

REPORT NUMBER: TO5-MGA-2001-003

**RIGID POLE SIDE IMPACT TESTS
2001 SATURN L200 WITHOUT SIDE AIRBAG**

**ES-2 DRIVER POSITION
HYBRID III 6 YR. OLD LEFT REAR
HYBRID III 3 YR. OLD RIGHT REAR**

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July 10, 2001

FINAL REPORT SUBMITTED: July 18, 2003

**PREPARED FOR:
U.S. DEPARTMENT OF TRANSPORTATION
VOLPE NATIONAL TRANSPORTATION SYSTEM CENTER
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SECTION 1
PURPOSE AND TEST PROCEDURE

This Side Impact test is conducted as part of Contract No. DTRS57-98-D-00041, task order 5, sponsored by the U.S. Department of Transportation, Volpe National Transportation System Center. The purpose of this test is to evaluate the responses of the ES-2 and SID/HIII dummies in a 2001 Saturn L200, without the head airbag curtain, when subjected to a rigid pole side impact.

MGA does not endorse or certify products. The manufacturer's name appears solely for identification purposes.

SECTION 2

SUMMARY OF SIDE IMPACT TEST

A rigid pole side impact test was performed on a model year 2001 Saturn L200 4 door without the head airbag curtain. The subject vehicle was towed into a rigid pole at a velocity of 28.0 km/h. The specified impact velocity range is from 27.2 to 28.8 km/h. The test vehicle was positioned 90° to the line of forward motion. The weight of the vehicle as tested was 1598.5 kg. The test was conducted at MGA Research Corporation in Burlington, Wisconsin, on July 10, 2001. Pre- and post-test photographs of the test vehicle and the dummies are included in Appendix A.

One ES-2 side impact dummy was placed in the left front designated seating position according to instructions specified in the FMVSS 201P Laboratory Test Procedure which is dated April 21, 2000 and Evaluation of Eurosid-1 Positioning Procedure Appendix A dated February 5, 1997. A Hybrid III 6 year old dummy was placed in the left rear outboard seating position. The dummy was restrained by the combination lap and shoulder belt. A Hybrid III 3 year old dummy was placed in a Cosco Triad child restraint in the right rear outboard seating position. The Cosco Triad child restraint was fastened to the vehicle with the combination lap and shoulder belt and the child seat tether strap. The side impact event was documented by eleven high speed cameras. Camera locations and other pertinent camera information can be found in this report.

Appendix B contains the vehicle and dummy response data traces. A summary of the side impact dummy (ES-2) configuration and performance verification test data is shown in Appendix C. Dummy and vehicle calibration data can be found in Appendix D of this report.

Appendix E contains a copy of the ES-2 dummy positioning procedure used and Appendix F contains the ES-2 and child peak responses.

The following table summarizes the results of the Left Side Impact test:

		Left Front
1) Head Performance Criteria		
< 1000	T1 (msec)	59.2
	T2 (msec)	60.0
	HPC	9004
2) Thorax Performance Criteria		
2.1) Chest Deflection < 42 mm	Upper Rib Deflection	44.8
	Mid Rib Deflection	35.4
	Lower Rib Deflection	33.5
2.2) Viscous Criteria < 1.0 (m/sec)	Upper Rib	0.8
	Mid Rib	0.5
	Lower Rib	0.6
3) Abdominal Protection Criterion		
Sum < 2500 N	Front Abdominal Force	77.5
	Mid Abdominal Force	330.3
	Rear Abdominal Force	658.7
	Sum of Abdominal Force	1022.4
4) Pelvis Performance Criterion		
< 6000 N	Pubic Symphysis Force	1558.8

HIC		Left Front
	T1 (msec)	59.2
	T2 (msec)	60.0
	T2 - T1 (msec)	0.8
	HIC	9004

Fir Filtered	Left Front
Upper Rib Y (g's)	95.2
Mid Rib Y (g's)	122.9
Lower Rib Y (g's)	143.0
Lower Spine Y (g's)	56.6
Pelvis Y (g's)	48.4
TTI (g's)	100

Contacts	Left Front
Head (msec)	60.3
Arm (msec)	25.4
Rib (msec)	34.9
Pelvis (msec)	27.4

TEST NOTES

SECTION 3
SIDE IMPACT DUMMY (ES-2) AND VEHICLE TEST DATA

DATA SHEET NO. 1
GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2001/Saturn/L200/4 door

Test Date: July 10, 2001

TEST VEHICLE INFORMATION

Make	Saturn
Model	L200
Body Style	4 door
VIN	1G8JU52FX1Y561049
Color	Painted Orange
Odometer Reading	180
Transmission	automatic
Final Drive	front
Number of Cylinders	4
Engine Displacement	2.2 Liters
Engine Placement	lateral

TEST VEHICLE OPTIONS

Front Airbags	yes
Side Airbags	no
Power Windows	yes
Power Steering	yes
Power Door	yes
Tilt Wheel	yes
Air Conditioning	yes
Power Brakes	yes
Anti-lock Brakes	no
AM/FM/Cassette	yes
Cruise Control	yes

DATA FROM CERTIFICATION LABEL

Manufactured By	Saturn Corporation	GVWR (kg)	1813
Date of Manufacture	03/01	GAWR Front (kg)	891
		GAWR Rear (kg)	922

DATA FROM TIRE PLACARD

Measured Parameter	Front	Rear
Maximum Tire Pressure (kPa)	210	210
Cold Pressure (kPa)	210	210
Recommend Tire Size	P195/65R15	P195/65R15
Tire Size on Vehicle	P195/65R15	P195/65R15
Tire Manufacturer	Firestone	Firestone

Measured Parameter	Front	Rear	Third	Total
Type of Seats	bucket	bench		
Number of Occupants	2	3		5
Capacity Wt. (VCW) (kg)				420
Cargo Weight (RCLW) (kg)				79.8

DATA SHEET NO. 1...(continued)
GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2001/Saturn/L200/4 door

Test Date: July 10, 2001

TEST VEHICLE WEIGHTS

	Units	As Delivered (UVW)			As Tested (ATW)		
		Front	Rear	Total	Front	Rear	Total
Left	kg	413.7	269.4		449.5	354.3	
Right	kg	397.8	276.2		436.4	358.3	
Ratio	%	59.8	40.2		55.4	44.6	
Totals	kg	811.5	545.6	1357.1	885.9	712.6	1598.5

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value
Unloaded Delivered Weight (UVW)	kg	1357.1
Rated Cargo Weight	kg	79.9
Weight of 2 Side Impact Dummies	kg	161.5
Vehicle Target Weight (TVTW)*	kg	1598.5

TEST VEHICLE ATTITUDES

	Units	As Delivered	Fully Loaded	Ready for Test
Right Door Sill Angle	deg	0.9 ND	0.4 ND	0.4 ND
Left Door Sill Angle	deg	0.9 ND	0.2 ND	0.2 ND
Front Bumper Angle	deg	0.1 LD	0.1 LD	0.1 LD
Rear Bumper Angle	deg	0.2 LD	0.0	0.0

ND = Nose Down, BD = Back Down, LD = Left Down, RD = Right Down

GENERAL TEST VEHICLE DATA

Measurement Description	Units	Value
Test Vehicle Wheel Base	mm	2707
Total Vehicle Length at Left Side	mm	4339
Total Vehicle Length at Centerline	mm	4836
Total Vehicle Length at Right Side	mm	4339
Weight of Ballast in Cargo Area	kg	0
Amount of Water in Fuel Tank	liters	18.9

TEST VEHICLE VERTICAL IMPACT LINE DATA

Measurement Description	Units	Value
Actual Impact Point	mm	6 mm rear

DATA SHEET NO. 1...(continued)
GENERAL TEST AND VEHICLE PARAMETER DATA

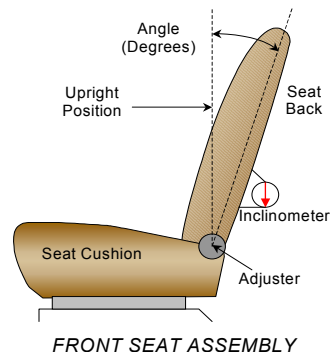
Test Vehicle: 2001/Saturn/L200/4 door

Test Date: July 10, 2001

NORMAL DESIGN RIDING POSITION

Driver seat back angle: 23.2 deg. on seat frame (adjusted forward 4.8 deg. to achieve head clearance)

Passenger seat back angle: non adjustable



SEAT FORE/AFT POSITIONS

The driver's seat is manually operated and the rear passenger seat has no adjustments.

Driver seat fore/aft total travel: 17 detents

Rear passenger seat fore/aft total travel: non adjustable

Driver seat fore/aft position: 5th notch, 1st as one (adjusted forward 4 notches to achieve 50 mm head clearance)

Rear passenger seat fore/aft position: non adjustable

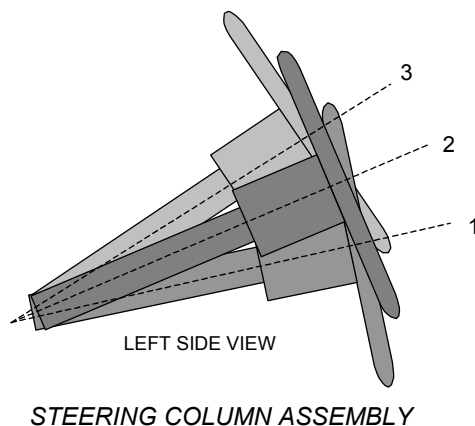
SEAT BELT UPPER ANCHORAGE

The test vehicle "D" ring anchorage for the driver's seat position was placed in the full up position.

STEERING COLUMN ADJUSTMENT

The steering column contained 4 adjustment positions.

The column was set in the second position down from the top as one.



**DATA SHEET NO. 2
POST TEST OBSERVATIONS**

Test Vehicle: 2001/Saturn/L200/4 door

Test Date: July 10, 2001

TEST DUMMY INFORMATION AND CONTACT POINTS

Description	Left Front	Left Rear	Right Rear
Dummy Type	ES-2	HIII 6 yr.	HIII 3 yr.
Head Contact	Pole, side header, headrest	Head to window sill, seatbelt Left knee to door Left foot to B Post	Head to child seat
Upper Torso Contact	Window sill, pole		
Lower Torso Contact	Armrest		
Left Knee Contact	Door trim panel		
Right Knee Contact	right knee		

POST TEST DOOR OPENING

Description	Left Front	Left Rear
Left Side Door Opening	remained closed	remained closed
Right Side Door Opening	remained closed	remained closed

POST TEST STRUCTURAL OBSERVATIONS

Critical Areas of Performance	Observations and Conclusions
Pillar Performance	No failures
Sill Separation	None
Windshield Damage	windshield cracked
Window Damage	struck side windows removed pre test
Other Notable Effects	None

AIRBAG DEPLOYMENT

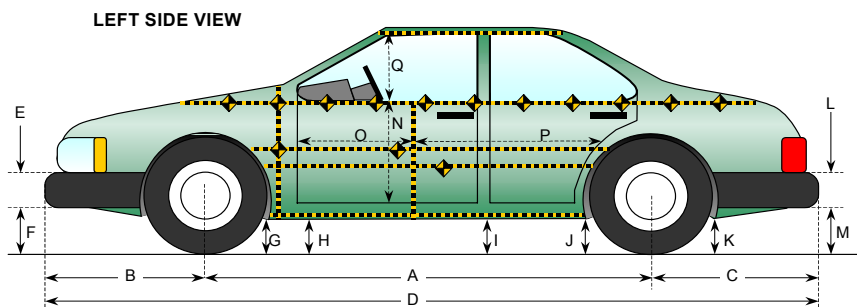
	Driver	Left Front	Left Rear
Front	no	no	
Side			
Curtain			

SECTION 4
OCCUPANT AND VEHICLE INFORMATION

DATA SHEET NO. 3
VEHICLE PRE-TEST AND POST-TEST MEASUREMENTS

Test Vehicle: 2001/Saturn/L200/4 door

Test Date: July 10, 2001



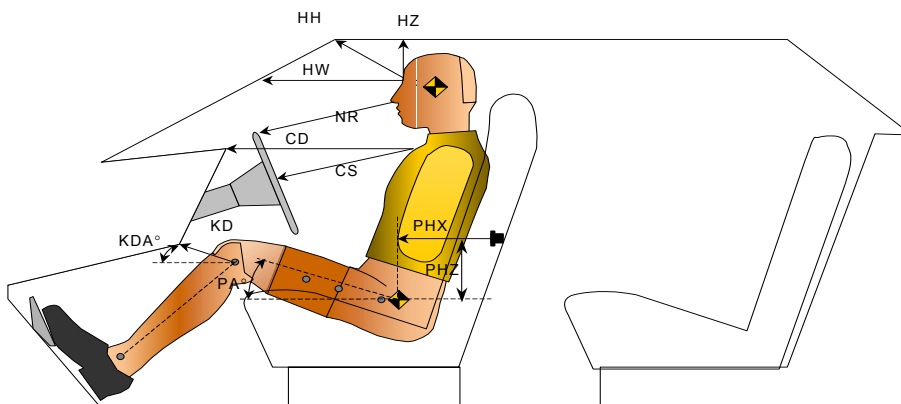
All Measurements in mm

Code	Measurement Description	Pre-Test	Post-Test	Difference
A	Wheelbase	2707	2485	-222
B	Front Axle to FSOV	1037	989	-48
C	Rear Axle to RSOV	1092	1121	29
D	Total Length at Centerline	4836	4595	-241
E	Front Bumper Thickness	260	260	0
F	Front Bumper Bottom to Ground	266	277	11
G	Sill Height at Front Wheel Well	195	185	-10
H	Sill Height at Front Door Leading Edge	200	189	-11
I	Sill Height at "B" Pillar	230	190	-40
J1	Sill Height at Rear Wheel Well	236	275	39
J2	Pinch Weld Height at Rear Wheel Well	230	251	21
K	Sill Height Aft of Rear Wheel Well	268	305	37
L	Rear Bumper Thickness	266	266	0
M	Rear Bumper Bottom to Ground	408	462	54
N	Sill Height to Window Bottom Sill	629	596	-33
O	Front Door Leading Edge to Impact CL	931	869	-62
P	Rear Door Trailing Edge to Impact CL	993	755	-238
Q	Front Window Opening	461	435	-26
R	Right Side Length	4339	4361	22
S	Left Side Length	4339	4106	-233
T	Vehicle Width at "B" Post	1745	1374	-371

DATA SHEET NO. 4
ES-2 LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: 2001/Saturn/L200/4 door

Test Date: July 10, 2001



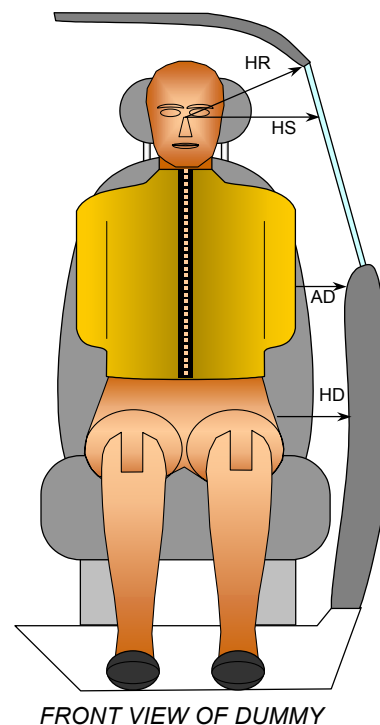
Driver Code	Measurement Description	Left Front	
		Length(mm)	Angle(°)
HH	Head to Header	298	
HW	Head to Windshield	512	
HZ	Head to Roof	166	
NR	Nose to Rim	417	
CD	Chest to Dash	506	
CS	Chest to Steering Wheel	323	
KDL	Left Knee to Dash	136	0.0
KDR	Right Knee to Dash	147	0.0
PA	Pelvic Angle (Longitudinal)		23.6
PA	Pelvic Angle (Lateral)		1.7
SA	Spine Angle (Longitudinal)		24.3
SA	Spine Angle (Lateral)		0.7
PHX	H-Point to Striker (X-Axis)	248	
PHZ	H-Point to Striker (Z-Axis)	160	

DATA SHEET NO. 5
ES-2 LATERAL CLEARANCE DIMENSIONS / CHILD DUMMY MEASUREMENTS

Test Vehicle: 2001/Saturn/L200/4 door

Test Date: July 10, 2001

Code	Measurement Description	Units	Left Front
HR	Head to Side Header	mm	224
HS	Head to Side Window	mm	305
AD	Arm to Door	mm	182
HD	H-Point to Door	mm	110



CHILD DUMMY MEASUREMENTS

Measurement Description	Units	Left Rear	Right Rear
Head CG to Striker X	mm	88	96
Head CG to Striker Y	mm	351	375
Head CG to Striker Z	mm	128	190

DATA SHEET NO. 6
DUMMY POSITIONING

Test Vehicle: 2001/Saturn/L200/4 door

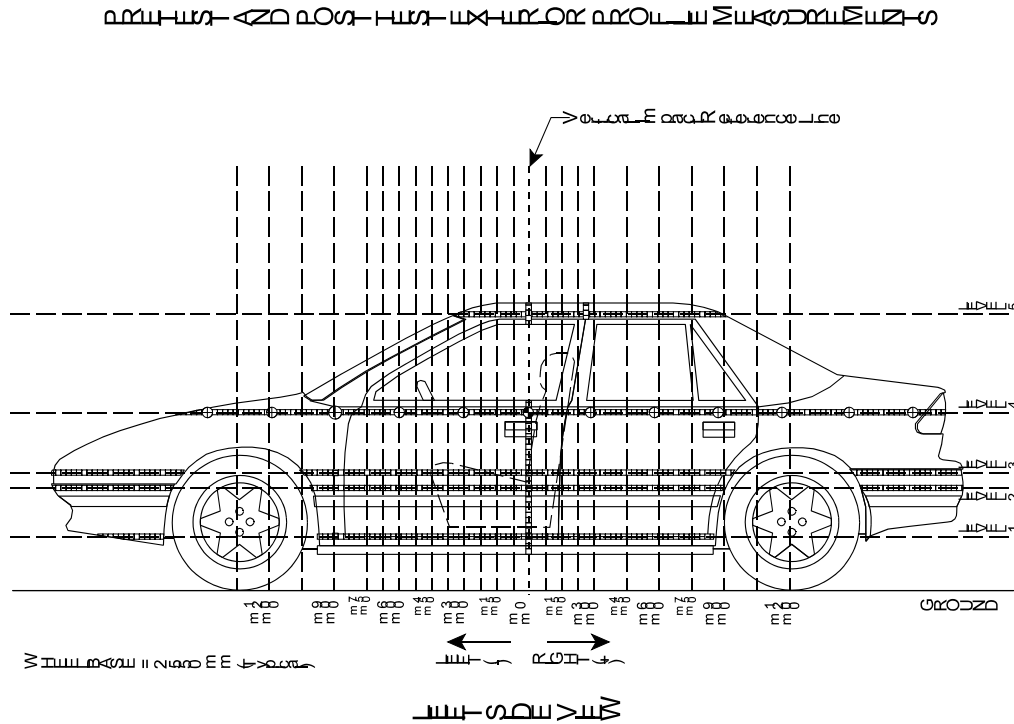
Test Date: July 10, 2001

	Left Front		
	H-Point Machine	Dummy H Point	Dummy H Point after seat back adjustment
HP to Floor Z (mm)	148	150	149
HP to Hinge X (mm)	745	750	705
HP to Sill Y (mm)	211	216	215
HP to Striker X (mm)	353	350	378
HP to Dash X (mm)	553	555	509
HP to Header Z (mm)	781	780	773
H-POINT MACHINE (deg)			
Left Knee	126		
Right Knee	125		
Left Foot	124		
Right Foot	128		
Left Leg (mm)	105		
Right Leg (mm)	103		
Hip Angle	99		
Back Angle	25		

DATA SHEET NO. 7 **VEHICLE SIDE MEASUREMENTS**

Test Vehicle: 2001/Saturn/L200/4 door

Test Date: July 10, 2001



Measurements are taken with vehicle in the as tested condition.

Measurements along the vertical 800 mm.

Level	Measurement Description	Units	Height Above Ground
5	Window	mm	1357
4	Window Sill	mm	905
3	Mid Door	mm	626
2	Occupant H-Point	mm	520
1	Sill Top	mm	348

DATA SHEET NO. 8
VEHICLE EXTERIOR CRUSH PROFILES

Test Vehicle: 2001/Saturn/L200/4 door

Test Date: July 10, 2001

	Pre-Test					Post-Test					Difference				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
-2100			492	566				512	570				20	4	
-1950			441	533				471	555				30	22	
-1800			401	505				444	534				43	29	
-1650				479					528					49	
-1500				462					525					63	
-1350				452					526					74	
-1200			372	444				471	526				99	82	
-1050	408	384	385	437		521	494	486	528		113	110	101	91	
-900	406	385	385	435		541	512	502	492		135	127	117	57	
-825	405	385	384	432		565	536	525	509		160	151	141	77	
-750	401	384	383	432		590	560	555	540		189	176	172	108	
-675	401	383	382	432		615	587	578	583		214	204	196	151	
-600	400	381	382	430		639	612	608	627		239	231	226	197	
-525	398	381	380	428		665	641	645	669		267	260	265	241	
-450	397	381	379	428		691	674	681	714		294	293	302	286	
-375	397	380	379	428		716	714	745	758		319	334	366	330	
-300	397	380	378	426	659	741	761	776	800	845	344	381	398	374	186
-225	397	379	377	423	655	788	812	830	845	890	391	433	453	422	235
-150	397	379	377	423	651	844	865	880	894	938	447	486	503	471	287
-75	397	379	376	422	651	901	918	927	939	987	504	539	551	517	336
0	396	379	376	420	650	935	950	955	968	1014	539	571	579	548	364
75	396	379	376	421	650	924	937	944	964	1008	528	558	568	543	358
150	396	378	376	421	651	886	893	901	925	1004	490	515	525	504	353
300	396	376	375	421	653	733	788	801	862	968	337	412	426	441	315
450	396	376	375	421	655	652	695	716	790	905	256	319	341	369	250
600	395	375	375	424	656	592	603	624	722	846	197	228	249	298	190
750	395	375	376	426	662	533	534	554	655	790	138	159	178	229	128
900		375	376	430	670		490	493	587	785		115	117	157	115
1050			370	436	677			475	523	781			105	87	104
1200				447					540					93	
1350				458					539					81	
1500			398	471				469	542				71	71	
1650			420	490				479	549				59	59	
1800			439	510				489	557				50	47	

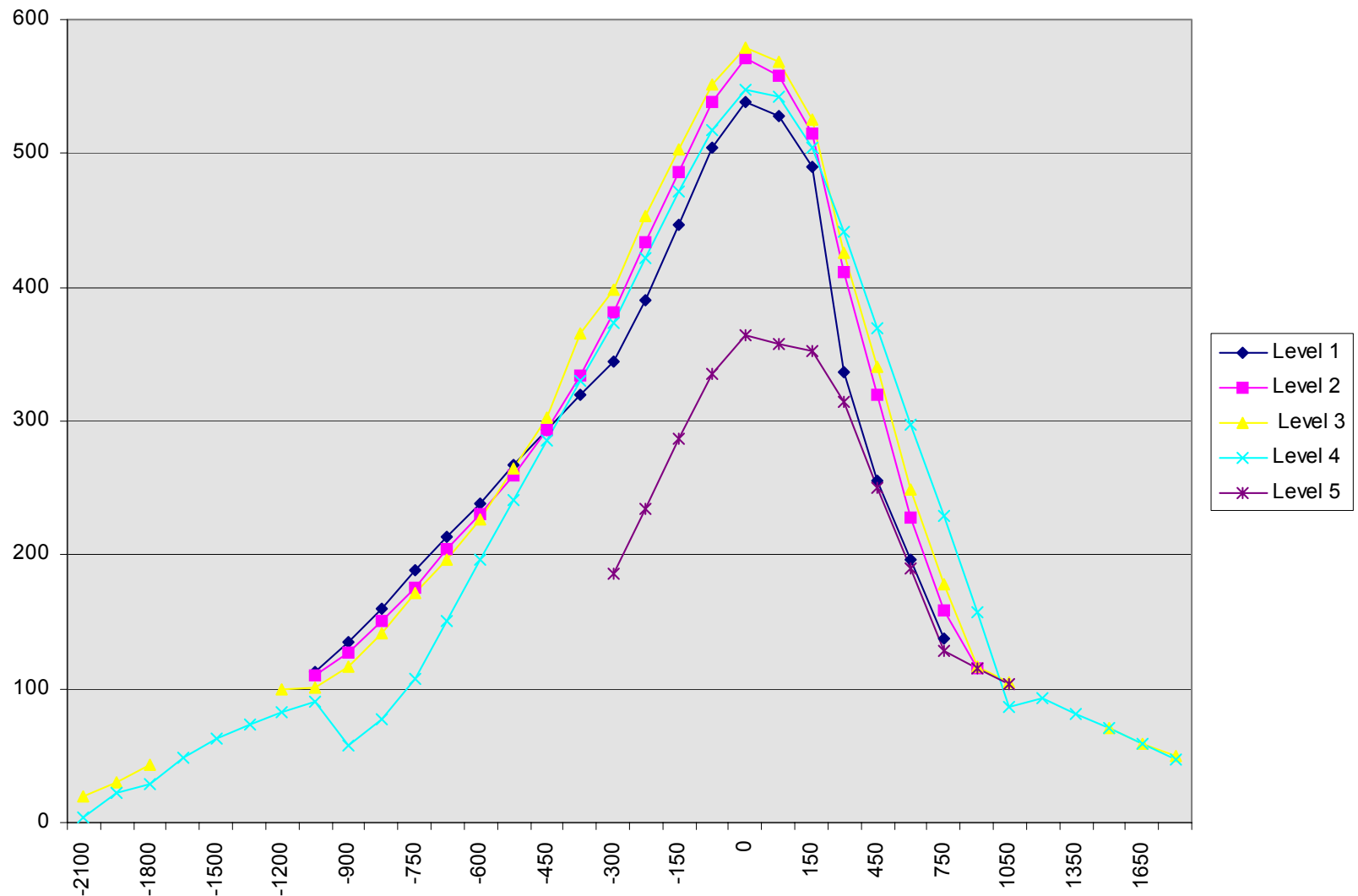
Reference plane is parallel to test vehicle longitudinal centerline
Given dimensions = Reference plane to car body

DATA SHEET NO. 8...(continued)
VEHICLE EXTERIOR CRUSH PROFILES

Test Vehicle: 2001/Saturn/L200/4 door

Test Date: July 10, 2001

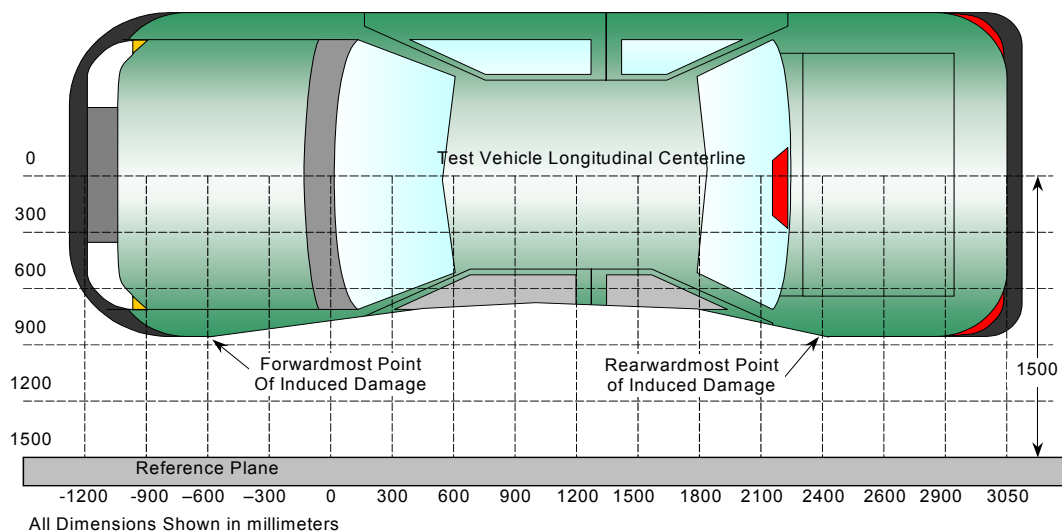
18



DATA SHEET NO. 9 **VEHICLE DAMAGE PROFILE DISTANCES**

Test Vehicle: 2001/Saturn/L200/4 door

Test Date: July 10, 2001



TOP VIEW

Damage Profile Distances

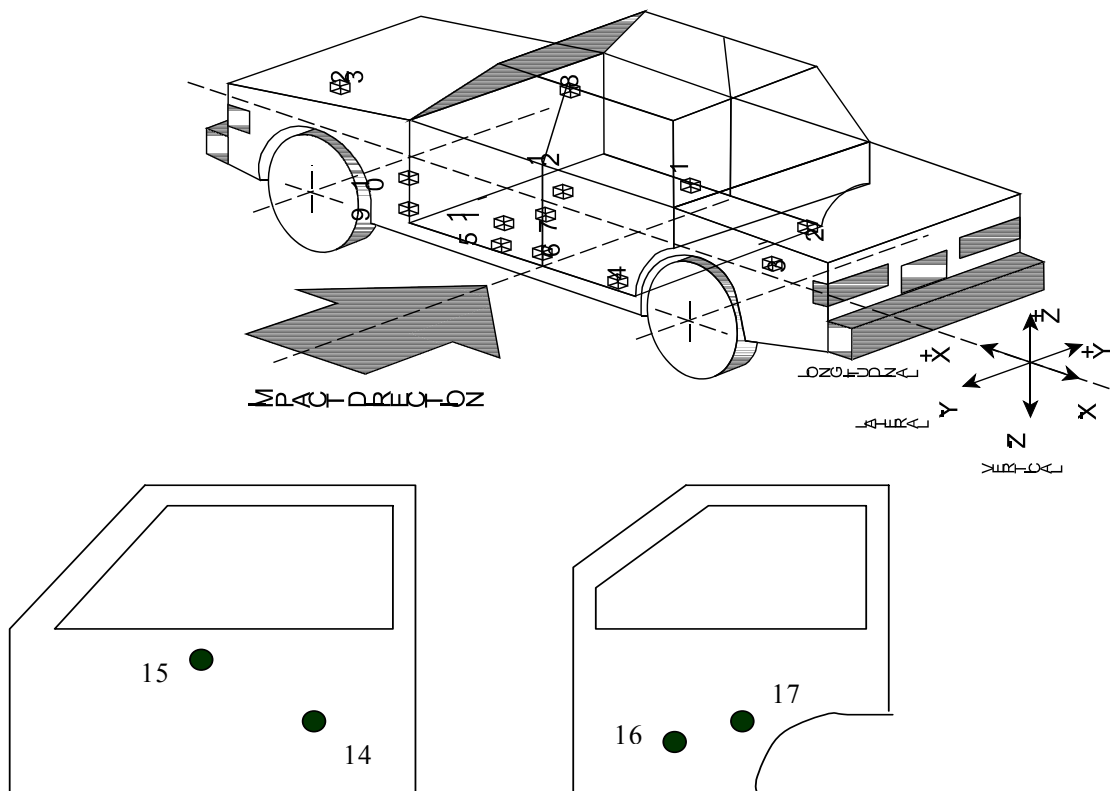
DPD	Distance from Impact Point in mm	Level	Pre-Test (mm)	Post-Test (mm)	Max Static Crush (mm)
1	1800 mm	4	510	557	47
2	1067 mm	4	437	544	107
3	205 mm	4	421	902	481
4	-634 mm	1	401	630	229
5	-1366 mm	4	454	527	73
6	-2100 mm	4	566	570	4

Reference plane is parallel to test vehicle longitudinal centerline
 Given dimensions = Reference plane to car body

DATA SHEET NO. 10
VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY

Test Vehicle: 2001/Saturn/L200/4 door

Test Date: July 10, 2001



No.	Location
1	Right Side Sill at Front Seat
2	Right Side Sill at Rear Seat
3	Rear Floorpan Above Axle
4	Left Side Sill at Rear Door
5	Left Side Sill at Front Door
6	Left Lower B Post
7	Left Mid B Post
8	Left Upper B Post
9	Left Lower A Post
10	Left Mid A Post
11	Driver Seat Track

No.	Location
12	Vehicle CG
13	Left A Pillar @ Roof
14	Left Front Door @ Pelvis
15	Left Front Door @ Arm
16	Left Rear Door @ Knee
17	Left Rear Door @ Pelvis
18	Child Seat @ Pelvis
19	Left Driver Seat Frame
20	Right Driver Seat Frame
21	Lower Center Radiator Support

DATA SHEET NO. 10...(continued)
VEHICLE ACCELEROMETER LOCATION AND DATA SUMMARY

Test Vehicle: 2001/Saturn/L200/4 door

Test Date: July 10, 2001

VEHICLE ACCELEROMETER PEAK DATA AND PRE-TEST LOCATIONS

Loc. No.	Accelerometer Location	Long. (X) Maximums (g's) (CFC 60)		Lat.. (Y) Maximums (g's) (CFC 60)		Vert. (Z) Maximums (g's) (CFC 60)		Resultant (g's) (CFC 60)
		Pos.	Neg.	Pos.	Neg.	Pos.	Neg.	Max.
1	Right Side Sill at Front Seat	1.9	0.7	8.1	0.2	2.5	3.2	8.2
2	Right Side Sill at Rear Seat	1.5	1.2	10.3	0.2	3.2	1.6	10.4
3	Rear Floorpan Above Axle	3.1	2.6	7.7	0.2	3.0	4.1	8.6
4	Left Side Sill at Rear Door			23.3	5.9			
5	Left Side Sill at Front Door			13.9	1.0			
6	Left Lower B Post			51.5	13.1			
7	Left Mid B Post			77.3	16.6			
8	Left Upper B Post			209.5	57.4			
9	Left Lower A Post			23.3	22.1			
10	Left Mid A Post			9.0	1.5			
11	Driver Left Seat Track			92.5	11.1			
12	Vehicle CG	2.6	2.7	13.8	0.3	5.7	4.5	14.0
13	Left A Pillar @ Roof			18.5	1.0			
14	Left Front Door @ Pelvis			81.3	50.7			
15	Left Front Door @ Arm			82.5	23.9			
16	Left Rear Door @ Knee			47.2	23.3			
17	Left Rear Door @ Pelvis			47.5	18.2			
18	Child Seat @ Pelvis			11.9	0.0			
19	Left Driver Seat Frame			79.0	10.8			
20	Right Driver Seat Frame			84.5	17.2			
21	Lower Center Radiator Support	1.7	3.1	7.4	4.1	3.9	7.0	8.6

DATA SHEET NO. 10...(continued)
VEHICLE ACCELEROMETER LOCATION AND DATA SUMMARY

Test Vehicle: 2001/Saturn/L200/4 door

Test Date: July 10, 2001

VEHICLE ACCELEROMETER COORDINATES

Loc. No.	Description	Coordinates (mm)*		
		X	Y	Z
1	Right Side Sill at Front Seat	2505	696	230
2	Right Side Sill at Rear Seat	1735	696	240
3	Rear Floorpan Above Axle	1015	0	505
4	Left Side Sill at Rear Door	1546	-672	240
5	Left Side Sill at Front Door	2642	-672	225
6	Left Lower B Post	2160	-715	400
7	Left Mid B Post	2171	-740	928
8	Left Upper B Post	2026	-542	1358
9	Left Lower A Post	3227	-718	406
10	Left Mid A Post	3148	-725	958
11	Driver Left Seat Track	2317	-565	355
12	Vehicle CG	2917	0	322
13	Left A Pillar @ Roof	2682	-536	1273
14	Left Front Door @ Pelvis	2498	-754	579
15	Left Front Door @ Arm	2541	-365	880
16	Left Rear Door @ Knee	1741	-745	819
17	Left Rear Door @ Pelvis	1432	-740	877
18	Child Seat @ Pelvis	1464	-228	807
19	Left Driver Seat Frame	2095	-573	680
20	Right Driver Seat Frame	2095	-163	682
21	Lower Center Radiator Support	4374	0	218

Reference Points

X - Rear Bumper (+ Forward)

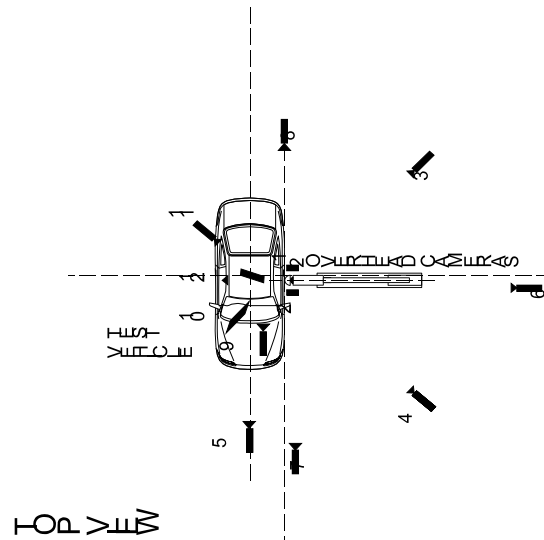
Y - Vehicle Centerline (+ to right)

Z - Ground Level (+ up)

DATA SHEET NO. 11
HIGH SPEED CAMERA LOCATIONS AND DATA

Test Vehicle: 2001/Saturn/L200/4 door

Test Date: July 10, 2001



No.	Camera View	Location (mm)			Lens (mm)	Film Speed (fps)
		X	Y	Z		
1	Overhead Overall	-840	0	5000	8	1010
2	Overhead Close-up	0	0	5000	13	1000
3	Left Side 45° Rearward Pole View	-1950	-6800	1234	50	1010
4	Left Side 45° Forward Pole View	-1800	6220	1365	50	1000
5	Real Time				13	1015
6	Left Side Rear Pole View	-3000	0	2570	8	1000
7	Front Ground Level Vehicle/Pole Impact	2800	9000	1520	25	1015
8	Rear Ground Level Vehicle/Pole Impact	3900	-8700	1320	25	1000
9	Test Vehicle Onboard Driver Hip				7.5	500
10	Test Vehicle Onboard Hood				13	506
11	Test Vehicle Onboard Driver Head Contact				13	512
12	Test Vehicle Onboard Child Dummies				13	509

Reference Points
X - + Forward of Impact
Y - + Right of Impact
Z - + Up from Ground

**APPENDIX A
PHOTOGRAPHS**

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Photo No. A-1 - Pre-Test Front View of Test Vehicle

A-2



Photo No. A-2 - Post-Test Front View of Test Vehicle



Photo No. A-3 - Pre-Test Rear View of Test Vehicle



Photo No. A-4 - Post-Test Rear View of Test Vehicle

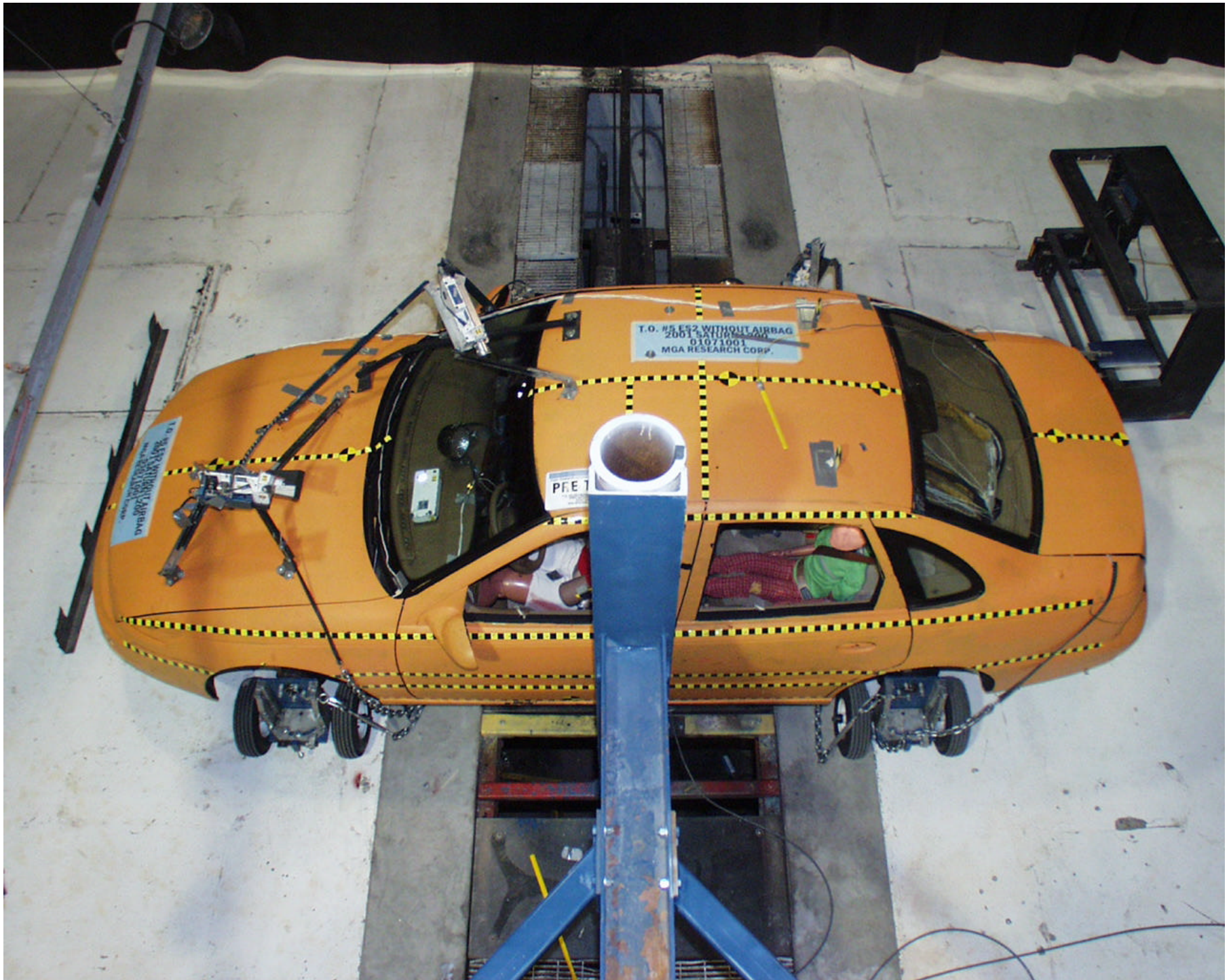


Photo No. A-5 - Pre-Test Left Side View of Test Vehicle

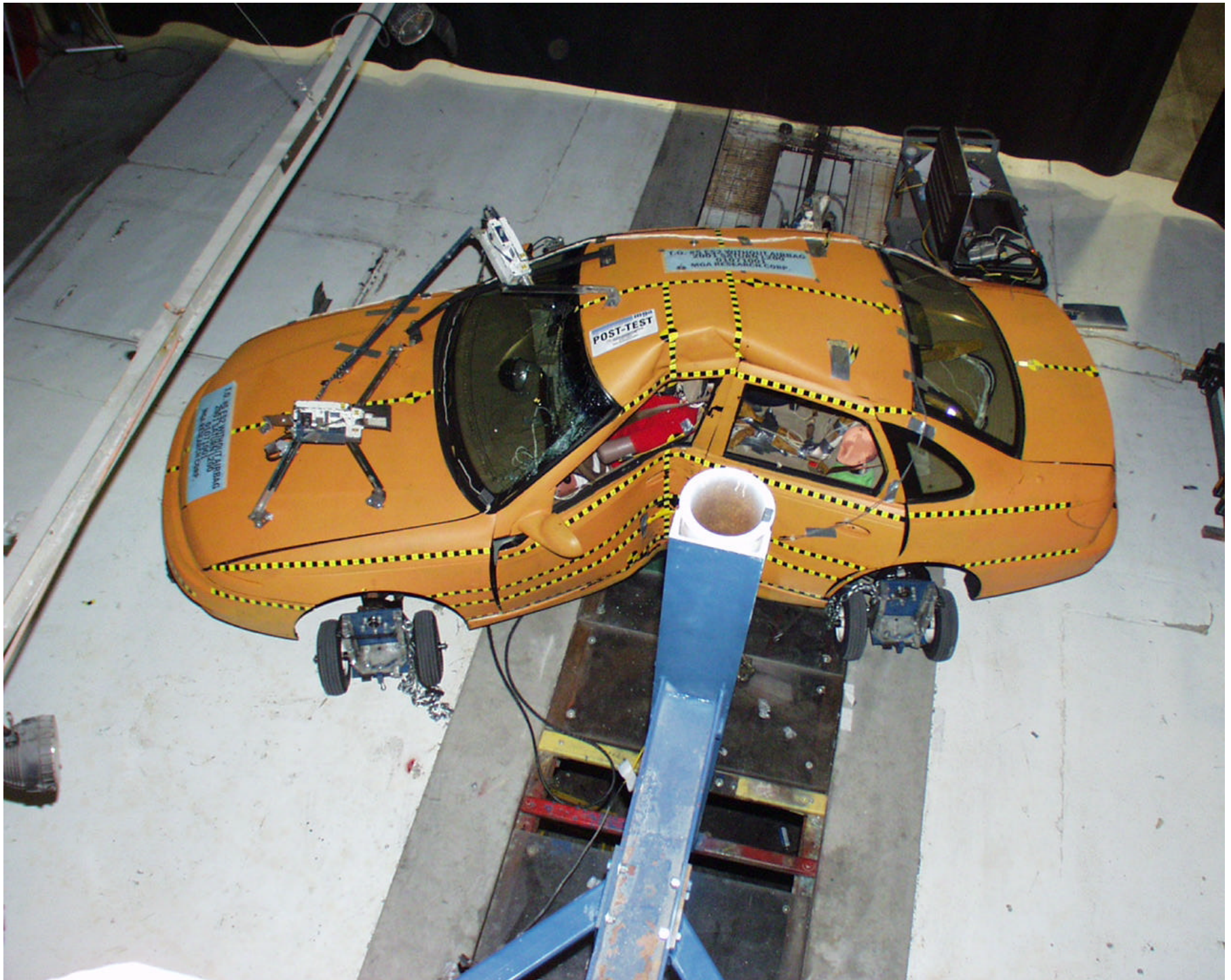


Photo No. A-6 - Post-Test Left Side View of Test Vehicle

A-7



Photo No. A-7 - Pre-Test Left Front View



Photo No. A-8 - Post-Test Left Front View

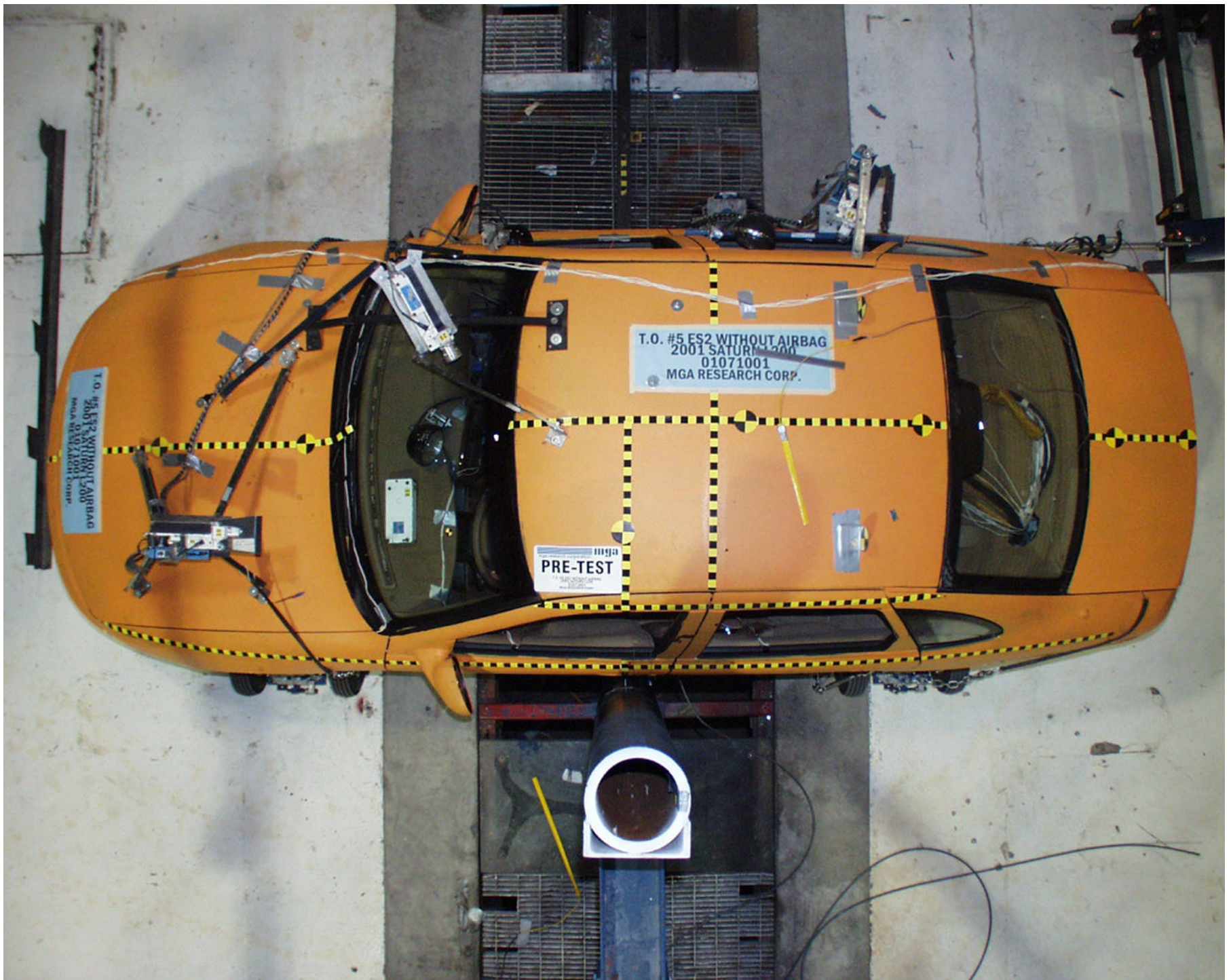


Photo No. A-9 - Pre-Test Overhead View

A-10

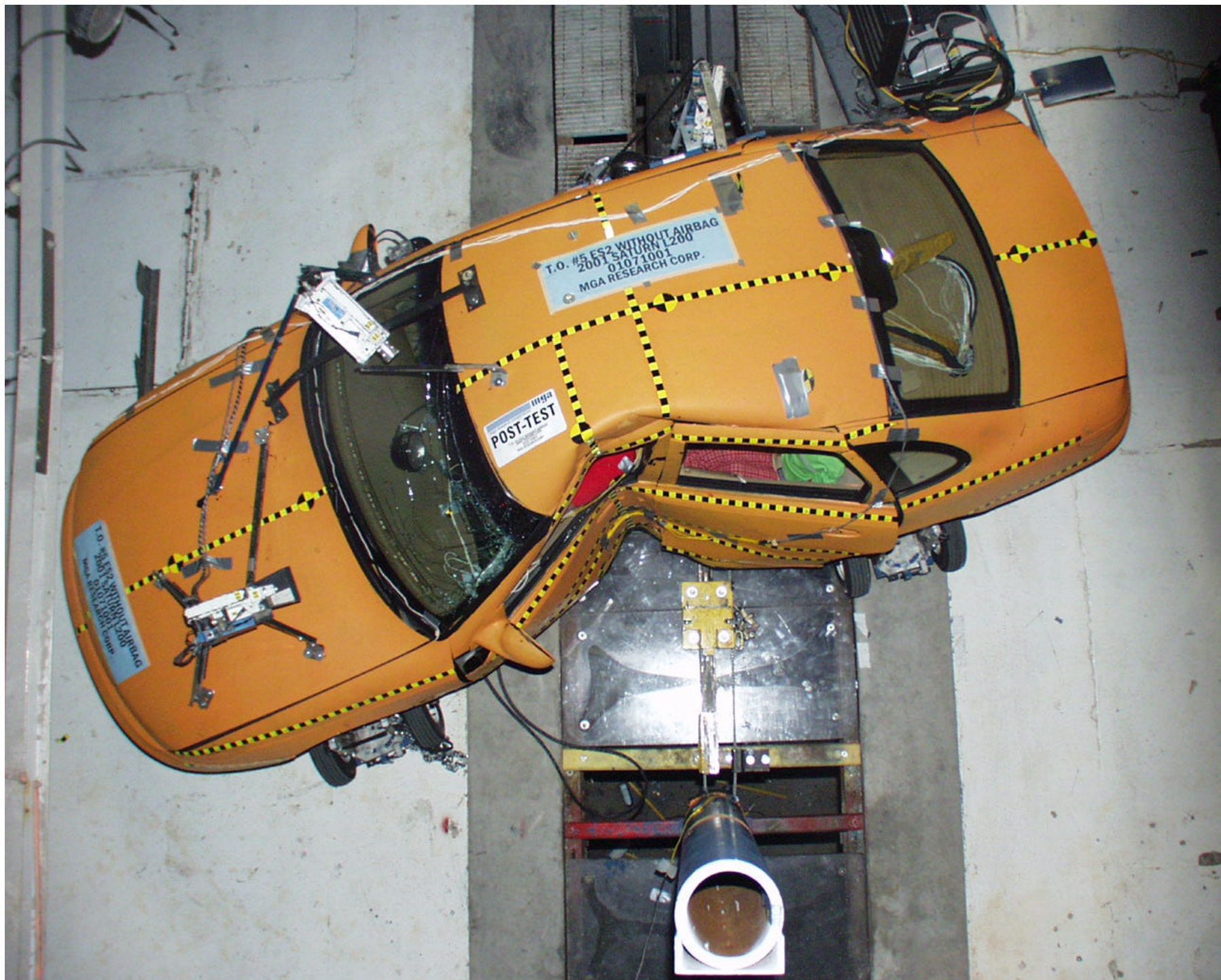


Photo No. A-10 - Post-Test Overhead View



Photo No. A-11 - Pre-Test Left Rear View



Photo No. A-12 - Post- Test Left Rear View



Photo No. A-13 - Pre-Test Driver Dummy Right Side View



Photo No. A-14 - Post-Test Driver Dummy Right Side View



Photo No. A-15 - Pre-Test Driver Dummy Left Side View



Photo No. A-16 - Post-Test Driver Dummy Left Side View



Photo No. A-17 - Pre-Test Driver Dummy Left Side View (Door Open)



Photo No. A-18 - Pre-Test Driver Dummy Shoulder and Door Top View



Photo No. A-19 - Post-Test Driver Dummy Shoulder and Door Top View

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Photo No. A-20 - Pre-Test Right Rear Passenger Dummy Right Side View (Door Open)



Photo No. A-21 - Post-Test Right Rear Passenger Dummy Right Side View

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Photo No. A-22 - Pre-Test Right Rear Passenger Dummy Left Side View

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Photo No. A-23 - Post-Test Right Rear Passenger Dummy Left Side View



Photo No. A-24 - Pre-Test Rear Passenger Dummies Left Side View (Door Open)



Photo No. A-25 - Post-Test Left Rear Passenger Dummy Right Side View



Photo No. A-26 - Pre-Test Driver Windshield View



Photo No. A-27 - Pre-Test Impact Point on Vehicle



Photo No. A-28 - Post-Test Impact Point on Vehicle

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Photo No. A-29 – Post-Test Driver Head Contact

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Photo No. A-30 - Post-Test Driver Contact



Photo No. A-31 – Post-Test Left Rear Passenger Head Contact

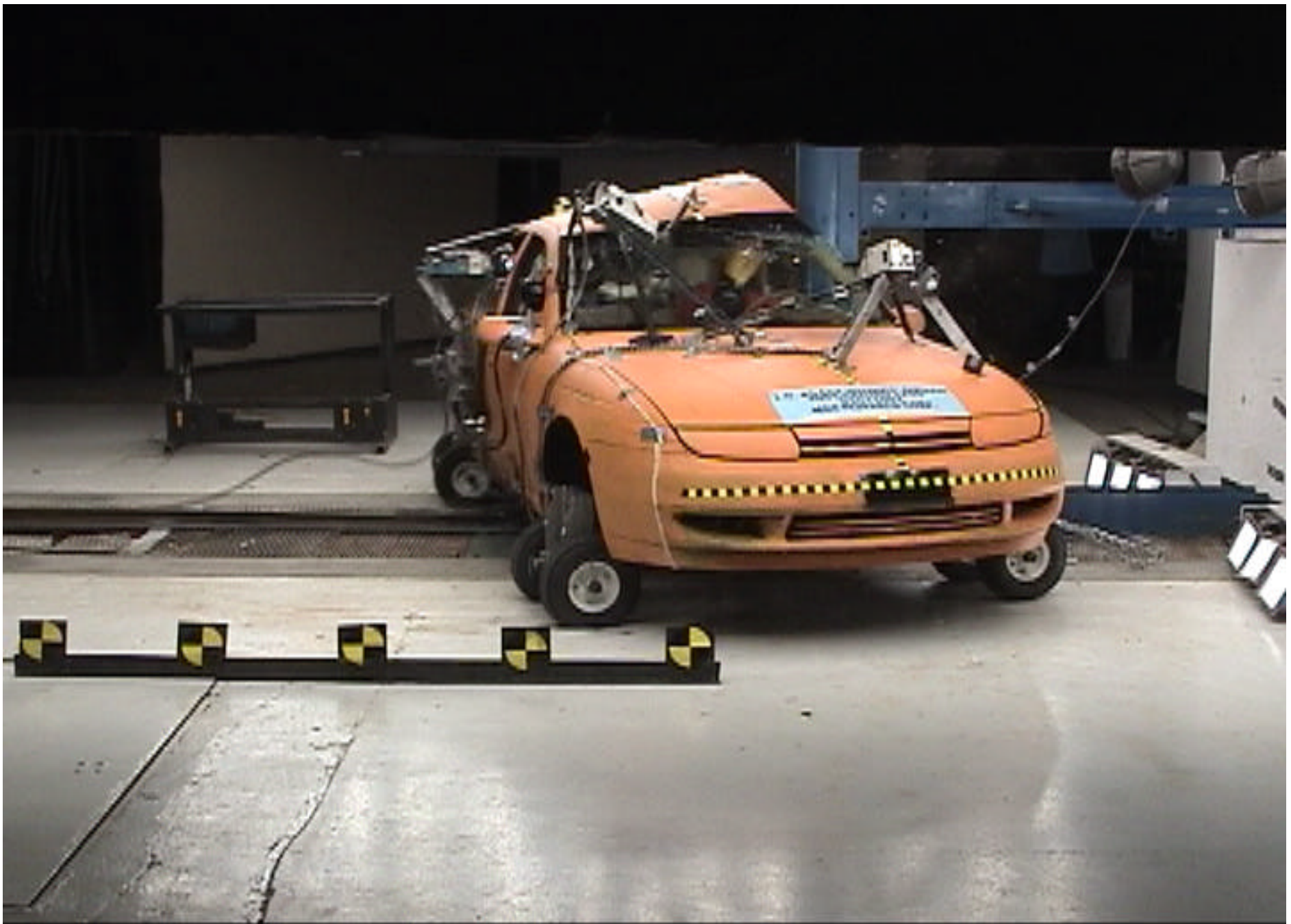


Photo No. A-32 – Impact



Photo No. A-33 –Vehicle Certification Label

APPENDIX B
VEHICLE AND ES-2 RESPONSE DATA TRACES

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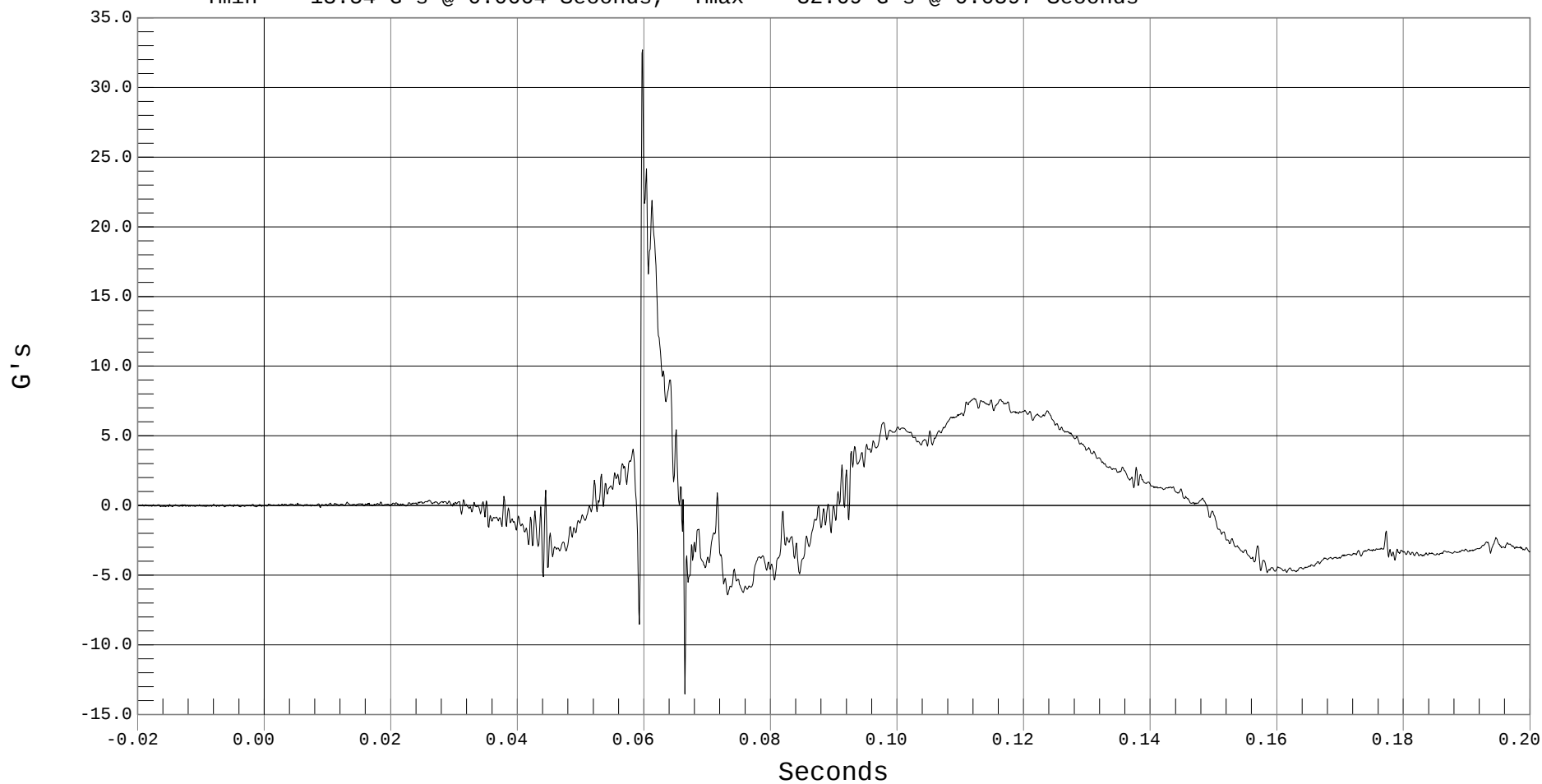
DRIVER HEAD X ACCELERATION

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 1000

— 1 DRIVER HEAD X, B01074AT.A01

Ymin = -13.54 G's @ 0.0664 Seconds, Ymax = 32.69 G's @ 0.0597 Seconds





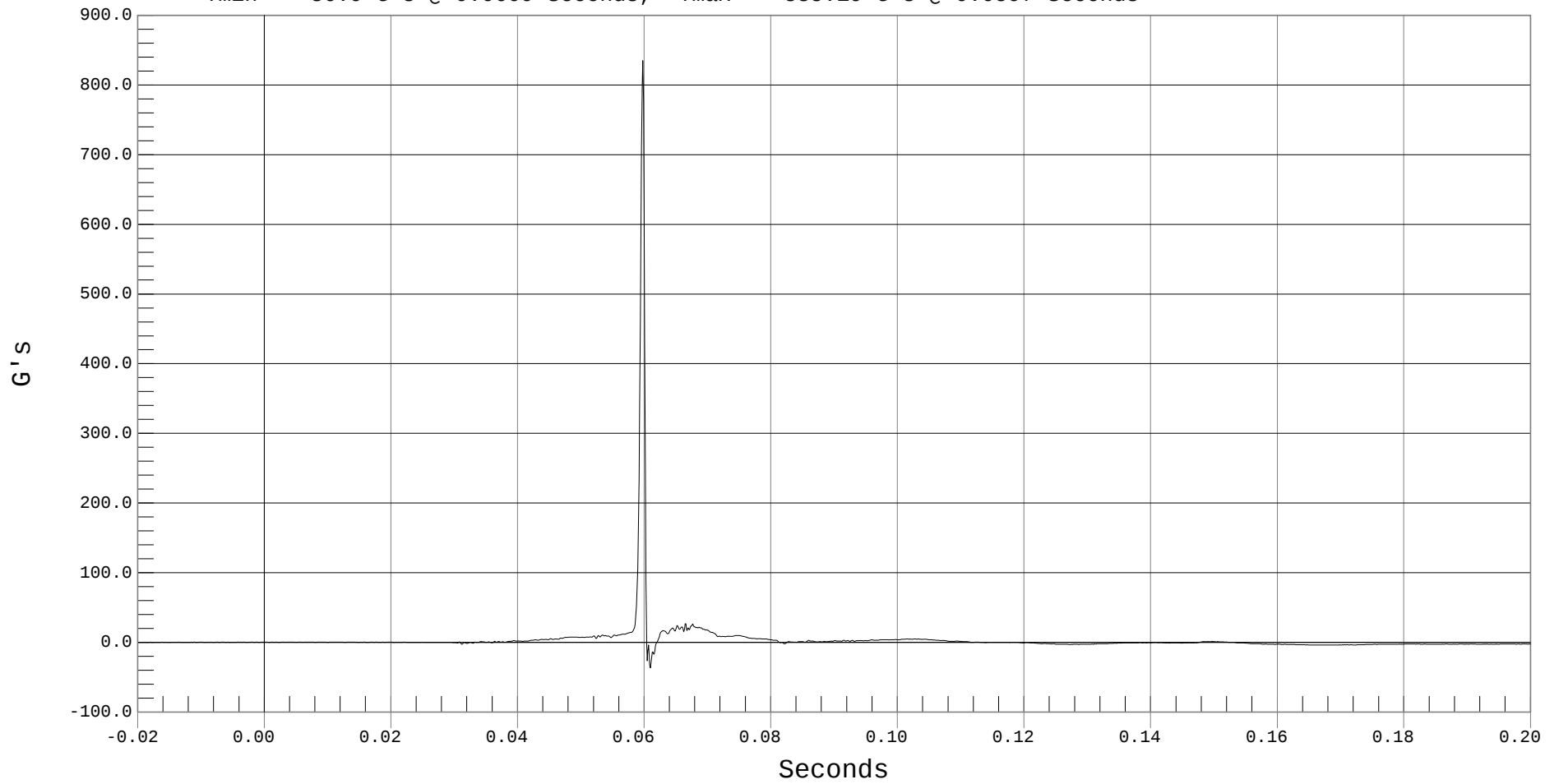
DRIVER HEAD Y ACCELERATION

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 1000

1 DRIVER HEAD Y, B01074AT.A02

Ymin = -36.9 G's @ 0.0609 Seconds, Ymax = 835.19 G's @ 0.0597 Seconds





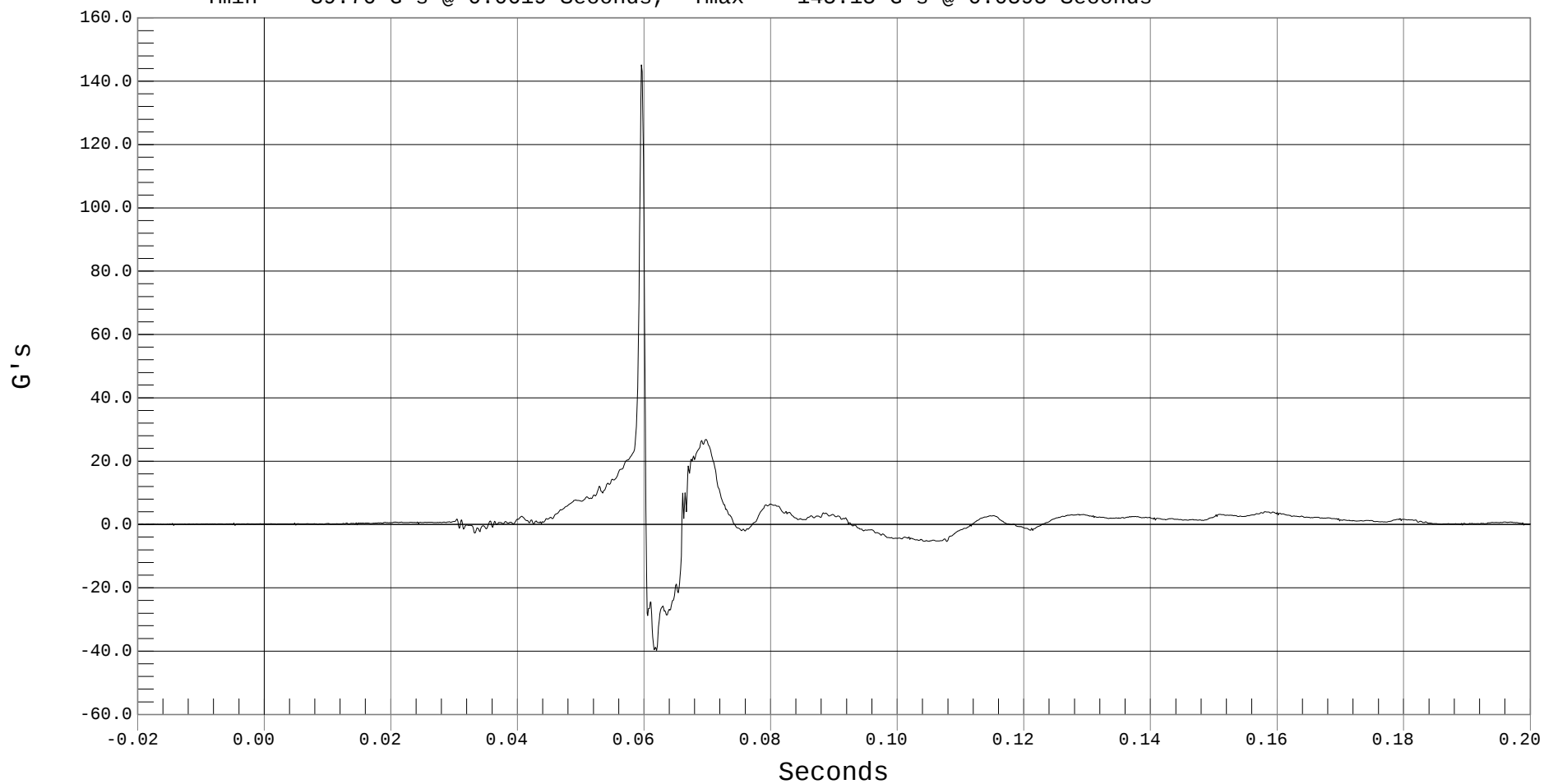
DRIVER HEAD Z ACCELERATION

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 1000

1 DRIVER HEAD Z, B01074AT.A03

Ymin = -39.76 G's @ 0.0619 Seconds, Ymax = 145.15 G's @ 0.0595 Seconds





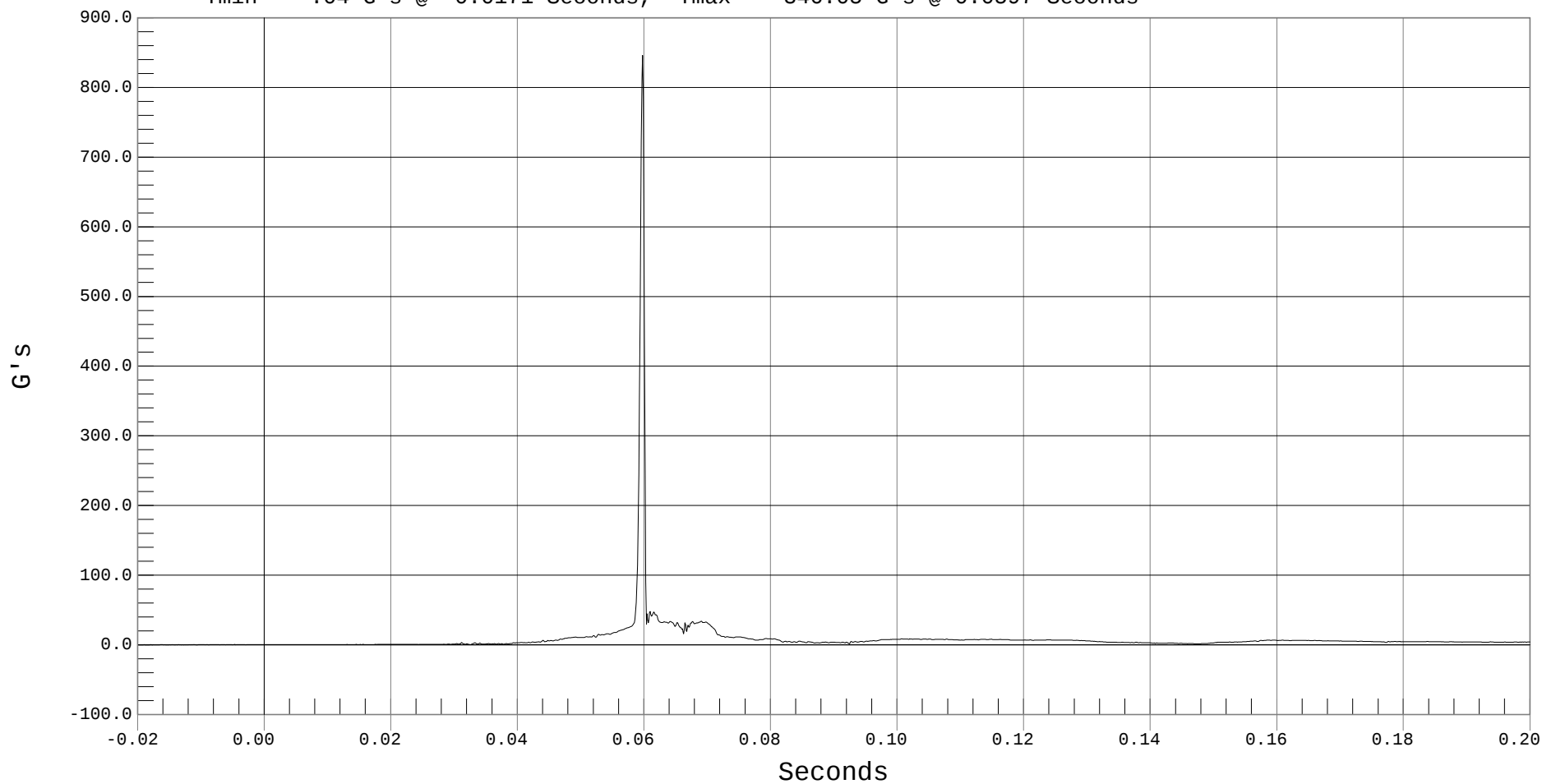
DRIVER HEAD RESULTANT ACCELERATION

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 1000

— 1 DRIVER HEAD RESULTANT RESULTANT, B01074AV.A01

Ymin = .04 G's @ -0.0171 Seconds, Ymax = 846.05 G's @ 0.0597 Seconds





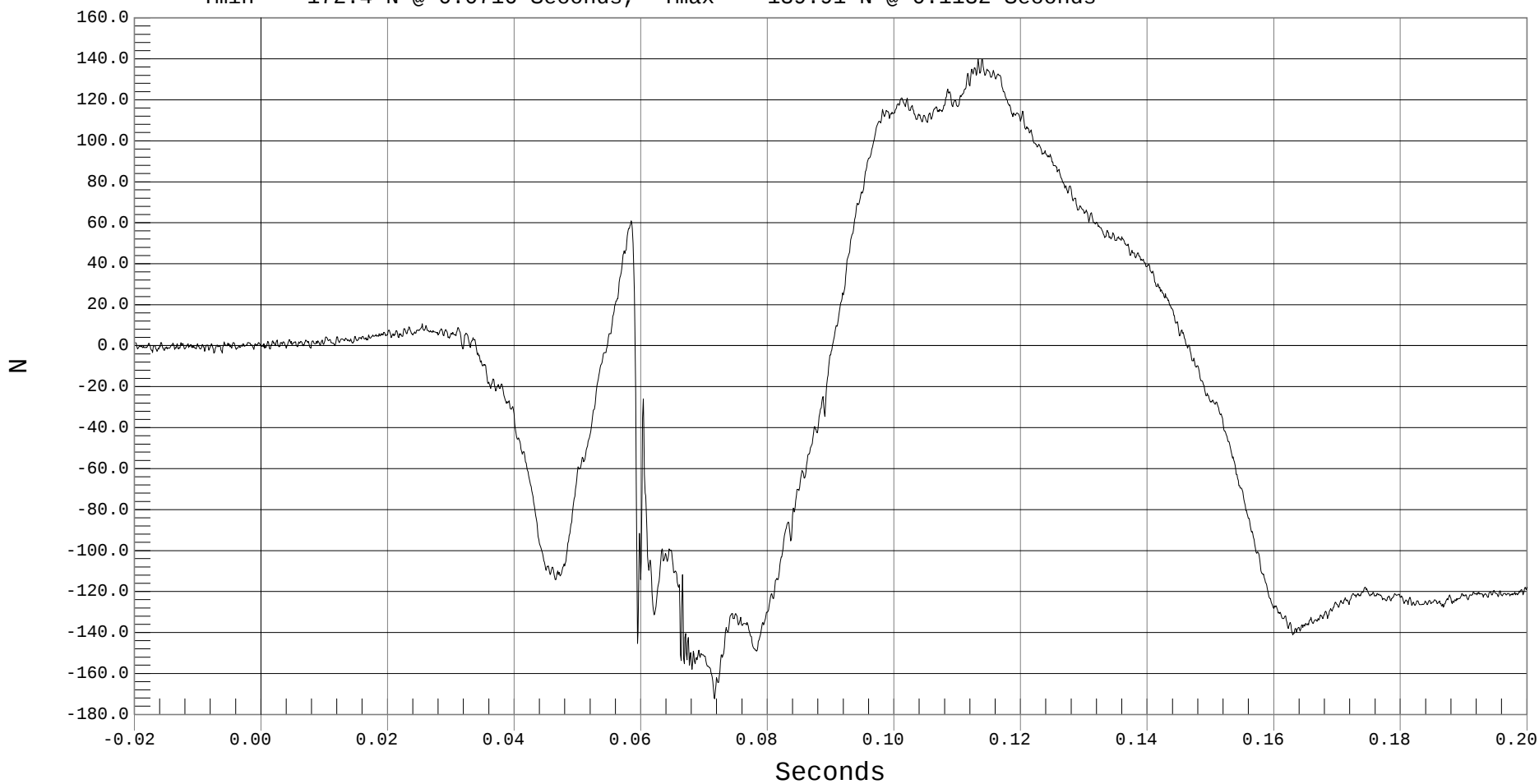
DRIVER UPPER NECK FORCE X

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 1000

1 DRIVER UPPER NECK FORCE X, B01074FT.F04

Ymin = -172.4 N @ 0.0716 Seconds, Ymax = 139.91 N @ 0.1132 Seconds





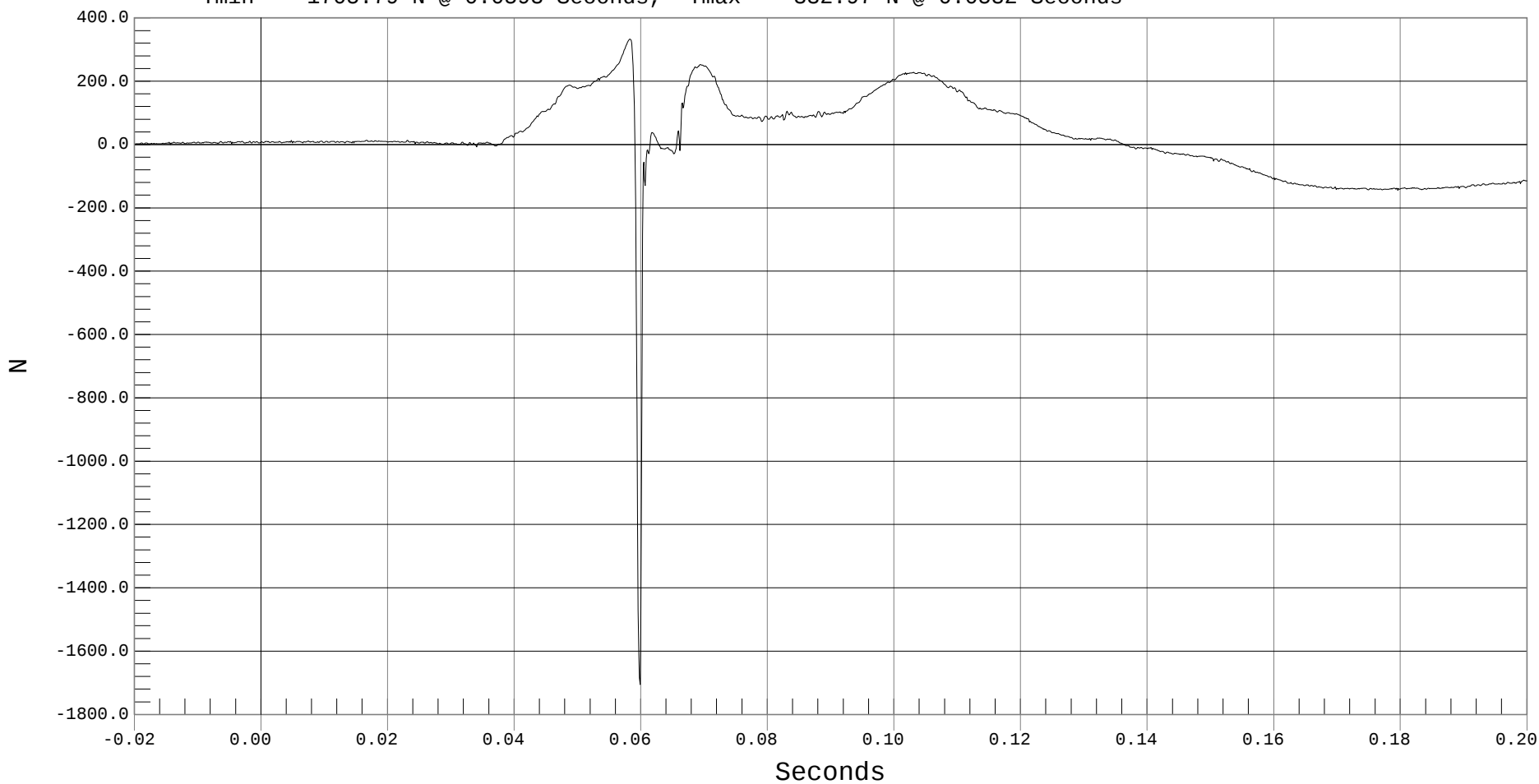
DRIVER UPPER NECK FORCE Y

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 1000

1 DRIVER UPPER NECK FORCE Y, B01074FT.F05

Ymin = -1705.79 N @ 0.0598 Seconds, Ymax = 332.97 N @ 0.0582 Seconds





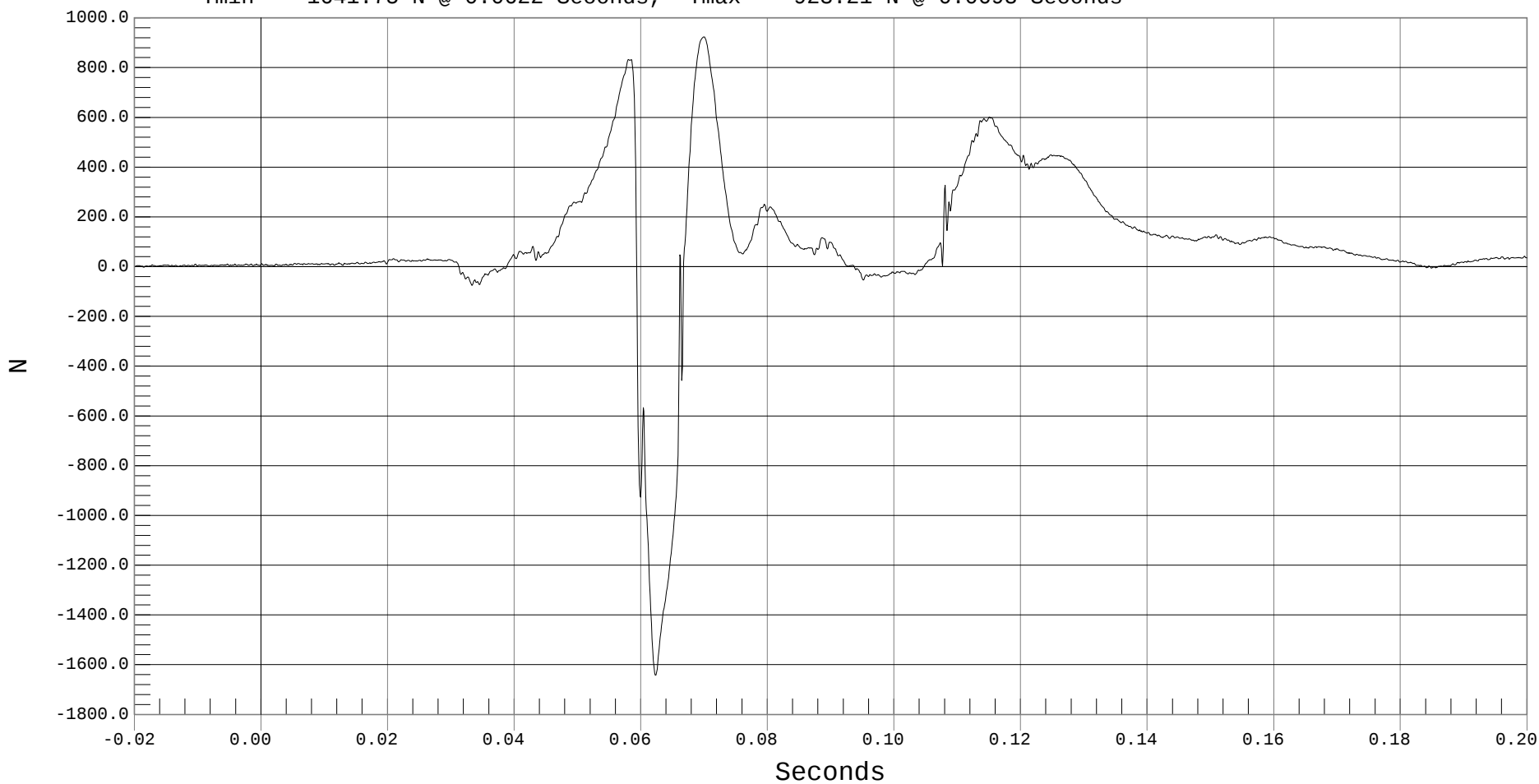
DRIVER UPPER NECK FORCE Z

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 1000

— 1 DRIVER UPPER NECK FORCE Z, B01074FT.F06

Ymin = -1641.75 N @ 0.0622 Seconds, Ymax = 923.21 N @ 0.0698 Seconds





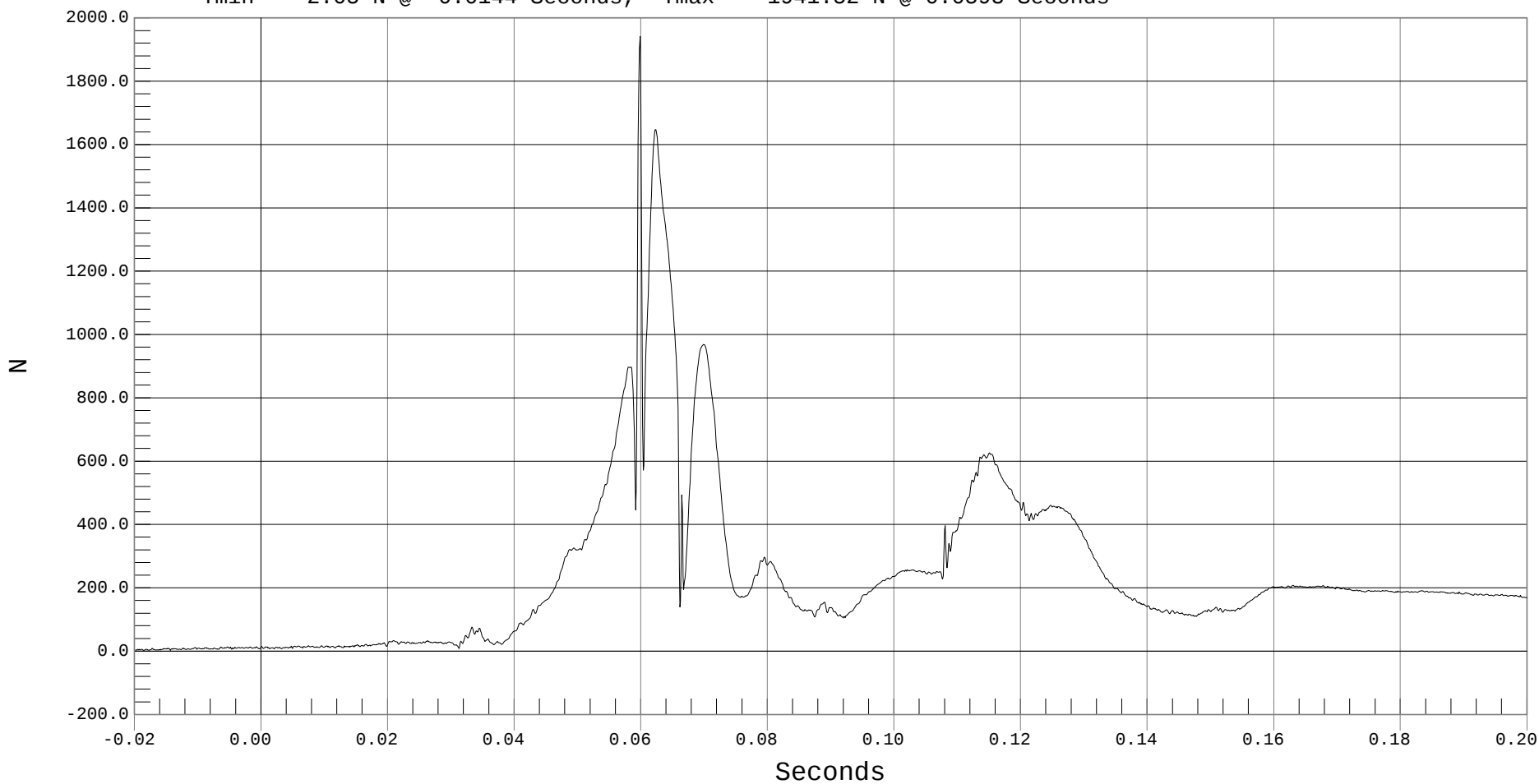
DRIVER UPPER NECK FORCE RESULTANT

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 1000

— 1 DRIVER UPPER NECK FORCE RESULTANT, B01074FV.F04

Ymin = 2.05 N @ -0.0144 Seconds, Ymax = 1941.52 N @ 0.0598 Seconds





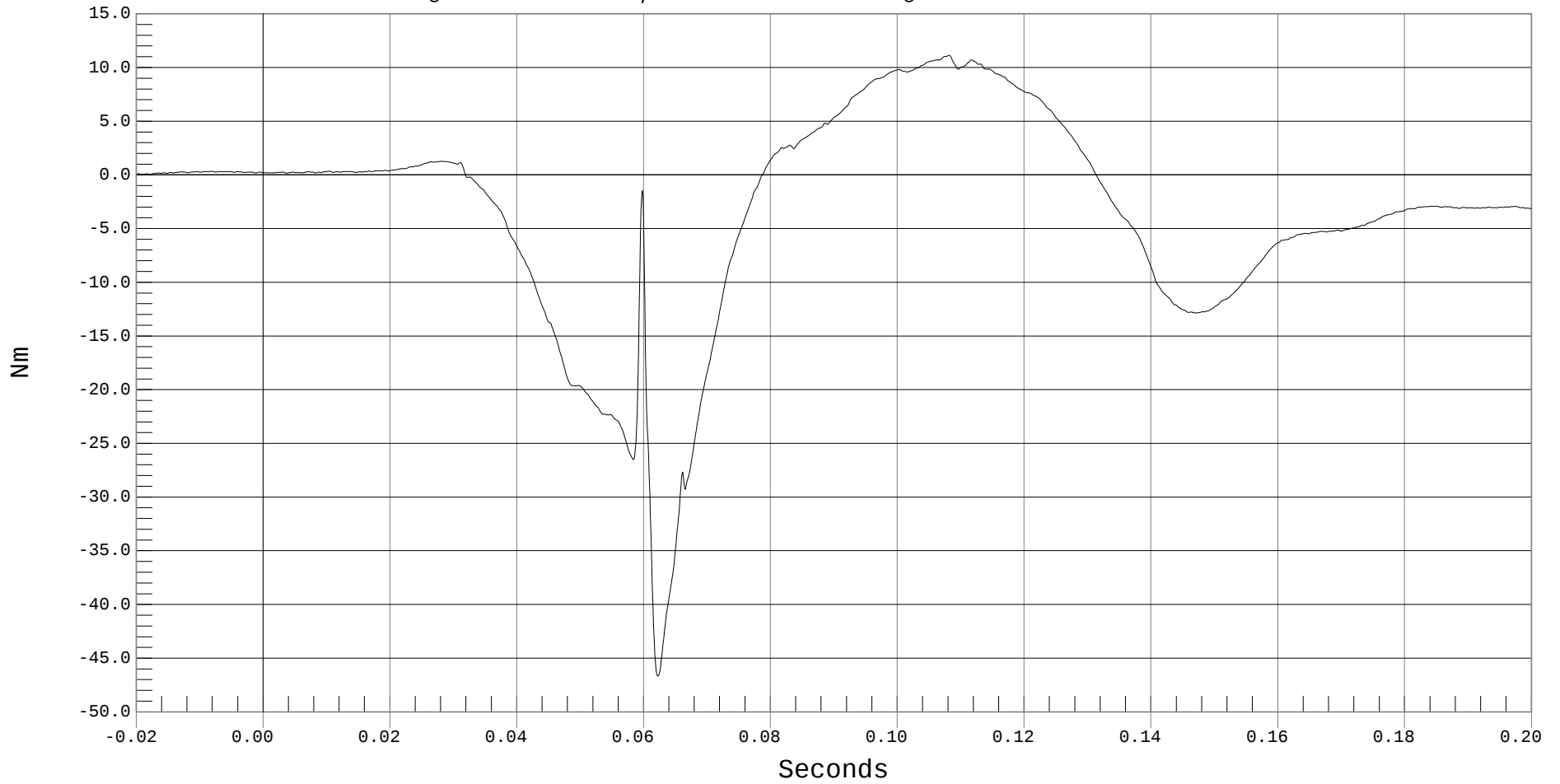
DRIVER UPPER NECK MOMENT X

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 600

— 1 DRIVER UPPER NECK MOMENT X, B01074MF.M07

Ymin = -46.67 Nm @ 0.0621 Seconds, Ymax = 11.14 Nm @ 0.1081 Seconds





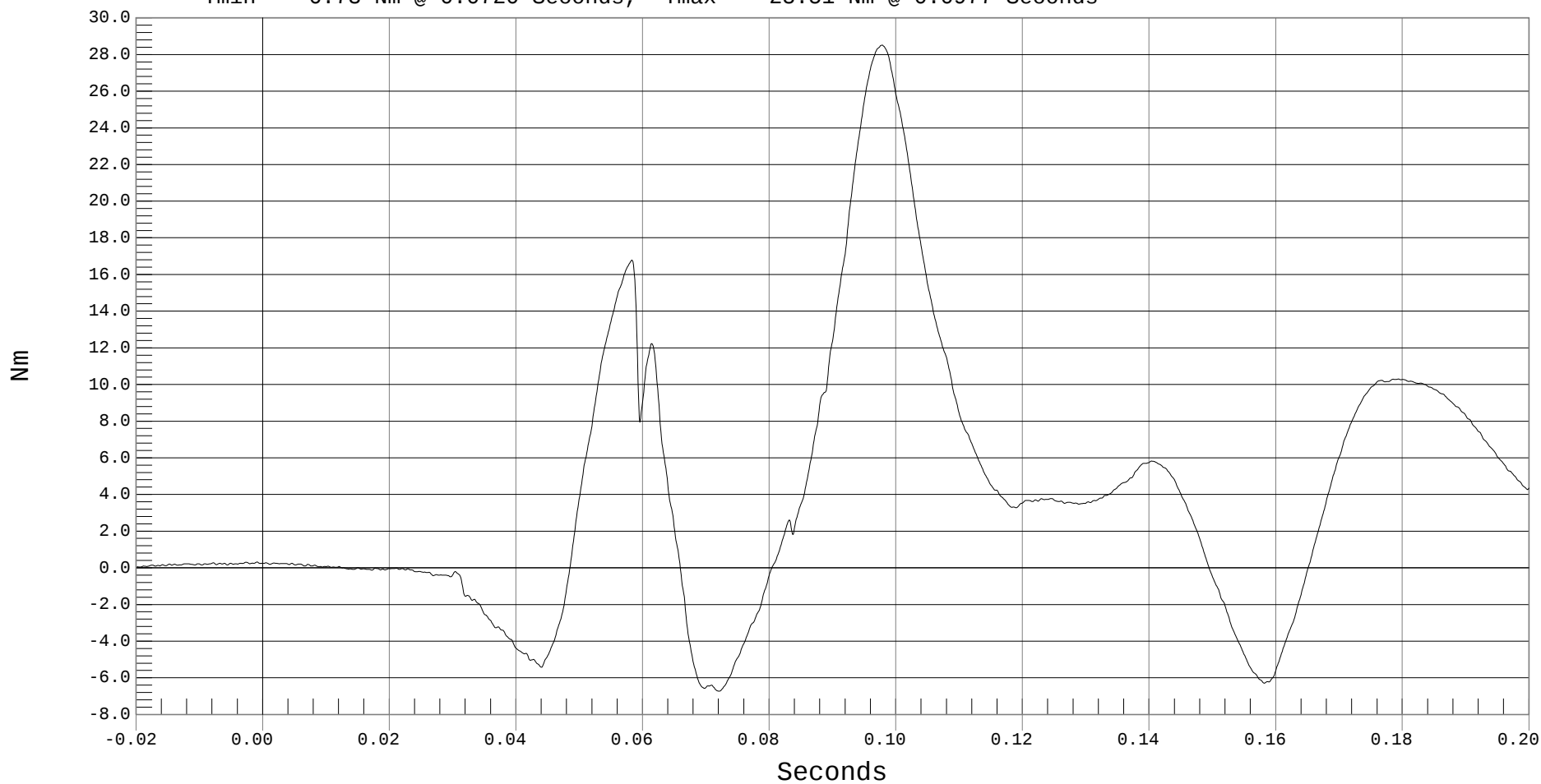
DRIVER UPPER NECK MOMENT Y

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 600

— 1 DRIVER UPPER NECK MOMENT Y, B01074MF.M08

Ymin = -6.73 Nm @ 0.0720 Seconds, Ymax = 28.51 Nm @ 0.0977 Seconds





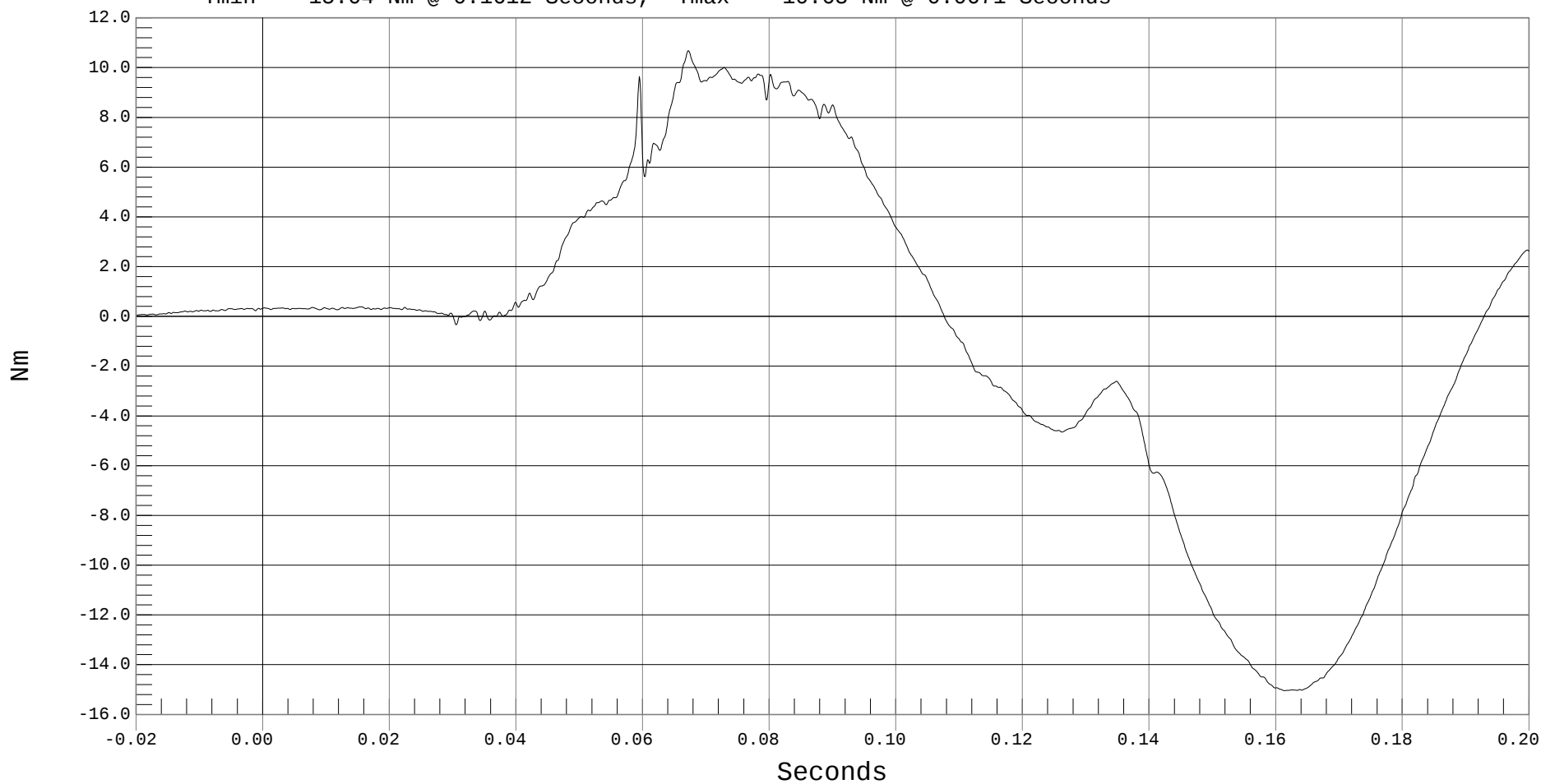
DRIVER UPPER NECK MOMENT Z

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 600

— 1 DRIVER UPPER NECK MOMENT Z, B01074MF.M09

Ymin = -15.04 Nm @ 0.1612 Seconds, Ymax = 10.68 Nm @ 0.0671 Seconds





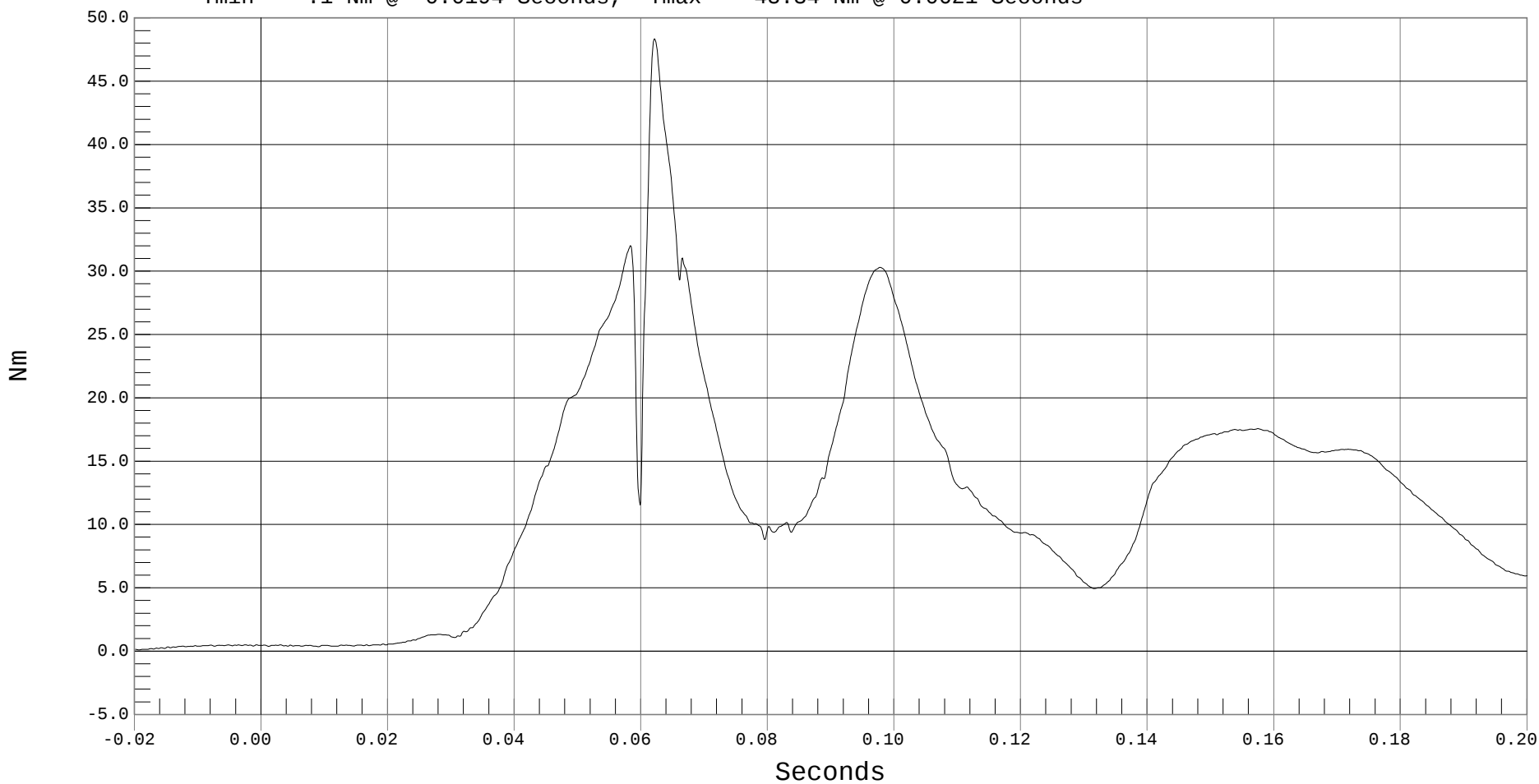
DRIVER UPPER NECK MOMENT RESULTANT

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 600

— 1 DRIVER UPPER NECK MOMENT RESULTANT, B01074MV.M07

Ymin = .1 Nm @ -0.0194 Seconds, Ymax = 48.34 Nm @ 0.0621 Seconds





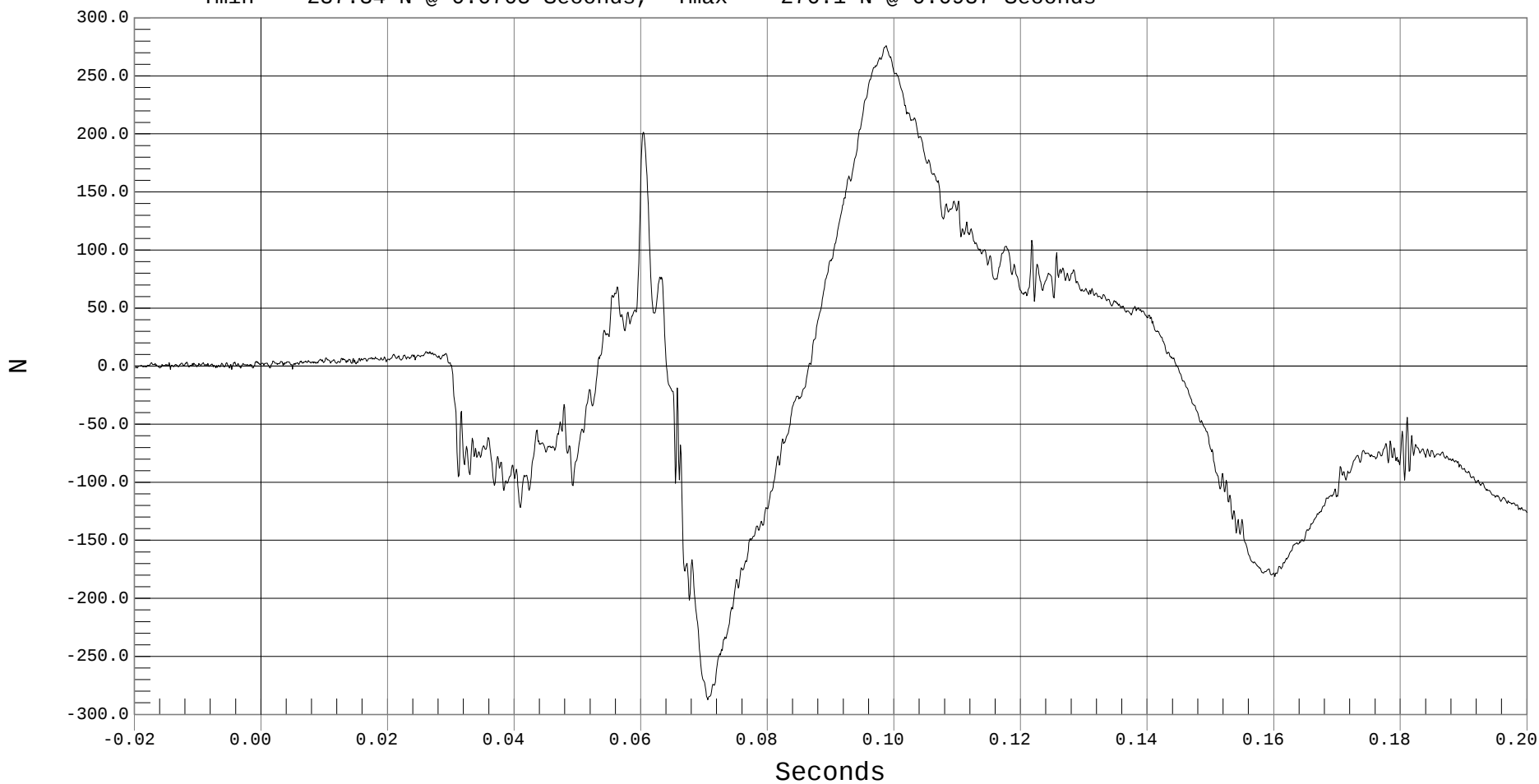
DRIVER LOWER NECK FORCE X

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 1000

— 1 DRIVER LOWER NECK FORCE X, B01074FT.F10

Ymin = -287.34 N @ 0.0705 Seconds, Ymax = 276.1 N @ 0.0987 Seconds





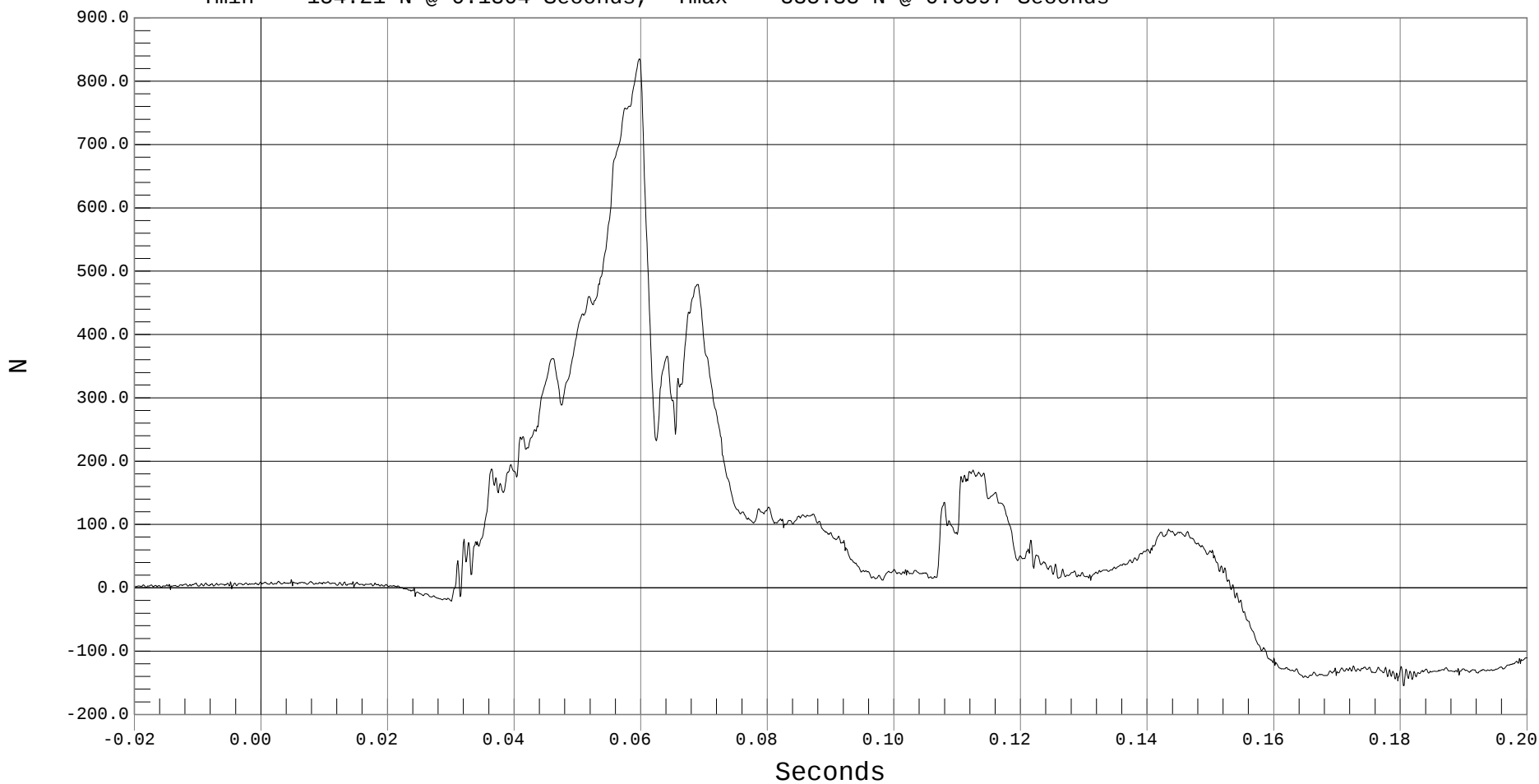
DRIVER LOWER NECK FORCE Y

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 1000

— 1 DRIVER LOWER NECK FORCE Y, B01074FT.F11

Ymin = -154.21 N @ 0.1804 Seconds, Ymax = 835.38 N @ 0.0597 Seconds





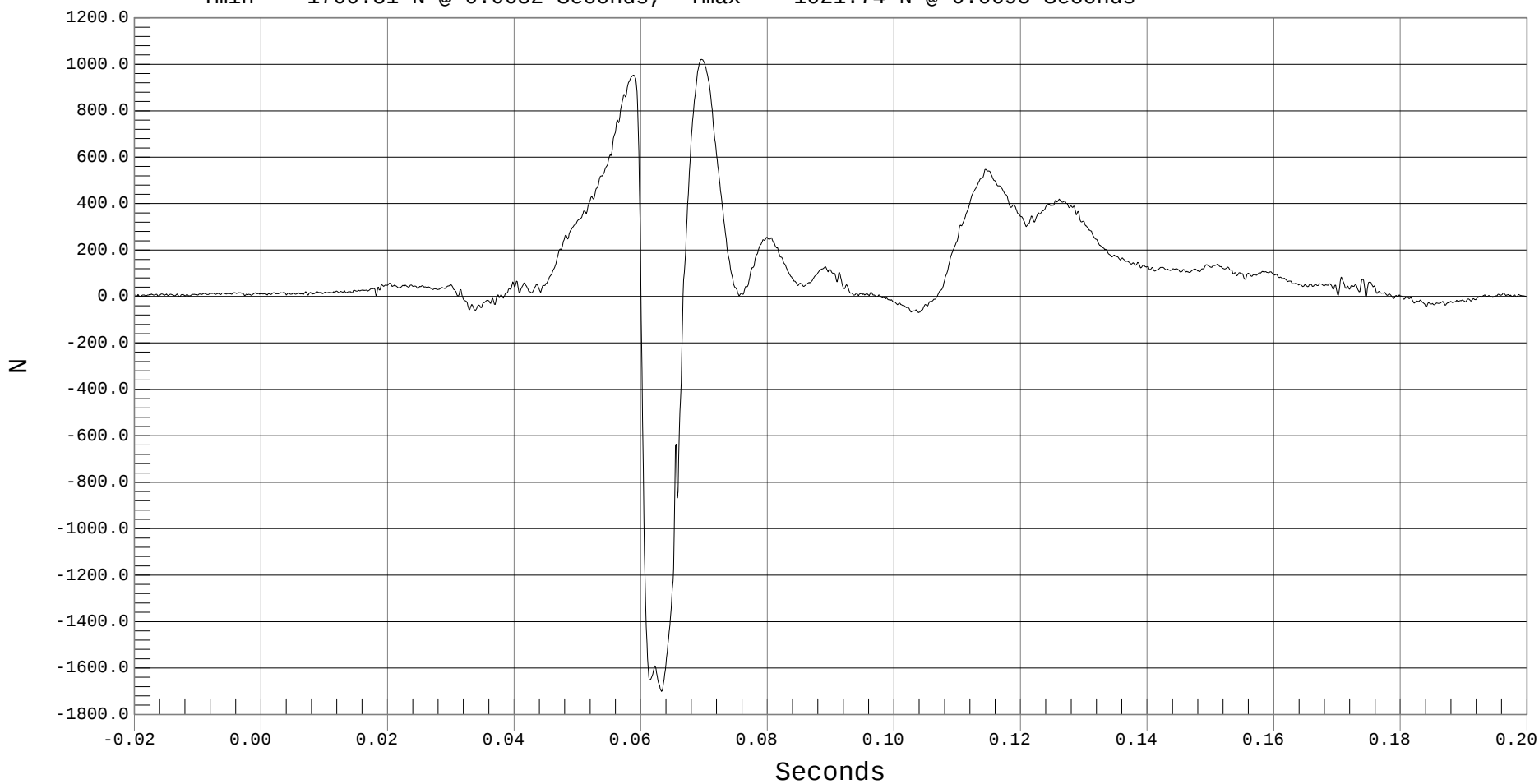
DRIVER LOWER NECK FORCE Z

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 1000

1 DRIVER LOWER NECK FORCE Z, B01074FT.F12

Ymin = -1700.31 N @ 0.0632 Seconds, Ymax = 1021.74 N @ 0.0695 Seconds





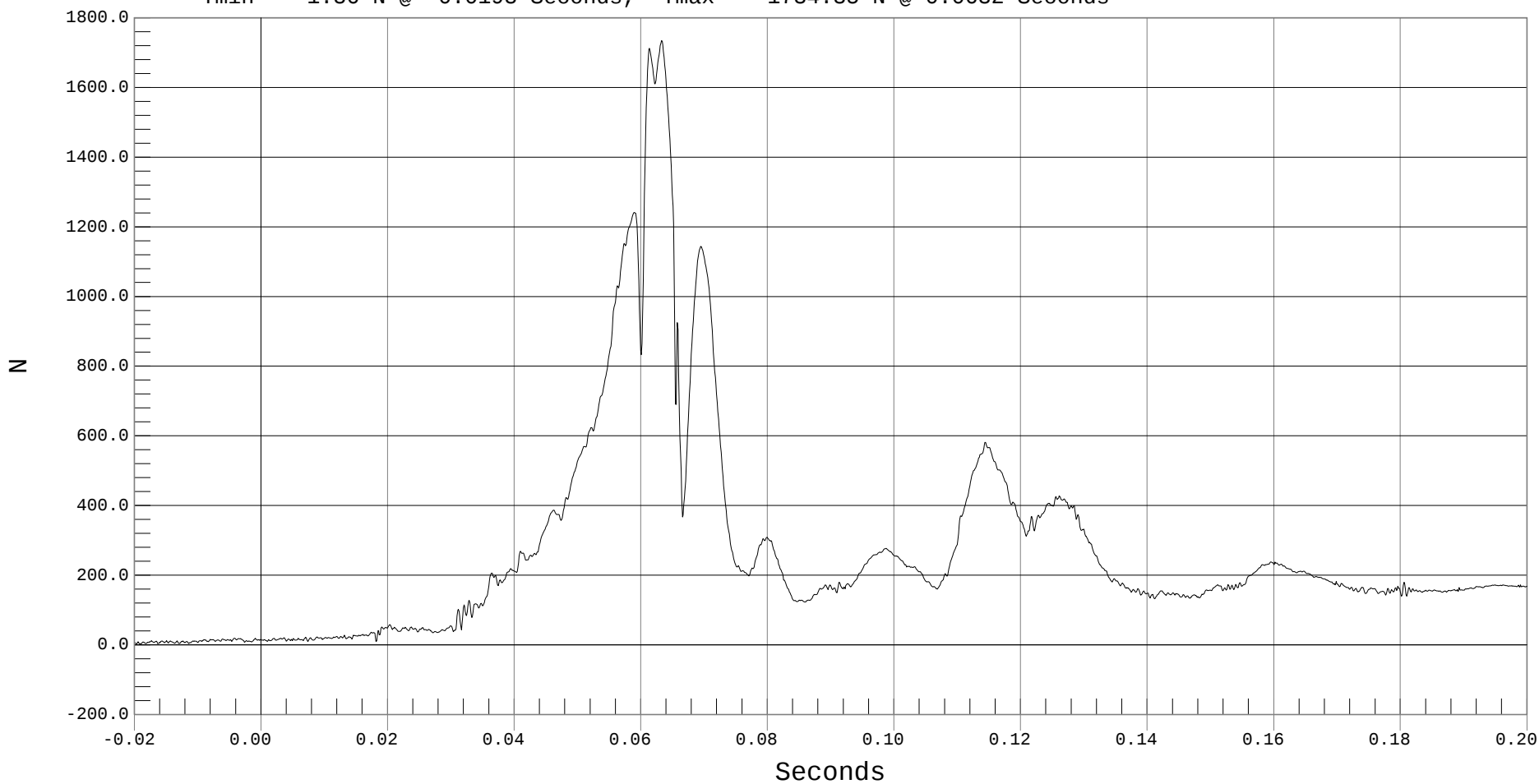
DRIVER LOWER NECK FORCE RESULTANT

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 1000

— 1 DRIVER LOWER NECK FORCE RESULTANT, B01074FV.F10

Ymin = 1.86 N @ -0.0198 Seconds, Ymax = 1734.35 N @ 0.0632 Seconds





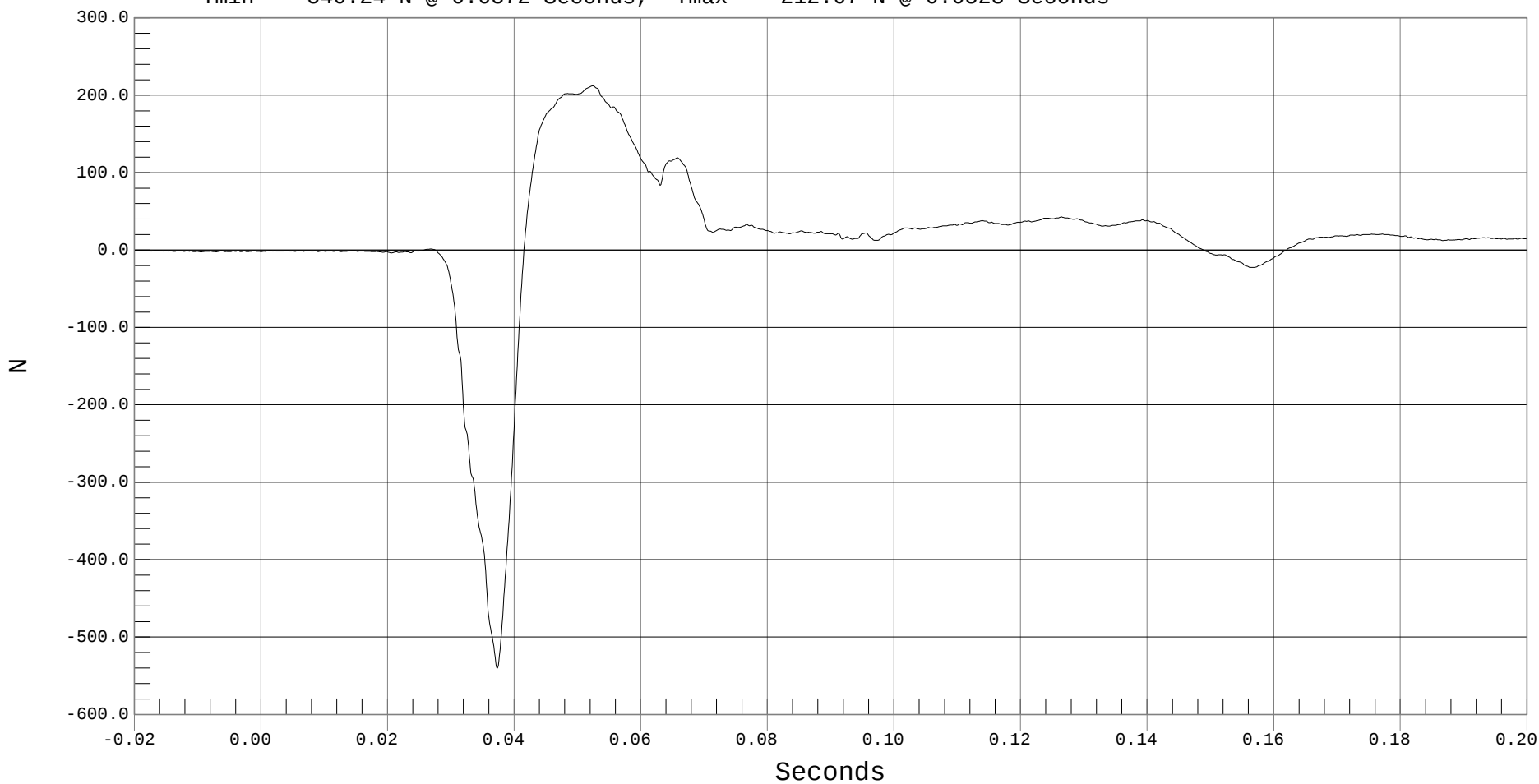
DRIVER SHOULDER FORCE X

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 600

— 1 DRIVER SHOULDER FORCE X, B01074FF.F16

Ymin = -540.24 N @ 0.0372 Seconds, Ymax = 212.07 N @ 0.0523 Seconds





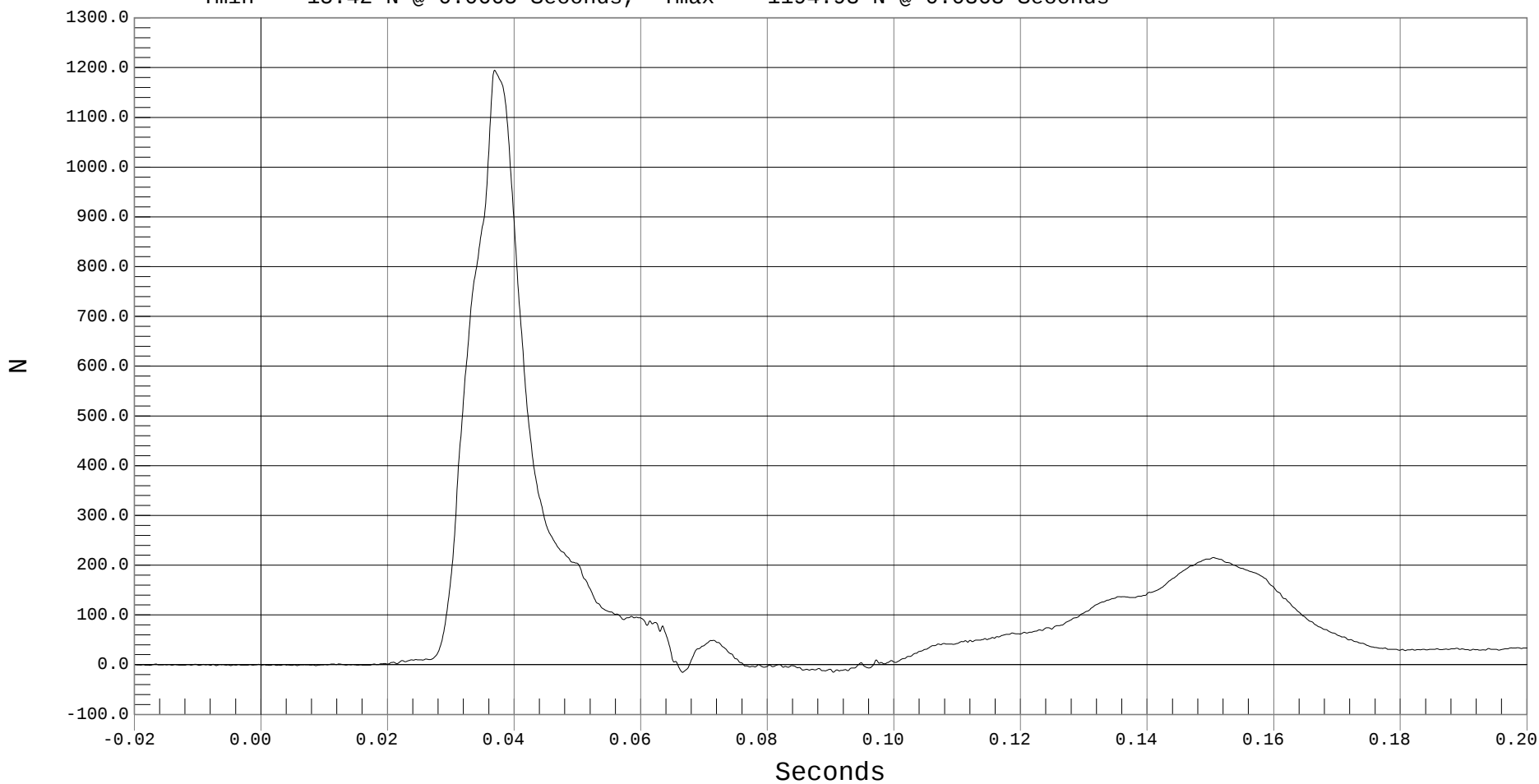
DRIVER SHOULDER FORCE Y

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 600

— 1 DRIVER SHOULDER FORCE Y, B01074FF.F17

Ymin = -15.42 N @ 0.0665 Seconds, Ymax = 1194.93 N @ 0.0368 Seconds





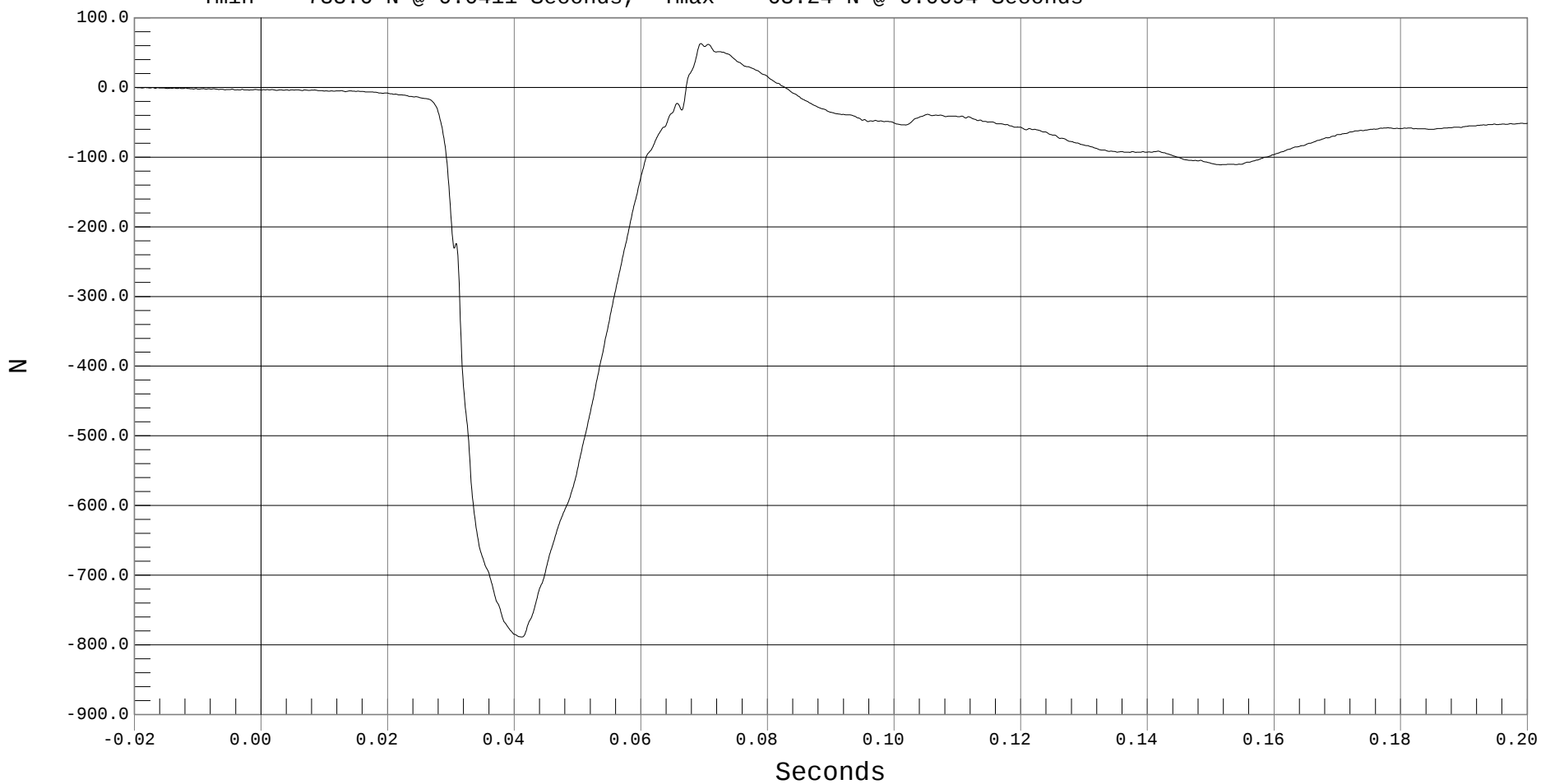
DRIVER SHOULDER FORCE Z

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 600

— 1 DRIVER SHOULDER FORCE Z, B01074FF.F18

Ymin = -788.6 N @ 0.0411 Seconds, Ymax = 63.24 N @ 0.0694 Seconds





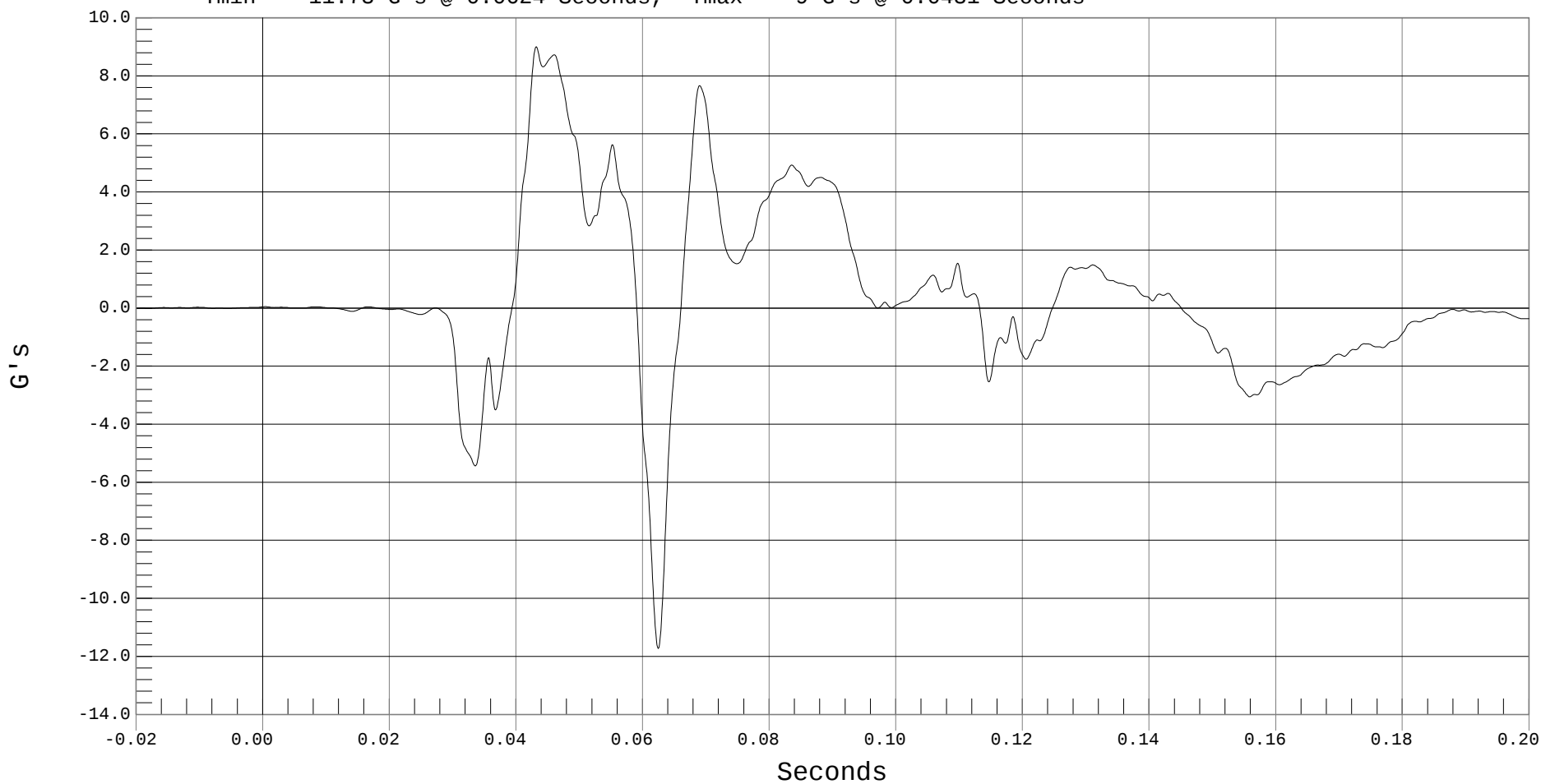
UPPER SPINE X ACCELERATION

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 180

— 1 DRIVER UPPER SPINE X, B01074AF.A20

Ymin = -11.73 G's @ 0.0624 Seconds, Ymax = 9 G's @ 0.0431 Seconds





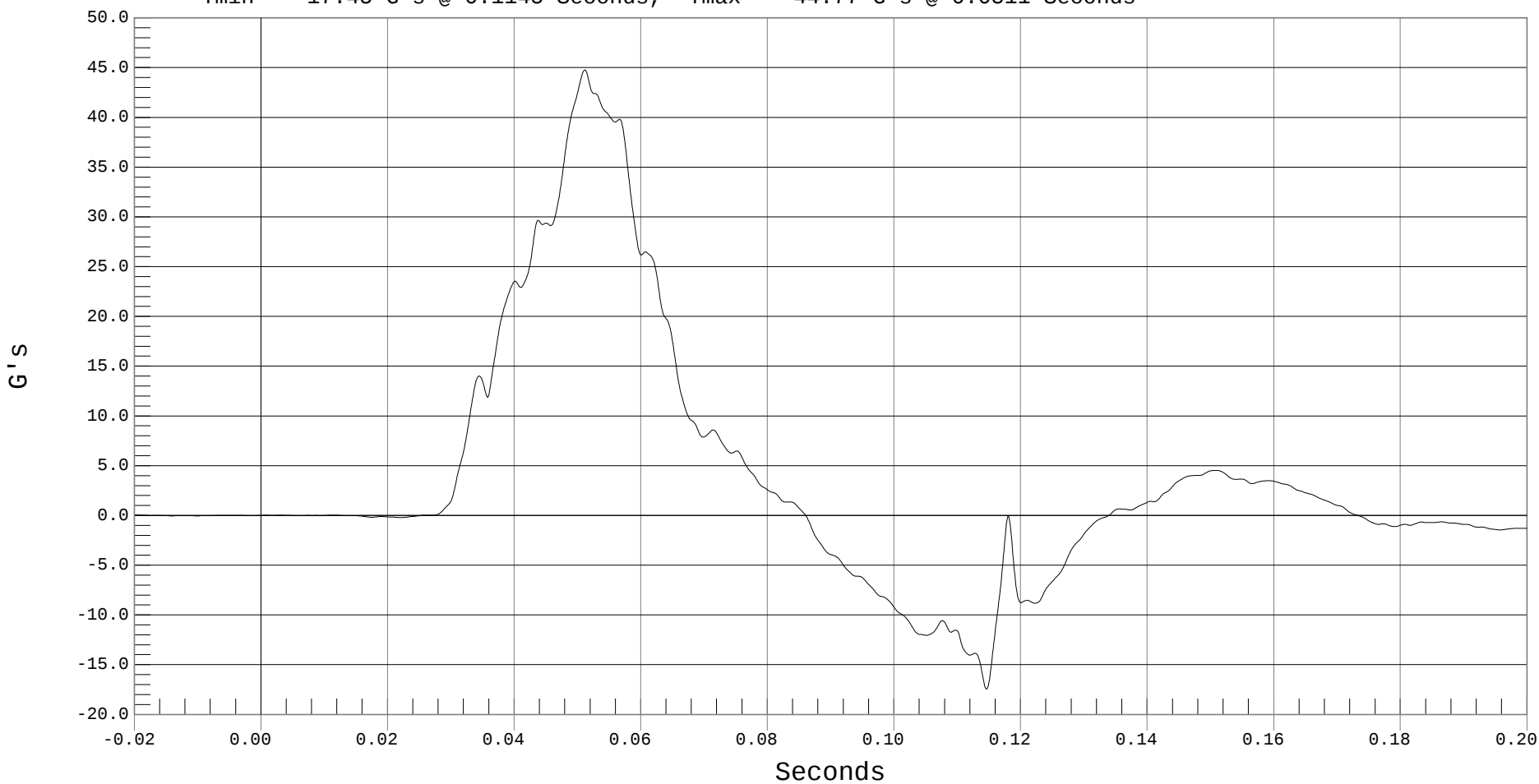
UPPER SPINE Y ACCELERATION

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 180

— 1 DRIVER UPPER SPINE Y, B01074AF.A21

Ymin = -17.45 G's @ 0.1145 Seconds, Ymax = 44.77 G's @ 0.0511 Seconds





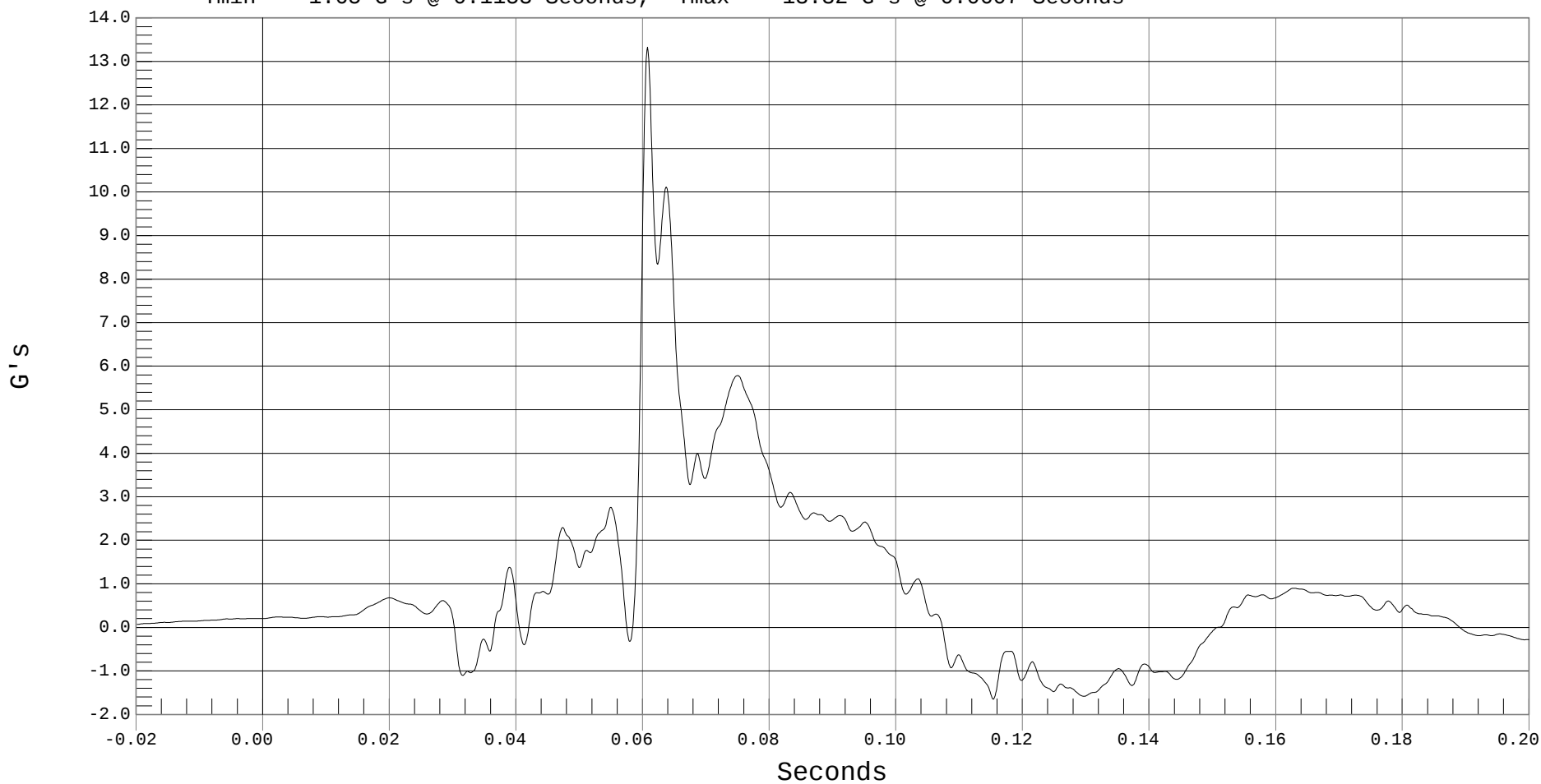
UPPER SPINE Z ACCELERATION

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 180

— 1 DRIVER UPPER SPINE Z, B01074AF.A22

Ymin = -1.65 G's @ 0.1153 Seconds, Ymax = 13.32 G's @ 0.0607 Seconds





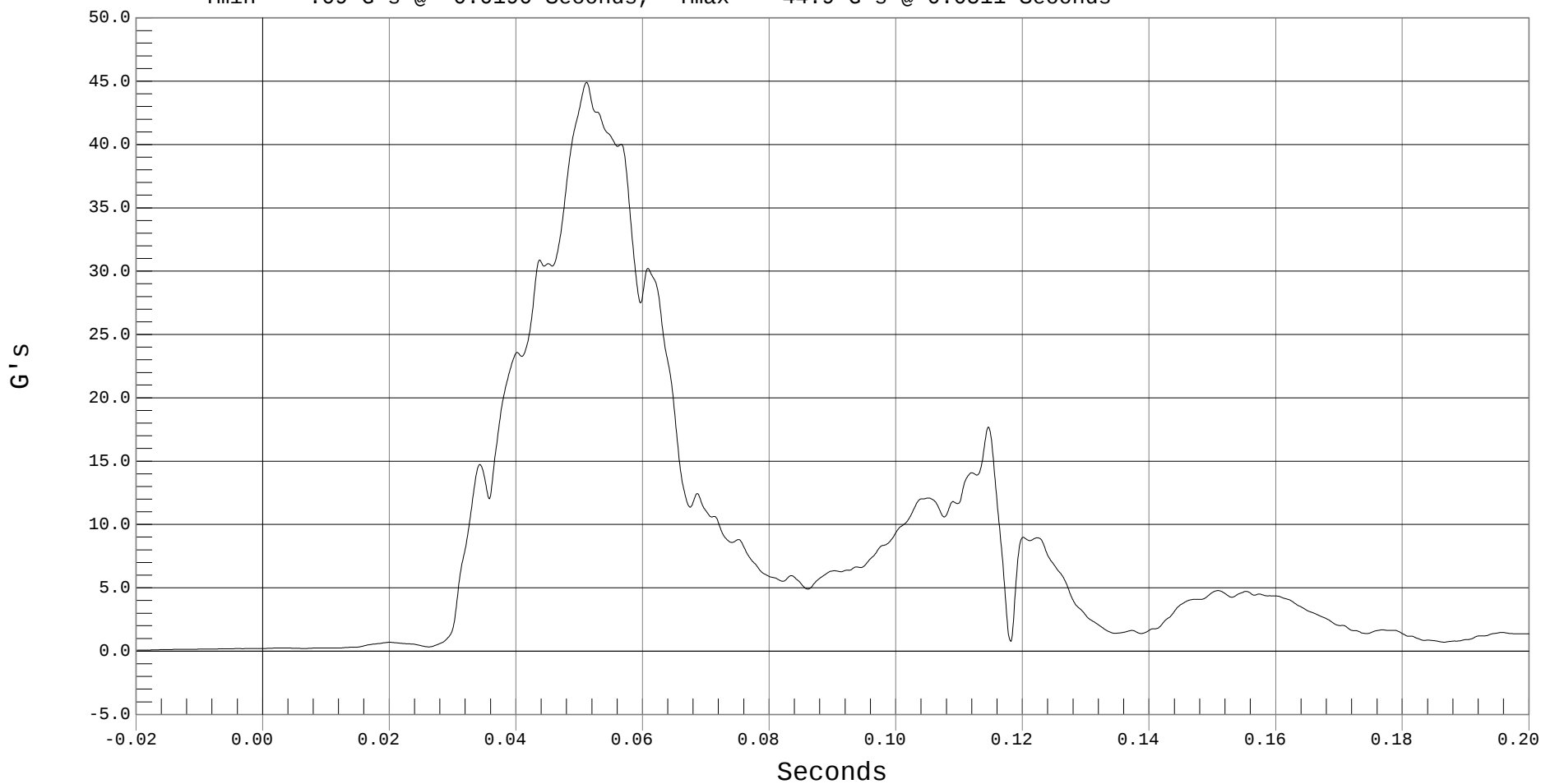
UPPER SPINE RESULTANT ACCELERATION

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 180

— 1 DRIVER UPPER SPINE RESULTANT, B01074AV.A20

Ymin = .09 G's @ -0.0190 Seconds, Ymax = 44.9 G's @ 0.0511 Seconds





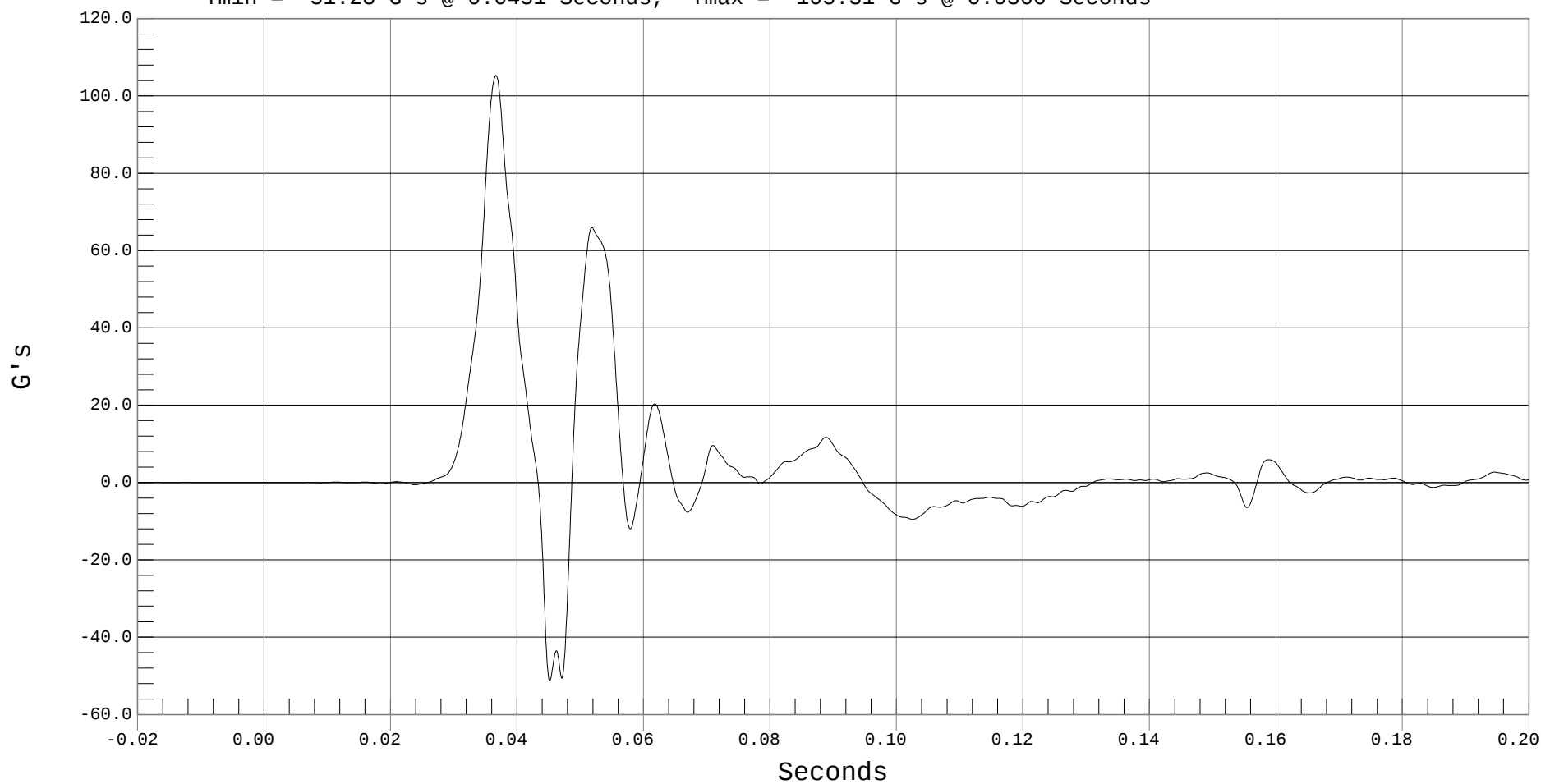
DRIVER UPPER RIB Y ACCELERATION

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 180

— 1 DRIVER UPPER RIB Y, B01074AF.A23

Ymin = -51.28 G's @ 0.0451 Seconds, Ymax = 105.31 G's @ 0.0366 Seconds





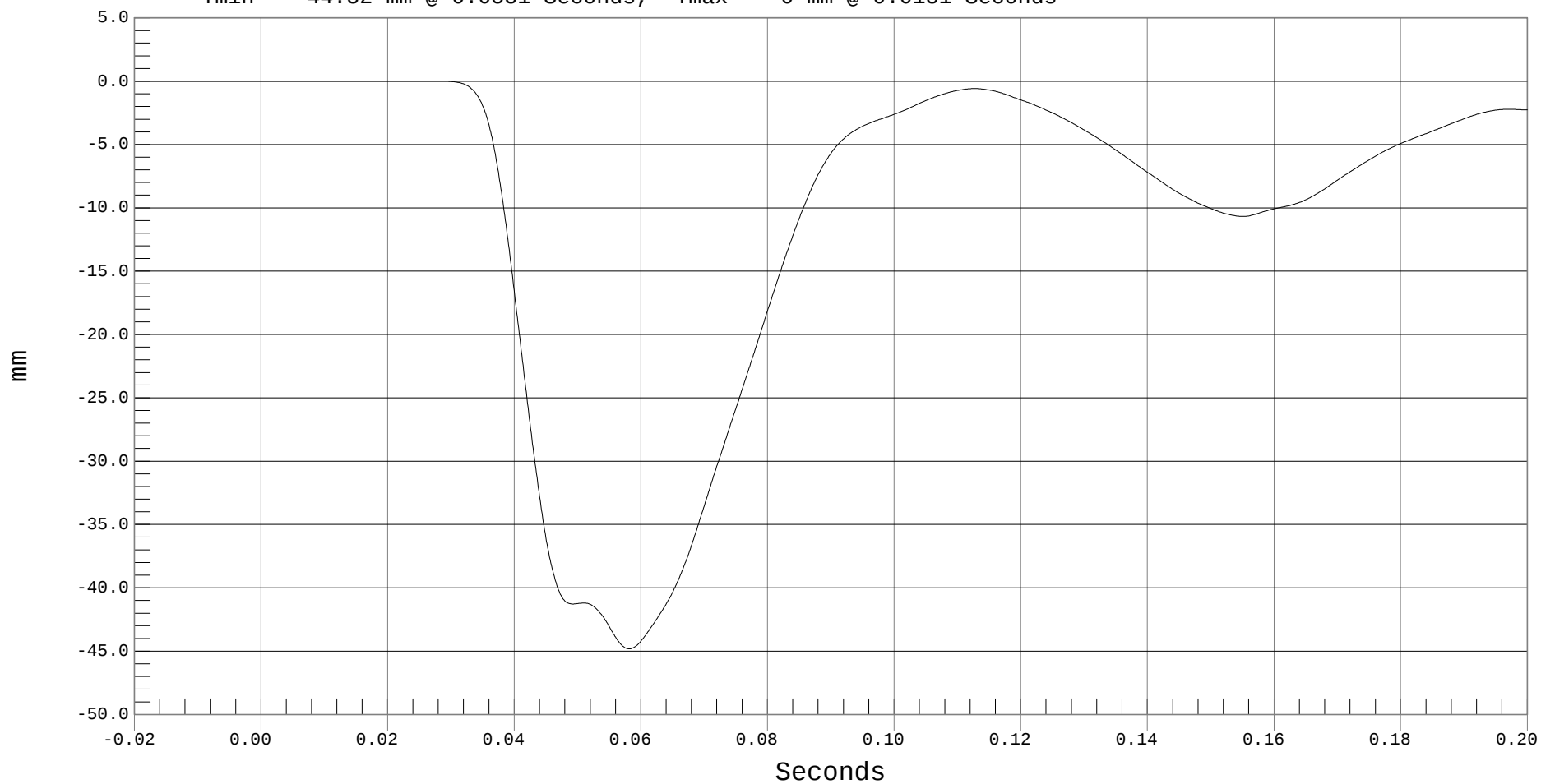
DRIVER UPPER RIB DISPLACEMENT

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 180

— 1 DRIVER UPPER RIB DISPLACEMENT, B01074DF.D26

Ymin = -44.82 mm @ 0.0581 Seconds, Ymax = 0 mm @ 0.0181 Seconds





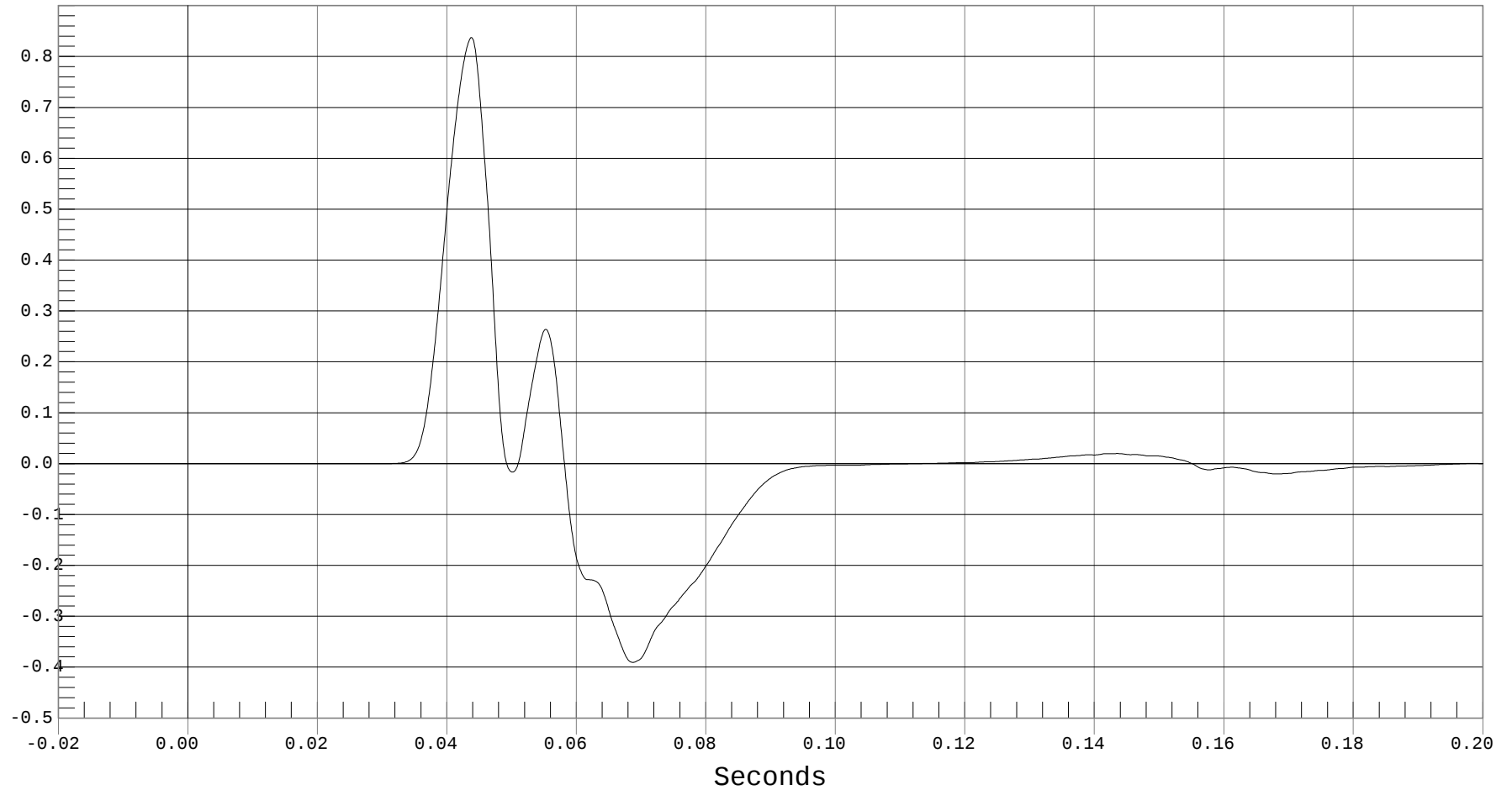
DRIVER UPPER RIB VISCOUS CRITERIA

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 180

— 1 Viscous Criterion, B01074DV.C26

Ymin = -.39 @ 0.0687 Seconds, Ymax = .84 @ 0.0437 Seconds





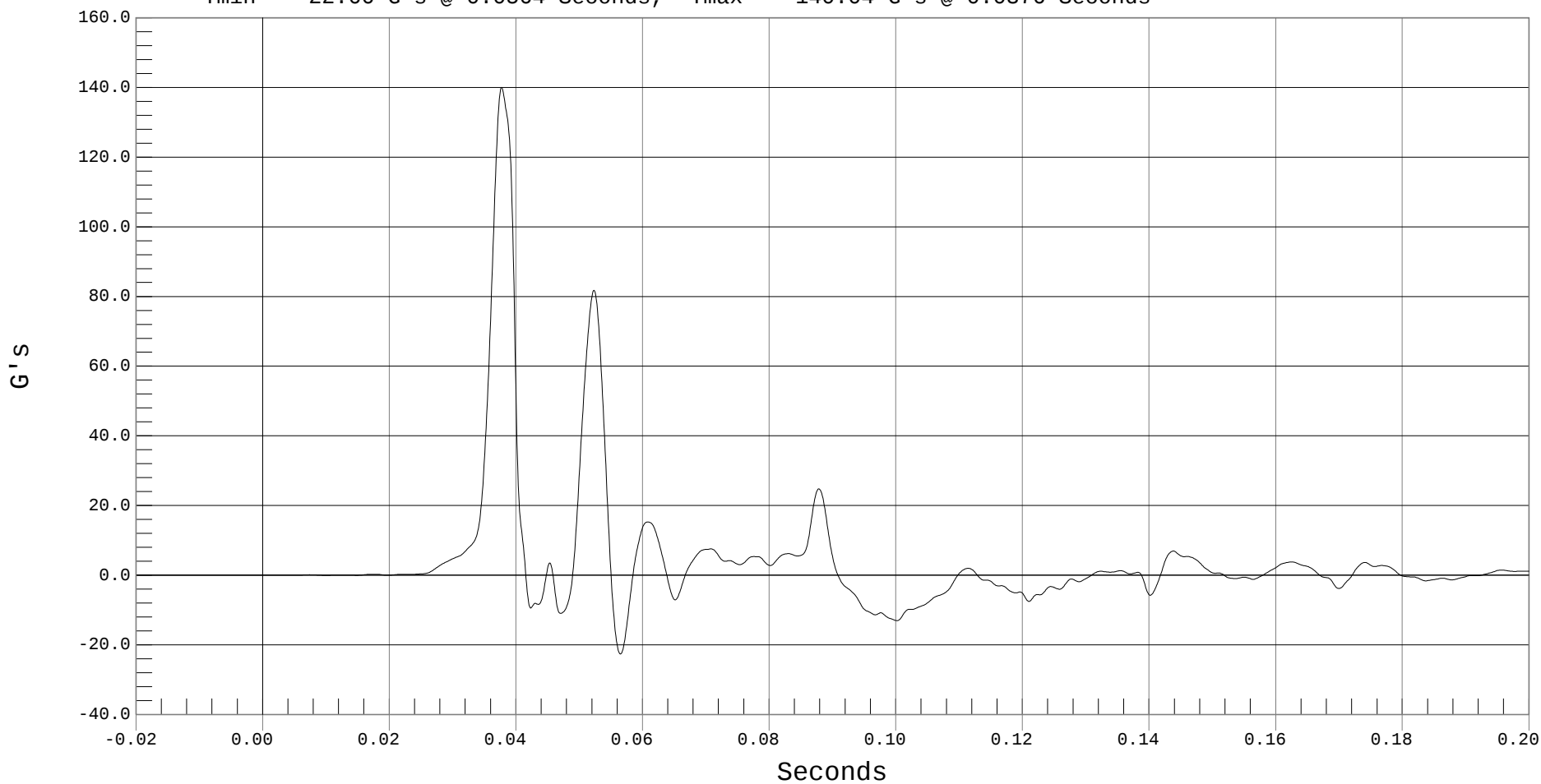
DRIVER MID RIB Y ACCELERATION

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 180

— 1 DRIVER MID RIB Y, B01074AF.A24

Ymin = -22.66 G's @ 0.0564 Seconds, Ymax = 140.04 G's @ 0.0376 Seconds





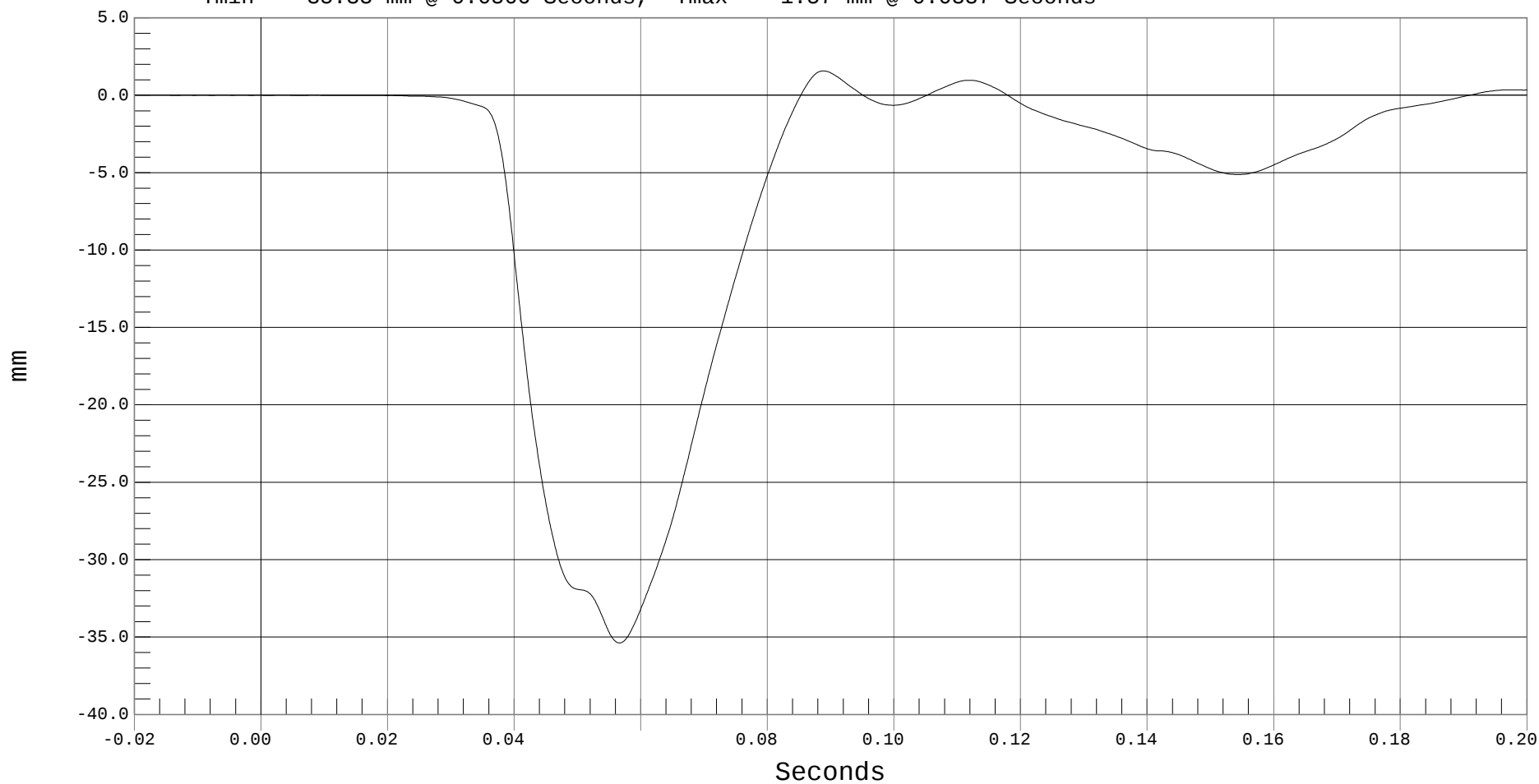
DRIVER MID RIB Y DISPLACEMENT

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 180

— 1 DRIVER MID RIB DISPLACEMENT, B01074DF.D27

Ymin = -35.38 mm @ 0.0566 Seconds, Ymax = 1.57 mm @ 0.0887 Seconds





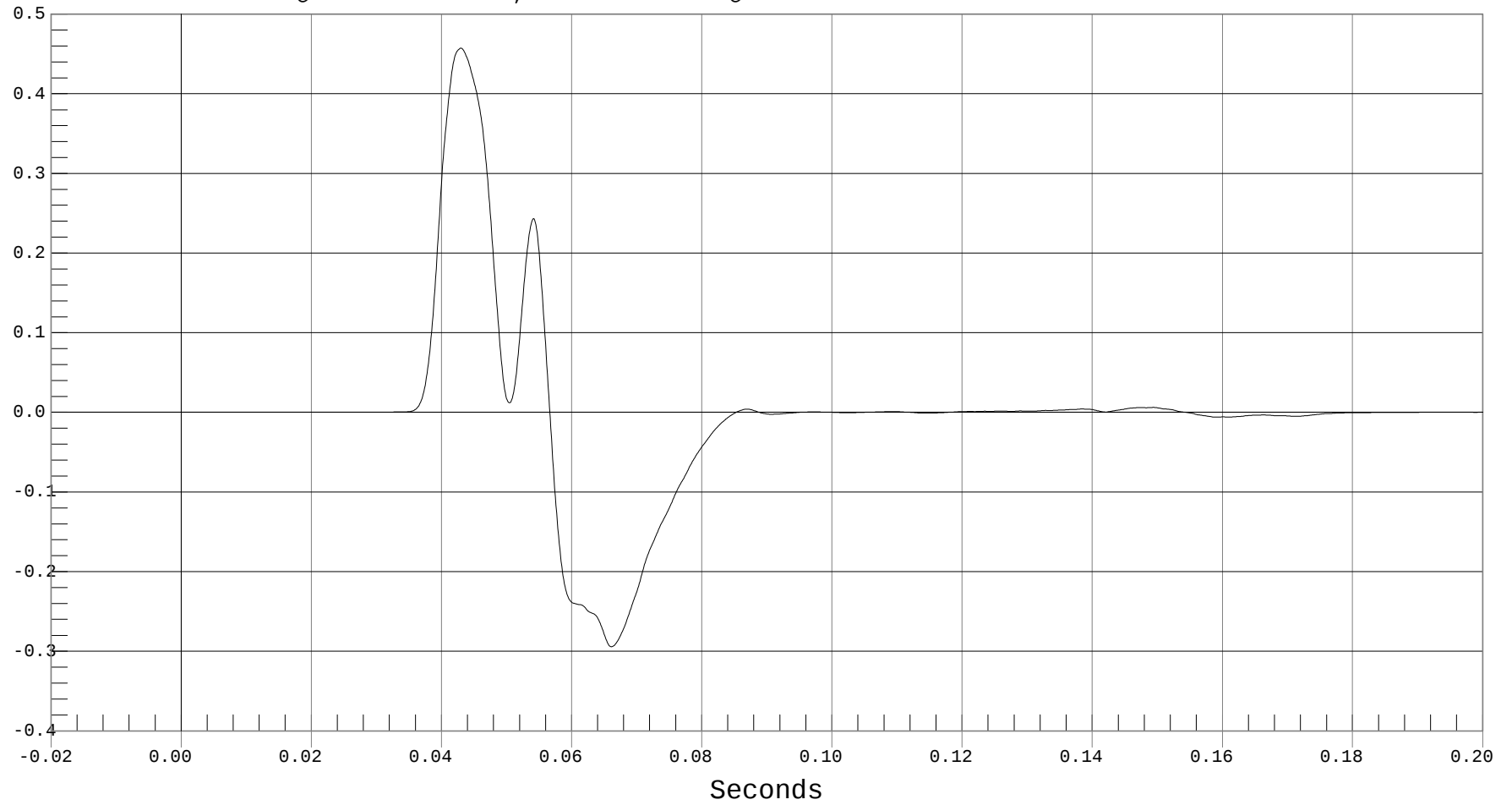
DRIVER MID RIB VISCOUS CRITERIA

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 180

— 1 Viscous Criterion, B01074DV.C27

Ymin = -.29 @ 0.0660 Seconds, Ymax = .46 @ 0.0429 Seconds





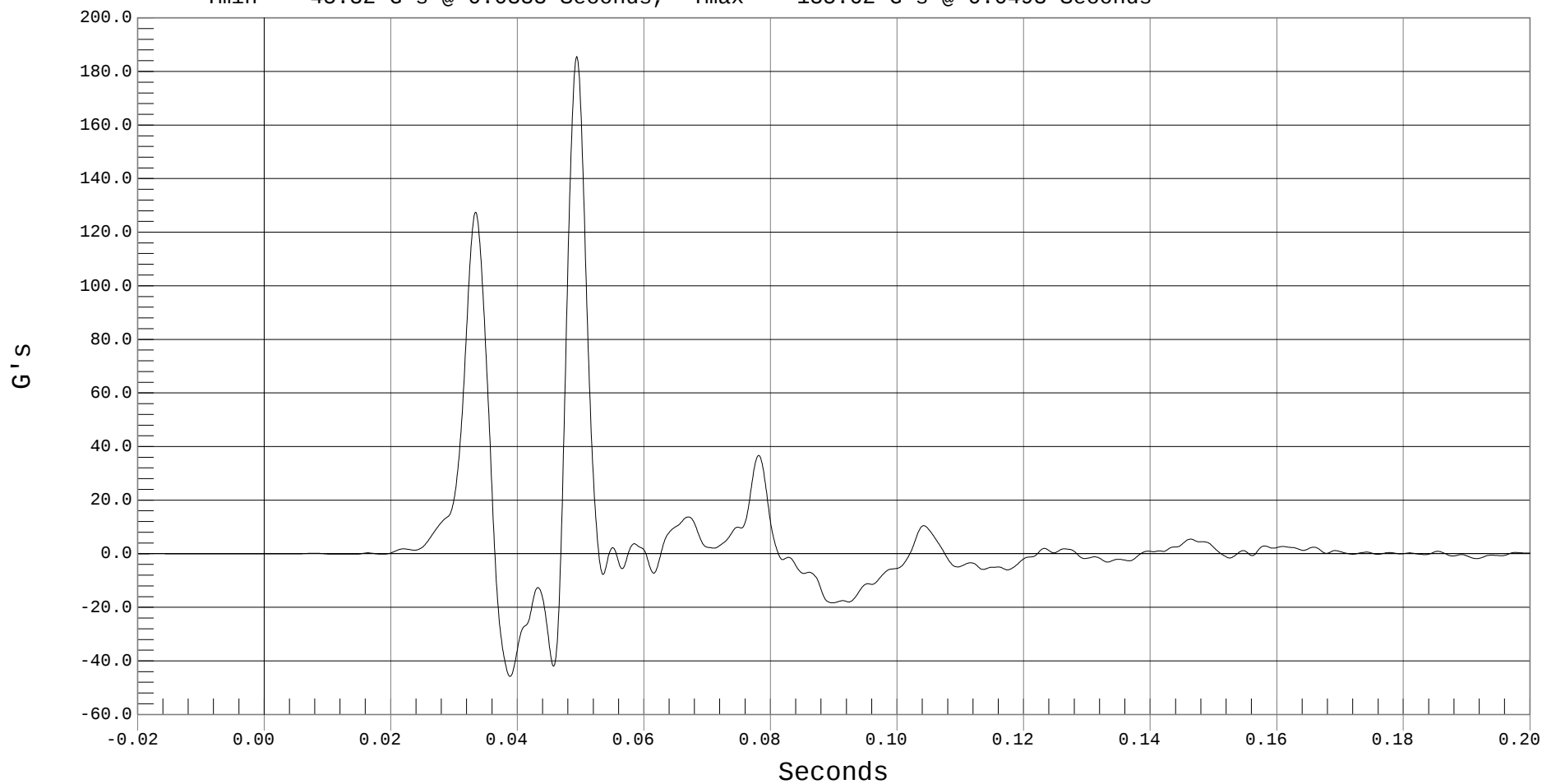
DRIVER LOWER RIB Y ACCELERATION

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 180

— 1 DRIVER LOWER RIB Y, B01074AF.A25

Ymin = -45.82 G's @ 0.0388 Seconds, Ymax = 185.62 G's @ 0.0493 Seconds





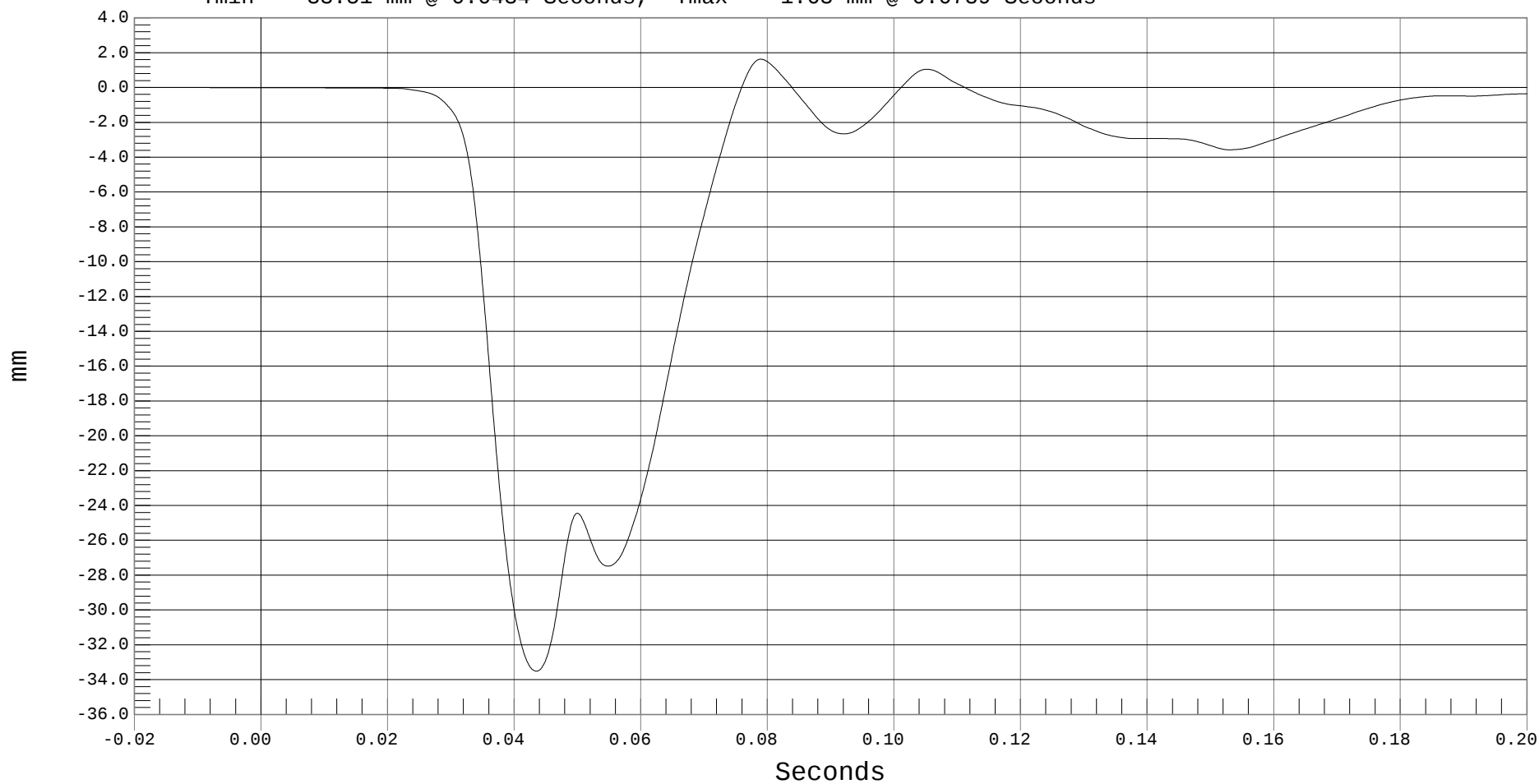
DRIVER LOWER RIB DISPLACEMENT

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 180

— 1 DRIVER LOWER RIB DISPLACEMENT, B01074DF.D28

Ymin = -33.51 mm @ 0.0434 Seconds, Ymax = 1.63 mm @ 0.0789 Seconds





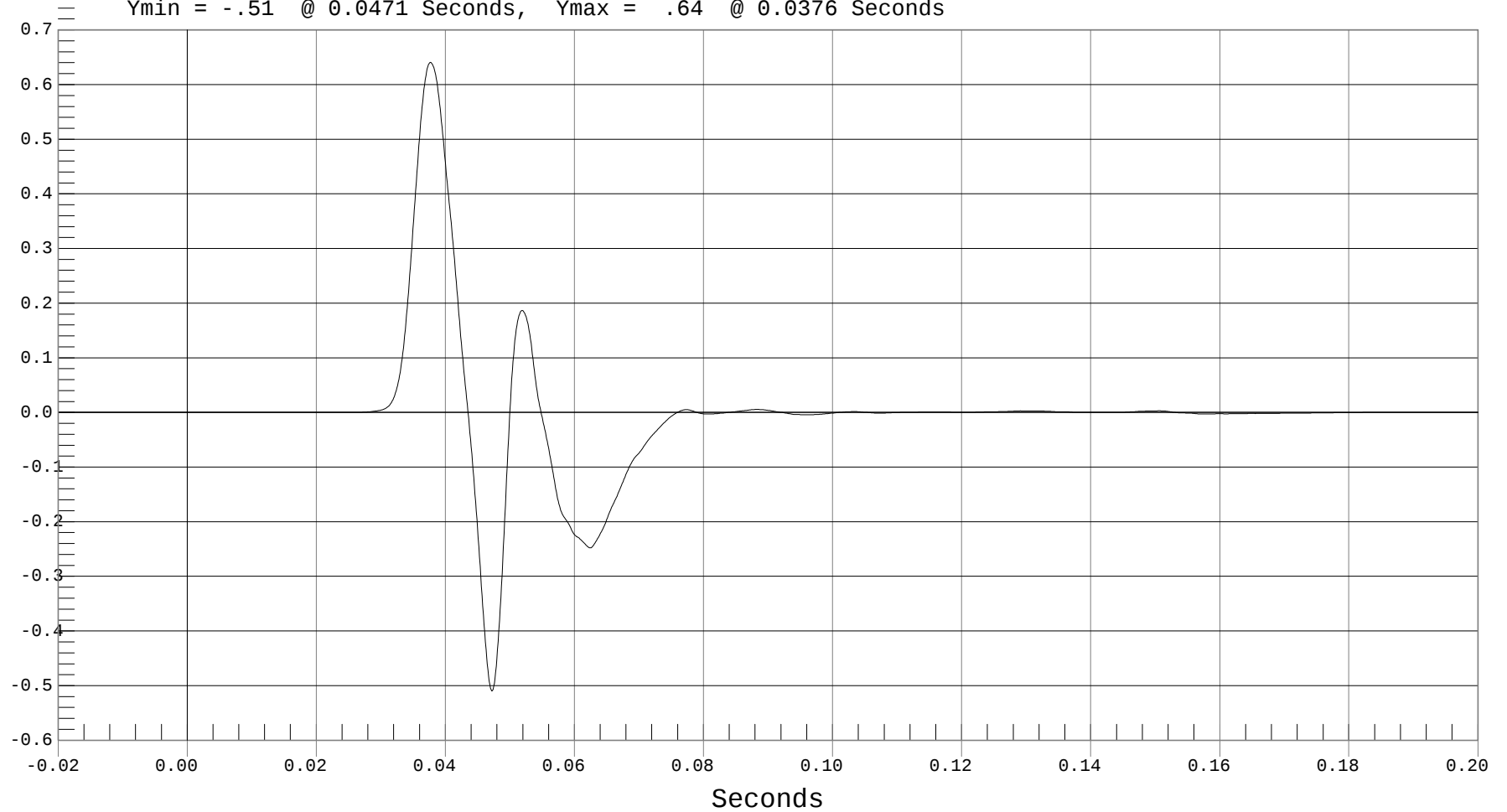
DRIVER LOWER RIB VISCOUS CRITERIA

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 180

— 1 Viscous Criterion, B01074DV.C28

Ymin = -.51 @ 0.0471 Seconds, Ymax = .64 @ 0.0376 Seconds





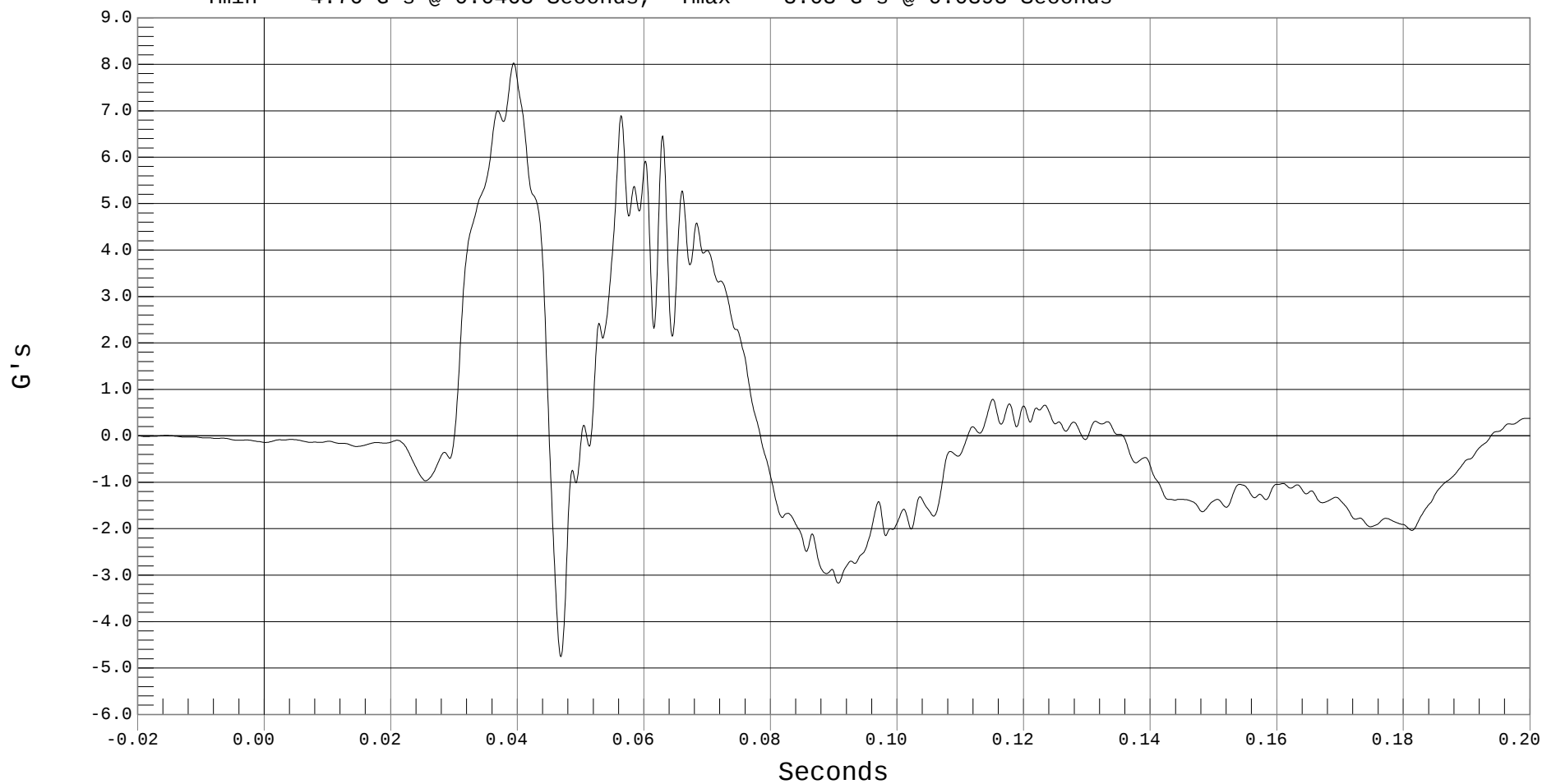
LOWER SPINE X ACCELERATION

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 180

— 1 DRIVER LOWER SPINE X, B01074AF.A29

Ymin = -4.76 G's @ 0.0468 Seconds, Ymax = 8.03 G's @ 0.0393 Seconds





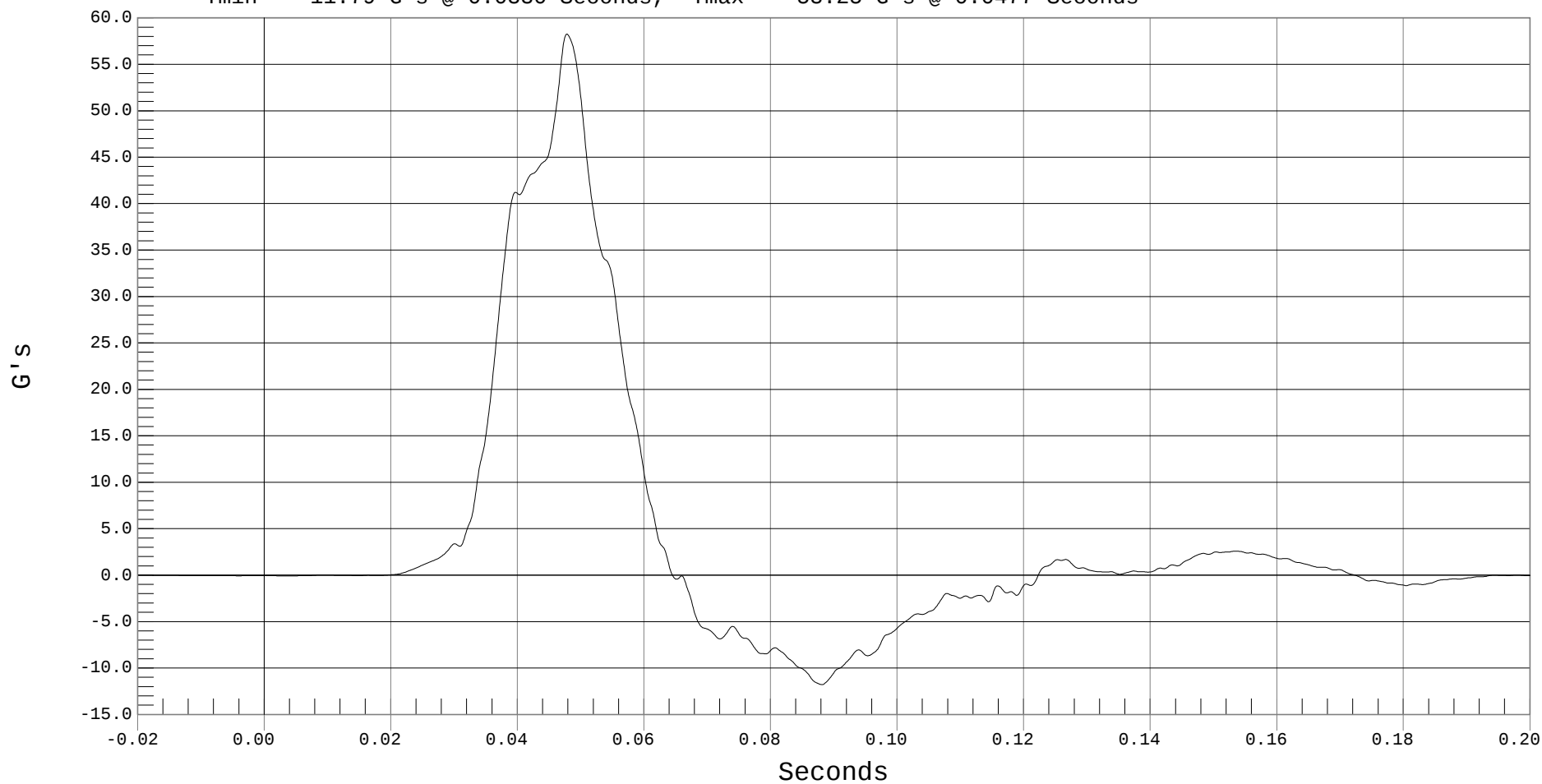
LOWER SPINE Y ACCELERATION

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 180

— 1 DRIVER LOWER SPINE Y, B01074AF.A30

Ymin = -11.79 G's @ 0.0880 Seconds, Ymax = 58.25 G's @ 0.0477 Seconds





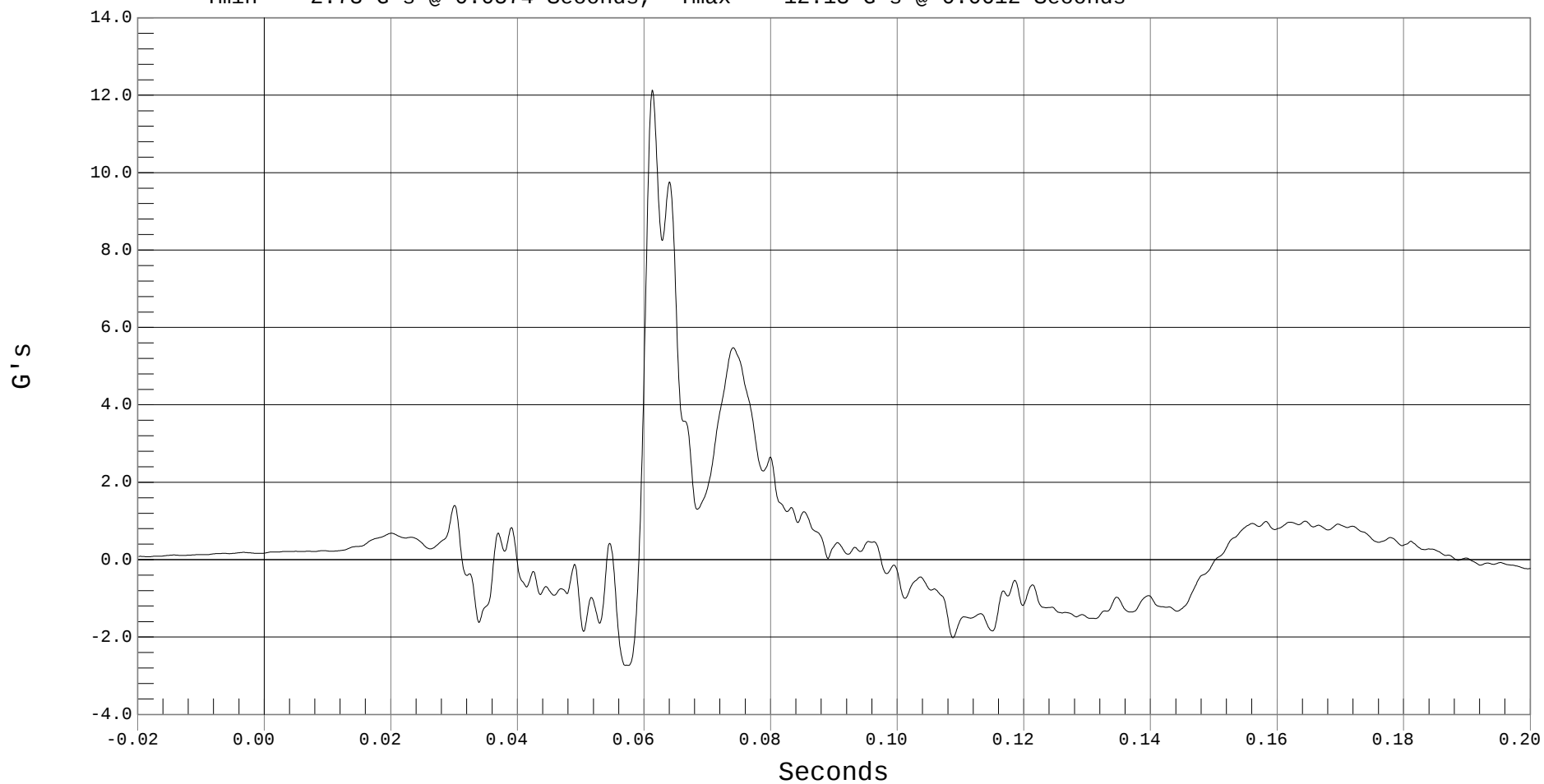
LOWER SPINE Z ACCELERATION

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 180

— 1 DRIVER LOWER SPINE Z, B01074AF.A31

Ymin = -2.73 G's @ 0.0574 Seconds, Ymax = 12.13 G's @ 0.0612 Seconds





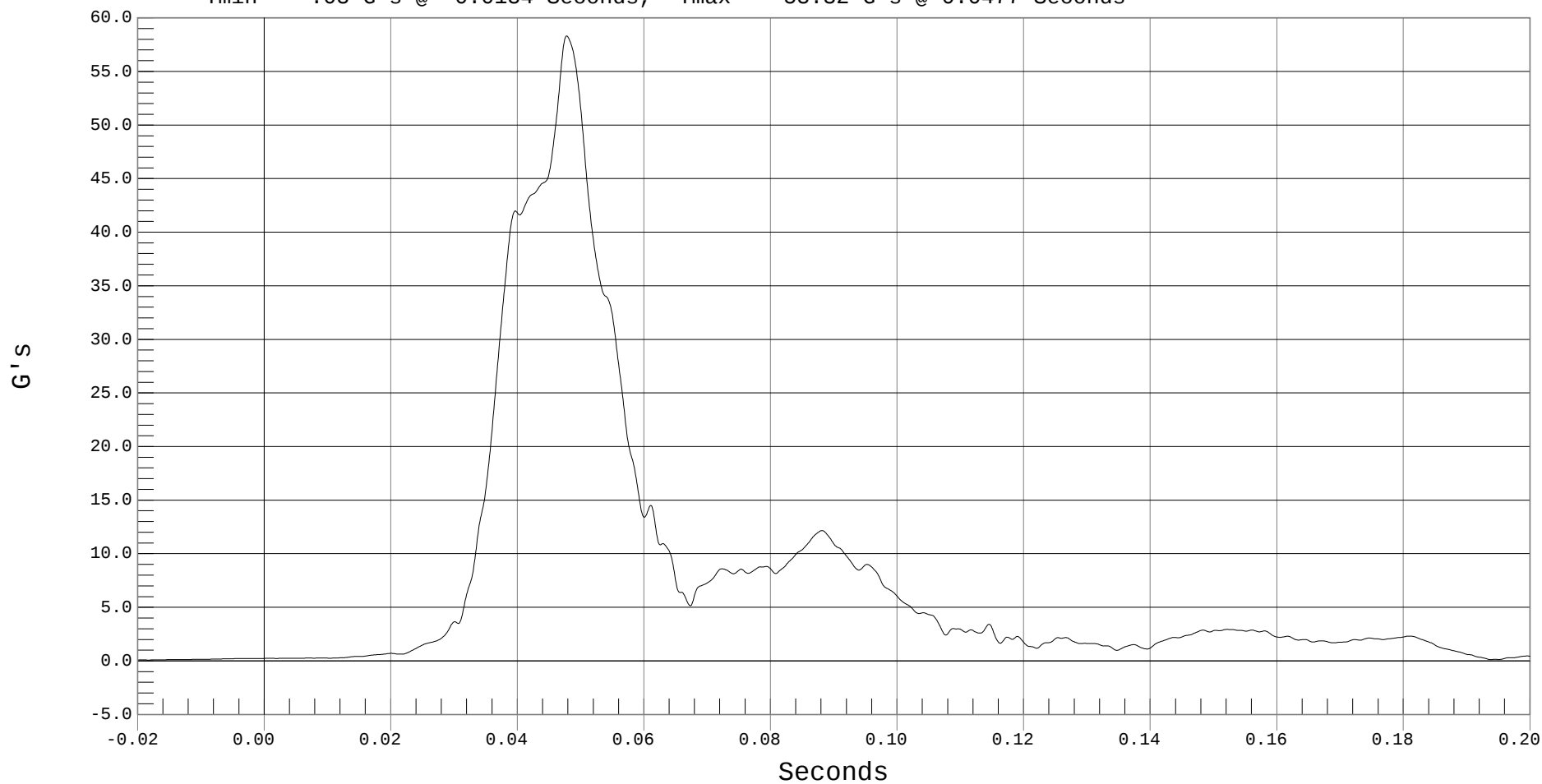
LOWER SPINE RESULTANT ACCELERATION

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 180

— 1 DRIVER LOWER SPINE RESULTANT, B01074AV.A29

Ymin = .08 G's @ -0.0184 Seconds, Ymax = 58.32 G's @ 0.0477 Seconds





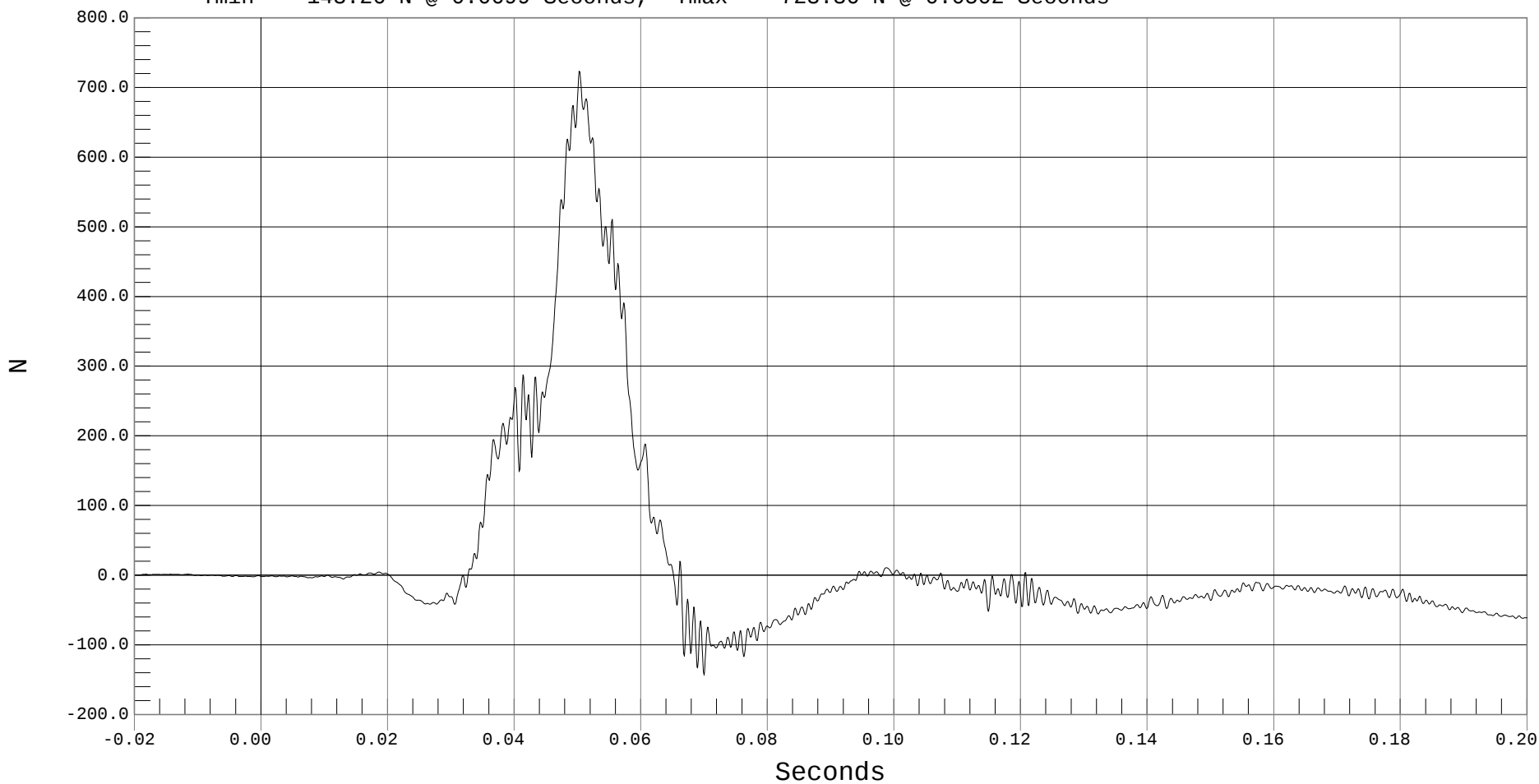
DRIVER TORSO FORCE X

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 600

— 1 DRIVER TORSO FORCE X, B01074FF.F33

Ymin = -143.26 N @ 0.0699 Seconds, Ymax = 723.36 N @ 0.0502 Seconds





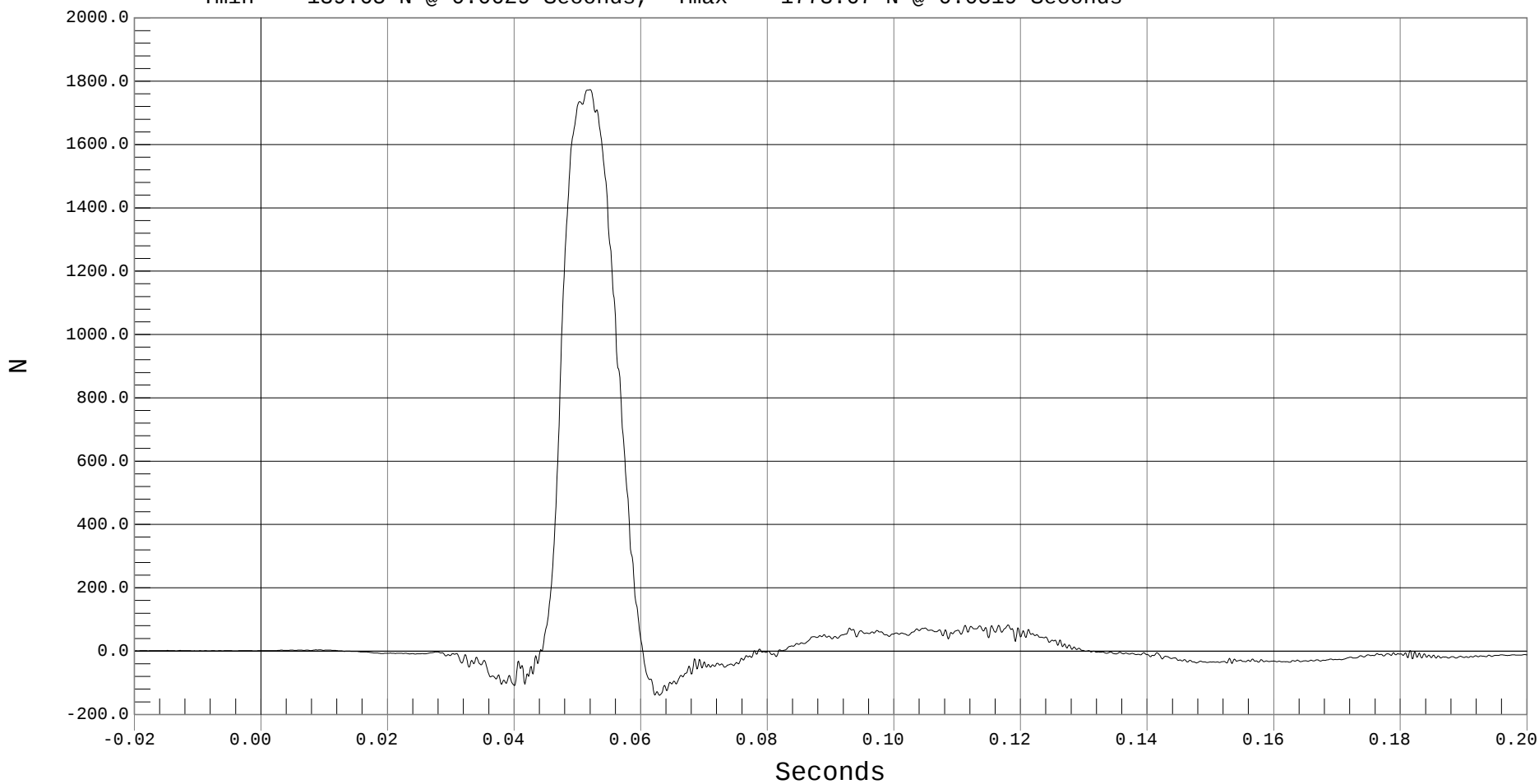
DRIVER TORSO FORCE Y

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 600

— 1 DRIVER TORSO FORCE Y, B01074FF.F34

Ymin = -139.65 N @ 0.0629 Seconds, Ymax = 1773.67 N @ 0.0519 Seconds





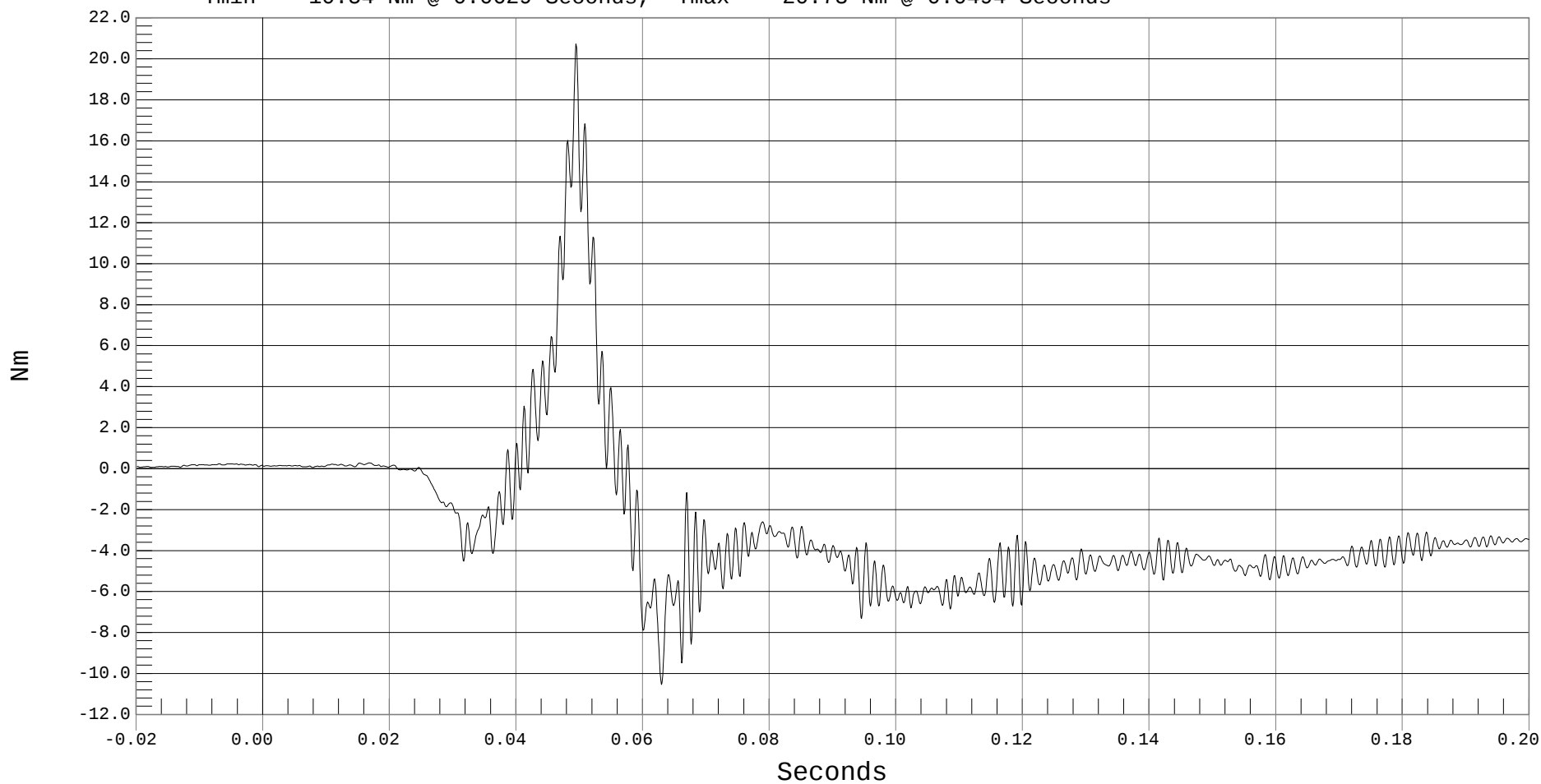
DRIVER TORSO MOMENT Y

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 600

— 1 DRIVER TORSO MOMENT Y, B01074MF.M35

Ymin = -10.54 Nm @ 0.0629 Seconds, Ymax = 20.73 Nm @ 0.0494 Seconds





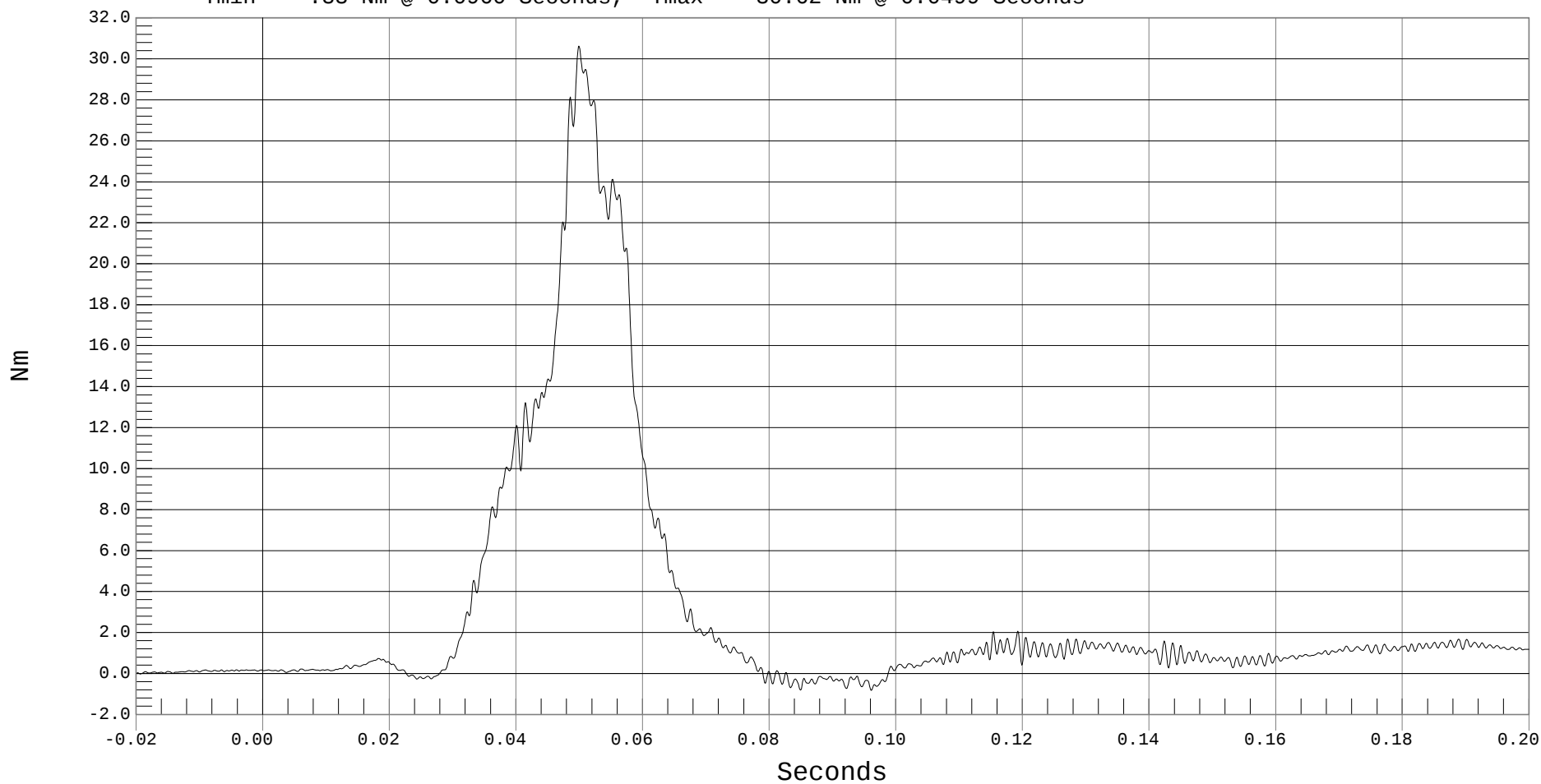
DRIVER TORSO MOMENT Z

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 600

— 1 DRIVER TORSO MOMENT Z, B01074MF.M36

Ymin = -.83 Nm @ 0.0960 Seconds, Ymax = 30.62 Nm @ 0.0499 Seconds





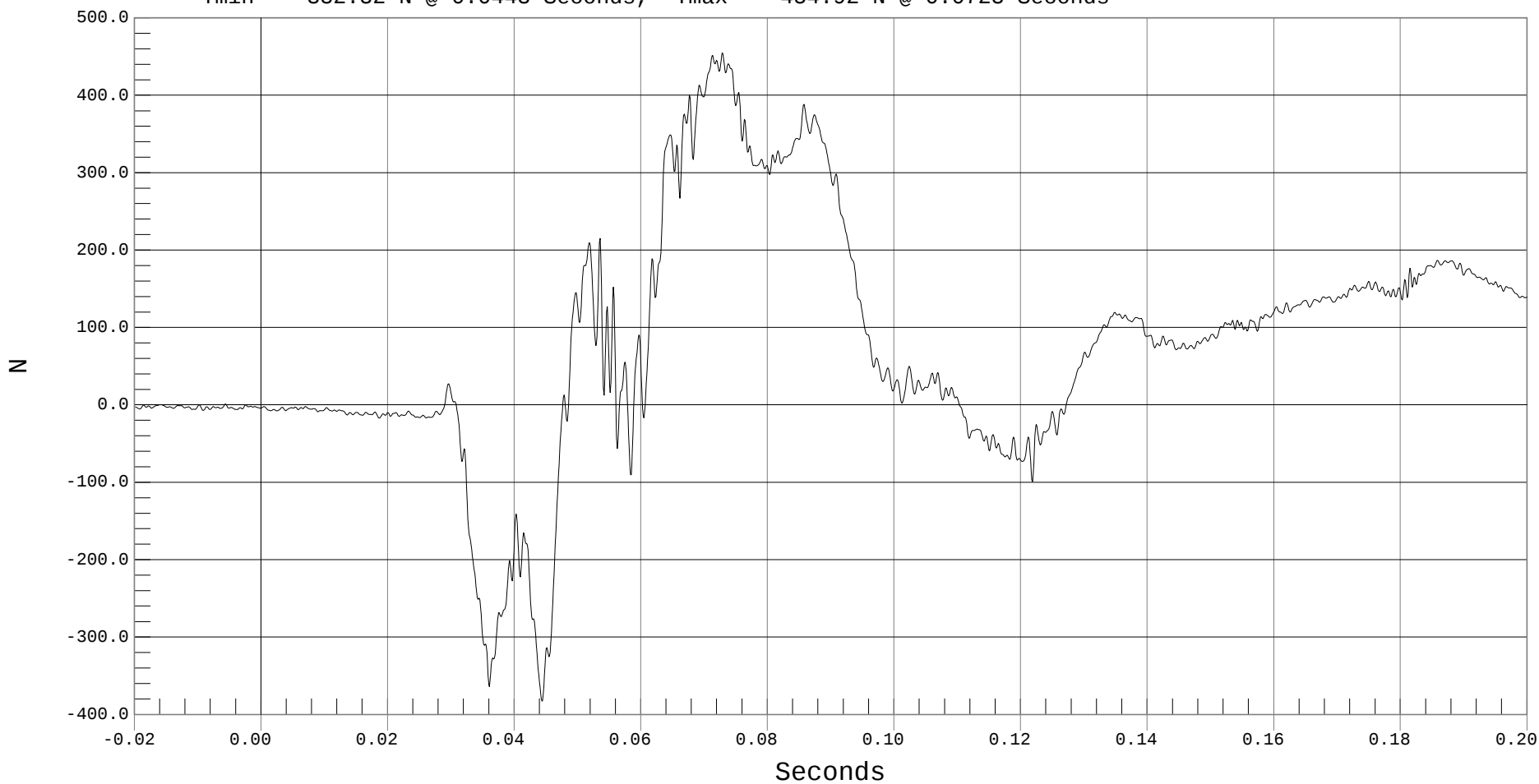
DRIVER T-12 FORCE X

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 600

1 DRIVER T-12 FORCE X, B01074FF.F37

Ymin = -382.82 N @ 0.0443 Seconds, Ymax = 454.92 N @ 0.0728 Seconds





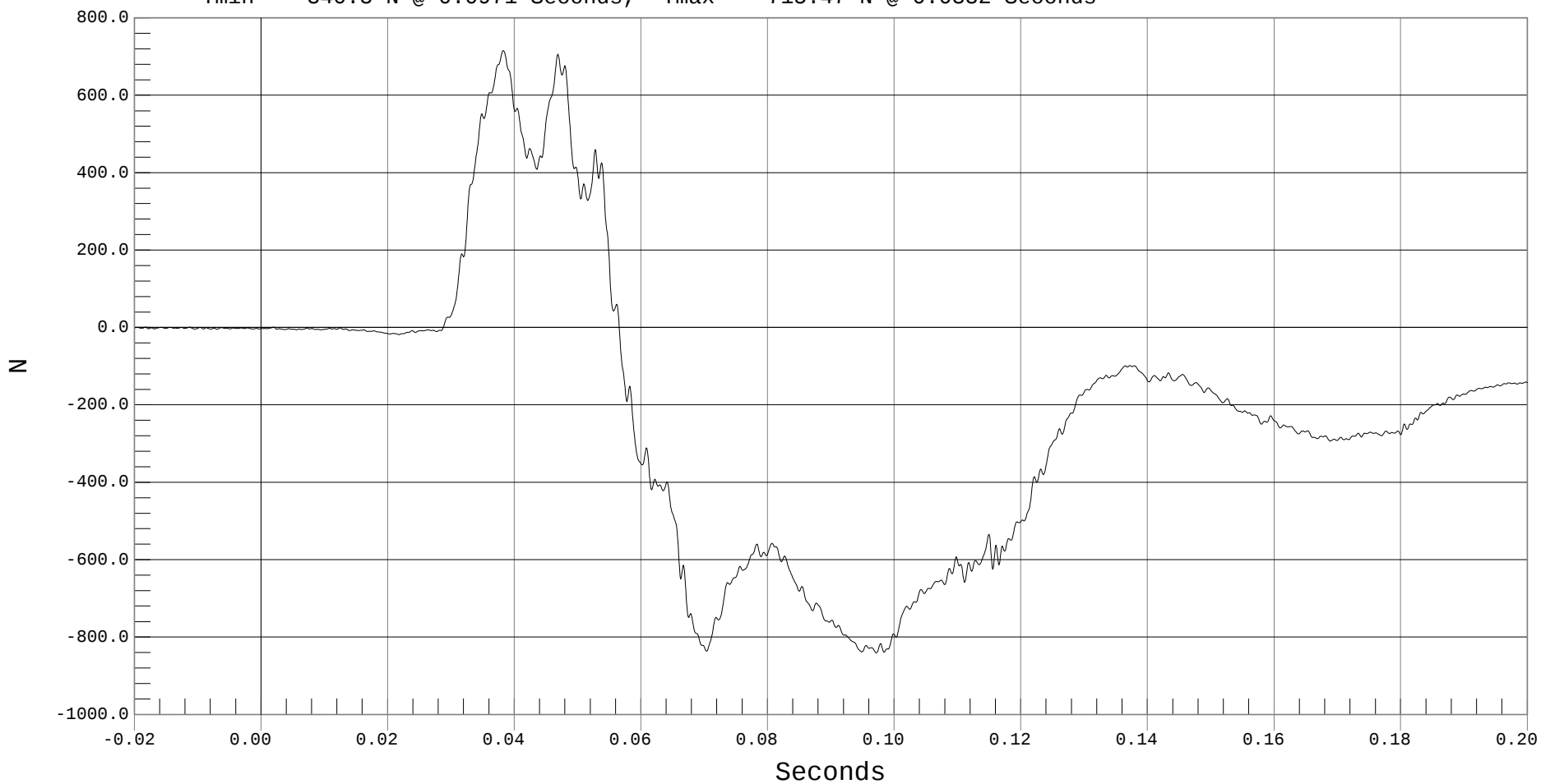
DRIVER T-12 FORCE Y

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 600

— 1 DRIVER T-12 FORCE Y, B01074FF.F38

Ymin = -840.8 N @ 0.0971 Seconds, Ymax = 715.47 N @ 0.0382 Seconds





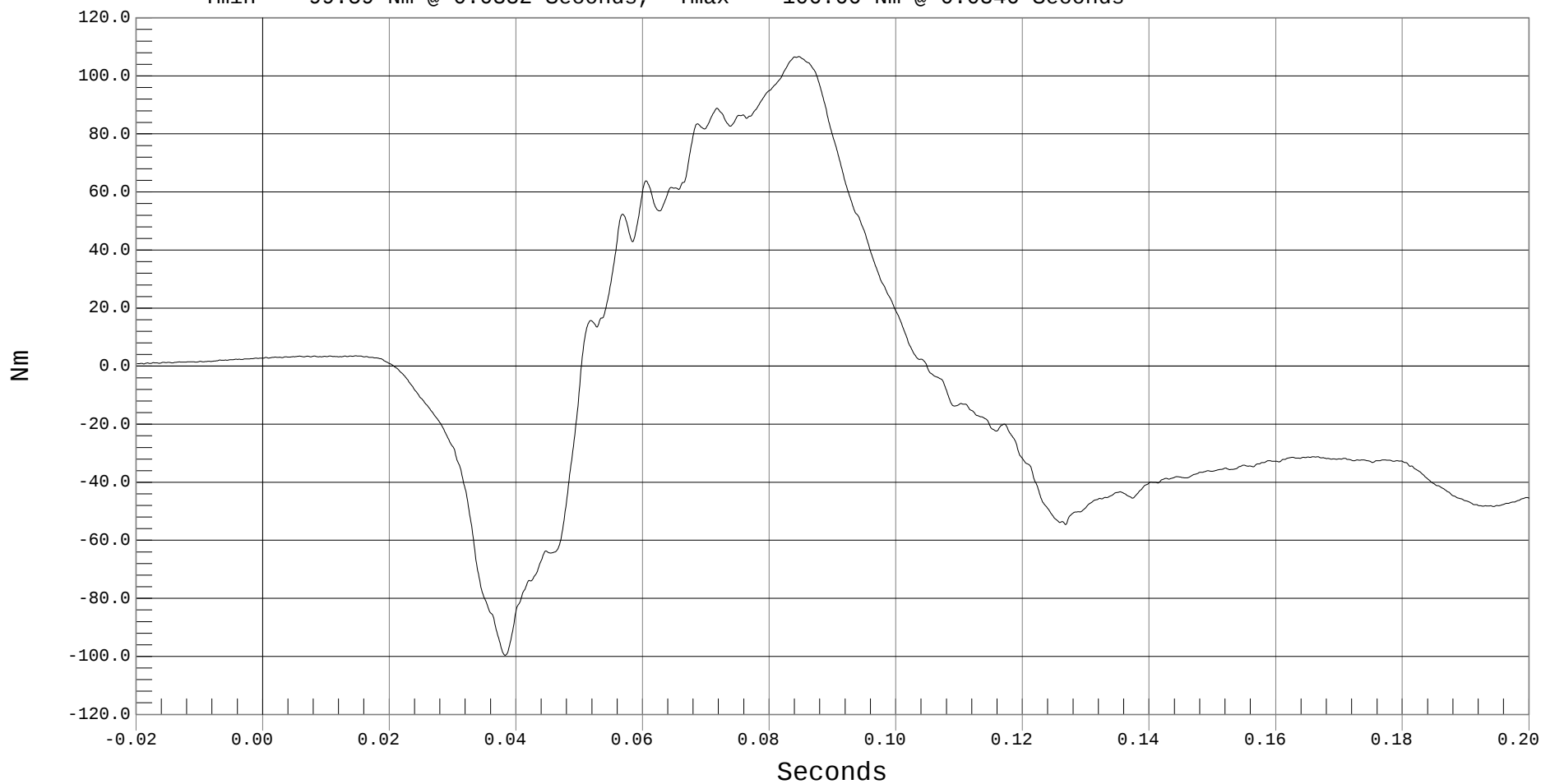
DRIVER T-12 MOMENT X

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 600

— 1 DRIVER T-12 MOMENT X, B01074MF.M39

Ymin = -99.59 Nm @ 0.0382 Seconds, Ymax = 106.66 Nm @ 0.0846 Seconds





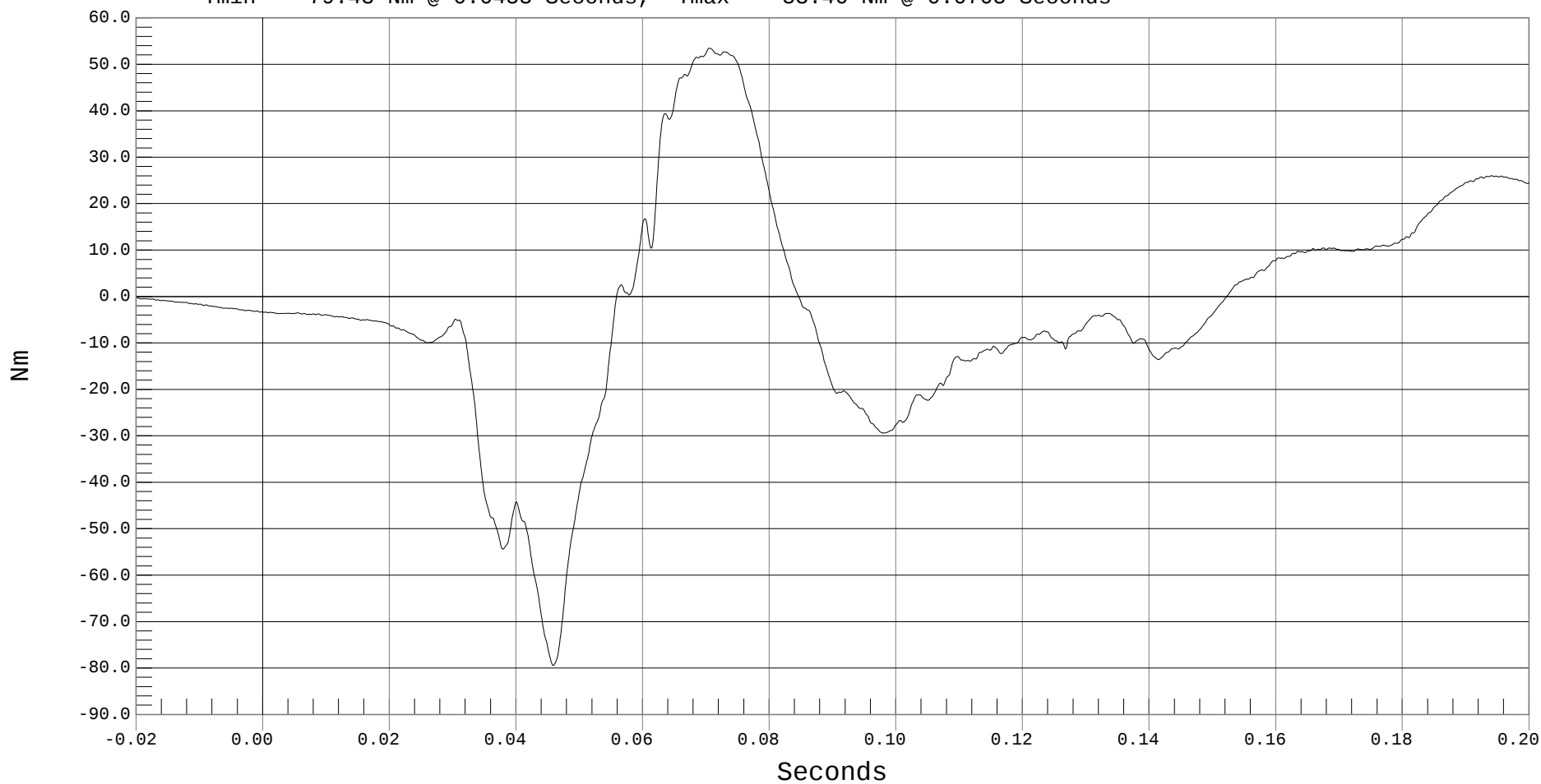
DRIVER T-12 MOMENT Y

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 600

1 DRIVER T-12 MOMENT Y, B01074MF.M40

Ymin = -79.48 Nm @ 0.0458 Seconds, Ymax = 53.46 Nm @ 0.0705 Seconds





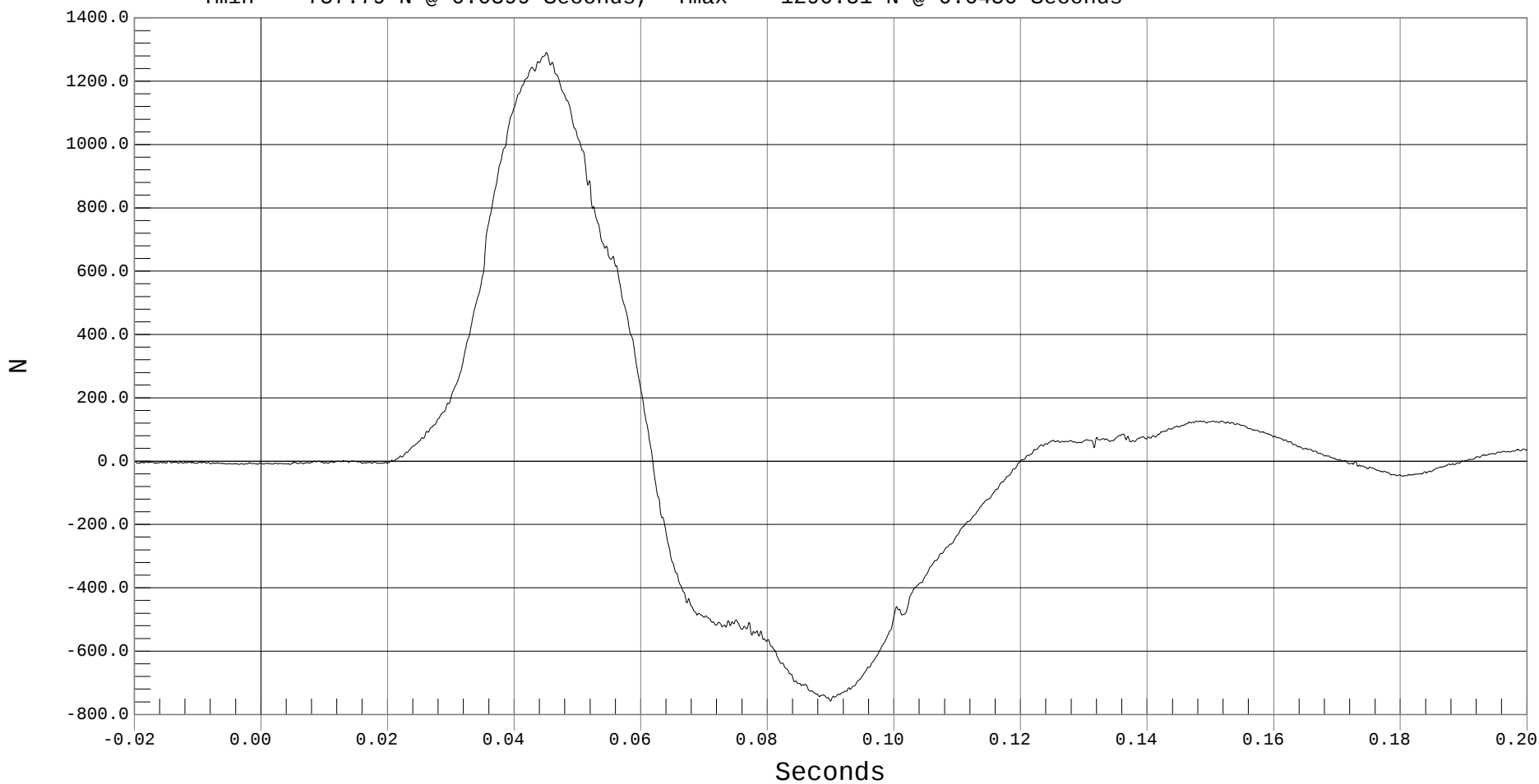
DRIVER LUMBAR FORCE Y

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 1000

1 DRIVER LUMBAR FORCE Y, B01074FT.F92

Ymin = -757.79 N @ 0.0899 Seconds, Ymax = 1290.51 N @ 0.0450 Seconds





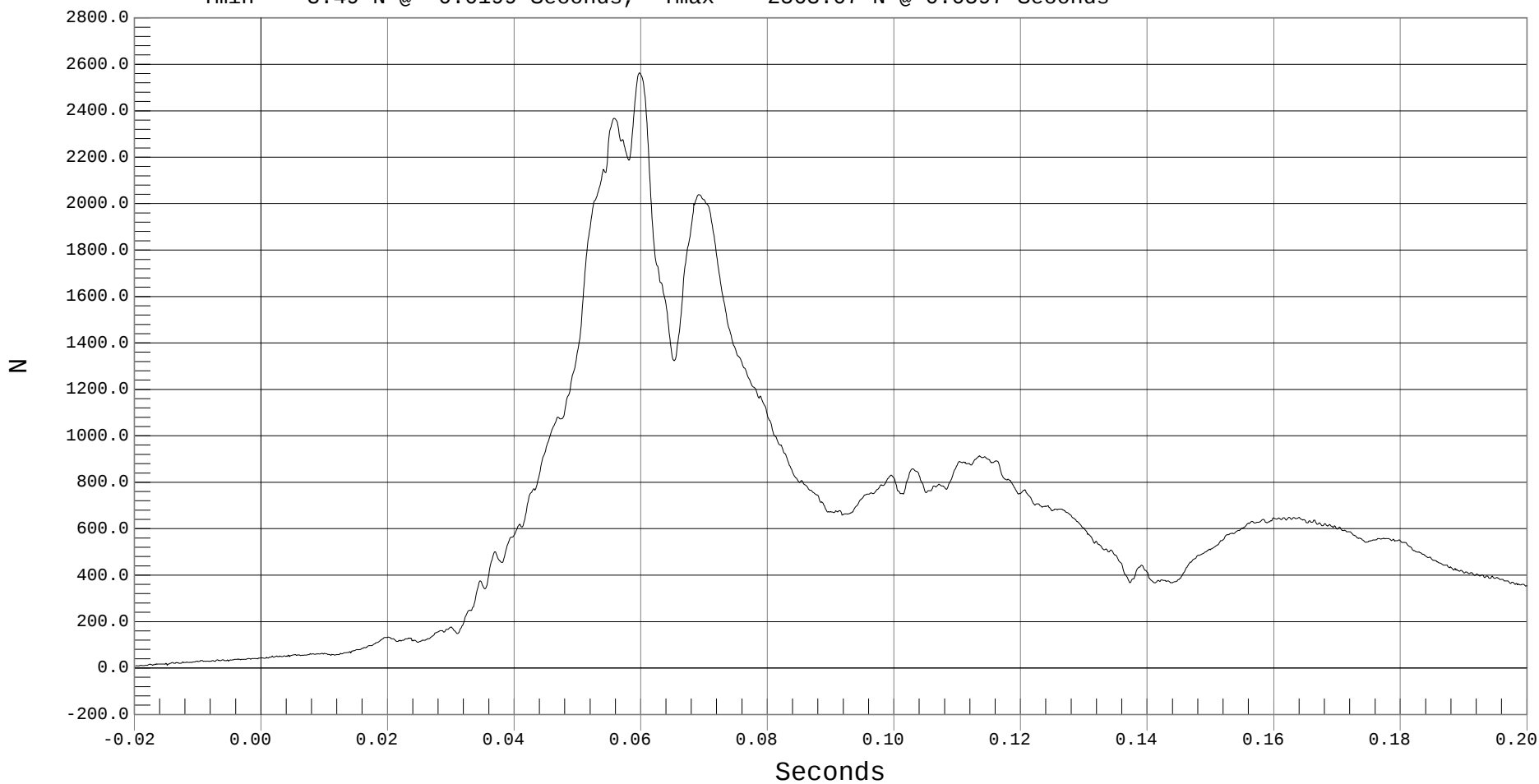
DRIVER LUMBAR FORCE Z

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 1000

— 1 DRIVER LUMBAR FORCE Z, B01074FT.F93

Ymin = 8.49 N @ -0.0199 Seconds, Ymax = 2563.07 N @ 0.0597 Seconds





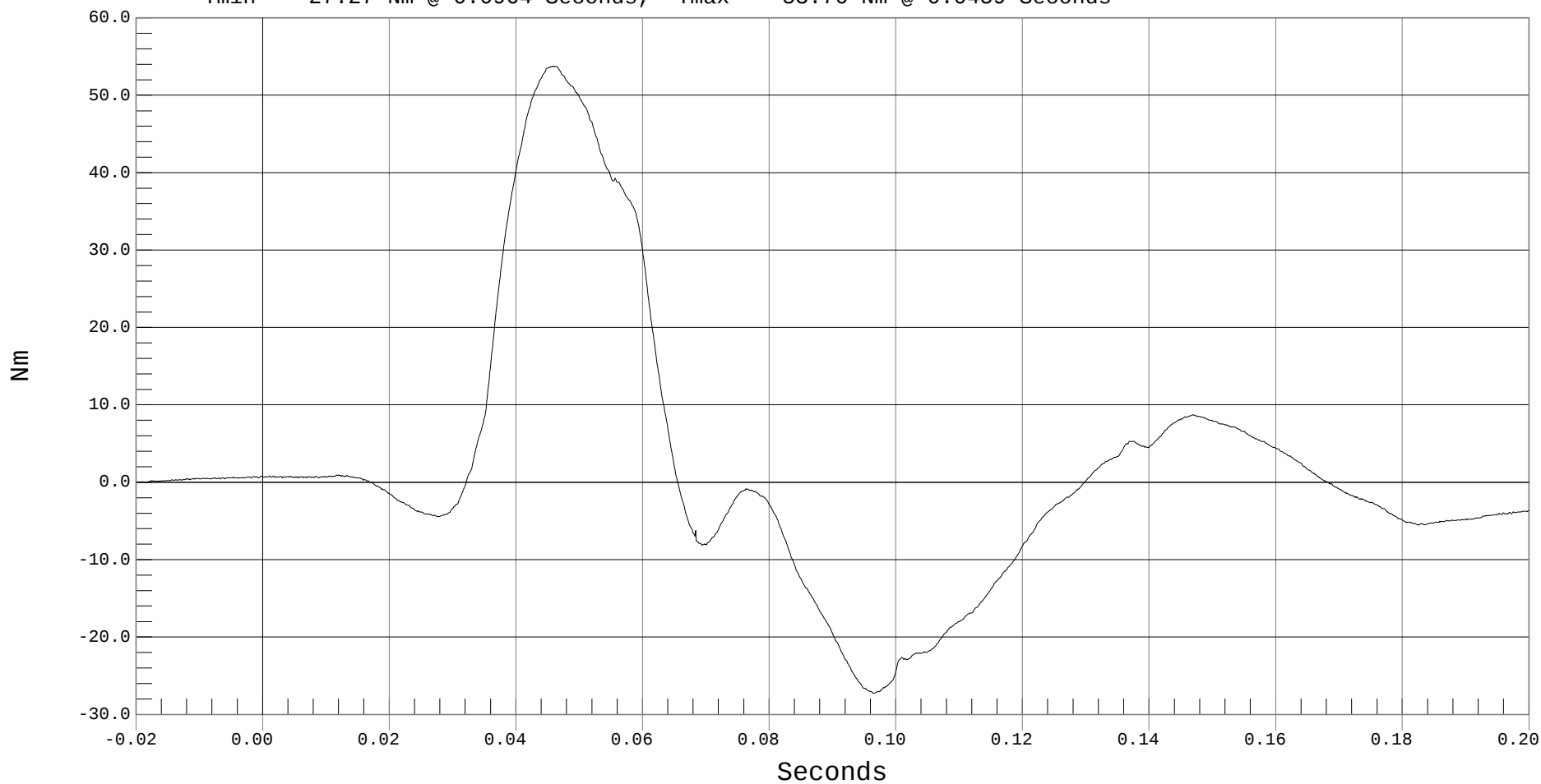
DRIVER LUMBAR MOMENT X

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 1000

— 1 DRIVER LUMBAR MOMENT X, B01074MT.M94

Ymin = -27.27 Nm @ 0.0964 Seconds, Ymax = 53.76 Nm @ 0.0459 Seconds





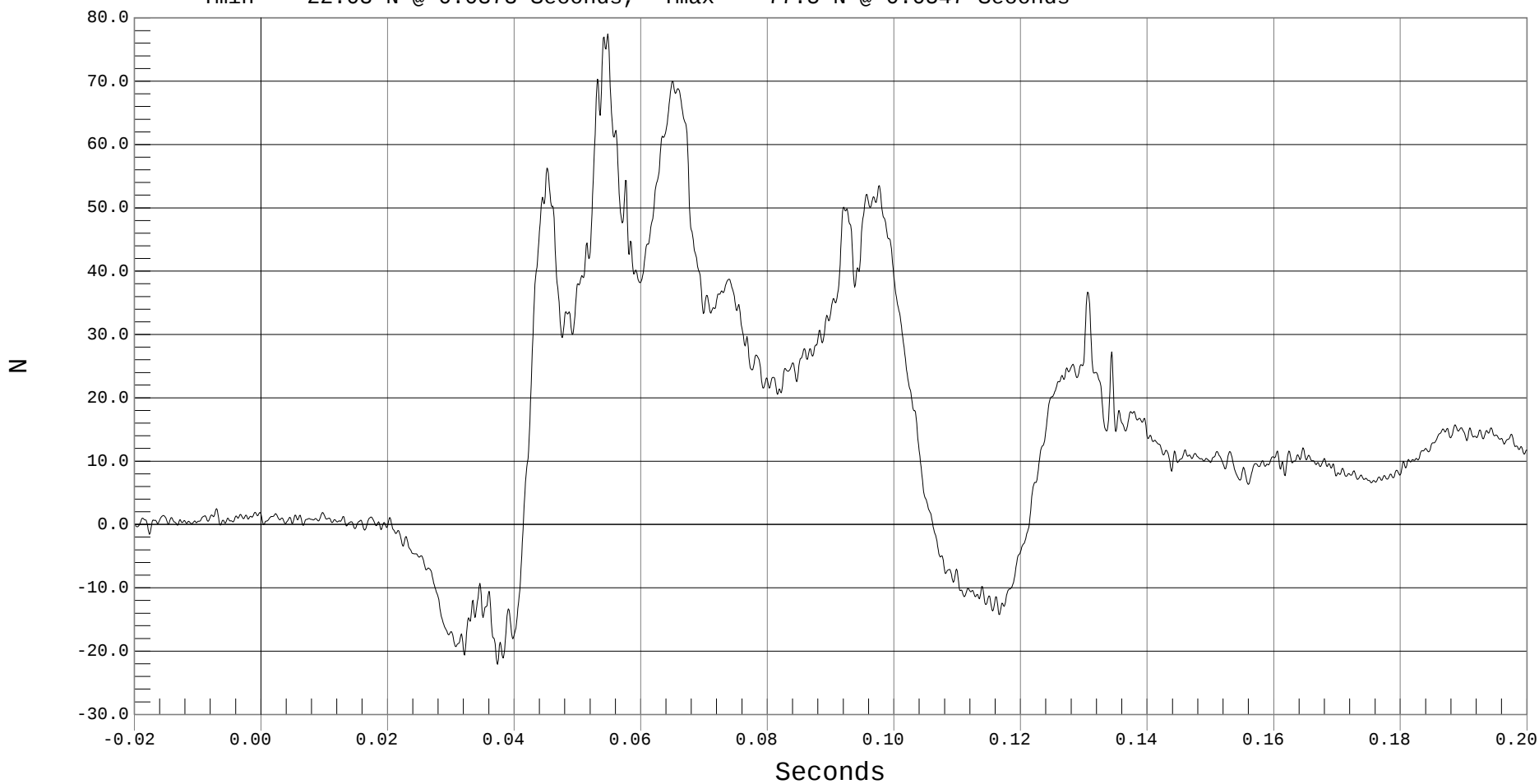
DRIVER ABDOMEN FRONT FORCE

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 600

— 1 DRIVER FRONT ABDOMEN FORCE, B01074FF.F41

Ymin = -22.08 N @ 0.0373 Seconds, Ymax = 77.5 N @ 0.0547 Seconds





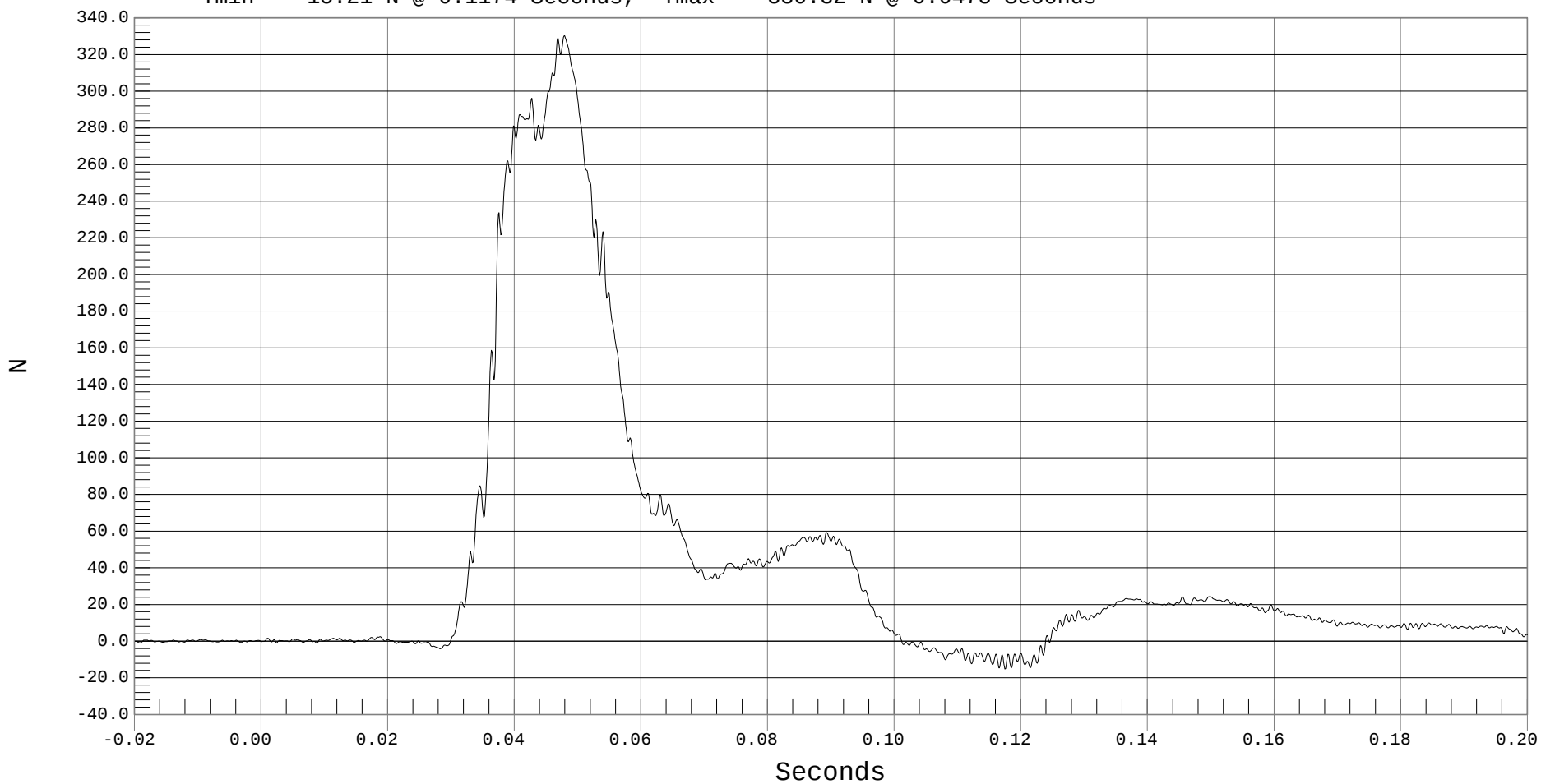
DRIVER ABDOMEN MID FORCE

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 600

— 1 DRIVER MID ABDOMEN FORCE, B01074FF.F42

Ymin = -15.21 N @ 0.1174 Seconds, Ymax = 330.32 N @ 0.0478 Seconds





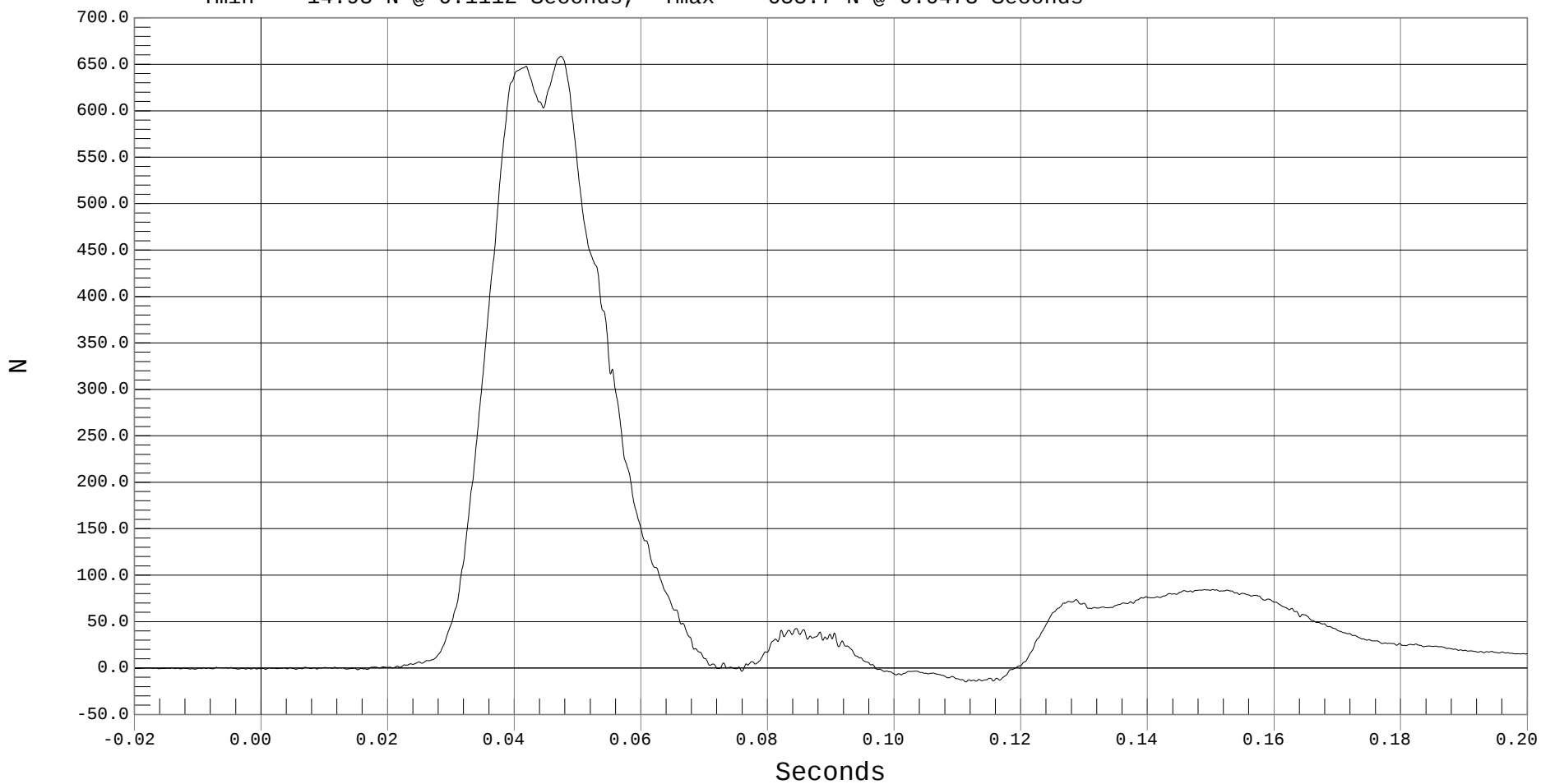
DRIVER ABDOMEN REAR FORCE

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 600

— 1 DRIVER REAR ABDOMEN FORCE, B01074FF.F43

Ymin = -14.98 N @ 0.1112 Seconds, Ymax = 658.7 N @ 0.0473 Seconds





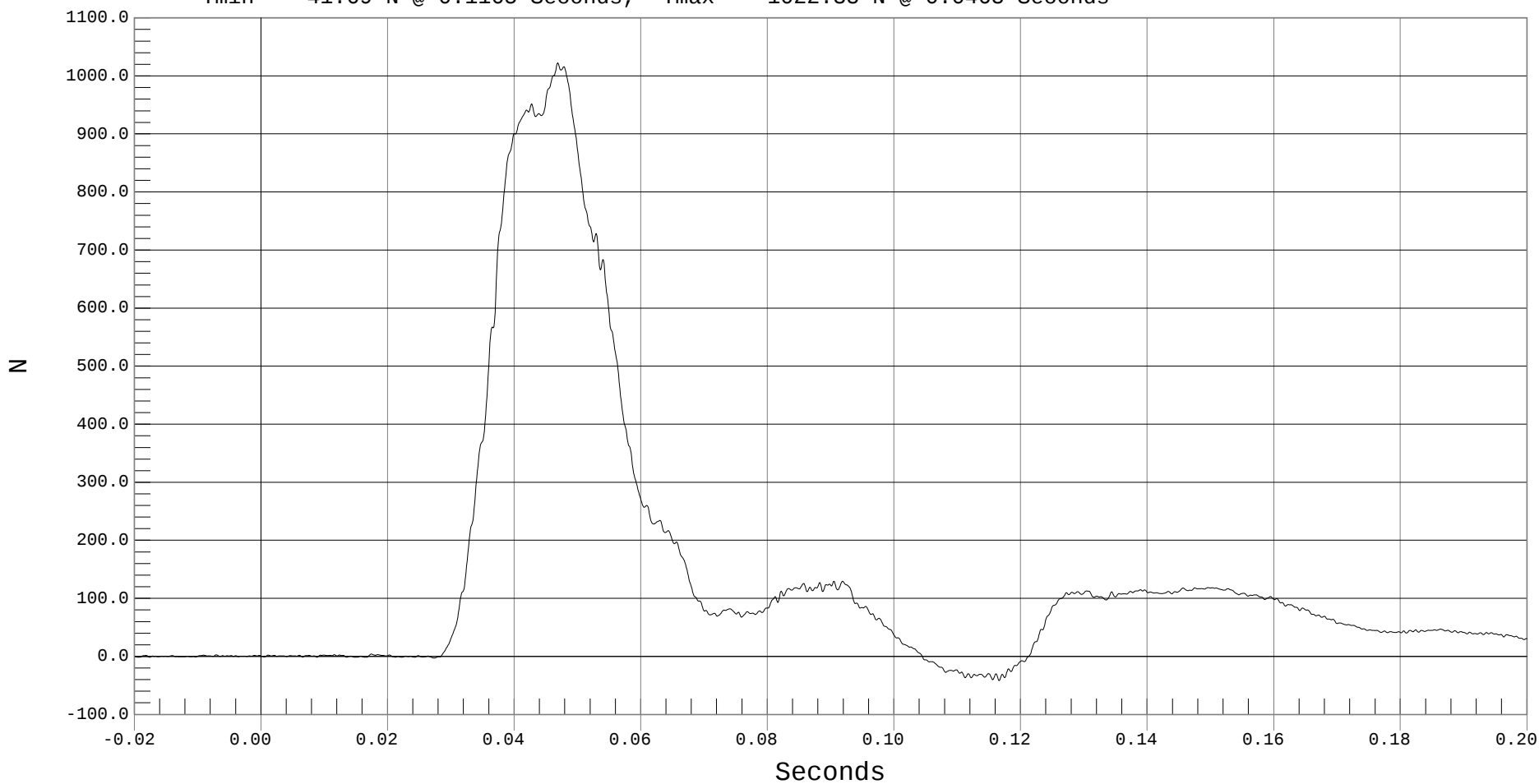
DRIVER SUMMED ABDOMEN FORCE

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 600

— 1 DRIVER SUMMED ABDOMEN FORCE, B01074FU.F41

Ymin = -41.69 N @ 0.1165 Seconds, Ymax = 1022.38 N @ 0.0468 Seconds





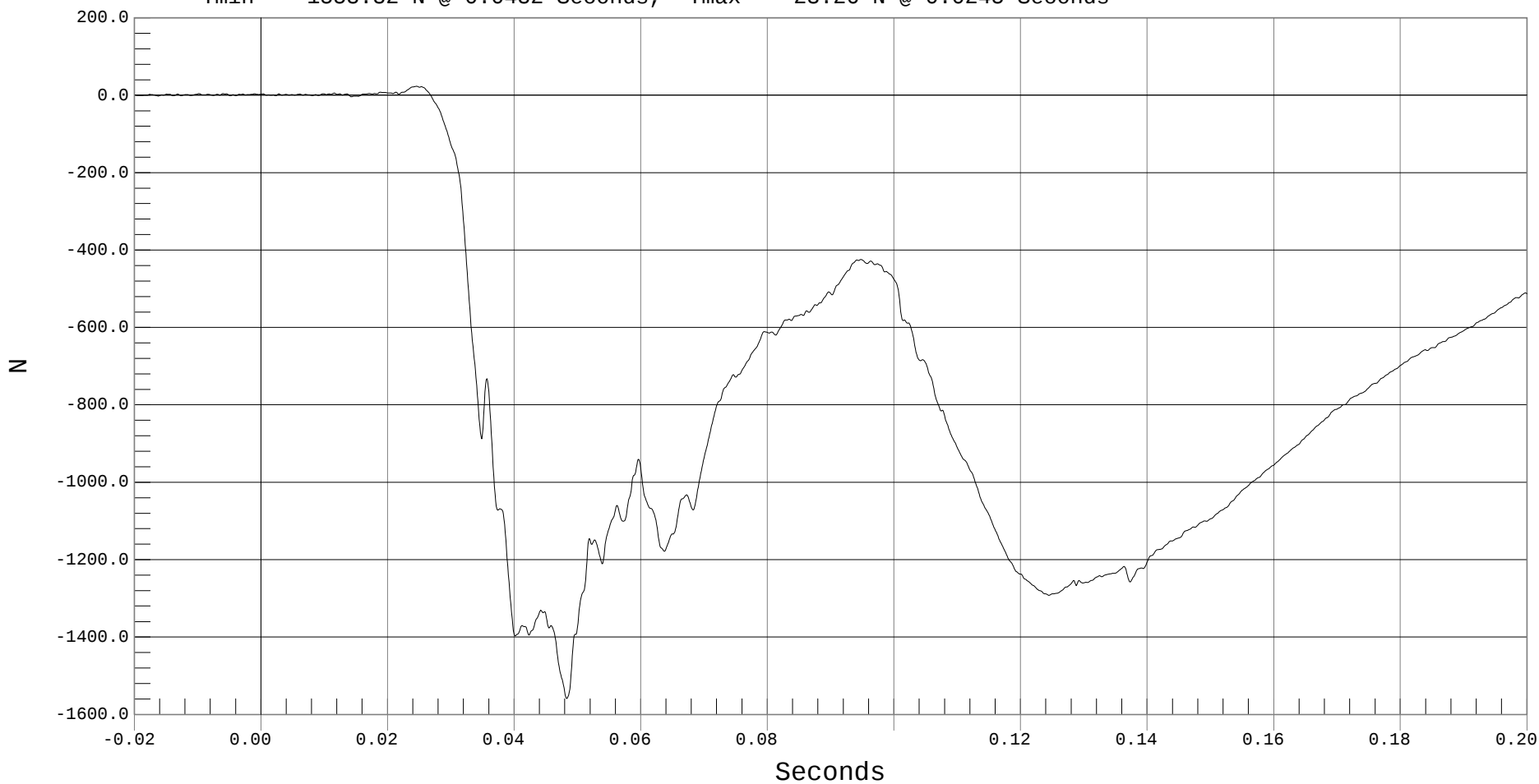
DRIVER PUBIC SYMPHYSIS FORCE

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 600

— 1 DRIVER PUBIC SYMPHYSIS FORCE, B01074FF.F44

Ymin = -1558.82 N @ 0.0482 Seconds, Ymax = 23.26 N @ 0.0245 Seconds





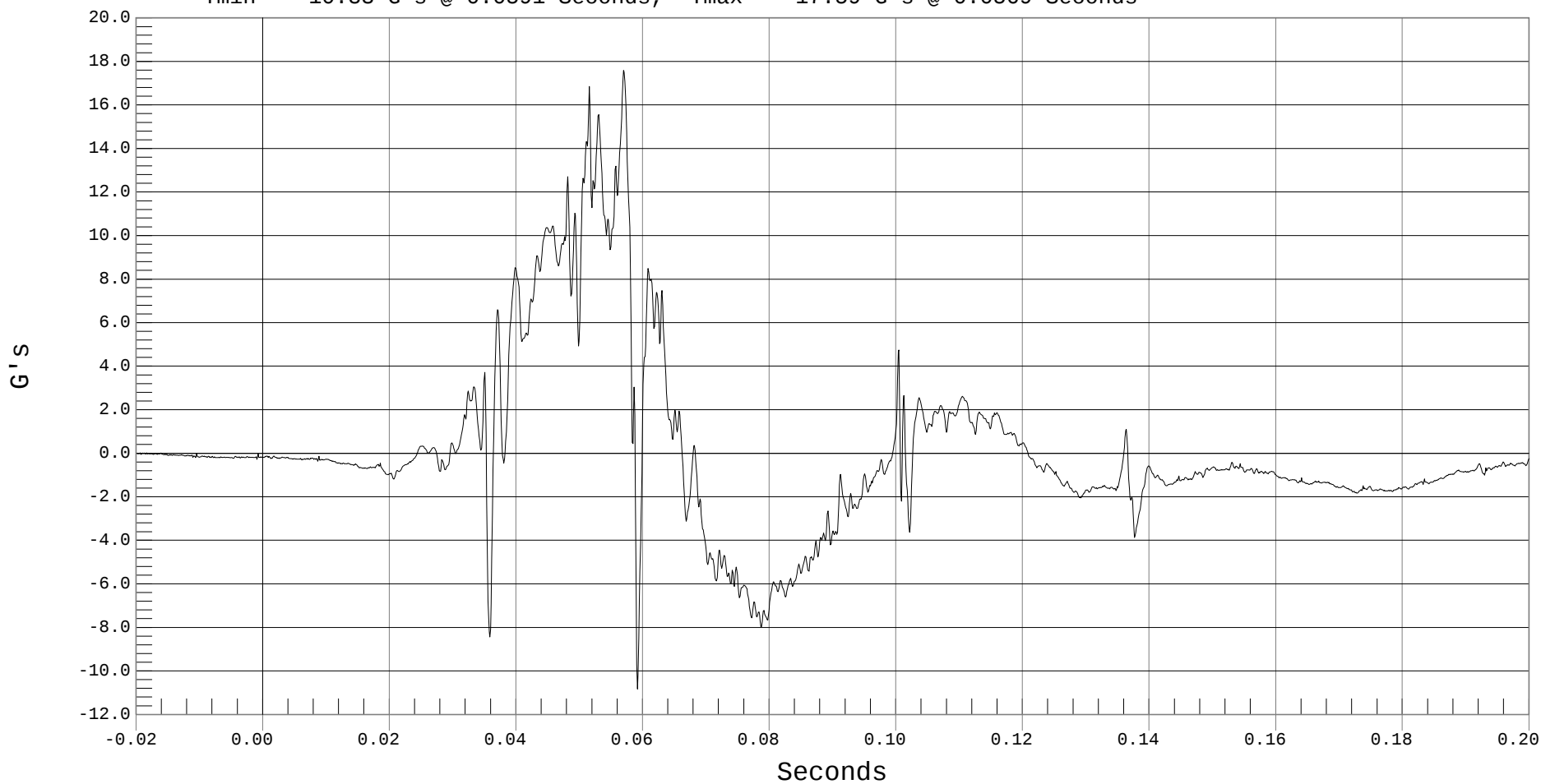
DRIVER PELVIS X ACCELERATION

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 1000

1 DRIVER PELVIS X, B01074AT.A45

Ymin = -10.83 G's @ 0.0591 Seconds, Ymax = 17.59 G's @ 0.0569 Seconds





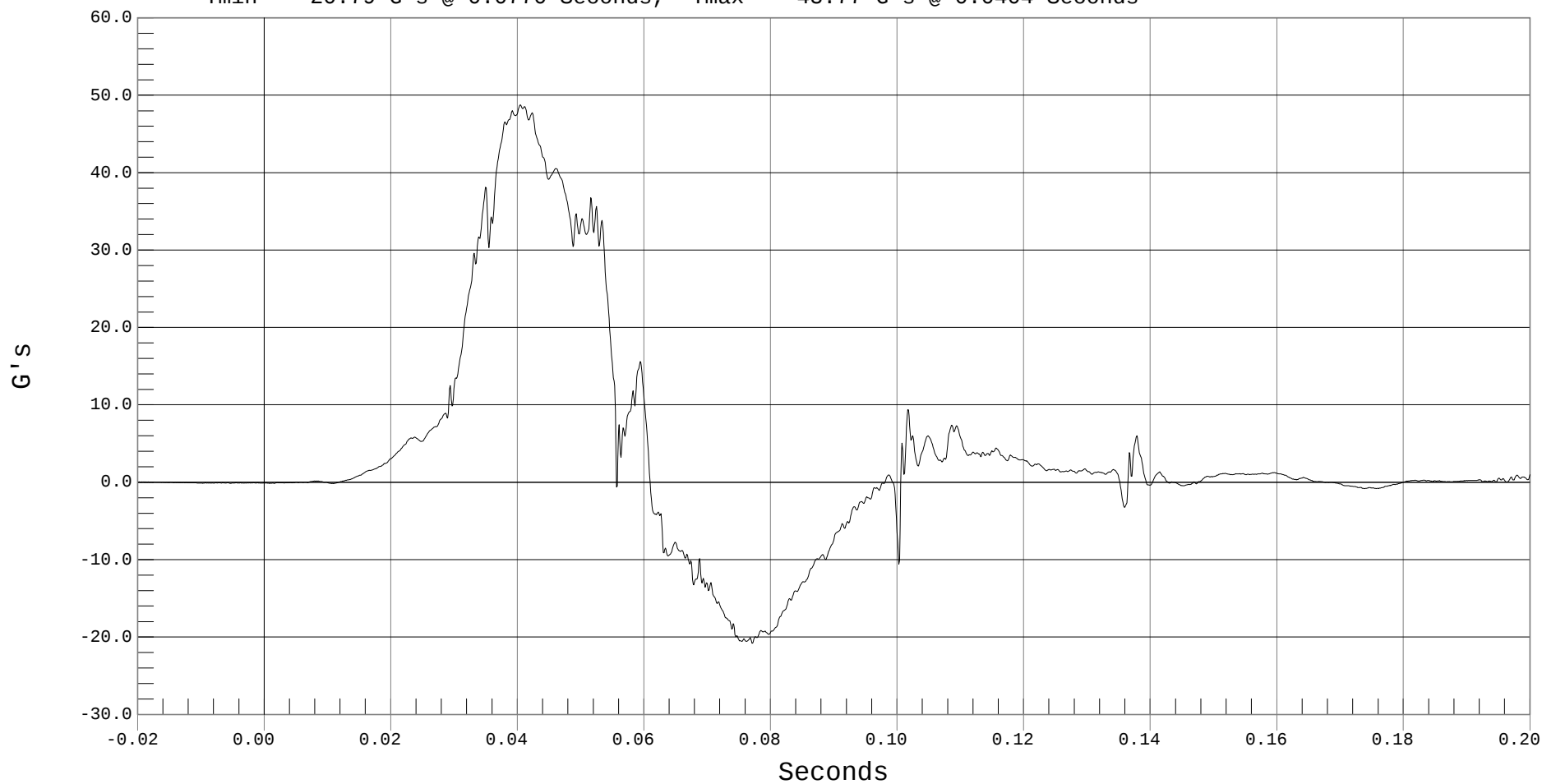
DRIVER PELVIS Y ACCELERATION

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 1000

1 DRIVER PELVIS Y, B01074AT.A46

Ymin = -20.79 G's @ 0.0770 Seconds, Ymax = 48.77 G's @ 0.0404 Seconds





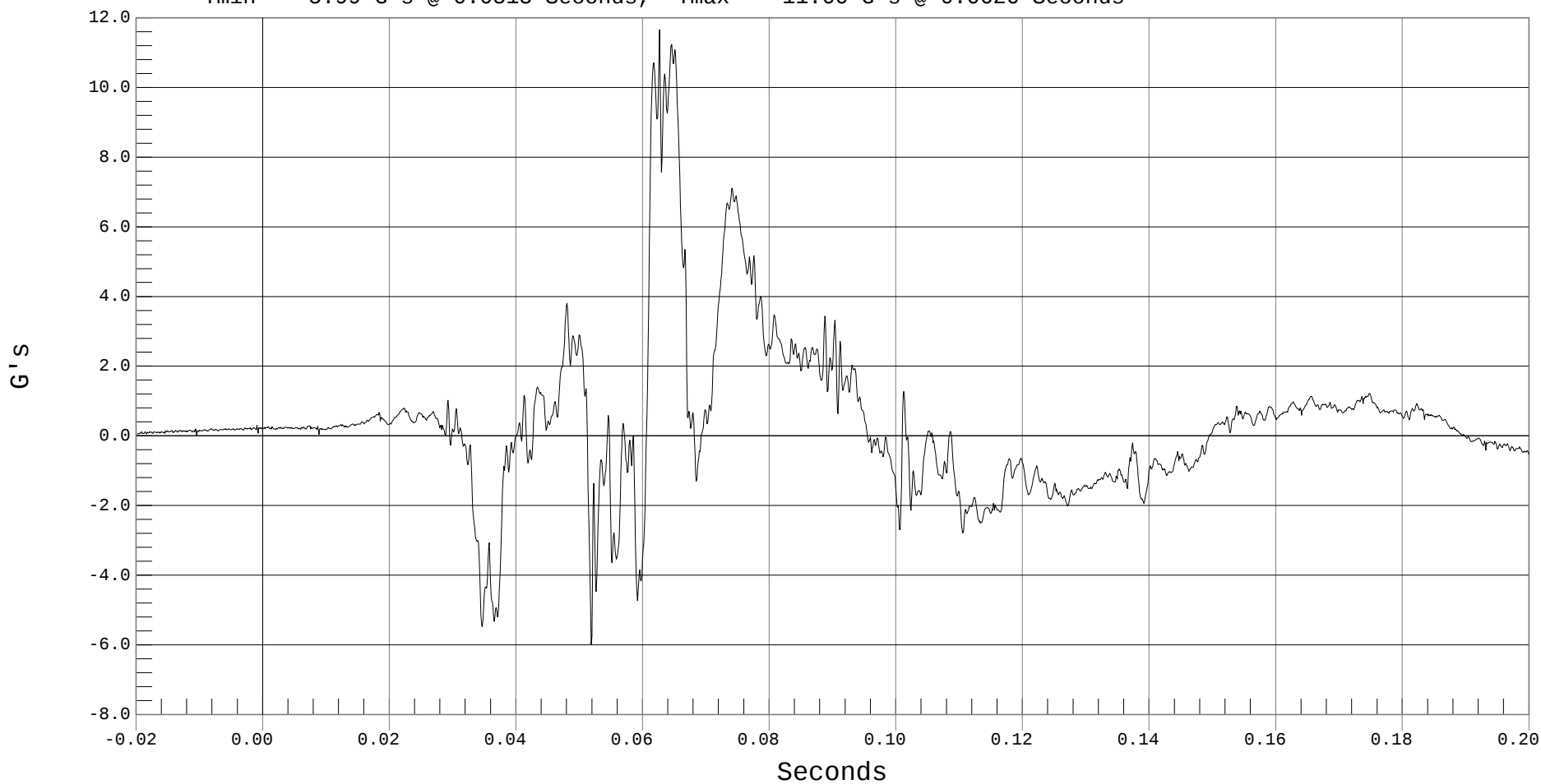
DRIVER PELVIS Z ACCELERATION

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 1000

— 1 DRIVER PELVIS Z, B01074AT.A47

Ymin = -5.99 G's @ 0.0518 Seconds, Ymax = 11.66 G's @ 0.0626 Seconds





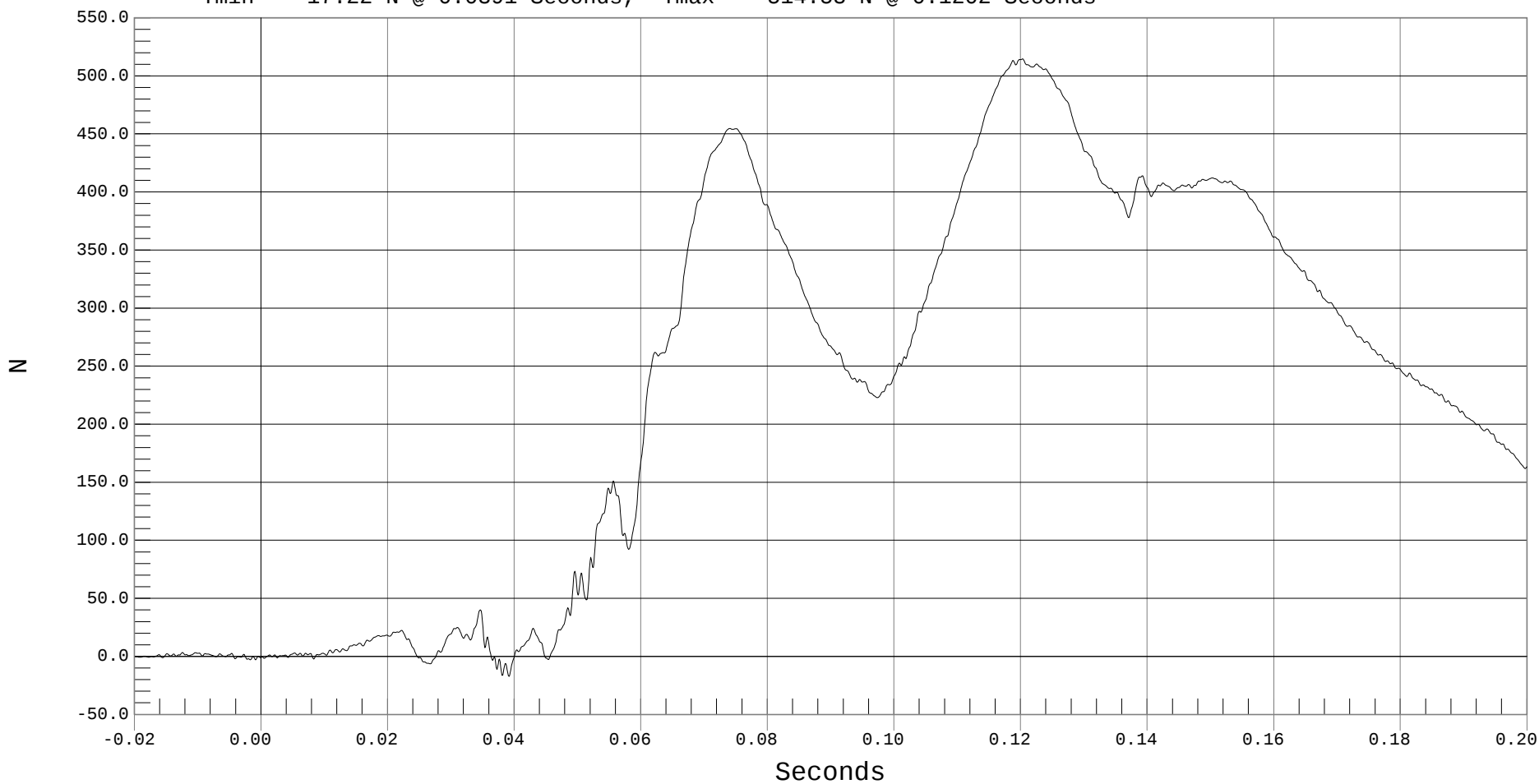
DRIVER LEFT FEMUR FORCE X

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 600

— 1 DRIVER LEFT FEMUR FORCE X, B01074FF.F54

Ymin = -17.22 N @ 0.0391 Seconds, Ymax = 514.58 N @ 0.1202 Seconds





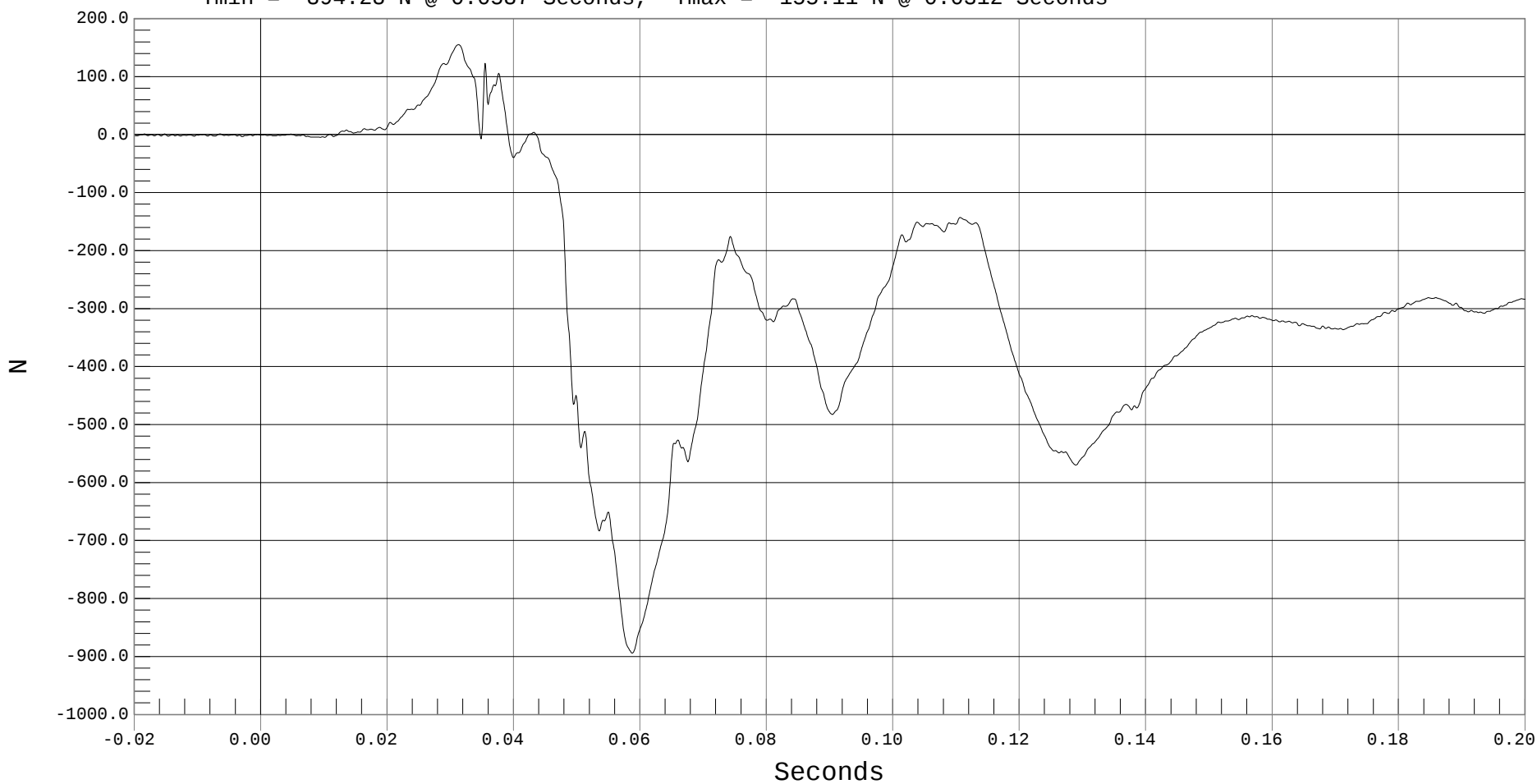
DRIVER LEFT FEMUR FORCE Y

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 600

— 1 DRIVER LEFT FEMUR FORCE Y, B01074FF.F55

Ymin = -894.28 N @ 0.0587 Seconds, Ymax = 155.11 N @ 0.0312 Seconds





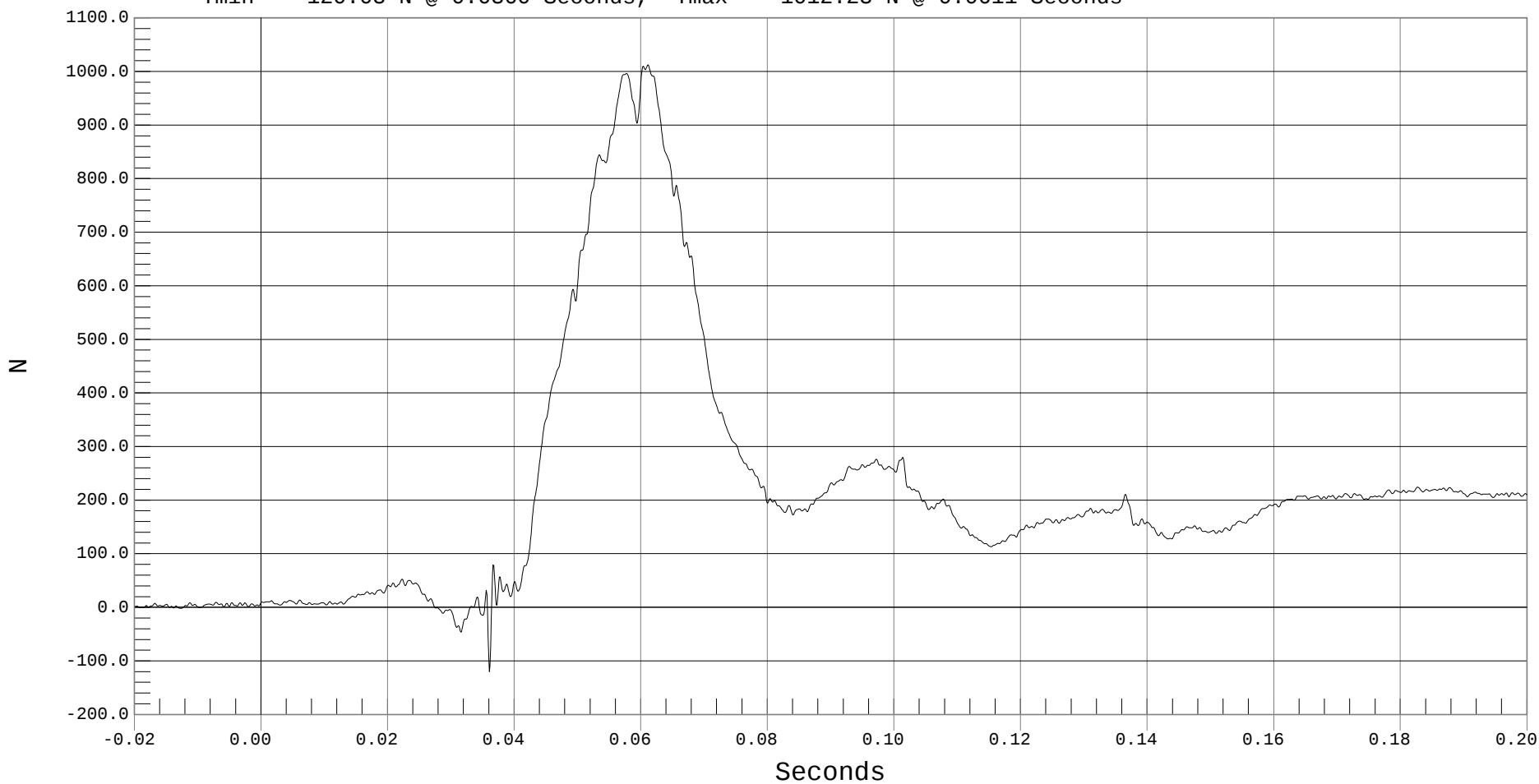
DRIVER LEFT FEMUR FORCE Z

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 600

— 1 DRIVER LEFT FEMUR FORCE Z, B01074FF.F56

Ymin = -120.08 N @ 0.0360 Seconds, Ymax = 1012.23 N @ 0.0611 Seconds





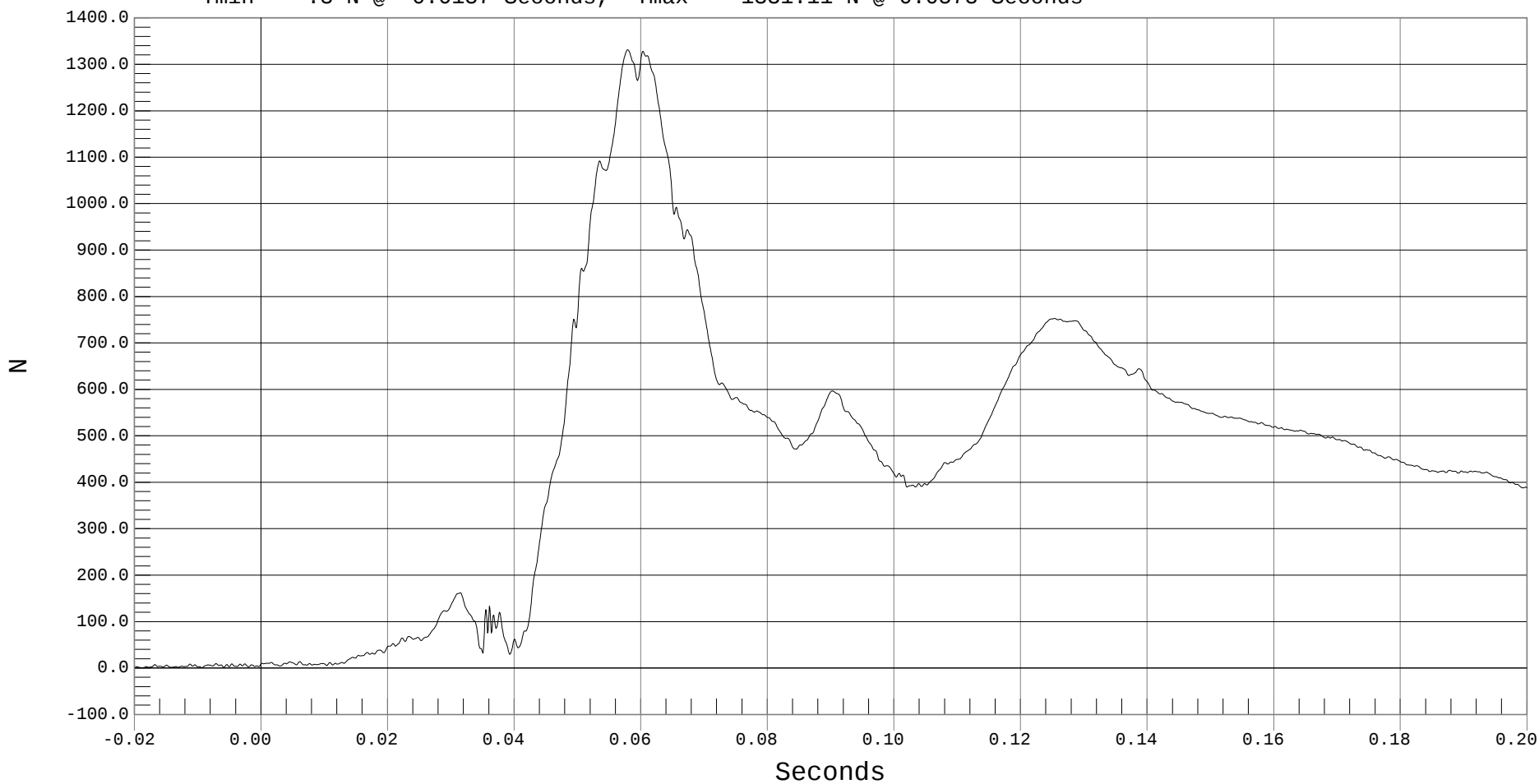
DRIVER LEFT FEMUR FORCE RESULTANT

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 600

— 1 DRIVER LEFT FEMUR FORCE RESULTANT, B01074FV.F54

Ymin = .3 N @ -0.0187 Seconds, Ymax = 1331.11 N @ 0.0578 Seconds





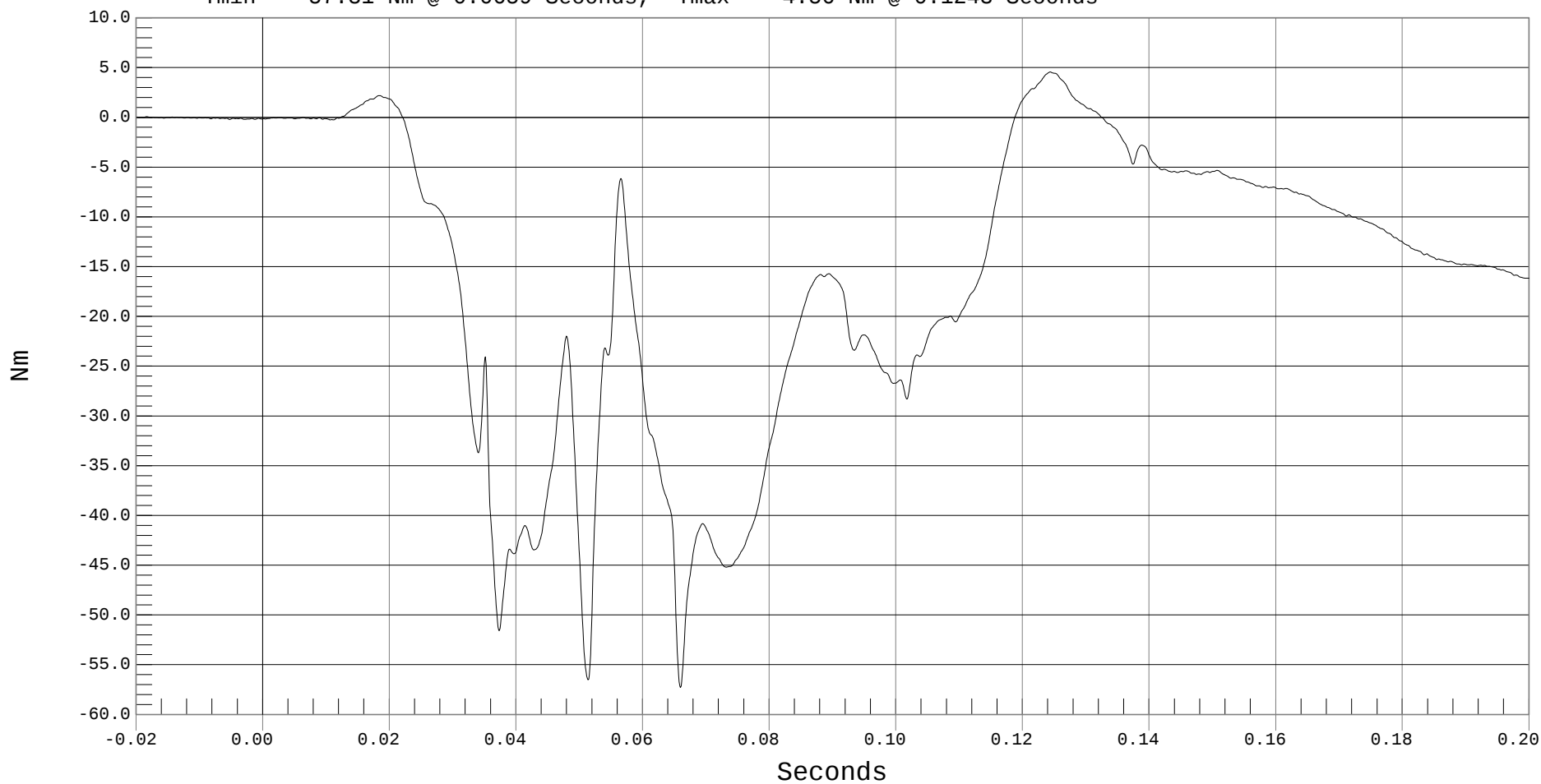
DRIVER LEFT FEMUR MOMENT X

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 600

1 DRIVER LEFT FEMUR MOMENT X, B01074MF.M57

Ymin = -57.31 Nm @ 0.0659 Seconds, Ymax = 4.56 Nm @ 0.1243 Seconds





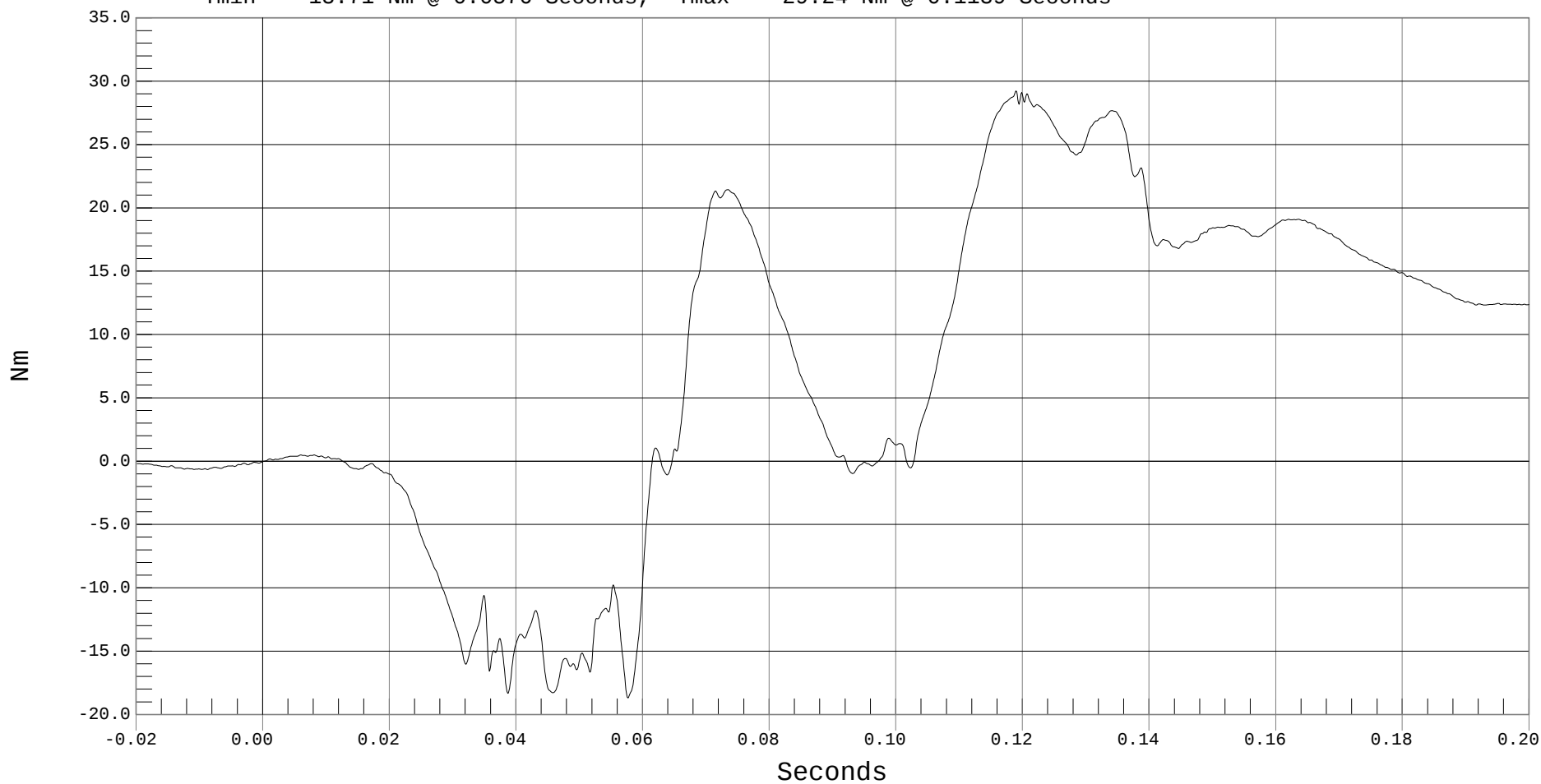
DRIVER LEFT FEMUR MOMENT Y

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 600

— 1 DRIVER LEFT FEMUR MOMENT Y, B01074MF.M58

Ymin = -18.71 Nm @ 0.0576 Seconds, Ymax = 29.24 Nm @ 0.1189 Seconds





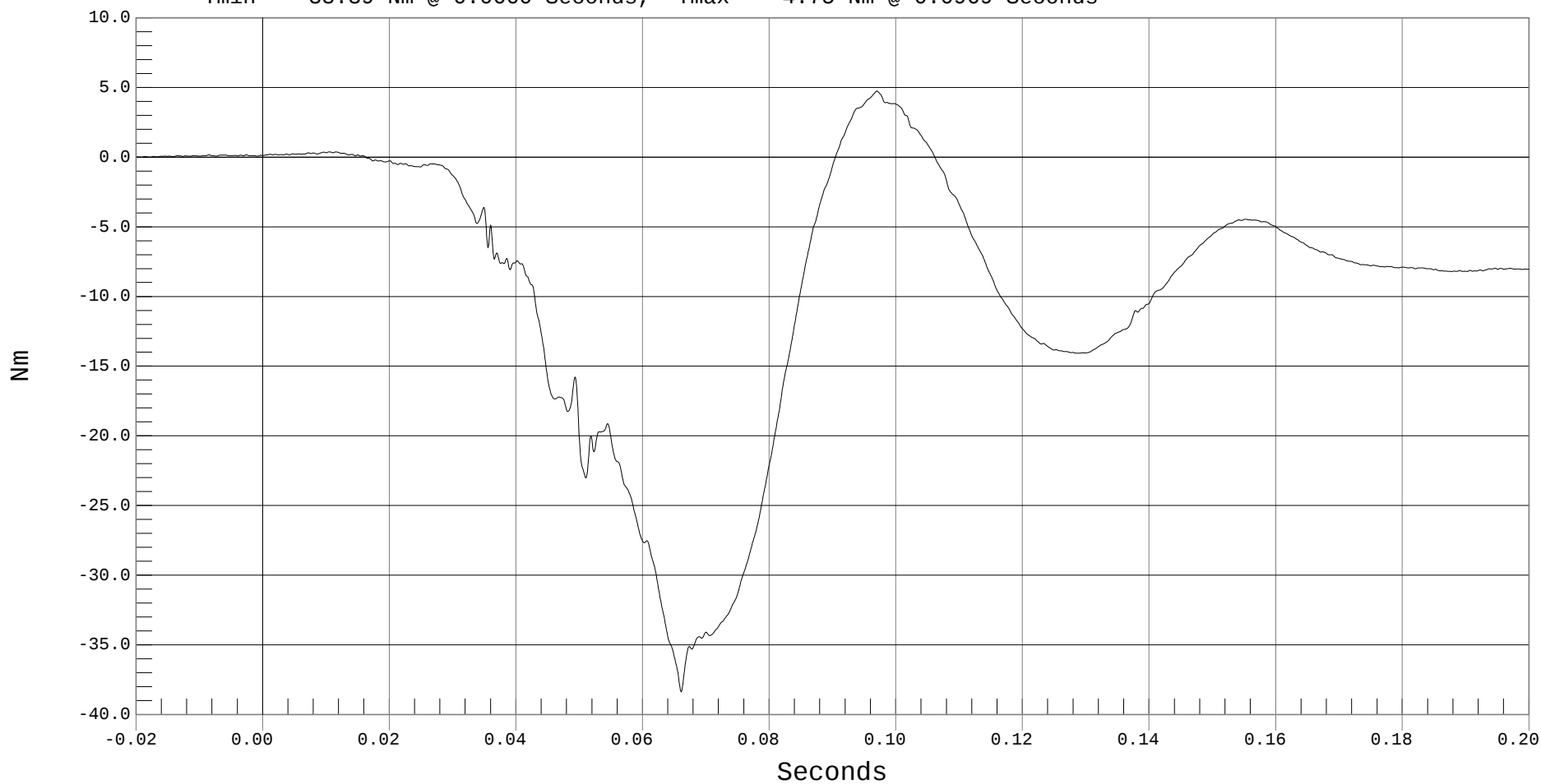
DRIVER LEFT FEMUR MOMENT Z

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 600

1 DRIVER LEFT FEMUR MOMENT Z, B01074MF.M01

Ymin = -38.39 Nm @ 0.0660 Seconds, Ymax = 4.75 Nm @ 0.0969 Seconds





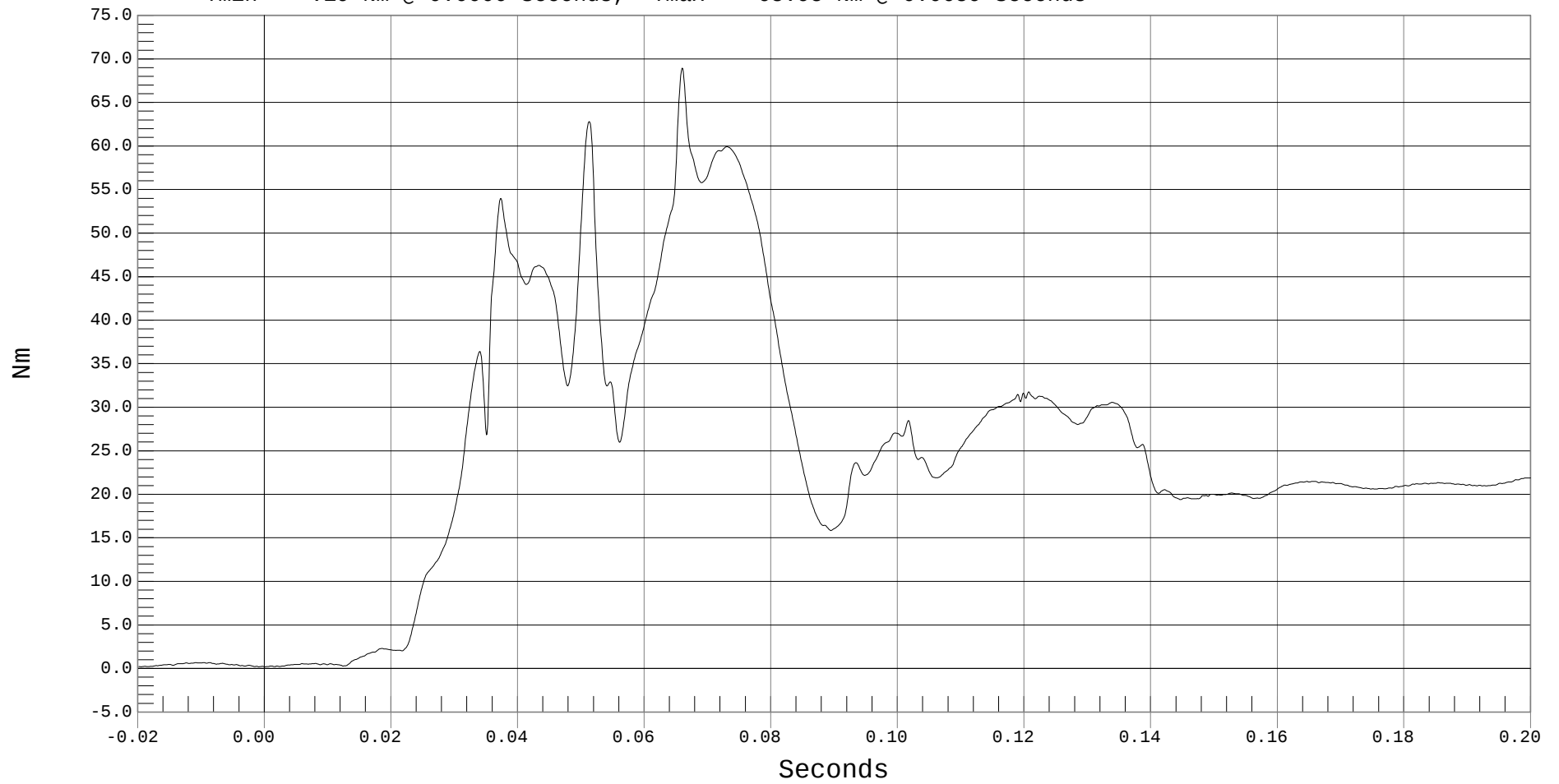
DRIVER LEFT FEMUR MOMENT RESULTANT

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 600

— 1 DRIVER LEFT FEMUR MOMENT RESULTANT, B01074MV.M01

Ymin = .19 Nm @ 0.0000 Seconds, Ymax = 68.95 Nm @ 0.0659 Seconds





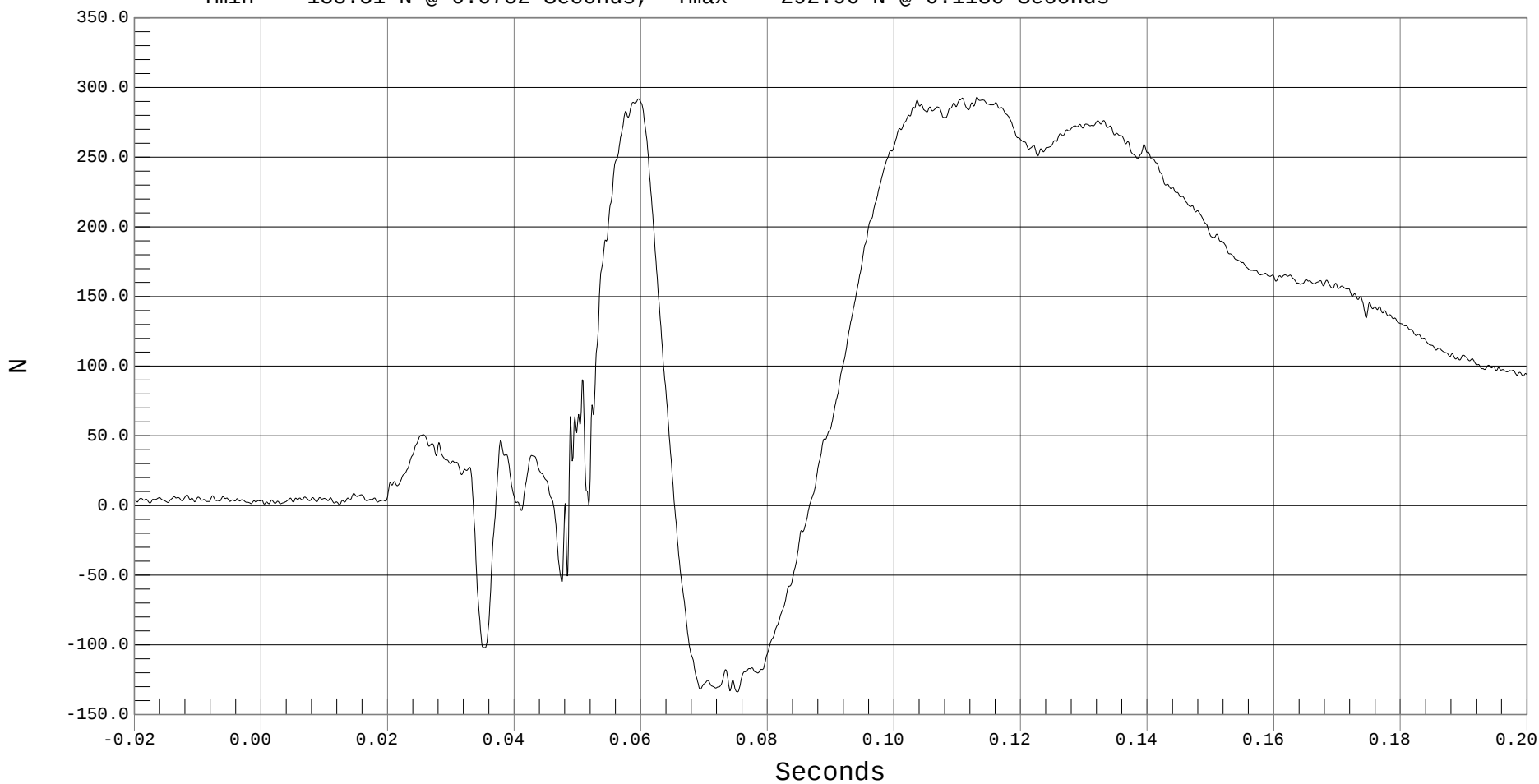
DRIVER RIGHT FEMUR FORCE X

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 600

— 1 DRIVER RIGHT FEMUR FORCE X, B01074FF.F48

Ymin = -133.81 N @ 0.0752 Seconds, Ymax = 292.96 N @ 0.1130 Seconds





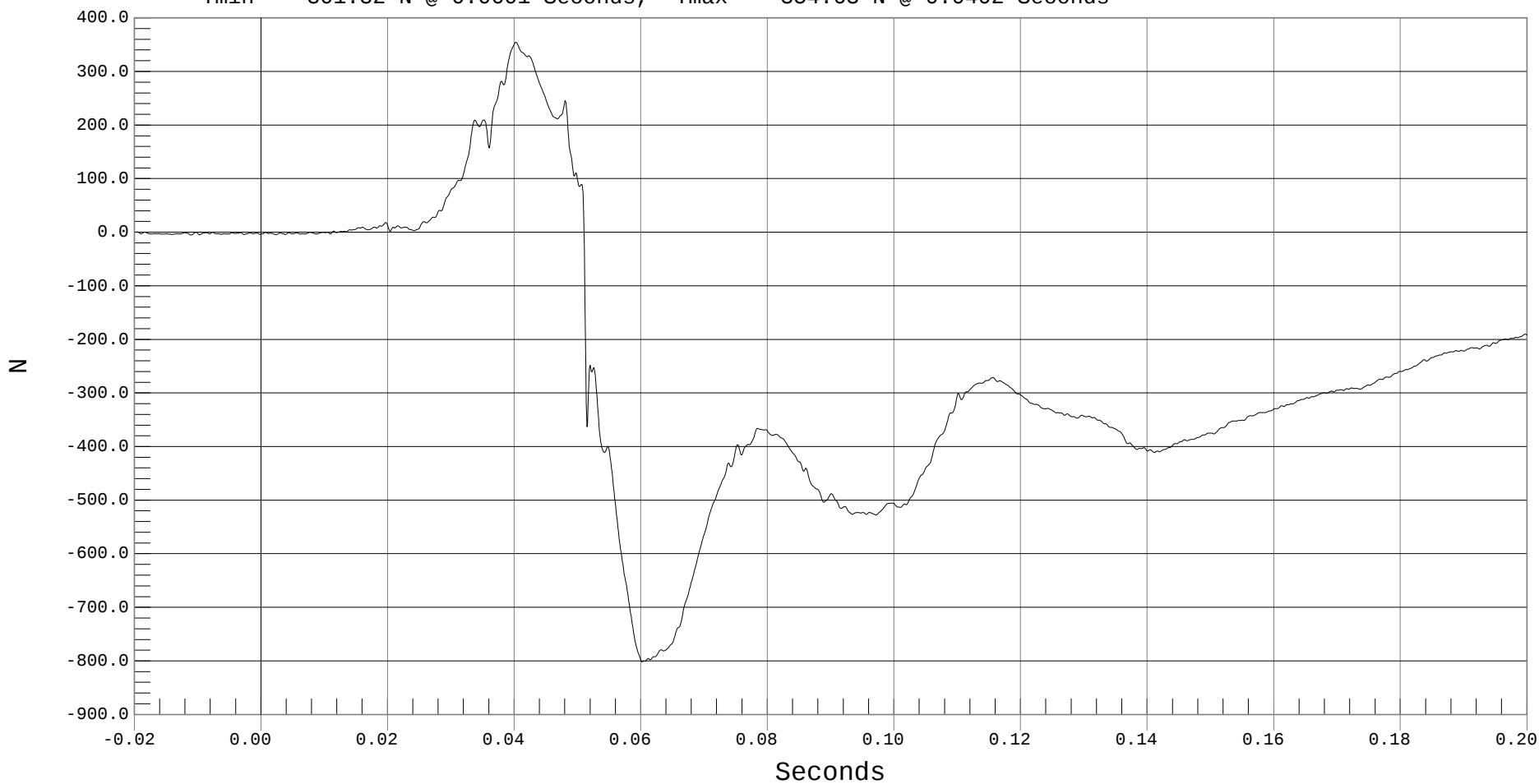
DRIVER RIGHT FEMUR FORCE Y

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 600

— 1 DRIVER RIGHT FEMUR FORCE Y, B01074FF.F49

Ymin = -801.82 N @ 0.0601 Seconds, Ymax = 354.63 N @ 0.0402 Seconds





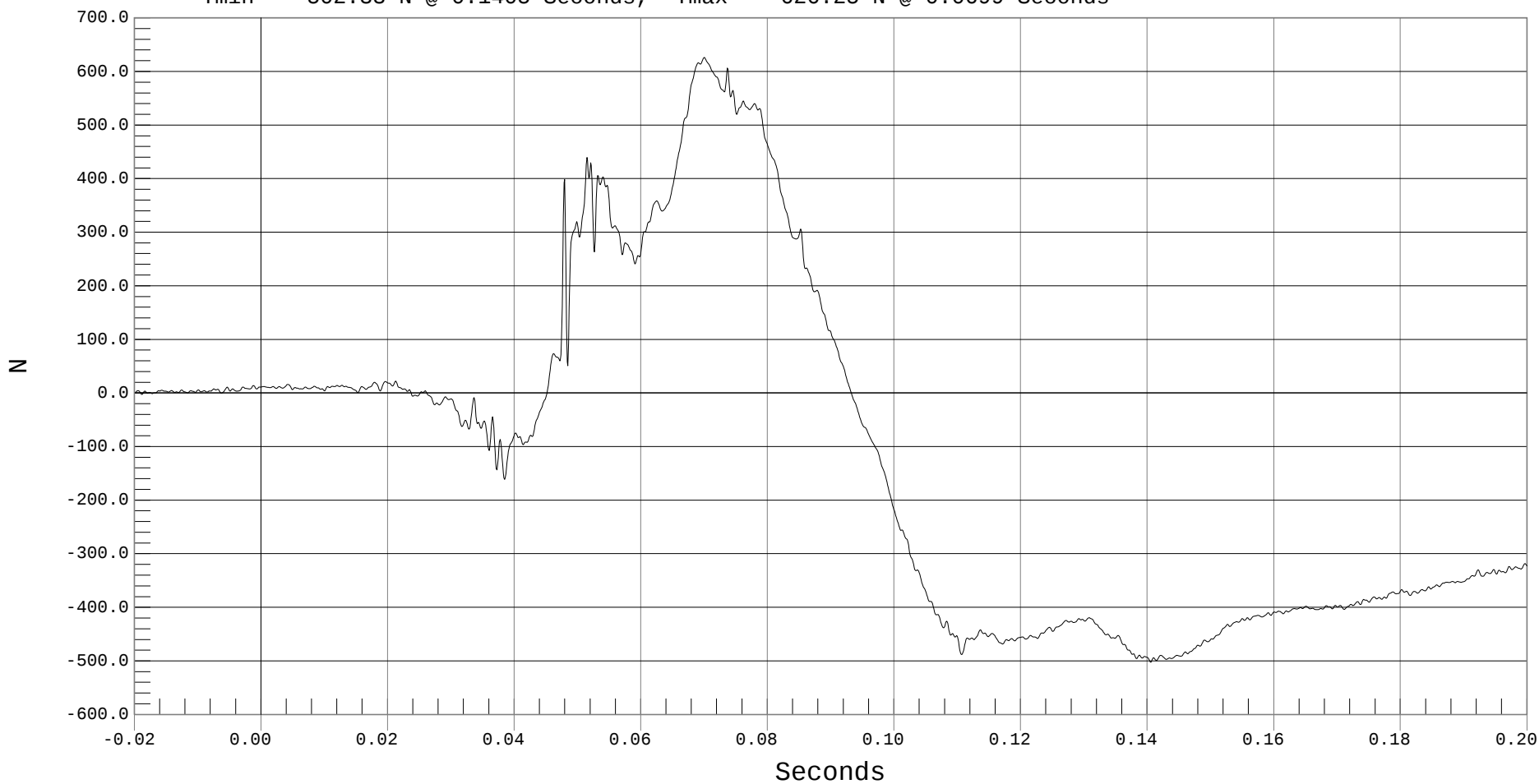
DRIVER RIGHT FEMUR FORCE Z

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 600

— 1 DRIVER RIGHT FEMUR FORCE Z, B01074FF.F50

Ymin = -502.33 N @ 0.1405 Seconds, Ymax = 626.25 N @ 0.0699 Seconds





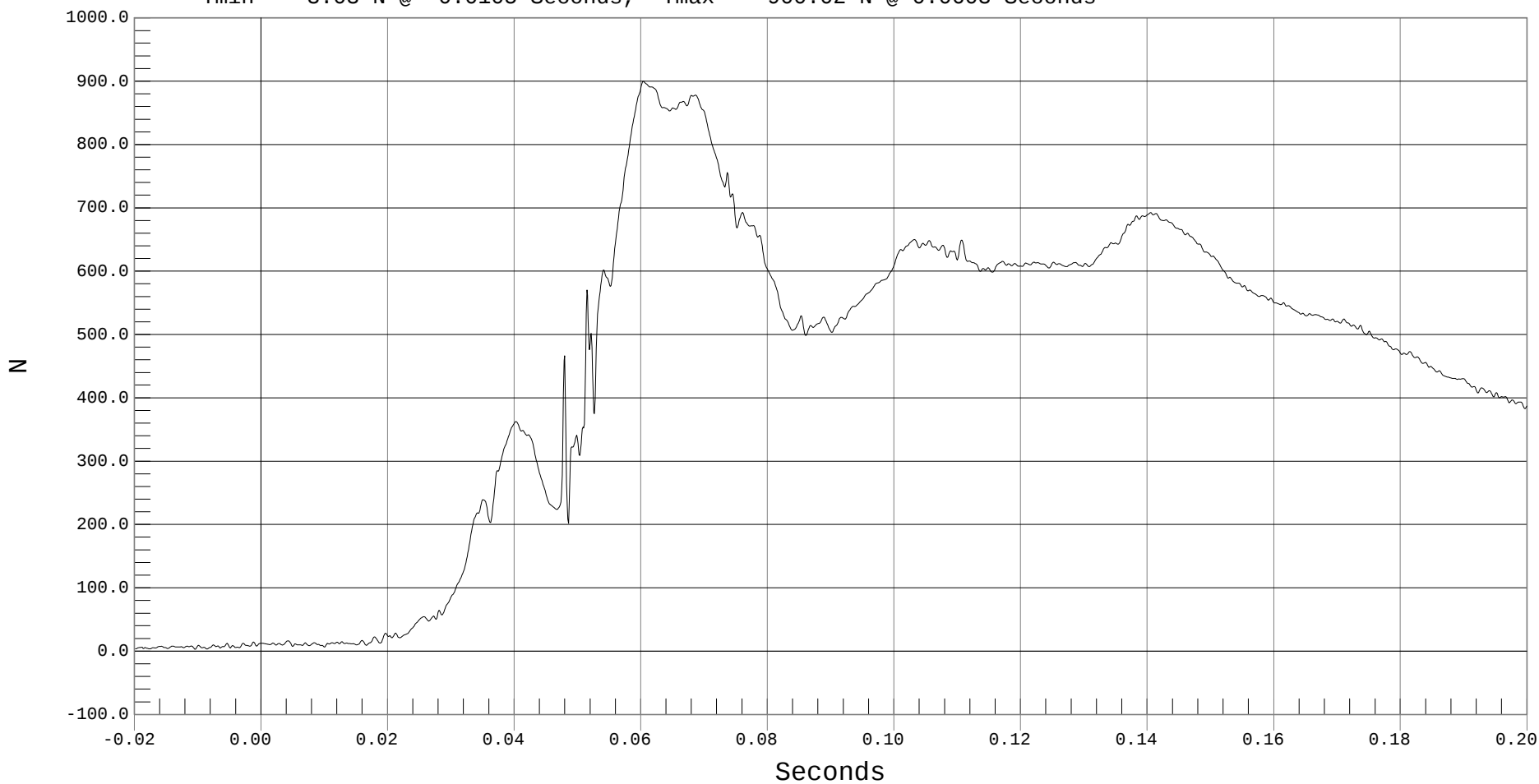
DRIVER RIGHT FEMUR FORCE RESULTANT

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 600

— 1 DRIVER RIGHT FEMUR FORCE RESULTANT, B01074FV.F48

Ymin = 3.03 N @ -0.0105 Seconds, Ymax = 900.02 N @ 0.0603 Seconds





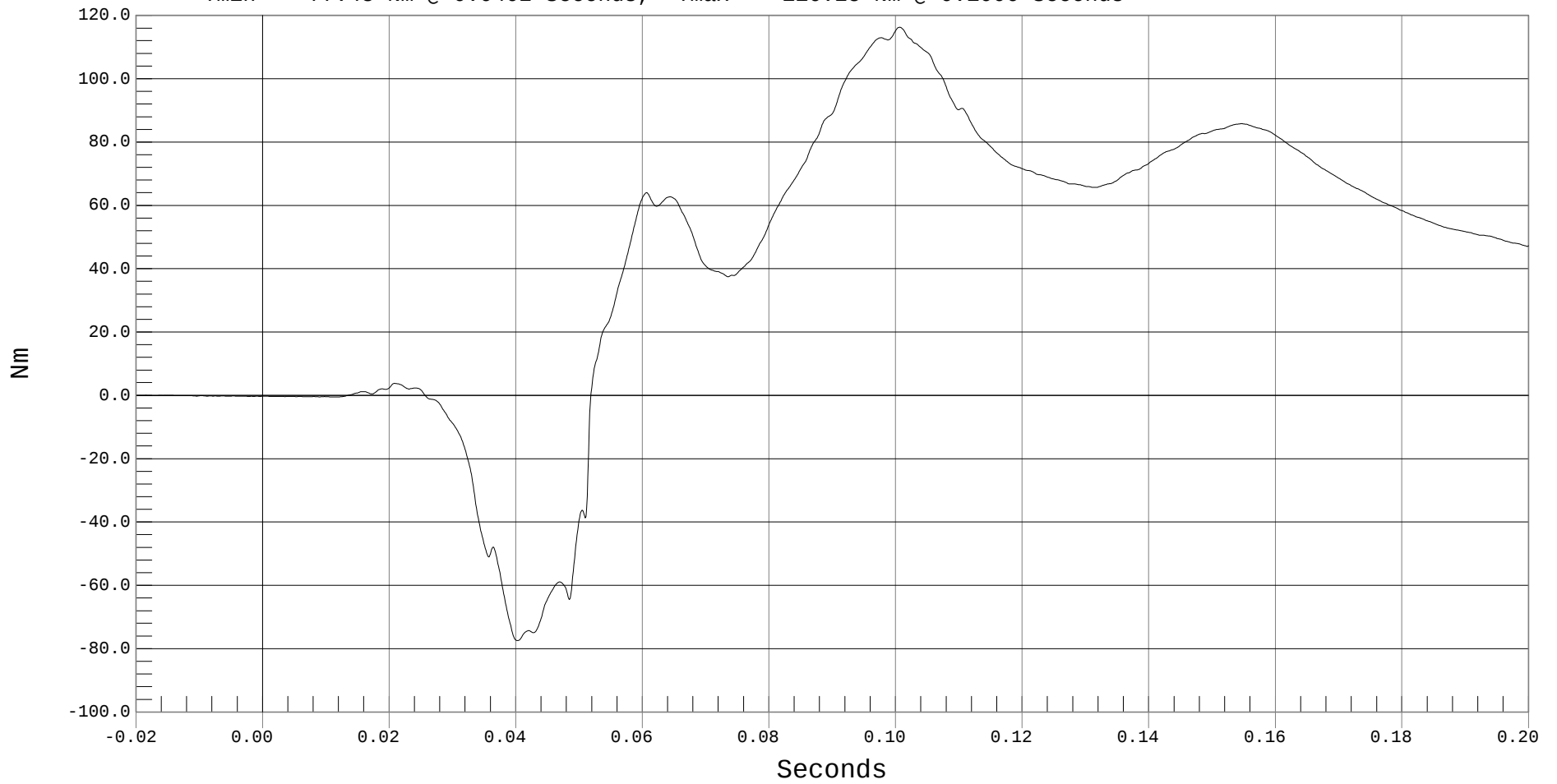
DRIVER RIGHT FEMUR MOMENT X

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 600

— 1 DRIVER RIGHT FEMUR MOMENT X, B01074MF.M51

Ymin = -77.48 Nm @ 0.0402 Seconds, Ymax = 116.25 Nm @ 0.1006 Seconds





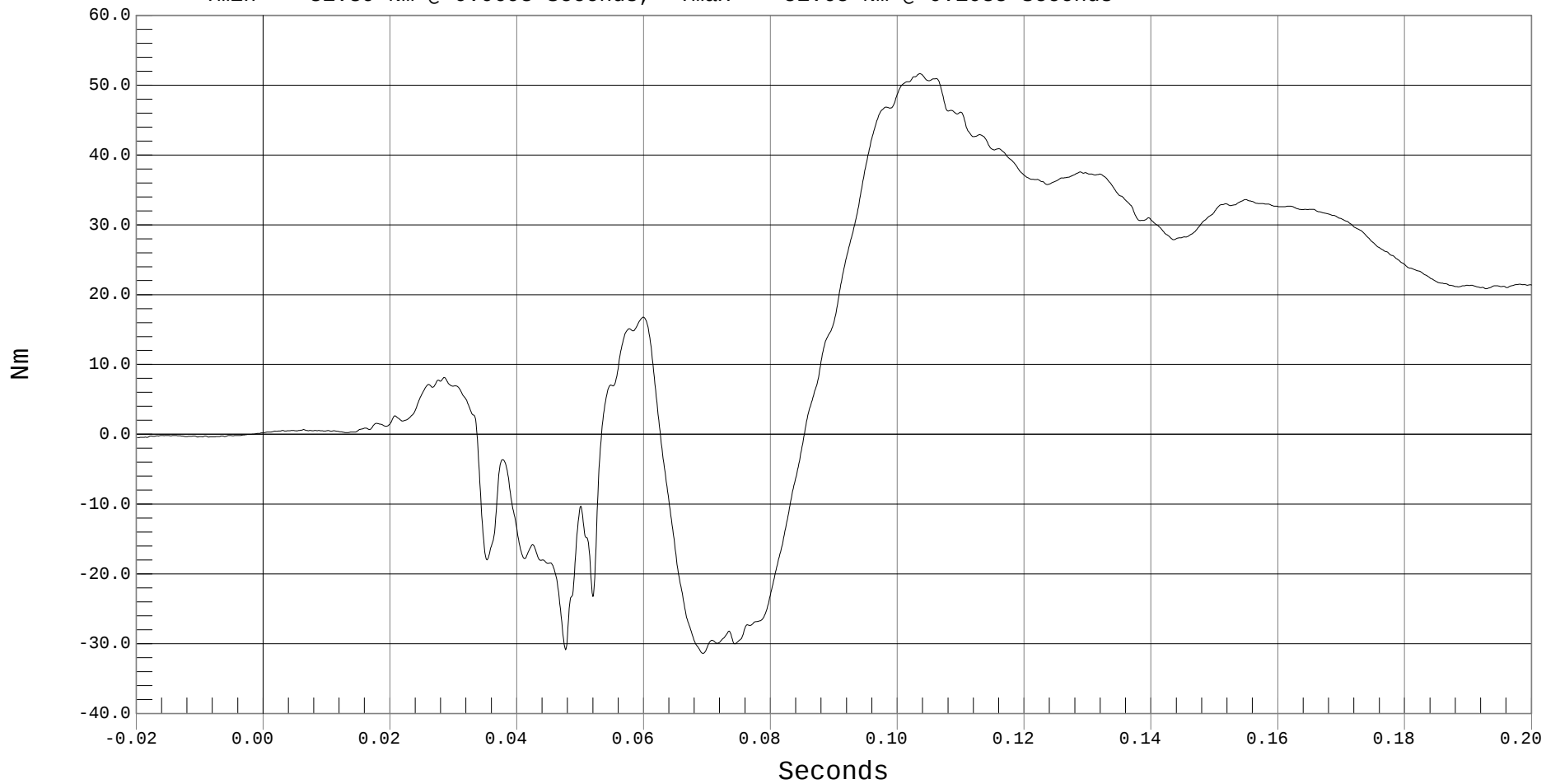
DRIVER RIGHT FEMUR MOMENT Y

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 600

— 1 DRIVER RIGHT FEMUR MOMENT Y, B01074MF.M52

Ymin = -31.39 Nm @ 0.0693 Seconds, Ymax = 51.65 Nm @ 0.1035 Seconds





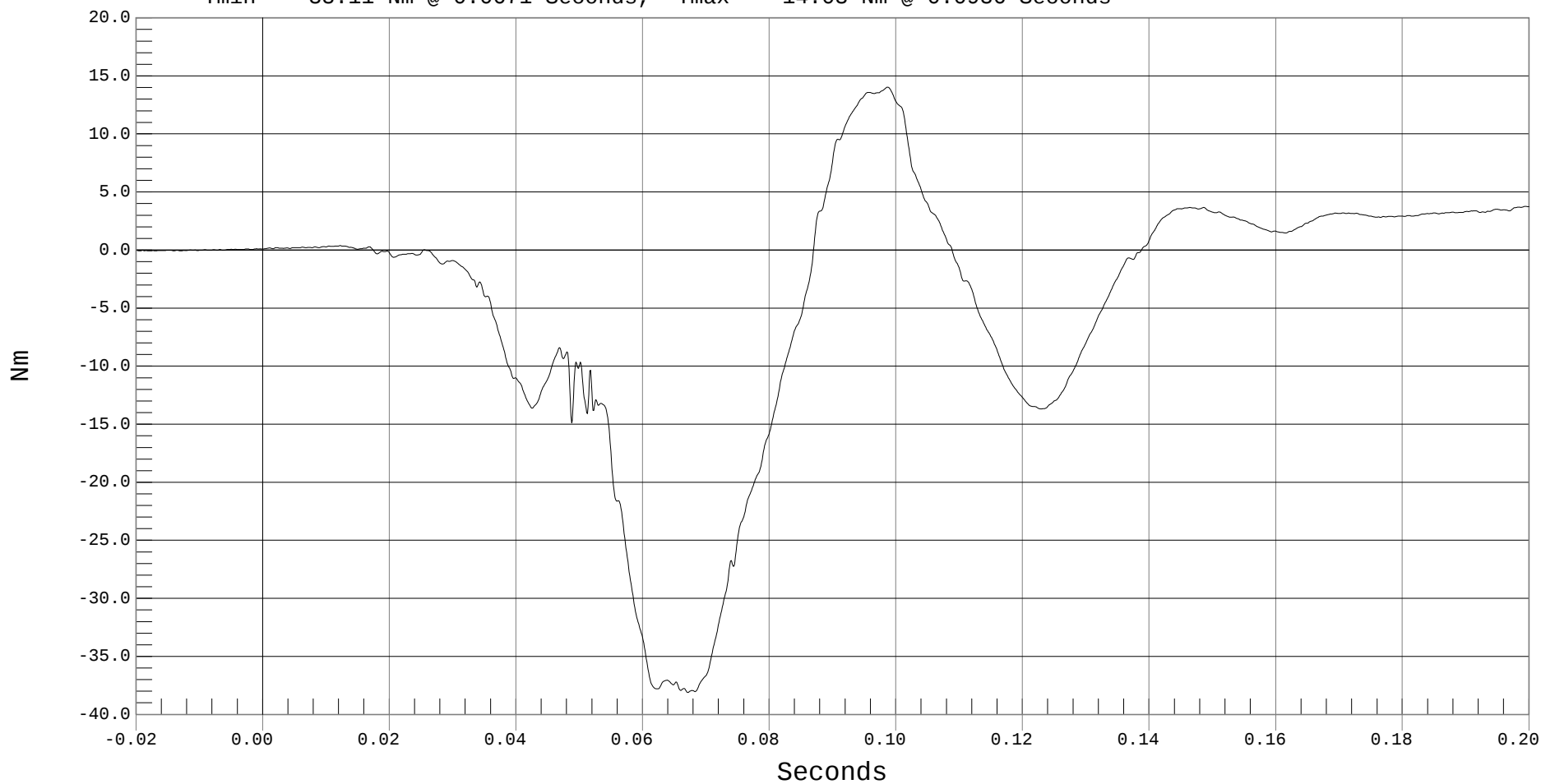
DRIVER RIGHT FEMUR MOMENT Z

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 600

— 1 DRIVER RIGHT FEMUR MOMENT Z, B01074MF.M53

Ymin = -38.11 Nm @ 0.0671 Seconds, Ymax = 14.03 Nm @ 0.0986 Seconds





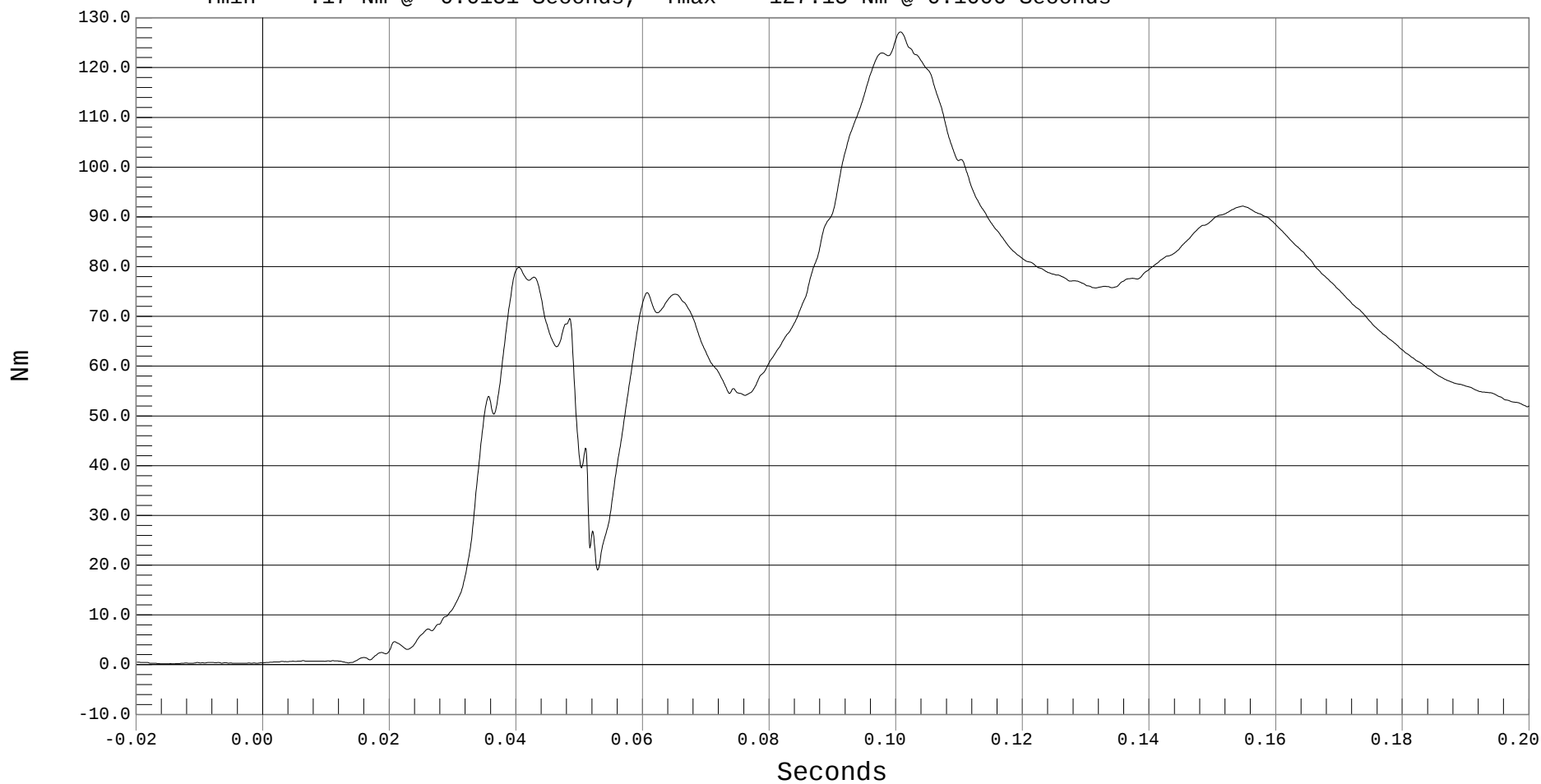
DRIVER RIGHT FEMUR MOMENT RESULTANT

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 600

— 1 DRIVER RIGHT FEMUR MOMENT RESULTANT, B01074MV.M51

Ymin = .17 Nm @ -0.0151 Seconds, Ymax = 127.15 Nm @ 0.1006 Seconds





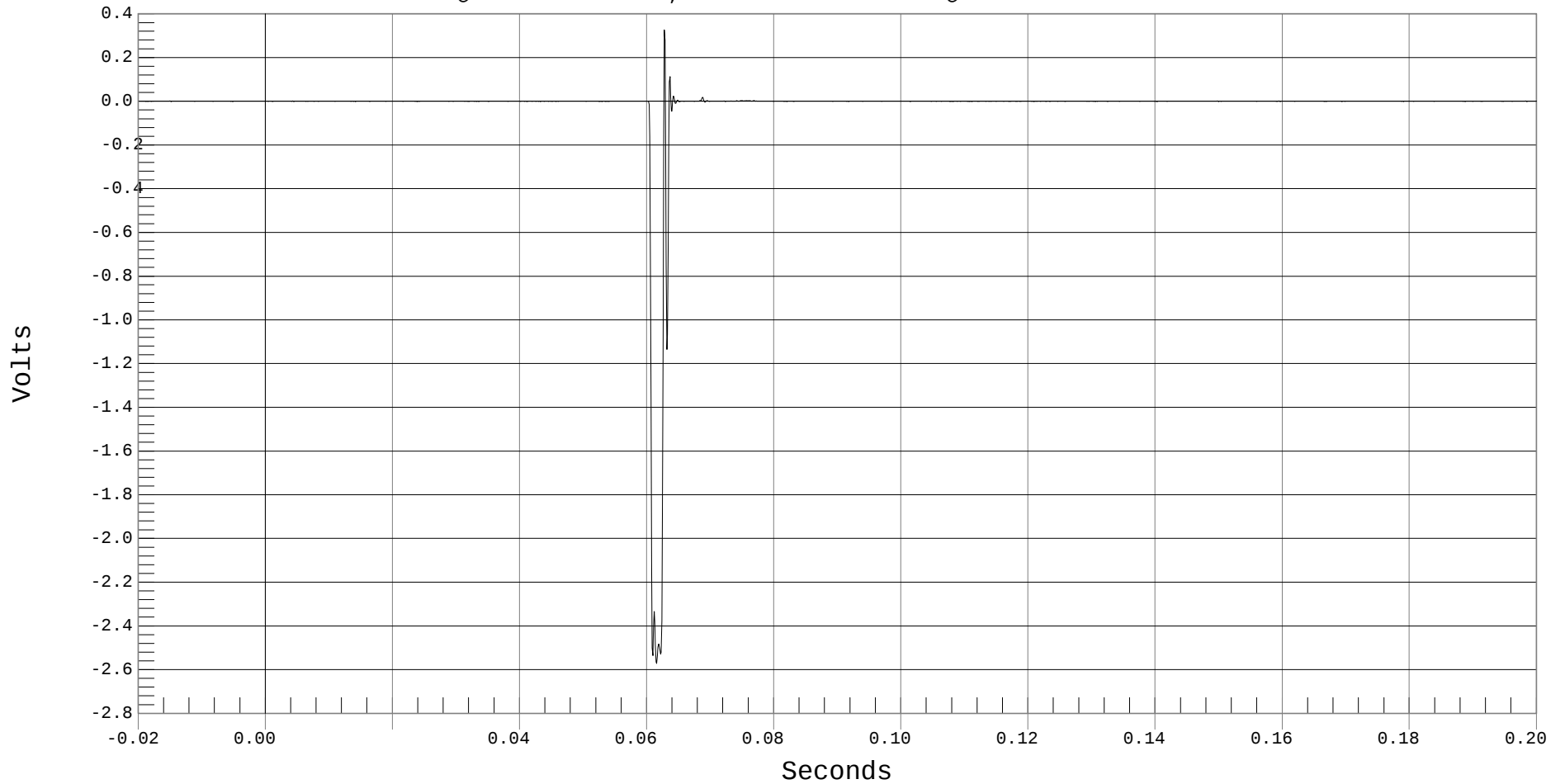
DRIVER HEAD CONTACT

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 1000

— 1 DRIVER HEAD CONTACT, B010740T.095

Ymin = -2.57 Volts @ 0.0615 Seconds, Ymax = .33 Volts @ 0.0627 Seconds





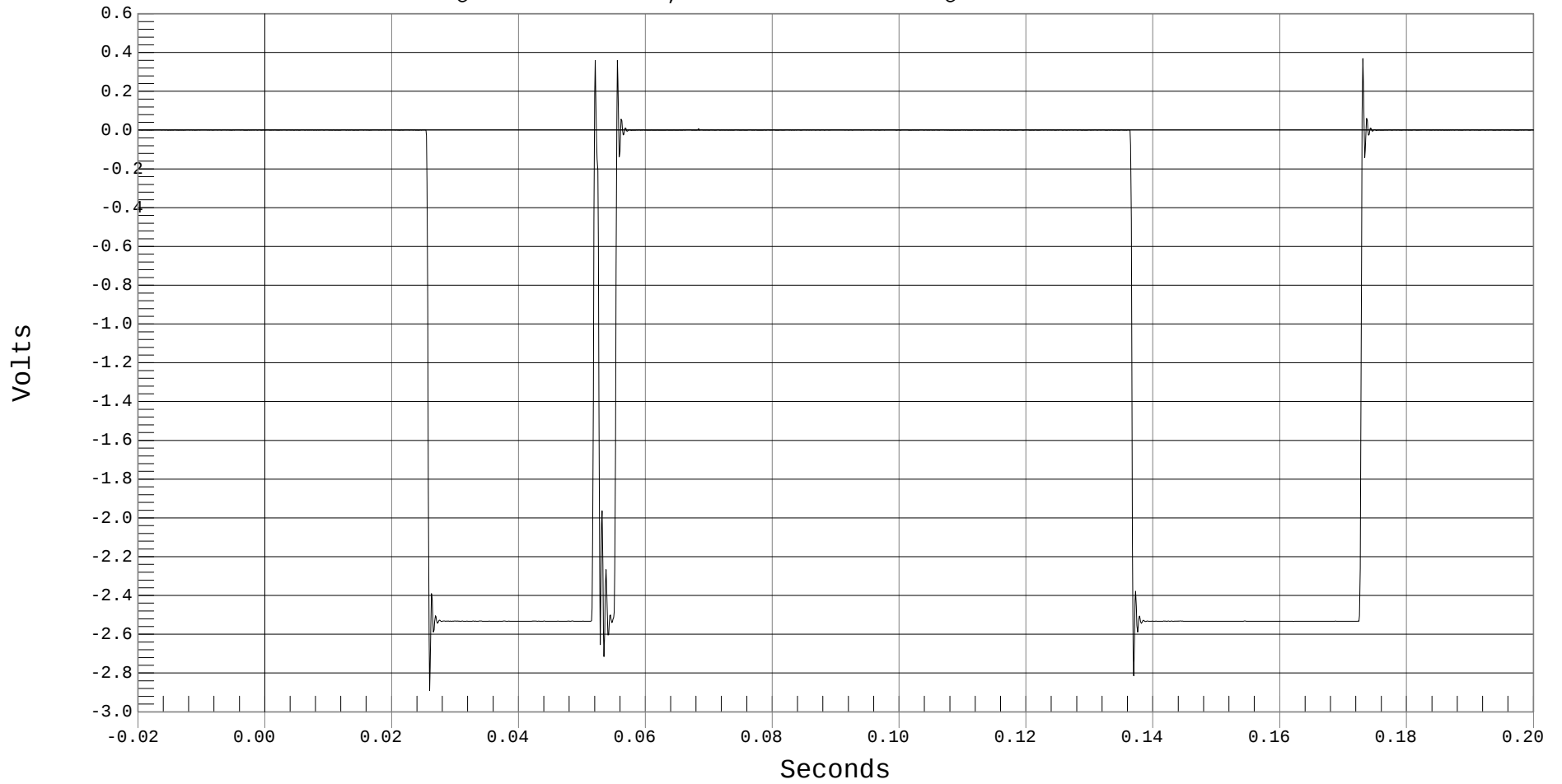
DRIVER ARM CONTACT

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 1000

1 DRIVER ARM CONTACT, B010740T.096

Ymin = -2.89 Volts @ 0.0259 Seconds, Ymax = .37 Volts @ 0.1730 Seconds





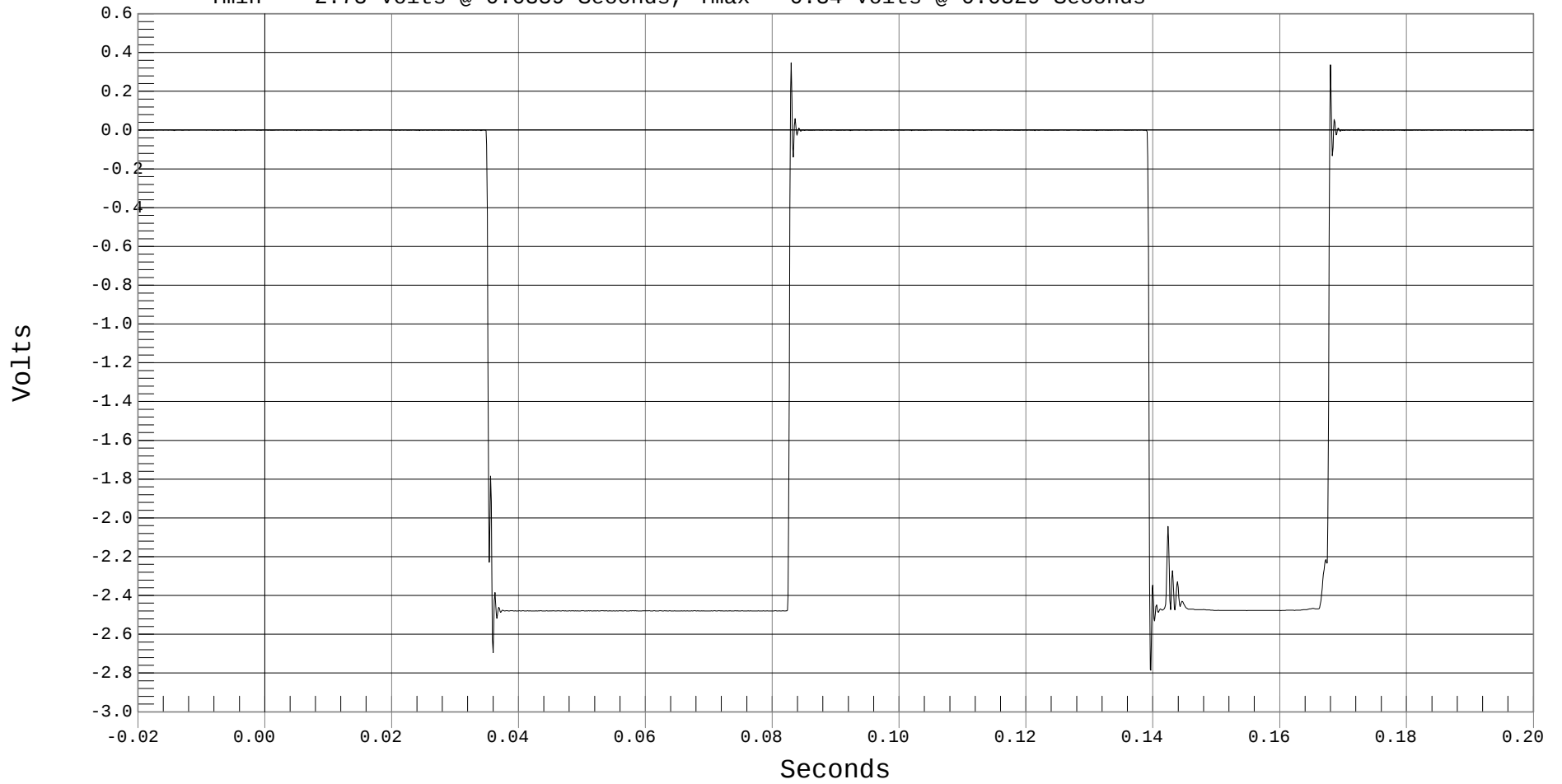
DRIVER RIB CONTACT

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 1000

1 DRIVER RIB CONTACT, B010740T.019

Ymin = -2.78 Volts @ 0.0359 Seconds, Ymax = 0.34 Volts @ 0.0829 Seconds





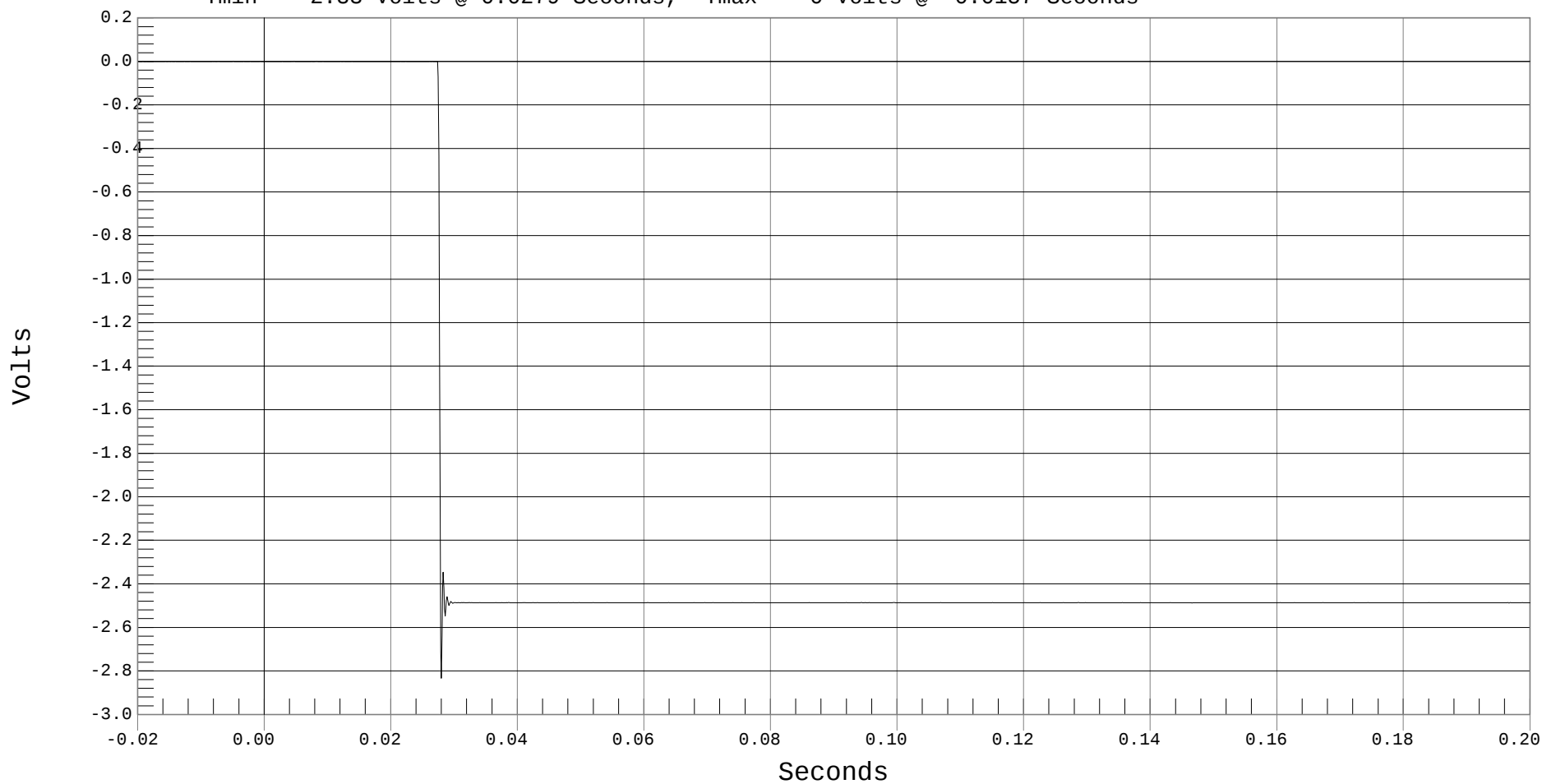
DRIVER PELVIS CONTACT

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 1000

— 1 DRIVER PELVIS CONTACT, B010740T.064

Ymin = -2.83 Volts @ 0.0279 Seconds, Ymax = 0 Volts @ -0.0157 Seconds





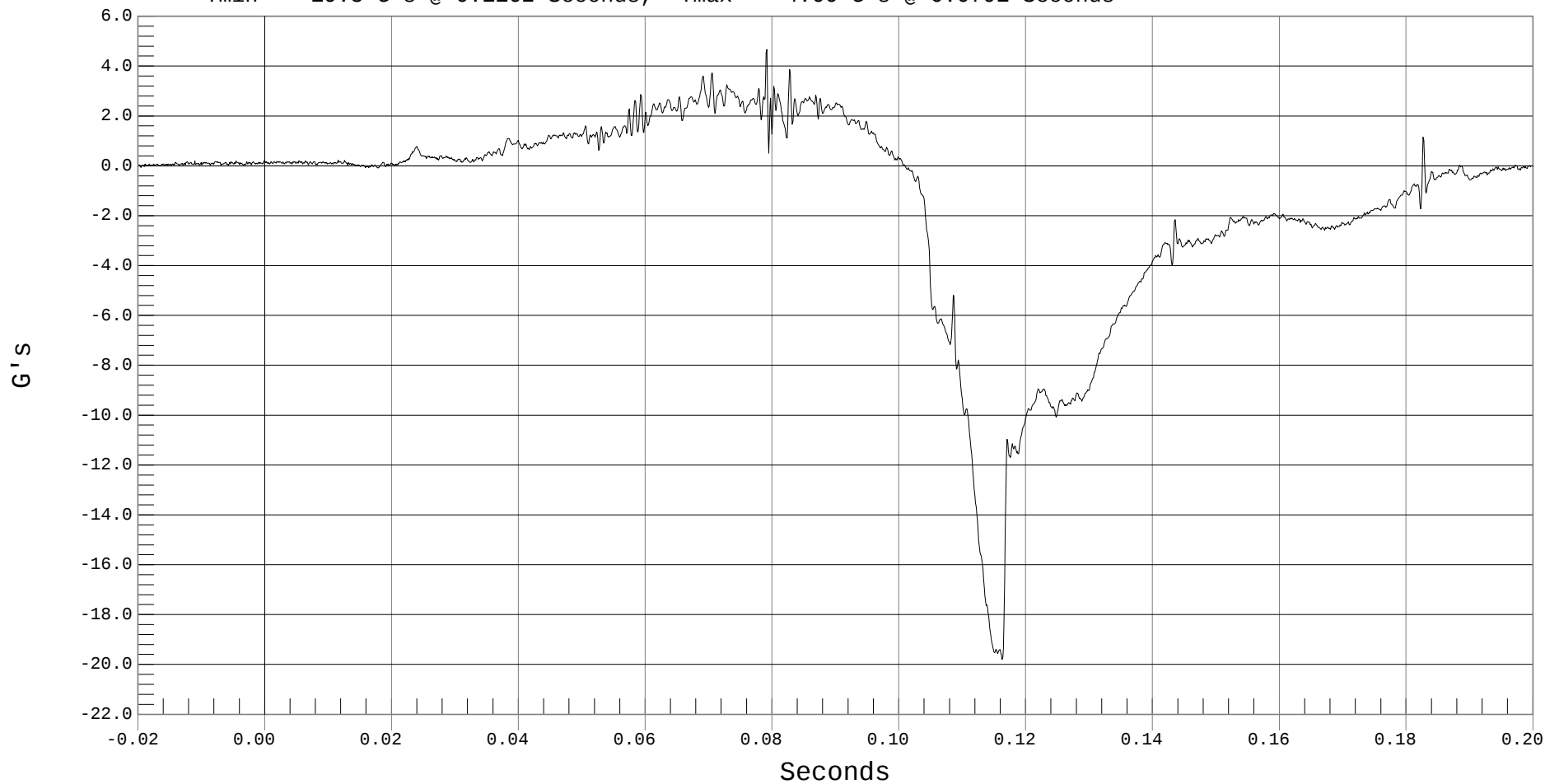
LEFT REAR HEAD X ACCELERATION

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 1000

— 1 LEFT REAR CHILD HEAD X, B01074AT.A60

Ymin = -19.8 G's @ 0.1162 Seconds, Ymax = 4.66 G's @ 0.0791 Seconds





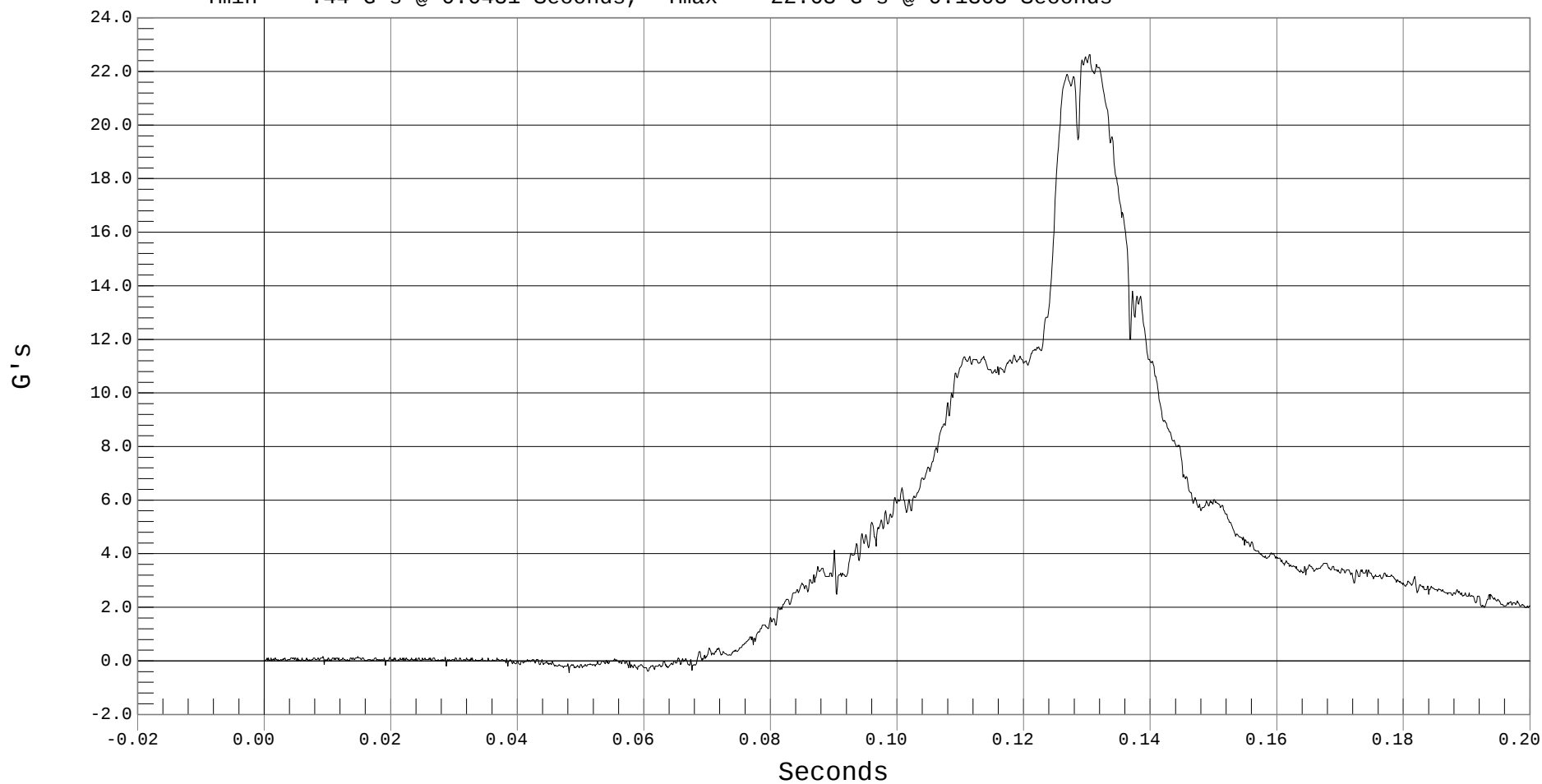
LEFT REAR HEAD Y ACCELERATION

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 1000

— 1 LEFT REAR CHILD HEAD Y, B01074AT.A61

Ymin = -.44 G's @ 0.0481 Seconds, Ymax = 22.63 G's @ 0.1303 Seconds





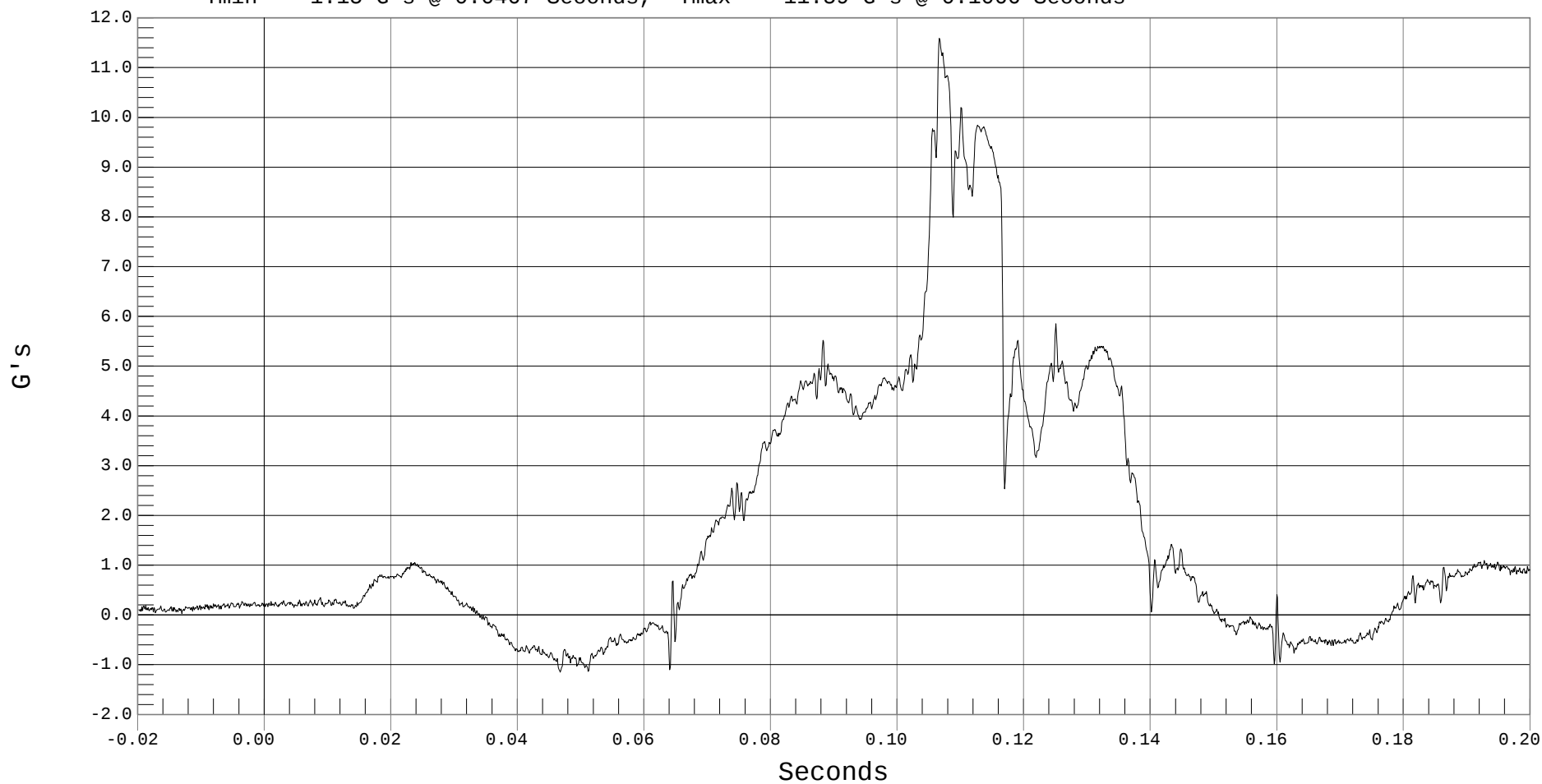
LEFT REAR HEAD Z ACCELERATION

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 1000

— 1 LEFT REAR CHILD HEAD Z, B01074AT.A62

Ymin = -1.15 G's @ 0.0467 Seconds, Ymax = 11.59 G's @ 0.1066 Seconds





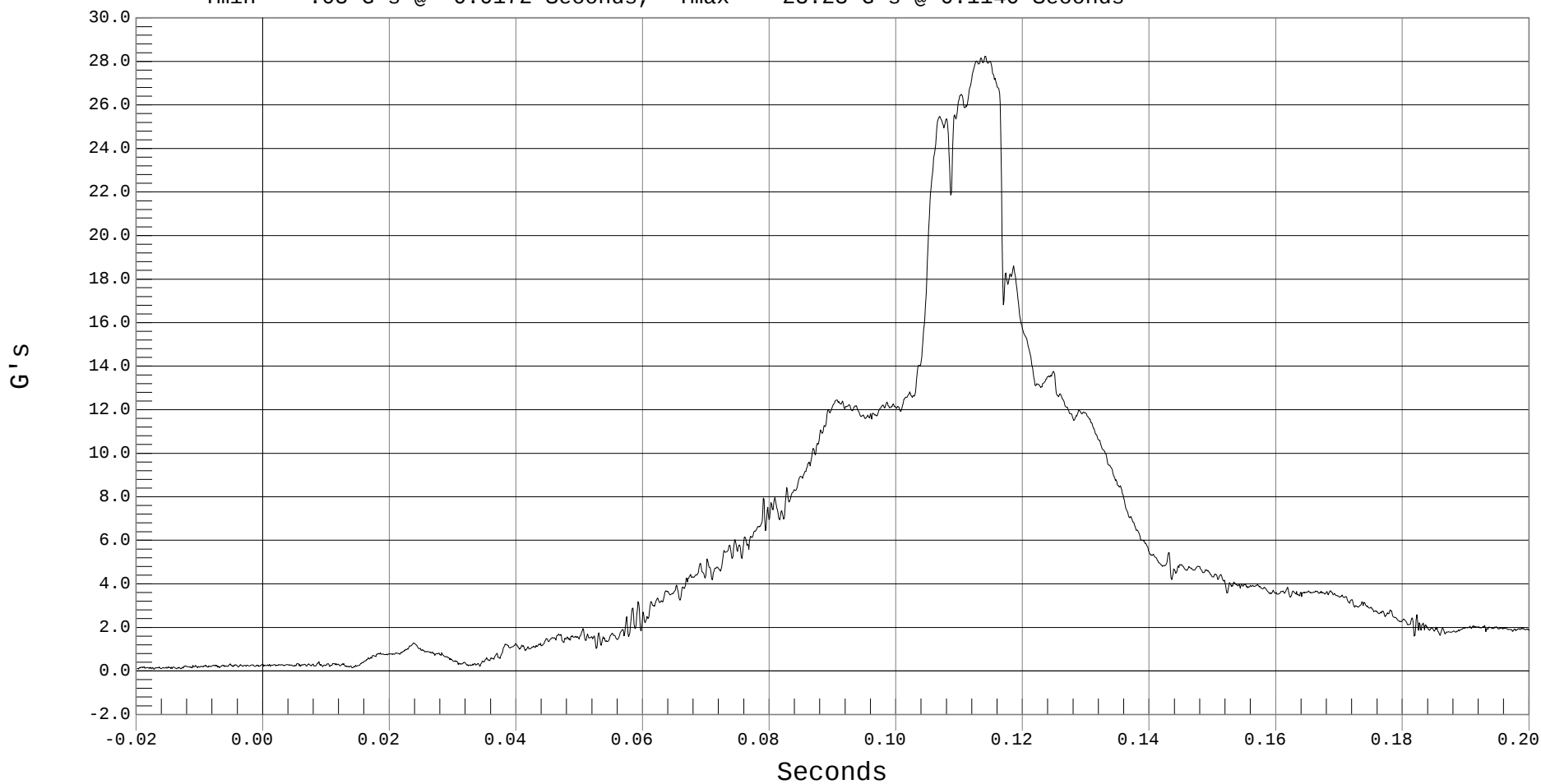
LEFT REAR HEAD RESULTANT ACCELERATION

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 1000

— 1 LEFT REAR HEAD RESULTANT, B01074AV.A60

Ymin = .08 G's @ -0.0172 Seconds, Ymax = 28.23 G's @ 0.1140 Seconds





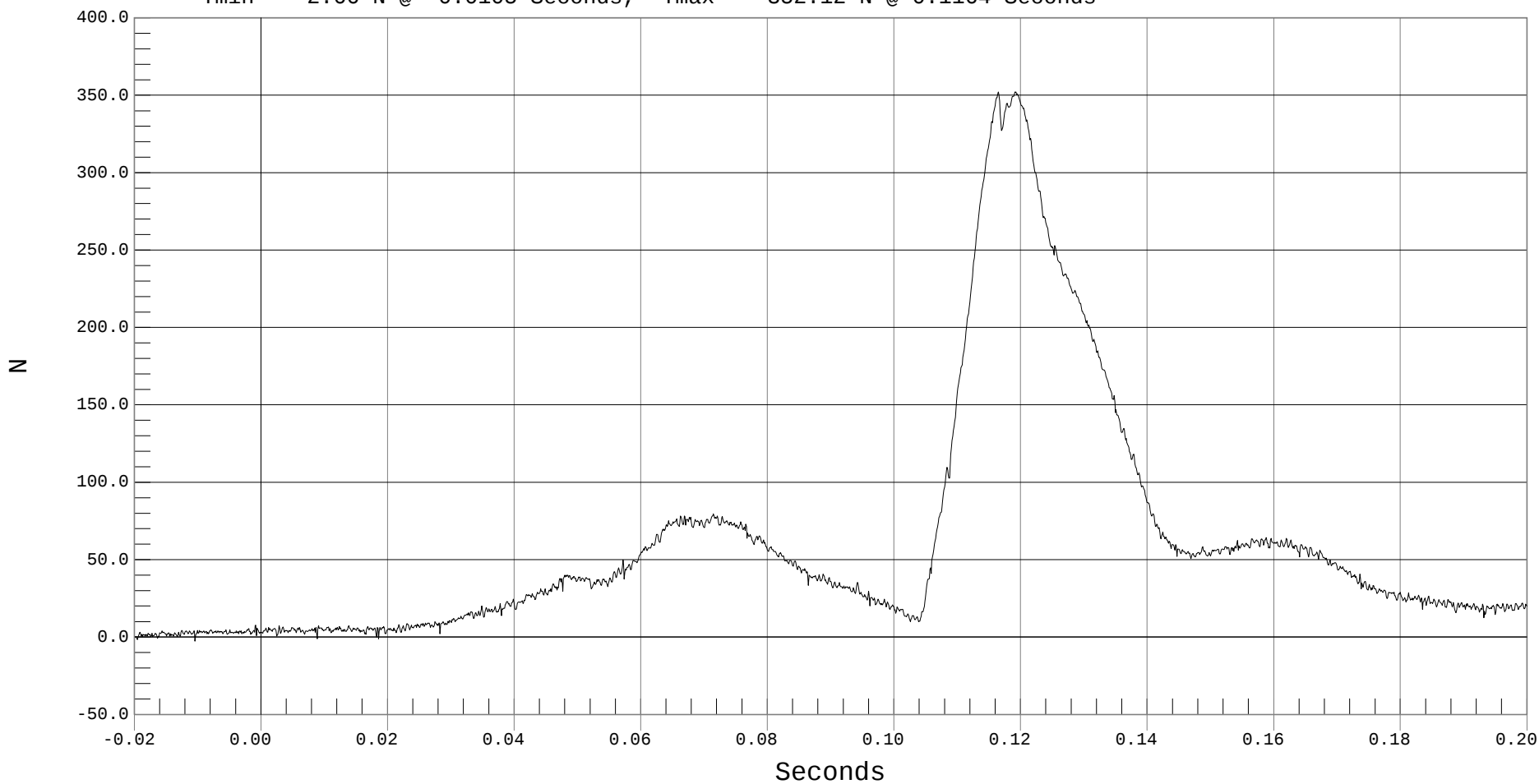
LEFT REAR UPPER NECK FORCE X

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 1000

— 1 LEFT REAR CHILD UPPER NECK FORCE X, B01074FT.F63

Ymin = -2.66 N @ -0.0105 Seconds, Ymax = 352.12 N @ 0.1164 Seconds





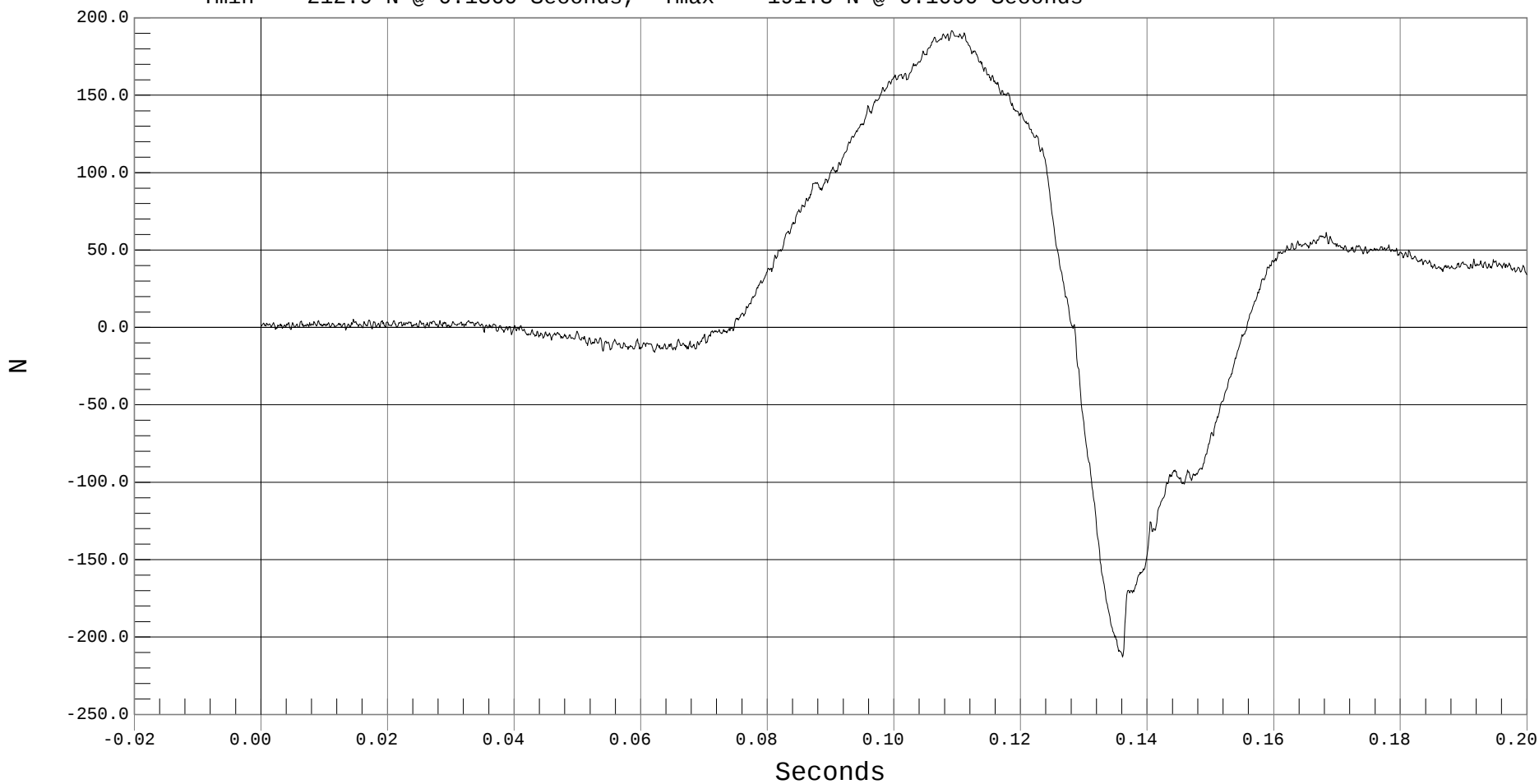
LEFT REAR UPPER NECK FORCE Y

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 1000

— 1 LEFT REAR CHILD UPPER NECK FORCE Y, B01074FT.F65

Ymin = -212.9 N @ 0.1360 Seconds, Ymax = 191.8 N @ 0.1090 Seconds





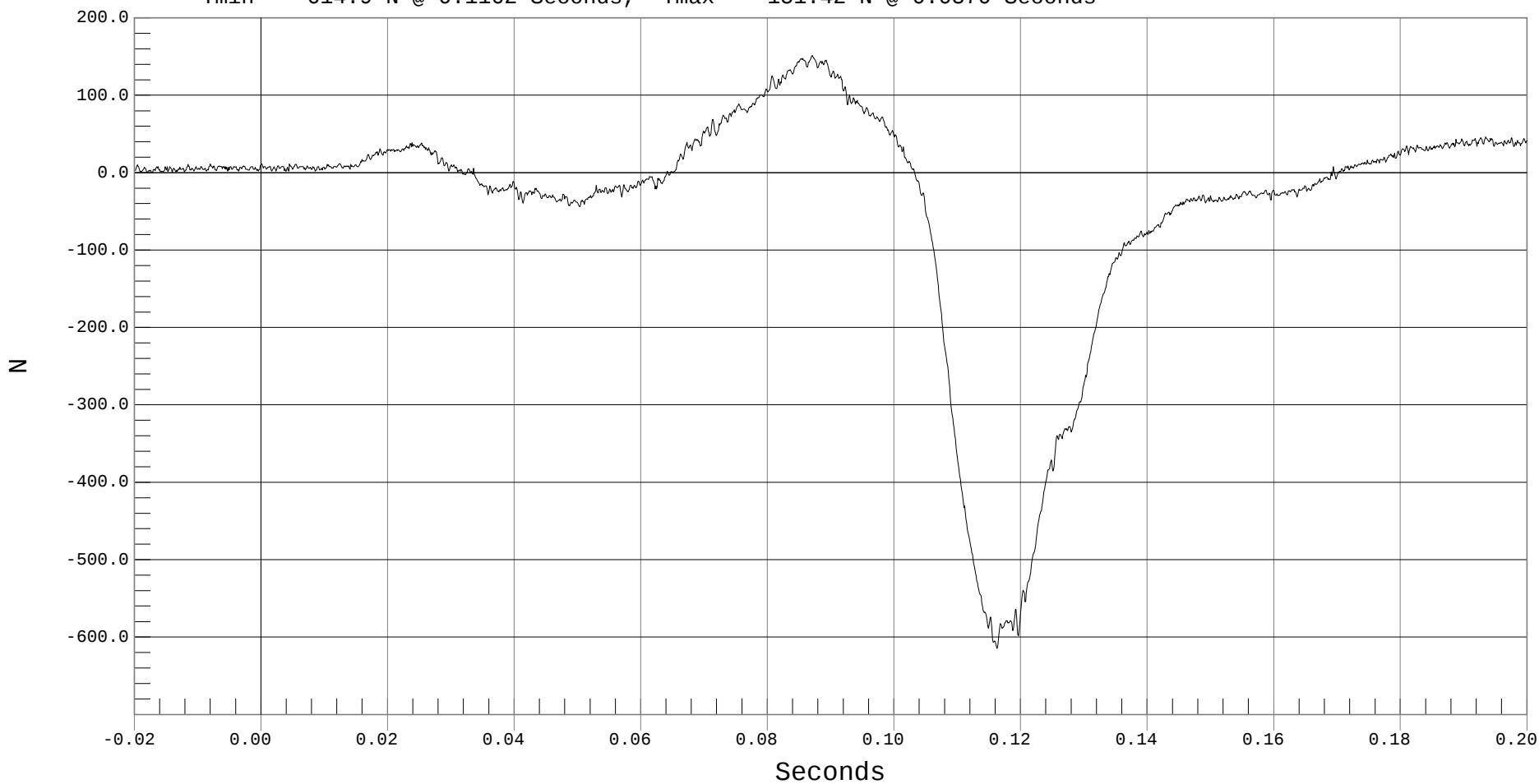
LEFT REAR UPPER NECK FORCE Z

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 1000

— 1 LEFT REAR CHILD UPPER NECK FORCE Z, B01074FT.F66

Ymin = -614.9 N @ 0.1162 Seconds, Ymax = 151.42 N @ 0.0870 Seconds





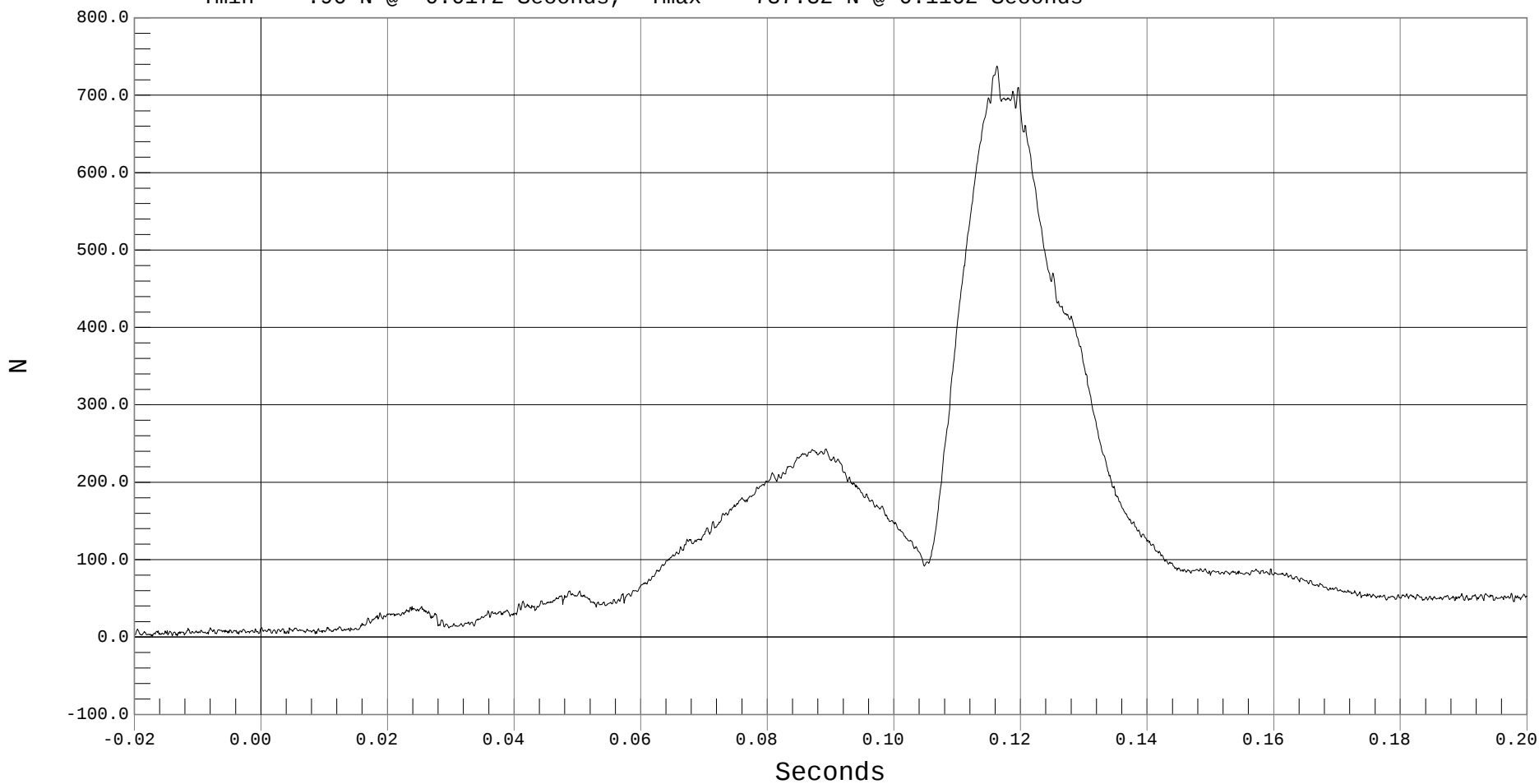
LEFT REAR UPPER NECK FORCE RESULTANT

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 1000

— 1 LEFT REAR UPPER NECK FORCE RESULTANT, B01074FV.F63

Ymin = .96 N @ -0.0172 Seconds, Ymax = 737.82 N @ 0.1162 Seconds





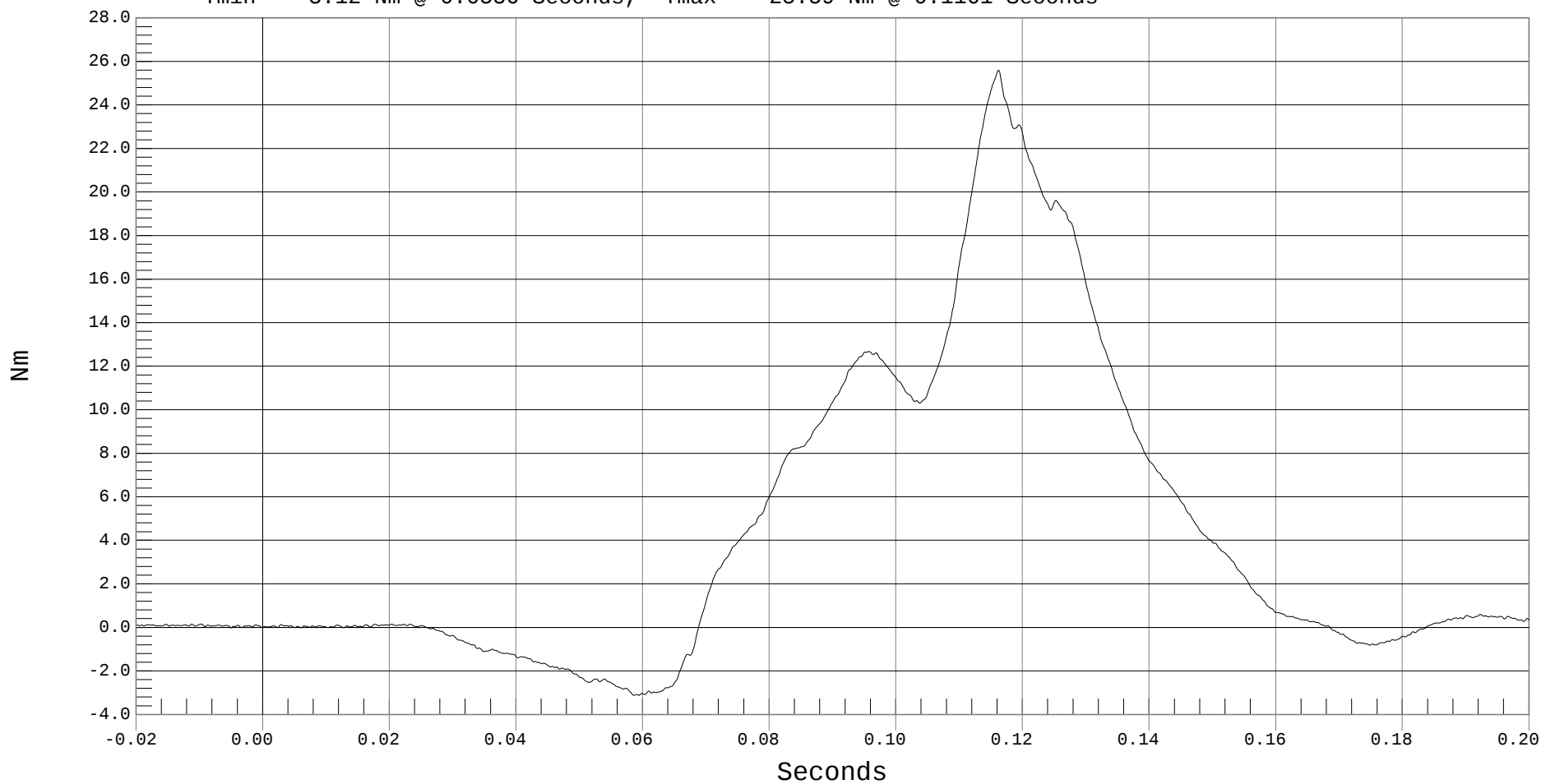
LEFT REAR UPPER NECK MOMENT X

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 600

1 LEFT REAR CHILD UPPER NECK MOMENT X, B01074MF.M67

Ymin = -3.12 Nm @ 0.0586 Seconds, Ymax = 25.59 Nm @ 0.1161 Seconds





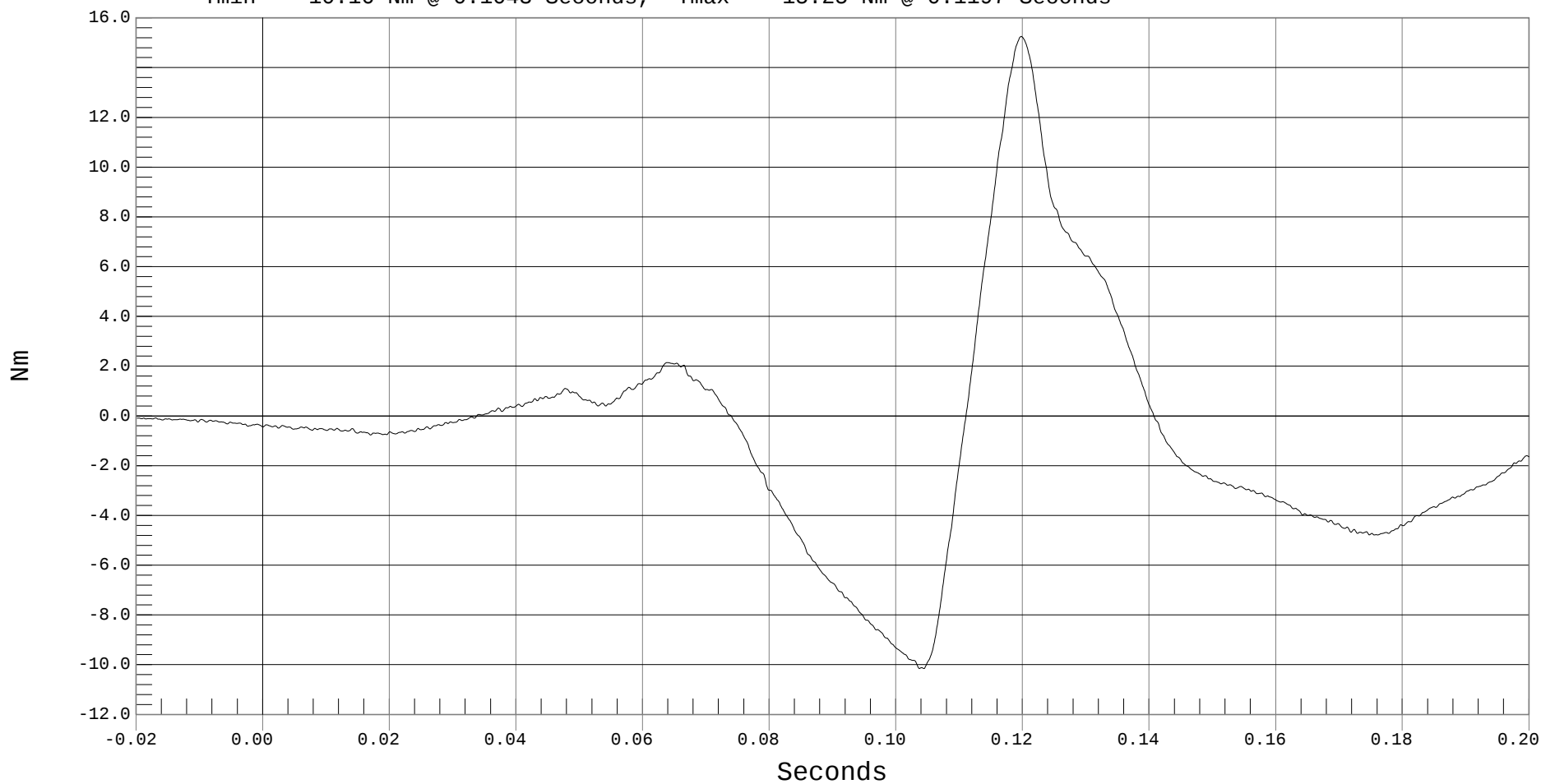
LEFT REAR UPPER NECK MOMENT Y

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 600

— 1 LEFT REAR CHILD UPPER NECK MOMENT Y, B01074MF.M68

Ymin = -10.16 Nm @ 0.1043 Seconds, Ymax = 15.25 Nm @ 0.1197 Seconds





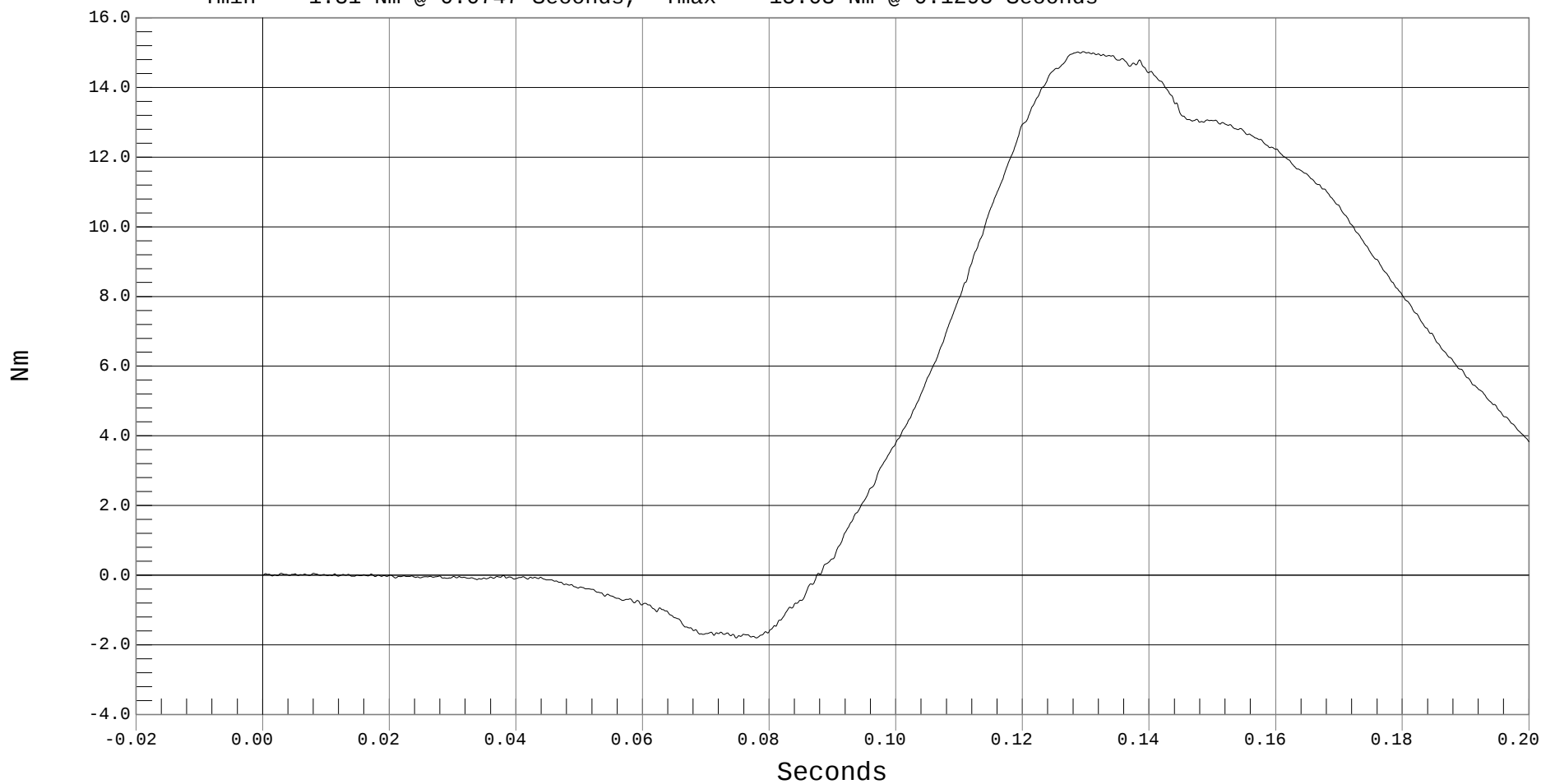
LEFT REAR UPPER NECK MOMENT Z

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 600

— 1 LEFT REAR CHILD UPPER NECK MOMENT Z, B01074MF.M69

Ymin = -1.81 Nm @ 0.0747 Seconds, Ymax = 15.03 Nm @ 0.1295 Seconds





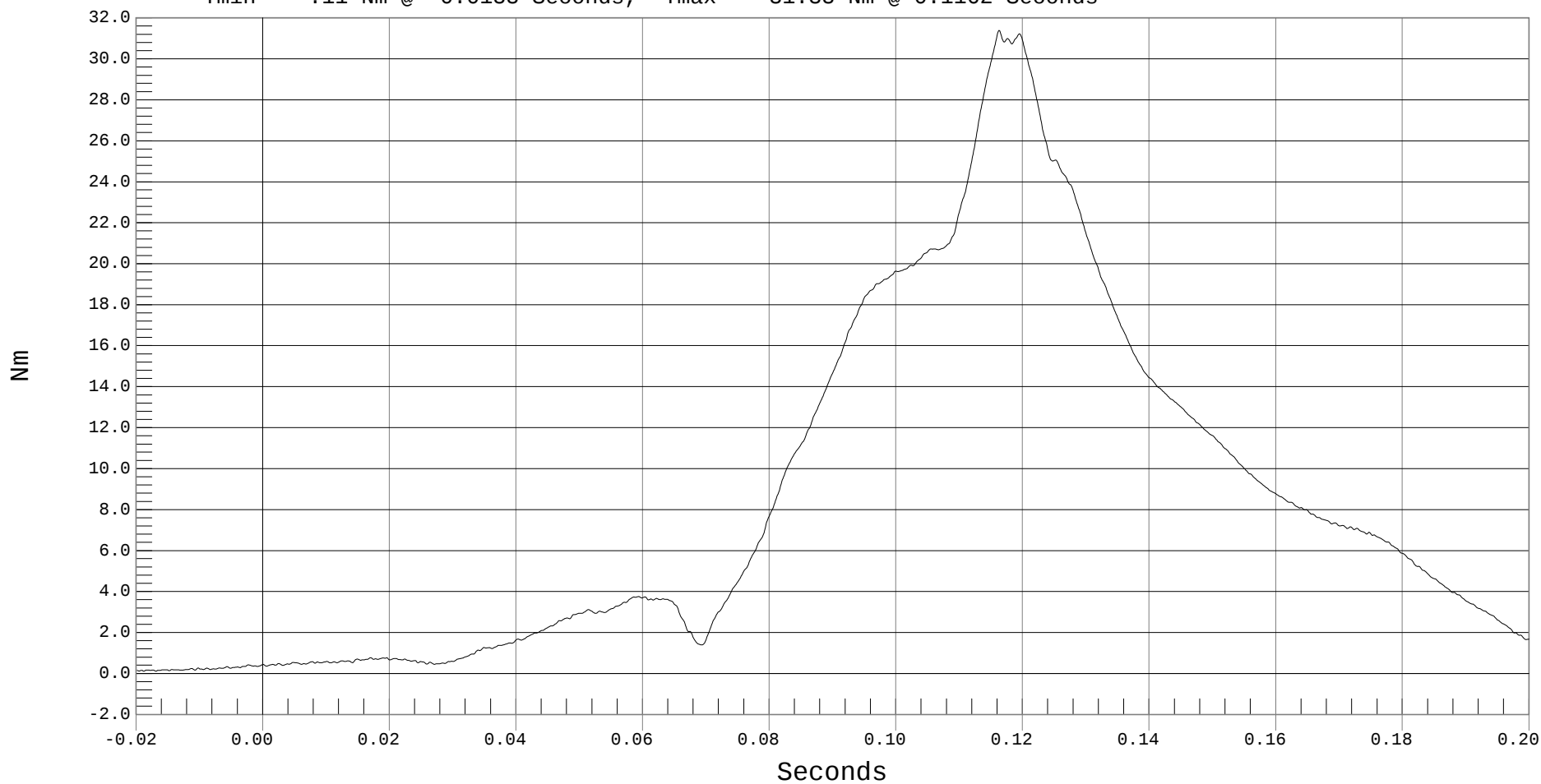
LEFT REAR UPPER NECK MOMENT RESULTANT

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 600

— 1 LEFT REAR UPPER NECK MOMENT RESULTANT, B01074MV.M67

Ymin = .11 Nm @ -0.0188 Seconds, Ymax = 31.38 Nm @ 0.1162 Seconds





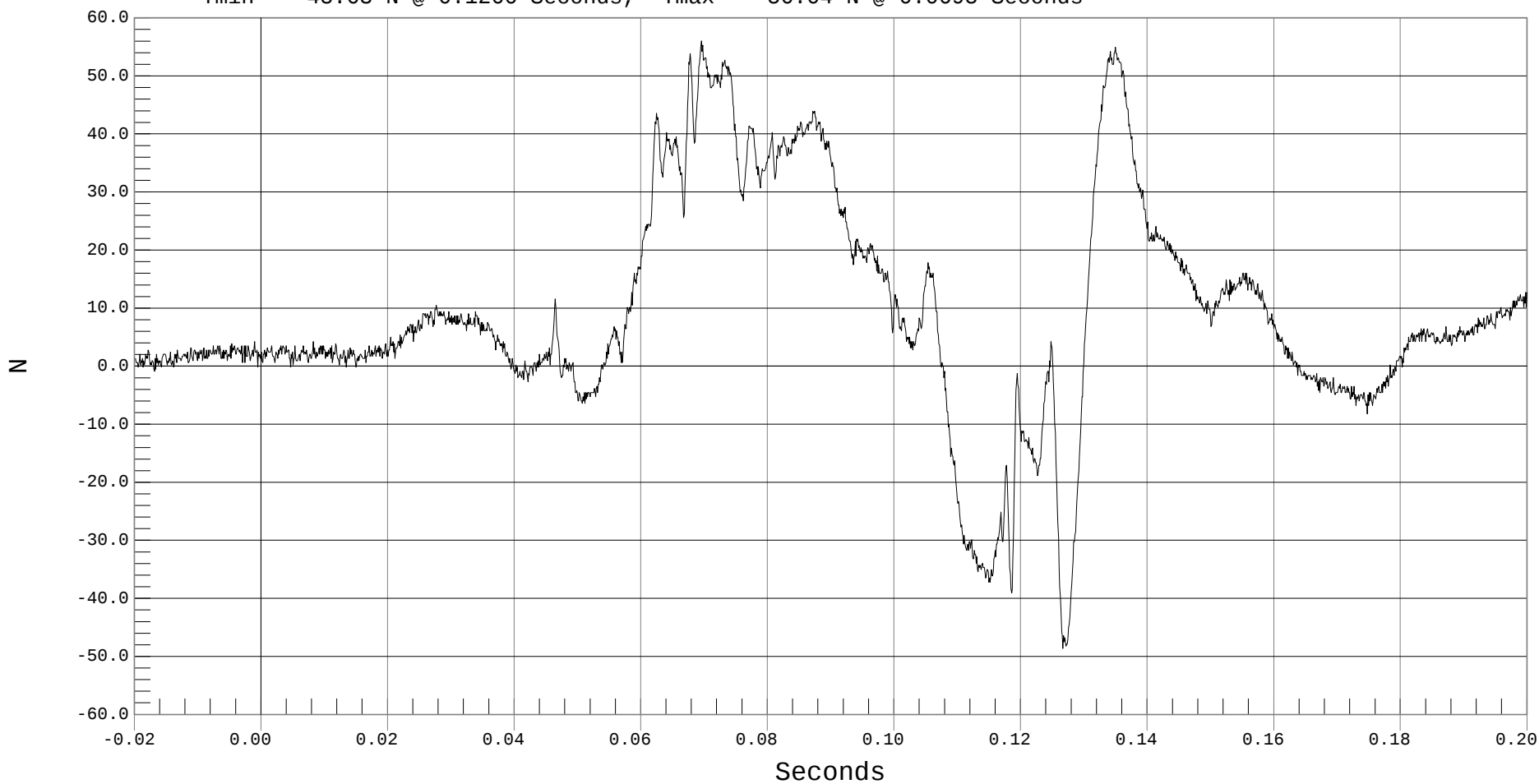
LEFT REAR LOWER NECK FORCE X

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 1000

— 1 LEFT REAR CHILD LOWER NECK FORCE X, B01074FT.F70

Ymin = -48.63 N @ 0.1266 Seconds, Ymax = 56.04 N @ 0.0695 Seconds





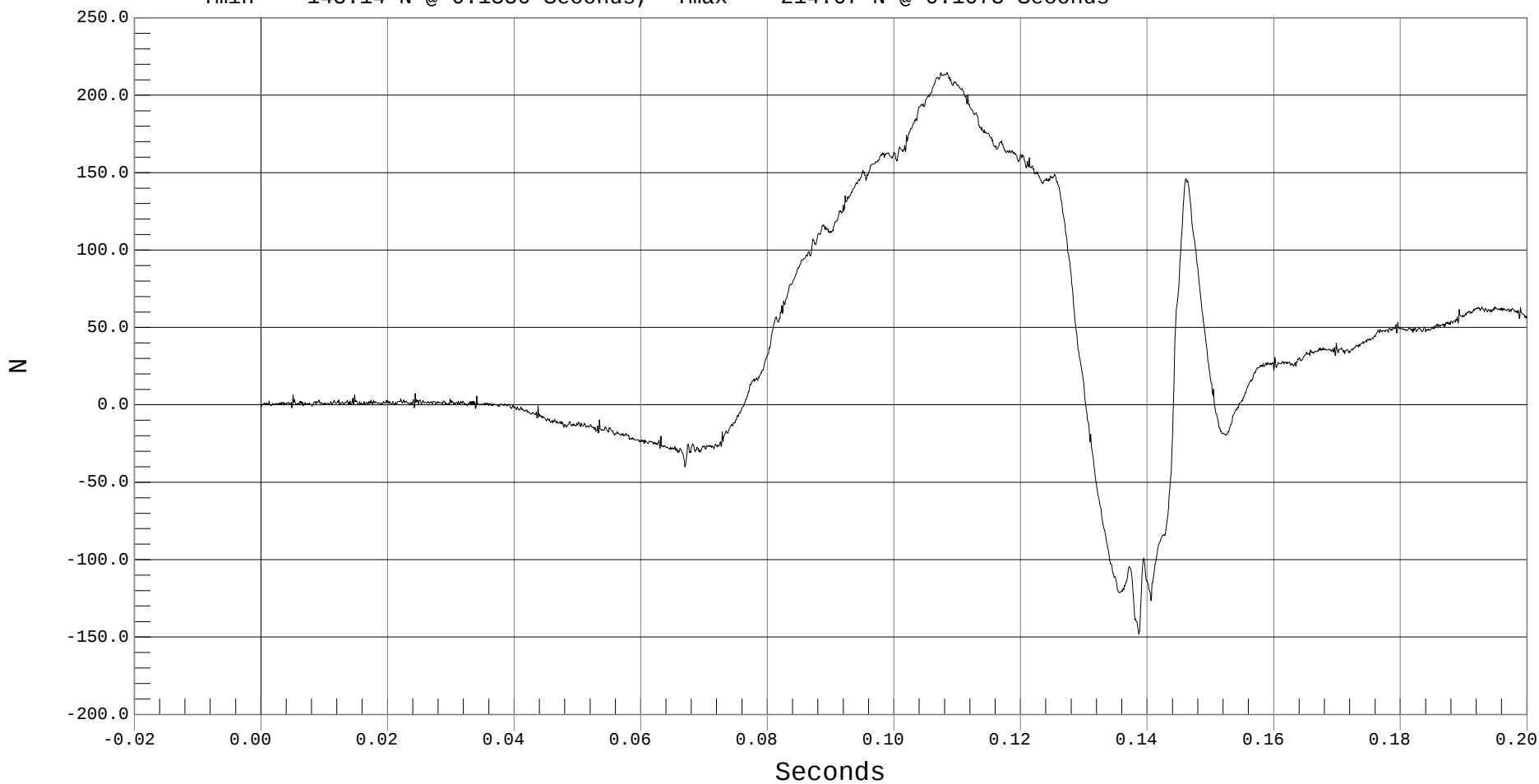
LEFT REAR LOWER NECK FORCE Y

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 1000

— 1 LEFT REAR CHILD LOWER NECK FORCE Y, B01074FT.F71

Ymin = -148.14 N @ 0.1386 Seconds, Ymax = 214.67 N @ 0.1073 Seconds





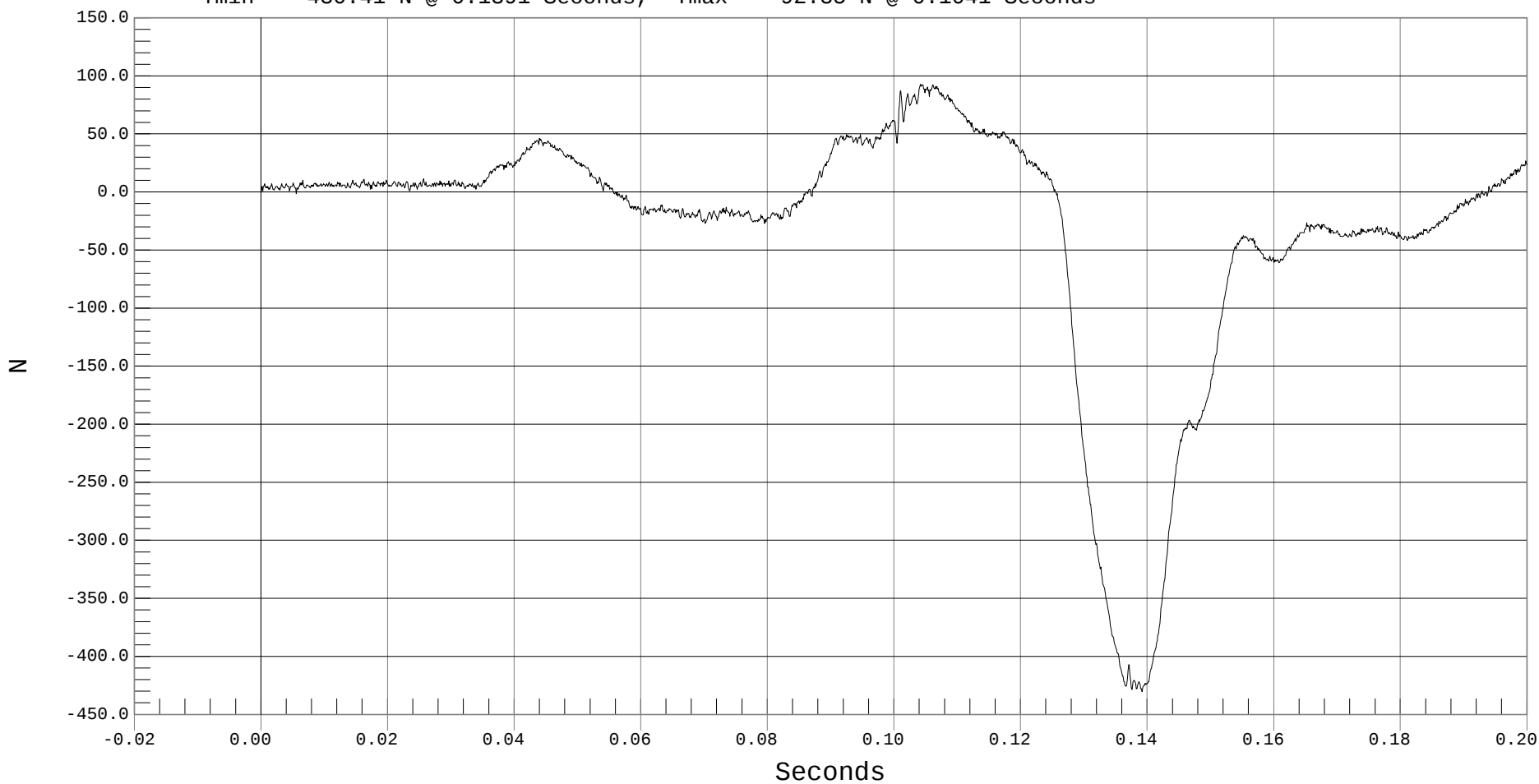
LEFT REAR LOWER NECK FORCE Z

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 1000

— 1 LEFT REAR CHILD LOWER NECK FORCE Z, B01074FT.F72

Ymin = -430.41 N @ 0.1391 Seconds, Ymax = 92.85 N @ 0.1041 Seconds





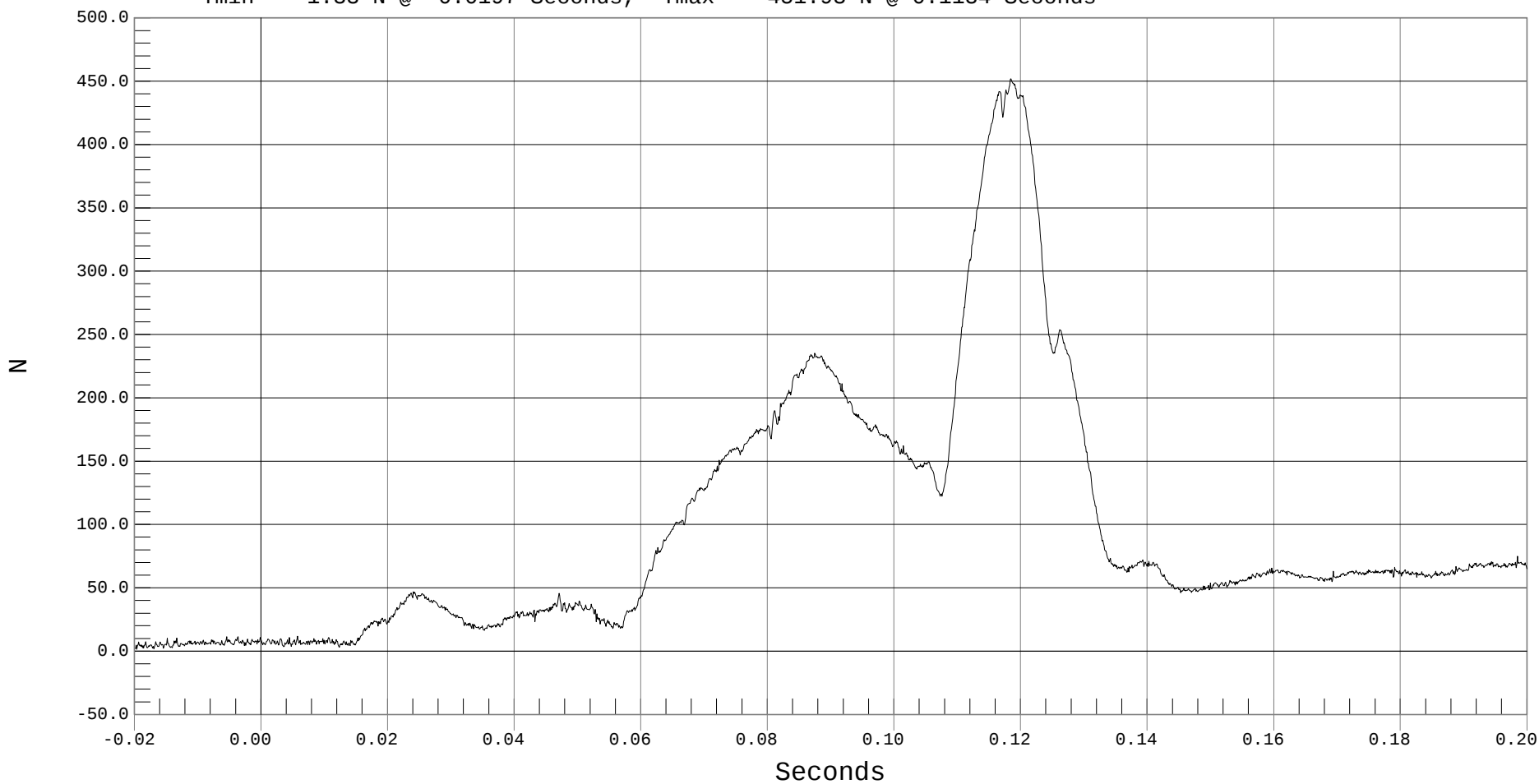
LEFT REAR LOWER NECK FORCE RESULTANT

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 1000

— 1 LEFT REAR LOWER NECK FORCE RESULTANT, B01074FV.F70

Ymin = 1.33 N @ -0.0197 Seconds, Ymax = 451.93 N @ 0.1184 Seconds





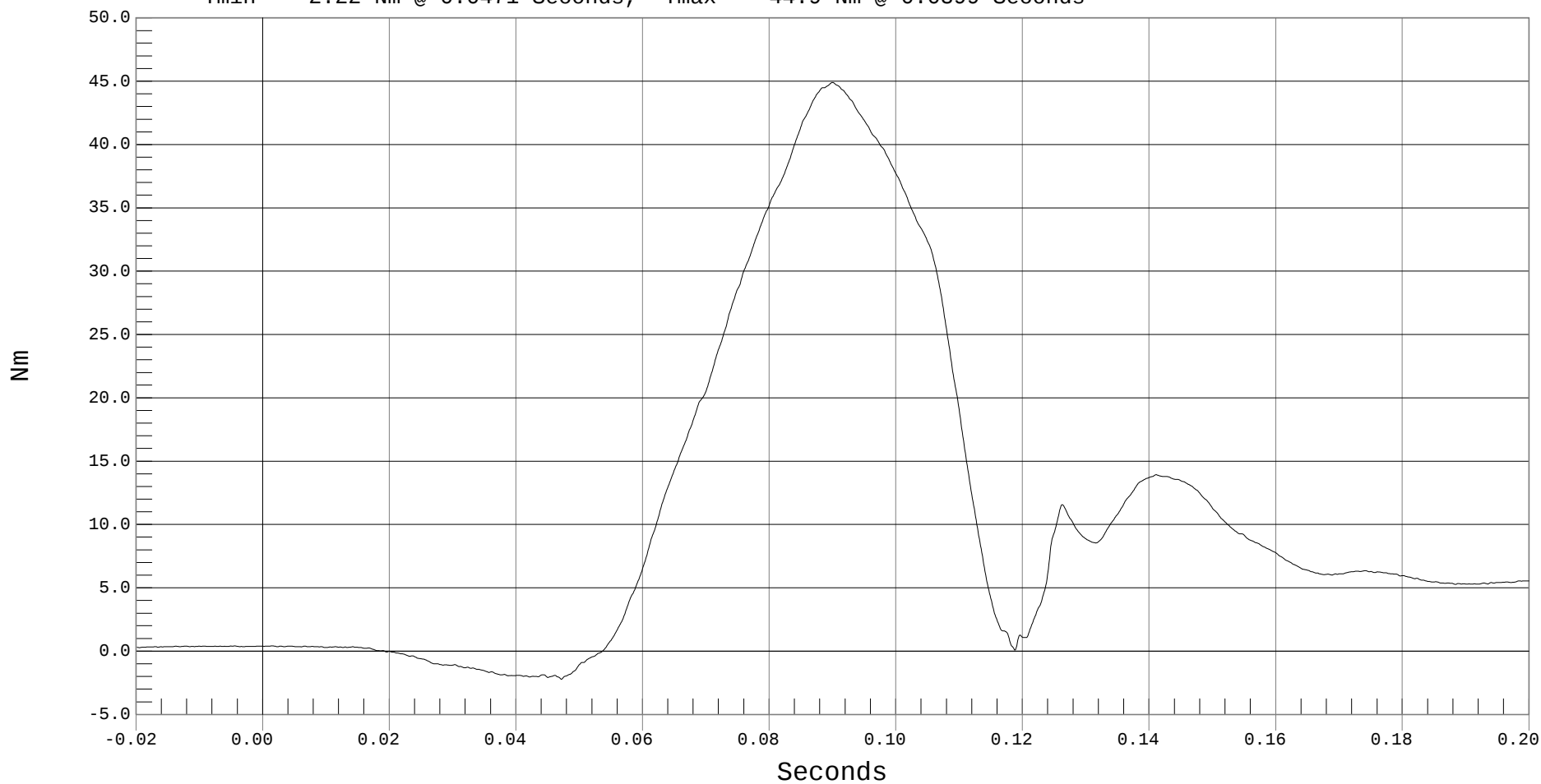
LEFT REAR LOWER NECK MOMENT X

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 600

— 1 LEFT REAR CHILD LOWER NECK MOMENT X, B01074MF.M73

Ymin = -2.22 Nm @ 0.0471 Seconds, Ymax = 44.9 Nm @ 0.0899 Seconds





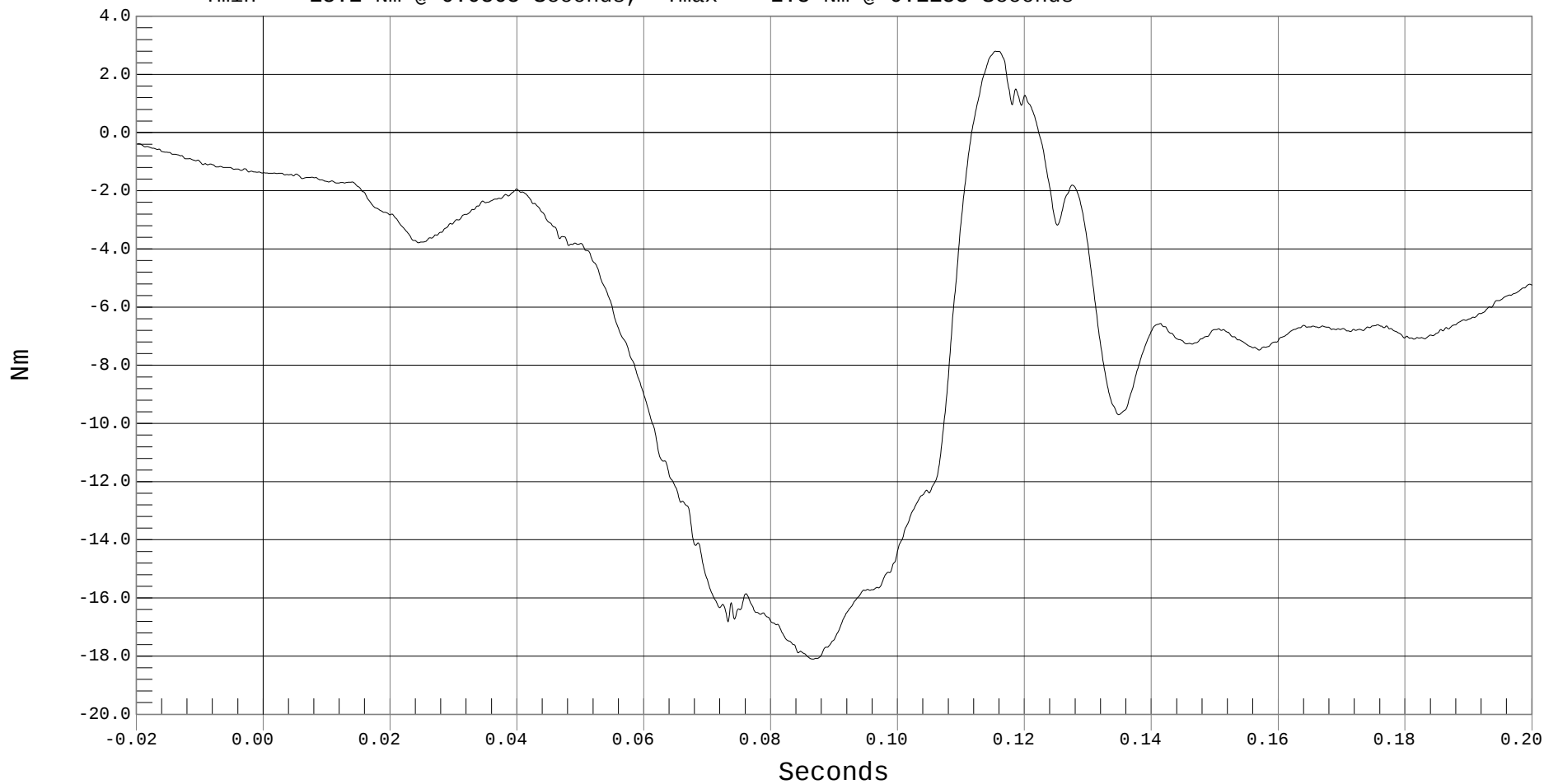
LEFT REAR LOWER NECK MOMENT Y

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 600

— 1 LEFT REAR CHILD LOWER NECK MOMENT Y, B01074MF.M74

Ymin = -18.1 Nm @ 0.0865 Seconds, Ymax = 2.8 Nm @ 0.1153 Seconds





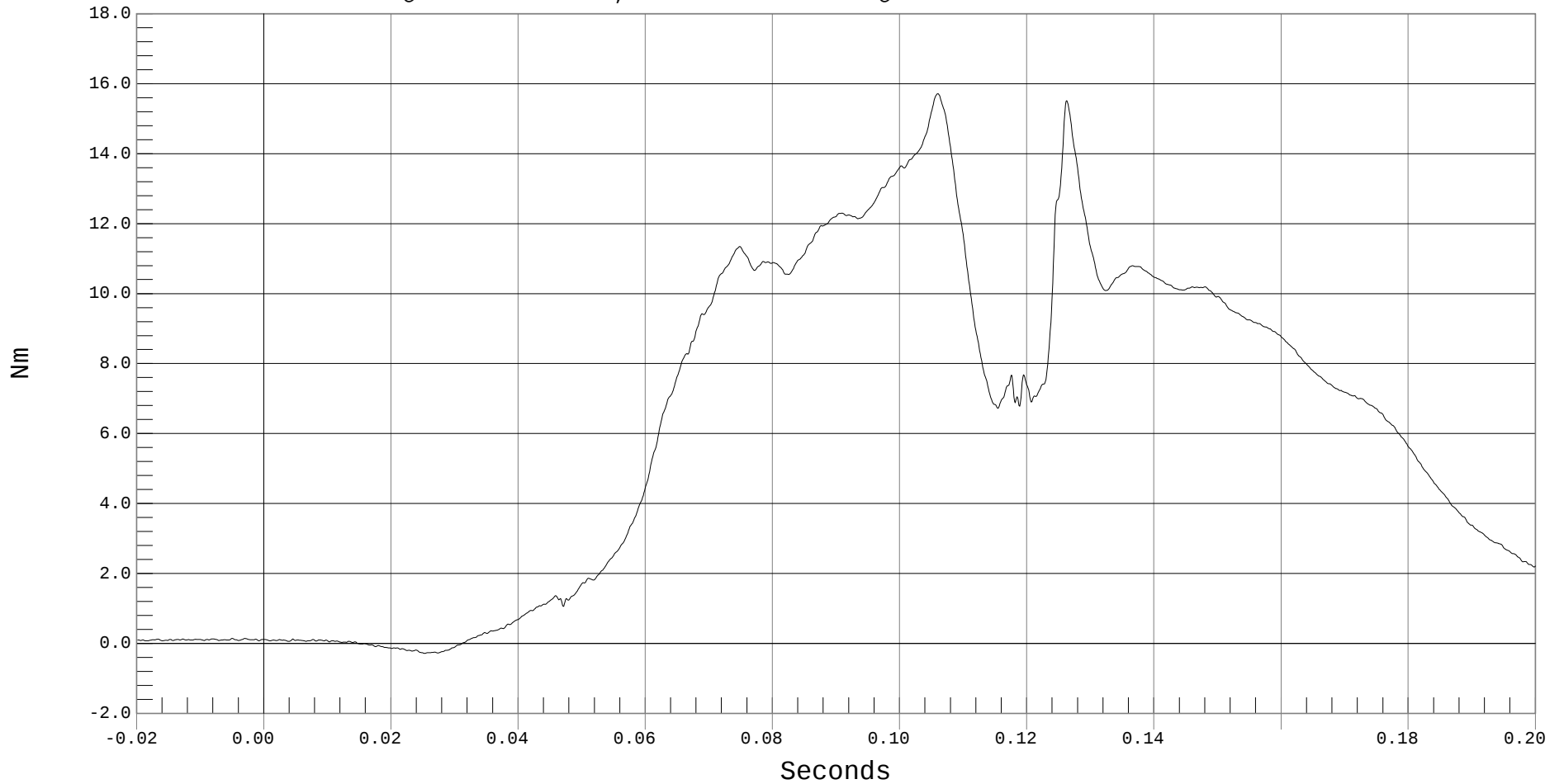
LEFT REAR LOWER NECK MOMENT Z

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 600

— 1 LEFT REAR CHILD LOWER NECK MOMENT Z, B01074MF.M75

Ymin = -.29 Nm @ 0.0252 Seconds, Ymax = 15.71 Nm @ 0.1059 Seconds





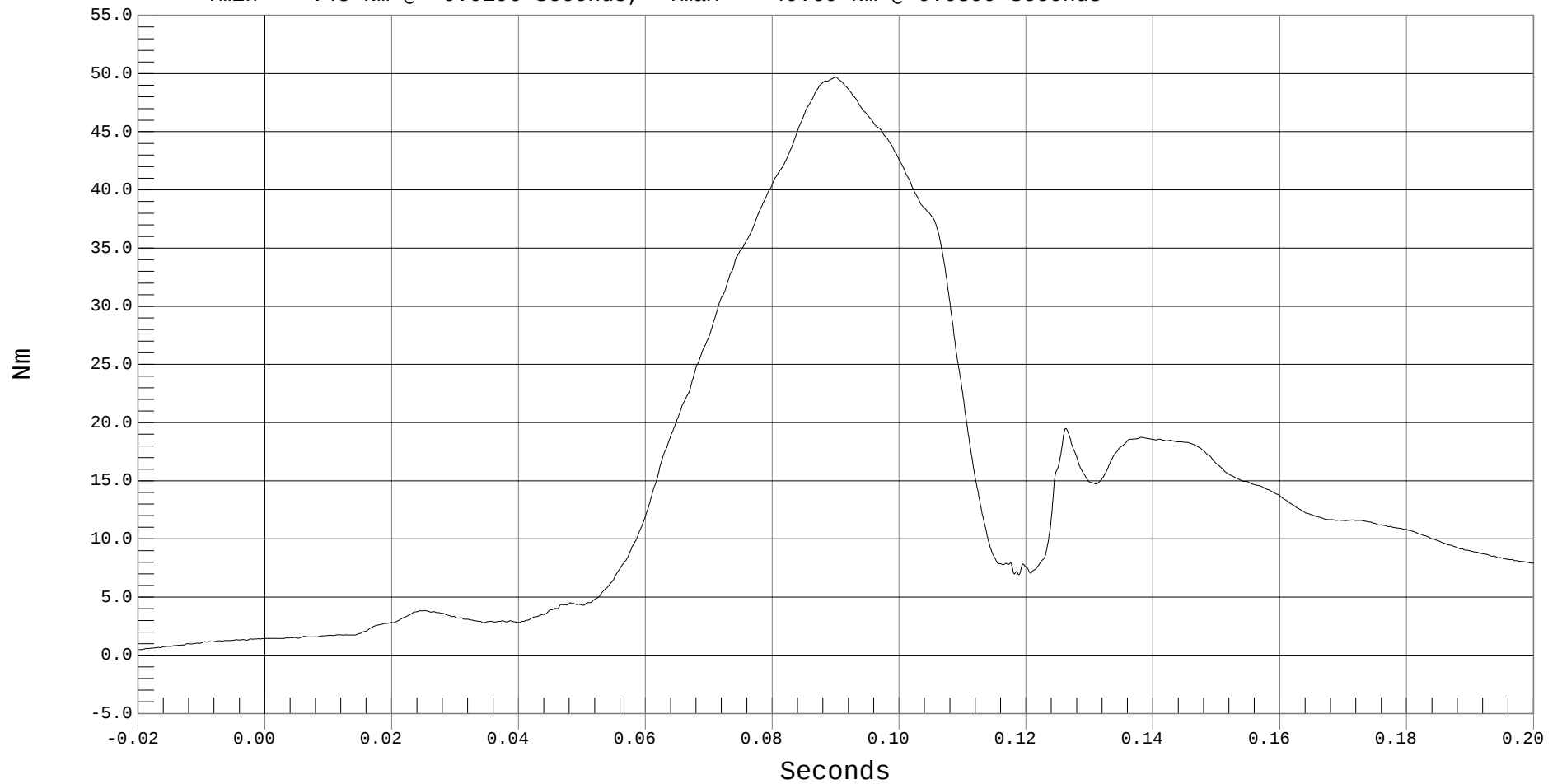
LEFT REAR LOWER NECK MOMENT RESULTANT

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 600

— 1 LEFT REAR LOWER NECK MOMENT RESULTANT, B01074MV.M73

Ymin = .48 Nm @ -0.0196 Seconds, Ymax = 49.69 Nm @ 0.0899 Seconds





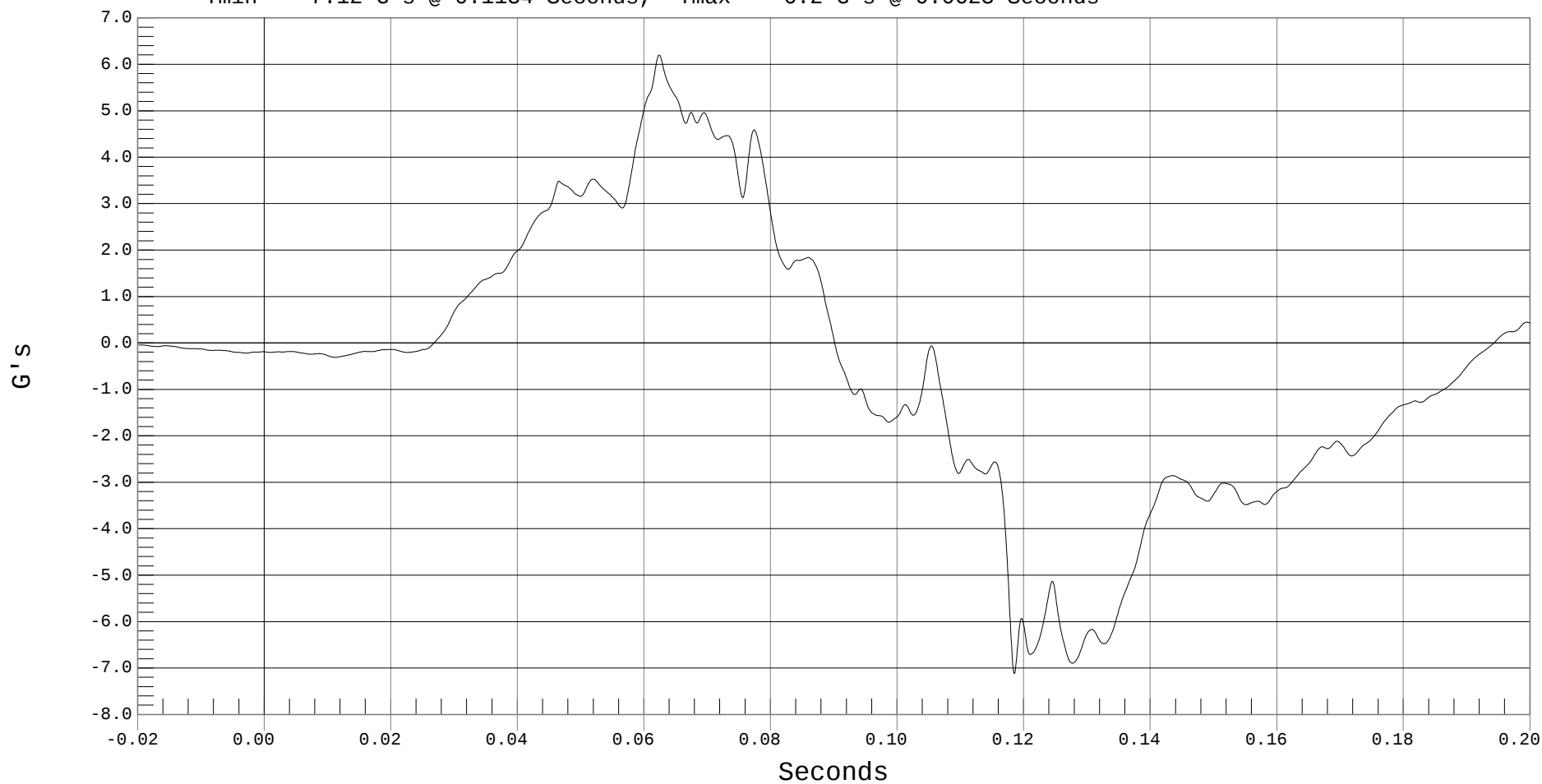
LEFT REAR CHEST X ACCELERATION

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 180

— 1 LEFT REAR CHILD CHEST X, B01074AF.A76

Ymin = -7.12 G's @ 0.1184 Seconds, Ymax = 6.2 G's @ 0.0623 Seconds





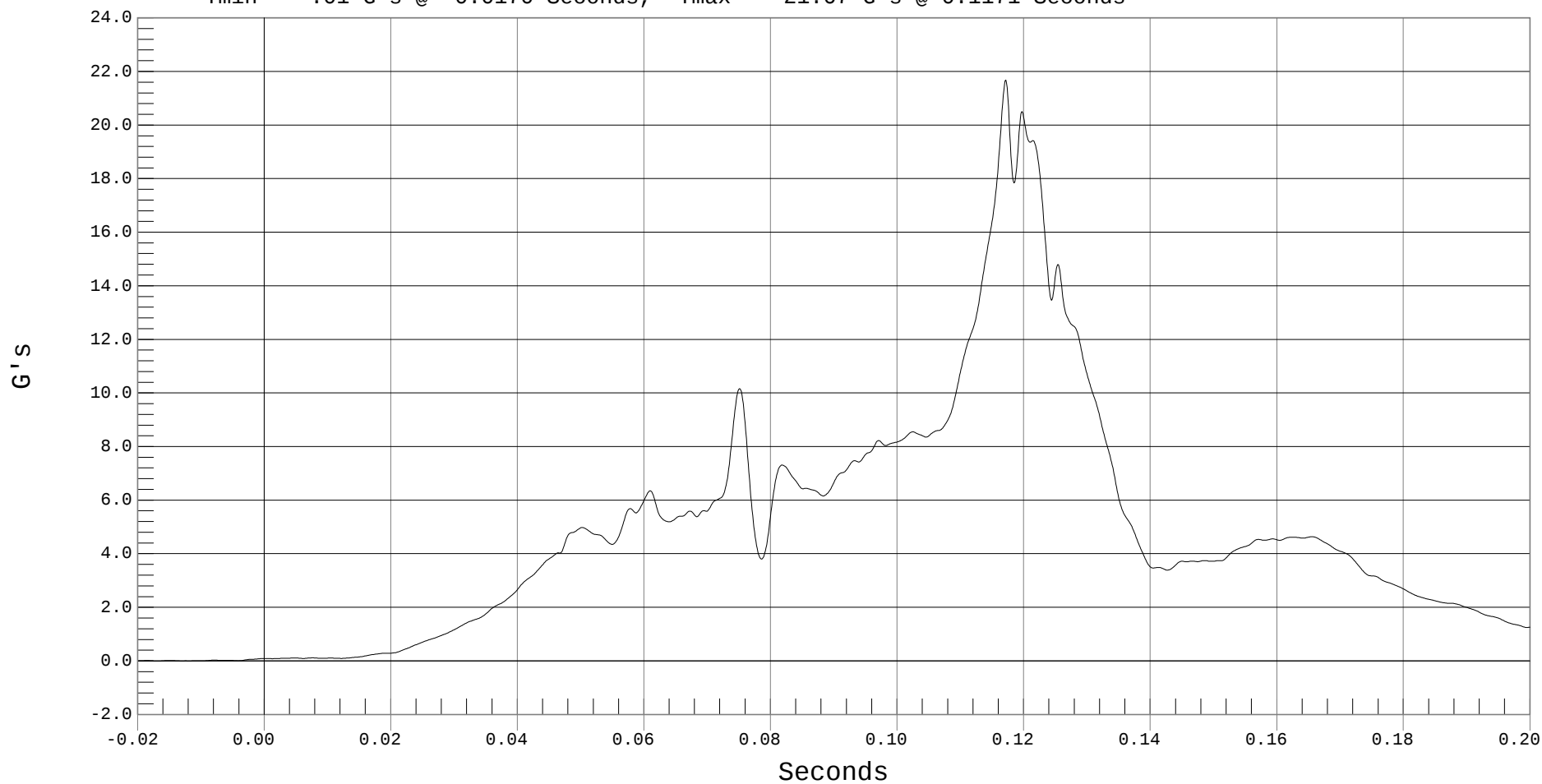
LEFT REAR CHEST Y ACCELERATION

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 180

— 1 LEFT REAR CHILD CHEST Y, B01074AF.A77

Ymin = -.01 G's @ -0.0170 Seconds, Ymax = 21.67 G's @ 0.1171 Seconds





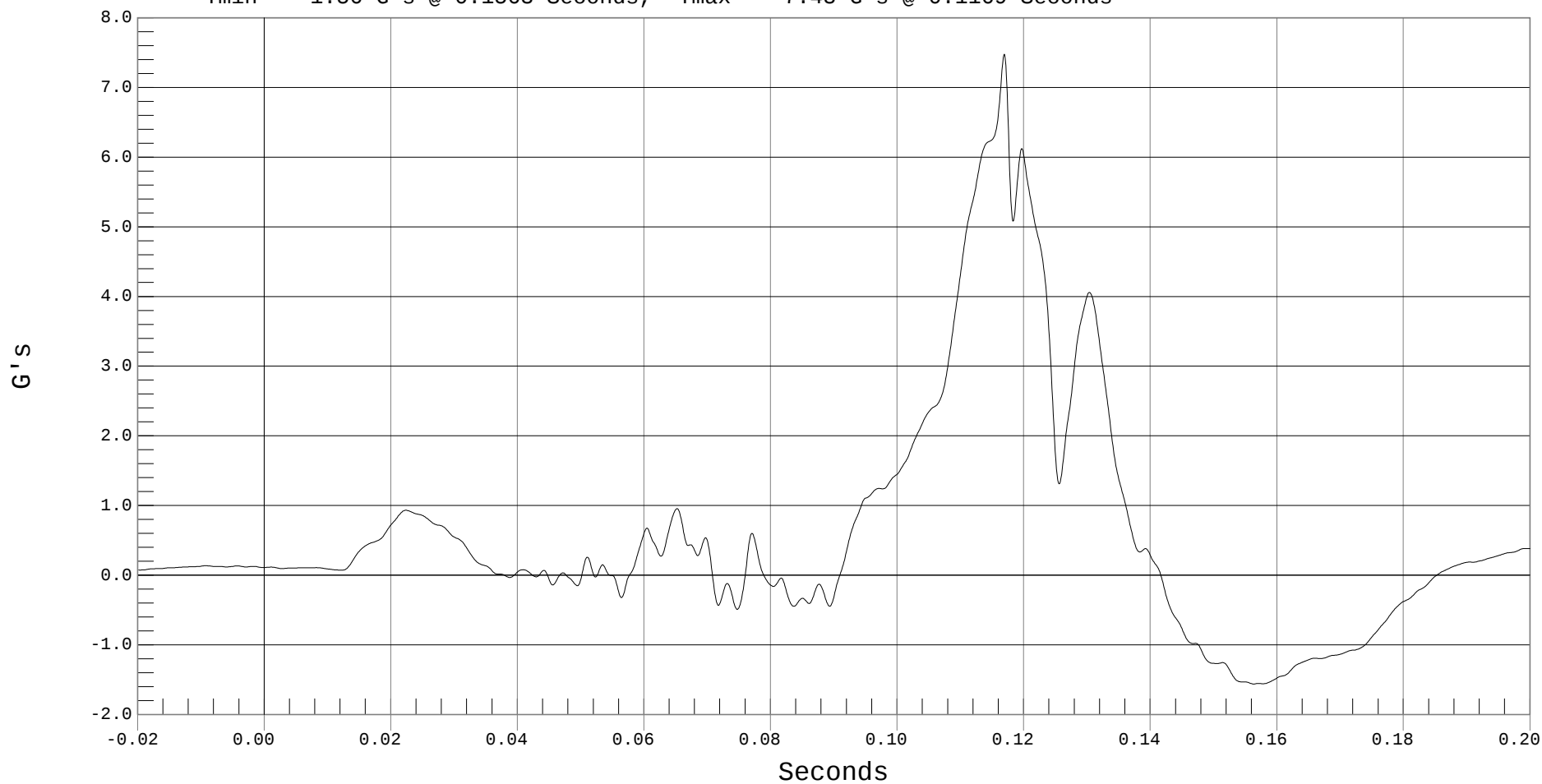
LEFT REAR CHEST Z ACCELERATION

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 180

— 1 LEFT REAR CHILD CHEST Z, B01074AF.A78

Ymin = -1.56 G's @ 0.1563 Seconds, Ymax = 7.48 G's @ 0.1169 Seconds





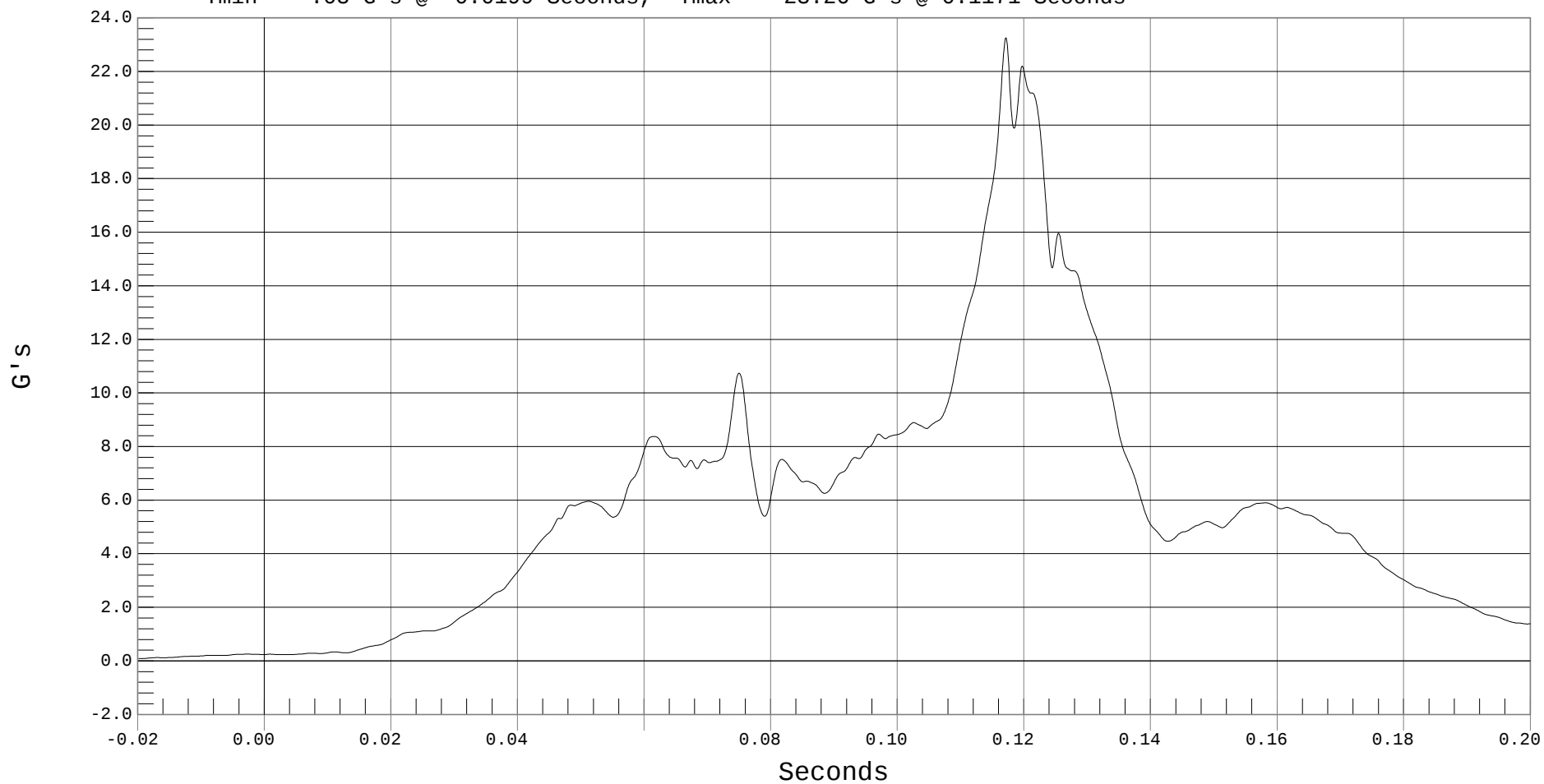
LEFT REAR CHEST RESULTANT ACCELERATION

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 180

— 1 LEFT REAR CHEST RESULTANT, B01074AV.A76

Ymin = .08 G's @ -0.0199 Seconds, Ymax = 23.26 G's @ 0.1171 Seconds





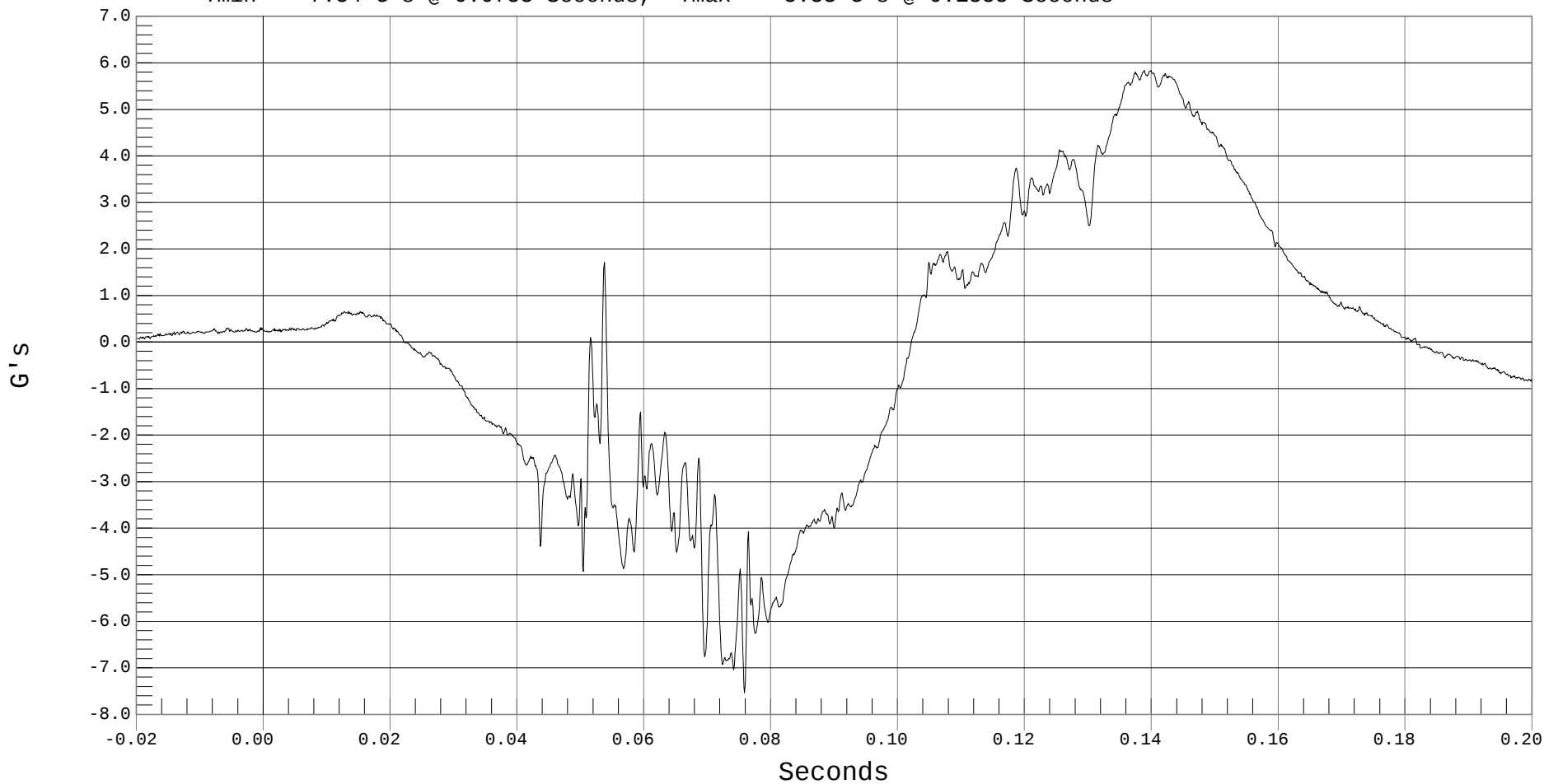
LEFT REAR PELVIS X ACCELERATION

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 1000

— 1 LEFT REAR CHILD PELVIS X, B01074AT.A80

Ymin = -7.54 G's @ 0.0758 Seconds, Ymax = 5.83 G's @ 0.1388 Seconds





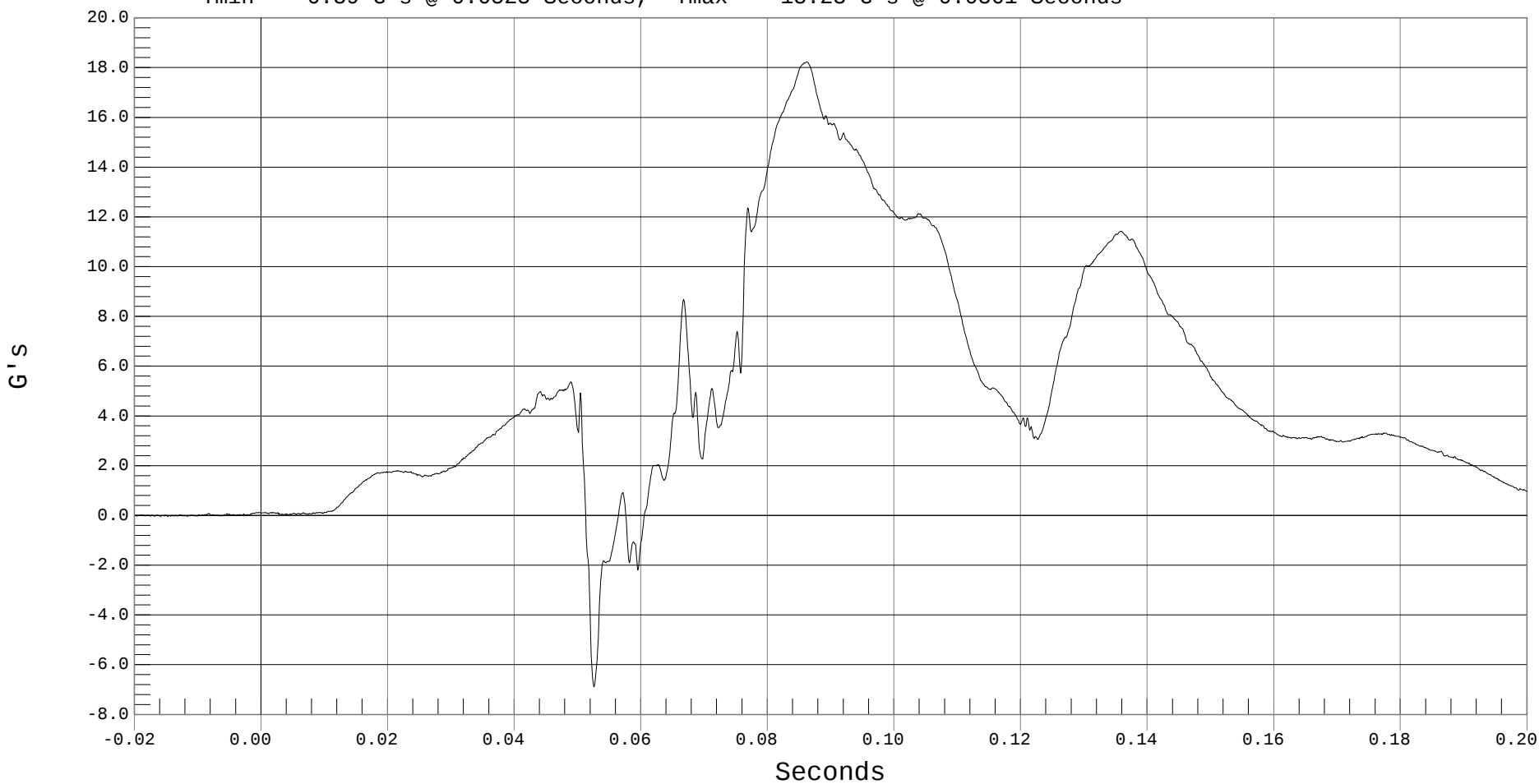
LEFT REAR PELVIS Y ACCELERATION

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 1000

— 1 LEFT REAR CHILD PELVIS Y, B01074AT.A81

Ymin = -6.89 G's @ 0.0525 Seconds, Ymax = 18.23 G's @ 0.0861 Seconds





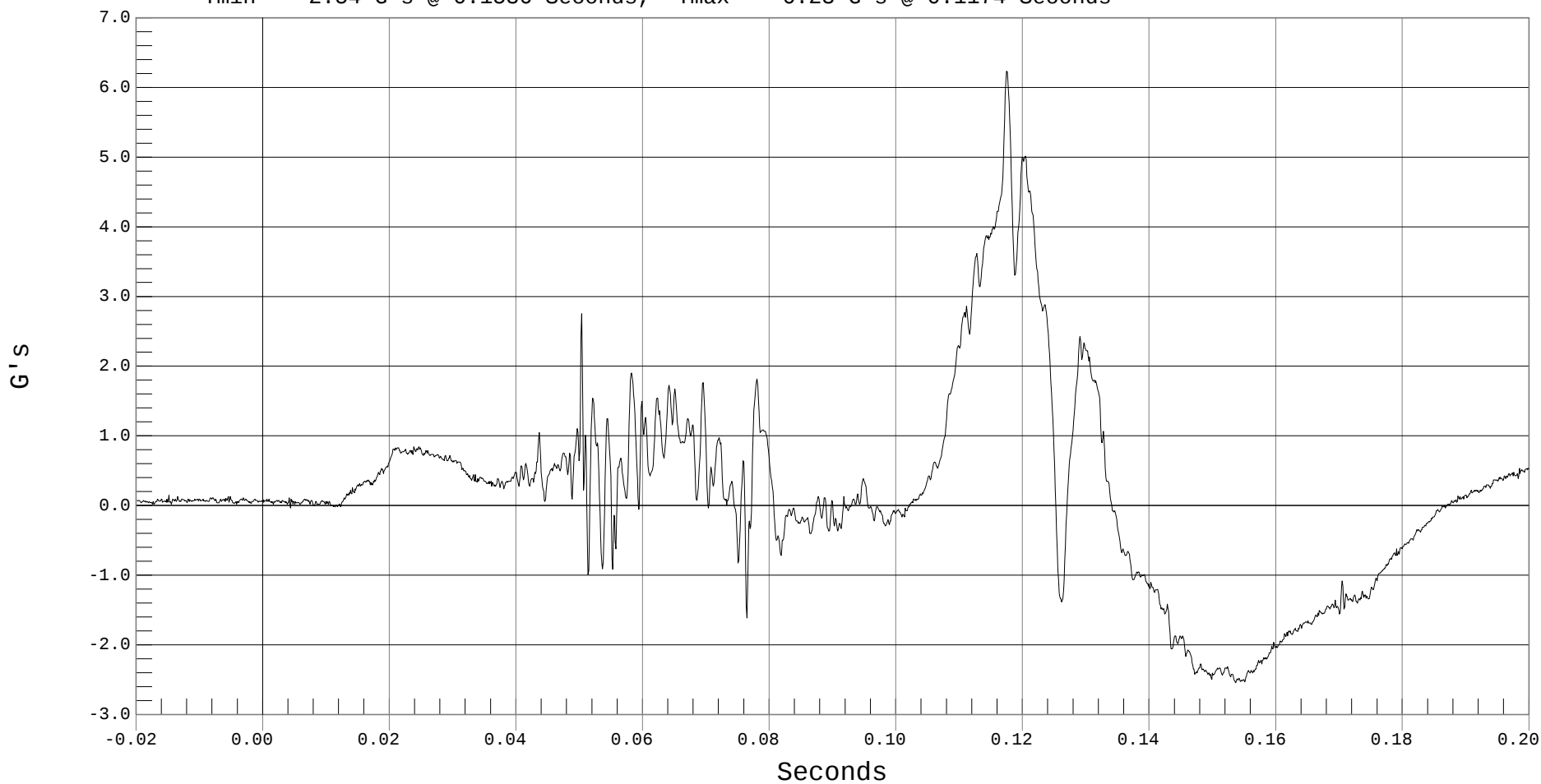
LEFT REAR PELVIS Z ACCELERATION

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 1000

— 1 LEFT REAR CHILD PELVIS Z, B01074AT.A82

Ymin = -2.54 G's @ 0.1536 Seconds, Ymax = 6.23 G's @ 0.1174 Seconds





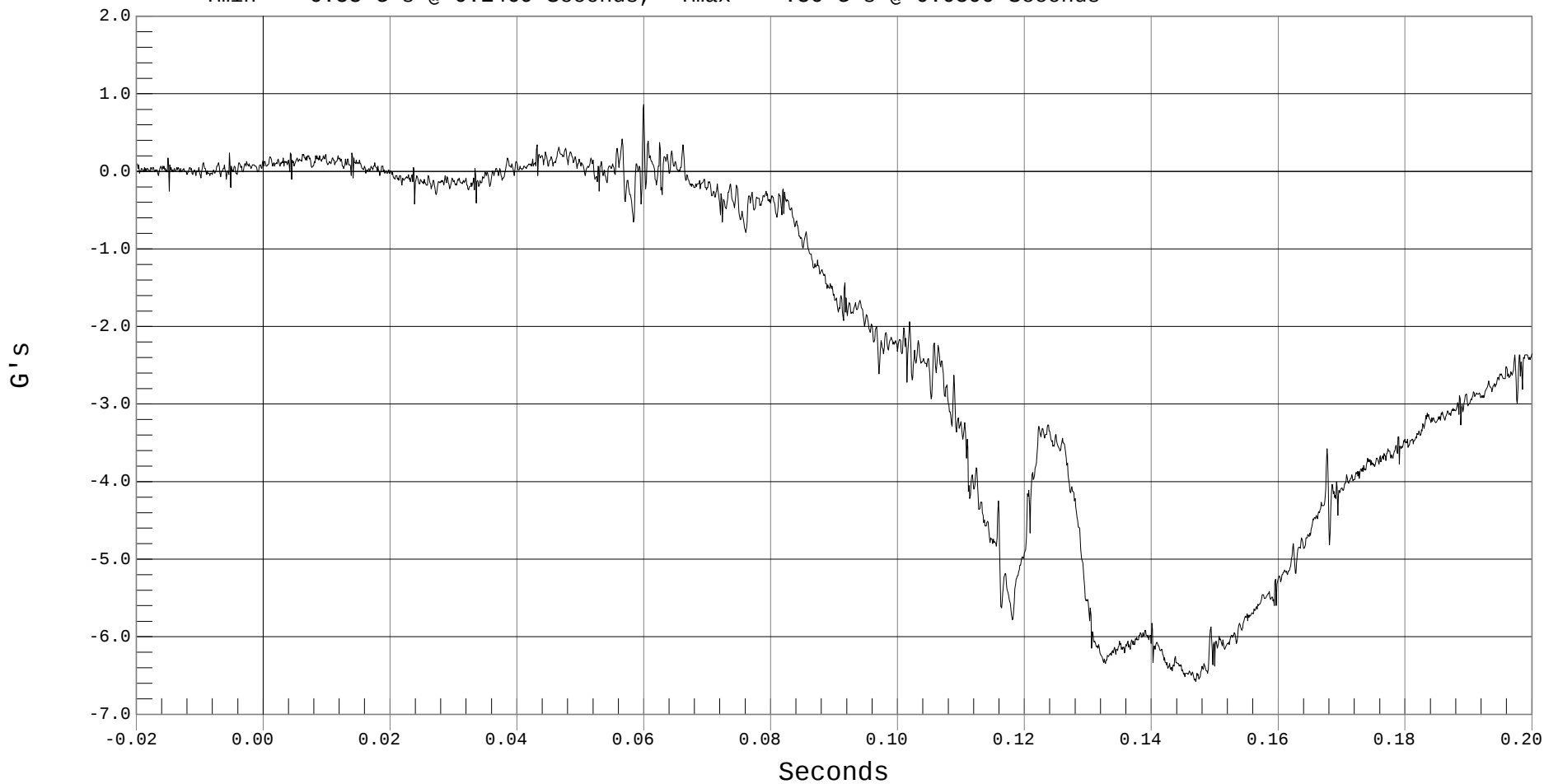
RIGHT REAR HEAD X ACCELERATION

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 1000

— 1 RIGHT REAR CHILD HEAD X, B01074AT.A83

Ymin = -6.58 G's @ 0.1469 Seconds, Ymax = .86 G's @ 0.0599 Seconds





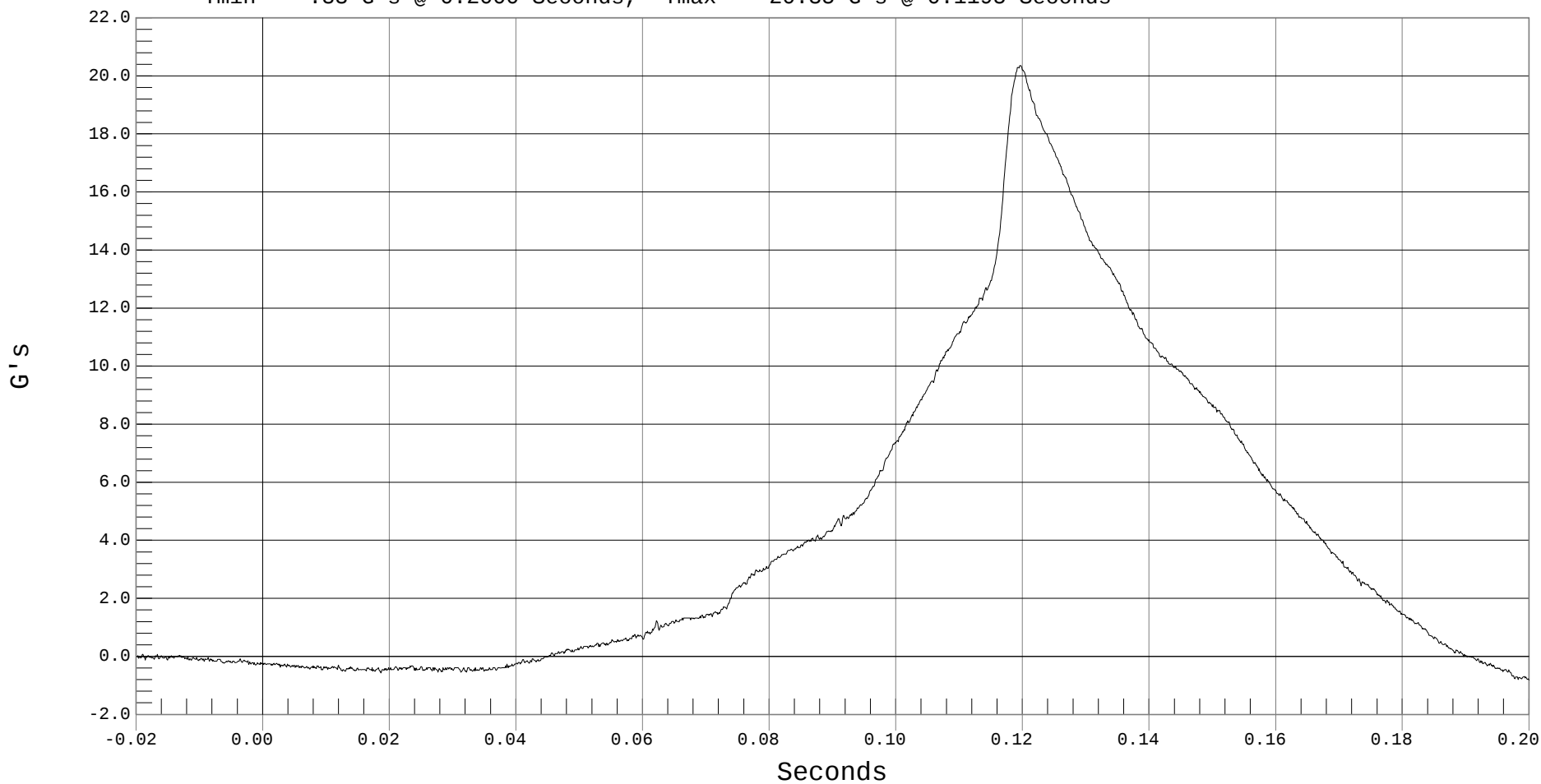
RIGHT REAR HEAD Y ACCELERATION

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 1000

— 1 RIGHT REAR CHILD HEAD Y, B01074AT.A84

Ymin = -.83 G's @ 0.2000 Seconds, Ymax = 20.35 G's @ 0.1195 Seconds





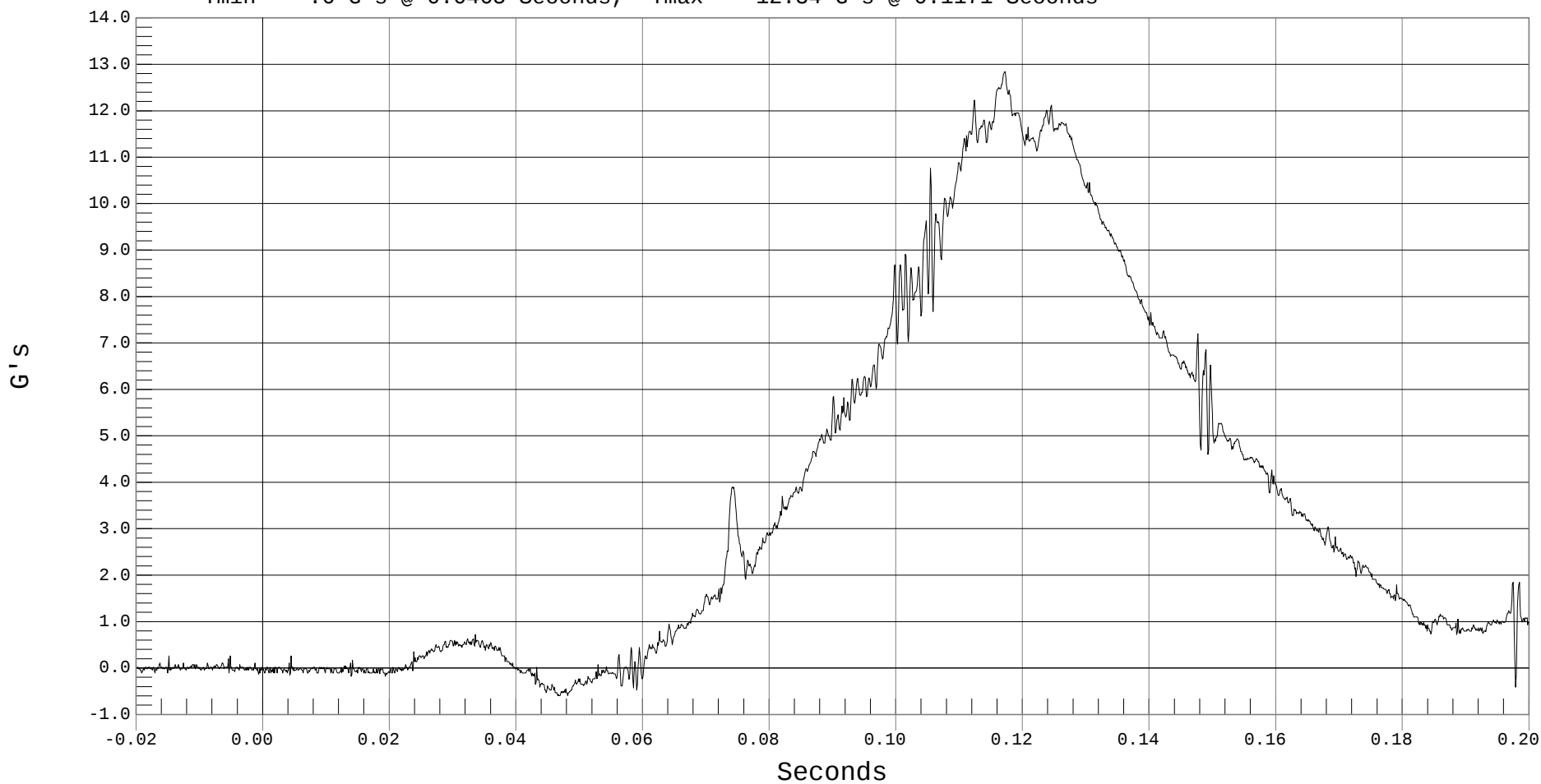
RIGHT REAR HEAD Z ACCELERATION

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 1000

— 1 RIGHT REAR CHILD HEAD Z, B01074AT.A85

Ymin = -.6 G's @ 0.0465 Seconds, Ymax = 12.84 G's @ 0.1171 Seconds





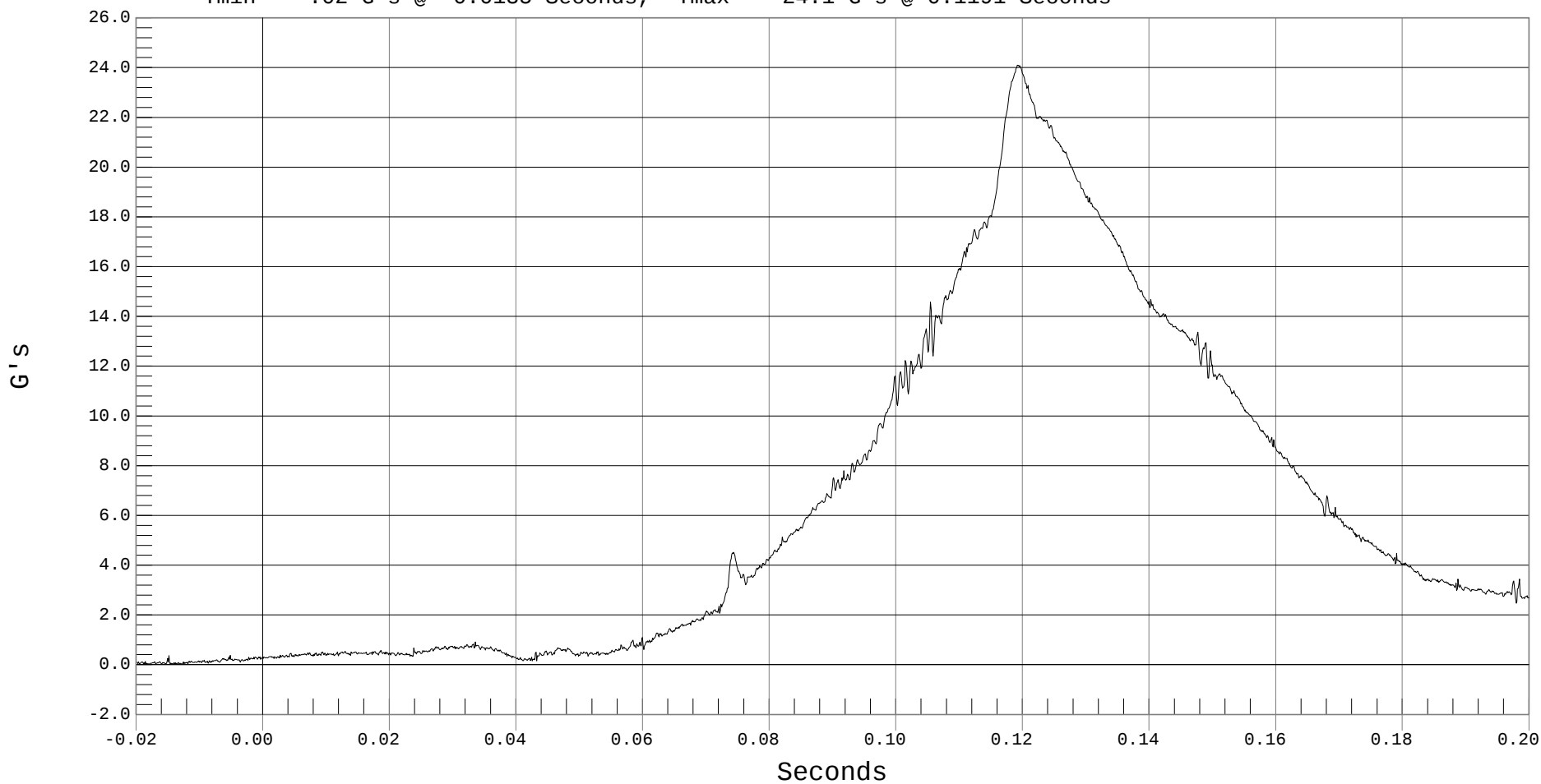
RIGHT REAR HEAD RESULTANT ACCELERATION

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 1000

— 1 RIGHT REAR HEAD RESULTANT, B01074AV.A83

Ymin = .02 G's @ -0.0185 Seconds, Ymax = 24.1 G's @ 0.1191 Seconds





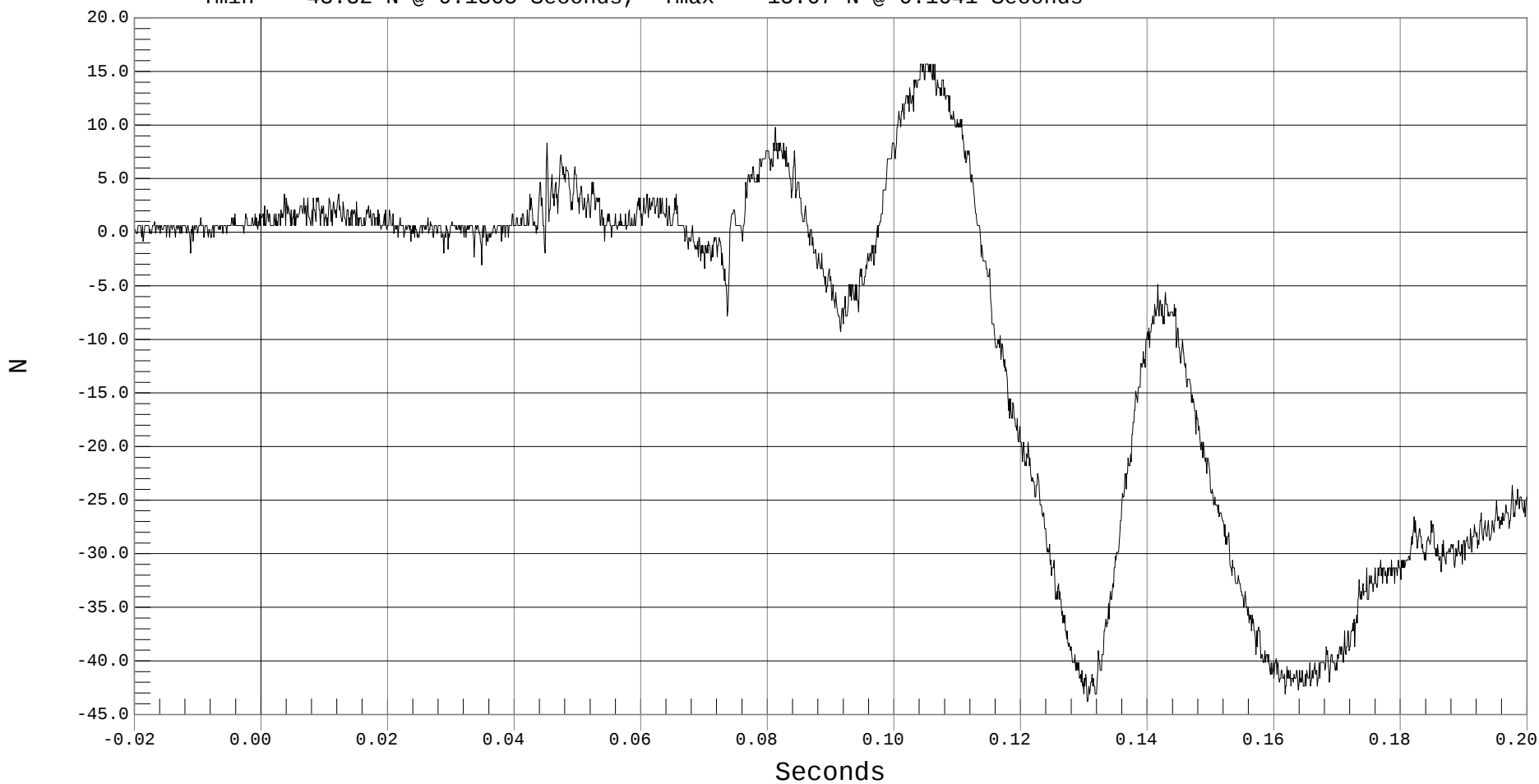
RIGHT REAR UPPER NECK FORCE X

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 1000

— 1 RIGHT REAR CHILD UPPER NECK FORCE X, B01074FT.F86

Ymin = -43.82 N @ 0.1305 Seconds, Ymax = 15.67 N @ 0.1041 Seconds





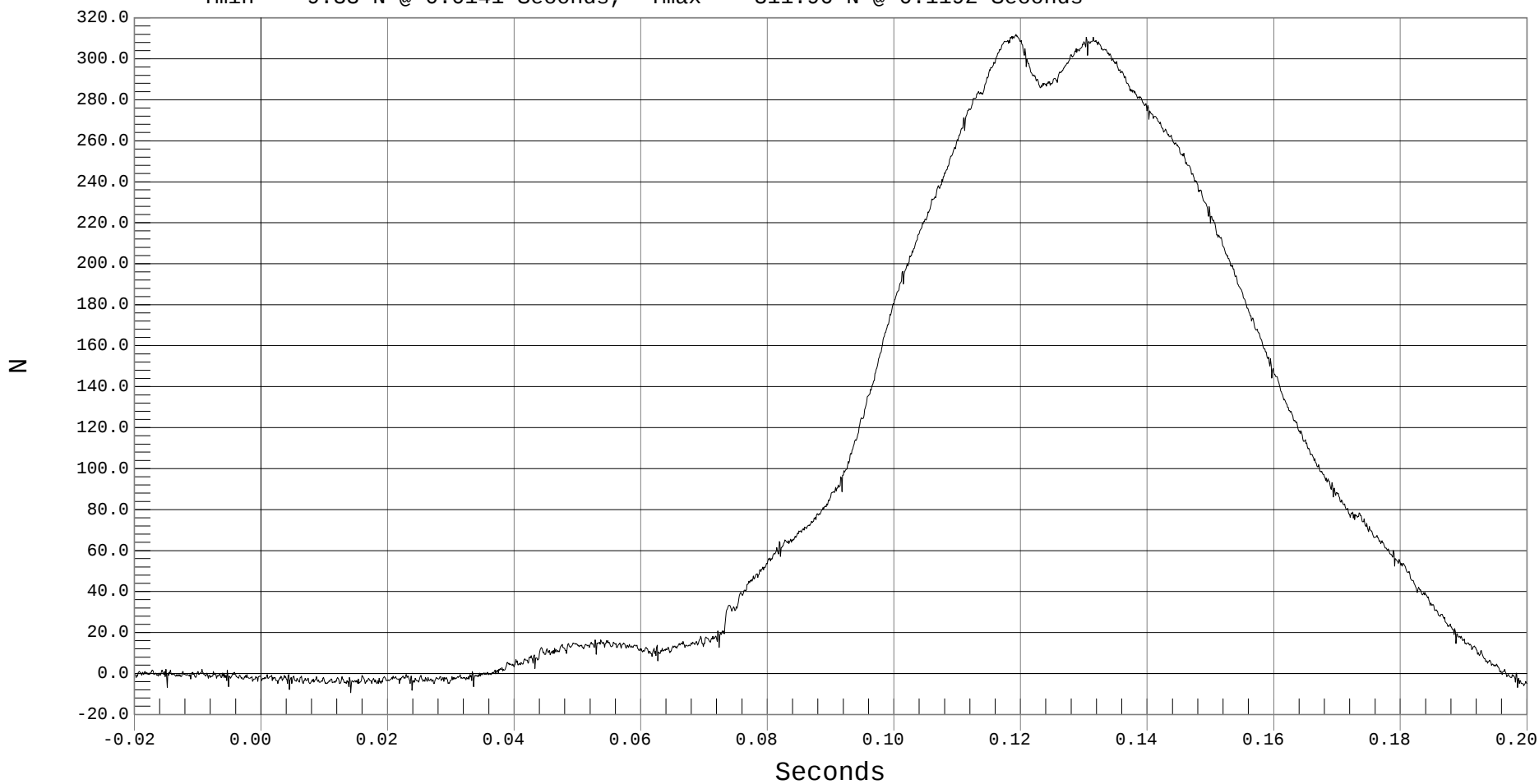
RIGHT REAR UPPER NECK FORCE Y

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 1000

— 1 RIGHT REAR CHILD UPPER NECK FORCE Y, B01074FT.F87

Ymin = -9.33 N @ 0.0141 Seconds, Ymax = 311.96 N @ 0.1192 Seconds





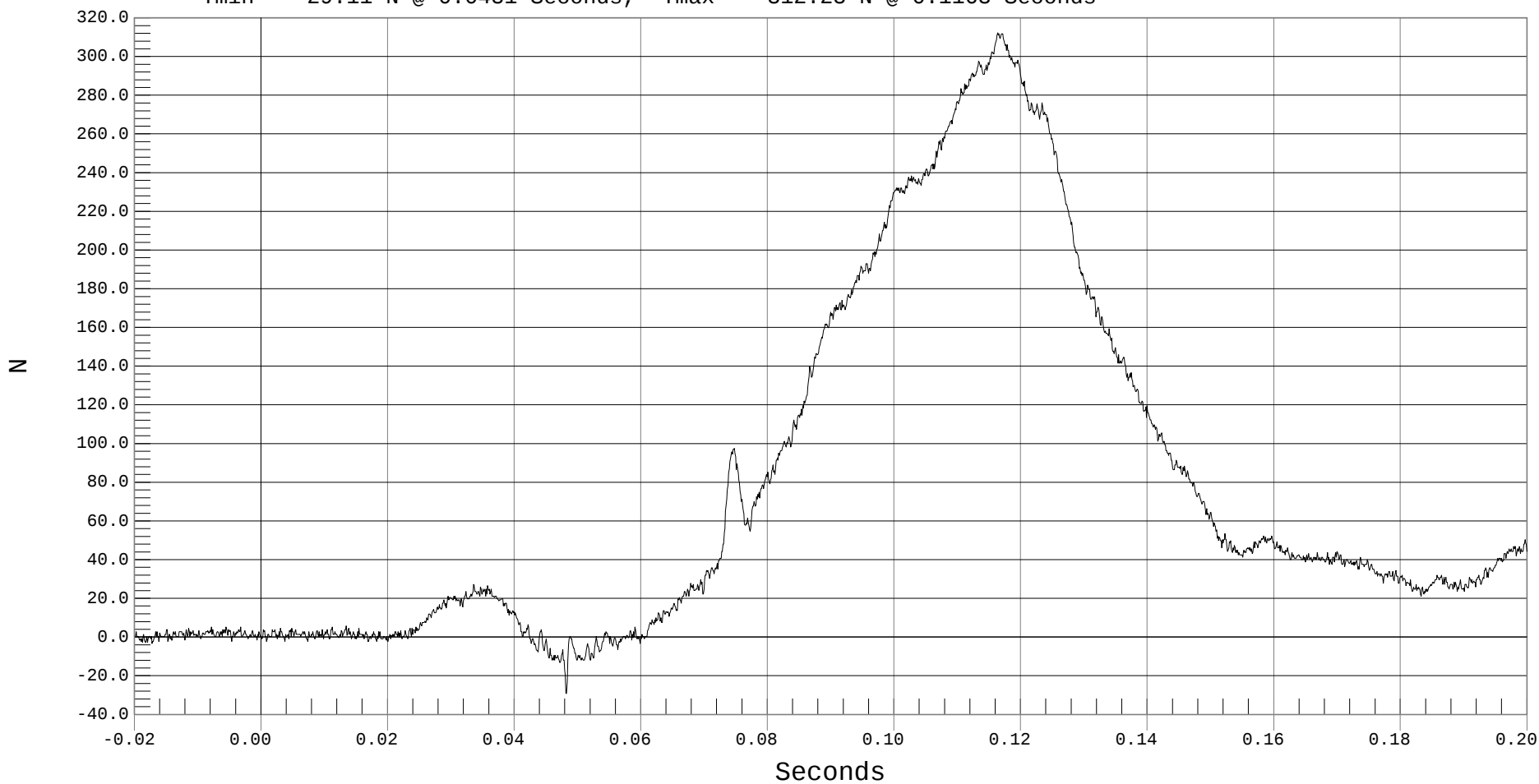
RIGHT REAR UPPER NECK FORCE Z

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 1000

— 1 RIGHT REAR CHILD UPPER NECK FORCE Z, B01074FT.F88

Ymin = -29.11 N @ 0.0481 Seconds, Ymax = 312.28 N @ 0.1163 Seconds





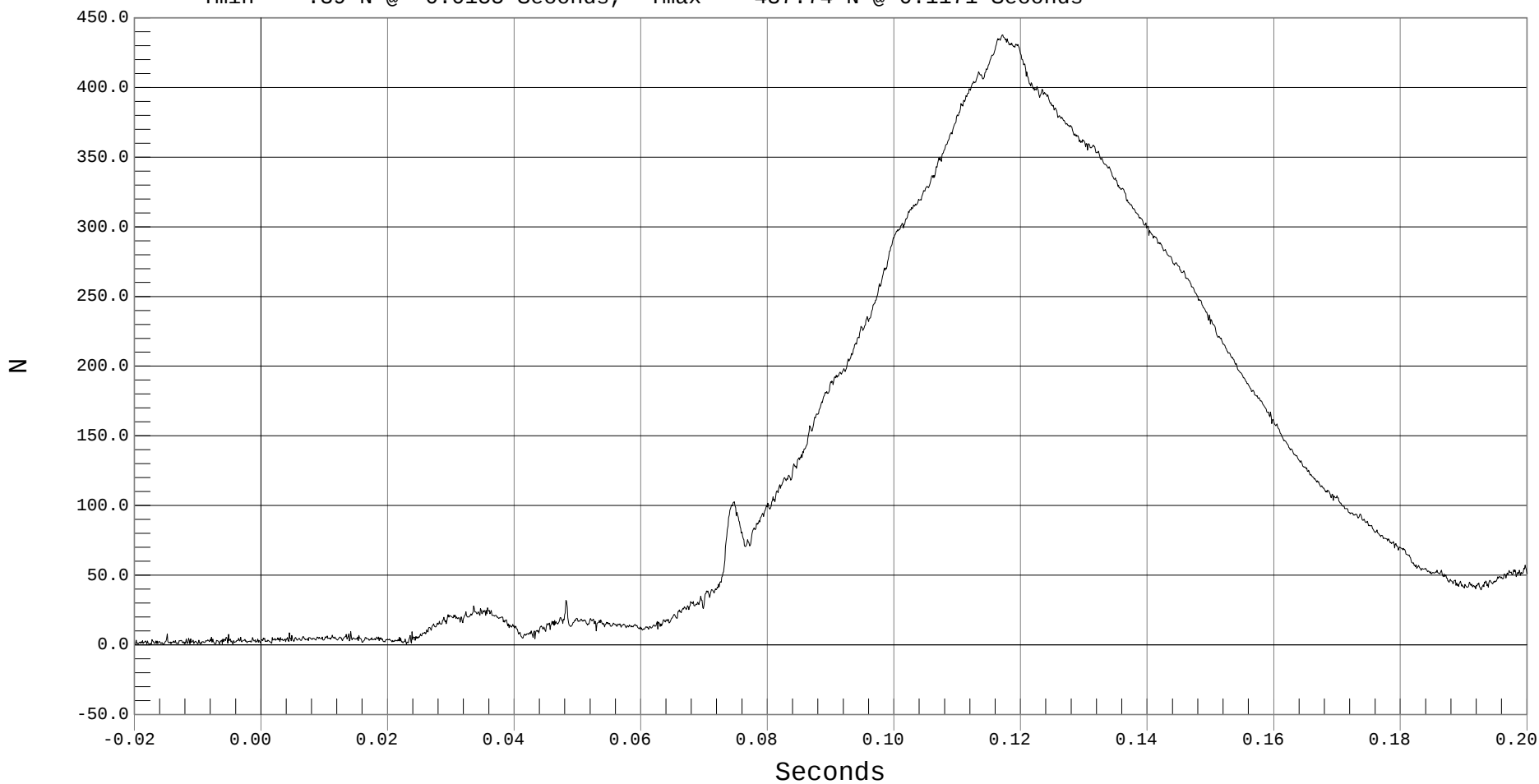
RIGHT REAR UPPER NECK FORCE RESULTANT

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 1000

— 1 RIGHT REAR UPPER NECK FORCE RESULTANT, B01074FV.F86

Ymin = .39 N @ -0.0155 Seconds, Ymax = 437.74 N @ 0.1171 Seconds





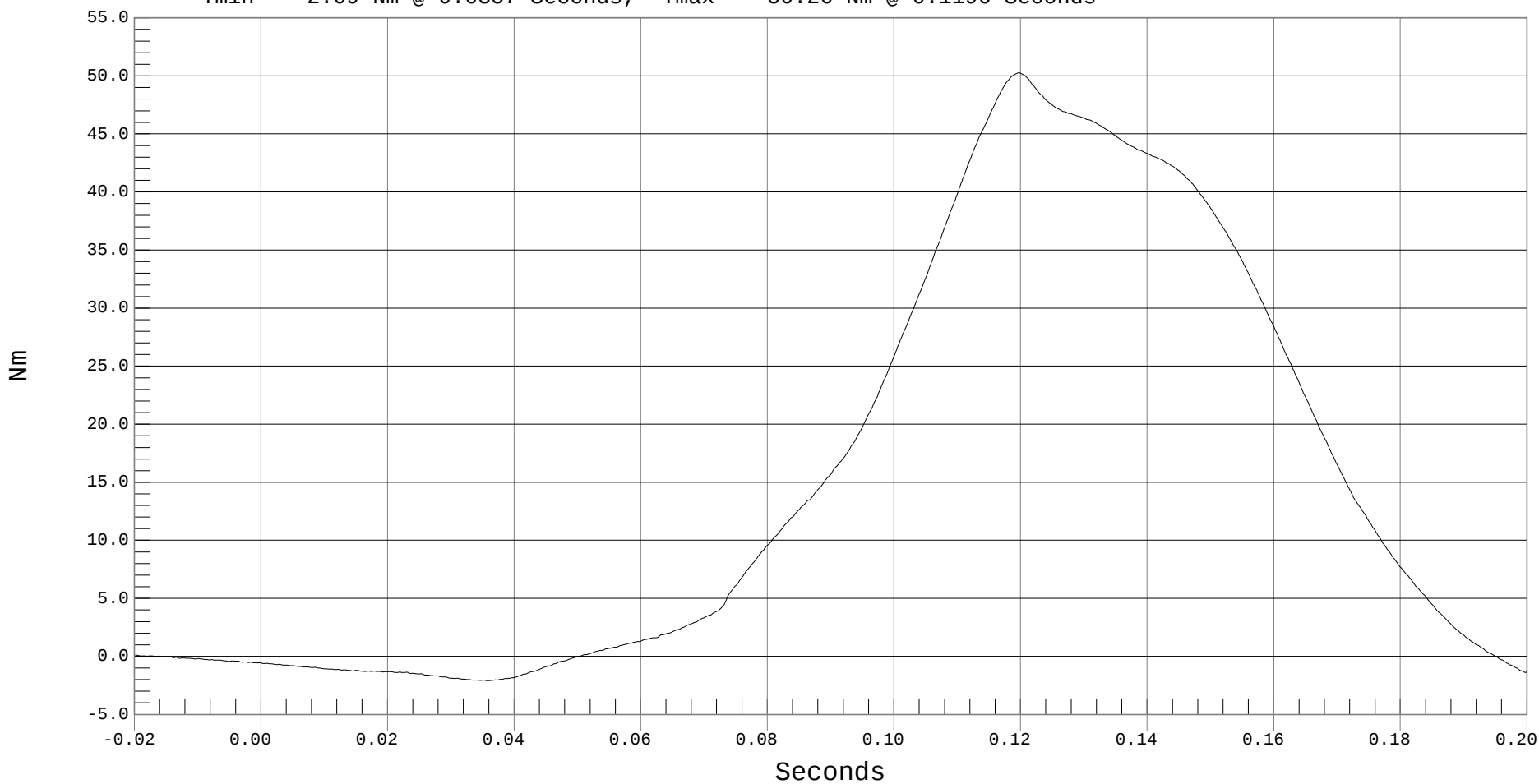
RIGHT REAR UPPER NECK MOMENT X

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 600

— 1 RIGHT REAR CHILD UPPER NECK MOMENT, B01074MF.M89

Ymin = -2.09 Nm @ 0.0357 Seconds, Ymax = 50.26 Nm @ 0.1196 Seconds





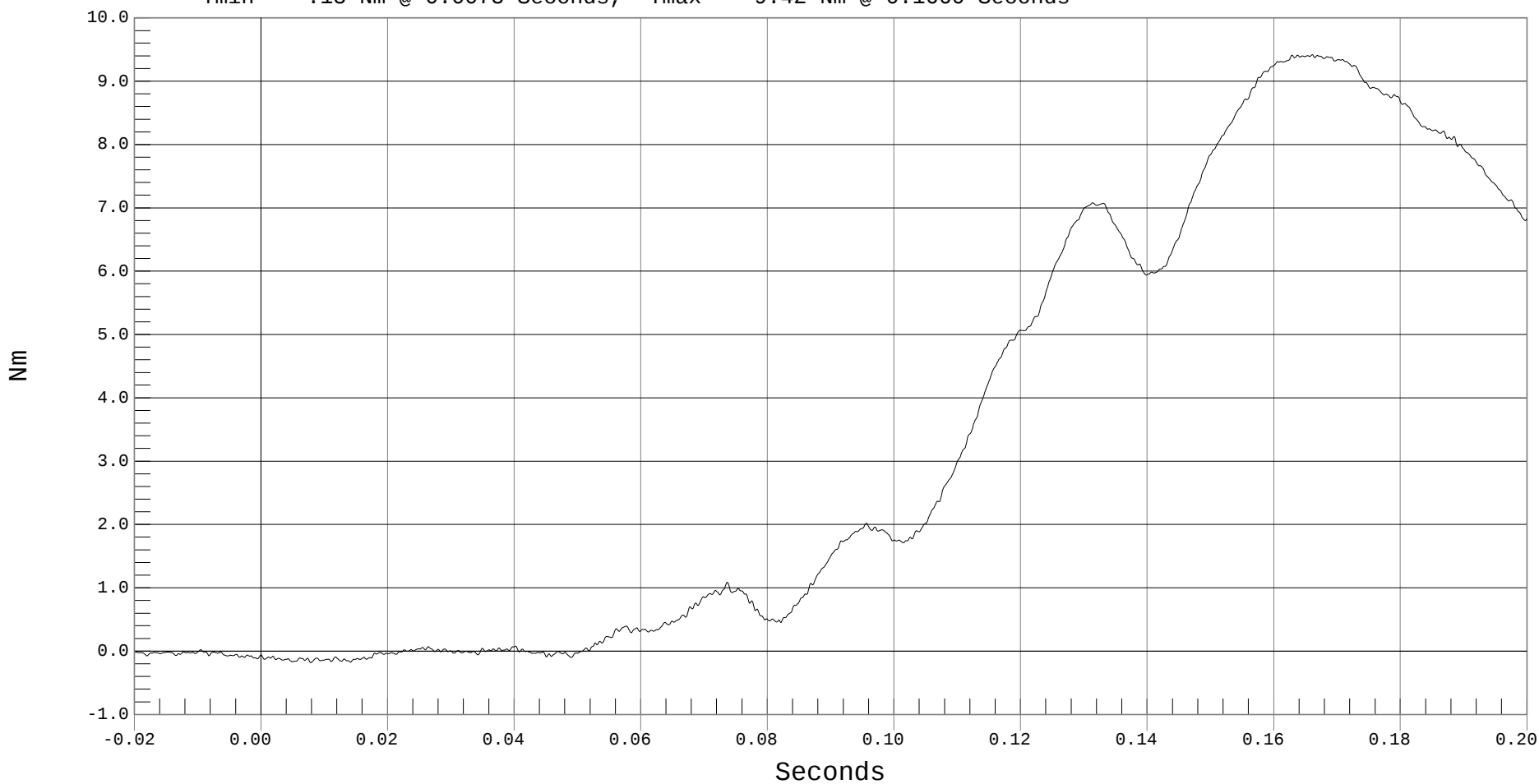
RIGHT REAR UPPER NECK MOMENT Y

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 600

— 1 RIGHT REAR CHILD UPPER NECK MOMENT, B01074MF.M90

Ymin = -.18 Nm @ 0.0078 Seconds, Ymax = 9.42 Nm @ 0.1660 Seconds





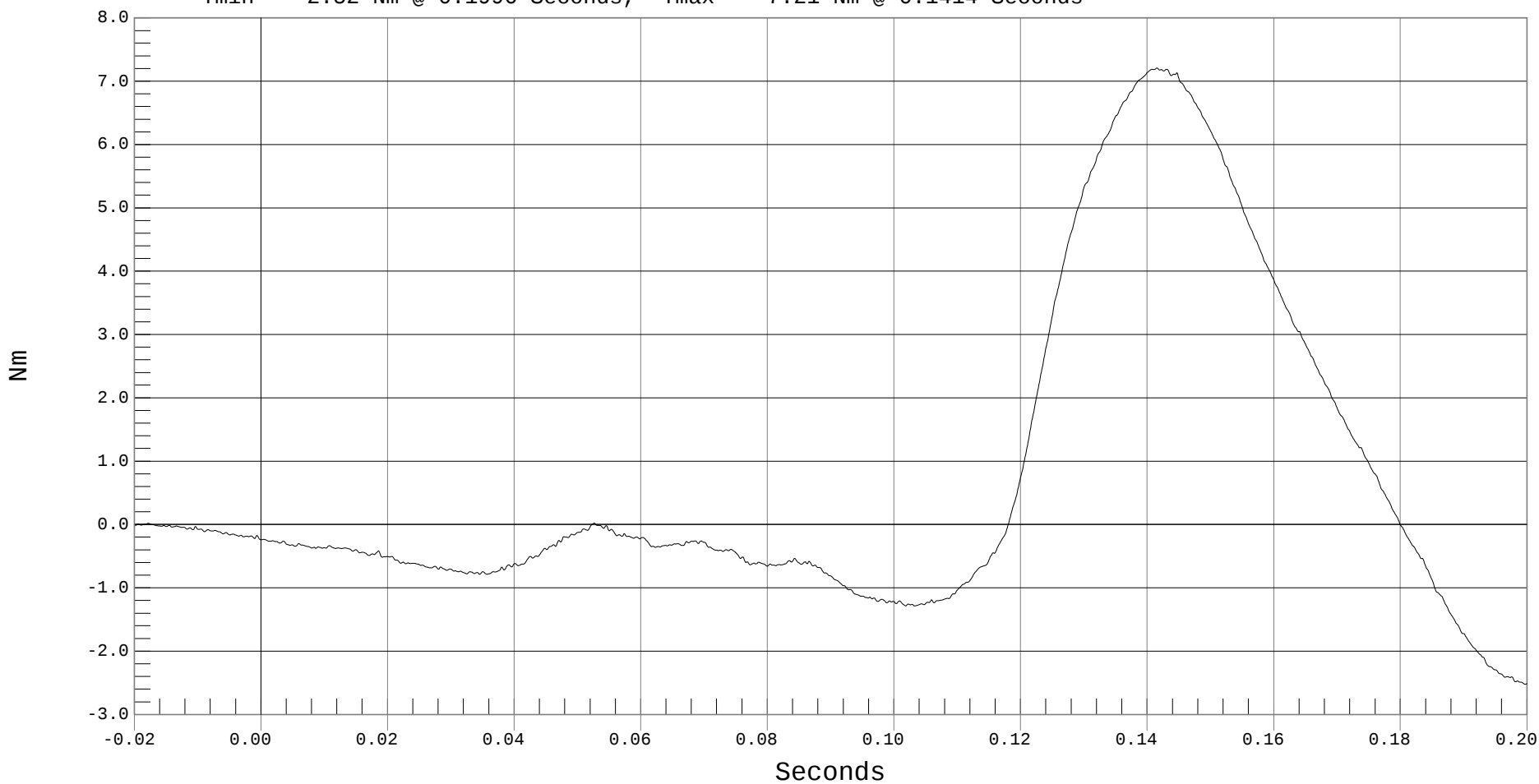
RIGHT REAR UPPER NECK MOMENT Z

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 600

— 1 RIGHT REAR CHILD UPPER NECK MOMENT, B01074MF.M59

Ymin = -2.52 Nm @ 0.1996 Seconds, Ymax = 7.21 Nm @ 0.1414 Seconds





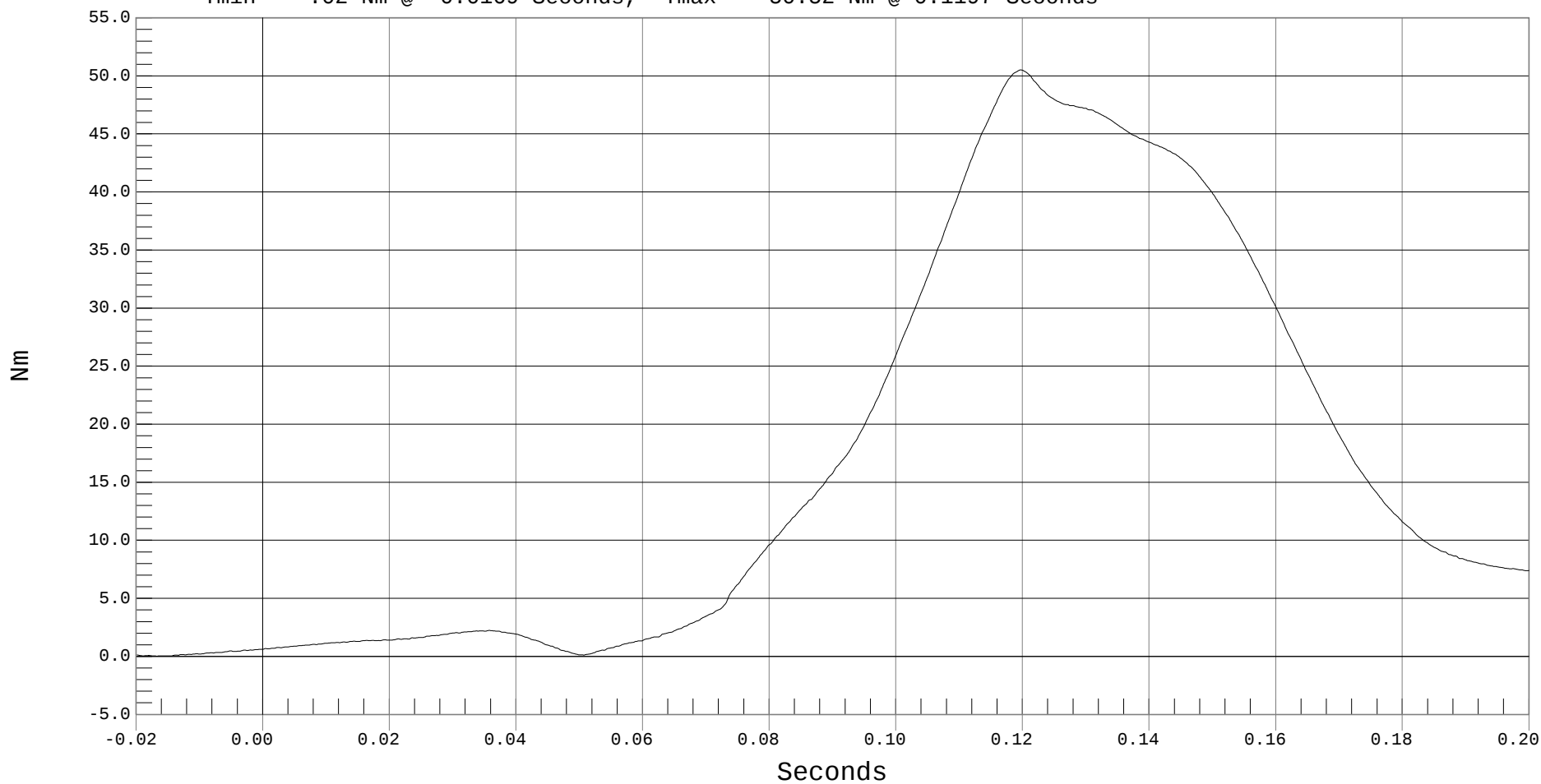
RIGHT REAR UPPER NECK MOMENT RESULTANT

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 600

— 1 RIGHT REAR UPPER NECK MOMENT RESULTANT, B01074MV.M59

Ymin = .02 Nm @ -0.0169 Seconds, Ymax = 50.52 Nm @ 0.1197 Seconds





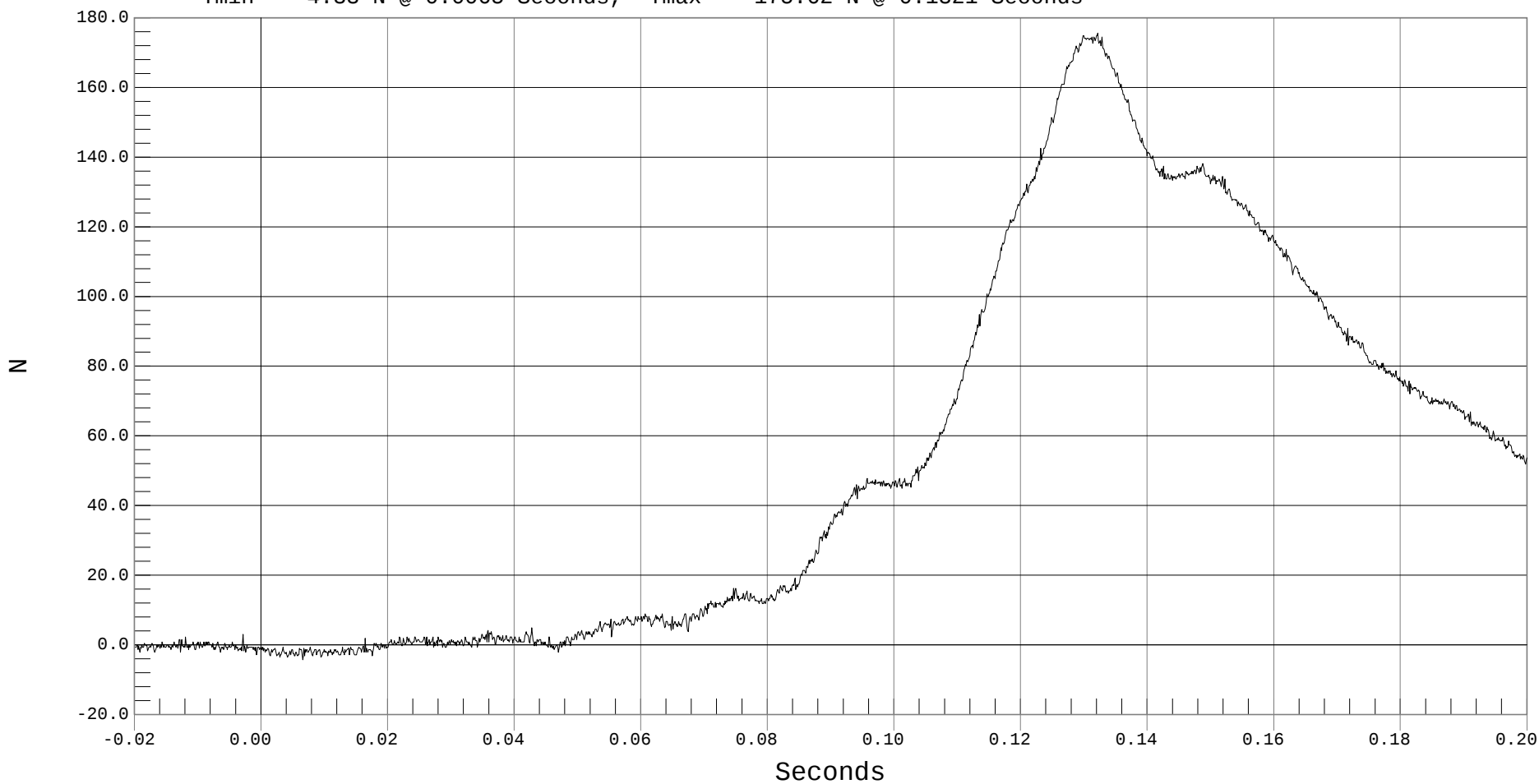
RIGHT REAR LOWER NECK FORCE X

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 1000

— 1 RIGHT REAR CHILD LOWER NECK FORCE X, B01074FT.F10

Ymin = -4.33 N @ 0.0065 Seconds, Ymax = 175.62 N @ 0.1321 Seconds





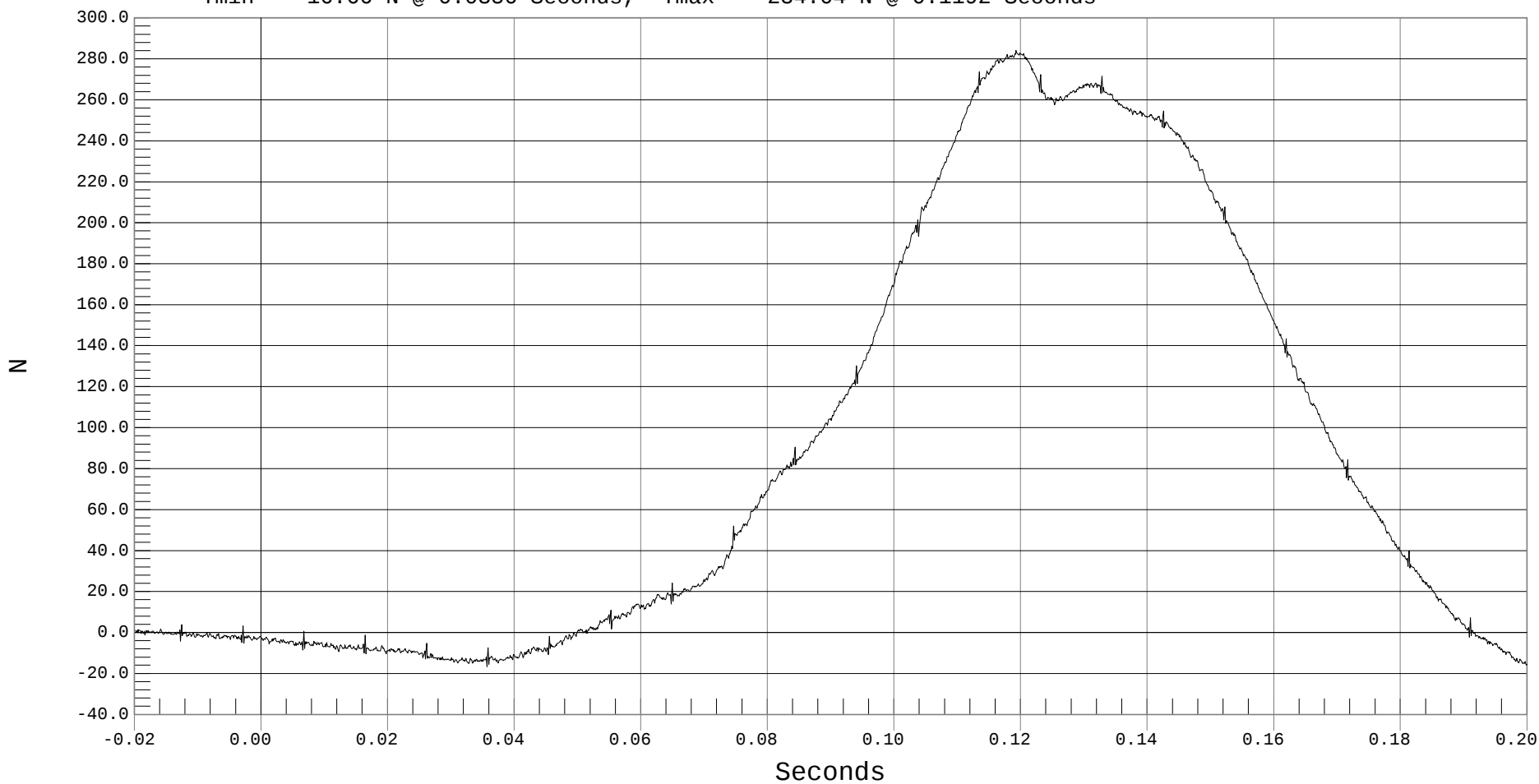
RIGHT REAR LOWER NECK FORCE Y

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 1000

— 1 RIGHT REAR CHILD LOWER NECK FORCE Y, B01074FT.F11

Ymin = -16.66 N @ 0.0356 Seconds, Ymax = 284.04 N @ 0.1192 Seconds





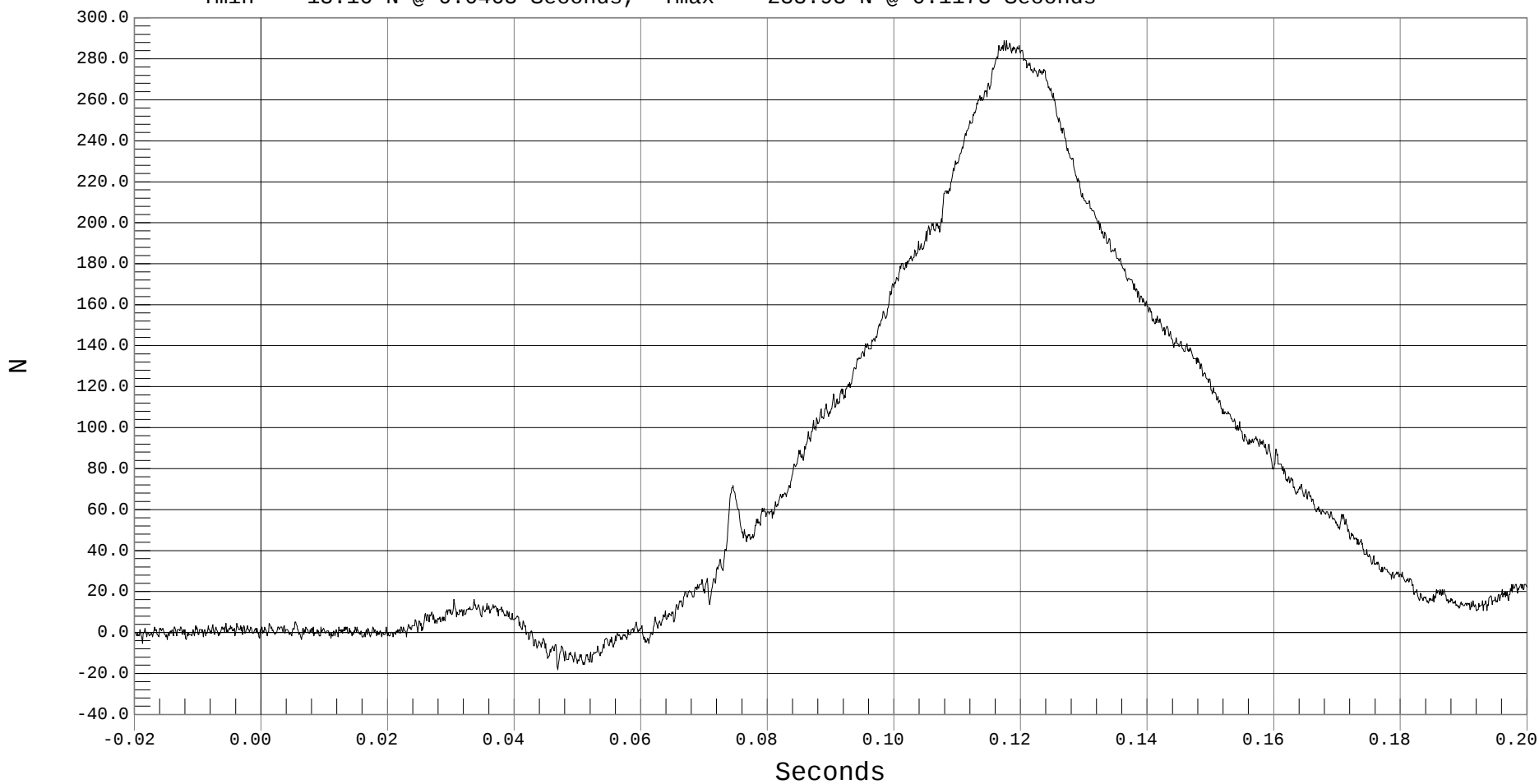
RIGHT REAR LOWER NECK FORCE Z

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 1000

— 1 RIGHT REAR CHILD LOWER NECK FORCE Z, B01074FT.F12

Ymin = -18.16 N @ 0.0468 Seconds, Ymax = 288.98 N @ 0.1173 Seconds





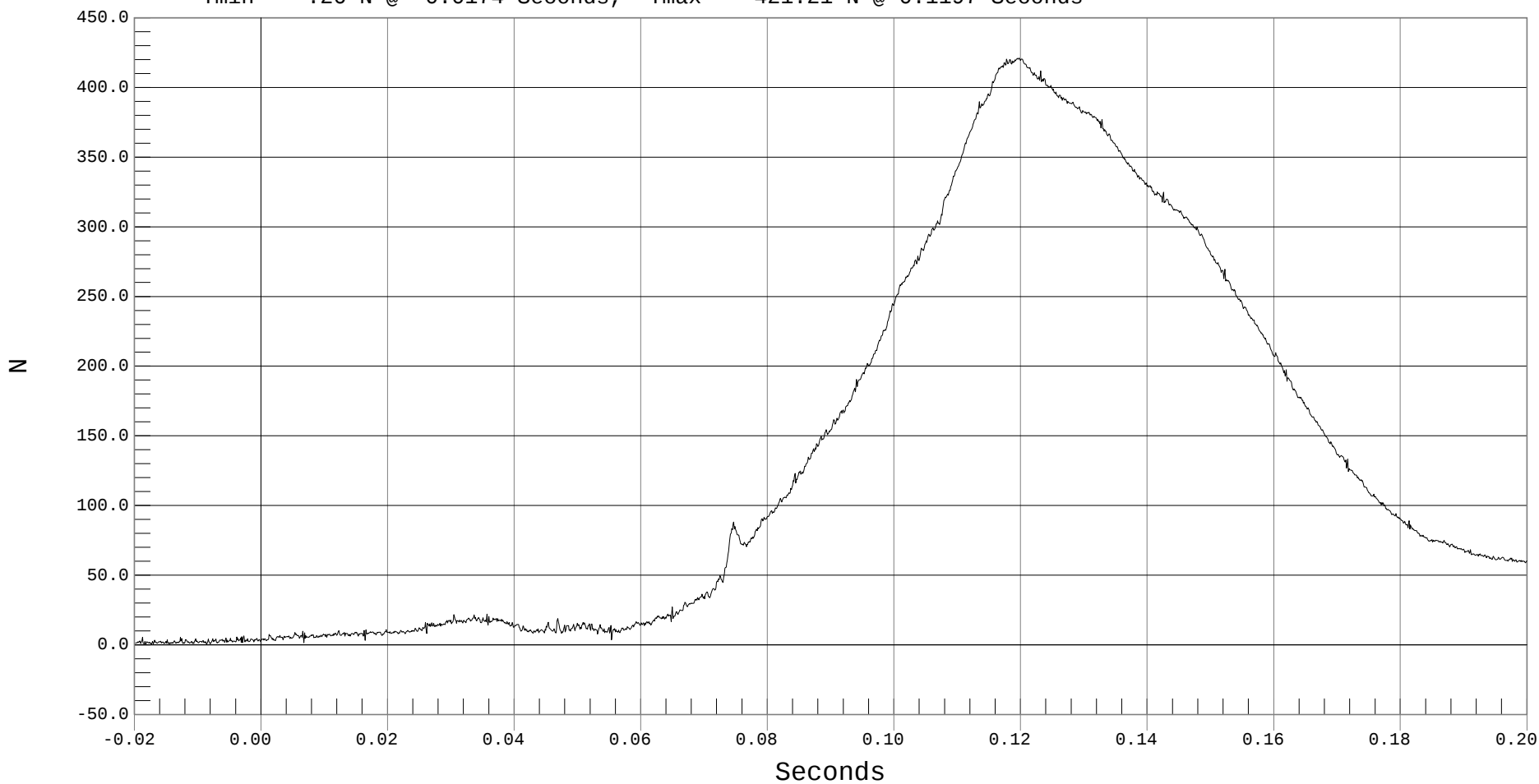
RIGHT REAR LOWER NECK FORCE RESULTANT

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 1000

— 1 RIGHT REAR LOWER NECK RESULTANT, B01074FV.F10

Ymin = .26 N @ -0.0174 Seconds, Ymax = 421.21 N @ 0.1197 Seconds





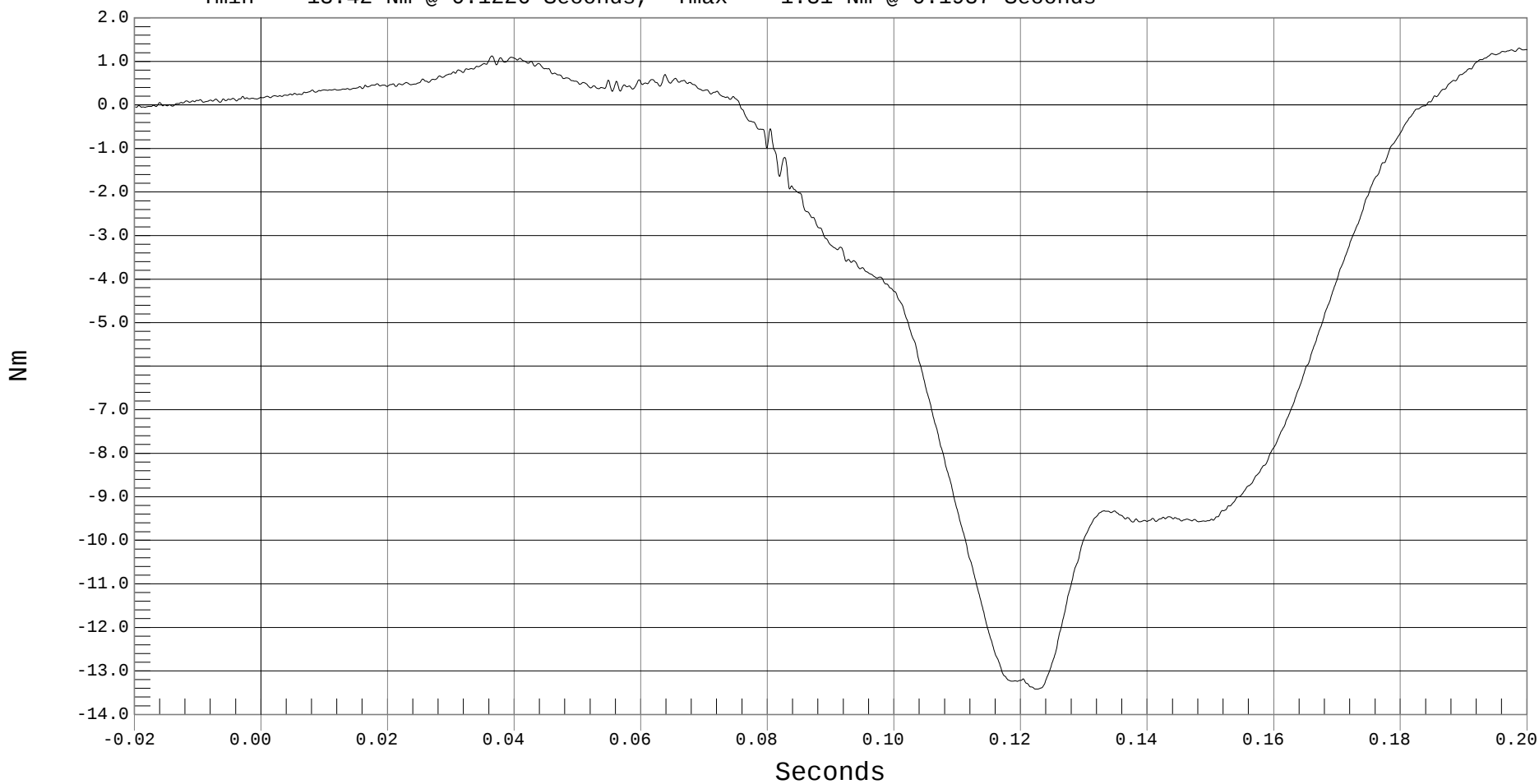
RIGHT REAR LOWER NECK MOMENT X

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 600

— 1 RIGHT REAR CHILD LOWER NECK MOMENT, B01074MF.M13

Ymin = -13.42 Nm @ 0.1226 Seconds, Ymax = 1.31 Nm @ 0.1987 Seconds





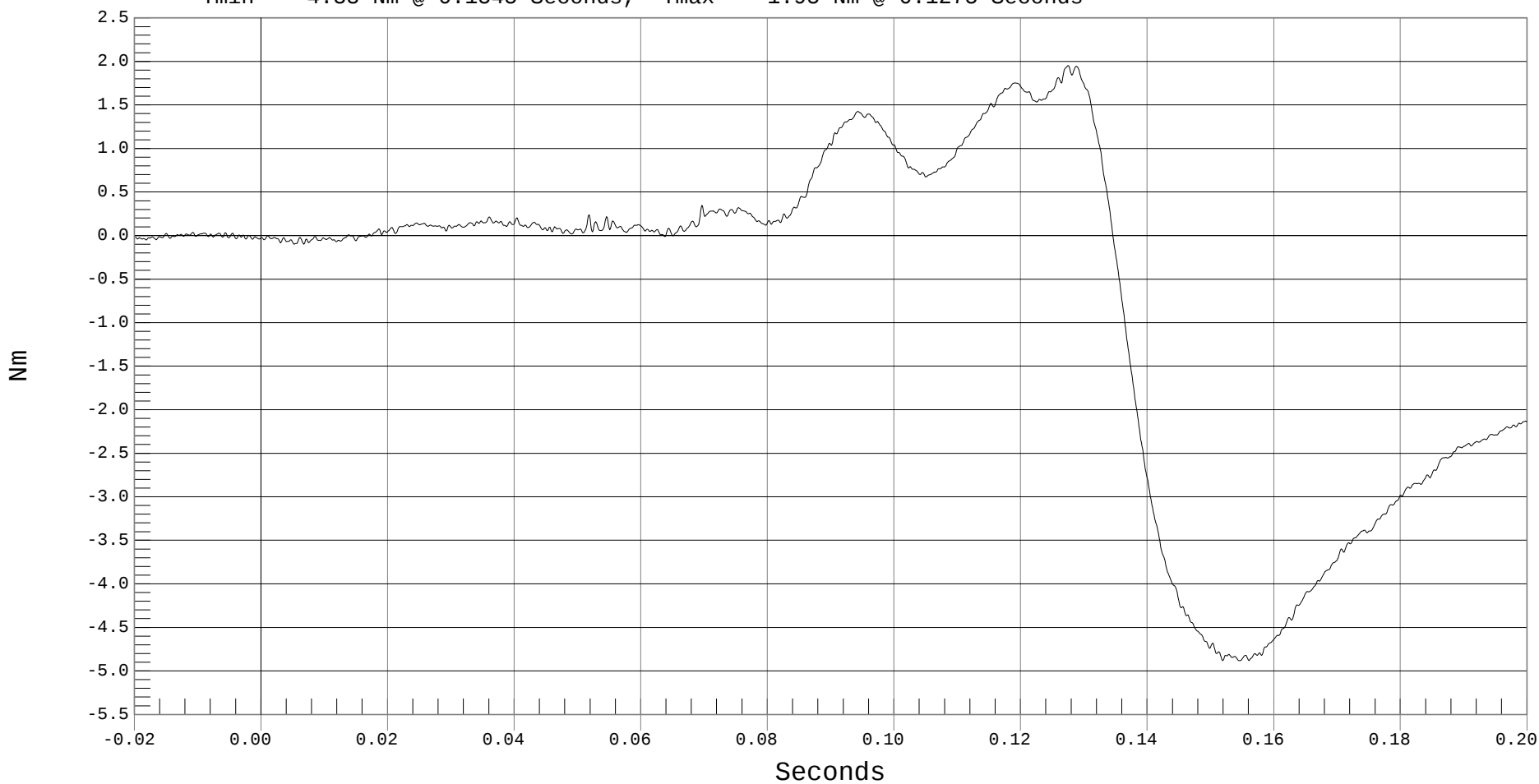
RIGHT REAR LOWER NECK MOMENT Y

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 600

— 1 RIGHT REAR CHILD LOWER NECK MOMENT, B01074MF.M14

Ymin = -4.88 Nm @ 0.1545 Seconds, Ymax = 1.95 Nm @ 0.1275 Seconds





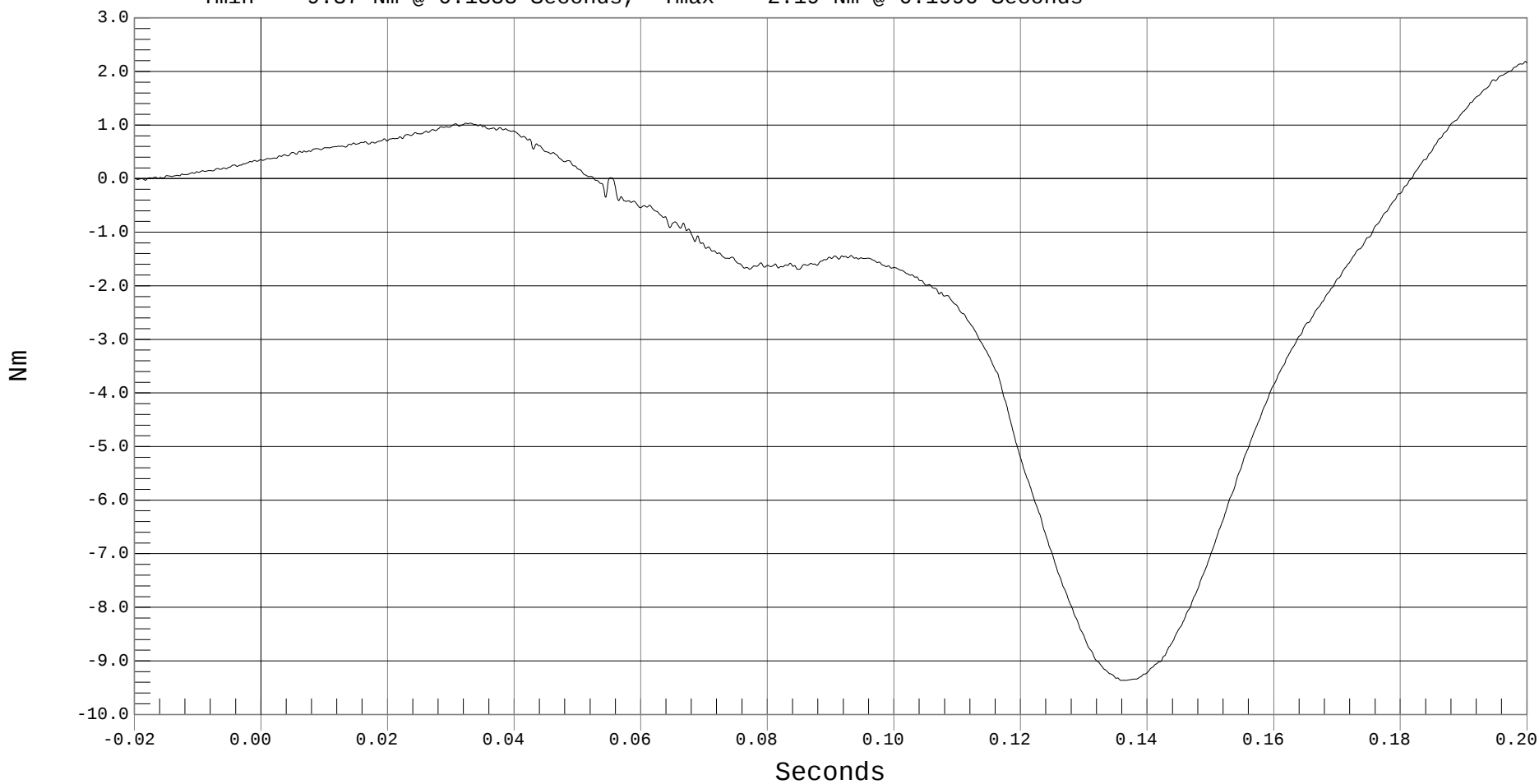
RIGHT REAR LOWER NECK MOMENT Z

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 600

— 1 RIGHT REAR CHILD LOWER NECK MOMENT, B01074MF.M15

Ymin = -9.37 Nm @ 0.1358 Seconds, Ymax = 2.19 Nm @ 0.1996 Seconds





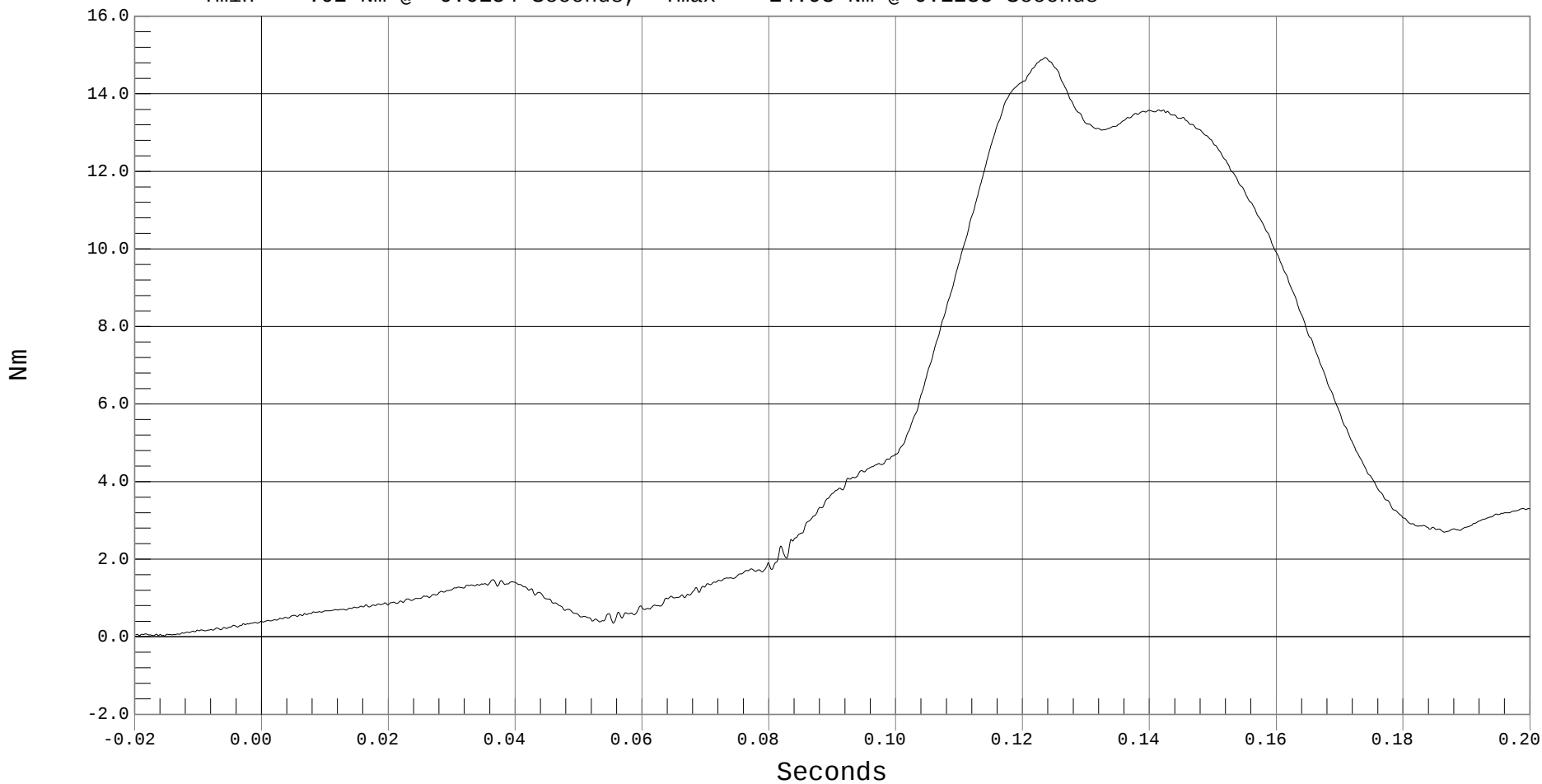
RIGHT REAR LOWER NECK MOMENT RESULTANT

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 600

— 1 RIGHT REAR LOWER NECK RESULTANT, B01074MV.M13

Ymin = .02 Nm @ -0.0154 Seconds, Ymax = 14.93 Nm @ 0.1235 Seconds





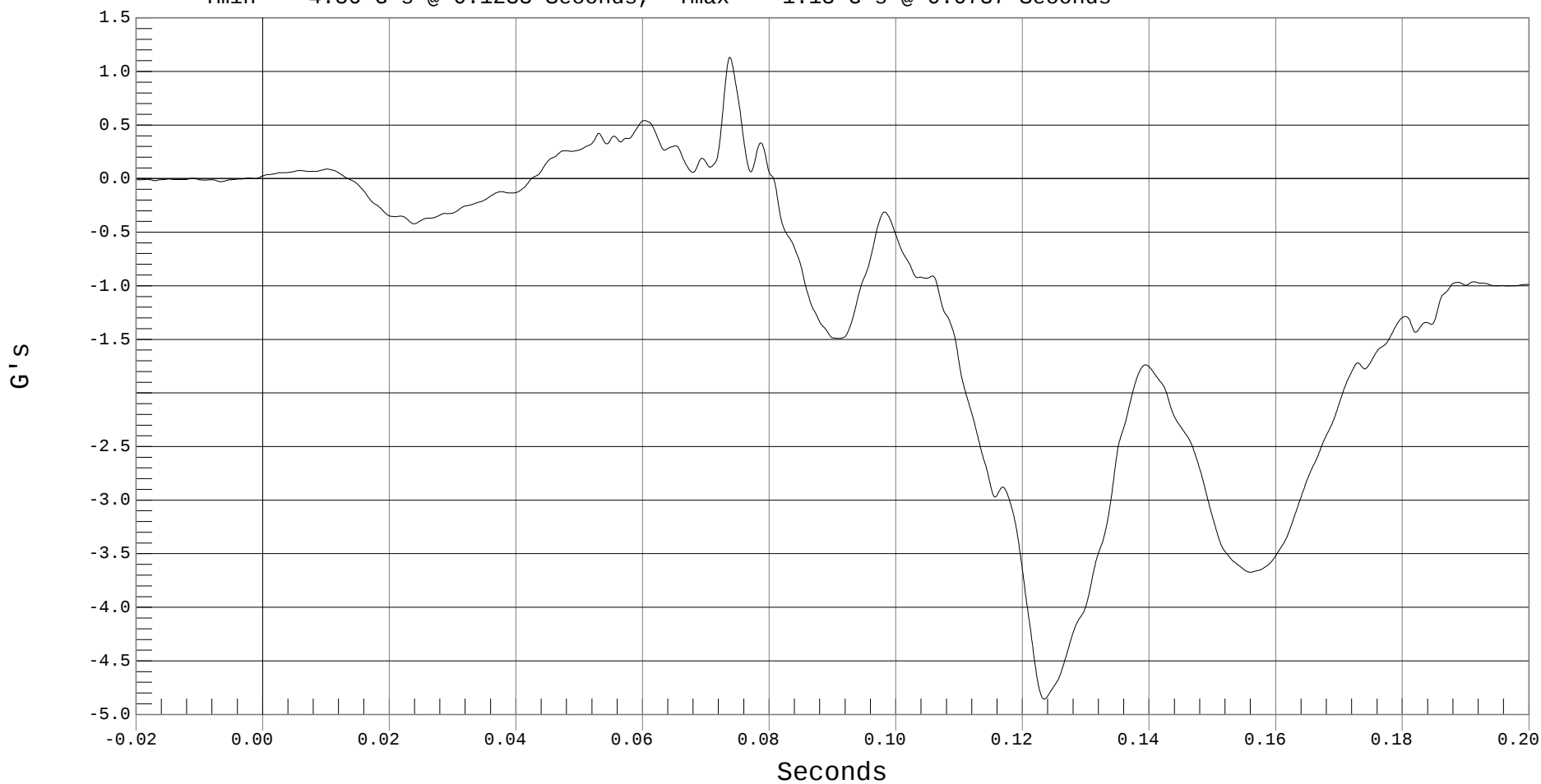
RIGHT REAR CHEST X ACCELERATION

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 180

— 1 RIGHT REAR CHILD CHEST X, B01074AF.A02

Ymin = -4.86 G's @ 0.1233 Seconds, Ymax = 1.13 G's @ 0.0737 Seconds





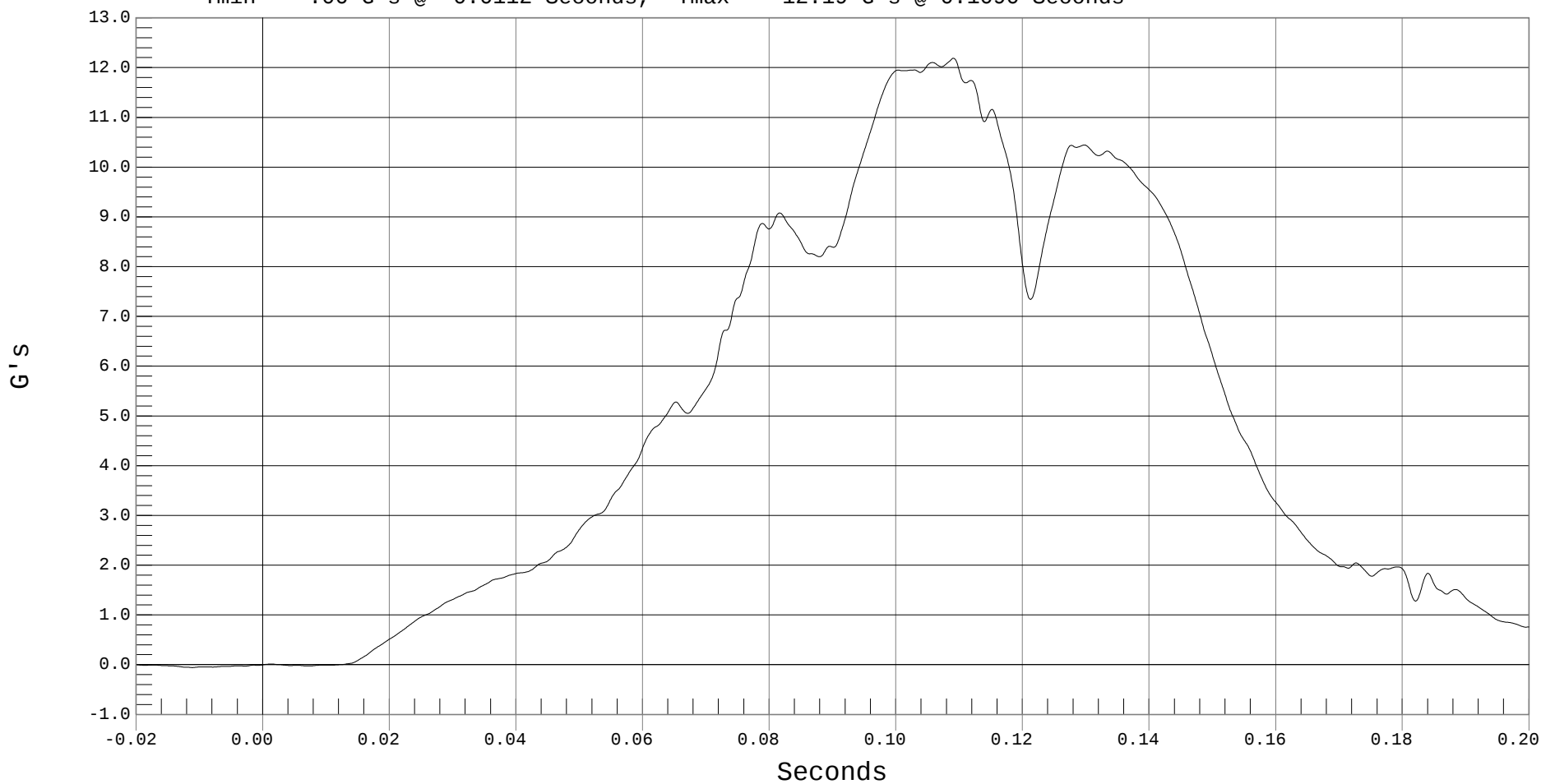
RIGHT REAR CHEST Y ACCELERATION

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 180

— 1 RIGHT REAR CHILD CHEST Y, B01074AF.A03

Ymin = -.06 G's @ -0.0112 Seconds, Ymax = 12.19 G's @ 0.1090 Seconds





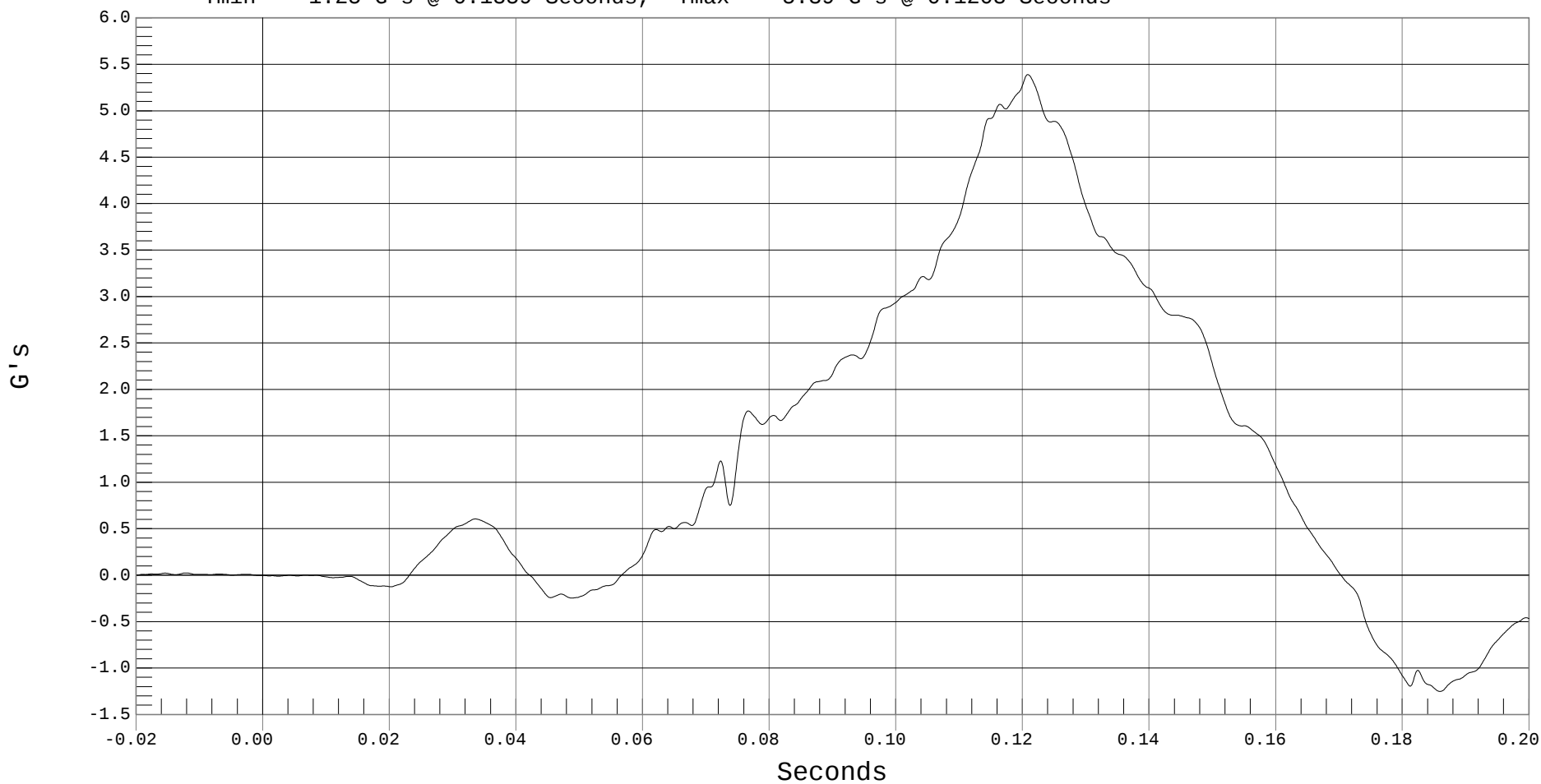
RIGHT REAR CHEST Z ACCELERATION

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 180

— 1 RIGHT REAR CHILD CHEST Z, B01074AF.A04

Ymin = -1.25 G's @ 0.1859 Seconds, Ymax = 5.39 G's @ 0.1208 Seconds





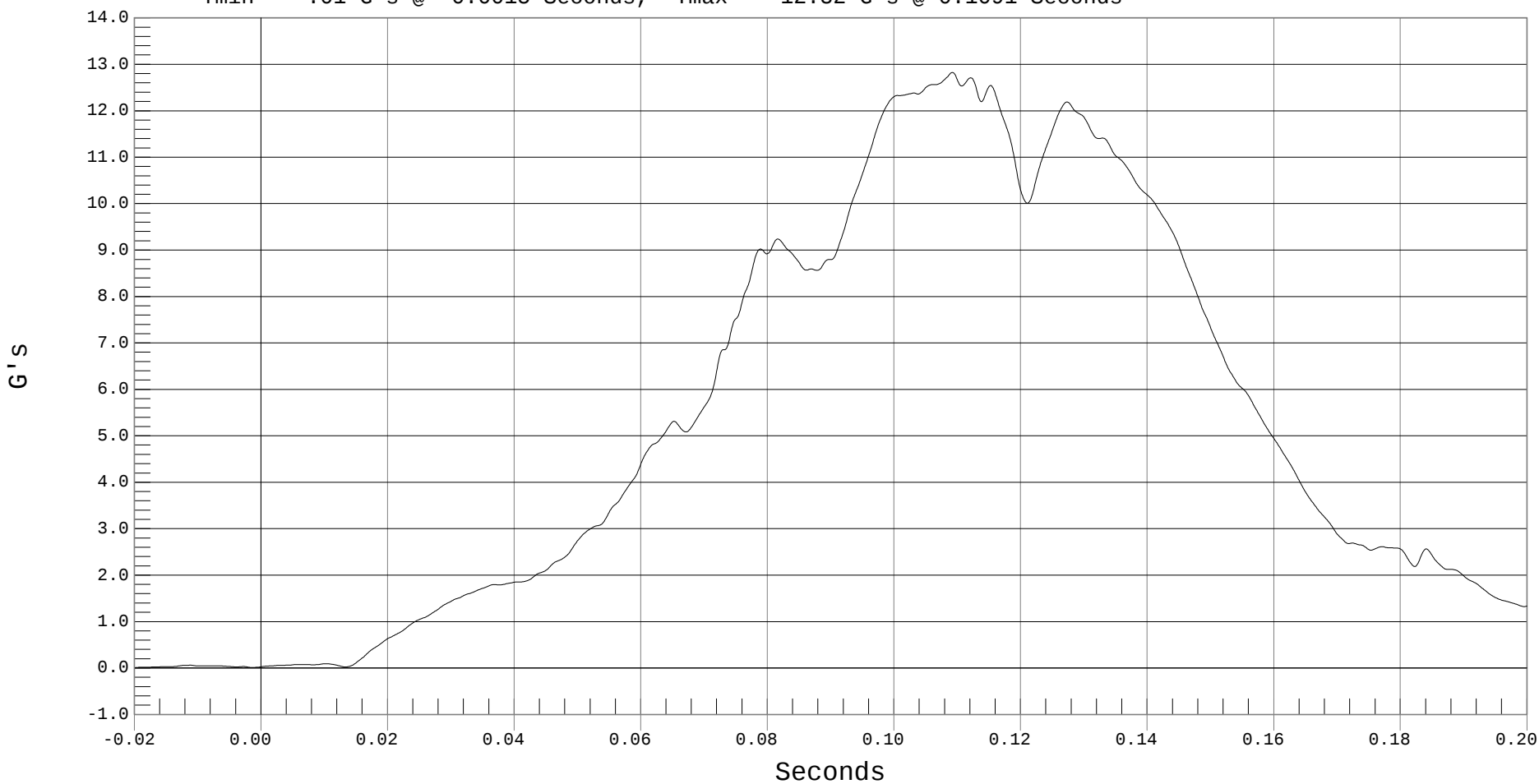
RIGHT REAR CHEST RESULTANT ACCELERATION

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 180

— 1 RIGHT REAR CHEST RESULTANT, B01074AV.A02

Ymin = .01 G's @ -0.0015 Seconds, Ymax = 12.82 G's @ 0.1091 Seconds





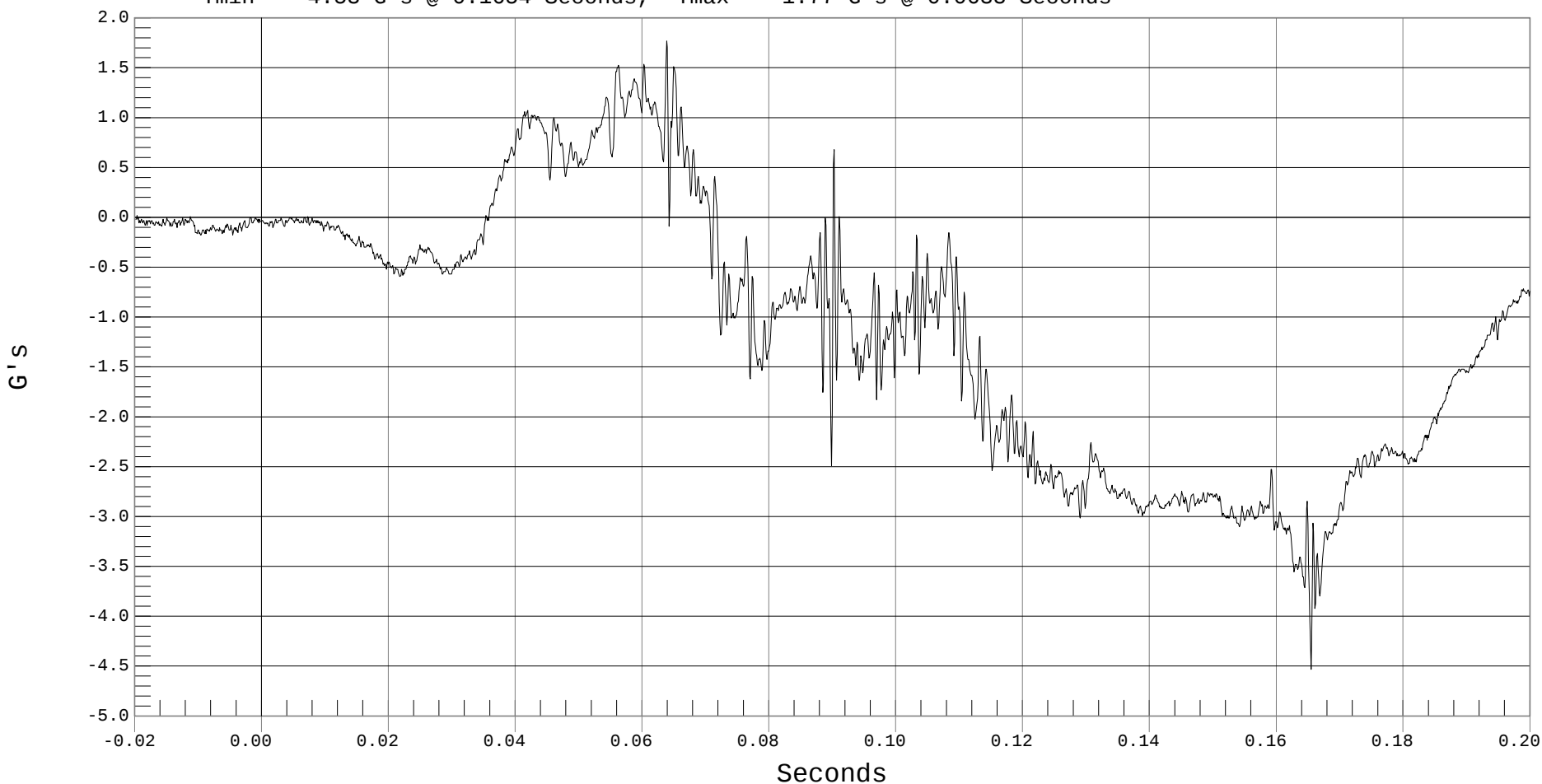
RIGHT REAR PELVIS X ACCELERATION

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 1000

— 1 RIGHT REAR CHILD PELVIS X, B01074AT.A06

Ymin = -4.53 G's @ 0.1654 Seconds, Ymax = 1.77 G's @ 0.0638 Seconds





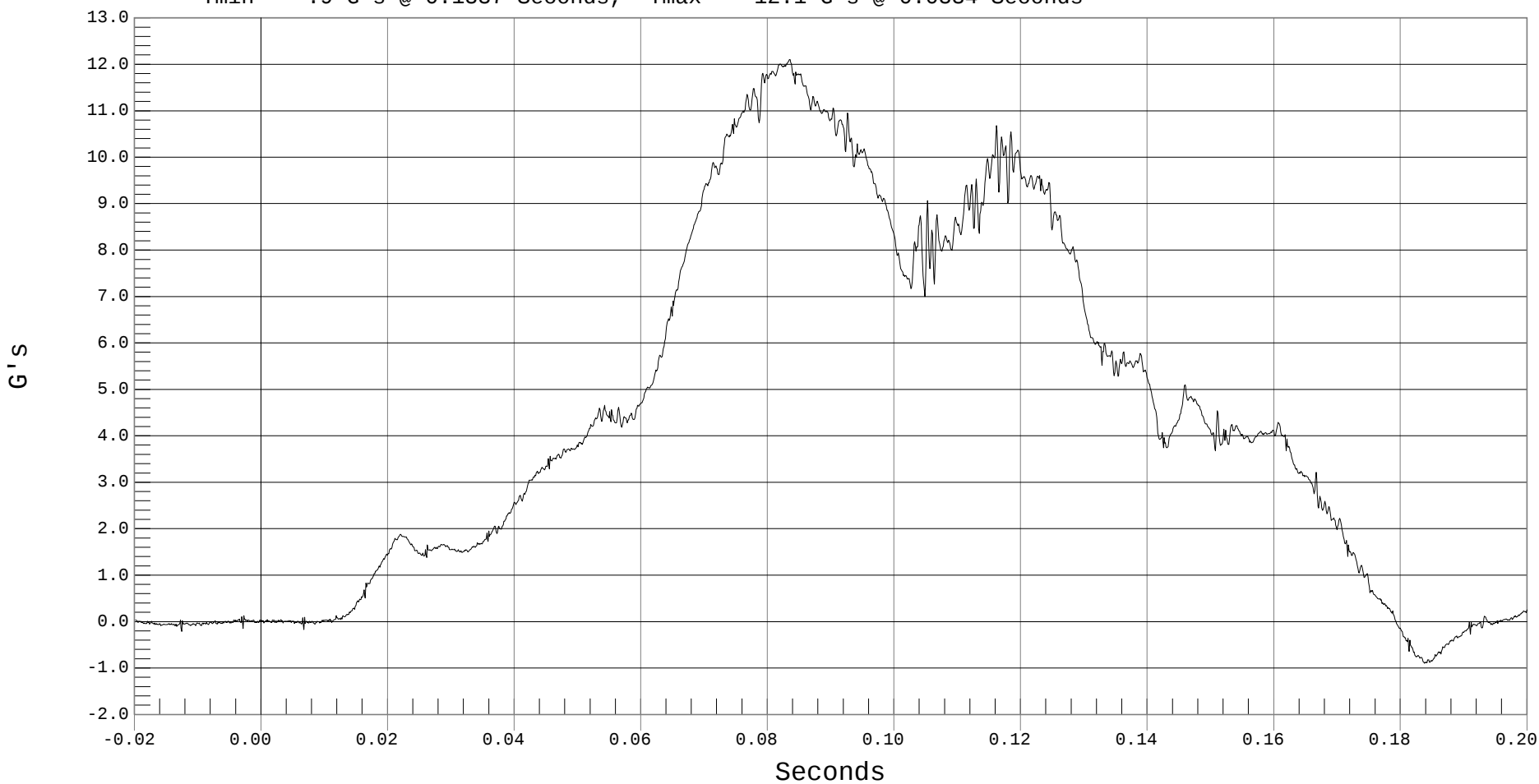
RIGHT REAR PELVIS Y ACCELERATION

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 1000

— 1 RIGHT REAR CHILD PELVIS Y, B01074AT.A07

Ymin = -0.9 G's @ 0.1837 Seconds, Ymax = 12.1 G's @ 0.0834 Seconds





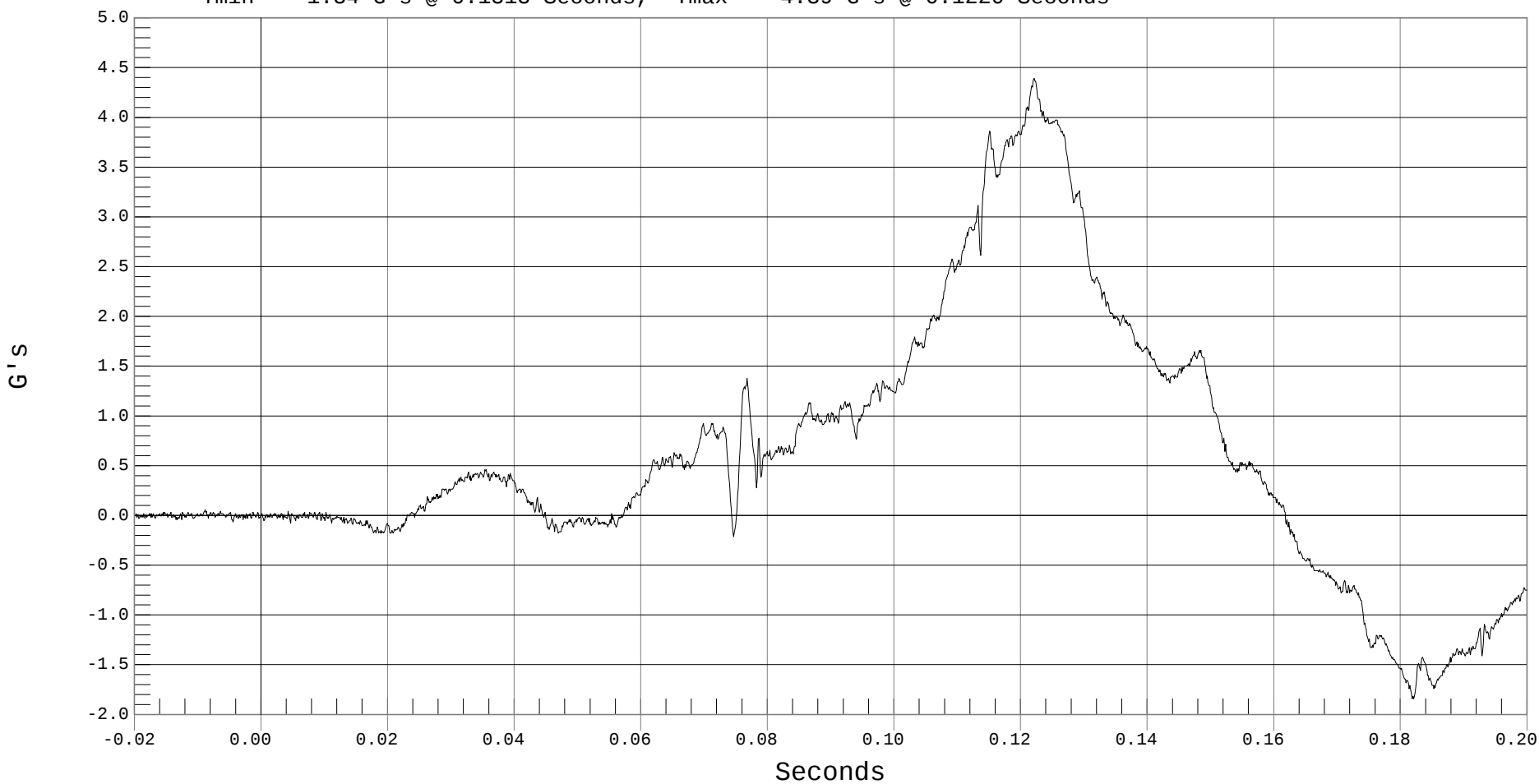
RIGHT REAR PELVIS Z ACCELERATION

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 1000

— 1 RIGHT REAR CHILD PELVIS Z, B01074AT.A08

Ymin = -1.84 G's @ 0.1818 Seconds, Ymax = 4.39 G's @ 0.1220 Seconds





RIGHT SIDE SILL AT FRONT SEAT X ACCELERATION

Test Desc.: RIGID POLE SIDE IMPACT

Component: 2001 SATURN L200 4 DOOR

Other Info:

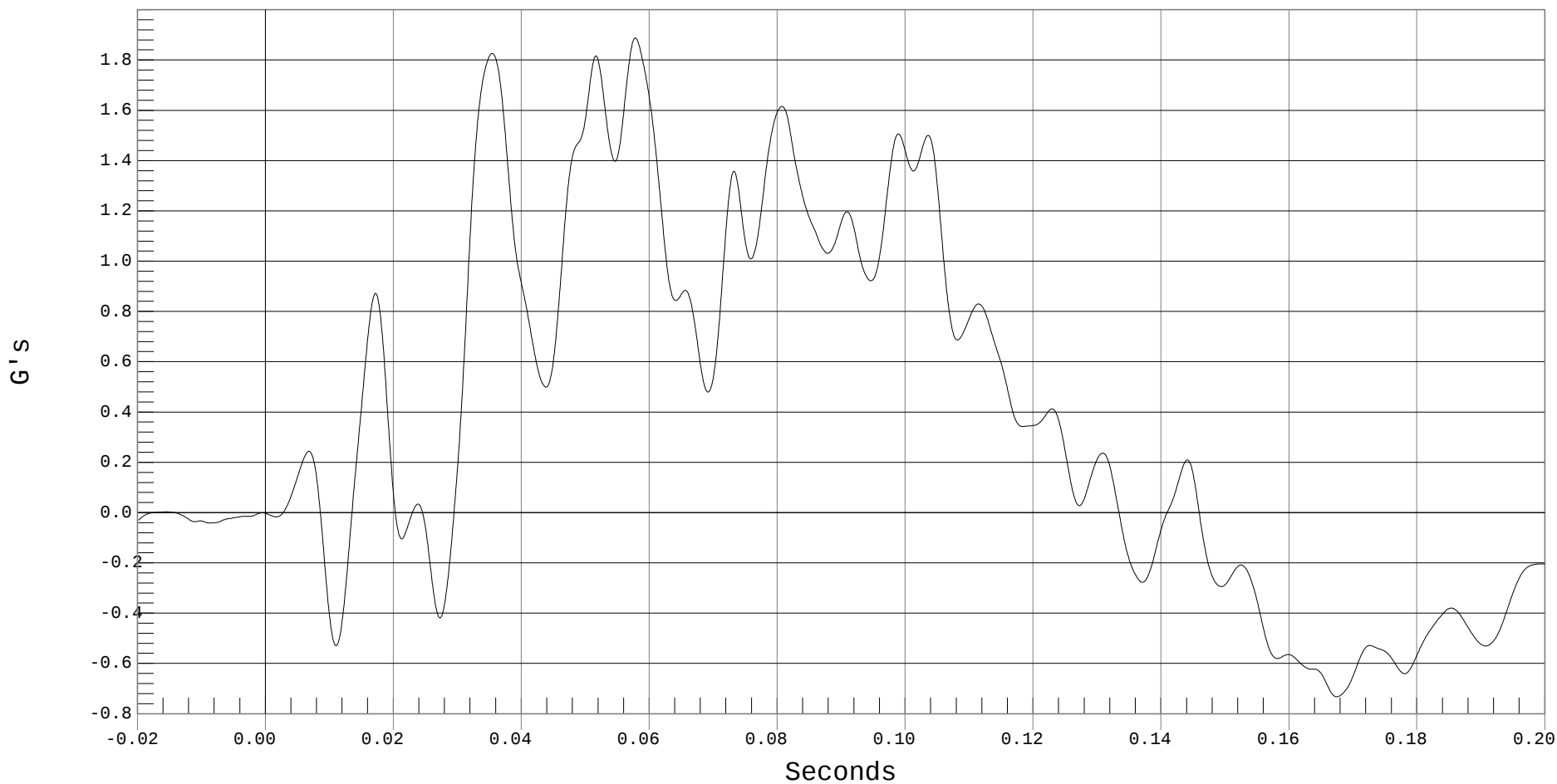
Test Date: 07-10-01

Speed: 17.4 MPH, 28.0 KPH

Filter Class: 60

— 1 RIGHT FRONT SILL X, B01074AF.A25

Ymin = -.73 G's @ 0.1674 Seconds, Ymax = 1.89 G's @ 0.0577 Seconds





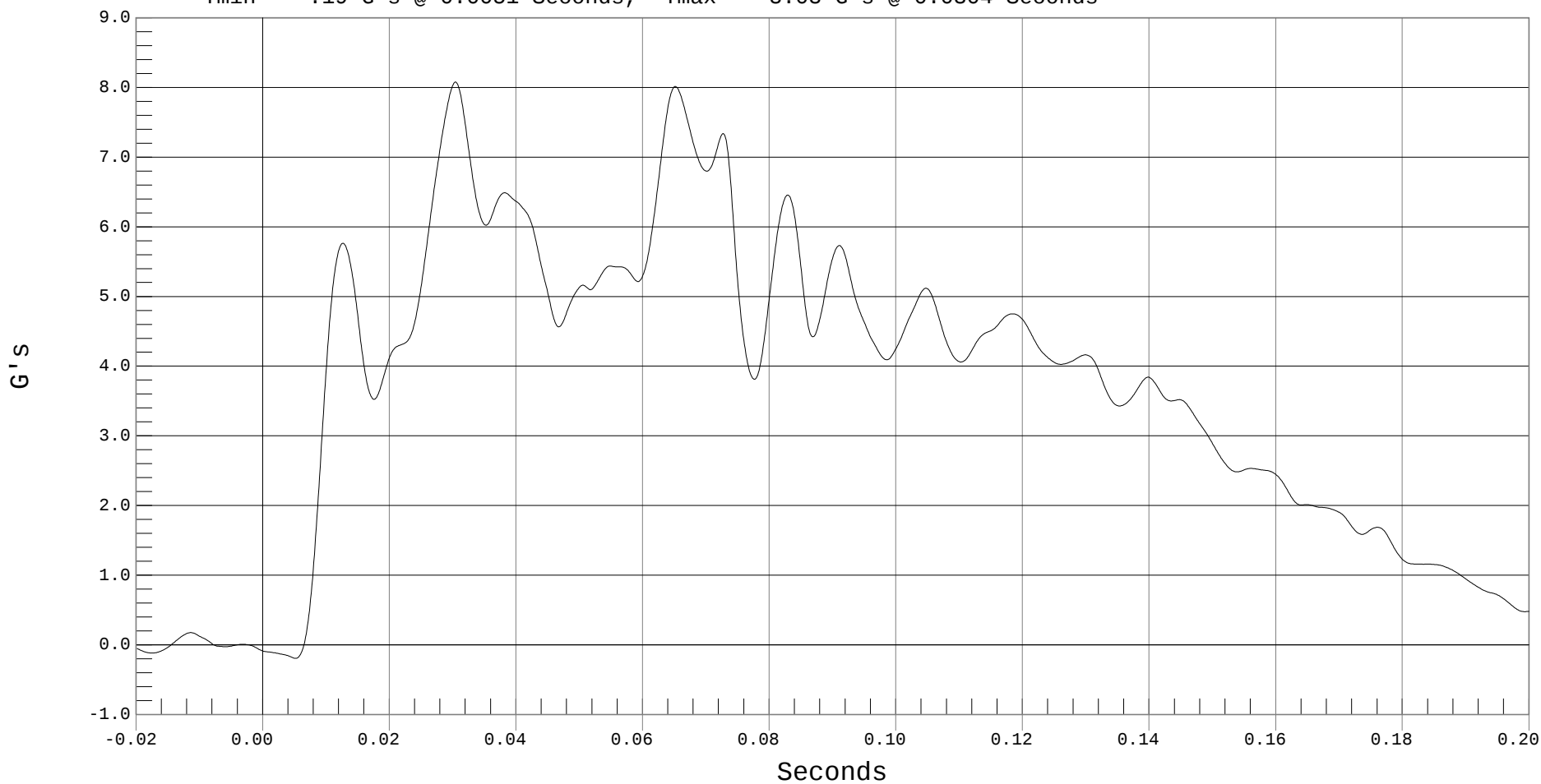
RIGHT SIDE SILL AT FRONT SEAT Y ACCELERATION

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 60

— 1 RIGHT FRONT SILL Y, B01074AF.A26

Ymin = -.19 G's @ 0.0051 Seconds, Ymax = 8.08 G's @ 0.0304 Seconds





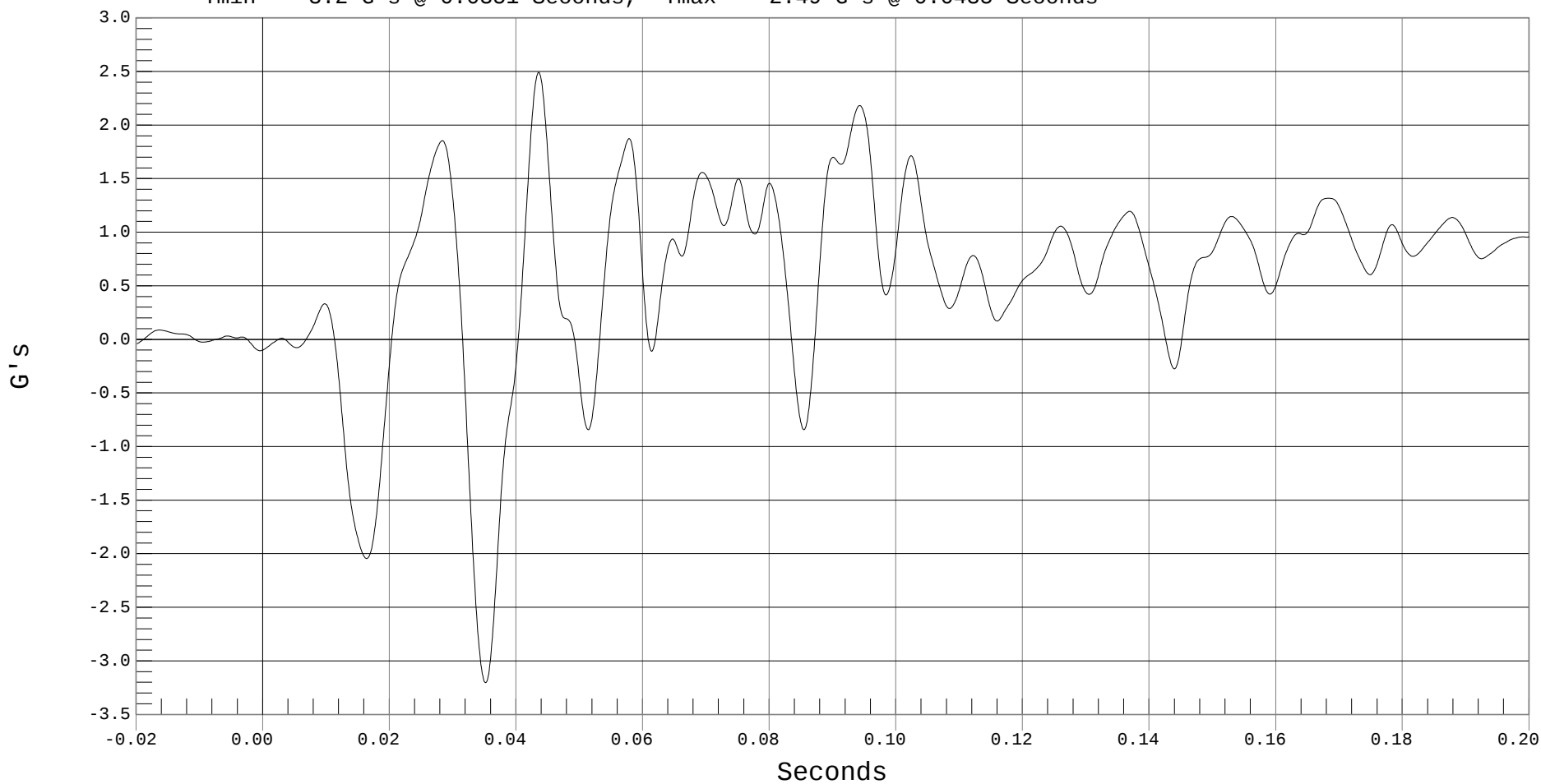
RIGHT SIDE SILL AT FRONT SEAT Z ACCELERATION

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 60

— 1 RIGHT FRONT SILL Z, B01074AF.A27

Ymin = -3.2 G's @ 0.0351 Seconds, Ymax = 2.49 G's @ 0.0435 Seconds





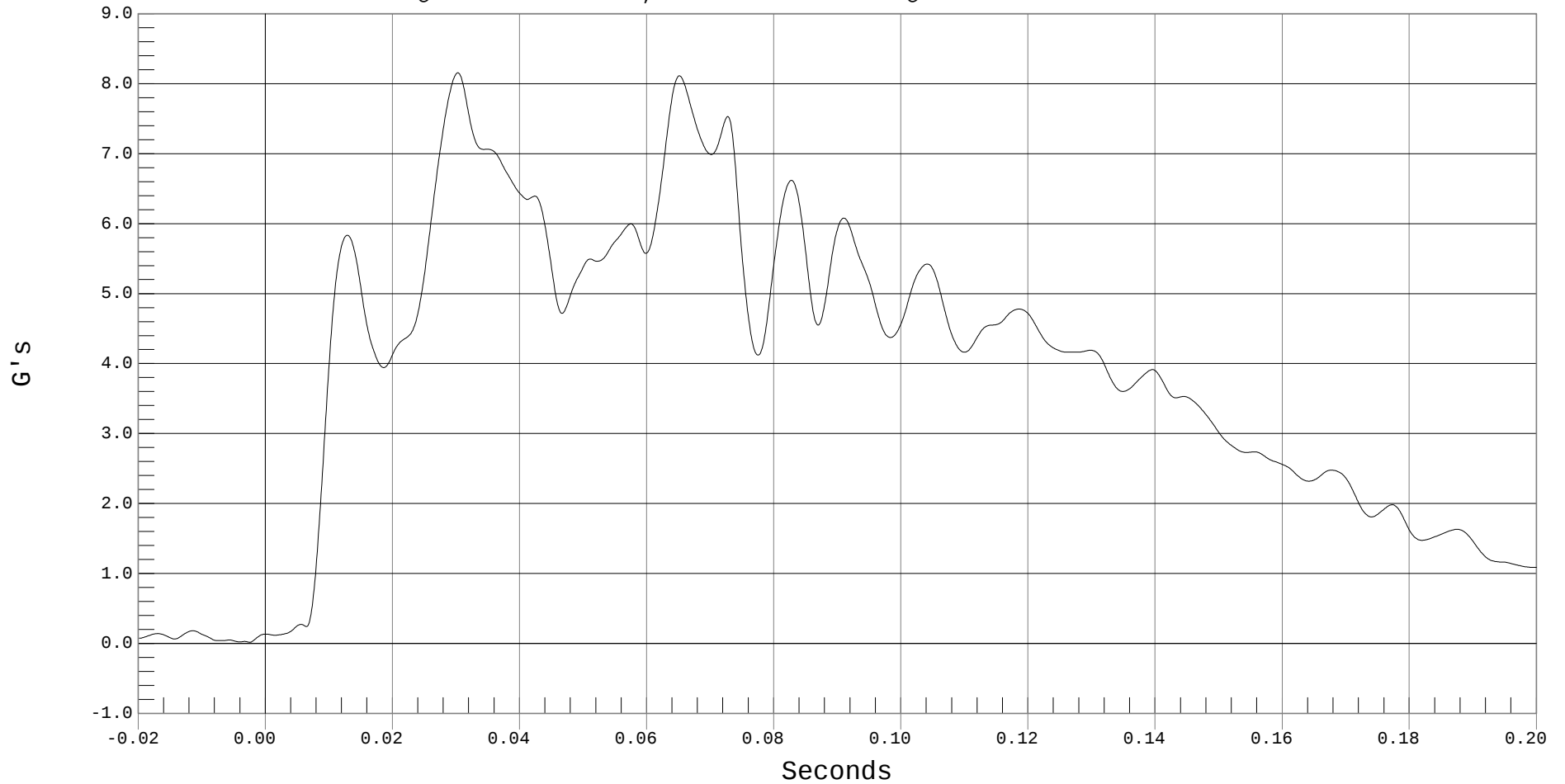
RIGHT SIDE SILL AT FRONT SEAT RESULTANT ACCELERATION

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 60

— 1 RIGHT FRONT SILL RESULTANT ACCELERATION, B01074AV.A25

Ymin = .02 G's @ -0.0025 Seconds, Ymax = 8.16 G's @ 0.0302 Seconds





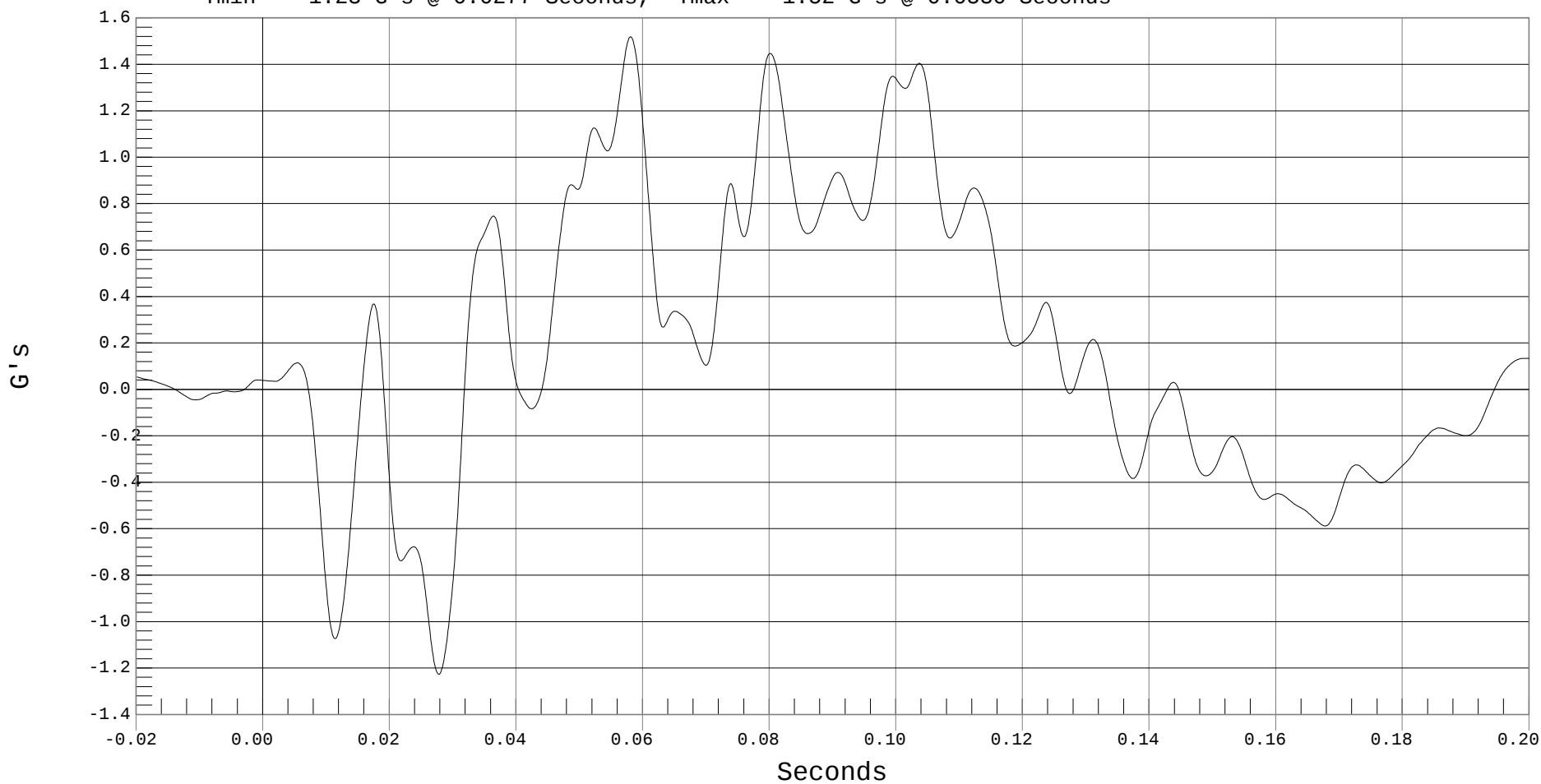
RIGHT SIDE SILL AT REAR SEAT X ACCELERATION

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 60

— 1 RIGHT REAR SILL X, B01074AF.A28

Ymin = -1.23 G's @ 0.0277 Seconds, Ymax = 1.52 G's @ 0.0580 Seconds





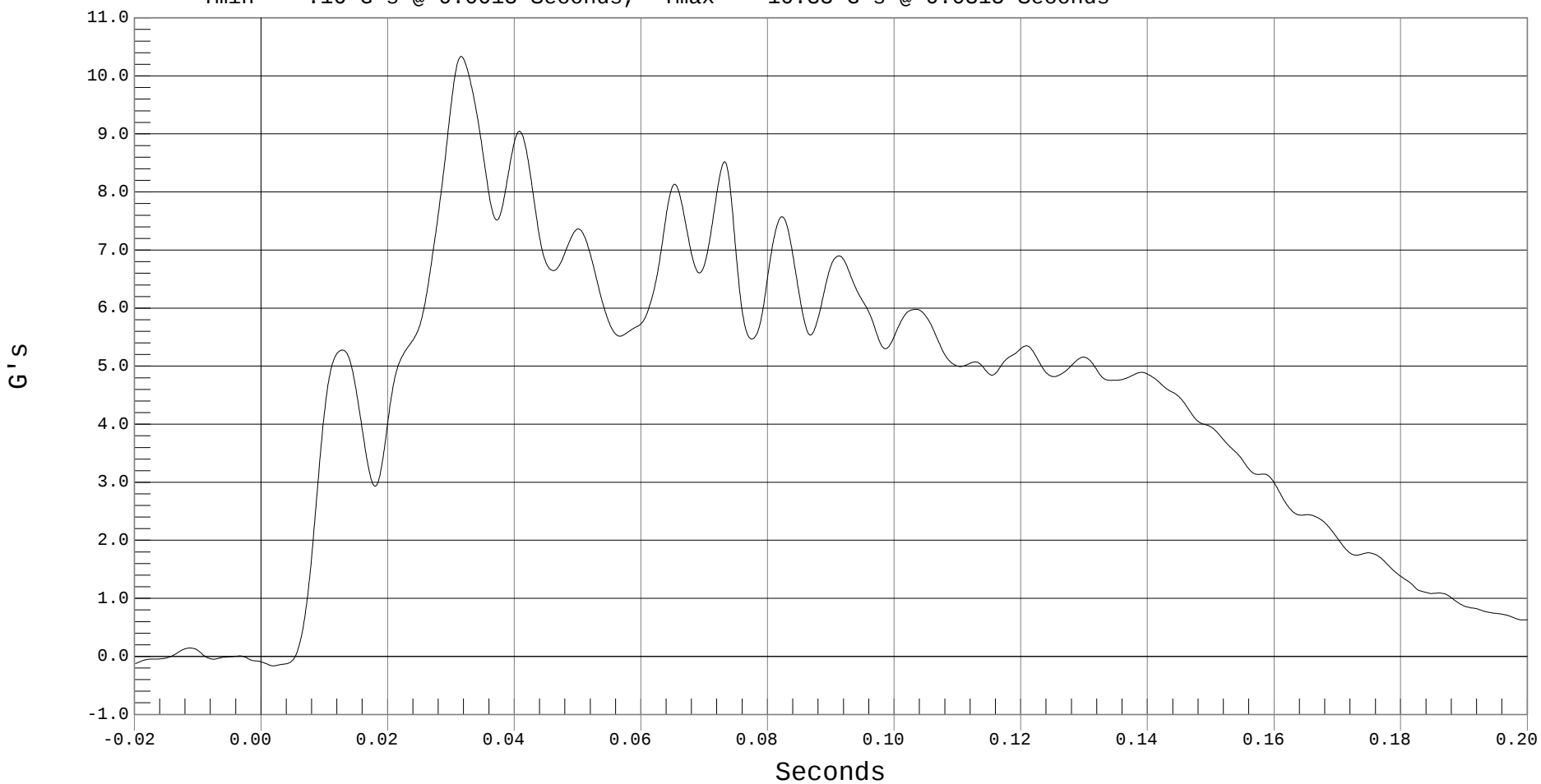
RIGHT SIDE SILL AT REAR SEAT Y ACCELERATION

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 60

— 1 RIGHT REAR SILL Y, B01074AF.A29

Ymin = -.16 G's @ 0.0018 Seconds, Ymax = 10.33 G's @ 0.0315 Seconds





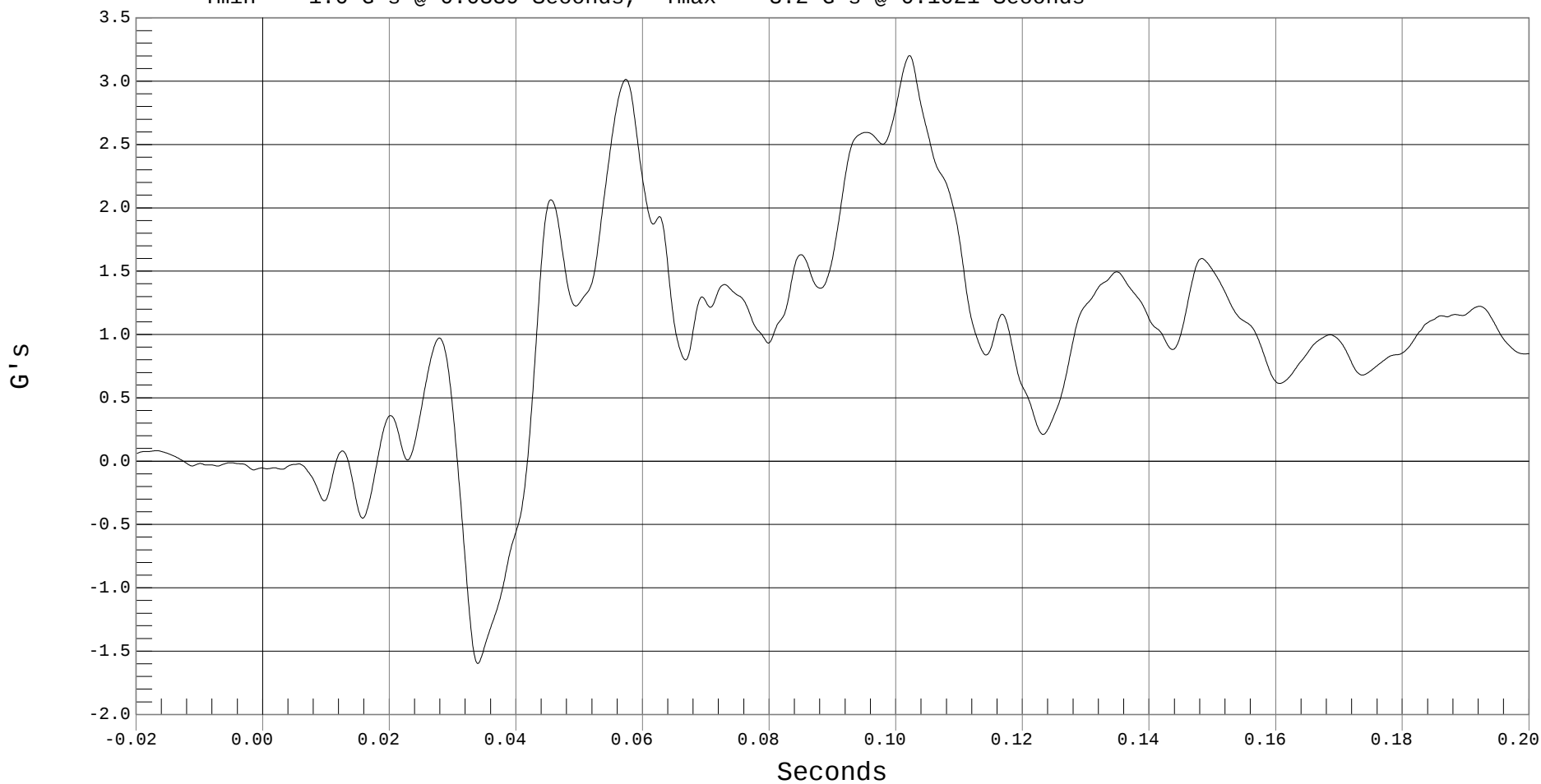
RIGHT SIDE SILL AT REAR SEAT Z ACCELERATION

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 60

— 1 RIGHT REAR SILL Z, B01074AF.A30

Ymin = -1.6 G's @ 0.0339 Seconds, Ymax = 3.2 G's @ 0.1021 Seconds





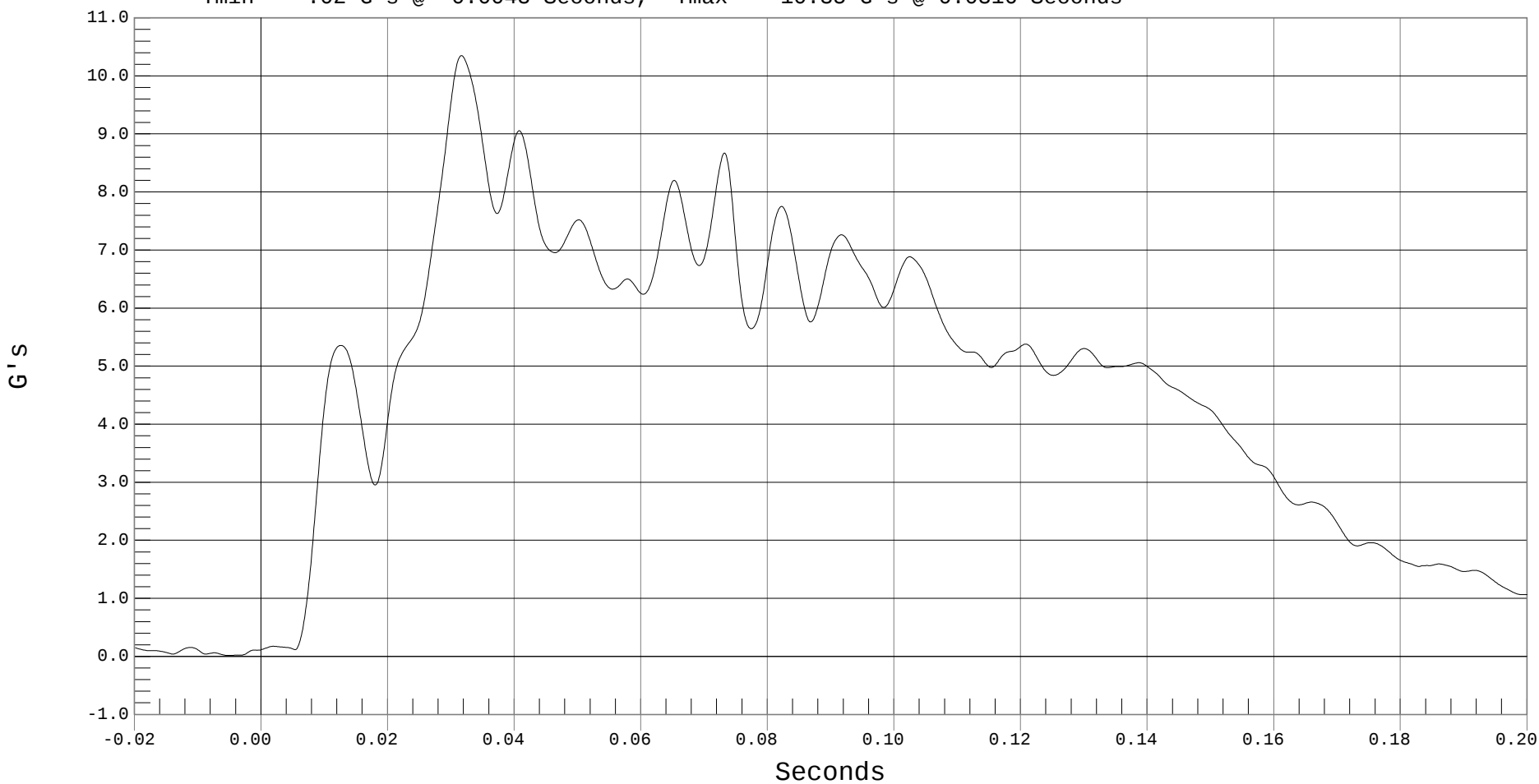
RIGHT SIDE SILL AT REAR SEAT RESULTANT ACCELERATION

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 60

— 1 RIGHT REAR SILL RESULTANT ACCELERATION, B01074AV.A28

Ymin = .02 G's @ -0.0048 Seconds, Ymax = 10.35 G's @ 0.0316 Seconds





REAR FLOORPAN ABOVE AXLE X ACCELERATION

Test Desc.: RIGID POLE SIDE IMPACT

Component: 2001 SATURN L200 4 DOOR

Other Info:

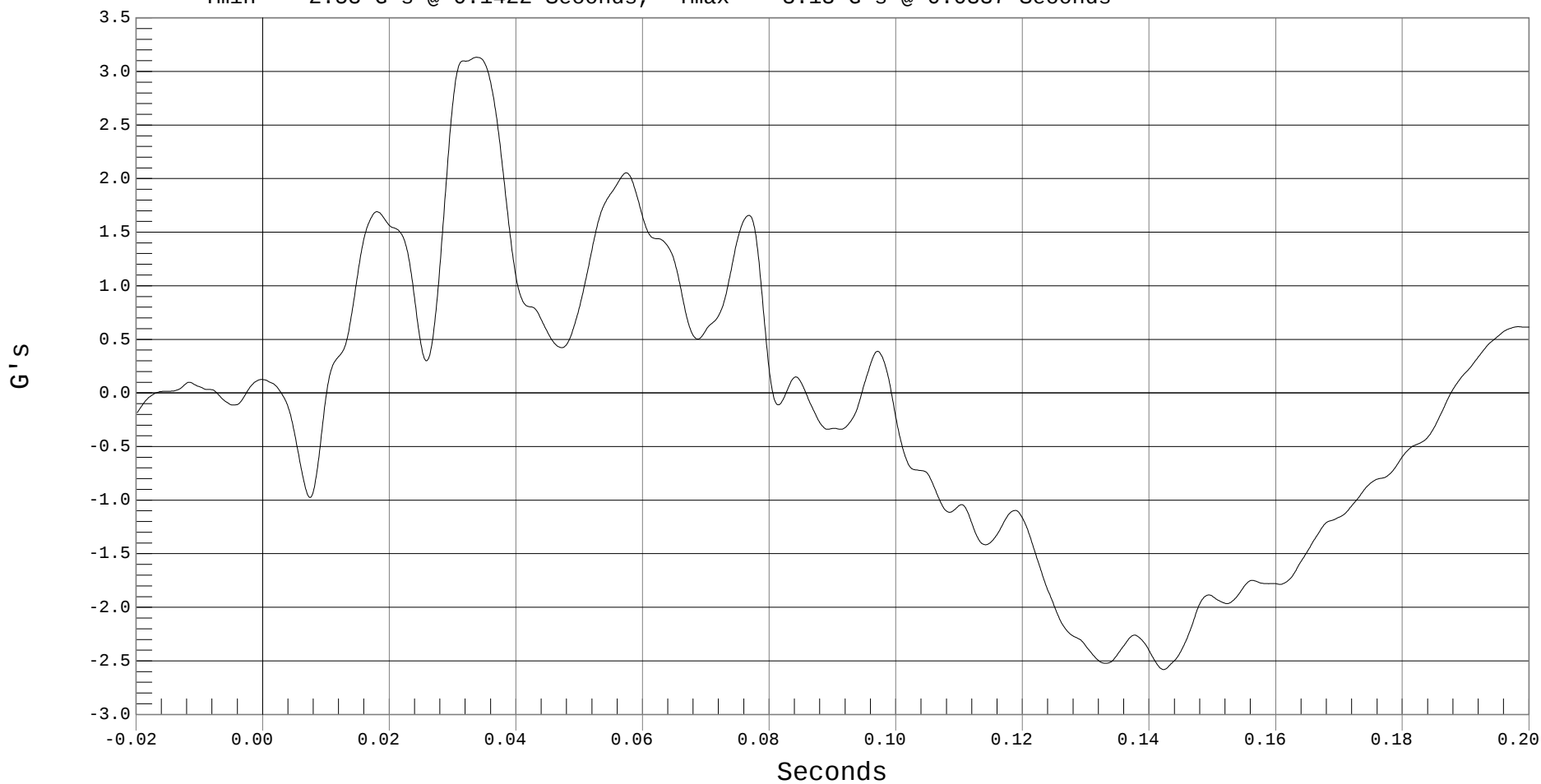
Test Date: 07-10-01

Speed: 17.4 MPH, 28.0 KPH

Filter Class: 60

— 1 FLOORPAN @ REAR AXLE X, B01074AF.A34

Ymin = -2.58 G's @ 0.1422 Seconds, Ymax = 3.13 G's @ 0.0337 Seconds





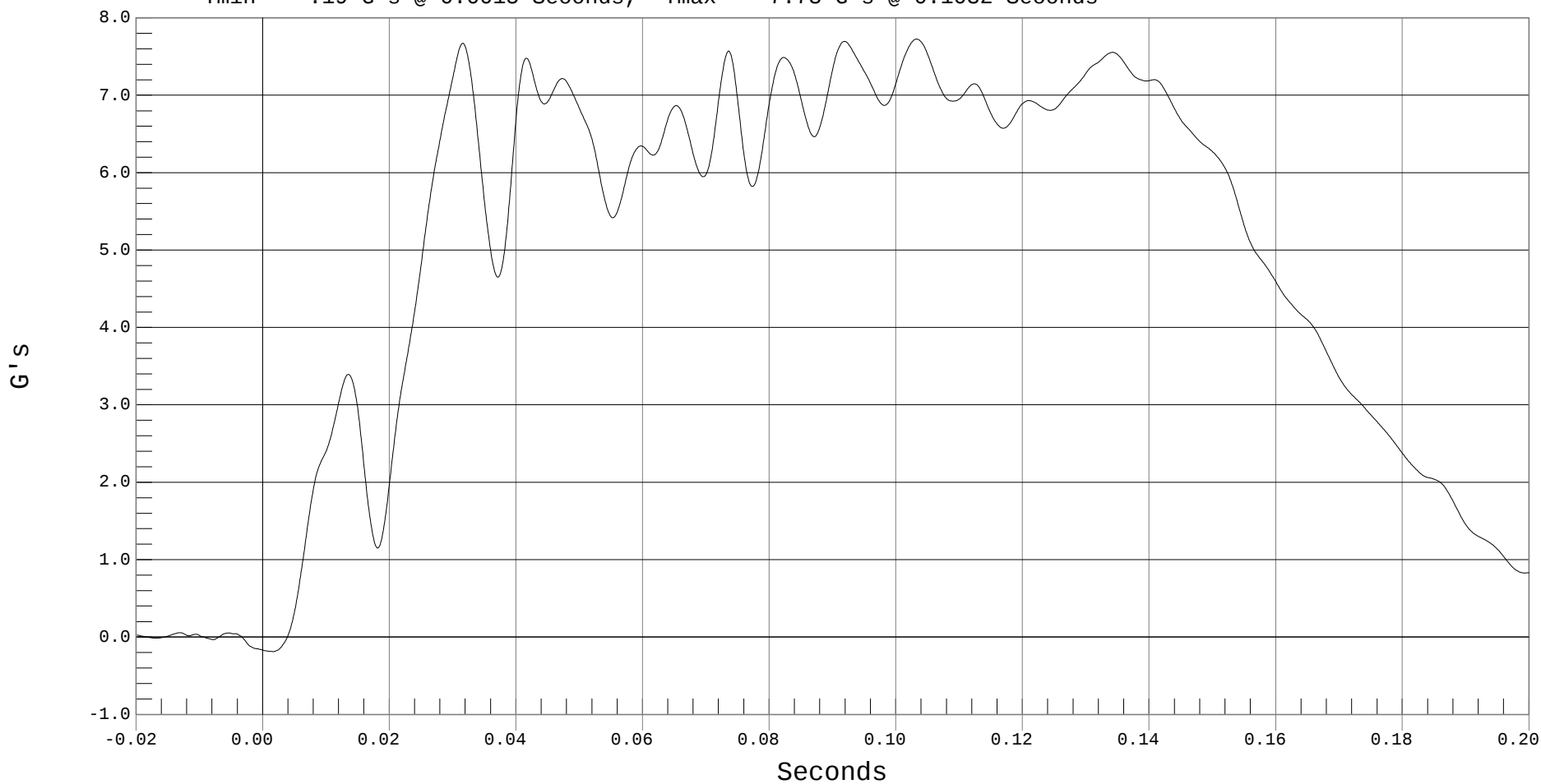
REAR FLOORPAN ABOVE AXLE Y ACCELERATION

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 60

— 1 FLOORPAN @ REAR AXLE Y, B01074AF.A35

Ymin = -.19 G's @ 0.0015 Seconds, Ymax = 7.73 G's @ 0.1032 Seconds





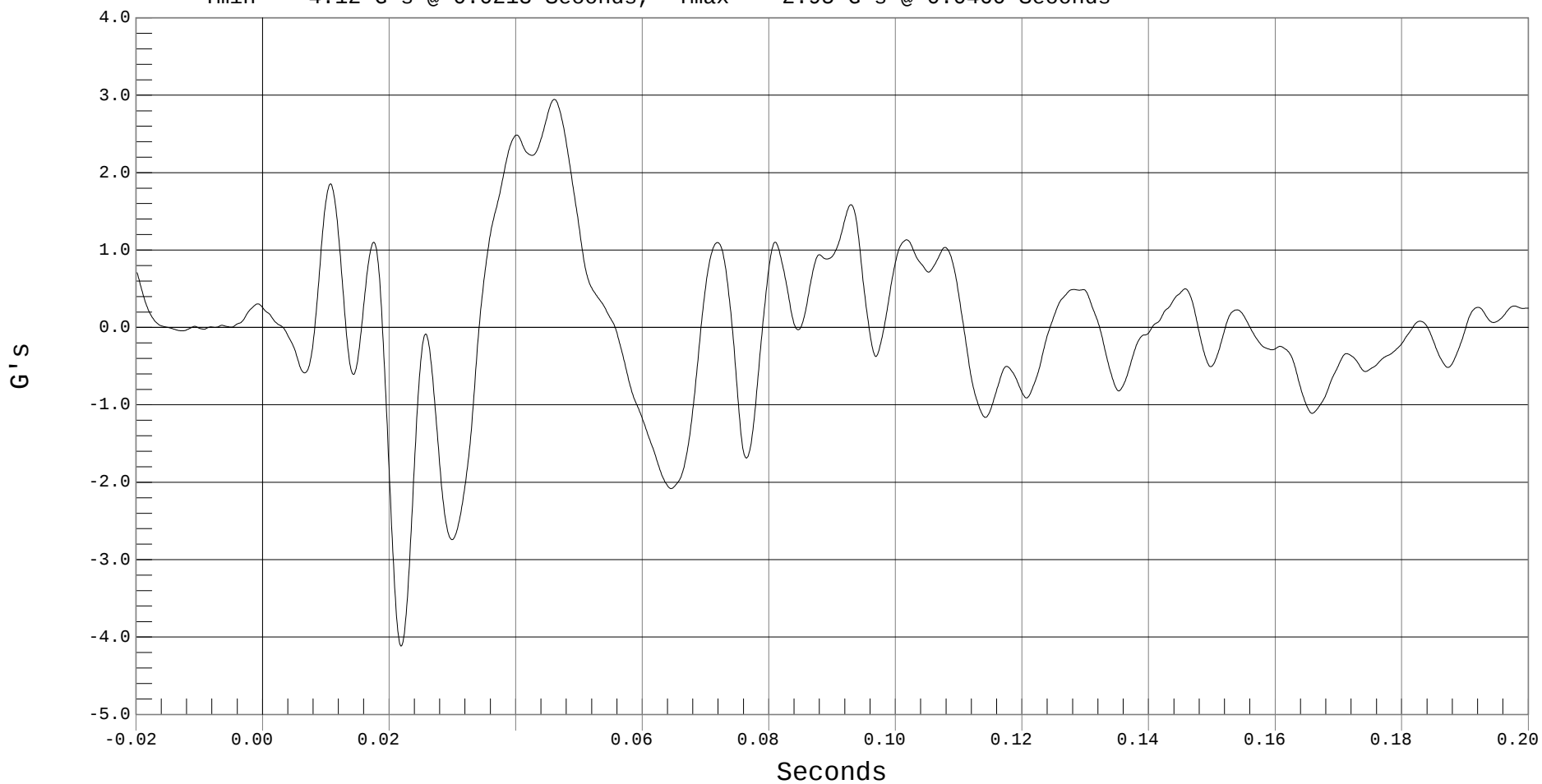
REAR FLOORPAN ABOVE AXLE Z ACCELERATION

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 60

— 1 FLOORPAN @ REAR AXLE Z, B01074AF.A36

Ymin = -4.12 G's @ 0.0218 Seconds, Ymax = 2.95 G's @ 0.0460 Seconds





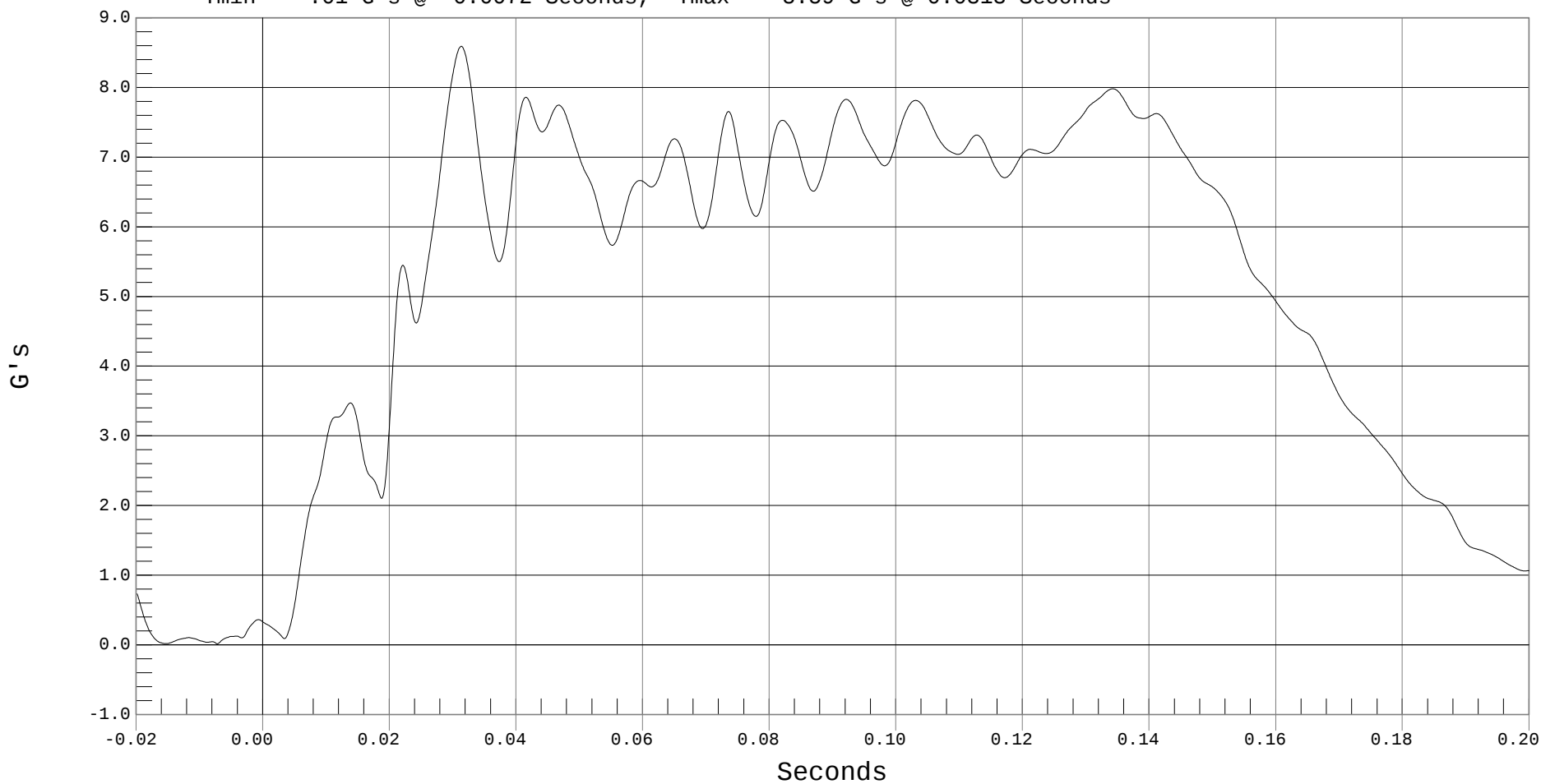
REAR FLOORPAN ABOVE AXLE RESULTANT ACCELERATION

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 60

— 1 FLOORPAN @ REAR AXLE ACCELERATION, B01074AV.A34

Ymin = .01 G's @ -0.0072 Seconds, Ymax = 8.59 G's @ 0.0313 Seconds





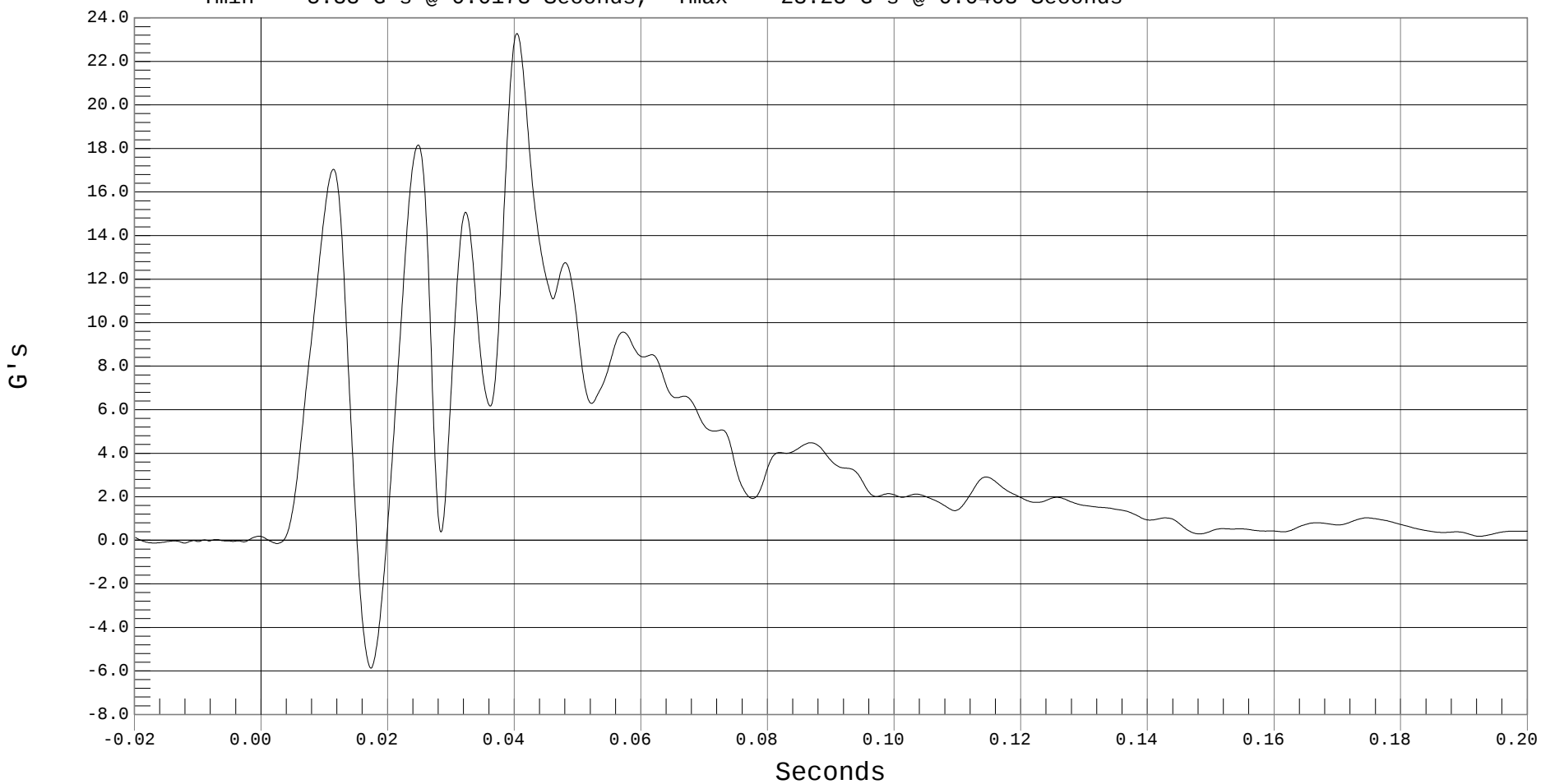
LEFT SIDE SILL AT FRONT SEAT Y ACCELERATION

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 60

— 1 LEFT FRONT SILL Y, B01074AF.A31

Ymin = -5.88 G's @ 0.0173 Seconds, Ymax = 23.28 G's @ 0.0403 Seconds





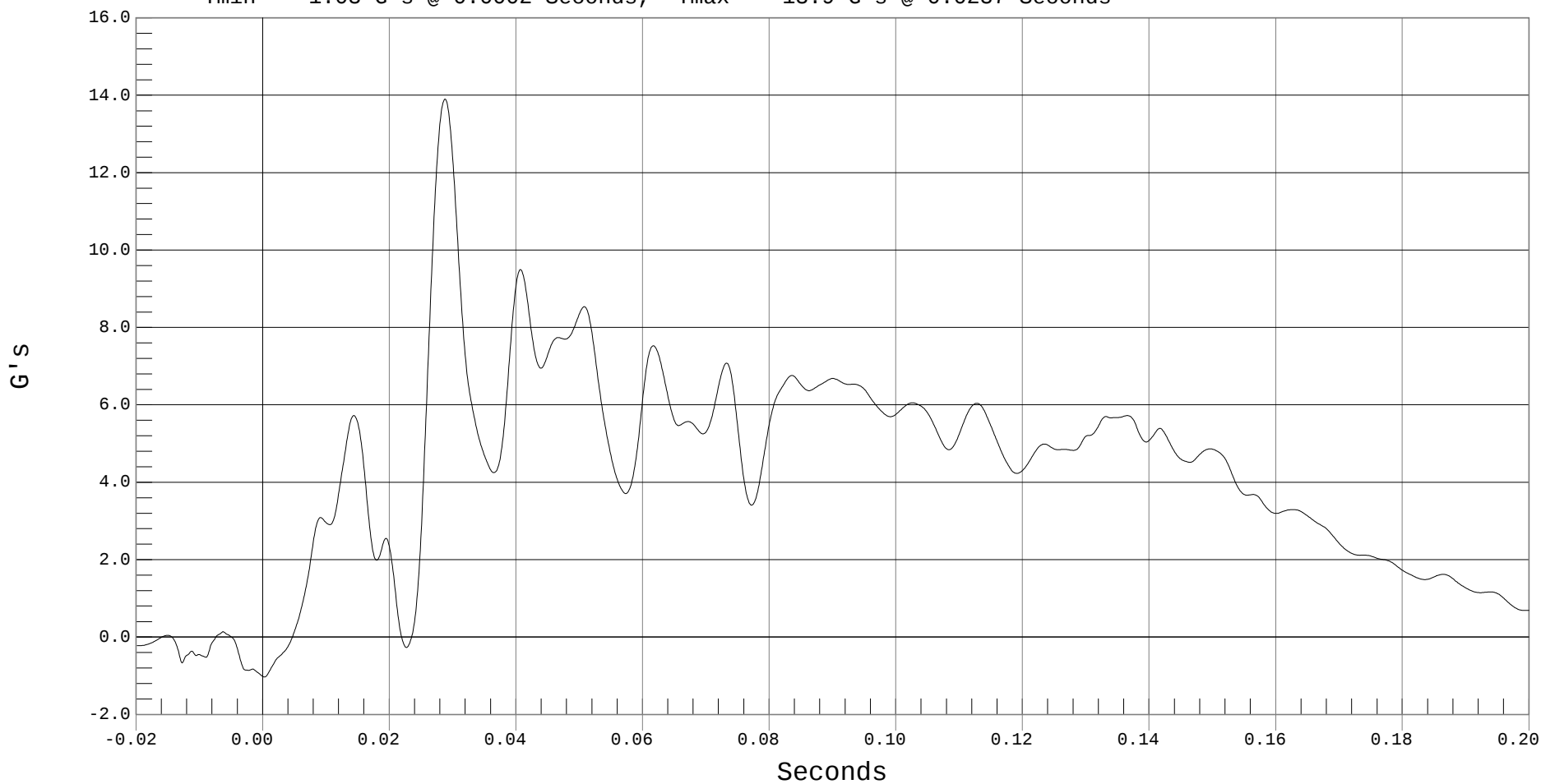
LEFT SIDE SILL AT REAR SEAT Y ACCELERATION

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 60

— 1 LEFT REAR SILL Y, B01074AF.A33

Ymin = -1.03 G's @ 0.0002 Seconds, Ymax = 13.9 G's @ 0.0287 Seconds





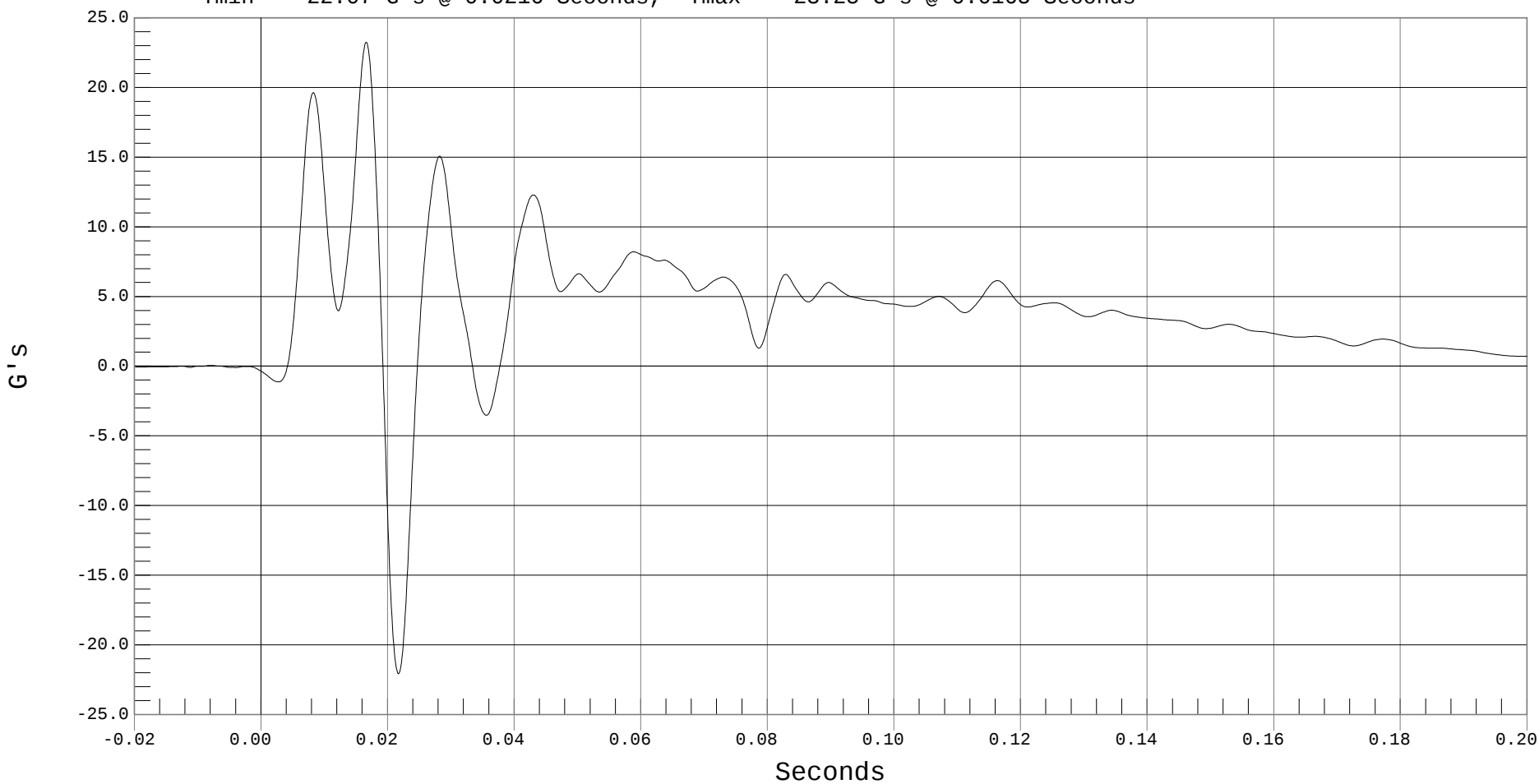
LEFT LOWER A-POST Y ACCELERATION

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 60

— 1 LEFT LOWER A-POST Y, B01074AF.A38

Ymin = -22.07 G's @ 0.0216 Seconds, Ymax = 23.25 G's @ 0.0165 Seconds





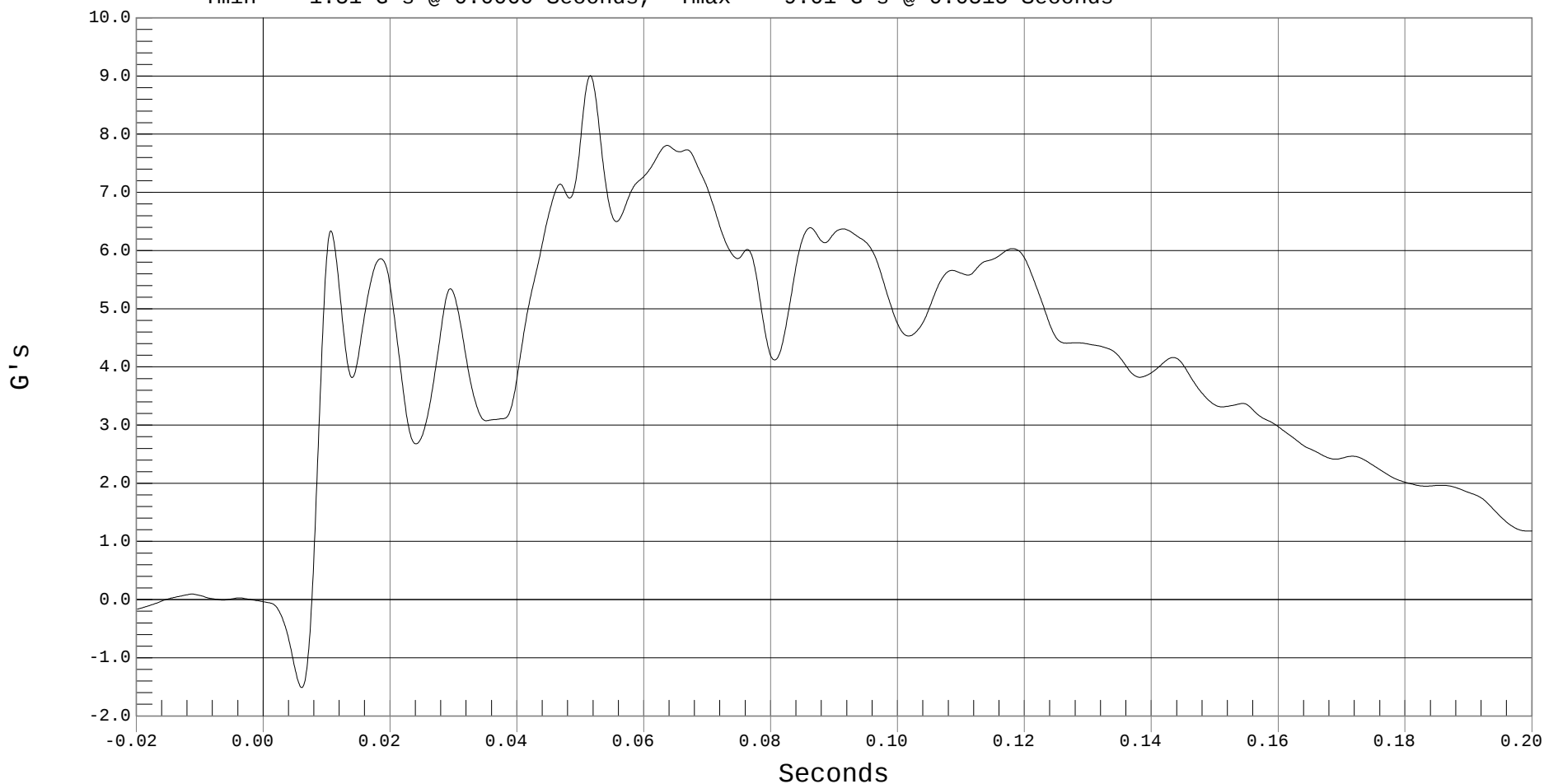
LEFT MID A-POST Y ACCELERATION

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 60

— 1 LEFT MID A-POST Y, B01074AF.A37

Ymin = -1.51 G's @ 0.0060 Seconds, Ymax = 9.01 G's @ 0.0515 Seconds





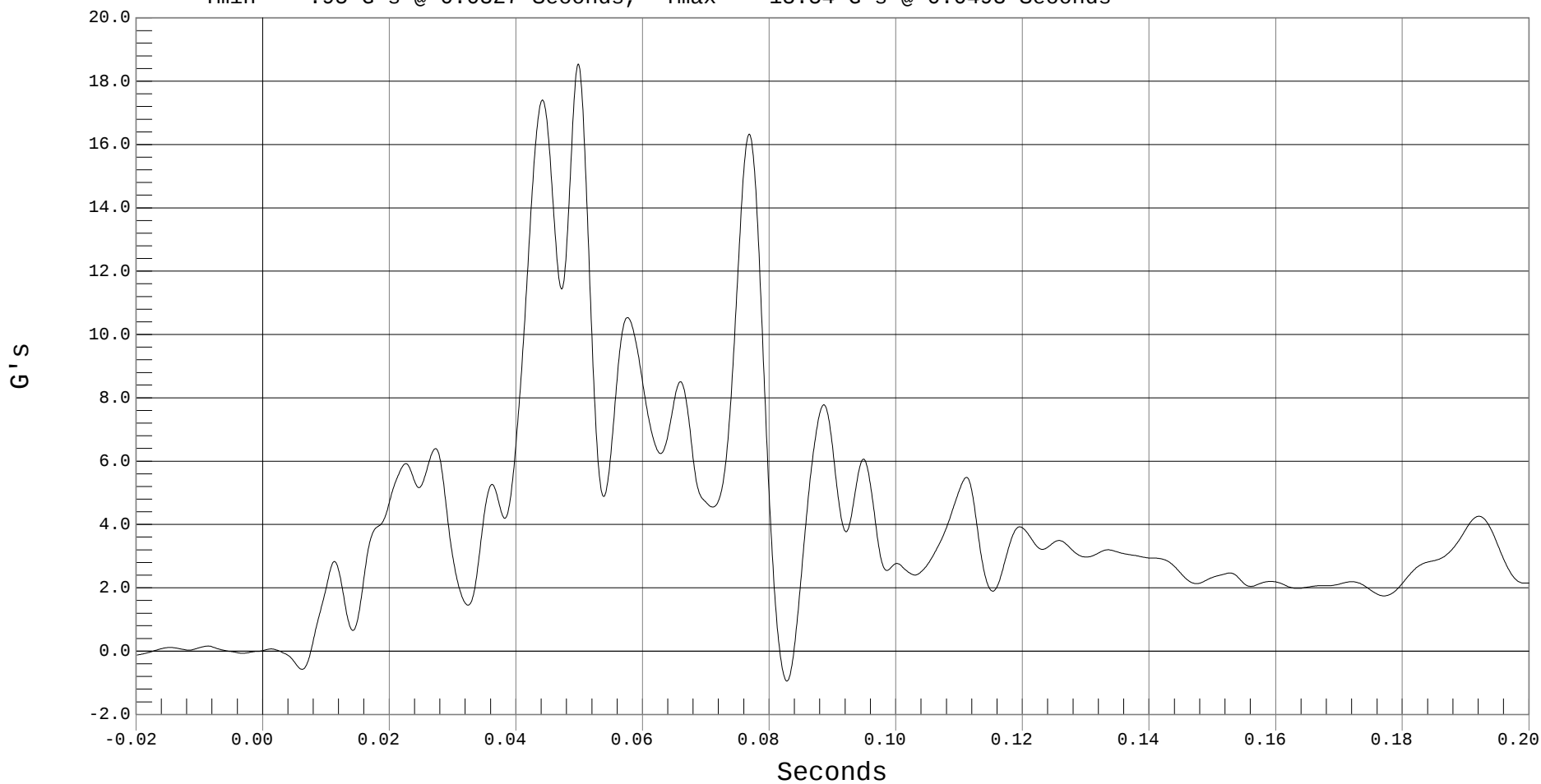
LEFT A PILLAR @ ROOF Y ACCELERATION

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 60

— 1 LEFT A PILLAR @ ROOF Y, B01074AF.A47

Ymin = -.95 G's @ 0.0827 Seconds, Ymax = 18.54 G's @ 0.0498 Seconds





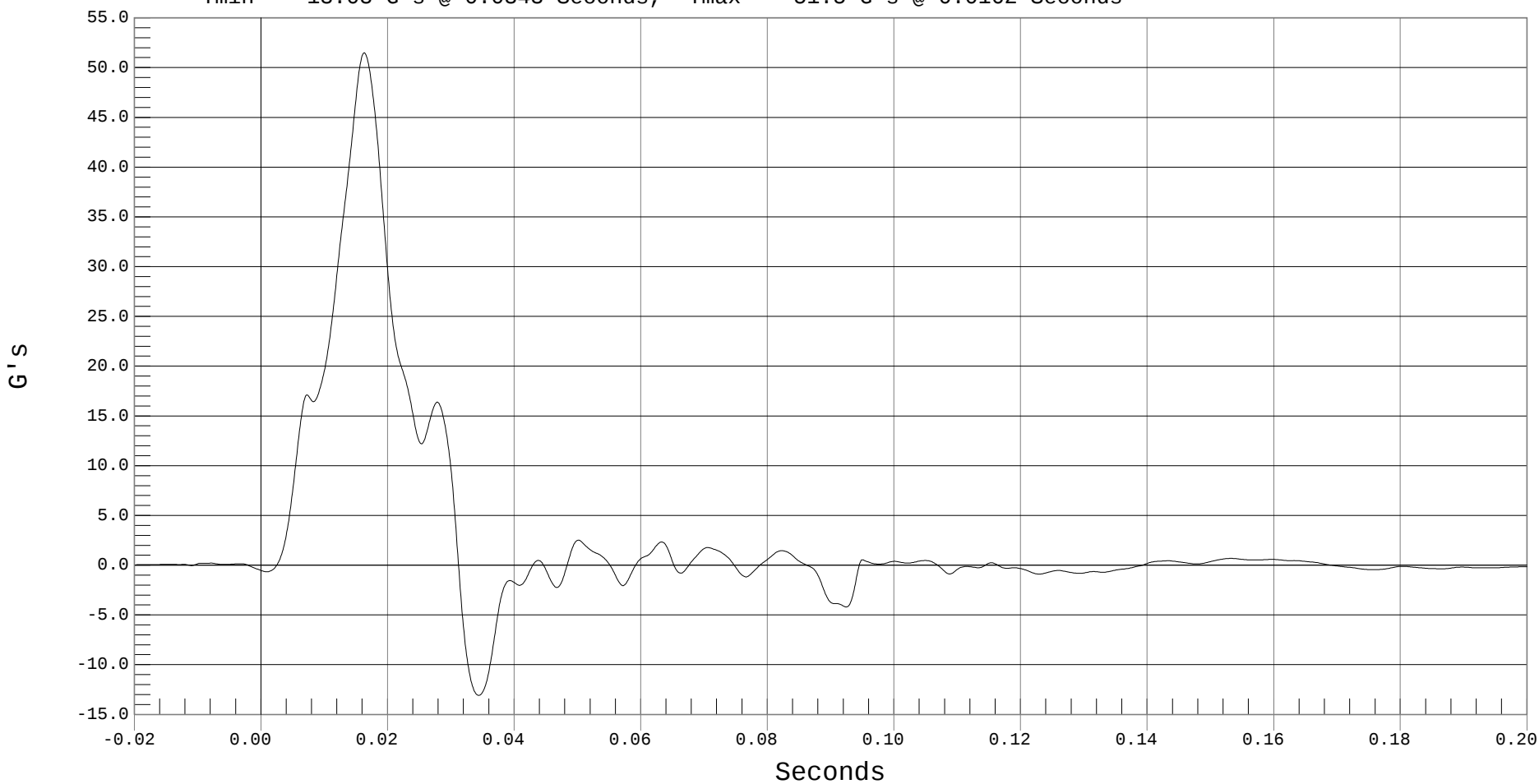
LEFT LOWER B-POST Y ACCELERATION

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 60

— 1 LOWER B-POST Y, B01074AF.A41

Ymin = -13.08 G's @ 0.0343 Seconds, Ymax = 51.5 G's @ 0.0162 Seconds





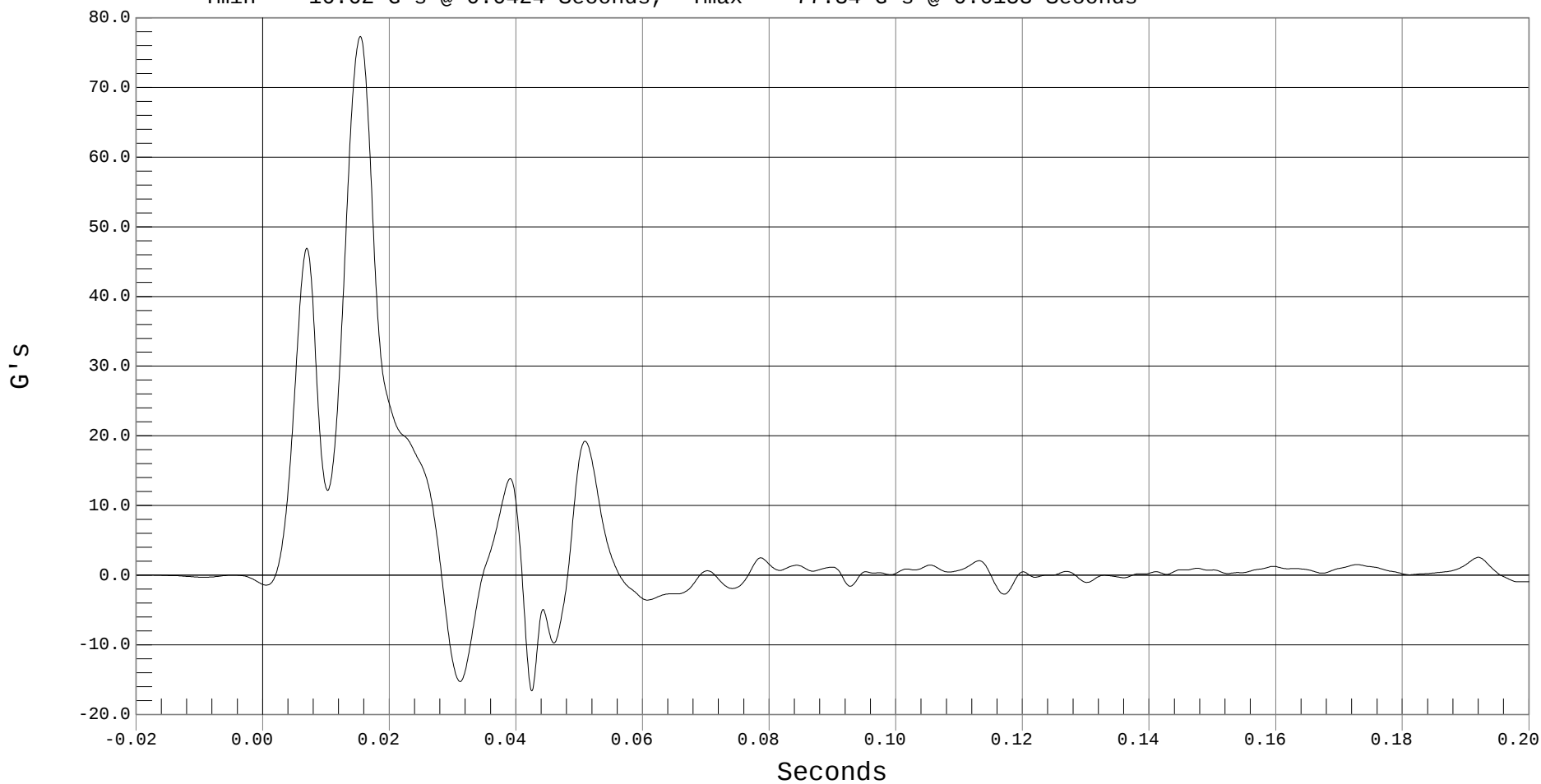
LEFT MID B-POST Y ACCELERATION

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 60

— 1 LEFT MID B-POST Y, B01074AF.A40

Ymin = -16.62 G's @ 0.0424 Seconds, Ymax = 77.34 G's @ 0.0153 Seconds





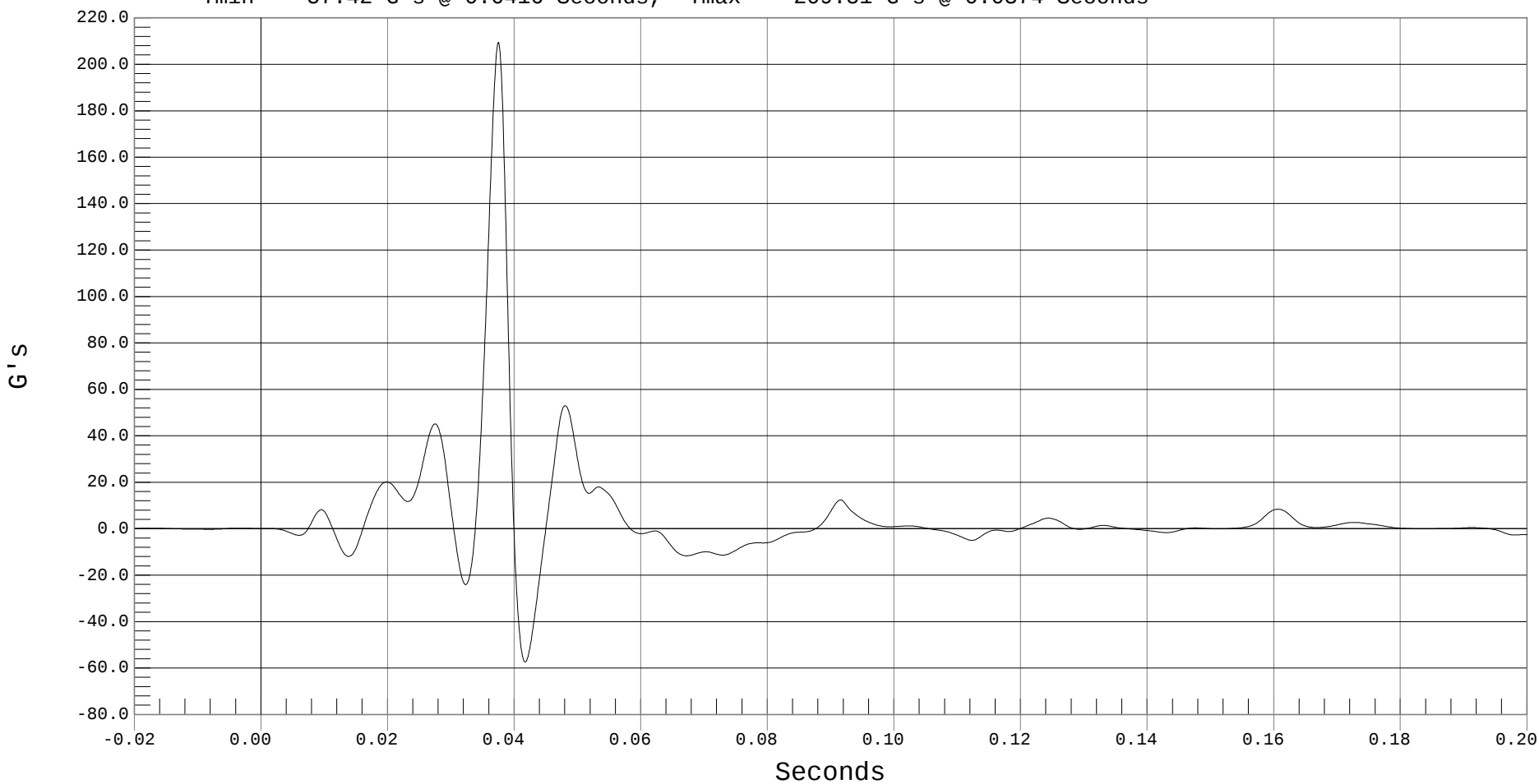
LEFT UPPER B-POST Y ACCELERATION

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 60

1 LEFT UPPER B-POST Y, B01074AF.A39

Ymin = -57.42 G's @ 0.0416 Seconds, Ymax = 209.51 G's @ 0.0374 Seconds





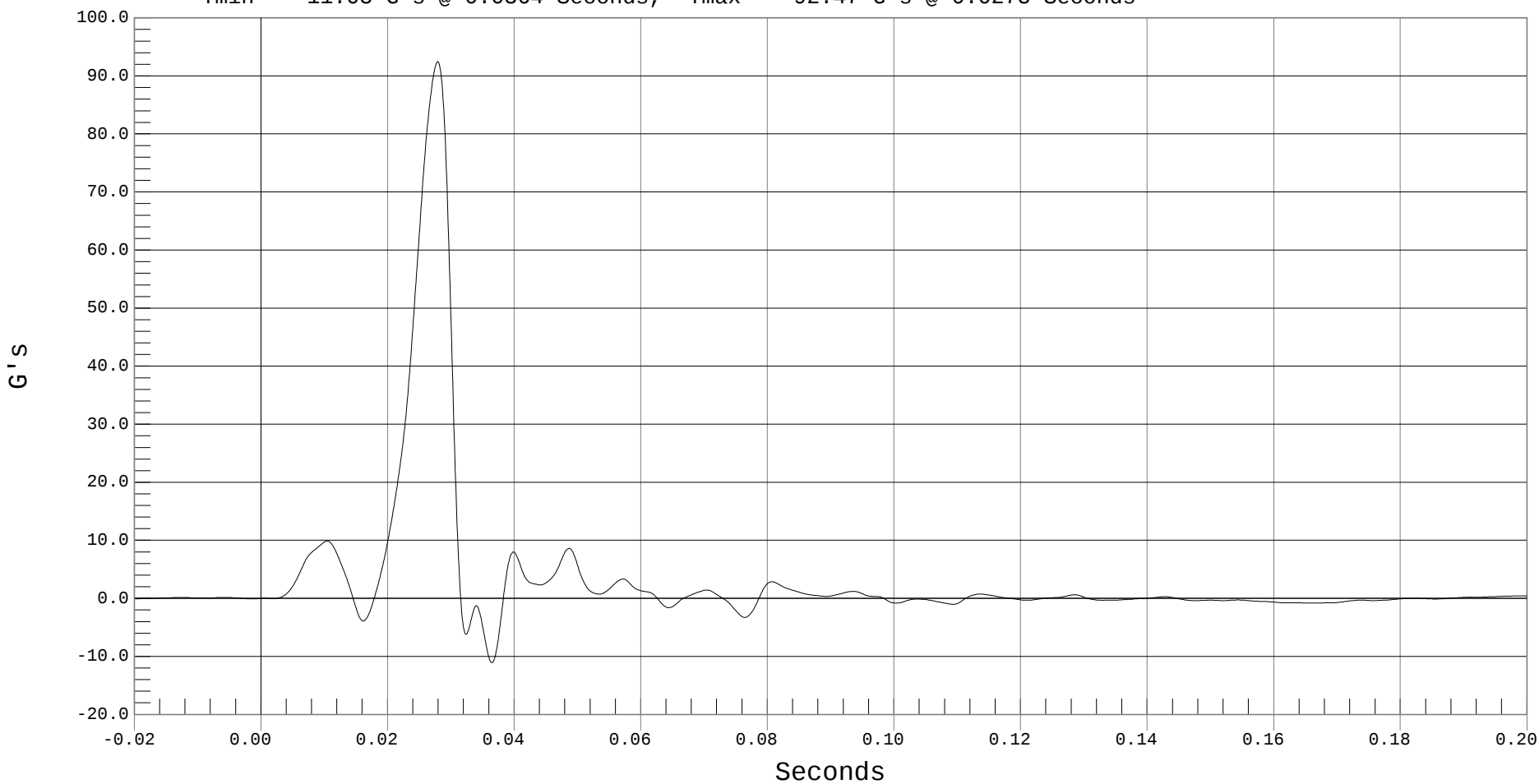
LEFT DRIVER SEAT TRACK Y ACCELERATION

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 60

— 1 DRIVER LEFT SEAT TRACK Y, B01074AF.A42

Ymin = -11.08 G's @ 0.0364 Seconds, Ymax = 92.47 G's @ 0.0278 Seconds





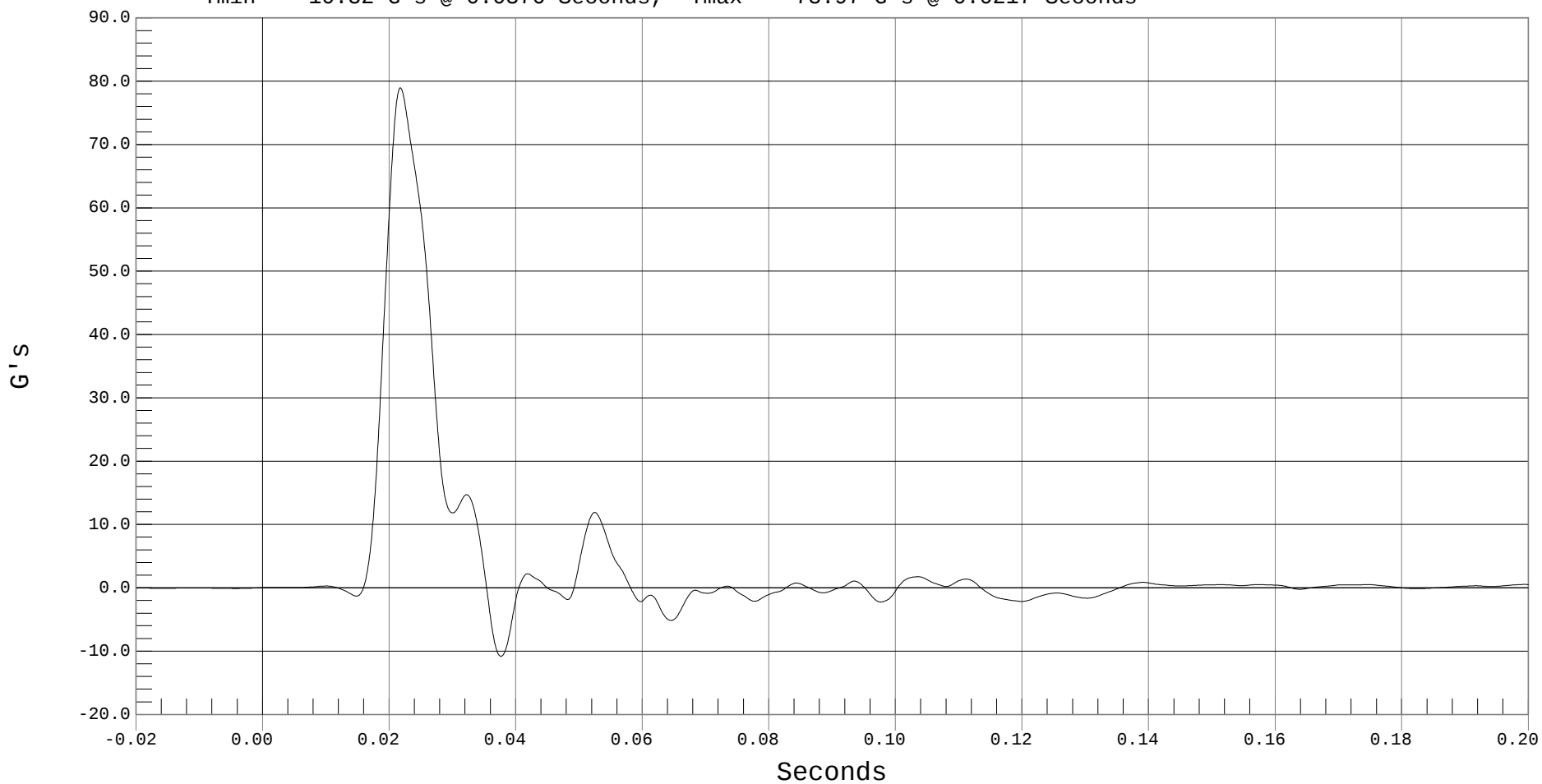
DRIVER LEFT SEAT FRAME Y ACCELERATION

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 60

— 1 DRIVER LEFT SEAT FRAME Y, B01074AF.A55

Ymin = -10.82 G's @ 0.0376 Seconds, Ymax = 78.97 G's @ 0.0217 Seconds





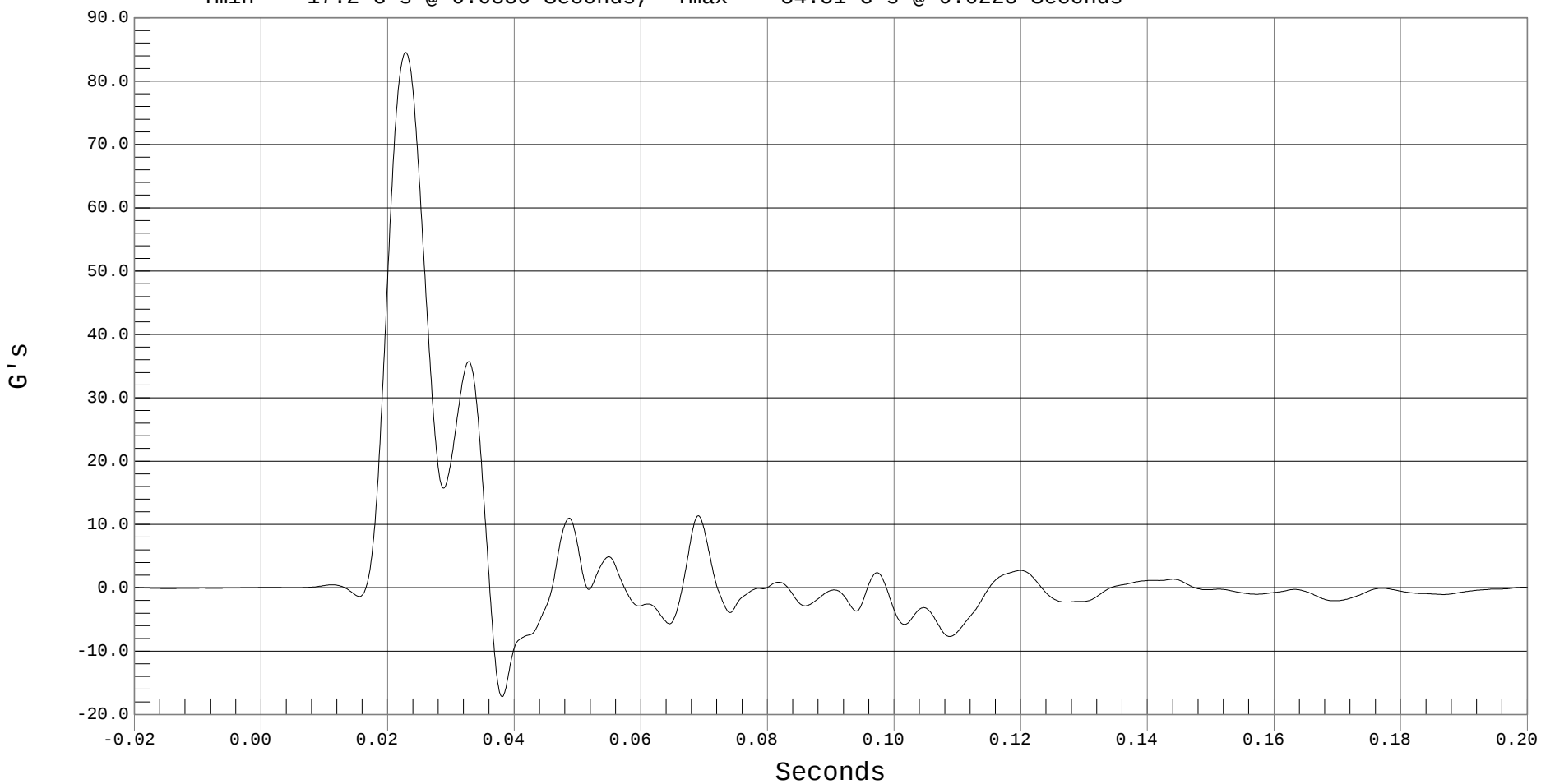
DRIVER RIGHT SEAT FRAME Y ACCELERATION

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 60

— 1 DRIVER RIGHT SEAT FRAME Y, B01074AF.A16

Ymin = -17.2 G's @ 0.0380 Seconds, Ymax = 84.51 G's @ 0.0228 Seconds





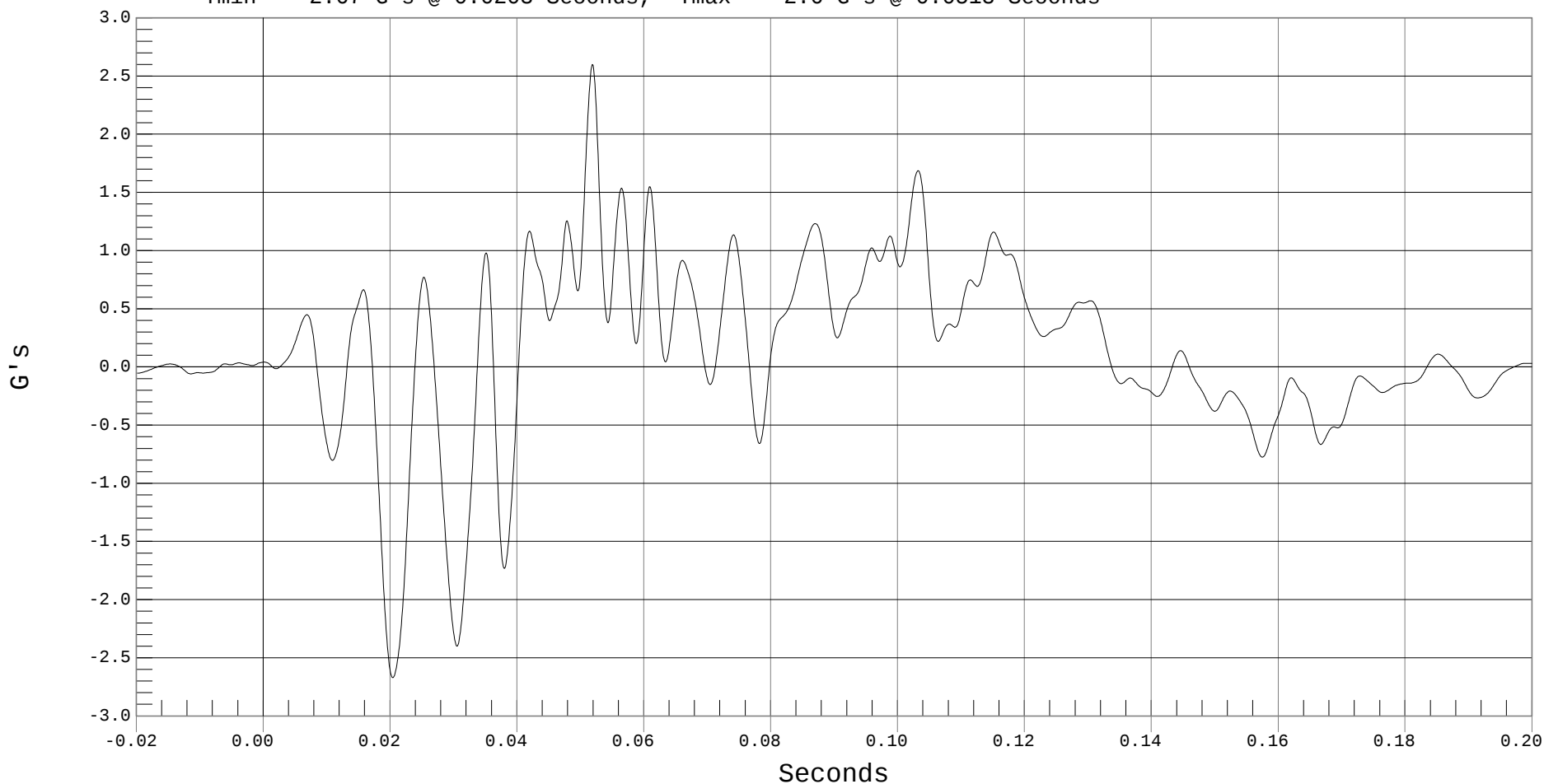
VEHICLE CG X ACCELERATION

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 60

— 1 VEHICLE CG X, B01074AF.A44

Ymin = -2.67 G's @ 0.0203 Seconds, Ymax = 2.6 G's @ 0.0518 Seconds





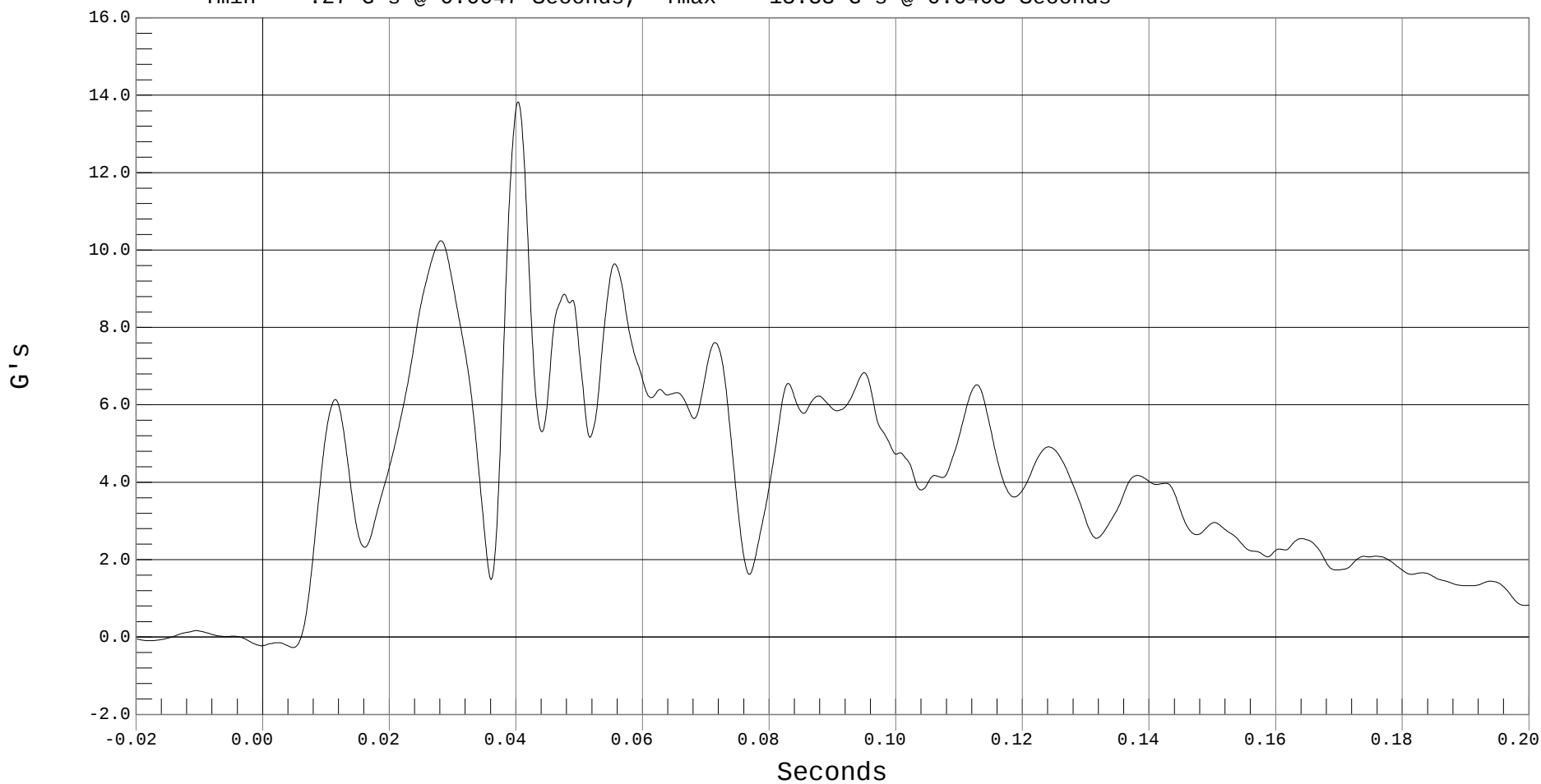
VEHICLE CG Y ACCELERATION

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 60

— 1 VEHICLE CG Y, B01074AF.A45

Ymin = -.27 G's @ 0.0047 Seconds, Ymax = 13.83 G's @ 0.0403 Seconds





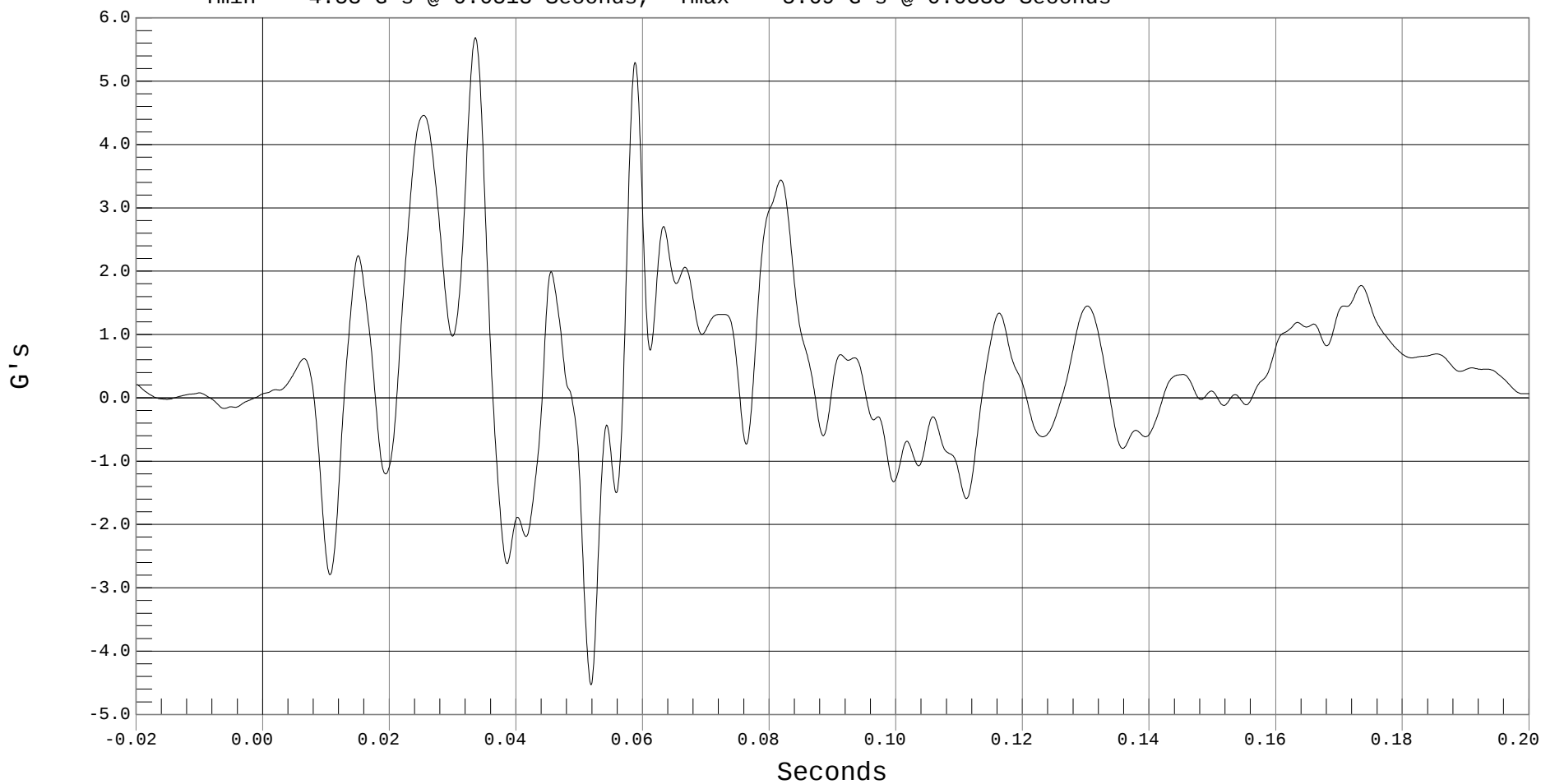
VEHICLE CG Z ACCELERATION

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 60

— 1 VEHICLE CG Z, B01074AF.A46

Ymin = -4.53 G's @ 0.0518 Seconds, Ymax = 5.69 G's @ 0.0335 Seconds





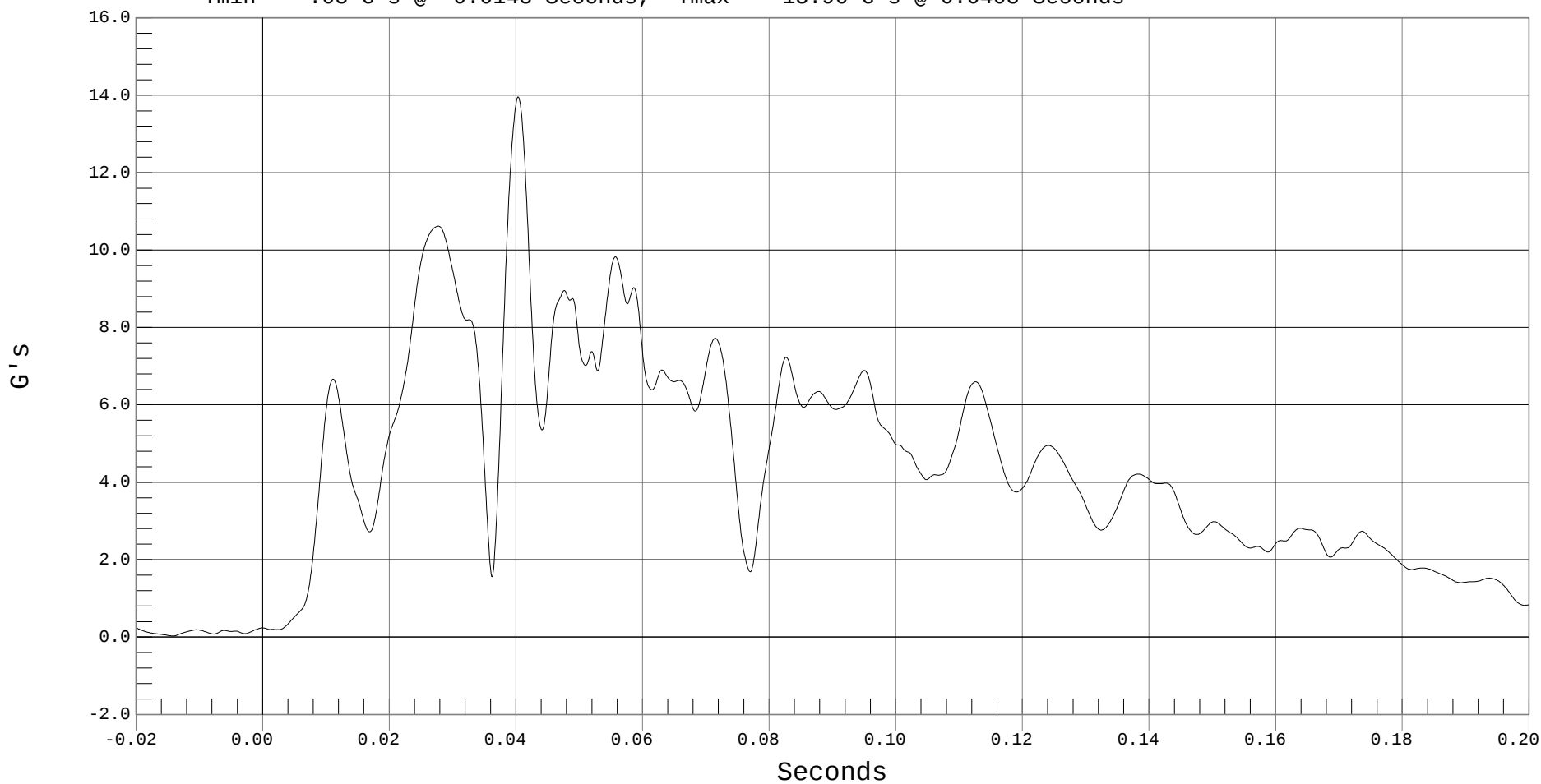
VEHICLE CG RESULTANT ACCELERATION

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 60

— 1 VEHICLE CG RESULTANT ACCELERATION, B01074AV.A44

Ymin = .03 G's @ -0.0143 Seconds, Ymax = 13.96 G's @ 0.0403 Seconds





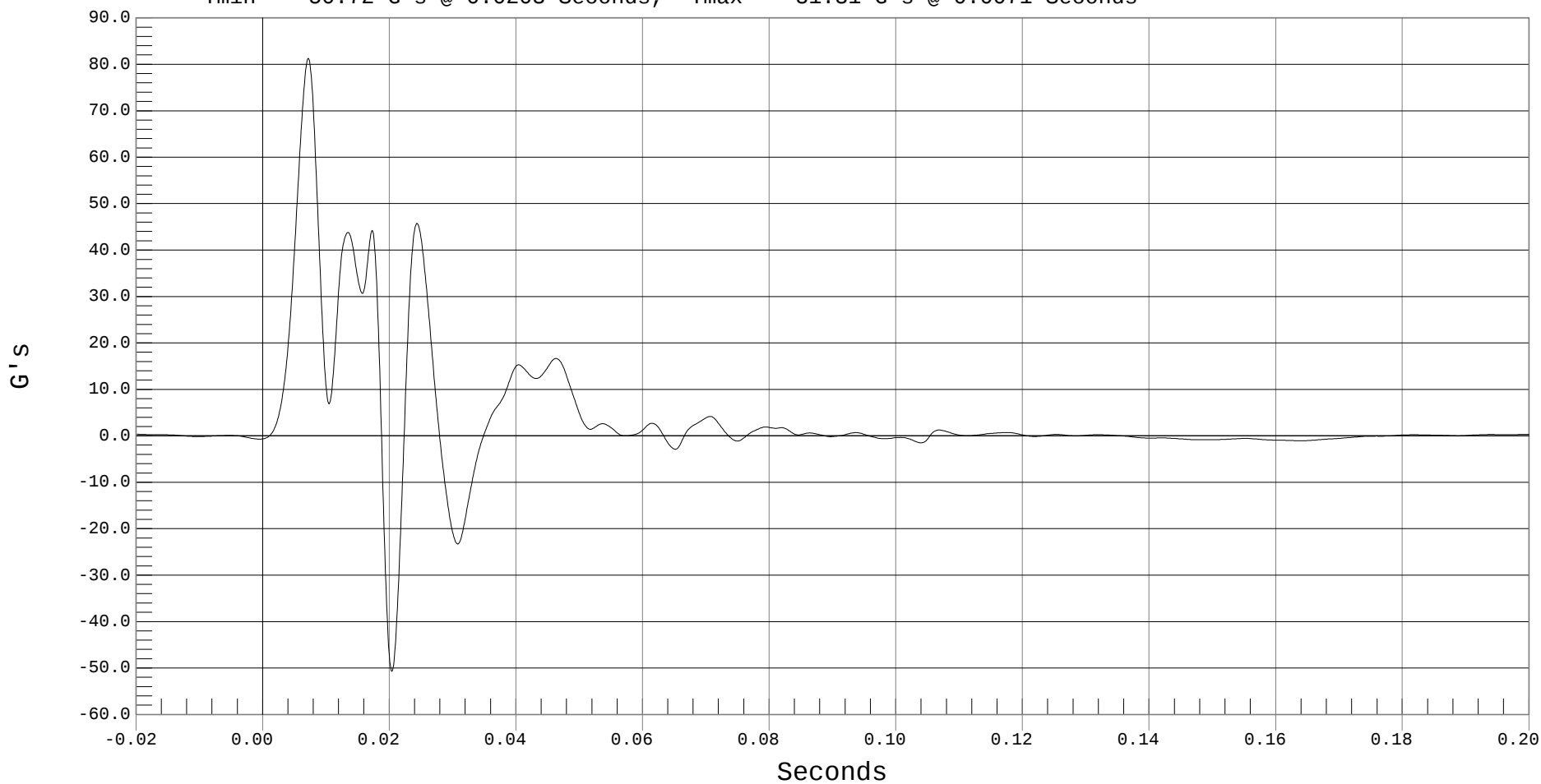
LEFT FRONT DOOR @ PELVIS Y ACCELERATION

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 60

— 1 LEFT FRONT DOOR @ PELVIS Y, B01074AF.A48

Ymin = -50.72 G's @ 0.0203 Seconds, Ymax = 81.31 G's @ 0.0071 Seconds





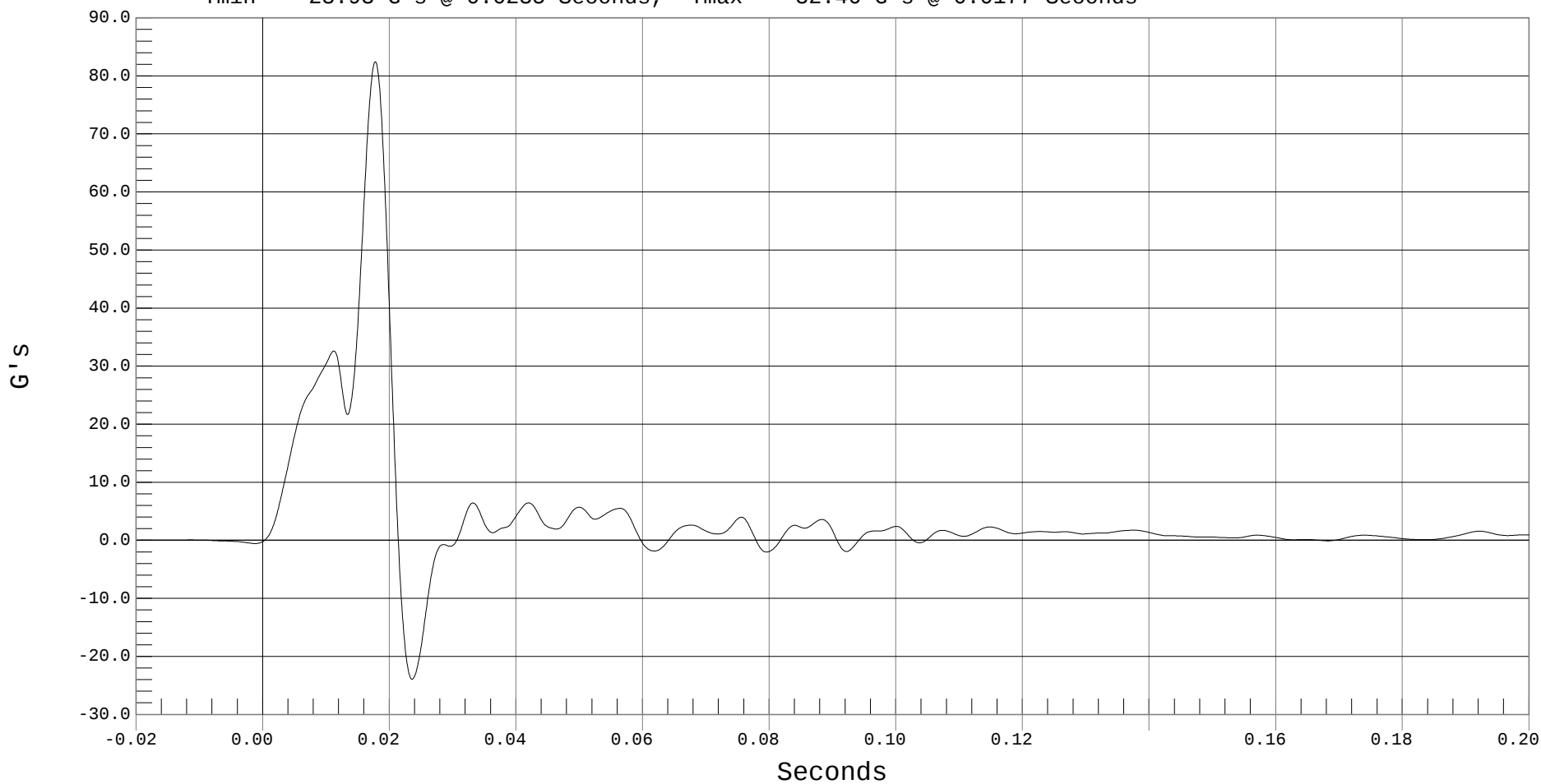
LEFT FRONT DOOR @ ARM Y ACCELERATION

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 60

— 1 LEFT FRONT DOOR @ ARM Y, B01074AF.A50

Ymin = -23.93 G's @ 0.0235 Seconds, Ymax = 82.46 G's @ 0.0177 Seconds





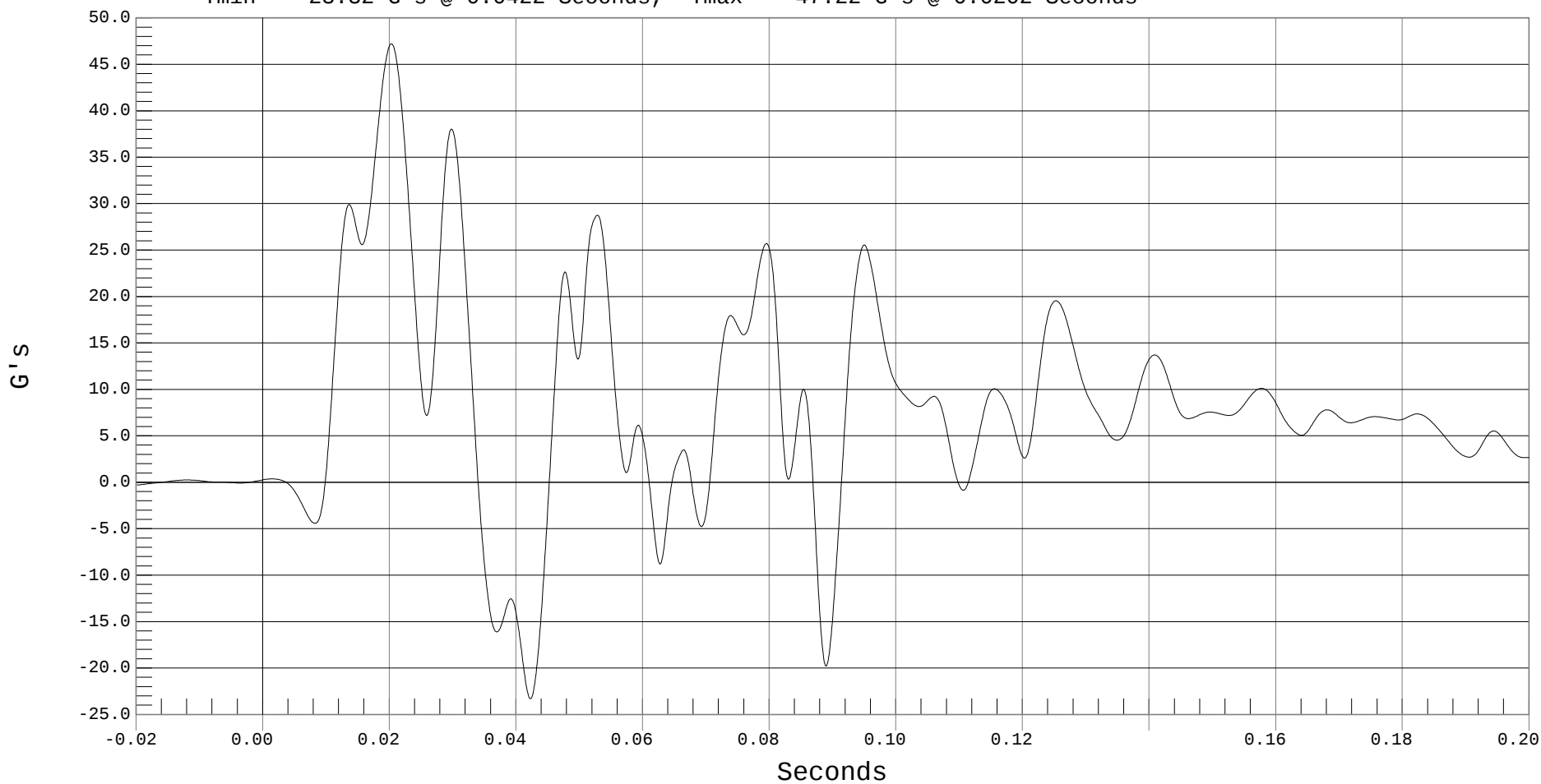
LEFT REAR DOOR @ KNEE Y ACCELERATION

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 60

— 1 LEFT REAR DOOR @ FRONT OF CAR SEAT, B01074AF.A51

Ymin = -23.32 G's @ 0.0422 Seconds, Ymax = 47.22 G's @ 0.0202 Seconds





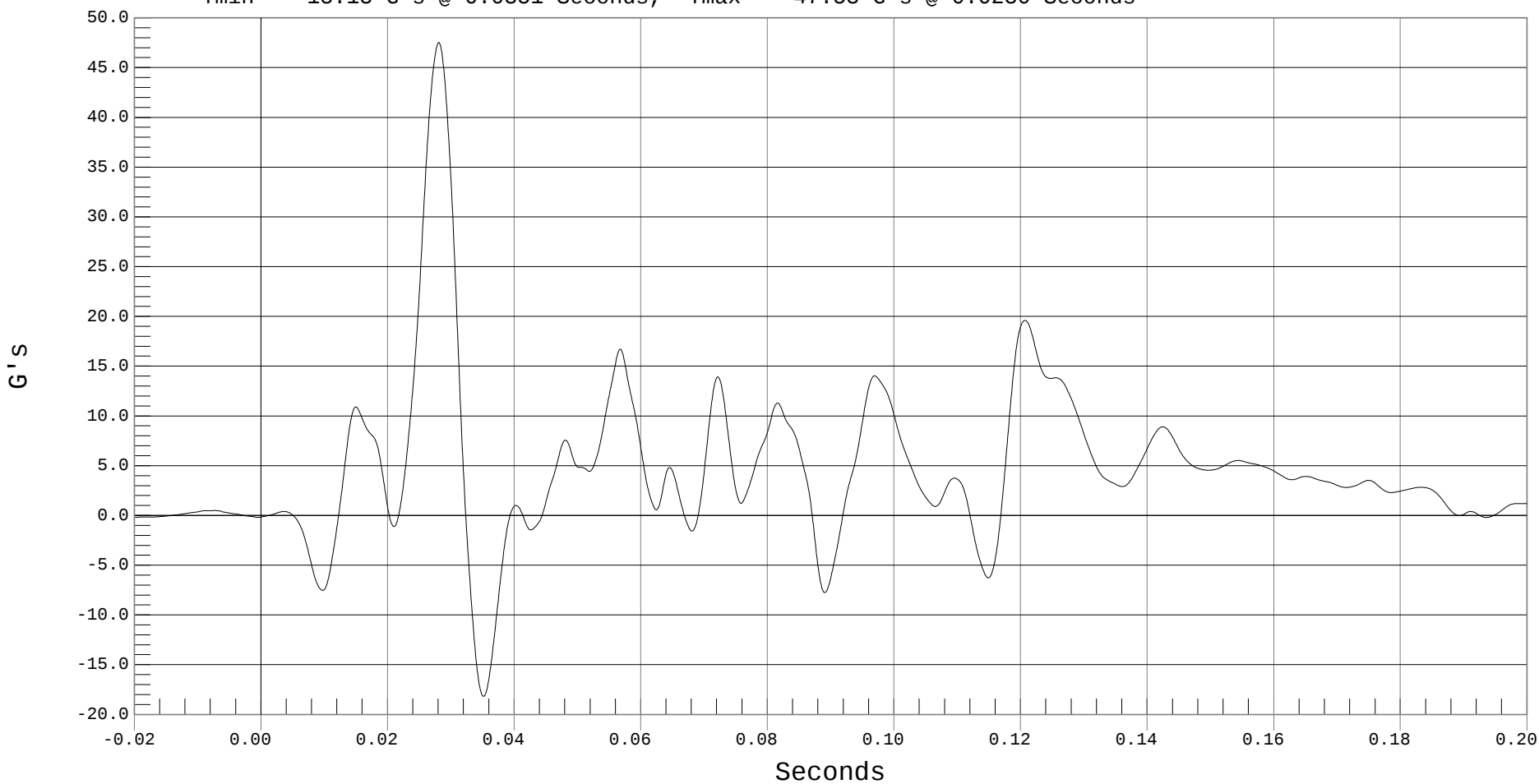
LEFT REAR DOOR @ PELVIS Y ACCELERATION

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 60

— 1 LEFT REAR DOOR @ REAR OF CAR SEAT Y, B01074AF.A52

Ymin = -18.18 G's @ 0.0351 Seconds, Ymax = 47.53 G's @ 0.0280 Seconds





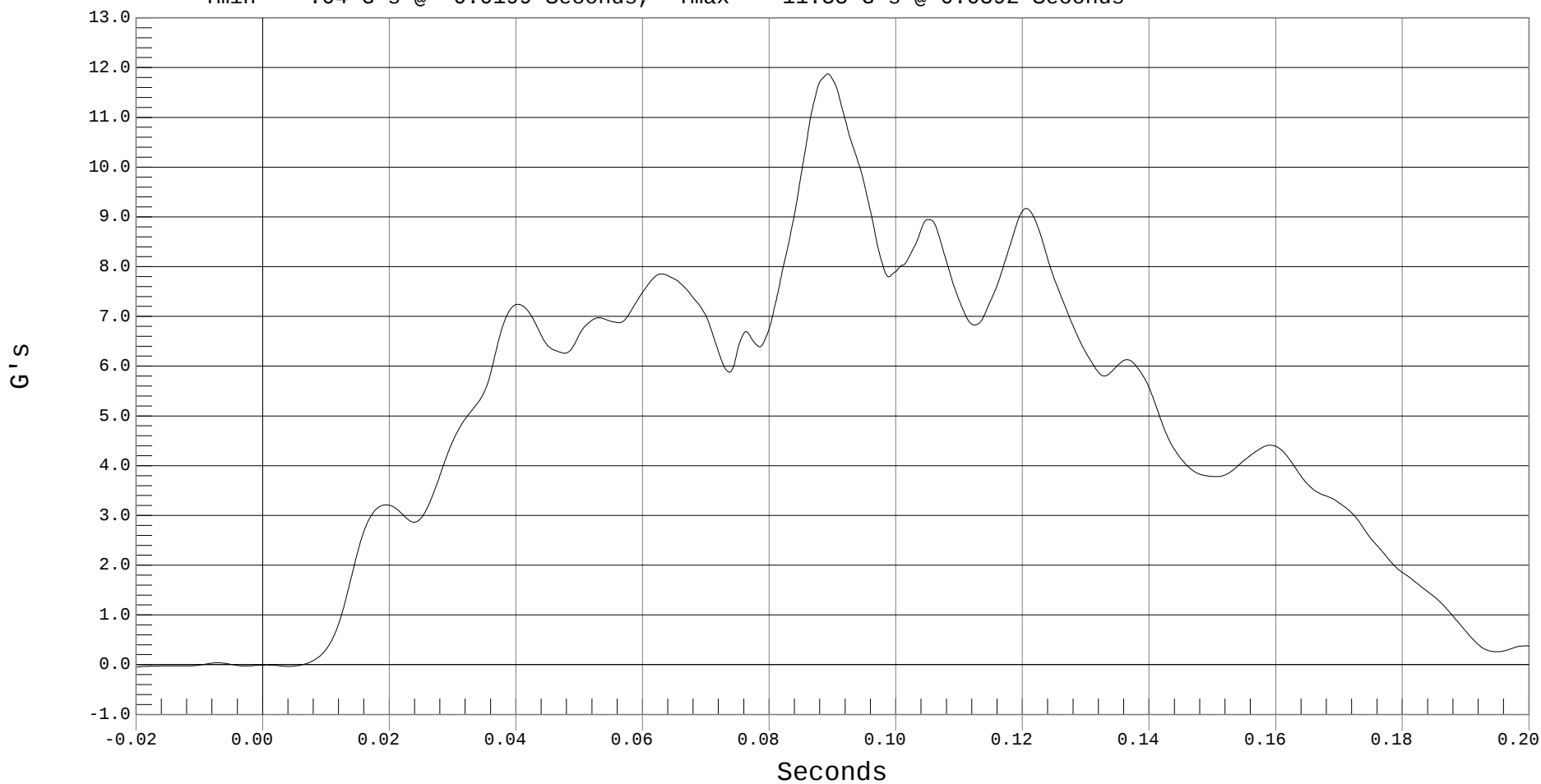
CHILD SEAT @ PELVIS Y ACCELERATION

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 60

— 1 RIGHT SIDE OF CHILD SEAT @ PELVIS Y, B01074AF.A54

Ymin = -.04 G's @ -0.0199 Seconds, Ymax = 11.88 G's @ 0.0892 Seconds





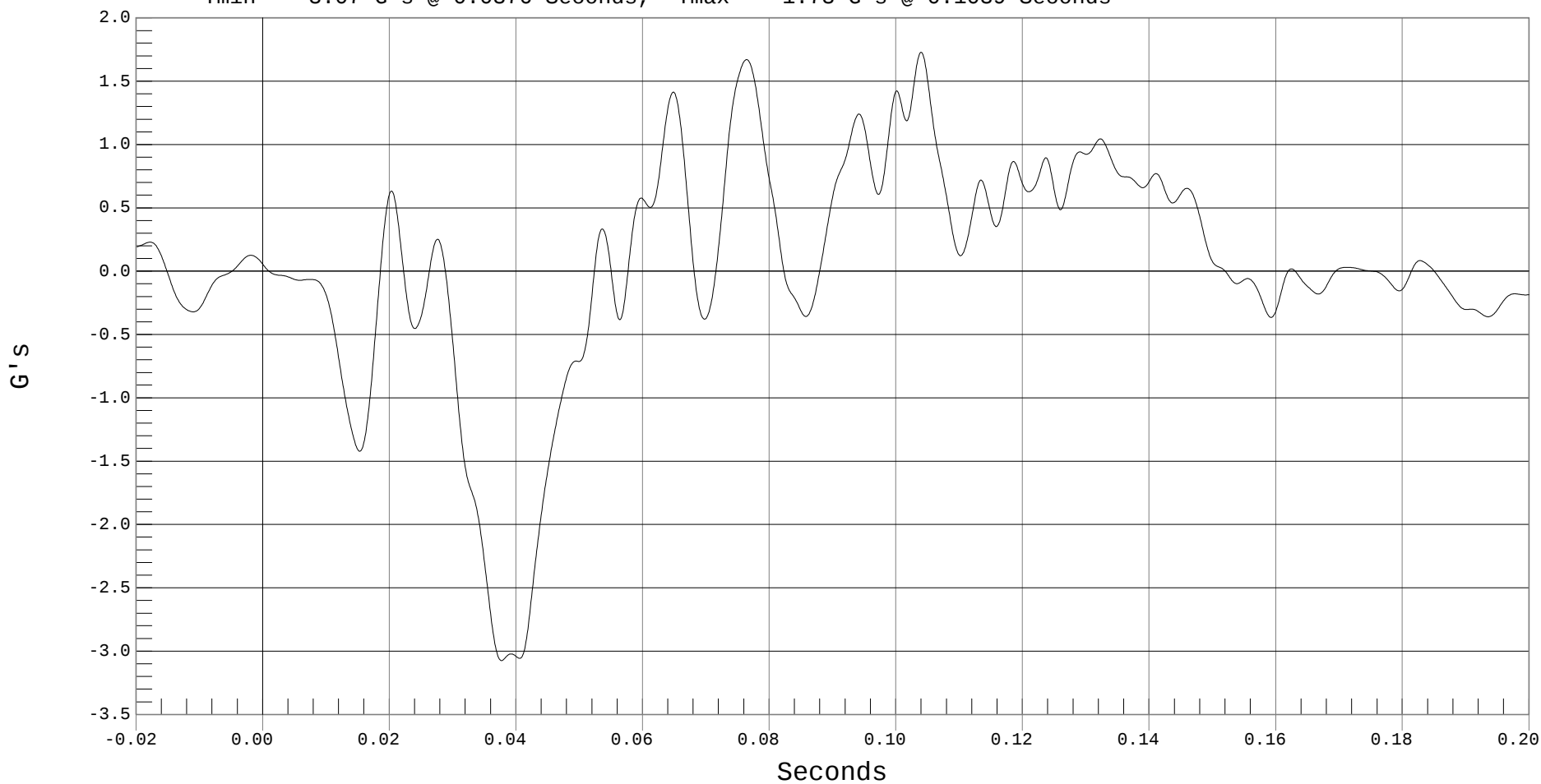
LOWER CENTER RADIATOR SUPPORT X ACCELERATION

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 60

— 1 LOWER CENTER RADIATOR SUPPORT X, B01074AF.A62

Ymin = -3.07 G's @ 0.0376 Seconds, Ymax = 1.73 G's @ 0.1039 Seconds





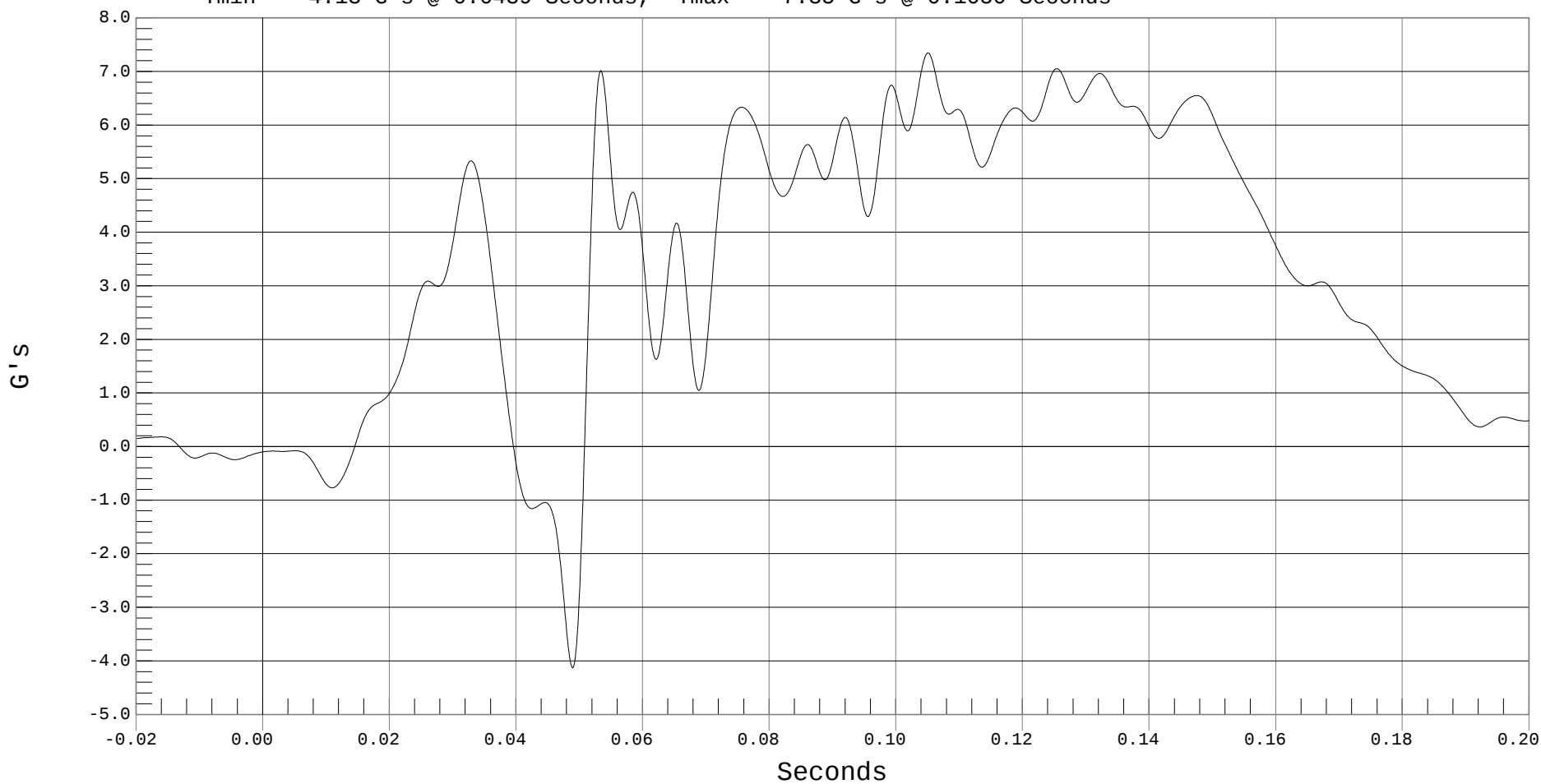
LOWER CENTER RADIATOR SUPPORT Y ACCELERATION

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 60

— 1 LOWER CENTER RADIATOR SUPPORT Y, B01074AF.A63

Ymin = -4.13 G's @ 0.0489 Seconds, Ymax = 7.35 G's @ 0.1050 Seconds





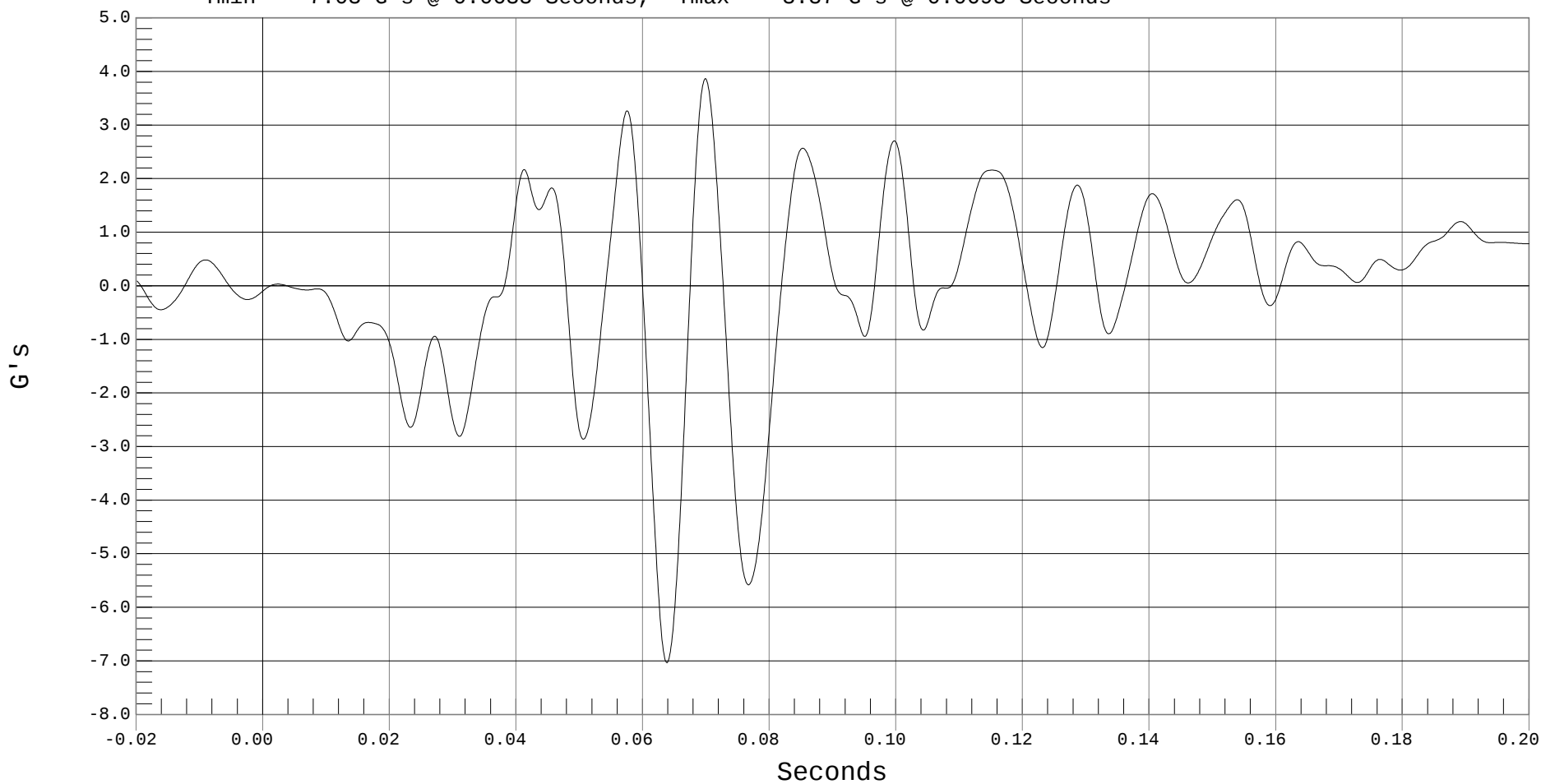
LOWER CENTER RADIATOR SUPPORT Z ACCELERATION

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Filter Class: 60

— 1 LOWER CENTER RADIATOR SUPPORT Z, B01074AF.A64

Ymin = -7.03 G's @ 0.0638 Seconds, Ymax = 3.87 G's @ 0.0698 Seconds





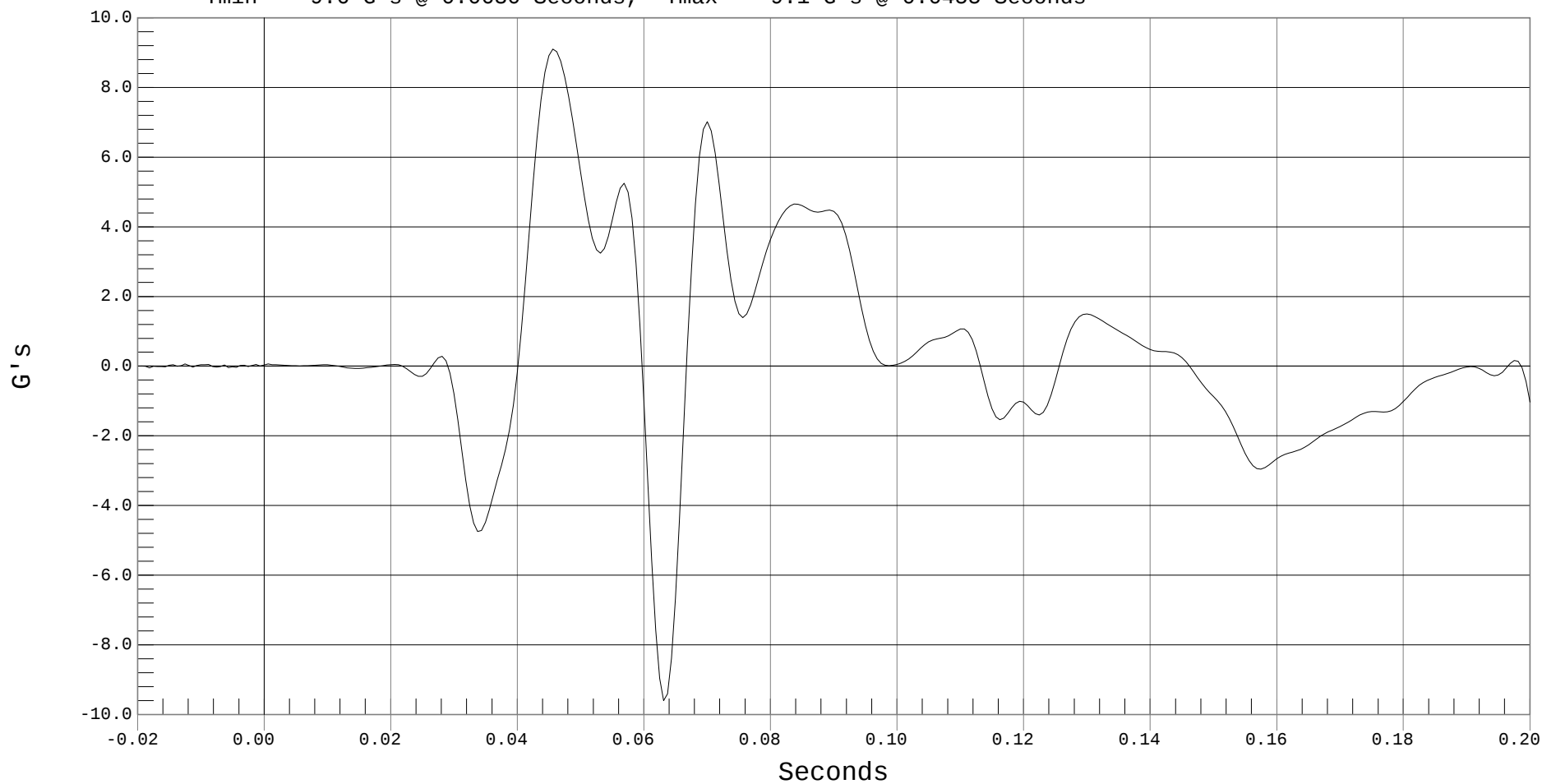
DRIVER UPPER SPINE X ACCELERATION

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Fir Filtered

— 1 DRIVER UPPER SPINE X, B01074FI.R20

Ymin = -9.6 G's @ 0.0630 Seconds, Ymax = 9.1 G's @ 0.0455 Seconds





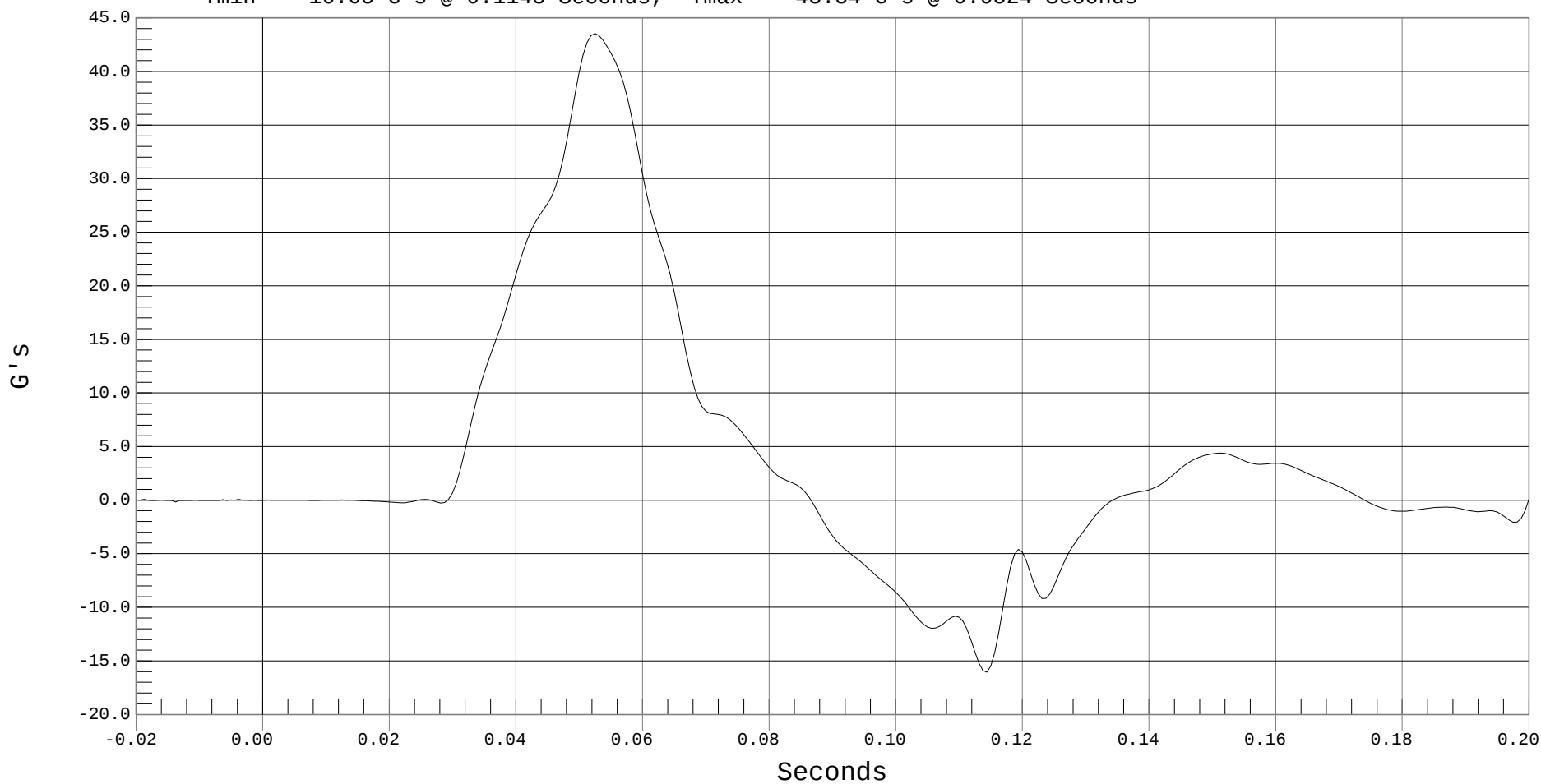
DRIVER UPPER SPINE Y ACCELERATION

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Fir Filtered

— 1 DRIVER UPPER SPINE Y, B01074FI.R21

Ymin = -16.05 G's @ 0.1143 Seconds, Ymax = 43.54 G's @ 0.0524 Seconds





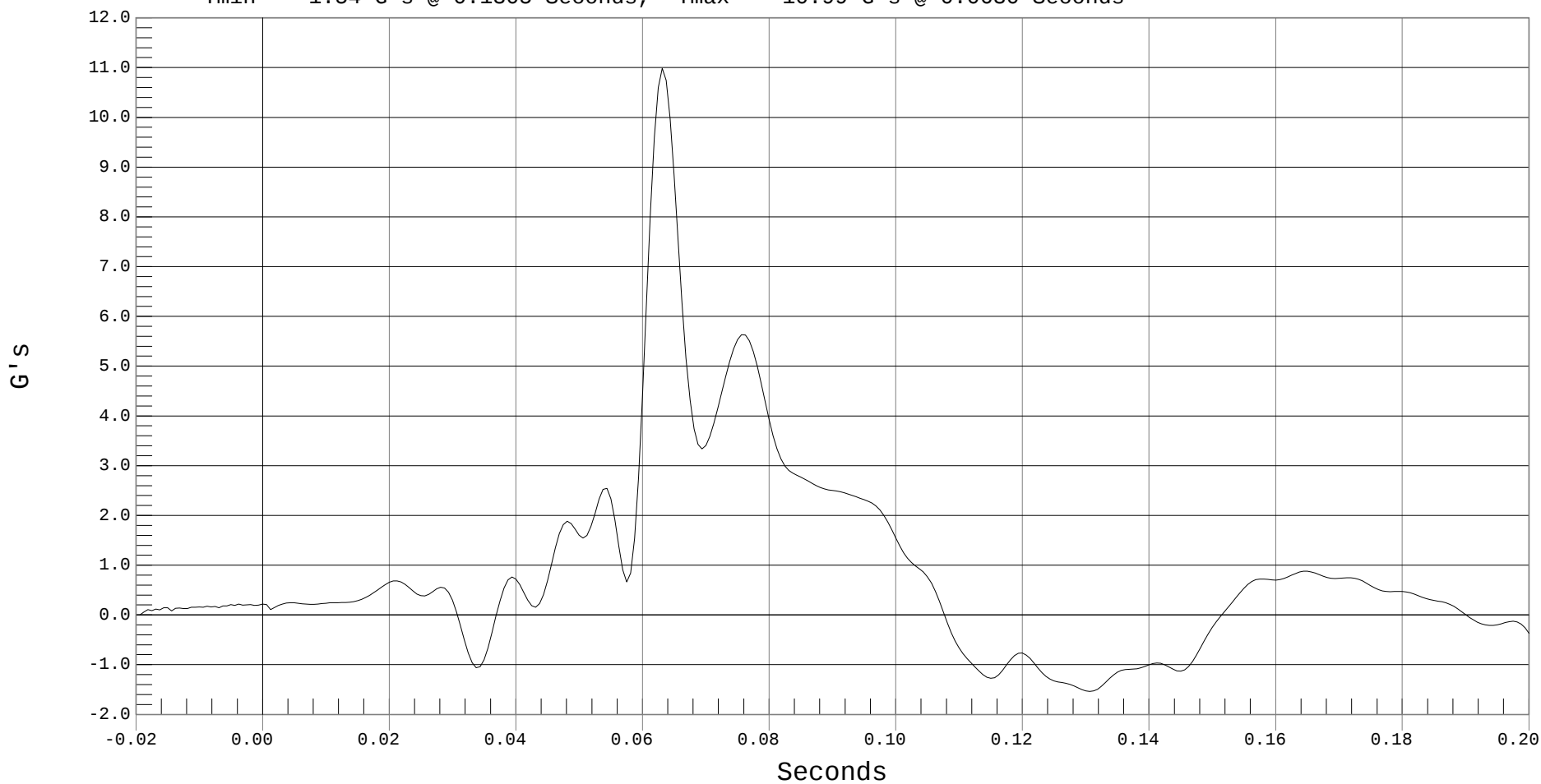
DRIVER UPPER SPINE Z ACCELERATION

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Fir Filtered

— 1 DRIVER UPPER SPINE Z, B01074FI.R22

Ymin = -1.54 G's @ 0.1305 Seconds, Ymax = 10.99 G's @ 0.0630 Seconds





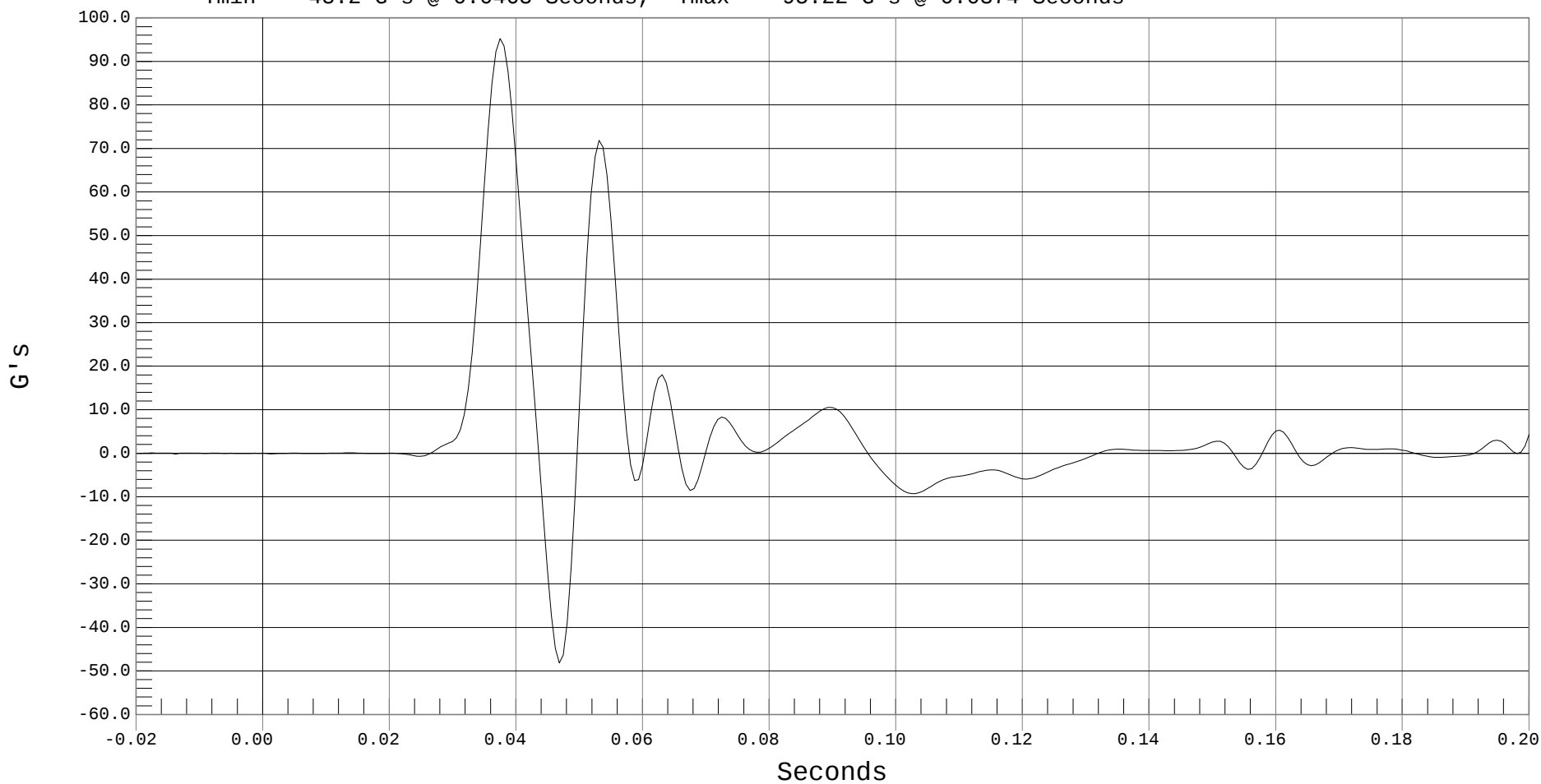
DRIVER UPPER RIB Y ACCELERATION

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Fir Filtered

— 1 DRIVER UPPER RIB Y, B01074FI.R23

Ymin = -48.2 G's @ 0.0468 Seconds, Ymax = 95.22 G's @ 0.0374 Seconds





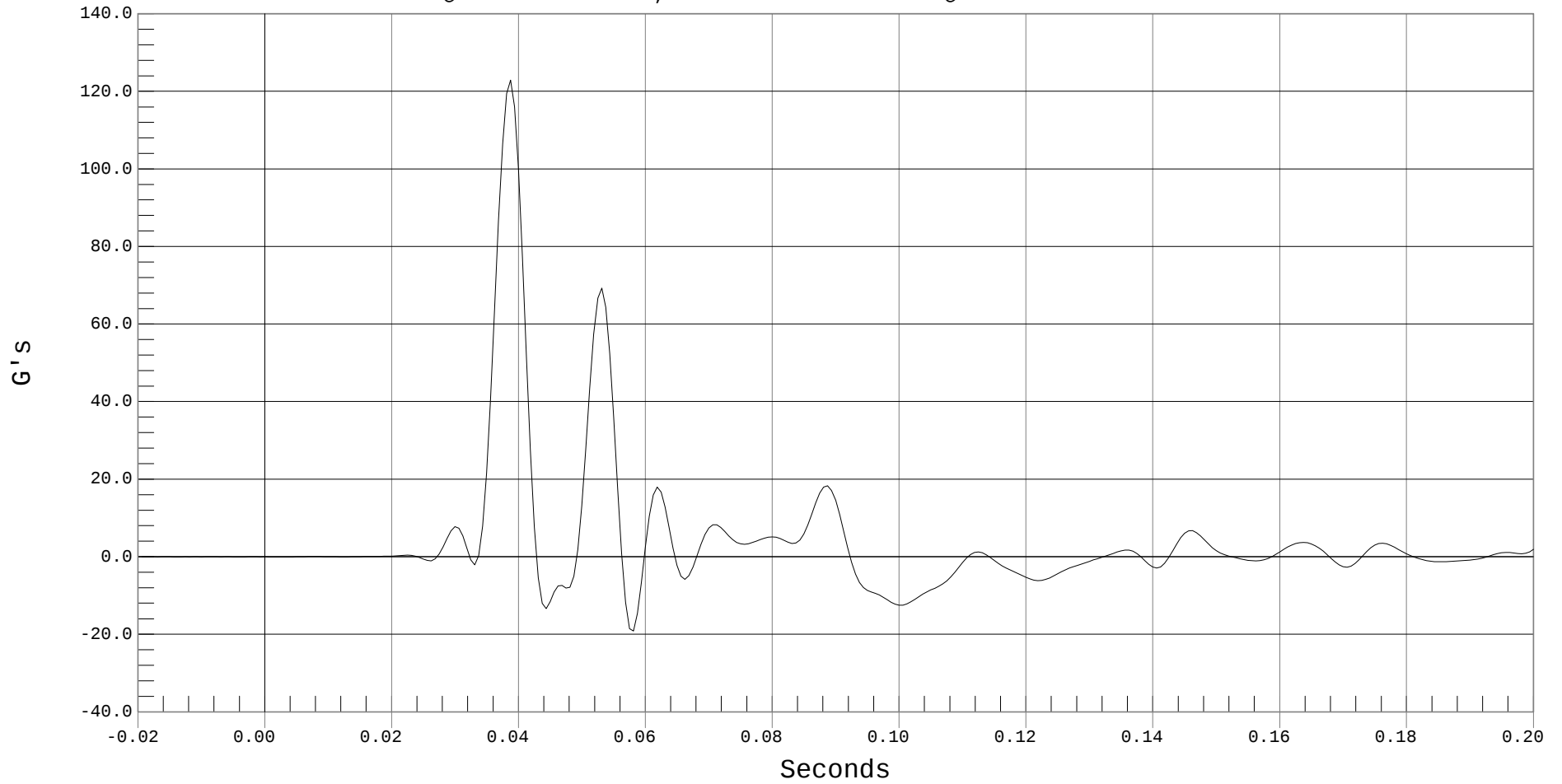
DRIVER MID RIB Y ACCELERATION

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Fir Filtered

— 1 DRIVER MID RIB Y, B01074FI.R24

Ymin = -19.19 G's @ 0.0580 Seconds, Ymax = 122.89 G's @ 0.0387 Seconds





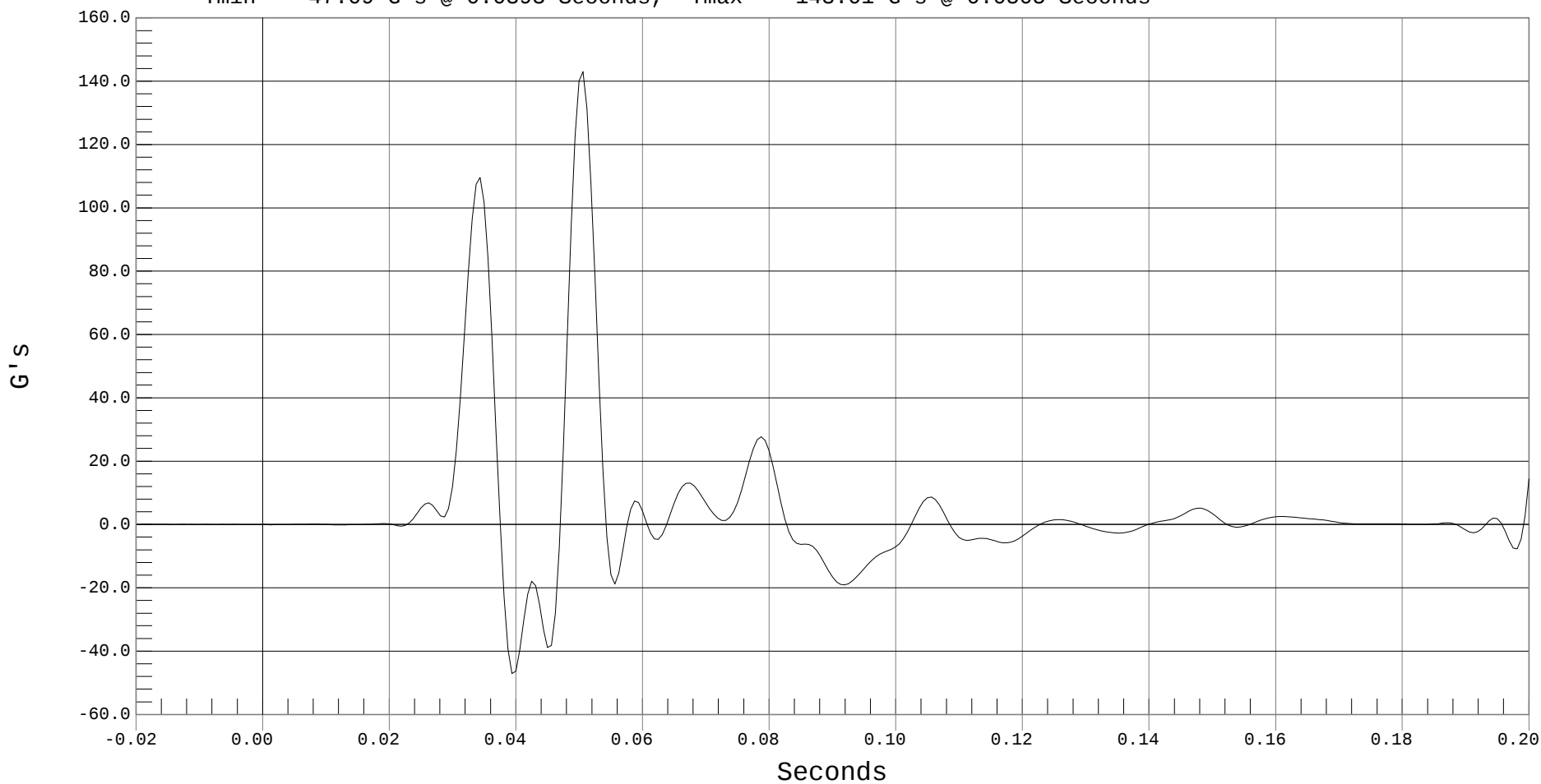
DRIVER LOWER RIB Y ACCELERATION

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Fir Filtered

— 1 DRIVER LOWER RIB Y, B01074FI.R25

Ymin = -47.09 G's @ 0.0393 Seconds, Ymax = 143.01 G's @ 0.0505 Seconds





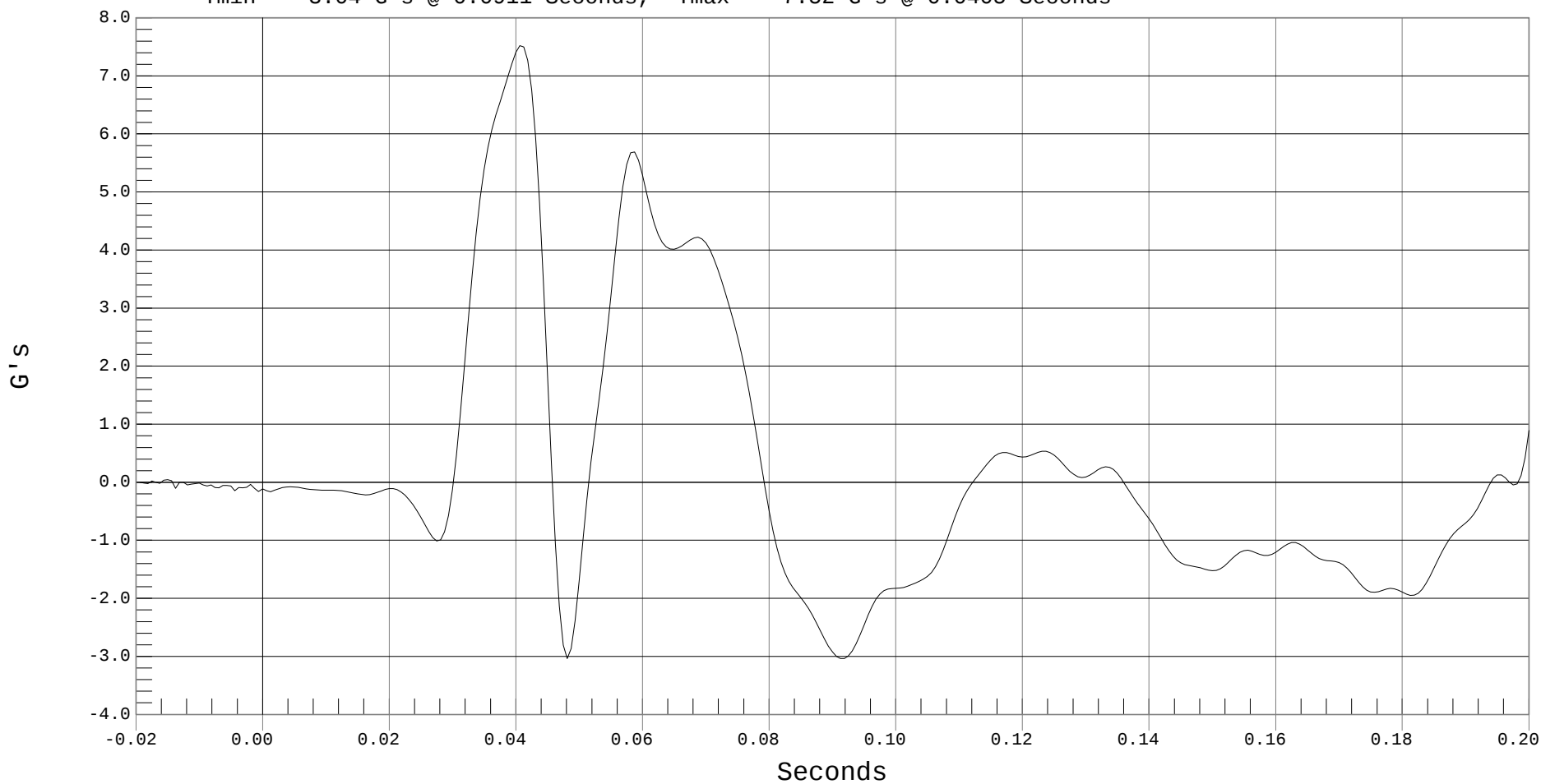
DRIVER LOWER SPINE X ACCELERATION

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Fir Filtered

— 1 DRIVER LOWER SPINE X, B01074FI.R29

Ymin = -3.04 G's @ 0.0911 Seconds, Ymax = 7.52 G's @ 0.0405 Seconds





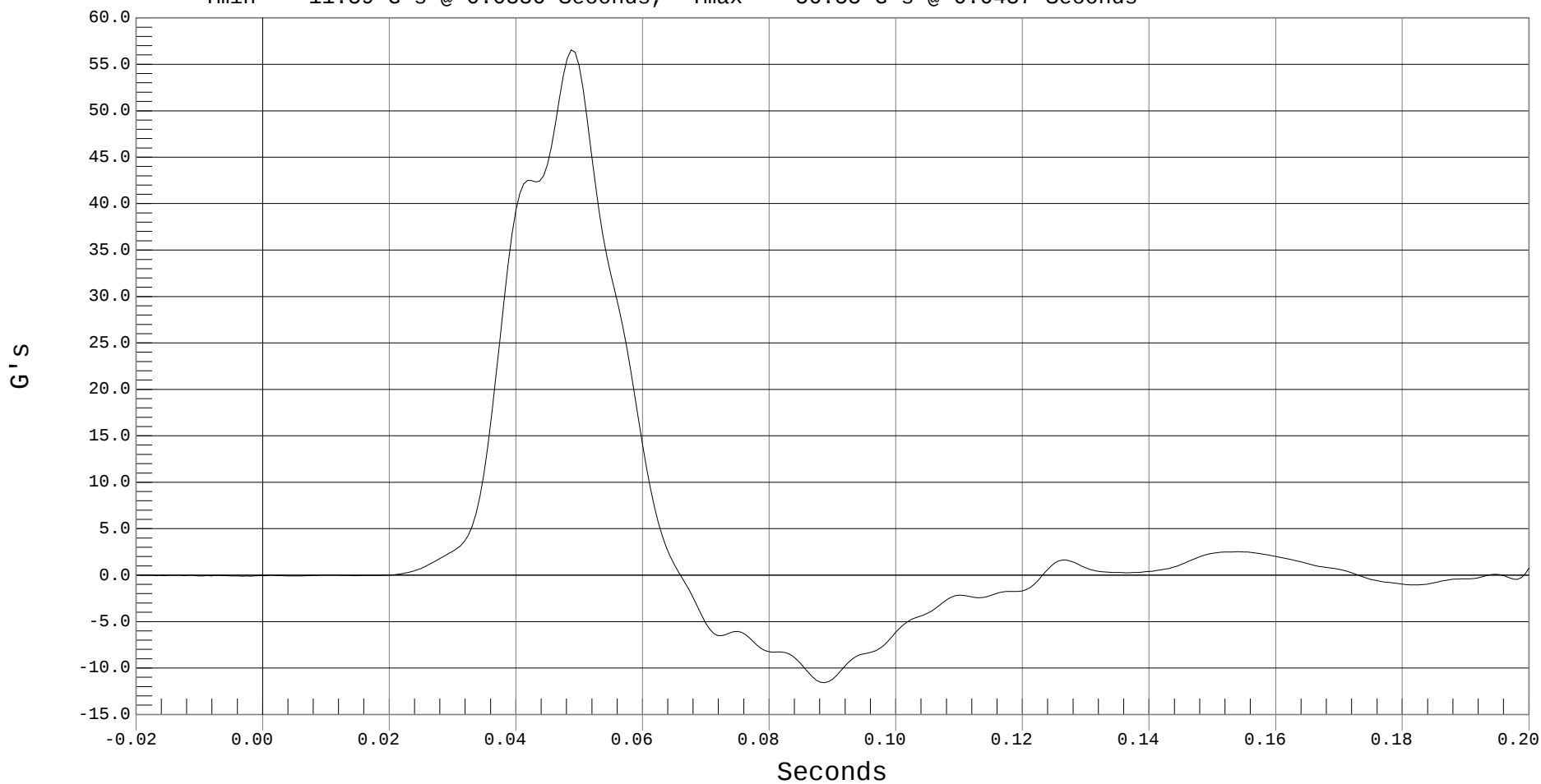
DRIVER LOWER SPINE Y ACCELERATION

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Fir Filtered

— 1 DRIVER LOWER SPINE Y, B01074FI.R30

Ymin = -11.59 G's @ 0.0886 Seconds, Ymax = 56.55 G's @ 0.0487 Seconds





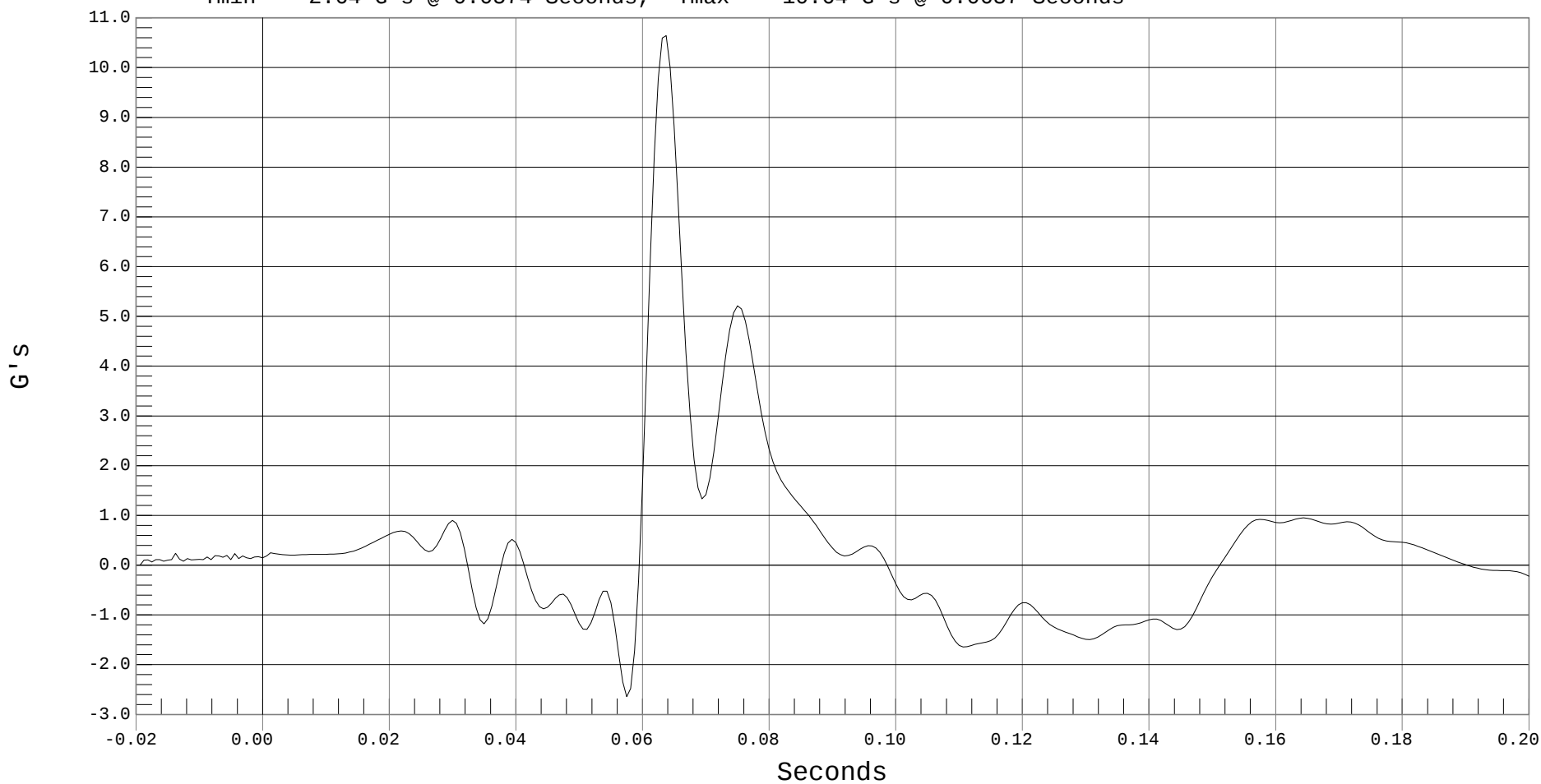
DRIVER LOWER SPINE Z ACCELERATION

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Fir Filtered

— 1 DRIVER LOWER SPINE Z, B01074FI.R31

Ymin = -2.64 G's @ 0.0574 Seconds, Ymax = 10.64 G's @ 0.0637 Seconds





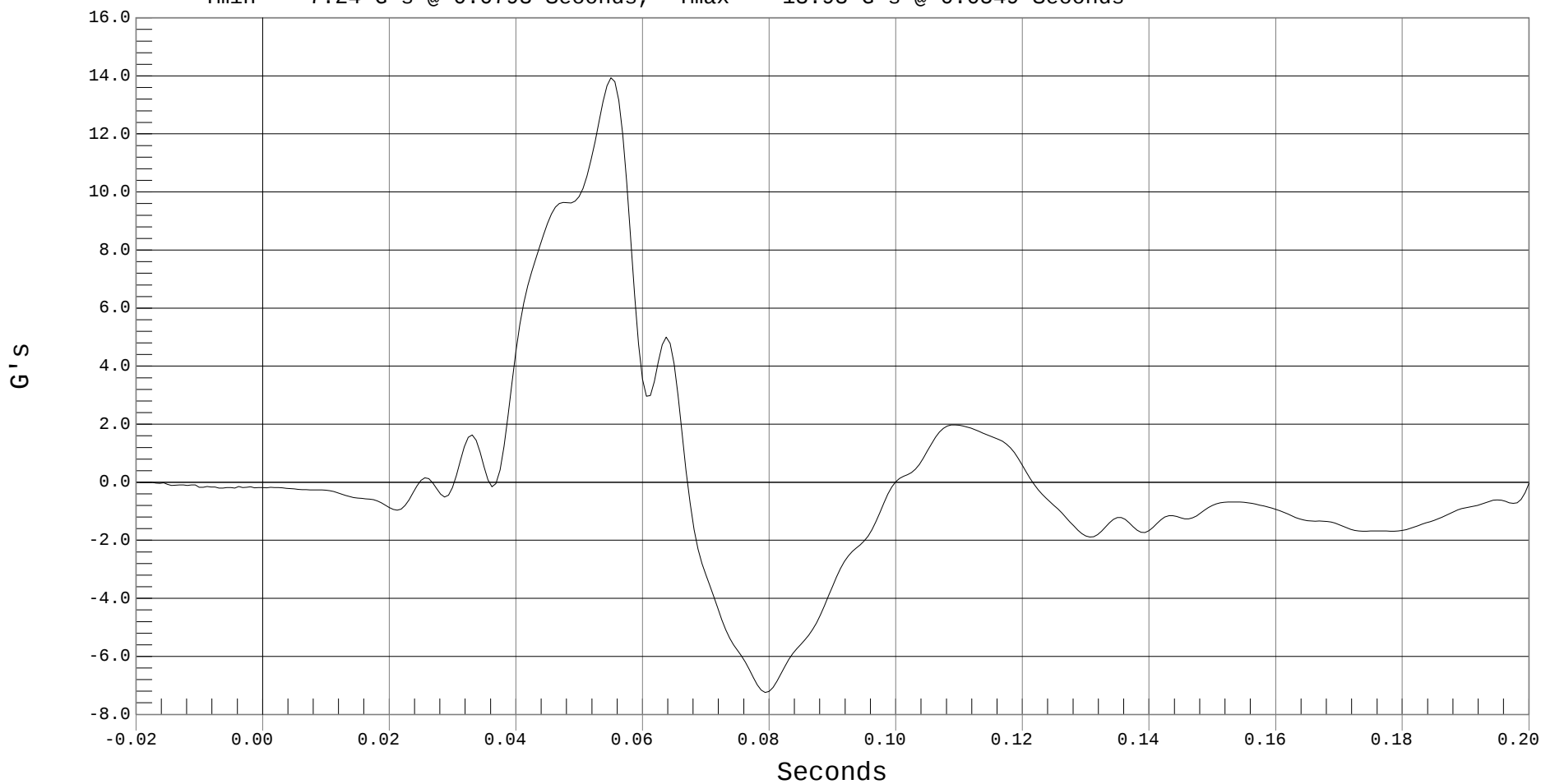
DRIVER PELVIS X ACCELERATION

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Fir Filtered

— 1 DRIVER PELVIS X, B01074FI.R45

Ymin = -7.24 G's @ 0.0793 Seconds, Ymax = 13.93 G's @ 0.0549 Seconds





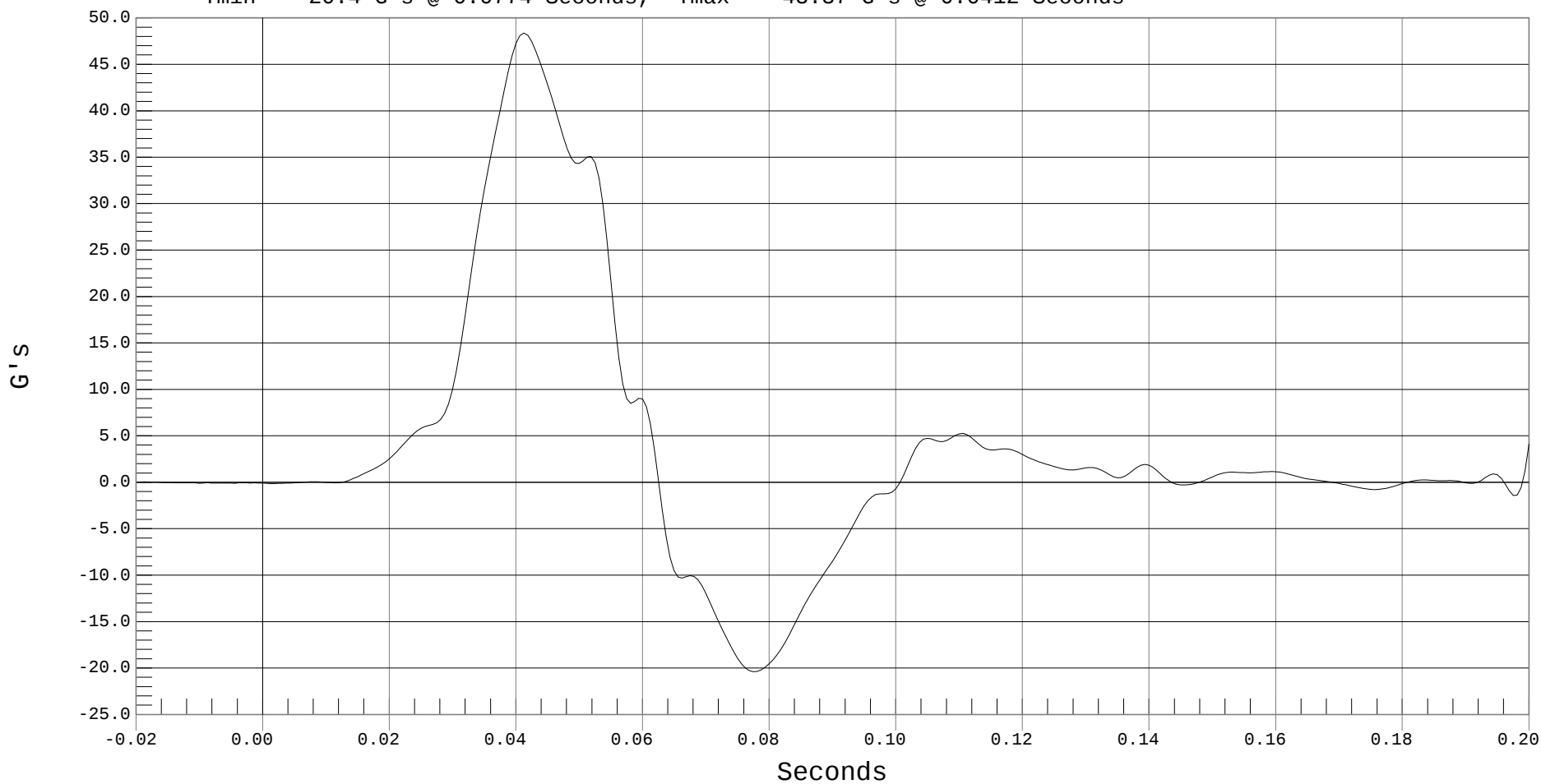
DRIVER PELVIS Y ACCELERATION

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Fir Filtered

1 DRIVER PELVIS Y, B01074FI.R46

Ymin = -20.4 G's @ 0.0774 Seconds, Ymax = 48.37 G's @ 0.0412 Seconds





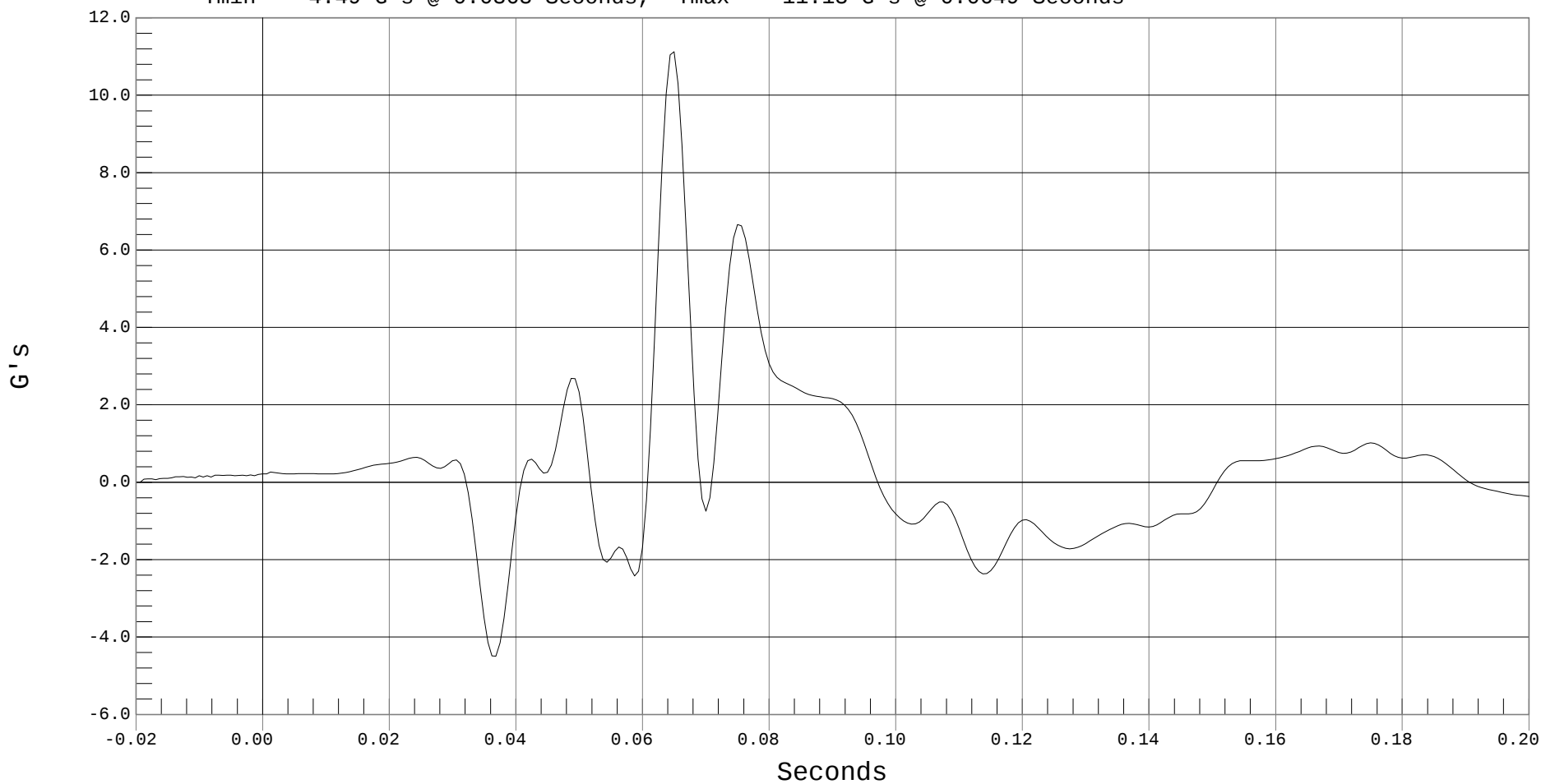
DRIVER PELVIS Z ACCELERATION

Test Desc.: RIGID POLE SIDE IMPACT
Component: 2001 SATURN L200 4 DOOR
Other Info:

Test Date: 07-10-01
Speed: 17.4 MPH, 28.0 KPH
Fir Filtered

— 1 DRIVER PELVIS Z, B01074FI.R47

Ymin = -4.49 G's @ 0.0368 Seconds, Ymax = 11.13 G's @ 0.0649 Seconds



APPENDIX C
ES-2 CONFIGURATION AND PERFORMANCE VERIFICATION DATA

CERTIFICATION DATA

Dummy Serial Number: 009

Calibration Test Results Summary

Dummy Serial Number: 009

Pre-Test Calibration

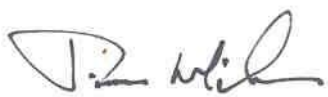
Head Drop Test:	The head passed all drop test requirements.
Neck Pendulum Test:	The neck passed all impact test requirements.
Shoulder Impact Test:	The shoulder passed all impact test requirements.
Rib Tests:	All ribs passed all impact test requirements.
Abdomen Test:	The abdomen passed all impact test requirements.
Lumbar Spine Test:	The lumbar spine passed all impact test requirements.
Pelvis Test:	The pelvis passed all impact test requirements.

MGA RESEARCH CORPORATION
HEAD DROP TEST
EUROSID 2 DUMMY

Date: 7/9/01
Dummy Serial Number: 009
Test Number: D01991

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature (°C)	18 – 22	22.0
Relative Humidity (%)	10 – 70	44
Peak Resultant Acceleration	100 – 150 g's	119
Time of Max. Res. Acceleration	-----	27.8 msec

TEST MEETS SPECIFICATIONS

Technician: 

Approved By: David Winkelbauer



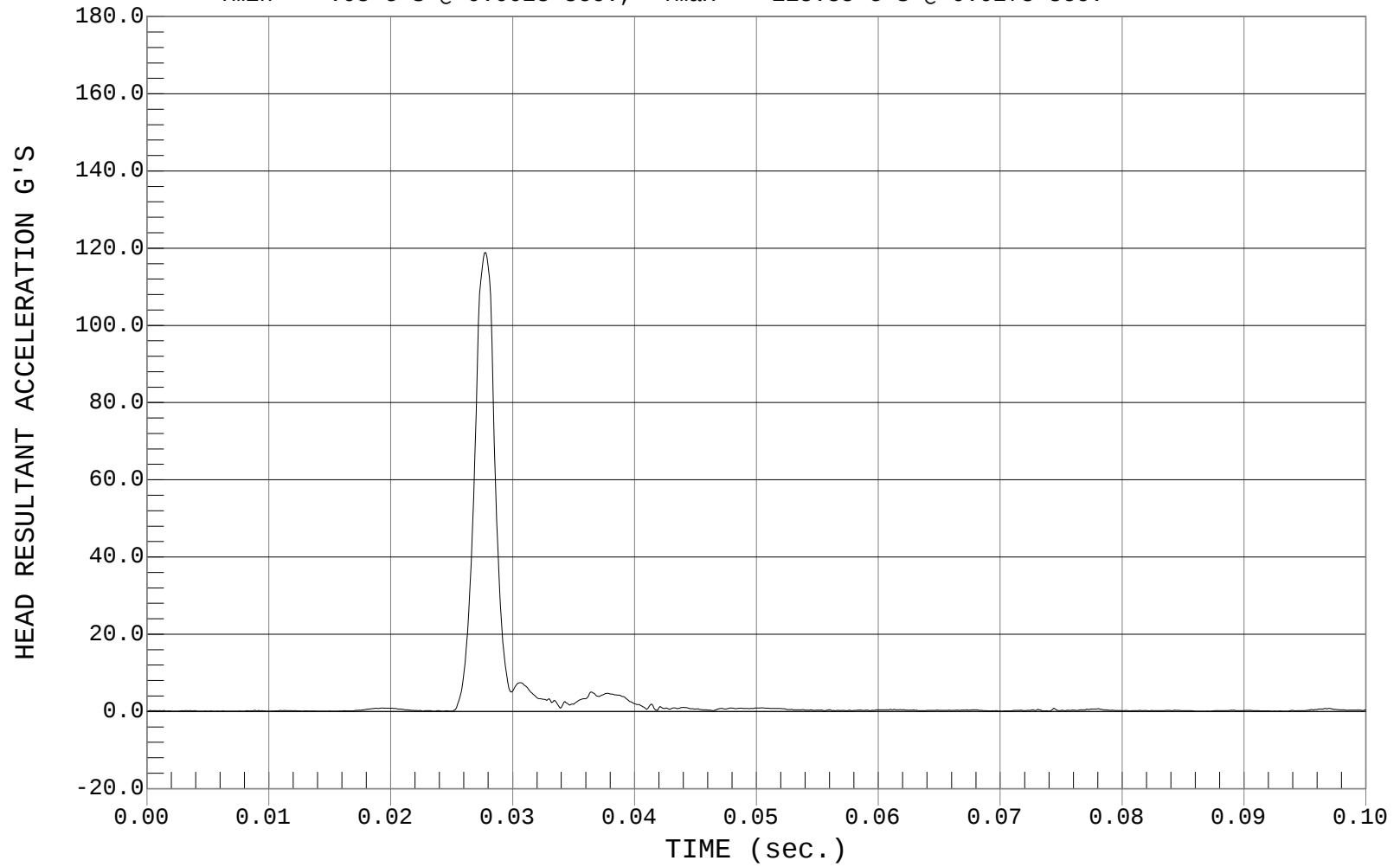
PEAK RESULTANT ACCELERATION

Test Desc.: Dummy Calibration - Head Drop
Component: Dummy #009

Test Date: 07-09-01
Speed: 0.00 FT/SEC, 0.00 M/SEC

— 1 HEAD RESULTANT ACCELERATION, D01991AV.A01

Ymin = .03 G'S @ 0.0023 sec., Ymax = 118.85 G'S @ 0.0278 sec.

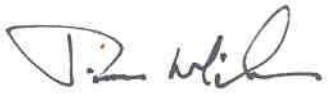


MGA RESEARCH CORPORATION
NECK PENDULUM TEST
EUROSID 2 DUMMY

Date: 7/9/01
Dummy Serial Number: 009
Test Number: D01992

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature (°C)		18 – 22	21.9
Relative Humidity (%)		10 – 70	45
Pendulum Speed		3.3 - 3.5	3.4
Pendulum Deceleration	3 msec	ˆ.25 - ˆ.53 m/sec	-.32
	8 msec	ˆ1.59 - ˆ2.04 m/sec	-1.69
	14 msec	ˆ3.20 - ˆ3.85 m/sec	-3.34
Maximum Flexion Angle		49.0 – 59.0 deg	55.7
Time of Max. Flexion Angle		54.0 – 66.0 ms	57.1
Maximum Angle Theta (A)		32.0 – 37.0 deg	33.9
Time of Max. Theta (A)		53.0 – 63.0 ms	56.7
Maximum Angle Theta (B)		29.21 – 31.71 deg	29.76
Time of Max. Theta (B)		54.0 – 64.0 ms	58.1

TEST MEETS SPECIFICATIONS

Technician: 

Approved By: David Winkelbauer

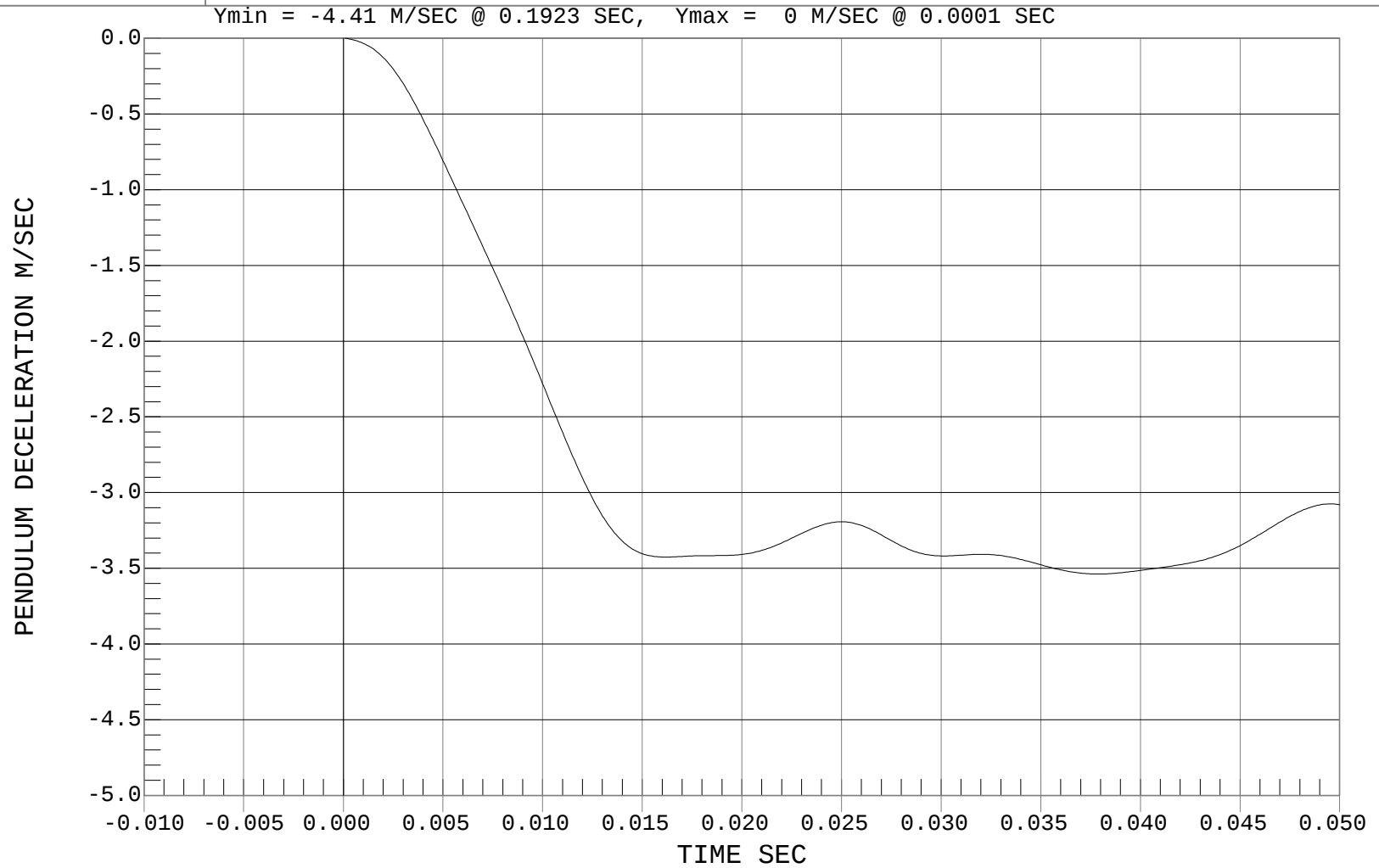


PENDULUM DECELERATION

Test Desc.: Dummy Calibration - Neck Bending
Component: Dummy #009

Test Date: 07-09-01
Speed: 11.07 FT/SEC, 3.37 M/SEC

— 1 PENDULUM DECELERATION, D01992AI.V04





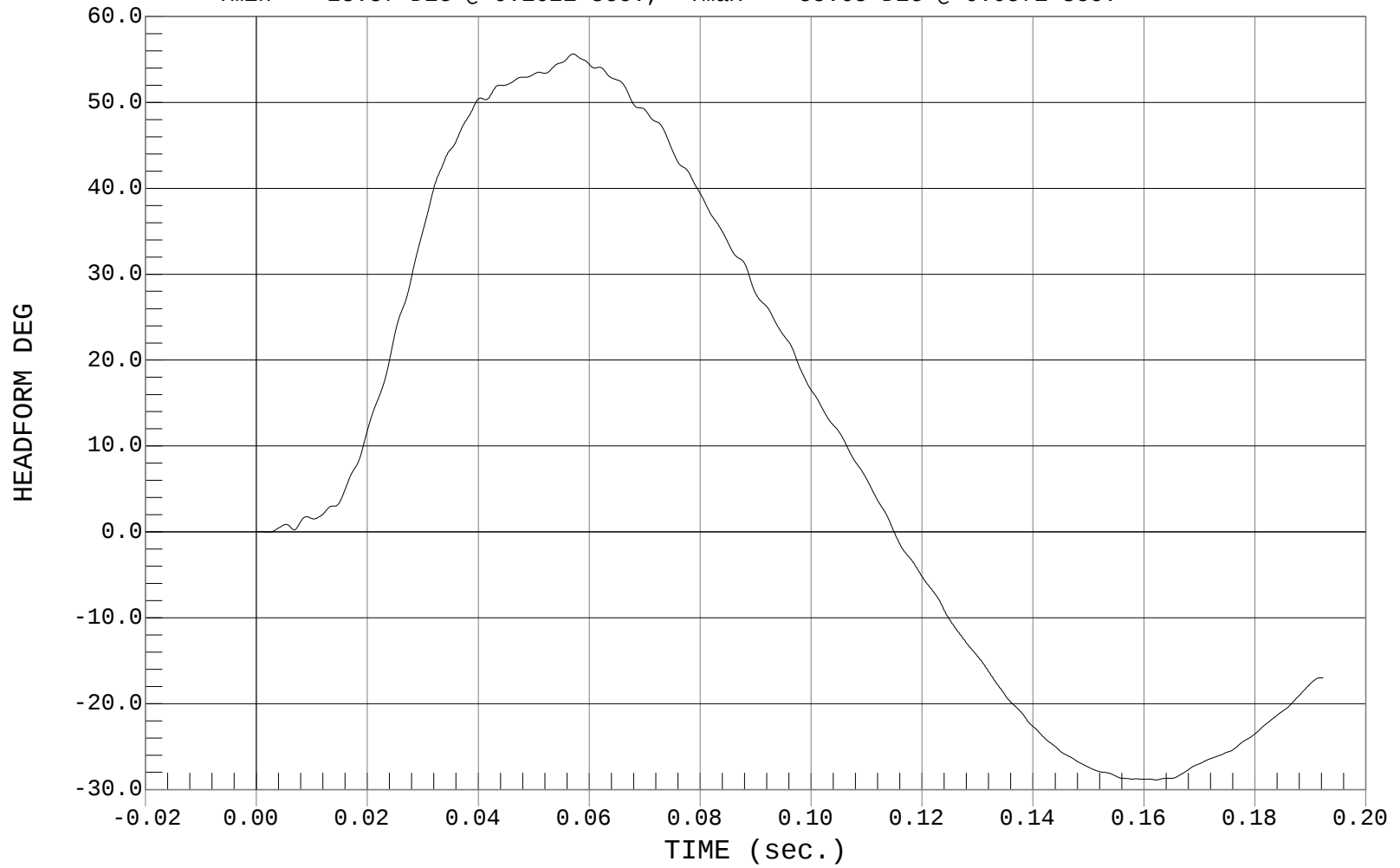
FLEXION ANGLE

Test Desc.: Dummy Calibration - Neck Bending
Component: Dummy #009

Test Date: 07-09-01
Speed: 11.07 FT/SEC, 3.37 M/SEC

— 1 HEADFORM, D01992DT.D08

Ymin = -28.87 DEG @ 0.1621 sec., Ymax = 55.65 DEG @ 0.0571 sec.





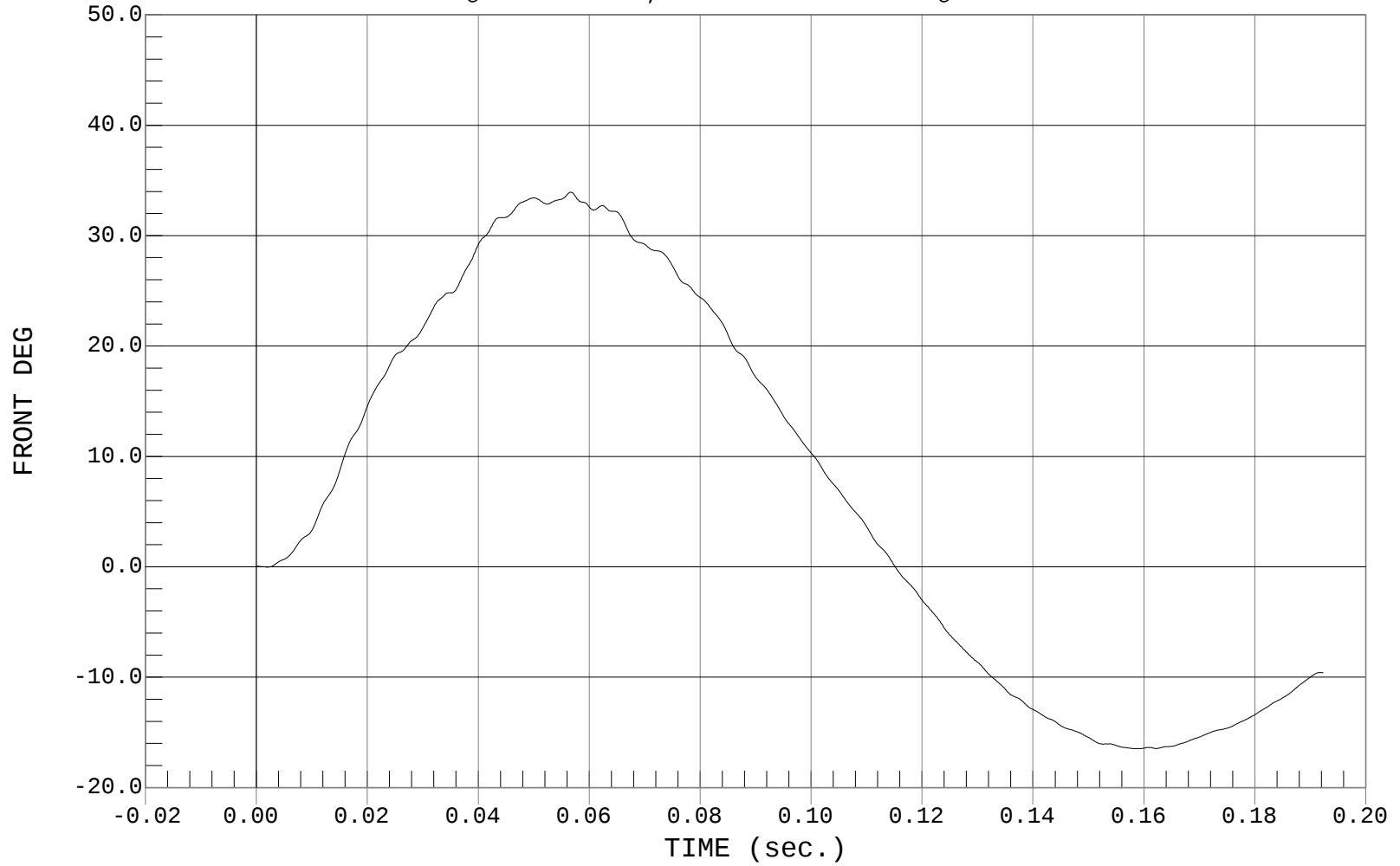
THETA A

Test Desc.: Dummy Calibration - Neck Bending
Component: Dummy #009

Test Date: 07-09-01
Speed: 11.07 FT/SEC, 3.37 M/SEC

— 1 FRONT, D01992DT.D05

Ymin = -16.47 DEG @ 0.1590 sec., Ymax = 33.94 DEG @ 0.0567 sec.





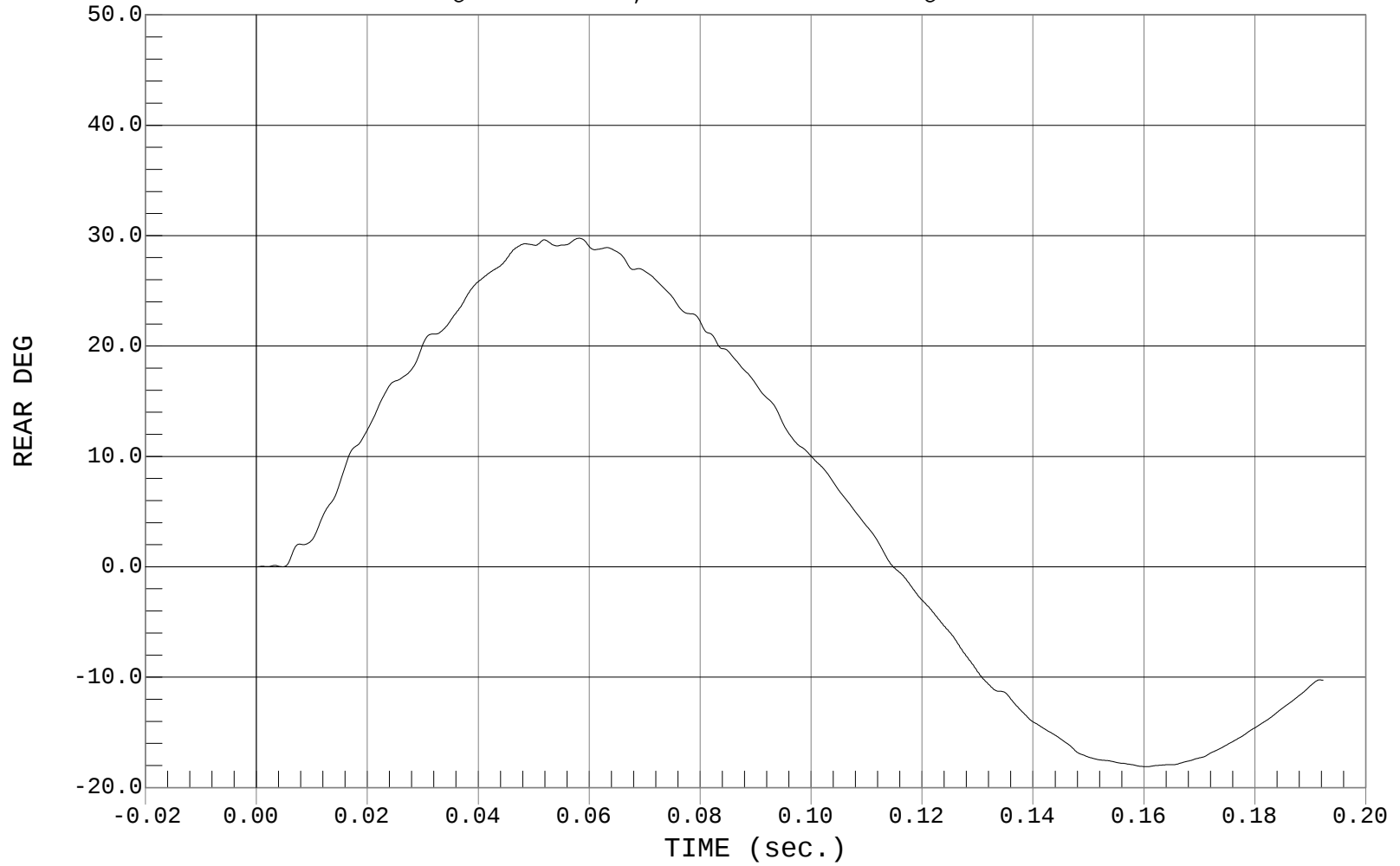
THETA B

Test Desc.: Dummy Calibration - Neck Bending
Component: Dummy #009

Test Date: 07-09-01
Speed: 11.07 FT/SEC, 3.37 M/SEC

— 1 REAR, D01992DT.D06

Ymin = -18.1 DEG @ 0.1605 sec., Ymax = 29.76 DEG @ 0.0581 sec.

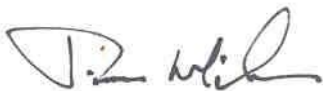


MGA RESEARCH CORPORATION
SHOULDER IMPACT TEST
EUROSID 2 DUMMY

Date: 7/6/01
Dummy Serial Number: 009
Test Number: D01993

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature (°C)	18 – 22	21.0
Relative Humidity (%)	10 – 70	47
Pendulum Speed	4.2 – 4.4 m/s	4.2
Max. Resultant Acceleration	7.5 – 10.5 g's	9.6
Time of Max. Pendulum Acceleration	-----	24.7 msec

TEST MEETS SPECIFICATIONS

Technician: 

Approved By: 



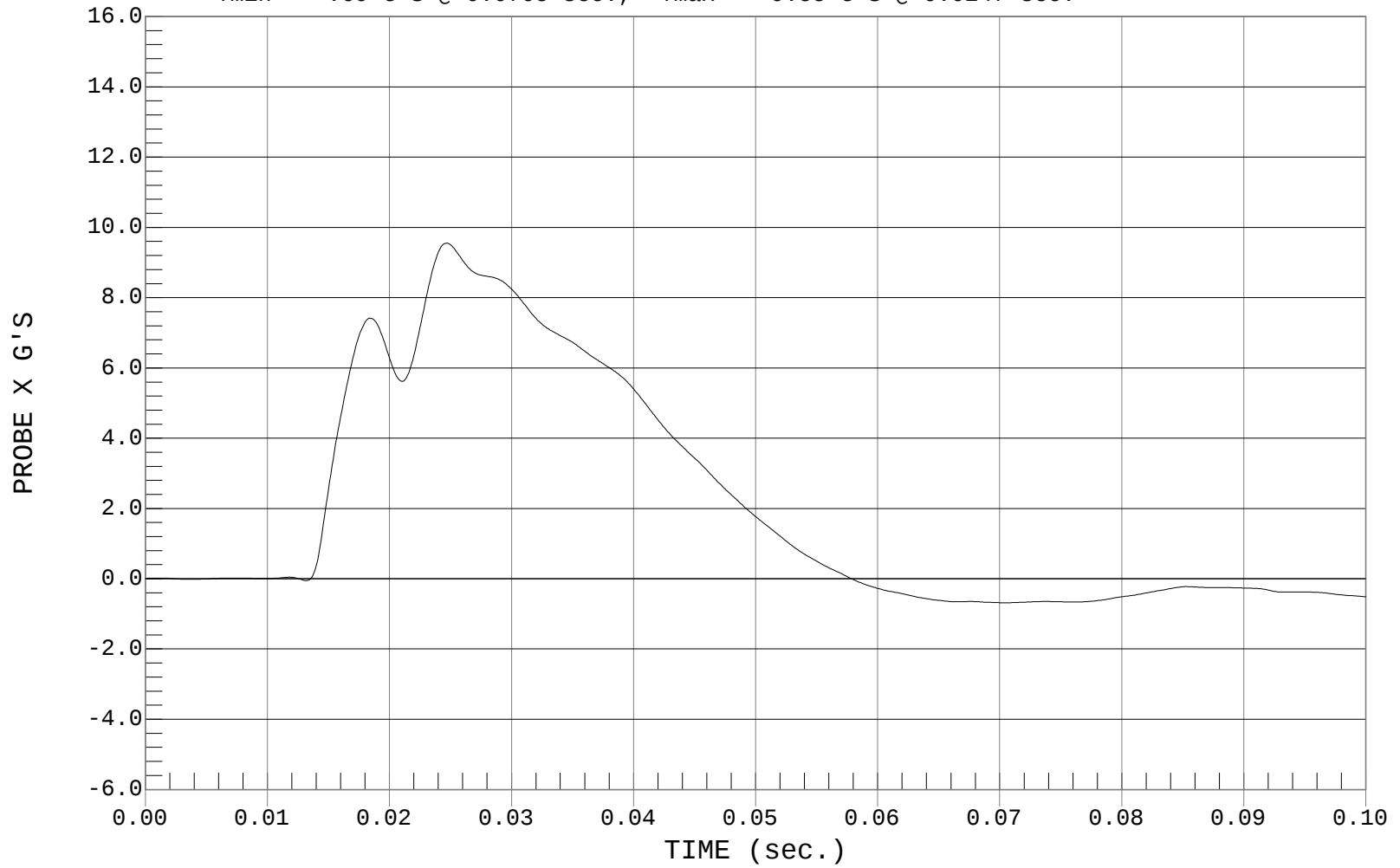
SHOULDER ACCELERATION

Test Desc.: Dummy Calibration - Shoulder Impact
Component: Dummy #009

Test Date: 07-06-01
Speed: 13.84 FT/SEC, 4.22 M/SEC

— 1 PROBE X, D01993AF.A01

Ymin = -0.69 G'S @ 0.0705 sec., Ymax = 9.55 G'S @ 0.0247 sec.

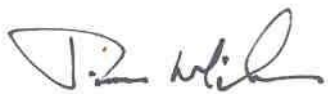


MGA RESEARCH CORPORATION
UPPER/MIDDLE/LOWER RIB TESTS
SIDE IMPACT DUMMY (SID)

Date: 7/9/01
Dummy Serial Number: 009
Test Number: D01994/5/6

UPPER RIB - TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature (°C)	18.9 – 25.5	22.0
Relative Humidity (%)	10 – 70	44
Displacement at 2 m/s	23.5 – 27.5 mm	24.5
Displacement at 3 m/s	36.0 – 40.0 mm	38.0
Displacement at 4 m/s	46.0 – 51.0 mm	50.4
MIDDLE RIB - TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature (°C)	18.9 – 25.5	22.0
Relative Humidity (%)	10 – 70	44
Displacement at 2 m/s	23.5 – 27.5 mm	25.5
Displacement at 3 m/s	36.0 – 40.0 mm	38.2
Displacement at 4 m/s	46.0 – 51.0 mm	49.7
LOWER RIB - TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature (°C)	18.9 – 25.5	22.0
Relative Humidity (%)	10 – 70	44
Displacement at 2 m/s	23.5 – 27.5 mm	25.0
Displacement at 3 m/s	36.0 – 40.0 mm	38.5
Displacement at 4 m/s	46.0 – 51.0 mm	49.7

TEST MEETS SPECIFICATIONS

Technician: 

Approved By: 



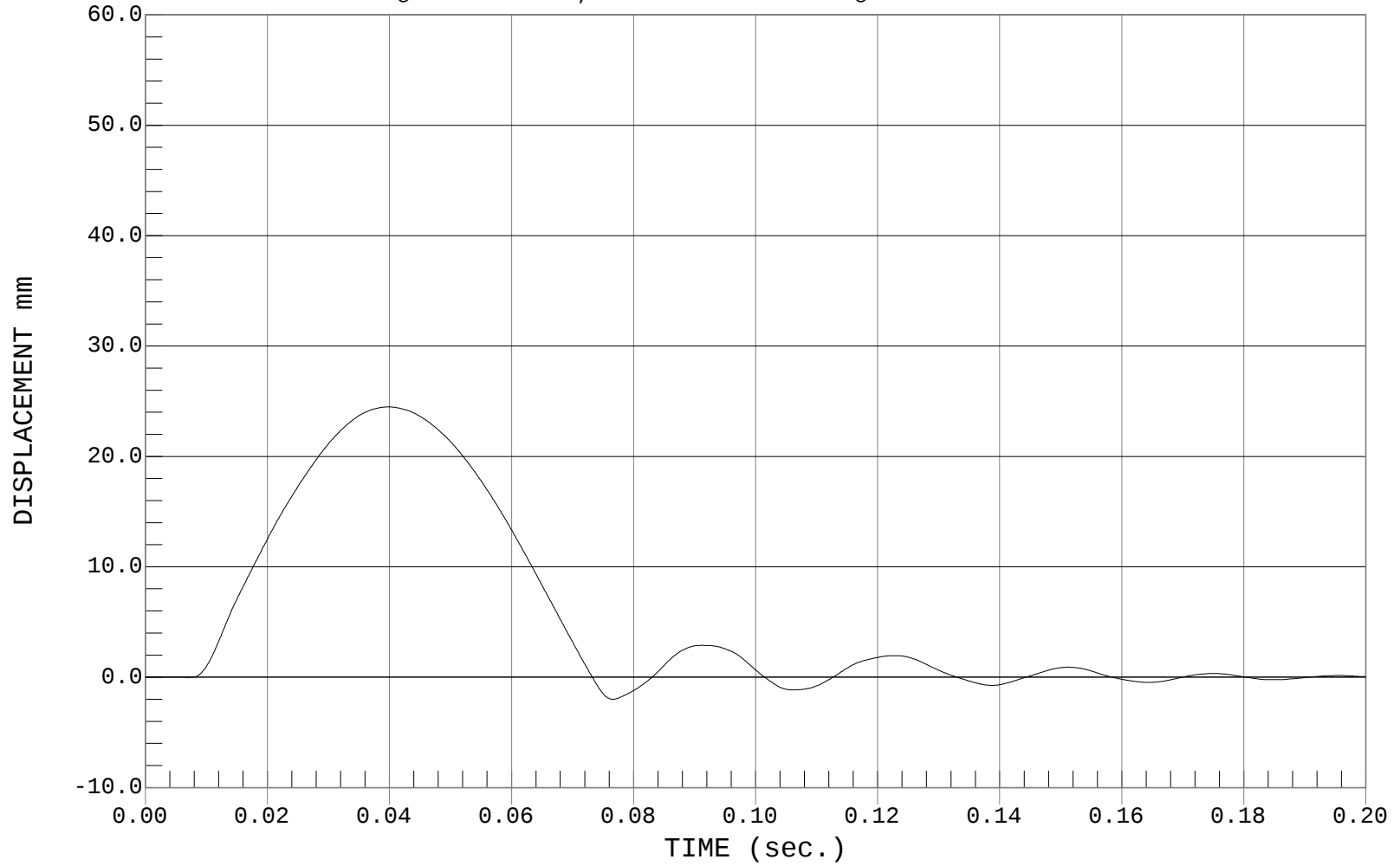
UPPER RIB DISPLACEMENT

Test Desc.: Dummy Calibration - Rib Module
Component: Dummy #009

Test Date: 07-09-01
Speed: 6.56 FT/SEC, 2.00 M/SEC

— 1 DISPLACEMENT, D01994DF.D05

Ymin = -2 mm @ 0.0766 sec., Ymax = 24.48 mm @ 0.0399 sec.





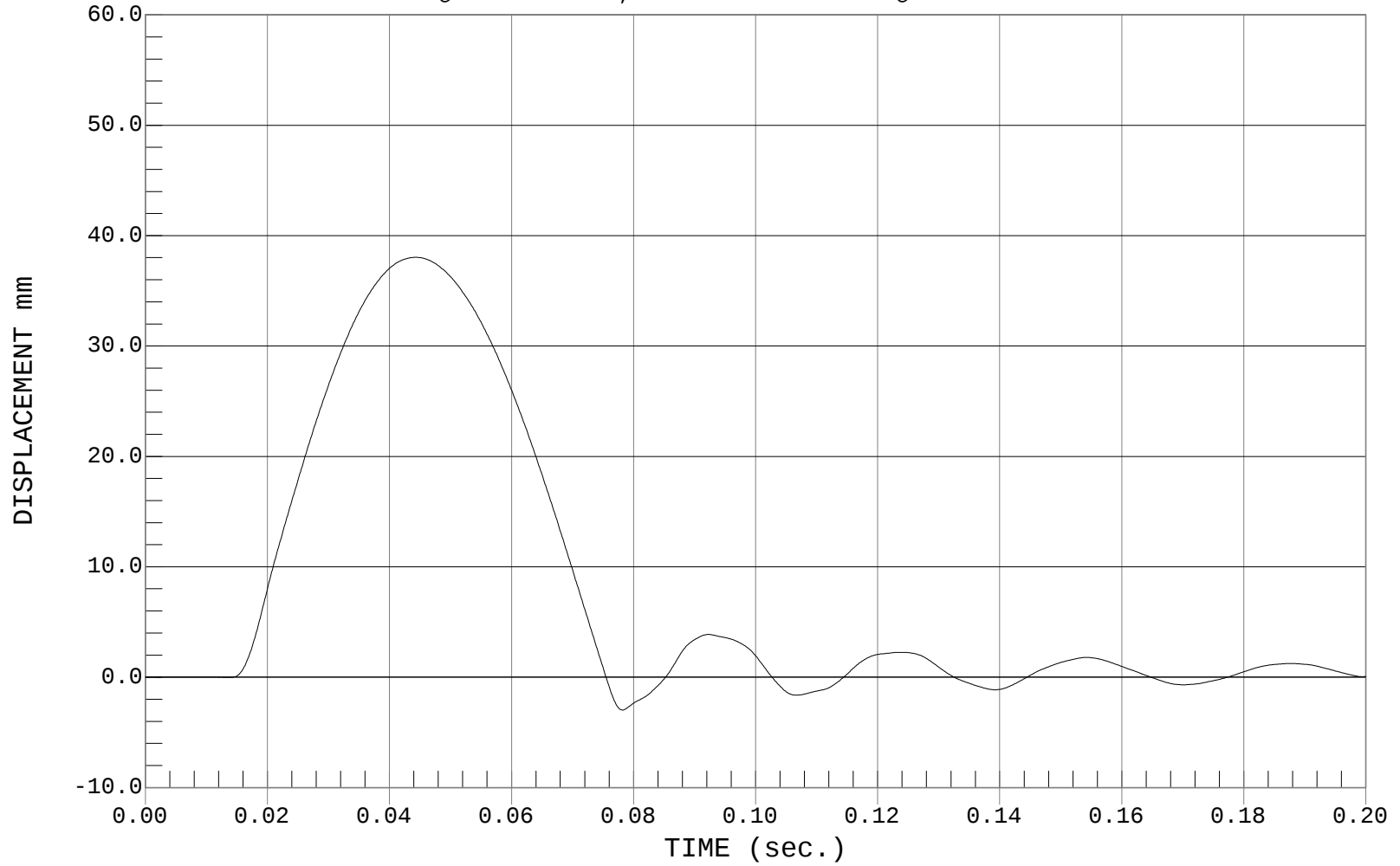
UPPER RIB DISPLACEMENT

Test Desc.: Dummy Calibration - Rib Module
Component: Dummy #009

Test Date: 07-09-01
Speed: 9.84 FT/SEC, 3.00 M/SEC

— 1 DISPLACEMENT, D01994DF.D06

Ymin = -2.97 mm @ 0.0782 sec., Ymax = 38.04 mm @ 0.0443 sec.



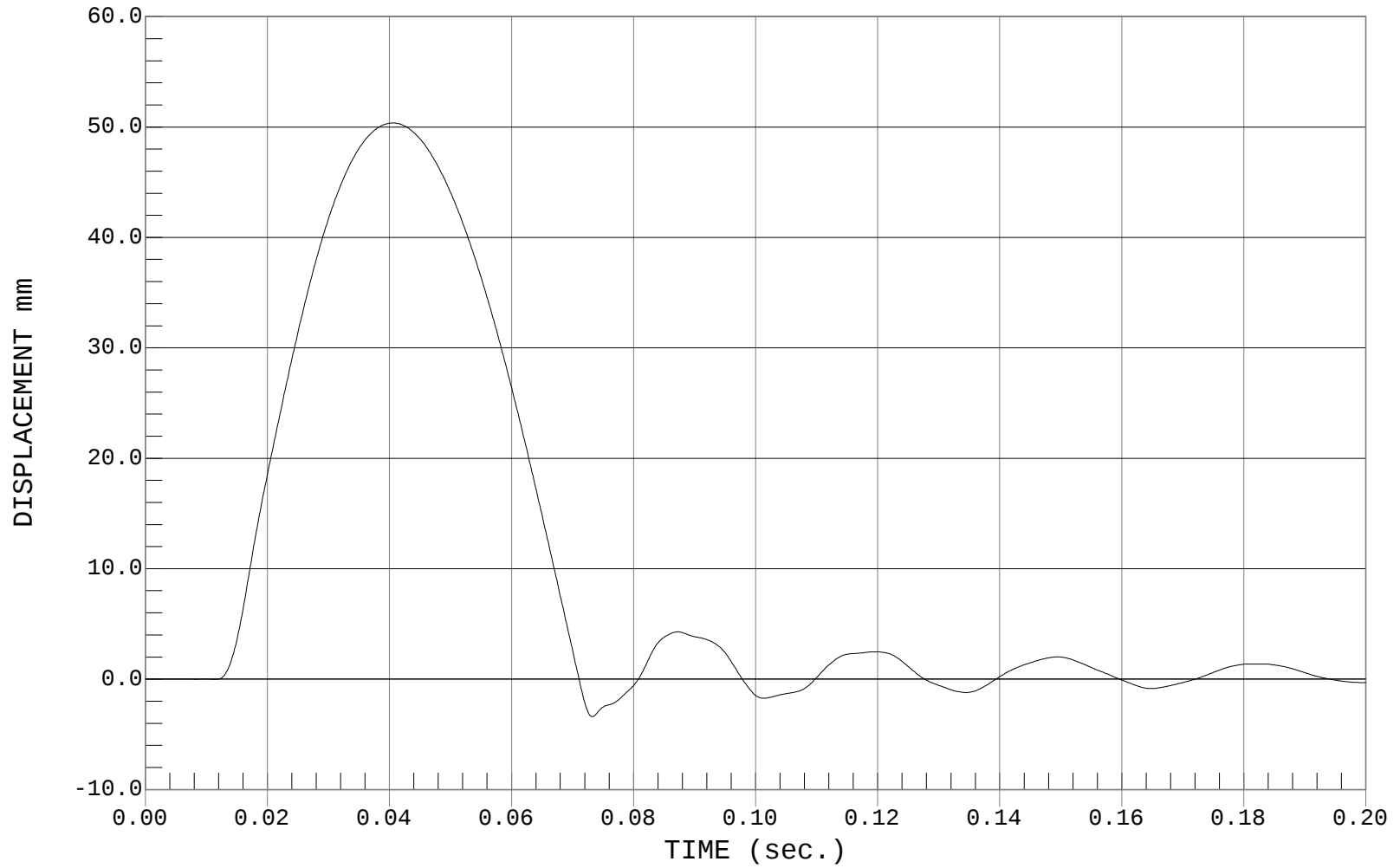


UPPER RIB DISPLACEMENT

Test Desc.: Dummy Calibration - Rib Module
Component: Dummy #009

Test Date: 07-09-01
Speed: 13.12 FT/SEC, 4.00 M/SEC

— 1 DISPLACEMENT, D01994DF.D07





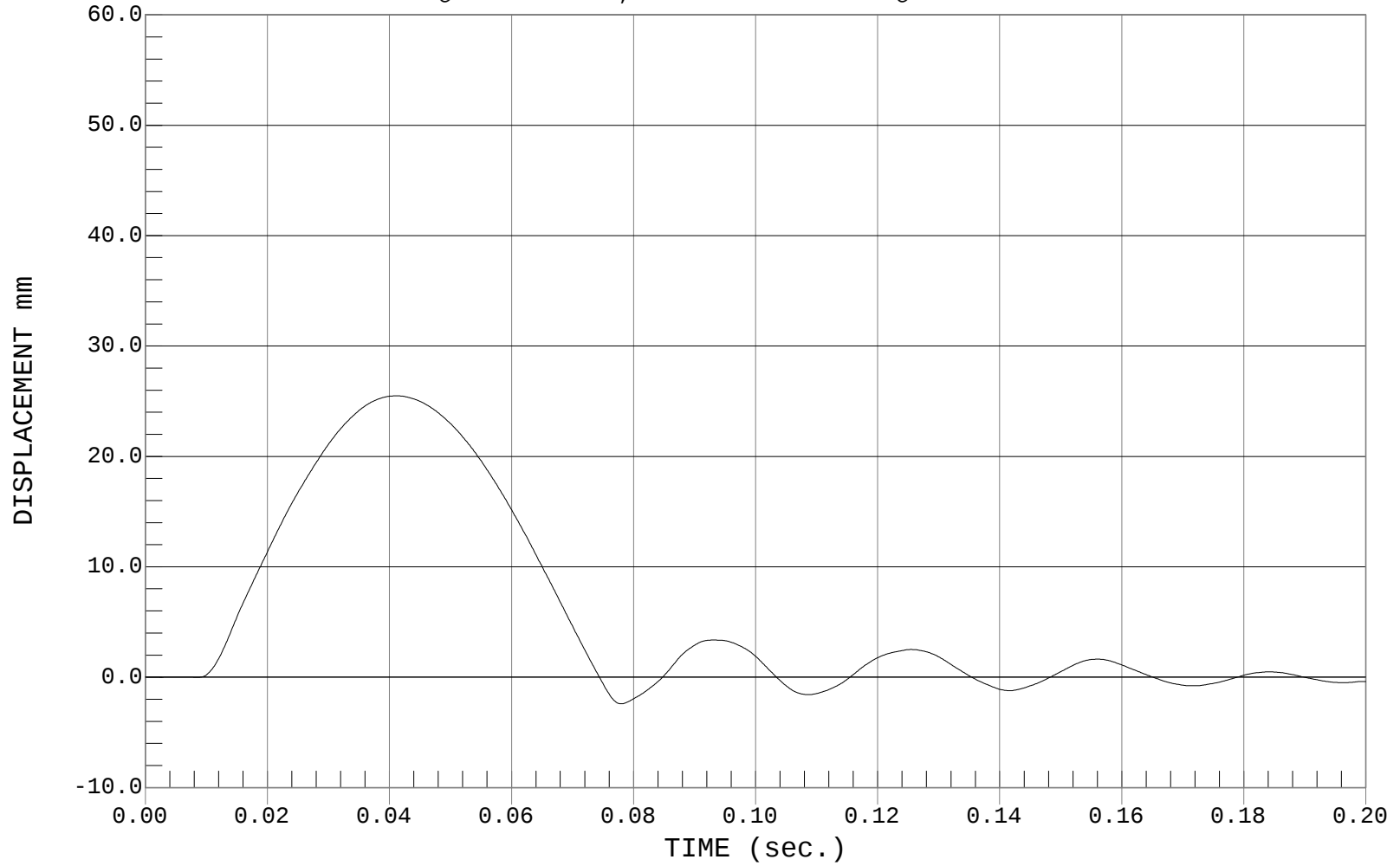
MIDDLE RIB DISPLACEMENT

Test Desc.: Dummy Calibration - Rib Module
Component: Dummy #009

Test Date: 07-09-01
Speed: 6.56 FT/SEC, 2.00 M/SEC

— 1 DISPLACEMENT, D01995DF.D05

Ymin = -2.41 mm @ 0.0780 sec., Ymax = 25.49 mm @ 0.0412 sec.





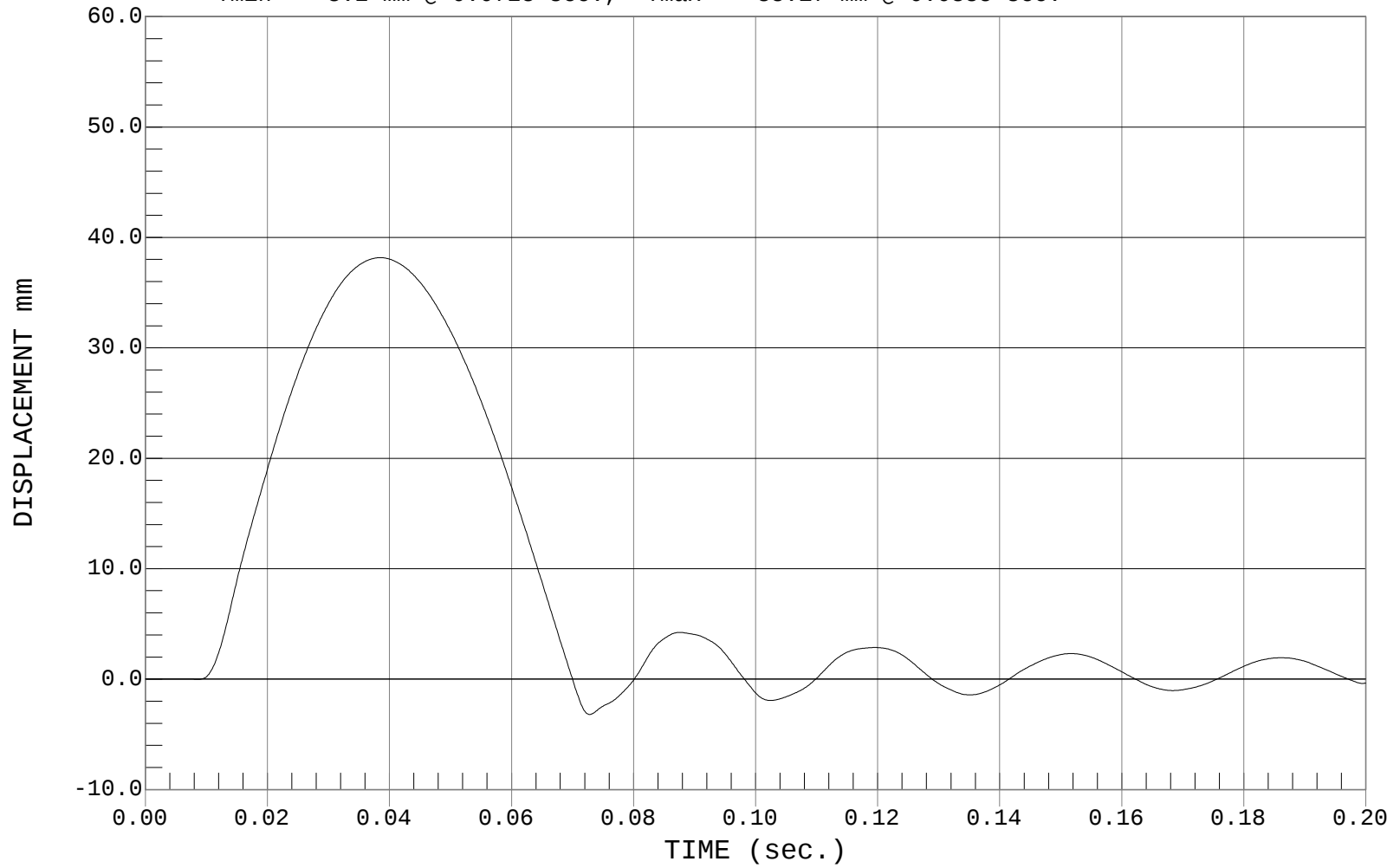
MIDDLE RIB DISPLACEMENT

Test Desc.: Dummy Calibration - Rib Module
Component: Dummy #009

Test Date: 07-09-01
Speed: 9.84 FT/SEC, 3.00 M/SEC

— 1 DISPLACEMENT, D01995DF.D06

Ymin = -3.2 mm @ 0.0728 sec., Ymax = 38.17 mm @ 0.0385 sec.





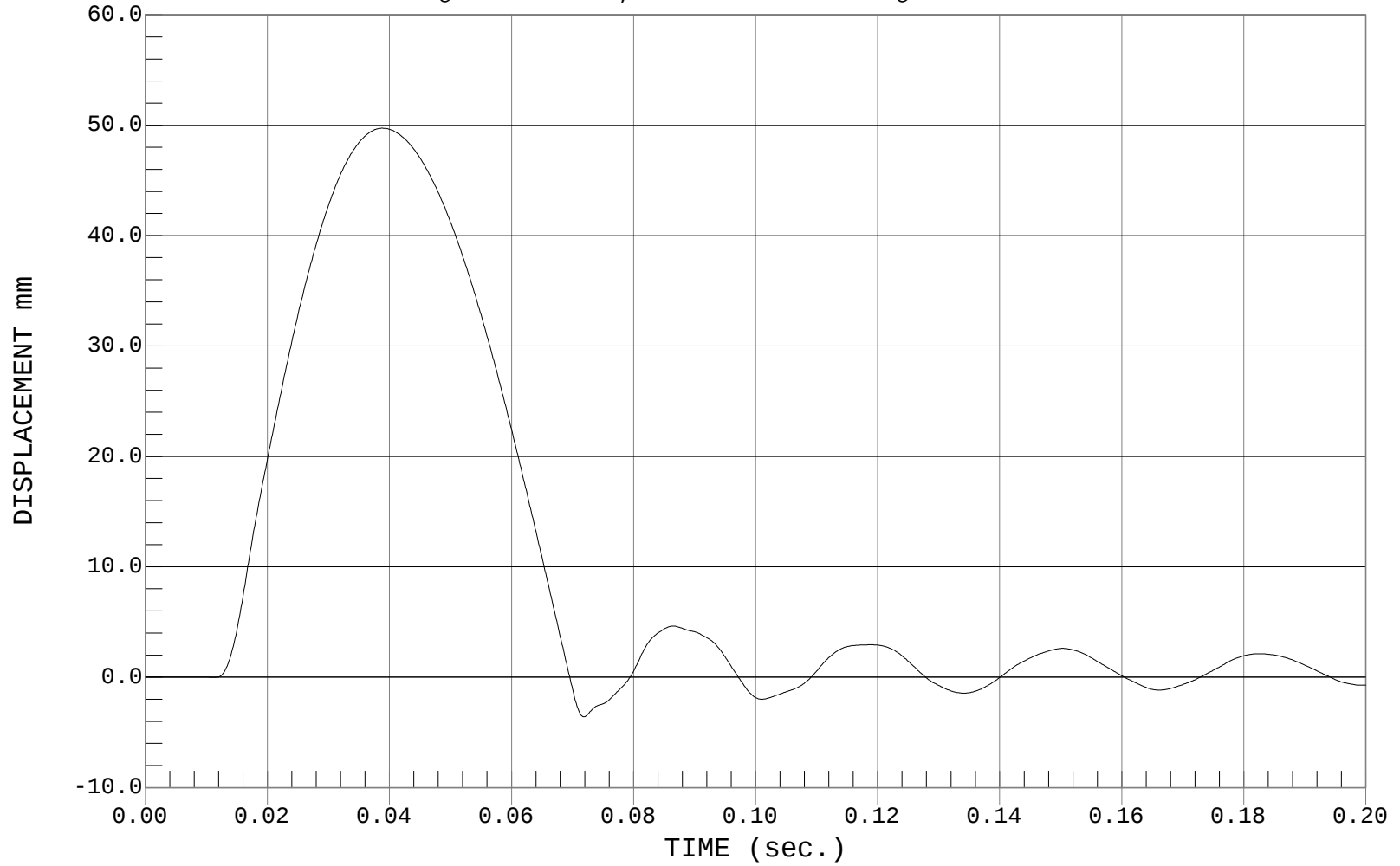
MIDDLE RIB DISPLACEMENT

Test Desc.: Dummy Calibration - Rib Module
Component: Dummy #009

Test Date: 07-09-01
Speed: 13.12 FT/SEC, 4.00 M/SEC

— 1 DISPLACEMENT, D01995DF.D07

Ymin = -3.59 mm @ 0.0718 sec., Ymax = 49.73 mm @ 0.0388 sec.





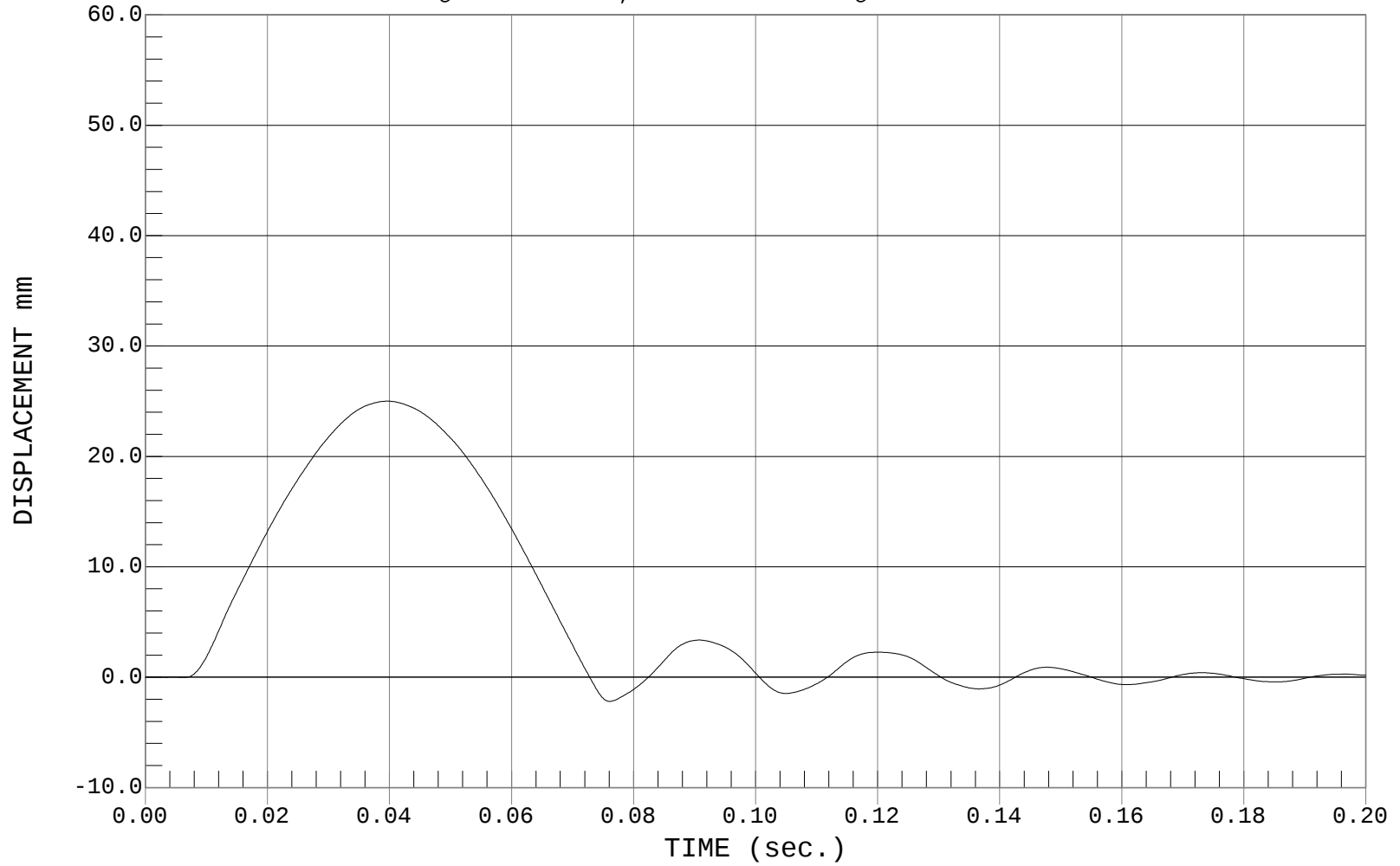
LOWER RIB DISPLACEMENT

Test Desc.: Dummy Calibration - Rib Module
Component: Dummy #009

Test Date: 07-09-01
Speed: 6.56 FT/SEC, 2.00 M/SEC

— 1 DISPLACEMENT, D01996DF.D05

Ymin = -2.19 mm @ 0.0761 sec., Ymax = 25 mm @ 0.0397 sec.





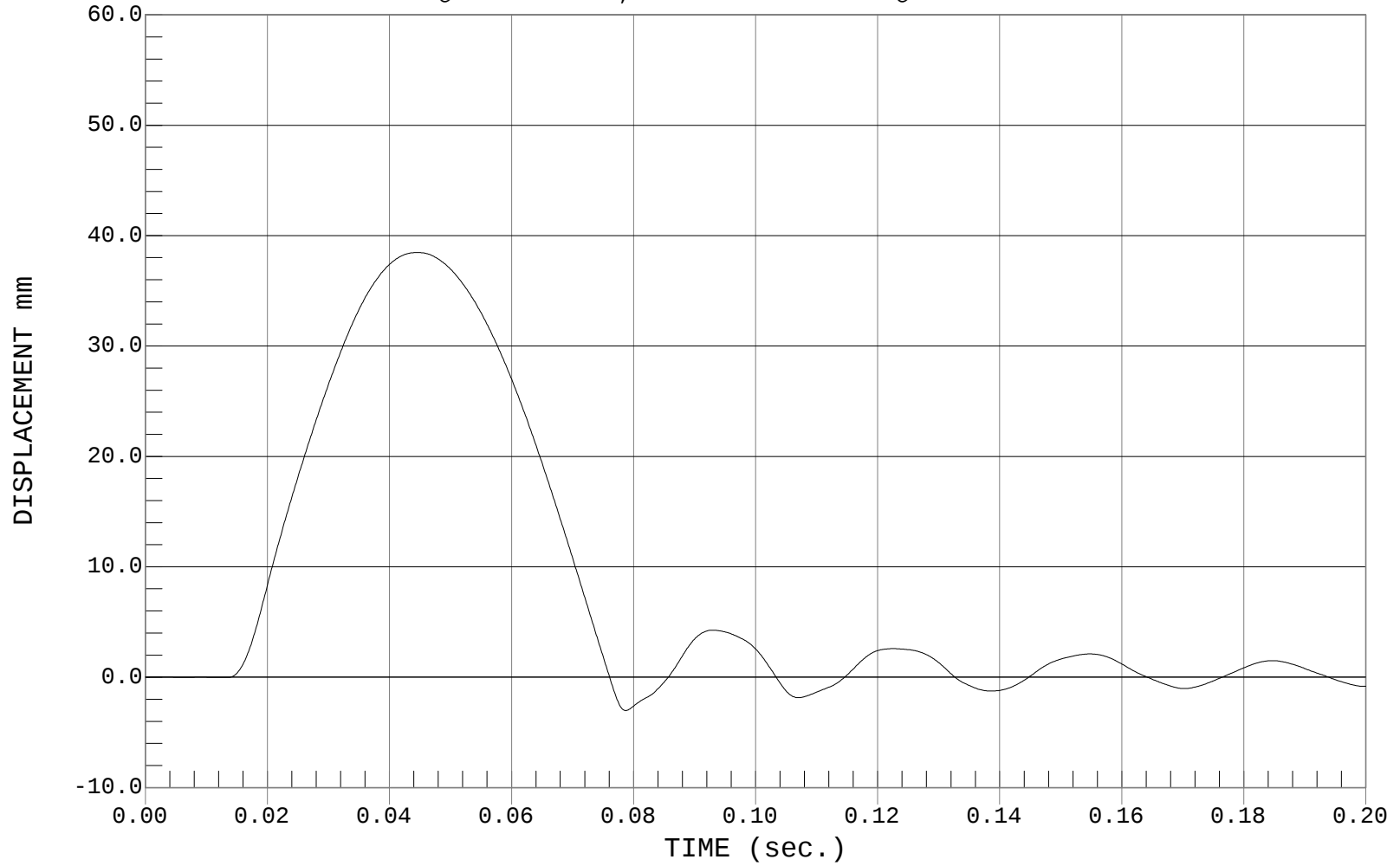
LOWER RIB DISPLACEMENT

Test Desc.: Dummy Calibration - Rib Module
Component: Dummy #009

Test Date: 07-09-01
Speed: 9.84 FT/SEC, 3.00 M/SEC

— 1 DISPLACEMENT, D01996DF.D06

Ymin = -3.02 mm @ 0.0787 sec., Ymax = 38.47 mm @ 0.0446 sec.





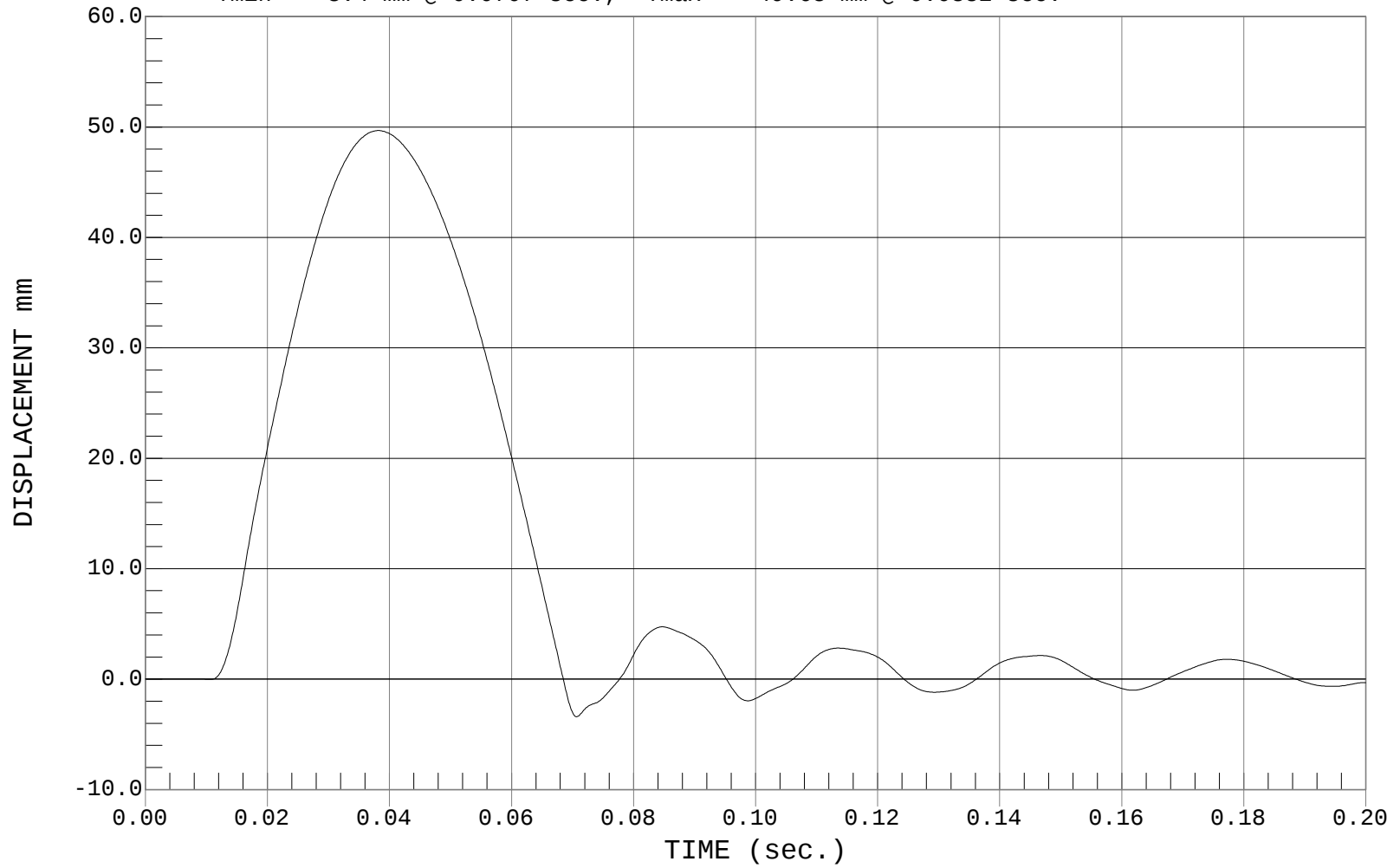
LOWER RIB DISPLACEMENT

Test Desc.: Dummy Calibration - Rib Module
Component: Dummy #009

Test Date: 07-09-01
Speed: 13.12 FT/SEC, 4.00 M/SEC

— 1 DISPLACEMENT, D01996DF.D07

Ymin = -3.4 mm @ 0.0707 sec., Ymax = 49.68 mm @ 0.0382 sec.

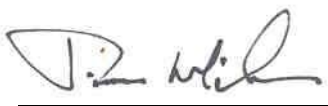


MGA RESEARCH CORPORATION
ABDOMEN TEST
EUROSID 2 DUMMY

Date: 7/6/01
Dummy Serial Number: 009
Test Number: D01997

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature (°C)	18 – 22	21.3
Relative Humidity (%)	10 – 70	46
Probe Speed (m/s)	3.90 – 4.10	4.00
Maximum Impact Force	4.00 – 4.80 kN	4.75
Time of Maximum Force	10.60 – 13.00 ms	11.30
Maximum Total Abdomen Force	2.20 – 2.70 kN	2.37
Time of Max. Total Force	10.00 – 12.30 ms	10.90

TEST MEETS SPECIFICATIONS

Technician: 

Approved By: 



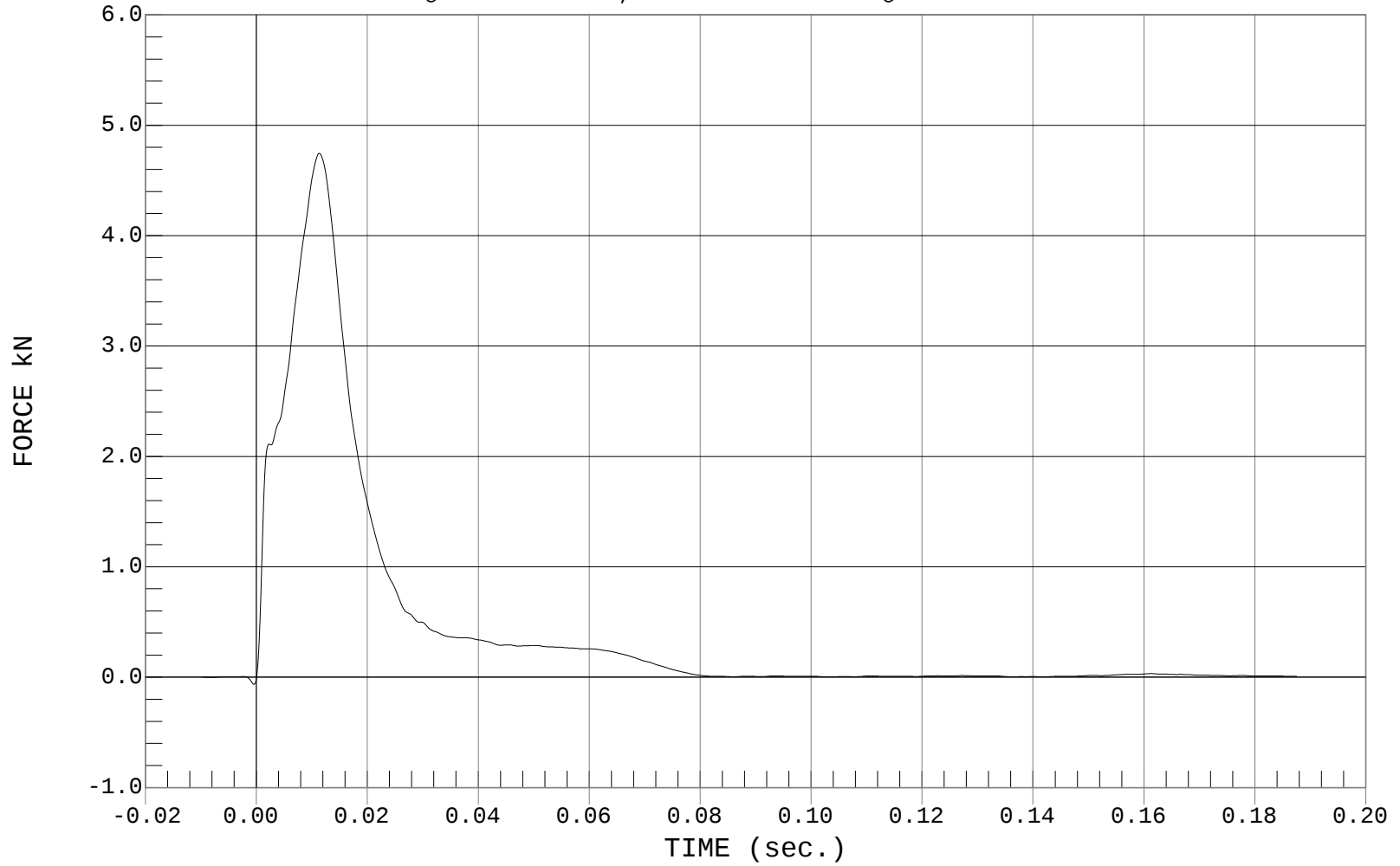
IMPACTOR FORCE

Test Desc.: Dummy Calibration - Abdomen Impact
Component: Dummy #009

Test Date: 07-06-01
Speed: 13.14 FT/SEC, 4.00 M/SEC

— 1 FORCE, D01997FT.F01

Ymin = -.07 kN @ -0.0004 sec., Ymax = 4.75 kN @ 0.0113 sec.





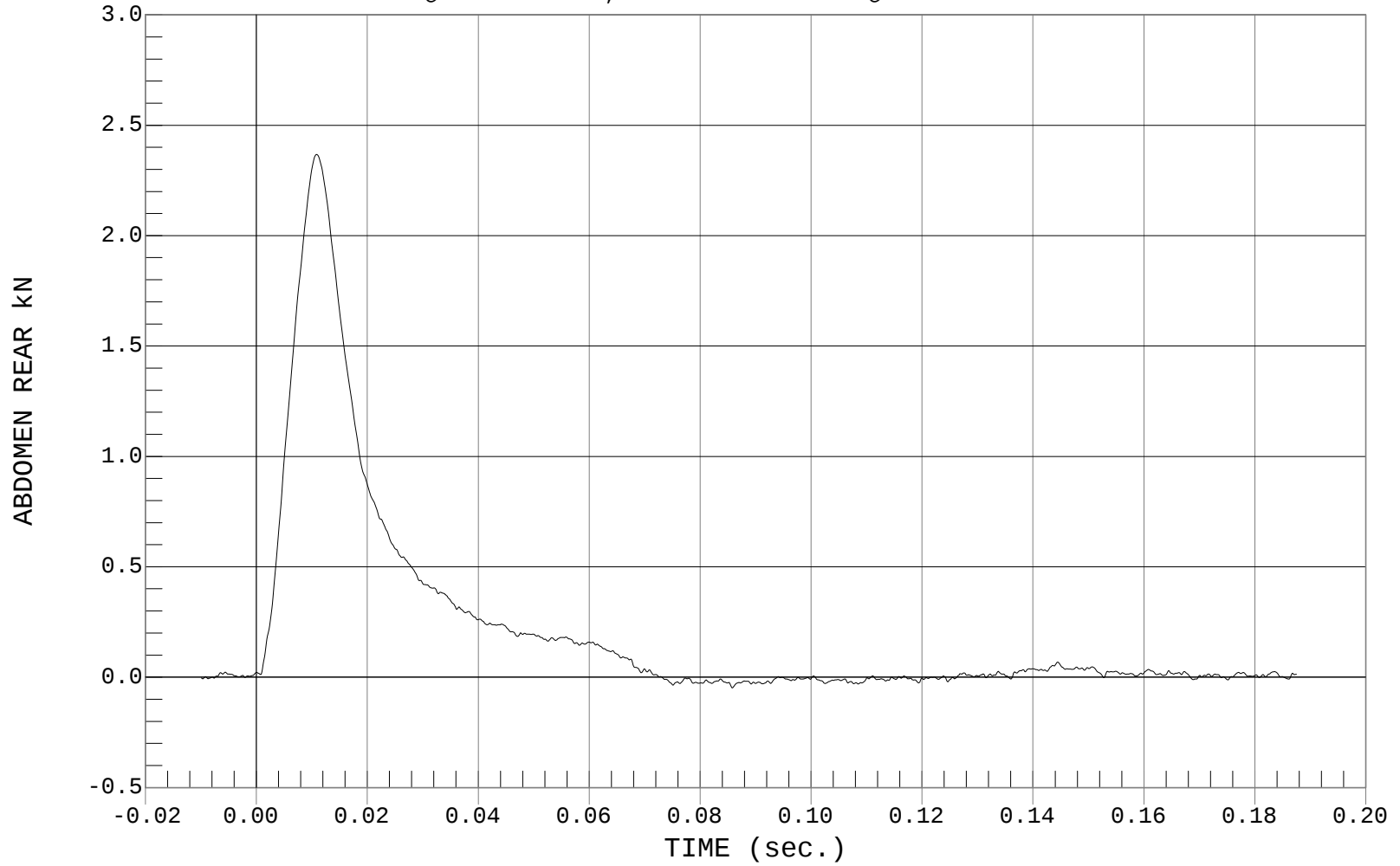
ABDOMEN FORCE

Test Desc.: Dummy Calibration - Abdomen Impact
Component: Dummy #009

Test Date: 07-06-01
Speed: 13.14 FT/SEC, 4.00 M/SEC

— 1 ABDOMEN REAR, D01997FT.F02

Ymin = -.05 kN @ 0.0858 sec., Ymax = 2.37 kN @ 0.0109 sec.

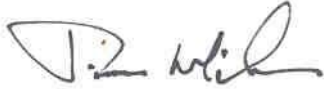


MGA RESEARCH CORPORATION
LUMBAR SPINE TEST
EUROSID 2 DUMMY

Date: 7/9/01
Dummy Serial Number: 009
Test Number: D01998

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature (°C)		18 – 22	21.7
Relative Humidity (%)		10 – 70	46
Pendulum Speed		5.95 – 6.15	6.14
Pendulum Deceleration	10 msec	-2.46 - -1.59 m/sec	-1.95
	20 msec	-5.25 - -4.07 m/sec	-4.43
	25 msec	-6.64 - -5.30 m/sec	-5.52
	30 msec	≥ -6.5 m/sec	-6.19
Maximum Flexion Angle		45.0 – 55.0 deg	53.9
Time of Max. Flexion Angle		39.0 – 53.0 ms	48.8
Maximum Angle Theta (A)		31.0 – 35.0 deg	34.1
Time of Max. Theta (A)		44.0 – 52.0 ms	47.4
Maximum Angle Theta (B)		29.28– 31.78 deg	30.05
Time of Max. Theta (B)		44.0 – 52.0 ms	47.6

TEST MEETS SPECIFICATIONS

Technician: 

Approved By: 



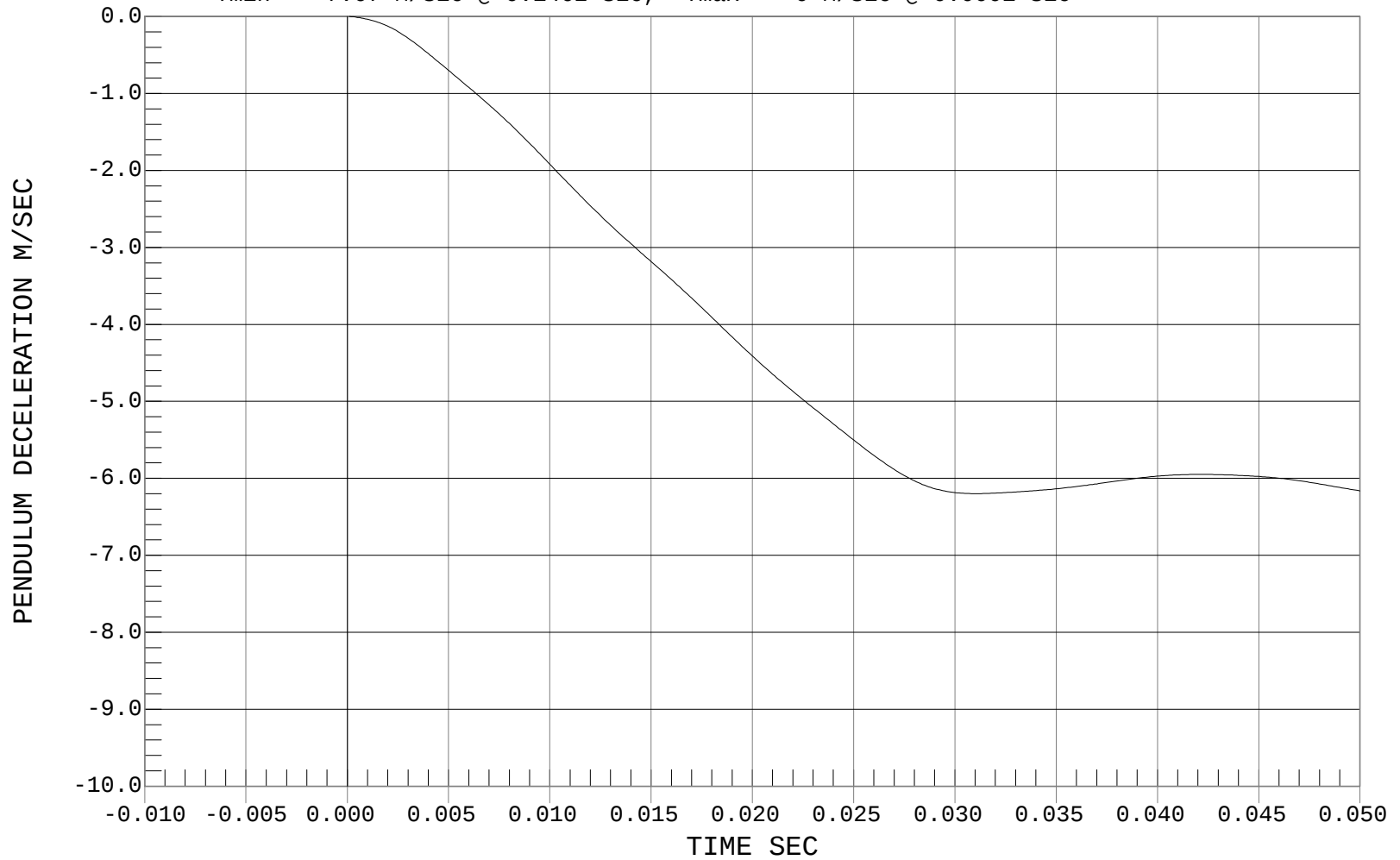
PENDULUM DECELERATION

Test Desc.: Dummy Calibration - Lumbar Flexion
Component: Dummy #009

Test Date: 07-09-01
Speed: 20.15 FT/SEC, 6.14 M/SEC

— 1 PENDULUM DECELERATION, D01998AI.V04

Ymin = -7.67 M/SEC @ 0.1462 SEC, Ymax = 0 M/SEC @ 0.0001 SEC





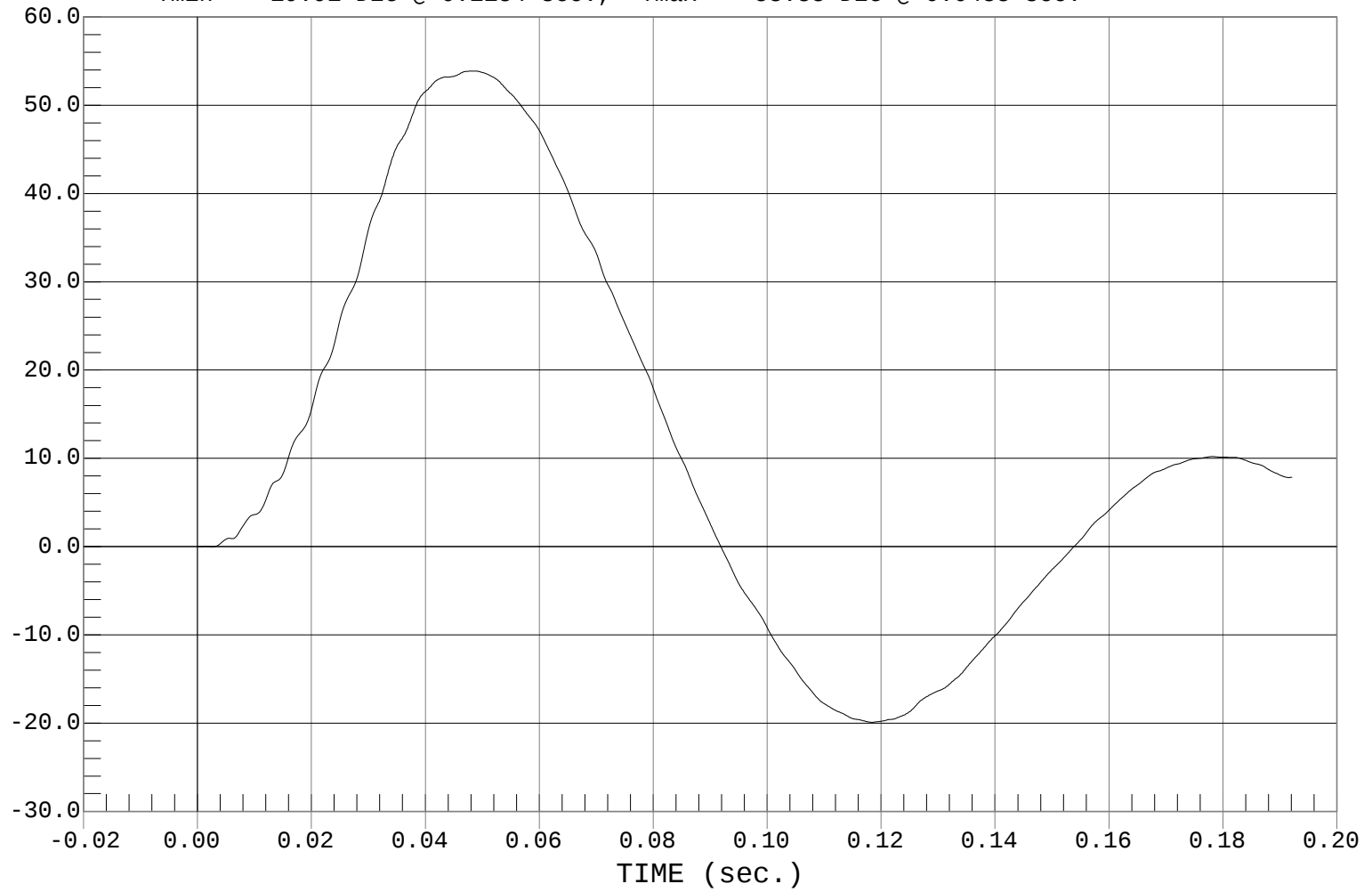
FLEXION ANGLE

Test Desc.: Dummy Calibration - Lumbar Flexion
Component: Dummy #009

Test Date: 07-09-01
Speed: 20.15 FT/SEC, 6.14 M/SEC

— 1 HEADFORM, D01998DT.D08

Ymin = -19.91 DEG @ 0.1184 sec., Ymax = 53.88 DEG @ 0.0488 sec.





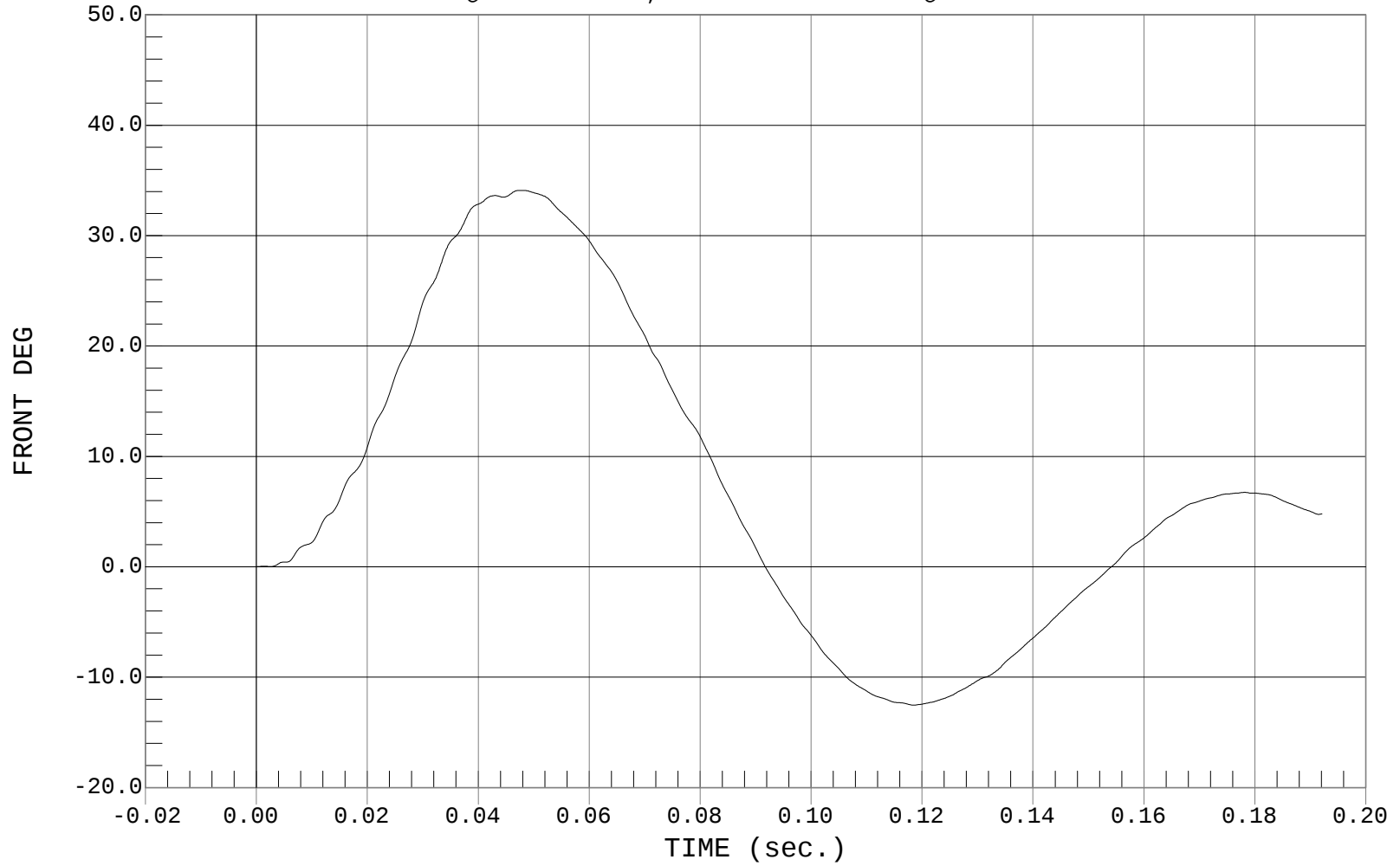
THETA A

Test Desc.: Dummy Calibration - Lumbar Flexion
Component: Dummy #009

Test Date: 07-09-01
Speed: 20.15 FT/SEC, 6.14 M/SEC

— 1 FRONT, D01998DT.D05

Ymin = -12.53 DEG @ 0.1185 sec., Ymax = 34.1 DEG @ 0.0474 sec.





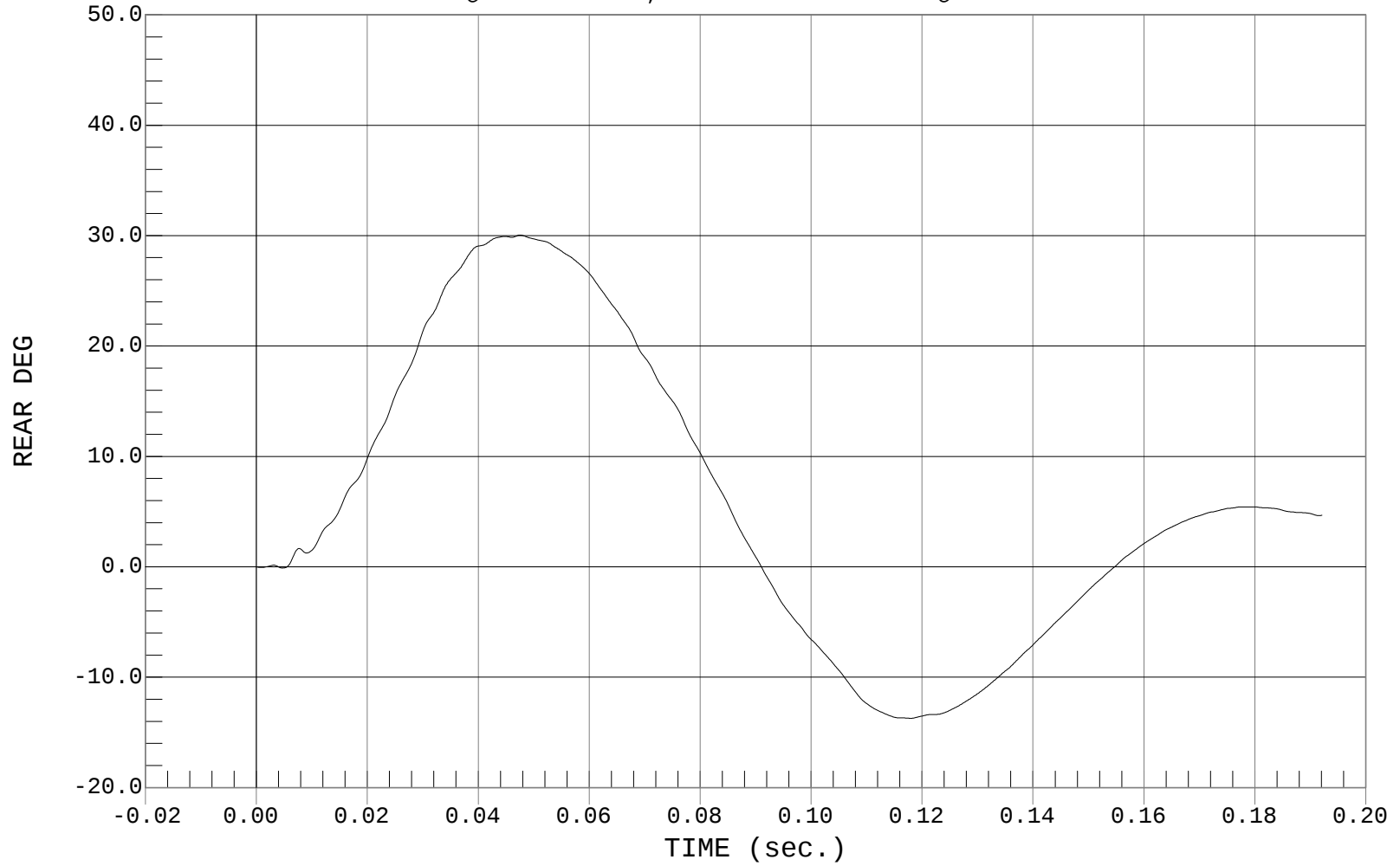
THETA B

Test Desc.: Dummy Calibration - Lumbar Flexion
Component: Dummy #009

Test Date: 07-09-01
Speed: 20.15 FT/SEC, 6.14 M/SEC

— 1 REAR, D01998DT.D06

Ymin = -13.72 DEG @ 0.1180 sec., Ymax = 30.05 DEG @ 0.0476 sec.

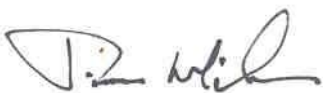


MGA RESEARCH CORPORATION
PELVIS TEST
EUROSID 2 DUMMY

Date: 7/6/01
Dummy Serial Number: 009
Test Number: D01999

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature (°C)	18 – 22	21.1
Relative Humidity (%)	10 – 70	46
Pendulum Speed	6.20 – 6.30 m/s	6.27
Maximum Impactor Force	9.80 – 12.20 kN	10.39
Time of Max. Impactor Force	9.50 – 12.50 ms	11.50
Maximum Pubic Force	2.65 – 3.35 kN	3.28
Time of Max. Pubic Force	10.00 – 13.00 ms	12.90

TEST MEETS SPECIFICATIONS

Technician: 

Approved By: 



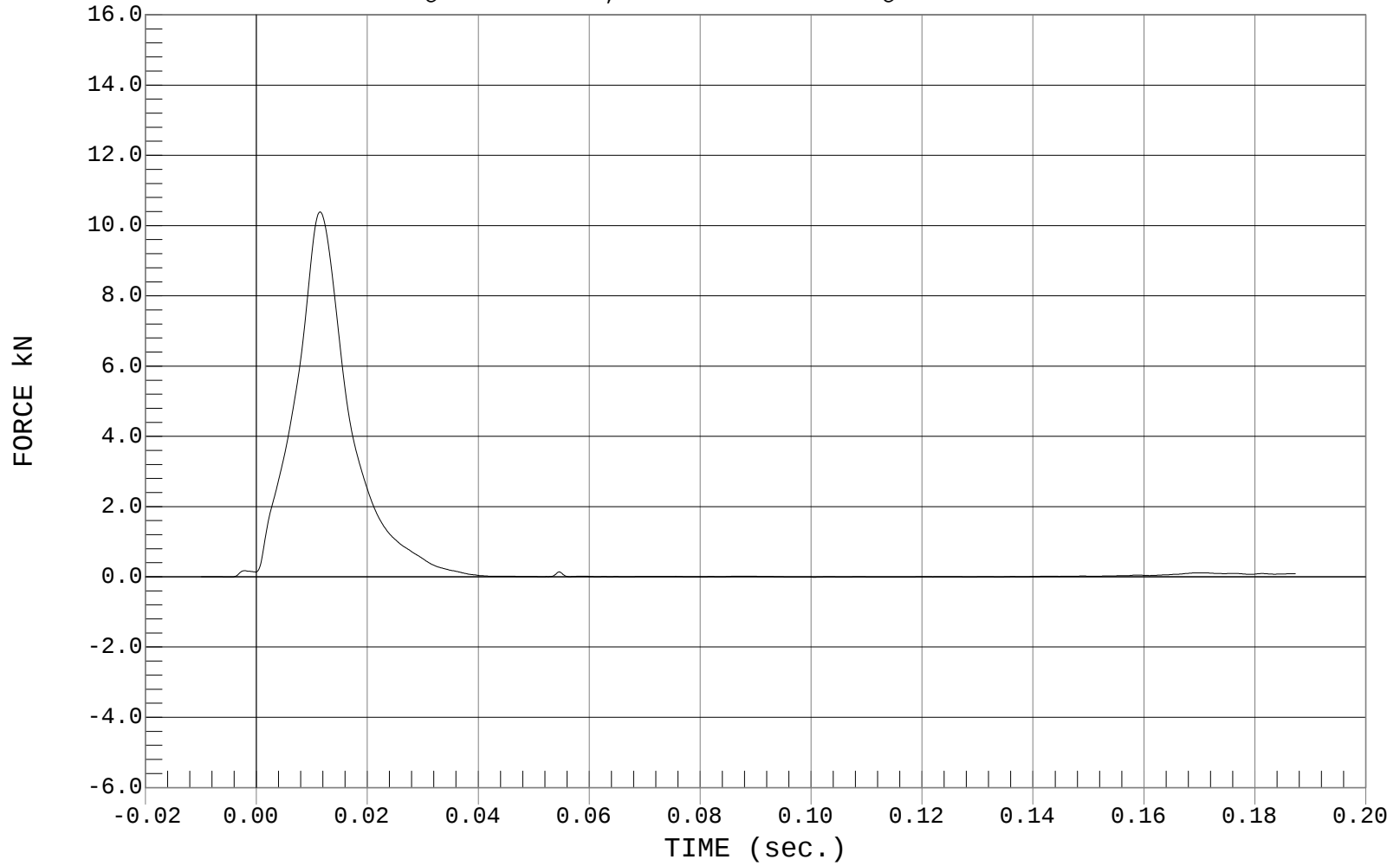
IMPACTOR FORCE

Test Desc.: Dummy Calibration - Pelvis Impact
Component: Dummy #009

Test Date: 07-06-01
Speed: 20.59 FT/SEC, 6.27 M/SEC

— 1 FORCE, D01999FT.F01

Ymin = -.01 kN @ 0.1006 sec., Ymax = 10.39 kN @ 0.0115 sec.





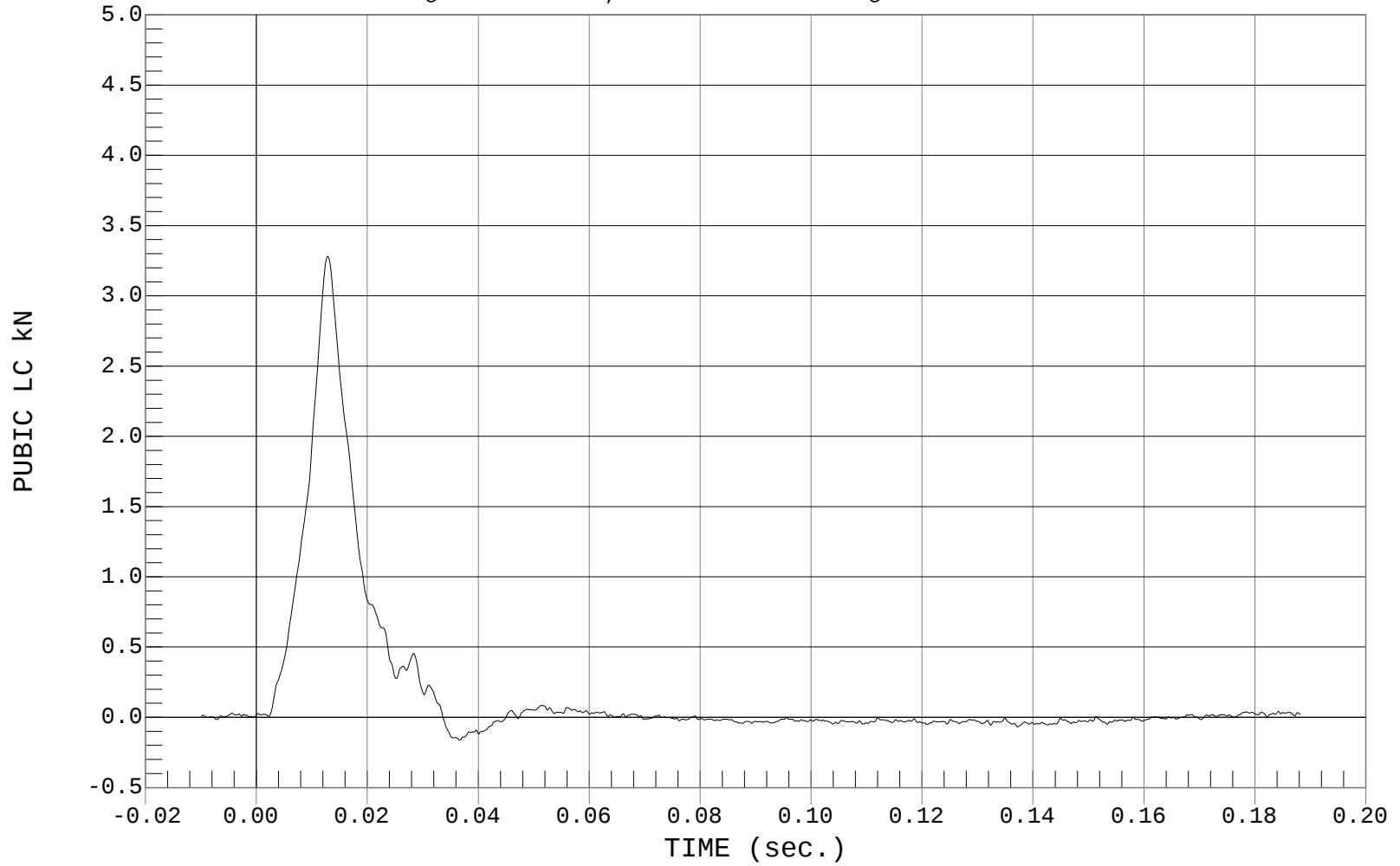
PUBIC FORCE

Test Desc.: Dummy Calibration - Pelvis Impact
Component: Dummy #009

Test Date: 07-06-01
Speed: 20.59 FT/SEC, 6.27 M/SEC

— 1 PUBIC LC, D01999FT.F02

Ymin = -.16 kN @ 0.0366 sec., Ymax = 3.28 kN @ 0.0129 sec.



CERTIFICATION DATA

Dummy Serial Number: 009

Calibration Test Results Summary

Dummy Serial Number: 009

Post-Test Calibration

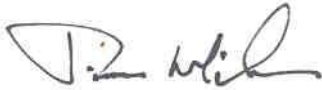
Head Drop Test:	The head passed all drop test requirements.
Neck Pendulum Test:	The neck passed all impact test requirements.
Shoulder Impact Test:	The shoulder passed all impact test requirements.
Rib Tests:	All ribs passed all impact test requirements.
Abdomen Test:	The abdomen passed all impact test requirements.
Lumbar Spine Test:	The lumbar spine passed all impact test requirements.
Pelvis Test:	The pelvis passed all impact test requirements.

MGA RESEARCH CORPORATION
HEAD DROP TEST
EUROSID 2 DUMMY

Date: 8/5/01
Dummy Serial Number: 009
Test Number: D011131

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature (°C)	18 – 22	20.7
Relative Humidity (%)	10 – 70	55
Peak Resultant Acceleration	100 – 150 g's	136
Time of Max. Res. Acceleration	-----	24.9 msec

TEST MEETS SPECIFICATIONS

Technician 

Approved By: David Winkelbauer



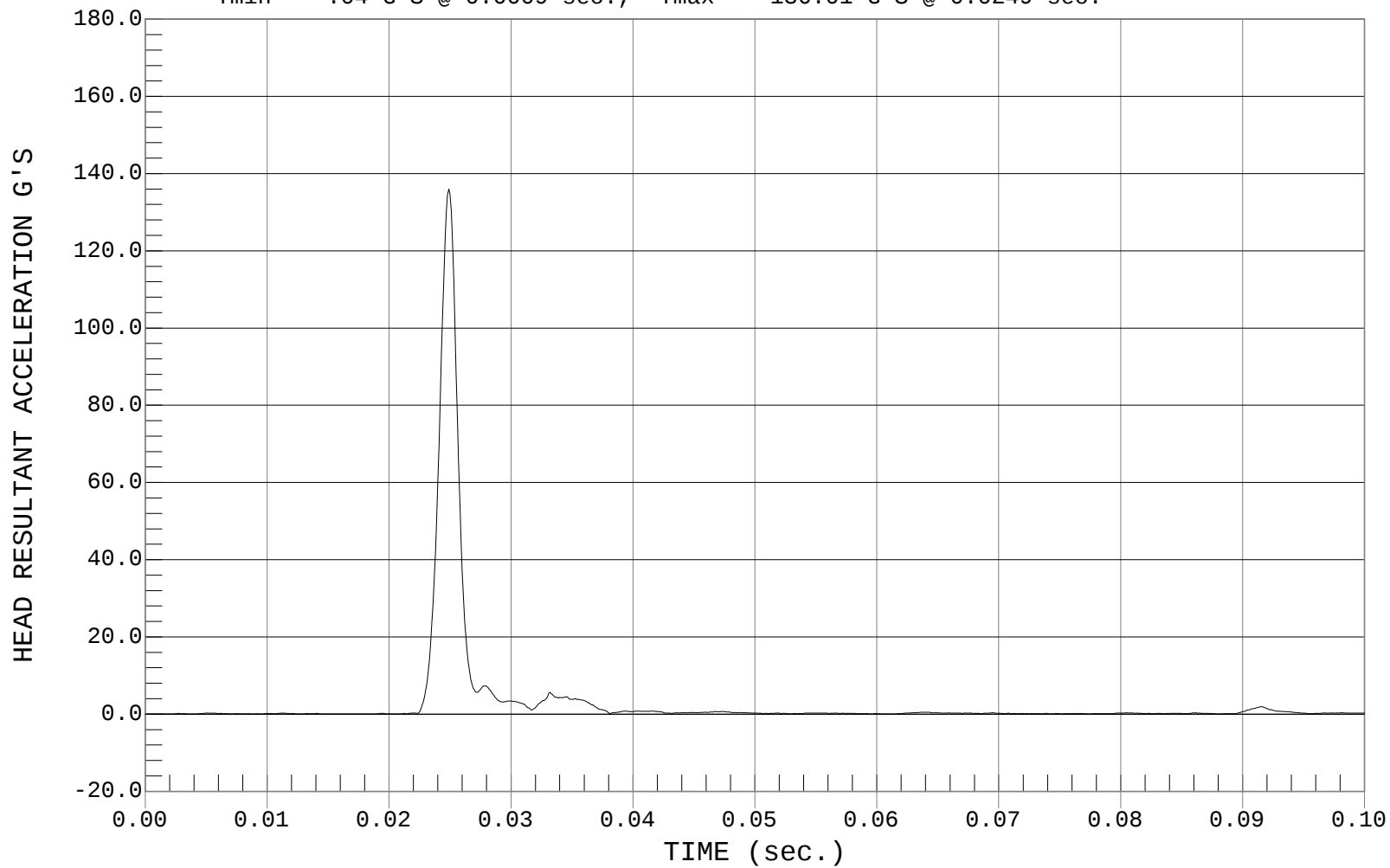
PEAK RESULTANT ACCELERATION

Test Desc.: Dummy Calibration - Head Drop
Component: Dummy #009

Test Date: 08-05-01
Speed: 0.00 FT/SEC, 0.00 M/SEC

— 1 HEAD RESULTANT ACCELERATION, D01131AV.A01

Ymin = .04 G'S @ 0.0009 sec., Ymax = 136.01 G'S @ 0.0249 sec.

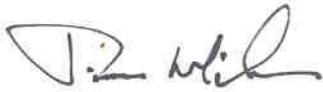


MGA RESEARCH CORPORATION
NECK PENDULUM TEST
EUROSID 2 DUMMY

Date: 8/5/01
Dummy Serial Number: 009
Test Number: D011132

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature (°C)		18 – 22	20.6
Relative Humidity (%)		10 – 70	53
Pendulum Speed		3.3 - 3.5	3.4
Pendulum Deceleration	3 msec	~.25 - ~.53 m/sec	-.35
	8 msec	~1.59 - ~2.04 m/sec	-1.71
	14 msec	~3.20 - ~3.85 m/sec	-3.36
Maximum Flexion Angle		49.0 – 59.0 deg	53.3
Time of Max. Flexion Angle		54.0 – 66.0 ms	56.6
Maximum Angle Theta (A)		32.0 – 37.0 deg	32.5
Time of Max. Theta (A)		53.0 – 63.0 ms	56.5
Maximum Angle Theta (B)		28.08 – 30.58 deg	29.18
Time of Max. Theta (B)		54.0 – 64.0 ms	55.6

TEST MEETS SPECIFICATIONS

Technician 

Approved By: 



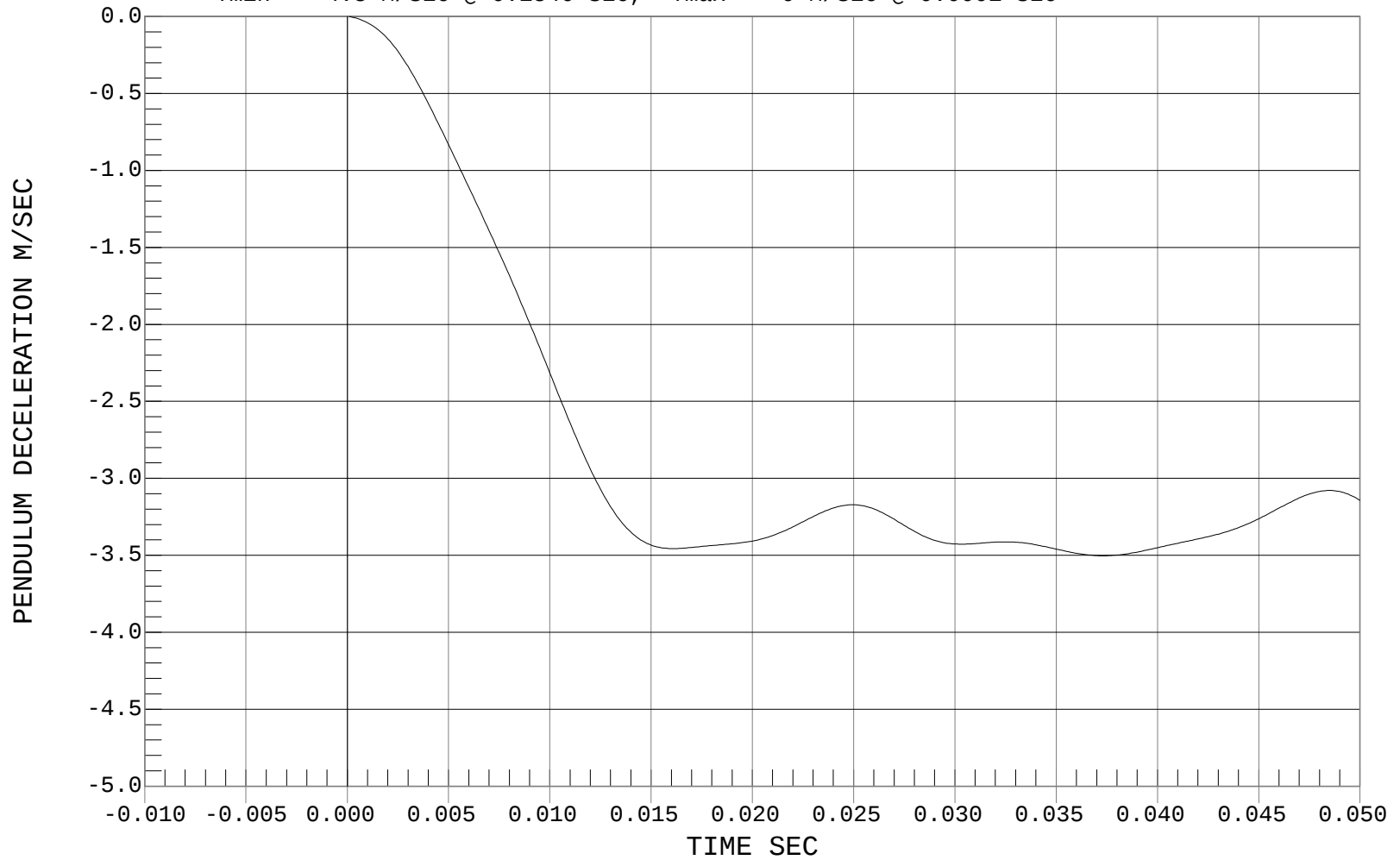
PENDULUM DECELERATION

Test Desc.: Dummy Calibration - Neck Bending
Component: Dummy #009

Test Date: 08-05-01
Speed: 11.12 FT/SEC, 3.39 M/SEC

— 1 PENDULUM DECELERATION, D01132AI.V04

Ymin = -4.3 M/SEC @ 0.1846 SEC, Ymax = 0 M/SEC @ 0.0001 SEC





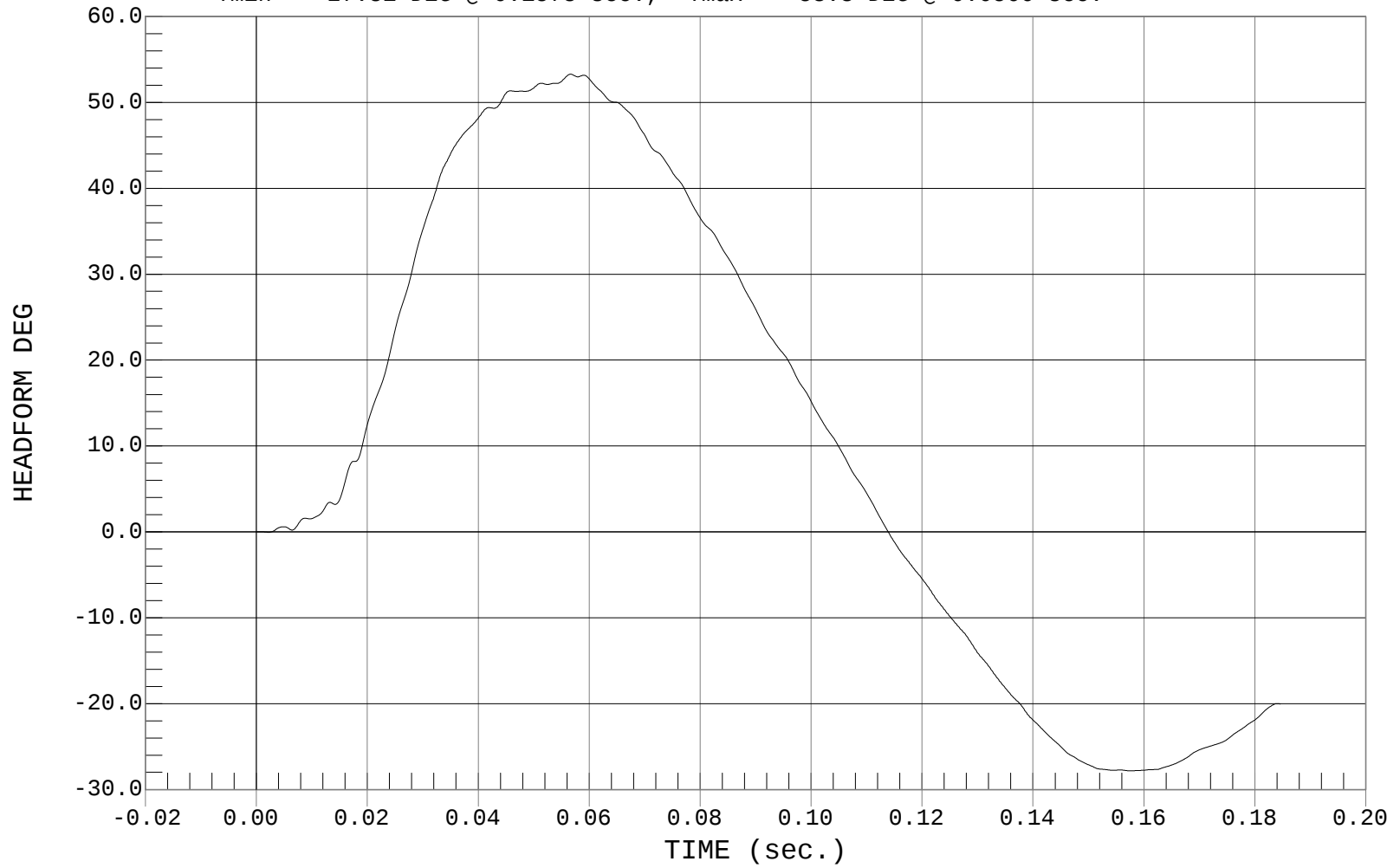
FLEXION ANGLE

Test Desc.: Dummy Calibration - Neck Bending
Component: Dummy #009

Test Date: 08-05-01
Speed: 11.12 FT/SEC, 3.39 M/SEC

— 1 HEADFORM, D01132DT.D08

Ymin = -27.81 DEG @ 0.1578 sec., Ymax = 53.3 DEG @ 0.0566 sec.





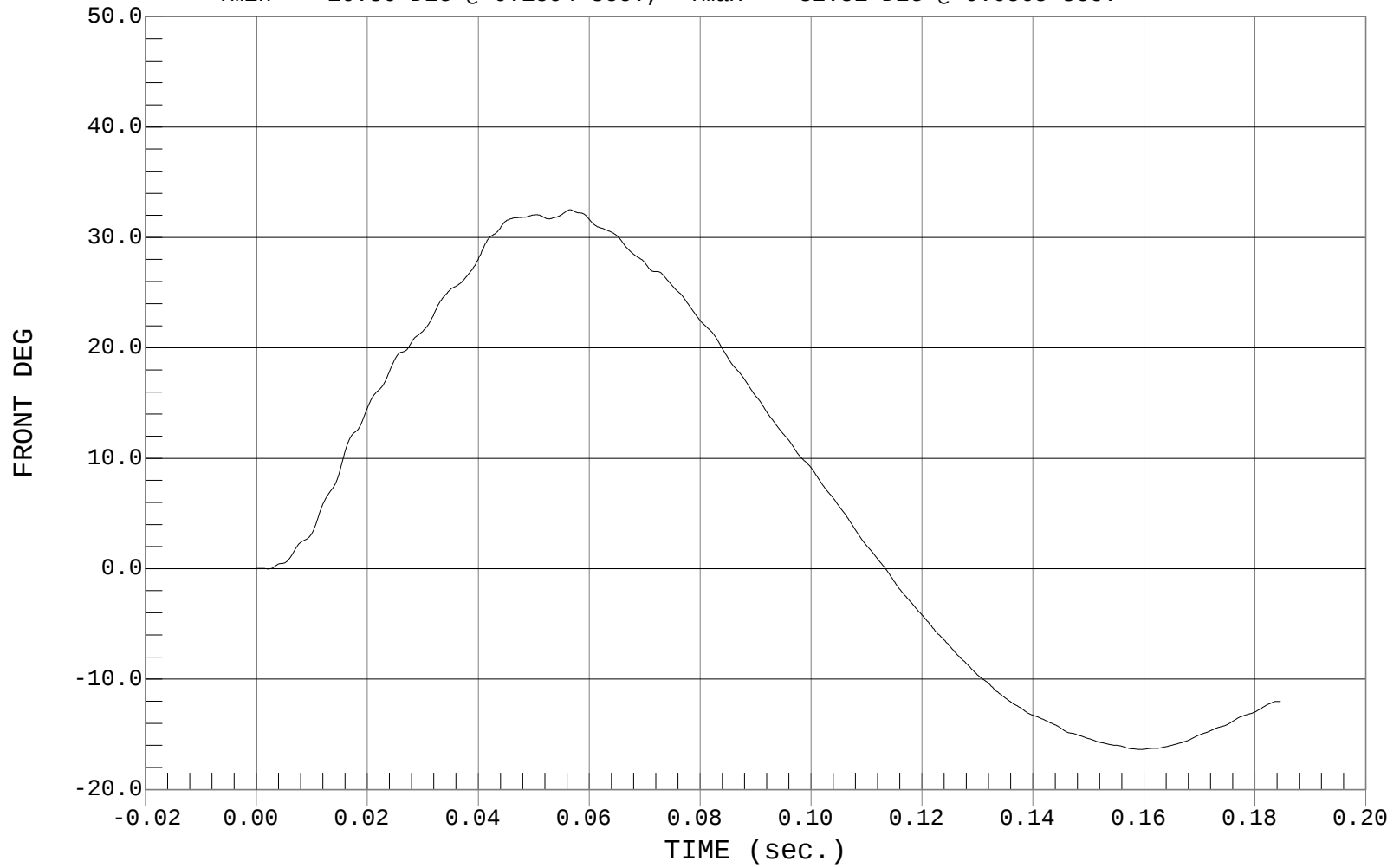
THETA A

Test Desc.: Dummy Calibration - Neck Bending
Component: Dummy #009

Test Date: 08-05-01
Speed: 11.12 FT/SEC, 3.39 M/SEC

— 1 FRONT, D01132DT.D05

Ymin = -16.36 DEG @ 0.1594 sec., Ymax = 32.51 DEG @ 0.0565 sec.





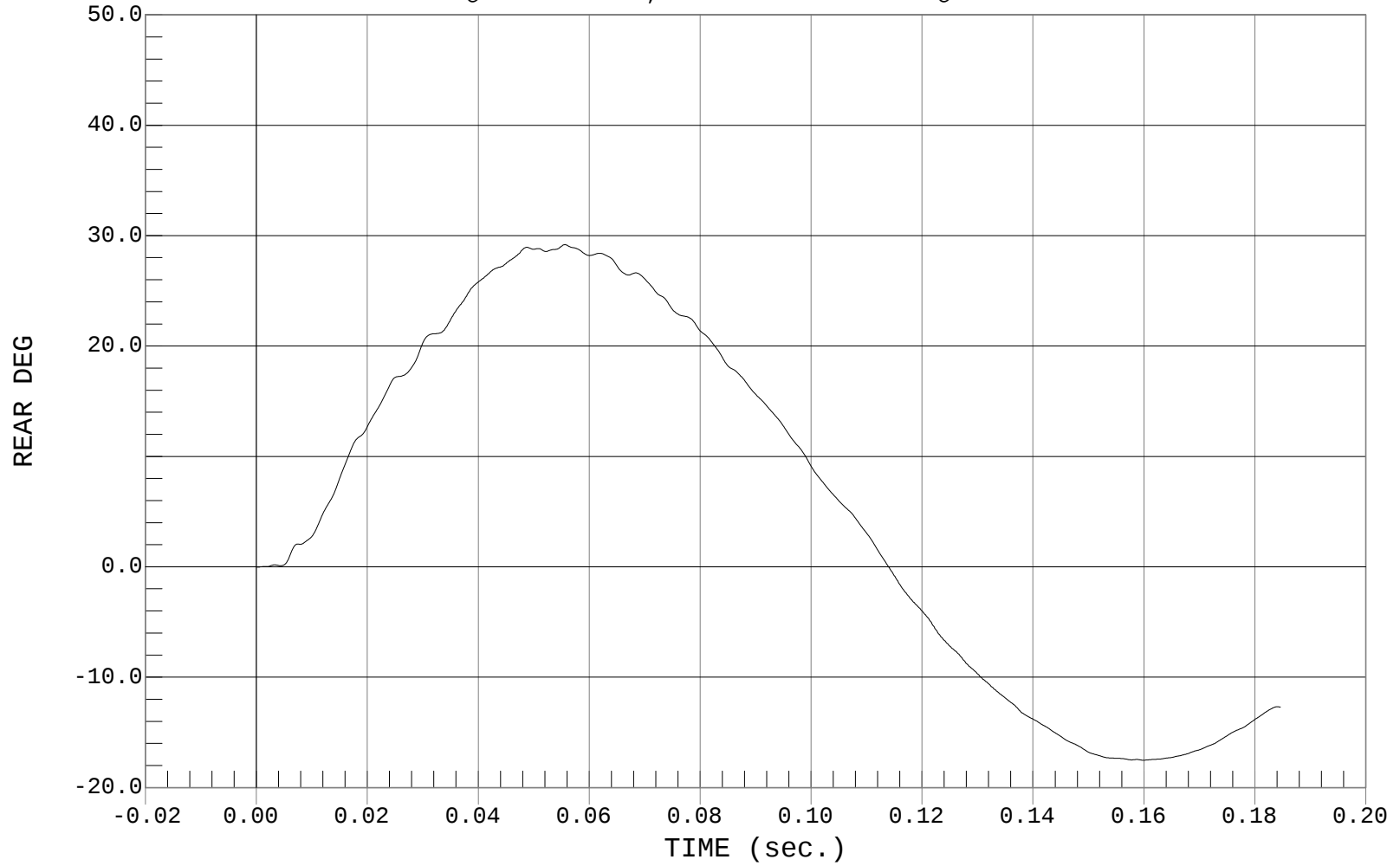
THETA B

Test Desc.: Dummy Calibration - Neck Bending
Component: Dummy #009

Test Date: 08-05-01
Speed: 11.12 FT/SEC, 3.39 M/SEC

— 1 REAR, D01132DT.D06

Ymin = -17.52 DEG @ 0.1599 sec., Ymax = 29.18 DEG @ 0.0556 sec.

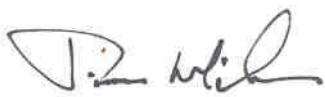


MGA RESEARCH CORPORATION
SHOULDER IMPACT TEST
EUROSID 2 DUMMY

Date: 8/7/01
Dummy Serial Number: 009
Test Number: D011133

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature (°C)	18 – 22	21.9
Relative Humidity (%)	10 – 70	62
Pendulum Speed	4.2 – 4.4 m/s	4.3
Max. Resultant Acceleration	7.5 – 10.5 g's	8.7
Time of Max. Pendulum Acceleration	-----	22.7 msec

TEST MEETS SPECIFICATIONS

Technician: 

Approved By: 



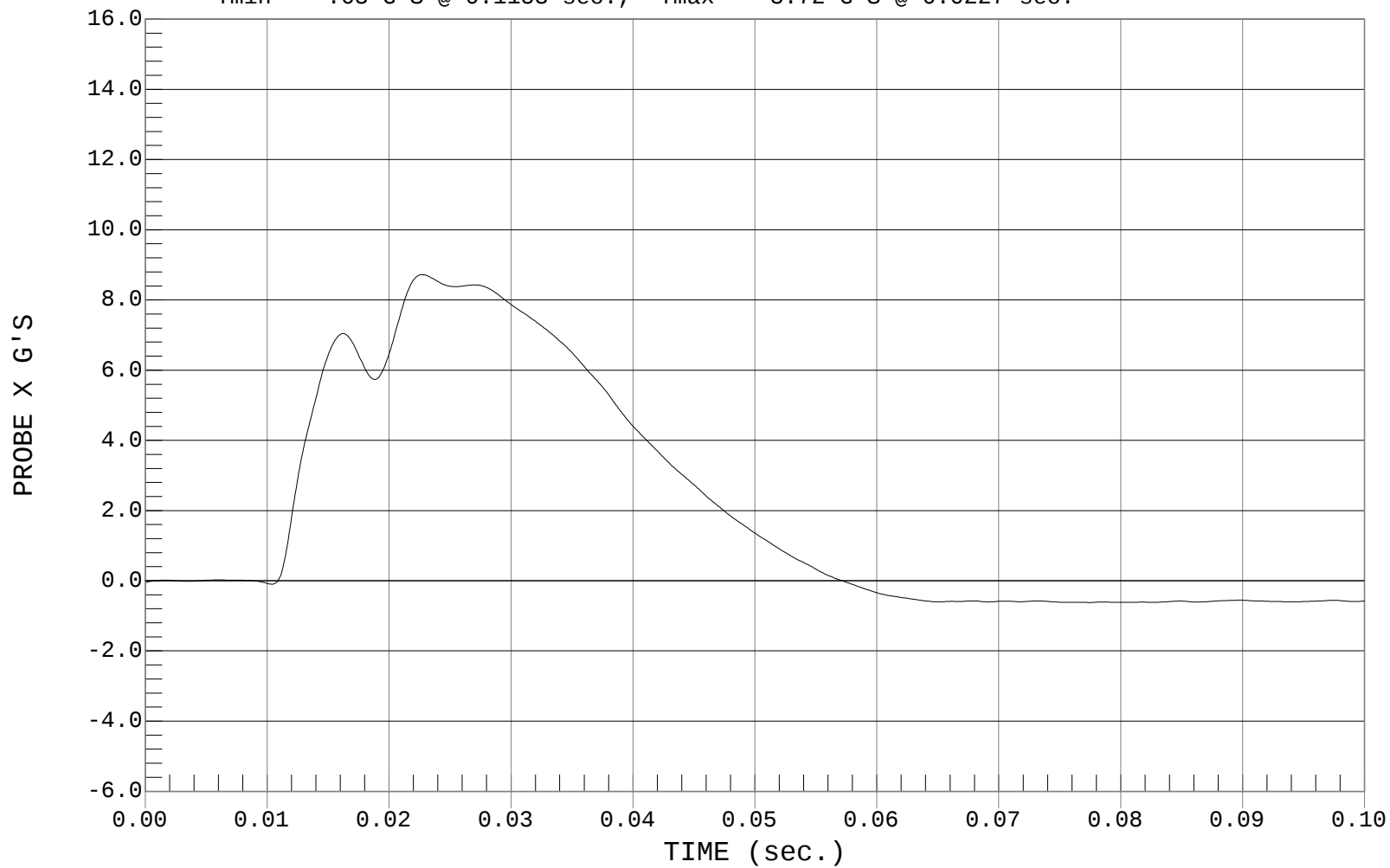
SHOULDER ACCELERATION

Test Desc.: Dummy Calibration - Shoulder Impact
Component: Dummy #009

Test Date: 08-07-01
Speed: 14.11 FT/SEC, 4.30 M/SEC

— 1 PROBE X, D01133AF.A01

Ymin = -0.63 G'S @ 0.1153 sec. , Ymax = 8.72 G'S @ 0.0227 sec.



MGA RESEARCH CORPORATION
UPPER/MIDDLE/LOWER RIB TESTS
SIDE IMPACT DUMMY (SID)

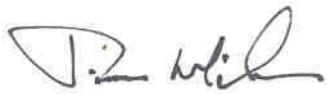
Date: 8/5/01
Dummy Serial Number: 009
Test Number: D011134/5/6

UPPER RIB - TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature (°C)	18.9 – 25.5	20.9
Relative Humidity (%)	10 – 70	55
Displacement at 2 m/s	23.5 – 27.5 mm	24.6
Displacement at 3 m/s	36.0 – 40.0 mm	38.5
Displacement at 4 m/s	46.0 – 51.0 mm	50.3

MIDDLE RIB - TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature (°C)	18.9 – 25.5	20.9
Relative Humidity (%)	10 – 70	55
Displacement at 2 m/s	23.5 – 27.5 mm	25.4
Displacement at 3 m/s	36.0 – 40.0 mm	38.7
Displacement at 4 m/s	46.0 – 51.0 mm	49.5

LOWER RIB - TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature (°C)	18.9 – 25.5	20.9
Relative Humidity (%)	10 – 70	55
Displacement at 2 m/s	23.5 – 27.5 mm	25.2
Displacement at 3 m/s	36.0 – 40.0 mm	38.5
Displacement at 4 m/s	46.0 – 51.0 mm	49.8

TEST MEETS SPECIFICATIONS

Technician: 
Approved By: David Winkelbauer



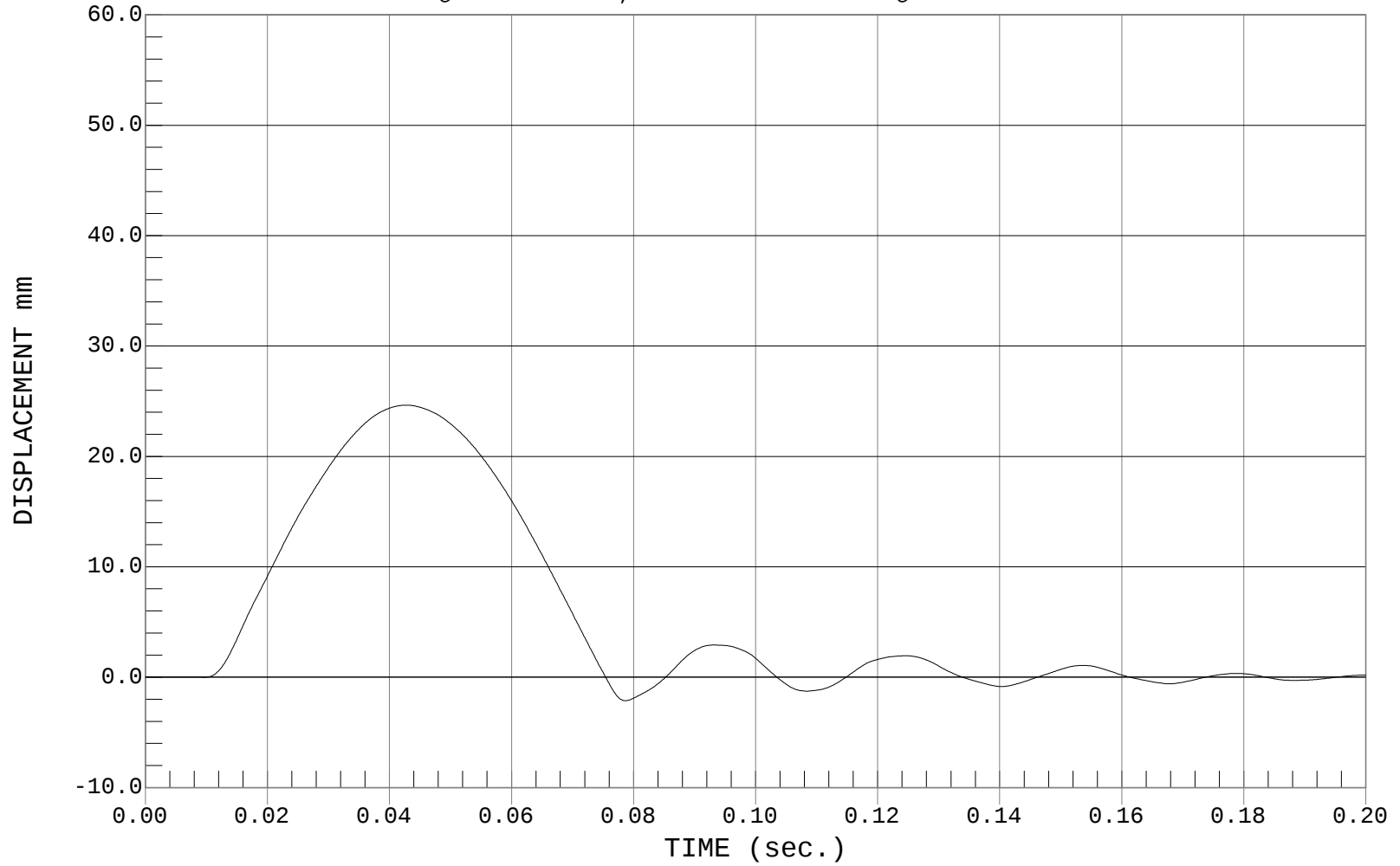
UPPER RIB DISPLACEMENT

Test Desc.: Dummy Calibration - Rib Module
Component: Dummy #009

Test Date: 08-05-01
Speed: 6.56 FT/SEC, 2.00 M/SEC

— 1 DISPLACEMENT, D01134DF.D05

Ymin = -2.13 mm @ 0.0787 sec., Ymax = 24.64 mm @ 0.0428 sec.





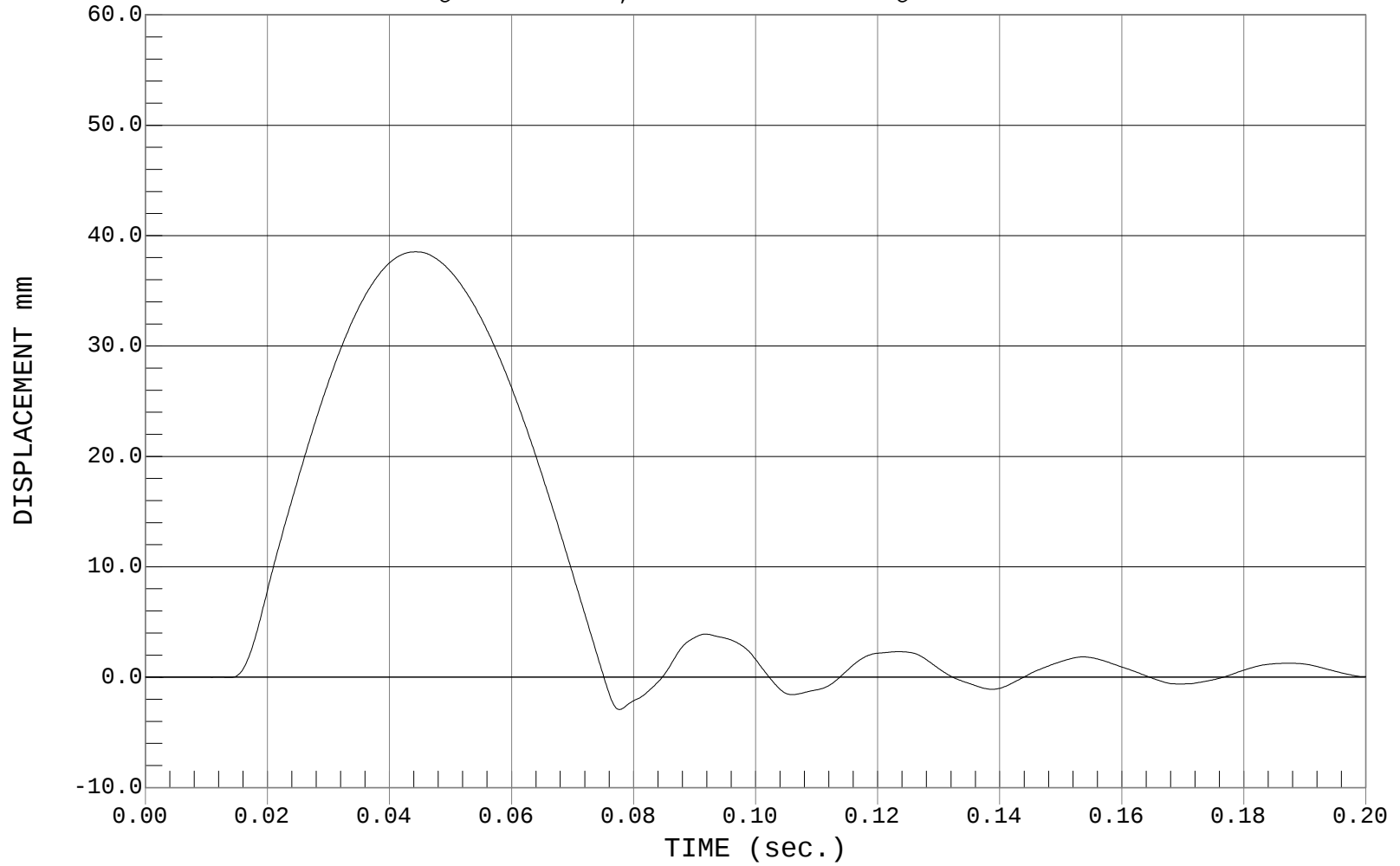
UPPER RIB DISPLACEMENT

Test Desc.: Dummy Calibration - Rib Module
Component: Dummy #009

Test Date: 08-05-01
Speed: 9.84 FT/SEC, 3.00 M/SEC

— 1 DISPLACEMENT, D01134DF.D06

Ymin = -2.94 mm @ 0.0777 sec., Ymax = 38.53 mm @ 0.0443 sec.





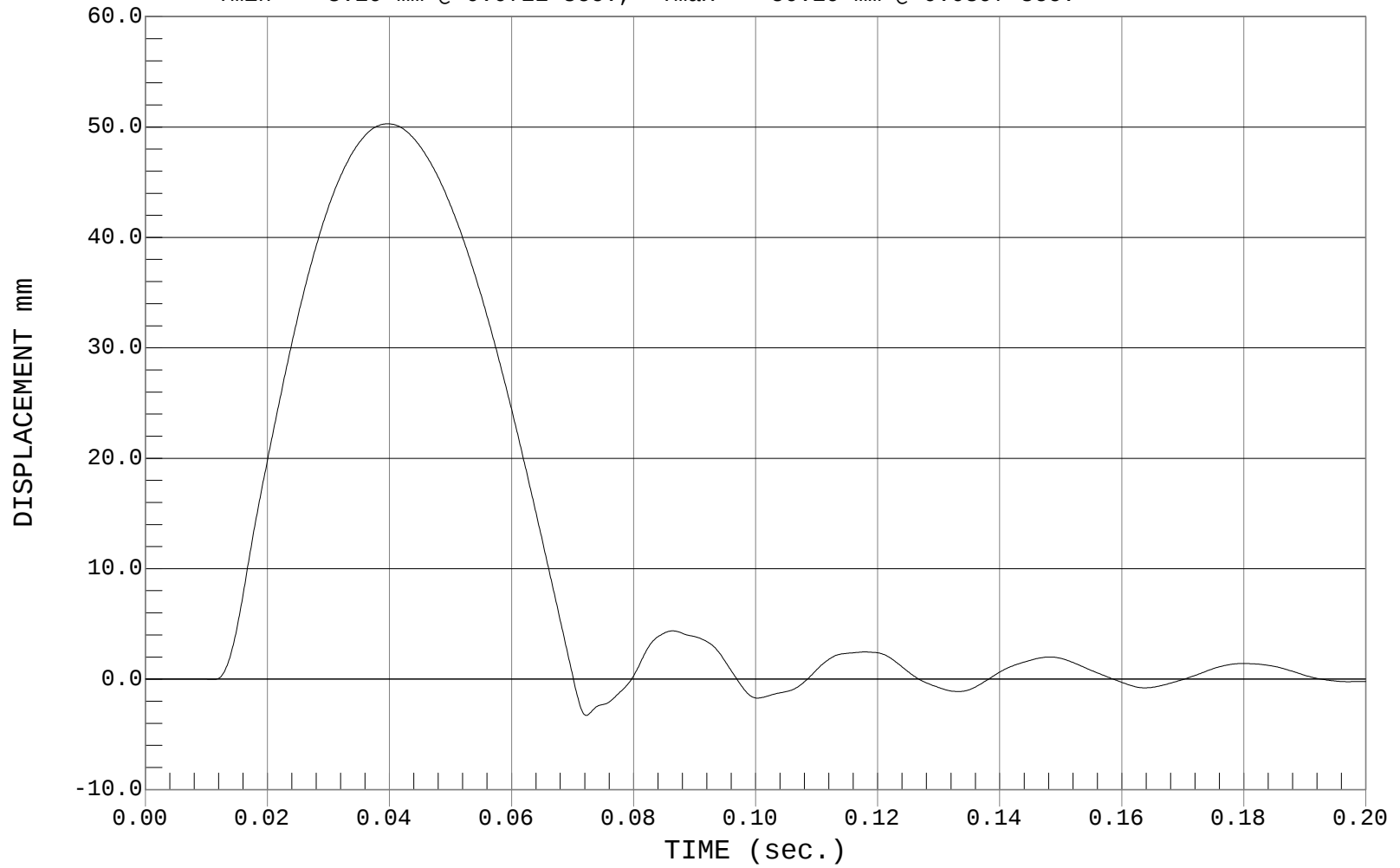
UPPER RIB DISPLACEMENT

Test Desc.: Dummy Calibration - Rib Module
Component: Dummy #009

Test Date: 08-05-01
Speed: 13.12 FT/SEC, 4.00 M/SEC

— 1 DISPLACEMENT, D01134DF.D07

Ymin = -3.29 mm @ 0.0722 sec., Ymax = 50.29 mm @ 0.0397 sec.





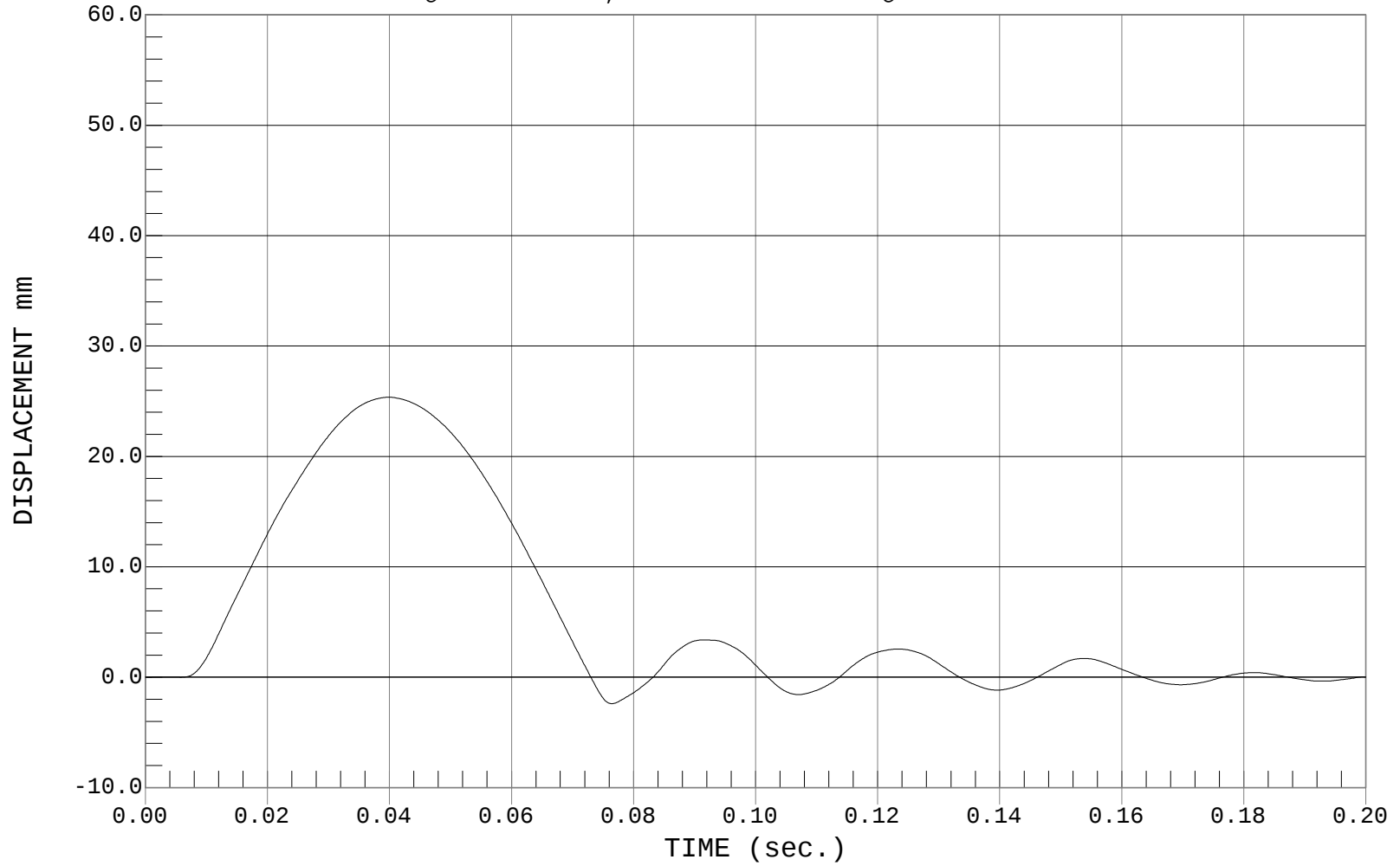
MIDDLE RIB DISPLACEMENT

Test Desc.: Dummy Calibration - Rib Module
Component: Dummy #009

Test Date: 08-05-01
Speed: 6.56 FT/SEC, 2.00 M/SEC

— 1 DISPLACEMENT, D01135DF.D05

Ymin = -2.4 mm @ 0.0764 sec., Ymax = 25.37 mm @ 0.0399 sec.





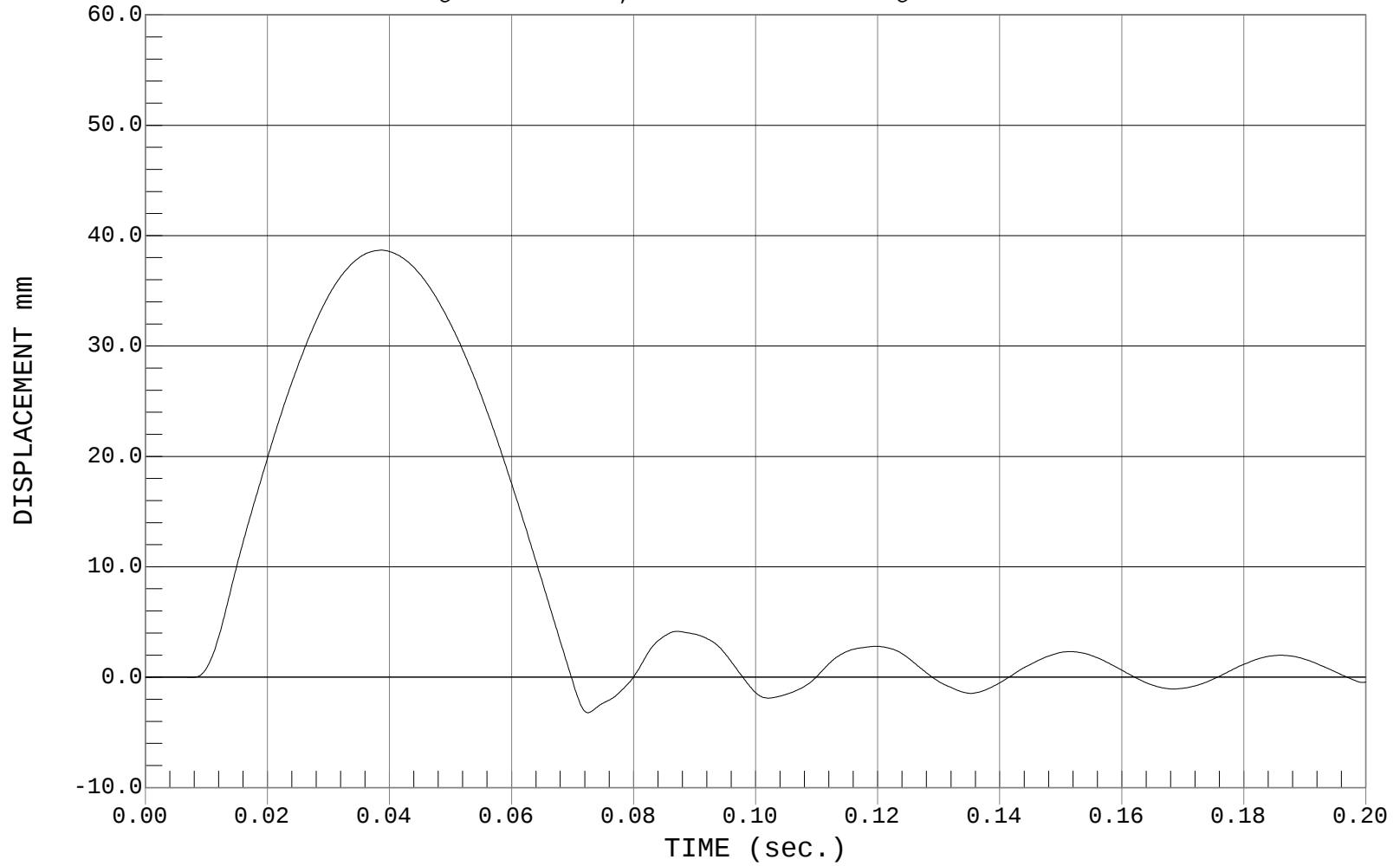
MIDDLE RIB DISPLACEMENT

Test Desc.: Dummy Calibration - Rib Module
Component: Dummy #009

Test Date: 08-05-01
Speed: 9.84 FT/SEC, 3.00 M/SEC

— 1 DISPLACEMENT, D01135DF.D06

Ymin = -3.22 mm @ 0.0725 sec., Ymax = 38.68 mm @ 0.0387 sec.





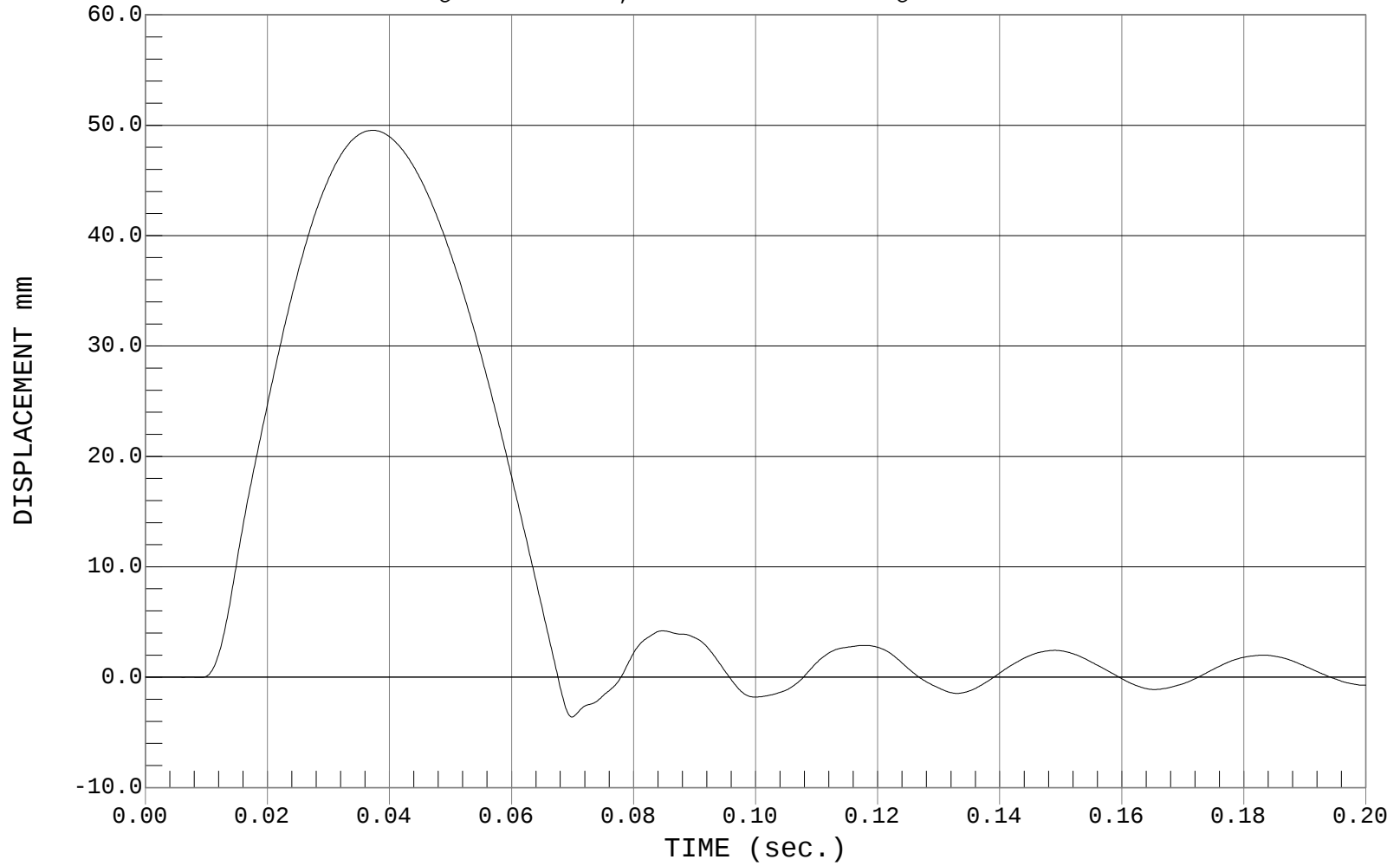
MIDDLE RIB DISPLACEMENT

Test Desc.: Dummy Calibration - Rib Module
Component: Dummy #009

Test Date: 08-05-01
Speed: 13.12 FT/SEC, 4.00 M/SEC

— 1 DISPLACEMENT, D01135DF.D07

Ymin = -3.61 mm @ 0.0699 sec., Ymax = 49.54 mm @ 0.0373 sec.





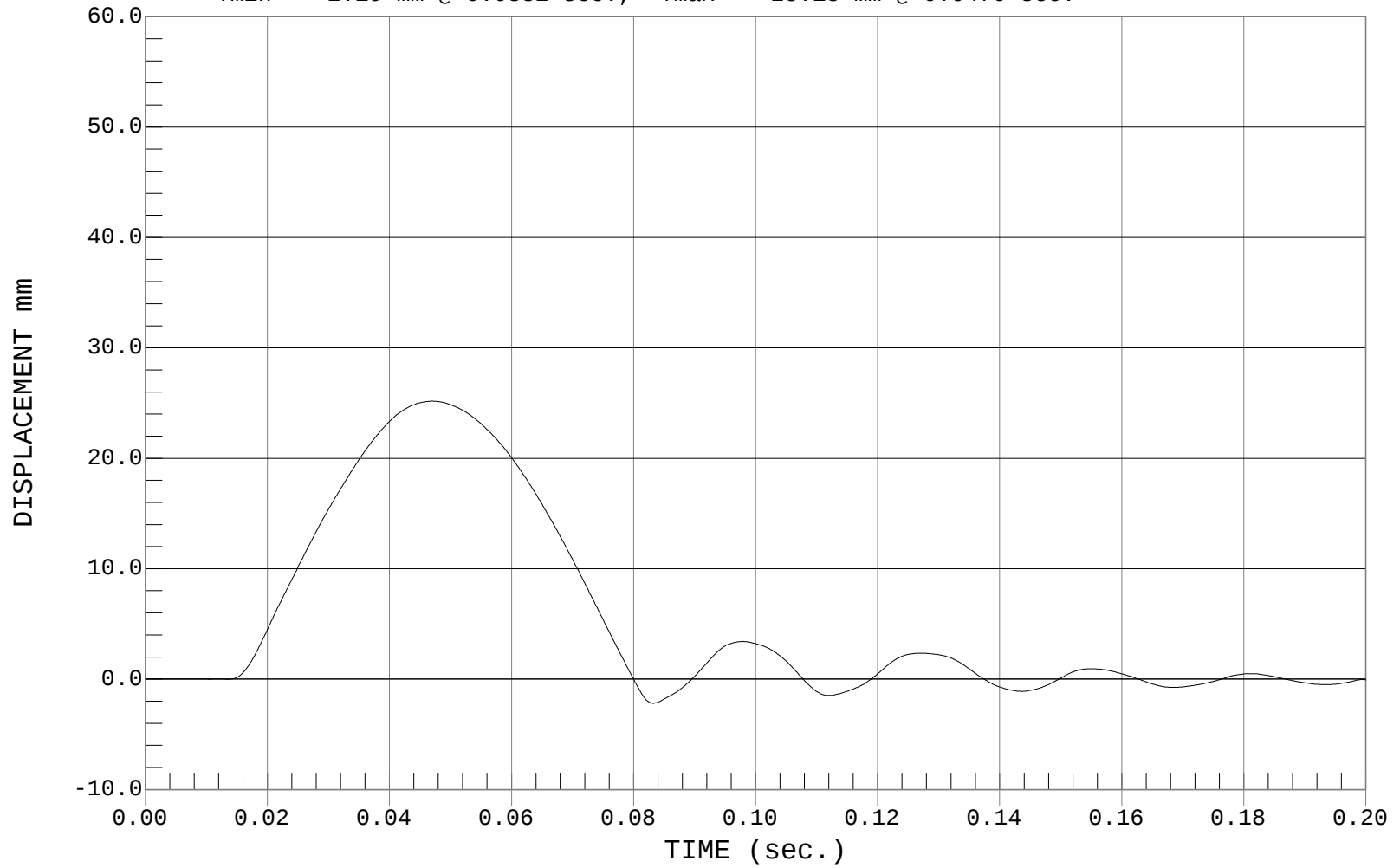
LOWER RIB DISPLACEMENT

Test Desc.: Dummy Calibration - Rib Module
Component: Dummy #009

Test Date: 08-05-01
Speed: 6.56 FT/SEC, 2.00 M/SEC

— 1 DISPLACEMENT, D01136DF.D05

Ymin = -2.19 mm @ 0.0832 sec., Ymax = 25.18 mm @ 0.0470 sec.





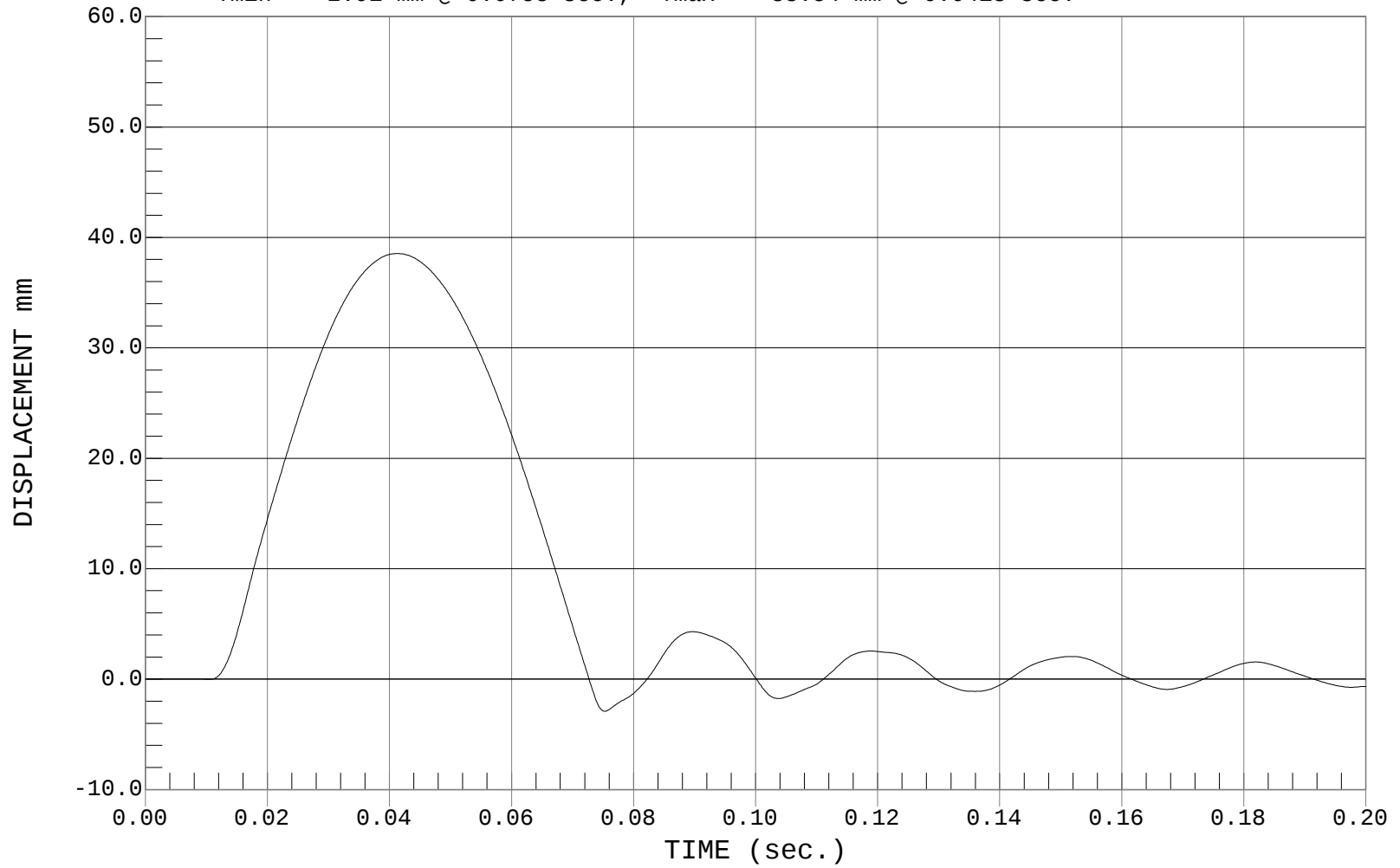
LOWER RIB DISPLACEMENT

Test Desc.: Dummy Calibration - Rib Module
Component: Dummy #009

Test Date: 08-05-01
Speed: 9.84 FT/SEC, 3.00 M/SEC

— 1 DISPLACEMENT, D01136DF.D06

Ymin = -2.91 mm @ 0.0753 sec., Ymax = 38.54 mm @ 0.0413 sec.





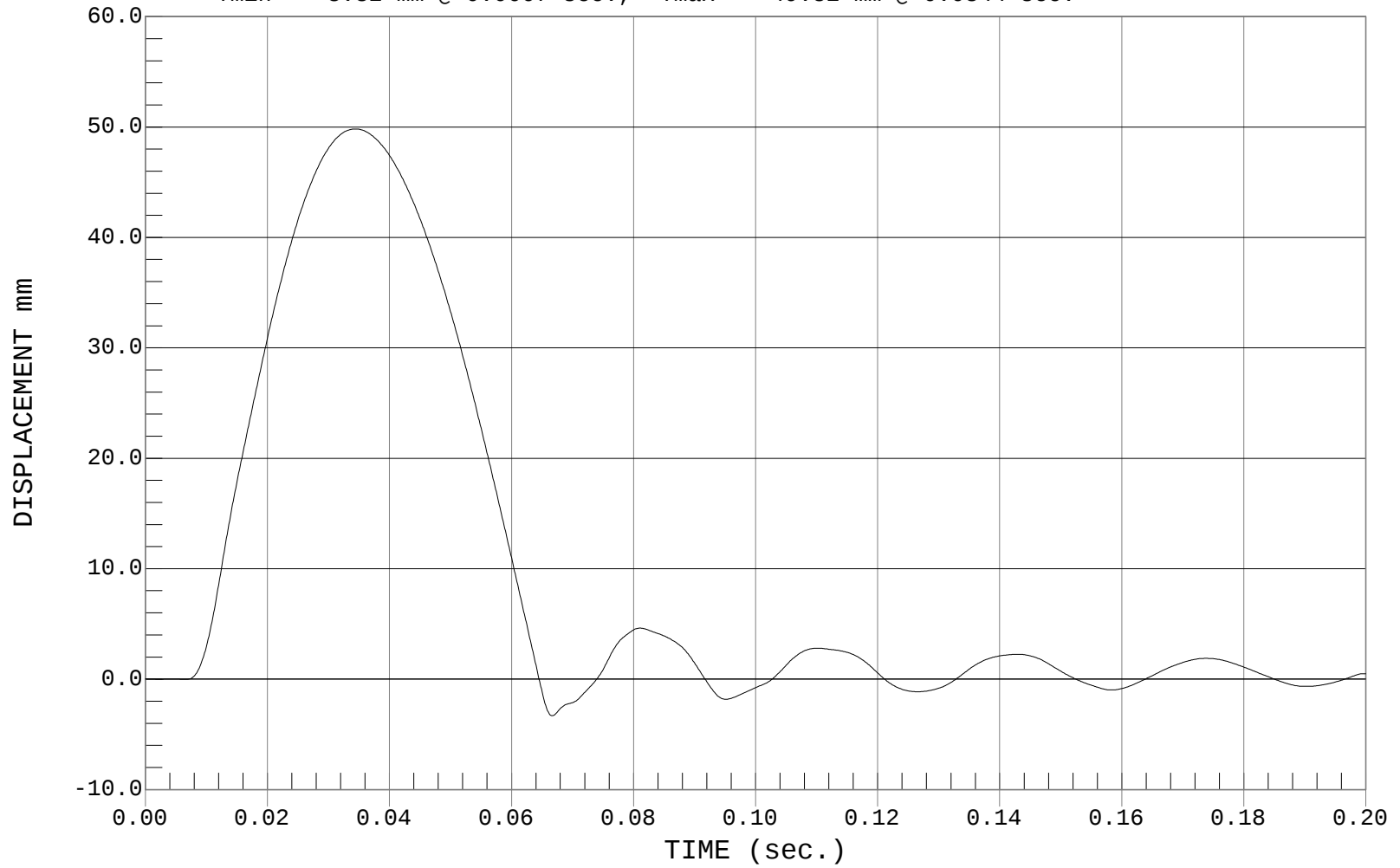
LOWER RIB DISPLACEMENT

Test Desc.: Dummy Calibration - Rib Module
Component: Dummy #009

Test Date: 08-05-01
Speed: 13.12 FT/SEC, 4.00 M/SEC

— 1 DISPLACEMENT, D01136DF.D07

Ymin = -3.32 mm @ 0.0667 sec., Ymax = 49.82 mm @ 0.0344 sec.

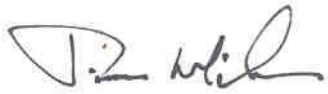


MGA RESEARCH CORPORATION
ABDOMEN TEST
EUROSID 2 DUMMY

Date: 8/7/01
Dummy Serial Number: 009
Test Number: D011137

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature (°C)	18 – 22	21.9
Relative Humidity (%)	10 – 70	62
Probe Speed (m/s)	3.90 – 4.10	3.95
Maximum Impact Force	4.00 – 4.80 kN	4.31
Time of Maximum Force	10.60 – 13.00 ms	11.60
Maximum Total Abdomen Force	2.20 – 2.70 kN	2.30
Time of Max. Total Force	10.00 – 12.30 ms	11.00

TEST MEETS SPECIFICATIONS

Technician: 

Approved By: 



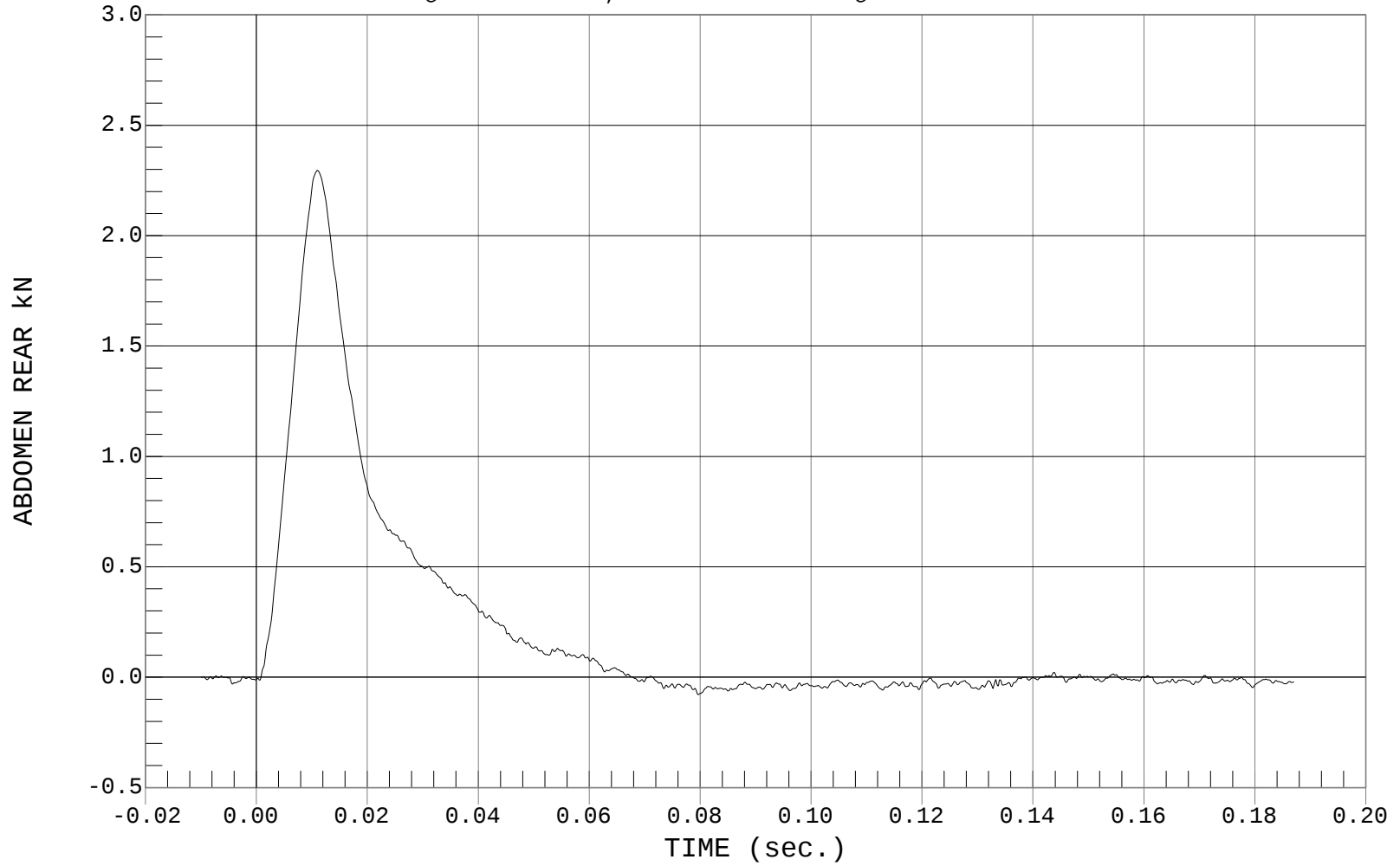
ABDOMEN FORCE

Test Desc.: Dummy Calibration - Abdomen Impact
Component: Dummy #009

Test Date: 08-07-01
Speed: 12.95 FT/SEC, 3.95 M/SEC

— 1 ABDOMEN REAR, D01137FT.F02

Ymin = -.08 kN @ 0.0796 sec., Ymax = 2.3 kN @ 0.0110 sec.





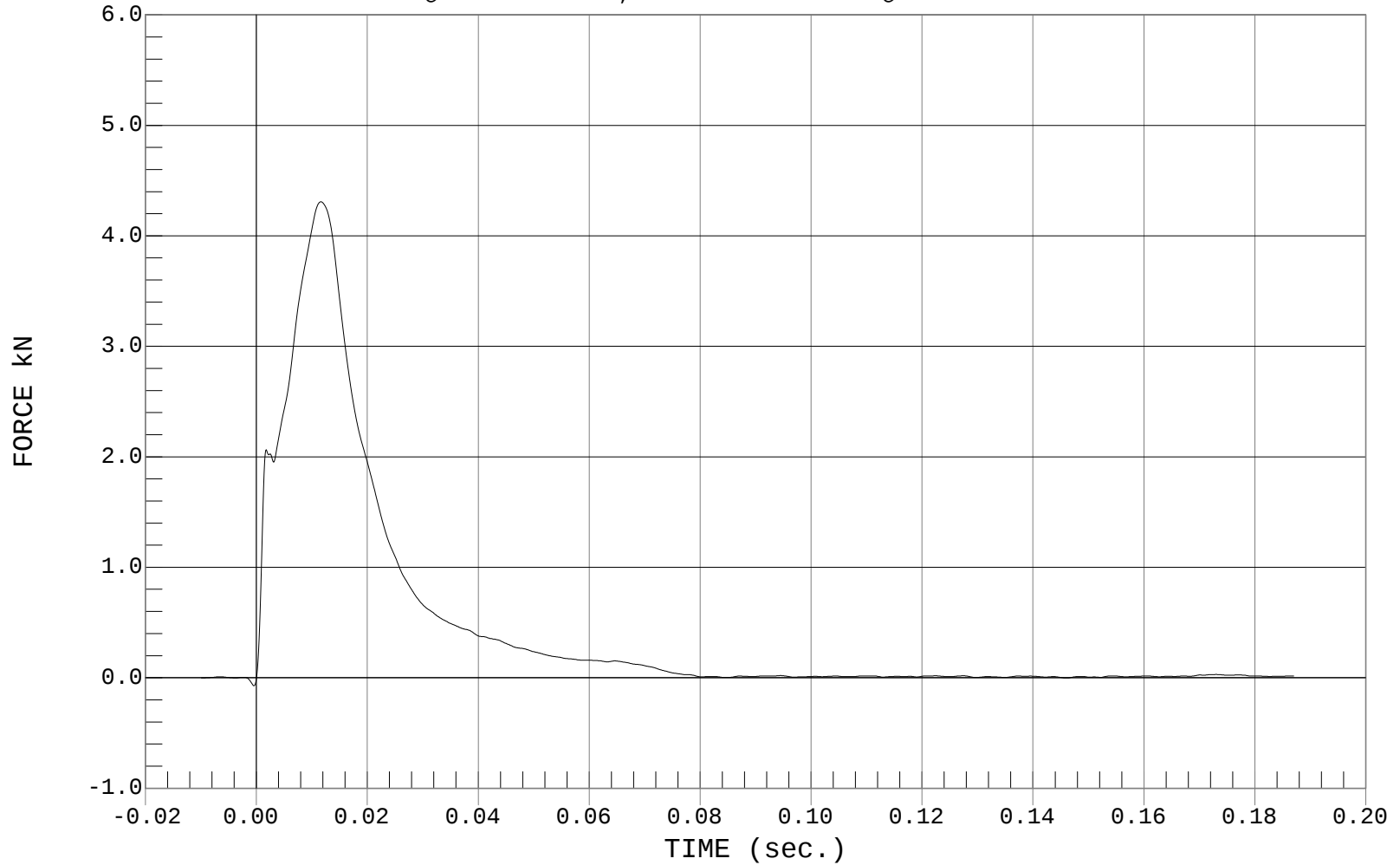
IMPACTOR FORCE

Test Desc.: Dummy Calibration - Abdomen Impact
Component: Dummy #009

Test Date: 08-07-01
Speed: 12.95 FT/SEC, 3.95 M/SEC

— 1 FORCE, D01137FT.F01

Ymin = -.07 kN @ -0.0004 sec., Ymax = 4.31 kN @ 0.0116 sec.

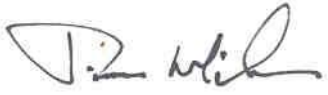


MGA RESEARCH CORPORATION
LUMBAR SPINE TEST
EUROSID 2 DUMMY

Date: 8/5/01
Dummy Serial Number: 009
Test Number: D011138

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature (°C)		18 – 22	20.9
Relative Humidity (%)		10 – 70	55
Pendulum Speed		5.95 – 6.15	6.09
Pendulum Deceleration	10 msec	$\bar{2}.46 - \bar{1}.59$ m/sec	-1.84
	20 msec	$\bar{5}.25 - \bar{4}.07$ m/sec	-4.25
	25 msec	$\bar{6}.64 - \bar{5}.3$ m/sec	-5.34
	30 msec	≥ -6.5 m/sec	-6.08
Maximum Flexion Angle		45.0 – 55.0 deg	50.7
Time of Max. Flexion Angle		39.0 – 53.0 ms	45.0
Maximum Angle Theta (A)		31.0 – 35.0 deg	32.1
Time of Max. Theta (A)		44.0 – 52.0 ms	45.1
Maximum Angle Theta (B)		27.68– 30.18 deg	28.18
Time of Max. Theta (B)		44.0 – 52.0 ms	45.3

TEST MEETS SPECIFICATIONS

Technician: 

Approved By: David Winkelbauer

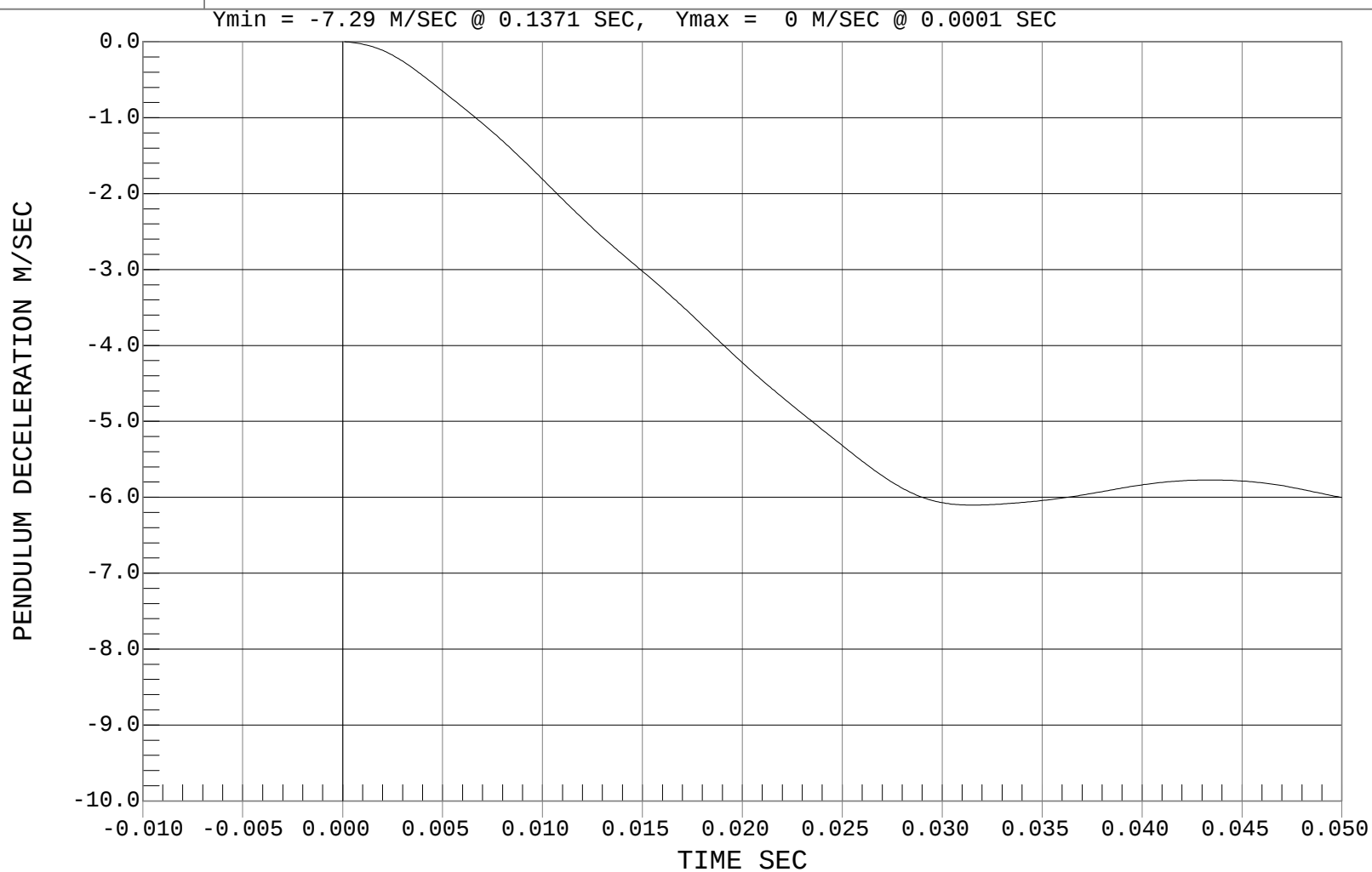


PENDULUM DECELERATION

Test Desc.: Dummy Calibration - Lumbar Flexion
Component: Dummy #009

Test Date: 08-05-01
Speed: 19.97 FT/SEC, 6.09 M/SEC

— 1 PENDULUM DECELERATION, D01138AI.V04





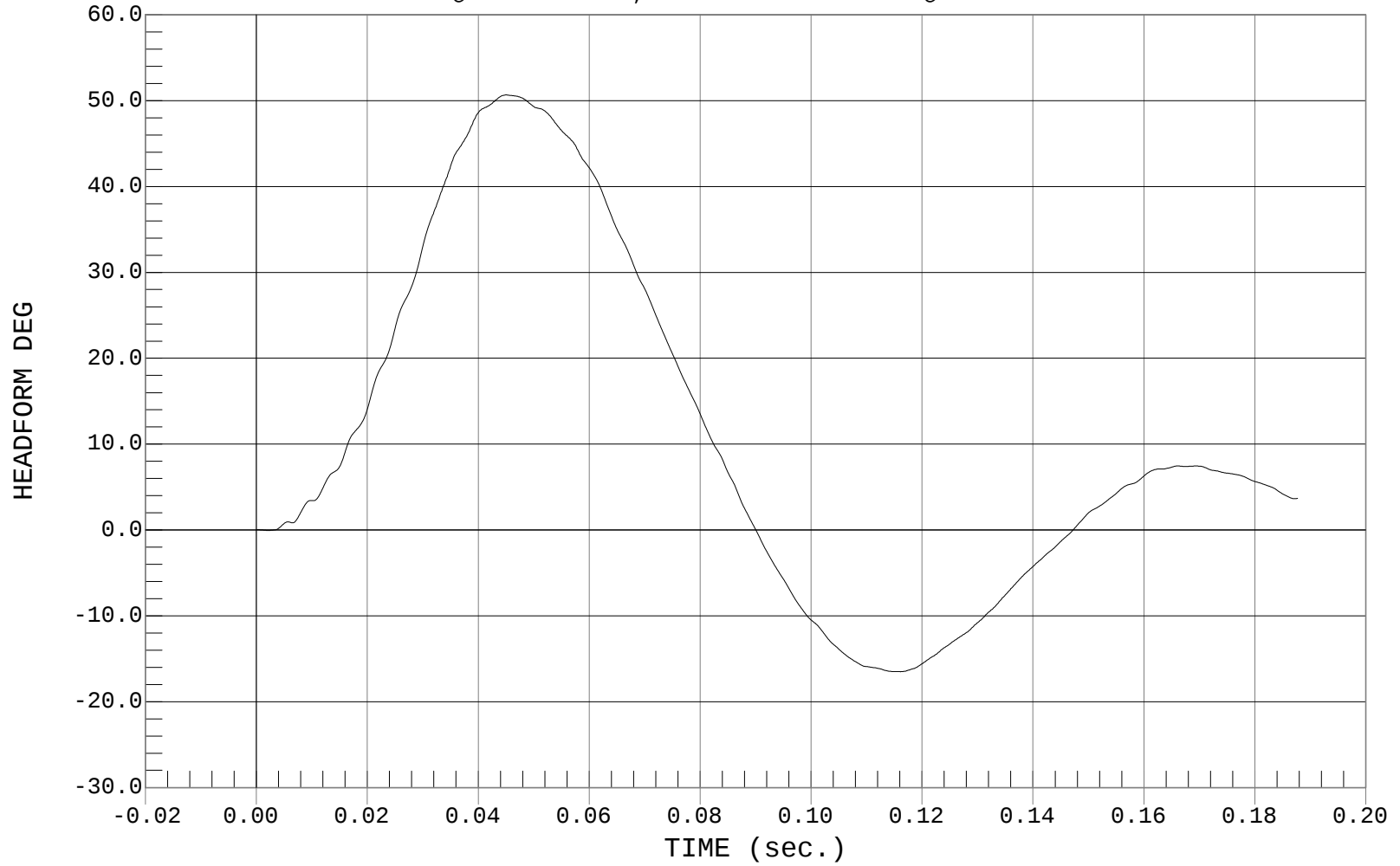
FLEXION ANGLE

Test Desc.: Dummy Calibration - Lumbar Flexion
Component: Dummy #009

Test Date: 08-05-01
Speed: 19.97 FT/SEC, 6.09 M/SEC

— 1 HEADFORM, D01138DT.D08

Ymin = -16.5 DEG @ 0.1161 sec., Ymax = 50.67 DEG @ 0.0450 sec.





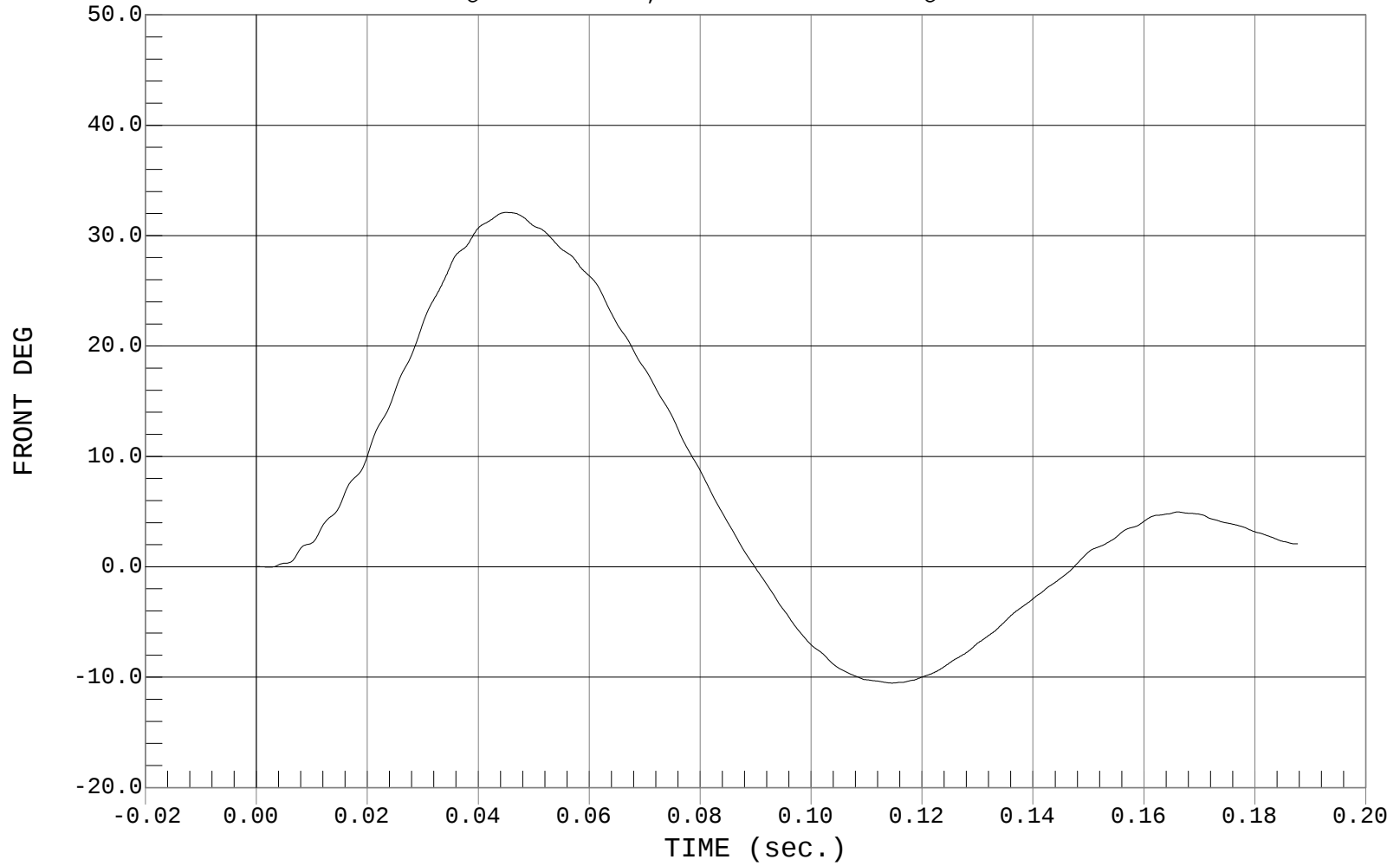
THETA A

Test Desc.: Dummy Calibration - Lumbar Flexion
Component: Dummy #009

Test Date: 08-05-01
Speed: 19.97 FT/SEC, 6.09 M/SEC

— 1 FRONT, D01138DT.D05

Ymin = -10.54 DEG @ 0.1146 sec., Ymax = 32.1 DEG @ 0.0451 sec.





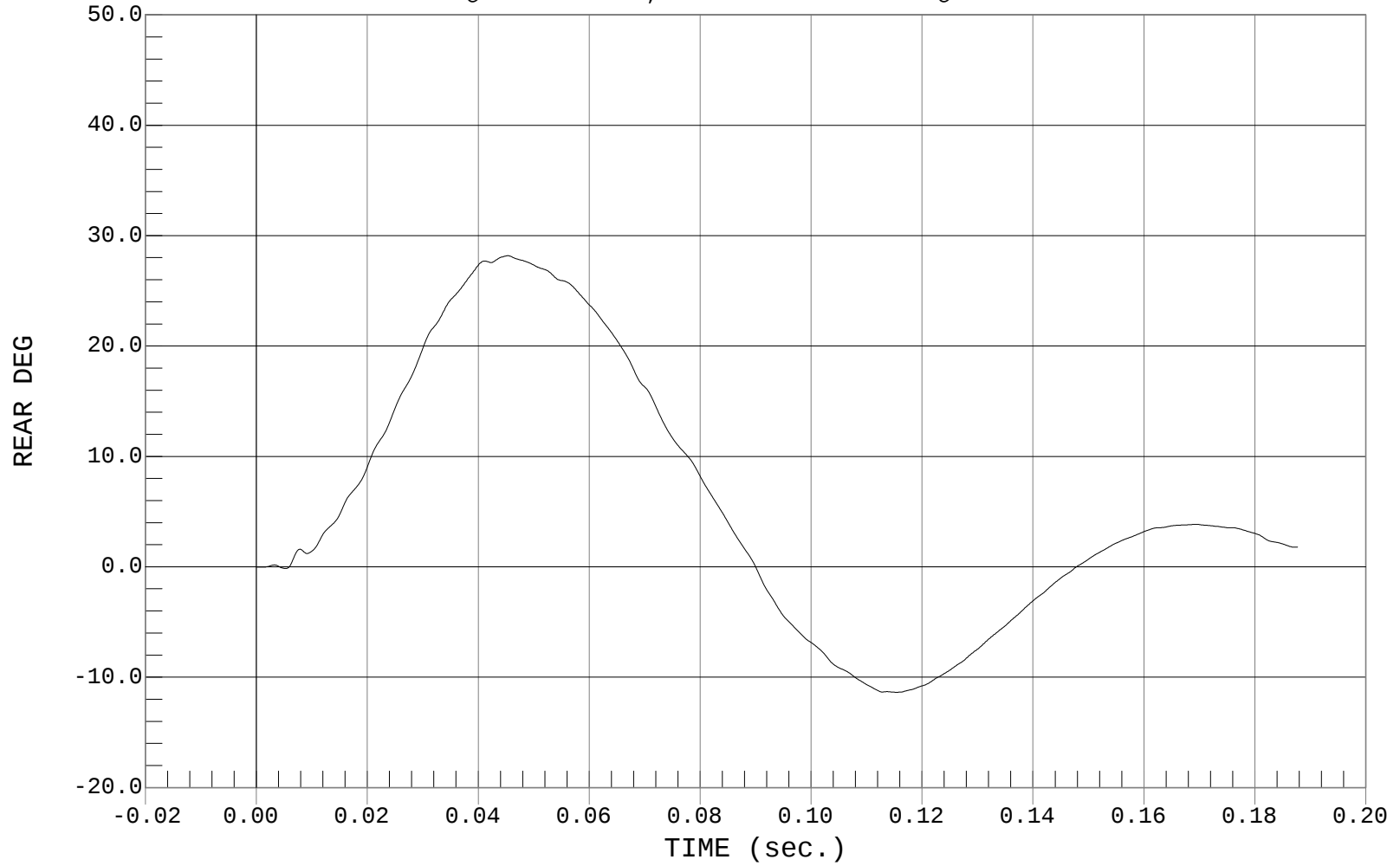
THETA B

Test Desc.: Dummy Calibration - Lumbar Flexion
Component: Dummy #009

Test Date: 08-05-01
Speed: 19.97 FT/SEC, 6.09 M/SEC

— 1 REAR, D01138DT.D06

Ymin = -11.37 DEG @ 0.1154 sec., Ymax = 28.18 DEG @ 0.0453 sec.

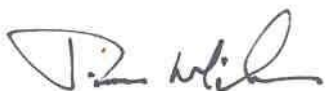


MGA RESEARCH CORPORATION
PELVIS TEST
EUROSID 2 DUMMY

Date: 8/7/01
Dummy Serial Number: 009
Test Number: D011139

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature (°C)	18 – 22	22.0
Relative Humidity (%)	10 – 70	63
Pendulum Speed	6.20 – 6.30 m/s	6.23
Maximum Impactor Force	9.80 – 12.20 kN	10.83
Time of Max. Impactor Force	9.50 – 12.50 ms	11.60
Maximum Pubic Force	2.65 – 3.35 kN	3.22
Time of Max. Pubic Force	10.00 – 13.00 ms	12.40

TEST MEETS SPECIFICATIONS

Technician: 

Approved By: 



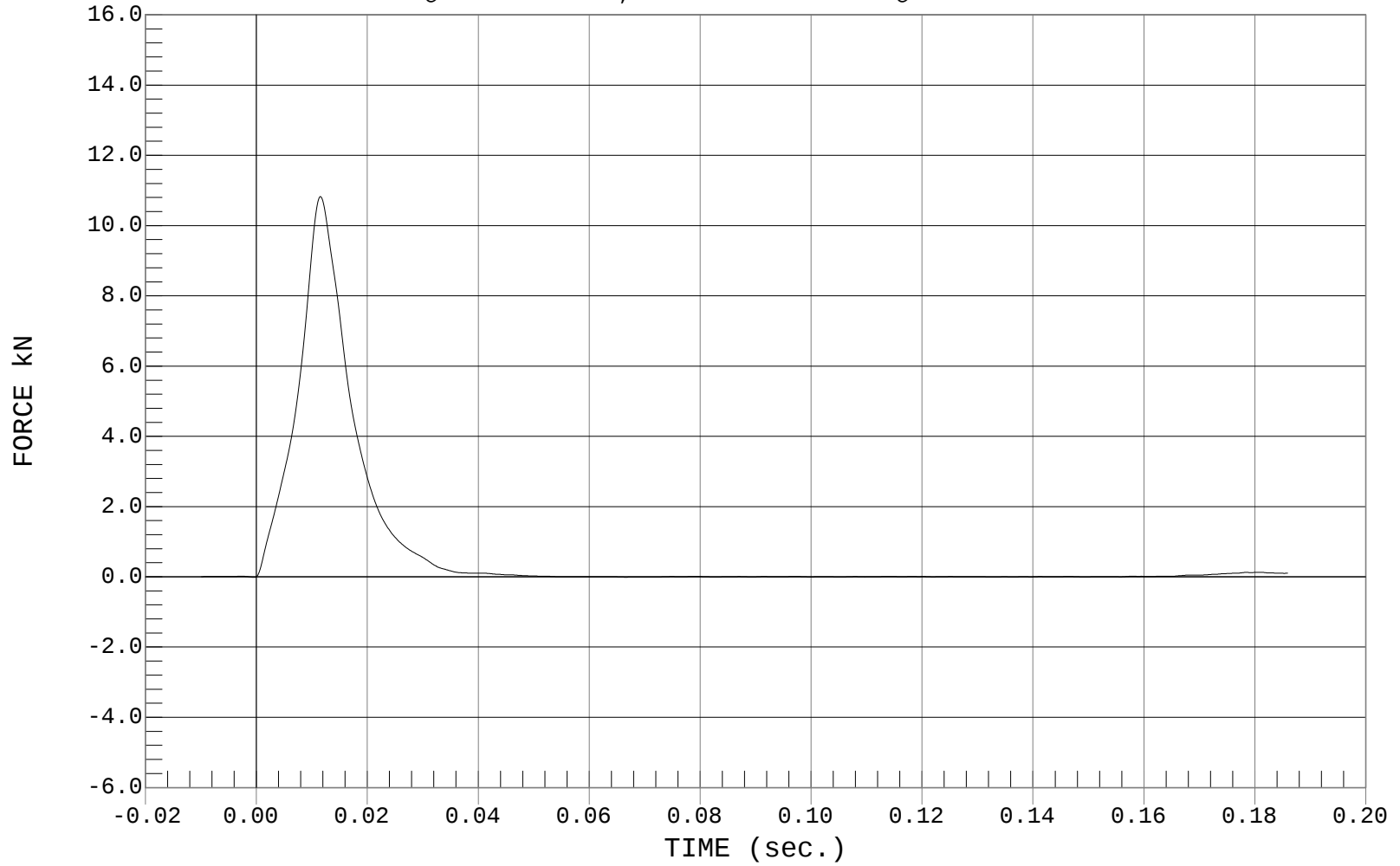
IMPACTOR FORCE

Test Desc.: Dummy Calibration - Pelvis Impact
Component: Dummy #009

Test Date: 08-07-01
Speed: 20.43 FT/SEC, 6.23 M/SEC

— 1 FORCE, D01139FT.F01

Ymin = -.02 kN @ -0.0004 sec., Ymax = 10.83 kN @ 0.0116 sec.





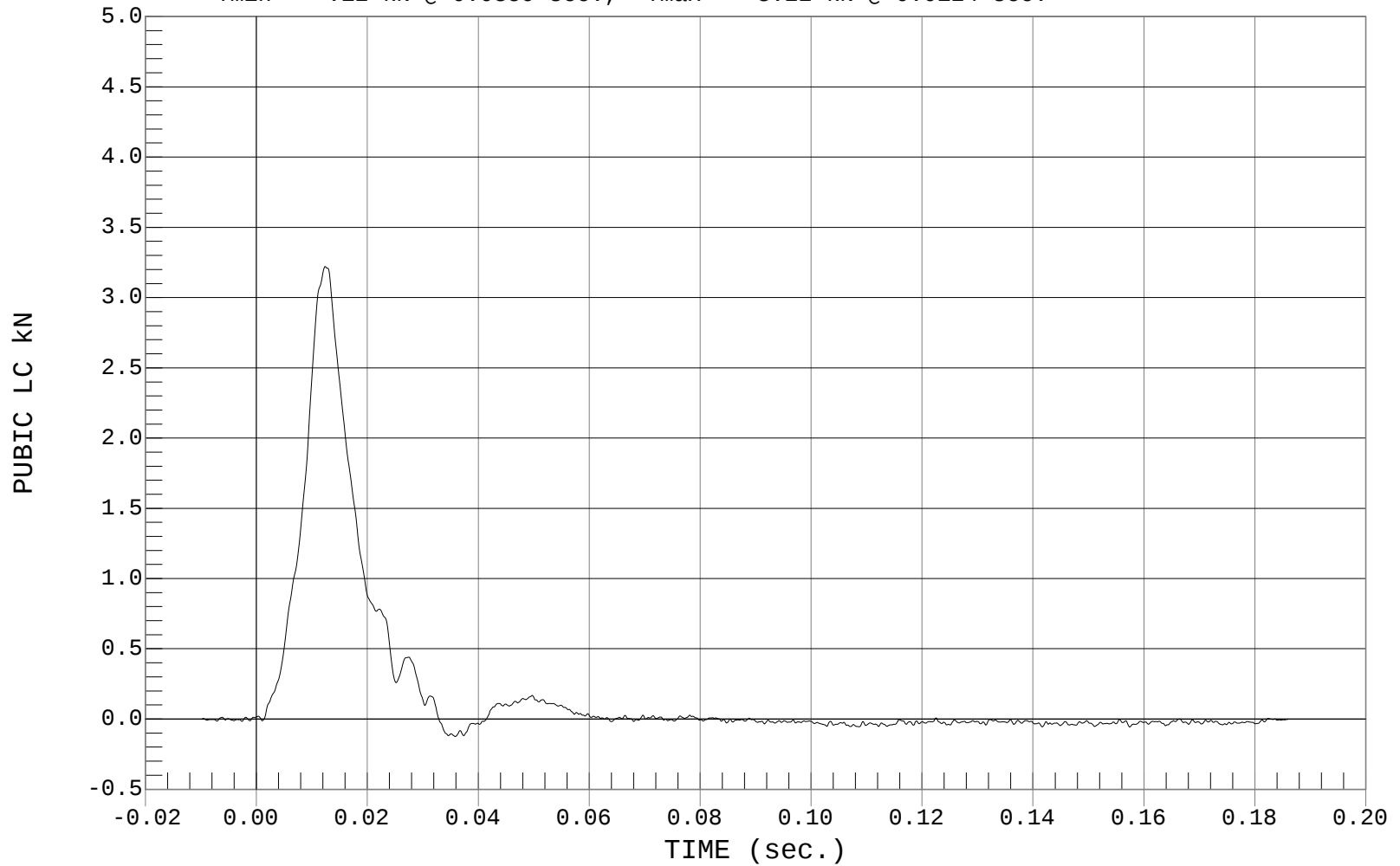
PUBIC FORCE

Test Desc.: Dummy Calibration - Pelvis Impact
Component: Dummy #009

Test Date: 08-07-01
Speed: 20.43 FT/SEC, 6.23 M/SEC

— 1 PUBIC LC, D01139FT.F02

Ymin = -.12 kN @ 0.0359 sec., Ymax = 3.22 kN @ 0.0124 sec.



APPENDIX D
TEST EQUIPMENT LIST AND CALIBRATION INFORMATION

DUMMY AND VEHICLE CALIBRATION DATA

	INSTRUMENTS FOR LEFT FRONT DUMMY NO. 009		
	SERIAL NO.	MANUFACTURER	CALIBRATION DATE
Head X Accelerometer	J11014	Endevco	3/28/01
Head Y Accelerometer	J11625	Endevco	3/28/01
Head Z Accelerometer	J10730	Endevco	3/28/01
Upper Neck Load Cell	105	FTSS	4/30/01
Lower Neck Load Cell	110	FTSS	5/4/01
Shoulder Force Load Cell	119	FTSS	4/24/01
Upper Spine X Accelerometer	J13941	Endevco	3/20/01
Upper Spine Y Accelerometer	J13984	Endevco	3/20/01
Upper Spine Z Accelerometer	J13927	Endevco	3/28/01
Upper Rib Y Accelerometer	AJ9Y3	Endevco	3/28/01
Mid Rib Y Accelerometer	ANAM1	Endevco	3/28/01
Lower Rib Y Accelerometer	ANAN7	Endevco	3/28/01
Upper Rib Displacement	009	Honeywell	5/22/01
Mid Rib Displacement	009	Honeywell	5/22/01
Lower Rib Displacement	009	Honeywell	5/22/01
Lower Spine X Accelerometer	ALFP1	Endevco	5/30/01
Lower Spine Y Accelerometer	AP179	Endevco	5/30/01
Lower Spine Z Accelerometer	AHTY4	Endevco	5/30/01
Torso Load Cell	122	FTSS	4/12/01
T-12 Load Cell	102	FTSS	3/27/01
Front Abdomen Load Cell	122	FTSS	4/26/01
Mid Abdomen Load Cell	123	FTSS	4/26/01
Rear Abdomen Load Cell	124	FTSS	4/26/01
Pubic Symphysis Load Cell	115	Denton	3/29/01
Pelvis X Accelerometer	J13772	Endevco	2/21/01
Pelvis Y Accelerometer	J14008	Endevco	2/21/01
Pelvis Z Accelerometer	J14028	Endevco	2/21/01
Right Femur Load Cell	135	FTSS	4/18/01
Left Femur Load Cell	136	FTSS	4/19/01
Lumbar Load Cell	104	FTSS	4/24/01

DUMMY AND VEHICLE CALIBRATION DATA

	INSTRUMENTS FOR RIGHT REAR DUMMY NO. 144		
	SERIAL NO.	MANUFACTURER	CALIBRATION DATE
Head X	AMTL6	Endevco	6/14/01
Head Y	ALC37	Endevco	6/14/01
Head Z	AMTG3	Endevco	6/14/01
Upper Neck Load Cell	274	FTSS	1/4/01
Lower Neck Load Cell	139	FTSS	11/28/00
Chest X	J20965	Endevco	6/14/01
Chest Y	J22055	Endevco	6/14/01
Chest Z	J22107	Endevco	6/14/01
Pelvis X	J13990	Endevco	6/14/01
Pelvis Y	J13631	Endevco	6/14/01
Pelvis Z	J13930	Endevco	6/14/01

	INSTRUMENTS FOR LEFT REAR DUMMY 025		
	SERIAL NO.	MANUFACTURER	CALIBRATION DATE
Head X	ALB87	Endevco	6/1/01
Head Y	AHRP5	Endevco	6/1/01
Head Z	AJ9T6	Endevco	6/1/01
Upper Neck Load Cell	233	Denton	4/17/01
Lower Neck Load Cell	214	Denton	4/17/01
Chest X	J13650	Endevco	3/22/01
Chest Y	J14007	Endevco	3/22/01
Chest Z	J13424	Endevco	3/22/01
Pelvis X	AH0A2	Endevco	5/31/01
Pelvis Y	AGMT2	Endevco	5/31/01
Pelvis Z	AJ837	Endevco	5/31/01

VEHICLE INSTRUMENT CALIBRATION

	VEHICLE ACCELEROMETERS		
	SERIAL NO.	MANUFACTURER	CALIBRATION DATE
Left Mid A-Post Y	E03-H02	Entran	6/6/01
Left Lower A-Post Y	D11-F11	Entran	5/31/01
Left Upper B-Post Y	D05-R25	Entran	2/7/01
Left Mid B-Post Y	F04-N10	Entran	6/22/01
Left Lower B-Post Y	E03-H16	Entran	6/7/01
Rear Floorpan Above Axle X	F04-N14	Entran	6/22/01
Rear Floorpan Above Axle Y	F04-N08	Entran	6/22/01
Rear Floorpan Above Axle Z	F04-N06	Entran	6/22/01
Driver Seat Track Y	F04-N12	Entran	6/22/01
Driver Left Seat Frame	I25-F12	Entran	6/25/01
Driver Right Seat Frame	E03-H13	Entran	6/6/01
Right Side Sill at Front Seat X	E03-H03	Entran	6/7/01
Right Side Sill at Front Seat Y	E03-H17	Entran	6/7/01
Right Side Sill at Front Seat Z	E03-H06	Entran	6/7/01
Right Side Sill at Rear Seat X	D11-F03	Entran	5/30/01
Right Side Sill at Rear Seat Y	E03-H14	Entran	6/7/01
Right Side Sill at Rear Seat Z	D11-F05	Entran	5/30/01
Left Side Sill at Front Seat Y	E03-H24	Entran	6/7/01
Left Side Sill at Rear Seat Y	F04-N17	Entran	6/25/01
Vehicle CG X	D11-F14	Entran	5/30/01
Vehicle CG Y	E03-H09	Entran	6/6/01
Vehicle CG Z	G13-F02	Entran	2/7/01
Left A Pillar @ Roof	D11-F01	Entran	5/30/01
Left Front Door @ Pelvis Y	G13-F01	Entran	2/7/01
Left Front Door @ End of Arm Y	L15-G21	Entran	6/25/01
Left Rear Door @ Knee	I25-J02	Entran	3/31/01
Left Rear Door @ Pelvis	D05-R11	Entran	6/25/01
Child Seat @ Pelvis	J07-X16	Entran	3/21/01
Lower Center Radiator Support X	G13-F18	Entran	4/4/01
Lower Center Radiator Support Y	G13-F16	Entran	4/4/01
Lower Center Radiator Support Z	G13-F03	Entran	4/4/01

Note: All Endevco accelerometers are Model No. 7264-2000

All Entran accelerometers are Model No. EGE-72

APPENDIX E
PROCEDURE USED FOR ES-2 POSITIONING

Installation of the Side Impact Dummy (recommended practice)

1. GENERAL

- 1.1 The dummy to be used for the following installation procedure is described in Annex 6 to this regulation.
- 1.2 Adjust the knee joints so that they just support the leg when it is extended horizontally (1 to 2 g).
- 1.3 Clothe the dummy in form fitting cotton stretch mid-calf length pants. Each foot is equipped with a shoe.

2. INSTALLATION

- 2.1 Place the dummy in the outboard front seat of the impact side as described in the test specifications.
- 2.2 The mid-sagittal plane of the dummy shall coincide with the centerplane of the occupant (as determined according to Annex 3, paragraph 2.8) with a tolerance of 2°.
- 2.3 The pelvis of the dummy shall be positioned according to the following:
 - 2.3.1 The pelvis pitch angle shall be 20.0° +/- 2.5°.
 - 2.3.2 A line passing through the dummy H-points shall pass through an imaginary circle in the mid-sagittal plane of the dummy. This circle has a radius of 10 mm and is located 20 mm horizontally forward and 5 mm vertically above the reference H-point, determined by the 3D H-point machine.
- 2.4 The upper torso of the dummy shall be positioned according to the following:
 - 2.4.1 The upper torso shall be bent forward and then laid back against the seat back. The shoulder of the dummy shall be set fully rearward.
 - 2.4.2 The torso reference line pitch angle shall be 25.0° +/- 2.5°. The torso reference line is defined as the thoracic spine center line.
- 2.5 The arms shall be positioned in such a way that the angle between the projection of the arm centerline on the mid-sagittal plane of the dummy and the torso reference line is 40° +/- 5°.

- 2.6 For the driver's seating position, without inducing pelvis or torso movement, place the right foot of the dummy on the undepressed accelerator pedal with the heel resting as far forward as possible on the floorpan. Set the left foot perpendicular to the lower leg with the heel resting on the floorpan in the same lateral line as the right heel. Set the knees of the dummy such that their outside surfaces are 150 ± 10 mm from the plane of symmetry of the dummy. If possible, within these constraints, place the thighs of the dummy in contact with the seat cushion.
- 2.7 For other seating positions, without inducing pelvis or torso movement, place the heels of the dummy as far forward as possible on the floorpan without compressing the seat cushion more than the compression due to the weight of the leg. Set the knees of the dummy such that their outside surfaces are 150 ± 10 mm from the plane of symmetry of the dummy.

APPENDIX F
ES-2 PEAK RESPONSES

ES-2 PEAK RESPONSE COMPARISON TABLE

Location	Peak Values (G's)				
	Class	Axis	Units	Saturn 7/10/01	
				201P	ES-2
				Peak	Time (msec)
Head	1000	X	G	32.7	60
	1000	Y	G	835.2	60
	1000	Z	G	145.2	60
	1000	RES	G	846.1	60
Head Injury Criteria (HIC)				9004	
time 1 msec				59.2	
time 2 msec				60.0	
Upper Neck Force	1000	X	N	-172	72
	1000	Y	N	-1706	60
	1000	Z	N	-1642	62
	1000	RES	N	1942	60
Upper Neck Moment	600	X	Nm	-46.7	62
	600	Y	Nm	28.5	98
	600	Z	Nm	-15.0	161
	600	RES	Nm	48.3	62
Lower Neck Force	1000	X	N	-287	71
	1000	Y	N	835	60
	1000	Z	N	-1700	63
	1000	RES	N	1734	63

ES-2 PEAK RESPONSE COMPARISON TABLE

Location	Peak Values (G's)				
	Class	Axis	Units	Saturn 7/10/01	
				201P	ES-2
				Peak	Time (msec)
Lower Neck Moment	600	X	Nm	No Valid Data	
	600	Y	Nm		
	600	Z	Nm		
	600	RES	Nm		
Shoulder Force	1000	X	N	-540	37
	1000	Y	N	1195	37
	1000	Z	N	-789	41
Upper Spine	180	X	G	-11.7	62
	180	Y	G	44.8	51
	180	Z	G	13.3	61
	180	RES	G	44.9	51
Lower Spine	180	X	G	8.0	38
	180	Y	G	58.3	48
	180	Z	G	12.1	61
	180	RES	G	58.3	48
Upper Rib	180	Y	G	105.3	37
Mid Rib	180	Y	G	140.0	38
Lower Rib	180	Y	G	185.6	49

ES-2 PEAK RESPONSE COMPARISON TABLE

Location	Peak Values (G's)				
	Class	Axis	Units	Saturn 7/10/01	
				201P	ES-2
				Peak	Time (msec)
Upper Rib Deflection	180	Y	mm	-44.8	58
Mid Rib Deflection	180	Y	mm	-35.4	57
Lower Rib Deflection	180	Y	mm	-33.5	43
Upper Rib VC	180	Y	msec	0.8	44
Mid Rib VC	180	Y	msec	0.5	43
Lower Rib VC	180	Y	msec	0.6	38
Torso Force	600	X	N	723	50
	600	Y	N	1774	52
Torso Moment	600	Y	Nm	20.7	49
	600	Z	Nm	30.6	50
T12 Force	600	X	N	455	73
	600	Y	N	-841	97
T12 Moment	600	X	Nm	106.7	85
	600	Y	Nm	-79.5	46
Abdomen Front Force	600	Y	N	78	55
Abdomen Mid Force	600	Y	N	330	48
Abdomen Rear Force	600	Y	N	659	47
Abdomen Summed Force	600	Y	N	1022	47
Pubic Symphysis Force	600	Y	N	-1559	48

ES-2 PEAK RESPONSE COMPARISON TABLE

Location	Peak Values (G's)				
	Class	Axis	Units	Saturn 7/10/01	
				201P	ES-2
				Peak	Time (msec)
Right Femur Force	600	X	N	293	113
	600	Y	N	-802	60
	600	Z	N	626	70
	600	RES	N	900	60
Right Femur Moment	600	X	Nm	116.3	101
	600	Y	Nm	51.7	104
	600	Z	Nm	-38.1	67
	600	RES	Nm	127.2	101
Left Femur Force	600	X	N	515	120
	600	Y	N	-894	59
	600	Z	N	1012	61
	600	RES	N	1331	58
Left Femur Moment	600	X	Nm	-57.3	66
	600	Y	Nm	29.2	119
	600	Z	Nm	-38.4	66
	600	RES	Nm	69.0	66
Pelvis	1000	X	G	17.6	57
	1000	Y	G	48.8	40
	1000	Z	G	11.7	63

ES-2 PEAK RESPONSE COMPARISON TABLE

Location	Peak Values (G's)				
	Class	Axis	Units	Saturn 7/10/01	
				201P	ES-2
				Peak	Time (msec)
AR (arm to door)			mm	182	
HP (Hi-point to door)			mm	110	
HR (head to roof)			mm	224	
HS (head to side)			mm	305	
Weight			kg	1598.5	
Upper Spine			G (fir)	43.5	52
Lower Spine			G (fir)	56.6	49
Upper Rib			G (fir)	95.2	37
Mid Rib			G (fir)	122.9	39
Lower Rib			G (fir)	143.0	51
Pelvis			G (fir)	48.4	41
TTI			G (fir)	100	
Impact Speed			kph	28.0	

CHILD PEAK RESPONSE COMPARISON TABLE

Location	Peak Values (G's)						
	Class	Axis	Units	Saturn 7/10/01 Left Rear HIII 6 yr. / 201P		Saturn 7/10/01 Right Rear HIII 3 yr. / 201P	
				Peak	Time (msec)	Peak	Time (msec)
Head	1000	X	G	-19.8	116	-6.6	147
	1000	Y	G	22.6	130	20.4	120
	1000	Z	G	11.6	107	12.8	117
	1000	RES	G	28.2	114	24.1	119
Head Injury Criteria (HIC)				46		52	
time 1 msec				90.4		106.6	
time 2 msec				126.4		142.6	
Upper Neck Force	1000	X	N	352.1	116	-43.8	131
	1000	Y	N	-212.9	136	312.0	119
	1000	Z	N	-614.9	116	312.3	116
	1000	RES	N	737.8	116	437.7	117
Upper Neck Moment	600	X	m	25.6	116	50.3	120
	600	Y	m	15.3	120	9.4	166
	600	Z	m	15.0	13	7.2	141
	600	RES	m	31.4	116	50.5	120

CHILD PEAK RESPONSE COMPARISON TABLE

Location	Peak Values (G's)						
	Class	Axis	Units	Saturn 7/10/01 Left Rear HIII 6 yr. / 201P		Saturn 7/10/01 Right Rear HIII 3 yr. / 201P	
				Peak	Time (msec)	Peak	Time (msec)
Lower Neck Force	1000	X	N	56.0	90	-13.4	123
	1000	Y	N	214.7	107	284.0	119
	1000	Z	N	-430.4	139	289.0	117
	1000	RES	N	451.9	118	421.2	120
Lower Neck Moment	600	X	m	44.9	90	-13.4	123
	600	Y	m	-18.1	106	-4.9	155
	600	Z	m	15.7	126	-9.4	136
	600	RES	m	49.7	90	14.9	124
Rib Deflection	180		mm				
Chest	180	X	G	-7.1	118	-4.9	123
	180	Y	G	21.7	117	12.2	109
	180	Z	G	7.5	117	12.8	109
	180	RES	G	23.3	117	12.8	109
Pelvis	1000	X	G	-7.5	76	-4.5	165
	1000	Y	G	18.2	86	12.1	83
	1000	Z	G	6.2	117	4.4	122

CHILD PEAK RESPONSE COMPARISON TABLE

Location	Peak Values (G's)						
	Class	Axis	Units	Saturn 7/10/01 Left Rear HIII 6 yr. / 201P		Saturn 7/10/01 Right Rear HIII 3 yr. / 201P	
				Peak	Time (msec)	Peak	Time (msec)
Head to Striker		X		88		96	
		Y		351		375	
		Z		128		190	
Chest to Door							