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REPORT NO.: 214-MGA-99-04
SAFETY COMPLIANCE TESTING FOR FMVSS NO. 214
"SIDE IMPACT PROTECTION"

Ford Motor Company
1999 Ford Ranger XLT Pick-up
NHTSA NO: CX0203

MGA PROVING GROUNDS
5000 WARREN ROAD
BURLINGTON, WI 53105

Test Date: December 16, 1998

Report Date: December 22, 1998

FINAL REPORT

Prepared For:

U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
ENFORCEMENT
OFFICE OF VEHICLE SAFETY COMPLIANCE
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WASHINGTON, D.C. 20590

This Final Report was prepared for the U.S. Department of Transportation, National Highway Traffic Safety Administration, under Contract No. DTNH22-97-C-11033.

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Acceptance Date: 2/0/99

1. Report No. 214-MGA-98-04	2. Government Accession No.	3. Recipient's Catalog No.
4. Title and Subtitle Final Report of FMVSS No.214 Compliance Side Impact Protection Testing of a 1999 Ford Ranger XLT Pick-up NHTSA No. CX0203		5. Report Date December 22, 1998 6. Performing Organization Code MGA
7. Author(s) Chad Gadberry		8. Performing Organization Report No. MGA-DOT-214-01
9. Performing Organization Name and Address MGA Research Corporation 5000 Warren Road Burlington, WI 53105		10. Work Unit No. 11. Contract or Grant No. DTNH22-97-C-11033
12. Sponsoring Agency Name and Address U.S. Department of Transportation National Highway Traffic Safety Administration Office of Vehicle Safety Compliance 400 Seventh St., S.W., Room 6115 Washington, D.C. 20590		13. Type of Report and Period Covered Final Test Report December 16, 1998 - December 22, 1998 14. Sponsoring Agency Code NSA-30
15. Supplementary Notes		

16. Abstract

A 48/24 kph 90° Impact (Moving Deformable Barrier) Compliance Test was conducted on the subject 1999 Ford Ranger XLT Pick-up in accordance with the specifications of the Office of Vehicle Safety Compliance Test Procedure No. TP- 214D-04 for the determination of FMVSS No. 214 Side Impact Protection compliance. The test was conducted at MGA Research Corporation in Burlington, Wisconsin, on December 16, 1998.

The impact velocity of the Moving Deformable Barrier (MDB) was 53.3 kph, and the ambient temperature at the struck side of the target vehicle at the time of impact was 21°C. The target vehicle post test maximum crush was 379 mm at level 3. The test vehicle's performance follows:

	DRIVER.
Left Upper Rib (LUR) Accel., g	46
Left Lower Rib (LLR) Accel., g	64
Lower Spine (T_{12}) Accel., g	57
Thoracic Trauma Index (TTI)	61
Pelvis (PEV) Accel., g	81

The doors on the struck side of the vehicle did not separate from the body at the hinges or latches and the opposite doors did not open during the side impact event.

17. Key Words	18. Distribution Statement
Compliance Testing Side Impact Protection FMVSS 214 Side Impact Dummy (SID)	Copies of this report are available from: National Highway Traffic Safety Adm. Technical Ref. Division, Room 5108 (NAD-52) 400 Seventh Street, S.W. Washington, D.C. 20590 Telephone No. 202-366-4946

19. Security Classif. (of this report)	20. Security Classif. (of this page)	21. No. of Pages	22. Price
Unclassified	Unclassified	223	

Form DOT F 1700.7 (8-69)

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SECTION 1
PURPOSE AND TEST PROCEDURE

This side impact test is part of the FY 99 FMVSS 214 Side Impact Protection Compliance Test Program, sponsored by the National Highway Traffic Safety Administration (NHTSA), under Contract No. DTNH22-97-C-11033. The purpose of this test was to evaluate side impact protection of a 1999 Ford Ranger XLT Pick-up.

This side impact test was conducted in accordance with the Vehicle Safety Compliance's FMVSS 214 test procedure (TP-214D-04, dated September 1, 1995).

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

SECTION 2
SUMMARY OF SIDE IMPACT TEST

A 1999 Ford Ranger XLT Pick-up was impacted on the left side by a Moving Deformable Barrier (MDB) which was moving forward in a 27° crabbed position to the tow road guidance system at a velocity of 33.1 mph (53.3 kph). The target vehicle was stationary and was positioned at an angle of 63° to the line of forward motion. The side impact test was conducted by MGA Research Corporation in Burlington, Wisconsin, on December 16, 1998. Pre- and post-test photographs of the test vehicle, the MDB and the side impact dummy (SID) are included in Appendix A.

One Side Impact Dummy (SID) was placed in the driver seating position according to instructions specified in the OVSC Side Impact Laboratory Test Procedure which is dated September 1, 1995. The side impact event was documented by eight high speed cameras. Camera locations and other pertinent camera information can be found in this report.

The SIDs were instrumented with the following accelerometers.

1. Left Upper Rib (LUR) uniaxial accelerometer (Y-direction)
2. Left Lower Rib (LLR) uniaxial accelerometer (Y-direction)
3. Lower Thoracic Spine (T_{12}) uniaxial accelerometer (Y-direction)
4. Pelvic (PEV) section uniaxial accelerometer (Y-direction)

Appendix B contains the vehicle and dummy response data traces. A summary of the side impact dummy (SID) 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.

The following table summarizes the results of the FMVSS 214 Left Side Impact test:

Injury Criteria	Front SID
TTI (g)	61
Pelvis (g)	81

TEST NOTES

1. The following accelerometers were not used for this test:

   Left Front Door on Centerline
   Midrear of Left Front Door
   Left Front Door Upper Centerline
   Midrear of Left Rear Door
   Left Rear Door Upper Centerline
   Left Mid B-Pillar
   Rear Seat Track

2. As a result of the impact, the vehicle (in the approximate location of the left A-pillar) landed on the MDB face. All post-test measurements were taken after the MDB was removed from under the vehicle.

SECTION 3
SIDE IMPACT DUMMY (SID) AND
VEHICLE TEST DATA

DATA SHEET NO. 1

GENERAL VEHICLE TEST PARAMETER DATA

TEST VEHICLE INFORMATION:

Year/Make/Model/Body Style: 1999/Ford/Ranger/XLT Pick-up

Vehicle NHTSA No.: CX0203 VIN: 1FTYR14V0XPA11327

Vehicle Body Color: Red Build Date: 8/98

Engine Data: 6 Cylinders; __ CID; 3.0 Liter; ___cc

Placement X Longitudinal; ___ Lateral

Transmission: 5 speed; X Manual; __ Automatic; X Overdrive

Final Drive: X Rear Wheel Drive; __ Frt. Wheel Drive; __ Four Wheel Drive

Odometer Reading 88 miles

Options: X A/C; X Pwr. Steering; X Pwr. Brakes; __ Pwr. Windows;

X Cruise Control; __Tilt Wheel; ___Power Door Locks;

DATA FROM TIRE PLACARD:

Tire Pressure (at capacity): 30 Psi FRONT

30 Psi REAR

Recommended Tire Size: P225/70R15

Tires on Test Vehicle: P225/70R15 Manufacturer: Firestone

Vehicle Capacity Data:

Number of Occupants: 3 Front; __ Rear; __ 3rd Seat 3 Total

Type of Front Seats: X Bucket; __ Bench; ___ Split Bench

Type of Front Seat Back: __ Fixed; X Adjustable with X Lever _Knob __Power

Vehicle Maximum Capacity Loading = 340.2 kg (A)

No. of Occupants x 68.04 kg. = 204.1 kg (B)

Cargo Capacity (A-B) = 136.1 kg

GENERAL VEHICLE TEST PARAMETER DATA (Cont'd)

WEIGHT OF TEST VEHICLE WITH MAXIMUM FLUIDS:

Right Front =	448.1 kg	Right Rear =	319.8 kg
Left Front =	482.6 kg	Left Rear =	327.5 kg
TOTAL FRONT =	930.7 kg	TOTAL REAR =	647.3 kg
% of Total Weight =	59.0 %;	% of Total Weight =	41.0 %
TOTAL WEIGHT =	1578.0 kg		

GENERAL VEHICLE TEST PARAMETER DATA (Cont'd)

Year/Make/Model/Body Style: 1999/Ford/Ranger/XLT Pick-up

Vehicle NHTSA No.: CX0203 Test Date: December 16, 1998

CALCULATION OF VEHICLE'S TARGET TEST WEIGHT:

Total Test Vehicle Delivered Weight with Maximum Fluids	= 1578.0 kg
Cargo Carrying Capacity of Test Vehicle	= 136.1 kg
Weight of 1 Side Impact Dummy	= 80.7 kg
TEST VEHICLE TARGET WEIGHT	= 1794.8 kg

ACTUAL WEIGHT OF TEST VEHICLE WITH 2 DUMMIES AND CARGO: (FULLY LOADED)

Right Front = 458.1 kg	Right Rear = 397.8 kg
Left Front = 524.4 kg	Left Rear = 413.7 kg
TOTAL FRONT = 982.5 kg	TOTAL REAR = 811.5 kg
% of Total Weight = 54.8 %	% of Total Weight = 45.2 %
TOTAL WEIGHT = 1794.4 kg	

TEST VEHICLE ATTITUDE:

CURB WEIGHT ATTITUDE:

Right Front 810 mm Left Front 795 mm Right Rear 831 mm Left Rear 815 mm

FULLY LOADED WEIGHT ATTITUDE:

Right Front 799 mm Left Front 781 mm Right Rear 800 mm Left Rear 781 mm

TEST ATTITUDE:

Right Front 799 mm Left Front 783 mm Right Rear 802 mm Left Rear 782 mm

GENERAL VEHICLE TEST PARAMETER DATA (Cont'd)

Test Vehicle Wheelbase: 3198 mm

C.G. As Tested = 1435 mm rearward of front wheel centerline

TOTAL VEHICLE LENGTH:

Right Side = 4863 mm

Centerline = 5138 mm

Left Side = 4863 mm

GENERAL VEHICLE TEST PARAMETER DATA (Cont'd)

Year/Make/Model/Body Style: 1999/Ford/Ranger/XLT Pick-up

Vehicle NHTSA No.: CX0203 Test Date: December 16, 1998

FRONT SEAT CUSHION PLACEMENT:

Total Length of Adjustment Travel: 170 mm

Test Position: 10th detent rearward of 18

FRONT SEAT BACK ADJUSTMENT POSITION:

Seat Back Angle = 21.5°

REAR POSITION SEAT:

Total Length of Fore/Aft Adjustment Travel: N/A

Seat Back Adjustment Position: N/A

ADJUSTABLE STEERING COLUMN POSITION: Mid position (3rd of 5 positions)

WINDOW POSITIONS: Left Front Closed Left Rear N/A

Right Front Open Right Rear N/A

AMOUNT OF STODDARD SOLVENT IN FUEL TANK:

Fuel system usable capacity = 19.5 gallons

Test Volume: 18.1 gallons 93% of capacity

LOCATIONS OF IMPACT POINT ON TEST VEHICLE SIDE TO BE IMPACTED:

Wheelbase: = 3198 mm

Impact Point is 508 mm rearward of front axle centerline

DATA SHEET NO. 2

TEST VEHICLE SUMMARY OF RESULTS

Year/Make/Model/Body Style: 1999/Ford/Ranger/XLT Pick-up

Vehicle NHTSA No.: CX0203 Test Date: December 16, 1998

Overall Length = 5138 mm; Overall Width = 1738 mm

TEST WEIGHT:

Right Front =	465.8 kg	Right Rear =	392.8 kg
Left Front =	519.4 kg	Left Rear =	409.1 kg
TOTAL FRONT =	985.2 kg	TOTAL REAR =	801.9 kg
% of Total Weight =	55.1 %	% of Total Weight =	44.9 %

TOTAL VEHICLE WEIGHT = 1787.1 kg

Wheelbase = 3198 mm

Longitudinal C.G. from Center of Front Axle = 1435 mm

Impact Angle with Respect to Impactor = 90° degrees

MAXIMUM EXTERIOR STATIC CRUSH:

1. LEVEL 1 (398 mm above ground) = 371 mm
2. LEVEL 2 (736 mm above ground) = 376 mm
3. LEVEL 3 (761 mm above ground) = 379 mm
4. LEVEL 4 (1040 mm above ground) = 286 mm
5. LEVEL 5 (1535 mm above ground) = 221 mm

Maximum Post-Test Intrusion = 379 mm

OCCUPANTS:	Driver
Type of Dummy	SID
Restraints Used	type II belt with frontal airbag

TEST VEHICLE SUMMARY OF RESULTS (Cont'd)

INSTRUMENTATION:

Number of Vehicle Data Channels:		= 19
Number of Cameras:	Onboard Vehicle	= 2
	Offboard Vehicle	= 4
	Deformable Barrier	= 2
	TOTAL	= 8

DATA SHEET NO. 3

MOVING DEFORMABLE BARRIER (MDB) SUMMARY OF RESULTS

Year/Make/Model/Body Style: 1999/Ford/Ranger/XLT Pick-up

Vehicle NHTSA No.: CX0203 Test Date: December 16, 1998

POSITION OF IMPACT (MDB) ON MONORAIL:

Crabbed 27° to left

MDB DETAILS:

Overall Width of Framework Carriage	= 1252 mm
Overall Length of MDB (incl. honeycomb impact face)	= 4115 mm
Wheelbase of Framework Carriage	= 2591 mm
Tread of Framework Carriage (Front & Rear)	= 1880 mm
C.G. Location Rearward of Front Axle	= 1098 mm
C.G. Location From Center Line	= -15 mm
C.G. Location Above Ground Level	= 485 mm

MDB WEIGHT:

Left Front	= 457.7 kg	Left Rear	= 235.1 kg
Right Front	= 328.1 kg	Right Rear	= 342.6 kg
TOTAL FRONT	= 785.8 kg	TOTAL REAR	= 577.7 kg

TOTAL MDB WEIGHT = 1363.5 kg

Impact Angle (MDB C/L to Target Vehicle C/L) = 90° degrees

Impact Speed = Primary: 33.1 mph (53.3 kph) Secondary: 33.1 mph (53.3 kph)

CRASH TEST SUMMARY FOR SIDE IMPACTOR (Cont'd)

MAXIMUM STATIC CRUSH OF HONEYCOMB IMPACT FACE:

1.	Row A Top of Stack (813 mm)	= 161	mm
2.	Row B Mid Stack (686 mm)	= 107	mm
3.	Row C Top of Bumper (533 mm)	= 30	mm
4.	Row D Center of Bumper (432 mm)	= 27	mm

INSTRUMENTATION:

Number of MDB Data Channels = 7

DATA SHEET NO. 4

POST-TEST OBSERVATIONS

Year/Make/Model/Body Style: 1999/Ford/Ranger/XLT Pick-up

Vehicle NHTSA No.: CX0203 Test Date: December 16, 1998

VISIBLE DUMMY CONTACT POINTS:

	DRIVER
Head	to header (side)
Arm	to door panel
Pelvis	to door panel below armrest
Left Knee	to mid door panel
Right Knee	to left knee

DOOR OPENING:

	LEFT SIDE	RIGHT SIDE
Front	Remained closed	Remained closed
Rear	Remained closed	Remained closed

MDB DISTANCE FROM TARGET IMPACT POINT:

Horizontal: 5 mm forward Vertical: 3 mm low

ARM REST LOCATIONS:

Front: 185 mm from bottom of window

Rear: N/A

POST-TEST OBSERVATIONS (Cont'd)

SEAT CRUSH:

Front Seat Back: 17 mm Front Seat Cushion: 8 mm

GLAZING DAMAGE:

Windshield cracked

PILLAR PERFORMANCE:

No failure noted

SILL SEPARATION:

None noted

FRONTAL AIRBAGS:

Driver Deployed: No Passenger Deployed: No

OTHER NOTABLE IMPACT EFFECTS:

Vehicle landed on top of MDB face; tailgate detached

SECTION 4
OCCUPANT AND VEHICLE INFORMATION

DATA SHEET NO. 5

SIDE IMPACT DUMMY (SID) INSTRUMENTATION DATA

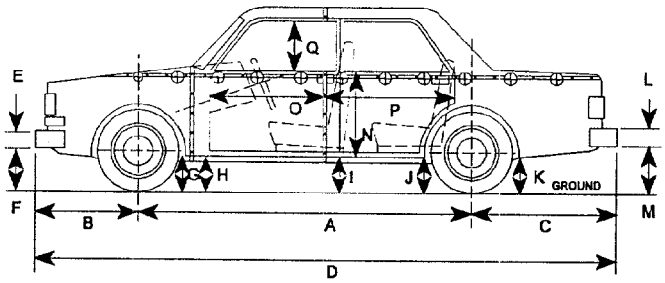
Year/Make/Model/Body Style: 1999/Ford/Ranger/XLT Pick-up

Vehicle NHTSA No.: CX0203 Test Date: December 16, 1998

	Front SID ID #048			
	Pos. Direct.		Neg. Direct	
	Max (g)	Time (msec)	Max (g)	Time (msec)
RIB ACCELERATIONS				
Left Upper Rib (LUR) Y	45.6	56	-3.4	139
Left Lower Rib (LLR) Y	64.3	45	-4.9	66
SPINE ACCELERATIONS				
Lower Lateral Y	57.3	42	-16.9	65
PELVIS ACCELERATIONS				
Lateral Y	81.3	36	-11.3	58

REFERENCE: Positive Direction- Longitudinal (X) = forward
Lateral (Y) = to right
Vertical (Z) = down

DATA SHEET NO. 6
VEHICLE PRE AND POST-TEST MEASUREMENTS



LEFT SIDE VIEW

D = Length at Centerline
R = Right Side Length
S = Left Side Length
T = Width at B Post
E & L = Bumper Thickness
J2 = To Sill
J1 = To Pinch Weld

ALL MEASUREMENTS IN (mm)

	PRE-TEST	POST-TEST*	Δ CHANGE
A	3198	3162	35
B	840	840	0
C	1100	1055	45
D	5138	5111	27
E	80	80	0
F	532	540	8
G	341	382	41
H	319	398	79
I	316	322	6
J1/J2	330/328	397/369	67/41
K	368	400	32
L	135	135	0
M	410	400	10
N	642	648	6
O	787	776	11
P	354	358	4
Q	495	489	6
R	4863	4928	65
S	4863	4792	71
T	1738	1565	173

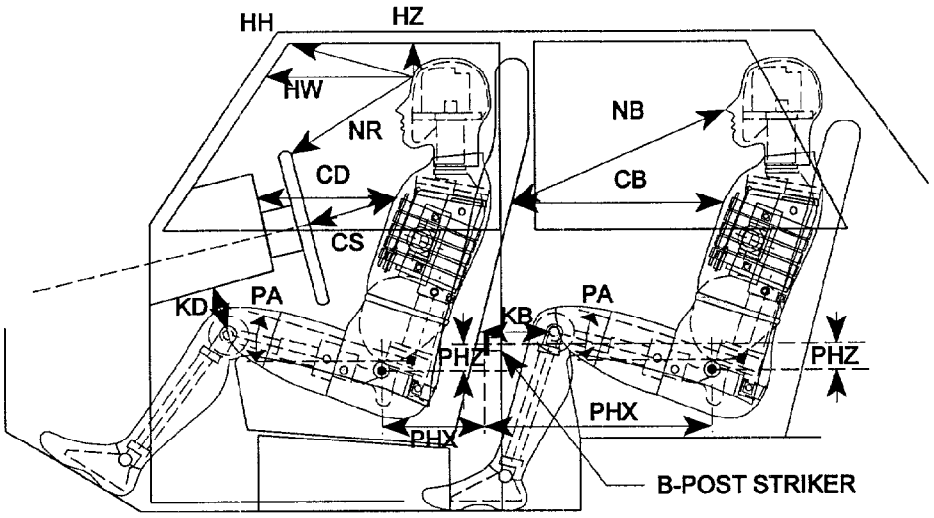
* Measurement taken after MDB was removed from under the vehicle.

DATA SHEET NO. 7

SIDE IMPACT DUMMY (SID) LONGITUDINAL CLEARANCE DIMENSIONS

Year/Make/Model/Body Style: 1999/Ford/Ranger/XLT Pick-up

NHTSA NO.: CX0203 Test Date: December 16, 1998



NOTE: All dimensions are in mm with tolerance of ± 3 mm

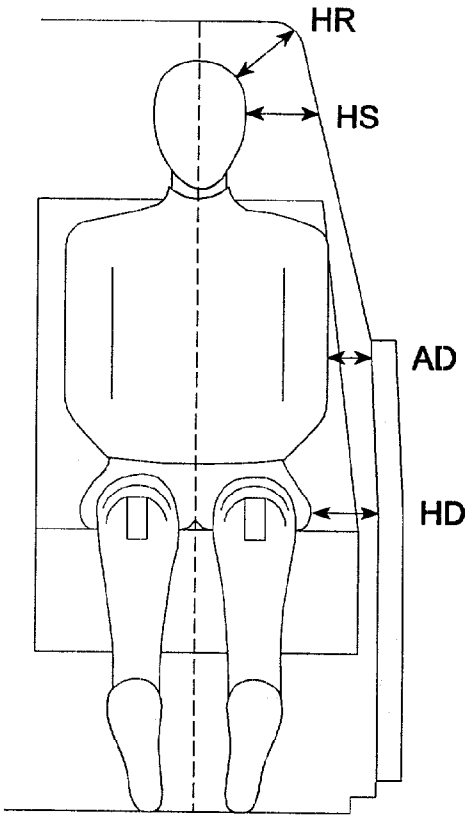
	DRIVER ID #048
HH	426
HW	529
HZ	172
NR	331
CD	463
CS	257
KDL (KDA°)	115 (39.5°)
KDR (KDA°)	156 (0.0°)
PA°	24.3°
PHX	337
PHZ	108

NOTE: 2-door vehicle shown. Rear dummy PHX & PHZ measurements for 4-door vehicle would use the C-post striker as reference point.

DATA SHEET NO. 8
SIDE IMPACT DUMMY (SID) LATERAL CLEARANCE DIMENSIONS

Year/Make/Model/Body Style: 1999/Ford/Ranger/XLT Pick-up

NHTSA NO.: CX0203 Test Date: December 16, 1998



NOTE: All dimensions are in mm

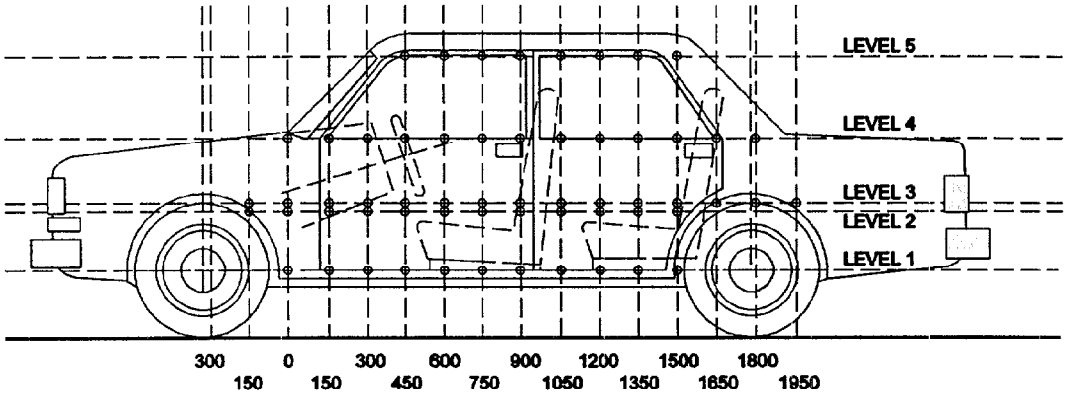
	DRIVER ID #048
HR	269
HS	329
AD	86
HD	135

DATA SHEET NO. 9

VEHICLE SIDE MEASUREMENTS

Year/Make/Model/Body Style: 1999/Ford/Ranger/XLT Pick-up

NHTSA NO.: CX0203 Test Date: December 16, 1998



LEFT SIDE VIEW

NOTE: All measurements are in millimeters (mm)

LEVEL 5 - WINDOW TOP
LEVEL 4 - WINDOW SILL
LEVEL 3 - OCCUPANT H-POINT
LEVEL 2 - MID DOOR
LEVEL 1 - AXLE CENTERLINE HEIGHT OR SILL TOP HEIGHT

MEASUREMENTS ARE TAKEN WHEN THE VEHICLE IS IN THE "AS TESTED" CONFIGURATION

MEASUREMENTS ALONG THE VERTICAL 750 mm. LINE SHOWN ABOVE

Level 1 @ Axle Centerline Height (or Sill Top Height)	= 398	mm
Level 2 @ Mid Door	= 736	mm
Level 3 @ Occupant H-Point	= 761	mm
Level 4 @ Window Sill	= 1040	mm
Level 5 @ Window Top	= 1535	mm

DATA SHEET NO. 10

VEHICLE EXTERIOR CRUSH PROFILES

	Level 1 - Axle Centerline		
Longitudinal Distance (mm)	Pre-Test (mm)	Post-Test (mm)	Static Crush (mm)
-1200			
-1050			
-900			
-750			
-600			
-450			
-300			
-150			
0 (impact point)	681	841	160
150	686	978	292
300	687	1024	337
450	687	1043	356
600	688	1045	357
750	688	1046	358
900	688	1046	358
1050	686	1053	367
1200	686	1057	371
1350	687	1049	362
1500	686	1050	364
1650	688	1051	363
1800	693	954	261
1950	687	835	148
2100	679	690	11
2250			
2400			

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

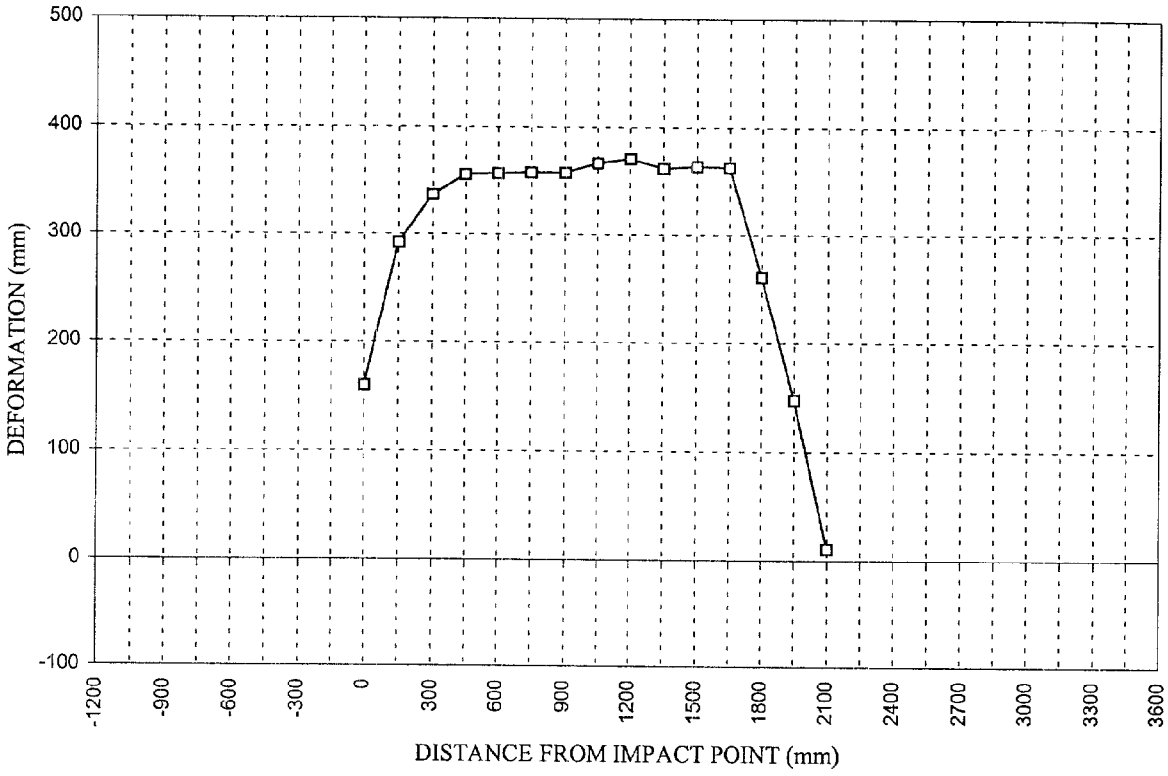
DATA SHEET NO. 10 (Cont'd)

VEHICLE EXTERIOR CRUSH PROFILES

	Level 1 - Axle Centerline		
Longitudinal Distance (mm)	Pre-Test (mm)	Post-Test (mm)	Static Crush (mm)
2550			
2700			
2850			
3000			
3150			
3300			
3450			
3600			

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

VEHICLE EXTERIOR STATIC CRUSH (Cont'd)



LEVEL 1 - AXLE CENTERLINE

DATA SHEET NO. 10 (Cont'd)

VEHICLE EXTERIOR CRUSH PROFILES

	Level 2 - Mid Door		
Longitudinal Distance (mm)	Pre-Test (mm)	Post-Test (mm)	Static Crush (mm)
-1200			
-1050	673	695	22
-900	654	691	37
-750	627	683	56
-600			
-450			
-300	610	711	101
-150	623	730	107
0 (impact point)	620	761	141
150	617	854	237
300	614	876	252
450	612	897	285
600	610	919	309
750	609	943	334
900	610	952	342
1050	610	984	374
1200	611	979	368
1350	612	988	376
1500	614	978	364
1650	617	953	336
1800	614	767	153
1950	614	713	99
2100	614	669	55
2250	617	611	-6
2400	617	627	10

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

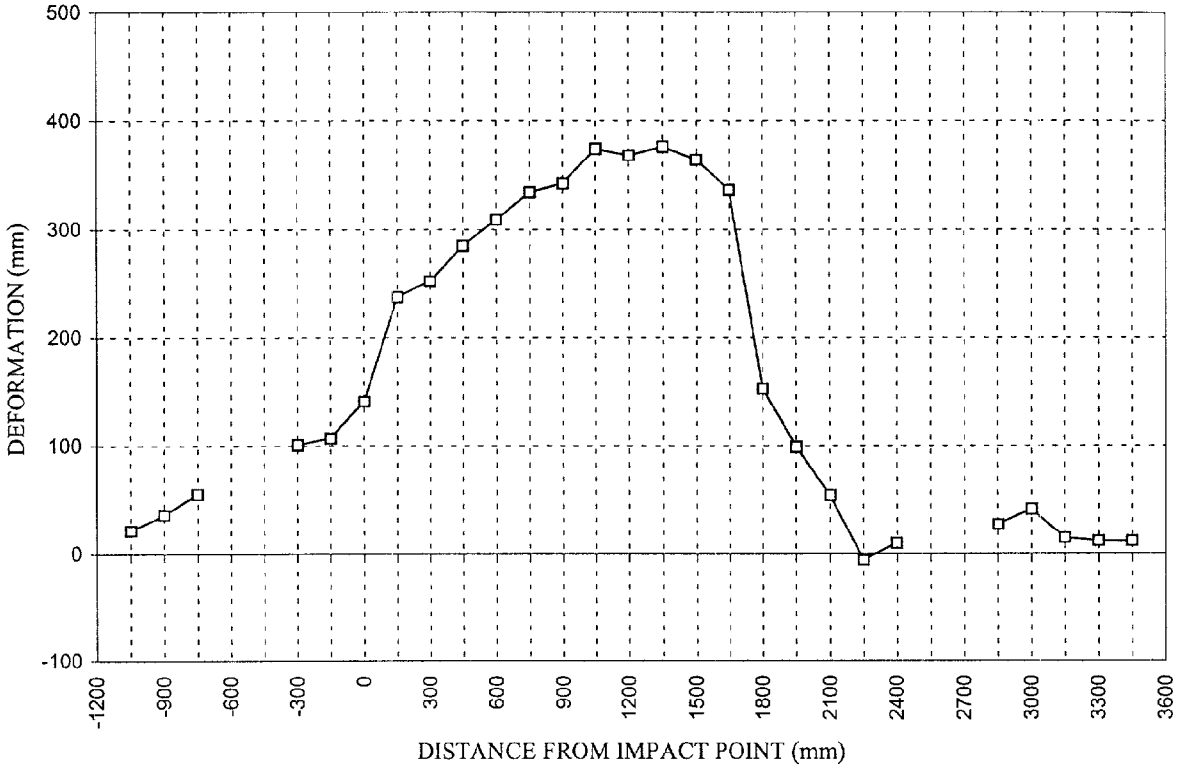
DATA SHEET NO. 10 (Cont'd)

VEHICLE EXTERIOR CRUSH PROFILES

	Level 2 - Mid Door		
Longitudinal Distance (mm)	Pre-Test (mm)	Post-Test (mm)	Static Crush (mm)
2550			
2700			
2850	615	643	28
3000	634	676	42
3150	638	653	15
3300	644	656	12
3450	652	664	12
3600			

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

VEHICLE EXTERIOR STATIC CRUSH (Cont'd)



LEVEL 2 - MID DOOR

DATA SHEET NO. 10 (Cont'd)

VEHICLE EXTERIOR CRUSH PROFILES

	Level 3 - Occupant H-Point		
Longitudinal Distance (mm)	Pre-Test (mm)	Post-Test (mm)	Static Crush (mm)
-1200			
-1050	673	697	24
-900	653	693	40
-750	630	687	57
-600			
-450			
-300	612	716	104
-150	624	736	112
0 (impact point)	622	774	152
150	618	859	241
300	617	881	264
450	614	900	282
600	612	916	314
750	612	935	323
900	611	948	337
1050	611	981	370
1200	612	981	369
1350	613	992	379
1500	616	983	367
1650	618	960	342
1800	617	772	155
1950	617	709	92
2100	617	669	52
2250	619	607	-12
2400	615	623	-8

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

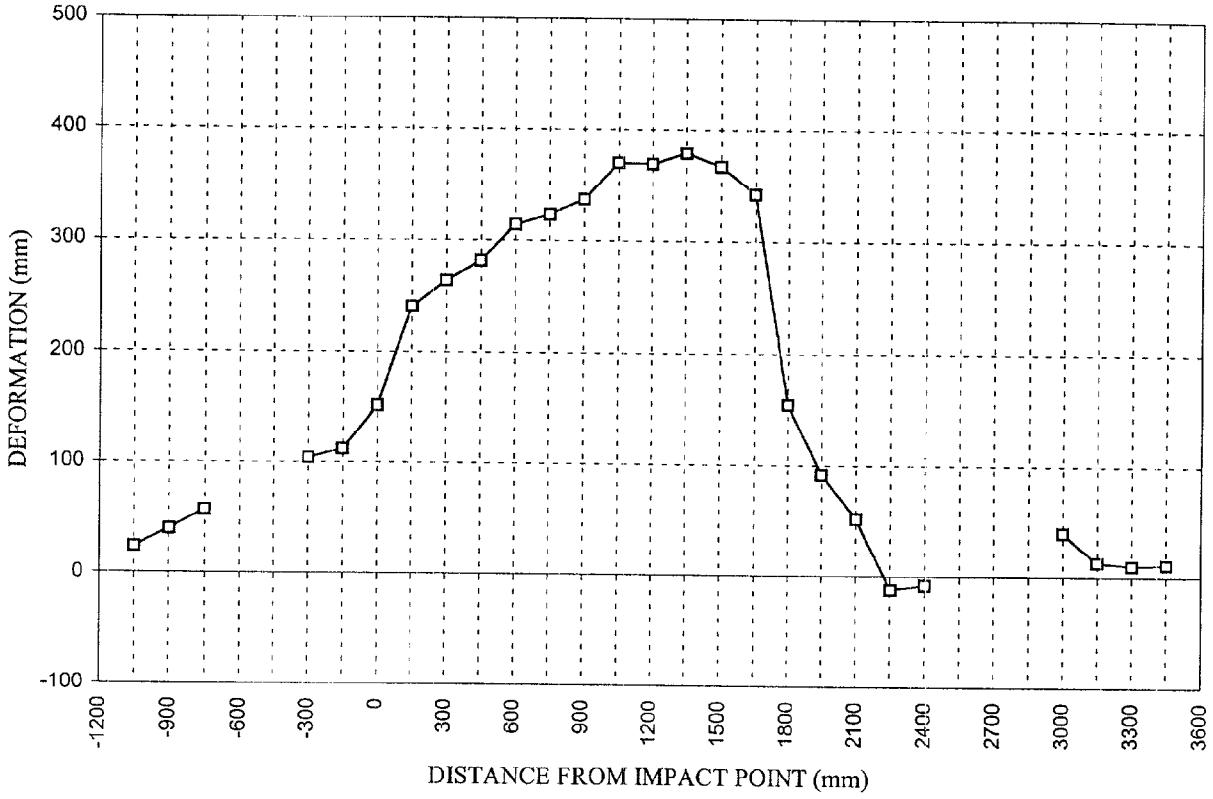
DATA SHEET NO. 10 (Cont'd)

VEHICLE EXTERIOR CRUSH PROFILES

	Level 3 - Occupant H-Point		
Longitudinal Distance (mm)	Pre-Test (mm)	Post-Test (mm)	Static Crush (mm)
2550			
2700			
2850			
3000	635	675	40
3150	639	652	13
3300	644	654	10
3450	653	664	11
3600			

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

VEHICLE EXTERIOR STATIC CRUSH (Cont'd)



LEVEL 3 - OCCUPANT H-POINT

DATA SHEET NO. 10 (Cont'd)

VEHICLE EXTERIOR CRUSH PROFILES

	Level 4 - Window Sill		
Longitudinal Distance (mm)	Pre-Test (mm)	Post-Test (mm)	Static Crush (mm)
-1200			
-1050	735	754	19
-900	715	746	31
-750	699	746	47
-600	688	750	62
-450	676	755	79
-300	670	766	96
-150	662	771	109
0 (impact point)	657	782	125
150	654	781	127
300	654	801	147
450	653	809	156
600	651	822	171
750	650	837	187
900	649	853	204
1050	649	869	220
1200	649	935	286
1350	651	929	278
1500	654	932	278
1650	655	935	280
1800	652	744	92
1950	650	728	78
2100	652	714	62
2250	655	710	55
2400	659	701	42

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

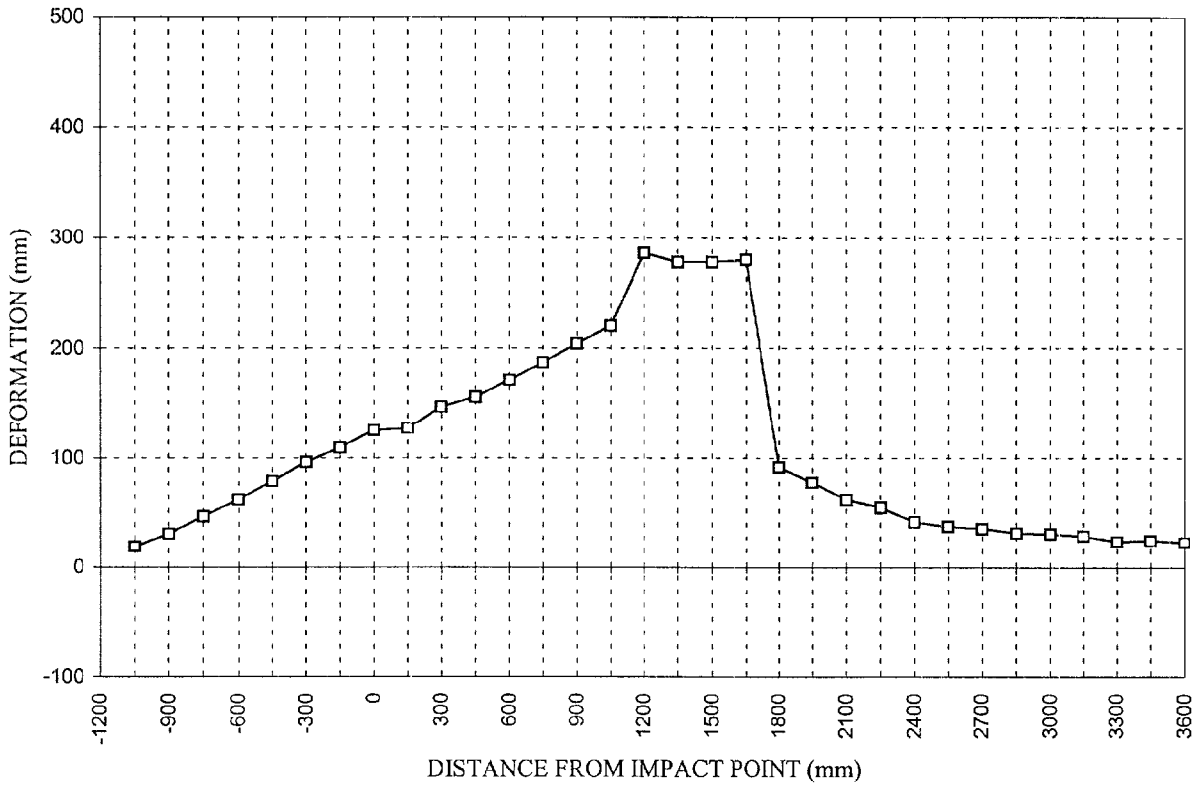
DATA SHEET NO. 10 (Cont'd)

VEHICLE EXTERIOR CRUSH PROFILES

	Level 4 - Window Sill		
Longitudinal Distance (mm)	Pre-Test (mm)	Post-Test (mm)	Static Crush (mm)
2550	663	701	38
2700	668	704	36
2850	671	703	32
3000	676	707	31
3150	681	710	29
3300	686	710	24
3450	691	716	25
3600	699	722	23

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

VEHICLE EXTERIOR STATIC CRUSH (Cont'd)



LEVEL 4 - WINDOW SILL

DATA SHEET NO. 10 (Cont'd)

VEHICLE EXTERIOR CRUSH PROFILES

	Level 5 - Window Top		
Longitudinal Distance (mm)	Pre-Test (mm)	Post-Test (mm)	Static Crush (mm)
-1200			
-1050			
-900			
-750			
-600			
-450			
-300			
-150			
0 (impact point)			
150			
300			
450			
600	808	799	-9
750	808	807	-1
900	807	821	14
1050	807	831	24
1200	805	1007	202
1350	807	1011	204
1500	809	1022	213
1650	830	1051	221
1800			
1950			
2100			
2250			
2400			

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

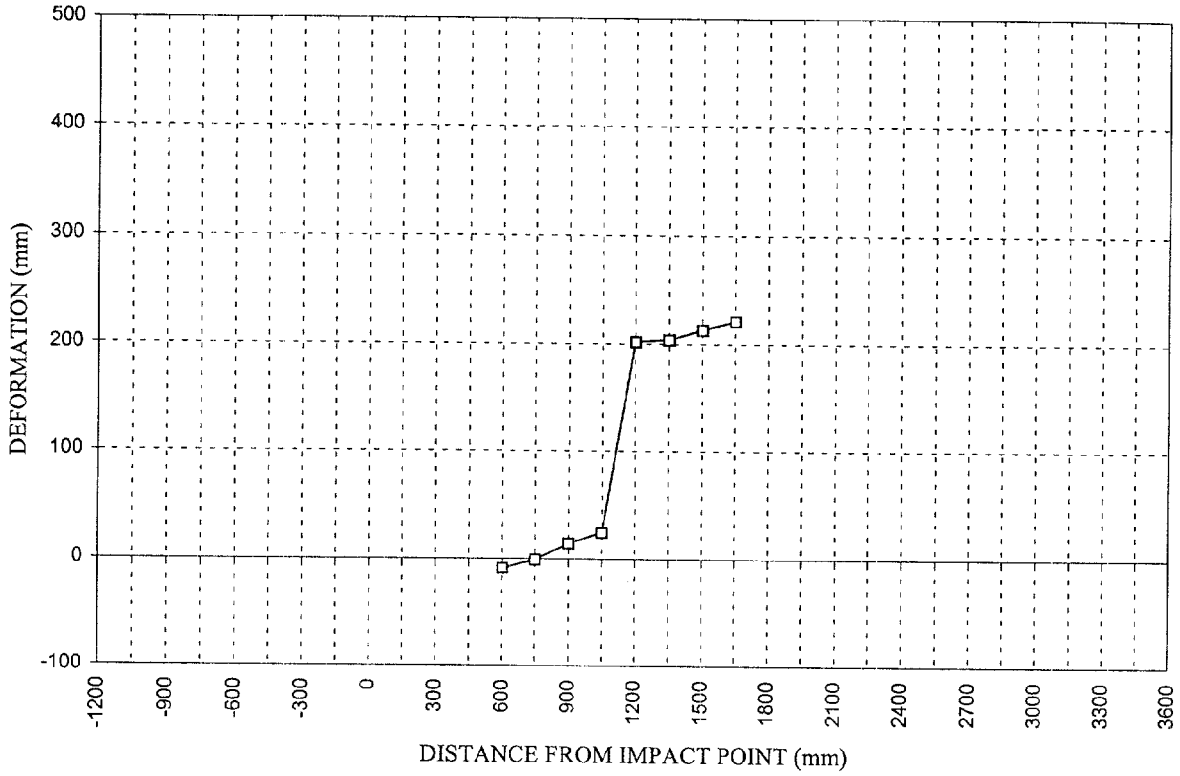
DATA SHEET NO. 10 (Cont'd)

VEHICLE EXTERIOR CRUSH PROFILES

	Level 5 - Window Top		
Longitudinal Distance (mm)	Pre-Test (mm)	Post-Test (mm)	Static Crush (mm)
2550			
2700			
2850			
3000			
3150			
3300			
3450			
3600			

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

VEHICLE EXTERIOR STATIC CRUSH (Cont'd)



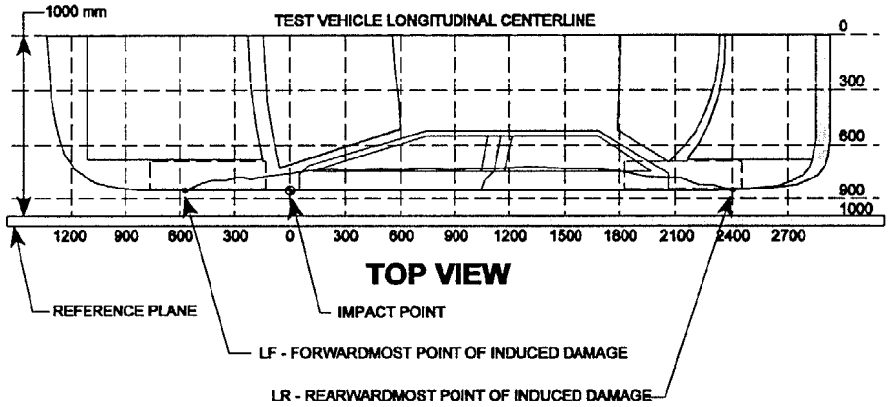
LEVEL 5 - WINDOW TOP

DATA SHEET NO. 11

VEHICLE DAMAGE PROFILE DISTANCES

Year/Make/Model/Body Style: 1999/Ford/Ranger/XLT Pick-up

NHTSA NO.: CX0203 Test Date: December 16, 1998



MEASUREMENT CONVENTIONS:

Forward of the impact point (towards front of vehicle) is considered negative (—).

Rearward of the impact point (toward rearend of vehicle) is considered positive (+).

DPD MEASUREMENTS	POST-TEST (mm)	PRE-TEST (mm)	STATIC CRUSH (mm)
1. (LF = -600 mm)	750	688	62
2. 45 mm	852	681	171
3. 678 mm	1046	688	358
4. 1335 mm	1049	687	362
5. 1870 mm	886	693	193
6. (LR = 2700 mm)	704	668	35

DATA SHEET NO. 12

EXTERIOR STATIC CRUSH FOR SIDE IMPACTOR

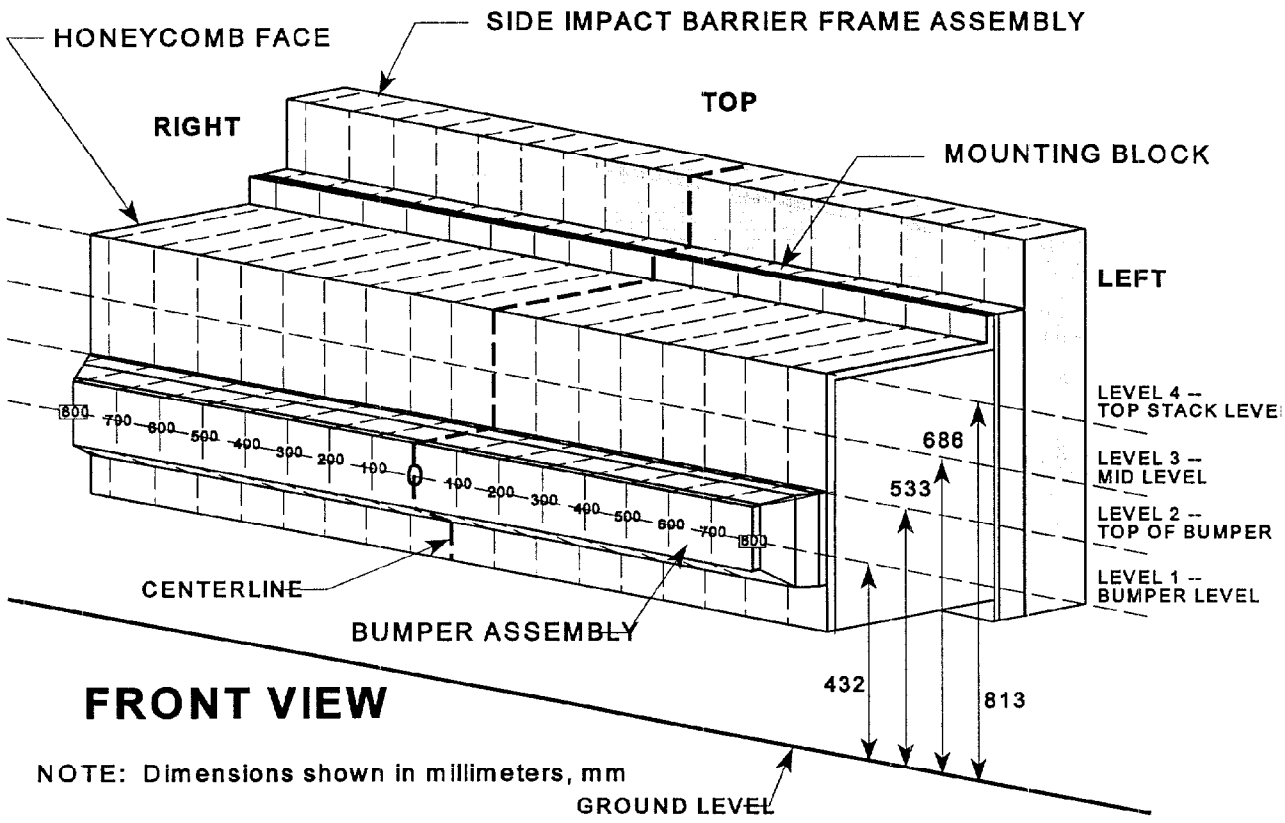
Year/Make/Model/Body Style: 1999/Ford/Ranger/XLT Pick-up

Vehicle NHTSA No.: CX0203 Test Date: December 16, 1998

		Distance Right of Center (mm)									Distance Left of Center (mm)							
Location	Height at CL*	800	700	600	500	400	300	200	100	0	100	200	300	400	500	600	700	800
Top Stack Level 4	813 mm	161	99	54	37	12	15	10	3	3	3	9	19	28	43	63	93	136
Mid Level Level 3	686 mm	107	46	15	-3	-3	-3	-4	-3	-2	-2	-2	-2	-2	2	12	29	67
Top Bumper Level 2	533 mm	29	23	19	19	19	18	15	13	12	13	14	14	14	15	17	21	30
Mid Bumper Level 1	432 mm	20	17	13	12	10	9	8	7	8	10	9	9	9	10	15	24	27

See next page for Barrier Face Graphic

DATA SHEET NO. 12 (Cont'd)



FRONT VIEW

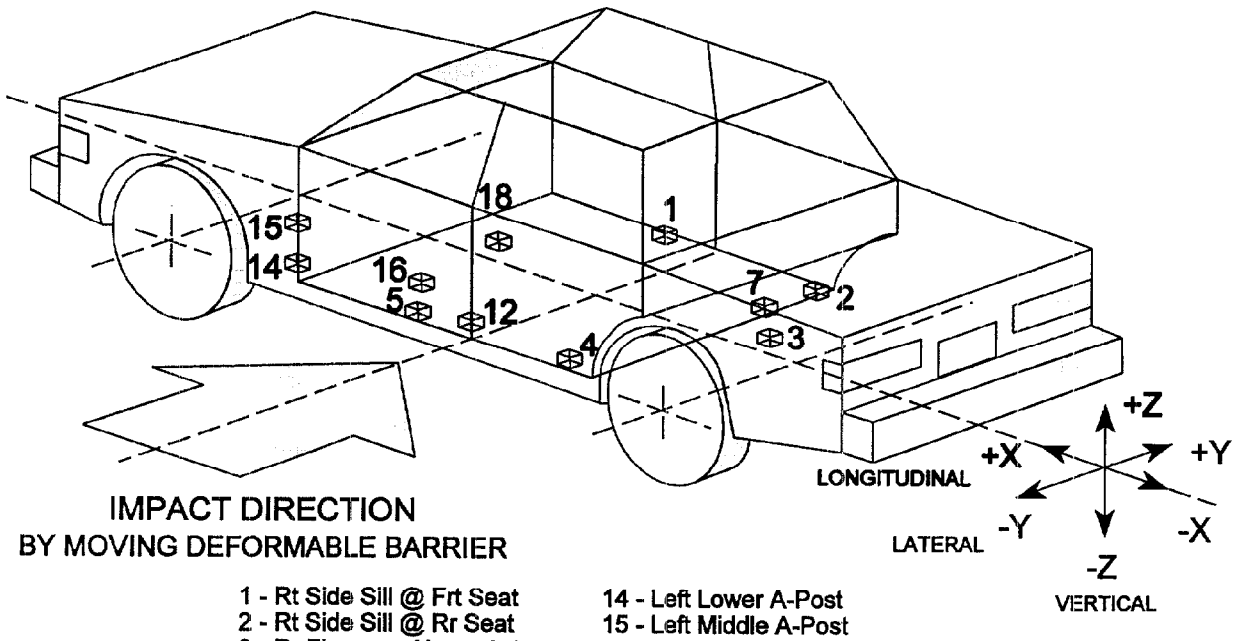
NOTE: Dimensions shown in millimeters, mm

DATA SHEET 13

TEST VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY

Year/Make/Model/Body Style: 1999/Ford/Ranger/XLT Pick-up

Vehicle NHTSA No.: CX0203 Test Date: December 16, 1998



IMPACT DIRECTION
BY MOVING DEFORMABLE BARRIER

1 - Rt Side Sill @ Frt Seat
2 - Rt Side Sill @ Rr Seat
3 - Rr Floorpan Above Axle
4 - Left Side Sill @ Rr Seat
5 - Left Side Sill @ Frt Seat
7 - Rt Rr Occ Compartment
12 - Left Lower B-Post
14 - Left Lower A-Post
15 - Left Middle A-Post
16 - Frt Seat Track
18 - Vehicle C.G.

DATA SHEET NO. 13 (Cont'd)

TEST VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY

Year/Make/Model/Body Style: 1999/Ford/Ranger/XLT Pick-up

Vehicle NHTSA No.: CX0203 Test Date: December 16, 1998

Accel. No.	Description	Coordinates (mm)*			Long. (X) Maximums (g's)		Lat. (Y) Maximums (g's)		Vert. (Z) Maximums (g's)		Resultant (g's)
		X	Y	Z	Pos.	Neg.	Pos.	Neg.	Pos.	Neg.	Max.
1	Right Side Sill @ Front Seat	3045	650	400	10.6	-10.4	60.7	-14.7	6.9	-26.7	61.5
2	Right Side Sill @ Rear Seat	2157	650	373	8.0	-9.0	84.0	-22.3	7.9	-25.9	86.5
3	Rear Floorpan Above Axle	1118	0	495	5.5	-5.1	20.6	-3.7	7.9	-9.7	20.7
4	Left Side Sill @ Rear Seat**	2155	-653	350	---	---	140.8	-32.0	---	---	---
5	Left Side Sill @ Front Seat	3042	-654	379	---	---	199.2	-21.4	---	---	---
7	Right Rear Occupant Compartment	2422	420	495	---	---	70.5	-16.3	---	---	---
12	Left Lower B-Post	2594	-628	498	---	---	160.0	-48.7	---	---	---
14	Left Lower A-Post	3736	-704	557	---	---	67.4	-28.2	---	---	---
15	Left Mid A-Post	3650	-730	1072	---	---	34.9	-2.7	---	---	---
16	Driver Seat Track	2869	-550	535	---	---	54.9	-19.2	---	---	---
18	Vehicle CG	2814	0	560	8.4	-17.1	51.0	-10.8	24.6	-36.9	62.2

*Reference: X - Rear Bumper (+ Forward)
Y - Vehicle Centerline (+ To right)
Z - Ground Level (+ Up)

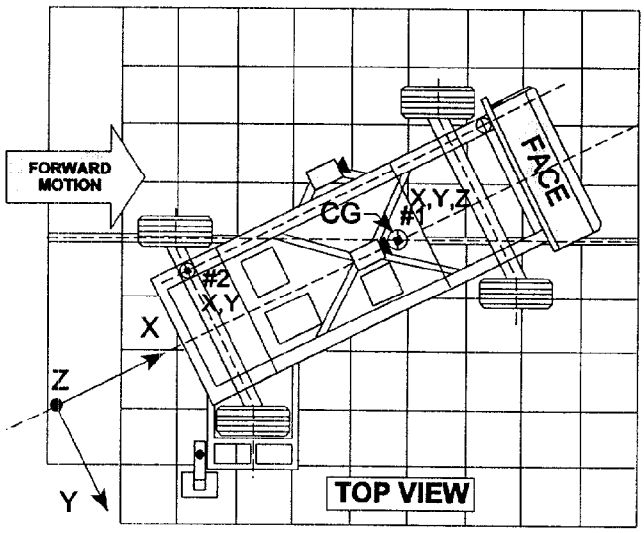
** Data not valid after approximately 31 msec.

DATA SHEET NO. 14

MOVING DEFORMABLE BARRIER (MDB) ACCELEROMETER LOCATIONS AND DATA SUMMARY

Year/Make/Model/Body Style: 1999/Ford/Ranger/XLT Pick-up

Vehicle NHTSA No.: CX0203 Test Date: December 16, 1998



Accel. No.	Description	Coordinates (mm)*			(+) Positive		(-) Negative	
		X	Y	Z	Max. (g)	Time (msec)	Max. (g)	Time (msec)
1	MDB Center of Gravity	-1092	0	483				
	Longitudinal (X)	---	---	---	3.5	150	-16.1	29
	Lateral (Y)	---	---	---	0.0	27	-7.4	16
	Vertical (Z)	---	---	---	7.1	20	-8.5	71
	Resultant (R)	---	---	---	17.3	37	---	---
2	Rear Frame Member	-2591	-625	622				
	Longitudinal (X)	---	---	---	1.7	149	-19.1	37
	Lateral (Y)	---	---	---	6.1	35	-1.5	146

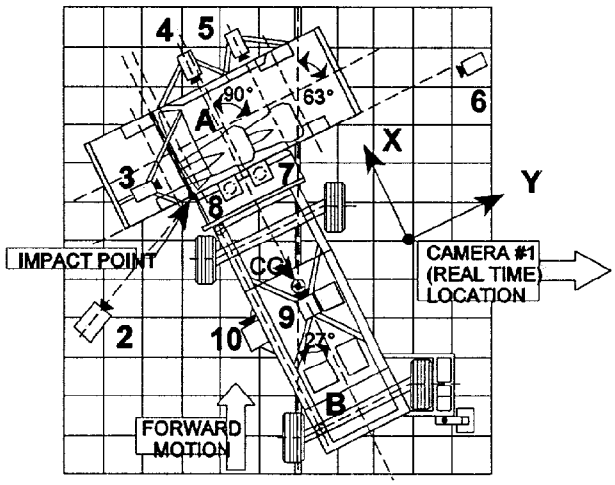
*Reference: X - Front Axle (+ Forward)
Y - Vehicle Centerline (+ To right)
Z - Ground Level (+ Up)

DATA SHEET NO. 15

HIGH SPEED CAMERA LOCATIONS AND DATA

Year/Make/Model/Body Style: 1999/Ford/Ranger/XLT Pick-up

Vehicle NHTSA No.: CX0203 Test Date: December 16, 1998



Camera No.	View	Coordinates (mm)*			Lens (mm)	Film Speed (fps)
		X	Y	Z		
1	Real Time				10	24
2	Left Impact	-300	-2825	1660	13	1005
3	Onboard Hood				13	1010
4	Onboard Front Occupant				8	1105
6	Right Impact	-580	10410	1860	25	1010
7	Top Overall	-170	1190	5000	8	985
8	Top Impact	-230	30	5000	13	935
9	Cart Overall				13	1015
10	Cart Impact				35	1005

* Reference: (from impact point)
+X = Forward
+Y = To Right
+Z = Upward from floor level

DATA SHEET 16

FUEL SYSTEM INTEGRITY POST IMPACT TEST DATA

Vehicle Year/Make/Model/Body Style: 1999/Ford/Ranger/XLT Pick-up

Vehicle NHTSA No.: CX0203 Test Date: December 16, 1998

TEST REQUIREMENTS:

Drain the test vehicle's fuel system and operate the engine until the fuel system is dry. Add Stoddard solvent, which has been dyed purple, until 92-94% of the stated usable capacity is reached. Operate the engine to assure the Stoddard solvent is present throughout the entire fuel system.

TEST VEHICLE IMPACT TYPE: X Left Side Impact MDB 33.1 mph (53.3 kph)

FUEL SPILLAGE MEASUREMENT:

POST IMPACT TEST	TEST RESULTS	MAXIMUM ALLOWABLE
1. From impact until Vehicle motion ceases	0	1 oz
2. For 5 minute period after vehicle motion ceases	0	5 oz
3. For next 25 minutes	0	1 oz./1 min

FUEL SPILLAGE LOCATION(S): None

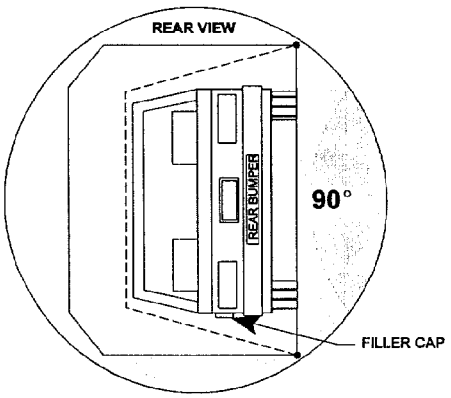
DATA SHEET 16

FMVSS 301 STATIC ROLLOVER TEST DATA

Vehicle Year/Make/Model/Body Style: 1999/Ford/Ranger/XLT Pick-up

Vehicle NHTSA No.: CX0203 Test Date: December 16, 1998

TEST PHASE: 0° - 90°



DETERMINATION OF

SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time = 2 minutes 49 seconds

(Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time = 5 minutes 0 seconds

TOTAL TIME = 7 minutes 49 seconds

Next Whole Minute Interval = 8 minutes

FUEL SPILLAGE MEASUREMENT:

0° TO 90° ROTATION (FILLER CAP DOWN)	TEST RESULTS	MAXIMUM ALLOWABLE
1. First 5 Minutes From Onset of Rotation	0 oz	5 oz
2. Sixth Minute From Onset of Rotation	0 oz	1 oz
3. Seventh Minute From Onset of Rotation	0 oz	1 oz
4. Eighth Minute if Required	0 oz	1 oz

FUEL SPILLAGE LOCATIONS(S): None

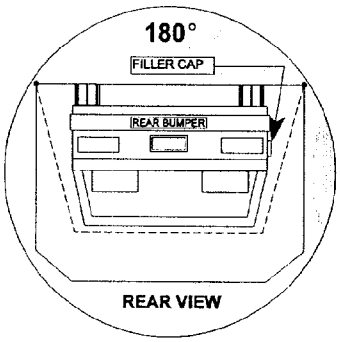
DATA SHEET 16

FMVSS 301 STATIC ROLLOVER TEST DATA (Cont'd)

Vehicle Year/Make/Model/Body Style: 1999/Ford/Ranger/XLT Pick-up

Vehicle NHTSA No.: CX0203 Test Date: December 16, 1998

TEST PHASE: 90° - 180°



DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time = 2 minutes 29 seconds

(Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time = 5 minutes 0 seconds

TOTAL TIME = 7 minutes 29 seconds

Next Whole Minute Interval = 8 minutes

FUEL SPILLAGE MEASUREMENT:

90° TO 180° ROTATION	TEST RESULTS	MAXIMUM ALLOWABLE
1. First 5 Minutes From Onset of Rotation	0 oz	5 oz
2. Sixth Minute From Onset of Rotation	0 oz	1 oz
3. Seventh Minute From Onset of Rotation	0 oz	1 oz
4. Eighth Minute if Required	0 oz	1 oz

FUEL SPILLAGE LOCATIONS(S): None

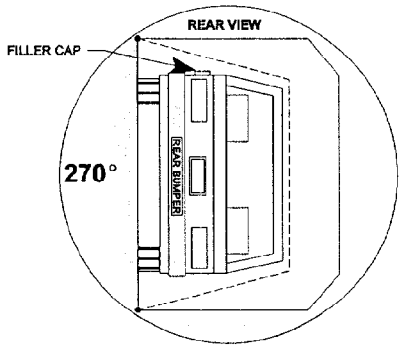
DATA SHEET 16

FMVSS 301 STATIC ROLLOVER TEST DATA (Cont'd)

Vehicle Year/Make/Model/Body Style: 1999/Ford/Ranger/XLT Pick-up

Vehicle NHTSA No.: CX0203 Test Date: December 16, 1998

TEST PHASE: 180° - 270°



DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time = 2 minutes 9 seconds

(Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time = 5 minutes 0 seconds

TOTAL TIME = 7 minutes 9 seconds

Next Whole Minute Interval = 8 minutes

FUEL SPILLAGE MEASUREMENT:

180° TO 270° ROTATION	TEST RESULTS	MAXIMUM ALLOWABLE
1. First 5 Minutes From Onset of Rotation	0 oz	5 oz
2. Sixth Minute From Onset of Rotation	0 oz	1 oz
3. Seventh Minute From Onset of Rotation	0 oz	1 oz
4. Eighth Minute if Required	0 oz	1 oz

FUEL SPILLAGE LOCATIONS(S): None

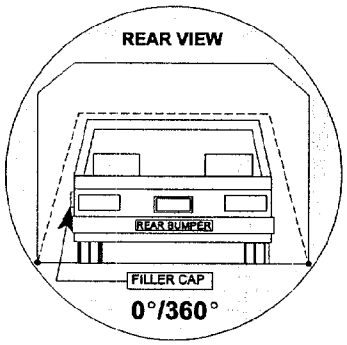
DATA SHEET 16

FMVSS 301 STATIC ROLLOVER TEST DATA

Vehicle Year/Make/Model/Body Style: 1999 Ford Ranger XLT Pick-up

Vehicle NHTSA No.: CX0203 Test Date: December 16, 1998

TEST PHASE: 270° - 360°



DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time = 2 minutes 40 seconds

(Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time = 5 minutes 0 seconds

TOTAL TIME = 7 minutes 40 seconds

Next Whole Minute Interval = 8 minutes

FUEL SPILLAGE MEASUREMENT:

270° TO 360° ROTATION	TEST RESULTS	MAXIMUM ALLOWABLE
1. First 5 Minutes From Onset of Rotation	0 oz	5 oz
2. Sixth Minute From Onset of Rotation	0 oz	1 oz
3. Seventh Minute From Onset of Rotation	0 oz	1 oz
4. Eighth Minute if Required	0 oz	1 oz

FUEL SPILLAGE LOCATIONS(S): None

TABLE OF PHOTOGRAPHS

* Photos taken with the MDB face under the vehicle.

TABLE OF PHOTOGRAPHS

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

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

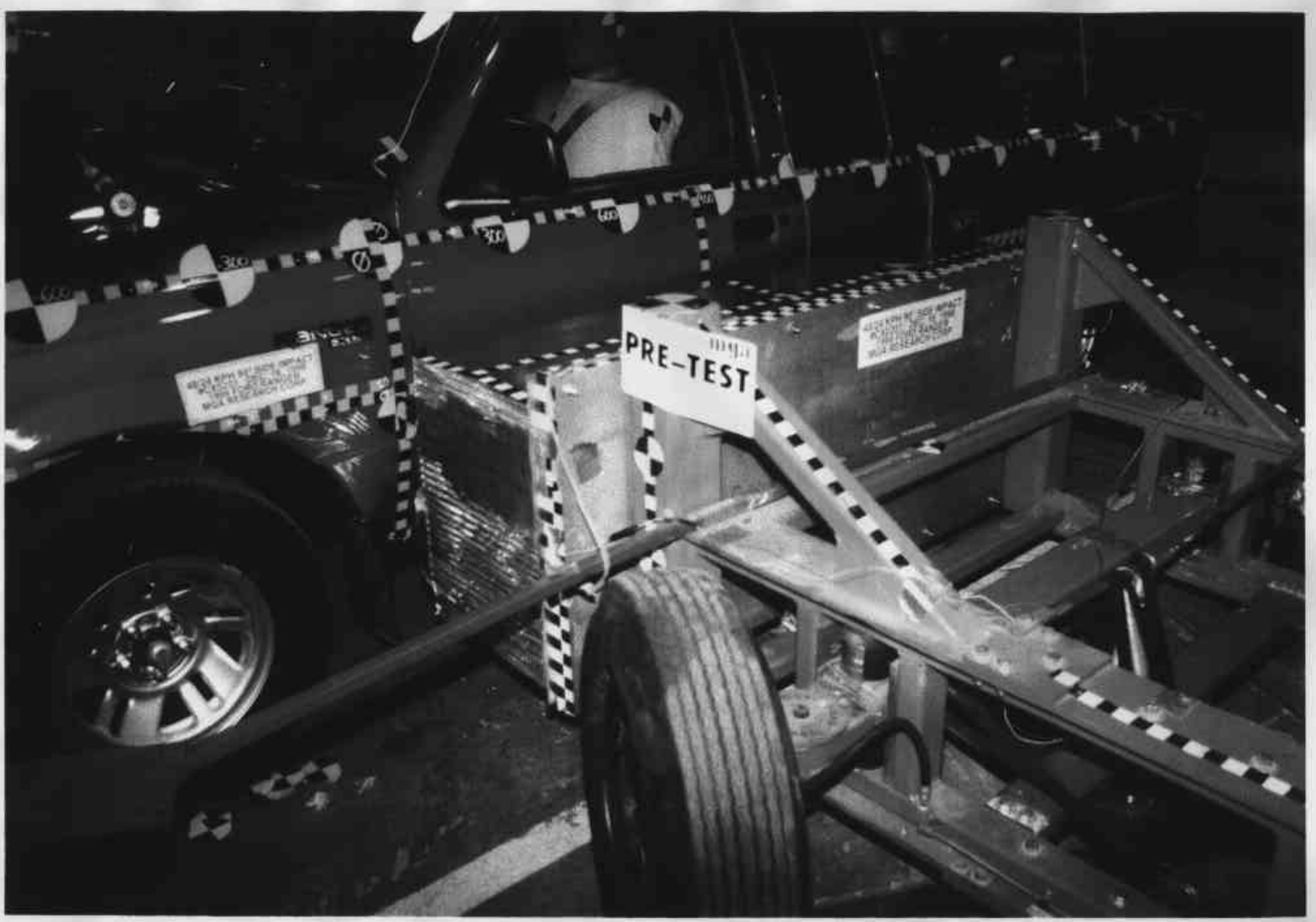


Photo No. A-7.- Pre-Test MDB Positioned Against Vehicle (left side)

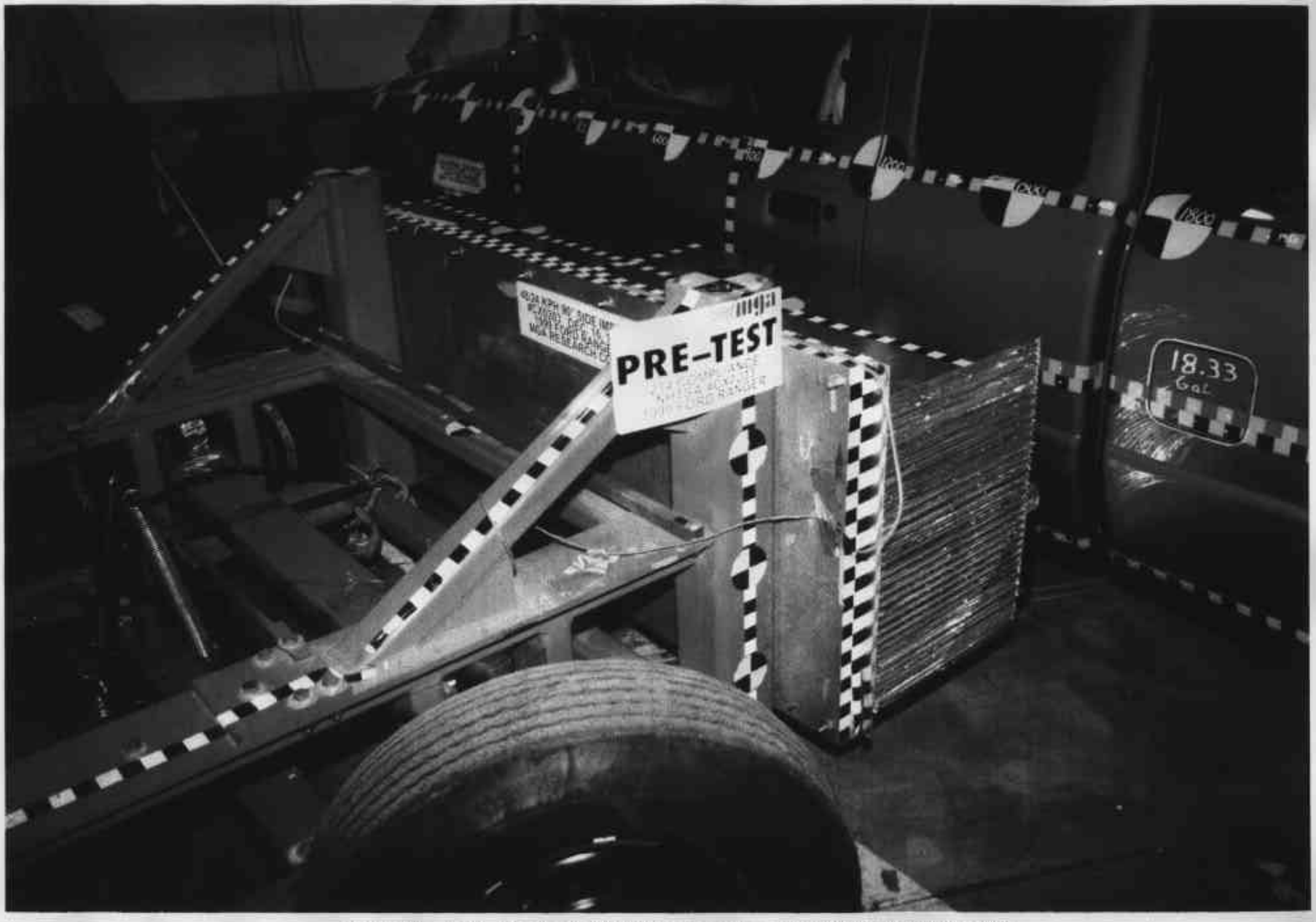


Photo No. A-8 - Pre-Test MDB Positioned Against Vehicle (right side)

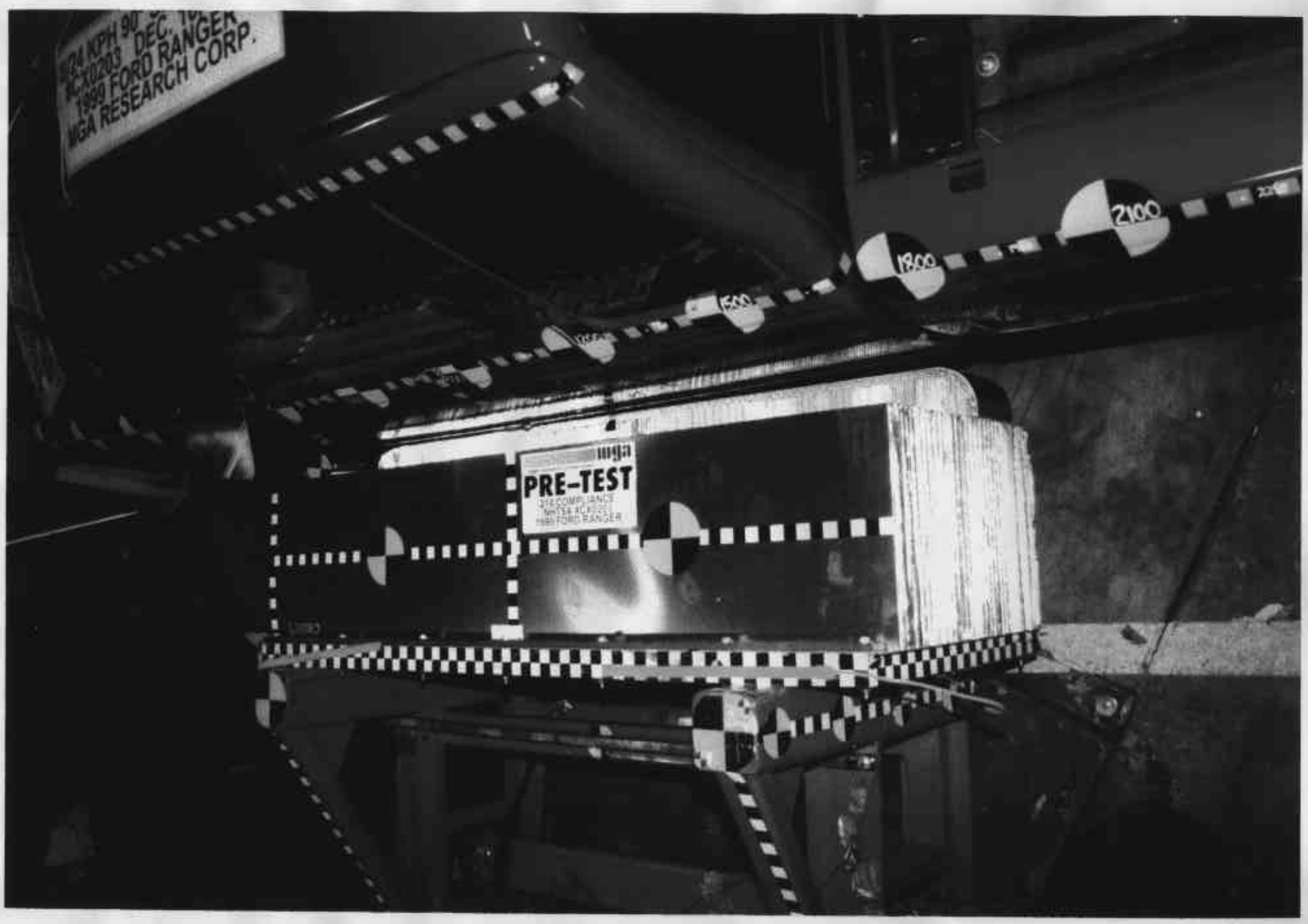


Photo No. A-9 - Pre-Test MDB Positioned Against Vehicle Overhead View

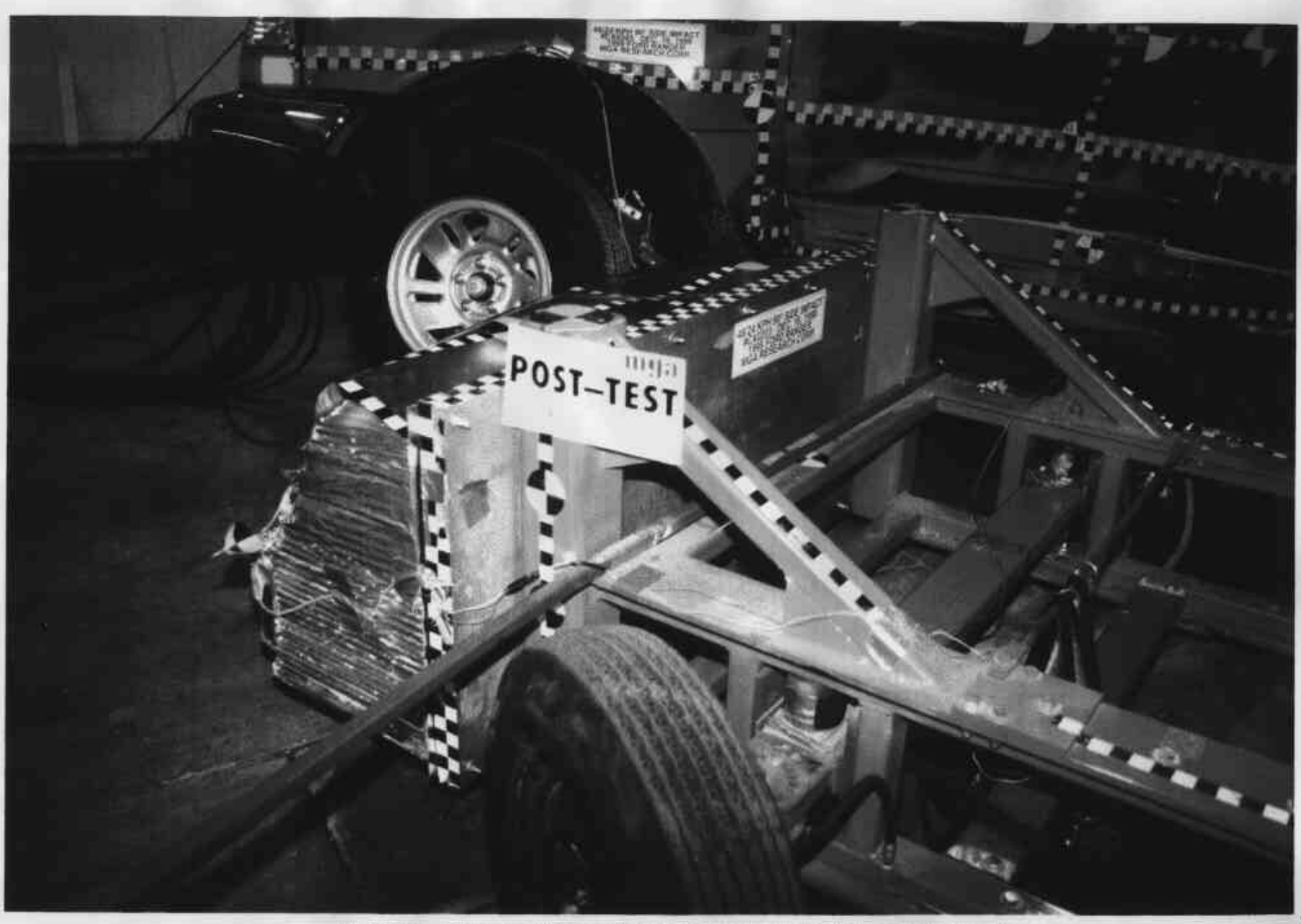


Photo No. A-10 - Post-Test MDB Positioned Against Vehicle (left side)

Photo No. A-11 - Post-Test MDB Positioned Against Vehicle (right side)

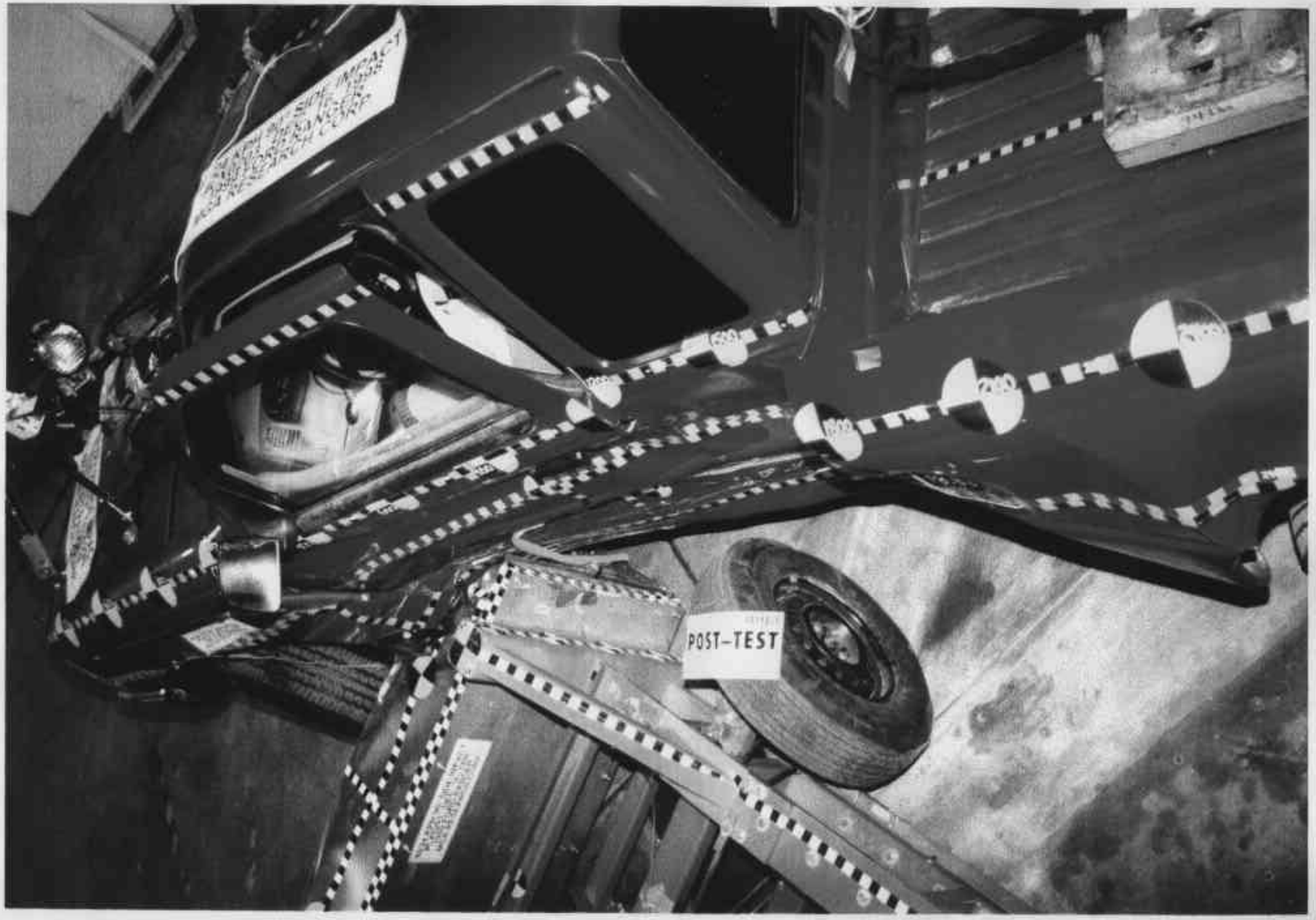


Photo No. A-12 - Post-Test MDB Positioned Against Vehicle Overhead View

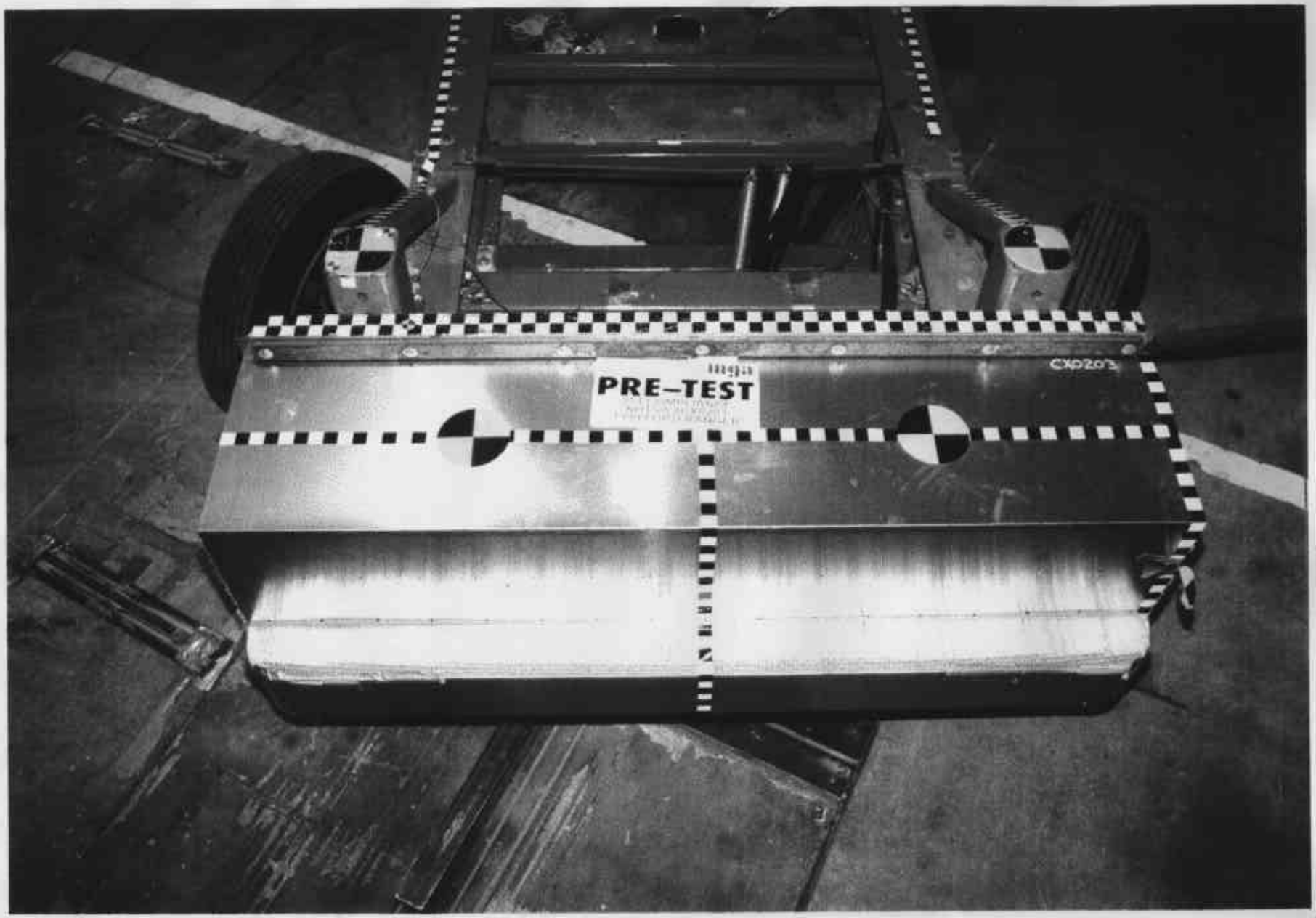


Photo No. A-13 - Pre-Test MDB Top View

Photo No. A-14 - Post-Test MDB Top View

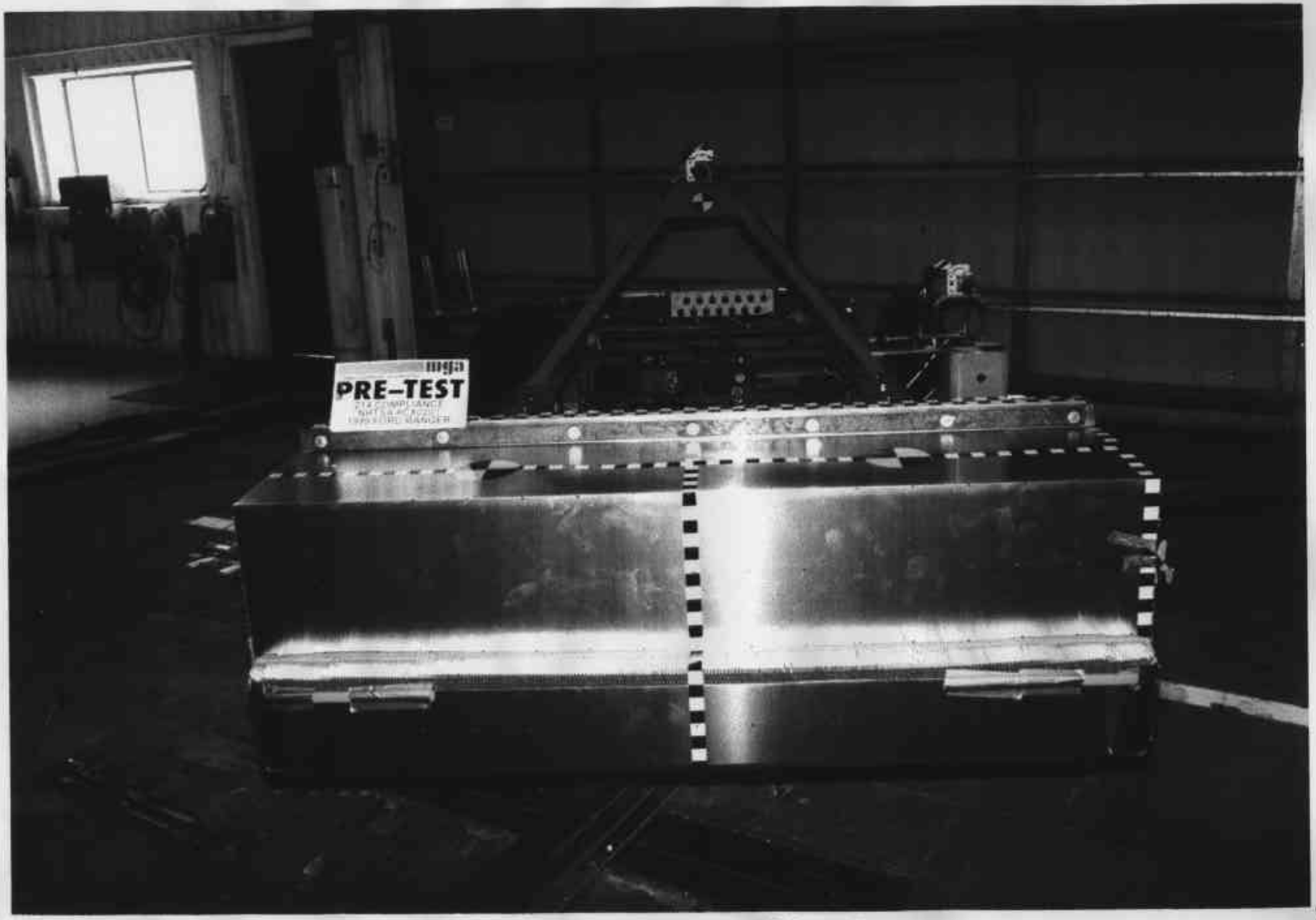


Photo No. A-15 - Pre-Test MDB Front View

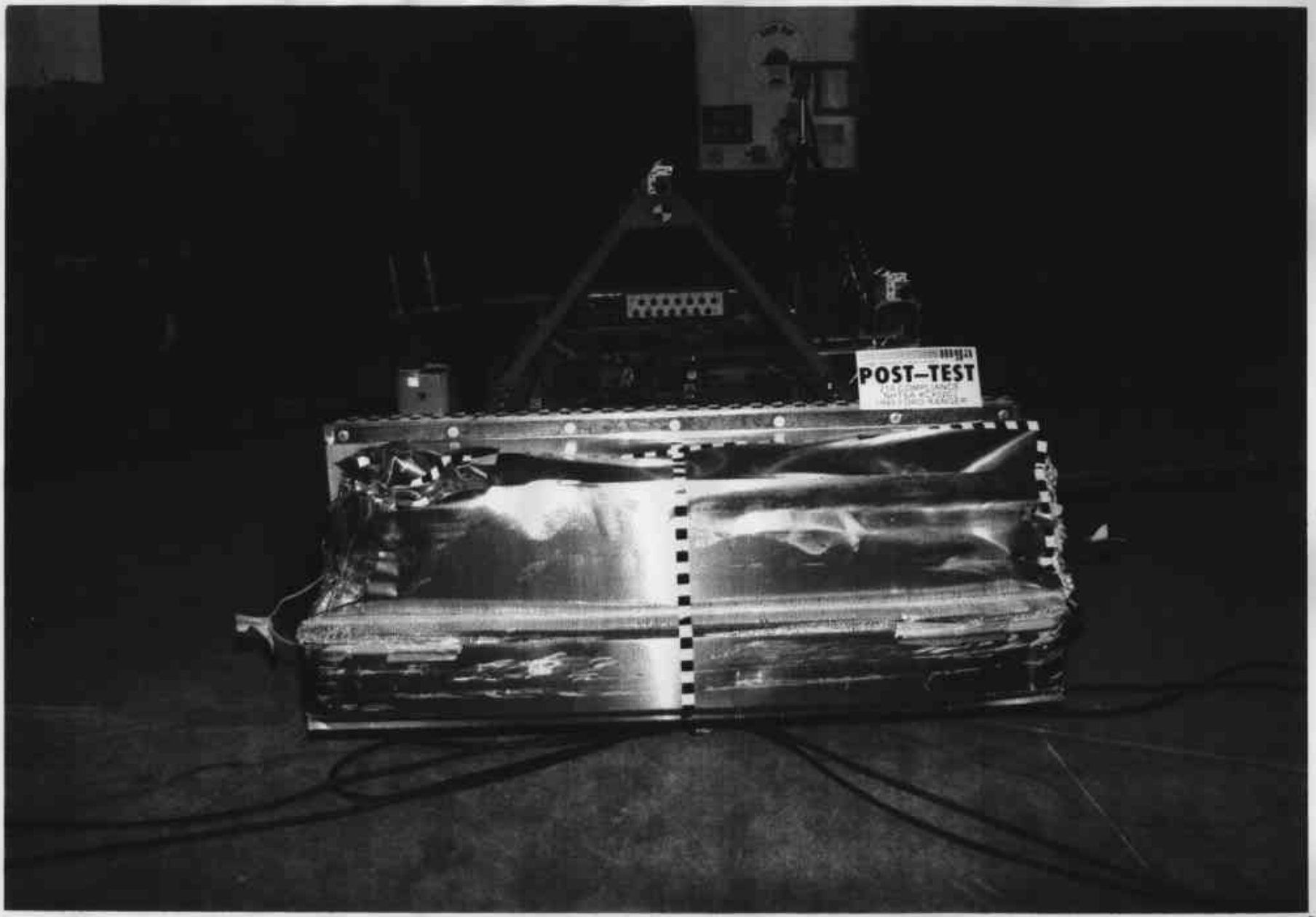


Photo No. A-16 - Post-Test MDB Front View

A-16

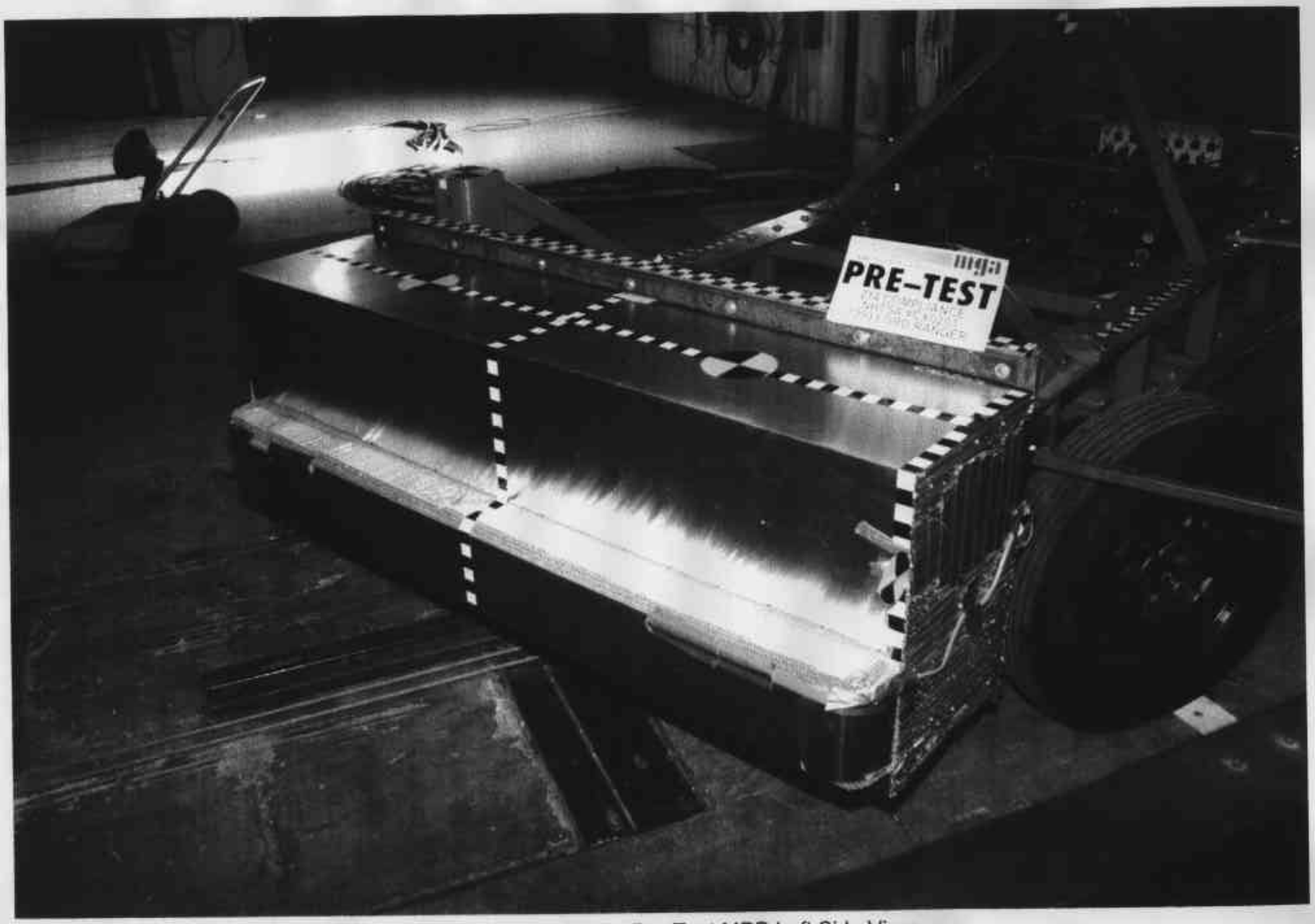


Photo No. A-17 - Pre-Test MDB Left Side View

A-17

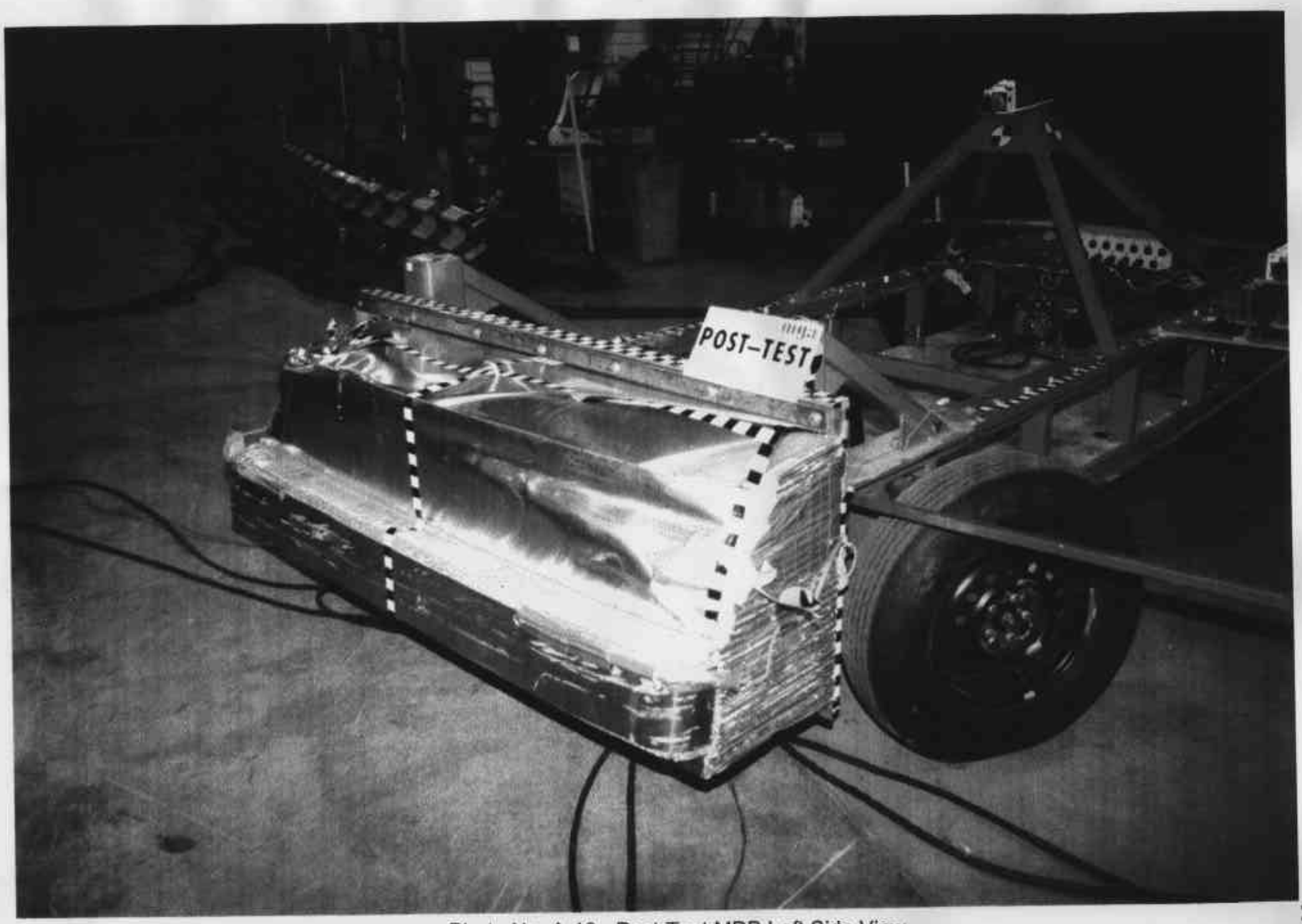


Photo No. A-18 - Post-Test MDB Left Side View

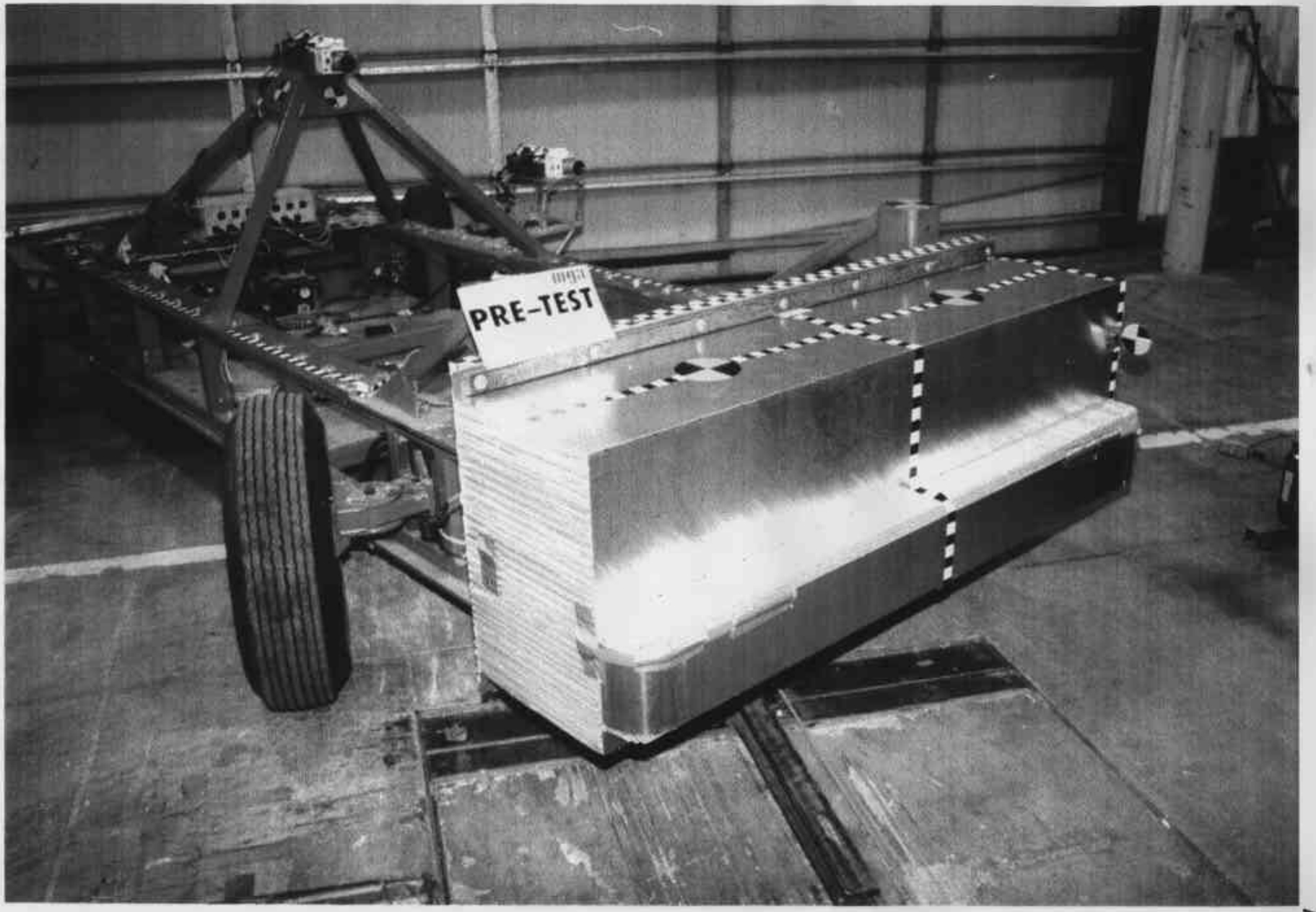


Photo No. A-19 - Pre-Test MDB Right Side View

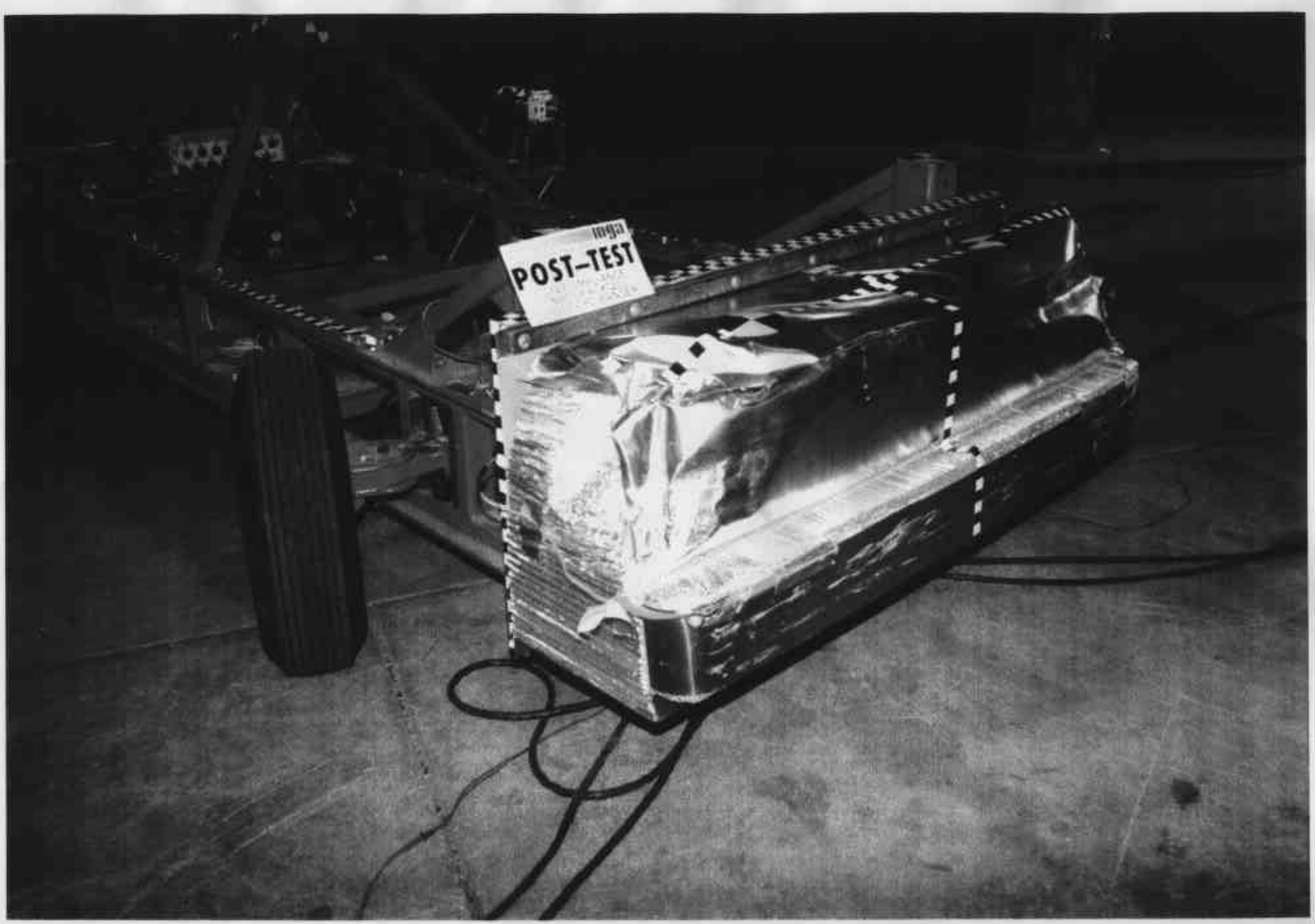


Photo No. A-20 - Post-Test MDB Right Side View

A-20

Photo No. A-21 - Pre-Test Driver Dummy Right Side View

A-21

Photo No. A-22 - Post-Test Driver Dummy Right Side View

A-22

Photo No. A-23 - Pre-Test Driver Dummy Left Side View

A-23

Photo No. A-24 - Post-Test Driver Dummy Left Side View

A-24

Photo No. A-25 - Pre-Test Driver Dummy Left Side View (Door Open)

Photo No. A-26 - Pre-Test Driver Shoulder and Door Top View

A-26

Photo No. A-27 - Post-Test Driver Shoulder and Door Top View

A-27

Photo No. A-28 - Post-Test Driver Dummy Contact

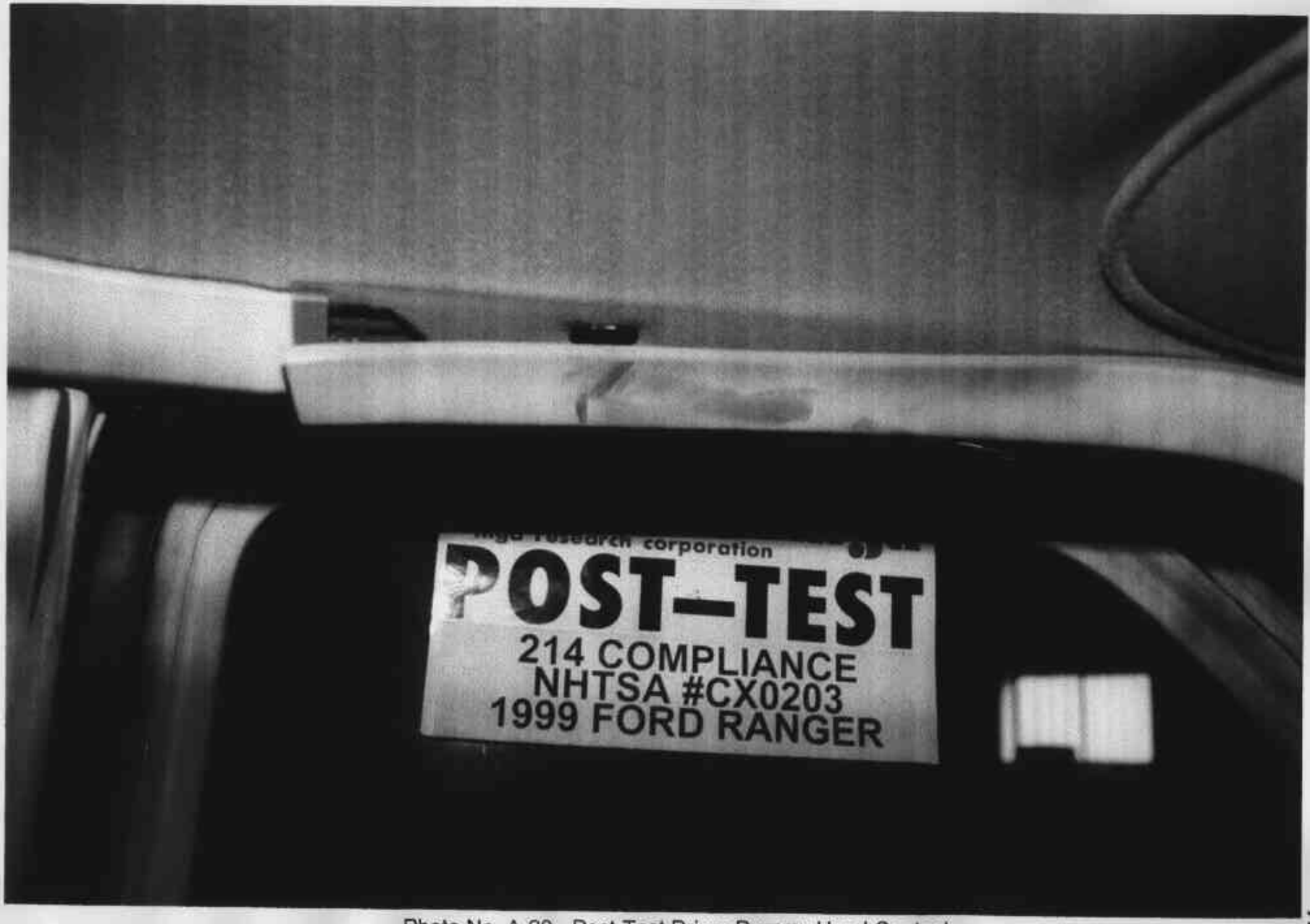


Photo No. A-29 - Post-Test Driver Dummy Head Contact

A-29

Photo No. A-30 - Pre-Test Right Front Impact Point on Vehicle

A-30

Photo No. A-31 - Post-Test Right Front Impact Point on Vehicle

A-31

Photo No. A-32 - Impact

Photo No. A-33 - Vehicle Certification Label and Tire Placard

A-33

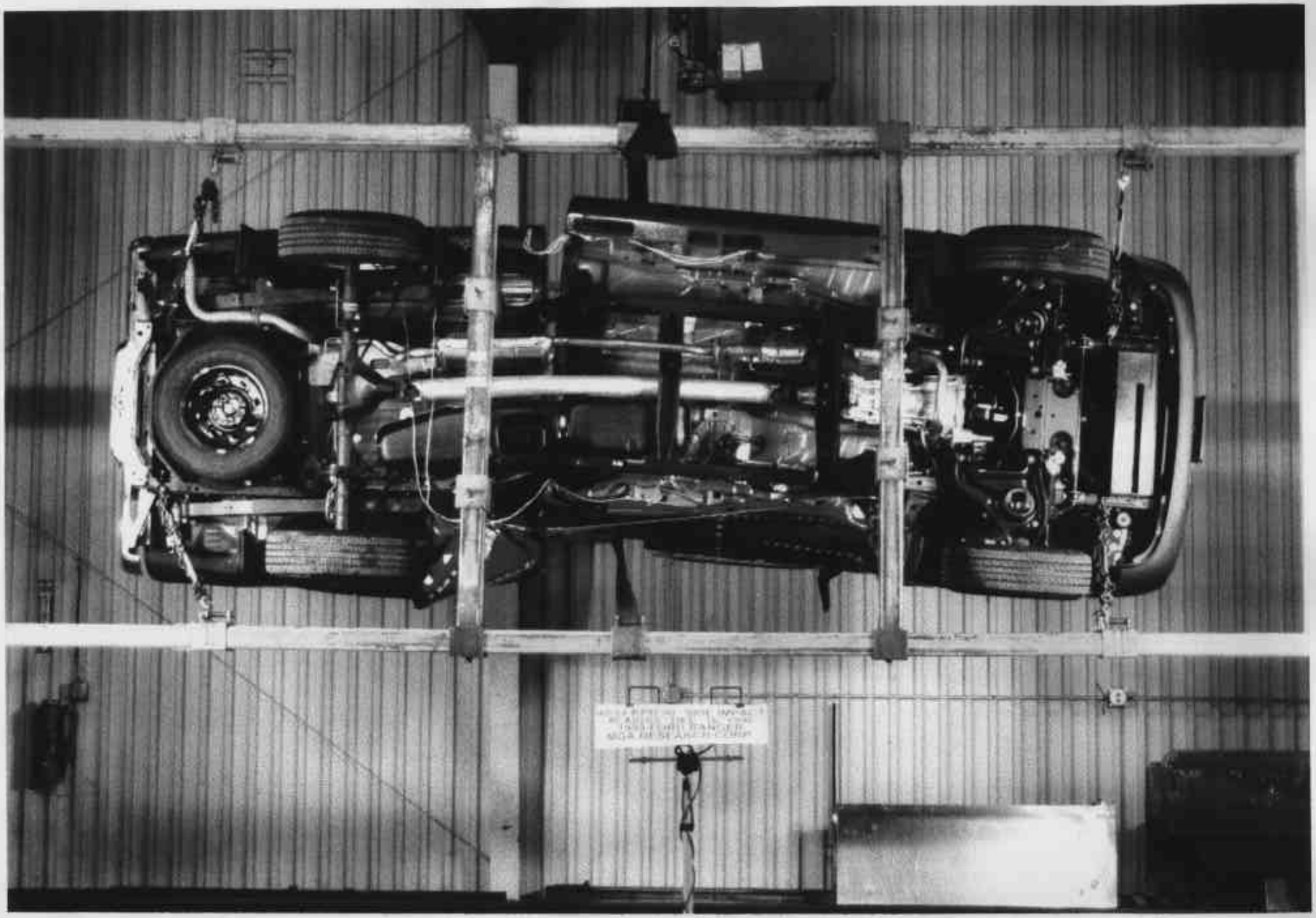


Photo No. A-34 - Rollover 90°

A-34

Photo No. A-35 - Rollover 180°

A-35

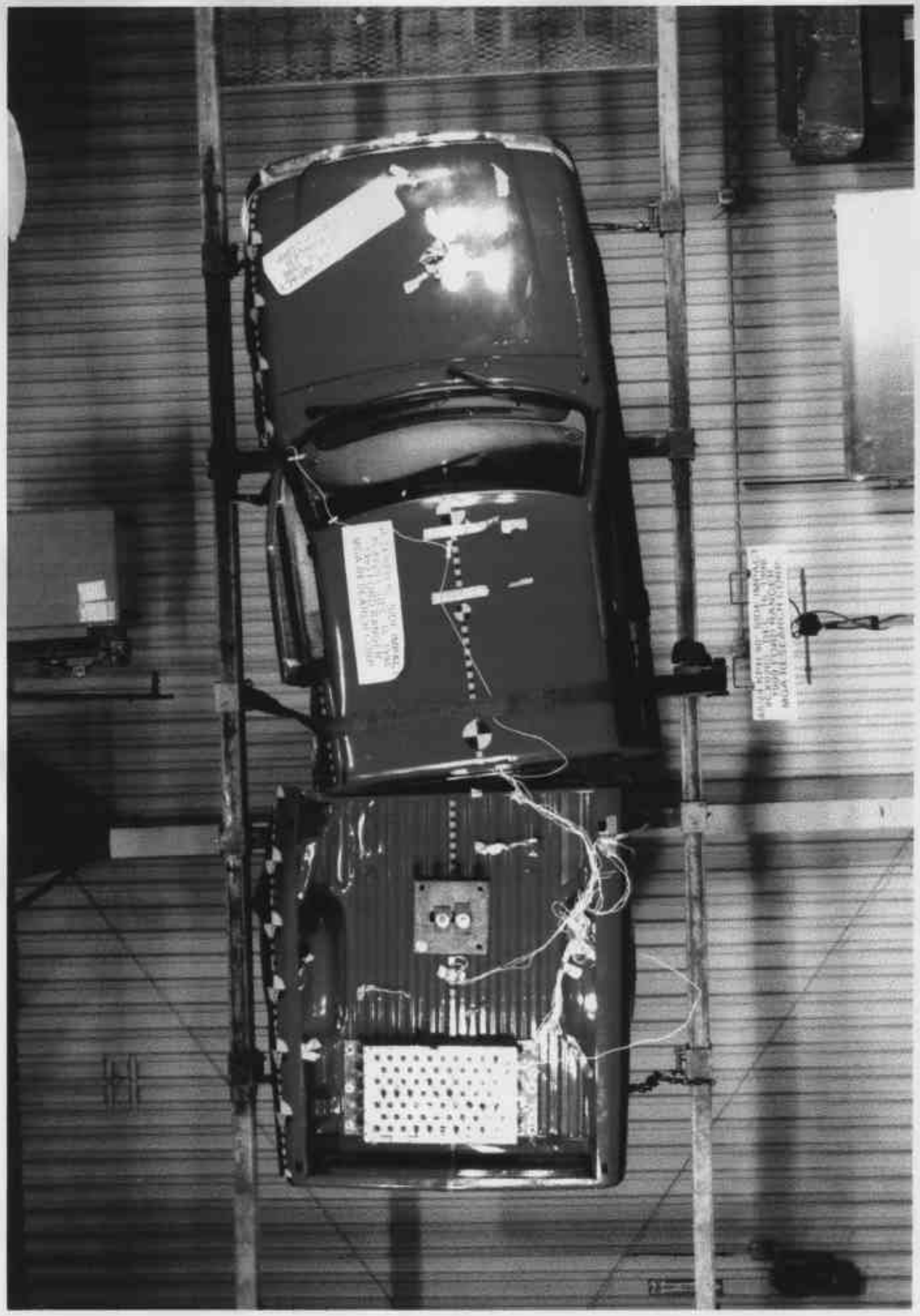


Photo No. A-36 - Rollover 270°

Photo No. A-37 - Rollover 360°

Photo No. A-38 - Left Front Attitude Point

A-38

Photo No. A-39 - Right Front Attitude Point

Photo No. A-40 - Left Rear Attitude Point

A-40

Photo No. A-41 - Right Rear Attitude Point

A-41

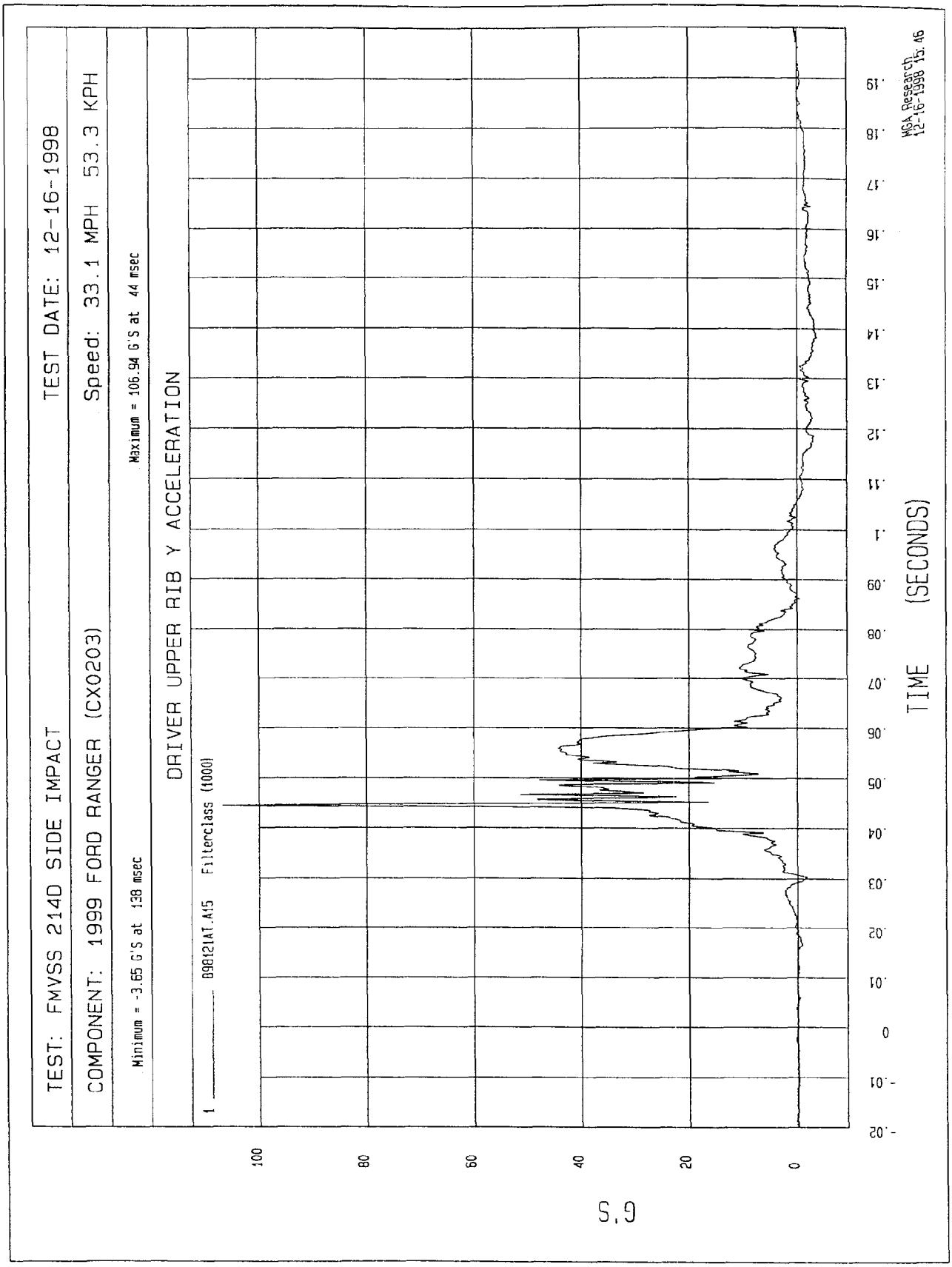
APPENDIX B - VEHICLE AND SID RESPONSE DATA

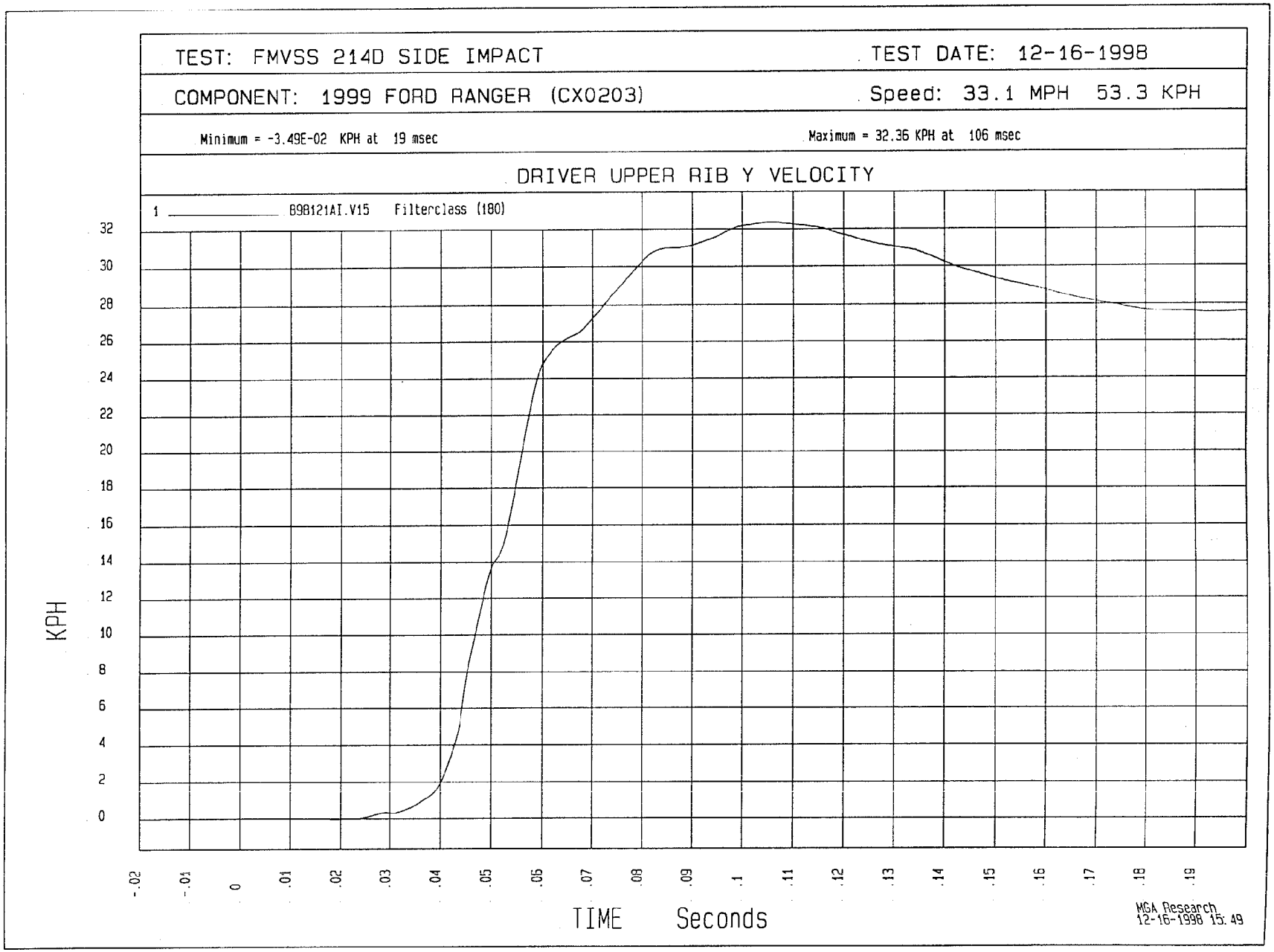
Table of Data Plots

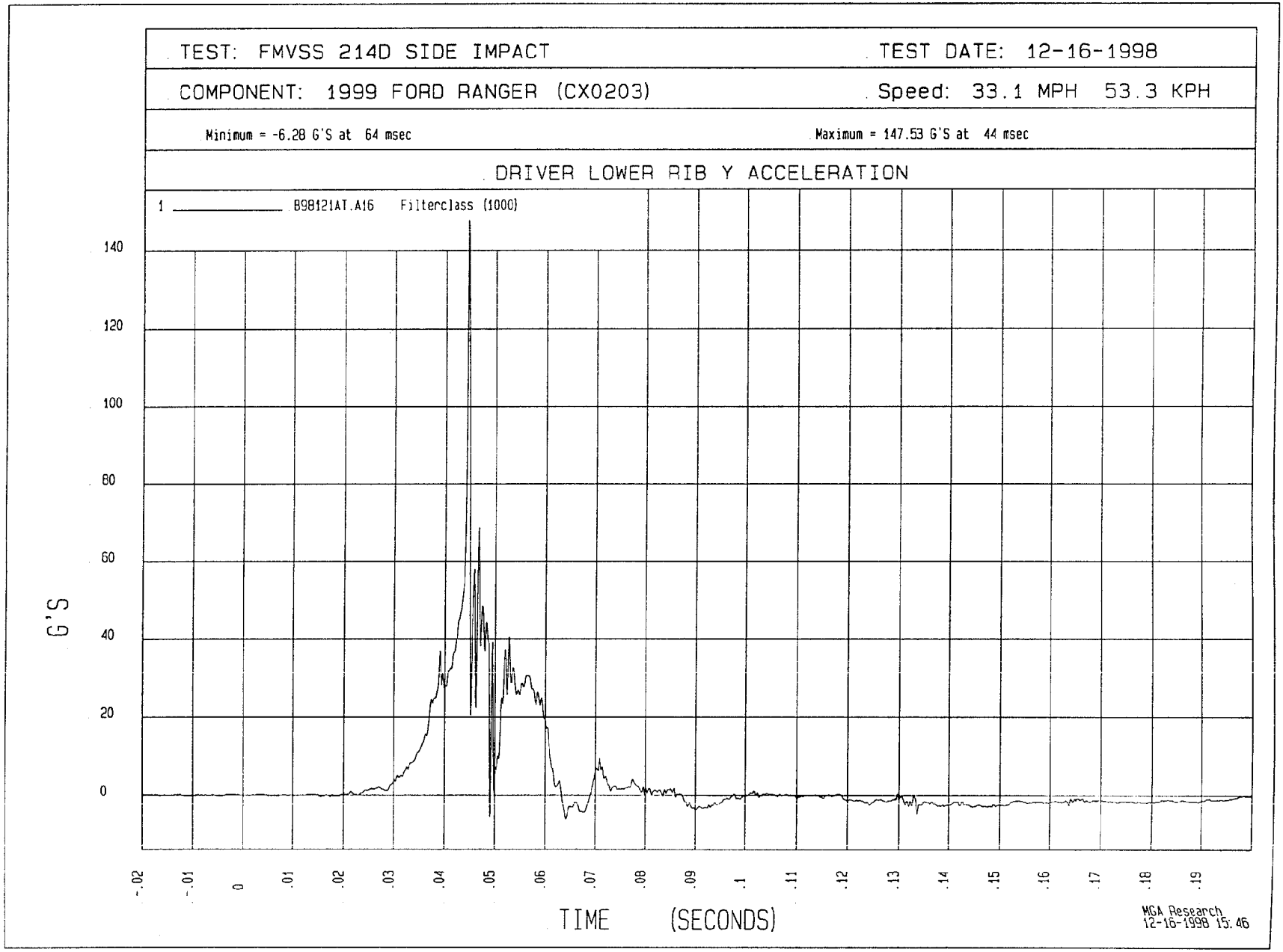
Table of Data Plots

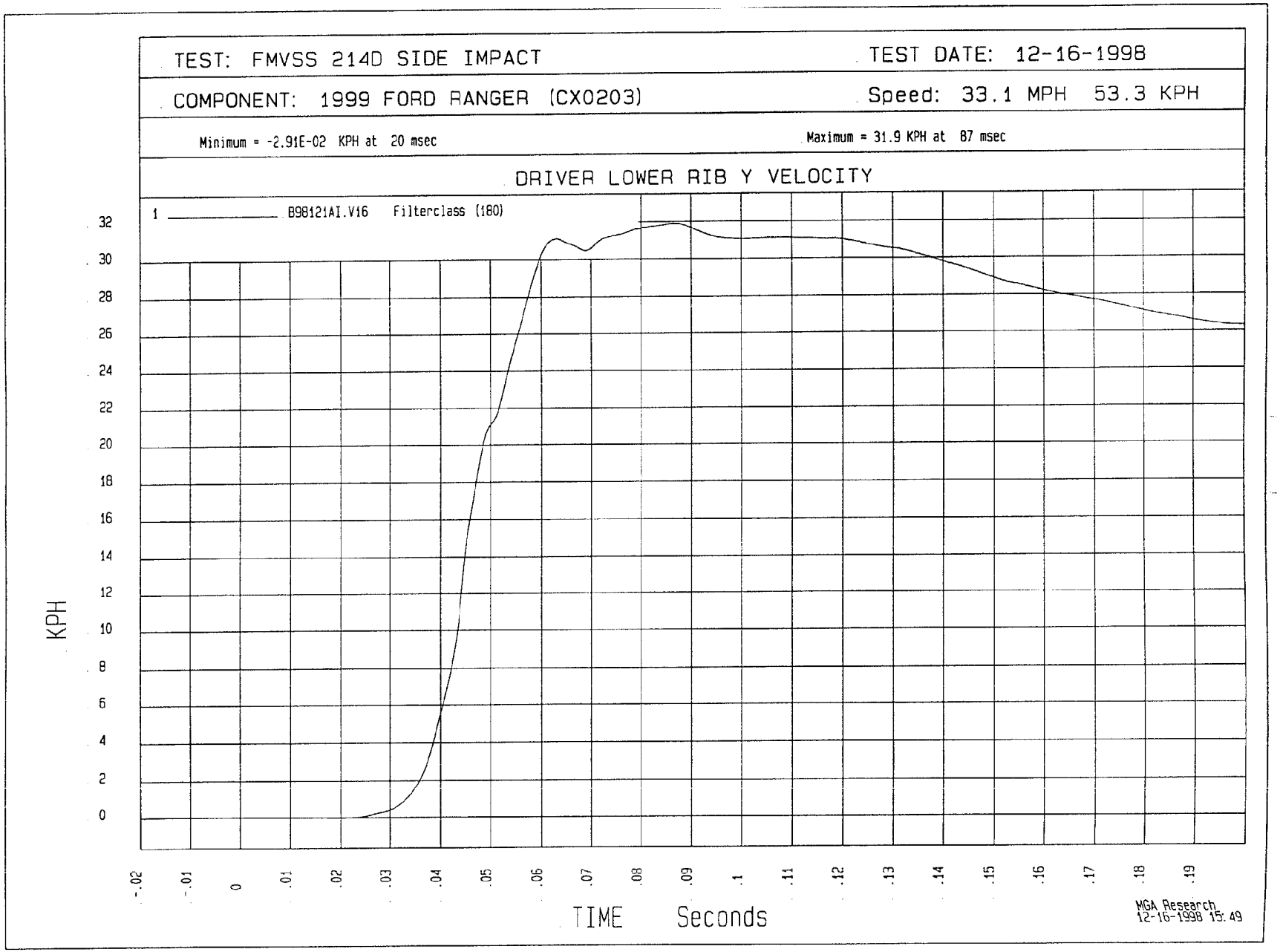
* Data not valid after approximately 31 msec.

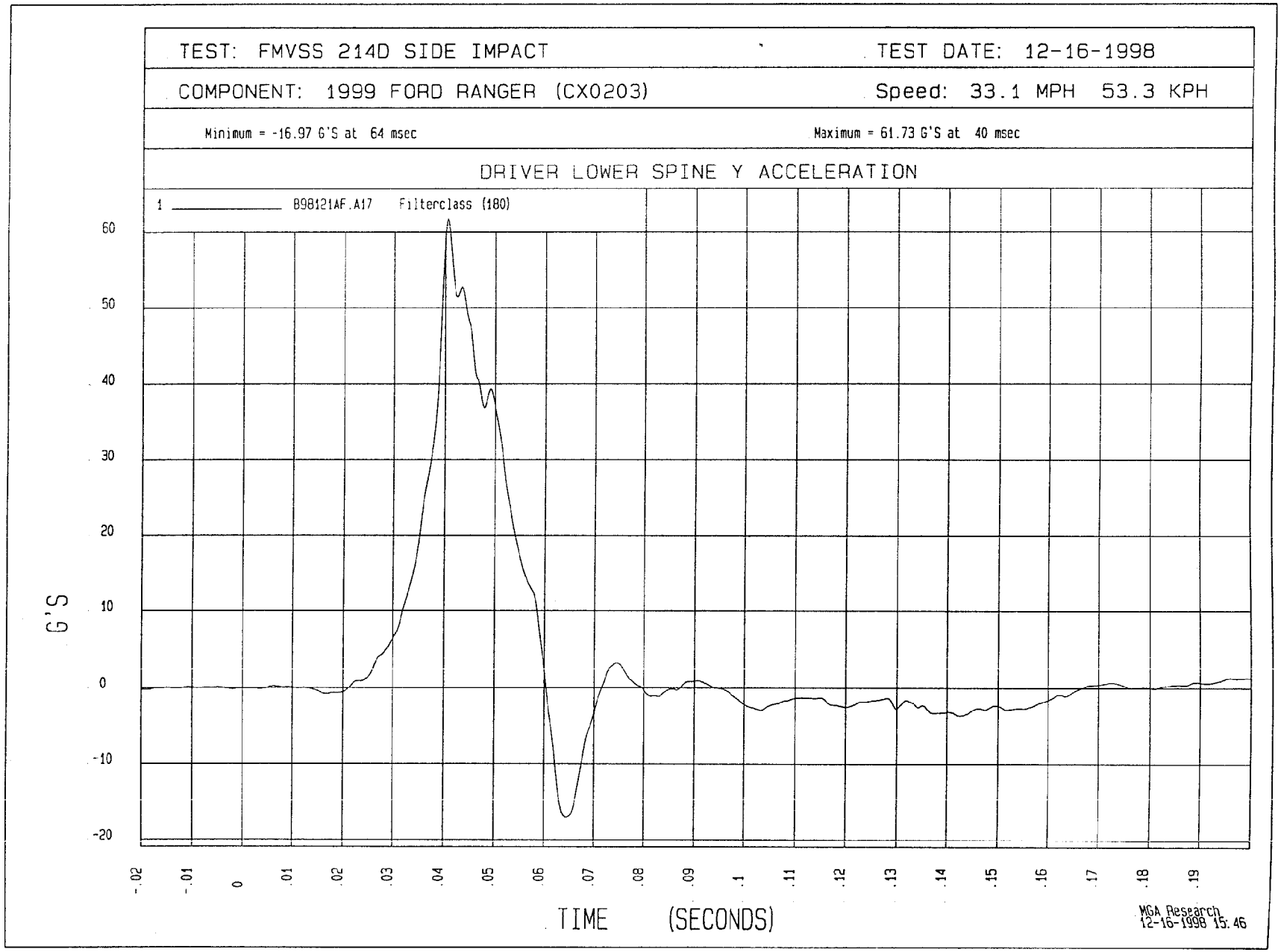
* Data not valid after approximately 49 msec. Data questionable from 34 - 49 msec.

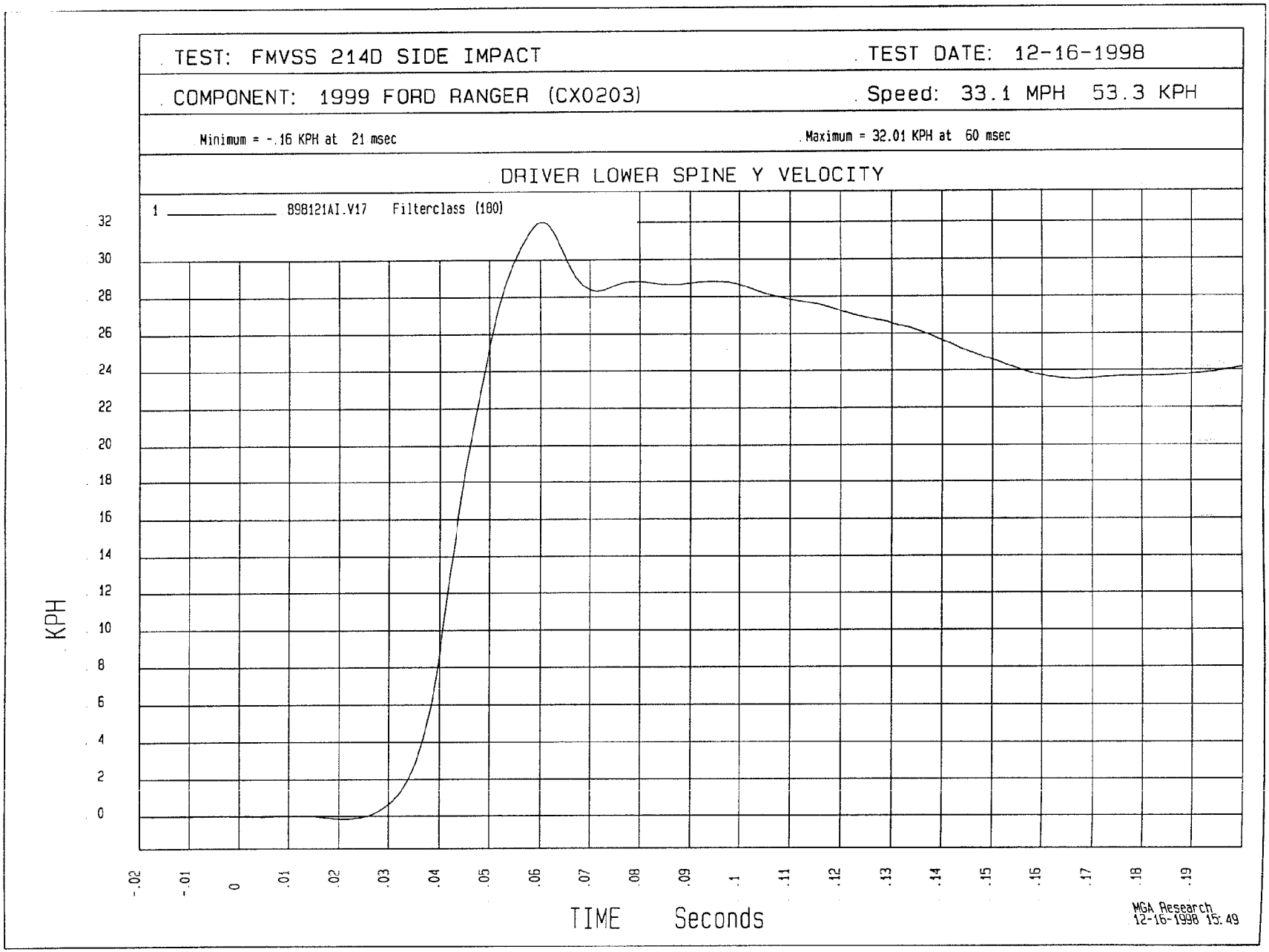

TEST: FMVSS 214D SIDE IMPACT
TEST DATE: 12-16-1998
COMPONENT: 1999 FORD RANGER (CX0203)
Speed: 33.1 MPH 53.3 KPH
Minimum = -3.65 G'S at 138 msec
Maximum = 106.94 G'S at 44 msec
DRIVER UPPER RIB Y ACCELERATION
1 B9812IAT.A15 Filterclass (1000)
100
80
60
40
20
0
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
.13
.14
.15
.16
.17
.18
.19
TIME (SECONDS)
MGA Research
12-16-1998 15:46
G's

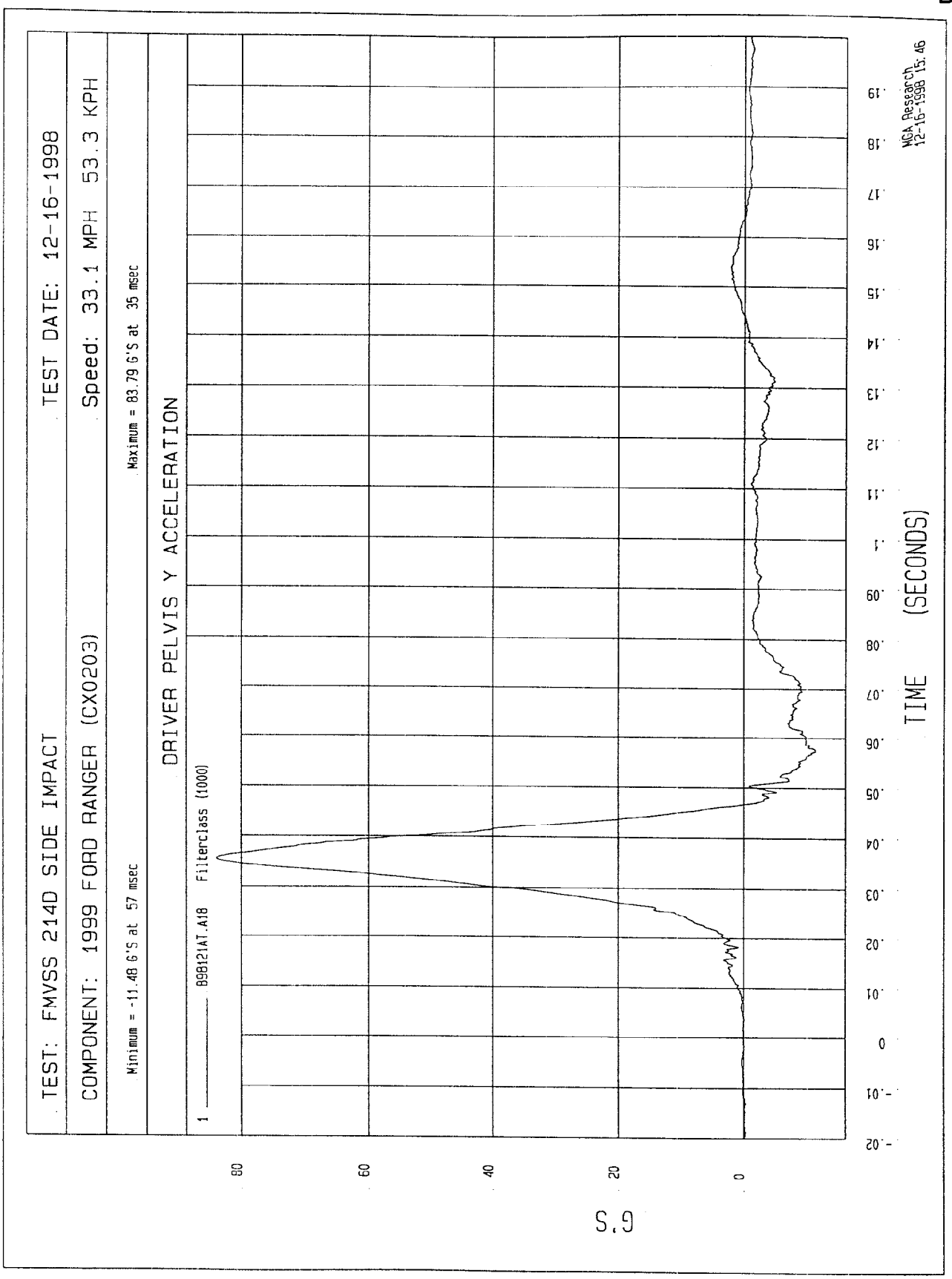

TEST: FMVSS 214D SIDE IMPACT
TEST DATE: 12-16-1998
COMPONENT: 1999 FORD RANGER (CX0203)
Speed: 33.1 MPH 53.3 KPH
Minimum = -3.49E-02 KPH at 19 msec
Maximum = 32.36 KPH at 106 msec
DRIVER UPPER RIB Y VELOCITY
1 B9B121AI.V15 Filterclass (180)
KPH
32
30
28
26
24
22
20
18
16
14
12
10
8
6
4
2
0
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
.13
.14
.15
.16
.17
.18
.19
TIME Seconds
MGA Research
12-16-1998 15:49

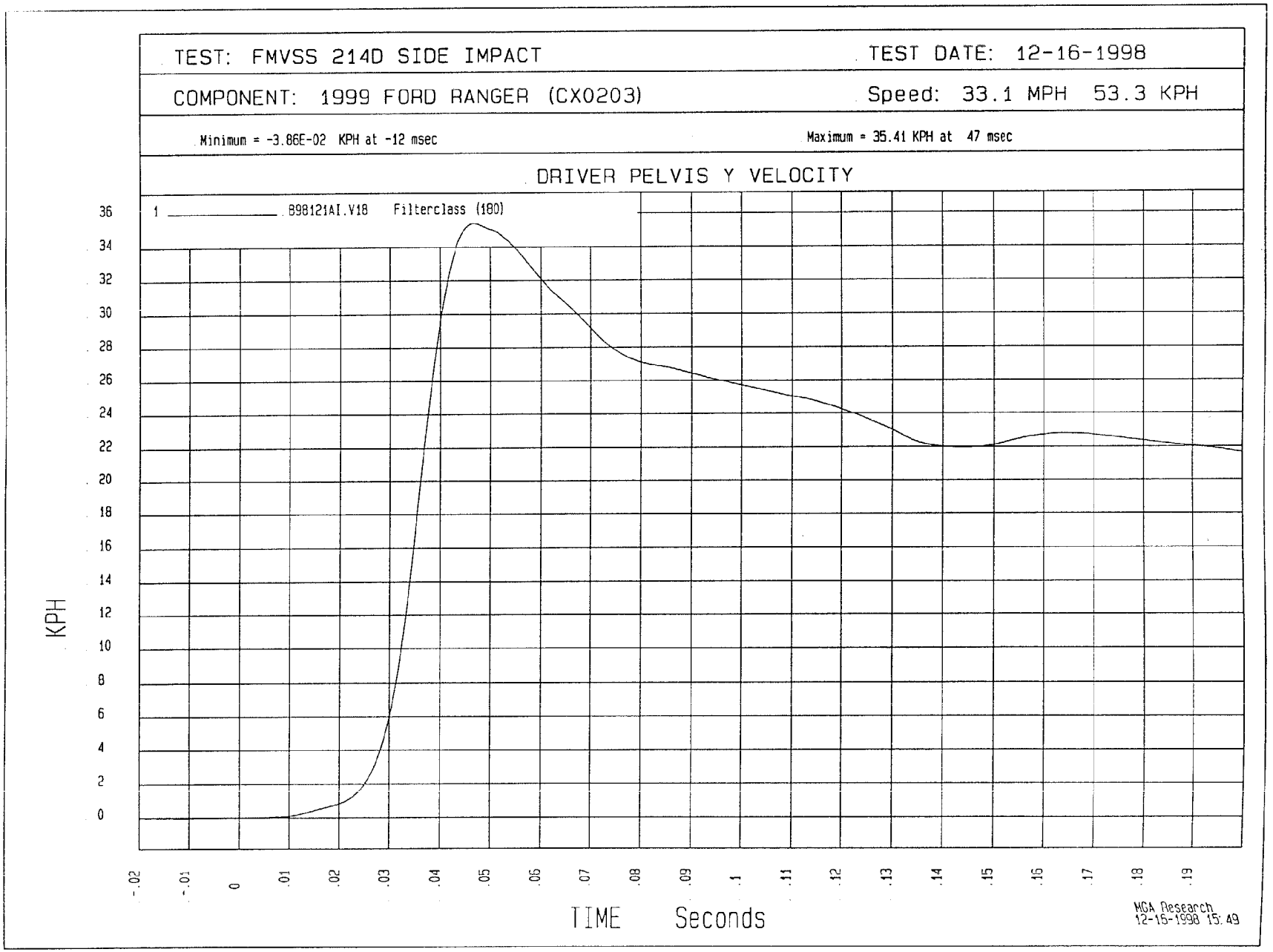

TEST: FMVSS 214D SIDE IMPACT
TEST DATE: 12-16-1998
COMPONENT: 1999 FORD RANGER (CX0203)
Speed: 33.1 MPH 53.3 KPH
Minimum = -6.28 G'S at 64 msec
Maximum = 147.53 G'S at 44 msec
DRIVER LOWER RIB Y ACCELERATION
1 B98121AT.A16 Filterclass (1000)
G'S
140
120
100
80
60
40
20
0
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
.13
.14
.15
.16
.17
.18
.19
TIME (SECONDS)
MGA Research
12-16-1998 15:46

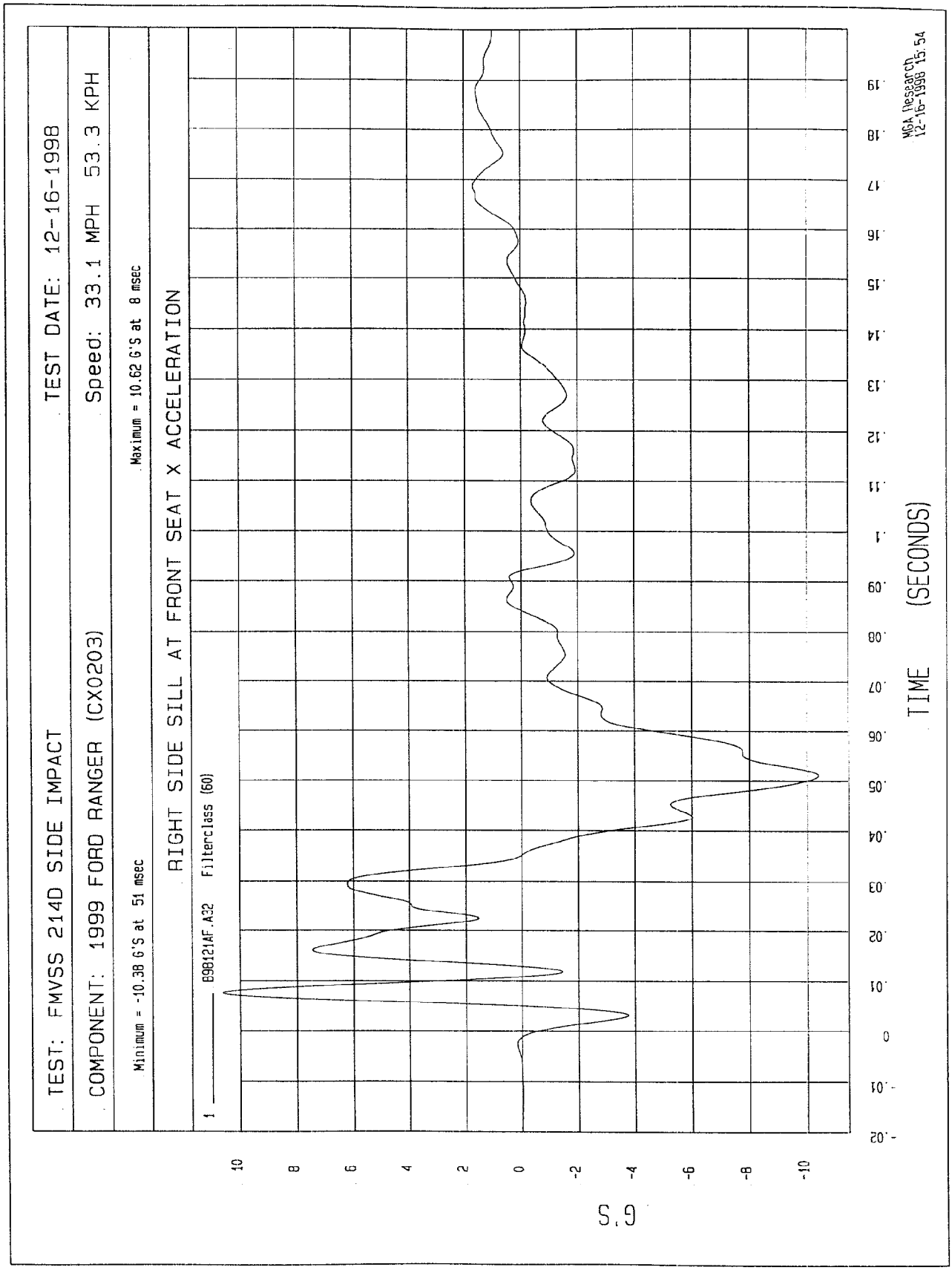

TEST: FMVSS 214D SIDE IMPACT
TEST DATE: 12-16-1998
COMPONENT: 1999 FORD RANGER (CX0203)
Speed: 33.1 MPH 53.3 KPH
Minimum = -2.91E-02 KPH at 20 msec
Maximum = 31.9 KPH at 87 msec
DRIVER LOWER RIB Y VELOCITY
1 B98121AI.V16 Filterclass (180)
KPH
32
30
28
26
24
22
20
18
16
14
12
10
8
6
4
2
0
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
.13
.14
.15
.16
.17
.18
.19
TIME Seconds
MGA Research
12-16-1998 15:49

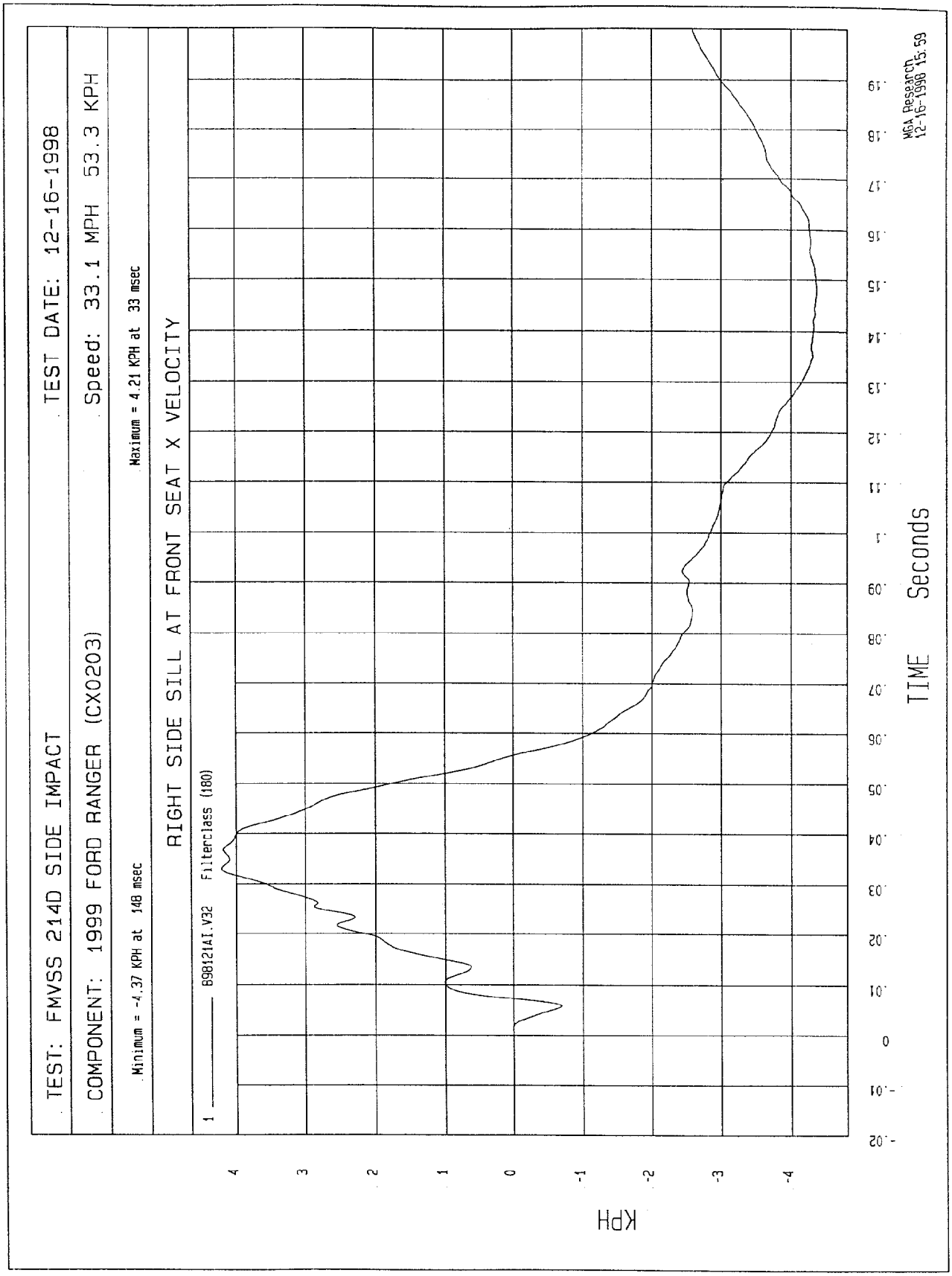

TEST: FMVSS 214D SIDE IMPACT
TEST DATE: 12-16-1998
COMPONENT: 1999 FORD RANGER (CX0203)
Speed: 33.1 MPH 53.3 KPH
Minimum = -16.97 G'S at 64 msec
Maximum = 61.73 G'S at 40 msec
DRIVER LOWER SPINE Y ACCELERATION
1 B98121AF.A17 Filterclass (180)
G'S
60
50
40
30
20
10
0
-10
-20
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
.13
.14
.15
.16
.17
.18
.19
TIME (SECONDS)
MGA Research
12-16-1998 15:46

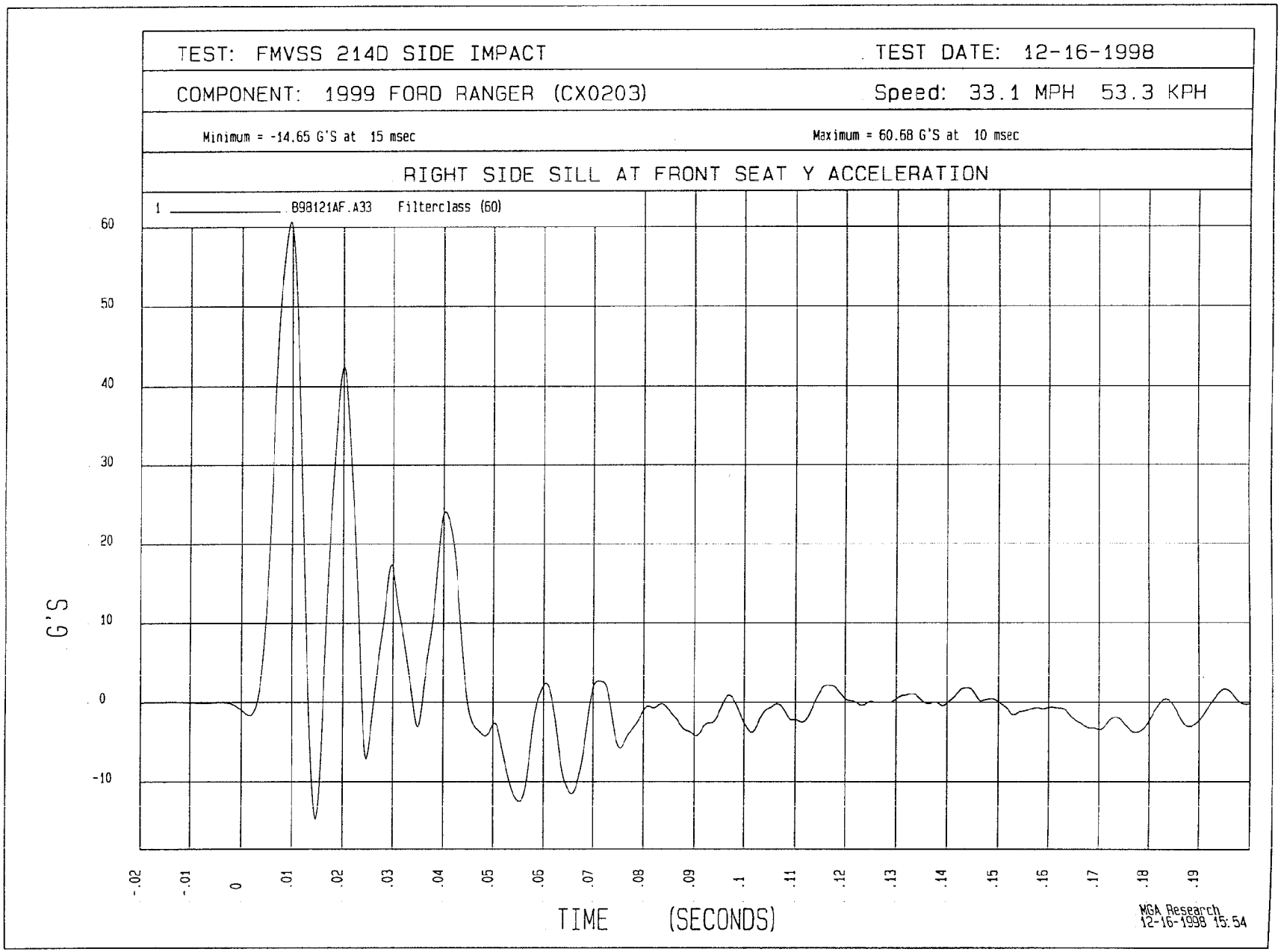

TEST: FMVSS 214D SIDE IMPACT
TEST DATE: 12-16-1998
COMPONENT: 1999 FORD RANGER (CX0203)
Speed: 33.1 MPH 53.3 KPH
Minimum = -.16 KPH at 21 msec
Maximum = 32.01 KPH at 60 msec
DRIVER LOWER SPINE Y VELOCITY
1 898121AI.V17 Filterclass (180)
KPH
32
30
28
26
24
22
20
18
16
14
12
10
8
6
4
2
0
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
.13
.14
.15
.16
.17
.18
.19
TIME Seconds
MGA Research
12-16-1998 15:49

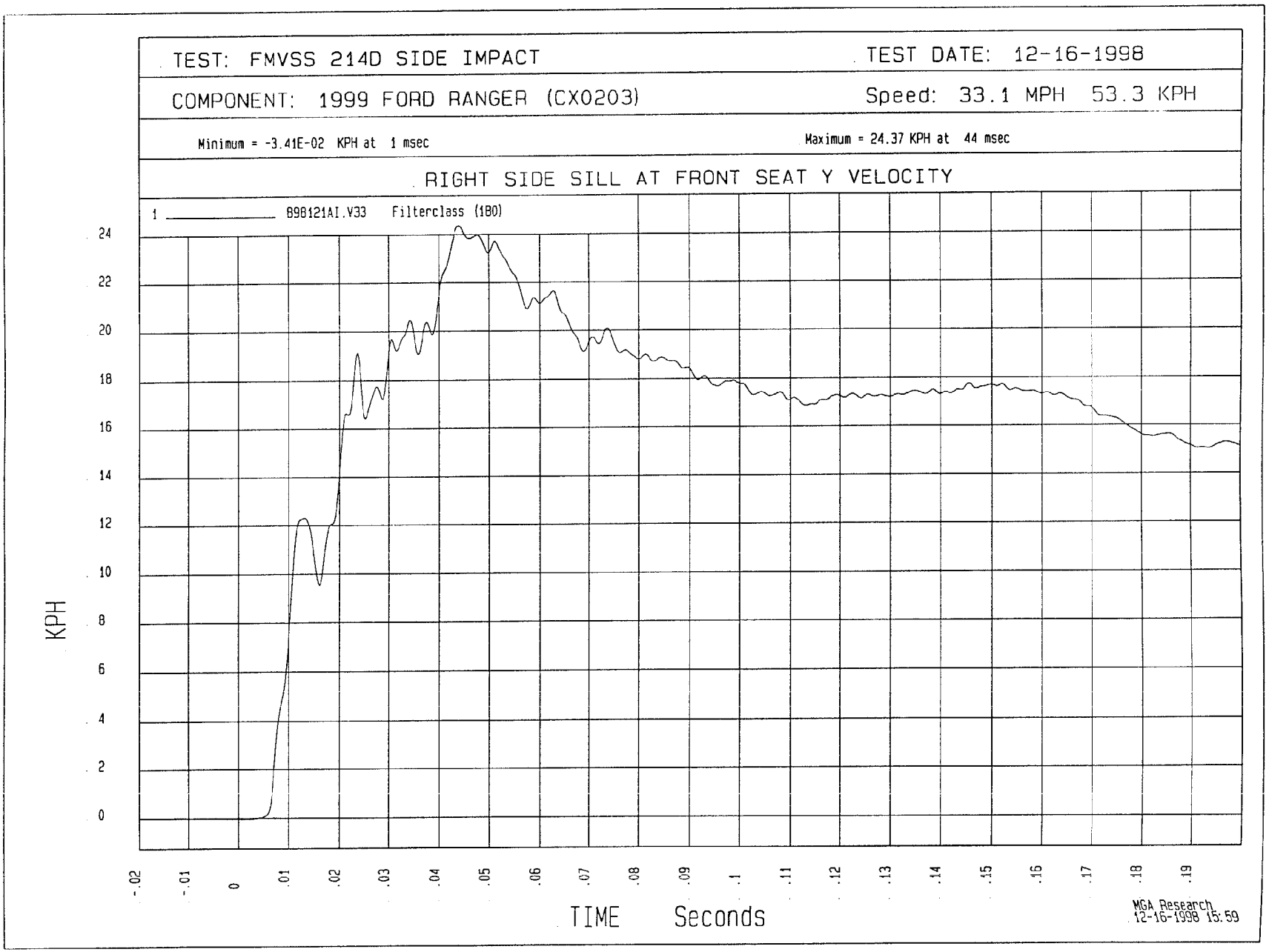

TEST: FMVSS 214D SIDE IMPACT
TEST DATE: 12-16-1998
COMPONENT: 1999 FORD RANGER (CX0203)
Speed: 33.1 MPH 53.3 KPH
Minimum = -11.48 G'S at 57 msec
Maximum = 83.79 G'S at 35 msec
DRIVER PELVIS Y ACCELERATION
1 B9B121AT.A1B Filterclass (1000)
MGA Research
12-16-1998 15:46
G'S
TIME (SECONDS)

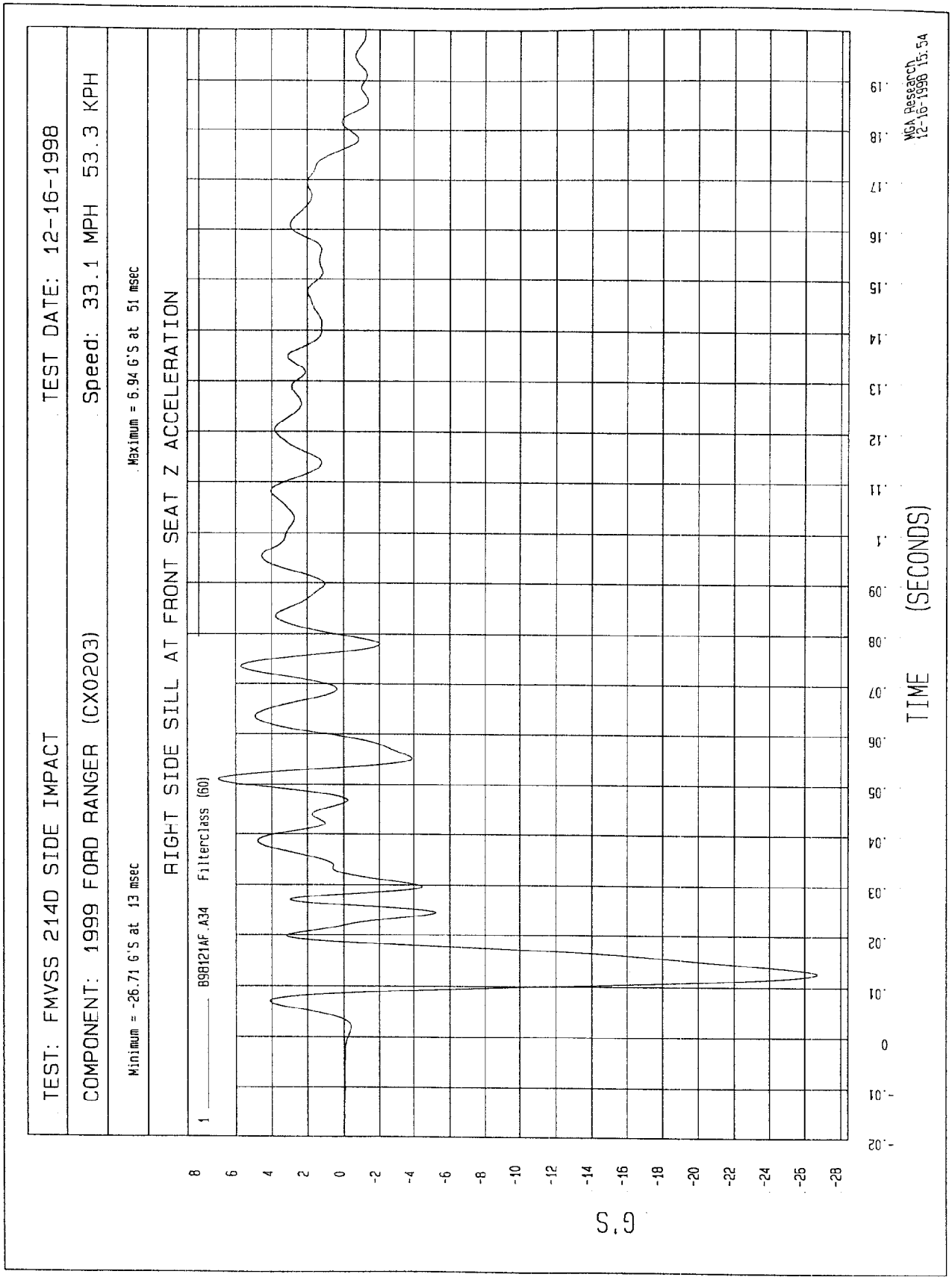

TEST: FMVSS 214D SIDE IMPACT
TEST DATE: 12-16-1998
COMPONENT: 1999 FORD RANGER (CX0203)
Speed: 33.1 MPH 53.3 KPH
Minimum = -3.86E-02 KPH at -12 msec
Maximum = 35.41 KPH at 47 msec
DRIVER PELVIS Y VELOCITY
1 B98121AI.V18 Filterclass (180)
KPH
36
34
32
30
28
26
24
22
20
18
16
14
12
10
8
6
4
2
0
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
.13
.14
.15
.16
.17
.18
.19
TIME Seconds
MGA Research
12-16-1998 15:49

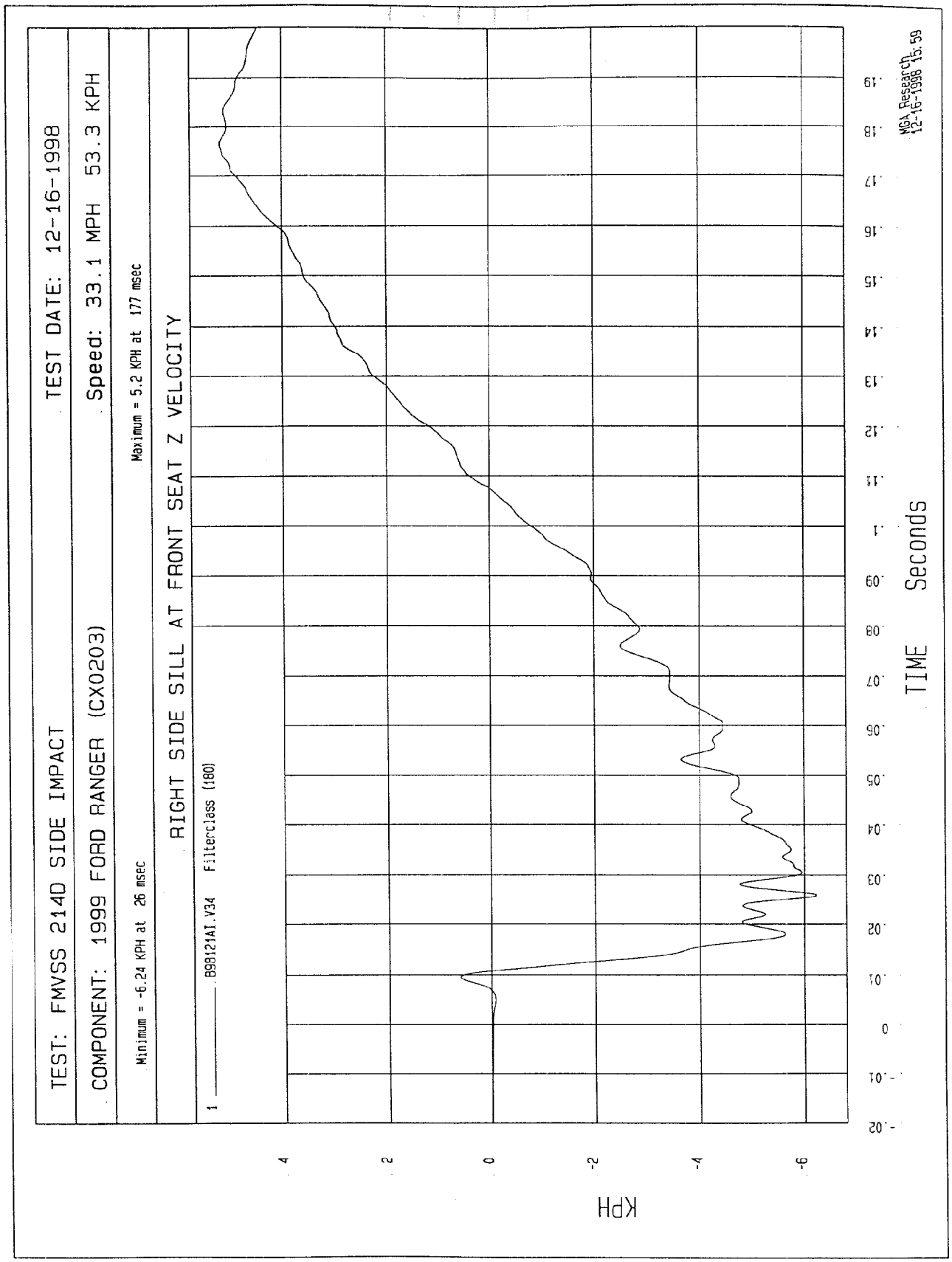

TEST: FMVSS 214D SIDE IMPACT
TEST DATE: 12-16-1998
COMPONENT: 1999 FORD RANGER (CX0203)
Speed: 33.1 MPH 53.3 KPH
Minimum = -10.38 G'S at 51 msec
Maximum = 10.62 G'S at 8 msec
RIGHT SIDE SILL AT FRONT SEAT X ACCELERATION
1 B9812IAF.A32 Filterclass (60)
10
8
6
4
2
0
-2
-4
-6
-8
-10
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
.13
.14
.15
.16
.17
.18
.19
TIME (SECONDS)
MGA Research
12-16-1998 15:54
S.9
6'S

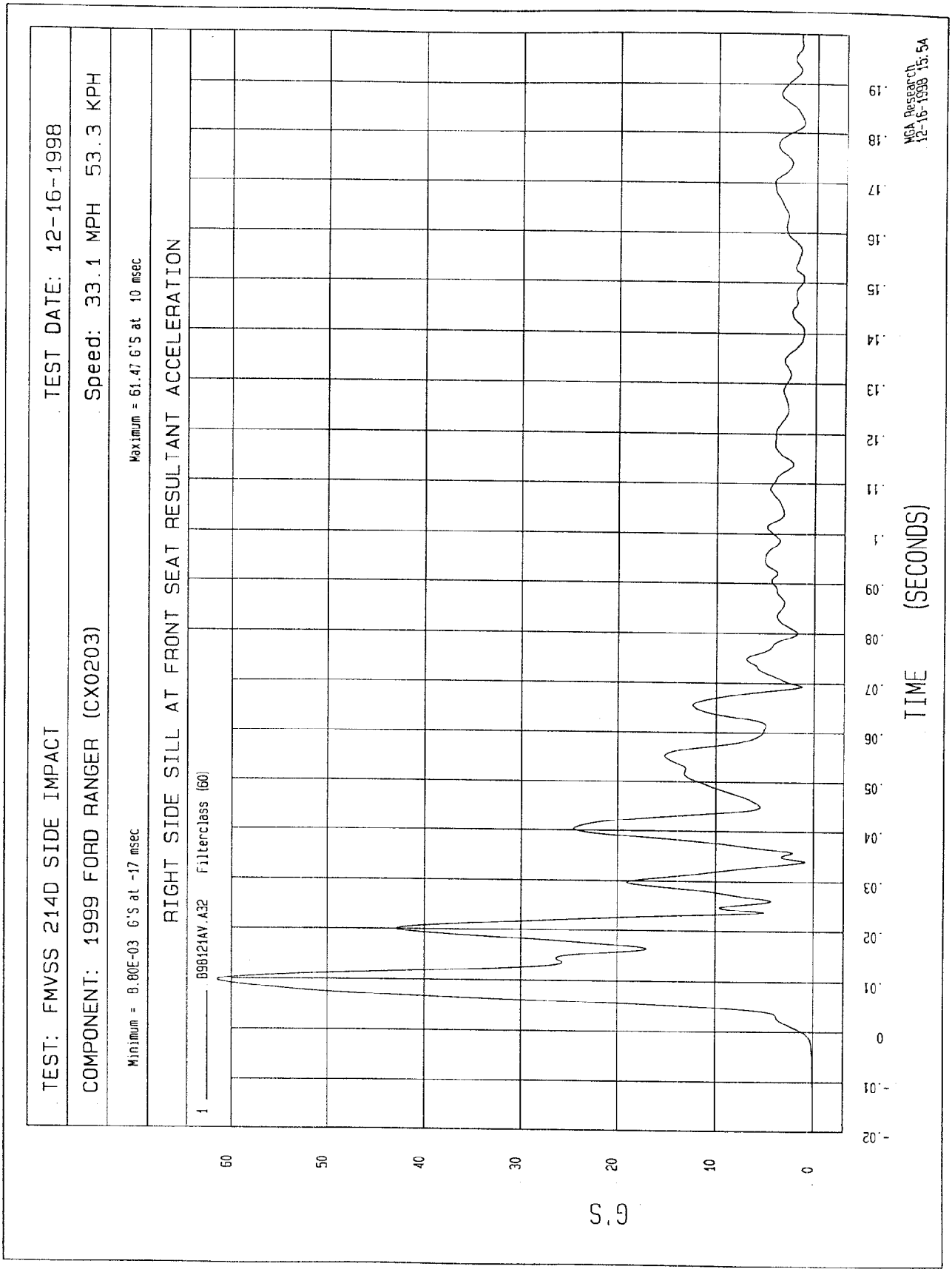

TEST: FMVSS 214D SIDE IMPACT
TEST DATE: 12-16-1998
COMPONENT: 1999 FORD RANGER (CX0203)
Speed: 33.1 MPH 53.3 KPH
Minimum = -4.37 KPH at 148 msec
Maximum = 4.21 KPH at 33 msec
RIGHT SIDE SILL AT FRONT SEAT X VELOCITY
1 B9012IAI.V32 Filterclass (180)
KPH
TIME Seconds
MGA Research
12-16-1998 15:59

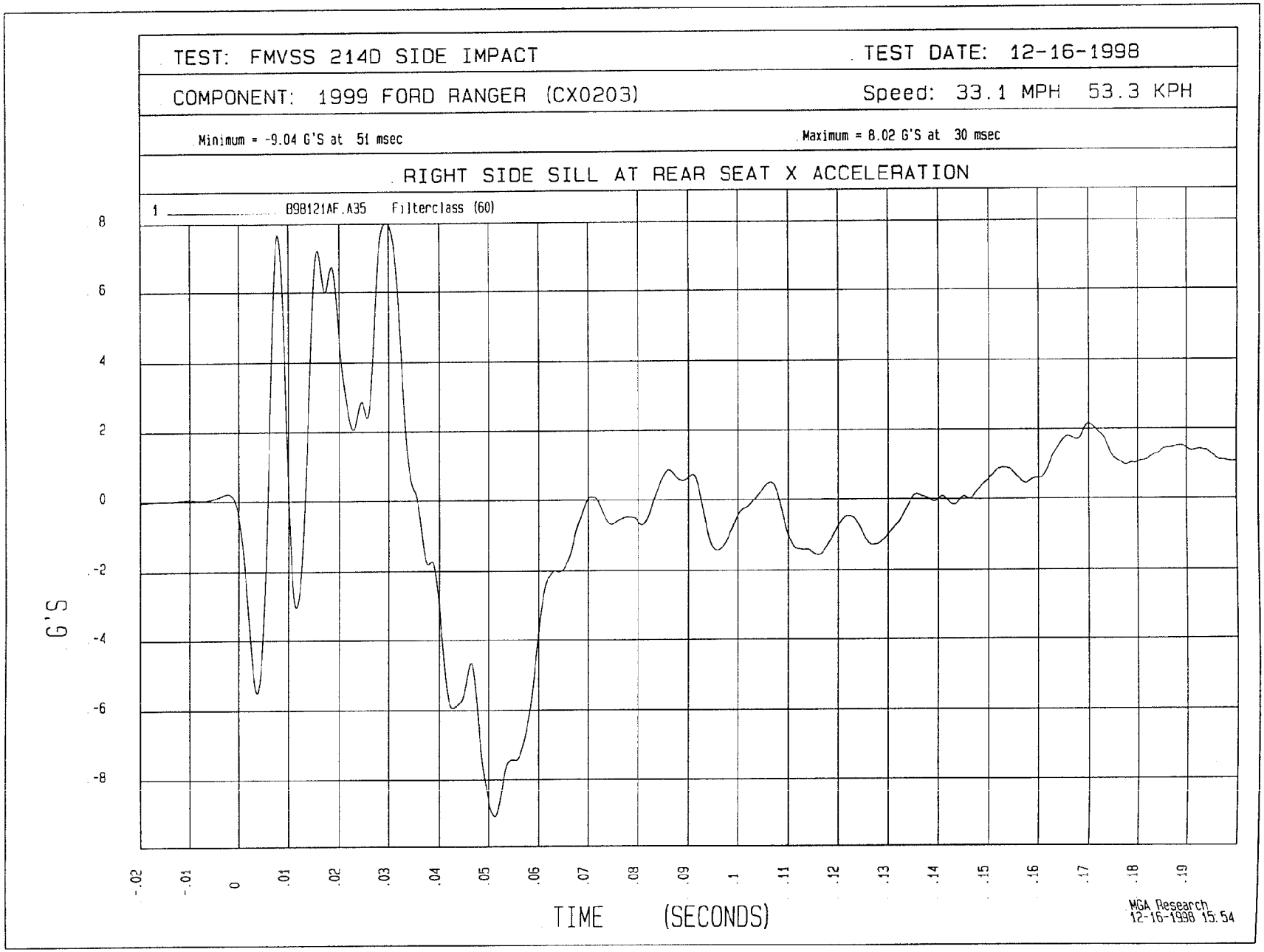

TEST: FMVSS 214D SIDE IMPACT
TEST DATE: 12-16-1998
COMPONENT: 1999 FORD RANGER (CX0203)
Speed: 33.1 MPH 53.3 KPH
Minimum = -14.65 G'S at 15 msec
Maximum = 60.68 G'S at 10 msec
RIGHT SIDE SILL AT FRONT SEAT Y ACCELERATION
1 B98121AF.A33 Filterclass (60)
G'S
60
50
40
30
20
10
0
-10
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
.13
.14
.15
.16
.17
.18
.19
TIME (SECONDS)
MGA Research
12-16-1998 15:54

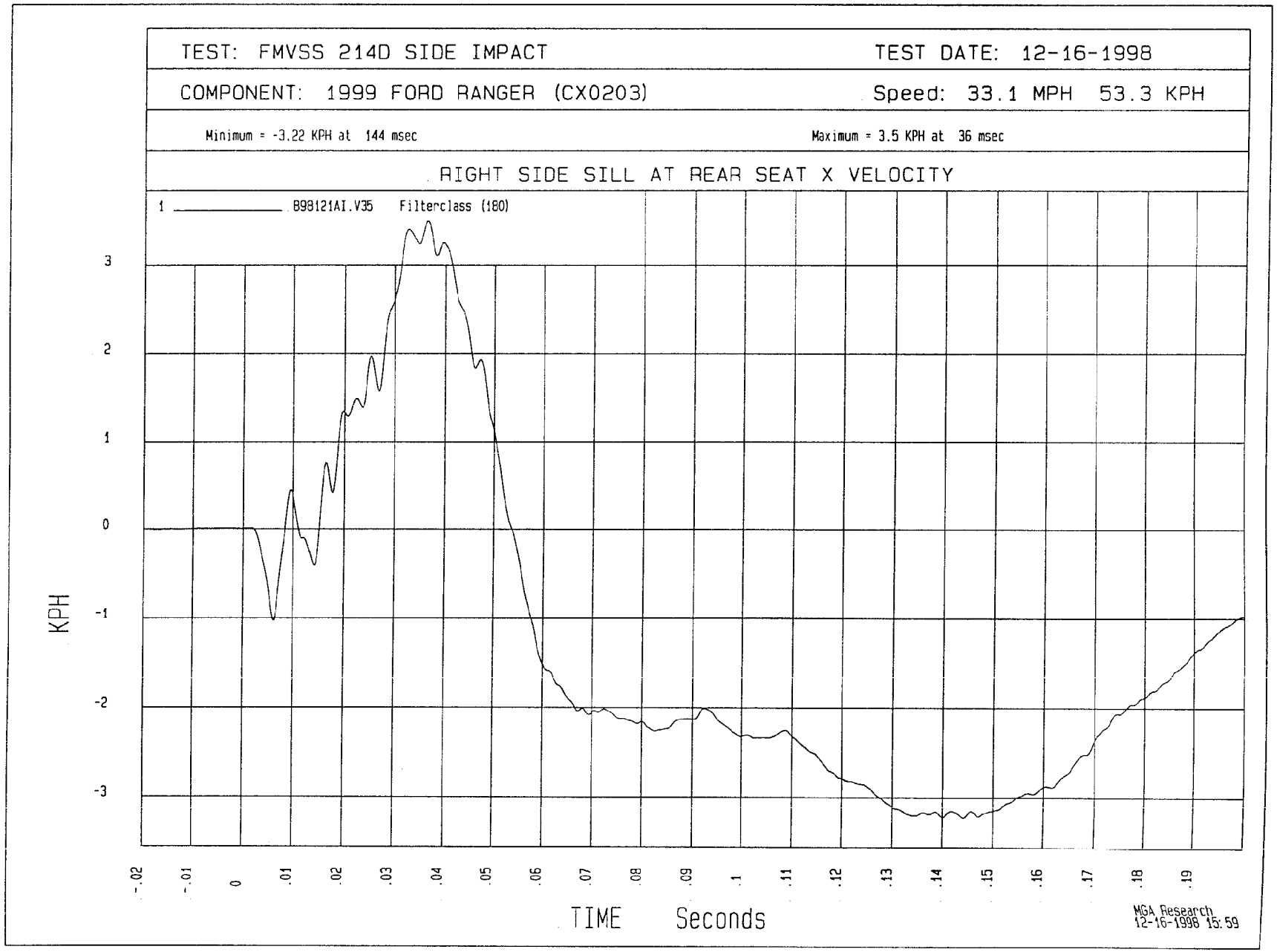

TEST: FMVSS 214D SIDE IMPACT
TEST DATE: 12-16-1998
COMPONENT: 1999 FORD RANGER (CX0203)
Speed: 33.1 MPH 53.3 KPH
Minimum = -3.41E-02 KPH at 1 msec
Maximum = 24.37 KPH at 44 msec
RIGHT SIDE SILL AT FRONT SEAT Y VELOCITY
1 B98121AI.V33 Filterclass (180)
KPH
24
22
20
18
16
14
12
10
8
6
4
2
0
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
.13
.14
.15
.16
.17
.18
.19
TIME Seconds
MGA Research
12-16-1998 15:59

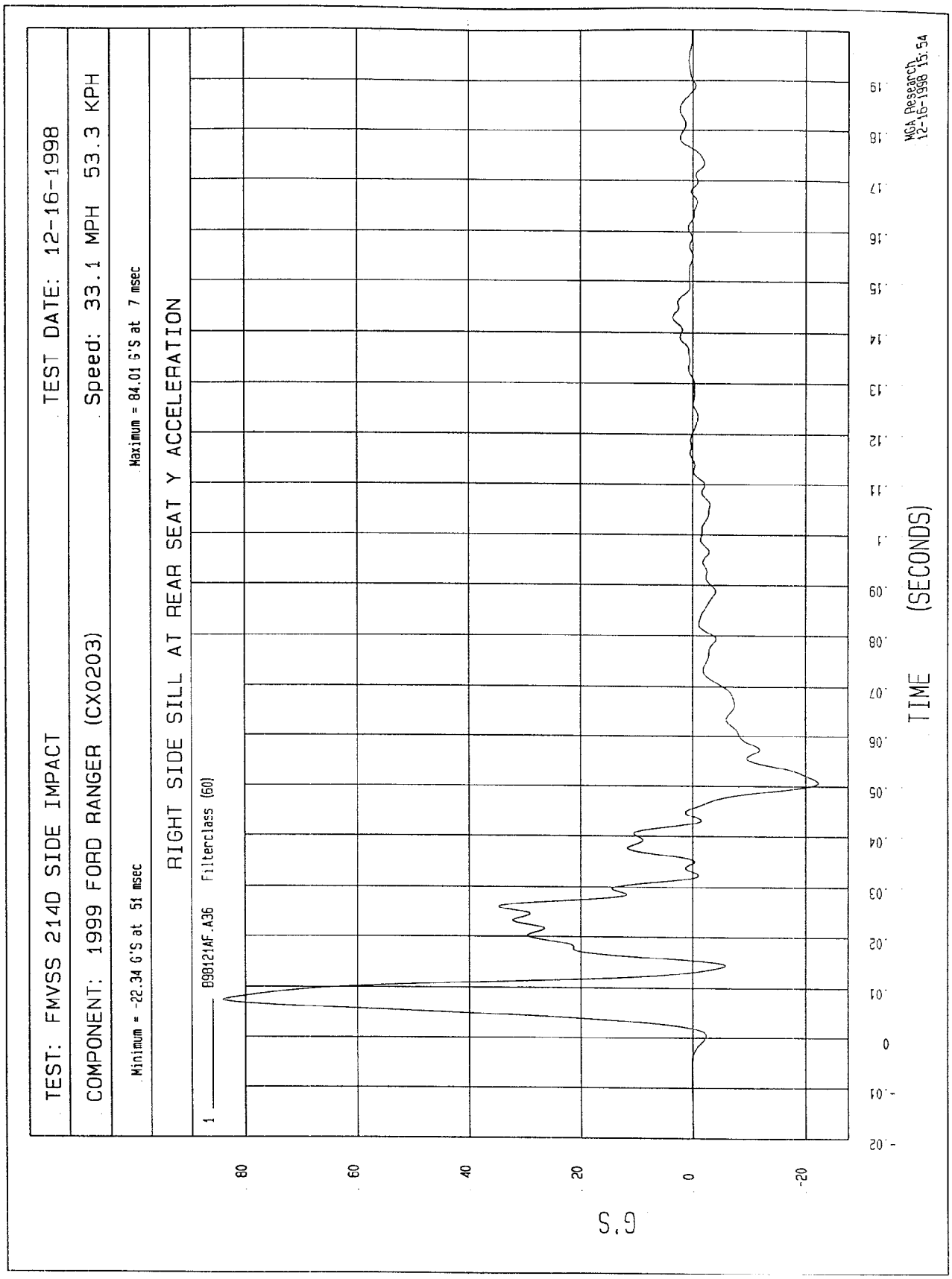

TEST: FMVSS 214D SIDE IMPACT
TEST DATE: 12-16-1998
COMPONENT: 1999 FORD RANGER (CX0203)
Speed: 33.1 MPH 53.3 KPH
Minimum = -26.71 G'S at 13 msec
Maximum = 6.94 G'S at 51 msec
RIGHT SIDE SILL AT FRONT SEAT Z ACCELERATION
1 B9B121AF.A34 Filterclass (60)
G'S
TIME (SECONDS)
NGA Research
12-16-1998 15:54

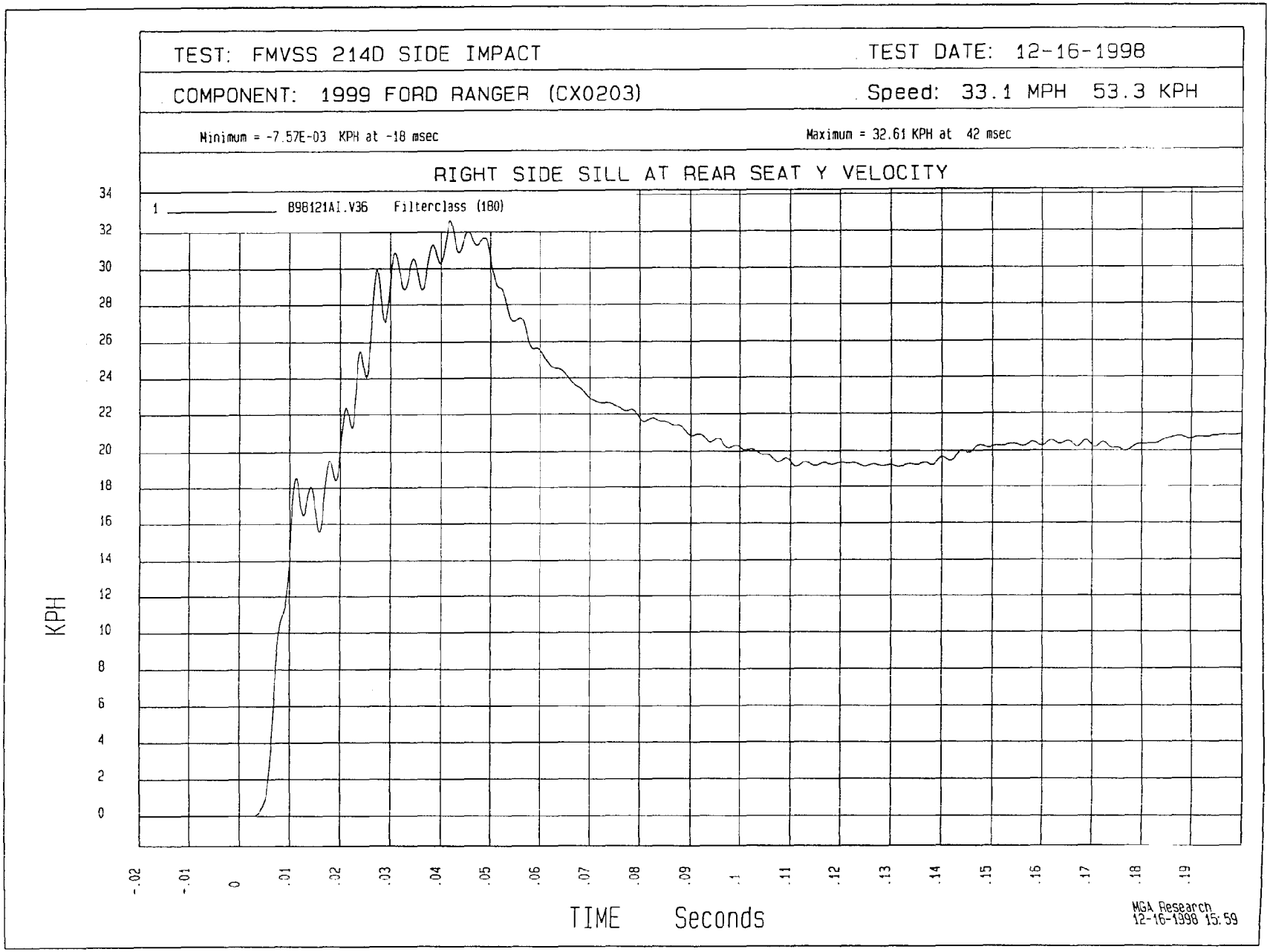

TEST: FMVSS 214D SIDE IMPACT
TEST DATE: 12-16-1998
COMPONENT: 1999 FORD RANGER (CX0203)
Speed: 33.1 MPH 53.3 KPH
Minimum = -6.24 KPH at 26 msec
Maximum = 5.2 KPH at 177 msec
RIGHT SIDE SILL AT FRONT SEAT Z VELOCITY
1 B98121AI.V34 Filterclass (180)
KPH
4
2
0
-2
-4
-6
TIME Seconds
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
.13
.14
.15
.16
.17
.18
.19
MGA Research
12-16-1998 15:59

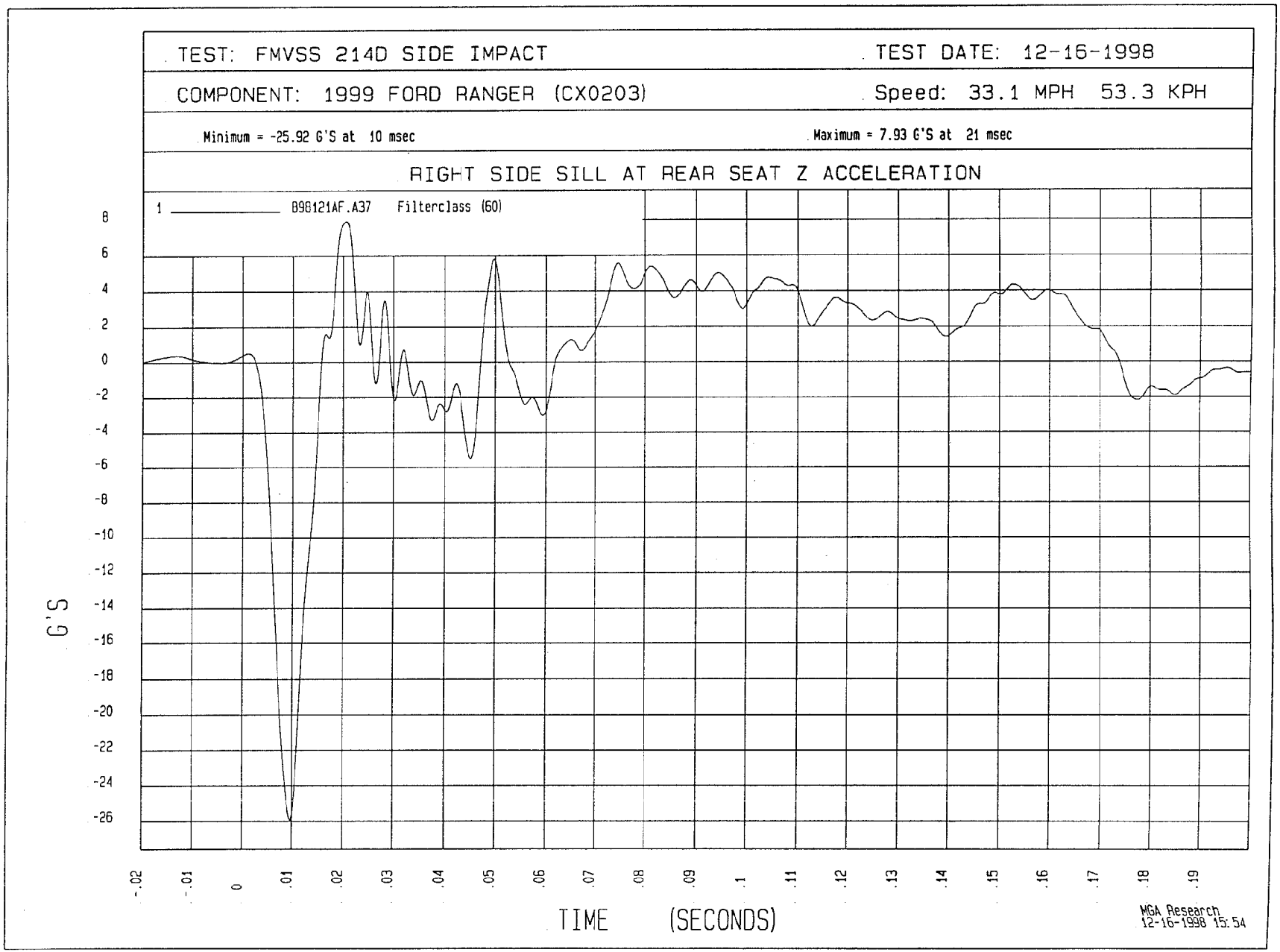

TEST: FMVSS 214D SIDE IMPACT
TEST DATE: 12-16-1998
COMPONENT: 1999 FORD RANGER (CX0203)
Speed: 33.1 MPH 53.3 KPH
Minimum = 8.80E-03 G'S at -17 msec
Maximum = 61.47 G'S at 10 msec
RIGHT SIDE SILL AT FRONT SEAT RESULTANT ACCELERATION
1 B9B121AV.A32 Filterclass (60)
60
50
40
30
20
10
0
G'S
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
.13
.14
.15
.16
.17
.18
.19
TIME (SECONDS)
MGA Research
12-16-1998 15:54

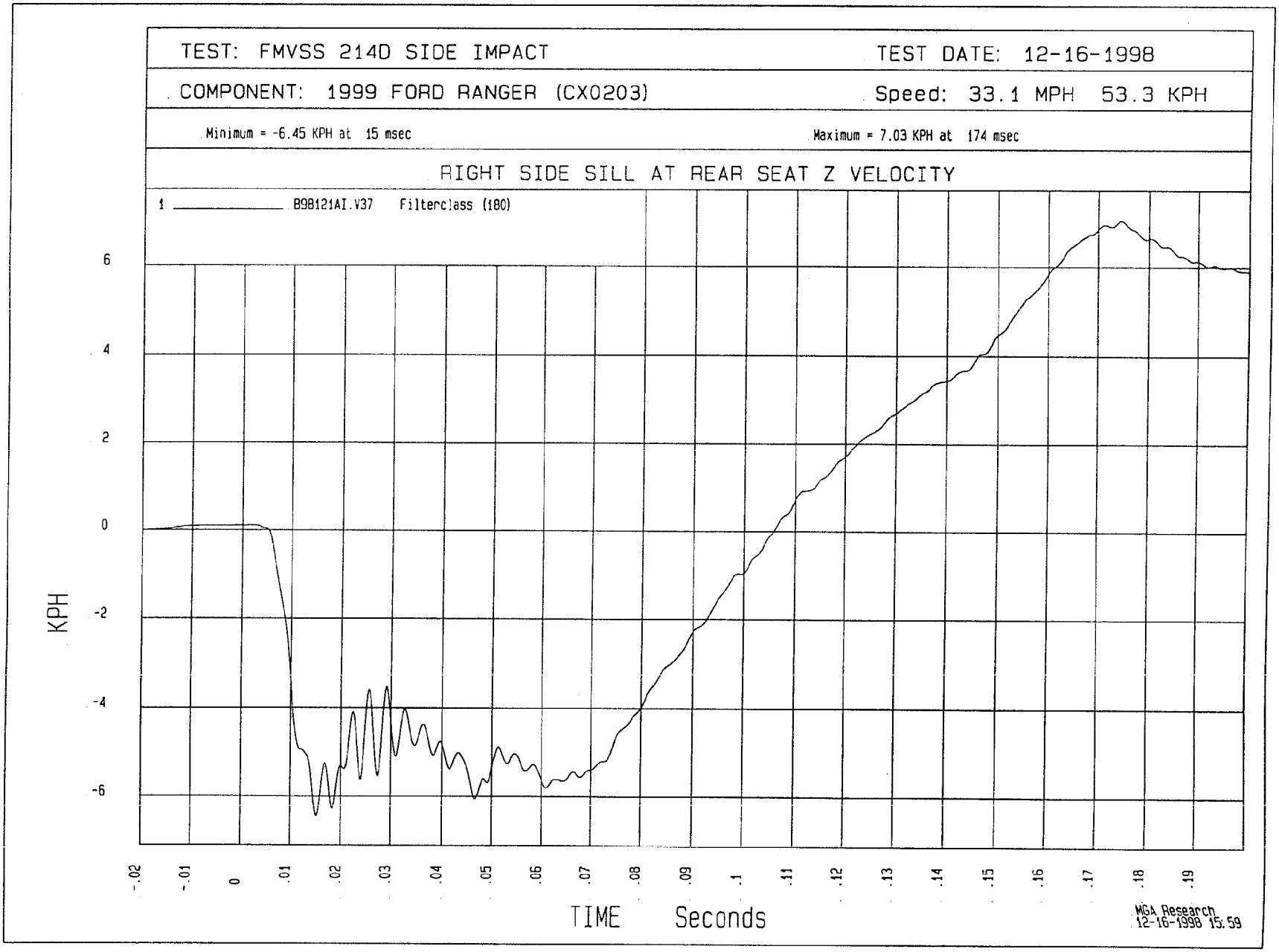

TEST: FMVSS 214D SIDE IMPACT
TEST DATE: 12-16-1998
COMPONENT: 1999 FORD RANGER (CX0203)
Speed: 33.1 MPH 53.3 KPH
Minimum = -9.04 G'S at 51 msec
Maximum = 8.02 G'S at 30 msec
RIGHT SIDE SILL AT REAR SEAT X ACCELERATION
1 B98121AF.A35 Filterclass (60)
G'S
8
6
4
2
0
-2
-4
-6
-8
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
.13
.14
.15
.16
.17
.18
.19
TIME (SECONDS)
MGA Research
12-16-1998 15:54


TEST: FMVSS 214D SIDE IMPACT
TEST DATE: 12-16-1998
COMPONENT: 1999 FORD RANGER (CX0203)
Speed: 33.1 MPH 53.3 KPH
Minimum = -3.22 KPH at 144 msec
Maximum = 3.5 KPH at 36 msec
RIGHT SIDE SILL AT REAR SEAT X VELOCITY
1 B98121AI.V35 Filterclass (180)
KPH
3
2
1
0
-1
-2
-3
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
.13
.14
.15
.16
.17
.18
.19
TIME Seconds
MGA Research
12-16-1998 15:59


TEST: FMVSS 214D SIDE IMPACT
TEST DATE: 12-16-1998
COMPONENT: 1999 FORD RANGER (CX0203)
Speed: 33.1 MPH 53.3 KPH
Minimum = -22.34 G'S at 51 msec
Maximum = 84.01 G'S at 7 msec
RIGHT SIDE SILL AT REAR SEAT Y ACCELERATION
1 B981214F.A36 Filterclass (60)
80
60
40
20
0
-20
G'S
TIME (SECONDS)
MGA Research
12-16-1998 15:54


TEST: FMVSS 214D SIDE IMPACT
TEST DATE: 12-16-1998
COMPONENT: 1999 FORD RANGER (CX0203)
Speed: 33.1 MPH 53.3 KPH
Minimum = -7.57E-03 KPH at -18 msec
Maximum = 32.61 KPH at 42 msec
RIGHT SIDE SILL AT REAR SEAT Y VELOCITY
1 B98121AI.V36 Filterclass (180)
KPH
34
32
30
28
26
24
22
20
18
16
14
12
10
8
6
4
2
0
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
.13
.14
.15
.16
.17
.18
.19
TIME Seconds
MGA Research
12-16-1998 15:59


TEST: FMVSS 214D SIDE IMPACT
TEST DATE: 12-16-1998
COMPONENT: 1999 FORD RANGER (CX0203)
Speed: 33.1 MPH 53.3 KPH
Minimum = -25.92 G'S at 10 msec
Maximum = 7.93 G'S at 21 msec
RIGHT SIDE SILL AT REAR SEAT Z ACCELERATION
1 B98121AF.A37 Filterclass (60)
8
6
4
2
0
-2
-4
-6
-8
-10
-12
-14
-16
-18
-20
-22
-24
-26
G'S
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
.13
.14
.15
.16
.17
.18
.19
TIME (SECONDS)
MGA Research
12-16-1998 15:54


TEST: FMVSS 214D SIDE IMPACT
TEST DATE: 12-16-1998
COMPONENT: 1999 FORD RANGER (CX0203)
Speed: 33.1 MPH 53.3 KPH
Minimum = -6.45 KPH at 15 msec
Maximum = 7.03 KPH at 174 msec
RIGHT SIDE SILL AT REAR SEAT Z VELOCITY
1 B98121AI.V37 Filterclass (180)
KPH
6
4
2
0
-2
-4
-6
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
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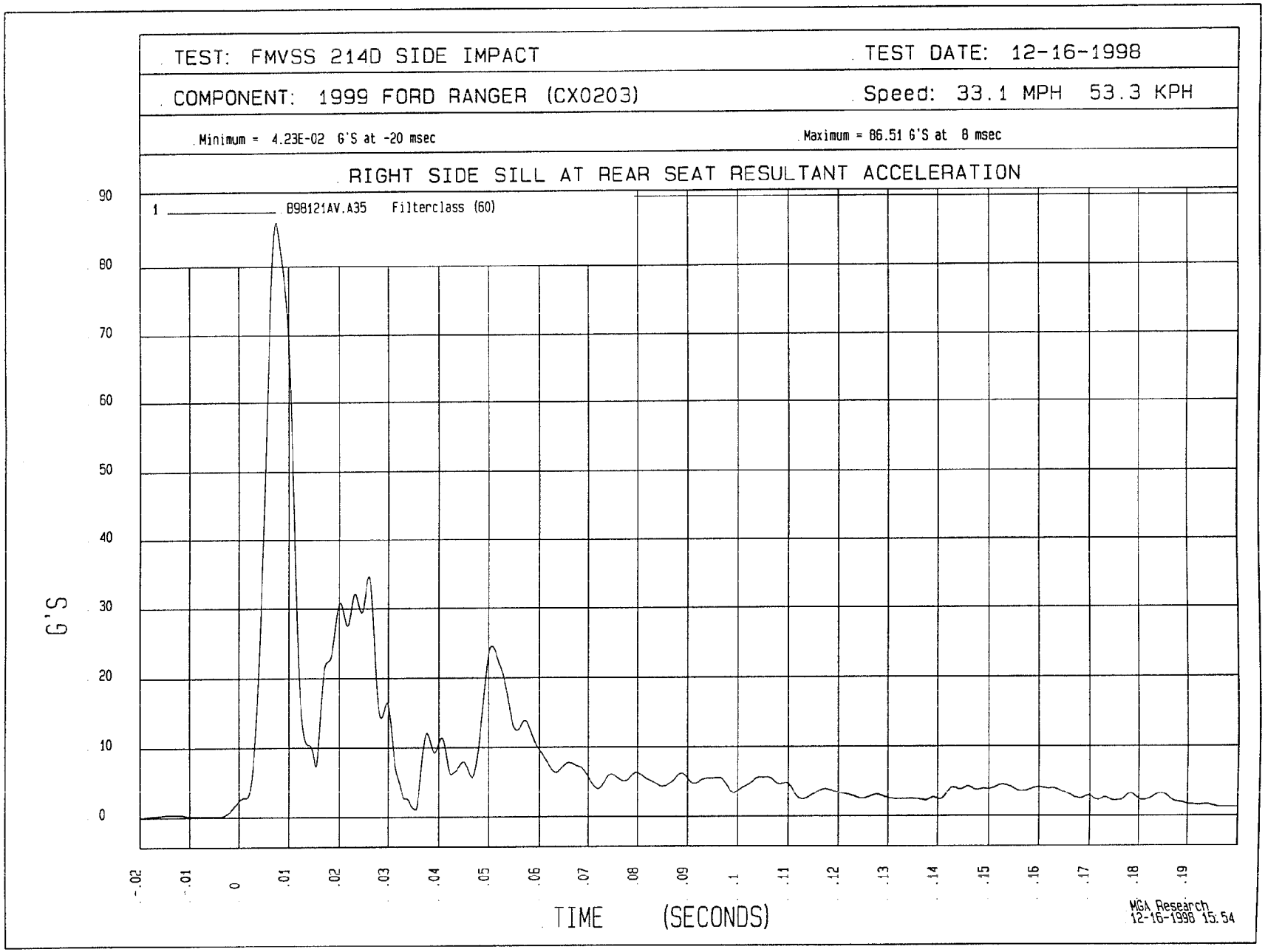
.17
.18
.19
TIME Seconds
MGA Research
12-16-1998 15:59


TEST: FMVSS 214D SIDE IMPACT
TEST DATE: 12-16-1998
COMPONENT: 1999 FORD RANGER (CX0203)
Speed: 33.1 MPH 53.3 KPH
Minimum = 4.23E-02 G'S at -20 msec
Maximum = 86.51 G'S at 8 msec
RIGHT SIDE SILL AT REAR SEAT RESULTANT ACCELERATION
1 B98121AV.A35 Filterclass (60)
G'S
90
80
70
60
50
40
30
20
10
0
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
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.11
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.16
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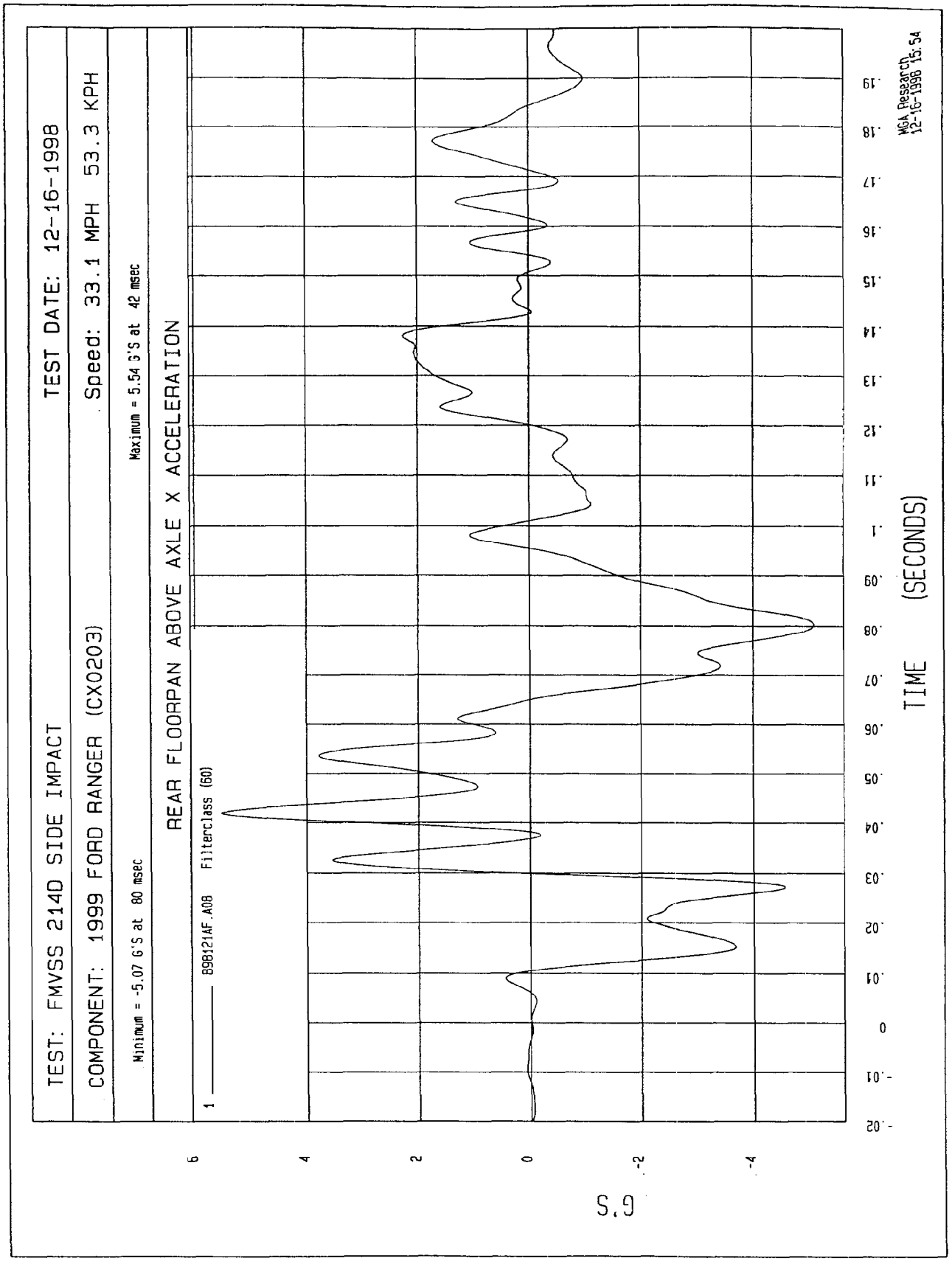
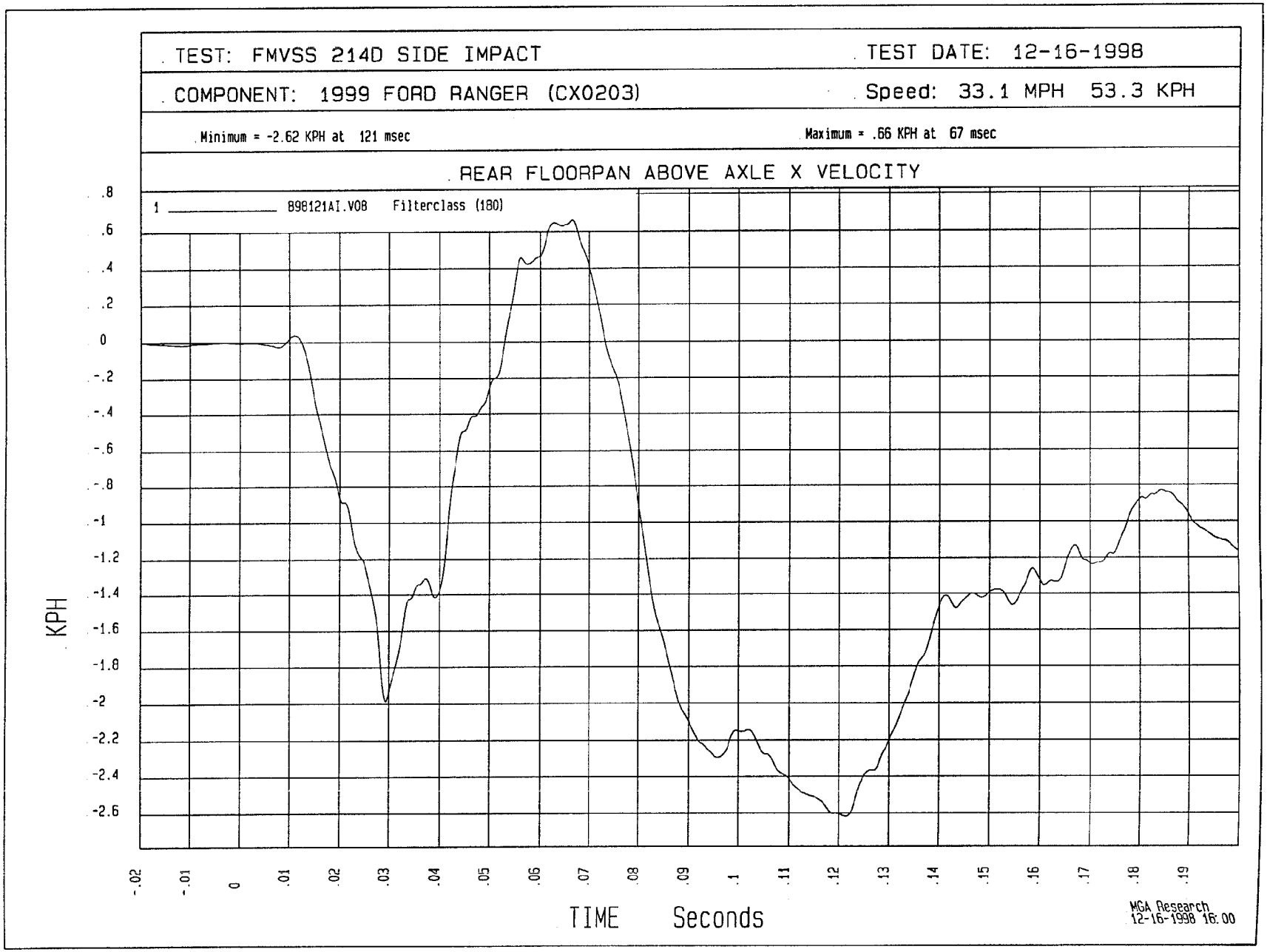
TIME (SECONDS)
MGA Research
12-16-1998 15:54


TEST: FMVSS 214D SIDE IMPACT
TEST DATE: 12-16-1998
COMPONENT: 1999 FORD RANGER (CX0203)
Speed: 33.1 MPH 53.3 KPH
Minimum = -5.07 G'S at 80 msec
Maximum = 5.54 G'S at 42 msec
REAR FLOORPAN ABOVE AXLE X ACCELERATION
1 B9B1214F.A08 Filterclass (60)
6
4
2
0
-2
-4
G'S
TIME (SECONDS)
MGA Research
12-16-1998 15:54


TEST: FMVSS 214D SIDE IMPACT
TEST DATE: 12-16-1998
COMPONENT: 1999 FORD RANGER (CX0203)
Speed: 33.1 MPH 53.3 KPH
Minimum = -2.62 KPH at 121 msec
Maximum = .66 KPH at 67 msec
REAR FLOORPAN ABOVE AXLE X VELOCITY
1 B98121AI.V08 Filterclass (180)
KPH
.8
.6
.4
.2
0
-.2
-.4
-.6
-.8
-1
-1.2
-1.4
-1.6
-1.8
-2
-2.2
-2.4
-2.6
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
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.11
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.14
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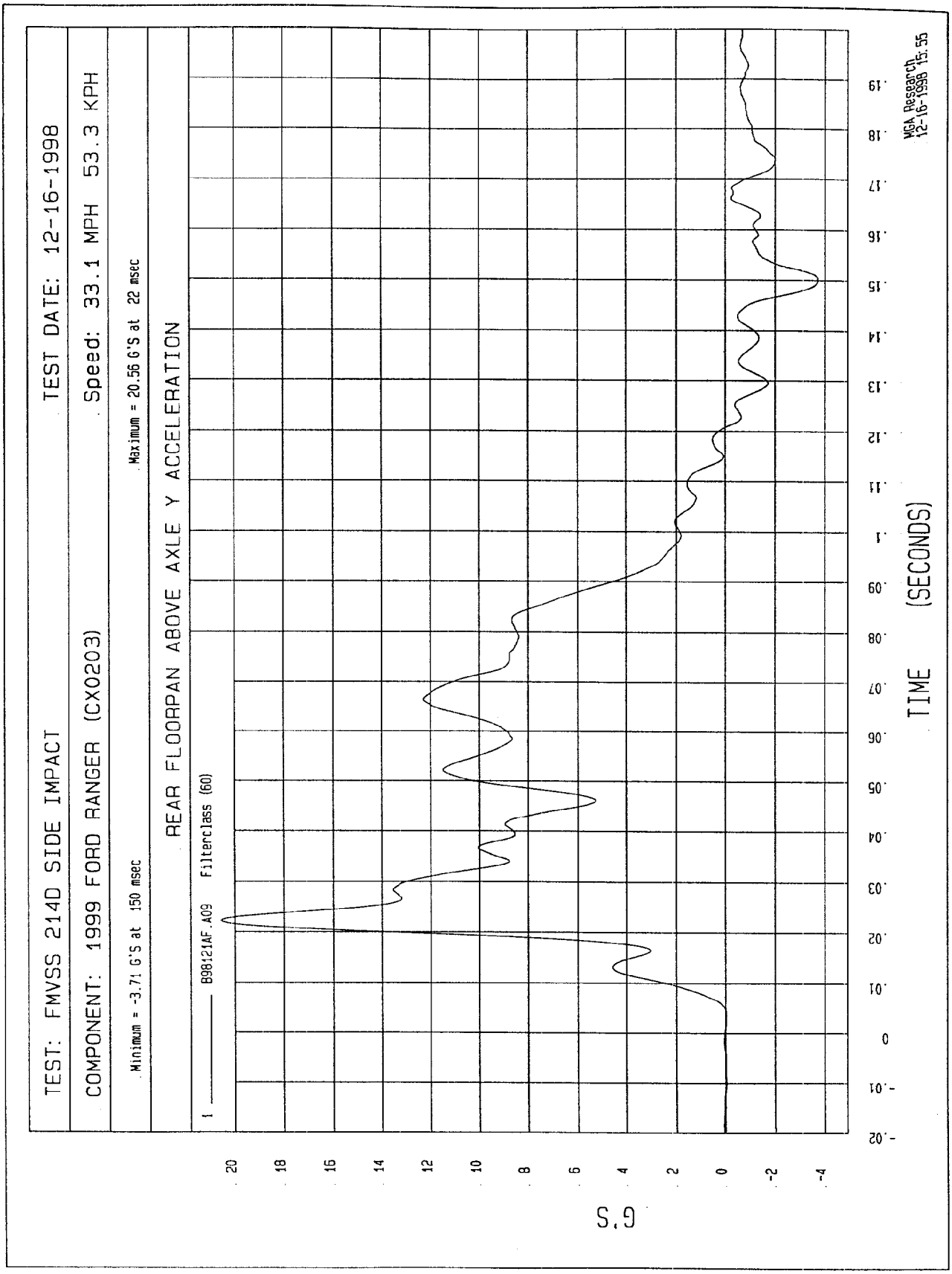
.16
.17
.18
.19
TIME Seconds
MGA Research
12-16-1998 16:00


TEST: FMVSS 214D SIDE IMPACT
TEST DATE: 12-16-1998
COMPONENT: 1999 FORD RANGER (CX0203)
Speed: 33.1 MPH 53.3 KPH
Minimum = -3.71 G'S at 150 msec
Maximum = 20.56 G'S at 22 msec
REAR FLOORPAN ABOVE AXLE Y ACCELERATION
1 B98121AF.A09 Filterclass (60)
MGA Research
12-16-1998 15:55
G'S
TIME (SECONDS)
20
18
16
14
12
10
8
6
4
2
0
-2
-4
.19
.18
.17
.16
.15
.14
.13
.12
.11
.1
.09
.08
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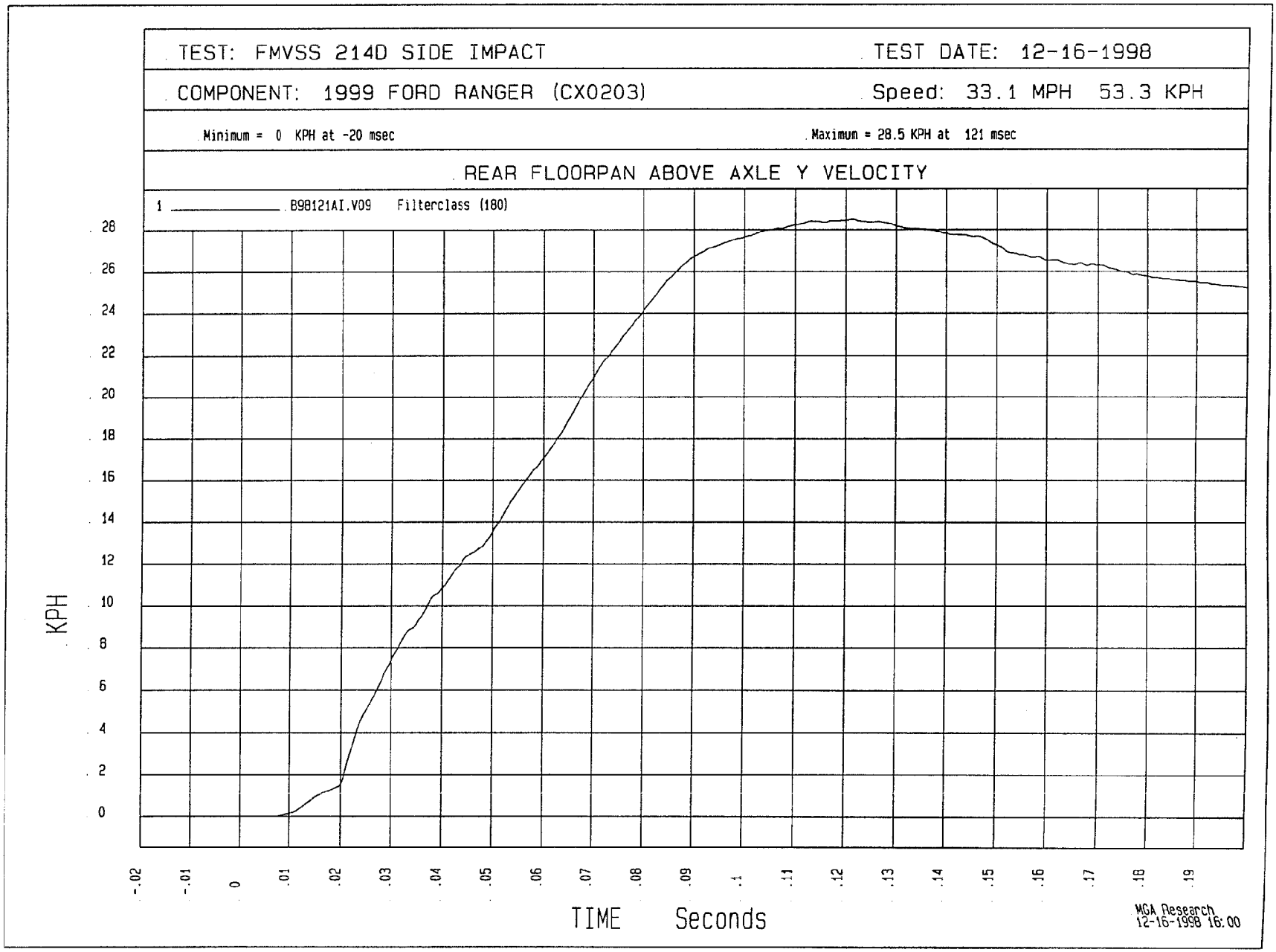
.06
.05
.04
.03
.02
.01
0
-.01
-.02


TEST: FMVSS 214D SIDE IMPACT
TEST DATE: 12-16-1998
COMPONENT: 1999 FORD RANGER (CX0203)
Speed: 33.1 MPH 53.3 KPH
Minimum = 0 KPH at -20 msec
Maximum = 28.5 KPH at 121 msec
REAR FLOORPAN ABOVE AXLE Y VELOCITY
1 B98121AI.V09 Filterclass (180)
KPH
28
26
24
22
20
18
16
14
12
10
8
6
4
2
0
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
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.1
.11
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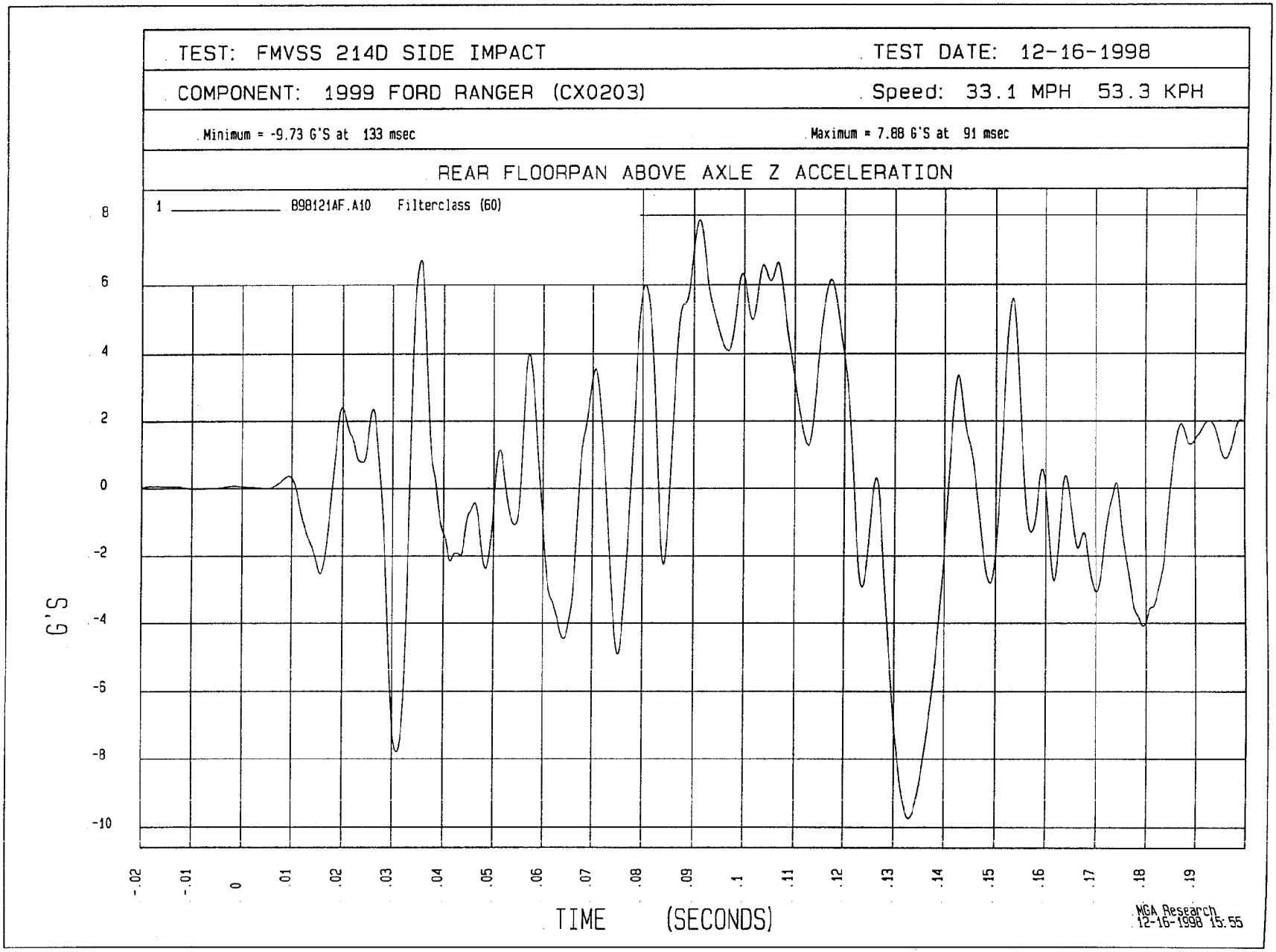
TIME Seconds
MGA Research
12-16-1998 16:00


TEST: FMVSS 214D SIDE IMPACT
TEST DATE: 12-16-1998
COMPONENT: 1999 FORD RANGER (CX0203)
Speed: 33.1 MPH 53.3 KPH
Minimum = -9.73 G'S at 133 msec
Maximum = 7.88 G'S at 91 msec
REAR FLOORPAN ABOVE AXLE Z ACCELERATION
1 B98121AF.A10 Filterclass (60)
G'S
8
6
4
2
0
-2
-4
-6
-8
-10
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
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.09
.1
.11
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.13
.14
.15
.16
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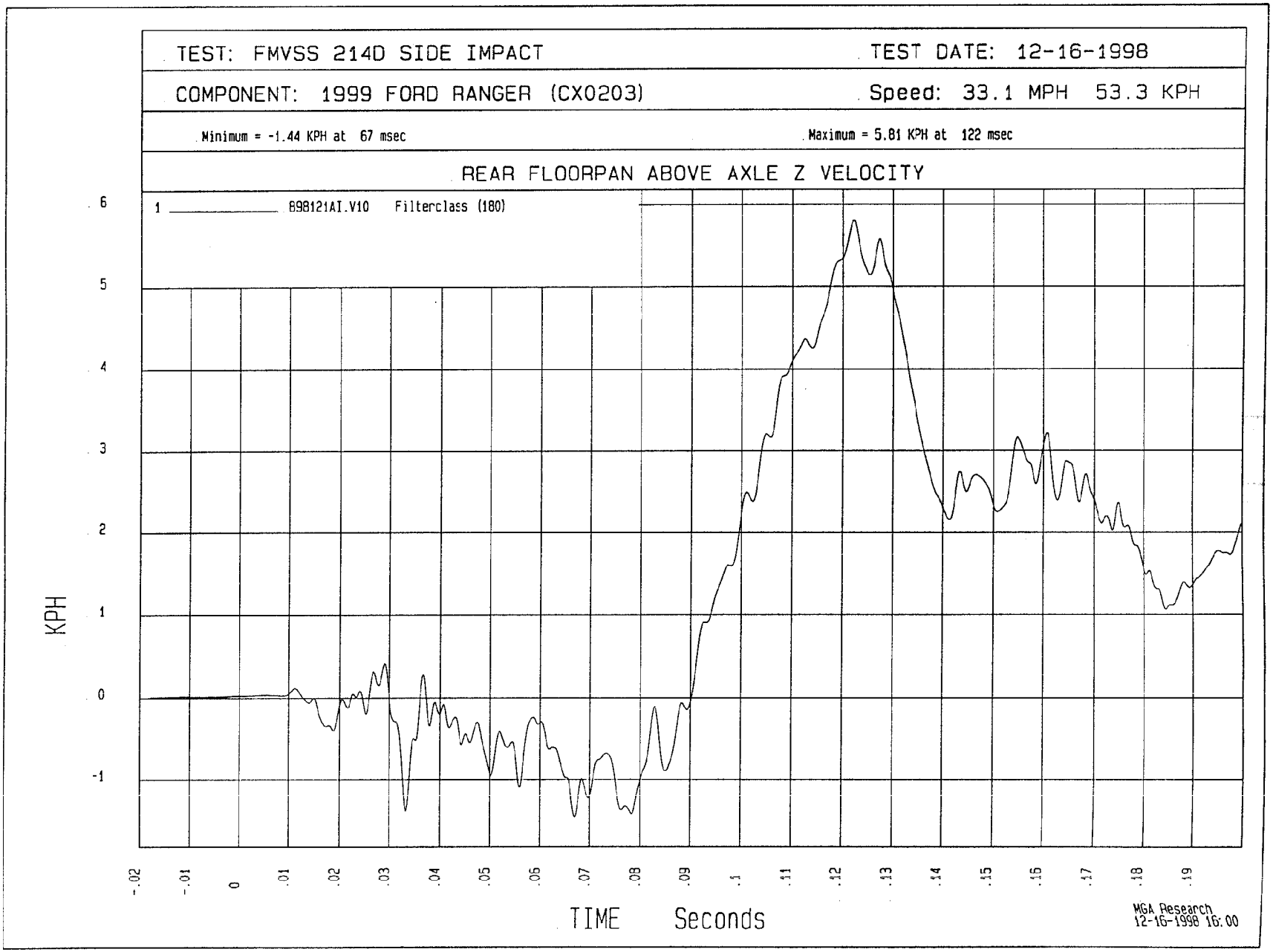
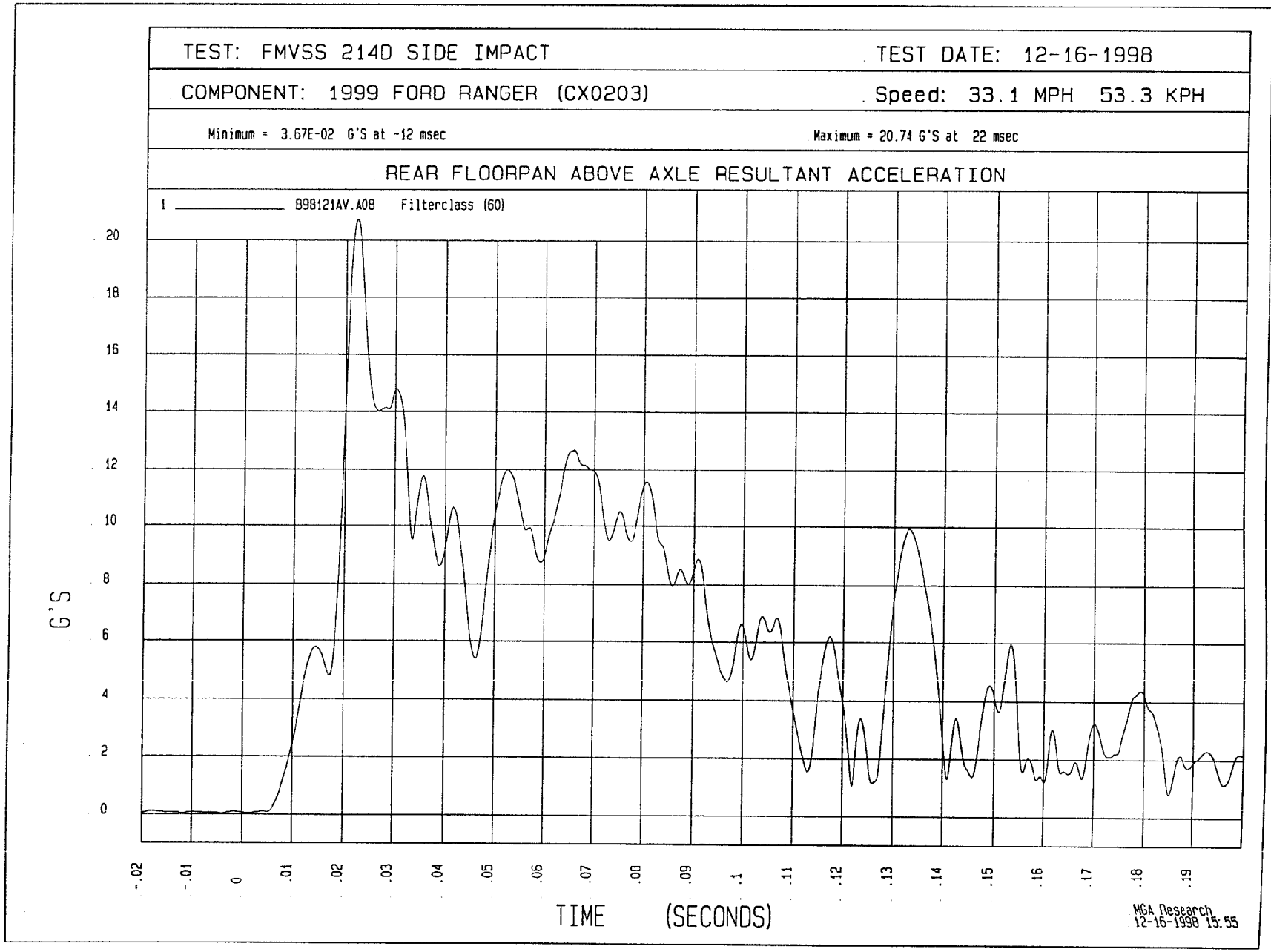
TIME (SECONDS)
NGA Research
12-16-1998 15:55


TEST: FMVSS 214D SIDE IMPACT
TEST DATE: 12-16-1998
COMPONENT: 1999 FORD RANGER (CX0203)
Speed: 33.1 MPH 53.3 KPH
Minimum = -1.44 KPH at 67 msec
Maximum = 5.81 KPH at 122 msec
REAR FLOORPAN ABOVE AXLE Z VELOCITY
1 898121AI.V10 Filterclass (180)
KPH
6
5
4
3
2
1
0
-1
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
.13
.14
.15
.16
.17
.18
.19
TIME Seconds
MGA Research
12-16-1998 16:00


TEST: FMVSS 214D SIDE IMPACT
TEST DATE: 12-16-1998
COMPONENT: 1999 FORD RANGER (CX0203)
Speed: 33.1 MPH 53.3 KPH
Minimum = 3.67E-02 G'S at -12 msec
Maximum = 20.74 G'S at 22 msec
REAR FLOORPAN ABOVE AXLE RESULTANT ACCELERATION
1 B98121AV.A08 Filterclass (60)
G'S
20
18
16
14
12
10
8
6
4
2
0
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
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.1
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.14
.15
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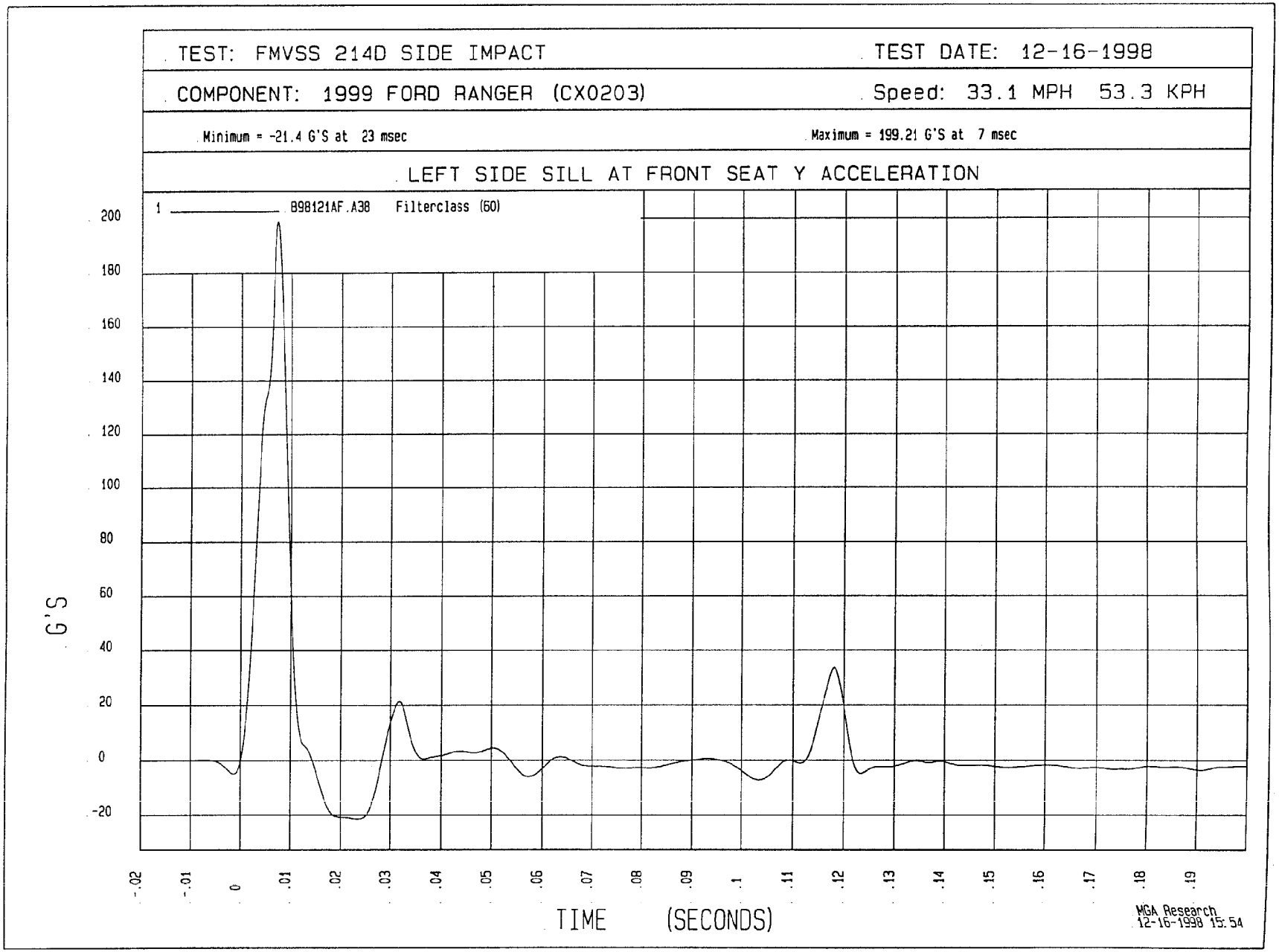
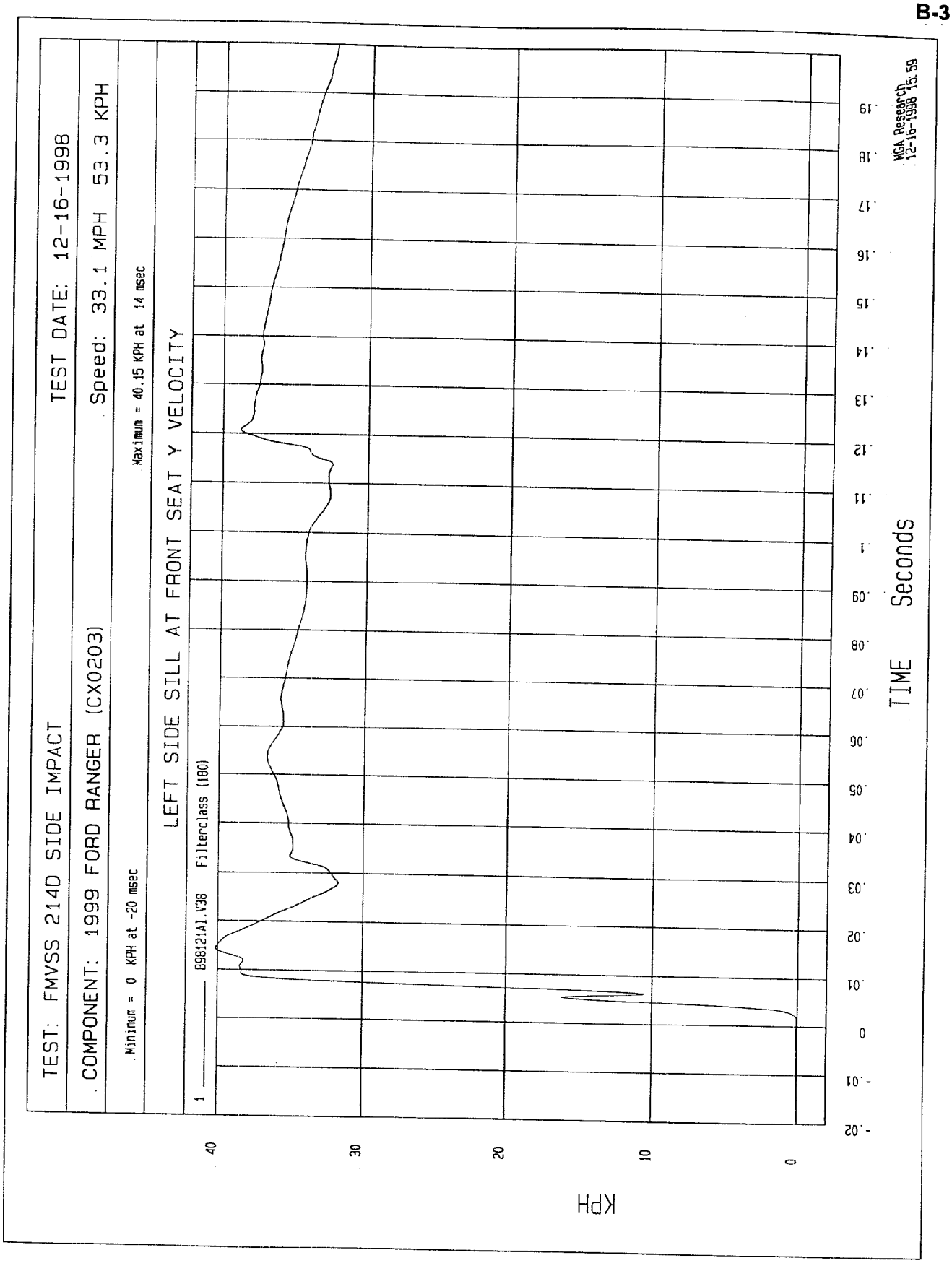
TIME (SECONDS)
MGA Research
12-16-1998 15:55


TEST: FMVSS 214D SIDE IMPACT
TEST DATE: 12-16-1998
COMPONENT: 1999 FORD RANGER (CX0203)
Speed: 33.1 MPH 53.3 KPH
Minimum = -21.4 G'S at 23 msec
Maximum = 199.21 G'S at 7 msec
LEFT SIDE SILL AT FRONT SEAT Y ACCELERATION
1 B98121AF.A38 Filterclass (60)
200
180
160
140
120
100
80
60
40
20
0
-20
G'S
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
.13
.14
.15
.16
.17
.18
.19
TIME (SECONDS)
MGA Research
12-16-1998 15:54


TEST: FMVSS 214D SIDE IMPACT
TEST DATE: 12-16-1998
COMPONENT: 1999 FORD RANGER (CX0203)
Speed: 33.1 MPH 53.3 KPH
Minimum = 0 KPH at -20 msec
Maximum = 40.15 KPH at 14 msec
LEFT SIDE SILL AT FRONT SEAT Y VELOCITY
1 B98121AI.V38 Filterclass (180)
KPH
40
30
20
10
0
TIME Seconds
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
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.1
.11
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.16
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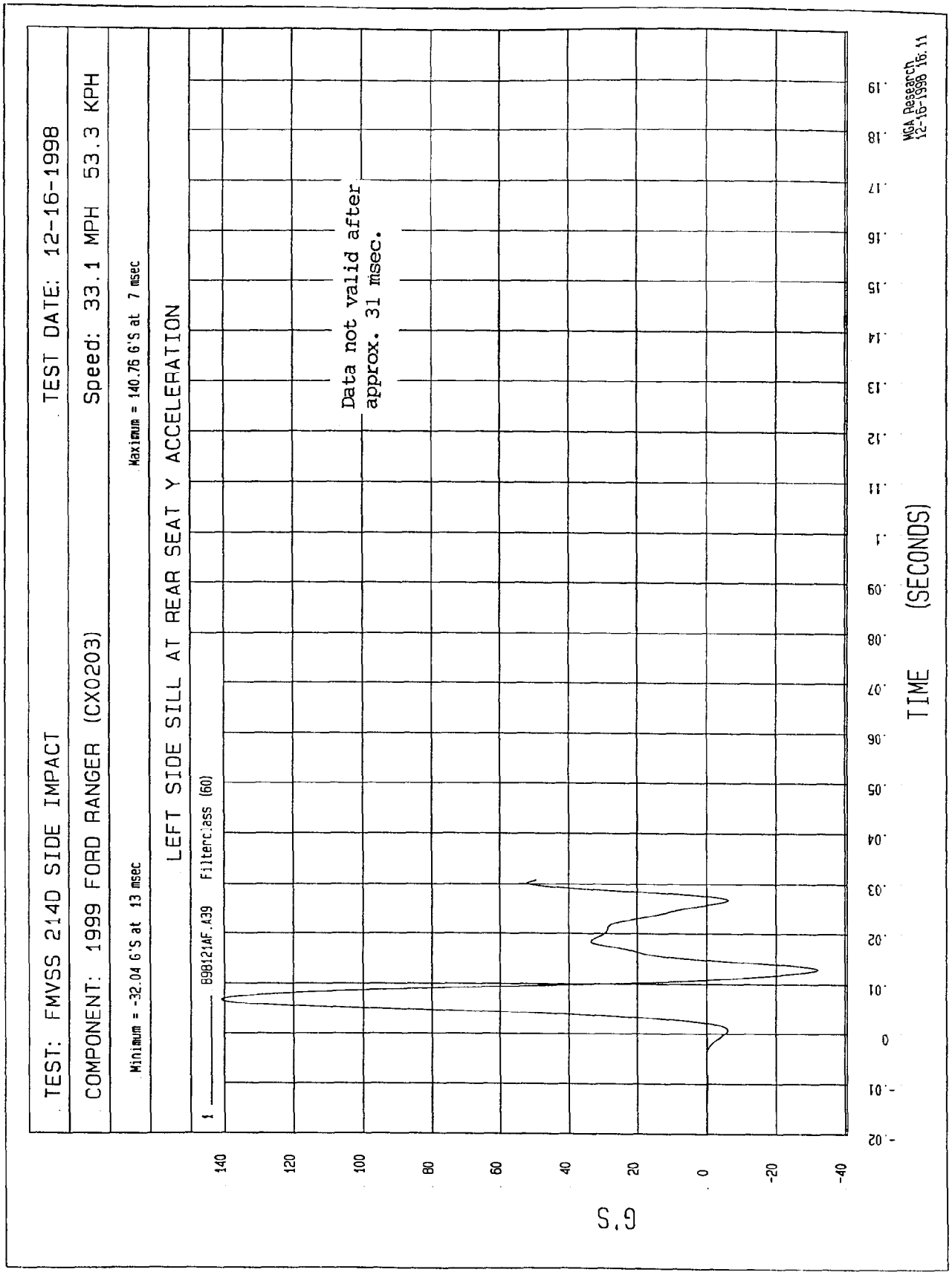
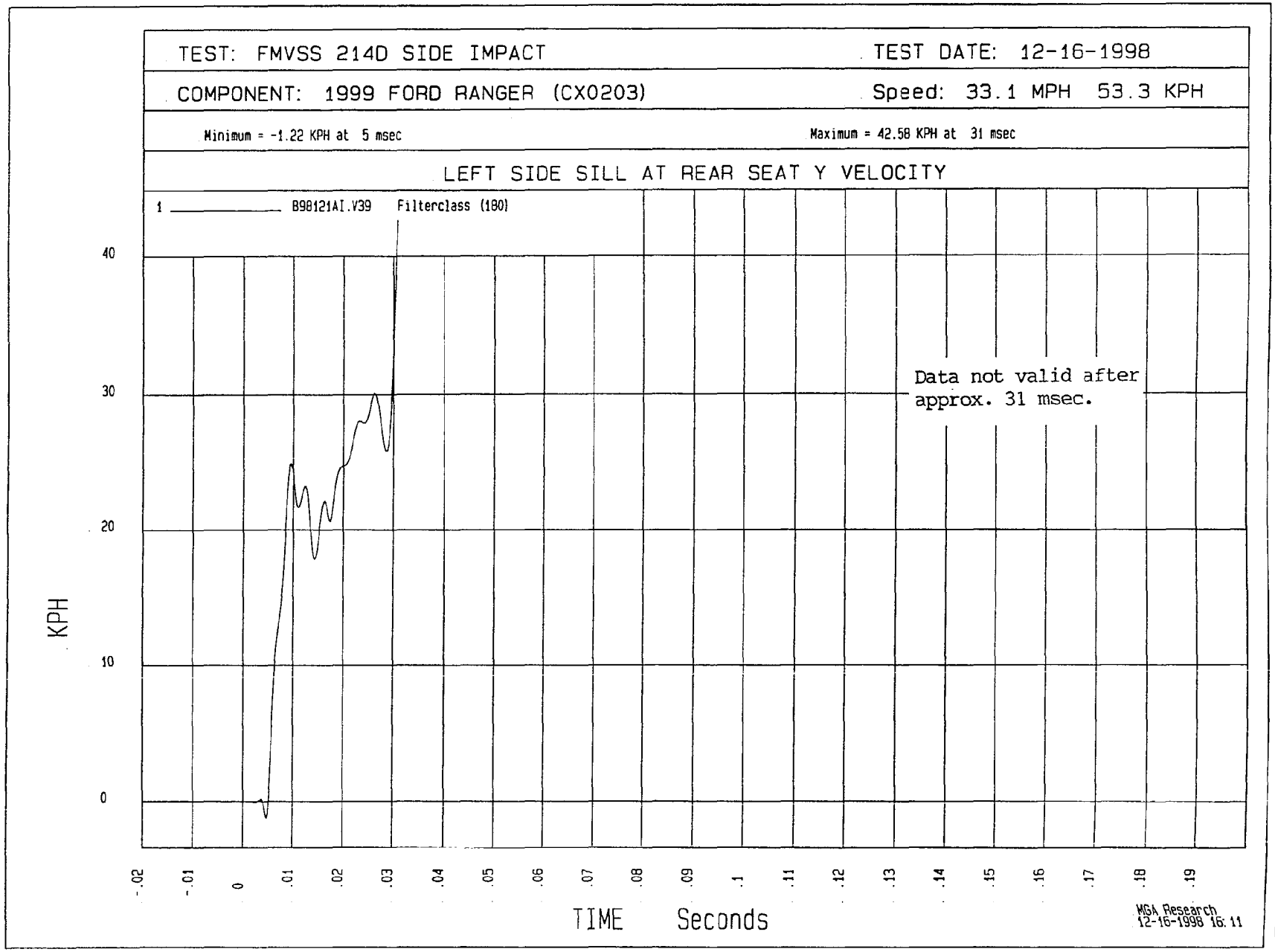
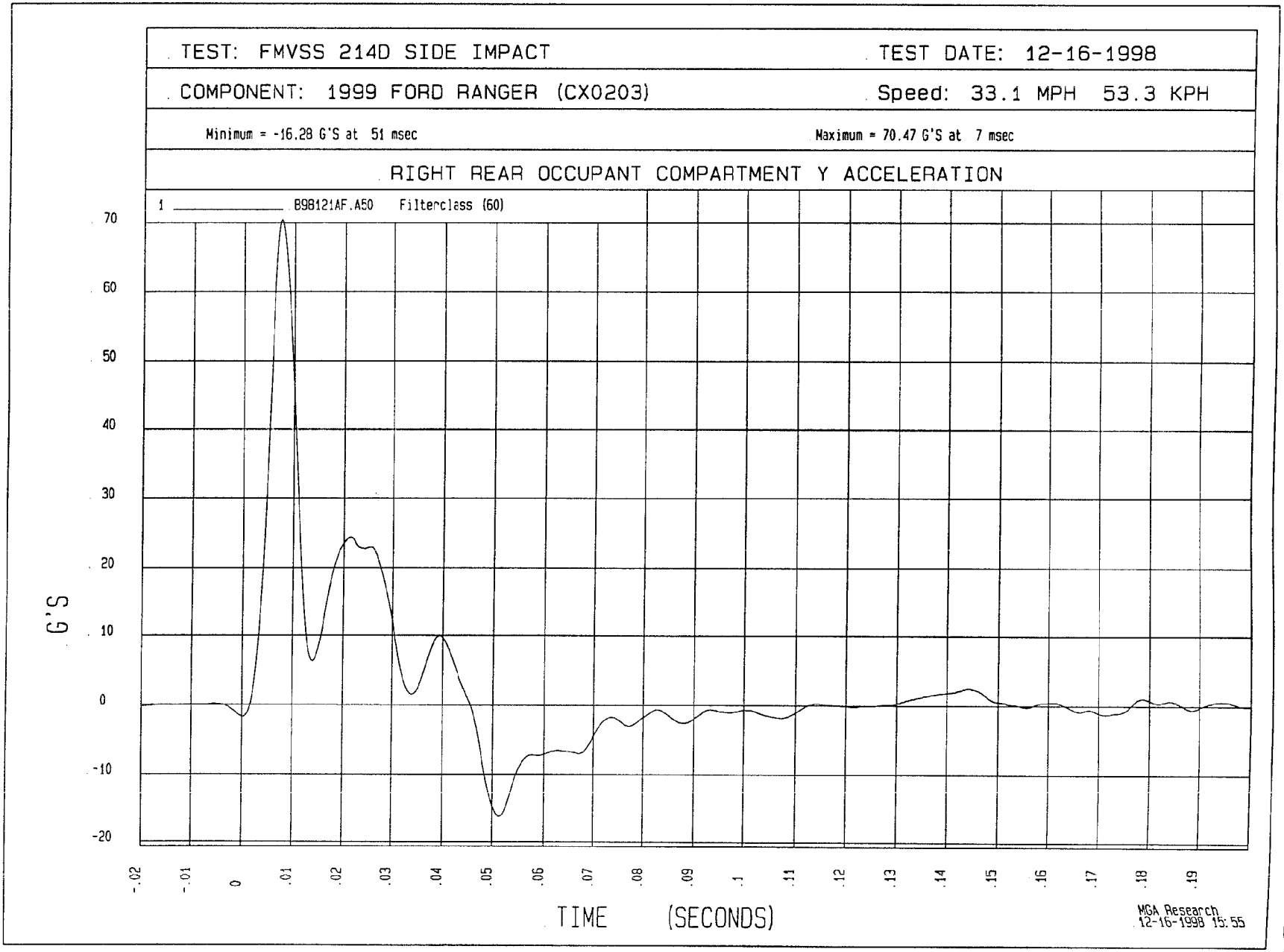
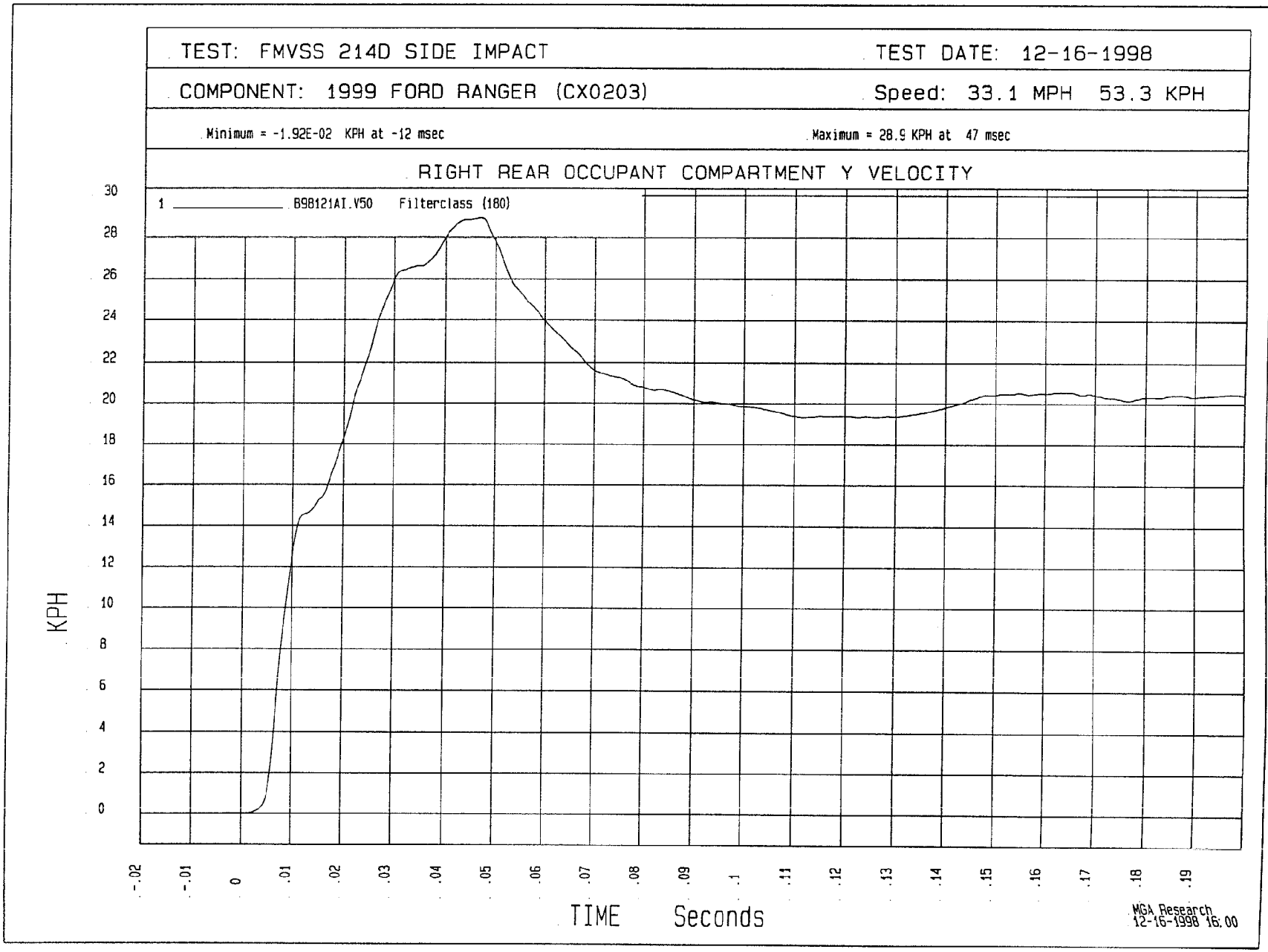
MGA Research
12-16-1998 15:59


TEST: FMVSS 214D SIDE IMPACT
TEST DATE: 12-16-1998
COMPONENT: 1999 FORD RANGER (CX0203)
Speed: 33.1 MPH 53.3 KPH
Minimum = -32.04 G'S at 13 msec
Maximum = 140.76 G'S at 7 msec
LEFT SIDE SILL AT REAR SEAT Y ACCELERATION
1 B98121AF.A39 Filterclass (60)
Data not valid after approx. 31 msec.
G'S
TIME (SECONDS)
MGA Research 12-16-1998 16:11


TEST: FMVSS 214D SIDE IMPACT
TEST DATE: 12-16-1998
COMPONENT: 1999 FORD RANGER (CX0203)
Speed: 33.1 MPH 53.3 KPH
Minimum = -1.22 KPH at 5 msec
Maximum = 42.58 KPH at 31 msec
LEFT SIDE SILL AT REAR SEAT Y VELOCITY
1 B98121AI.V39 Filterclass (180)
Data not valid after approx. 31 msec.
KPH
40
30
20
10
0
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
.13
.14
.15
.16
.17
.18
.19
TIME Seconds
MGA Research
12-16-1998 16:11


TEST: FMVSS 214D SIDE IMPACT
TEST DATE: 12-16-1998
COMPONENT: 1999 FORD RANGER (CX0203)
Speed: 33.1 MPH 53.3 KPH
Minimum = -16.28 G'S at 51 msec
Maximum = 70.47 G'S at 7 msec
RIGHT REAR OCCUPANT COMPARTMENT Y ACCELERATION
1 B98121AF.A50 Filterclass (60)
70
60
50
40
30
20
10
0
-10
-20
G'S
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
.13
.14
.15
.16
.17
.18
.19
TIME (SECONDS)
MGA Research
12-16-1998 15:55


TEST: FMVSS 214D SIDE IMPACT
TEST DATE: 12-16-1998
COMPONENT: 1999 FORD RANGER (CX0203)
Speed: 33.1 MPH 53.3 KPH
Minimum = -1.92E-02 KPH at -12 msec
Maximum = 28.9 KPH at 47 msec
RIGHT REAR OCCUPANT COMPARTMENT Y VELOCITY
1 B98121AI.V50 Filterclass (180)
KPH
30
28
26
24
22
20
18
16
14
12
10
8
6
4
2
0
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
.13
.14
.15
.16
.17
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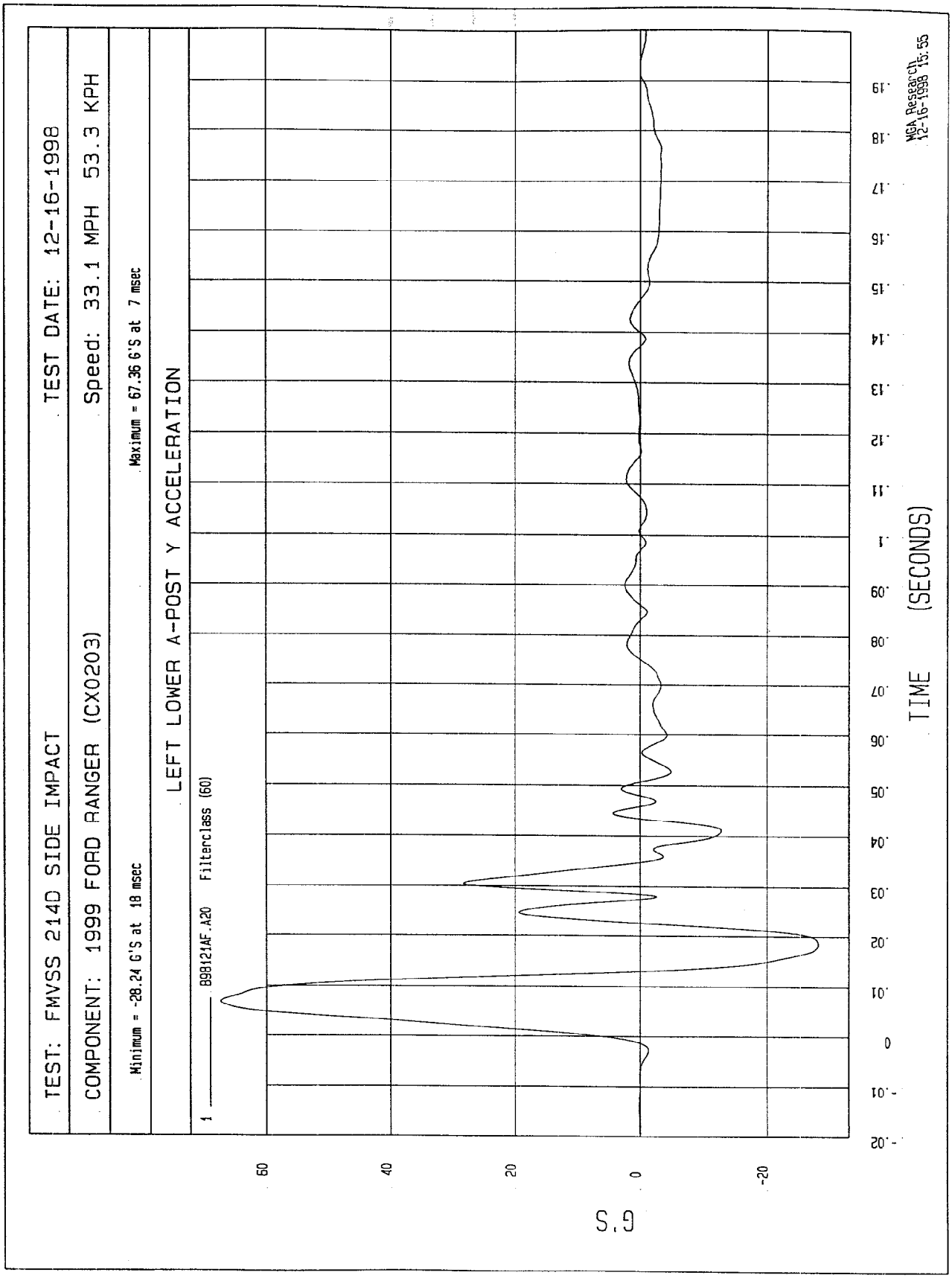
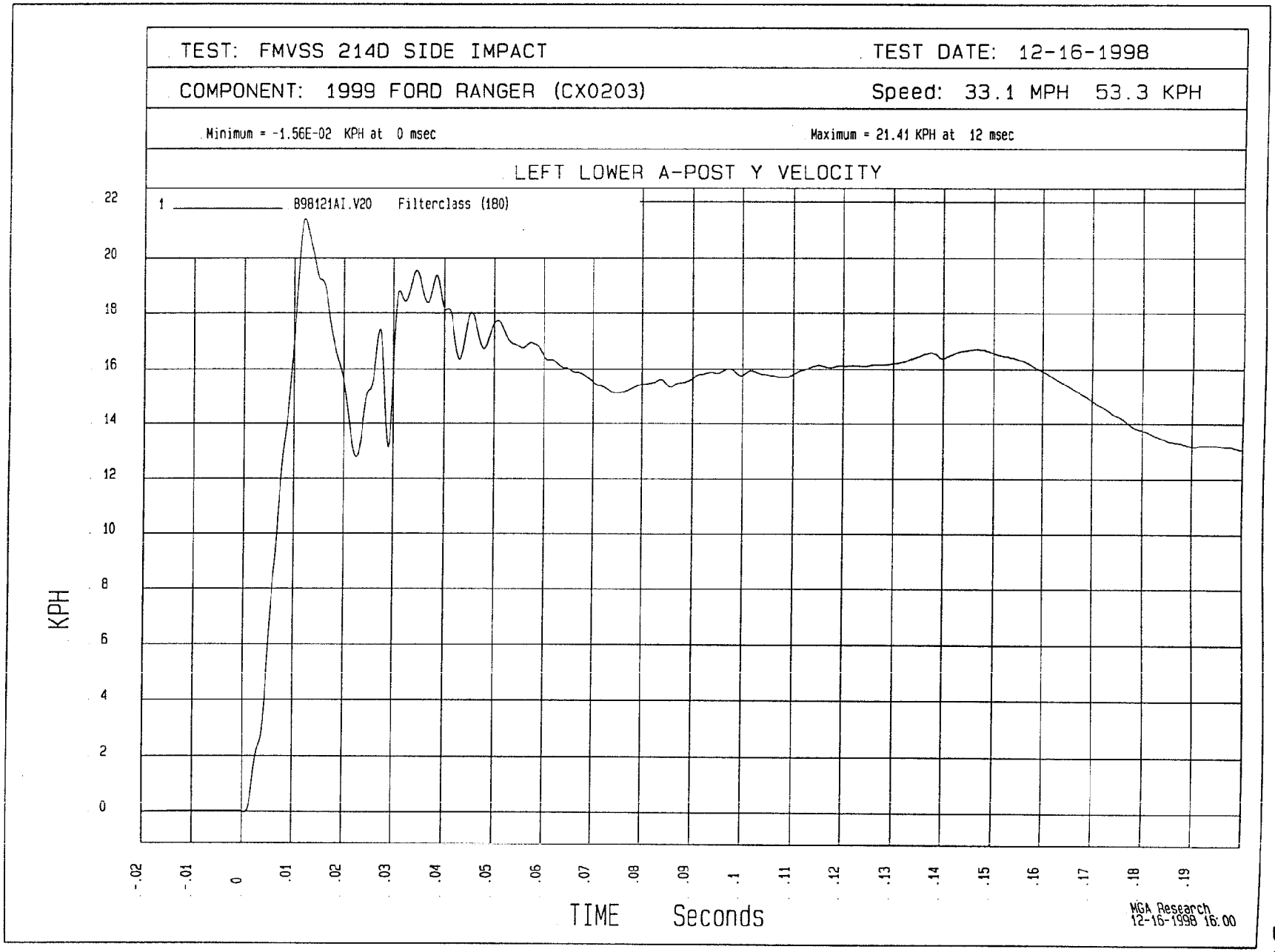
.19
TIME Seconds
MGA Research
12-16-1998 16:00


TEST: FMVSS 214D SIDE IMPACT
TEST DATE: 12-16-1998
COMPONENT: 1999 FORD RANGER (CX0203)
Speed: 33.1 MPH 53.3 KPH
Minimum = -28.24 G'S at 18 msec
Maximum = 67.36 G'S at 7 msec
LEFT LOWER A-POST Y ACCELERATION
1 _____ B98121AF.A20 Filterclass (60)
MGA Research
12-16-1998 15:55
60
40
20
0
-20
G'S
.19
.18
.17
.16
.15
.14
.13
.12
.11
.1
.09
.08
.07
.06
.05
.04
.03
.02
.01
0
-.01
-.02
TIME (SECONDS)


TEST: FMVSS 214D SIDE IMPACT
TEST DATE: 12-16-1998
COMPONENT: 1999 FORD RANGER (CX0203)
Speed: 33.1 MPH 53.3 KPH
Minimum = -1.56E-02 KPH at 0 msec
Maximum = 21.41 KPH at 12 msec
LEFT LOWER A-POST Y VELOCITY
1 B98121AI.V20 Filterclass (180)
KPH
22
20
18
16
14
12
10
8
6
4
2
0
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
.13
.14
.15
.16
.17
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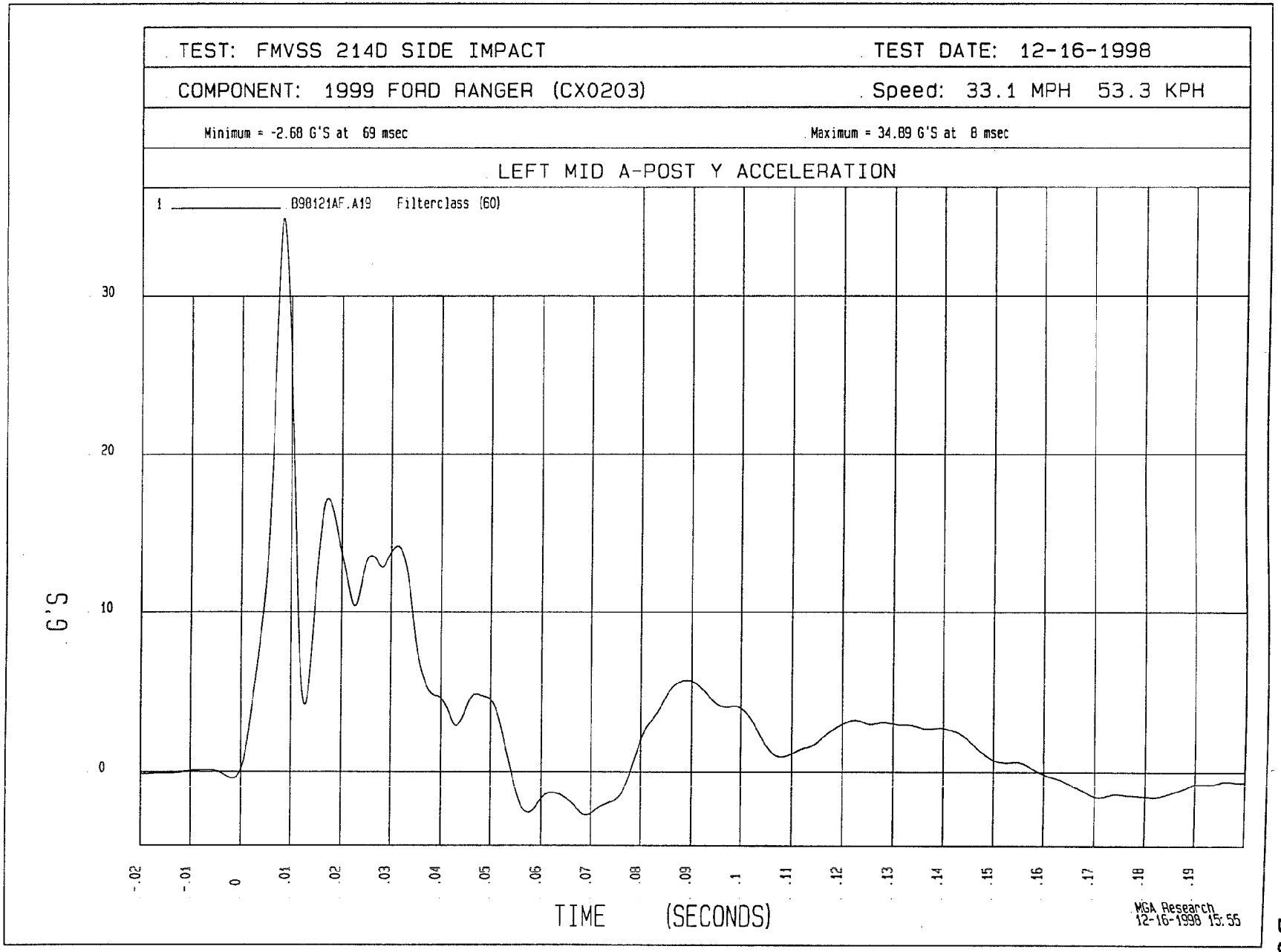
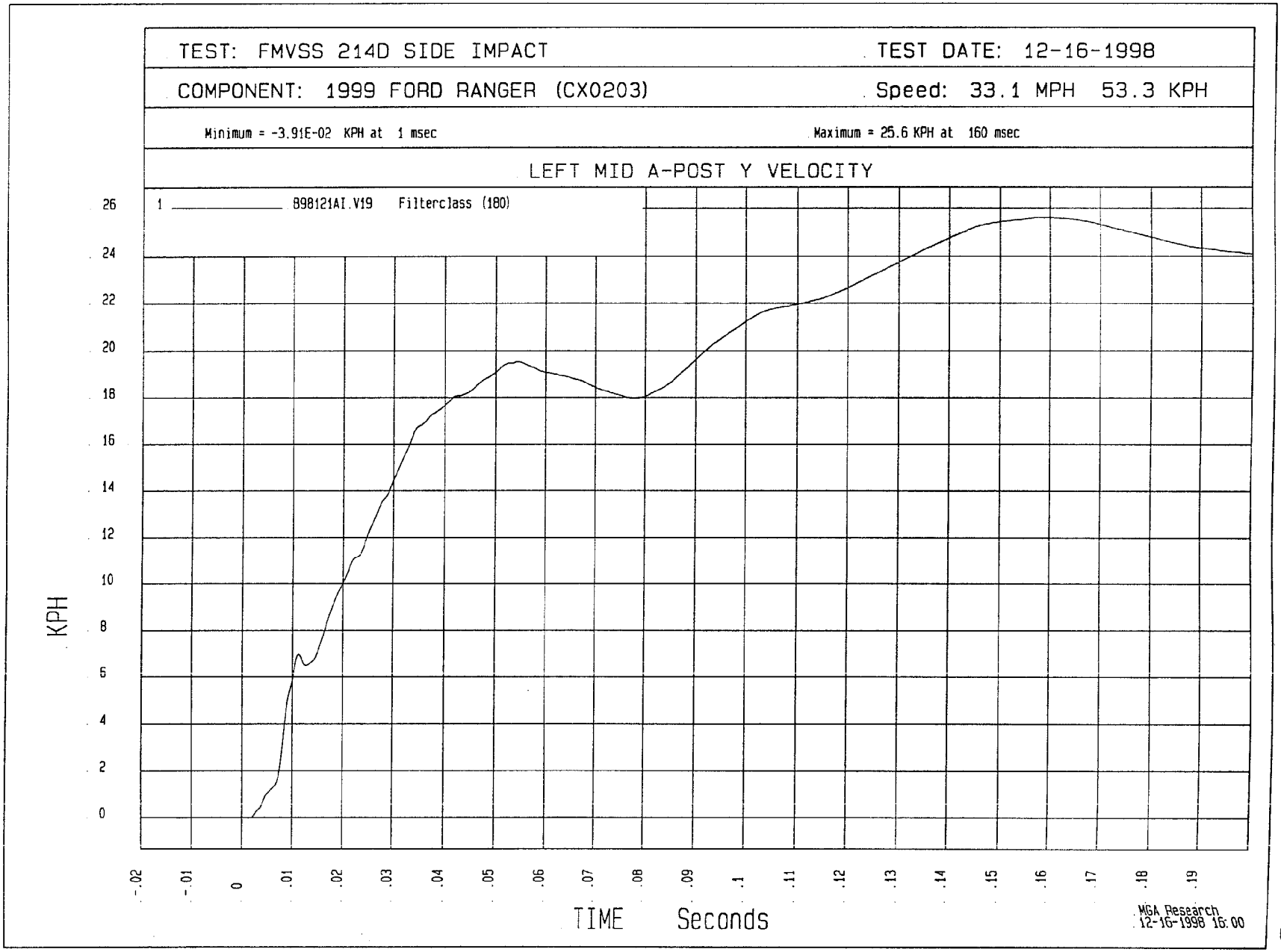
.19
TIME Seconds
MGA Research
12-16-1998 16:00


TEST: FMVSS 214D SIDE IMPACT
TEST DATE: 12-16-1998
COMPONENT: 1999 FORD RANGER (CX0203)
Speed: 33.1 MPH 53.3 KPH
Minimum = -2.68 G'S at 69 msec
Maximum = 34.89 G'S at 8 msec
LEFT MID A-POST Y ACCELERATION
1 B98121AF.A19 Filterclass (60)
G'S
30
20
10
0
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
.13
.14
.15
.16
.17
.18
.19
TIME (SECONDS)
MGA Research
12-16-1998 15:55


TEST: FMVSS 214D SIDE IMPACT
TEST DATE: 12-16-1998
COMPONENT: 1999 FORD RANGER (CX0203)
Speed: 33.1 MPH 53.3 KPH
Minimum = -3.91E-02 KPH at 1 msec
Maximum = 25.6 KPH at 160 msec
LEFT MID A-POST Y VELOCITY
1 898121AI.V19 Filterclass (180)
KPH
26
24
22
20
18
16
14
12
10
8
6
4
2
0
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
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.13
.14
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.16
.17
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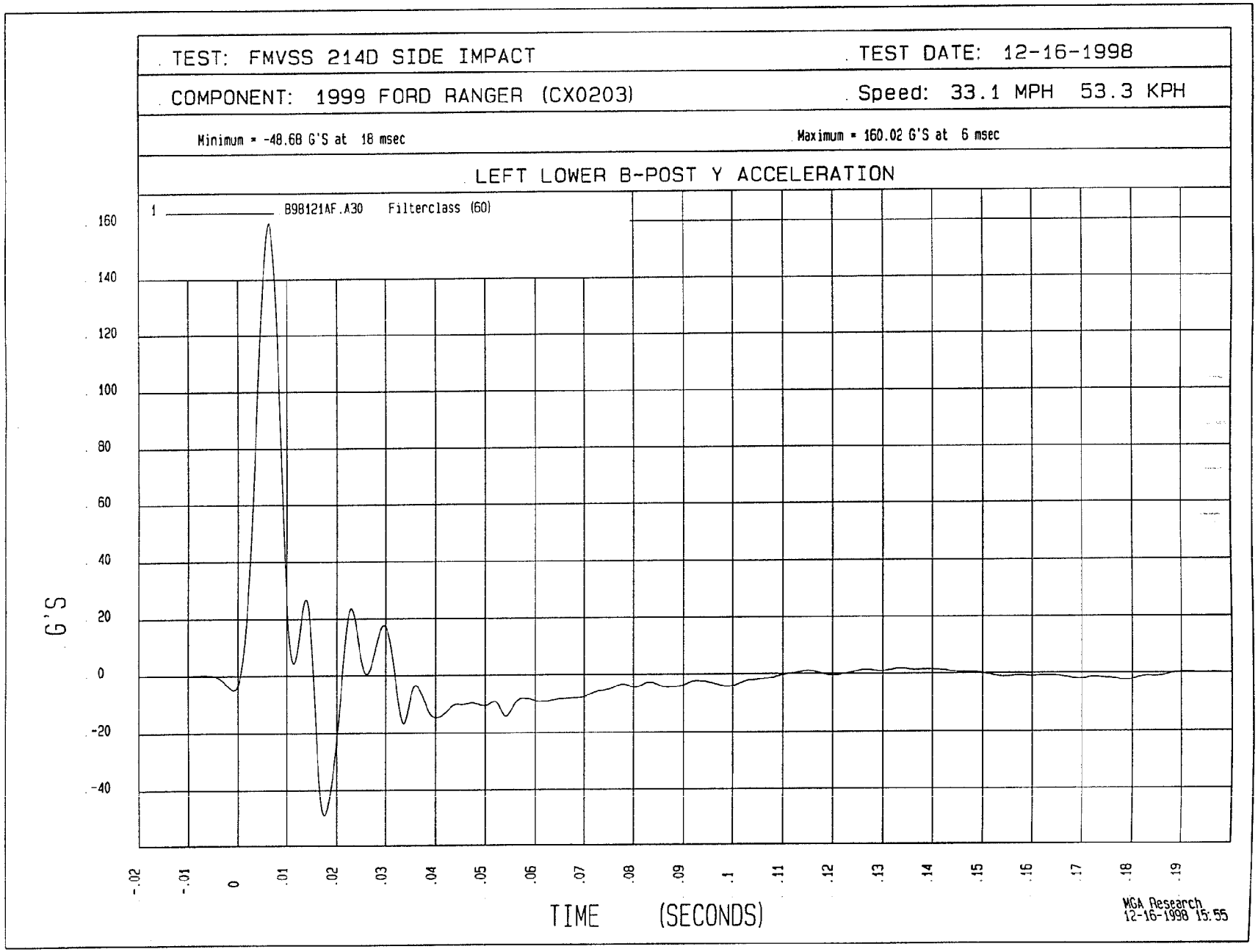
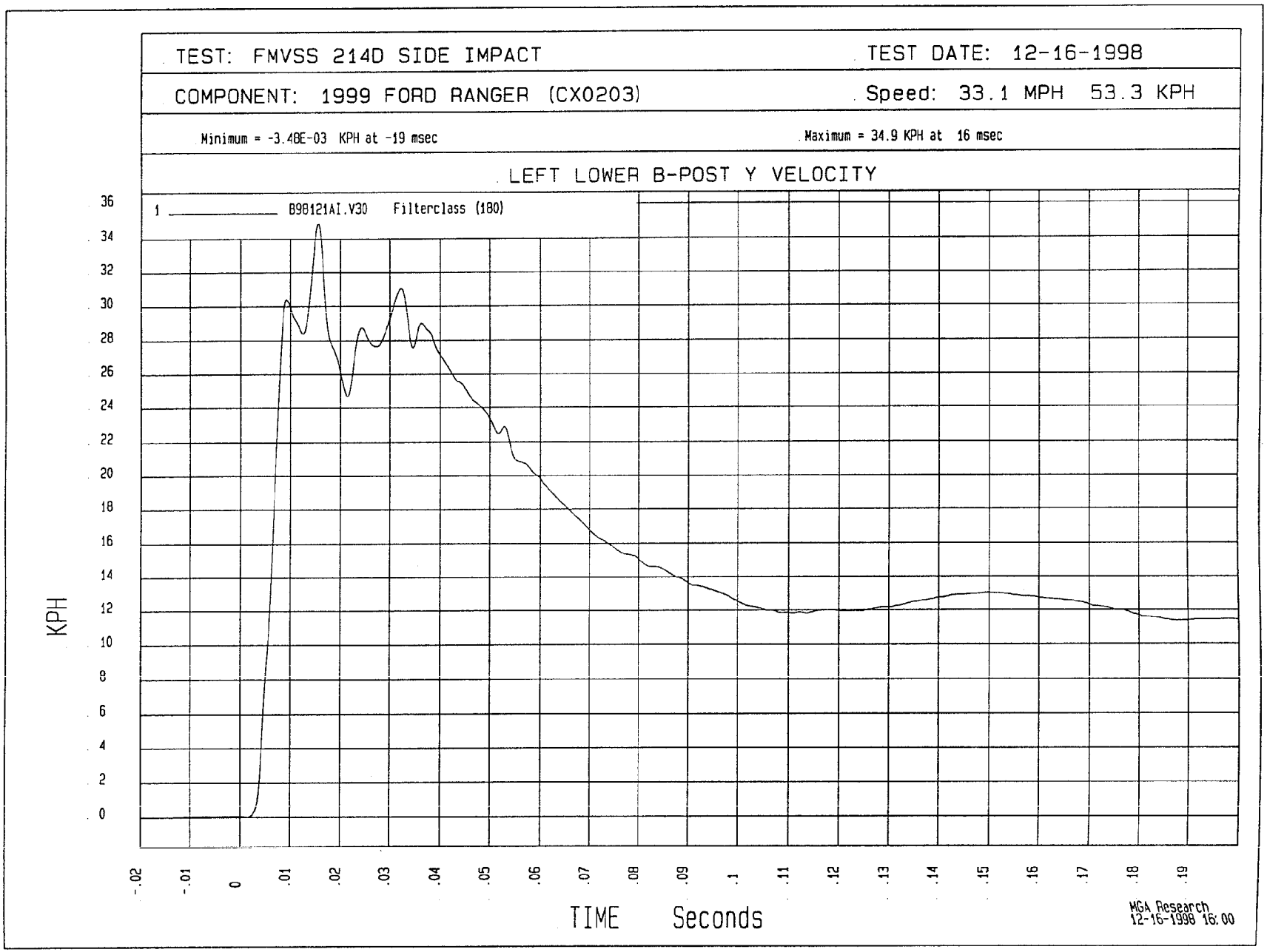
TIME Seconds
MGA Research
12-16-1998 16:00


TEST: FMVSS 214D SIDE IMPACT
TEST DATE: 12-16-1998
COMPONENT: 1999 FORD RANGER (CX0203)
Speed: 33.1 MPH 53.3 KPH
Minimum = -48.68 G'S at 18 msec
Maximum = 160.02 G'S at 6 msec
LEFT LOWER B-POST Y ACCELERATION
1 B98121AF.A30 Filterclass (60)
160
140
120
100
80
60
40
20
0
-20
-40
G'S
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
.13
.14
.15
.16
.17
.18
.19
TIME (SECONDS)
MGA Research
12-16-1998 15:55


TEST: FMVSS 214D SIDE IMPACT
TEST DATE: 12-16-1998
COMPONENT: 1999 FORD RANGER (CX0203)
Speed: 33.1 MPH 53.3 KPH
Minimum = -3.48E-03 KPH at -19 msec
Maximum = 34.9 KPH at 16 msec
LEFT LOWER B-POST Y VELOCITY
1 B98121AI.V30 Filterclass (180)
KPH
36
34
32
30
28
26
24
22
20
18
16
14
12
10
8
6
4
2
0
-.02
-.01
0
.01
.02
.03
.04
.05
.06
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.09
.1
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.12
.13
.14
.15
.16
.17
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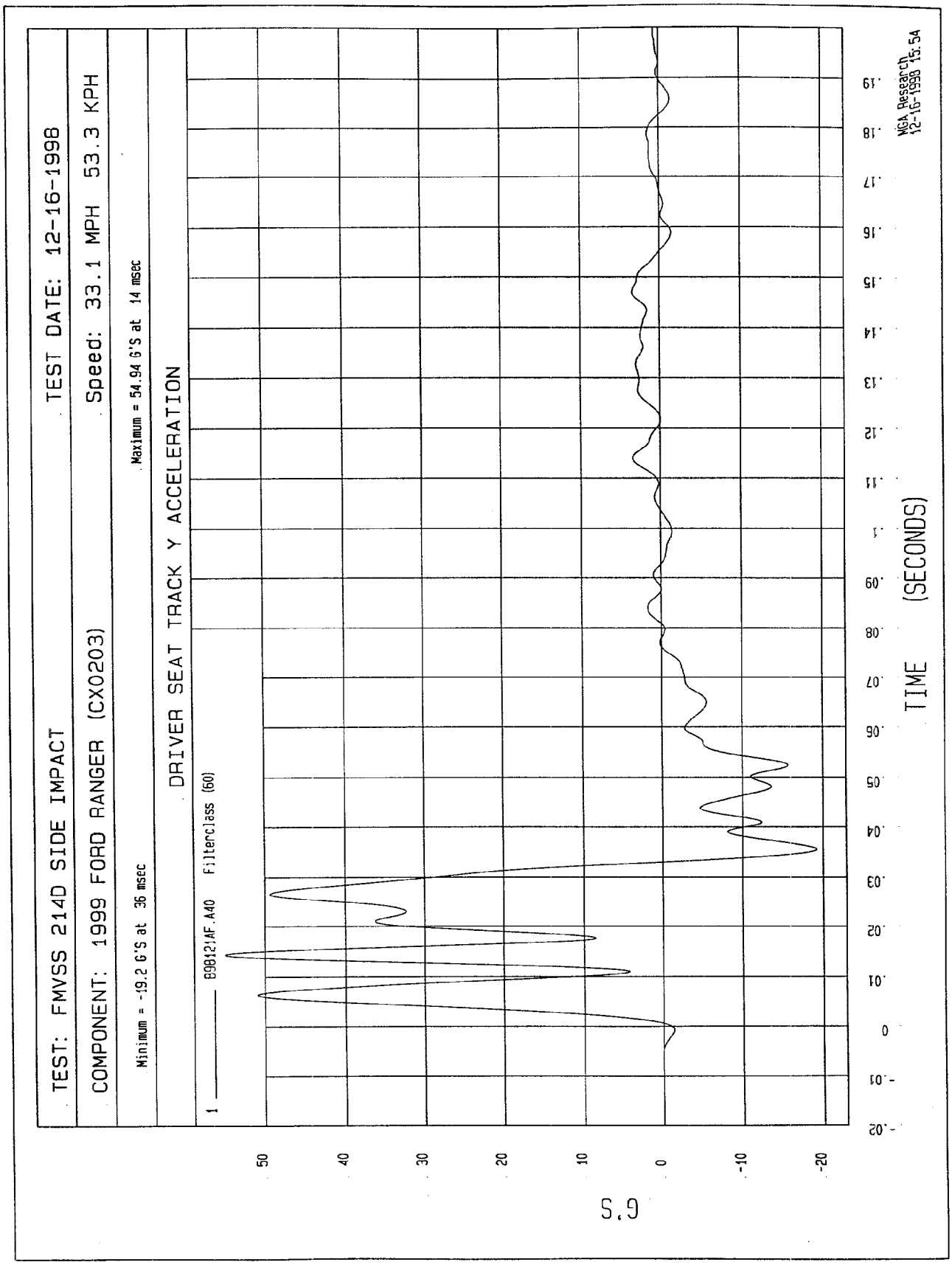
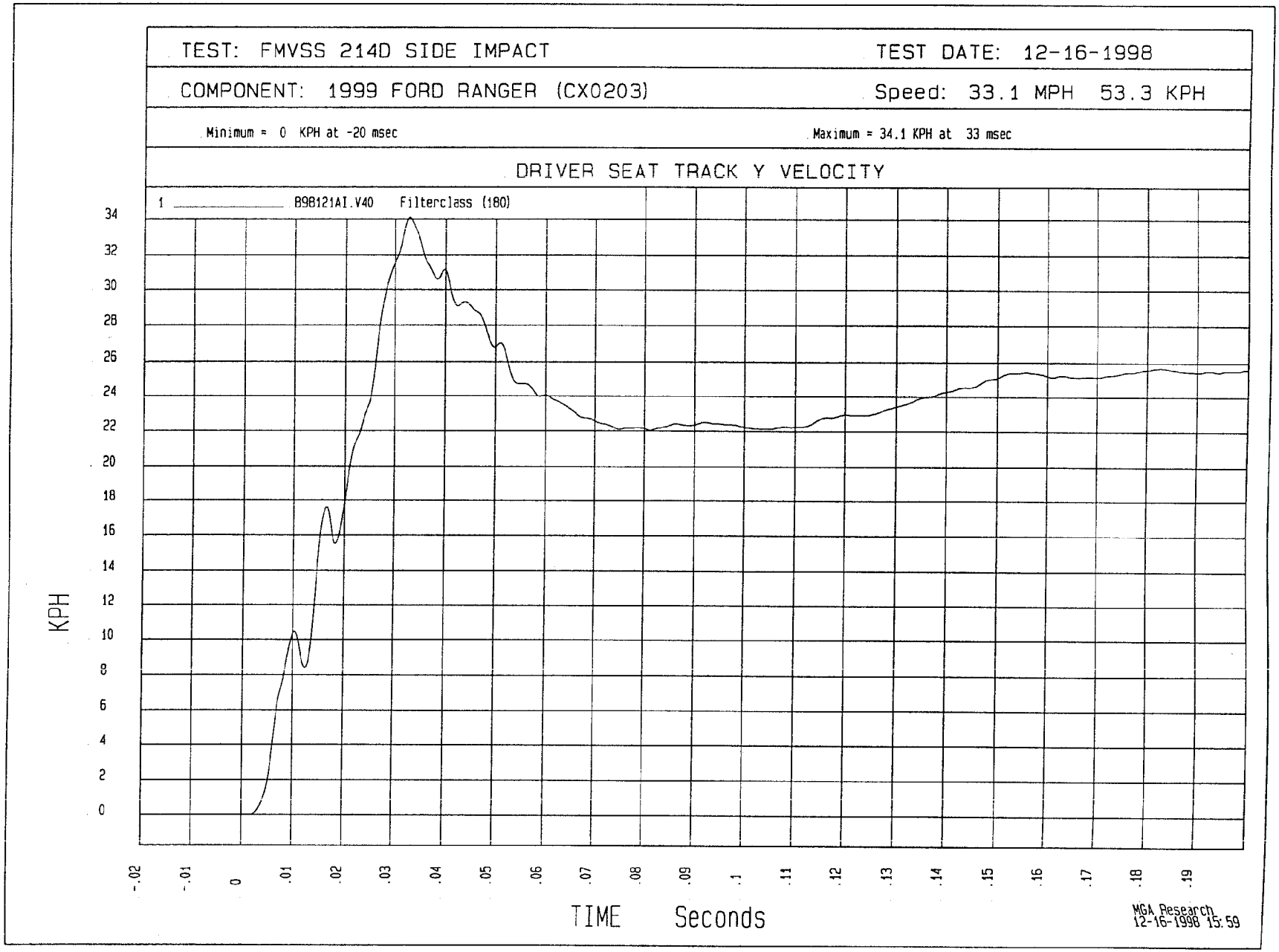
.19
TIME Seconds
MGA Research
12-16-1998 16:00


TEST: FMVSS 214D SIDE IMPACT
TEST DATE: 12-16-1998
COMPONENT: 1999 FORD RANGER (CX0203)
Speed: 33.1 MPH 53.3 KPH
Minimum = -19.2 G'S at 36 msec
Maximum = 54.94 G'S at 14 msec
DRIVER SEAT TRACK Y ACCELERATION
1 B9812IAF.A40 Filterclass (60)
MGA Research
12-16-1998 15:54
50
40
30
20
10
0
-10
-20
G'S
.19
.18
.17
.16
.15
.14
.13
.12
.11
.1
.09
.08
.07
.06
.05
.04
.03
.02
.01
0
-.01
-.02
TIME (SECONDS)


TEST: FMVSS 214D SIDE IMPACT
TEST DATE: 12-16-1998
COMPONENT: 1999 FORD RANGER (CX0203)
Speed: 33.1 MPH 53.3 KPH
Minimum = 0 KPH at -20 msec
Maximum = 34.1 KPH at 33 msec
DRIVER SEAT TRACK Y VELOCITY
1 B98121AI.V40 Filterclass (180)
KPH
34
32
30
28
26
24
22
20
18
16
14
12
10
8
6
4
2
0
-.02
-.01
0
.01
.02
.03
.04
.05
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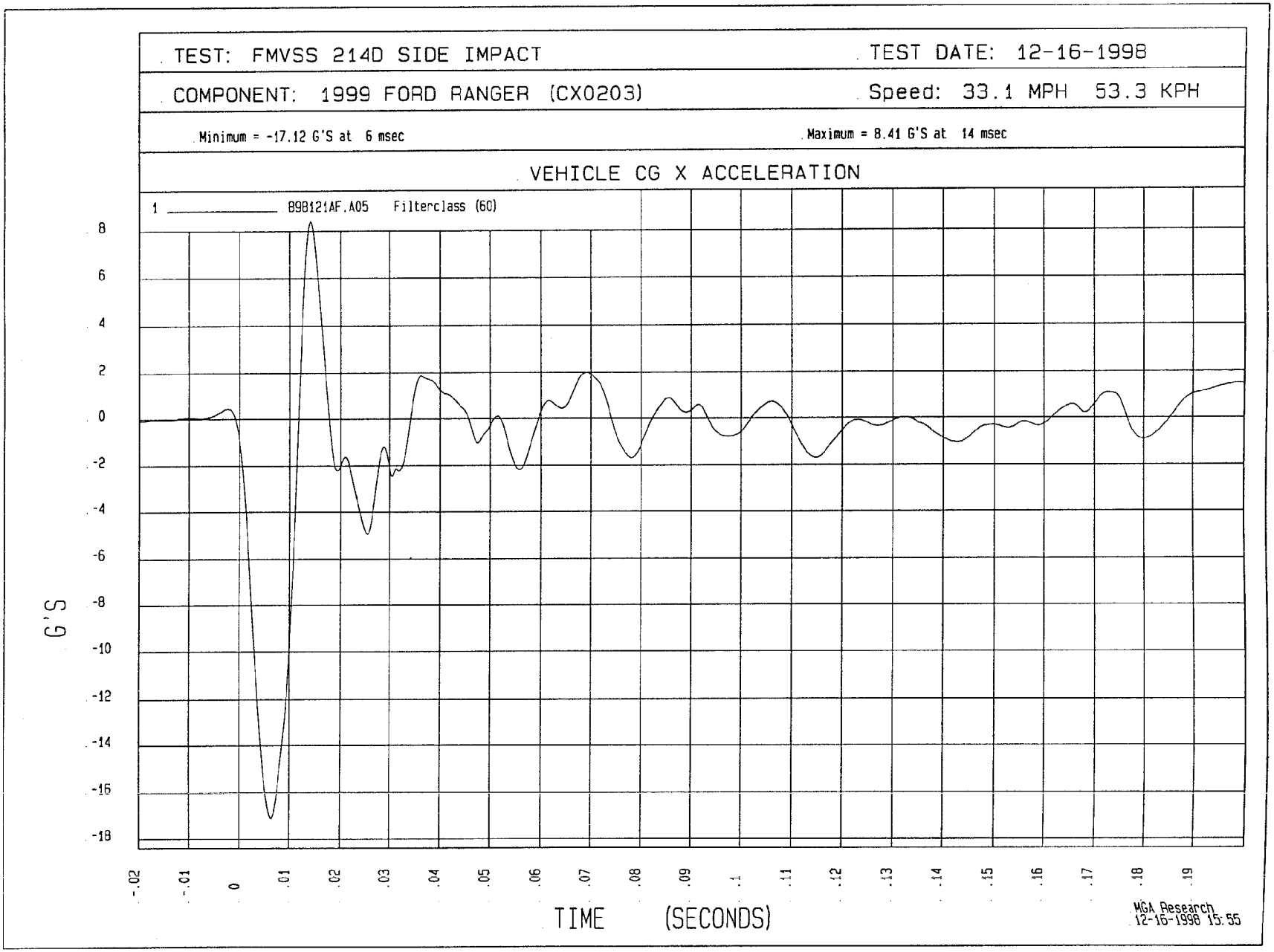
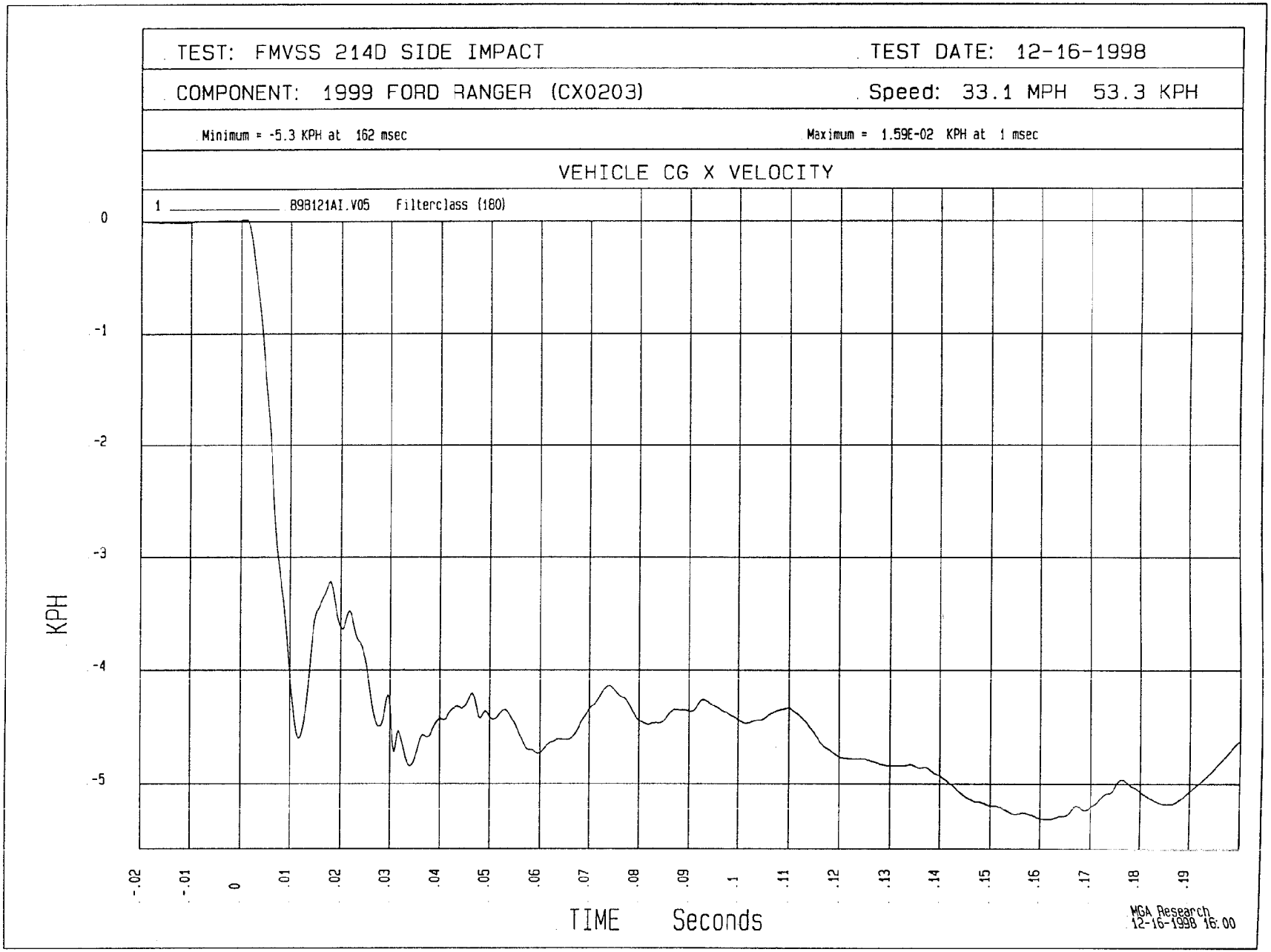
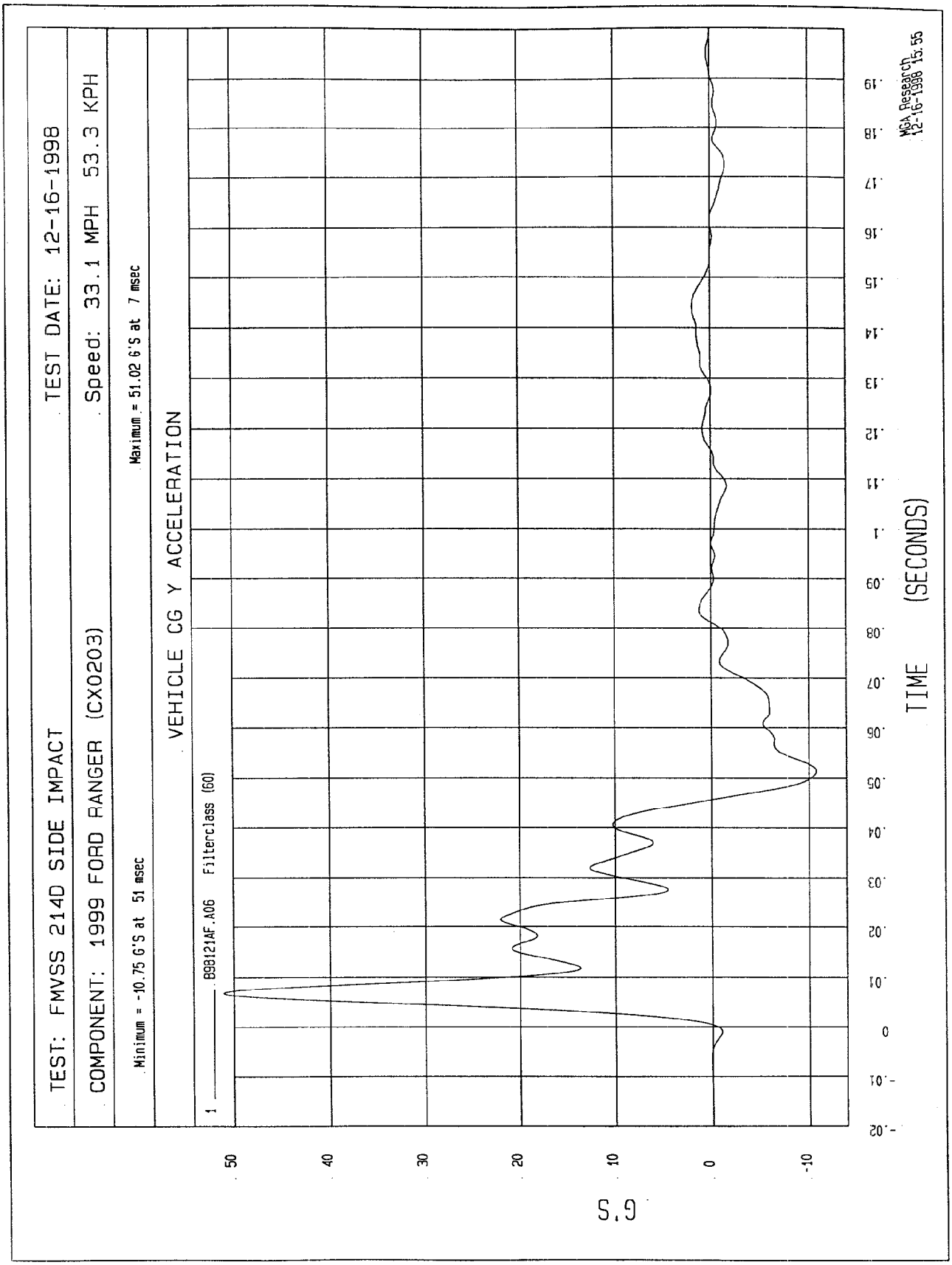
.16
.17
.18
.19
TIME Seconds
MGA Research
12-16-1998 15:59


TEST: FMVSS 214D SIDE IMPACT
TEST DATE: 12-16-1998
COMPONENT: 1999 FORD RANGER (CX0203)
Speed: 33.1 MPH 53.3 KPH
Minimum = -17.12 G'S at 6 msec
Maximum = 8.41 G'S at 14 msec
VEHICLE CG X ACCELERATION
1 B98121AF.A05 Filterclass (60)
8
6
4
2
0
-2
-4
-6
-8
-10
-12
-14
-16
-18
G'S
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
.13
.14
.15
.16
.17
.18
.19
TIME (SECONDS)
MGA Research
12-16-1998 15:55


TEST: FMVSS 214D SIDE IMPACT
TEST DATE: 12-16-1998
COMPONENT: 1999 FORD RANGER (CX0203)
Speed: 33.1 MPH 53.3 KPH
Minimum = -5.3 KPH at 162 msec
Maximum = 1.59E-02 KPH at 1 msec
VEHICLE CG X VELOCITY
1 B98121AI.V05 Filterclass (180)
0
-1
-2
-3
-4
-5
KPH
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
.13
.14
.15
.16
.17
.18
.19
TIME Seconds
MGA Research
12-16-1998 16:00


TEST: FMVSS 214D SIDE IMPACT
TEST DATE: 12-16-1998
COMPONENT: 1999 FORD RANGER (CX0203)
Speed: 33.1 MPH 53.3 KPH
Minimum = -10.75 G'S at 51 msec
Maximum = 51.02 G'S at 7 msec
VEHICLE CG Y ACCELERATION
1 B981121AF.A06 Filterclass (60)
MGA Research
12-16-1998 15:55
50
40
30
20
10
0
-10
.02
.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
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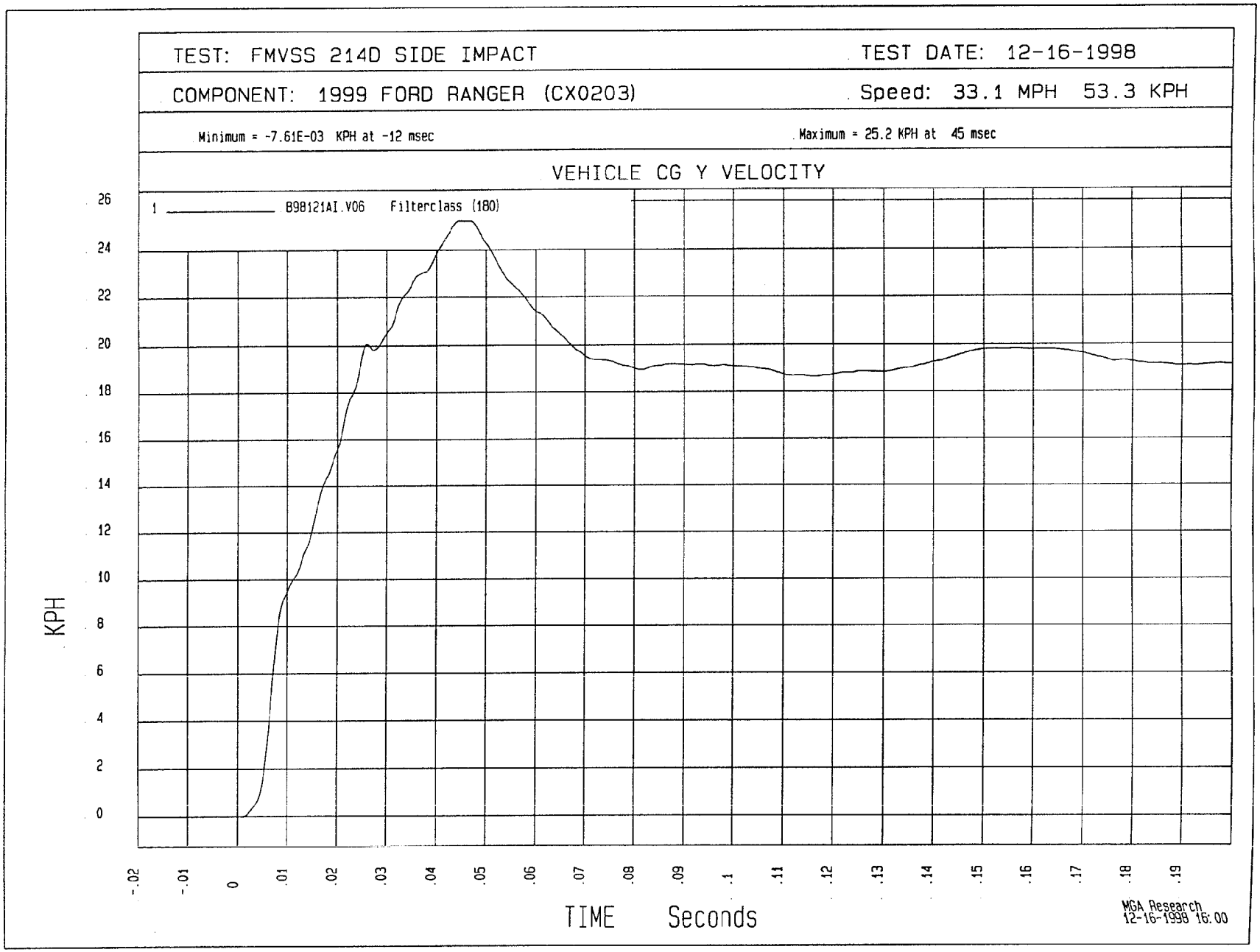
.15
.16
.17
.18
.19
TIME (SECONDS)
G'S


TEST: FMVSS 214D SIDE IMPACT
TEST DATE: 12-16-1998
COMPONENT: 1999 FORD RANGER (CX0203)
Speed: 33.1 MPH 53.3 KPH
Minimum = -7.61E-03 KPH at -12 msec
Maximum = 25.2 KPH at 45 msec
VEHICLE CG Y VELOCITY
1 B98121AI.V06 Filterclass (180)
KPH
26
24
22
20
18
16
14
12
10
8
6
4
2
0
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
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.12
.13
.14
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.16
.17
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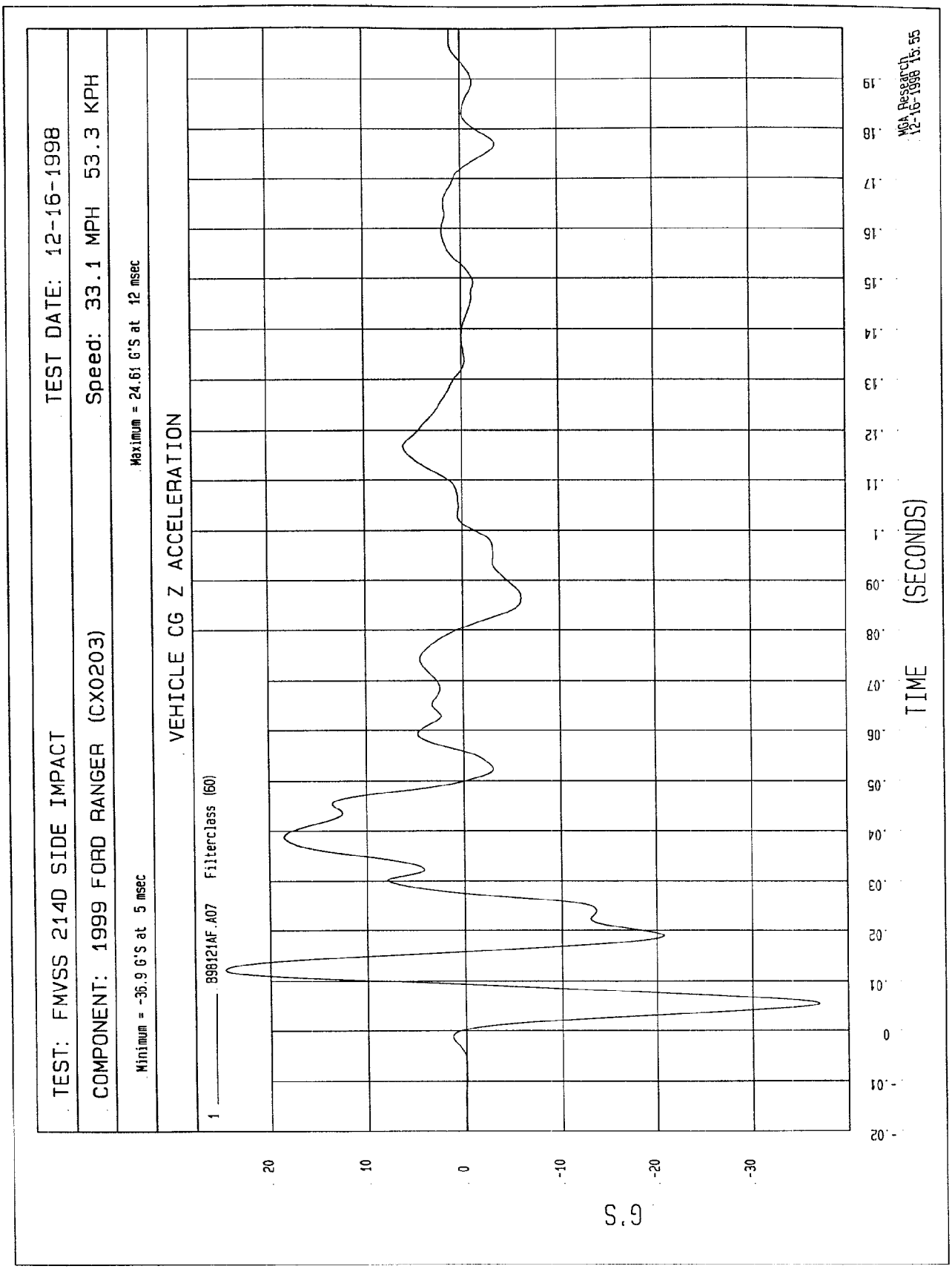
.19
TIME Seconds
MGA Research
12-16-1998 16:00


TEST: FMVSS 214D SIDE IMPACT
TEST DATE: 12-16-1998
COMPONENT: 1999 FORD RANGER (CX0203)
Speed: 33.1 MPH 53.3 KPH
Minimum = -36.9 G'S at 5 msec
Maximum = 24.61 G'S at 12 msec
VEHICLE CG Z ACCELERATION
1 _____ 898121AF.A07 Filterclass (60)
MGA Research
12-16-1998 15:55
G'S
TIME (SECONDS)
20
10
0
-10
-20
-30
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
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.12
.13
.14
.15
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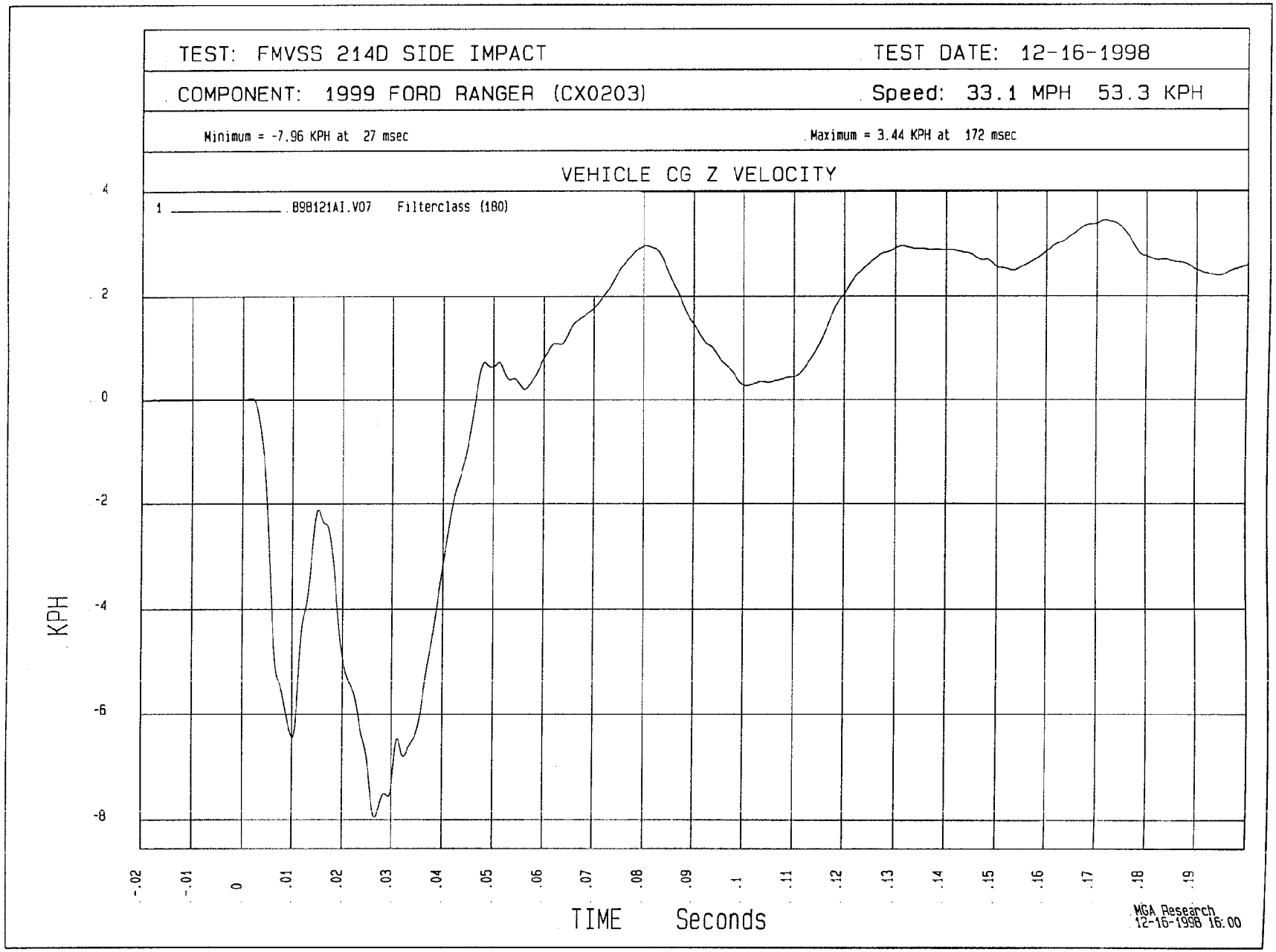
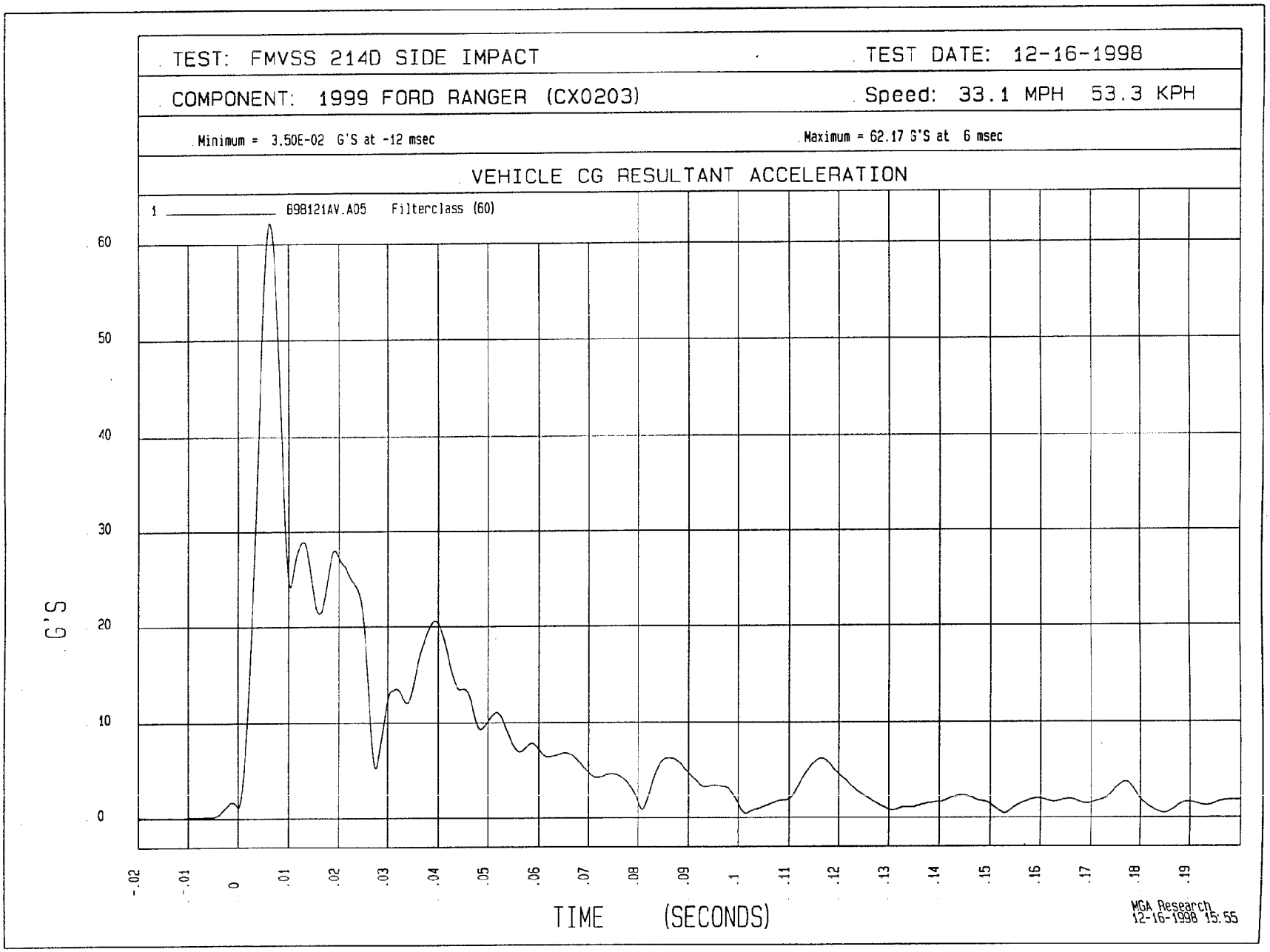

TEST: FMVSS 214D SIDE IMPACT
TEST DATE: 12-16-1998
COMPONENT: 1999 FORD RANGER (CX0203)
Speed: 33.1 MPH 53.3 KPH
Minimum = -7.96 KPH at 27 msec
Maximum = 3.44 KPH at 172 msec
VEHICLE CG Z VELOCITY
1 B98121AI.V07 Filterclass (180)
KPH
4
2
0
-2
-4
-6
-8
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
.13
.14
.15
.16
.17
.18
.19
TIME Seconds
MGA Research
12-16-1998 16:00


TEST: FMVSS 214D SIDE IMPACT
TEST DATE: 12-16-1998
COMPONENT: 1999 FORD RANGER (CX0203)
Speed: 33.1 MPH 53.3 KPH
Minimum = 3.50E-02 G'S at -12 msec
Maximum = 62.17 G'S at 6 msec
VEHICLE CG RESULTANT ACCELERATION
1 B98121AV.A05 Filterclass (60)
G'S
60
50
40
30
20
10
0
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
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.11
.12
.13
.14
.15
.16
.17
.18
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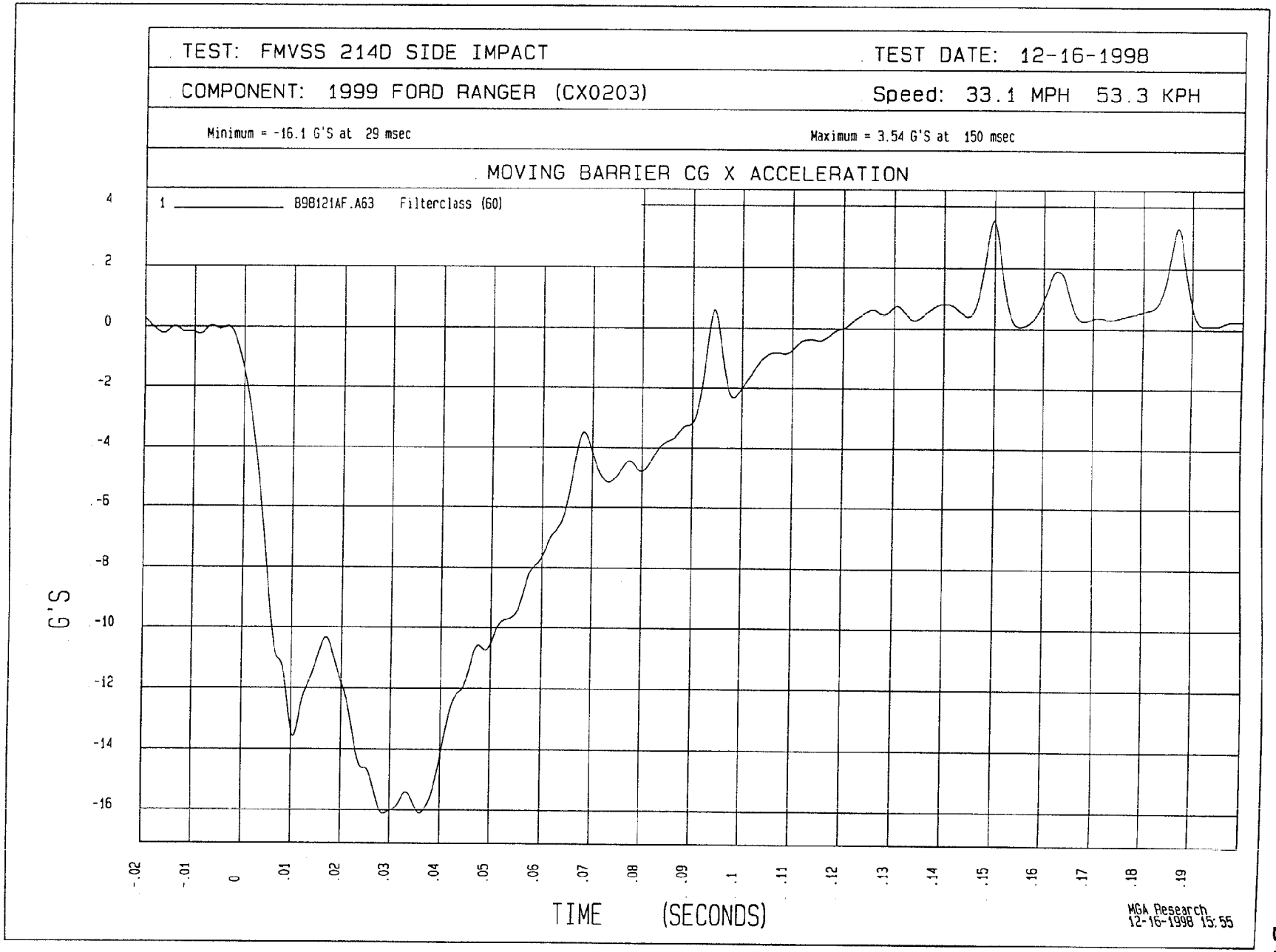
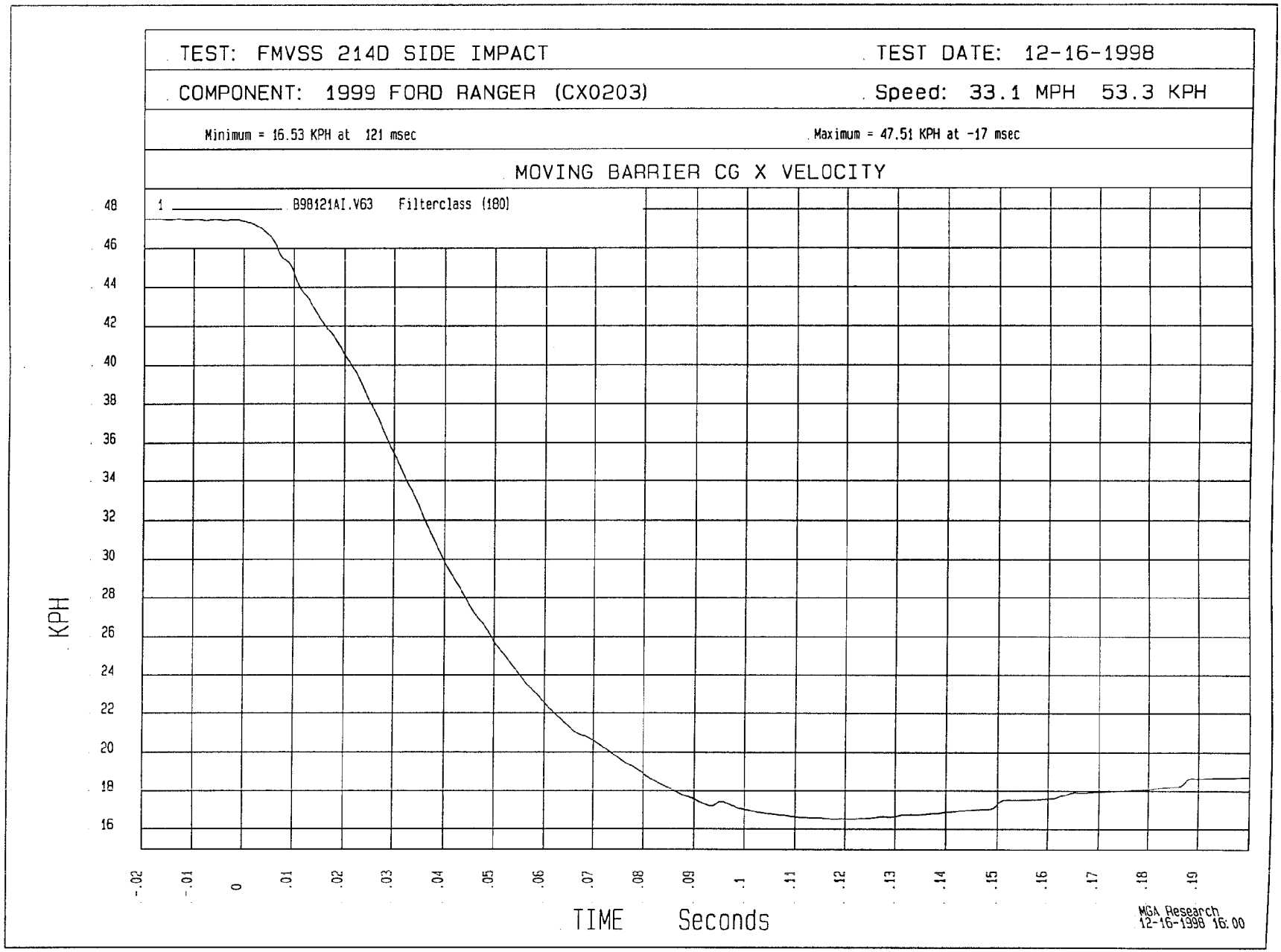
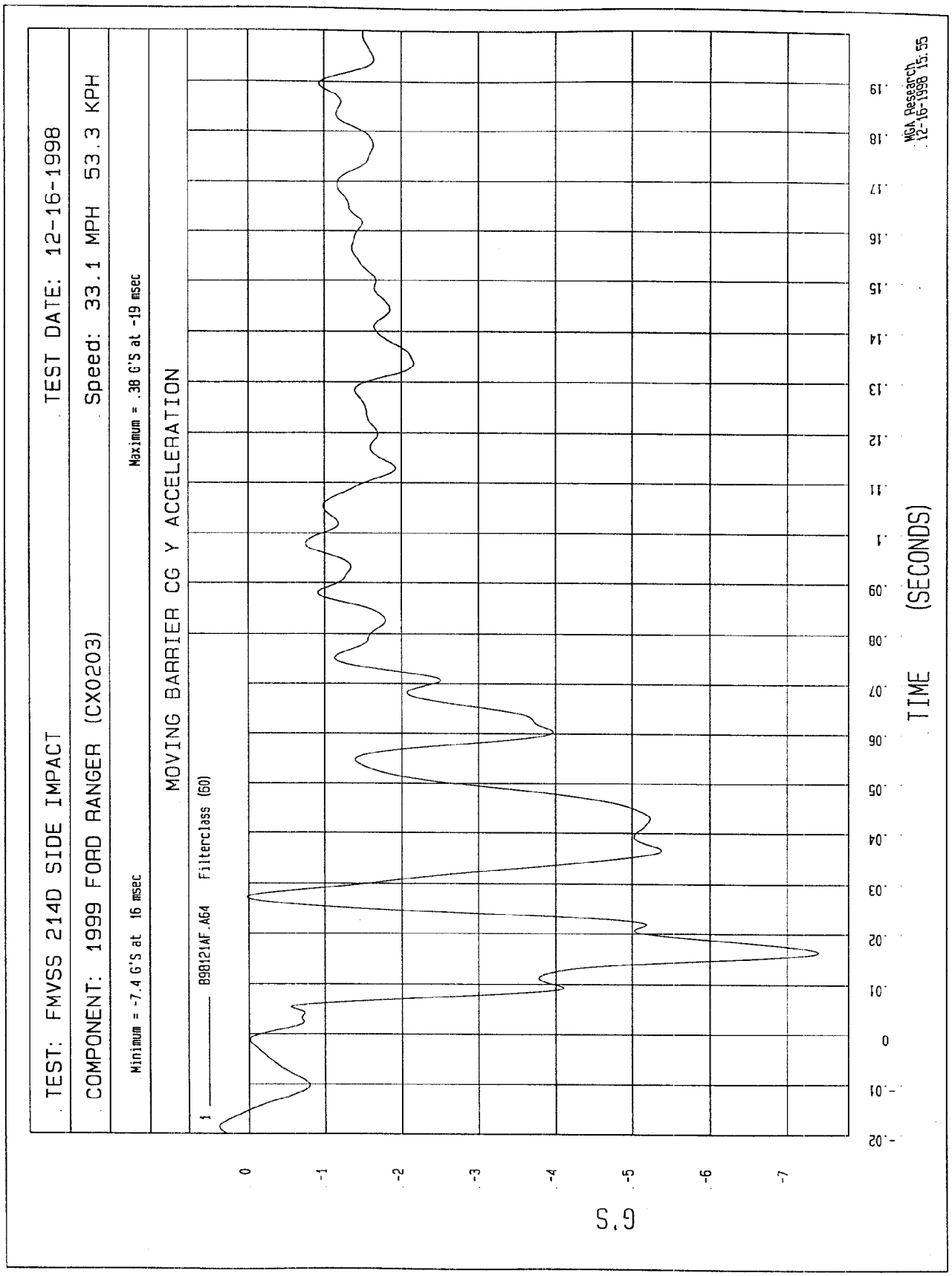
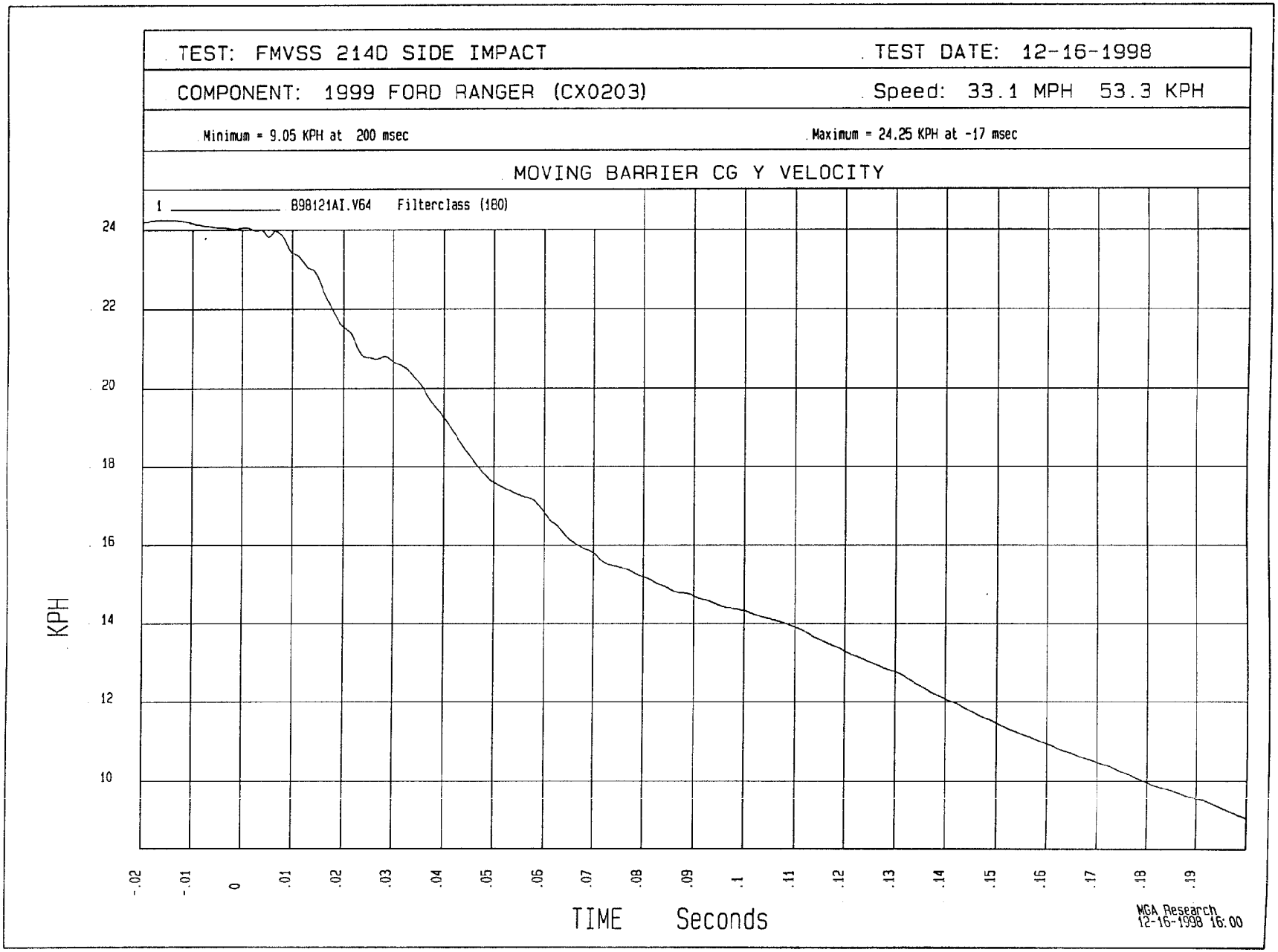
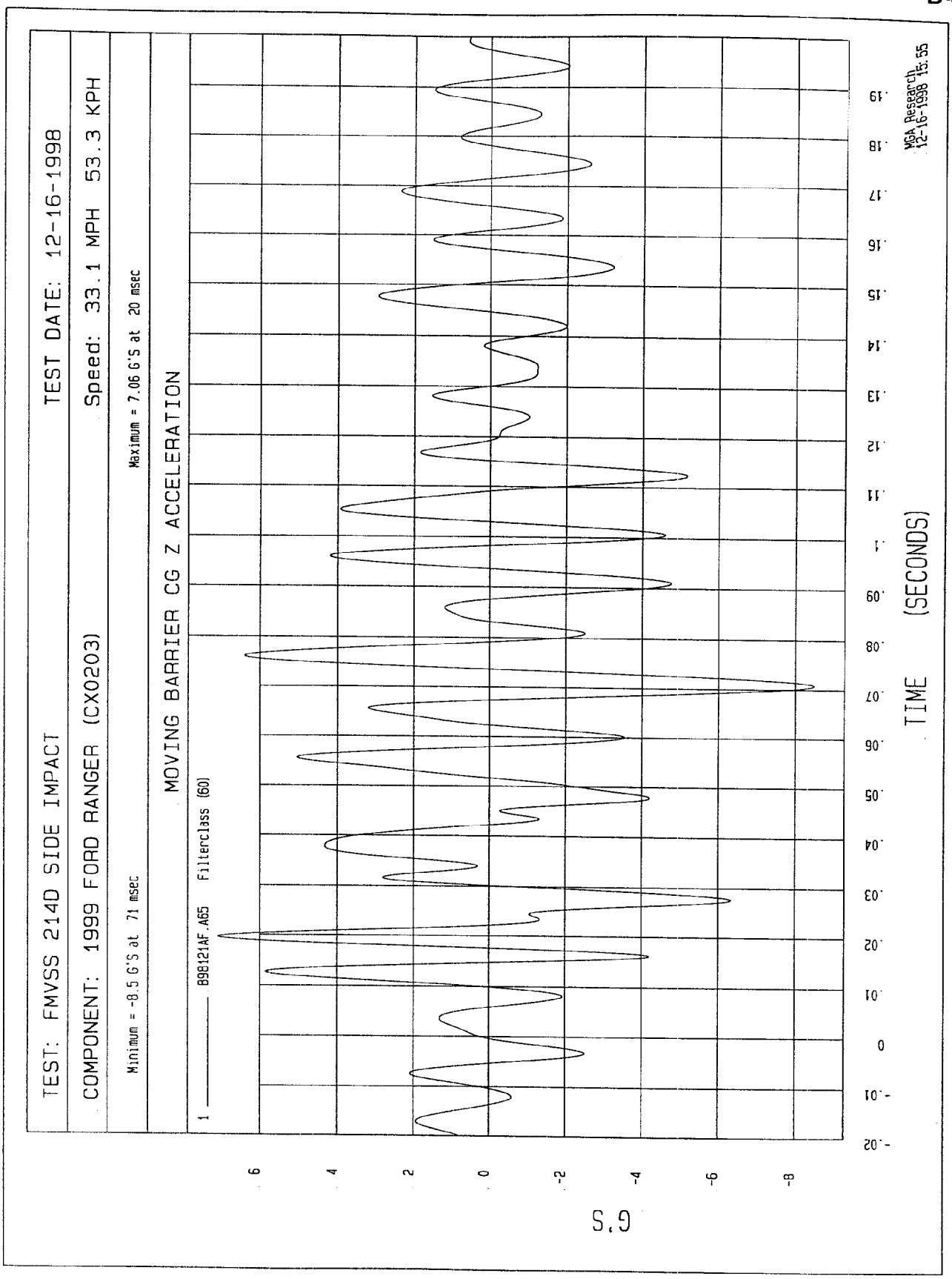
TIME (SECONDS)
MGA Research
12-16-1998 15:55

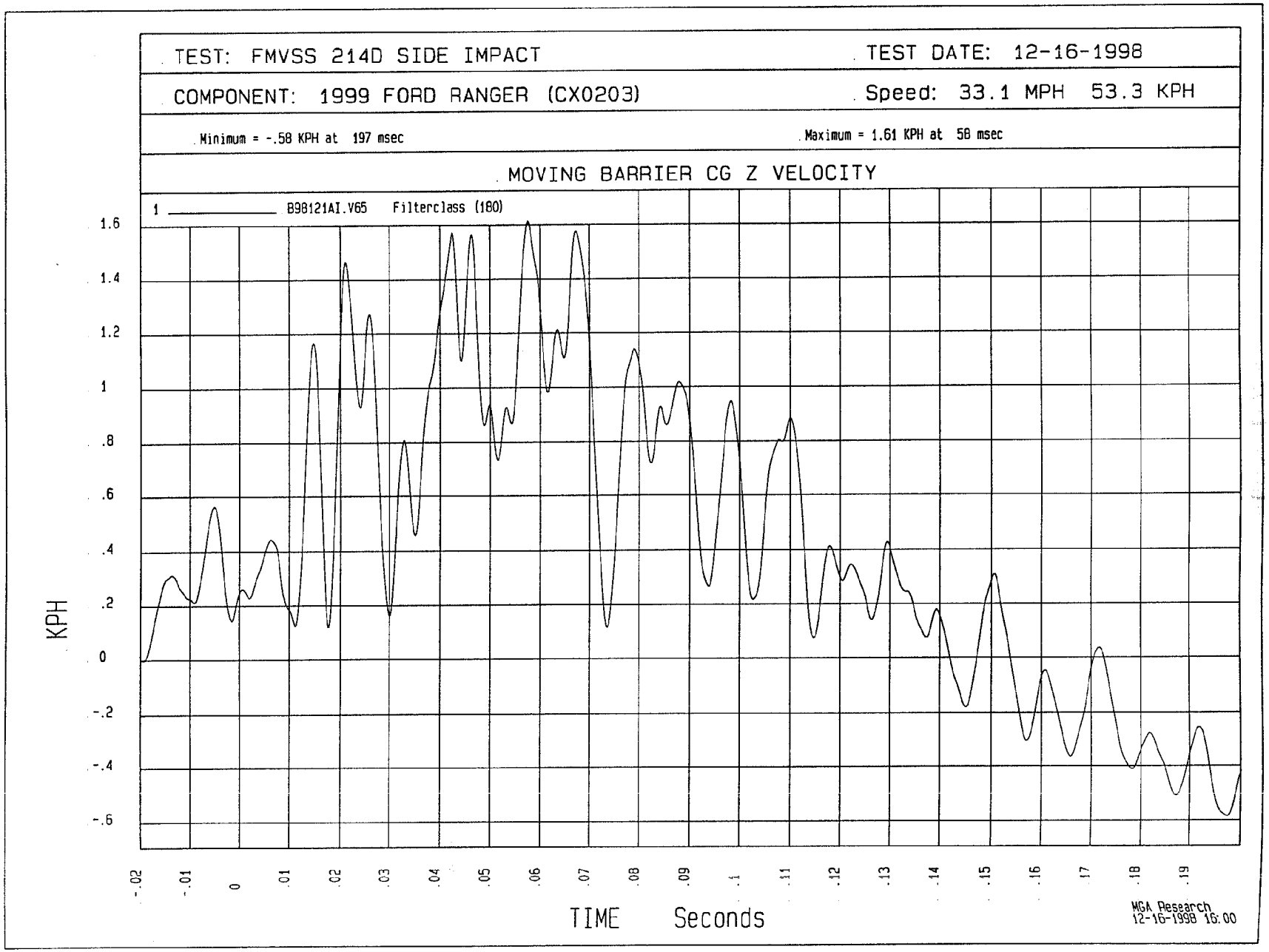

TEST: FMVSS 214D SIDE IMPACT
TEST DATE: 12-16-1998
COMPONENT: 1999 FORD RANGER (CX0203)
Speed: 33.1 MPH 53.3 KPH
Minimum = -16.1 G'S at 29 msec
Maximum = 3.54 G'S at 150 msec
MOVING BARRIER CG X ACCELERATION
1 B98121AF.A63 Filterclass (60)
4
2
0
-2
-4
-6
-8
-10
-12
-14
-16
G'S
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
.13
.14
.15
.16
.17
.18
.19
TIME (SECONDS)
MGA Research
12-16-1998 15:55

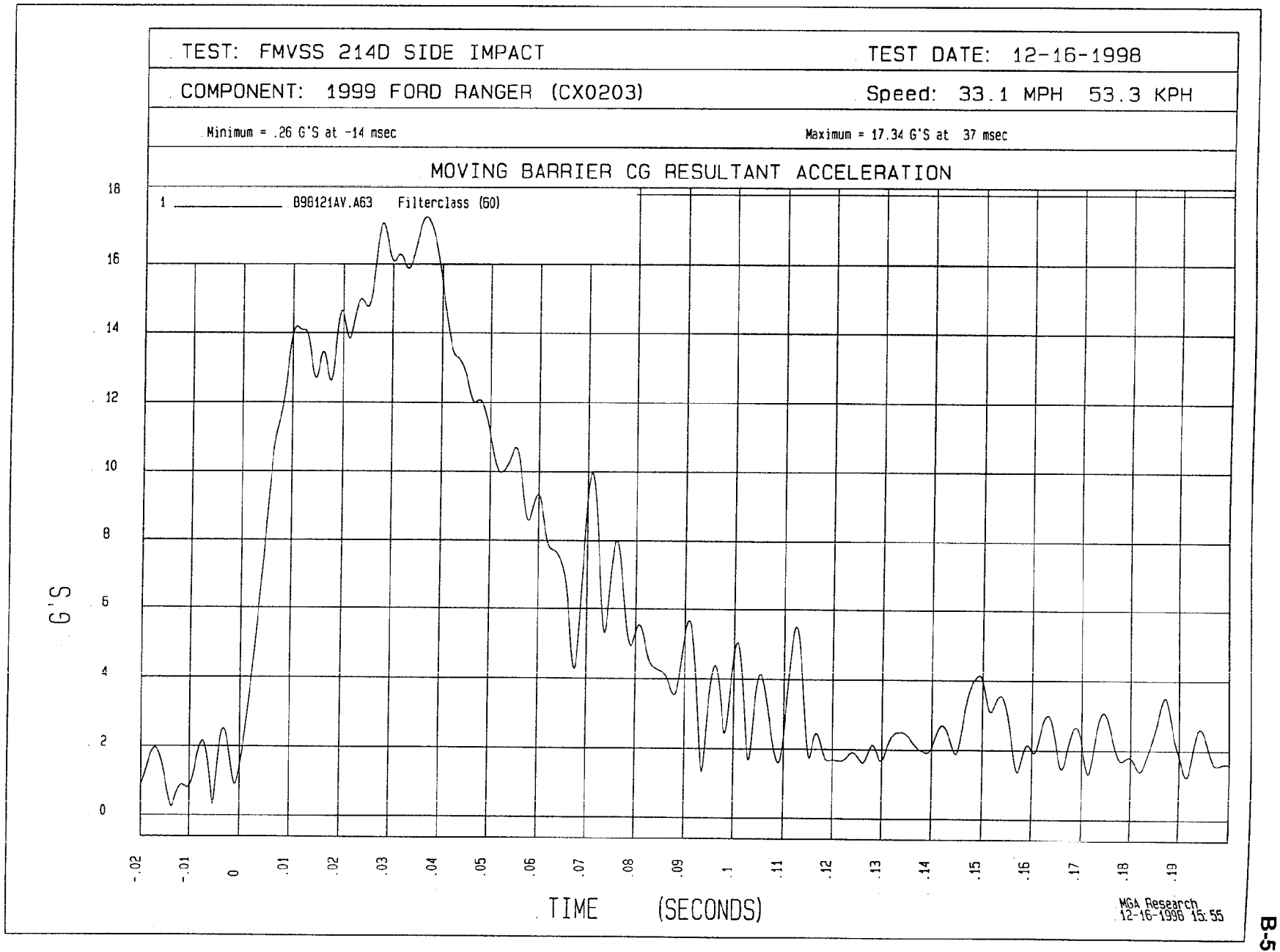

TEST: FMVSS 214D SIDE IMPACT
TEST DATE: 12-16-1998
COMPONENT: 1999 FORD RANGER (CX0203)
Speed: 33.1 MPH 53.3 KPH
Minimum = 16.53 KPH at 121 msec
Maximum = 47.51 KPH at -17 msec
MOVING BARRIER CG X VELOCITY
1 B98121AI.V63 Filterclass (180)
KPH
48
46
44
42
40
38
36
34
32
30
28
26
24
22
20
18
16
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
.13
.14
.15
.16
.17
.18
.19
TIME Seconds
MGA Research
12-16-1998 16:00

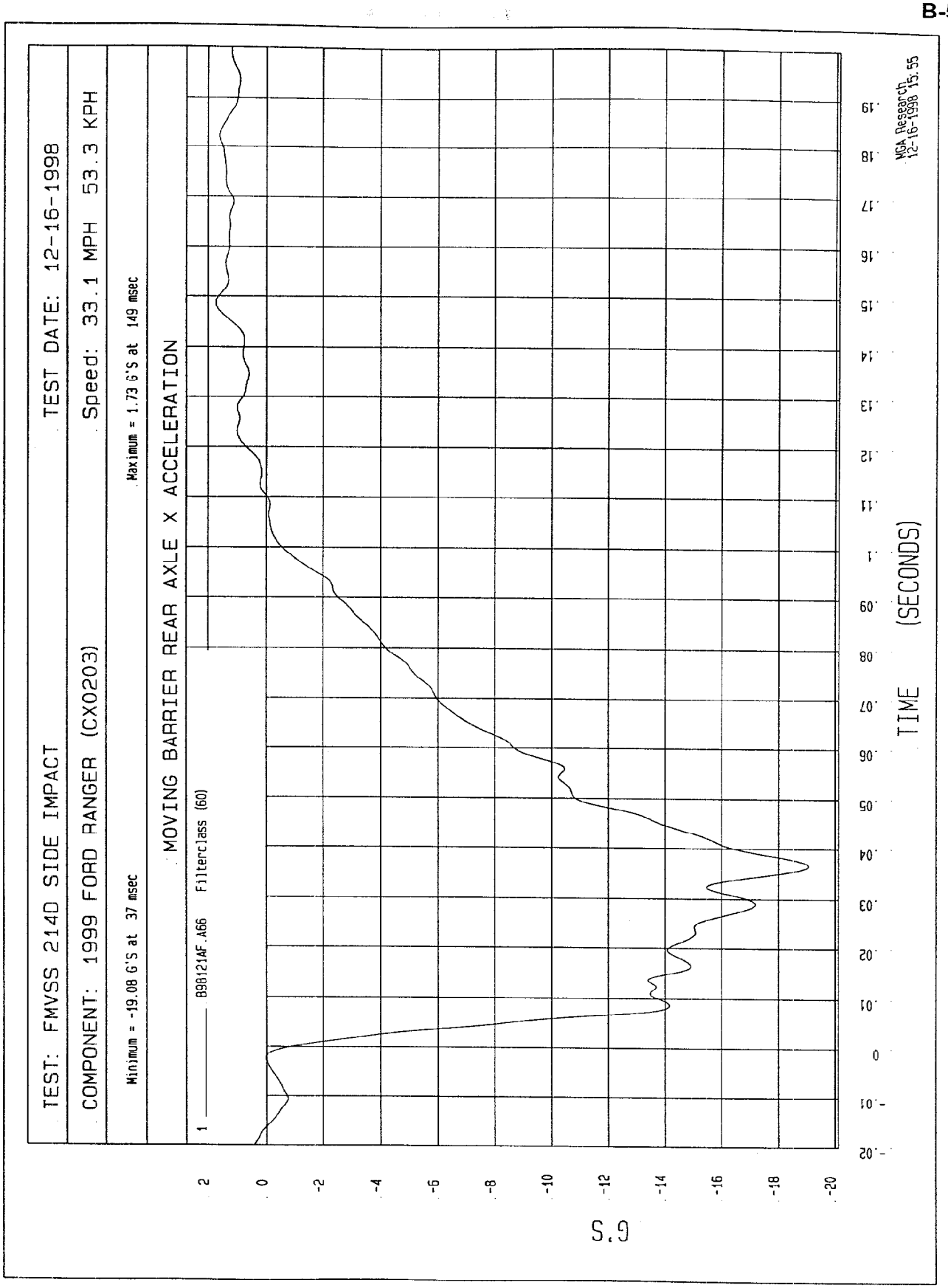

TEST: FMVSS 214D SIDE IMPACT
TEST DATE: 12-16-1998
COMPONENT: 1999 FORD RANGER (CX0203)
Speed: 33.1 MPH 53.3 KPH
Minimum = -7.4 G'S at 16 msec
Maximum = .38 G'S at -19 msec
MOVING BARRIER CG Y ACCELERATION
1 B9B121AF.A64 Filterclass (60)
0
-1
-2
-3
-4
-5
-6
-7
G'S
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
.13
.14
.15
.16
.17
.18
.19
TIME (SECONDS)
MGA Research
12-16-1998 15:55

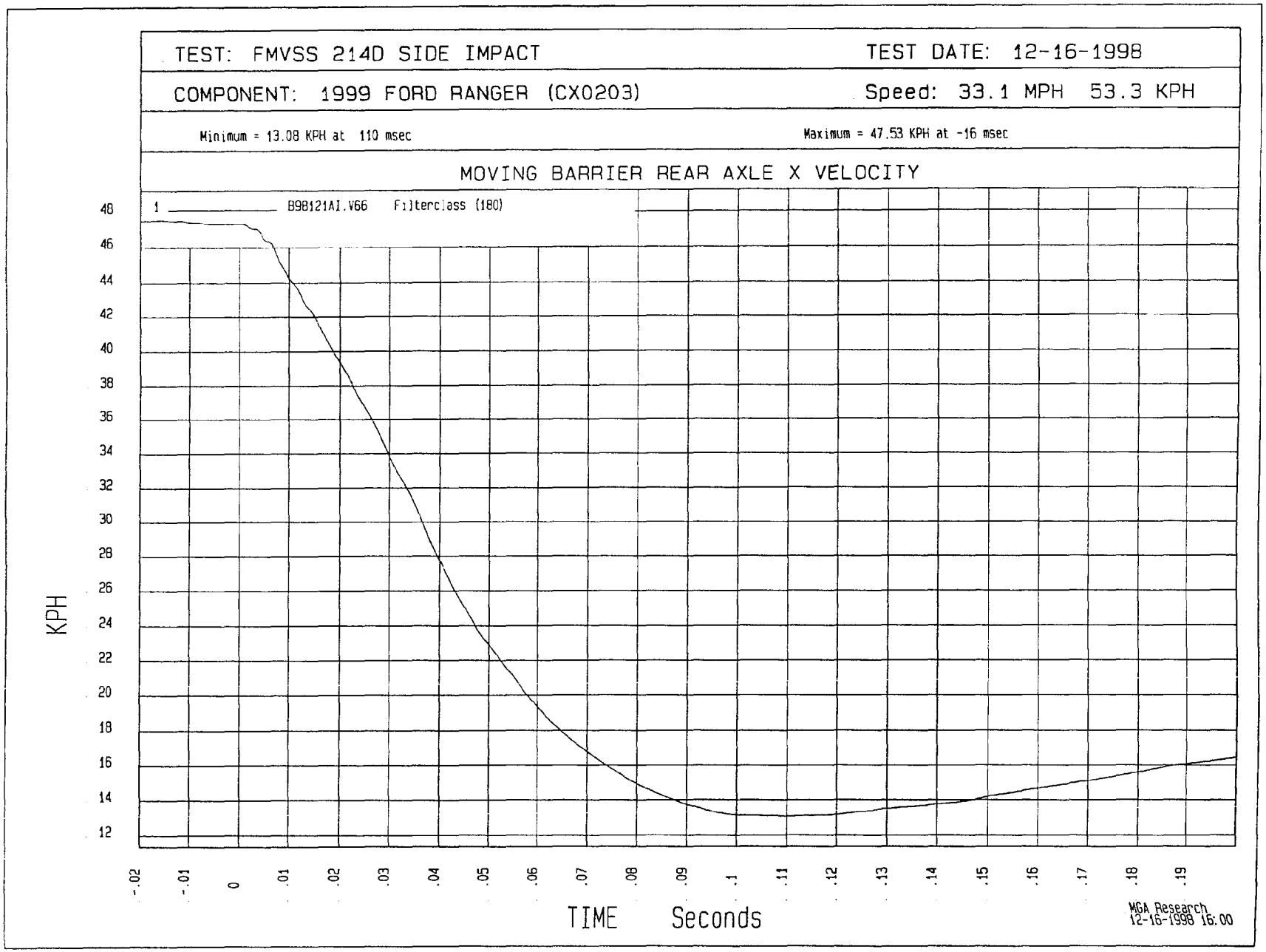

TEST: FMVSS 214D SIDE IMPACT
TEST DATE: 12-16-1998
COMPONENT: 1999 FORD RANGER (CX0203)
Speed: 33.1 MPH 53.3 KPH
Minimum = 9.05 KPH at 200 msec
Maximum = 24.25 KPH at -17 msec
MOVING BARRIER CG Y VELOCITY
1 B98121AI.V64 Filterclass (180)
KPH
24
22
20
18
16
14
12
10
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
.13
.14
.15
.16
.17
.18
.19
TIME Seconds
MGA Research
12-16-1998 16:00

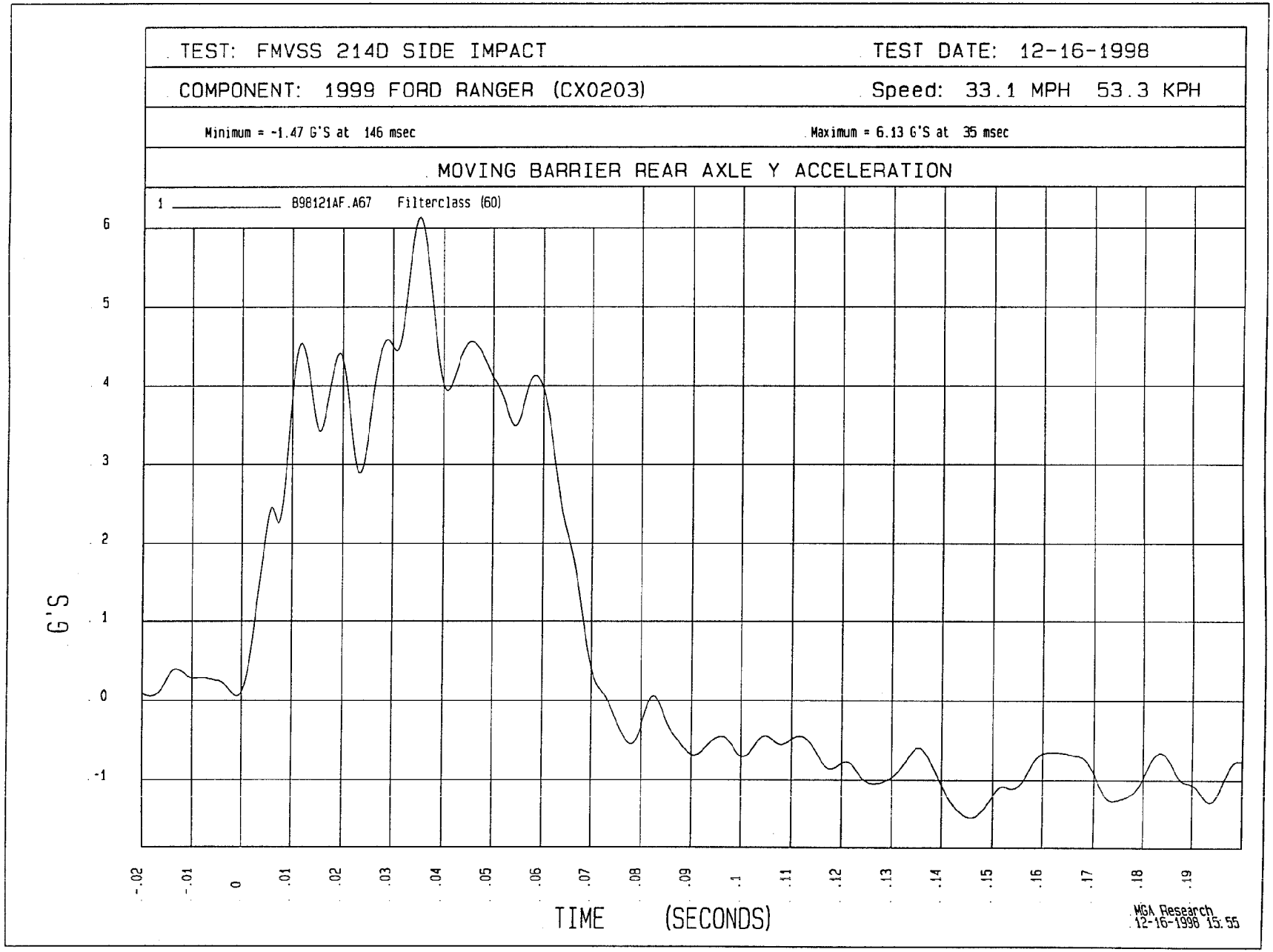

TEST: FMVSS 214D SIDE IMPACT
TEST DATE: 12-16-1998
COMPONENT: 1999 FORD RANGER (CX0203)
Speed: 33.1 MPH 53.3 KPH
Minimum = -8.5 G'S at 71 msec
Maximum = 7.06 G'S at 20 msec
MOVING BARRIER CG Z ACCELERATION
1 B98121AF.A65 Filterclass (60)
MGA Research
12-16-1998 15:55
6
4
2
0
-2
-4
-6
-8
G's
.19
.18
.17
.16
.15
.14
.13
.12
.11
.1
.09
.08
.07
.06
.05
.04
.03
.02
.01
0
-.01
-.02
TIME (SECONDS)


TEST: FMVSS 214D SIDE IMPACT
TEST DATE: 12-16-1998
COMPONENT: 1999 FORD RANGER (CX0203)
Speed: 33.1 MPH 53.3 KPH
Minimum = -.58 KPH at 197 msec
Maximum = 1.61 KPH at 58 msec
MOVING BARRIER CG Z VELOCITY
1 B98121AI.V65 Filterclass (180)
KPH
1.6
1.4
1.2
1
.8
.6
.4
.2
0
-.2
-.4
-.6
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
.13
.14
.15
.16
.17
.18
.19
TIME Seconds
MGA Research
12-16-1998 16:00


TEST: FMVSS 214D SIDE IMPACT
TEST DATE: 12-16-1998
COMPONENT: 1999 FORD RANGER (CX0203)
Speed: 33.1 MPH 53.3 KPH
Minimum = .26 G'S at -14 msec
Maximum = 17.34 G'S at 37 msec
MOVING BARRIER CG RESULTANT ACCELERATION
1 B98121AV.A63 Filterclass (60)
G'S
18
16
14
12
10
8
6
4
2
0
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
.13
.14
.15
.16
.17
.18
.19
TIME (SECONDS)
MGA Research
12-16-1998 15:55


TEST: FMVSS 214D SIDE IMPACT
TEST DATE: 12-16-1998
COMPONENT: 1999 FORD RANGER (CX0203)
Speed: 33.1 MPH 53.3 KPH
Minimum = -19.08 G'S at 37 msec
Maximum = 1.73 G'S at 149 msec
MOVING BARRIER REAR AXLE X ACCELERATION
1 B98121AF.A66 Filterclass (60)
MGA Research
12-16-1998 15:55
2
0
-2
-4
-6
-8
-10
-12
-14
-16
-18
-20
.19
.18
.17
.16
.15
.14
.13
.12
.11
1
.09
.08
.07
.06
.05
.04
.03
.02
.01
0
-.01
-.02
TIME (SECONDS)
G's


TEST: FMVSS 214D SIDE IMPACT
TEST DATE: 12-16-1998
COMPONENT: 1999 FORD RANGER (CX0203)
Speed: 33.1 MPH 53.3 KPH
Minimum = 13.08 KPH at 110 msec
Maximum = 47.53 KPH at -16 msec
MOVING BARRIER REAR AXLE X VELOCITY
1 B98121AI.V66 Filterclass (180)
KPH
48
46
44
42
40
38
36
34
32
30
28
26
24
22
20
18
16
14
12
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
.13
.14
.15
.16
.17
.18
.19
TIME Seconds
MGA Research
12-16-1998 16:00


TEST: FMVSS 214D SIDE IMPACT
TEST DATE: 12-16-1998
COMPONENT: 1999 FORD RANGER (CX0203)
Speed: 33.1 MPH 53.3 KPH
Minimum = -1.47 G'S at 146 msec
Maximum = 6.13 G'S at 35 msec
MOVING BARRIER REAR AXLE Y ACCELERATION
1 B98121AF.A67 Filterclass (60)
G'S
6
5
4
3
2
1
0
-1
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
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.13
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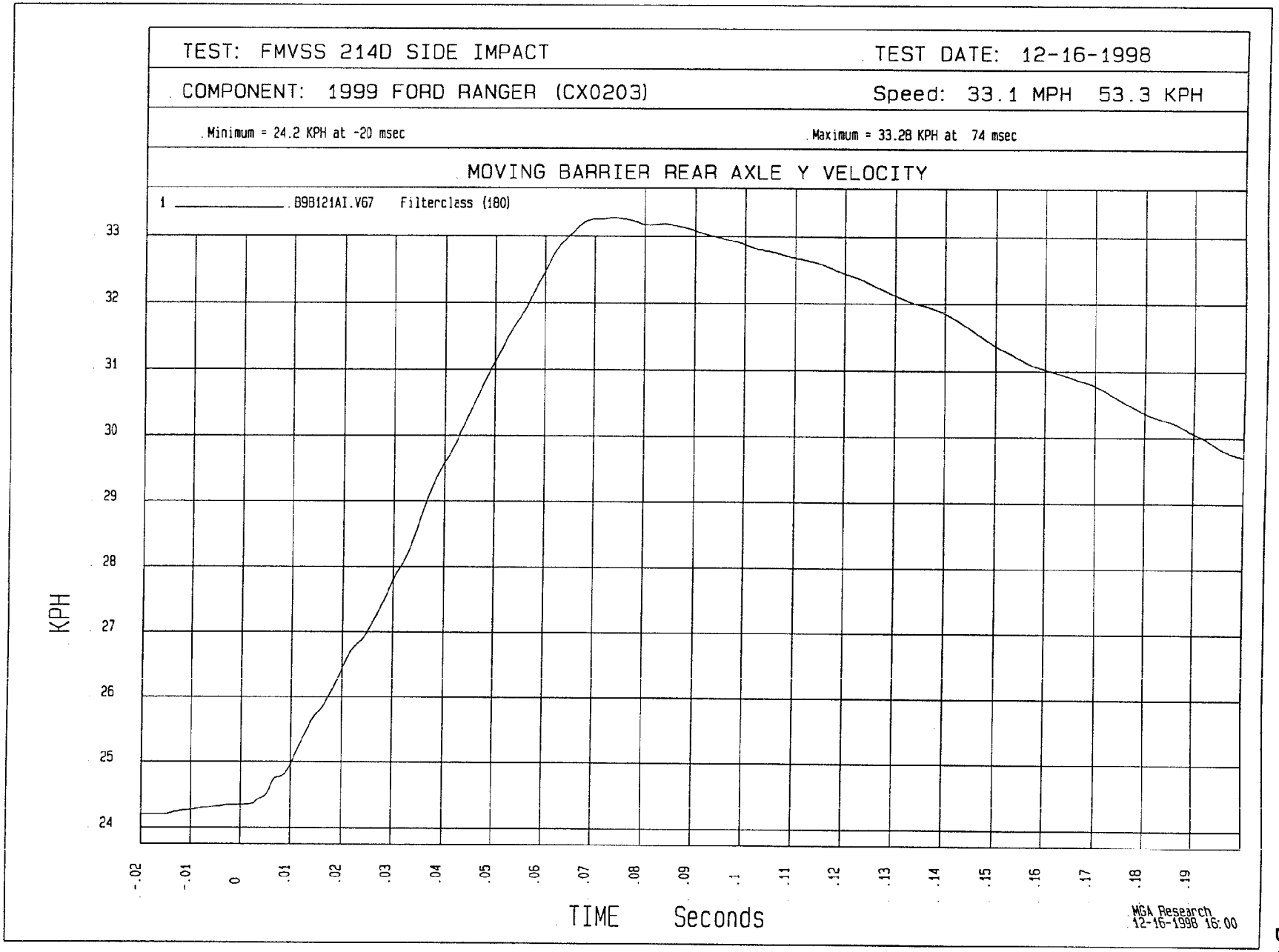
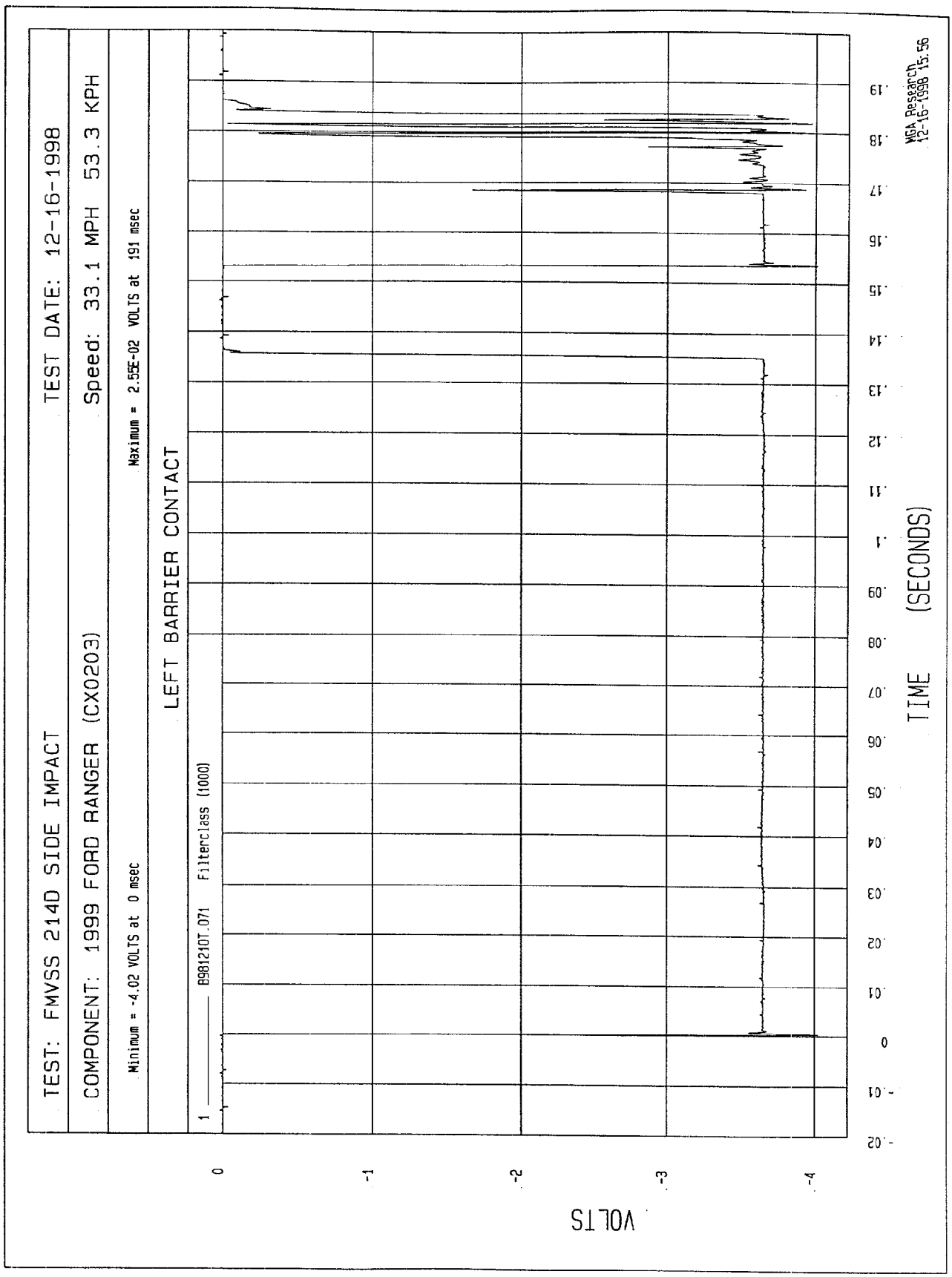
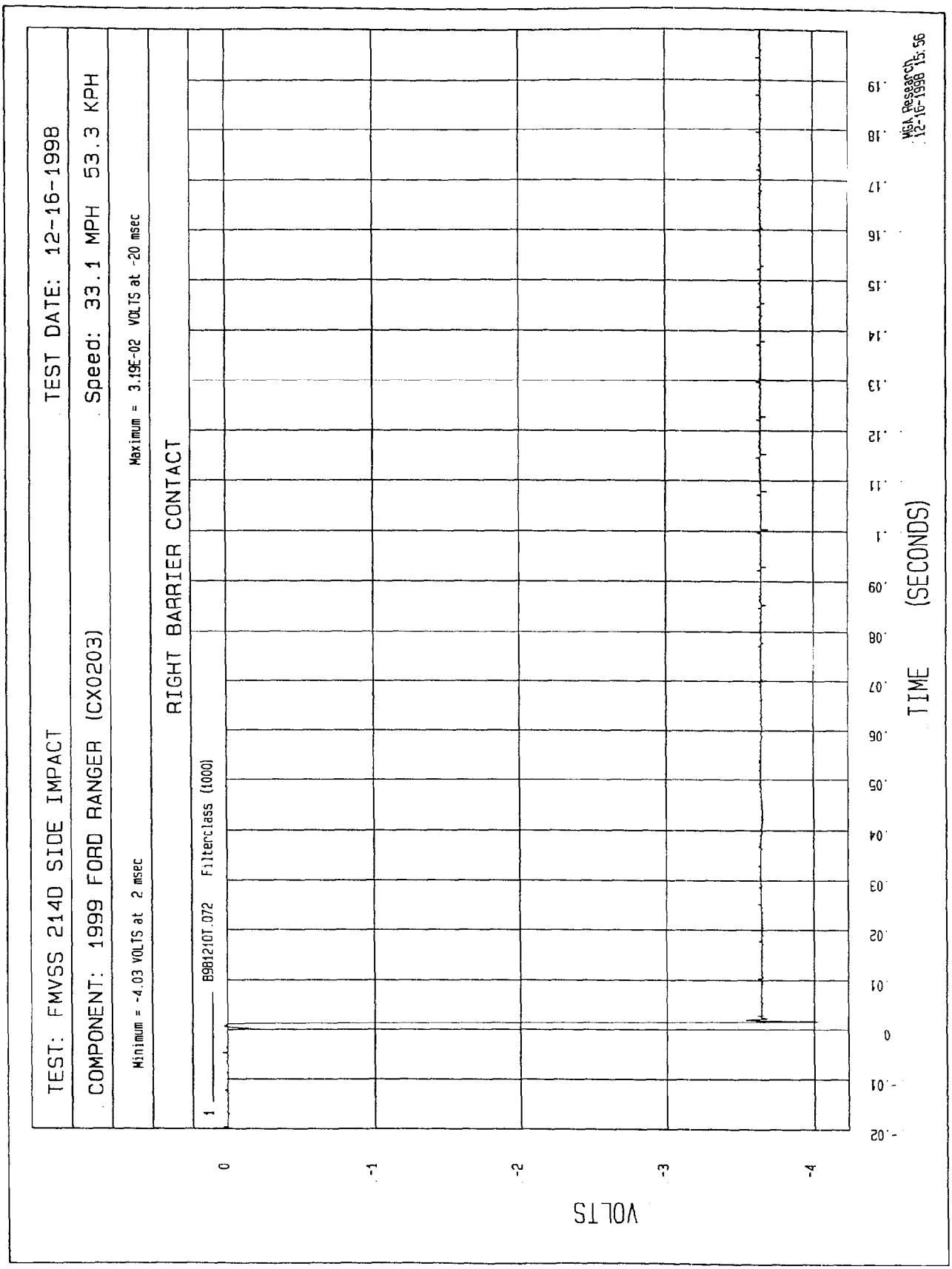
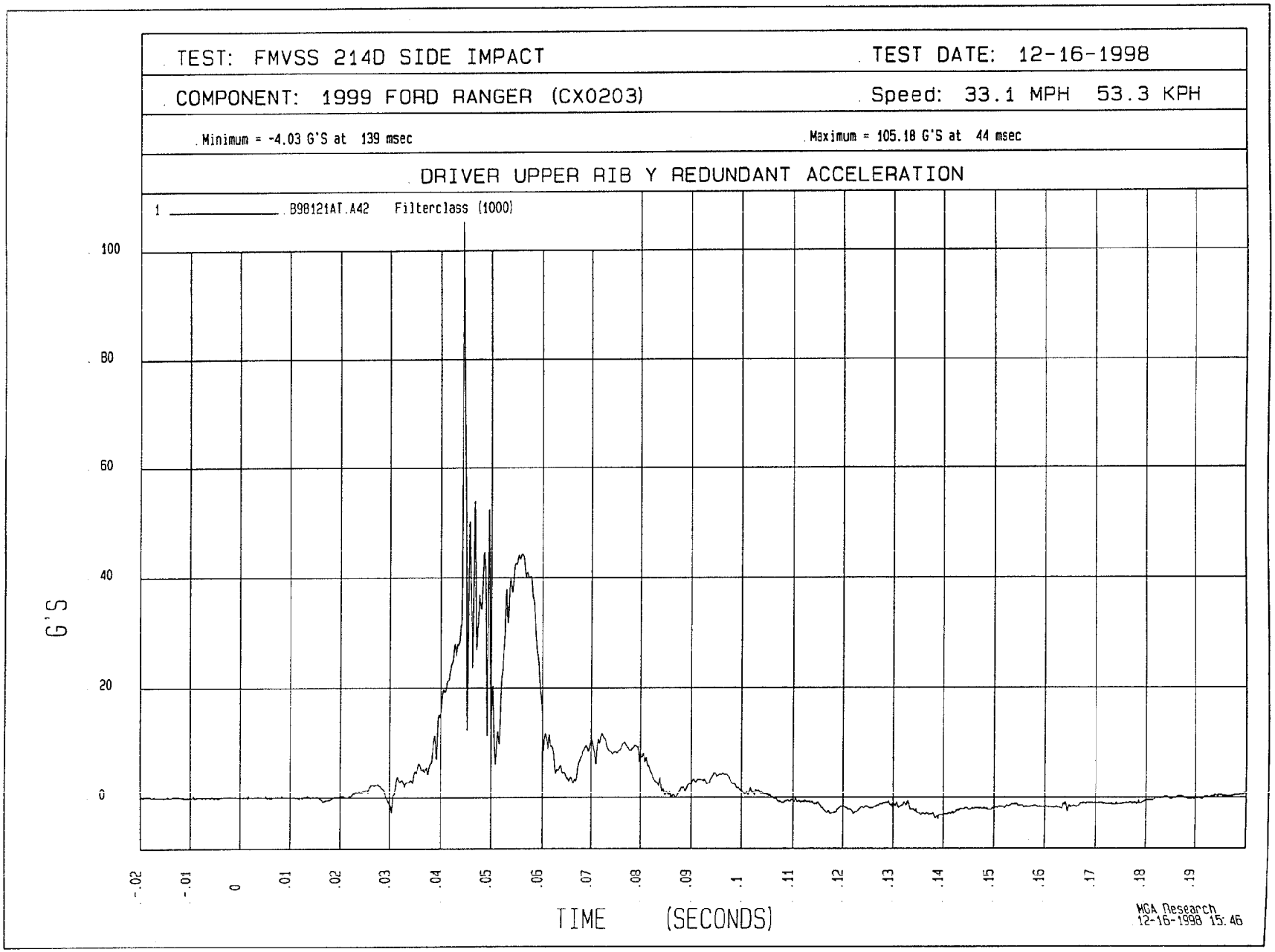
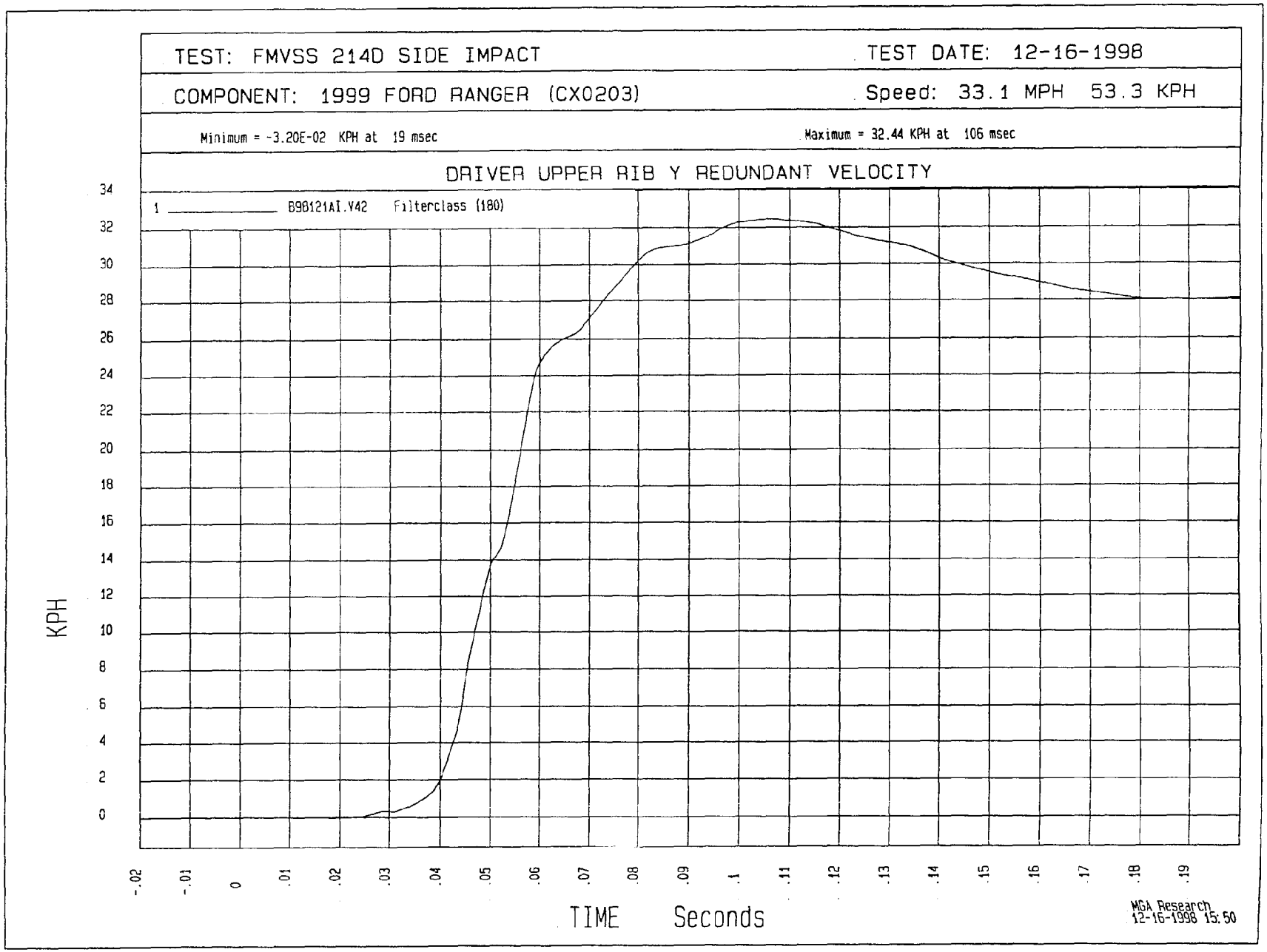
TIME (SECONDS)
MGA Research
12-16-1998 15:55

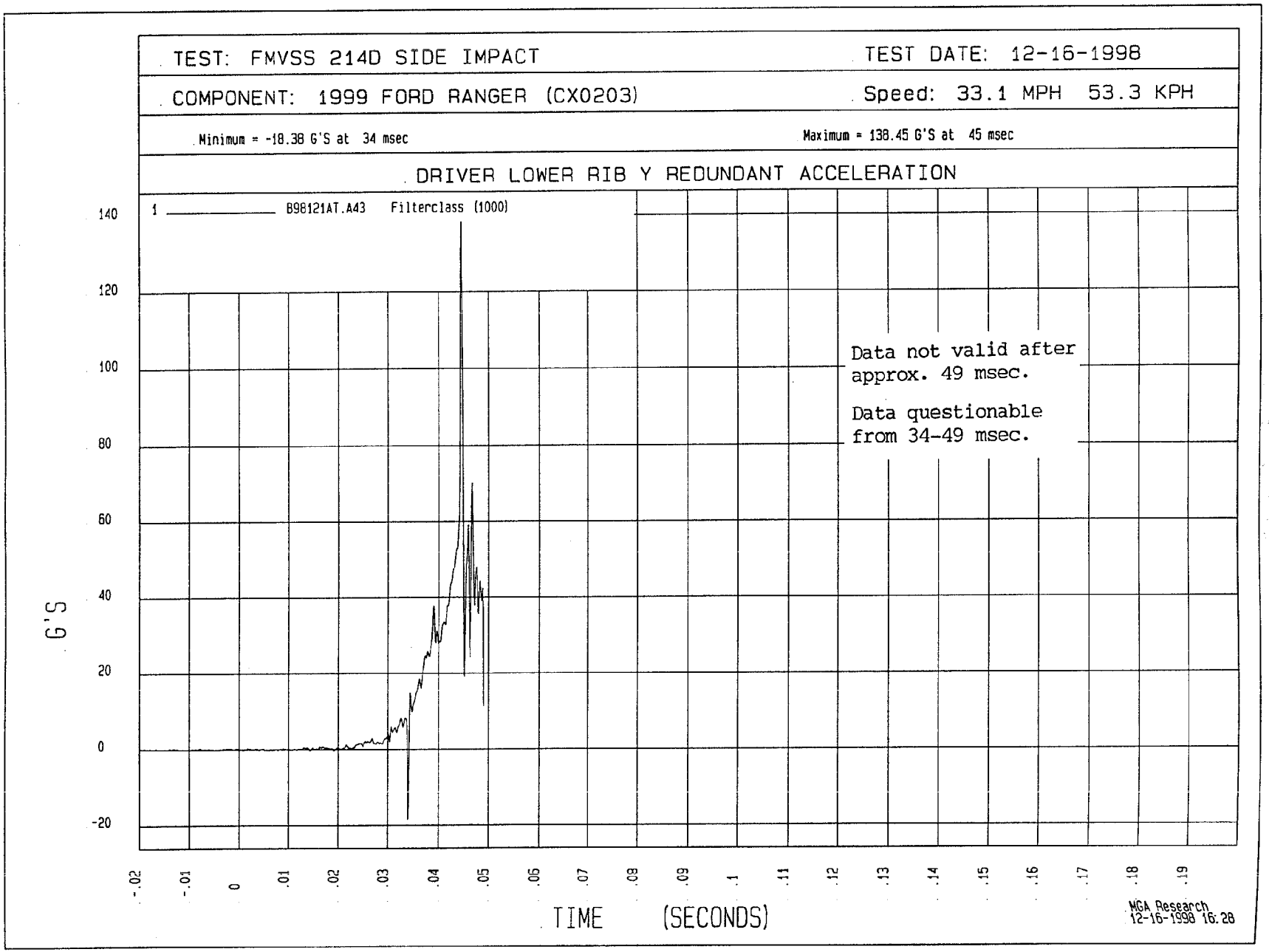

TEST: FMVSS 214D SIDE IMPACT
TEST DATE: 12-16-1998
COMPONENT: 1999 FORD RANGER (CX0203)
Speed: 33.1 MPH 53.3 KPH
Minimum = 24.2 KPH at -20 msec
Maximum = 33.28 KPH at 74 msec
MOVING BARRIER REAR AXLE Y VELOCITY
1 B98121AI.V67 Filterclass (180)
KPH
33
32
31
30
29
28
27
26
25
24
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
.13
.14
.15
.16
.17
.18
.19
TIME Seconds
MGA Research
12-16-1998 16:00

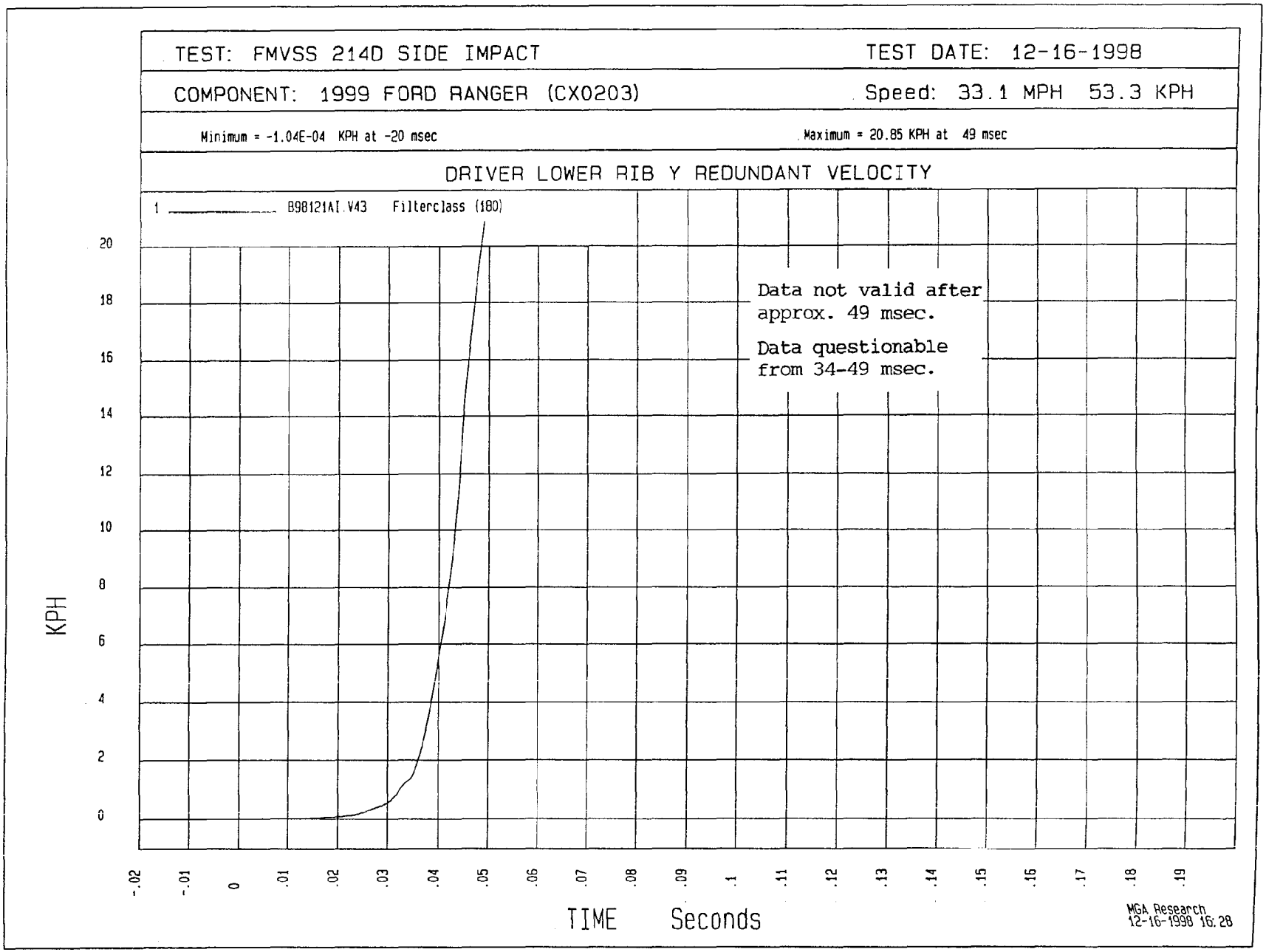

TEST: FMVSS 214D SIDE IMPACT
TEST DATE: 12-16-1998
COMPONENT: 1999 FORD RANGER (CX0203)
Speed: 33.1 MPH 53.3 KPH
Minimum = -4.02 VOLTS at 0 msec
Maximum = 2.55E-02 VOLTS at 191 msec
LEFT BARRIER CONTACT
1 B9812107.071 Filterclass (1000)
VOLTS
0
-1
-2
-3
-4
TIME (SECONDS)
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
.13
.14
.15
.16
.17
.18
.19
MGA Research
12-16-1998 15:56

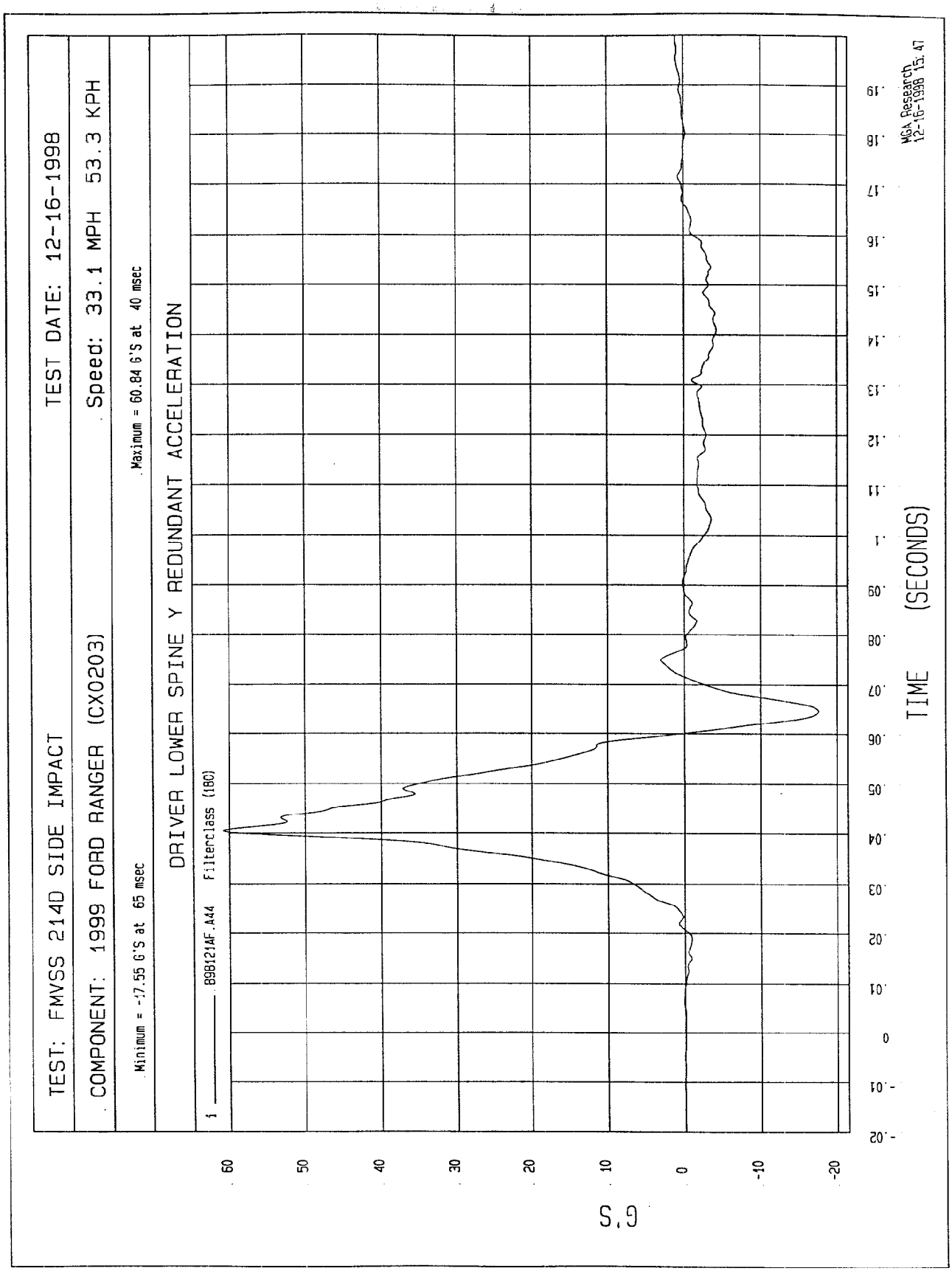

TEST: FMVSS 214D SIDE IMPACT
TEST DATE: 12-16-1998
COMPONENT: 1999 FORD RANGER (CX0203)
Speed: 33.1 MPH 53.3 KPH
Minimum = -4.03 VOLTS at 2 msec
Maximum = 3.19E-02 VOLTS at -20 msec
RIGHT BARRIER CONTACT
1 B9B1210T.072 Filterclass (1000)
VOLTS
0
-1
-2
-3
-4
TIME (SECONDS)
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
.13
.14
.15
.16
.17
.18
.19
MGA Research
12-16-1998 15:56

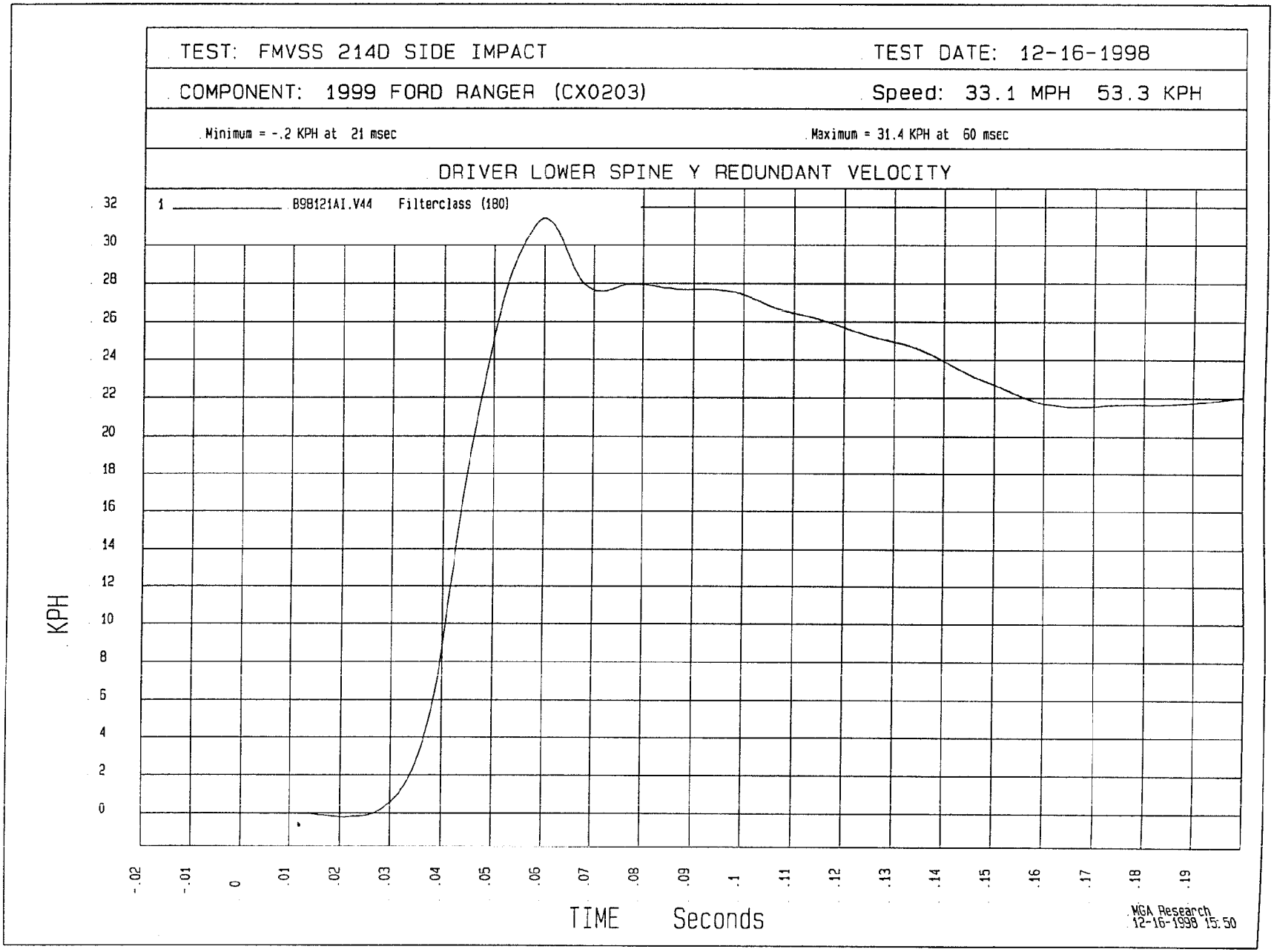

TEST: FMVSS 214D SIDE IMPACT
TEST DATE: 12-16-1998
COMPONENT: 1999 FORD RANGER (CX0203)
Speed: 33.1 MPH 53.3 KPH
Minimum = -4.03 G'S at 139 msec
Maximum = 105.18 G'S at 44 msec
DRIVER UPPER RIB Y REDUNDANT ACCELERATION
1 B98121AT.A42 Filterclass (1000)
100
80
60
40
20
0
G'S
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
.13
.14
.15
.16
.17
.18
.19
TIME (SECONDS)
MGA Research
12-16-1998 15:46

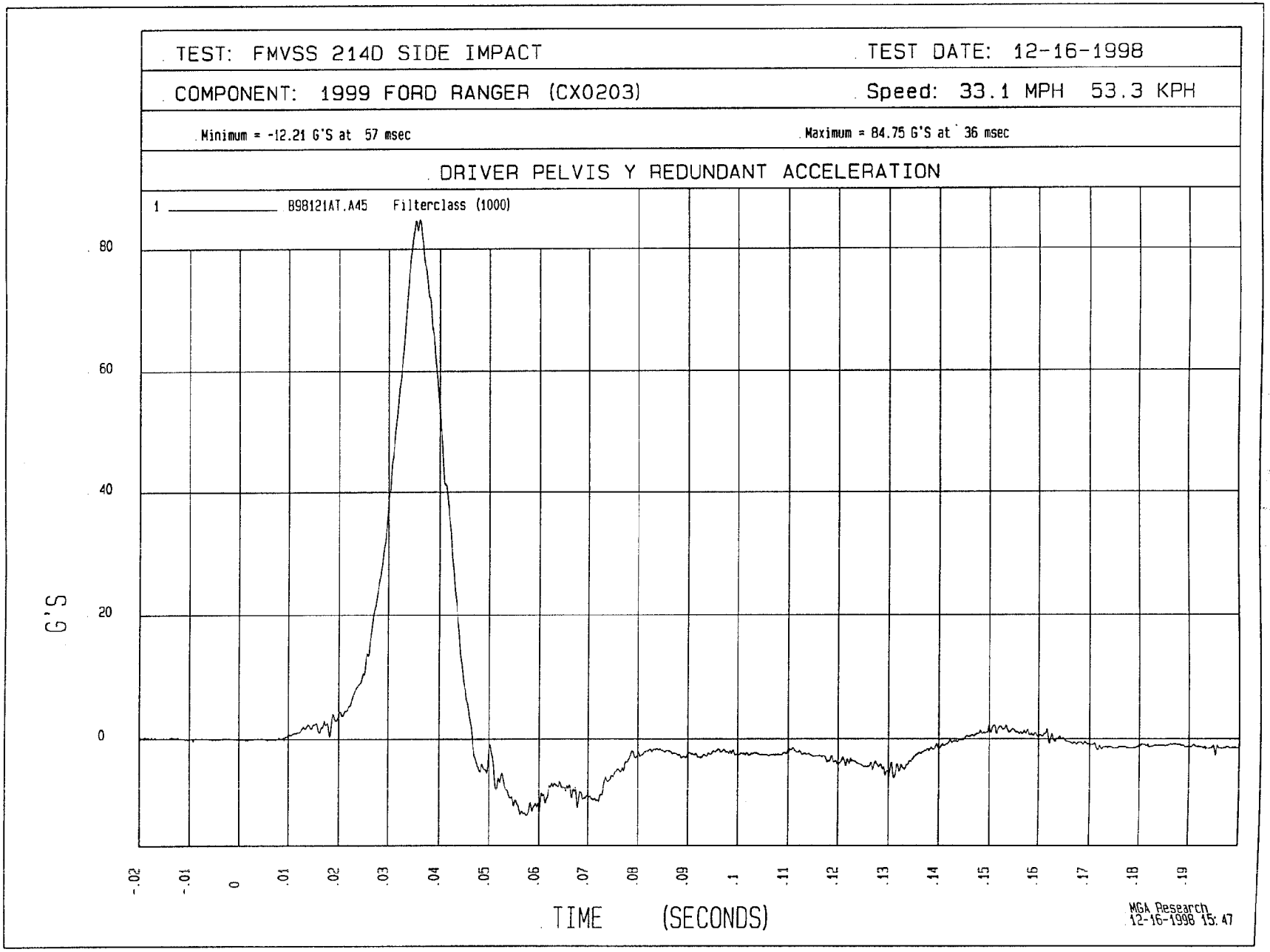

TEST: FMVSS 214D SIDE IMPACT
TEST DATE: 12-16-1998
COMPONENT: 1999 FORD RANGER (CX0203)
Speed: 33.1 MPH 53.3 KPH
Minimum = -3.20E-02 KPH at 19 msec
Maximum = 32.44 KPH at 106 msec
DRIVER UPPER RIB Y REDUNDANT VELOCITY
1 B98121AI.V42 Filterclass (180)
KPH
34
32
30
28
26
24
22
20
18
16
14
12
10
8
6
4
2
0
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
.13
.14
.15
.16
.17
.18
.19
TIME Seconds
MGA Research
12-16-1998 15:50

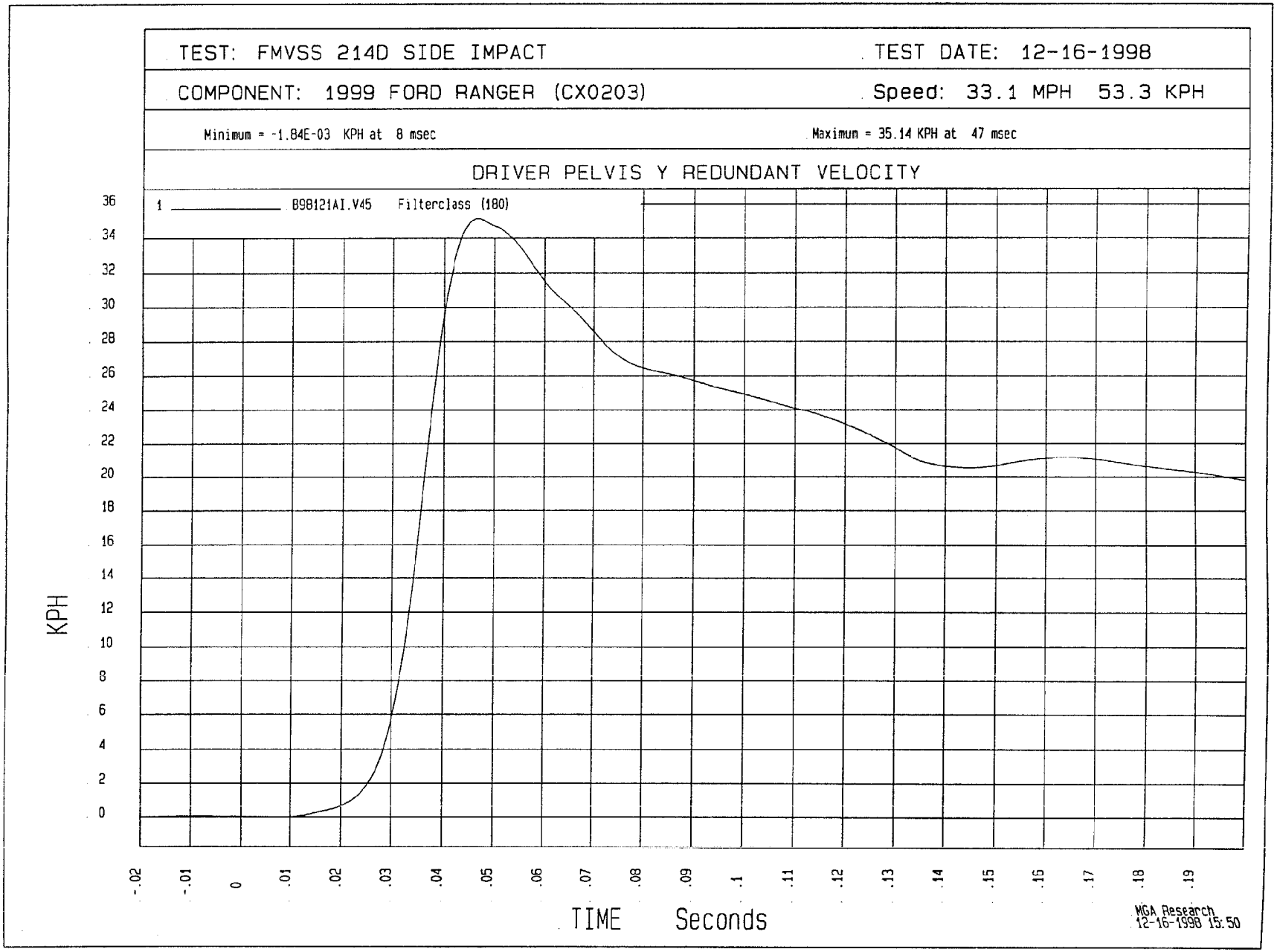

TEST: FMVSS 214D SIDE IMPACT
TEST DATE: 12-16-1998
COMPONENT: 1999 FORD RANGER (CX0203)
Speed: 33.1 MPH 53.3 KPH
Minimum = -18.38 G'S at 34 msec
Maximum = 138.45 G'S at 45 msec
DRIVER LOWER RIB Y REDUNDANT ACCELERATION
1 B98121AT.A43 Filterclass (1000)
Data not valid after approx. 49 msec.
Data questionable from 34-49 msec.
G'S
140
120
100
80
60
40
20
0
-20
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
.13
.14
.15
.16
.17
.18
.19
TIME (SECONDS)
MGA Research
12-16-1998 16:28


TEST: FMVSS 214D SIDE IMPACT
TEST DATE: 12-16-1998
COMPONENT: 1999 FORD RANGER (CX0203)
Speed: 33.1 MPH 53.3 KPH
Minimum = -1.04E-04 KPH at -20 msec
Maximum = 20.85 KPH at 49 msec
DRIVER LOWER RIB Y REDUNDANT VELOCITY
1 B98121AI.V43 Filterclass (180)
Data not valid after approx. 49 msec.
Data questionable from 34-49 msec.
KPH
20
18
16
14
12
10
8
6
4
2
0
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
.13
.14
.15
.16
.17
.18
.19
TIME Seconds
MGA Research
12-16-1998 16:28


TEST: FMVSS 214D SIDE IMPACT
TEST DATE: 12-16-1998
COMPONENT: 1999 FORD RANGER (CX0203)
Speed: 33.1 MPH 53.3 KPH
Minimum = -17.55 G'S at 65 msec
Maximum = 60.84 G'S at 40 msec
DRIVER LOWER SPINE Y REDUNDANT ACCELERATION
1 B9B121AF.A44 Filterclass (180)
60
50
40
30
20
10
0
-10
-20
G's
.02
.01
0
-.01
-.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
.13
.14
.15
.16
.17
.18
.19
TIME (SECONDS)
MGA Research
12-16-1998 15:47


TEST: FMVSS 214D SIDE IMPACT
TEST DATE: 12-16-1998
COMPONENT: 1999 FORD RANGER (CX0203)
Speed: 33.1 MPH 53.3 KPH
Minimum = -.2 KPH at 21 msec
Maximum = 31.4 KPH at 60 msec
DRIVER LOWER SPINE Y REDUNDANT VELOCITY
1 B98121AI.V44 Filterclass (180)
KPH
32
30
28
26
24
22
20
18
16
14
12
10
8
6
4
2
0
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
.13
.14
.15
.16
.17
.18
.19
TIME Seconds
MGA Research
12-16-1998 15:50


TEST: FMVSS 214D SIDE IMPACT
TEST DATE: 12-16-1998
COMPONENT: 1999 FORD RANGER (CX0203)
Speed: 33.1 MPH 53.3 KPH
Minimum = -12.21 G'S at 57 msec
Maximum = 84.75 G'S at 36 msec
DRIVER PELVIS Y REDUNDANT ACCELERATION
1 B98121AT.A45 Filterclass (1000)
80
60
40
20
0
G'S
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
.13
.14
.15
.16
.17
.18
.19
TIME (SECONDS)
MGA Research
12-16-1998 15:47


TEST: FMVSS 214D SIDE IMPACT
TEST DATE: 12-16-1998
COMPONENT: 1999 FORD RANGER (CX0203)
Speed: 33.1 MPH 53.3 KPH
Minimum = -1.84E-03 KPH at 8 msec
Maximum = 35.14 KPH at 47 msec
DRIVER PELVIS Y REDUNDANT VELOCITY
1 B98121AI.V45 Filterclass (180)
KPH
36
34
32
30
28
26
24
22
20
18
16
14
12
10
8
6
4
2
0
-.02
-.01
0
.01
.02
.03
.04
.05
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.11
.12
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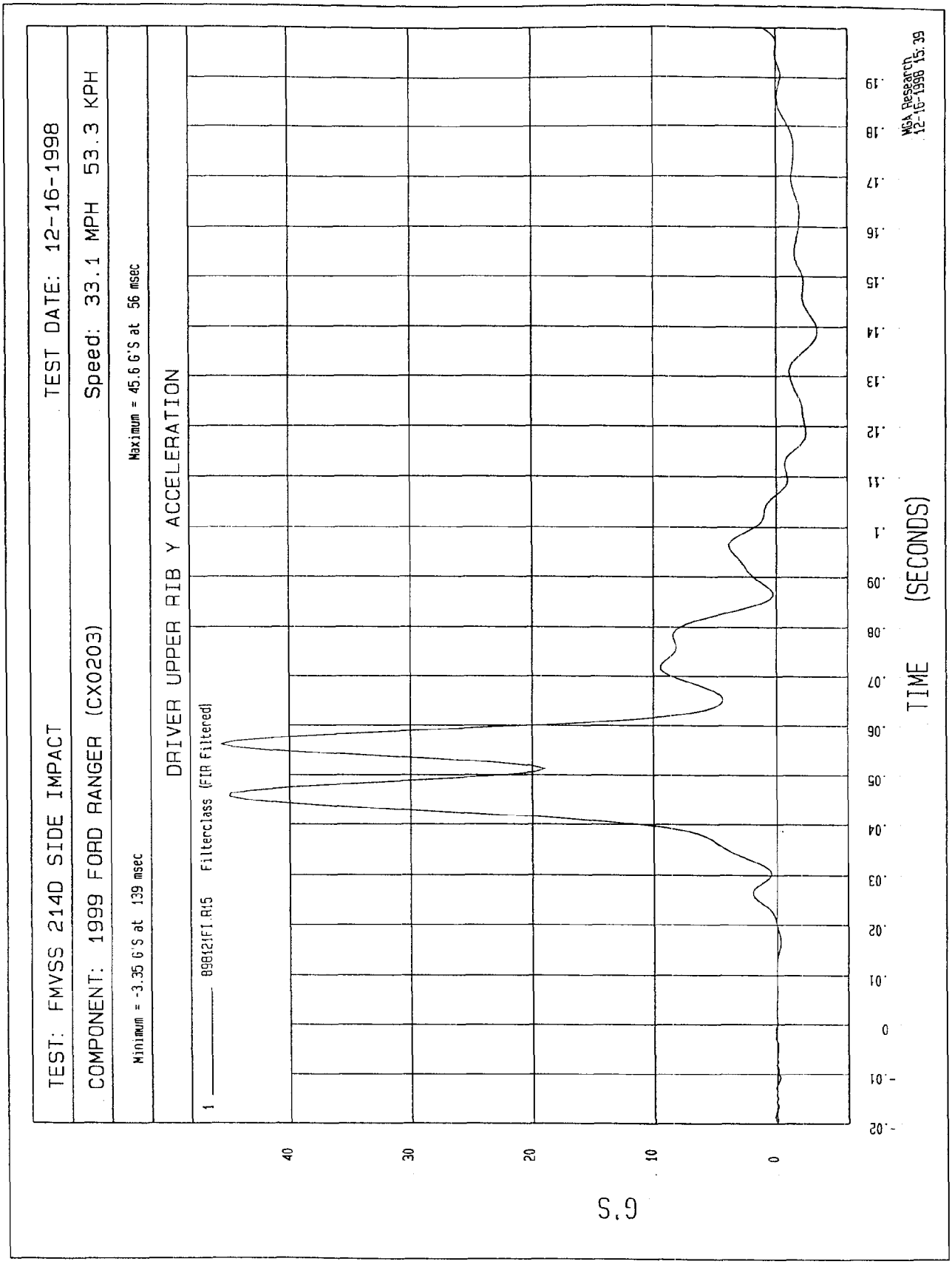
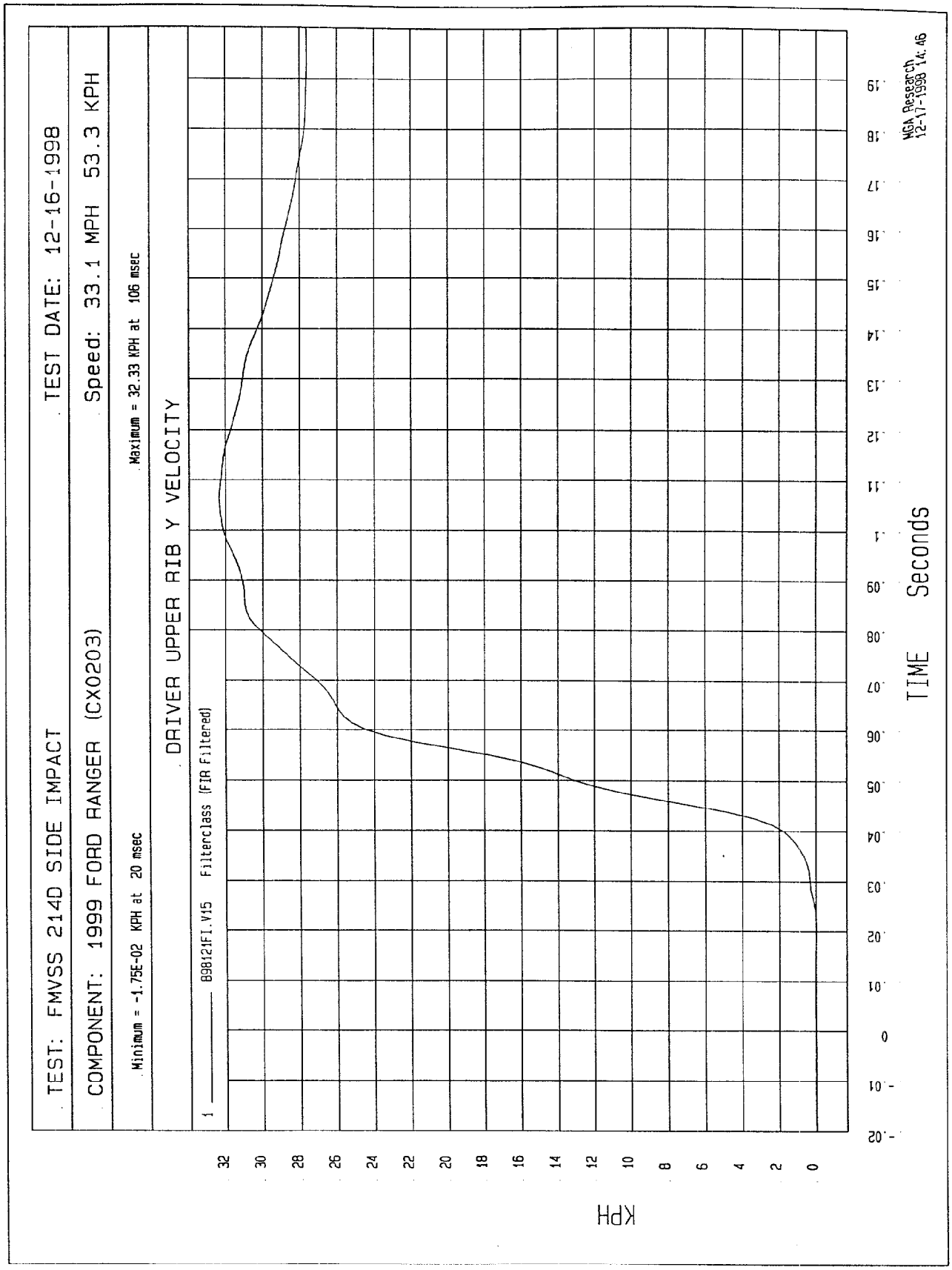
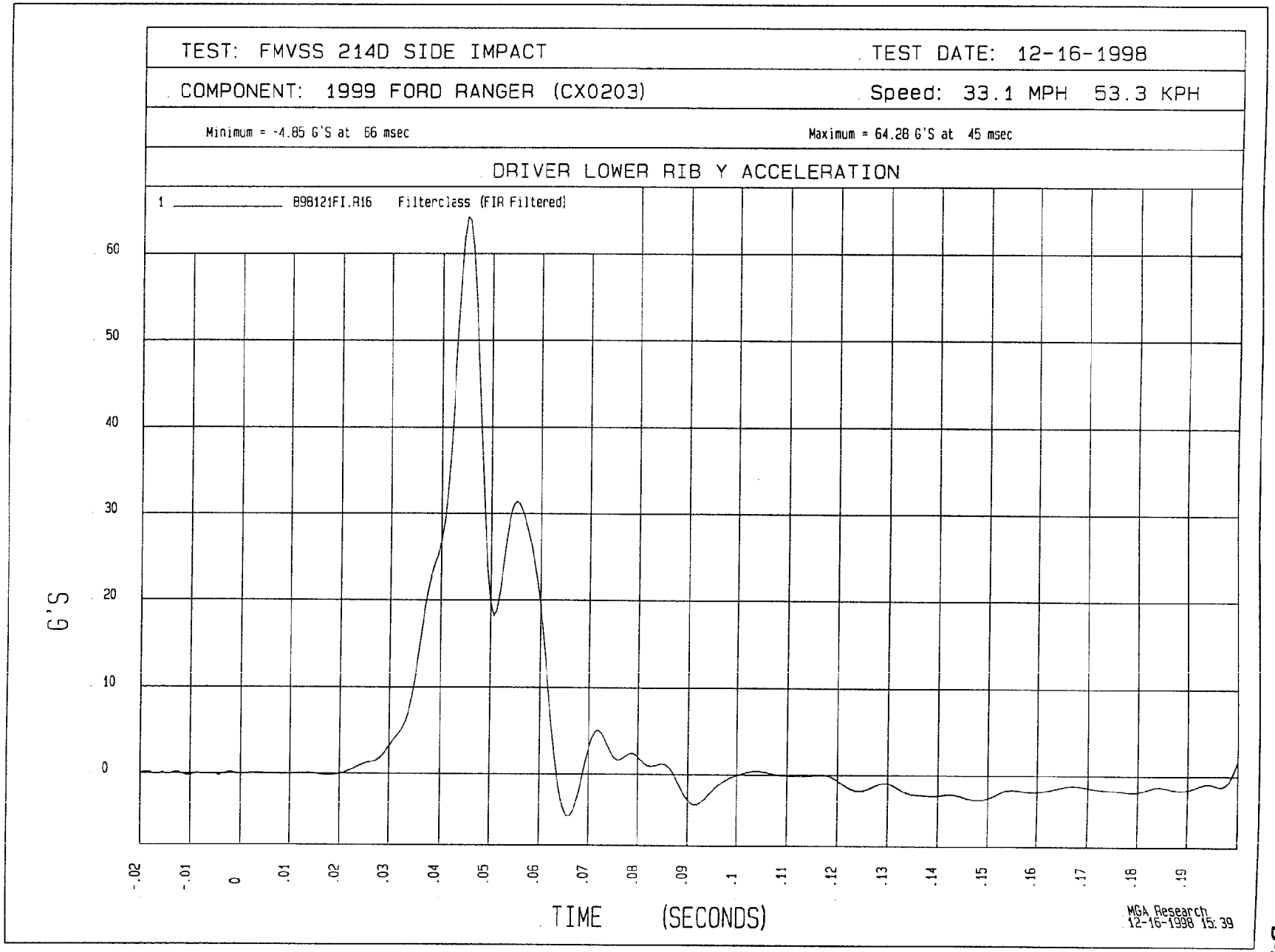
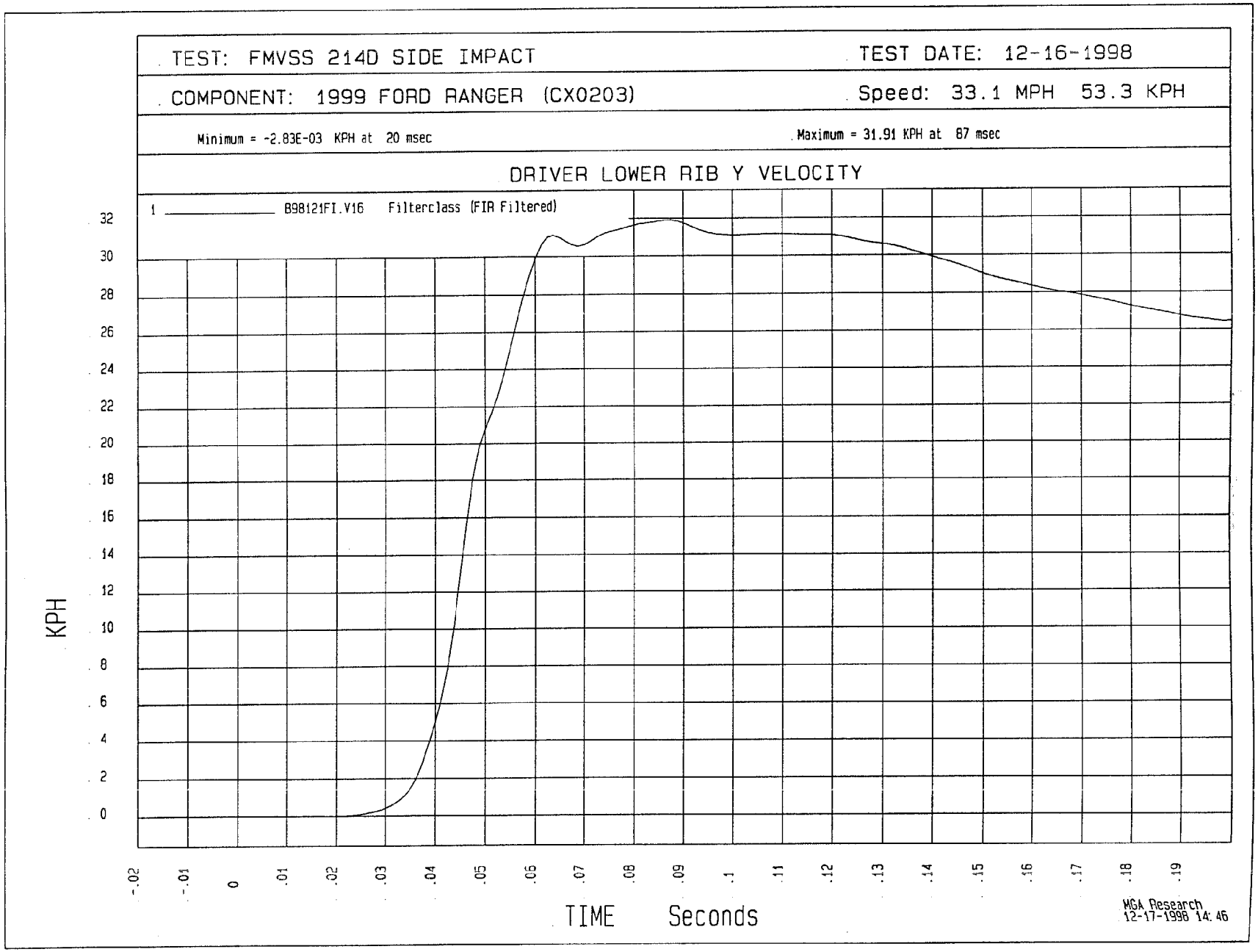
.14
.15
.16
.17
.18
.19
TIME Seconds
MGA Research
12-16-1998 15:50

FINITE IMPULSE RESPONSE (FIR) FILTERED DATA


TEST: FMVSS 214D SIDE IMPACT
TEST DATE: 12-16-1998
COMPONENT: 1999 FORD RANGER (CX0203)
Speed: 33.1 MPH 53.3 KPH
Minimum = -3.35 G'S at 139 msec
Maximum = 45.6 G'S at 56 msec
DRIVER UPPER RIB Y ACCELERATION
1 B9812FI.A15 Filterclass (FIR Filtered)
MGA Research
12-16-1998 15:39
40
30
20
10
0
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
.13
.14
.15
.16
.17
.18
.19
TIME (SECONDS)
S.9


TEST: FMVSS 214D SIDE IMPACT
TEST DATE: 12-16-1998
COMPONENT: 1999 FORD RANGER (CX0203)
Speed: 33.1 MPH 53.3 KPH
Minimum = -1.75E-02 KPH at 20 msec
Maximum = 32.33 KPH at 106 msec
DRIVER UPPER RIB Y VELOCITY
1 B98121FI.V15 Filterclass (FIR Filtered)
KPH
TIME Seconds
WGA Research
12-17-1998 14:46


TEST: FMVSS 214D SIDE IMPACT
TEST DATE: 12-16-1998
COMPONENT: 1999 FORD RANGER (CX0203)
Speed: 33.1 MPH 53.3 KPH
Minimum = -4.85 G'S at 66 msec
Maximum = 64.28 G'S at 45 msec
DRIVER LOWER RIB Y ACCELERATION
1 B98121FI.R16 Filterclass (FIR Filtered)
G'S
60
50
40
30
20
10
0
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
.13
.14
.15
.16
.17
.18
.19
TIME (SECONDS)
MGA Research
12-16-1998 15:39


TEST: FMVSS 214D SIDE IMPACT
TEST DATE: 12-16-1998
COMPONENT: 1999 FORD RANGER (CX0203)
Speed: 33.1 MPH 53.3 KPH
Minimum = -2.83E-03 KPH at 20 msec
Maximum = 31.91 KPH at 87 msec
DRIVER LOWER RIB Y VELOCITY
1 B98121FI.V16 Filterclass (FIR Filtered)
KPH
32
30
28
26
24
22
20
18
16
14
12
10
8
6
4
2
0
-.02
-.01
0
.01
.02
.03
.04
.05
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.11
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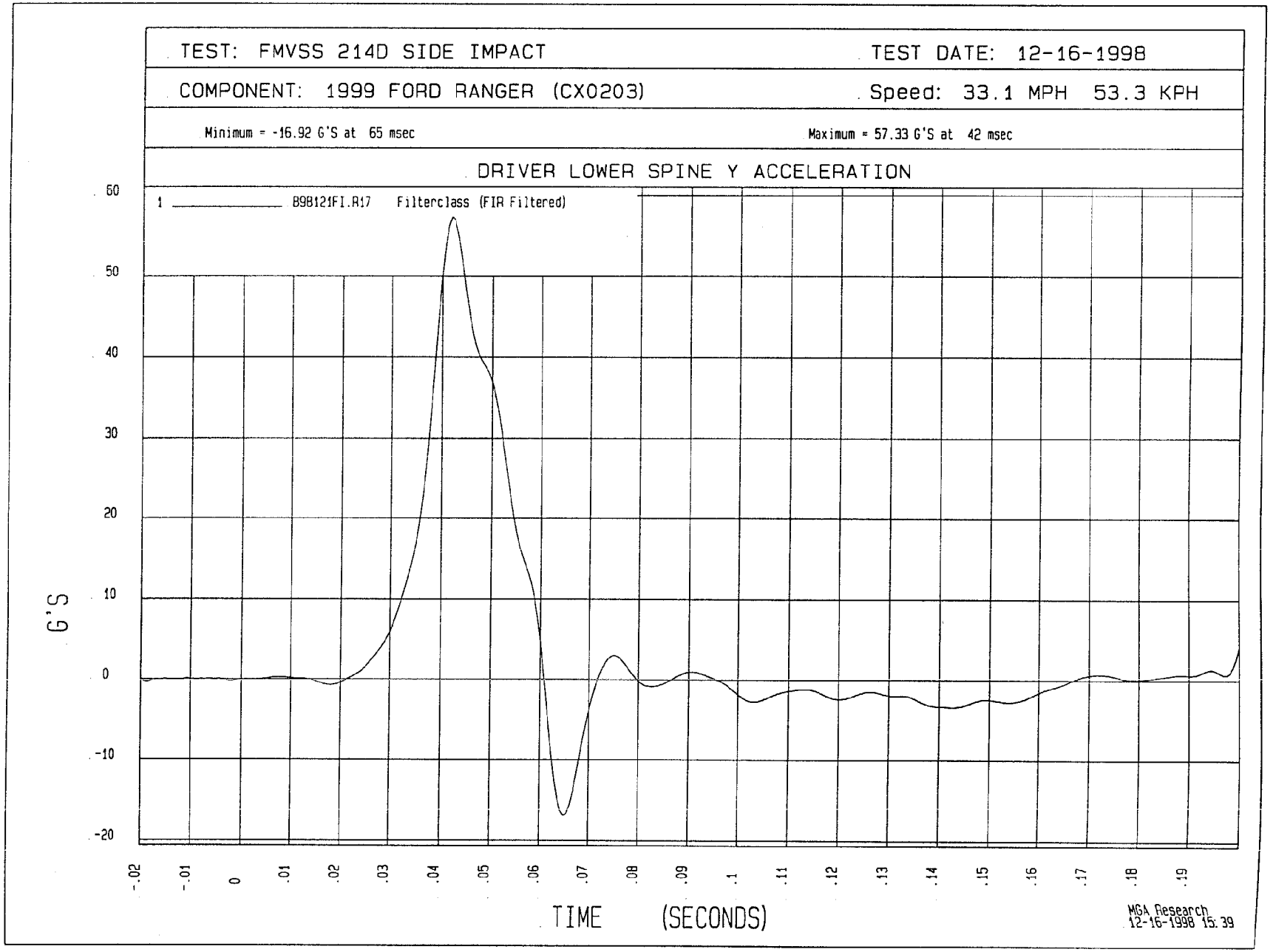
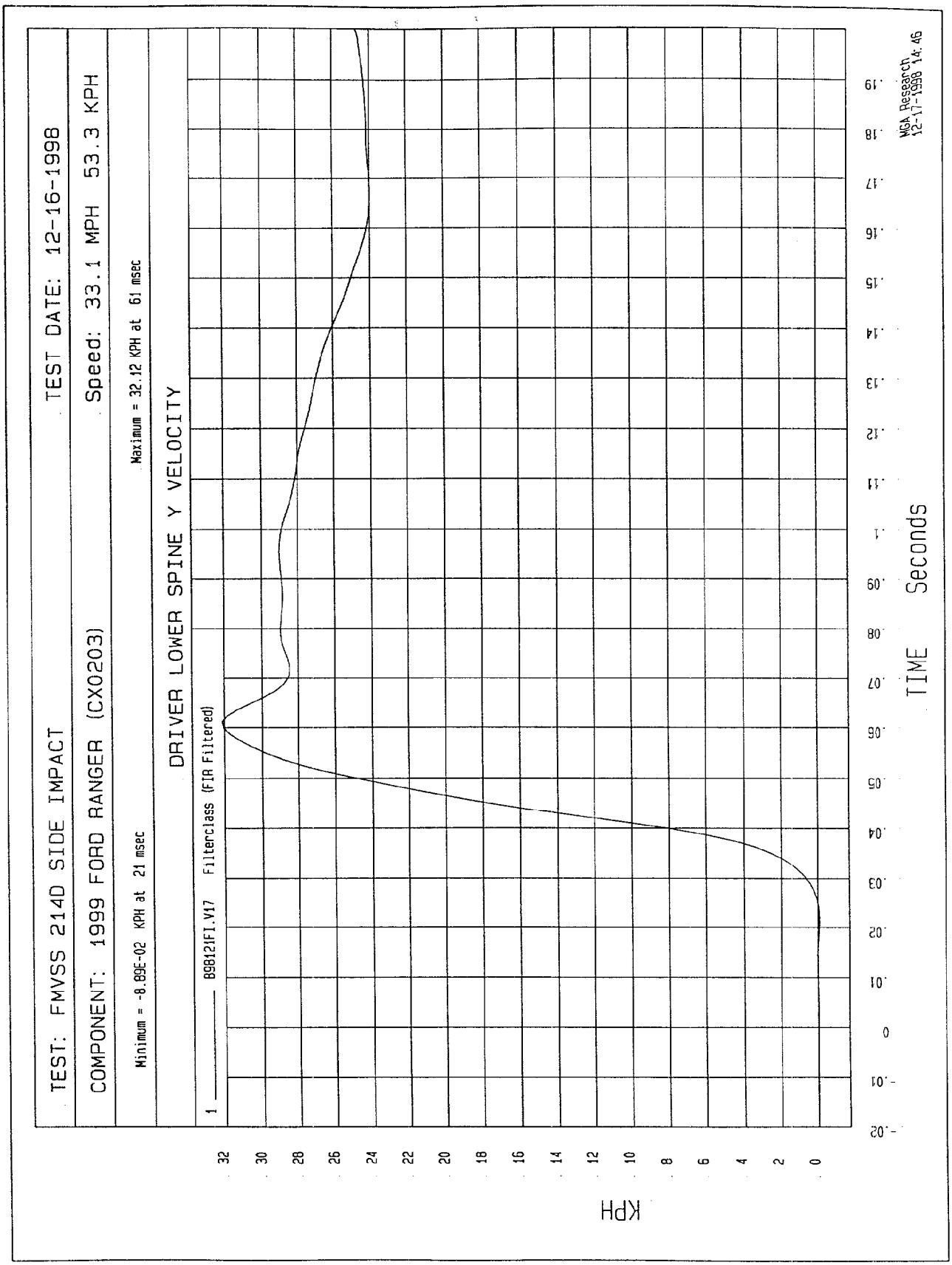
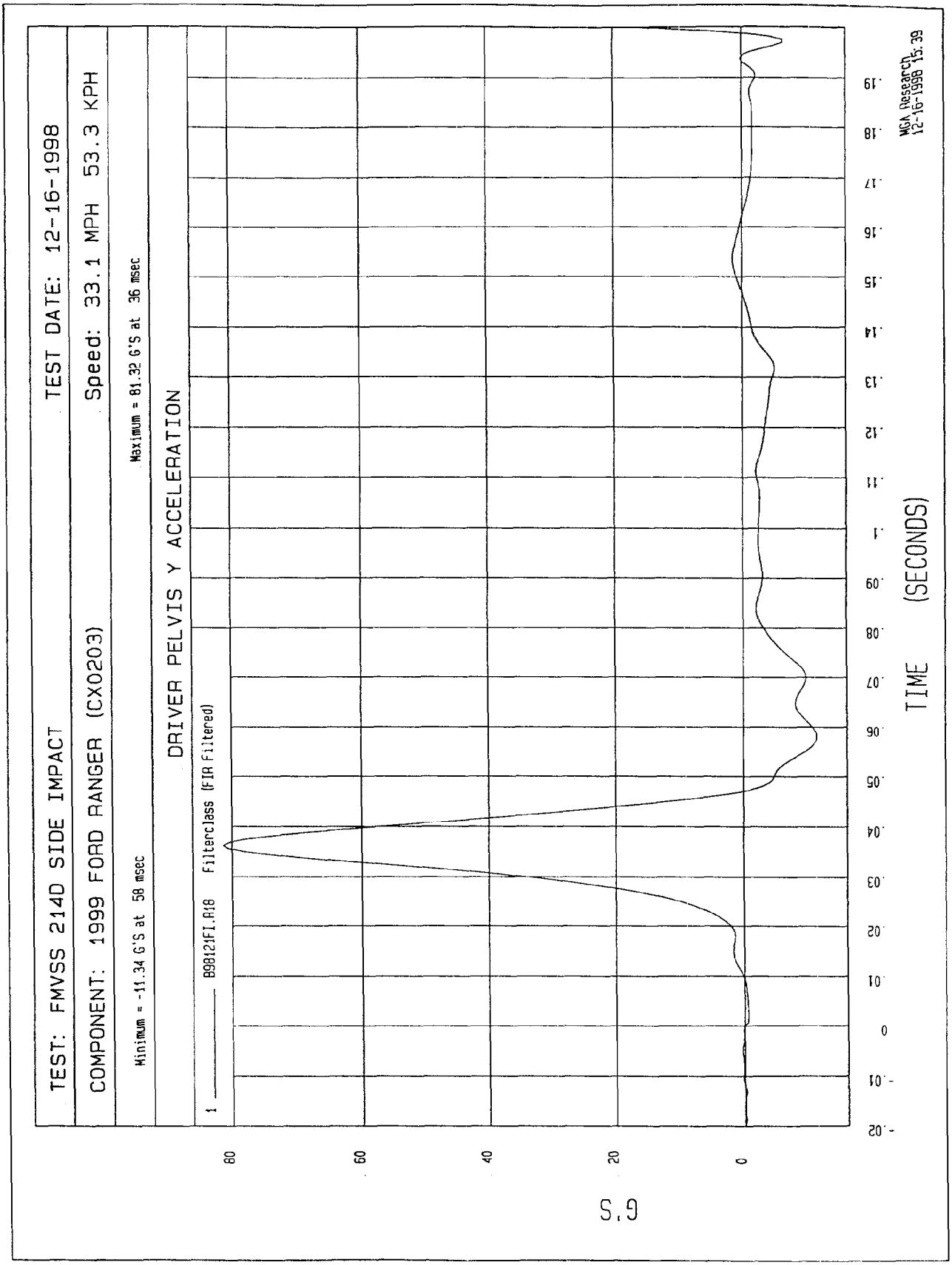
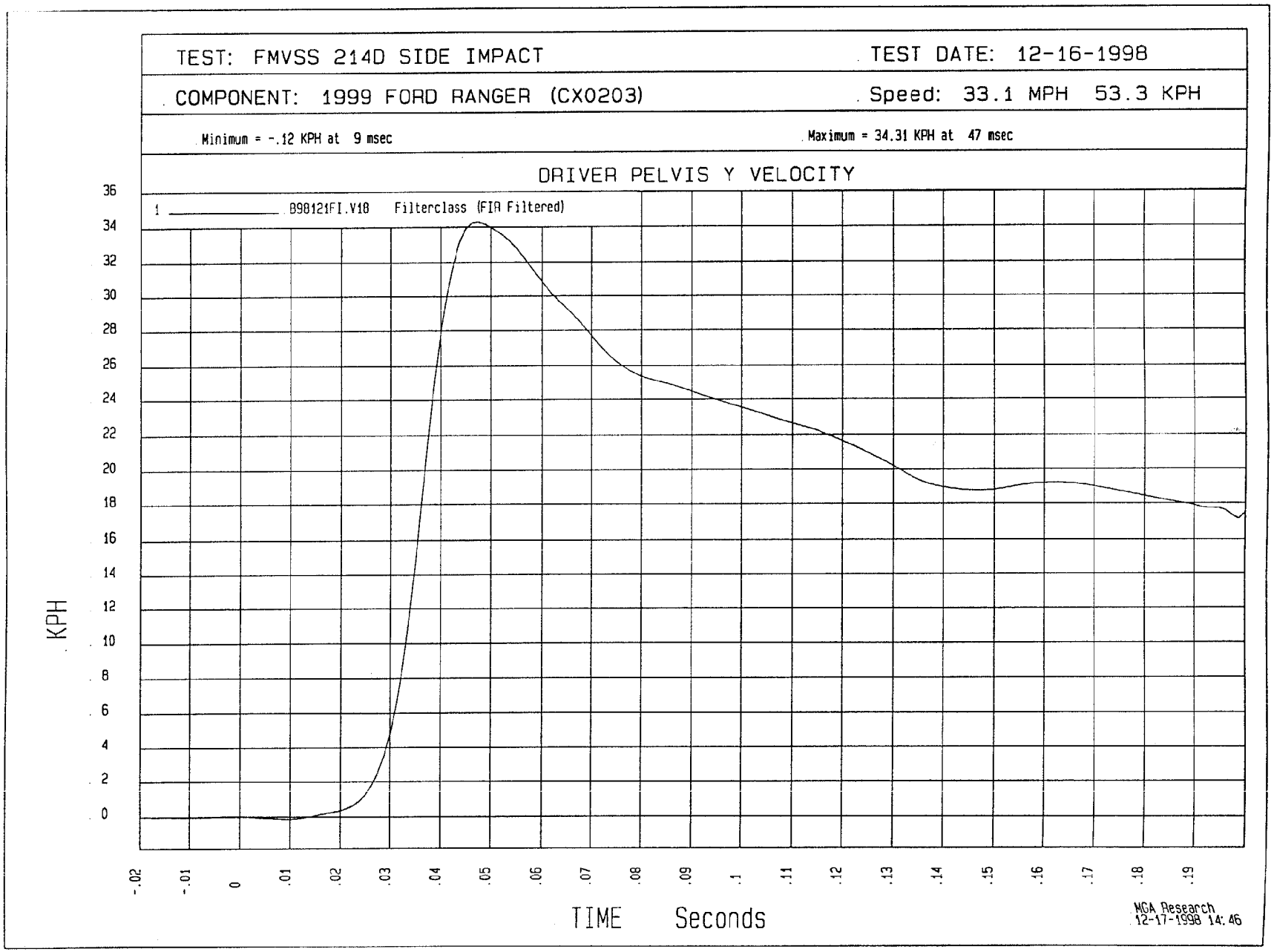
.13
.14
.15
.16
.17
.18
.19
TIME Seconds
MGA Research
12-17-1998 14:46


TEST: FMVSS 214D SIDE IMPACT
TEST DATE: 12-16-1998
COMPONENT: 1999 FORD RANGER (CX0203)
Speed: 33.1 MPH 53.3 KPH
Minimum = -16.92 G'S at 65 msec
Maximum = 57.33 G'S at 42 msec
DRIVER LOWER SPINE Y ACCELERATION
1 B98121FI.A17 Filterclass (FIR Filtered)
G'S
60
50
40
30
20
10
0
-10
-20
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
.13
.14
.15
.16
.17
.18
.19
TIME (SECONDS)
MGA Research
12-16-1998 15:39


TEST: FMVSS 214D SIDE IMPACT
TEST DATE: 12-16-1998
COMPONENT: 1999 FORD RANGER (CX0203)
Speed: 33.1 MPH 53.3 KPH
Minimum = -8.89E-02 KPH at 21 msec
Maximum = 32.12 KPH at 61 msec
DRIVER LOWER SPINE Y VELOCITY
1 B9812IFI.V17 Filterclass (FIR Filtered)
KPH
TIME Seconds
MGA Research
12-17-1998 14:46


TEST: FMVSS 214D SIDE IMPACT
TEST DATE: 12-16-1998
COMPONENT: 1999 FORD RANGER (CX0203)
Speed: 33.1 MPH 53.3 KPH
Minimum = -11.34 G'S at 58 msec
Maximum = 81.32 G'S at 36 msec
DRIVER PELVIS Y ACCELERATION
1 B98121FI.A18 Filterclass (FIR Filtered)
MGA Research
12-16-1998 15:39
80
60
40
20
0
-20
.19
.18
.17
.16
.15
.14
.13
.12
.11
.1
.09
.08
.07
.06
.05
.04
.03
.02
.01
0
-.01
-.02
TIME (SECONDS)
G's


TEST: FMVSS 214D SIDE IMPACT
TEST DATE: 12-16-1998
COMPONENT: 1999 FORD RANGER (CX0203)
Speed: 33.1 MPH 53.3 KPH
Minimum = -.12 KPH at 9 msec
Maximum = 34.31 KPH at 47 msec
DRIVER PELVIS Y VELOCITY
1 B98121FI.V18 Filterclass (FIR Filtered)
KPH
36
34
32
30
28
26
24
22
20
18
16
14
12
10
8
6
4
2
0
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
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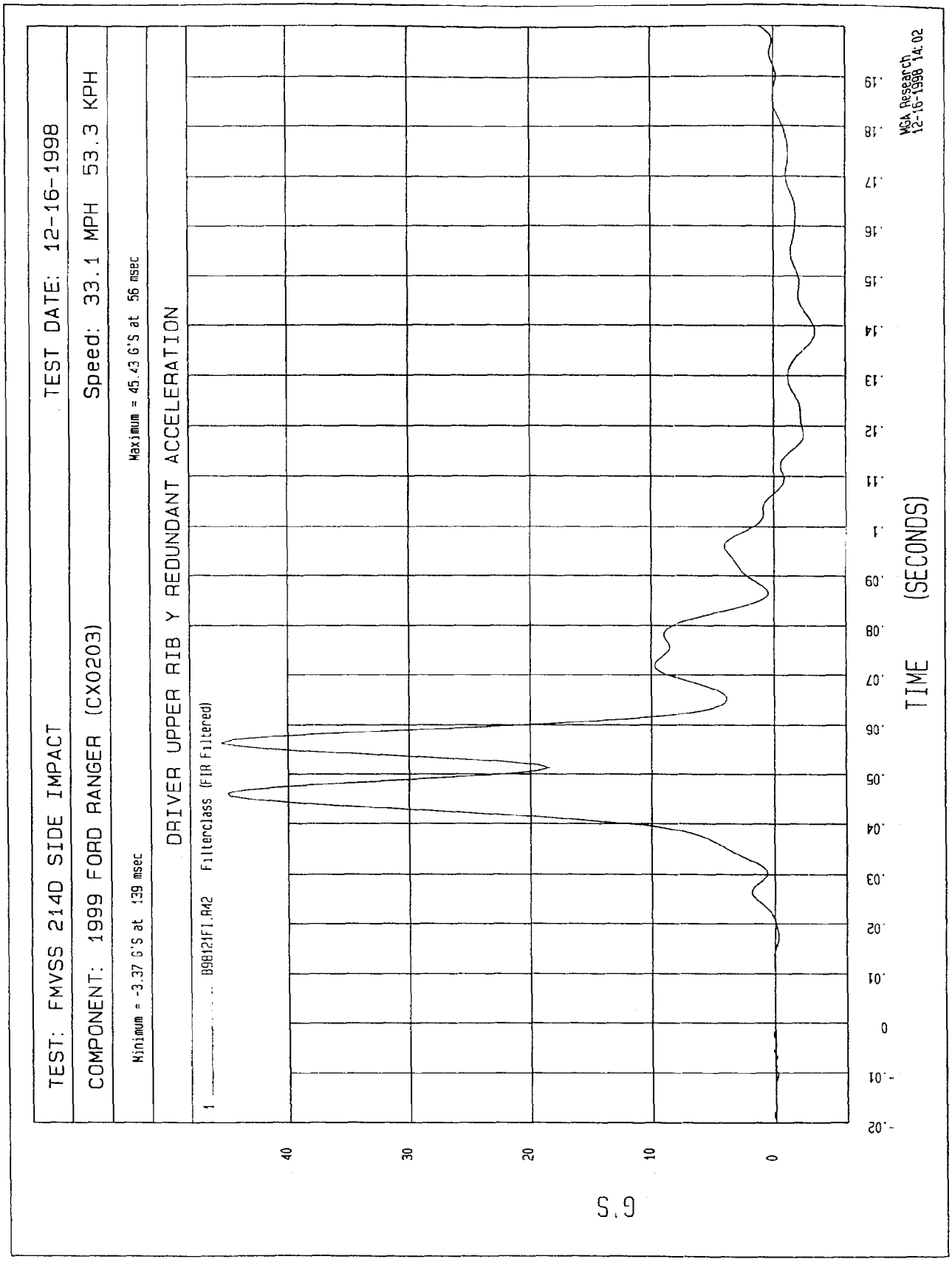
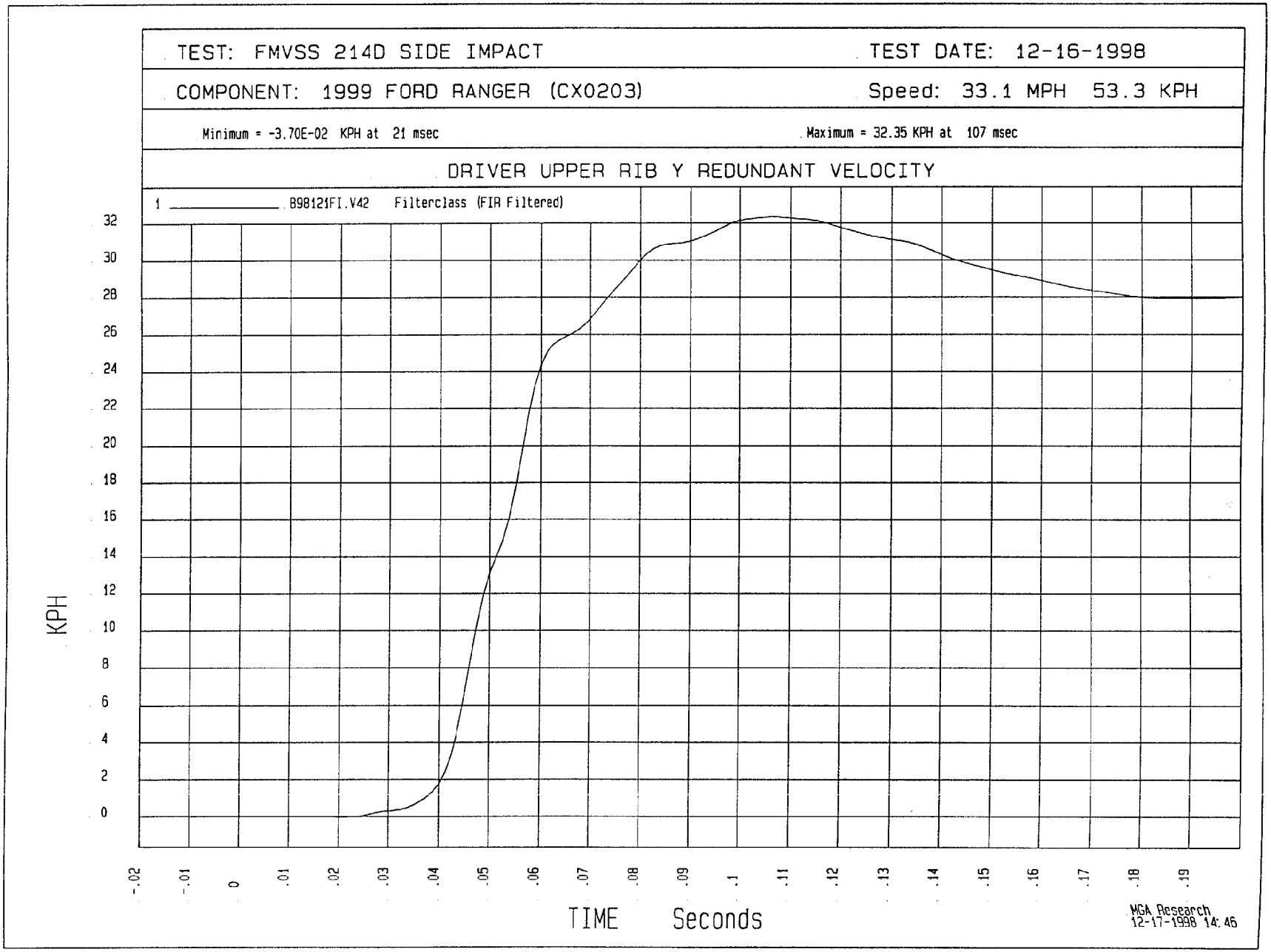
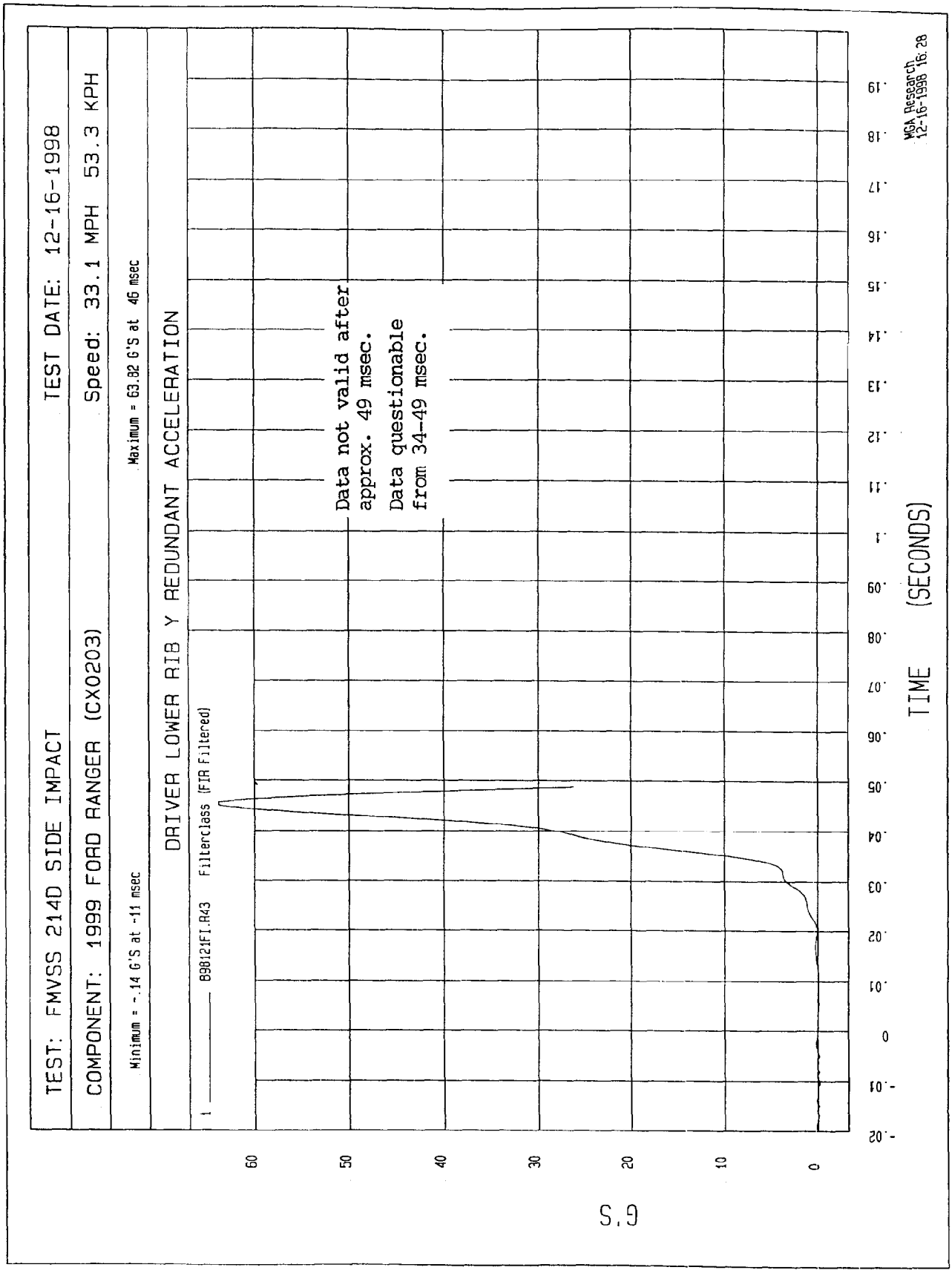
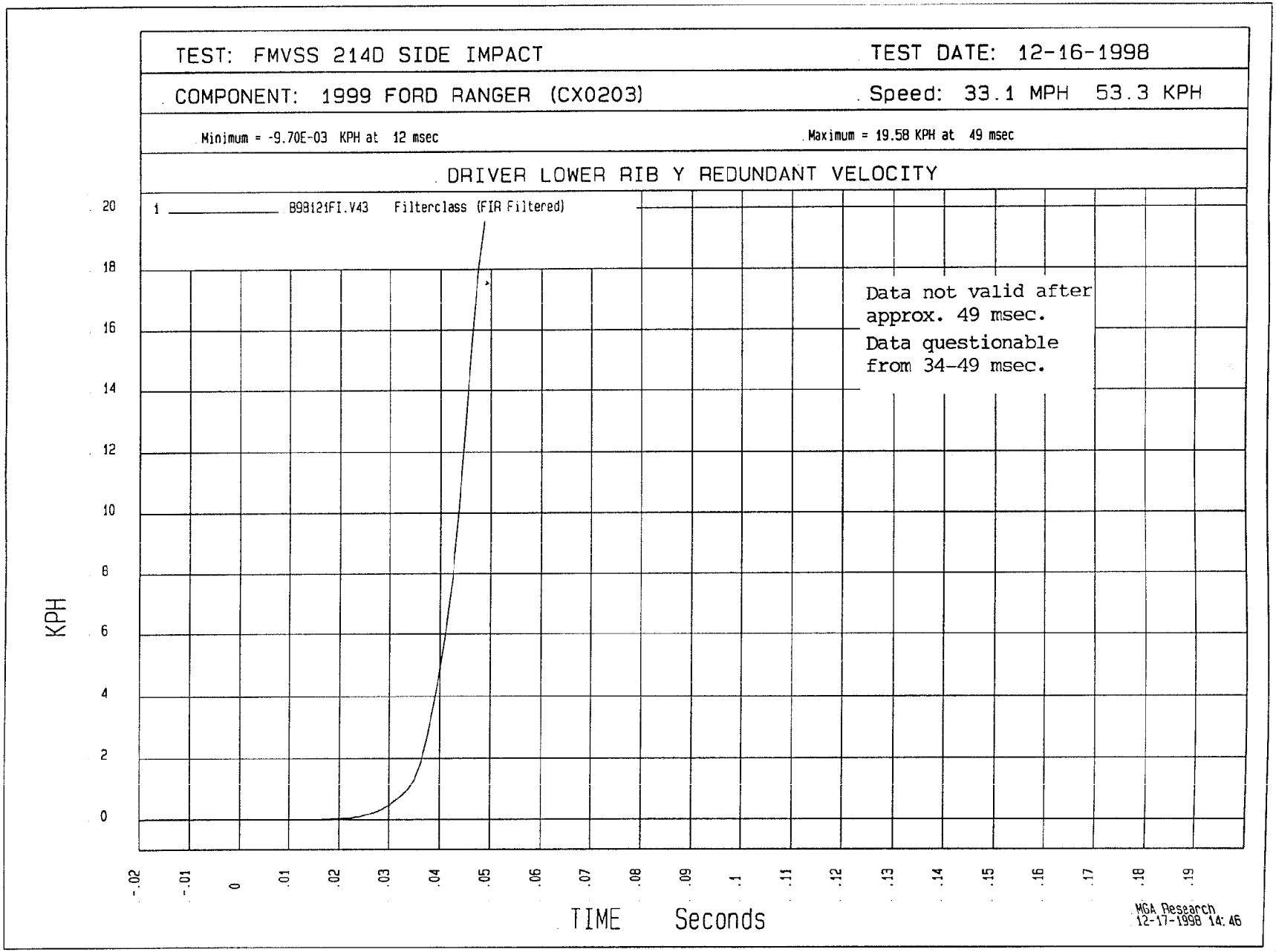
.11
.12
.13
.14
.15
.16
.17
.18
.19
TIME Seconds
MGA Research
12-17-1998 14:46


TEST: FMVSS 214D SIDE IMPACT
TEST DATE: 12-16-1998
COMPONENT: 1999 FORD RANGER (CX0203)
Speed: 33.1 MPH 53.3 KPH
Minimum = -3.37 G'S at 139 msec
Maximum = 45.43 G'S at 56 msec
DRIVER UPPER RIB Y REDUNDANT ACCELERATION
1 B98121F1.A42 Filterclass (FIR Filtered)
MGA Research
12-16-1998 14:02
G'S
TIME (SECONDS)


TEST: FMVSS 214D SIDE IMPACT
TEST DATE: 12-16-1998
COMPONENT: 1999 FORD RANGER (CX0203)
Speed: 33.1 MPH 53.3 KPH
Minimum = -3.70E-02 KPH at 21 msec
Maximum = 32.35 KPH at 107 msec
DRIVER UPPER RIB Y REDUNDANT VELOCITY
1 B98121FI.V42 Filterclass (FIR Filtered)
KPH
32
30
28
26
24
22
20
18
16
14
12
10
8
6
4
2
0
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
.13
.14
.15
.16
.17
.18
.19
TIME Seconds
MGA Research
12-17-1998 14:46


TEST: FMVSS 214D SIDE IMPACT
TEST DATE: 12-16-1998
COMPONENT: 1999 FORD RANGER (CX0203)
Speed: 33.1 MPH 53.3 KPH
Minimum = -.14 G'S at -11 msec
Maximum = 63.82 G'S at 46 msec
DRIVER LOWER RIB Y REDUNDANT ACCELERATION
1 B98121FI.R43 Filterclass (FIR Filtered)
Data not valid after approx. 49 msec.
Data questionable from 34-49 msec.
G'S
TIME (SECONDS)
MGA Research 12-16-1998 16:28


TEST: FMVSS 214D SIDE IMPACT
TEST DATE: 12-16-1998
COMPONENT: 1999 FORD RANGER (CX0203)
Speed: 33.1 MPH 53.3 KPH
Minimum = -9.70E-03 KPH at 12 msec
Maximum = 19.58 KPH at 49 msec
DRIVER LOWER RIB Y REDUNDANT VELOCITY
1 B98121FI.V43 Filterclass (FIR Filtered)
Data not valid after approx. 49 msec.
Data questionable from 34-49 msec.
KPH
20
18
16
14
12
10
8
6
4
2
0
-.02
-.01
0
.01
.02
.03
.04
.05
.06
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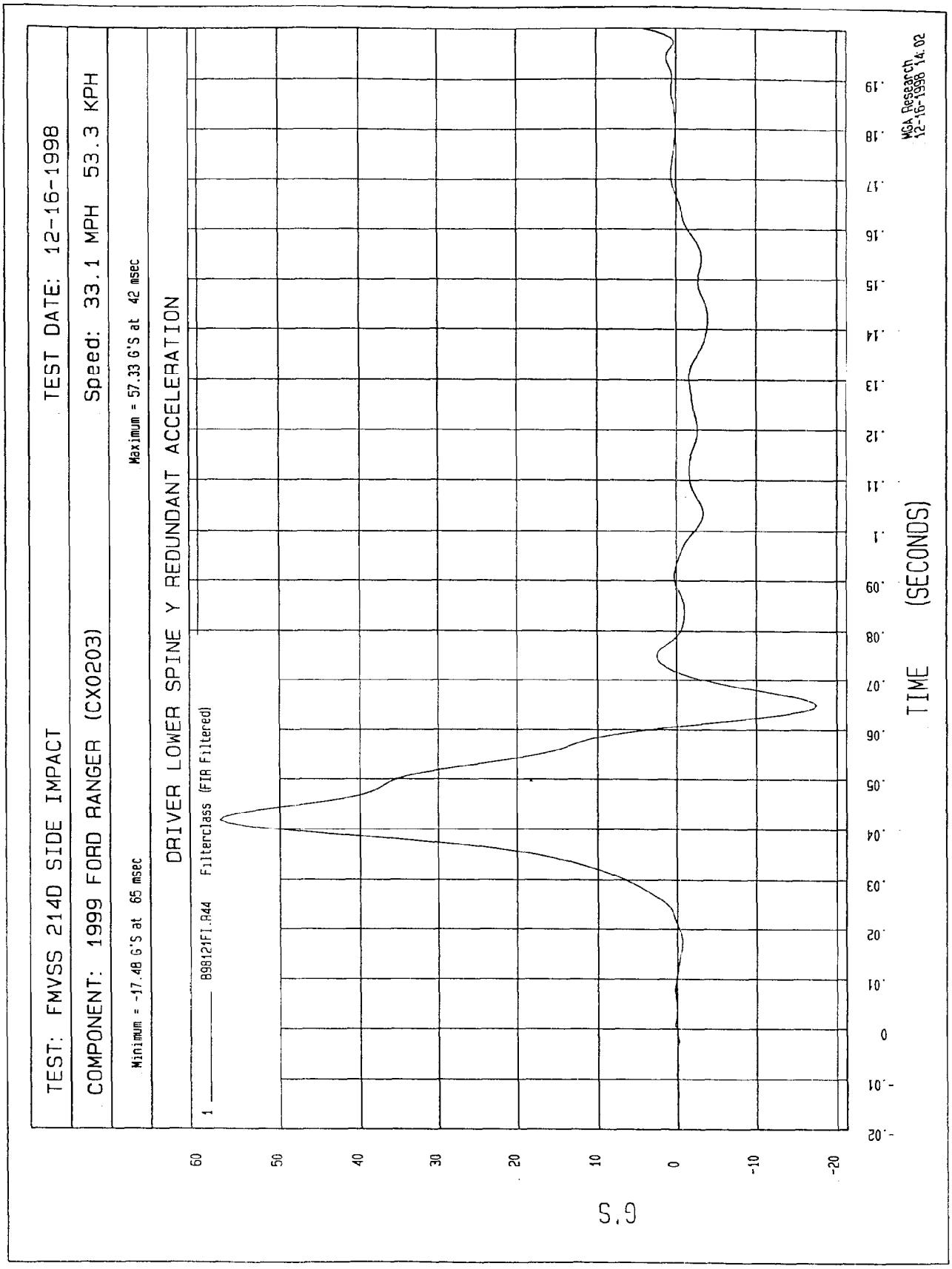
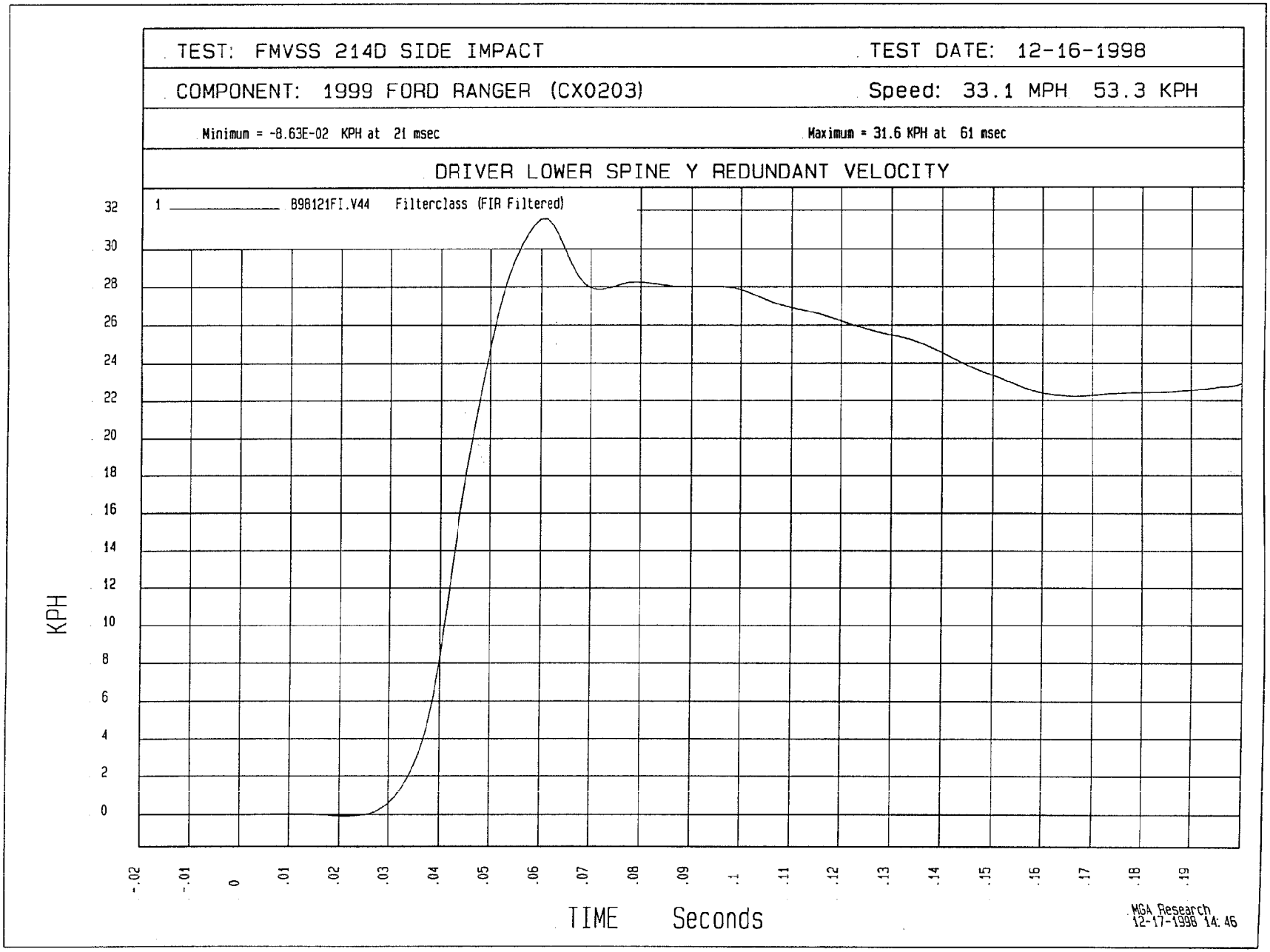
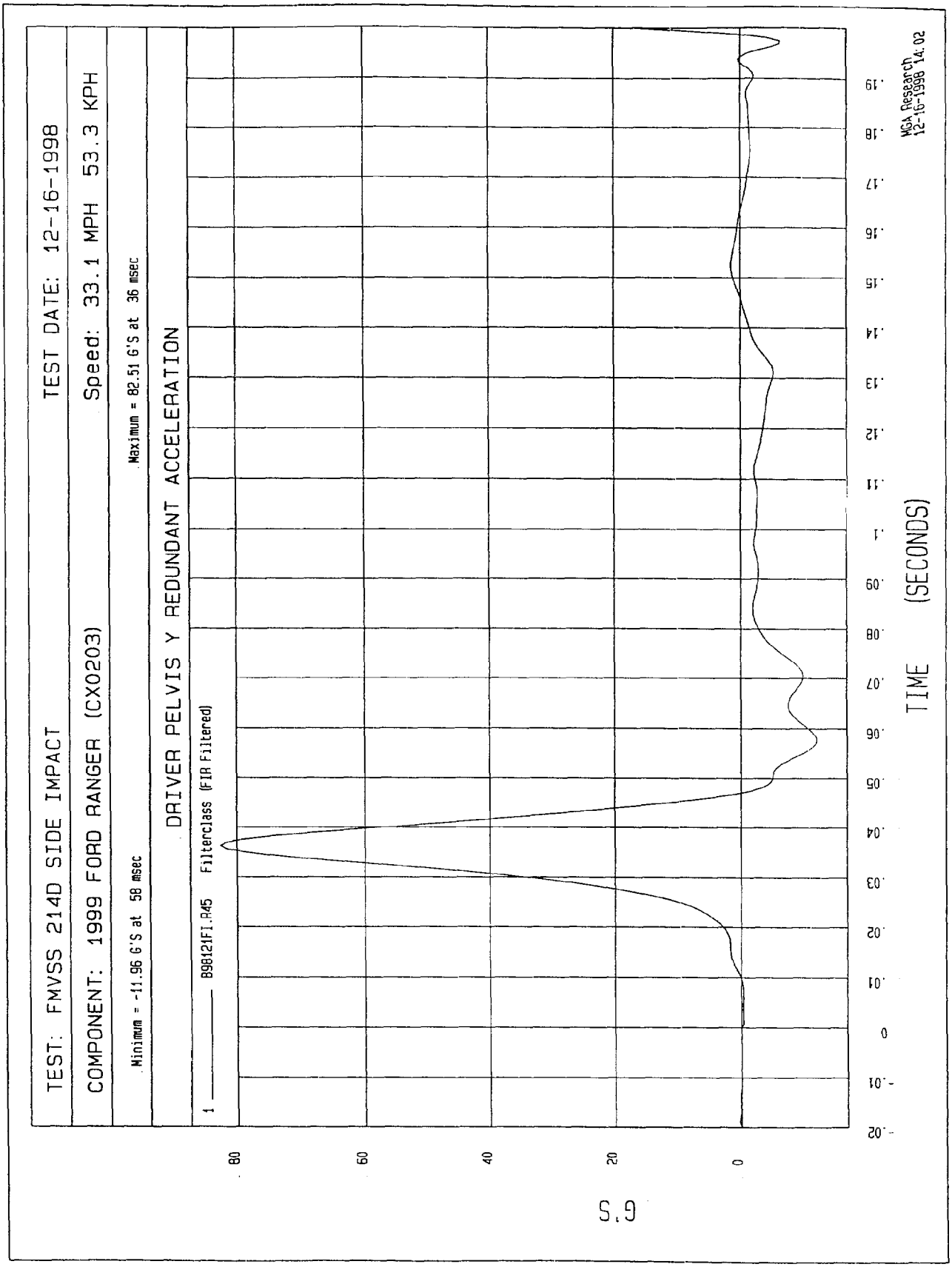
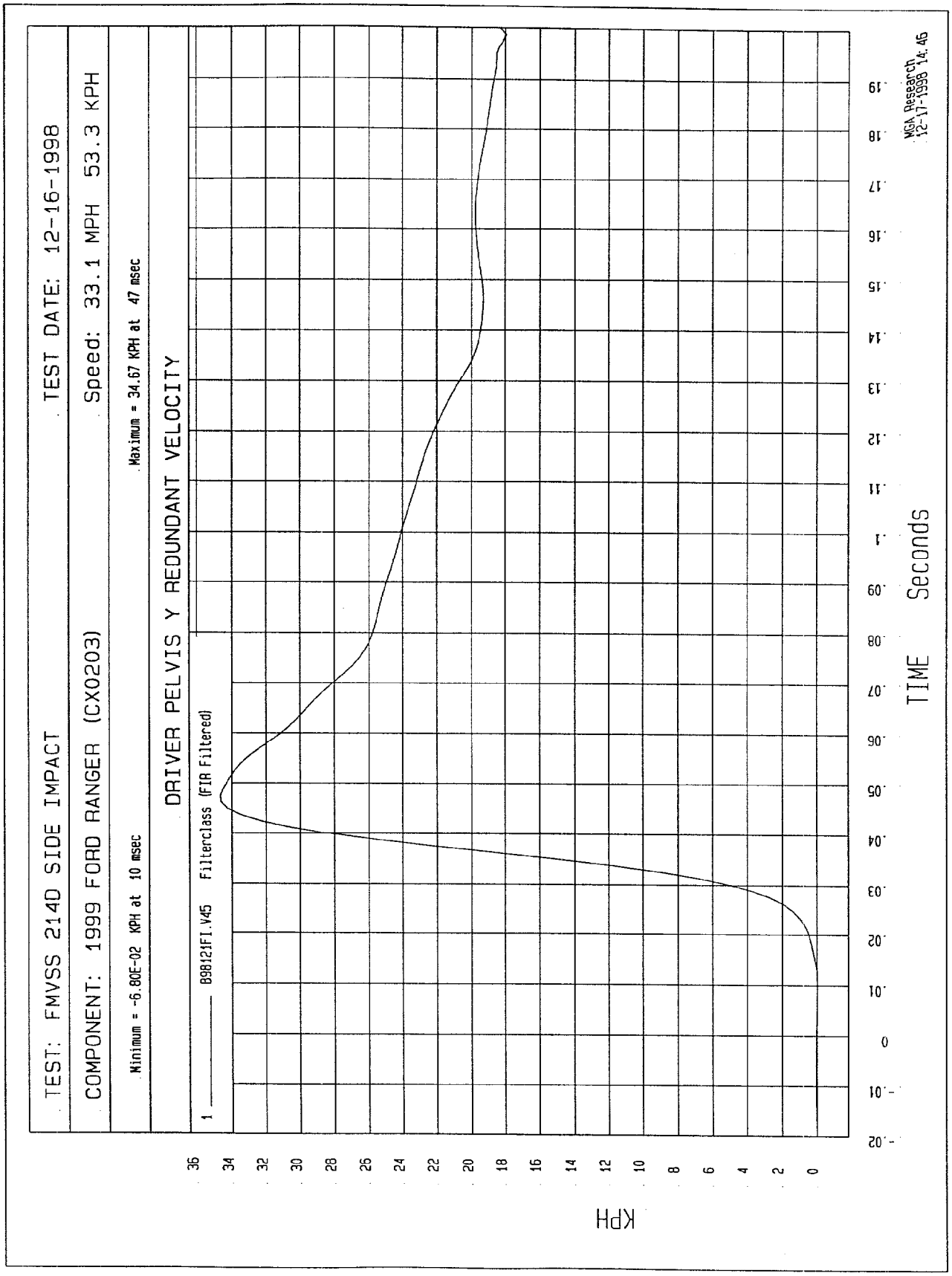
.12
.13
.14
.15
.16
.17
.18
.19
TIME Seconds
MGA Research
12-17-1998 14:46


TEST: FMVSS 214D SIDE IMPACT
TEST DATE: 12-16-1998
COMPONENT: 1999 FORD RANGER (CX0203)
Speed: 33.1 MPH 53.3 KPH
Minimum = -17.48 G'S at 65 msec
Maximum = 57.33 G'S at 42 msec
DRIVER LOWER SPINE Y REDUNDANT ACCELERATION
1 B98121FI.R44 Filterclass (FIR Filtered)
60
50
40
30
20
10
0
-10
-20
.19
.18
.17
.16
.15
.14
.13
.12
.11
.1
.09
.08
.07
.06
.05
.04
.03
.02
.01
0
-.01
-.02
TIME (SECONDS)
MGA Research
12-16-1998 14:02
6.5
S.9


TEST: FMVSS 214D SIDE IMPACT
TEST DATE: 12-16-1998
COMPONENT: 1999 FORD RANGER (CX0203)
Speed: 33.1 MPH 53.3 KPH
Minimum = -8.63E-02 KPH at 21 msec
Maximum = 31.6 KPH at 61 msec
DRIVER LOWER SPINE Y REDUNDANT VELOCITY
1 B98121FI.V44 Filterclass (FIR Filtered)
KPH
32
30
28
26
24
22
20
18
16
14
12
10
8
6
4
2
0
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
.13
.14
.15
.16
.17
.18
.19
TIME Seconds
MGA Research
12-17-1998 14:46


TEST: FMVSS 214D SIDE IMPACT
TEST DATE: 12-16-1998
COMPONENT: 1999 FORD RANGER (CX0203)
Speed: 33.1 MPH 53.3 KPH
Minimum = -11.96 G'S at 58 msec
Maximum = 82.51 G'S at 36 msec
DRIVER PELVIS Y REDUNDANT ACCELERATION
1 B98121FI.A45 Filterclass (FIR Filtered)
80
60
40
20
0
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
.13
.14
.15
.16
.17
.18
.19
TIME (SECONDS)
MGA Research
12-16-1998 14:02
G's


TEST: FMVSS 214D SIDE IMPACT
TEST DATE: 12-16-1998
COMPONENT: 1999 FORD RANGER (CX0203)
Speed: 33.1 MPH 53.3 KPH
Minimum = -6.80E-02 KPH at 10 msec
Maximum = 34.67 KPH at 47 msec
DRIVER PELVIS Y REDUNDANT VELOCITY
1 B98121FI.V45 Filterclass (FIR Filtered)
KPH
TIME Seconds
MGA Research
12-17-1998 14:46

APPENDIX C
SID CONFIGURATION AND PERFORMANCE VERIFICATION

SUMMARY

SIDE PRE & POST-TEST CALIBRATION

CONFIGURED TO LEFT SIDE IMPACT

Report Date: December 22, 1998 Technician: Tim Michnay

Test Date: December 16, 1998

Test Parameter	Specification	Dummy Serial No: 048	
		Pre-Test	Post-Test
SH-Seated Height (mm)	889 - 909	904	904
RH-Rib Height (mm)	501 - 521	516	516
HP-Hip Pivot Height (mm)	99 ref.	99	99
RD-Rib from Back Line (mm)	229 - 241	233	233
KV-Knee Pivot from Back Line (mm)	511 - 526	524	524
SW-Knee Pivot to Floor (mm)	490 - 505	493	493
HW-Hip Width (mm)	356 - 391	371	371
Thorax Impacts			
Temperature (°C)	18.9 - 25.5	21.0	21.0
Relative Humidity (%)	10 - 70	22	20
Probe Speed (m/s)	4.27 - 4.33	4.28	4.28
Upper Rib (g's)	37 - 46	44	41
Lower Rib (g's)	37 - 46	40	39
Lower Spine (g's)	15 - 22	22	20
Pelvis Impact			
Temperature (°C)	18.9 - 25.5	21.0	21.0
Relative Humidity (%)	10 - 70	22	20
Probe Speed (m/s)	4.27 - 4.33	4.28	4.30
Pelvis ('gs)	40 - 60	53	49

REMARKS:

PRE-TEST CERTIFICATION DATA

Dummy Serial Number: 048

Calibration Test Results Summary

Dummy Serial Number: 048

Pre-Test Calibration

External Dimensions:	The dummy passed all external dimension requirements.
Thorax Impact Test:	The thorax passed all impact test requirements.
Pelvic Impact Test:	The pelvis passed all impact test requirements.
Abdominal Compression Test:	The abdomen passed all compression test requirements.
Lumbar Flexion Test:	The lumbar passed all flexion test requirements.

SIDE IMPACT DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA

DUMMY SERIAL NO.: 048 DATE OF VERIFICATION: December 15, 1998

DESCRIPTION	SPECIFICATION	TEST RESULTS
SH - Seated Height (mm)	889 - 909	904
RH - Rib Height (mm)	501 - 521	516
HP - Hip Pivot Height (mm)	99 ref.	99
RD - Rib From Back Line (mm)	229 - 241	233
KV - Knee Pivot From Back Line (mm)	511 - 526	524
SW - Knee Pivot to Floor (mm)	490 - 505	493
HW - Hip Width (mm)	356 - 391	371

MEASUREMENTS BY: _____

APPROVED BY: _____

MGA RESEARCH CORPORATION

THORAX IMPACT TEST

SIDE IMPACT DUMMY (SID)

DATE: December 15, 1998

DUMMY SERIAL NUMBER: 048

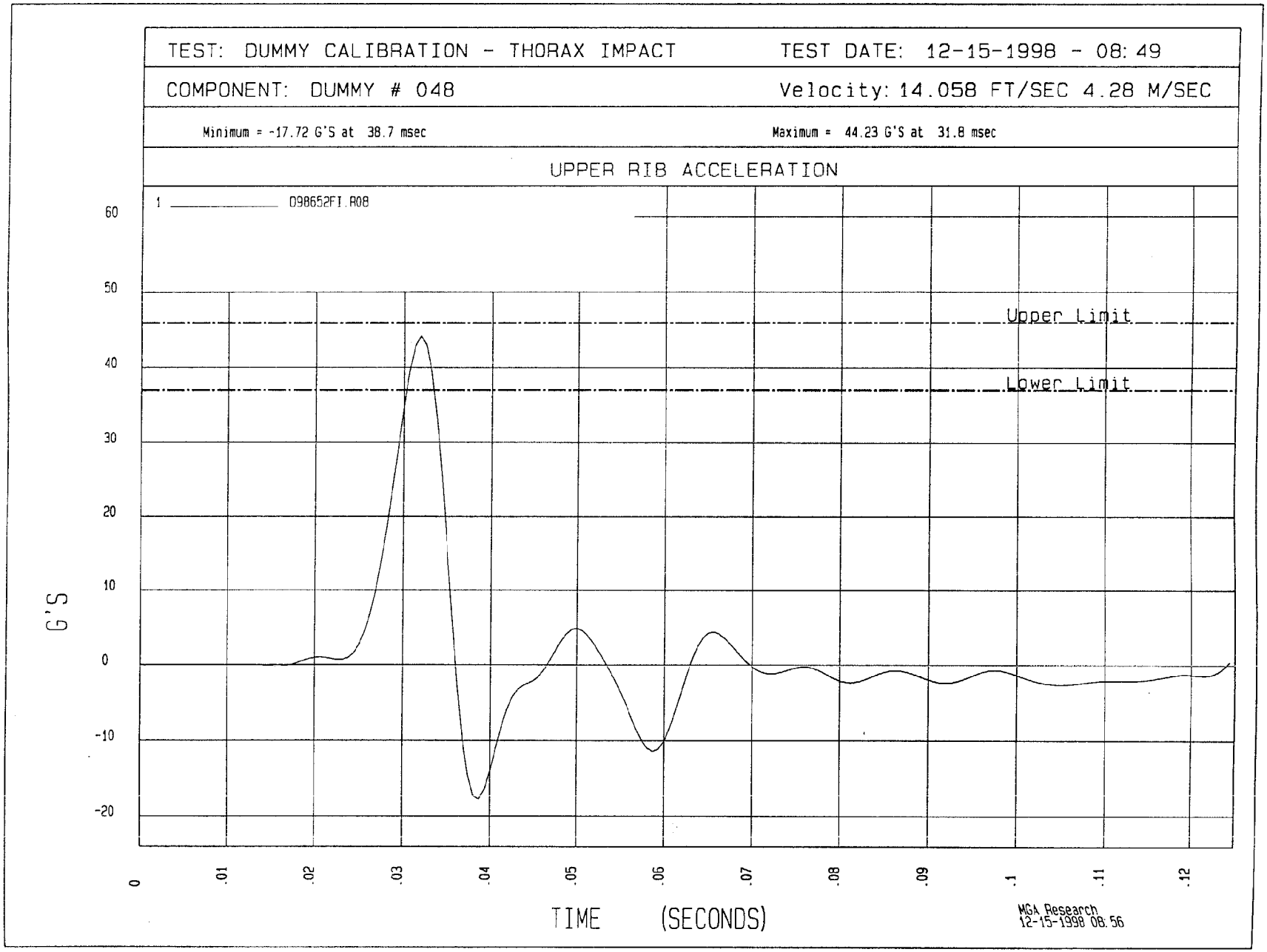
TEST NUMBER: D981652

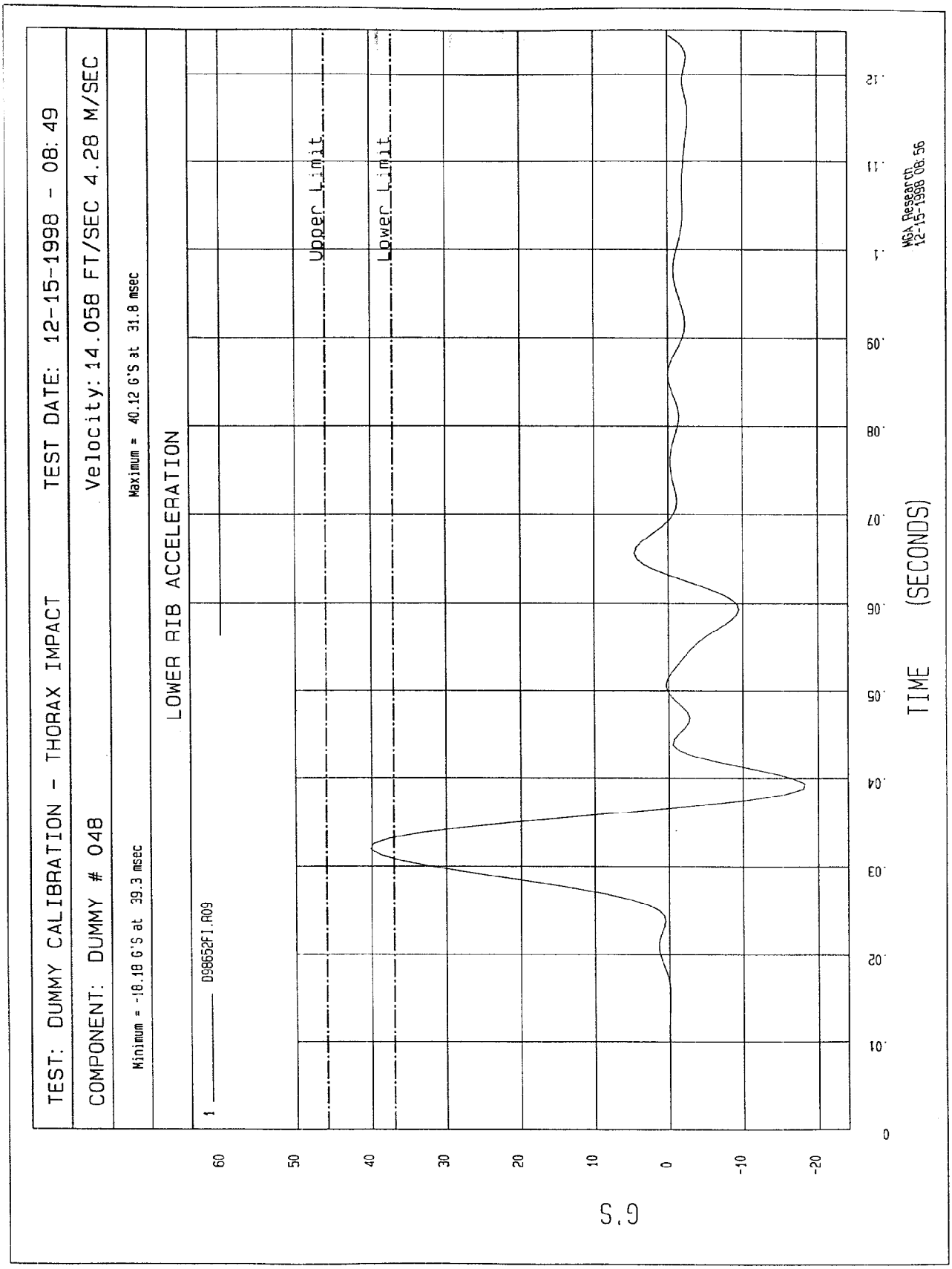
TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	21.0
RELATIVE HUMIDITY (%)	10 - 70	22
PROBE SPEED (m/s)	4.27 - 4.33	4.28
UPPER RIB (g's)	37 - 46 g's	44
LOWER RIB (g's)	37 - 46 g's	40
LOWER SPINE (g's)	15 - 22 g's	22

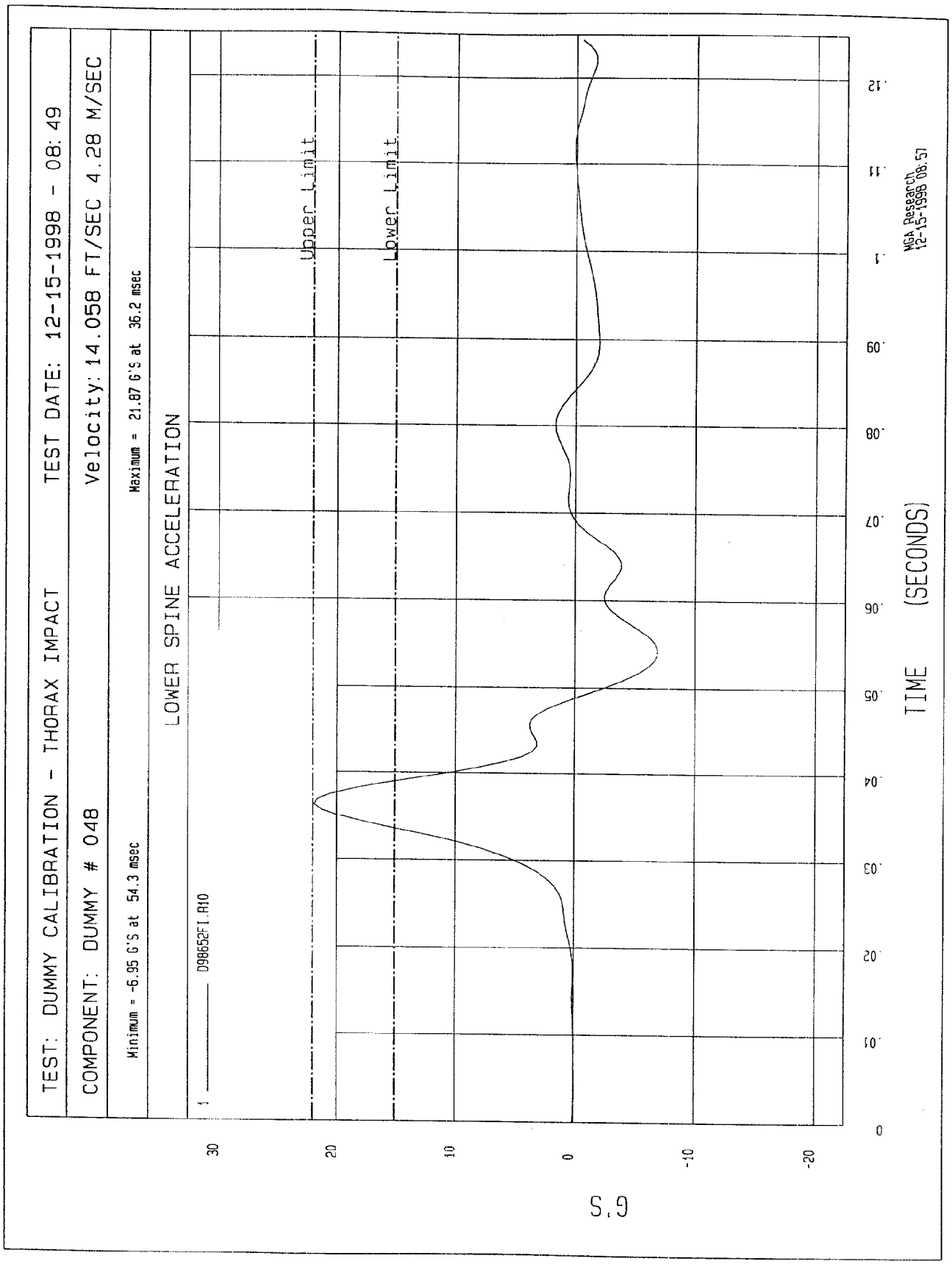
TEST MEETS SPECIFICATIONS

TECHNICIAN

APPROVED BY


TEST: DUMMY CALIBRATION - THORAX IMPACT
TEST DATE: 12-15-1998 - 08:49
COMPONENT: DUMMY # 048
Velocity: 14.058 FT/SEC 4.28 M/SEC
Minimum = -17.72 G'S at 38.7 msec
Maximum = 44.23 G'S at 31.8 msec
UPPER RIB ACCELERATION
1 D98652FI.R08
Upper Limit
Lower Limit
60
50
40
30
20
10
0
-10
-20
G'S
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
TIME (SECONDS)
MGA Research
12-15-1998 08:56


TEST: DUMMY CALIBRATION - THORAX IMPACT
TEST DATE: 12-15-1998 - 08:49
COMPONENT: DUMMY # 048
Velocity: 14.058 FT/SEC 4.28 M/SEC
Minimum = -18.18 G'S at 39.3 msec
Maximum = 40.12 G'S at 31.8 msec
LOWER RIB ACCELERATION
1 D98652F1.R09
Upper Limit
Lower Limit
60
50
40
30
20
10
0
-10
-20
G'S
0
10
20
30
40
50
60
70
80
90
1
11
12
TIME (SECONDS)
MGA Research
12-15-1998 08:56


TEST: DUMMY CALIBRATION - THORAX IMPACT
TEST DATE: 12-15-1998 - 08:49
COMPONENT: DUMMY # 048
Velocity: 14.058 FT/SEC 4.28 M/SEC
Minimum = -6.95 G'S at 54.3 msec
Maximum = 21.87 G'S at 36.2 msec
LOWER SPINE ACCELERATION
1 D9865SFI.A10
Upper Limit
Lower Limit
30
20
10
0
-10
-20
.12
.11
.1
.09
.08
.07
.06
.05
.04
.03
.02
.01
0
TIME (SECONDS)
MGA Research
12-15-1998 08:57
6'S

MGA RESEARCH CORPORATION

PELVIS IMPACT TEST

SIDE IMPACT DUMMY (SID)

DATE: December 15, 1998

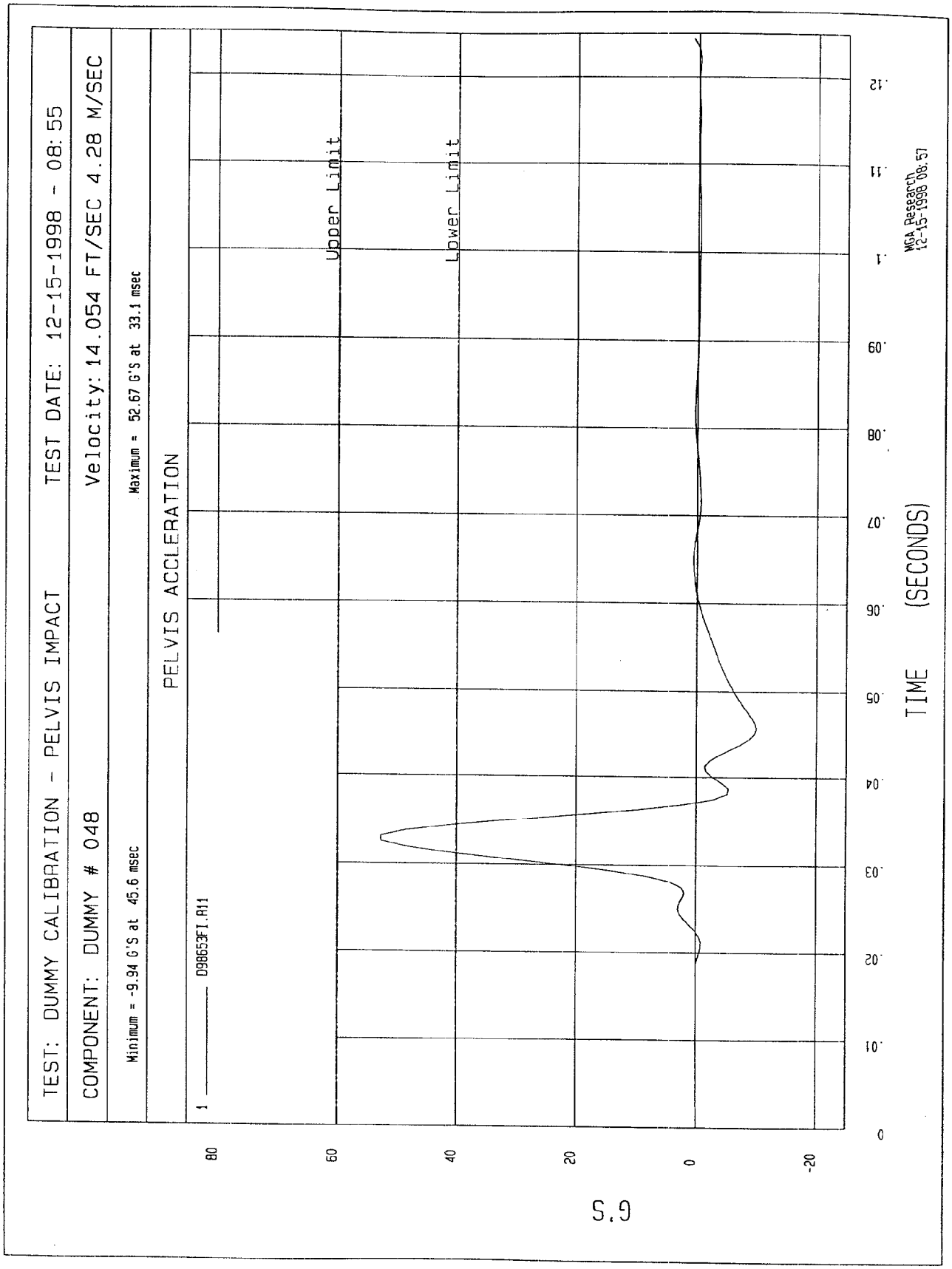
DUMMY SERIAL NUMBER: 048 TEST NUMBER: D981653

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	21.0
RELATIVE HUMIDITY (%)	10 - 70	22
PROBE SPEED (m/s)	4.27 - 4.33	4.28
PELVIS ACCELERATION (g's)	40 - 60	53

TEST MEETS SPECIFICATIONS

TECHNICIAN _____

APPROVED BY _____


TEST: DUMMY CALIBRATION - PELVIS IMPACT
TEST DATE: 12-15-1998 - 08:55
COMPONENT: DUMMY # 048
Velocity: 14.054 FT/SEC 4.28 M/SEC
Minimum = -9.94 G'S at 45.6 msec
Maximum = 52.67 G'S at 33.1 msec
PELVIS ACCLERATION
1 D98653FI.A11
Upper Limit
Lower Limit
80
60
40
20
0
-20
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
TIME (SECONDS)
MGA Research
12-15-1998 08:57
G's

MGA RESEARCH CORPORATION

ABDOMINAL COMPRESSION TEST
(PRELOAD = 10 LBS)

SIDE IMPACT DUMMY (SID)

DATE: December 15, 1998

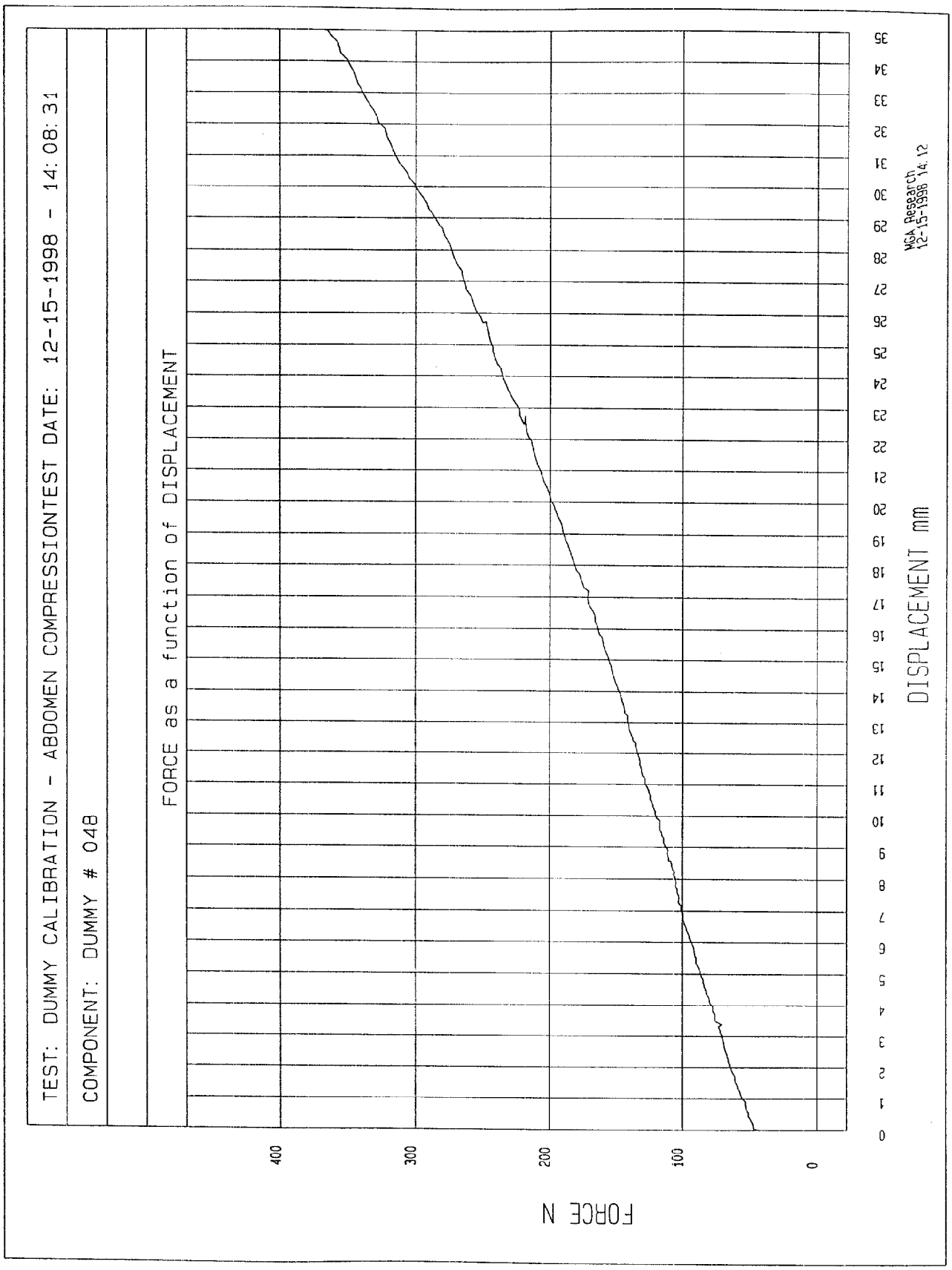
DUMMY SERIAL NUMBER: 048 TEST NUMBER: D981654

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	21.0
RELATIVE HUMIDITY (%)	10 - 70	22
FORCE @ 12.7 mm	104 - 162	139
FORCE @ 19.0 mm	163 - 222	190
FORCE @ 25.4 mm	222 - 280	246
FORCE @ 33 mm	325 - 391	341

TEST MEETS SPECIFICATIONS

TECHNICIAN

APPROVED BY


TEST: DUMMY CALIBRATION - ABDOMEN COMPRESSIONTEST DATE: 12-15-1998 - 14:08:31
COMPONENT: DUMMY # 048
FORCE as a function of DISPLACEMENT
FORCE N
400
300
200
100
0
DISPLACEMENT mm
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35
MGA Research
12-15-1998 14:12

MGA RESEARCH CORPORATION

LUMBAR FLEXION TEST

SIDE IMPACT DUMMY (SID)

DATE: December 15, 1998

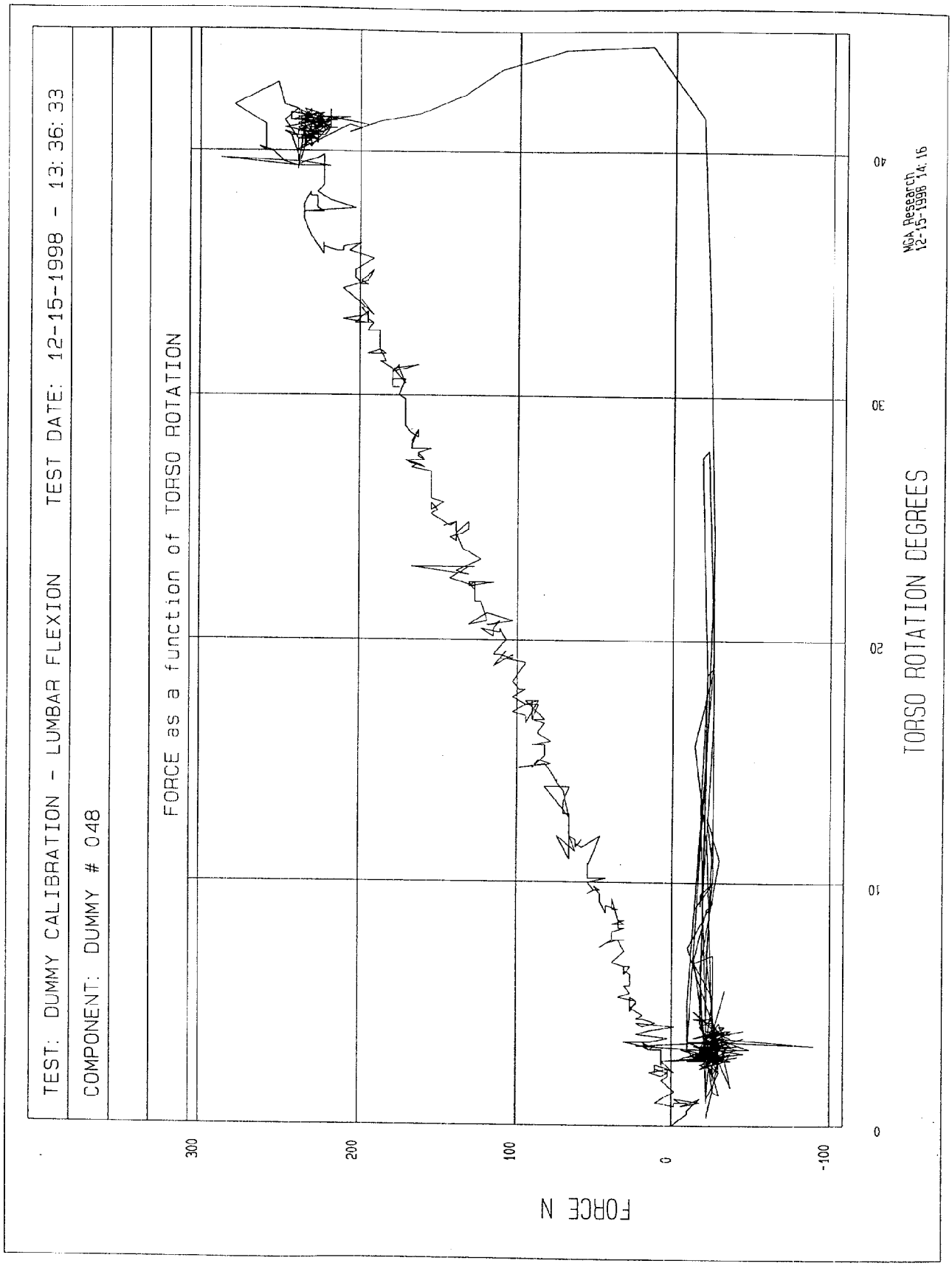
DUMMY SERIAL NUMBER: 048 TEST NUMBER: D981655

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	21.0
RELATIVE HUMIDITY (%)	10 - 70	22
FORCE @ 0°	0 - 26.7	0
FORCE @ 20°	97.9 - 151.2	106.6
FORCE @ 30°	151.2 - 204.6	174.8
FORCE @ 40°	204.6 - 258.0	255.1
RETURN ANGLE	12° maximum	3

TEST MEETS SPECIFICATIONS

TECHNICIAN

APPROVED BY


TEST: DUMMY CALIBRATION - LUMBAR FLEXION TEST DATE: 12-15-1998 - 13:36:33
COMPONENT: DUMMY # 048
FORCE as a function of TORSO ROTATION
FORCE N
300
200
100
0
-100
0
10
20
30
40
TORSO ROTATION DEGREES
MGA Research
12-15-1998 14:16

POST-TEST CERTIFICATION DATA

Dummy Serial Number: 048

Calibration Test Results Summary

Dummy Serial Number: 048

Post-Test Calibration

External Dimensions:	The dummy passed all external dimension requirements.
Thorax Impact Test:	The thorax passed all impact test requirements.
Pelvic Impact Test:	The pelvis passed all impact test requirements.
Abdominal Compression Test:	The abdomen passed all compression test requirements.
Lumbar Flexion Test:	The lumbar passed all flexion test requirements.

SIDE IMPACT DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA

DUMMY SERIAL NO.: 048 DATE OF VERIFICATION: January 5, 1999

DESCRIPTION	SPECIFICATION	TEST RESULTS
SH - Seated Height (mm)	889 - 909	904
RH - Rib Height (mm)	501 - 521	516
HP - Hip Pivot Height (mm)	99 ref.	99
RD - Rib From Back Line (mm)	229 - 241	233
KV - Knee Pivot From Back Line (mm)	511 - 526	524
SW - Knee Pivot to Floor (mm)	490 - 505	493
HW - Hip Width (mm)	356 - 391	371

MEASUREMENTS BY: _____

APPROVED BY: _____

MGA RESEARCH CORPORATION

THORAX IMPACT TEST

SIDE IMPACT DUMMY (SID)

DATE: January 5, 1999

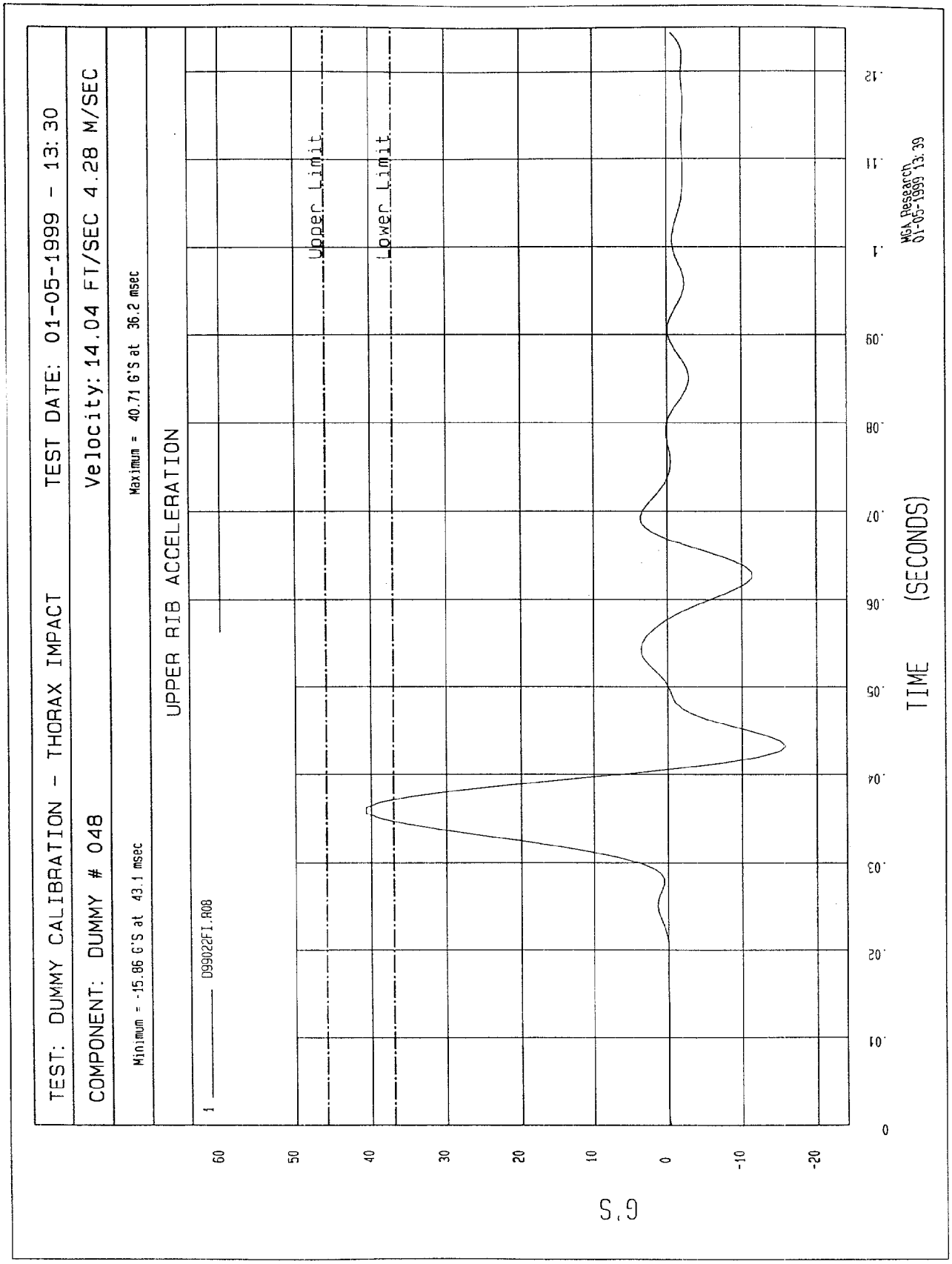
DUMMY SERIAL NUMBER: 048 TEST NUMBER: D99022

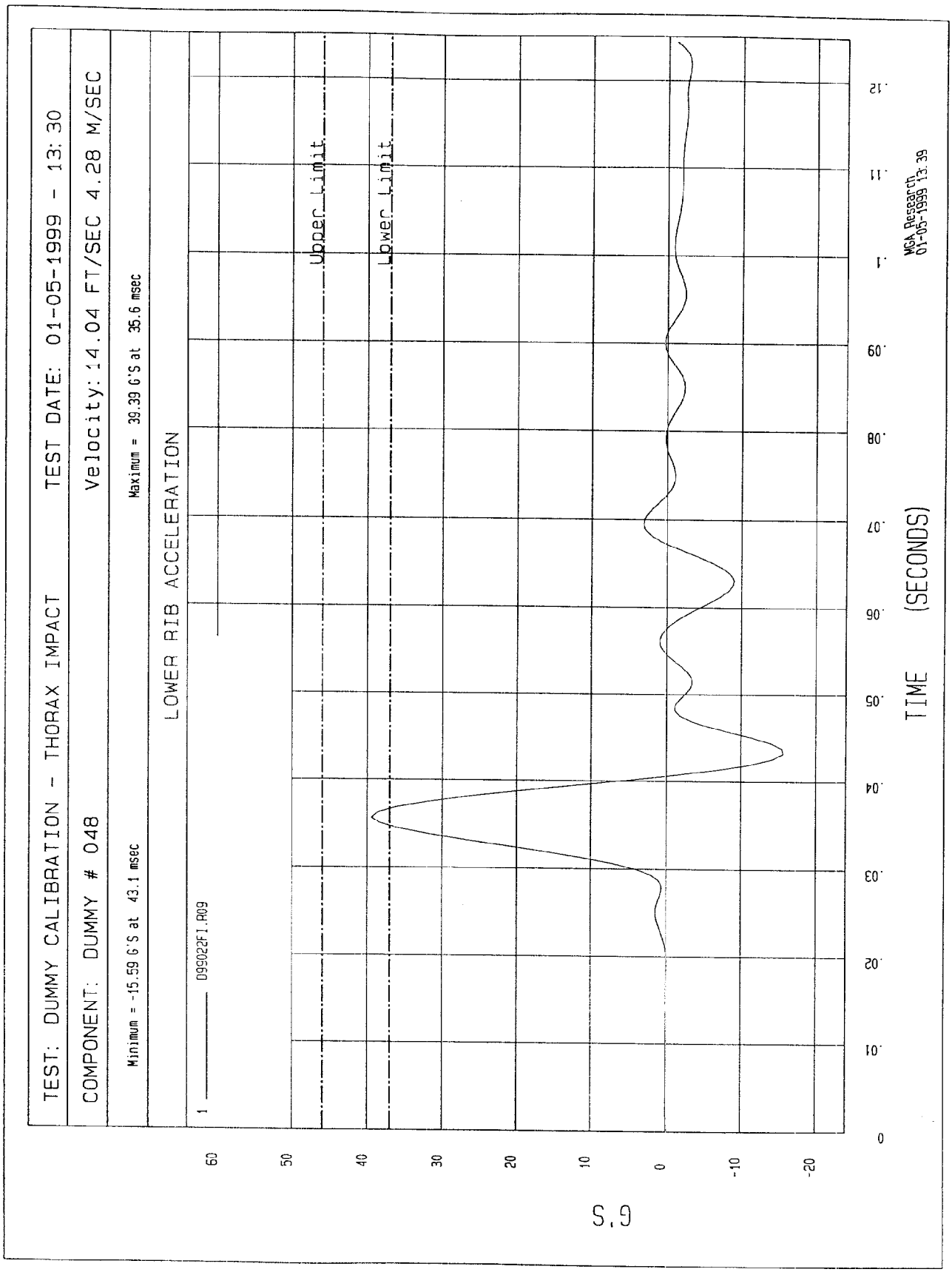
TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	21.0
RELATIVE HUMIDITY (%)	10 - 70	20
PROBE SPEED (m/s)	4.27 - 4.33 fps	4.28
UPPER RIB (g's)	37 - 46 g's	41
LOWER RIB (g's)	37 - 46 g's	39
LOWER SPINE (g's)	15 - 22 g's	20

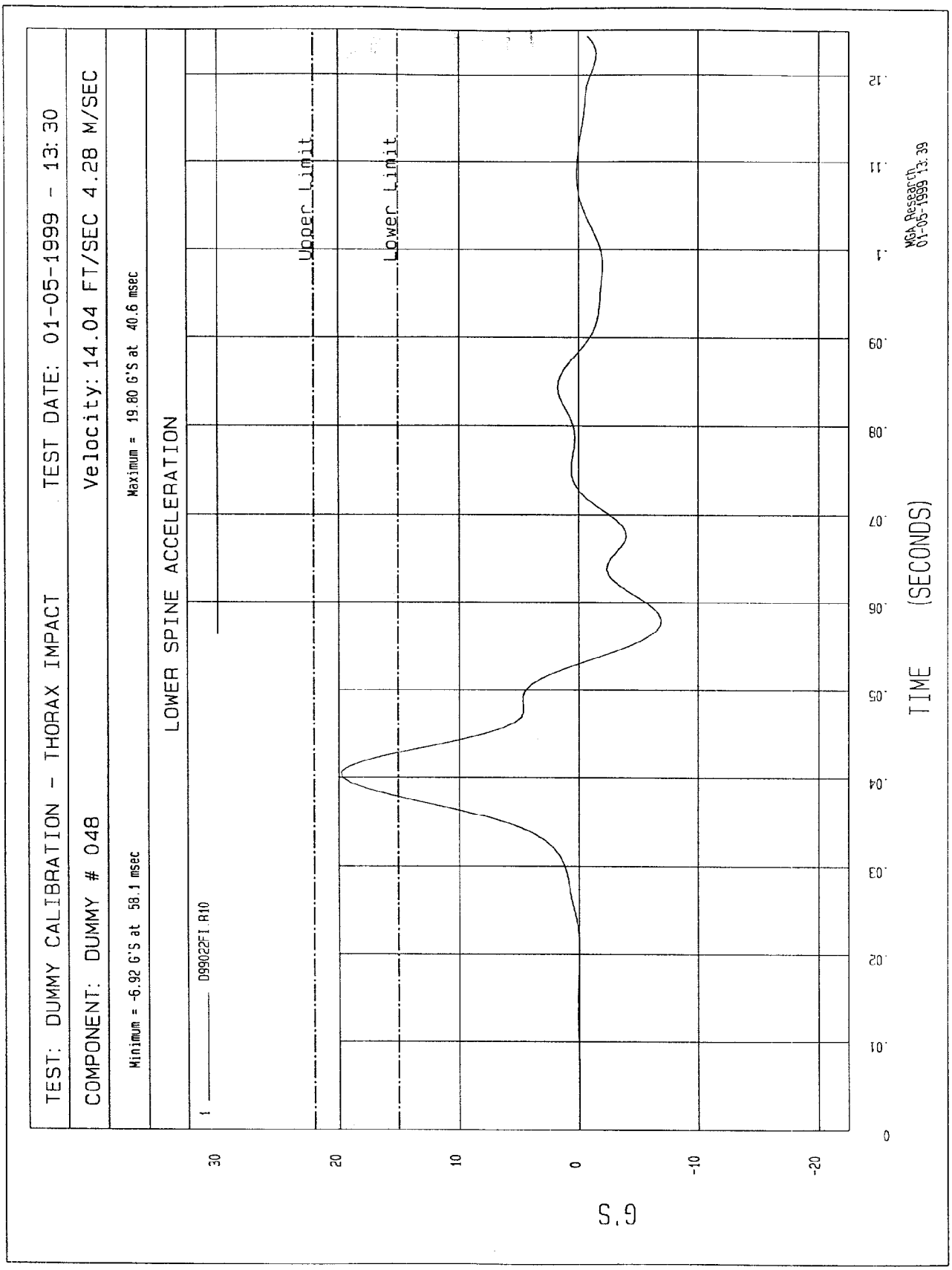
TEST MEETS SPECIFICATIONS

TECHNICIAN

APPROVED BY


TEST: DUMMY CALIBRATION - THORAX IMPACT
TEST DATE: 01-05-1999 - 13:30
COMPONENT: DUMMY # 048
Velocity: 14.04 FT/SEC 4.28 M/SEC
Minimum = -15.86 G'S at 43.1 msec
Maximum = 40.71 G'S at 36.2 msec
UPPER RIB ACCELERATION
1 D9902FI.R08
Upper Limit
Lower Limit
60
50
40
30
20
10
0
-10
-20
G'S
0
01
02
03
04
05
06
07
08
09
1
11
12
TIME (SECONDS)
MGA Research
01-05-1999 13:39


TEST: DUMMY CALIBRATION - THORAX IMPACT
TEST DATE: 01-05-1999 - 13:30
COMPONENT: DUMMY # 048
Velocity: 14.04 FT/SEC 4.28 M/SEC
Minimum = -15.59 G'S at 43.1 msec
Maximum = 39.39 G'S at 35.6 msec
LOWER RIB ACCELERATION
1 D95022F1.R09
Upper Limit
Lower Limit
60
50
40
30
20
10
0
-10
-20
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
TIME (SECONDS)
MGA Research
01-05-1999 13:39
G's


TEST: DUMMY CALIBRATION - THORAX IMPACT
TEST DATE: 01-05-1999 - 13:30
COMPONENT: DUMMY # 048
Velocity: 14.04 FT/SEC 4.28 M/SEC
Minimum = -6.92 G'S at 58.1 msec
Maximum = 19.80 G'S at 40.6 msec
LOWER SPINE ACCELERATION
1 D99022FI.R10
Upper Limit
Lower Limit
30
20
10
0
-10
-20
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
TIME (SECONDS)
MGA Research
01-05-1999 13:39
G's

MGA RESEARCH CORPORATION

PELVIS IMPACT TEST

SIDE IMPACT DUMMY (SID)

DATE: January 5, 1999

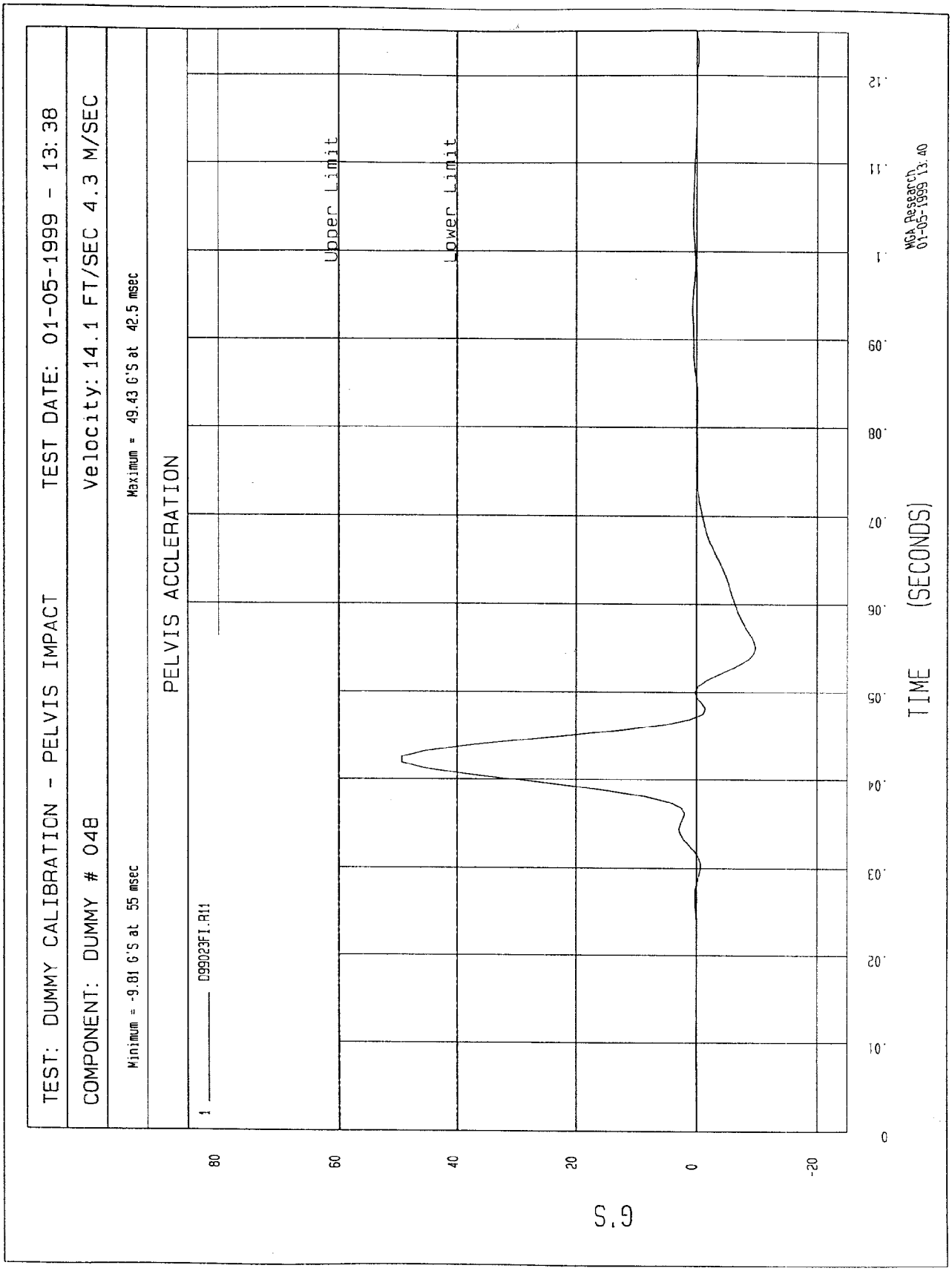
DUMMY SERIAL NUMBER: 048 TEST NUMBER: D99023

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5° F	21.0
RELATIVE HUMIDITY (%)	10 - 70%	20
PROBE SPEED (m/s)	4.27 - 4.33 f/s	4.30
PELVIS ACCELERATION (g's)	40 - 60 g's	49

TEST MEETS SPECIFICATIONS

TECHNICIAN

APPROVED BY


TEST: DUMMY CALIBRATION - PELVIS IMPACT
TEST DATE: 01-05-1999 - 13:38
COMPONENT: DUMMY # 048
Velocity: 14.1 FT/SEC 4.3 M/SEC
Minimum = -9.81 G'S at 55 msec
Maximum = 49.43 G'S at 42.5 msec
PELVIS ACCLERATION
1 ——— D99023FI.A11
Upper Limit
Lower Limit
80
60
40
20
0
-20
0
10
20
03
04
05
06
07
08
09
1
11
12
TIME (SECONDS)
MGA Research
01-05-1999 13:40
6.5
5.9

MGA RESEARCH CORPORATION

ABDOMINAL COMPRESSION TEST
(PRELOAD = 10 LBS)

SIDE IMPACT DUMMY (SID)

DATE: January 4, 1999

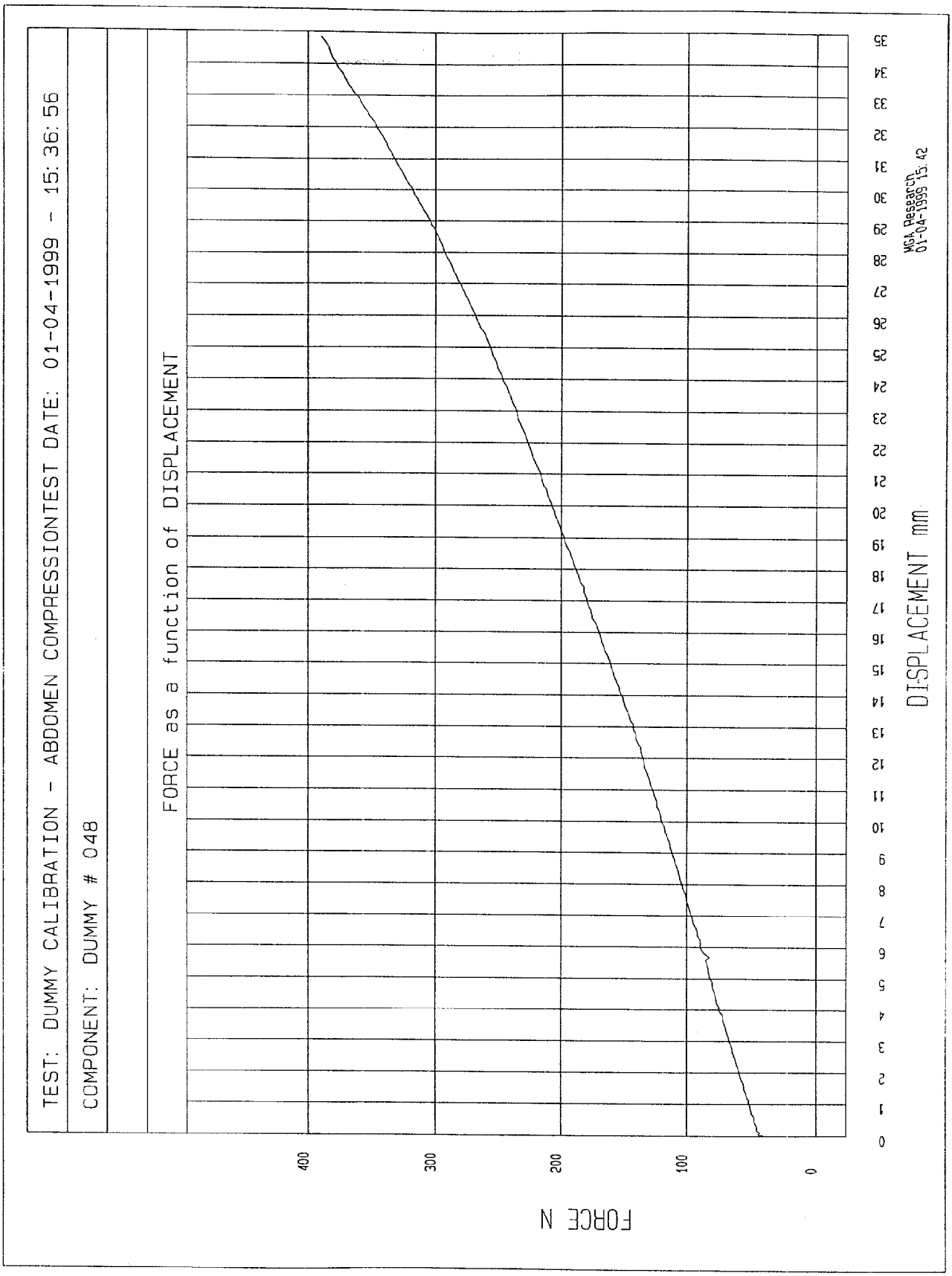
DUMMY SERIAL NUMBER: 048 TEST NUMBER: D98024

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	21.0
RELATIVE HUMIDITY (%)	10 - 70	15
FORCE @ 12.7 mm	104 - 162	140
FORCE @ 19.0 mm	163 - 222	198
FORCE @ 25.4 mm	222 - 280	261
FORCE @ 33 mm	325 - 391	363

TEST MEETS SPECIFICATIONS

TECHNICIAN _____

APPROVED BY _____


TEST: DUMMY CALIBRATION - ABDOMEN COMPRESSIONTEST DATE: 01-04-1999 - 15:36:56
COMPONENT: DUMMY # 048
FORCE as a function of DISPLACEMENT
FORCE N
400
300
200
100
0
DISPLACEMENT mm
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
MGA Research
01-04-1999 15:42

MGA RESEARCH CORPORATION

LUMBAR FLEXION TEST

SIDE IMPACT DUMMY (SID)

DATE: January 5, 1999

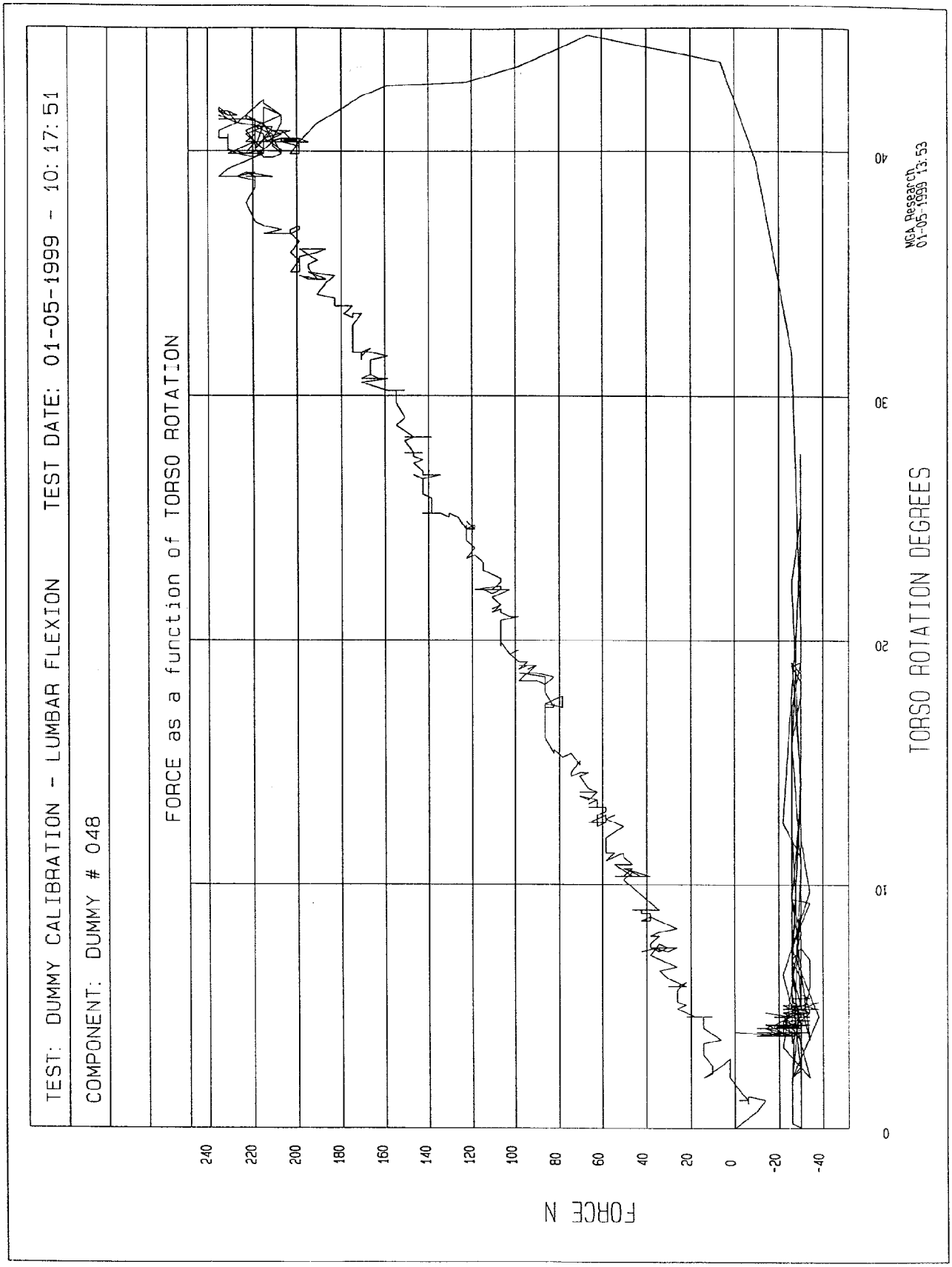
DUMMY SERIAL NUMBER: 048 TEST NUMBER: D99025

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	21.0
RELATIVE HUMIDITY (%)	10 - 70	15
FORCE @ 0°	0 - 26.7	0
FORCE @ 20°	97.9 - 151.2	106.6
FORCE @ 30°	151.2 - 204.6	154.7
FORCE @ 40°	204.6 - 258.0	231.0
RETURN ANGLE	12° maximum	4

TEST MEETS SPECIFICATIONS

TECHNICIAN _____

APPROVED BY _____


TEST: DUMMY CALIBRATION - LUMBAR FLEXION TEST DATE: 01-05-1999 - 10:17:51
COMPONENT: DUMMY # 048
FORCE as a function of TORSO ROTATION
FORCE N
240
220
200
180
160
140
120
100
80
60
40
20
0
-20
-40
0
10
20
30
40
TORSO ROTATION DEGREES
MGA Research
01-05-1999 13:53

POST-TEST DRIVER DUMMY INSPECTION CHECKLIST

Type: Side Impact Dummy

Dummy Serial Number: 048

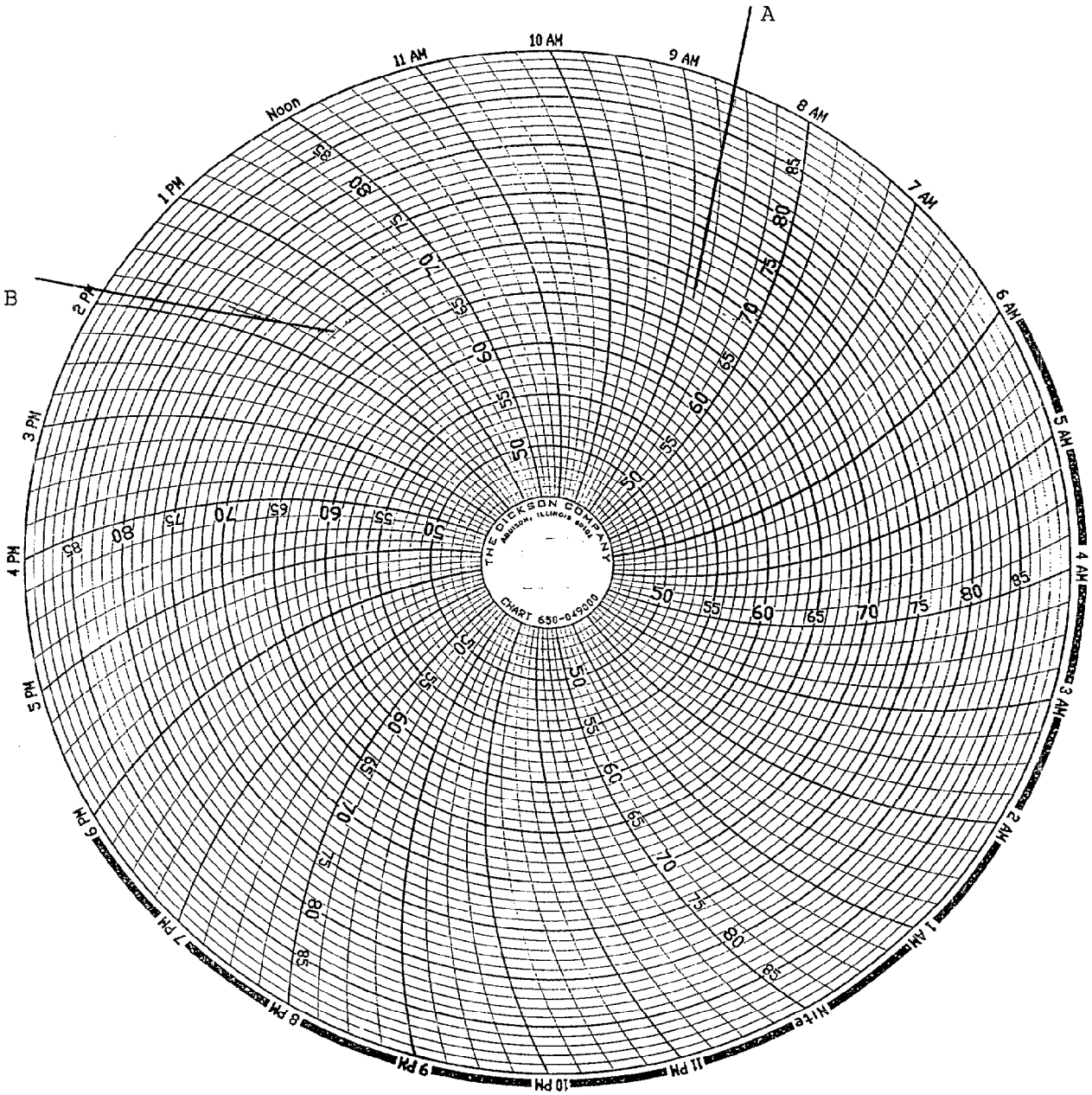
Inspected By: Time Michnay

Date: January 5, 1999

Part	Items Checked	Comments
Skin	visual inspection	OK
Head	visual, ballast, accelerometer mount	OK
Neck	visual	OK
Spine box	visual, ballast, weldment, accelerometer mount	OK
Rib cage	visual, measure	OK
Sternum	visual	OK
Lumbar spine	visual	OK
Abdomen	visual	OK
Pelvis	visual, palpate, accelerometer mount	OK
Upper legs	visual	OK
Knees	visual	OK
Lower legs	visual, range of motion	OK
Ankles	visual, range of motion	OK
Feet	visual, range of motion	OK
Joints	1 to 2 g range	OK
Other		

NOTES: (include component/problem/action/reason):

VEHICLE AND DUMMY TEMPERATURE



A = Dummies installed in vehicle
B = Test conducted

APPENDIX D
TEST EQUIPMENT LIST AND CALIBRATION INFORMATION

DUMMY AND VEHICLE CALIBRATION DATA
INSTRUMENTS FOR DRIVER DUMMY NO. 048

	DRIVER		
	SERIAL NO.	MANUFACTURER	CALIBRATION DATE
Upper Rib Y	AKAC4	Endevco	December 8, 1998
Lower Rib Y	J11630	Endevco	December 8, 1998
Lower Spine Y	J10431	Endevco	December 8, 1998
Pelvis Y	AJ9P7	Endevco	December 8, 1998
Upper Rib Redundant Y	J13642	Endevco	December 8, 1998
Lower Rib Redundant Y	J11166	Endevco	December 8, 1998
Lower Spine Redundant Y	AN9E3	Endevco	December 8, 1998
Pelvis Redundant Y	AJ462	Endevco	December 8, 1998

VEHICLE INSTRUMENT CALIBRATION

	VEHICLE AND MDB ACCELEROMETERS		
	SERIAL NO.	MANUFACTURER	CALIBRATION DATE
Moving Barrier CG X	J06-D22	Entran	June 22, 1998
Moving Barrier CG Y	I18-E18	Entran	September 16, 1998
Moving Barrier CG Z	F12-G02	Entran	June 28, 1998
Moving Barrier Rear Axle X	J10-E14	Entran	June 16, 1998
Moving Barrier Rear Axle Y	F07-A14	Entran	June 16, 1998
Left Mid A-Post Y	G13-B01	Entran	June 16, 1998
Left Lower A-Post Y	I25-J07	Entran	June 28, 1998
Left Lower B-Post Y	B13-Z02	Entran	June 16, 1998
Rear Floorpan Above Axle X	J23-E07	Entran	December 8, 1998
Rear Floorpan Above Axle Y	I25-J14	Entran	December 8, 1998
Rear Floorpan Above Axle Z	J23-E10	Entran	December 8, 1998
Driver Seat Track Y	B13-Z05	Entran	June 18, 1998
Right Side Sill at Front Seat X	E10-F03	Entran	June 18, 1998
Right Side Sill at Front Seat Y	I25-J05	Entran	September 24, 1998
Right Side Sill at Front Seat Z	F11-G08	Entran	June 18, 1998
Right Side Sill at Rear Seat X	I26-D11	Entran	June 25, 1998
Right Side Sill at Rear Seat Y	G01-J03	Entran	June 28, 1998
Right Side Sill at Rear Seat Z	I14-D13	Entran	June 25, 1998
Left Side Sill at Front Seat Y	J06-D20	Entran	June 16, 1998

VEHICLE INSTRUMENT CALIBRATION

	VEHICLE AND MDB ACCELEROMETERS		
	SERIAL NO.	MANUFACTURER	CALIBRATION DATE
Left Side Sill at Rear Seat Y	J23-E13	Entran	June 16, 1998
Rear Occupant Compartment Y	I26-D14	Entran	June 17, 1998
Vehicle CG X	J10-E16	Entran	June 22, 1998
Vehicle CG Y	C25-A22	Entran	December 15, 1998
Vehicle CG Z	F11-G09	Entran	June 28, 1998

Note: All Endevco accelerometers are Model No. 7264-2000. All Entran accelerometers are Model No. EGE-72