

**Vehicle Research and Test Center
1996 Chrysler Concorde 4-door
into a Deformable Load Cell Barrier
TRC Inc. Test Number: 041105-1**

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Section 1.0

Purpose and Test Procedure

Purpose

This test was conducted for National Highway Traffic Safety Administration (NHTSA) and Vehicle Research and Test Center (VRTC) by Transportation Research Center Inc. (TRC Inc). The purpose of this test was to determine the vehicle response of the subject vehicle, a 1996 Chrysler Concorde 4-door.

Test Procedure

This test was conducted per VRTC instructions. Data was obtained relative to FMVSS 208, “Occupant Crash Protection”.

The test vehicle was instrumented with two (2) accelerometers to measure longitudinal axis accelerations; two (2) accelerometers to measure lateral axis accelerations and two (2) accelerometers to measure vertical axis accelerations. The vehicle's specified impact velocity range was 55.4 to 57.0 km/h. The vehicle impacted a deformable load cell barrier equipped with one hundred thirty-four (134) load cells and covered by a Cellbond deformable barrier face.

The 142 data channels were digitally sampled and recorded at 12,500 samples per second and processed per the NHTSA Laboratory Test Procedure.

The crash event was recorded by one (1) real-time panning motion picture camera and six (6) high-speed digital motion picture cameras operating at 1000 frames per second.

The vehicle data is summarized in Section 2.0. The vehicle and camera measurements are presented in Section 3.0. Appendix A contains the still photographic prints. Appendix B contains the vehicle and barrier data plots. Appendix C contains miscellaneous test information. Appendix D contains an INSIA report that was the basis for the Structural Measurements presented in Table 8 of this report.

Section 2.0

Impact Test Summary

Test Results Summary

This 35 mph deformable load cell barrier test was conducted by TRC Inc. on November 5, 2004.

The test vehicle, a 1996 Chrysler Concorde 4-door, was equipped with a 6-cylinder engine, automatic transmission, power steering, and power brakes. The vehicle's test weight was 1787.6 kg. The vehicle's fuel system contained 63.4 liters of Stoddard for the test. The vehicle's impact speed was 56.4 km/h. The vehicle's maximum static crush was 539 mm.

Data Acquisition Explanations

There were no anomalies to report for this test.

Table 1 Crash Test Summary

Test type:	Deformable load cell barrier
Test date:	11/05/04
Test time:	9:27
Ambient temperature:	21° C
Vehicle:	1996 Chrysler Concorde 4-door
Vehicle test weight:	1787.6 kg
Impact angle: ¹	0°
Impact velocity: ²	Primary = 56.4 km/h Secondary = 56.4 km/h
Maximum static crush:	539 mm
Average rebound:	451 mm
Number of cameras:	
High-speed digital	6
Real-time	1

¹ With respect to tow track centerline.

² Speed trap measurement ($\pm .08$ km/h accuracy)

Table 2 Test Vehicle Information

Vehicle manufacturer:	Chrysler Corporation		
Make/model:	Chrysler/Concorde		
VIN:	1C3HD56F0TF137445		
Model year:	1996		
Body style:	4-door		
Color:	White		
Engine data:			
Type:	V		
Cylinders:	6		
Displacement:	3.5 liters		
Transmission data:	<u>4</u> Speed, <u>X</u> FWD,	<u> </u> Manual, <u> </u> RWD,	<u>X</u> Automatic, <u> </u> 4WD
Date vehicle received:	11/3/2004		
Odometer reading:	48,928 miles		
Dealer's name and address:	Vehicle provided by VRTC		

Accessories:

Power steering	Yes	Automatic transmission	Yes
Power brakes	Yes	Automatic speed control	Yes
Power seats	Driver only	Tilting steering wheel	Yes
Power windows	Yes	Telescoping steering wheel	No
Tinted glass	Yes	Air conditioning	Yes
Radio	Yes	Anti-skid brake	No
Clock	Yes	Rear window defroster	Yes
Other	None		

Certification data from vehicle's label:

Vehicle manufactured by:	Chrysler Corporation	
Date of manufacture:	02/1996	
VIN:	1C3HD56F0TF137445	
GVWR:	4673 lbs. (2120 kg)	
GAWR: Front:	2673 lbs. (1213 kg)	
Rear:	2050 lbs. (930 kg)	

Table 2 Test Vehicle Information, continued

Tires on vehicle (mfr., line, size): Goodyear, Eagle GA, 225/60R16

Tire pressure with maximum
capacity vehicle load:

Front: 300 kPa
Rear: 300 kPa

Spare tire (mfr., line, size): Goodyear, Temporary, T135/80D15

Type of seats: Front: Bucket
Rear: Bench

Type of front seat backs: Power

Maximum width: 1900 mm

Wheelbase: 2870 mm

Location of "Recommended Tire Pressure" label:

The tire pressure label was located on the driver door.

Data from vehicle's "Recommended Tire Pressure" label:

Recommended tire size: 205/70R15

Recommended cold

tire pressure: Front: 32 psi (220 kPa)
tire pressure: Rear: 32 psi (220 kPa)

Seating capacity: Front: 2
Rear: 3
Total: 5

Vehicle capacity weight: 392 kg

Test vehicle attitude:

Pre-test attitude: LF 730 mm; RF 735 mm; LR 714 mm; RR 725 mm
Post-test attitude: LF 888 mm; RF 835 mm; LR 710 mm; RR 714 mm

Table 2 Test Vehicle Information, continued

Test vehicle's target test weight:¹

Front	1077.2	kg
Rear	710.4	kg
Total	1787.6	kg

Weight of test vehicle:

Right front	527.4	kg	Right rear	349.6	kg
Left front	552.2	kg	Left rear	358.4	kg
Total front weight	1079.6	kg	(60.4% of total vehicle weight)		
Total rear weight	708.0	kg	(39.6% of total vehicle weight)		
Total test weight	1787.6	kg			

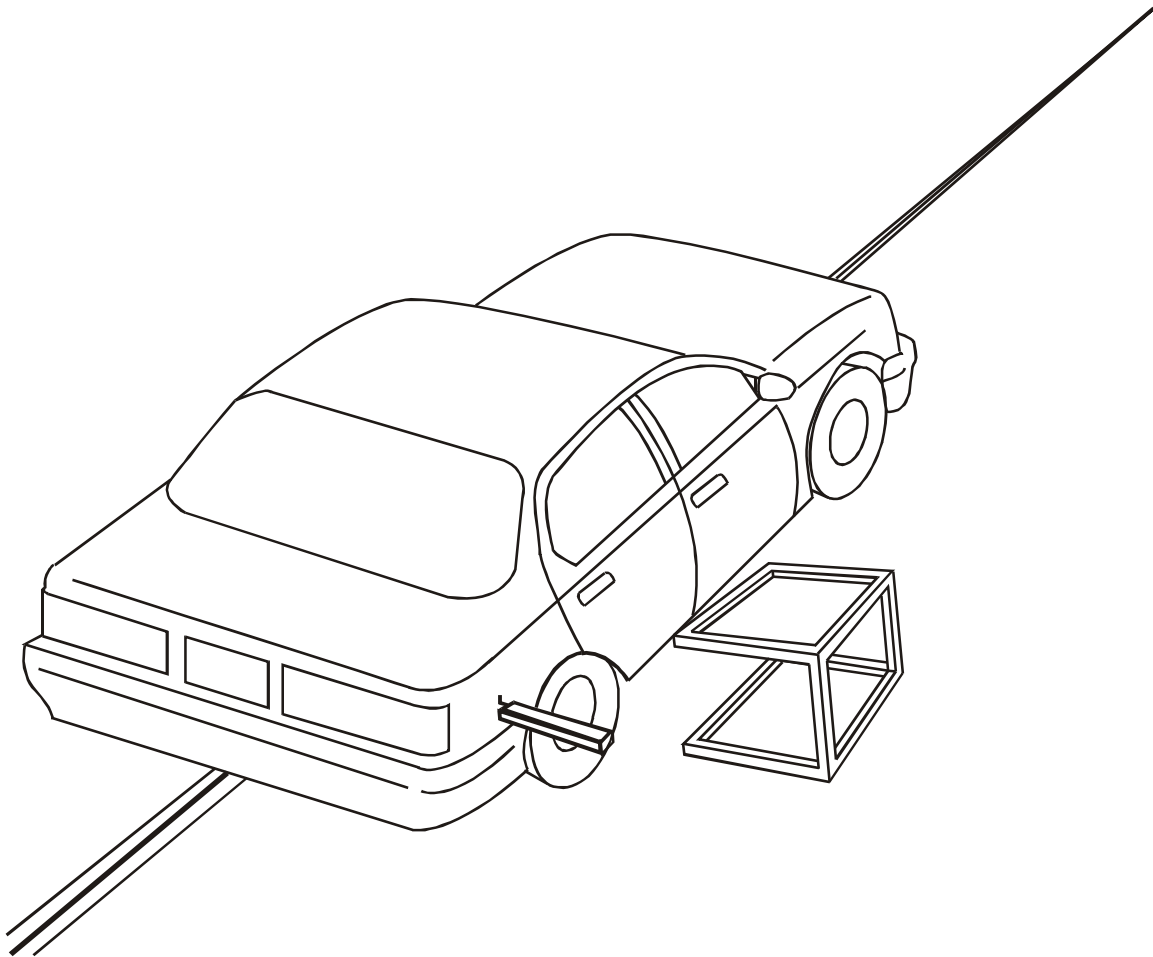
Location of vehicle center of gravity: 1137 mm rearward of front axle centerline

Weight of ballast secured in vehicle: 149.7 kg

Components removed to meet target test weight: None

¹ Target test weight provided by VRTC.

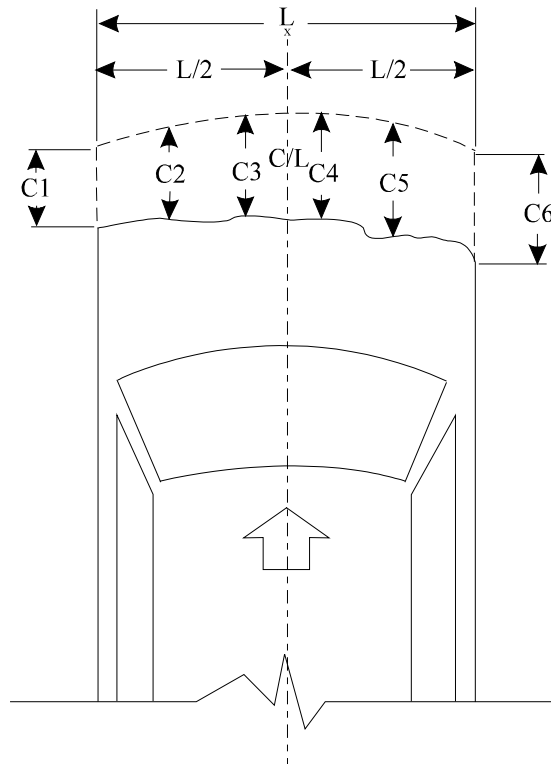
Figure 1 Impact Velocity Measurement System



The final vane clears the final emitter/receiver pair 50 mm before impact.

The vanes have 610 mm spacing.

Figure 2 Vehicle Crush



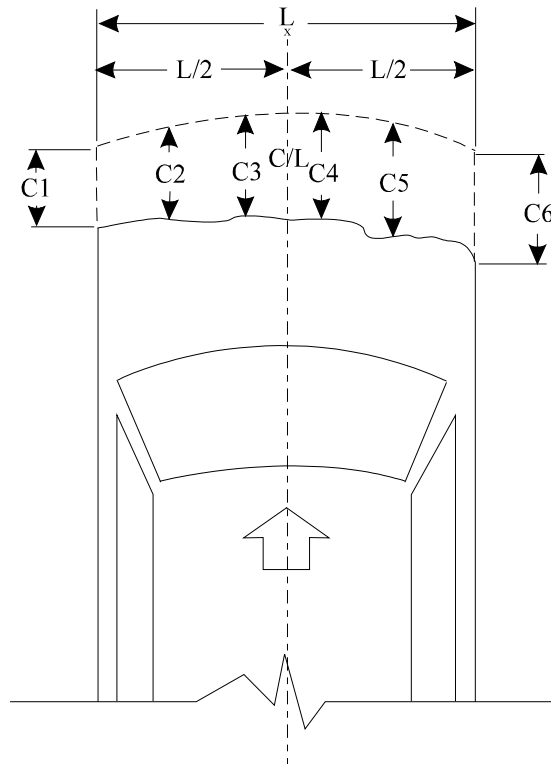
Notes: L is pre-test length of contact surface.
C1 through C6 are spaced equally apart.
CL is vehicle centerline.
Measured with bumper fascia.

Vehicle: 1996 Chrysler Concorde 4-door

	Pre-test	Post-test	Crush ¹
L	1524 mm		
C1	4920 mm	4541 mm	379 mm
C2	5050 mm	4608 mm	442 mm
C3	5085 mm	4631 mm	454 mm
C4	5085 mm	4632 mm	453 mm
C5	5050 mm	4609 mm	441 mm
C6	4925 mm	4546 mm	379 mm
CL	5105 mm	4639 mm	466 mm

¹ The difference for point C2, measured with the bumper fascia, is included in the NHTSA Database Submission as Damage Profile Distance 2.

Figure 2 Vehicle Crush, continued



Notes: L is pre-test length of contact surface.
C1 through C6 are spaced equally apart.
CL is vehicle centerline.
Measured without bumper fascia.

Vehicle: 1996 Chrysler Concorde 4-door

	Pre-test	Post-test	Crush ¹
L	1135 mm		
C1	4970 mm	4512 mm	458 mm
C2	4990 mm	4550 mm	440 mm
C3	5001 mm	4540 mm	461 mm
C4	5001 mm	4547 mm	454 mm
C5	4987 mm	4538 mm	449 mm
C6	4970 mm	4527 mm	443 mm
CL	5012 mm	4548 mm	464 mm

¹ The difference for points C1, 5, and 6, measured with the bumper fascia, are included in the NHTSA Database Submission as Damage Profile Distance 1, 5, and 6.

Figure 3 Vehicle Accelerometer Placement

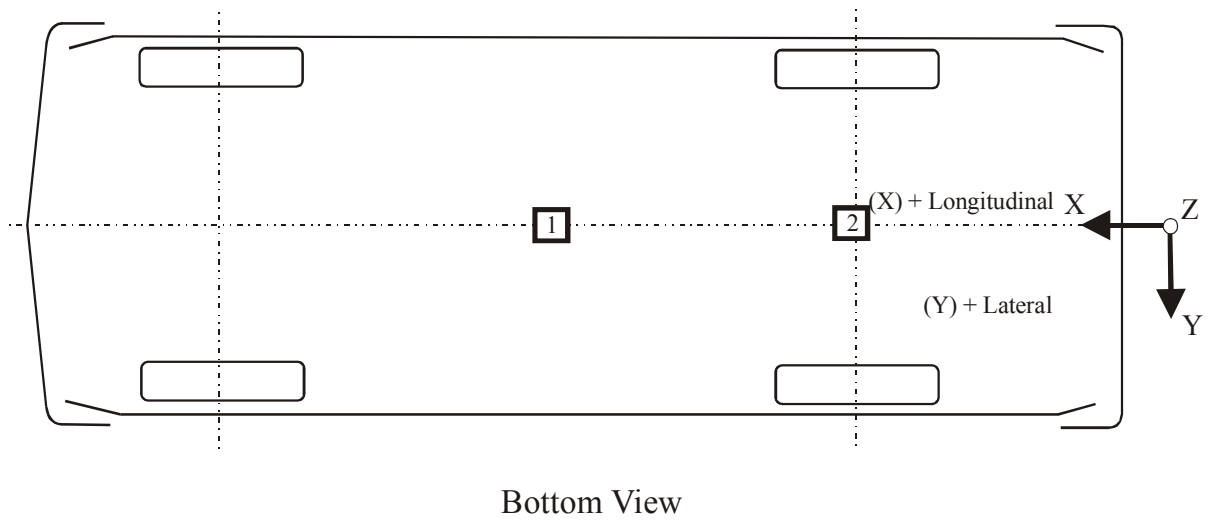
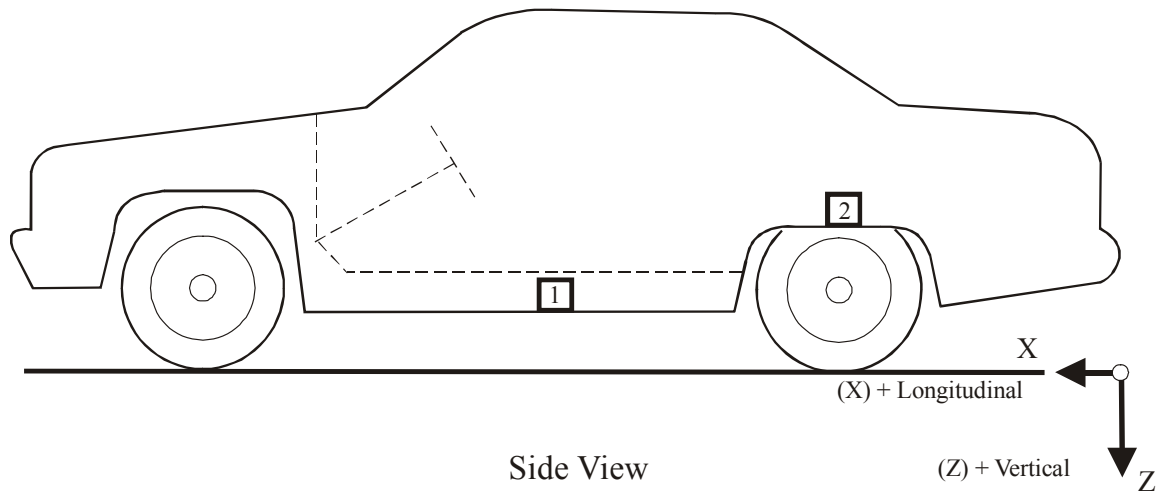


Table 3 Vehicle Accelerometer Locations and Data Summary

Accel. No.	Location	Coordinates (millimeters)			Positive Direction		Negative Direction	
		X*	Y*	Z*	Max. (g)	Time (ms)	Max. (g)	Time (ms)
1	Vehicle Center of Gravity	2975	60	-510				
	Longitudinal X				15.5	34.6	56.1	76.3
	Lateral Y				43.6	84.6	20.4	69.3
	Vertical Z				43.8	43.1	87.2	83.1
	Resultant				99.0	83.3		
2	Rear Deck	250	0	-532				
	Longitudinal X				26.3	115.7	50.2	80.6
	Lateral Y				6.2	101.8	6.8	81.1
	Vertical Z				8.9	118.9	19.9	61.8
	Resultant				50.7	80.6		

*Reference: X = Rear Bumper (+ Forward)

Y = Vehicle Centerline (+ To Right)

Z = Ground Level (+ Down)

All measurements accurate to within ± 3 mm.

Table 4 Post-Impact Data

Door opening:

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

Seat back failure:

Left	None
Right	None

Seat track shift:

Left	None
Right	None

Glazing damage:

Front windshield broken

Other notable impact effects:

None

Figure 4 Load Cell Barrier Mnemonics

Row	Column															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
9						LC0906	LC0907	LC0908	LC0909	LC0910	LC0911					
8	LC0801	LC0802	LC0803	LC0804	LC0805	LC0806	LC0807	LC0808	LC0809	LC0810	LC0811	LC0812	LC0813	LC0814	LC0815	LC0816
7	LC0701	LC0702	LC0703	LC0704	LC0705	LC0706	LC0707	LC0708	LC0709	LC0710	LC0711	LC0712	LC0713	LC0714	LC0715	LC0716
6	LC0601	LC0602	LC0603	LC0604	LC0605	LC0606	LC0607	LC0608	LC0609	LC0610	LC0611	LC0612	LC0613	LC0614	LC0615	LC0616
5	LC0501	LC0502	LC0503	LC0504	LC0505	LC0506	LC0507	LC0508	LC0509	LC0510	LC0511	LC0512	LC0513	LC0514	LC0515	LC0516
4	LC0401	LC0402	LC0403	LC0404	LC0405	LC0406	LC0407	LC0408	LC0409	LC0410	LC0411	LC0412	LC0413	LC0414	LC0415	LC0416
3	LC0301	LC0302	LC0303	LC0304	LC0305	LC0306	LC0307	LC0308	LC0309	LC0310	LC0311	LC0312	LC0313	LC0314	LC0315	LC0316
2	LC0201	LC0202	LC0203	LC0204	LC0205	LC0206	LC0207	LC0208	LC0209	LC0210	LC0211	LC0212	LC0213	LC0214	LC0215	LC0216
1	LC0101	LC0102	LC0103	LC0104	LC0105	LC0106	LC0107	LC0108	LC0109	LC0110	LC0111	LC0112	LC0113	LC0114	LC0115	LC0116

Figure 5 Load Cell Barrier Configuration

					109	044	134	115	110	064					
133	039	085	059	116	013	119	107	095	103	129	058	126	108	025	070
027	111	072	106	056	114	068	157	049	131	018	084	062	078	127	021
036	052	010	034	026	022	030	016	035	092	043	076	001	087	096	015
090	065	079	055	031	054	050	089	130	082	083	123	032	121	009	037
040	007	071	094	067	086	118	101	073	047	099	080	097	048	061	005
125	004	051	042	011	117	066	045	077	029	100	102	091	012	017	081
120	063	124	093	046	122	002	060	105	020	069	041	112	074	128	075
053	008	028	038	003	014	024	006	132	023	033	019	113	098	104	088

LOAD CELL SERIAL NUMBERS

Track C/L

Table 5 Load Cell Barrier Data Summary

Location	Column	Positive Direction		Negative Direction	
		Max. (N)	Time (ms)	Max. (N)	Time (ms)
Load Cell Row 1	1	74.1	3.8	-1,253.4	66.6
	2	40.9	281.9	-679.7	102.6
	3	56.1	174.1	-2,430.4	96.9
	4	62.5	4.1	-3,216.0	93.8
	5	126.3	150.5	-5,563.3	88.2
	6	110.4	192.5	-3,376.0	44.6
	7	68.1	194.0	-6,765.5	39.8
	8	75.7	184.6	-3,964.5	41.1
	9	30.1	5.4	-7,514.9	88.5
	10	122.9	5.6	-4,157.2	43.4
	11	200.1	4.8	-3,088.1	58.3
	12	173.2	4.6	-4,304.3	93.2
	13	215.9	184.2	-1,302.0	96.7
	14	89.3	5.4	-2,608.8	29.2
	15	161.4	196.6	-520.6	59.4
	16	121.8	200.2	-602.9	58.6

Table 5 Load Cell Barrier Data Summary, continued

Location	Column	Positive Direction		Negative Direction	
		Max. (N)	Time (ms)	Max. (N)	Time (ms)
Load Cell Row 2	1	58.5	6.0	-268.7	27.6
	2	120.6	6.5	-2,843.1	49.6
	3	158.4	6.1	-1,119.8	25.4
	4	157.9	5.0	-8,335.3	29.7
	5	203.9	3.2	-16,105.9	42.1
	6	238.1	4.8	-8,860.8	40.2
	7	215.8	20.0	-7,924.4	60.6
	8	261.5	20.6	-18,212.7	61.4
	9	281.4	20.4	-15,778.9	86.1
	10	315.1	19.7	-8,553.7	86.4
	11	63.7	267.0	-10,086.0	41.4
	12	178.2	20.0	-7,588.9	81.7
	13	84.3	221.1	-3,581.3	87.4
	14	129.0	20.6	-1,293.9	90.0
	15	67.4	5.1	-752.3	95.8
	16	36.2	199.0	-267.5	97.1

Table 5 Load Cell Barrier Data Summary, continued

Location	Column	Positive Direction		Negative Direction	
		Max. (N)	Time (ms)	Max. (N)	Time (ms)
Load Cell Row 3	1	86.2	195.8	-1,063.1	48.2
	2	166.9	20.6	-3,657.1	45.8
	3	215.6	6.6	-6,382.4	24.0
	4	348.9	5.7	-16,469.5	29.6
	5	273.9	5.8	-18,993.3	44.9
	6	210.7	1.6	-24,799.6	38.8
	7	260.9	-0.3	-25,413.5	38.2
	8	146.7	-1.2	-26,749.0	39.3
	9	211.6	252.6	-26,725.9	40.8
	10	180.2	-1.0	-26,379.6	39.0
	11	167.7	3.0	-22,674.5	43.3
	12	280.9	2.3	-28,161.1	28.9
	13	149.7	5.0	-10,160.8	57.9
	14	89.6	5.3	-6,897.1	38.5
	15	54.5	19.4	-2,492.8	37.8
	16	66.3	198.5	-455.8	96.2

Table 5 Load Cell Barrier Data Summary, continued

Location	Column	Positive Direction		Negative Direction	
		Max. (N)	Time (ms)	Max. (N)	Time (ms)
Load Cell Row 4	1	45.5	3.3	-1,120.6	49.4
	2	159.2	7.0	-3,756.6	63.8
	3	201.1	6.8	-4,389.1	59.4
	4	330.9	5.9	-6,100.1	19.8
	5	258.7	6.2	-11,712.6	46.6
	6	297.0	3.6	-19,600.7	45.0
	7	80.8	1.6	-17,414.4	44.4
	8	49.0	0.3	-15,332.8	44.5
	9	27.9	187.3	-16,806.9	45.2
	10	77.2	-0.3	-16,112.5	45.3
	11	65.9	2.1	-13,096.3	44.2
	12	155.4	4.8	-4,341.7	49.3
	13	158.3	5.7	-4,174.7	40.2
	14	76.0	5.4	-5,199.1	57.8
	15	35.9	5.7	-2,262.6	37.9
	16	104.1	197.6	-326.4	62.6

Table 5 Load Cell Barrier Data Summary, continued

Location	Column	Positive Direction		Negative Direction	
		Max. (N)	Time (ms)	Max. (N)	Time (ms)
Load Cell Row 5	1	114.6	191.4	-874.7	66.8
	2	168.1	7.1	-592.6	67.8
	3	197.9	7.2	-840.9	49.8
	4	227.7	6.9	-6,511.0	37.2
	5	107.9	73.6	-7,453.8	27.8
	6	247.9	6.0	-6,755.1	30.2
	7	48.8	111.1	-5,125.9	42.2
	8	27.2	-0.4	-3,446.4	35.0
	9	40.6	-1.0	-7,306.4	33.9
	10	142.3	5.0	-4,583.1	38.4
	11	139.4	4.6	-6,634.1	27.9
	12	165.8	5.4	-5,839.3	38.8
	13	139.0	5.4	-5,534.1	38.3
	14	64.2	5.6	-652.6	37.6
	15	81.6	32.0	-32.6	181.0
	16	55.0	195.3	-409.7	62.3

Table 5 Load Cell Barrier Data Summary, continued

Location	Column	Positive Direction		Negative Direction	
		Max. (N)	Time (ms)	Max. (N)	Time (ms)
Load Cell Row 6	1	26.2	190.7	-792.2	67.0
	2	166.5	7.8	-174.2	13.4
	3	207.5	7.5	-803.0	53.4
	4	263.6	21.6	-677.3	49.8
	5	230.1	7.0	-4,183.0	38.6
	6	255.7	21.9	-3,161.8	38.0
	7	215.4	6.7	-7,539.2	38.6
	8	312.1	176.1	-6,964.5	39.0
	9	19.9	190.6	-6,957.8	39.1
	10	167.0	5.7	-6,864.8	37.4
	11	101.7	4.7	-7,004.7	37.8
	12	113.9	4.9	-463.7	38.5
	13	142.7	20.9	-23.9	256.4
	14	46.0	5.3	-88.5	62.8
	15	22.0	207.1	-80.6	50.6
	16	75.4	196.1	-215.8	61.8

Table 5 Load Cell Barrier Data Summary, continued

Location	Column	Positive Direction		Negative Direction	
		Max. (N)	Time (ms)	Max. (N)	Time (ms)
Load Cell Row 7	1	273.8	191.4	-956.3	48.4
	2	230.5	21.9	-53.8	13.4
	3	186.4	8.1	-178.9	13.8
	4	221.4	21.9	-215.1	14.0
	5	287.4	222.5	-1,689.3	48.9
	6	235.7	22.0	-1,388.5	48.6
	7	220.3	21.9	-555.3	48.5
	8	148.7	6.2	-1,467.4	48.4
	9	36.8	199.8	-3,106.3	35.6
	10	105.5	5.6	-2,675.1	48.2
	11	112.0	5.3	-212.8	28.4
	12	74.7	5.3	-2,013.5	47.6
	13	79.2	21.6	-44.8	36.2
	14	128.3	45.1	-21.4	290.8
	15	66.2	54.6	-58.4	50.6
	16	46.3	6.0	-142.9	50.3

Table 5 Load Cell Barrier Data Summary, continued

Location	Column	Positive Direction		Negative Direction	
		Max. (N)	Time (ms)	Max. (N)	Time (ms)
Load Cell Row 8	1	265.2	10.2	-851.5	70.9
	2	226.4	22.5	-139.1	49.5
	3	131.9	9.0	-247.4	49.4
	4	77.3	8.8	-842.0	49.4
	5	157.7	9.0	-593.5	49.0
	6	197.4	9.4	-665.3	49.4
	7	165.7	8.6	-871.7	49.0
	8	50.4	199.6	-2,199.1	48.8
	9	137.2	195.9	-533.8	49.0
	10	99.1	22.2	-669.0	49.3
	11	28.4	22.7	-1,139.2	49.2
	12	155.1	38.8	-710.4	49.5
	13	37.5	198.1	-434.2	49.8
	14	54.0	3.4	-936.7	71.1
	15	98.2	23.8	-411.1	71.6
	16	146.2	15.1	-192.8	70.9

Table 5 Load Cell Barrier Data Summary, continued

Location	Column	Positive Direction		Negative Direction	
		Max. (N)	Time (ms)	Max. (N)	Time (ms)
Load Cell Row 9	6	193.2	114.2	-497.5	15.9
	7	171.6	22.4	-287.5	16.2
	8	103.9	22.6	-349.4	49.8
	9	100.2	22.6	-338.0	16.5
	10	85.9	112.6	-480.3	49.5
	11	74.8	113.9	-388.5	49.7

Section 3.0

Vehicle, Barrier, and Camera Measurements

Table 6 Fuel System Data

Vehicle year/make/ model/body style:	1996/Chrysler/Concorde/4-door
Fuel system capacity:	68.1 liters (from owner's manual)
Usable capacity:	N/A
Test volume range:	62.7 liters to 64.0 liters (92% to 94% of usable)
Actual test volume:	63.4 liters
Test fluid type:	Stoddard
Specific gravity:	0.764
Kinematic viscosity:	0.99 centistoke
Test fluid color:	Purple
Did electric fuel pump operate with ignition switch "on" and the engine not operating?	Yes
Details of fuel system:	

Figure 6 Pre-Test And Post-Test Measurement Points

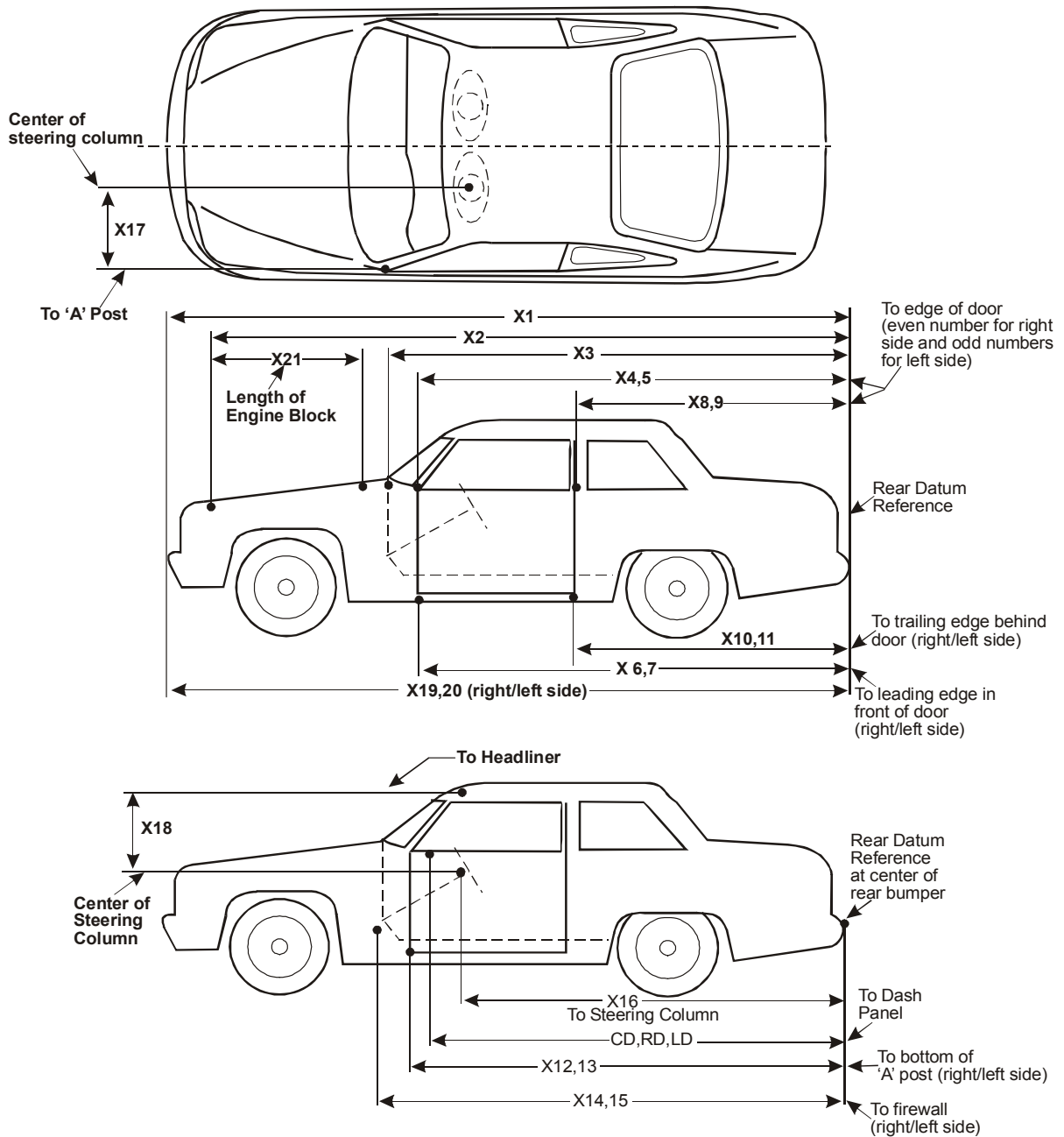


Table 7 Impacted Vehicle Measurements

Vehicle Make/Model: 1996 Chrysler Concorde 4-door

Test Number: 041105-1

No.	Type of measurement	Pre-Test	Post-Test	Difference
X1	Total Length of Vehicle at Centerline	5105	4639	466
X2	Rear Surface of Vehicle to Front of Engine Block	4460	4232	228
X3	Rear Surface of Vehicle to Firewall	4023	4045	-22
X4	Rear Surface of Vehicle to Upper Leading Edge of Right Door	3486	3489	-3
X5	Rear Surface of Vehicle to Upper Leading Edge of Left Door	3497	3505	-8
X6	Rear Surface of Vehicle to Lower Leading Edge of Right Door	3426	3460	-34
X7	Rear Surface of Vehicle to Lower Leading Edge of Left Door	3440	3470	-30
X8	Rear Surface of Vehicle to Upper Trailing Edge of Right Door	2425	2427	-2
X9	Rear Surface of Vehicle to Upper Trailing Edge of Left Door	2436	2445	-9
X10	Rear Surface of Vehicle to Lower Trailing Edge of Right Door	2422	2455	-33
X11	Rear Surface of Vehicle to Lower Trailing Edge of Left Door	2437	2463	-26
X12	Rear Surface of Vehicle to Bottom of " A " Post on Right Side	3435	3429	6
X13	Rear Surface of Vehicle to Bottom of " A " Post on Left Side	3450	3450	0
X14	Rear Surface of Vehicle to Firewall-Right Side	4152	4045	107
X15	Rear Surface of Vehicle to Firewall-Left Side	4051	4035	16
X16	Rear Surface of Vehicle to Steering Wheel Center	3015	2955	60
X17	Center of Steering Column to " A " Post	310	260	50
X18	Center of Steering Column to Headliner	350	418	-68
X19	Rear Surface of Vehicle to Right Side of Front Bumper	4925	4546	379
X20	Rear Surface of Vehicle to Left Side of Front Bumper	4920	4541	379
X21	Length of Engine Block	400	400	0

All measurements are in millimeters.

Table 8 Vehicle Structural Measurements¹

	Elements	Pre-Test
1	Total Length	5105
2	Total Width	1900
3	Bumper Top Height	505
4	Bumper Bottom Height	417
5	Longitudinal Member Top Height	510
6	Longitudinal Member Bottom Height	410
7	Distance Between Longitudinal Members	1040
7'	Longitudinal Member Width	69
8	Engine Top Height	819
9	Engine Bottom Height	178
10	Engine and Gearbox Width	535
11	Front Bumper - Engine Distance	530
12	Front Shock Absorber Fixing Height	869
13	Bonnet Leading Edge Height	674
14	Front Shock Absorber Fixing Width	1162
15	Front Bumper - Front Axle Distance	1125
16	Front Axle - A Pillar Distance	511
17	A Pillar - B Pillar Distance	1055
18	B Pillar - Rear Axle Distance	1300
19	B Pillar - C Pillar Distance	990
20	Roof Sill Bottom Height	1269
21	Roof Sill Top Height	1307
22	Floor Sill Bottom Height	299
23	Floor Sill Top Height	317

All distance measurements are in millimeters.

¹ Taken from INSIA report, “Structural Survey of Cars, Methodology of the Main Resistant Elements in the Car Body”, March 1999. This report is included in Appendix E.

Table 9 Frontal Profile Measurements

Bottom of Front Bumper

Pre-Test			
Index	Xmm	Ymm	Zmm
1	4899	-730	-360
2	5032	-445	-367
3	5070	-160	-379
4	5075	160	-395
5	5040	433	-394
6	4915	740	-385

Post-Test		
Xmm	Ymm	Zmm
4589	-735	-465
4653	-450	-523
4680	-163	-563
4680	160	-595
4659	433	-575
4590	740	-509

Difference		
Xmm	Ymm	Zmm
310	5	105
379	5	156
390	3	184
395	0	200
381	0	181
325	0	124

Top of Front Bumper

Pre-Test			
Index	Xmm	Ymm	Zmm
1	4920	-755	-468
2	5050	-450	-471
3	5085	-163	-466
4	5085	160	-474
5	5050	445	-478
6	4925	745	-474

Post-Test		
Xmm	Ymm	Zmm
4541	-752	-568
4608	-449	-625
4631	-162	-650
4632	160	-662
4609	445	-643
4546	748	-590

Difference ¹		
Xmm	Ymm	Zmm
379	-3	100
442	-1	154
454	-1	184
453	0	188
441	0	165
379	-3	116

Center of Grill

Pre-Test			
Index	Xmm	Ymm	Zmm
1	4800	-750	-599
2	4939	-455	-585
3	5010	-150	-604
4	5010	150	-600
5	4934	450	-600
6	4805	755	-612

Post-Test		
Xmm	Ymm	Zmm
N/A ³	N/A ³	N/A ³
N/A ³	N/A ³	N/A ³
4490	-151	-690
4471	155	-710
N/A ³	N/A ³	N/A ³
N/A ³	N/A ³	N/A ³

Difference ²		
Xmm	Ymm	Zmm
N/A ³	N/A ³	N/A ³
N/A ³	N/A ³	N/A ³
520	1	86
539	-5	110
N/A ³	N/A ³	N/A ³
N/A ³	N/A ³	N/A ³

Front of Hood

Pre-Test			
Index	Xmm	Ymm	Zmm
1	4874	-730	-665
2	4910	-455	-664
3	4963	-165	-668
4	4960	160	-668
5	4908	450	-660
6	4781	735	-668

Post-Test		
Xmm	Ymm	Zmm
4461	-680	-810
4493	-425	-753
4548	-167	-742
4540	155	-735
4500	419	-730
4450	690	-790

Difference		
Xmm	Ymm	Zmm
413	-50	145
417	-30	89
415	2	74
420	5	67
408	31	70
331	45	122

¹ The difference for point 2, measured at the top of front bumper, is included in the NHTSA Database Submission as Damage Profile Distance 2.

² The difference for points 3 and 4, measured at the center of grill, are included in the NHTSA Database Submission as Damage Profile Distance 3 and 4.

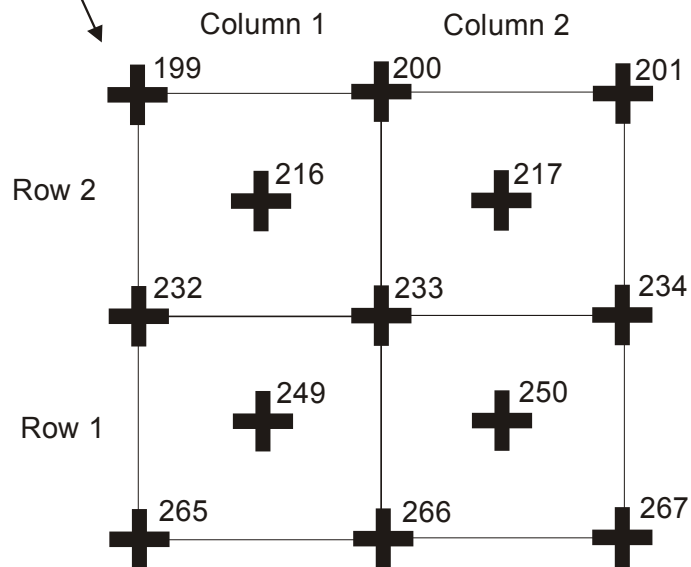
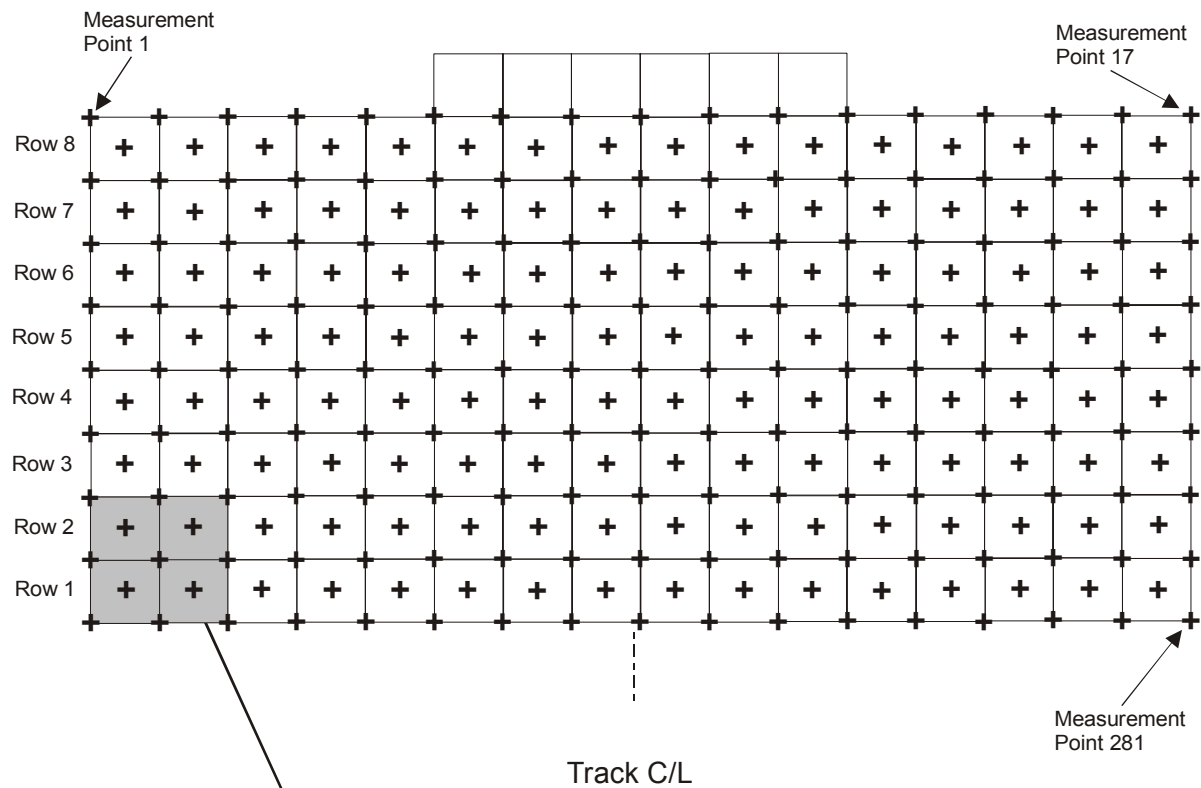
³ Measurement point could not located post-test.

Table 10 Additional Requested Measurements

Type of measurement	
Height of the lowest edge of the bottom row of load cells	130 mm
Height of lowest structure on test vehicle	175 mm
Mid-hood height of test vehicle	835 mm
Height of test vehicle hood 2 feet rearward of front bumper	832 mm

Test vehicle impact point deviation: Vehicle 16 mm left and 20 mm high on impact.

Figure 7 Deformable Barrier Face Measurement Point Placement



Example of Faro Measurement Point Placement

Table 11 Deformable Barrier Measurements

Load Cell Row	Measurement Point Location	Measurement Point Location	Crush (mm)
Row 1	Bottom corner of load cell	265	1
	Bottom corner of load cell	266	1
	Bottom corner of load cell	267	0
	Bottom corner of load cell	268	0
	Bottom corner of load cell	269	3
	Bottom corner of load cell	270	-8
	Bottom corner of load cell	271	4
	Bottom corner of load cell	272	15
	Bottom corner of load cell	273	14
	Bottom corner of load cell	274	16
	Bottom corner of load cell	275	11
	Bottom corner of load cell	276	-1
	Bottom corner of load cell	277	-1
	Bottom corner of load cell	278	-3
	Bottom corner of load cell	279	-2
	Bottom corner of load cell	280	0
	Bottom corner of load cell	281	1
	Center of load cell	249	1
	Center of load cell	250	1
	Center of load cell	251	1
	Center of load cell	252	6
	Center of load cell	253	-5
	Center of load cell	254	1
	Center of load cell	255	46
	Center of load cell	256	28
	Center of load cell	257	26
	Center of load cell	258	24
	Center of load cell	259	16
	Center of load cell	260	-2
	Center of load cell	261	0
	Center of load cell	262	0
	Center of load cell	263	0
	Center of load cell	264	1

Table 11 Deformable Barrier Measurements, continued

Load Cell Row	Measurement Point Location	Measurement Point Number	Crush (mm)
Row 2	Bottom corner of load cell	232	1
	Bottom corner of load cell	233	-1
	Bottom corner of load cell	234	2
	Bottom corner of load cell	235	1
	Bottom corner of load cell	236	16
	Bottom corner of load cell	237	-1
	Bottom corner of load cell	238	52
	Bottom corner of load cell	239	90
	Bottom corner of load cell	240	81
	Bottom corner of load cell	241	70
	Bottom corner of load cell	242	6
	Bottom corner of load cell	243	21
	Bottom corner of load cell	244	7
	Bottom corner of load cell	245	0
	Bottom corner of load cell	246	0
	Bottom corner of load cell	247	0
	Bottom corner of load cell	248	1
	Center of load cell	216	1
	Center of load cell	217	3
	Center of load cell	218	1
	Center of load cell	219	-5
	Center of load cell	220	32
	Center of load cell	221	43
	Center of load cell	222	19
	Center of load cell	223	10
	Center of load cell	224	-16
	Center of load cell	225	54
	Center of load cell	226	53
	Center of load cell	227	77
	Center of load cell	228	5
	Center of load cell	229	2
	Center of load cell	230	5
	Center of load cell	231	1

Table 11 Deformable Barrier Measurements, continued

Load Cell Row	Measurement Point Location	Measurement Point Number	Crush (mm)
Row 3	Bottom corner of load cell	199	1
	Bottom corner of load cell	200	1
	Bottom corner of load cell	201	15
	Bottom corner of load cell	202	61
	Bottom corner of load cell	203	25
	Bottom corner of load cell	204	40
	Bottom corner of load cell	205	185
	Bottom corner of load cell	206	175
	Bottom corner of load cell	207	174
	Bottom corner of load cell	208	176
	Bottom corner of load cell	209	177
	Bottom corner of load cell	210	168
	Bottom corner of load cell	211	159
	Bottom corner of load cell	212	52
	Bottom corner of load cell	213	3
	Bottom corner of load cell	214	1
	Bottom corner of load cell	215	2
	Center of load cell	183	1
	Center of load cell	184	25
	Center of load cell	185	64
	Center of load cell	186	161
	Center of load cell	187	158
	Center of load cell	188	160
	Center of load cell	189	176
	Center of load cell	190	175
	Center of load cell	191	169
	Center of load cell	192	161
	Center of load cell	193	146
	Center of load cell	194	150
	Center of load cell	195	85
	Center of load cell	196	49
	Center of load cell	197	17
	Center of load cell	198	1

Table 11 Deformable Barrier Measurements, continued

Load Cell Row	Measurement Point Location	Measurement Point Number	Crush (mm)
Row 4	Bottom corner of load cell	166	1
	Bottom corner of load cell	167	0
	Bottom corner of load cell	168	35
	Bottom corner of load cell	169	97
	Bottom corner of load cell	170	150
	Bottom corner of load cell	171	168
	Bottom corner of load cell	172	185
	Bottom corner of load cell	173	181
	Bottom corner of load cell	174	173
	Bottom corner of load cell	175	172
	Bottom corner of load cell	176	170
	Bottom corner of load cell	177	158
	Bottom corner of load cell	178	148
	Bottom corner of load cell	179	80
	Bottom corner of load cell	180	32
	Bottom corner of load cell	181	-1
	Bottom corner of load cell	182	1
	Center of load cell	150	21
	Center of load cell	151	N/A ¹
	Center of load cell	152	N/A ¹
	Center of load cell	153	N/A ¹
	Center of load cell	154	N/A ¹
	Center of load cell	155	N/A ¹
	Center of load cell	156	N/A ¹
	Center of load cell	157	N/A ¹
	Center of load cell	158	N/A ¹
	Center of load cell	159	N/A ¹
	Center of load cell	160	N/A ¹
	Center of load cell	161	16
	Center of load cell	162	42
	Center of load cell	163	30
	Center of load cell	164	N/A ¹
	Center of load cell	165	2

¹ Measurement point could not be located post-test.

Table 11 Deformable Barrier Measurements, continued

Load Cell Row	Measurement Point Location	Measurement Point Number	Crush (mm)
Row 5	Bottom corner of load cell	133	3
	Bottom corner of load cell	134	23
	Bottom corner of load cell	135	N/A ¹
	Bottom corner of load cell	136	N/A ¹
	Bottom corner of load cell	137	N/A ¹
	Bottom corner of load cell	138	N/A ¹
	Bottom corner of load cell	139	N/A ¹
	Bottom corner of load cell	140	N/A ¹
	Bottom corner of load cell	141	N/A ¹
	Bottom corner of load cell	142	N/A ¹
	Bottom corner of load cell	143	86
	Bottom corner of load cell	144	53
	Bottom corner of load cell	145	17
	Bottom corner of load cell	146	N/A ¹
	Bottom corner of load cell	147	N/A ¹
	Bottom corner of load cell	148	45
	Bottom corner of load cell	149	2
	Center of load cell	117	3
	Center of load cell	118	48
	Center of load cell	119	29
	Center of load cell	120	52
	Center of load cell	121	62
	Center of load cell	122	39
	Center of load cell	123	60
	Center of load cell	124	73
	Center of load cell	125	70
	Center of load cell	126	53
	Center of load cell	127	48
	Center of load cell	128	49
	Center of load cell	129	38
	Center of load cell	130	41
	Center of load cell	131	6
	Center of load cell	132	17

¹ Measurement point could not be located post-test.

Table 11 Deformable Barrier Measurements, continued

Load Cell Row	Measurement Point Location	Measurement Point Number	Crush (mm)
Row 6	Bottom corner of load cell	100	2
	Bottom corner of load cell	101	3
	Bottom corner of load cell	102	47
	Bottom corner of load cell	103	2
	Bottom corner of load cell	104	3
	Bottom corner of load cell	105	44
	Bottom corner of load cell	106	15
	Bottom corner of load cell	107	30
	Bottom corner of load cell	108	38
	Bottom corner of load cell	109	27
	Bottom corner of load cell	110	14
	Bottom corner of load cell	111	4
	Bottom corner of load cell	112	0
	Bottom corner of load cell	113	0
	Bottom corner of load cell	114	0
	Bottom corner of load cell	115	0
	Bottom corner of load cell	116	1
	Center of load cell	84	3
	Center of load cell	85	6
	Center of load cell	86	13
	Center of load cell	87	12
	Center of load cell	88	3
	Center of load cell	89	17
	Center of load cell	90	6
	Center of load cell	91	2
	Center of load cell	92	4
	Center of load cell	93	-1
	Center of load cell	94	3
	Center of load cell	95	9
	Center of load cell	96	14
	Center of load cell	97	4
	Center of load cell	98	0
	Center of load cell	99	0

Table 11 Deformable Barrier Measurements, continued

Load Cell Row	Measurement Point Location	Measurement Point Number	Crush (mm)
Row 7	Bottom corner of load cell	67	2
	Bottom corner of load cell	68	2
	Bottom corner of load cell	69	1
	Bottom corner of load cell	70	1
	Bottom corner of load cell	71	1
	Bottom corner of load cell	72	4
	Bottom corner of load cell	73	22
	Bottom corner of load cell	74	8
	Bottom corner of load cell	75	5
	Bottom corner of load cell	76	6
	Bottom corner of load cell	77	30
	Bottom corner of load cell	78	1
	Bottom corner of load cell	79	0
	Bottom corner of load cell	80	0
	Bottom corner of load cell	81	0
	Bottom corner of load cell	82	1
	Bottom corner of load cell	83	1
	Center of load cell	51	2
	Center of load cell	52	2
	Center of load cell	53	1
	Center of load cell	54	1
	Center of load cell	55	1
	Center of load cell	56	1
	Center of load cell	57	0
	Center of load cell	58	0
	Center of load cell	59	0
	Center of load cell	60	0
	Center of load cell	61	0
	Center of load cell	62	0
	Center of load cell	63	0
	Center of load cell	64	1
	Center of load cell	65	1
	Center of load cell	66	1

Table 11 Deformable Barrier Measurements, continued

Load Cell Row	Measurement Point Location	Measurement Point Number	Crush (mm)
Row 8	Bottom corner of load cell	34	3
	Bottom corner of load cell	35	2
	Bottom corner of load cell	36	1
	Bottom corner of load cell	37	1
	Bottom corner of load cell	38	1
	Bottom corner of load cell	39	0
	Bottom corner of load cell	40	0
	Bottom corner of load cell	41	0
	Bottom corner of load cell	42	-1
	Bottom corner of load cell	43	0
	Bottom corner of load cell	44	0
	Bottom corner of load cell	45	0
	Bottom corner of load cell	46	0
	Bottom corner of load cell	47	0
	Bottom corner of load cell	48	1
	Bottom corner of load cell	49	1
	Bottom corner of load cell	50	1
	Center of load cell	18	2
	Center of load cell	19	1
	Center of load cell	20	1
	Center of load cell	21	1
	Center of load cell	22	1
	Center of load cell	23	0
	Center of load cell	24	0
	Center of load cell	25	0
	Center of load cell	26	0
	Center of load cell	27	0
	Center of load cell	28	0
	Center of load cell	29	0
	Center of load cell	30	0
	Center of load cell	31	1
	Center of load cell	32	1
	Center of load cell	33	1

Table 11 Deformable Barrier Measurements, continued

Load Cell Row	Measurement Point Location	Measurement Point Number	Crush (mm)
Row 8	Top corner of load cell	1	2
	Top corner of load cell	2	1
	Top corner of load cell	3	1
	Top corner of load cell	4	1
	Top corner of load cell	5	1
	Top corner of load cell	6	1
	Top corner of load cell	7	1
	Top corner of load cell	8	0
	Top corner of load cell	9	1
	Top corner of load cell	10	0
	Top corner of load cell	11	1
	Top corner of load cell	12	0
	Top corner of load cell	13	1
	Top corner of load cell	14	0
	Top corner of load cell	15	1
	Top corner of load cell	16	1
	Top corner of load cell	17	1

Figure 8 Camera Positions

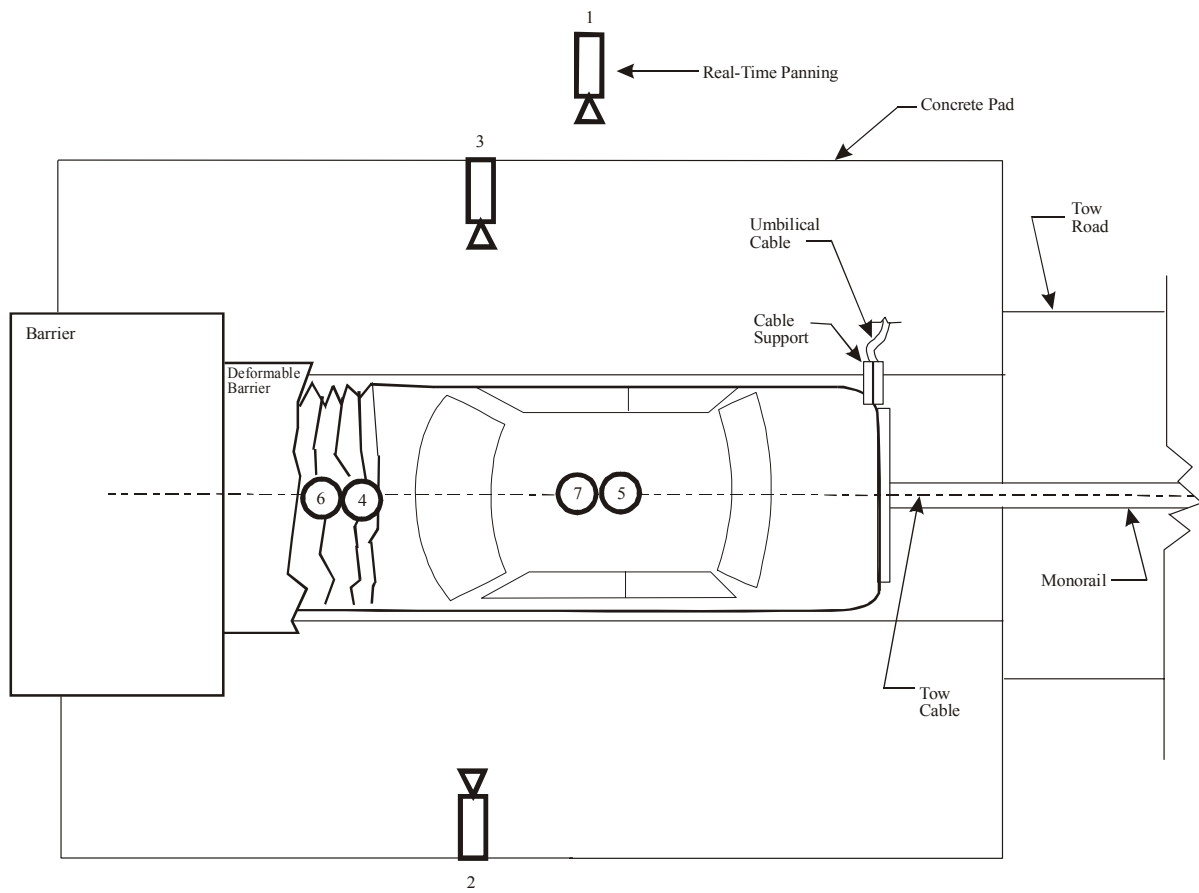


Table 12 Camera Information

Camera Number	Location	Type	Lens (mm)	Speed (frames/s)	Purpose of Camera Data
1	Panning/documentary	Panasonic	Zoom	30	Vehicle dynamics
2	Left side perpendicular	Visario	13	1000	Vehicle dynamics
3	Right side perpendicular	Visario	13	1000	Vehicle dynamics
4	Overhead tight	Visario	50	1000	Vehicle crush
5	Overhead wide	Visario	12.5	1000	Vehicle crush
6	Underbody tight	Visario	25	1000	Vehicle crush
7	Underbody wide	Visario	13	1000	Vehicle crush

Appendix A

Photographs



Figure A-1 Pre-Test Front View

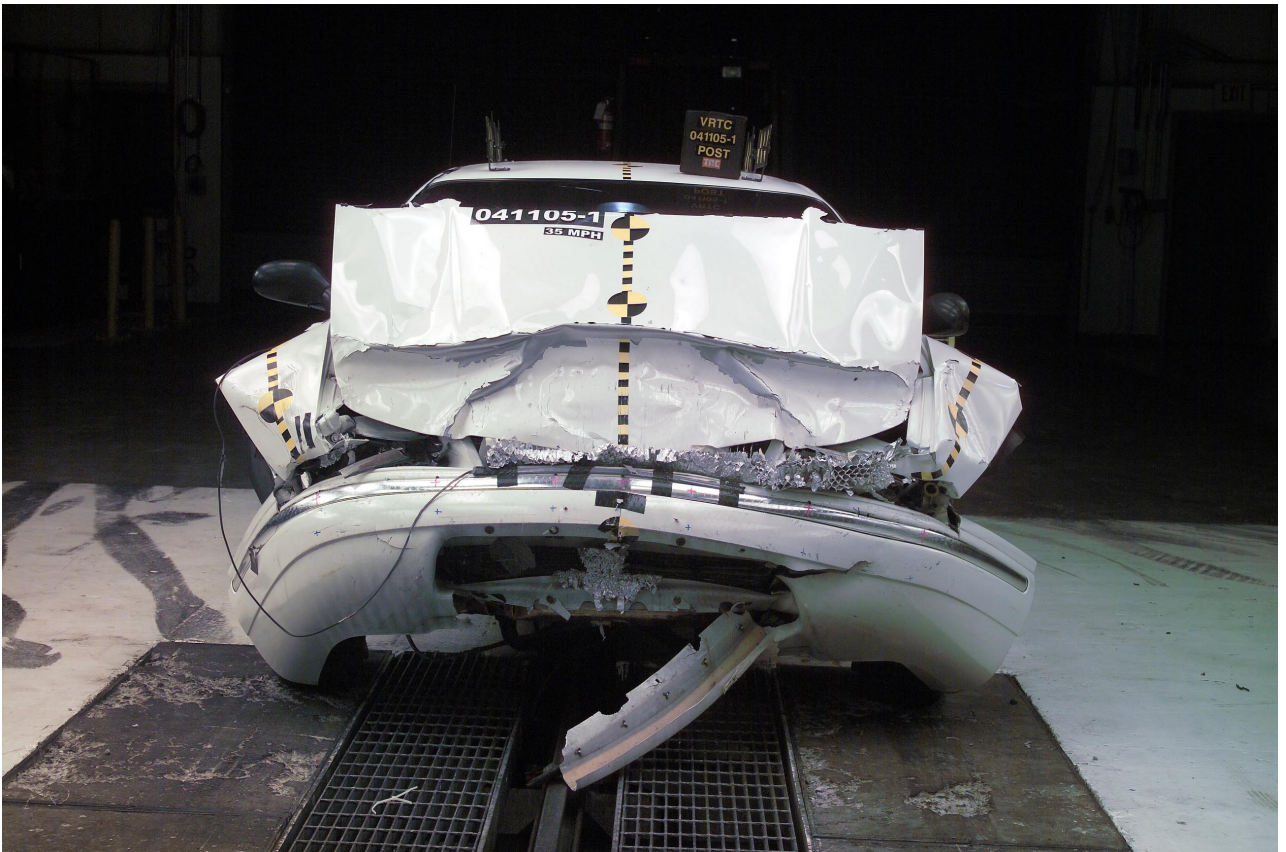


Figure A-2 Post-Test Front View



Figure A-3 Pre-Test Left Front View



Figure A-4 Post-Test Left Front View



Figure A-5 Pre-Test Left Side View



Figure A-6 Post-Test Left Side View



Figure A-7 Post-Test Rear View

Intentionally Left Blank



Figure A-8 Pre-Test Right Rear View



Figure A-9 Post-Test Right Rear View



Figure A-10 Pre-Test Right Side View



Figure A-11 Post-Test Right Side View



Figure A-12 Pre-Test Overhead View

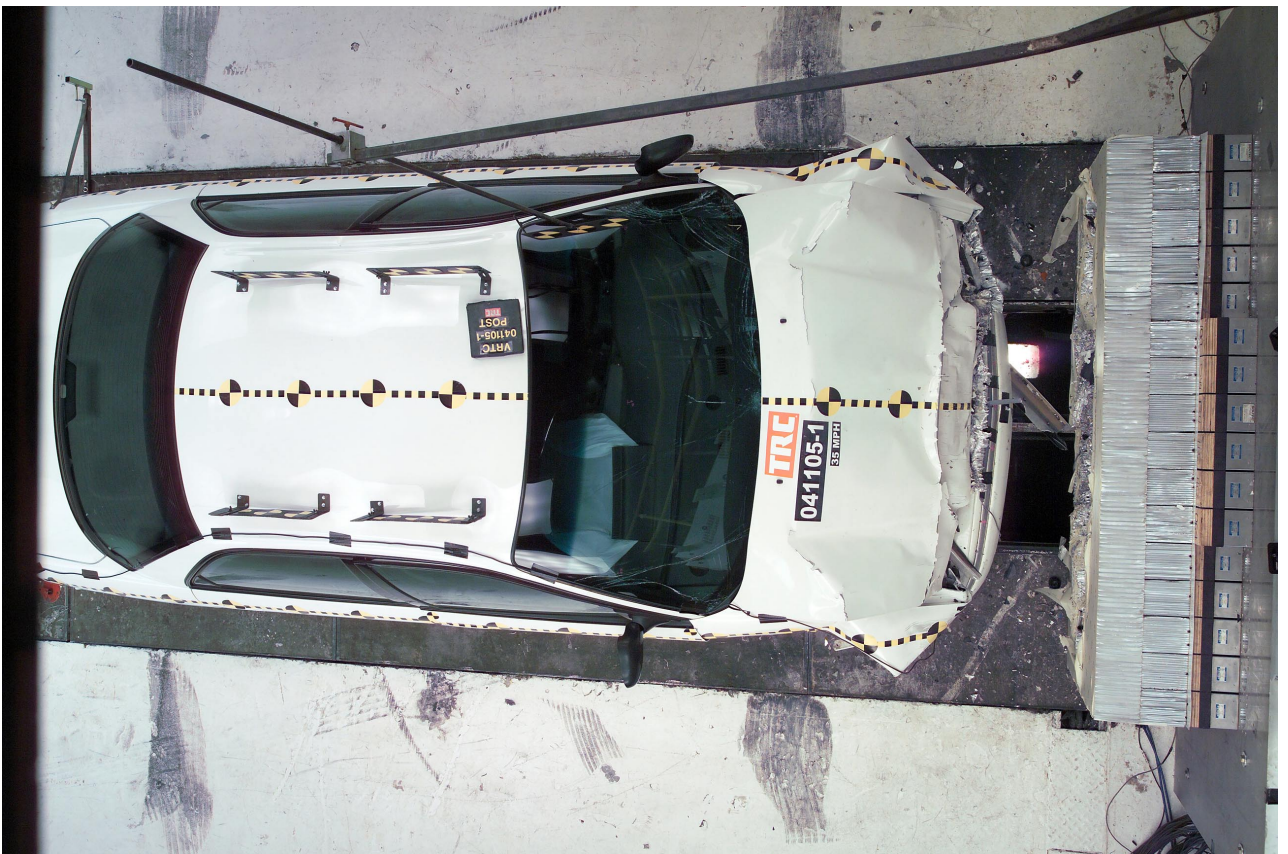


Figure A-13 Post-Test Overhead View

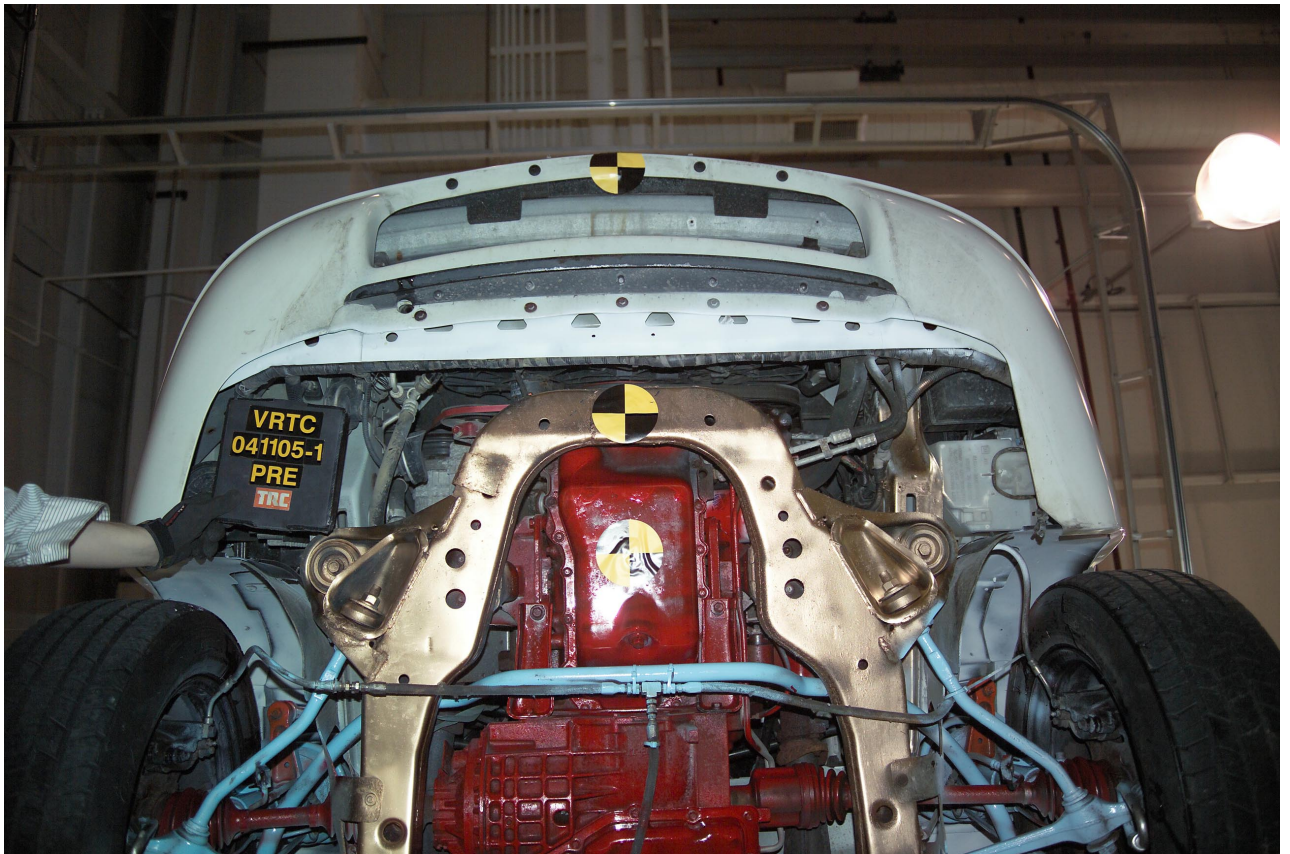


Figure A-14 Pre-Test Front Underbody View

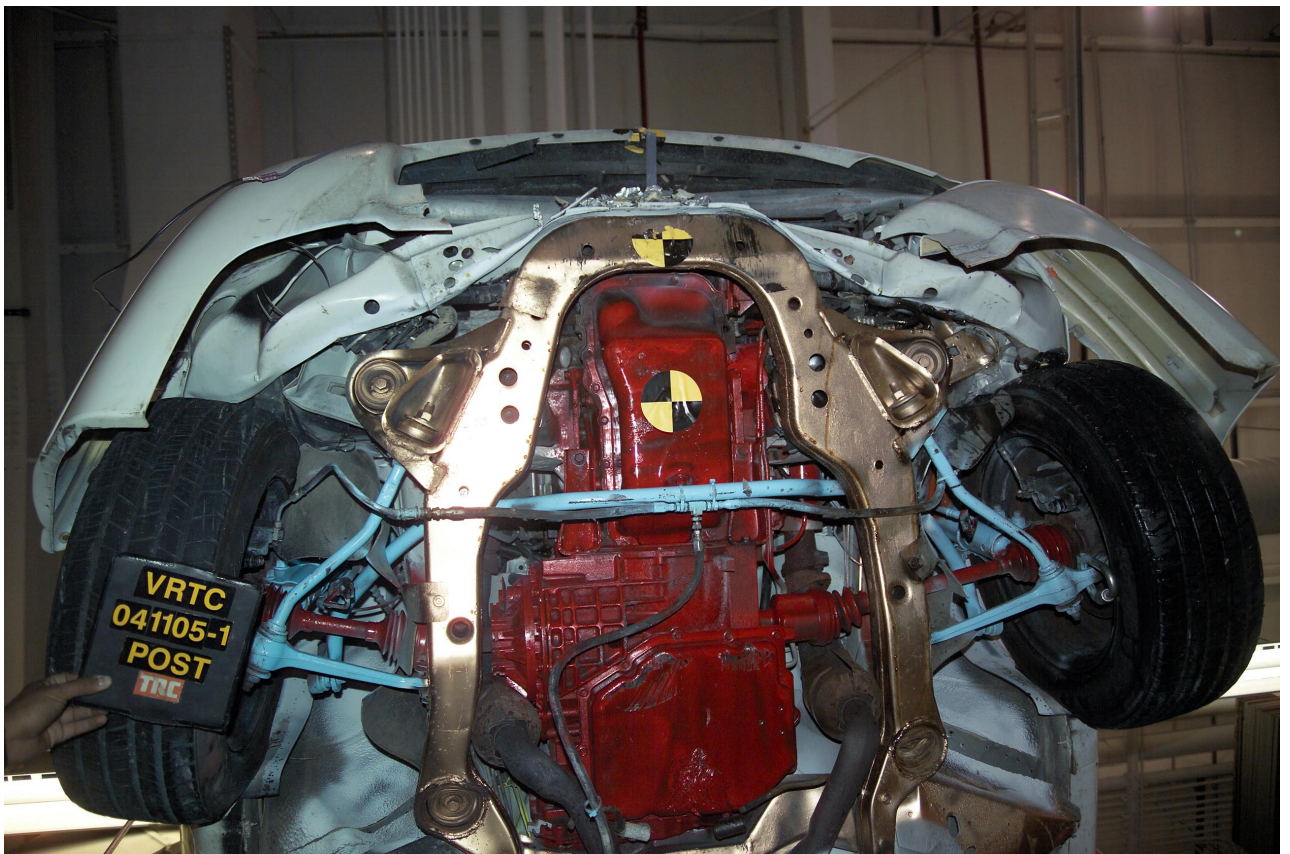


Figure A-15 Post-Test Front Underbody View

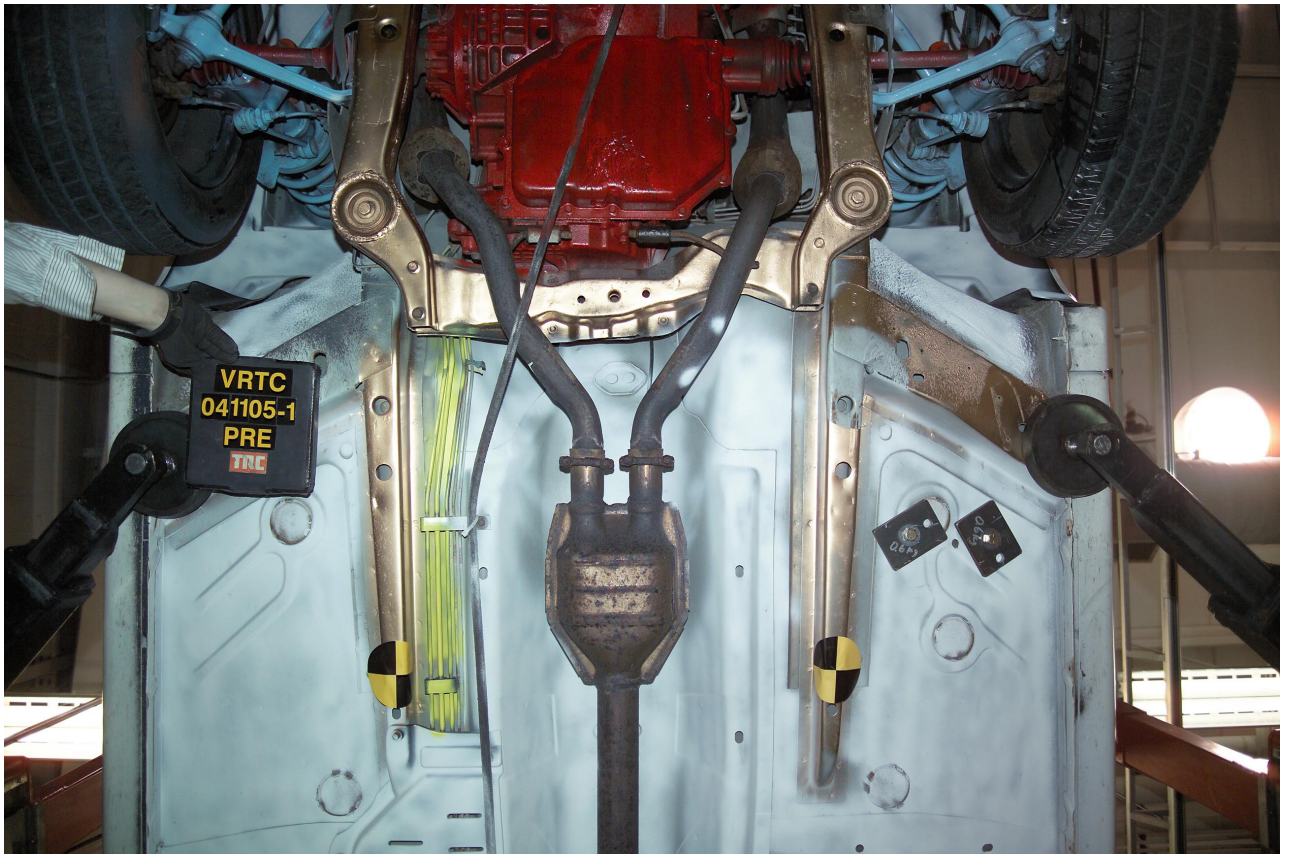


Figure A-16 Pre-Test Front Mid Underbody View

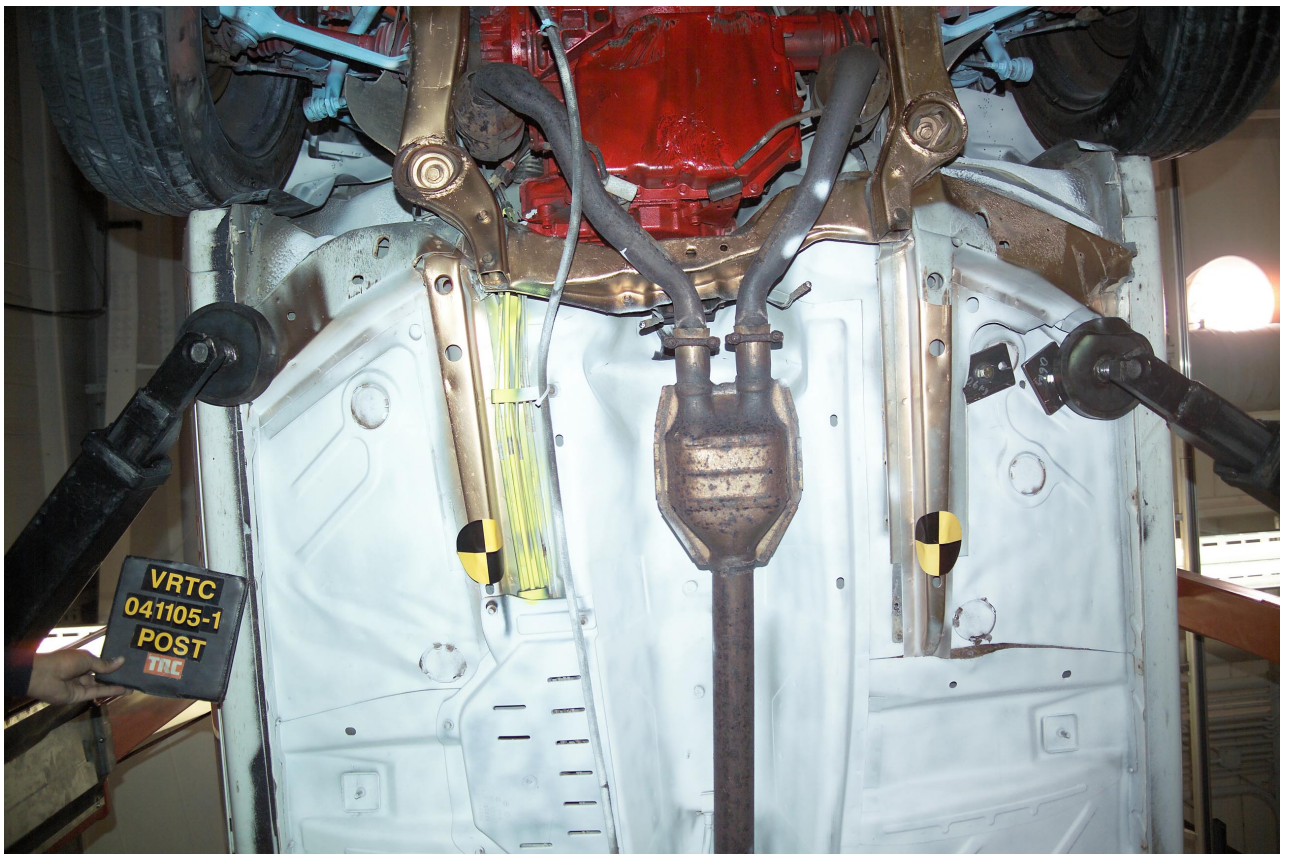


Figure A-17 Post-Test Front Mid Underbody View



Figure A-18 Pre-Test Mid Underbody View

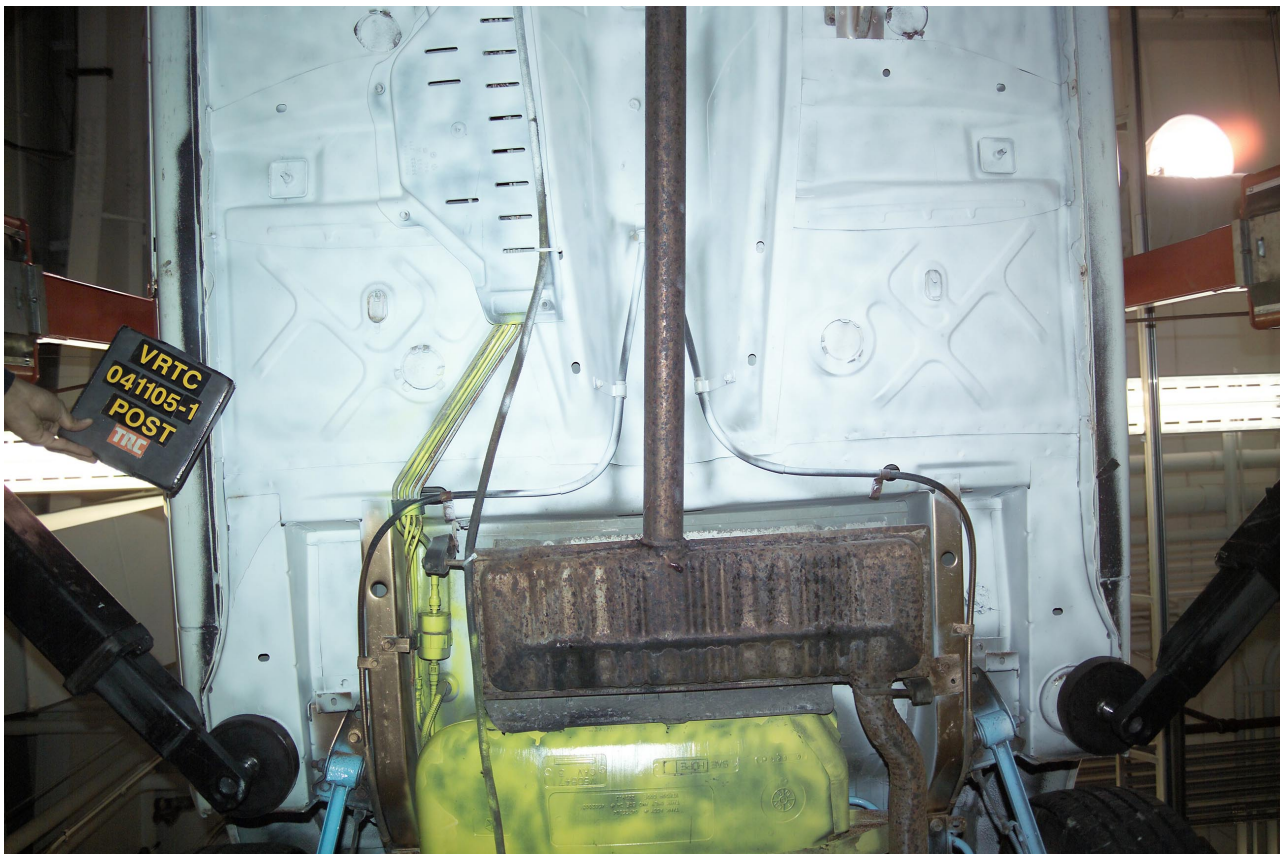


Figure A-19 Post-Test Mid Underbody View

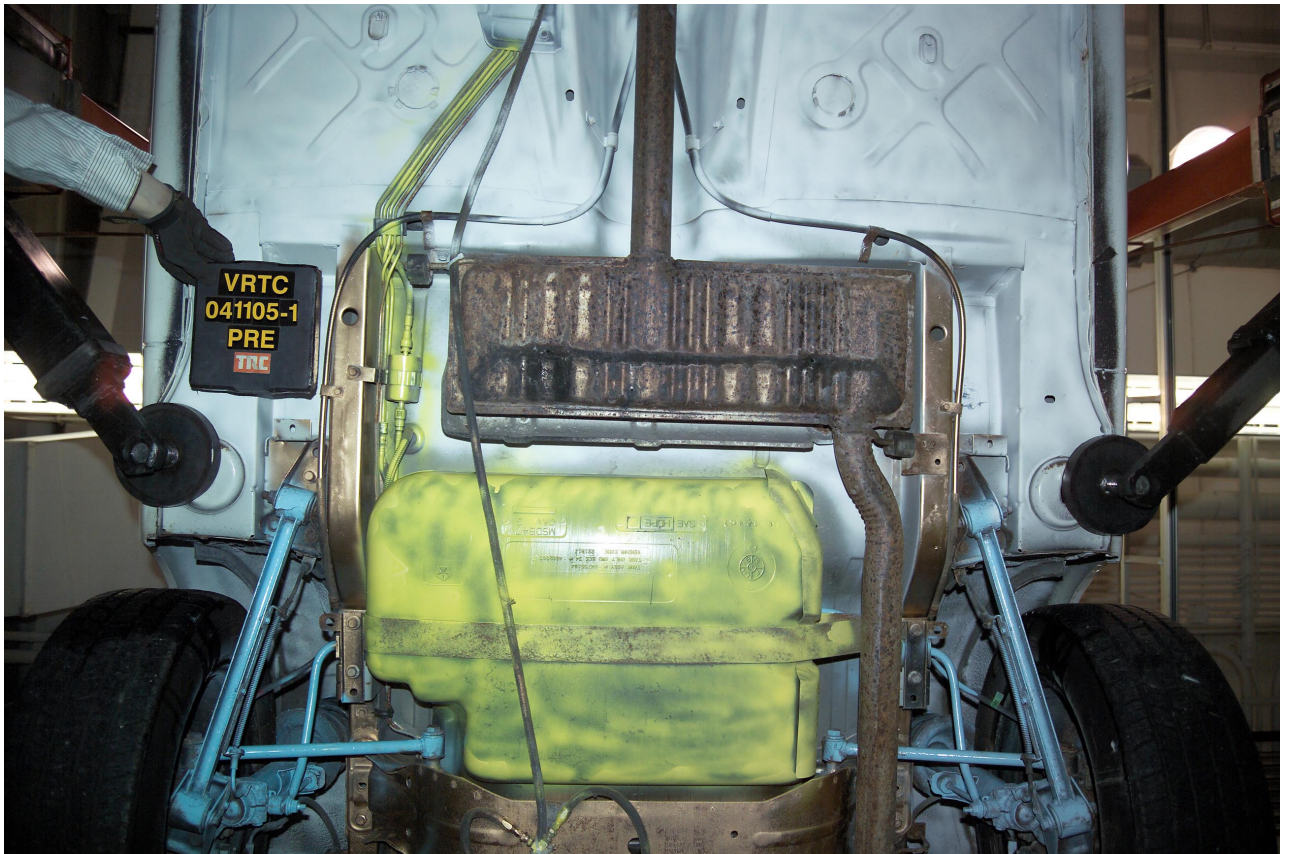


Figure A-20 Pre-Test Rear Mid Underbody View

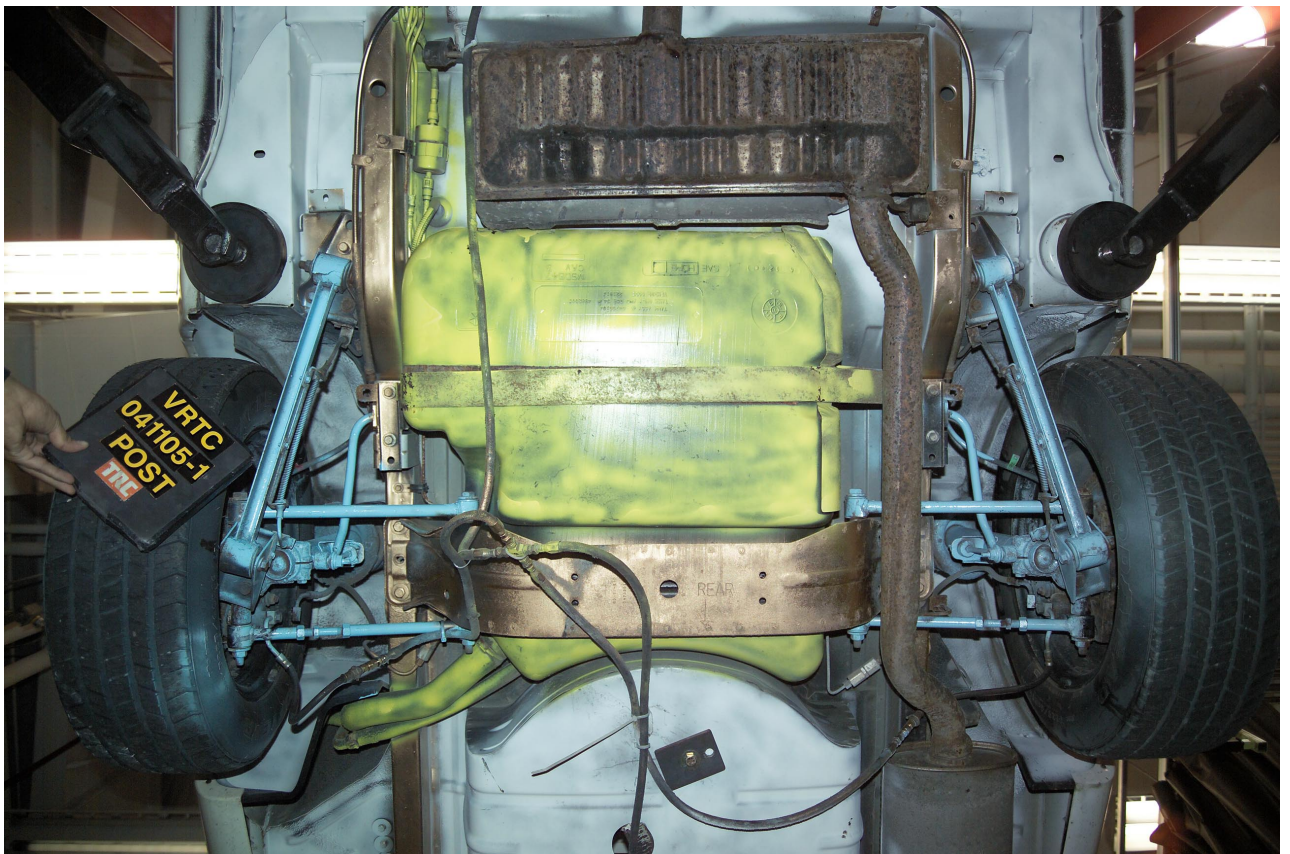


Figure A-21 Post-Test Rear Mid Underbody View

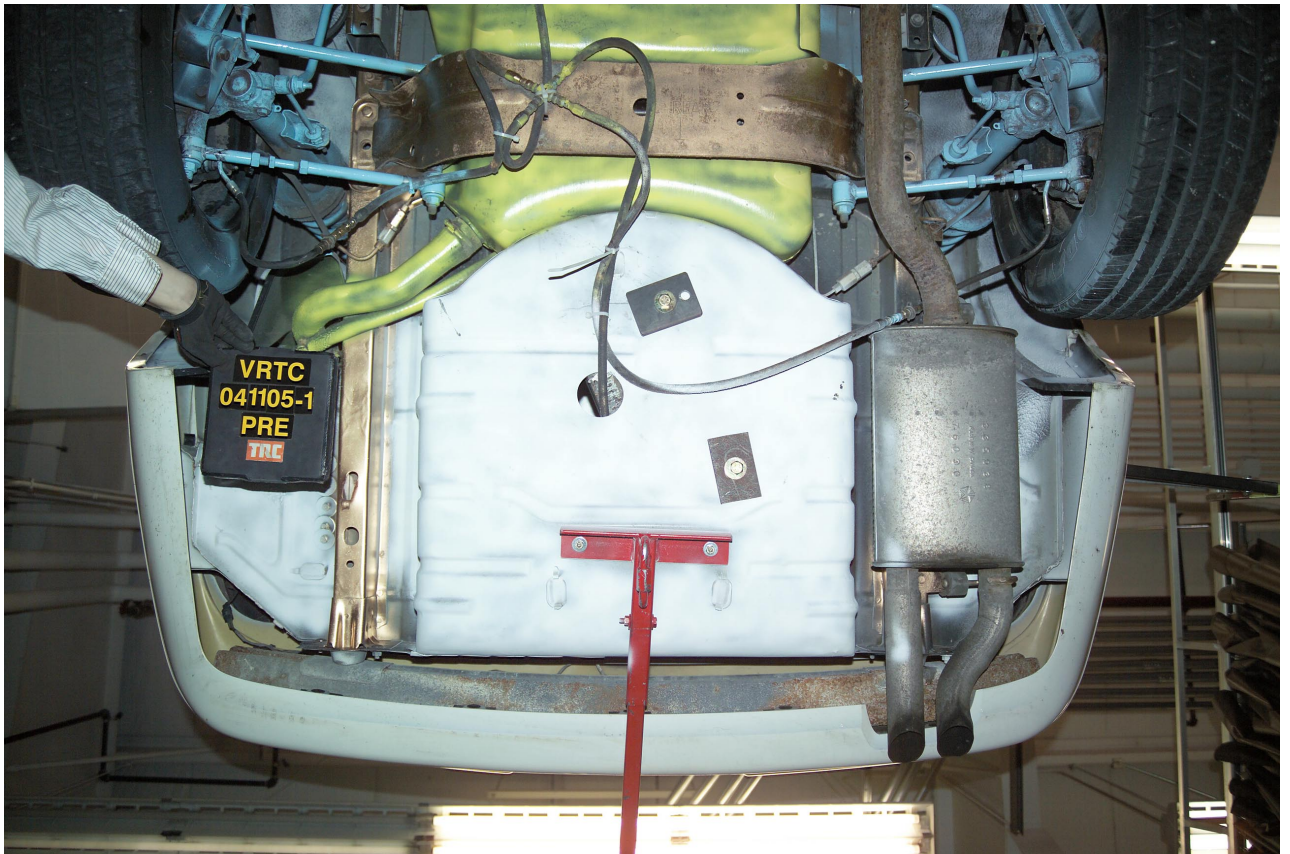


Figure A-22 Pre-Test Rear Underbody View

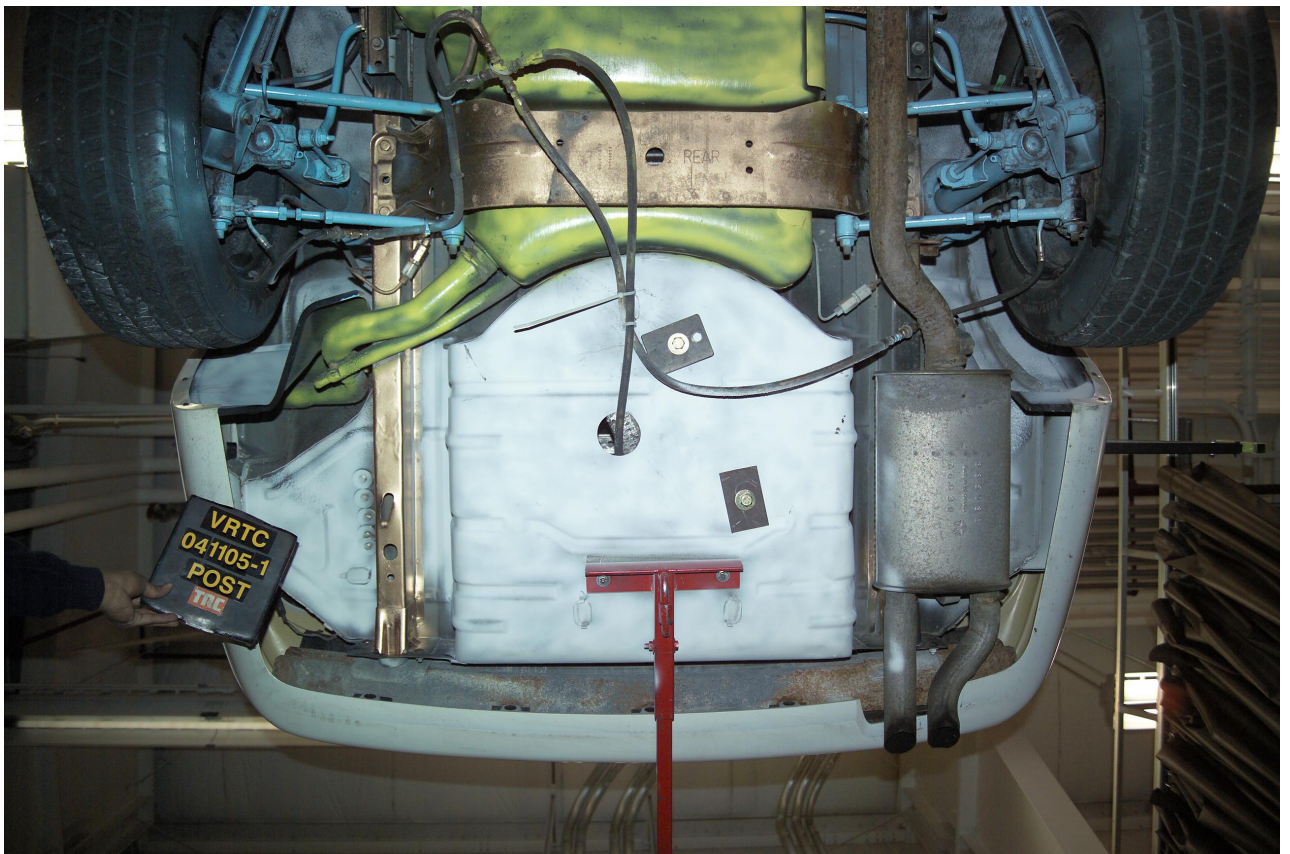


Figure A-23 Post-Test Rear Underbody View



Figure A-24 Pre-Test Fuel Tank View

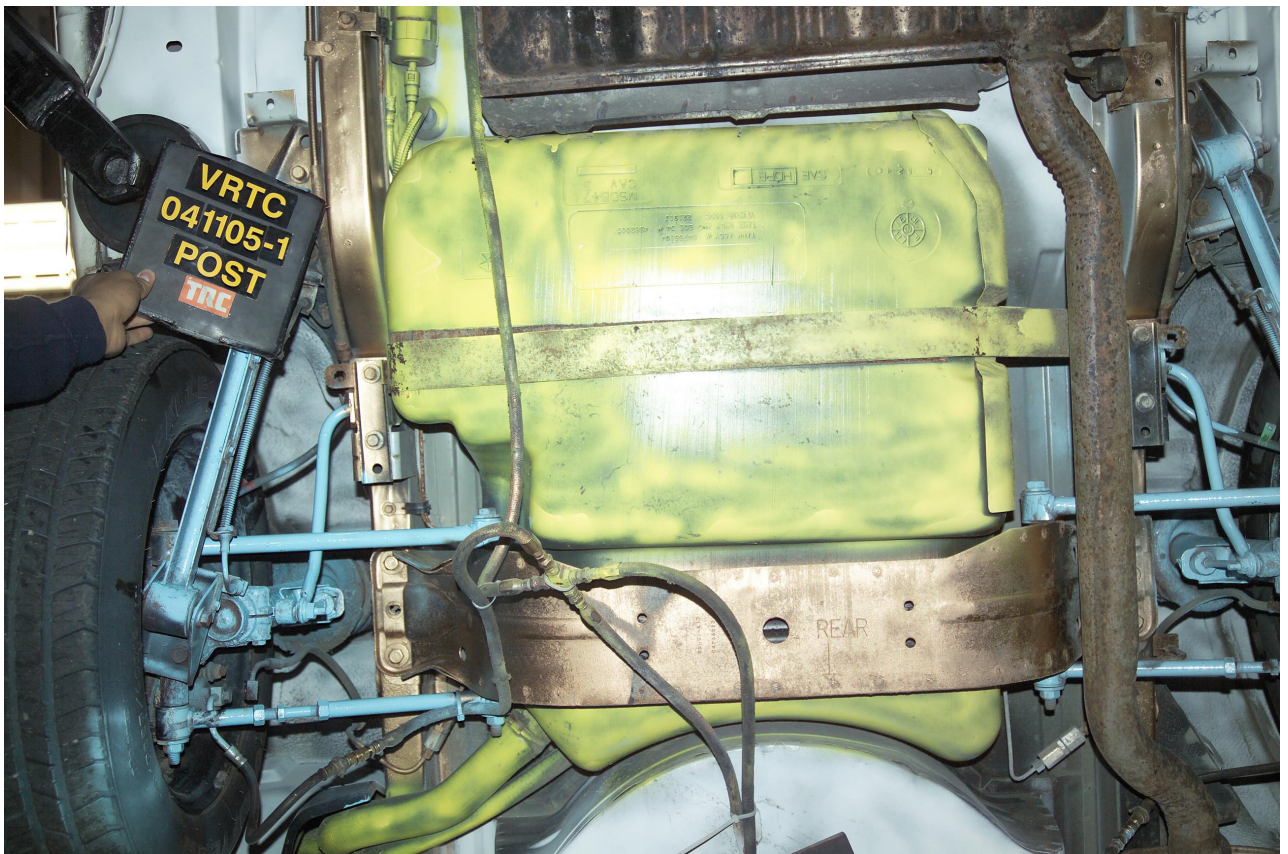


Figure A-25 Post-Test Fuel Tank View



Figure A-26 Pre-Test Fuel Filler Neck View



Figure A-27 Post-Test Fuel Filler Neck View



Figure A-28 Pre-Test Fuel Filler Cap View



Figure A-29 Post-Test Fuel Filler Cap View



Figure A-30 Pre-Test Engine Compartment View

Intentionally Left Blank



Figure A-31 Pre-Test Windshield View



Figure A-32 Post-Test Windshield View



Figure A-33 Post-Test Driver Airbag View



Figure A-34 Post-Test Driver Toe-board Deformation View



Figure A-35 Post-Test Passenger Airbag View



Figure A-36 Post-Test Passenger Toe-board Deformation View

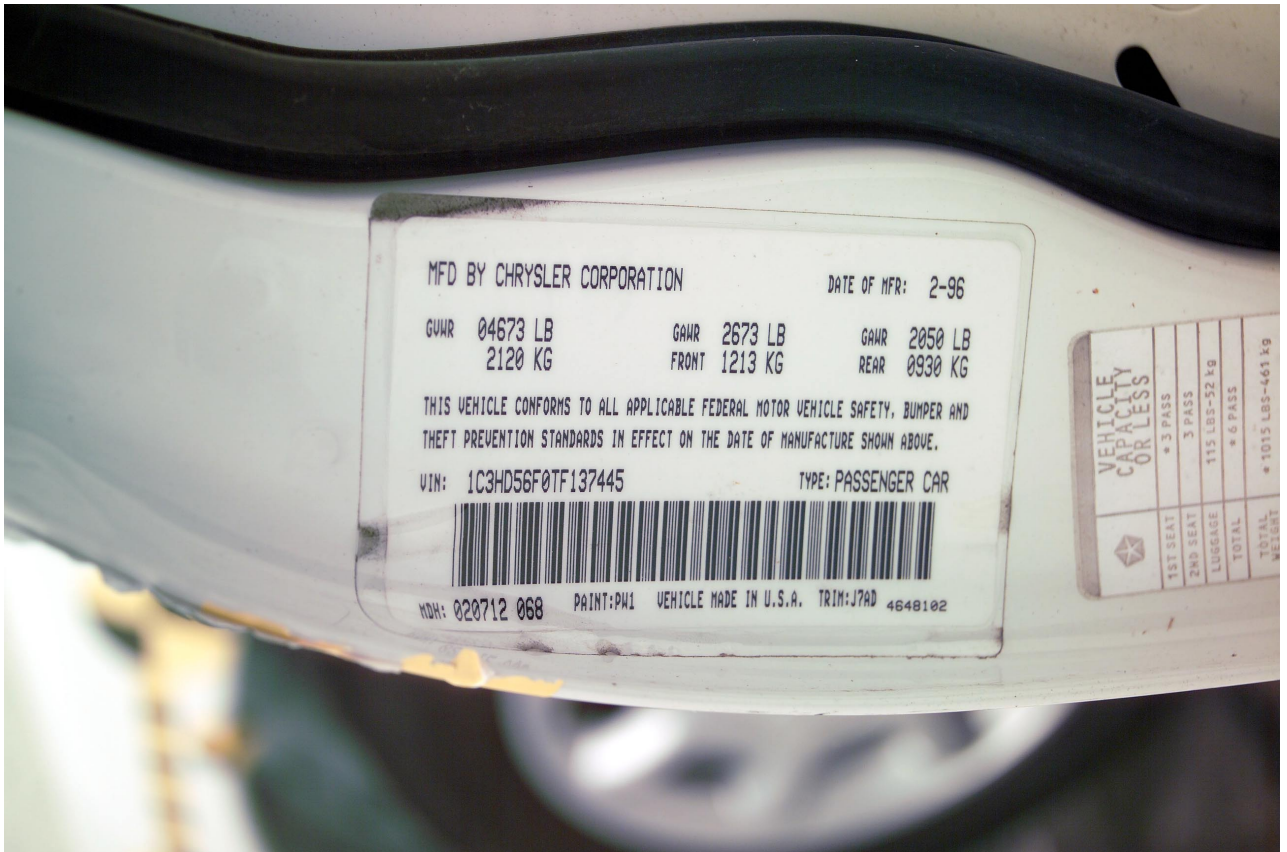


Figure A-37 Vehicle Certification Label View



Figure A-38 Vehicle Tire Pressure Label View



Figure A-39 Pre-Test Deformable Barrier Front View

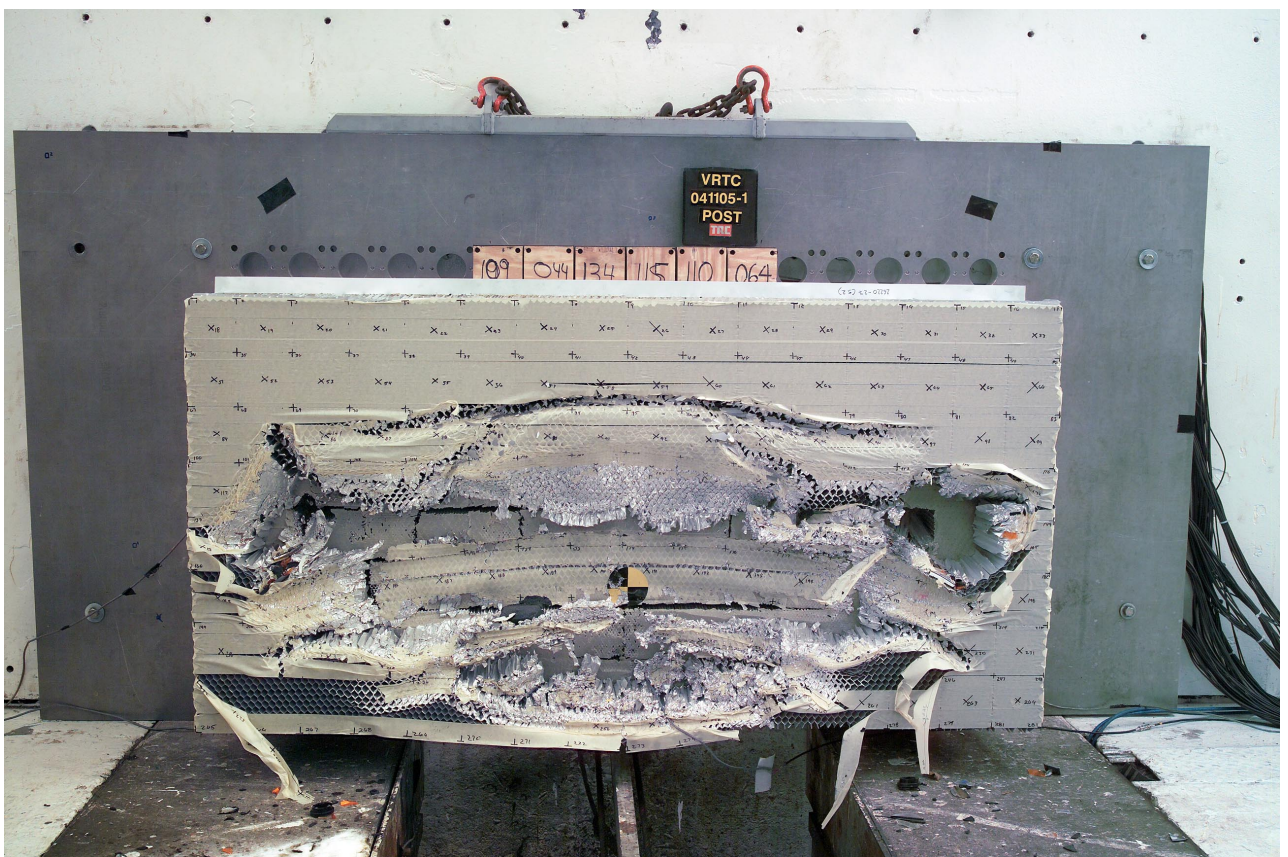


Figure A-40 Post-Test Deformable Barrier Front View

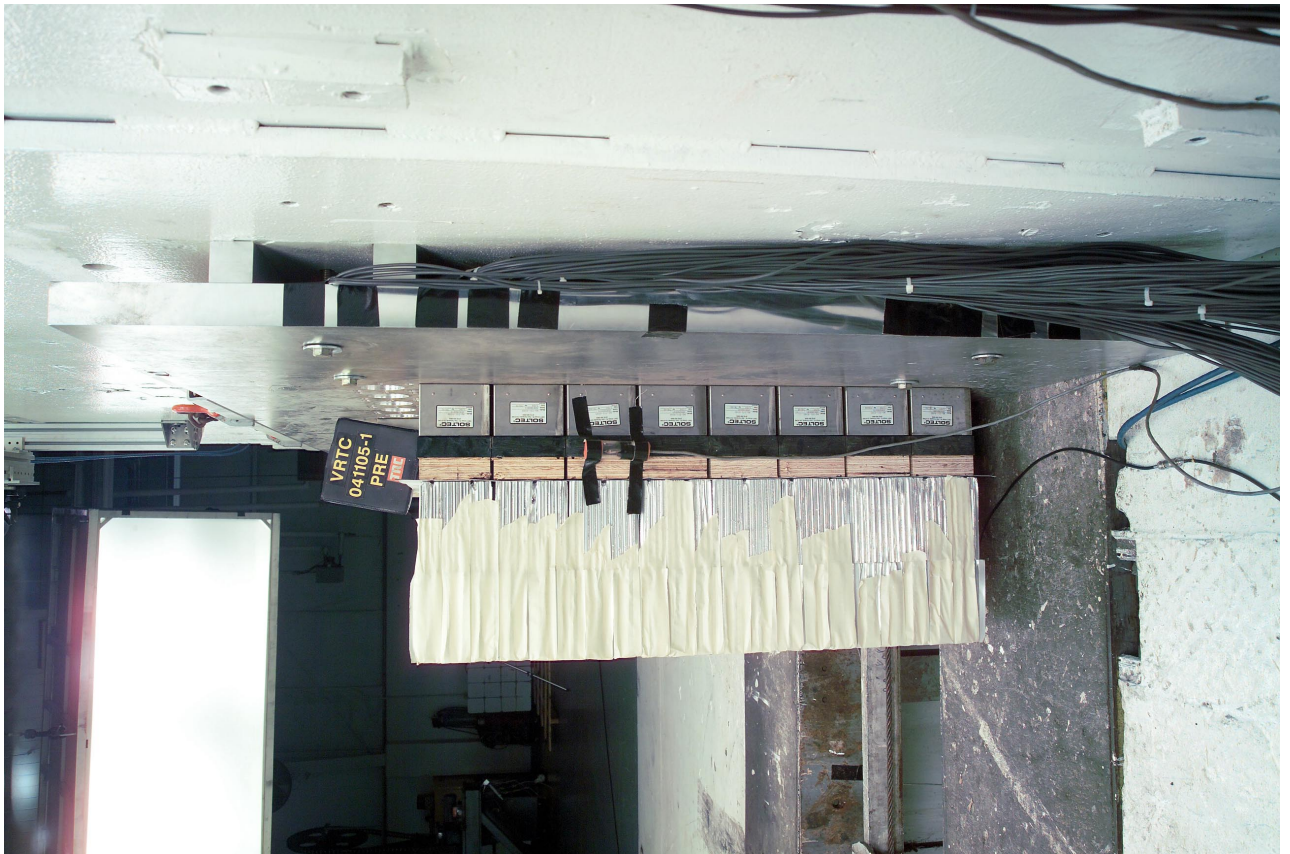


Figure A-41 Pre-Test Deformable Barrier Left Side View



Figure A-42 Post-Test Deformable Barrier Left Side View

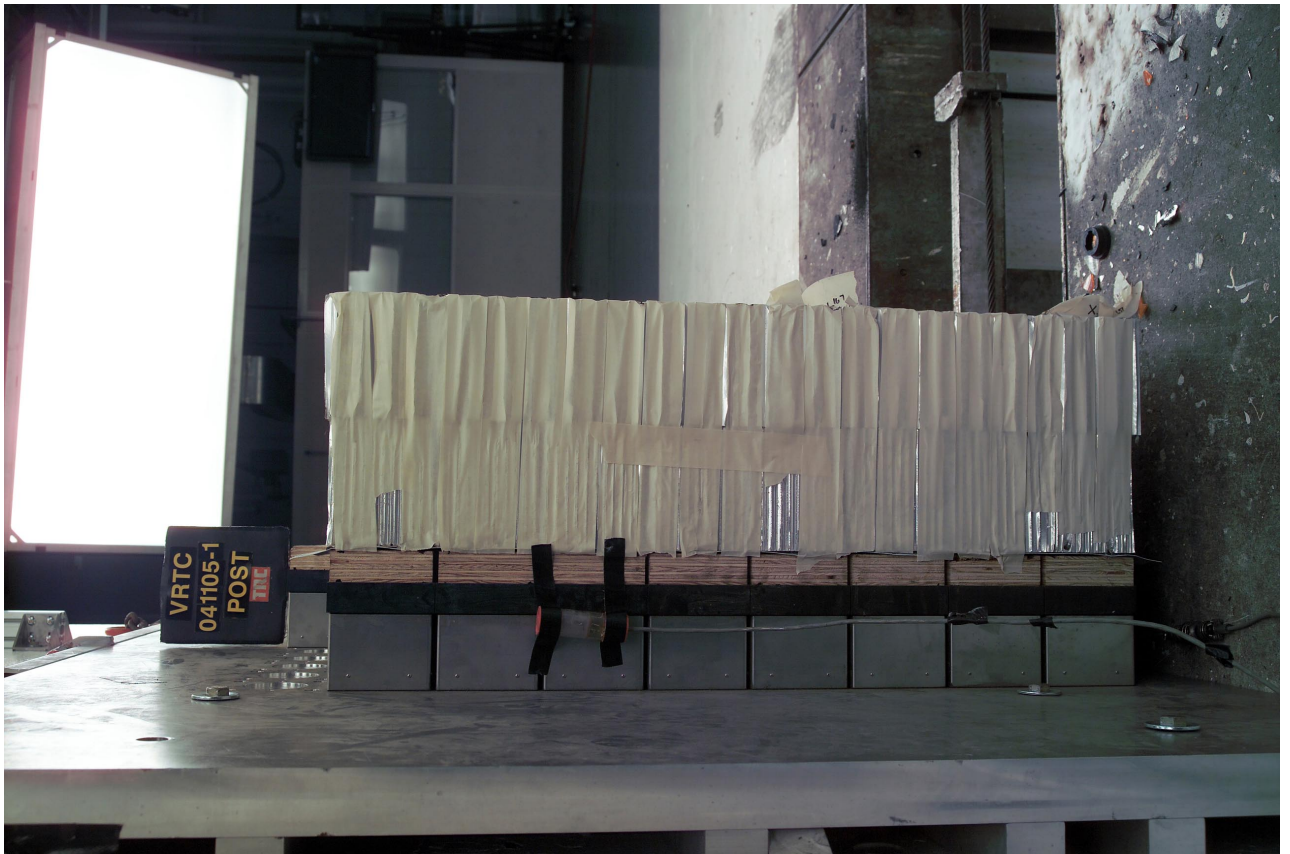


Figure A-43 Post-Test Deformable Barrier Right Side View

Intentionally Left Blank

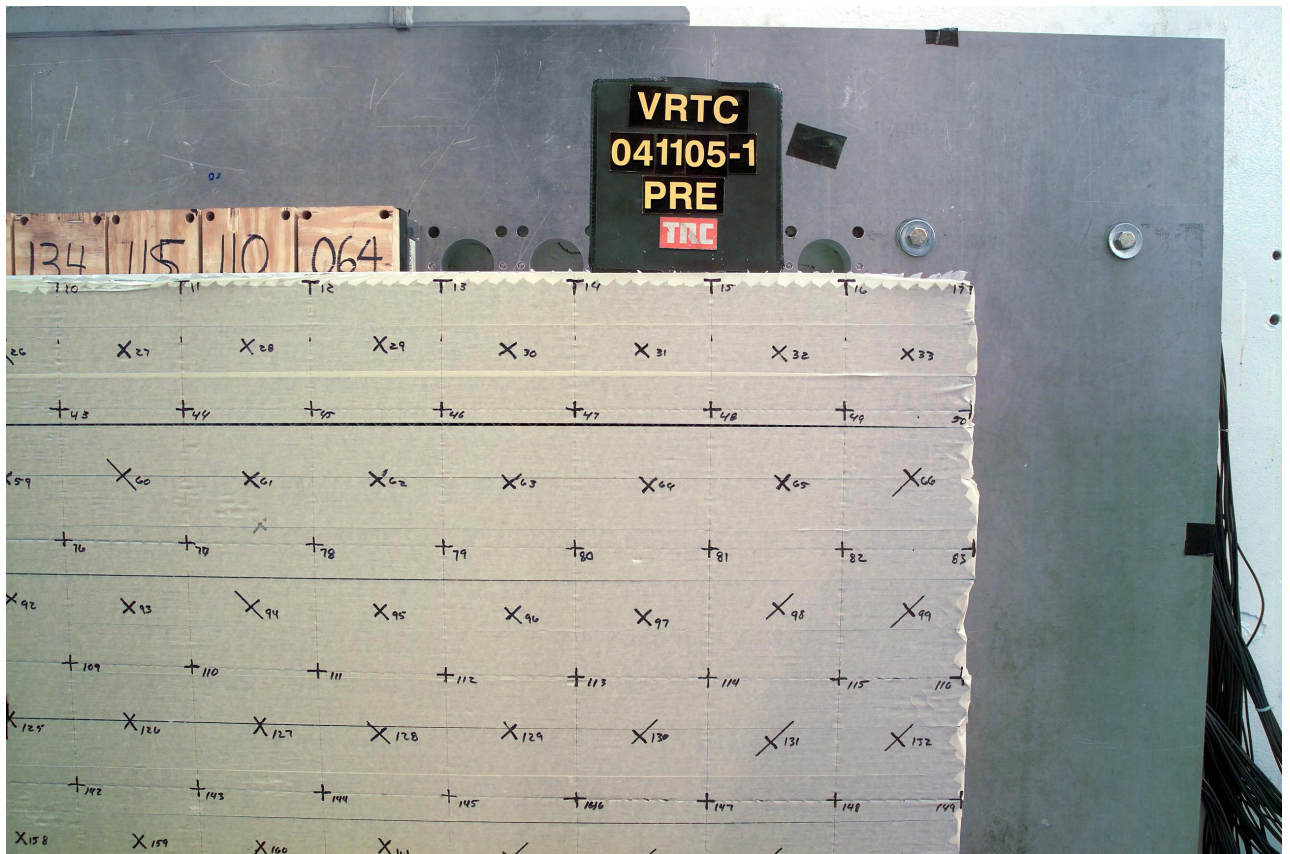


Figure A-44 Pre-Test Deformable Barrier Cover Detail - View 1



Figure A-45 Pre-Test Deformable Barrier Cover Detail - View 2



Figure A-46 Post-Test Vehicle Impact Point Deviation View



Figure A-47 Pre-Test Vehicle Ballast View

Appendix B

Data Plots



Transportation Research Center, Inc.

Vehicle CG X-Axis Acceleration

Date: 11/05/2004

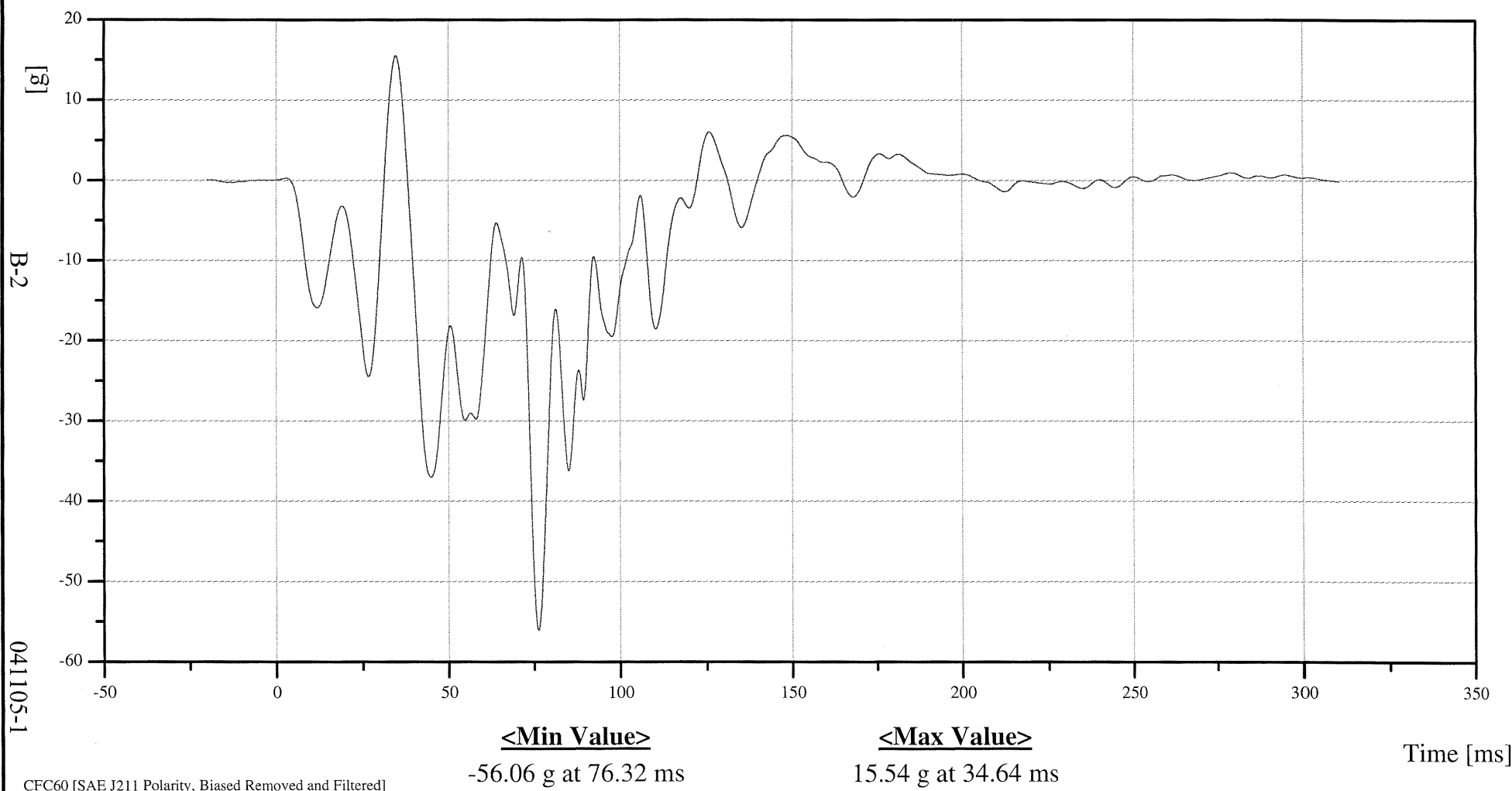
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

VCGXG1





Transportation Research Center, Inc.

Vehicle CG Y-Axis Acceleration

Date: 11/05/2004

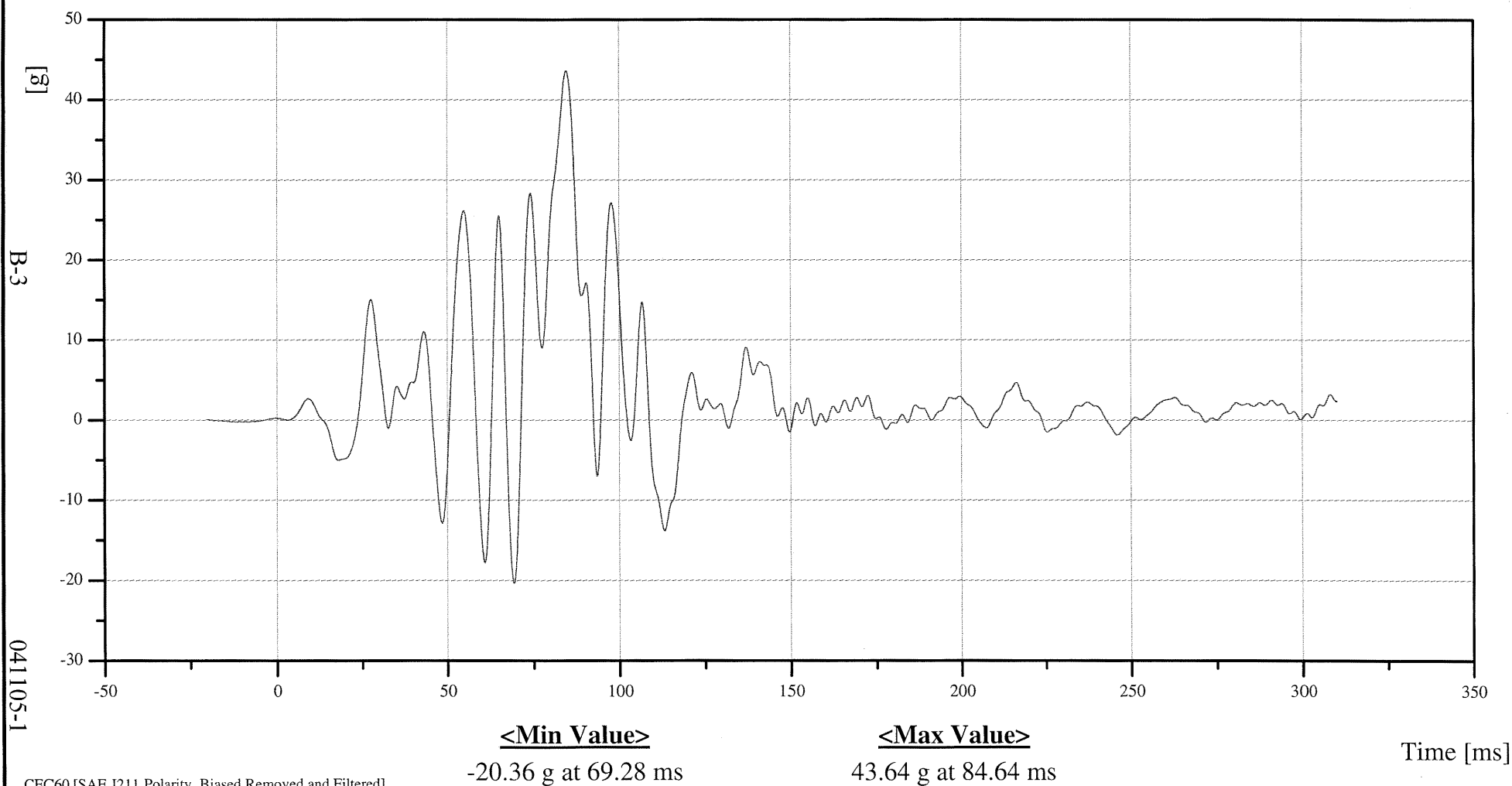
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

VCGYG1



CFC60 [SAE J211 Polarity, Biased Removed and Filtered]



Transportation Research Center, Inc.

Vehicle CG Z-Axis Acceleration

Date: 11/05/2004

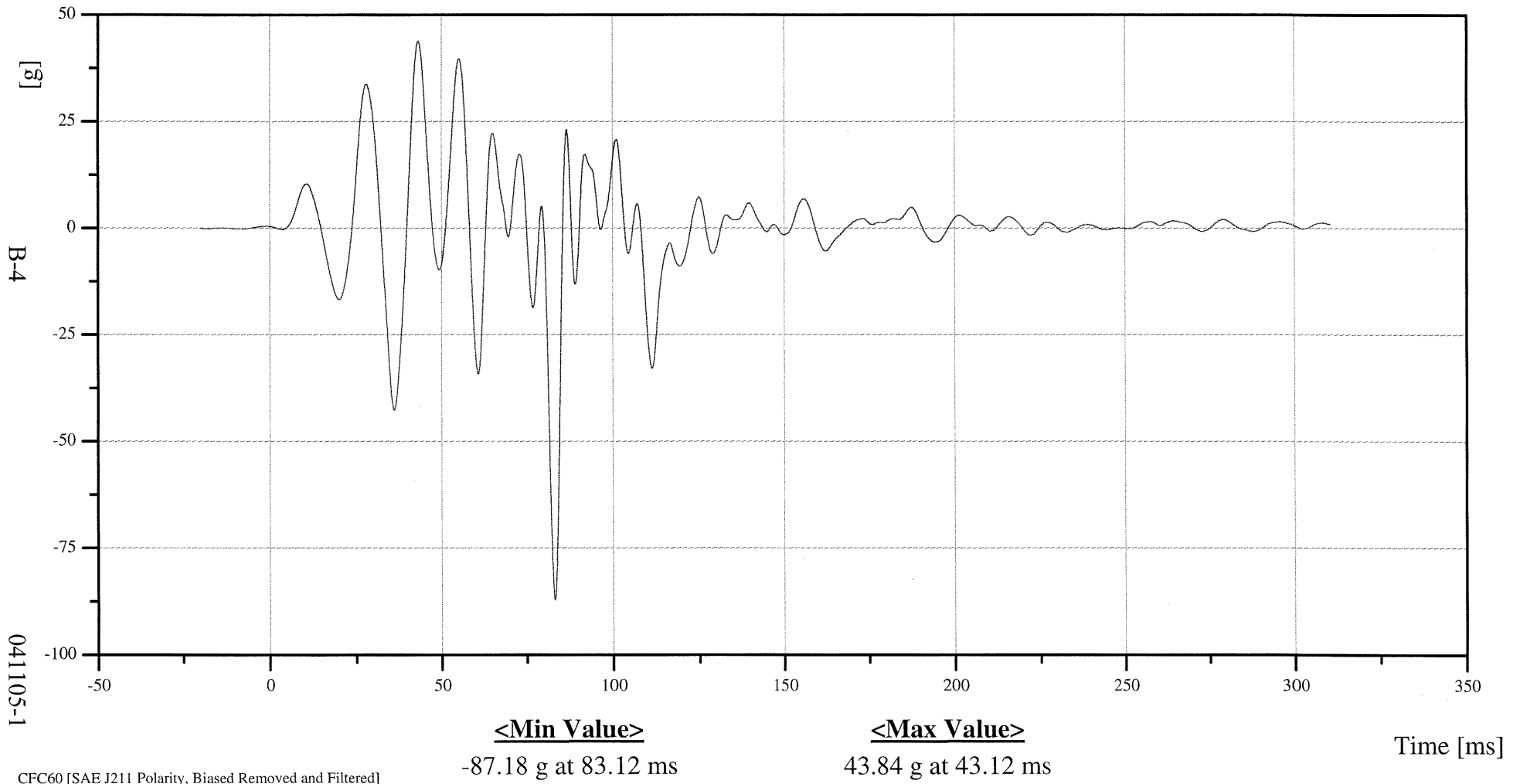
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

VCGZG1





Transportation Research Center, Inc.

Vehicle CG Resultant Acceleration

Date: 11/05/2004

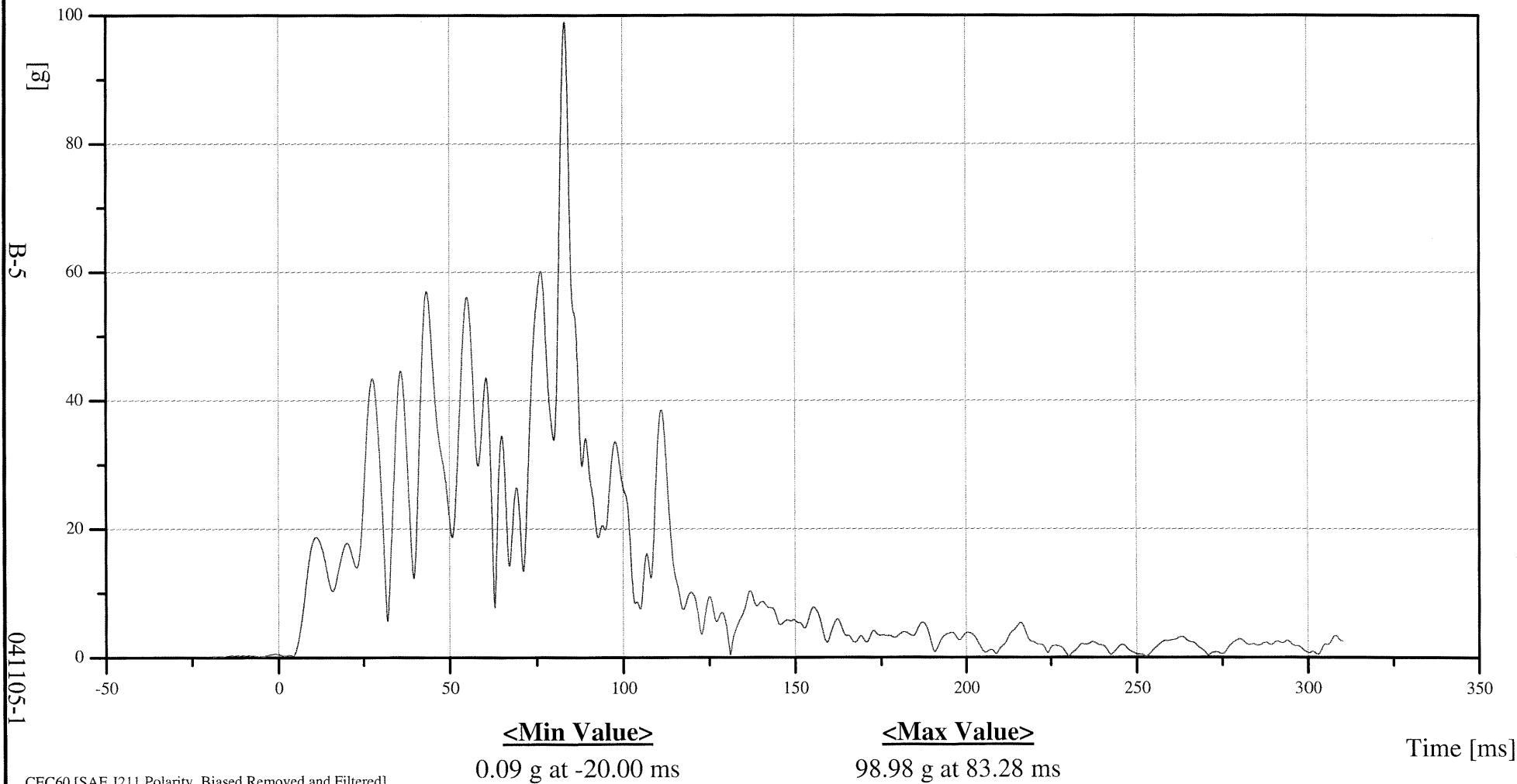
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

VCGRG1



CFC60 [SAE J211 Polarity, Biased Removed and Filtered]



Transportation Research Center, Inc.

Vehicle Rear Deck X-Axis Acceleration

Date: 11/05/2004

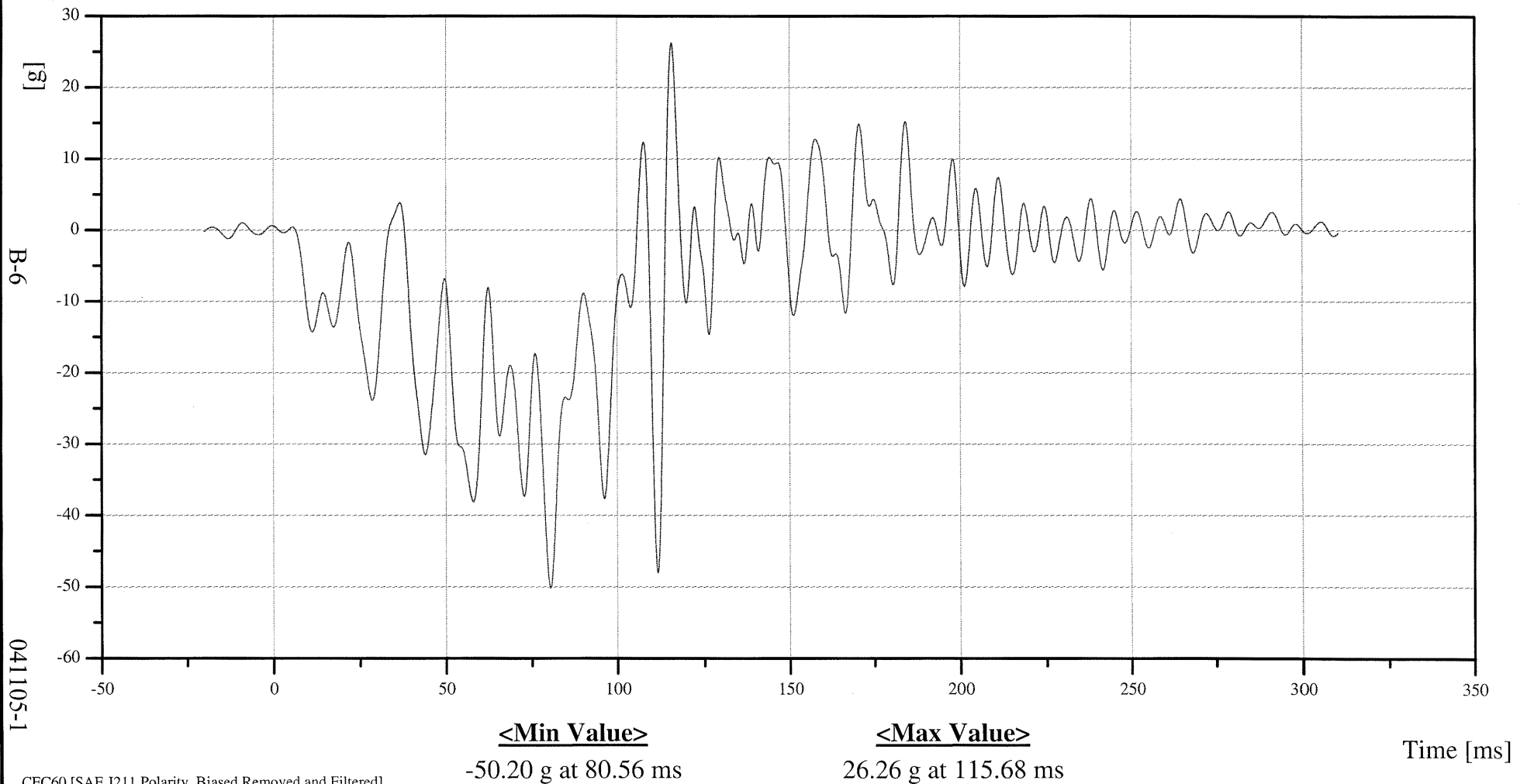
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

RDKXG1





Transportation Research Center, Inc.

Vehicle Rear Deck Y-Axis Acceleration

Date: 11/05/2004

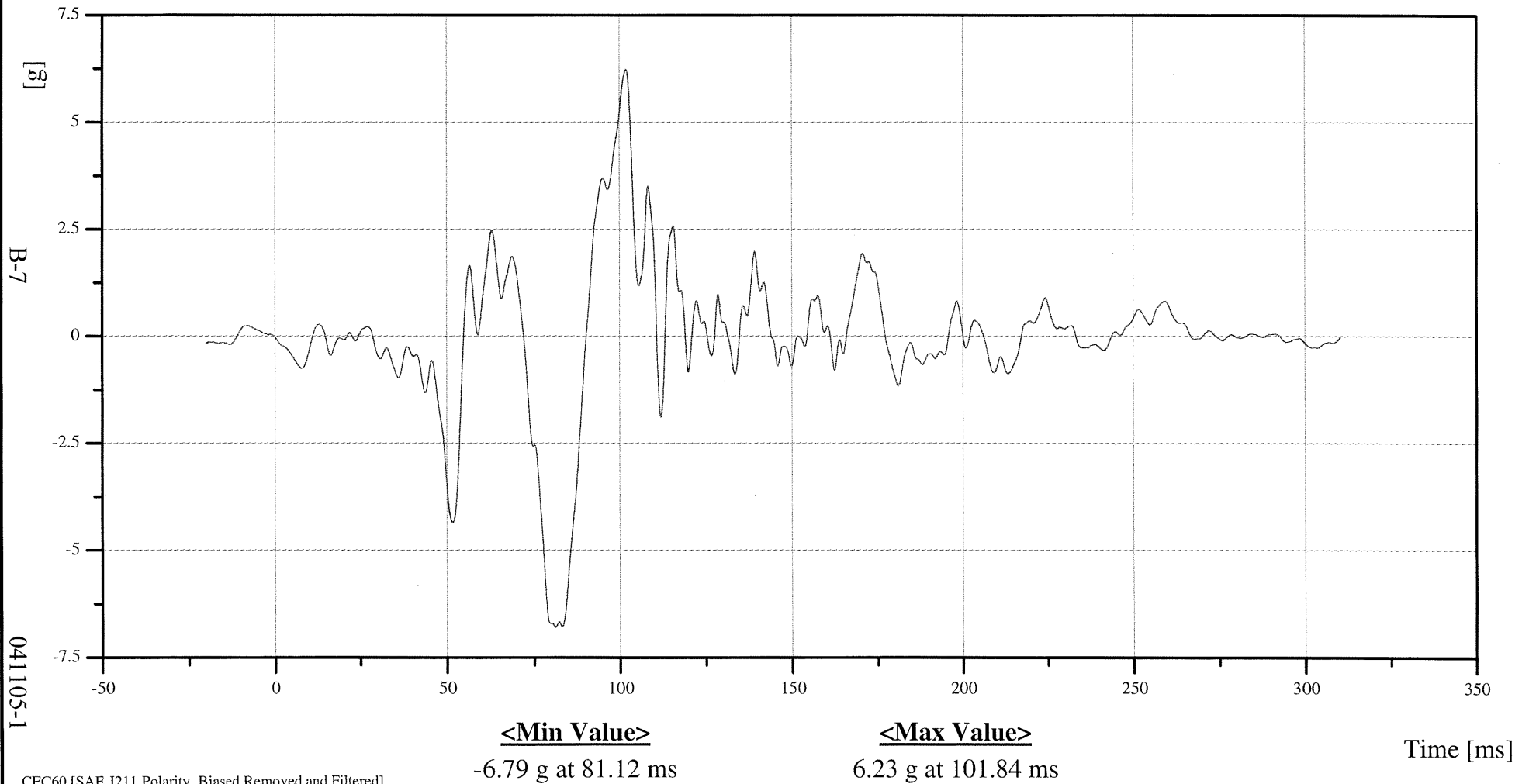
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

RDKYG1



CFC60 [SAE J211 Polarity, Biased Removed and Filtered]



Transportation Research Center, Inc.

Vehicle Rear Deck Z-Axis Acceleration

Date: 11/05/2004

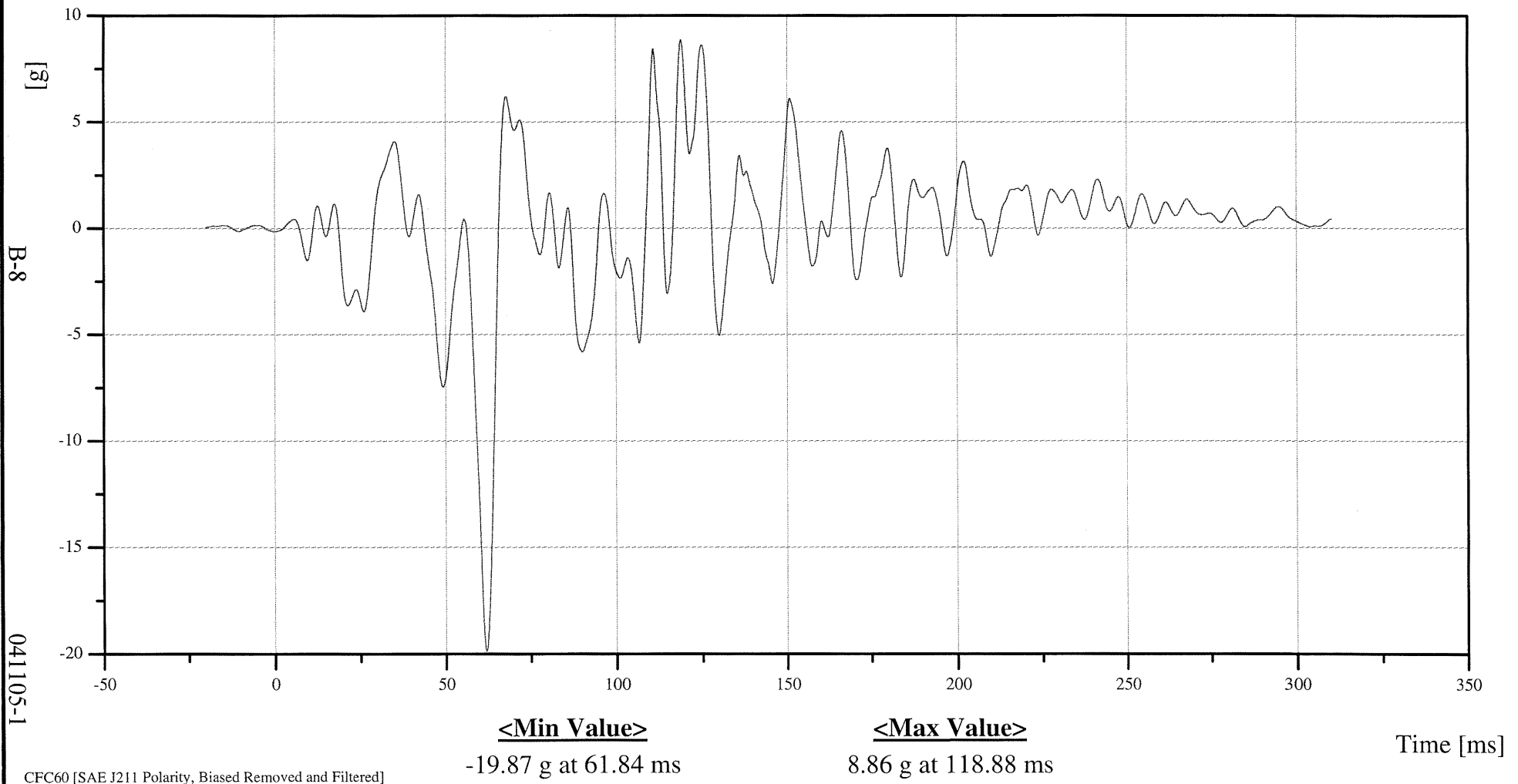
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

RDKZG1





Transportation Research Center, Inc.

Vehicle Rear Deck Resultant Acceleration

Date: 11/05/2004

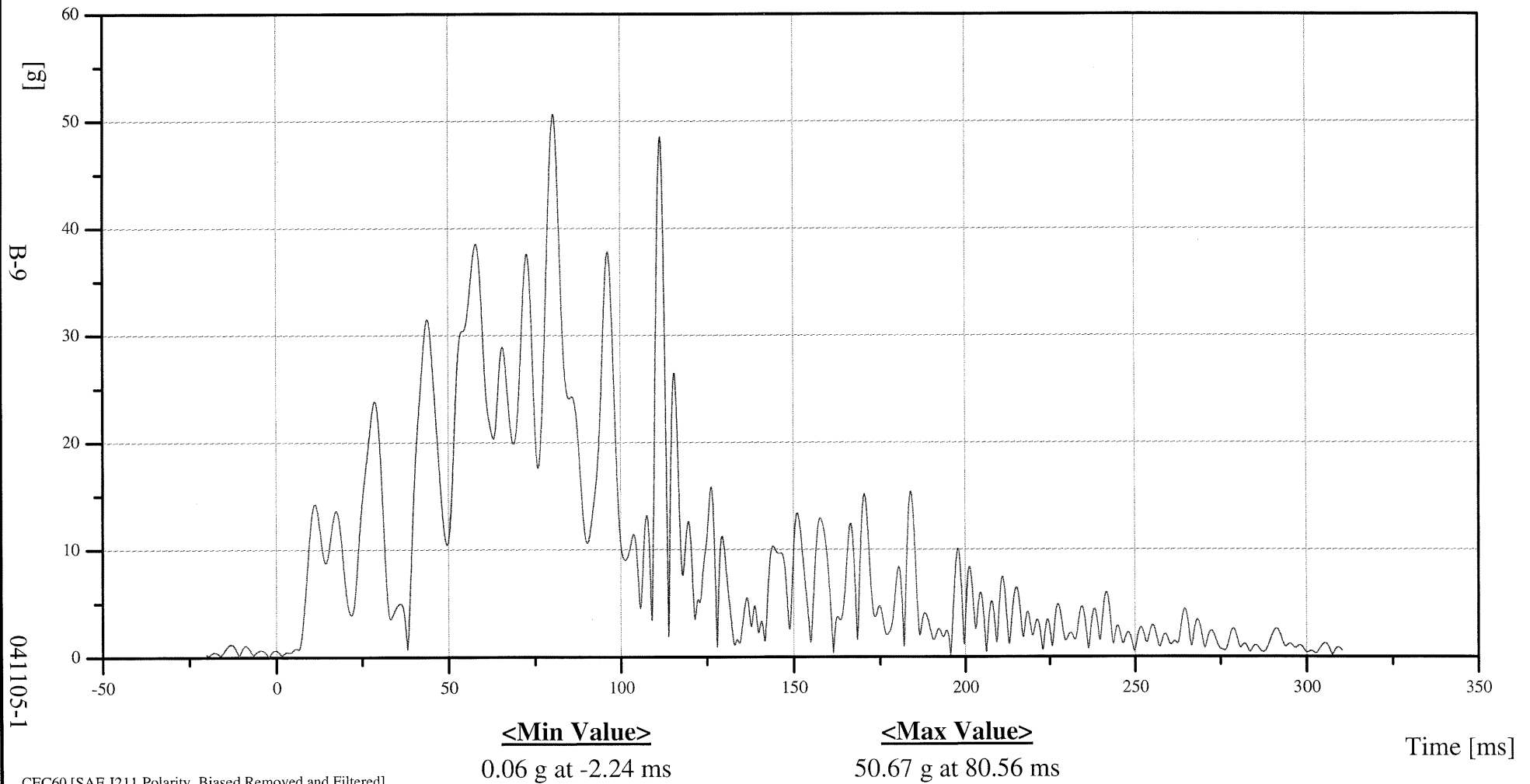
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

RDKRG1





Transportation Research Center, Inc.

Driver Airbag - Primary

Date: 11/05/2004

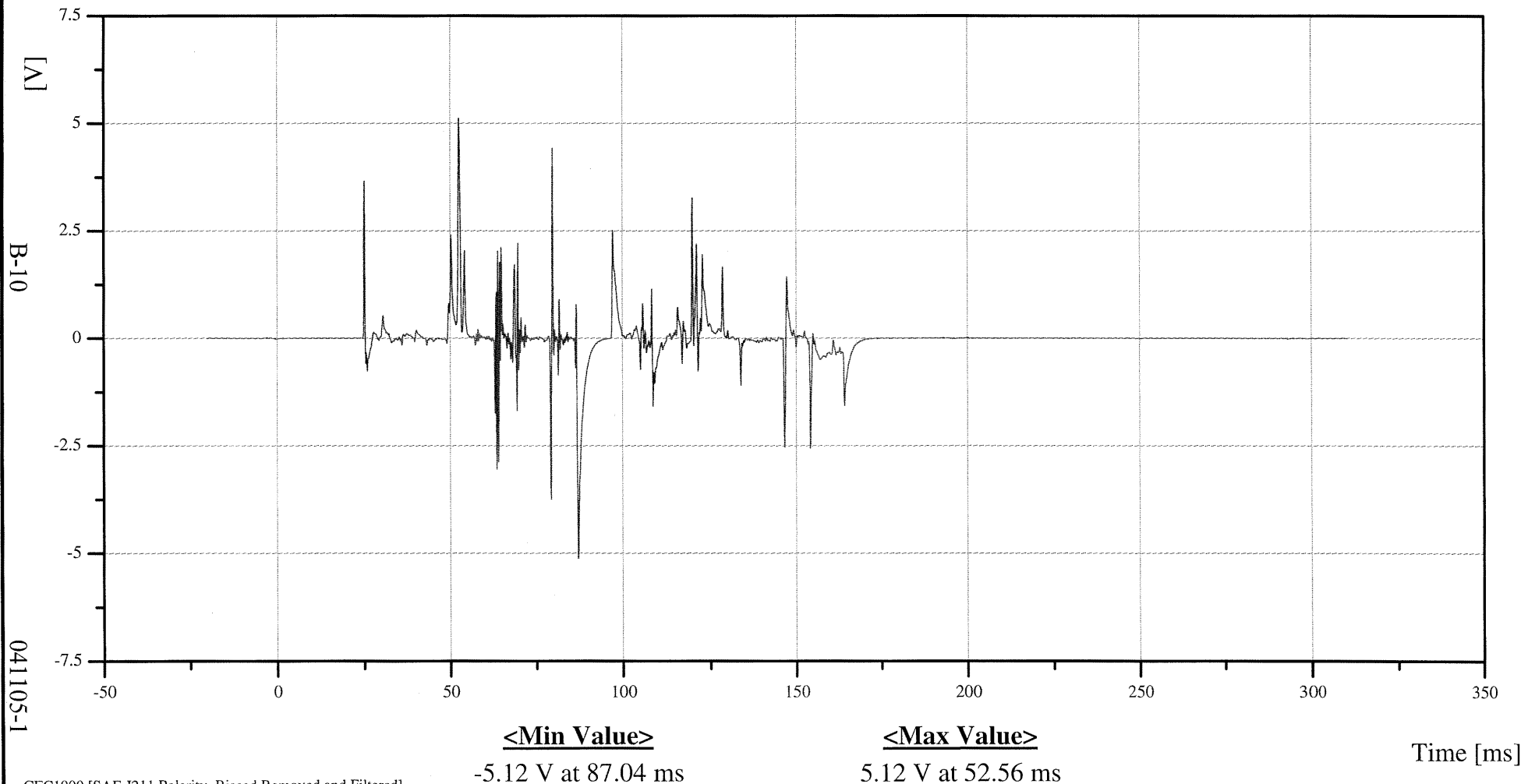
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

DABETA



CFC1000 [SAE J211 Polarity, Biased Removed and Filtered]



Transportation Research Center, Inc.

Passenger Airbag - Primary

Date: 11/05/2004

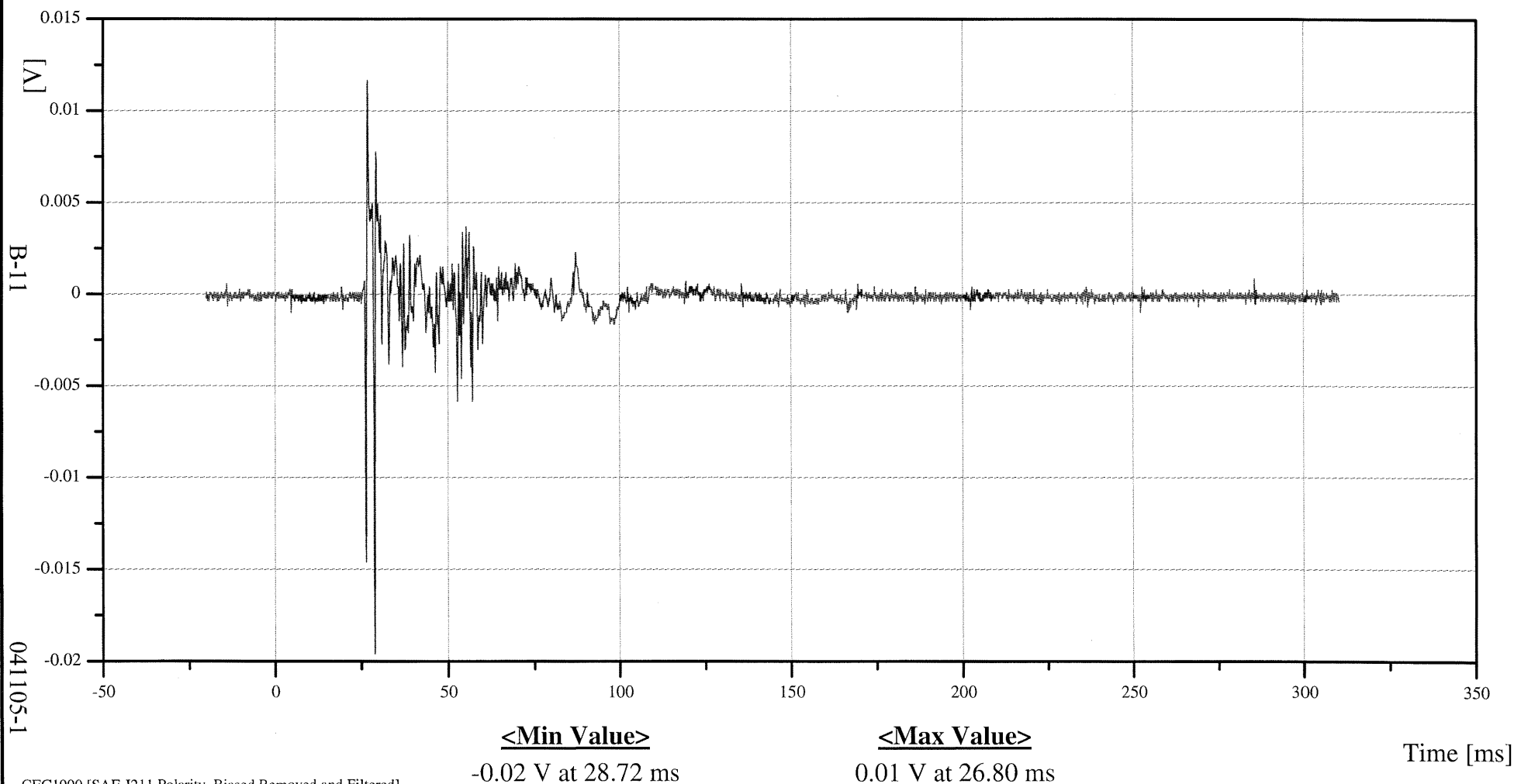
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

PABETA



CFC1000 [SAE J211 Polarity, Biased Removed and Filtered]



Transportation Research Center, Inc.

ROW 1 COLUMN 1

Date: 11/05/2004

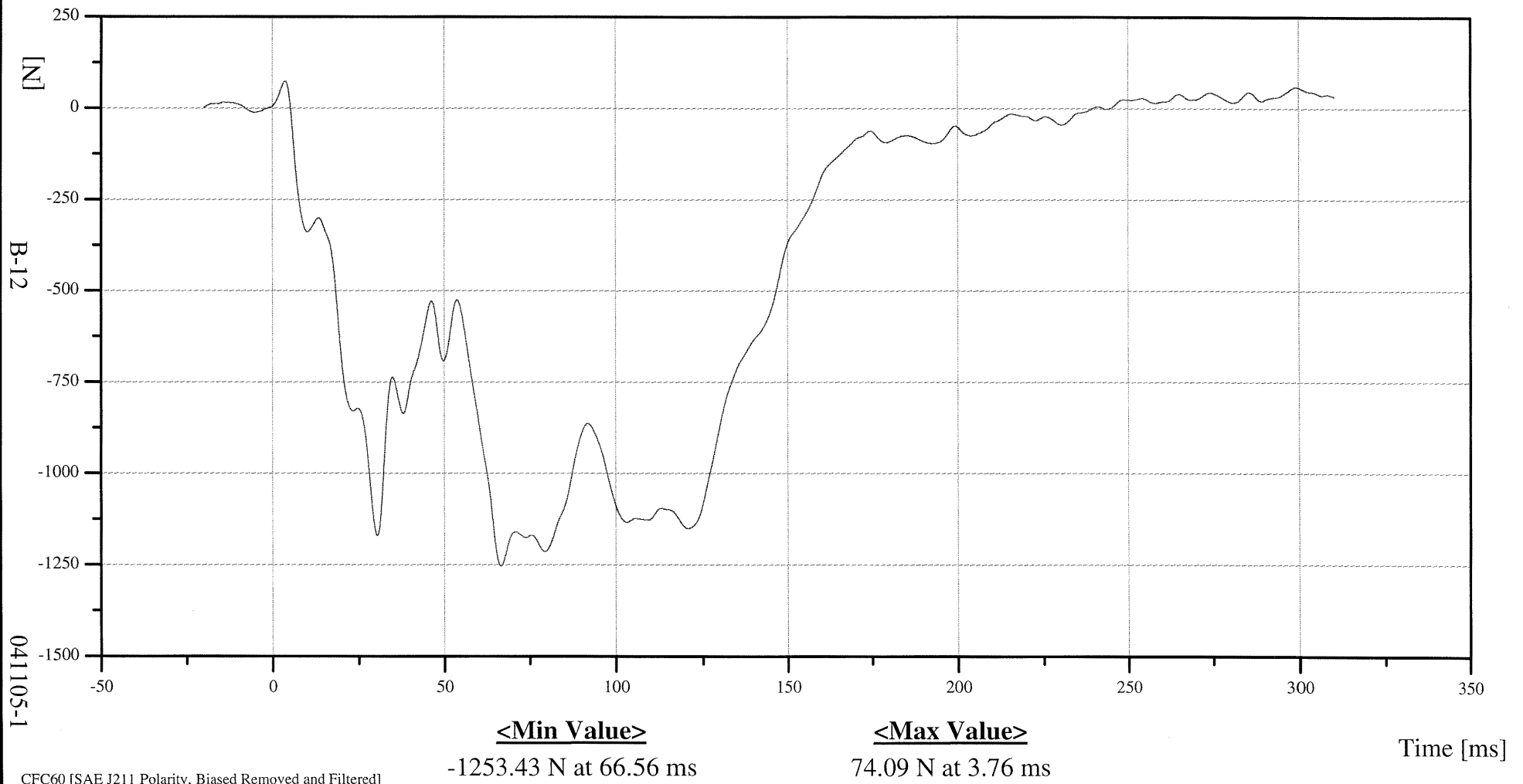
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0101





Transportation Research Center, Inc.

ROW 1 COLUMN 2

Date: 11/05/2004

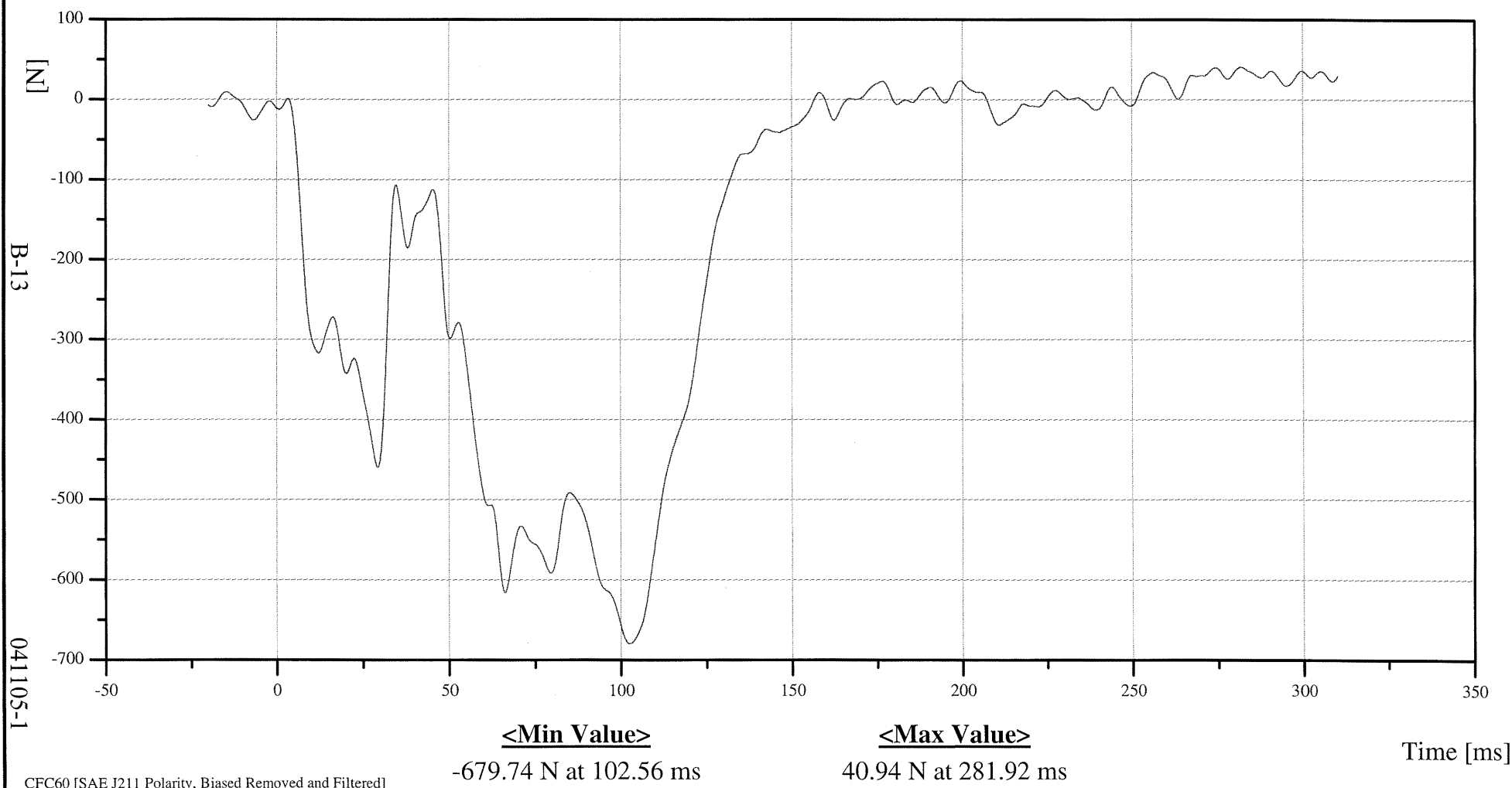
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0102





Transportation Research Center, Inc.

ROW 1 COLUMN 3

Date: 11/05/2004

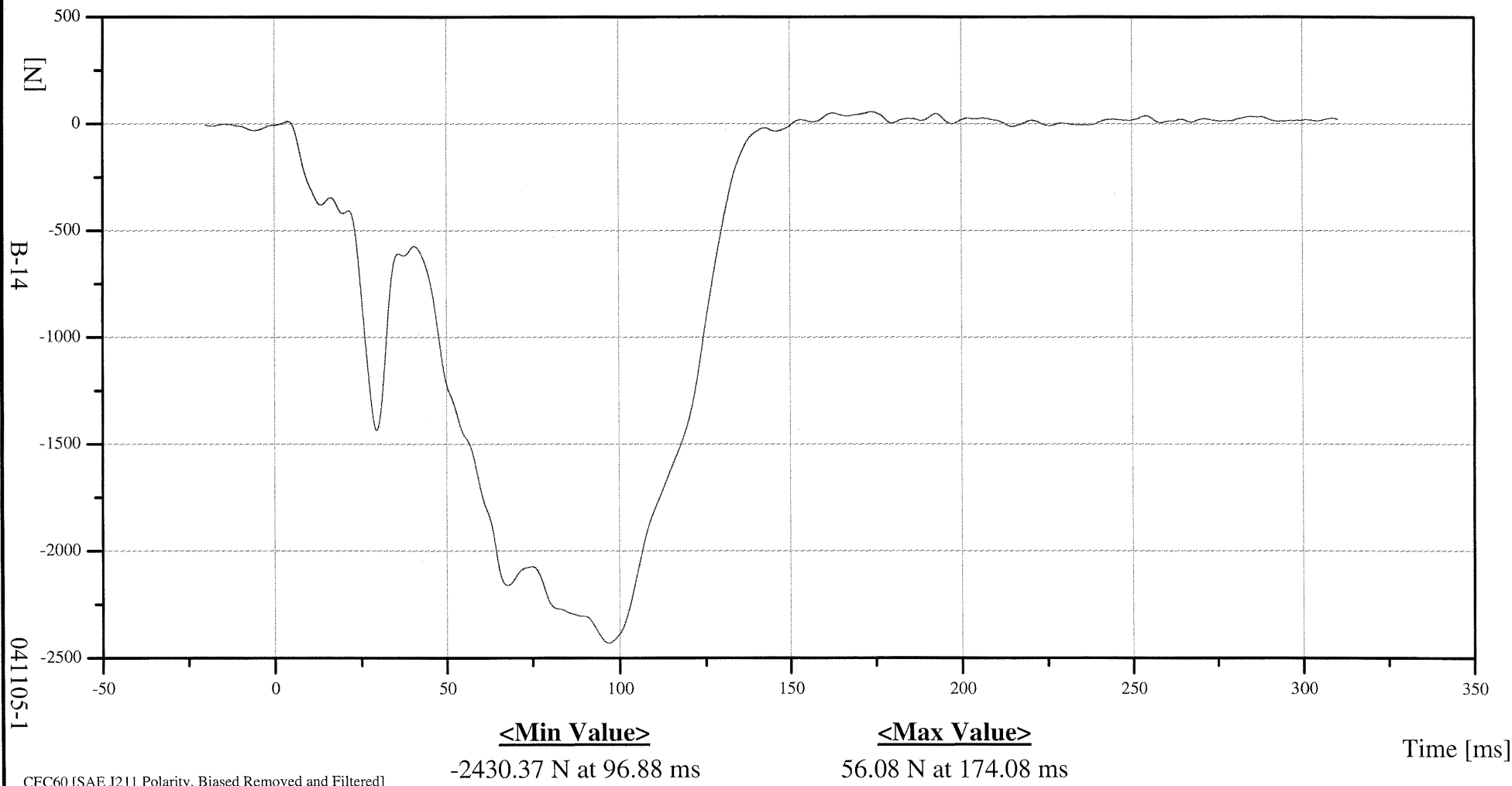
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0103





Transportation Research Center, Inc.

ROW 1 COLUMN 4

Date: 11/05/2004

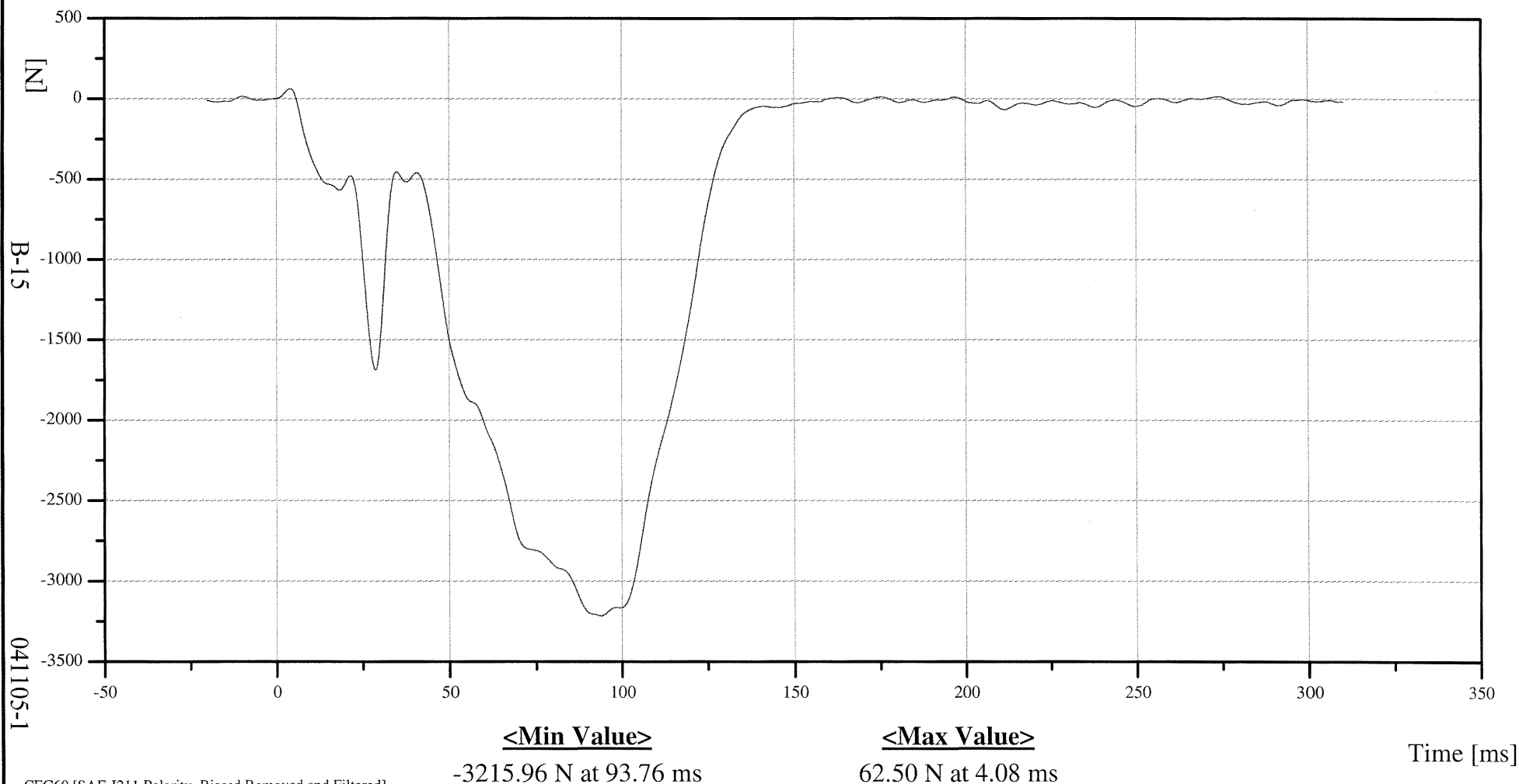
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0104



CFC60 [SAE J211 Polarity, Biased Removed and Filtered]



Transportation Research Center, Inc.

ROW 1 COLUMN 5

Date: 11/05/2004

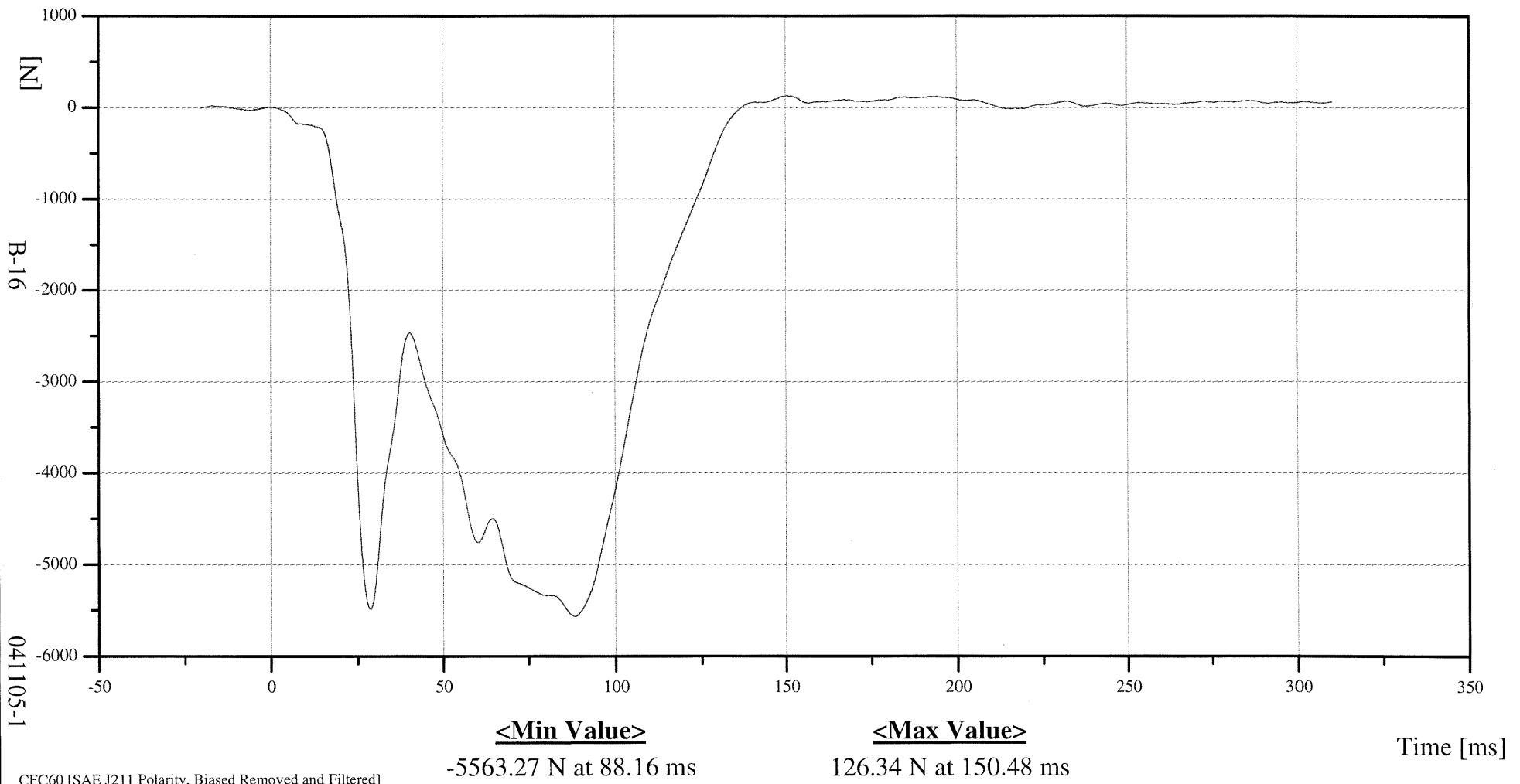
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0105





Transportation Research Center, Inc.

ROW 1 COLUMN 6

Date: 11/05/2004

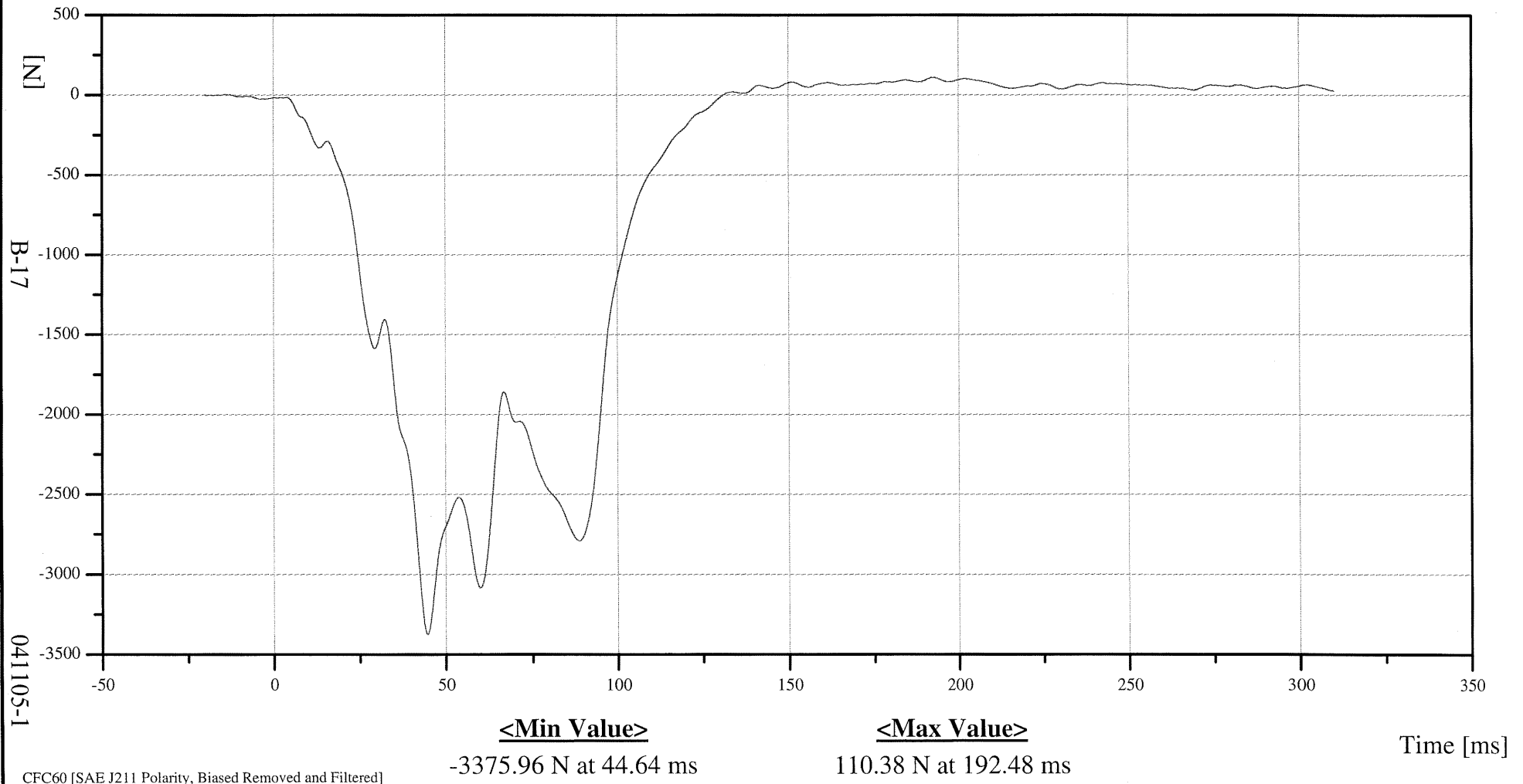
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0106





Transportation Research Center, Inc.

ROW 1 COLUMN 7

Date: 11/05/2004

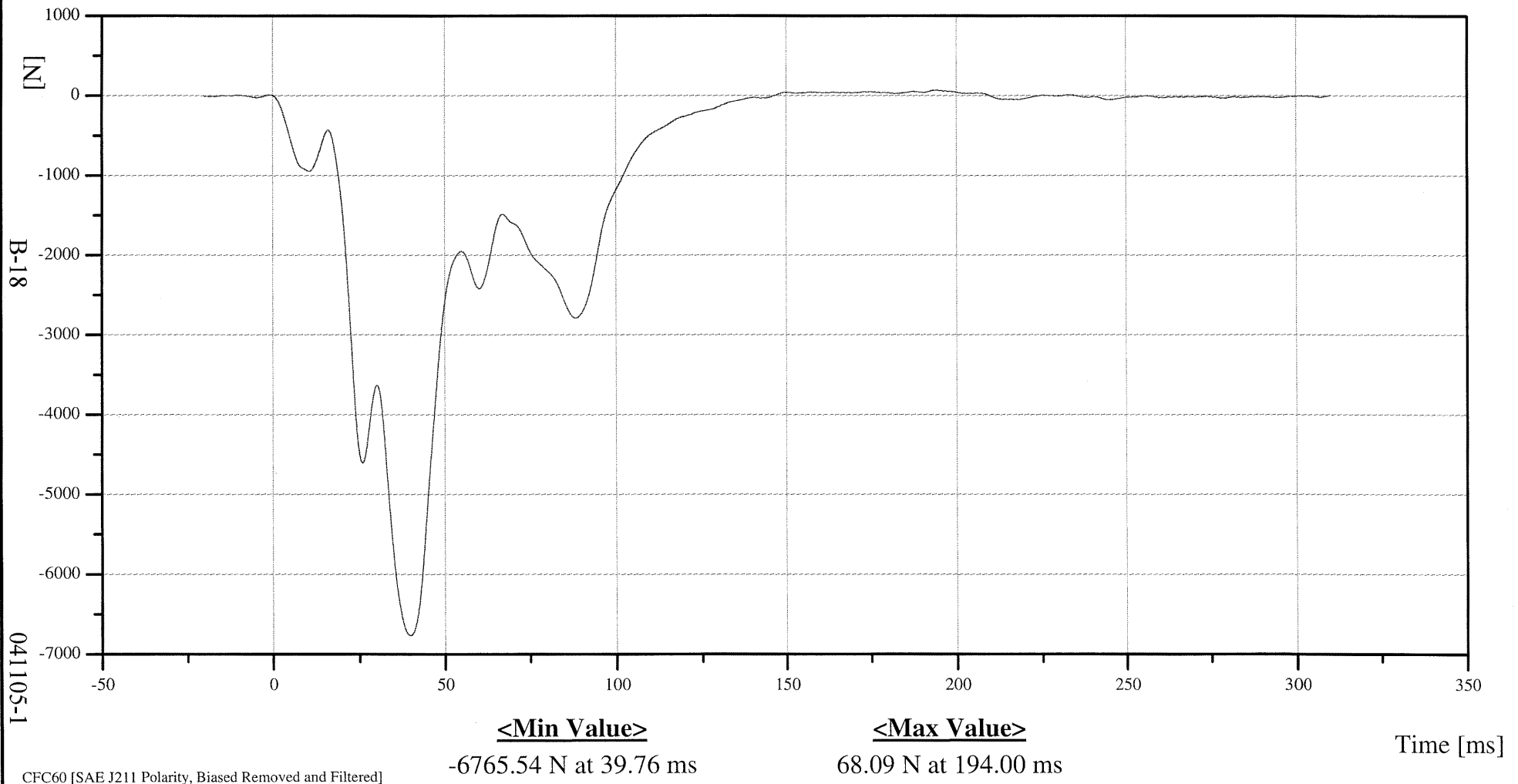
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0107





Transportation Research Center, Inc.

ROW 1 COLUMN 8

Date: 11/05/2004

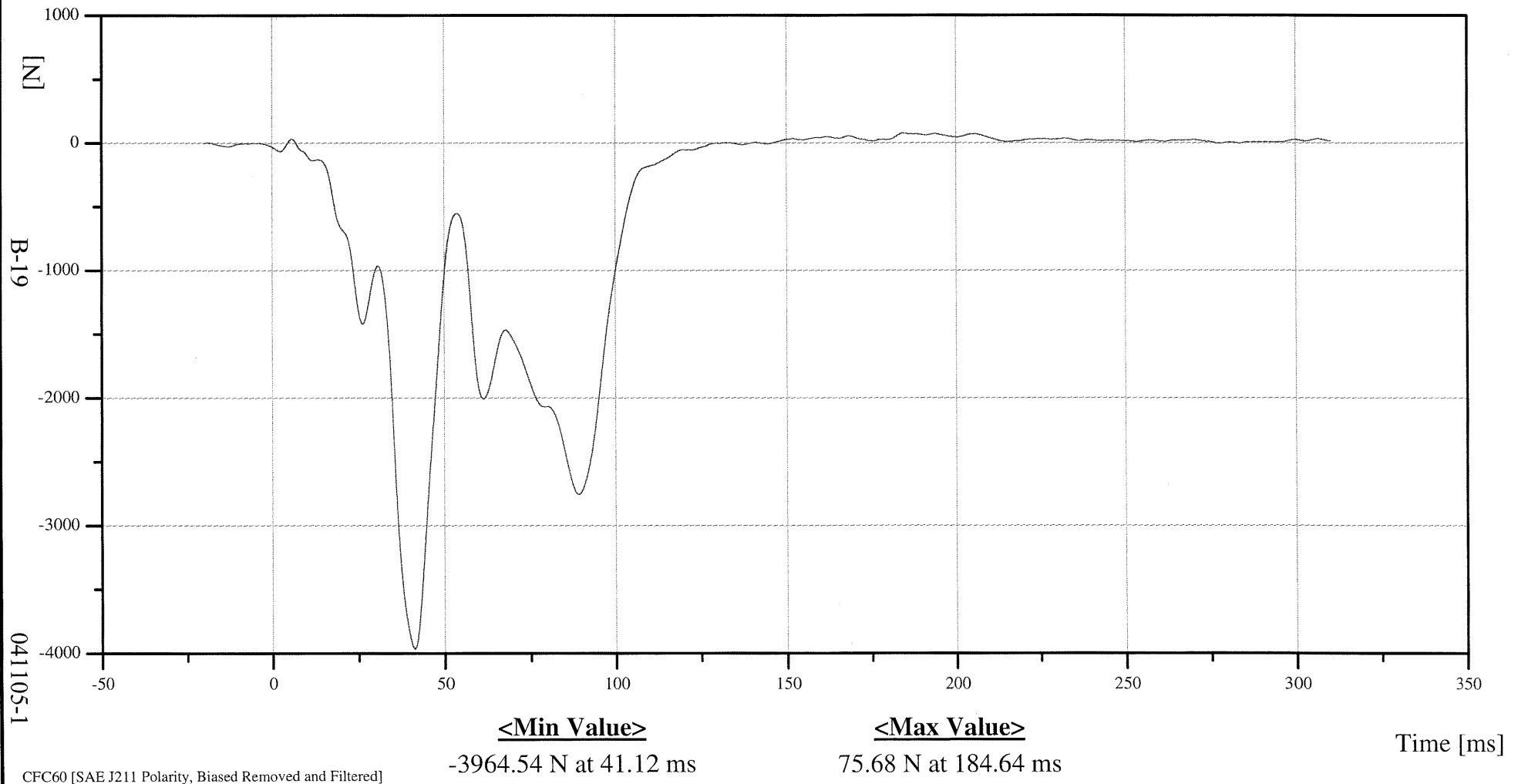
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0108





Transportation Research Center, Inc.

ROW 1 COLUMN 9

Date: 11/05/2004

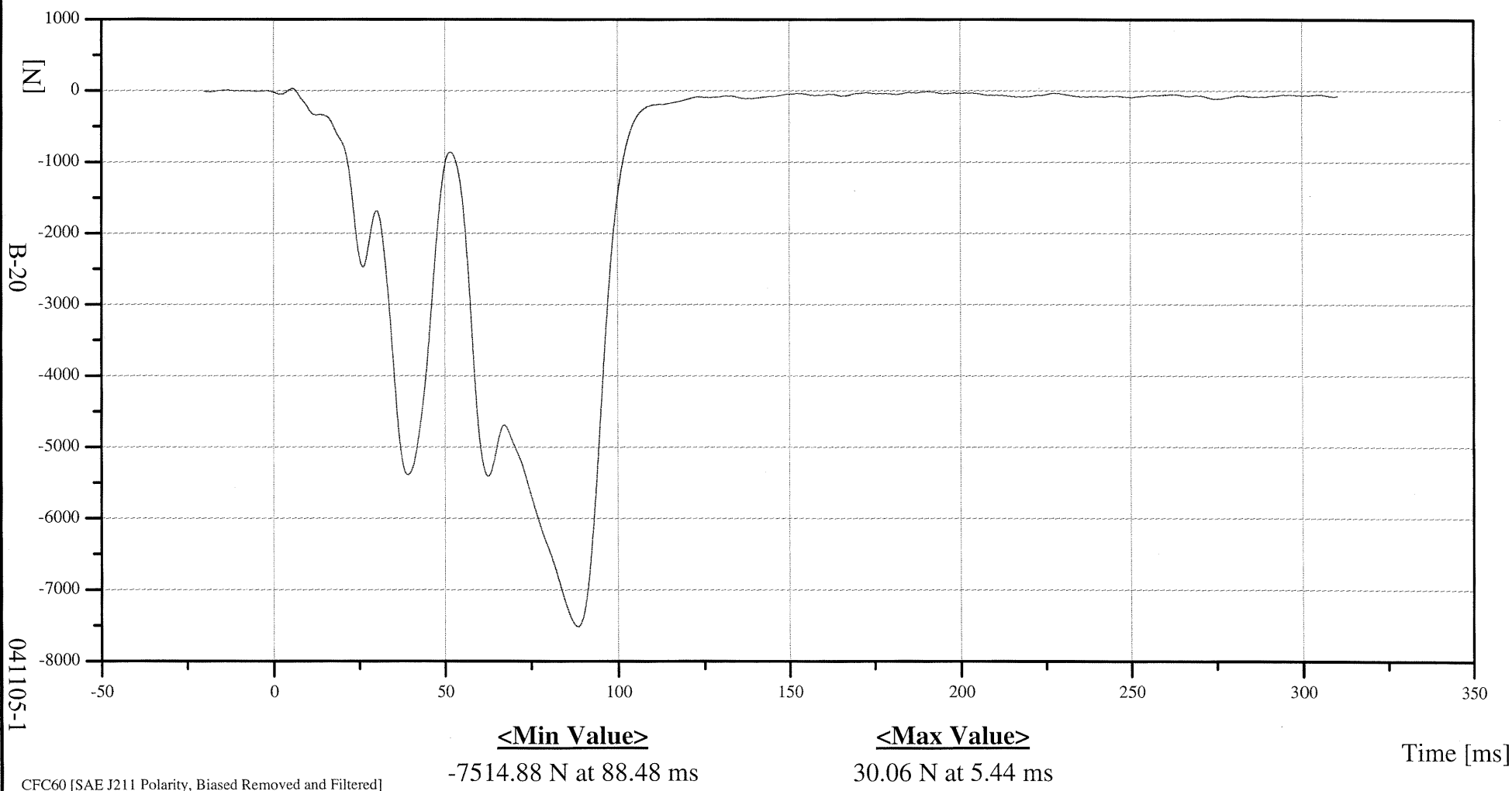
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0109





Transportation Research Center, Inc.

ROW 1 COLUMN 10

Date: 11/05/2004

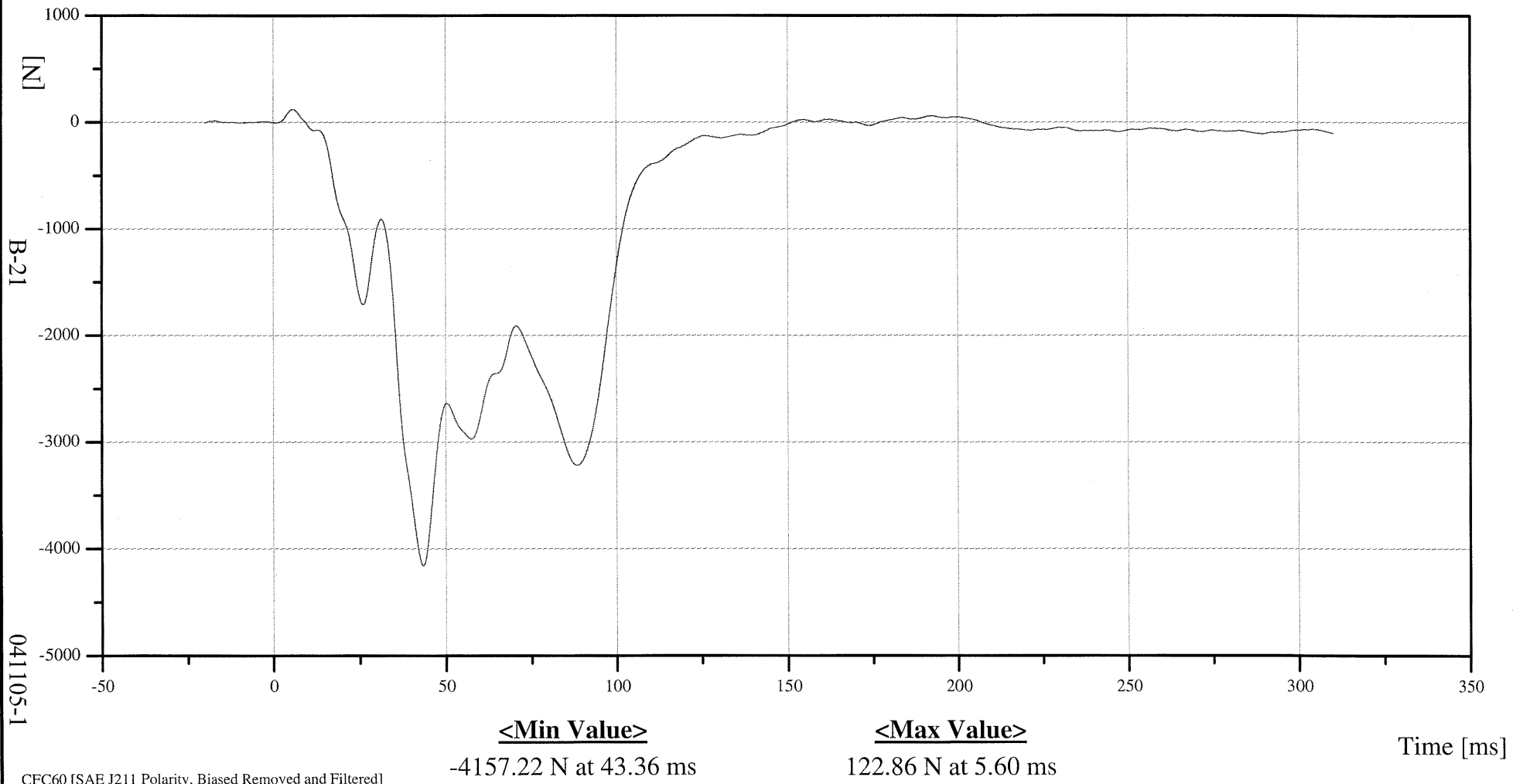
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0110





Transportation Research Center, Inc.

ROW 1 COLUMN 11

Date: 11/05/2004

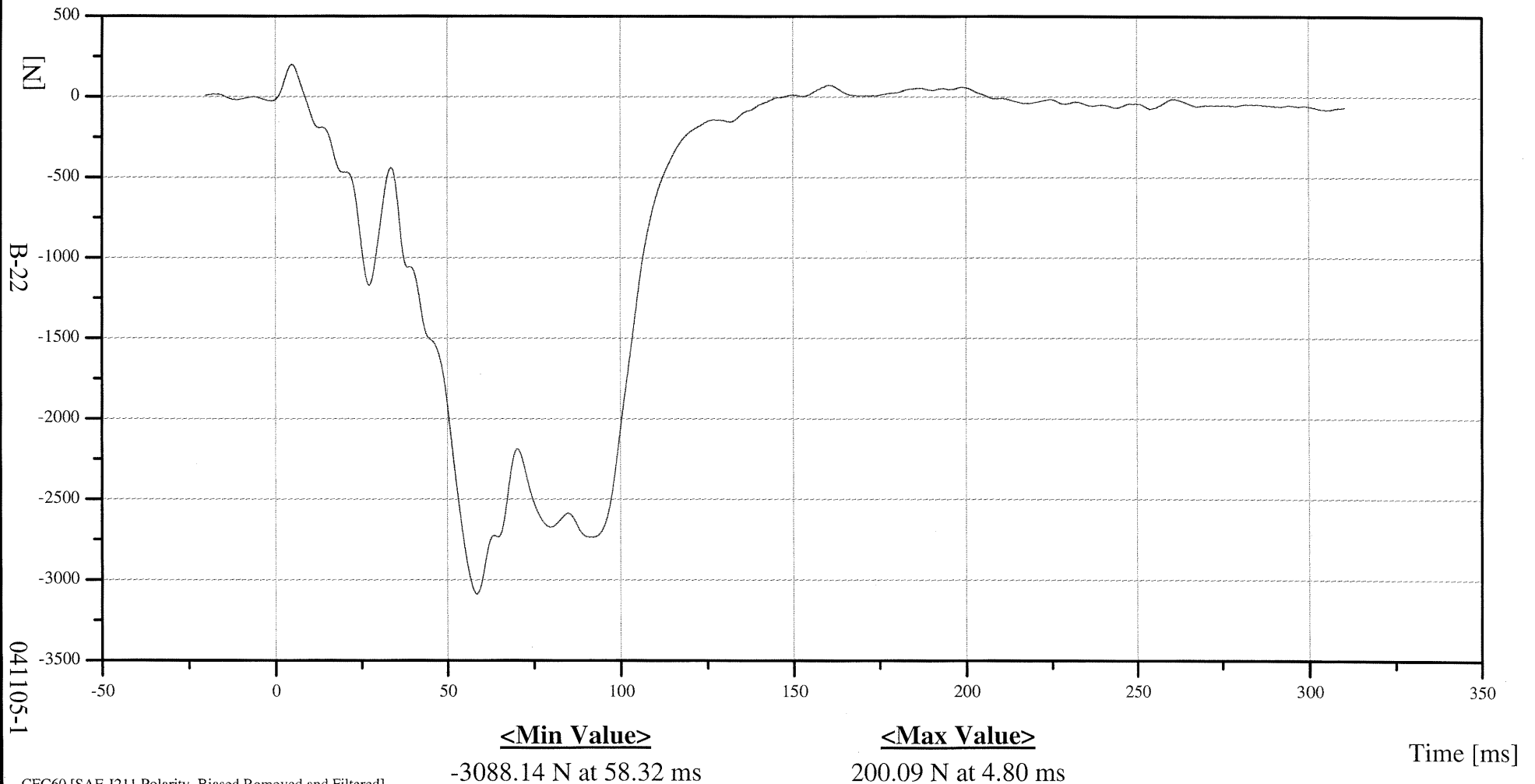
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0111





Transportation Research Center, Inc.

ROW 1 COLUMN 12

Date: 11/05/2004

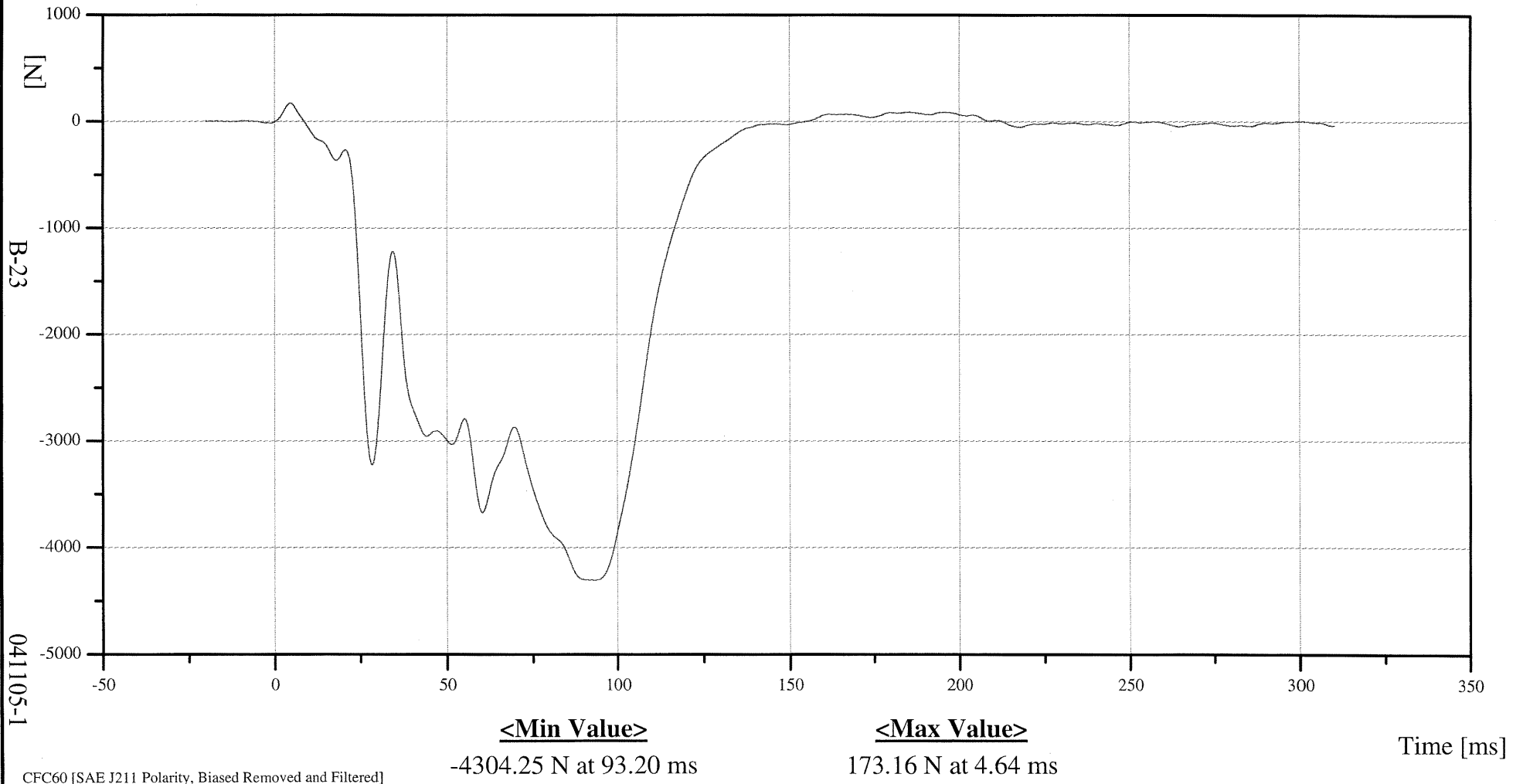
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0112





Transportation Research Center, Inc.

ROW 1 COLUMN 13

Date: 11/05/2004

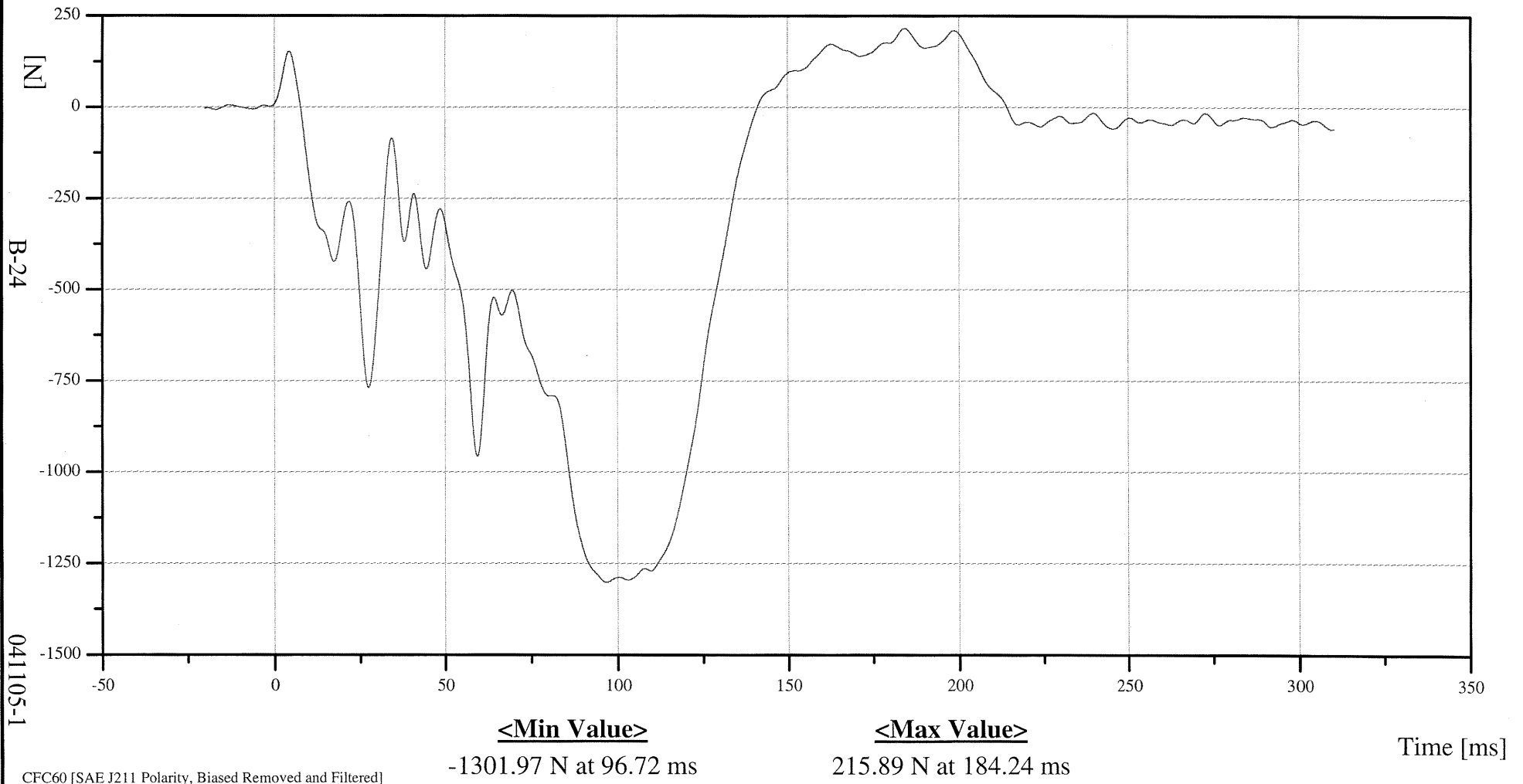
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0113





Transportation Research Center, Inc.

ROW 1 COLUMN 14

Date: 11/05/2004

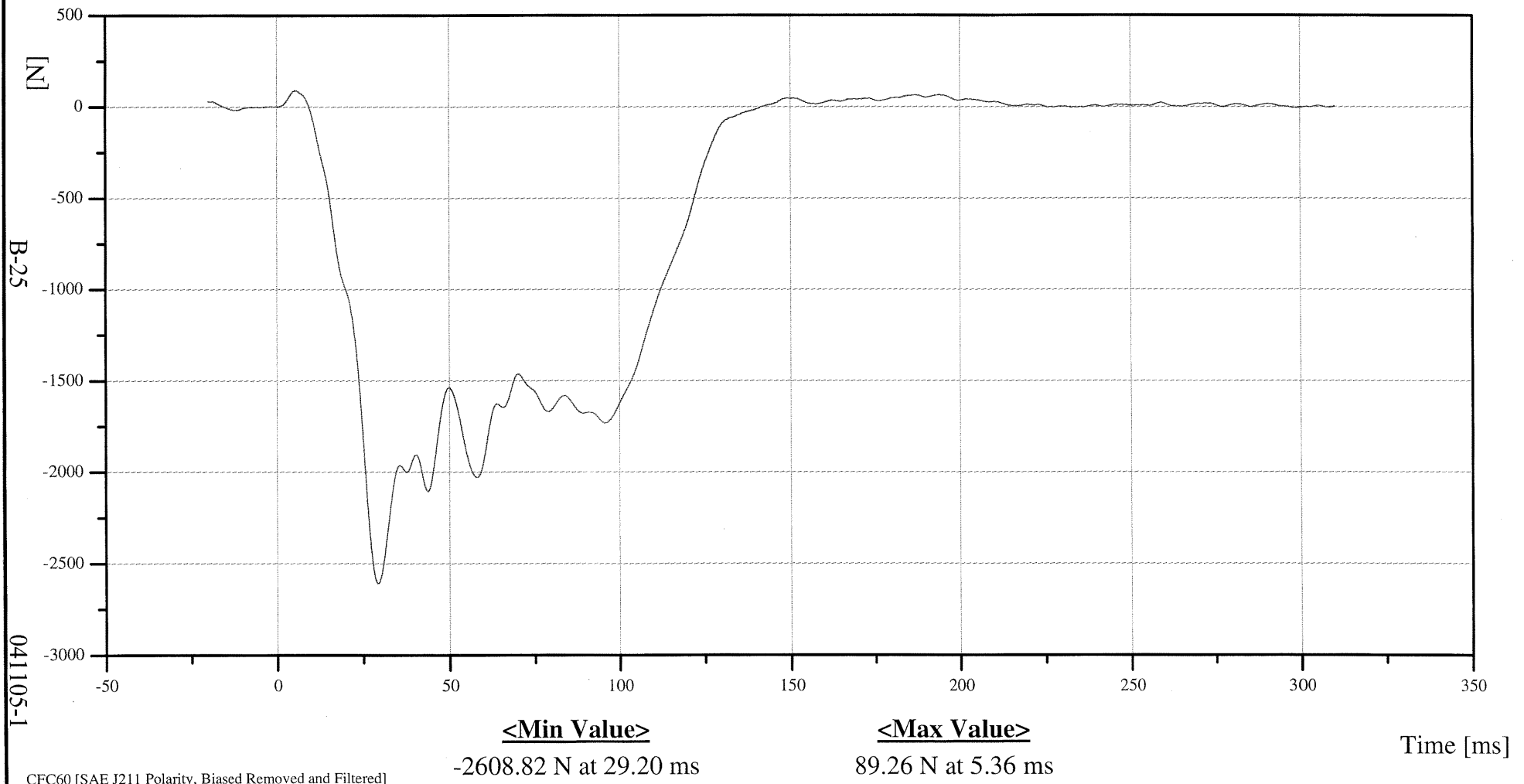
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0114





Transportation Research Center, Inc.

ROW 1 COLUMN 15

Date: 11/05/2004

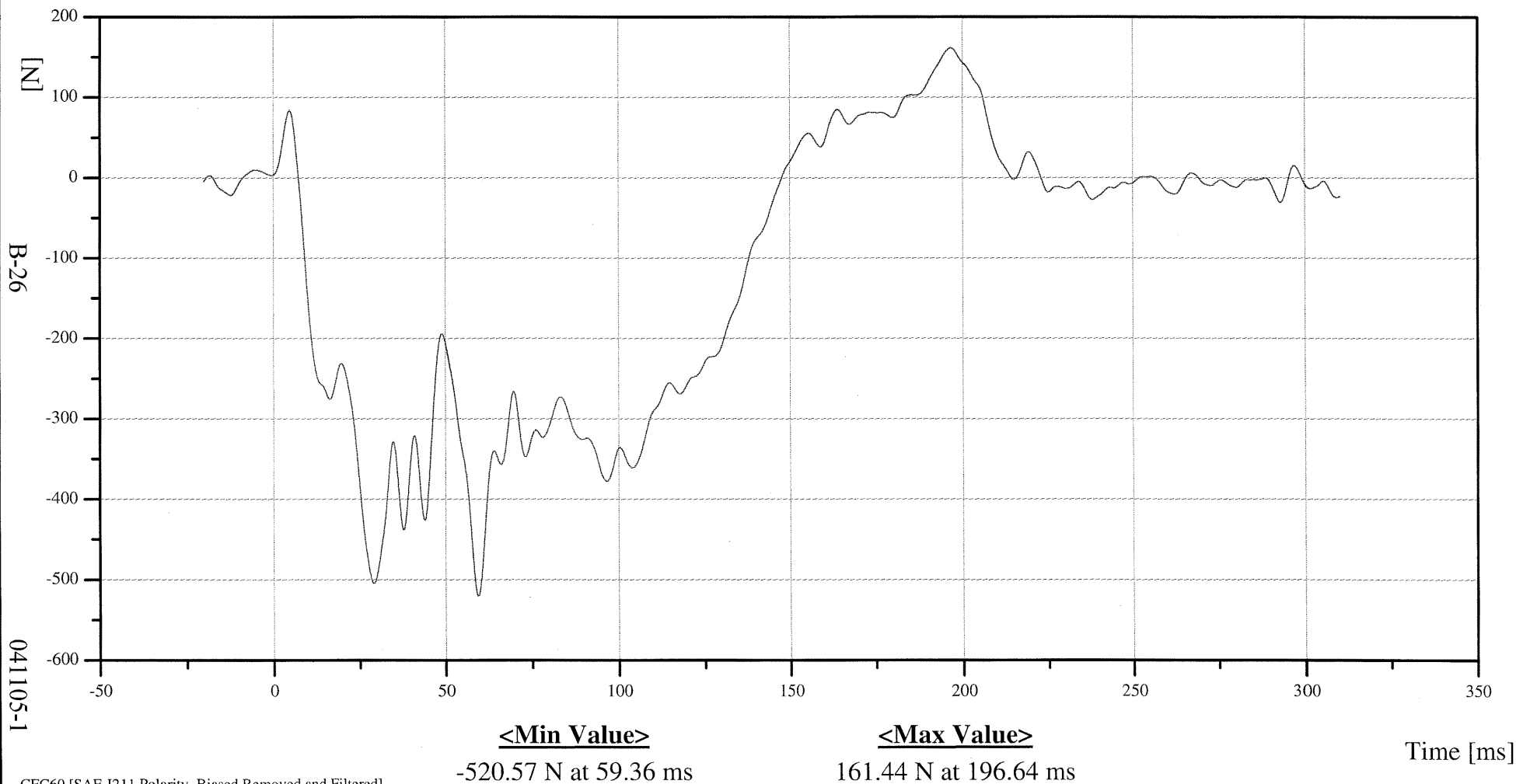
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0115





Transportation Research Center, Inc.

ROW 1 COLUMN 16

Date: 11/05/2004

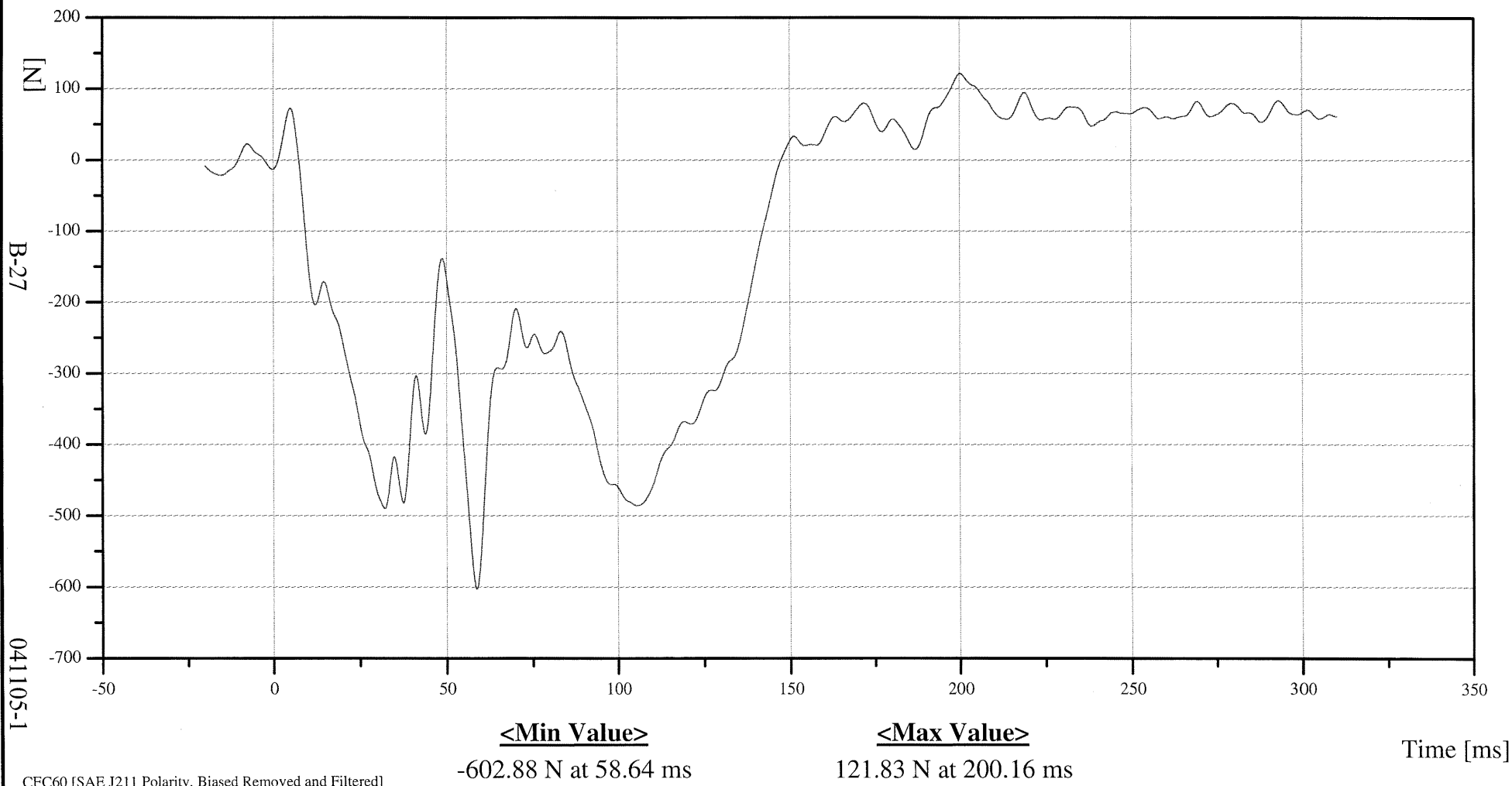
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0116





Transportation Research Center, Inc.

ROW 2 COLUMN 1

Date: 11/05/2004

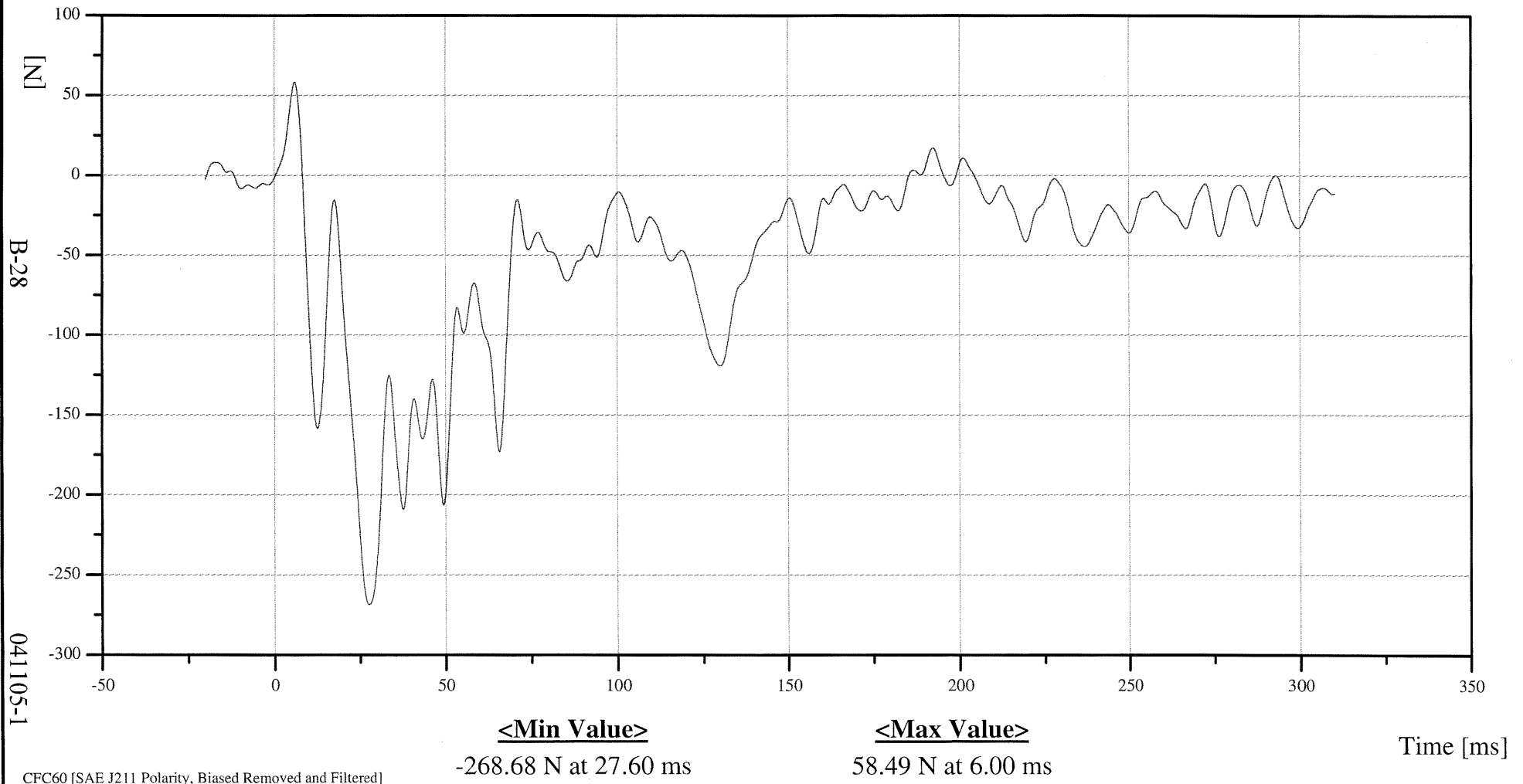
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0201





Transportation Research Center, Inc.

ROW 2 COLUMN 2

Date: 11/05/2004

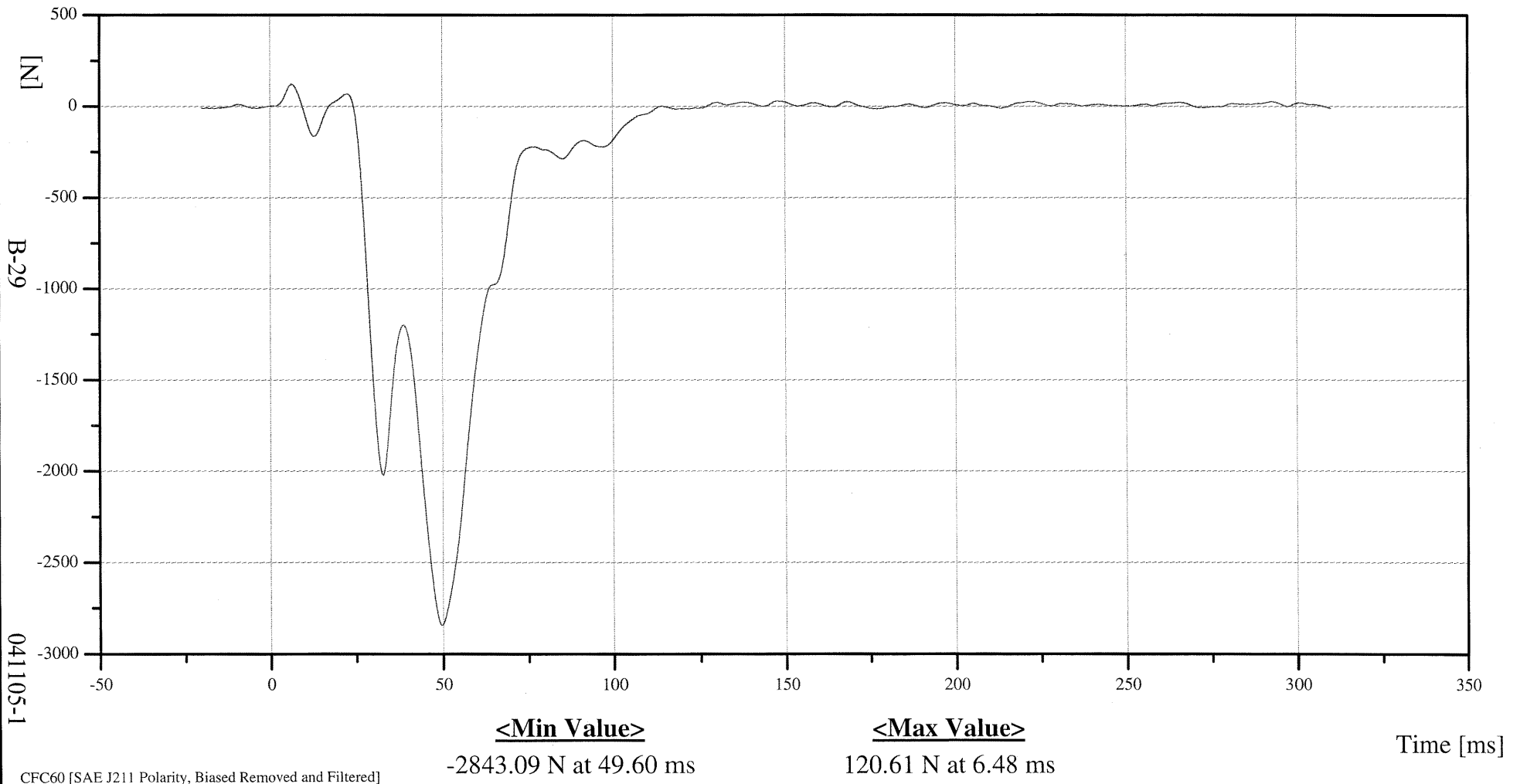
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0202





Transportation Research Center, Inc.

ROW 2 COLUMN 3

Date: 11/05/2004

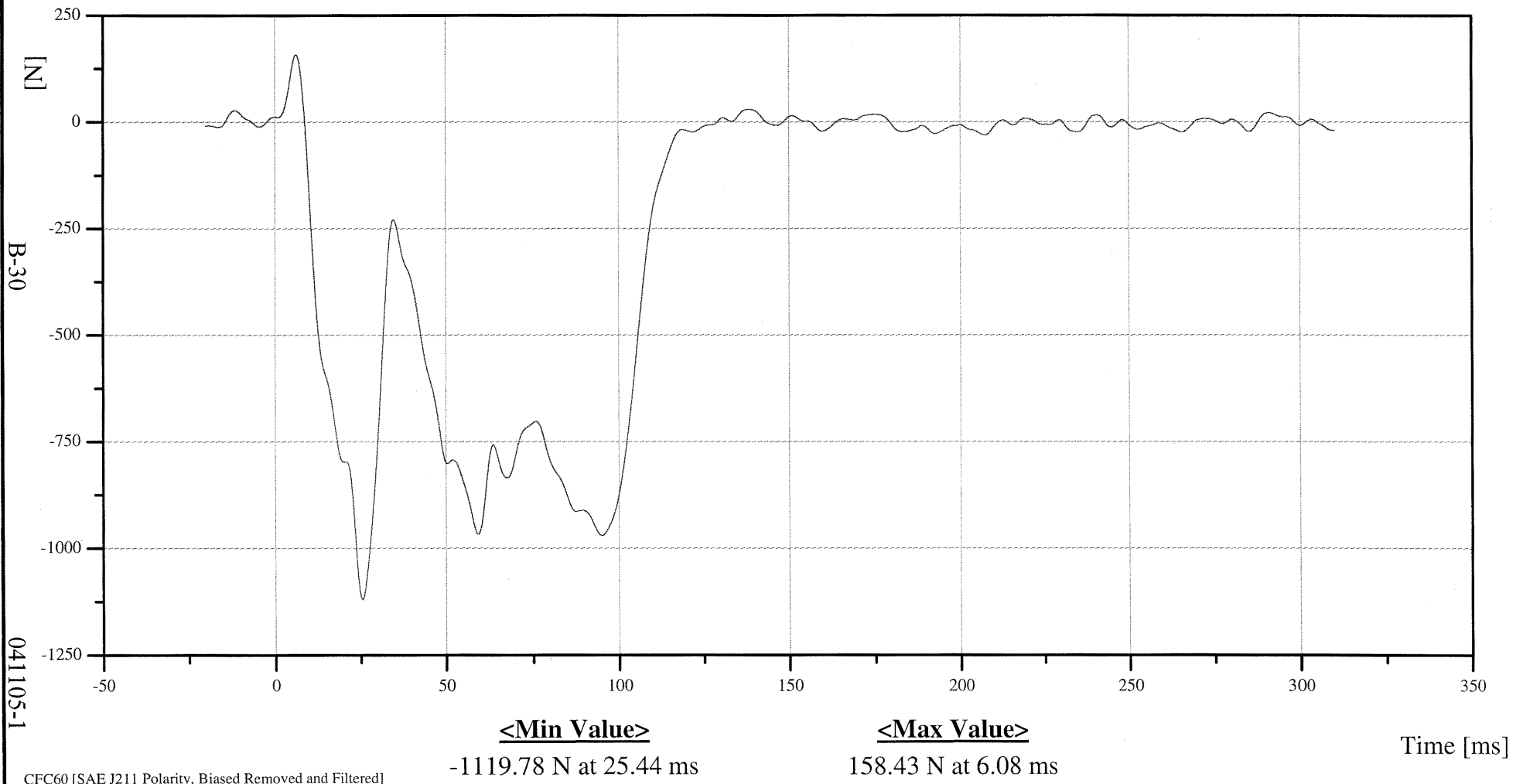
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0203





Transportation Research Center, Inc.

ROW 2 COLUMN 4

Date: 11/05/2004

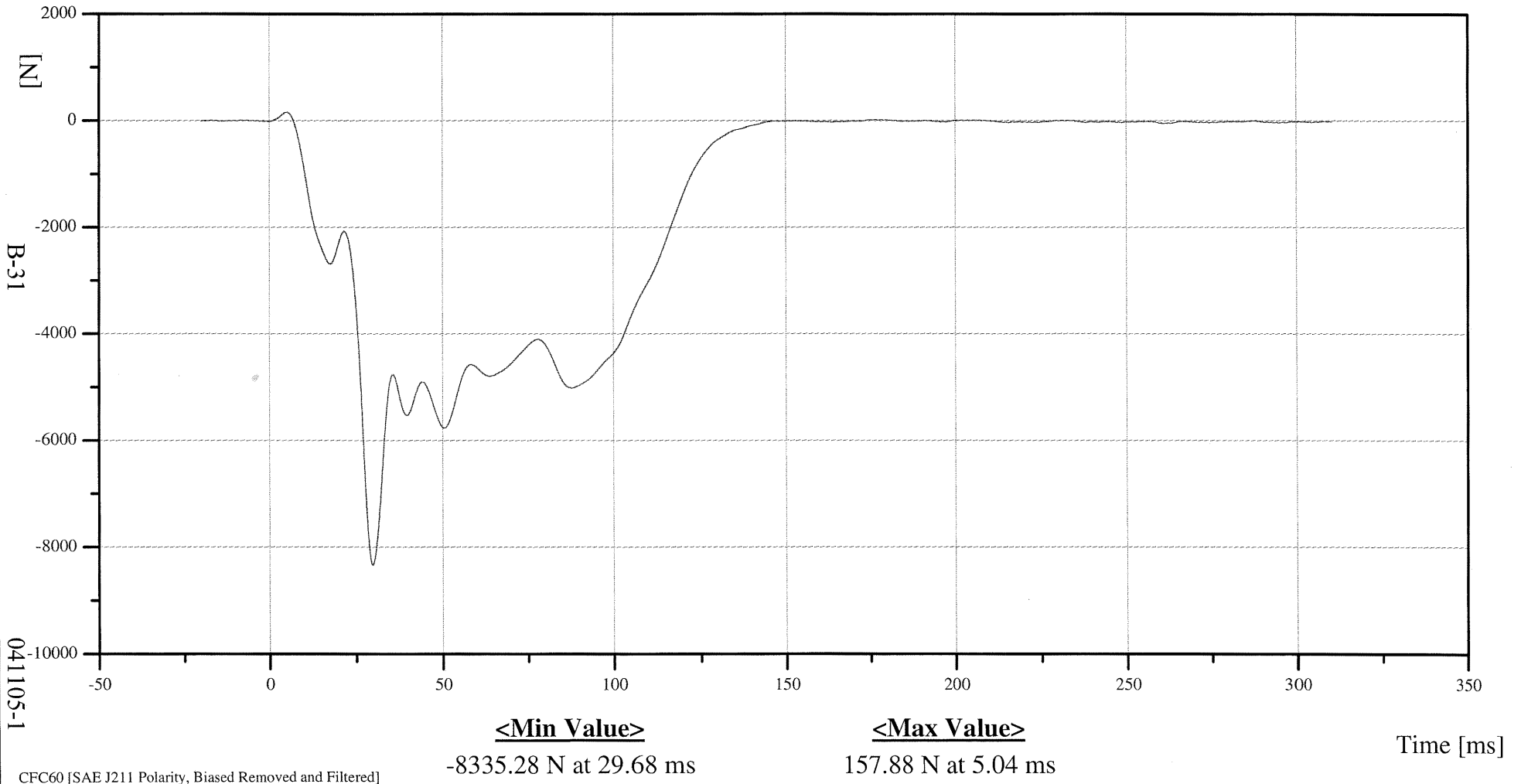
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0204





Transportation Research Center, Inc.

ROW 2 COLUMN 5

Date: 11/05/2004

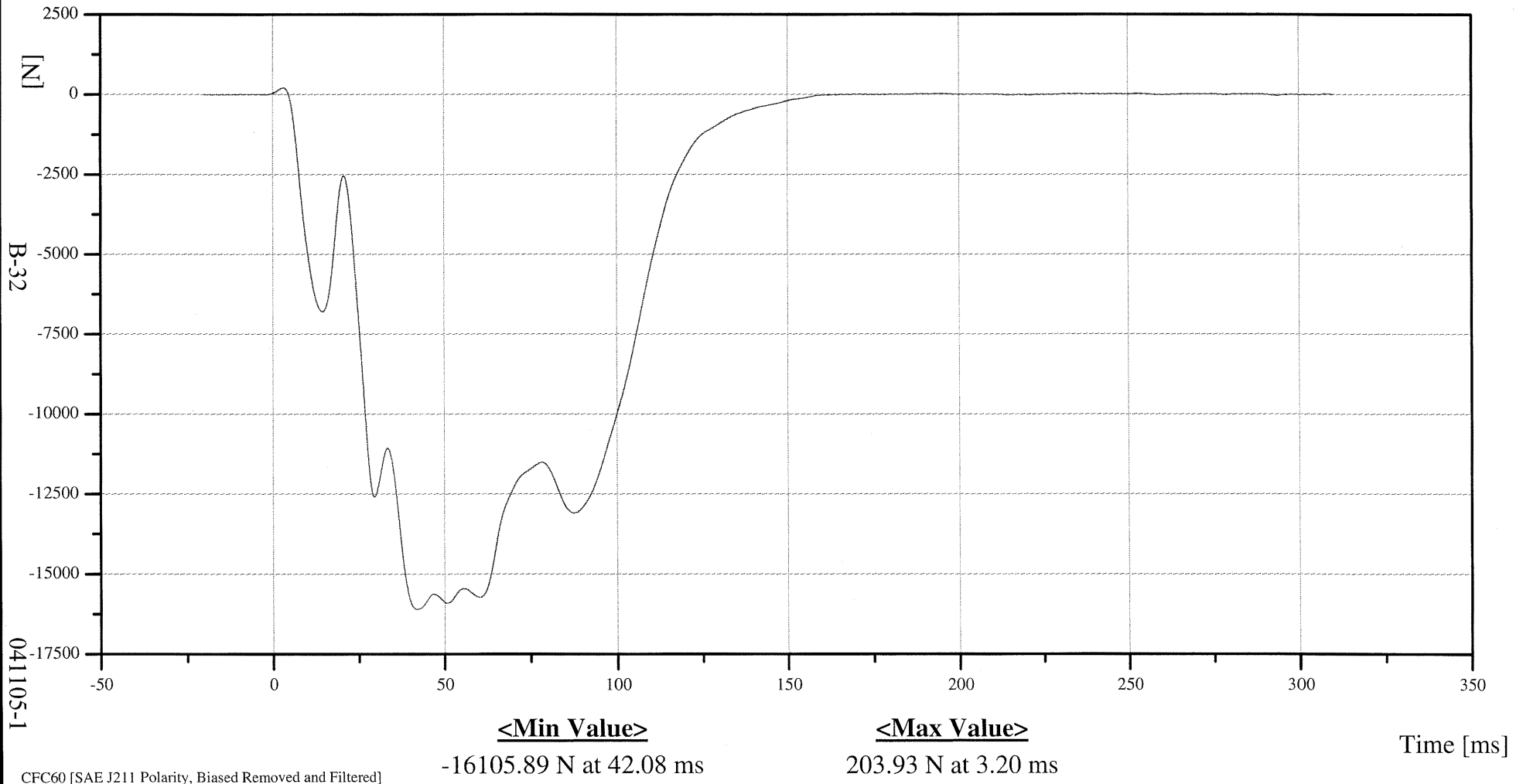
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0205





Transportation Research Center, Inc.

ROW 2 COLUMN 6

Date: 11/05/2004

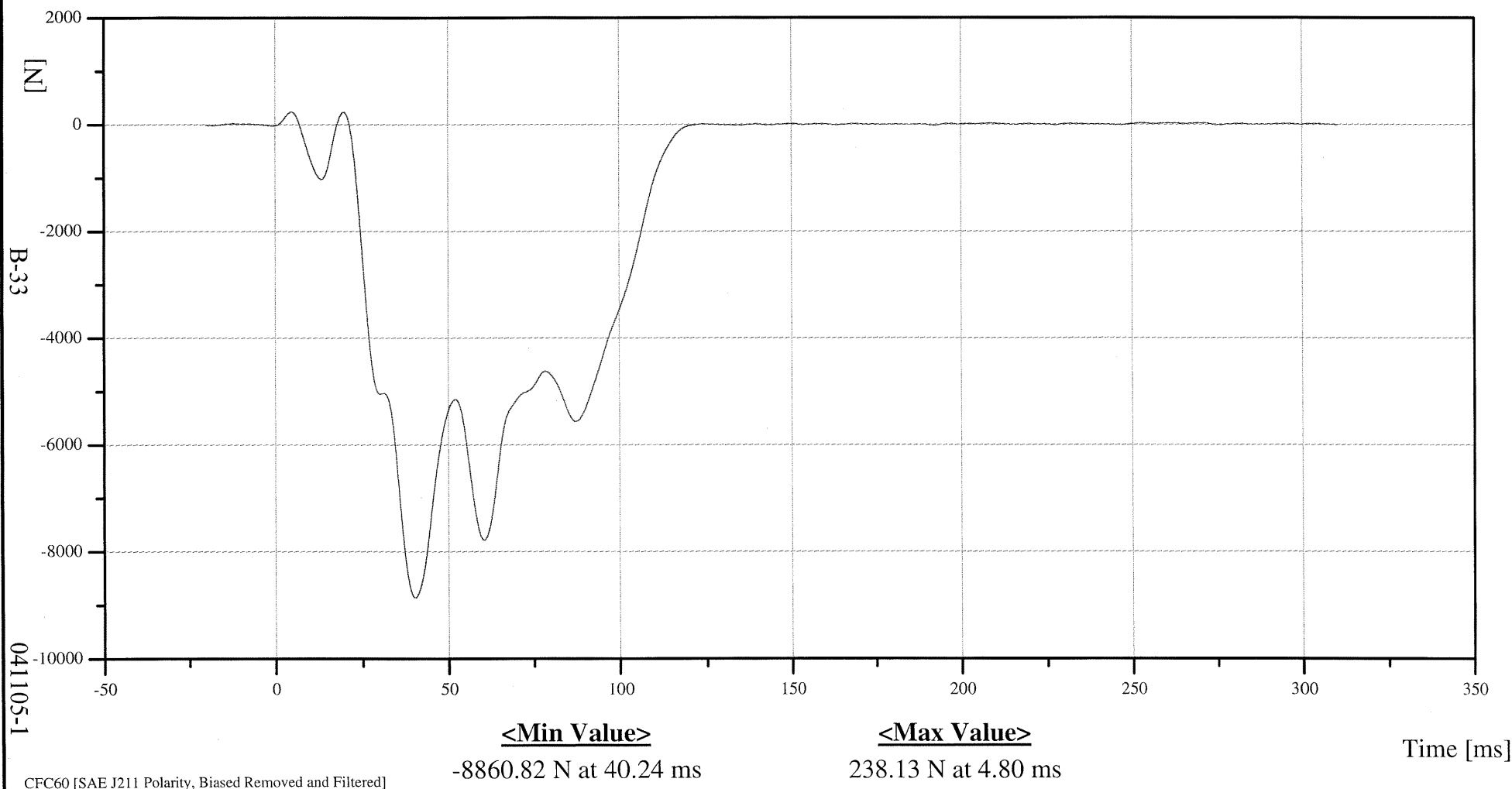
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0206





Transportation Research Center, Inc.

ROW 2 COLUMN 7

Date: 11/05/2004

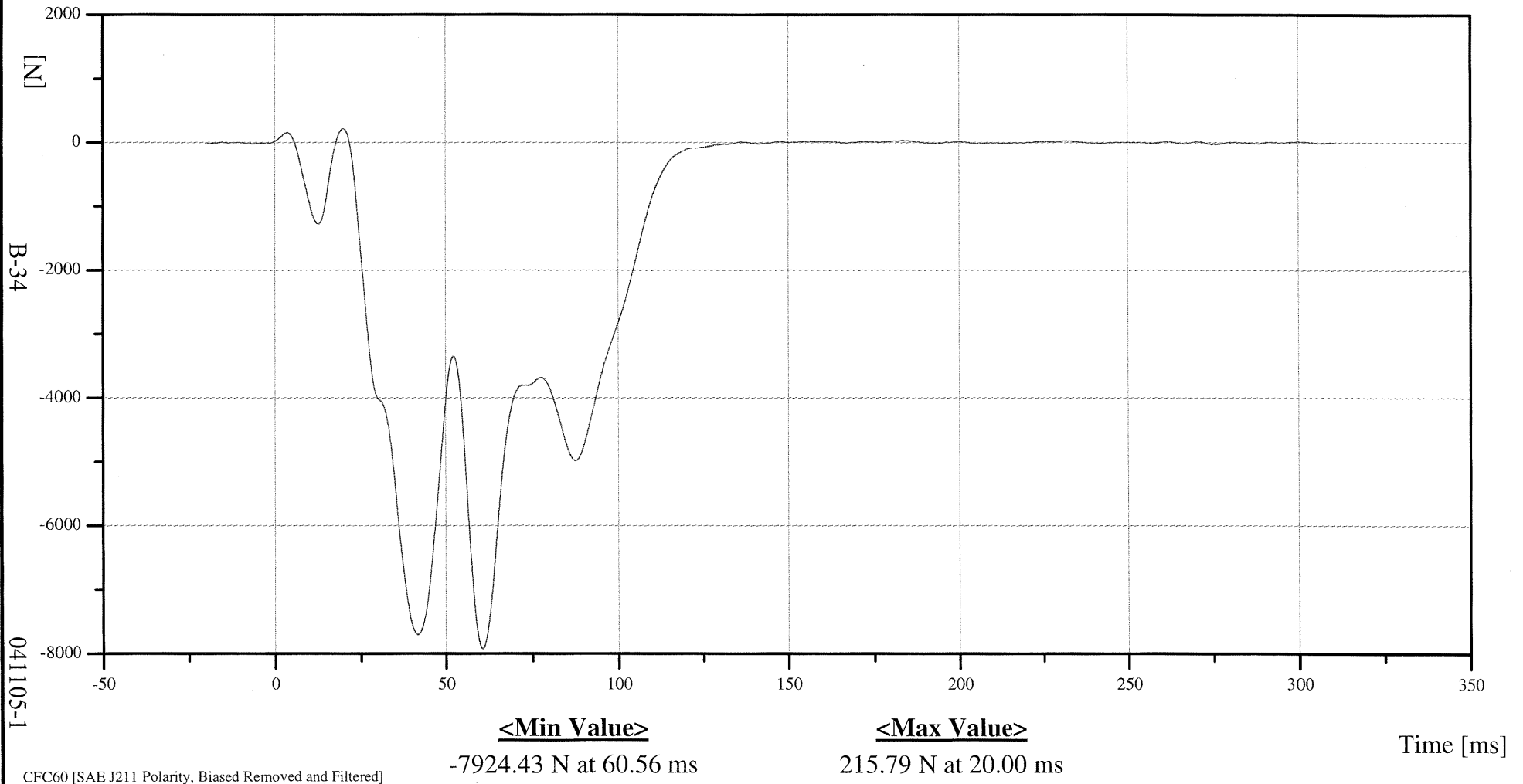
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0207





Transportation Research Center, Inc.

ROW 2 COLUMN 8

Date: 11/05/2004

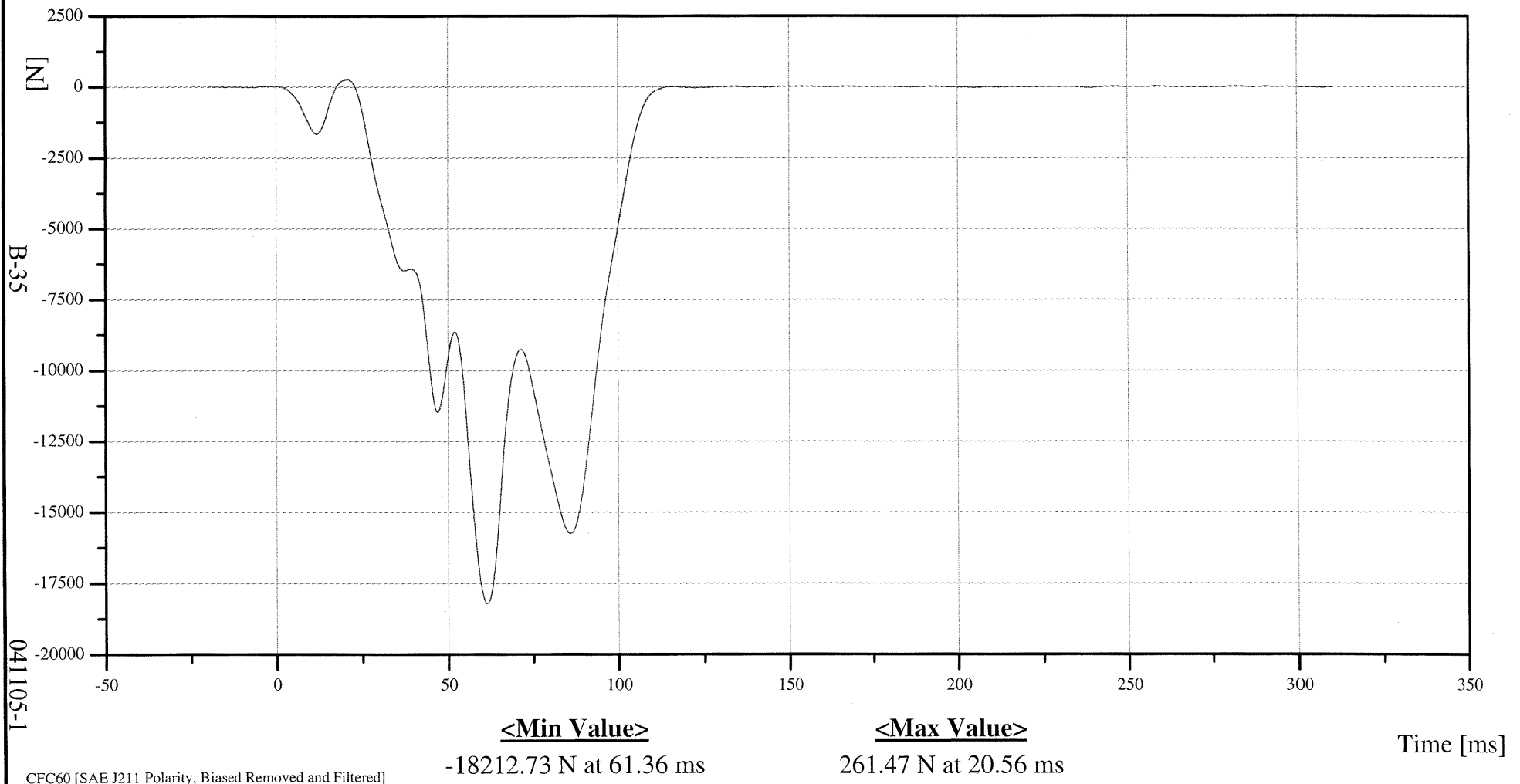
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0208





Transportation Research Center, Inc.

ROW 2 COLUMN 9

Date: 11/05/2004

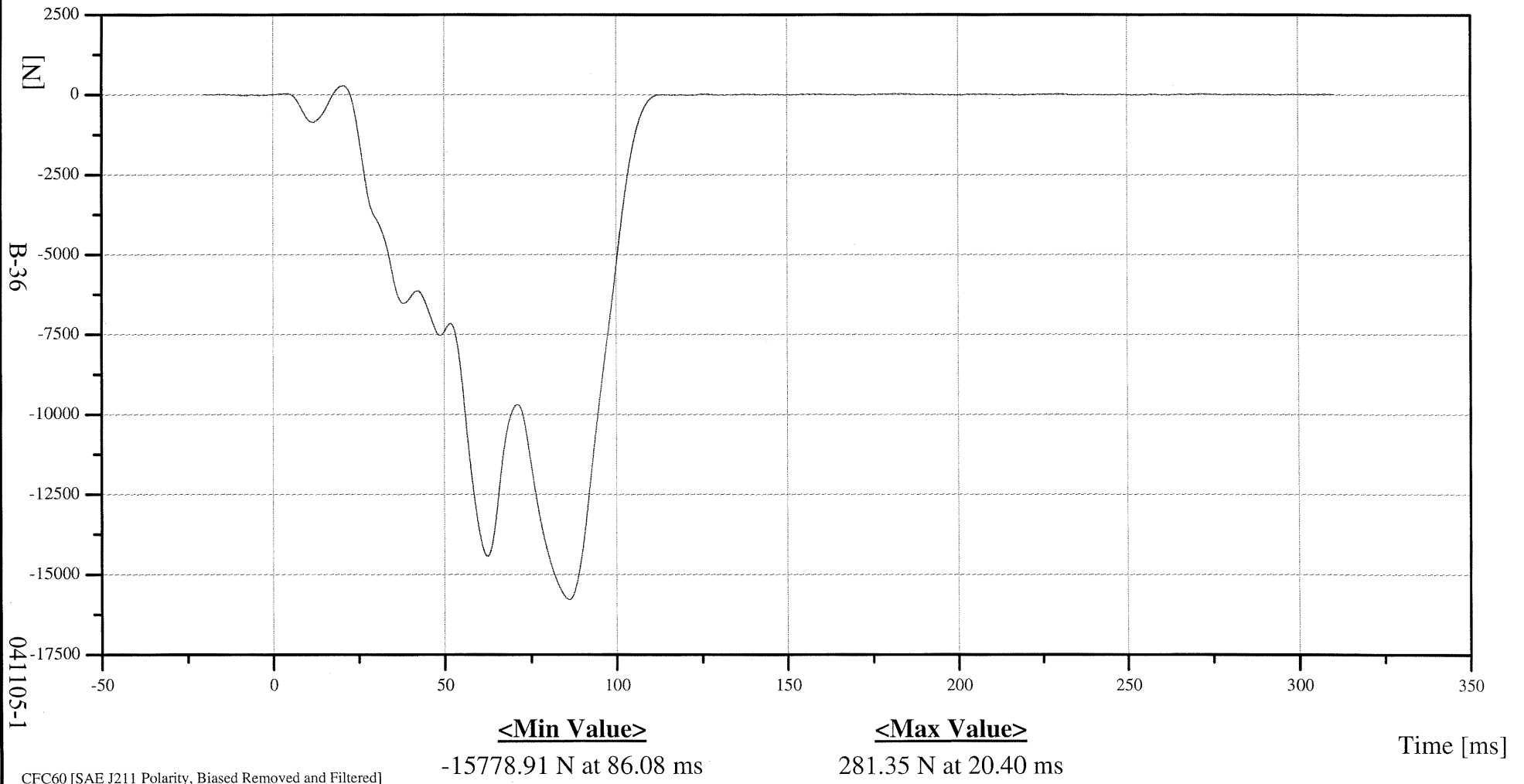
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0209





Transportation Research Center, Inc.

ROW 2 COLUMN 10

Date: 11/05/2004

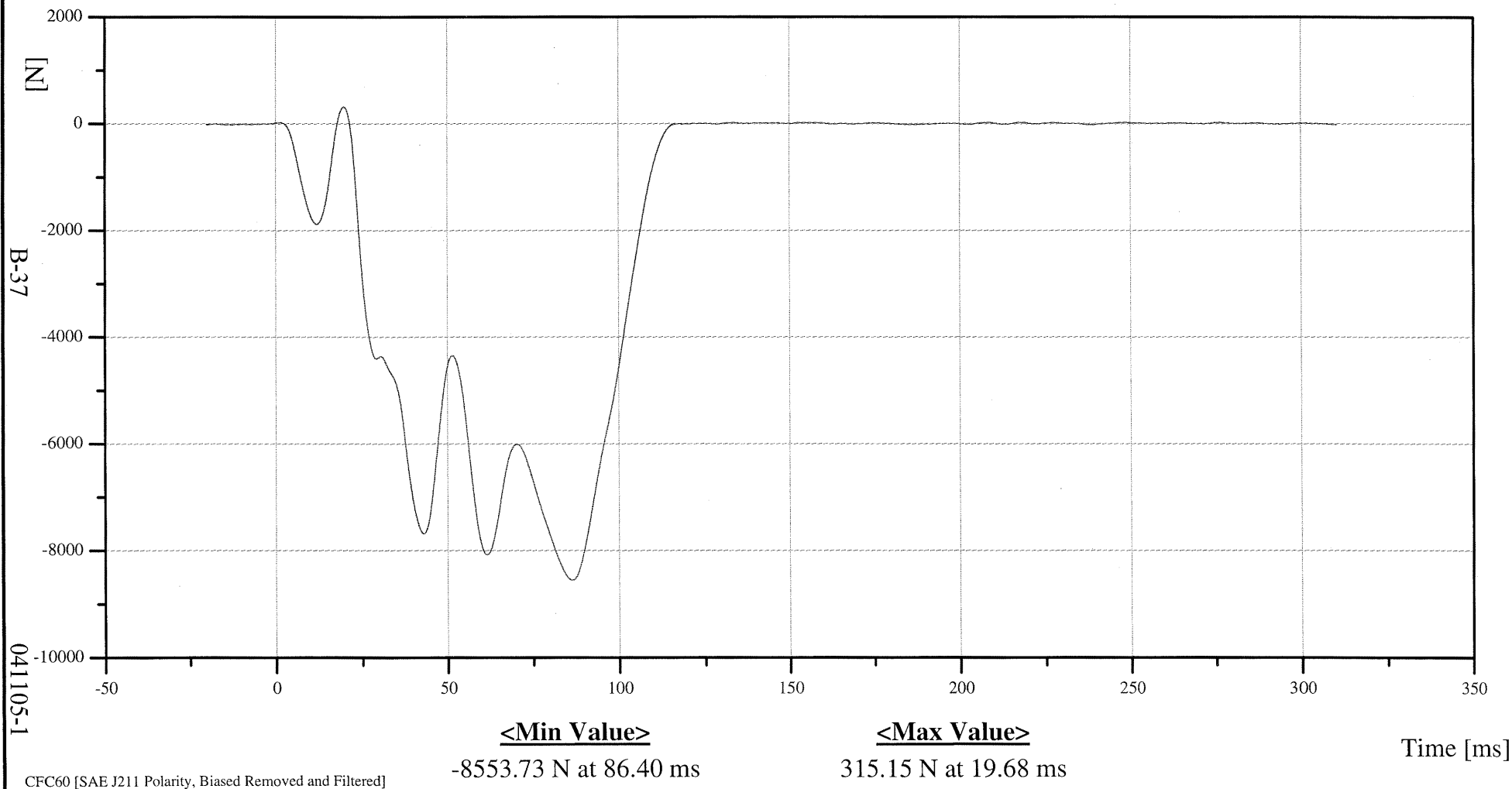
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0210





Transportation Research Center, Inc.

ROW 2 COLUMN 11

Date: 11/05/2004

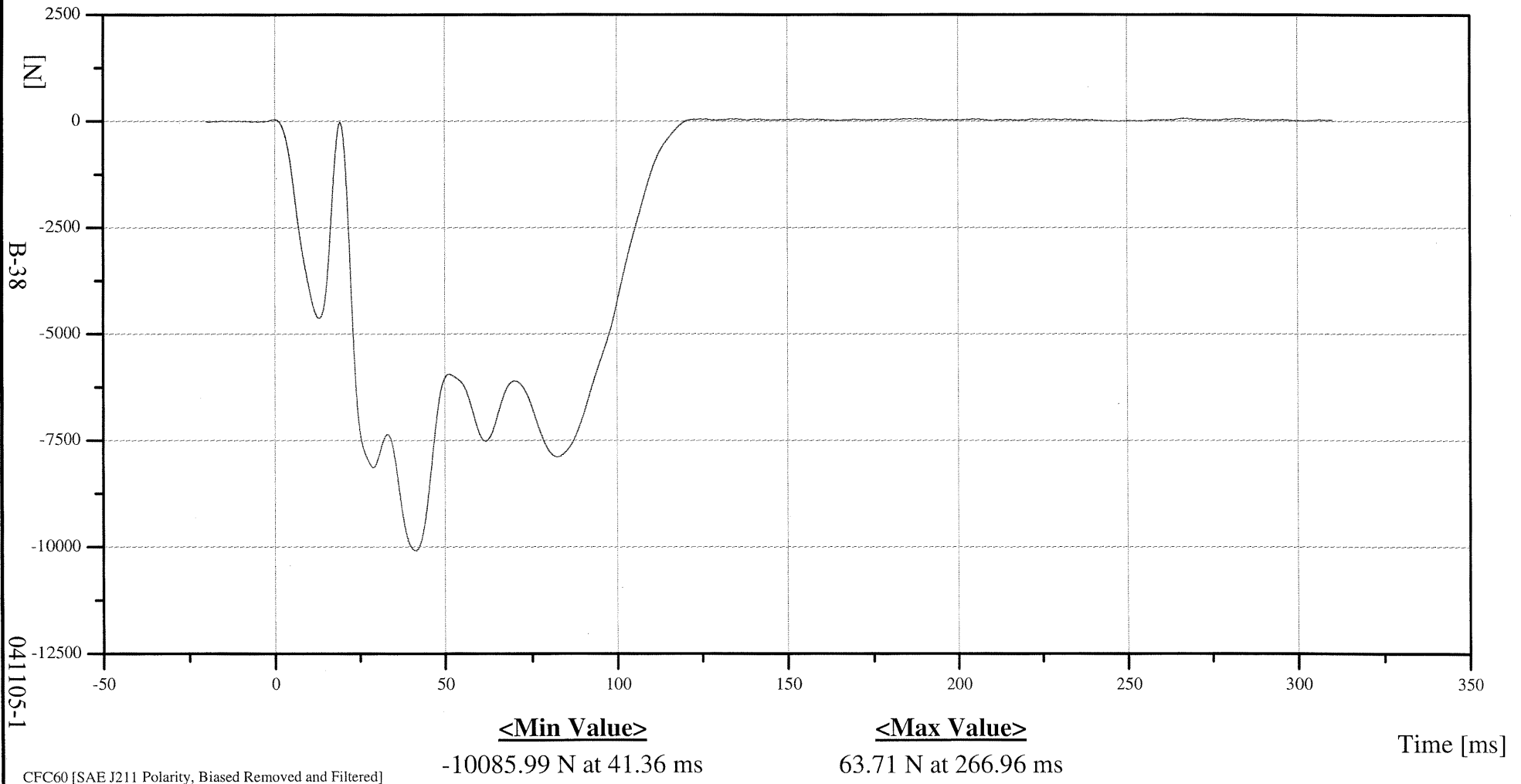
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0211





Transportation Research Center, Inc.

ROW 2 COLUMN 12

Date: 11/05/2004

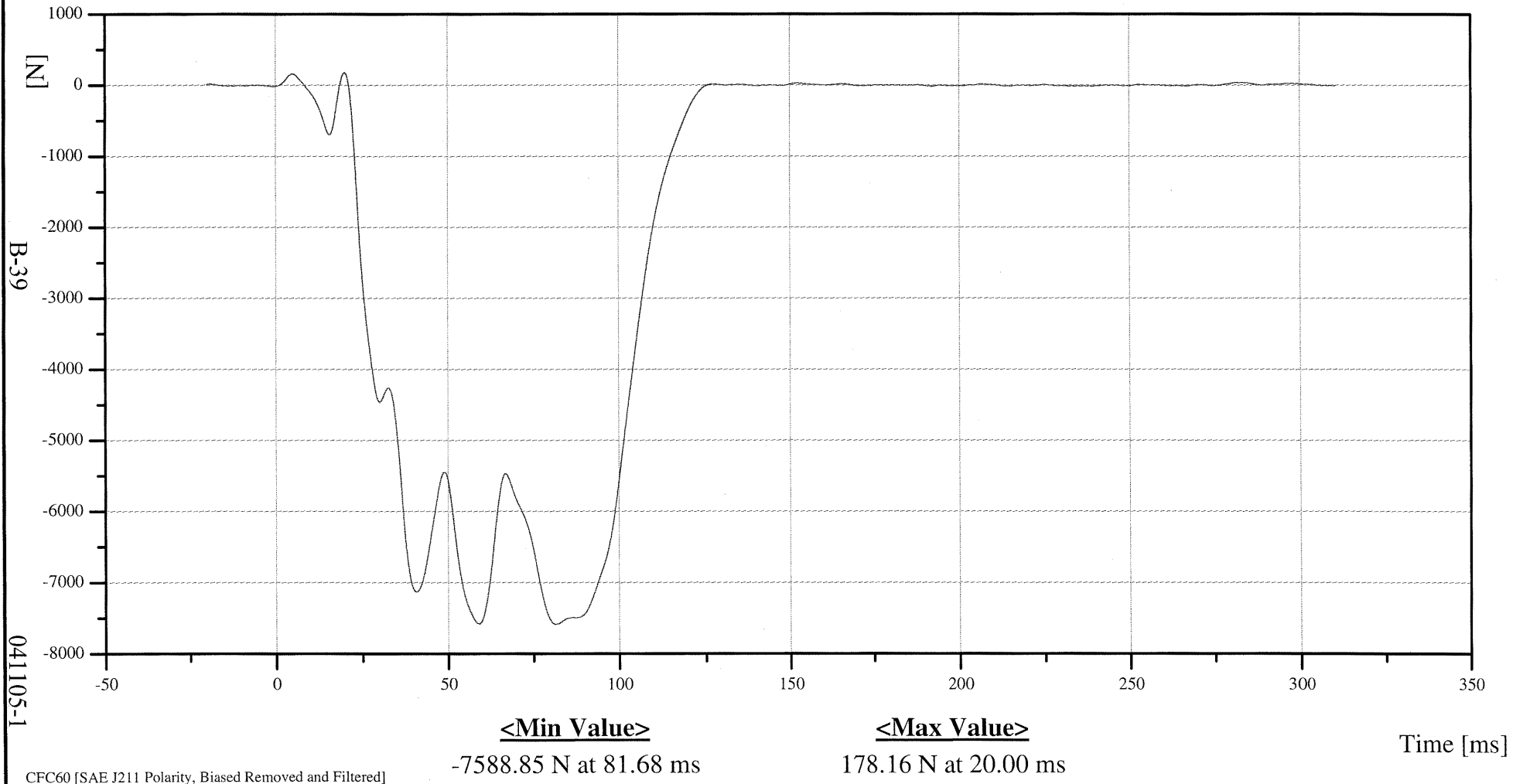
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0212





Transportation Research Center, Inc.

ROW 2 COLUMN 13

Date: 11/05/2004

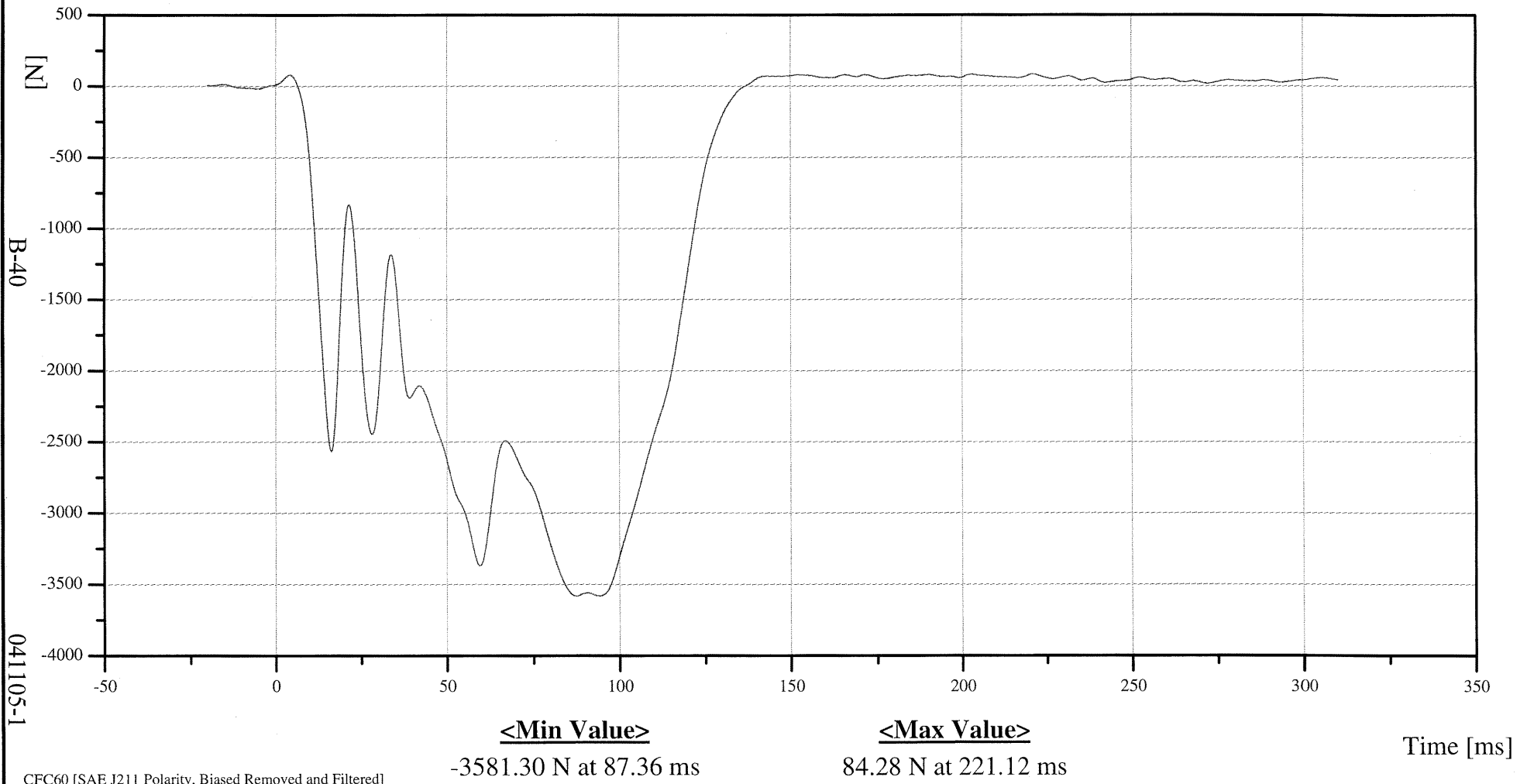
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0213





Transportation Research Center, Inc.

ROW 2 COLUMN 14

Date: 11/05/2004

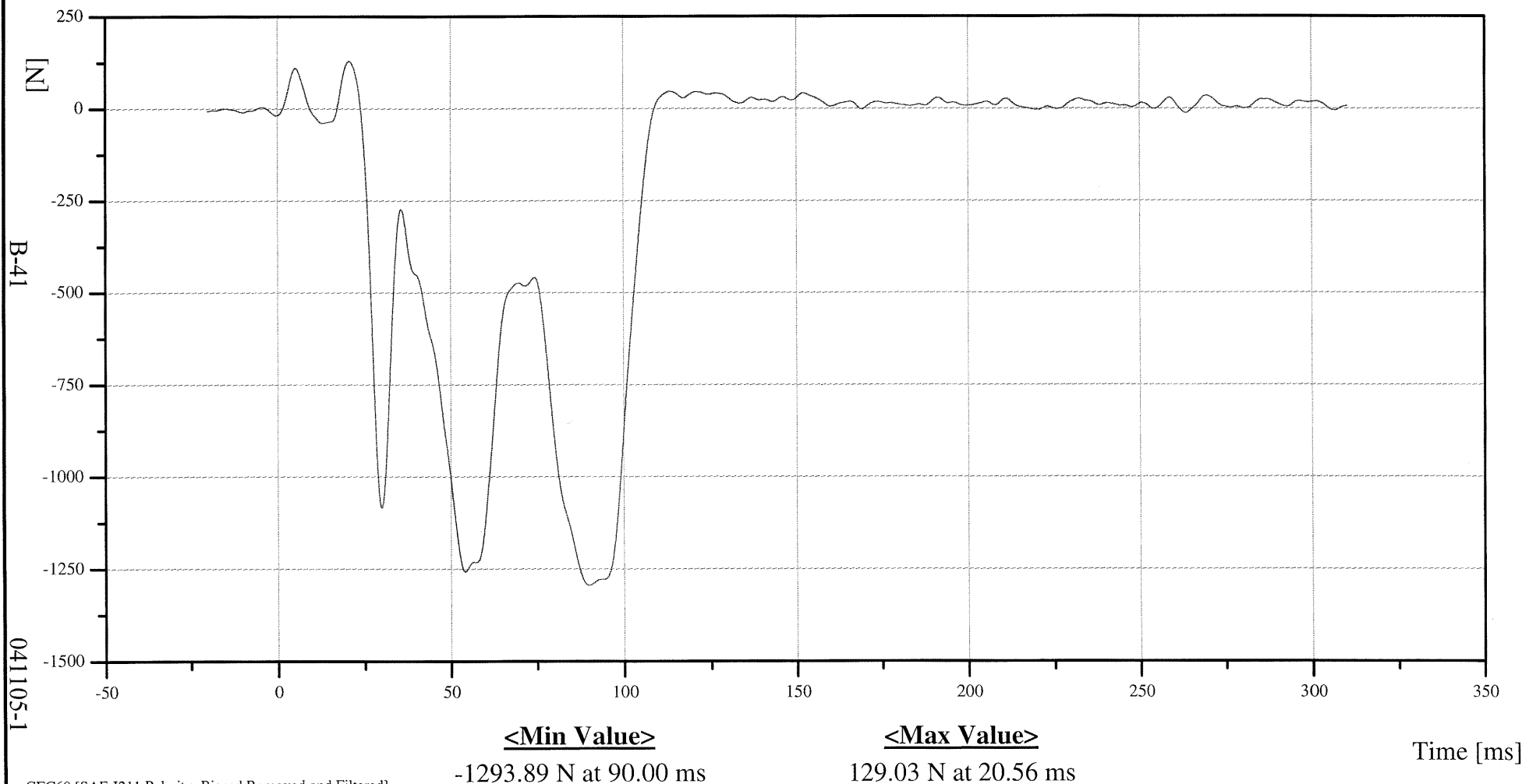
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0214



CFC60 [SAE J211 Polarity, Biased Removed and Filtered]



Transportation Research Center, Inc.

ROW 2 COLUMN 15

Date: 11/05/2004

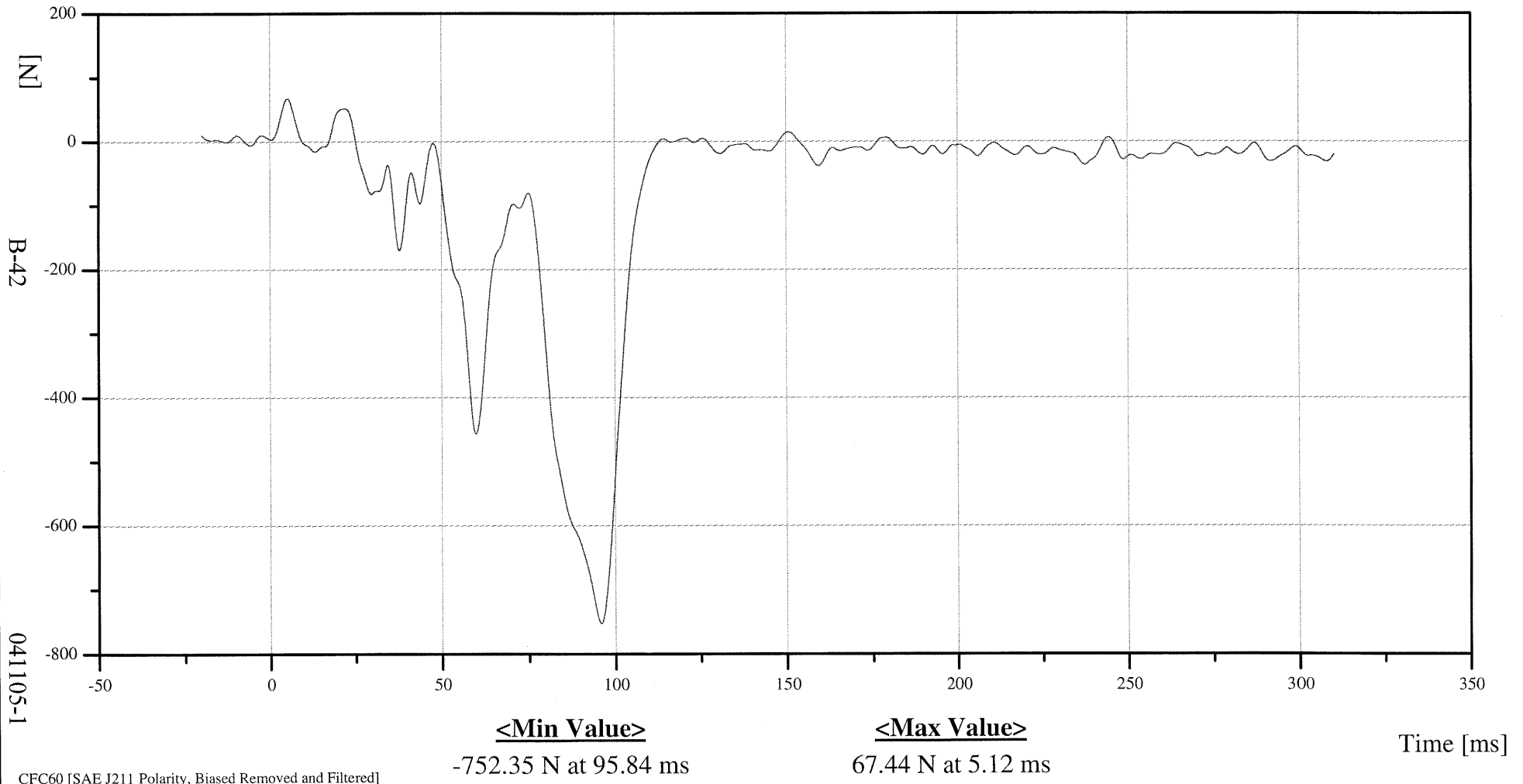
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0215





Transportation Research Center, Inc.

ROW 2 COLUMN 16

Date: 11/05/2004

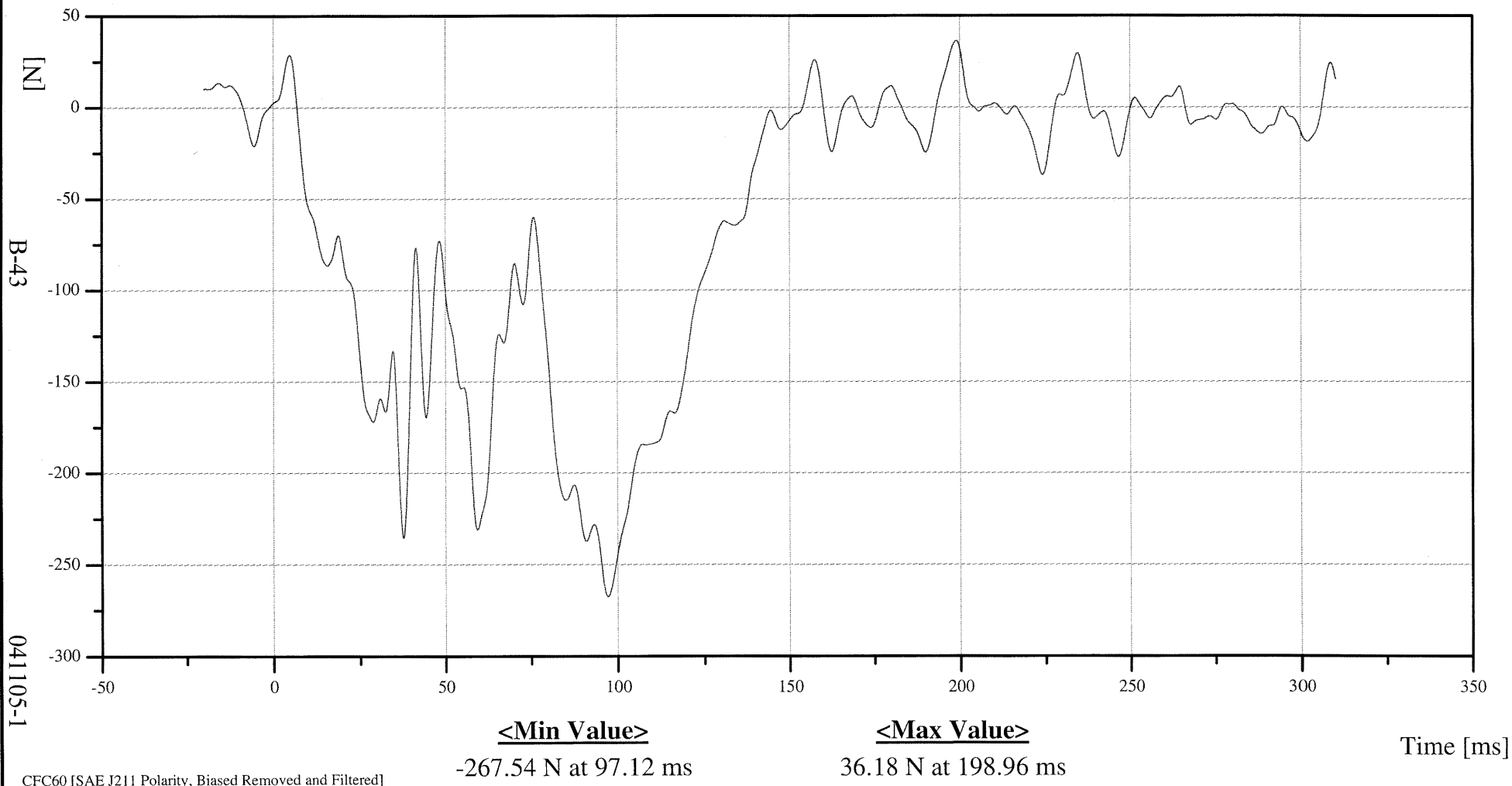
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0216





Transportation Research Center, Inc.

ROW 3 COLUMN 1

Date: 11/05/2004

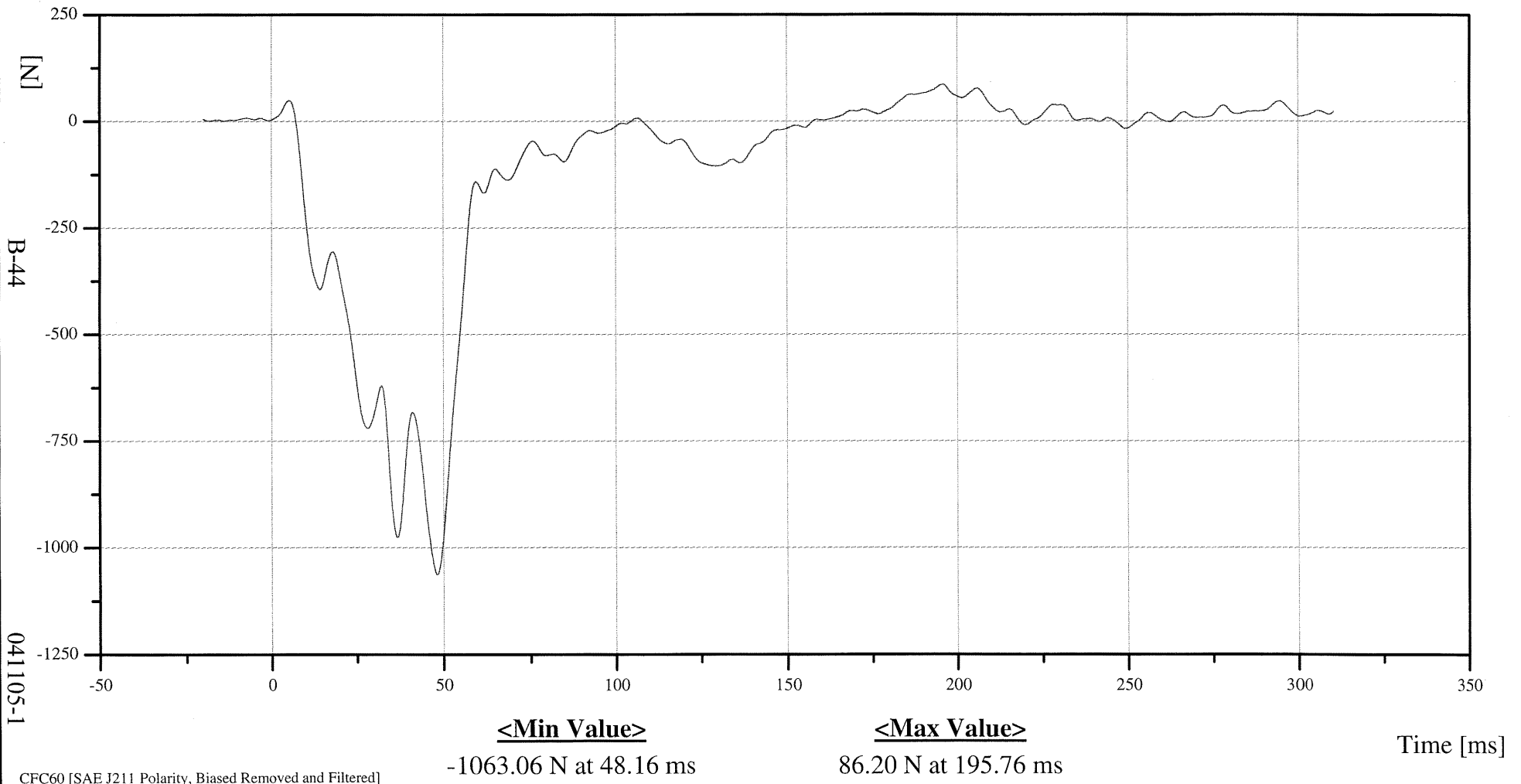
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0301





Transportation Research Center, Inc.

ROW 3 COLUMN 2

Date: 11/05/2004

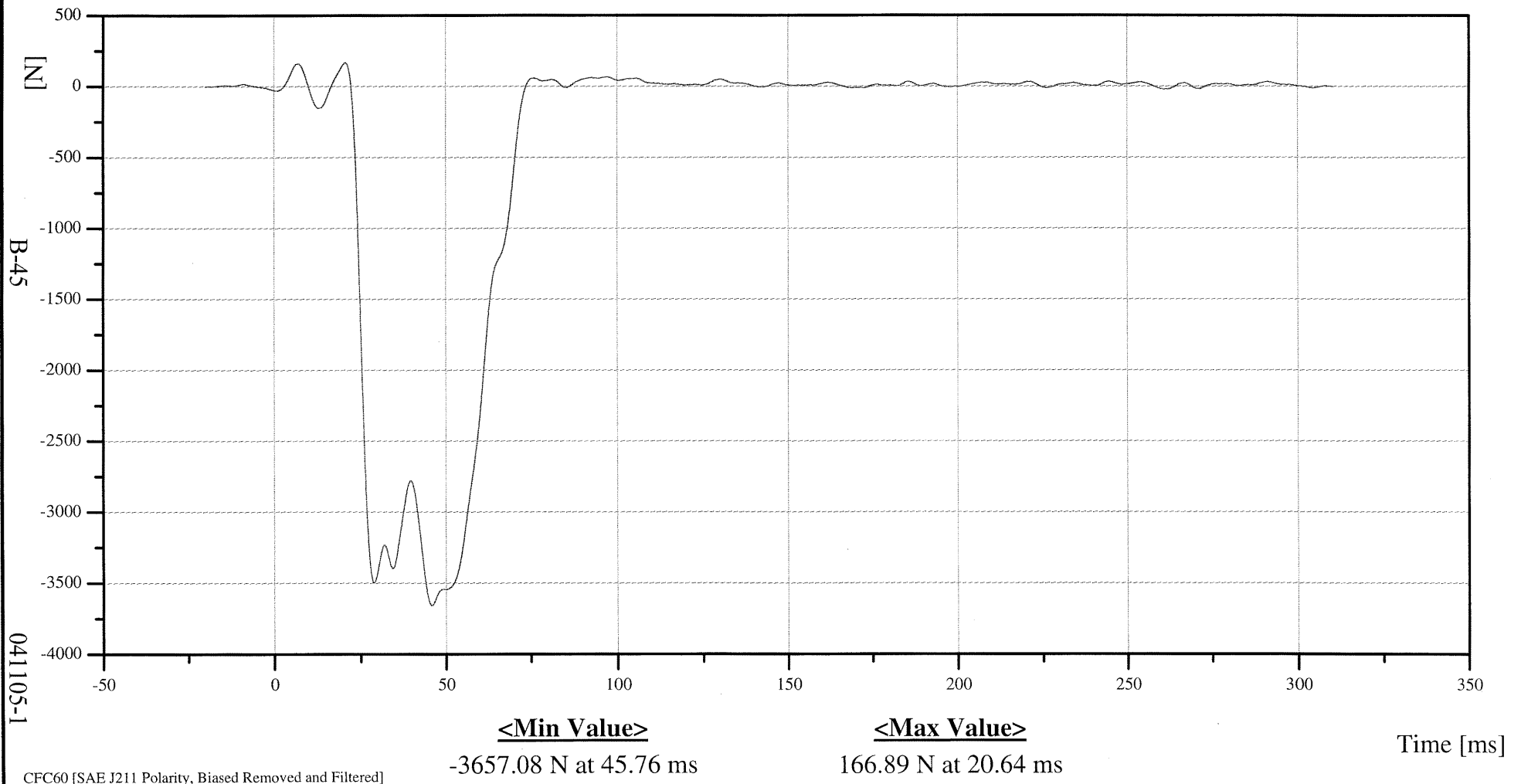
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0302





Transportation Research Center, Inc.

ROW 3 COLUMN 3

Date: 11/05/2004

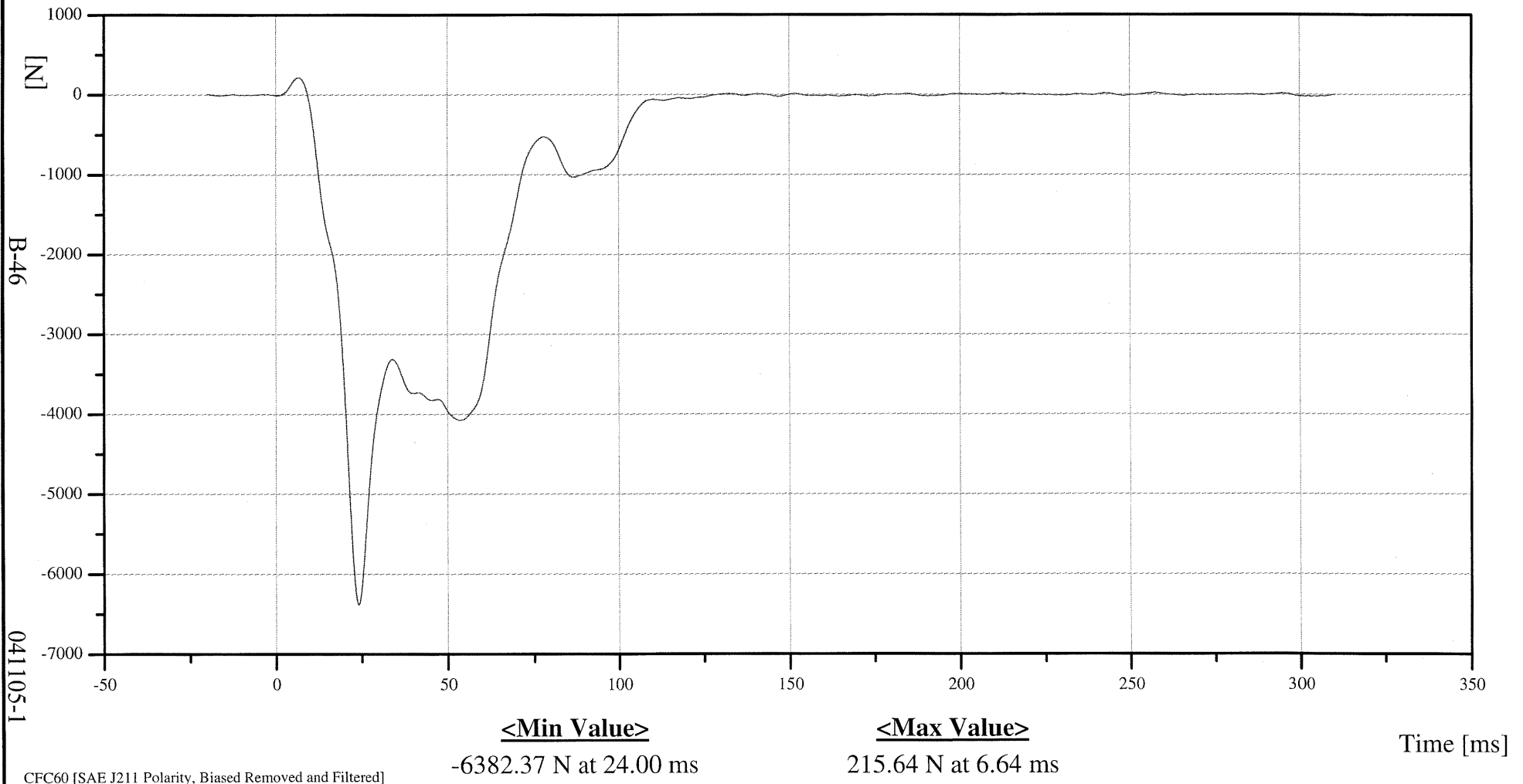
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0303





Transportation Research Center, Inc.

ROW 3 COLUMN 4

Date: 11/05/2004

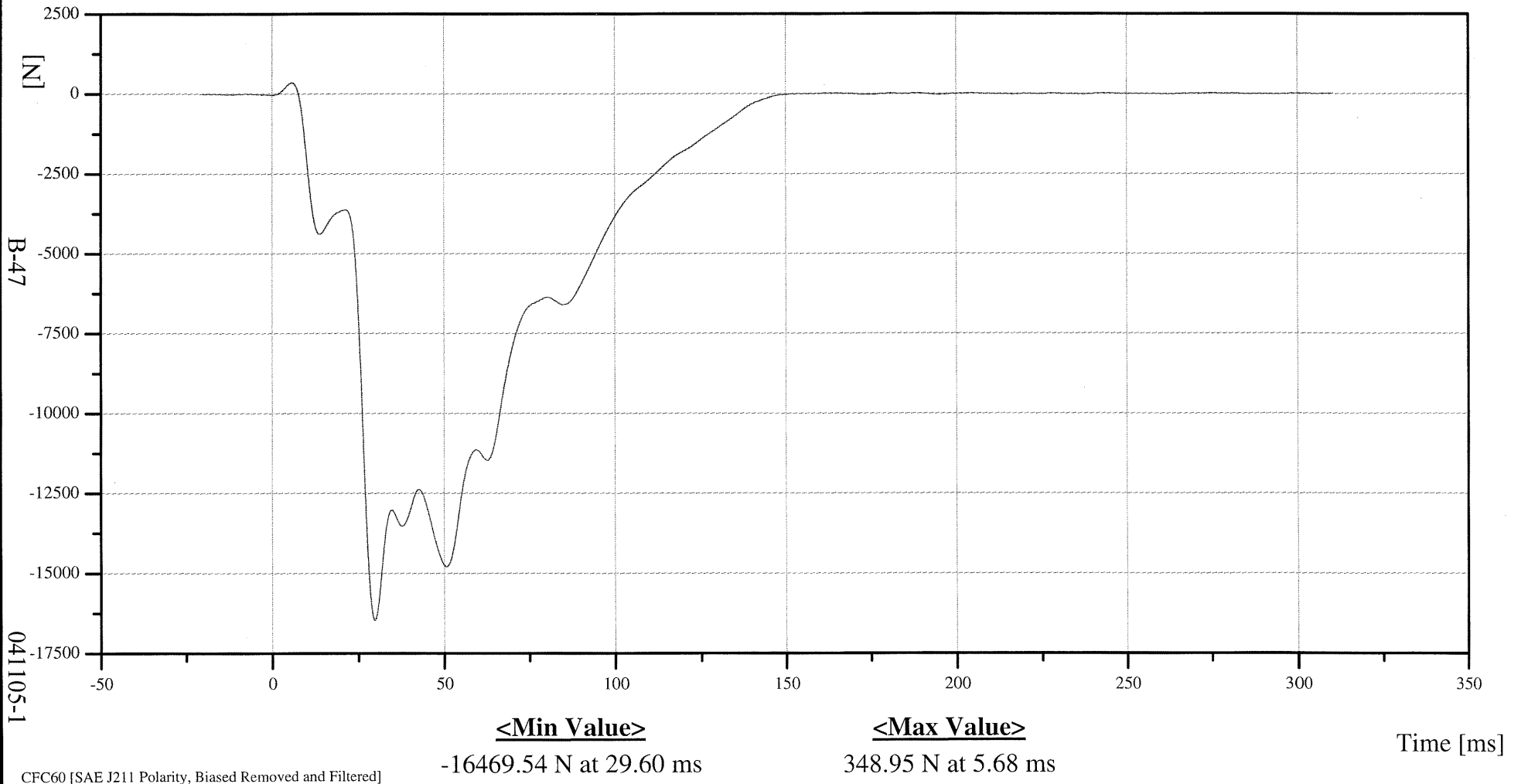
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0304





Transportation Research Center, Inc.

ROW 3 COLUMN 5

Date: 11/05/2004

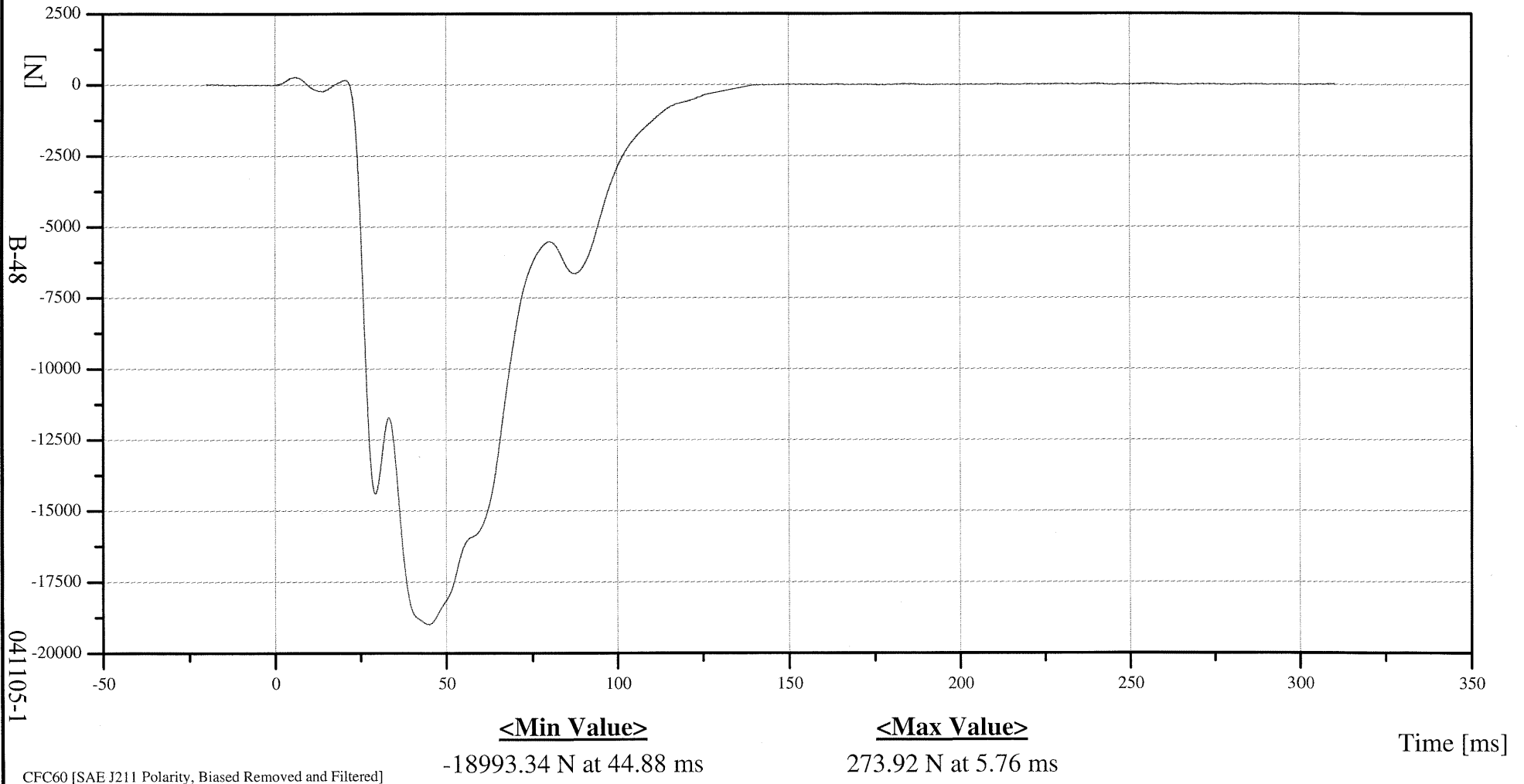
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0305





Transportation Research Center, Inc.

ROW 3 COLUMN 6

Date: 11/05/2004

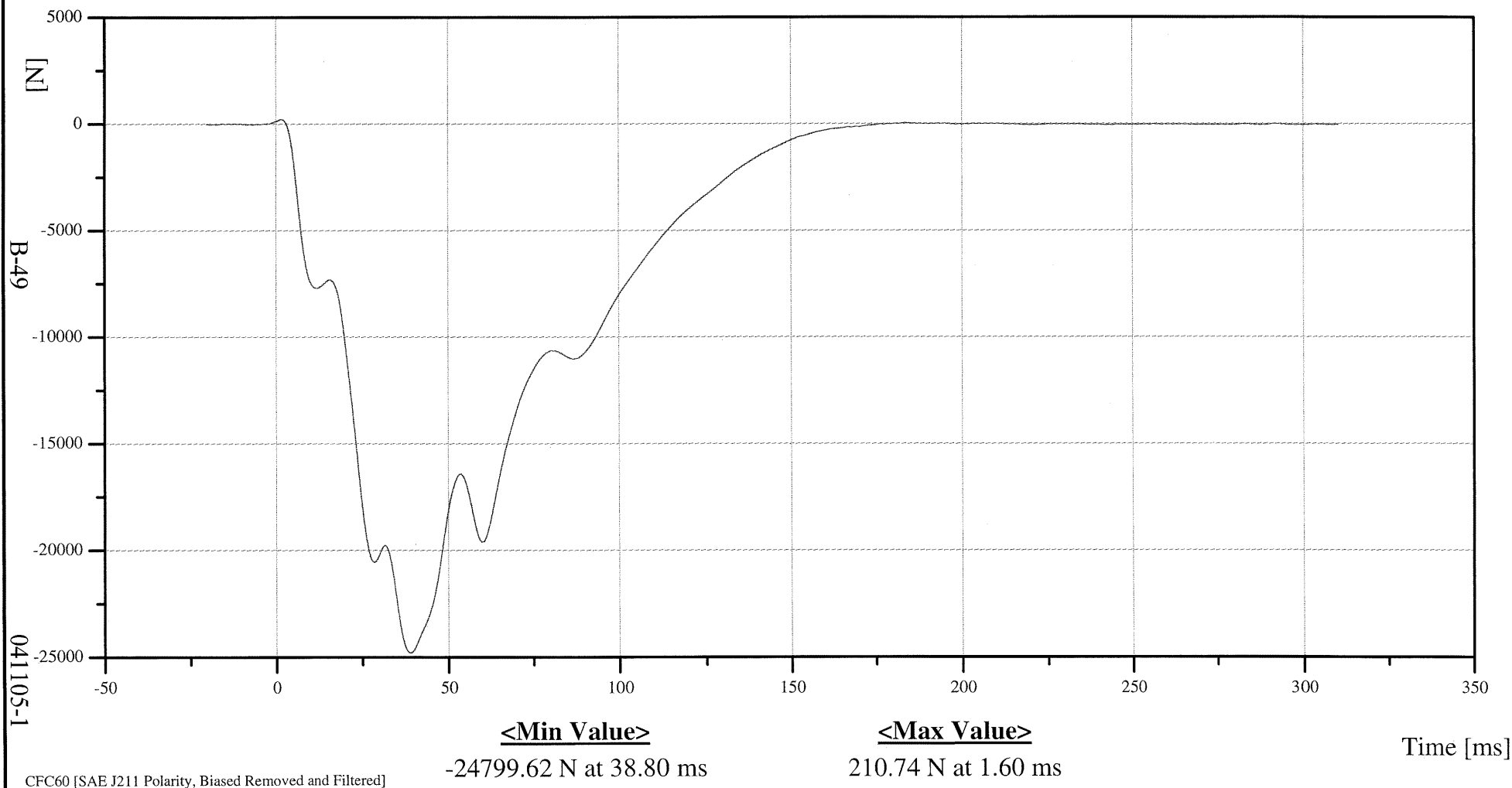
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0306





Transportation Research Center, Inc.

ROW 3 COLUMN 7

Date: 11/05/2004

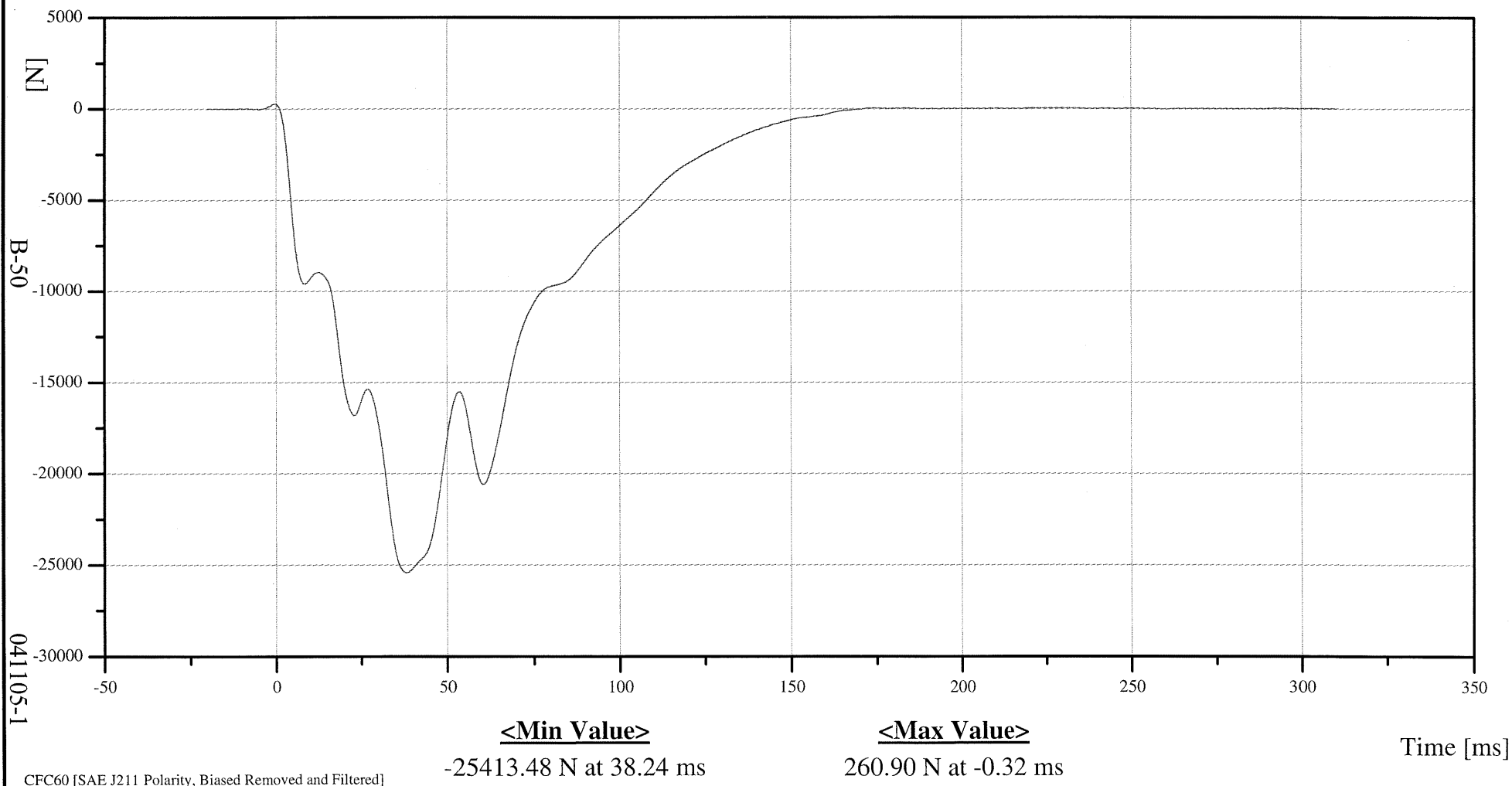
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0307





Transportation Research Center, Inc.

ROW 3 COLUMN 8

Date: 11/05/2004

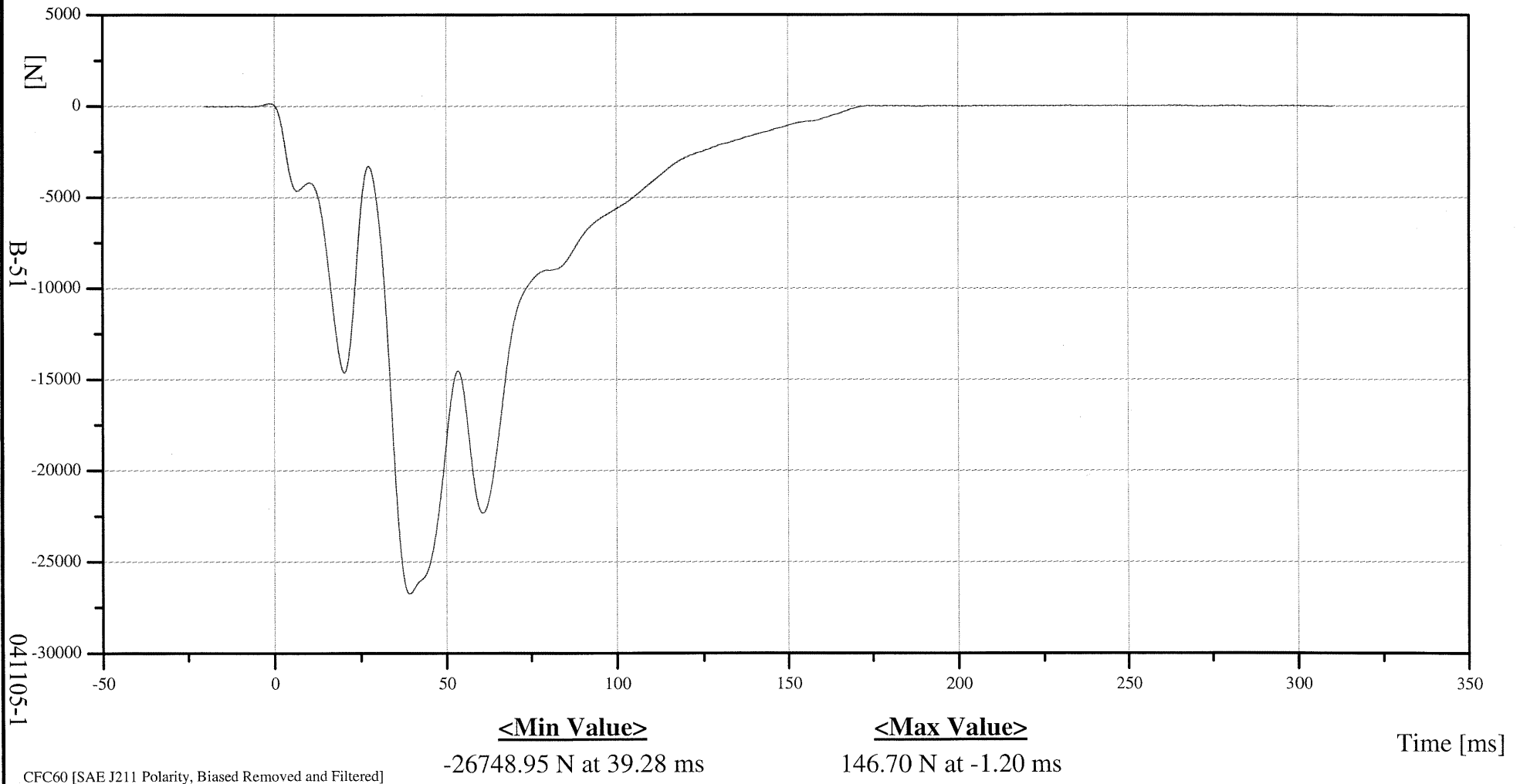
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0308





Transportation Research Center, Inc.

ROW 3 COLUMN 9

Date: 11/05/2004

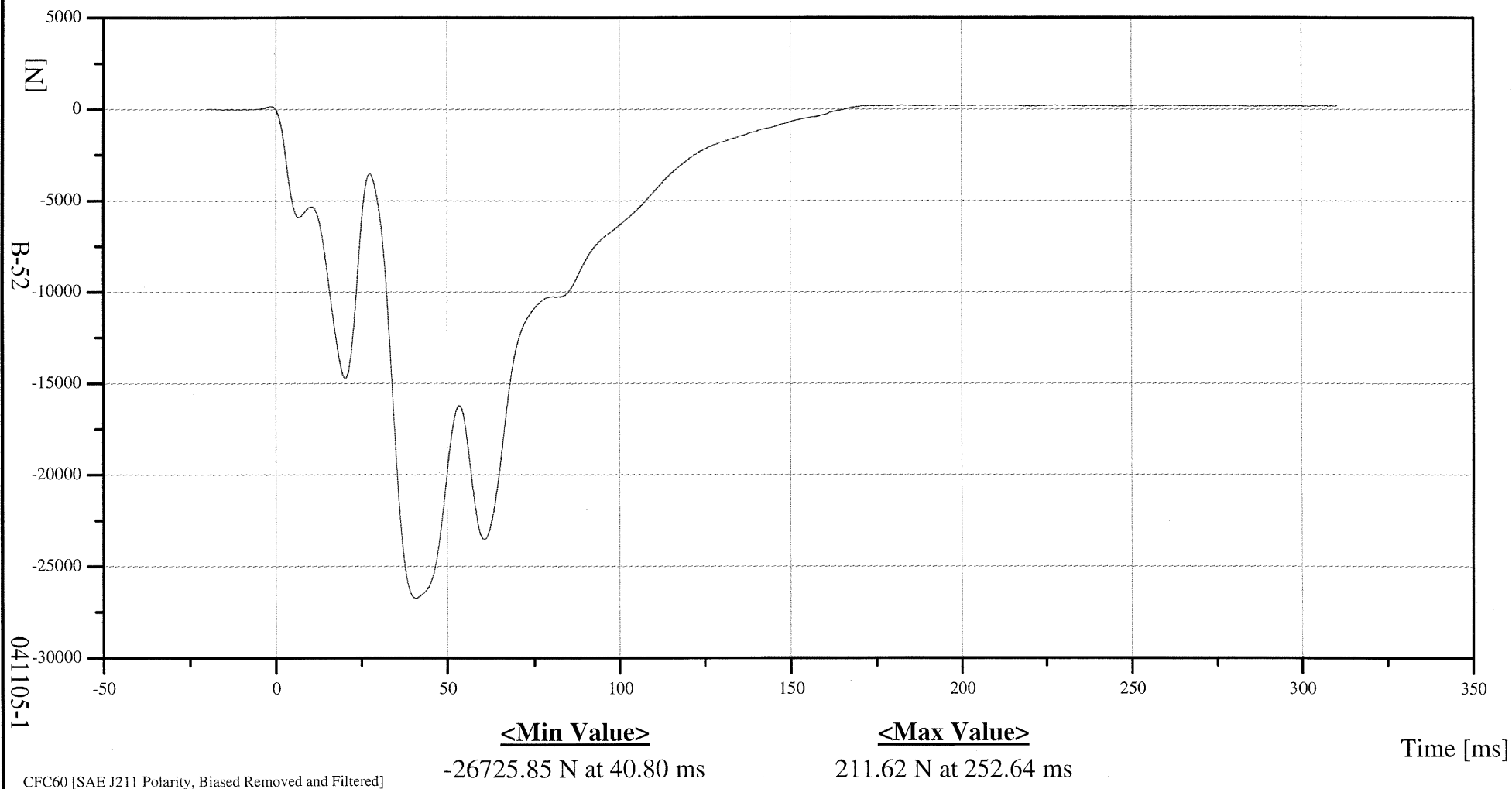
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0309





Transportation Research Center, Inc.

ROW 3 COLUMN 10

Date: 11/05/2004

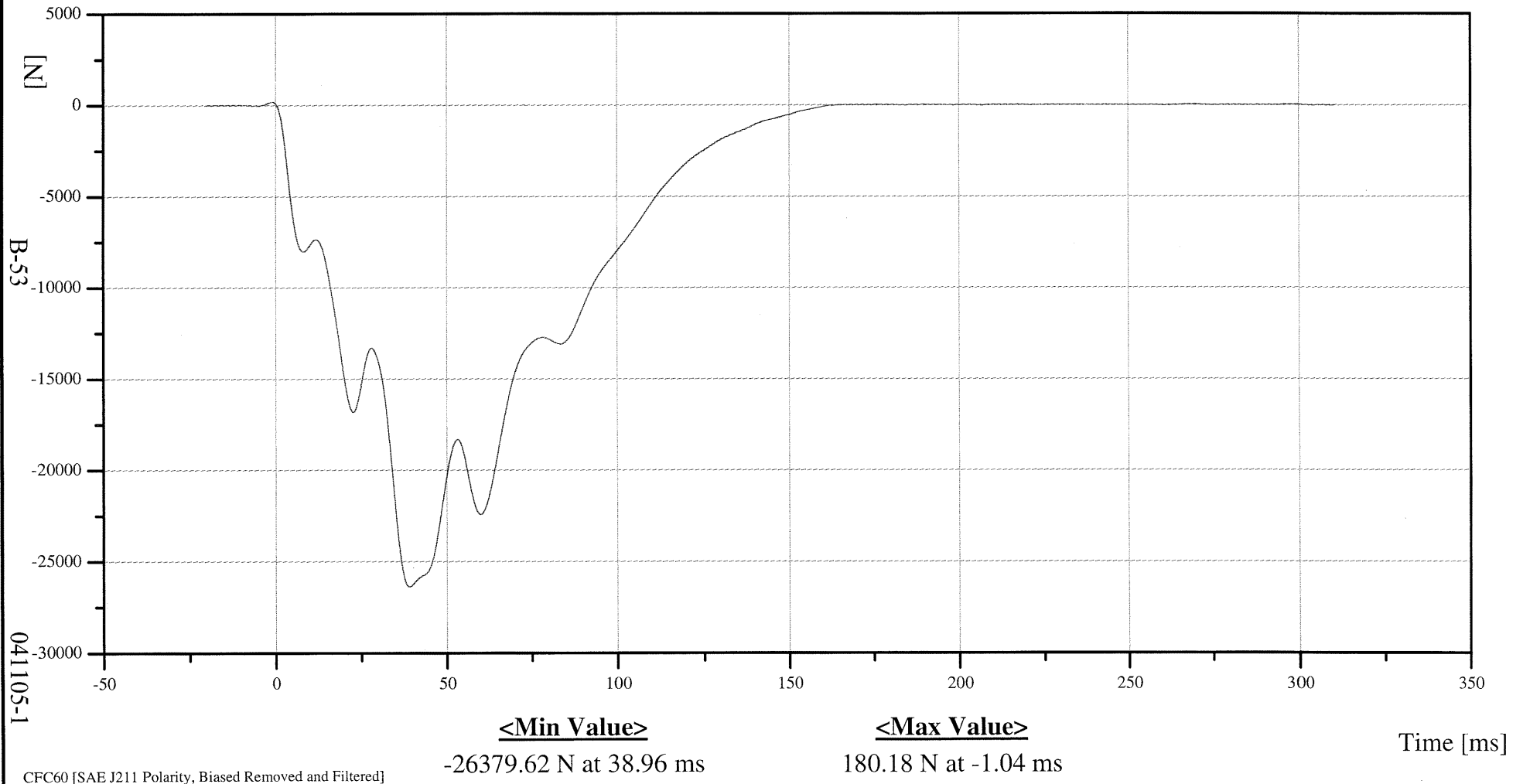
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0310





Transportation Research Center, Inc.

ROW 3 COLUMN 11

Date: 11/05/2004

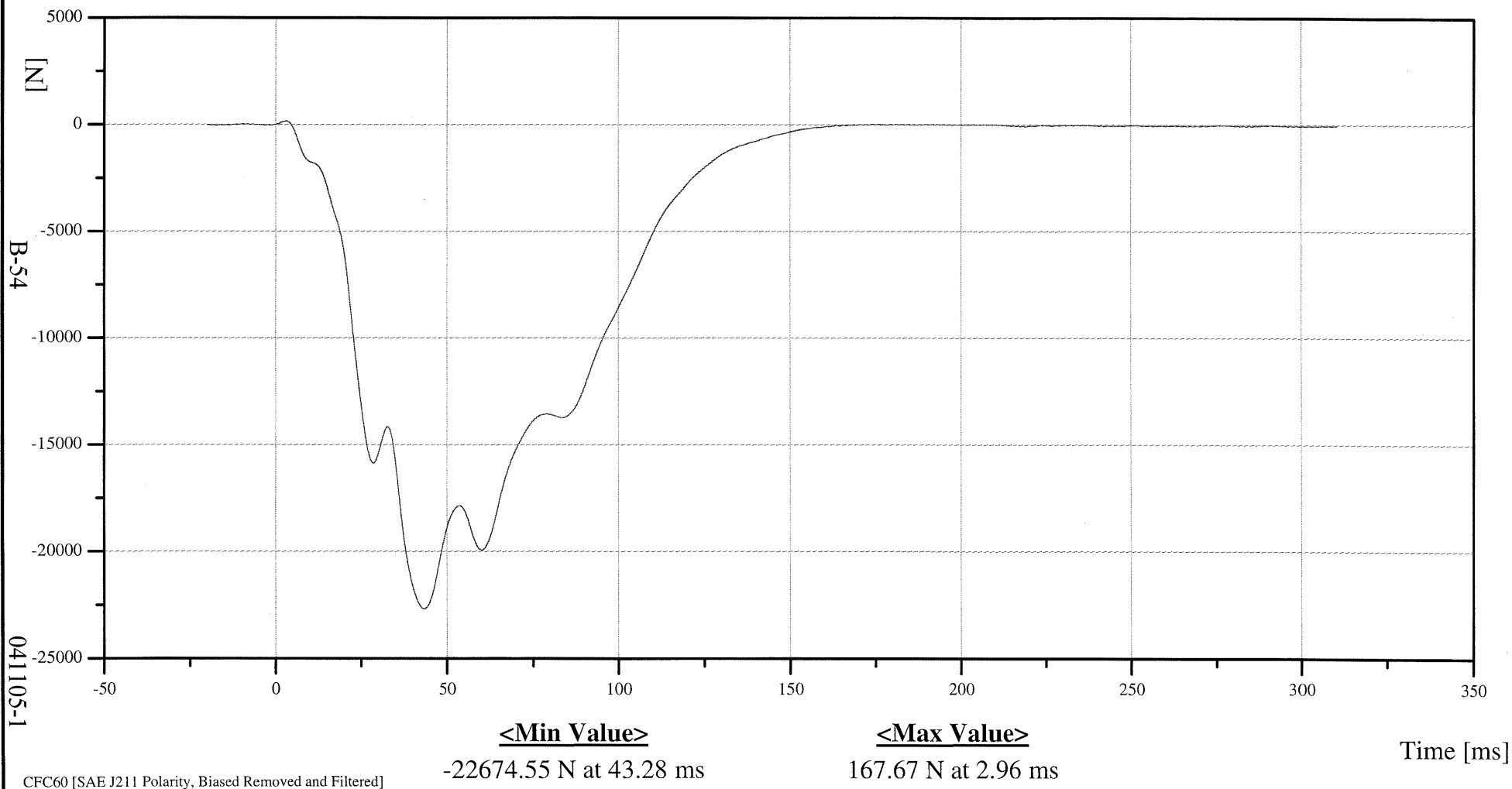
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0311





Transportation Research Center, Inc.

ROW 3 COLUMN 12

Date: 11/05/2004

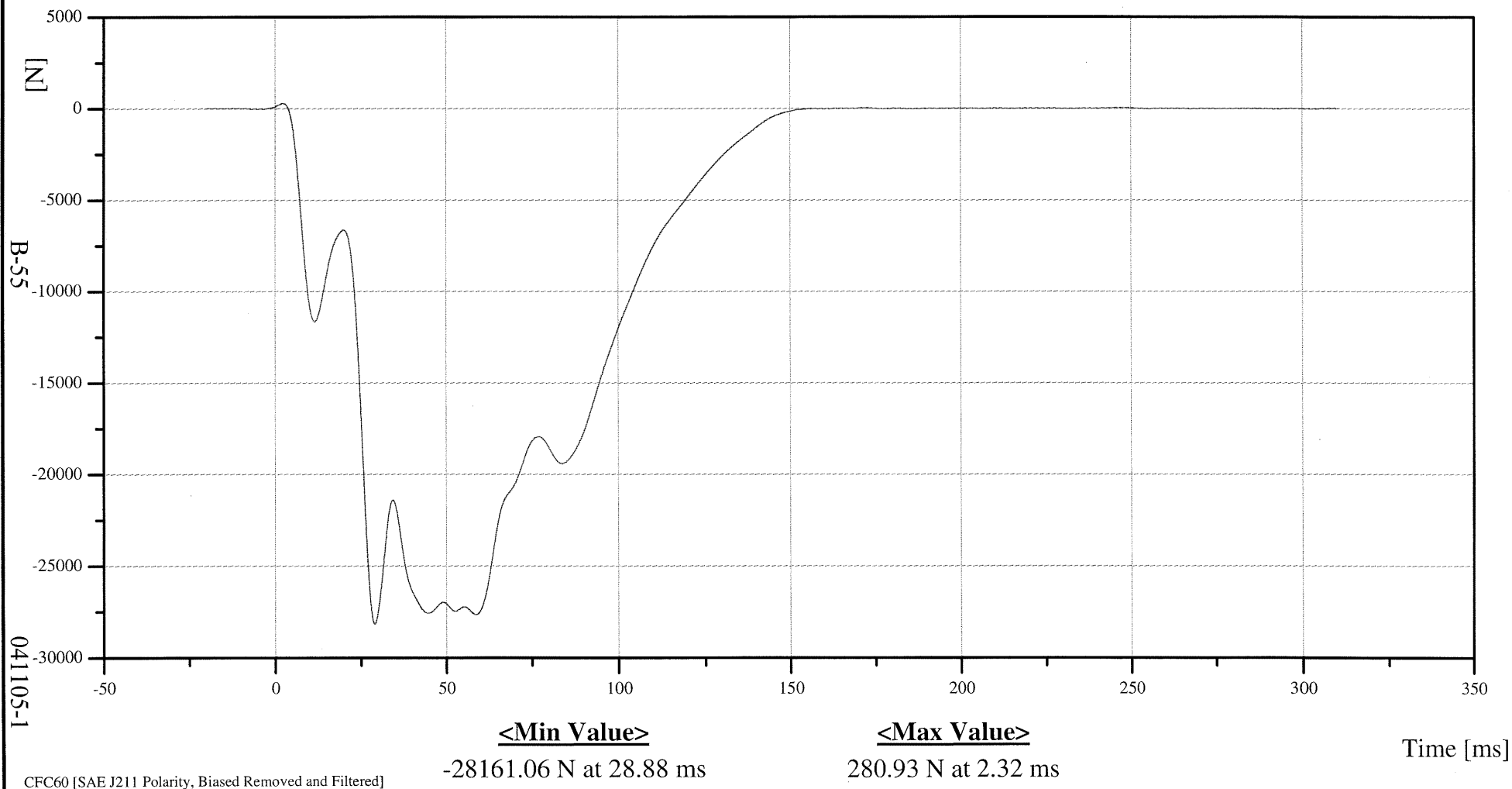
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0312





Transportation Research Center, Inc.

ROW 3 COLUMN 13

Date: 11/05/2004

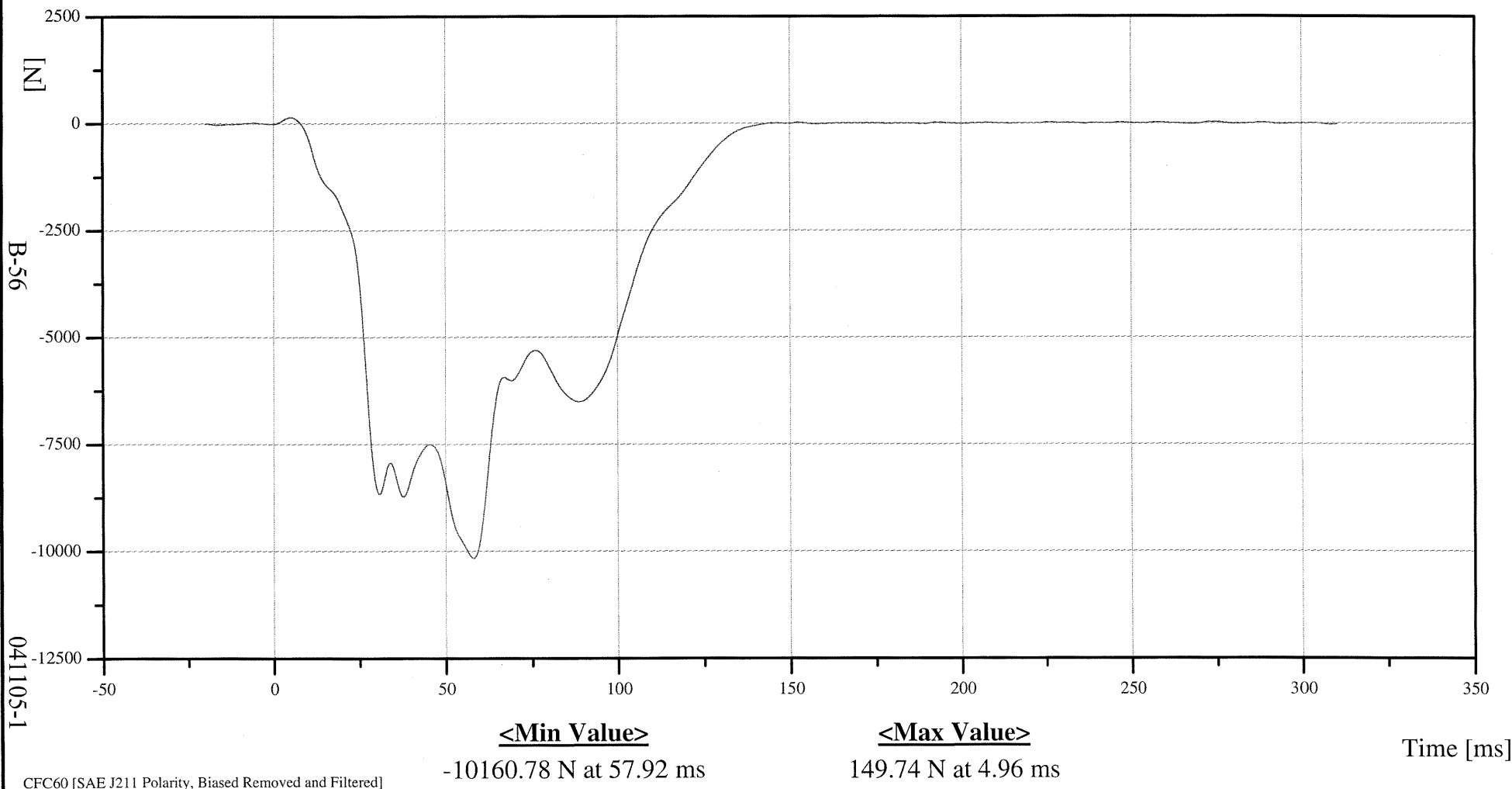
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0313





Transportation Research Center, Inc.

ROW 3 COLUMN 14

Date: 11/05/2004

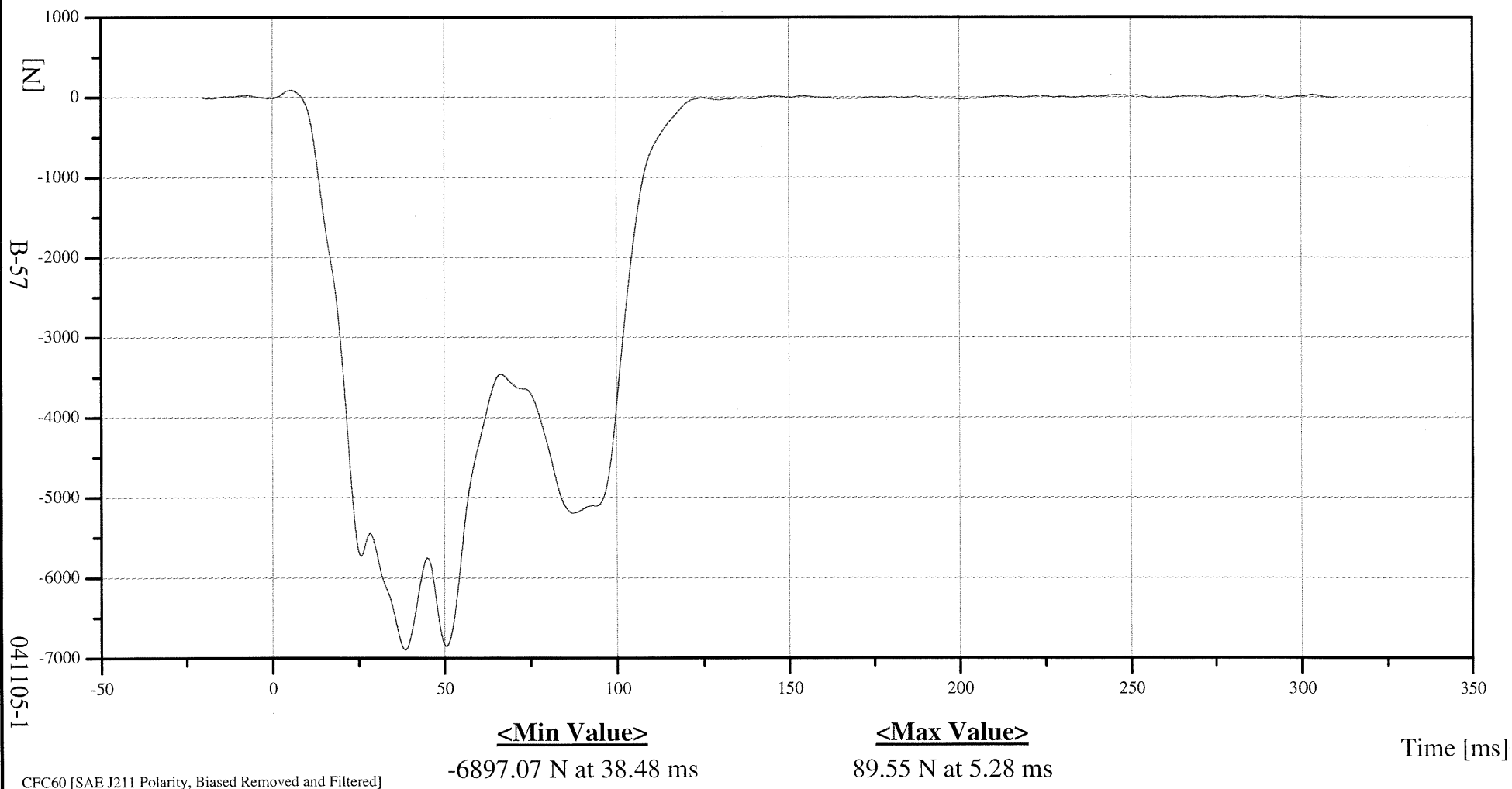
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0314





Transportation Research Center, Inc.

ROW 3 COLUMN 15

Date: 11/05/2004

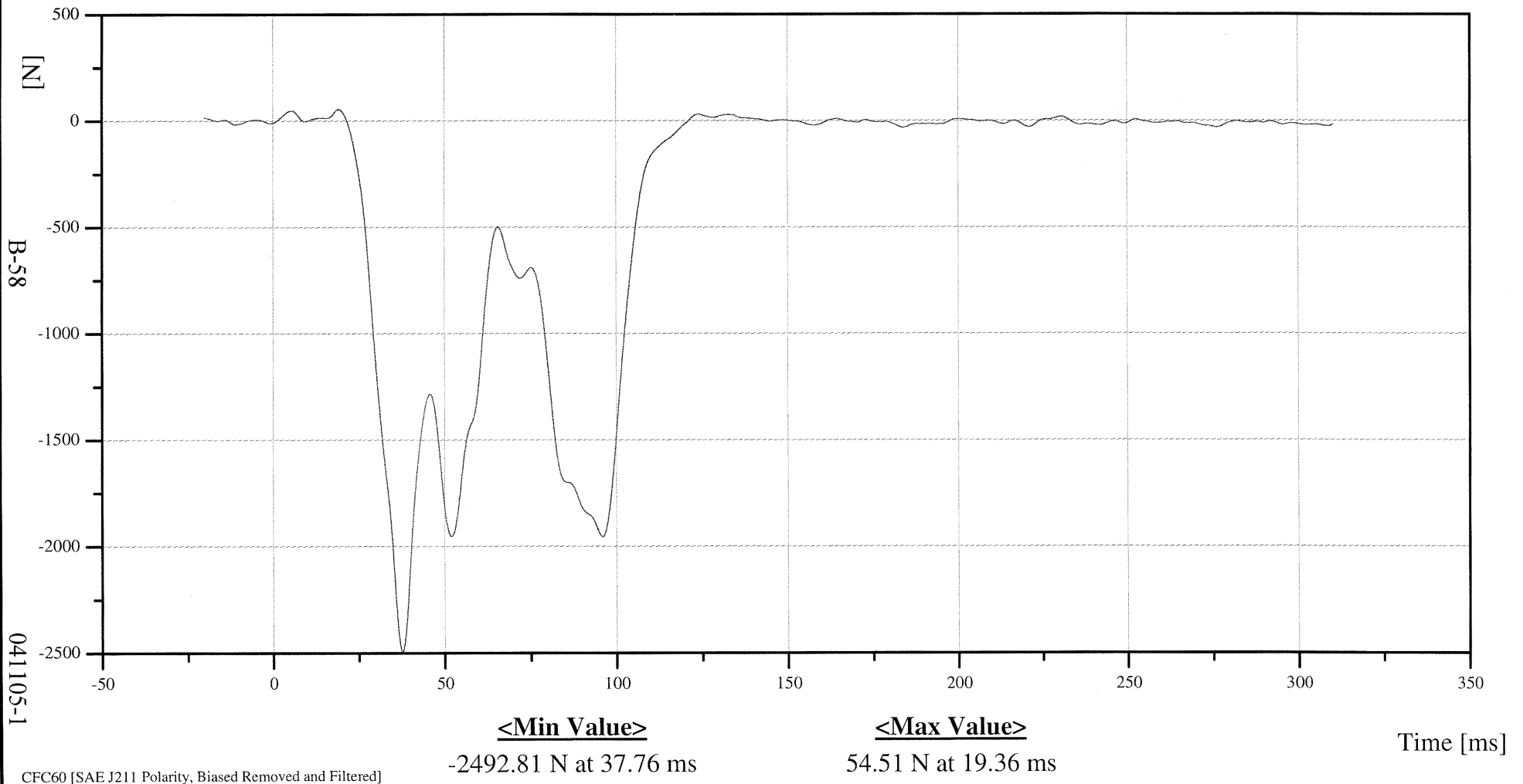
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0315





Transportation Research Center, Inc.

ROW 3 COLUMN 16

Date: 11/05/2004

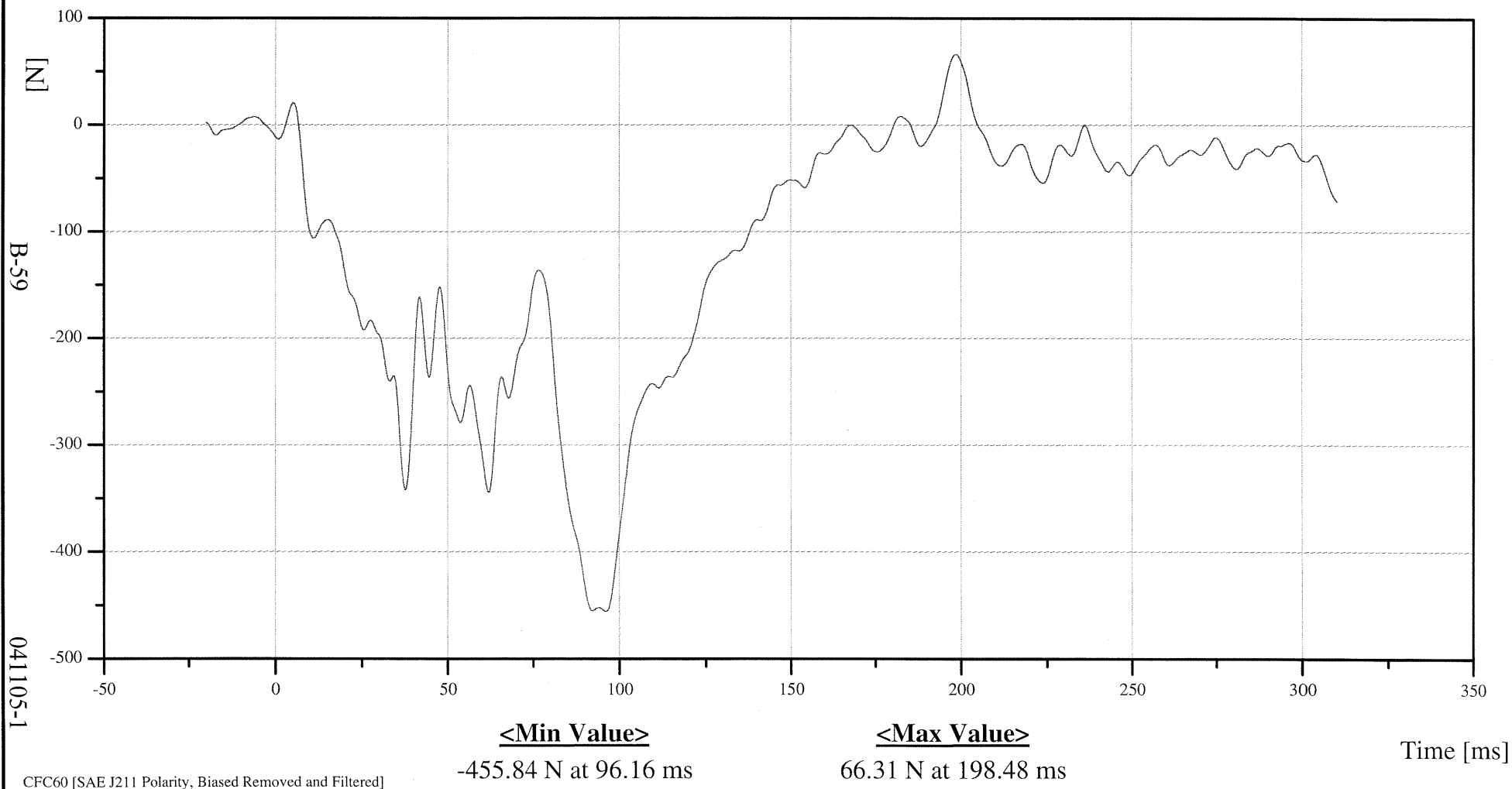
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0316





Transportation Research Center, Inc.

ROW 4 COLUMN 1

Date: 11/05/2004

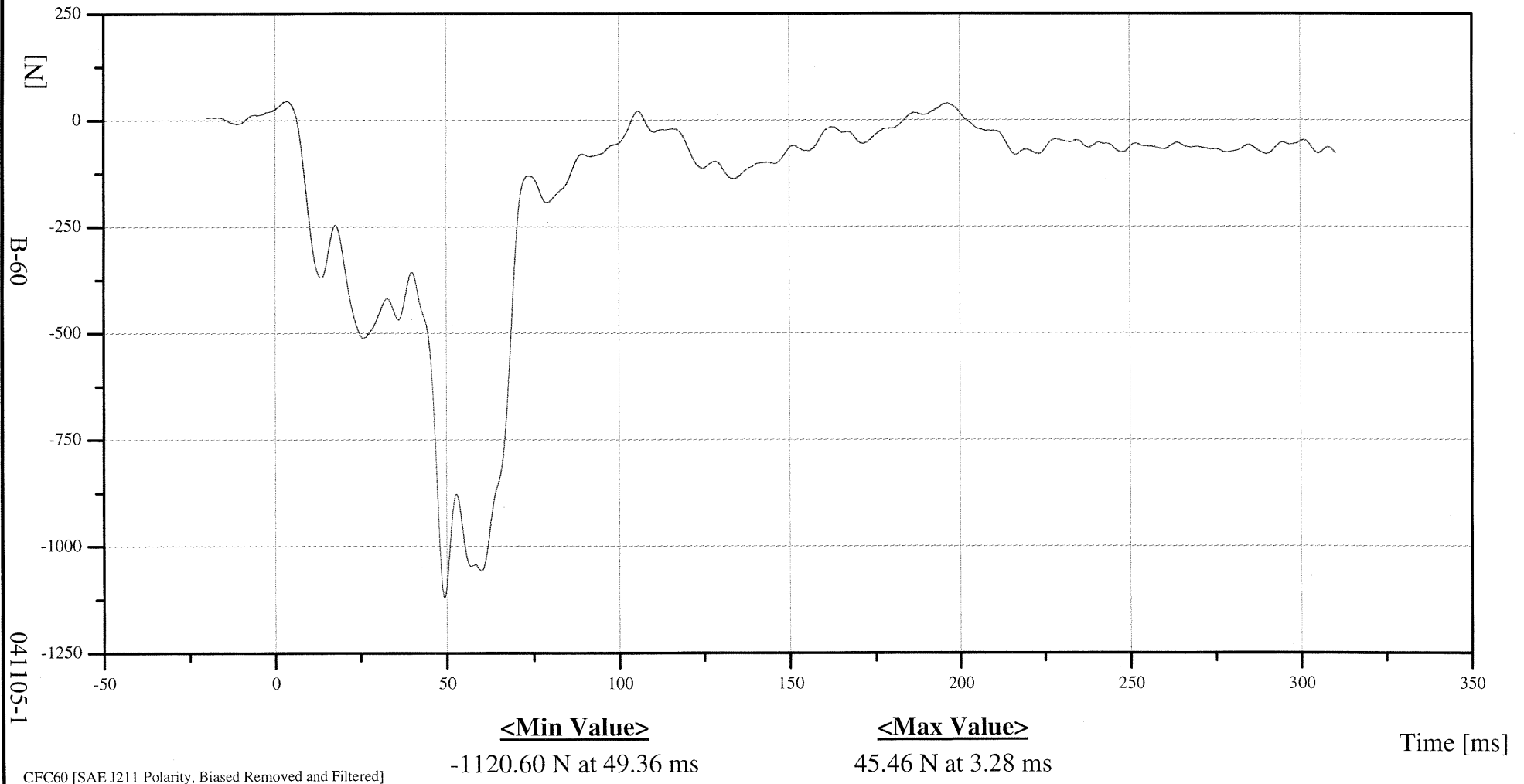
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0401





Transportation Research Center, Inc.

ROW 4 COLUMN 2

Date: 11/05/2004

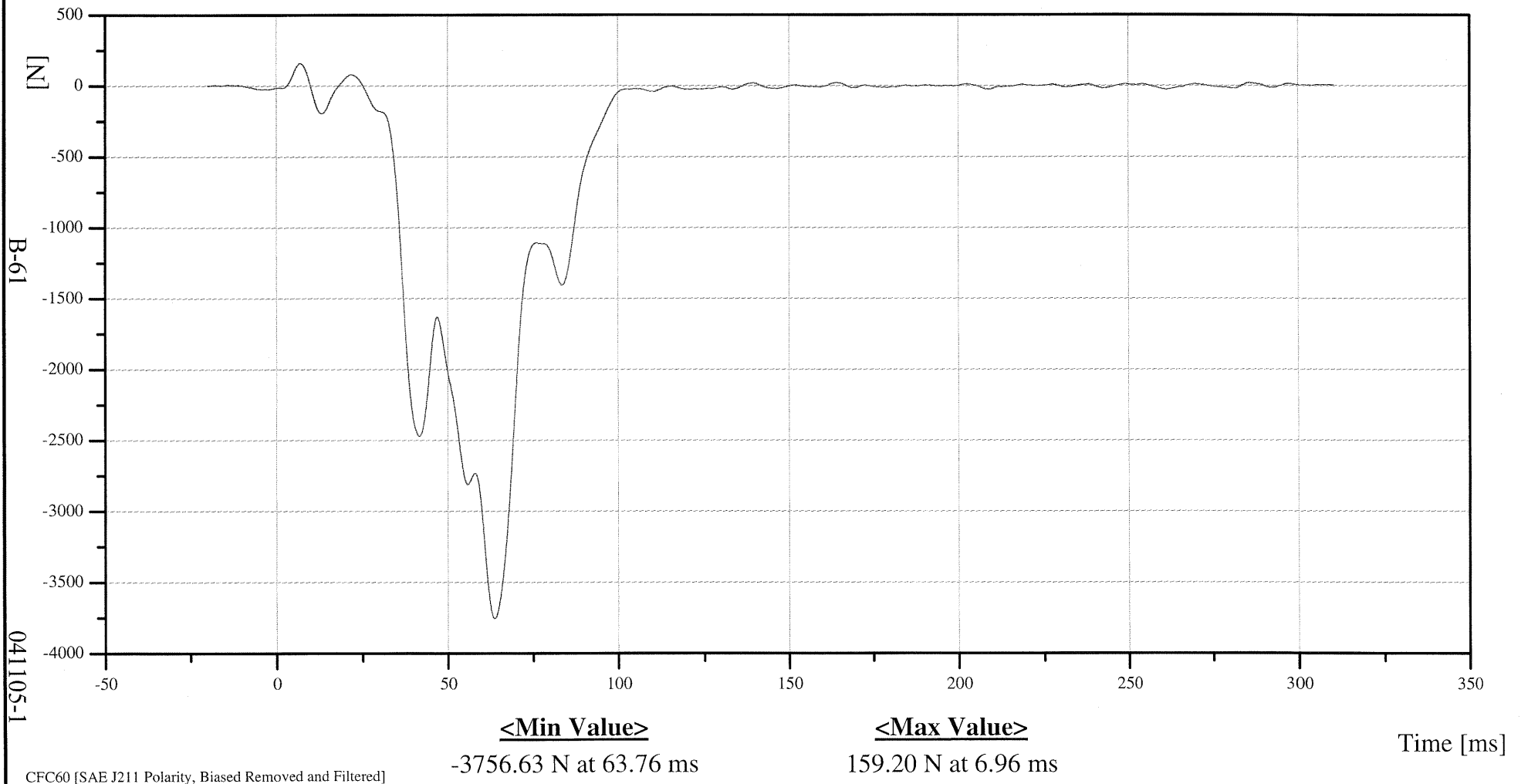
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0402





Transportation Research Center, Inc.

ROW 4 COLUMN 3

Date: 11/05/2004

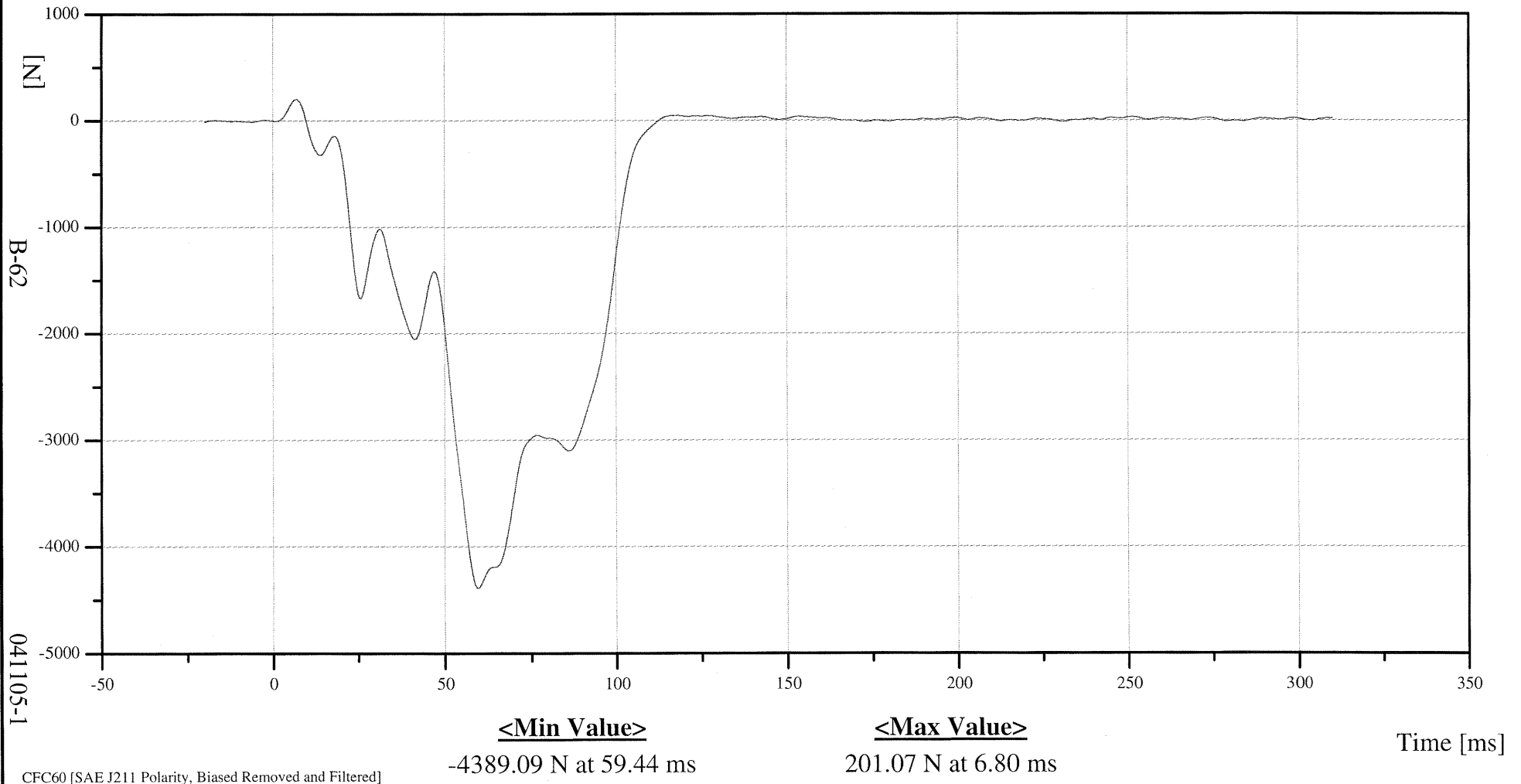
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0403





Transportation Research Center, Inc.

ROW 4 COLUMN 4

Date: 11/05/2004

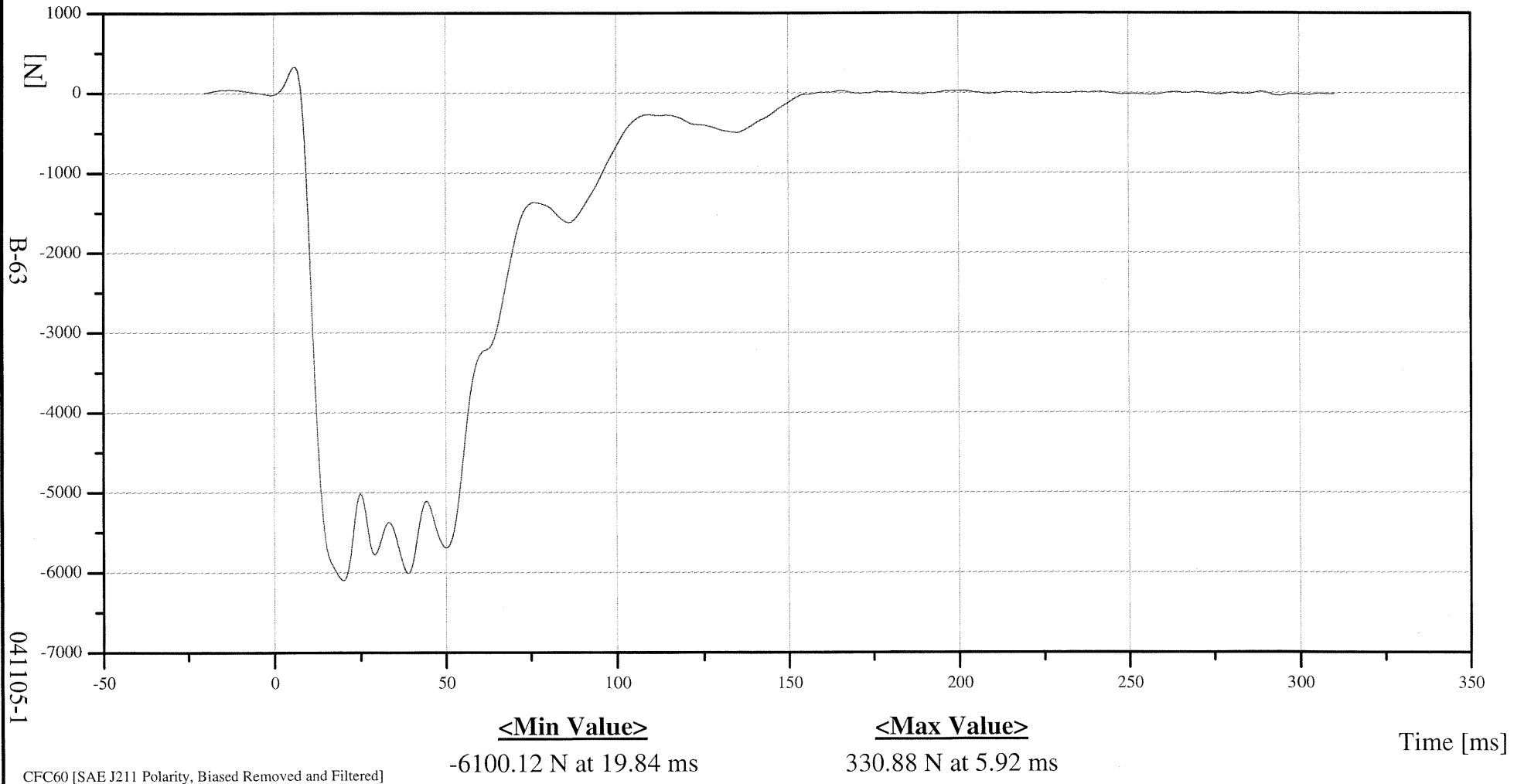
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0404





Transportation Research Center, Inc.

ROW 4 COLUMN 5

Date: 11/05/2004

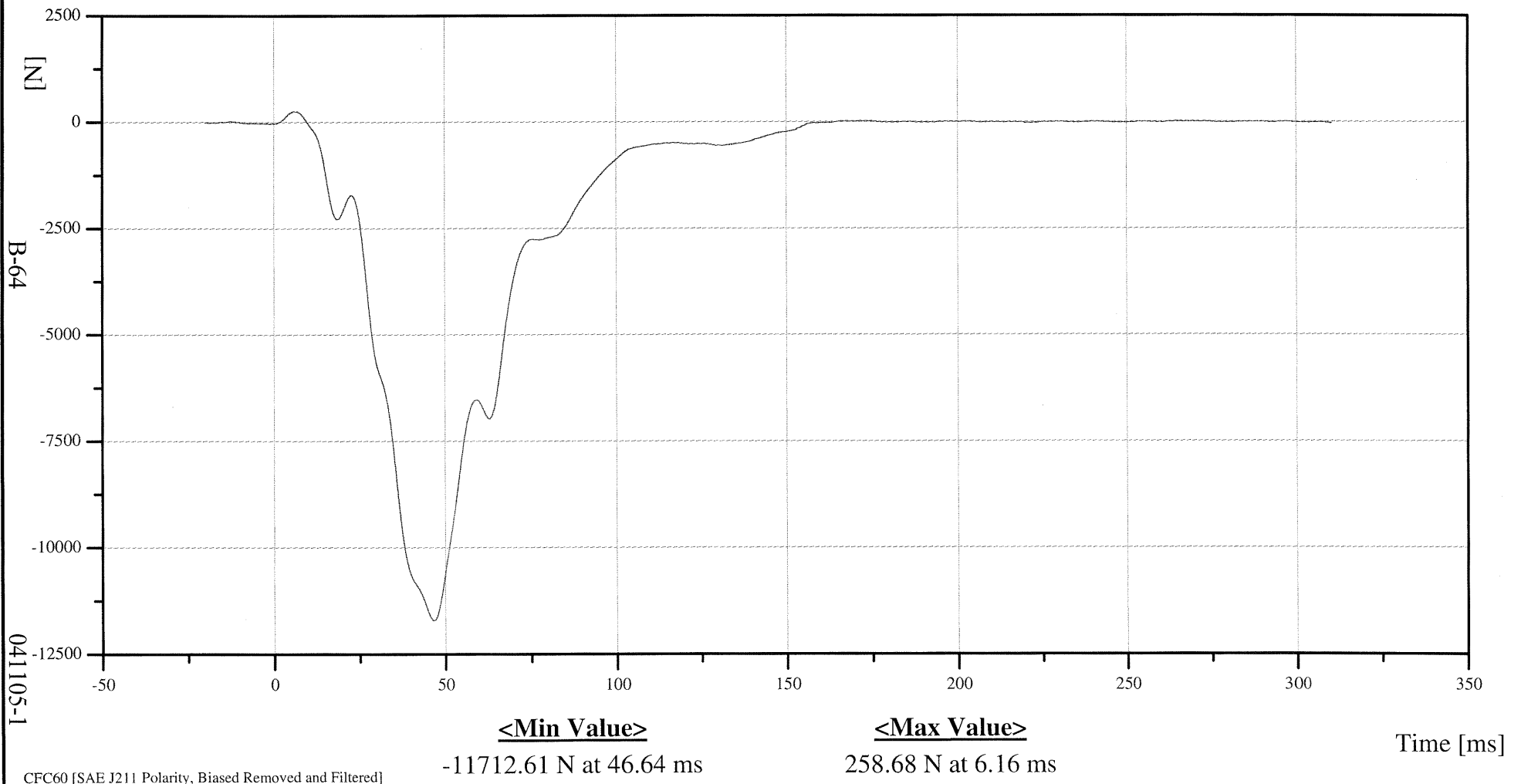
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0405





Transportation Research Center, Inc.

ROW 4 COLUMN 6

Date: 11/05/2004

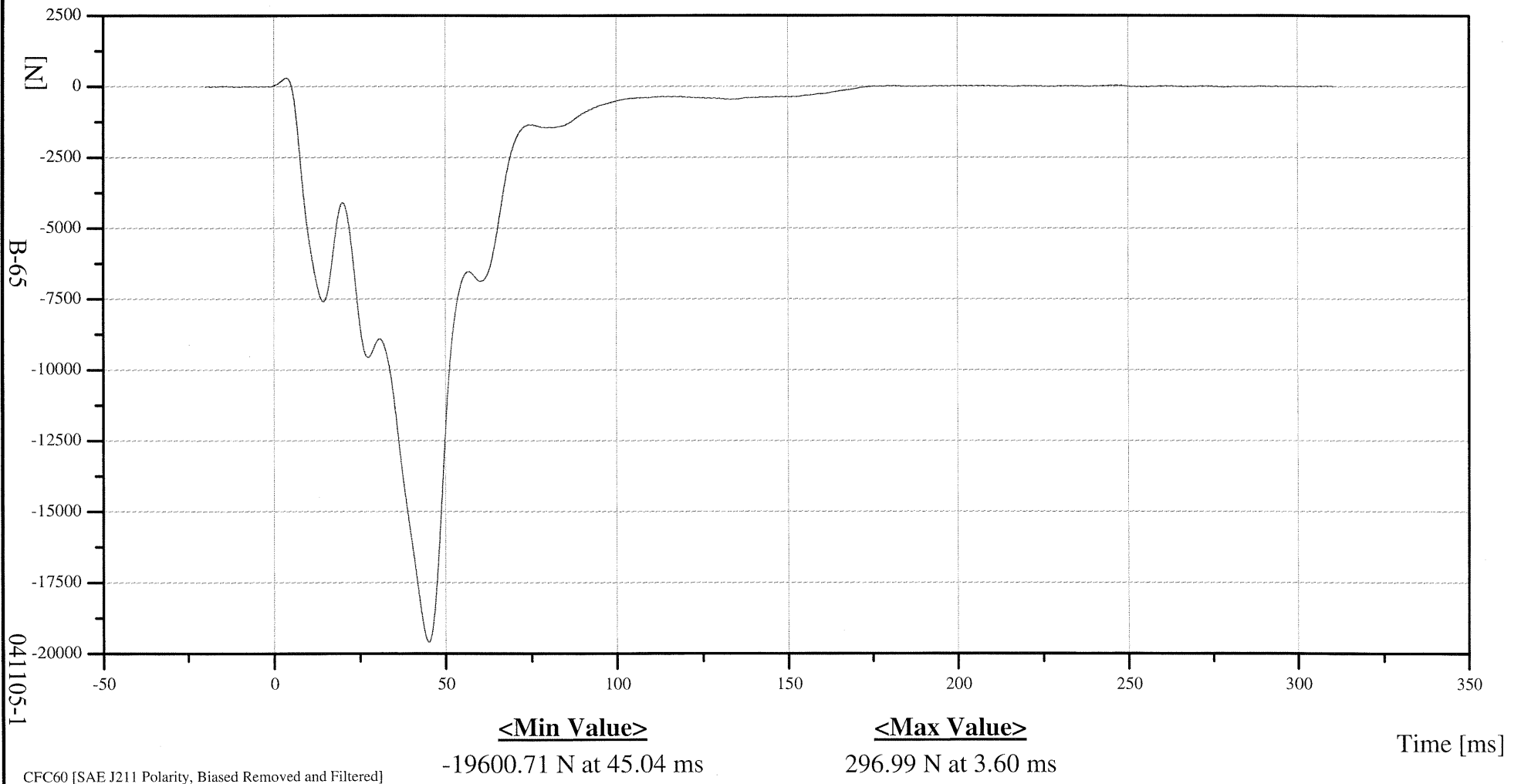
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0406





Transportation Research Center, Inc.

ROW 4 COLUMN 7

Date: 11/05/2004

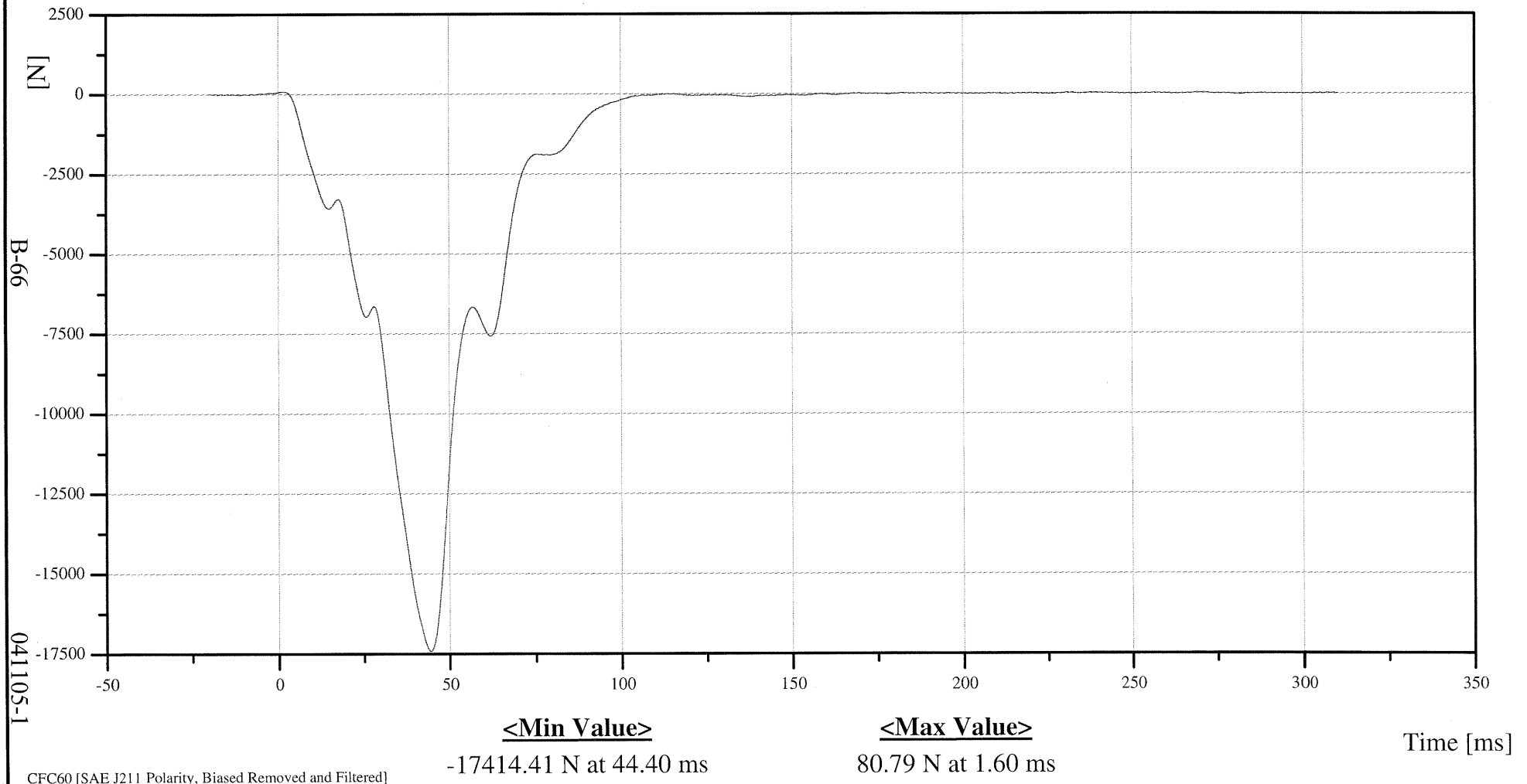
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0407





Transportation Research Center, Inc.

ROW 4 COLUMN 8

Date: 11/05/2004

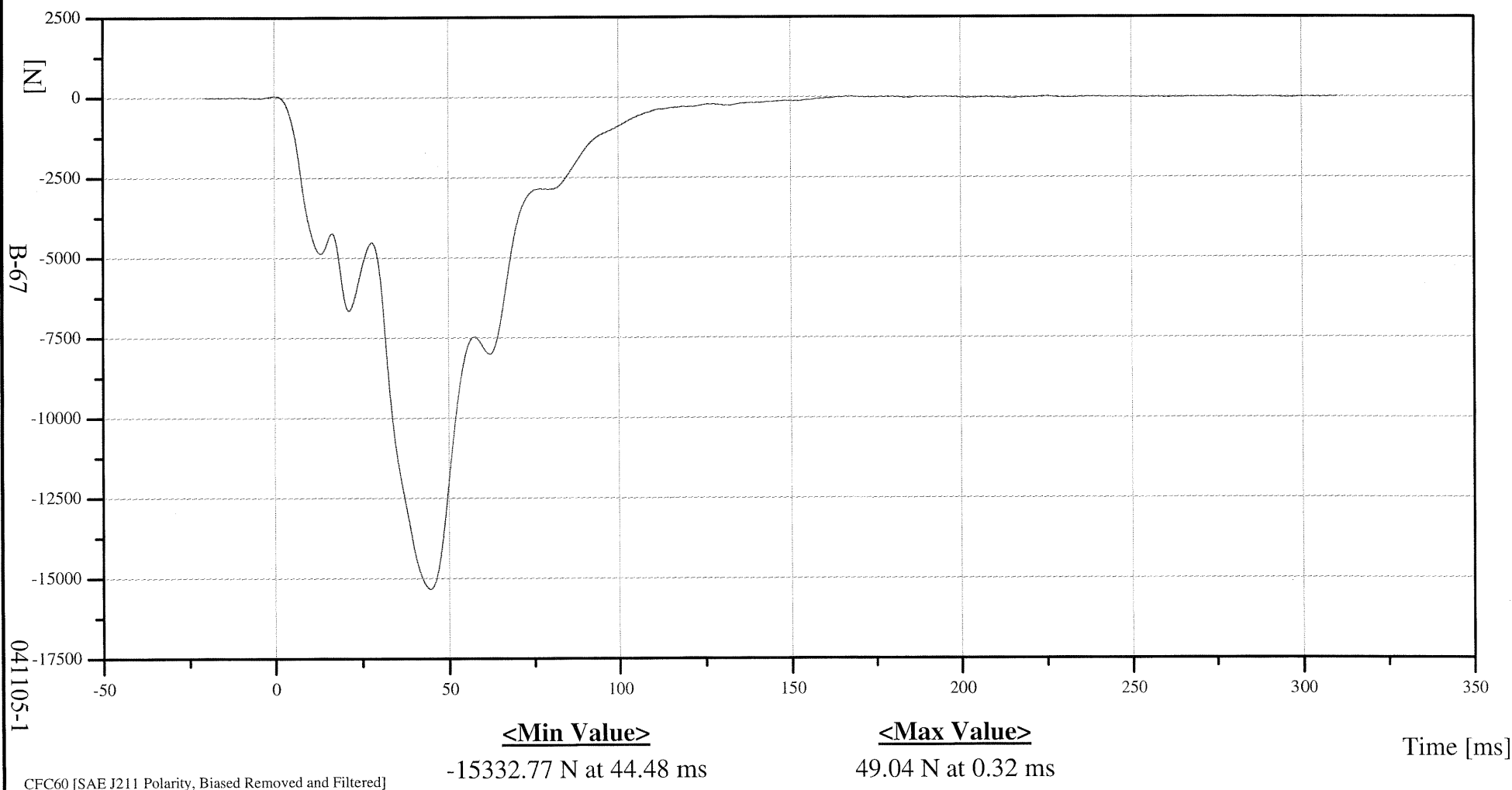
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0408





Transportation Research Center, Inc.

ROW 4 COLUMN 9

Date: 11/05/2004

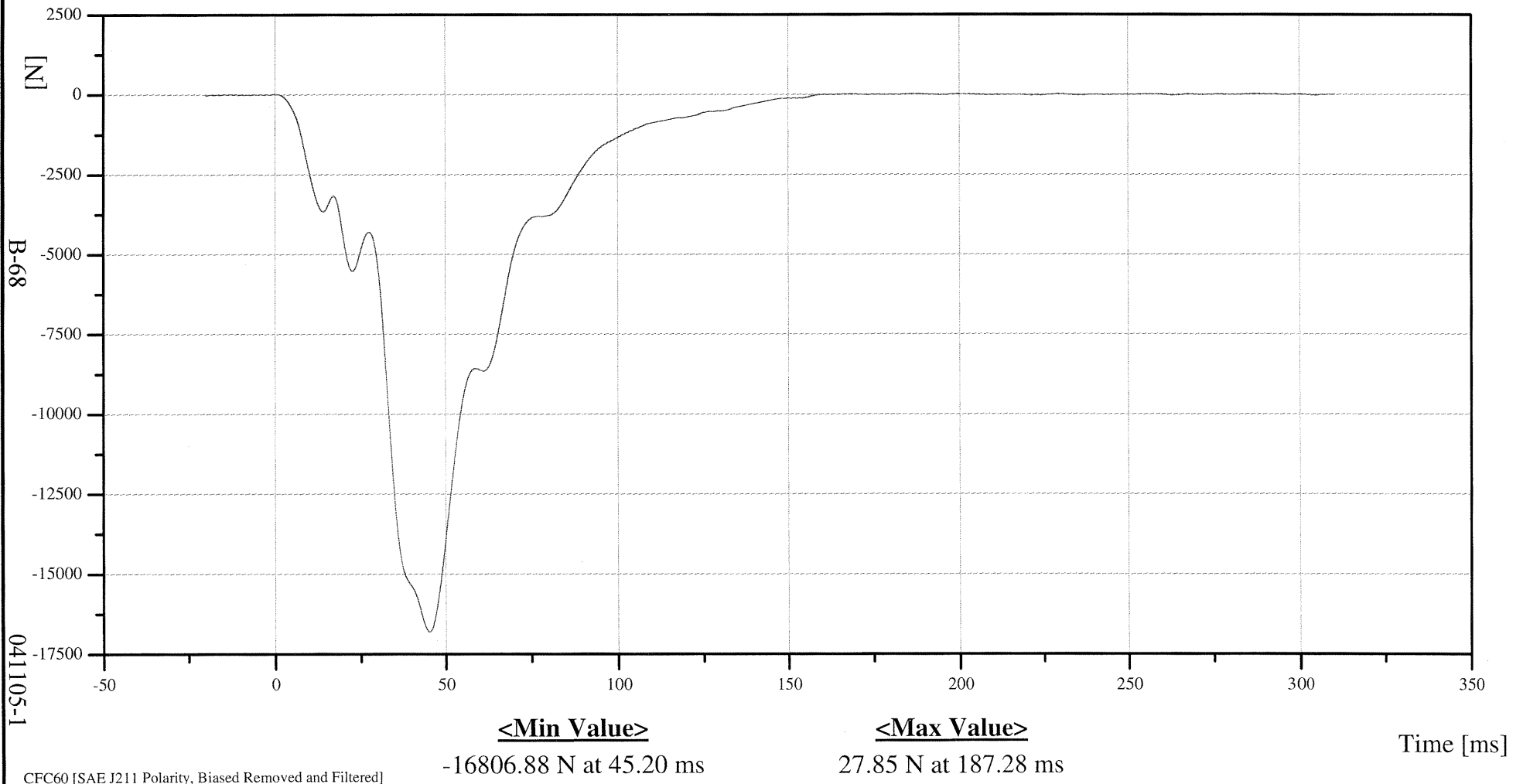
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0409





Transportation Research Center, Inc.

ROW 4 COLUMN 10

Date: 11/05/2004

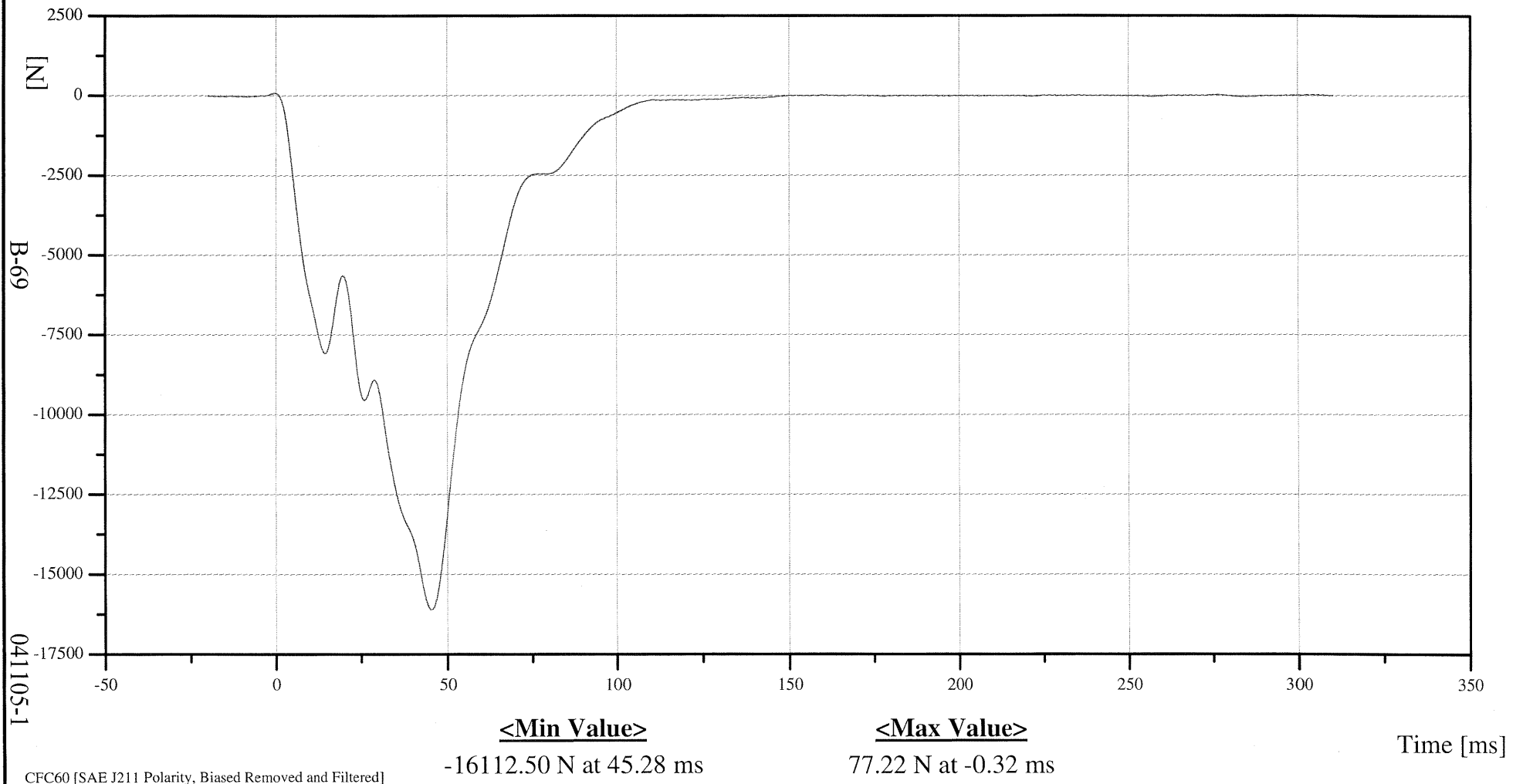
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0410





Transportation Research Center, Inc.

ROW 4 COLUMN 11

Date: 11/05/2004

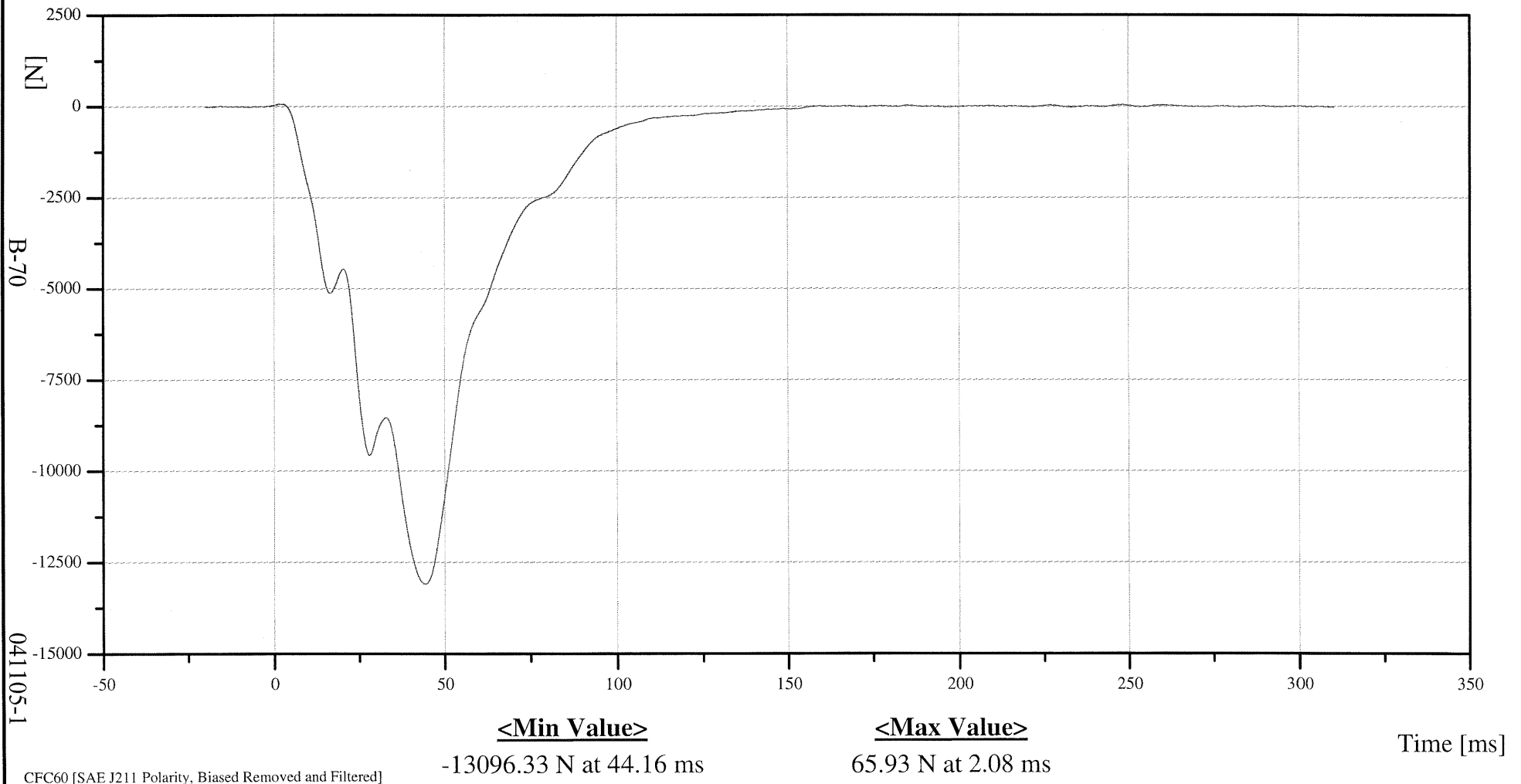
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0411





Transportation Research Center, Inc.

ROW 4 COLUMN 12

Date: 11/05/2004

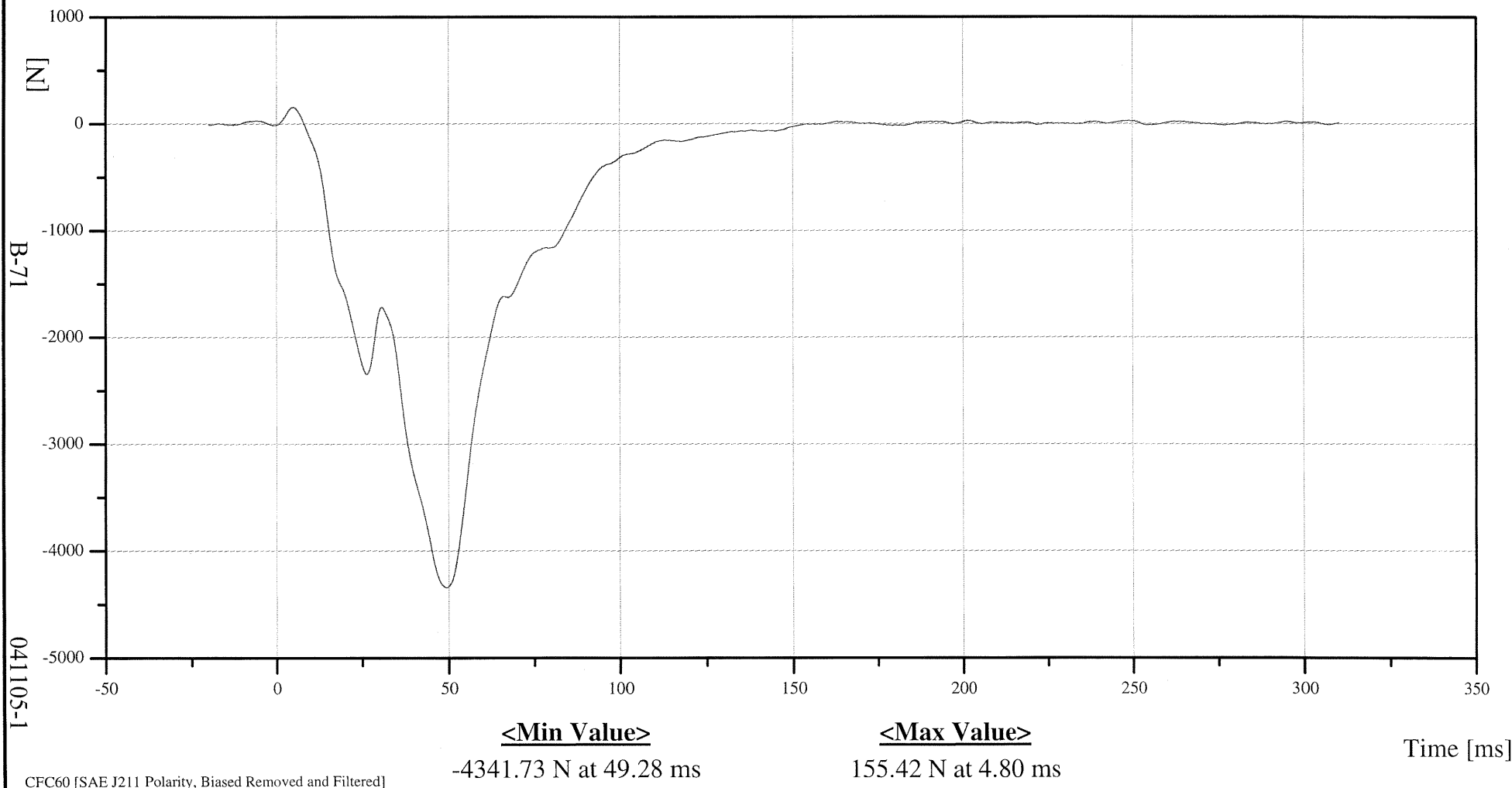
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0412





Transportation Research Center, Inc.

ROW 4 COLUMN 13

Date: 11/05/2004

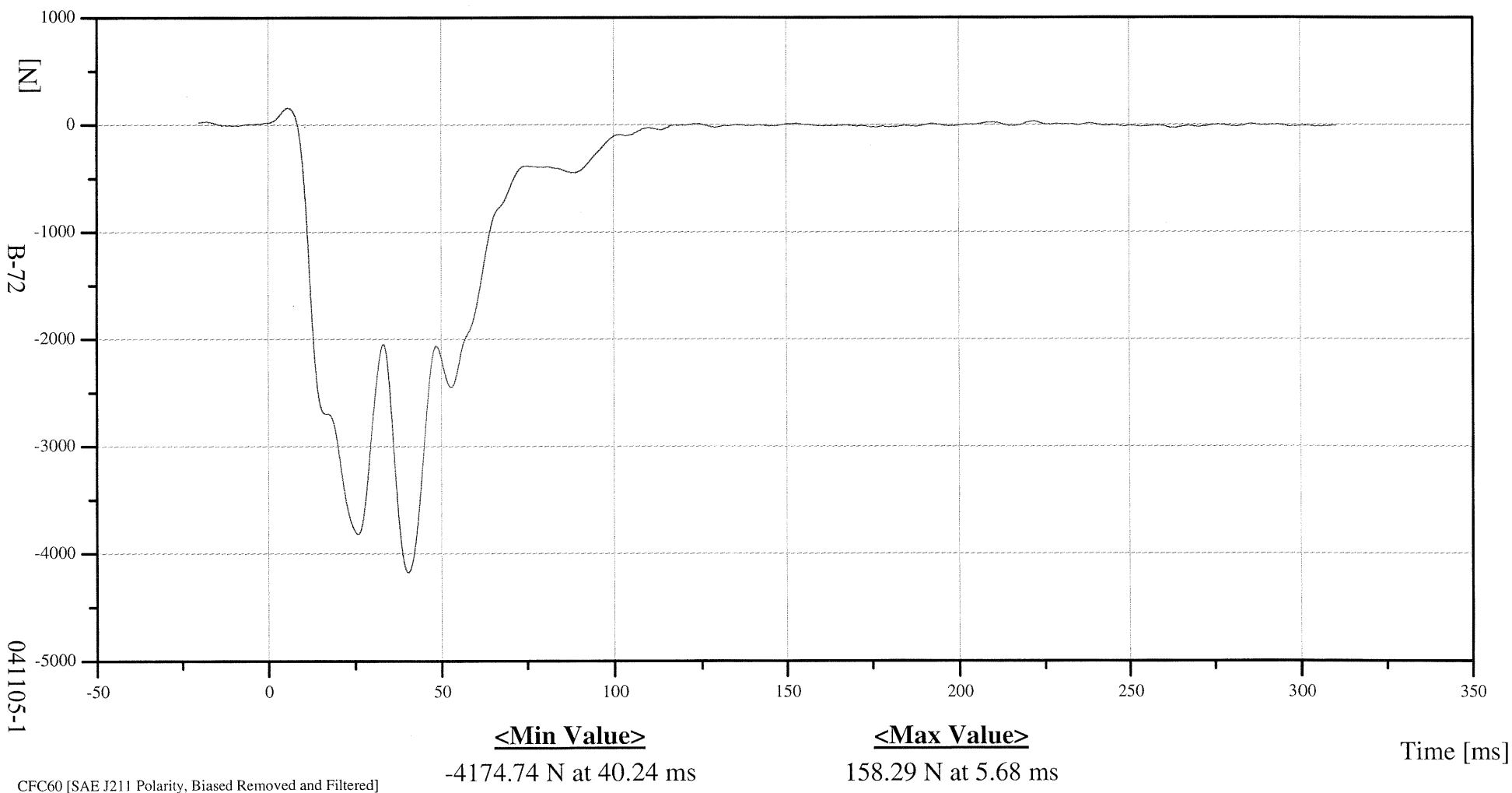
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0413





Transportation Research Center, Inc.

ROW 4 COLUMN 14

Date: 11/05/2004

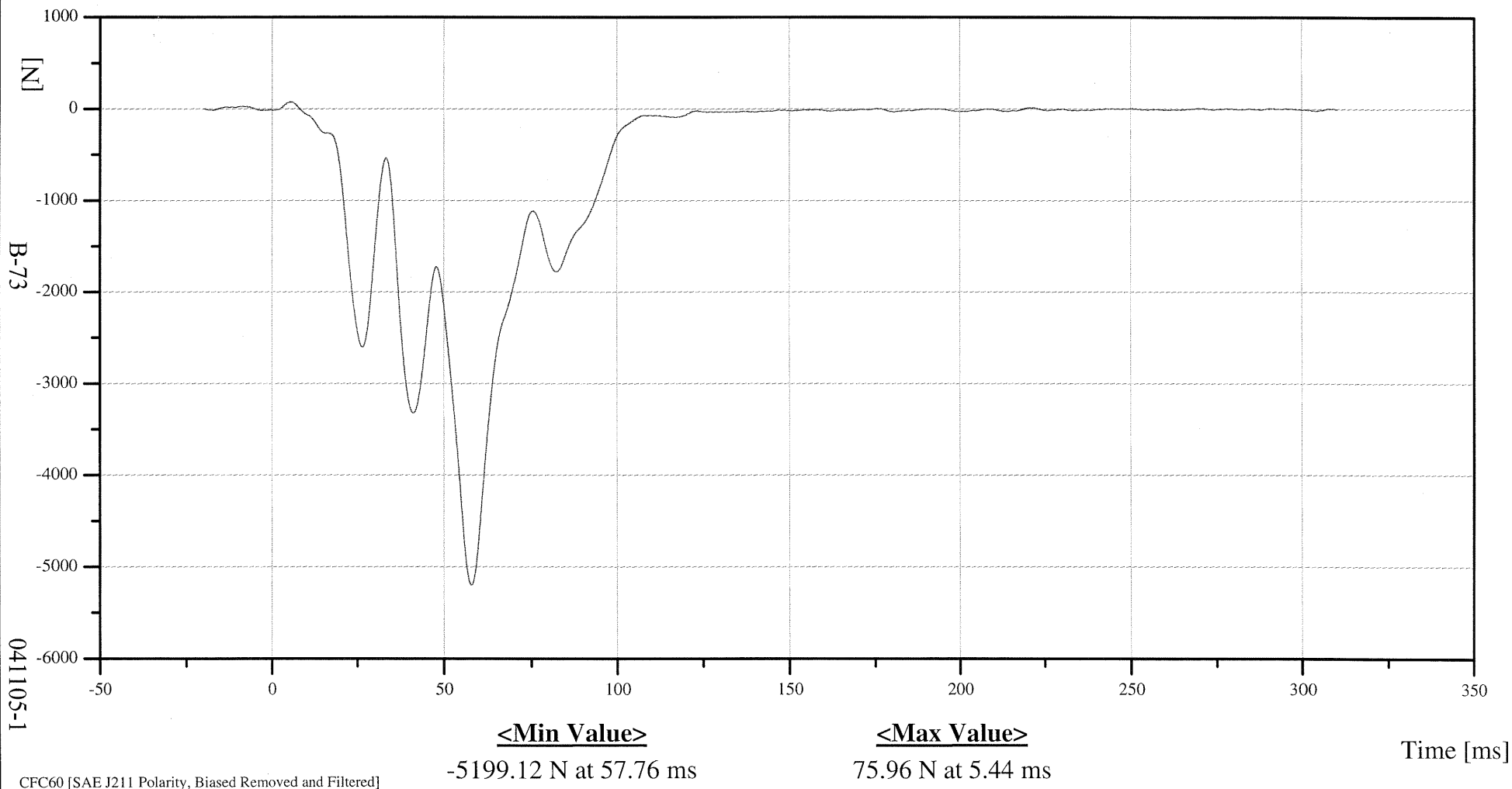
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0414





Transportation Research Center, Inc.

ROW 4 COLUMN 15

Date: 11/05/2004

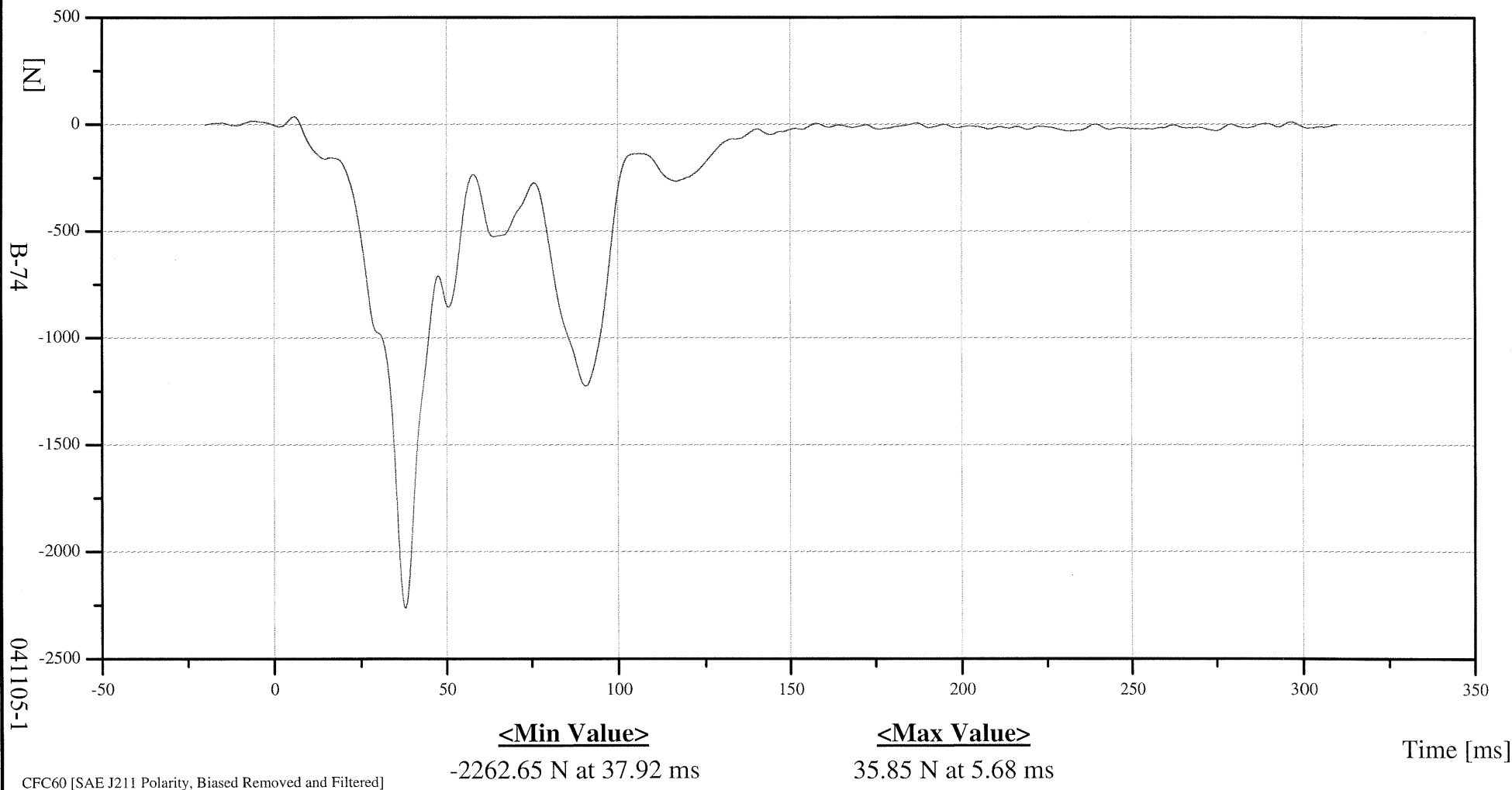
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0415





Transportation Research Center, Inc.

ROW 4 COLUMN 16

Date: 11/05/2004

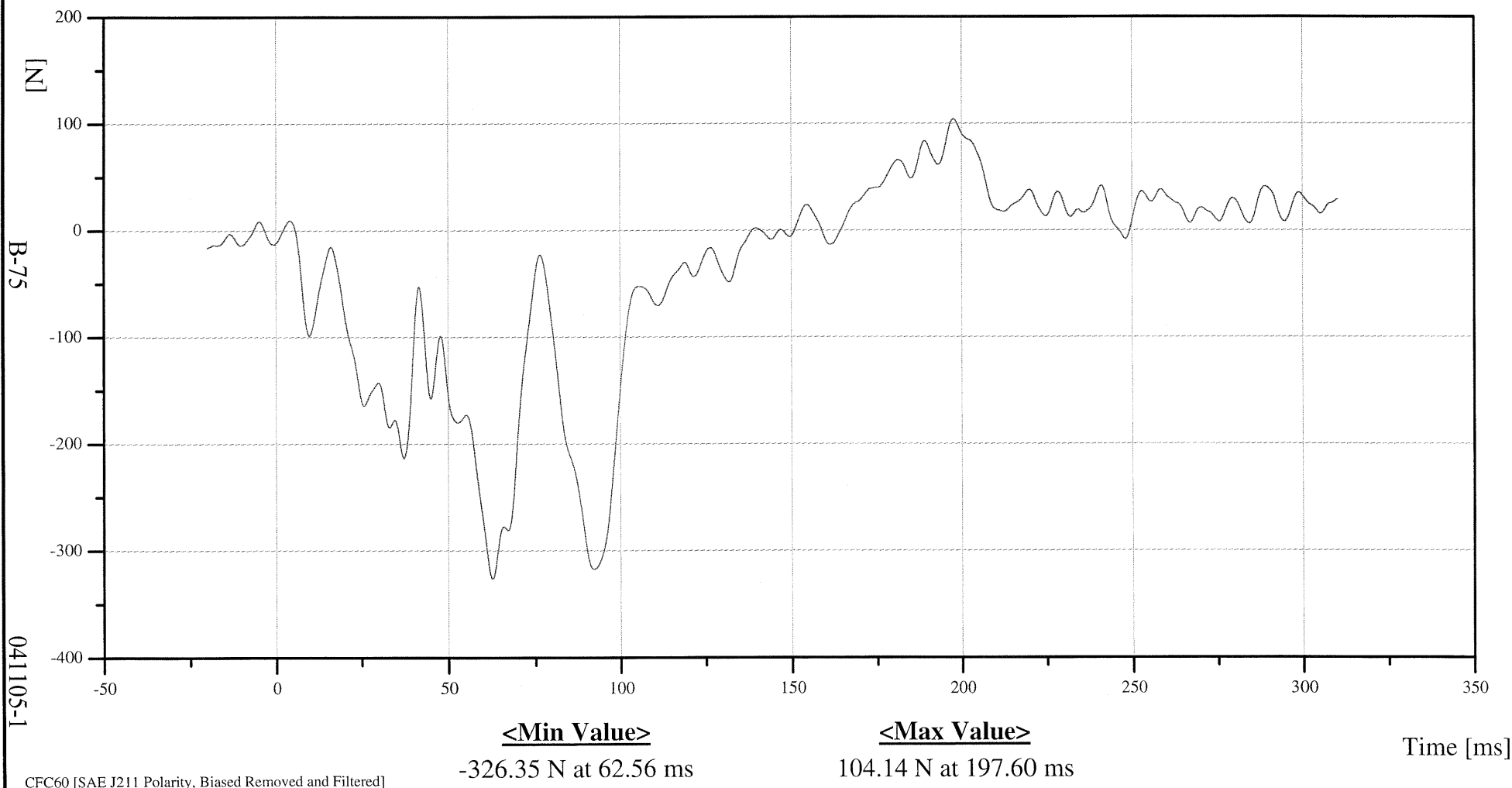
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0416





Transportation Research Center, Inc.

ROW 5 COLUMN 1

Date: 11/05/2004

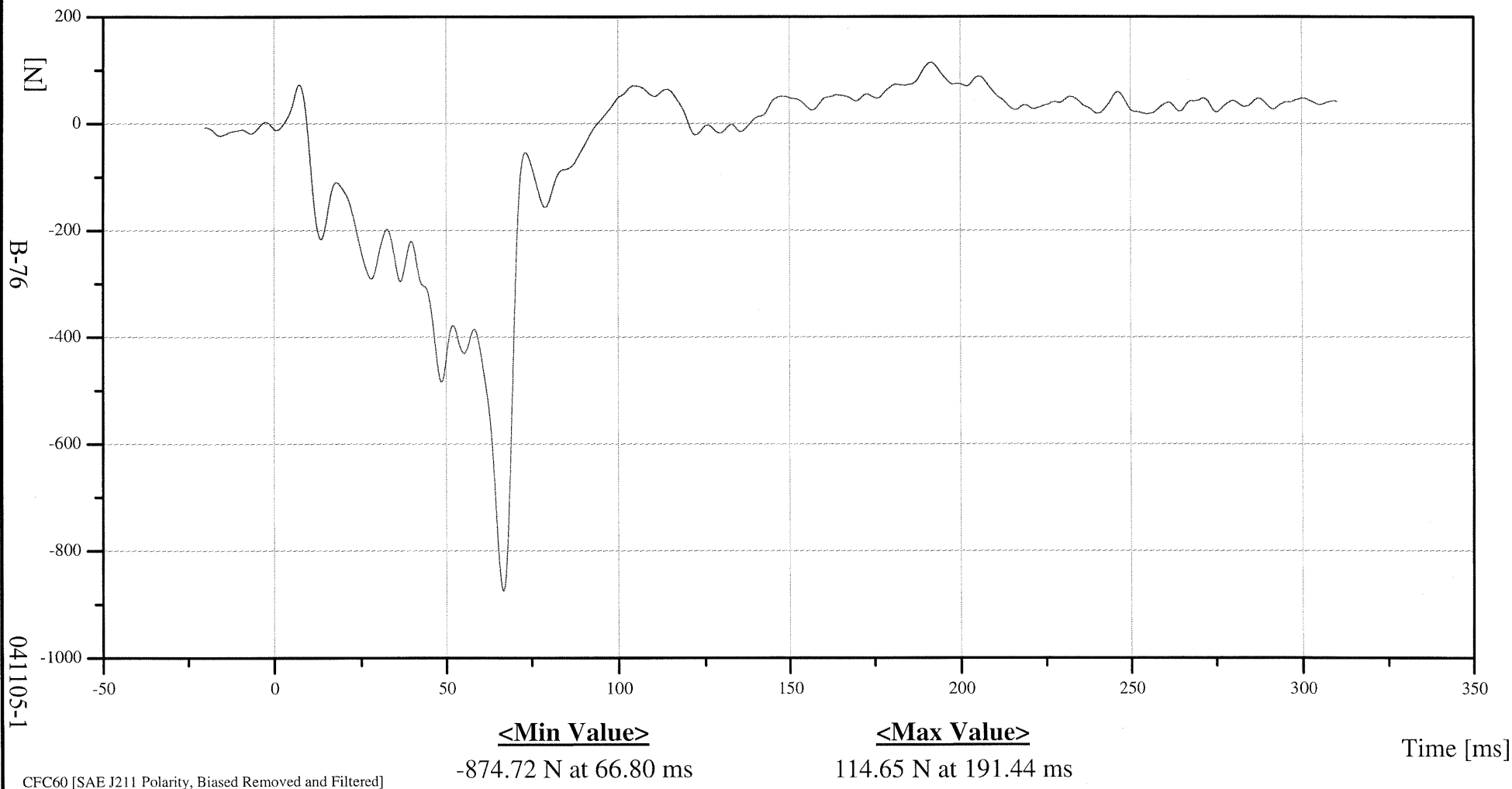
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0501





Transportation Research Center, Inc.

ROW 5 COLUMN 2

Date: 11/05/2004

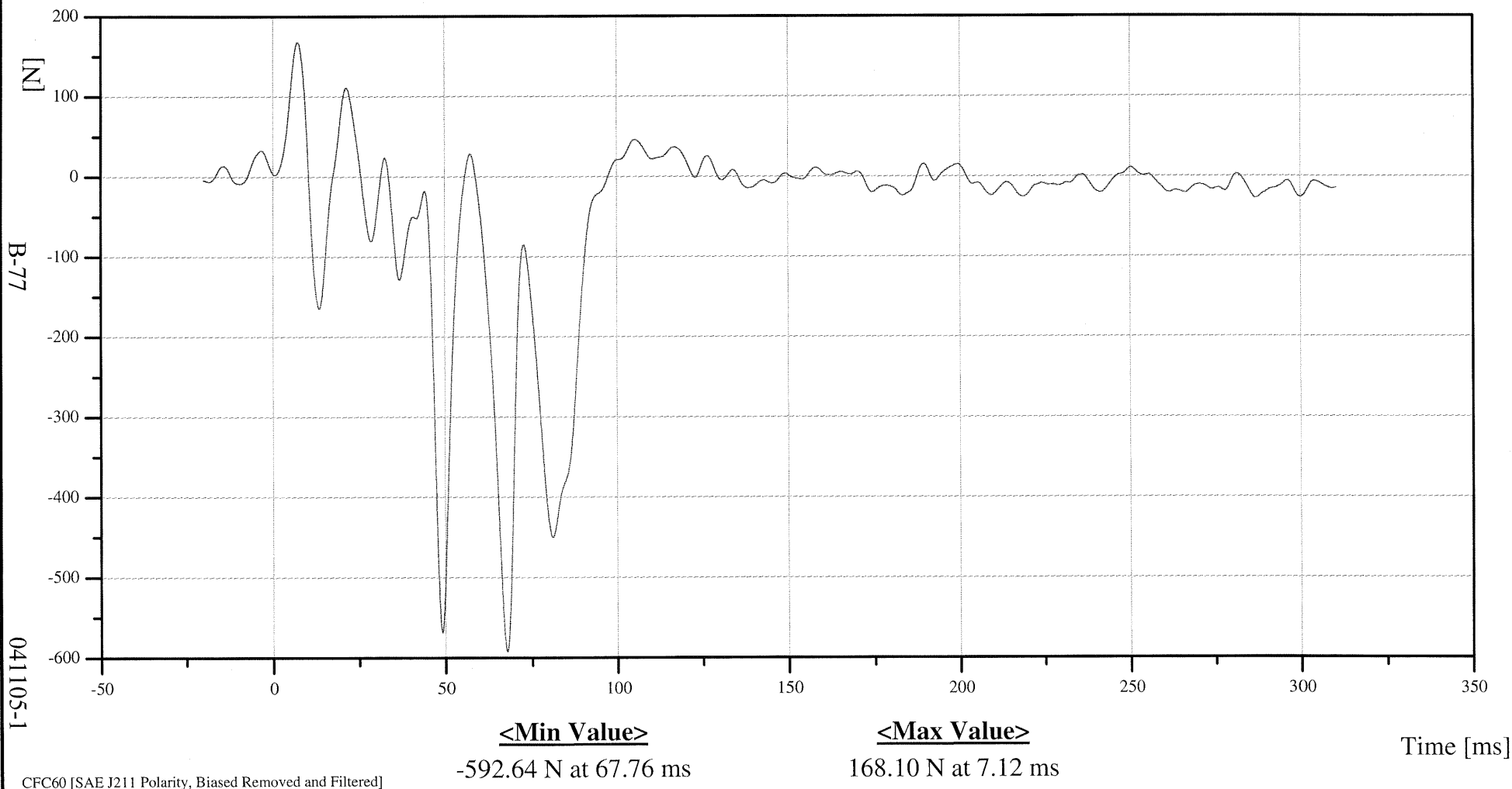
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0502





Transportation Research Center, Inc.

ROW 5 COLUMN 3

Date: 11/05/2004

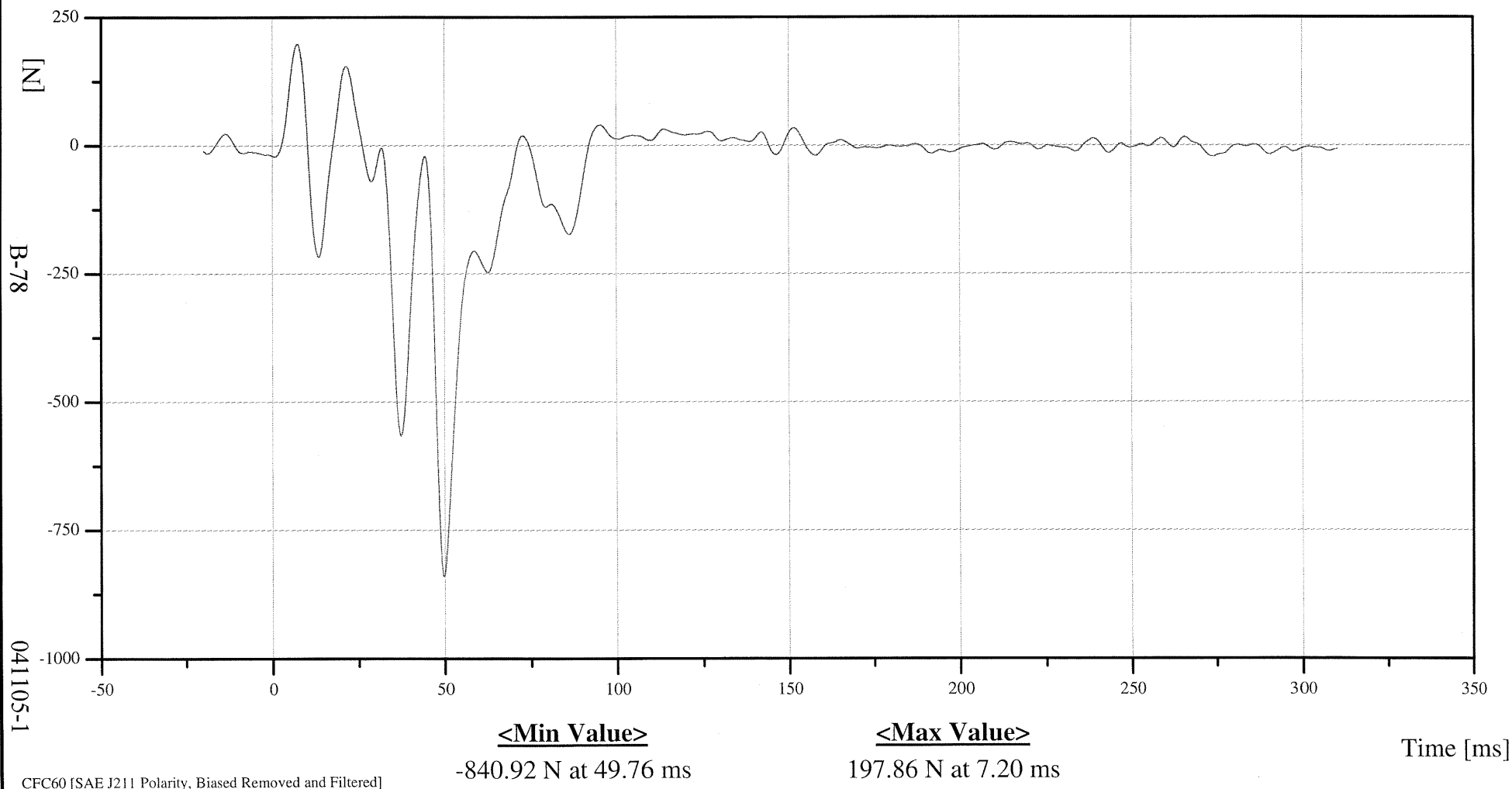
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0503





Transportation Research Center, Inc.

ROW 5 COLUMN 4

Date: 11/05/2004

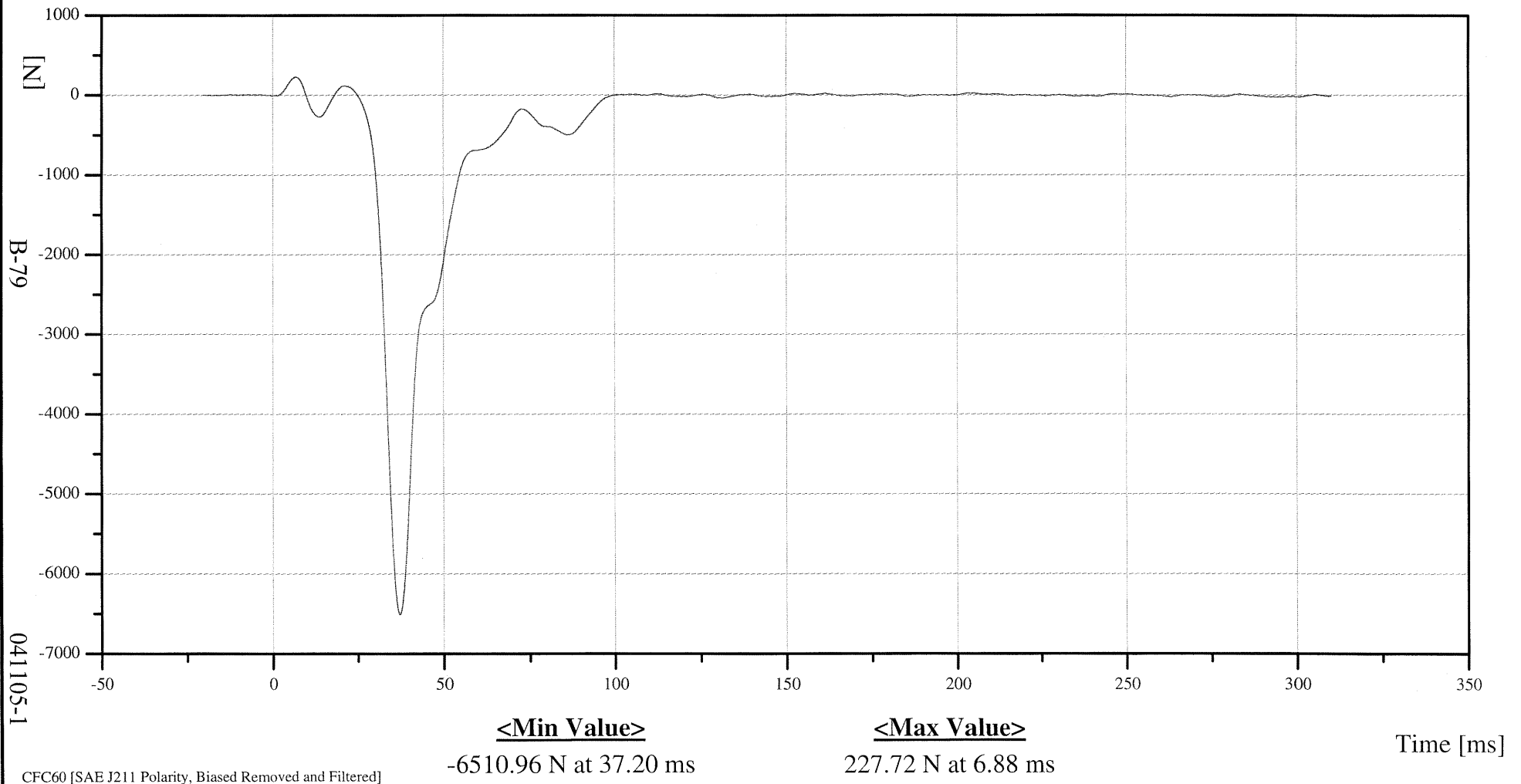
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0504





Transportation Research Center, Inc.

ROW 5 COLUMN 5

Date: 11/05/2004

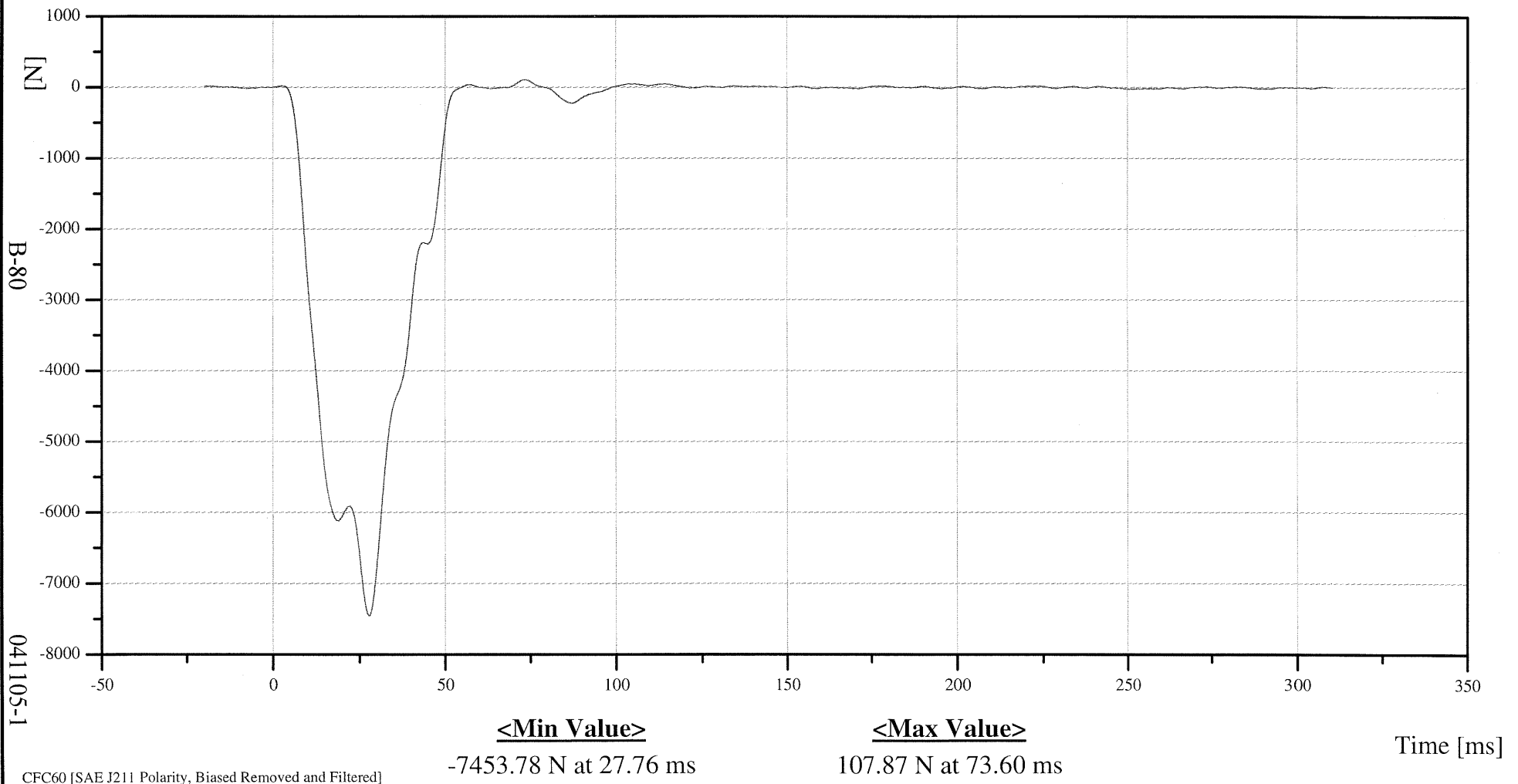
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0505





Transportation Research Center, Inc.

ROW 5 COLUMN 6

Date: 11/05/2004

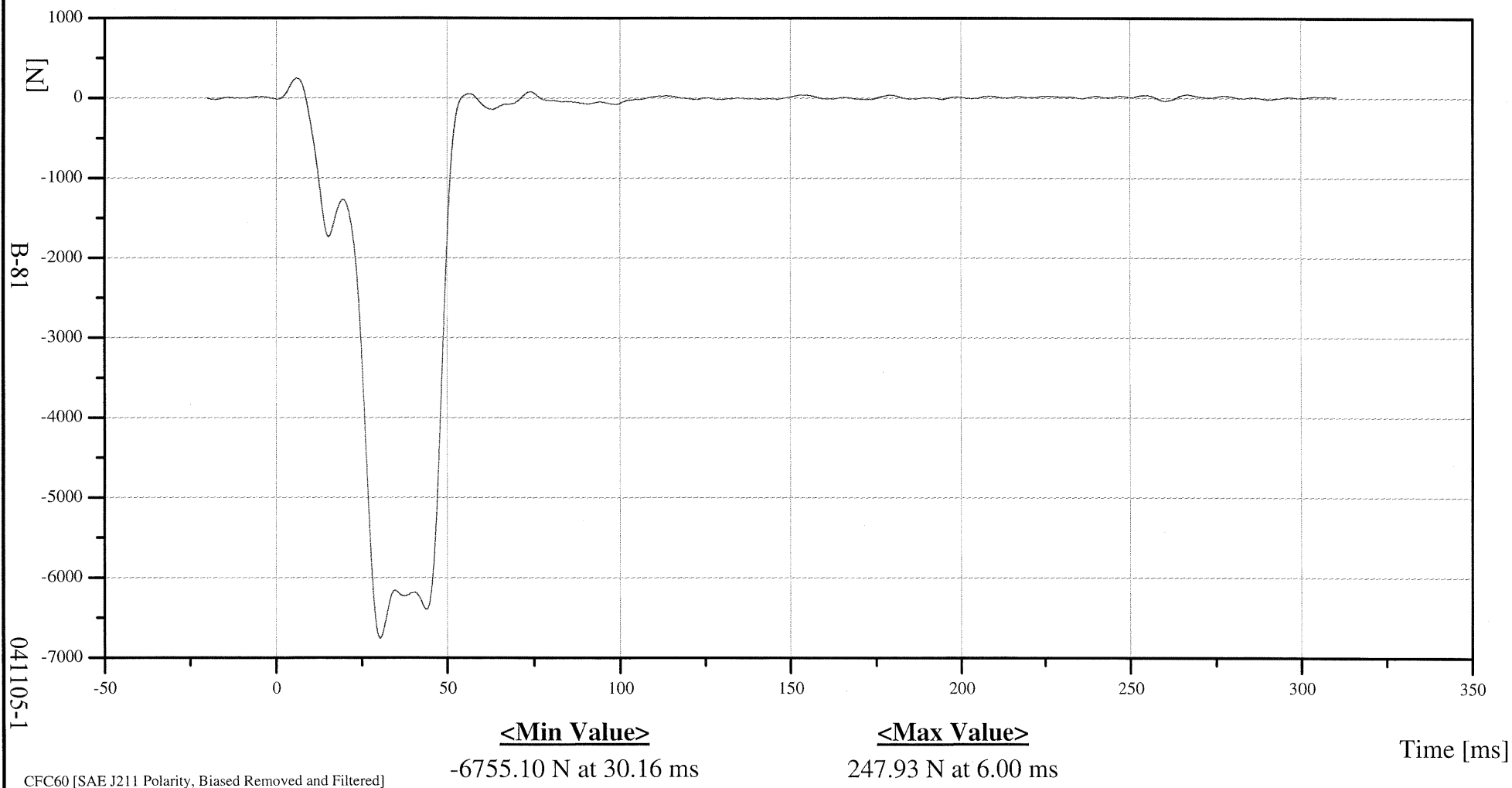
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0506





Transportation Research Center, Inc.

ROW 5 COLUMN 7

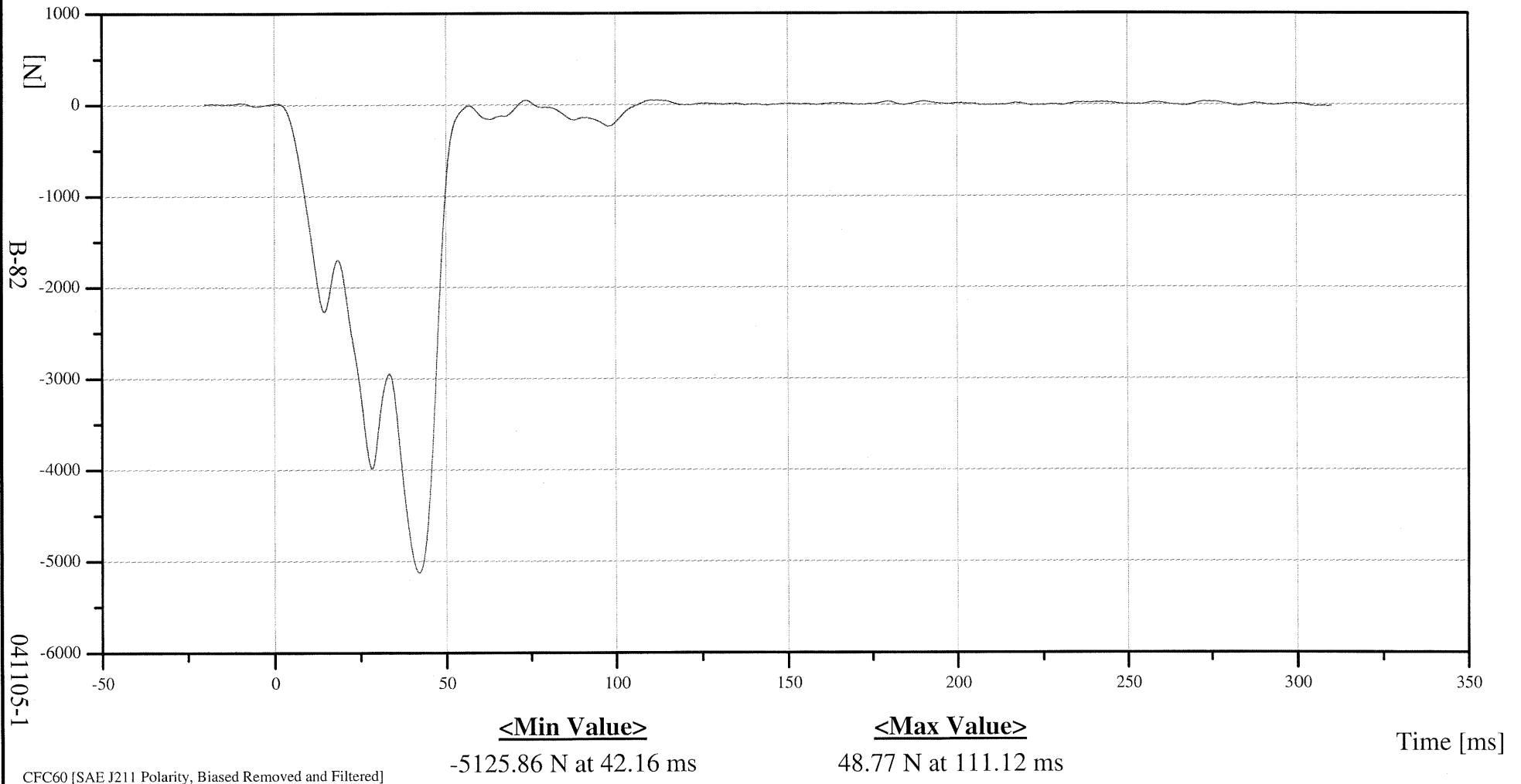
Date: 11/05/2004
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0507





Transportation Research Center, Inc.

ROW 5 COLUMN 8

Date: 11/05/2004

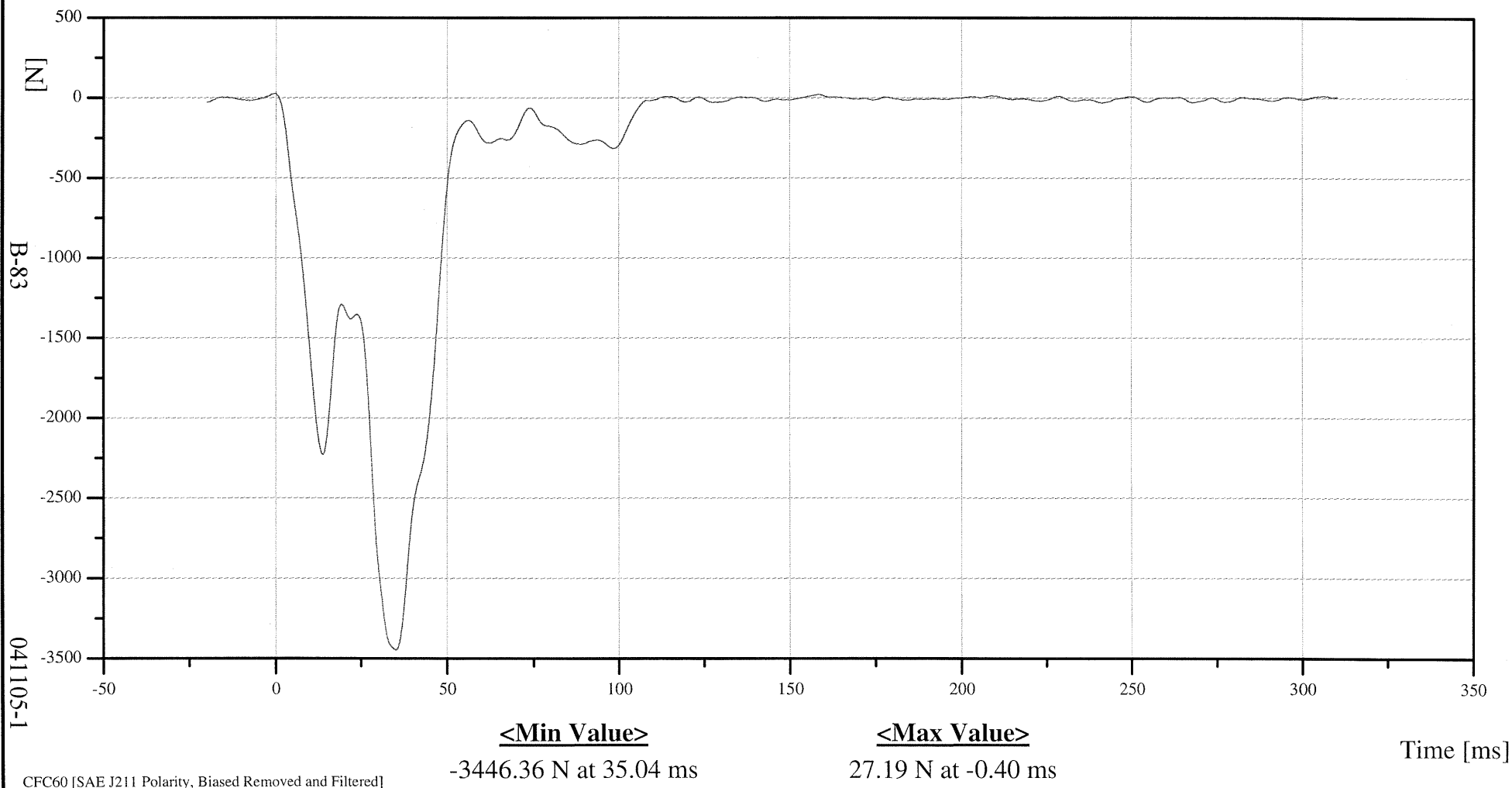
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0508





Transportation Research Center, Inc.

ROW 5 COLUMN 9

Date: 11/05/2004

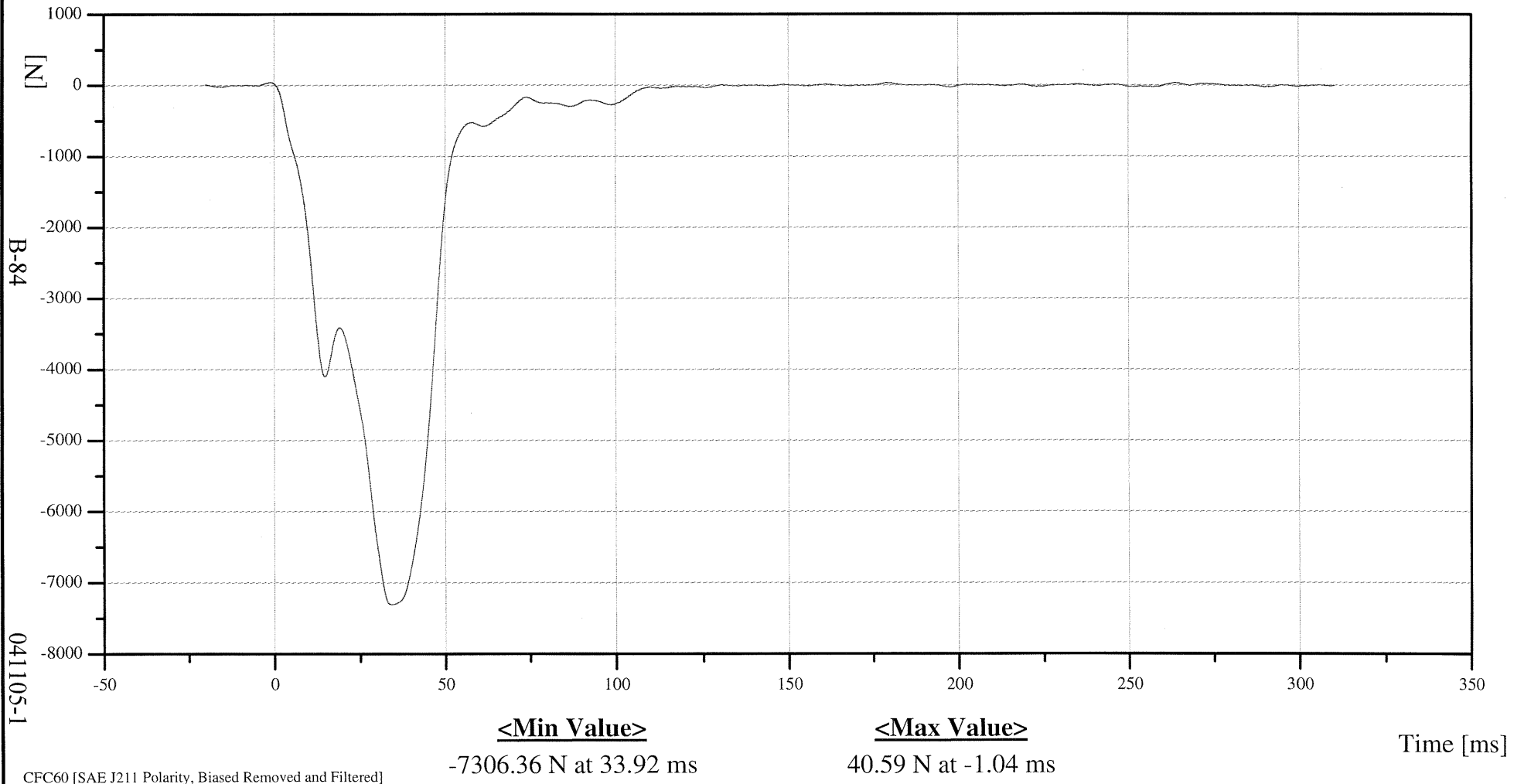
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0509





Transportation Research Center, Inc.

ROW 5 COLUMN 10

Date: 11/05/2004

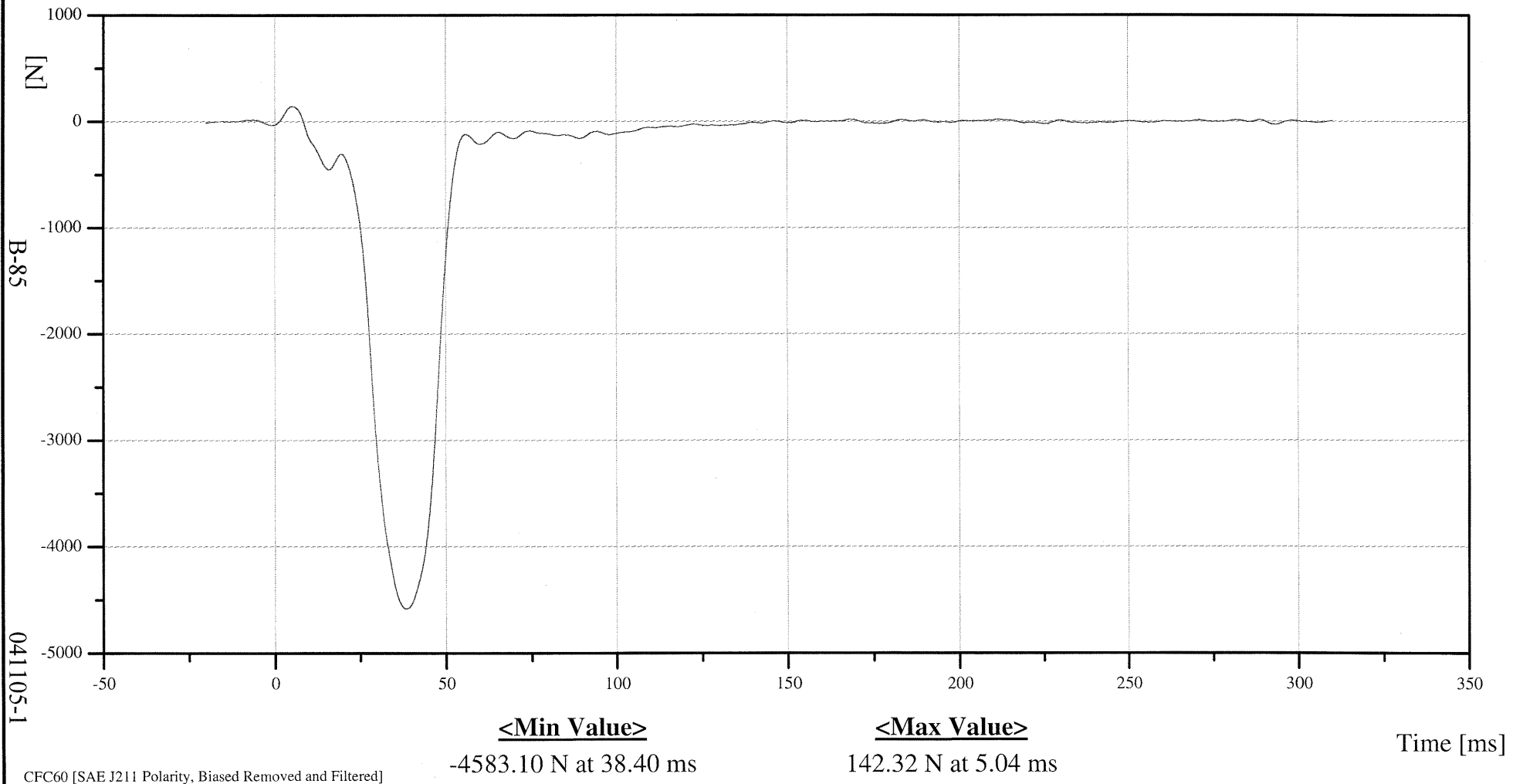
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0510





Transportation Research Center, Inc.

ROW 5 COLUMN 11

Date: 11/05/2004

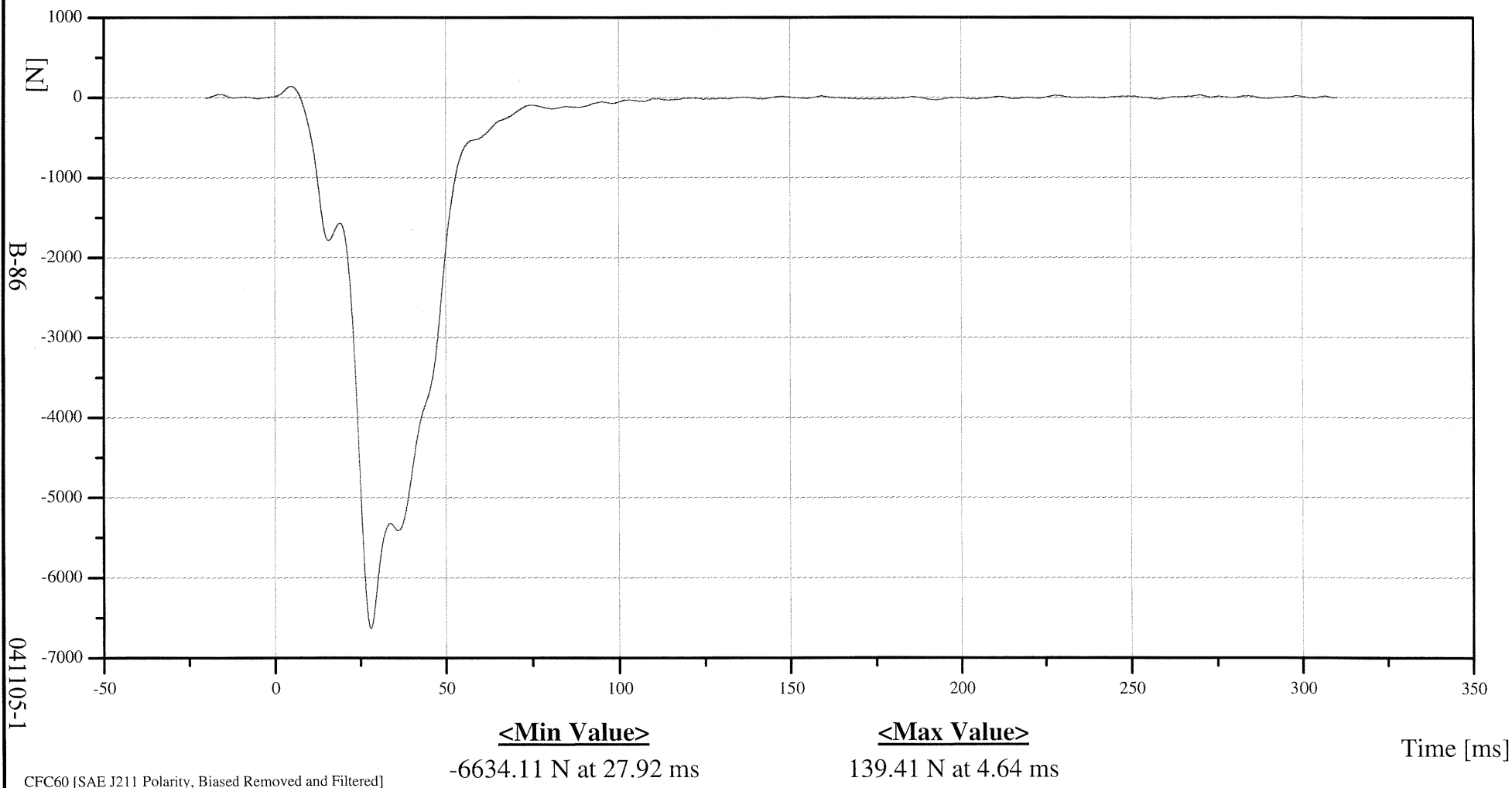
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0511





Transportation Research Center, Inc.

ROW 5 COLUMN 12

Date: 11/05/2004

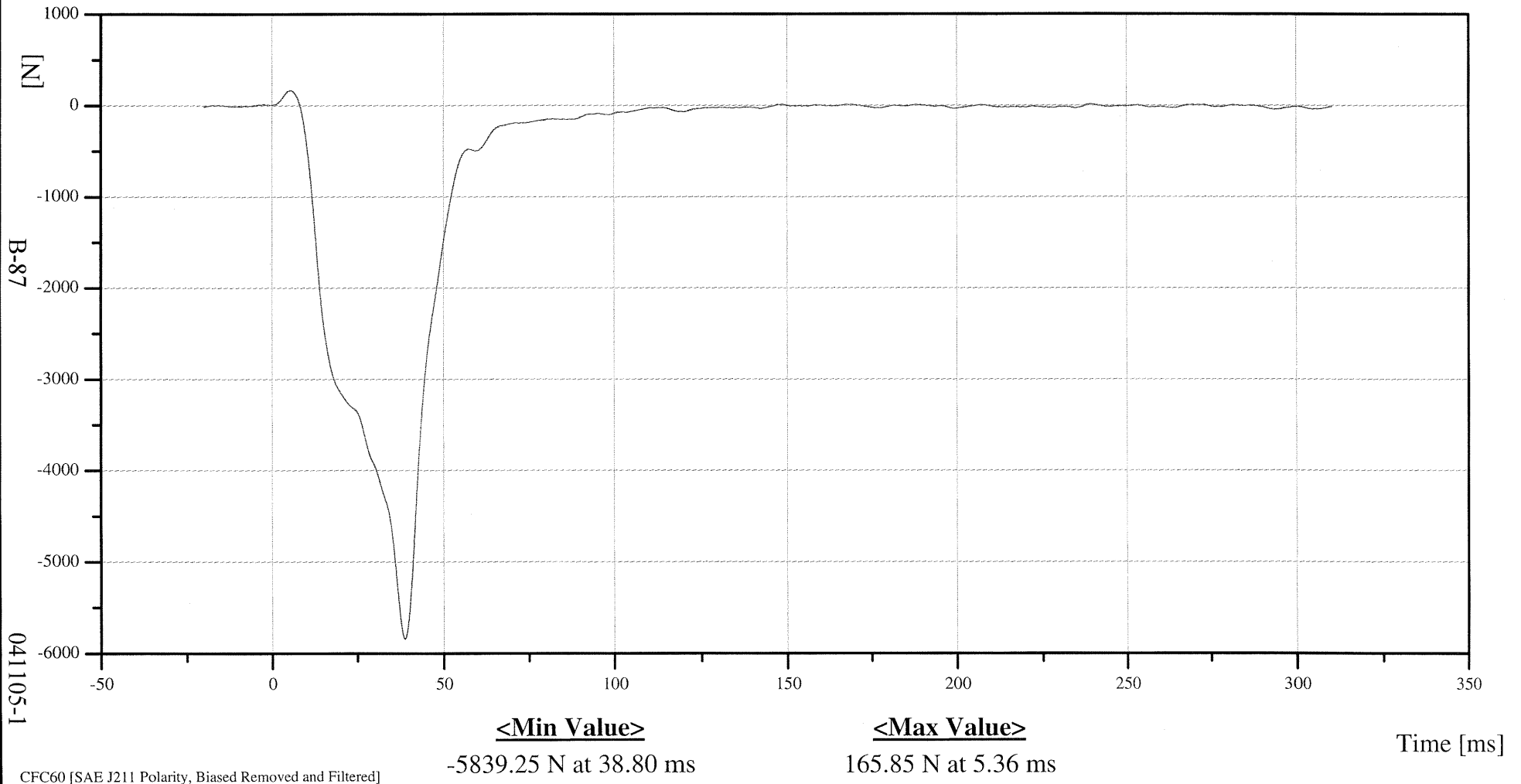
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0512





Transportation Research Center, Inc.

ROW 5 COLUMN 13

Date: 11/05/2004

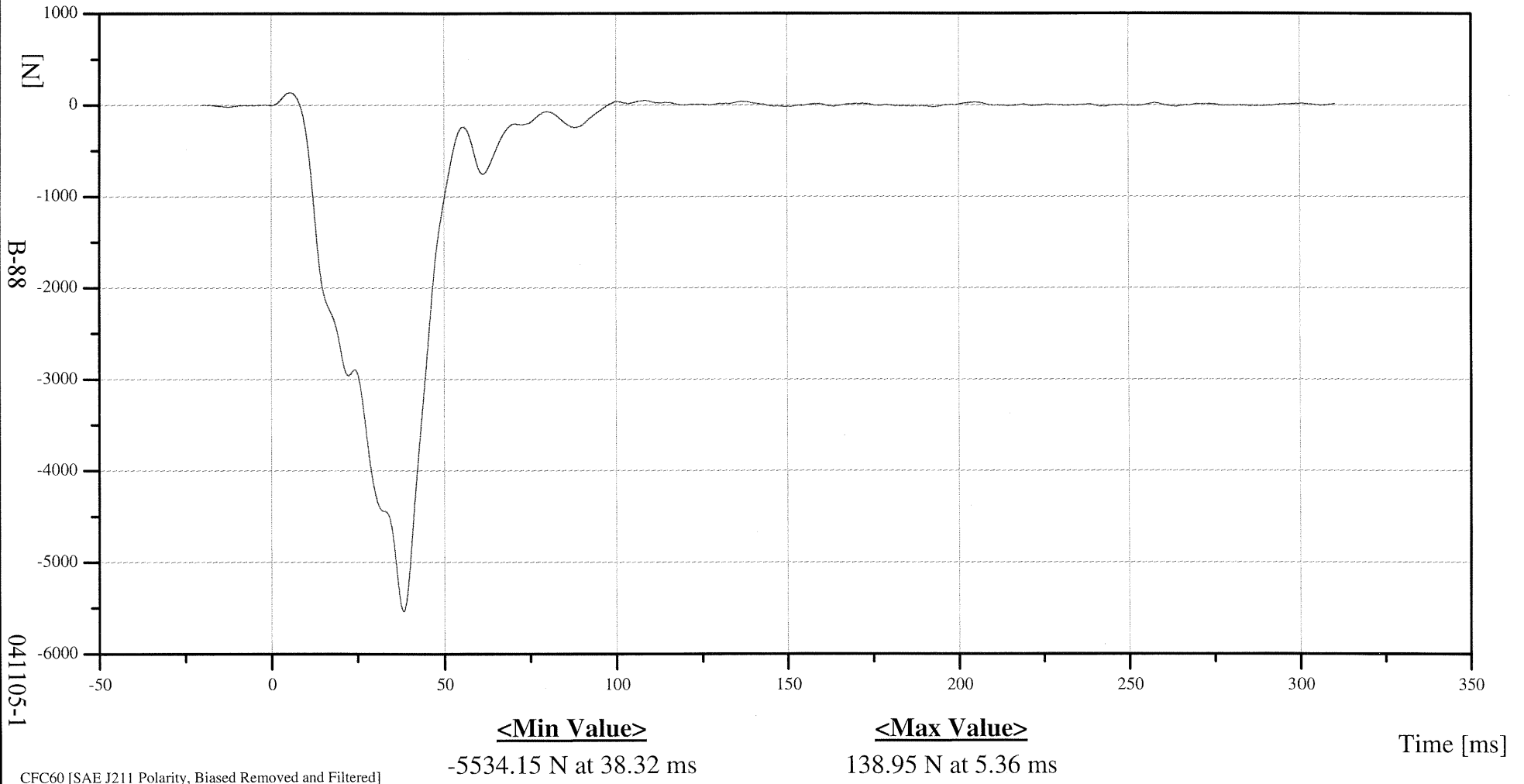
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0513





Transportation Research Center, Inc.

ROW 5 COLUMN 14

Date: 11/05/2004

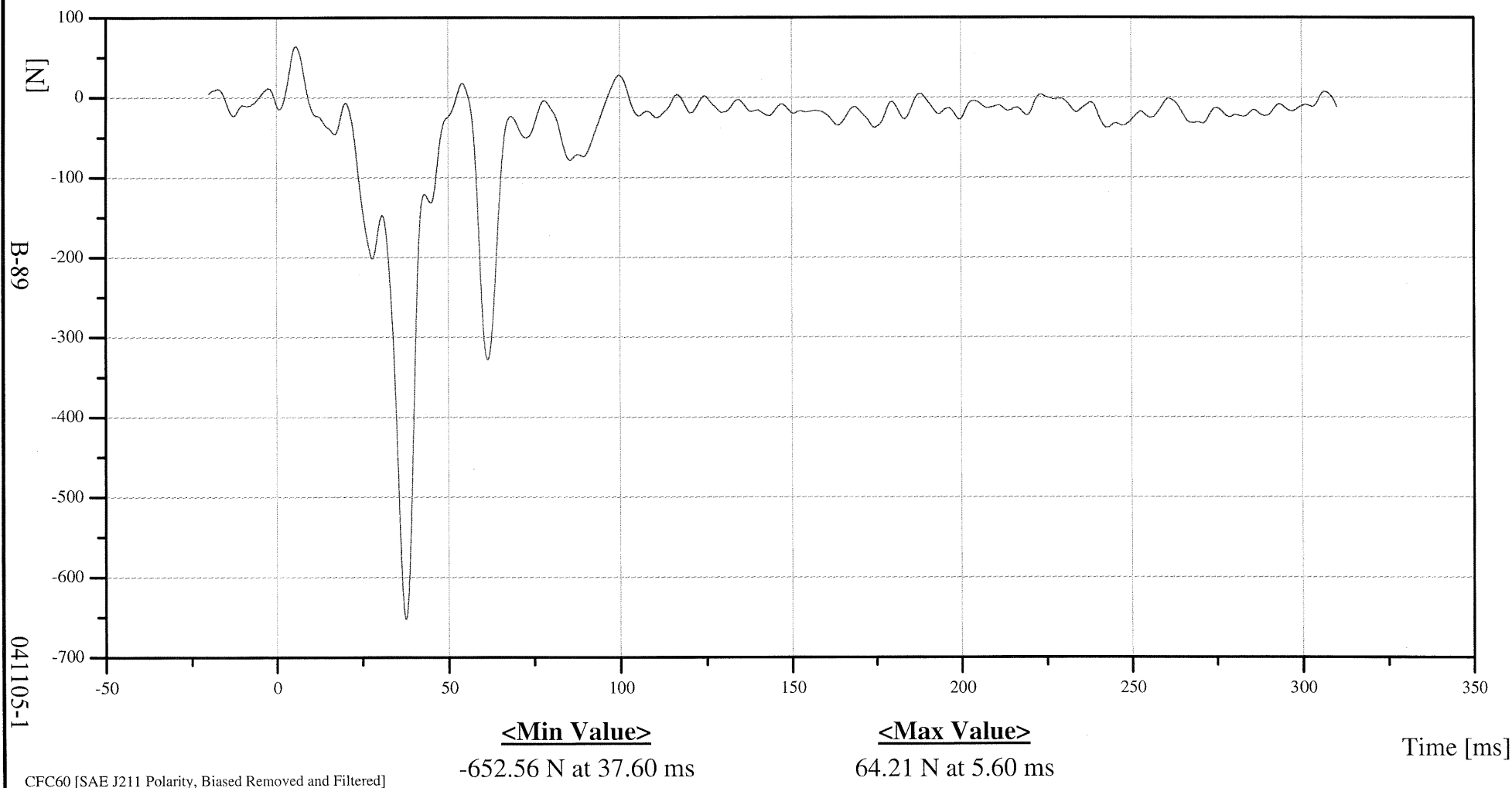
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0514





Transportation Research Center, Inc.

ROW 5 COLUMN 15

Date: 11/05/2004

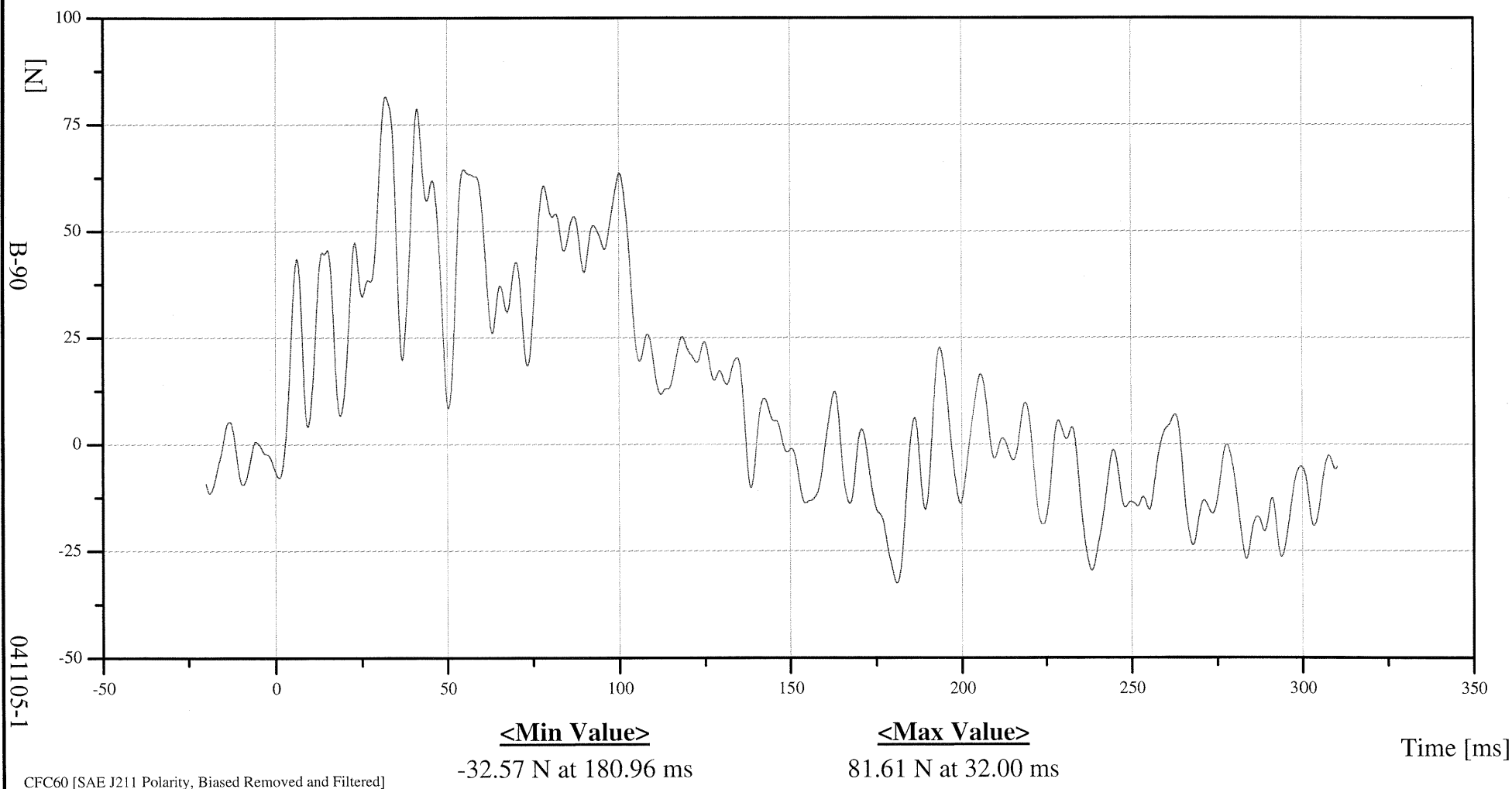
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0515





Transportation Research Center, Inc.

ROW 5 COLUMN 16

Date: 11/05/2004

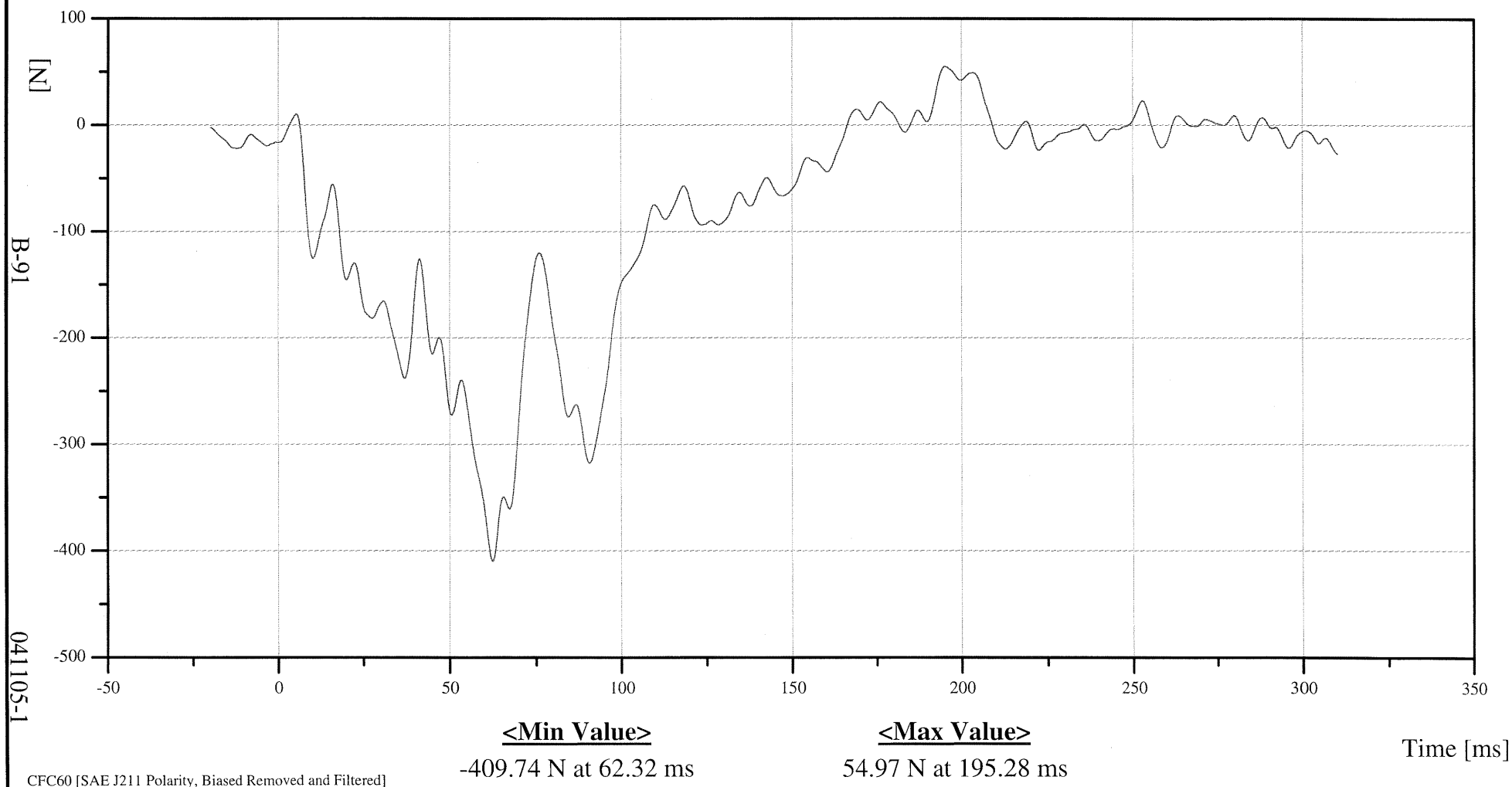
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0516





Transportation Research Center, Inc.

ROW 6 COLUMN 1

Date: 11/05/2004

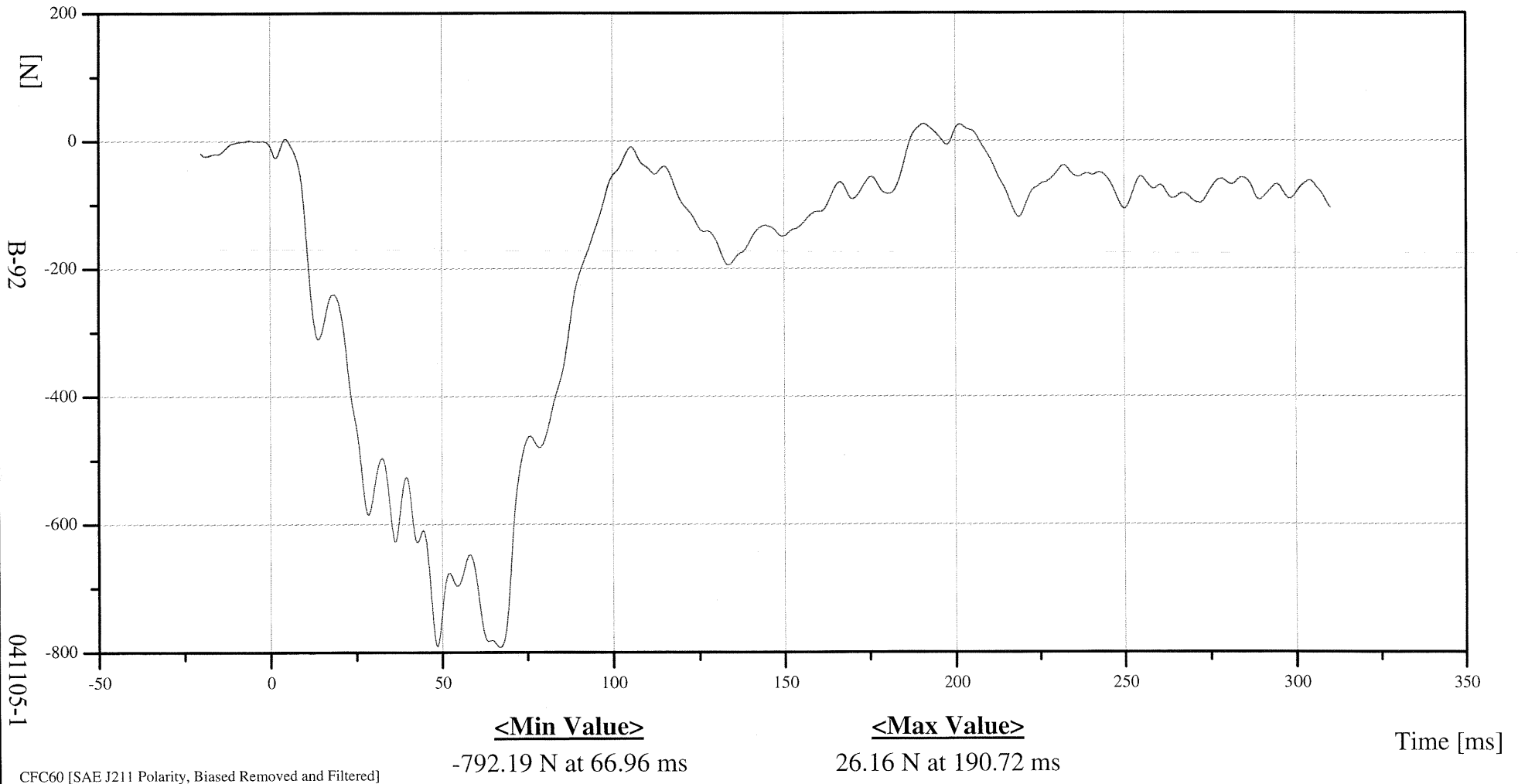
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0601





Transportation Research Center, Inc.

ROW 6 COLUMN 2

Date: 11/05/2004

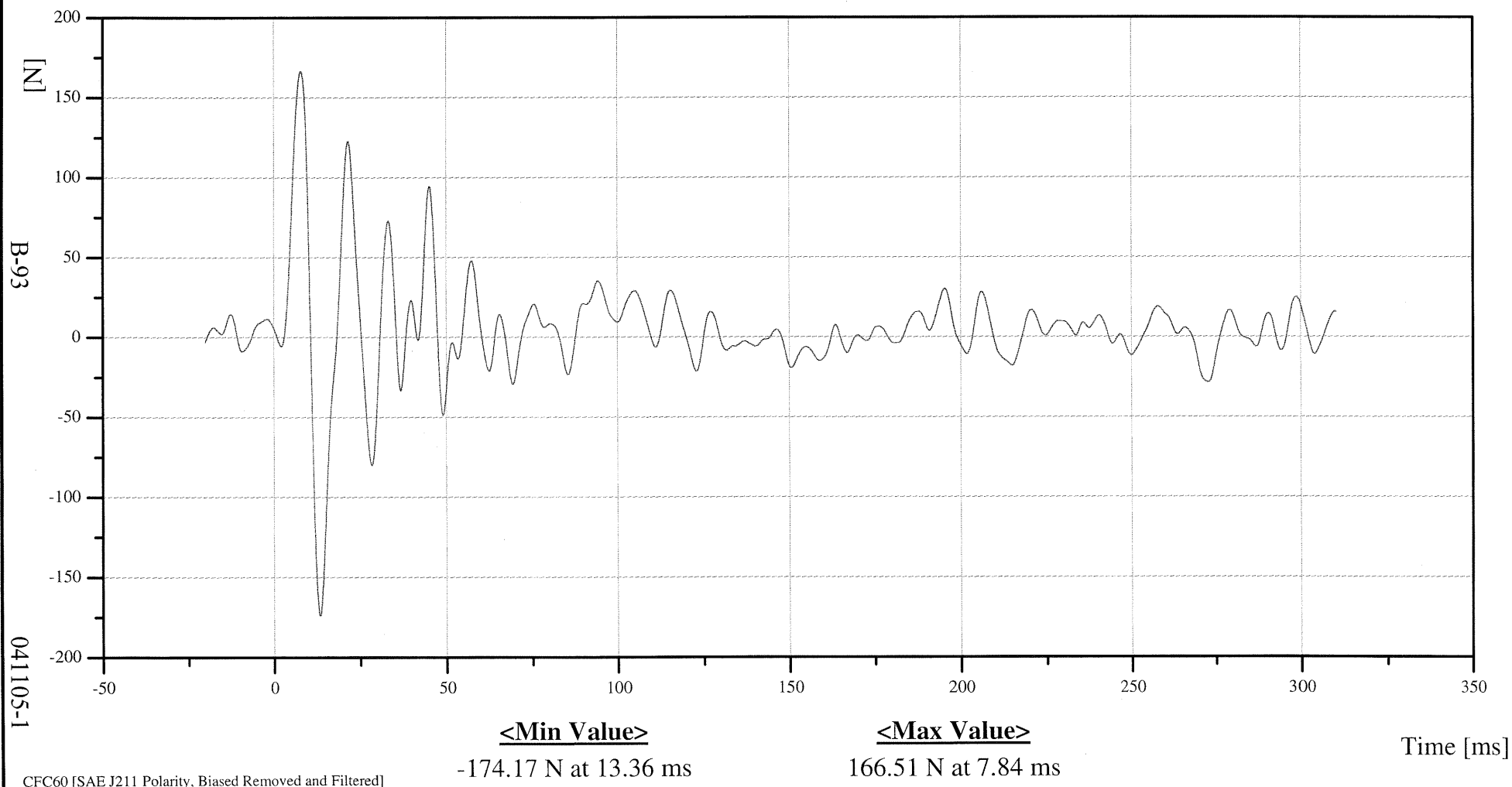
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0602





Transportation Research Center, Inc.

ROW 6 COLUMN 3

Date: 11/05/2004

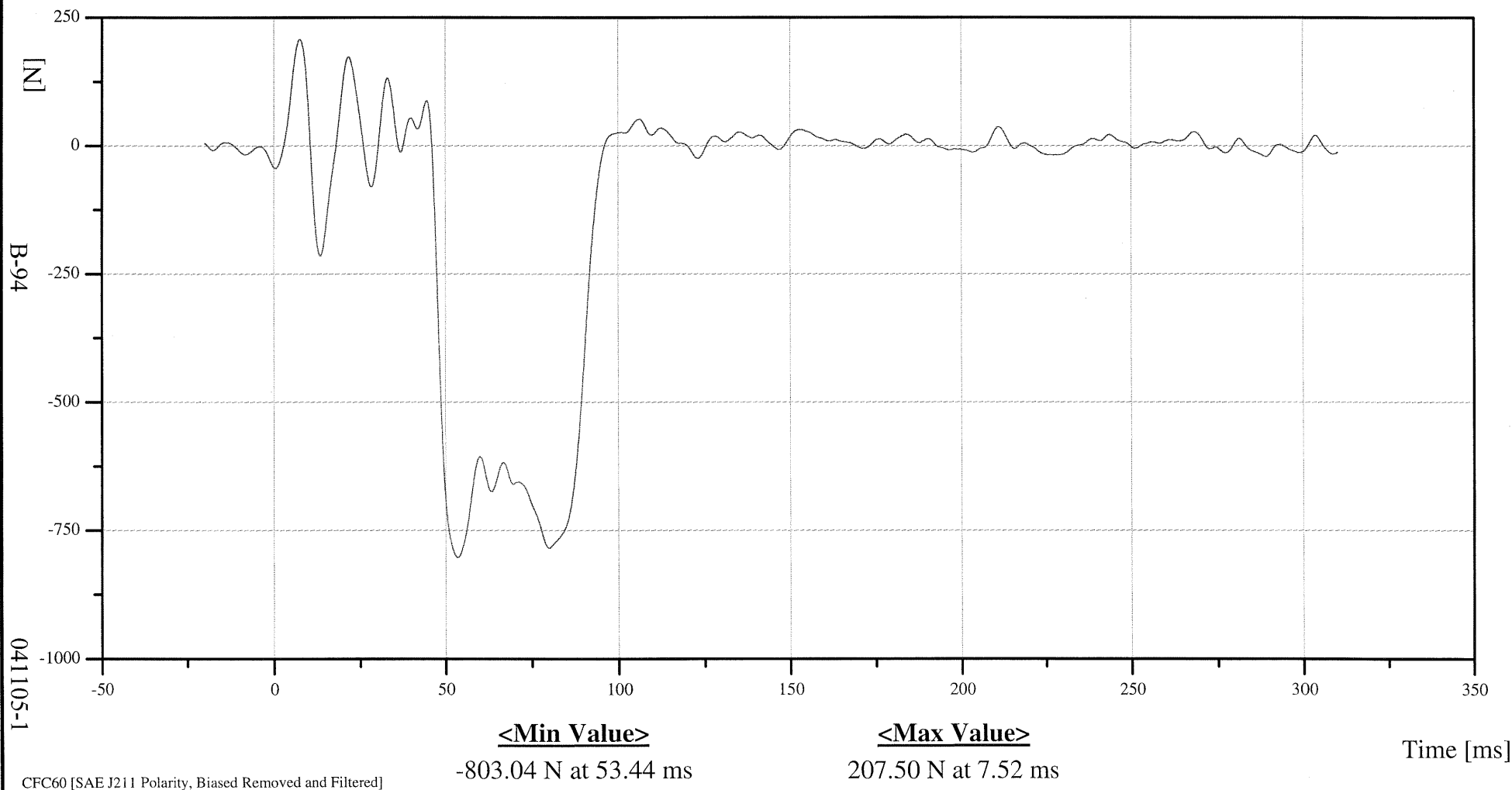
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0603





Transportation Research Center, Inc.

ROW 6 COLUMN 4

Date: 11/05/2004

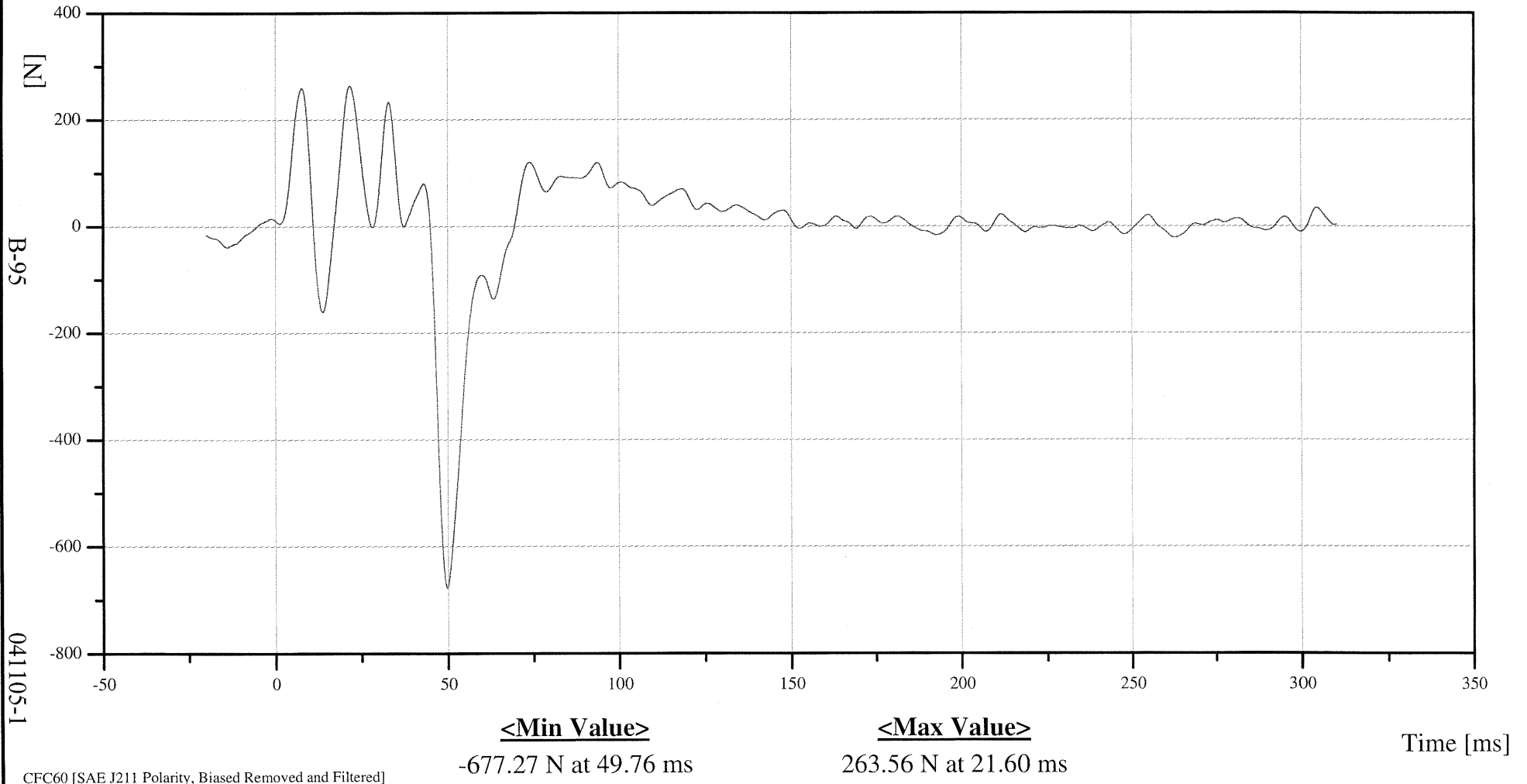
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0604





Transportation Research Center, Inc.

ROW 6 COLUMN 5

Date: 11/05/2004

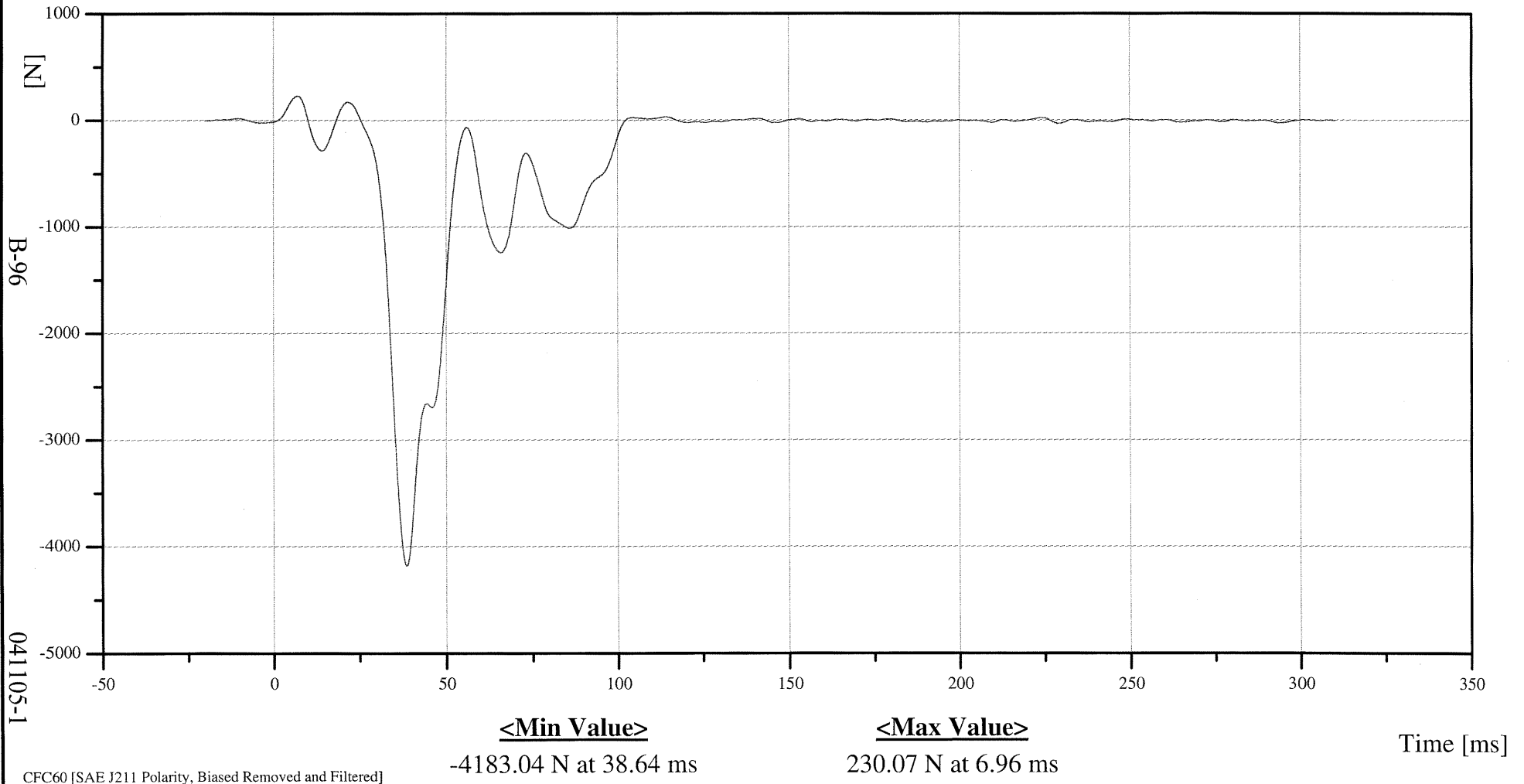
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0605





Transportation Research Center, Inc.

ROW 6 COLUMN 6

Date: 11/05/2004

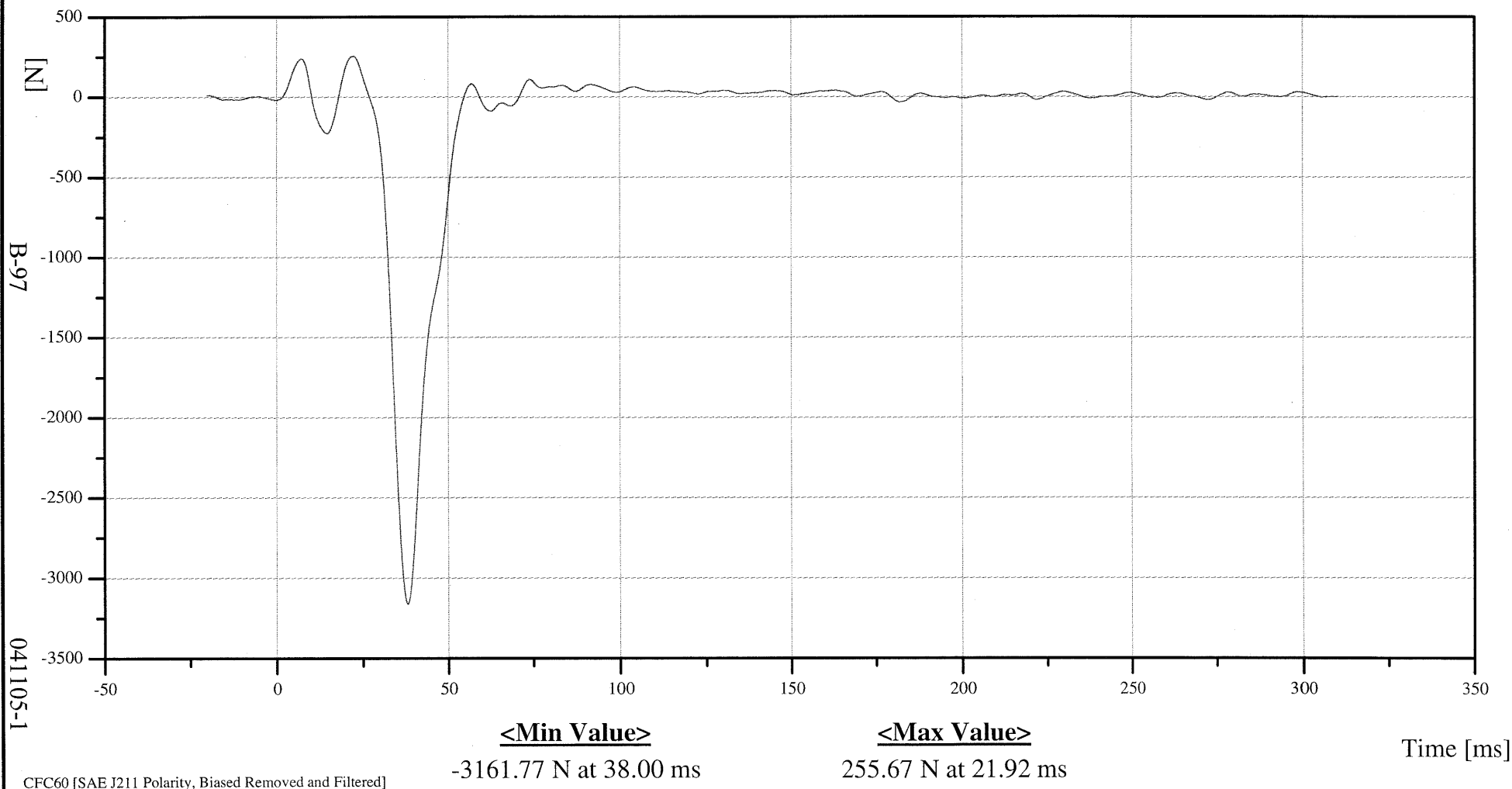
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0606





Transportation Research Center, Inc.

ROW 6 COLUMN 7

Date: 11/05/2004

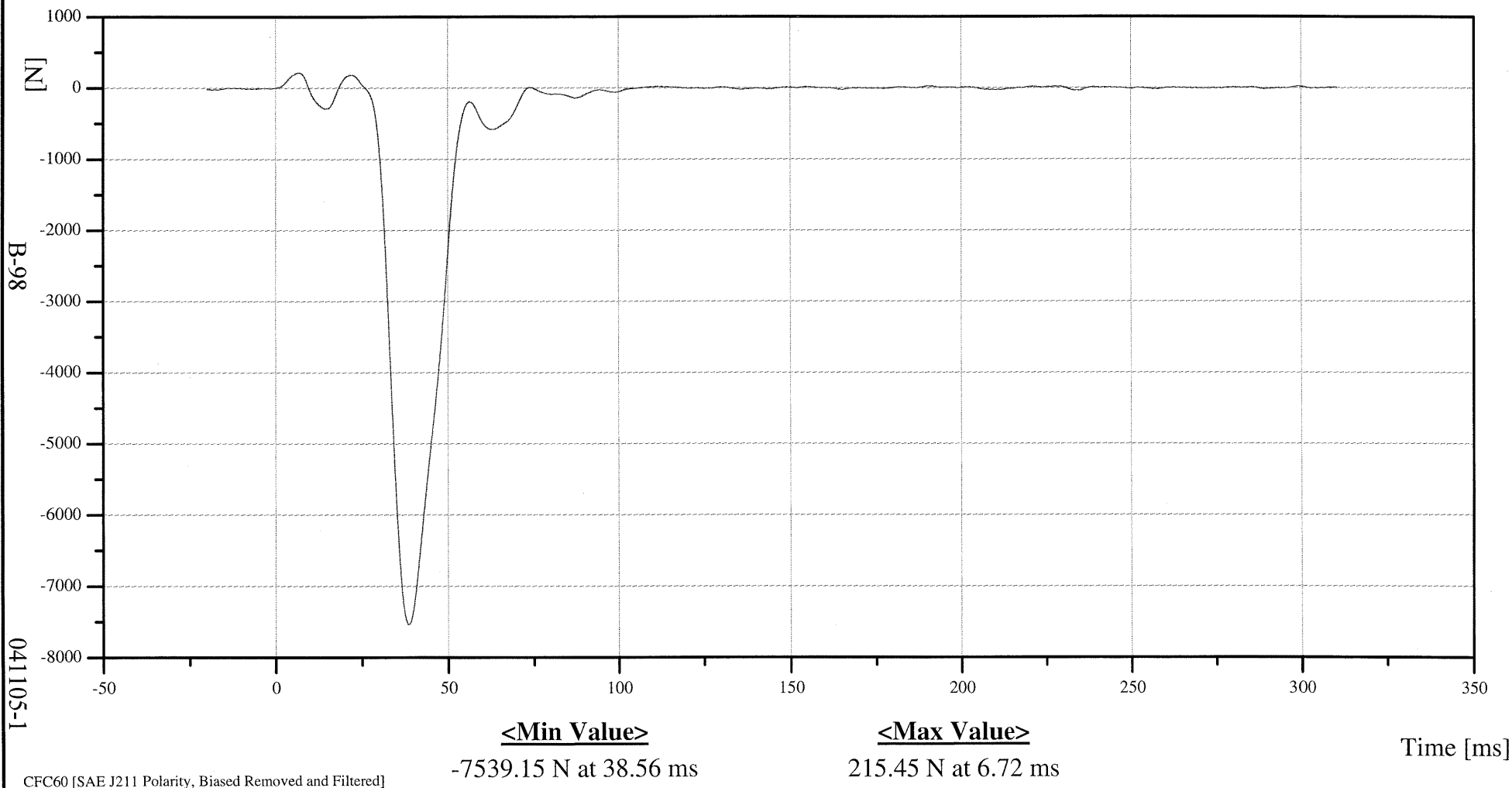
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0607





Transportation Research Center, Inc.

ROW 6 COLUMN 8

Date: 11/05/2004

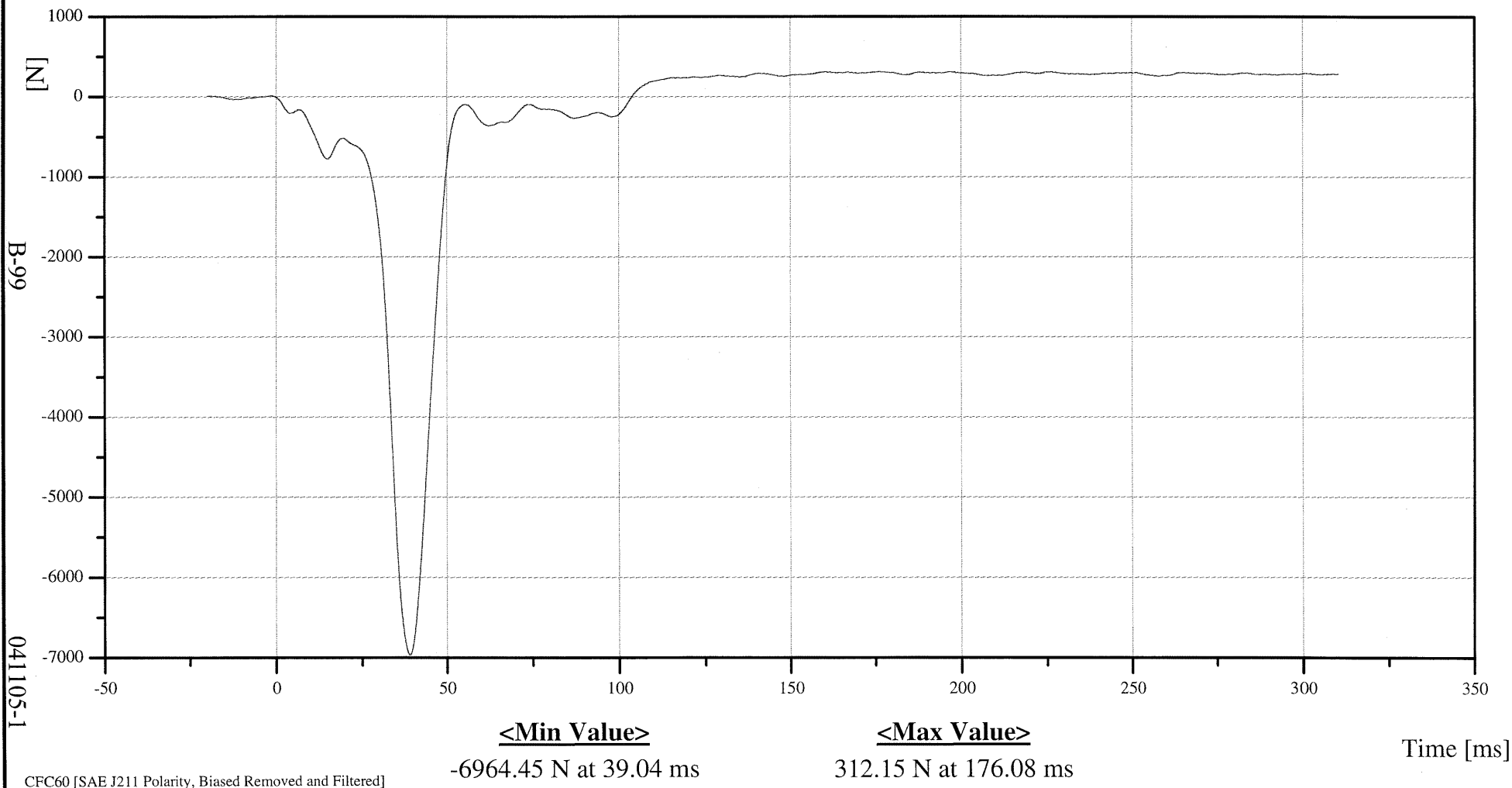
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0608





Transportation Research Center, Inc.

ROW 6 COLUMN 9

Date: 11/05/2004

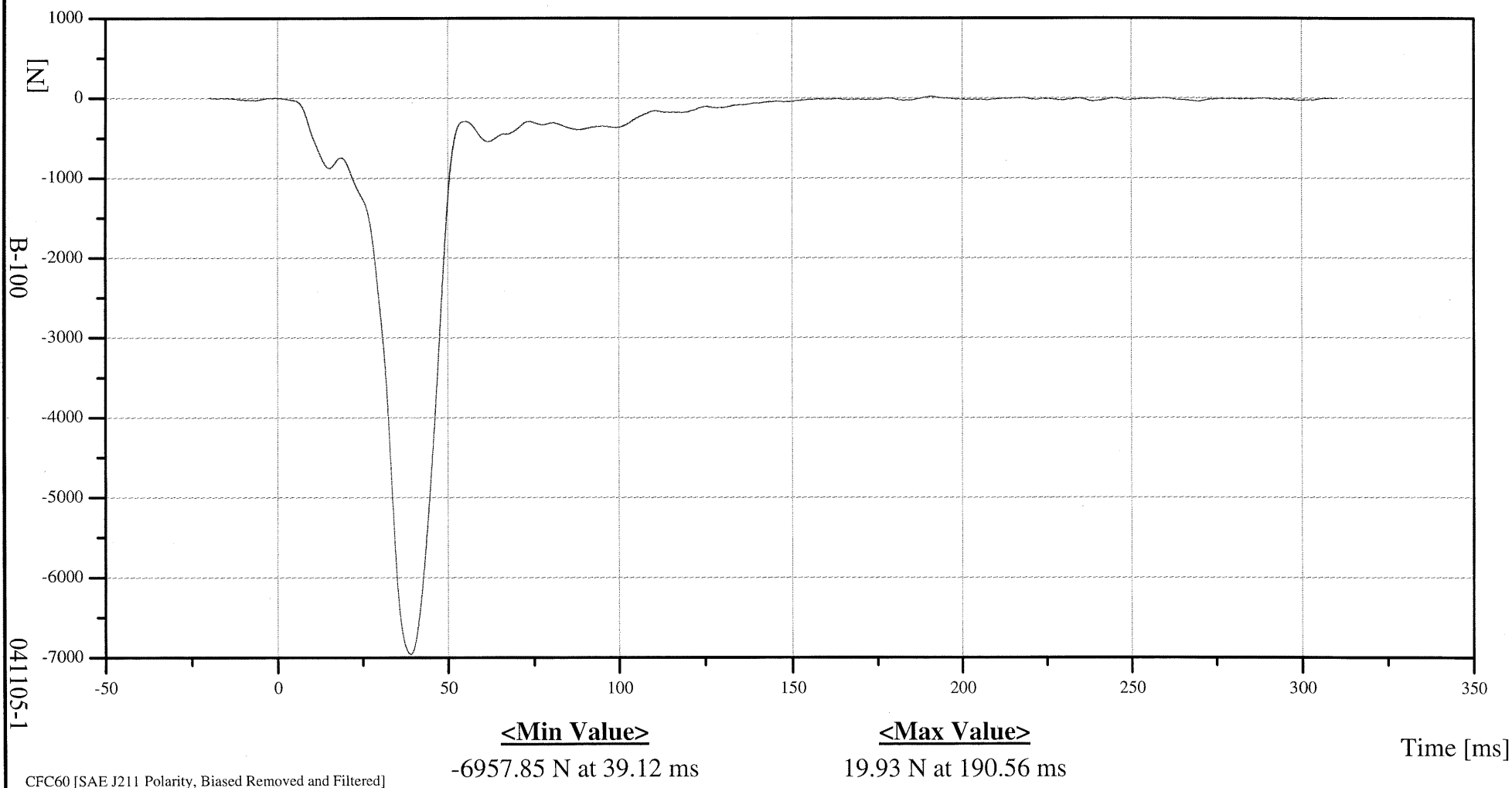
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0609





Transportation Research Center, Inc.

ROW 6 COLUMN 10

Date: 11/05/2004

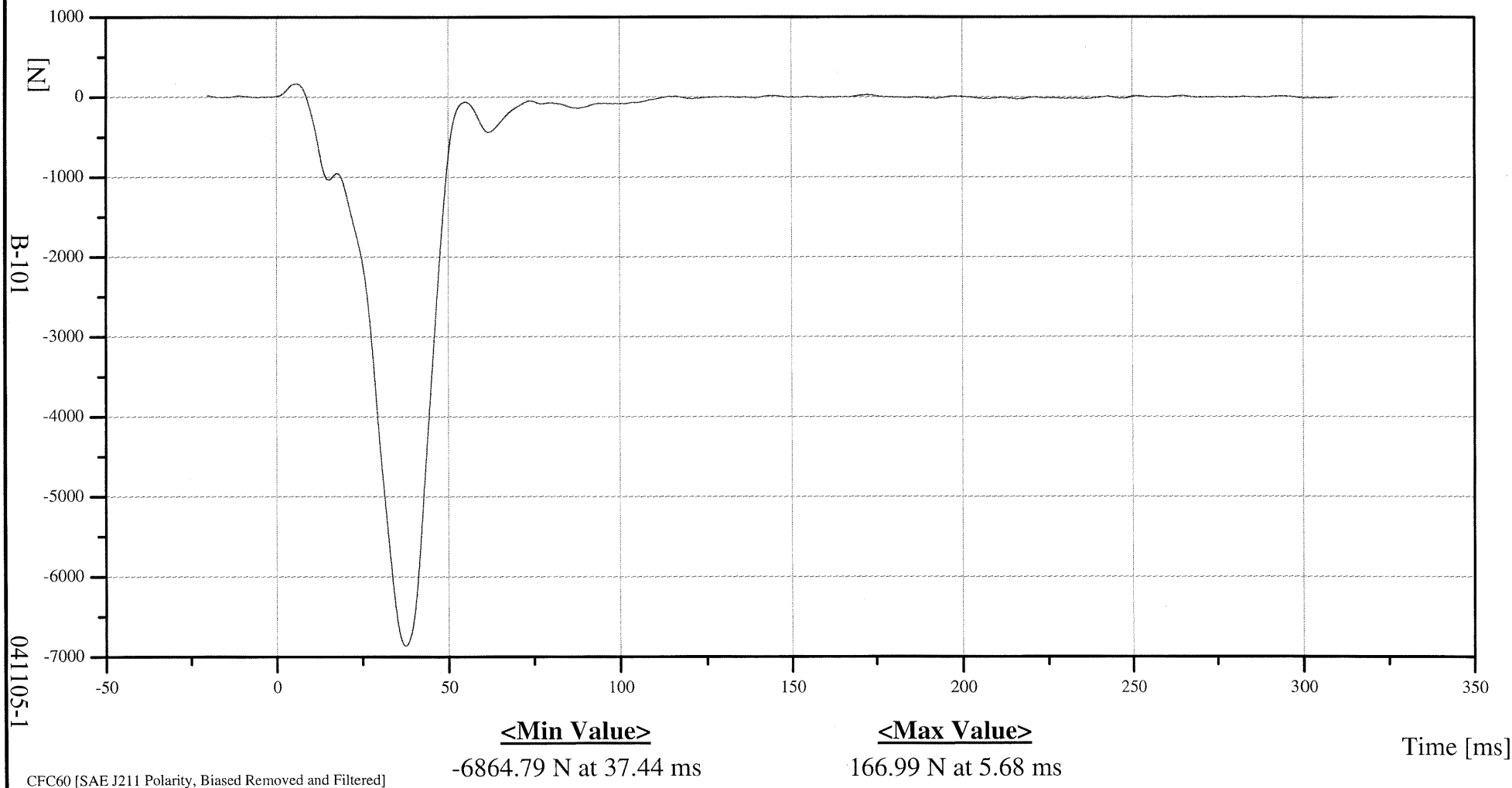
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0610





Transportation Research Center, Inc.

ROW 6 COLUMN 11

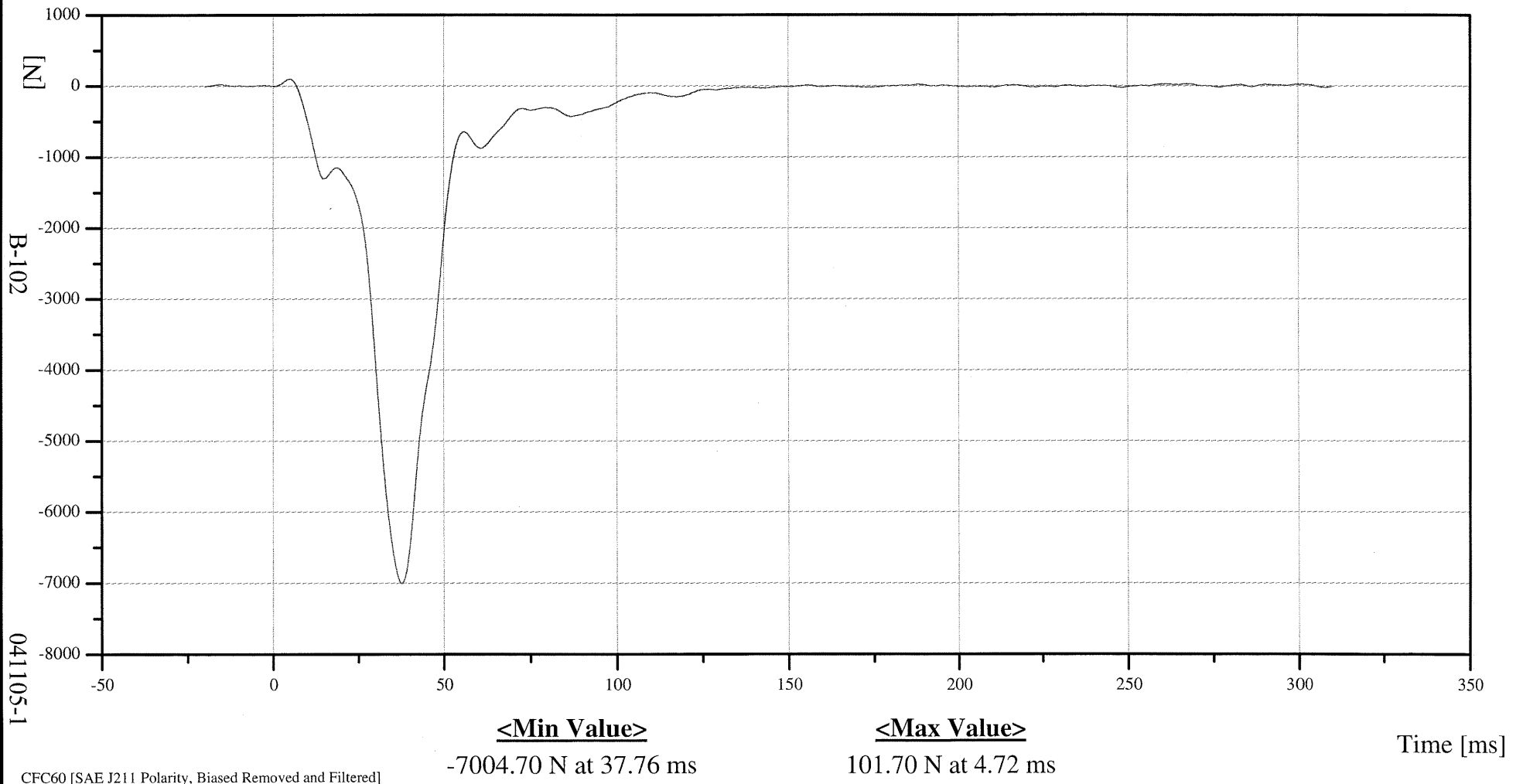
Date: 11/05/2004
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0611





Transportation Research Center, Inc.

ROW 6 COLUMN 12

Date: 11/05/2004

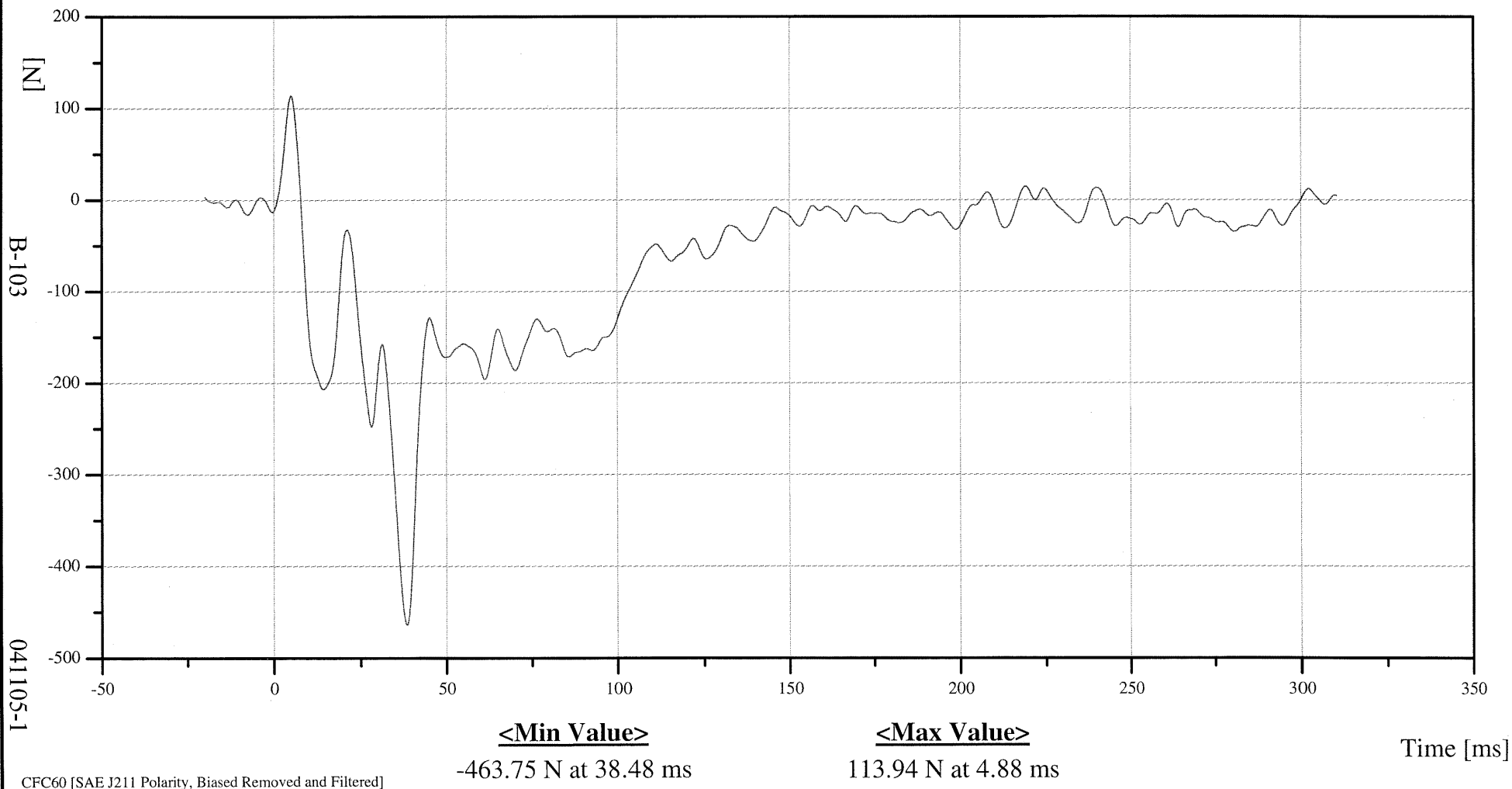
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0612





Transportation Research Center, Inc.

ROW 6 COLUMN 13

Date: 11/05/2004

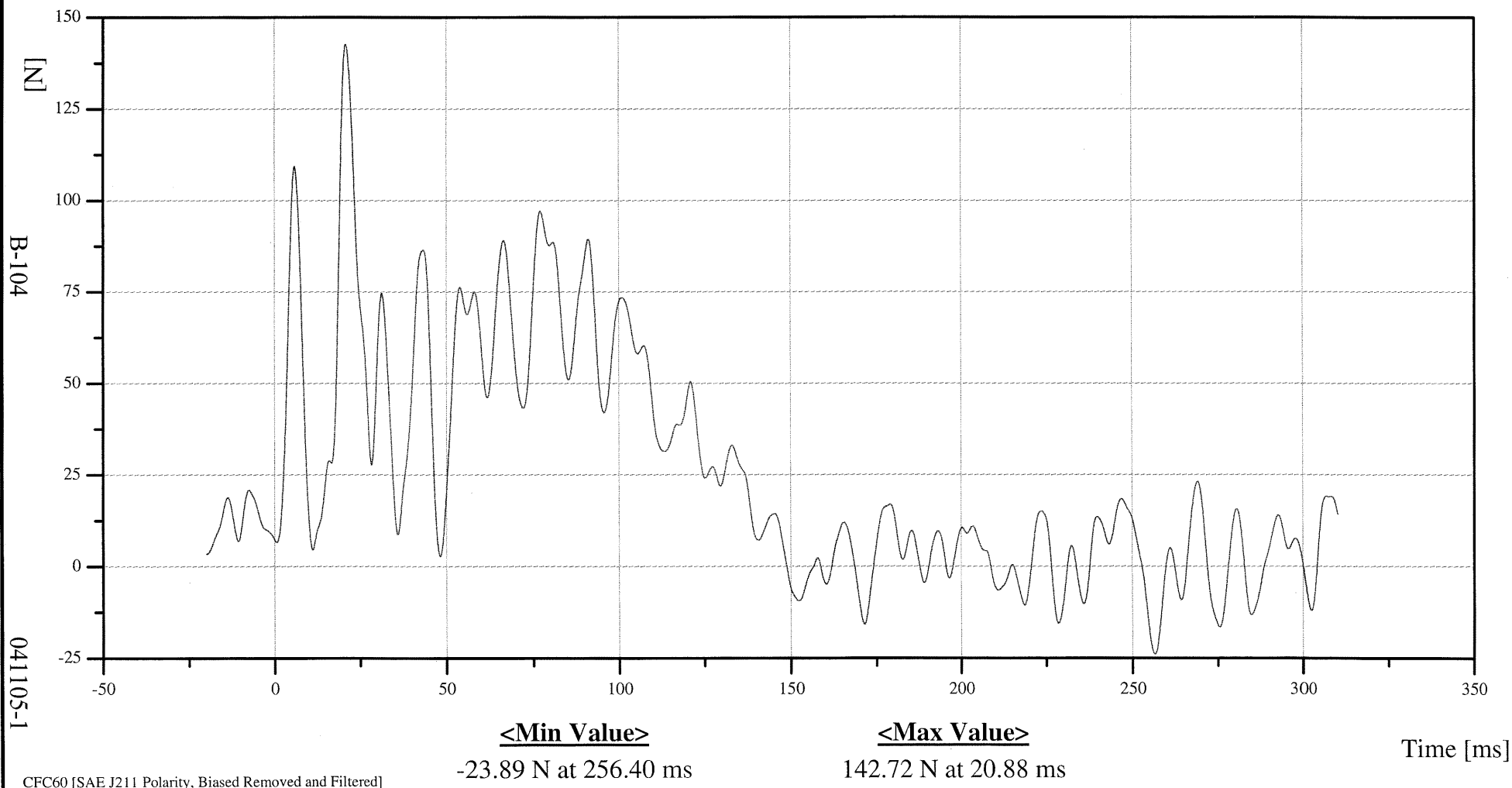
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0613





Transportation Research Center, Inc.

ROW 6 COLUMN 14

Date: 11/05/2004

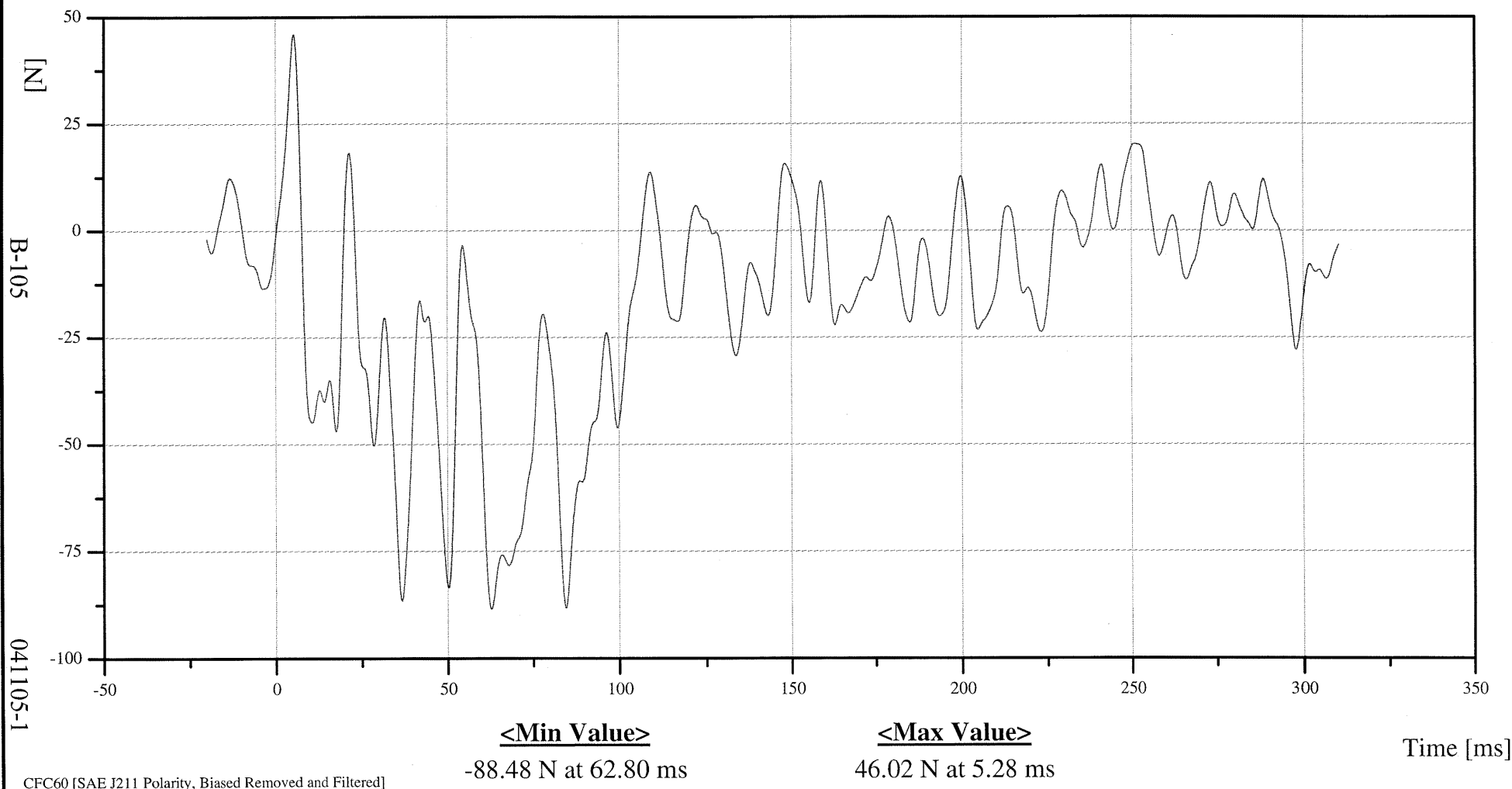
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0614





Transportation Research Center, Inc.

ROW 6 COLUMN 15

Date: 11/05/2004

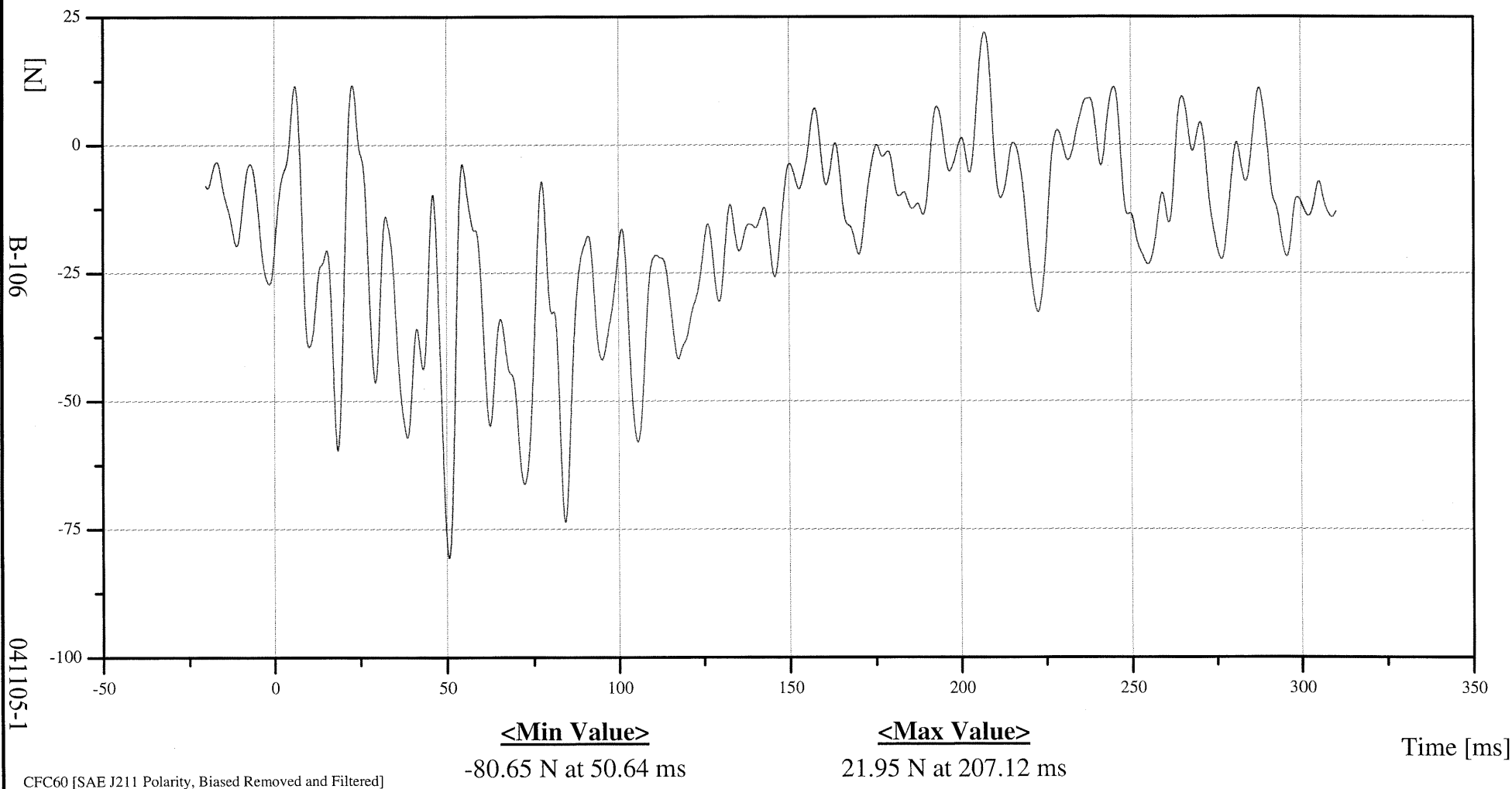
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0615





Transportation Research Center, Inc.

ROW 6 COLUMN 16

Date: 11/05/2004

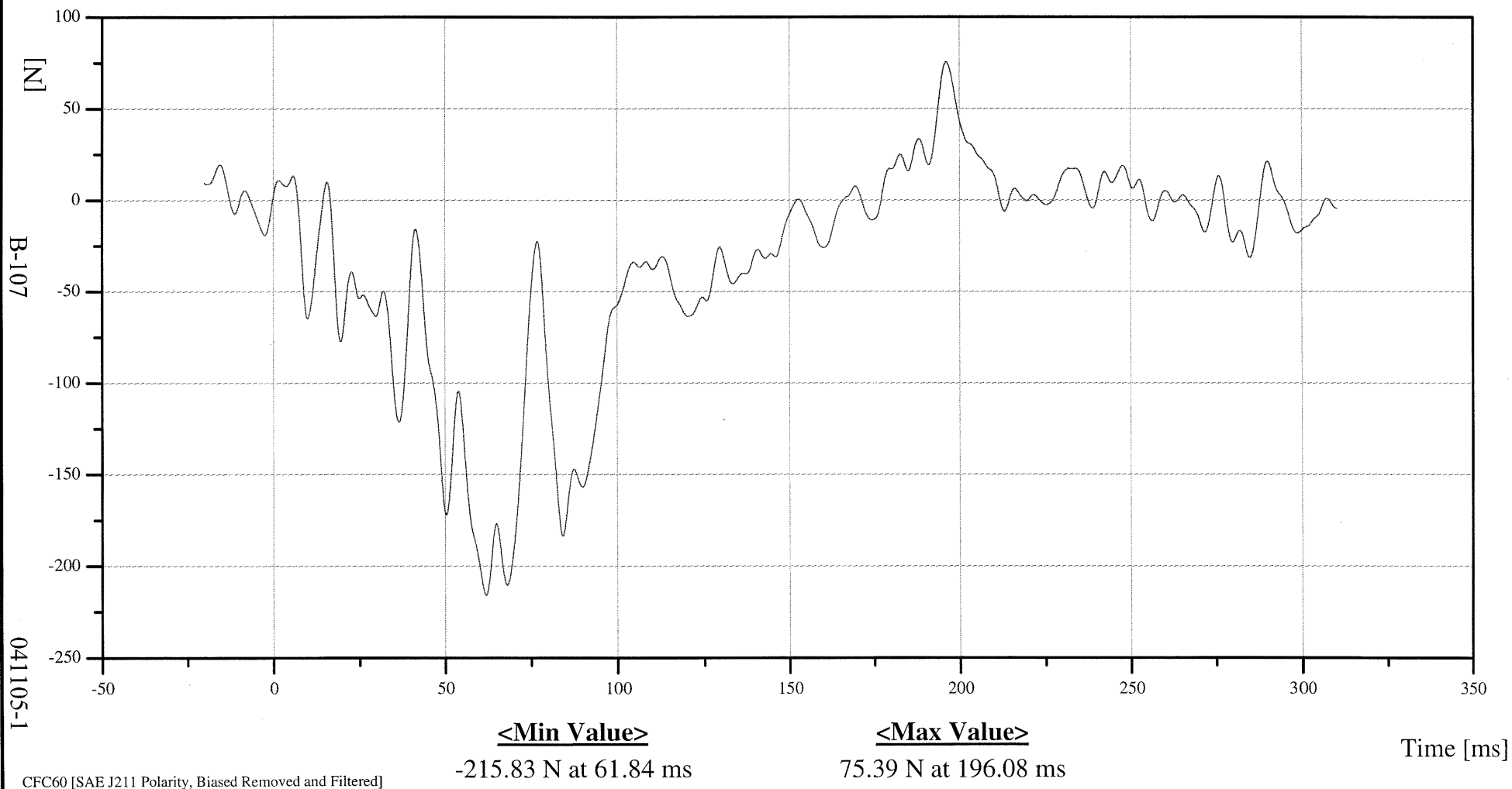
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0616





Transportation Research Center, Inc.

ROW 7 COLUMN 1

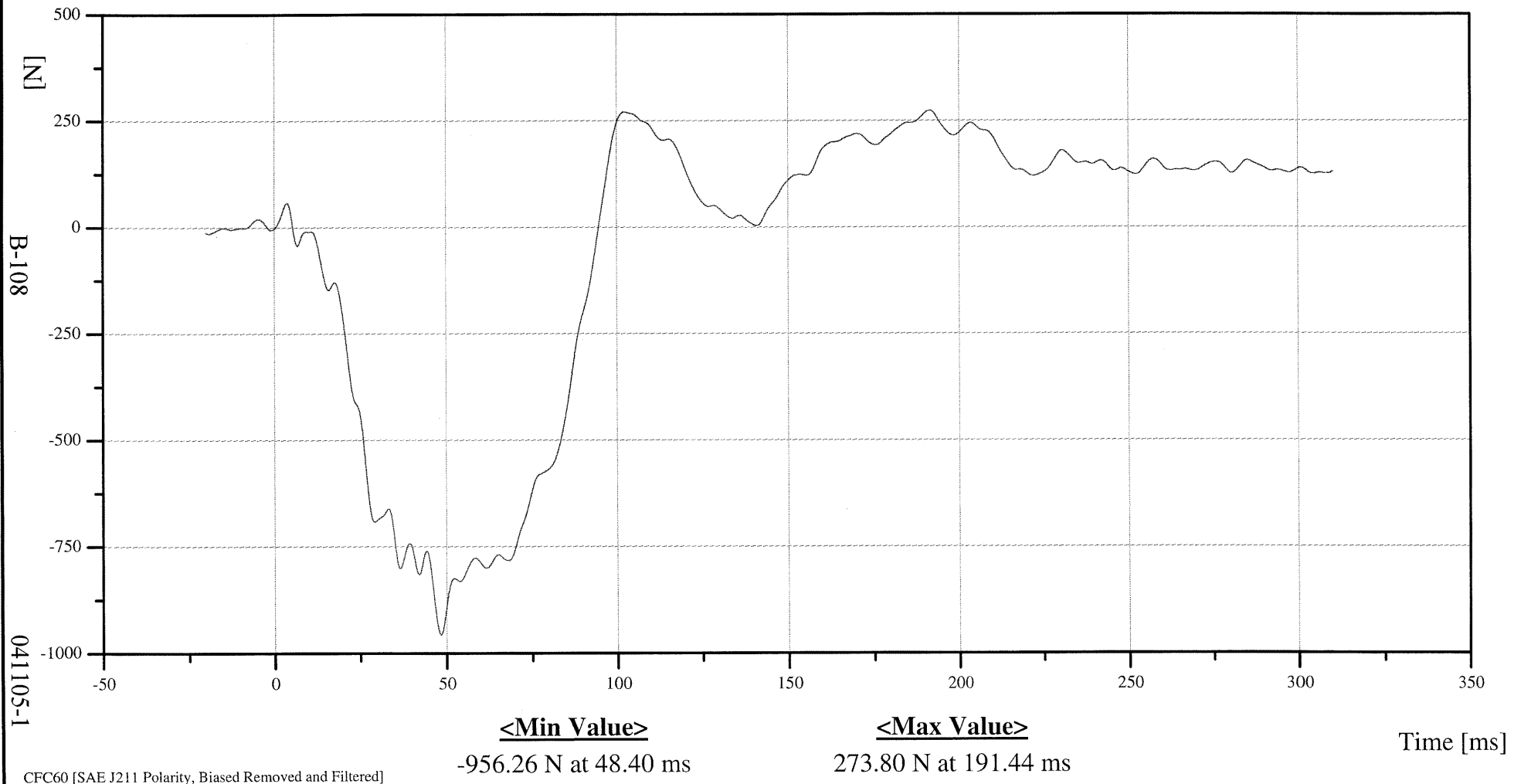
Date: 11/05/2004
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0701





Transportation Research Center, Inc.

ROW 7 COLUMN 2

Date: 11/05/2004

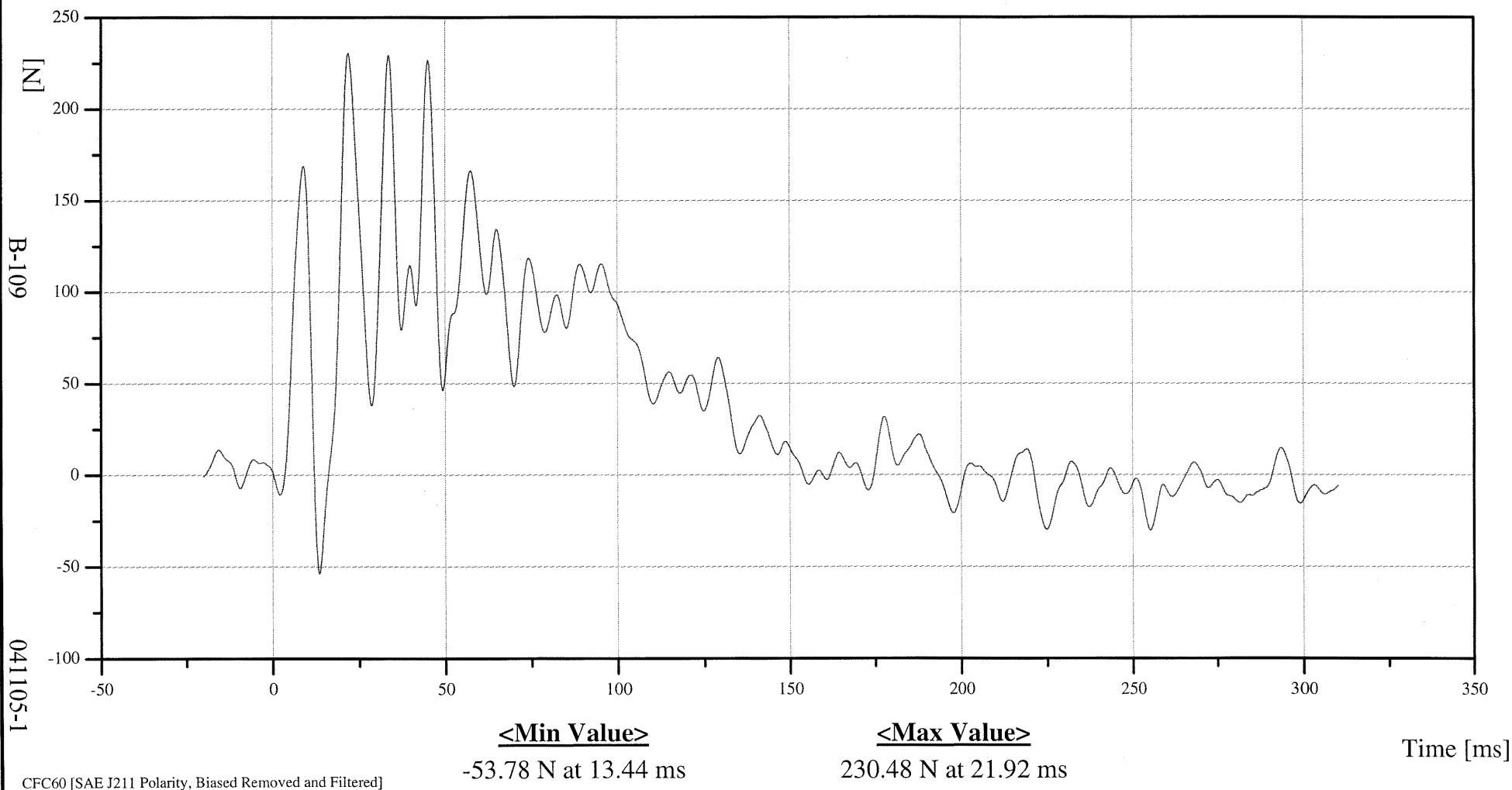
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0702





Transportation Research Center, Inc.

ROW 7 COLUMN 3

Date: 11/05/2004

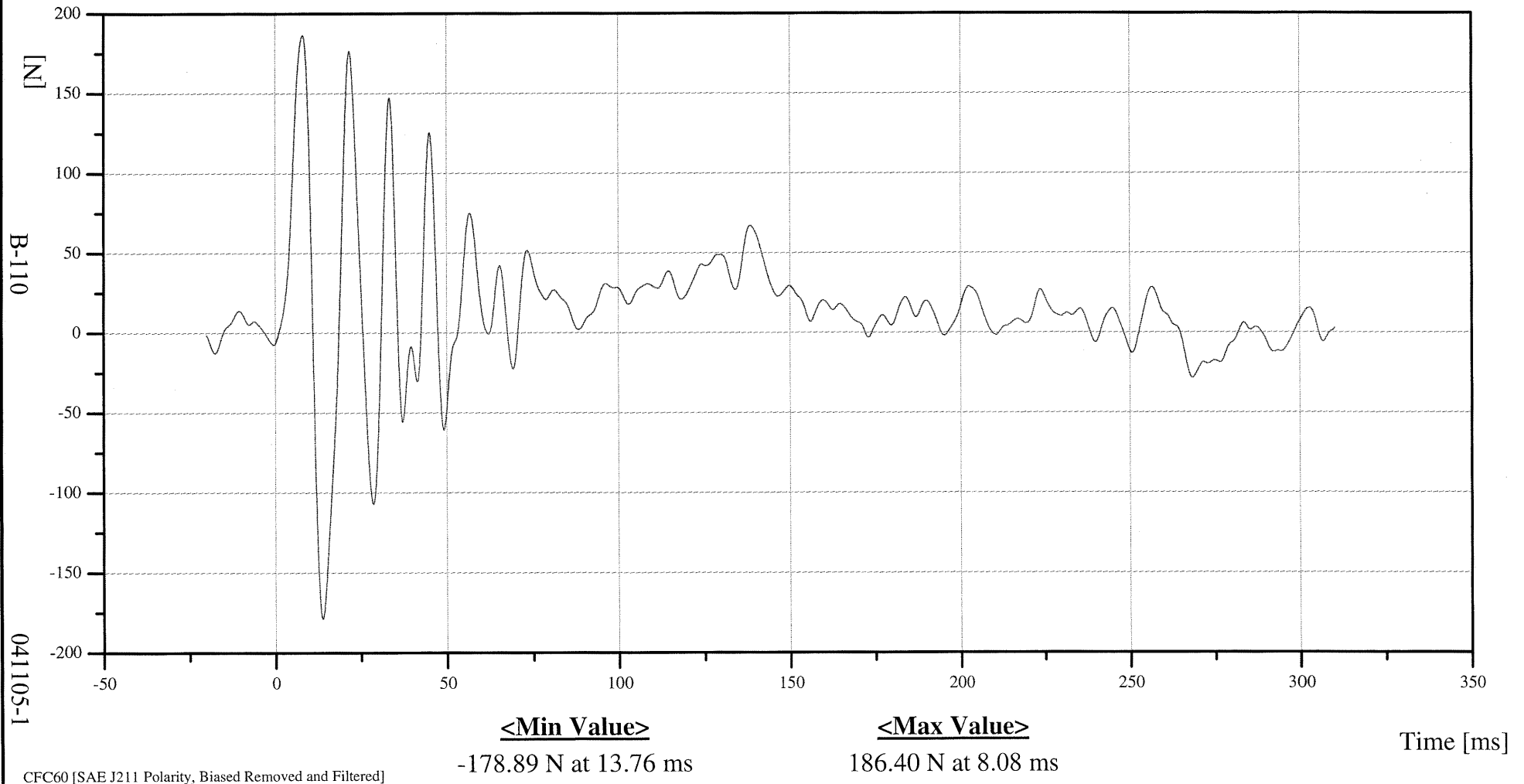
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0703





Transportation Research Center, Inc.

ROW 7 COLUMN 4

Date: 11/05/2004

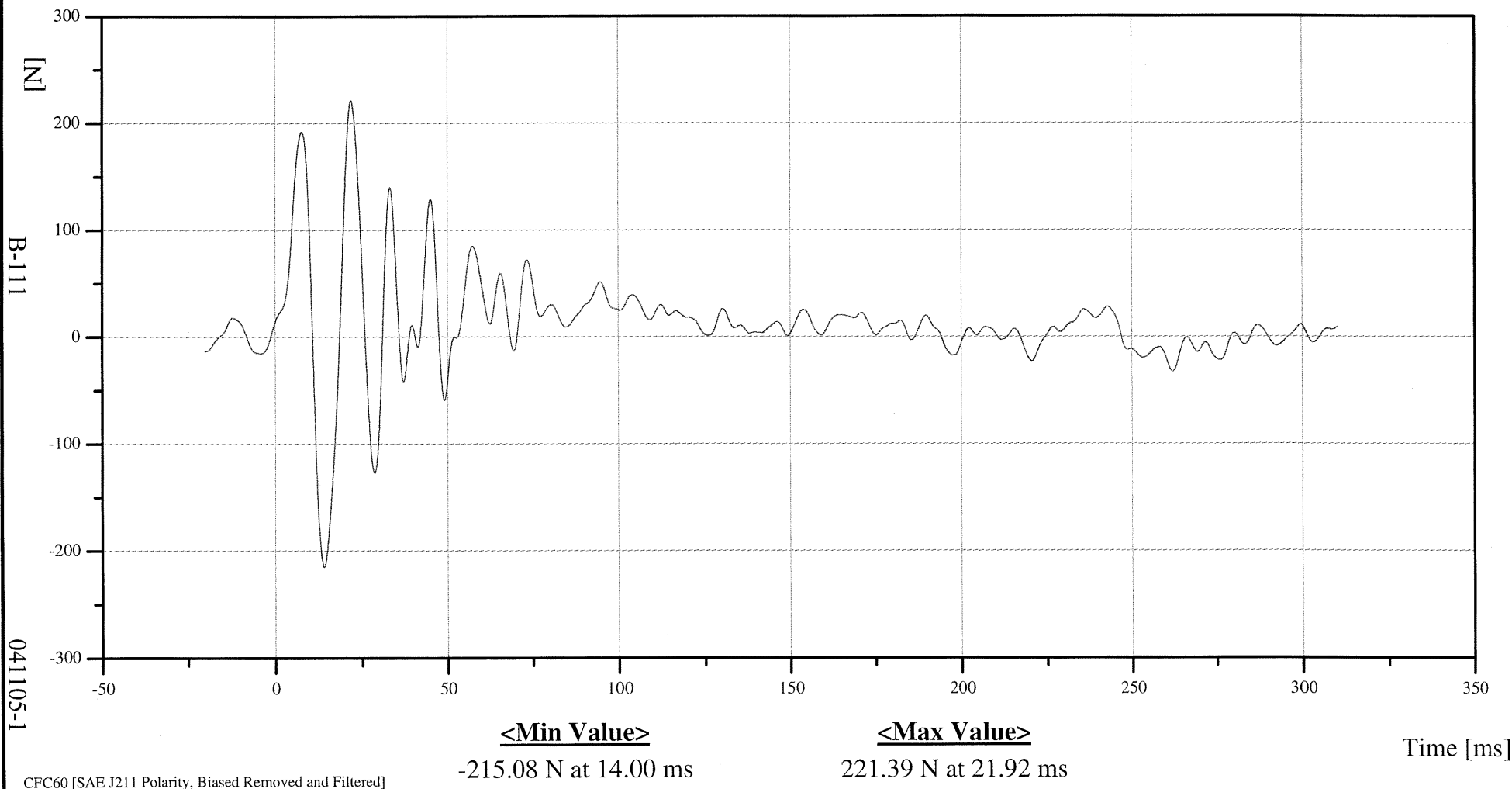
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0704





Transportation Research Center, Inc.

ROW 7 COLUMN 5

Date: 11/05/2004

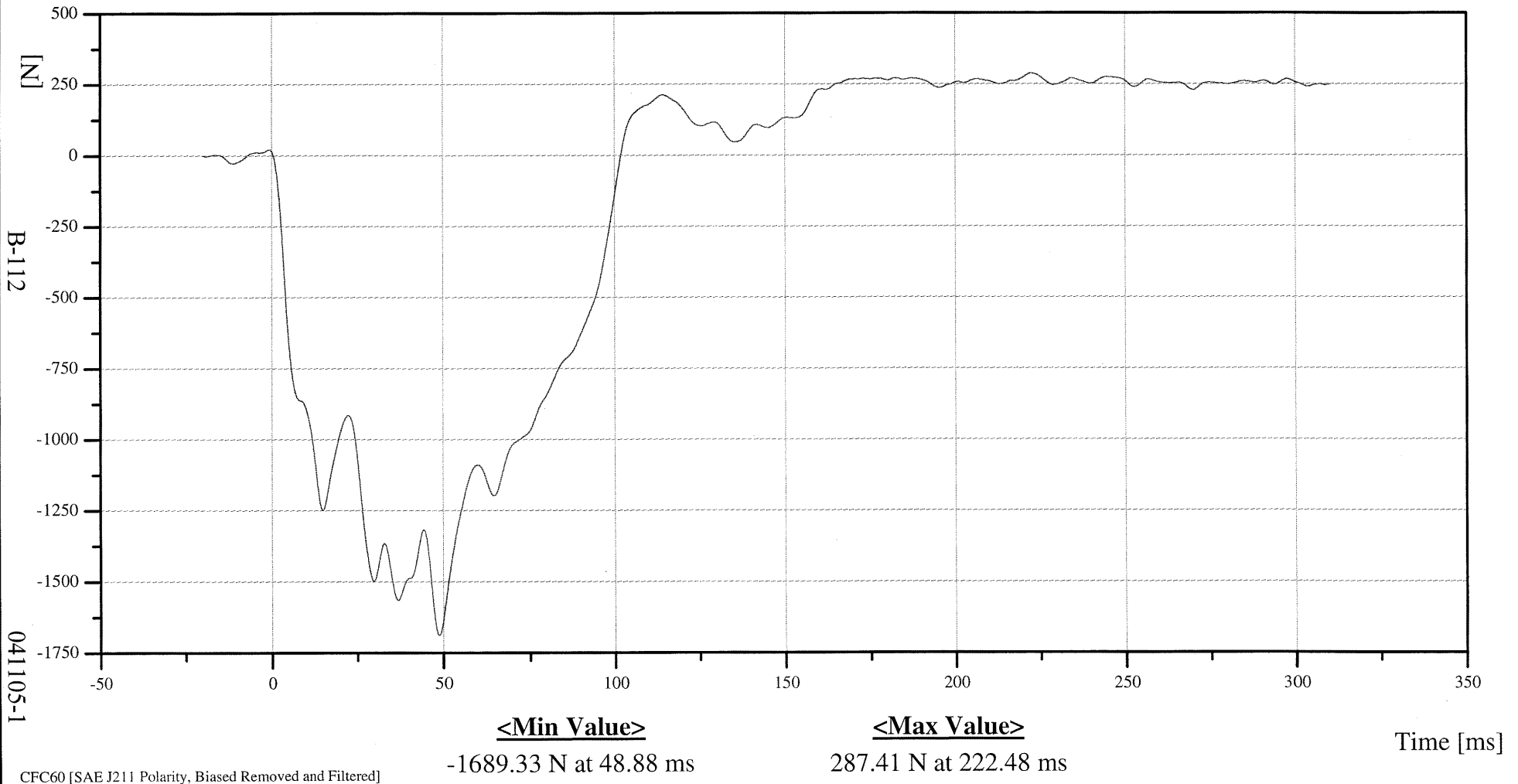
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0705





Transportation Research Center, Inc.

ROW 7 COLUMN 6

Date: 11/05/2004

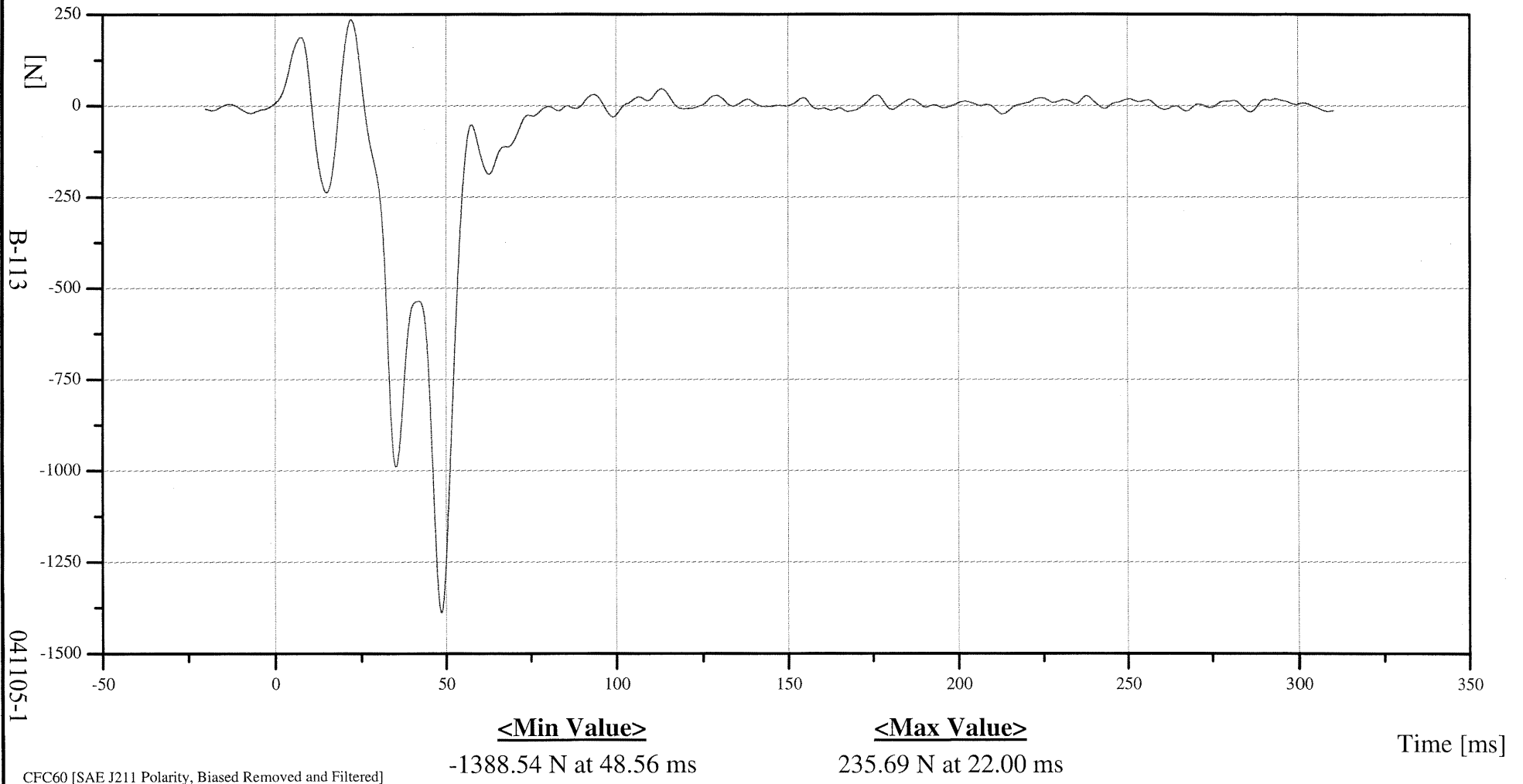
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0706





Transportation Research Center, Inc.

ROW 7 COLUMN 7

Date: 11/05/2004

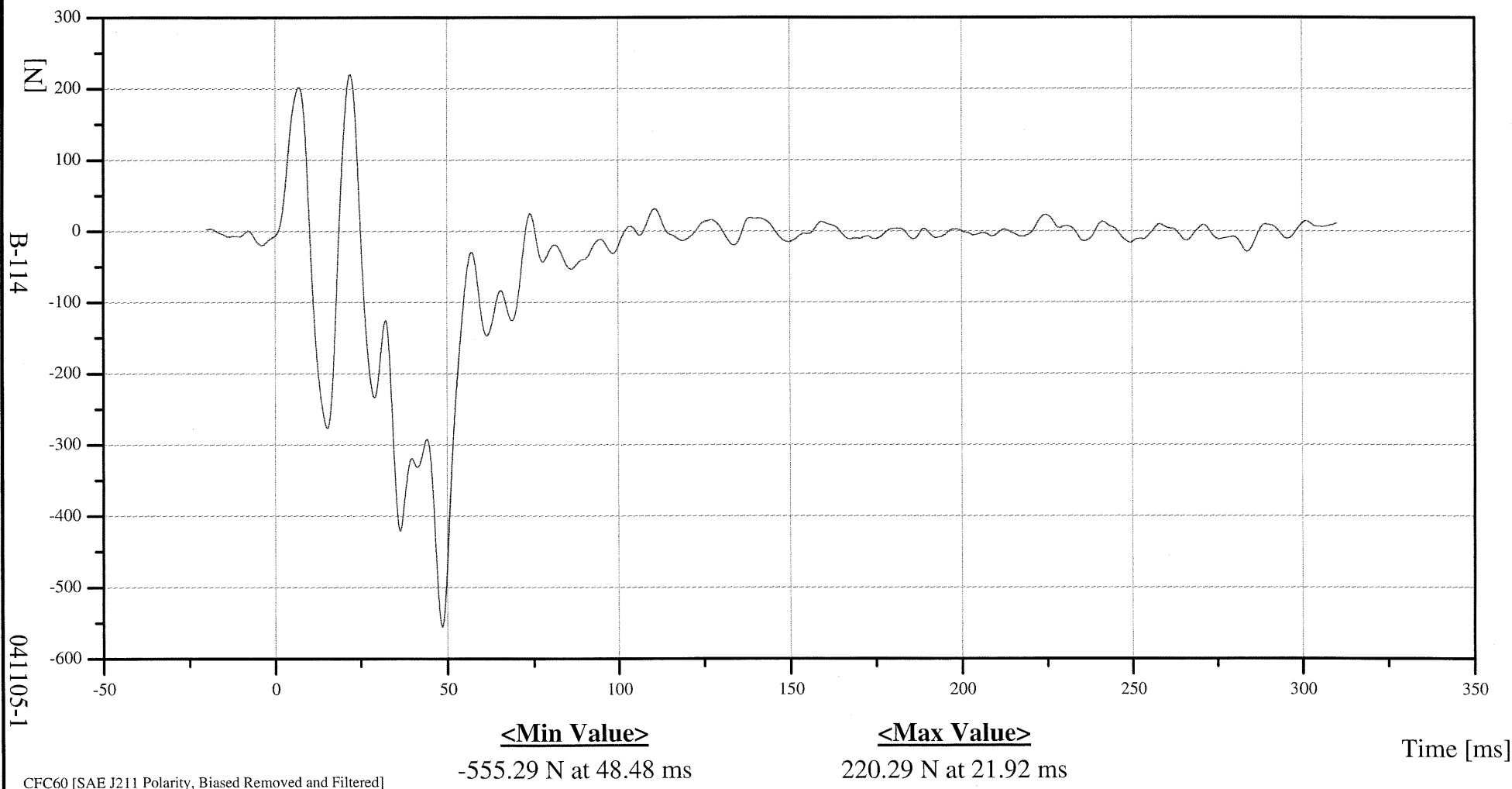
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0707





Transportation Research Center, Inc.

ROW 7 COLUMN 8

Date: 11/05/2004

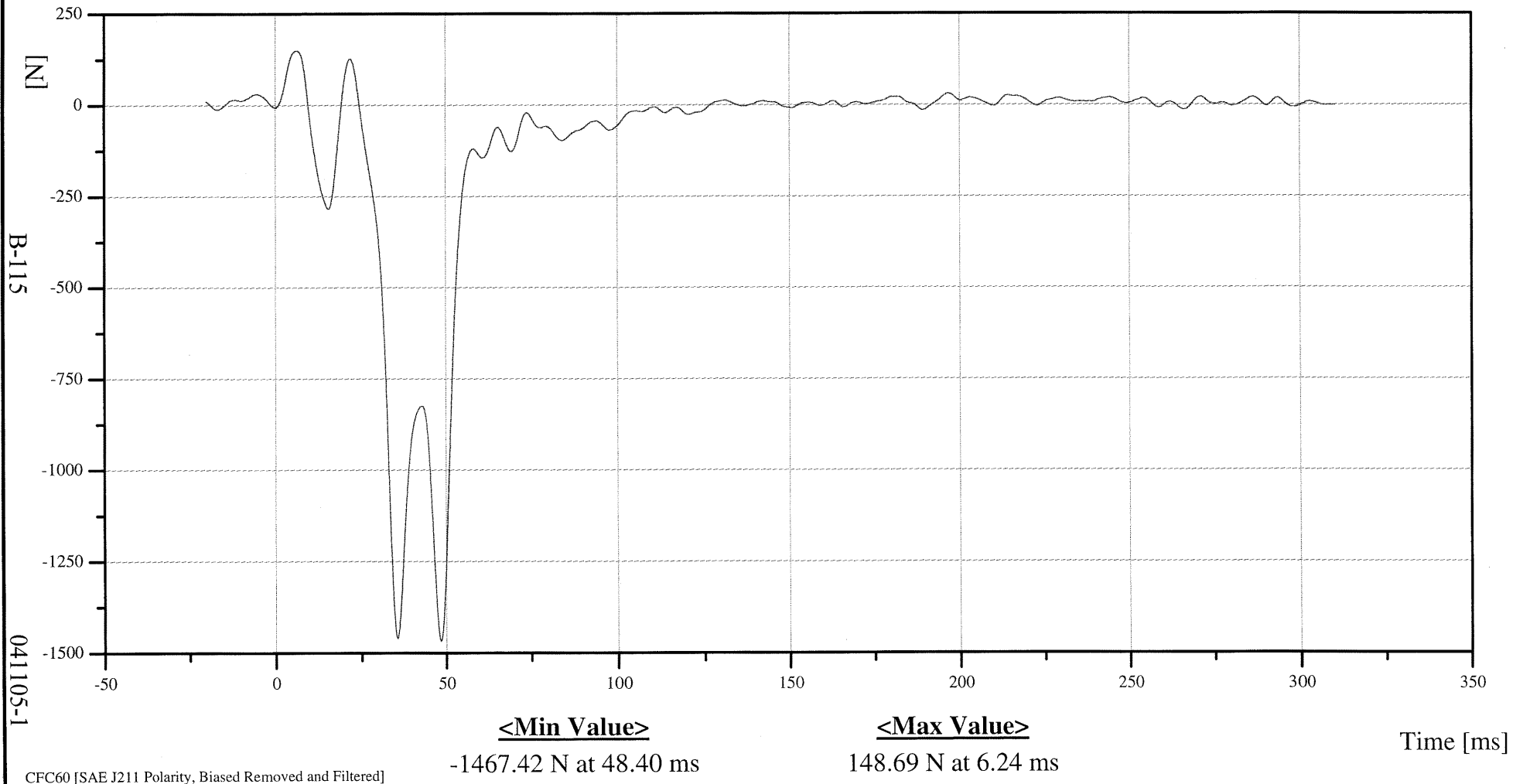
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0708





Transportation Research Center, Inc.

ROW 7 COLUMN 9

Date: 11/05/2004

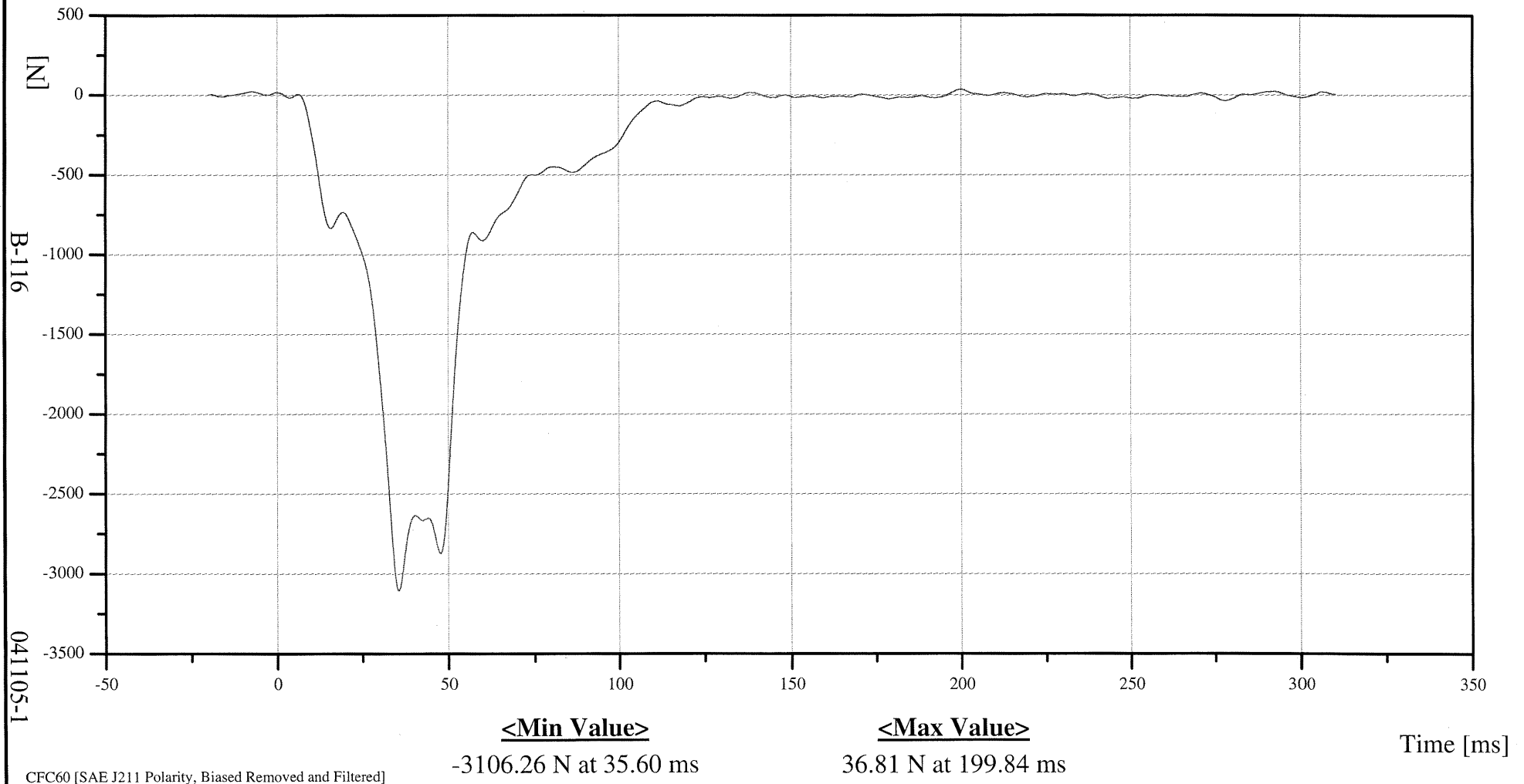
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0709





Transportation Research Center, Inc.

ROW 7 COLUMN 10

Date: 11/05/2004

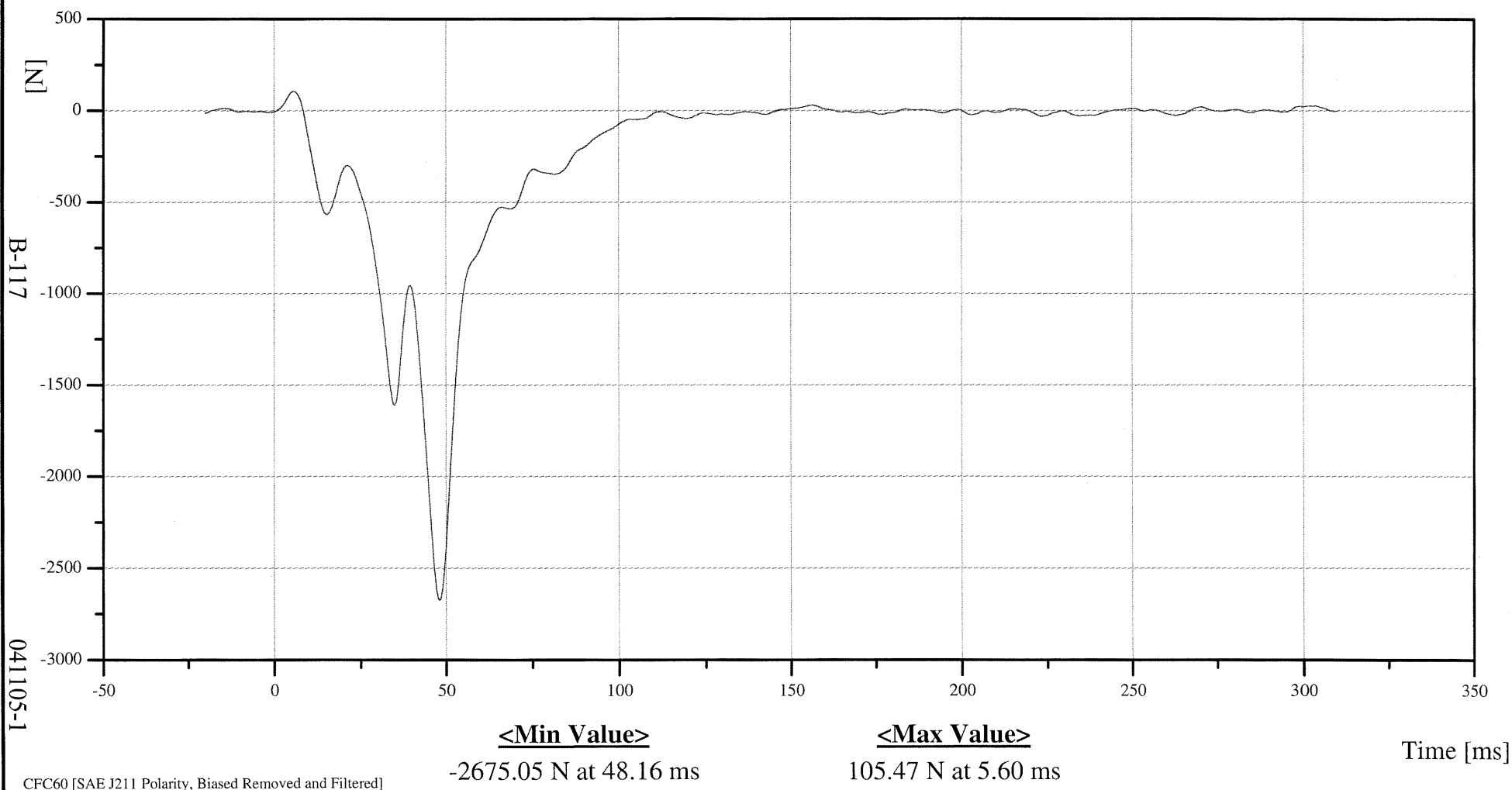
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0710





Transportation Research Center, Inc.

ROW 7 COLUMN 11

Date: 11/05/2004

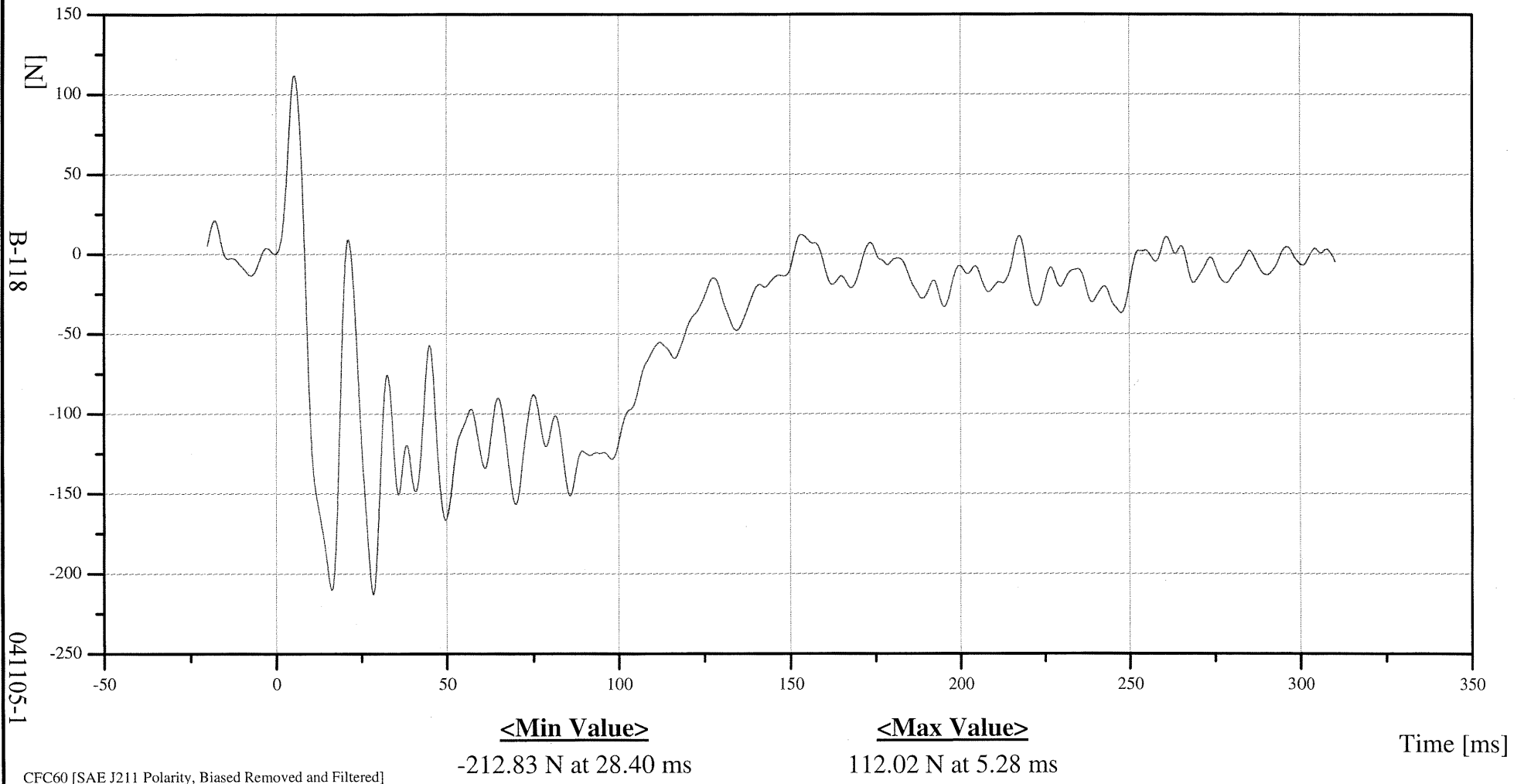
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0711





Transportation Research Center, Inc.

ROW 7 COLUMN 12

Date: 11/05/2004

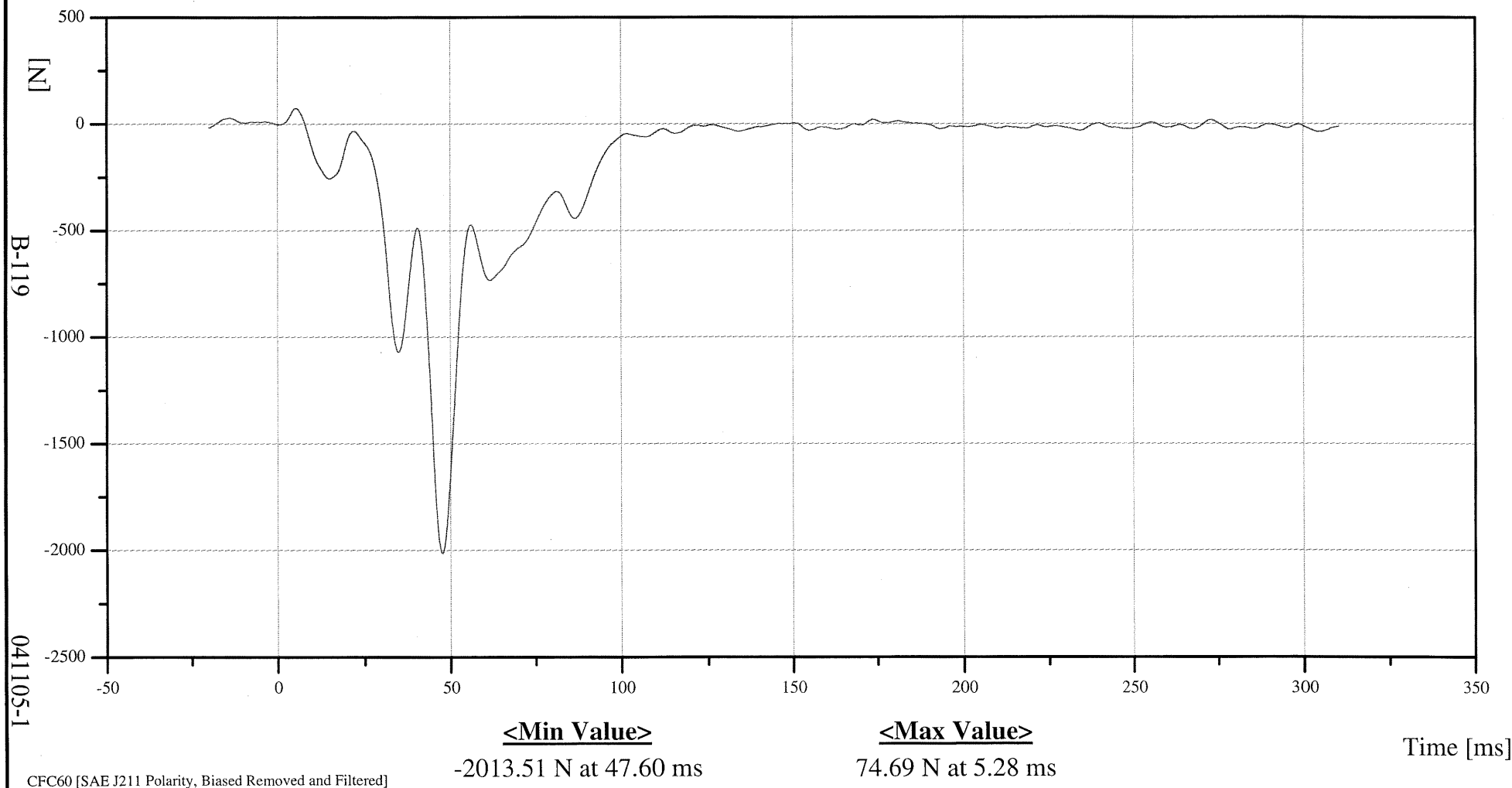
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0712





Transportation Research Center, Inc.

ROW 7 COLUMN 13

Date: 11/05/2004

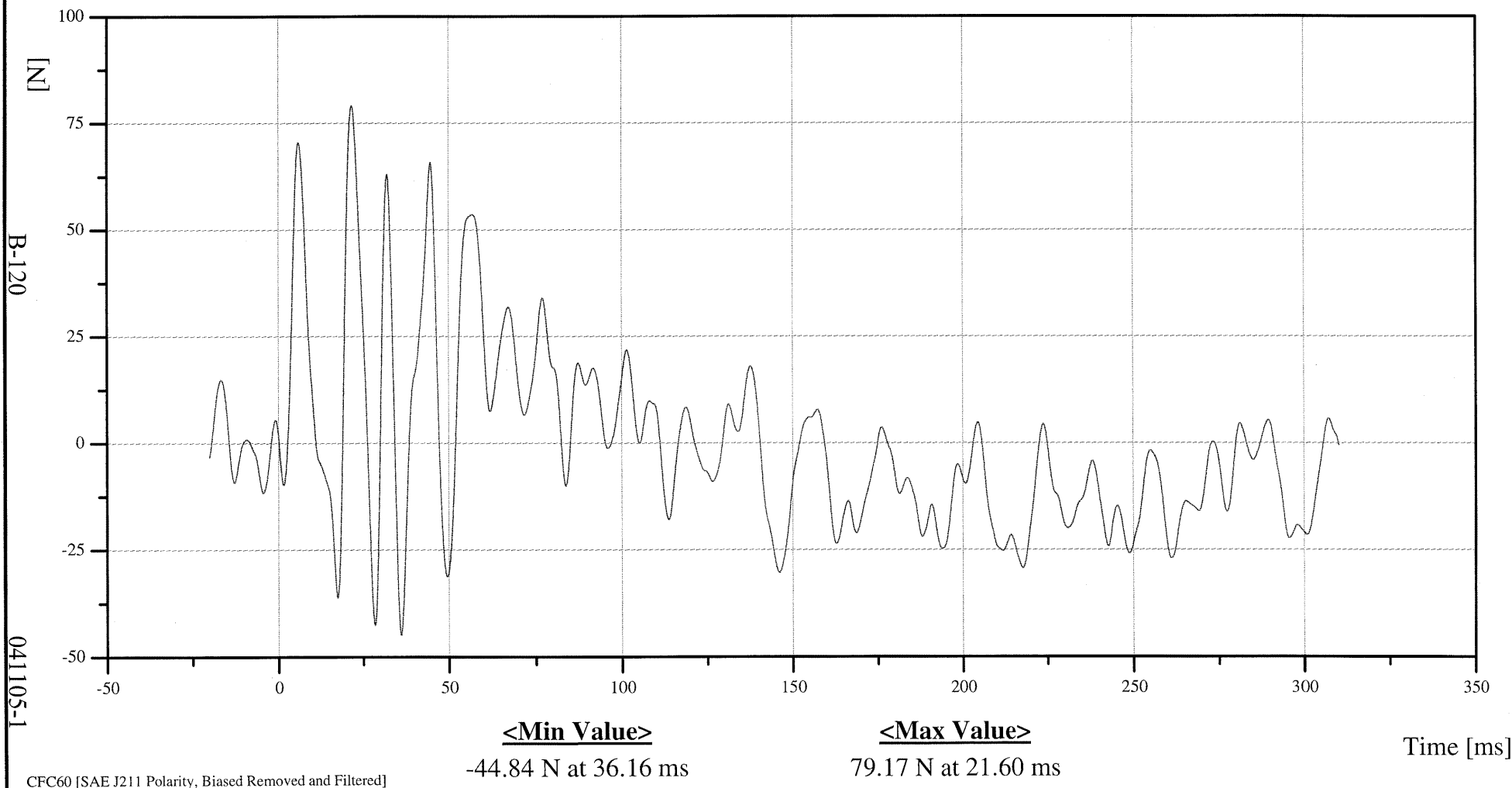
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0713





Transportation Research Center, Inc.

ROW 7 COLUMN 14

Date: 11/05/2004

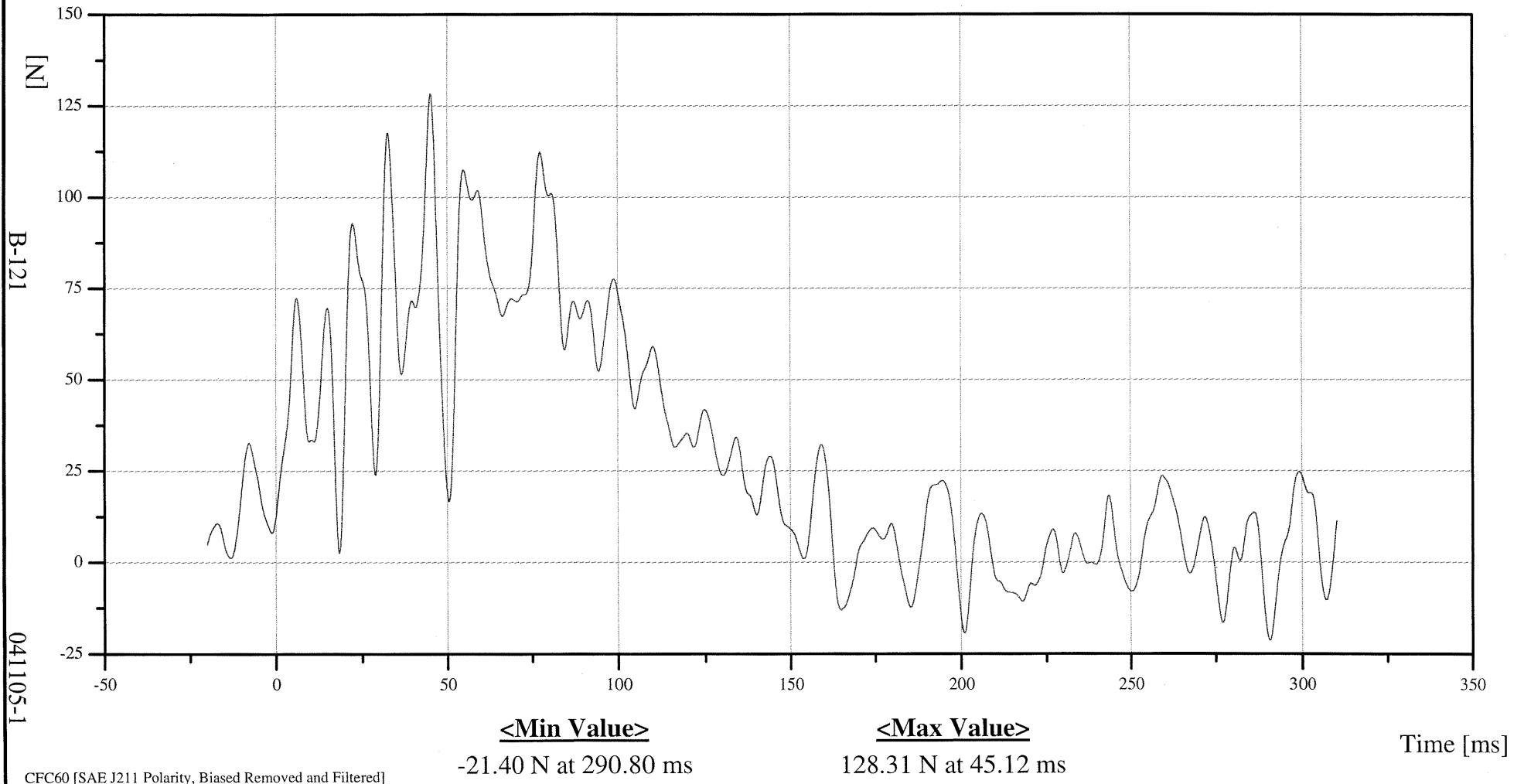
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0714





Transportation Research Center, Inc.

ROW 7 COLUMN 15

Date: 11/05/2004

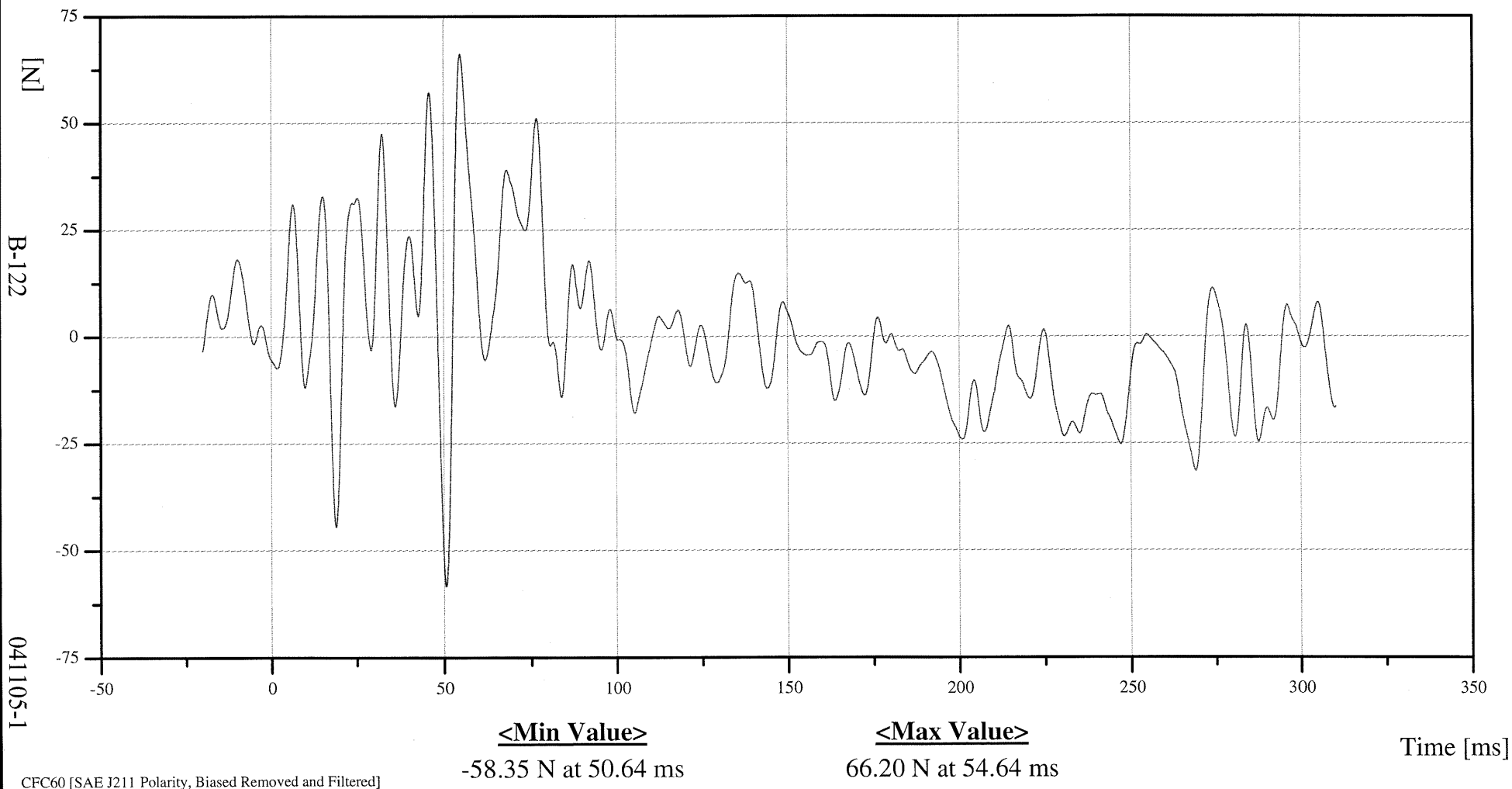
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0715





Transportation Research Center, Inc.

ROW 7 COLUMN 16

Date: 11/05/2004

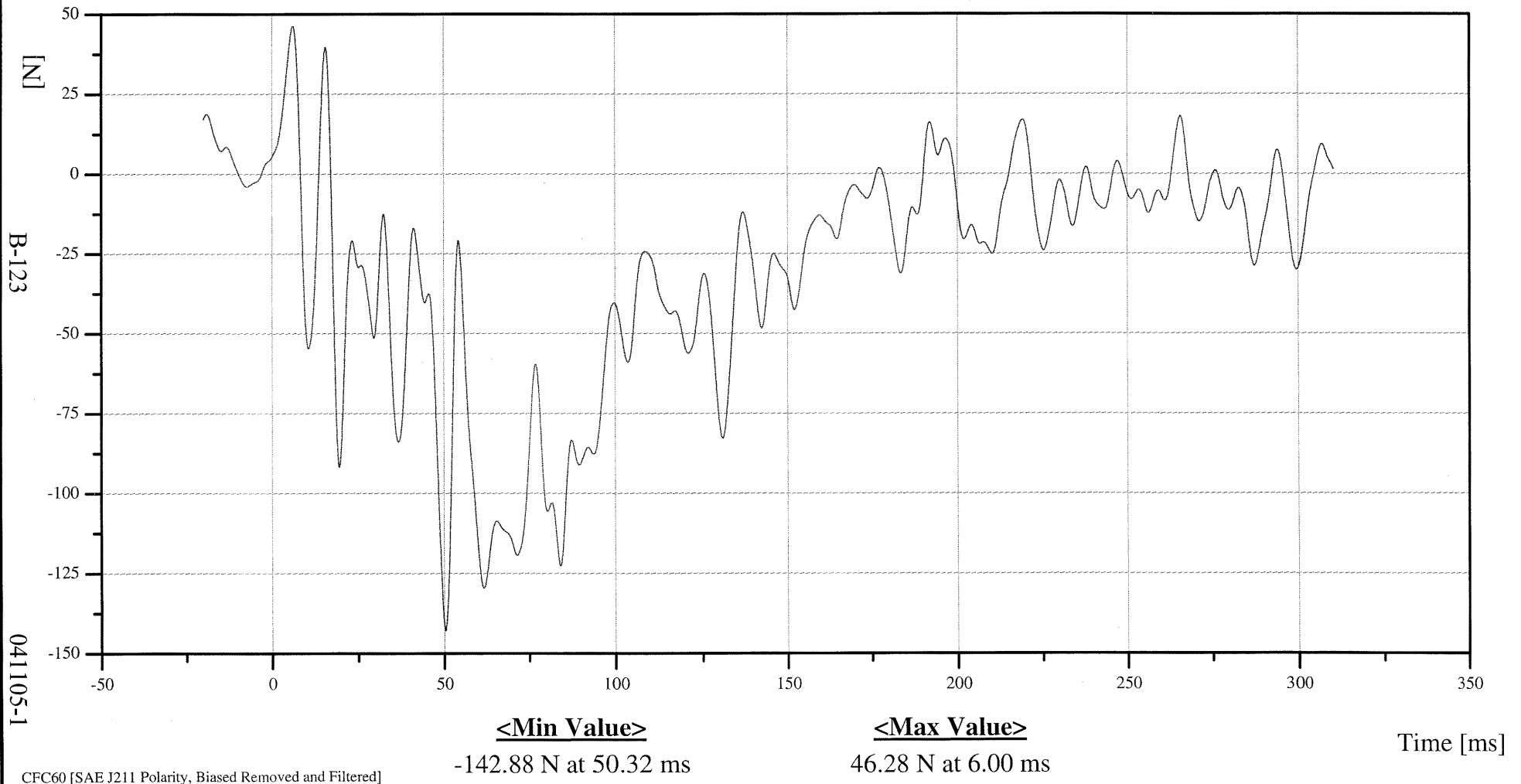
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0716





Transportation Research Center, Inc.

ROW 8 COLUMN 1

Date: 11/05/2004

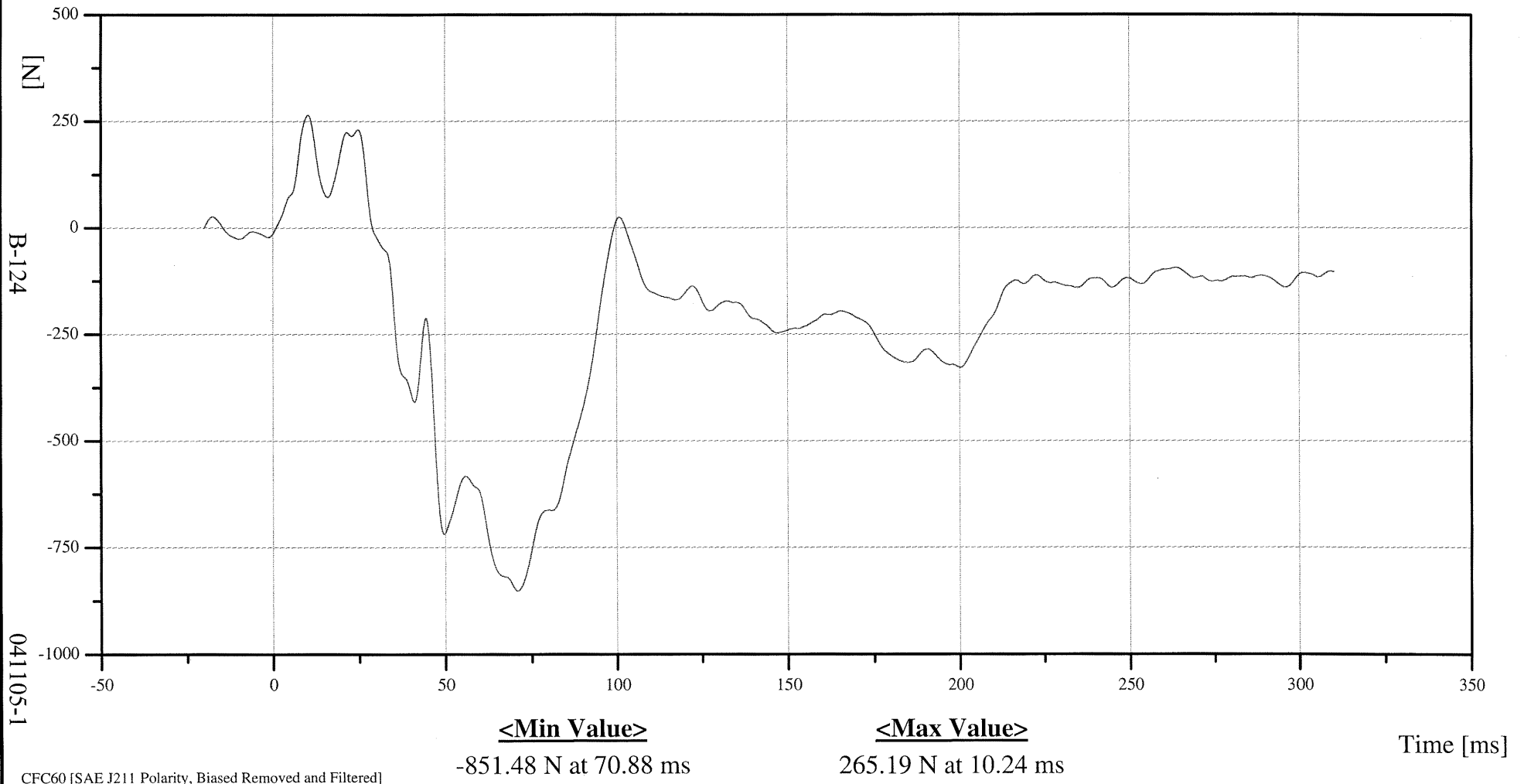
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0801





Transportation Research Center, Inc.

ROW 8 COLUMN 2

Date: 11/05/2004

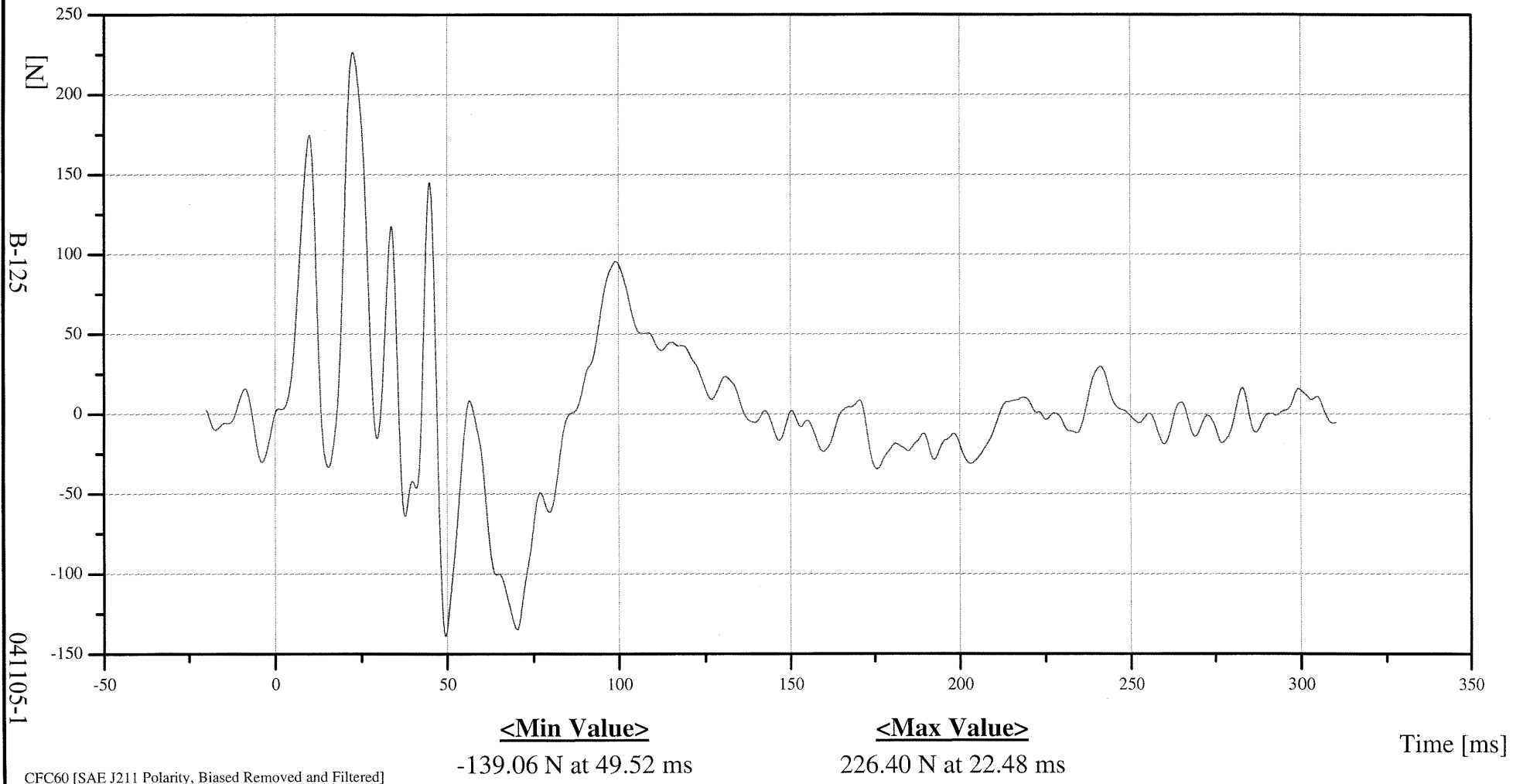
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0802





Transportation Research Center, Inc.

ROW 8 COLUMN 3

Date: 11/05/2004

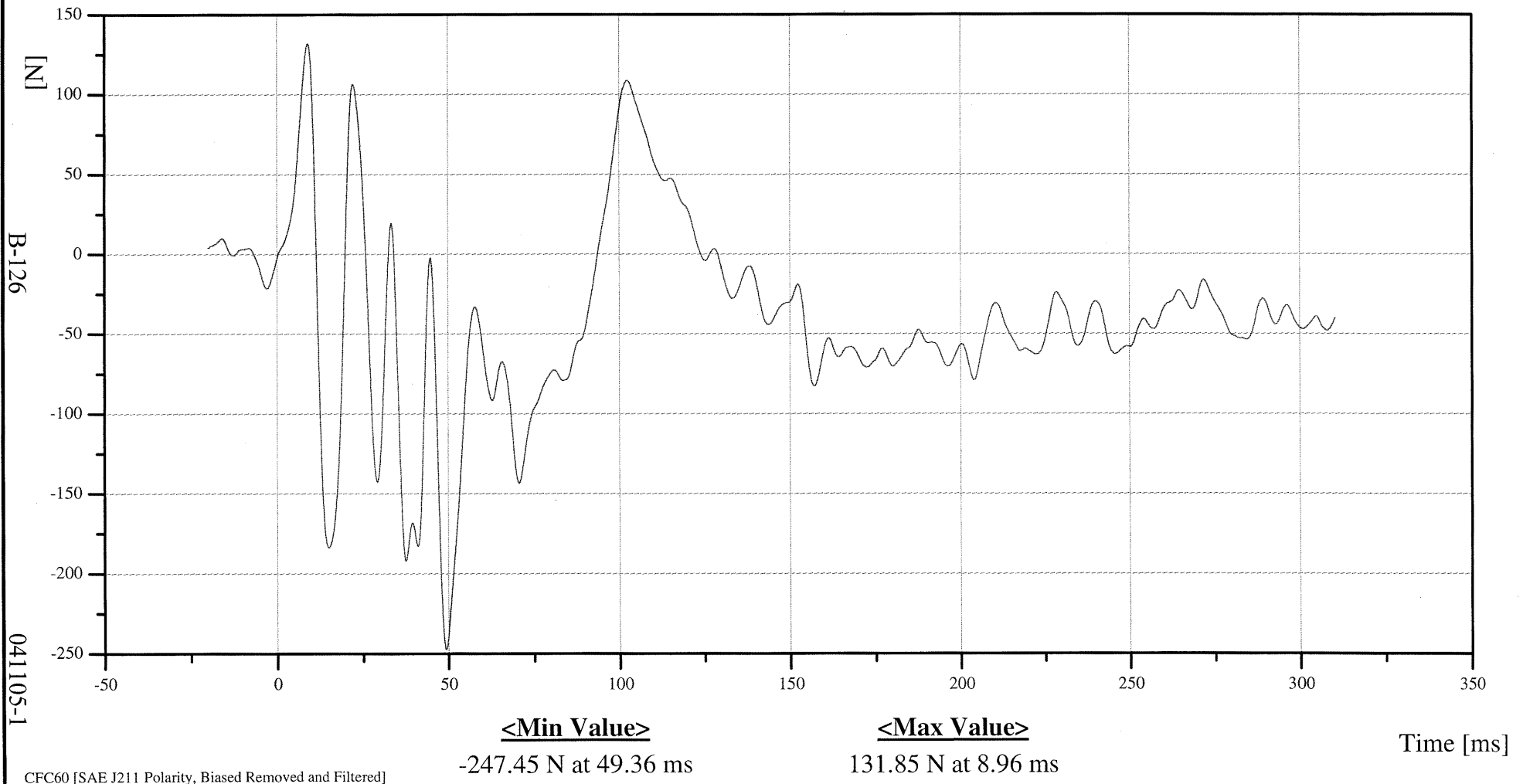
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0803





Transportation Research Center, Inc.

ROW 8 COLUMN 4

Date: 11/05/2004

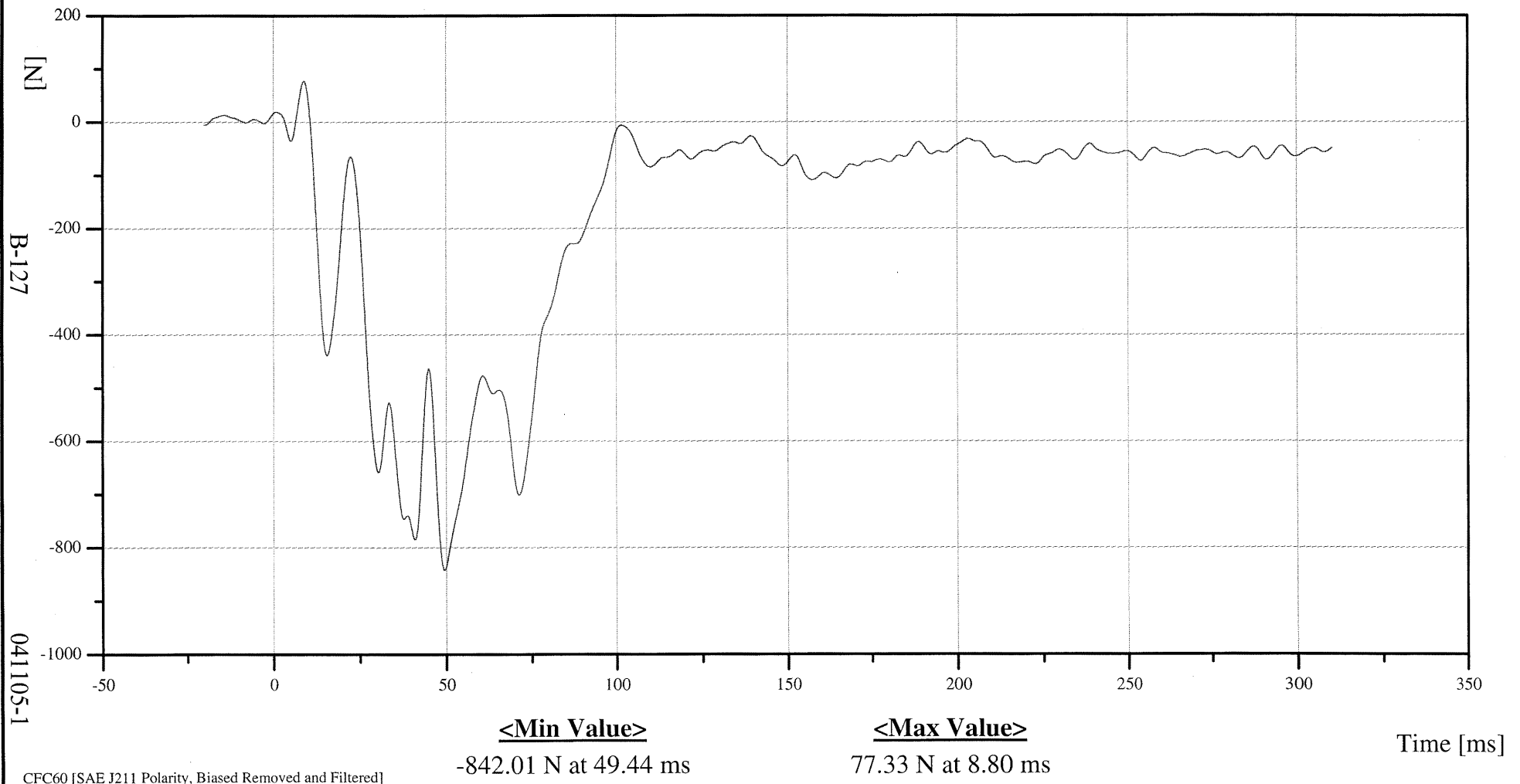
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0804





Transportation Research Center, Inc.

ROW 8 COLUMN 5

Date: 11/05/2004

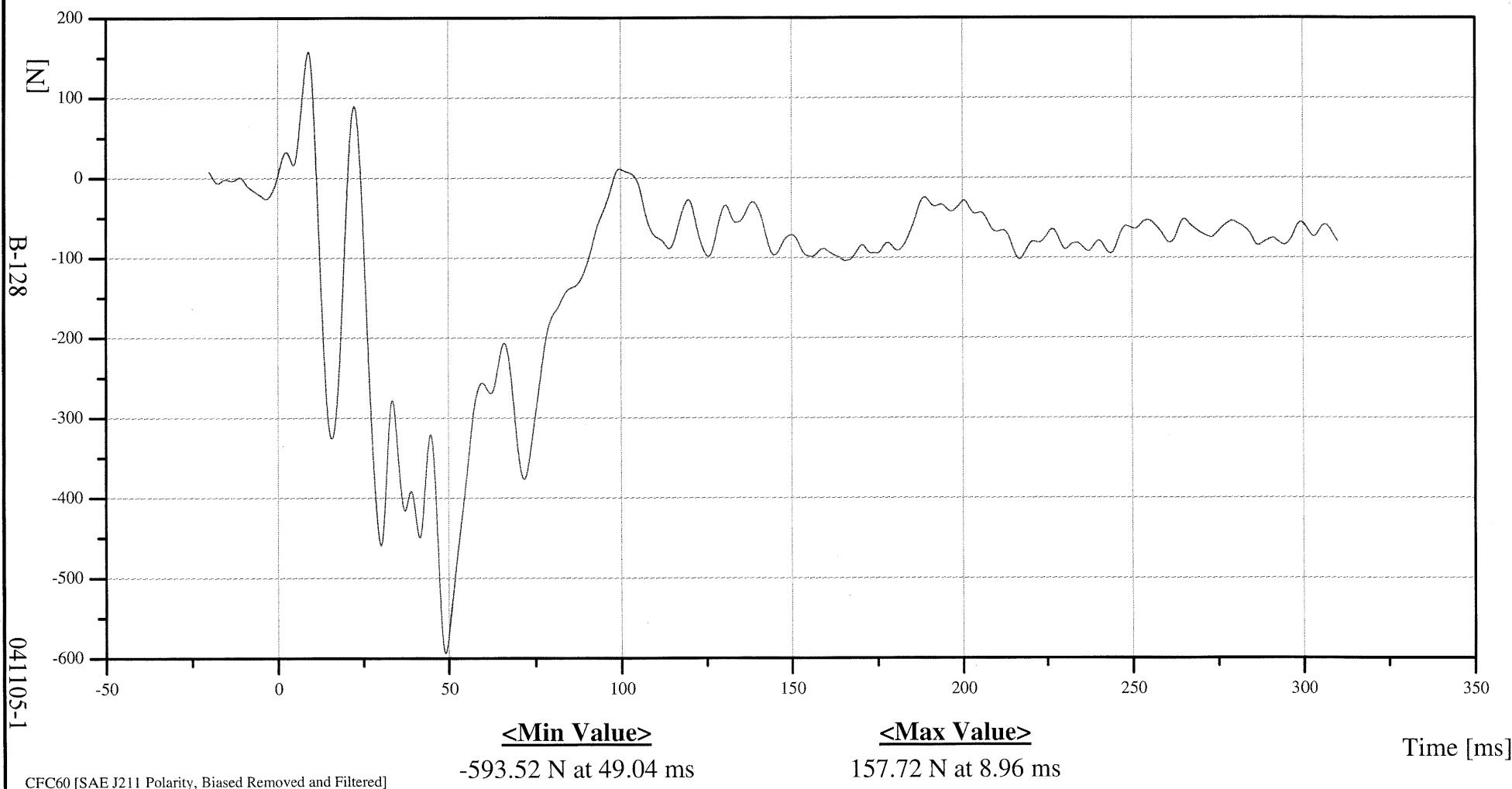
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0805





Transportation Research Center, Inc.

ROW 8 COLUMN 6

Date: 11/05/2004

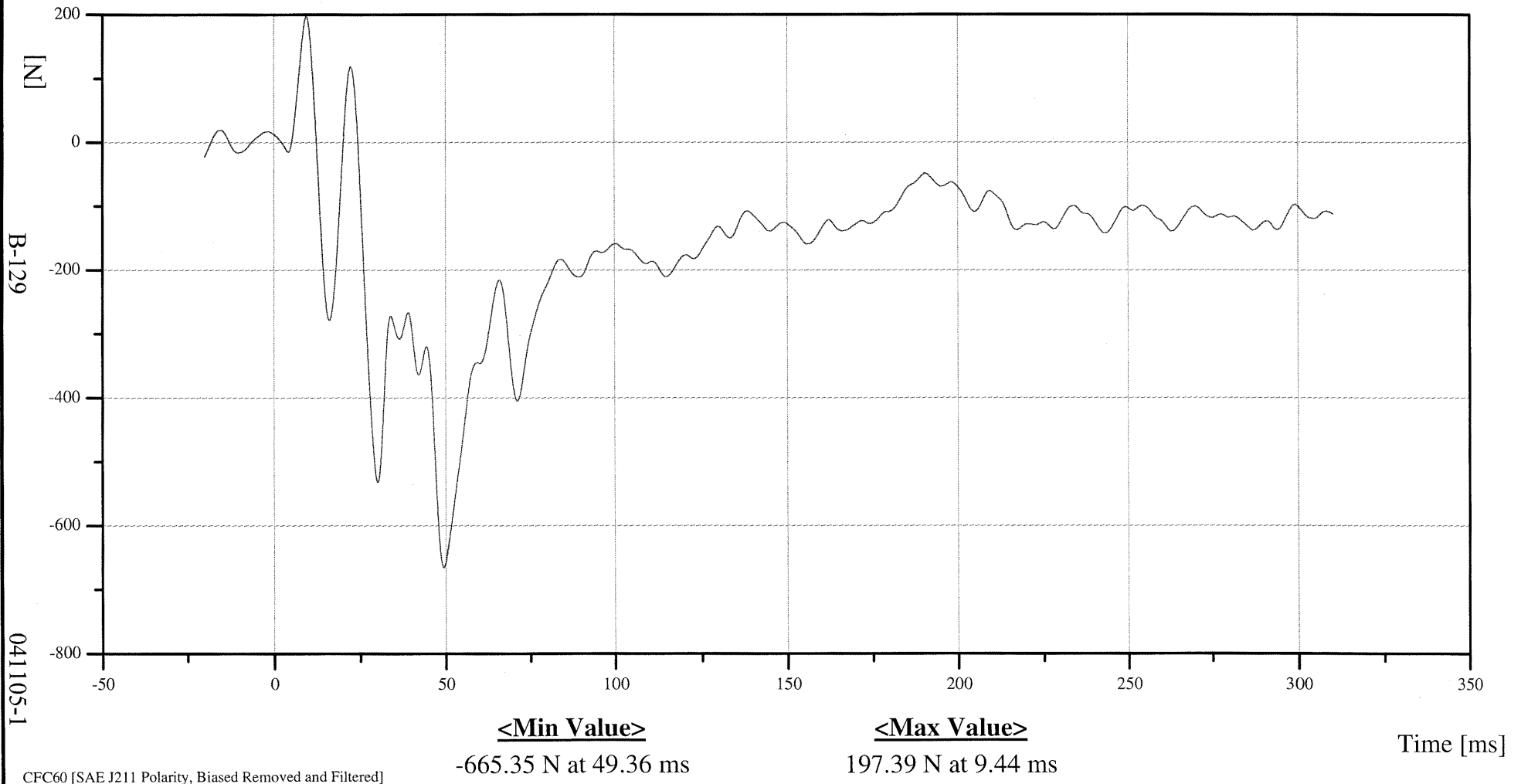
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0806





Transportation Research Center, Inc.

ROW 8 COLUMN 7

Date: 11/05/2004

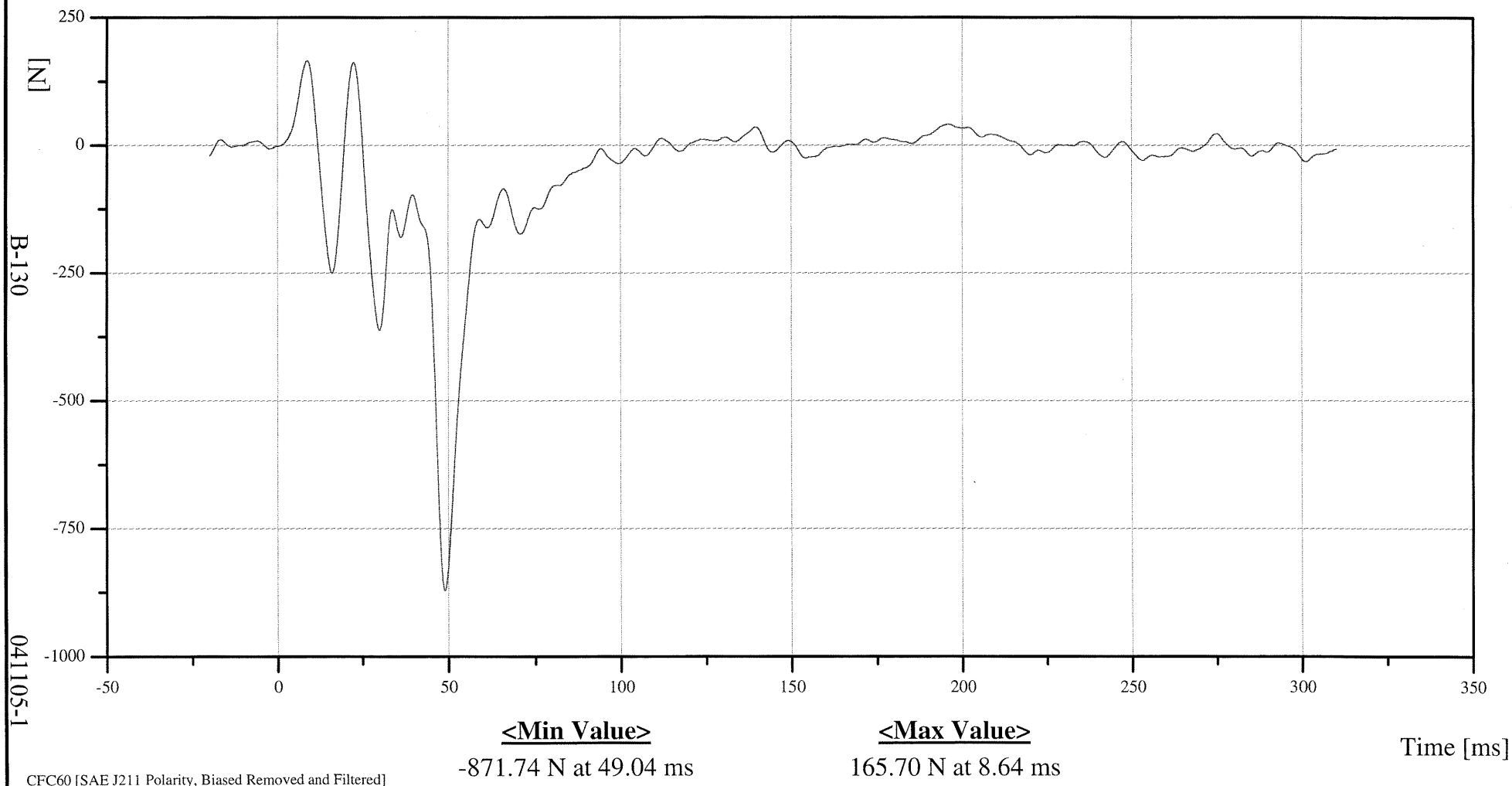
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0807





Transportation Research Center, Inc.

ROW 8 COLUMN 8

Date: 11/05/2004

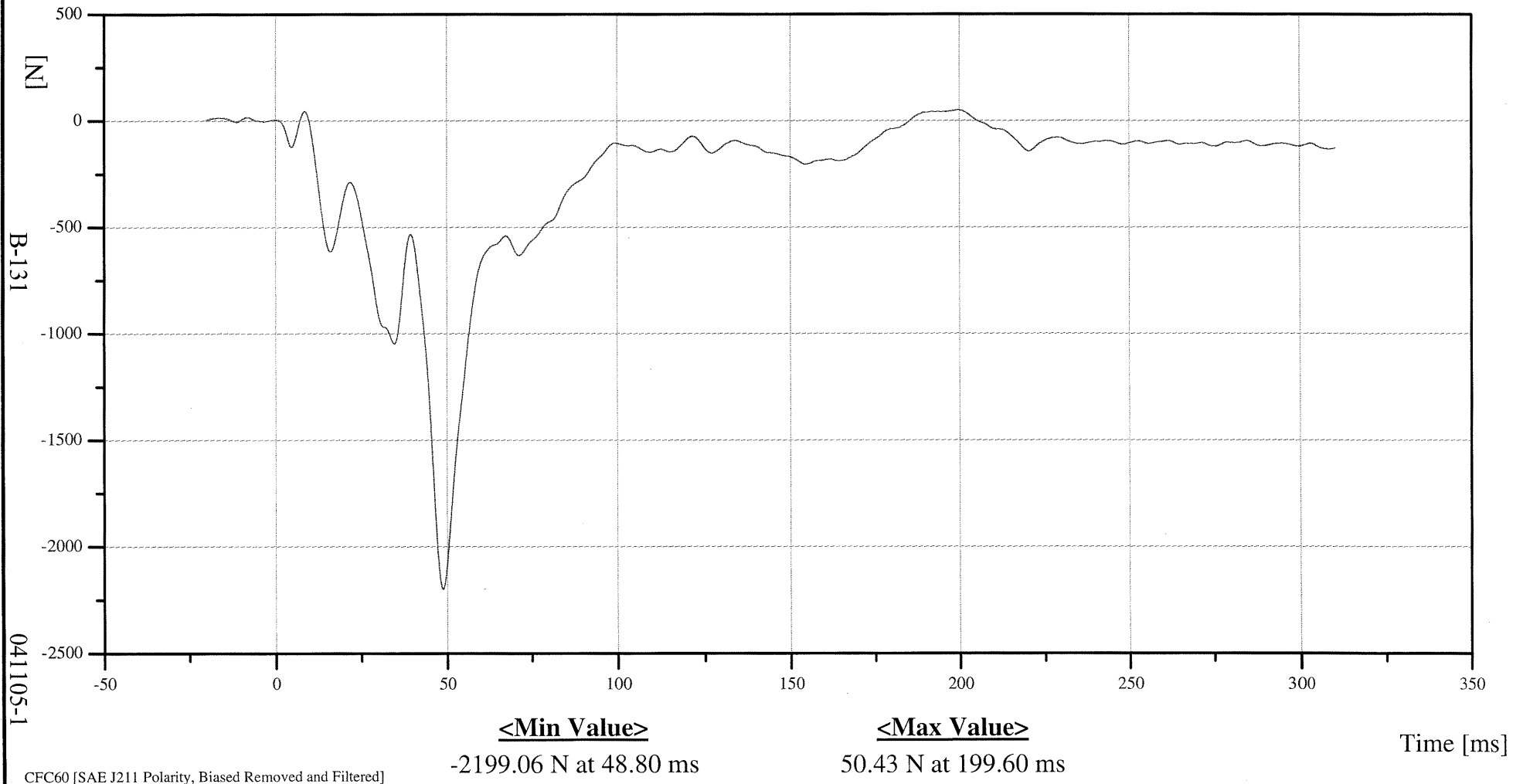
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0808





Transportation Research Center, Inc.

ROW 8 COLUMN 9

Date: 11/05/2004

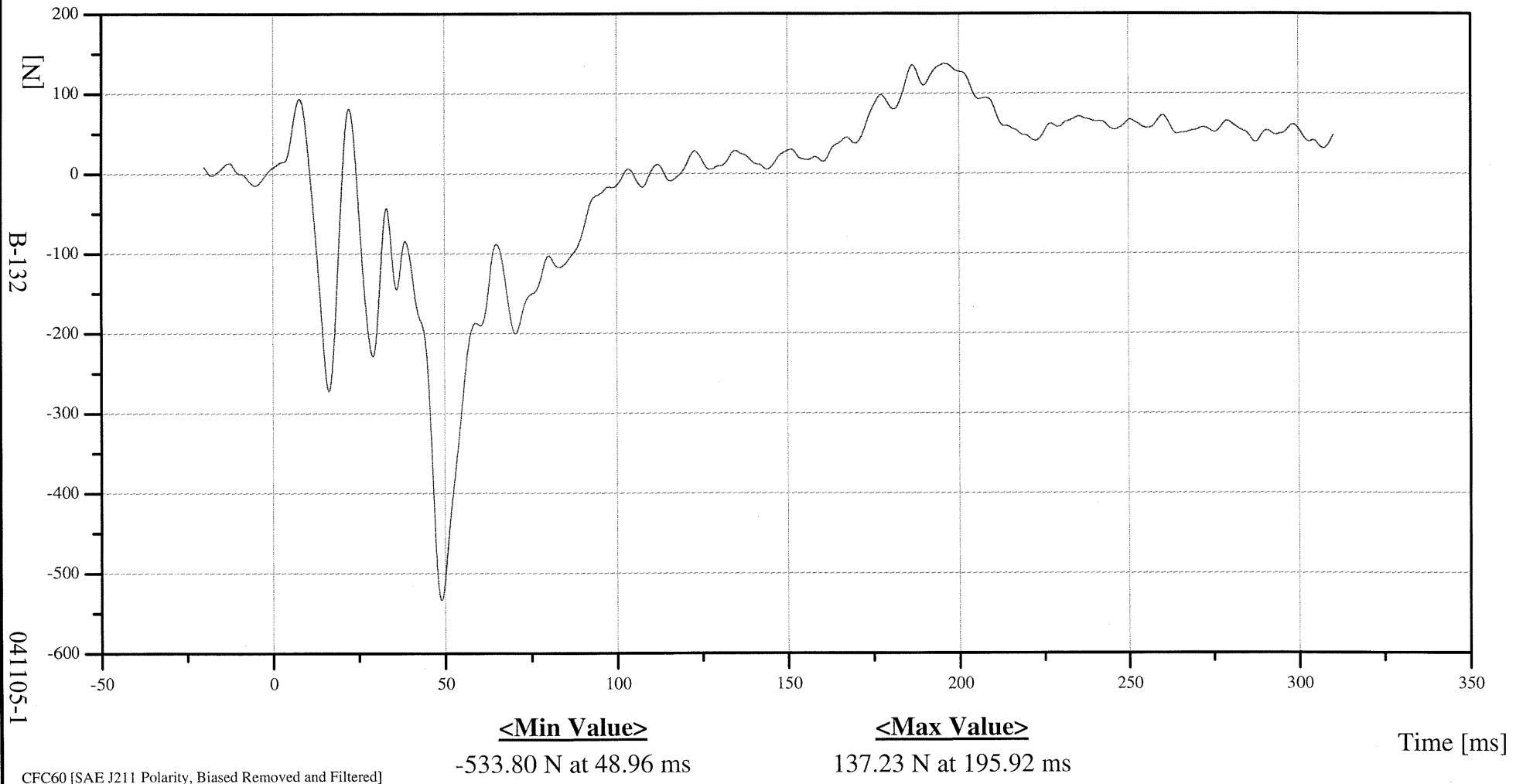
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0809





Transportation Research Center, Inc.

ROW 8 COLUMN 10

Date: 11/05/2004

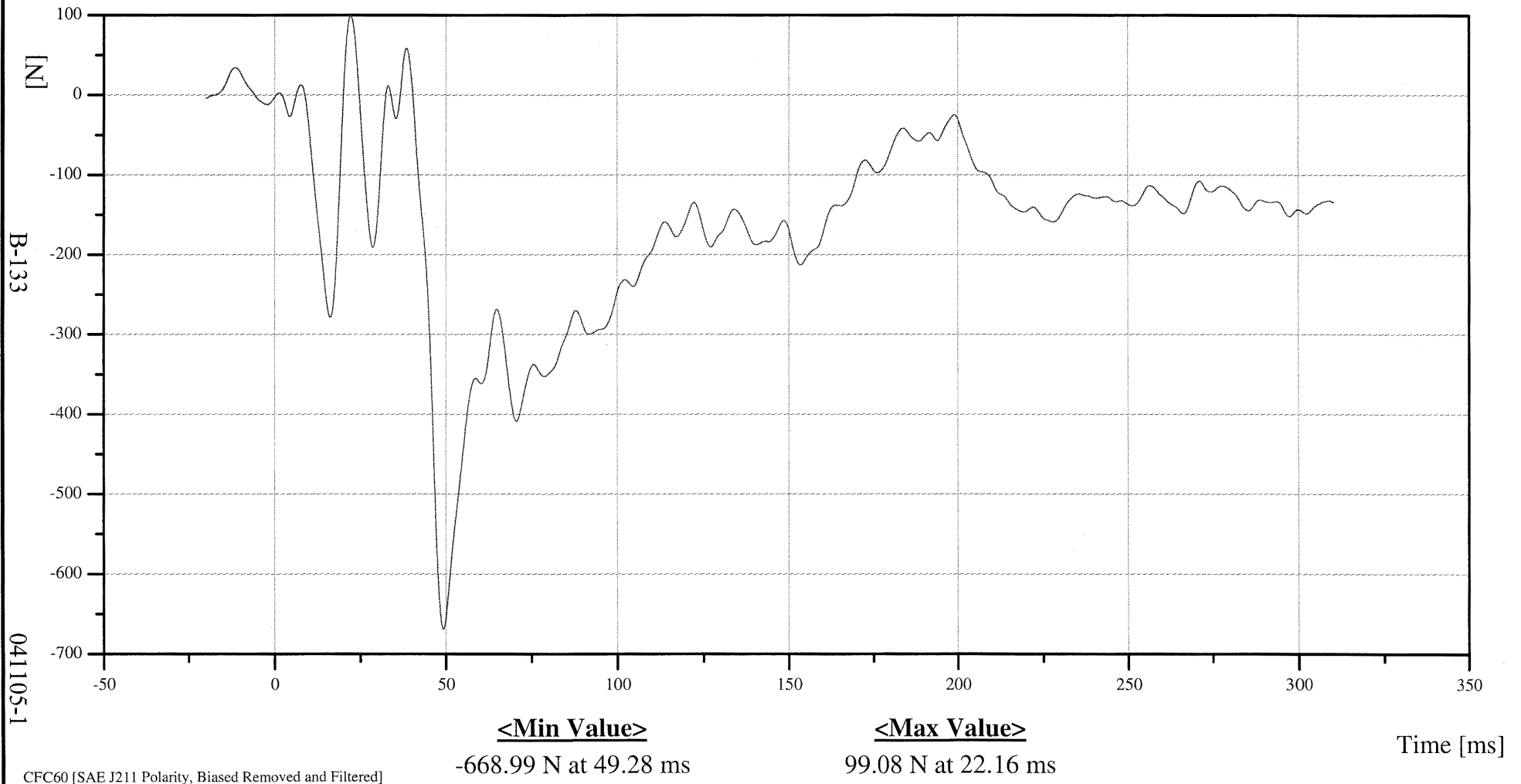
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0810





Transportation Research Center, Inc.

ROW 8 COLUMN 11

Date: 11/05/2004

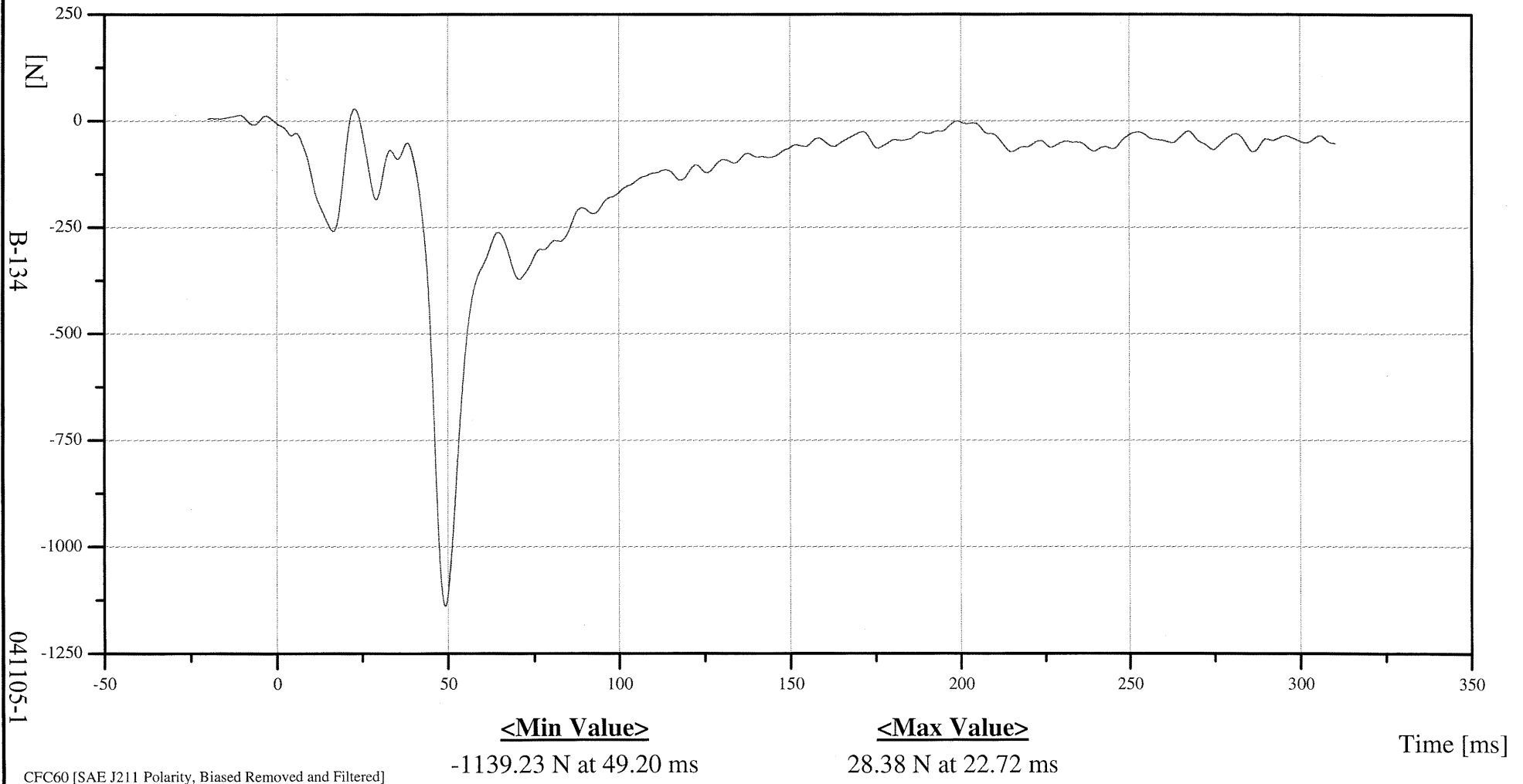
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0811





Transportation Research Center, Inc.

ROW 8 COLUMN 12

Date: 11/05/2004

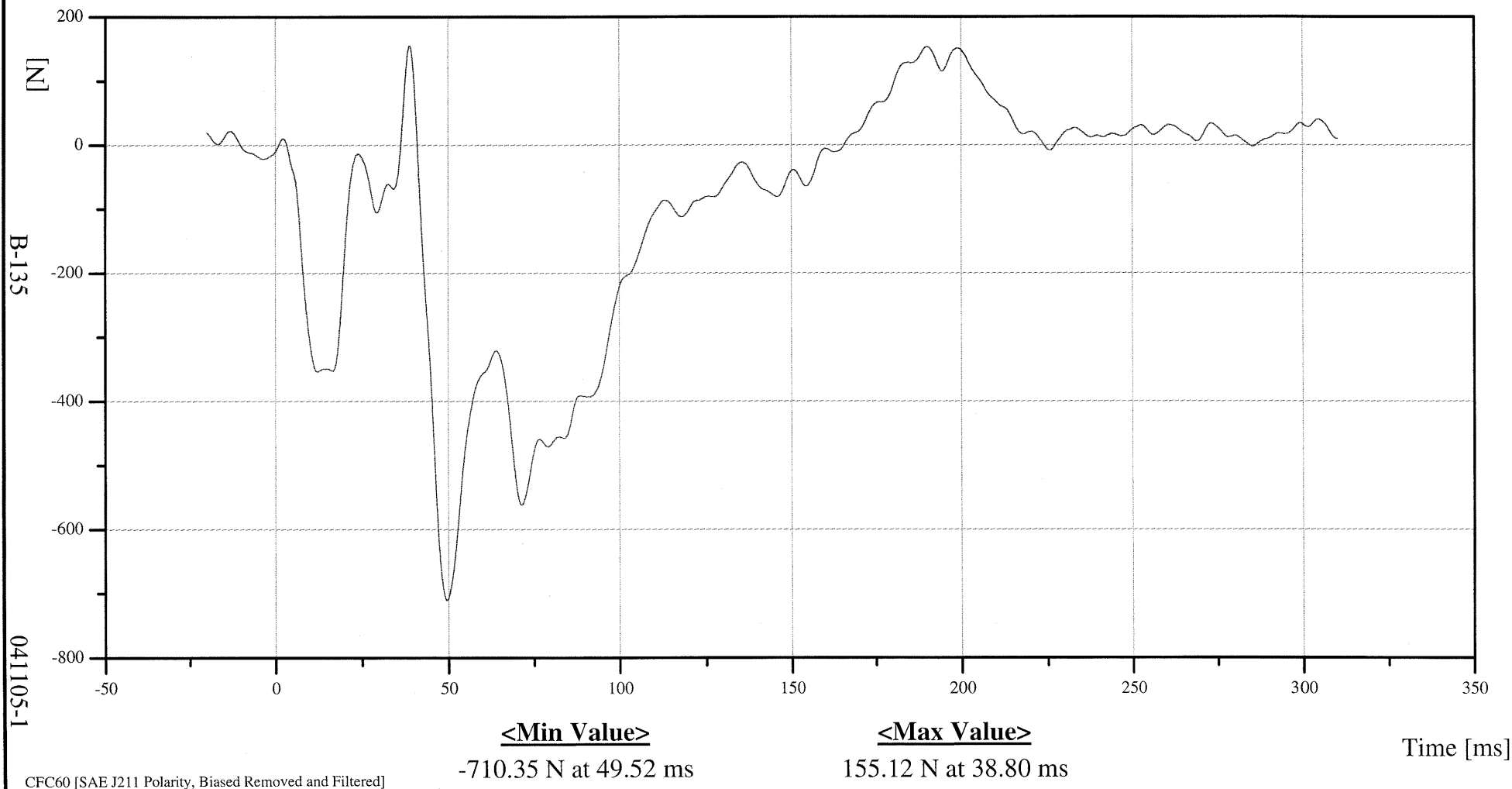
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0812





Transportation Research Center, Inc.

ROW 8 COLUMN 13

Date: 11/05/2004

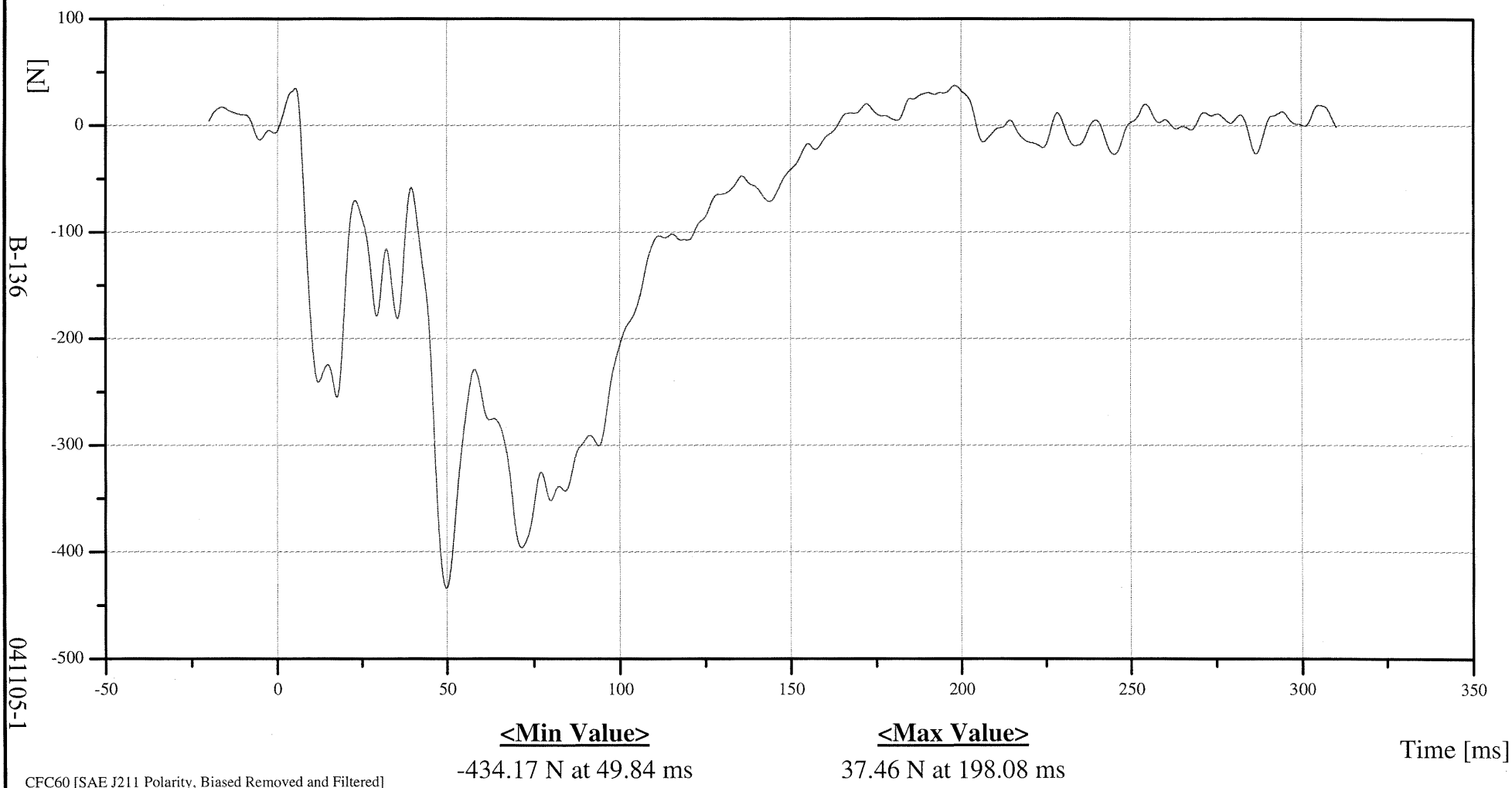
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0813





Transportation Research Center, Inc.

ROW 8 COLUMN 14

Date: 11/05/2004

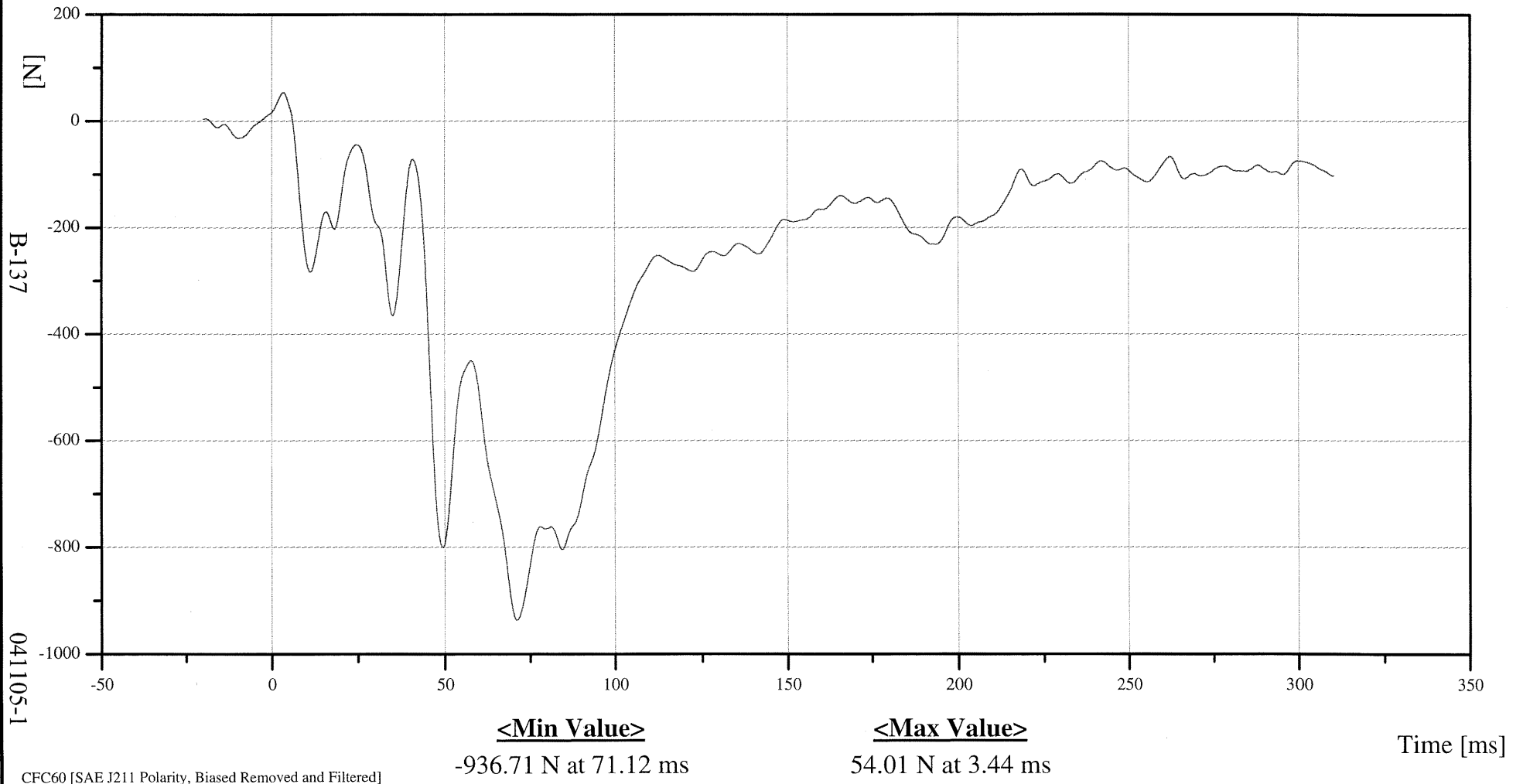
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0814





Transportation Research Center, Inc.

ROW 8 COLUMN 15

Date: 11/05/2004

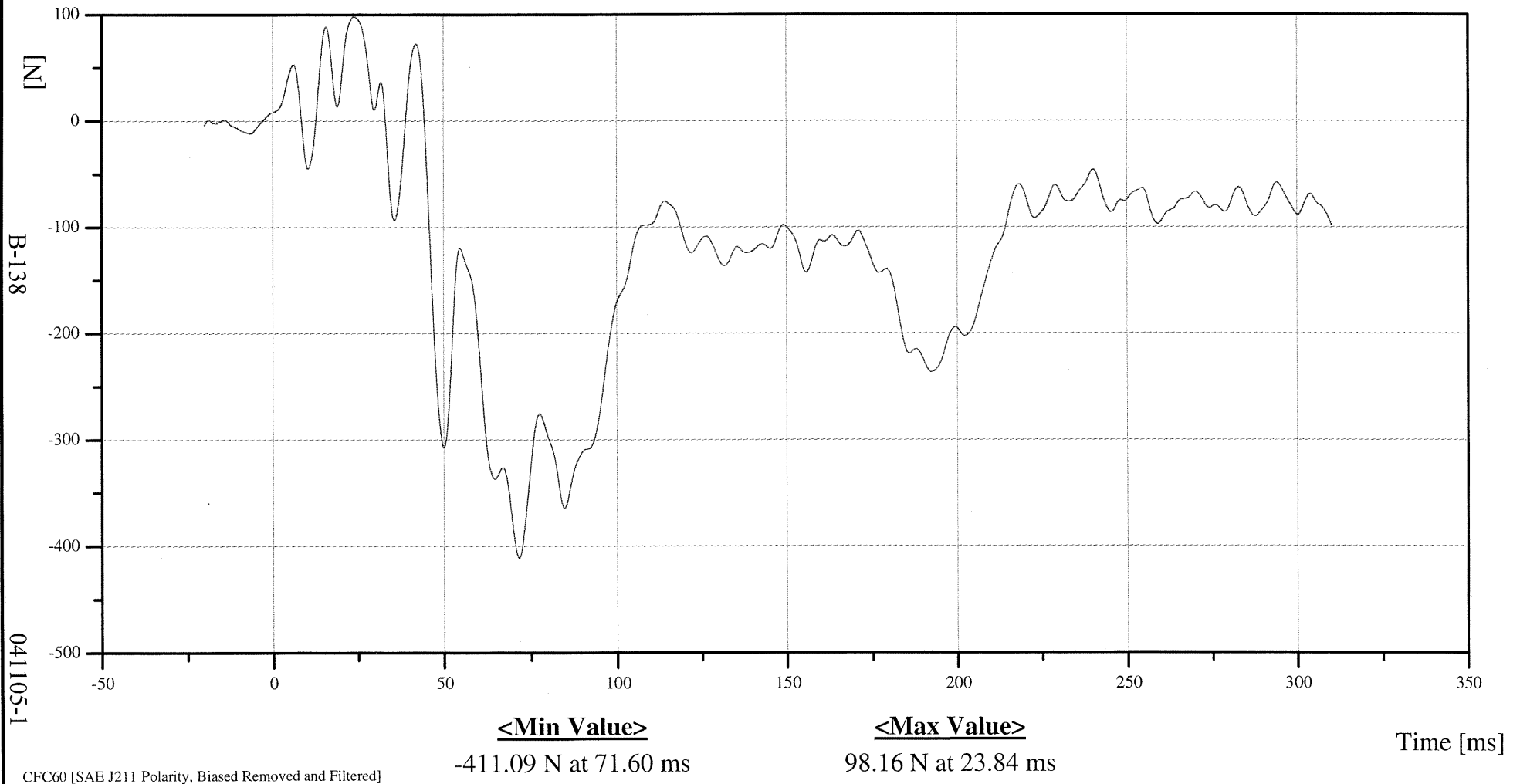
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0815





Transportation Research Center, Inc.

ROW 8 COLUMN 16

Date: 11/05/2004

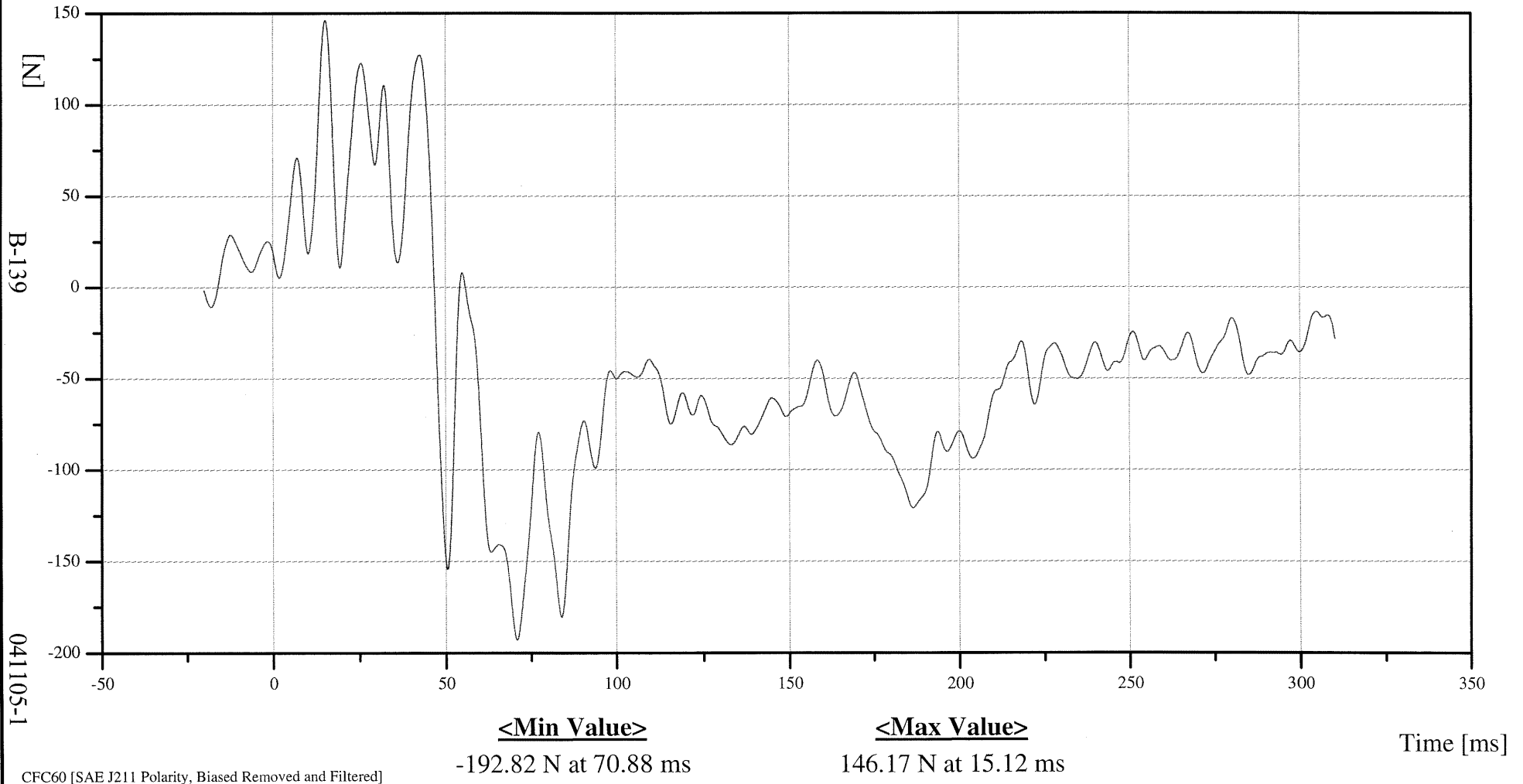
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0816





Transportation Research Center, Inc.

ROW 9 COLUMN 6

Date: 11/05/2004

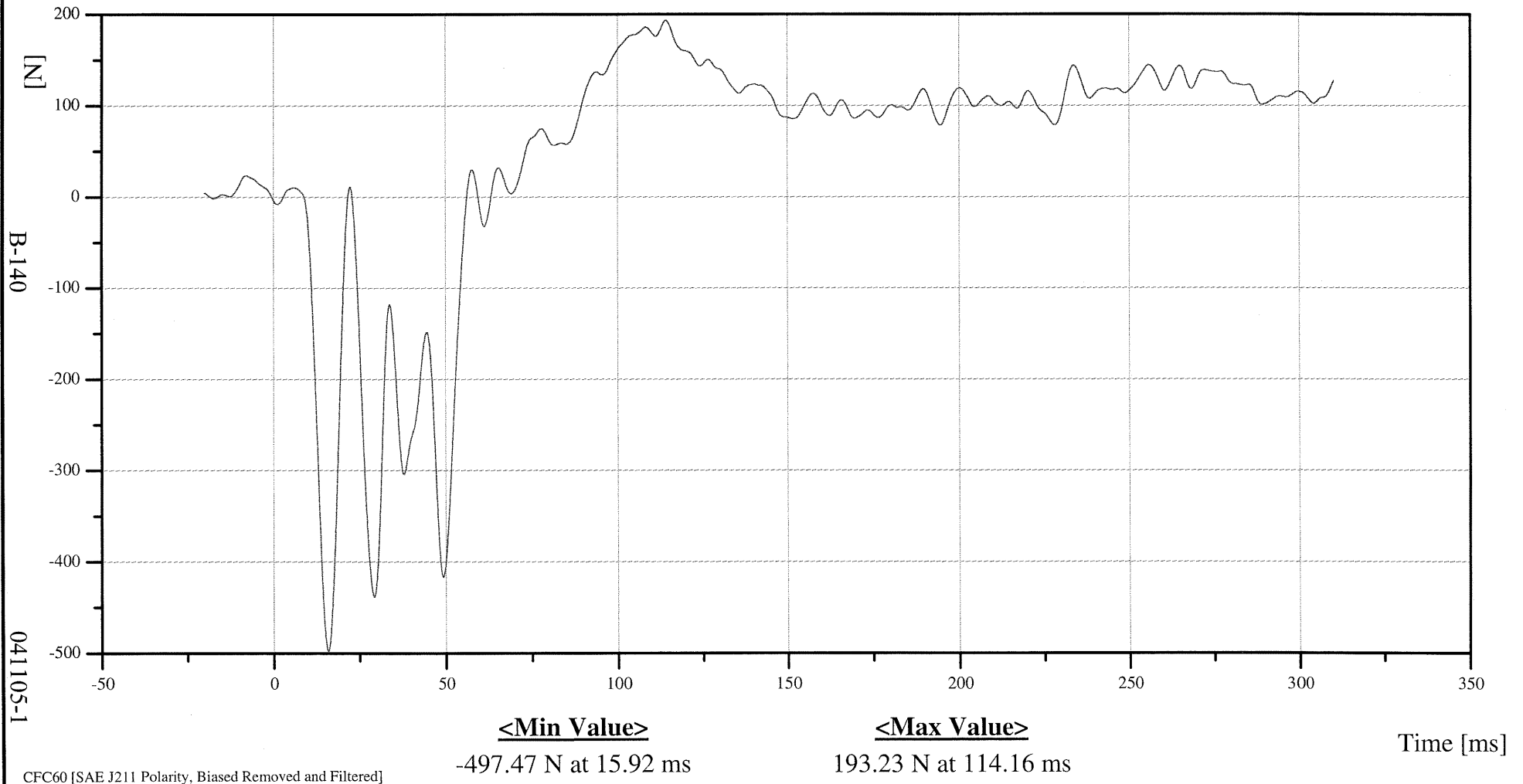
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0906





Transportation Research Center, Inc.

ROW 9 COLUMN 7

Date: 11/05/2004

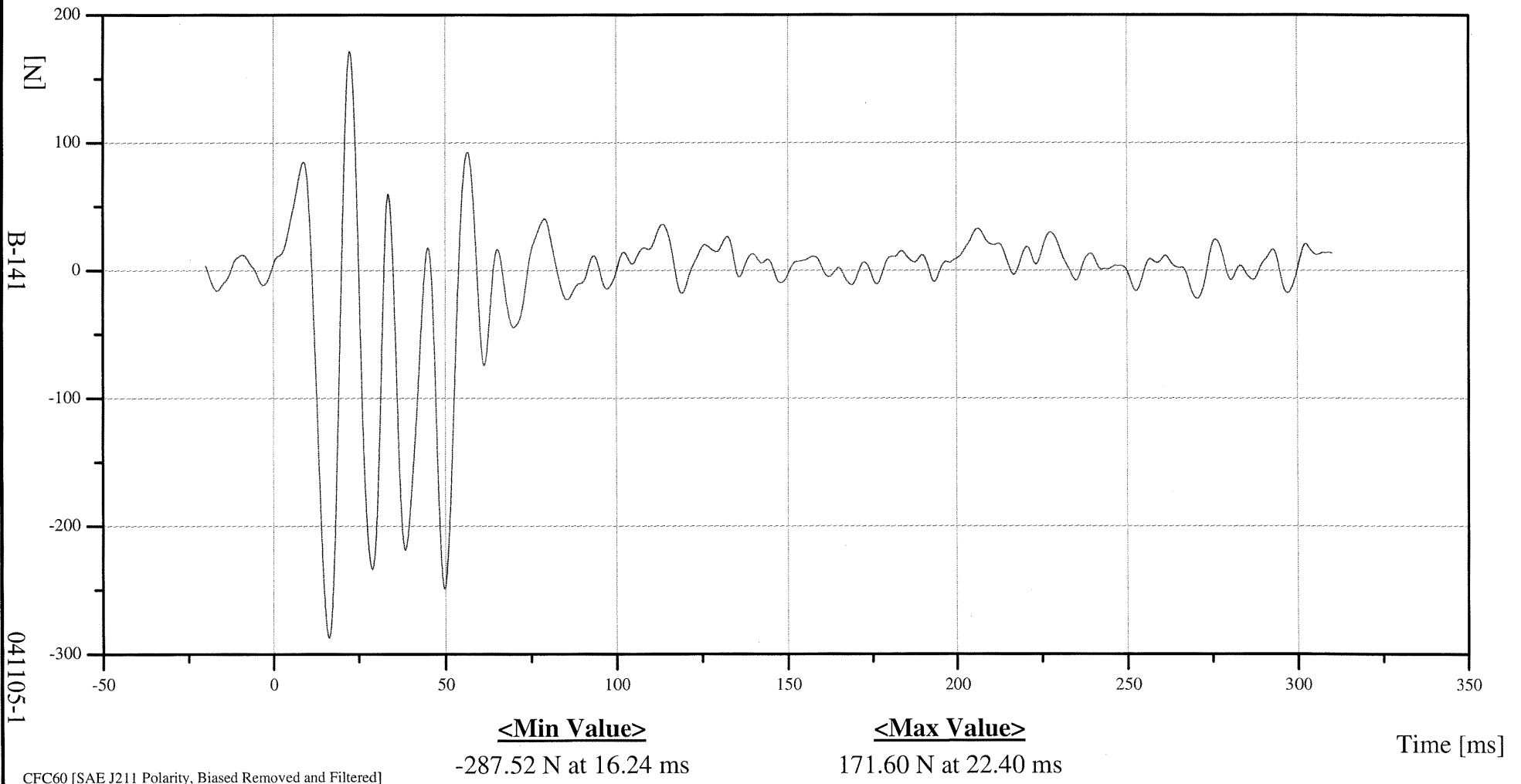
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0907





Transportation Research Center, Inc.

ROW 9 COLUMN 8

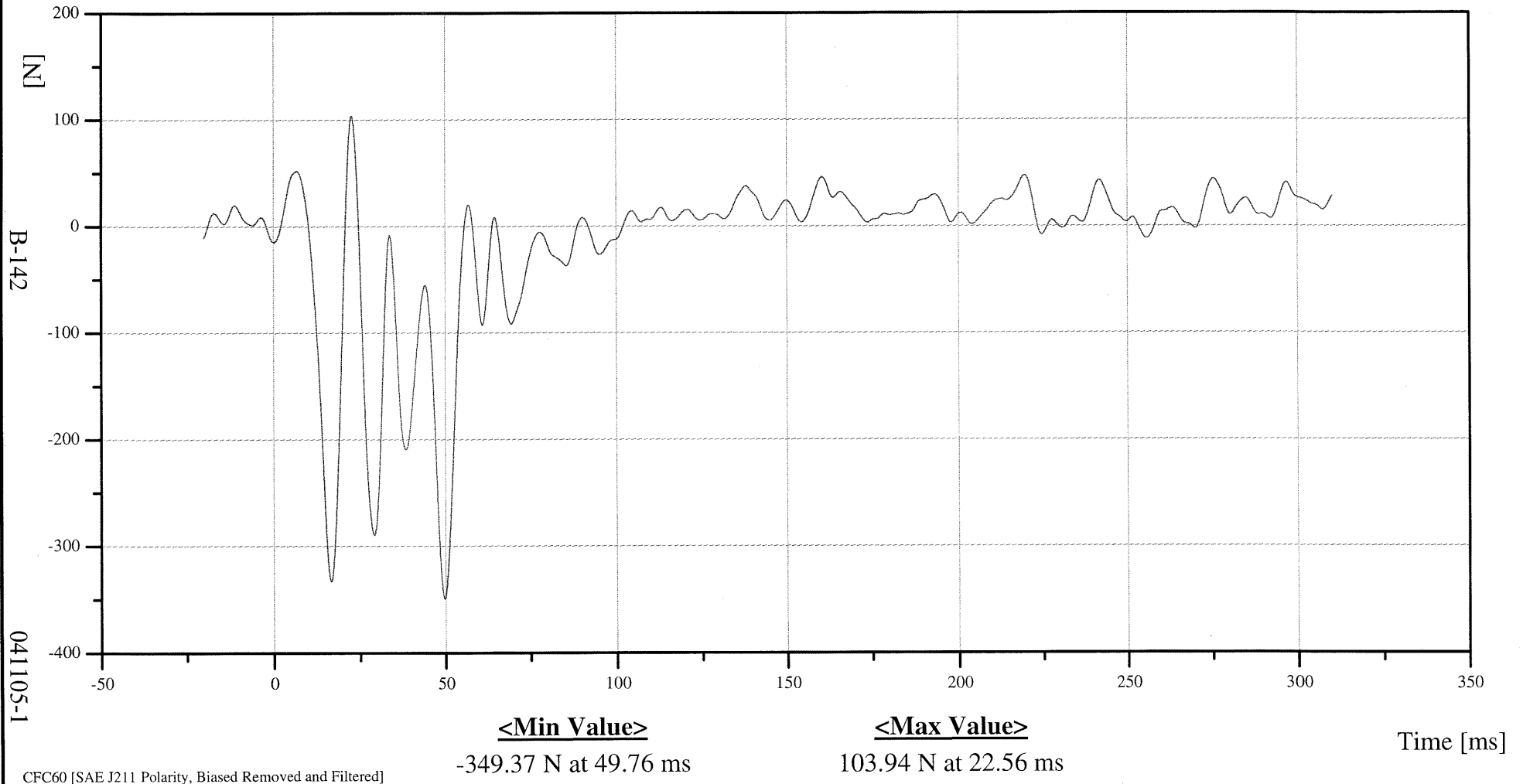
Date: 11/05/2004
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0908





Transportation Research Center, Inc.

ROW 9 COLUMN 9

Date: 11/05/2004

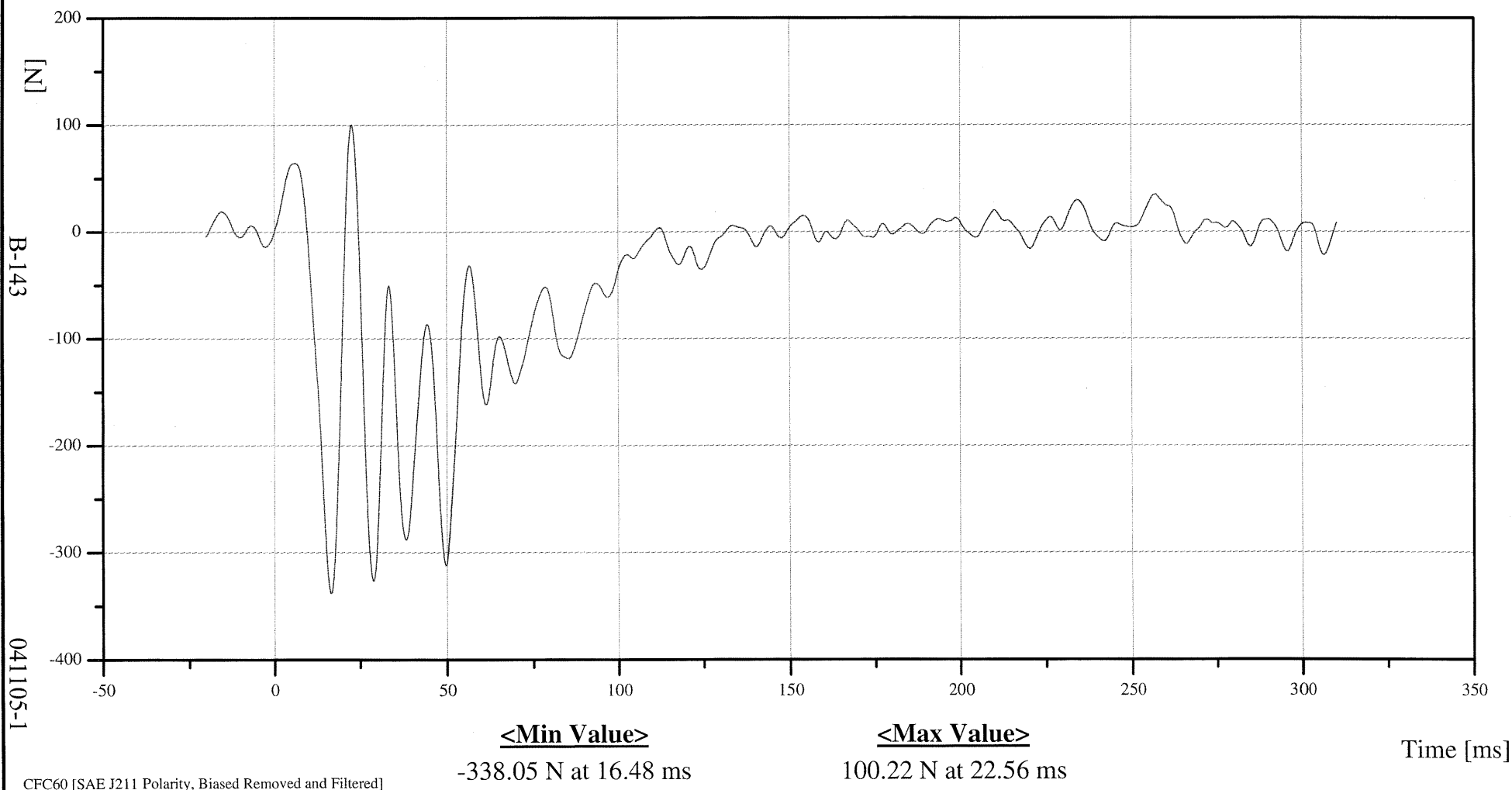
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0909





Transportation Research Center, Inc.

ROW 9 COLUMN 10

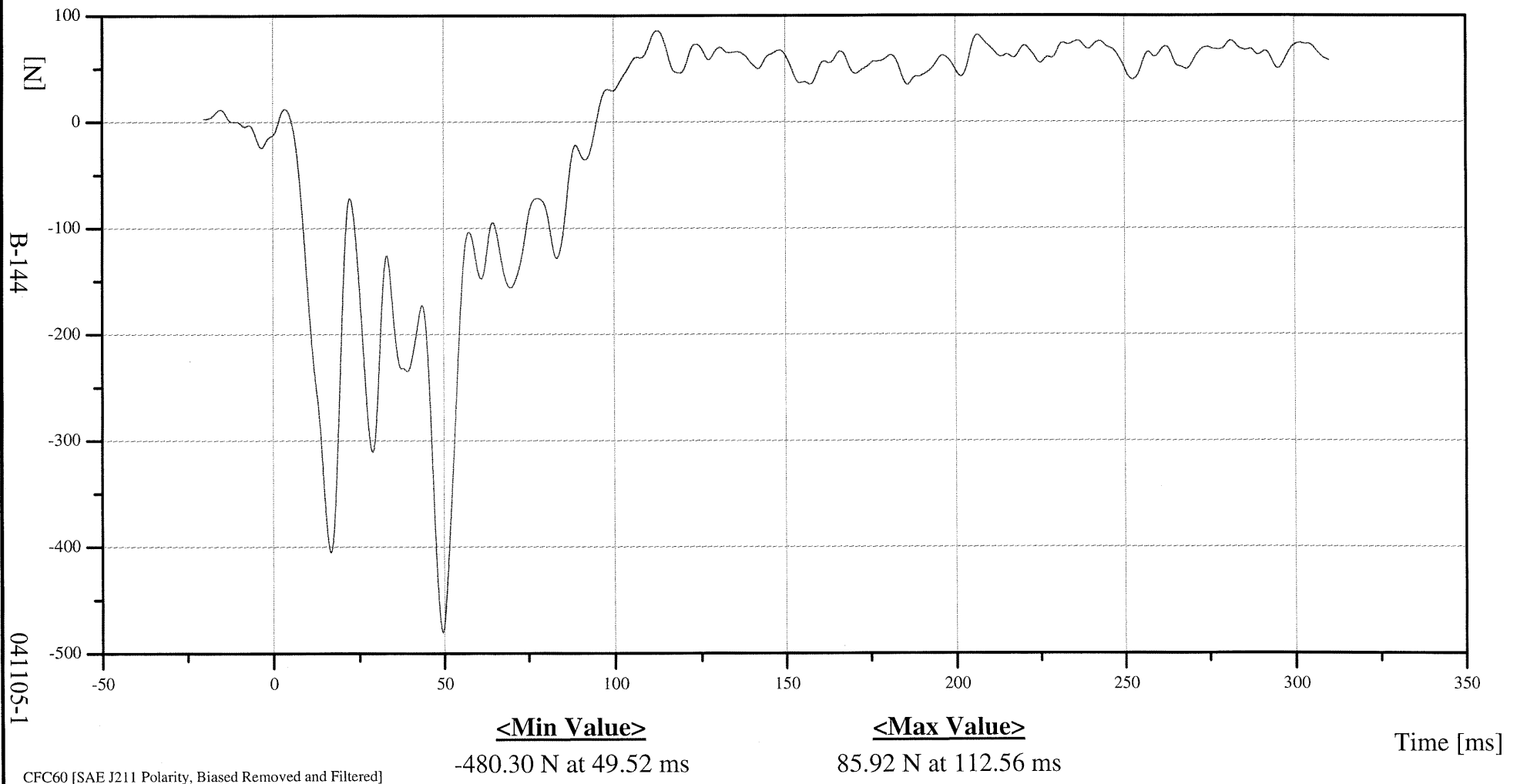
Date: 11/05/2004
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0910





Transportation Research Center, Inc.

ROW 9 COLUMN 11

Date: 11/05/2004

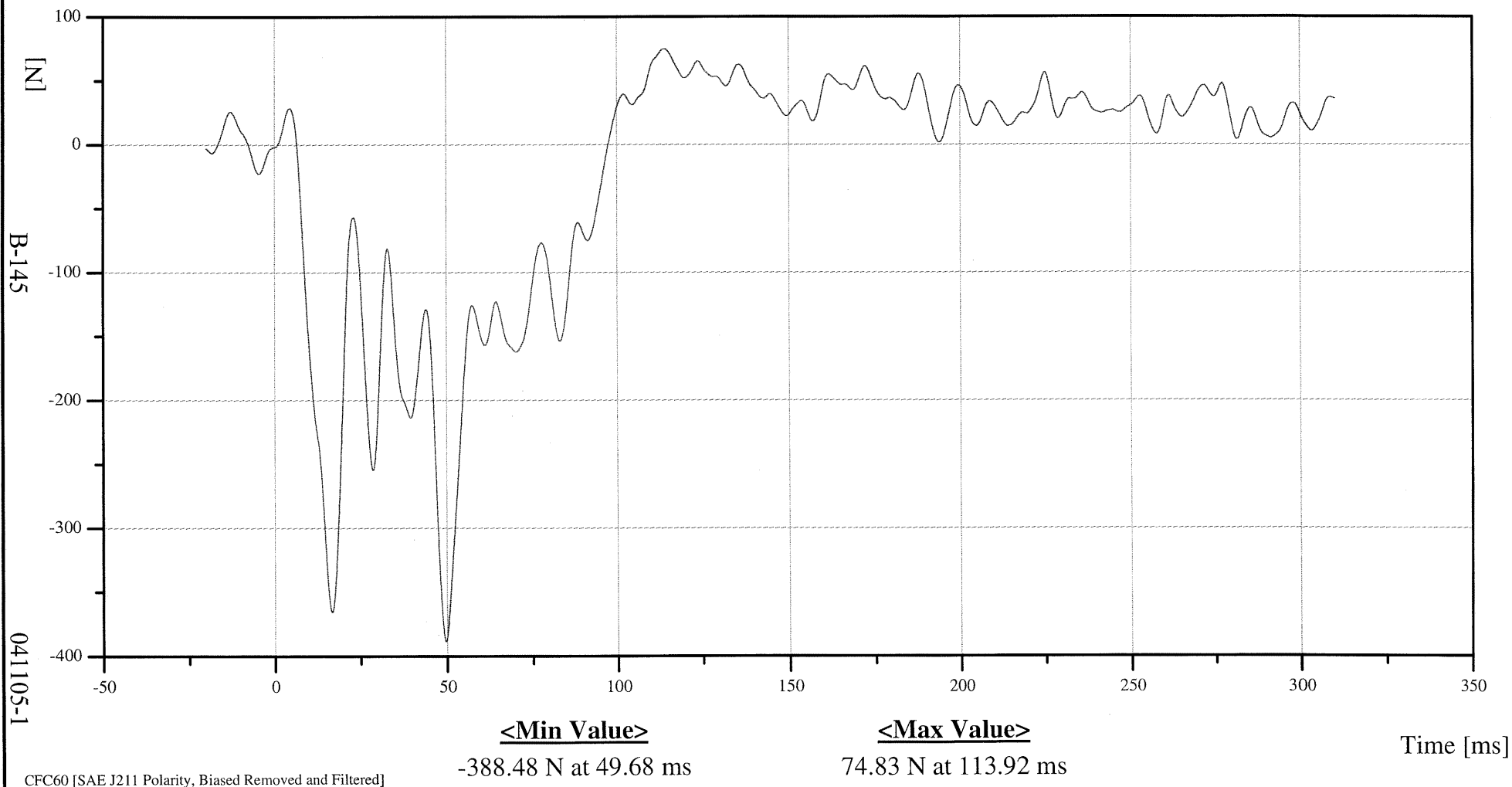
Time: 09:33:53

Test Lab: CTF

Customer: VRTC

Test Number: 041105-1

LC0911



Appendix C

Miscellaneous Test Information

Channel Report

11/5/2004 7:06:12 AM

Name of Test		System		MINIDAU		Name of DAU		DAU6			
Chan.#	Sensor #	Mnemonic	Description	Dir.	Range	Pol.	Cal.	Group	Mfg.	Model	
6001	P33592	VCGXG1	Vehicle CG X-axis accel	FWD	1020.0454	g	+	7/28/2004	OK -1	Endevco	7264C-2K-2-180
6002	P29629	VCGYG1	Vehicle CG Y-axis accel	LT	988.94085	g	-	8/24/2004	OK -1	Endevco	7264C-2K-2-180
6003	P33069	VCGZG1	Vehicle CG Z-axis accel	UP	998.10204	g	-	8/24/2004	OK -1	Endevco	7264C-2K-2-180
6004	P37753	RDKXG1	Vehicle rear deck X-axis accel	FWD	1013.2778	g	+	10/12/2004	OK -1	Endevco	7264C-2K-2-180
6005	P33877	RDKYG1	Vehicle rear deck Y-axis accel	LT	1014.1023	g	-	9/30/2004	OK -1	Endevco	7264C-2K-2-180
6006	P23186	RDKZG1	Vehicle rear deck Z-axis accel	DN	987.01915	g	+	9/30/2004	OK -1	Endevco	7264C-2K-2-180
6007	ABFire1	DABETA	Driver airbag primary	IP12	5.12	V	+	4/19/2004	OK -1	FLUKE	Y8101A
6008	ABFire2	PABETA	Passenger airbag primary	IP25	5.12	V	+	4/19/2004	OK -1	FLUKE	Y8101A

Channel Report

11/5/2004 7:06:12 AM

Name of Test 041105-1

System MINIDAU

Name of DAU DAUB

Chan.#	Sensor #	Mnemonic	Description	Dir.	Range	Pol.	Cal.	Group	Mfg.	Model
0001	398390053	LC0101	ROW 1 COLUMN 1		500056.15	N	- 12/10/2003	---	VRTC	KYOWA F99-1875
0003	398390008	LC0102	ROW 1 COLUMN 2		500176.82	N	- 12/10/2003	---	VRTC	KYOWA F99-1875
0004	398390028	LC0103	ROW 1 COLUMN 3		499943.36	N	- 12/10/2003	---	VRTC	KYOWA F99-1875
0005	398390038	LC0104	ROW 1 COLUMN 4		500056.15	N	- 12/10/2003	---	VRTC	KYOWA F99-1875
0006	398390003	LC0105	ROW 1 COLUMN 5		500005.61	N	- 12/10/2003	---	VRTC	KYOWA F99-1875
0007	398390014	LC0106	ROW 1 COLUMN 6		499994.14	N	- 12/10/2003	---	VRTC	KYOWA F99-1875
0008	398390024	LC0107	ROW 1 COLUMN 7		499692.08	N	- 12/10/2003	---	VRTC	KYOWA F99-1875
0009	398390006	LC0108	ROW 1 COLUMN 8		499822.32	N	- 12/10/2003	---	VRTC	KYOWA F99-1875
0010	398390132	LC0109	ROW 1 COLUMN 9		499750.85	N	- 12/10/2003	---	VRTC	KYOWA F99-1875
0011	398390023	LC0110	ROW 1 COLUMN 10		499692.08	N	- 12/10/2003	---	VRTC	KYOWA F99-1875
0012	398390033	LC0111	ROW 1 COLUMN 11		499933.11	N	- 12/10/2003	---	VRTC	KYOWA F99-1875
0013	398390019	LC0112	ROW 1 COLUMN 12		500122.10	N	- 12/10/2003	---	VRTC	KYOWA F99-1875
0014	398390113	LC0113	ROW 1 COLUMN 13		500176.82	N	- 12/10/2003	---	VRTC	KYOWA F99-1875
0015	398390098	LC0114	ROW 1 COLUMN 14		500125.03	N	- 12/10/2003	---	VRTC	KYOWA F99-1875
0016	398390104	LC0115	ROW 1 COLUMN 15		499816.96	N	- 12/10/2003	---	VRTC	KYOWA F99-1875
0017	398390088	LC0116	ROW 1 COLUMN 16		499750.85	N	- 12/10/2003	---	VRTC	KYOWA F99-1875
0018	398390120	LC0201	ROW 2 COLUMN 1		499822.32	N	- 12/10/2003	---	VRTC	KYOWA F99-1875
0019	398390063	LC0202	ROW 2 COLUMN 2		500252.81	N	- 12/10/2003	---	VRTC	KYOWA F99-1875
0020	398390124	LC0203	ROW 2 COLUMN 3		500176.82	N	- 12/10/2003	---	VRTC	KYOWA F99-1875
0021	398390093	LC0204	ROW 2 COLUMN 4		499822.32	N	- 12/10/2003	---	VRTC	KYOWA F99-1875
0022	398390046	LC0205	ROW 2 COLUMN 5		500125.03	N	- 12/10/2003	---	VRTC	KYOWA F99-1875
0023	398390122	LC0206	ROW 2 COLUMN 6		500176.82	N	- 12/10/2003	---	VRTC	KYOWA F99-1875
0024	398390002	LC0207	ROW 2 COLUMN 7		500176.82	N	- 12/10/2003	---	VRTC	KYOWA F99-1875
0025	398390060	LC0208	ROW 2 COLUMN 8		500298.02	N	- 12/10/2003	---	VRTC	KYOWA F99-1875
0027	398390020	LC0210	ROW 2 COLUMN 10		499692.08	N	- 12/10/2003	---	VRTC	KYOWA F99-1875
0028	398390069	LC0211	ROW 2 COLUMN 11		500240.10	N	- 12/10/2003	---	VRTC	KYOWA F99-1875
0029	398390041	LC0212	ROW 2 COLUMN 12		499816.96	N	- 12/10/2003	---	VRTC	KYOWA F99-1875
0030	398390112	LC0213	ROW 2 COLUMN 13		499994.14	N	- 12/10/2003	---	VRTC	KYOWA F99-1875
0031	398390074	LC0214	ROW 2 COLUMN 14		500125.03	N	- 12/10/2003	---	VRTC	KYOWA F99-1875
0032	398390128	LC0215	ROW 2 COLUMN 15		500176.82	N	- 12/10/2003	---	VRTC	KYOWA F99-1875

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041105-1

Channel Report

11/5/2004 7:06:13 AM

Name of Test 041105-1

System MINIDAU

Name of DAU DAUC

Chan.#	Sensor #	Mnemonic	Description	Dir.	Range	Pol.	Cal.	Group	Mfg.	Model
0001	398390075	LC0216	ROW 2 COLUMN 16		500125.03 N	-	12/10/2003	---	VRTC	KYOWA F99-1875
0002	398390125	LC0301	ROW 3 COLUMN 1		500176.82 N	-	12/10/2003	---	VRTC	KYOWA F99-1875
0003	398390004	LC0302	ROW 3 COLUMN 2		500298.02 N	-	12/10/2003	---	VRTC	KYOWA F99-1875
0004	398390051	LC0303	ROW 3 COLUMN 3		500298.02 N	-	12/10/2003	---	VRTC	KYOWA F99-1875
0005	398390042	LC0304	ROW 3 COLUMN 4		499816.96 N	-	12/10/2003	---	VRTC	KYOWA F99-1875
0006	398390011	LC0305	ROW 3 COLUMN 5		500057.13 N	-	12/10/2003	---	VRTC	KYOWA F99-1875
0007	398390117	LC0306	ROW 3 COLUMN 6		500298.02 N	-	12/10/2003	---	VRTC	KYOWA F99-1875
0008	398390066	LC0307	ROW 3 COLUMN 7		499692.08 N	-	12/10/2003	---	VRTC	KYOWA F99-1875
0009	398390045	LC0308	ROW 3 COLUMN 8		499943.36 N	-	12/10/2003	---	VRTC	KYOWA F99-1875
0010	398390077	LC0309	ROW 3 COLUMN 9		500056.15 N	-	12/10/2003	---	VRTC	KYOWA F99-1875
0011	398390029	LC0310	ROW 3 COLUMN 10		499750.85 N	-	12/10/2003	---	VRTC	KYOWA F99-1875
0012	398390100	LC0311	ROW 3 COLUMN 11		499874.29 N	-	12/10/2003	---	VRTC	KYOWA F99-1875
0013	398390102	LC0312	ROW 3 COLUMN 12		500056.15 N	-	12/10/2003	---	VRTC	KYOWA F99-1875
0014	398390091	LC0313	ROW 3 COLUMN 13		500176.82 N	-	12/10/2003	---	VRTC	KYOWA F99-1875
0015	398390012	LC0314	ROW 3 COLUMN 14		499943.36 N	-	12/10/2003	---	VRTC	KYOWA F99-1875
0016	398390017	LC0315	ROW 3 COLUMN 15		500252.81 N	-	12/10/2003	---	VRTC	KYOWA F99-1875
0017	398390081	LC0316	ROW 3 COLUMN 16		500180.72 N	-	12/10/2003	---	VRTC	KYOWA F99-1875
0018	398390040	LC0401	ROW 4 COLUMN 1		499692.08 N	-	12/10/2003	---	VRTC	KYOWA F99-1875
0019	398390007	LC0402	ROW 4 COLUMN 2		499933.11 N	-	12/10/2003	---	VRTC	KYOWA F99-1875
0020	398390071	LC0403	ROW 4 COLUMN 3		500056.15 N	-	12/10/2003	---	VRTC	KYOWA F99-1875
0021	398390094	LC0404	ROW 4 COLUMN 4		499994.14 N	-	12/10/2003	---	VRTC	KYOWA F99-1875
0022	398390067	LC0405	ROW 4 COLUMN 5		499943.36 N	-	12/10/2003	---	VRTC	KYOWA F99-1875
0023	398390086	LC0406	ROW 4 COLUMN 6		500176.82 N	-	12/10/2003	---	VRTC	KYOWA F99-1875
0024	398390118	LC0407	ROW 4 COLUMN 7		500056.15 N	-	12/10/2003	---	VRTC	KYOWA F99-1875
0025	398390101	LC0408	ROW 4 COLUMN 8		500056.15 N	-	12/10/2003	---	VRTC	KYOWA F99-1875
0026	398390073	LC0409	ROW 4 COLUMN 9		500056.15 N	-	12/10/2003	---	VRTC	KYOWA F99-1875
0027	398390047	LC0410	ROW 4 COLUMN 10		500298.02 N	-	12/10/2003	---	VRTC	KYOWA F99-1875
0028	398390099	LC0411	ROW 4 COLUMN 11		499692.08 N	-	12/10/2003	---	VRTC	KYOWA F99-1875
0029	398390080	LC0412	ROW 4 COLUMN 12		499708.66 N	-	12/10/2003	---	VRTC	KYOWA F99-1875
0030	398390097	LC0413	ROW 4 COLUMN 13		500180.72 N	-	12/10/2003	---	VRTC	KYOWA F99-1875
0031	398390048	LC0414	ROW 4 COLUMN 14		500056.15 N	-	12/10/2003	---	VRTC	KYOWA F99-1875
0032	398390061	LC0415	ROW 4 COLUMN 15		499933.11 N	-	12/10/2003	---	VRTC	KYOWA F99-1875

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041105-1

Channel Report

11/5/2004 7:06:13 AM

Name of Test 041105-1

System MINIDAU

Name of DAU DAUD

Chan.#	Sensor #	Mnemonic	Description	Dir.	Range	Pol.	Cal.	Group	Mfg.	Model
0001	398390005	LC0416	ROW 4 COLUMN 16		500240.10 N	-	12/10/2003	---	VRTC	KYOWA F99-1875
0002	398390090	LC0501	ROW 5 COLUMN 1		500240.10 N	-	12/10/2003	---	VRTC	KYOWA F99-1875
0003	398390065	LC0502	ROW 5 COLUMN 2		499692.08 N	-	12/10/2003	---	VRTC	KYOWA F99-1875
0004	398390079	LC0503	ROW 5 COLUMN 3		499816.96 N	-	12/10/2003	---	VRTC	KYOWA F99-1875
0005	398390055	LC0504	ROW 5 COLUMN 4		500180.72 N	-	12/10/2003	---	VRTC	KYOWA F99-1875
0006	398390031	LC0505	ROW 5 COLUMN 5		499750.85 N	-	12/10/2003	---	VRTC	KYOWA F99-1875
0007	398390054	LC0506	ROW 5 COLUMN 6		499692.08 N	-	12/10/2003	---	VRTC	KYOWA F99-1875
0008	398390050	LC0507	ROW 5 COLUMN 7		500056.15 N	-	12/10/2003	---	VRTC	KYOWA F99-1875
0009	398390089	LC0508	ROW 5 COLUMN 8		499750.85 N	-	12/10/2003	---	VRTC	KYOWA F99-1875
0010	398390130	LC0509	ROW 5 COLUMN 9		499692.08 N	-	12/10/2003	---	VRTC	KYOWA F99-1875
0011	398390082	LC0510	ROW 5 COLUMN 10		500005.61 N	-	12/10/2003	---	VRTC	KYOWA F99-1875
0012	398390083	LC0511	ROW 5 COLUMN 11		499994.14 N	-	12/10/2003	---	VRTC	KYOWA F99-1875
0013	398390123	LC0512	ROW 5 COLUMN 12		499750.85 N	-	12/10/2003	---	VRTC	KYOWA F99-1875
0014	398390032	LC0513	ROW 5 COLUMN 13		499874.29 N	-	12/10/2003	---	VRTC	KYOWA F99-1875
0015	398390121	LC0514	ROW 5 COLUMN 14		500180.72 N	-	12/10/2003	---	VRTC	KYOWA F99-1875
0016	398390009	LC0515	ROW 5 COLUMN 15		499933.11 N	-	12/10/2003	---	VRTC	KYOWA F99-1875
0017	398390037	LC0516	ROW 5 COLUMN 16		499933.11 N	-	12/10/2003	---	VRTC	KYOWA F99-1875
0018	398390036	LC0601	ROW 6 COLUMN 1		499994.14 N	-	12/10/2003	---	VRTC	KYOWA F99-1875
0019	398390052	LC0602	ROW 6 COLUMN 2		499692.08 N	-	12/10/2003	---	VRTC	KYOWA F99-1875
0020	398390010	LC0603	ROW 6 COLUMN 3		500056.15 N	-	12/10/2003	---	VRTC	KYOWA F99-1875
0021	398390034	LC0604	ROW 6 COLUMN 4		499874.29 N	-	12/10/2003	---	VRTC	KYOWA F99-1875
0022	398390026	LC0605	ROW 6 COLUMN 5		500019.53 N	-	12/10/2003	---	VRTC	KYOWA F99-1875
0023	398390022	LC0606	ROW 6 COLUMN 6		499994.14 N	-	12/10/2003	---	VRTC	KYOWA F99-1875
0024	398390030	LC0607	ROW 6 COLUMN 7		499994.14 N	-	12/10/2003	---	VRTC	KYOWA F99-1875
0025	398390016	LC0608	ROW 6 COLUMN 8		500056.15 N	-	12/10/2003	---	VRTC	KYOWA F99-1875
0026	398390035	LC0609	ROW 6 COLUMN 9		499692.08 N	-	12/10/2003	---	VRTC	KYOWA F99-1875
0027	398390092	LC0610	ROW 6 COLUMN 10		500298.02 N	-	12/10/2003	---	VRTC	KYOWA F99-1875
0028	398390043	LC0611	ROW 6 COLUMN 11		500176.82 N	-	12/10/2003	---	VRTC	KYOWA F99-1875
0029	398390076	LC0612	ROW 6 COLUMN 12		499692.08 N	-	12/10/2003	---	VRTC	KYOWA F99-1875
0030	398390001	LC0613	ROW 6 COLUMN 13		499933.11 N	-	12/10/2003	---	VRTC	KYOWA F99-1875
0031	398390087	LC0614	ROW 6 COLUMN 14		500176.82 N	-	12/10/2003	---	VRTC	KYOWA F99-1875
0032	398390096	LC0615	ROW 6 COLUMN 15		499943.36 N	-	12/10/2003	---	VRTC	KYOWA F99-1875

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041105-1

Channel Report

11/5/2004 7:06:14 AM

Name of Test 041105-1

System MINIDAU

Name of DAU DAUE

Chan.#	Sensor #	Mnemonic	Description	Dir.	Range	Pol.	Cal.	Group	Mfg.	Model
0001	398390015	LC0616	ROW 6 COLUMN 16		499692.08 N	-	12/10/2003	---	VRTC	KYOWA F99-1875
0002	398390027	LC0701	ROW 7 COLUMN 1		500180.72 N	-	12/10/2003	---	VRTC	KYOWA F99-1875
0003	398390111	LC0702	ROW 7 COLUMN 2		499994.14 N	-	12/10/2003	---	VRTC	KYOWA F99-1875
0004	398390072	LC0703	ROW 7 COLUMN 3		500125.03 N	-	12/10/2003	---	VRTC	KYOWA F99-1875
0005	398390106	LC0704	ROW 7 COLUMN 4		499933.11 N	-	12/10/2003	---	VRTC	KYOWA F99-1875
0006	398390056	LC0705	ROW 7 COLUMN 5		500180.72 N	-	12/10/2003	---	VRTC	KYOWA F99-1875
0007	398390114	LC0706	ROW 7 COLUMN 6		499755.97 N	-	12/10/2003	---	VRTC	KYOWA F99-1875
0008	398390068	LC0707	ROW 7 COLUMN 7		500331.76 N	-	12/10/2003	---	VRTC	KYOWA F99-1875
0009	398390057	LC0708	ROW 7 COLUMN 8		500180.72 N	-	12/10/2003	---	VRTC	KYOWA F99-1875
0010	398390049	LC0709	ROW 7 COLUMN 9		499692.08 N	-	12/10/2003	---	VRTC	KYOWA F99-1875
0011	398390131	LC0710	ROW 7 COLUMN 10		500125.03 N	-	12/10/2003	---	VRTC	KYOWA F99-1875
0012	398390018	LC0711	ROW 7 COLUMN 11		499750.85 N	-	12/10/2003	---	VRTC	KYOWA F99-1875
0013	398390084	LC0712	ROW 7 COLUMN 12		500122.10 N	-	12/10/2003	---	VRTC	KYOWA F99-1875
0014	398390062	LC0713	ROW 7 COLUMN 13		499874.29 N	-	12/10/2003	---	VRTC	KYOWA F99-1875
0015	398390078	LC0714	ROW 7 COLUMN 14		499933.11 N	-	12/10/2003	---	VRTC	KYOWA F99-1875
0016	398390127	LC0715	ROW 7 COLUMN 15		499692.08 N	-	12/10/2003	---	VRTC	KYOWA F99-1875
0017	398390021	LC0716	ROW 7 COLUMN 16		499874.29 N	-	12/10/2003	---	VRTC	KYOWA F99-1875
0018	398390133	LC0801	ROW 8 COLUMN 1		499874.29 N	-	12/10/2003	---	VRTC	KYOWA F99-1875
0019	398390039	LC0802	ROW 8 COLUMN 2		499750.85 N	-	12/10/2003	---	VRTC	KYOWA F99-1875
0020	398390085	LC0803	ROW 8 COLUMN 3		500298.02 N	-	12/10/2003	---	VRTC	KYOWA F99-1875
0021	398390059	LC0804	ROW 8 COLUMN 4		500125.03 N	-	12/10/2003	---	VRTC	KYOWA F99-1875
0022	398390116	LC0805	ROW 8 COLUMN 5		500176.82 N	-	12/10/2003	---	VRTC	KYOWA F99-1875
0023	398390013	LC0806	ROW 8 COLUMN 6		499933.11 N	-	12/10/2003	---	VRTC	KYOWA F99-1875
0024	398390119	LC0807	ROW 8 COLUMN 7		500122.10 N	-	12/10/2003	---	VRTC	KYOWA F99-1875
0025	398390107	LC0808	ROW 8 COLUMN 8		500122.10 N	-	12/10/2003	---	VRTC	KYOWA F99-1875
0026	398390095	LC0809	ROW 8 COLUMN 9		499755.97 N	-	12/10/2003	---	VRTC	KYOWA F99-1875
0027	398390103	LC0810	ROW 8 COLUMN 10		499750.85 N	-	12/10/2003	---	VRTC	KYOWA F99-1875
0028	398390129	LC0811	ROW 8 COLUMN 11		499692.08 N	-	12/10/2003	---	VRTC	KYOWA F99-1875
0029	398390058	LC0812	ROW 8 COLUMN 12		499874.29 N	-	12/10/2003	---	VRTC	KYOWA F99-1875
0030	398390126	LC0813	ROW 8 COLUMN 13		499692.08 N	-	12/10/2003	---	VRTC	KYOWA F99-1875
0031	398390108	LC0814	ROW 8 COLUMN 14		499755.97 N	-	12/10/2003	---	VRTC	KYOWA F99-1875
0032	398390025	LC0815	ROW 8 COLUMN 15		500176.82 N	-	12/10/2003	---	VRTC	KYOWA F99-1875

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Channel Report

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0033	398390070	LC0816	ROW 8 COLUMN 16	500252.81	N	-	12/10/2003	---	VRTC	KYOWA	F99-1875
0034	398390109	LC0906	ROW 9 COLUMN 6	500122.10	N	-	12/10/2003	---	VRTC	KYOWA	F99-1875
0035	398390044	LC0907	ROW 9 COLUMN 7	500122.10	N	-	12/10/2003	---	VRTC	KYOWA	F99-1875
0036	398390134	LC0908	ROW 9 COLUMN 8	499960.94	N	-	12/10/2003	---	VRTC	KYOWA	F99-1875
0038	398390115	LC0909	ROW 9 COLUMN 9	499755.97	N	-	12/10/2003	---	VRTC	KYOWA	F99-1875
0039	398390110	LC0910	ROW 9 COLUMN 10	499692.08	N	-	12/10/2003	---	VRTC	KYOWA	F99-1875
0040	398390064	LC0911	ROW 9 COLUMN 11	499943.36	N	-	12/10/2003	---	VRTC	KYOWA	F99-1875
0041	EVENT	EVENT	EVENT	5.12	V	+	4/19/2004	OK	-1	TRC	Event
0042	398390105	LC0209	ROW 2 COLUMN 9	499933.11	N	-	12/10/2003	---	VRTC	KYOWA	F99-1875

Appendix D

INSIA Report on Structural Measurements

STRUCTURAL SURVEY OF CARS. MEASUREMENT METHODOLOGY OF THE MAIN RESISTANT ELEMENTS IN THE CAR BODY

APARICIO IZQUIERDO, FRANCISCO
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March, 1999

REPORT DOCUMENTATION PAGE**Title:**

STRUCTURAL SURVEY OF CARS. MEASUREMENT METHODOLOGY OF THE MAIN RESISTANT ELEMENTS IN THE CAR BODY

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Carretera de Valencia, Km. 7 – Campus Sur de la Universidad Politécnica de Madrid
28031 – Madrid – Spain

Supplementary notes:

Under contract to:

THE EUROPEAN COMMUNITY

Project: "Improvement of Crash Compatibility between Cars"

Contract N°: RO – 97 – SC.1064

Abstract:

The main aim of this working package -*Structural Survey of Cars*- is the reduction of incompatibilities, both structural and geometric, between passenger vehicles and their potential collision partners. The understanding of these incompatibilities needs a previous step for the knowledge of the existing car fleet.

Firstly, it is necessary to select the main resistant elements in the car body. These elements have to be chosen from the point of view of the sort of collision that we want to study, that is to say, frontal and side impacts.

Detailed measurements have been taken from exterior and interior elements, spread to a total number of 74 models selected from the main vehicle manufacturers at Spain. All of them are being sold this year. Using the information available from the previous measurements in vehicles, the geometric characteristics of the main resistant elements involved in the geometric compatibility between cars will be defined.

This report shows the methodology followed to get these measurements.

Subject terms:

Crash compatibility, geometric compatibility, resistant elements, measure methodology

Date:

March, 1999

1.- METHODOLOGY.

Detailed measurements have been taken from exterior and interior elements. Using the information available from the previous measurements in vehicles, the geometric characteristics of the main resistant elements involved in the geometric compatibility between cars have been defined. These elements are presented in the following figures, and have been divided in two main groups according to the vehicle zones studied in this project.

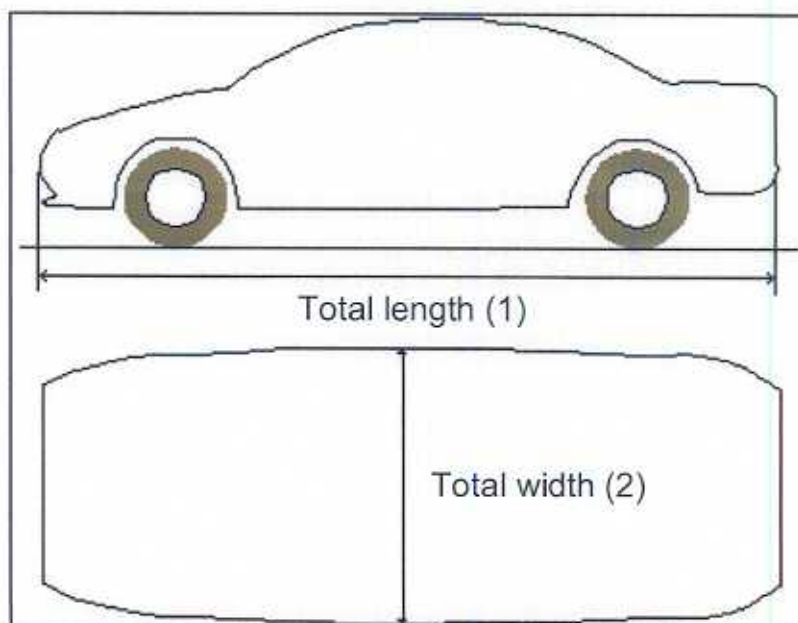


Figure 1.- Definition of the main resistant elements. General dimensions.

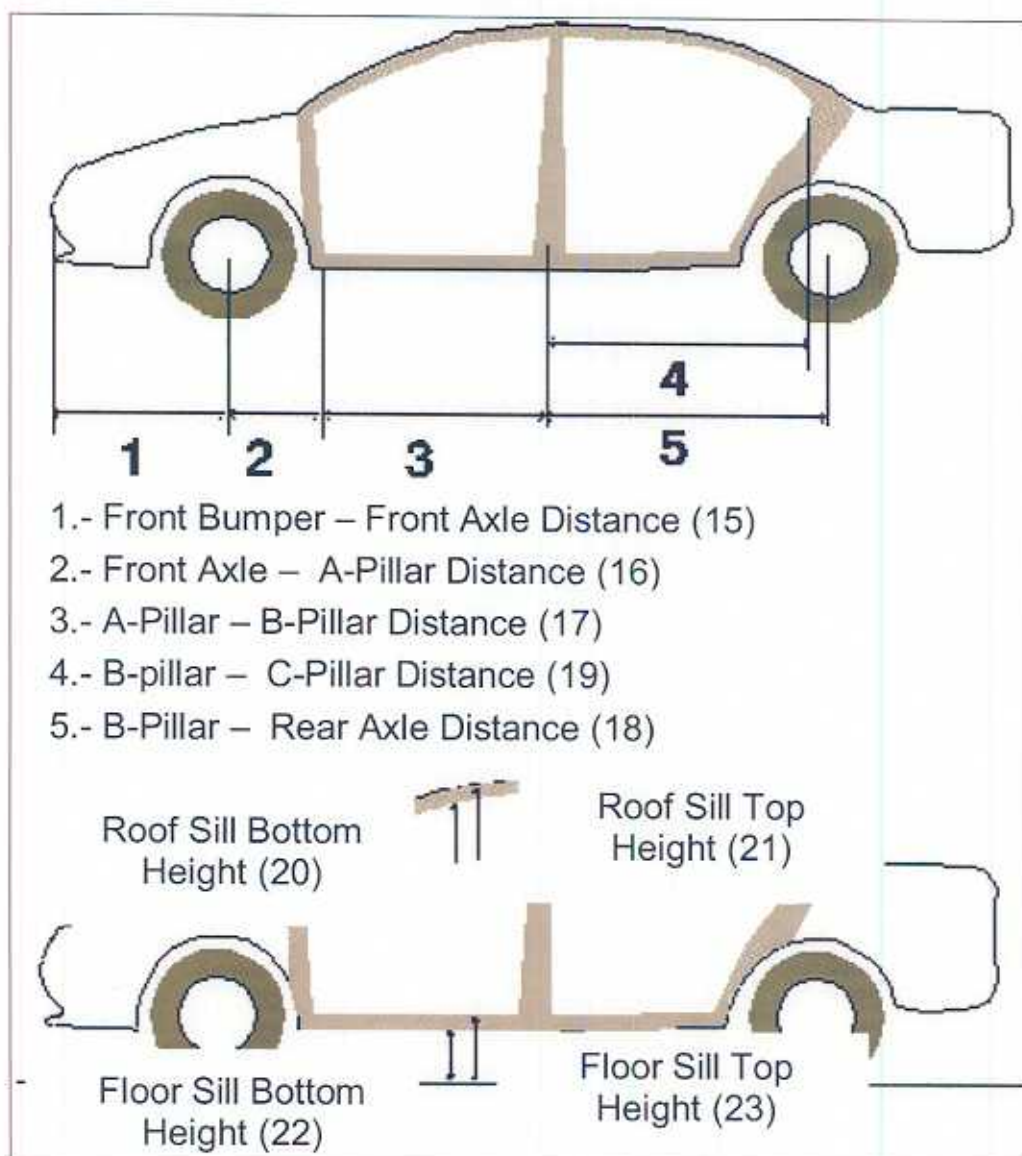


Figure 2.- Definition of the main resistant elements. Side elements.

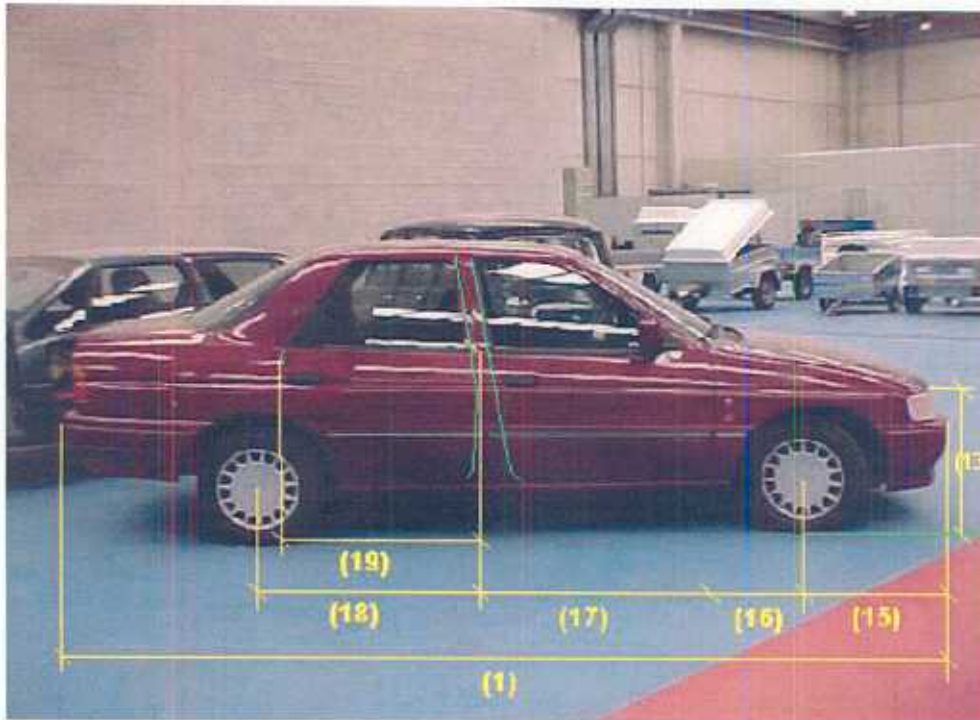


Figure 3.-
Measurements of
the side resistant
elements (outer).

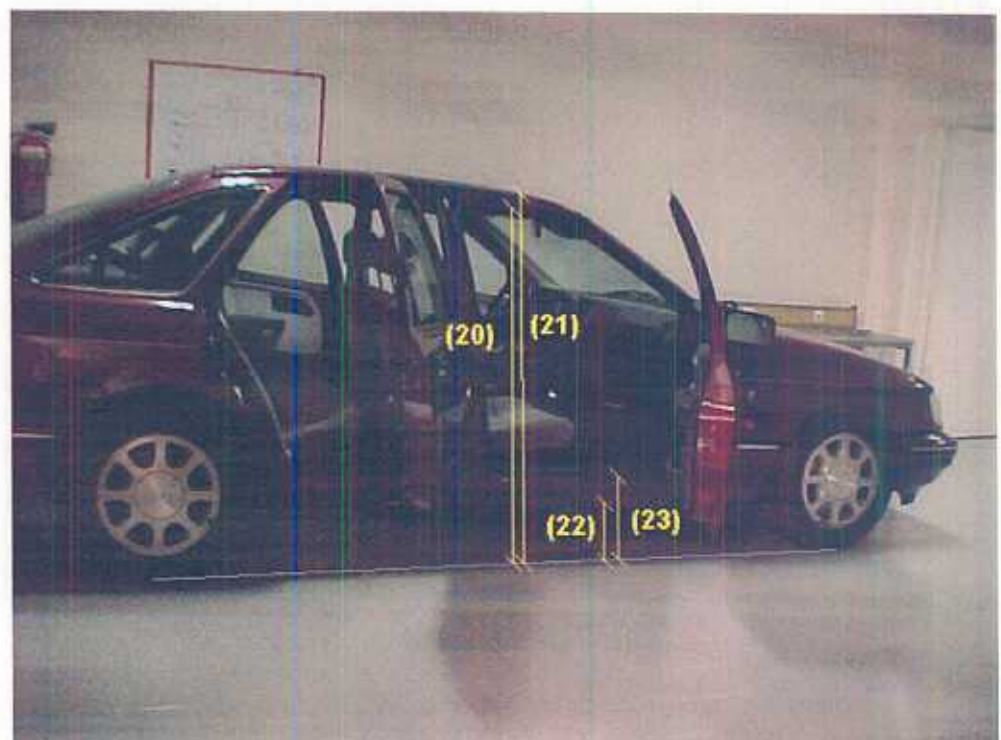


Figure 4.- Measurements
of the side resistant
elements (inner).

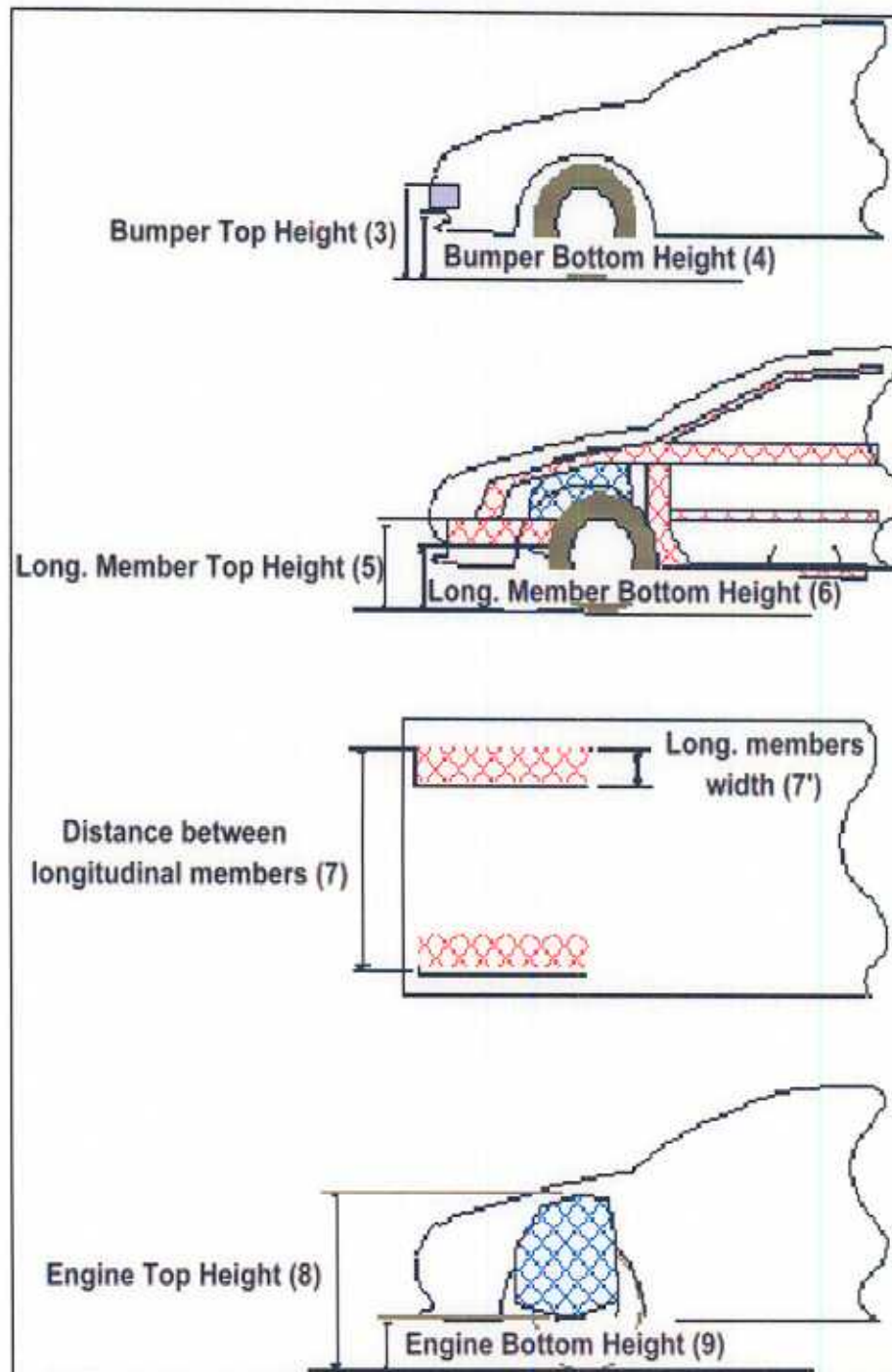


Figure 5.- Definition of the main resistant elements. Front elements.

Figure 6.-
Measurements of the
main resistant elements.
Front elements 1.

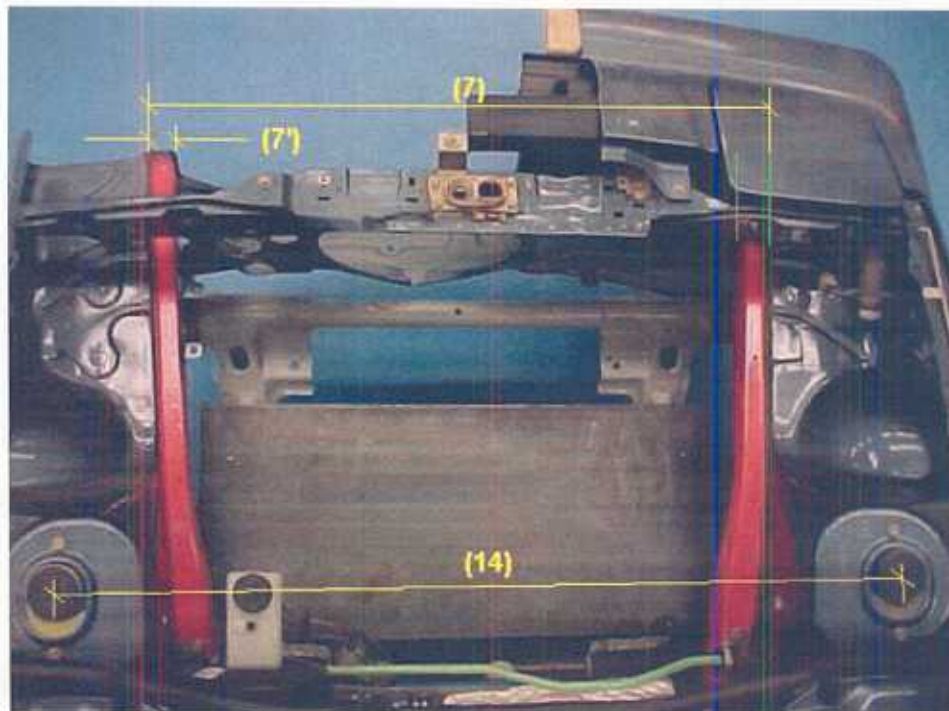
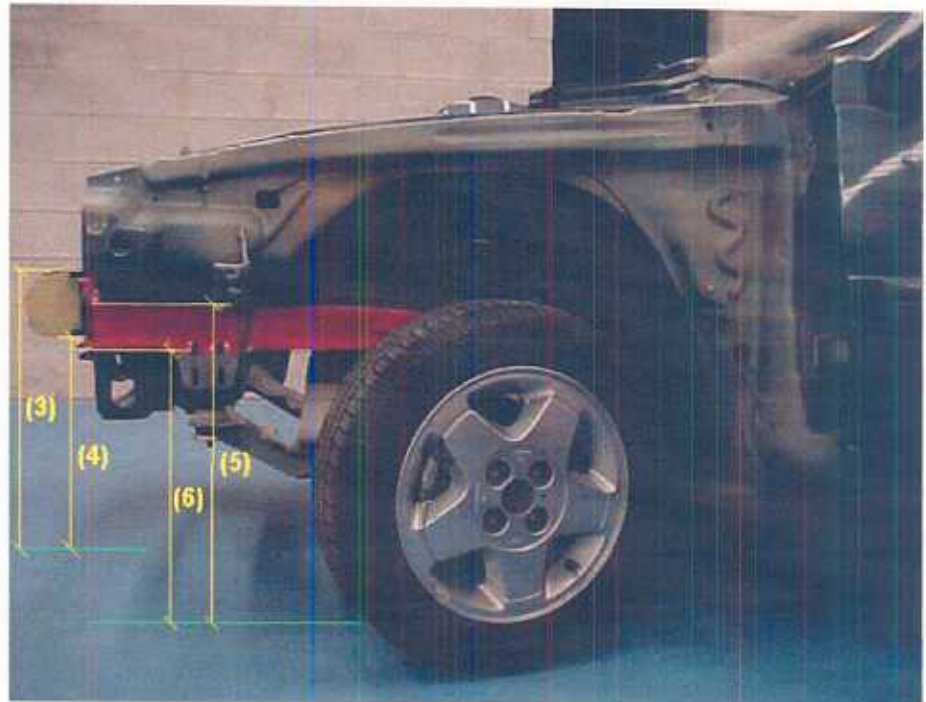


Figure 7.-
Measurements
of the main
resistant
elements. Front
elements 2.

Figure 8.-
Measurements of
the main resistant
elements. Front
elements 3.

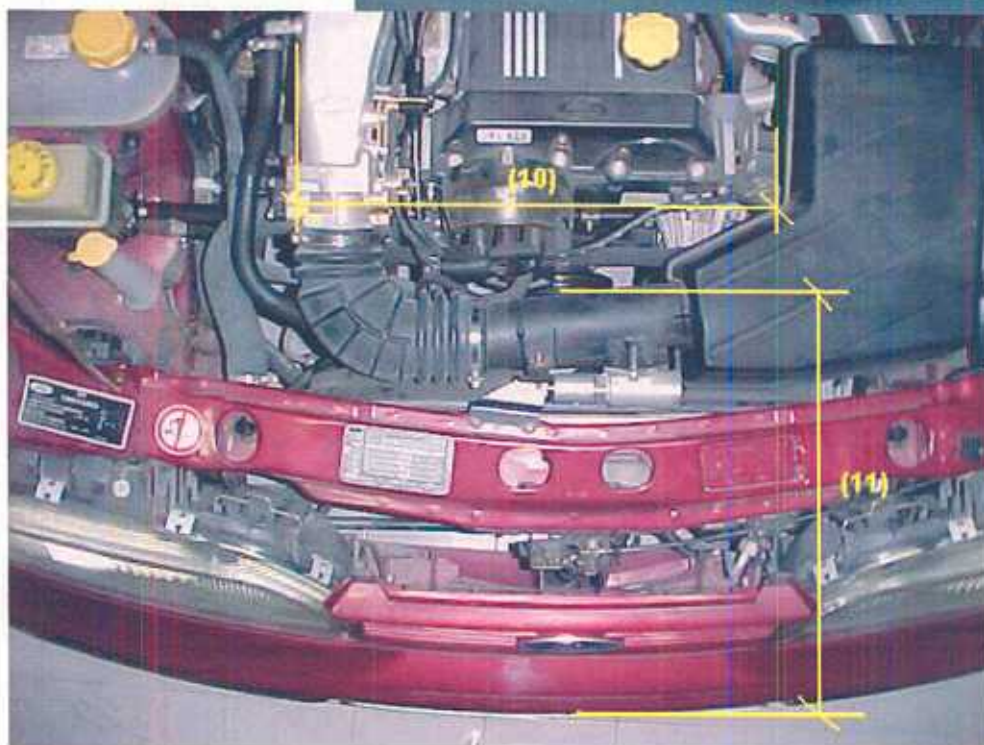
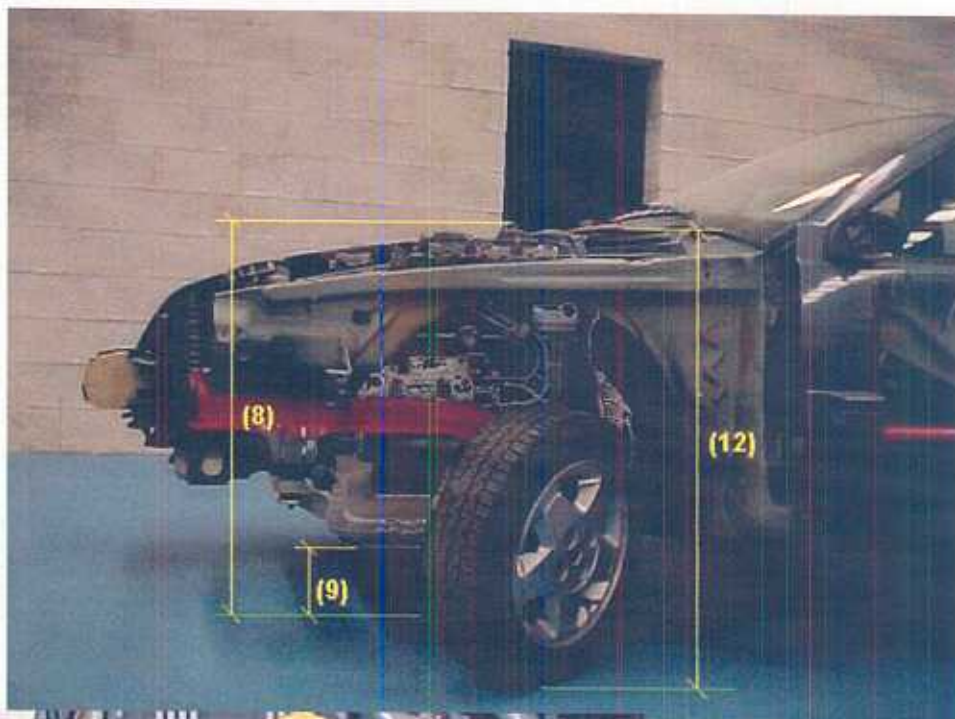


Figure 9.-
Definition of
the main
resistant
elements. Front
elements
(Longitudinal
engine).

The procedure considered to measure these elements is described as follows, where it is indicated the location of these ones in the Excel Sheet (SURVEY.XLS) into brackets:

FRONT ELEMENTS

- **Total Length –(1)- (Side & Front Sheets - C column):** distance between the point in the front bumper further on and the point in the rear bumper further back.
- **Weight (Side & Front Sheets - D column):** mass, including an average driver weight (70 kg), and the fuel tank mass (at half-capacity).
- **Total Width –(2)- (Side & Front Sheets - E column):** distance between the outer side points in a transverse plane of the vehicle (middle plane between the front and rear axles).
- **Bumper bottom height –(4)- (Front Sheet G column):** distance between the ground and the lowest point on the front bumper, being a resistant member (aerodynamic elements under the front bumper are not considered).
- **Bumper top height –(3)- (Front Sheet H column):** distance between the ground and the highest point on the front bumper, being a resistant member (aerodynamic elements are not considered).
- **Longitudinal member top height –(5)- (Front Sheet I column):** distance between the ground and the highest point on the longitudinal members, measured approximately in the front bumper-longitudinal member joint (when accessible).
- **Longitudinal member bottom height –(6)- (Front Sheet J column):** distance between the ground and the lowest point on the longitudinal members, measured approximately in the front bumper-longitudinal member joint.
- **Distance between longitudinal members (Front Sheet K column):** transverse distance between extreme points in longitudinal members, measured approximately in the front bumper-longitudinal member joint.

Depending on the accessibility of these members, the extreme points are the inner points (I) or the outer points (O).

- **Longitudinal member width -7'- (Front Sheet L column):** width of one of the longitudinal members, measured approximately in the front bumper-longitudinal member joint.

- **Engine top height (8) (Front Sheet N column):** distance between the ground and the highest point on the engine that can be a resistant member in case of accident (usually, the highest point on the head, or the highest point of the inlet or exhaust manifolds).
- **Engine bottom height (9) (Front Sheet M column):** distance between the ground and the lowest point on the engine (usually, the lowest point on the crankcase).
- **Engine and Gearbox width (10) (Front Sheet O & P columns):**
 - *Transverse configuration engine:* distance between extreme points in the gearbox-cylinder block unit or others resistant members attached to the cylinder block unit, i.e. fan belts (from a front point of view).
 - *Longitudinal configuration engine:* distance between extreme points in the cylinder block unit (from a front point of view).
- **Front bumper - Engine distance (11) (Front Sheet Q column):** distance between the point in the front bumper further on and the point in the engine further on that is a resistant element, i.e. the further on point of the exhaust manifold placed in the front of the engine.
- **Front shock absorber fixing width (14) (Front Sheet R column):** transverse distance between the front shock absorber - body car joints.
- **Front shock absorber fixing height (12) (Front Sheet S column):** distance between the ground and the front shock absorber-body car joint.
- **Bonnet leading edge height (Front Sheet T column):** distance between the ground and the bonnet edge further on.

SIDE ELEMENTS

- **Front bumper - Front axle distance (15) (Side Sheet G column):** distance between the point in the front bumper further on and the middle point in the front tyre-road contact patch.
- **Front axle - A Pillar distance (16) (Side Sheet H column):** distance between the middle point in the front tyre-road contact patch and the point in the A-pillar further back.
- **A Pillar - B Pillar distance (17) (Side Sheet I column):** distance between the point in the A-pillar further back and the middle point in the B-pillar.
- **B Pillar - C Pillar distance (19) (Side Sheet J column):** distance between the middle point in the B-pillar and the point in the C-pillar further back (only 4/5-door vehicles).
- **B Pillar - Rear axle distance (18) (Side Sheet K column):** distance between the middle point in the B-pillar and the middle point in the rear tyre-road contact patch.
- **Roof sill bottom height (20) (Side Sheet L column):** distance between the ground and the lowest point on the roof sill, measured in the front door middle point.
- **Roof sill top height (21) (Side Sheet M column):** distance between the ground and the highest point on the roof sill (usually located in the sill-roof joint), measured in the front door middle point.
- **Floor sill bottom height (22) (Side Sheet N column):** distance between the ground and the lowest point on the floor sill, measured in the front door middle point.
- **Floor sill top height (23) (Side Sheet O column):** distance between the ground and the highest point on the floor sill, measured in the front door middle point.

NOTE

- N/A: dimension not available.