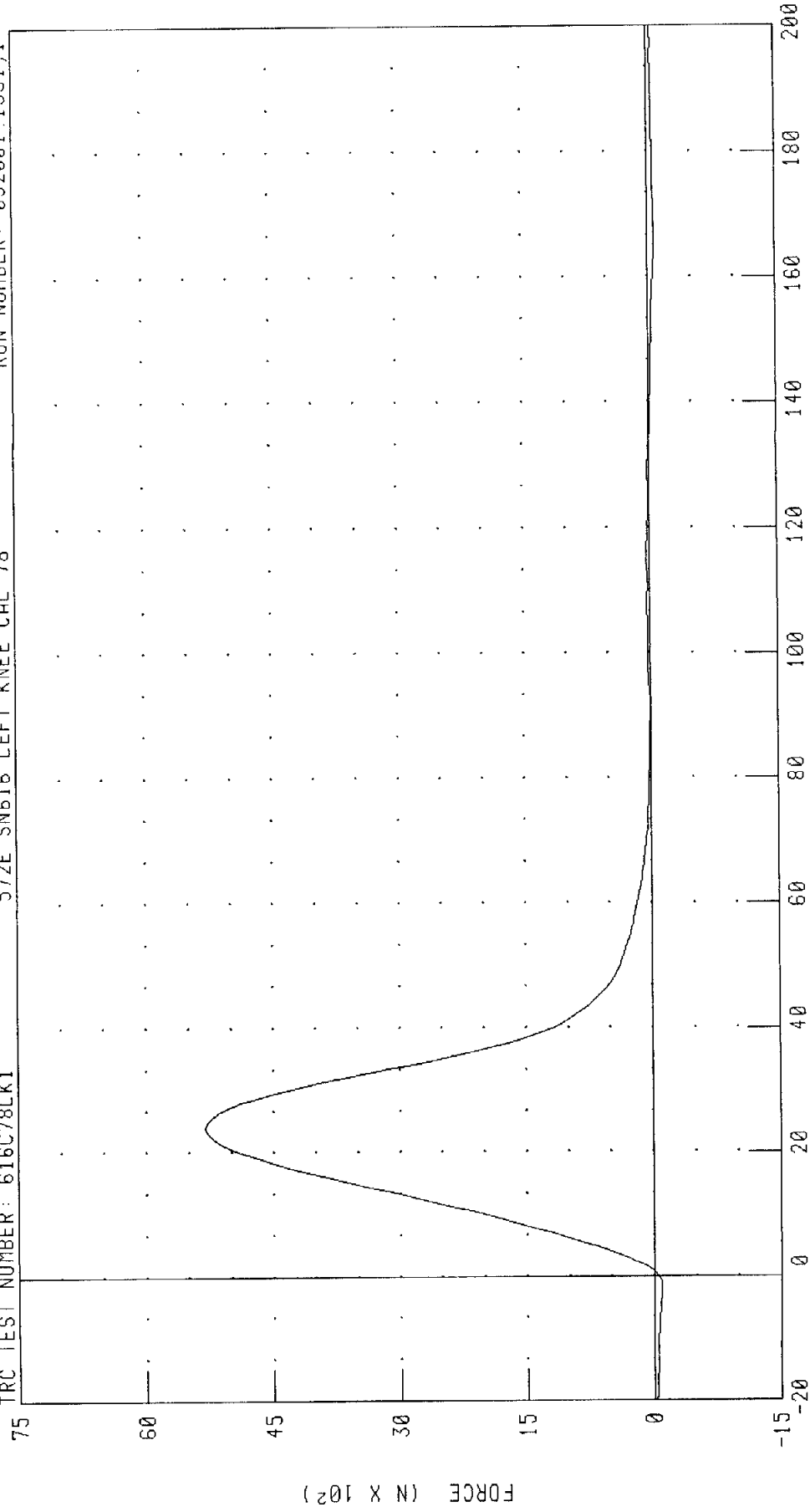
PART 572-E HYBRID III LEFT KNEE CALIBRATION

PENDULUM FORCE (5 KG PEND.)

RUN NUMBER: 092001.1531.1

TRC TEST NUMBER: 616C78LK1

572E SN616 LEFT KNEE CAL 78



PEAK DATA: 5301.92 N @ 2.40 MS, -97.37 N @ -0.16 MS

CHANNEL: PENXF FILTER: CH. CLASS 600

TRANSPORTATION RESEARCH CENTER INC.

RIGHT KNEE IMPACT TEST

HYBRID III 50th

05-APR-01

TRC INC.

TEST NO: 616C78RK1

572E SN616 RIGHT KNEE CAL 78

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9-25.6 DEG. C	22.2 DEG. C
RELATIVE HUMIDITY	10 - 70 %	24.0 %
PROBE VELOCITY	2.07 - 2.13 M/S	2.07 M/S
PEAK KNEE IMPACT FORCE 5.0 KG PENDULUM	4715 - 5782 N	5703.7 N

TEST MEETS SPECIFICATIONS

TECHNICIAN

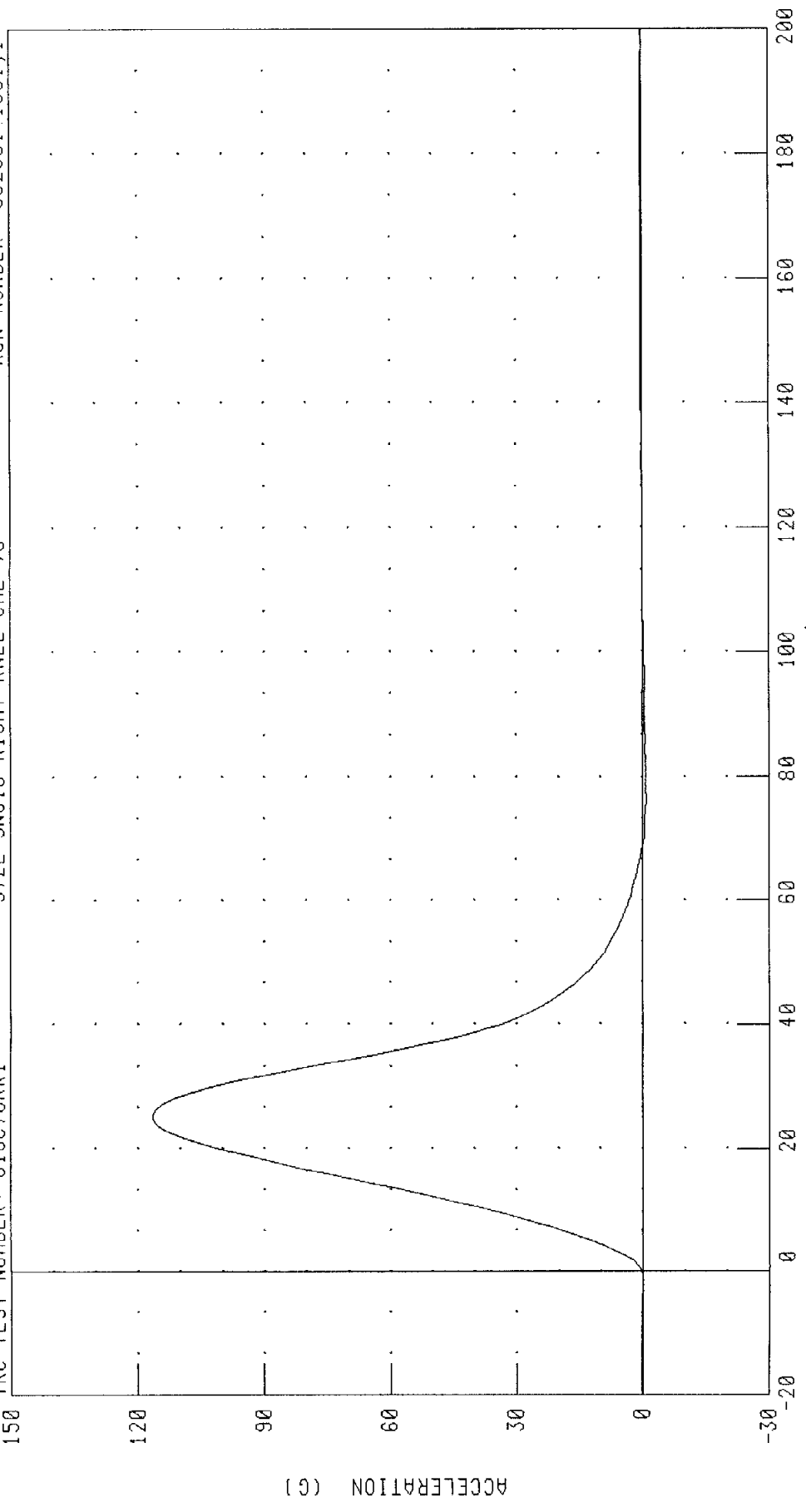


RUN NUMBER: 040501.0847;1

PART 572-E HYBRID III RIGHT KNEE CALIBRATION

PENDULUM DECELERATION (5 KG PEND.)

TRC TEST NUMBER: 616C78RK1 572E SN616 RIGHT KNEE CAL 78 RUN NUMBER: 092001.1531.1



CHANNEL: PENXC FILTER: CH. CLASS 600 PEAK DATA: 116.57 G @ 2.48 MS, -0.99 G @ 7.68 MS

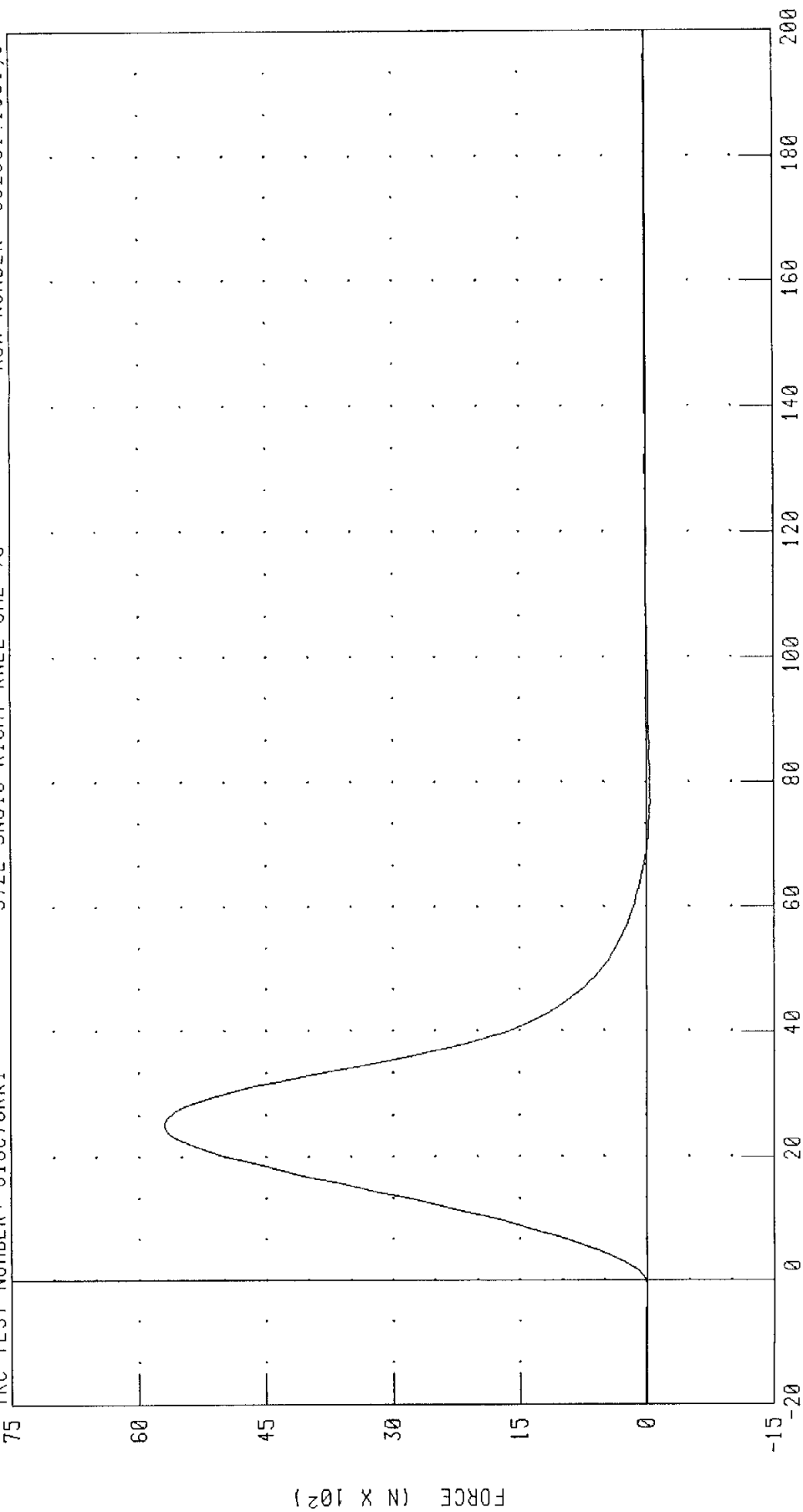
PART 572-E HYBRID III RIGHT KNEE CALIBRATION

PENDULUM FORCE (5 KG PEND.)

TRC TEST NUMBER: 616C78RK1

572E SN616 RIGHT KNEE CAL 78

RUN NUMBER: 092001.1531.1



CHANNEL: PENXF

FILTER: CH. CLASS 600

PEAK DATA: 5703.74 N @ 2.48 MS; -48.31 N @ 7.68 MS

Appendix D

Miscellaneous Test Information

Report Sign Convention
SAE J211 MAR95

Accelerometers:

+X: Forward
+Y: Rightward
+Z: Downward

Potentiometers:

+Chest longitudinal deflection: Outward
+Chest lateral deflection: Leftward
+Seat belt displacement: Outward
+Seat belt extension: Elongation
+Knee slider displacement: Distance between femur and tibia
increased (in relation to a seated
dummy)

Rotation potentiometers:

+About the X-axis: Left foot-eversion
Right foot-inversion
+About the Y-axis: Left/right foot-dorsiflexion
+About the Z-axis: Left foot-internal
Right foot-external

Load cells:

+Femur force: Tension
+Seat belt force: Tension
+Barrier force: Tension

Neck load cells:

+X force: Head pushed rearward
+Y force: Head pushed leftward
+Z force: Head pulled upward (tension on neck)
+X moment: Left ear rotating toward left shoulder
+Y moment: Chin rotating toward chest
+Z moment: Chin rotating toward left shoulder

Tibia load cells:

+X force: Ankle forward, knee rearward
+Y force: Ankle rightward, knee leftward
+Z force: Tension
+X moment: Bottom of tibia moving leftward
+Y moment: Bottom of tibia moving rearward

Frequency Response Classes
SAE J211 MAR95

<u>Typical Test Measurements</u>	<u>Channel Class</u>
Vehicle Structural Accelerations for use in:	
Total vehicle comparison	60
Collision simulation input	60
Component analysis	600
Integration for velocity or displacement	180
Barrier Face Forces	60
Belt Restraint System Loads	60
Anthropomorphic Test Device	
Head accelerations (linear and angular)	1000
Neck	
Forces	1000
Moments	600
Thorax	
Spine accelerations	180
Rib accelerations	1000
Sternum accelerations	1000
Deflections	180
Lumbar	
Forces	1000
Moments	1000
Pelvis	
Accelerations	1000
Forces	1000
Moments	1000
Femur/Knee/Tibia/Ankle	
Forces	600
Moments	600
Displacements	180
Sled Accelerations	60
Steering Column Loads	600
Head form Accelerations	1000

The direction column on the following sheets describes the transducer output as mounted and wired in the test location. See Report Sign Convention sheet for description of data output as presented in the report: channels were adjusted in post-acquisition processing to conform to J211 MAR95.

Channel Report

04/12/2001 11:16:01 AM

Name of Test 010412-1

System K3600

Name of DAU DAU0

Chan.#	Sensor #	Mnemonic	Description	Dir.	Range	Pol.	Cal. Date/Status	Group	Mfg.	Model
0000	EVENT	BACKUP	BACKUP EVENT		10.24	+	11/20/2000	OK	TRC	Event
0001	C13397	HEDXG1	Head Accel X	Rwd	400.9601115G	+	03/09/2001	OK	Endevco	7231C
0002	A70D	HEDYG1	Head Accel Y	Lft	398.8160149G	+	03/09/2001	OK	Endevco	7231C
0003	C15285	HEDZG1	Head Accel Z	Up	400.9365627G	+	03/09/2001	OK	Endevco	7231C
0004	1716-0424-FX	NEKXF1	Neck Force X	Hd	8892.677540N	+	03/09/2001	OK	Denton	1716
0005	1716-0424-FY	NEKYF1	Neck Force Y	Hd	8892.138687N	+	03/09/2001	OK	Denton	1716
0006	1716-0424-FZ	NEKZF1	Neck Force Z	Hd	13341.89090N	+	03/09/2001	OK	Denton	1716
0007	1716-0424-MX	NEKXM1	Neck Moment X	Rt Ear	282.3049328NM	+	03/09/2001	OK	Denton	1716
0008	1716-0424-MY	NEKYM1	Neck Moment Y	Chn	282.4051392NM	+	03/09/2001	OK	Denton	1716
0009	1716-0424-MZ	NEKZM1	Neck Moment Z	Chn	282.8129726NM	+	03/09/2001	OK	Denton	1716
0010	AN4K8	CSTXG1	Chest Accel X	Fwd	400.0468804G	+	03/09/2001	OK	Endevco	7231C
0011	C15223	CSTYG1	Chest Accel Y	Lft	399.9062719G	+	03/09/2001	OK	Endevco	7231C
0012	AN4K9	CSTZG1	Chest Accel Z	Dwn	400.4379790G	+	03/09/2001	OK	Endevco	7231C
0013	14CB1-2897-329	CSTXD1	Chest Deflection X	Strmm	99.28686048.MM	+	03/09/2001	OK	Servo	14CB1-2897
0014	AD4J4	PEVXG1	Pelvis Accel X	Rwd	399.1315769G	+	03/09/2001	OK	Endevco	7231C
0015	AH5C0	PEVYG1	Pelvis Accel Y	Lft	399.8516175G	+	03/09/2001	OK	Endevco	7231C
0016	AD415	PEVZG1	Pelvis Accel Z	Up	399.2576303G	+	03/09/2001	OK	Endevco	7231C
0017	2430T-889	LFMZFI	Left Femur Force Z	Knee	13348.47203N	+	03/09/2001	OK	GSE	2430T
0018	2430T-613	RFMZFI	Right Femur Force Z	Knee	13347.09544N	+	03/09/2001	OK	GSE	2430T
0019	A16K	HEDXG2	Head Accel X	Rwd	398.9869472G	+	03/12/2001	OK	Endevco	7231C
0020	A49D	HEDYG2	Head Accel Y	Lft	399.8844084G	+	03/12/2001	OK	Endevco	7231C
0021	APDA7	HEDZG2	Head Accel Z	Up	399.4382899G	+	03/12/2001	OK	Endevco	7231C
0022	1716-0533-FX	NEKXF2	Neck Force X	Hd	8898.583942N	+	03/12/2001	OK	Denton	1716
0023	1716-0533-FY	NEKYF2	Neck Force Y	Hd	8901.197111N	+	03/12/2001	OK	Denton	1716
0024	1716-0533-FZ	NEKZF2	Neck Force Z	Hd	13347.66869N	+	03/12/2001	OK	Denton	1716
0025	1716-0533-MX	NEKXM2	Neck Moment X	Rt Ear	282.5143154NM	+	03/12/2001	OK	Denton	1716
0026	1716-0533-MY	NEKYM2	Neck Moment Y	Chn	282.3057789NM	+	03/12/2001	OK	Denton	1716
0027	1716-0533-MZ	NEKZM2	Neck Moment Z	Chn	282.5130505NM	-	03/12/2001	OK	Denton	1716
0028	AH469	CSTXG2	Chest Accel X	Fwd	399.2015968G	+	03/12/2001	OK	Endevco	7231C
0029	C14318	CSTYG2	Chest Accel Y	Lft	399.9218902G	+	03/12/2001	OK	Endevco	7231C

Channel Report

0030	C14547	CSTZG2	Chest Accel Z	Dwn	399.2202729 G	+	03/12/2001	OK	616t	Endevco	7231C
0031	14CB1-2897-370	CSTXD2	Chest Deflection X	Strmn	100.5201722 MM	+	03/09/2001	OK	616t	Servo	14CB1-2897
0032	AH5A7	PEVXG2	Pelvis Accel X	Rwd	399.4632212 G	+	03/12/2001	OK	616t	Endevco	7231C
0033	A07G	PEVYG2	Pelvis Accel Y	Lft	401.3325494 G	+	03/12/2001	OK	616t	Endevco	7231C
0034	AD4G0	PEVZG2	Pelvis Accel Z	Up	398.8408687 G	+	03/12/2001	OK	616t	Endevco	7231C
0035	2430T-9432	LFMZF2	Left Femur Force Z S02	Knee	13348.47759 N	+	03/12/2001	OK	616t	GSE	2430T
0036	2430T-609	RFMZG2	Right Femur Force Z 520	Knee	13346.41560 N	+	03/12/2001	OK	616t	GSE	2430T
0037	J31698	VCGXG1	VEHICLE CG X-axis	RR	401.6883463 G	+	03/22/2001	OK	-1	Endevco	7264-2000TZ
0038	J36574	VCGYG1	VEHICLE CG Y-axis	RT	399.1191316 G	+	03/30/2001	OK	-1	Endevco	7264-2000TZ
0039	J22075	VCGZG1	VEHICLE CG Z-axis	UP	400.4473748 G	+	03/08/2001	OK	-1	Endevco	7264-2000TZ
0040	J36584	FTUXG1	FLOOR TUNNEL X-axis	FWD	401.4363895 G	+	01/15/2001	OK	-1	Endevco	7264-2000TZ
0041	J36271	FTUYG1	FLOOR TUNNEL Y-axis	LT	398.3071944 G	+	01/15/2001	OK	-1	Endevco	7264-2000TZ
0048	A84J	FTUZG1	FLOOR TUNNEL Z-axis	UP	399.5006242 G	+	12/01/2000	OK	-1	Endevco	7264-2000TZ
0049	J36108	LBPXG1	LEFT B-Pillar X-axis Accel	RR	987.9592466 G	+	02/20/2001	OK	-1	Endevco	7264-2000TZ
0050	J30377	LBPYG1	LEFT B-Pillar Y-axis Accel	RT	1008.648371 G	+	12/12/2000	OK	-1	Endevco	7264-2000TZ
0051	J35077	LPBZG1	LEFT B-Pillar Z-axis Accel	UP	989.6205810 G	+	11/21/2000	OK	-1	Endevco	7264-2000TZ
0052	CL95H	RBPXG1	RIGHT B-Pillar X-axis Accel	FWD	1012.978790 G	+	11/30/2000	OK	-1	Endevco	7264-2000TZ
0053	J29684	RBPYG1	RIGHT B-Pillar Y-axis Accel	LT	994.6479393 G	+	12/08/2000	OK	-1	Endevco	7264-2000TZ
0054	J29154	RBPZG1	RIGHT B-Pillar Z-axis Accel	UP	996.4191187 G	+	11/30/2000	OK	-1	Endevco	7264-2000TZ
0058	J36280	LFDXG1	LEFT Inner Door X-axis Accel	RR	1995.167952 G	+	01/15/2001	OK	-1	Endevco	7264-2000TZ
0060	J36236	LFDYG1	LEFT Inner Door Y-axis Accel	RT	1001.290726 G	+	01/15/2001	OK	-1	Endevco	7264-2000TZ
0061	J36221	LFDZG1	LEFT Inner Door Z-axis Accel	DWN	999.6875976 G	+	01/15/2001	OK	-1	Endevco	7264-2000TZ
0062	J30402	RFDXG1	RIGHT Inner Door X-axis Accel	FWD	1003.331373 G	+	12/04/2000	OK	-1	Endevco	7264-2000TZ
0063	J38164	RFDYG1	RIGHT Inner Door Y-axis Accel	LT	984.6721926 G	+	03/27/2001	OK	-1	Endevco	7264-2000TZ
0064	J27226	RFDZG1	RIGHT Inner Door Z-axis Accel	DWN	999.9023532 G	+	12/01/2000	OK	-1	Endevco	7264-2000TZ
0065	ARS-01-193	CGAXG1	Vehicle CG roll Angular Accel	Count	3944.530046 DEG/SEC	+	04/10/1994	---	-1	ATA	ARS-01
0066	ARS-01-195	CGAYG1	Vehicle CG Pitch Angular Accel	Nose	4387.693889 DEG/SEC	+	04/10/1994	---	-1	ATA	ARS-01
0067	ARS-01-194	CGAZG1	Vehicle CG Yaw Angular Accel	Nose	3929.092164 DEG/SEC	+	04/10/1994	---	-1	ATA	ARS-01
0068	A37490	SFLZD1	Left Front Suspension Vert disp.		500.0263197 MM	+	04/10/2001	OK	-1	Celesco	PT-101-0050-111-1110
0069	A12889	SFRZD1	Right Front Suspension Vert		544.5166480 MM	+	03/09/2001	OK	-1	Celesco	PT-101-40A
0070	A35691	SRLZD1	Left Rear Suspension Vert disp.		500.5461192 MM	+	02/13/2001	OK	-1	Celesco	PT-101-0050-111-1110
0071	A60897	SRRZD1	Right Rear Suspension Vert disp.		463.2328849 MM	+	11/20/2000	OK	-1	Celesco	PT-101-0050-111-1110
0072	J35051	CRTXG1	CART FRAME RAIL X-AXIS	FWD	994.7348992 G	+	04/06/2001	OK	-1	Endevco	7264-2000TZ
0073	J34489	CRTXG2	CART FRAME RAIL X-AXIS	FWD	1001.839314 G	+	12/01/2000	OK	-1	Endevco	7264-2000TZ

Digital and System Channel Report

Name of Test		010412-1		System	K3600	Name of DAU	DAU0	description	Module Type
enabled	Channel	Short Name							
Yes	0500	DIG0		Type	dig0				KM3650 Sequencer
bit position	bit selector	short name		long name		description			
MSB = bit 15	1	EVENT		EVENT			170 ms		
bit 14	1	ABEVT1		Airbag event-drivers side			170 ms		
bit 13	1	ABEVT2		Airbag event-passengers side					
bit 12	0								
bit 11	0								
bit 10	0								
bit 09	0								
bit 08	0								
bit 07	0								
bit 06	0								
bit 05	0								
bit 04	0								
bit 03	0								
bit 02	0								
bit 01	0								
LSB = bit 00	0								

Dummy	617t	Type	HYBRID III 50TH	Description	TRC - 617 HYBRID III 50TH. CAL DUE 9-9-01 (DKS 3-12-01)				
Chsname	Location		Model	Name	Manufacturer	Sens./mV/V/U	Fullscale	Caldate	TRC Dir
HEDXG	Head Accel X		7231C	C13397	Endevco	0.02343 G	750	3/9/01	Rwd
HEDYG	Head Accel Y		7231C	A70D	Endevco	0.0196 G	750	3/9/01	Lft
HEDZG	Head Accel Z		7231C	C15285	Endevco	0.02027 G	750	3/9/01	Up
NEKXF	Neck Force X		1716	1716-0424-FX	Denton	0.000188772 N	8896.4	3/9/01	Hd Fd,Cst Rr
NEKYF	Neck Force Y		1716	1716-0424-FY	Denton	0.000178263 N	8896.4	3/9/01	Hd Lt,Cst Rt
NEKZF	Neck Force Z		1716	1716-0424-FZ	Denton	0.000086724 N	13344.6	3/9/01	Hd Up,Cst Dn
NEKXM	Neck Moment X		1716	1716-0424-MX	Denton	0.005775929 NM	282.5	3/9/01	Rt Ear to Rt Shld
NEKYM	Neck Moment Y		1716	1716-0424-MY	Denton	0.005895929 NM	282.5	3/9/01	Chn to Strum
NEKZM	Neck Moment Z		1716	1716-0424-MZ	Denton	0.00806407 NM	282.5	3/9/01	Chn to Lt Shld
CSTXG	Chest Accel X		7231C	AN4K8	Endevco	0.0179 G	750	3/9/01	Fwd
CSTYG	Chest Accel Y		7231C	C15223	Endevco	0.02065 G	750	3/9/01	Lft
CSTZG	Chest Accel Z		7231C	AN4K9	Endevco	0.02131 G	750	3/9/01	Dwn
CSTXD	Chest Deflection X		14CB1-2897	14CB1-2897-329	Servo	1.14595 M	100	3/9/01	Strum Away Frm Spn
PEVXG	Pelvis Accel X		7231C	AD4J4	Endevco	0.01929 G	750	3/9/01	Rwd
PEVYG	Pelvis Accel Y		7231C	AH5C0	Endevco	0.01897 G	750	3/9/01	Lft
PEVZG	Pelvis Accel Z		7231C	AD4I5	Endevco	0.01943 G	750	3/9/01	Up
LFMZG	Left Femur Force Z		2430T	2430T-889	GSE	0.000069739 N	13344	3/9/01	Knee Fd,Pel Rr
RFMZG	Right Femur Force Z	512	2430T	2430T-613	GSE	0.000063301 N	13344	3/9/01	Knee Fd,Pel Rr
!SHLXG	Shoulder Accel Left X		7264-2000TZ	A69JJ	Endevco	0.02704 G	2000	5/16/01	Rwd
!SHRXG	Shoulder Accel Right X		7264-2000TZ	AGRGS	Endevco	0.02247 G	2000	5/7/01	Rwd

Dummy	616t	Type	HYBRID III 50TH	Description	TRC - 616 HYBRID III 50TH. CAL DUE 9-9-01 (DKS 3-12-01)				
Chsname	Location		Model	Name	Manufacturer	Sens./mV/V/U	Fullscale	Caldate	TRC Dir
HEDXG	Head Accel X		7231C	A16K	Endevco	0.0177 G	750	3/12/01	Rwd
HEDYG	Head Accel Y		7231C	A49D	Endevco	0.01911 G	750	3/12/01	Lft
HEDZG	Head Accel Z		7231C	APDA7	Endevco	0.02465 G	750	3/12/01	Up
NEKXF	Neck Force X		1716	1716-0533-FX	Denton	0.000192111 N	8896.4	3/12/01	Hd Fd,Cst Rr
NEKYF	Neck Force Y		1716	1716-0533-FY	Denton	0.000183478 N	8896.4	3/12/01	Hd Lt,Cst Rt
NEKZF	Neck Force Z		1716	1716-0533-FZ	Denton	0.000086491 N	13344.6	3/12/01	Hd Up,Cst Dn
NEKXM	Neck Moment X		1716	1716-0533-MX	Denton	0.005790088 NM	282.5	3/12/01	Rt Ear to Rt Shld
NEKYM	Neck Moment Y		1716	1716-0533-MY	Denton	0.00590761 NM	282.5	3/12/01	Chn to Strum
NEKZM	Neck Moment Z		1716	1716-0533-MZ	Denton	0.008163539 NM	282.5	3/12/01	Chn to Lt Shld
CSTXG	Chest Accel X		7231C	AH469	Endevco	0.02004 G	750	3/12/01	Fwd
CSTYG	Chest Accel Y		7231C	C14318	Endevco	0.02845 G	750	3/12/01	Lft
CSTZG	Chest Accel Z		7231C	C14547	Endevco	0.027 G	750	3/12/01	Dwn
CSTXD	Chest Deflection X		14CB1-2897	14CB1-2897-370	Servo	1.13189 M	100	3/9/01	Strum Away Frm Spn
PEVXG	Pelvis Accel X		7231C	AH5A7	Endevco	0.01942 G	750	3/12/01	Rwd
PEVYG	Pelvis Accel Y		7231C	A07G	Endevco	0.0189 G	750	3/12/01	Lft
PEVZG	Pelvis Accel Z		7231C	AD4G0	Endevco	0.01916 G	750	3/12/01	Up
LFMZG	Left Femur Force Z S02		2430T	2430T-9432	GSE	0.000069866 N	13344.6	3/12/01	Knee Fd,Pel Rr
RFMZG	Right Femur Force Z 520		2430T	2430T-609	GSE	0.000066142 N	13344	3/12/01	Knee Fd,Pel Rr
SHLXG	Shoulder Left Accel X		7264-2000TZ	A34FJ	Endevco	0.02564 G	2000	11/21/00	Rwd
SHRXG	Shoulder Right Accel X		7264-2000TZ	CY31H	Endevco	0.0204 G	2000	9/12/01	Rwd