TRC TEST NUMBER: 961210

V2514

Report Prepared by:

Jason D. Jenkins — Date: 02/27/97
Project Engineer

Report Approved by:

Jeffery W. Sankey — Date: 2/27/97
Manager, Project Operations
Transportation Research Center Inc.

Final Report Accepted by:

Steve Duffy — Date: 6/12/97
Project Engineer
Vehicle Research & Test Center

Negatives and proof sheets were sent with report.

Inflatable Tubular Structure Evaluation
In A Controlled 30 mph Rollover Crash
1994 Ford Explorer
Test No. 961210

Prepared by:
Transportation Research Center Inc.
10820 State Route 347
East Liberty, OH 43319

December 1996 - February 1997
Test Report

Prepared for:
Vehicle Research and Test Center
P. O. Box 37
East Liberty, OH 43319

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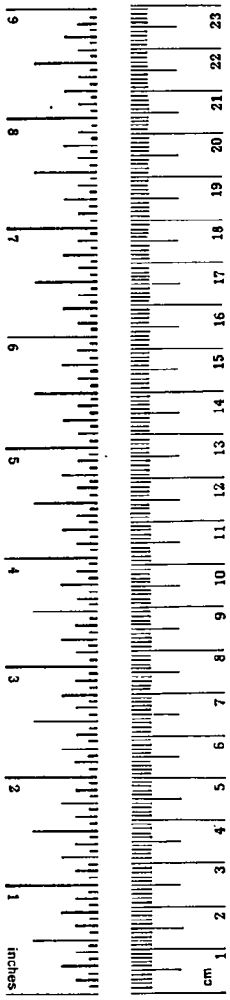
METRIC CONVERSION FACTORS

Approximate Conversions to Metric Measures

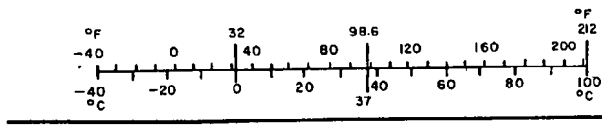
Symbol	When You Know	Multiply by	To Find	Symbol
		LENGTH		
in	inches	*2.5	centimeters	cm
ft	feet	30	centimeters	cm
yd	yards	0.9	meters	m
mi	miles	1.6	kilometers	km
		AREA		
in^2	square inches	6.5	square centimeters	cm^2
ft^2	square feet	0.09	square meters	m^2
yd^2	square yards	0.8	square meters	m^2
mi^2	square miles	2.6	square kilometers	km^2
	acres	0.4	hectares	ha
		MASS (weight)		
oz	ounces	28	grams	g
lb	pounds	0.45	kilograms	kg
	short tons (2000 lb)	0.9	tonnes	t
		VOLUME		
tsp	teaspoons	5	milliliters	ml
Tbsp	tablespoons	15	milliliters	ml
fl oz	fluid ounces	30	milliliters	ml
c	cups	0.24	liters	l
pt	pints	0.47	liters	l
qt	quarts	0.95	liters	l
gal	gallons	3.8	liters	l
ft^3	cubic feet	0.03	cubic meters	m^3
yd^3	cubic yards	0.76	cubic meters	m^3
		TEMPERATURE (exact)		
°F	Fahrenheit temperature	5/9 (after subtracting 32)	Celsius temperature	°C

*1 in = 2.54 (exactly). For other exact conversions and more detailed tables, see NBS Misc. Publ. 286, Units of Weights and Measures, Price $2.25, SD Catalog No. C13.10:286.



Approximate Conversions from Metric Measures

Symbol	When You Know	Multiply by	To Find	Symbol
		LENGTH		
mm	millimeters	0.04	inches	in
cm	centimeters	0.4	inches	in
m	meters	3.3	feet	ft
m	meters	1.1	yards	yd
km	kilometers	0.6	miles	mi
		AREA		
cm^2	square centimeters	0.16	square inches	in^2
m^2	square meters	1.2	square yards	yd^2
km^2	square kilometers	0.4	square miles	mi^2
ha	hectares (10,000 m^2)	2.5	acres	
		MASS (weight)		
g	grams	0.035	ounces	oz
kg	kilograms	2.2	pounds	lb
t	tonnes (1000 kg)	1.1	short tons	
		VOLUME		
ml	milliliters	0.03	fluid ounces	fl oz
l	liters	2.1	pints	pt
l	liters	1.06	quarts	qt
l	liters	0.26	gallons	gal
m^3	cubic meters	35	cubic feet	ft^3
m^3	cubic meters	1.3	cubic yards	yd^3
		TEMPERATURE (exact)		
°C	Celsius temperature	9/5 (then add 32)	Fahrenheit temperature	°F



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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 2 3/4 rolls and came to rest on its right side. The rollover crash test was conducted by Transportation Research Center Inc. (TRC) in East Liberty, Ohio, on December 10, 1996.

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 and Optional Appendix C of Laboratory Procedure TP-208-09. The dummies were instrumented with head, chest, and pelvis triaxial accelerometers, chest triaxial angular velocity sensors, upper and lower six-axis neck load cells, and a chest deflection potentiometer. Both dummies were unrestrained.

The vehicle was instrumented with fifteen (15) accelerometers, three (3) rate gyroscopes, one (1) quartz angular velocity sensor, and four (4) suspension displacement potentiometers. The side airbags were instrumented with shoulder load cells. The rollover test device was instrumented with two (2) accelerometers.

The crash event was recorded by seventy-seven (77) channels of data on a K-T box data acquisition system. The analog data was digitally sampled at 10,000 samples per second. The data was digitally filtered as per SAE J211 OCT88.

The crash event was filmed by nine (9) high-speed motion picture cameras operating at approximately 500 frames per second, one (1) real-time panning motion picture camera, and one (1) high-speed panning camera operating at approximately 240 frames per second.

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

The event trigger signal was lost during the release stages of the cart. Due to this, time-zero was imposed by TRC personnel. Not enough pre-event time was collected to get the cart deceleration pulse.

The driver dummy's chest angular velocity Y-axis data channel, CSTYV1, recorded questionable data throughout the event.

The driver dummy's chest angular velocity Z-axis data channel, CSTZV1, recorded questionable data throughout the event.

The passenger dummy's chest angular velocity X-axis data channel, CSTXV2, recorded questionable data throughout the event.

The passenger dummy's chest angular velocity Y-axis data channel, CSTYV2, recorded questionable data throughout the event.

The passenger dummy's chest angular velocity Z-axis data channel, CSTZV2, recorded questionable data throughout the event.

The vehicle's wheel well angular velocity quartz rate sensor, SRRXV1, recorded questionable data throughout the event.

Table 1 Roll Cart Instrumentation Locations and Data Summary

No.	Location	X	Y	Z	Positive Direction	Negative Direction
1	Left frame rail Longitudinal	2300 mm	0 mm	310 mm	2.2 g @ 115.2 ms	2.7 g @ 8.5 ms
2	Left frame rail Redundant Longitudinal	2300 mm	0 mm	310 mm	2.3 g @ 115.2 ms	2.7 g @ 8.6 ms

Reference: X: + Forward from rear bumper
Y: + Leftward from vehicle centerline
Z: + Upward from ground level

Table 2 Final Resting Place of Vehicle, Parts, and Rollover Cart

Description of Vehicle	X, Distance[1]	Y, Distance[1]
Center of Gravity	102.5	
Description of Parts		
Left rear wheel separated and rested with an X distance of 61.5 feet.		
Description of Rollover Cart		
Left rear corner	1.1	
Right rear corner	1.1	
Left front corner	13.8	
Right front corner	13.8	

[1] Reference: +X: Forward From Release Block
+Y: Leftward From Center Release Block

All measurements are in feet.

Figure 1 Vehicle Pre-Test and Post-Test Measurement Points

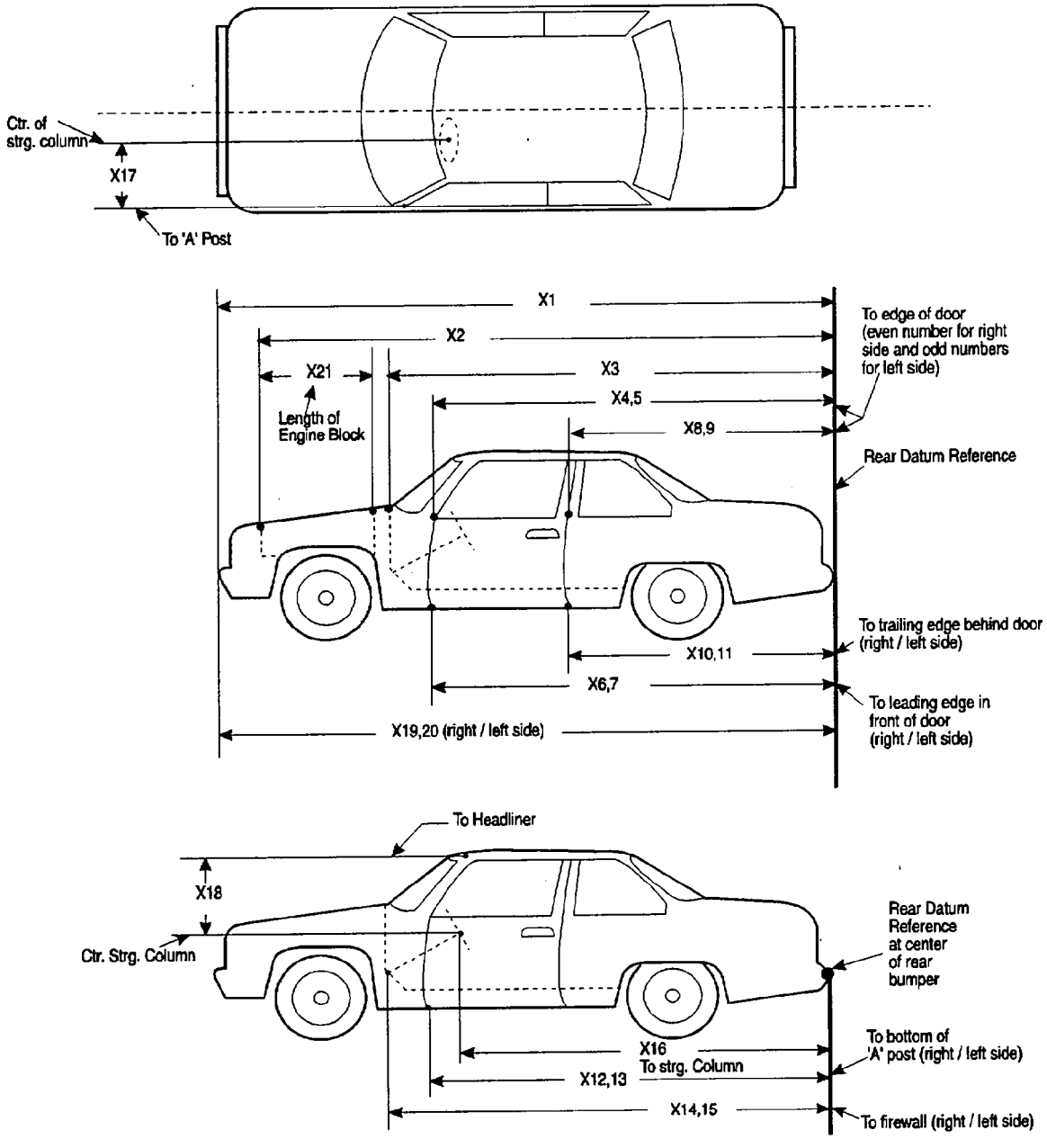


Table 3 Impacted Vehicle Measurements

Vehicle: 1994 Ford Explorer Test Number: 961210-1

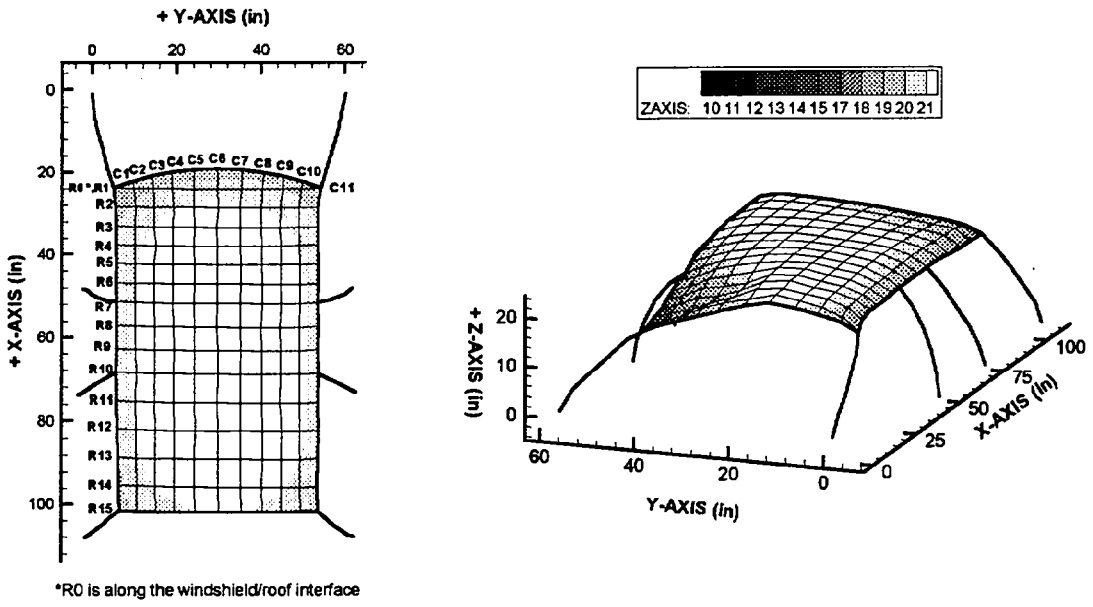
No.	Type of Measurement	Pre-test	Post-test	Difference
X1	Total length of vehicle at centerline	4444 mm	4455 mm	-11 mm
X2	Rear surface of vehicle to front of engine block	3894 mm	3803 mm	91 mm
X3	Rear surface of vehicle to firewall	3400 mm	3335 mm	65 mm
X4	Rear surface of vehicle to upper leading edge of right door	3116 mm	3096 mm	20 mm
X5	Rear surface of vehicle to upper leading edge of left door	3102 mm	3077 mm	25 mm
X6	Rear surface of vehicle to lower leading edge of right door	3045 mm	3049 mm	-4 mm
X7	Rear surface of vehicle to lower leading edge of left door	3055 mm	3082 mm	-27 mm
X8	Rear surface of vehicle to upper trailing edge of right door	1892 mm	1874 mm	18 mm
X9	Rear surface of vehicle to upper trailing edge of left door	1884 mm	1858 mm	26 mm
X10	Rear surface of vehicle to lower trailing edge of right door	1863 mm	1869 mm	-6 mm
X11	Rear surface of vehicle to lower trailing edge of left door	1879 mm	1877 mm	2 mm
X12	Rear surface of vehicle to bottom of "A" post on right side	3048 mm	3034 mm	14 mm
X13	Rear surface of vehicle to bottom of "A" post on left side	3044 mm	3033 mm	11 mm
X14	Rear surface of vehicle to firewall - right side	3360 mm	3318 mm	42 mm
X15	Rear surface of vehicle to firewall - left side	3362 mm	3314 mm	48 mm
X16	Rear surface of vehicle to steering wheel center	2604 mm	2649 mm	-45 mm
X17	Center of steering column to "A" post	315 mm	400 mm	-85 mm

Table 3 Impacted Vehicle Measurements, Cont'd.

Vehicle: 1994 Ford Explorer Test Number: 961210-1

No.	Type of Measurement	Pre-test	Post-test	Difference
X18	Center of steering column to headliner	440 mm	540 mm	-100 mm
X19	Rear surface of vehicle to right side of front bumper	4383 mm	4375 mm	8 mm
X20	Rear surface of vehicle to left side of front bumper	4385 mm	4410 mm	-25 mm
X21	Length of engine block	360 mm	360 mm	0 mm

Figure 2 Vehicle Roof Exterior Profiles
(Pre-Test and Post-Test Measurement Points)



*R0 is along the windshield/roof interface

Table 4 Vehicle Roof Crush Measurements

Pre-Test Profile *Distance in Inches from Reference Point* **			Post-Test Profile *Distance in Inches from Reference Point* **			Static Crush*** *(Difference)*		
X-AXIS	Y-AXIS	Z-AXIS	X-AXIS	Y-AXIS	Z-AXIS	X-AXIS	Y-AXIS	Z-AXIS
			Left A-Pillar					
0	0	0	0	0	0	0	0	0
3.93	0.39	3.58	4.01	0.2	3.53	0.08	-0.19	-0.05
7.76	1.23	7.1	7.91	0.15	6.73	0.15	-1.08	-0.37
11.55	2.46	10.52	11.75	0.33	10.21	0.2	-2.13	-0.31
15.49	3.49	13.8	15.58	0.65	13.48	0.09	-2.84	-0.32
			Right A-Pillar					
0	60.07	0.25	-0.09	57.82	0	-0.09	-2.25	-0.25
4.08	59.17	4.04	4.18	56.42	3.49	0.1	-2.75	-0.55
8.13	58.28	7.55	8.07	53.94	6.32	-0.06	-4.34	-1.23
11.99	56.97	10.96	11.95	51.61	8.89	-0.04	-5.36	-2.07
15.91	55.7	14.23	15.93	49.33	11.36	0.02	-6.37	-2.87
			Left B-Pillar					
47.88	-2.1	-2.75	47.51	-5.09	-3.46	-0.37	-2.99	-0.71
47.56	-0.89	1.83	47.97	-4.22	1.22	0.41	-3.33	-0.61
47.55	-0.12	6.42	47.81	-3.32	5.74	0.26	-3.2	-0.68
47.56	1.26	10.93	47.81	-1.61	10.21	0.25	-2.87	-0.72
47.29	3.03	15.27	47.41	0.41	14.46	0.12	-2.62	-0.81
			Right B-Pillar					
47.72	61.89	-2.5	47.27	59.39	-1.87	-0.45	-2.5	0.63
47.72	60.92	2.06	46.87	58.55	2.6	-0.85	-2.37	0.54
47.62	59.91	6.69	46.86	56.75	7.05	-0.76	-3.16	0.36
47.51	58.4	11.2	46.58	54.47	11.35	-0.93	-3.93	0.15
47.43	56.47	15.6	46.4	51.49	15.06	-1.03	-4.98	-0.54
			Left C-Pillar					
73.56	-3.3	-2.5	73.59	-5.25	-3.5	0.03	-1.95	-1
71.95	-1.76	2.05	72.12	-4.4	1.04	0.17	-2.64	-1.01
70.04	-0.02	6.59	70.33	-2.81	5.44	0.29	-2.79	-1.15
68.17	1.51	11.06	68.36	-0.76	9.77	0.19	-2.27	-1.29
66.4	3.22	15.4	66.73	1.34	13.97	0.33	-1.88	-1.43
			Right C-Pillar					
72.93	62.59	-2.22	72.73	59.87	-1.04	-0.2	-2.72	1.18
71.5	61.34	2.39	71.15	58.61	3.5	-0.35	-2.73	1.11
70	59.93	6.88	69.11	56.87	7.82	-0.89	-3.06	0.94
68.29	58.25	11.27	67.28	54.92	12.08	-1.01	-3.33	0.81
66.64	56.39	15.64	65.52	52.86	16.24	-1.12	-3.53	0.6
			Left D-Pillar					
107.75	-1.67	-2.37	108.12	-4.43	-3.5	0.37	-2.76	-1.13
106.47	-0.82	1.77	106.81	-3.63	0.72	0.34	-2.81	-1.05
104.28	0.87	6.2	104.92	-1.56	4.97	0.64	-2.43	-1.23
102.34	2.35	10.5	102.61	0.32	8.98	0.27	-2.03	-1.52
99.99	4.11	14.57	100.29	2.33	12.92	0.3	-1.78	-1.65
			Right D-Pillar					
107.39	62.08	-2.24	107.43	59.45	-0.14	0.04	-2.63	2.1
106.19	60.64	2.04	105.96	57.51	4.1	-0.23	-3.13	2.06
104.47	59.27	6.43	103.97	56.32	8.47	-0.5	-2.95	2.04
102.48	57.57	10.65	101.7	54.87	12.59	-0.78	-2.7	1.94
100.15	55.77	14.73	99.39	53.22	16.7	-0.76	-2.55	1.97

Table 4 Vehicle Roof Crush Measurements, Cont'd.

Roof Top

R_0C_1	19.91	5.18	16.99	19.81	1.86	16.09	-0.1	-3.32	-0.9
R_0C_2	18.21	9.7	17.54	18.32	5.21	18.51	0.11	-4.49	0.97
R_0C_3	16.88	14.24	17.81	16.85	9.48	19.92	-0.03	-4.76	2.11
R_0C_4	15.9	18.87	18.01	15.72	13.91	21.02	-0.18	-4.96	3.01
R_0C_5	15.27	24.12	18.12	15.03	19.05	21.87	-0.24	-5.07	3.75
R_0C_6	14.99	29.72	18.15	14.62	24.59	20.78	-0.37	-5.13	2.63
R_0C_7	15.33	35.46	18.17	14.94	29.99	19.06	-0.39	-5.47	0.89
R_0C_8	16.01	40.64	18.12	15.56	35.04	17.34	-0.45	-5.6	-0.78
R_0C_9	16.97	45.29	17.95	16.49	39.3	15.8	-0.48	-5.99	-2.15
R_0C_{10}	18.29	49.82	17.67	17.9	43.53	14.19	-0.39	-6.29	-3.48
R_0C_{11}	20.06	54.28	17.22	19.99	46.79	12.55	-0.07	-7.49	-4.67
R_1C_1	19.86	5.13	16.98	19.79	1.8	16.14	-0.07	-3.33	-0.84
R_1C_2	19.84	9.88	18.22	19.99	5.35	18.96	0.15	-4.53	0.74
R_1C_3	19.75	14.38	18.92	19.85	9.63	20.56	0.1	-4.75	1.64
R_1C_4	19.71	19.01	19.36	19.71	14.2	21.52	0	-4.81	2.16
R_1C_5	19.71	24.13	19.65	19.6	19.21	22.33	-0.11	-4.92	2.68
R_1C_6	19.73	29.71	19.77	19.61	24.73	21.01	-0.12	-4.98	1.24
R_1C_7	19.7	35.38	19.68	19.46	30.1	19.82	-0.24	-5.28	0.14
R_1C_8	19.76	40.32	19.43	19.46	34.91	18.16	-0.3	-5.41	-1.27
R_1C_9	19.85	45.06	19.02	19.6	39.12	16.2	-0.25	-5.94	-2.82
R_1C_{10}	19.98	49.6	18.37	19.71	43.44	14.62	-0.27	-6.16	-3.75
R_1C_{11}	20.03	54.25	17.2	19.97	46.99	12.59	-0.06	-7.26	-4.61
R_2C_1	24.28	5.58	18.33	24.59	2.85	17.53	0.31	-2.73	-0.8
R_2C_2	24.15	10.36	19.27	24.33	5.8	19.72	0.18	-4.56	0.45
R_2C_3	24.14	14.67	19.71	24.15	10.02	21.13	0.01	-4.65	1.42
R_2C_4	24.15	19.21	19.98	24.13	14.51	21.77	-0.02	-4.7	1.79
R_2C_5	24.14	24.23	20.2	24.07	19.34	22.47	-0.07	-4.89	2.27
R_2C_6	24.17	29.77	20.27	23.9	24.88	21.86	-0.27	-4.89	1.59
R_2C_7	24.23	35.07	20.22	23.91	29.84	19.79	-0.32	-5.23	-0.43
R_2C_8	24.26	40.06	20.07	23.99	34.52	18.22	-0.27	-5.54	-1.85
R_2C_9	24.31	44.66	19.84	23.93	38.59	16.44	-0.38	-6.07	-3.4
R_2C_{10}	24.35	49.07	19.43	23.93	42.96	15.46	-0.42	-6.11	-3.97
R_2C_{11}	24.5	53.69	18.53	23.94	46.54	14.24	-0.56	-7.15	-4.29
R_3C_1	28.8	5.74	18.84	29.11	2.76	18.17	0.31	-2.98	-0.67
R_3C_2	28.8	10.22	19.75	29.04	5.8	20.03	0.24	-4.42	0.28
R_3C_3	28.85	14.67	20.09	28.92	10.11	21.35	0.07	-4.56	1.26
R_3C_4	28.85	19.16	20.32	28.84	14.59	21.96	-0.01	-4.57	1.64
R_3C_5	28.86	24.29	20.49	28.68	19.46	22.85	-0.18	-4.83	2.36
R_3C_6	28.91	29.59	20.55	28.58	25.1	22.25	-0.33	-4.49	1.7
R_3C_7	28.95	35.11	20.53	28.65	29.96	19.92	-0.3	-5.15	-0.61
R_3C_8	28.98	40	20.4	28.57	34.66	18.44	-0.41	-5.34	-1.96
R_3C_9	29.02	44.6	20.24	28.47	38.94	17.71	-0.55	-5.66	-2.53
R_3C_{10}	29.08	49	19.91	28.46	43.07	15.92	-0.62	-5.93	-3.99
R_3C_{11}	29.11	53.68	19.01	28.4	46.58	14.79	-0.71	-7.1	-4.22
R_4C_1	33.39	5.68	18.99	33.54	2.91	18.06	0.15	-2.77	-0.93
R_4C_2	33.39	10.16	19.93	33.52	6	20.1	0.13	-4.16	0.17
R_4C_3	33.4	15.03	20.47	33.38	10.2	21.44	-0.02	-4.83	0.97
R_4C_4	33.42	19.13	20.53	33.24	14.7	22.04	-0.18	-4.43	1.51
R_4C_5	33.45	24.2	20.66	33.18	19.57	22.88	-0.27	-4.63	2.22
R_4C_6	33.44	29.66	20.74	33.03	25.25	22.53	-0.41	-4.41	1.79
R_4C_7	33.5	35.16	20.69	33.08	30.28	20.34	-0.42	-4.88	-0.35
R_4C_8	33.5	40.22	20.61	32.96	35.18	19.33	-0.54	-5.04	-1.28
R_4C_9	33.5	44.68	20.45	32.84	39.51	18.55	-0.66	-5.17	-1.9
R_4C_{10}	33.49	49.14	20.08	32.9	43.54	16.67	-0.59	-5.6	-3.41
R_4C_{11}	33.48	53.65	19.15	32.8	47.14	15.44	-0.68	-6.51	-3.71
R_5C_1	37.89	5.78	19.01	38.11	2.93	18.1	0.22	-2.85	-0.91
R_5C_2	37.9	10.14	19.94	38.03	6.08	20.1	0.13	-4.06	0.16
R_5C_3	37.93	14.63	20.37	37.96	10.29	21.58	0.03	-4.34	1.21
R_5C_4	37.96	19.2	20.59	37.84	14.82	22.19	-0.12	-4.38	1.6
R_5C_5	37.96	24.34	20.74	37.74	19.71	23	-0.22	-4.63	2.26
R_5C_6	37.99	29.71	20.82	37.64	25.31	22.79	-0.35	-4.4	1.97
R_5C_7	38.05	35.33	20.78	37.55	30.54	21.36	-0.5	-4.79	0.58
R_5C_8	38.08	40.27	20.69	37.44	35.51	20.26	-0.64	-4.76	-0.43
R_5C_9	38.1	44.75	20.58	37.41	39.83	19.27	-0.69	-4.92	-1.31

Table 4 Vehicle Roof Crush Measurements, Cont'd.

R_5C_{10}	38.19	49.31	20.18	37.44	43.84	17.33	-0.75	-5.47	-2.85
R_5C_{11}	38.2	53.81	19.27	37.29	47.56	16.21	-0.91	-6.25	-3.06
R_6C_1	42.51	5.76	19.14	42.75	3.02	18.23	0.24	-2.74	-0.91
R_6C_2	42.49	10.19	20.03	42.65	6.18	20.16	0.16	-4.01	0.13
R_6C_3	42.55	14.62	20.49	42.56	10.41	21.69	0.01	-4.21	1.2
R_6C_4	42.56	19.2	20.72	42.48	14.84	22.28	-0.08	-4.36	1.56
R_6C_5	42.61	24.31	20.85	42.36	19.81	23.02	-0.25	-4.5	2.17
R_6C_6	42.61	29.65	20.93	42.24	25.5	22.78	-0.37	-4.15	1.85
R_6C_7	42.63	35.32	20.9	42.12	30.86	22.17	-0.51	-4.46	1.27
R_6C_8	42.66	40.3	20.84	42	35.82	21.16	-0.66	-4.48	0.32
R_6C_9	42.7	44.74	20.69	41.95	40.12	20.01	-0.75	-4.62	-0.68
R_6C_{10}	42.78	49.3	20.27	41.99	44.27	18.07	-0.79	-5.03	-2.2
R_6C_{11}	42.87	53.74	19.41	41.87	47.95	16.99	-1	-5.79	-2.42
R_7C_1	47.11	5.79	19.24	47.28	3.3	18.33	0.17	-2.49	-0.91
R_7C_2	47.11	10.17	20.14	47.27	6.4	20.08	0.16	-3.77	-0.06
R_7C_3	47.14	14.66	20.61	47.16	10.61	21.72	0.02	-4.05	1.11
R_7C_4	47.17	19.12	20.84	47.03	14.96	22.4	-0.14	-4.16	1.56
R_7C_5	47.23	24.24	20.97	47.01	19.92	22.98	-0.22	-4.32	2.01
R_7C_6	47.21	29.67	21.05	46.86	25.47	23.16	-0.35	-4.2	2.11
R_7C_7	47.28	35.21	21	46.74	31.04	22.64	-0.54	-4.17	1.64
R_7C_8	47.3	40.29	21	46.63	36.05	21.6	-0.67	-4.24	0.6
R_7C_9	47.37	44.8	20.78	46.53	40.32	20.59	-0.84	-4.48	-0.19
R_7C_{10}	47.42	49.27	20.35	46.55	44.59	18.93	-0.87	-4.68	-1.42
R_7C_{11}	47.34	53.68	19.45	46.51	48.18	17.33	-0.83	-5.5	-2.12
R_8C_1	52.8	5.79	19.3	52.9	3.45	18.18	0.1	-2.34	-1.12
R_8C_2	52.84	10.21	20.27	52.9	6.71	19.96	0.06	-3.5	-0.31
R_8C_3	52.86	14.75	20.72	52.83	10.88	21.61	-0.03	-3.87	0.89
R_8C_4	52.87	19.22	20.96	52.76	15.23	22.21	-0.11	-3.99	1.25
R_8C_5	52.98	24.27	21.08	52.67	20.24	22.75	-0.31	-4.03	1.67
R_8C_6	52.98	29.59	21.16	52.63	25.61	22.99	-0.35	-3.98	1.83
R_8C_7	53	35.17	21.13	52.43	31.22	22.75	-0.57	-3.95	1.62
R_8C_8	53.06	40.13	21.06	52.27	36.33	21.97	-0.79	-3.8	0.91
R_8C_9	53.09	44.6	20.88	52.22	40.56	21.18	-0.87	-4.04	0.3
R_8C_{10}	53.12	49.09	20.46	52.15	44.83	19.67	-0.97	-4.26	-0.79
R_8C_{11}	53.09	53.74	19.52	52.1	48.73	18.32	-0.99	-5.01	-1.2
R_9C_1	58.48	5.83	19.23	58.62	3.62	18.11	0.14	-2.21	-1.12
R_9C_2	58.53	10.39	20.28	58.65	6.82	20.12	0.12	-3.57	-0.16
R_9C_3	58.54	14.87	20.69	58.55	11.07	21.54	0.01	-3.8	0.85
R_9C_4	58.58	19.35	20.94	58.47	15.44	22.08	-0.11	-3.91	1.14
R_9C_5	58.59	24.3	21.08	58.4	20.39	22.52	-0.19	-3.91	1.44
R_9C_6	58.62	29.86	21.17	58.29	25.93	22.86	-0.33	-3.93	1.69
R_9C_7	58.68	35.27	21.15	58.12	31.53	22.79	-0.56	-3.74	1.64
R_9C_8	58.77	40.2	21.07	58.06	36.48	22.28	-0.71	-3.72	1.21
R_9C_9	58.85	44.71	20.89	58.01	40.82	21.64	-0.84	-3.89	0.75
R_9C_{10}	58.86	49.16	20.53	57.81	45.14	20.48	-1.05	-4.02	-0.05
R_9C_{11}	58.83	53.67	19.55	57.75	49.13	19.08	-1.08	-4.54	-0.47
$R_{10}C_1$	64.2	5.76	19.25	64.36	3.71	17.96	0.16	-2.05	-1.29
$R_{10}C_2$	64.24	10.4	20.34	64.31	7.02	20.07	0.07	-3.38	-0.27
$R_{10}C_3$	64.22	14.85	20.74	64.25	11.25	21.4	0.03	-3.6	0.66
$R_{10}C_4$	64.29	19.31	20.98	64.15	15.7	21.88	-0.14	-3.61	0.9
$R_{10}C_5$	64.36	24.27	21.13	64	20.67	22.32	-0.36	-3.6	1.19
$R_{10}C_6$	64.35	29.79	21.2	63.95	26.1	22.66	-0.4	-3.69	1.46
$R_{10}C_7$	64.46	35.12	21.17	63.83	31.54	22.74	-0.63	-3.58	1.57
$R_{10}C_8$	64.51	40.21	21.08	63.77	36.49	22.42	-0.74	-3.72	1.34
$R_{10}C_9$	64.52	44.64	20.9	63.57	40.95	21.92	-0.95	-3.69	1.02
$R_{10}C_{10}$	64.58	49.08	20.55	63.58	45.32	21.04	-1	-3.76	0.49
$R_{10}C_{11}$	64.57	53.81	19.48	63.48	49.6	19.52	-1.09	-4.21	0.04
$R_{11}C_1$	70.99	5.81	19.2	71.05	3.65	18.01	0.06	-2.16	-1.19
$R_{11}C_2$	70.94	10.35	20.3	71.08	7.1	19.99	0.14	-3.25	-0.31
$R_{11}C_3$	71	14.85	20.72	71.03	11.48	21.11	0.03	-3.37	0.39
$R_{11}C_4$	71.07	19.27	20.95	70.95	15.8	21.59	-0.12	-3.47	0.64
$R_{11}C_5$	71.07	24.27	21.12	70.83	20.68	22.03	-0.24	-3.59	0.91
$R_{11}C_6$	71.12	29.66	21.18	70.75	26.18	22.37	-0.37	-3.48	1.19
$R_{11}C_7$	71.2	35.1	21.14	70.6	31.61	22.52	-0.6	-3.49	1.38
$R_{11}C_8$	71.25	40.22	21.06	70.51	36.79	22.42	-0.74	-3.43	1.36

Table 4 Vehicle Roof Crush Measurements, Cont'd.

$R_{11}C_9$	71.31	44.61	20.86	70.42	41.09	22.09	-0.89	-3.52	1.23
$R_{11}C_{10}$	71.35	49.15	20.49	70.28	45.58	21.45	-1.07	-3.57	0.96
$R_{11}C_{11}$	71.4	53.68	19.43	70.17	49.85	20.05	-1.23	-3.83	0.62
$R_{12}C_1$	77.58	6	18.98	77.58	3.82	17.39	0	-2.18	-1.59
$R_{12}C_2$	77.62	10.51	20.16	77.67	7.31	19.65	0.05	-3.2	-0.51
$R_{12}C_3$	77.66	14.96	20.55	77.62	11.7	20.61	-0.04	-3.26	0.06
$R_{12}C_4$	77.68	19.45	20.8	77.5	16.16	21.13	-0.18	-3.29	0.33
$R_{12}C_5$	77.73	24.44	20.97	77.42	21.08	21.56	-0.31	-3.36	0.59
$R_{12}C_6$	77.82	29.84	21.04	77.3	26.56	21.89	-0.52	-3.28	0.85
$R_{12}C_7$	77.77	35.19	21	77.15	31.98	22.12	-0.62	-3.21	1.12
$R_{12}C_8$	77.86	40.42	20.88	77.06	37.06	22.15	-0.8	-3.36	1.27
$R_{12}C_9$	77.89	44.9	20.68	76.94	41.53	22.01	-0.95	-3.37	1.33
$R_{12}C_{10}$	77.97	49.24	20.32	76.91	46.04	21.56	-1.06	-3.2	1.24
$R_{12}C_{11}$	77.96	53.76	19.23	76.81	50.3	20.15	-1.15	-3.46	0.92
$R_{13}C_1$	84.3	6.12	18.82	84.34	3.98	17.09	0.04	-2.14	-1.73
$R_{13}C_2$	84.34	10.53	19.97	84.43	7.52	19.35	0.09	-3.01	-0.62
$R_{13}C_3$	84.37	14.92	20.36	84.27	12	20.13	-0.1	-2.92	-0.23
$R_{13}C_4$	84.4	19.38	20.6	84.21	16.36	20.63	-0.19	-3.02	0.03
$R_{13}C_5$	84.43	24.34	20.77	84.12	21.27	21.1	-0.31	-3.07	0.33
$R_{13}C_6$	84.47	29.83	20.85	84.03	26.83	21.51	-0.44	-3	0.66
$R_{13}C_7$	84.5	35.3	20.81	83.87	32.24	21.74	-0.63	-3.06	0.93
$R_{13}C_8$	84.6	40.3	20.67	83.8	37.29	21.88	-0.8	-3.01	1.21
$R_{13}C_9$	84.63	44.87	20.46	83.7	41.66	21.85	-0.93	-3.21	1.39
$R_{13}C_{10}$	84.68	49.33	20.08	83.62	46.23	21.56	-1.06	-3.1	1.48
$R_{13}C_{11}$	84.66	53.67	19	83.48	50.51	20.26	-1.18	-3.16	1.26
$R_{14}C_1$	91.03	6.23	18.6	91.06	4.17	16.81	0.03	-2.06	-1.79
$R_{14}C_2$	91.03	10.55	19.73	91.1	7.77	18.95	0.07	-2.78	-0.78
$R_{14}C_3$	91.09	14.97	20.08	91.01	12.2	19.5	-0.08	-2.77	-0.58
$R_{14}C_4$	91.12	19.42	20.3	90.89	16.65	20.02	-0.23	-2.77	-0.28
$R_{14}C_5$	91.15	24.31	20.47	90.83	21.45	20.53	-0.32	-2.86	0.06
$R_{14}C_6$	91.3	29.84	20.67	90.76	27.09	20.98	-0.54	-2.75	0.31
$R_{14}C_7$	91.27	35.28	20.5	90.63	32.43	21.26	-0.64	-2.85	0.76
$R_{14}C_8$	91.3	40.24	20.36	90.57	37.59	21.5	-0.73	-2.65	1.14
$R_{14}C_9$	91.38	44.8	20.16	90.5	41.96	21.57	-0.88	-2.84	1.41
$R_{14}C_{10}$	91.46	49.25	19.83	90.44	46.48	21.45	-1.02	-2.77	1.62
$R_{14}C_{11}$	91.39	53.52	18.74	90.23	50.67	20.26	-1.16	-2.85	1.52
$R_{15}C_1$	97.53	6.56	18.31	97.54	4.3	16.56	0.01	-2.26	-1.75
$R_{15}C_2$	97.53	10.6	19.35	97.68	8.08	18.11	0.15	-2.52	-1.24
$R_{15}C_3$	97.58	15.08	19.69	97.62	12.46	18.77	0.04	-2.62	-0.92
$R_{15}C_4$	97.64	19.55	19.9	97.59	16.8	19.31	-0.05	-2.75	-0.59
$R_{15}C_5$	97.68	24.44	20.04	97.45	21.82	19.87	-0.23	-2.62	-0.17
$R_{15}C_6$	97.71	29.9	20.11	97.43	27.28	20.35	-0.28	-2.62	0.24
$R_{15}C_7$	97.72	35.46	20.08	97.19	32.67	20.73	-0.53	-2.79	0.65
$R_{15}C_8$	97.69	40.39	19.97	97.07	37.74	21	-0.62	-2.65	1.03
$R_{15}C_9$	97.74	44.88	19.8	96.92	42.13	21.17	-0.82	-2.75	1.37
$R_{15}C_{10}$	97.67	49.38	19.49	96.82	46.68	21.2	-0.85	-2.7	1.71
$R_{15}C_{11}$	97.68	53.57	18.41	96.75	50.86	20.24	-0.93	-2.71	1.83

** Reference point is located at the base of the left A-pillar (see Figure A-6)

*** Negative static crush values means vehicle structure is crushed

Section 3.0

General Test and Vehicle Parameter Data

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

Table 5 Test Vehicle Information

Vehicle:	1994 Ford Explorer			
Color:	Plum			
VIN:	1FMCU22X0RUA03487			
Engine data:				
Placement:	Inline			
Cylinders:	6			
Displacement:	4.0 liters			
Transmission data:	5 speed,	X manual,	__automatic,	_overdrive
Final drive:	__fwd,	X rwd,	_4wd	
Date vehicle received:	N/A			
Odometer reading:	41,378			
Dealer's name and address:	NA			

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	None		

Certification data from vehicle's label:

Vehicle manufactured by:		Ford Motor Company
Date of manufacture:		9/93
VIN:		1FMCU22X0RUA03487
GVWR:		4780 lbs.
GAWR:	Front:	2230 lbs.
	Rear:	2760 lbs.

Table 5 Test Vehicle Information, Cont'd.

Size of tires on vehicle:	P235/75R15
Spare tire:	P235/75R15
Type of seats:	
Front:	Bucket
Rear:	Bench

Tire & capacity data from vehicle's label:

Recommended tire size:	P235/75R15 SL
Recommended cold tire pressure:	
Front:	26 psi
Rear:	26 psi
Designated seating capacity:	
Front:	NA
Rear:	NA
Total:	NA
Vehicle capacity weight:	NA

Test vehicle attitudes:

Pre-test attitude:	LF: 800 mm	RF: 809 mm	LR: 797 mm	RR: 809 mm
Post-test attitude:	LF: 814 mm	RF: 794 mm	LR: 830 mm	RR: 896 mm

Table 5 Test Vehicle Information, Cont'd.

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

Right front	kg	Right rear	kg
Left front	kg	Left rear	kg
Total front weight	kg	(% of total vehicle weight)	
Total rear weight	kg	(% of total vehicle weight)	
Total delivered weight	kg		

Calculation of test vehicle's target test weight: N/A

RCLW[1] = Rated Cargo and Luggage Weight

UDW = Unloaded Delivered Weight (NA)

VCW = Vehicle Capacity Weight (NA)

DSC = Designated Seating Capacity (NA)

RCLW[1] = VCW - 150 (DSC) = 300

Target Test Weight = UDW + RCLW[1] + (No. of Hybrid III dummies X 167 lbs. per dummy)

Target Test Weight = 2212 kg (provided by VRTC)

Target Test Weight = 2212 kg

Weight of test vehicle with required dummies:

Right front	471	kg	Right rear	517	kg
Left front	459	kg	Left rear	507	kg
Total front weight	930	kg	(47.6 total vehicle weight)		
Total rear weight	1024	kg	(52.4 total vehicle weight)		
Total test weight	1954	kg			

Weight of ballast secured in vehicle: 0 kg

Components removed to meet target test weight: None

CG rearward of front wheel centerline: 1362 mm

Vehicle Wheelbase: 2600 mm

[1] Cargo weight for multi-purpose passenger vehicles, trucks, and buses is the vehicle's rated cargo and luggage weight from the vehicle's label or 300 pounds, whichever is less.

Table 6 Test Conditions

Test Number: 961210-1

Date of Test: 12/10/96

Time of Test: 1104

Ambient Temperature at Impact Area: 2.0° C

Temperature in Occupant Compartment: 21.7° C

Driver Dummy Temperature: 21.7° C

Vehicle and Roll Cart Data

	Actual	Intended
Vehicle Test Weight (kg.):	1954	N/A
Vehicle Orientation (C)[1]:	23	23
Impact Side:	Left	Left
Roll Cart Crabbed Angle (deg.)[2]:	0	0
Roll Cart Velocity (mph)[3]:	30.0	30.0

Vehicle Measurements:

Maximum Length:	4444 mm
Maximum Width:	1800 mm
Wheelbase:	2600 mm
Top Width:	N/A
C.G. Rearward of Front Wheel Centerline:	1362 mm
C.G. Height Above Ground Level:	N/A

[1] As measured on the roll cart with cylinder in rest position.
[2] As measured from roll cart's centerline to direction of travel (positive is clockwise).
[3] As measured over final one foot of travel.

Table 6 Test Conditions, Cont'd.

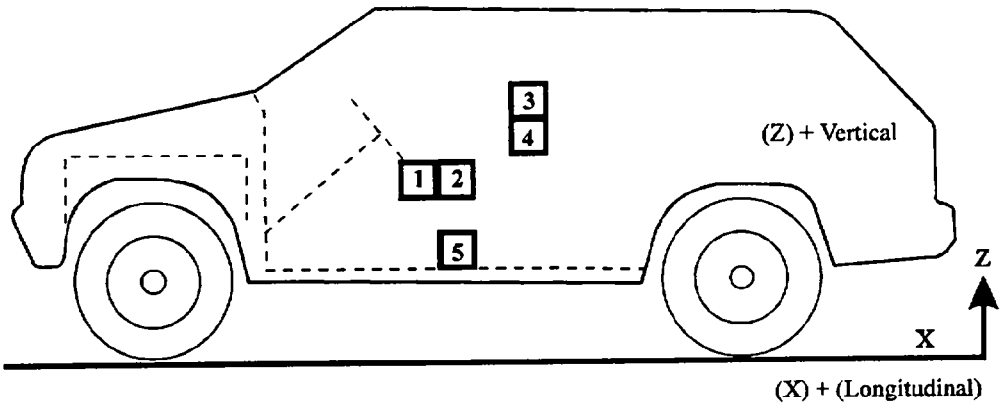
Vehicle Information:

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

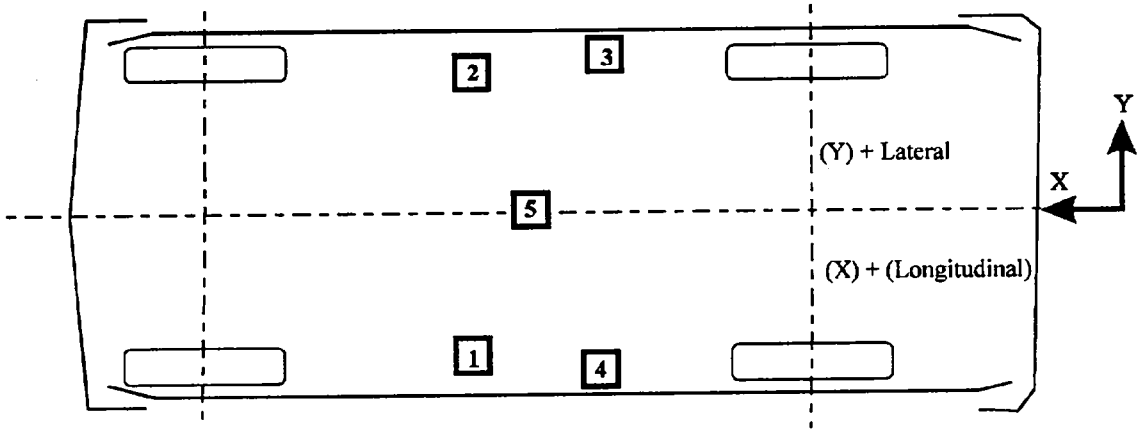
Dummy Information:

	Driver:	Passenger:
Type:	Part 572 E	Part 572 E
Position:	Left Front	Right Front
Serial No.:	090	045
Instrumentation:		
Head Accelerometers:	3	3
Neck Load Cells:		
Upper:	6	6
Lower:	6	6
Chest Accelerometers:	3	3
Chest Deflection Potentiometers:	1	1
Chest Angular Velocity Sensors:	3	3
Pelvis Accelerometers:	3	3
Restraint System:	Side Airbag	Side Airbag

Figure 3 Vehicle Instrumentation Locations



Side View



Bottom View

Table 7 Vehicle Instrumentation Locations and Data Summary

TEST NUMBER: 961210 No. LOCATION	X	Y	Z	POSITIVE DIRECTION		NEGATIVE DIRECTION	
1 RIGHT INNER DOOR PANEL	2120 mm	675 mm	788 mm				
LONGITUDINAL				11.8 g	@ 1569.5 ms	3.4 g	@ 696.1 ms
LATERAL				20.0 g	@ 273.4 ms	12.4 g	@ 1538.2 ms
VERTICAL				5.7 g	@ 1478.8 ms	8.8 g	@ 2115.9 ms
RESULTANT				20.3 g	@ 273.3 ms		
2 LEFT INNER DOOR PANEL	2120 mm	675 mm	738 mm				
LONGITUDINAL				6.6 g	@ 427.6 ms	5.8 g	@ 1516.1 ms
LATERAL				9.8 g	@ 969.3 ms	19.4 g	@ 459.2 ms
VERTICAL				18.4 g	@ 945.4 ms	8.0 g	@ 468.6 ms
RESULTANT				20.4 g	@ 470.0 ms		
3 LEFT B-PILLAR	1938 mm	710 mm	595 mm				
LONGITUDINAL				5.4 g	@ 939.3 ms	5.0 g	@ 1505.6 ms
LATERAL				15.2 g	@ 945.0 ms	17.0 g	@ 1468.7 ms
VERTICAL				18.5 g	@ 206.3 ms	5.9 g	@ 1481.6 ms
RESULTANT				20.5 g	@ 945.3 ms		
4 RIGHT B-PILLAR	1930 mm	710 mm	597 mm				
LONGITUDINAL				7.1 g	@ 211.9 ms	5.6 g	@ 945.5 ms
LATERAL				14.9 g	@ 940.2 ms	15.0 g	@ 212.1 ms
VERTICAL				7.5 g	@ 214.7 ms	7.3 g	@ 2120.5 ms
RESULTANT				17.2 g	@ 212.2 ms		
5 VEHICLE CENTER OF GRAVITY	1950 mm	0 mm	568 mm				
LONGITUDINAL				3.7 g	@ 217.3 ms	3.4 g	@ 747.0 ms
LATERAL				11.8 g	@ 943.2 ms	13.0 g	@ 211.1 ms
VERTICAL				10.6 g	@ 206.3 ms	5.2 g	@ 2276.8 ms

Table 7 Vehicle Instrumentation Locations and Data Summary, Cont'd.

TEST NUMBER: 961210 No. LOCATION	X	Y	Z	POSITIVE DIRECTION	NEGATIVE DIRECTION
6 VEHICLE CENTER OF GRAVITY	NA	NA	NA		
ROLL				6.3 rad/s @ 784.6 ms	1.8 rad/s @ 3983.7 ms
YAW				1.7 rad/s @ 1476.4 ms	2.8 rad/s @ 214.9 ms
PITCH				2.9 rad/s @ 1470.2 ms	2.2 rad/s @ 776.0 ms
7 VEHICLE CENTER OF GRAVITY (QUARTZ RATE SENSOR)	NA	NA	NA		
ROLL[1]				--- ---	--- ---

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

ROLL: + RIGHT
PITCH: + NOSE DOWNWARD
YAW: + COUNTERCLOCKWISE

[1] See DATA ACQUISITION EXPLANATIONS

Figure 4 Camera Locations

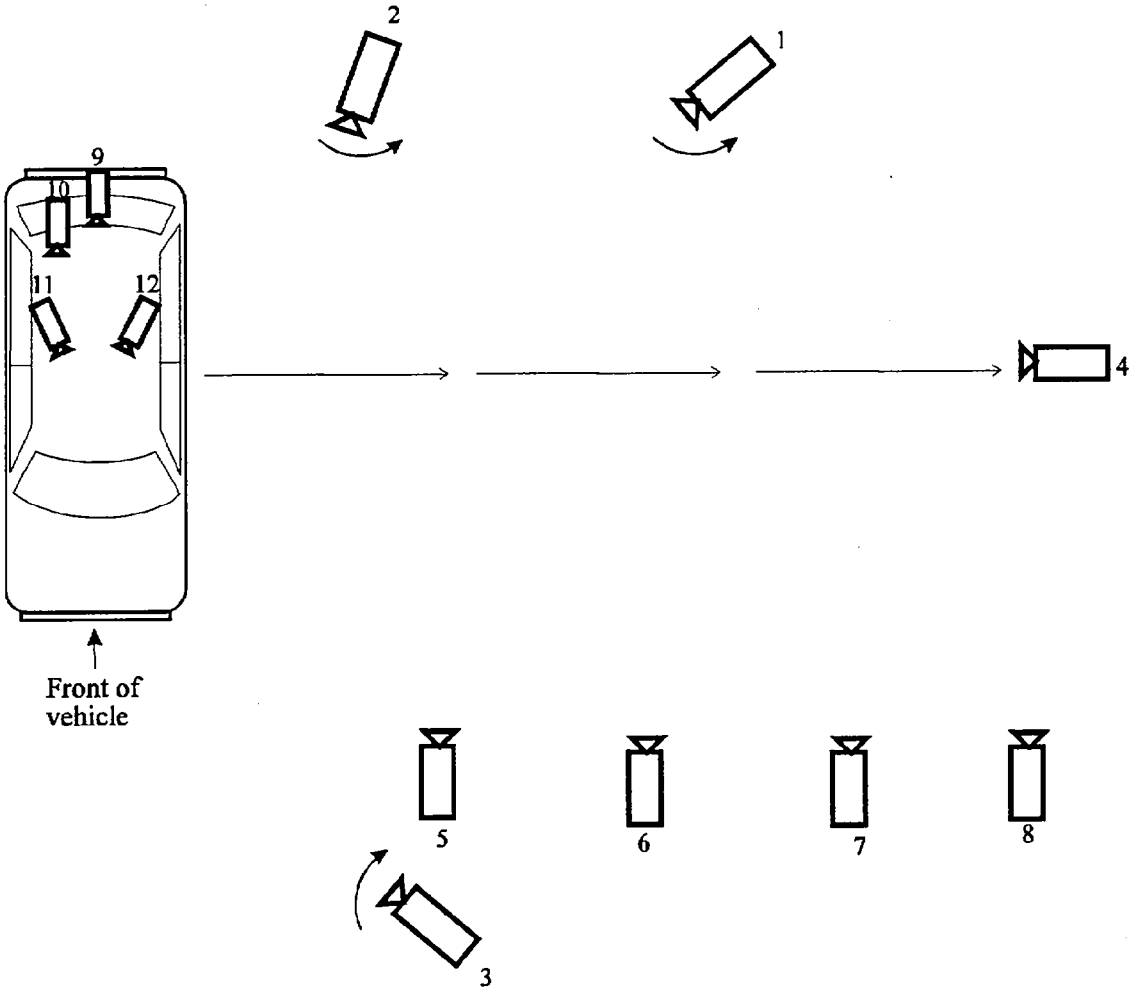


Table 8 Motion Picture Camera Information

Camera Number	Location	Type	Lens (mm)	Speed (fps)	Purpose of Camera Data
1	Low speed panning	Video	---	---	Real-time documentation
2	High speed panning	Photosonic	13	240	Vehicle dynamics
3	Regular panning	Bolex	12-120	24	Real-time documentation
4	Perpendicular to rollover	Photosonic	25	502	Vehicle dynamics
5	1st Rollover	Photosonic	13	505	Vehicle dynamics
6	2nd Rollover	Photosonic	13	502	Vehicle dynamics
7	3rd Rollover	Photosonic	13	475	Vehicle dynamics
8	4th Rollover	Photosonic	13	505	Vehicle dynamics
9	Onboard rear center	Photosonic	8	505	Dummy kinematics
10	Onboard rear driver	Photosonic	8	502	Dummy kinematics
11	Onboard driver	Photosonic	8	505	Dummy kinematics
12	Onboard passenger	Photosonic	8	495	Dummy kinematics

Section 4.0

Occupant Information

Table 9 Dummy Data Summary

TEST NUMBER: 961210 DRIVER DUMMY SERIAL NUMBER: 090

	POSITIVE DIRECTION			NEGATIVE DIRECTION		
HEAD ACCELERATION						
LONGITUDINAL	17.2 g	@	99.0 ms	10.8 g	@	1581.5 ms
LATERAL	13.9 g	@	1582.1 ms	29.2 g	@	454.1 ms
VERTICAL	8.6 g	@	243.8 ms	7.7 g	@	1659.4 ms
RESULTANT	30.7 g	@	454.5 ms			
HIC	26 from 450.4 to 460.4 ms					
NECK FORCE						
LONGITUDINAL	364.5 N	@	146.4 ms	561.2 N	@	1586.9 ms
LATERAL	591.8 N	@	1875.7 ms	563.9 N	@	123.0 ms
VERTICAL	417.0 N	@	741.2 ms	1212.3 N	@	2119.9 ms
NECK MOMENT						
ABOUT LONG.	60.7 N-m	@	1874.8 ms	36.2 N-m	@	789.9 ms
ABOUT LATERAL	27.0 N-m	@	1590.4 ms	56.4 N-m	@	796.0 ms
ABOUT VERTICAL	23.2 N-m	@	486.6 ms	9.9 N-m	@	576.5 ms
OCC. CONDYLE	17.7 N-m	@	1591.4 ms	51.8 N-m	@	795.7 ms
LOWER NECK FORCE						
LONGITUDINAL	566.8 N	@	2106.5 ms	515.2 N	@	1873.1 ms
LATERAL	590.1 N	@	487.2 ms	1305.9 N	@	246.1 ms
VERTICAL	1301.2 N	@	245.5 ms	903.3 N	@	1587.6 ms
LOWER NECK MOMENT						
ABOUT LONG.	66.3 N-m	@	1115.6 ms	41.2 N-m	@	1883.8 ms
ABOUT LATERAL	67.9 N-m	@	144.3 ms	148.2 N-m	@	247.3 ms
ABOUT VERTICAL	62.3 N-m	@	2104.3 ms	108.3 N-m	@	245.6 ms
CHEST ACCELERATION						
LONGITUDINAL	6.2 g	@	1536.9 ms	4.1 g	@	1628.4 ms
LATERAL	3.5 g	@	1079.9 ms	13.3 g	@	480.2 ms
VERTICAL	13.8 g	@	245.6 ms	3.5 g	@	794.9 ms
RESULTANT	14.7 g	@	480.1 ms			
3 MSEC	14.3 g					
CHEST ANGULAR VELOCITY						
LONGITUDINAL	1.9 rad/s	@	947.2 ms	11.3 rad/s	@	1515.6 ms
LATERAL[1]	3.6 rad/s	@	1674.3 ms	11.3 rad/s	@	211.1 ms
VERTICAL[1]	0.3 rad/s	@	851.8 ms	0.5 rad/s	@	960.7 ms

Table 9 Dummy Data Summary, Cont'd.

TEST NUMBER: 961210 DRIVER DUMMY SERIAL NUMBER: 090

	POSITIVE DIRECTION			NEGATIVE DIRECTION		
CHEST DEFLECTION						
LONGITUDINAL	4.5 mm	@	762.7 ms	0.0 mm	@	3276.7 ms

POSITIVE DIRECTION		NEGATIVE DIRECTION	
LONGITUDINAL:	FORWARD	LONGITUDINAL:	REARWARD
LATERAL:	LEFTWARD	LATERAL:	RIGHTWARD
VERTICAL:	UPWARD	VERTICAL:	DOWNWARD
FORCE:	TENSION	FORCE:	COMPRESSION
ROLL:	RIGHT		
PITCH:	NOSE DOWNWARD		
YAW:	COUNTERCLOCKWISE		

[1] See DATA ACQUISITION EXPLANATIONS

Table 9 Dummy Data Summary, Cont'd.

TEST NUMBER: 961210 PASSENGER DUMMY SERIAL NUMBER: 045

	POSITIVE DIRECTION			NEGATIVE DIRECTION		
HEAD ACCELERATION						
LONGITUDINAL	5.5 g	@	1018.0 ms	11.8 g	@	1852.8 ms
LATERAL	17.9 g	@	705.7 ms	19.9 g	@	1599.8 ms
VERTICAL	5.3 g	@	663.3 ms	11.4 g	@	691.4 ms
RESULTANT	21.1 g	@	1600.8 ms			
HIC	19.5 from 1588.7 to 1605.4 ms					
NECK FORCE						
LONGITUDINAL	278.5 N	@	1664.9 ms	413.2 N	@	103.6 ms
LATERAL	802.3 N	@	105.1 ms	111.2 N	@	1615.5 ms
VERTICAL	306.2 N	@	1019.3 ms	1837.8 N	@	1631.0 ms
NECK MOMENT						
ABOUT LONG.	43.9 N-m	@	106.7 ms	39.5 N-m	@	1643.6 ms
ABOUT LATERAL	88.1 N-m	@	1627.2 ms	15.4 N-m	@	1756.7 ms
ABOUT VERTICAL	10.4 N-m	@	705.5 ms	14.1 N-m	@	1616.0 ms
OCC. CONDYLE	85.2 N-m	@	1630.1 ms	15.0 N-m	@	1757.9 ms
LOWER NECK FORCE						
LONGITUDINAL	189.6 N	@	1854.4 ms	677.9 N	@	1625.3 ms
LATERAL	881.1 N	@	710.2 ms	227.1 N	@	662.7 ms
VERTICAL	425.5 N	@	1693.2 ms	1517.2 N	@	688.0 ms
LOWER NECK MOMENT						
ABOUT LONG.	7.5 N-m	@	3111.6 ms	131.6 N-m	@	711.7 ms
ABOUT LATERAL	87.6 N-m	@	1659.2 ms	39.3 N-m	@	1737.6 ms
ABOUT VERTICAL	40.9 N-m	@	1603.8 ms	30.4 N-m	@	1645.2 ms
CHEST ACCELERATION						
LONGITUDINAL	7.3 g	@	244.9 ms	11.6 g	@	687.7 ms
LATERAL	18.2 g	@	687.9 ms	10.6 g	@	248.4 ms
VERTICAL	10.5 g	@	687.1 ms	10.7 g	@	689.7 ms
RESULTANT	22.8 g	@	687.6 ms			
3 MSEC	14.6 g					
CHEST ANGULAR VELOCITY						
LONGITUDINAL[1]	1.2 rad/s	@	226.1 ms	0.8 rad/s	@	269.9 ms
LATERAL[1]	0.3 rad/s	@	1596.2 ms	0.4 rad/s	@	216.2 ms
VERTICAL[1]	0.4 rad/s	@	318.7 ms	0.4 rad/s	@	309.1 ms

Table 9 Dummy Data Summary, Cont'd.

TEST NUMBER: 961210 PASSENGER DUMMY SERIAL NUMBER: 045

	POSITIVE DIRECTION			NEGATIVE DIRECTION		
CHEST DEFLECTION LONGITUDINAL	1.4 mm	@	112.8 ms	0.4 mm	@	721.9 ms

POSITIVE DIRECTION

LONGITUDINAL:	FORWARD
LATERAL:	LEFTWARD
VERTICAL:	UPWARD
FORCE:	TENSION
ROLL:	RIGHT
PITCH:	NOSE DOWNWRAD
YAW:	COUNTER CLOCKWISE

NEGATIVE DIRECTION

LONGITUDINAL:	REARWARD
LATERAL:	RIGHTWARD
VERTICAL:	DOWNWARD
FORCE:	COMPRESSION

[1] See DATA ACQUISITION EXPLANATIONS

Table 10 Post-Impact Dummy/Vehicle Data

Visible Dummy Contact Points:

	Driver #090	Passenger #045
Head	Side airbag headliner	Side airbag/ headliner
Chest	None	None
Abdomen	None	None
Left knee	None	None
Right knee	None	None

Door Opening:

	Left	Right
Front	Easy	Easy
Rear	NA	NA

Seat Movement:

	Seat Back Failure	Seat Shift
Front	None	None
Rear	NA	NA

Glazing Damage: The entire windshield cracked. All side and rear glasses were broken out except for glass behind driver door glass which had no damage.

Other Notable Impact Effects: Left rear wheel separated from the vehicle.

Kinematic Summary

The driver dummy initially translated up in the Z direction and inboard, striking its head on the headliner and shoulder on the inflatable tubular structure. The dummy then rotated clockwise with its buttock out the side window. The dummy's shoulder then hit the headliner while the dummy's head remained close to the headliner. Next the dummy rotated further clockwise with its head extended toward the passenger dummy. The dummy then rotated counterclockwise hitting its head again on the headliner. The passenger dummy then struck the driver dummy. The dummy came to rest leaning on the passenger dummy with the dummy's arm around the passenger's neck.

The passenger dummy initially translated up in the Z direction striking its head on the headliner. Next, the dummy's head hit the side inflatable tubular structure while its arm extended out the side window. This arm remained out the side window throughout the duration of the rollover. Next the dummy's shoulder translated into the side inflatable tubular structure. The dummy then translated to the center line of the vehicle, striking the driver. The dummy then moved back to its seat. The dummy came to rest in its seat with the driver's arm around its neck.

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, and six load cells in the neck. The chest was also instrumented with angular velocity sensors. 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 17° for the driver and 21° for the passenger. The dummies were positioned in the seats according to the dummy placement procedure specified in Appendix B and Optional Appendix C of Laboratory Procedure TP-208-09. The H-point location of the seats were obtained by using the SAE J211 OCT88 H-point machine.

Figure 5 Dummy and Seat Positioning Data

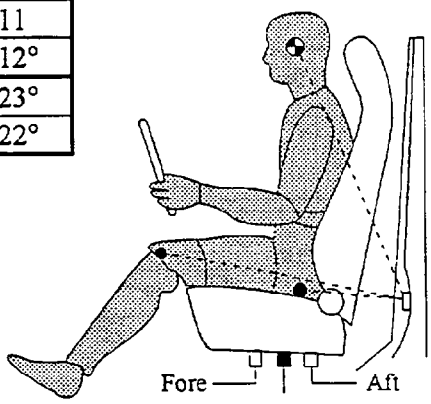
Vehicle:	1994 Ford Explorer
Seat Type:	Bucket
Adjuster Type:	Manual
Bucket Seat Back Type:	Adjustable - reclining
Technicians:	J. Sankey, J. Jenkins
Positioning Date:	12/09/96
Ambient Temperature:	20° C
Time:	N/A

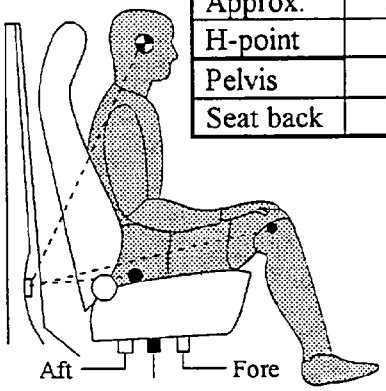
Driver Dummy #090 Type: HIII

Head	573
Target	38°
Knee	767
Joint	91°
Approx.	411
H-point	112°
Pelvis	23°
Seat back	22°

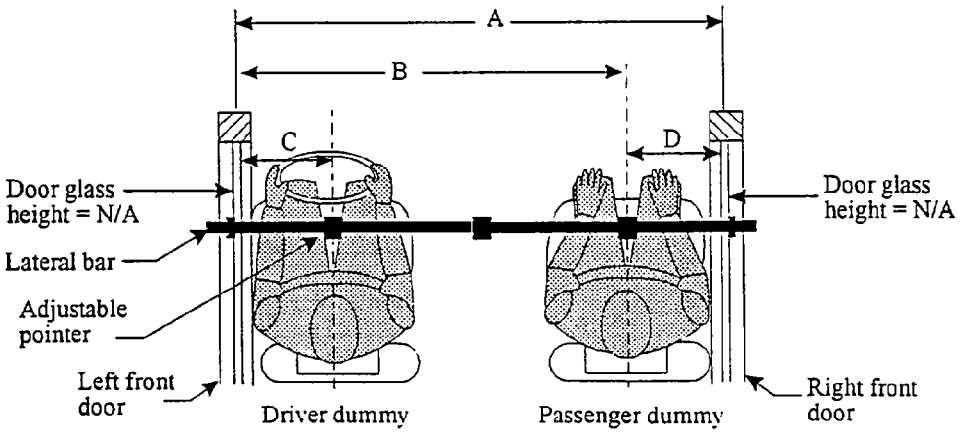
Passenger Dummy #045 Type: HIII

Head	547
Target	30°
Knee	745
Joint	93°
Approx.	395
H-point	113°
Pelvis	23°
Seat back	21°





A	N/A
B	N/A
C	448
D	N/A

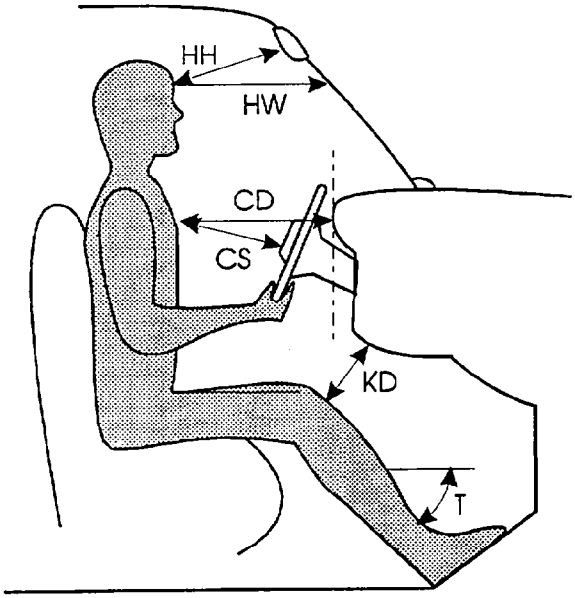


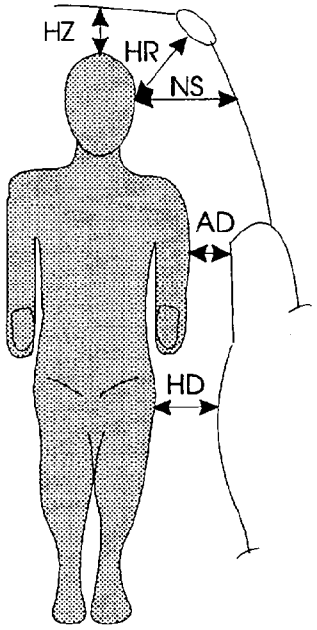
All angles are relative to vertical plane through door striker.
All distance measurements are in millimeters.

Figure 6 Dummy In-Vehicle Positioning Data

	Driver	Passenger
HH	410	415
HW	570	567
CD	551	567
CS	325	N/A
KDL	233	251
KDR	238	253
TL	39°	36°
KK	272	268
HY	234	248

	Driver	Passenger
HR	260	258
NS	362	448
AD	125	44
HD	141	137
HZ	146	150





All distance measurements are in millimeters.

Figure 7 Dummy Measurement Locations for Front Seat Occupants

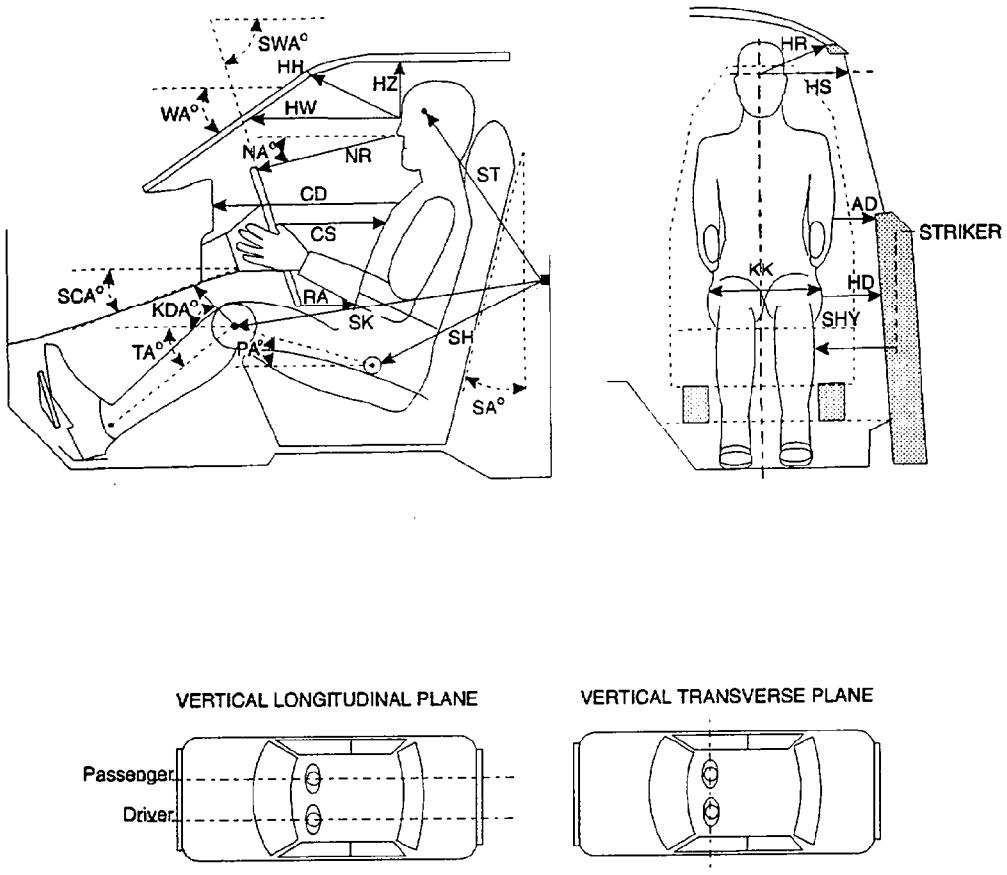


Table 11 Dummy Measurement Data For Front Seat Occupants

Designation	Type of Measurement	Driver (Serial #090)	Passenger (Serial #045)
WA	Windshield angle	37°	NA
SWA	Steering wheel angle	56°	NA
SCA	Steering column angle	34°	NA
SA	Seat back angle	17°	21°
HZ	Head to roof	146 mm	150 mm
HH	Head to header	410 mm	415 mm
HW	Head to windshield	570 mm	567 mm
HR	Head to side header	260 mm	258 mm
NR	Nose to rim	416 mm	NA
NA	Nose to rim angle	11°	NA
CD	Chest to dash	551 mm	NA
CS	Steering wheel to chest	325 mm	NA
RA	Rim to abdomen	172 mm	NA
KDL	Left knee to dash	233 mm	251 mm
KDR	Right knee to dash	238 mm	253 mm
KDA	Outboard knee to dash angle	25°	21°
PA	Pelvic angle	23°	23°
TA	Tibial angle	39°	36°
KK	Knee to knee	272 mm	268 mm
ST[1]	Striker to head	573 mm	547 mm
	Striker to head angle	-52°	-60°
SK[1]	Striker to knee	767 mm	745 mm
	Striker to knee angle	1°	3°
SH[1]	Striker to H-point	411 mm	395 mm
	Striker to H-point angle	22°	23°
SHY	Striker to H-point (Y dir.)	234 mm	248 mm
HS	Head to side window	362 mm	448 mm
HD	H-point to door	141 mm	137 mm
AD	Arm to door	125 mm	44 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

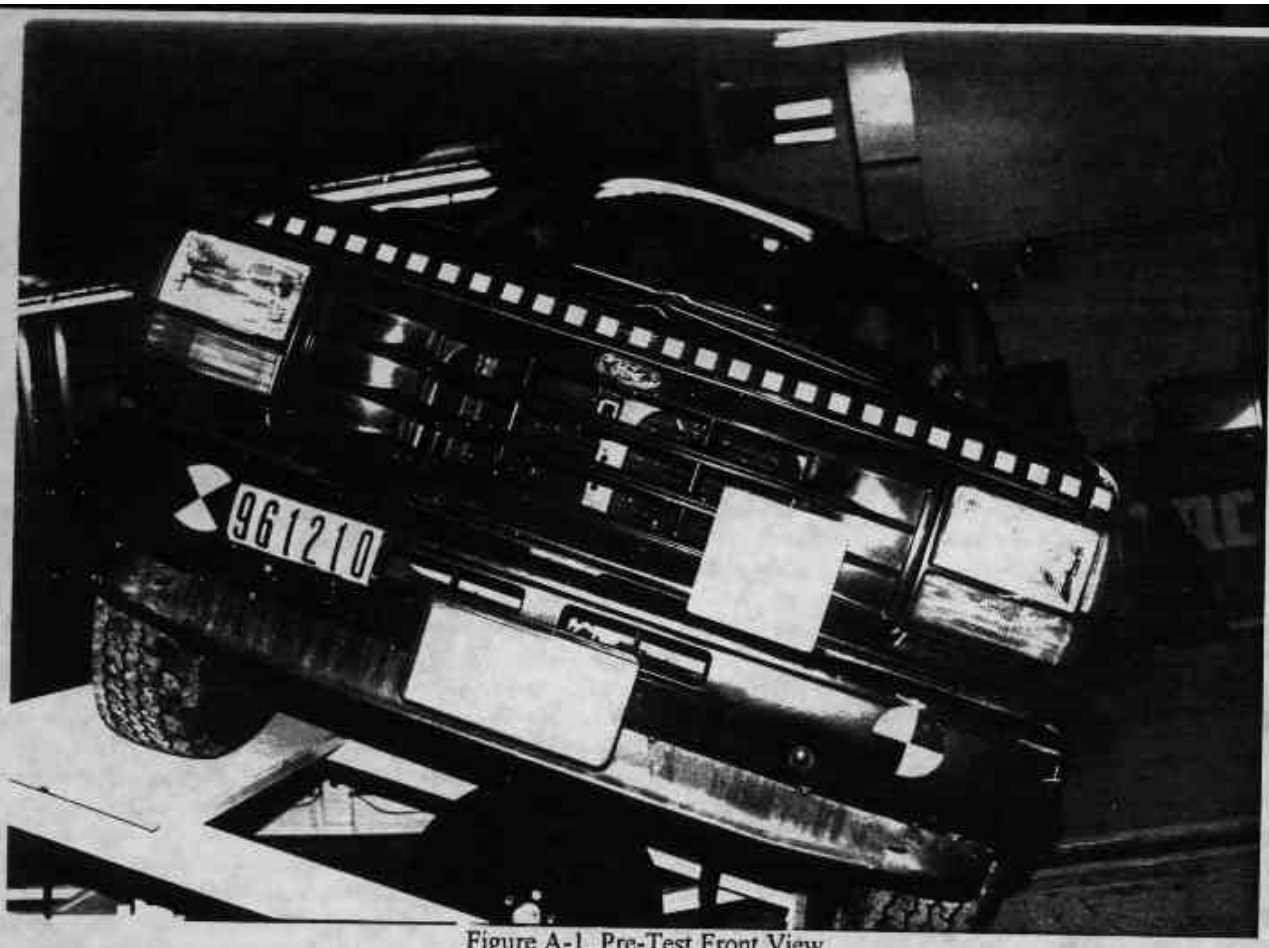


Figure A-1 Pre-Test Front View

Figure A-2 Pre-Test Right Side View

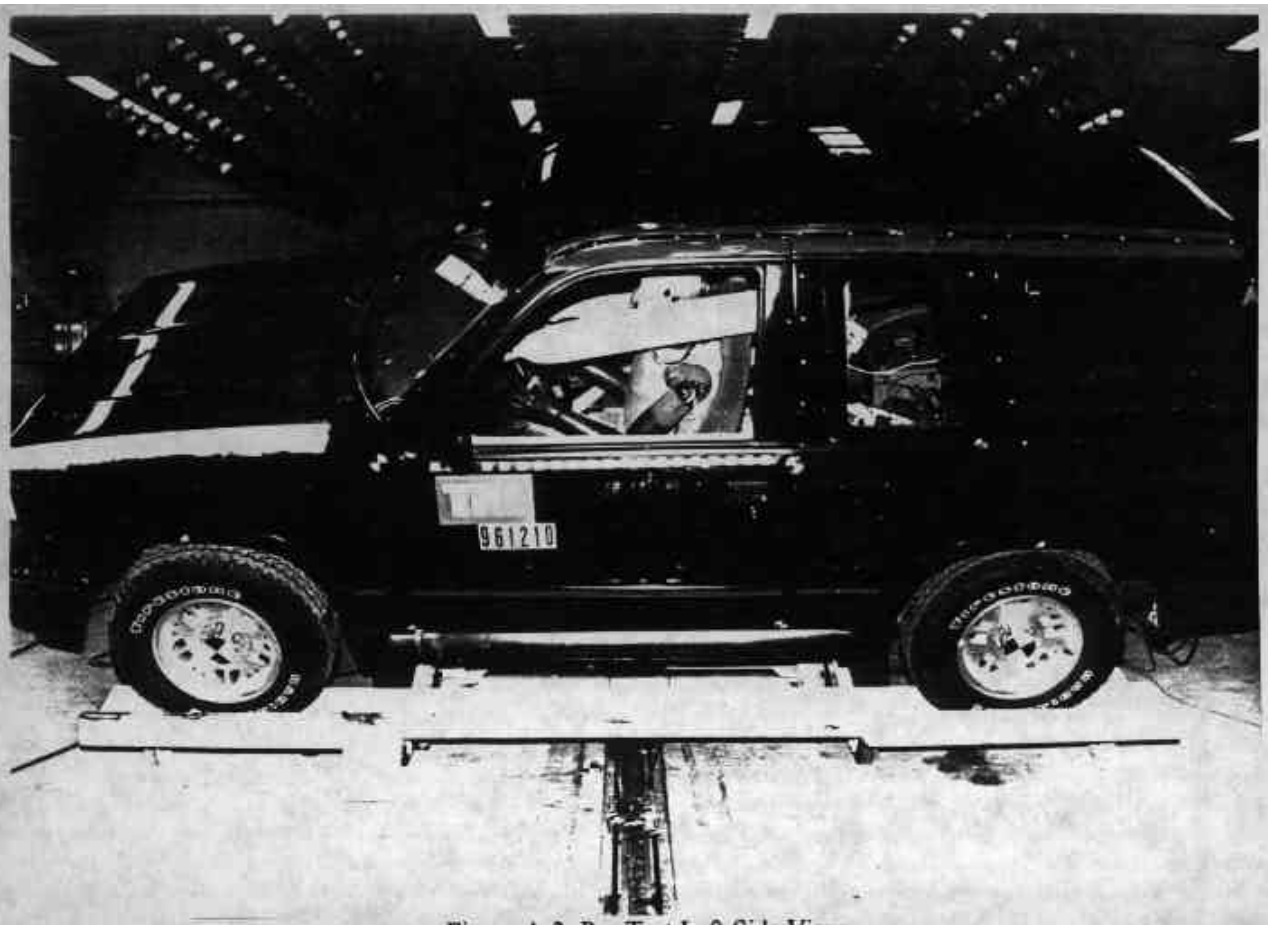


Figure A-3 Pre-Test Left Side View

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

Figure A-5 Pre-Test Right Front Three-Quarter View

Figure A-6 Pre-Test Left Front Three-Quarter View

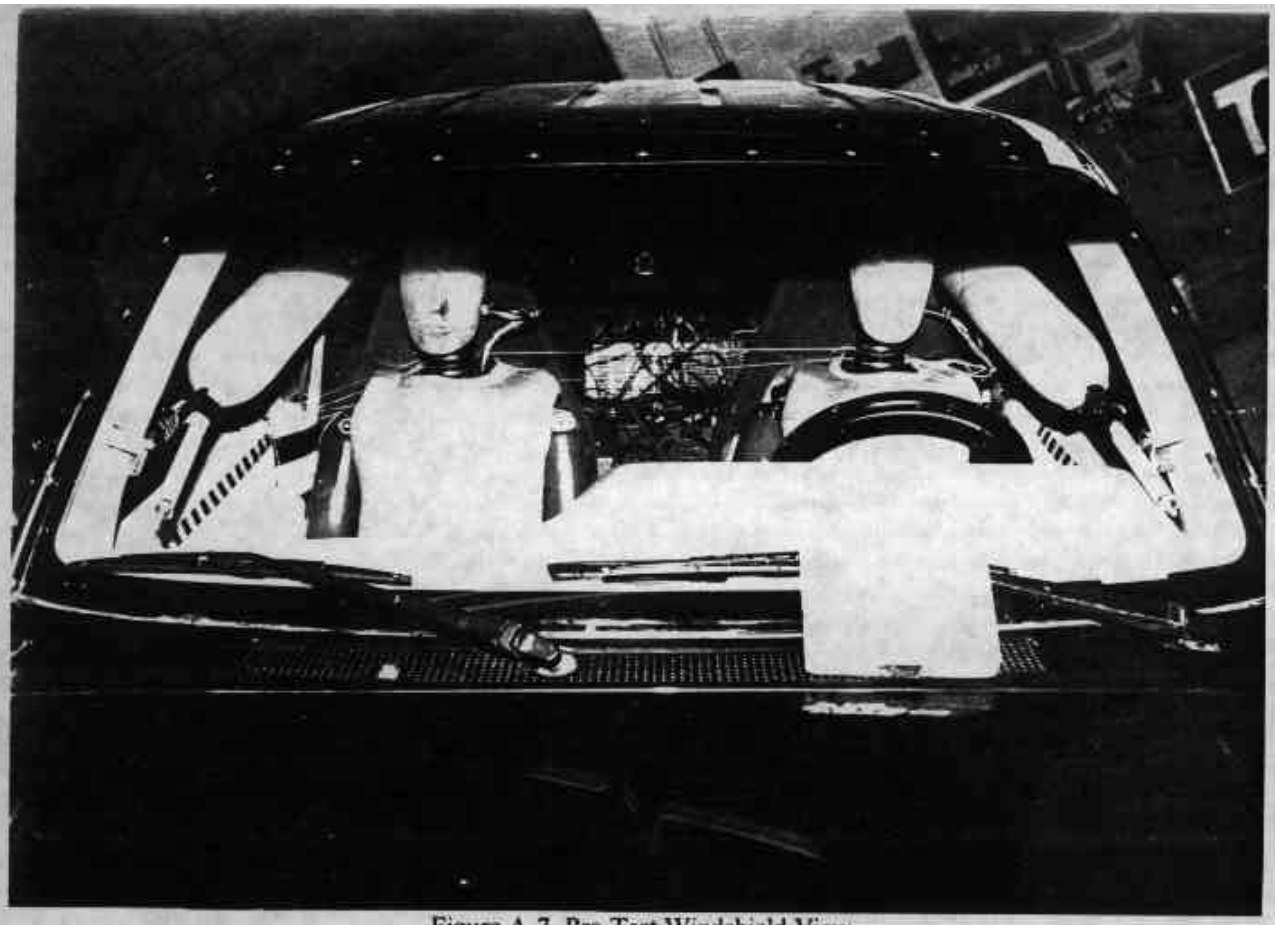


Figure A-7 Pre-Test Windshield View

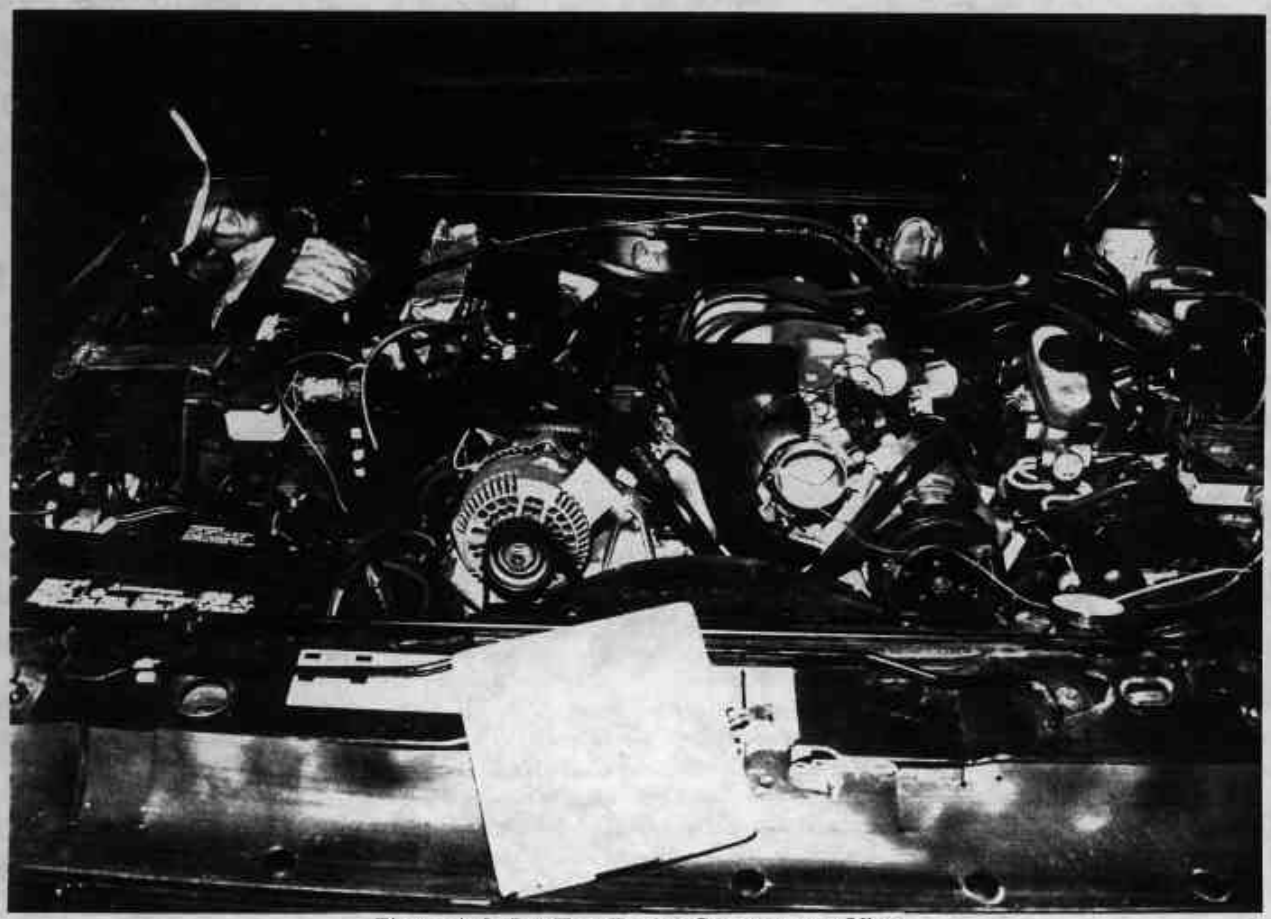


Figure A-8 Pre-Test Engine Compartment View

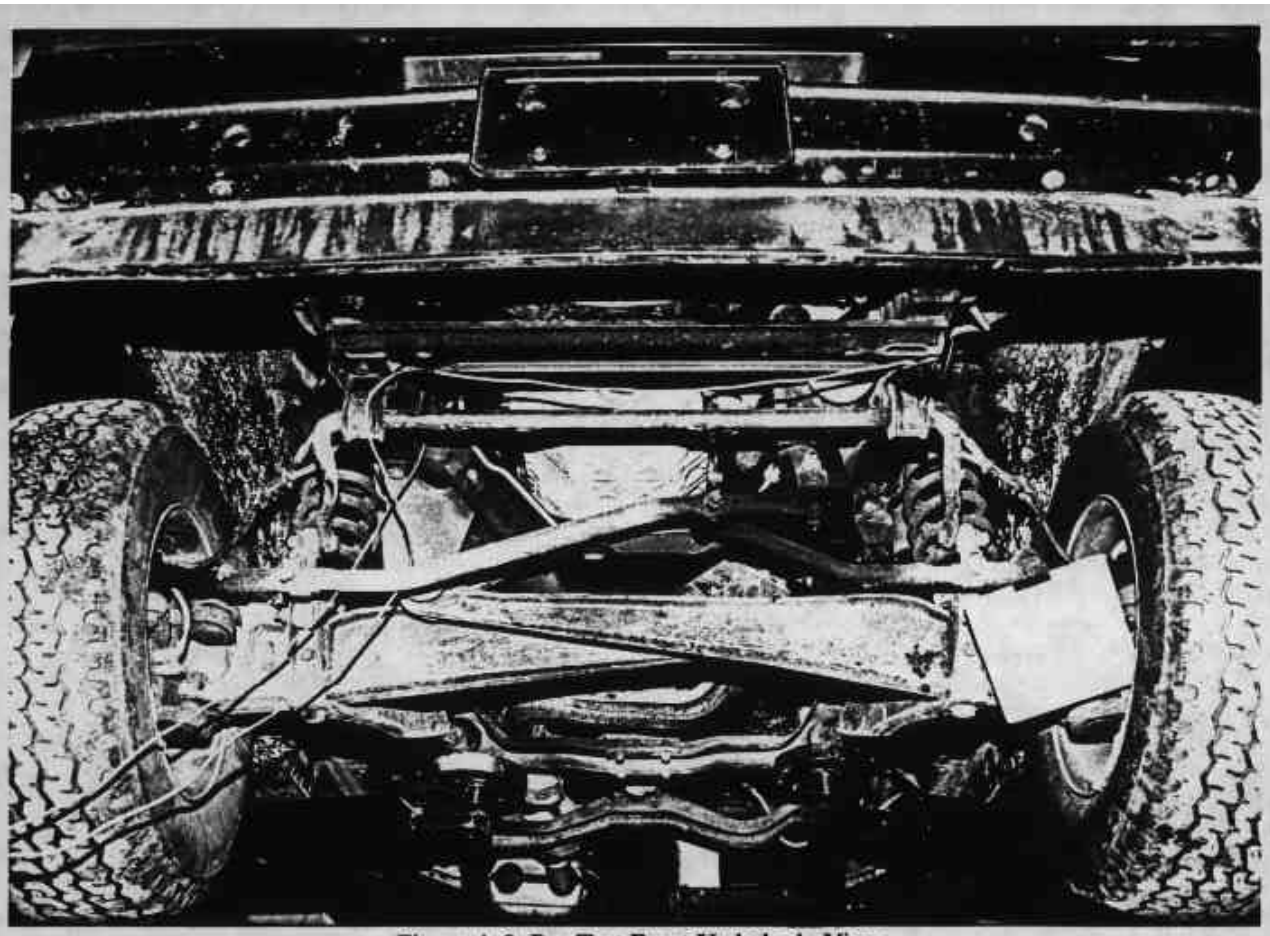


Figure A-9 Pre-Test Front Underbody View

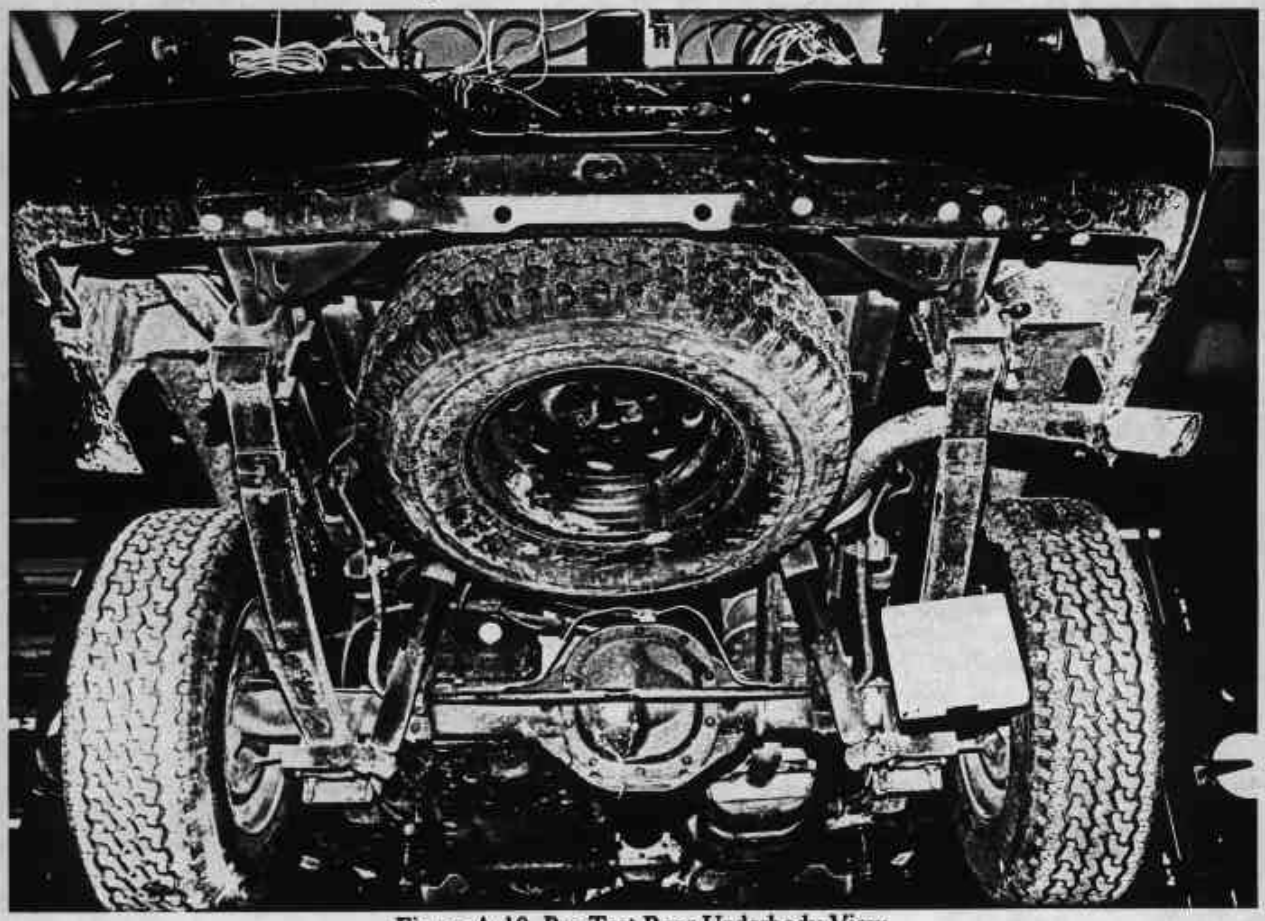


Figure A-10 Pre-Test Rear Underbody View

Figure A-11 Pre-Test Vehicle Certification Label

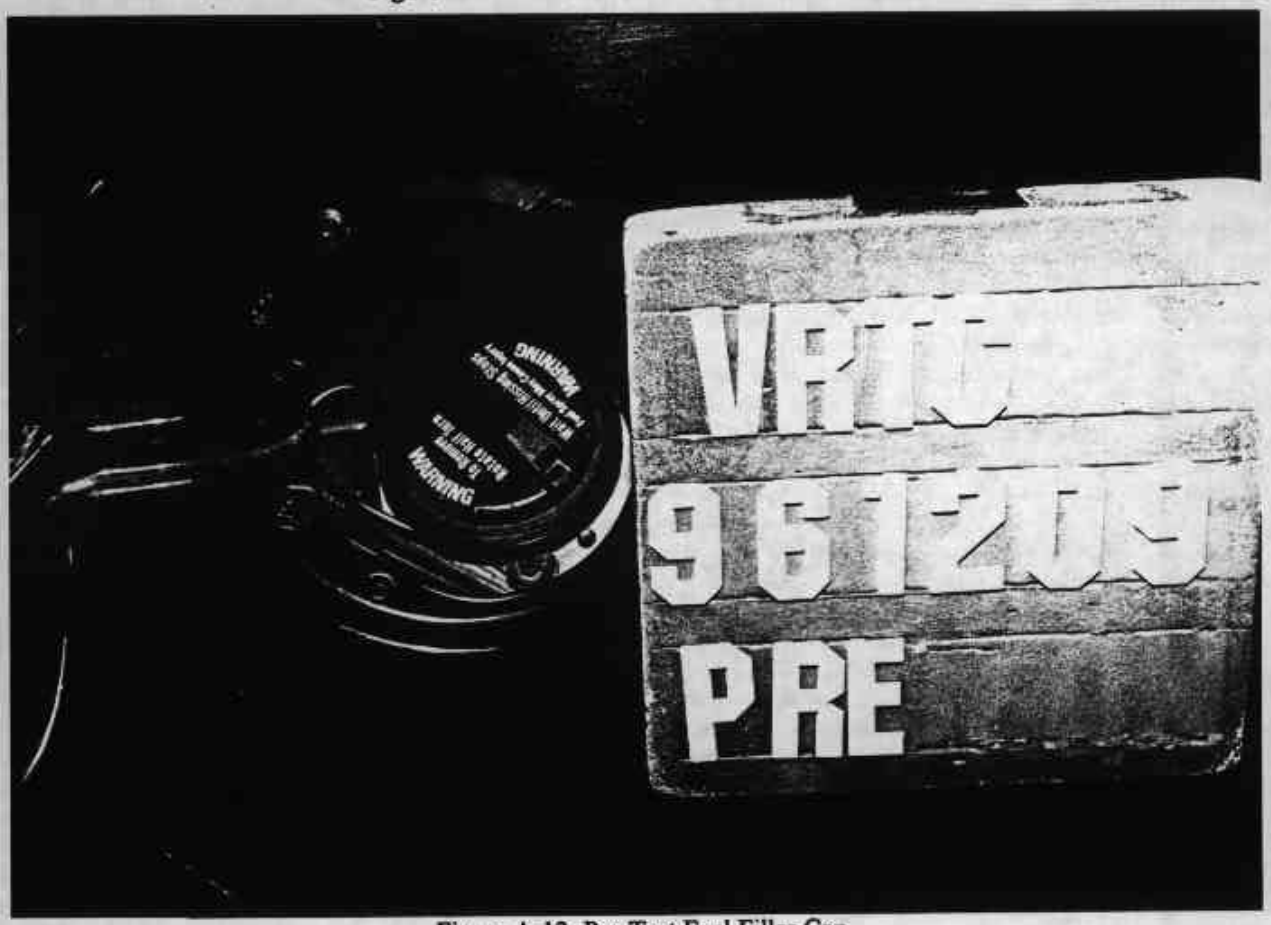


Figure A-12 Pre-Test Fuel Filler Cap

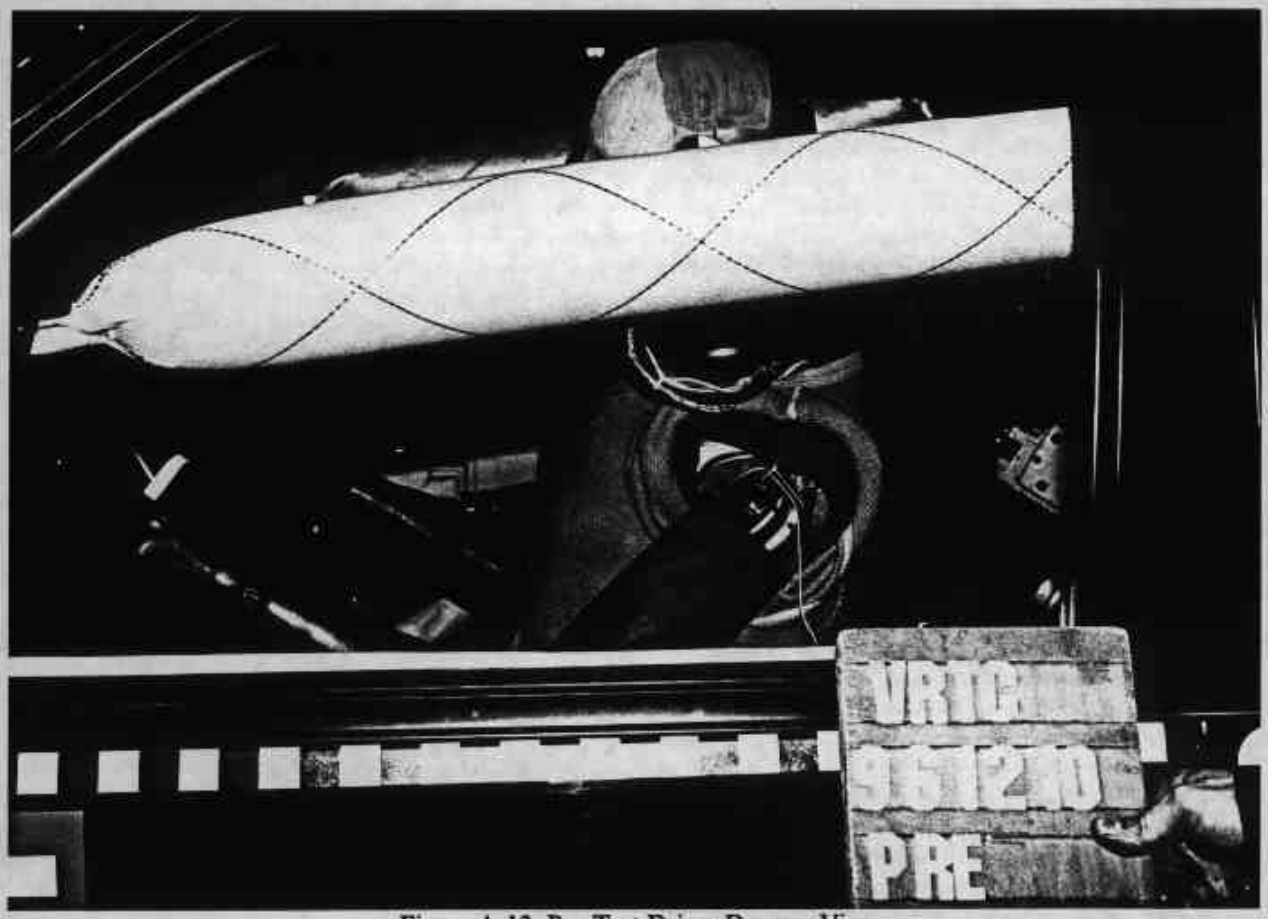


Figure A-13 Pre-Test Driver Dummy View

Figure A-14 Pre-Test Passenger Dummy View

Figure A-15 Post-Test Front View

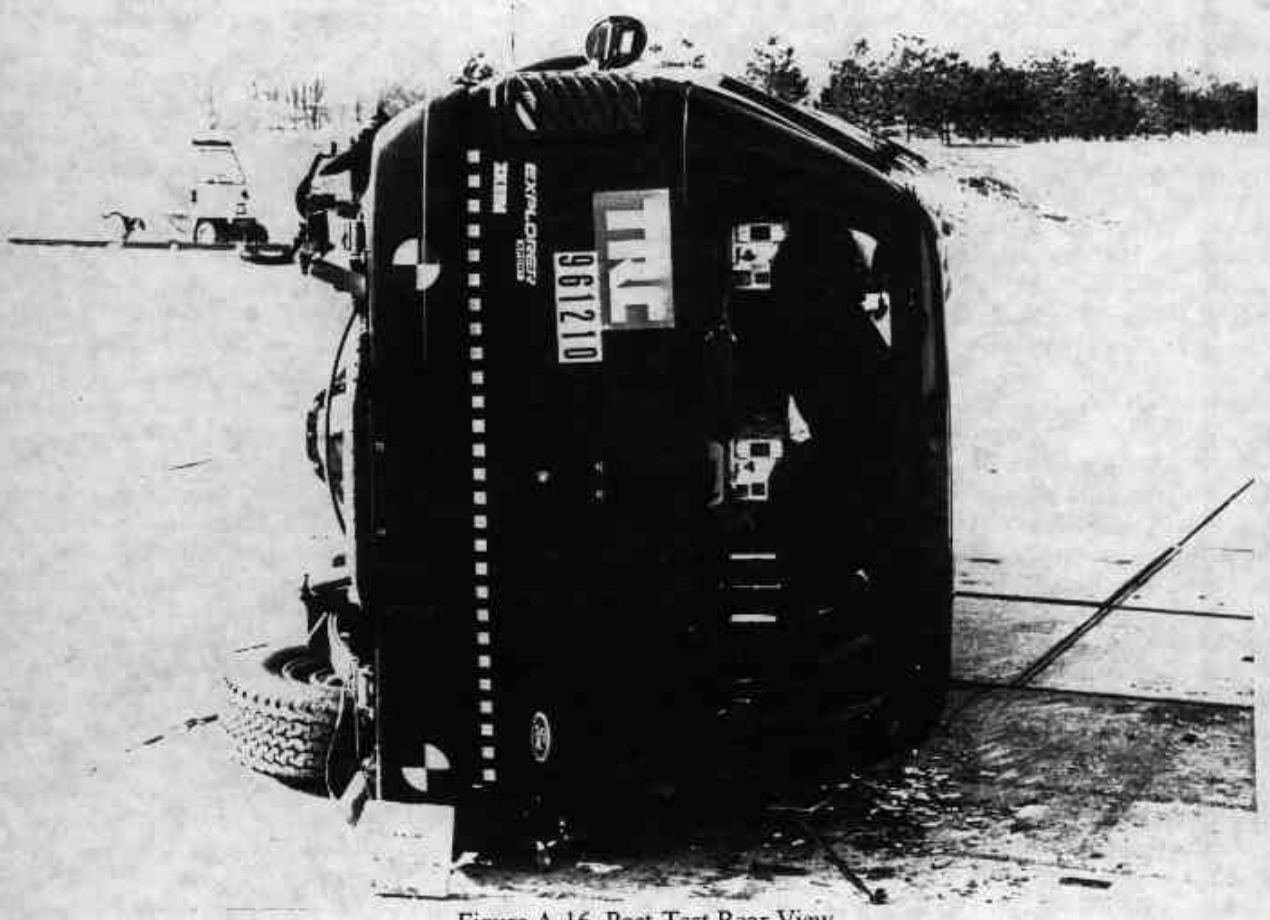


Figure A-16 Post-Test Rear View

Figure A-17 Post-Test Left Rear Three-Quarter View

Figure A-18 Post-Test Right Front Three-Quarter View

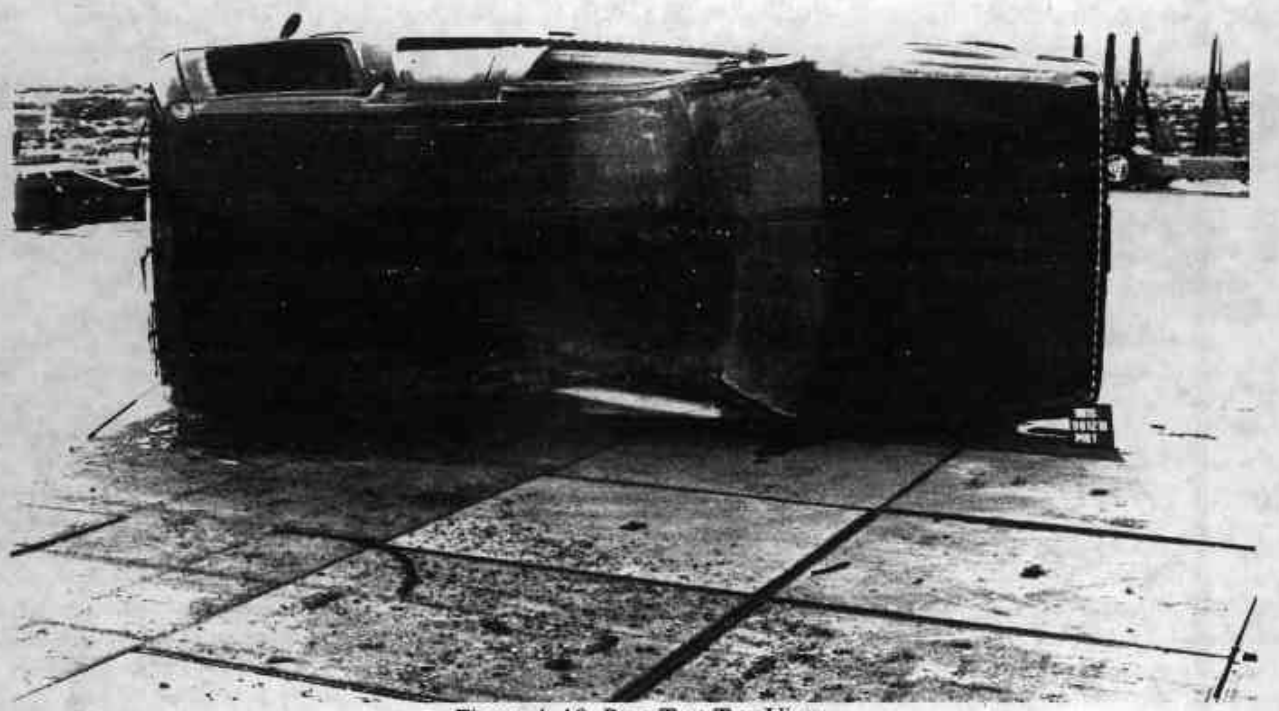


Figure A-19 Post-Test Top View

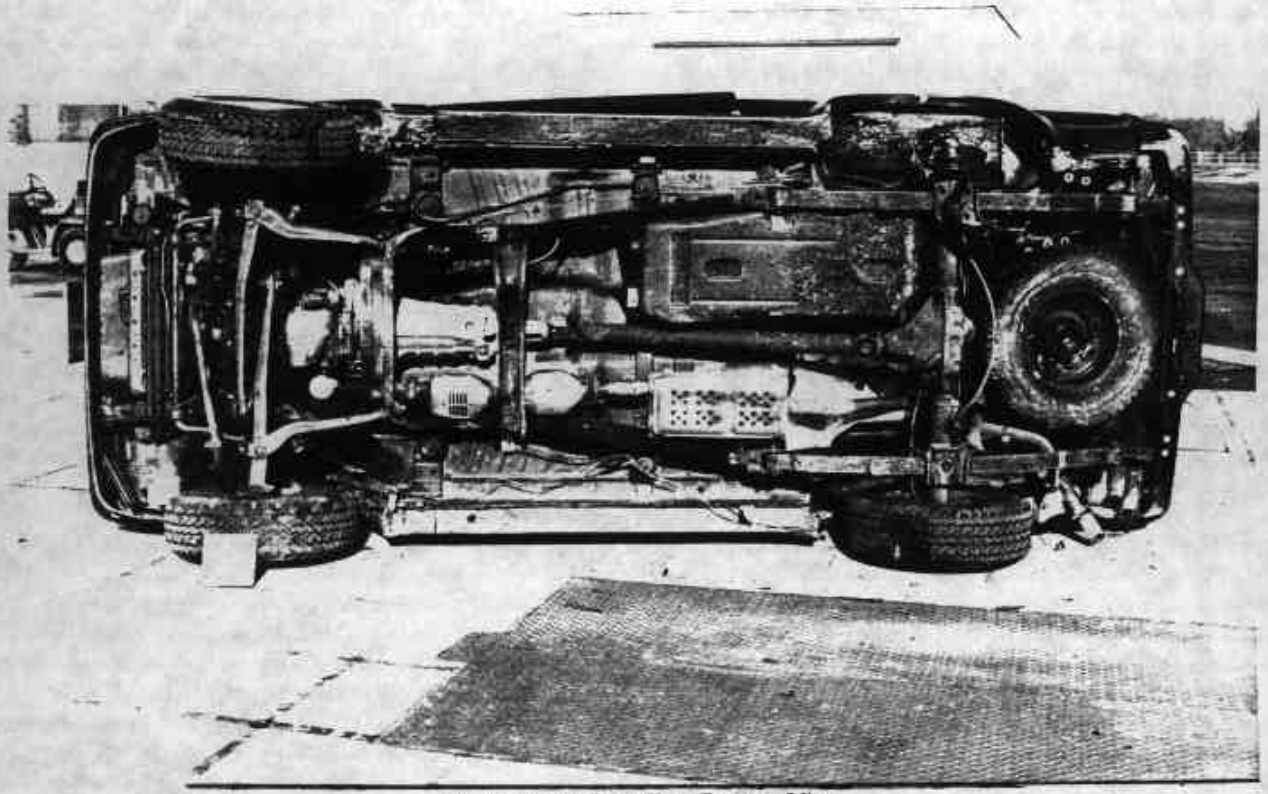


Figure A-20 Post-Test Bottom View

Figure A-21 Post-Test Windshield View

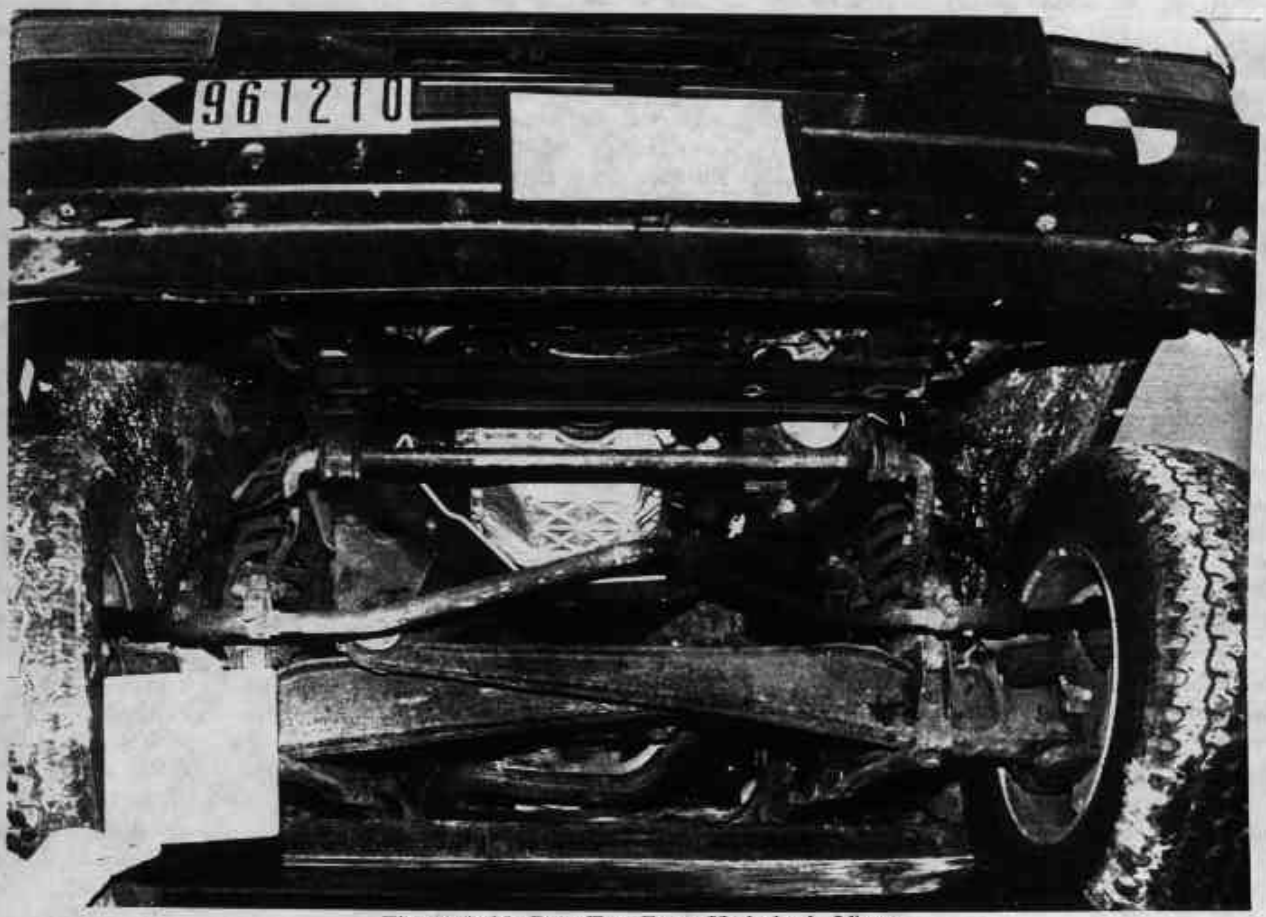


Figure A-22 Post-Test Front Underbody View

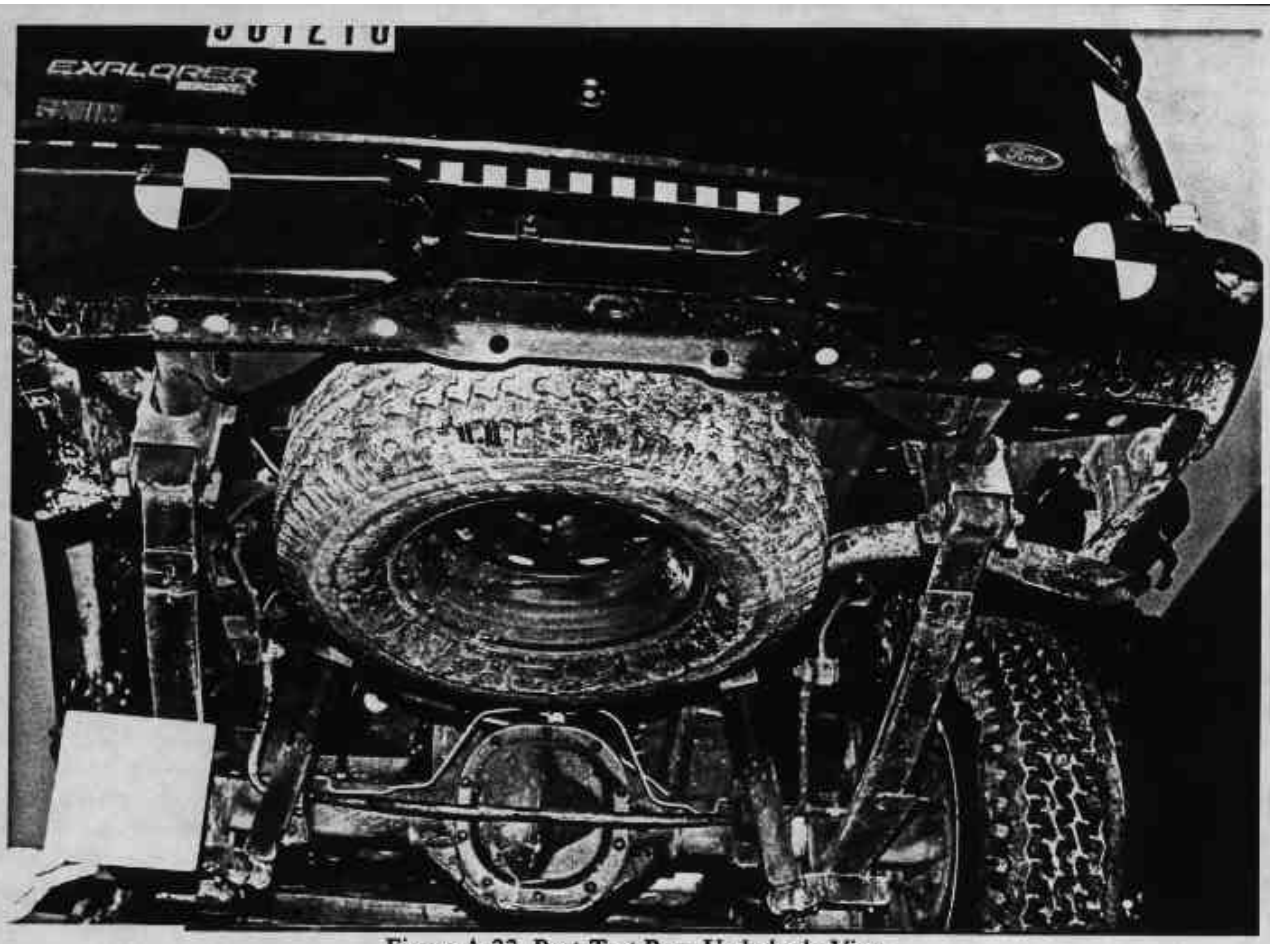


Figure A-23 Post-Test Rear Underbody View

Figure A-24 Post-Test Fuel Filler Cap View

Figure A-25 Post-Test Driver Dummy - View 1

Figure A-26 Post-Test Driver Dummy - View 2

Figure A-27 Post-Test Driver Dummy - View 3

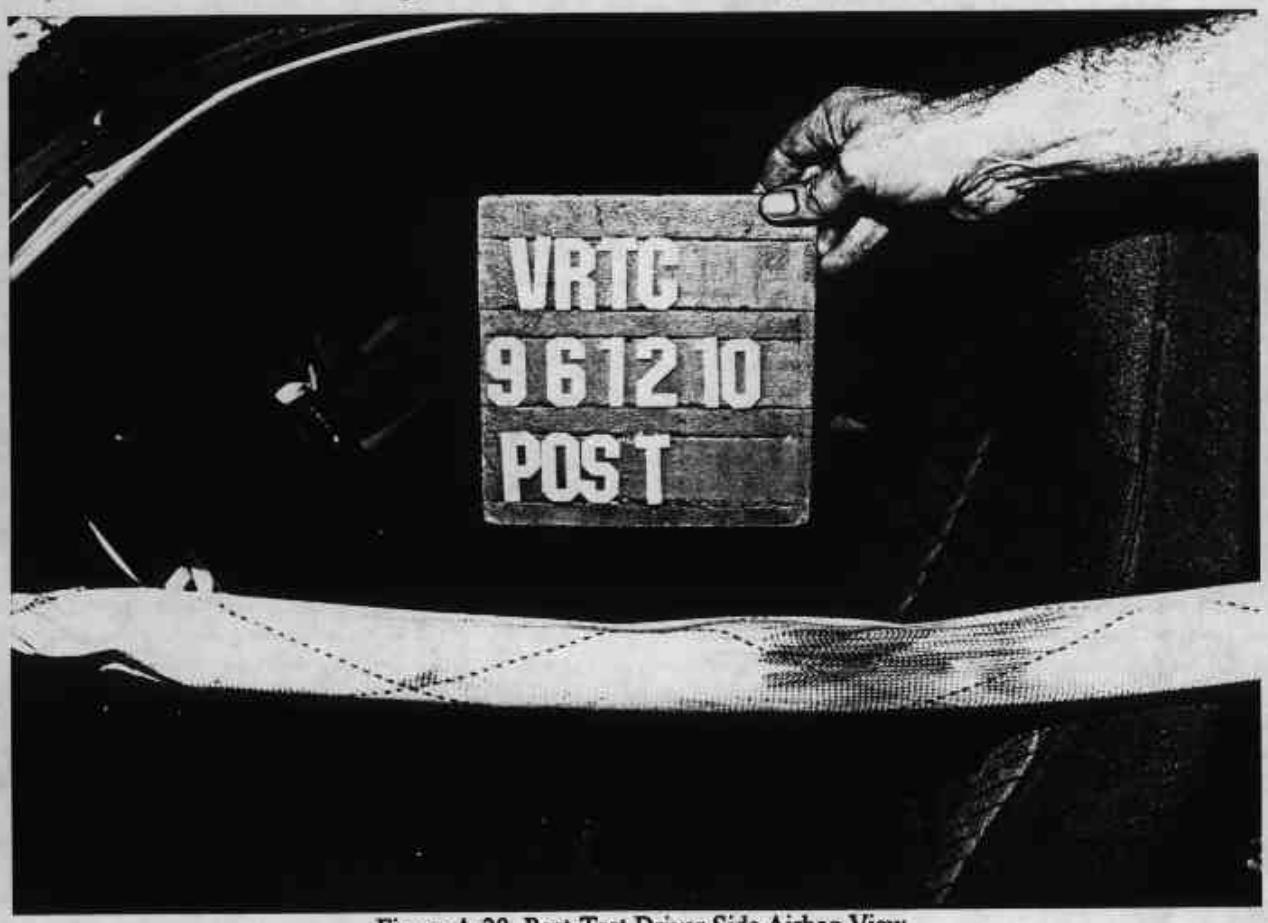


Figure A-28 Post-Test Driver Side Airbag View

Figure A-29 Post-Test Passenger Dummy - View 1

Figure A-30 Post-Test Passenger Dummy - View 2

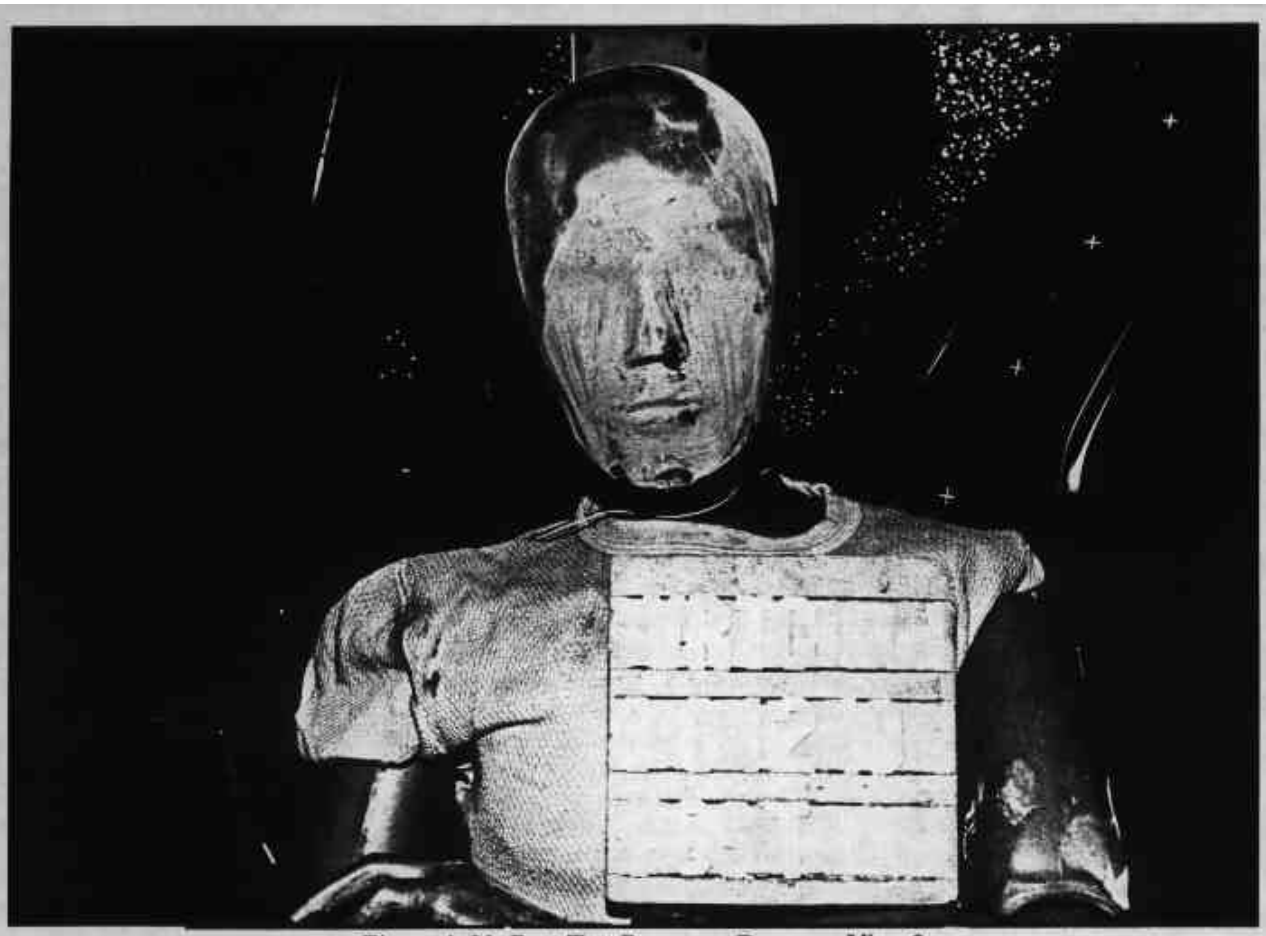


Figure A-31 Post-Test Passenger Dummy - View 3

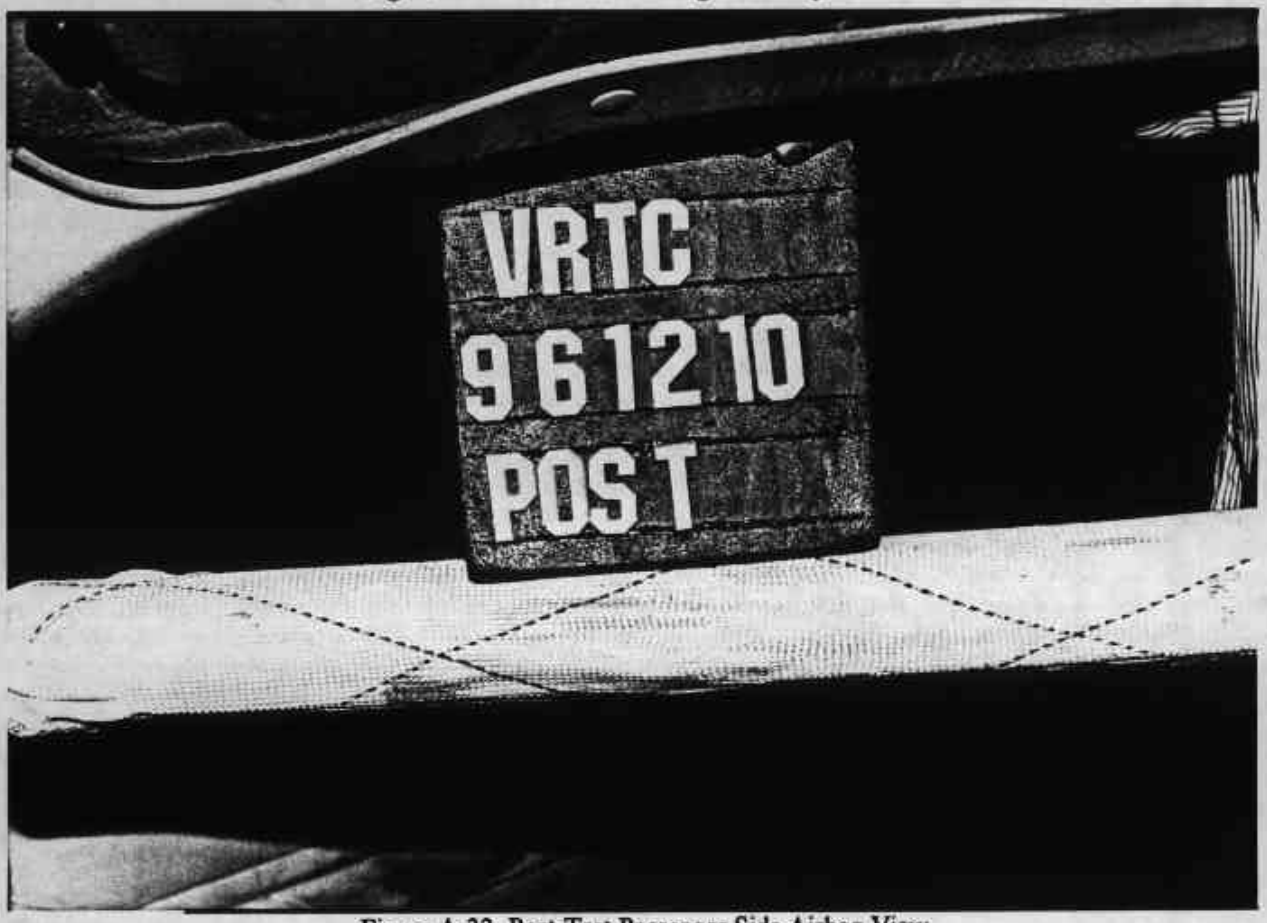


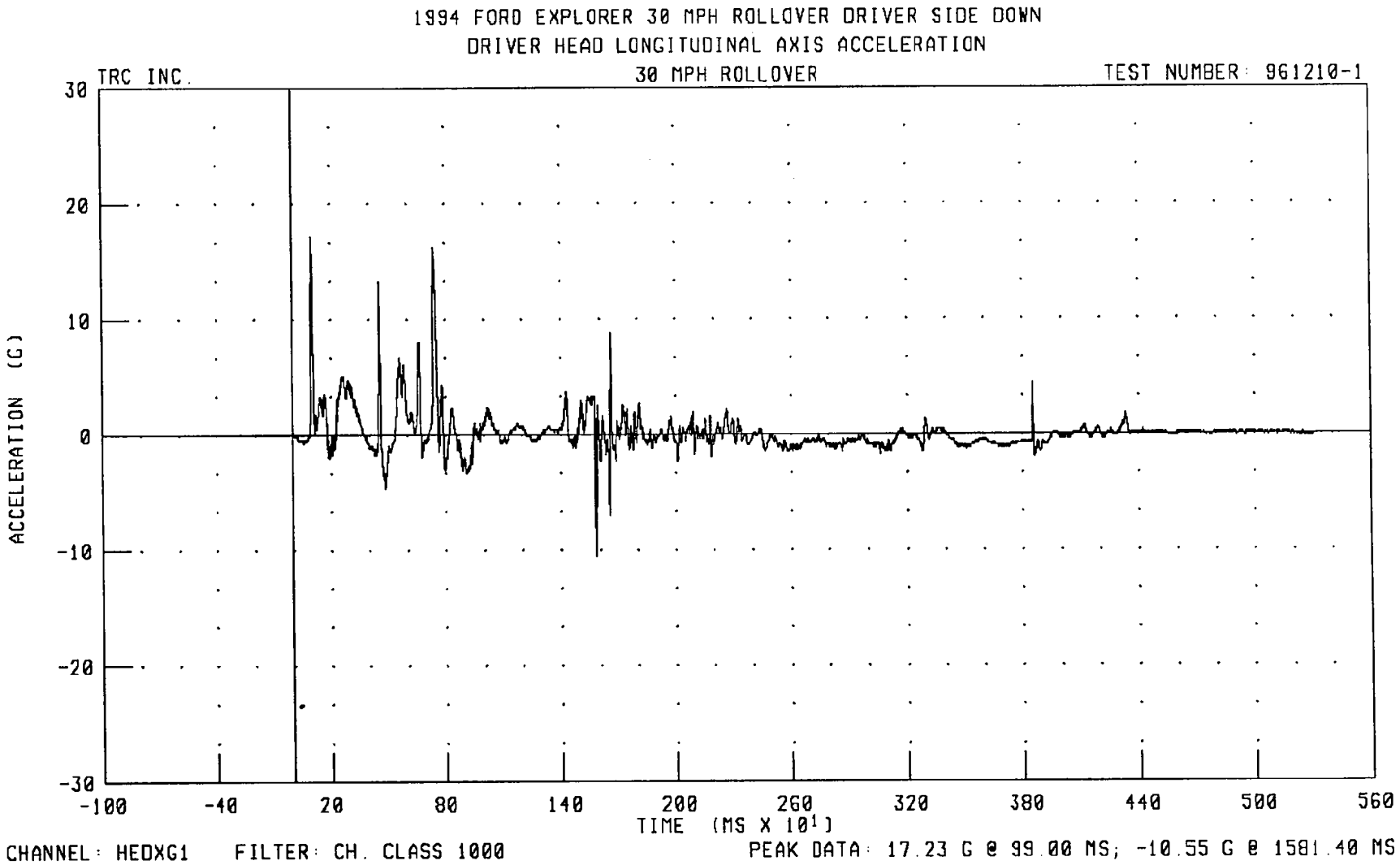
Figure A-32 Post-Test Passenger Side Airbag View

Figure A-33 Post-Test Driver Dummy Head Contact View

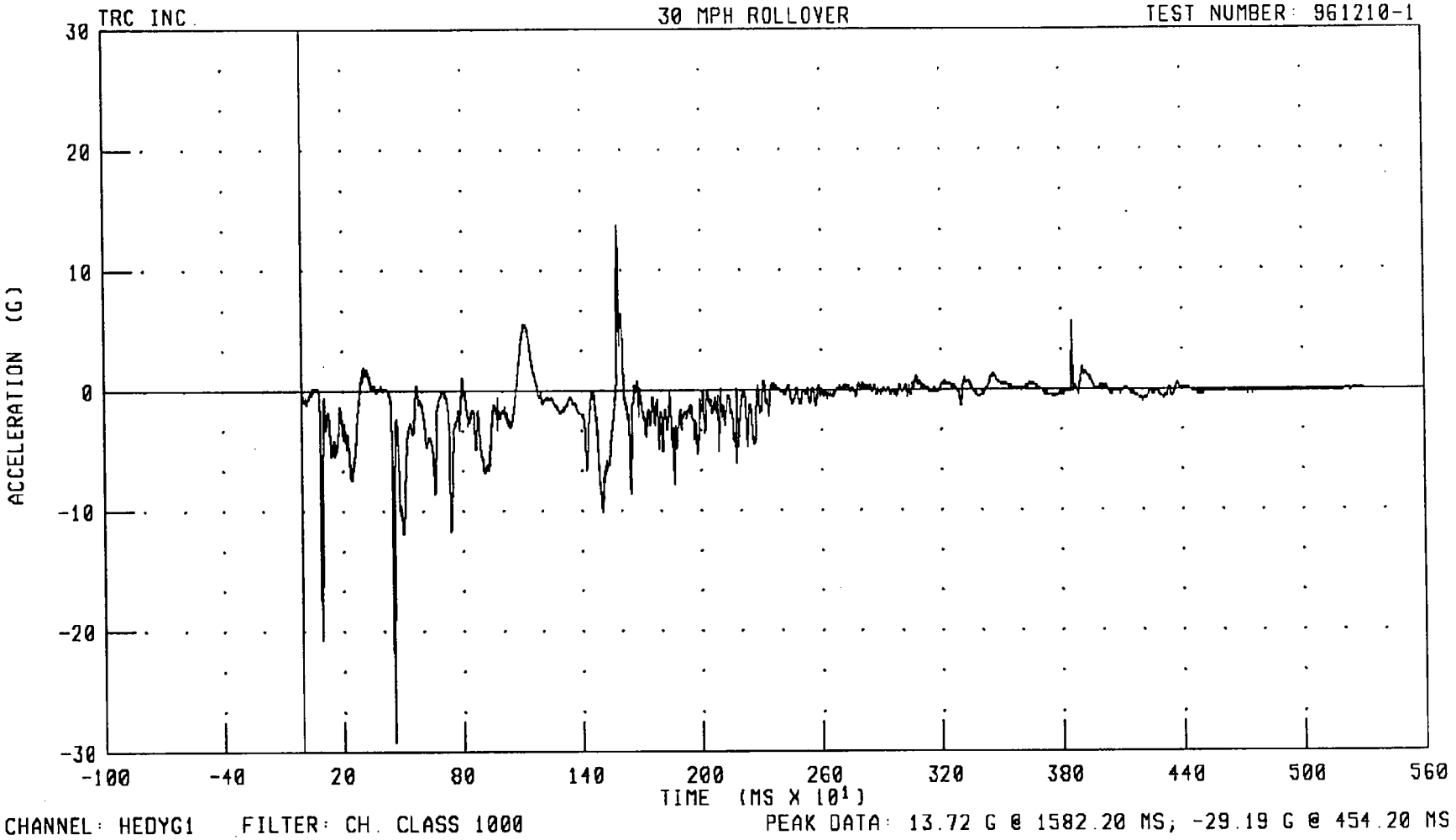
Figure A-34 Post-Test Passenger Dummy Head Contact View

Appendix B

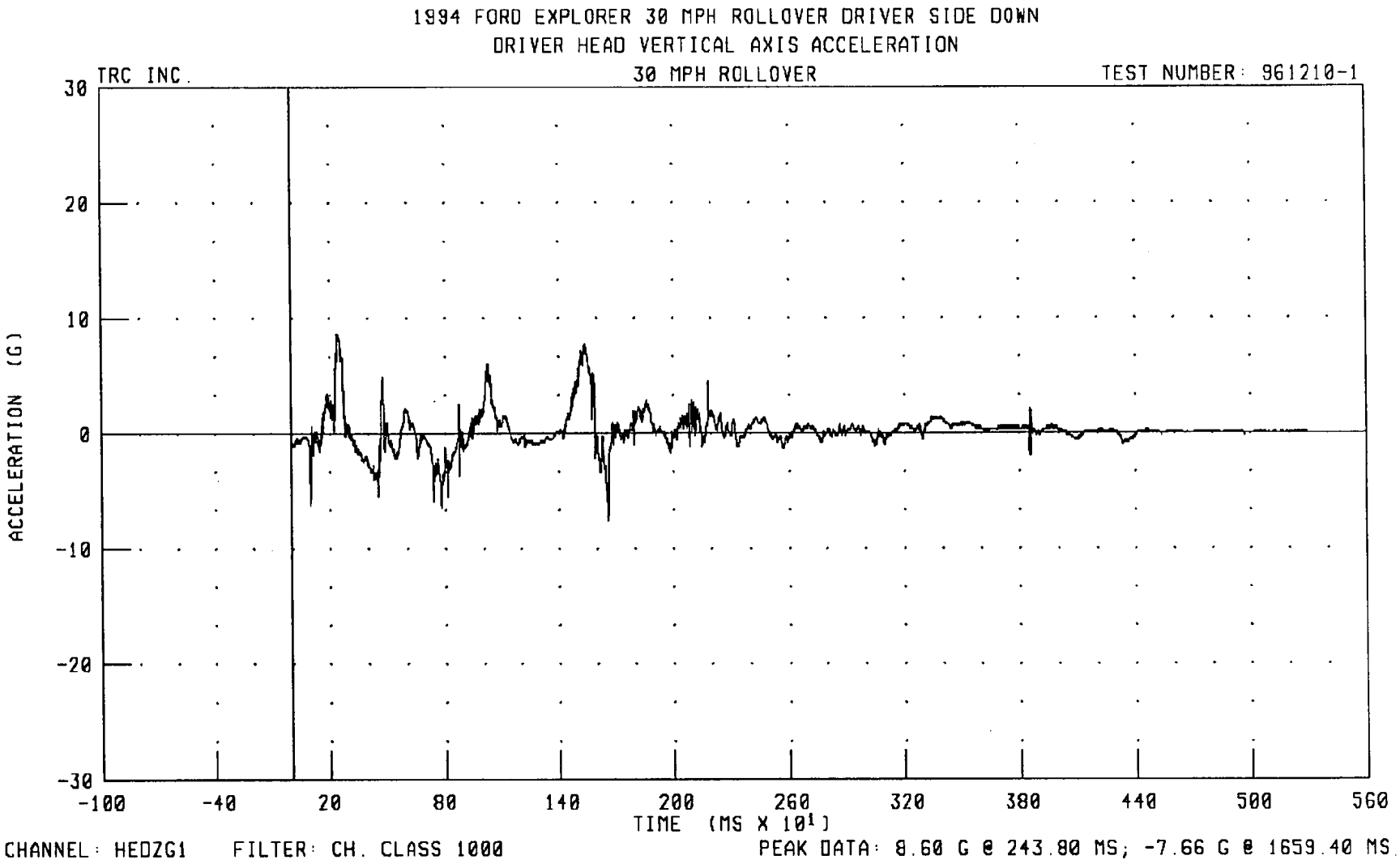
Data Plots

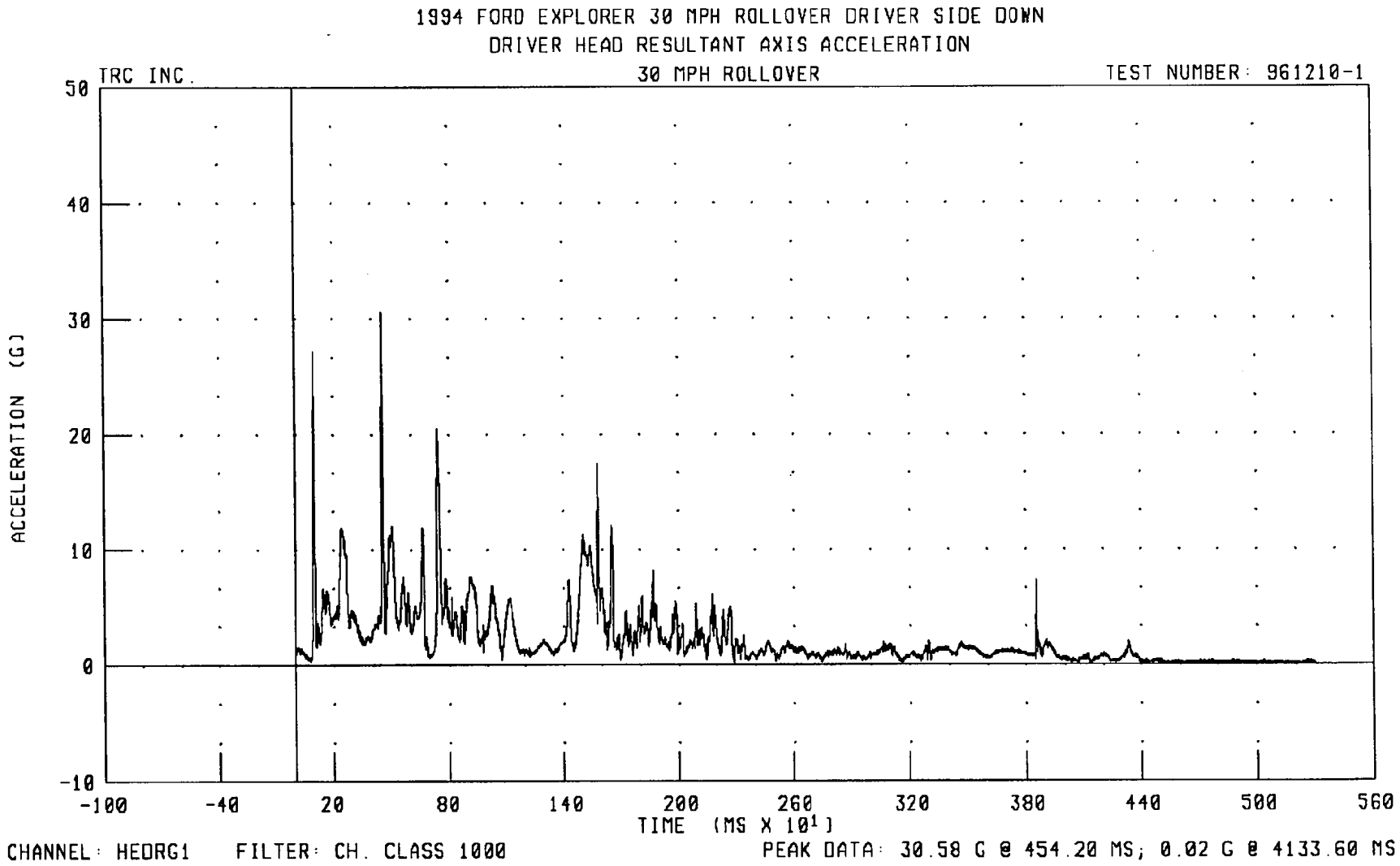

1994 FORD EXPLORER 30 MPH ROLLOVER DRIVER SIDE DOWN
DRIVER HEAD LONGITUDINAL AXIS ACCELERATION
TRC INC.
30 MPH ROLLOVER
TEST NUMBER: 961210-1
ACCELERATION (G)
30
20
10
0
-10
-20
-30
-100
-40
20
80
140
200
260
320
380
440
500
560
TIME (MS X 10¹)
CHANNEL: HEDXG1
FILTER: CH. CLASS 1000
PEAK DATA: 17.23 G @ 99.00 MS; -10.55 G @ 1581.40 MS

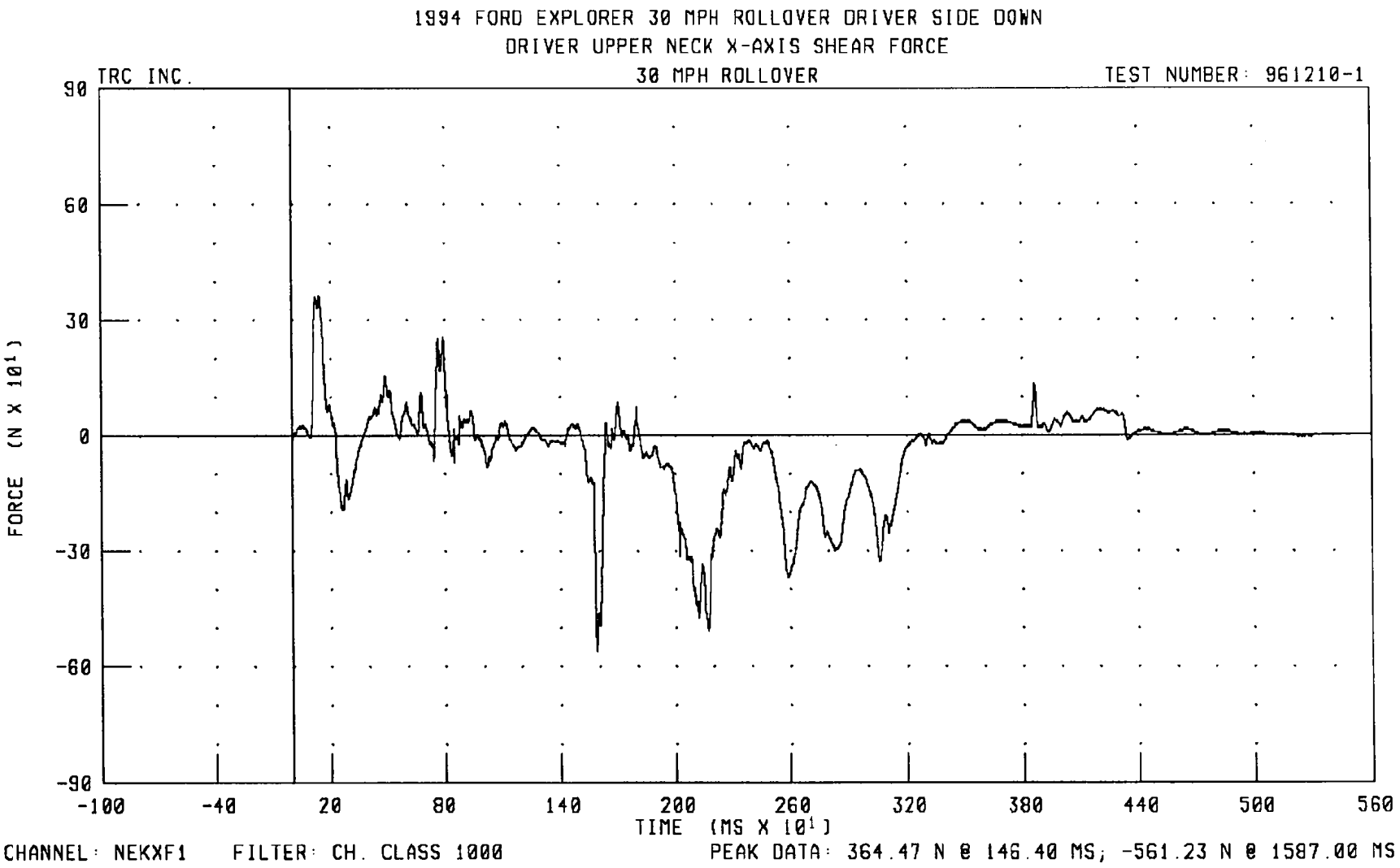
1994 FORD EXPLORER 30 MPH ROLLOVER DRIVER SIDE DOWN
DRIVER HEAD LATERAL AXIS ACCELERATION

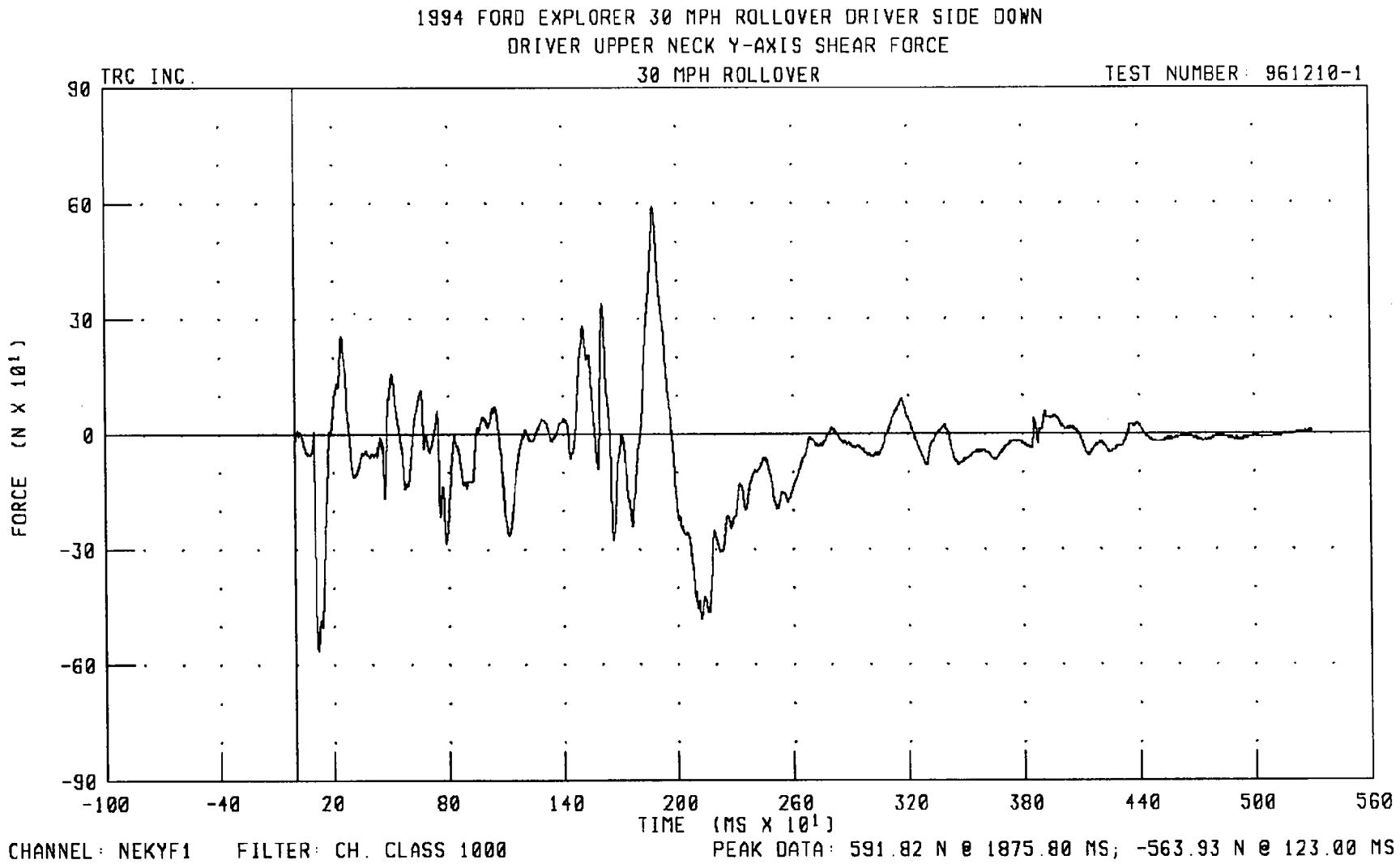


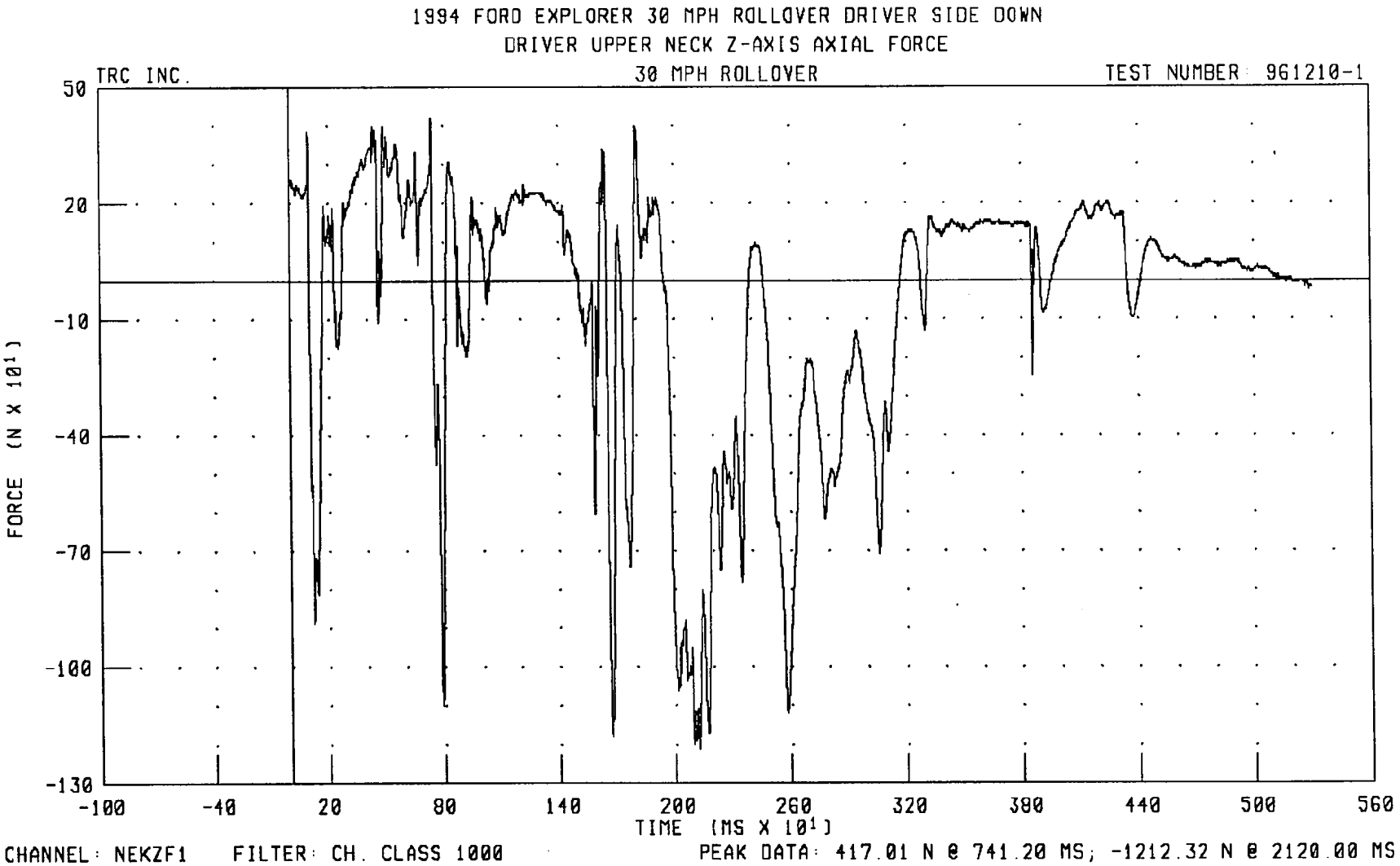
CHANNEL: HEDYG1 FILTER: CH. CLASS 1000 PEAK DATA: 13.72 G @ 1582.20 MS; -29.19 G @ 454.20 MS


1994 FORD EXPLORER 30 MPH ROLLOVER DRIVER SIDE DOWN
DRIVER HEAD VERTICAL AXIS ACCELERATION
TRC INC.
30 MPH ROLLOVER
TEST NUMBER: 961210-1
ACCELERATION (G)
30
20
10
0
-10
-20
-30
-100
-40
20
80
140
200
260
320
380
440
500
560
TIME (MS X 10¹)
CHANNEL: HEDZG1
FILTER: CH. CLASS 1000
PEAK DATA: 8.60 G @ 243.80 MS; -7.66 G @ 1659.40 MS

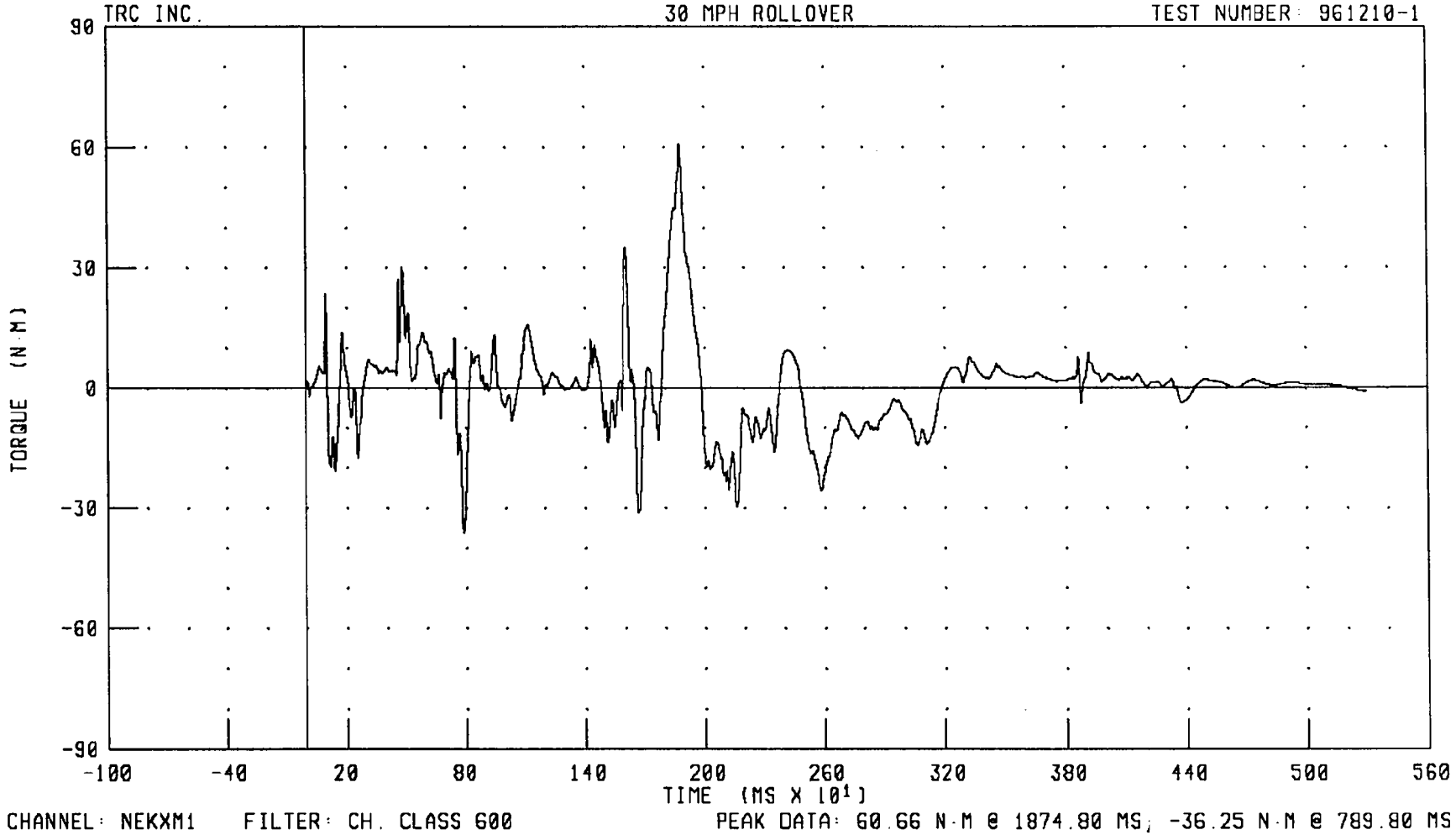

1994 FORD EXPLORER 30 MPH ROLLOVER DRIVER SIDE DOWN
DRIVER HEAD RESULTANT AXIS ACCELERATION
TRC INC.
30 MPH ROLLOVER
TEST NUMBER: 961210-1
ACCELERATION (G)
50
40
30
20
10
0
-10
-100
-40
20
80
140
200
260
320
380
440
500
560
TIME (MS X 10¹)
CHANNEL: HEDRG1
FILTER: CH. CLASS 1000
PEAK DATA: 30.58 G @ 454.20 MS; 0.02 G @ 4133.60 MS


1994 FORD EXPLORER 30 MPH ROLLOVER DRIVER SIDE DOWN
DRIVER UPPER NECK X-AXIS SHEAR FORCE
TRC INC.
30 MPH ROLLOVER
TEST NUMBER: 961210-1
90
60
30
0
-30
-60
-90
FORCE (N X 10¹)
-100
-40
20
80
140
200
260
320
380
440
500
560
TIME (MS X 10¹)
CHANNEL: NEKXF1
FILTER: CH. CLASS 1000
PEAK DATA: 364.47 N @ 146.40 MS; -561.23 N @ 1587.00 MS

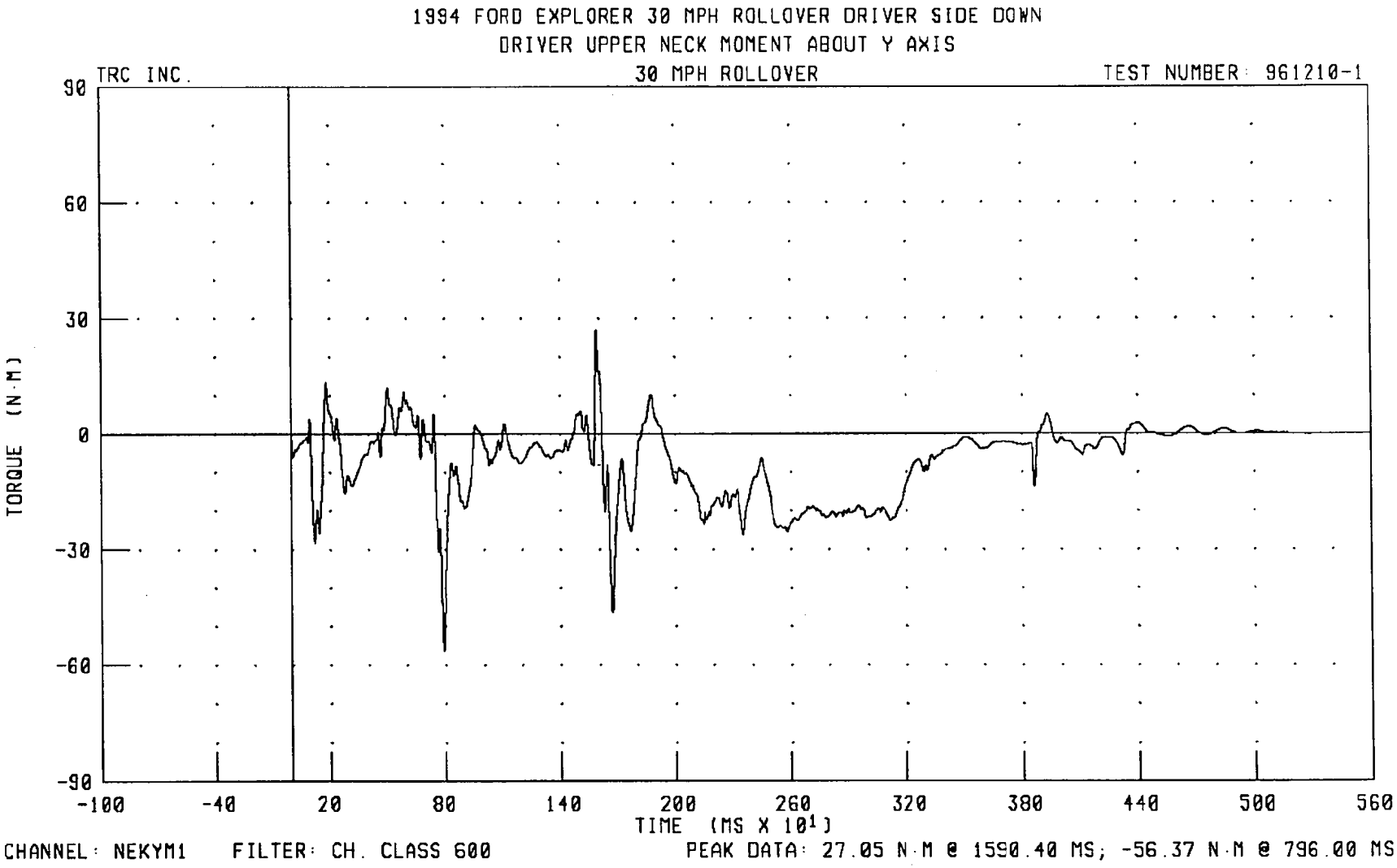

1994 FORD EXPLORER 30 MPH ROLLOVER DRIVER SIDE DOWN
DRIVER UPPER NECK Y-AXIS SHEAR FORCE
TRC INC.
30 MPH ROLLOVER
TEST NUMBER: 961210-1
FORCE (N X 10¹)
90
60
30
0
-30
-60
-90
-100
-40
20
80
140
200
260
320
380
440
500
560
TIME (MS X 10¹)
CHANNEL: NEKYF1
FILTER: CH. CLASS 1000
PEAK DATA: 591.82 N @ 1875.80 MS; -563.93 N @ 123.00 MS


1994 FORD EXPLORER 30 MPH ROLLOVER DRIVER SIDE DOWN
DRIVER UPPER NECK Z-AXIS AXIAL FORCE
TRC INC.
30 MPH ROLLOVER
TEST NUMBER: 961210-1
50
20
-10
-40
-70
-100
-130
FORCE (N X 10¹)
-100
-40
20
80
140
200
260
320
380
440
500
560
TIME (MS X 10¹)
CHANNEL: NEKZF1
FILTER: CH. CLASS 1000
PEAK DATA: 417.01 N @ 741.20 MS; -1212.32 N @ 2120.00 MS

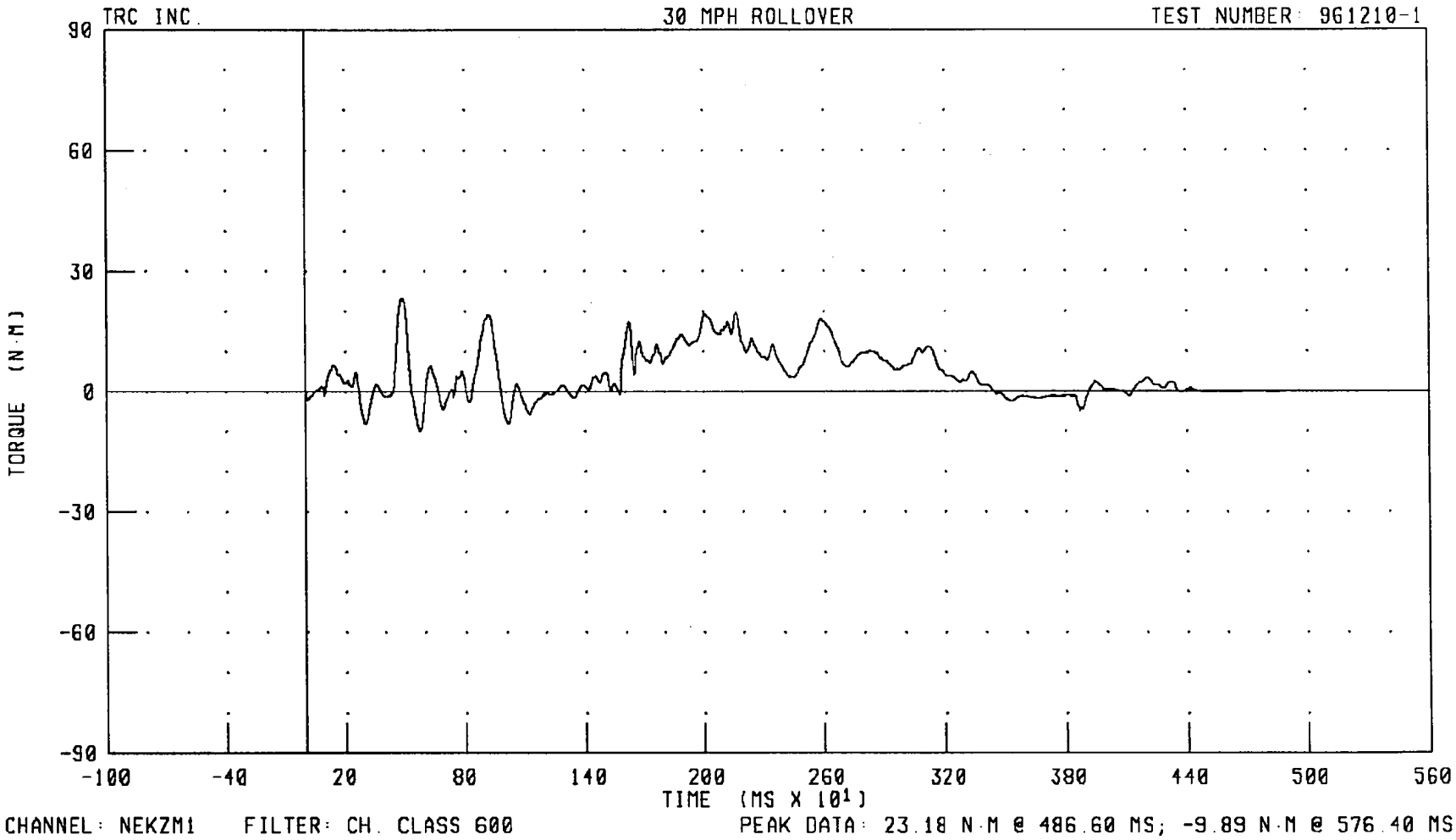
1994 FORD EXPLORER 30 MPH ROLLOVER DRIVER SIDE DOWN
DRIVER UPPER NECK MOMENT ABOUT X AXIS



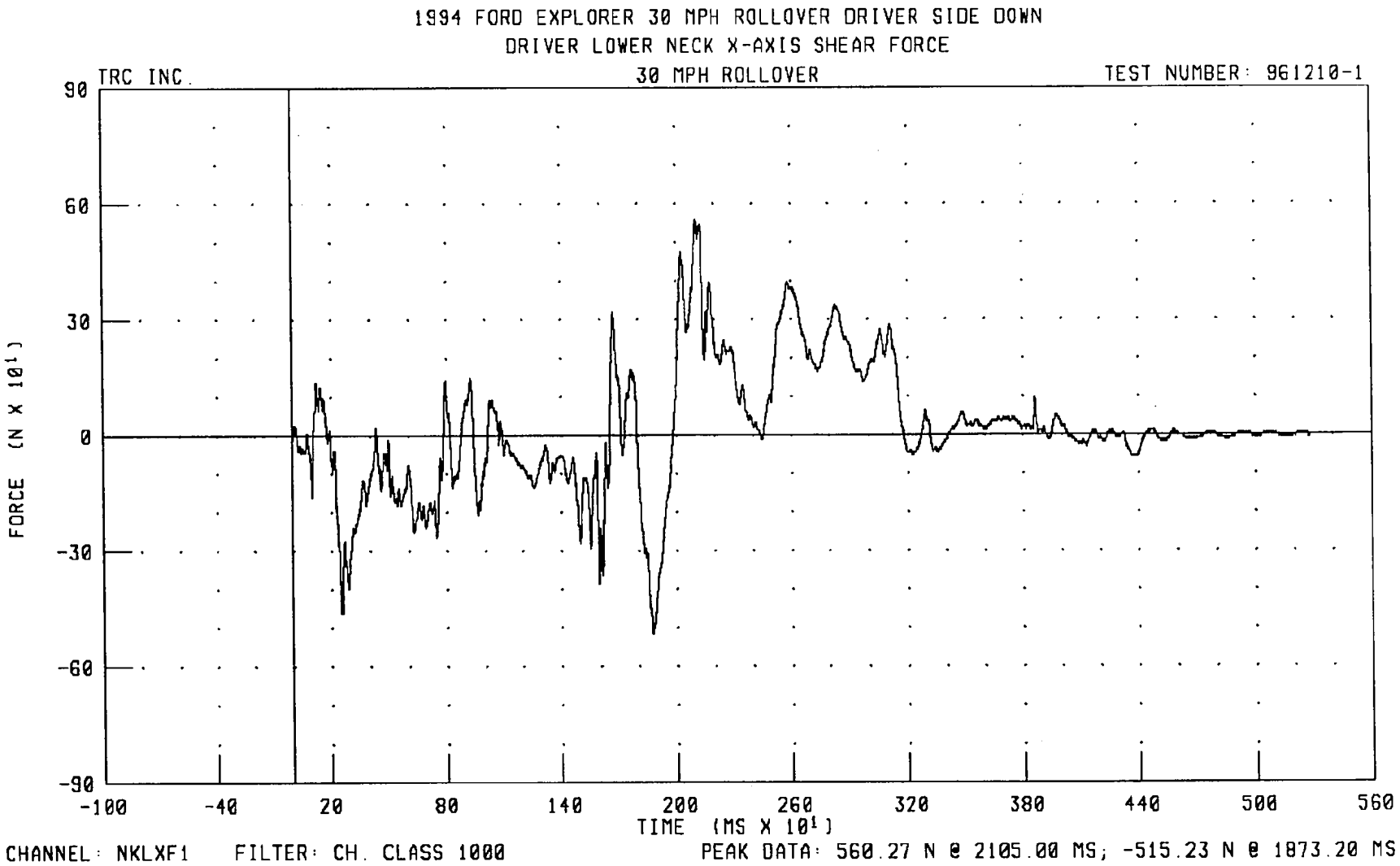
CHANNEL: NEKXM1 FILTER: CH. CLASS 600 PEAK DATA: 60.66 N-M @ 1874.80 MS; -36.25 N-M @ 789.80 MS


1994 FORD EXPLORER 30 MPH ROLLOVER DRIVER SIDE DOWN
DRIVER UPPER NECK MOMENT ABOUT Y AXIS
TRC INC.
30 MPH ROLLOVER
TEST NUMBER: 961210-1
90
60
30
0
-30
-60
-90
TORQUE (N-M)
-100
-40
20
80
140
200
260
320
380
440
500
560
TIME (MS X 10¹)
CHANNEL: NEKYM1
FILTER: CH. CLASS 600
PEAK DATA: 27.05 N-M @ 1590.40 MS; -56.37 N-M @ 796.00 MS

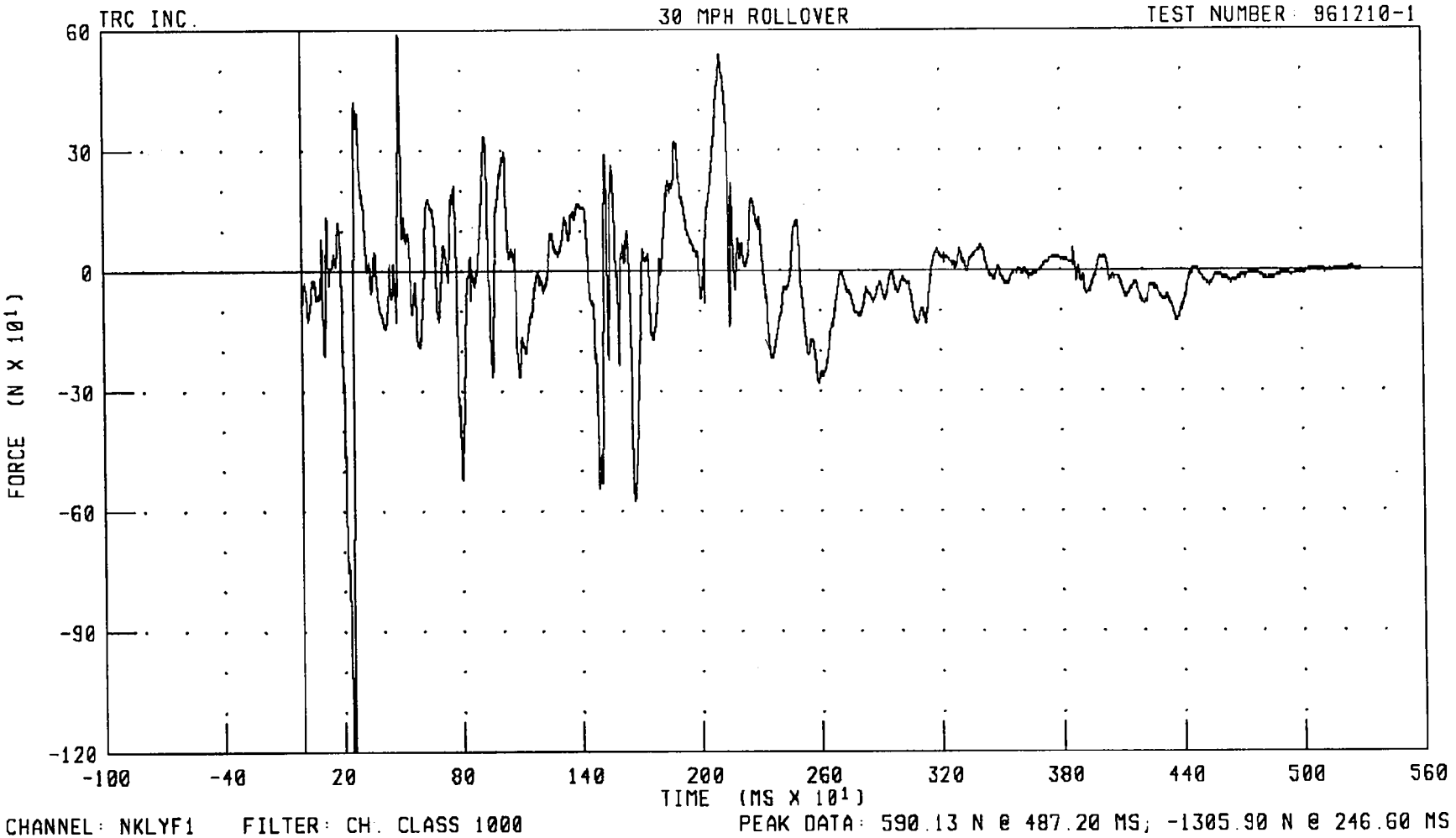
1994 FORD EXPLORER 30 MPH ROLLOVER DRIVER SIDE DOWN
DRIVER UPPER NECK MOMENT ABOUT Z AXIS



CHANNEL: NEKZM1 FILTER: CH. CLASS 600 PEAK DATA: 23.18 N-M @ 486.60 MS; -9.89 N-M @ 576.40 MS

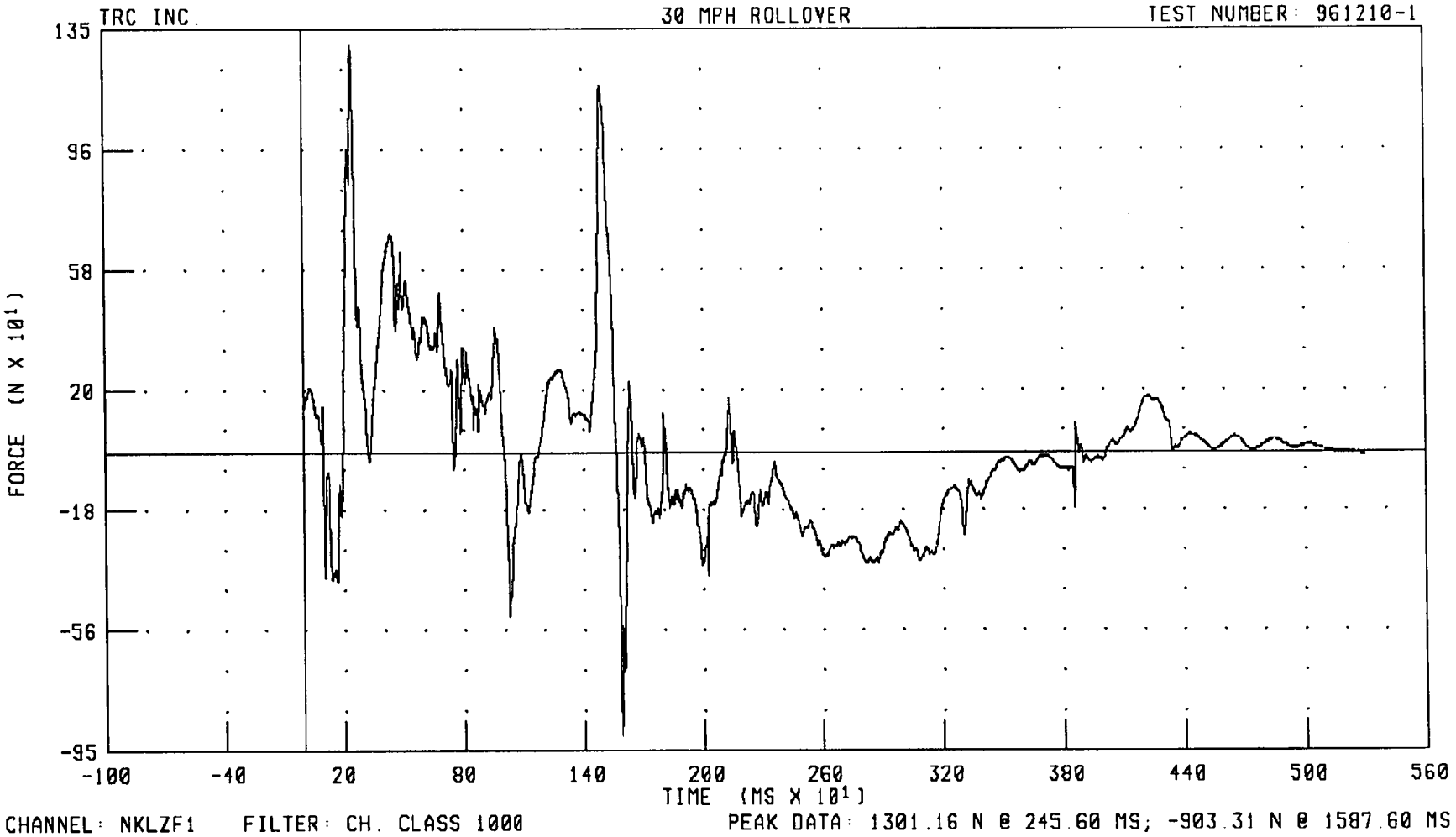

1994 FORD EXPLORER 30 MPH ROLLOVER DRIVER SIDE DOWN
DRIVER LOWER NECK X-AXIS SHEAR FORCE
TRC INC.
30 MPH ROLLOVER
TEST NUMBER: 961210-1
90
60
30
0
-30
-60
-90
FORCE (N X 10¹)
-100
-40
20
80
140
200
260
320
380
440
500
560
TIME (MS X 10¹)
CHANNEL: NKLXF1
FILTER: CH. CLASS 1000
PEAK DATA: 560.27 N @ 2105.00 MS; -515.23 N @ 1873.20 MS

1994 FORD EXPLORER 30 MPH ROLLOVER DRIVER SIDE DOWN
DRIVER LOWER NECK Y-AXIS SHEAR FORCE

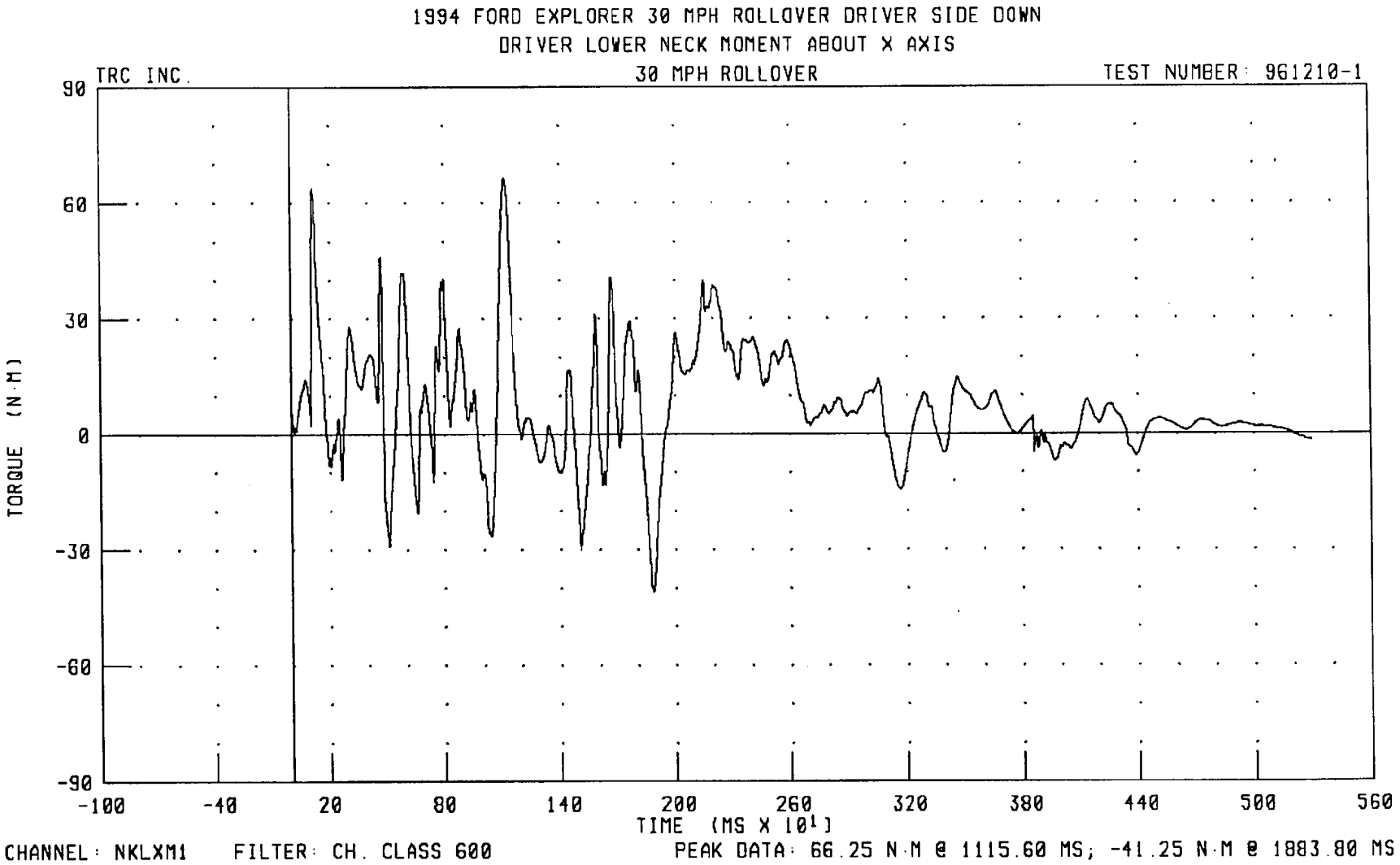


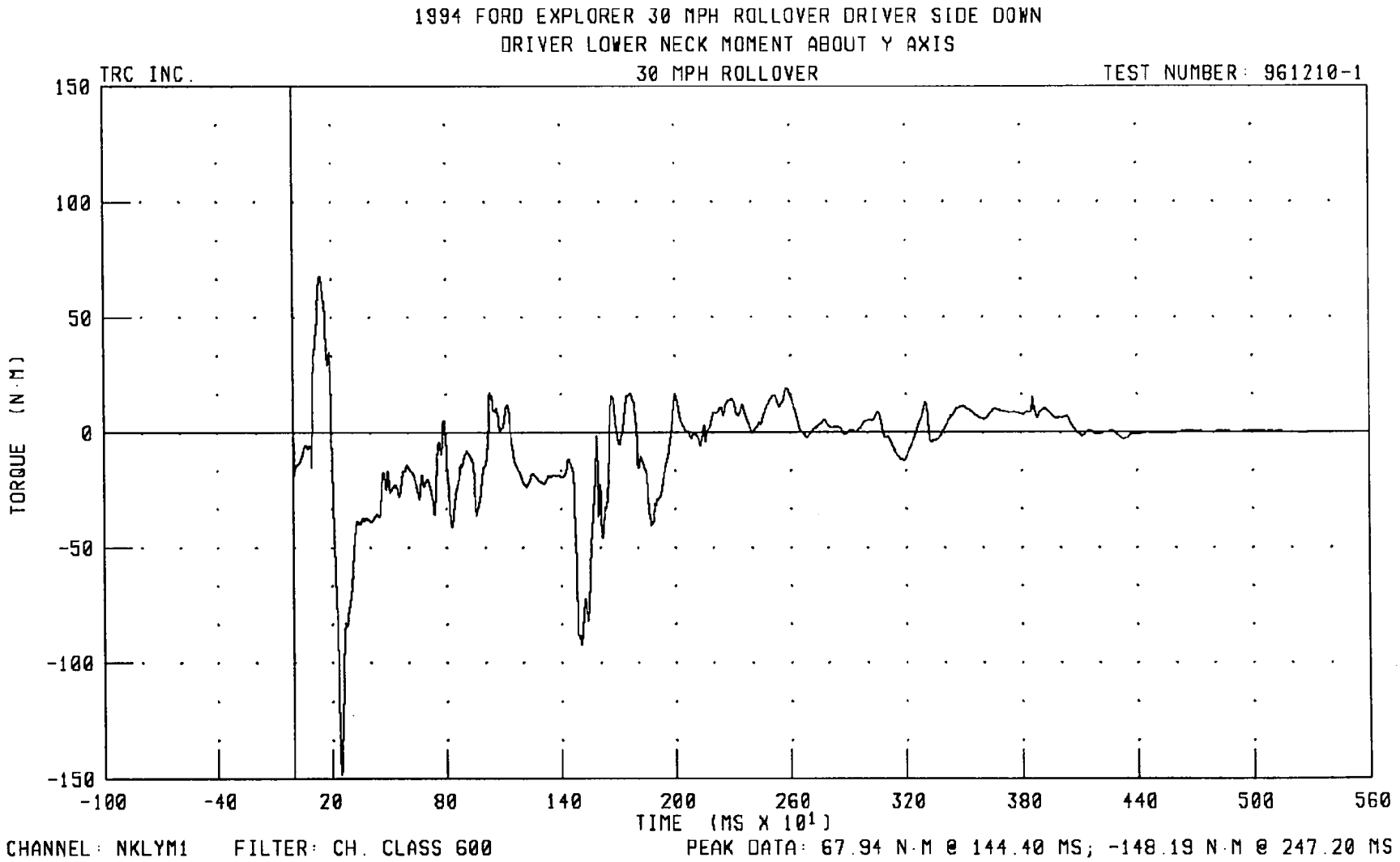
CHANNEL: NKLYF1 FILTER: CH. CLASS 1000 PEAK DATA: 590.13 N @ 487.20 MS; -1305.90 N @ 246.60 MS

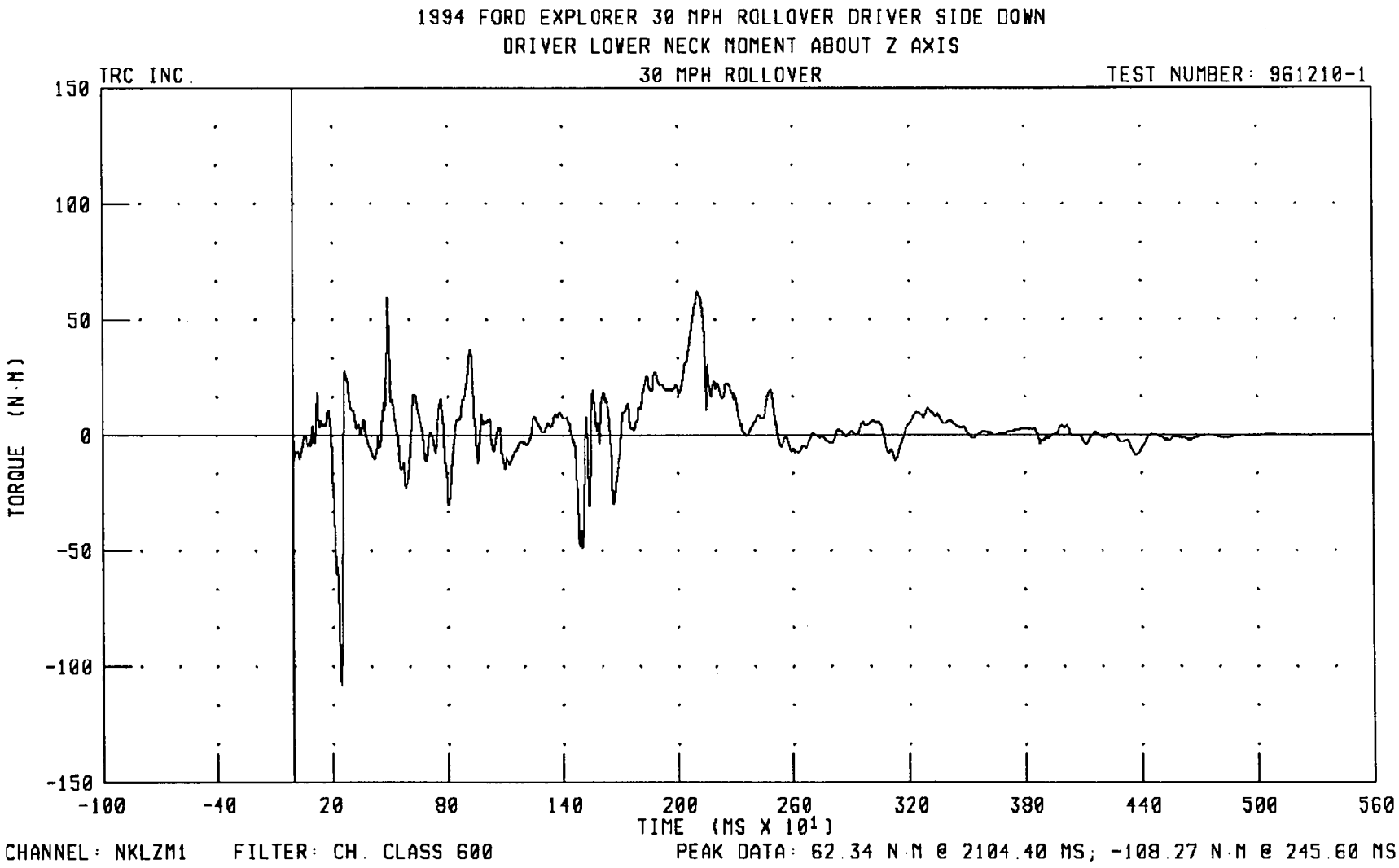
1994 FORD EXPLORER 30 MPH ROLLOVER DRIVER SIDE DOWN
DRIVER LOWER NECK Z-AXIS SHEAR FORCE

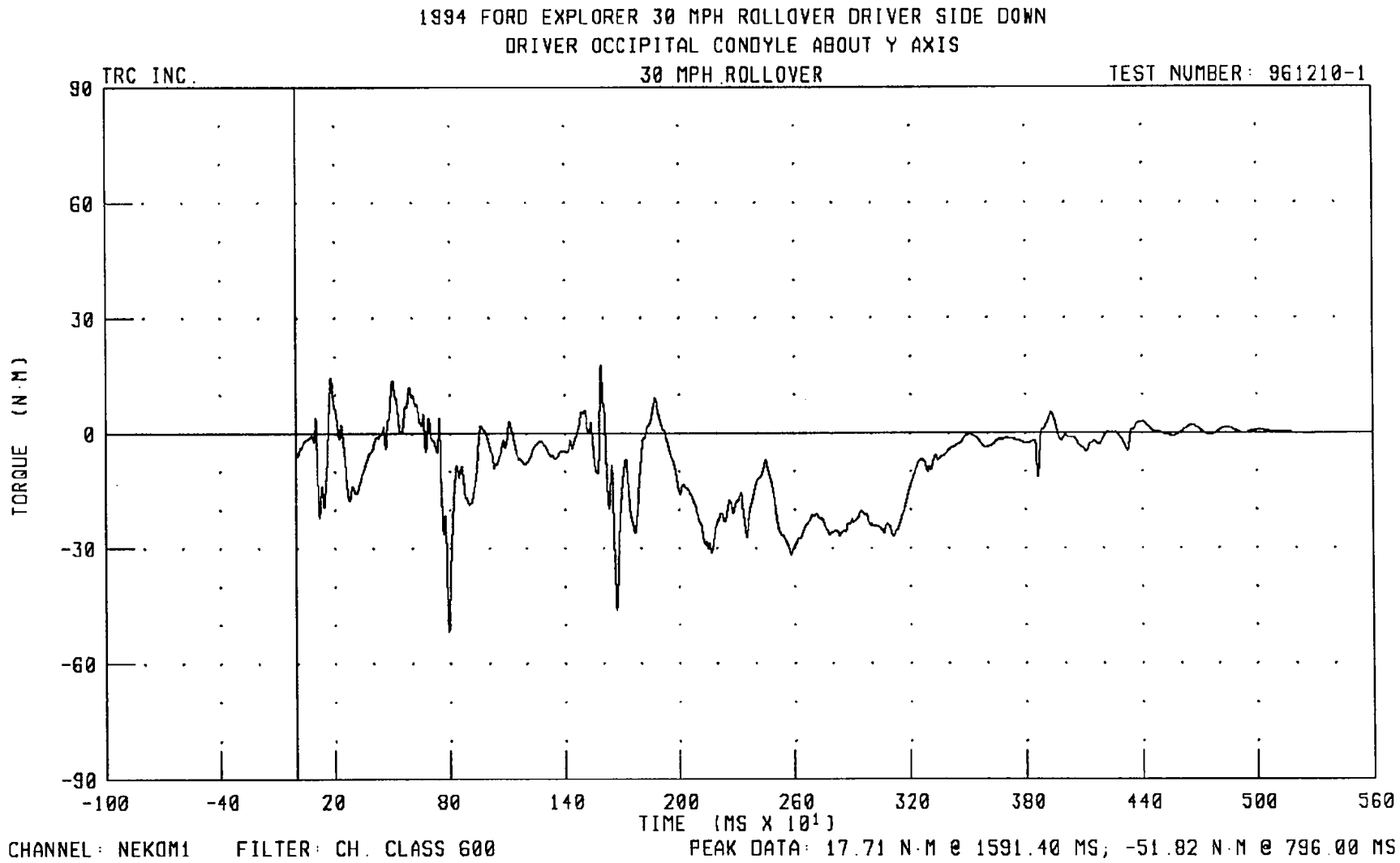


CHANNEL: NKLZF1 FILTER: CH. CLASS 1000 PEAK DATA: 1301.16 N @ 245.60 MS; -903.31 N @ 1587.60 MS

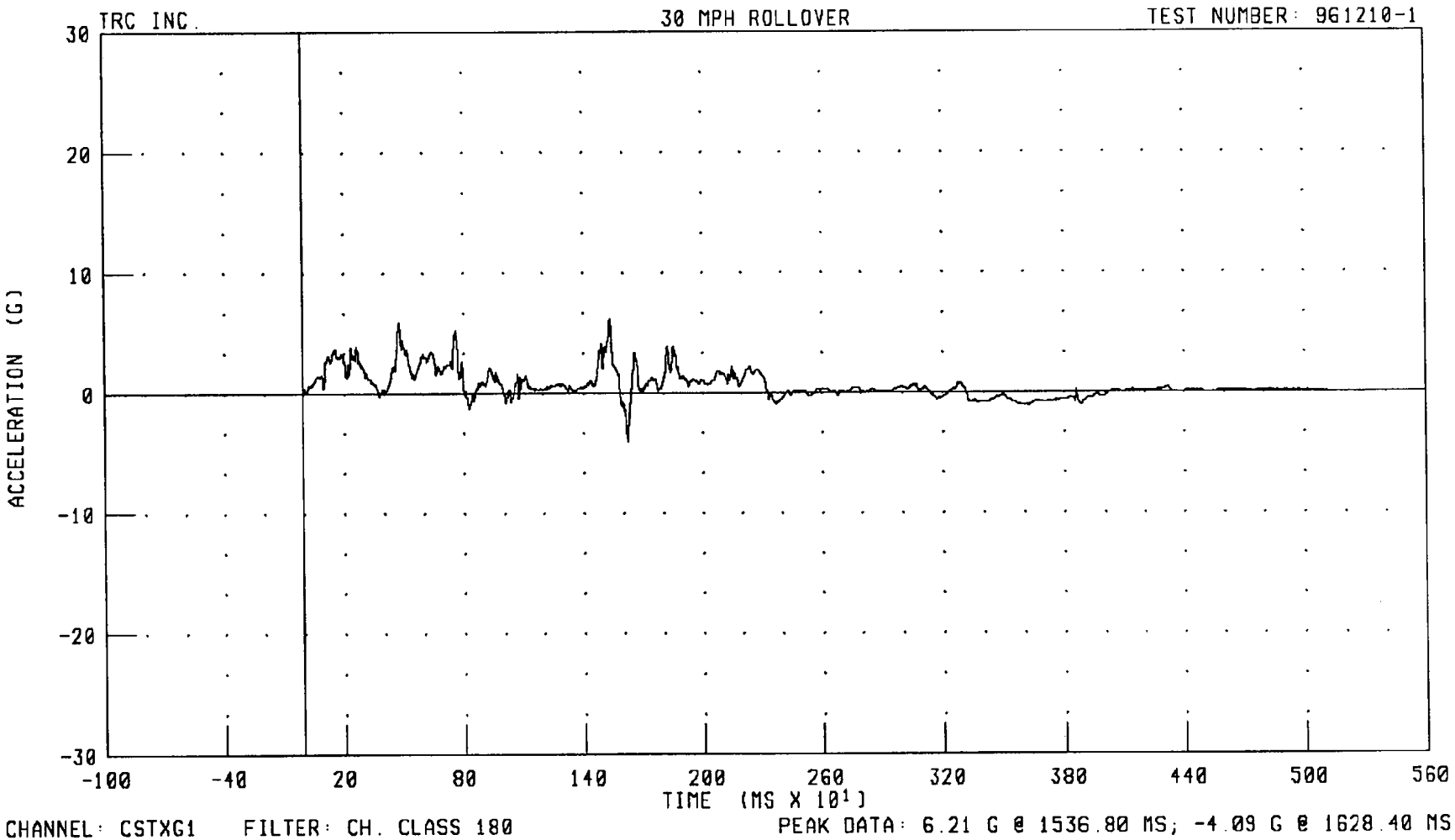

1994 FORD EXPLORER 30 MPH ROLLOVER DRIVER SIDE DOWN
DRIVER LOWER NECK MOMENT ABOUT X AXIS
TRC INC.
30 MPH ROLLOVER
TEST NUMBER: 961210-1
90
60
30
0
-30
-60
-90
TORQUE (N-M)
-100
-40
20
80
140
200
260
320
380
440
500
560
TIME (MS X 10[1])
CHANNEL: NKLXM1
FILTER: CH. CLASS 600
PEAK DATA: 66.25 N-M @ 1115.60 MS; -41.25 N-M @ 1883.80 MS


1994 FORD EXPLORER 30 MPH ROLLOVER DRIVER SIDE DOWN
DRIVER LOWER NECK MOMENT ABOUT Y AXIS
TRC INC.
30 MPH ROLLOVER
TEST NUMBER: 961210-1
150
100
50
0
-50
-100
-150
TORQUE (N-M)
-100
-40
20
80
140
200
260
320
380
440
500
560
TIME (MS X 10¹)
CHANNEL: NKLYM1
FILTER: CH. CLASS 600
PEAK DATA: 67.94 N-M @ 144.40 MS; -148.19 N-M @ 247.20 MS


1994 FORD EXPLORER 30 MPH ROLLOVER DRIVER SIDE DOWN
DRIVER LOWER NECK MOMENT ABOUT Z AXIS
TRC INC.
30 MPH ROLLOVER
TEST NUMBER: 961210-1
150
100
50
0
-50
-100
-150
TORQUE (N-M)
-100
-40
20
80
140
200
260
320
380
440
500
560
TIME (MS X 10¹)
CHANNEL: NKLZM1
FILTER: CH. CLASS 600
PEAK DATA: 62.34 N-M @ 2104.40 MS; -108.27 N-M @ 245.60 MS

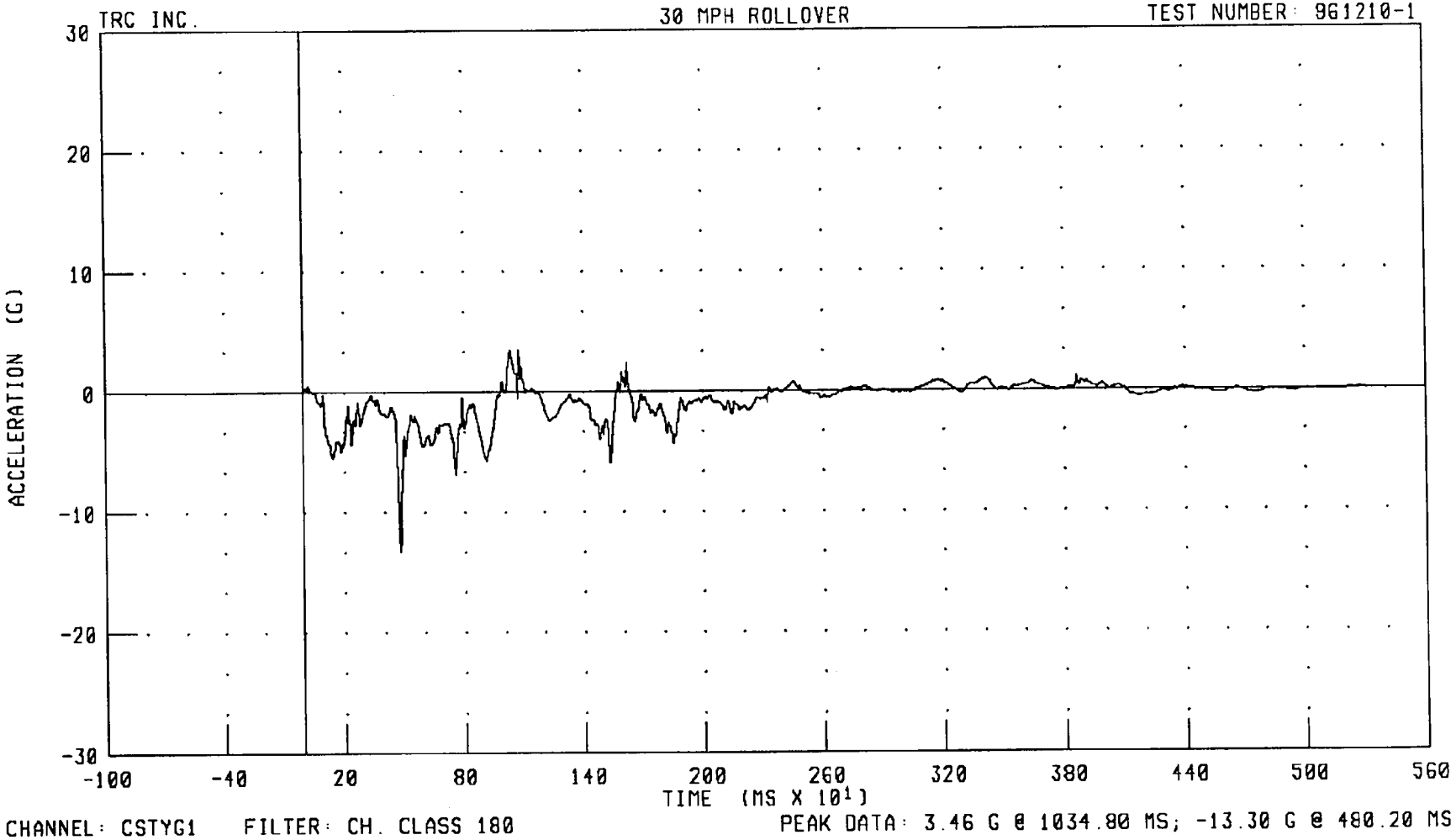

1994 FORD EXPLORER 30 MPH ROLLOVER DRIVER SIDE DOWN
DRIVER OCCIPITAL CONDYLE ABOUT Y AXIS
TRC INC.
30 MPH ROLLOVER
TEST NUMBER: 961210-1
90
60
30
0
-30
-60
-90
TORQUE (N-M)
-100
-40
20
80
140
200
260
320
380
440
500
560
TIME (MS X 10¹)
CHANNEL: NEKOM1
FILTER: CH. CLASS 600
PEAK DATA: 17.71 N-M @ 1591.40 MS; -51.82 N-M @ 796.00 MS

1994 FORD EXPLORER 30 MPH ROLLOVER DRIVER SIDE DOWN
DRIVER CHEST LONGITUDINAL AXIS ACCELERATION



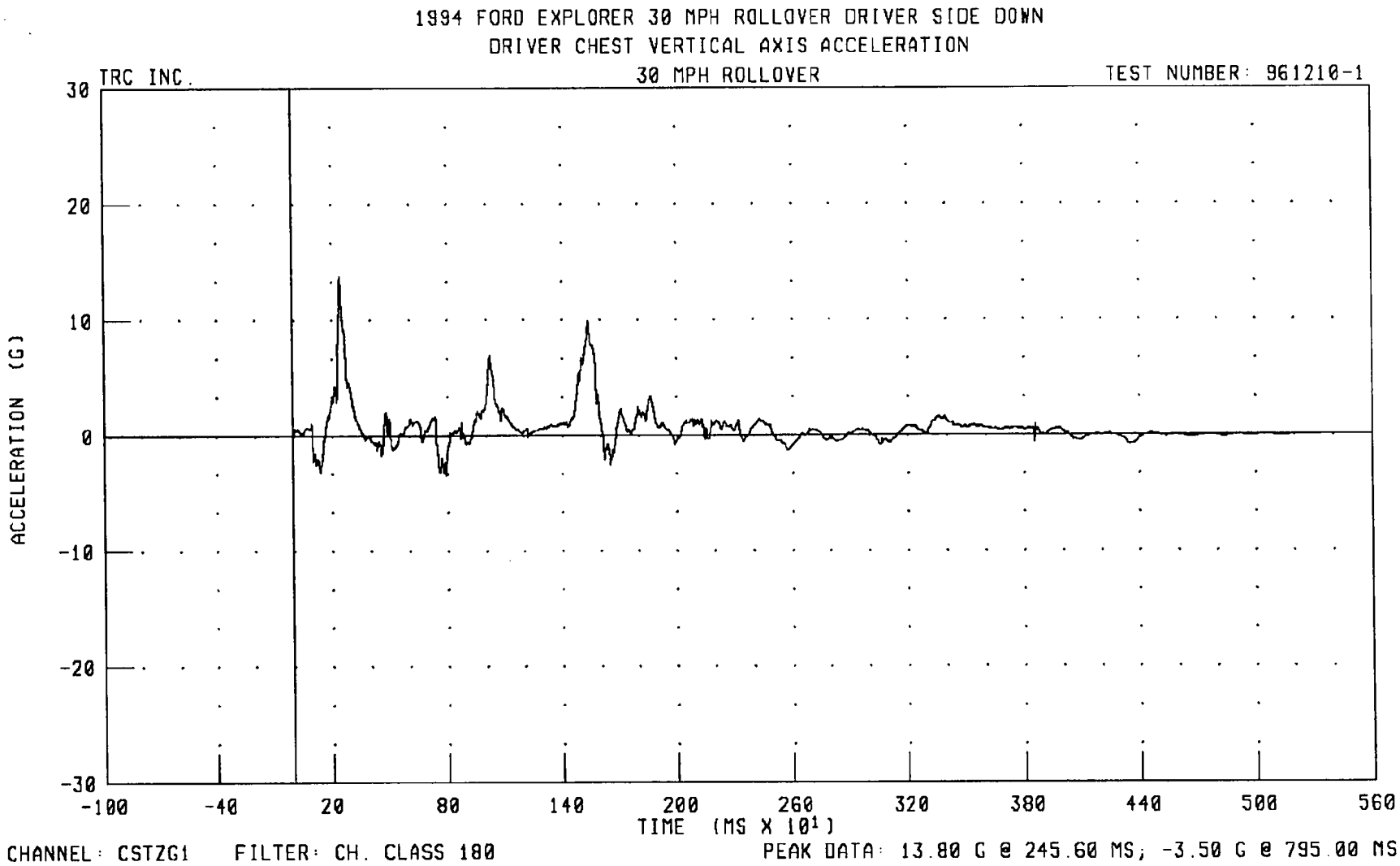
CHANNEL: CSTXG1 FILTER: CH. CLASS 180 PEAK DATA: 6.21 G @ 1536.80 MS; -4.09 G @ 1628.40 MS

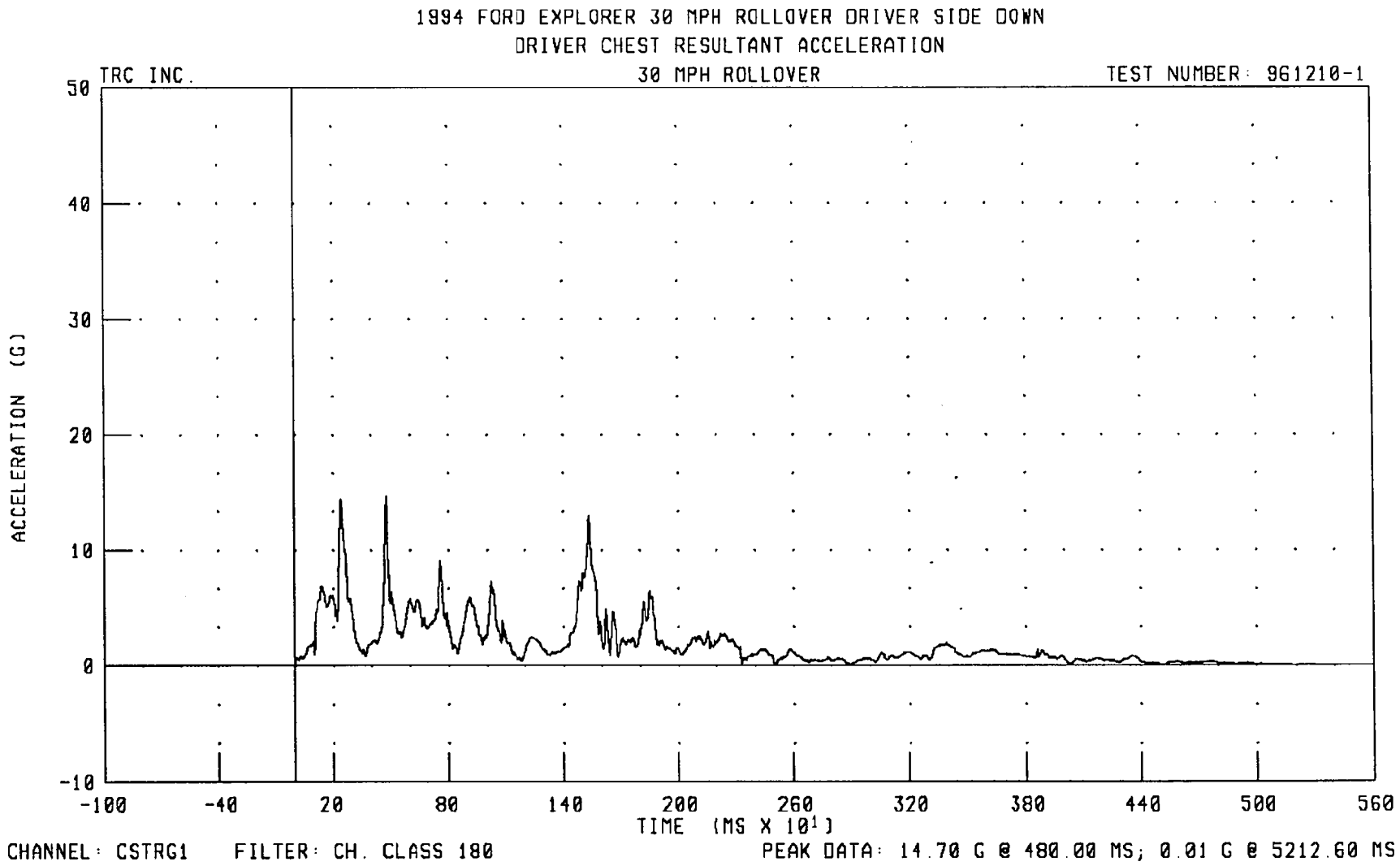
1994 FORD EXPLORER 30 MPH ROLLOVER DRIVER SIDE DOWN
DRIVER CHEST LATERAL AXIS ACCELERATION



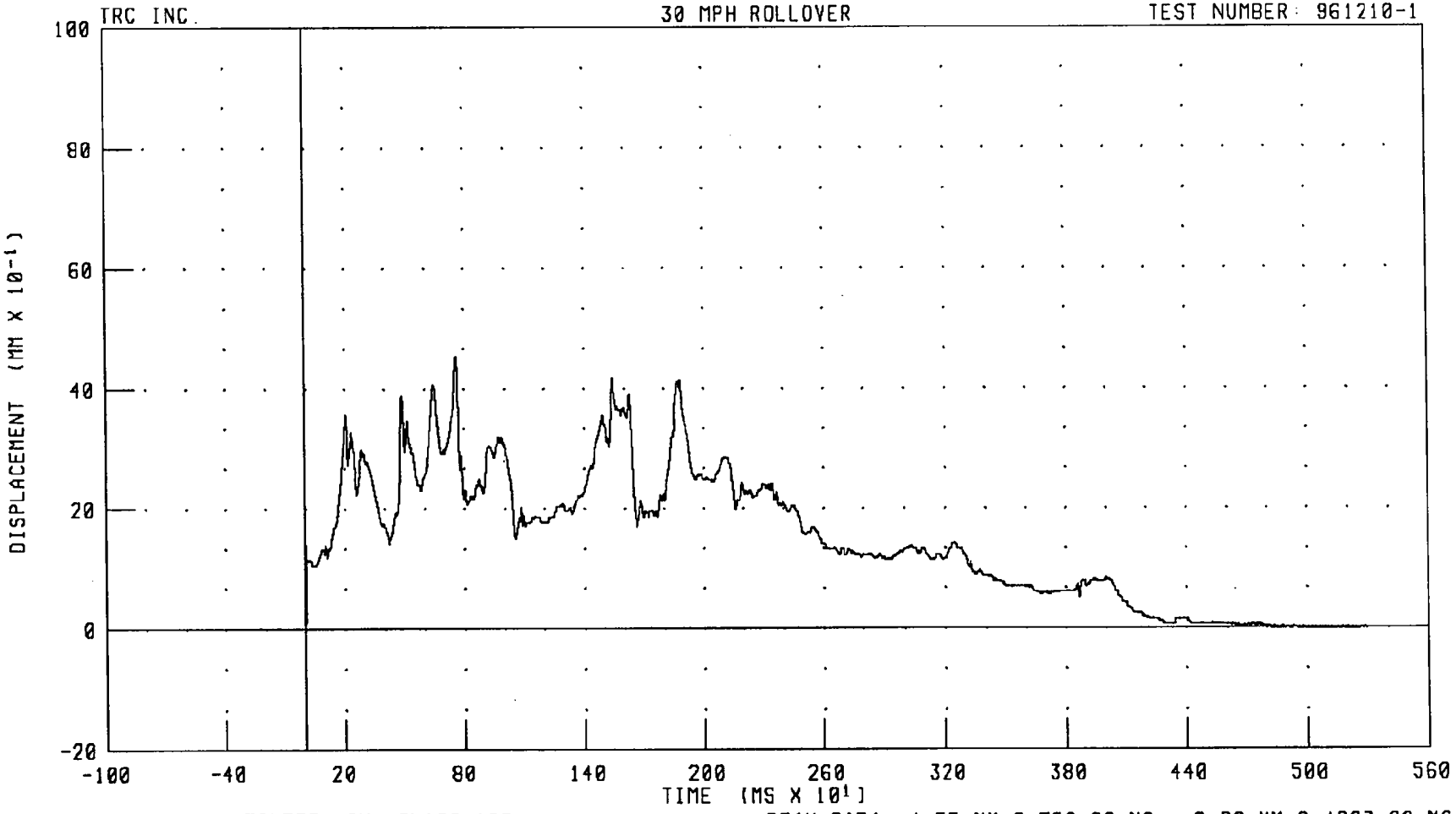
CHANNEL: CSTYG1 FILTER: CH. CLASS 180

PEAK DATA: 3.46 G @ 1034.80 MS; -13.30 G @ 480.20 MS


1994 FORD EXPLORER 30 MPH ROLLOVER DRIVER SIDE DOWN
DRIVER CHEST VERTICAL AXIS ACCELERATION
TRC INC.
30 MPH ROLLOVER
TEST NUMBER: 961210-1
ACCELERATION (G)
30
20
10
0
-10
-20
-30
-100
-40
20
80
140
200
260
320
380
440
500
560
TIME (MS X 10¹)
CHANNEL: CSTZG1
FILTER: CH. CLASS 180
PEAK DATA: 13.80 G @ 245.60 MS; -3.50 G @ 795.00 MS

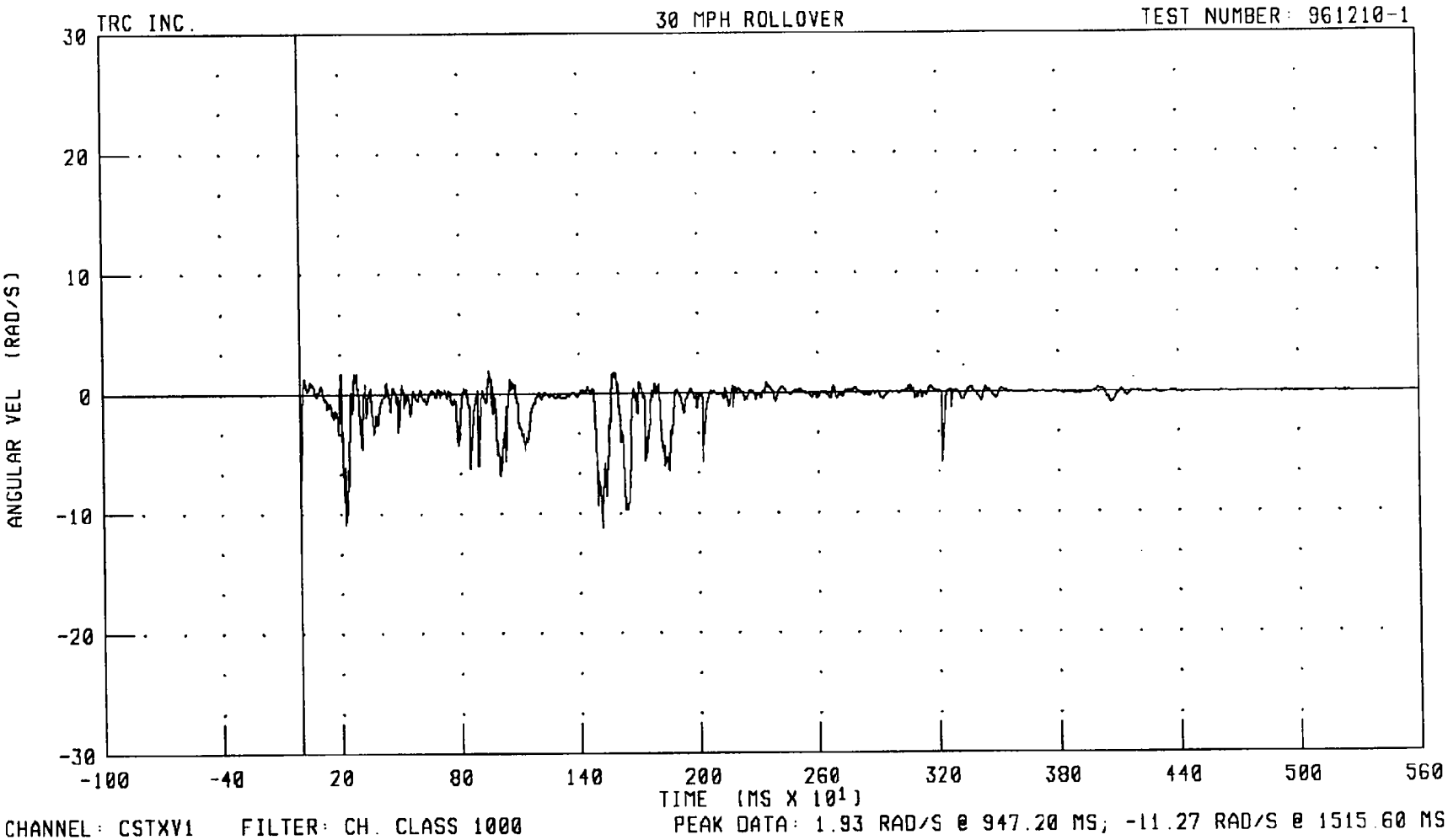

1994 FORD EXPLORER 30 MPH ROLLOVER DRIVER SIDE DOWN
DRIVER CHEST RESULTANT ACCELERATION
TRC INC.
30 MPH ROLLOVER
TEST NUMBER: 961210-1
ACCELERATION (G)
50
40
30
20
10
0
-10
-100
-40
20
80
140
200
260
320
380
440
500
560
TIME (MS X 10¹)
CHANNEL: CSTRG1
FILTER: CH. CLASS 180
PEAK DATA: 14.70 G @ 480.00 MS; 0.01 G @ 5212.60 MS

1994 FORD EXPLORER 30 MPH ROLLOVER DRIVER SIDE DOWN
DRIVER CHEST DEFLECTION



CHANNEL: CSTXD1 FILTER: CH. CLASS 180 PEAK DATA: 4.55 MM @ 762.80 MS; -0.02 MM @ 4823.20 MS

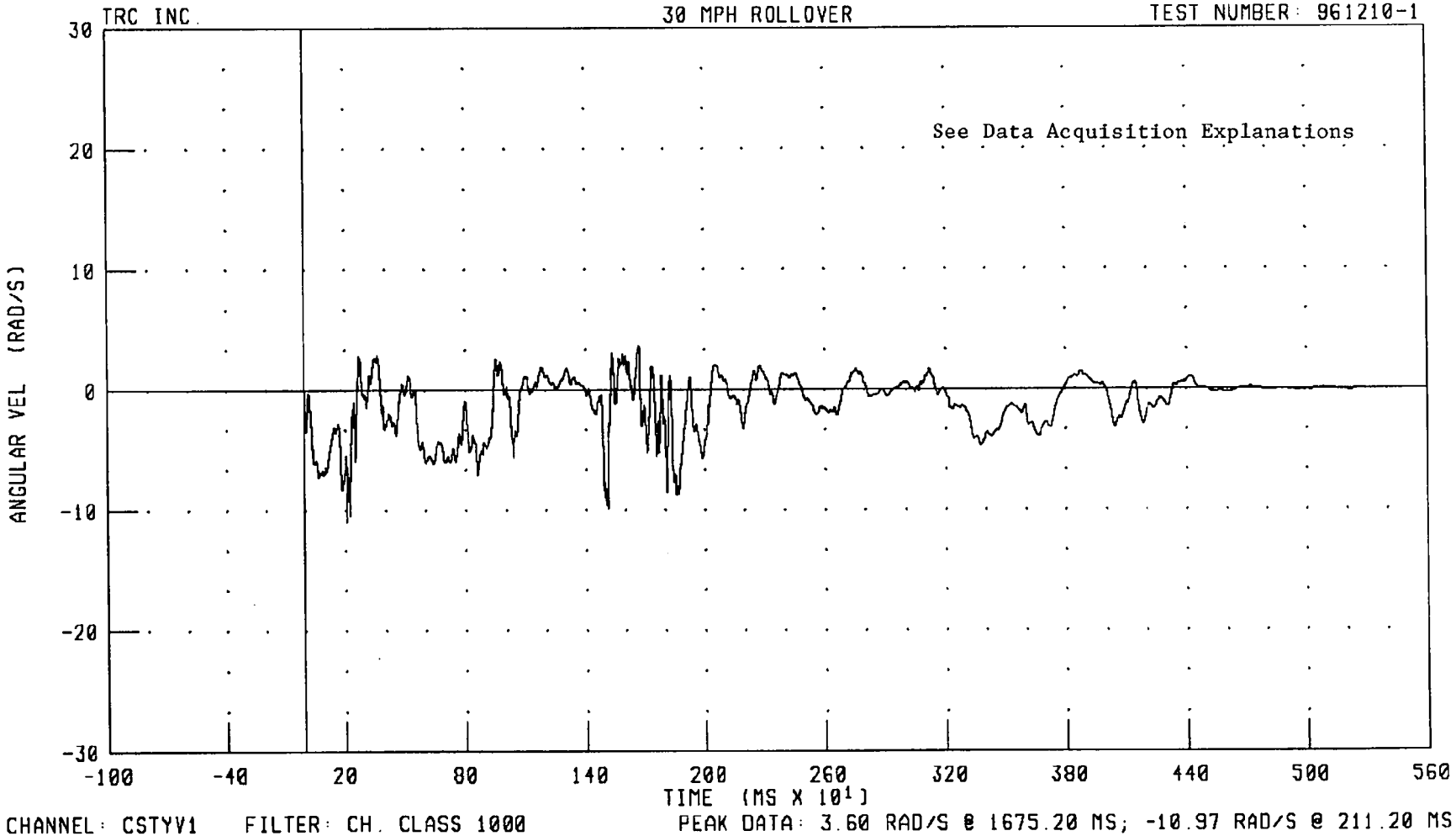
1994 FORD EXPLORER 30 MPH ROLLOVER DRIVER SIDE DOWN
DRIVER CHEST ROLL VELOCITY



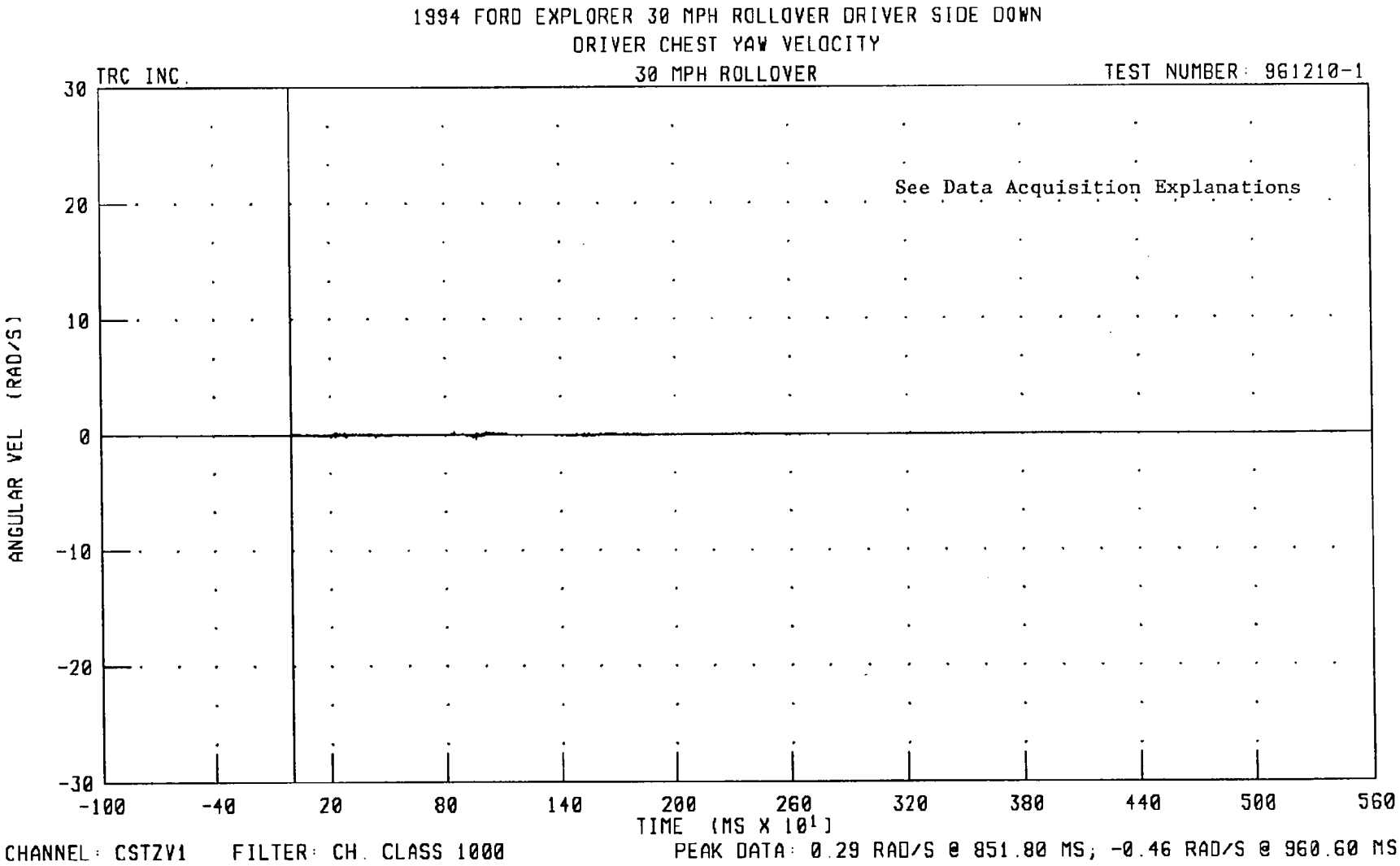
CHANNEL: CSTXV1 FILTER: CH. CLASS 1000

PEAK DATA: 1.93 RAD/S @ 947.20 MS; -11.27 RAD/S @ 1515.60 MS

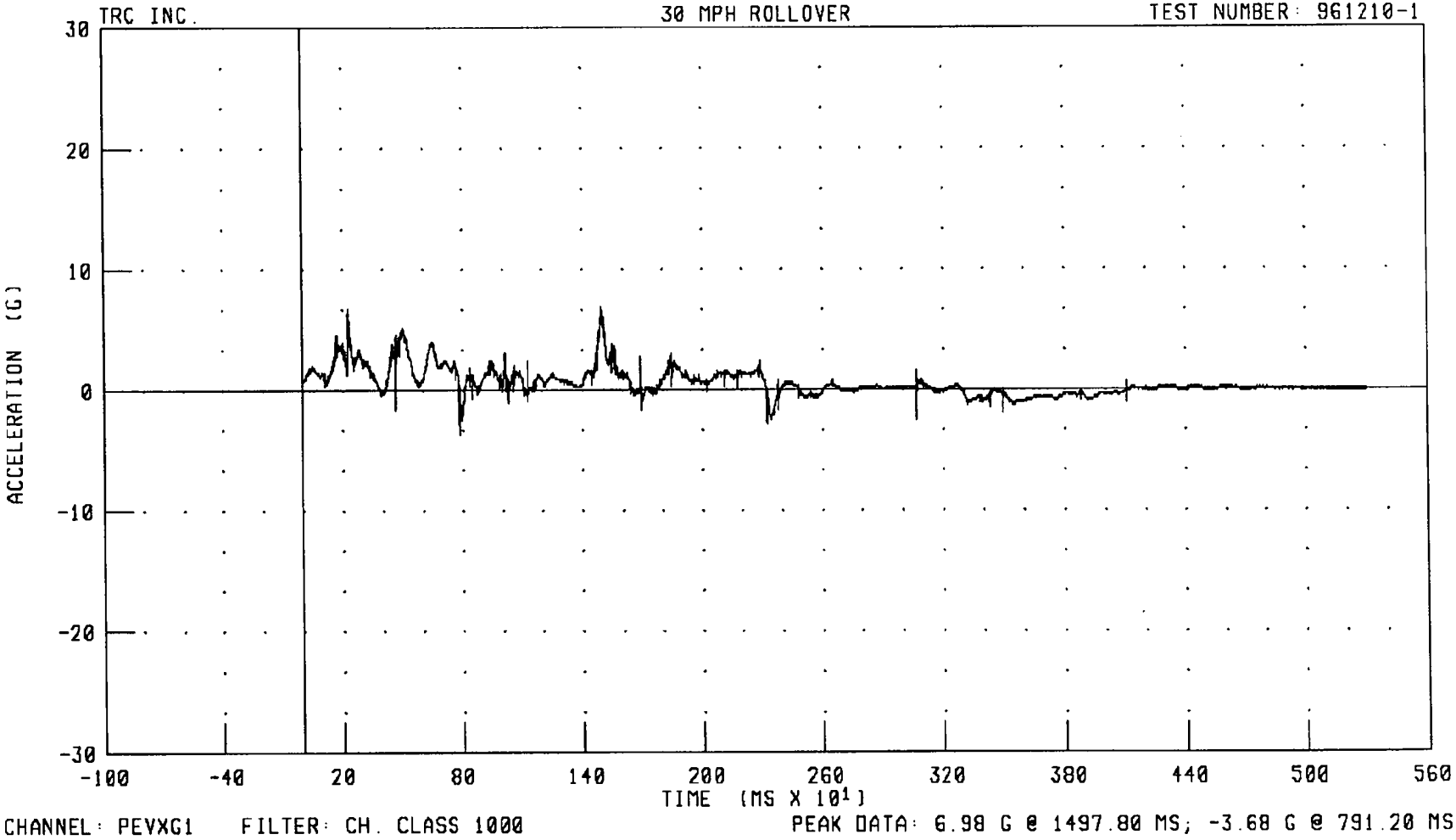
1994 FORD EXPLORER 30 MPH ROLLOVER DRIVER SIDE DOWN
DRIVER CHEST PITCH VELOCITY



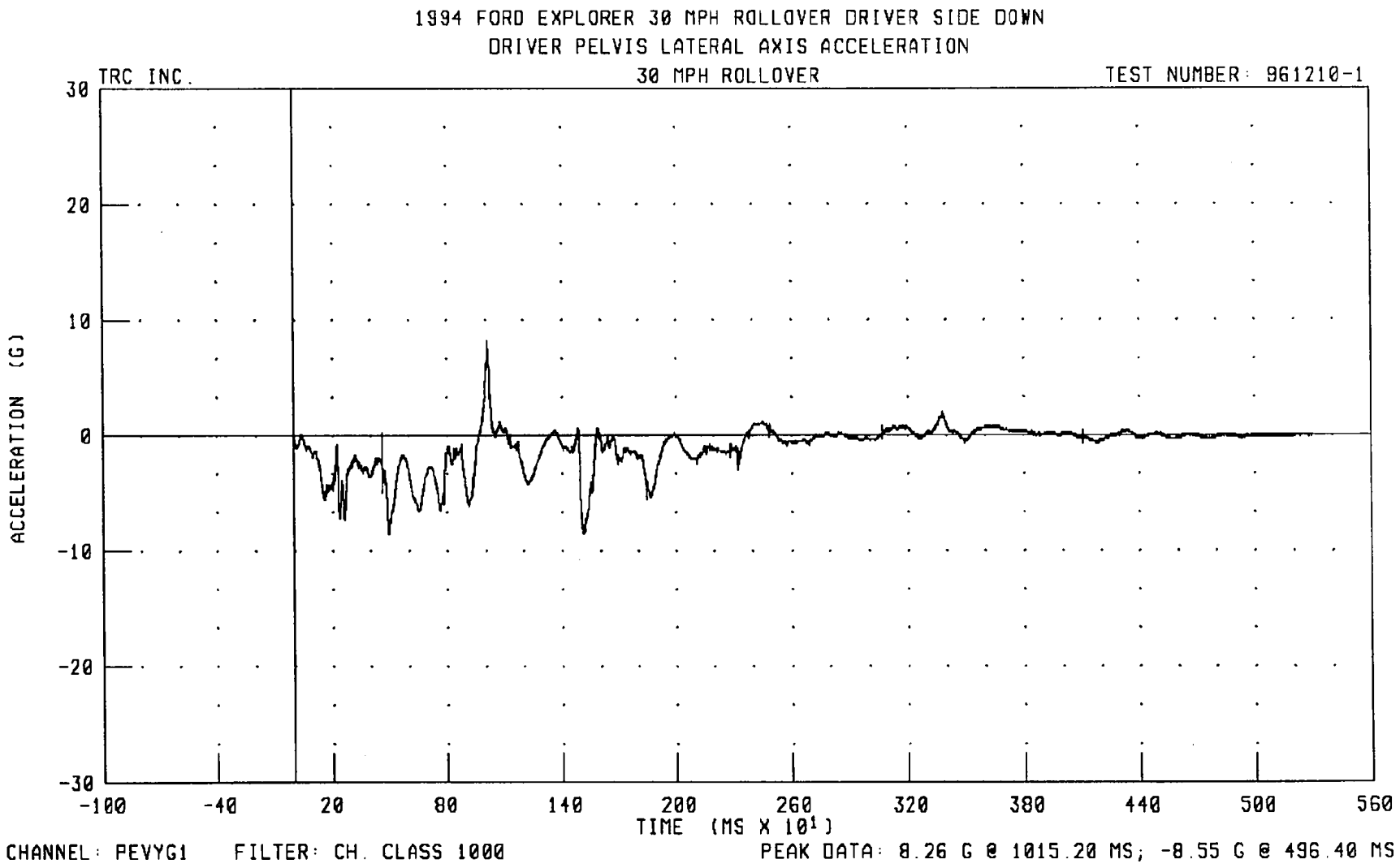
CHANNEL: CSTYV1 FILTER: CH. CLASS 1000 PEAK DATA: 3.60 RAD/S @ 1675.20 MS; -10.97 RAD/S @ 211.20 MS


1994 FORD EXPLORER 30 MPH ROLLOVER DRIVER SIDE DOWN
DRIVER CHEST YAW VELOCITY
TRC INC.
30 MPH ROLLOVER
TEST NUMBER: 961210-1
See Data Acquisition Explanations
ANGULAR VEL (RAD/S)
30
20
10
0
-10
-20
-30
-100
-40
20
80
140
200
260
320
380
440
500
560
TIME (MS X 10[1])
CHANNEL: CSTZV1
FILTER: CH. CLASS 1000
PEAK DATA: 0.29 RAD/S @ 851.80 MS; -0.46 RAD/S @ 960.60 MS

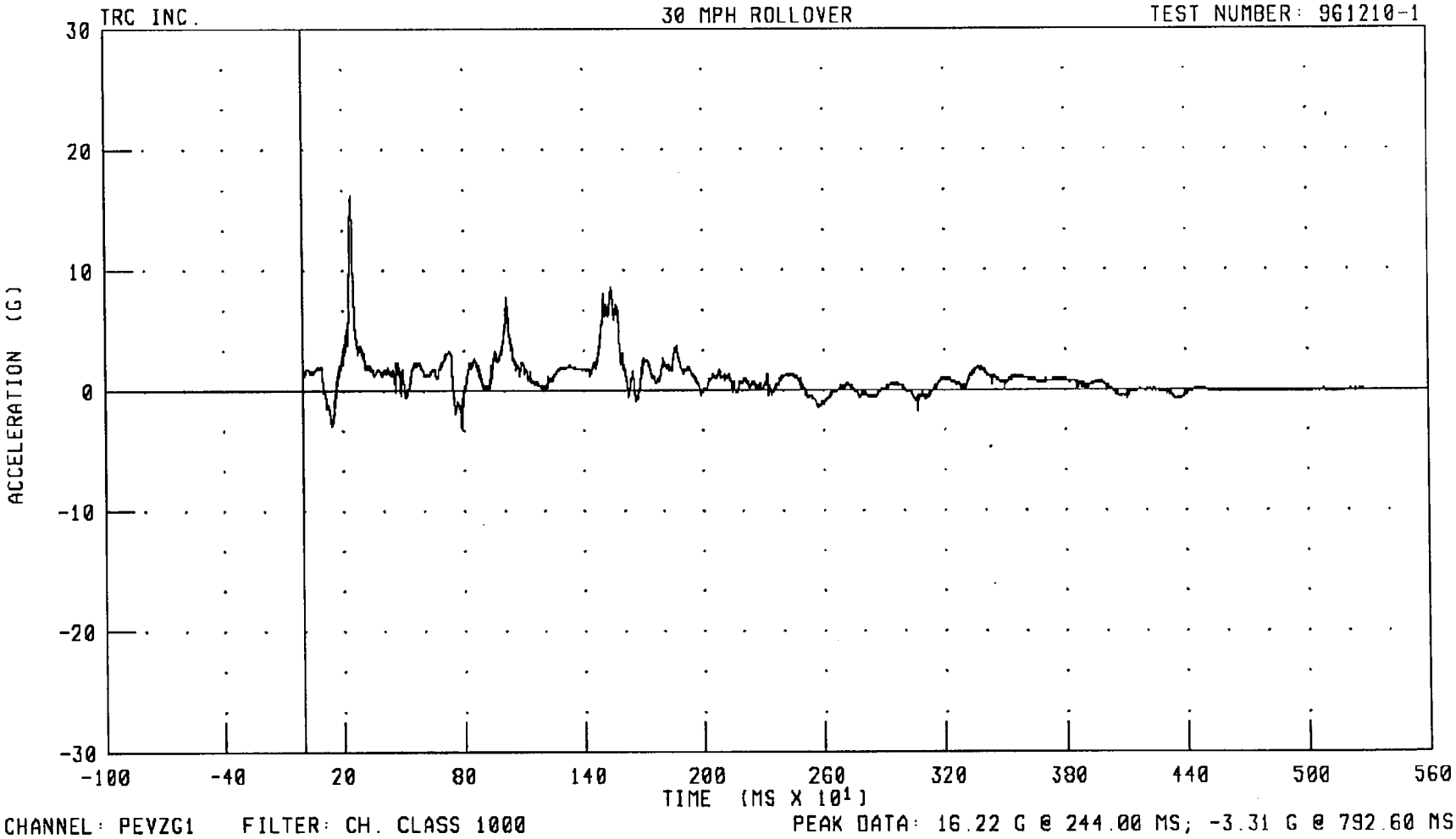
1994 FORD EXPLORER 30 MPH ROLLOVER DRIVER SIDE DOWN
DRIVER PELVIS LONGITUDINAL AXIS ACCELERATION



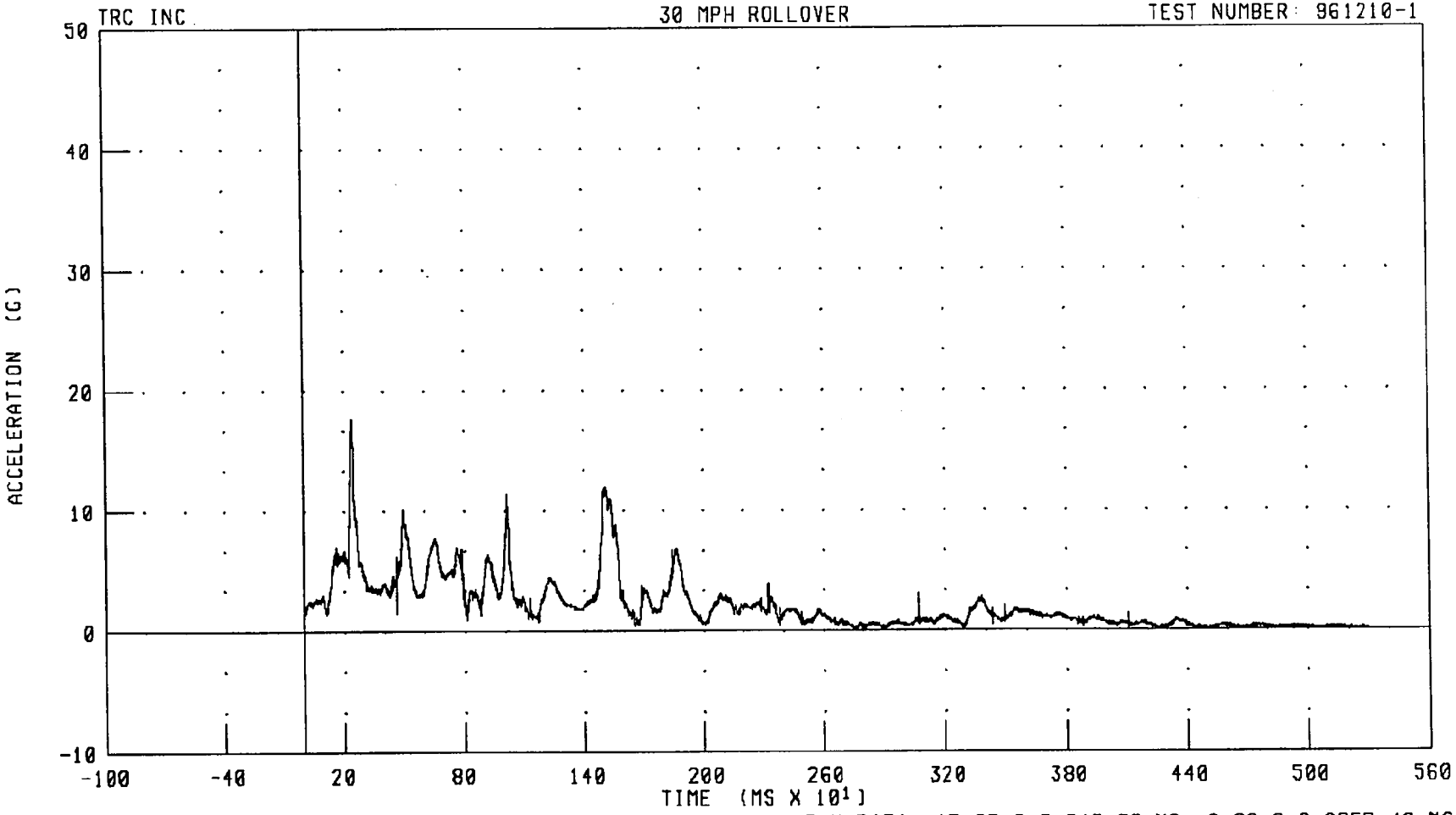
CHANNEL: PEVXG1 FILTER: CH. CLASS 1000 PEAK DATA: 6.98 G @ 1497.80 MS; -3.68 G @ 791.20 MS


1994 FORD EXPLORER 30 MPH ROLLOVER DRIVER SIDE DOWN
DRIVER PELVIS LATERAL AXIS ACCELERATION
TRC INC.
30 MPH ROLLOVER
TEST NUMBER: 961210-1
ACCELERATION (G)
30
20
10
0
-10
-20
-30
-100
-40
20
80
140
200
260
320
380
440
500
560
TIME (MS X 10¹)
CHANNEL: PEVYG1
FILTER: CH. CLASS 1000
PEAK DATA: 8.26 G @ 1015.20 MS; -8.55 G @ 496.40 MS

1994 FORD EXPLORER 30 MPH ROLLOVER DRIVER SIDE DOWN
DRIVER PELVIS VERTICAL AXIS ACCELERATION

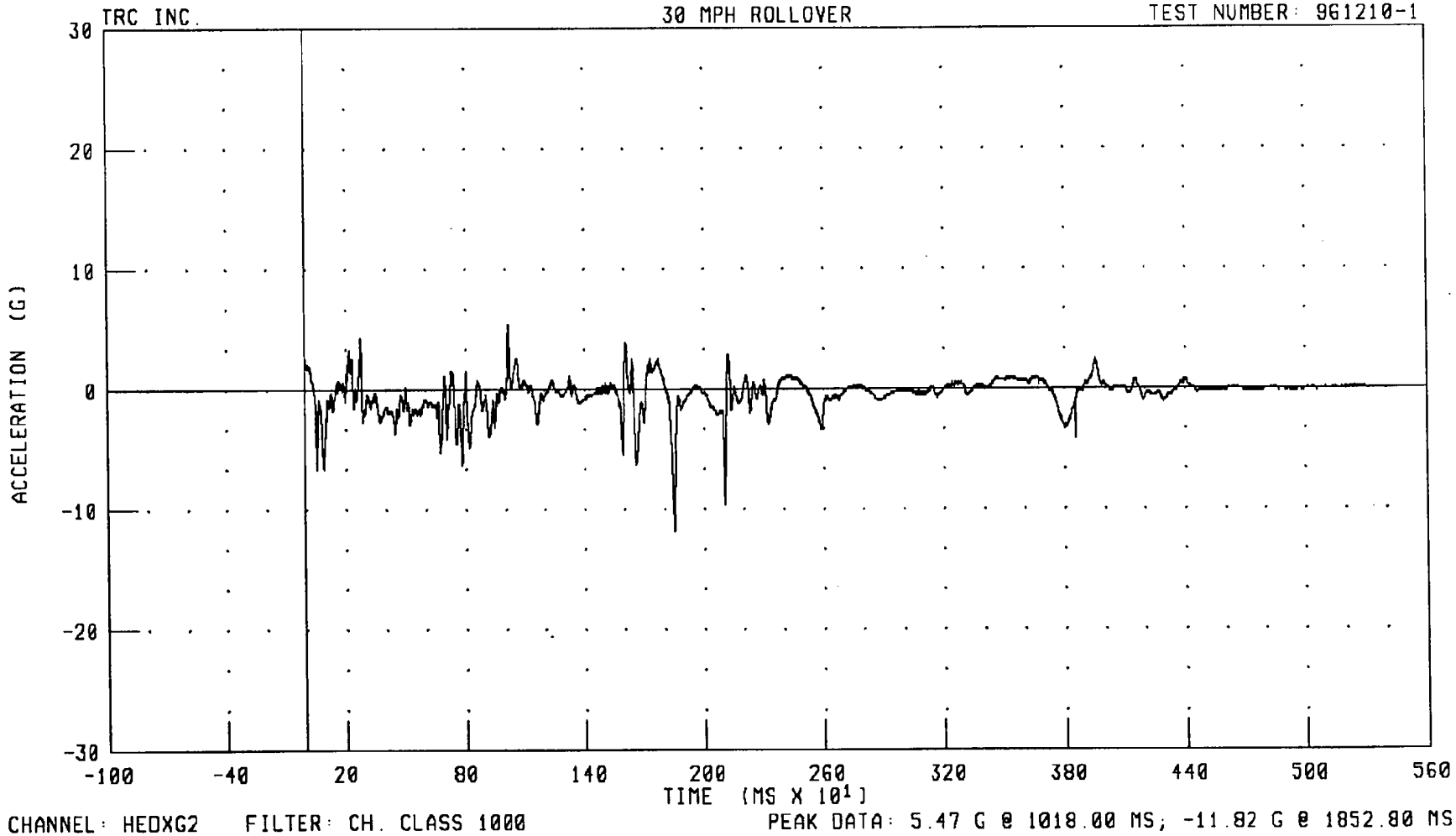


1994 FORD EXPLORER 30 MPH ROLLOVER DRIVER SIDE DOWN
DRIVER PELVIS RESULTANT ACCELERATION

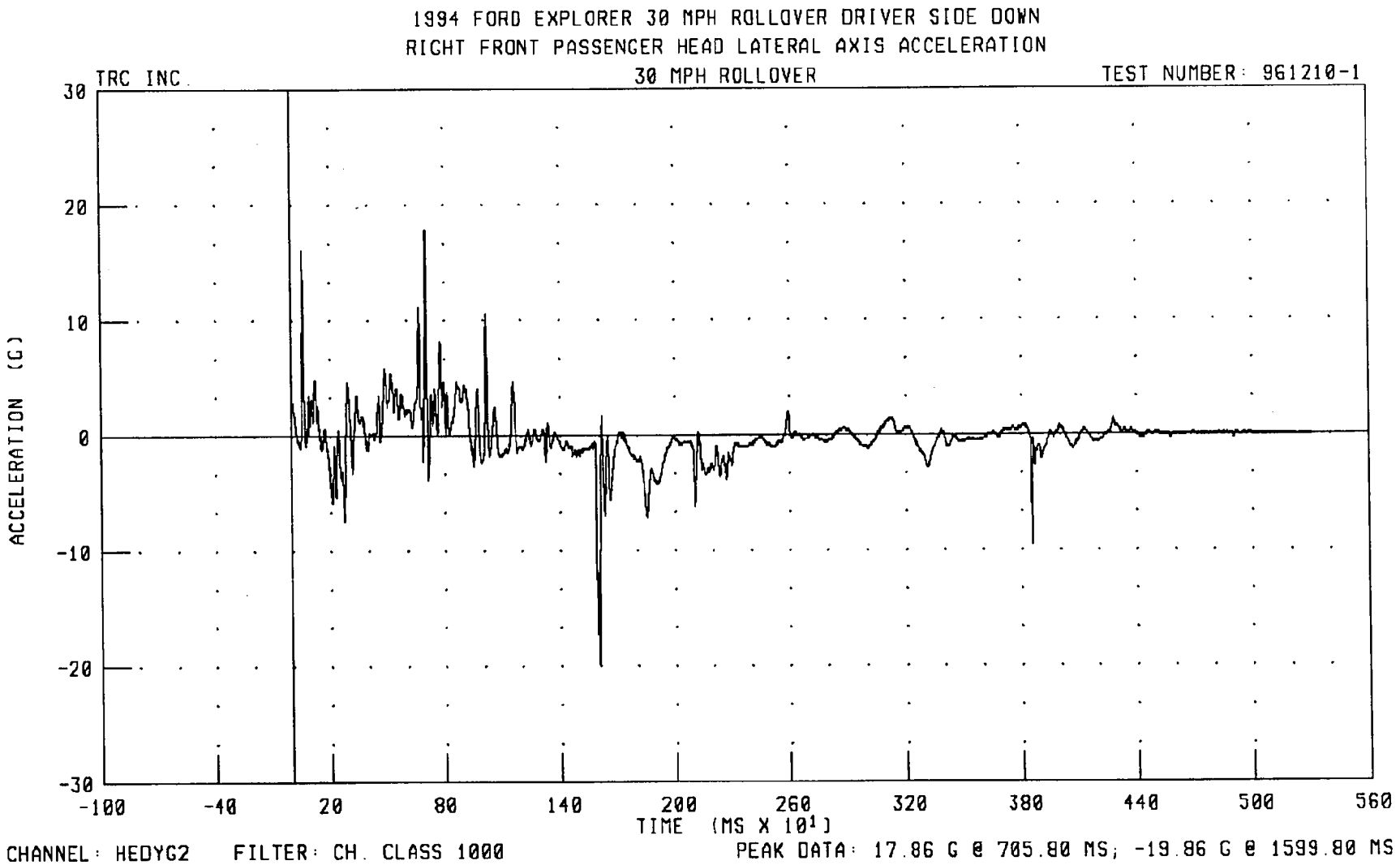


CHANNEL: PEVRG1 FILTER: CH. CLASS 1000 PEAK DATA: 17.63 G @ 243.20 MS; 0.08 G @ 2757.40 MS

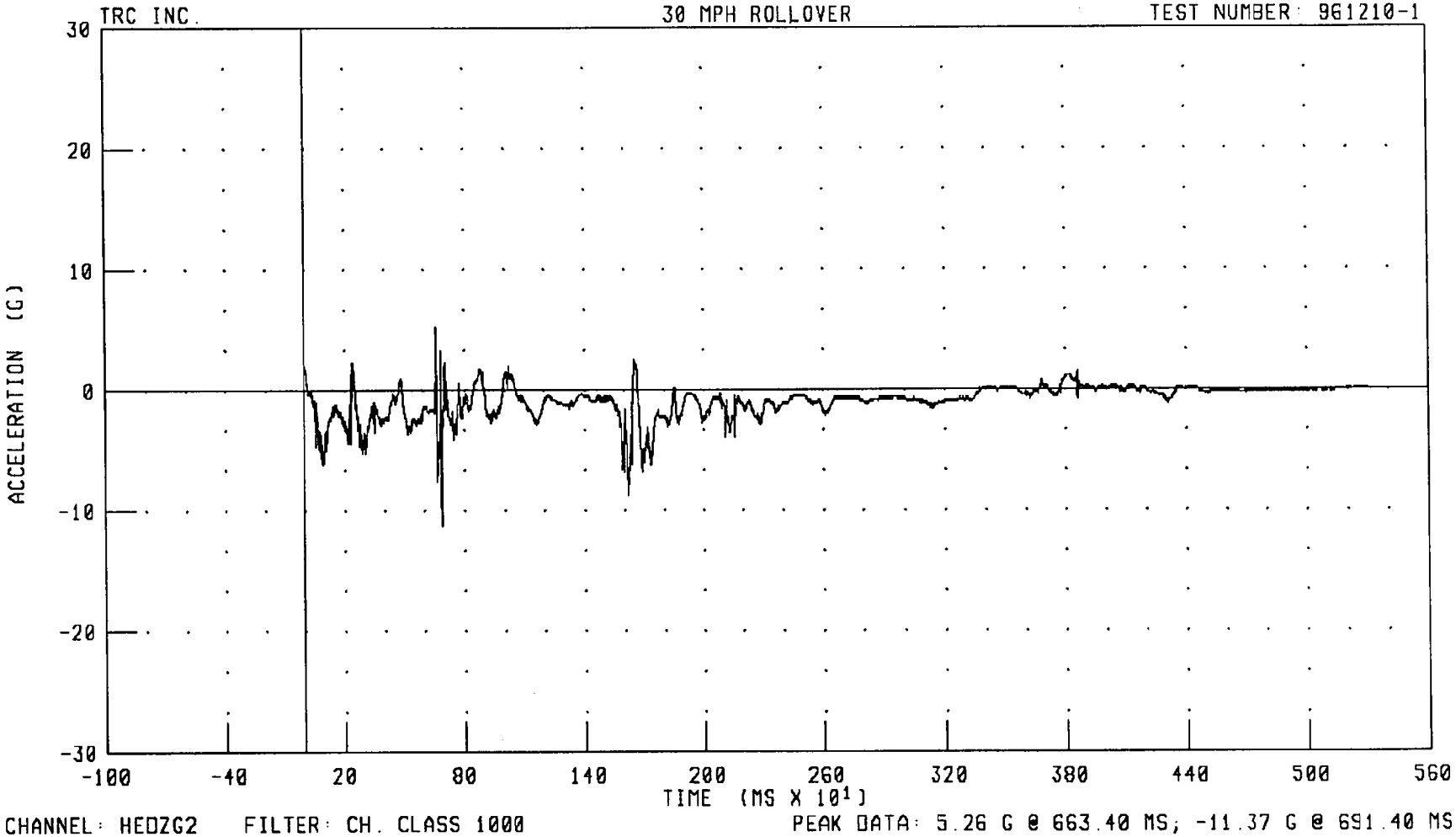
1994 FORD EXPLORER 30 MPH ROLLOVER DRIVER SIDE DOWN
RIGHT FRONT PASSENGER HEAD LONGITUDINAL AXIS ACCELERATION



CHANNEL: HEDXG2 FILTER: CH. CLASS 1000 PEAK DATA: 5.47 G @ 1018.00 MS; -11.82 G @ 1852.80 MS

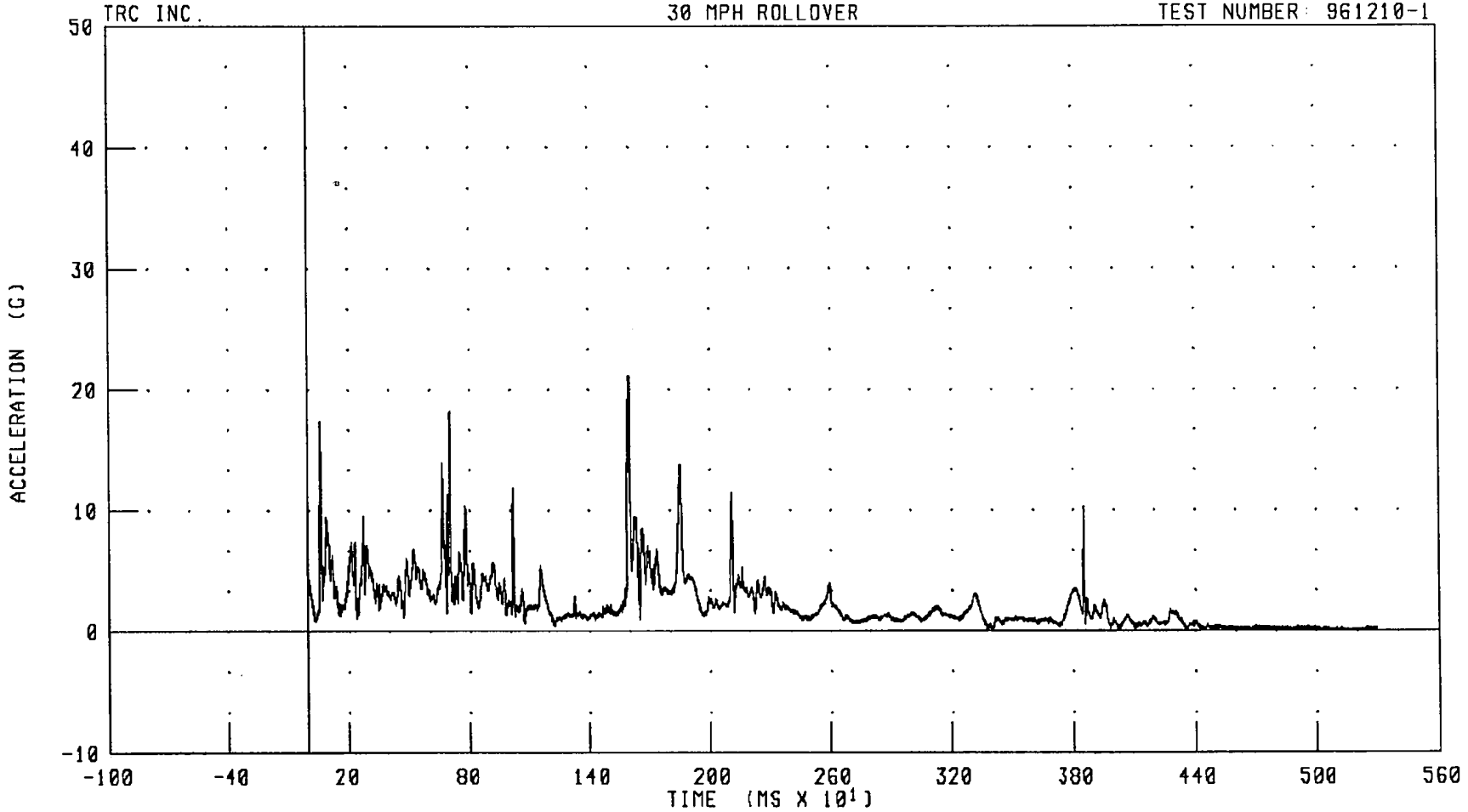

1994 FORD EXPLORER 30 MPH ROLLOVER DRIVER SIDE DOWN
RIGHT FRONT PASSENGER HEAD LATERAL AXIS ACCELERATION
TRC INC.
30 MPH ROLLOVER
TEST NUMBER: 961210-1
ACCELERATION (G)
30
20
10
0
-10
-20
-30
-100
-40
20
80
140
200
260
320
380
440
500
560
TIME (MS X 10¹)
CHANNEL: HEDYG2
FILTER: CH. CLASS 1000
PEAK DATA: 17.86 G @ 705.80 MS; -19.86 G @ 1599.80 MS

1994 FORD EXPLORER 30 MPH ROLLOVER DRIVER SIDE DOWN
RIGHT FRONT PASSENGER HEAD VERTICAL AXIS ACCELERATION



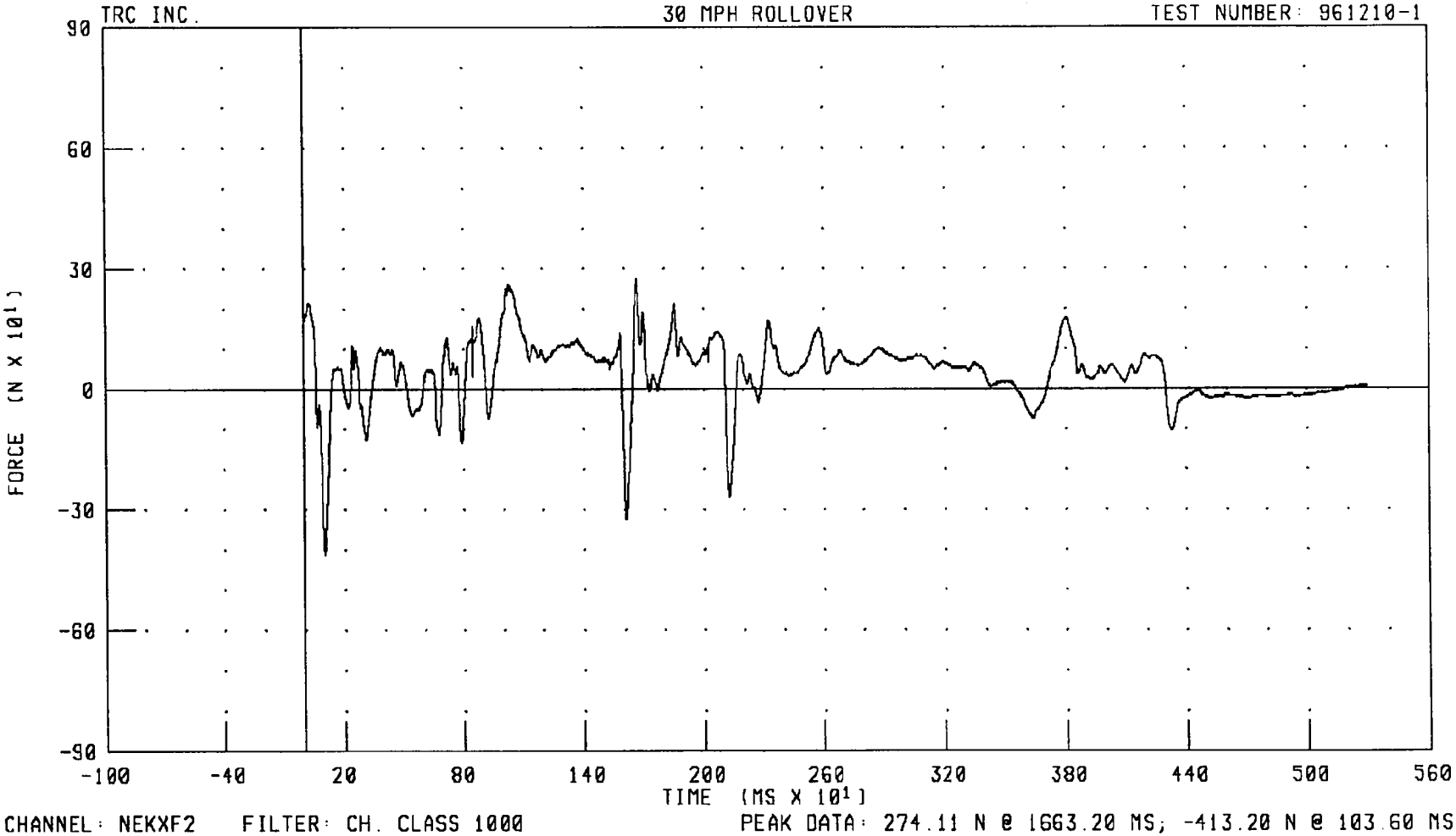
CHANNEL: HEDZG2 FILTER: CH. CLASS 1000 PEAK DATA: 5.26 G @ 663.40 MS; -11.37 G @ 691.40 MS

1994 FORD EXPLORER 30 MPH ROLLOVER DRIVER SIDE DOWN
RIGHT FRONT PASSENGER HEAD RESULTANT ACCELERATION

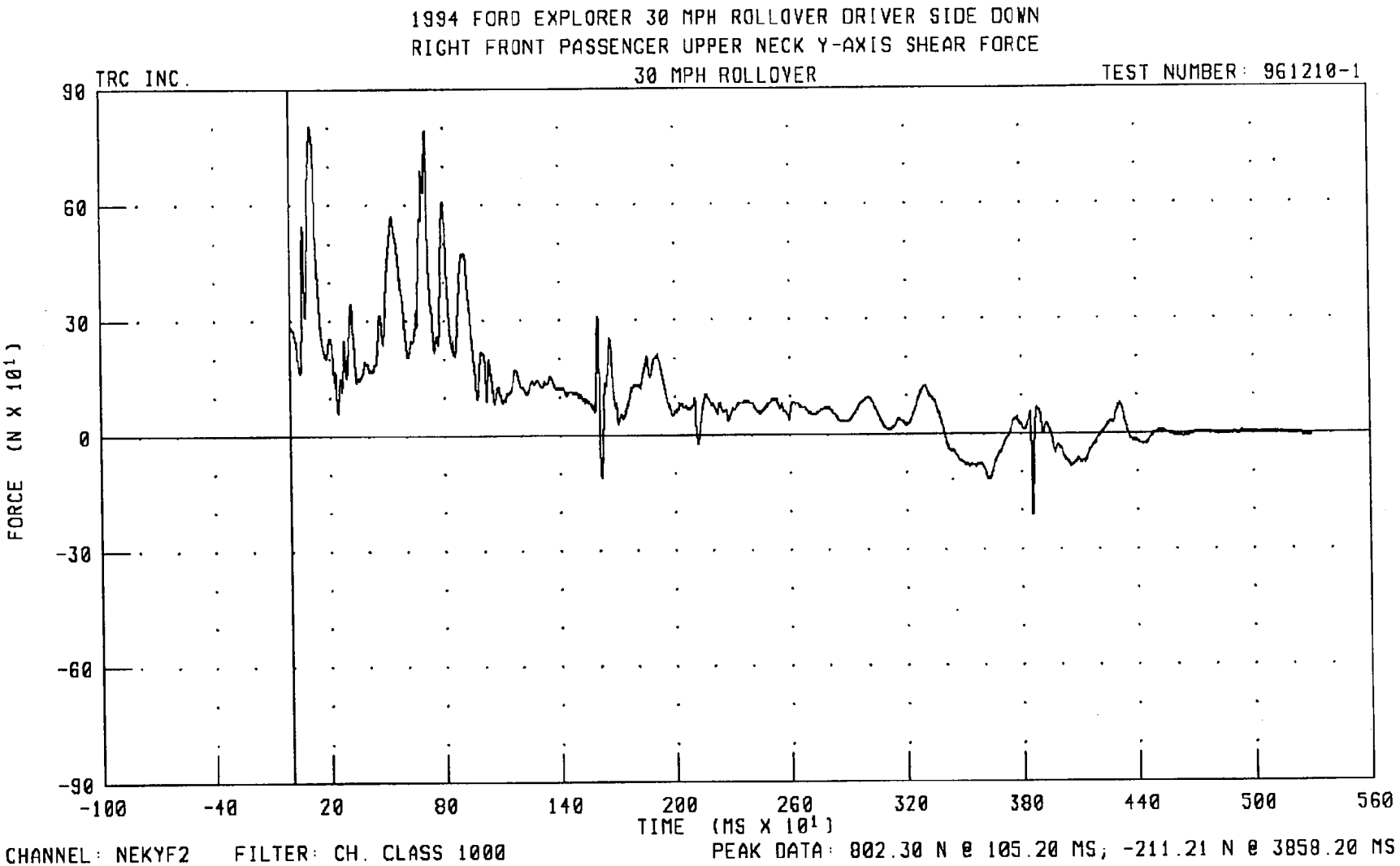


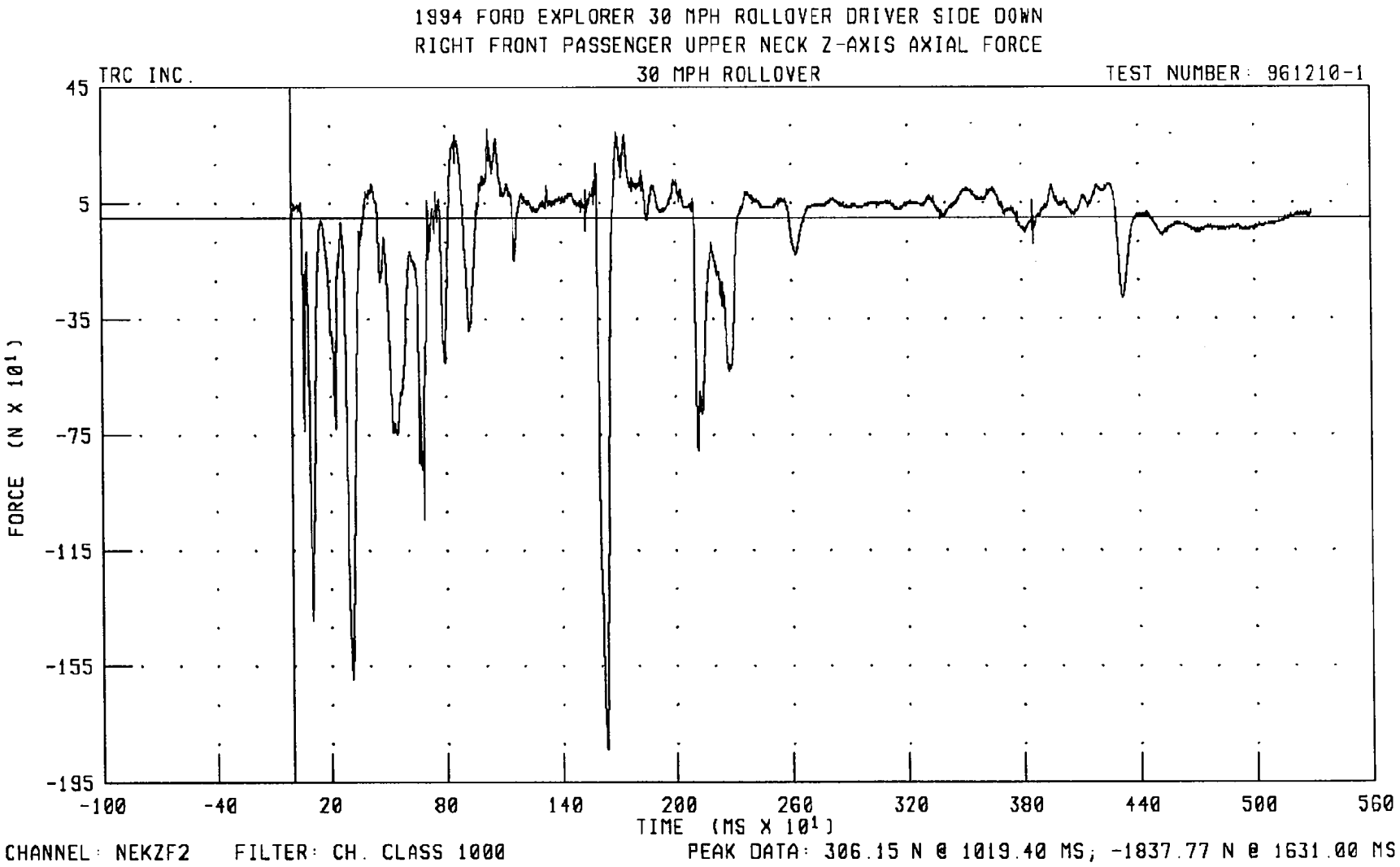
CHANNEL: HEDRG2 FILTER: CH. CLASS 1000 PEAK DATA: 21.07 G @ 1600.80 MS; 0.09 G @ 4352.40 MS

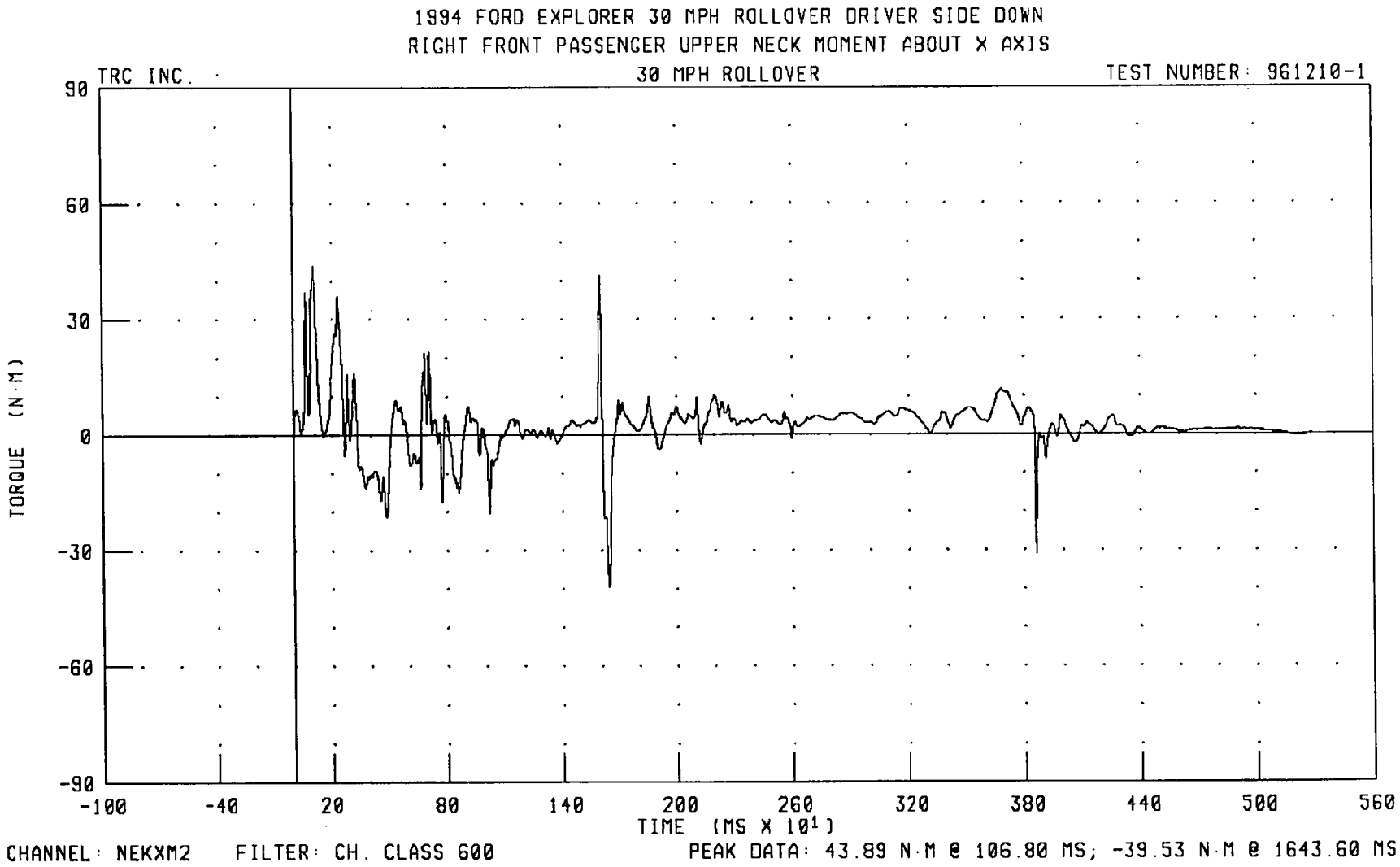
1994 FORD EXPLORER 30 MPH ROLLOVER DRIVER SIDE DOWN
RIGHT FRONT PASSENGER UPPER NECK X-AXIS SHEAR FORCE

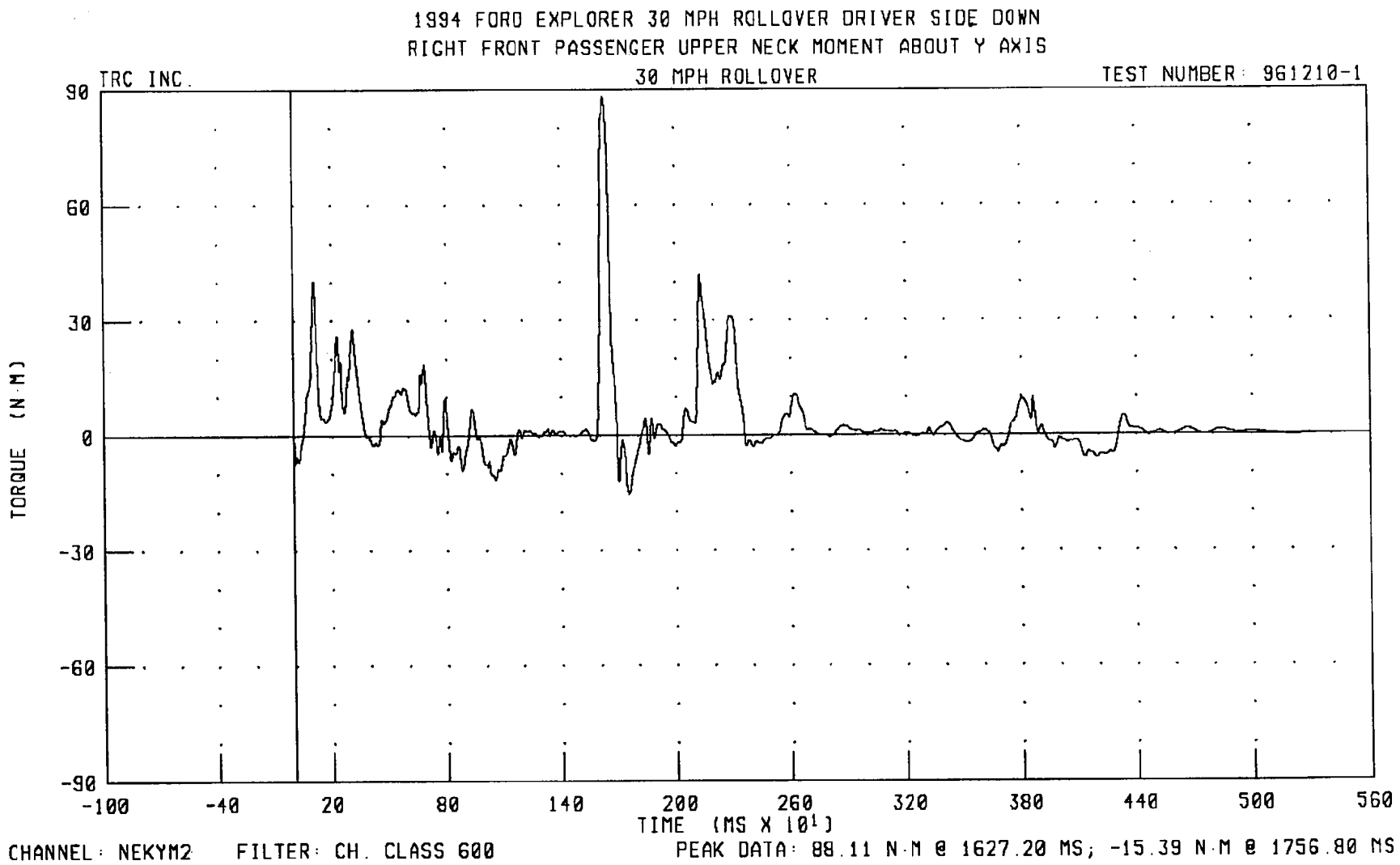


CHANNEL: NEKXF2 FILTER: CH. CLASS 1000 PEAK DATA: 274.11 N @ 1663.20 MS; -413.20 N @ 103.60 MS

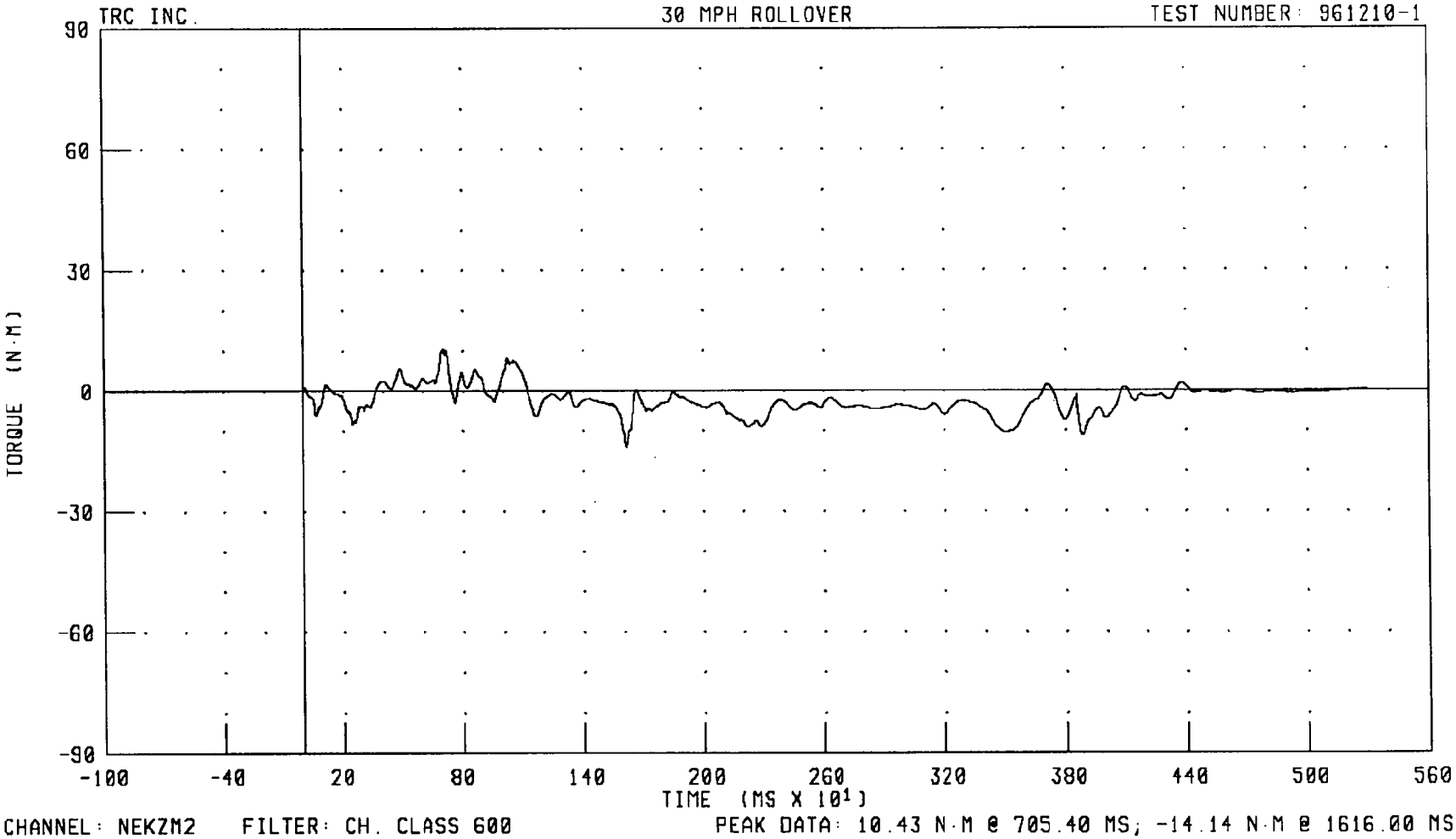

1994 FORD EXPLORER 30 MPH ROLLOVER DRIVER SIDE DOWN
RIGHT FRONT PASSENGER UPPER NECK Y-AXIS SHEAR FORCE
TRC INC.
30 MPH ROLLOVER
TEST NUMBER: 961210-1
FORCE (N X 10¹)
90
60
30
0
-30
-60
-90
-100
-40
20
80
140
200
260
320
380
440
500
560
TIME (MS X 10¹)
CHANNEL: NEKYF2
FILTER: CH. CLASS 1000
PEAK DATA: 802.30 N @ 105.20 MS; -211.21 N @ 3858.20 MS


1994 FORD EXPLORER 30 MPH ROLLOVER DRIVER SIDE DOWN
RIGHT FRONT PASSENGER UPPER NECK Z-AXIS AXIAL FORCE
TRC INC.
30 MPH ROLLOVER
TEST NUMBER: 961210-1
45
5
-35
-75
-115
-155
-195
FORCE (N X 10¹)
-100
-40
20
80
140
200
260
320
380
440
500
560
TIME (MS X 10¹)
CHANNEL: NEKZF2
FILTER: CH. CLASS 1000
PEAK DATA: 306.15 N @ 1019.40 MS; -1837.77 N @ 1631.00 MS


1994 FORD EXPLORER 30 MPH ROLLOVER DRIVER SIDE DOWN
RIGHT FRONT PASSENGER UPPER NECK MOMENT ABOUT X AXIS
TRC INC.
30 MPH ROLLOVER
TEST NUMBER: 961210-1
90
60
30
0
-30
-60
-90
TORQUE (N-M)
-100
-40
20
80
140
200
260
320
380
440
500
560
TIME (MS X 10^1)
CHANNEL: NEKXM2
FILTER: CH. CLASS 600
PEAK DATA: 43.89 N-M @ 106.80 MS; -39.53 N-M @ 1643.60 MS


1994 FORD EXPLORER 30 MPH ROLLOVER DRIVER SIDE DOWN
RIGHT FRONT PASSENGER UPPER NECK MOMENT ABOUT Y AXIS
TRC INC.
30 MPH ROLLOVER
TEST NUMBER: 961210-1
TORQUE (N-M)
90
60
30
0
-30
-60
-90
-100
-40
20
80
140
200
260
320
380
440
500
560
TIME (MS X 10¹)
CHANNEL: NEKYM2
FILTER: CH. CLASS 600
PEAK DATA: 88.11 N-M @ 1627.20 MS; -15.39 N-M @ 1756.80 MS

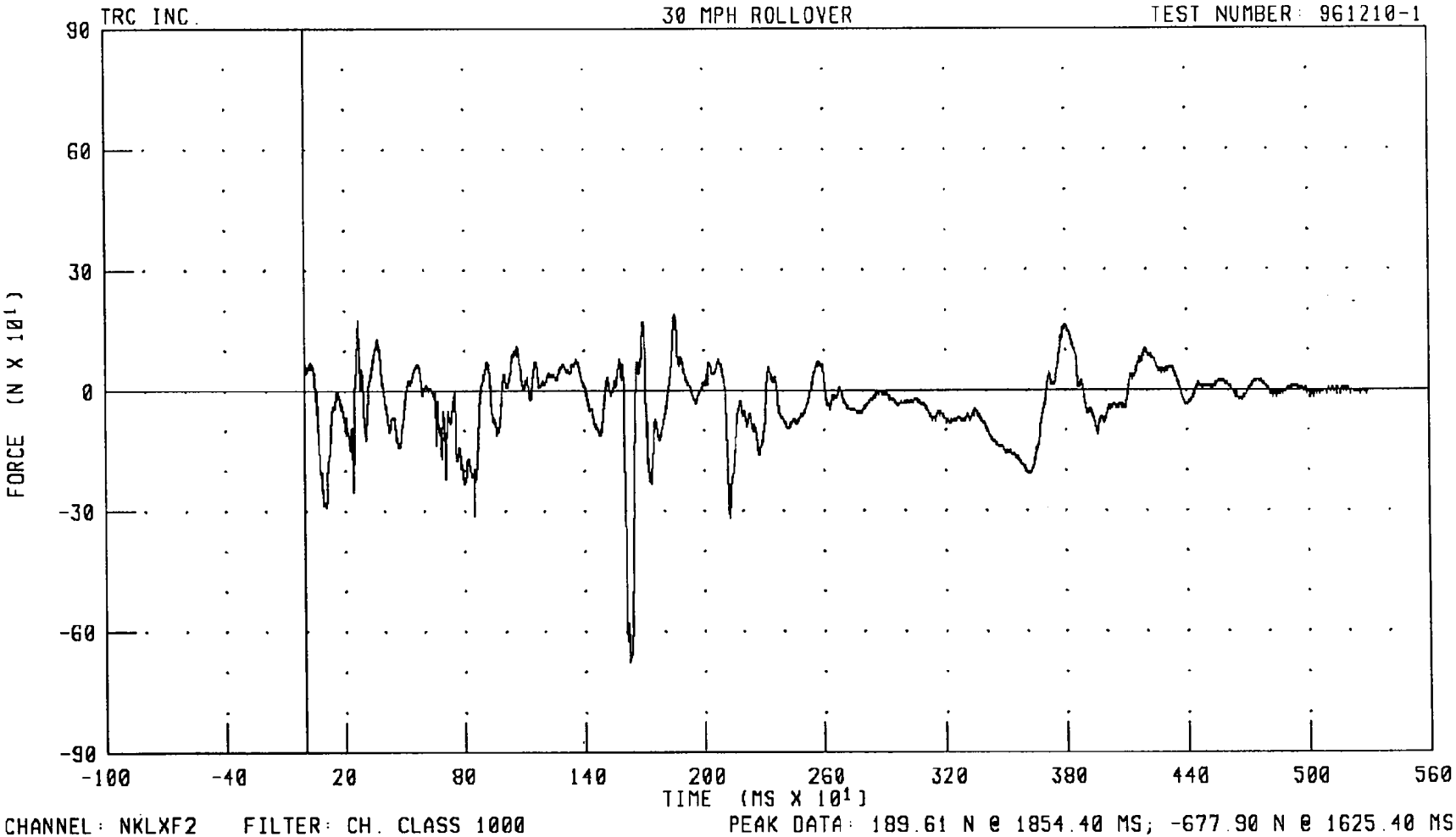
1994 FORD EXPLORER 30 MPH ROLLOVER DRIVER SIDE DOWN
RIGHT FRONT PASSENGER UPPER NECK MOMENT ABOUT Z AXIS



CHANNEL: NEKZM2 FILTER: CH. CLASS 600

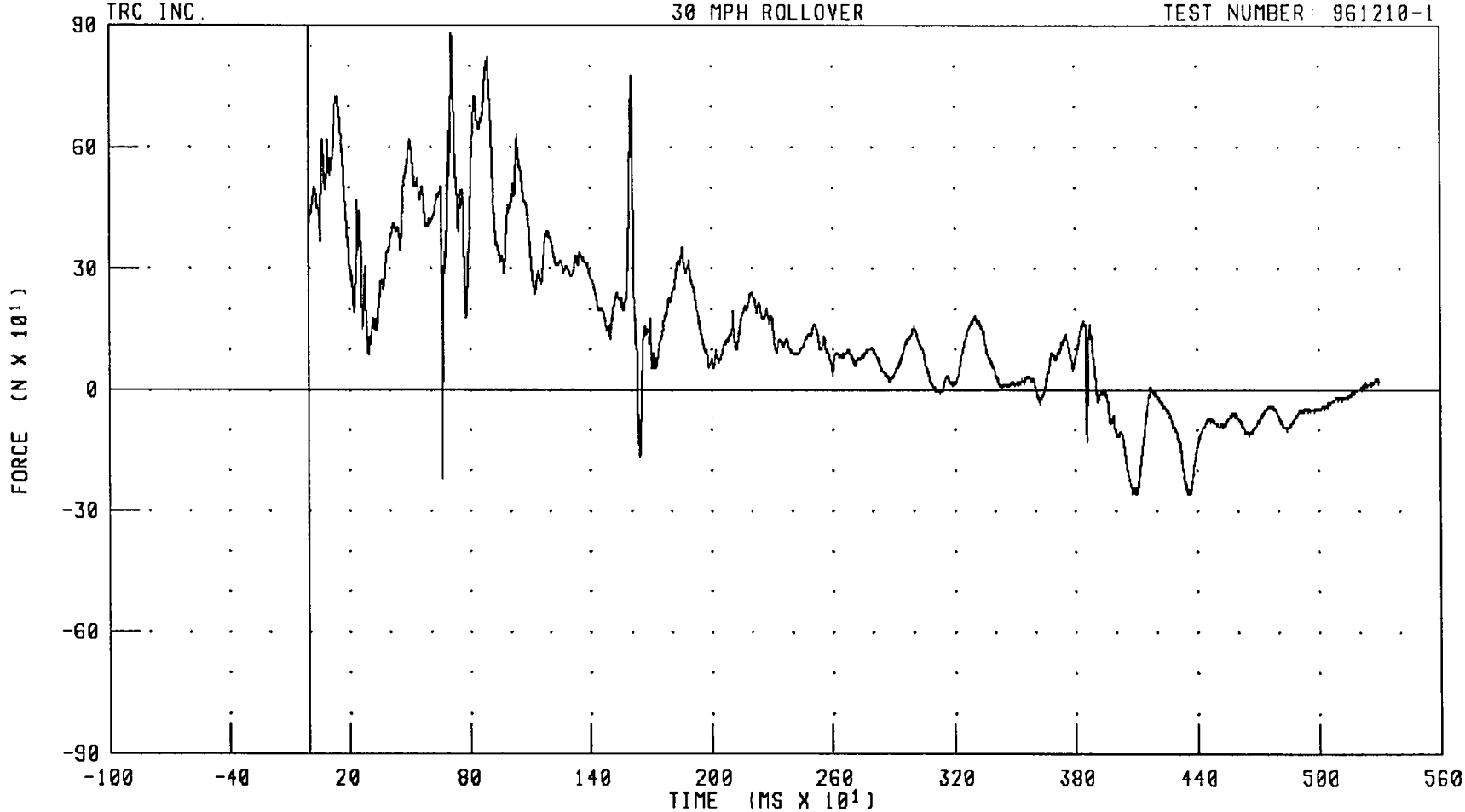
PEAK DATA: 10.43 N-M @ 705.40 MS; -14.14 N-M @ 1616.00 MS

1994 FORD EXPLORER 30 MPH ROLLOVER DRIVER SIDE DOWN
RIGHT FRONT PASSENGER LOWER NECK X-AXIS SHEAR FORCE



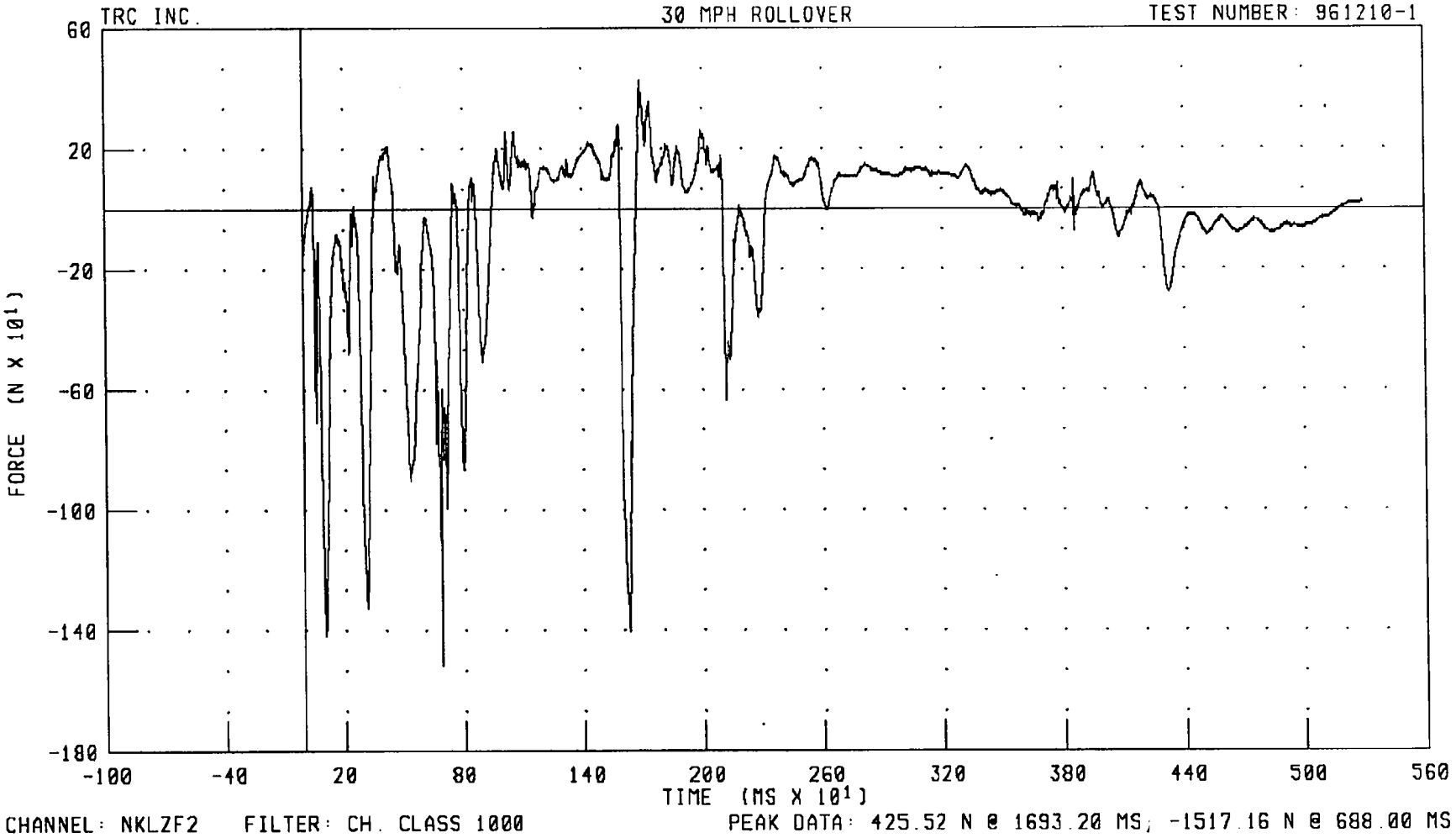
CHANNEL: NKLXF2 FILTER: CH. CLASS 1000 PEAK DATA: 189.61 N @ 1854.40 MS; -677.90 N @ 1625.40 MS

1994 FORD EXPLORER 30 MPH ROLLOVER DRIVER SIDE DOWN
RIGHT FRONT PASSENGER LOWER NECK Y-AXIS SHEAR FORCE



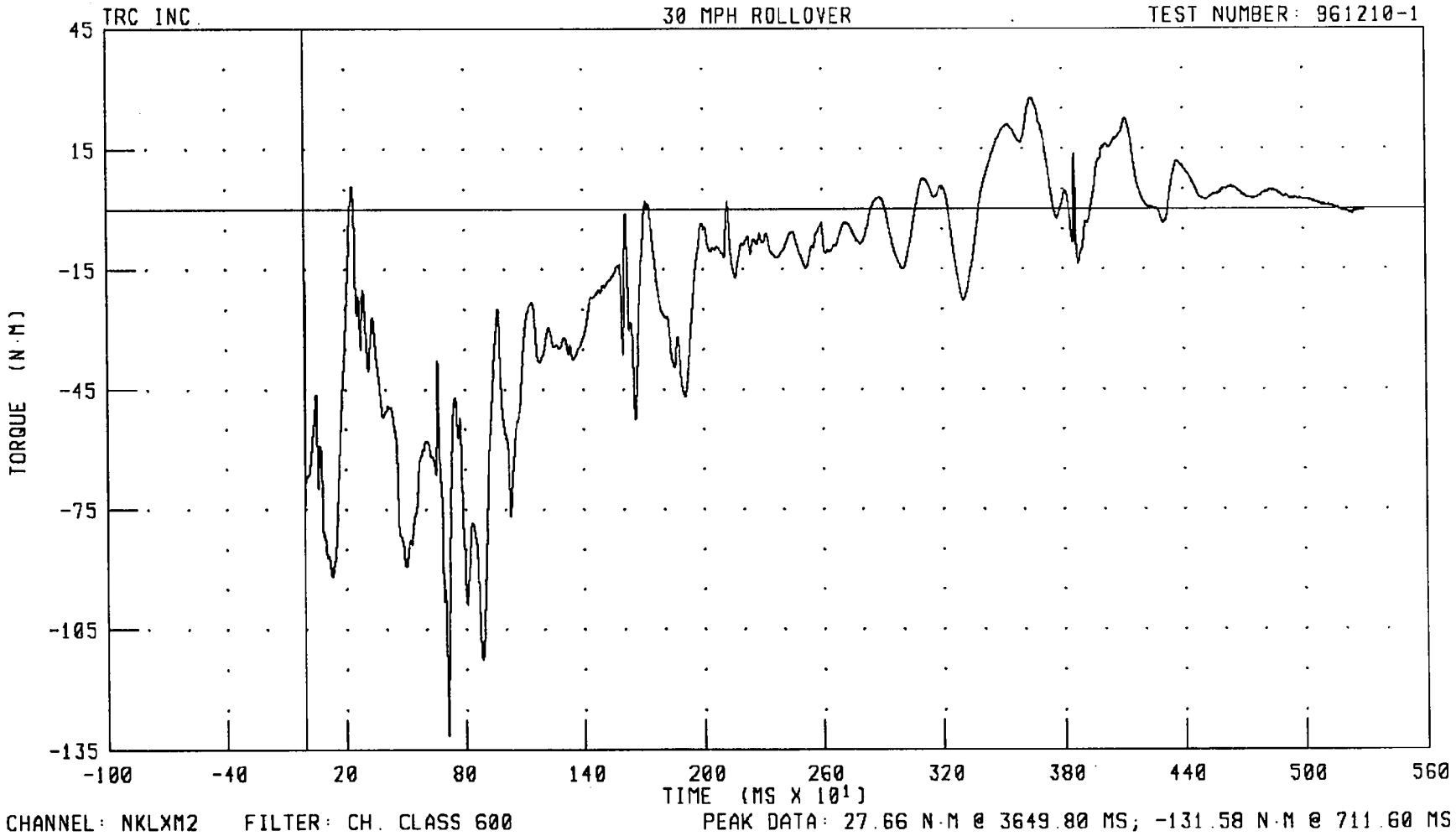
CHANNEL: NKLYF2 FILTER: CH. CLASS 1000 PEAK DATA: 881.05 N @ 710.20 MS; -259.74 N @ 4084.20 MS

1994 FORD EXPLORER 30 MPH ROLLOVER DRIVER SIDE DOWN
RIGHT FRONT PASSENGER LOWER NECK Z-AXIS SHEAR FORCE



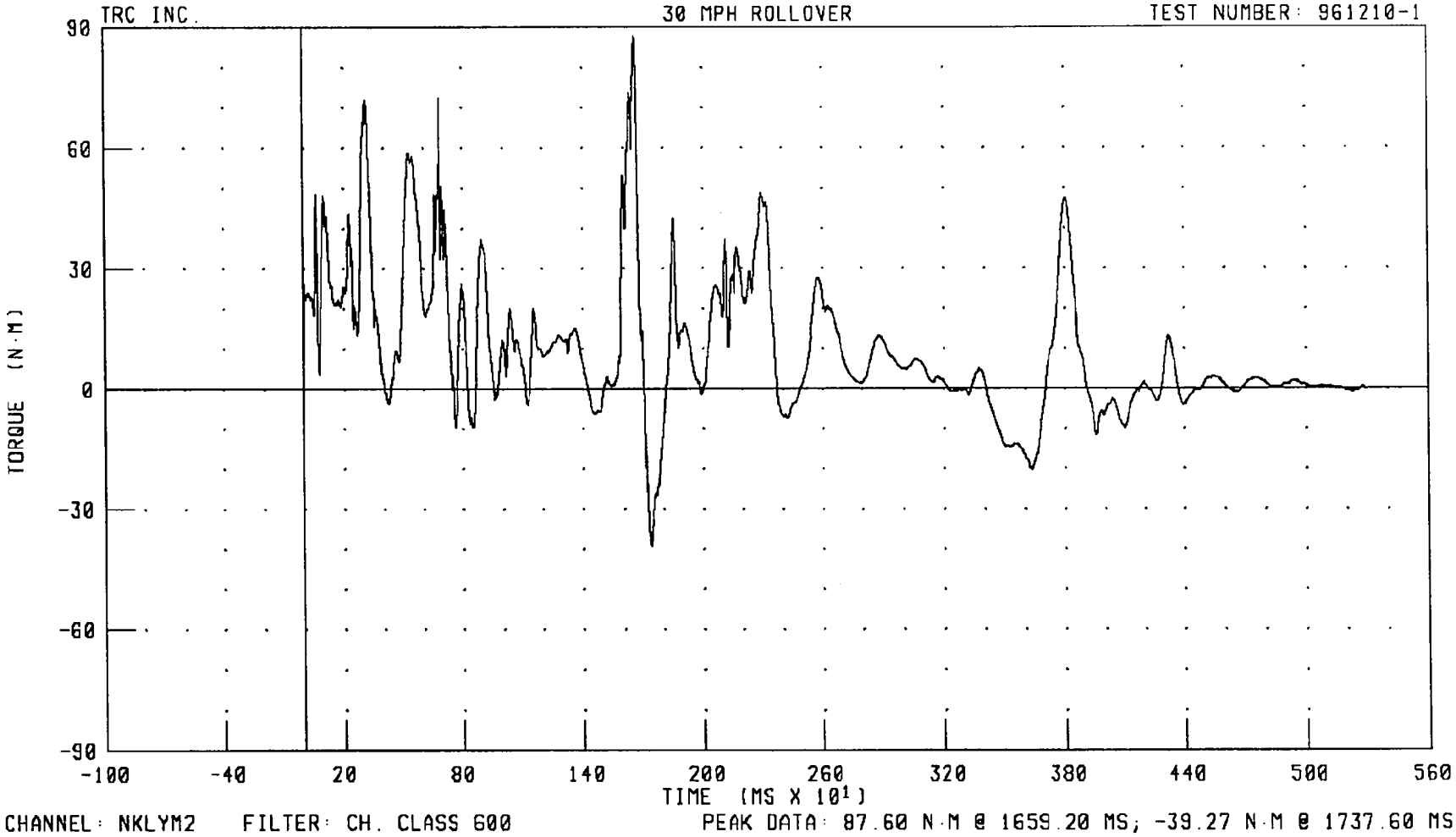
CHANNEL: NKLZF2 FILTER: CH. CLASS 1000 PEAK DATA: 425.52 N @ 1693.20 MS; -1517.16 N @ 688.00 MS

1994 FORD EXPLORER 30 MPH ROLLOVER DRIVER SIDE DOWN
RIGHT FRONT PASSENGER LOWER NECK MOMENT ABOUT X AXIS



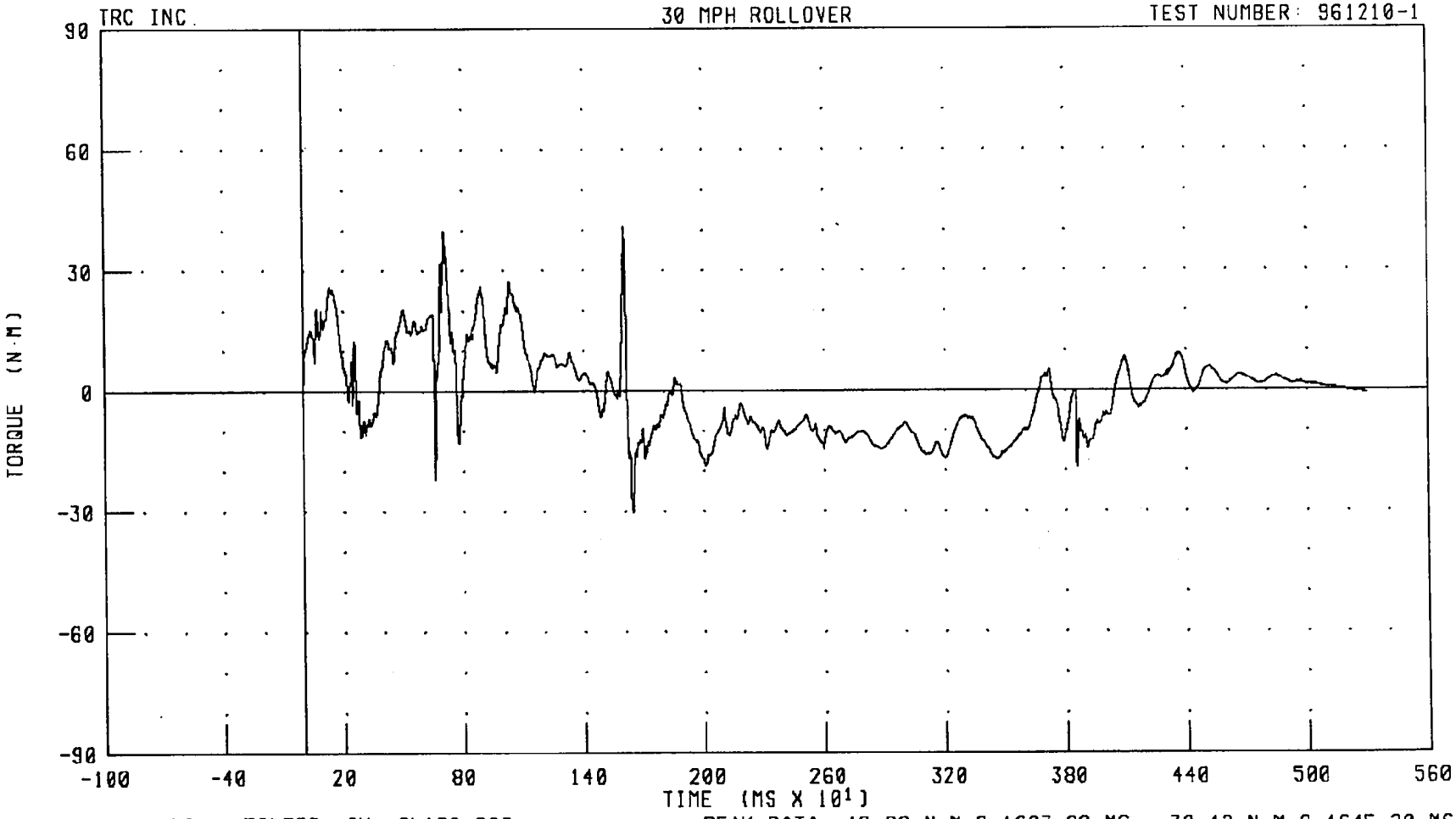
CHANNEL: NKLXM2 FILTER: CH. CLASS 600 PEAK DATA: 27.66 N·M @ 3649.80 MS; -131.58 N·M @ 711.60 MS

1994 FORD EXPLORER 30 MPH ROLLOVER DRIVER SIDE DOWN
RIGHT FRONT PASSENGER LOWER NECK MOMENT ABOUT Y AXIS



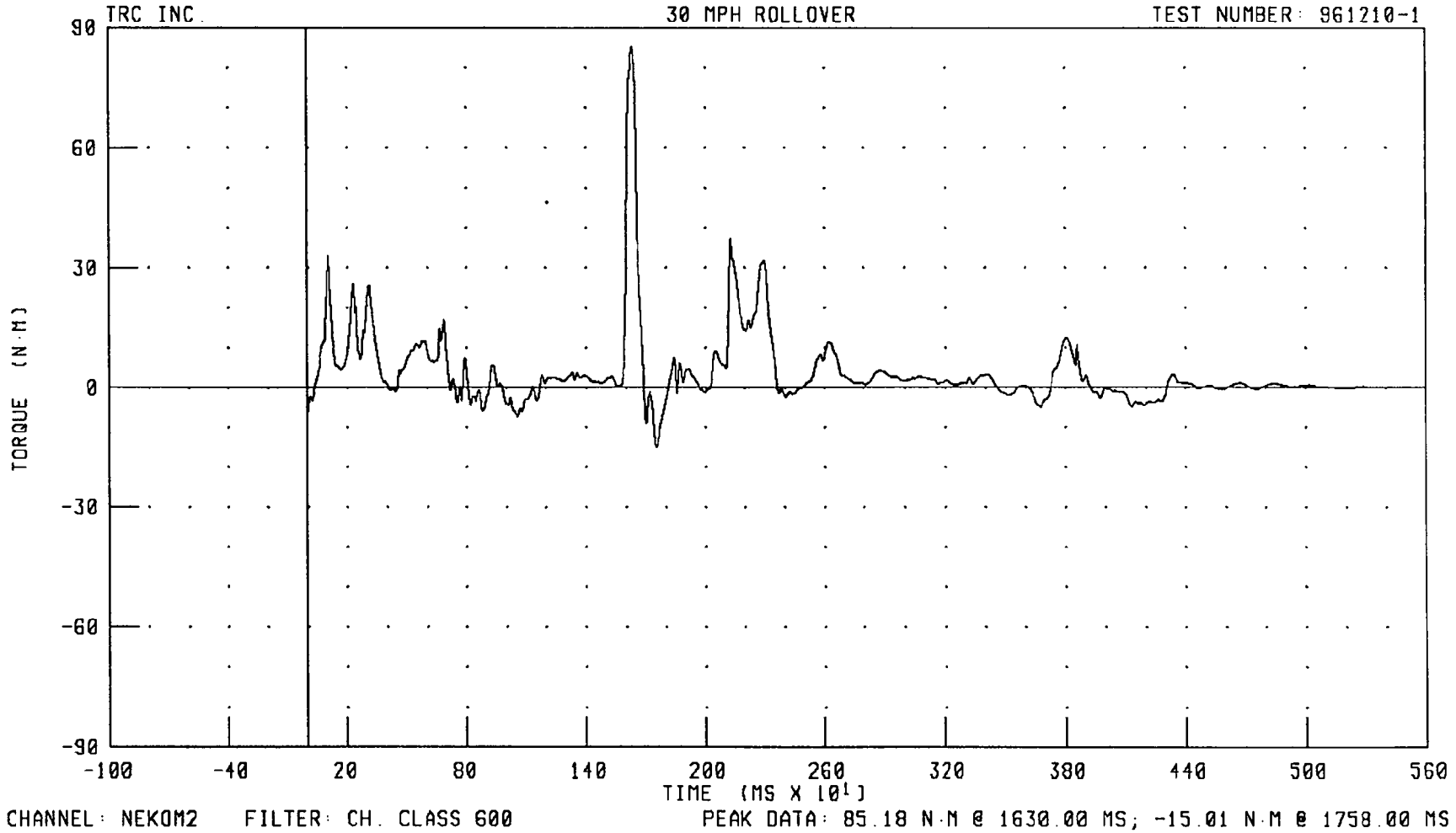
CHANNEL: NKLYM2 FILTER: CH. CLASS 600 PEAK DATA: 87.60 N-M @ 1659.20 MS; -39.27 N-M @ 1737.60 MS

1994 FORD EXPLORER 30 MPH ROLLOVER DRIVER SIDE DOWN
RIGHT FRONT PASSENGER LOWER NECK MOMENT ABOUT Z AXIS



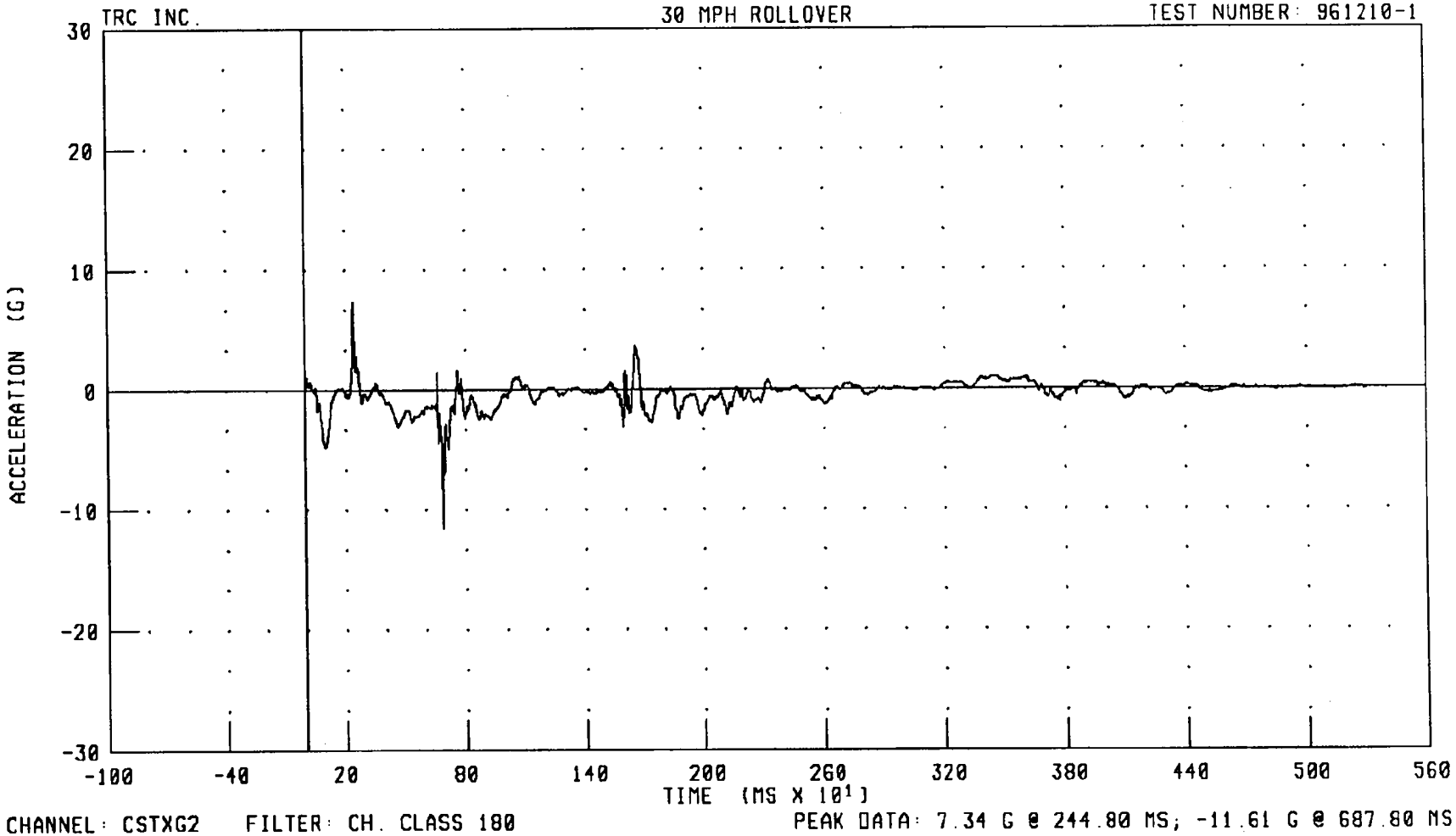
CHANNEL: NKLZM2 FILTER: CH. CLASS 600 PEAK DATA: 40.92 N-M @ 1603.80 MS; -30.42 N-M @ 1645.20 MS

1994 FORD EXPLORER 30 MPH ROLLOVER DRIVER SIDE DOWN
RIGHT FRONT PASSENGER OCCIPITAL CONDYLE ABOUT Y AXIS

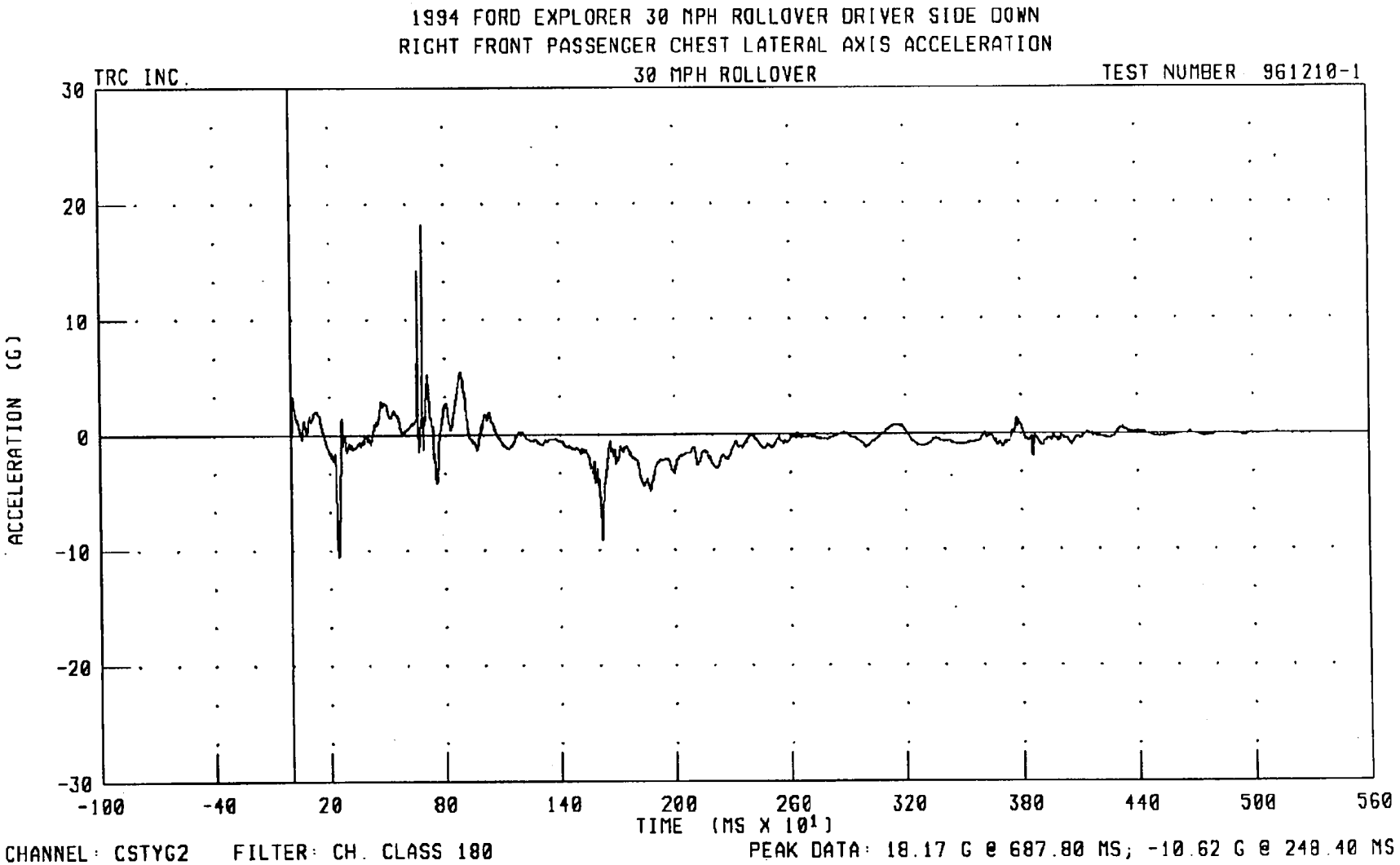


CHANNEL: NEKOM2 FILTER: CH. CLASS 600 PEAK DATA: 85.18 N·M @ 1630.00 MS; -15.01 N·M @ 1758.00 MS

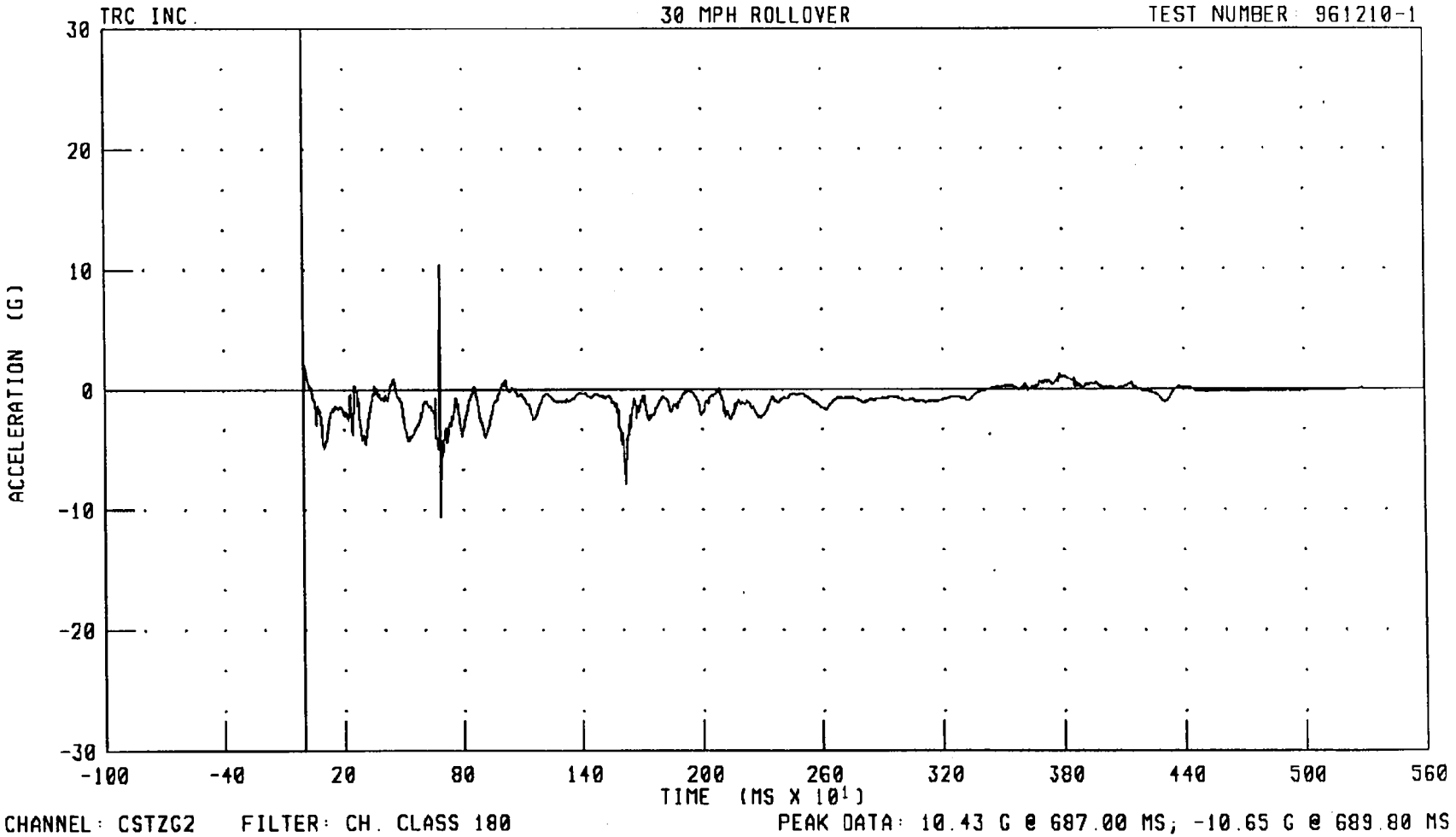
1994 FORD EXPLORER 30 MPH ROLLOVER DRIVER SIDE DOWN
RIGHT FRONT PASSENGER CHEST LONGITUDINAL AXIS ACCELERATION



CHANNEL: CSTXG2 FILTER: CH. CLASS 180 PEAK DATA: 7.34 G @ 244.80 MS; -11.61 G @ 687.80 MS

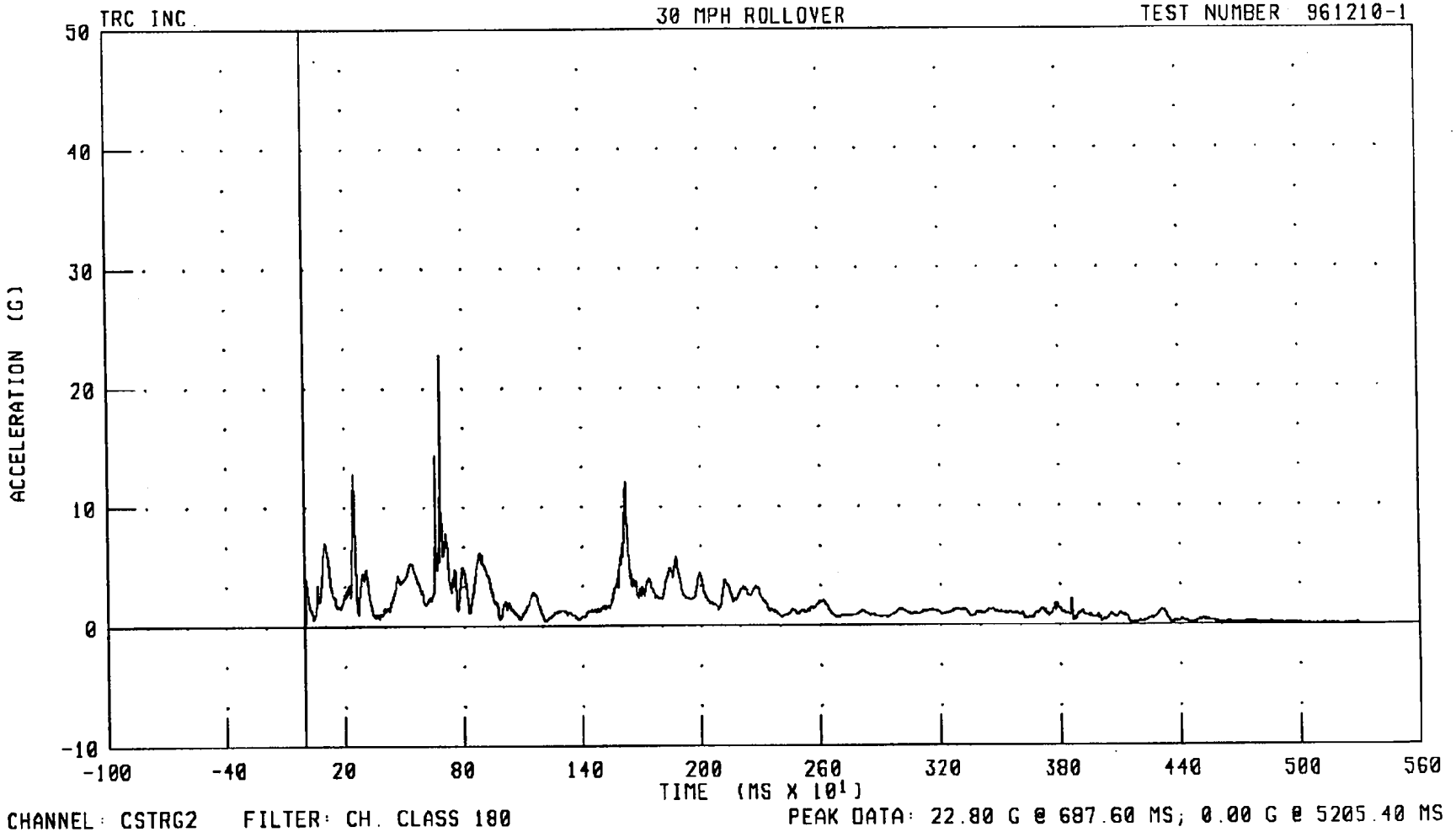

1994 FORD EXPLORER 30 MPH ROLLOVER DRIVER SIDE DOWN
RIGHT FRONT PASSENGER CHEST LATERAL AXIS ACCELERATION
TRC INC.
30 MPH ROLLOVER
TEST NUMBER 961210-1
ACCELERATION (G)
30
20
10
0
-10
-20
-30
-100
-40
20
80
140
200
260
320
380
440
500
560
TIME (MS X 10¹)
CHANNEL: CSTYG2
FILTER: CH. CLASS 180
PEAK DATA: 18.17 G @ 687.80 MS; -10.62 G @ 248.40 MS

1994 FORD EXPLORER 30 MPH ROLLOVER DRIVER SIDE DOWN
RIGHT FRONT PASSENGER CHEST VERTICAL AXIS ACCELERATION



CHANNEL: CSTZG2 FILTER: CH. CLASS 180 PEAK DATA: 10.43 G @ 687.00 MS; -10.65 G @ 689.80 MS

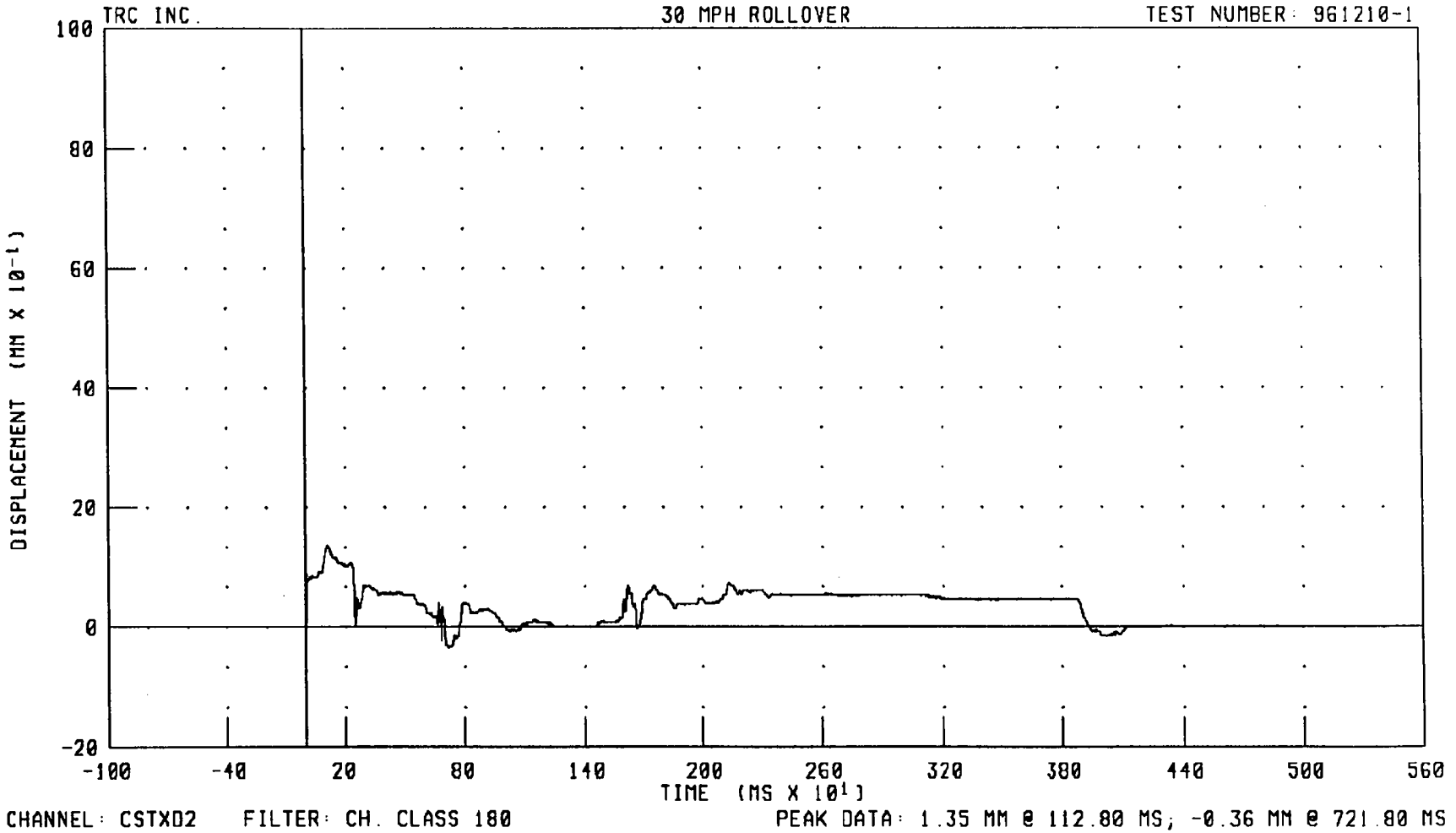
1994 FORD EXPLORER 30 MPH ROLLOVER DRIVER SIDE DOWN
RIGHT FRONT PASSENGER CHEST RESULTANT ACCELERATION



CHANNEL: CSTRG2 FILTER: CH. CLASS 180

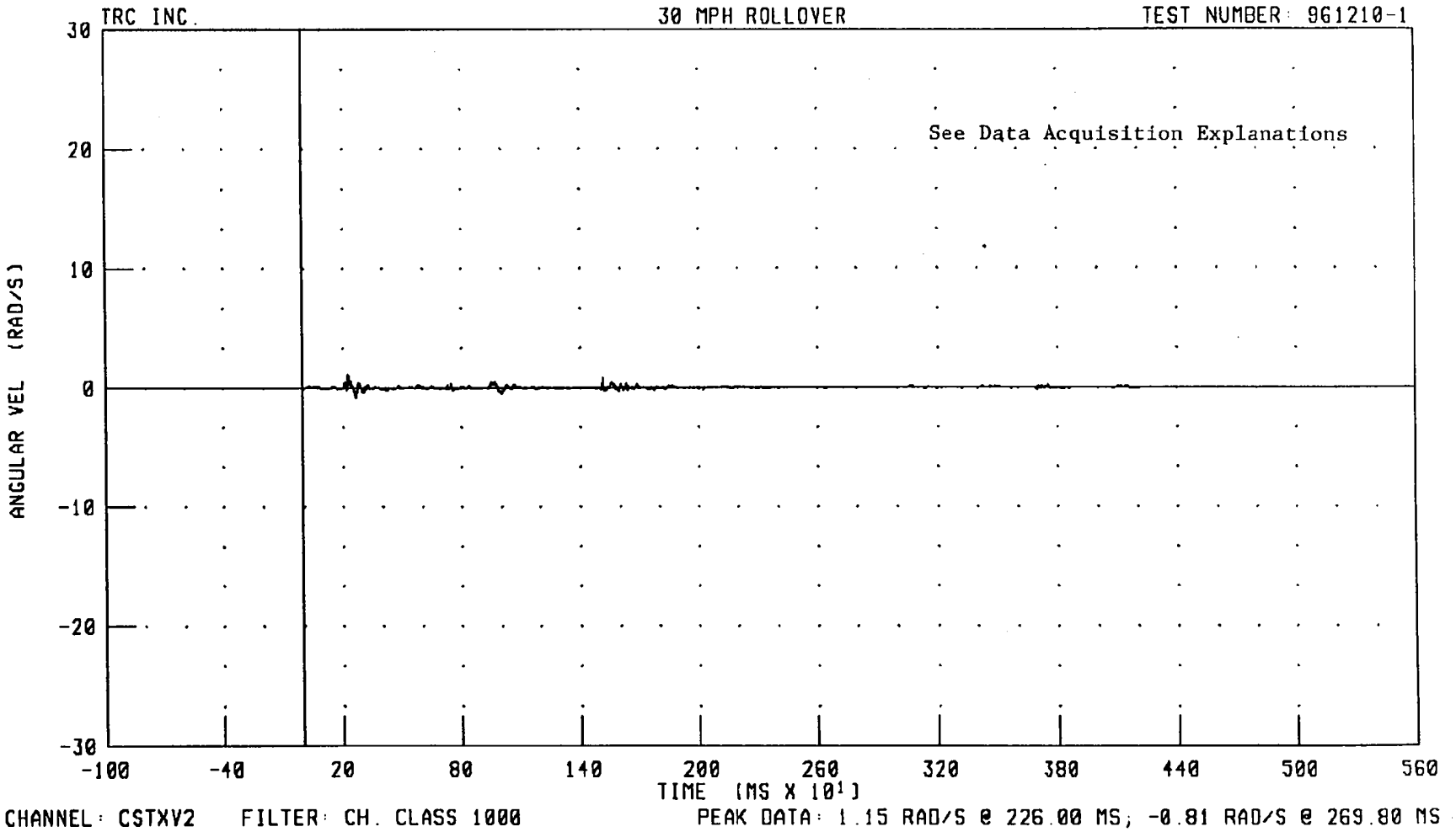
PEAK DATA: 22.80 G @ 687.60 MS; 0.00 G @ 5205.40 MS

1994 FORD EXPLORER 30 MPH ROLLOVER DRIVER SIDE DOWN
RIGHT FRONT PASSENGER CHEST DEFLECTION



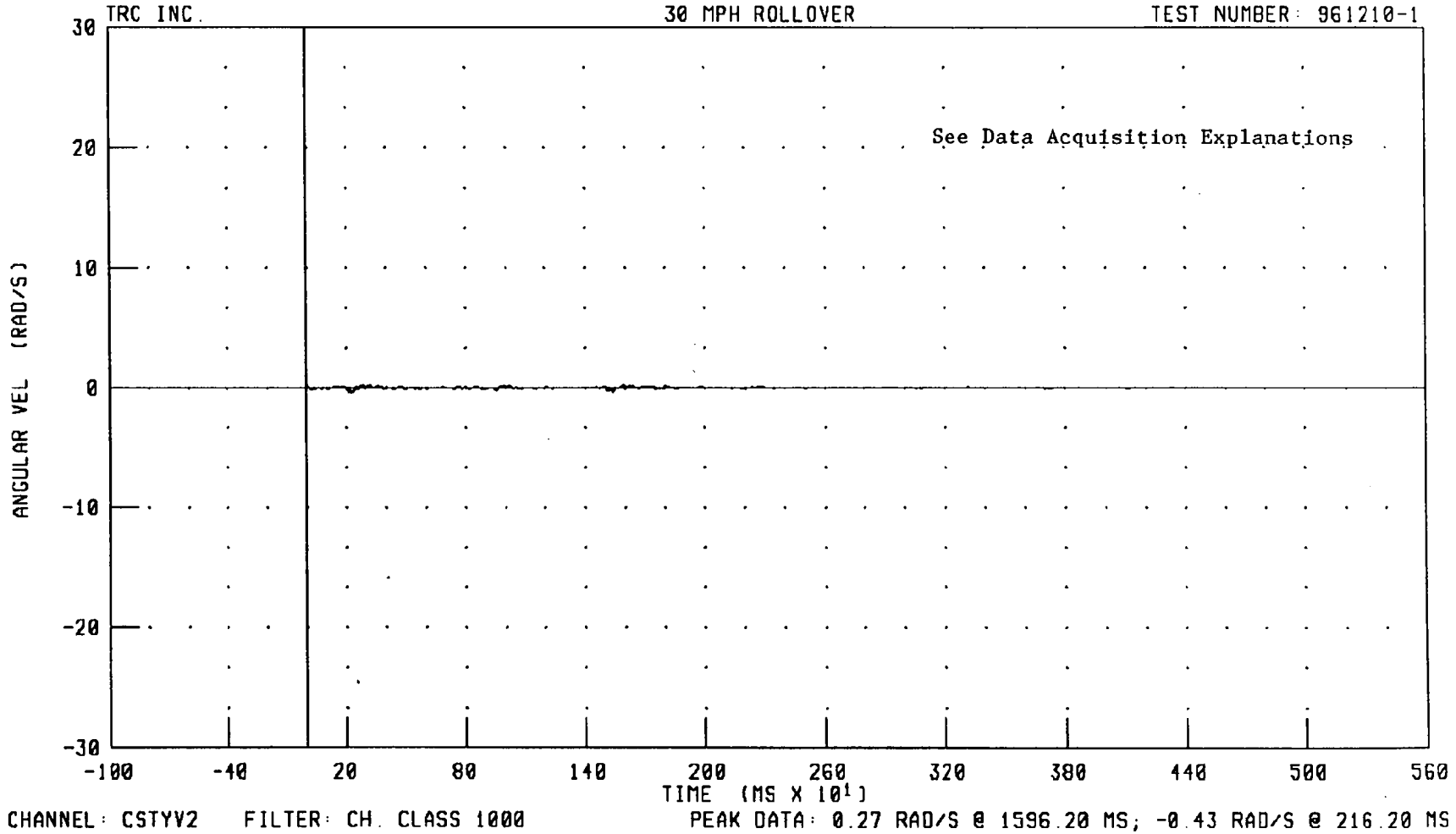
CHANNEL: CSTXD2 FILTER: CH. CLASS 180 PEAK DATA: 1.35 MM @ 112.80 MS; -0.36 MM @ 721.80 MS

1994 FORD EXPLORER 30 MPH ROLLOVER DRIVER SIDE DOWN
RIGHT FRONT PASSENGER CHEST ROLL VELOCITY



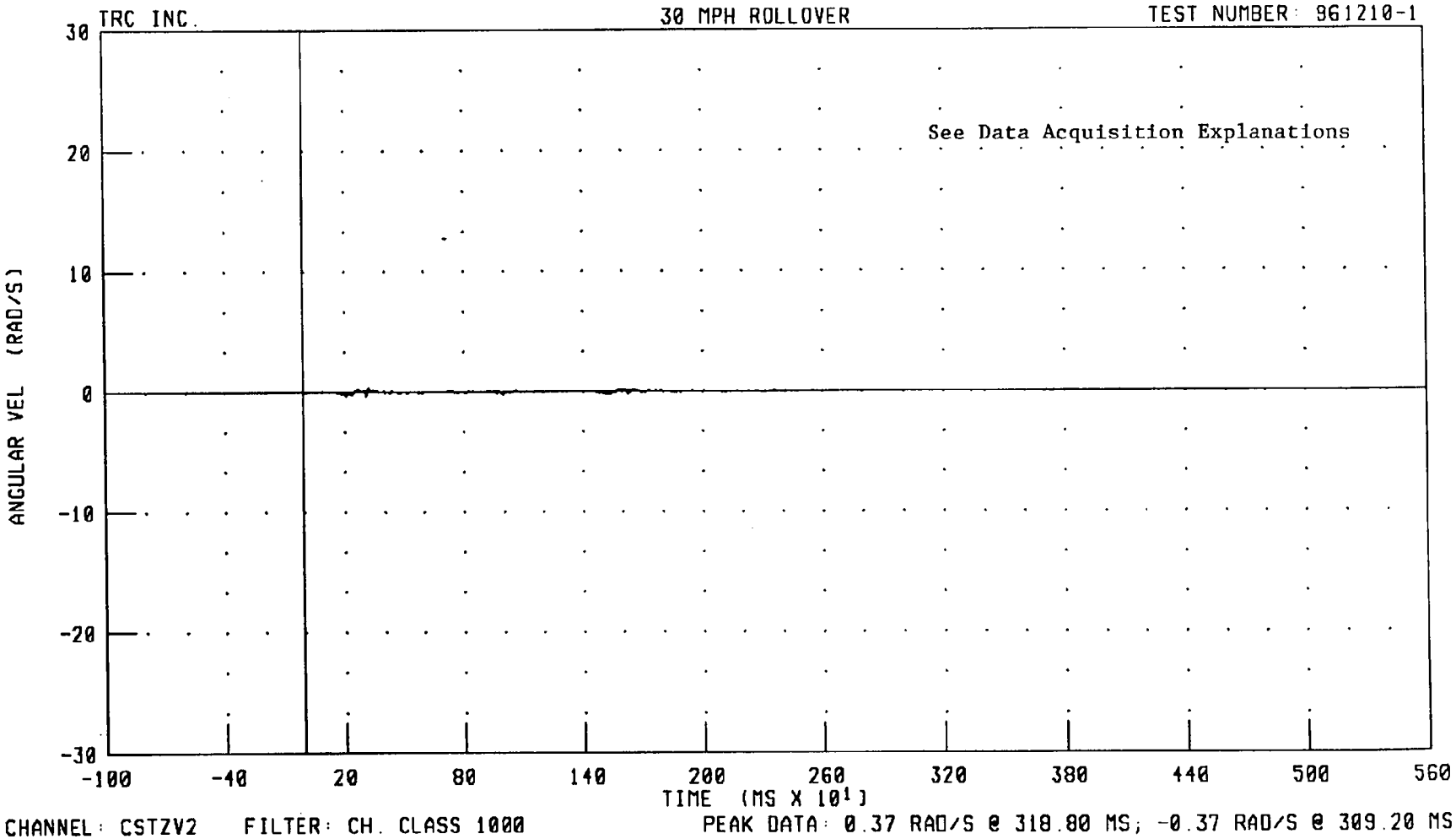
CHANNEL: CSTXV2 FILTER: CH. CLASS 1000 PEAK DATA: 1.15 RAD/S @ 226.00 MS; -0.81 RAD/S @ 269.80 MS

1994 FORD EXPLORER 30 MPH ROLLOVER DRIVER SIDE DOWN
RIGHT FRONT PASSENGER CHEST PITCH VELOCITY



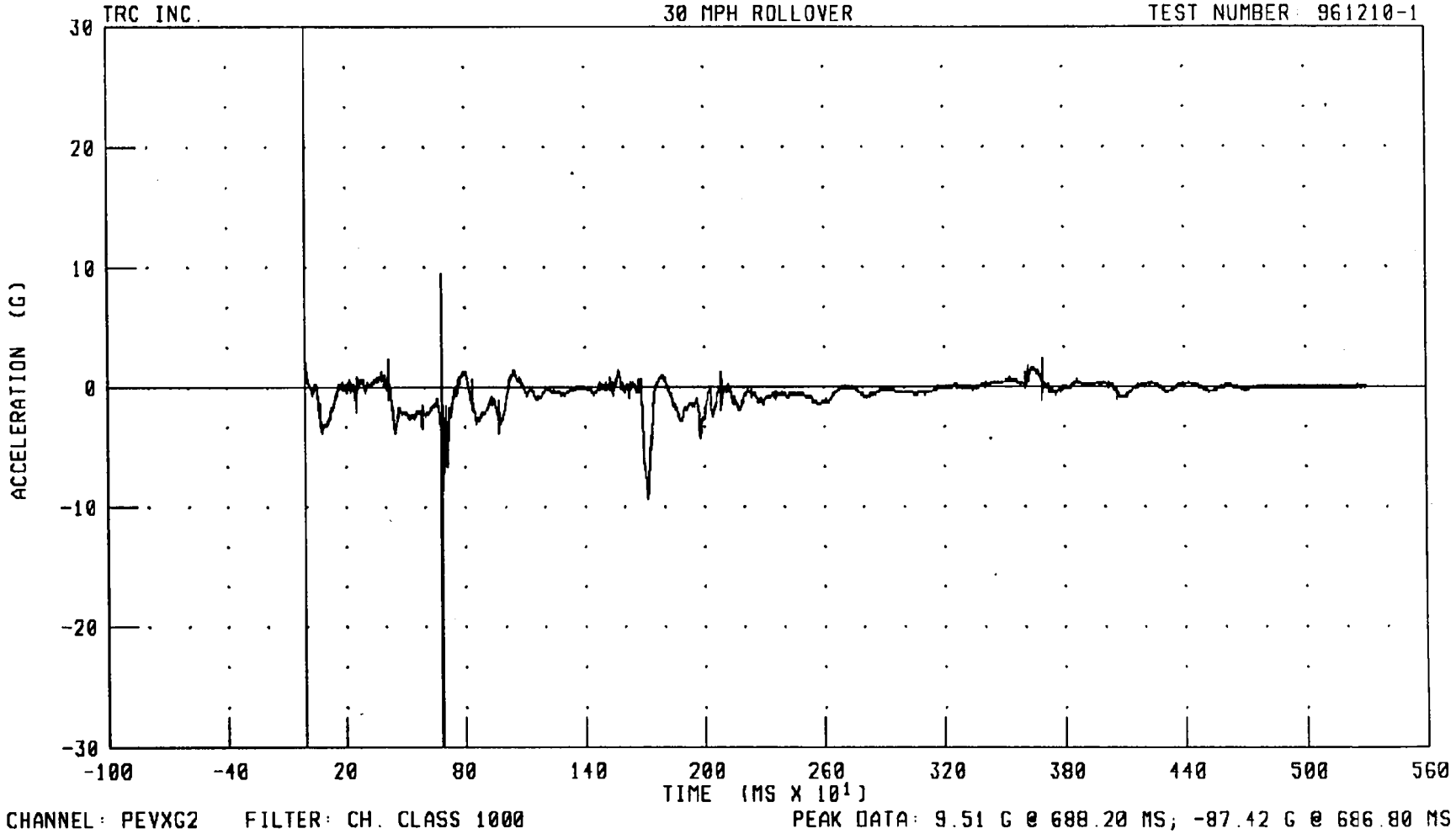
CHANNEL: CSTYV2 FILTER: CH. CLASS 1000 PEAK DATA: 0.27 RAD/S @ 1596.20 MS; -0.43 RAD/S @ 216.20 MS

1994 FORD EXPLORER 30 MPH ROLLOVER DRIVER SIDE DOWN
RIGHT FRONT PASSENGER CHEST YAW VELOCITY



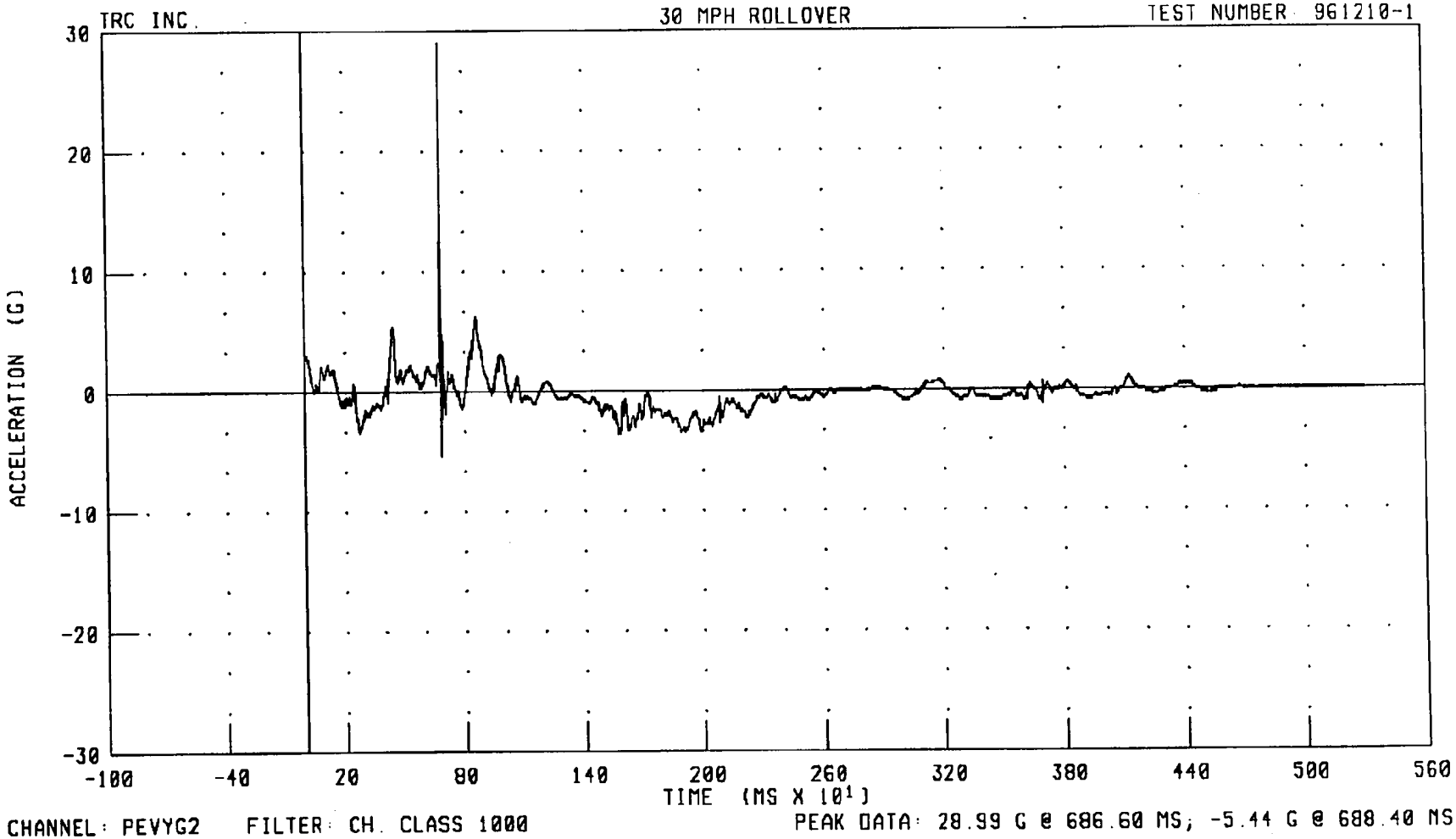
CHANNEL: CSTZV2 FILTER: CH. CLASS 1000 PEAK DATA: 0.37 RAD/S @ 318.80 MS; -0.37 RAD/S @ 309.20 MS

1994 FORD EXPLORER 30 MPH ROLLOVER DRIVER SIDE DOWN
RIGHT FRONT PASSENGER PELVIS LONGITUDINAL AXIS ACCELERATION



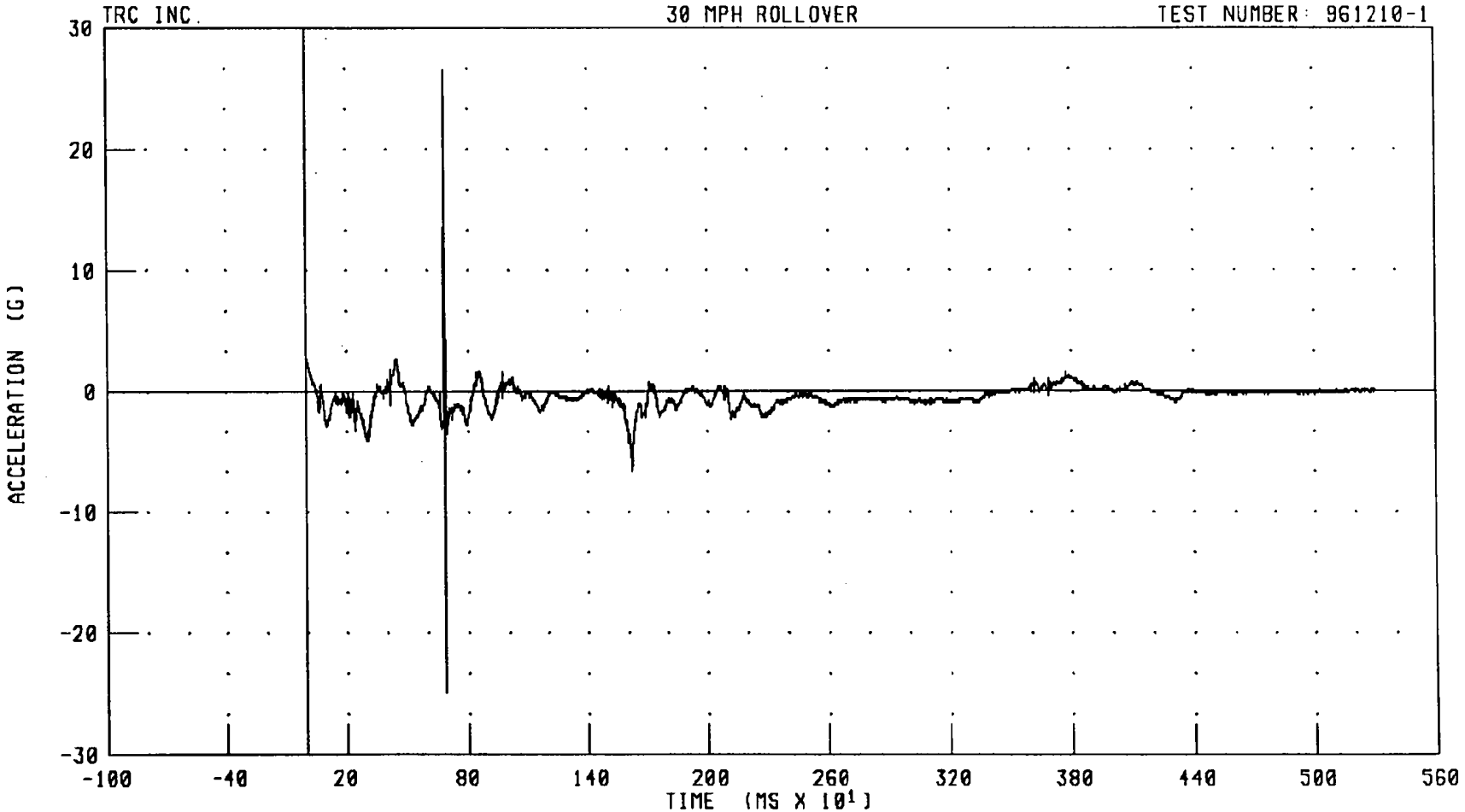
CHANNEL: PEVXG2 FILTER: CH. CLASS 1000 PEAK DATA: 9.51 G @ 688.20 MS; -87.42 G @ 686.80 MS

1994 FORD EXPLORER 30 MPH ROLLOVER DRIVER SIDE DOWN
RIGHT FRONT PASSENGER PELVIS LATERAL AXIS ACCELERATION

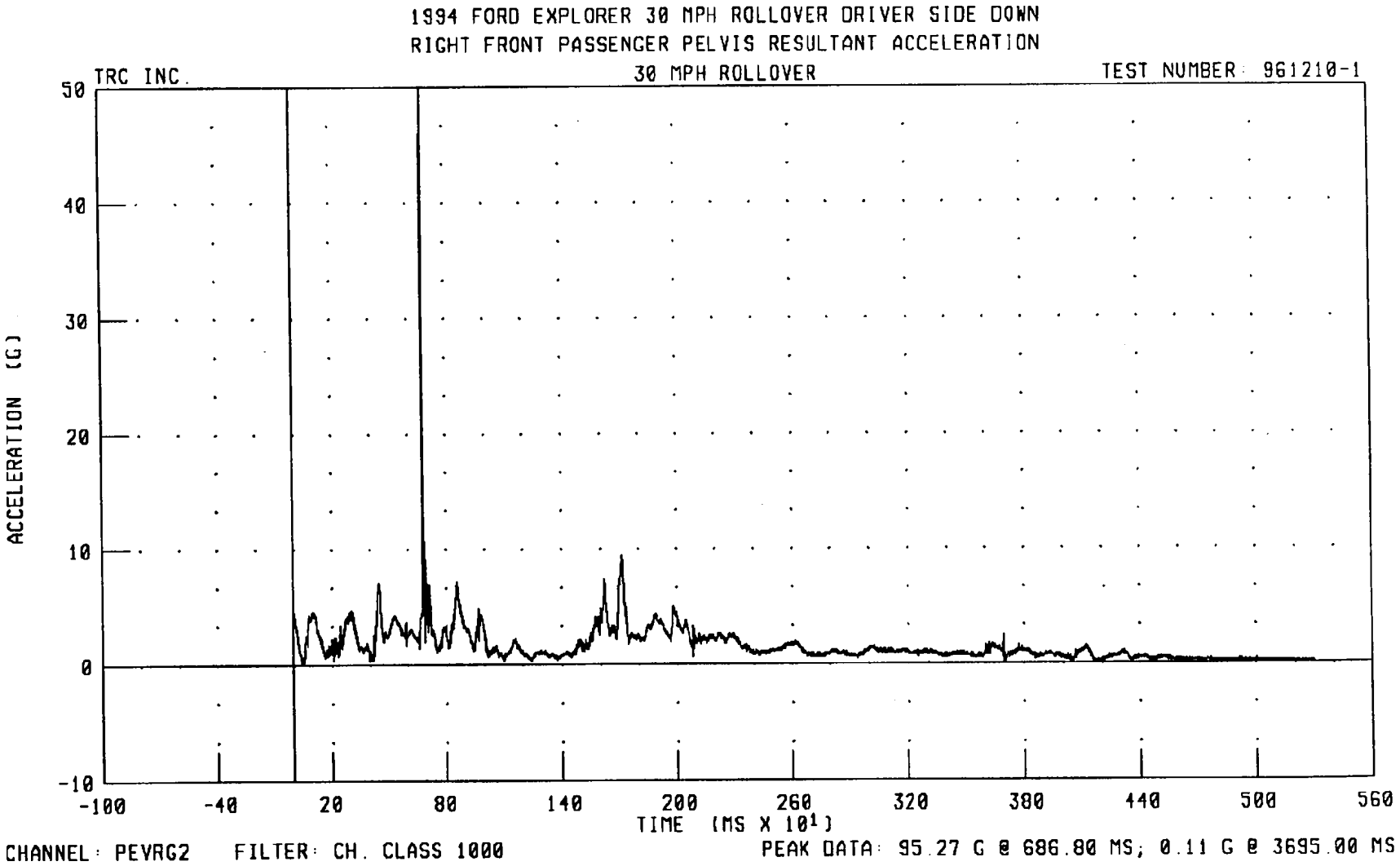


CHANNEL: PEVYG2 FILTER: CH. CLASS 1000 PEAK DATA: 28.99 G @ 686.60 MS; -5.44 G @ 688.40 MS

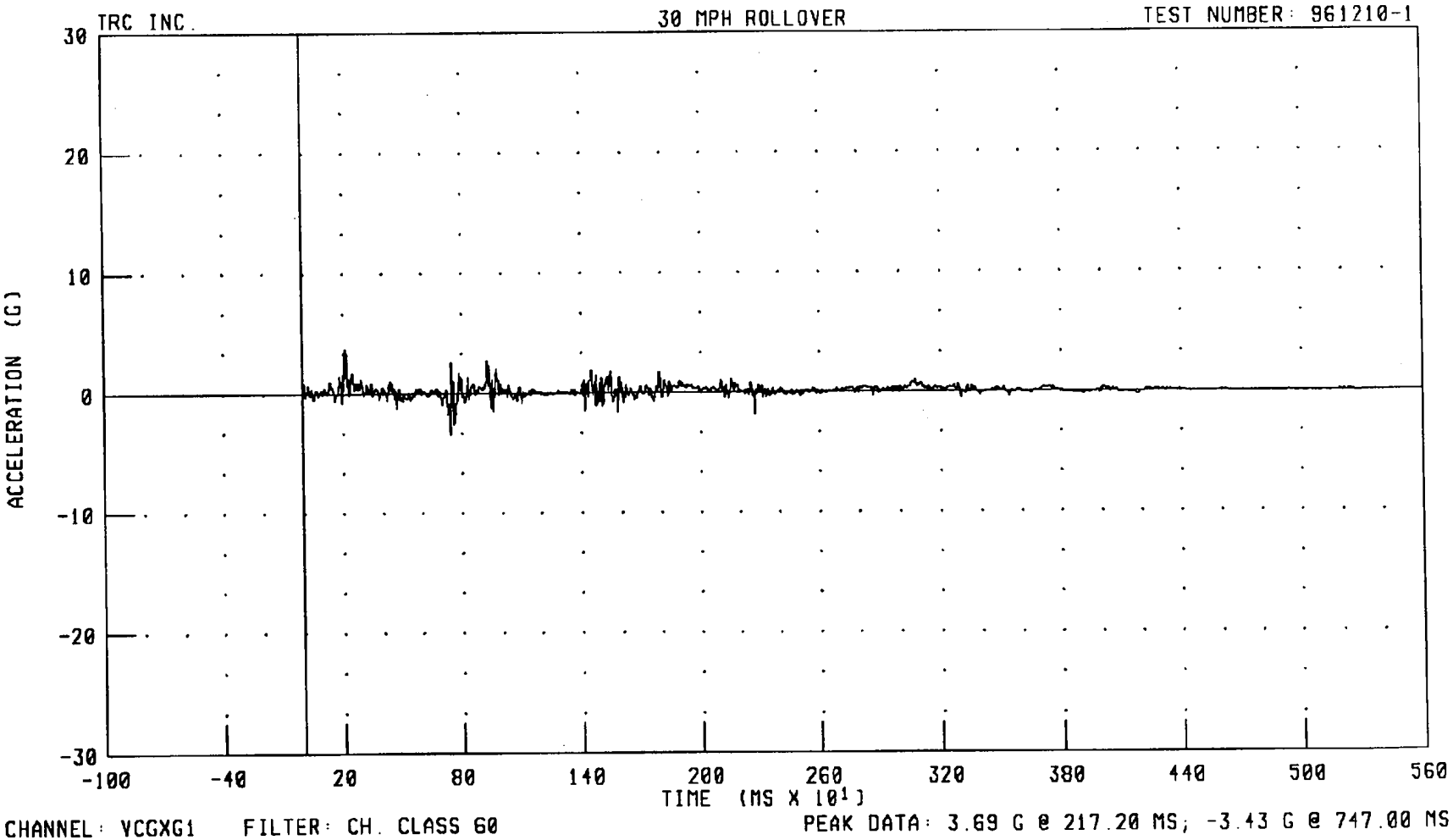
1994 FORD EXPLORER 30 MPH ROLLOVER DRIVER SIDE DOWN
RIGHT FRONT PASSENGER PELVIS VERTICAL AXIS ACCELERATION



CHANNEL: PEVZG2 FILTER: CH. CLASS 1000 PEAK DATA: 26.53 G @ 686.60 MS; -24.95 G @ 688.20 MS

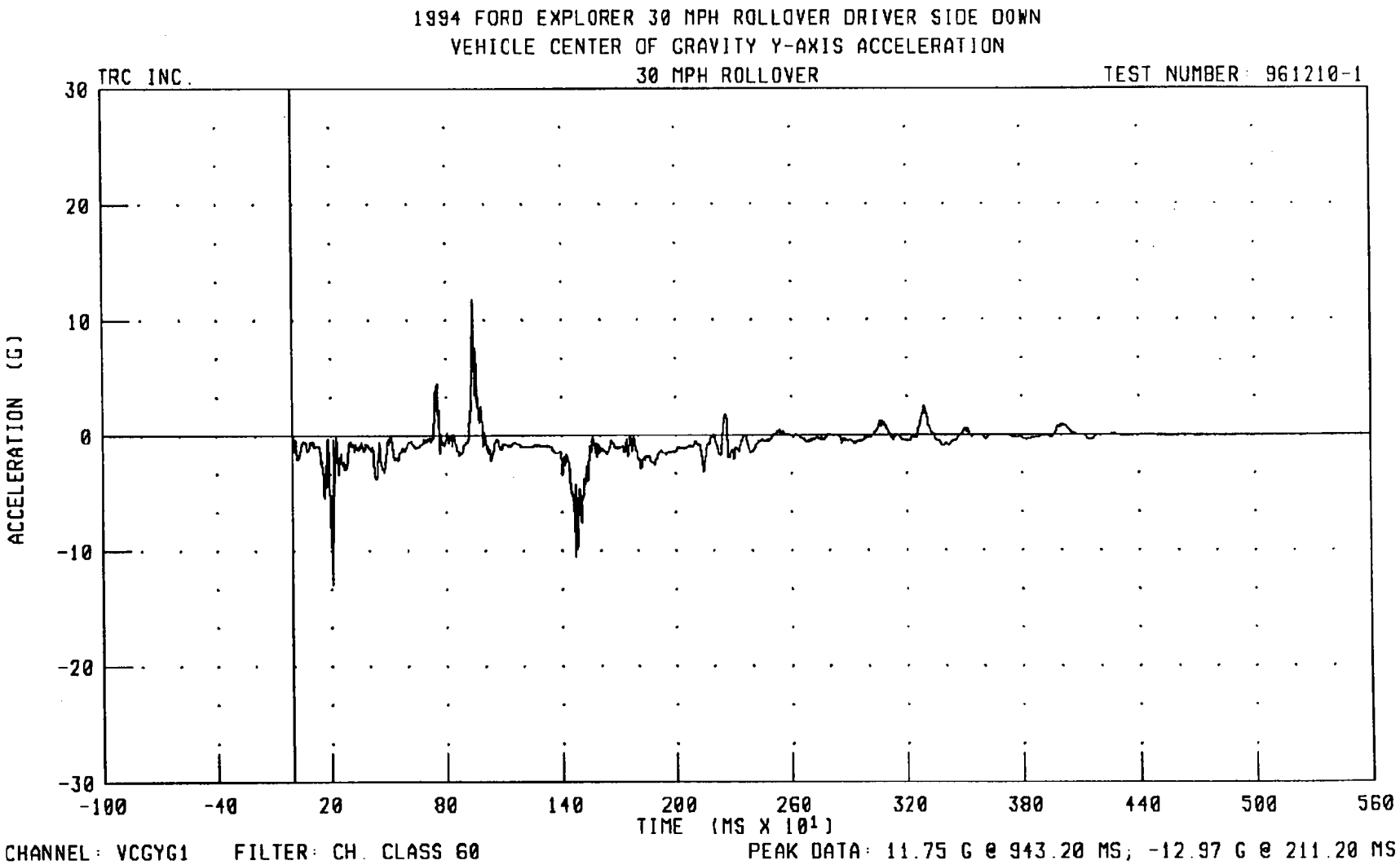

1994 FORD EXPLORER 30 MPH ROLLOVER DRIVER SIDE DOWN
RIGHT FRONT PASSENGER PELVIS RESULTANT ACCELERATION
TRC INC.
30 MPH ROLLOVER
TEST NUMBER: 961210-1
ACCELERATION (G)
50
40
30
20
10
0
-10
-100
-40
20
80
140
200
260
320
380
440
500
560
TIME (MS X 10¹)
CHANNEL: PEVRG2
FILTER: CH. CLASS 1000
PEAK DATA: 95.27 G @ 686.80 MS; 0.11 G @ 3695.00 MS

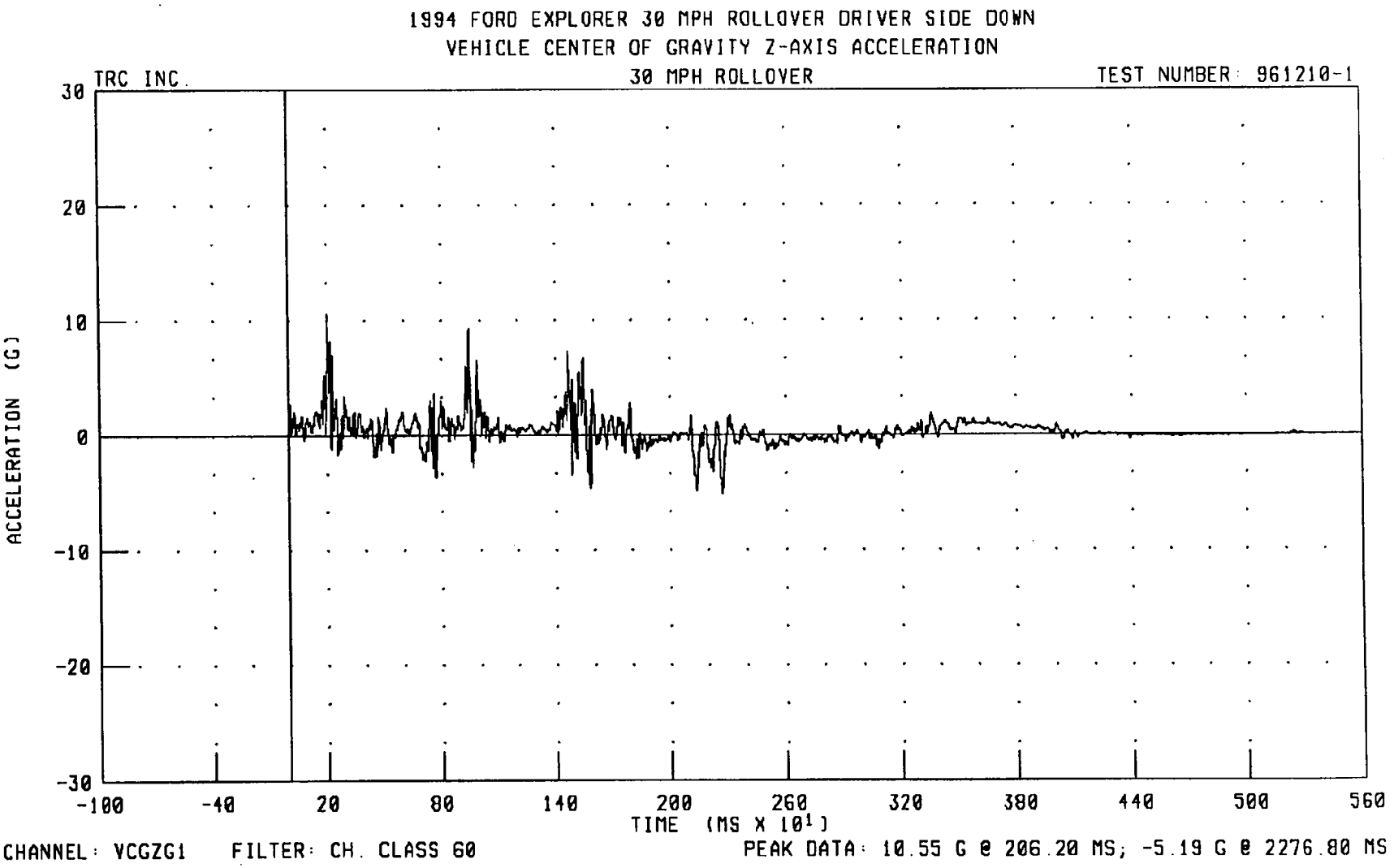
1994 FORD EXPLORER 30 MPH ROLLOVER DRIVER SIDE DOWN
VEHICLE CENTER OF GRAVITY X-AXIS ACCELERATION



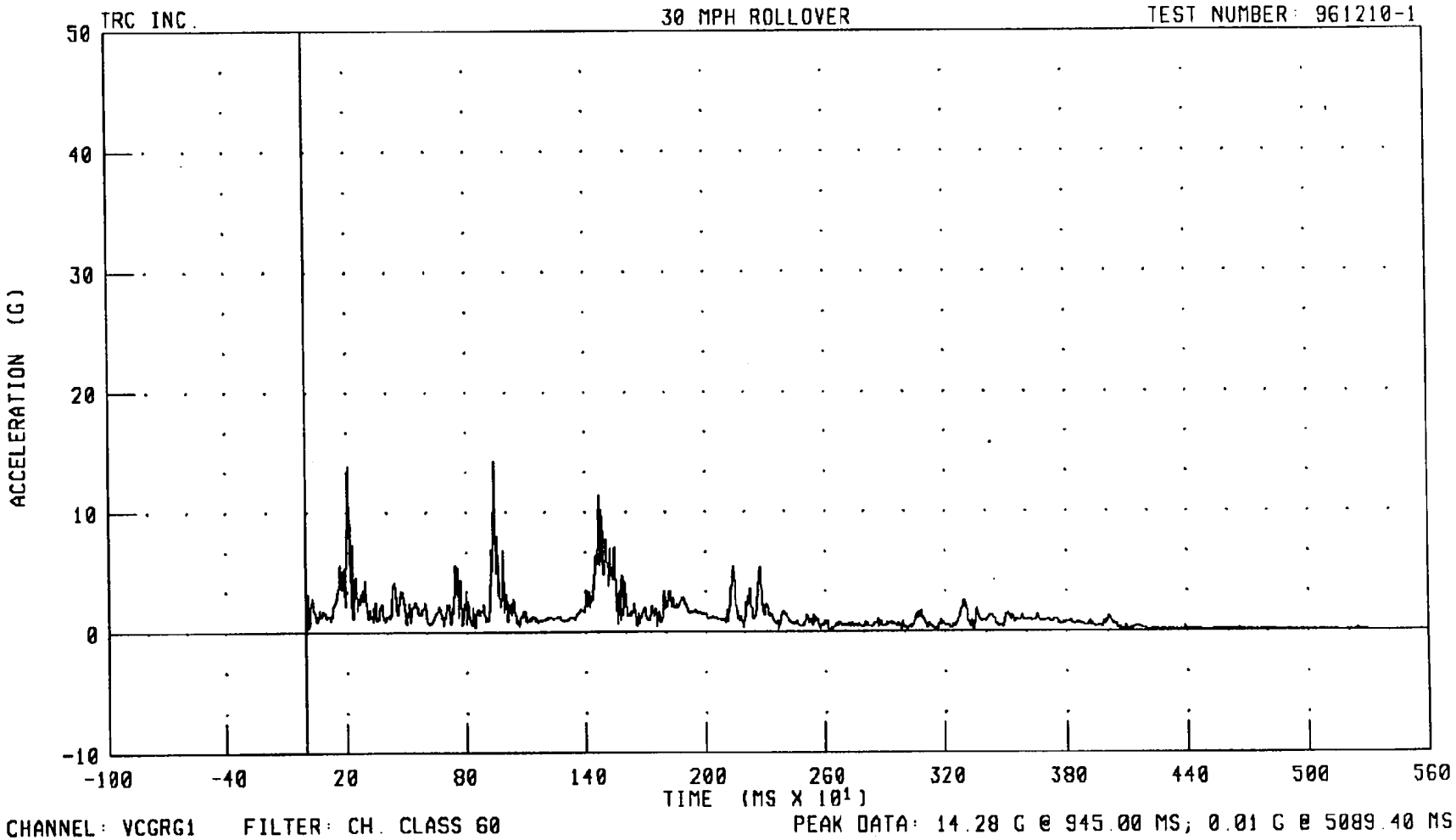
CHANNEL: VCGXG1 FILTER: CH. CLASS 60

PEAK DATA: 3.69 G @ 217.20 MS; -3.43 G @ 747.00 MS


1994 FORD EXPLORER 30 MPH ROLLOVER DRIVER SIDE DOWN
VEHICLE CENTER OF GRAVITY Y-AXIS ACCELERATION
TRC INC.
30 MPH ROLLOVER
TEST NUMBER: 961210-1
ACCELERATION (G)
30
20
10
0
-10
-20
-30
-100
-40
20
80
140
200
260
320
380
440
500
560
TIME (MS X 10¹)
CHANNEL: VCGYG1
FILTER: CH. CLASS 60
PEAK DATA: 11.75 G @ 943.20 MS; -12.97 G @ 211.20 MS

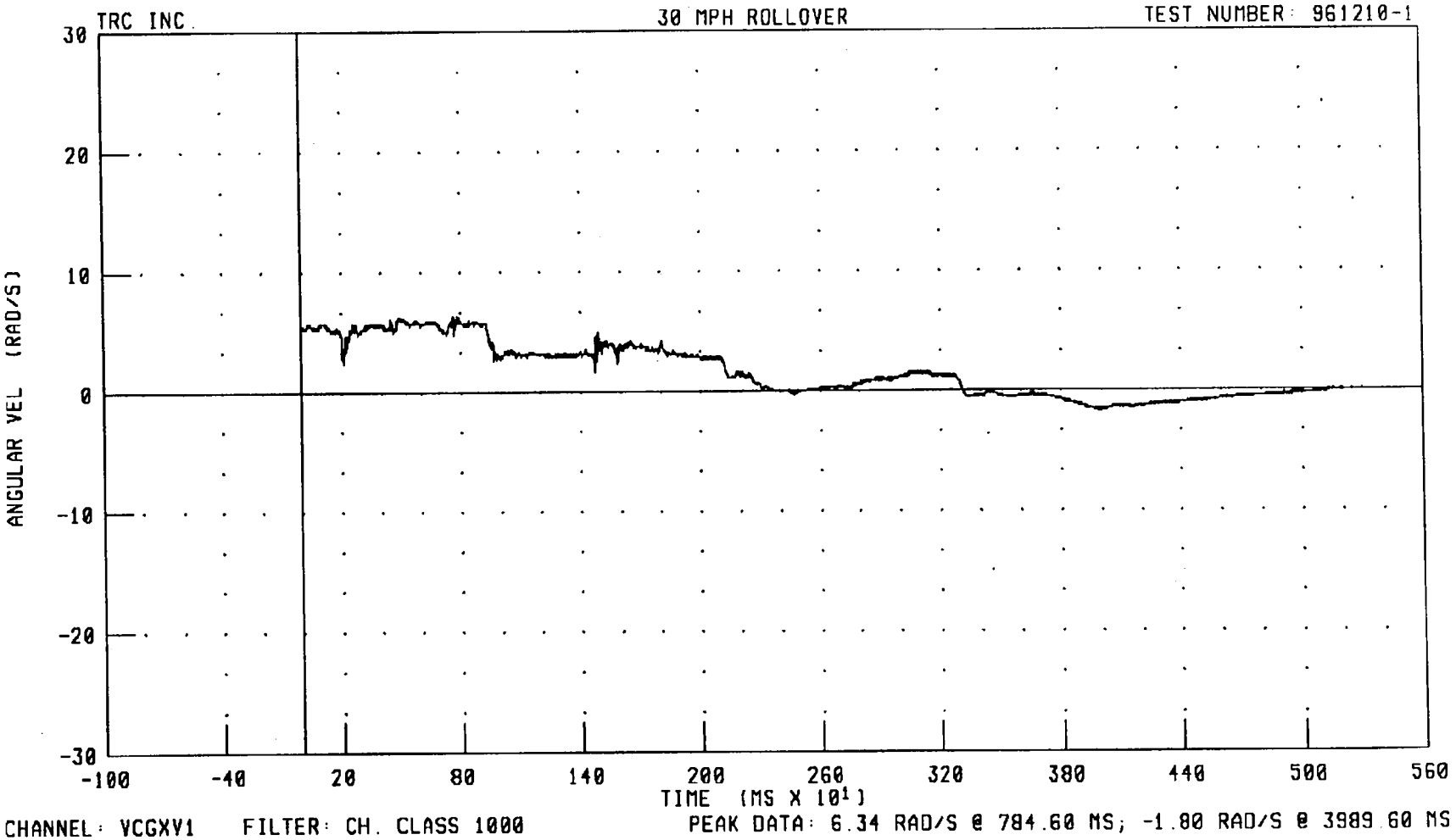

1994 FORD EXPLORER 30 MPH ROLLOVER DRIVER SIDE DOWN
VEHICLE CENTER OF GRAVITY Z-AXIS ACCELERATION
TRC INC.
30 MPH ROLLOVER
TEST NUMBER: 961210-1
ACCELERATION (G)
30
20
10
0
-10
-20
-30
-100
-40
20
80
140
200
260
320
380
440
500
560
TIME (MS X 10¹)
CHANNEL: VCGZG1
FILTER: CH. CLASS 60
PEAK DATA: 10.55 G @ 206.20 MS; -5.19 G @ 2276.80 MS

1994 FORD EXPLORER 30 MPH ROLLOVER DRIVER SIDE DOWN
VEHICLE CENTER OF GRAVITY RESULTANT ACCELERATION



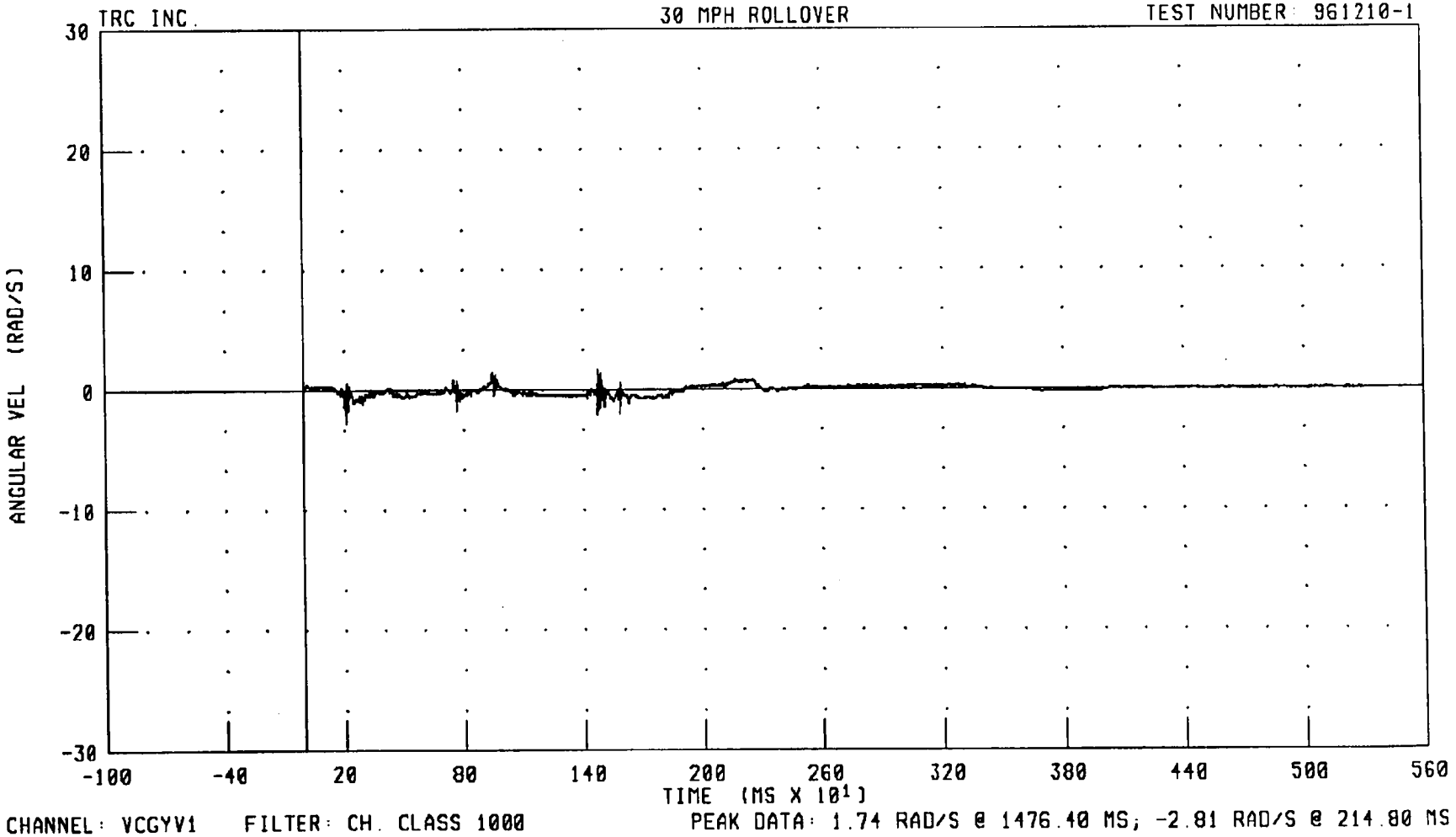
CHANNEL: VCGRG1 FILTER: CH. CLASS 60 PEAK DATA: 14.28 G @ 945.00 MS; 0.01 G @ 5089.40 MS

1994 FORD EXPLORER 30 MPH ROLLOVER DRIVER SIDE DOWN
VEHICLE CENTER OF GRAVITY ROLL VELOCITY



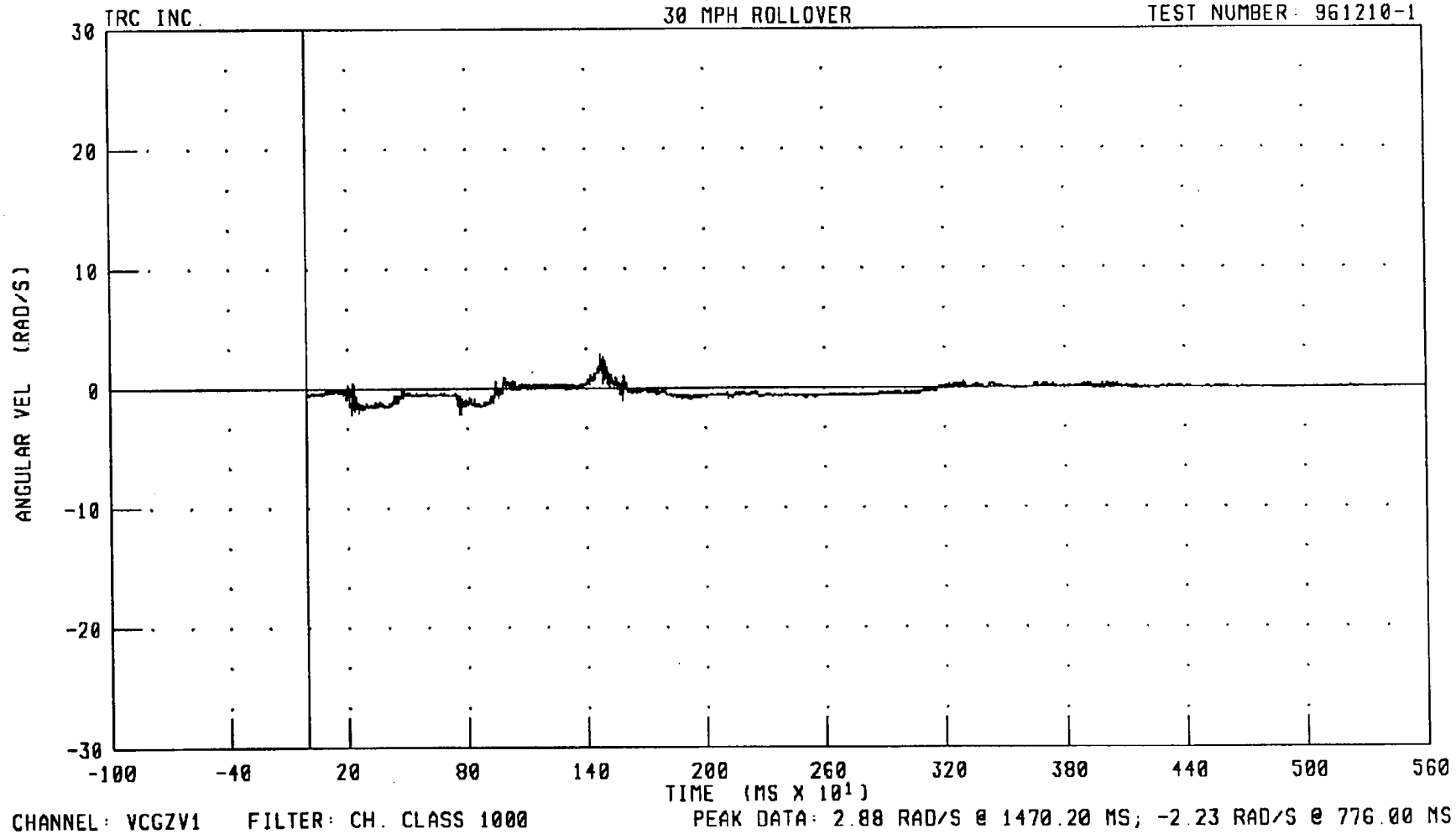
CHANNEL: VCGXV1 FILTER: CH. CLASS 1000 PEAK DATA: 6.34 RAD/S @ 784.60 MS; -1.80 RAD/S @ 3989.60 MS

1994 FORD EXPLORER 30 MPH ROLLOVER DRIVER SIDE DOWN
VEHICLE CENTER OF GRAVITY PITCH VELOCITY

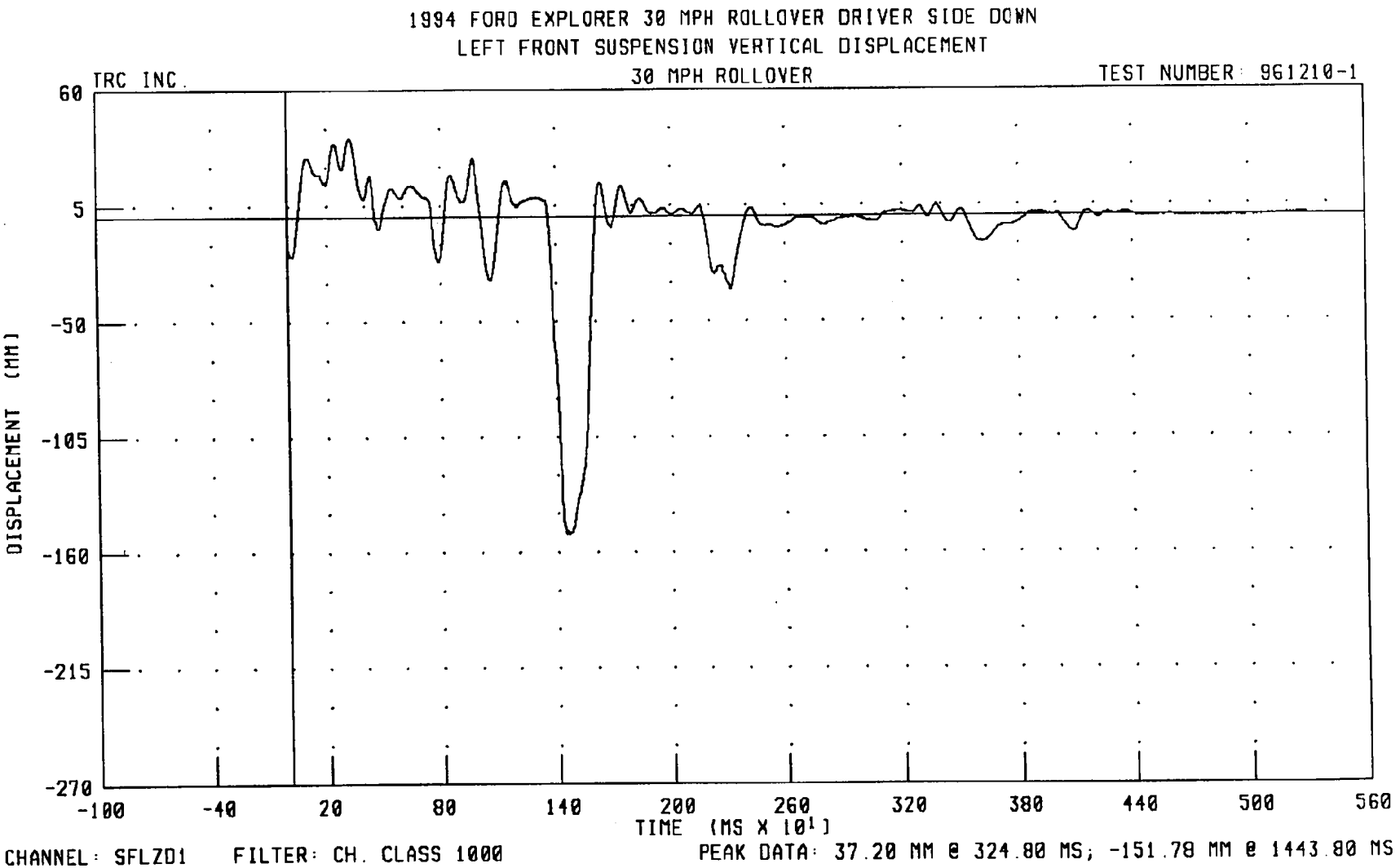


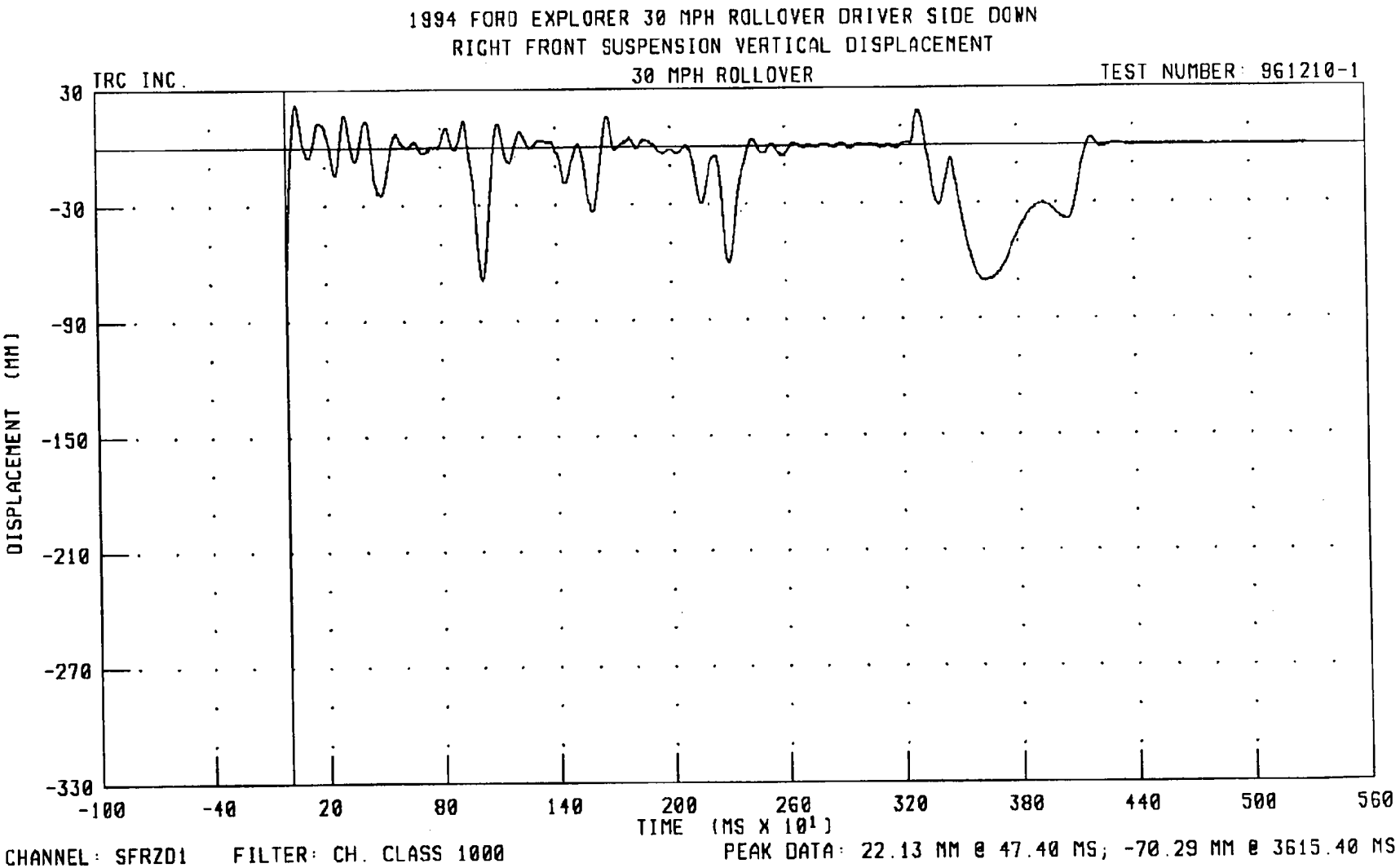
CHANNEL: VCGYV1 FILTER: CH. CLASS 1000 PEAK DATA: 1.74 RAD/S @ 1476.40 MS; -2.81 RAD/S @ 214.80 MS

1994 FORD EXPLORER 30 MPH ROLLOVER DRIVER SIDE DOWN
VEHICLE CENTER OF GRAVITY YAW VELOCITY

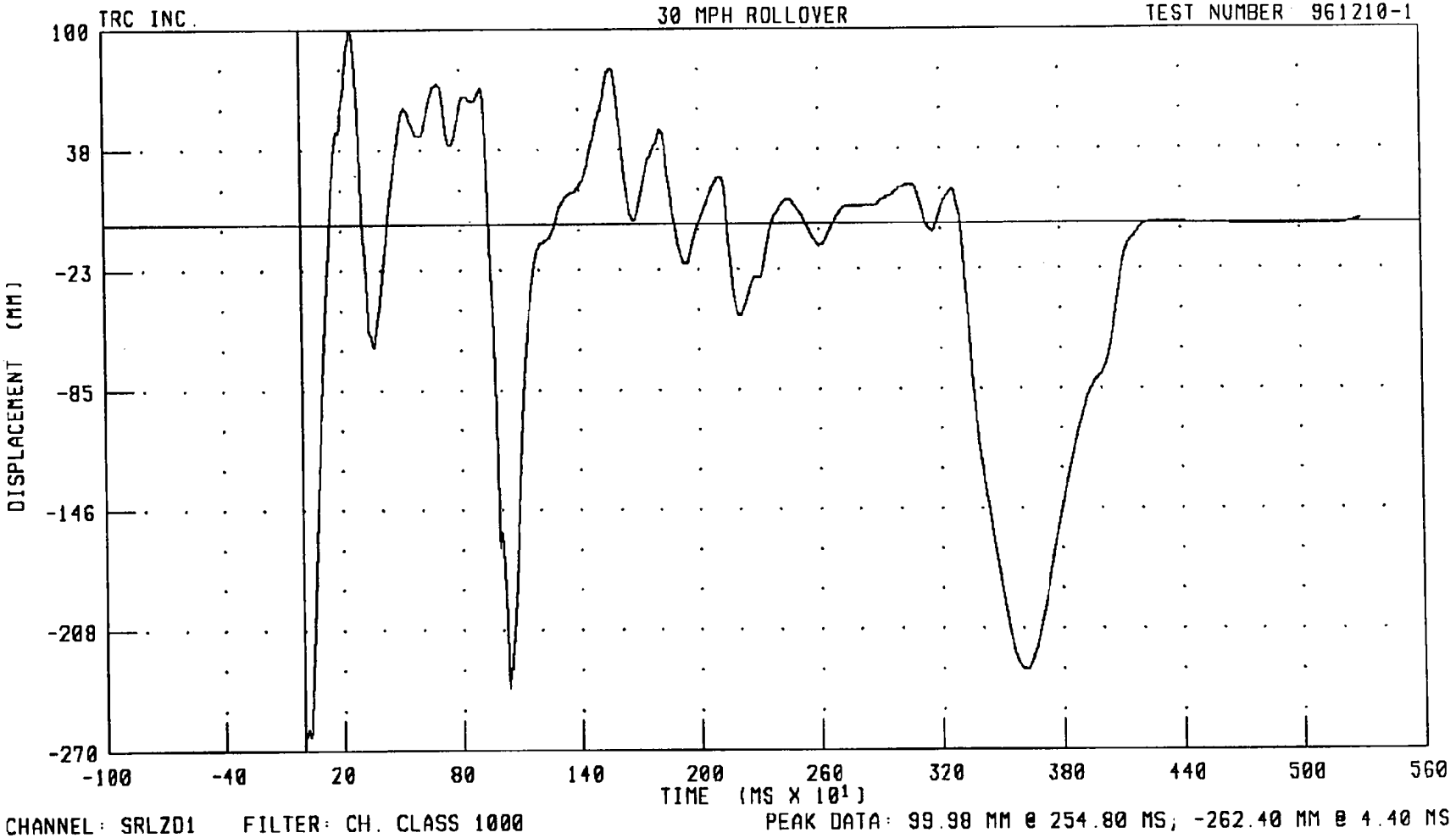


CHANNEL: VCGZV1 FILTER: CH. CLASS 1000 PEAK DATA: 2.88 RAD/S @ 1470.20 MS; -2.23 RAD/S @ 776.00 MS

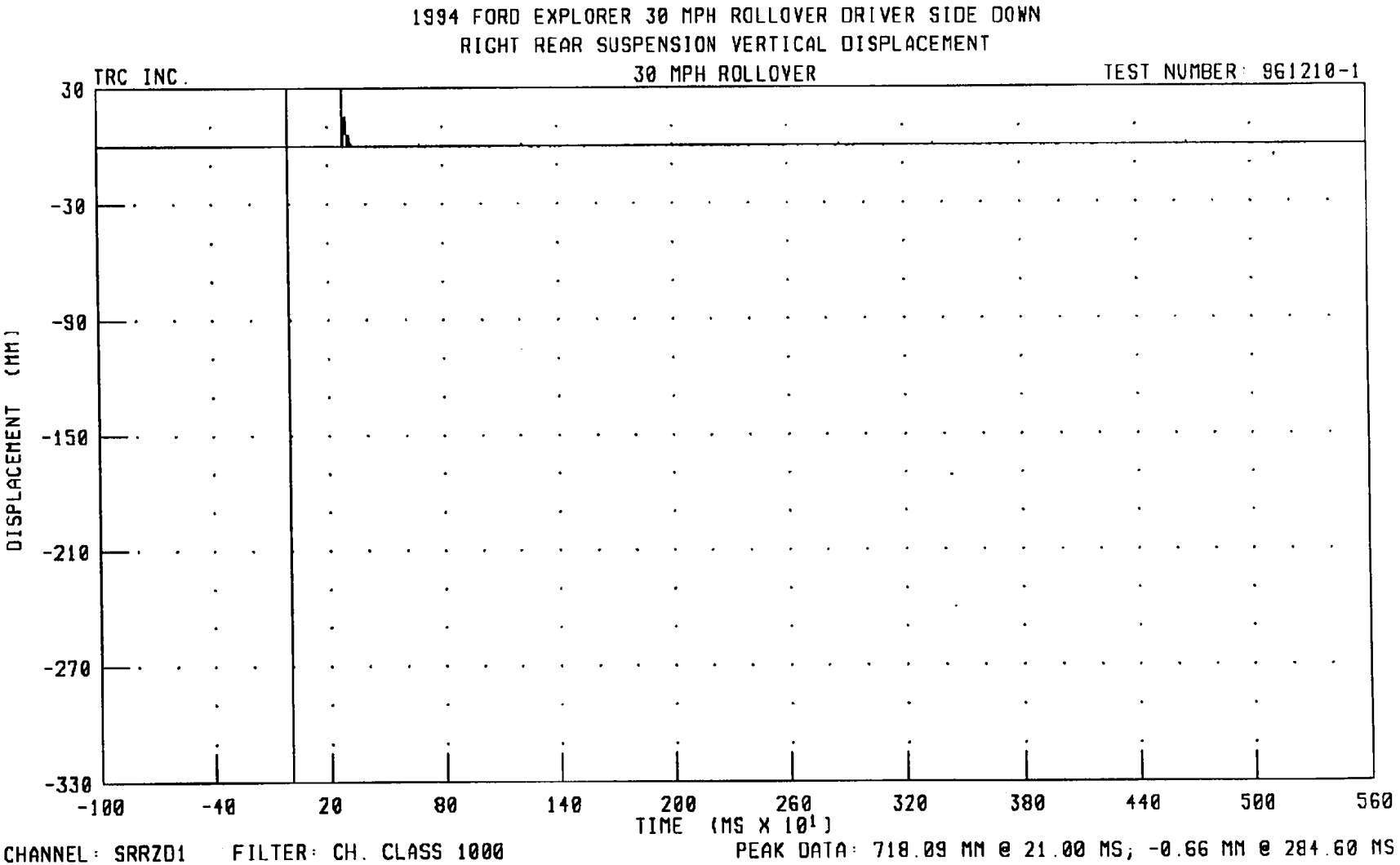

1994 FORD EXPLORER 30 MPH ROLLOVER DRIVER SIDE DOWN
LEFT FRONT SUSPENSION VERTICAL DISPLACEMENT
TRC INC.
30 MPH ROLLOVER
TEST NUMBER: 961210-1
60
5
-50
-105
-160
-215
-270
DISPLACEMENT (MM)
-100
-40
20
80
140
200
260
320
380
440
500
560
TIME (MS X 10¹)
CHANNEL: SFLZD1
FILTER: CH. CLASS 1000
PEAK DATA: 37.20 MM @ 324.80 MS; -151.78 MM @ 1443.80 MS


1994 FORD EXPLORER 30 MPH ROLLOVER DRIVER SIDE DOWN
RIGHT FRONT SUSPENSION VERTICAL DISPLACEMENT
TRC INC.
30 MPH ROLLOVER
TEST NUMBER: 961210-1
30
-30
-90
-150
-210
-270
-330
DISPLACEMENT (MM)
-100
-40
20
80
140
200
260
320
380
440
500
560
TIME (MS X 10¹)
CHANNEL: SFRZD1
FILTER: CH. CLASS 1000
PEAK DATA: 22.13 MM @ 47.40 MS; -70.29 MM @ 3615.40 MS

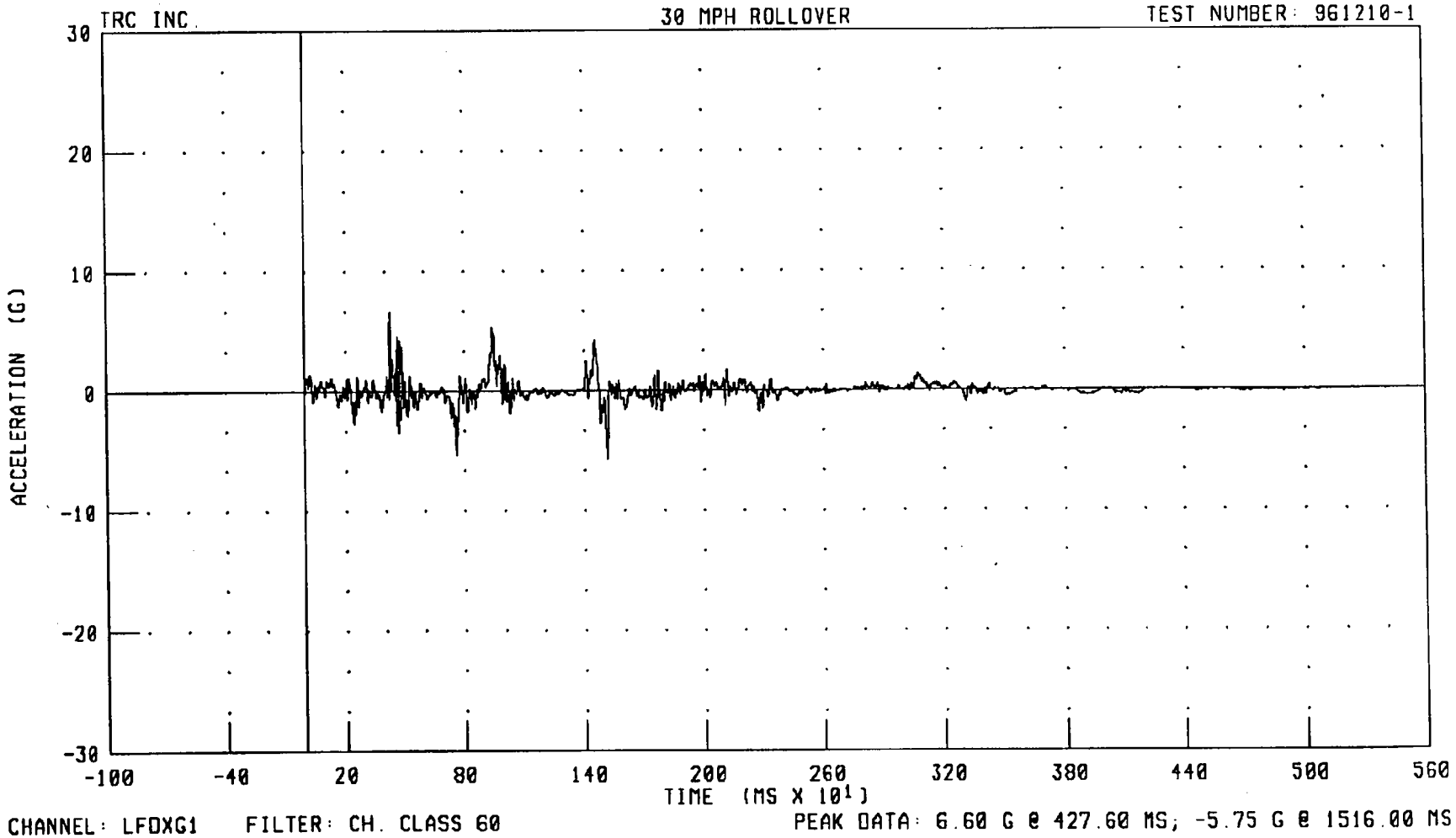
1994 FORD EXPLORER 30 MPH ROLLOVER DRIVER SIDE DOWN
LEFT REAR SUSPENSION VERTICAL DISPLACEMENT



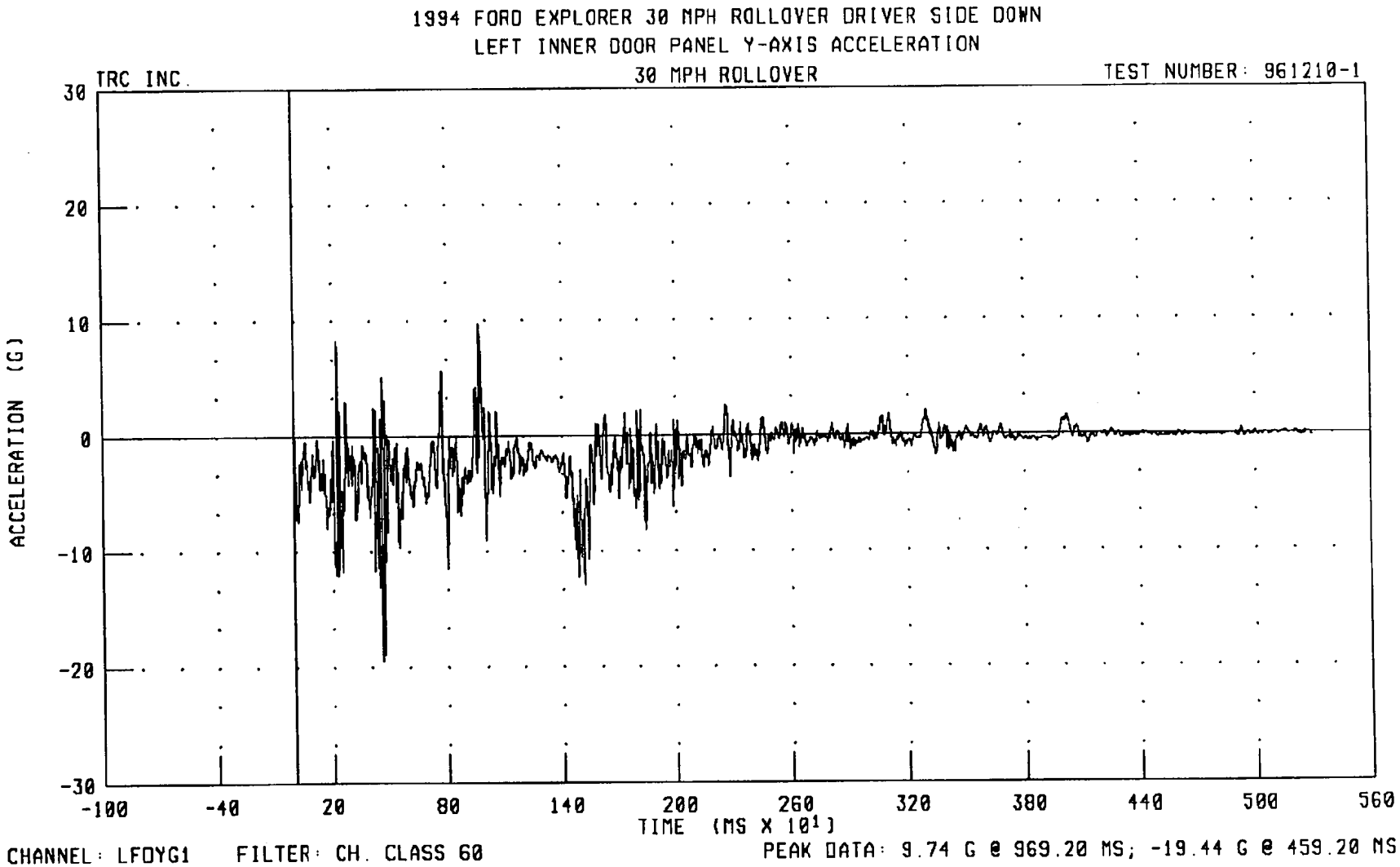
CHANNEL: SRLZD1 FILTER: CH. CLASS 1000 PEAK DATA: 99.98 MM @ 254.80 MS; -262.40 MM @ 4.40 MS


1994 FORD EXPLORER 30 MPH ROLLOVER DRIVER SIDE DOWN
RIGHT REAR SUSPENSION VERTICAL DISPLACEMENT
TRC INC.
30 MPH ROLLOVER
TEST NUMBER: 961210-1
30
-30
-90
-150
-210
-270
-330
DISPLACEMENT (MM)
-100
-40
20
80
140
200
260
320
380
440
500
560
TIME (MS X 10¹)
CHANNEL: SRRZD1
FILTER: CH. CLASS 1000
PEAK DATA: 718.09 MM @ 21.00 MS; -0.66 MM @ 284.60 MS

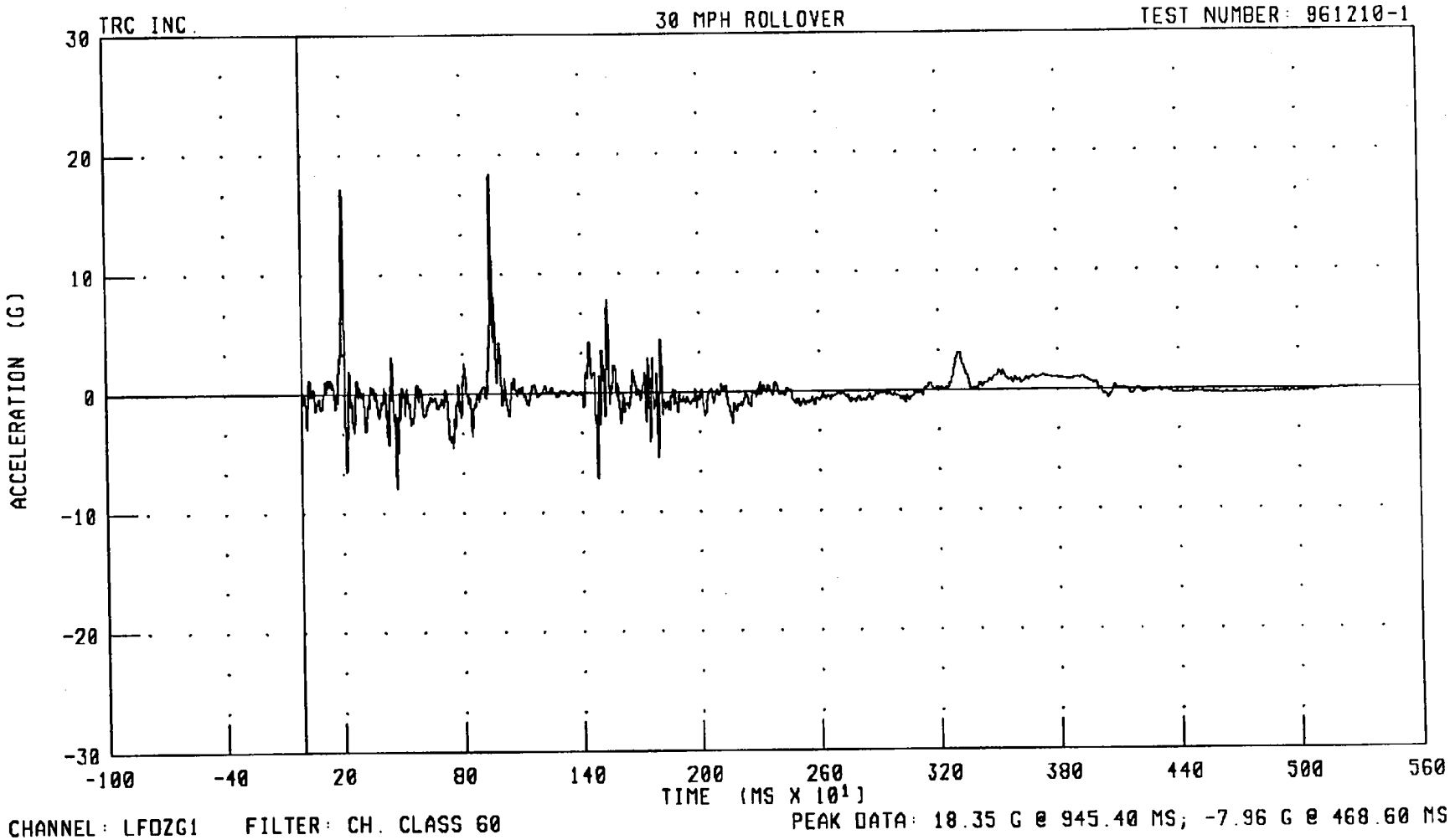
1994 FORD EXPLORER 30 MPH ROLLOVER DRIVER SIDE DOWN
LEFT INNER DOOR PANEL X-AXIS ACCELERATION



CHANNEL: LFDXG1 FILTER: CH. CLASS 60 PEAK DATA: 6.60 G @ 427.60 MS; -5.75 G @ 1516.00 MS


1994 FORD EXPLORER 30 MPH ROLLOVER DRIVER SIDE DOWN
LEFT INNER DOOR PANEL Y-AXIS ACCELERATION
TRC INC.
30 MPH ROLLOVER
TEST NUMBER: 961210-1
30
20
10
0
-10
-20
-30
ACCELERATION (G)
-100
-40
20
80
140
200
260
320
380
440
500
560
TIME (MS X 10¹)
CHANNEL: LFOYG1
FILTER: CH. CLASS 60
PEAK DATA: 9.74 G @ 969.20 MS; -19.44 G @ 459.20 MS

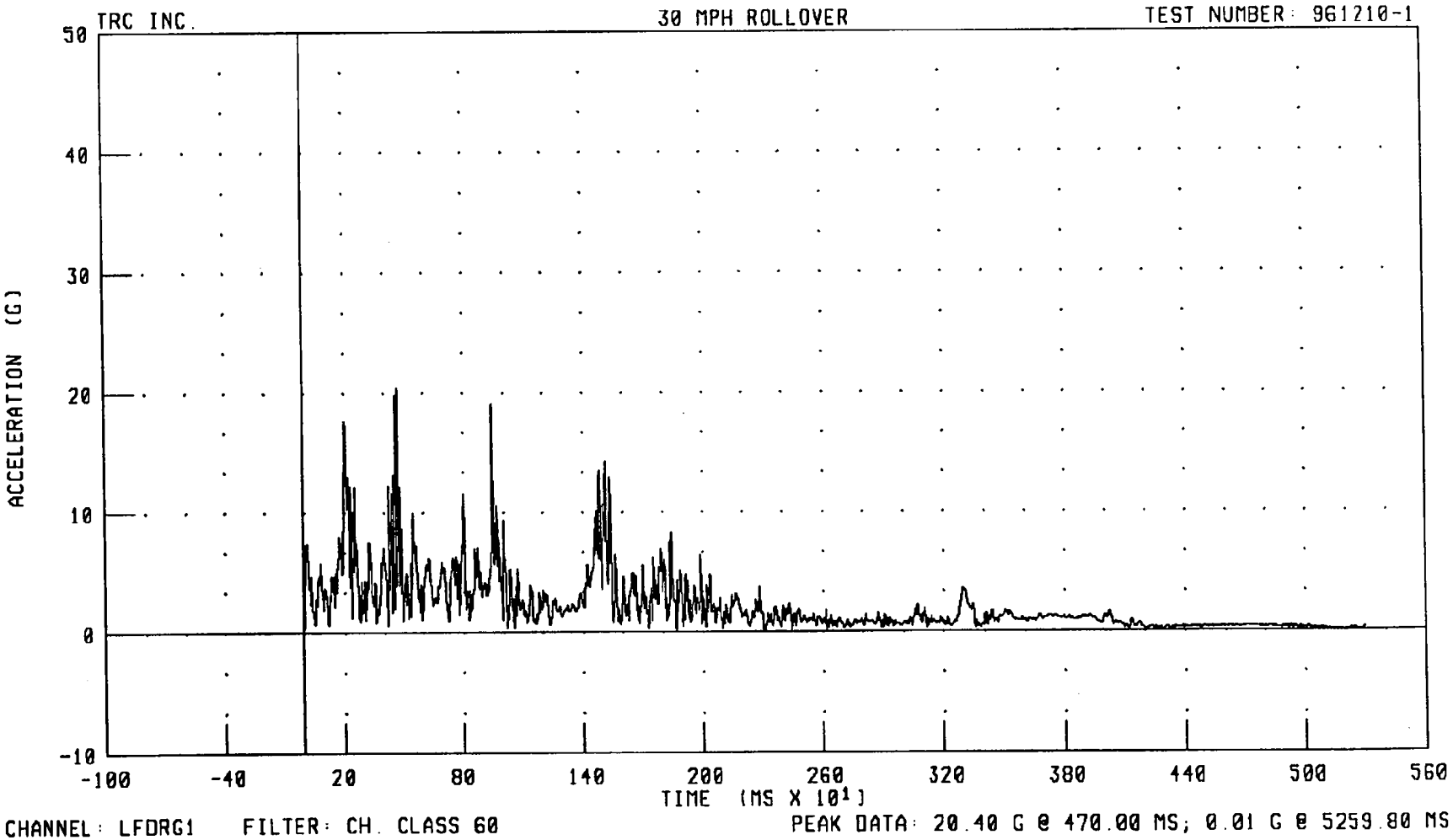
1994 FORD EXPLORER 30 MPH ROLLOVER DRIVER SIDE DOWN
LEFT INNER DOOR PANEL X-AXIS ACCELERATION



CHANNEL: LFDZG1 FILTER: CH. CLASS 60

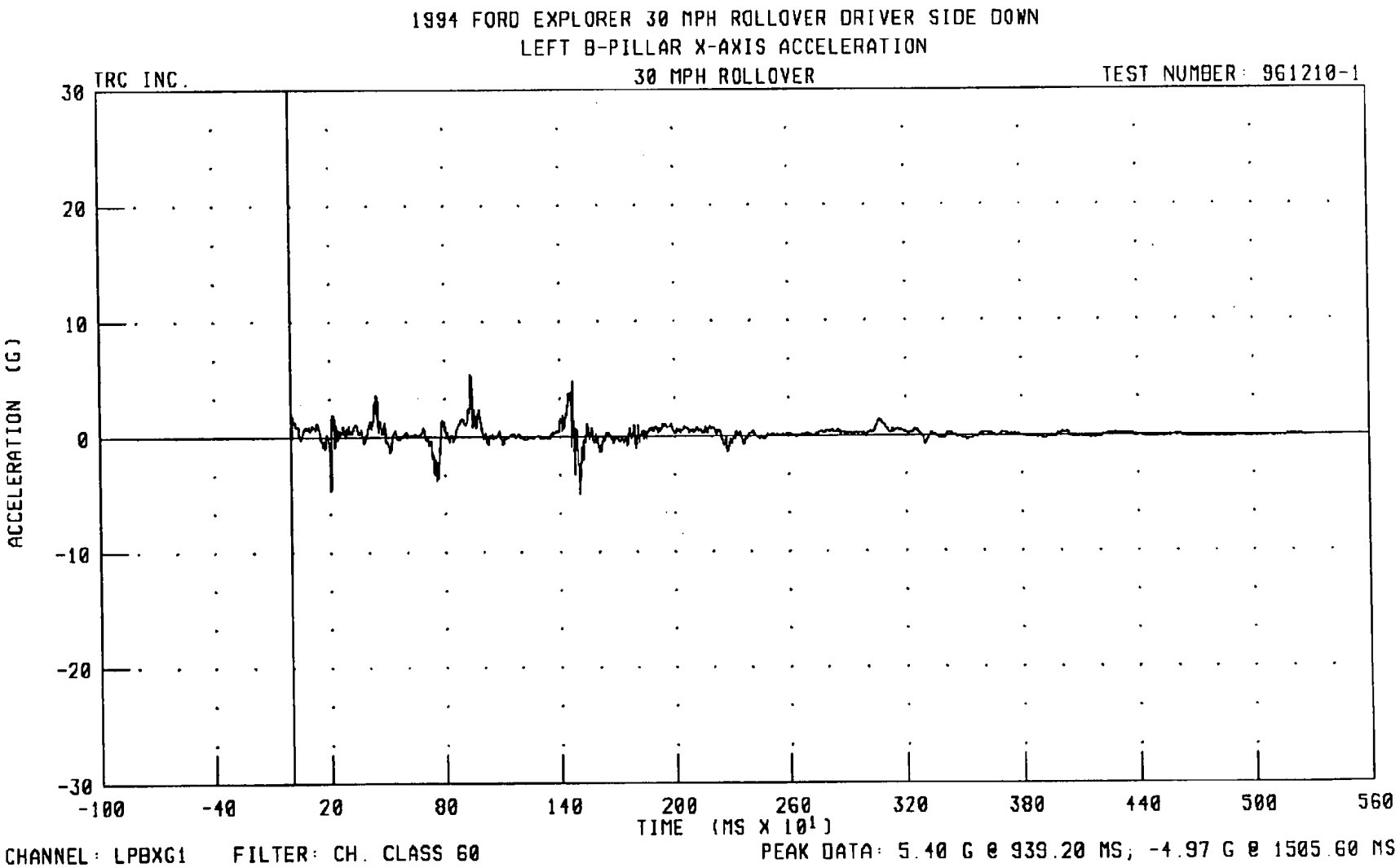
PEAK DATA: 18.35 G @ 945.40 MS; -7.96 G @ 468.60 MS

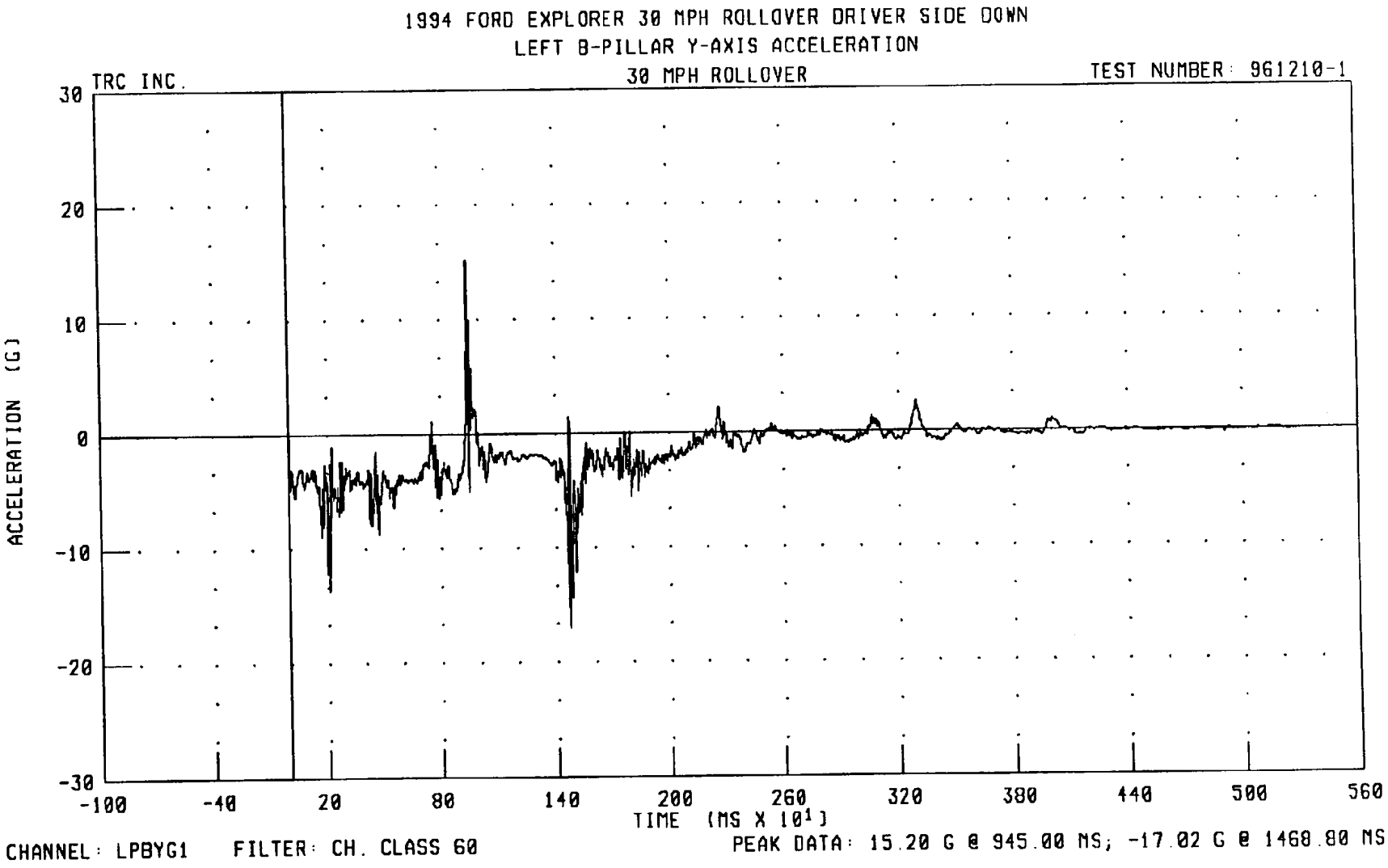
1994 FORD EXPLORER 30 MPH ROLLOVER DRIVER SIDE DOWN
LEFT INNER DOOR PANEL RESULTANT ACCELERATION

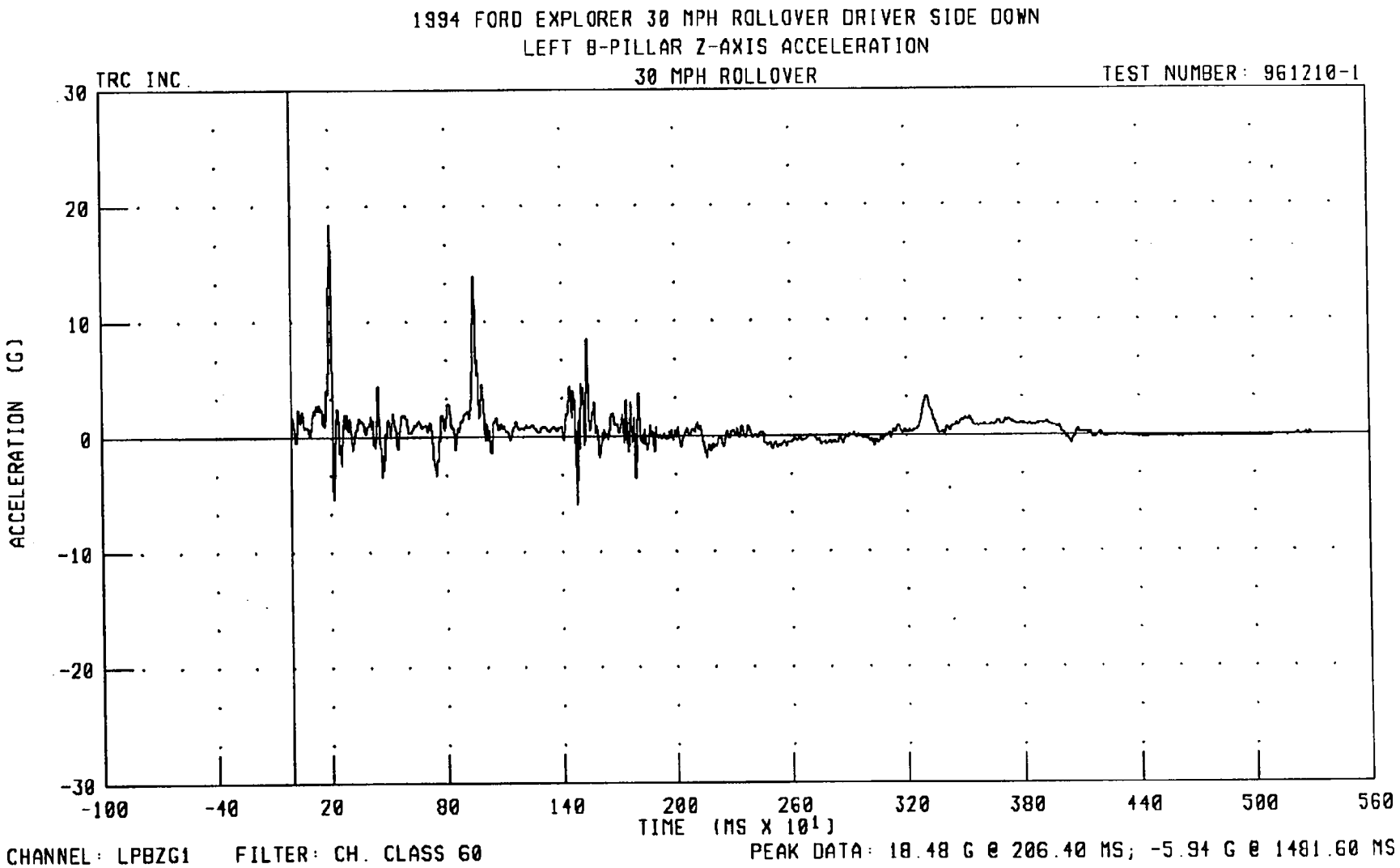


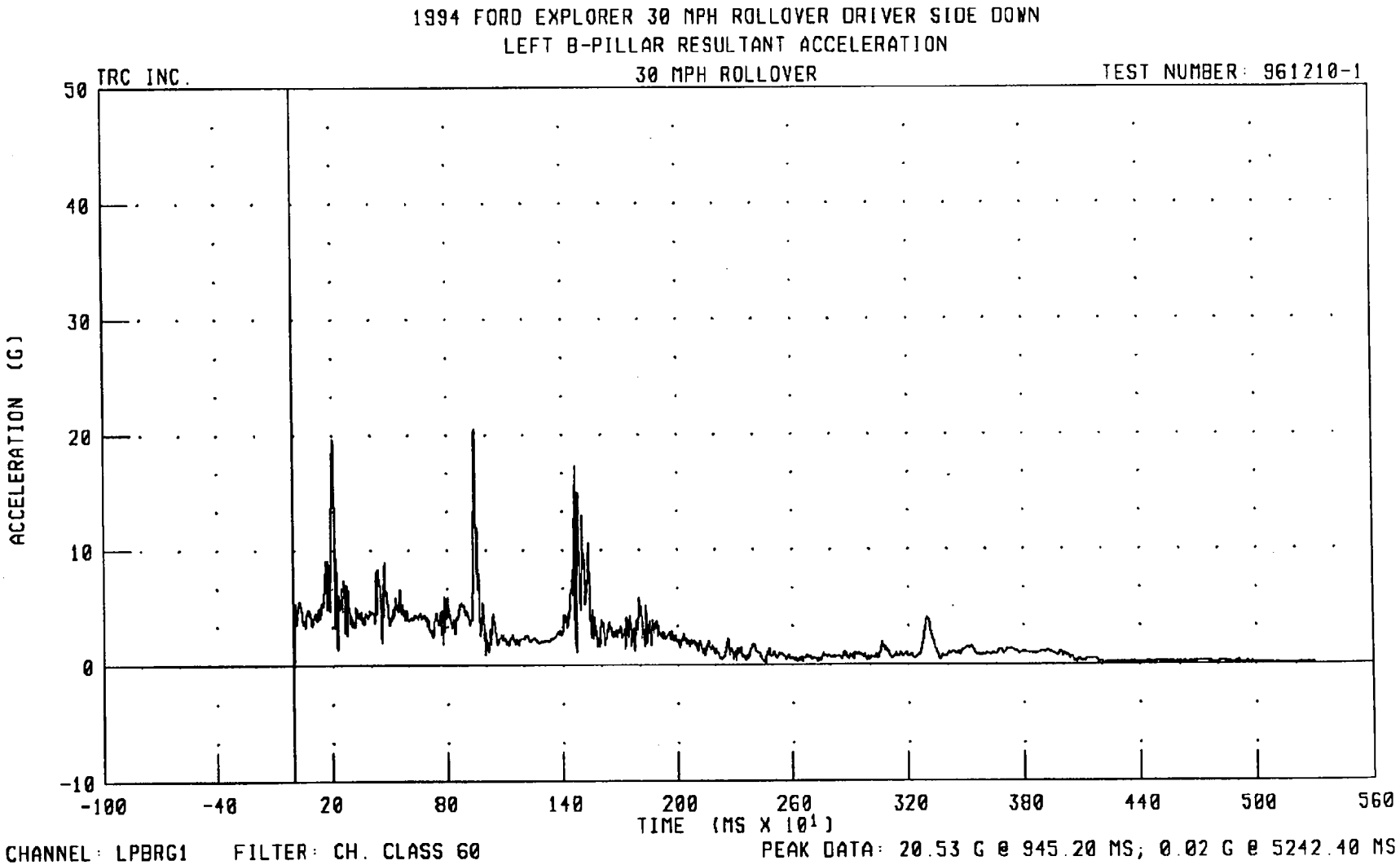
CHANNEL: LFDRG1 FILTER: CH. CLASS 60

PEAK DATA: 20.40 G @ 470.00 MS; 0.01 G @ 5259.80 MS

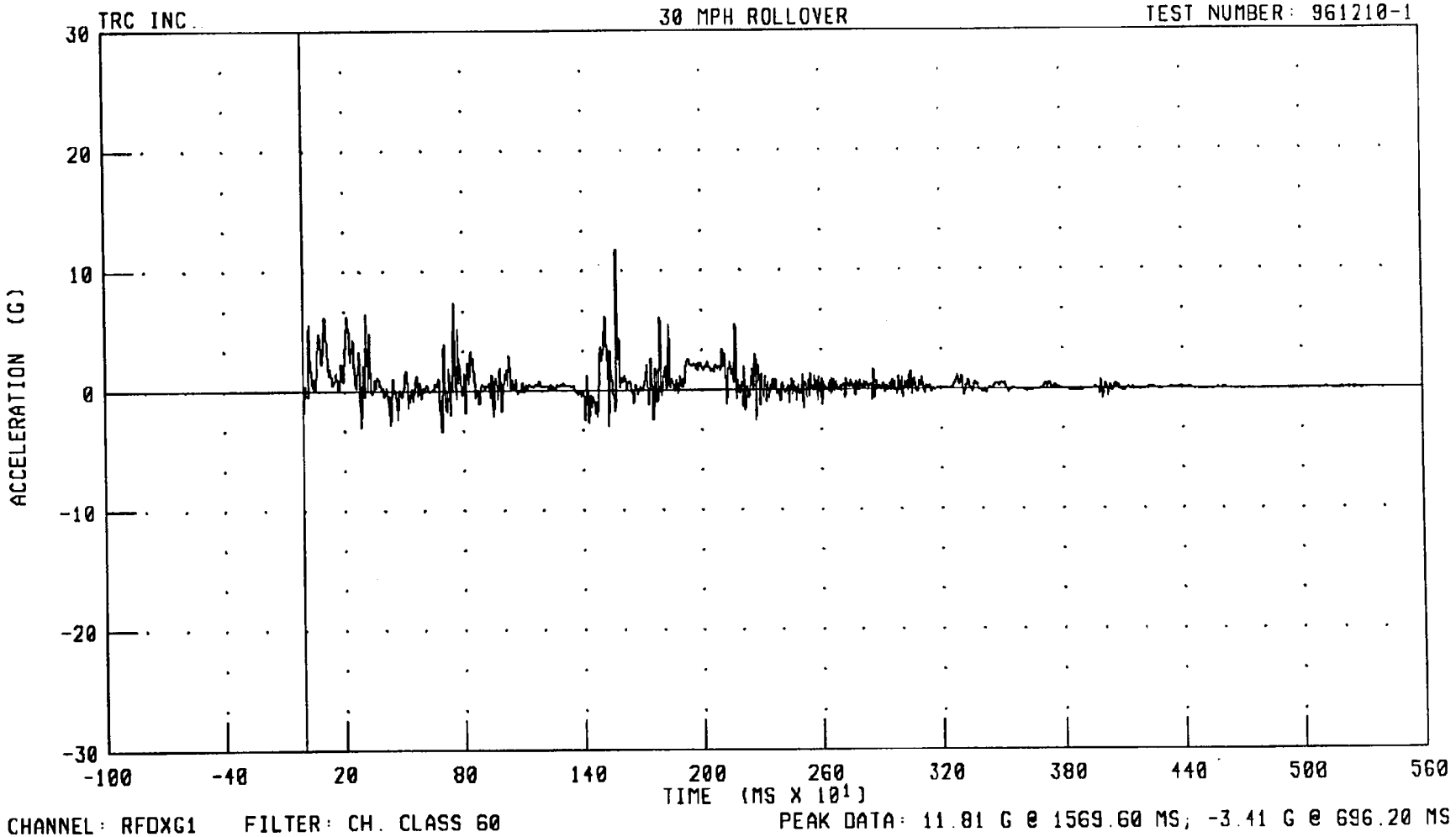

1994 FORD EXPLORER 30 MPH ROLLOVER DRIVER SIDE DOWN
LEFT B-PILLAR X-AXIS ACCELERATION
TRC INC.
30 MPH ROLLOVER
TEST NUMBER: 961210-1
ACCELERATION (G)
30
20
10
0
-10
-20
-30
-100
-40
20
80
140
200
260
320
380
440
500
560
TIME (MS X 10¹)
CHANNEL: LPBXG1
FILTER: CH. CLASS 60
PEAK DATA: 5.40 G @ 939.20 MS; -4.97 G @ 1505.60 MS


1994 FORD EXPLORER 30 MPH ROLLOVER DRIVER SIDE DOWN
LEFT B-PILLAR Y-AXIS ACCELERATION
TRC INC.
30 MPH ROLLOVER
TEST NUMBER: 961210-1
ACCELERATION (G)
30
20
10
0
-10
-20
-30
-100
-40
20
80
140
200
260
320
380
440
500
560
TIME (MS X 10¹)
CHANNEL: LPBYG1
FILTER: CH. CLASS 60
PEAK DATA: 15.20 G @ 945.00 MS; -17.02 G @ 1468.80 MS


1994 FORD EXPLORER 30 MPH ROLLOVER DRIVER SIDE DOWN
LEFT B-PILLAR Z-AXIS ACCELERATION
TRC INC.
30 MPH ROLLOVER
TEST NUMBER: 961210-1
ACCELERATION (G)
30
20
10
0
-10
-20
-30
-100
-40
20
80
140
200
260
320
380
440
500
560
TIME (MS X 10¹)
CHANNEL: LPBZG1
FILTER: CH. CLASS 60
PEAK DATA: 18.48 G @ 206.40 MS; -5.94 G @ 1481.60 MS


1994 FORD EXPLORER 30 MPH ROLLOVER DRIVER SIDE DOWN
LEFT B-PILLAR RESULTANT ACCELERATION
TRC INC.
30 MPH ROLLOVER
TEST NUMBER: 961210-1
ACCELERATION (G)
50
40
30
20
10
0
-10
-100
-40
20
80
140
200
260
320
380
440
500
560
TIME (MS X 10¹)
CHANNEL: LPBRG1
FILTER: CH. CLASS 60
PEAK DATA: 20.53 G @ 945.20 MS; 0.02 G @ 5242.40 MS

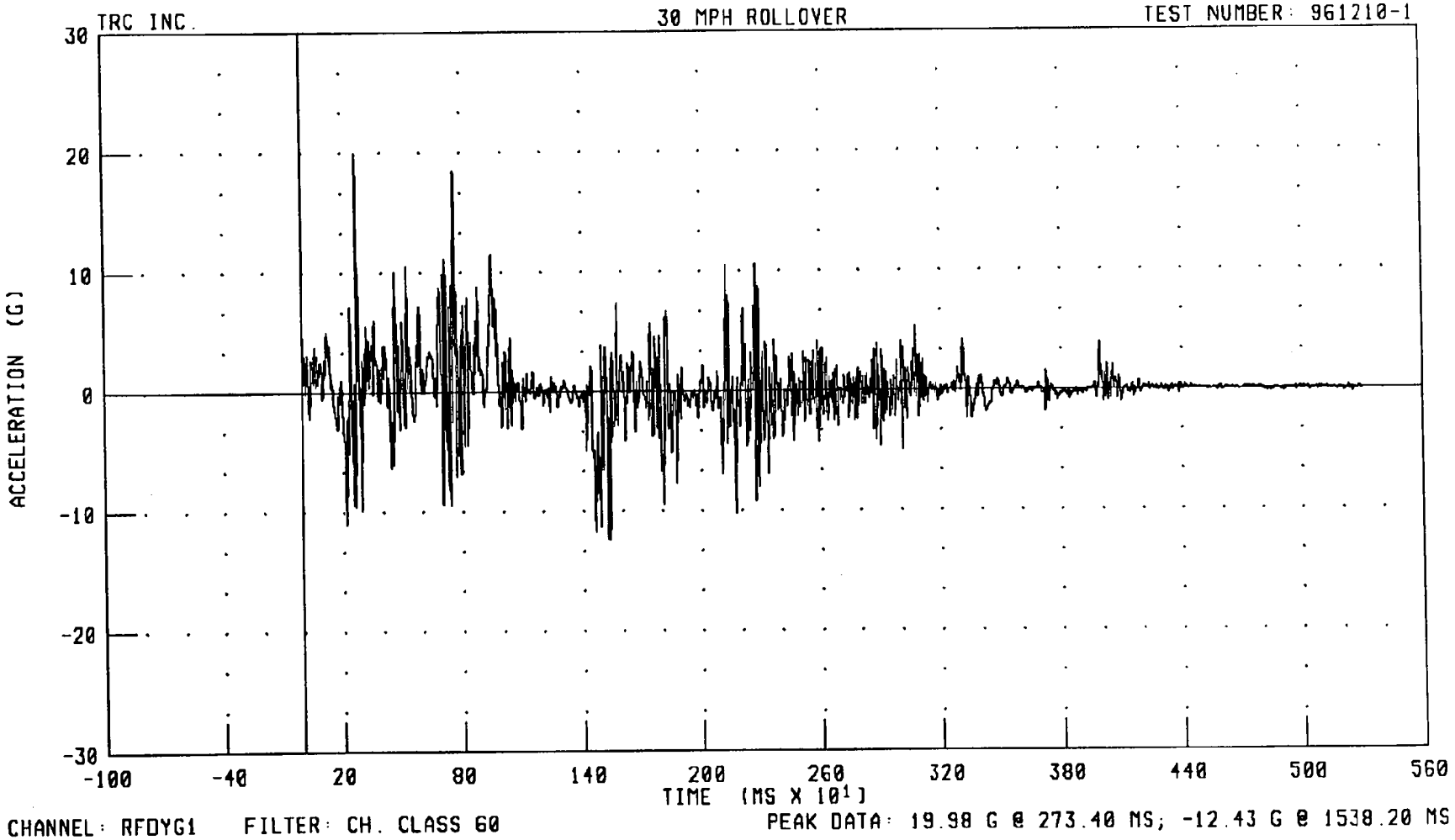
1994 FORD EXPLORER 30 MPH ROLLOVER DRIVER SIDE DOWN
RIGHT INNER DOOR PANEL X-AXIS ACCELERATION



CHANNEL: RFDXG1 FILTER: CH. CLASS 60

PEAK DATA: 11.81 G @ 1569.60 MS; -3.41 G @ 696.20 MS

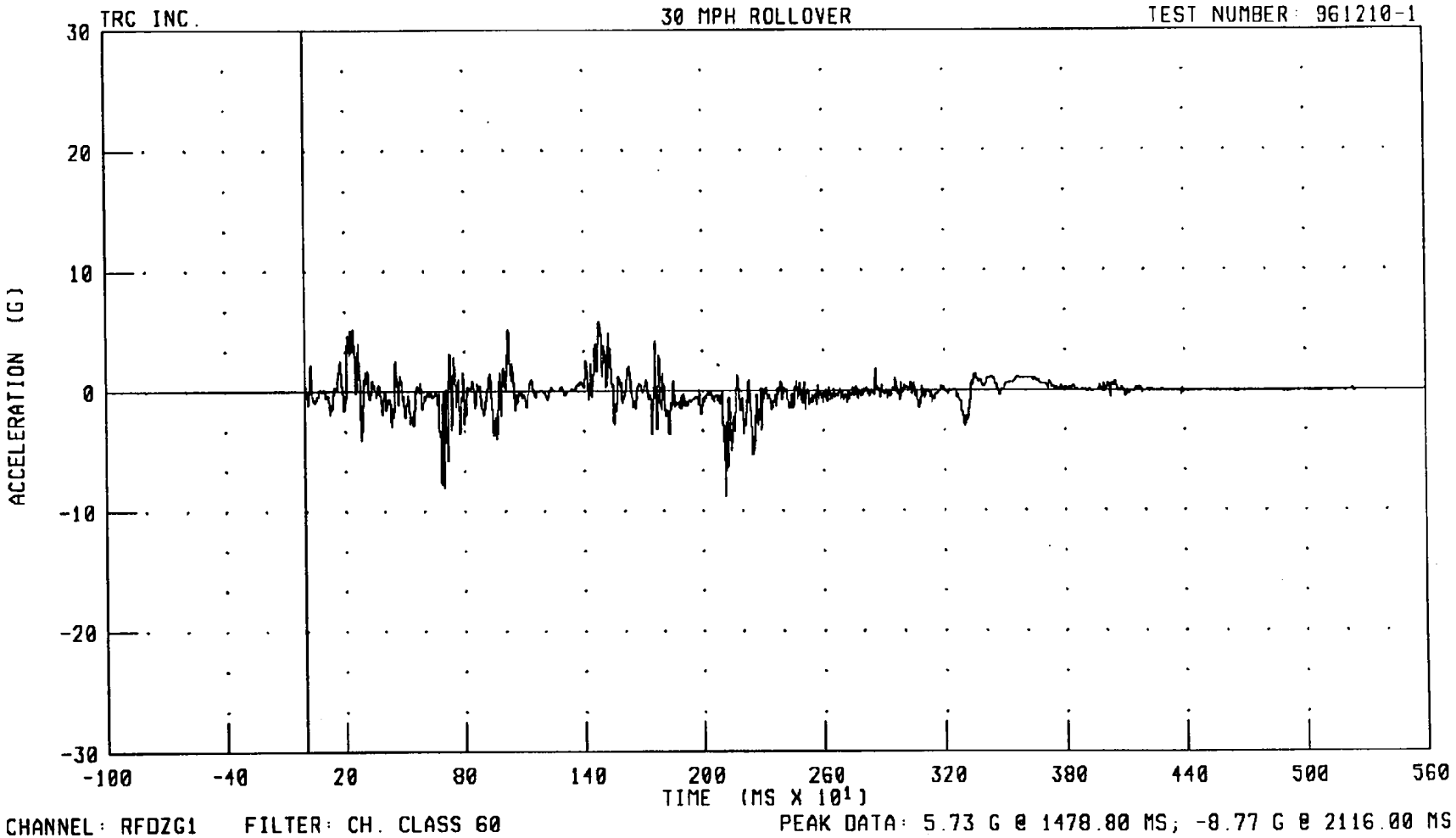
1994 FORD EXPLORER 30 MPH ROLLOVER DRIVER SIDE DOWN
RIGHT INNER DOOR PANEL Y-AXIS ACCELERATION



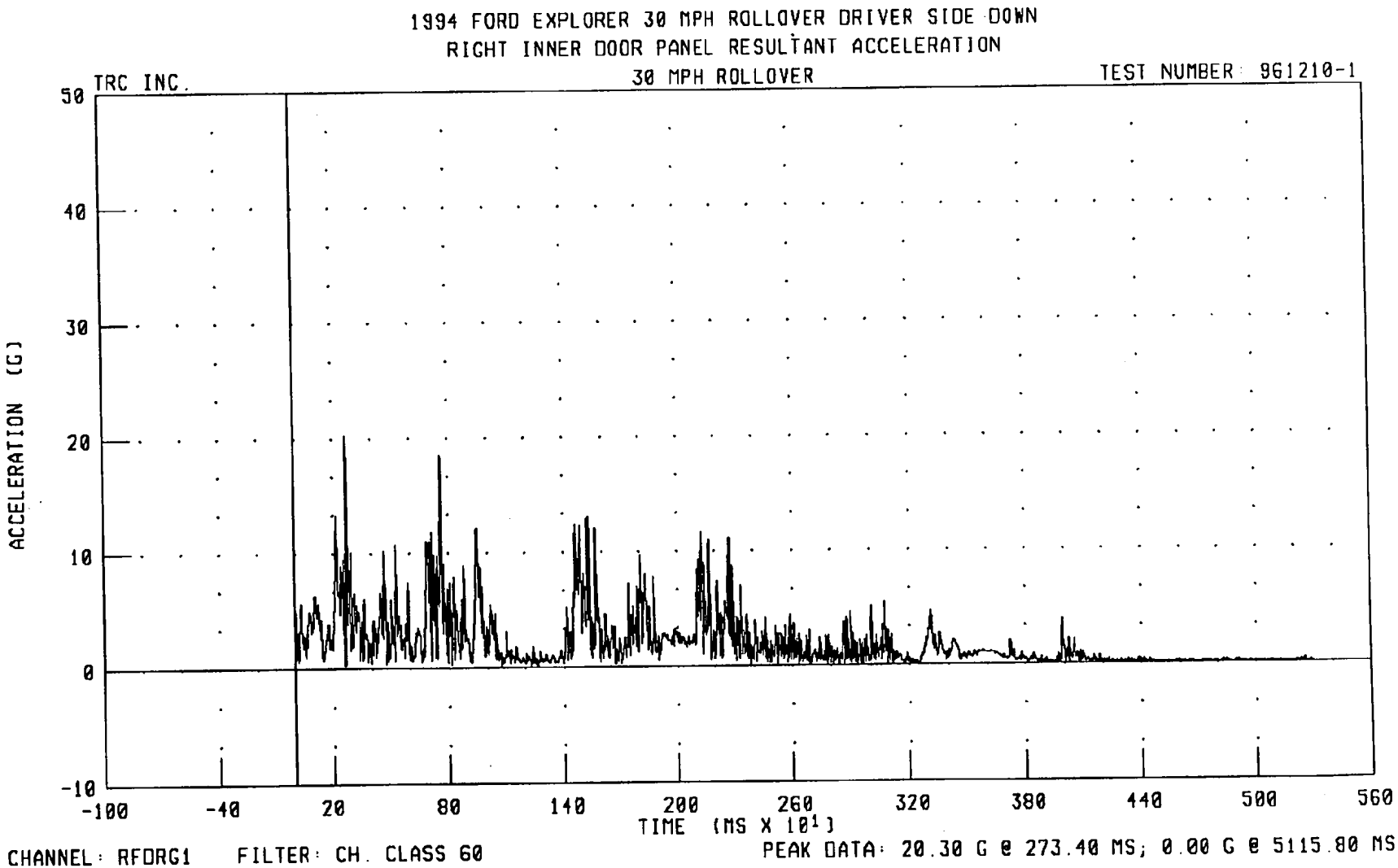
CHANNEL: RFDYG1 FILTER: CH. CLASS 60

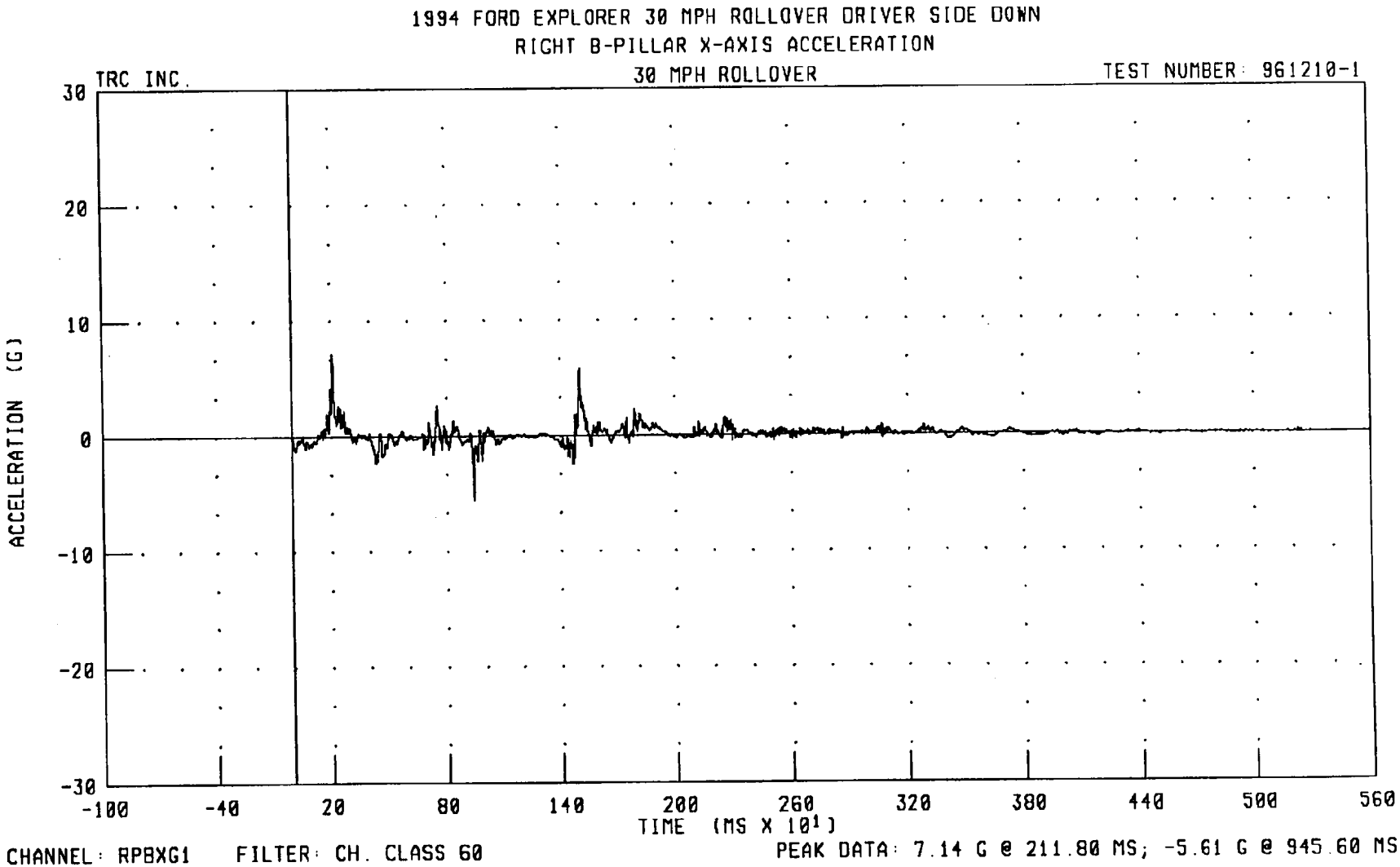
PEAK DATA: 19.98 G @ 273.40 MS; -12.43 G @ 1538.20 MS

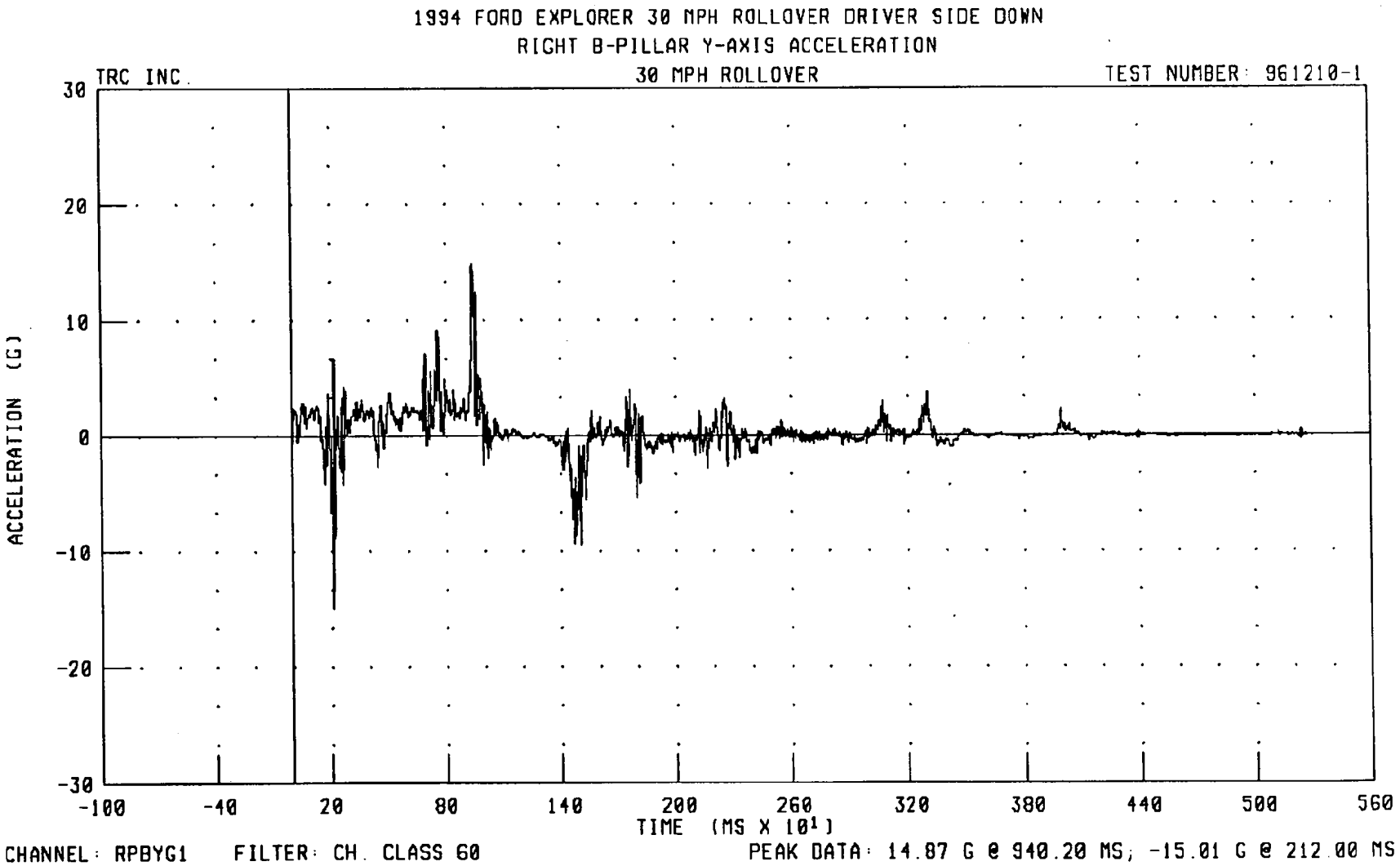
1994 FORD EXPLORER 30 MPH ROLLOVER DRIVER SIDE DOWN
RIGHT INNER DOOR PANEL X-AXIS ACCELERATION



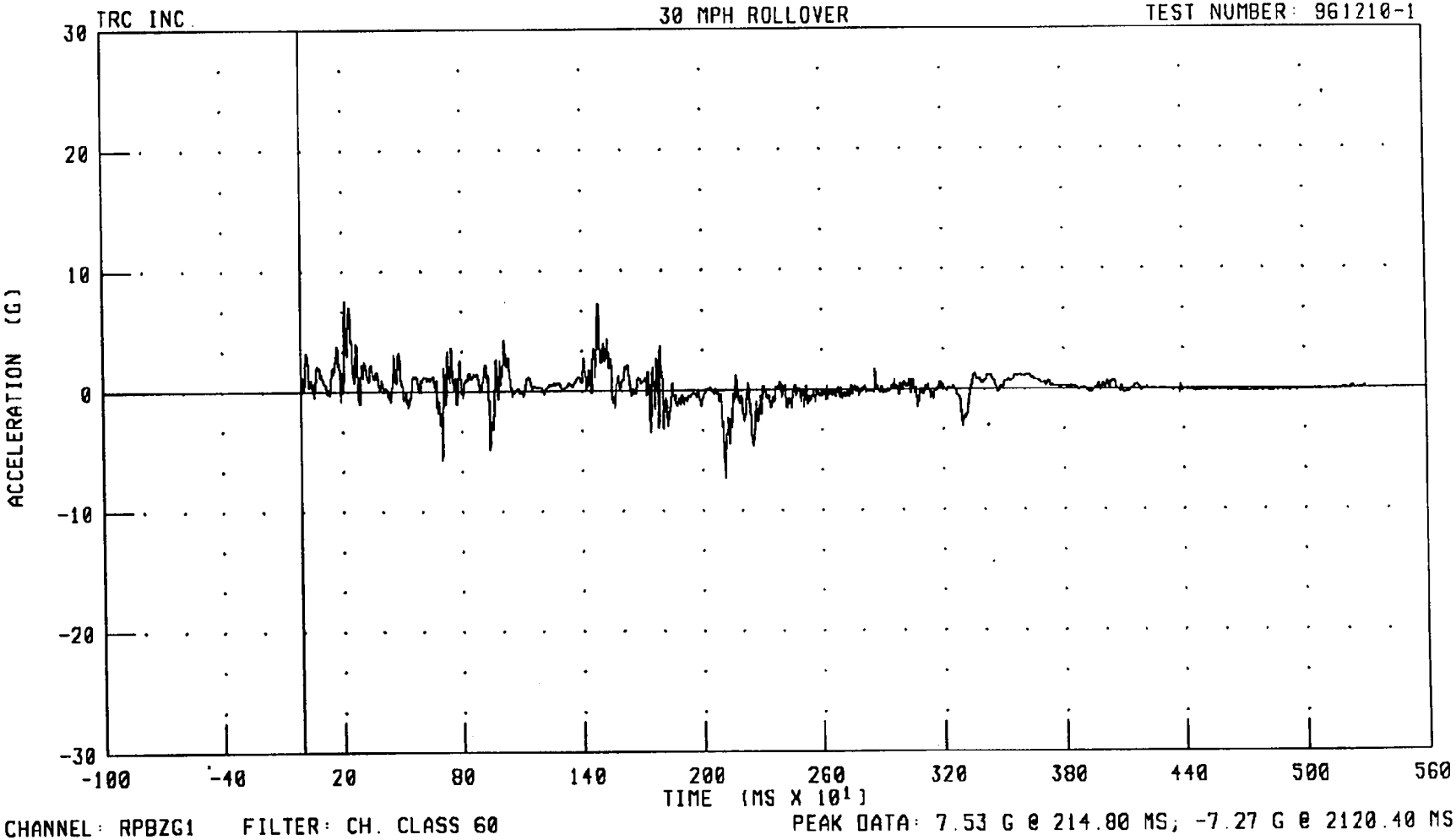
CHANNEL: RFDZG1 FILTER: CH. CLASS 60 PEAK DATA: 5.73 G @ 1478.80 MS; -8.77 G @ 2116.00 MS


1994 FORD EXPLORER 30 MPH ROLLOVER DRIVER SIDE DOWN
RIGHT INNER DOOR PANEL RESULTANT ACCELERATION
TRC INC.
30 MPH ROLLOVER
TEST NUMBER: 961210-1
ACCELERATION (G)
50
40
30
20
10
0
-10
-100
-40
20
80
140
200
260
320
380
440
500
560
TIME (MS X 10¹)
CHANNEL: RFDRG1
FILTER: CH. CLASS 60
PEAK DATA: 20.30 G @ 273.40 MS; 0.00 G @ 5115.80 MS


1994 FORD EXPLORER 30 MPH ROLLOVER DRIVER SIDE DOWN
RIGHT B-PILLAR X-AXIS ACCELERATION
TRC INC.
30 MPH ROLLOVER
TEST NUMBER: 961210-1
ACCELERATION (G)
30
20
10
0
-10
-20
-30
-100
-40
20
80
140
200
260
320
380
440
500
560
TIME (MS X 10¹)
CHANNEL: RPBXG1
FILTER: CH. CLASS 60
PEAK DATA: 7.14 G @ 211.80 MS; -5.61 G @ 945.60 MS

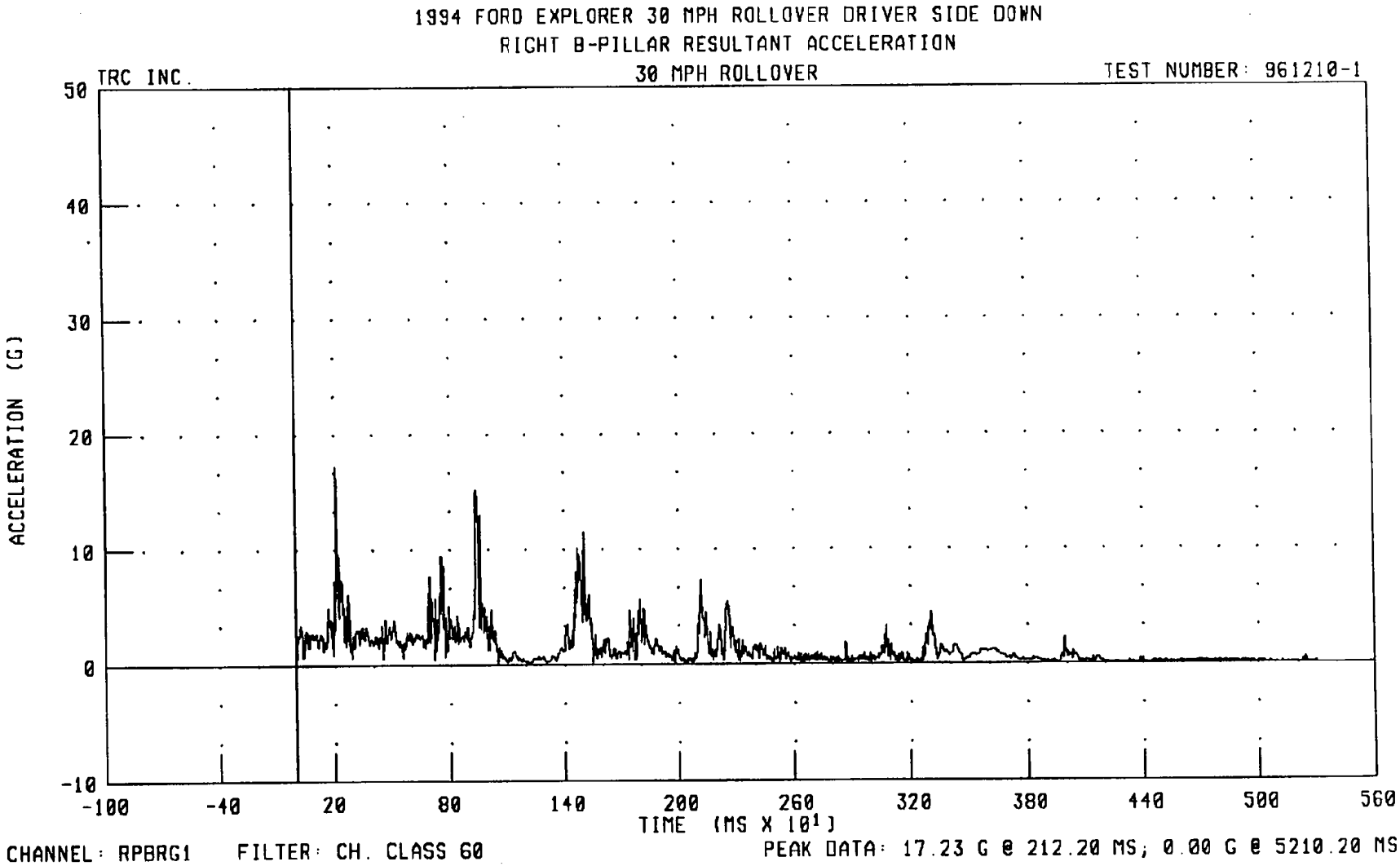

1994 FORD EXPLORER 30 MPH ROLLOVER DRIVER SIDE DOWN
RIGHT B-PILLAR Y-AXIS ACCELERATION
TRC INC.
30 MPH ROLLOVER
TEST NUMBER: 961210-1
ACCELERATION (G)
30
20
10
0
-10
-20
-30
-100
-40
20
80
140
200
260
320
380
440
500
560
TIME (MS X 10¹)
CHANNEL: RPBYG1
FILTER: CH. CLASS 60
PEAK DATA: 14.87 G @ 940.20 MS; -15.01 G @ 212.00 MS

1994 FORD EXPLORER 30 MPH ROLLOVER DRIVER SIDE DOWN
RIGHT B-PILLAR Z-AXIS ACCELERATION

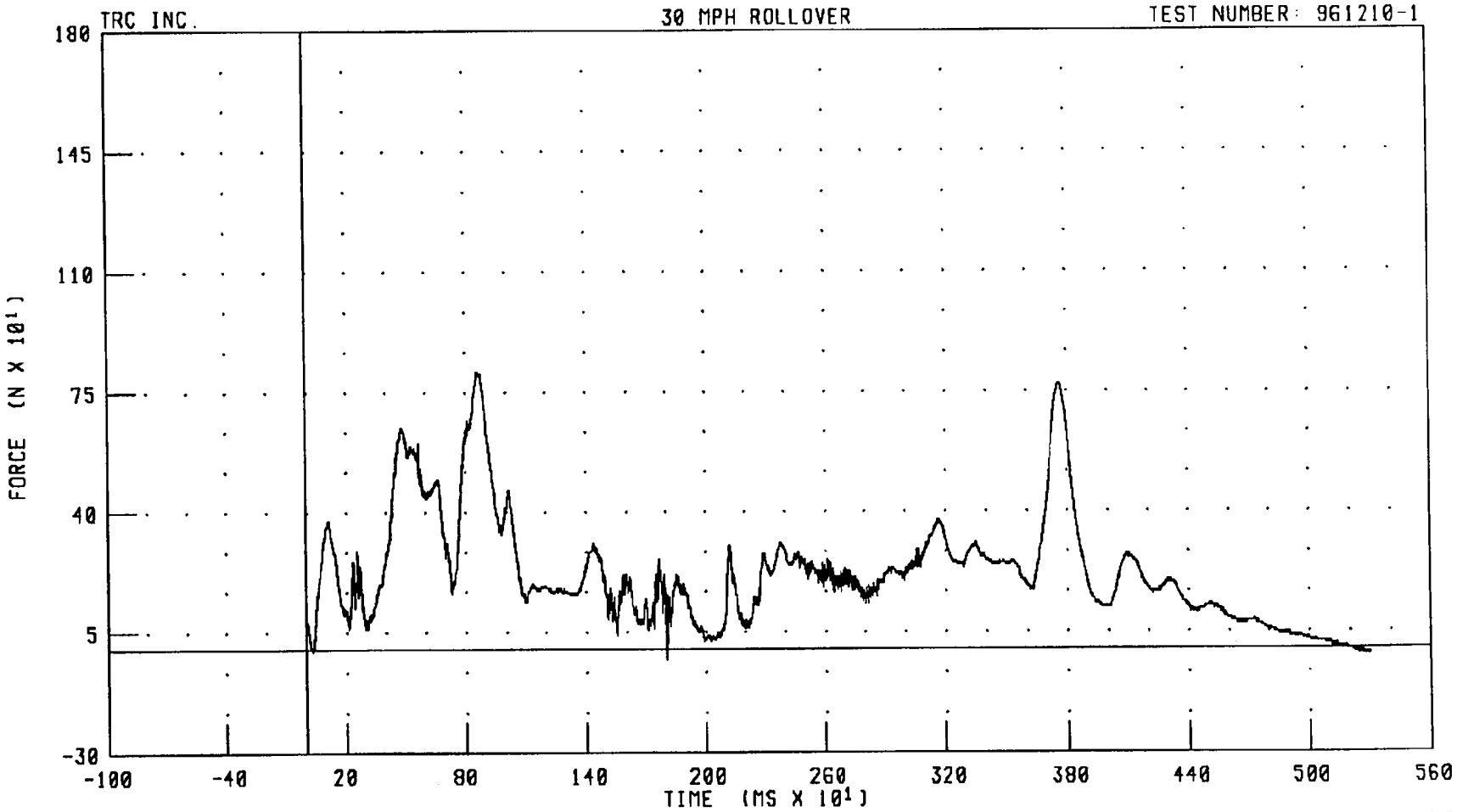


CHANNEL: RPBZG1 FILTER: CH. CLASS 60

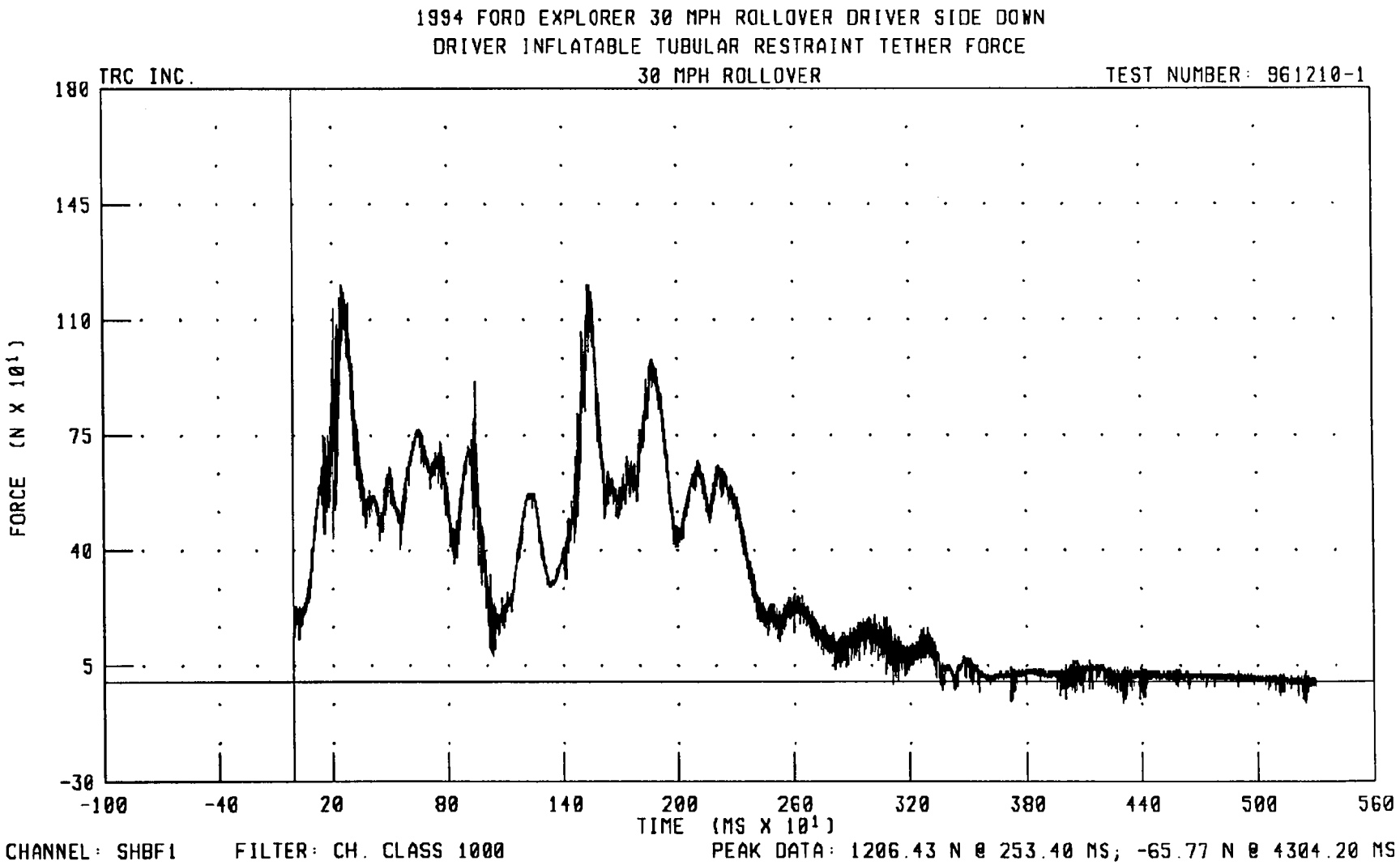
PEAK DATA: 7.53 G @ 214.80 MS; -7.27 G @ 2120.40 MS


1994 FORD EXPLORER 30 MPH ROLLOVER DRIVER SIDE DOWN
RIGHT B-PILLAR RESULTANT ACCELERATION
TRC INC.
30 MPH ROLLOVER
TEST NUMBER: 961210-1
ACCELERATION (G)
50
40
30
20
10
0
-10
-100
-40
20
80
140
200
260
320
380
440
500
560
TIME (MS X 10¹)
CHANNEL: RPBRG1
FILTER: CH. CLASS 60
PEAK DATA: 17.23 G @ 212.20 MS; 0.00 G @ 5210.20 MS

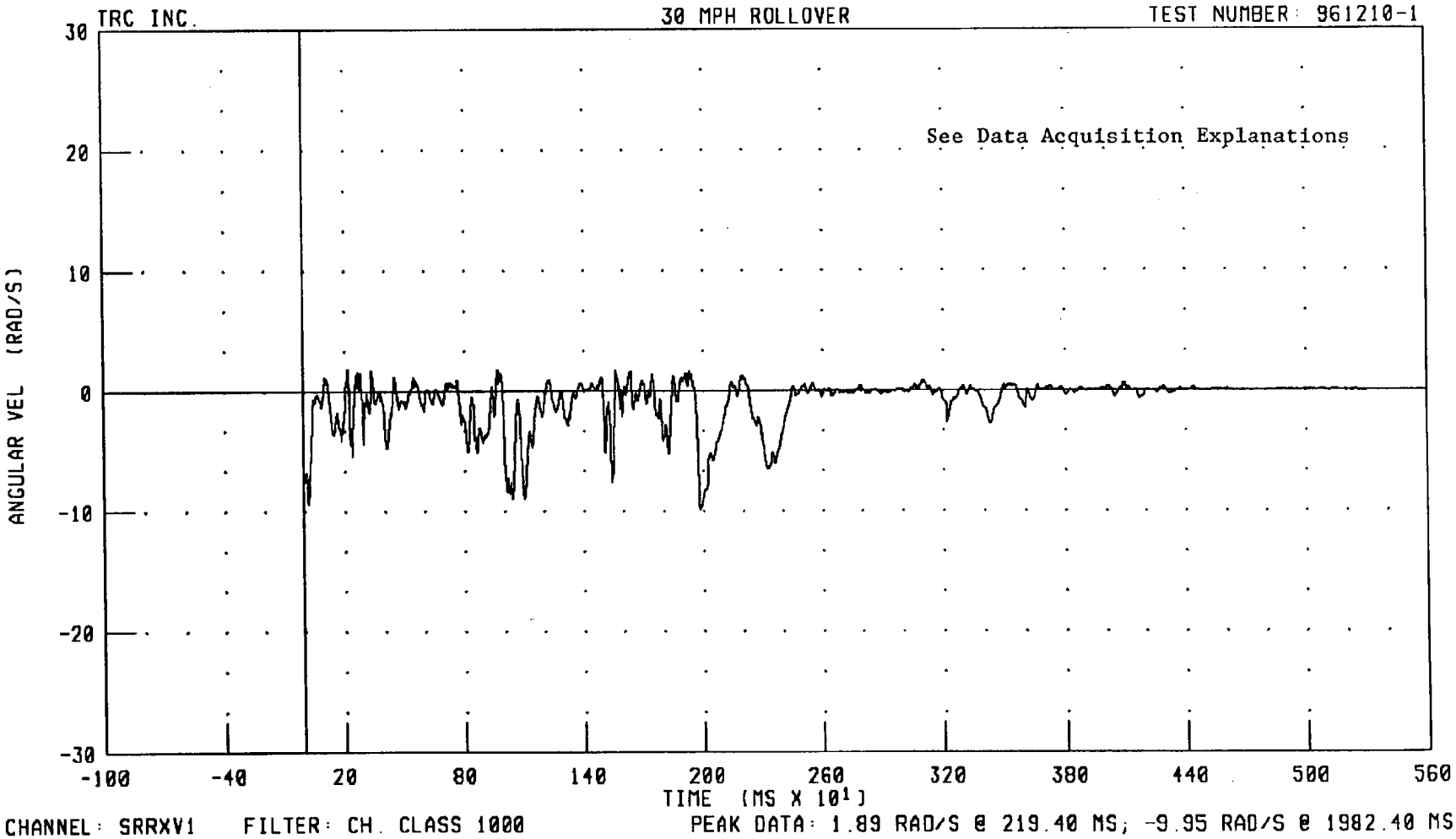
1994 FORD EXPLORER 30 MPH ROLLOVER DRIVER SIDE DOWN
RIGHT FRONT PASSENGER INFLATABLE TUBULAR RESTRAINT TETHER FORCE



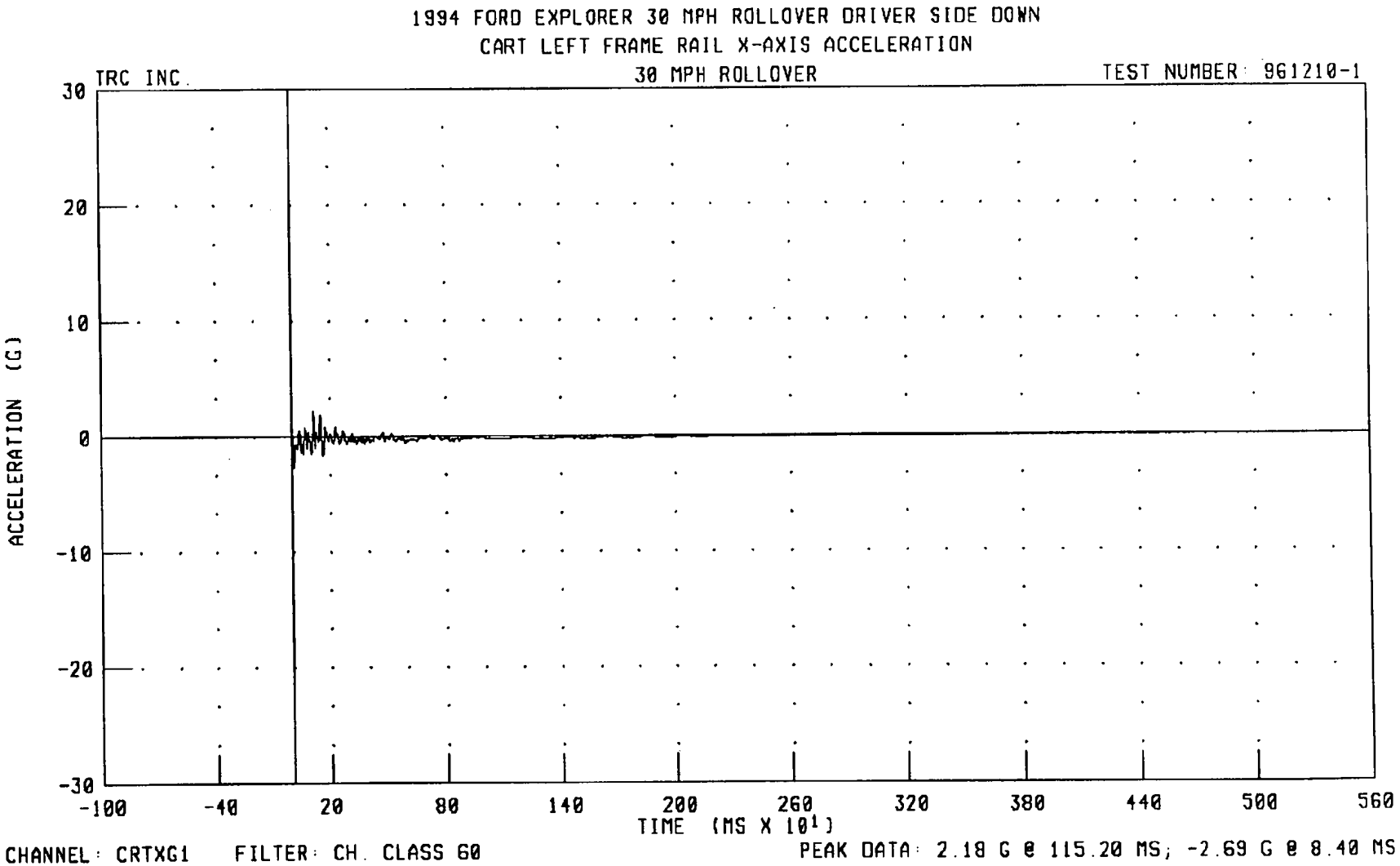
CHANNEL: SHBF2 FILTER: CH. CLASS 1000 PEAK DATA: 809.38 N @ 861.40 MS; -31.64 N @ 1806.00 MS


1994 FORD EXPLORER 30 MPH ROLLOVER DRIVER SIDE DOWN
DRIVER INFLATABLE TUBULAR RESTRAINT TETHER FORCE
TRC INC.
30 MPH ROLLOVER
TEST NUMBER: 961210-1
180
145
110
75
40
5
-30
FORCE (N X 10¹)
-100
-40
20
80
140
200
260
320
380
440
500
560
TIME (MS X 10¹)
CHANNEL: SHBF1
FILTER: CH. CLASS 1000
PEAK DATA: 1206.43 N @ 253.40 MS; -65.77 N @ 4304.20 MS

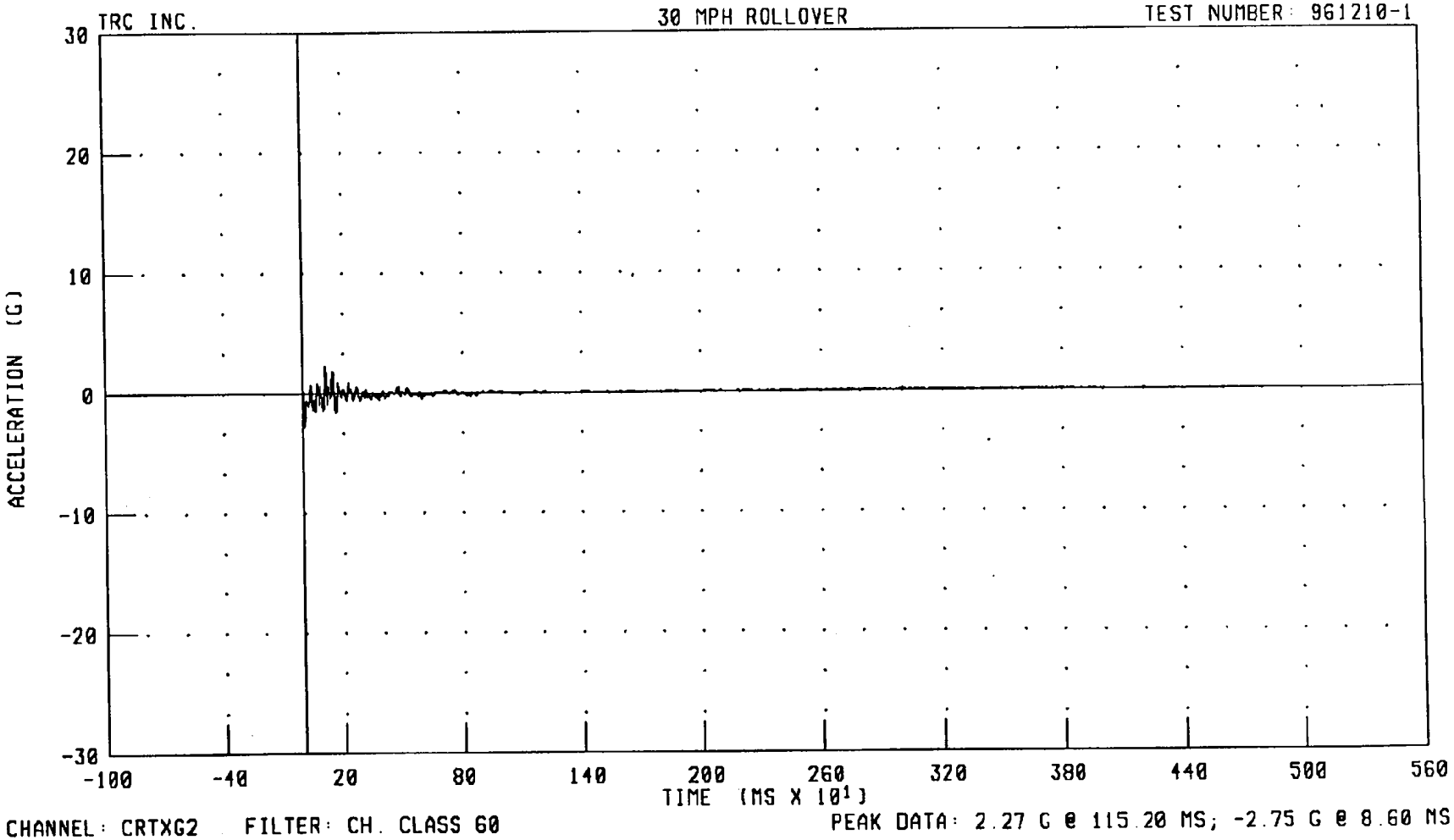
1994 FORD EXPLORER 30 MPH ROLLOVER DRIVER SIDE DOWN
ANGULAR VELOCITY IN WHEEL WELL (QUARTZ SENSOR)



CHANNEL: SRRXV1 FILTER: CH. CLASS 1000 PEAK DATA: 1.89 RAD/S @ 219.40 MS; -9.95 RAD/S @ 1982.40 MS


1994 FORD EXPLORER 30 MPH ROLLOVER DRIVER SIDE DOWN
CART LEFT FRAME RAIL X-AXIS ACCELERATION
30 MPH ROLLOVER
TRC INC.
TEST NUMBER: 961210-1
ACCELERATION (G)
30
20
10
0
-10
-20
-30
-100
-40
20
80
140
200
260
320
380
440
500
560
TIME (MS X 10¹)
CHANNEL: CRTXG1
FILTER: CH. CLASS 60
PEAK DATA: 2.18 G @ 115.20 MS; -2.69 G @ 8.40 MS

1994 FORD EXPLORER 30 MPH ROLLOVER DRIVER SIDE DOWN
CART LEFT FRAME RAIL X-AXIS ACCELERATION REDUNDANT



Appendix C

Dummy Certification Data

Pre-Test Certification Data

Driver Dummy S/N 090

TRANSPORTATION RESEARCH CENTER INC.
HYBRID III EXTERNAL DIMENSIONS
SN090

05-DEC-96

TRC INC. TEST NO: 90C21ED1 572E SN090 EXT.DIMENSION CAL21

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	859. MM
CHEST DEPTH	(O)	213 - 229 MM	216. 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	879. MM
THIGH CLEARANCE	(F)	140 - 155 MM	155. MM
BUTTOCK KNEE LENGTH	(K)	579 - 605 MM	602. MM
BUTTOCK POPLITEAL LENGTH	(N)	452 - 478 MM	462. MM
POPLITEAL HEIGHT	(L)	429 - 455 MM	439. MM
KNEE PIVOT HEIGHT	(M)	485 - 500 MM	495. MM
FOOT LENGTH	(P)	252 - 267 MM	257. MM
FOOT BREADTH	(W)	91 - 107 MM	99. MM
SHOULDER PIVOT FROM BACKLINE	(E)	84 - 94 MM	86. MM
SHOULDER BREADTH	(V)	422 - 437 MM	424. MM
SHOULDER PIVOT HEIGHT	(B)	506 - 521 MM	518. MM
ELBOW REST HEIGHT	(J)	191 - 211 MM	208. MM
SHOULDER-ELBOW LENGTH	(I)	330 - 345 MM	335. MM
BACK OF ELBOW TO WRIST PIVOT	(G)	290 - 305 MM	295. MM

DUMMY MEETS SPECIFICATIONS

TECHNICIAN Bruce Crabb

RUN NUMBER: 120996.0838

TRANSPORTATION RESEARCH CENTER INC.

HEAD DROP TEST

HYBRID III 06-DEC-96

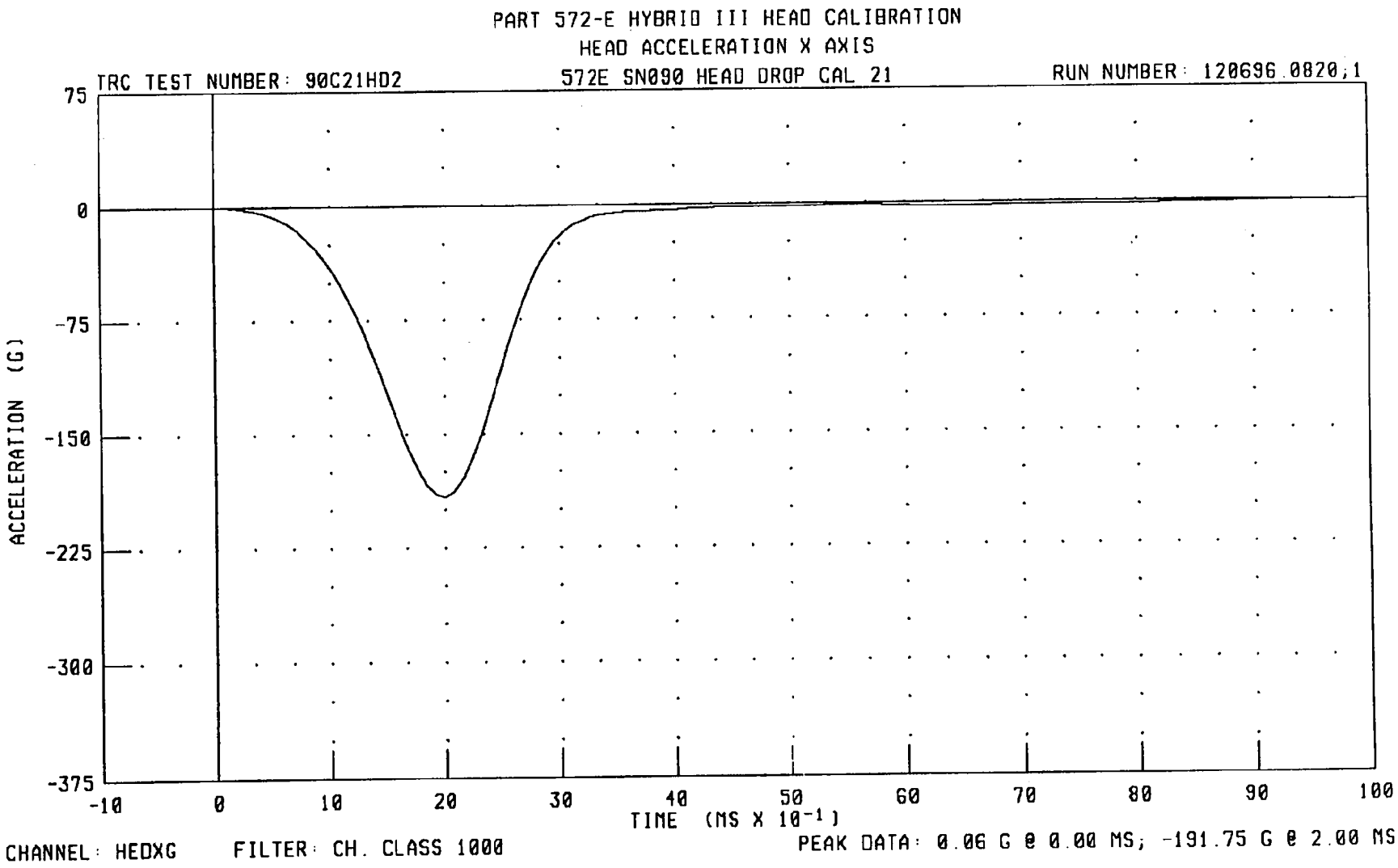
TRC INC. TEST NO: 90C21HD2 572E SN090 HEAD DROP CAL 21

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9-25.6 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY	10 - 70 %	32.0 %
PEAK RESULTANT ACCELERATION	225 - 275 G	231.06 G
PEAK LATERAL ACCELERATION	15 G MAX	-2.11 G
IS ACCELERATION CURVE UNIMODAL?	YES	YES

TEST MEETS SPECIFICATIONS

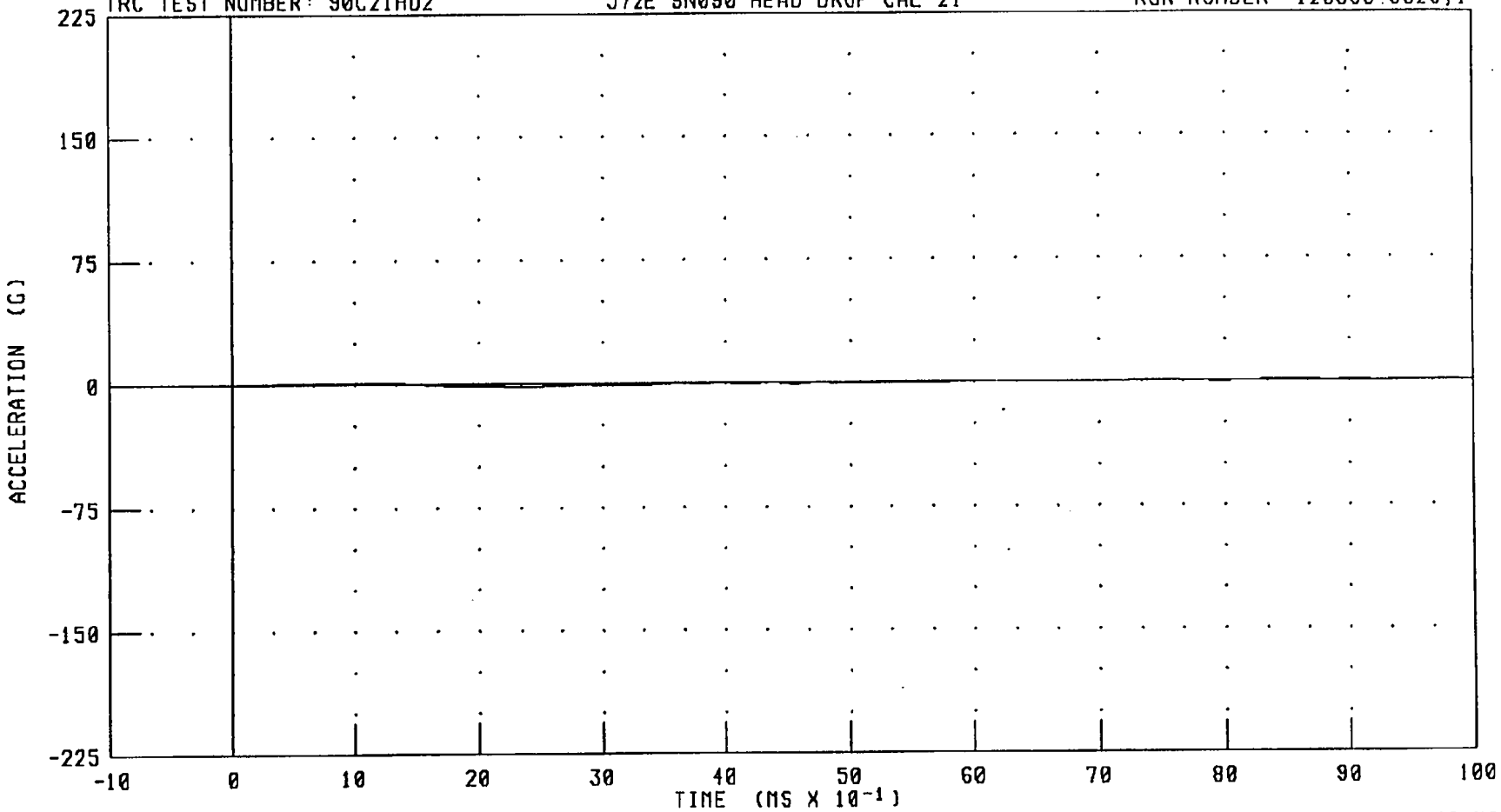
TECHNICIAN Bry Colt

RUN NUMBER: 120696.0819;1

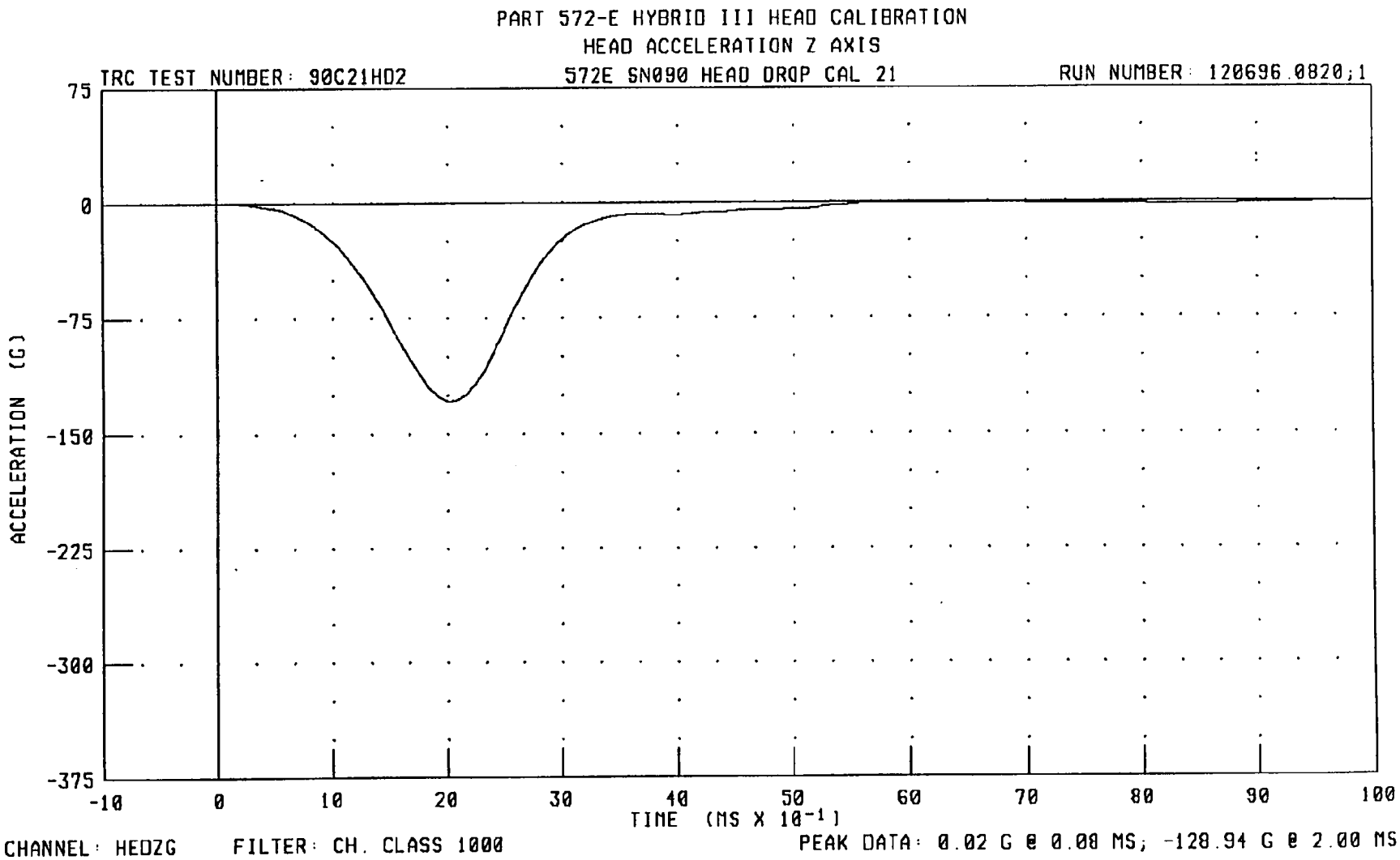

PART 572-E HYBRID III HEAD CALIBRATION
HEAD ACCELERATION X AXIS
TRC TEST NUMBER: 90C21HD2
572E SN090 HEAD DROP CAL 21
RUN NUMBER: 120696.0820;1
75
0
-75
-150
-225
-300
-375
ACCELERATION (G)
-10
0
10
20
30
40
50
60
70
80
90
100
TIME (MS X 10-1)
CHANNEL: HEDXG
FILTER: CH. CLASS 1000
PEAK DATA: 0.06 G @ 0.00 MS; -191.75 G @ 2.00 MS

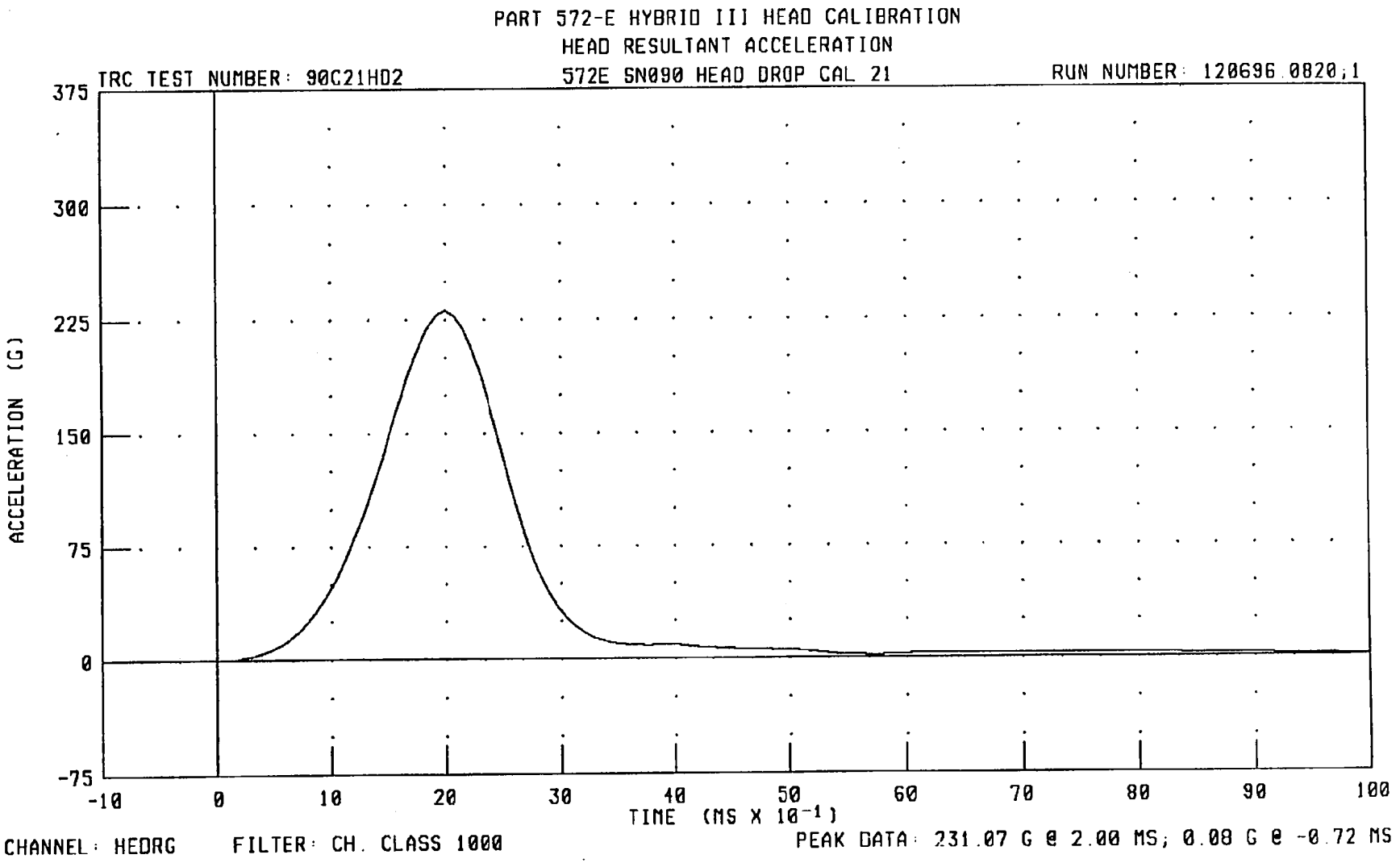
PART 572-E HYBRID III HEAD CALIBRATION
HEAD ACCELERATION Y AXIS

TRC TEST NUMBER: 90C21HD2 572E SN090 HEAD DROP CAL 21 RUN NUMBER: 120696.0820,1



CHANNEL: HEDYG FILTER: CH. CLASS 1000 PEAK DATA: 0.93 G @ 1.28 MS; -2.12 G @ 2.32 MS


PART 572-E HYBRID III HEAD CALIBRATION
HEAD ACCELERATION Z AXIS
TRC TEST NUMBER: 90C21HD2
572E SN090 HEAD DROP CAL 21
RUN NUMBER: 120696.0820;1
75
0
-75
-150
-225
-300
-375
ACCELERATION (G)
-10
0
10
20
30
40
50
60
70
80
90
100
TIME (MS X 10-1)
CHANNEL: HEDZG
FILTER: CH. CLASS 1000
PEAK DATA: 0.02 G @ 0.00 MS; -128.94 G @ 2.00 MS


PART 572-E HYBRID III HEAD CALIBRATION
HEAD RESULTANT ACCELERATION
TRC TEST NUMBER: 90C21HD2
572E SN090 HEAD DROP CAL 21
RUN NUMBER: 120696.0820;1
ACCELERATION (G)
375
300
225
150
75
0
-75
-10
0
10
20
30
40
50
60
70
80
90
100
TIME (MS X 10⁻¹)
CHANNEL: HEDRG
FILTER: CH. CLASS 1000
PEAK DATA: 231.07 G @ 2.00 MS; 0.08 G @ -0.72 MS

TRANSPORTATION RESEARCH CENTER INC.

NECK FLEXION TEST - 6 CHANNEL TRANSDUCER

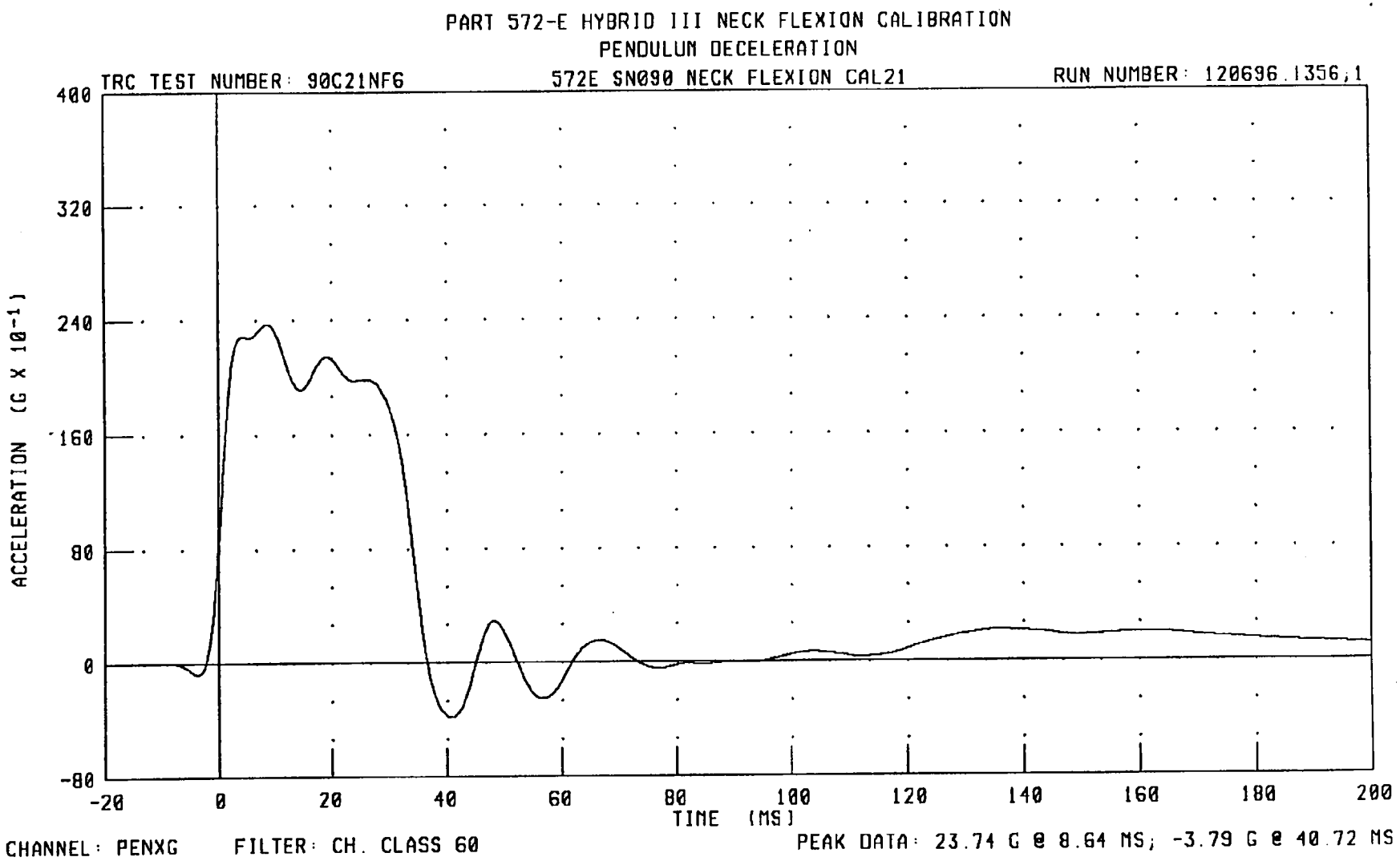
HYBRID III 06-DEC-96

TRC INC. TEST NO: 90C21NF6 572E SN090 NECK FLEXION CAL21

TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE		20.6-22.2 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY		10 - 70 %	32.0 %
IMPACT VELOCITY		6.89 - 7.13 M/S	6.99 M/S
PENDULUM DECELERATION	10 MS	22.50 - 27.50 G	23.20 G
	20 MS	17.60 - 22.60 G	21.30 G
	30 MS	12.50 - 18.50 G	17.90 G
MAX PENDULUM G		29 G MAX	23.74 G
MAX PENDULUM G ABOVE 30 MS		29 G MAX	17.82 G
DECELERATION-TIME CURVE DECAY TIME TO 5 G		34 - 42 MS	34.96 MS
D PLANE ROTATION	MAX	64 - 78 DEG.	73.42 DEG.
	TIME	57 - 64 MS	59.28 MS
MOMENT ABOUT OCCIPITAL CONDYLE	MAX	88.2 - 108.5 NM	93.39 NM
	TIME	47 - 58 MS	48.80 MS
ROTATION ANGLE-TIME CURVE DECAY TIME TO ZERO		113 - 128 MS	118.00 MS
POSITIVE MOMENT-TIME CURVE DECAY TIME TO ZERO		97 - 107 MS	99.12 MS

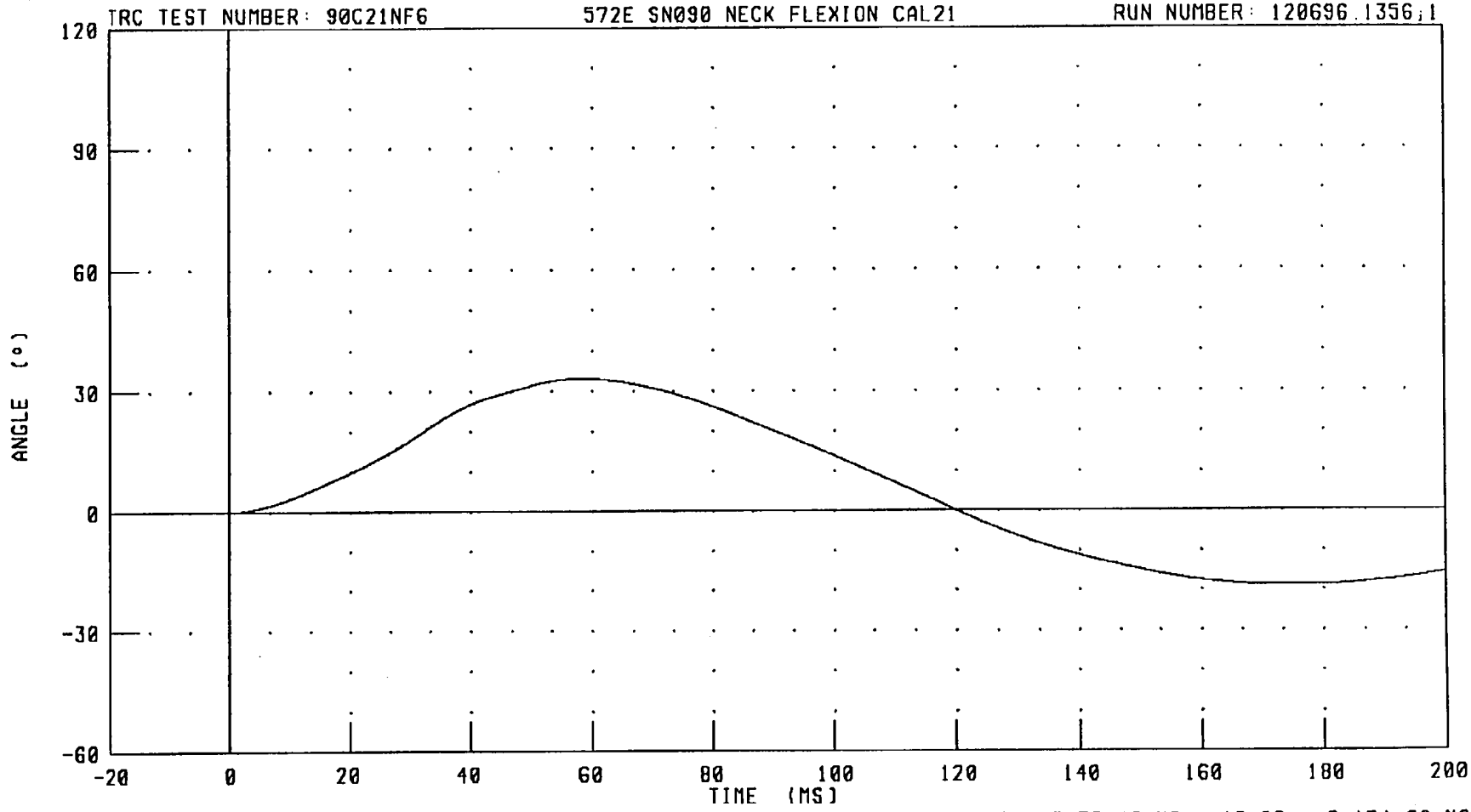
TEST MEETS SPECIFICATIONS

TECHNICIAN Bryan Colt RUN NUMBER: 120696.1356;1

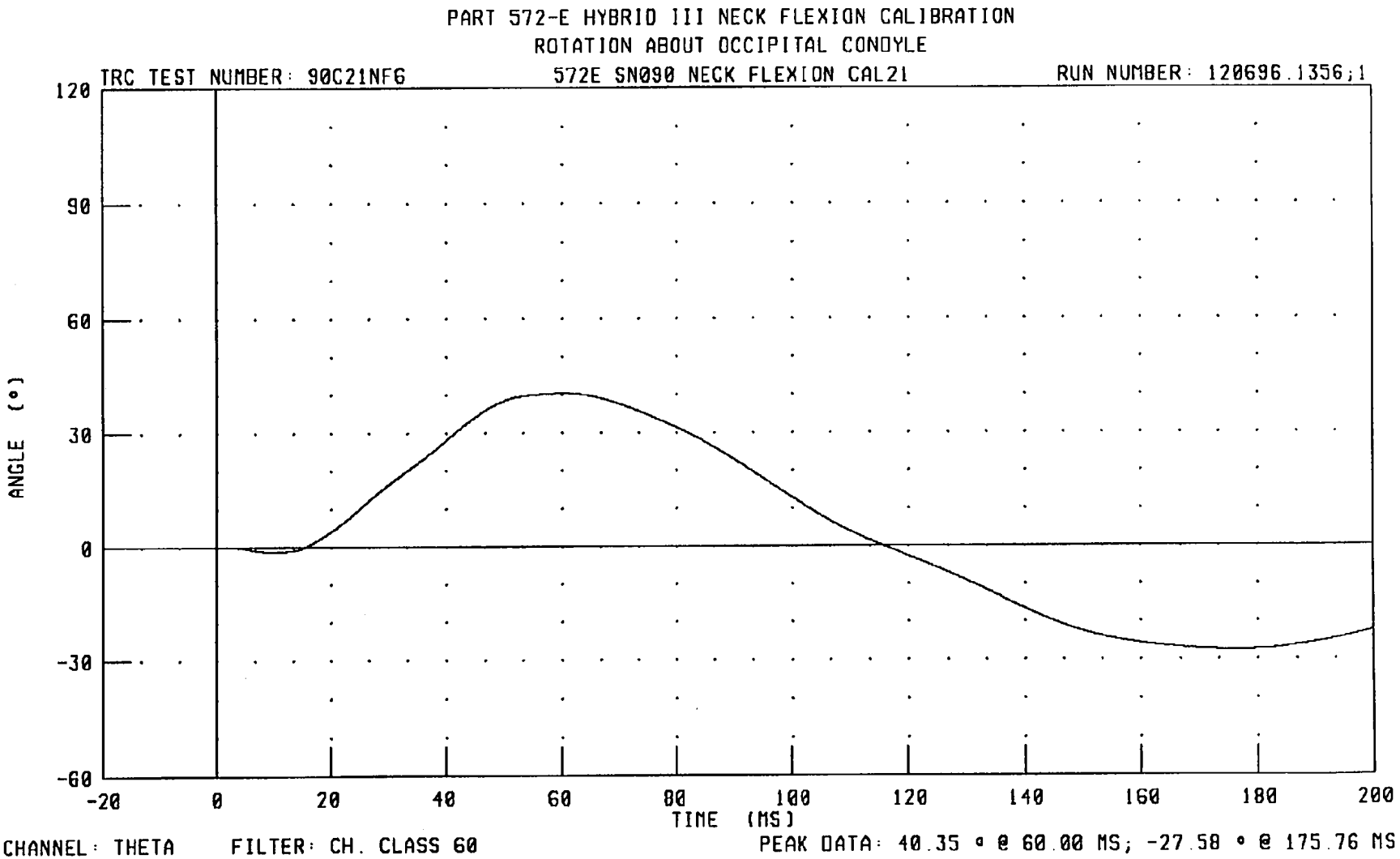

PART 572-E HYBRID III NECK FLEXION CALIBRATION
PENDULUM DECELERATION
TRC TEST NUMBER: 90C21NF6
572E SN090 NECK FLEXION CAL21
RUN NUMBER: 120696.1356,1
ACCELERATION (G X 10-1)
400
320
240
160
80
0
-80
-20
0
20
40
60
80
100
120
140
160
180
200
TIME (MS)
CHANNEL: PENXG
FILTER: CH. CLASS 60
PEAK DATA: 23.74 G @ 8.64 MS; -3.79 G @ 40.72 MS

PART 572-E HYBRID III NECK FLEXION CALIBRATION
ROTATION ABOUT BASE OF NECK

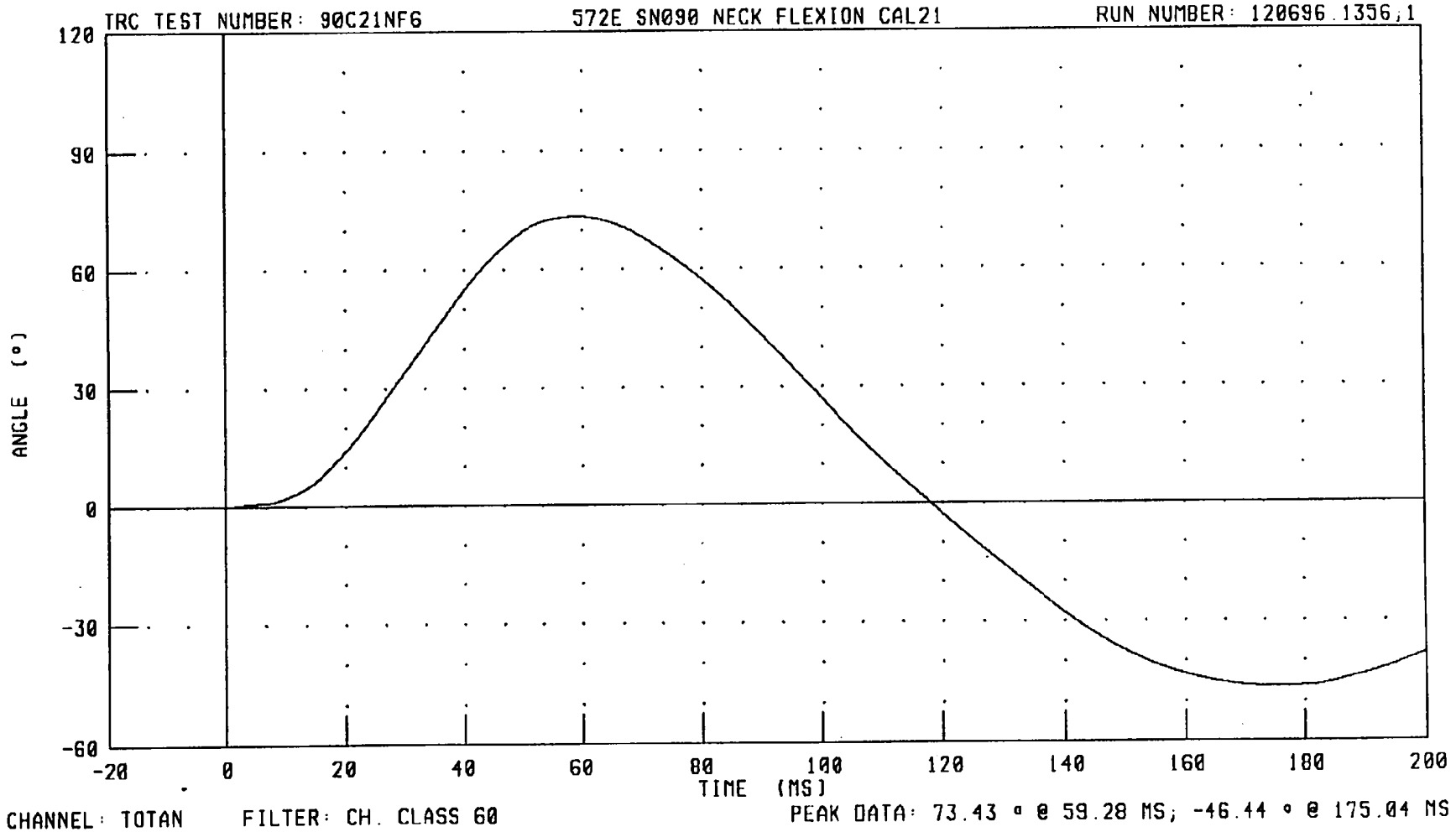
TRC TEST NUMBER: 90C21NF6 572E SN090 NECK FLEXION CAL21 RUN NUMBER: 120696.1356;1



CHANNEL: BETA FILTER: CH. CLASS 60 PEAK DATA: 33.11 ° @ 58.40 MS; -18.88 ° @ 174.00 MS

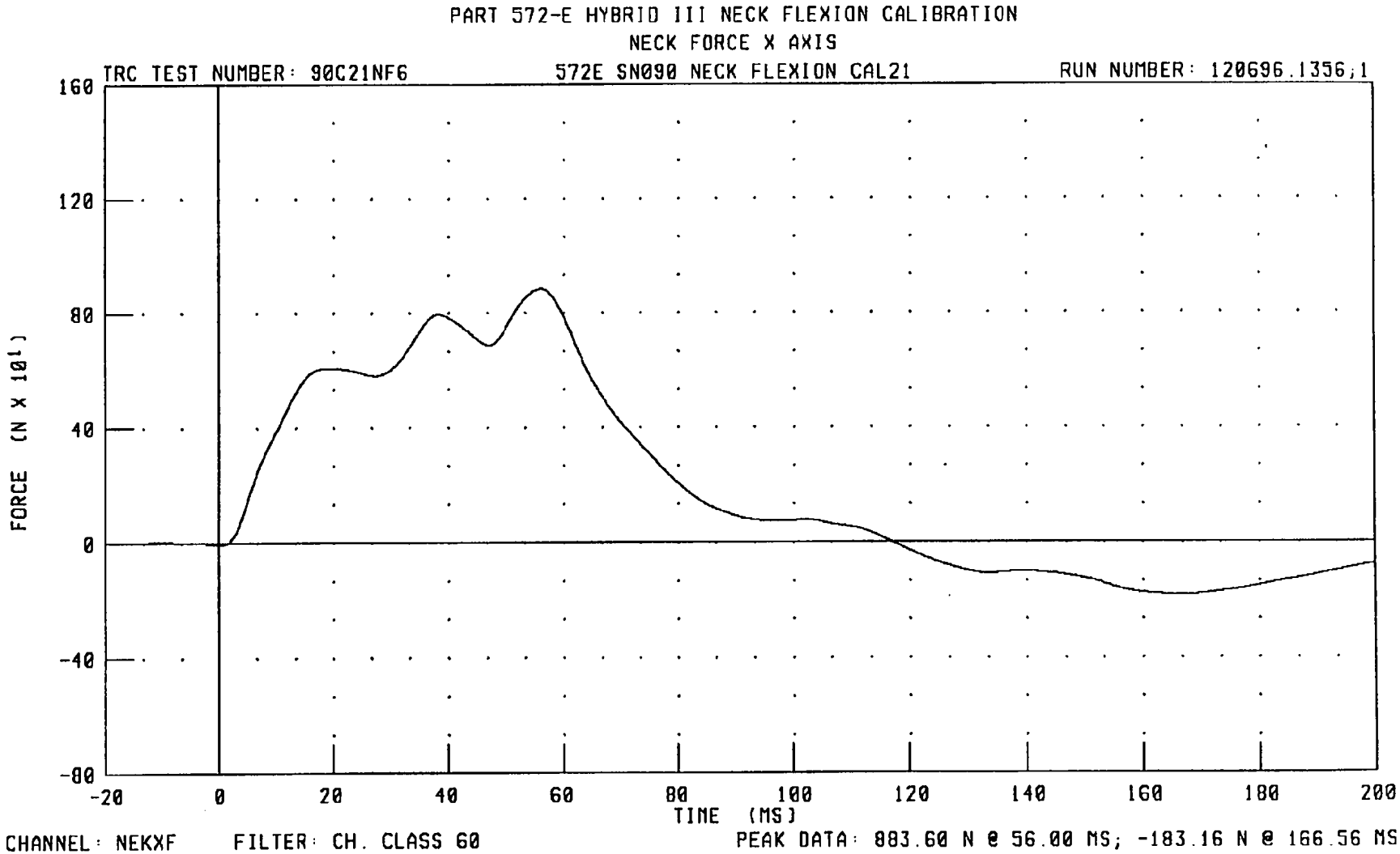

PART 572-E HYBRID III NECK FLEXION CALIBRATION
ROTATION ABOUT OCCIPITAL CONDYLE
TRC TEST NUMBER: 90C21NFG
572E SN090 NECK FLEXION CAL21
RUN NUMBER: 120696.1356;1
120
90
60
30
0
-30
-60
ANGLE (°)
-20
0
20
40
60
80
100
120
140
160
180
200
TIME (MS)
CHANNEL: THETA
FILTER: CH. CLASS 60
PEAK DATA: 40.35 ° @ 60.00 MS; -27.58 ° @ 175.76 MS

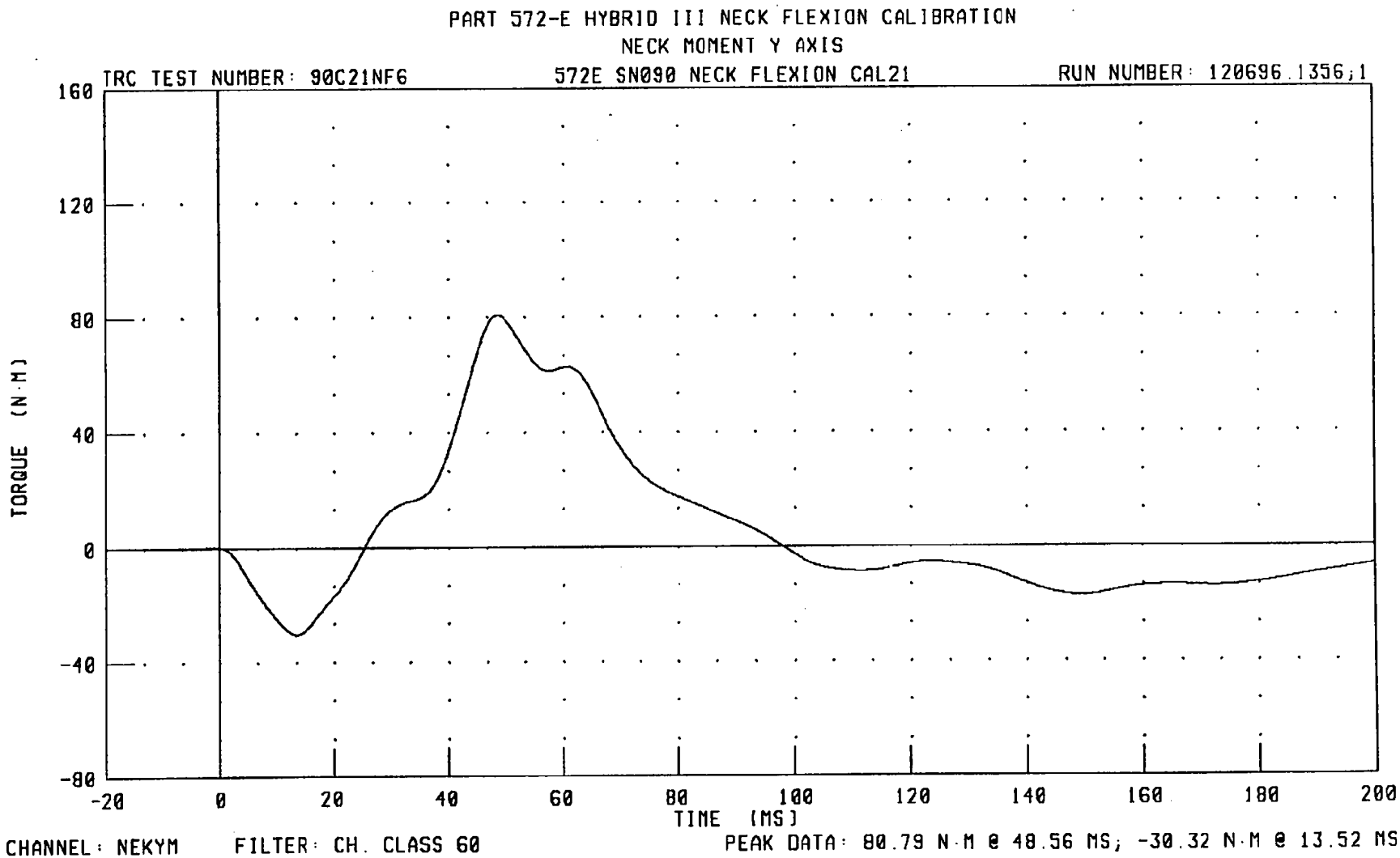
PART 572-E HYBRID III NECK FLEXION CALIBRATION
TOTAL ROTATION

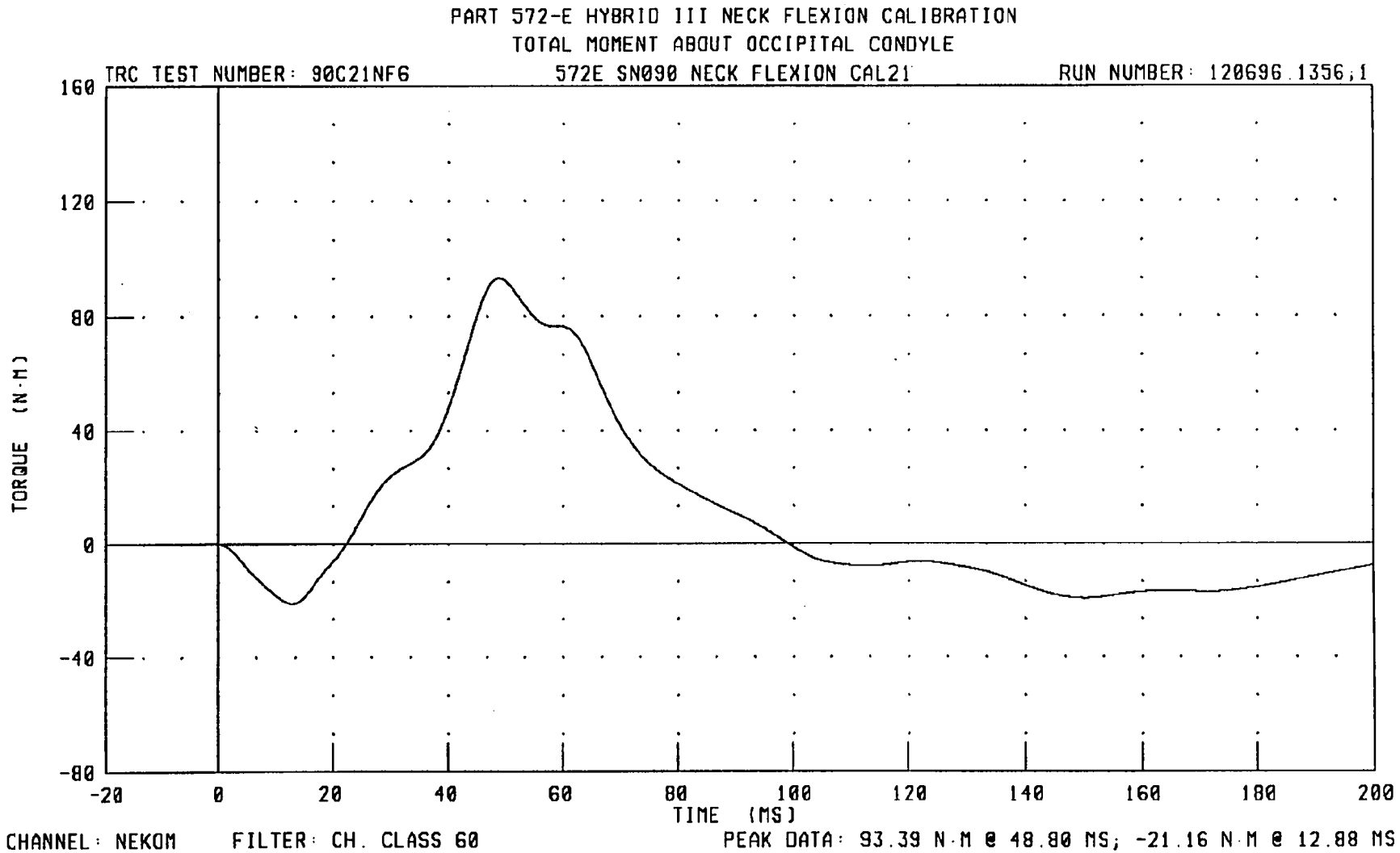


CHANNEL: TOTAN FILTER: CH. CLASS 60

PEAK DATA: 73.43 ° @ 59.28 MS; -46.44 ° @ 175.04 MS


PART 572-E HYBRID III NECK FLEXION CALIBRATION
NECK FORCE X AXIS
TRC TEST NUMBER: 90C21NF6
572E SN090 NECK FLEXION CAL21
RUN NUMBER: 120696.1356;1
160
120
80
40
0
-40
-80
FORCE (N X 10¹)
-20
0
20
40
60
80
100
120
140
160
180
200
TIME (MS)
CHANNEL: NEKXF
FILTER: CH. CLASS 60
PEAK DATA: 883.60 N @ 56.00 MS; -183.16 N @ 166.56 MS


PART 572-E HYBRID III NECK FLEXION CALIBRATION
NECK MOMENT Y AXIS
TRC TEST NUMBER: 90C21NF6
572E SN090 NECK FLEXION CAL21
RUN NUMBER: 120696.1356;1
160
120
80
40
0
-40
-80
TORQUE (N-M)
-20
0
20
40
60
80
100
120
140
160
180
200
TIME (MS)
CHANNEL: NEKYM
FILTER: CH. CLASS 60
PEAK DATA: 80.79 N-M @ 48.56 MS; -30.32 N-M @ 13.52 MS


PART 572-E HYBRID III NECK FLEXION CALIBRATION
TOTAL MOMENT ABOUT OCCIPITAL CONDYLE
TRC TEST NUMBER: 90C21NF6
572E SN090 NECK FLEXION CAL21
RUN NUMBER: 120696.1356;1
TORQUE (N-M)
160
120
80
40
0
-40
-80
-20
0
20
40
60
80
100
120
140
160
180
200
TIME (MS)
CHANNEL: NEKOM
FILTER: CH. CLASS 60
PEAK DATA: 93.39 N-M @ 48.80 MS; -21.16 N-M @ 12.88 MS

TRANSPORTATION RESEARCH CENTER INC.

NECK EXTENSION TEST - 6 CHANNEL TRANSDUCER

HYBRID III 06-DEC-96

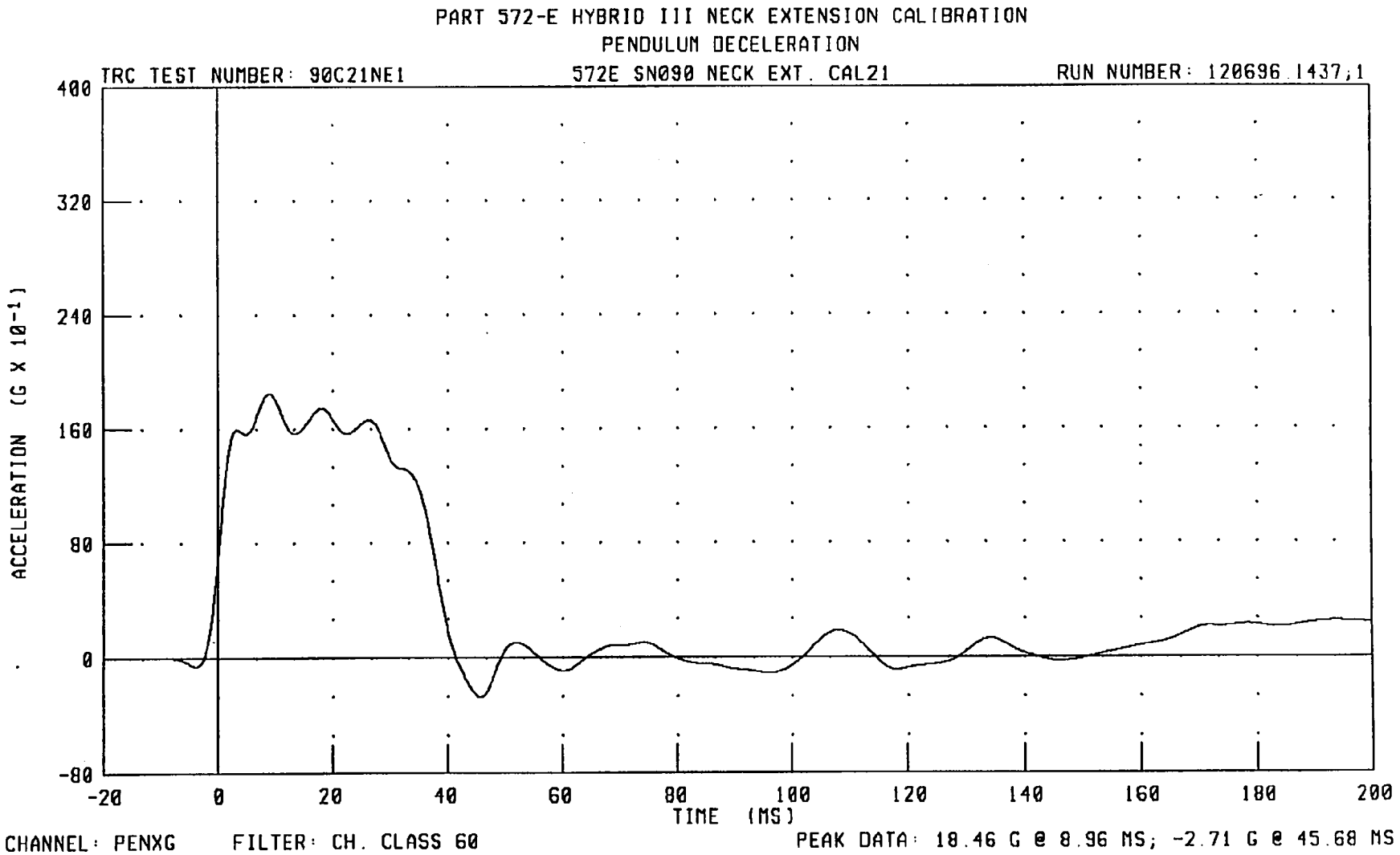
TRC INC. TEST NO: 90C21NE1 572E SN090 NECK EXT. CAL21

TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE		20.6 - 22.2 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY		10 - 70 %	32.0 %
IMPACT VELOCITY		5.95 - 6.19 M/S	5.95 M/S
PENDULUM DECELERATION	10 MS	17.20 - 21.20 G	18.00 G
	20 MS	14.00 - 19.00 G	16.69 G
	30 MS	11.00 - 16.00 G	13.90 G
MAX PENDULUM G		22 G MAX	18.45 G
MAX PENDULUM G ABOVE 30 MS		22 G MAX	13.84 G
DECELERATION-TIME CURVE DECAY TIME TO 5 G		38 - 46 MS	38.56 MS
D PLANE ROTATION	MAX	81 - 106 DEG.	97.35 DEG.
	TIME	72 - 82 MS	77.84 MS
MOMENT ABOUT OCCIPITAL CONDYLE	MIN	-80.0/-52.9 NM	-58.63 NM
	TIME	65 - 79 MS	71.52 MS
ROTATION ANGLE-TIME CURVE DECAY TIME TO ZERO		147 - 174 MS	163.28 MS
NEGATIVE MOMENT-TIME CURVE DECAY TIME TO ZERO		120 - 148 MS	139.44 MS

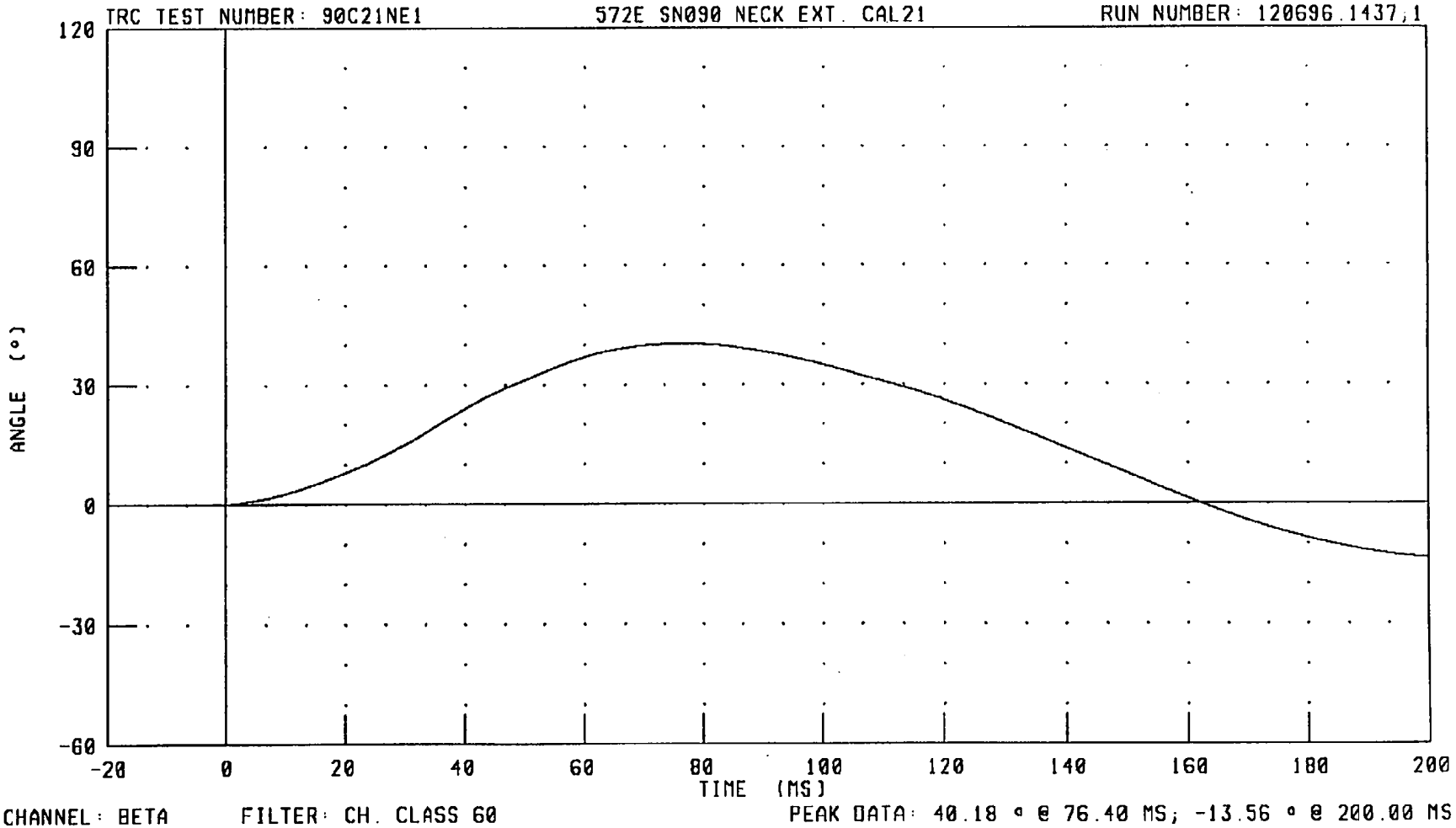
TEST MEETS SPECIFICATIONS

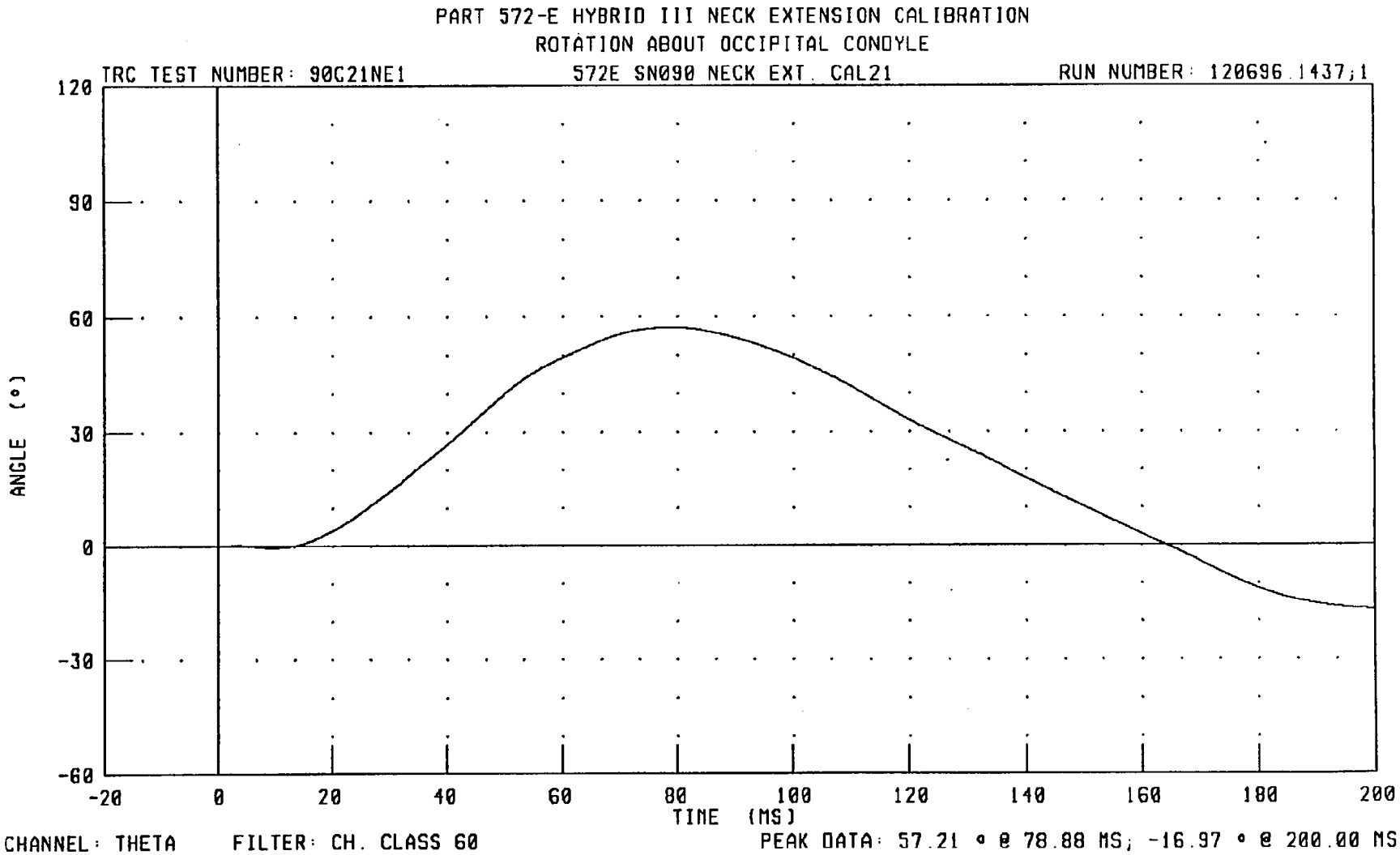
TECHNICIAN Bry Cratt

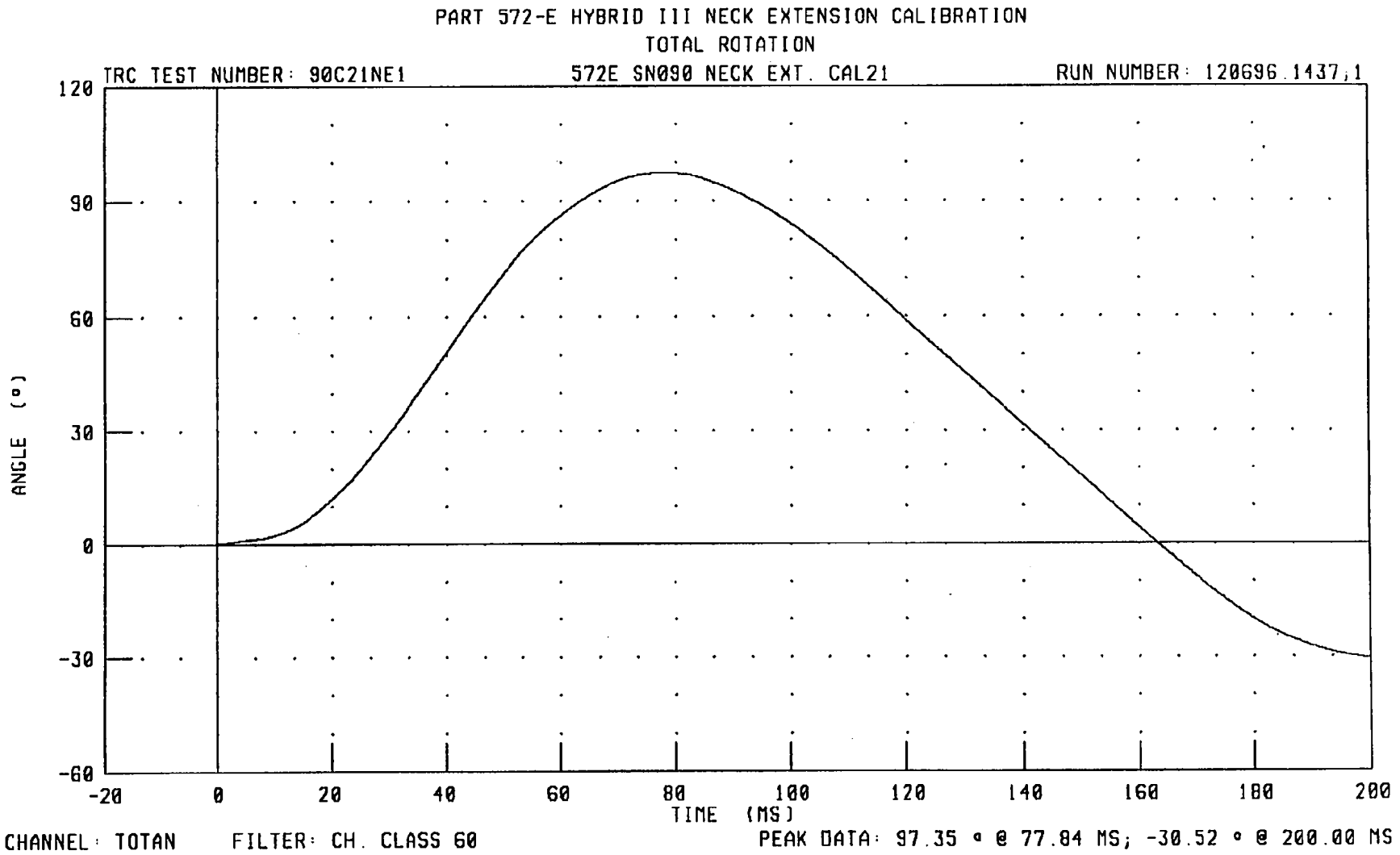
RUN NUMBER: 120696.1436;1

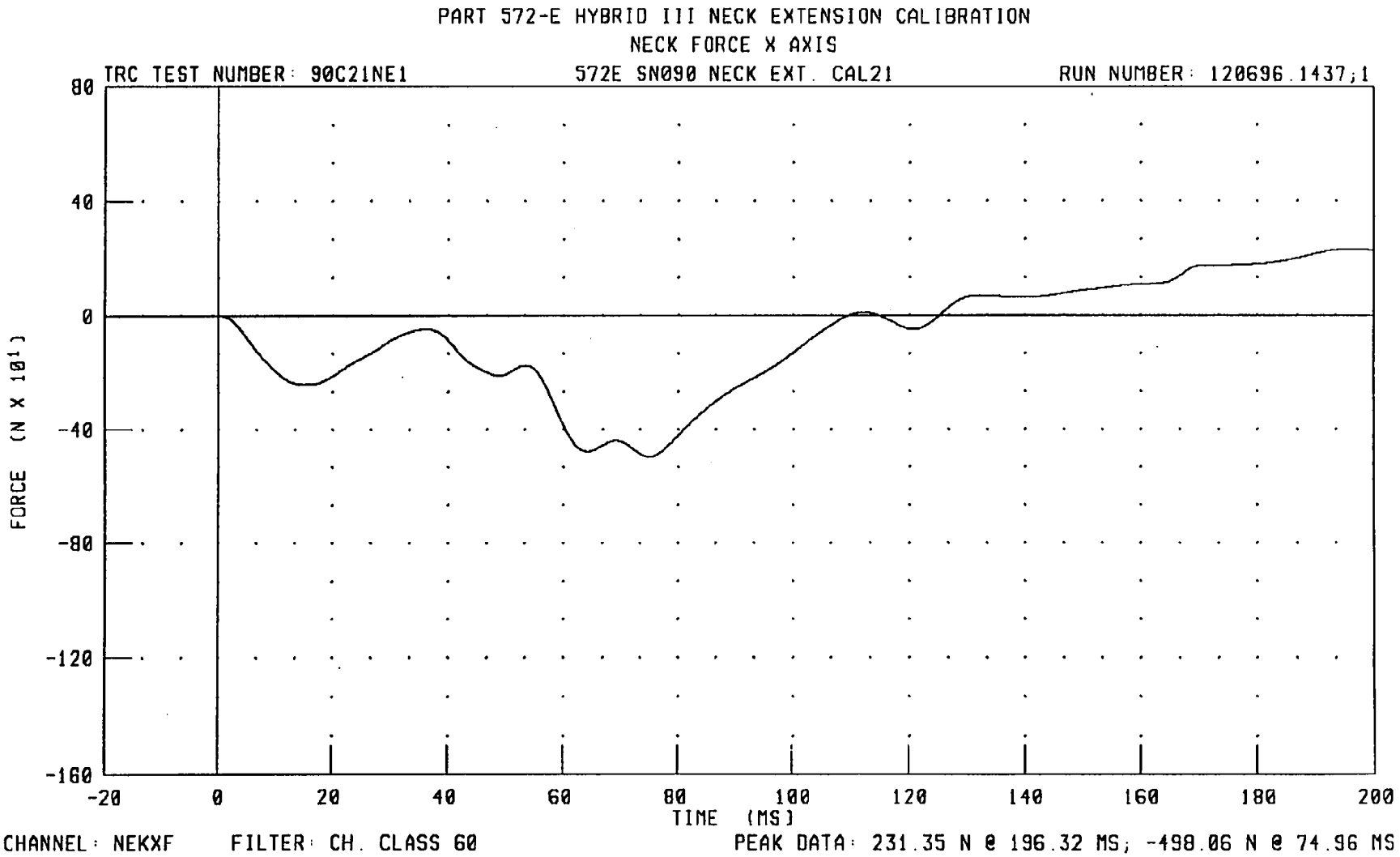

PART 572-E HYBRID III NECK EXTENSION CALIBRATION
PENDULUM DECELERATION
TRC TEST NUMBER: 90C21NE1
572E SN090 NECK EXT. CAL21
RUN NUMBER: 120696.1437;1
400
320
240
160
80
0
-80
ACCELERATION (G X 10-1)
-20
0
20
40
60
80
100
120
140
160
180
200
TIME (MS)
CHANNEL: PENXG
FILTER: CH. CLASS 60
PEAK DATA: 18.46 G @ 8.96 MS; -2.71 G @ 45.68 MS

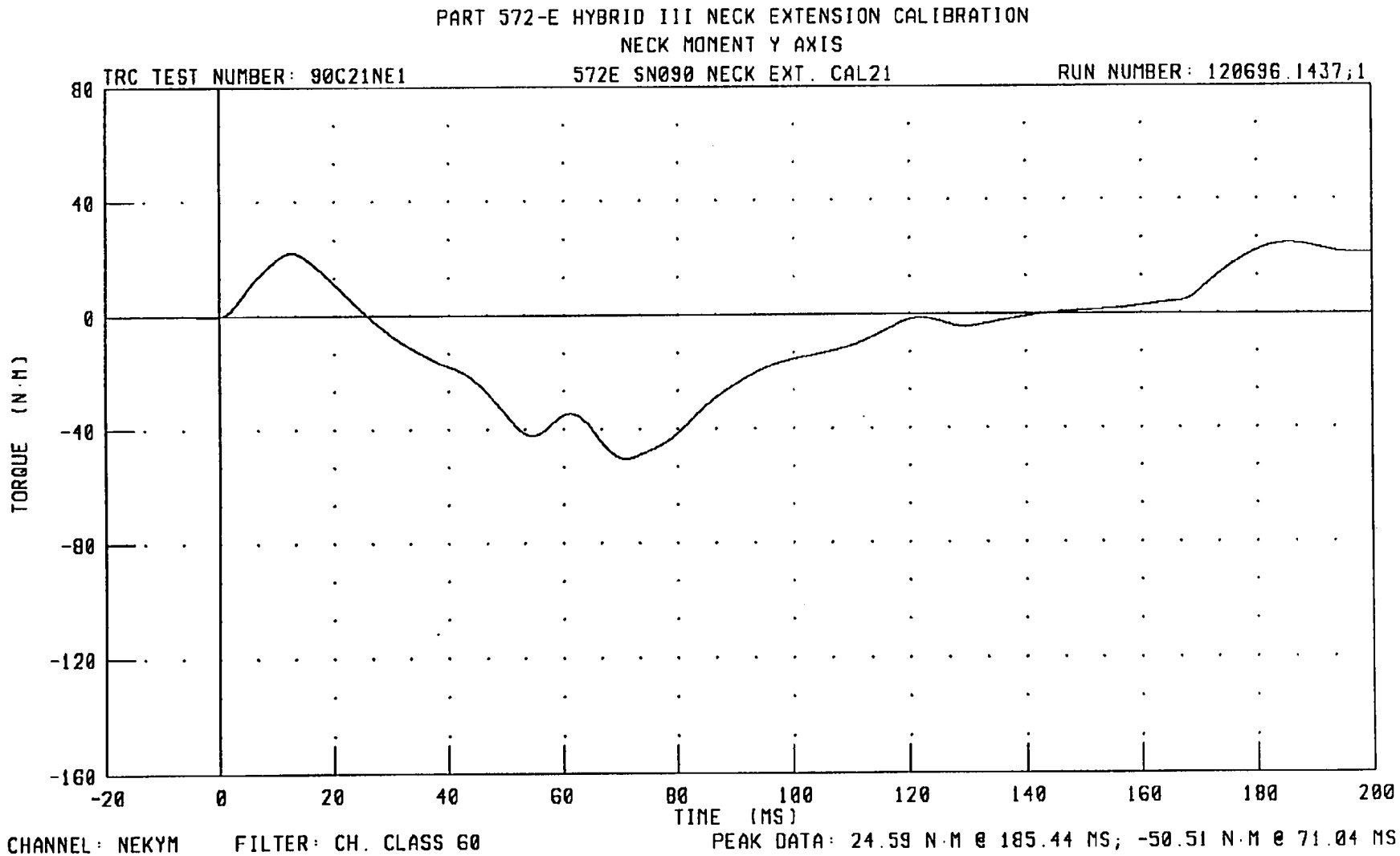
PART 572-E HYBRID III NECK EXTENSION CALIBRATION
ROTATION ABOUT BASE OF NECK

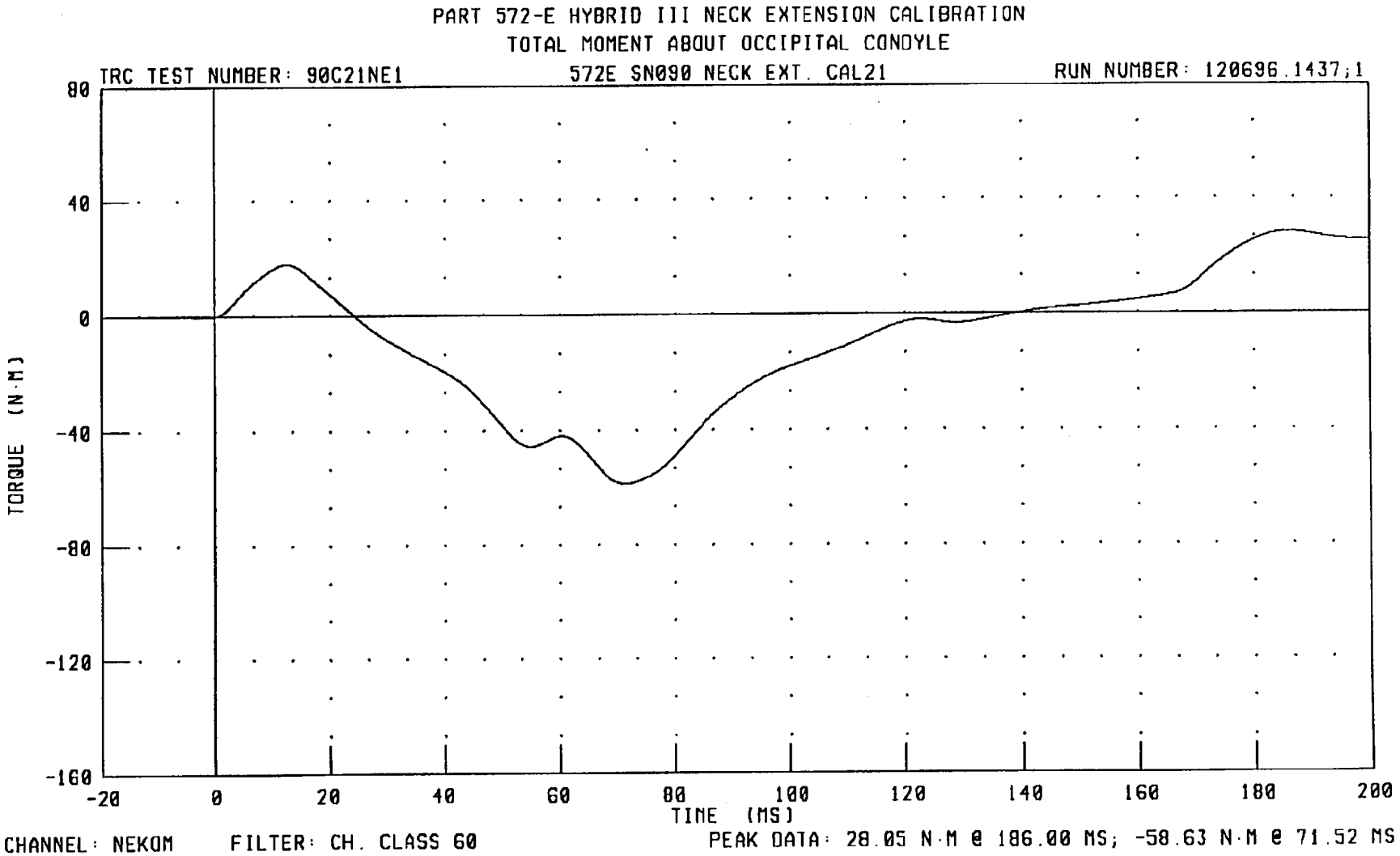



PART 572-E HYBRID III NECK EXTENSION CALIBRATION
ROTATION ABOUT OCCIPITAL CONDYLE
TRC TEST NUMBER: 90C21NE1
572E SN090 NECK EXT. CAL21
RUN NUMBER: 120696.1437;1
ANGLE (°)
120
90
60
30
0
-30
-60
-20
0
20
40
60
80
100
120
140
160
180
200
TIME (MS)
CHANNEL: THETA
FILTER: CH. CLASS 60
PEAK DATA: 57.21 ° @ 78.88 MS; -16.97 ° @ 200.00 MS


PART 572-E HYBRID III NECK EXTENSION CALIBRATION
TOTAL ROTATION
TRC TEST NUMBER: 90C21NE1
572E SN090 NECK EXT. CAL21
RUN NUMBER: 120696.1437;1
120
90
60
30
0
-30
-60
ANGLE (°)
-20
0
20
40
60
80
100
120
140
160
180
200
TIME (MS)
CHANNEL: TOTAN
FILTER: CH. CLASS 60
PEAK DATA: 97.35 ° @ 77.84 MS; -30.52 ° @ 200.00 MS


PART 572-E HYBRID III NECK EXTENSION CALIBRATION
NECK FORCE X AXIS
TRC TEST NUMBER: 90C21NE1
572E SN090 NECK EXT. CAL21
RUN NUMBER: 120696.1437;1
80
40
0
-40
-80
-120
-160
FORCE (N X 10¹)
-20
0
20
40
60
80
100
120
140
160
180
200
TIME (MS)
CHANNEL: NEKXF
FILTER: CH. CLASS 60
PEAK DATA: 231.35 N @ 196.32 MS; -498.06 N @ 74.96 MS


PART 572-E HYBRID III NECK EXTENSION CALIBRATION
NECK MOMENT Y AXIS
TRC TEST NUMBER: 90C21NE1
572E SN090 NECK EXT. CAL21
RUN NUMBER: 120696.1437;1
80
40
0
-40
-80
-120
-160
TORQUE (N·M)
-20
0
20
40
60
80
100
120
140
160
180
200
TIME (MS)
CHANNEL: NEKYM
FILTER: CH. CLASS 60
PEAK DATA: 24.59 N·M @ 185.44 MS; -50.51 N·M @ 71.04 MS


PART 572-E HYBRID III NECK EXTENSION CALIBRATION
TOTAL MOMENT ABOUT OCCIPITAL CONDYLE
TRC TEST NUMBER: 90C21NE1
572E SN090 NECK EXT. CAL21
RUN NUMBER: 120696.1437;1
80
40
0
-40
-80
-120
-160
TORQUE (N-M)
-20
0
20
40
60
80
100
120
140
160
180
200
TIME (MS)
CHANNEL: NEKOM
FILTER: CH. CLASS 60
PEAK DATA: 28.05 N-M @ 186.00 MS; -58.63 N-M @ 71.52 MS

TRANSPORTATION RESEARCH CENTER INC.

THORAX IMPACT TEST

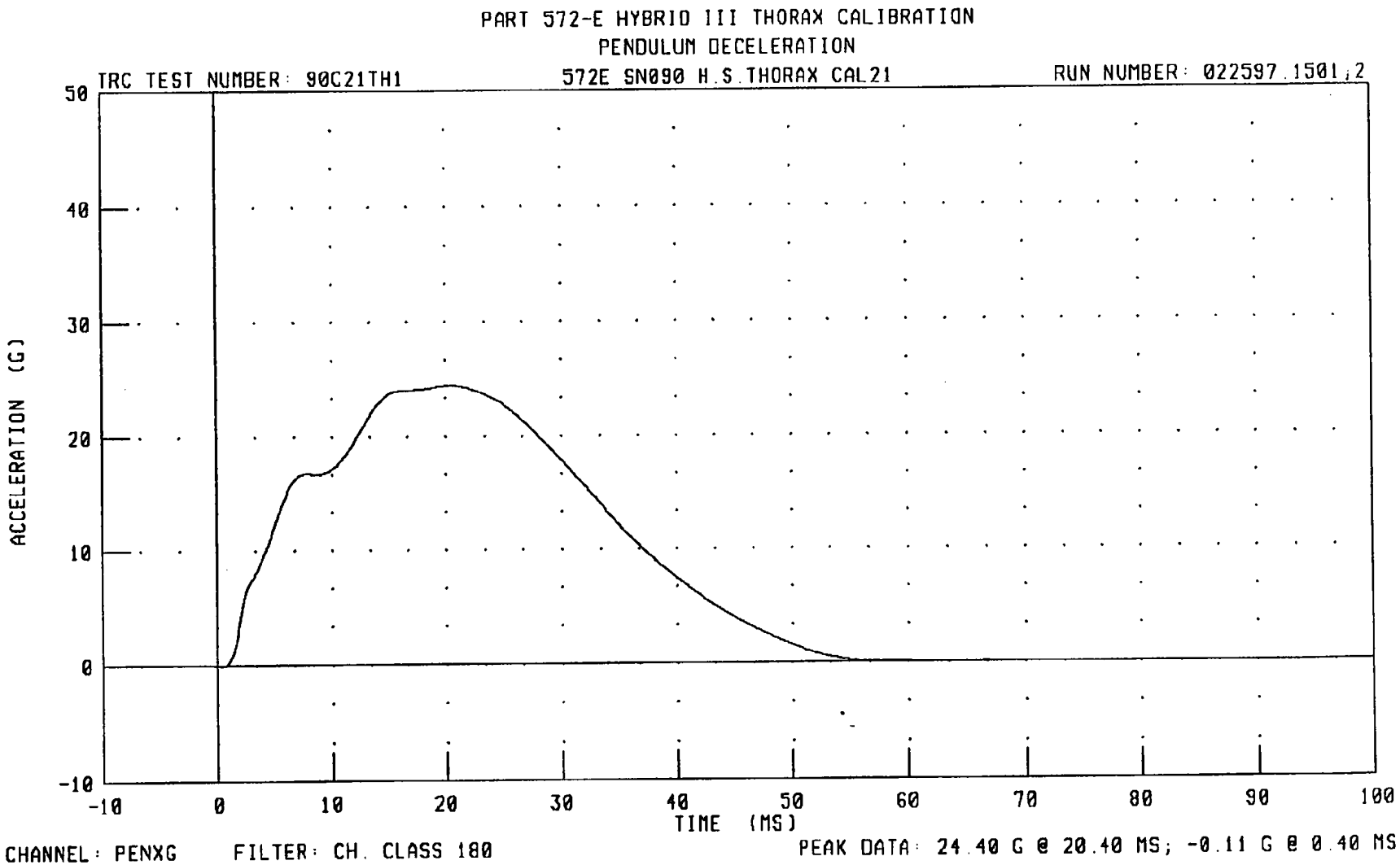
HYBRID III 07-DEC-96

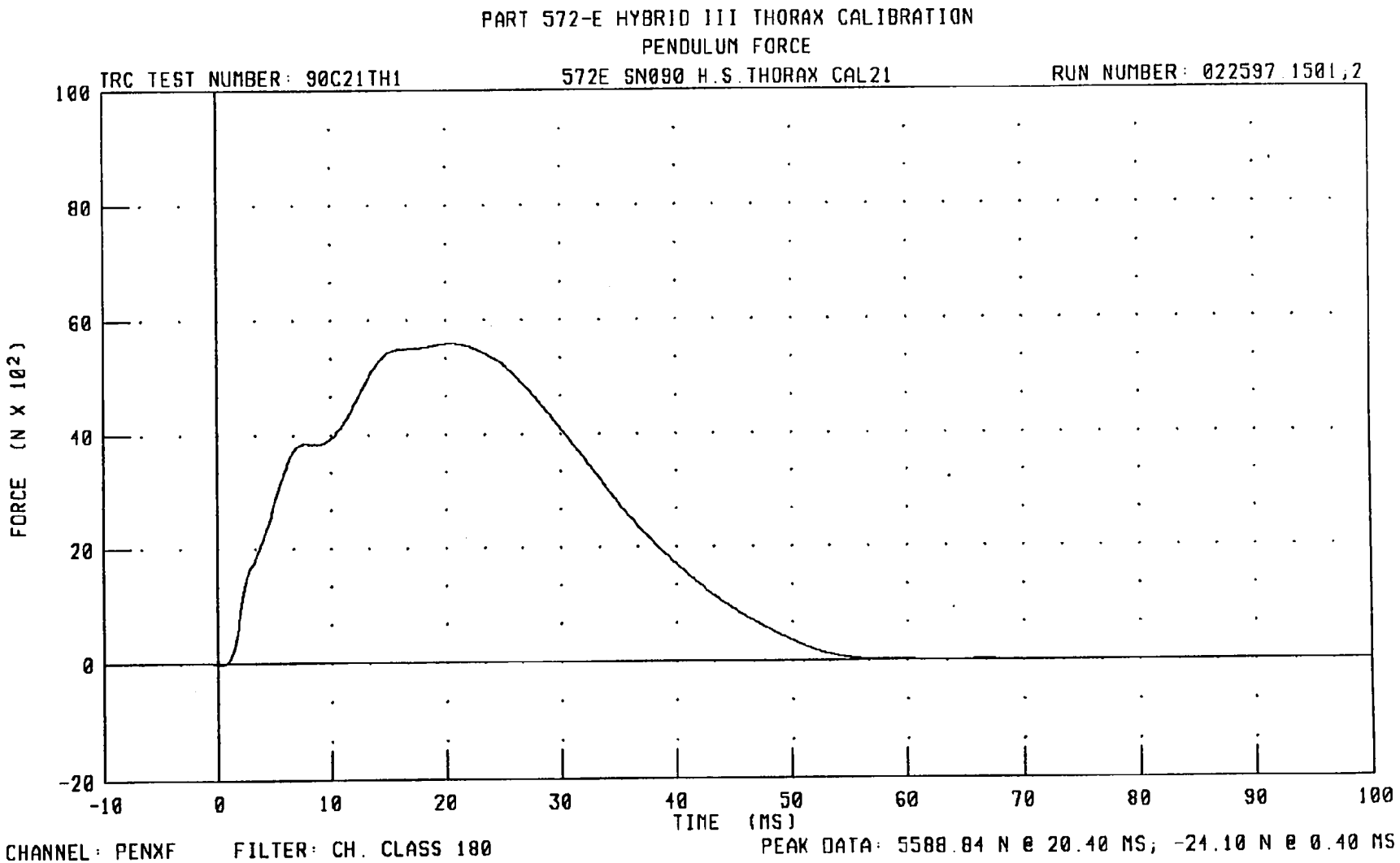
TRC INC. TEST NO: 90C21TH1 572E SN090 H.S.THORAX CAL21

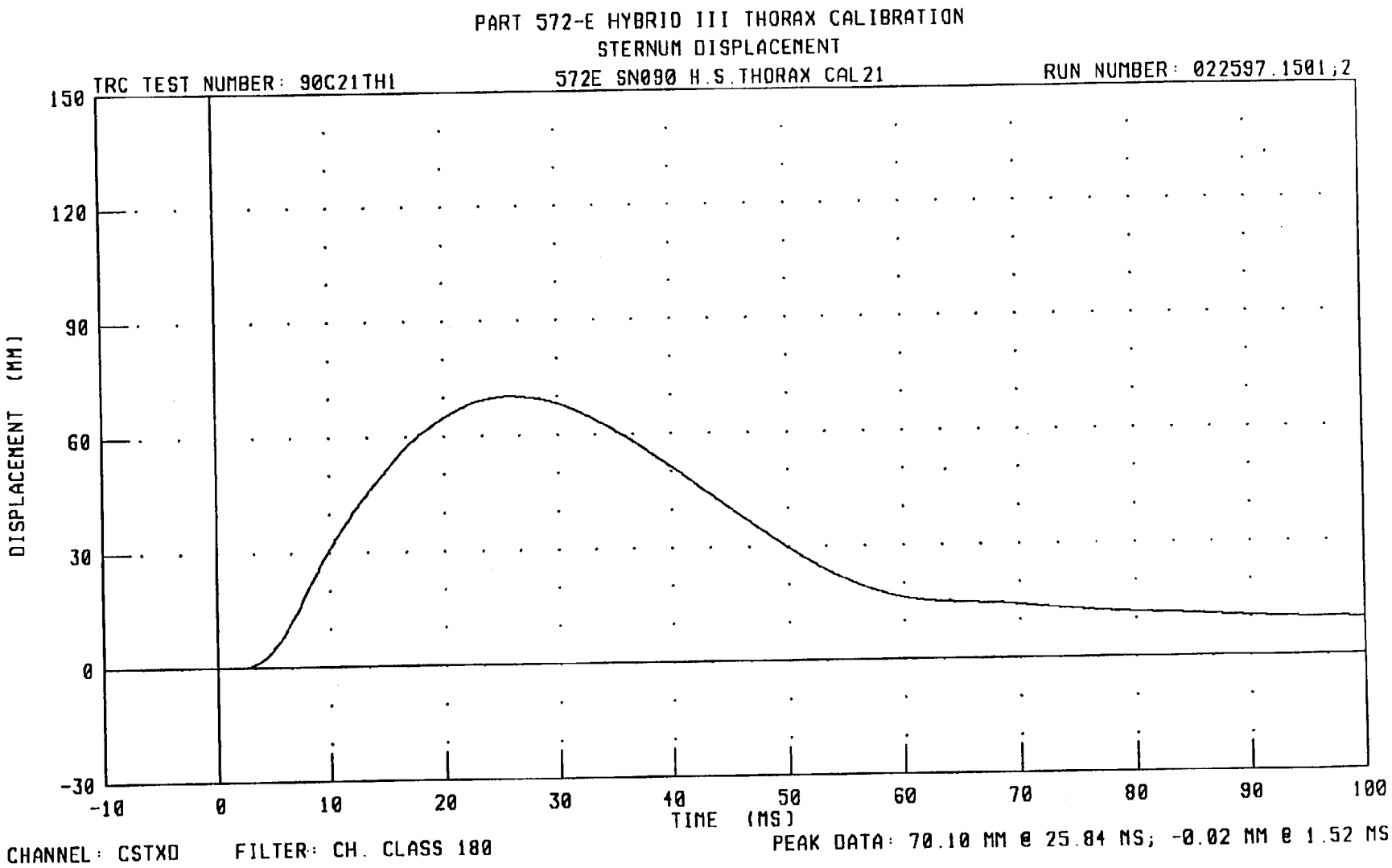
TEST PARAMETER	HIGH SPEED TEST SPECIFICATION	TEST RESULTS
TEMPERATURE	20.6-22.2 DEG. C	21.2 DEG. C
RELATIVE HUMIDITY	10 - 70 %	32.0 %
PENDULUM VELOCITY	6.59 - 6.83 M/S	6.65 M/S
MAXIMUM DEFLECTION	63.5 - 72.6 MM	70.0 MM
MAXIMUM RESISTIVE FORCE	5159 - 5894 N	5588. N
INTERNAL HYSTERESIS	69% - 85%	74.9%

TEST MEETS SPECIFICATIONS

TECHNICIAN _____ RUN NUMBER: 120796.1057;2

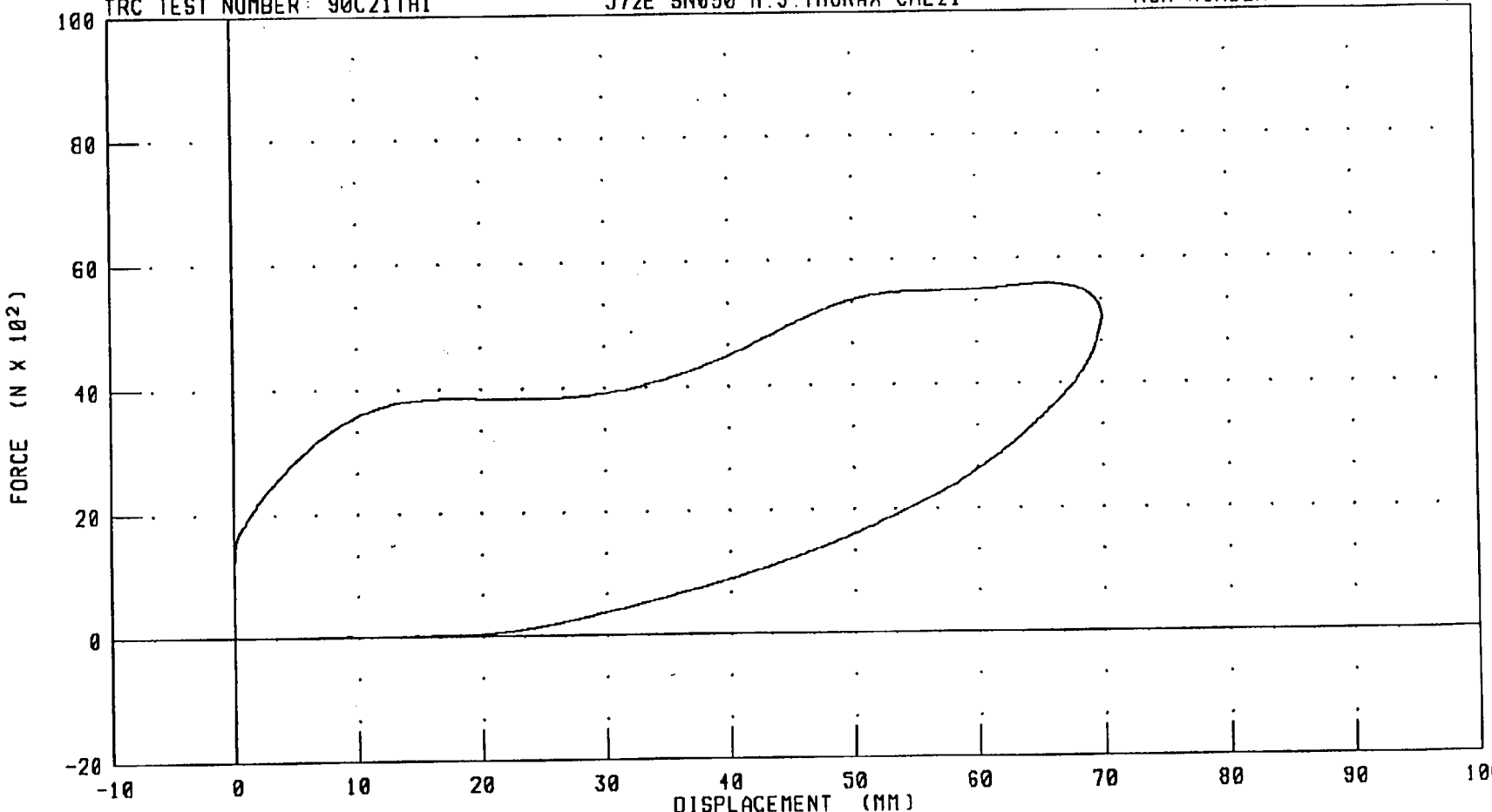

PART 572-E HYBRID III THORAX CALIBRATION
PENDULUM DECELERATION
TRC TEST NUMBER: 90C21TH1
572E SN090 H.S.THORAX CAL21
RUN NUMBER: 022597.1501;2
ACCELERATION (G)
50
40
30
20
10
0
-10
-10
0
10
20
30
40
50
60
70
80
90
100
TIME (MS)
CHANNEL: PENXG
FILTER: CH. CLASS 180
PEAK DATA: 24.40 G @ 20.40 MS; -0.11 G @ 0.40 MS


PART 572-E HYBRID III THORAX CALIBRATION
PENDULUM FORCE
TRC TEST NUMBER: 90C21TH1
572E SN090 H.S.THORAX CAL21
RUN NUMBER: 022597.1501,2
FORCE (N X 10²)
100
80
60
40
20
0
-20
-10
0
10
20
30
40
50
60
70
80
90
100
TIME (MS)
CHANNEL: PENXF
FILTER: CH. CLASS 180
PEAK DATA: 5588.84 N @ 20.40 MS; -24.10 N @ 0.40 MS


PART 572-E HYBRID III THORAX CALIBRATION
STERNUM DISPLACEMENT
TRC TEST NUMBER: 90C21TH1
572E SN090 H.S.THORAX CAL21
RUN NUMBER: 022597.1501;2
DISPLACEMENT (MM)
150
120
90
60
30
0
-30
-10
0
10
20
30
40
50
60
70
80
90
100
TIME (MS)
CHANNEL: CSTXD
FILTER: CH. CLASS 180
PEAK DATA: 70.10 MM @ 25.84 MS; -0.02 MM @ 1.52 MS

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

TRC TEST NUMBER: 90C21TH1 572E SN090 H.S.THORAX CAL21 RUN NUMBER: 022597.1501;2



CHANNEL: CSTXD FILTER: CH. CLASS 180
PENXF CH. CLASS 180

PEAK DATA: 70.10 MM @ 25.84 MS; -0.02 MM @ 1.52 MS
5588.84 N @ 20.40 MS; -24.10 N @ 0.40 MS

TRANSPORTATION RESEARCH CENTER INC.

RIGHT KNEE IMPACT TEST

HYBRID III 05-DEC-96

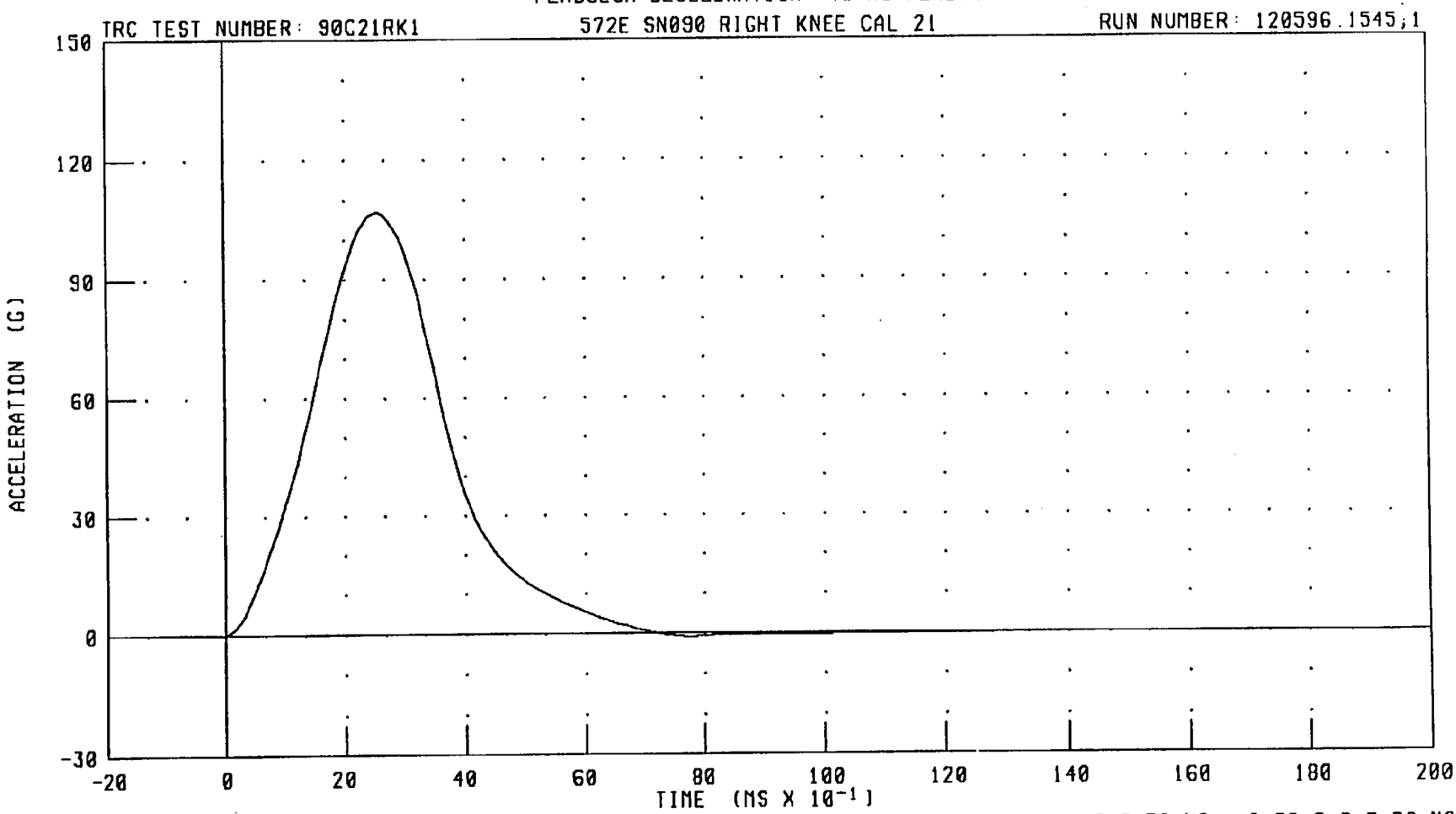
TRC INC. TEST NO: 90C21RK1 572E SN090 RIGHT KNEE CAL 21

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9-25.6 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY	10 - 70 %	32.0 %
PROBE VELOCITY	2.07 - 2.13 M/S	2.08 M/S
PEAK KNEE IMPACT FORCE 5.0 KG PENDULUM	4715 - 5782 N	5230.4 N

TEST MEETS SPECIFICATIONS

TECHNICIAN _____ RUN NUMBER: 120596.1545;1

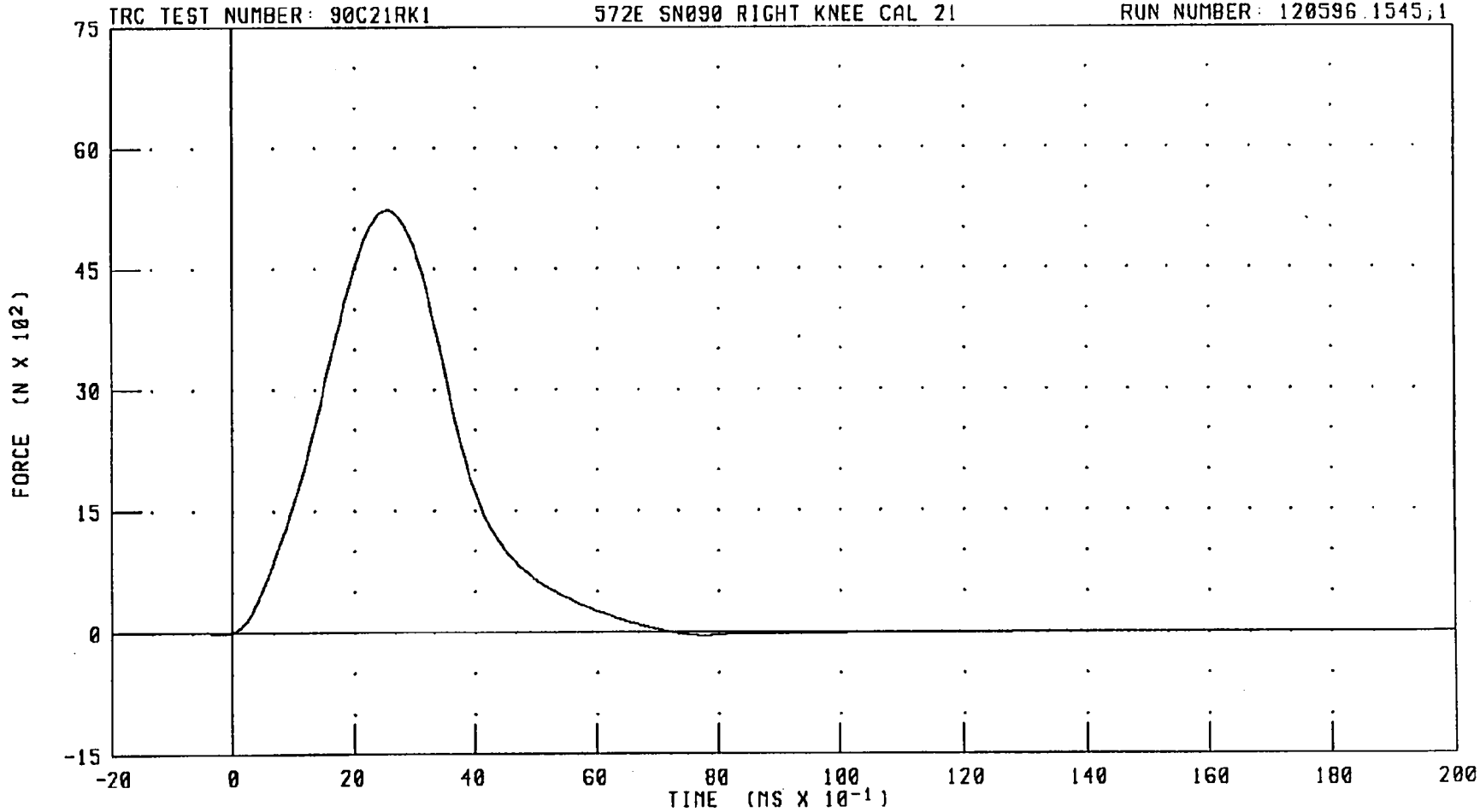
PART 572-E HYBRID III RIGHT KNEE CALIBRATION
PENDULUM DECELERATION (5 KG PEND.)



PART 572-E HYBRID III RIGHT KNEE CALIBRATION

PENDULUM FORCE (5 KG PEND.)

TRC TEST NUMBER: 90C21RK1 572E SN090 RIGHT KNEE CAL 21 RUN NUMBER: 120596.1545;1



CHANNEL: PENXF FILTER: CH. CLASS 600 PEAK DATA: 5230.44 N @ 2.56 MS; -43.14 N @ 7.76 MS

TRANSPORTATION RESEARCH CENTER INC.

LEFT KNEE IMPACT TEST

HYBRID III 05-DEC-96

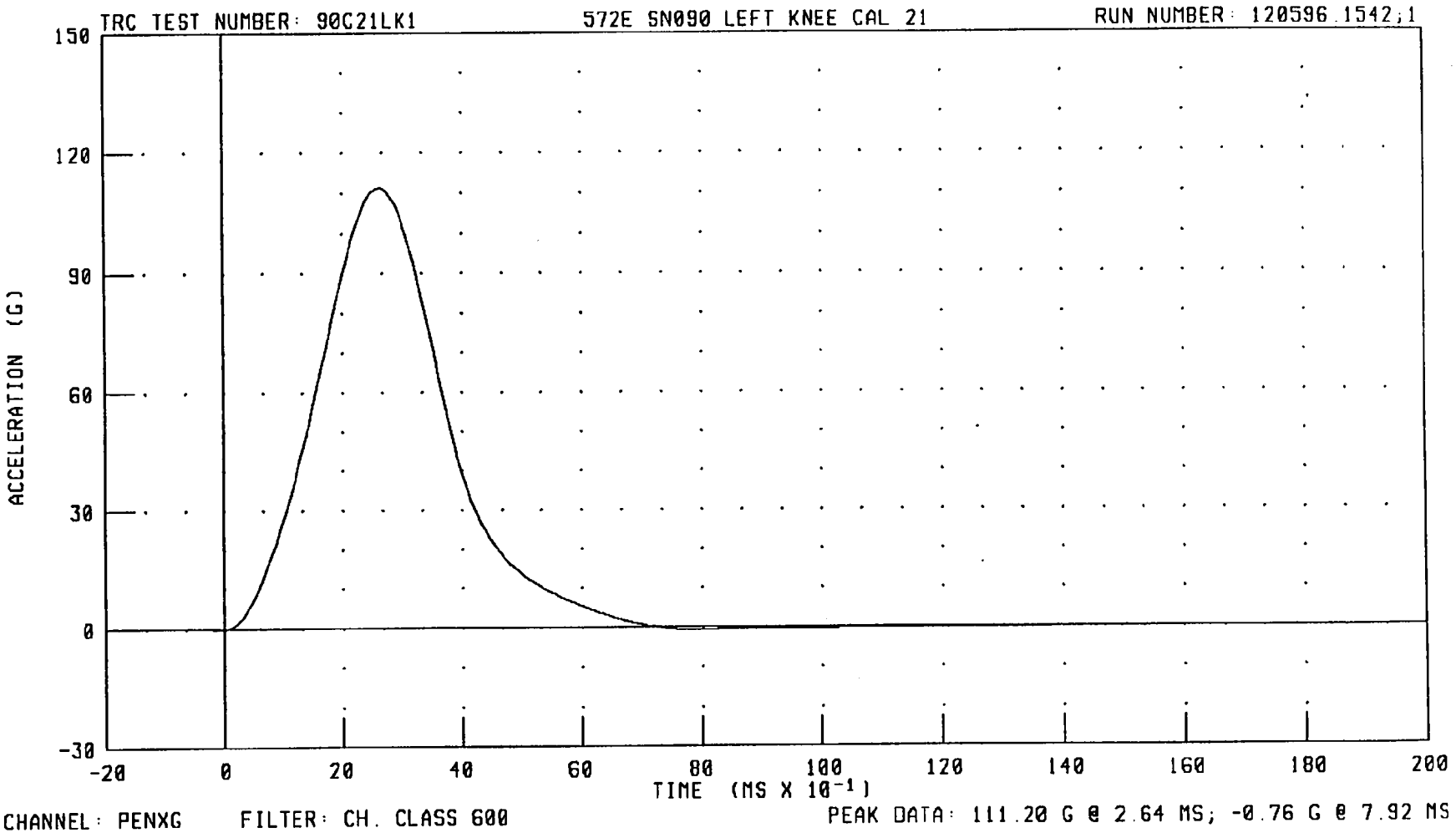
TRC INC. TEST NO: 90C21LK1 572E SN090 LEFT KNEE CAL 21

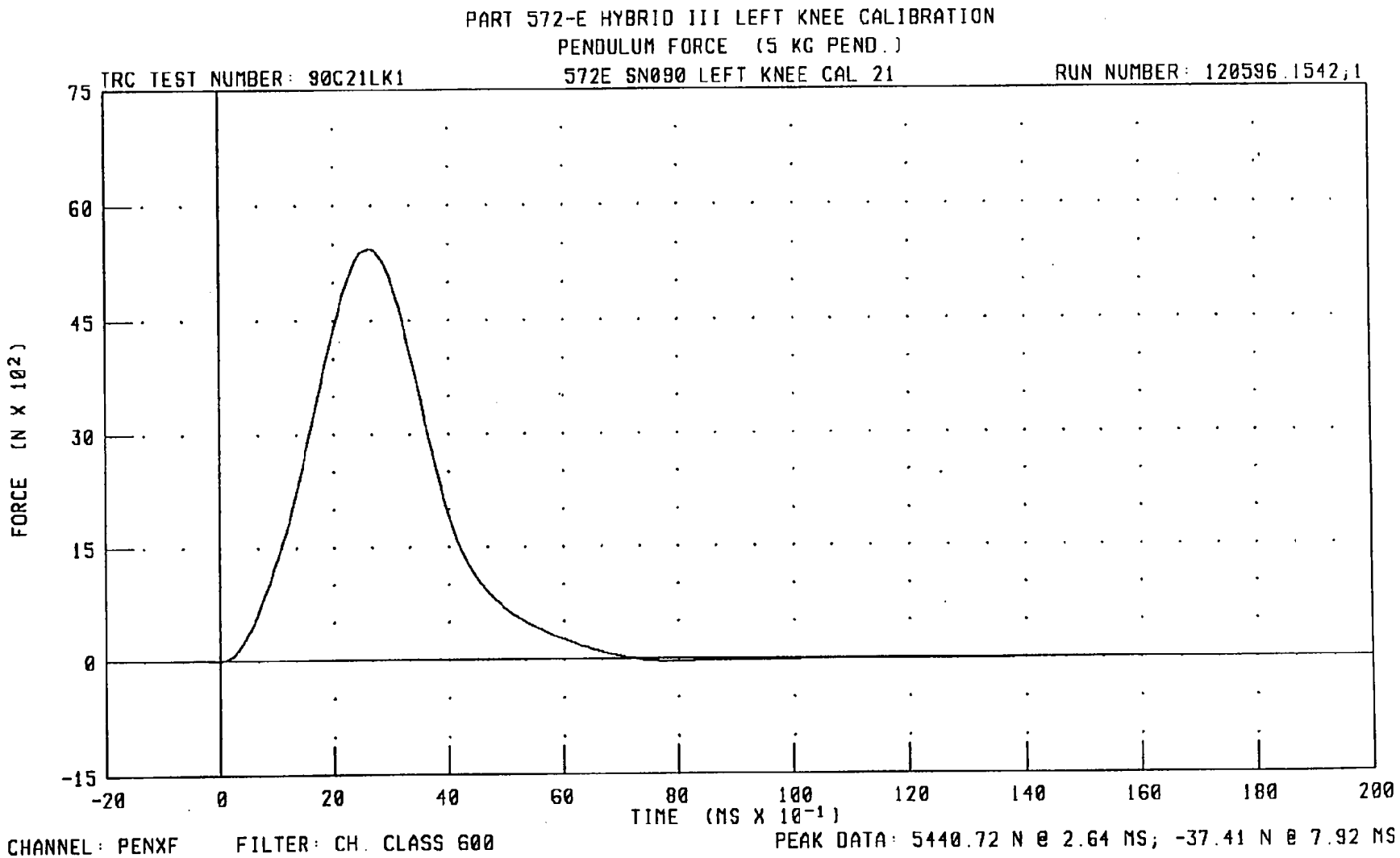
TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9-25.6 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY	10 - 70 %	32.0 %
PROBE VELOCITY	2.07 - 2.13 M/S	2.10 M/S
PEAK KNEE IMPACT FORCE 5.0 KG PENDULUM	4715 - 5782 N	5440.7 N

TEST MEETS SPECIFICATIONS

TECHNICIAN _____ RUN NUMBER: 120596.1541;1

PART 572-E HYBRID III LEFT KNEE CALIBRATION
PENDULUM DECELERATION (5 KG PEND.)




PART 572-E HYBRID III LEFT KNEE CALIBRATION
PENDULUM FORCE (5 KG PEND.)
TRC TEST NUMBER: 90C21LK1
572E SN090 LEFT KNEE CAL 21
RUN NUMBER: 120596.1542;1
FORCE (N X 10²)
75
60
45
30
15
0
-15
-20
0
20
40
60
80
100
120
140
160
180
200
TIME (MS X 10⁻¹)
CHANNEL: PENXF
FILTER: CH. CLASS 600
PEAK DATA: 5440.72 N @ 2.64 MS; -37.41 N @ 7.92 MS

Pre-Test Certification Data

Passenger Dummy S/N 045

TRANSPORTATION RESEARCH CENTER INC.
HYBRID III EXTERNAL DIMENSIONS
SN045

TRC INC. TEST NO: 45C34ED1 05-DEC-96
572E SN045 EXT.DIMENSION CAL34

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	996. MM
WAIST CIRCUMFERENCE	(Z)	836 - 866 MM	848. MM
CHEST DEPTH	(O)	213 - 229 MM	216. 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	879. MM
THIGH CLEARANCE	(F)	140 - 155 MM	155. MM
BUTTOCK KNEE LENGTH	(K)	579 - 605 MM	602. MM
BUTTOCK POPLITEAL LENGTH	(N)	452 - 478 MM	462. MM
POPLITEAL HEIGHT	(L)	429 - 455 MM	445. MM
KNEE PIVOT HEIGHT	(M)	485 - 500 MM	498. MM
FOOT LENGTH	(P)	252 - 267 MM	257. MM
FOOT BREADTH	(W)	91 - 107 MM	99. MM
SHOULDER PIVOT FROM BACKLINE	(E)	84 - 94 MM	91. MM
SHOULDER BREADTH	(V)	422 - 437 MM	427. MM
SHOULDER PIVOT HEIGHT	(B)	506 - 521 MM	511. MM
ELBOW REST HEIGHT	(J)	191 - 211 MM	196. MM
SHOULDER-ELBOW LENGTH	(I)	330 - 345 MM	335. MM
BACK OF ELBOW TO WRIST PIVOT	(G)	290 - 305 MM	292. MM

DUMMY MEETS SPECIFICATIONS
TECHNICIAN _____ RUN NUMBER: 120996.0830

TRANSPORTATION RESEARCH CENTER INC.

HEAD DROP TEST

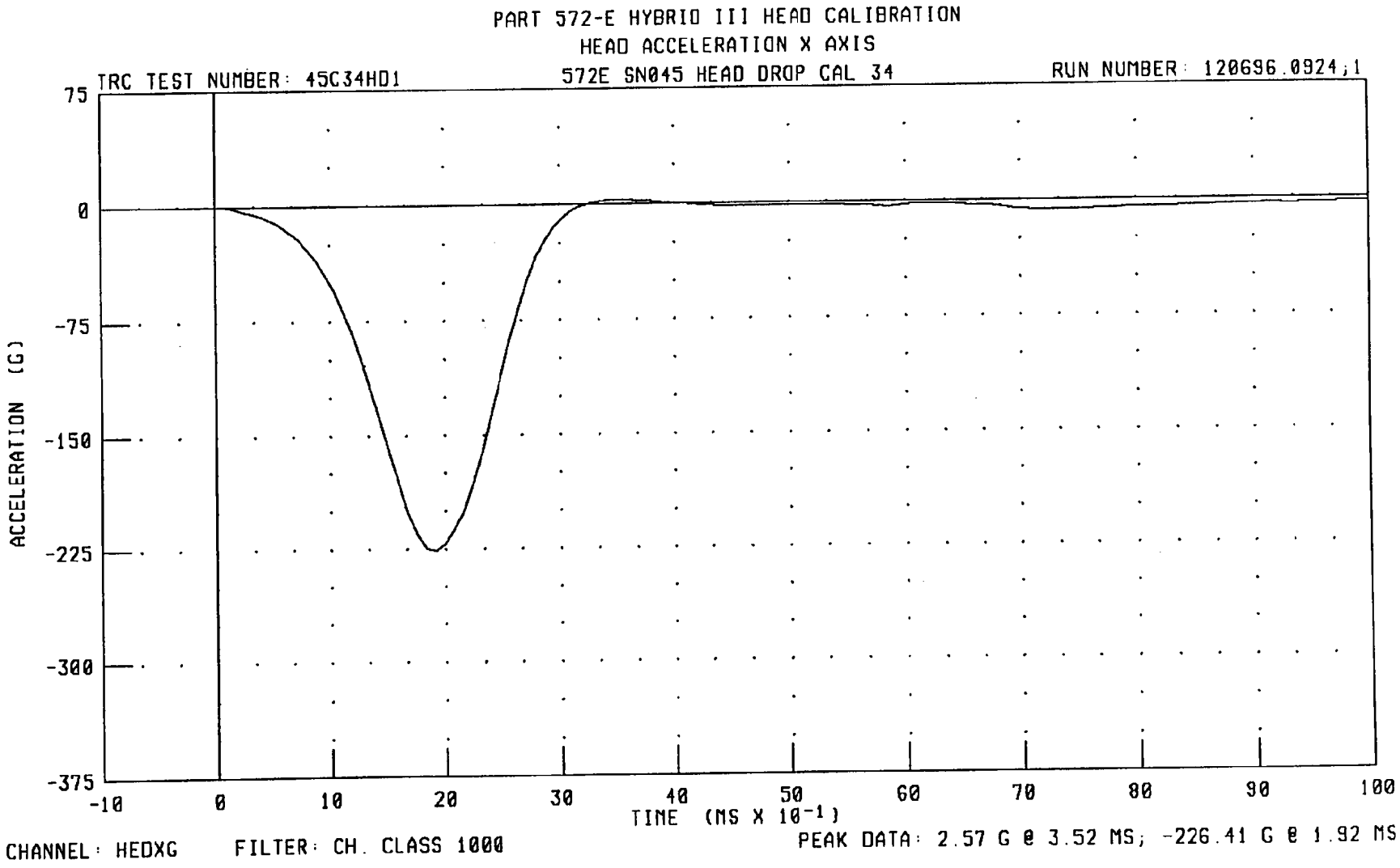
HYBRID III 06-DEC-96

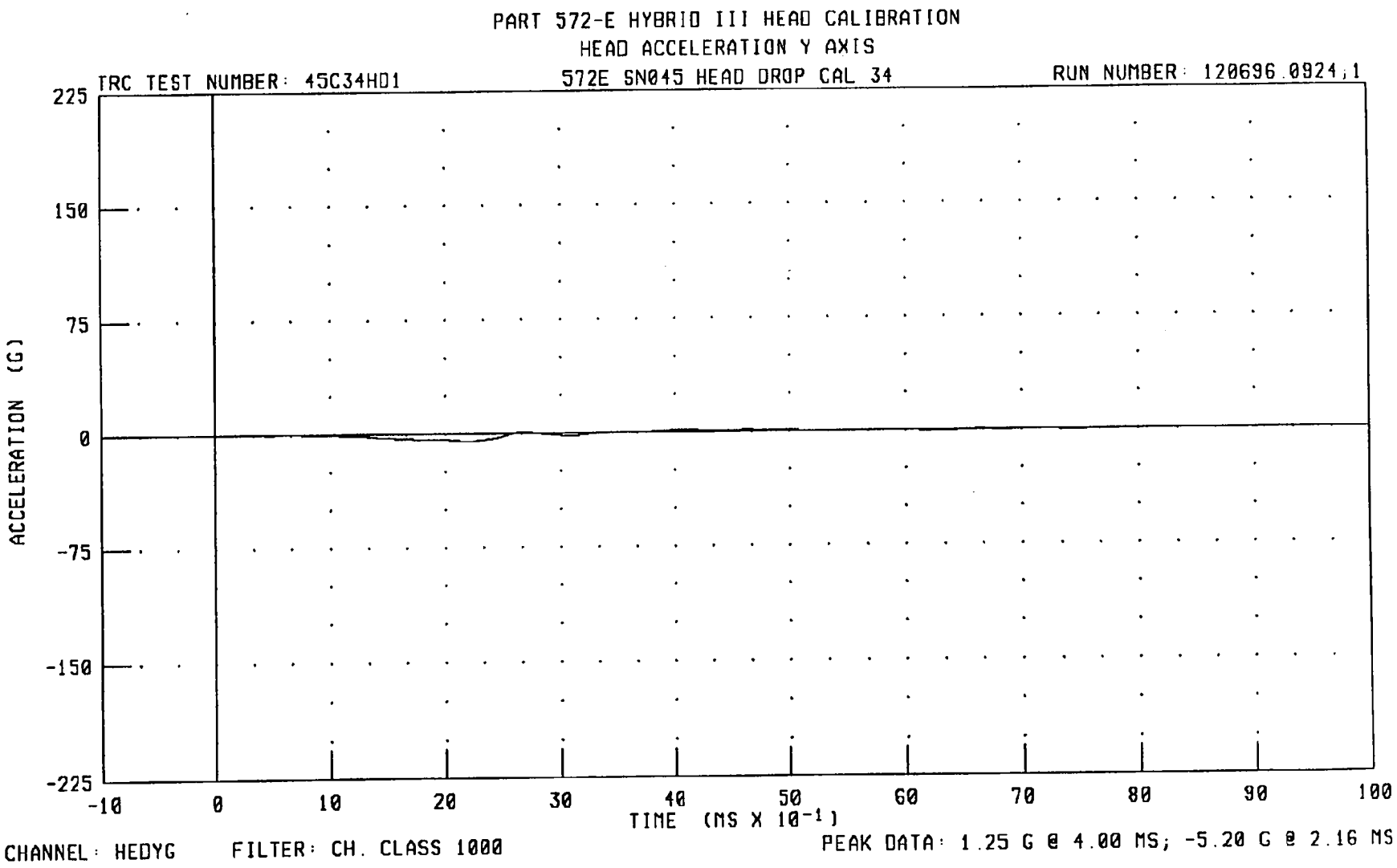
TRC INC. TEST NO: 45C34HD1 572E SN045 HEAD DROP CAL 34

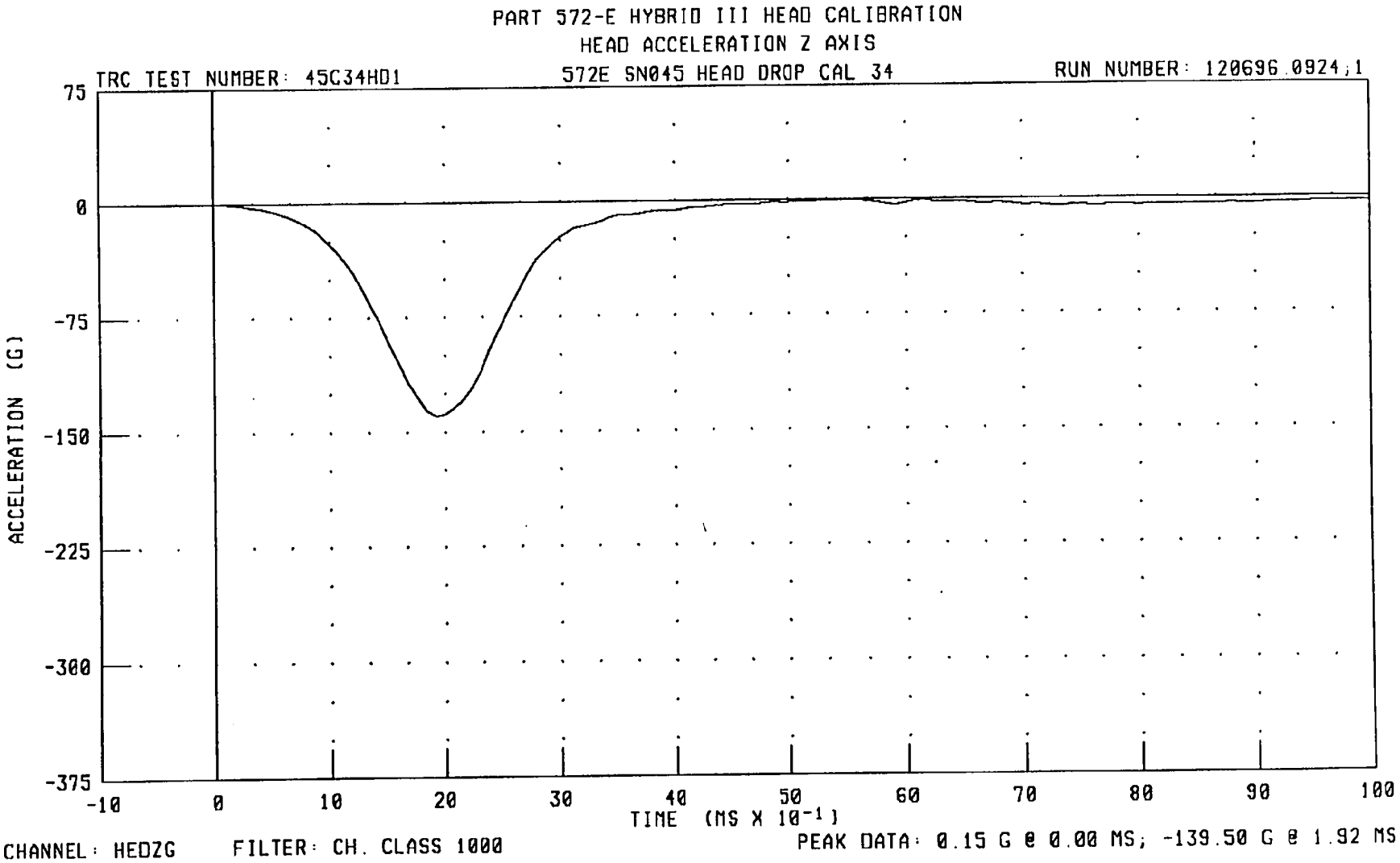
TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9-25.6 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY	10 - 70 %	32.0 %
PEAK RESULTANT ACCELERATION	225 - 275 G	265.95 G
PEAK LATERAL ACCELERATION	15 G MAX	-5.19 G
IS ACCELERATION CURVE UNIMODAL?	YES	YES

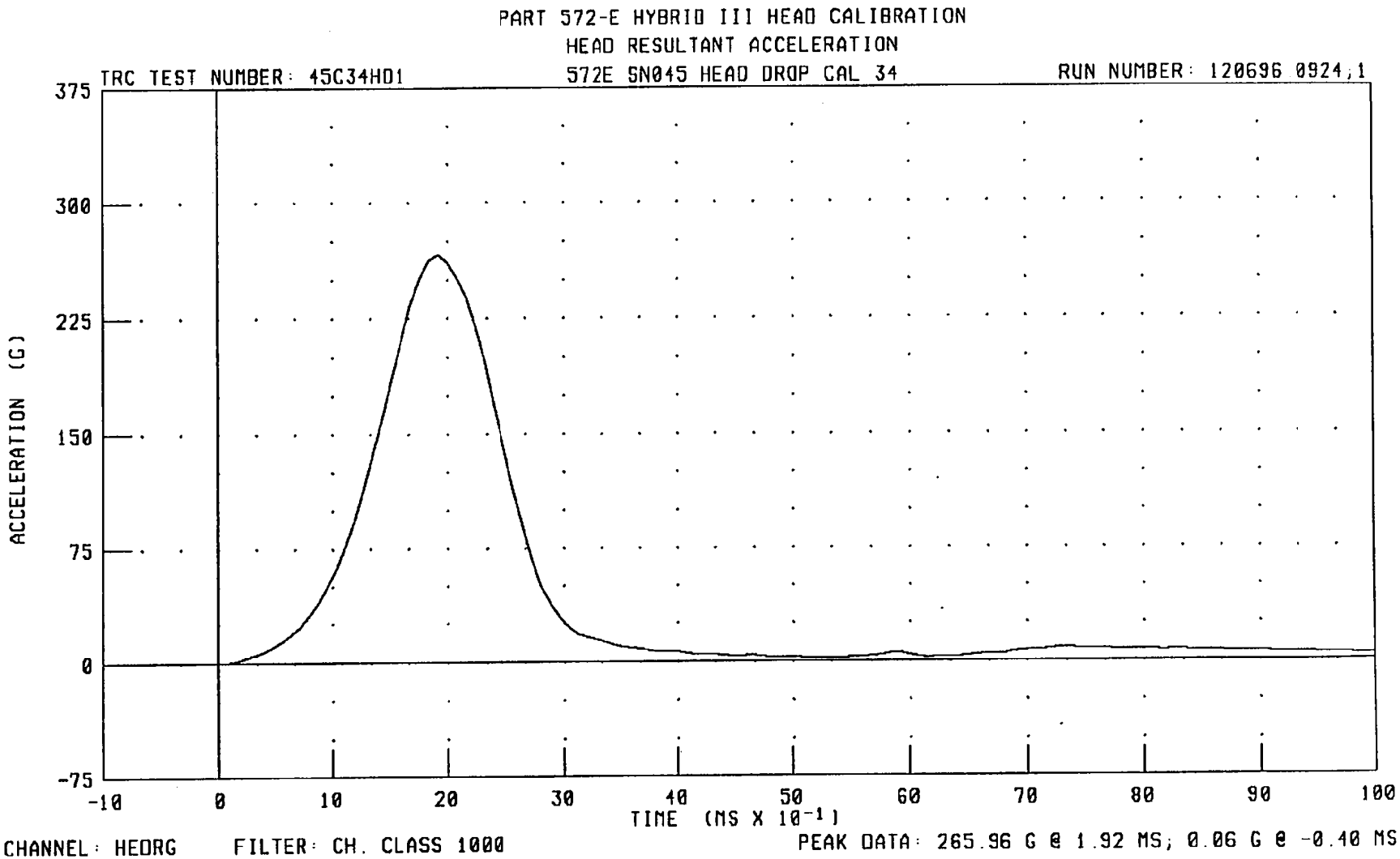
TEST MEETS SPECIFICATIONS

TECHNICIAN Bruce Caudle RUN NUMBER: 120696.0923;1


PART 572-E HYBRID III HEAD CALIBRATION
HEAD ACCELERATION X AXIS
TRC TEST NUMBER: 45C34HD1
572E SN045 HEAD DROP CAL 34
RUN NUMBER: 120696.0924;1
75
0
-75
-150
-225
-300
-375
ACCELERATION (G)
-10
0
10
20
30
40
50
60
70
80
90
100
TIME (MS X 10⁻¹)
CHANNEL: HEDXG
FILTER: CH. CLASS 1000
PEAK DATA: 2.57 G @ 3.52 MS; -226.41 G @ 1.92 MS


PART 572-E HYBRID III HEAD CALIBRATION
HEAD ACCELERATION Y AXIS
TRC TEST NUMBER: 45C34HD1
572E SN045 HEAD DROP CAL 34
RUN NUMBER: 120696.0924;1
225
150
75
0
-75
-150
-225
ACCELERATION (G)
-10
0
10
20
30
40
50
60
70
80
90
100
TIME (MS X 10-1)
CHANNEL: HEDYG
FILTER: CH. CLASS 1000
PEAK DATA: 1.25 G @ 4.00 MS; -5.20 G @ 2.16 MS


PART 572-E HYBRID III HEAD CALIBRATION
HEAD ACCELERATION Z AXIS
TRC TEST NUMBER: 45C34HD1
572E SN045 HEAD DROP CAL 34
RUN NUMBER: 120696.0924;1
75
0
-75
-150
-225
-300
-375
ACCELERATION (G)
-10
0
10
20
30
40
50
60
70
80
90
100
TIME (MS X 10-1)
CHANNEL: HEDZG
FILTER: CH. CLASS 1000
PEAK DATA: 0.15 G @ 0.00 MS; -139.50 G @ 1.92 MS


PART 572-E HYBRID III HEAD CALIBRATION
HEAD RESULTANT ACCELERATION
TRC TEST NUMBER: 45C34HD1
572E SN045 HEAD DROP CAL 34
RUN NUMBER: 120696 0924;1
375
300
225
150
75
0
-75
ACCELERATION (G)
-10
0
10
20
30
40
50
60
70
80
90
100
TIME (MS X 10⁻¹)
CHANNEL: HEDRG
FILTER: CH. CLASS 1000
PEAK DATA: 265.96 G @ 1.92 MS; 0.06 G @ -0.40 MS

TRANSPORTATION RESEARCH CENTER INC.

NECK FLEXION TEST - 6 CHANNEL TRANSDUCER

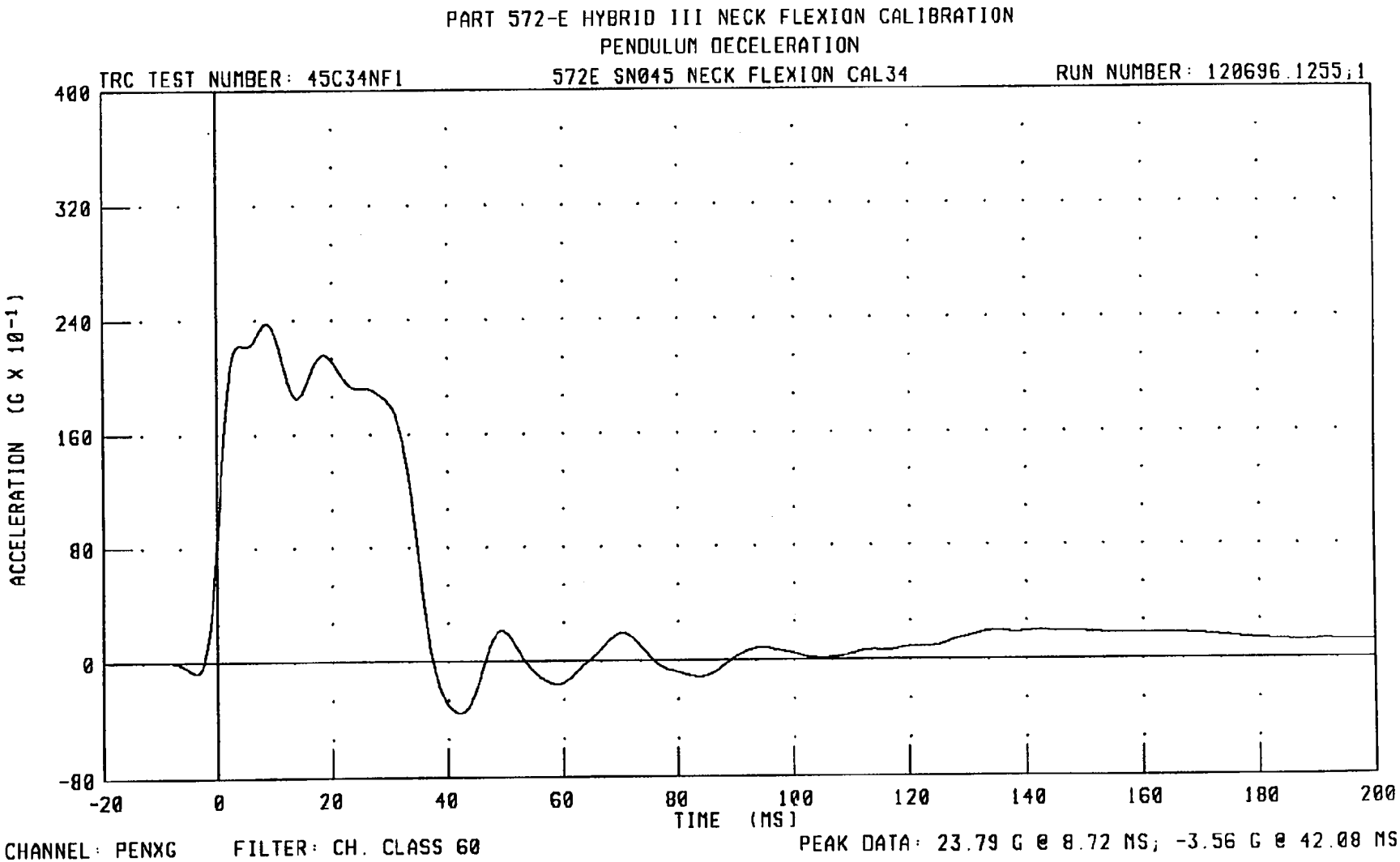
HYBRID III 06-DEC-96

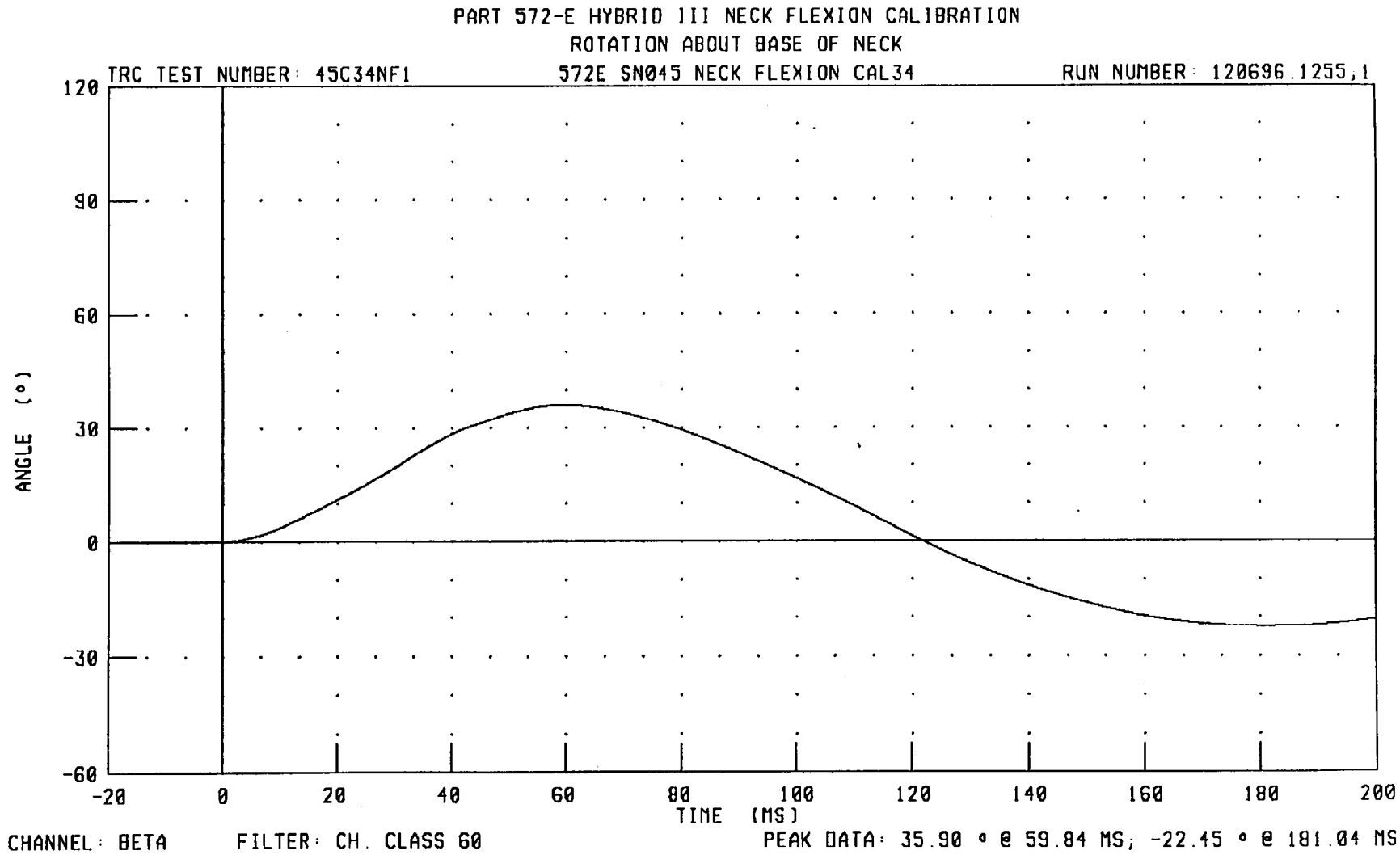
TRC INC. TEST NO: 45C34NF1 572E SN045 NECK FLEXION CAL34

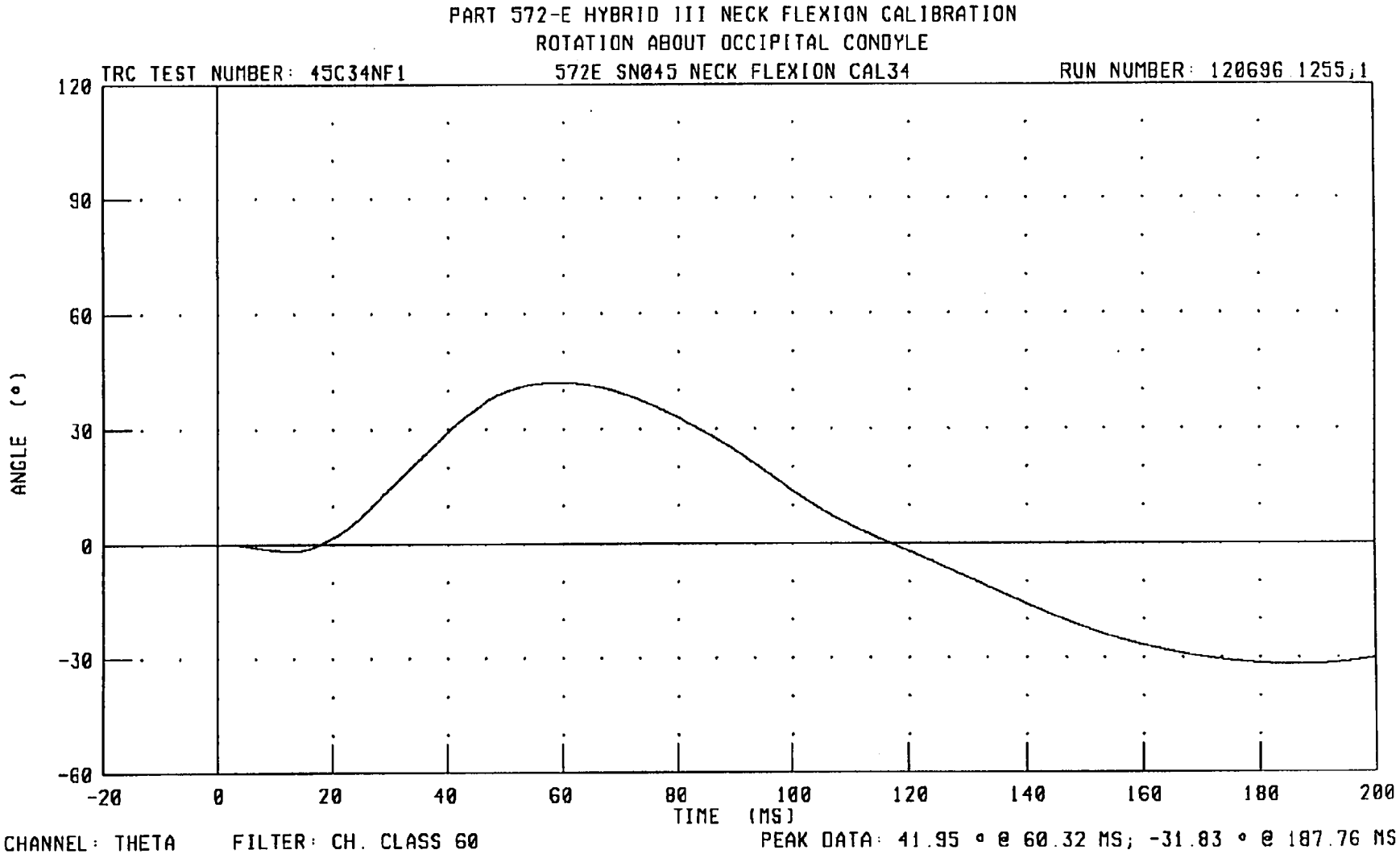
TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE		20.6-22.2 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY		10 - 70 %	32.0 %
IMPACT VELOCITY		6.89 - 7.13 M/S	6.99 M/S
PENDULUM DECELERATION	10 MS	22.50 - 27.50 G	23.04 G
	20 MS	17.60 - 22.60 G	21.15 G
	30 MS	12.50 - 18.50 G	18.07 G
MAX PENDULUM G		29 G MAX	23.79 G
MAX PENDULUM G ABOVE 30 MS		29 G MAX	18.02 G
DECELERATION-TIME CURVE DECAY TIME TO 5 G		34 - 42 MS	35.60 MS
D PLANE ROTATION	MAX	64 - 78 DEG.	77.85 DEG.
	TIME	57 - 64 MS	60.08 MS
MOMENT ABOUT OCCIPITAL CONDYLE	MAX	88.2 - 108.5 NM	93.34 NM
	TIME	47 - 58 MS	49.60 MS
ROTATION ANGLE-TIME CURVE DECAY TIME TO ZERO		113 - 128 MS	119.60 MS
POSITIVE MOMENT-TIME CURVE DECAY TIME TO ZERO		97 - 107 MS	100.56 MS

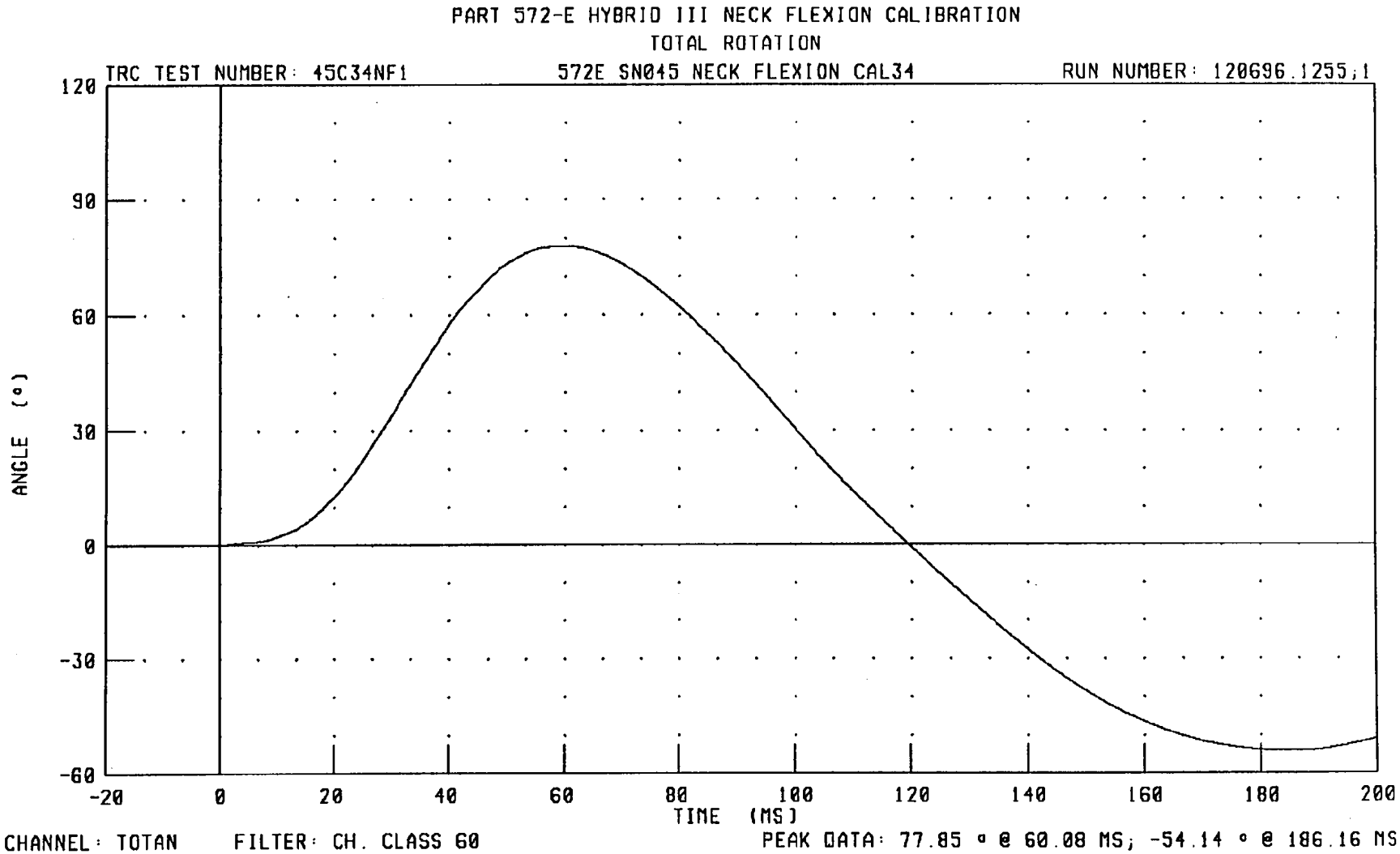
TEST MEETS SPECIFICATIONS

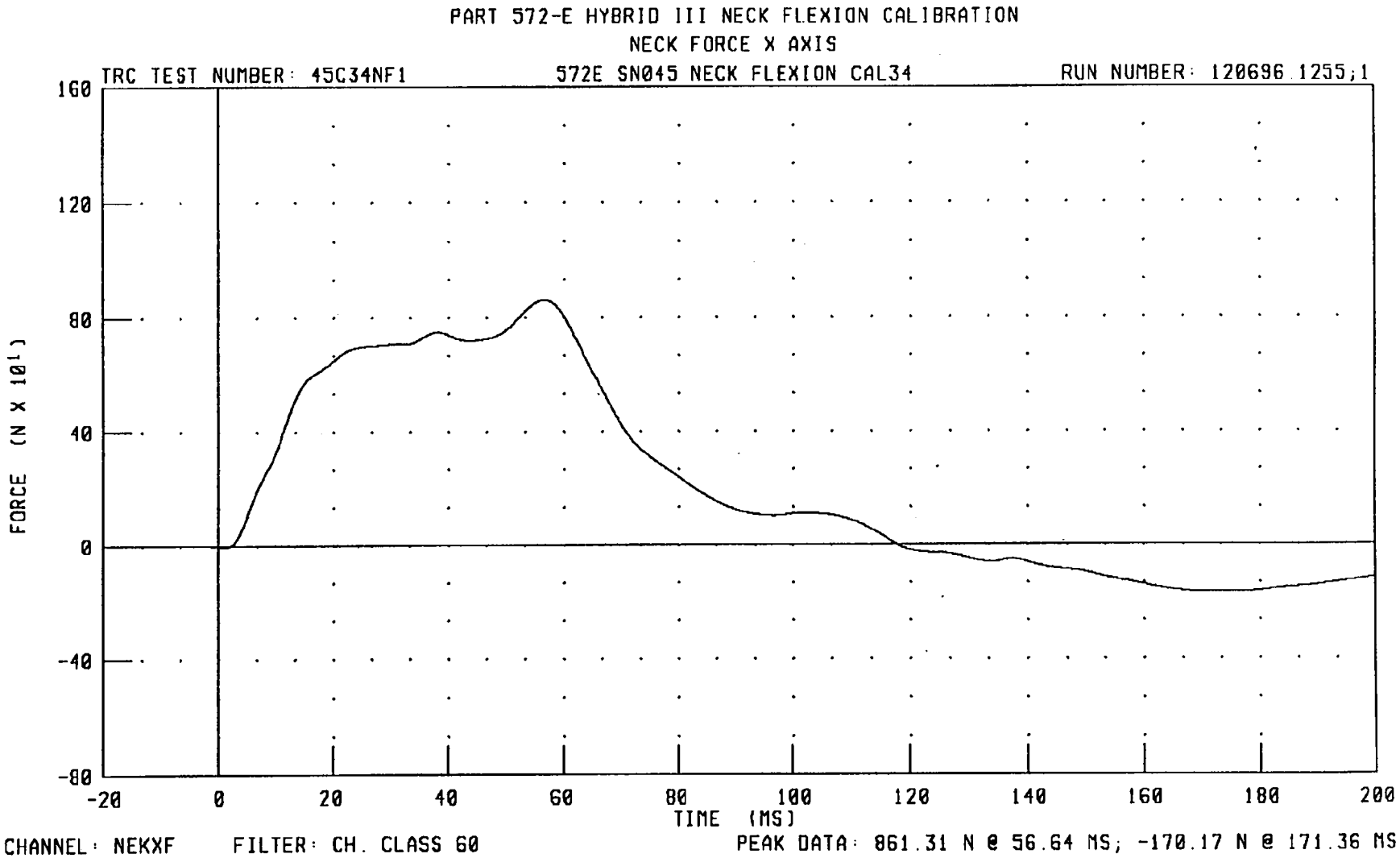
TECHNICIAN _____ RUN NUMBER: 120696.1254;1

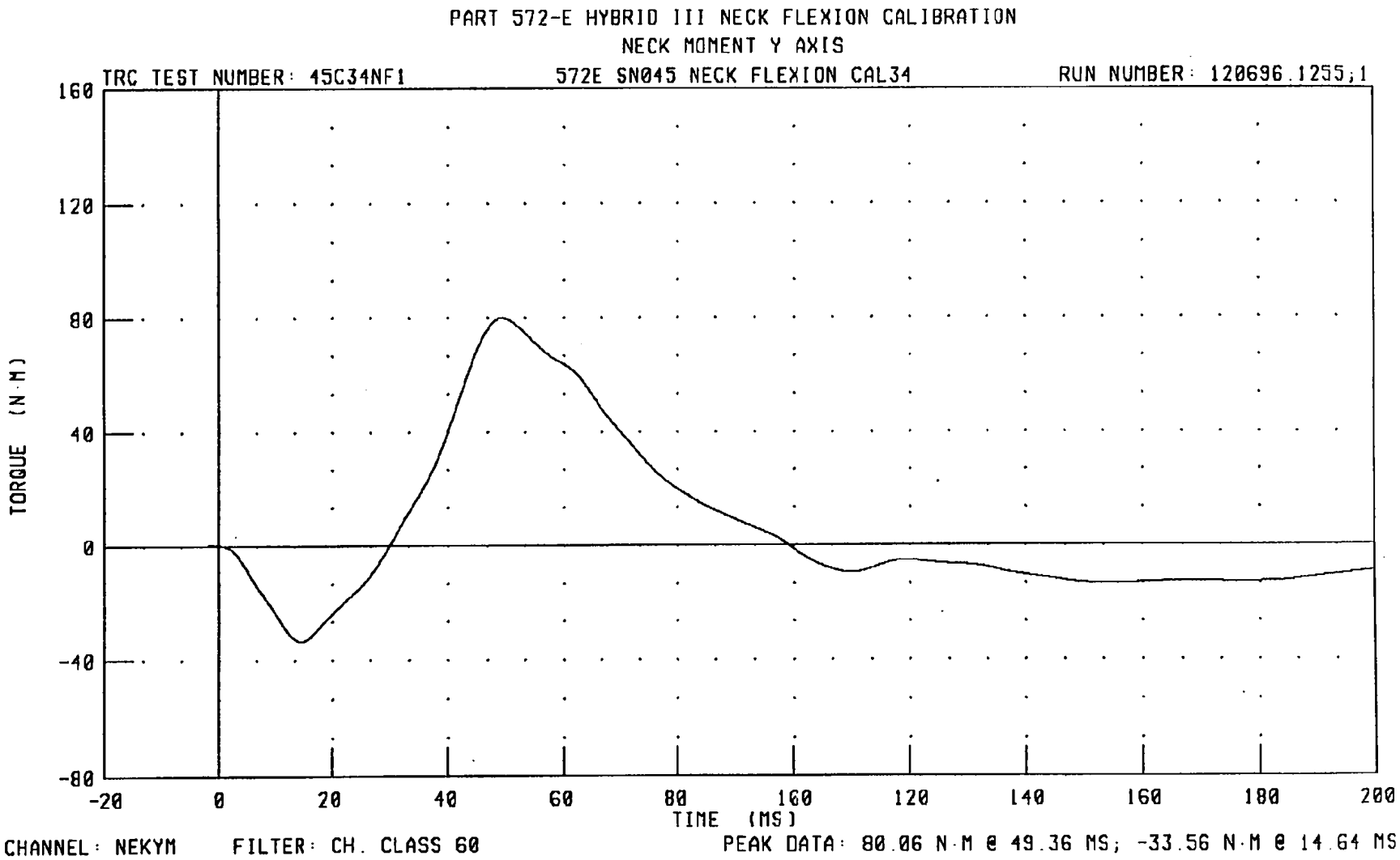

PART 572-E HYBRID III NECK FLEXION CALIBRATION
PENDULUM DECELERATION
TRC TEST NUMBER: 45C34NF1
572E SN045 NECK FLEXION CAL34
RUN NUMBER: 120696.1255;1
ACCELERATION (G X 10⁻¹)
400
320
240
160
80
0
-80
-20
0
20
40
60
80
100
120
140
160
180
200
TIME (MS)
CHANNEL: PENXG
FILTER: CH. CLASS 60
PEAK DATA: 23.79 G @ 8.72 MS; -3.56 G @ 42.08 MS

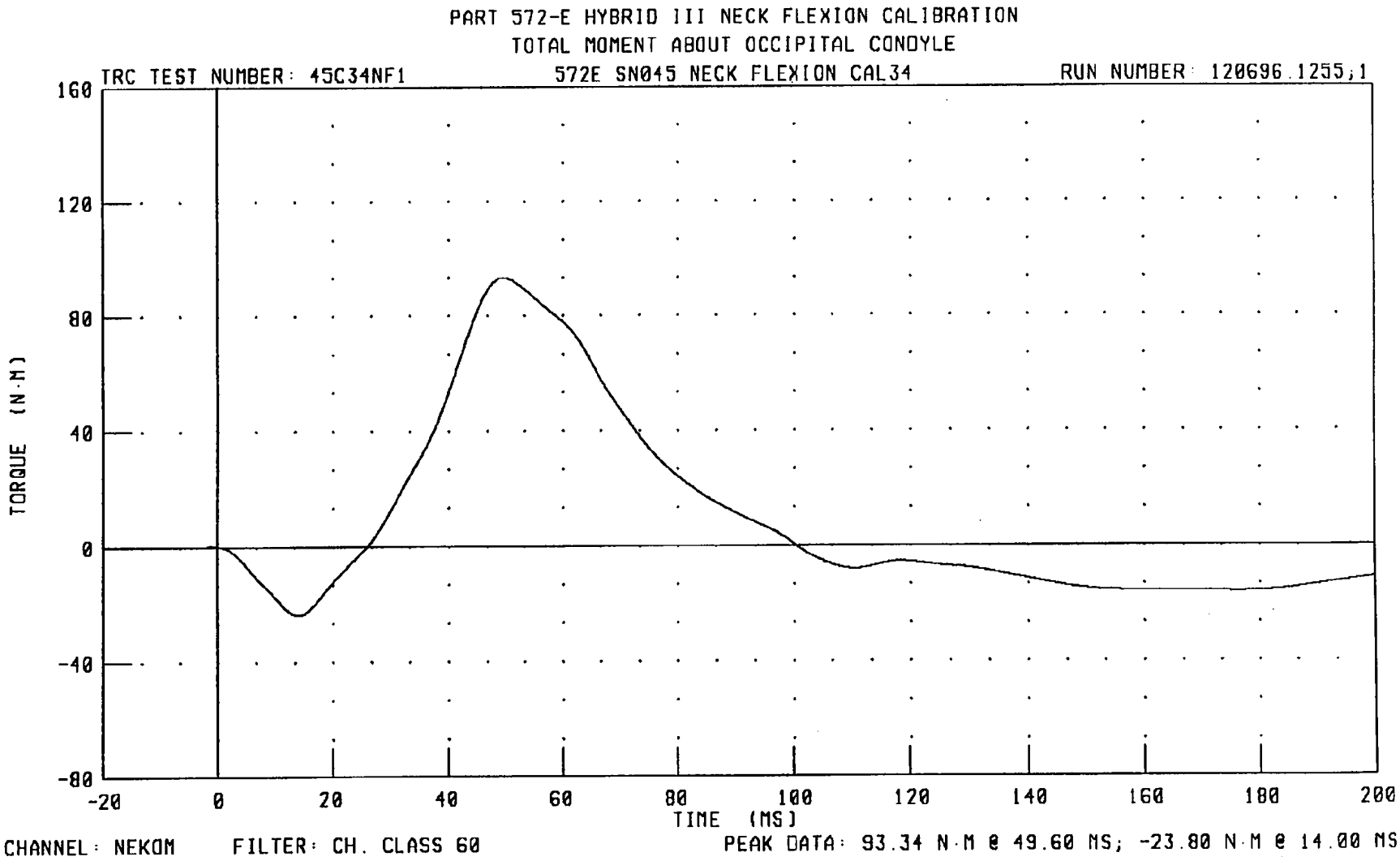

PART 572-E HYBRID III NECK FLEXION CALIBRATION
ROTATION ABOUT BASE OF NECK
TRC TEST NUMBER: 45C34NF1
572E SN045 NECK FLEXION CAL34
RUN NUMBER: 120696.1255,1
120
90
60
30
0
-30
-60
ANGLE (°)
-20
0
20
40
60
80
100
120
140
160
180
200
TIME (MS)
CHANNEL: BETA
FILTER: CH. CLASS 60
PEAK DATA: 35.90 ° @ 59.84 MS; -22.45 ° @ 181.04 MS


PART 572-E HYBRID III NECK FLEXION CALIBRATION
ROTATION ABOUT OCCIPITAL CONDYLE
TRC TEST NUMBER: 45C34NF1
572E SN045 NECK FLEXION CAL34
RUN NUMBER: 120696 1255;1
120
90
60
30
0
-30
-60
ANGLE (°)
-20
0
20
40
60
80
100
120
140
160
180
200
TIME (MS)
CHANNEL: THETA
FILTER: CH. CLASS 60
PEAK DATA: 41.95 ° @ 60.32 MS; -31.83 ° @ 187.76 MS


PART 572-E HYBRID III NECK FLEXION CALIBRATION
TOTAL ROTATION
TRC TEST NUMBER: 45C34NF1
572E SN045 NECK FLEXION CAL34
RUN NUMBER: 120696.1255;1
ANGLE (°)
120
90
60
30
0
-30
-60
-20
0
20
40
60
80
100
120
140
160
180
200
TIME (MS)
CHANNEL: TOTAN
FILTER: CH. CLASS 60
PEAK DATA: 77.85 ° @ 60.08 MS; -54.14 ° @ 186.16 MS


PART 572-E HYBRID III NECK FLEXION CALIBRATION
NECK FORCE X AXIS
TRC TEST NUMBER: 45C34NF1
572E SN045 NECK FLEXION CAL34
RUN NUMBER: 120696.1255;1
160
120
80
40
0
-40
-80
FORCE (N X 10¹)
-20
0
20
40
60
80
100
120
140
160
180
200
TIME (MS)
CHANNEL: NEKXF
FILTER: CH. CLASS 60
PEAK DATA: 861.31 N @ 56.64 MS; -170.17 N @ 171.36 MS


PART 572-E HYBRID III NECK FLEXION CALIBRATION
NECK MOMENT Y AXIS
TRC TEST NUMBER: 45C34NF1
572E SN045 NECK FLEXION CAL34
RUN NUMBER: 120696.1255;1
160
120
80
40
0
-40
-80
TORQUE (N-M)
-20
0
20
40
60
80
100
120
140
160
180
200
TIME (MS)
CHANNEL: NEKYM
FILTER: CH. CLASS 60
PEAK DATA: 80.06 N-M @ 49.36 MS; -33.56 N-M @ 14.64 MS


PART 572-E HYBRID III NECK FLEXION CALIBRATION
TOTAL MOMENT ABOUT OCCIPITAL CONDYLE
TRC TEST NUMBER: 45C34NF1
572E SN045 NECK FLEXION CAL34
RUN NUMBER: 120696.1255;1
TORQUE (N-M)
160
120
80
40
0
-40
-80
-20
0
20
40
60
80
100
120
140
160
180
200
TIME (MS)
CHANNEL: NEKOM
FILTER: CH. CLASS 60
PEAK DATA: 93.34 N-M @ 49.60 MS; -23.80 N-M @ 14.00 MS

TRANSPORTATION RESEARCH CENTER INC.

NECK EXTENSION TEST - 6 CHANNEL TRANSDUCER

HYBRID III 06-DEC-96

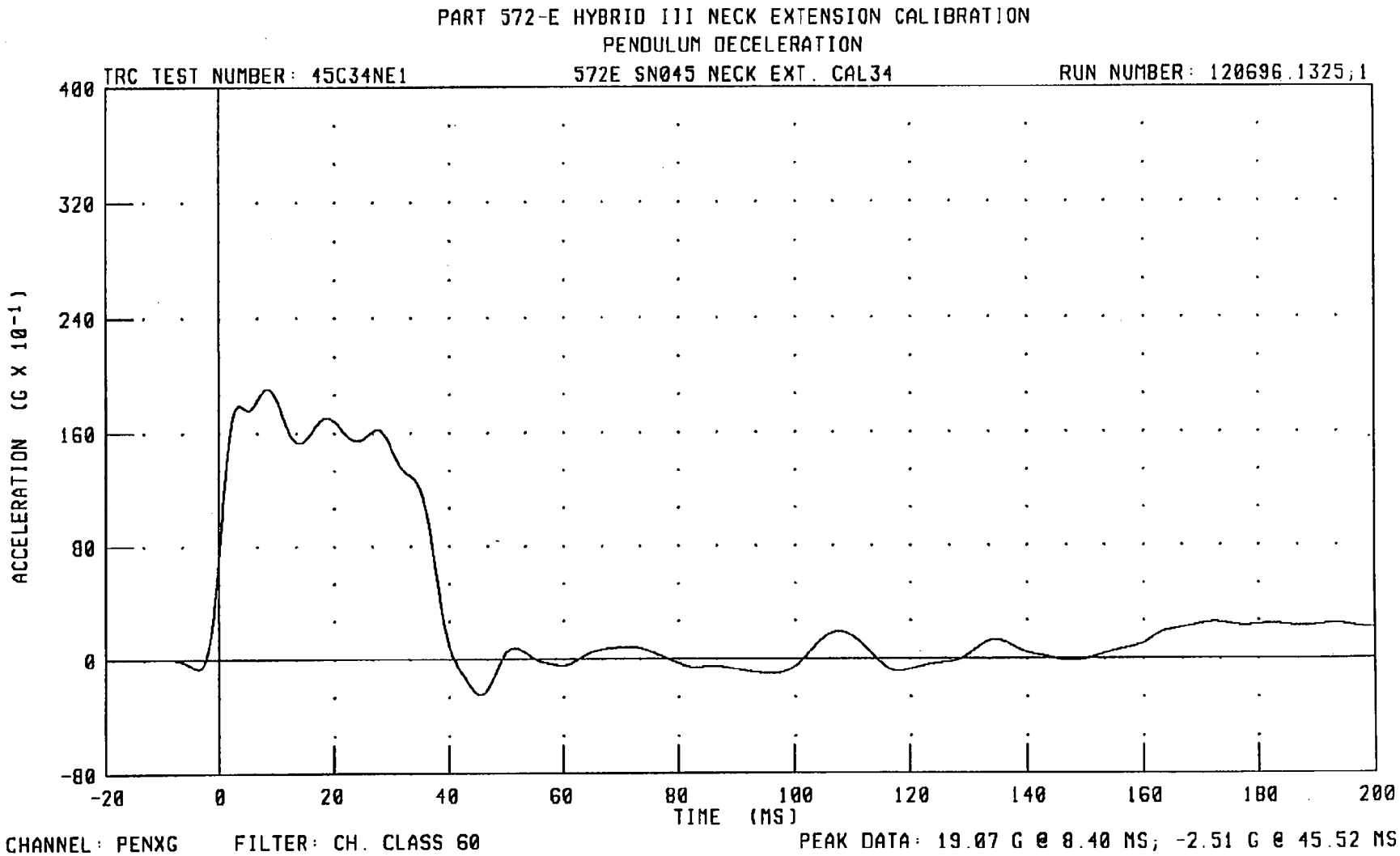
TRC INC. TEST NO: 45C34NE1 572E SN045 NECK EXT. CAL34

TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE		20.6 - 22.2 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY		10 - 70 %	32.0 %
IMPACT VELOCITY		5.95 - 6.19 M/S	6.05 M/S
PENDULUM DECELERATION	10 MS	17.20 - 21.20 G	18.30 G
	20 MS	14.00 - 19.00 G	16.81 G
	30 MS	11.00 - 16.00 G	14.80 G
MAX PENDULUM G		22 G MAX	19.07 G
MAX PENDULUM G ABOVE 30 MS		22 G MAX	14.72 G
DECELERATION-TIME CURVE DECAY TIME TO 5 G		38 - 46 MS	38.16 MS
D PLANE ROTATION	MAX	81 - 106 DEG.	102.74 DEG.
	TIME	72 - 82 MS	74.56 MS
MOMENT ABOUT OCCIPITAL CONDYLE	MIN	-80.0/-52.9 NM	-74.51 NM
	TIME	65 - 79 MS	69.92 MS
ROTATION ANGLE-TIME CURVE DECAY TIME TO ZERO		147 - 174 MS	157.44 MS
NEGATIVE MOMENT-TIME CURVE DECAY TIME TO ZERO		120 - 148 MS	141.36 MS

TEST MEETS SPECIFICATIONS

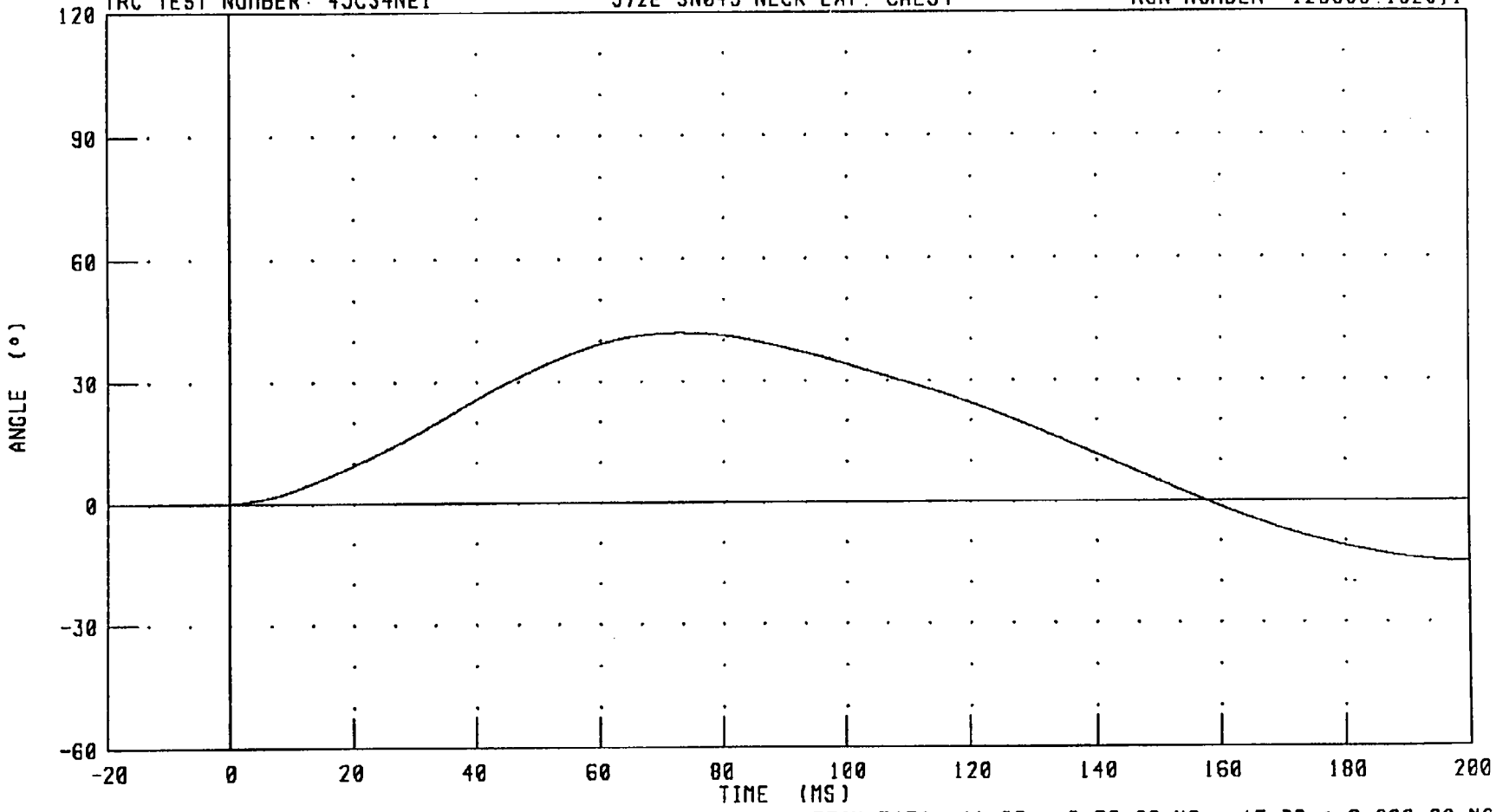
TECHNICIAN Bryan Crabtree

RUN NUMBER: 120696.1324;1


PART 572-E HYBRID III NECK EXTENSION CALIBRATION
PENDULUM DECELERATION
TRC TEST NUMBER: 45C34NE1
572E SN045 NECK EXT. CAL34
RUN NUMBER: 120696.1325;1
400
320
240
160
80
0
-80
ACCELERATION (G X 10-1)
-20
0
20
40
60
80
100
120
140
160
180
200
TIME (MS)
CHANNEL: PENXG
FILTER: CH. CLASS 60
PEAK DATA: 19.07 G @ 8.40 MS; -2.51 G @ 45.52 MS

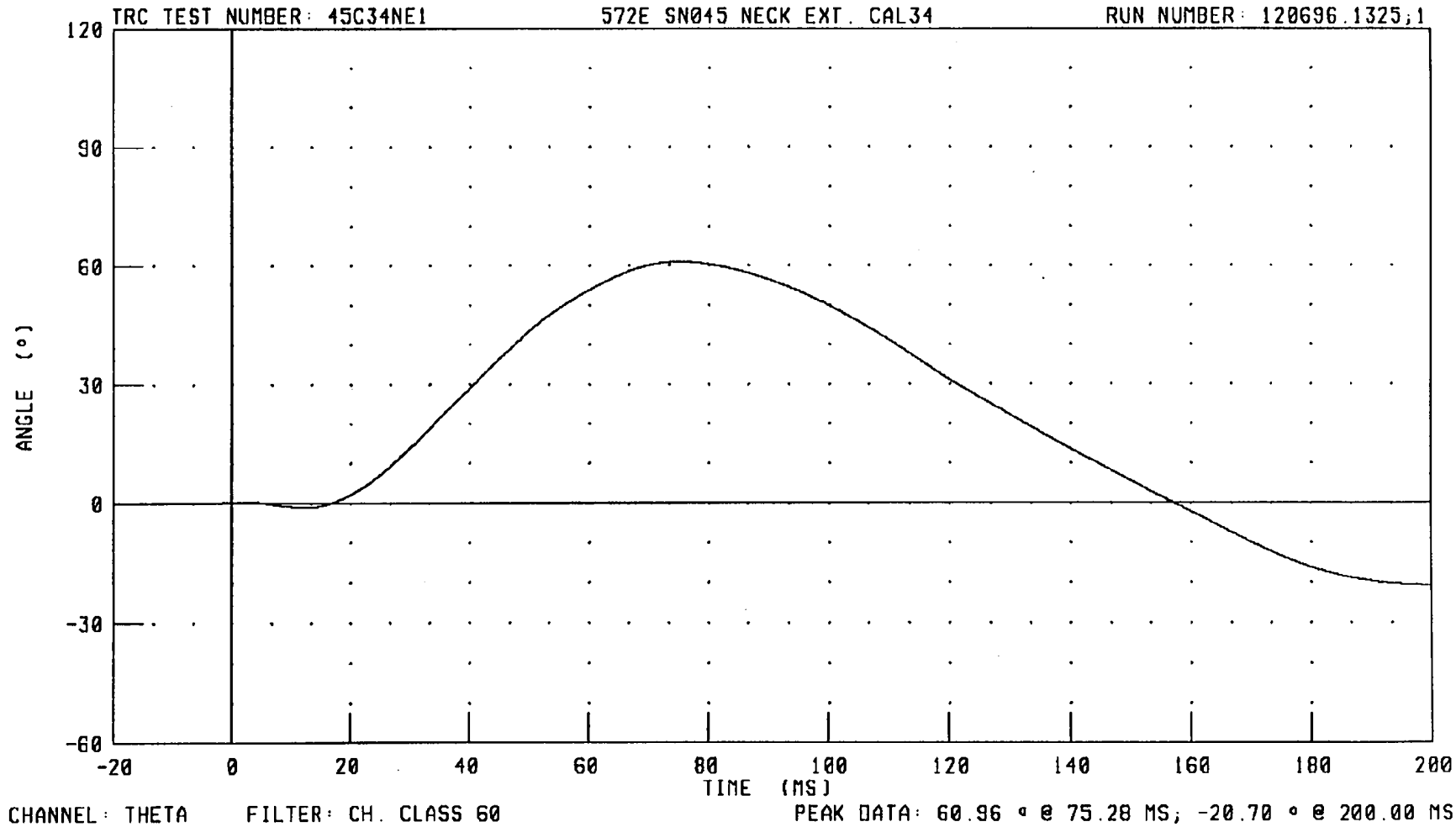
PART 572-E HYBRID III NECK EXTENSION CALIBRATION
ROTATION ABOUT BASE OF NECK

TRC TEST NUMBER: 45C34NE1 572E SN045 NECK EXT. CAL34 RUN NUMBER: 120696.1325;1

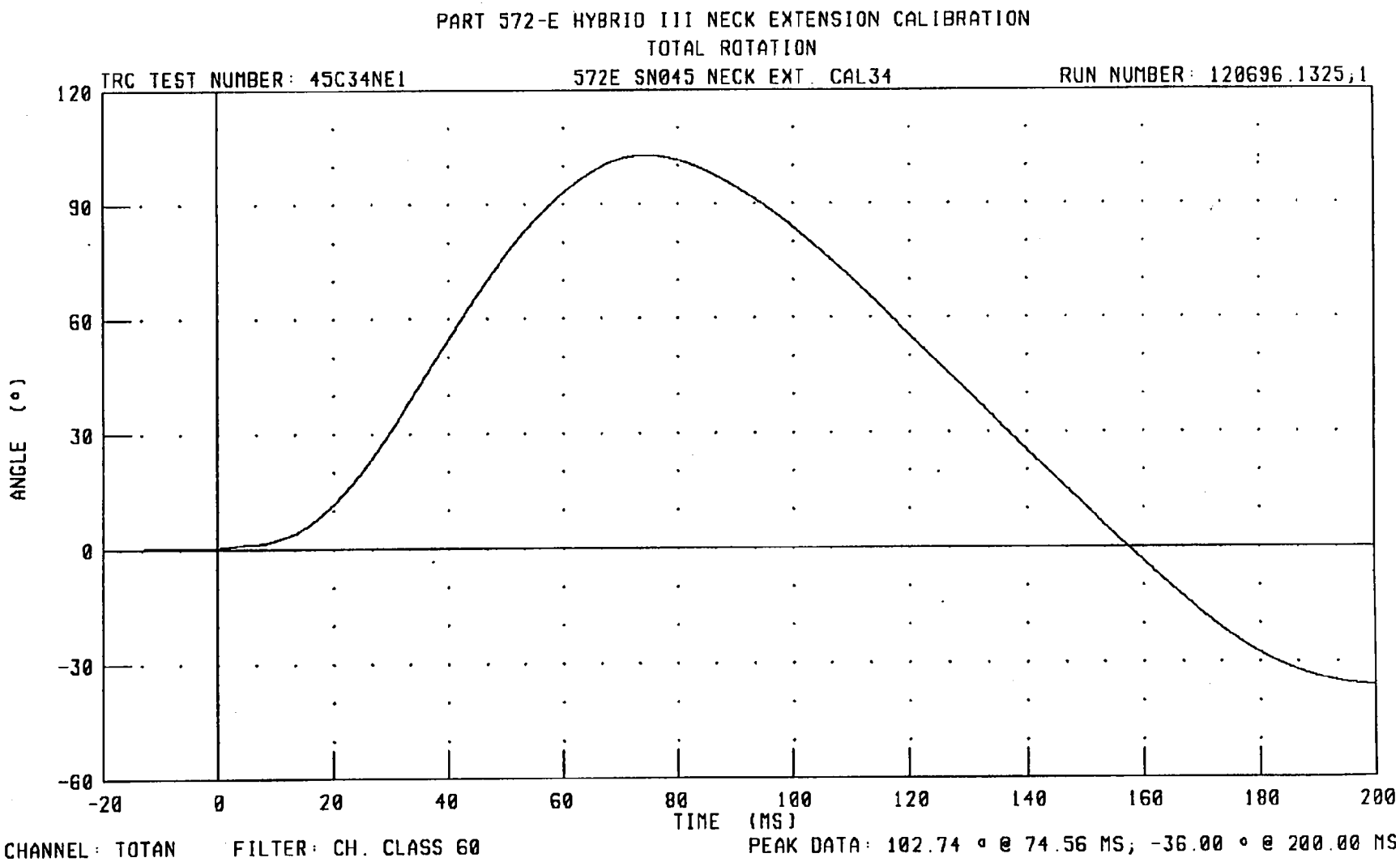


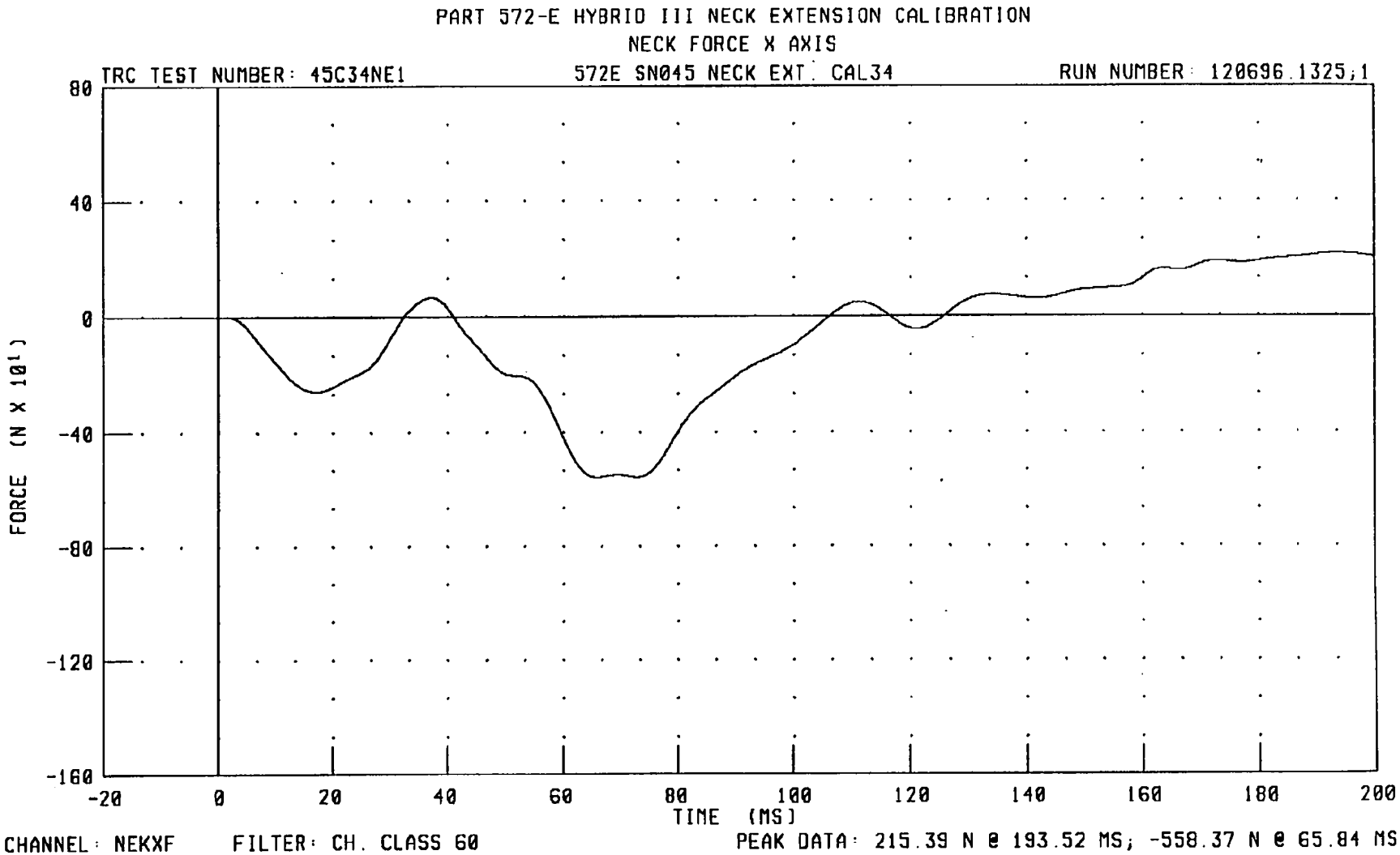
CHANNEL: BETA FILTER: CH. CLASS 60 PEAK DATA: 41.83 ° @ 72.96 MS; -15.30 ° @ 200.00 MS

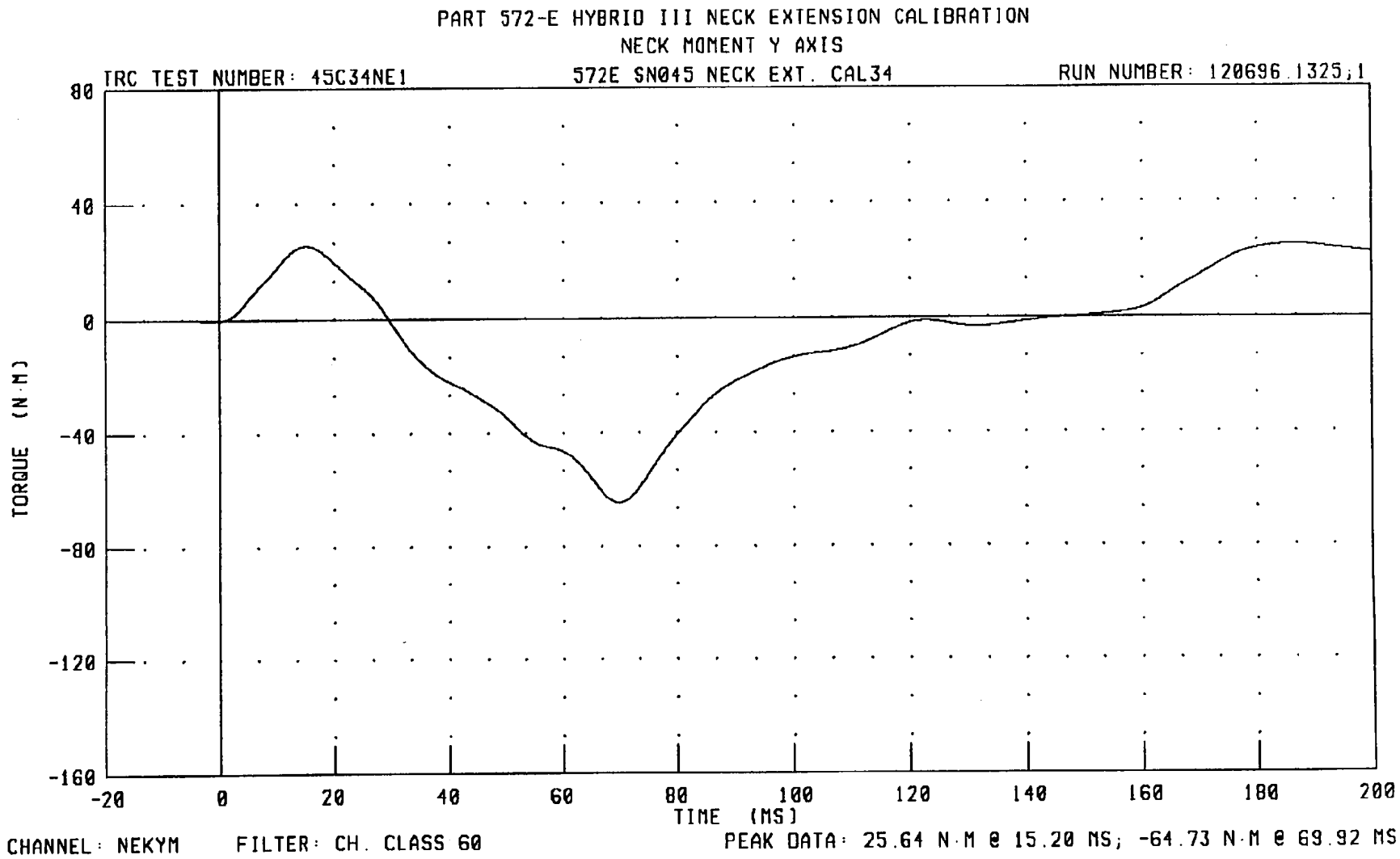
PART 572-E HYBRID III NECK EXTENSION CALIBRATION
ROTATION ABOUT OCCIPITAL CONDYLE

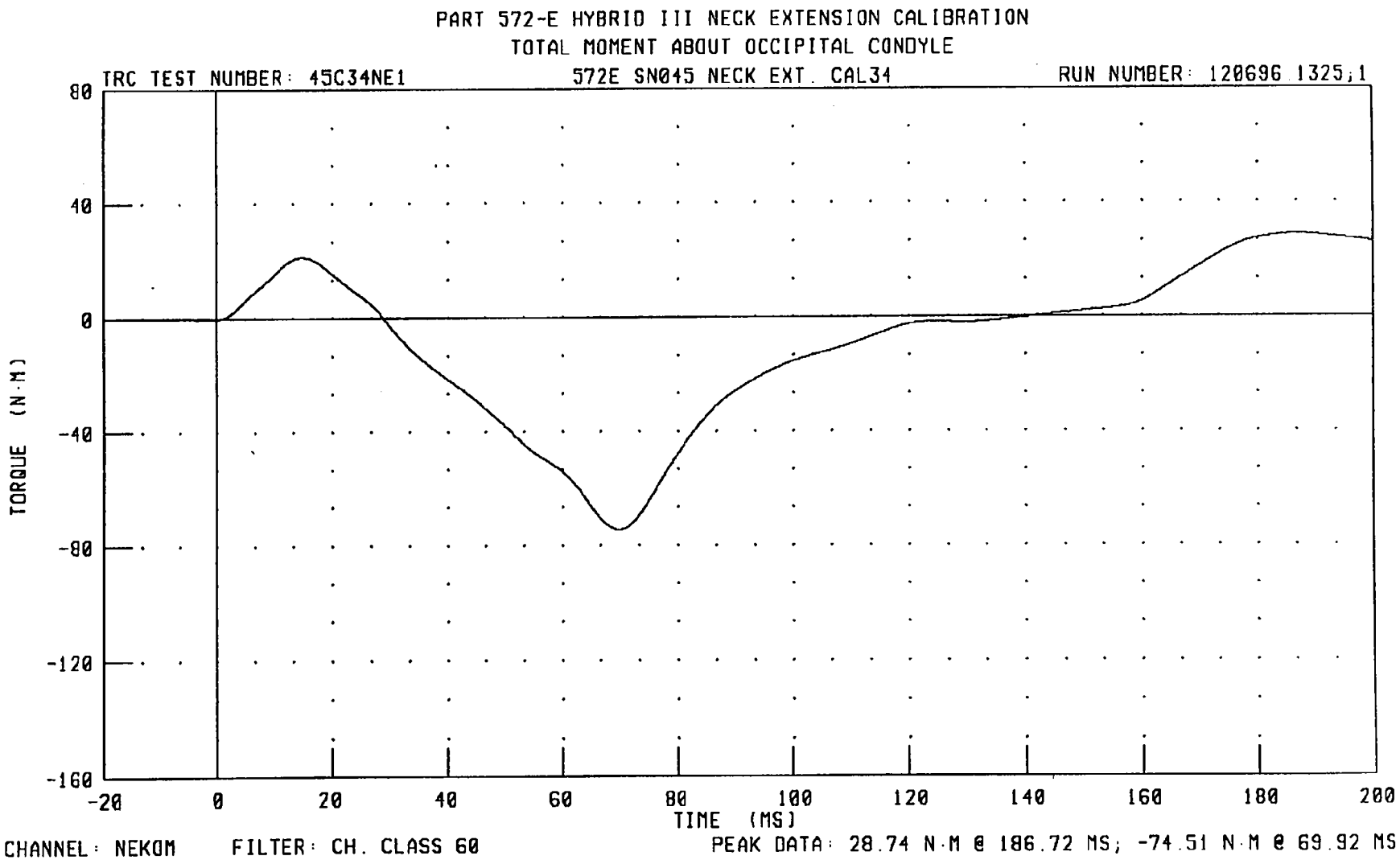


CHANNEL: THETA FILTER: CH. CLASS 60 PEAK DATA: 60.96 ° @ 75.28 MS; -20.70 ° @ 200.00 MS


PART 572-E HYBRID III NECK EXTENSION CALIBRATION
TOTAL ROTATION
TRC TEST NUMBER: 45C34NE1
572E SN045 NECK EXT. CAL34
RUN NUMBER: 120696.1325;1
120
90
60
30
0
-30
-60
ANGLE (°)
-20
0
20
40
60
80
100
120
140
160
180
200
TIME (MS)
CHANNEL: TOTAN
FILTER: CH. CLASS 60
PEAK DATA: 102.74 ° @ 74.56 MS; -36.00 ° @ 200.00 MS


PART 572-E HYBRID III NECK EXTENSION CALIBRATION
NECK FORCE X AXIS
TRC TEST NUMBER: 45C34NE1
572E SN045 NECK EXT. CAL34
RUN NUMBER: 120696.1325;1
80
40
0
-40
-80
-120
-160
FORCE (N X 10¹)
-20
0
20
40
60
80
100
120
140
160
180
200
TIME (MS)
CHANNEL: NEKXF
FILTER: CH. CLASS 60
PEAK DATA: 215.39 N @ 193.52 MS; -558.37 N @ 65.84 MS


PART 572-E HYBRID III NECK EXTENSION CALIBRATION
NECK MOMENT Y AXIS
TRC TEST NUMBER: 45C34NE1
572E SN045 NECK EXT. CAL34
RUN NUMBER: 120696.1325;1
80
40
0
-40
-80
-120
-160
TORQUE (N.M)
-20
0
20
40
60
80
100
120
140
160
180
200
TIME (MS)
CHANNEL: NEKYM
FILTER: CH. CLASS 60
PEAK DATA: 25.64 N.M @ 15.20 MS; -64.73 N.M @ 69.92 MS


PART 572-E HYBRID III NECK EXTENSION CALIBRATION
TOTAL MOMENT ABOUT OCCIPITAL CONDYLE
TRC TEST NUMBER: 45C34NE1
572E SN045 NECK EXT. CAL34
RUN NUMBER: 120696 1325;1
80
40
0
-40
-80
-120
-160
TORQUE (N-M)
-20
0
20
40
60
80
100
120
140
160
180
200
TIME (MS)
CHANNEL: NEKOM
FILTER: CH. CLASS 60
PEAK DATA: 28.74 N-M @ 186.72 MS; -74.51 N-M @ 69.92 MS

TRANSPORTATION RESEARCH CENTER INC.

THORAX IMPACT TEST

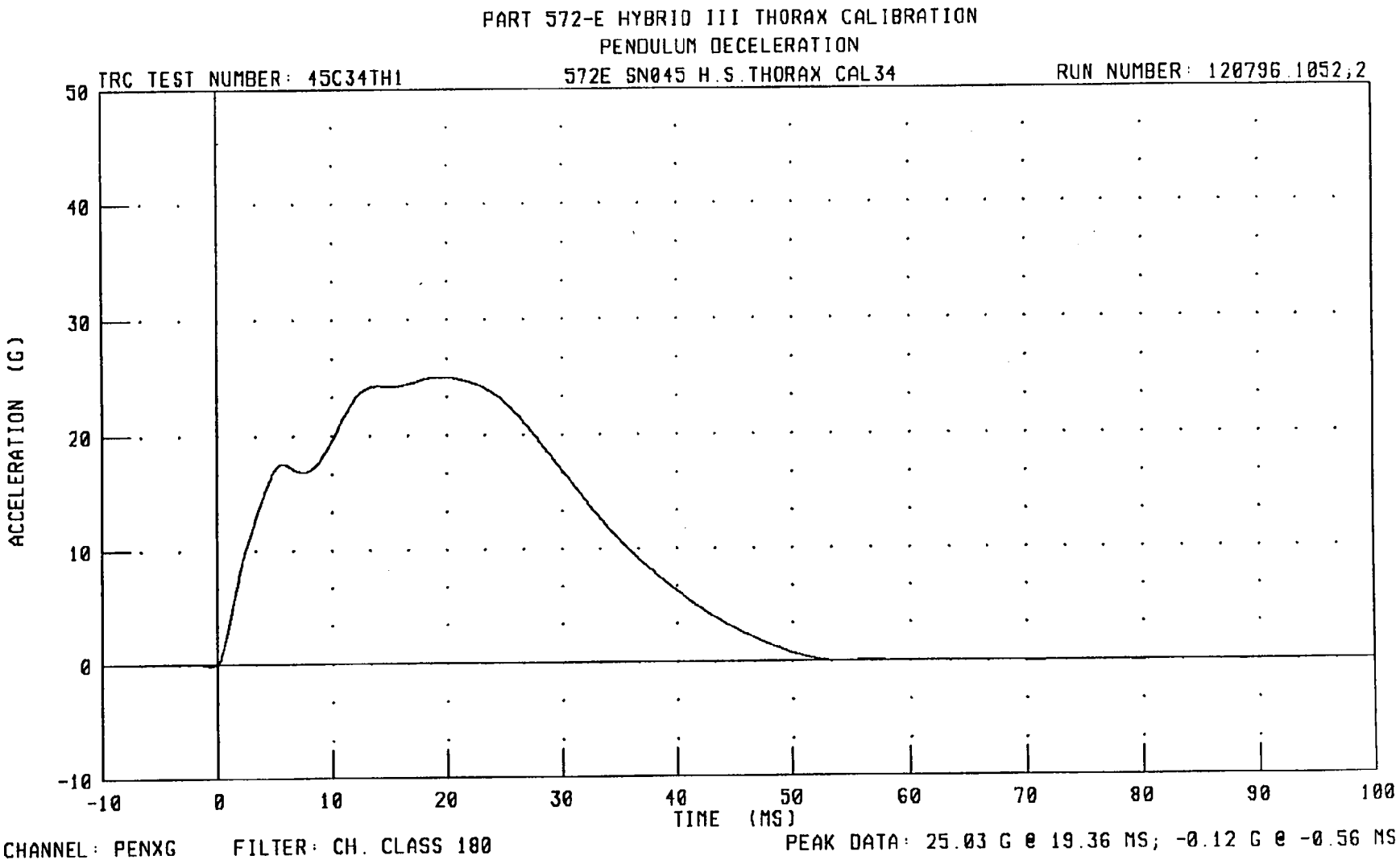
HYBRID III 07-DEC-96

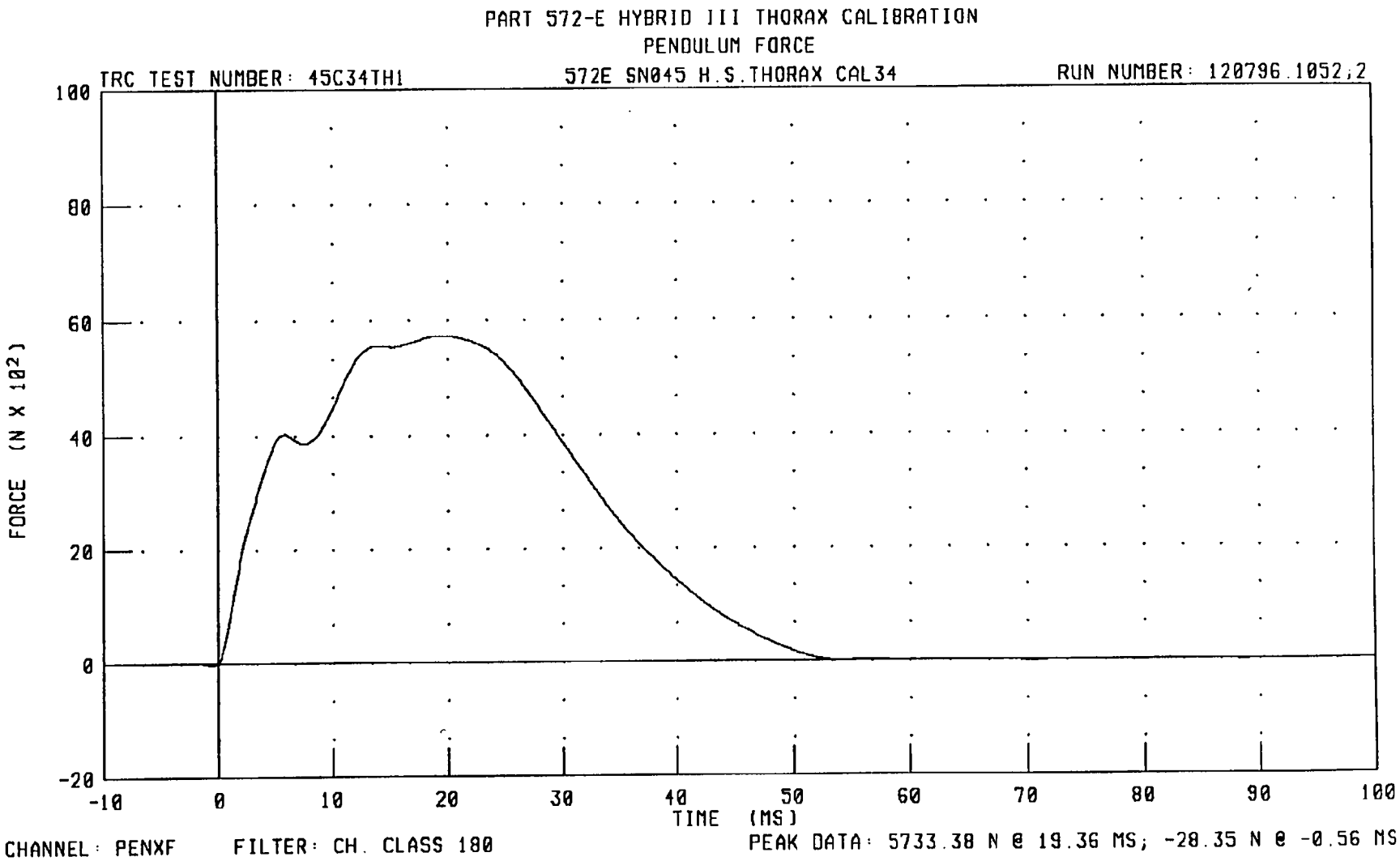
TRC INC. TEST NO: 45C34TH1 572E SN045 H.S.THORAX CAL34

TEST PARAMETER	HIGH SPEED TEST SPECIFICATION	TEST RESULTS
TEMPERATURE	20.6-22.2 DEG. C	21.2 DEG. C
RELATIVE HUMIDITY	10 - 70 %	32.0 %
PENDULUM VELOCITY	6.59 - 6.83 M/S	6.65 M/S
MAXIMUM DEFLECTION	63.5 - 72.6 MM	69.0 MM
MAXIMUM RESISTIVE FORCE	5159 - 5894 N	5733. N
INTERNAL HYSTERESIS	69% - 85%	74.4%

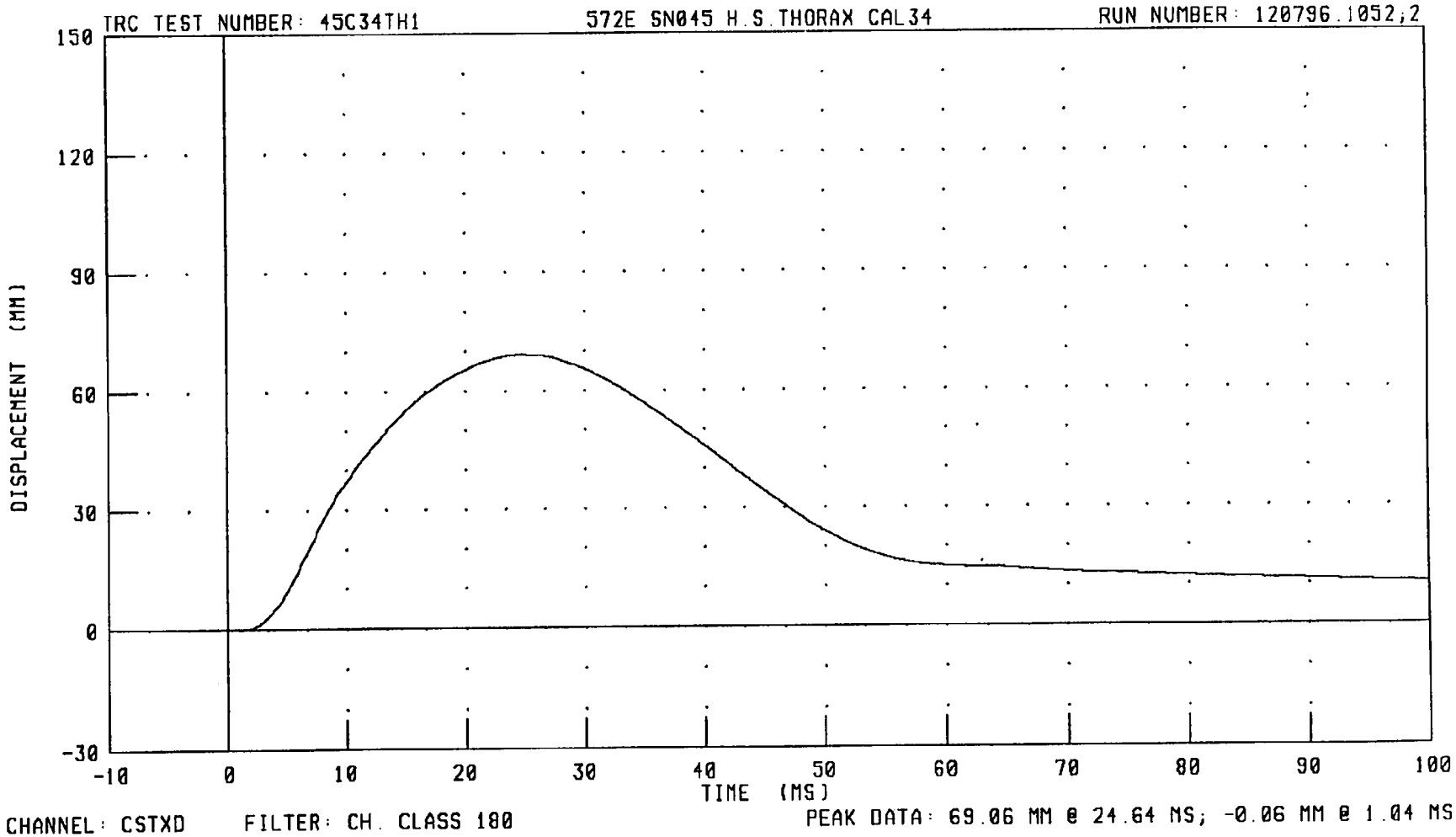
TEST MEETS SPECIFICATIONS

TECHNICIAN Bryce Colt RUN NUMBER: 120796.1052;2


PART 572-E HYBRID III THORAX CALIBRATION
PENDULUM DECELERATION
TRC TEST NUMBER: 45C34TH1
572E SN045 H.S.THORAX CAL34
RUN NUMBER: 120796.1052;2
ACCELERATION (G)
50
40
30
20
10
0
-10
-10
0
10
20
30
40
50
60
70
80
90
100
TIME (MS)
CHANNEL: PENXG
FILTER: CH. CLASS 180
PEAK DATA: 25.03 G @ 19.36 MS; -0.12 G @ -0.56 MS


PART 572-E HYBRID III THORAX CALIBRATION
PENDULUM FORCE
TRC TEST NUMBER: 45C34TH1
572E SN045 H.S.THORAX CAL34
RUN NUMBER: 120796.1052;2
100
80
60
40
20
0
-20
FORCE (N X 10²)
-10
0
10
20
30
40
50
60
70
80
90
100
TIME (MS)
CHANNEL: PENXF
FILTER: CH. CLASS 180
PEAK DATA: 5733.38 N @ 19.36 MS; -28.35 N @ -0.56 MS

PART 572-E HYBRID III THORAX CALIBRATION
STERNUM DISPLACEMENT

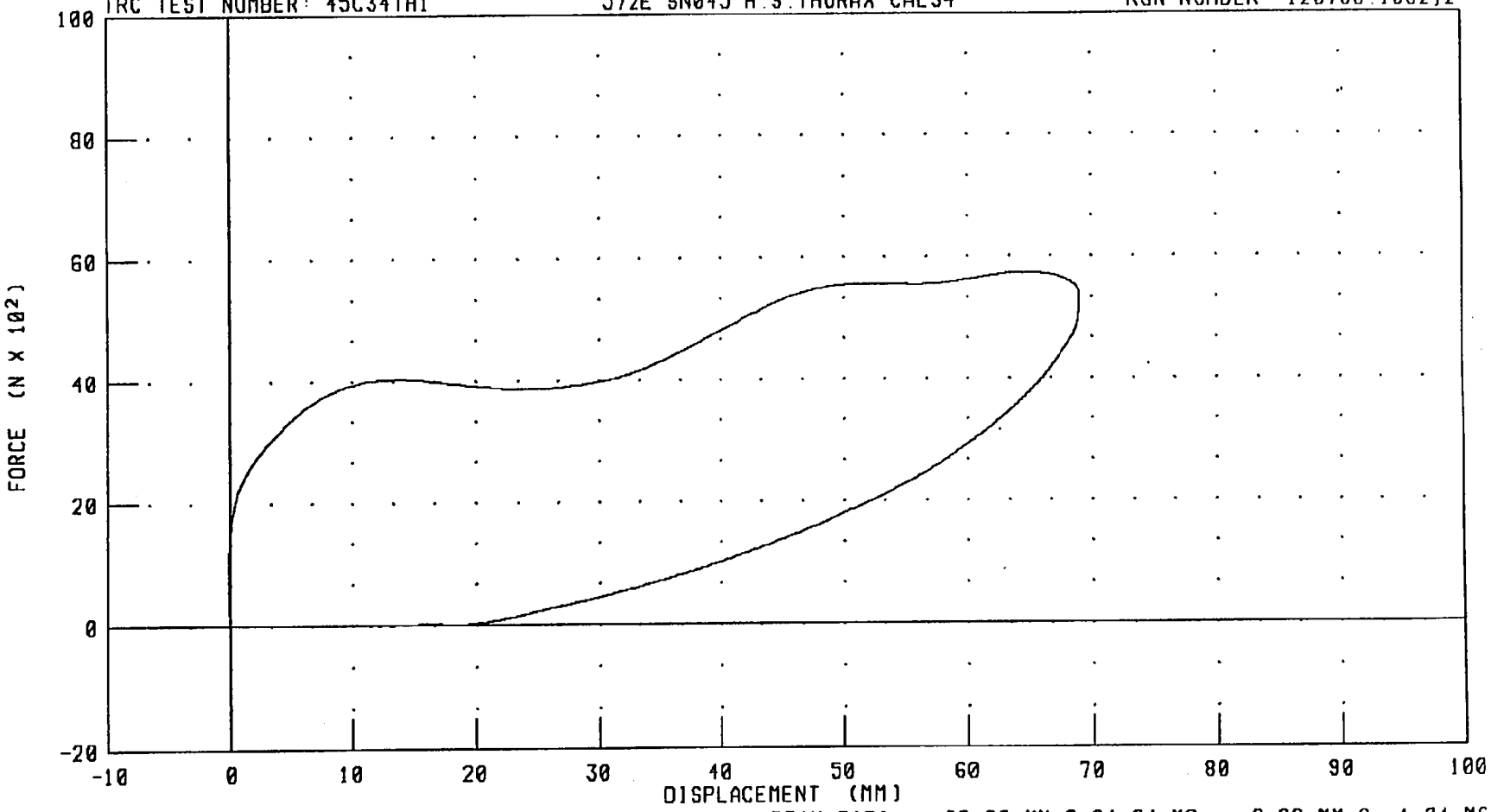


CHANNEL: CSTXD FILTER: CH. CLASS 180

PEAK DATA: 69.06 MM @ 24.64 MS; -0.06 MM @ 1.04 MS

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

TRC TEST NUMBER: 45C34TH1 572E SN045 H.S.THORAX CAL34 RUN NUMBER: 120796.1052;2



CHANNEL: CSTXD FILTER: CH. CLASS 180
PENXF CH. CLASS 180

PEAK DATA: 69.06 MM @ 24.64 MS; -0.06 MM @ 1.04 MS
5733.38 N @ 19.36 MS; -28.35 N @ -0.56 MS

TRANSPORTATION RESEARCH CENTER INC.

RIGHT KNEE IMPACT TEST

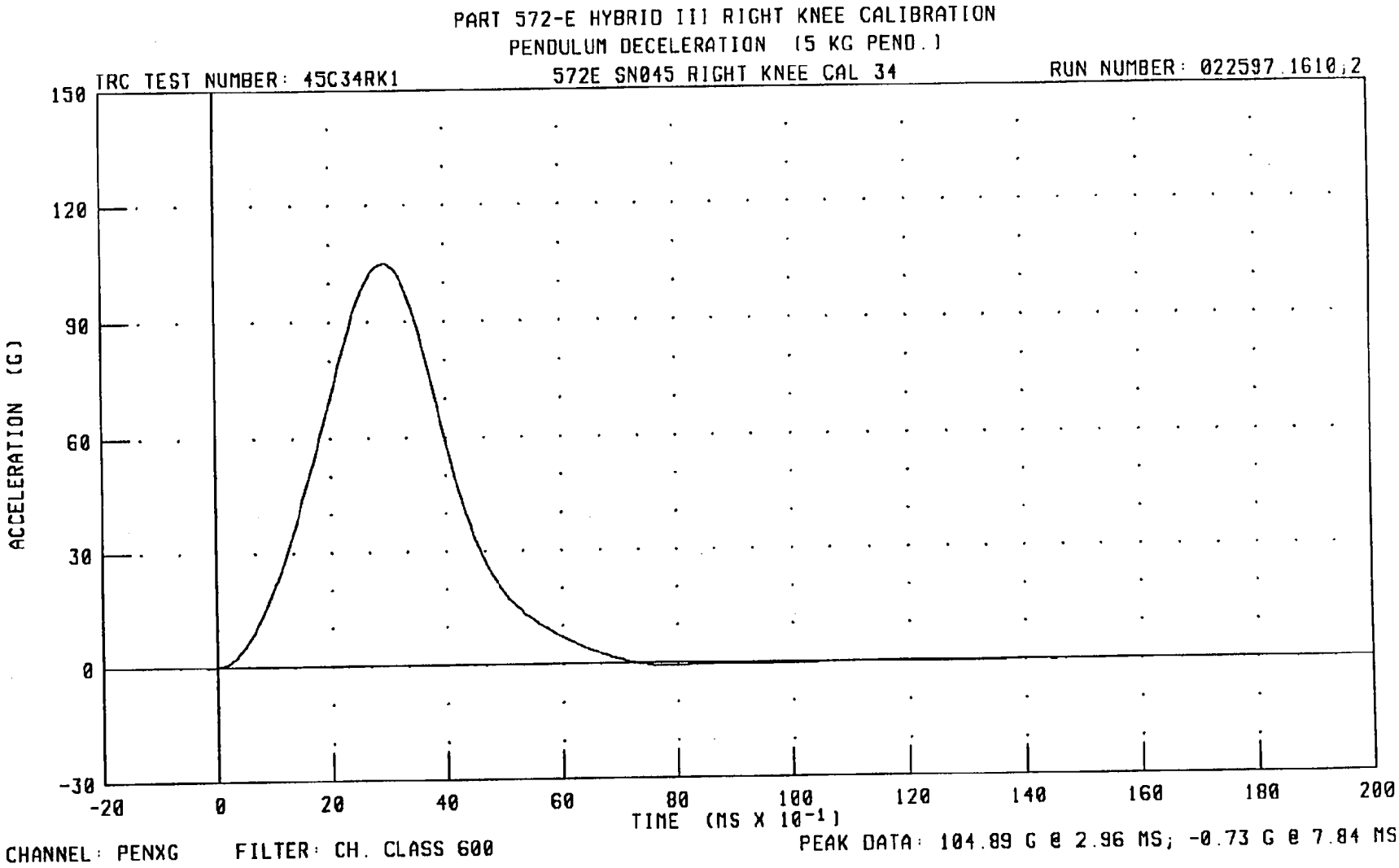
HYBRID III 05-DEC-96

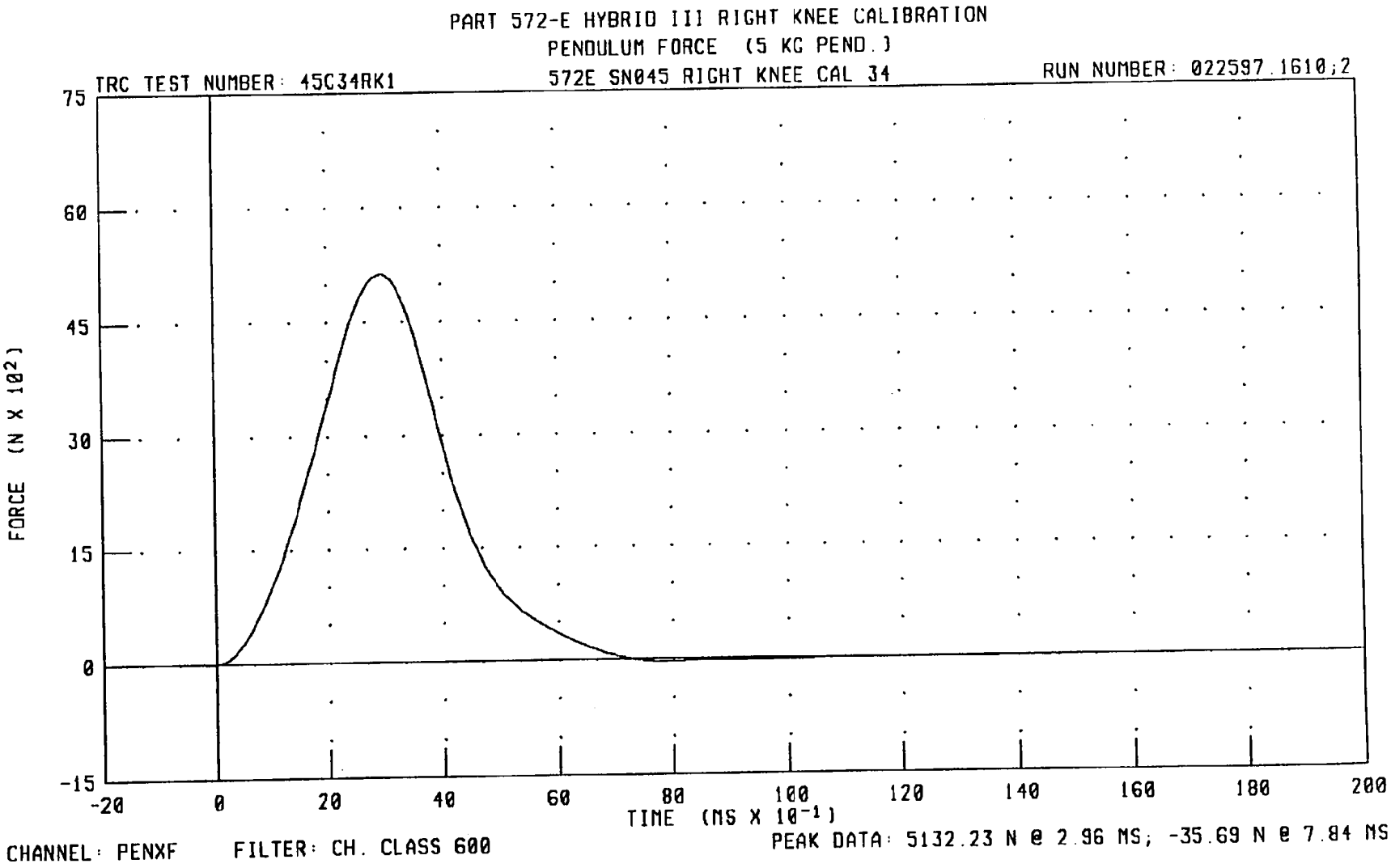
TRC INC. TEST NO: 45C34RK1 572E SN045 RIGHT KNEE CAL 34

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9-25.6 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY	10 - 70 %	32.0 %
PROBE VELOCITY	2.07 - 2.13 M/S	2.11 M/S
PEAK KNEE IMPACT FORCE 5.0 KG PENDULUM	4715 - 5782 N	5132.2 N

TEST MEETS SPECIFICATIONS

TECHNICIAN Bryan Cook RUN NUMBER: 022597.1609;2


PART 572-E HYBRID III RIGHT KNEE CALIBRATION
PENDULUM DECELERATION (5 KG PEND.)
TRC TEST NUMBER: 45C34RK1
572E SN045 RIGHT KNEE CAL 34
RUN NUMBER: 022597.1610.2
ACCELERATION (G)
150
120
90
60
30
0
-30
-20
0
20
40
60
80
100
120
140
160
180
200
TIME (MS X 10-1)
CHANNEL: PENXG
FILTER: CH. CLASS 600
PEAK DATA: 104.89 G @ 2.96 MS; -0.73 G @ 7.84 MS


PART 572-E HYBRID III RIGHT KNEE CALIBRATION
PENDULUM FORCE (5 KG PEND.)
572E SN045 RIGHT KNEE CAL 34
TRC TEST NUMBER: 45C34RK1
RUN NUMBER: 022597.1610;2
FORCE (N X 10²)
75
60
45
30
15
0
-15
-20
0
20
40
60
80
100
120
140
160
180
200
TIME (MS X 10⁻¹)
CHANNEL: PENXF
FILTER: CH. CLASS 600
PEAK DATA: 5132.23 N @ 2.96 MS; -35.69 N @ 7.84 MS

TRANSPORTATION RESEARCH CENTER INC.

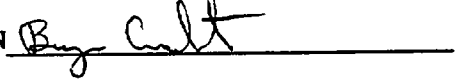
LEFT KNEE IMPACT TEST

HYBRID III 05-DEC-96

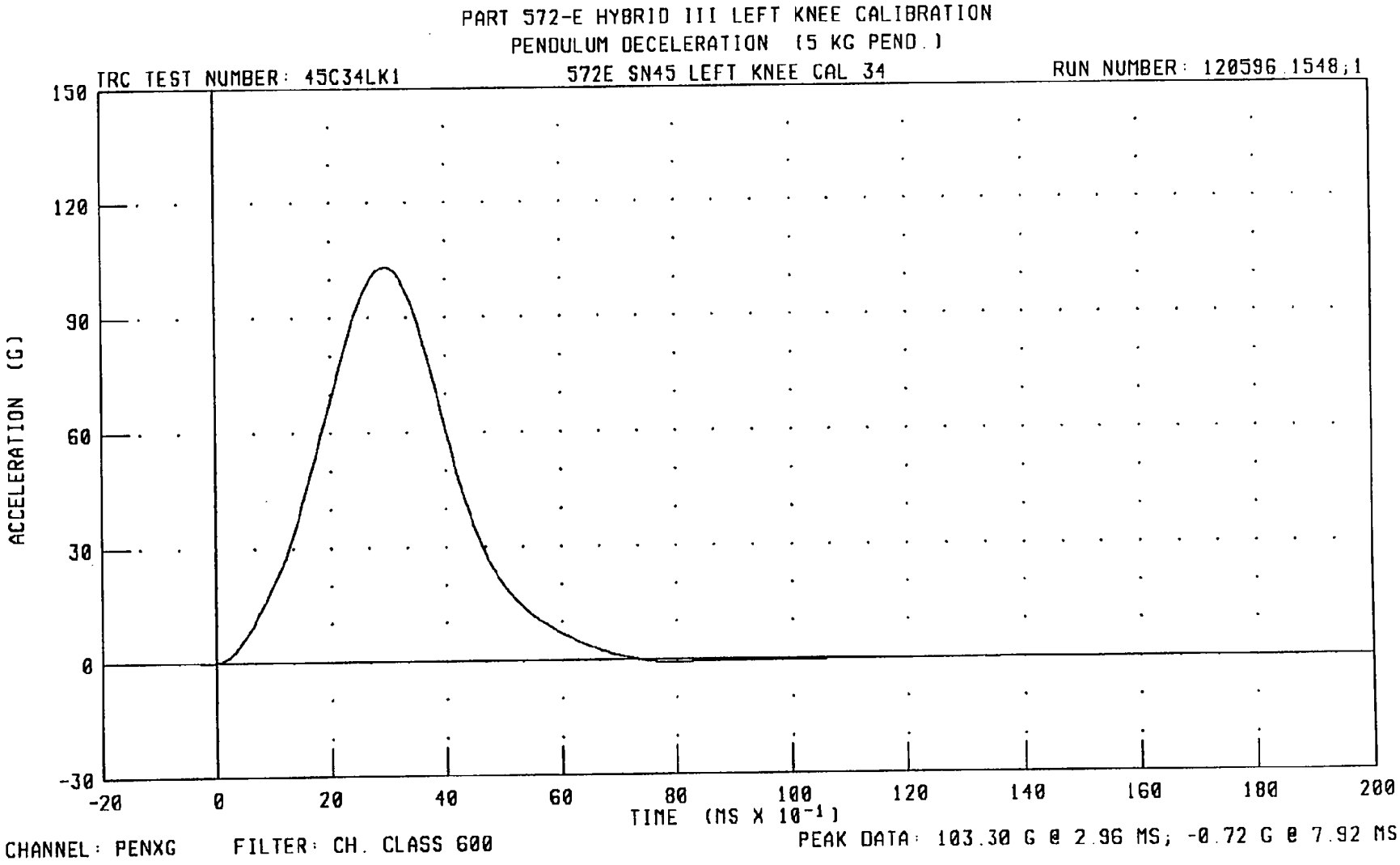
TRC INC. TEST NO: 45C34LK1 572E SN45 LEFT KNEE CAL 34

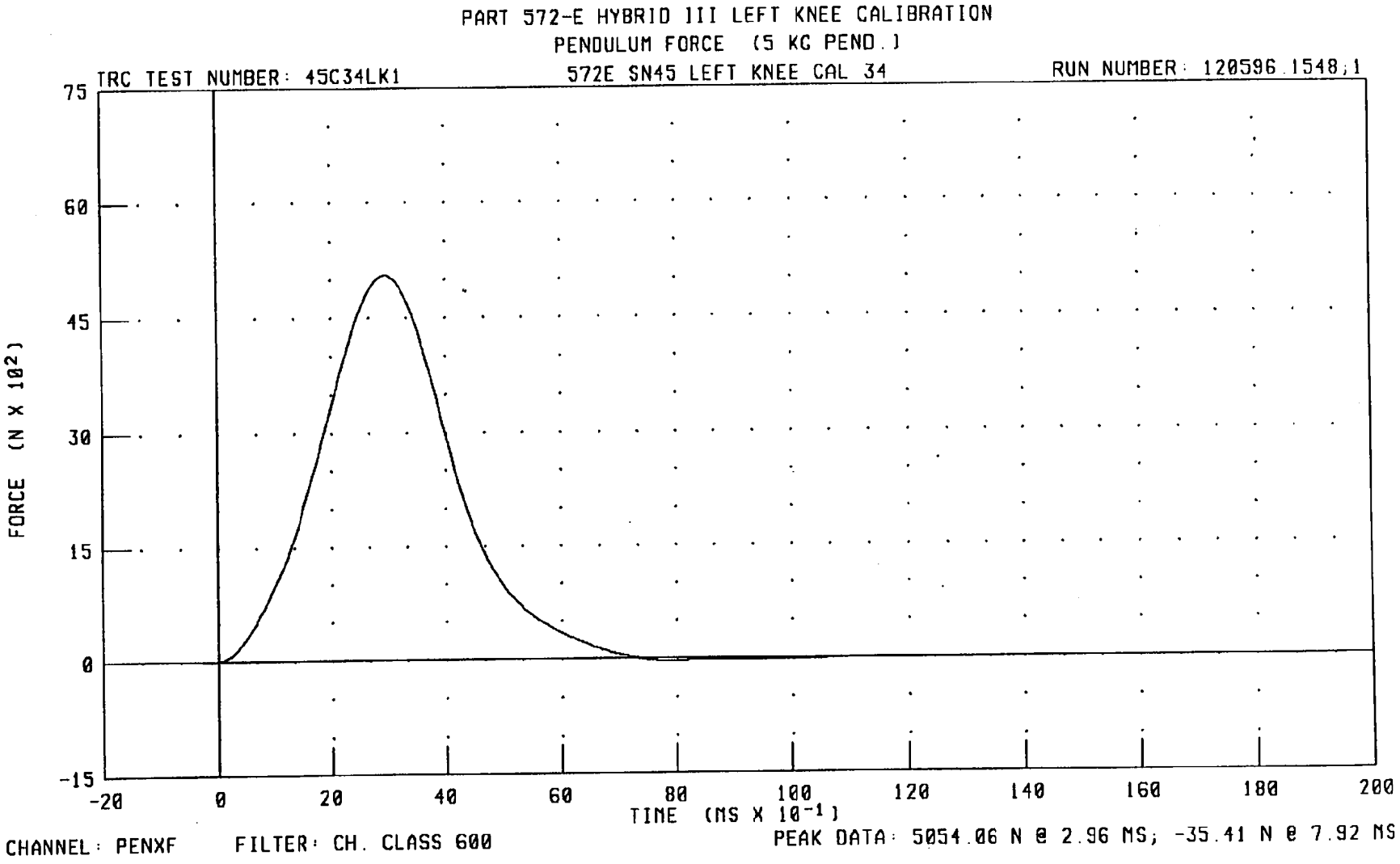
TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9-25.6 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY	10 - 70 %	32.0 %
PROBE VELOCITY	2.07 - 2.13 M/S	2.08 M/S
PEAK KNEE IMPACT FORCE 5.0 KG PENDULUM	4715 - 5782 N	5054.0 N

TEST MEETS SPECIFICATIONS

TECHNICIAN 

RUN NUMBER: 120596.1547;1


PART 572-E HYBRID III LEFT KNEE CALIBRATION
PENDULUM DECELERATION (5 KG PEND.)
TRC TEST NUMBER: 45C34LK1
572E SN45 LEFT KNEE CAL 34
RUN NUMBER: 120596.1548;1
ACCELERATION (G)
150
120
90
60
30
0
-30
-20
0
20
40
60
80
100
120
140
160
180
200
TIME (MS X 10⁻¹)
CHANNEL: PENXG
FILTER: CH. CLASS 600
PEAK DATA: 103.30 G @ 2.96 MS; -0.72 G @ 7.92 MS


PART 572-E HYBRID III LEFT KNEE CALIBRATION
PENDULUM FORCE (5 KG PEND.)
TRC TEST NUMBER: 45C34LK1
572E SN45 LEFT KNEE CAL 34
RUN NUMBER: 120596.1548;1
FORCE (N X 10²)
75
60
45
30
15
0
-15
-20
0
20
40
60
80
100
120
140
160
180
200
TIME (MS X 10⁻¹)
CHANNEL: PENXF
FILTER: CH. CLASS 600
PEAK DATA: 5054.06 N @ 2.96 MS; -35.41 N @ 7.92 MS

Appendix D

Miscellaneous Test Information

Dummy Instrumentation Placement

Dummy Manufacturer/Serial Number: Alderson Research Labs/090

Seating Position: Driver

Location	Axis	Mfr	Model	S/N	Orientation (+ Sensing)
Head Acceleration	X	Endevco	7264	AJ4R6	Rearward
Head Acceleration	Y	Endevco	7264	AJ4E9	Left
Head Acceleration	Z	Endevco	7264	AJRG5	Up
Neck Force	X	Denton	1716	0627FX	*
Neck Force	Y	Denton	1716	0627FY	*
Neck Force	Z	Denton	1716	0627FZ	*
Neck Moment	X	Denton	1716	0627MX	*
Neck Moment	Y	Denton	1716	0627MY	*
Neck Moment	Z	Denton	1716	0627MZ	*
Chest Acceleration	X	Endevco	7264	ACCP1	Front
Chest Acceleration	Y	Endevco	7264	AFYD2	Left
Chest Acceleration	Z	Endevco	7264	AJ7J9	Up
Chest Angular Velocity	X	Systdonner	QRS11-03600-100	16392	N/A
Chest Angular Velocity	Y	Systdonner	QRS11-03600-100	12419	N/A
Chest Angular Velocity	Z	Systdonner	QRS11-0500-100	19532	N/A
Chest Deflection	X	Servo	14CB1-2847	83672-14	N/A
Pelvis Acceleration	X	Endevco	7264	J15368	Rear
Pelvis Acceleration	Y	Endevco	7264	J15372	Left
Pelvis Acceleration	Z	Endevco	7264	J15383	Up

*See Sign Convention sheet for positive sensing orientation of neck load channels.

Dummy Instrumentation Placement

Dummy Manufacturer/Serial Number: Humanetics/045

Seating Position: Passenger

Location	Axis	Mfr	Model	S/N	Orientation (+ Sensing)
Head Acceleration	X	Endevco	7264	EH75J	Rearward
Head Acceleration	Y	Endevco	7264	FJ66J	Left
Head Acceleration	Z	Endevco	7264	EY99J	Up
Neck Force	X	Denton	1716	0452FX	*
Neck Force	Y	Denton	1716	0452FY	*
Neck Force	Z	Denton	1716	0452FZ	*
Neck Moment	X	Denton	1716	0452MX	*
Neck Moment	Y	Denton	1716	0452MY	*
Neck Moment	Z	Denton	1716	0452MZ	*
Chest Acceleration	X	Endevco	7264	AJ4G7	Front
Chest Acceleration	Y	Endevco	7264	AJ507	Left
Chest Acceleration	Z	Endevco	7264	AC9F9	Up
Chest Angular Velocity	X	Systdonner	QRS-0500-100	19535	N/A
Chest Angular Velocity	Y	Systdonner	QRS-0500-100	19886	N/A
Chest Angular Velocity	Z	Systdonner	QRS-0500-100	19887	N/A
Chest Deflection	X	Servo	14CB1-2847	86696-1	N/A
Pelvis Acceleration	X	Endevco	7264	J17988	Rear
Pelvis Acceleration	Y	Endevco	7264	J18037	Left
Pelvis Acceleration	Z	Endevco	7264	AJ4R3	Up

*See Sign Convention sheet for positive sensing orientation of neck load channels.

Vehicle Instrumentation Placement

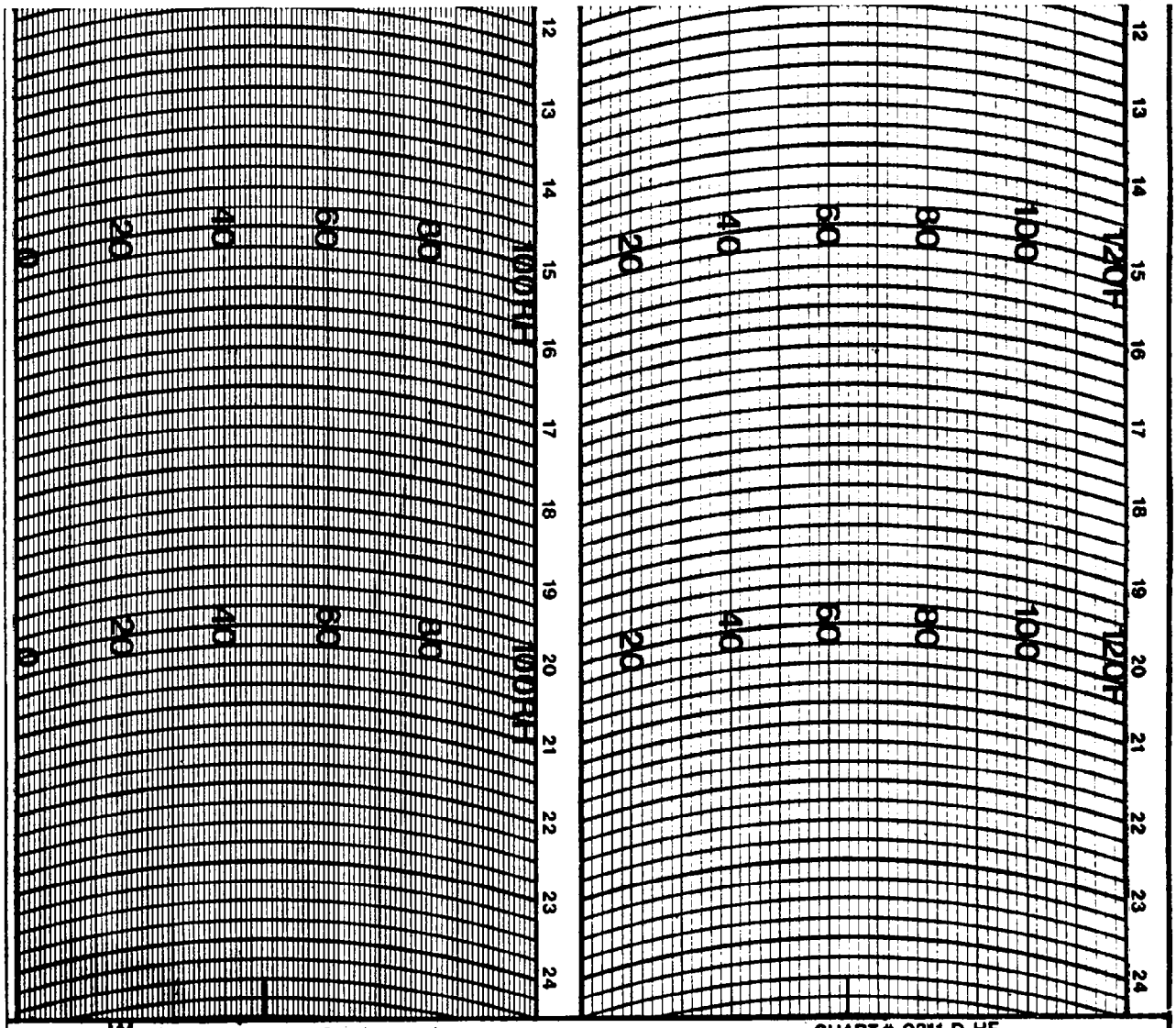
Location	Axis	Mfr	Model	S/N	Orientation (+ Sensing)
Center of Gravity Accelerometer	X	Endevco	7264	J13944	Rearward
Center of Gravity Accelerometer	Y	Endevco	7264	CH35H	Left
Center of Gravity Accelerometer	Z	Endevco	7264	J14148	
Center of Gravity Roll	X	Humphrey	RG28-0128-1	H-13	Left
Center of Gravity Pitch	Y	Humphrey	RG28-0128-1	H-19	Down
Center of Gravity Yaw	Z	Humphrey	RG28-0128-1	H-14	Right
Left B-Pillar	X	Endevco	7264	J14391	Rear
	Y	Endevco	7264	AMR92	Right
	Z	Endevco	7264	J10322	Up
Right B-Pillar	X	Endevco	7264	J11004	Rear
	Y	Endevco	7264	FH18J	Left
	Z	Endevco	7264	J14402	Down
Left Inner Door	X	Endevco	7264	AGR76	Rear
	Y	Endevco	7264	ANB43	Right
	Z	Endevco	7264	J10853	Up
Right Inner Door	X	Endevco	7264	ACB93	Rear
	Y	Endevco	7264	CK11H	Left
	Z	Endevco	7264	APB64	Down
Driver's Shoulder Belt Force		Lebow	3419	615	Tension
Driver's Lap Belt Outboard Force		Lebow	3419	612	Tension
Passenger's Shoulder Belt Force		Lebow	3419	590	Tension
Passenger's Lap Belt Outboard Force		Lebow	3419	236	Tension
Left Front Suspension Displacement		Celesco	PT-101-50A	A02465	Outward
Right Front Suspension Displacement		Celesco	PT-101-40A	A60896	Outward
Left Rear Suspension Displacement		Celesco	PT-101-40A	51807	Outward
Right Rear Suspension Displacement		Celesco	PT-101-40A	A37491	Outward
Vehicle Center of Gravity		Systron Donner	QRS11-03600-503	20603	Right

Roll Cart Instrumentation Placement

Location	Axis	Mfr	Model	S/N	Orientation (+ Sensing)
Left Frame Rail	X	Endevco	7264	J14392	Forward
Right Frame Rail	X	Endevco	7264	DR10JT	Rearward
Vehicle/Roll Cart Separation Upper Switch	NA	NA	NA	NA	NA
Vehicle/Roll Cart Separation Lower Switch	NA	NA	NA	NA	NA

Sign Convention

Accelerometers:	+X: Forward	
	+Y: Leftward	
	+Z: Upward	
Potentiometers:	+Chest Displacement:	Outward
	+Seat Belt Displacement:	Outward
	+Seat Belt Extension:	Elongation
	+Vehicle Displacement:	Outward
Load Cells:	+Femur Force:	Tension
	+Seat Belt Force:	Tension
	+Barrier Force:	Tension
Neck Load Cells:	+X Force:	Head Pushed Forward
	+Y Force:	Head Pushed Leftward
	+Z Force:	Head Pulled Upward (Tension on Neck)
	+X Moment:	Right Ear Rotating Toward Right Shoulder
	+Y Moment:	Head Rotating Forward
	+Z Moment:	Chin Rotating to Left Shoulder
Gyroscopes:	+X Roll:	To Right
	+Y Pitch:	Front Down
	+Z Yaw:	Counterclockwise
Quartz Rate Sensor:	+X Roll:	To Right
	+Y Pitch:	Front Down
	+Z Yaw:	Counterclockwise



WEATHER MEASURE
P.O. BOX 41257
SACRAMENTO, CA. 95841
PHONE (916)481-7565

HYGROTHERMOGRAPH
1 DAY

CHART # C311 D HF
PART # 699123

STATION _____ DATE ON _____ DATE OFF _____

END
of
NHTSA
VEHICLE DATABASE
REPORT
(***)