REPORT NO. 208-MGA-2002-006

SAFETY COMPLIANCE SLED TESTING FOR FMVSS 208 OCCUPANT CRASH PROTECTION

DaimlerChrysler Corporation
2002 Jeep Liberty MPV
NHTSA NO C20302

MGA RESEARCH CORPORATION
5000 WARREN ROAD
BURLINGTON, WI 53105

Test Date May 14, 2002

Report Date May 21, 2002

FINAL REPORT

Prepared For
U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
SAFETY ASSURANCE
OFFICE OF VEHICLE SAFETY COMPLIANCE
MAIL CODE: NSA-30
400 SEVENTH STREET, S W , ROOM 6115
WASHINGTON, D.C 20590

PREPARED BY _____ DATE. 5/23/02
Chad Gadberry, Project Engineer
MGA Research Corporation

APPROVED BY _____ DATE 5/23/02
David Winkelbauer, Facility Director
MGA Research Corporation

Technicians Tammy Brausch
James Carney
David Kirby
Tim Michnay
Doug Miller
Chris Novak
Kurt Range

Secretary Donna M Janovicz

FINAL REPORT ACCEPTED BY:

_____
Contracting Officer's Technical Representative (COTR)
NHTSA, Office of Vehicle Safety Compliance

7/10/02
Date of Report Acceptance

TECHNICAL REPORT STANDARD TITLE PAGE

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12 Sponsoring Agency Name and Address U S Department of Transportation National Highway Traffic Safety Administration Office of Vehicle Safety Compliance (Mail Code NSA-30) 400 Seventh St , S W , Room 6115 Washington, D C 20590		13 Type of Report and Period Covered Final Report May 14-21, 2002 14 Sponsoring Agency Code NSA-30
15 Supplementary Notes		
16 Abstract A compliance test (sled test) was conducted on the subject 2002 Jeep Liberty MPV in accordance with the specifications of the Office of Vehicle Safety Compliance Test Procedure No TP208S-01 for the determination of FMVSS 208 compliance Test failures identified were as follows Lap Belt Lockability - For additional information, refer to OVSC file CI-208-020111		
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Purpose

This FMVSS 208 compliance sled test is part of the Federal Motor Vehicle Safety Standard (FMVSS) 208 compliance test program conducted for the National Highway Traffic Safety Administration (NHTSA) by MGA Research Corporation (MGA) under Contract No DTNH22-98-D-11055. The purpose of this test was to determine if the subject vehicle, a 2002 Jeep Liberty MPV, NHTSA No. C20302, meets the performance requirements of FMVSS 208, "Occupant Crash Protection," in the impact simulation sled test mode.

Test Procedure

This test was conducted in accordance with NHTSA's Office of Vehicle Safety Compliance (OVSC) Laboratory Test Procedure No TP-208S-01 dated January 15, 1998 Data was obtained relative to FMVSS 208, "Occupant Crash Protection," performance

The test vehicle was instrumented with four (4) accelerometers to measure longitudinal axis accelerations

The test vehicle contained two (2) Part 572 E 50th percentile adult male anthropomorphic test devices (dummies) The dummies were positioned in the front outboard seating positions according to the dummy placement procedures specified in Appendix B of the Laboratory Test Procedure The dummies were not restrained by seat belts

Both dummies were instrumented with head and chest accelerometers to measure longitudinal, lateral, and vertical accelerations, chest deflection potentiometers, left and right femur load cells to measure axial forces, and upper neck load cells to measure longitudinal, lateral, and vertical forces and moments

The thirty-eight (38) data channels were digitally sampled at 10,000 samples per second and processed per Sections 11 7 through 11 9 of the Laboratory Test Procedure

The crash event was recorded by six (6) high-speed motion picture cameras. The pre-test and post-test conditions were recorded by one (1) real-time motion picture camera.

Test Results Summary

This FMVSS 208 compliance sled test was conducted at MGA Research Corporation on May 14, 2002

The test vehicle, a 2002 Jeep Liberty MPV, NHTSA No C20302, appeared to comply with the performance requirements of FMVSS 208 in the impact simulation sled test mode as measured by Hybrid III 50th percentile male dummies

	FMVSS 208 Max Allowable Injury Assessment Values	Driver (Serial #312)	Passenger (Serial #340)
HIC	1000	168	133
Chest g	60 g	33 7 g	29.1 g
Chest displacement	3 in	1 1 in.	0 3 in
Left Femur	2250 lb	1059 lb	1417 lb
Right Femur	2250 lb	1092 lb	1419 lb
Neck Extension	57 Nm	5 2 Nm	14 1 Nm
Neck Flexion	190 Nm	73 9 Nm	22 7 Nm
Neck Tension	3300 N	632 N	697 N
Neck Compression	4000 N	554 N	2222 N
Neck Shear	3100 N	1216 N	814 N

The vehicle also appears to meet the other FMVSS 208 requirements for which it was tested, with the exception of lap belt lockability (refer to OVSC file CI-208-020111) These results are shown in the data sheets that are included in this report

The test vehicle was equipped with air bags at the driver and passenger seating positions The dummies were not restrained by seat belts The sled carriage was accelerated to 17 5 g with an integrated velocity change of 29.9 mph After filtering the acceleration signal to Channel Class 60, the first and second stages of the airbag system were triggered 20 4 and 30 4 milliseconds after 0 5 g acceleration, respectively

INCLUDE DISCUSSION OF LOST CHANNELS OR OTHER TEST ISSUES.

No noted test issues occurred

Sled Test Summary

Vehicle NHTSA No.: C20302 Test Mode FMVSS 208 SLED TEST

Vehicle Yr/Make/Model/Body Style 2002/Jeep/Liberty/MPV

Test Date: May 14, 2002 Time 2 38 p m Temp 70°F

Vehicle Test Weight 4571 lbs

DUMMY INFO.	**DRIVER**	**PASSENGER**
Dummy Type	Part 572E	Part 572E
Serial Number	312	340
Restraint System	Frontal airbag	Frontal airbag
No. Data Channels	15	15
Number of Cameras	1 Real Time	
	6 High Speed	
Door Opening Data	yes Left Front	
	yes Right Front	

FRONT SEAT(S) DATA	**DRIVER**	**PASSENGER**
Seat Track Failure -	0 0 inches shift,	0 0 inches shift
Seat Back Failure -	no	no

VISIBLE DUMMY CONTACT POINTS:	**DRIVER**	**PASSENGER**
Head	Airbag/sunvisor/ windshield header	Airbag/windshield/ sunvisor
Chest	Airbag	Airbag
Left Knee	Knee bolster	Glove box
Right Knee	Knee bolster	Glove box

General Test And Vehicle Parameter Data

Vehicle Yr/Make/Model/Body Style: 2002/Jeep/Liberty/MPV

Vehicle NHTSA No C20302 VIN 1J4GK48K92W172091 Color Silver

Engine Data

No Cylinders. 6, CID ____, Liters 3 7, CCs ____

Placement: Longitudinal/Inline X, Transverse/Lateral _____

Transmission Data

Speeds 4, Manual ____, Automatic. X; Overdrive X

Final Drive.

Rear Wheel Drive X, Front Wheel Drive ____, Four Wheel Drive: ____

Major Options

A/C X, Pwr Strg . X; Pwr Brakes. X, Pwr. Windows X

Pwr Dr Locks. X, Other Tilt wheel, rear defogger

Date Received 11/12/01, Odometer Reading 173 miles

Selling Dealer Ernie Von Schledorn Chrysler, N88 W14301 Stanley Drive, Menomonee Falls, WI 53051

REMARKS: None

General Test And Vehicle Parameter Data (Cont.)

DATA FROM VEHICLE'S CERTIFICATION LABEL

Vehicle Manufactured By DaimlerChrysler Corporation

Date of Manufacture 8/01, VIN: 1J4GK48K92W172091

GVWR 5300 lbs, GAWR Front 2600 lbs

GAWR Rear 2950 lbs

DATA FROM TIRE PLACARD

Tire Pressure with Maximum Capacity Vehicle Load:

FRONT: 33 psi REAR 33 psi

Recommended Tire Size P215/75R15, P215/75D16, or P235/70R16

Recommended Cold Tire Pressure:

FRONT 33 psi REAR 33 psi

Size of Tires on Test Vehicle P235/70R16

Type of Spare Tire P235/70R16, Space Saver ___, Standard X

Vehicle Capacity Data

Type of Front Seats. X Bucket, __Bench, __Split Bench

Number of Occupants 2 Front, 3 Rear, __3rd Seat, 5 TOTAL

REMARKS: None

VEHICLE CAPACITY WEIGHT (VCW) = 1150 lbs.

No Of Occupants x 150 lbs = 750 lbs

Rated Cargo/Luggage Weight (RCWL) = 400 lbs (Difference)

General Test And Vehicle Parameter Data (Cont.)

WEIGHT OF TEST VEHICLE AS RECEIVED AT LABORATORY (with maximum fluids)

Right Front =	1044 lbs	Right Rear =	908 lbs
Left Front =	1022 lbs.	Left Rear =	953 lbs
TOTAL FRONT =	2066 lbs	TOTAL REAR =	1861 lbs
% Total Weight =	52 6 %	% Total Weight =	47 4 %

TOTAL DELIVERED WEIGHT = 3927 lbs

WEIGHT OF FULLY LOADED TEST VEHICLE WITH TWO DUMMIES (344 LB) AND 300 POUNDS OF CARGO WEIGHT*

Right Front =	1096 lbs	Right Rear =	1165 lbs
Left Front =	1088 lbs	Left Rear =	1222 lbs
TOTAL FRONT =	2184 lbs.	TOTAL REAR =	2387 lbs.
% Total Weight =	47 8 %	% Total Weight =	52 2 %

TOTAL WEIGHT = 4571 lbs.

TEST VEHICLE ATTITUDE (all measurements in degrees)

AS DELIVERED DOOR SILL ANGLE	1 0° nose down
AS TESTED DOOR SILL ANGLE·	0 5° nose down
FULLY LOADED DOOR SILL ANGLE:	0 4° nose down

FUEL SYSTEM DATA

Fuel System Capacity From Owner's Manual = 18 5 gallons

Usable Capacity Figure Furnished by COTR = 18.5 gallons

REMARKS None

* - For MPVs, add 300 pounds or RCWL, whichever is less.

Post-Impact Data

Test number:	HT02051401
NHTSA number:	C20302
Test date:	May 14, 2002
Test time.	2:38 p.m
Test type:	FMVSS 208 Compliance Sled Test
Impact angle	0°
Ambient Temperature at Impact Area:	70°F
Temperature in Occupant Compartment.	70°F

Impact Velocity

Integrated velocity from the integration of the entire sled acceleration	29 9 mph
Specified integrated velocity range	28 to 30 mph

Sled Carriage Acceleration

Acceleration	17 5 g
Specified Acceleration Range:	16 0 - 18 2 g

Sled Carriage Acceleration Duration

Time from T-0 (-0 5 g) to 0 0 g	122 0 msec
Specified Acceleration Duration	120 0 to 130 0 msec

The sled acceleration corridor was achieved.

Seat and Steering Column Positioning Data

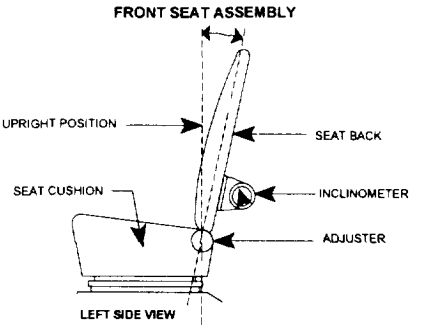
Vehicle Yr/Make/Model/Body Style: 2002/Jeep/Liberty/MPV

Vehicle NHTSA No. C20302 Test Date May 14, 2002

NOMINAL DESIGN RIDING POSITION

Driver Seat Seat Back Angle = 24 0°

Passenger Seat Seat Back Angle = 23 4°



SEAT FORE AND AFT POSITIONS

Driver Seat The seat track had a total position movement of 19 notches and was positioned 9 notches rearward from the foremost position with the forward most locking position as zero

Passenger Seat The seat track had a total position movement of 19 notches and was positioned 9 notches rearward from the foremost position with the forward most locking position as zero

STEERING COLUMN ADJUSTMENTS

The steering column was placed in the mid position (24 1°) of its continuous angular adjustment range (21 2° - 27 0°)

Dummy Positioning Measurement Table

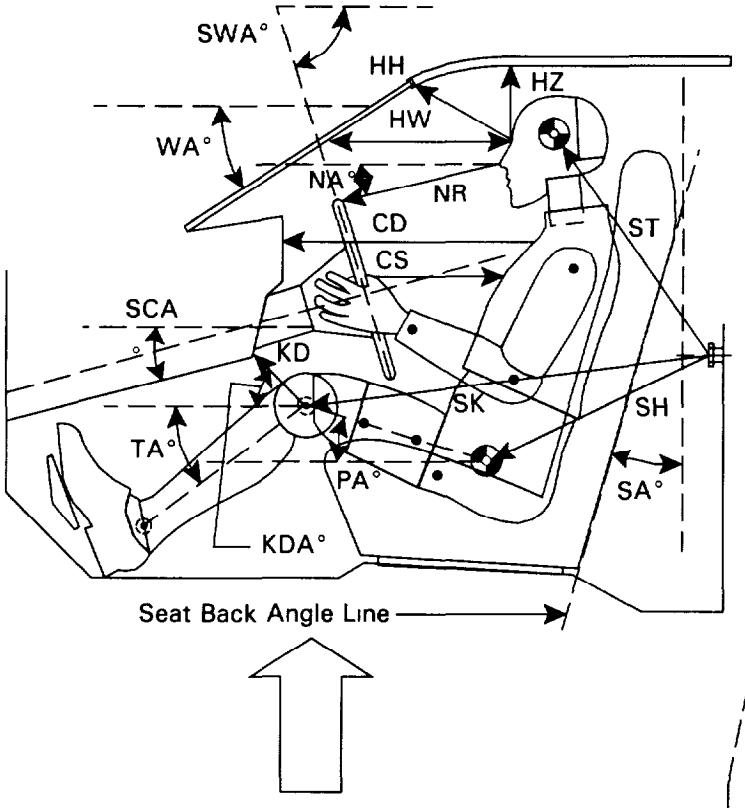
Vehicle Year/Make/Model/Body Style 2002/Jeep/Liberty/MPV

Vehicle NHTSA No · C20302 Test Date· May 14, 2002

	DRIVER (Serial #312)	PASSENGER (Serial #340)
WA°	42.8°	
SWA°	65.9°	
SCA°	24 3°	
SA°	24 0°	23.4°
HZ	8.2	8 3
HH	15 9	16 0
HW	21 3	21 5
HR	7 1	6 9
NR	16 3 Angle (NA°) 18.4°	
CD	20 0	22 5
CS	13 4	
RA	7 5	
KDL	5 5 Angle (KDA°) 0 0°	5 4
KDR	5 6	5 7 Angle (KDA°) 0 0°
PA°	22 3°	23 7°
TA°	47 1°	53 6°
KK	11 0	10 0
ST	24 1 Angle 7.0°	23 8 Angle 5 8°
SK	23 1 Angle 84 1°	23.5 Angle 85 0°
SH	7 8 Angle 108.9°	7 8 Angle 103 4°
SHY	7 9	7.8
HS	11.5	11 3
HD	7 4	7 0
AD	3 1	2 6

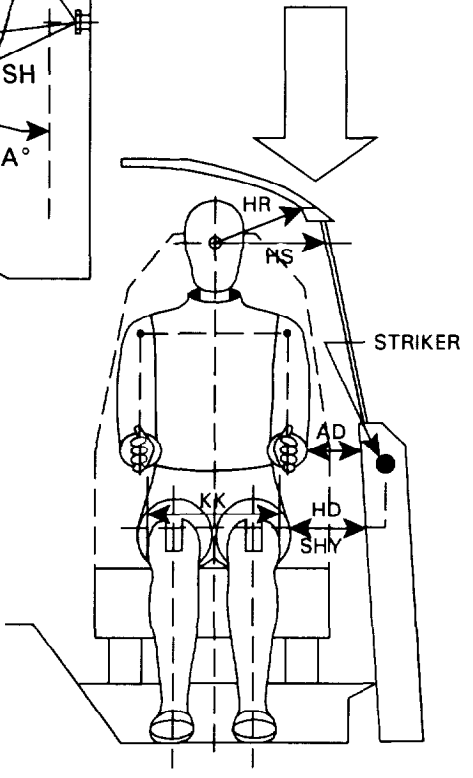
Dummy Positioning Measurement Locations

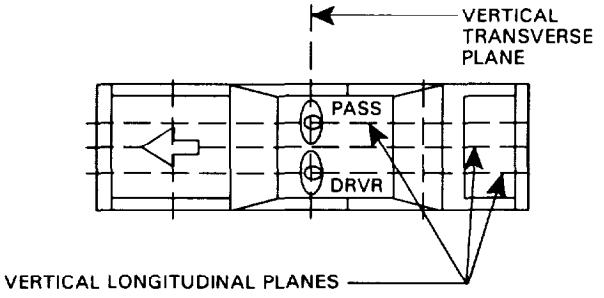
DUMMY MEASUREMENT FOR FRONT SEAT PASSENGERS



AD - Arm to Door
HD - H-Point to Door
HR - Head to Side Header
HS - Head to Side Window
KK - Knee to Knee
SHY- Striker to H-Point (Y Direction)

CD - Chest to Dash
CS - Steering Wheel to Chest
HH - Head to Header
HW - Head to Windshield
HZ - Head to Roof
KDA- Knee to Dash Angle
KDL- Left Knee to Dash
KDR- Right Knee to Dash
NA - Nose to Rim Angle
NR - Nose to Rim
PA - Pelvic Angle
RA - Rim to Abdomen
SA - Seat Back Angle
SCA- Steering Column Angle
SH - Striker to H-Point
SK - Striker to Knee
ST - Striker to Head
SWA- Steering Wheel Angle
TA - Tibial Angle
WA - Windshield Angle





Description of Dummy Measurements

When a level is to be used, it is to ensure that the line containing the two points described is either parallel or perpendicular to the ground If a measurement to be made is less than 10 inches ignore the directions to use a level and approximate a level measurement Also, when a measurement is to be taken to or from the center of a bolt on the dummy, take the measurement from the center of the bolt hole if the bolt is recessed

The following measurements are to be made within a vertical longitudinal plane.

* HH Head to Header, taken from the point where the dummy's nose meets his forehead (between his eyes) to the furthest point forward on the header

* HW Head to Windshield, taken from the point where the dummy's nose meets his forehead (between his eyes) to a point on the windshield Use a level

HZ Head to Roof, taken from the point where the dummy's nose meets his forehead (between his eyes) to the point on the roof directly above it Use a level

* CS Steering Wheel to Chest, taken from the center of the steering wheel hub to the dummy's chest Use a level.

* CD Chest to Dash, place a tape measure on the tip of the dummy's chin and rotate five inches of it downward toward the dummy to the point of contact on the transverse center of the dummy's chest Then measure from this point to the closest point on the dashboard either between the upper part of the steering wheel between the hub and the rim, or measure to the dashboard placing the tape measure above the rim, whichever is a shorter measurement See photograph

RA Steering Wheel Rim to Abdomen, taken from the bottommost point of the steering wheel rim horizontally rearward to the dummy Use a level

NR Nose to Rim, taken from the tip of the dummy's nose to the closest point on the top of the steering wheel rim Also indicate the angle this line makes with respect to the horizontal (NA)

*[1] KDL, KDR Left and Right Knees to Dashboard, taken from the center of the knee pivot bolt's outer surface to the closest point forward acquired by swinging the tape measure in continually larger arcs until it contacts the dashboard. Also reference the angle of this measurement with respect to the horizontal for the outboard knee (KDA). See photograph.

* Measurement used in Data Tape Reference Guide
[1] Only outboard measurement is referenced in Data Tape Reference Guide

Description of Dummy Measurements (Cont)

SH, SK, ST Striker to Hip, Knee, and Head, these measurements are to be taken in the X-Z plane measured from the forward most center point on the striker to the center of the H-point, outer knee bolt, and head target When taking this measurement a firm device that can be rigidly connected to the striker should be used Use a level The angles of these measurements with respect to the horizontal should also be recorded. The measurement in the Y (transverse) direction from the striker to the H-point should also be taken (SHY) See photograph

The following measurements are to be made within a vertical transvers plane.

HS Head to Side Window, taken from the point where the dummy's nose meets his forehead (between his eyes) to the outside of the side window In order to make this measurement, roll the window down to the exact height which allows a level measurement. Use a level. See photograph

* AD Arm to Door, taken from the outer surface of the elbow pivot bolt on a Hybrid II dummy to the first point it hits on the door. In the case of a Hybrid III dummy, measure from the bolt on the outer biceps When a SID is used make the measurement from the center of the bottom of the arm segment where it meets the dummy's torso

* HD H-point to Door, taken from the H-point on the dummy to the closest point on the door. Use a level

* HR Head to Side Header, measure the shortest distance from the point where the dummy's nose meets his forehead (between his eyes) to the side edge of the header just above the window frame, directly adjacent to the dummy

SHY Striker to H-point, taken from a rod rigidly connected to the forward most center point on the striker to the H-point Use a level See photograph.

KK Knee to Knee, for Hybrid II dummies measure the distance between knee pivot bolt head outer surfaces For Hybrid III dummies measure the distance between the outboard knee clevis flange surfaces (This measurement may not be exactly transverse)

* Measurement used in Data Tape Reference Guide

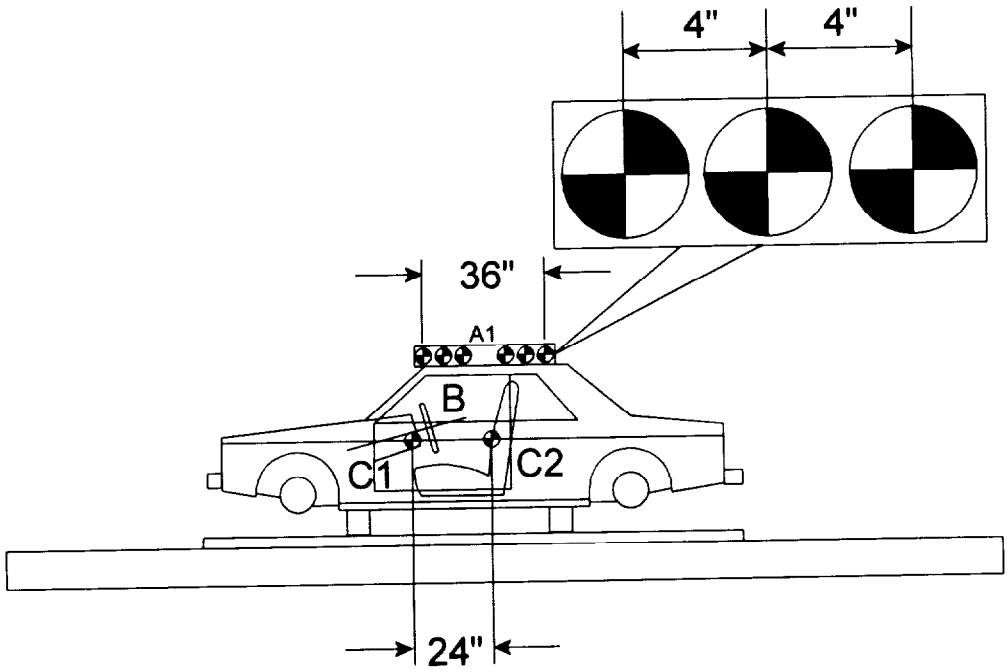
Description of Dummy Measurements (Cont)

Angles

SA	Seat Back Angle, find this angle using the instructions provided by the manufacturer If the manufacturer doesn't provide clear instructions contact the COTR.
PA	Pelvic or Femur Angle, taken by inserting the pelvic angle gauge into the H-point gauging hole on the SID or the Hybrid III dummies and taking this angle with respect to the horizontal Measure the angle of the line connecting the H-point hole and the outer knee pivot bolt hole on a Hybrid II dummy with respect to the horizontal, to find the femur angle
SWA	Steering Wheel Angle, find this by placing a straight edge against the steering wheel rim along the longitudinal plane. Then measure the acute angle of the straight edge with respect to the horizontal
SCA	Steering Column Angle, measured with respect to the horizontal by placing an inclinometer on the center of the underside of the steering column
NA	Measure the angle made when taking the measurement NR with respect to the horizontal
KDA	Knee to Dash Angle, the angle that the measurement KD is taken at with respect to the horizontal. Only get this angle for the outboard knee See photograph
WA	Windshield Angle, place an inclinometer along the transverse center of the windshield exterior (measurement is made with respect to horizontal)
TA	Tibial Angle, use a straight edge to connect the dummy's knee and ankle bolts Then place an inclinometer on the straight edge and measure the angle with respect to the horizontal

Vehicle Targeting Measurements

REFERENCE PHOTO TARGETS

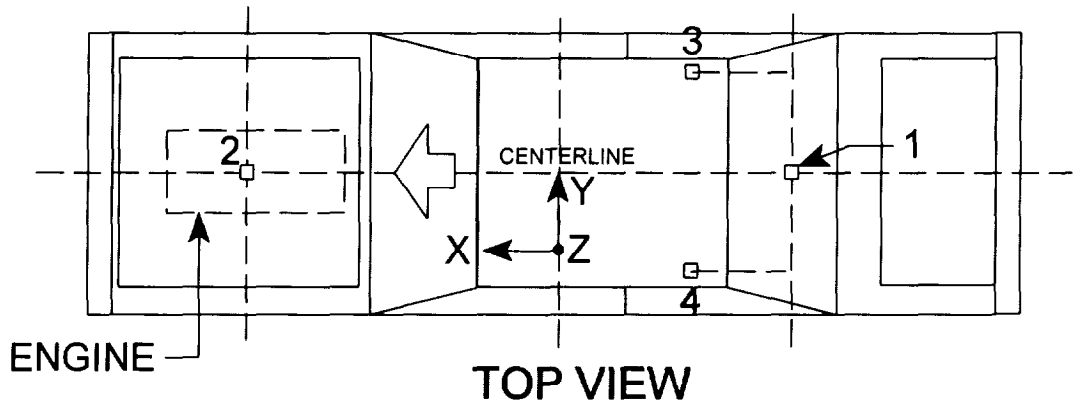


LEFT SIDE VIEW

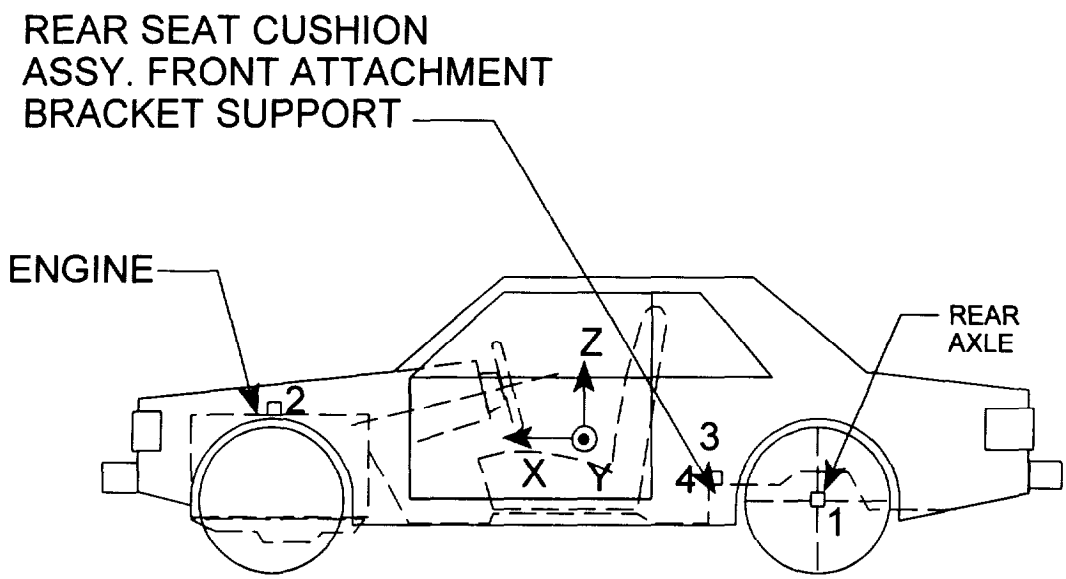
Vehicle Accelerometer Placement and Data Summary

Vehicle Year/Make/Model/Body Style 2002/Jeep/Liberty/MPV

Vehicle NHTSA No C20302 Test Date May 14, 2002



TOP VIEW



LEFT SIDE VIEW

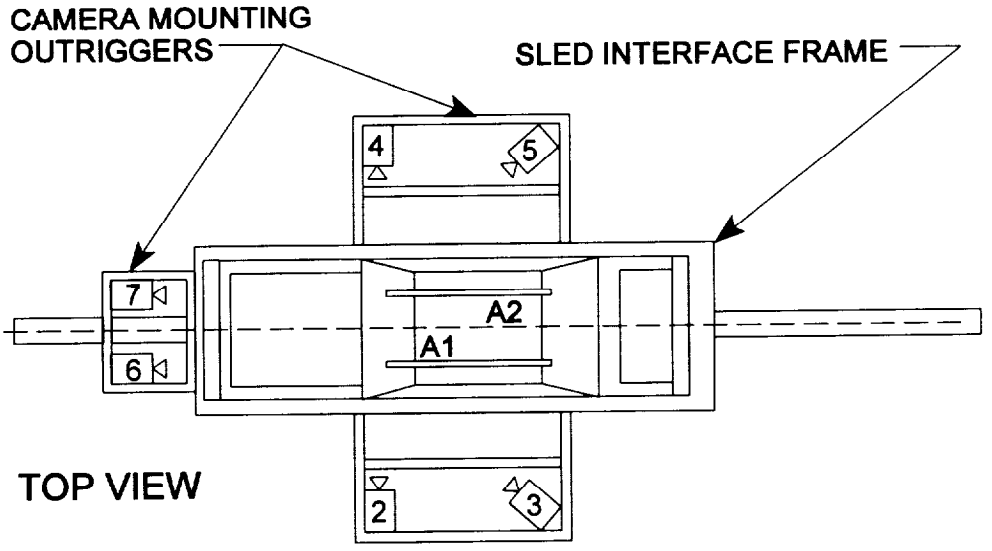
Vehicle Accelerometer Location Measurements and Data Summary

Vehicle Year/Make/Model/Body Style. 2002/Jeep/Liberty/MPV

Vehicle NHTSA No . C20302 Test Date. May 14, 2002

No.	Location	X (in)	Y (in)	Positive Direction		Negative Direction	
				Value	Time (msec)	Value	Time (msec)
	Sled Primary Longitudinal	67 0	0	17 5 g	45	-1 1 g	125
	Sled Redundant Longitudinal	67.0	4 0	17 7 g	45	-1.1 g	125
	Sled Velocity Measured Integrated	67 0	0	29.9 mph	122	--	--
1	Rear Axle Longitudinal	28 0	0	20.7 g	42	-0 7 g	126
2	Top Engine Longitudinal	138 0	0	18 9 g	46	-1 9 g	131
3	Right Rear Seat Member Longitudinal	35.0	17 5	18.8 g	44	-1 7 g	155
4	Left Rear Seat Member Longitudinal	35 0	17 5	18 2 g	56	-1.2 g	125

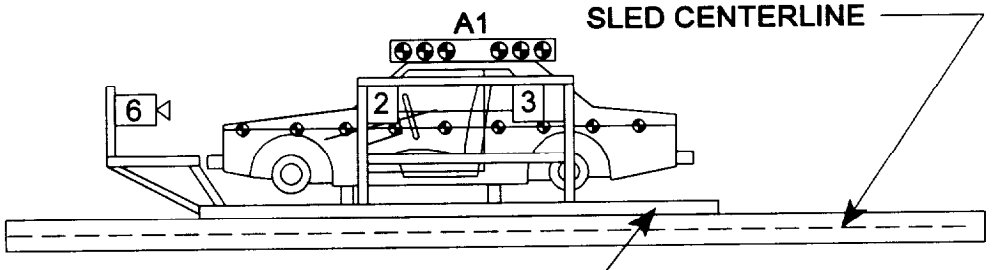
Camera Positions



TOP VIEW

CAMERA FRAME RATES:
#1 = 24 fps
All Others = 1,000 fps

1 REAL TIME CAMERA



LEFT SIDE VIEW

Camera Location Measurements

Camera No	VIEW	Camera Positions (inches)*			Angle (deg)	Film Plane To Head Target	Lens (mm)	Speed (fps)
		X	Y	Z				
1	Real-Time (Pre and Post)						10	24
2	Onboard Driver	70 6	88 6	38 4	90	72 4	13	909
3	Onboard Driver Angle	150.9	91 1	47.8			13	1000
4	Onboard Passenger	71 8	89 6	38 5	90	71 1	13	1005
5	Onboard Passenger Angle	146 7	88 5	47 9			13	909
6	Onboard Windshield Driver	18.3	14 1	42.9			13	1000
7	Onboard Windshield Passenger	18 3	13.9	42 9			13	870

Reference* X = Front of sled carriage

Y = Center of sled carriage

Z = Top of sled carriage

Occupant Injury Data

Vehicle Year/Make/Model/Body Style 2002/Jeep/Liberty/MPV

Vehicle NHTSA No : C20302 Test Date. May 14, 2002

MAXIMUM ACCELERATION VALUES (g's)	DRIVER DUMMY #312	PASSENGER DUMMY #340
Head Channel X	-33 4	-21 7
Head Channel Y	6 4	-50 4
Head Channel Z	22.2	22 3
HEAD RESULTANT	40 2	52 9
Chest Channel X	-33 0	-28 7
Chest Channel Y	3 0	-3 6
Chest Channel Z	9 6	14 7
CHEST RESULTANT	34.3	29 9

HEAD INJURY CRITERIA (HIC) VALUES.

HIC	168	133
t_1 = (msec)	78.5	86 4
t_2 = (msec)	114.5	122 4

[The maximum time interval from t_1 to t_2 is 36 milliseconds]

CHEST INJURY CRITERIA (CLIP) VALUES (g's)

CLIP	33 7	29 1
t_1 = (msec)	96.4	83.9
t_2 = (msec)	99 4	86 9
CHEST DEFLECTION (in)	1 1	0 3

Occupant Injury Data (Cont)

MAX. COMPRESSIVE FEMUR FORCES	DRIVER DUMMY #312	PASSENGER DUMMY #340
Left Side (lbs)	1059	1417
Right Side (lbs)	1092	1419

NECK INJURY CRITERIA

Peak Flexion Bending Moment about the Occipital Condyle (N-m)	73 9	22 7
Peak Extension Bending Moment about the Occipital Condyle (N-m)	5 2	14 1
Peak Axial Tension (N)	632	697
Peak Axial Compression (N)	554	2222
Peak Fore Shear (N)	1216	814
Peak Aft Shear (N)	95	124

Seat Belt Warning System Data

Vehicle Year/Make/Model/Body Style: 2002/Jeep/Liberty/MPV

NHTSA No : C20302 , Technician. Chad Gadberry , Date December 21, 2001

Complete the following to determine which seat belt warning system option (S7 3(a)(1) or S7 3 (a)(2)) is used (Manufacturers may use either option)

A. With occupant in driver's position and lap belt in stowed position and ignition switch placed in "Start/On" position

A.1 S7.3(a)(1)
Time duration of audible warning signal = 7 seconds
(4 to 8 seconds)

Time duration of reminder light operation = >60 seconds
(no less than 60 seconds)

A.2 S7 3(a)(2)
Time duration of audible warning signal = ____ seconds
(4 to 8 seconds)(see 49 USCS @ 30124)

Time duration of reminder light operation = ____ seconds
(4 to 8 seconds)

B. With occupant in driver's position and lap belt in use and ignition switch placed in "Start/On" position

B.1 S7 3(a)(1)
Time duration of audible warning signal = 0 seconds
(audible warning not required)

Time duration of reminder light operation = 7 seconds
(reminder light not required)

B 2 S7 3(a)(2)
Time duration of audible warning signal = ____ seconds
(audible warning not required)

Time duration of reminder light operation = ____ seconds
(4 to 8 seconds)

C Note wording of visual warning
Fasten seat belt _____
Fasten Belt _____
Symbol 101 X

Readiness Indicator

Vehicle Year/Make/Model/Body Style 2002/Jeep/Liberty/MPV

NHTSA No : C20302 , Technician Chad Gadberry , Date. December 21, 2001

An occupant restraint system that deploys in the event of a crash shall have a monitoring system with a readiness indicator A totally mechanical system is exempt from this requirement (11/8/94 legal interpretation)

1. Is the system totally mechanical? ( )Yes (X)No
(If YES this Data Sheet is complete.)

2 Describe the location of the readiness indicator Left side of instrument panel

3 Is the readiness indicator clearly visible to the driver?
(X)Yes-Pass ( )**No-FAIL**

4. Is a list of the elements in the occupant restraint system, being monitored by the readiness indicator, provided?
(X)Yes-Pass ( )**No-FAIL**

Air Bag Labels Data

Vehicle Year/Make/Model/Body Style 2002/Jeep/Liberty/MPV

NHTSA No. C20302 ; Technician Chad Gadberry , Date December 21, 2001

1 Air bag maintenance label and owner's manual instructions (S4 5 1(a))

1 1 Does the manufacturer recommend periodic maintenance or replacement of the airbag? ( )Yes, go to 1 2 (X) No, go to 2

1 2. Does the vehicle have a maintenance or replacement label?
( )Yes-Pass ( ) **No-FAIL**

1 3 Does the label contain one of the following?
( )Yes-Pass ( ) **No-FAIL**
( ) Schedule on label specifies month and year (Date _____)
( ) Schedule on label specifies vehicle mileage (Mileage _____)
( ) Schedule on label specifies interval measured from date on certification label (Date._____)

1 4 Is the label permanently affixed within the passenger compartment?
( )Yes-Pass ( ) **No-FAIL**

1 5 Is the label lettered in English?
( )Yes-Pass ( ) **No-FAIL**

1.6. Is the label in block capitals and numerals?
( )Yes-Pass ( ) **No-FAIL**

1 7. Are the letters and numerals at least 3/32 inches high?
( )Yes-Pass ( ) **No-FAIL**

1 8 Does the owner's manual set forth the recommended schedule for maintenance or replacement? ( )Yes-Pass ( ) **No-FAIL**

2 Does the owner's manual (S4 5 1(f))

2 1 Include a description of the vehicle's airbag system in an easily understandable format? (X)Yes-Pass ( ) **No-FAIL**

2.2 Include a statement that the vehicle is equipped with an airbag and a lap/shoulder belt at the front outboard seating positions?
(X)Yes-Pass ( ) **No-FAIL**

Air Bag Labels Data (Cont)

2 3 Include a statement that the air bag is a supplemental restraint at the front outboard seating positions?
(X)Yes-Pass ( ) **No-FAIL**

2 4 Emphasize that all occupants, including the driver, should always wear their seat belts whether or not an airbag is also provided at their seating positions to minimize the risk of severe injury or death in the event of a crash?
(X)Yes-Pass ( ) **No-FAIL**

2 5 Provide any necessary precautions regarding the proper positioning of occupants, including children, at seating positions equipped with air bags to insure maximum safety protection for those occupants?
(X)Yes-Pass ( ) **No-FAIL**

2 6 Explain that no objects should be placed over or near the air bag on the steering wheel or on the instrument panel, because any such objects could cause harm if the vehicle is in a crash severe enough to cause the air bag to inflate?
(X)Yes-Pass ( ) **No-FAIL**

3 Does the vehicle:

3 1 Provide an automatic means to ensure that the airbag does not deploy when a child seat or child with a total mass of 30 kg or less is present on the front outboard passenger? ( )Yes (X) No

3 2 Incorporate sensors, other than or in addition to weight sensors, which automatically prevent the passenger air bag from deploying in situations in which it might have an adverse effect on infants in rear-facing child seats, and unbelted or improperly belted children? ( )Yes (X) No

3 3. Have a passenger air bag designed to deploy in a manner that does not create a risk of serious injury to infants in rear-facing child seats, and unbelted or improperly belted children? ( )Yes (X) No

If yes to 3 1, or 3 2, or 3.3, the vehicle is not required to have a sunvisor warning label (S4 5 1(6)), an airbag alert label (S4 5 1(c)) or a label on the dash (S4 5 2(e)) and this check sheet is complete (S4 5 1) If no to 3 1, 3.2, and 3.3, go to 4

4. Sun Visor Warning Label

4 1 Is the label permanently affixed (may be permanent marking or molding) to either side of the sunvisor at each front outboard seating position with an airbag? (S4 5 1(b)(2))

Driver Side - (X)Yes-Pass ( ) **No-FAIL**
Passenger Side - ( ) N/A (X)Yes-Pass ( ) **No-FAIL**

Air Bag Labels Data (Cont)

4 2 Does the label conform in content (vehicles without back seats may omit the statement: "The back seat is the safest place for children ") (S4 5 1(b)(2)(v))) to either label shown on the next page as appropriate at each front outboard seating position with an air bag? (S4 5 1(b)(2))

4.2 1 **Dual air bags:** ( ) Not Applicable
Driver Side - (X)Yes-Pass ( ) **No-FAIL**
Passenger Side - (X)Yes-Pass ( ) **No-FAIL**

4 2 2 **Vehicle with driver air bag ONLY - either 4.2.2.1 or 4.2.2.2 is applicable, not both.** (S4 5 1(b)(2)(iv))

4 2 2 1 Does the label conform in content to either label shown on the following page as appropriate?
(X) Not Applicable
Driver Side - ( )Yes-Pass ( ) **No-FAIL**

4.2 2 2 Does the label conform in content to the first label shown on the following page where the label can be modified to omit the pictogram and the message text may read

DEATH or SERIOUS INJURY can occur
• Sit as far back as possible from the air bag
• ALWAYS use SEAT BELTS and CHILD RESTRAINTS
• The BACK SEAT is the SAFEST place for children

(X) Not Applicable
Driver Side - ( )Yes-Pass ( ) **No-FAIL**

Air Bag Labels Data (Cont)

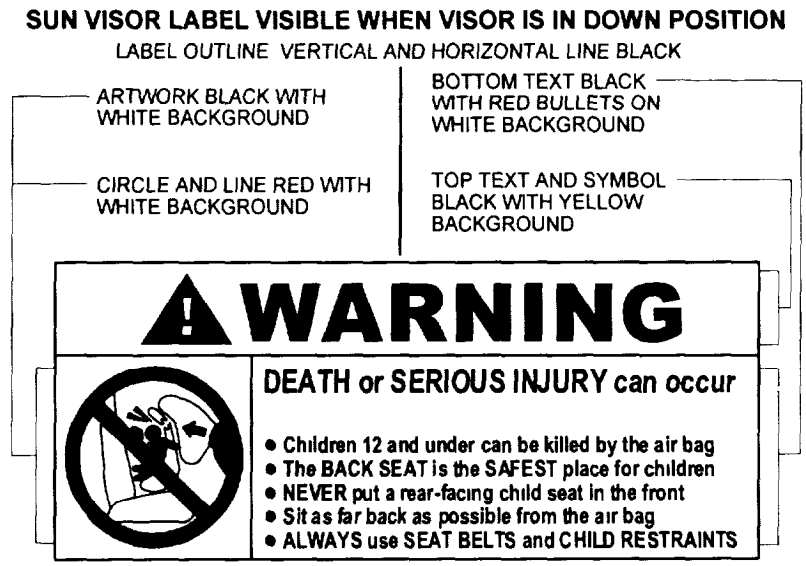


Figure 6a (S4 5 1(b)(2))

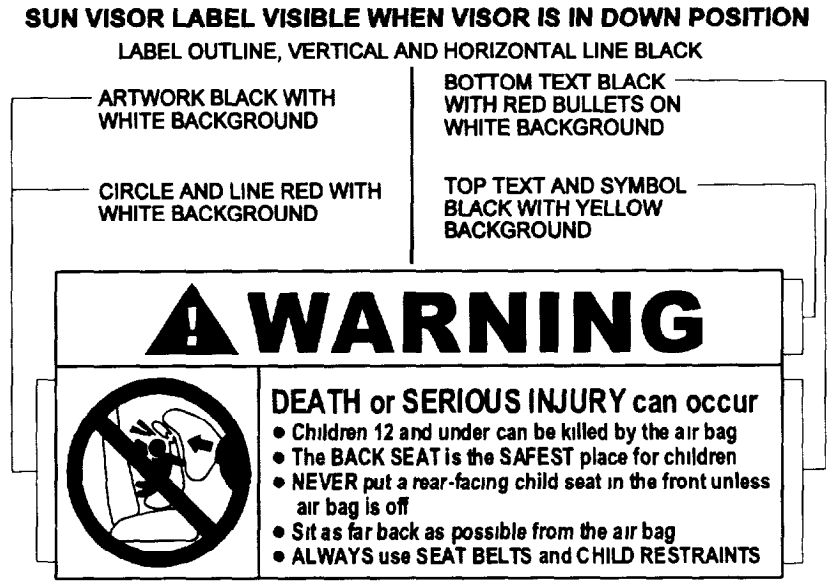


Figure 6b (S4 5 1(b)(2))

4 3 Is the label heading area yellow with the word "warning" and the alert symbol in black? (S4 5 1(b)(2)(i)) Driver Side - (X)Yes-Pass ( ) **No-FAIL**
Passenger Side - ( ) No air bag (X)Yes-Pass ( ) **No-FAIL**

4 4 Is the message white with black text? (S4 5 1(b)(2)(ii))
Driver Side - (X)Yes-Pass ( ) **No-FAIL**
Passenger Side - ( ) No air bag (X)Yes-Pass ( ) **No-FAIL**

Air Bag Labels Data (Cont)

4 5 Is the message area at least 30 cm^2? (S4 5 1(b)(2)(ii))
Actual message area 44 5 cm^2

Driver Side -		(X)Yes-Pass	( ) **No-FAIL**
Passenger Side -	( ) No air bag	(X)Yes-Pass	( ) **No-FAIL**

4 6 Is the pictogram black with a red circle and slash on a white background? (S4 5 1(b)(2)(iii) & (S4.5.1(b)(2)(iv))
For vehicles with driver side air bag ONLY ( ) Not Applicable

Driver Side -		(X)Yes-Pass	( ) **No-FAIL**
Passenger Side -	( ) No air bag	(X)Yes-Pass	( ) **No-FAIL**

4 7 Is the pictogram at least 30 mm in diameter? (S4.5 1(b)(2)(iii))
Actual diameter 30 mm
For vehicles with driver side air bag ONLY ( ) Not Applicable

Driver Side -		(X)Yes-Pass	( ) **No-FAIL**
Passenger Side -	( ) No air bag	(X)Yes-Pass	( ) **No-FAIL**

4 8 Is the same side of the sun visor to which the sun visor label is affixed free of other information with the exception of an air bag maintenance label? (S4 5.1(b)(3))

Driver Side -		(X)Yes-Pass	( ) **No-FAIL**
Passenger Side -	( ) No air bag	(X)Yes-Pass	( ) **No-FAIL**

4 9 Is the sun visor free of other information about air bags or the need to wear seat belts with the exception of the air bag alert label or the utility vehicle label? (S4 5.1(b)(3))

Driver Side -		(X)Yes-Pass	( ) **No-FAIL**
Passenger Side -	( ) No air bag	(X)Yes-Pass	( ) **No-FAIL**

5 Air Bag Alert Label

5 1 Is the Sun Visor Warning Label visible when the sunvisor is in the stowed position?

Driver Side -		(X)Yes, go to 6	( ) No
Passenger Side -	( )No air bag	(X)Yes	( ) No

5 2 Does the label conform in content to the label shown below? (S4 5 1(c)(2))

Driver Side -		( )Yes-Pass	( ) **No-FAIL**
Passenger Side -	( )No air bag	( )Yes-Pass	( ) **No-FAIL**

5 3 Is the message area black with yellow text? (S4 5 1(c)(2)(i))

Driver Side -		( )Yes-Pass	( ) **No-FAIL**
Passenger Side -	( )No air bag	( )Yes-Pass	( ) **No-FAIL**

Air Bag Labels Data (Cont)

5 4 Is the message area at least 20 cm^2? (S4 5 1(c)(2)(i))
Actual message area: _____ cm^2
Driver Side - ( )Yes-Pass ( ) **No-FAIL**
Passenger Side - ( )No air bag ( )Yes-Pass ( ) **No-FAIL**

5.5 Is the pictogram black with a red circle and slash on a white background? (S4.5.1(c)(2)(ii))
For vehicles with driver side air bag ONLY ( ) Not Applicable
( )Yes-Pass ( ) **No-FAIL**

5.6 Is the pictogram at least 20 mm in diameter? (S4.5 1(c)(2)(ii))
Actual diameter _____ mm
For vehicles with driver side air bag ONLY ( ) Not Applicable
( )Yes-Pass ( ) **No-FAIL**

SUN VISOR LABEL VISIBLE WHEN VISOR IS IN UP POSITION

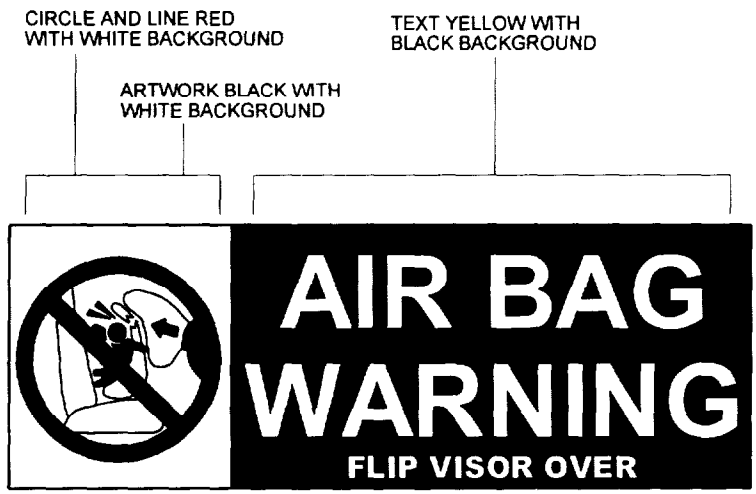


Figure 6c (S4 5 1(c)(2))

6. Label On the Dash

6 1 Does the vehicle have a passenger side air bag?
(X)Yes ( ) No, check sheet is complete

6 2 Does the vehicle have a label on the dash or steering wheel hub? (S4 5 1(e))
(X)Yes-Pass ( ) **No-FAIL**

6 3 Does the label conform in content (vehicles without back seats may omit the statement. "The back seat is the safest place for children 12 and under " (S4 5 1(e)(iii)) to the label shown below. (S4 5 1(e))
(X)Yes-Pass ( ) **No-FAIL**

Air Bag Labels Data (Cont)

6 4 Is the heading area yellow with the word "warning" and the alert symbol in black? (S4 5.1(e)(i)) (X)Yes-Pass ( ) **No-FAIL**

6 5 Is the message white with black text? (S4 5 1(e)(ii)) (X)Yes-Pass ( ) **No-FAIL**

6.6 Is the message area at least 30 cm^2? (S4.5.1(e)(ii))
Actual message area 33 8 cm^2
(X)Yes-Pass ( )**No-FAIL**

REMOVABLE LABEL ON DASH

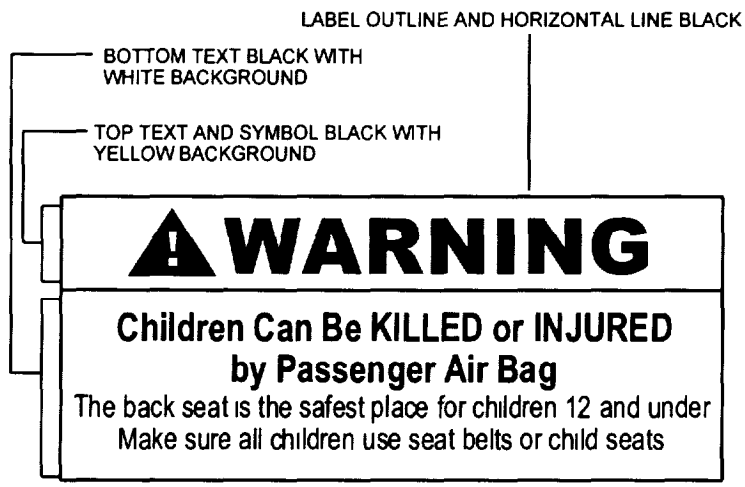


Figure 7 (S4 5 1(e))

Rear Outboard Seating Position Seat Belt Data

Vehicle Year/Make/Model/Body Style: 2002/Jeep/Liberty/MPV

NHTSA No C20302, Technician Chad Gadberry, Date: December 21, 2001

Do all rear outboard seating positions have type 2 seat belts?

(X)Yes ( )No

If NO, describe the seat belt installed, the seat location, and any other information about the seat that would explain why a type 2 belt was not installed

_____

_____

Lap Belt Lockability Data

Vehicle Year/Make/Model/Body Style 2002/Jeep/Liberty/MPV

NHTSA No · C20302 , Technician Chad Gadberry , Date December 21, 2001

Passenger cars, trucks, buses, and multipurpose passenger vehicles with a GVWR of 10,000 pounds or less. (S7 1 1 5)

Complete one of these forms for **each** designated seating position with forward-facing seats, other than the driver's seat, or seats that can be adjusted to forward-facing **and** that has seat belt retractors that are not automatic locking retractors. (S7 1 1 5(c))

Designated Seating Position (DSP)· Right Front

1 Record the seating position Fully rearward
(S7.1 1.5(c)(1))
(Any position is acceptable)

2 Buckle the seat belt. (S7 1 1 5(c)(1))

3 Complete any procedures recommended in the vehicle owner's manual to activate any locking feature (S7 1 1.5(c)(1))

4 Does the lap belt portion of the seat belt in the forward-facing seat or seat that can be adjusted to forward-facing consist of a locking device that does NOT have to be attached by the vehicle user to the seat belt webbing, retractor, or any other part of the vehicle (S7.1.1.5(a))

(X)Yes-Pass ( ) **No-FAIL**

5 Does the lap belt portion of the seat belt in the forward-facing seat or seat that can be adjusted to forward-facing consist of a locking device that does NOT require inverting, twisting or deforming of the belt webbing. (S7 1 1 5(a))

(X)Yes-Pass ( ) **No-FAIL**

6 Does the vehicle user need to take some action to activate the locking feature on the lap belt portion of the seat belt in any forward-facing seat or seat that can be adjusted to forward-facing? (X)Yes, go to 6 1 ( ) No, go to 7

6 1 Does the vehicle owner's manual include a description in words and/or diagrams describing how to activate the locking feature so that the seat belt assembly can tightly secure a child restraint system and how to deactivate the locking feature to remove the child restraint system (S7 1 1 5(b))

(X)Yes-Pass ( ) **No-FAIL**

7 Locate a reference point A on the seat belt buckle (S7 1 1 5(c)(2))

Lap Belt Lockability Data (Cont.)

8. Locate a reference point B on the attachment hardware or retractor assembly at the other end of the lap belt or lap belt portion of the seat belt assembly (S7 1 1 5(c)(2))

9 Adjust the lap belt or lap belt portion of the seat belt assembly according to any procedures recommended in the vehicle owner's manual to activate any locking feature so that the webbing between points A and B is at the maximum length allowed by the belt system. (S7 1 1 5(c)(2))

10 Measure and record the distance between points A and B along the longitudinal centerline of the webbing for the lap belt or lap belt portion of the seat belt assembly (S7 1.1 5(c)(2))

Measured distance between A and B is 61 0 inches

11 Readjust the belt system so that the webbing between points A and B is at any length that is 5 inches or more shorter than the maximum length of the webbing (S7 1 1 5(c)(3))

12 To the lap belt or lap belt portion of the seat belt assembly, apply a preload of 10 pounds using the webbing tension pull device Apply the load in a vertical plane parallel to the longitudinal axis of the vehicle and passing through the seating reference point of the designated seating position Apply the preload in a horizontal direction toward the front of the vehicle with a force application angle of not less than 5 degrees nor more than 15 degrees above the horizontal (S7 1 1 5(c)(4))

The measured force application angle = 10 (spec 5-15 degrees)

WEBBING TENSION PULL DEVICE

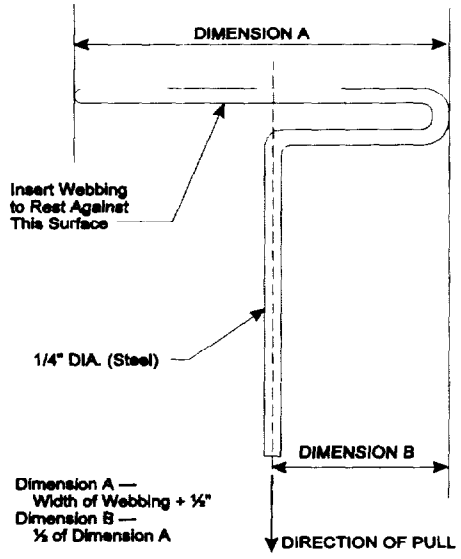


Figure 5 (S7 1 1 5(c)(4))

Lap Belt Lockability Data (Cont)

13 Measure the length between points A and B along the longitudinal centerline of the webbing while the preload is being applied (S7.1 1.5(c)(4))

Measured distance between A and B is 21.5 inches

14 Increase the load to 50 pounds at a rate of no more than 50 pounds per second Attain the load in not more than 5 seconds (If webbing sensitive emergency locking retractors are installed as part of the lap belt or lap belt portion of the seat belt assembly, apply the load at a rate less than the threshold value for lock-up specified by the manufacturer) Maintain the load for at least 5 seconds Measure and record the distance between points A and B along the longitudinal centerline of the webbing. (S7 1 1 5(c)(5))

Record onset rate 10 lb/sec (Spec 10 to 50 lb/sec)

Measure distance between points A and B 22 5 inches (S7 1 1 5(c)(6))

15 Subtract the measurement in 13 from the measurement in 14 Is the difference 2 inches or less? (S7 1 1.5(c)(7))

14-13 = 1.0 inches (X)Yes-Pass ( ) **No-FAIL**

16 Subtract the measurement in 14 from the measurement in 10 Is the difference 3 inches or more?

10-14 = 38 5 inches (X)Yes-Pass ( ) **No-FAIL**

REMARKS. None

Lap Belt Lockability Data (Cont.)

Vehicle Year/Make/Model/Body Style 2002/Jeep/Liberty/MPV

NHTSA No C20302 ; Technician Chad Gadberry ; Date. December 21, 2001

Passenger cars, trucks, buses, and multipurpose passenger vehicles with a GVWR of 10,000 pounds or less. (S7.1.1.5)

Complete one of these forms for **each** designated seating position with forward-facing seats, other than the driver's seat, or seats that can be adjusted to forward-facing **and** that has seat belt retractors that are not automatic locking retractors (S7 1 1 5(c))

Designated Seating Position (DSP) Left Rear

1 Record the seating position Non-adjustable
(S7 1 1 5(c)(1))
(Any position is acceptable)

2 Buckle the seat belt (S7.1.1.5(c)(1))

3. Complete any procedures recommended in the vehicle owner's manual to activate any locking feature (S7 1 1 5(c)(1))

4 Does the lap belt portion of the seat belt in the forward-facing seat or seat that can be adjusted to forward-facing consist of a locking device that does NOT have to be attached by the vehicle user to the seat belt webbing, retractor, or any other part of the vehicle (S7 1 1 5(a))

(X)Yes-Pass ( ) **No-FAIL**

5 Does the lap belt portion of the seat belt in the forward-facing seat or seat that can be adjusted to forward-facing consist of a locking device that does NOT require inverting, twisting or deforming of the belt webbing (S7 1 1 5(a))

(X)Yes-Pass ( ) **No-FAIL**

6 Does the vehicle user need to take some action to activate the locking feature on the lap belt portion of the seat belt in any forward-facing seat or seat that can be adjusted to forward-facing? ( )Yes, go to 6 1 (X) No, go to 7

6 1 Does the vehicle owner's manual include a description in words and/or diagrams describing how to activate the locking feature so that the seat belt assembly can tightly secure a child restraint system and how to deactivate the locking feature to remove the child restraint system (S7 1 1 5(b))

( )Yes-Pass ( ) **No-FAIL**

7 Locate a reference point A on the seat belt buckle (S7 1 1 5(c)(2))

Lap Belt Lockability Data (Cont)

8 Locate a reference point B on the attachment hardware or retractor assembly at the other end of the lap belt or lap belt portion of the seat belt assembly (S7 1 1 5(c)(2))

9 Adjust the lap belt or lap belt portion of the seat belt assembly according to any procedures recommended in the vehicle owner's manual to activate any locking feature so that the webbing between points A and B is at the maximum length allowed by the belt system. (S7 1 1 5(c)(2))

10 Measure and record the distance between points A and B along the longitudinal centerline of the webbing for the lap belt or lap belt portion of the seat belt assembly (S7.1 1 5(c)(2))

Measured distance between A and B is 68 1 inches

11 Readjust the belt system so that the webbing between points A and B is at any length that is 5 inches or more shorter than the maximum length of the webbing (S7.1.1.5(c)(3))

12 To the lap belt or lap belt portion of the seat belt assembly, apply a preload of 10 pounds using the webbing tension pull device Apply the load in a vertical plane parallel to the longitudinal axis of the vehicle and passing through the seating reference point of the designated seating position Apply the preload in a horizontal direction toward the front of the vehicle with a force application angle of not less than 5 degrees nor more than 15 degrees above the horizontal (S7 1 1 5(c)(4))

The measured force application angle = 10 (spec 5-15 degrees)

WEBBING TENSION PULL DEVICE

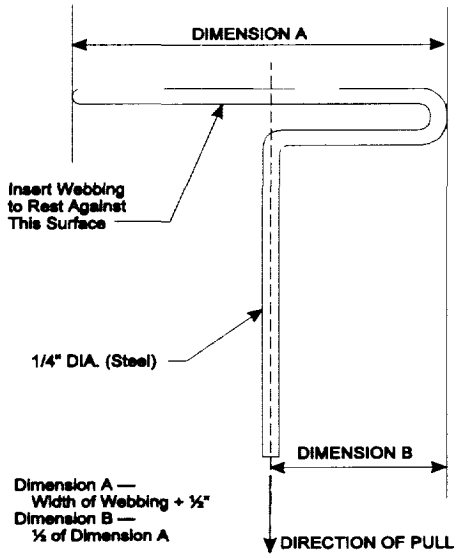


Figure 5 (S7.1 1 5(c)(4))

Lap Belt Lockability Data (Cont)

13 Measure the length between points A and B along the longitudinal centerline of the webbing while the preload is being applied (S7 1 1 5(c)(4))

Measured distance between A and B is 17.6 inches

14 Increase the load to 50 pounds at a rate of no more than 50 pounds per second Attain the load in not more than 5 seconds (If webbing sensitive emergency locking retractors are installed as part of the lap belt or lap belt portion of the seat belt assembly, apply the load at a rate less than the threshold value for lock-up specified by the manufacturer.) Maintain the load for at least 5 seconds. Measure and record the distance between points A and B along the longitudinal centerline of the webbing (S7 1.1.5(c)(5))

Record onset rate 10 lb/sec (Spec 10 to 50 lb/sec)

Measure distance between points A and B 20.1 inches (S7 1 1.5(c)(6))

15 Subtract the measurement in 13 from the measurement in 14 Is the difference 2 inches or less? (S7 1 1.5(c)(7))

14-13 = 2 5 inches ( )Yes-Pass (X) **No-FAIL**

16 Subtract the measurement in 14 from the measurement in 10 Is the difference 3 inches or more?

10-14 = 48 1 inches (X)Yes-Pass ( ) **No-FAIL**

REMARKS: For additional information, refer to OVSC file CI-208-020111

Lap Belt Lockability Data (Cont)

Vehicle Year/Make/Model/Body Style 2002/Jeep/Liberty/MPV

NHTSA No. C20302 ; Technician Chad Gadberry , Date December 21, 2001

Passenger cars, trucks, buses, and multipurpose passenger vehicles with a GVWR of 10,000 pounds or less (S7 1 1 5)

Complete one of these forms for **each** designated seating position with forward-facing seats, other than the driver's seat, or seats that can be adjusted to forward-facing **and** that has seat belt retractors that are not automatic locking retractors (S7 1 1 5(c))

Designated Seating Position (DSP). Center Rear

1. Record the seating position. Non-adjustable
(S7 1 1.5(c)(1))
(Any position is acceptable)

2 Buckle the seat belt (S7 1 1.5(c)(1))

3 Complete any procedures recommended in the vehicle owner's manual to activate any locking feature (S7 1 1 5(c)(1))

4 Does the lap belt portion of the seat belt in the forward-facing seat or seat that can be adjusted to forward-facing consist of a locking device that does NOT have to be attached by the vehicle user to the seat belt webbing, retractor, or any other part of the vehicle. (S7 1.1 5(a))

(X)Yes-Pass ( ) **No-FAIL**

5 Does the lap belt portion of the seat belt in the forward-facing seat or seat that can be adjusted to forward-facing consist of a locking device that does NOT require inverting, twisting or deforming of the belt webbing (S7 1 1 5(a))

(X)Yes-Pass ( ) **No-FAIL**

6. Does the vehicle user need to take some action to activate the locking feature on the lap belt portion of the seat belt in any forward-facing seat or seat that can be adjusted to forward-facing? ( )Yes, go to 6 1 (X) No, go to 7

6 1 Does the vehicle owner's manual include a description in words and/or diagrams describing how to activate the locking feature so that the seat belt assembly can tightly secure a child restraint system and how to deactivate the locking feature to remove the child restraint system (S7.1.1 5(b))

( )Yes-Pass ( ) **No-FAIL**

7 Locate a reference point A on the seat belt buckle (S7 1 1 5(c)(2))

Lap Belt Lockability Data (Cont)

8 Locate a reference point B on the attachment hardware or retractor assembly at the other end of the lap belt or lap belt portion of the seat belt assembly (S7 1 1 5(c)(2))

9. Adjust the lap belt or lap belt portion of the seat belt assembly according to any procedures recommended in the vehicle owner's manual to activate any locking feature so that the webbing between points A and B is at the maximum length allowed by the belt system. (S7 1 1 5(c)(2))

10 Measure and record the distance between points A and B along the longitudinal centerline of the webbing for the lap belt or lap belt portion of the seat belt assembly. (S7 1.1 5(c)(2))

Measured distance between A and B is 67 6 inches

11. Readjust the belt system so that the webbing between points A and B is at any length that is 5 inches or more shorter than the maximum length of the webbing (S7.1 1 5(c)(3))

12 To the lap belt or lap belt portion of the seat belt assembly, apply a preload of 10 pounds using the webbing tension pull device Apply the load in a vertical plane parallel to the longitudinal axis of the vehicle and passing through the seating reference point of the designated seating position Apply the preload in a horizontal direction toward the front of the vehicle with a force application angle of not less than 5 degrees nor more than 15 degrees above the horizontal (S7 1 1 5(c)(4))

The measured force application angle = 10 (spec 5-15 degrees)

WEBBING TENSION PULL DEVICE

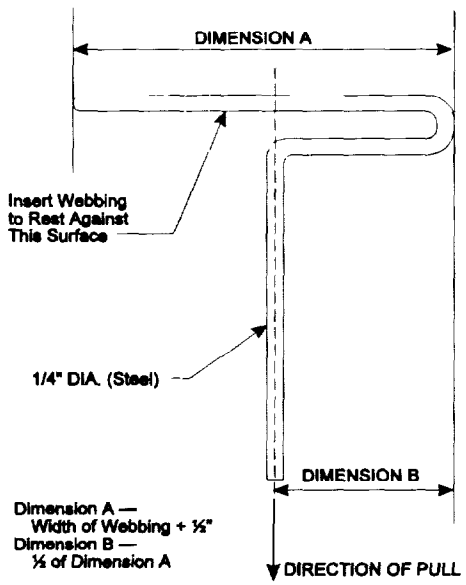


Figure 5 (S7.1.1 5(c)(4))

Lap Belt Lockability Data (Cont)

13. Measure the length between points A and B along the longitudinal centerline of the webbing while the preload is being applied (S7 1 1 5(c)(4))

Measured distance between A and B is 14 3 inches

14. Increase the load to 50 pounds at a rate of no more than 50 pounds per second Attain the load in not more than 5 seconds. (If webbing sensitive emergency locking retractors are installed as part of the lap belt or lap belt portion of the seat belt assembly, apply the load at a rate less than the threshold value for lock-up specified by the manufacturer) Maintain the load for at least 5 seconds Measure and record the distance between points A and B along the longitudinal centerline of the webbing (S7 1.1.5(c)(5))

Record onset rate. 10 lb/sec (Spec 10 to 50 lb/sec)

Measure distance between points A and B 14.6 inches (S7.1.1 5(c)(6))

15 Subtract the measurement in 13 from the measurement in 14. Is the difference 2 inches or less? (S7.1 1.5(c)(7))

14-13 = 0 3 inches (X)Yes-Pass ( ) **No-FAIL**

16 Subtract the measurement in 14 from the measurement in 10 Is the difference 3 inches or more?

10-14 = 53.0 inches (X)Yes-Pass ( ) **No-FAIL**

REMARKS: None

Lap Belt Lockability Data (Cont)

Vehicle Year/Make/Model/Body Style 2002/Jeep/Liberty/MPV

NHTSA No : C20302 , Technician Chad Gadberry , Date December 21, 2001

Passenger cars, trucks, buses, and multipurpose passenger vehicles with a GVWR of 10,000 pounds or less (S7 1 1 5)

Complete one of these forms for **each** designated seating position with forward-facing seats, other than the driver's seat, or seats that can be adjusted to forward-facing **and** that has seat belt retractors that are not automatic locking retractors (S7 1 1 5(c))

Designated Seating Position (DSP) Right Rear

1 Record the seating position. Non-adjustable
(S7.1.1 5(c)(1))
(Any position is acceptable.)

2. Buckle the seat belt (S7 1 1 5(c)(1))

3 Complete any procedures recommended in the vehicle owner's manual to activate any locking feature (S7 1 1 5(c)(1))

4 Does the lap belt portion of the seat belt in the forward-facing seat or seat that can be adjusted to forward-facing consist of a locking device that does NOT have to be attached by the vehicle user to the seat belt webbing, retractor, or any other part of the vehicle. (S7 1 1 5(a))

(X)Yes-Pass ( ) **No-FAIL**

5 Does the lap belt portion of the seat belt in the forward-facing seat or seat that can be adjusted to forward-facing consist of a locking device that does NOT require inverting, twisting or deforming of the belt webbing (S7 1.1 5(a))

(X)Yes-Pass ( ) **No-FAIL**

6 Does the vehicle user need to take some action to activate the locking feature on the lap belt portion of the seat belt in any forward-facing seat or seat that can be adjusted to forward-facing? ( )Yes, go to 6 1 (X) No, go to 7

6 1 Does the vehicle owner's manual include a description in words and/or diagrams describing how to activate the locking feature so that the seat belt assembly can tightly secure a child restraint system and how to deactivate the locking feature to remove the child restraint system (S7 1 1 5(b))

( )Yes-Pass ( ) **No-FAIL**

7 Locate a reference point A on the seat belt buckle (S7 1 1 5(c)(2))

Lap Belt Lockability Data (Cont)

8. Locate a reference point B on the attachment hardware or retractor assembly at the other end of the lap belt or lap belt portion of the seat belt assembly. (S7 1 1 5(c)(2))

9 Adjust the lap belt or lap belt portion of the seat belt assembly according to any procedures recommended in the vehicle owner's manual to activate any locking feature so that the webbing between points A and B is at the maximum length allowed by the belt system (S7.1 1.5(c)(2))

10. Measure and record the distance between points A and B along the longitudinal centerline of the webbing for the lap belt or lap belt portion of the seat belt assembly (S7.1.1 5(c)(2))

Measured distance between A and B is 69 3 inches

11. Readjust the belt system so that the webbing between points A and B is at any length that is 5 inches or more shorter than the maximum length of the webbing (S7.1.1.5(c)(3))

12 To the lap belt or lap belt portion of the seat belt assembly, apply a preload of 10 pounds using the webbing tension pull device. Apply the load in a vertical plane parallel to the longitudinal axis of the vehicle and passing through the seating reference point of the designated seating position Apply the preload in a horizontal direction toward the front of the vehicle with a force application angle of not less than 5 degrees nor more than 15 degrees above the horizontal (S7 1 1 5(c)(4))

The measured force application angle = 10 (spec 5-15 degrees)

WEBBING TENSION PULL DEVICE

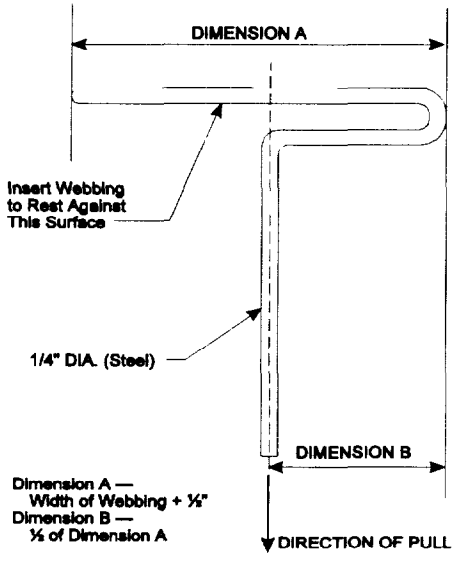


Figure 5 (S7 1 1 5(c)(4))

Lap Belt Lockability Data (Cont)

13 Measure the length between points A and B along the longitudinal centerline of the webbing while the preload is being applied (S7 1 1 5(c)(4))

Measured distance between A and B is 17 0 inches

14 Increase the load to 50 pounds at a rate of no more than 50 pounds per second Attain the load in not more than 5 seconds (If webbing sensitive emergency locking retractors are installed as part of the lap belt or lap belt portion of the seat belt assembly, apply the load at a rate less than the threshold value for lock-up specified by the manufacturer.) Maintain the load for at least 5 seconds Measure and record the distance between points A and B along the longitudinal centerline of the webbing (S7.1.1 5(c)(5))

Record onset rate 10 lb/sec (Spec 10 to 50 lb/sec)

Measure distance between points A and B * inches (S7 1 1 5(c)(6))

15 Subtract the measurement in 13 from the measurement in 14 Is the difference 2 inches or less? (S7 1 1 5(c)(7))

14-13 = * inches ( )Yes-Pass (X) **No-FAIL**

16 Subtract the measurement in 14 from the measurement in 10 Is the difference 3 inches or more?

10-14 = * inches (X)Yes-Pass ( ) **No-FAIL**

REMARKS For additional information, refer to OVSC file CI-208-02011

* Did not lock under 50 lb load, could not take accurate measurement

Seat Belt Comfort and Convenience Data

1 **BELT CONTACT FORCE (S7.4.3)**

Test Vehicle NHTSA No :C20302

Vehicle Model Year/Make/Model/Body Style: 2002/Jeep/Liberty/MPV

Designated Seating Position Tested Left Front

Date of Comfort/Convenience Check: December 21, 2001

Technician Performing Check Chad Gadberry

GVWR: 5300 lb

Test all Type 2 seat belts other than those in walk-in van-type vehicles and those at front outboard designated seating positions in passenger cars. Complete a form for each applicable seat belt

1 1 Does the vehicle incorporate a webbing tension-relieving device?
( ) Yes - go to latchplate access
(X) No - continue with this check sheet

1.2 Adjustable seats are in adjustment position midway between the forward most and rearmost positions If an adjustment position does not exist midway between the forward most and rearmost positions, the next closest adjustment position to the rear of the midpoint is used (S8 1 2)
(X) Check
( ) N/A

1 3 If separately adjustable in a vertical direction, the seats are at the lowest position
( ) Check
(X) N/A

1 4 Place adjustable seat backs in the manufacturer's nominal design riding position in the manner specified by the manufacturer
(X) Check
( ) N/A

1.5 Place any adjustable anchorages at the manufacturer's nominal design position for a 50th percentile adult male (50M) occupant This information will be furnished by the COTR
(X) Check
( ) N/A

1 6 Place each adjustable head restraint in its highest adjustment position
( ) Check
(X) N/A

Seat Belt Comfort and Convenience Data (Cont)

1 7 Adjustable lumbar supports are positioned so that the lumbar support is in its lowest adjustment position. (S8 1 3)

( ) Check
(X) N/A

1 8 Position the test dummies according to dummy position placement instructions in Appendix B.

(X) Check

1 9 Fasten the seat belt latch Pull either 12 inches of belt webbing or the maximum available amount of belt webbing, whichever is less, from the retractor and then release it, allowing the belt webbing to return to the dummy's chest Locate the point where the centerline of the upper torso belt webbing crosses the midsagittal line on the dummy's chest At that point, pull the belt webbing out 3 inches from the dummy's chest and release until it is within one inch from the dummy's chest (S10 8) Measure the contact force exerted by the belt webbing on the dummy's chest Contact the COTR if the contact force exceeds 0.7 pounds

Contact Force 0 6 lb

(X) 0 0 to 0 7 pounds - Pass
( ) greater than 0.7 pounds - FAIL*

* If the seat belts are voluntarily installed by the manufacturer they do not have to comply

Seat Belt Comfort and Convenience Data (Cont)

1 **BELT CONTACT FORCE (S7.4.3)**

Test Vehicle NHTSA No C20302

Vehicle Model Year/Make/Model/Body Style 2002/Jeep/Liberty/MPV

Designated Seating Position Tested Right Front

Date of Comfort/Convenience Check December 21, 2001

Technician Performing Check Chad Gadberry

GVWR 5300 lb

Test all Type 2 seat belts other than those in walk-in van-type vehicles and those at front outboard designated seating positions in passenger cars Complete a form for each applicable seat belt

1 1 Does the vehicle incorporate a webbing tension-relieving device?
( ) Yes - go to latchplate access
(X) No - continue with this check sheet

1 2 Adjustable seats are in adjustment position midway between the forward most and rearmost positions If an adjustment position does not exist midway between the forward most and rearmost positions, the next closest adjustment position to the rear of the midpoint is used (S8 1 2)
(X) Check
( ) N/A

1 3 If separately adjustable in a vertical direction, the seats are at the lowest position
( ) Check
(X) N/A

1.4 Place adjustable seat backs in the manufacturer's nominal design riding position in the manner specified by the manufacturer
(X) Check
( ) N/A

1 5 Place any adjustable anchorages at the manufacturer's nominal design position for a 50th percentile adult male (50M) occupant This information will be furnished by the COTR
(X) Check
( ) N/A

1 6 Place each adjustable head restraint in its highest adjustment position
( ) Check
(X) N/A

Seat Belt Comfort and Convenience Data (Cont.)

1 7 Adjustable lumbar supports are positioned so that the lumbar support is in its lowest adjustment position. (S8 1 3)

( ) Check
(X) N/A

1.8 Position the test dummies according to dummy position placement instructions in Appendix B

(X) Check

1 9 Fasten the seat belt latch Pull either 12 inches of belt webbing or the maximum available amount of belt webbing, whichever is less, from the retractor and then release it, allowing the belt webbing to return to the dummy's chest Locate the point where the centerline of the upper torso belt webbing crosses the midsagittal line on the dummy's chest. At that point, pull the belt webbing out 3 inches from the dummy's chest and release until it is within one inch from the dummy's chest. (S10 8) Measure the contact force exerted by the belt webbing on the dummy's chest Contact the COTR if the contact force exceeds 0.7 pounds

Contact Force 0 6 lb.

(X) 0 0 to 0 7 pounds - Pass
( ) greater than 0 7 pounds - FAIL*

* If the seat belts are voluntarily installed by the manufacturer they do not have to comply

Seat Belt Comfort and Convenience Data (Cont)

1 **BELT CONTACT FORCE (S7.4.3)**

Test Vehicle NHTSA No C20302

Vehicle Model Year/Make/Model/Body Style 2002/Jeep/Liberty/MPV

Designated Seating Position Tested Left Rear

Date of Comfort/Convenience Check: December 21, 2001

Technician Performing Check Chad Gadberry

GVWR: 5300 lb

Test all Type 2 seat belts other than those in walk-in van-type vehicles and those at front outboard designated seating positions in passenger cars Complete a form for each applicable seat belt.

1.1 Does the vehicle incorporate a webbing tension-relieving device?
( ) Yes - go to latchplate access
(X) No - continue with this check sheet

1 2 Adjustable seats are in adjustment position midway between the forward most and rearmost positions If an adjustment position does not exist midway between the forward most and rearmost positions, the next closest adjustment position to the rear of the midpoint is used (S8 1 2)
( ) Check
(X) N/A

1 3 If separately adjustable in a vertical direction, the seats are at the lowest position
( ) Check
(X) N/A

1 4 Place adjustable seat backs in the manufacturer's nominal design riding position in the manner specified by the manufacturer
( ) Check
(X) N/A

1 5 Place any adjustable anchorages at the manufacturer's nominal design position for a 50th percentile adult male (50M) occupant This information will be furnished by the COTR
( ) Check
(X) N/A

1.6 Place each adjustable head restraint in its highest adjustment position
(X) Check
( ) N/A

Seat Belt Comfort and Convenience Data (Cont)

1 7 Adjustable lumbar supports are positioned so that the lumbar support is in its lowest adjustment position (S8 1 3)

( ) Check
(X) N/A

1 8 Position the test dummies according to dummy position placement instructions in Appendix B

(X) Check

1 9 Fasten the seat belt latch Pull either 12 inches of belt webbing or the maximum available amount of belt webbing, whichever is less, from the retractor and then release it, allowing the belt webbing to return to the dummy's chest. Locate the point where the centerline of the upper torso belt webbing crosses the midsagittal line on the dummy's chest. At that point, pull the belt webbing out 3 inches from the dummy's chest and release until it is within one inch from the dummy's chest. (S10.8) Measure the contact force exerted by the belt webbing on the dummy's chest Contact the COTR if the contact force exceeds 0 7 pounds

Contact Force 0 6 lb

(X) 0.0 to 0.7 pounds - Pass
( ) greater than 0 7 pounds - FAIL*

* If the seat belts are voluntarily installed by the manufacturer they do not have to comply

Seat Belt Comfort and Convenience Data (Cont.)

1 **BELT CONTACT FORCE (S7.4.3)**

Test Vehicle NHTSA No .C20302

Vehicle Model Year/Make/Model/Body Style. 2002/Jeep/Liberty/MPV

Designated Seating Position Tested Center Rear

Date of Comfort/Convenience Check December 21, 2001

Technician Performing Check. Chad Gadberry

GVWR 5300 lb

Test all Type 2 seat belts other than those in walk-in van-type vehicles and those at front outboard designated seating positions in passenger cars Complete a form for each applicable seat belt

1 1 Does the vehicle incorporate a webbing tension-relieving device?
( ) Yes - go to latchplate access
(X) No - continue with this check sheet

1 2 Adjustable seats are in adjustment position midway between the forward most and rearmost positions. If an adjustment position does not exist midway between the forward most and rearmost positions, the next closest adjustment position to the rear of the midpoint is used (S8.1.2)
( ) Check
(X) N/A

1 3 If separately adjustable in a vertical direction, the seats are at the lowest position
( ) Check
(X) N/A

1.4 Place adjustable seat backs in the manufacturer's nominal design riding position in the manner specified by the manufacturer
( ) Check
(X) N/A

1.5 Place any adjustable anchorages at the manufacturer's nominal design position for a 50th percentile adult male (50M) occupant This information will be furnished by the COTR.
( ) Check
(X) N/A

1 6 Place each adjustable head restraint in its highest adjustment position
( ) Check
(X) N/A

Seat Belt Comfort and Convenience Data (Cont)

1 7 Adjustable lumbar supports are positioned so that the lumbar support is in its lowest adjustment position. (S8 1 3)

( ) Check
(X) N/A

1 8 Position the test dummies according to dummy position placement instructions in Appendix B

(X) Check

1 9 Fasten the seat belt latch Pull either 12 inches of belt webbing or the maximum available amount of belt webbing, whichever is less, from the retractor and then release it, allowing the belt webbing to return to the dummy's chest Locate the point where the centerline of the upper torso belt webbing crosses the midsagittal line on the dummy's chest At that point, pull the belt webbing out 3 inches from the dummy's chest and release until it is within one inch from the dummy's chest (S10 8) Measure the contact force exerted by the belt webbing on the dummy's chest. Contact the COTR if the contact force exceeds 0.7 pounds

Contact Force 0 5 lb.

(X) 0 0 to 0 7 pounds - Pass
( ) greater than 0.7 pounds - FAIL*

* If the seat belts are voluntarily installed by the manufacturer they do not have to comply

Seat Belt Comfort and Convenience Data (Cont)

1 **BELT CONTACT FORCE (S7.4.3)**

Test Vehicle NHTSA No. C20302

Vehicle Model Year/Make/Model/Body Style 2002/Jeep/Liberty/MPV

Designated Seating Position Tested Right Rear

Date of Comfort/Convenience Check December 21, 2001

Technician Performing Check Chad Gadberry

GVWR: 5300 lb

Test all Type 2 seat belts other than those in walk-in van-type vehicles and those at front outboard designated seating positions in passenger cars Complete a form for each applicable seat belt

1 1 Does the vehicle incorporate a webbing tension-relieving device?
( ) Yes - go to latchplate access
(X) No - continue with this check sheet

1 2 Adjustable seats are in adjustment position midway between the forward most and rearmost positions If an adjustment position does not exist midway between the forward most and rearmost positions, the next closest adjustment position to the rear of the midpoint is used (S8 1 2)
( ) Check
(X) N/A

1 3 If separately adjustable in a vertical direction, the seats are at the lowest position
( ) Check
(X) N/A

1 4 Place adjustable seat backs in the manufacturer's nominal design riding position in the manner specified by the manufacturer
( ) Check
(X) N/A

1 5 Place any adjustable anchorages at the manufacturer's nominal design position for a 50th percentile adult male (50M) occupant This information will be furnished by the COTR
( ) Check
(X) N/A

1 6 Place each adjustable head restraint in its highest adjustment position
(X) Check
( ) N/A

Seat Belt Comfort and Convenience Data (Cont)

1 7 Adjustable lumbar supports are positioned so that the lumbar support is in its lowest adjustment position (S8 1 3)

( ) Check
(X) N/A

1 8 Position the test dummies according to dummy position placement instructions in Appendix B

(X) Check

1 9 Fasten the seat belt latch Pull either 12 inches of belt webbing or the maximum available amount of belt webbing, whichever is less, from the retractor and then release it, allowing the belt webbing to return to the dummy's chest Locate the point where the centerline of the upper torso belt webbing crosses the midsagittal line on the dummy's chest. At that point, pull the belt webbing out 3 inches from the dummy's chest and release until it is within one inch from the dummy's chest (S10.8) Measure the contact force exerted by the belt webbing on the dummy's chest Contact the COTR if the contact force exceeds 0 7 pounds

Contact Force 0.6 lb

(X) 0 0 to 0.7 pounds - Pass
( ) greater than 0 7 pounds - FAIL*

* If the seat belts are voluntarily installed by the manufacturer they do not have to comply.

Seat Belt Comfort and Convenience Data (Cont)

2 LATCHPLATE ACCESS (S7.4.4)

Test Vehicle NHTSA No .C20302

Vehicle Model Year/Make/Model/Body Style: 2002/Jeep/Liberty/MPV

Designated Seating Position Tested: Left Front

Date of Comfort/Convenience Check: December 21, 2001

Technician Performing Check Chad Gadberry

GVWR: 5300 lb

Test all front outboard seat belts other than those in walk-in van-type vehicles and those at front outboard designated seating positions in passenger cars Complete a form for each applicable seat belt.

2 1 Position the seat in its forward most adjustment position
(X) Check

2.2 Position the test dummy using the procedures in Appendix B (Some modifications to the positioning procedure may need to be made because the seat is in its forward most position)
(X) Check

2 3 Position the adjustable seat belt anchorage in the manufacturer's nominal design position for a 50th percentile adult male occupant.
(X) Check

2 4 Attach the inboard and outboard reach string following the instructions on Figure 1C
(X) Check

2 5 Place the latch plate in the stowed position.
(X) Check

2 6 Extend each line backward and outboard to generate arcs of the reach envelop of the test dummy's arms Is the latch plate within the reach envelope?
(X)Yes-Pass ( ) **No-FAIL**

2.7 Using the clearance test block, specified in Figure 2C, is there sufficient clearance between the vehicle seat and the side of vehicle interior to allow the test block to move unhindered to the latch plate or buckle?
(X)Yes-Pass ( ) **No-FAIL**

Seat Belt Comfort and Convenience Data (Cont)

2 LATCHPLATE ACCESS (S7.4.4)

Test Vehicle NHTSA No. C20302

Vehicle Model Year/Make/Model/Body Style 2002/Jeep/Liberty/MPV

Designated Seating Position Tested. Right Front

Date of Comfort/Convenience Check December 21, 2001

Technician Performing Check Chad Gadberry

GVWR 5300 lb

Test all front outboard seat belts other than those in walk-in van-type vehicles and those at front outboard designated seating positions in passenger cars Complete a form for each applicable seat belt

2 1 Position the seat in its forward most adjustment position
(X) Check

2 2 Position the test dummy using the procedures in Appendix B (Some modifications to the positioning procedure may need to be made because the seat is in its forward most position)
(X) Check

2 3 Position the adjustable seat belt anchorage in the manufacturer's nominal design position for a 50th percentile adult male occupant.
(X) Check

2 4 Attach the inboard and outboard reach string following the instructions on Figure 1C.
(X) Check

2.5 Place the latch plate in the stowed position.
(X) Check

2 6 Extend each line backward and outboard to generate arcs of the reach envelop of the test dummy's arms Is the latch plate within the reach envelope?
(X)Yes-Pass ( ) **No-FAIL**

2 7 Using the clearance test block, specified in Figure 2C, is there sufficient clearance between the vehicle seat and the side of vehicle interior to allow the test block to move unhindered to the latch plate or buckle?
(X)Yes-Pass ( ) **No-FAIL**

Seat Belt Comfort and Convenience Data (Cont.)

3 **RETRACTION (S7.4.5)**

Test Vehicle NHTSA No C20302

Vehicle Model Year/Make/Model/Body Style: 2002/Jeep/Liberty/MPV

Designated Seating Position Tested: Left Front

Date of Comfort/Convenience Check. December 21, 2001

Technician Performing Check Chad Gadberry

GVWR 5300 lb

Test all front outboard seat belts other than those in walk-in van-type vehicles and those at front outboard designated seating positions in passenger cars Complete a form for each applicable seat belt

3 1 Is the vehicle a passenger car or walk-in van-type vehicle?
( )Yes If yes, go to seat belt guides and hardware
(X) No

3 2 Adjustable seats are in the adjustment position midway between the forward most and rearmost positions If an adjustment position does not exist midway between the forward most and rearmost positions, the next closest adjustment position to the rear of the midpoint is used. (S8 1 2)
(X) Check

3 3 If separately adjustable in a vertical direction, the seats are at the lowest position
(X) Check

3 4 Place adjustable seat backs in the manufacturer's nominal design riding position in the manner specified by the manufacturer
(X) Check

3 5 Place any adjustable anchorages at the manufacturer's nominal design position for a 50th percentile adult male (50M) occupant This information will be furnished by the COTR
(X) Check

3 6 Place each adjustable head restraint in its highest adjustment position
(X) Check

3 7 Adjustable lumbar supports are positioned so that the lumbar support is in its lowest adjustment position (S8.1.3)
(X) Check

Seat Belt Comfort and Convenience Data (Cont)

3.8 Use anthropomorphic test dummies whose arms have been removed and position the dummies in the front outboard designated seating positions according to instructions in Appendix B

(X) Check

3.9 Restrain the dummies using the belt systems for the position being tested

(X) Check

3 10 Stow outboard armrests which are capable of being stowed

(X) Check

3 11 Check the statement that applies to this test vehicle

(A) The torso and lap belt webbing of the seat belt system automatically retracts to a stowed position when the adjacent vehicle door is in an open position and the seat belt latch plate is released

(X) Pass

(B) The torso and lap belt webbing of the seat belt system automatically retracts when the seat belt latch plate is released

(X) Pass

(C) Neither A or B apply.

( ) **FAIL**

3 12 With the webbing and hardware in the stowed position are the webbing and hardware prevented from being pinched when the door is closed?

(X)Yes - Pass

( ) **No - FAIL**

3 13 If this test vehicle has an open body (without doors) and has a seat belt system with a tension-relieving device, does the belt system fully retract when the tension-relieving device is deactivated?

(X) N/A

( ) Yes - Pass

( ) **No - FAIL**

Seat Belt Comfort and Convenience Data (Cont)

3. **RETRACTION (S7.4.5)**

Test Vehicle NHTSA No. C20302

Vehicle Model Year/Make/Model/Body Style 2002/Jeep/Liberty/MPV

Designated Seating Position Tested Right Front

Date of Comfort/Convenience Check December 21, 2001

Technician Performing Check. Chad Gadberry

GVWR 5300 lb

Test all front outboard seat belts other than those in walk-in van-type vehicles and those at front outboard designated seating positions in passenger cars. Complete a form for each applicable seat belt.

3.1 Is the vehicle a passenger car or walk-in van-type vehicle?
( )Yes If yes, go to seat belt guides and hardware
(X) No

3.2 Adjustable seats are in the adjustment position midway between the forward most and rearmost positions If an adjustment position does not exist midway between the forward most and rearmost positions, the next closest adjustment position to the rear of the midpoint is used (S8.1.2)
(X) Check

3 3 If separately adjustable in a vertical direction, the seats are at the lowest position
(X) Check

3.4 Place adjustable seat backs in the manufacturer's nominal design riding position in the manner specified by the manufacturer.
(X) Check

3.5 Place any adjustable anchorages at the manufacturer's nominal design position for a 50th percentile adult male (50M) occupant This information will be furnished by the COTR
(X) Check

3 6 Place each adjustable head restraint in its highest adjustment position.
(X) Check

3.7 Adjustable lumbar supports are positioned so that the lumbar support is in its lowest adjustment position (S8.1.3)
(X) Check

Seat Belt Comfort and Convenience Data (Cont)

3 8 Use anthropomorphic test dummies whose arms have been removed and position the dummies in the front outboard designated seating positions according to instructions in Appendix B

(X) Check

3 9 Restrain the dummies using the belt systems for the position being tested

(X) Check

3 10 Stow outboard armrests which are capable of being stowed

(X) Check

3 11 Check the statement that applies to this test vehicle

(A) The torso and lap belt webbing of the seat belt system automatically retracts to a stowed position when the adjacent vehicle door is in an open position and the seat belt latch plate is released.

(X) Pass

(B) The torso and lap belt webbing of the seat belt system automatically retracts when the seat belt latch plate is released

(X) Pass

(C) Neither A or B apply.

( ) **FAIL**

3 12 With the webbing and hardware in the stowed position are the webbing and hardware prevented from being pinched when the door is closed?

(X)Yes - Pass

( ) **No - FAIL**

3 13 If this test vehicle has an open body (without doors) and has a seat belt system with a tension-relieving device, does the belt system fully retract when the tension-relieving device is deactivated?

(X) N/A

( ) Yes - Pass

( ) **No - FAIL**

Seat Belt Comfort and Convenience Data (Cont)

4 **SEAT BELT GUIDES AND HARDWARE (S7.4.6)**

Test Vehicle NHTSA No C20302

Vehicle Model Year/Make/Model/Body Style 2002/Jeep/Liberty/MPV

Designated Seating Position Tested Left Front

Date of Comfort/Convenience Check December 21, 2001

Technician Performing Check Chad Gadberry

GVWR 5300 lb

Test seat belts except those in walk-in van-type vehicles and those at front outboard designated seating positions in passenger cars Complete a form for each applicable seat belt.

The requirements for accessibility **DO NOT APPLY** to.

A Seats whose seat cushions are movable so that the seat back serves a function other than seating (S7 4 6 1(b))

B. Seats which are removable

C Seats which are movable so that the space formerly occupied by the seat can be used for a secondary function.

If the seats in this vehicle are different than the criteria above determine the following

4.1 Is the webbing designed to pass through the seat cushion or between the seat cushion and seat back?

( )Yes - Go to 4.2.
(X) No - this form is complete

4.2 Does one of the following three parts, the seat belt latch plate, the buckle, or the seat belt webbing, stay on top of or above the seat cushion under normal conditions (i e , conditions other than when belt hardware is intentionally pushed behind the seat by a vehicle occupant)?

( )Yes - Pass
( ) **No - FAIL**

4 3 Are the remaining two seat belt parts accessible under normal conditions?

( )Yes - Pass
( ) **No - FAIL**

Seat Belt Comfort and Convenience Data (Cont)

4.4 The buckle and latch plate do not pass through the guides or conduits provided and fall behind the seat when the following events occur in order

(A) The belt is completely retracted or, if the belt is nonretractable, the belt is unlatched.

( ) Check

(B) The seat is moved to any position to which it is designed to be adjusted

( ) Check

(C) The seat back, if foldable, is folded forward as far as possible and then moved backward into position.

( ) Check

( )Yes - Pass

( ) **No - FAIL**

4 5 Is the inboard receptacle end of the seat belt assembly, installed in the outboard designated seating position, accessible with the center arm rest in any position to which it can be adjusted (without moving the armrest)?

( ) Yes - Pass

( ) **No - FAIL**

Seat Belt Comfort and Convenience Data (Cont)

4 **SEAT BELT GUIDES AND HARDWARE (S7.4.6)**

Test Vehicle NHTSA No C20302

Vehicle Model Year/Make/Model/Body Style 2002/Jeep/Liberty/MPV

Designated Seating Position Tested Right Front

Date of Comfort/Convenience Check December 21, 2001

Technician Performing Check Chad Gadberry

GVWR. 5300 lb

Test seat belts except those in walk-in van-type vehicles and those at front outboard designated seating positions in passenger cars Complete a form for each applicable seat belt

The requirements for accessibility **DO NOT APPLY** to

A Seats whose seat cushions are movable so that the seat back serves a function other than seating (S7 4 6 1(b))

B Seats which are removable

C Seats which are movable so that the space formerly occupied by the seat can be used for a secondary function.

If the seats in this vehicle are different than the criteria above determine the following

4 1 Is the webbing designed to pass through the seat cushion or between the seat cushion and seat back?

( )Yes - Go to 4.2
(X) No - this form is complete

4 2 Does one of the following three parts, the seat belt latch plate, the buckle, or the seat belt webbing, stay on top of or above the seat cushion under normal conditions (i e , conditions other than when belt hardware is intentionally pushed behind the seat by a vehicle occupant)?

( )Yes - Pass
( ) **No - FAIL**

4.3 Are the remaining two seat belt parts accessible under normal conditions?

( )Yes - Pass
( ) **No - FAIL**

Seat Belt Comfort and Convenience Data (Cont)

4 4 The buckle and latch plate do not pass through the guides or conduits provided and fall behind the seat when the following events occur in order

(A) The belt is completely retracted or, if the belt is nonretractable, the belt is unlatched.

( ) Check

(B) The seat is moved to any position to which it is designed to be adjusted

( ) Check

(C) The seat back, if foldable, is folded forward as far as possible and then moved backward into position

( ) Check

( )Yes - Pass
( ) **No - FAIL**

4.5 Is the inboard receptacle end of the seat belt assembly, installed in the outboard designated seating position, accessible with the center arm rest in any position to which it can be adjusted (without moving the armrest)?

( ) Yes - Pass
( ) **No - FAIL**

Seat Belt Comfort and Convenience Data (Cont)

4. **SEAT BELT GUIDES AND HARDWARE (S7.4.6)**

Test Vehicle NHTSA No C20302

Vehicle Model Year/Make/Model/Body Style 2002/Jeep/Liberty/MPV

Designated Seating Position Tested. Left Rear

Date of Comfort/Convenience Check December 21, 2001

Technician Performing Check Chad Gadberry

GVWR: 5300 lb

Test seat belts except those in walk-in van-type vehicles and those at front outboard designated seating positions in passenger cars Complete a form for each applicable seat belt.

The requirements for accessibility **DO NOT APPLY** to:

A. Seats whose seat cushions are movable so that the seat back serves a function other than seating (S7.4 6 1(b))

B Seats which are removable

C. Seats which are movable so that the space formerly occupied by the seat can be used for a secondary function

If the seats in this vehicle are different than the criteria above determine the following

4 1 Is the webbing designed to pass through the seat cushion or between the seat cushion and seat back?

( )Yes - Go to 4.2
(X) No - this form is complete

4 2 Does one of the following three parts, the seat belt latch plate, the buckle, or the seat belt webbing, stay on top of or above the seat cushion under normal conditions (i e , conditions other than when belt hardware is intentionally pushed behind the seat by a vehicle occupant)?

( )Yes - Pass
( ) **No - FAIL**

4.3 Are the remaining two seat belt parts accessible under normal conditions?

( )Yes - Pass
( ) **No - FAIL**

Seat Belt Comfort and Convenience Data (Cont)

4 4 The buckle and latch plate do not pass through the guides or conduits provided and fall behind the seat when the following events occur in order

(A) The belt is completely retracted or, if the belt is nonretractable, the belt is unlatched

( ) Check

(B) The seat is moved to any position to which it is designed to be adjusted

( ) Check

(C) The seat back, if foldable, is folded forward as far as possible and then moved backward into position

( ) Check

( )Yes - Pass
( ) **No - FAIL**

4 5 Is the inboard receptacle end of the seat belt assembly, installed in the outboard designated seating position, accessible with the center arm rest in any position to which it can be adjusted (without moving the armrest)?

( ) Yes - Pass
( ) **No - FAIL**

Seat Belt Comfort and Convenience Data (Cont)

4 **SEAT BELT GUIDES AND HARDWARE (S7.4.6)**

Test Vehicle NHTSA No .C20302

Vehicle Model Year/Make/Model/Body Style: 2002/Jeep/Liberty/MPV

Designated Seating Position Tested Center Rear

Date of Comfort/Convenience Check: December 21, 2001

Technician Performing Check. Chad Gadberry

GVWR 5300 lb

Test seat belts except those in walk-in van-type vehicles and those at front outboard designated seating positions in passenger cars Complete a form for each applicable seat belt

The requirements for accessibility **DO NOT APPLY** to

A. Seats whose seat cushions are movable so that the seat back serves a function other than seating (S7 4 6 1(b))

B. Seats which are removable.

C Seats which are movable so that the space formerly occupied by the seat can be used for a secondary function

If the seats in this vehicle are different than the criteria above determine the following

4 1 Is the webbing designed to pass through the seat cushion or between the seat cushion and seat back?

(X)Yes - Go to 4.2.
( ) No - this form is complete

4 2 Does one of the following three parts, the seat belt latch plate, the buckle, or the seat belt webbing, stay on top of or above the seat cushion under normal conditions (i e , conditions other than when belt hardware is intentionally pushed behind the seat by a vehicle occupant)?

(X)Yes - Pass
( ) **No - FAIL**

4 3 Are the remaining two seat belt parts accessible under normal conditions?

(X)Yes - Pass
( ) **No - FAIL**

Seat Belt Comfort and Convenience Data (Cont)

4.4 The buckle and latch plate do not pass through the guides or conduits provided and fall behind the seat when the following events occur in order

(A) The belt is completely retracted or, if the belt is nonretractable, the belt is unlatched. (X) Check

(B) The seat is moved to any position to which it is designed to be adjusted
(X) Check

(C) The seat back, if foldable, is folded forward as far as possible and then moved backward into position
(X) Check

(X)Yes - Pass
( ) **No - FAIL**

4 5 Is the inboard receptacle end of the seat belt assembly, installed in the outboard designated seating position, accessible with the center arm rest in any position to which it can be adjusted (without moving the armrest)?
(X) Yes - Pass
( ) **No - FAIL**

Seat Belt Comfort and Convenience Data (Cont)

4. **SEAT BELT GUIDES AND HARDWARE (S7.4.6)**

Test Vehicle NHTSA No C20302

Vehicle Model Year/Make/Model/Body Style 2002/Jeep/Liberty/MPV

Designated Seating Position Tested Right Rear

Date of Comfort/Convenience Check: December 21, 2001

Technician Performing Check: Chad Gadberry

GVWR: 5300 lb

Test seat belts except those in walk-in van-type vehicles and those at front outboard designated seating positions in passenger cars Complete a form for each applicable seat belt

The requirements for accessibility **DO NOT APPLY** to:

A Seats whose seat cushions are movable so that the seat back serves a function other than seating (S7 4 6.1(b))

B Seats which are removable

C Seats which are movable so that the space formerly occupied by the seat can be used for a secondary function

If the seats in this vehicle are different than the criteria above determine the following

4 1 Is the webbing designed to pass through the seat cushion or between the seat cushion and seat back?

( )Yes - Go to 4 2.
(X) No - this form is complete

4 2 Does one of the following three parts, the seat belt latch plate, the buckle, or the seat belt webbing, stay on top of or above the seat cushion under normal conditions (i e , conditions other than when belt hardware is intentionally pushed behind the seat by a vehicle occupant)?

( )Yes - Pass
( ) **No - FAIL**

4 3 Are the remaining two seat belt parts accessible under normal conditions?

( )Yes - Pass
( ) **No - FAIL**

Seat Belt Comfort and Convenience Data (Cont.)

4 4 The buckle and latch plate do not pass through the guides or conduits provided and fall behind the seat when the following events occur in order

(A) The belt is completely retracted or, if the belt is nonretractable, the belt is unlatched

( ) Check

(B) The seat is moved to any position to which it is designed to be adjusted.

( ) Check

(C) The seat back, if foldable, is folded forward as far as possible and then moved backward into position

( ) Check

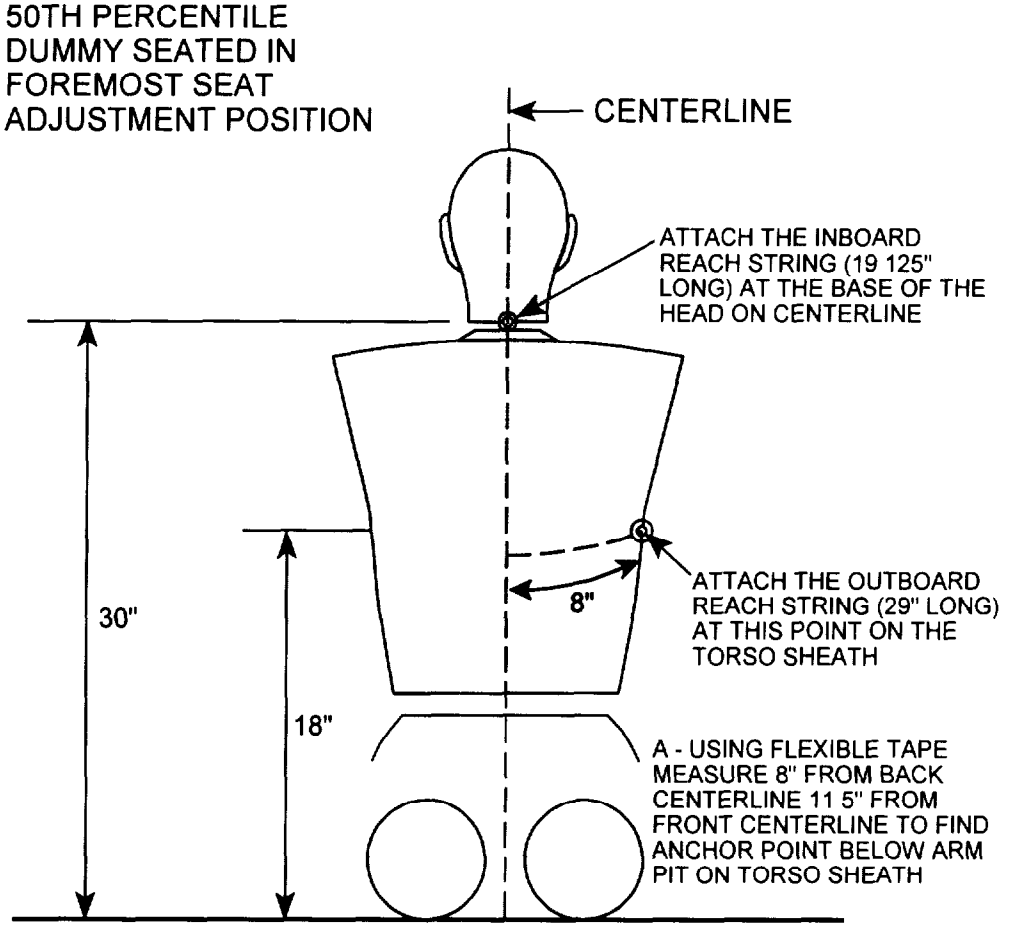
( )Yes - Pass
( ) **No - FAIL**

4.5 Is the inboard receptacle end of the seat belt assembly, installed in the outboard designated seating position, accessible with the center arm rest in any position to which it can be adjusted (without moving the armrest)?

( ) Yes - Pass
( ) **No - FAIL**

LOCATION OF ANCHORING POINTS FOR LATCHPLATE REACH LIMITING CHAINS OR STRINGS TO TEST FOR LATCHPLATE ACCESSIBILITY

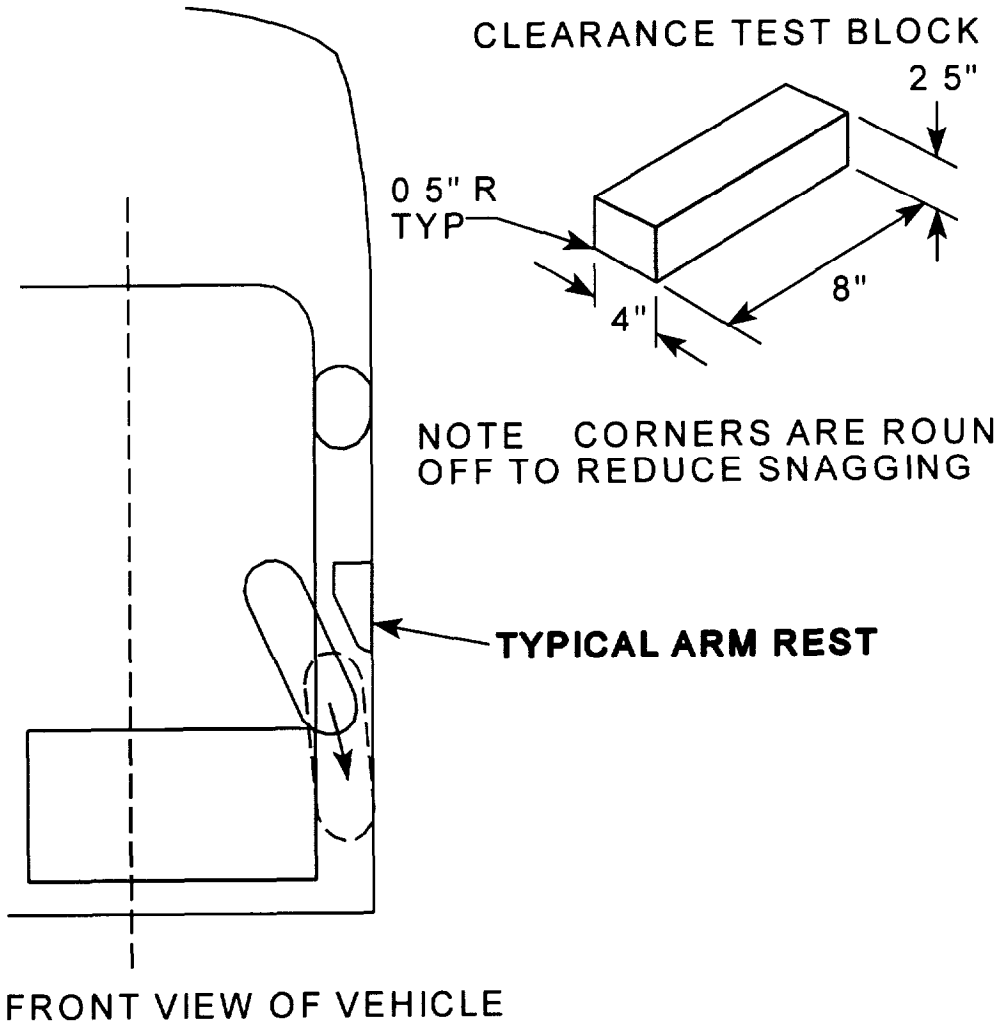
PART 572E DUMMY



SEAT PLANE IS 90 DEGREES TO THE TORSO LINE

REAR VIEW

USE OF CLEARANCE TEST BLOCK TO DETERMINE HAND/ARM ACCESS



APPENDIX A
PHOTOGRAPHS

TABLE OF PHOTOGRAPHS

Photo No. A-1 - Pre-Test Frontal View

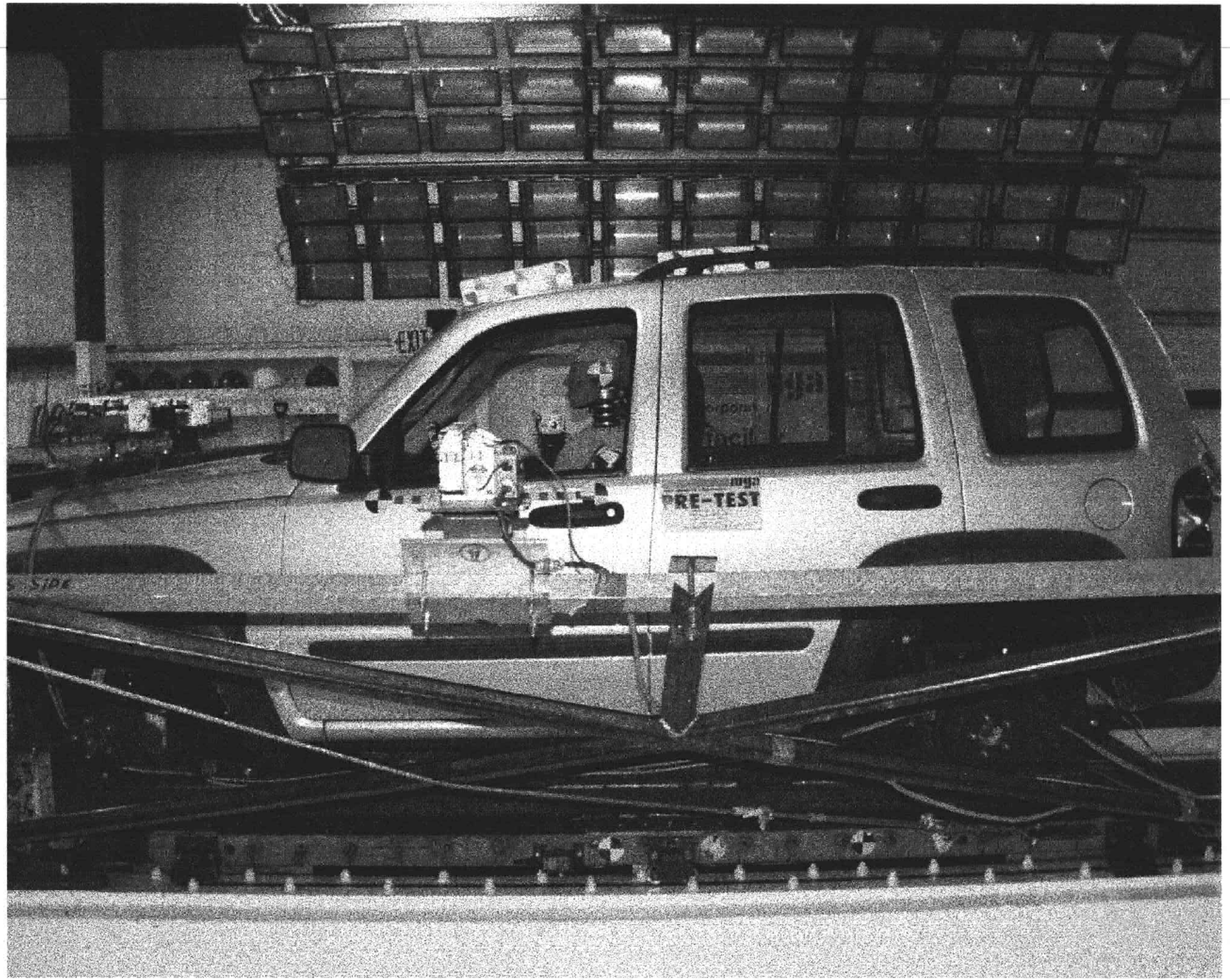


Photo No. A-2 - Pre-Test Left Side View

Photo No. A-3 - Pre-Test Right Side View

Photo No. A-4 - Pre-Test Windshield View

Photo No. A-5 - Post-Test Windshield View

Photo No. A-6 - Pre-Test Driver Dummy Position View (Door Open)

Photo No. A-7 - Post-Test Driver Dummy Position View (Door Open)

Photo No. A-8 - Pre-Test Driver Dummy Position View

Photo No. A-9 - Post-Test Driver Dummy Position View

Photo No. A-10 - Pre-Test Passenger Dummy Position View (Door Open)

Photo No. A-11 - Post-Test Passenger Dummy Position View (Door Open)

Photo No. A-12 - Pre-Test Passenger Dummy Position View

Photo No. A-13 - Post-Test Passenger Dummy Position View

Photo No. A-14 - Post-Test Driver Airbag View

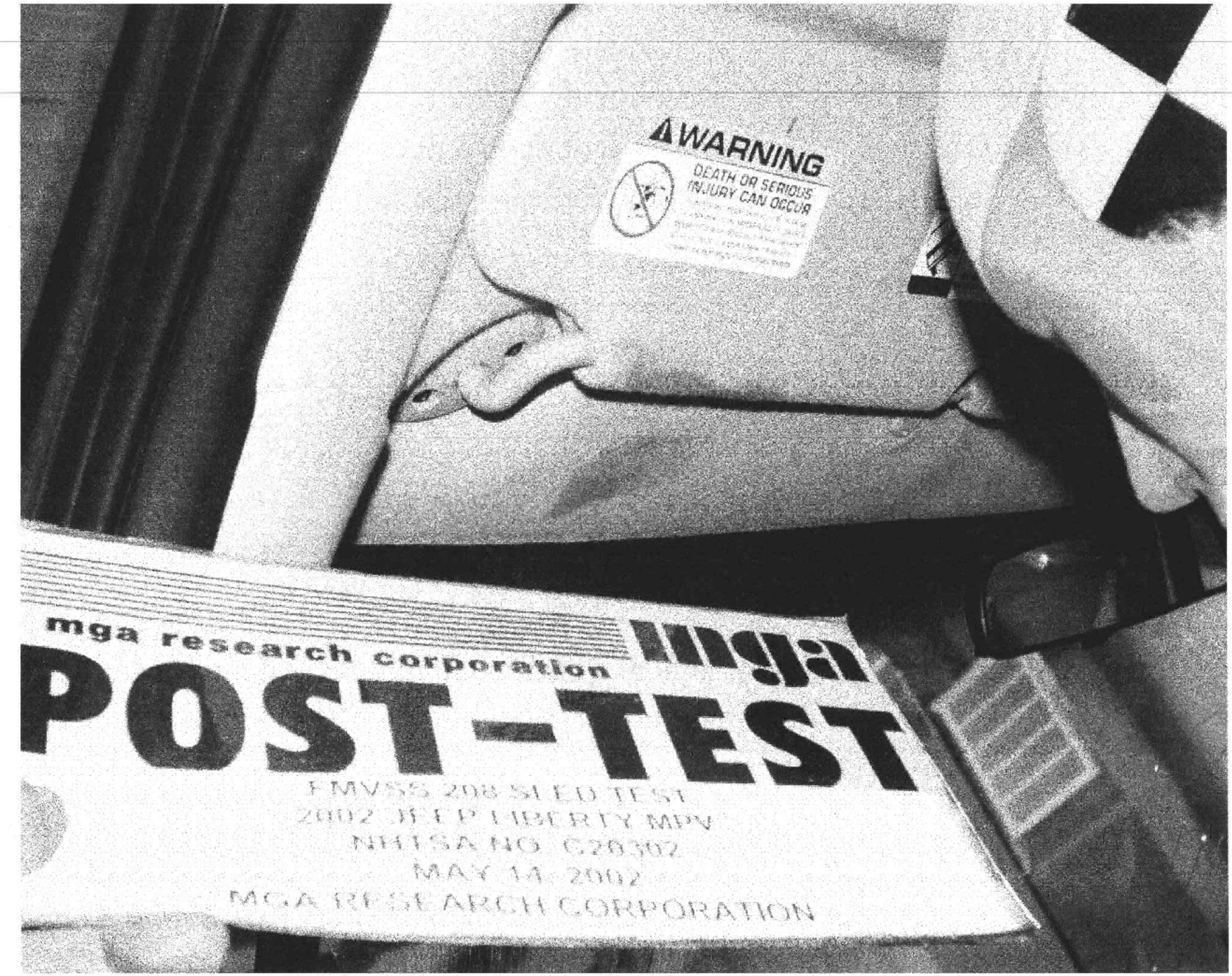


Photo No. A-15 - Post-Test Driver Head Contact View (visor and header)

Photo No. A-16 - Post-Test Passenger Dummy Airbag View

Photo No. A-17 - Post-Test Passenger Dummy Head Contact View (visor)

Photo No. A-18 - Post-Test Passenger Dummy Head Contact View (windshield)

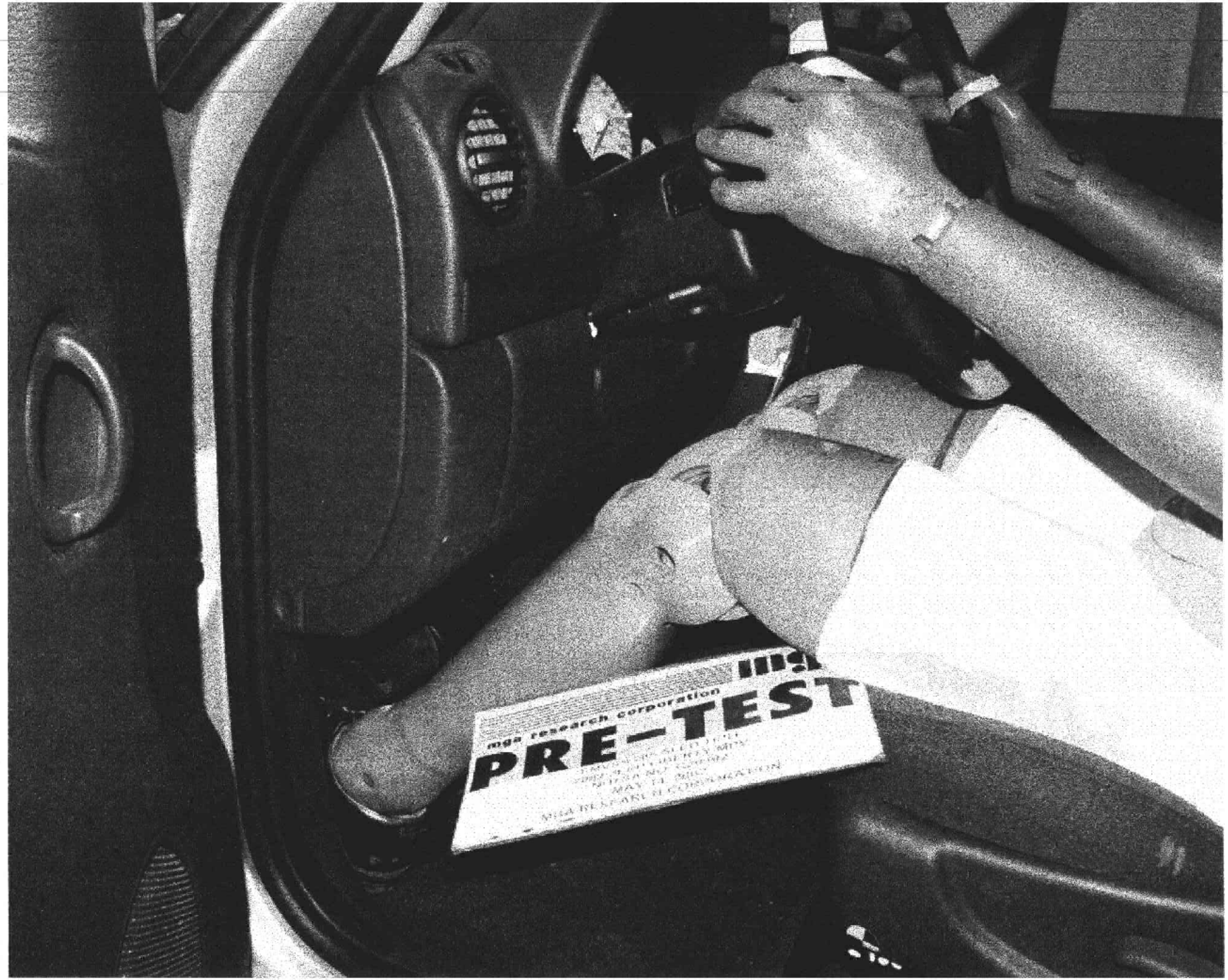


Photo No. A-19 - Pre-Test Driver Knee Bolster View

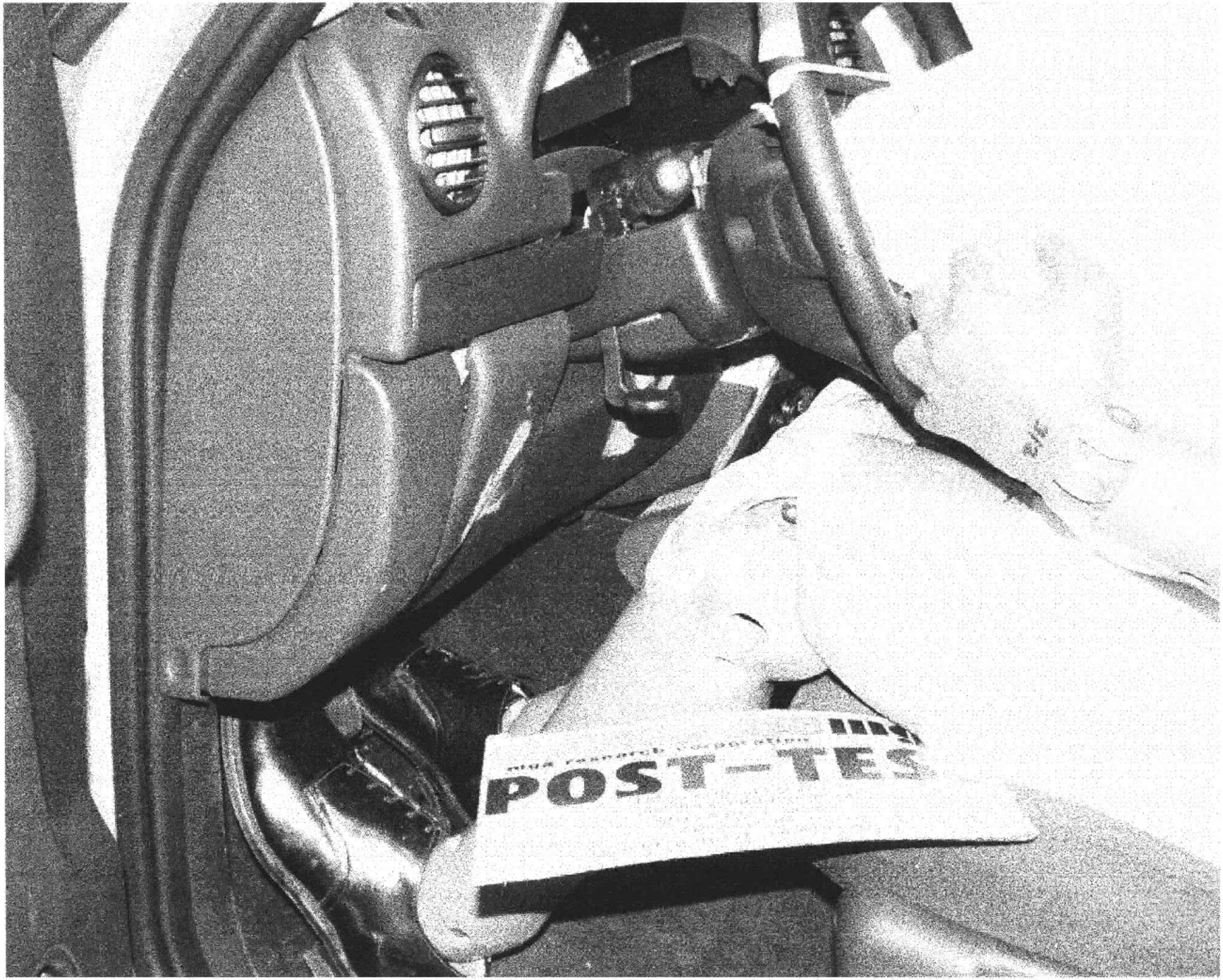


Photo No. A-20 - Post-Test Driver Knee Bolster View

Photo No. A-21 - Pre-Test Passenger Knee Bolster View

Photo No. A-22 - Post-Test Passenger Knee Bolster View

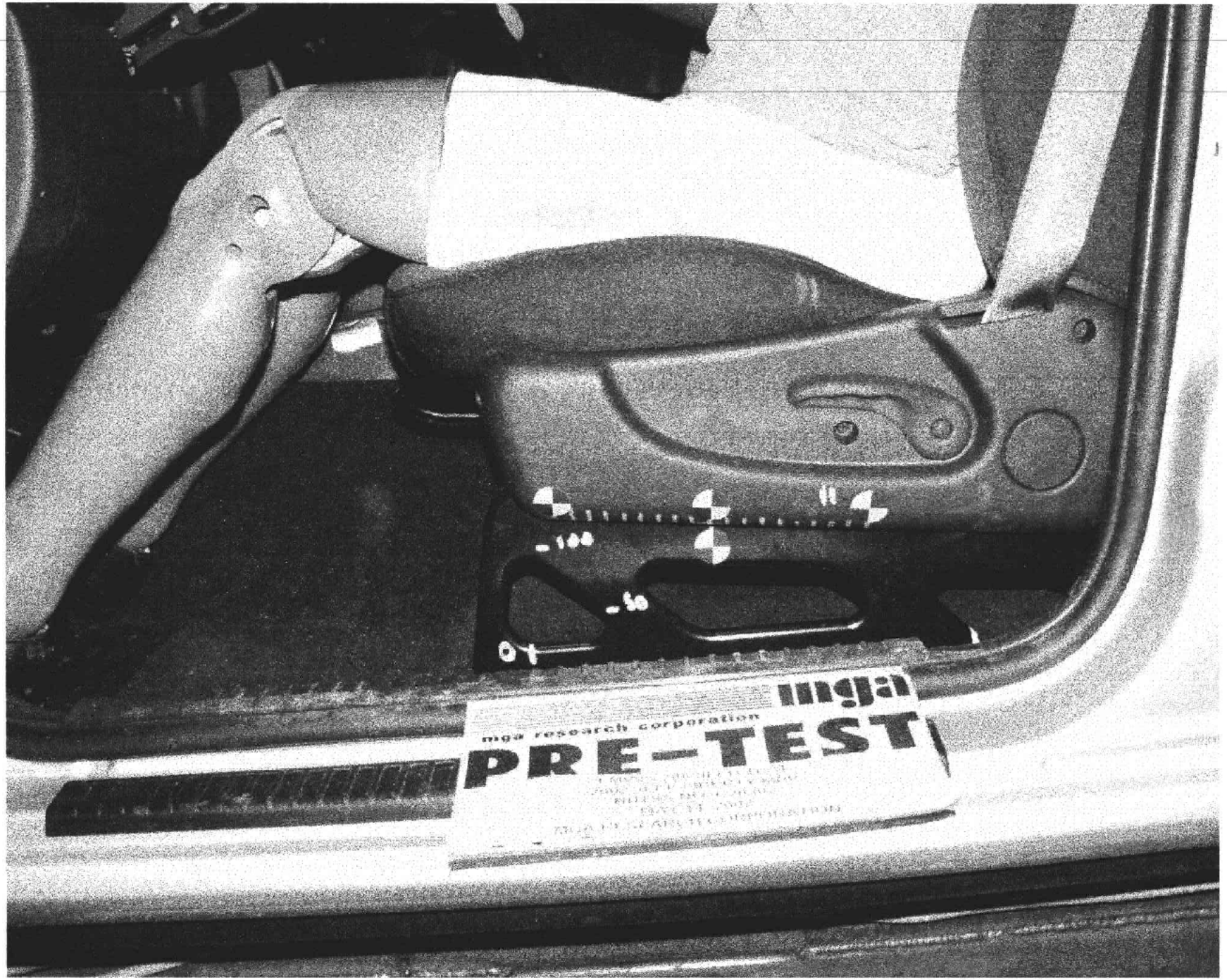


Photo No. A-23 - Pre-Test Driver Seat Position View

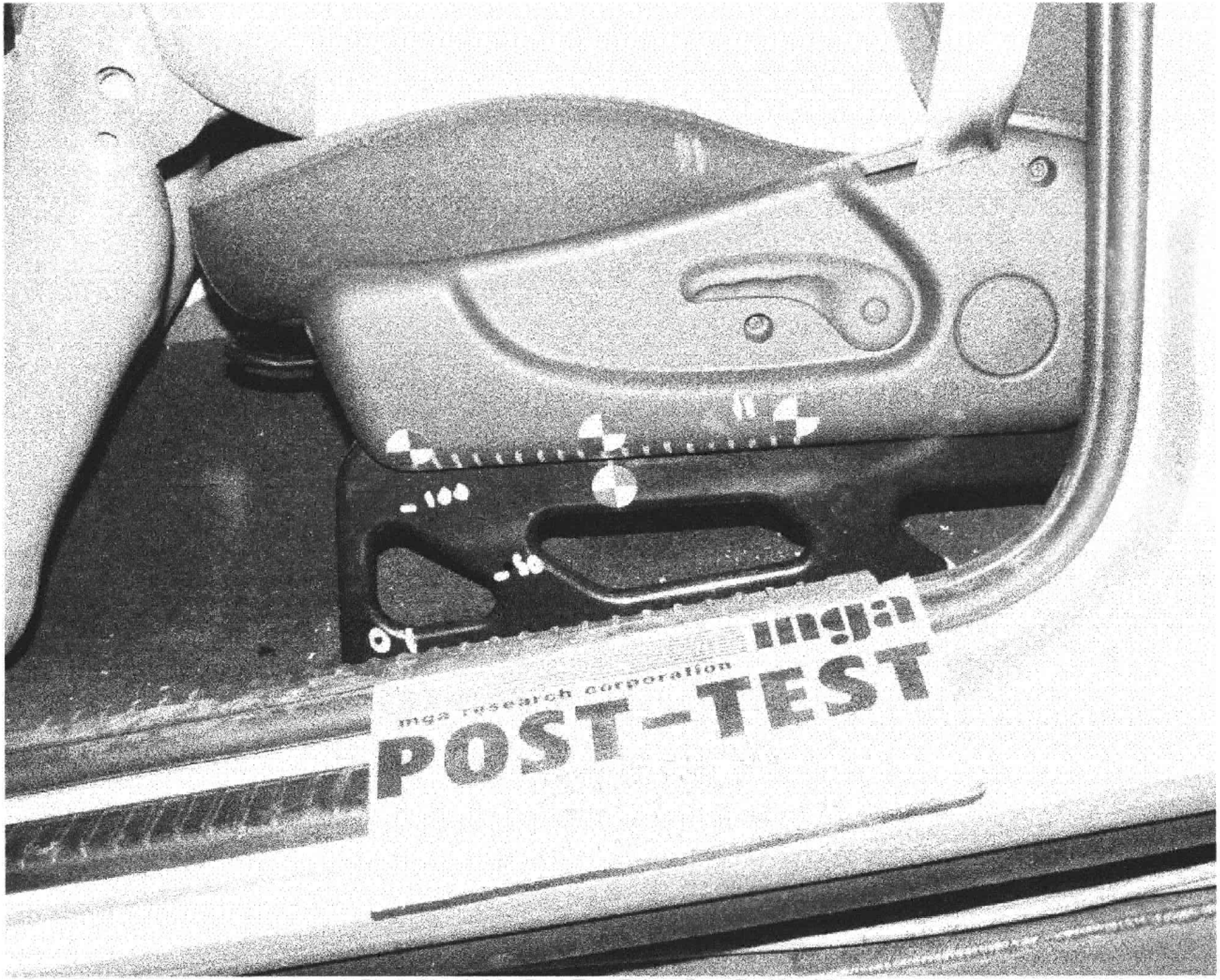


Photo No. A-24 - Post-Test Driver Seat Position View

Photo No. A-25 - Pre-Test Passenger Seat Position View

Photo No. A-26 - Post-Test Passenger Seat Position View

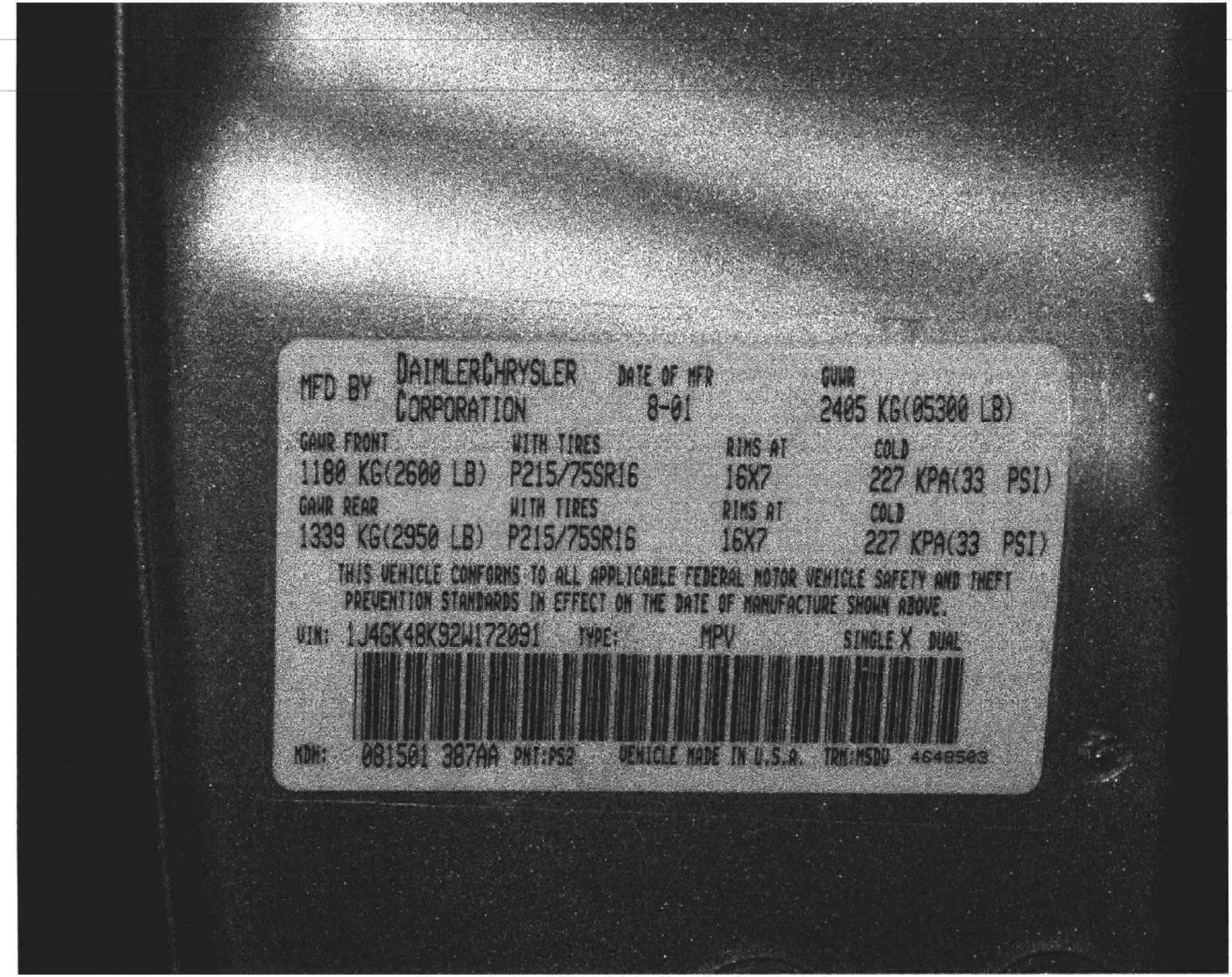


Photo No. A-27 - Vehicle Certification Label

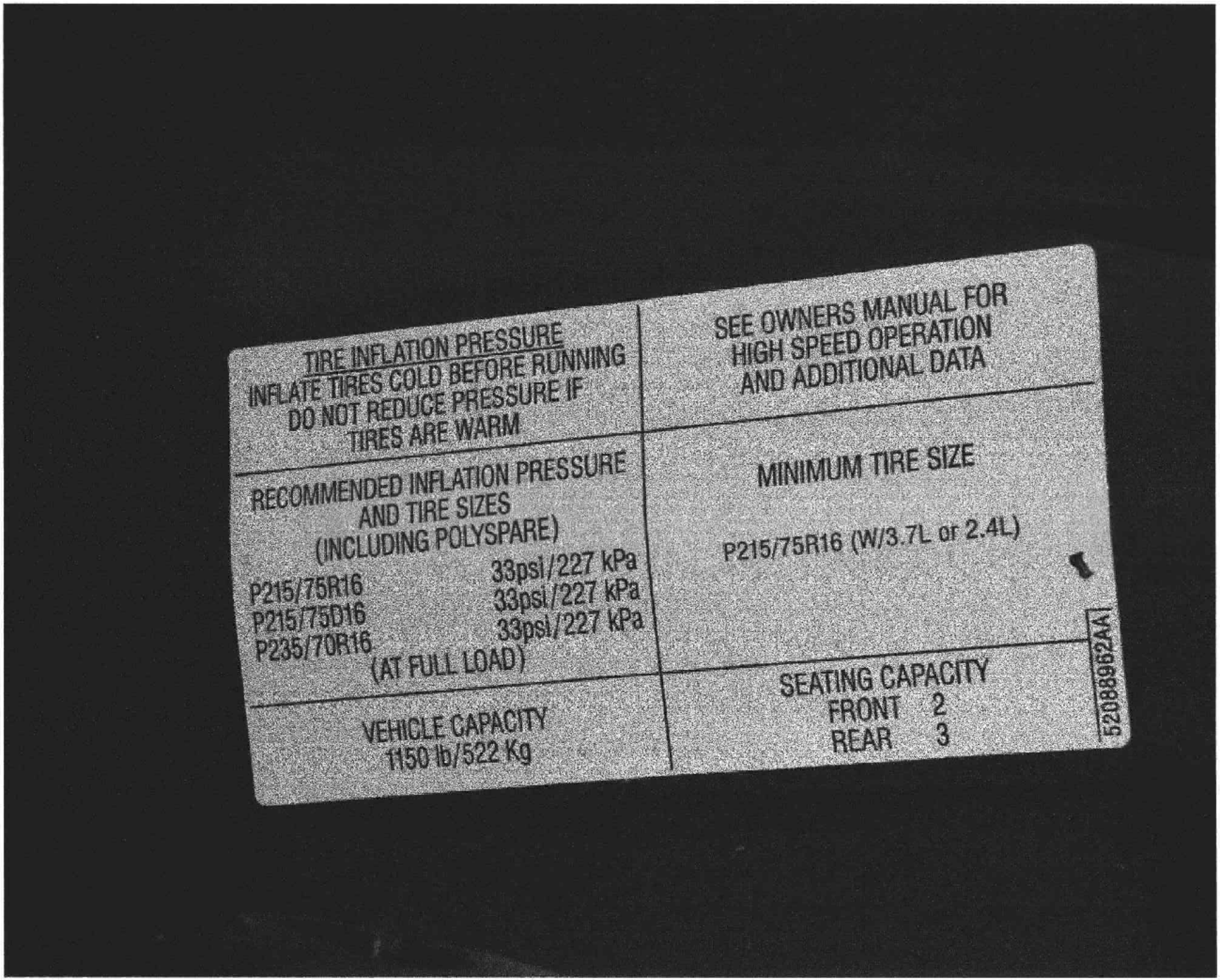
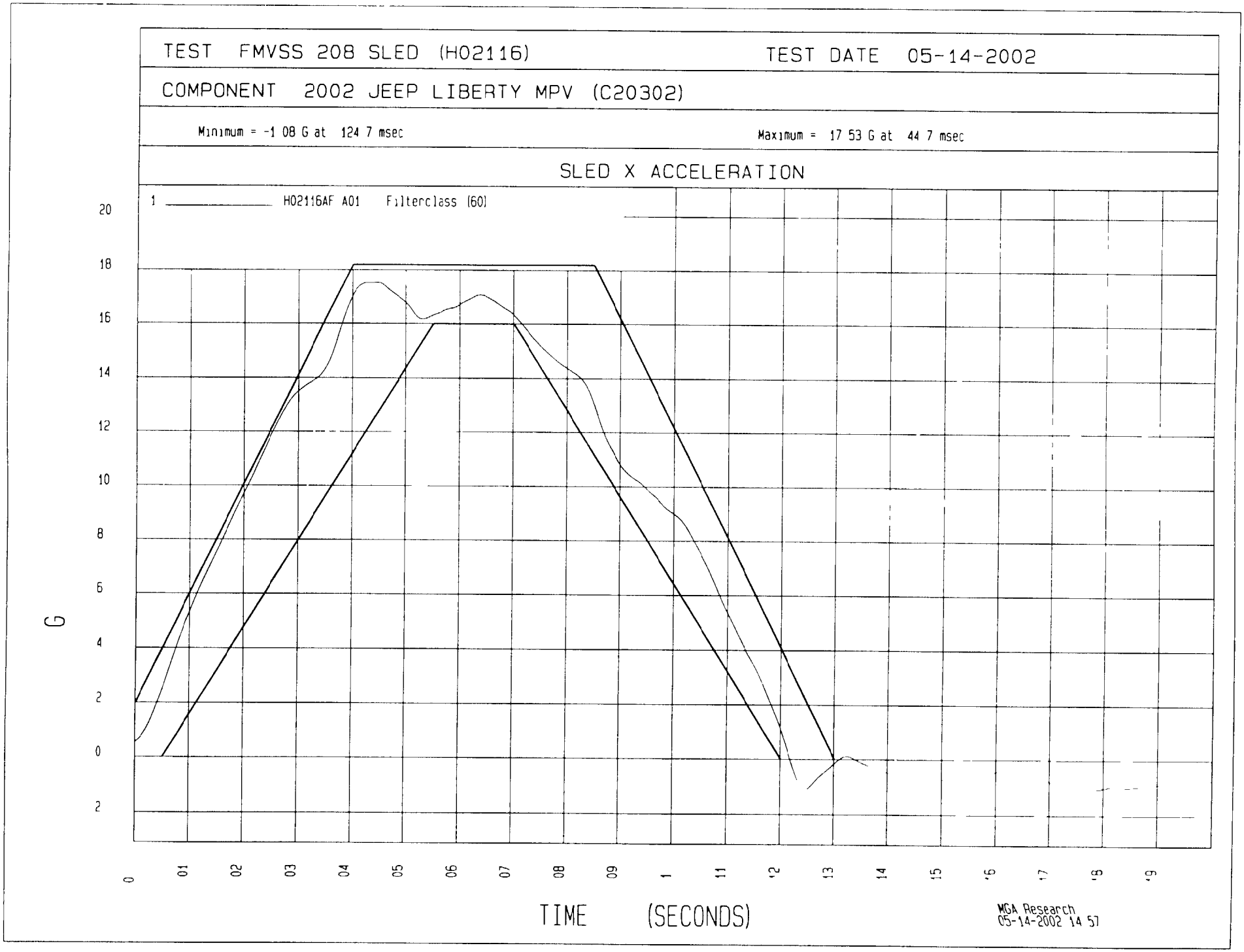


Photo No. A-28 - FMVSS 110 Label

APPENDIX B
DATA PLOTS

TABLE OF DATA PLOTS

TABLE OF DATA PLOTS (Cont)

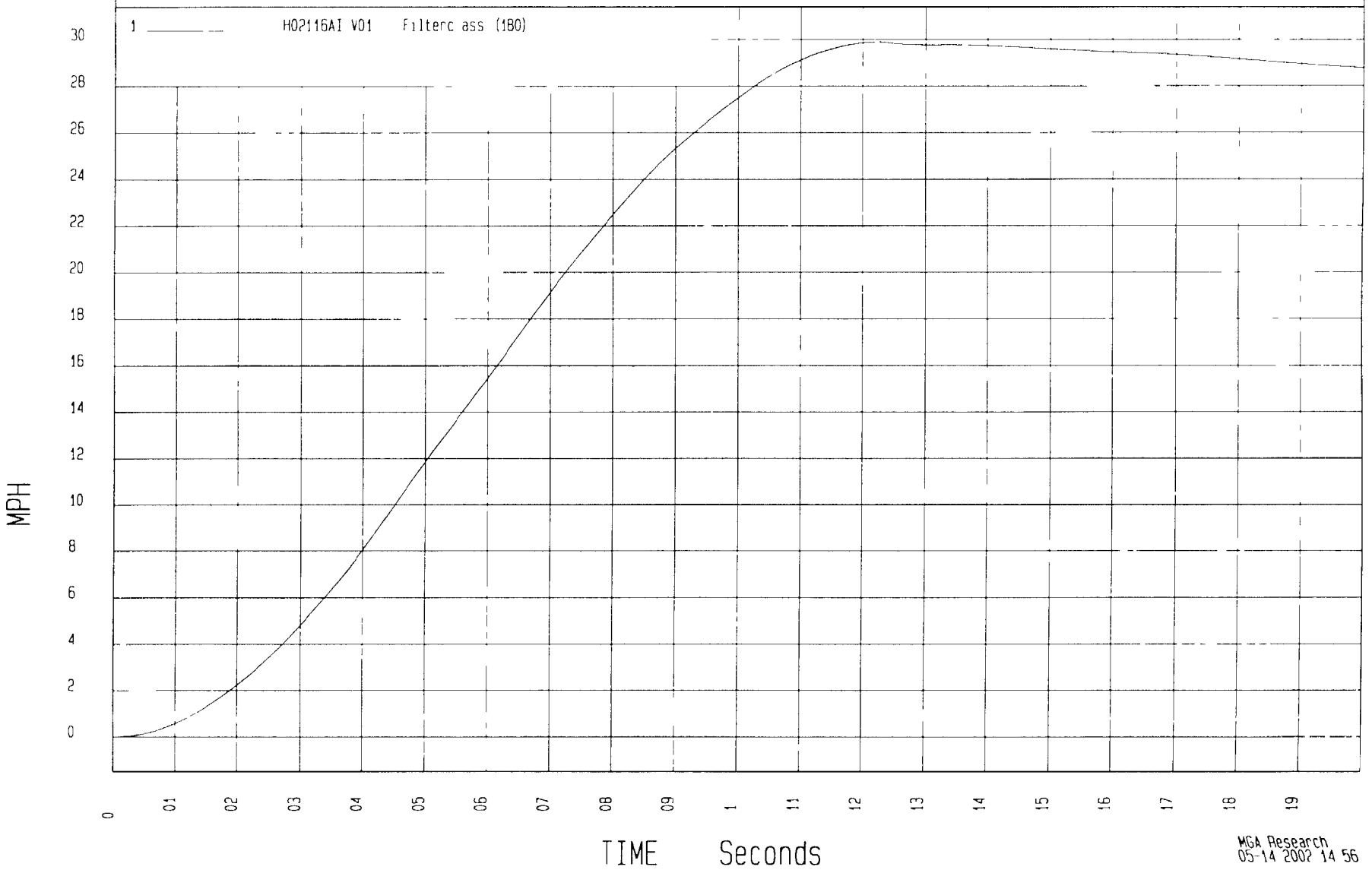

TEST FMVSS 208 SLED (H02116)
TEST DATE 05-14-2002
COMPONENT 2002 JEEP LIBERTY MPV (C20302)
Minimum = -1 08 G at 124 7 msec
Maximum = 17 53 G at 44 7 msec
SLED X ACCELERATION
1 H02116AF A01 Filterclass (60)
G
20
18
16
14
12
10
8
6
4
2
0
2
0
01
02
03
04
05
06
07
08
09
1
11
12
13
14
15
16
17
18
19
TIME (SECONDS)
MGA Research
05-14-2002 14 57

TEST FMVSS 208 SLED (H02116) TEST DATE 05-14-2002

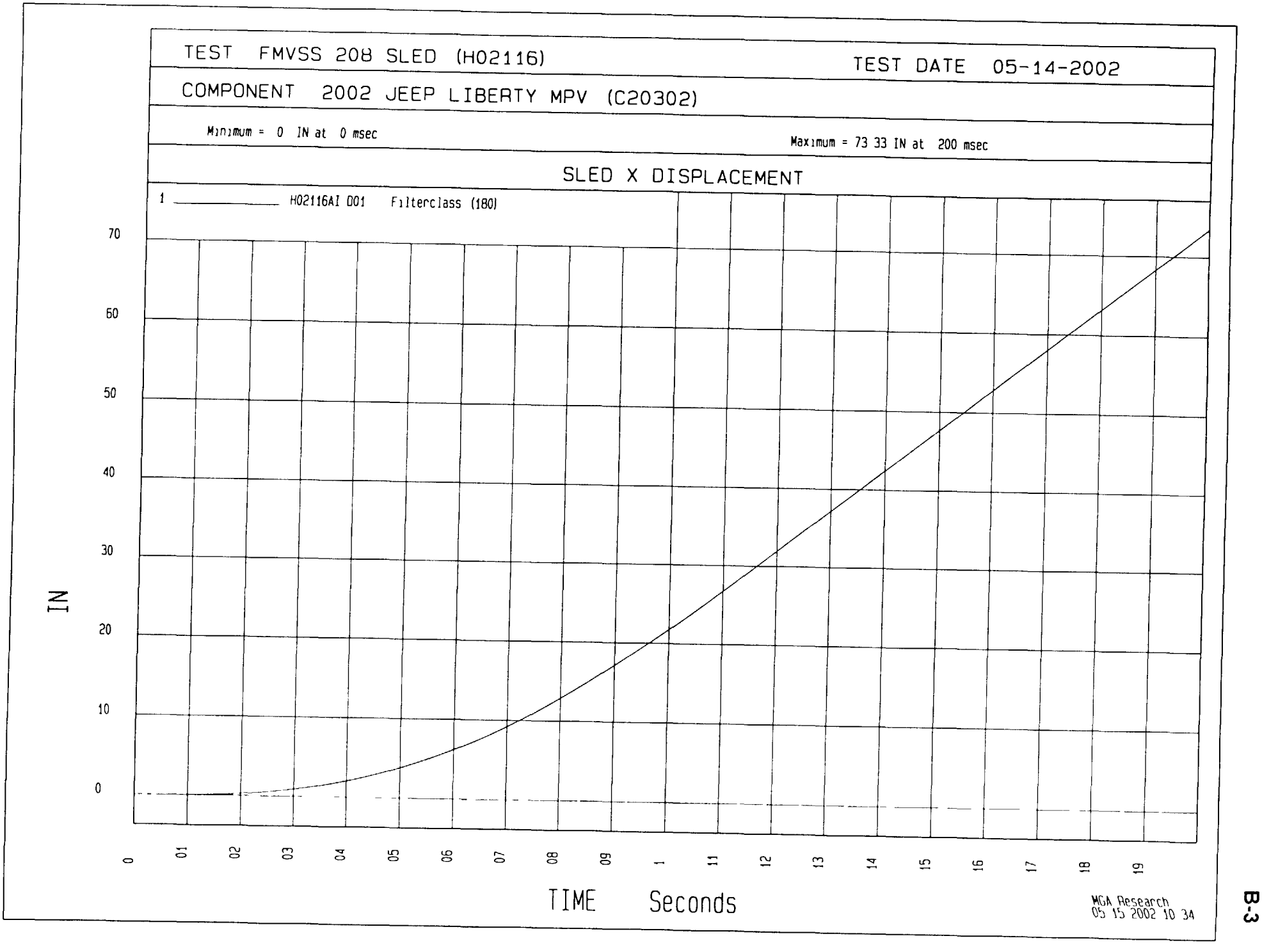
COMPONENT 2002 JEEP LIBERTY MPV (C20302)

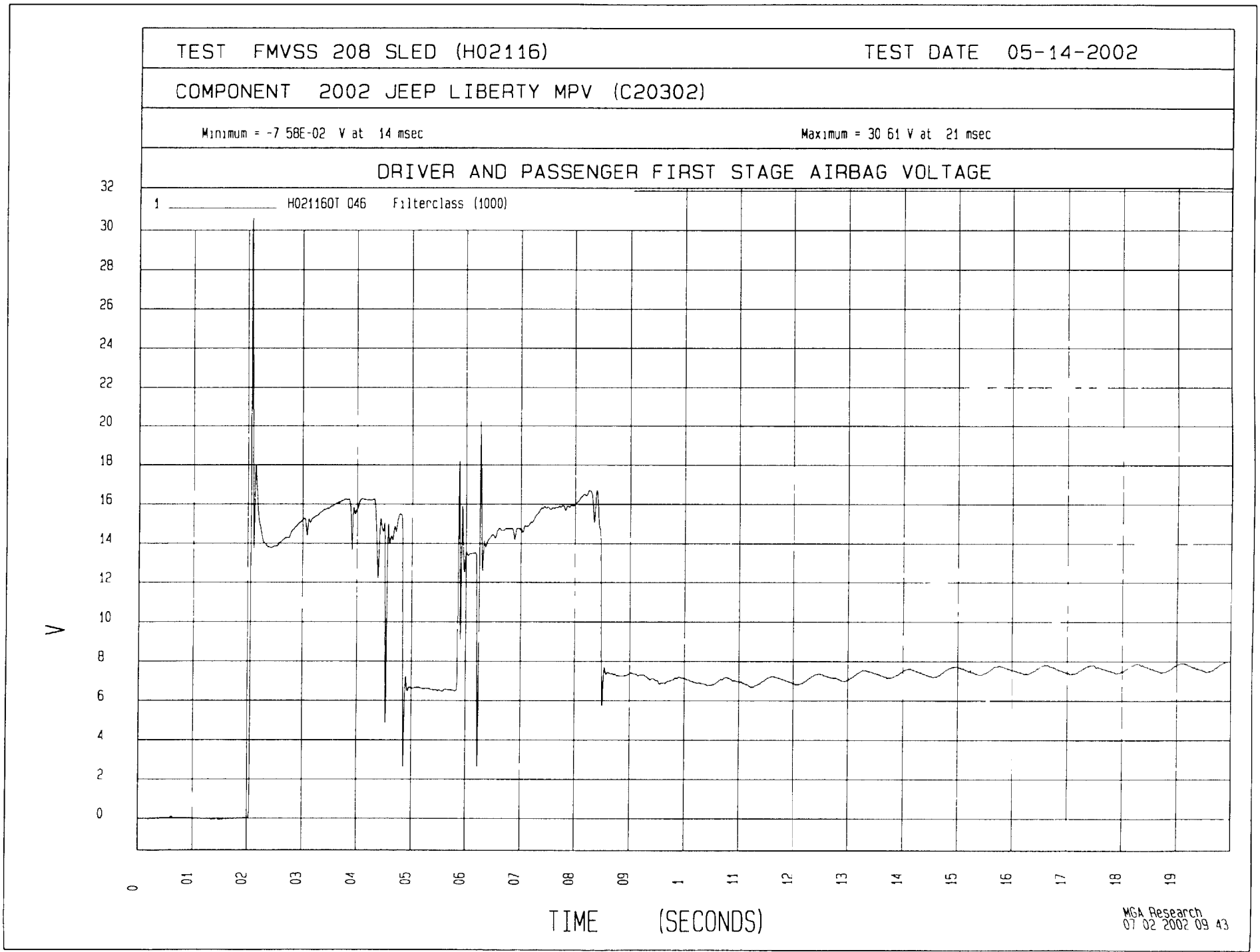
Minimum = 0 MPH at 0 msec Maximum = 29 89 MPH at 122 msec

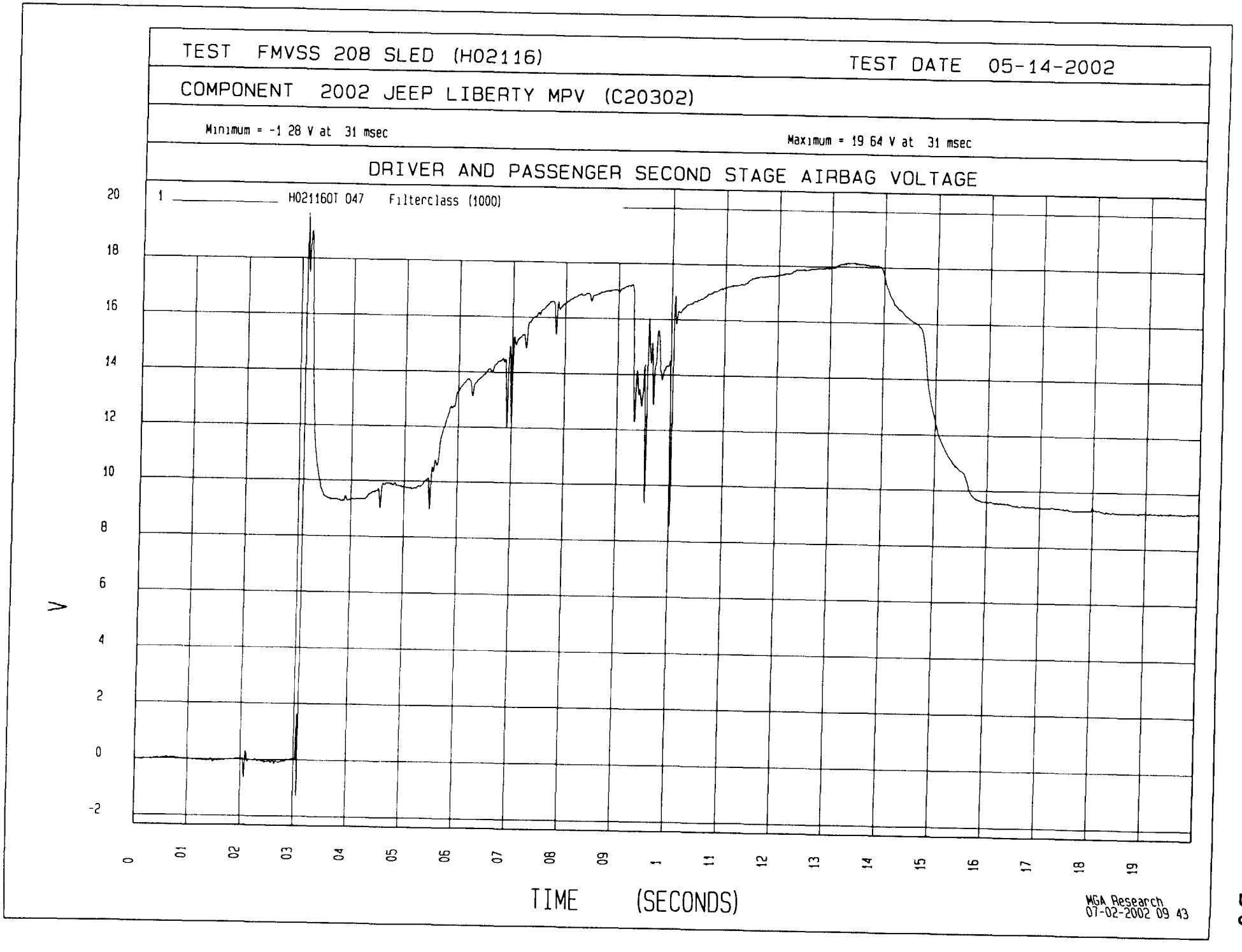
SLED X VELOCITY

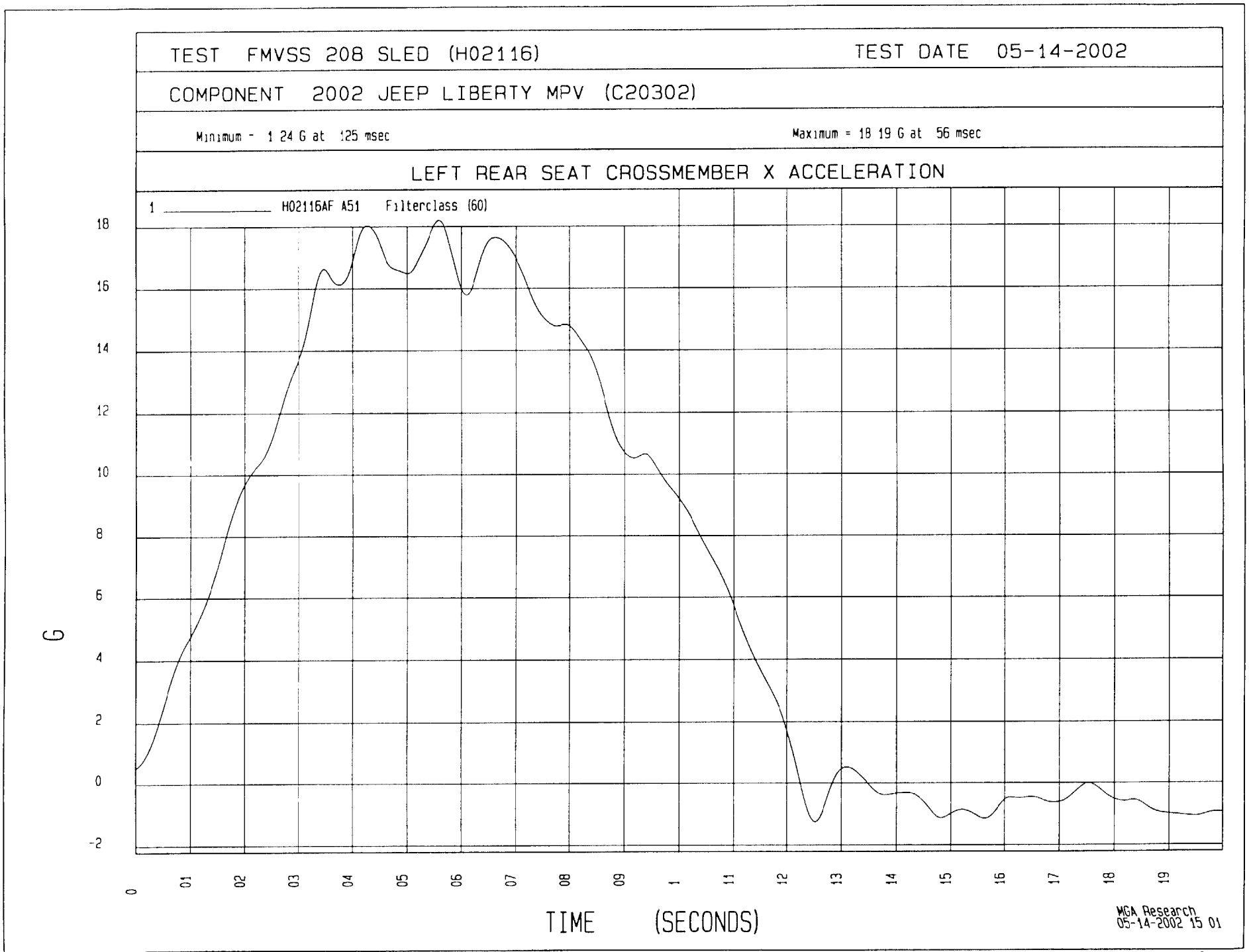


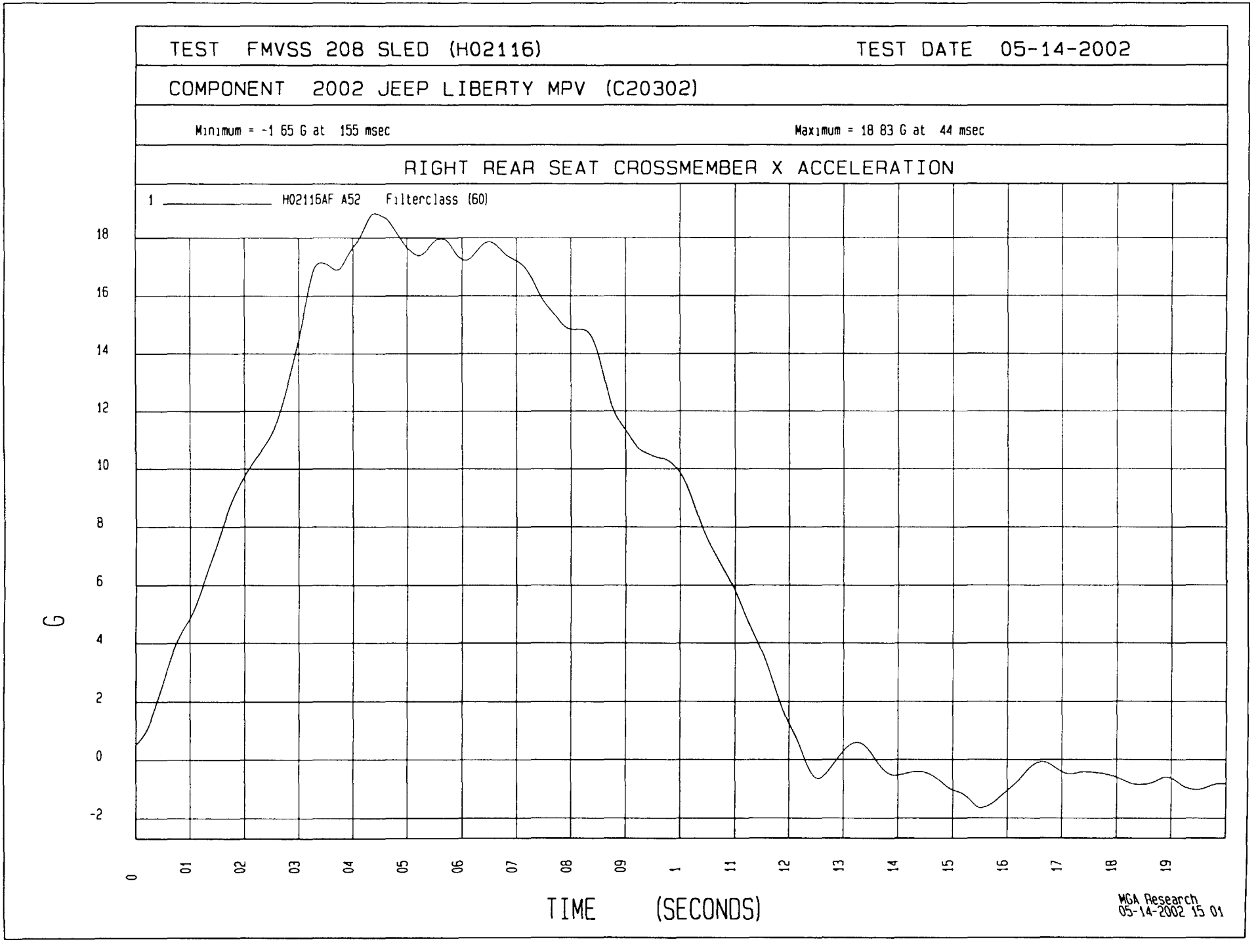
MGA Research
05-14 2002 14 56

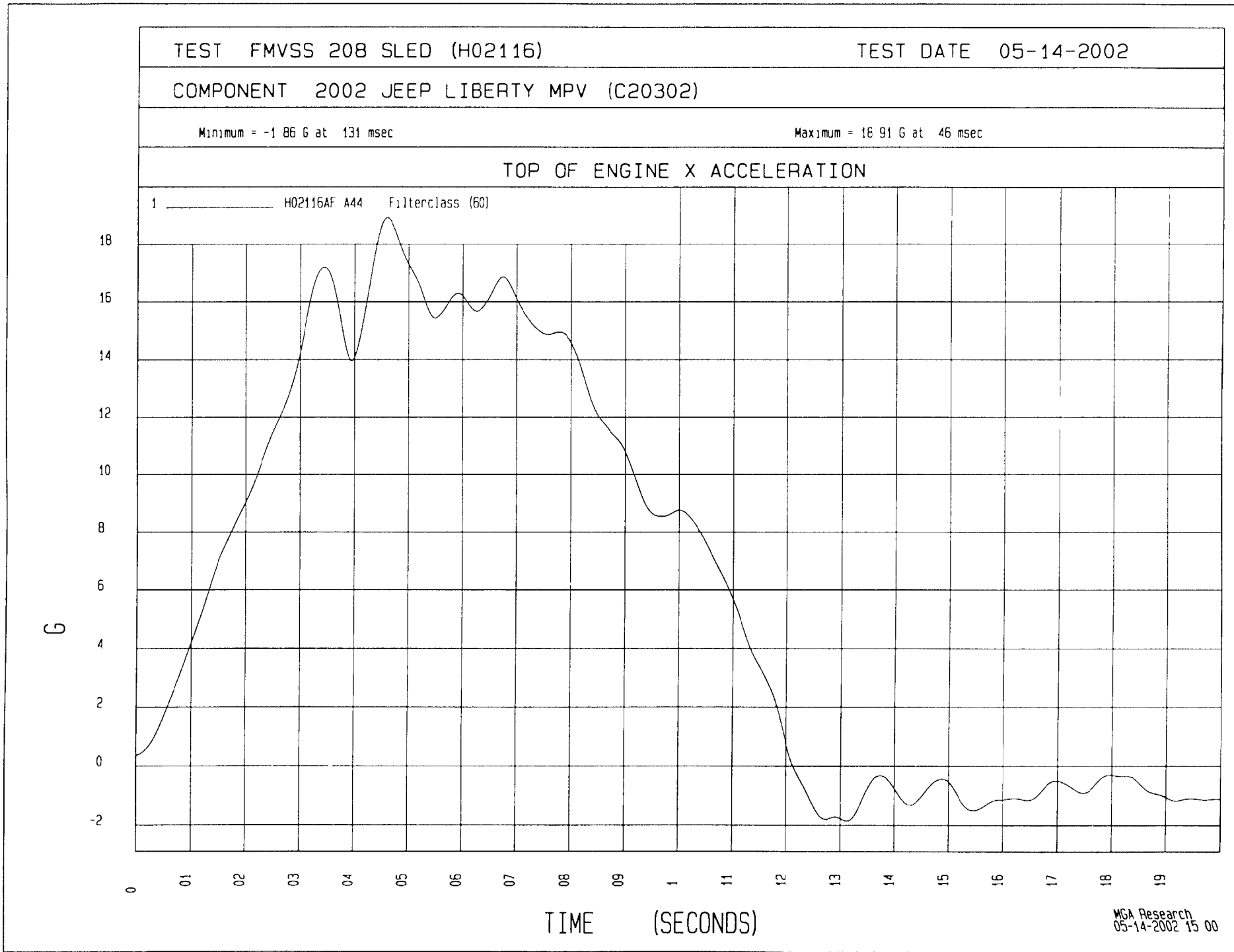

TEST FMVSS 208 SLED (H02116)
TEST DATE 05-14-2002
COMPONENT 2002 JEEP LIBERTY MPV (C20302)
Minimum = 0 IN at 0 msec
Maximum = 73 33 IN at 200 msec
SLED X DISPLACEMENT
1 H02116AI 001 Filterclass (180)
IN
70
60
50
40
30
20
10
0
0
01
02
03
04
05
06
07
08
09
1
11
12
13
14
15
16
17
18
19
TIME Seconds
MGA Research
05 15 2002 10 34

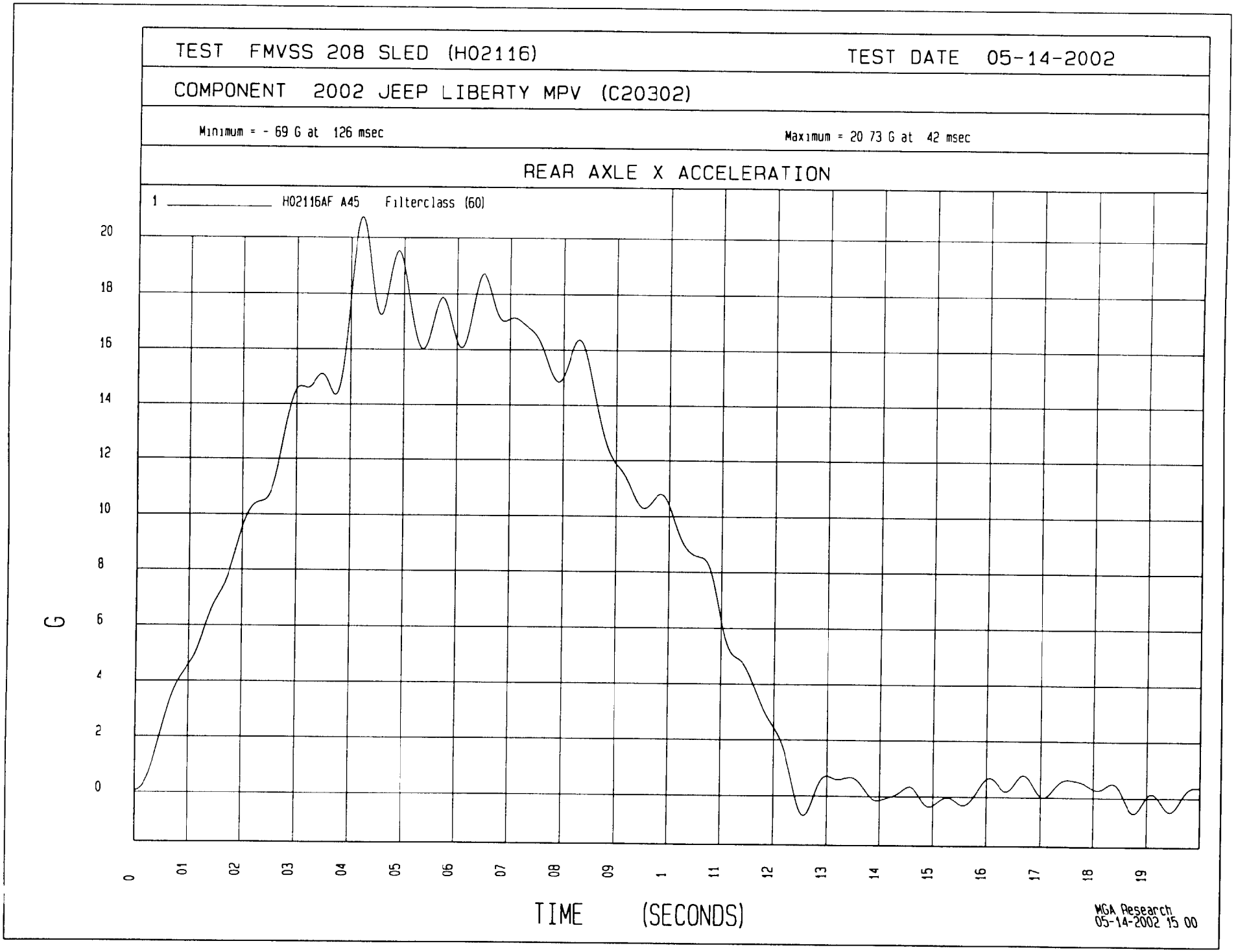

TEST FMVSS 208 SLED (H02116)
TEST DATE 05-14-2002
COMPONENT 2002 JEEP LIBERTY MPV (C20302)
Minimum = -7 58E-02 V at 14 msec
Maximum = 30 61 V at 21 msec
DRIVER AND PASSENGER FIRST STAGE AIRBAG VOLTAGE
1 H021160T 046 Filterclass (1000)
V
32
30
28
26
24
22
20
18
16
14
12
10
8
6
4
2
0
0
01
02
03
04
05
06
07
08
09
1
11
12
13
14
15
16
17
18
19
TIME (SECONDS)
MGA Research
07 02 2002 09 43

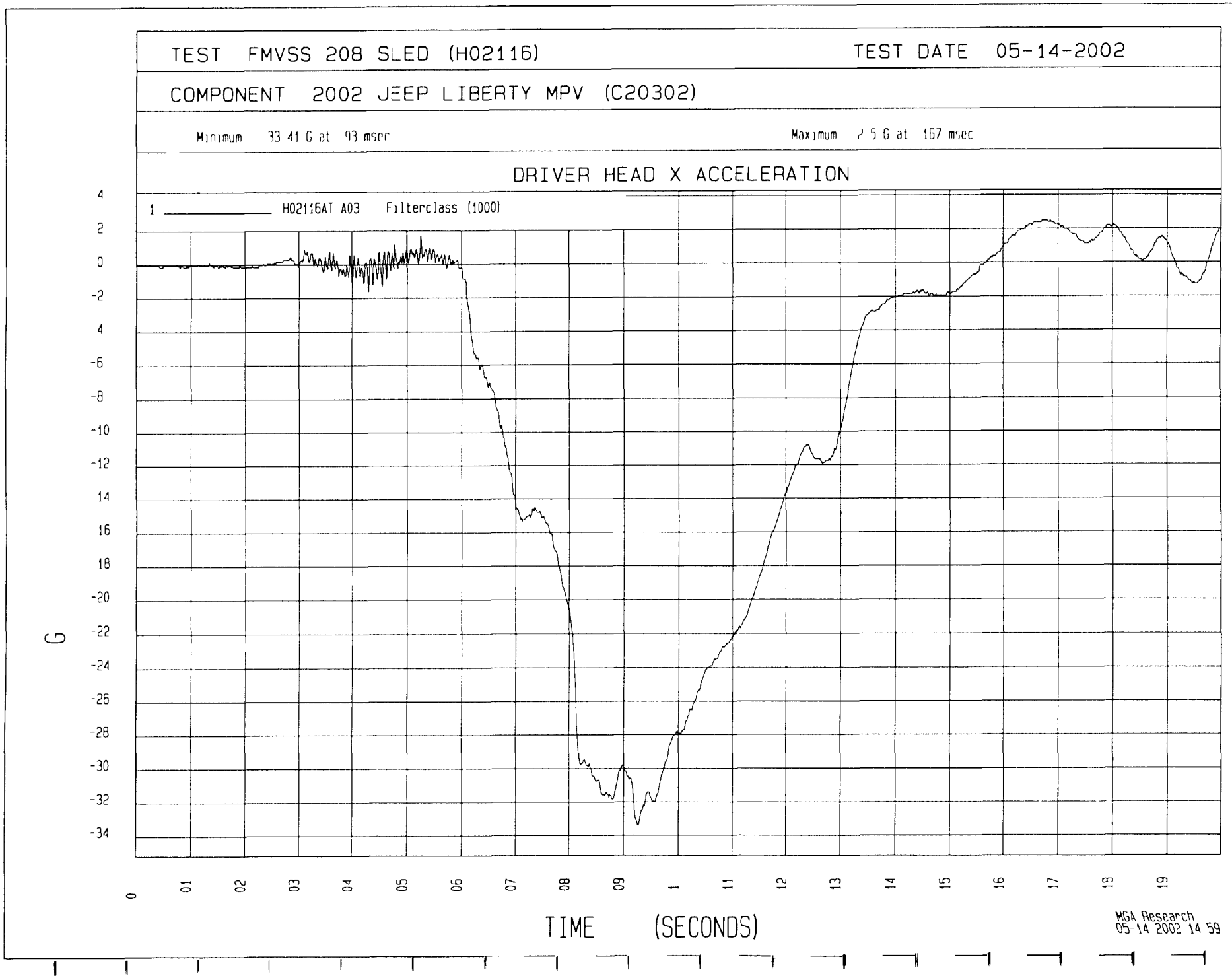

TEST FMVSS 208 SLED (H02116)
TEST DATE 05-14-2002
COMPONENT 2002 JEEP LIBERTY MPV (C20302)
Minimum = -1 28 V at 31 msec
Maximum = 19 64 V at 31 msec
DRIVER AND PASSENGER SECOND STAGE AIRBAG VOLTAGE
1 H021160T 047 Filterclass (1000)
V
20
18
16
14
12
10
8
6
4
2
0
-2
0
01
02
03
04
05
06
07
08
09
1
11
12
13
14
15
16
17
18
19
TIME (SECONDS)
MGA Research
07-02-2002 09 43

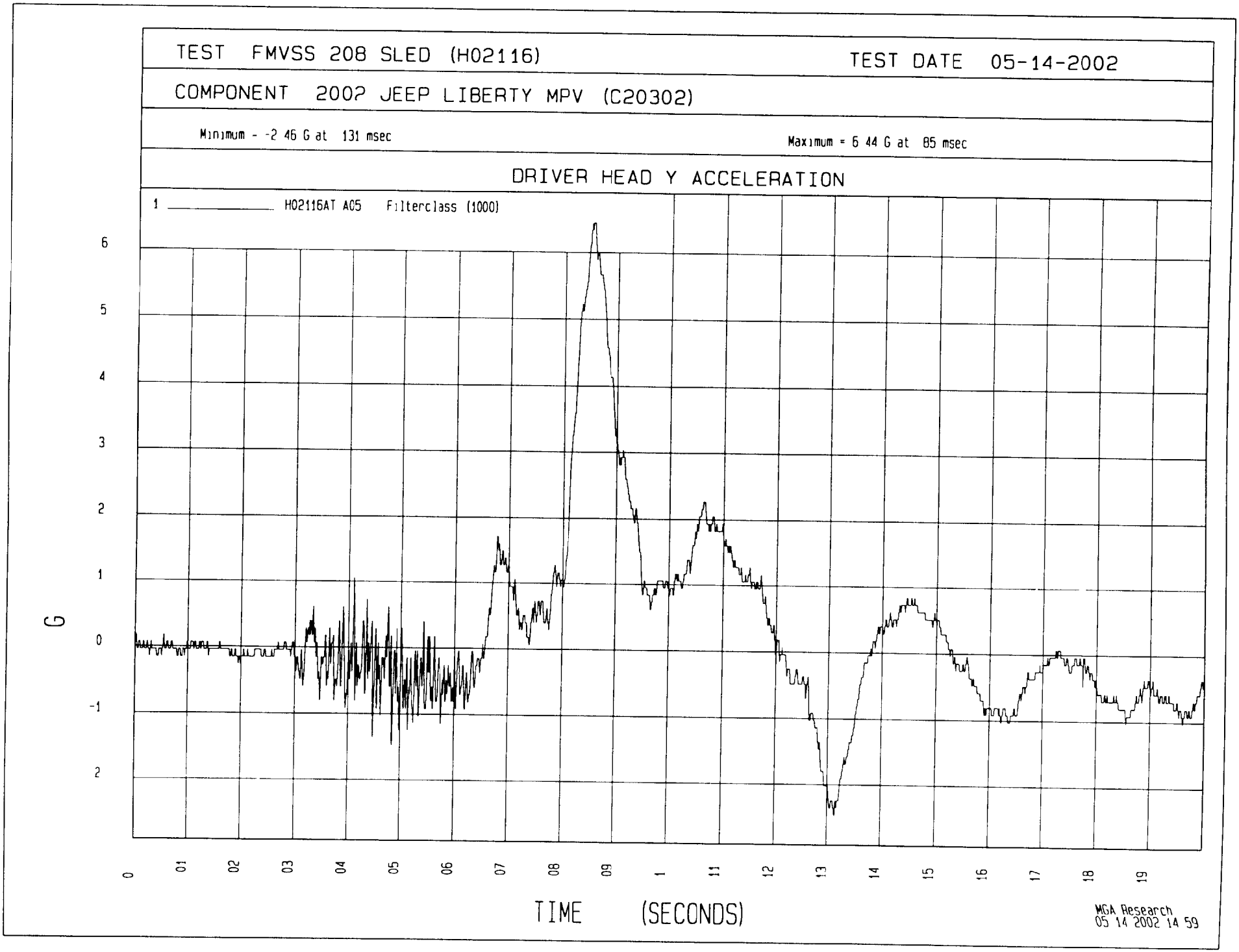

TEST FMVSS 208 SLED (H02116)
TEST DATE 05-14-2002
COMPONENT 2002 JEEP LIBERTY MPV (C20302)
Minimum - 1 24 G at 125 msec
Maximum = 18 19 G at 56 msec
LEFT REAR SEAT CROSSMEMBER X ACCELERATION
1 H02116AF A51 Filterclass (60)
18
16
14
12
10
8
6
4
2
0
-2
G
0
01
02
03
04
05
06
07
08
09
1
11
12
13
14
15
16
17
18
19
TIME (SECONDS)
MGA Research
05-14-2002 15 01

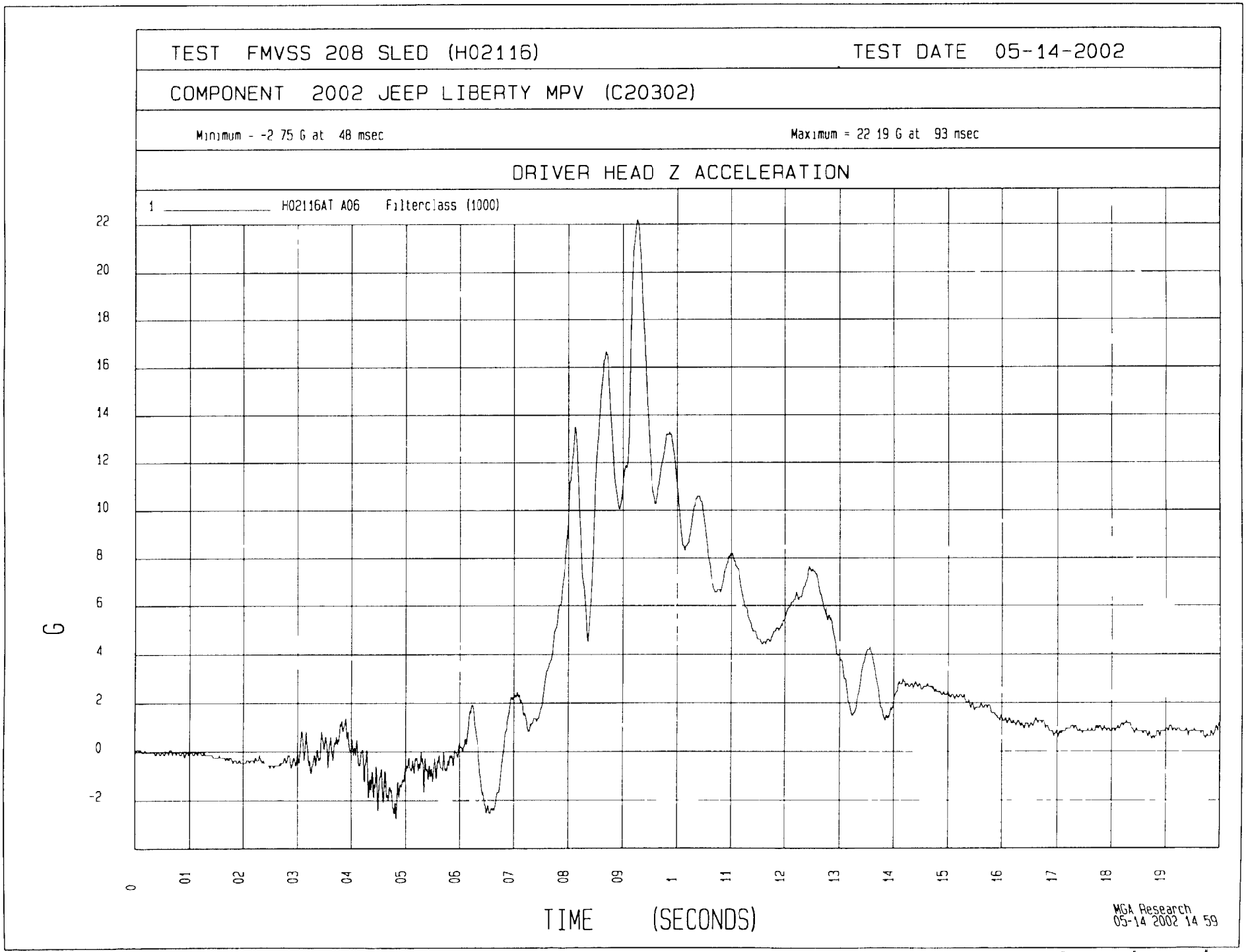

TEST FMVSS 208 SLED (H02116)
TEST DATE 05-14-2002
COMPONENT 2002 JEEP LIBERTY MPV (C20302)
Minimum = -1 65 G at 155 msec
Maximum = 18 83 G at 44 msec
RIGHT REAR SEAT CROSSMEMBER X ACCELERATION
1 H02116AF A52 Filterclass (60)
18
16
14
12
10
8
6
4
2
0
-2
G
0
01
02
03
04
05
06
07
08
09
1
11
12
13
14
15
16
17
18
19
TIME (SECONDS)
MGA Research
05-14-2002 15 01

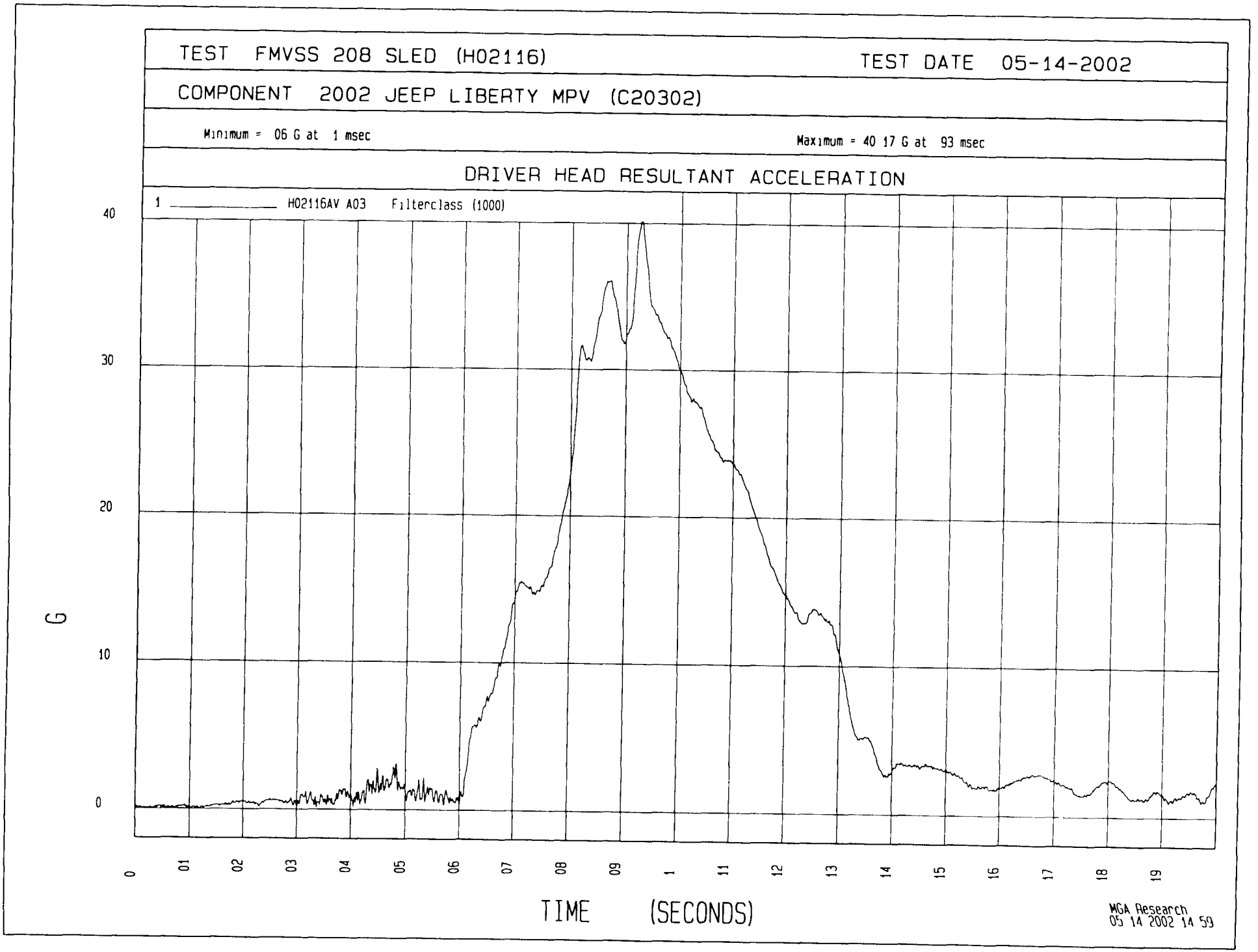

TEST FMVSS 208 SLED (H02116)
TEST DATE 05-14-2002
COMPONENT 2002 JEEP LIBERTY MPV (C20302)
Minimum = -1 86 G at 131 msec
Maximum = 18 91 G at 46 msec
TOP OF ENGINE X ACCELERATION
1 H02116AF A44 Filterclass (60)
G
18
16
14
12
10
8
6
4
2
0
-2
0
01
02
03
04
05
06
07
08
09
1
11
12
13
14
15
16
17
18
19
TIME (SECONDS)
MGA Research
05-14-2002 15 00

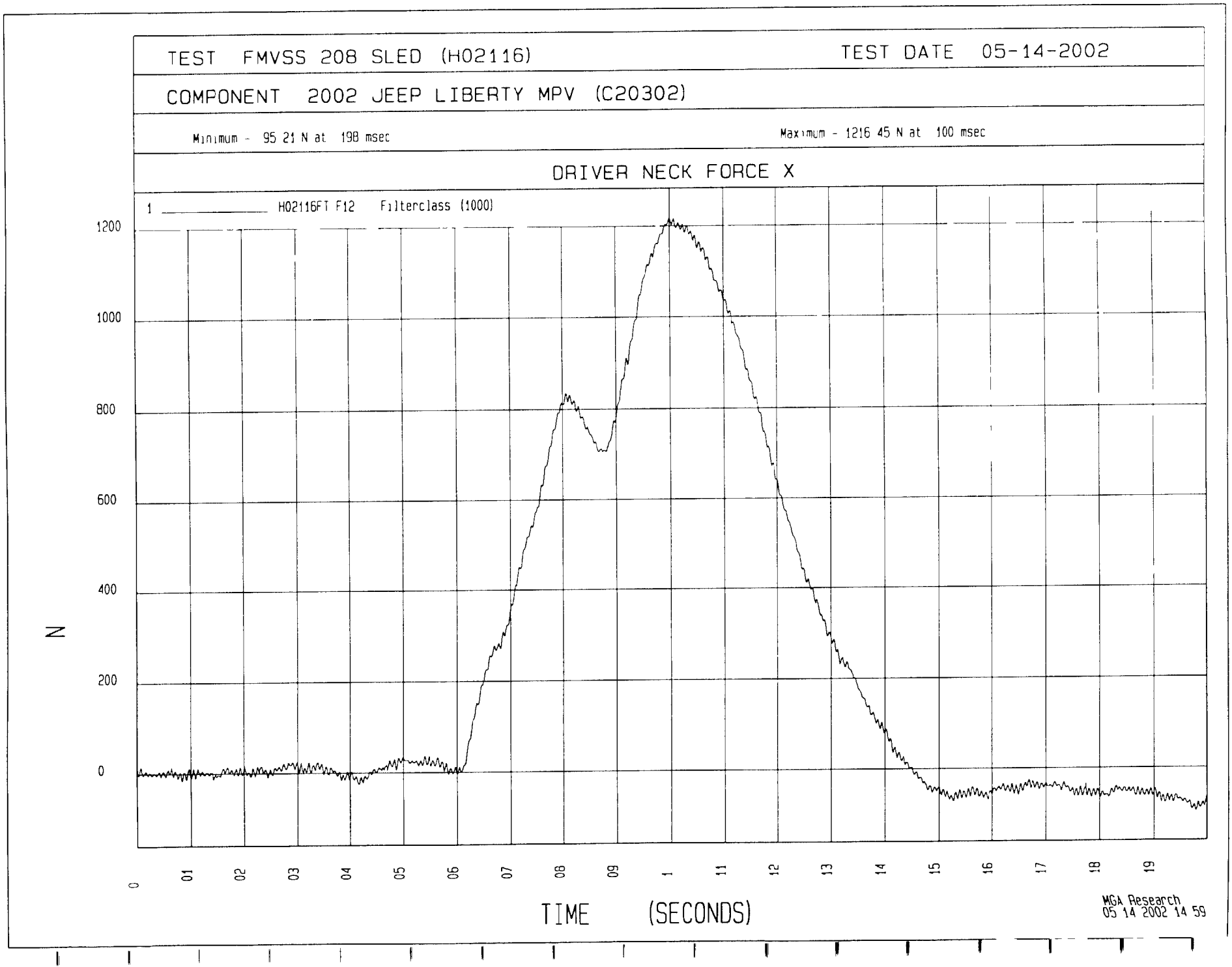

TEST FMVSS 208 SLED (H02116)
TEST DATE 05-14-2002
COMPONENT 2002 JEEP LIBERTY MPV (C20302)
Minimum = - 69 G at 126 msec
Maximum = 20 73 G at 42 msec
REAR AXLE X ACCELERATION
1 H02116AF A45 Filterclass (60)
G
20
18
16
14
12
10
8
6
4
2
0
0
01
02
03
04
05
06
07
08
09
1
11
12
13
14
15
16
17
18
19
TIME (SECONDS)
MGA Research
05-14-2002 15 00

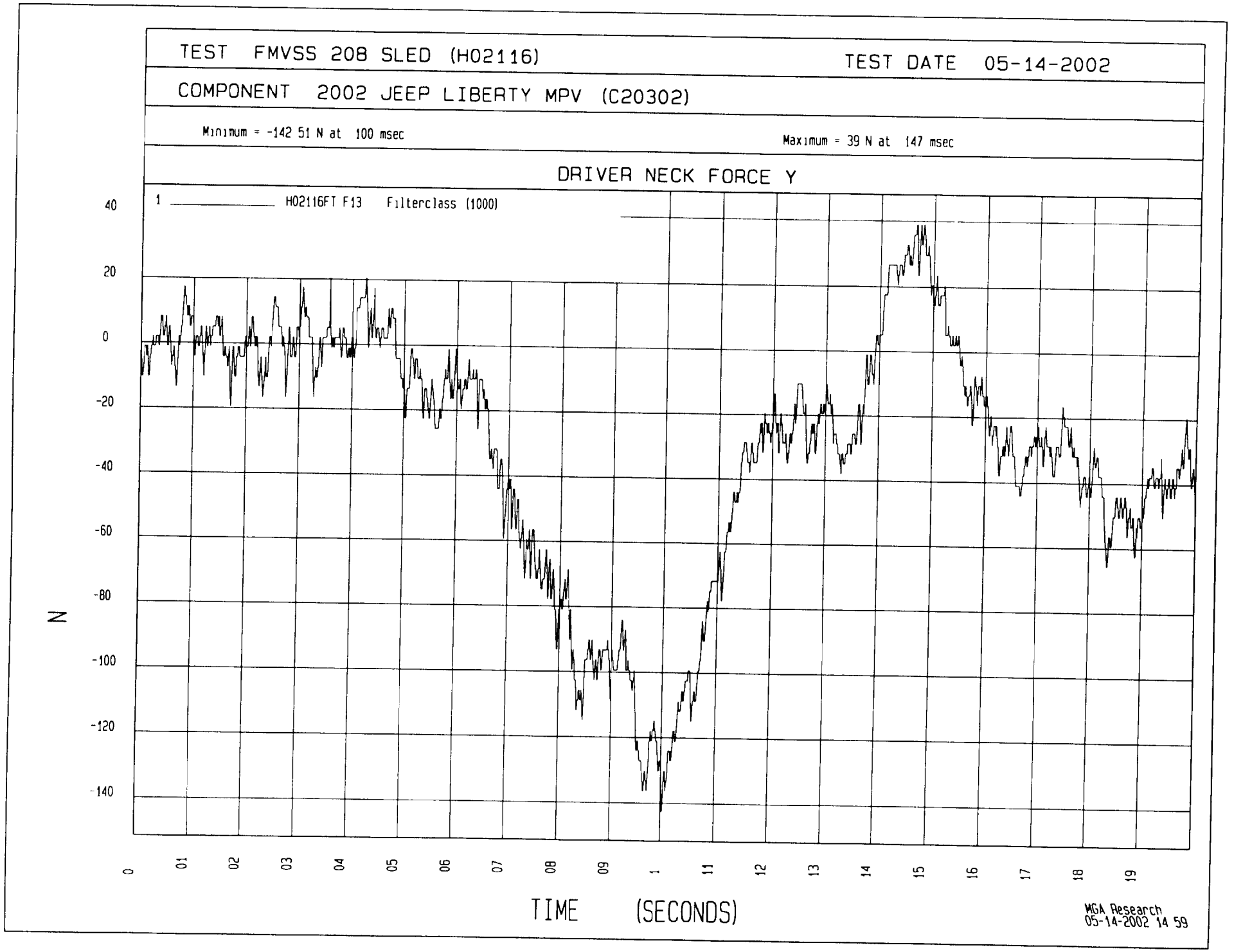

TEST FMVSS 208 SLED (H02116)
TEST DATE 05-14-2002
COMPONENT 2002 JEEP LIBERTY MPV (C20302)
Minimum 33 41 G at 93 msec
Maximum 2 5 G at 167 msec
DRIVER HEAD X ACCELERATION
1 H02116AT A03 Filterclass (1000)
G
TIME (SECONDS)
MGA Research
05-14 2002 14 59

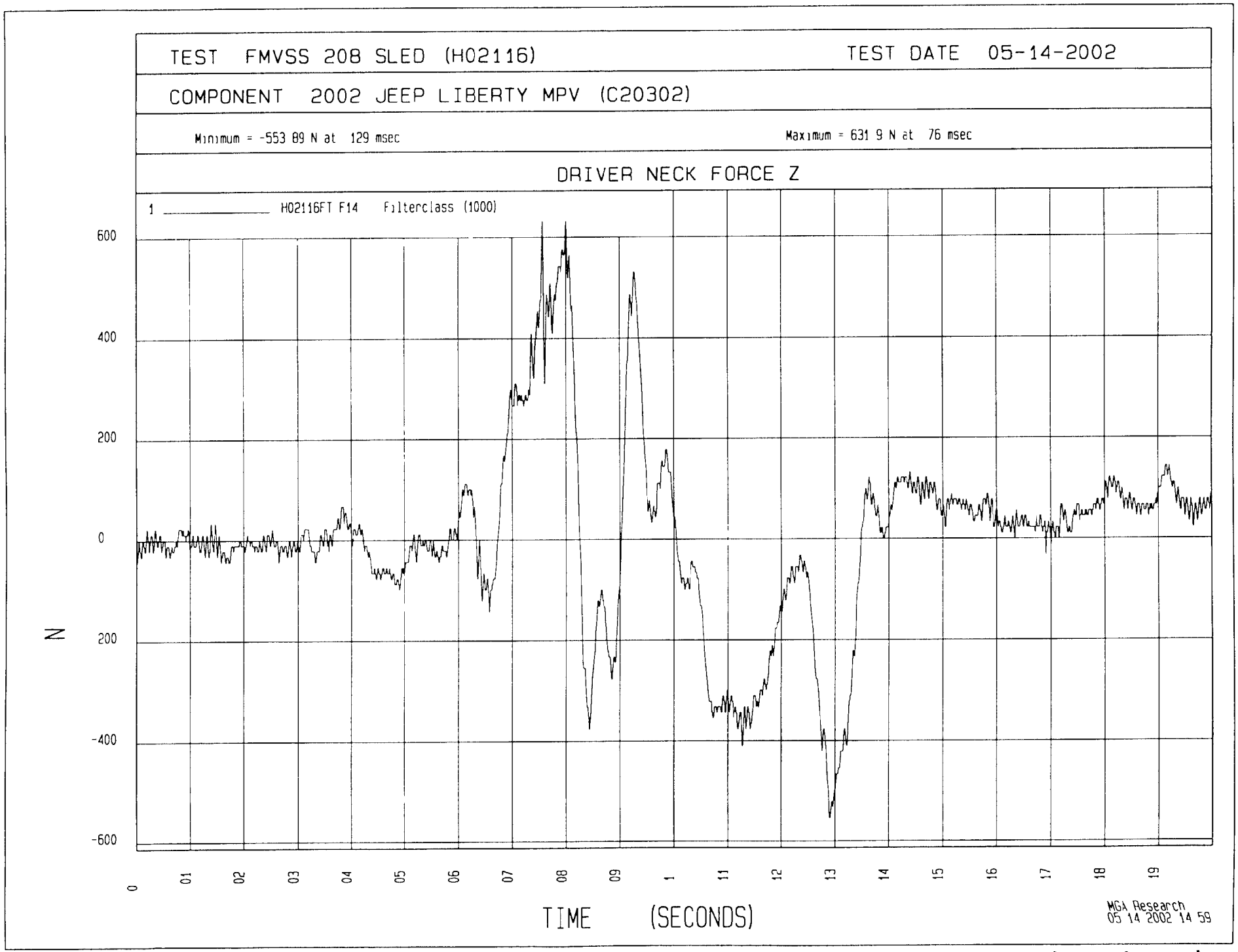

TEST FMVSS 208 SLED (H02116)
TEST DATE 05-14-2002
COMPONENT 2002 JEEP LIBERTY MPV (C20302)
Minimum = -2 46 G at 131 msec
Maximum = 6 44 G at 85 msec
DRIVER HEAD Y ACCELERATION
1 H02116AT A05 Filterclass (1000)
G
6
5
4
3
2
1
0
-1
2
0
01
02
03
04
05
06
07
08
09
1
11
12
13
14
15
16
17
18
19
TIME (SECONDS)
MGA Research
05 14 2002 14 59

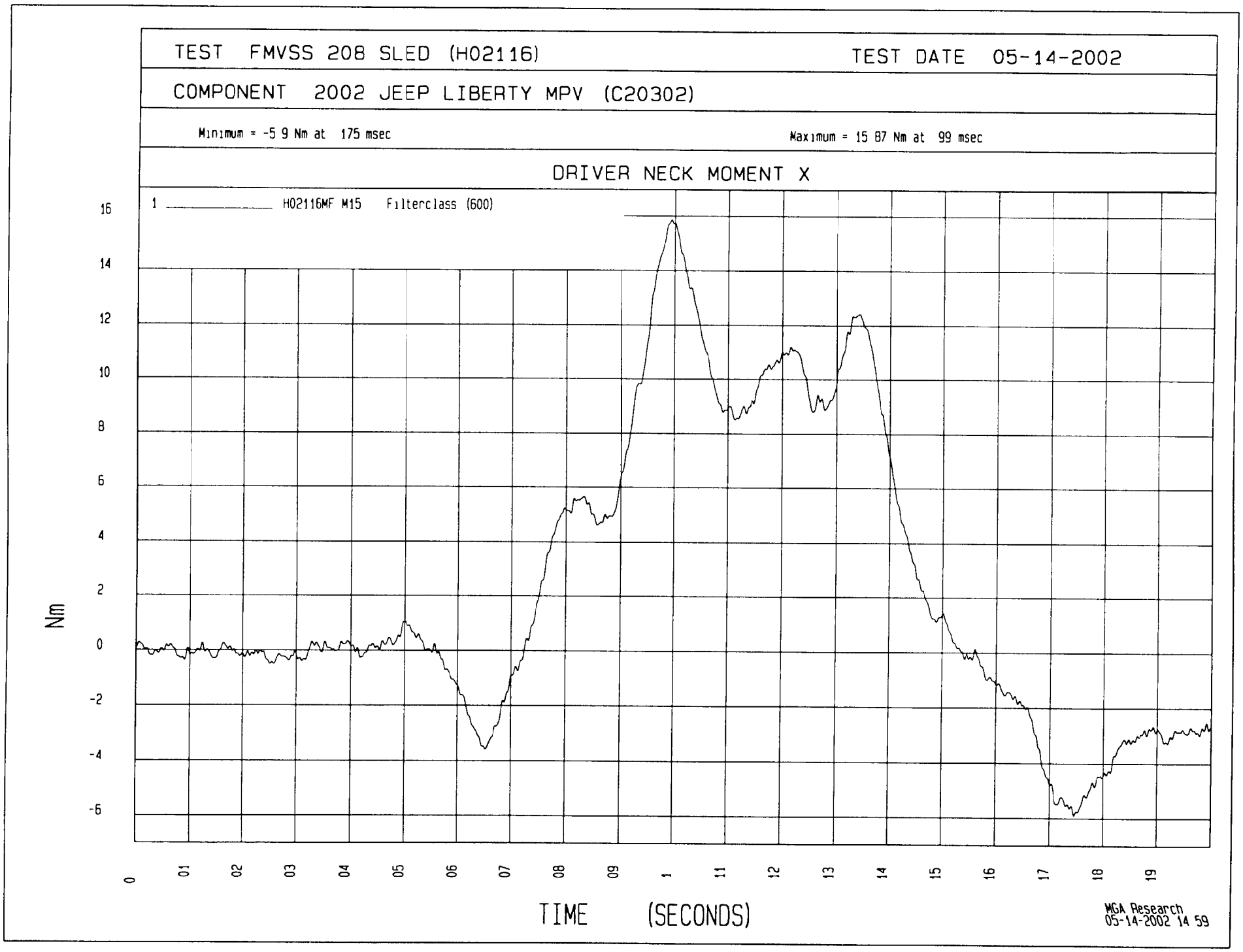

TEST FMVSS 208 SLED (H02116)
TEST DATE 05-14-2002
COMPONENT 2002 JEEP LIBERTY MPV (C20302)
Minimum = -2 75 G at 48 msec
Maximum = 22 19 G at 93 msec
DRIVER HEAD Z ACCELERATION
1 H02116AT A06 Filterclass (1000)
G
22
20
18
16
14
12
10
8
6
4
2
0
-2
0
01
02
03
04
05
06
07
08
09
1
11
12
13
14
15
16
17
18
19
TIME (SECONDS)
MGA Research
05-14 2002 14 59

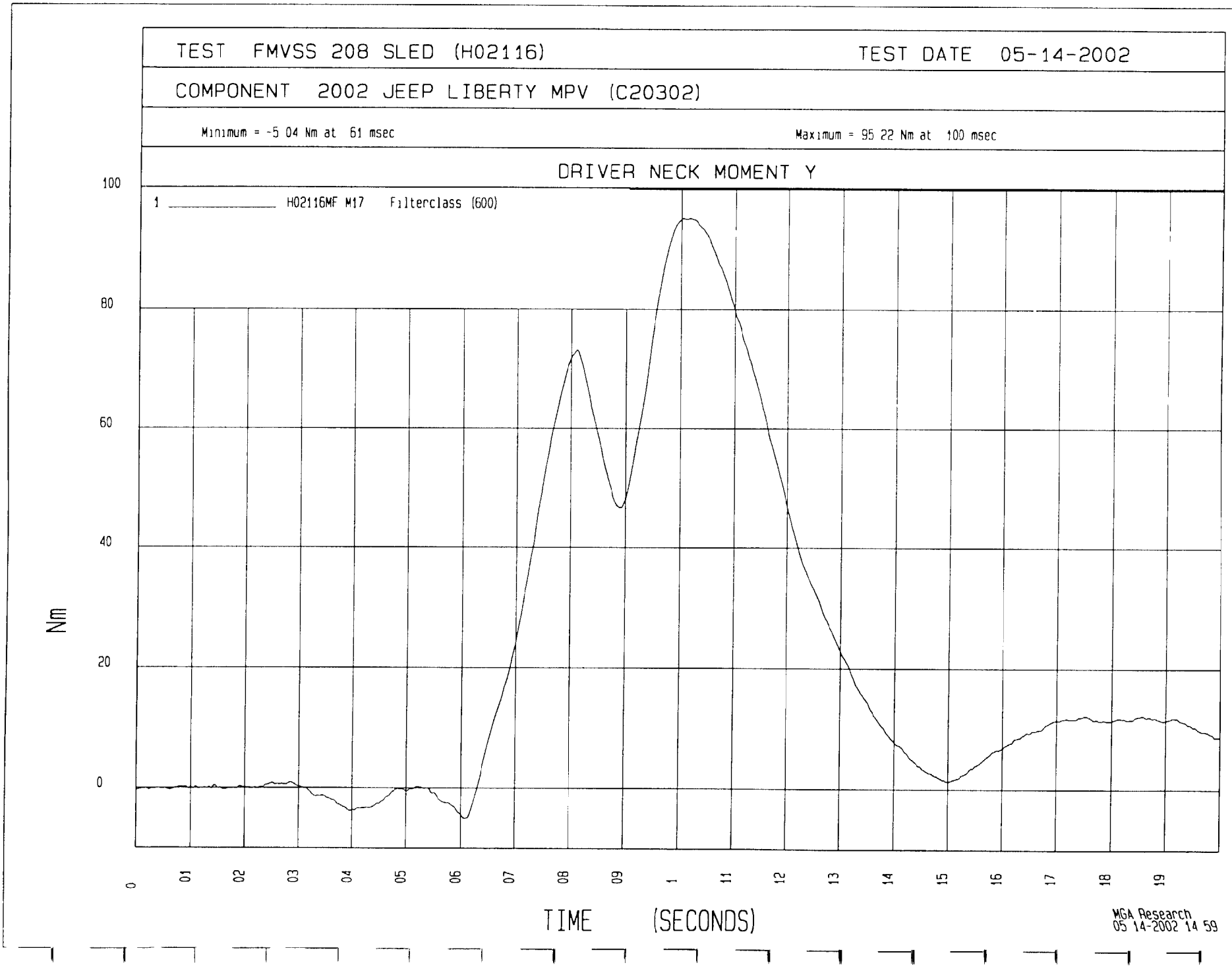

TEST FMVSS 208 SLED (H02116)
TEST DATE 05-14-2002
COMPONENT 2002 JEEP LIBERTY MPV (C20302)
Minimum = 06 G at 1 msec
Maximum = 40 17 G at 93 msec
DRIVER HEAD RESULTANT ACCELERATION
1 H02116AV A03 Filterclass (1000)
40
30
20
10
0
G
0
01
02
03
04
05
06
07
08
09
1
11
12
13
14
15
16
17
18
19
TIME (SECONDS)
MGA Research
05 14 2002 14 59

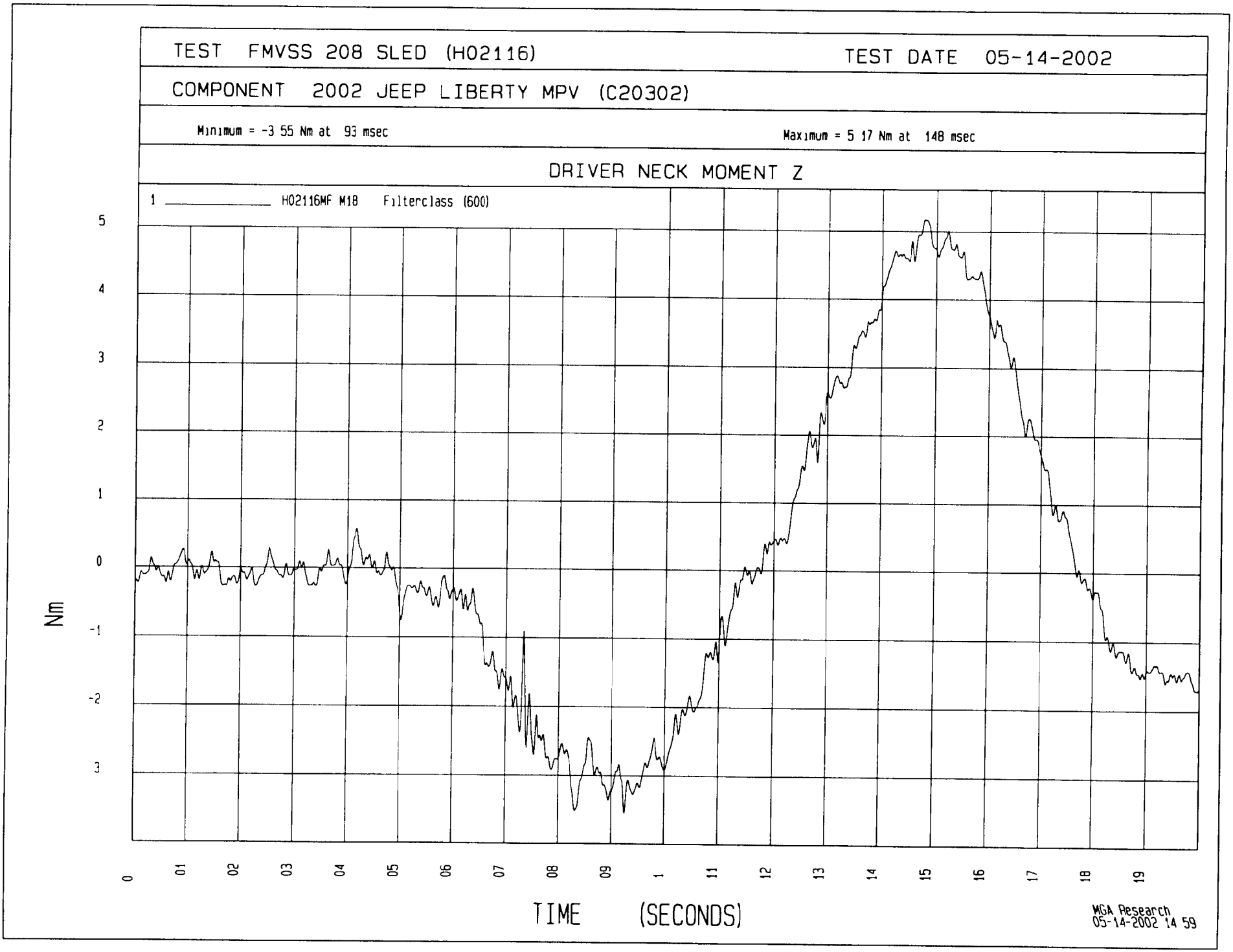

TEST FMVSS 208 SLED (H02116)
TEST DATE 05-14-2002
COMPONENT 2002 JEEP LIBERTY MPV (C20302)
Minimum - 95 21 N at 198 msec
Maximum - 1216 45 N at 100 msec
DRIVER NECK FORCE X
1 H02116FT F12 Filterclass (1000)
N
1200
1000
800
600
400
200
0
0
01
02
03
04
05
06
07
08
09
1
11
12
13
14
15
16
17
18
19
TIME (SECONDS)
MGA Research
05 14 2002 14 59

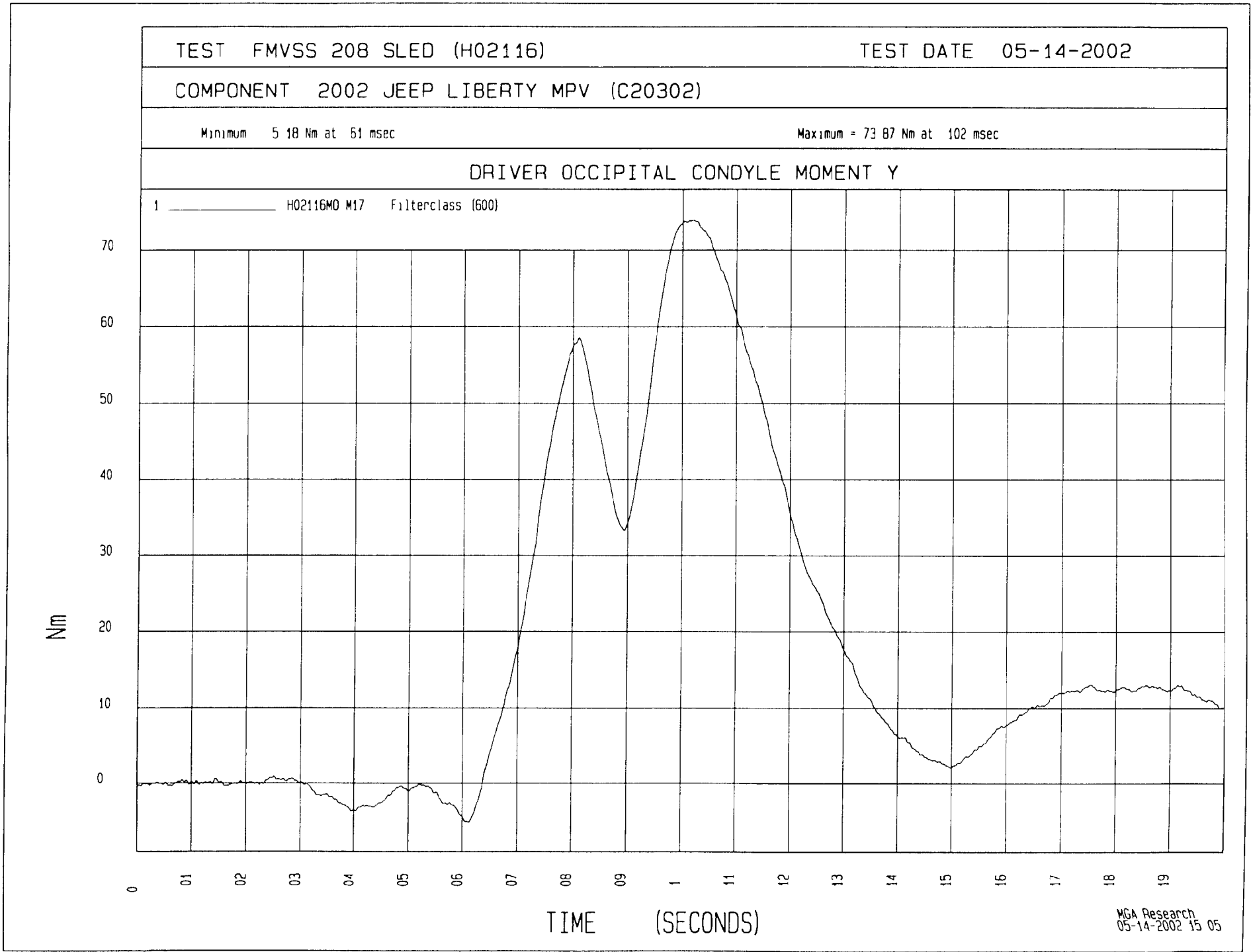

TEST FMVSS 208 SLED (H02116)
TEST DATE 05-14-2002
COMPONENT 2002 JEEP LIBERTY MPV (C20302)
Minimum = -142 51 N at 100 msec
Maximum = 39 N at 147 msec
DRIVER NECK FORCE Y
1 H02116FT F13 Filterclass (1000)
40
20
0
-20
-40
-60
-80
-100
-120
-140
N
0
01
02
03
04
05
06
07
08
09
1
11
12
13
14
15
16
17
18
19
TIME (SECONDS)
MGA Research
05-14-2002 14 59

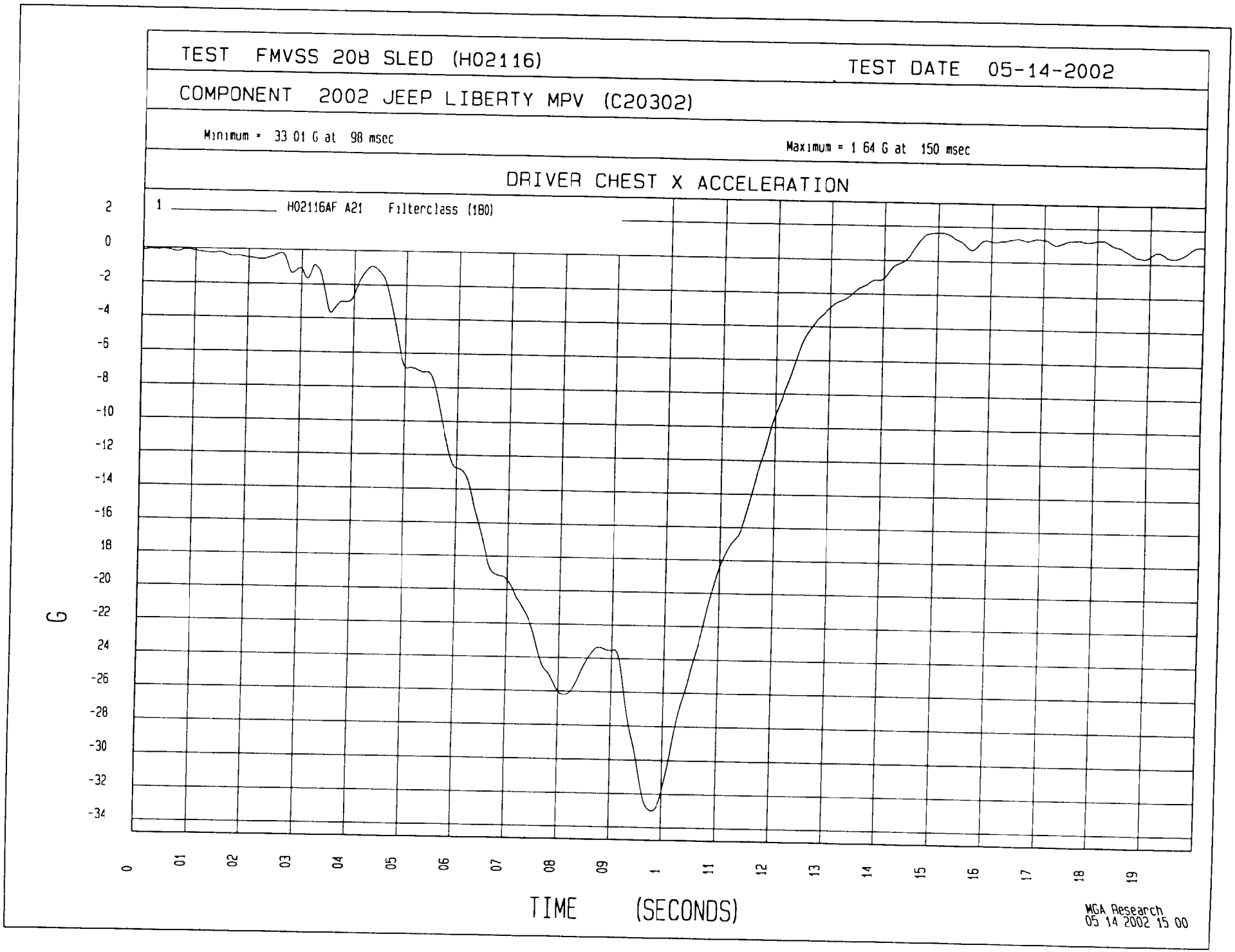

TEST FMVSS 208 SLED (H02116)
TEST DATE 05-14-2002
COMPONENT 2002 JEEP LIBERTY MPV (C20302)
Minimum = -553 89 N at 129 msec
Maximum = 631 9 N at 76 msec
DRIVER NECK FORCE Z
1 H02116FT F14 Filterclass (1000)
600
400
200
0
200
-400
-600
N
0
01
02
03
04
05
06
07
08
09
1
11
12
13
14
15
16
17
18
19
TIME (SECONDS)
MGA Research
05 14 2002 14 59

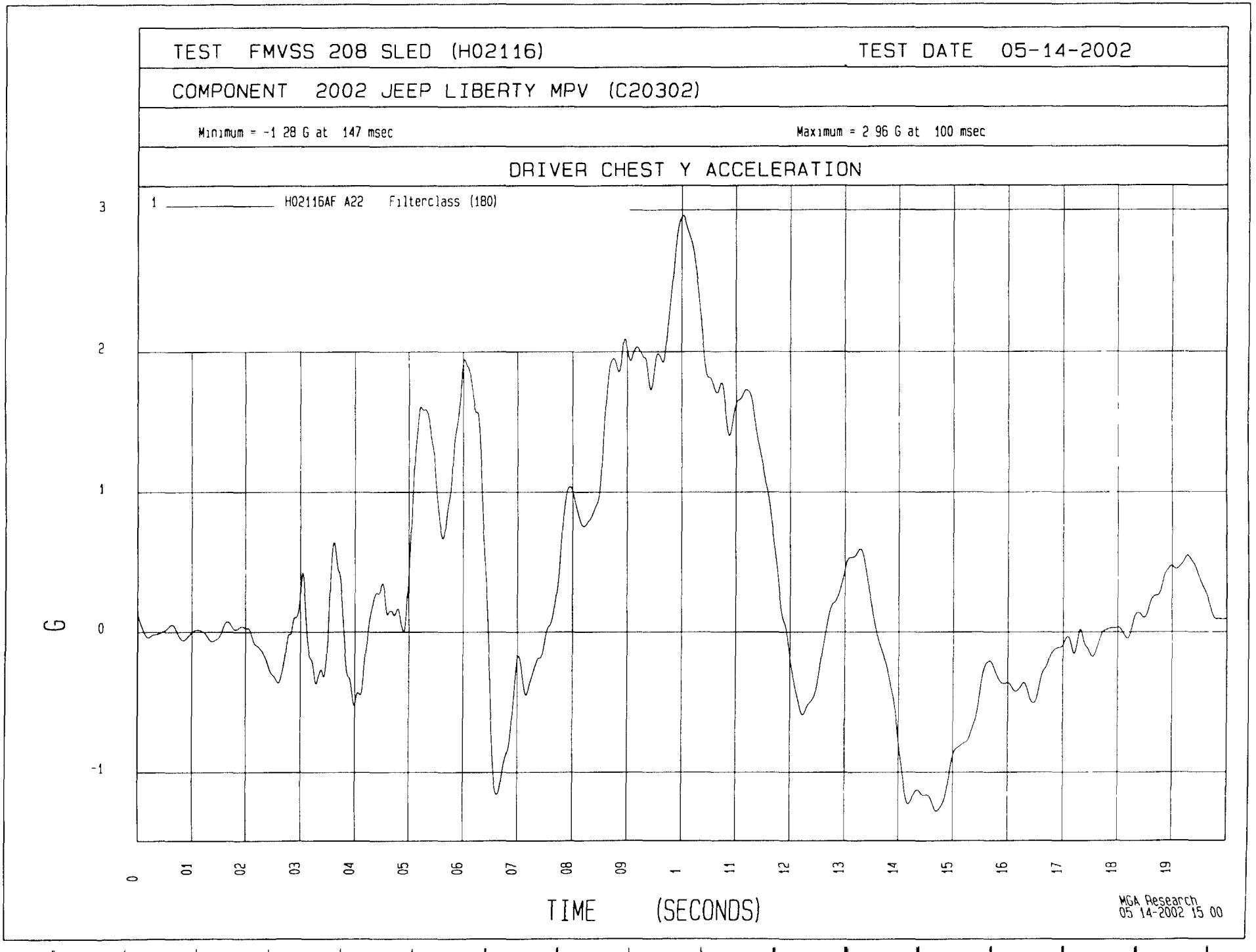

TEST FMVSS 208 SLED (H02116)
TEST DATE 05-14-2002
COMPONENT 2002 JEEP LIBERTY MPV (C20302)
Minimum = -5 9 Nm at 175 msec
Maximum = 15 87 Nm at 99 msec
DRIVER NECK MOMENT X
1 H02116MF M15 Filterclass (600)
16
14
12
10
8
6
4
2
0
-2
-4
-6
Nm
0
01
02
03
04
05
06
07
08
09
1
11
12
13
14
15
16
17
18
19
TIME (SECONDS)
MGA Research
05-14-2002 14 59

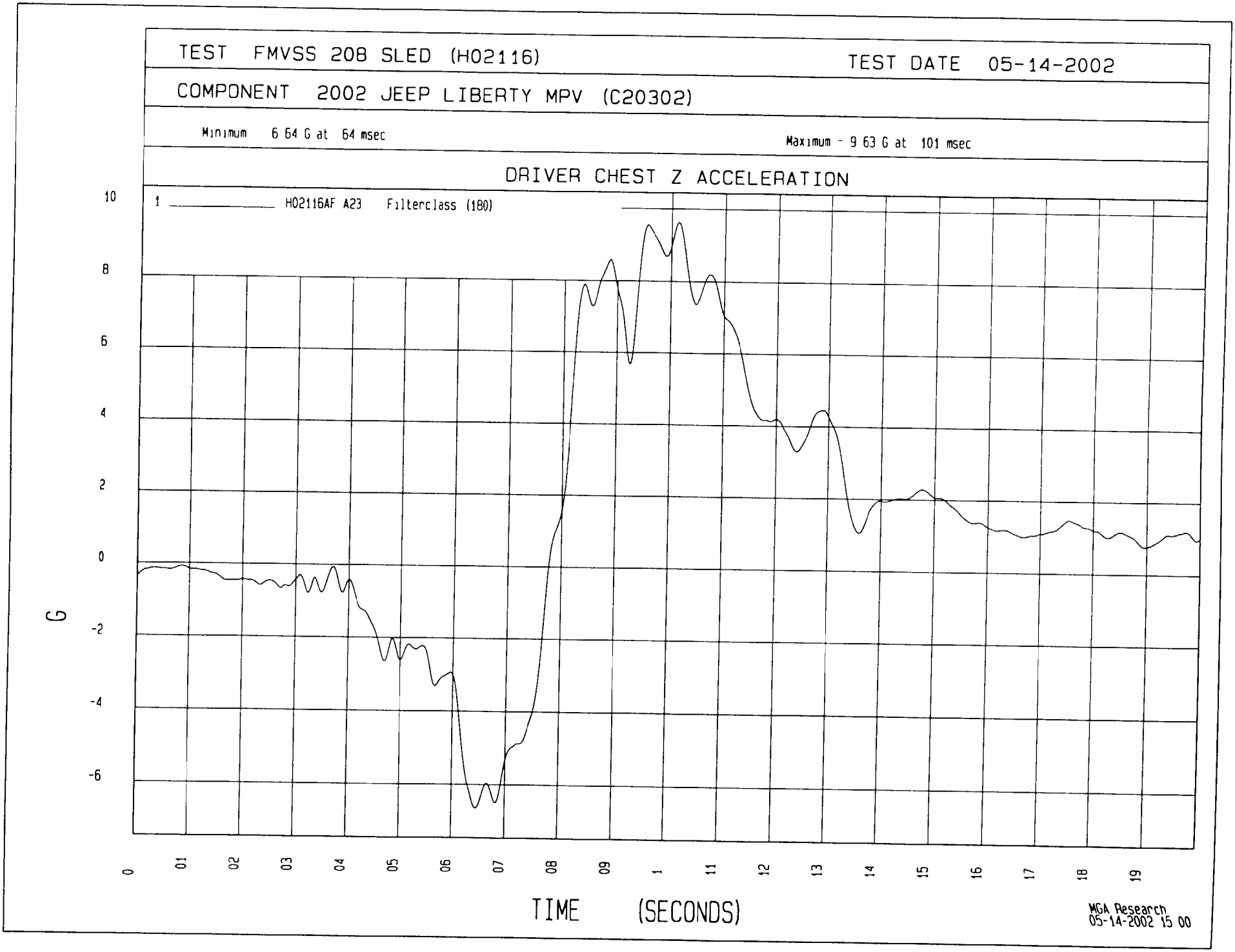

TEST FMVSS 208 SLED (H02116)
TEST DATE 05-14-2002
COMPONENT 2002 JEEP LIBERTY MPV (C20302)
Minimum = -5 04 Nm at 61 msec
Maximum = 95 22 Nm at 100 msec
DRIVER NECK MOMENT Y
1 H02116MF M17 Filterclass (600)
Nm
100
80
60
40
20
0
0
01
02
03
04
05
06
07
08
09
1
11
12
13
14
15
16
17
18
19
TIME (SECONDS)
MGA Research
05 14-2002 14 59

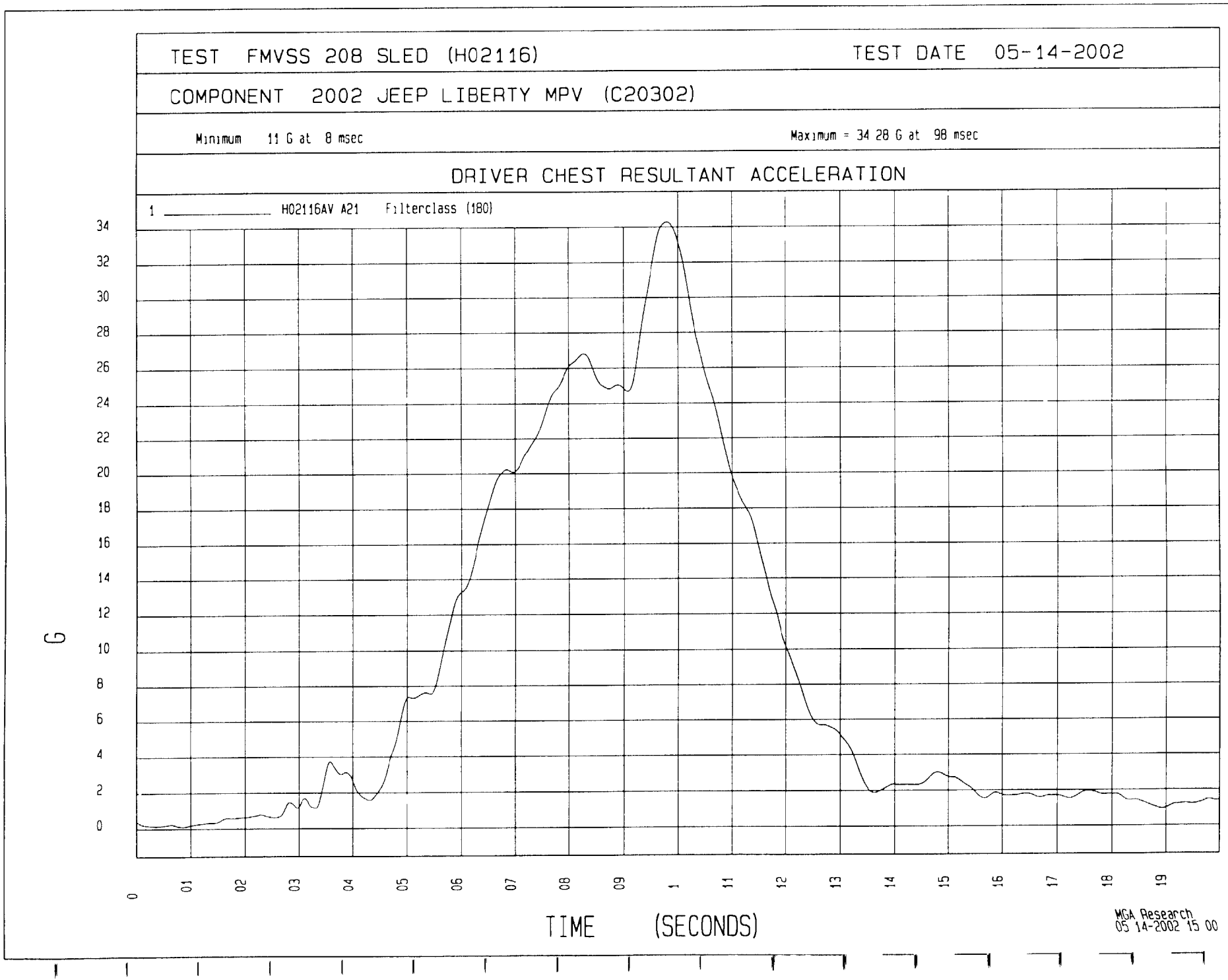

TEST FMVSS 208 SLED (H02116)
TEST DATE 05-14-2002
COMPONENT 2002 JEEP LIBERTY MPV (C20302)
Minimum = -3 55 Nm at 93 msec
Maximum = 5 17 Nm at 148 msec
DRIVER NECK MOMENT Z
1 H02116MF M18 Filterclass (600)
Nm
5
4
3
2
1
0
-1
-2
3
0
01
02
03
04
05
06
07
08
09
1
11
12
13
14
15
16
17
18
19
TIME (SECONDS)
MGA Research
05-14-2002 14 59

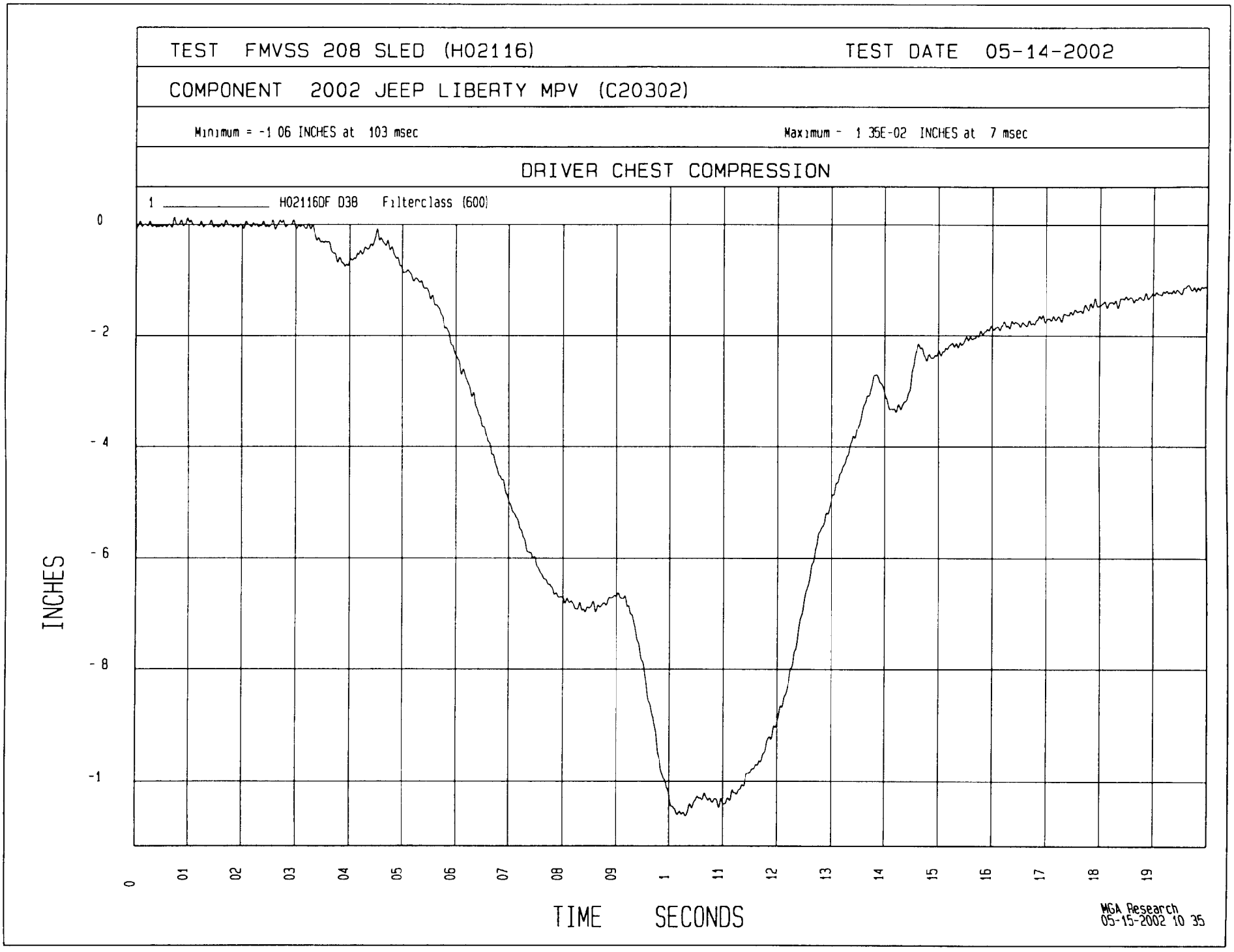

TEST FMVSS 208 SLED (H02116)
TEST DATE 05-14-2002
COMPONENT 2002 JEEP LIBERTY MPV (C20302)
Minimum 5 18 Nm at 51 msec
Maximum = 73 87 Nm at 102 msec
DRIVER OCCIPITAL CONDYLE MOMENT Y
1 H02116M0 M17 Filterclass (600)
Nm
70
60
50
40
30
20
10
0
0
01
02
03
04
05
06
07
08
09
1
11
12
13
14
15
16
17
18
19
TIME (SECONDS)
MGA Research
05-14-2002 15 05

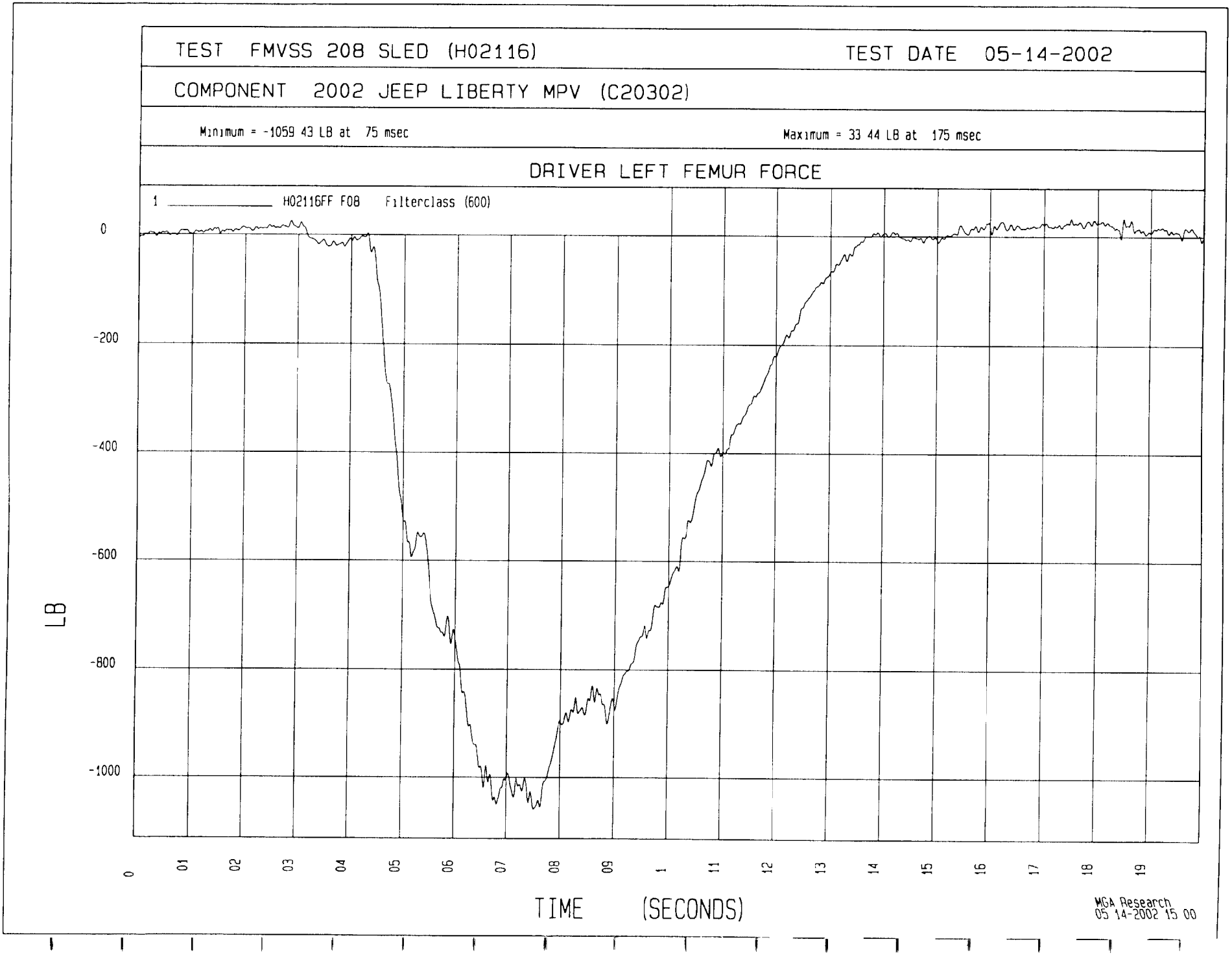

TEST FMVSS 208 SLED (H02116)
TEST DATE 05-14-2002
COMPONENT 2002 JEEP LIBERTY MPV (C20302)
Minimum = 33 01 G at 98 msec
Maximum = 1 64 G at 150 msec
DRIVER CHEST X ACCELERATION
1 H02116AF A21 Filterclass (180)
2
0
-2
-4
-6
-8
-10
-12
-14
-16
18
-20
-22
24
-26
-28
-30
-32
-34
G
0
01
02
03
04
05
06
07
08
09
1
11
12
13
14
15
16
17
18
19
TIME (SECONDS)
MGA Research
05 14 2002 15 00

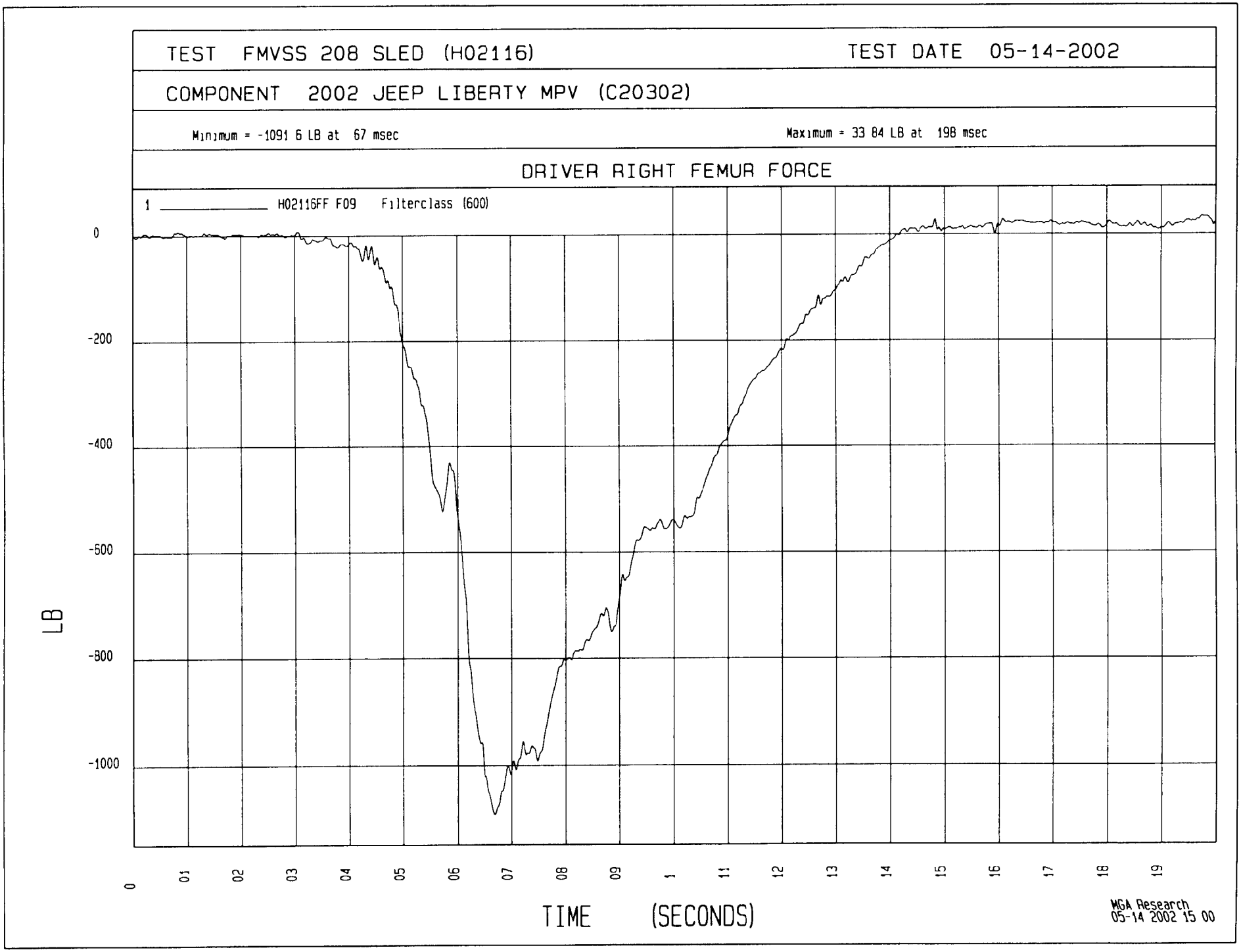

TEST FMVSS 208 SLED (H02116)
TEST DATE 05-14-2002
COMPONENT 2002 JEEP LIBERTY MPV (C20302)
Minimum = -1 28 G at 147 msec
Maximum = 2 96 G at 100 msec
DRIVER CHEST Y ACCELERATION
1 H02116AF A22 Filterclass (180)
3
2
1
0
-1
G
0
01
02
03
04
05
06
07
08
09
1
11
12
13
14
15
16
17
18
19
TIME (SECONDS)
MGA Research
05 14-2002 15 00

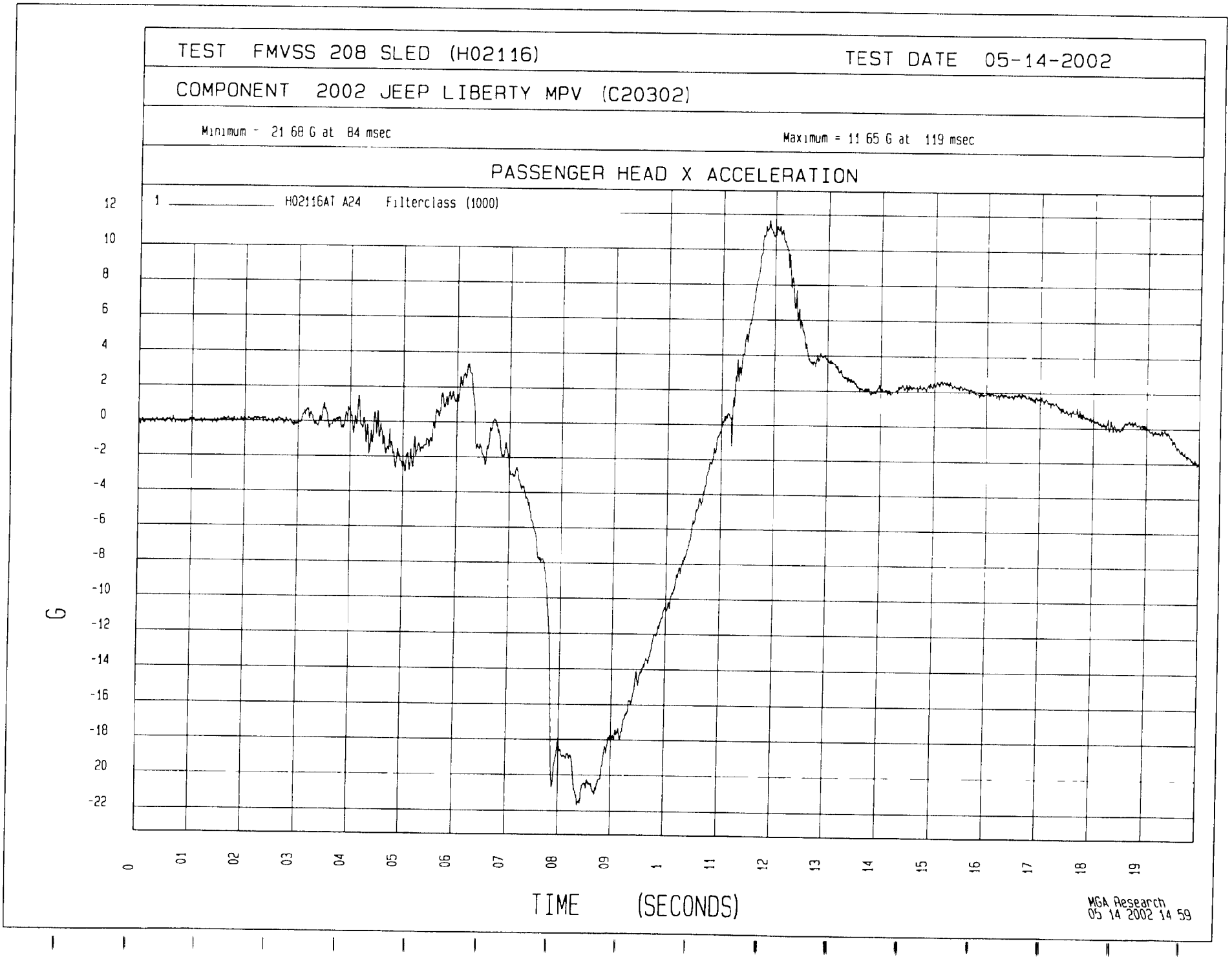

TEST FMVSS 208 SLED (H02116)
TEST DATE 05-14-2002
COMPONENT 2002 JEEP LIBERTY MPV (C20302)
Minimum 6 64 G at 64 msec
Maximum - 9 63 G at 101 msec
DRIVER CHEST Z ACCELERATION
1 H02116AF A23 Filterclass (180)
10
8
6
4
2
0
-2
-4
-6
G
0
01
02
03
04
05
06
07
08
09
1
11
12
13
14
15
16
17
18
19
TIME (SECONDS)
MGA Research
05-14-2002 15 00

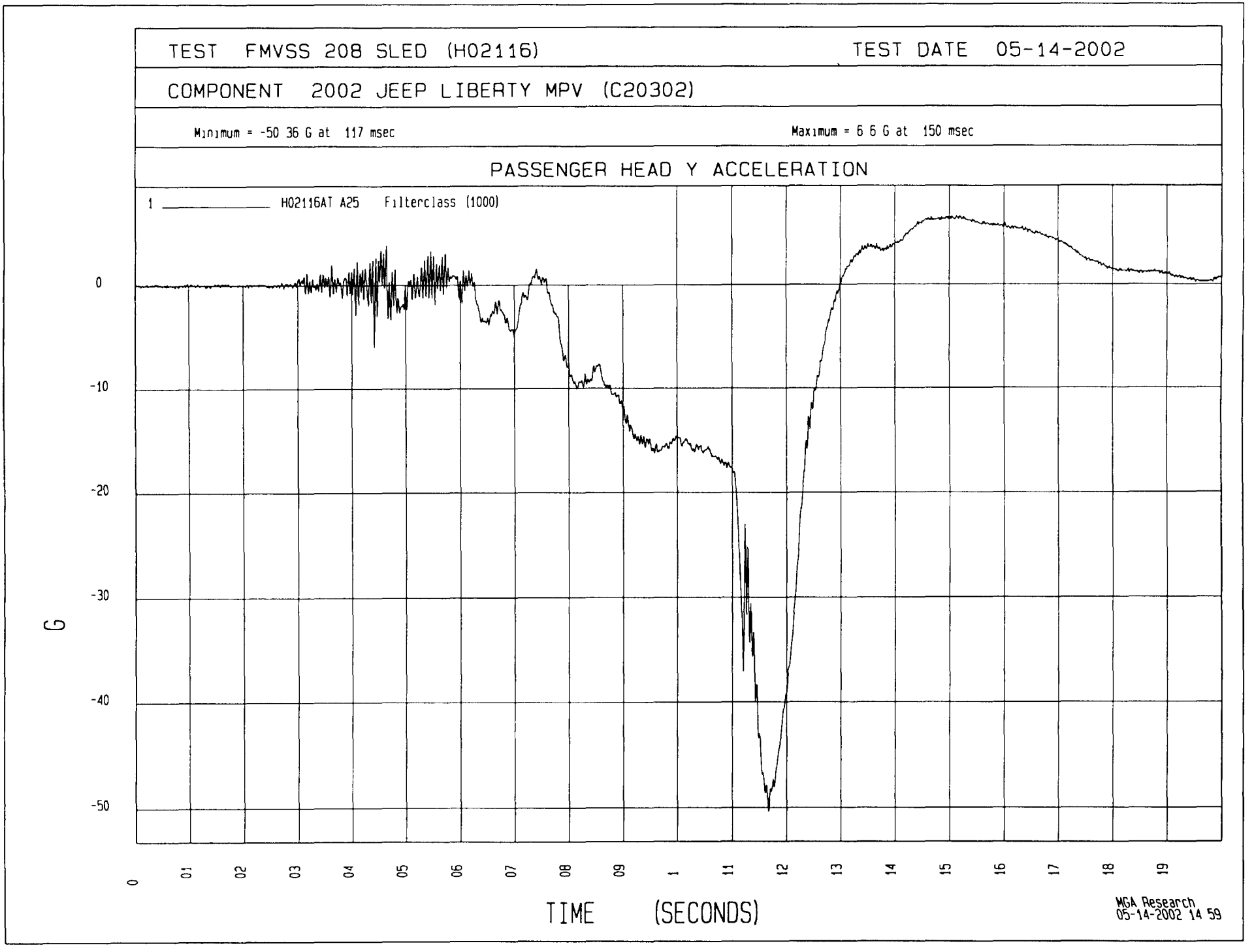

TEST FMVSS 208 SLED (H02116)
TEST DATE 05-14-2002
COMPONENT 2002 JEEP LIBERTY MPV (C20302)
Minimum 11 G at 8 msec
Maximum = 34 28 G at 98 msec
DRIVER CHEST RESULTANT ACCELERATION
1 H02116AV A21 Filterclass (180)
G
34
32
30
28
26
24
22
20
18
16
14
12
10
8
6
4
2
0
0
01
02
03
04
05
06
07
08
09
1
11
12
13
14
15
16
17
18
19
TIME (SECONDS)
MGA Research
05 14-2002 15 00

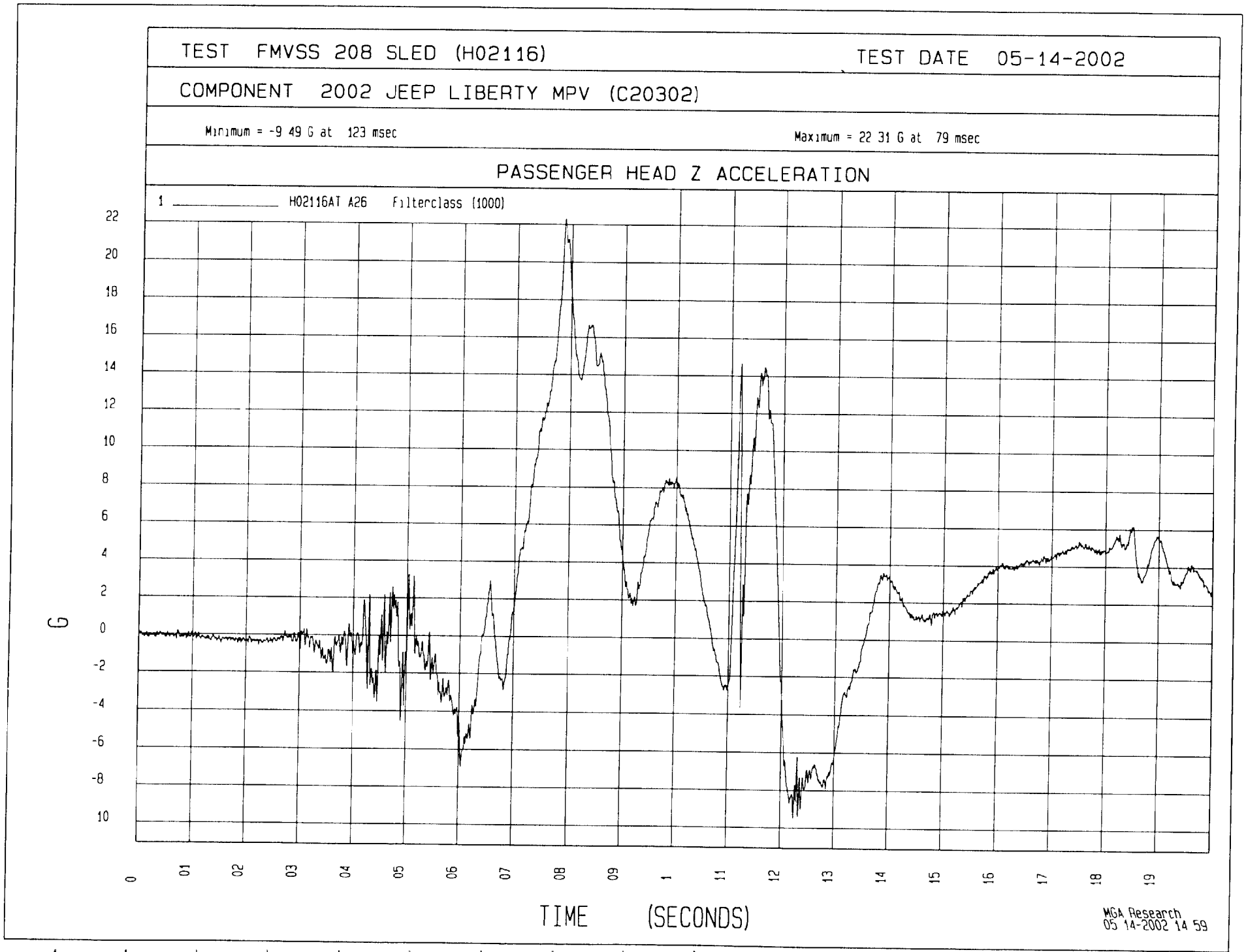

TEST FMVSS 208 SLED (H02116)
TEST DATE 05-14-2002
COMPONENT 2002 JEEP LIBERTY MPV (C20302)
Minimum = -1 06 INCHES at 103 msec
Maximum = 1 35E-02 INCHES at 7 msec
DRIVER CHEST COMPRESSION
1 H02116DF D38 Filterclass (600)
INCHES
0
- 2
- 4
- 6
- 8
-1
0 01 02 03 04 05 06 07 08 09 1 11 12 13 14 15 16 17 18 19
TIME SECONDS
MGA Research
05-15-2002 10 35

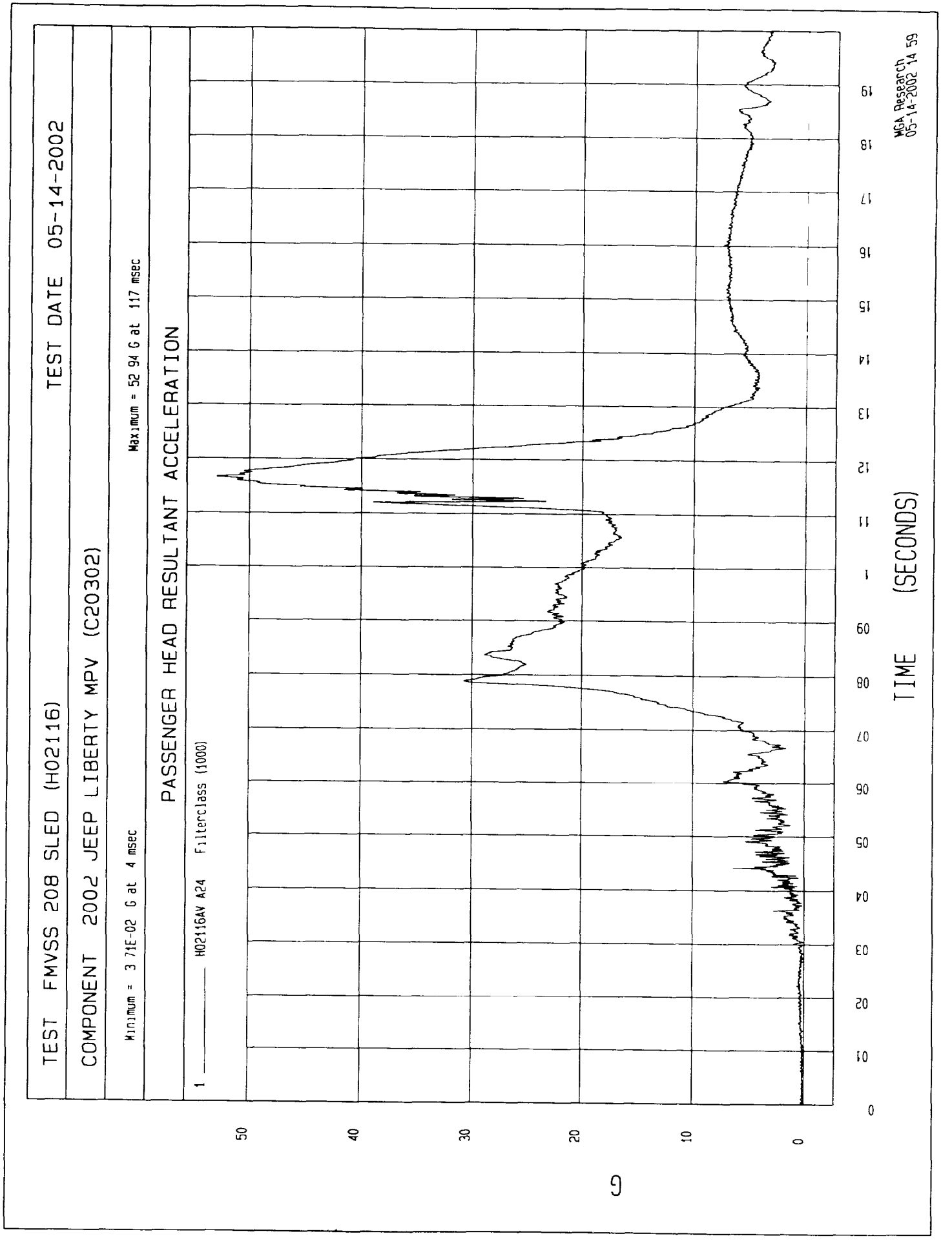

TEST FMVSS 208 SLED (H02116)
TEST DATE 05-14-2002
COMPONENT 2002 JEEP LIBERTY MPV (C20302)
Minimum = -1059 43 LB at 75 msec
Maximum = 33 44 LB at 175 msec
DRIVER LEFT FEMUR FORCE
1 H02116FF F08 Filterclass (600)
0
-200
-400
-600
-800
-1000
LB
0
01
02
03
04
05
06
07
08
09
1
11
12
13
14
15
16
17
18
19
TIME (SECONDS)
MGA Research
05 14-2002 15 00

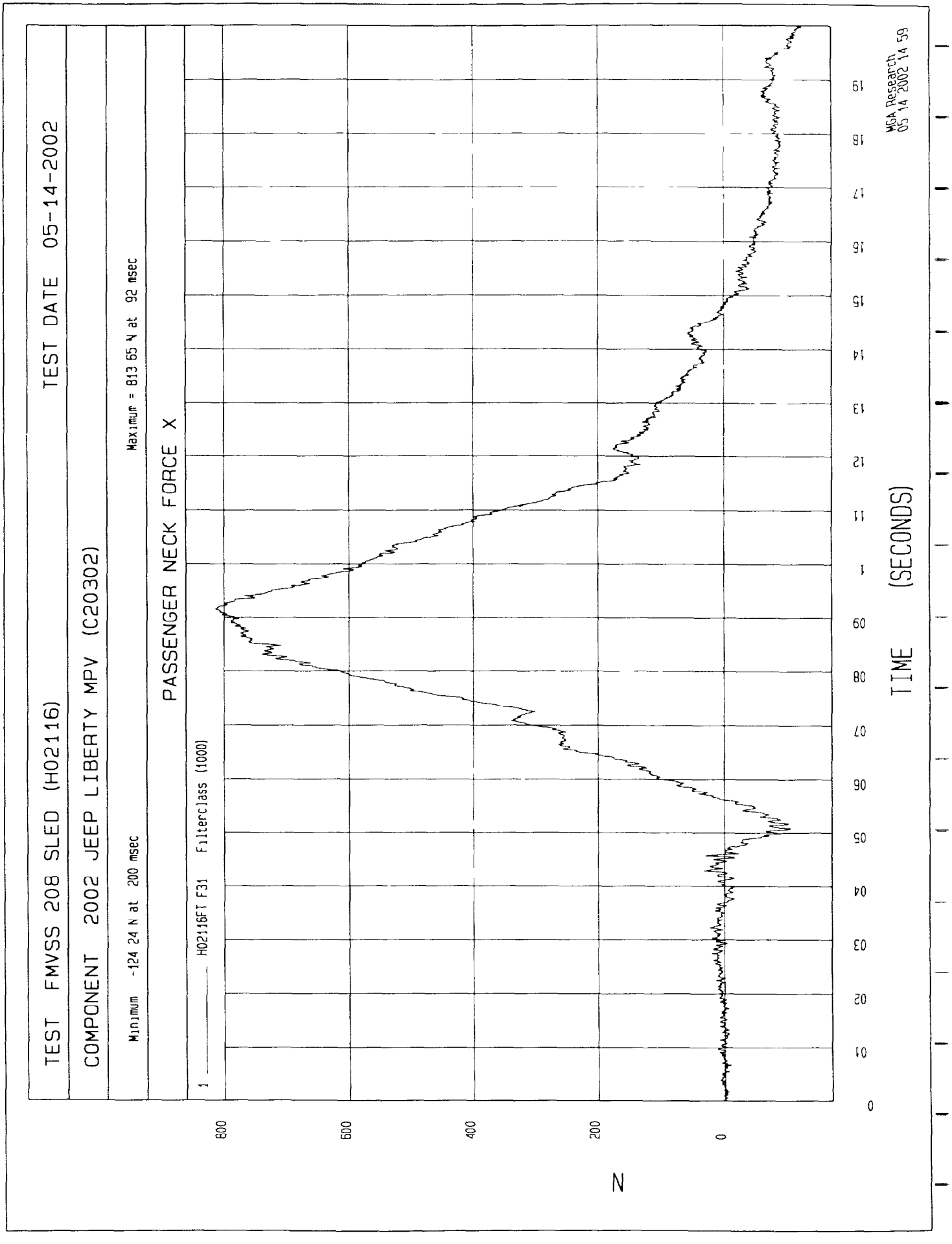

TEST FMVSS 208 SLED (H02116)
TEST DATE 05-14-2002
COMPONENT 2002 JEEP LIBERTY MPV (C20302)
Minimum = -1091 6 LB at 67 msec
Maximum = 33 84 LB at 198 msec
DRIVER RIGHT FEMUR FORCE
1 H02116FF F09 Filterclass (600)
0
-200
-400
-500
-800
-1000
LB
0
01
02
03
04
05
06
07
08
09
1
11
12
13
14
15
16
17
18
19
TIME (SECONDS)
MGA Research
05-14 2002 15 00

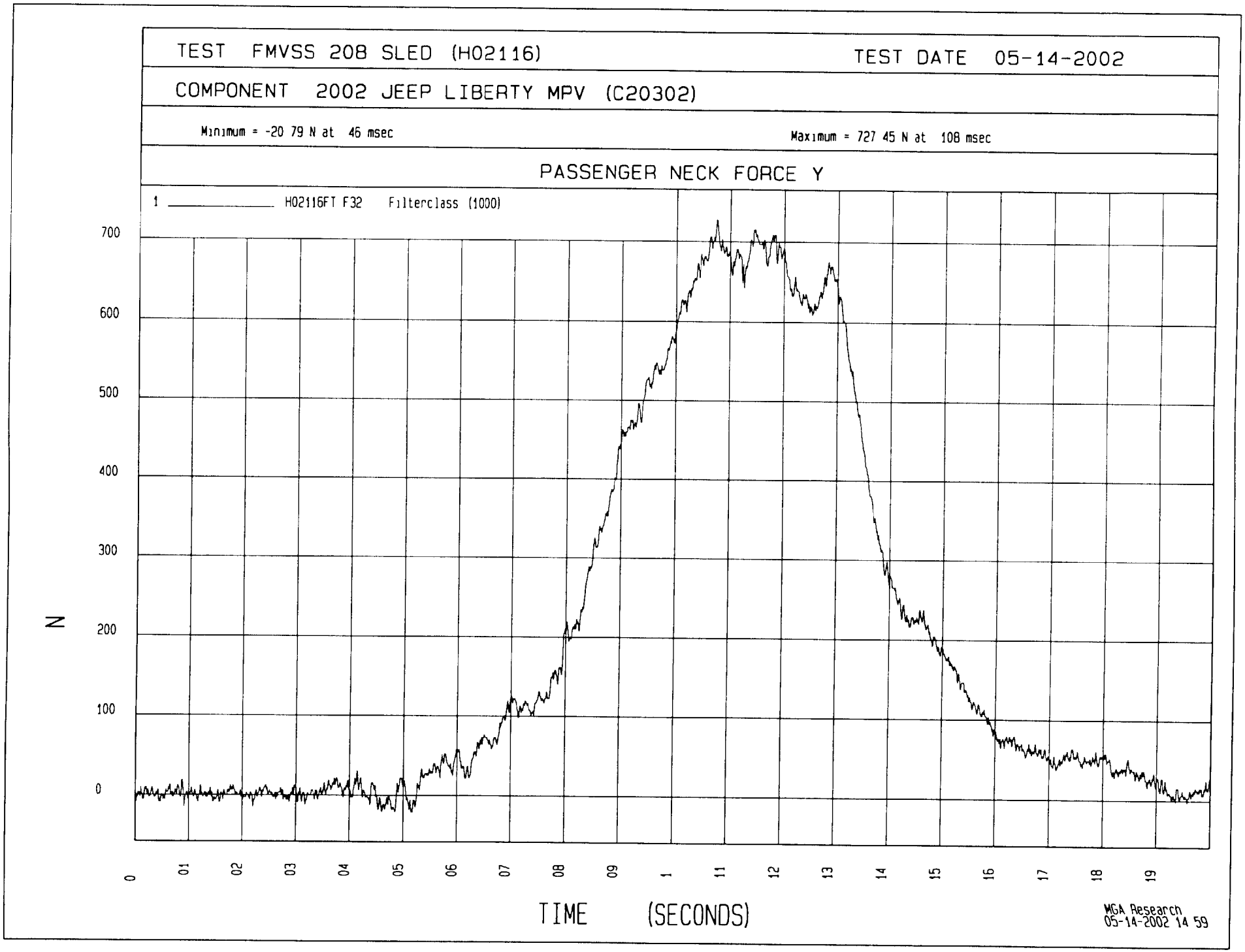

TEST FMVSS 208 SLED (H02116)
TEST DATE 05-14-2002
COMPONENT 2002 JEEP LIBERTY MPV (C20302)
Minimum = 21 68 G at 84 msec
Maximum = 11 65 G at 119 msec
PASSENGER HEAD X ACCELERATION
1 H02116AT A24 Filterclass (1000)
12
10
8
6
4
2
0
-2
-4
-6
-8
-10
-12
-14
-16
-18
20
-22
G
0
01
02
03
04
05
06
07
08
09
1
11
12
13
14
15
16
17
18
19
TIME (SECONDS)
MGA Research
05 14 2002 14 59


TEST FMVSS 208 SLED (H02116)
TEST DATE 05-14-2002
COMPONENT 2002 JEEP LIBERTY MPV (C20302)
Minimum = -50 36 G at 117 msec
Maximum = 6 6 G at 150 msec
PASSENGER HEAD Y ACCELERATION
1 H02116AT A25 Filterclass (1000)
0
-10
-20
-30
-40
-50
G
0
01
02
03
04
05
06
07
08
09
1
11
12
13
14
15
16
17
18
19
TIME (SECONDS)
MGA Research
05-14-2002 14 59

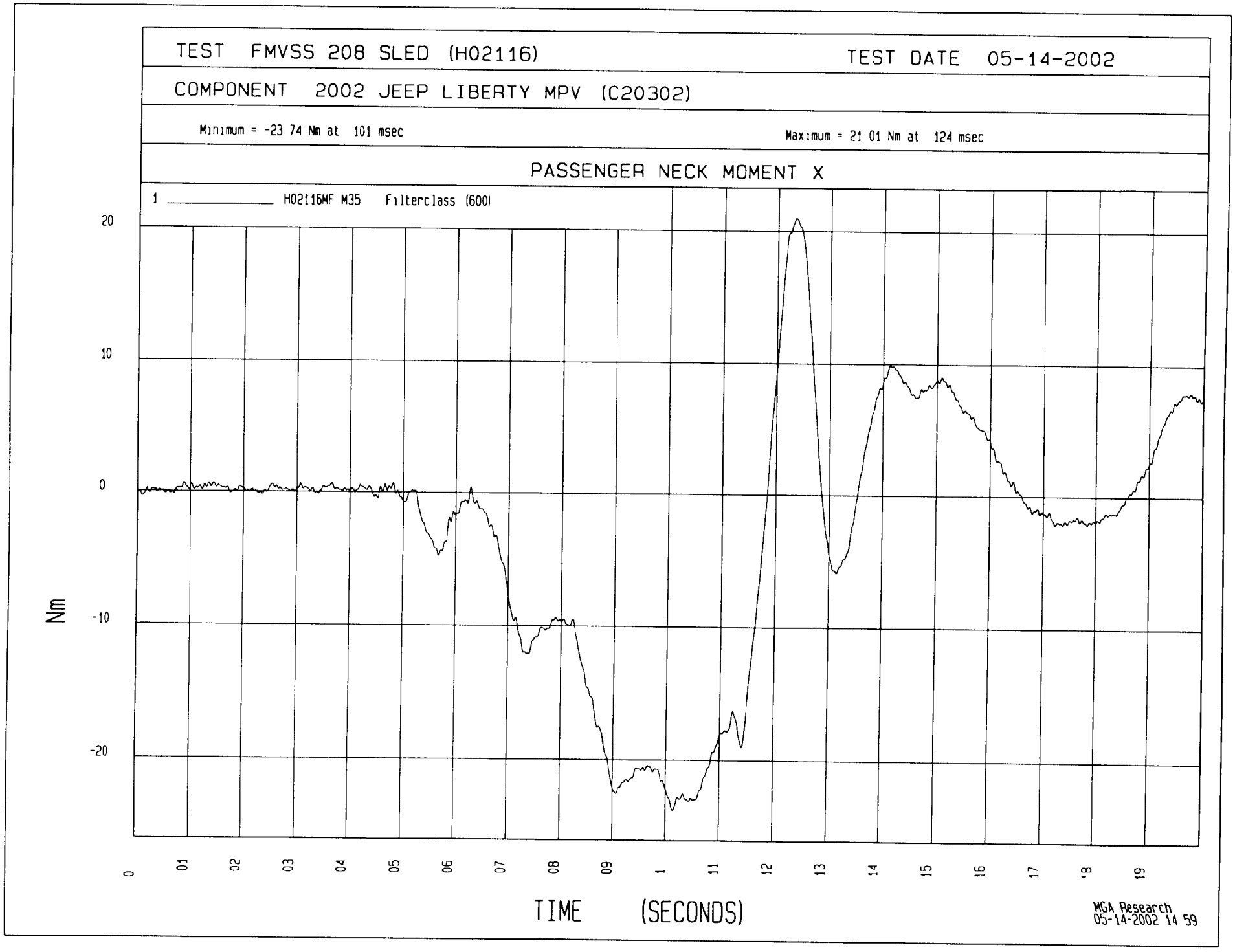

TEST FMVSS 208 SLED (H02116)
TEST DATE 05-14-2002
COMPONENT 2002 JEEP LIBERTY MPV (C20302)
Minimum = -9 49 G at 123 msec
Maximum = 22 31 G at 79 msec
PASSENGER HEAD Z ACCELERATION
1 H02116AT A26 Filterclass (1000)
22
20
18
16
14
12
10
8
6
4
2
0
-2
-4
-6
-8
10
G
0
01
02
03
04
05
06
07
08
09
1
11
12
13
14
15
16
17
18
19
TIME (SECONDS)
MGA Research
05 14-2002 14 59


TEST FMVSS 208 SLED (H02116)
TEST DATE 05-14-2002
COMPONENT 2002 JEEP LIBERTY MPV (C20302)
Minimum = 3 71E-02 G at 4 msec
Maximum = 52 94 G at 117 msec
PASSENGER HEAD RESULTANT ACCELERATION
1 _____ H02116AV A24 Filterclass (1000)
MGA Research
05-14-2002 14 59
TIME (SECONDS)
0
10
20
30
40
50
01
02
03
04
05
06
07
08
09
60
1
11
12
13
14
15
16
17
18
19

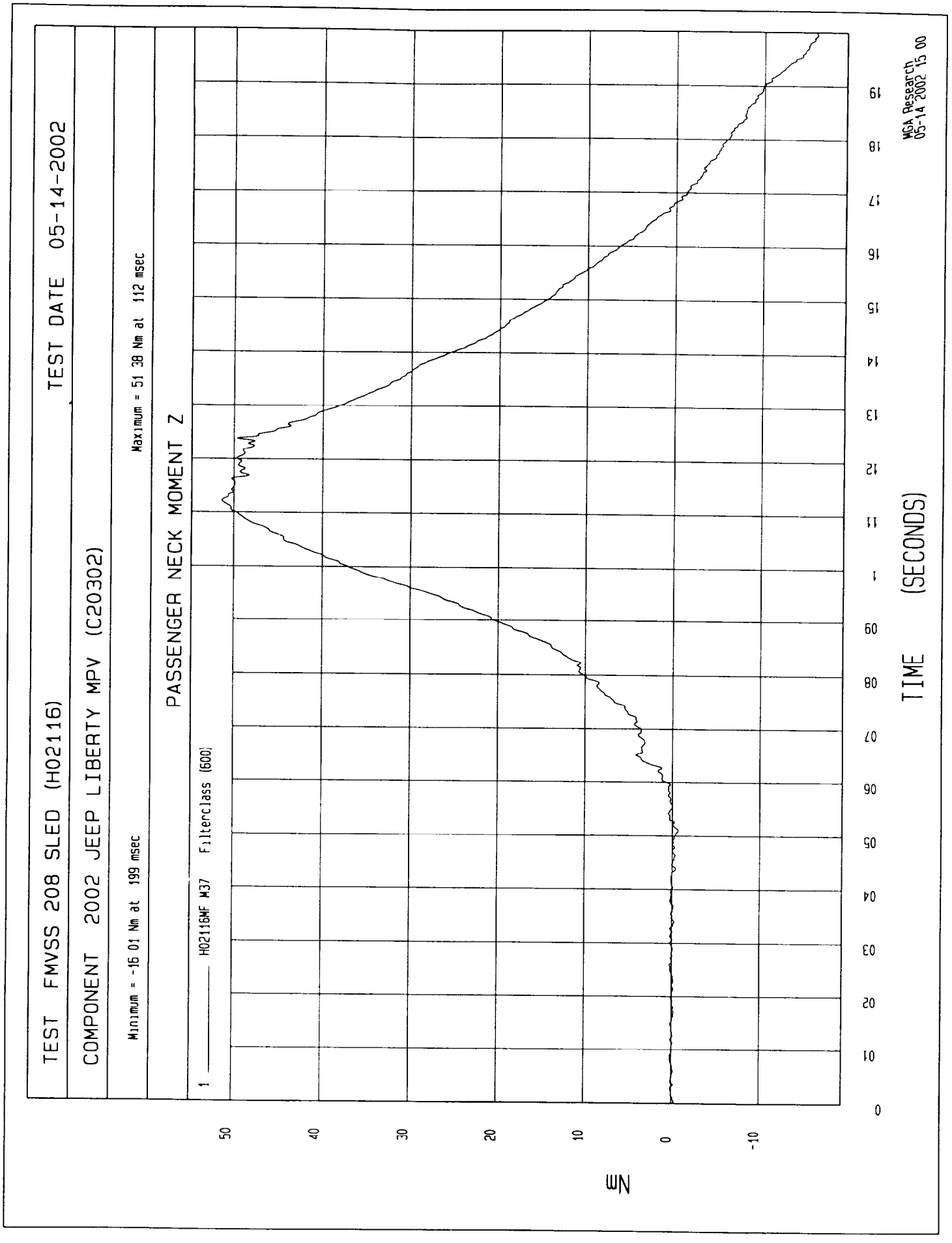

TEST FMVSS 208 SLED (H02116)
TEST DATE 05-14-2002
COMPONENT 2002 JEEP LIBERTY MPV (C20302)
Minimum -124 24 N at 200 msec
Maximum = 813 65 N at 92 msec
PASSENGER NECK FORCE X
1 H02116FT F31 Filterclass (1000)
800
600
400
200
0
N
0
01
02
03
04
05
06
07
08
09
1
11
12
13
14
15
16
17
18
19
TIME (SECONDS)
MGA Research
05 14 2002 14 59

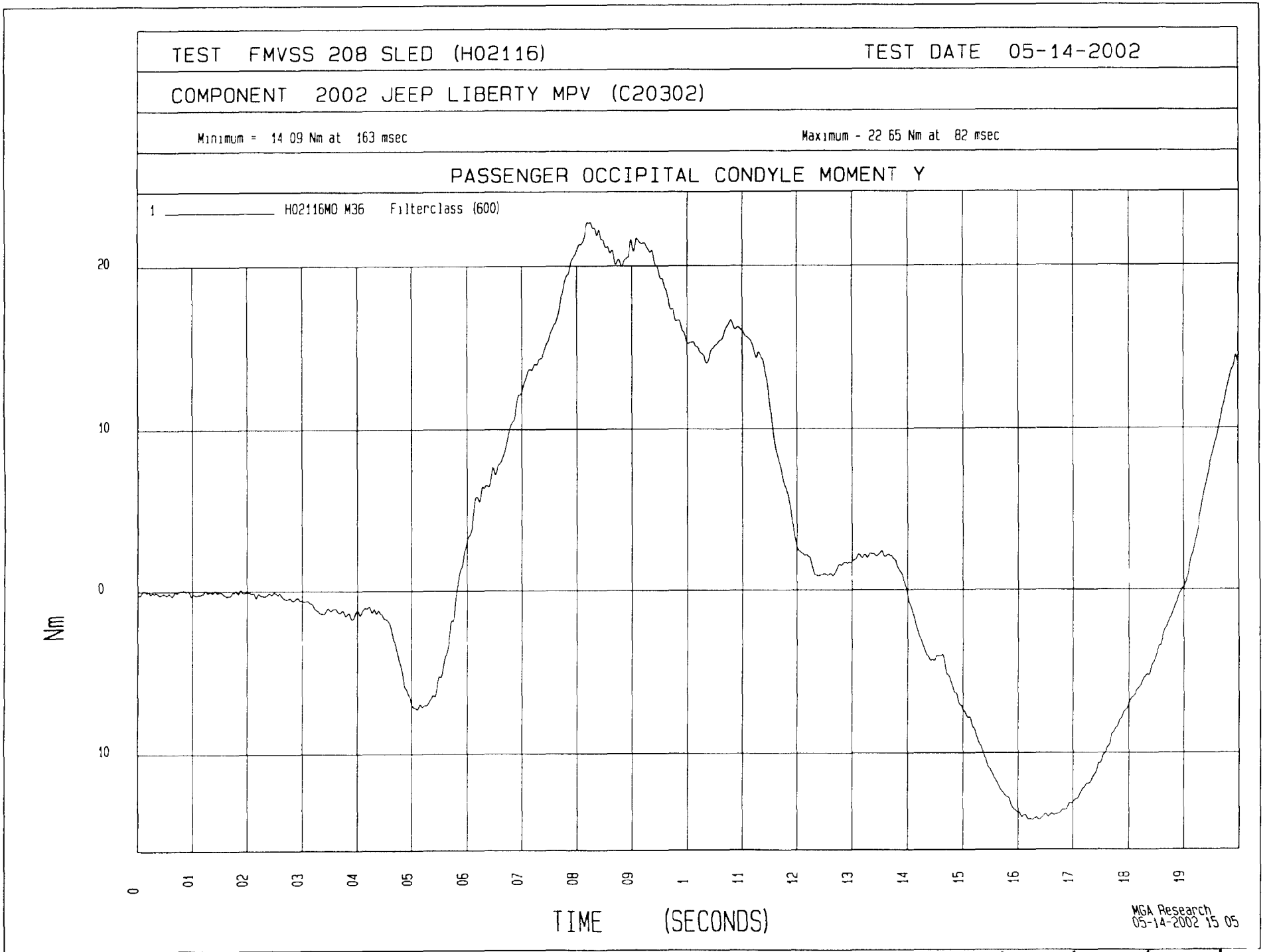

TEST FMVSS 208 SLED (H02116)
TEST DATE 05-14-2002
COMPONENT 2002 JEEP LIBERTY MPV (C20302)
Minimum = -20 79 N at 46 msec
Maximum = 727 45 N at 108 msec
PASSENGER NECK FORCE Y
1 H02116FT F32 Filterclass (1000)
700
600
500
400
300
200
100
0
N
0
01
02
03
04
05
06
07
08
09
1
11
12
13
14
15
16
17
18
19
TIME (SECONDS)
MGA Research
05-14-2002 14 59

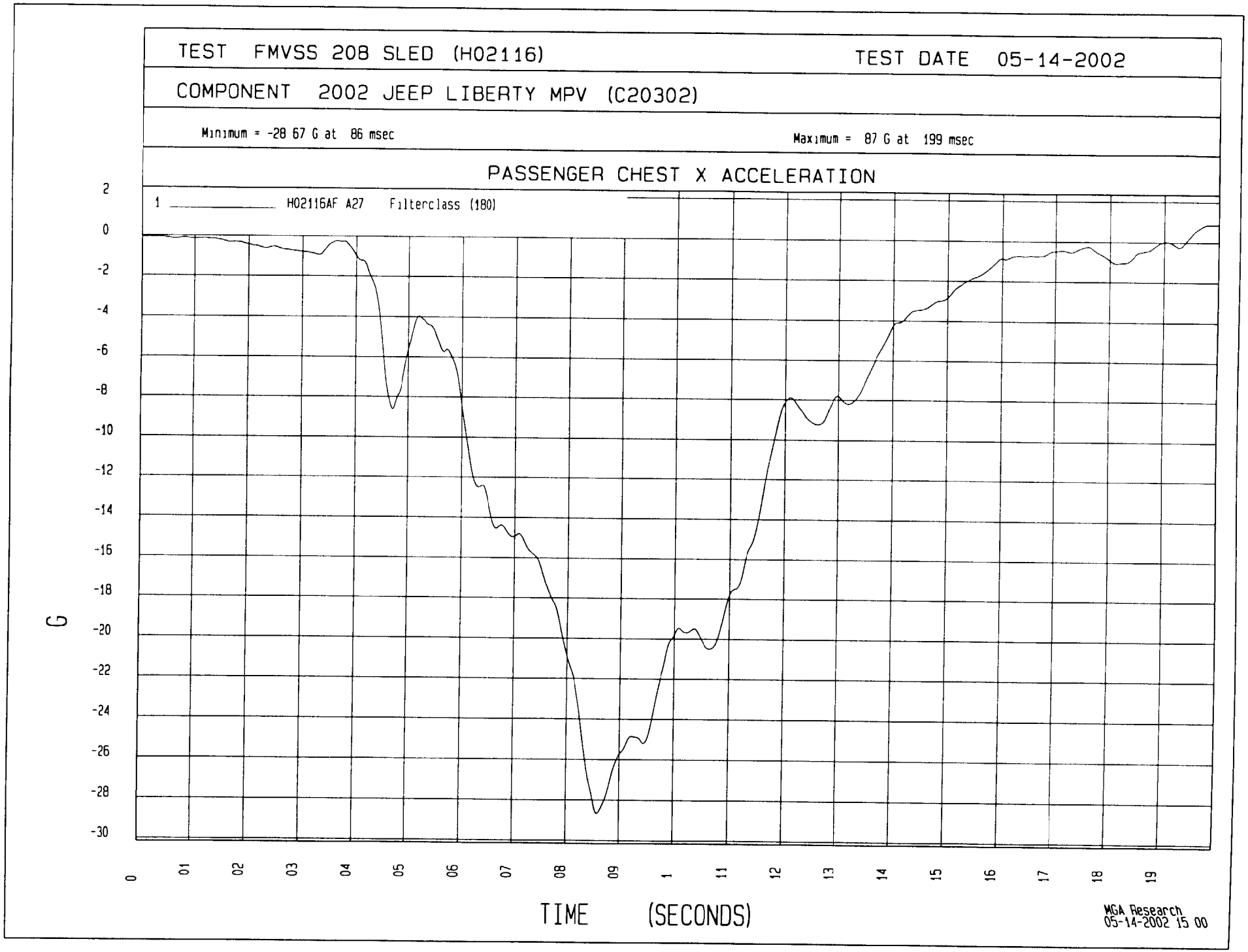

TEST FMVSS 208 SLED (H02116)
TEST DATE 05-14-2002
COMPONENT 2002 JEEP LIBERTY MPV (C20302)
Minimum = -2222 14 N at 119 msec
Maximum = 697 23 N at 77 msec
PASSENGER NECK FORCE Z
1 H02116FT F33 Filterclass (1000)
800
600
400
200
0
-200
-400
-600
-800
-1000
-1200
-1400
-1600
-1800
-2000
2200
N
0
01
02
03
04
05
06
07
08
09
1
11
12
13
14
15
16
17
18
19
TIME (SECONDS)
MGA Research
05-14-2002 14 59

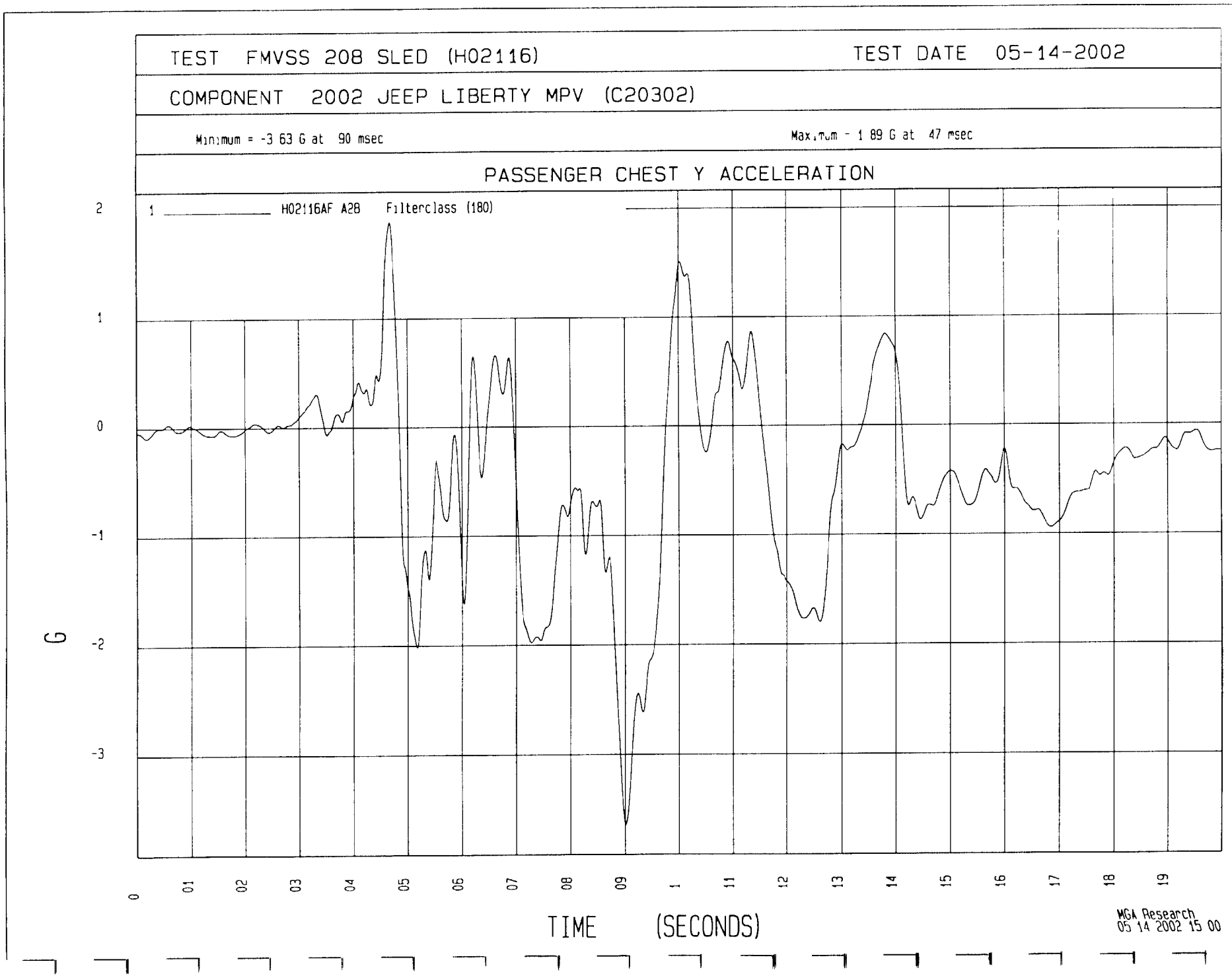

TEST FMVSS 208 SLED (H02116)
TEST DATE 05-14-2002
COMPONENT 2002 JEEP LIBERTY MPV (C20302)
Minimum = -23 74 Nm at 101 msec
Maximum = 21 01 Nm at 124 msec
PASSENGER NECK MOMENT X
1 H02116MF M35 Filterclass (600)
20
10
0
-10
-20
Nm
0
01
02
03
04
05
06
07
08
09
1
11
12
13
14
15
16
17
18
19
TIME (SECONDS)
MGA Research
05-14-2002 14 59

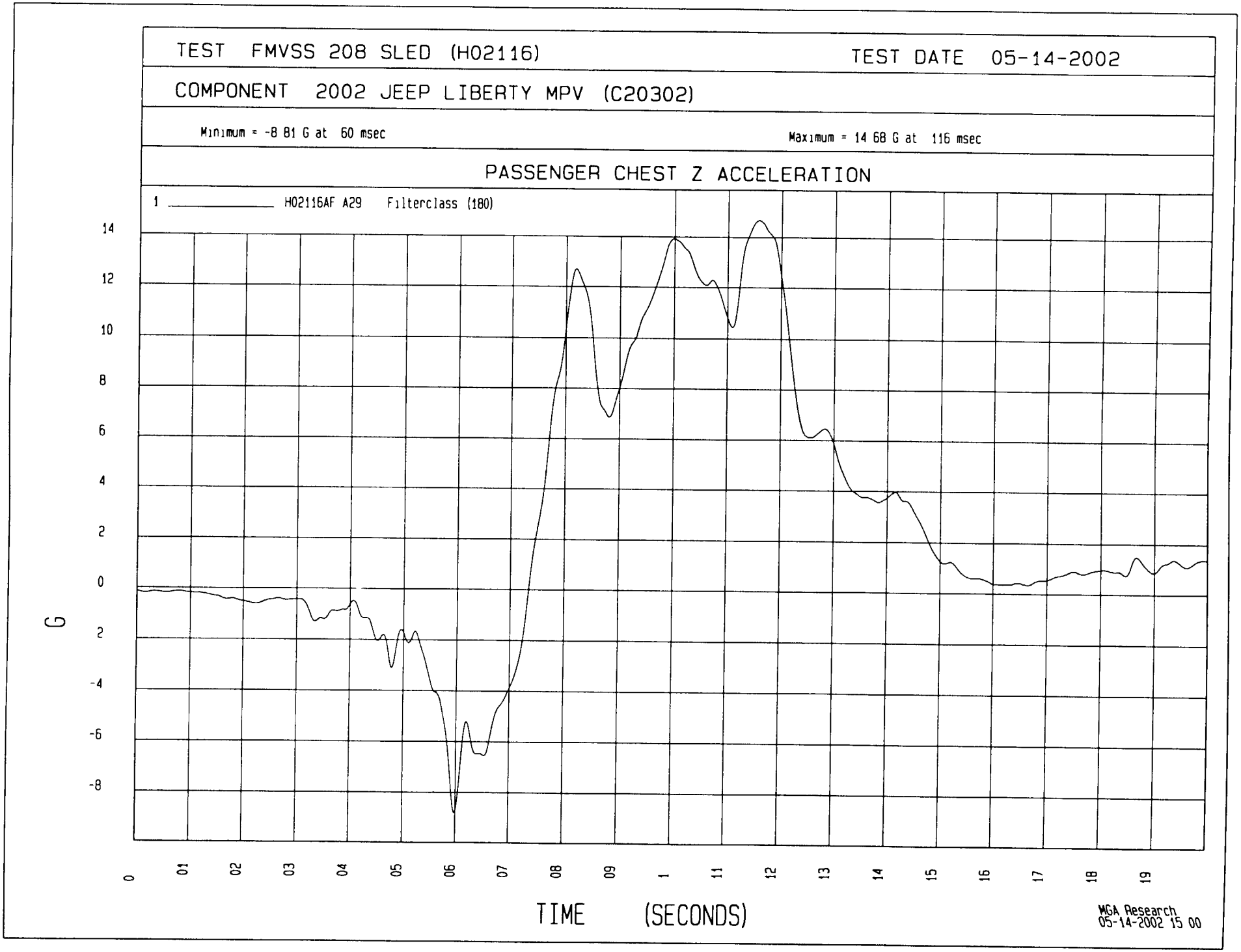

TEST FMVSS 208 SLED (H02116)
TEST DATE 05-14-2002
COMPONENT 2002 JEEP LIBERTY MPV (C20302)
Minimum = -15 21 Nm at 164 msec
Maximum = 35 99 Nm at 91 msec
PASSENGER NECK MOMENT Y
1 H02116MF M36 Filterclass (600)
30
20
10
0
-10
Nm
0
01
02
03
04
05
06
07
08
09
1
11
12
13
14
15
16
17
18
19
TIME (SECONDS)
MGA Research
05-14-2002 14 59

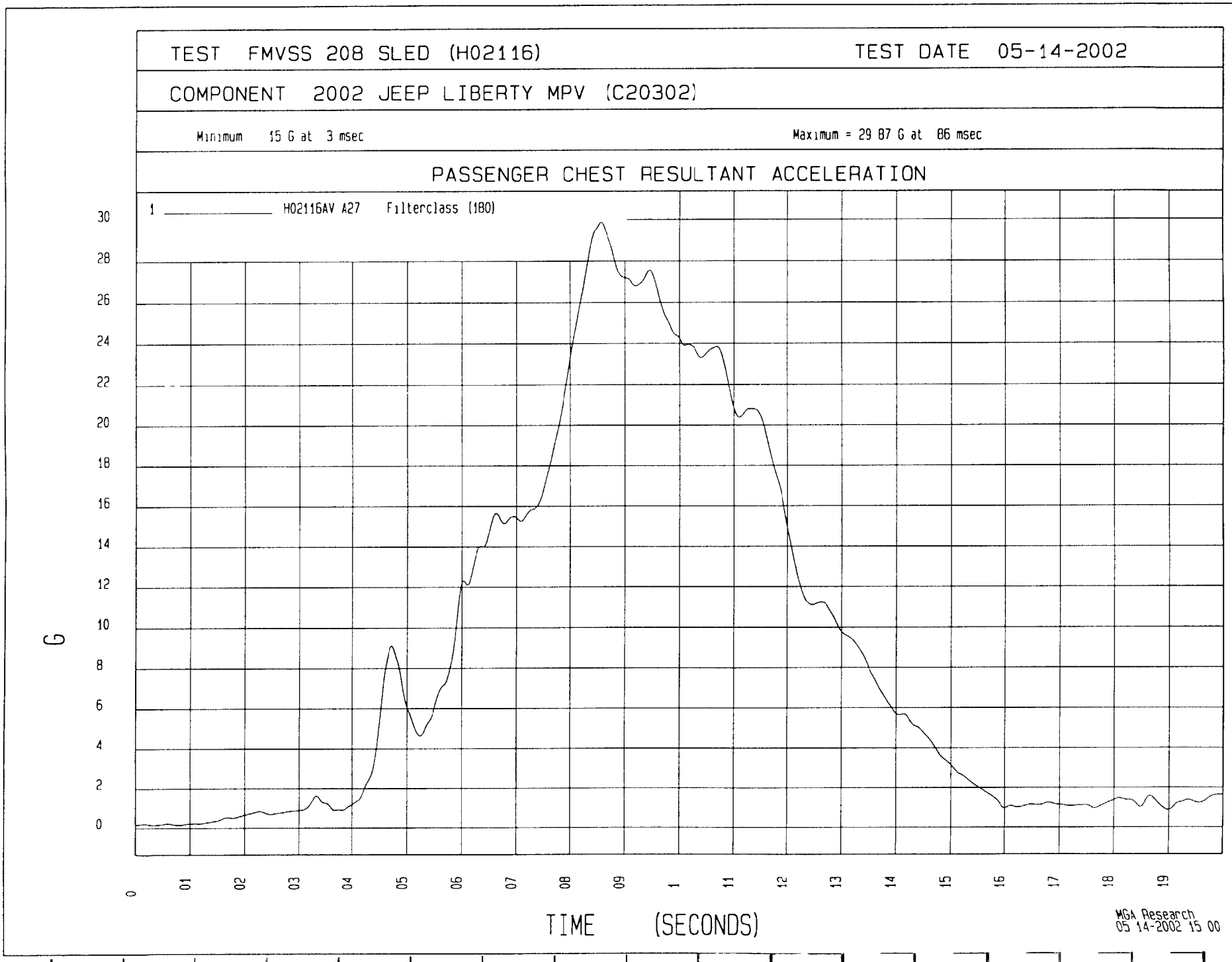

TEST FMVSS 208 SLED (H02116)
TEST DATE 05-14-2002
COMPONENT 2002 JEEP LIBERTY MPV (C20302)
Minimum = -16 01 Nm at 199 msec
Maximum = 51 38 Nm at 112 msec
PASSENGER NECK MOMENT Z
1 H02116MF M37 Filterclass (600)
MGA Research
05-14 2002 15 00
Nm
50
40
30
20
10
0
-10
0
01
02
03
04
05
06
07
08
09
1
11
12
13
14
15
16
17
18
19
TIME (SECONDS)

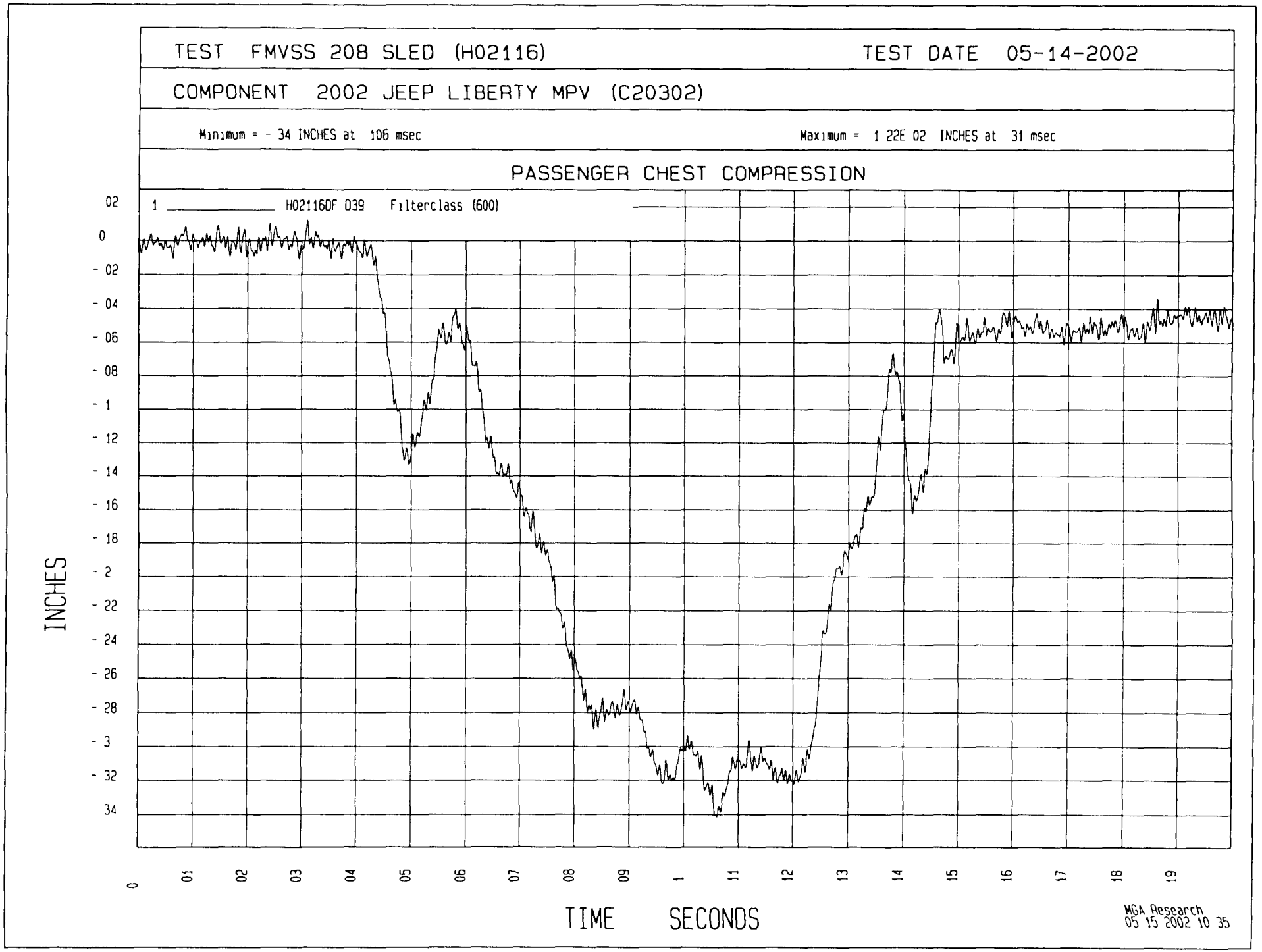

TEST FMVSS 208 SLED (H02116)
TEST DATE 05-14-2002
COMPONENT 2002 JEEP LIBERTY MPV (C20302)
Minimum = 14 09 Nm at 163 msec
Maximum - 22 65 Nm at 82 msec
PASSENGER OCCIPITAL CONDYLE MOMENT Y
1 H02116MO M36 Filterclass (600)
20
10
0
10
Nm
0
01
02
03
04
05
06
07
08
09
1
11
12
13
14
15
16
17
18
19
TIME (SECONDS)
MGA Research
05-14-2002 15 05

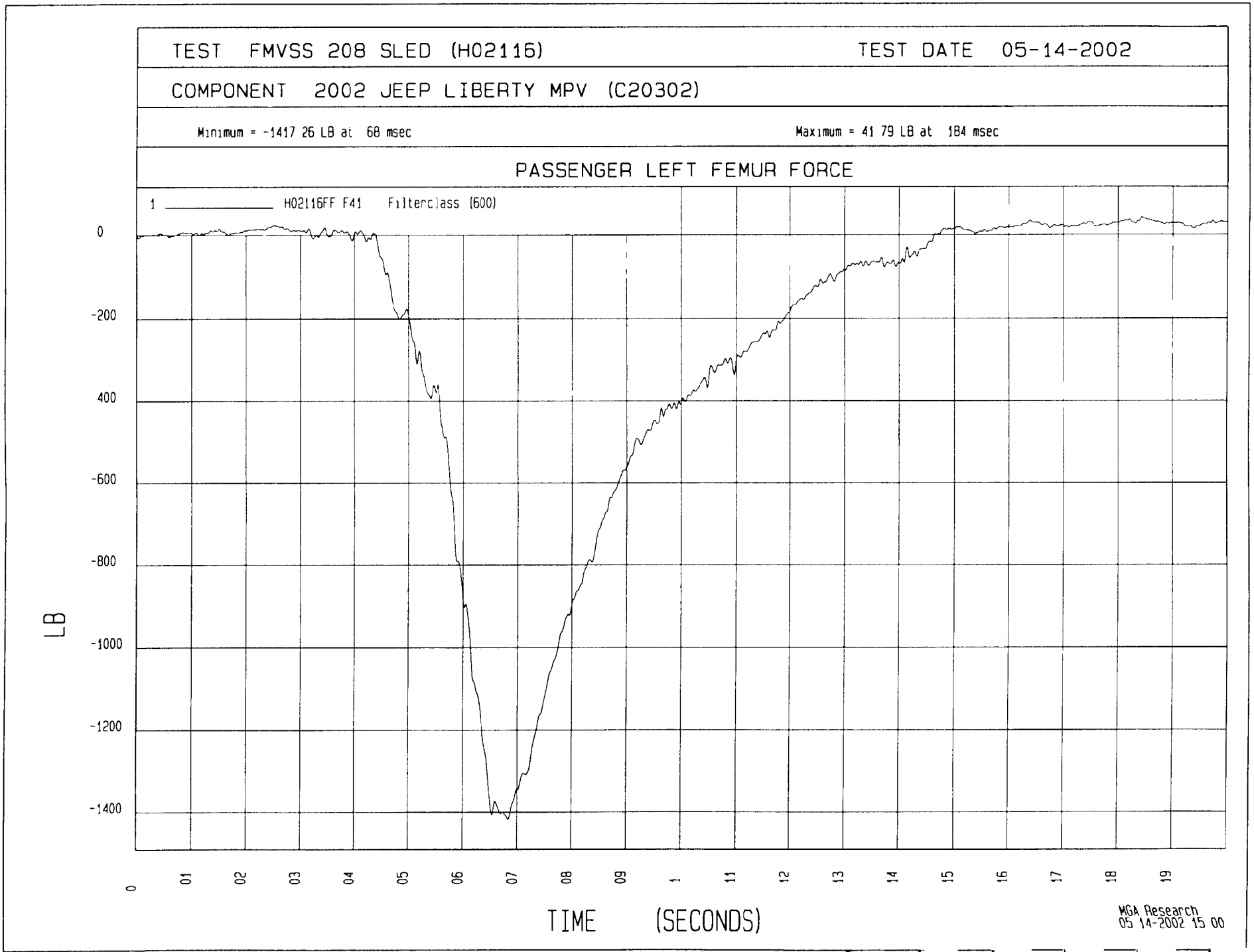

TEST FMVSS 208 SLED (H02116)
TEST DATE 05-14-2002
COMPONENT 2002 JEEP LIBERTY MPV (C20302)
Minimum = -28 67 G at 86 msec
Maximum = 87 G at 199 msec
PASSENGER CHEST X ACCELERATION
1 H02116AF A27 Filterclass (180)
2
0
-2
-4
-6
-8
-10
-12
-14
-16
-18
-20
-22
-24
-26
-28
-30
G
0
01
02
03
04
05
06
07
08
09
1
11
12
13
14
15
16
17
18
19
TIME (SECONDS)
MGA Research
05-14-2002 15 00

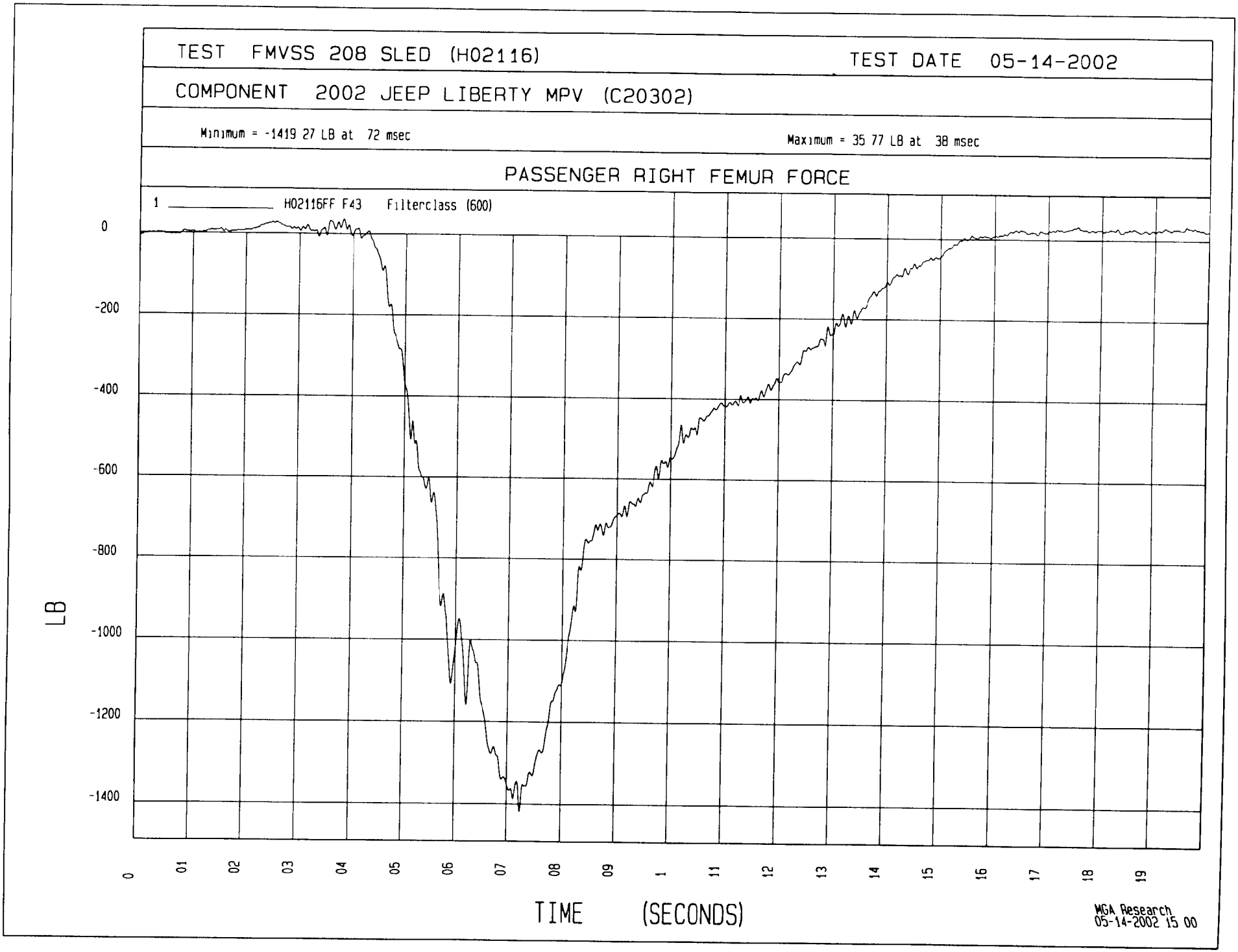

TEST FMVSS 208 SLED (H02116)
TEST DATE 05-14-2002
COMPONENT 2002 JEEP LIBERTY MPV (C20302)
Minimum = -3 63 G at 90 msec
Maximum = 1 89 G at 47 msec
PASSENGER CHEST Y ACCELERATION
1 H02116AF A28 Filterclass (180)
2
1
0
-1
-2
-3
G
0
01
02
03
04
05
06
07
08
09
1
11
12
13
14
15
16
17
18
19
TIME (SECONDS)
MGA Research
05 14 2002 15 00


TEST FMVSS 208 SLED (H02116)
TEST DATE 05-14-2002
COMPONENT 2002 JEEP LIBERTY MPV (C20302)
Minimum = -8 81 G at 60 msec
Maximum = 14 68 G at 116 msec
PASSENGER CHEST Z ACCELERATION
1 H02116AF A29 Filterclass (180)
G
14
12
10
8
6
4
2
0
2
-4
-6
-8
0
01
02
03
04
05
06
07
08
09
1
11
12
13
14
15
16
17
18
19
TIME (SECONDS)
MGA Research
05-14-2002 15 00


TEST FMVSS 208 SLED (H02116)
TEST DATE 05-14-2002
COMPONENT 2002 JEEP LIBERTY MPV (C20302)
Minimum 15 G at 3 msec
Maximum = 29 87 G at 86 msec
PASSENGER CHEST RESULTANT ACCELERATION
1 H02116AV A27 Filterclass (180)
G
30
28
26
24
22
20
18
16
14
12
10
8
6
4
2
0
0
01
02
03
04
05
06
07
08
09
1
11
12
13
14
15
16
17
18
19
TIME (SECONDS)
MGA Research
05 14-2002 15 00


TEST FMVSS 208 SLED (H02116)
TEST DATE 05-14-2002
COMPONENT 2002 JEEP LIBERTY MPV (C20302)
Minimum = - 34 INCHES at 106 msec
Maximum = 1 22E 02 INCHES at 31 msec
PASSENGER CHEST COMPRESSION
1 H02116DF 039 Filterclass (600)
02
0
- 02
- 04
- 06
- 08
- 1
- 12
- 14
- 16
- 18
- 2
- 22
- 24
- 26
- 28
- 3
- 32
34
INCHES
0
01
02
03
04
05
06
07
08
09
1
11
12
13
14
15
16
17
18
19
TIME SECONDS
MGA Research
05 15 2002 10 35


TEST FMVSS 208 SLED (H02116)
TEST DATE 05-14-2002
COMPONENT 2002 JEEP LIBERTY MPV (C20302)
Minimum = -1417 26 LB at 68 msec
Maximum = 41 79 LB at 184 msec
PASSENGER LEFT FEMUR FORCE
1 H02116FF F41 Filterclass (600)
0
-200
400
-600
-800
-1000
-1200
-1400
LB
0
01
02
03
04
05
06
07
08
09
1
11
12
13
14
15
16
17
18
19
TIME (SECONDS)
MGA Research
05 14-2002 15 00


TEST FMVSS 208 SLED (H02116)
TEST DATE 05-14-2002
COMPONENT 2002 JEEP LIBERTY MPV (C20302)
Minimum = -1419 27 LB at 72 msec
Maximum = 35 77 LB at 38 msec
PASSENGER RIGHT FEMUR FORCE
1 H02116FF F43 Filterclass (600)
0
-200
-400
-600
-800
-1000
-1200
-1400
LB
0
01
02
03
04
05
06
07
08
09
1
11
12
13
14
15
16
17
18
19
TIME (SECONDS)
MGA Research
05-14-2002 15 00

APPENDIX C

MANUFACTURER'S VEHICLE INFORMATION

November 6, 2001

Ms. Marilynne Jacobs, Director
Office of Vehicle Safety Compliance
National Highway Traffic Safety Administration
U.S. Department of Transportation
NSA 31, 400 Seventh Street, S. W., Room 6111
Washington, DC 20590

Dear Ms. Jacobs

Reference: **NSA-31CCa/OA-208-010924-B; FMVSS 208**
2002 MY Jeep® Liberty

The following is provided in response to your September 28, 2001 information request.

Q1 **Please inform OVSC to which sections of FMVSS No. 208 the subject vehicle is certified with respect to dynamic tests in which seat belts are fastened and seat belts are unfastened. Provide a copy of the certification test reports for all the applicable impact tests and sled tests with respect to these sections.**

A1 The DaimlerChrysler Corporation 2002 MY Jeep® Liberty is certified to S5.1.1 for the belted requirements and to S13 for the unbelted requirements.

Q2 **Provide the following: (1) describe the difference between the MY 2002 air bag system and the MY 2001 air bag system, (2) explain what other restraint changes have been made, (3) explain what other vehicle changes have been made that might have affected FMVSS No. 208 performance, and (4) describe any features that might affect performance with respect to children and out or position occupants.**

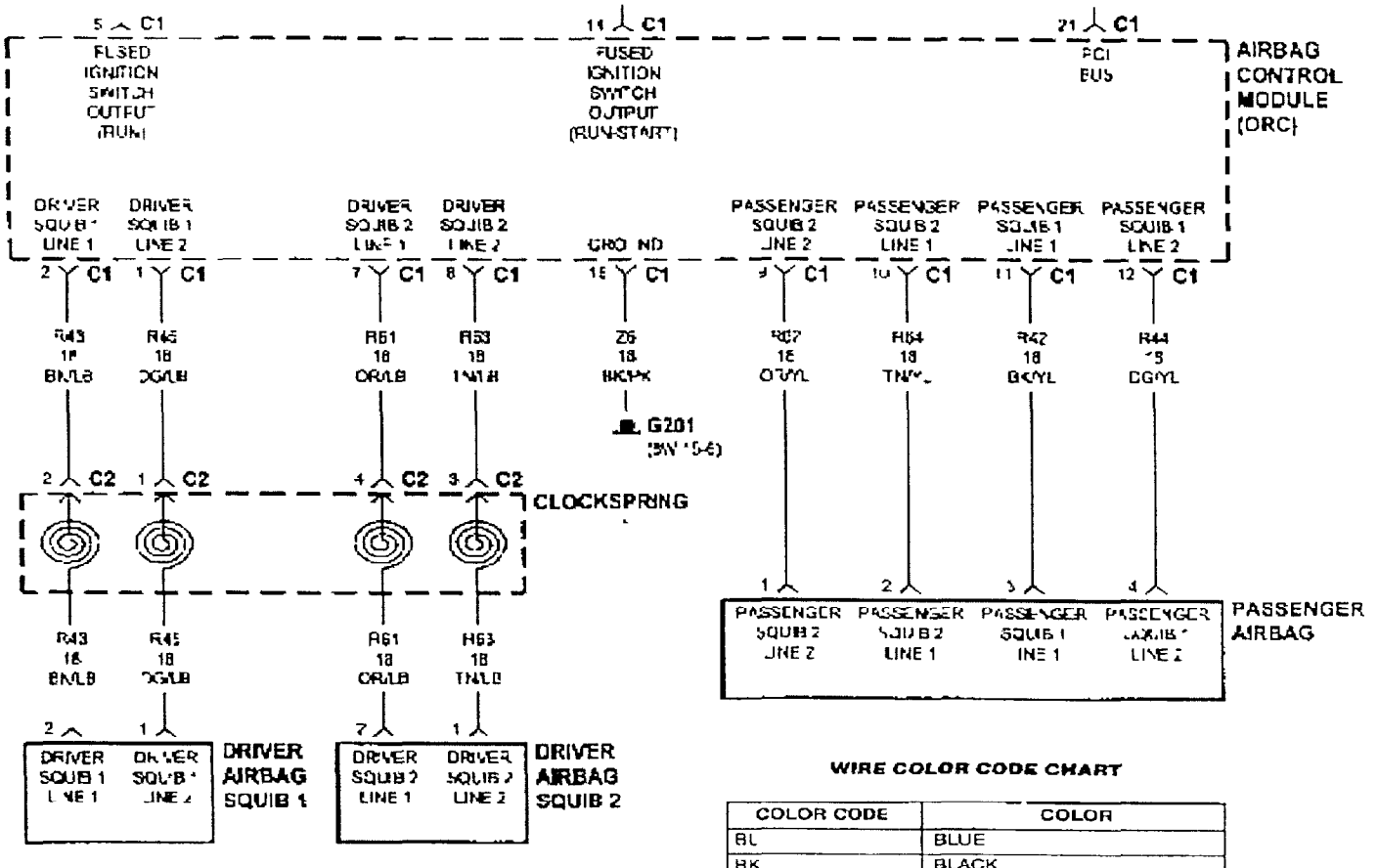
A2 The Jeep® Liberty is new for the 2002 MY. Both driver and passenger air bags have dual inflators and can therefore, inflate with different levels depending on crash severity.

Q3 **If the vehicle was certified with unrestrained dummies to meet the requirements of S13, describe how to disconnect the air bags from the vehicle sensors and connect them to the triggering mechanism used in the sled test.**

Describe the method used in certification to determine when to trigger the air bag and the system used to trigger the air bag.

For air bags with dual stage or multistage inflators describe when the stages are triggered and provide data to show that this is similar to what would occur in a crash of similar severity. See the enclosed interpretation.

A3 As indicated in our answer to question 1, the Jeep® Liberty is certified to the unbelted requirements of S13. During the sled test, the air bags were deployed 20 ms after attaining a sled pulse of 0.5 g. This is accomplished by "hard wiring" a timer box into the air bag squib circuits. All squibs are energized at the same time. A wiring schematic is provided below:



WIRE COLOR CODE CHART

COLOR CODE	COLOR
BL	BLUE
BK	BLACK
BR	BROWN
DB	DARK BLUE
DG	DARK GREEN
GY	GRAY
LB	LIGHT BLUE
LG	LIGHT GREEN
OR	ORANGE
PK	PINK
RD	RED
TN	TAN
VT	VIOLET
WT	WHITE
YL	YELLOW
*	WITH TRACER

Q4 State for any safety belt system in this vehicle whether or not it is equipped with a tension-relieving device. Provide a copy of the information furnished in accordance with S7.4.2 if the tension-relieving device is used.

A4 The Jeep® Liberty is not equipped with a tension relieving device in the seat belt.

Q5 FMVSS No. 208, S8.1.5, allows the manufacturer the option of having movable vehicle windows and vents placed in the closed position. State whether the vehicle's movable windows and vents were opened or closed for the certification tests.

A5 During the sled and flat front barrier tests, the windows were in the open position. During the angled barrier tests, the windows were in the closed position. For the NHTSA verification test, we recommend all windows to be in the closed position.

Q6 Submit dummy placement measurements, including diagrams or photographs which show exactly where each measurement was taken. Enclosed is a diagram of some of OVSC's dummy measurements. Where possible, use each dimension shown in the diagram to provide the individual dummy placement measurements.

A6 Please see attachment 1, for dummy setup information.

Q7 State whether the vehicle has a foot rest for the driver.

A7 The 2002 Jeep® Liberty is equipped with a foot rest for the driver.

Q8 Provide the seat positioning, steering column positioning, and fuel tank data on the enclosed form. If more than one front seating, steering column of fuel tank configuration are available on this vehicle, provide separate information for each. In addition, provide the seating reference point for each seat for the lockable seat belt requirement in S7.1.1.5

A8 See attachment 2, which show seat positioning, steering column position, fuel tank data and seating reference point information. To meet the lockable seat belt requirements of S7.1.1 5, all second row seating positions in the Jeep® Liberty have cinching latch plates while the right front position uses an ELR/ALR switchable retractor.

Q9 If the vehicle is equipped with adjustable seat belt anchorages, provide the manufacturer's nominal design position for a 50th percentile adult male occupant.

A9 There are five detents for the adjustable seat belt anchorage. The mid-position is used during the test.

Q10 For all certification barrier tests, provide the speed at impact, vehicle test weight, and resulting injury criteria (ie:, HIC, chest acceleration, chest compression, femur loads, and where applicable neck moments and forces). For all certification sled tests, provide the resulting injury criteria (ie:, HIC, chest acceleration, chest compression, femur loads, and neck moments and forces).

A10 See attachment 3, Jeep® Liberty MVSS 208 Compliance Test Summary. There was a change to the passenger air bag vent diameter effective on April 10, 2001. Passenger certification data is provided for configurations built before and after that date.

Q11 When vehicle components must be removed to obtain the proper test weight for the barrier test, what components do you recommend for removal and in what priority order do you recommend removal?

A11 The rear seat should be removed first followed by the spare tire and rear bumper if needed

Q12 If the vehicle uses a pressure vessel to inflate the air bag, provide a copy of the test reports or engineering analysis to demonstrate that it meets all the requirements of S9.1.

A12 A pressure vessel used to inflate the passenger air bag conforms to the requirements of S9.1. Please see attachment 4 for appropriate documentation.

Q13 If the vehicle uses an explosive device to inflate the air bag, provide a copy of the test report or engineering analysis to demonstrate that it meets all the requirements of S9.2.

A13 An explosive device used to inflate the driver air bag conforms to the requirements of S9.2 Please see attachment 4 for appropriate documentation.

If you have any questions regarding the information provided, please contact Mr. M A. Heitkamp of my staff at 248-512-6439.

Sincerely,

Matthew C. Reynolds, Director
Vehicle Compliance and Safety Affairs

Attachments

Attachment 1:

2002 Jeep® Liberty MVSS 208 Dummy Measurement Summary

2002 KJ MVSS 208 Dummy Measurement Summary

Driver Dummy Measurements (In Inches)						
Test Number	**Test Mode**	**NR**	**NH**	**CH**	**KL**	**KR**
VC09043	Frontal	17 3	18 5	12 3	3 6	3 8
IS20478	Sled	17 7	18 8	12 5	2.1	3 3
IS20479	Sled	18 8	19 4	13 0	3 6	3 9
VC09108	Frontal	16 1	17 2	11 5	3 3	3 5
VC09096	Frontal	16 5	17 6	12 3	3 6	4 0
VC09027	R Angular	17 0	18 6	12 4	3 9	3 7
VC09085	L Angular	17 4	18 9	13 1	4 3	4 8
IS20565	Sled	18 4	18 4	11 6	2 5	2 5
IS20566	Sled	18 9	19 5	13 0	3 6	4 2
Average		**17 6**	**18.6**	**12 4**	**3.4**	**3.7**

NR = Tip of nose to top rear surface of steering wheel rim
NH = Tip of nose to center of steering wheel hub
CH = Chest 9 inches down from chin to center of steering wheel hub
KL = Left knee clearance from surface of knee to surface of bolster
KR = Right knee clearance from surface of knee to surface of bolster

Passenger Dummy Measurements (In Inches)						
Test Number	**Test Mode**	**A**	**B**	**C**	**KL**	**KR**
VC09043	Frontal	21 8	27 6	20 7	3 8	3 3
IS20478	Sled	21 9	26 6	21 8	3 8	3 7
IS20479	Sled	22 7	26 2	22 0	4 1	3 8
VC09108	Frontal	21 1	25 7	21 3	4 0	3 9
VC09096	Frontal	22 1	24 7	20 2	3 6	3 2
VC09027	R Angular	22 6	25 9	20 6	4 1	3 8
VC09085	L Angular	21 9	25 9	20 3	3 2	3 0
IS20565	Sled	24 0	27 0	20 2	3 2	3 0
IS20566	Sled	21 2	27 0	21 1	4 1	3 4
Average		**22 1**	**26 3**	**20 9**	**3.8**	**3.5**

A = Bridge of nose horizontal to contact with windshield
B = Center of head CG target horizontal to contact with windshield
C = Chest 9 inches down from chin to closest point on instrument panel
KL = Left knee clearance from surface of knee to surface of bolster
KR = Right knee clearance from surface of knee to surface of bolster

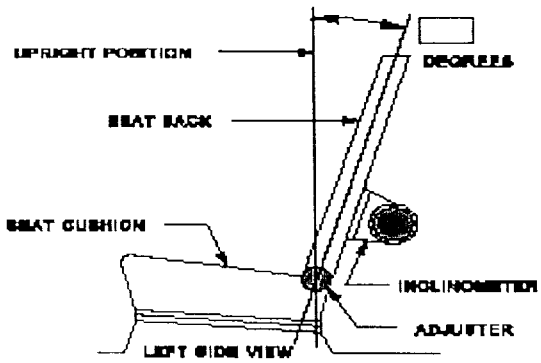
Attachment 2:

2002 Jeep® Liberty MVSS 208 Test Set up Information

TEST VEHICLE INFORMATION

Vehicle Model Year & Make 2002 Jeep
Vehicle Model & Body Style Liberty - 74

1 NOMINAL DESIGN RIDING POSITION - -
For adjustable driver and passenger seat backs describe how to position the inclinometer to measure the seat back angle Include description of the location of the adjustment latch detent if applicable Indicate, if applicable, how the detents are numbered (is the first detent "0" or "1"?) Indicate if the seat back angle is measured with the dummy in the seat



Seat back angle for driver's seat = 23 5 °
Measurement Instructions
Ensure vehicle is level Cut rear seat cover to expose outboard seat frame Place inclinometer on exposed frame Position seat to 23 5 degrees

Seat back angle for passenger's seat = 23 5 °
Measurement Instructions
Ensure vehicle is level Cut rear seat cover to expose outboard seat frame Place inclinometer on exposed frame Position seat to 23 5 degrees

2 SEAT FORE & AFT POSITIONS - -
Provide instructions for positioning the driver and front outboard passenger seat(s) in the center of fore and aft travel For example, indicate how the detents are numbered (Is the first detent 0" or "1"?) Provide information to locate the detent in which the seat track is to be locked

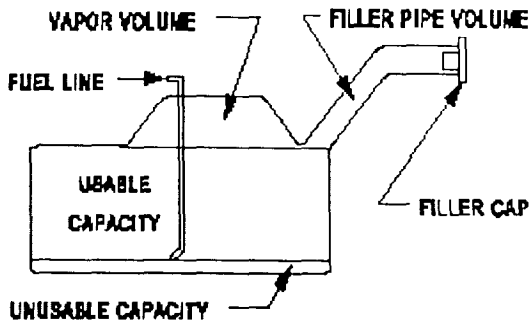
Positioning of the driver's seat
Mid position
Positioning of the passenger's seat (if applicable)
Mid position

TEST VEHICLE INFORMATION

3 FUEL TANK CAPACITY DATA

3 1 A "Usable Capacity" of standard equipment fuel tank = 18 5 gallons
B "Usable Capacity" of optional equipment fuel tank = 18 5 gallons
C "Usable Capacity" of vehicles(s) used for certification testing to requirements of FMVSS 301 = 18 5 gallons

Operational Instructions



VEHICLE FUEL TANK ASSEMBLY

3 2 Amount of Stoddard solvent added to vehicle(s) used for certification test(s) = 17 3 gallons

3 3 Is vehicle equipped with electric fuel pump? ☒ YES ☐ NO

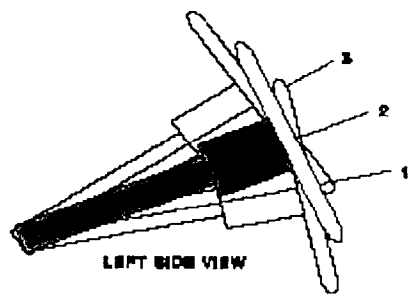
If YES, does pump normally operate when vehicle's electrical system is activated?
☒ YES ☐ NO

4 ADJUSTABLE UPPER ANCHORAGE POSITION
Mid position

5 STEERING COLUMN ADJUSTMENTS

Steering wheel and column adjustments are made so that the steering wheel hub is at the geometric center of the locus it describes when it is moved through its full range of driving positions

If the tested vehicle has any of these adjustments, does your company use any specific procedures to determine the geometric center?

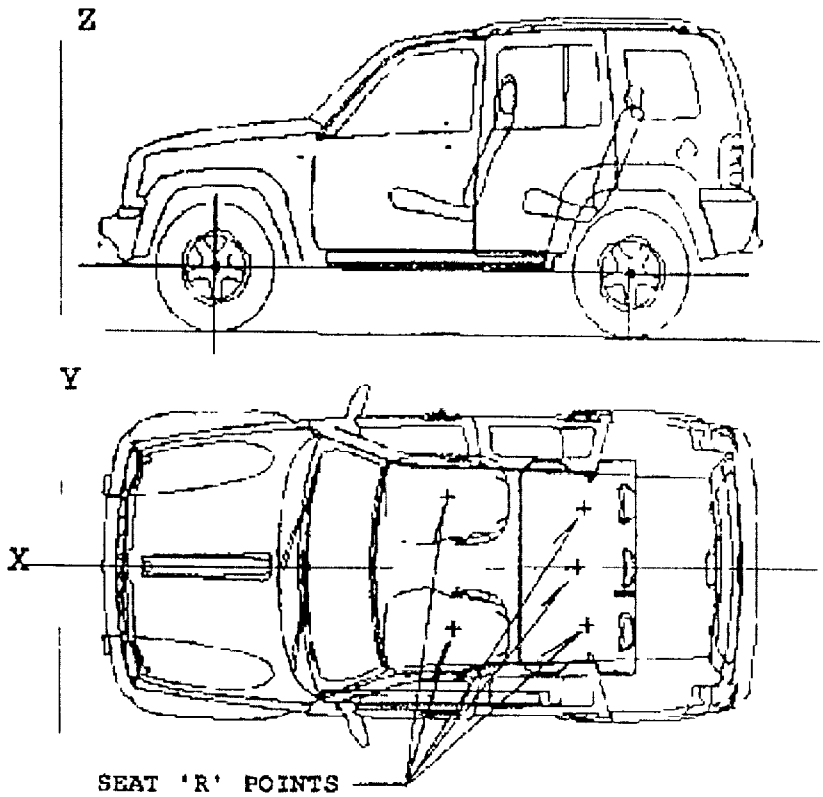


STEERING COLUMN ASSEMBLY

Operational Instructions
Measure angle at full up and full down column positions Place column at angle in the middle of above measurements

TEST VEHICLE INFORMATION

6 SEATING REFERENCE POINT (SRP)

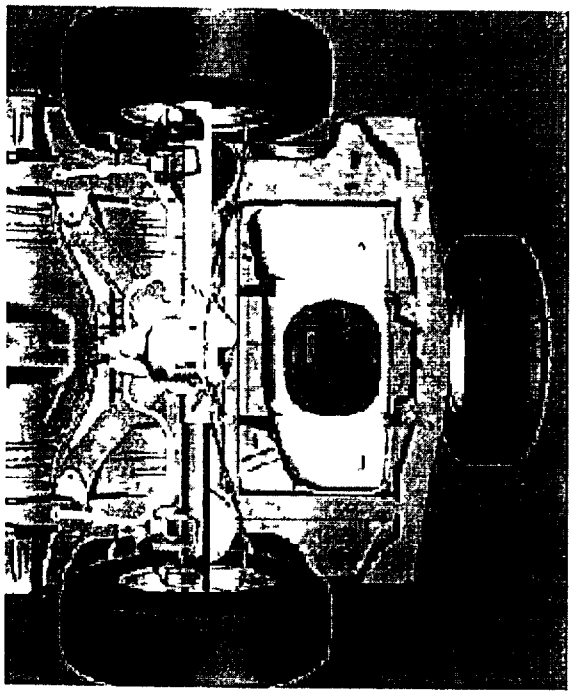


COORDINATES	FRONT SEATS	PRIMARY REFERENCE FORWARD LOCATION	FIDUCIAL MARKS (MM) REARWARD LOCATION
X	3120	2328 72	4750 0
Y	+/ 390	403 47	486 5
Z	1431	952 22	1232 0
SEAT BACK FRAME ANGLE	23 5	N/A	N/A

See graphics for additional information on these Primary Reference Points (Fiducial Marks)

TEST VEHICLE INFORMATION

7 FUEL TANK LOCATION



FORM 14

SEAT REFERENCE POINT (SRP) AND TORSO ANGLE DATA
FOR FMVSS 225
(All dimensions in mm[1])

Model Year: 2002 Make DC Model JEEP Body Style: 4 DR
Seat Style Front Row: Bucket Second Row: Folding Third Row: N/A

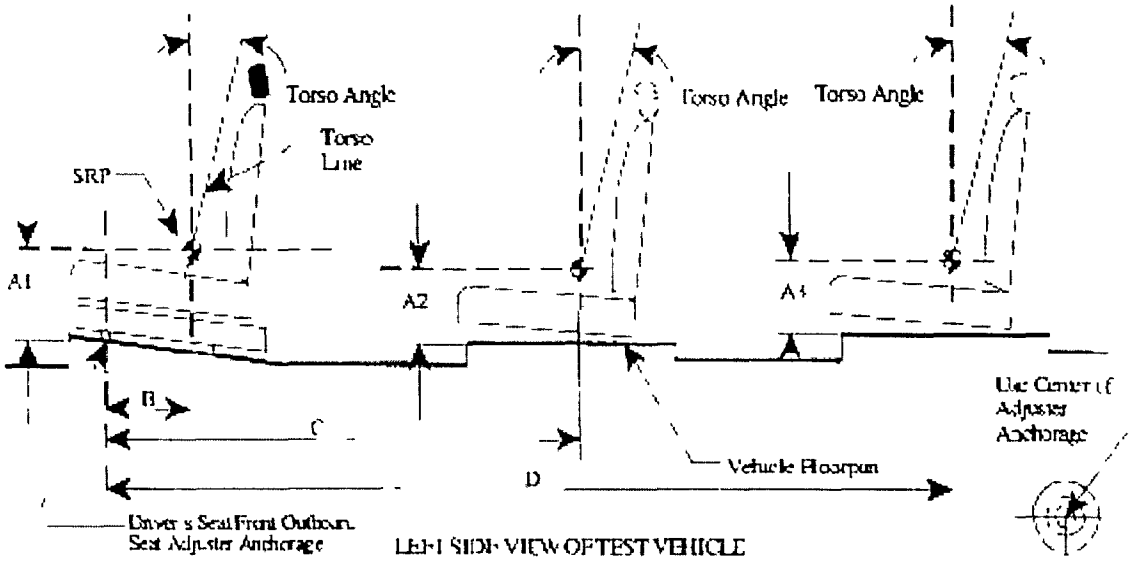


Table 1. Seating Positions[1] and Torso Angles

		Left (Driver Side)	Center (if any)	Right
A1		(Driver) 323.0	N/A	323.0
A2		255.0	280.2	255.0
A3		N/A	N/A	N/A
B		328.1	N/A	328.1
C		769.0	769.0	769.0
D		N/A	N/A	N/A
Torso Angle (degree)	Front Row	23.5 Deg	N/A	23.5 Deg
	Second Row	23.5 Deg.	23.5 Deg	23.5 Deg.
	Third Row	N/A	N/A	N/A

Note. 1 All dimensions are in mm. If not, provide the unit used

FORM 14

SEATING REFERENCE POINT
FOR FMVSS 225
(All dimensions in mm)

Model Year: 2002 Make: DC Model JEEP Body Style 4 DR
Seat Style: Front Row: Bucket Second Row: Folding Third Row: N/A