

V3022

REPORT NUMBER: CAL-99-5

**NEW CAR ASSESSMENT PROGRAM (NCAP)
FRONTAL BARRIER IMPACT TEST**

**CHRYSLER CORPORATION
1999 JEEP CHEROKEE
4 -DOOR SE 4WD**

NHTSA NUMBER: MX0309

CALSPAN TEST NUMBER: 8413-29

CALSPAN CORPORATION
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January 7, 1999

FINAL REPORT

PREPARED FOR:

U. S. DEPARTMENT OF TRANSPORTATION
National Highway Traffic Safety Administration
Safety Performance Standards
Office of Crashworthiness Standards
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16. <i>Abstract</i> A frontal load cell barrier test of a 1999 Jeep Cherokee 4 -Door SE 4WD was performed at Calspan Corporation crash test facility in Buffalo, New York, on January 7, 1999. The impact velocity was 56.5 kph and the temperature at the barrier face was 20°C. The maximum post-test vehicle crush was 531 mm. The test vehicle was equipped with 3-point belt systems and airbags on both driver and passenger front outboard locations With respect to FMVSS 208 "Occupant Crash Protection - Injury Criteria" both the driver and passenger appear to comply with head and femur requirements. However, both the driver and passenger appear to exceed the chest requirements.			
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Section 1

PURPOSE AND SUMMARY OF TEST MX0309

PURPOSE

This 56.5 kph frontal barrier impact test is part of the Vehicle Barrier Impact Testing Program sponsored by the National Highway Traffic Safety Administration (NHTSA) under Contract No. DTNH22-96-D-02010. The purpose of this test was to obtain vehicle crashworthiness and occupant restraint system performance data for an impact speed in excess of the current 48.3 kph requirements.

The 56.5 kph frontal barrier impact test was conducted in accordance with the Office of Crashworthiness Standards Laboratory Indicant Test procedure.

SUMMARY

A load cell barrier consisting of 36 load cells was impacted by a 1999 Jeep Cherokee 4 -Door SE 4WD at a velocity of 56.5 kph. The test was performed at the Calspan Corporation on January 7, 1999. Pre- and post-test photographs of the vehicle and dummies can be found in Appendix A.

The frontal barrier impact event was documented by 1 real-time camera and 16 high-speed cameras. Camera locations and other pertinent camera information can be found in this report.

Two Part 572E, 50th percentile male anthropomorphic test devices (ATDs), were placed in the driver and right-front passenger seating positions according to dummy placement instructions specified in the Laboratory Indicant Test Procedure.

Both ATDs were fully instrumented with head, chest, and pelvis triaxial accelerometers, chest displacement potentiometers, upper neck transducers, right/left femur load cells, and lower leg instrumentation. Seat belt load cells were also on the driver's and passenger's lap and shoulder belts to measure dummy torso and pelvic section loading. The driver (position 1) ATD (Serial No. 061) and the right-front passenger (position 2) ATD (Serial No. 064) were both used in prior tests where they did not exceed FMVSS 208 injury criteria. Certification details, along with instrumentation calibration data, are found in Appendix C.

The 133 channels of data were recorded on an on-board data acquisition system. Appendix B contains the vehicle, load cell barrier and dummy response data traces. The passenger right lower tibia Fz channel contains questionable data after 0.05 msec. The passenger right toe Z, vehicle left rear crossmember and engine bottom accelerometers contain questionable

load cell barrier and dummy response data traces. The passenger right lower tibia Fz channel contains questionable data after 0.05 msec. The passenger right toe Z, vehicle left rear crossmember and engine bottom accelerometers contain questionable data. The instrument panel accelerometer did not record data.

The driver's HIC was 824.0. The maximum chest deceleration over 3 milliseconds was 61.2 g's and maximum chest deflection was 38.1 mm. Femur loads were 4954.7 Newtons on the left and 9648.2 Newtons on the right.

The right front passenger's HIC was 475.4. The maximum chest deceleration over 3 milliseconds was 65.2 g's. Femur loads were 8160.5 Newtons on the left and 5543.7 Newtons on the right. The data recorded for the chest deflection is questionable.

SECTION 2

GENERAL TEST AND VEHICLE PARAMETER DATA

DATA SHEET NO. 1 CRASH TEST SUMMARY

Vehicle NHTSA No. : MX0309 Test Mode : 56.3 kph Frontal Barrier

Test Date : January 7, 1999 Time: 15:15 Temperature : 20 °C

Vehicle Make/Model/Body Style : 1999 Jeep Cherokee 4 -Door SE 4WD

Vehicle Test Weight : 1850 kg

Vehicle/Barrier Impact Angle : 0 °

Impact Velocity : 56.5 kph

Maximum Static Crush : 503.8 mm

Vehicle Rebound : 591.0 mm

DUMMIES:

DRIVER

PASSENGER

Type : 572E

572E

Restraint System : 3-point belt system with airbag

3-point belt system with airbag

Number of Data Channels : 133

Number of Cameras : 1 Real Time

16 High Speed

DOOR OPENING DATA : Closed/Inoperable - Left Front

Closed/Inoperable - Right Front

Front Seat(s) Data :

DRIVER

PASSENGER

Seat Track Failure :(mm of shift) 0

0

Seat Back Failure : None

None

VISIBLE DUMMY CONTACT POINTS :

DRIVER

PASSENGER

Head : Airbag/ Back of head into headrest

Airbag/ Back of head into headrest

Abdomen : -

-

Chest Airbag/ Steering wheel into ribs

Airbag

Knees Knee Bolster

Knee Bolster

DATA SHEET NO. 2 GENERAL TEST AND VEHICLE PARAMETER DATA

TEST VEHICLE INFORMATION :

Year/Make/Model/Body Style : 1999 Jeep Cherokee 4 -Door SE 4WD
NHTSA No. : MX0309 ; VIN: 1J4FF28S1XL532287 ; Color : Red
Engine Data: 6 cylinders; - CID; 4.0 Liters; - cc
Placement : x Longitudinal or In-Line; - Transverse or Lateral
Transmission Data : 5 speeds; x Manual; - Automatic; - Overdrive
Final Drive : - Rear Wheel Drive; - Front Wheel Drive; x Four Wheel Drive
Major Options : x A/C; x Pwr.Strg.; x Pwr. Brakes
- Pwr. Windows; - Pwr. Door Locks; - Tilt Wheel
Date Received : 12/23/98 ; Odometer Reading 150 km
Selling Dealer : Friendly C-P-D-J-E Inc.
& Address: 2499 Roue 14a PennYan, N.Y. 14527

DATA FROM TIRE VEHICLE'S CERTIFICATION LABEL:

Vehicle Manufactured by : Chrysler Corporation
Date of Manufacture 9/98
GVWR : 2223 kg; GAWR: 1134 kg FRONT; 1225 kg REAR

DATA FROM TIRE PLACARD:

Tire Pressure with Maximum Capacity Vehicle Load : 227 kpa FRONT
227 kpa REAR
Recommended Tire Size : P215/75R15
* Recommended Cold Tire Pressure : 227 kpa FRONT; 227 kpa REAR
Size of Tires on Test Vehicle: P215/75R15 ; Manufacturer: Goodyear
Vehicle Capacity Data :
Type of Front Seats: - Bench; x Bucket; - Split Bench
Number of Occupants: 2 Front; 3 Rear; 5 Total
Vehicle Capacity Weight (VCW) = 665 kg
No. of Occupants x 68 kg = 340 kg
Rated Cargo/Luggage Weight (RCLW) = 325 kg 136 kg maximum

*Tire pressure used for test

DATA SHEET NO. 2 GENERAL TEST AND VEHICLE PARAMETER DATA (cont.)

WEIGHT OF TEST VEHICLE AS RECEIVED FROM DEALER (with maximum fluids)= UDW:

Right Front	=	<u>420.5</u>	kg	Right Rear	=	<u>351</u>	kg
Left Front	=	<u>446</u>	kg	Left Rear	=	<u>350.5</u>	kg
TOTAL FRONT	=	<u>866.5</u>	kg	TOTAL REAR	=	<u>701.5</u>	kg
TOTAL DELIVERED WEIGHT =		<u>1,568.0</u>	kg				
% of Total Front of Vehicle Weight =		<u>55.3</u>	%	% of Total Rear Weight =		<u>44.7</u>	%

CALCULATION OF VEHICLE'S TARGET TEST WEIGHT:

Total Delivered Weight (UDW)	=	<u>1,568.0</u>	kg	
Rated Cargo/Luggage Weight (RCLW)	=	<u>136.0</u>	kg	136 kg maximum
Weight of 2 p.572 Dummies @ 76 each	=	<u>152</u>	kg	
TARGET TEST WEIGHT	=	<u>1,856.0</u>	kg	

WEIGHT OF TEST VEHICLE WITH TWO DUMMIES AND 130 KG OF CARGO WEIGHT:

Right Front	=	<u>460.5</u>	kg	Right Rear	=	<u>459.0</u>	kg
Left Front	=	<u>469.0</u>	kg	Left Rear	=	<u>461.5</u>	kg
TOTAL FRONT	=	<u>929.5</u>	kg	TOTAL REAR	=	<u>920.5</u>	kg
TOTAL TEST WEIGHT =		<u>1,850.0</u>	kg				
% of Total Front Weight =		<u>50.2</u>	%	% of Total Rear Weight =		<u>49.8</u>	%
Weight of Ballast Secured in Vehicle Trunk Area =		<u>57</u>	kg				
Vehicle Components Removed for Weight Reduction:		<u>None</u>					

VEHICLE ATTITUDE (all dimension in millimeters):

AS DELIVERED :	RF	<u>807</u>	LF	<u>801</u>	RR	<u>794</u>	LR	<u>789</u>
FULLY LOADED :	RF	<u>790</u>	LF	<u>787</u>	RR	<u>737</u>	LR	<u>736</u>
AS TESTED :	RF	<u>792</u>	LF	<u>793</u>	RR	<u>746</u>	LR	<u>744</u>
Vehicle's Wheel Base :		<u>2579</u> mm						
Location of Vehicle's C.G. :		<u>1,283.2</u> mm rearward of front wheel center.						

FUEL SYSTEM DATA :

Fuel System Capacity From Owner's Manual	=	<u>75.7</u>	liters
Usable Capacity Figure Furnished by COTR	=	<u>75.7</u>	liters
Test Volume Range (92 to 94% of Usable Capacity)	=	<u>69.7</u>	to <u>71.2</u> liters
ACTUAL TEST VOLUME=	<u>70.0</u>	liters	(with entire fuel system filled)
Test Fluid Type:	<u>Stoddard Solution</u> ;	Spec. Grav. =	<u>0.764</u>
Kinematic Viscosity =	<u>0.96</u>	centistokes;	Color = <u>Orange</u>
Type of Fuel Pump:	Electric- <u>x</u> ;	Mechanical-	<u>-</u>
Does Electric Pump operate with ignition switch "ON" & engine "OFF"		Yes- <u>x</u>	No- <u>-</u>
Details of Fuel System <u>Fuel filler located on left side aft of axle, fuel tank centered aft of axle and fuel lines run along left frame rail.</u>			

DATA SHEET NO. 3 POST IMPACT DATA

TYPE OF TEST:

Type of Test : Frontal Barrier Impact Angle : 0°
Test Date : January 7, 1999 Time: 15:15 Temperature: 20 °C
Vehicle NHTSA No. : MX0309
Required Impact Velocity Range : 55.5 to 57.1 kph

BARRIER IMPACT VELOCITY : (Speed traps within 5 feet of impact plane.)

Trap No. 1 = 56.5 kph; Trap No. 2 = 56.5 kph
Distance from vehicle to barrier : (1) entering trap = 813 mm
(2) exiting trap = 305 mm

VEHICLE STATIC CRUSH: (mm) (For frontal and rear impacts only.)

Vehicle Length:

Pre-Test	Right =	<u>4266.7</u>	; C/L =	<u>4266.8</u>	; Left =	<u>4255.3</u>
Post-Test	Right =	<u>3763</u>	; C/L =	<u>3763</u>	; Left =	<u>3772</u>
Crush	Right =	<u>503.7</u>	; C/L =	<u>503.8</u>	; Left =	<u>483.3</u>
AVERAGE	=	<u>496.9</u>	mm			

VEHICLE REBOUND: (From rigid barrier only.)

Distance from front of test vehicle to impact point :

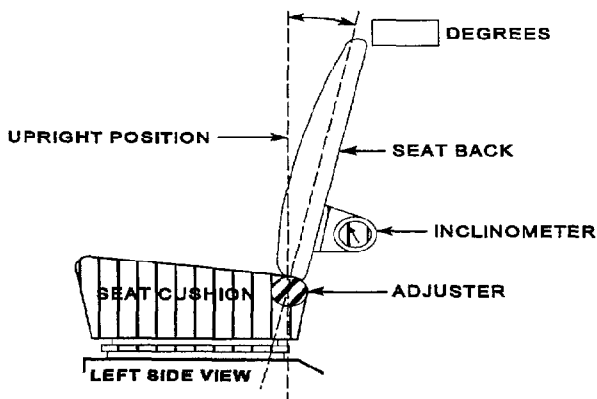
	Right =	<u>579</u>	; C/L =	<u>605</u>	; Left =	<u>589</u>
AVERAGE	=	<u>591.0</u>	mm			

DATA SHEET NO. 4 TEST VEHICLE INFORMATION

VEHICLE IDENTIFICATION:

Model Year : 1999 Vehicle Model: Jeep Cherokee Body Style : 4 -Door SE 4WD

1. Nominal Design Riding Position for adjustable driver and passenger seat backs. Please describe how to position the inclinometer to measure the seat back angle. Include description of the location of the adjustment latch detent, if applicable.



FRONT SEAT ASSEMBLY

Seat back angle for driver's seat : 7

Measurement instructions : 7 deg back from fully erect position - witness hole aligned with sighting hole

Seat back angle for passenger's seat : 7

Measurement instructions : 7 deg back from fully erect position - witness hole aligned with sighting hole

2. Seat Fore and Aft Positioning

Positioning of the driver's seat : Mechanical middle - 20 detents - placed in 11th notch

Positioning of the passenger's seat (if applicable) : Mechanical middle - 20 detents - placed in 11th notch

3. Fuel Tank Capacity Data

3.1

A. "Usable Capacity" of the standard equipment fuel tank is 75.7 liters

B. "Usable Capacity" of the optional equipment fuel tank is - liters

C. "Usable Capacity" of the vehicle(s) used for certification testing to requirements of FMVSS 301 = 75.7 liters

3.2 Amount of Stoddard solvent added to vehicle(s) used for certification test(s) = 70.0 liters

3.3 Is vehicle equipped with electric fuel pump? Yes- x ; No- -

If YES, explain the vehicle operating conditions under which the fuel pump will pump fuel.

With electrical system activated

DATA SHEET NO. 4 TEST VEHICLE INFORMATION (cont.)

4. STEERING COLUMN ADJUSTMENTS :

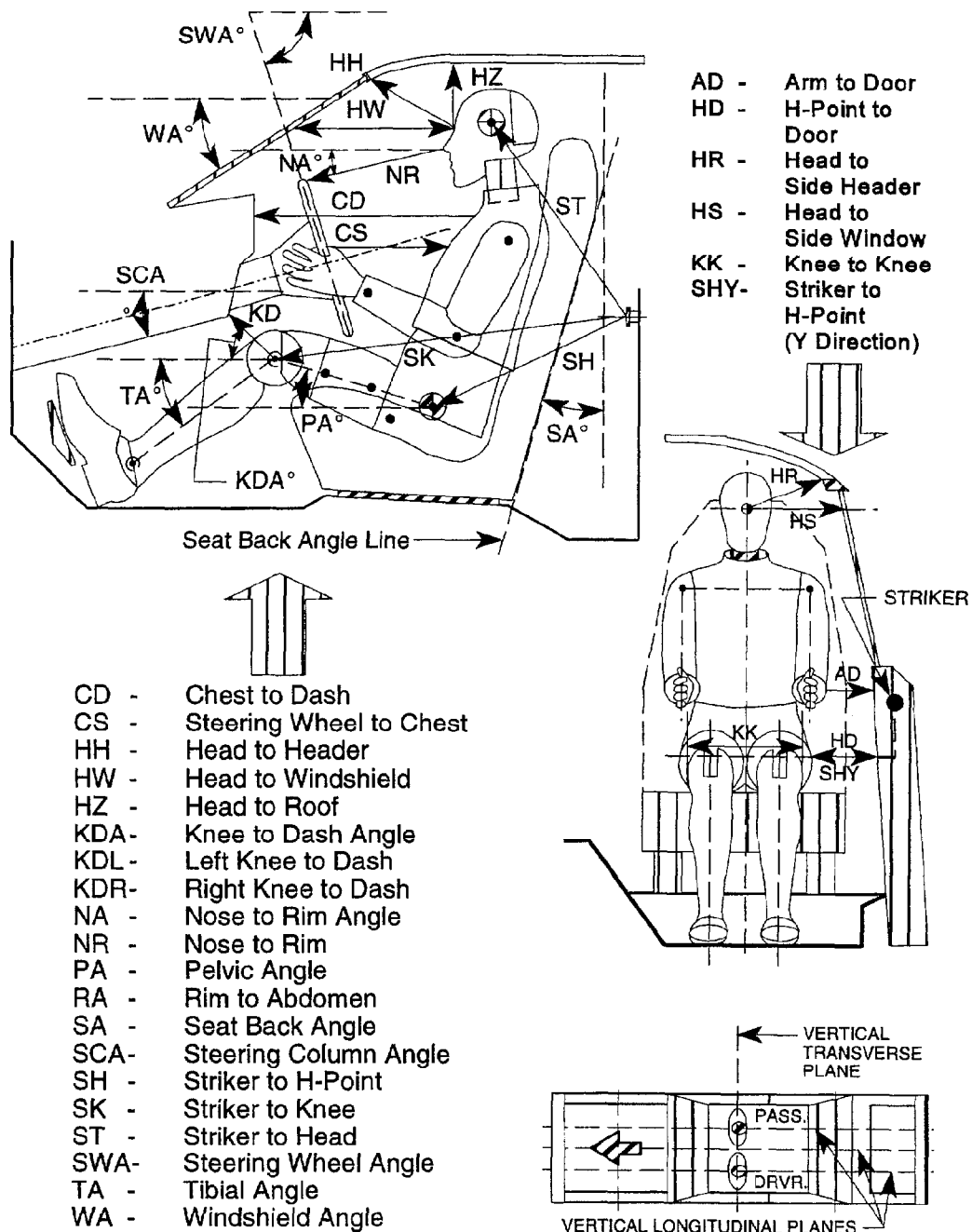
Steering wheel and column adjustments are made so that the steering wheel hub is at the geometric center of the locus it describes when it is moved through its full range of driving positions. If the tested vehicle has any of these adjustments, does your company use any specific procedures to determine the geometric center.

Operational Instructions: No adjustment

5. SEAT BELT UPPER ANCHORAGE

Nominal design riding position: 5 position adjustment - mechanical middle - put in 3rd detent

DUMMY MEASUREMENT FOR FRONT SEAT PASSENGERS

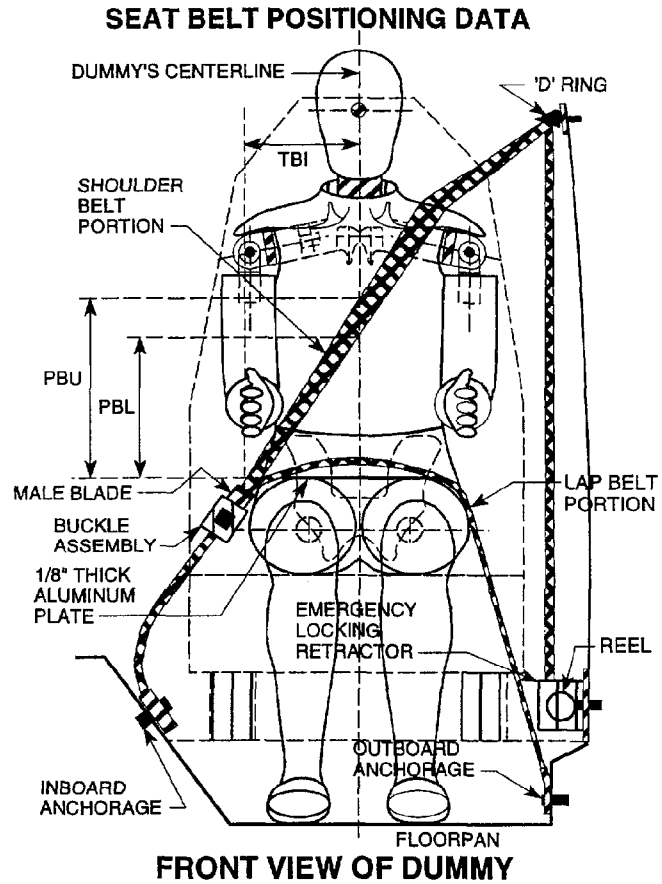


DATA SHEET NO. 5 FRONT SEAT DUMMY POSITIONING MEASUREMENTS IN VEHICLE

	DRIVER (Serial #061)			PASS. (Serial # 064)		
WA°	42 deg.			N/A		
SWA°	65 deg.			N/A		
SCA°	25 deg.			N/A		
SA°	7 deg.			7 deg.		
HZ	162			141		
HH	386			370		
HW	483			472		
HR	246			224		
NR	379	Angle	15 deg.	N/A		
CD	508			552		
CS	266			N/A		
RA	153			N/A		
KDL	160	Angle (KDA)	32 deg.	151		
KDR	153			149	Angle (KDA)	24 deg.
PA°	22.5 deg.			22.5 deg.		
TA°	43 deg.			41 deg.		
KK	290			259		
ST	592	Angle	6 deg.	619	Angle	8 deg.
SK	593	Angle	89 deg.	595	Angle	95 deg.
SH	208	Angle	109 deg.	209	Angle	111 deg.
SHY	210			191		
HS	315			286		
HD	155			151		
AD	65			57		

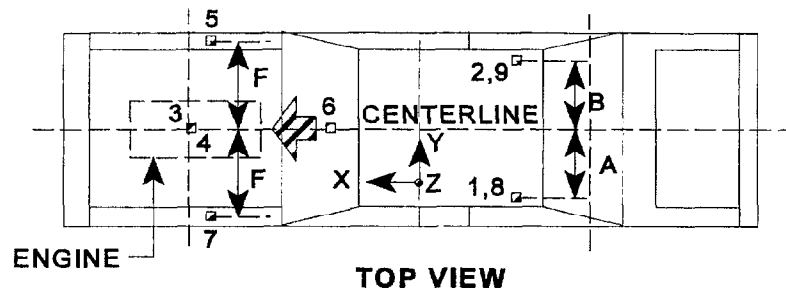
Dimensions in millimeters

DATA SHEET NO. 6 SEAT BELT POSITIONING DATA

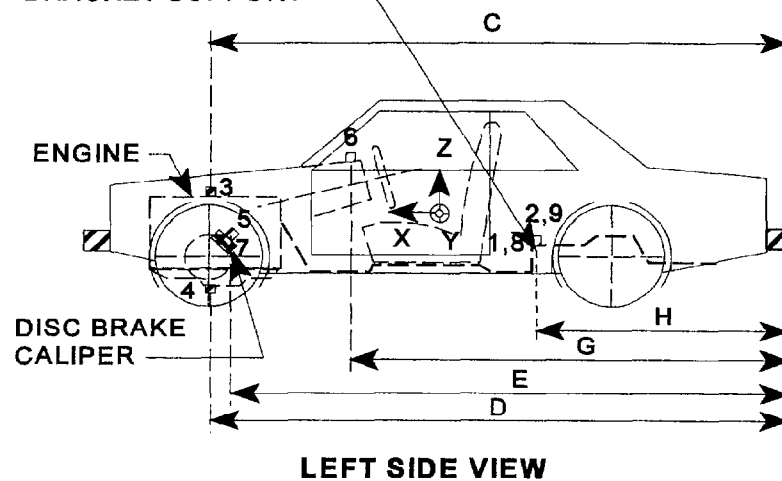


	DRIVER DUMMY (mm)	PASSENGER DUMMY (mm)
PBU -- Top surface of alum. plate to upper edge	335	331
PBL-- Top surface of alum. plate to belt lower edge	265	254
<u>LAP BELT TENSION</u>	10 nwt	10 nwt
<u>SHOULDER BELT TENSION</u>	retractor	retractor

VEHICLE ACCELEROMETER LOCATION AND DATA SUMMARY



REAR SEAT CUSHION
ASSY. FRONT ATTACHMENT
BRACKET SUPPORT



Note: Vehicle accelerometer location and data summary shown in DATA SHEET NO. 7

DATA SHEET NO. 7 VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY

DIMENSION	LENGTH (mm)
	PRE-TEST VALUES
A Left Rear Seat Crossmember Y	492
B Right Rear Seat Crossmember Y	490
C Top of Engine X	3594
D Bottom of Engine X	3252
E Disc Brake Calipers X	3325
F Disc Brake Calipers Y	435
G Instrument Panel X	2641
H Rear Seat Crossmembers X	1588

LOCATION NUMBER	DESCRIPTION	MAXIMUM VALUE (g's)			
		Pos.	msec.	Neg.	msec.
1	Rear Seat X-Member @ Left Side	11.8*	36.4	-9.8*	29.4
2	Rear Seat X-Member @ Right Side	3.9	146.2	-43.3	34.3
3	Top of Engine Block	54.3	33.2	-137.6	22.3
4	Bottom of Engine	*	*	*	*
5	Disc Brake Caliper @ Right Side	44.4	55.5	-84.9	34.1
6	Instrument Panel	*	*	*	*
7	Disc Brake Caliper @Left Side	45.6	49.9	-144.8	24.8
8	Rear Seat X-Member @ Left-Redundant	4.1	145.5	-41.0	32.2
9	Rear Seat X-Member @ Right-Redundant	4.0	146.3	-42.9	34.3

*Data is questionable.

DATA SHEET NO. 8 DUMMY INJURY CRITERIA VALUES

NHTSA Test No.: MX0309 Vehicle: 1999 Jeep Cherokee 4 -Door SE 4WD

DESCRIPTION	UNIT	MAXIMUM VALUE			
		Pos.	msec.	Neg.	msec.
Pos. 1 Head X	g's	16.5	222.4	-63.6	62.8
Pos. 1 Head Y	g's	4.2	563.6	-18.6	86.1
Pos. 1 Head Z	g's	27.8	57.9	-8.3	113.0
Pos. 1 Head Resultant	g's	67.6	62.8	0.0	-67.2
Pos. 2 Head X	g's	2.9	262.5	-41.0	67.6
Pos. 2 Head Y	g's	7.8	82.5	-5.0	42.2
Pos. 2 Head Z	g's	8.9	121.0	-38.6	63.5
Pos. 2 Head Resultant	g's	55.5	63.5	0.0	-71.4
Pos. 1 Chest X	g's	3.3	160.6	-61.3	62.8
Pos. 1 Chest Y	g's	7.3	562.9	-11.0	77.1
Pos. 1 Chest Z	g's	20.8	61.8	-9.9	124.8
Pos. 1 Chest Resultant	g's	64.5	62.7	0.0	-10.3
Pos. 1 Chest Displacement	mm	0.0	-0.4	-38.1	59.7
Pos. 2 Chest X	g's	2.1	433.9	-65.8	64.4
Pos. 2 Chest Y	g's	5.1	55.0	-6.8	65.1
Pos. 2 Chest Z	g's	13.8	123.5	-20.8	62.0
Pos. 2 Chest Resultant	g's	68.9	64.4	0.0	-74.4
Pos. 2 Chest Displacement	mm	0.0†	-4.0†	-14.5†	64.3†
Pos. 1 Left Femur	N	175.0	122.6	-4954.7	66.6
Pos. 1 Right Femur	N	137.5	95.5	-9648.2	47.4
Pos. 2 Left Femur	N	90.7	117.6	-8160.5	45.0
Pos. 2 Right Femur	N	193.6	120.5	-5543.7	55.0
Pos. 1 Left Belt Load	N	4693.9	45.6	-21.9	159.8
Pos. 1 Torso Belt Load	N	6222.1	64.7	-22.2	279.4
Pos. 2 Right Belt Load	N	3949.0	43.9	-46.0	86.3
Pos. 2 Torso Belt Load	N	6748.6	62.1	-23.9	236.7

† Data is questionable.

DATA SHEET NO. 8 DUMMY INJURY CRITERIA VALUES (cont.)

NHTSA Test No.: MX0309 Vehicle: 1999 Jeep Cherokee 4 -Door SE 4WD

HEAD INJURY CRITERIA (HIC)				
	HIC**	t ₁ (msec)	t ₂ (msec)	Average Acceleration t ₁ to t ₂
Position #1 - Driver	824.0	53.8	89.6	55.6
Position #2 - Passenger	475.4	52.5	88.5	44.5

** HIC is as defined in FMVSS 208. The maximum time interval from t₁ to t₂ is 36 milliseconds.

CLIP SUMMARY*				
	CLIP (g's)	t ₁ (msec)	t ₂ (msec)	CSI
Position #1 - Driver	61.2	61.6	64.6	-
Position #2 - Passenger	65.2	62.5	65.5	-

* The maximum chest resultant acceleration is defined as the maximum acceleration which exceeds 0.003 seconds in duration.

DATA SHEET NO. 8 DUMMY INJURY CRITERIA VALUES (cont.)
HYBRID III NECK AND PELVIC DATA SHEET

Vehicle Year/Make/Model/Body Style: 1999 Jeep Cherokee 4 -Door SE 4WD
NHTSA Test No.: MX0309 Test Date: January 7, 1999

DESCRIPTION	UNIT	MAXIMUM VALUE			
		Pos.	msec	Neg.	msec
Pos. 1 Upper Neck Fx	N	91.3	43.9	-913.2	58.4
Pos. 1 Upper Neck Fy	N	132.4	44.8	-345.2	105.4
Pos. 1 Upper Neck Fz	N	3014.9	64.2	-417.3	123.2
Pos. 1 Neck Force Result	N	3083.0	59.5	0.2	-62.8
Pos. 1 Upper Neck Mx	N-m	12.2	169.1	-42.6	89.2
Pos. 1 Upper Neck My	N-m	17.6	150.4	-57.8	59.1
Pos. 1 Upper Neck Mz	N-m	35.0	95.5	-16.7	154.4
Pos. 1 Neck Moment Result	N-m	58.2	59.1	0.1	-3.8
Pos. 2 Upper Neck Fx	N	301.1	72.6	-458.2	144.8
Pos. 2 Upper Neck Fy	N	320.0	61.2	-107.5	97.0
Pos. 2 Upper Neck Fz	N	2301.0	63.3	-488.2	121.0
Pos. 2 Neck Force Result	N	2314.3	63.3	0.5	-69.5
Pos. 2 Upper Neck Mx	N-m	7.4	44.8	-22.8	58.6
Pos. 2 Upper Neck My	N-m	34.3	156.1	-36.1	55.0
Pos. 2 Upper Neck Mz	N-m	19.0	82.5	-11.3	123.4
Pos. 2 Neck Moment Result	N-m	41.6	55.0	0.0	-71.5
Pos. 1 Pelvic (X)	g's	3.7	561.9	-70.4	47.7
Pos. 1 Pelvic (Y)	g's	7.0	67.0	-14.4	46.2
Pos. 1 Pelvic (Z)	g's	7.0	43.9	-12.2	107.0
Pos. 1 Pelvic (R)	g's	70.8	47.6	0.0	-67.4
Pos. 2 Pelvic (X)	g's	4.4	157.2	-76.0	42.4
Pos. 2 Pelvic (Y)	g's	5.1	37.9	-8.4	40.2
Pos. 2 Pelvic (Z)	g's	37.9	42.2	-20.4	55.1
Pos. 2 Pelvic (R)	g's	77.4	42.2	0.0	-87.2

DATA SHEET NO. 8 DUMMY INJURY CRITERIA VALUES (cont.)
HYBRID III LOWER LEG DATA SHEET

Vehicle Year/Make/Model/Body Style: 1999 Jeep Cherokee 4 -Door SE 4WD
 NHTSA Test No.: MX0309 Test Date: January 7, 1999

DESCRIPTION	UNIT	MAXIMUM VALUE			
		Pos.	msec	Neg.	msec
P1 Lt Upper Tibia Mx	N-m	64.5	58.9	-56.5	44.0
P1 Lt Upper Tibia My	N-m	15.9	209.0	-131.1	32.5
P1 Lt Lower Tibia Fz	N	198.5	133.5	-2199.4	32.2
P1 Lt Lower Tibia Mx	N-m	58.3	49.3	-26.5	35.0
P1 Lt Lower Tibia My	N-m	62.8	32.3	-26.8	51.8
P1 Rt Upper Tibia Mx	N-m	103.7	41.6	-14.6	167.6
P1 Rt Upper Tibia My	N-m	34.9	135.4	-142.8	34.0
P1 Rt Lower Tibia Fz	N	991.6	60.5	-3049.2	39.9
P1 Rt Lower Tibia Mx	N-m	*	*	*	*
P1 Rt Lower Tibia My	N-m	56.3	33.5	-122.9	48.1
Pos. 2 Lt Upper Tibia Mx	N-m	13.5	94.3	-95.7	37.9
Pos. 2 Lt Upper Tibia My	N-m	118.0	41.5	-74.3	32.7
Pos. 2 Lt Lower Tibia Fz	N	302.8	55.3	-6441.6	36.8
Pos. 2 Lt Lower Tibia Mx	N-m	72.4	41.4	-88.3	37.9
Pos. 2 Lt Lower Tibia My	N-m	126.2	41.8	-68.6	32.9
Pos. 2 Rt Upper Tibia Mx	N-m	39.8	121.4	-63.1	60.2
Pos. 2 Rt Upper Tibia My	N-m	121.4	71.6	-81.2	33.8
Pos. 2 Rt Lower Tibia Fz	N	*	*	*	*
Pos. 2 Rt Lower Tibia Mx	N-m	20.5	109.2	-24.0	44.0
Pos. 2 Rt Lower Tibia My	N-m	40.0	66.3	-78.2	34.1

* Data is questionable.

DATA SHEET NO. 8 DUMMY INJURY CRITERIA VALUES (cont.)
HYBRID III ANKLE DATA SHEET

Vehicle Year/Make/Model/Body Style: 1999 Jeep Cherokee 4 -Door SE 4WD

NHTSA Test No.: MX0309 Test Date: January 7, 1999

DESCRIPTION	UNIT	MAXIMUM VALUE			
		Pos.	msec	Neg.	msec
Pos. 1 Left Ankle X	g's	42.7	46.7	-111.3	31.8
Pos. 1 Left Ankle Z	g's	24.7	53.2	-65.4	44.2
Pos. 1 Left Toe Z	g's	110.1	31.9	-56.6	53.4
Pos. 1 Right Ankle X	g's	43.3	45.5	-113.2	28.5
Pos. 1 Right Ankle Z	g's	17.6	43.3	-100.6	39.6
Pos. 1 Right Toe Z	g's	280.3	32.4	-108.3	43.2
Pos. 2 Left Ankle X	g's	39.4	43.1	-260.0	35.4
Pos. 2 Left Ankle Z	g's	32.5	40.4	-193.6	35.9
Pos. 2 Left Toe Z	g's	190.7	35.7	-240.5	31.3
Pos. 2 Right Ankle X	g's	27.8	56.5	-171.1	33.4
Pos. 2 Right Ankle Z	g's	11.1	60.3	-58.5	35.2
Pos. 2 Right Toe Z	g's	*	*	*	*

* Data is questionable.

DATA SHEET NO. 8 DUMMY INJURY CRITERIA VALUES (cont.)
REDUNDANT DUMMY DATA

NHTSA Test No.: MX0309 Vehicle: 1999 Jeep Cherokee 4 -Door SE 4WD

DESCRIPTION	UNIT	MAXIMUM VALUE			
		Pos.	msec	Neg.	msec
Pos. 1 Head X(R)	g's	16.0	222.4	-68.3	62.1
Pos. 1 Head Y(R)	g's	21.8	82.6	-5.5	44.3
Pos. 1 Head Z(R)	g's	34.5	52.6	-8.5	117.0
Pos. 1 Head Resultant(RR)	g's	74.0	61.9	0.0	-69.7
Pos. 2 Head X(R)	g's	2.5	268.0	-46.0	67.6
Pos. 2 Head Y(R)	g's	2.8	59.6	-12.6	52.9
Pos. 2 Head Z(R)	g's	41.5	63.3	-10.1	121.3
Pos. 2 Head Resultant(RR)	g's	60.5	63.3	0.0	-69.9
Pos. 1 Chest X(R)	g's	3.4	160.7	-62.5	63.0
Pos. 1 Chest Y(R)	g's	5.5	98.1	-10.2	77.2
Pos. 1 Chest Z(R)	g's	22.6	61.9	-10.1	125.1
Pos. 1 Chest Resultant(RR)	g's	66.0	62.7	0.0	-10.1
Pos. 2 Chest X(R)	g's	2.6	406.9	-64.2	64.2
Pos. 2 Chest Y(R)	g's	10.5	65.0	-1.7	54.8
Pos. 2 Chest Z(R)	g's	20.3	64.1	-14.8	123.5
Pos. 2 Chest Resultant(RR)	g's	68.0	64.2	0.0	-71.7

DATA SHEET NO. 8 DUMMY INJURY CRITERIA VALUES (cont.)
REDUNDANT DUMMY DATA

NHTSA Test No.: MX0309 Vehicle: 1999 Jeep Cherokee 4 -Door SE 4WD

HEAD INJURY CRITERIA (HIC) REDUNDANT				
	HIC**	t_1 (msec)	t_2 (msec)	Average Acceleration t_1 to t_2
Position #1 - Driver	976.6	53.5	89.5	59.3
Position #2 - Passenger	533.8	52.3	88.3	46.6

** HIC is as defined in FMVSS 208. The maximum time interval from t_1 to t_2 is 36 milliseconds.

CLIP SUMMARY* REDUNDANT				
	CLIP (g's)	t_1 (msec)	t_2 (msec)	CSI
Position #1 - Driver	62.8	61.6	64.6	717.2
Position #2 - Passenger	64.1	62.3	65.3	578.5

* The maximum chest resultant acceleration is defined as the maximum acceleration which exceeds 0.003 seconds in duration.

DATA SHEET NO. 9 SEAT BELT PERFORMANCE ASSESSMENT TEST DATA

BELT LENGTH DATA:

Belt length from trim panel exit
to bolt hole anchor point for
continuous webbing systems.

Driver

Passenger

2225

2180

Shoulder belt length as measured
on Part 572 Dummy.

832

819

Lap belt length as measured
on Part 572 Dummy.

746

714

SHOULDER BELT SPOOL-OFF DATA:

As determined by film analysis.

78

85

As determined mechanically.

74

76

As determined electronically.

80.5

81.5

BELT STRETCH DATA:

Measured electronically between shoulder
belt load cell and the "D" ring.

2.1 mm/M

1.4 mm/M

Measured mechanically.

1 mm

1 mm

Dimensions in millimeters

DATA SHEET NO.10 SUMMARY OF FMVSS 212 DATA

FMVSS NO. 212 - "WINDSHIELD MOUNTING" DATA

DETAILS OF WINDSHIELD MOUNTING SUCH AS RETENTION METHOD, TRIM TYPE, ETC.:

Windshield is bonded in place and covered with 23 mm molding.

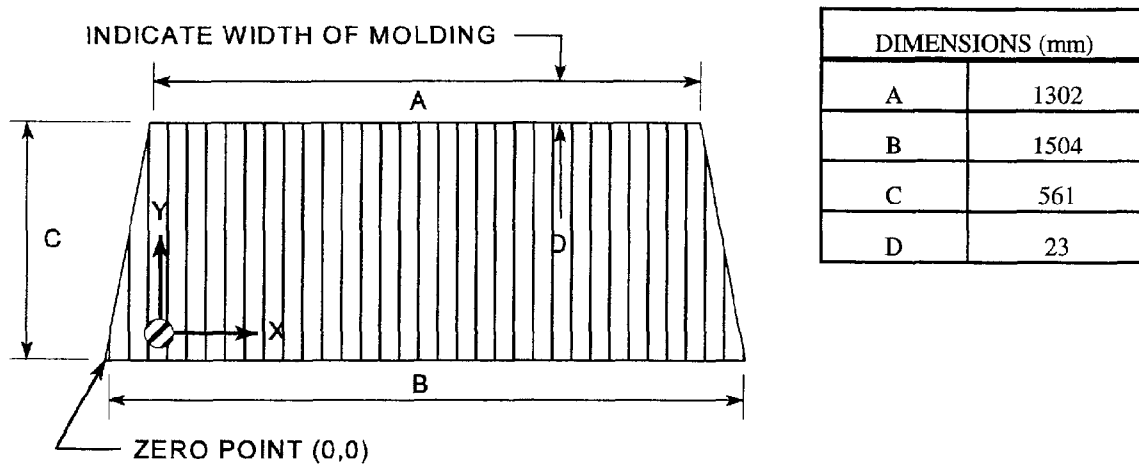
FMVSS 212 REQUIREMENTS:

The Post-Test periphery retention amount must be at least 75% of the Pre-Test periphery measurement for vehicles NOT equipped with automatic restraints, and 50% for each side of the windshield for vehicles equipped with automatic restraint systems for front occupants.

FMVSS 212 TEST DATA

	WINDSHIELD PERIPHERY		% OF RETENTION
	PRE-TEST (mm)	POST-TEST (mm)	
RIGHT SIDE	1964	1964	100
LEFT SIDE	1964	1964	100
TOTAL	3,928	3,928	100

AREA OF RETENTION FAILURE:



FRONT VIEW OF WINDSHIELD

FAILURE DETAILS:

None

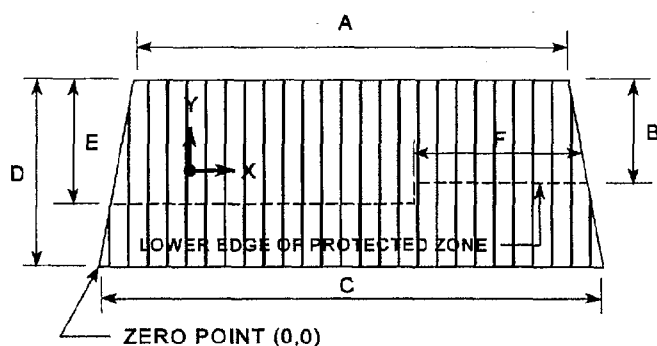
DATA SHEET NO. 11 FMVSS NO. 219 (PARTIAL) - "WINDSHIELD ZONE INTRUSION" DATA

PROTECTED ZONE LOWER EDGE REQUIREMENT:

The lower edge of the protected zone is determined by placing a 165 mm diameter rigid sphere weighing 6.8 kg in a position such that it simultaneously contacts the inner surface of the windshield and the top surface of the instrument panel including padding. The locus of points is drawn on the inner surface of the windshield contacted by the sphere across the width of the instrument panel. From the outermost contactable points extend the locus line horizontally to the edges of the windshield, then draw a line on the inner surface of the windshield below and 13 mm distant from the locus line. The LOWER EDGE OF THE PROTECTED ZONE is the longitudinal projection of this line onto the outer surface of the windshield.

FMVSS 219 TEST DATA:

(Dimensions in mm)



DIMENSIONS	
A	1302
B	315
C	1504
D	561
E	365
F	985

FRONT VIEW OF WINDSHIELD

DETAILS OF WINDSHIELD GLASS PENETRATION GREATER THAN 6 mm:

(Show location of penetration on the above sketch)

	COORDINATES	
	X	Y
1.		
2.		
3.		
4.		

DATA SHEET NO. 12 FMVSS NO. 301-75 "FUEL SYSTEM INTEGRITY" POST IMPACT TEST DATA

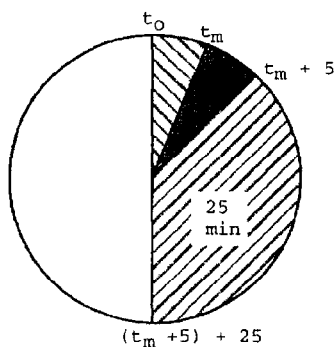
NHTSA TEST No.: MX0309 TEST DATE: January 7, 1999
VEHICLE MAKE/MODEL: 1999 Jeep Cherokee

The test vehicle was filled from 92% to 94% of the manufacture's "usable" capacity. The electric fuel pump was operating if it will operate without engine operation. Two Part 572 anthropomorphic test devices were located at each of the front designated seating positions.

=====

TEST VEHICLE IMPACT TYPE: X Frontal (56 kph)
- Oblique (48 kph) with _____ deg. barrier face first
 contacting _____
 (driver/passenger) side
- Rear Moving Barrier (48 kph)
- Lateral Moving Barrier (32 kph)

FUEL SPILLAGE MEASUREMENT:



1. From impact until vehicle motion ceases
2. For 5 minute period after vehicle motion ceases
3. For next 25 minutes

ACTUAL	MAX ALLOWED
0	28 g
0	141 g
0	28 g/min.

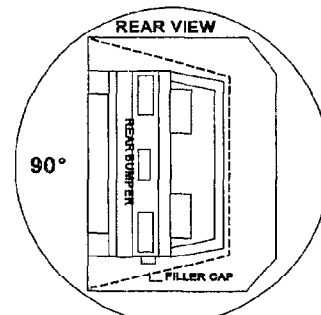
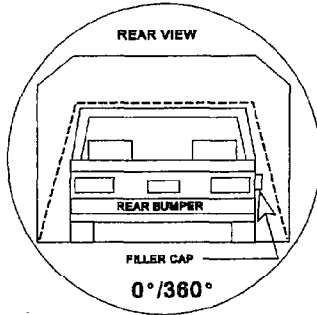
SOLVENT SPILLAGE DETAILS:

None

DATA SHEET NO. 13 FMVSS NO. 301 STATIC ROLLOVER DATA SHEET

TEST PHASE:
0-90 deg.

NHTSA Test No.:
MX0309



INDETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90 deg. Rotation Time
(Spec. Range = 1 to 3 minutes)

1 minutes

6 seconds

FMVSS 301 Position Hold Time +

5 minutes

00 seconds

TOTAL

6 minutes

6 seconds

Next whole minute interval

7 minutes

00 seconds

II. FMVSS 301 REQUIREMENTS:

(1) Time Period

First 5 min. from onset of rotation	6th min.	7th min.	8th min. if reqd.
-------------------------------------	----------	----------	-------------------

(2) Maximum Allowable Solvent Spillage

141 g	28 g	28 g	28 g
-------	------	------	------

III. ACTUAL TEST VEHICLE SOLVENT SPILLAGE:

0	0	0	n/a
---	---	---	-----

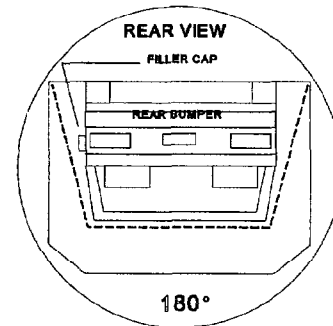
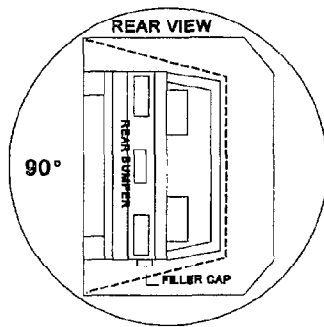
Note: Record spillage for whole minute intervals only as determined above.

IV. SOLVENT SPILLAGE LOCATION(S): None

TEST SHEET NO. 13 FMVSS NO. 301 STATIC ROLLOVER DATA SHEET (cont.)

TEST PHASE:
90-180 deg.

NHTSA Test No.:
MX0309



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90 deg. Rotation Time
(Spec. Range = 1 to 3 minutes)

1 minutes 1 seconds

FMVSS 301 Position Hold Time +

5 minutes 00 seconds

TOTAL

6 minutes 1 seconds

Next whole minute interval

7 minutes 00 seconds

II. FMVSS 301 REQUIREMENTS:

(1) Time Period

First 5 min. from onset of rotation	6th min.	7th min.	8th min. if reqd.
-------------------------------------	----------	----------	-------------------

(2) Maximum Allowable Solvent Spillage

141 g	28 g	28 g	28 g
-------	------	------	------

III. ACTUAL TEST VEHICLE SOLVENT SPILLAGE:

0	0	0	n/a
---	---	---	-----

Note: Record spillage for whole minute intervals only as determined above.

IV. SOLVENT SPILLAGE LOCATION(S): None

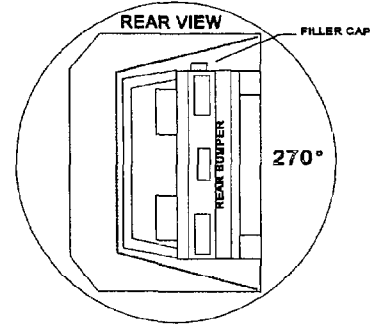
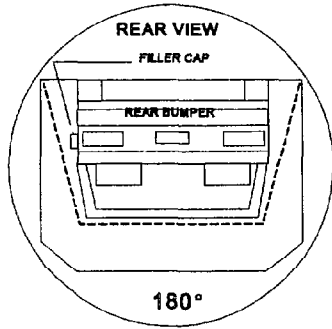
TEST SHEET NO. 13 FMVSS NO. 301 STATIC ROLLOVER DATA SHEET (cont.)

TEST PHASE:

180-270 deg.

NHTSA Test No.:

MX0309



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90 deg. Rotation Time
(Spec. Range = 1 to 3 minutes)

1 minutes 4 seconds

FMVSS 301 Position Hold Time +

5 minutes 00 seconds

TOTAL

6 minutes 4 seconds

Next whole minute interval

7 minutes 00 seconds

II. FMVSS 301 REQUIREMENTS:

(1) Time Period

First 5 min. from onset of rotation	6th min.	7th min.	8th min. if reqd.
-------------------------------------	----------	----------	-------------------

(2) Maximum Allowable Solvent Spillage

141 g	28 g	28 g	28 g
-------	------	------	------

III. ACTUAL TEST VEHICLE SOLVENT SPILLAGE:

0	0	0	n/a
---	---	---	-----

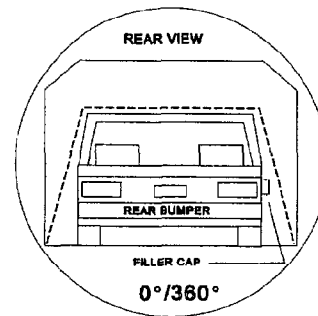
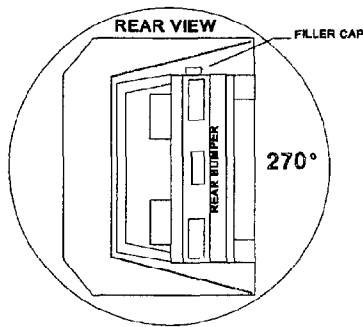
Note: Record spillage for whole minute intervals only as determined above.

IV. **SOLVENT SPILLAGE LOCATION(S):** None

TEST SHEET NO. 13 FMVSS NO. 301 STATIC ROLLOVER DATA SHEET (cont.)

TEST PHASE:
270-360 deg.

NHTSA Test No.:
MX0309



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90 deg. Rotation Time
(Spec. Range = 1 to 3 minutes)

1 minutes 11 seconds

FMVSS 301 Position Hold Time +

5 minutes 00 seconds

TOTAL

6 minutes 11 seconds

Next whole minute interval

7 minutes 00 seconds

II. FMVSS 301 REQUIREMENTS:

(1) Time Period

First 5 min. from onset of rotation	6th min.	7th min.	8th min. if reqd.
-------------------------------------	----------	----------	-------------------

(2) Maximum Allowable Solvent Spillage

141 g	28 g	28 g	28 g
-------	------	------	------

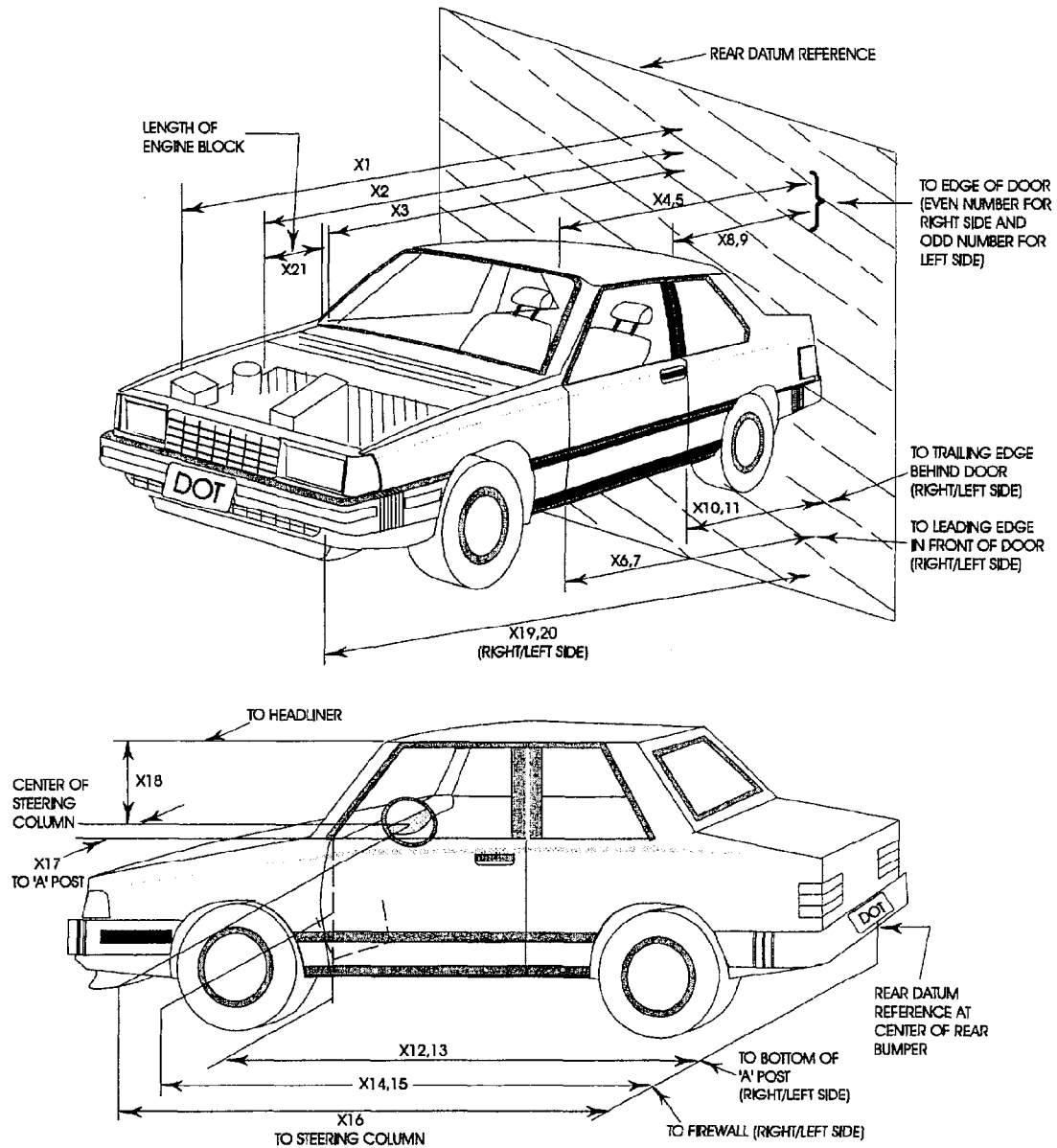
III. ACTUAL TEST VEHICLE SOLVENT SPILLAGE:

0	0	0	n/a
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Note: Record spillage for whole minute intervals only as determined above.

IV. SOLVENT SPILLAGE LOCATION(S): None

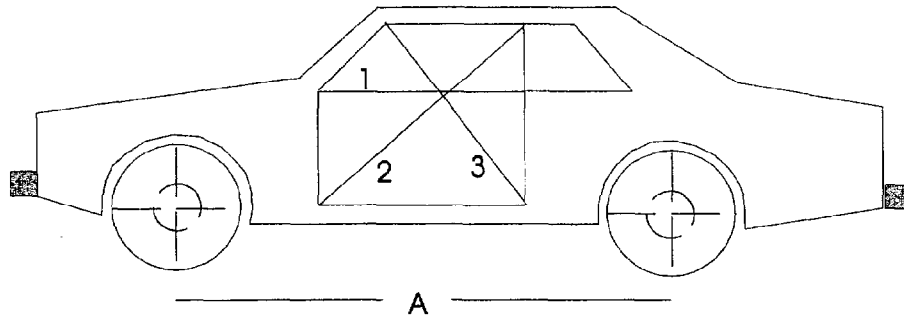
TEST VEHICLE MEASUREMENTS



DATA SHEET NO.14 VEHICLE MEASUREMENTS

No.		All Dimensions in mm			Differences
		Pre-Test	Post-Test		
X1	Total Length of Vehicle at Centerline	4266.8	3736		531
X2	Rear Surface of Vehicle to Front of Engine	3817.1	3392		425
X3	Rear Surface of Vehicle to Firewall	3144.3	3005		139
X4	Rear Surface of Vehicle to Upper Leading Edge of Right Door	2928.7	2847		82
X5	Rear Surface of Vehicle to Upper Leading Edge of Left Door	2917.3	2850		67
X6	Rear Surface of Vehicle to Lower Leading Edge of Right Door	2935.6	2869		67
X7	Rear Surface of Vehicle to Lower Leading Edge of Left Door	2916.5	2876		41
X8	Rear Surface of Vehicle to Upper Trailing Edge of Right Door	1947.0	1879		68
X9	Rear Surface of Vehicle to Upper Trailing Edge of Left Door	1933.6	1890		44
X10	Rear Surface of Vehicle to Lower Trailing Edge of Right Door	1944.4	1898		46
X11	Rear Surface of Vehicle to Lower Trailing Edge of Left Door	1929.4	1904		25
X12	Rear Surface of Vehicle to Bottom of "A" Post of Right Side	2952.6	2774		179
X13	Rear Surface of Vehicle to Bottom of "A" Post of Left Side	2918.2	2868		50
X14	Rear Surface of Vehicle to Firewall, Right Side	3134.7	2998		137
X15	Rear Surface of Vehicle to Firewall, Left Side	3126.8	2990		137
X16	Rear Surface of Vehicle to Steering Column	2481.1	2385		96
X17	Center of Steering Column to "A" Post	378.7	387		-8
X18	Center of Steering Column to Headliner	403.2	372		31
X19	Rear Surface of Vehicle to Right Side of Front Bumper	4266.7	3763		504
X20	Rear Surface of Vehicle to Left Side of Front Bumper	4255.3	3772		483
X21	Length of Engine Block	659.8	659.8		0
RD	Rear Surface of Vehicle to Right Side of Dash Panel	2778.9	2709		70
CD	Rear Surface of Vehicle to Center of Dash Panel	2696.2	2582		114
LD	Rear Surface of Vehicle to Left Side of Dash Panel	2770.8	2636		135

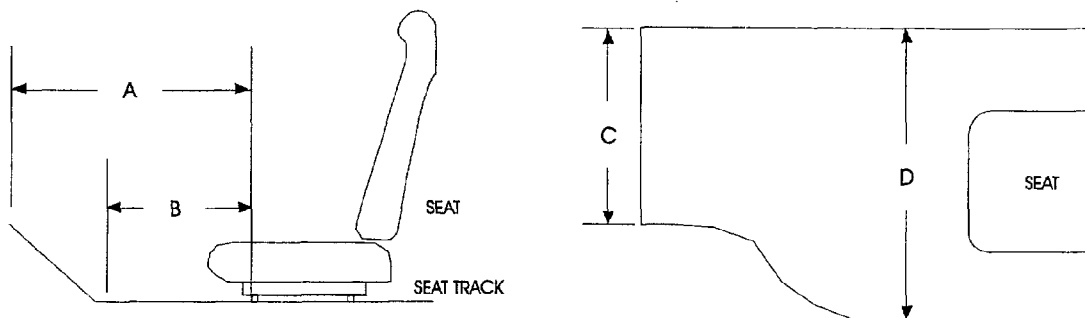
DATA SHEET NO.14 VEHICLE MEASUREMENTS (cont.)
VEHICLE INTRUSION MEASUREMENTS
DOOR OPENING WIDTH



UNITS (mm)	LEFT			RIGHT		
MEASUREMENT	1	2	3	1	2	3
BEFORE TEST	896.8	1370.9	1018.4	889.3	1377.3	1017.0
AFTER TEST	884.7	1352.8	1093.6	872.3	1347.2	1072.7
DIFFERENCE	12.1	18.1	-75.2	17	30.1	-55.7

UNITS (mm)	A = WHEELBASE LEFT	A = WHEELBASE RIGHT
BEFORE TEST	2595.2	2587.1
AFTER TEST	2422.3	2468.4
DIFFERENCE	172.9	118.7

DATA SHEET NO.14 VEHICLE MEASUREMENTS (cont.)
VEHICLE INTRUSION MEASUREMENTS
STATIC FOOTWELL DEFORMATION



DRIVER

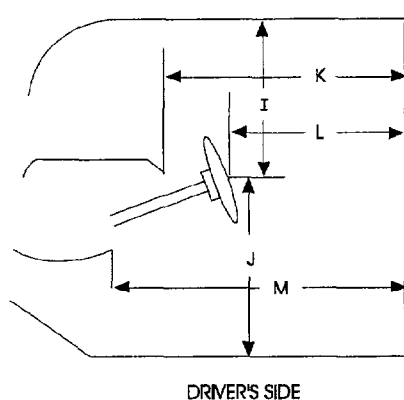
Measurement	Pre-Test	Post-Test	Difference
A	624.7	583.7	41
B	469.6	461.8	8
C	380.1	322.2	58
D	344.6	289.4	55

PASSENGER

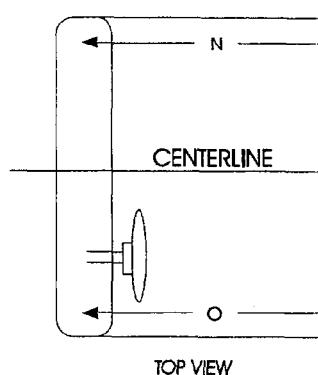
Measurement	Pre-Test	Post-Test	Difference
A	589.5	478.3	111
B	500.2	434.9	65
C	366.2	315.2	51
D	334.2	287.1	47

Units = mm

DATA SHEET NO.14 VEHICLE MEASUREMENTS (cont.)
VEHICLE INTRUSION MEASUREMENTS
STATIC PASSENGER COMPARTMENT INTRUSION

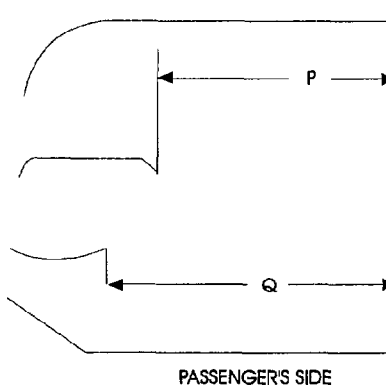


DRIVER'S SIDE



TOP VIEW

MEASUREMENTS
FROM C-PILLAR
BELT ANCHORAGE

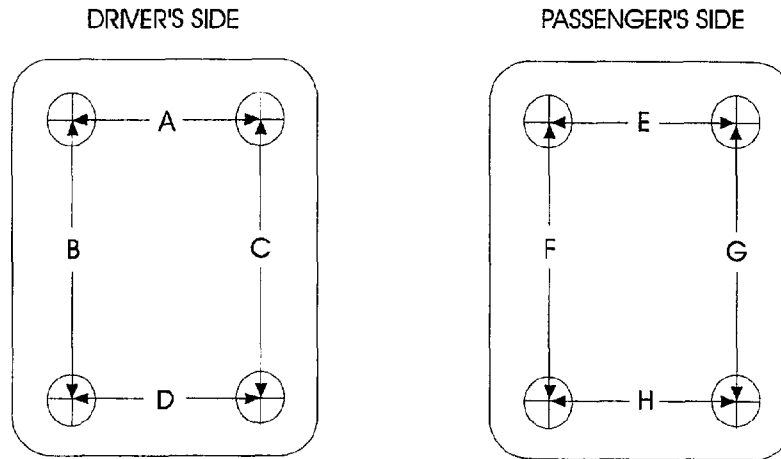


PASSENGER'S SIDE

Measurement	Pre-Test	Post-Test	Difference
I	451.6	418.5	33
J	689.7	789.8	-100
K	1517.4	1431.6	86
L	1303.3	1255.7	48
M	1572.7	1533.1	40
N	1545.2	1506.7	39
O	1541.6	1495.4	46
P = K (PASS.)	1560.5	1495.3	65
Q = M (PASS.)	1596.6	1551.6	45

Units = mm

DATA SHEET NO.14 VEHICLE MEASUREMENTS (cont.)
FLOORBOARD DEFORMATION

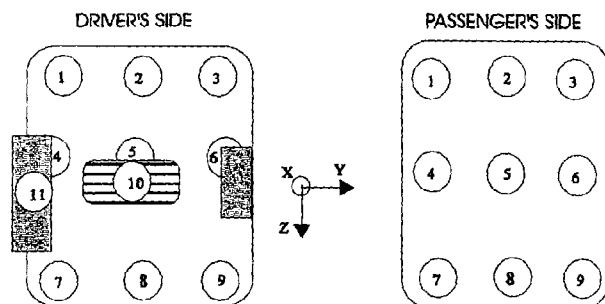


TOP VIEW THROUGH FLOOR PAN

Measurement	Pre-Test	Post-Test	Difference
A	300	295	5
B	575	570	5
C	720	710	10
D	280	280	0
E	255	250	5
F	700	685	15
G	565	560	5
H	220	220	0

Units = mm

DATA SHEET NO.14 VEHICLE MEASUREMENTS (cont.)
TOE-PAN INTRUSION



Driver Side Floorpan Measurements

Reference: X = Rear Bumper; Z = Ground

Floorpan Location	X Deformation			Z Deformation		
	Pre-Test	Post-Test	Difference	Pre-Test	Post-Test	Difference
1	3156.5	3026.2	130	-610.2	-702.8	93
2	3147.5	2944.4	203	-622.0	-702.5	81
3	3150.3	2919.0	231	-605.0	-711.7	107
4	3110.2	3014.1	96	-567.7	-644.5	77
5	3127.0	2949.4	178	-581.3	-643.0	62
6	3132.9	2889.4	244	-565.0	-654.4	89
7	3071.6	2989.0	83	-526.6	-576.6	50
8	3068.8	2954.3	115	-527.2	-564.8	38
9	3086.0	2899.0	187	-526.3	-586.0	60
10	2955.7	3001.6	-46	-598.7	-625.0	26
11	3086.5	2780.9	306	-557.6	-633.5	76

Passenger Side Floorpan Measurements

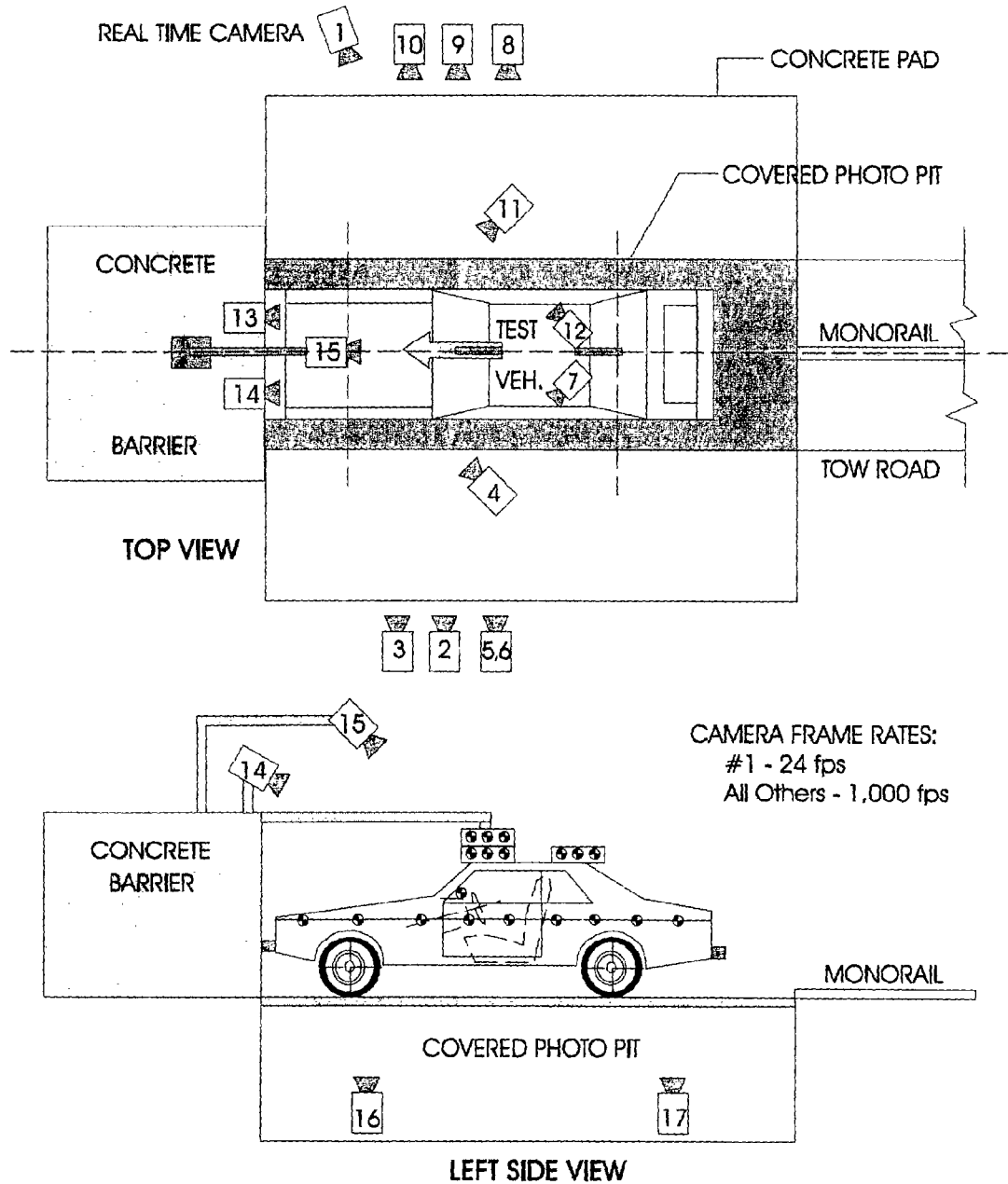
Reference: X = Rear Bumper; Z = Ground

Floorpan Location	X Deformation			Z Deformation		
	Pre-Test	Post-Test	Difference	Pre-Test	Post-Test	Difference
1	3134.3	2895.8	239	-611.4	-692.5	81
2	3135.9	2915.2	221	-599.3	-677.5	78
3	3129.4	2966.9	163	-628.2	-665.5	37
4	3085.0	2891.2	194	-553.0	-603.2	50
5	3090.7	2924.0	167	-557.9	-597.5	40
6	3058.9	2975.2	84	-565.1	-602.2	37
7	3018.9	2872.0	147	-510.3	-531.3	21
8	3026.1	2895.5	131	-507.6	-539.8	32
9	3061.9	2964.6	97	-529.8	-521.7	-8

Units in mm

CAMERA POSITIONS FOR FRONTAL IMPACTS

NOTE: Camera information shown in DATA SHEET NO. 15.



DATA SHEET NO.15 HIGH-SPEED CAMERA LOCATIONS

NHTSA Test No.:

MX0309

Vehicle:

1999 Jeep Cherokee 4 -Door SE 4WD

CAMERA NO.	VIEW	CAMERA POSITIONS (mm)*			ANGLE** (deg)	FILM PLANE TO HEAD TARGET	LENS (mm)	SPEED (fps)
		X	Y	Z				
1	Real-Time Camera	-	-	-	-	-	-	24
2	Overall Left Side	4789	1513	1047	-2	4482	12.5	1010
3	Left Side View	7620	1069	1077	-4	7313	25	1010
4	Driver and Interior View	4653	2819	1996	-12	-	25	1000
5	Steering Column (Bottom)	6663	1867	1171	-1	6356	25	1005
6	Steering Column (Top)	6663	1867	1779	-8	6356	25	1010
7	Left Belt	-	-	-	-	-	8	750
8	Overall Right Side	7963	1796	1082	-4	7656	13	1020
9	Right Side View	7801	1324	1103	-2	7494	25	1000
10	Right Passenger View	7852	1748	1349	-3	7545	35	1010
11	Passenger and Interior View	4629	2716	2015	-13	-	25	1000
12	Right Belt	-	-	-	-	-	8	830
13	Passenger Front View	545	-450	2000	-43	-	13	1015
14	Driver Front View	545	-450	2000	-42	-	13	1005
15	Windshield View	0	0	3374	-55	-	13	1005
16	Pit View of Engine	0	930	-3048	90	-	13	1000
17	Pit View of Fuel Tank	0	2475	-3048	90	-	13	1000

*X = film plane to monorail centerline

Y = film plane to impact location

Z = film plane to ground

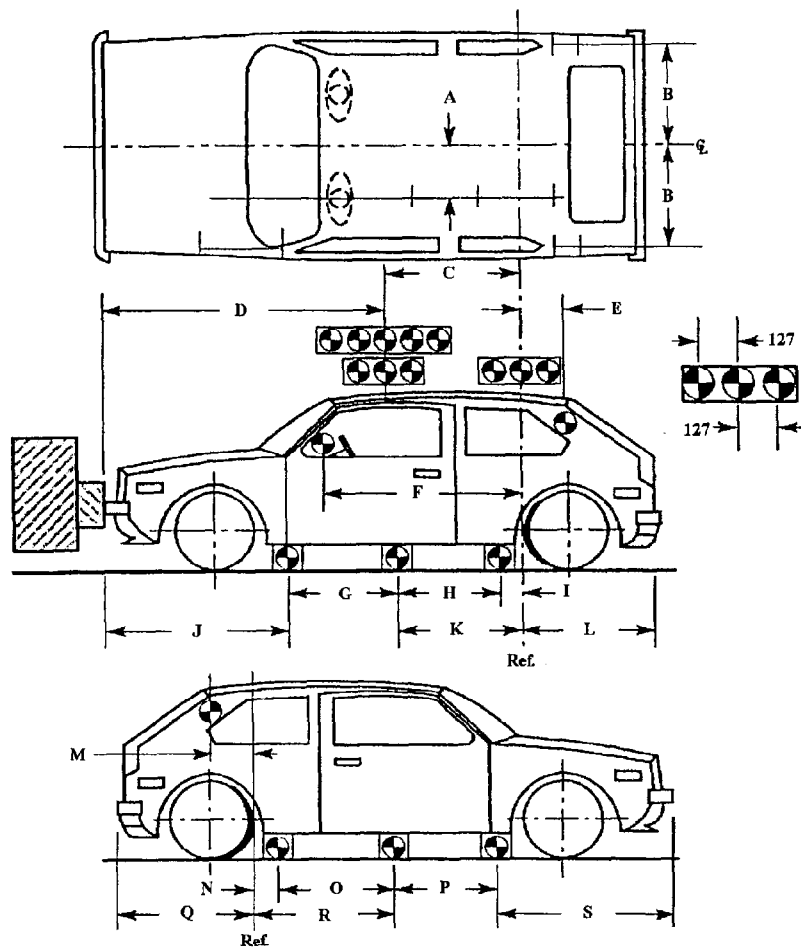
** = referenced to horizontal plane

N.T. indicates No Timing

DATA SHEET NO. 16 VEHICLE REFERENCE PHOTO TARGET LOCATIONS

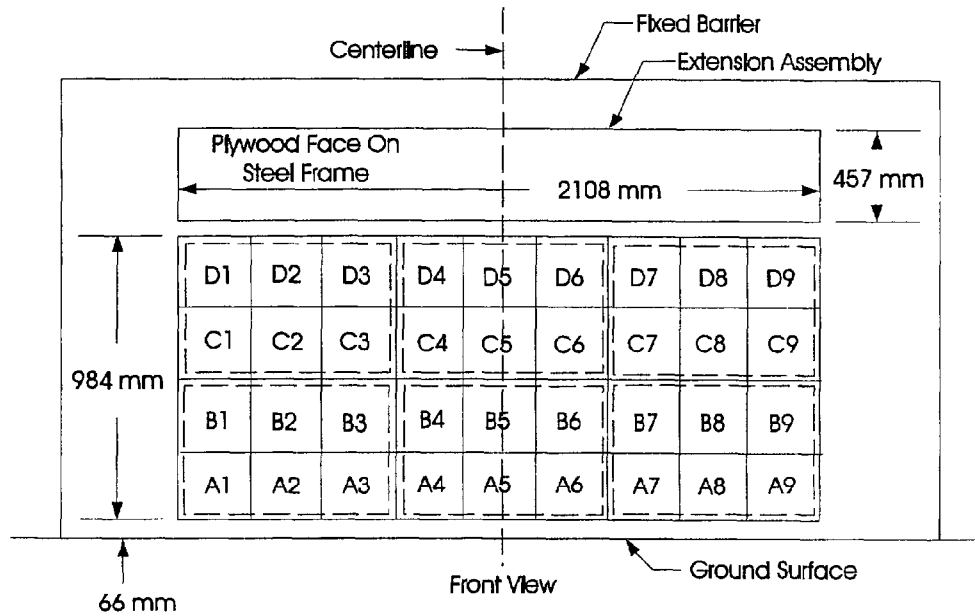
(Dimensions in millimeters)

A	382.9
B	693.5
C	918.1
D	2048.8
E	338.7
F	1358.0
G	759.6
H	772.1
I	164.6
J	1235.6
K	1522.6
L	1299.4
M	387.7
N	178.6
O	756.6
P	762.5
Q	1313.4
R	935.2
S	1220.2



DATA SHEET NO. 17 LOAD CELL LOCATIONS ON FIXED BARRIER

- 36 Load Cells
- 4 Rows
- 9 Columns
- 6 Groupings (6 cells/group)



6 GROUPS OF 6 LOAD CELLS EACH

Group 4 C1 thru D3	Group 5 C4 thru D6	Group 6 C7 thru D9
Group 1 A1 thru B3	Group 2 A4 thru B6	Group 3 A7 thru B9

The following data is presented in Appendix B:

- (1) Data from 36 individual load cells
- (2) Total or Sum of 36 individual load cells
- (3) Data from 6 Groupings shown above (6 cells/group)

DATA SHEET NO. 18 POST TEST AIR BAG DATA

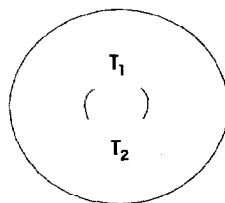
NHTSA No. : MX0309; Test Date: January 7, 1999; Technician: J. Cz.

Vehicle Model Year/Make/Model: 1999 Jeep Cherokee

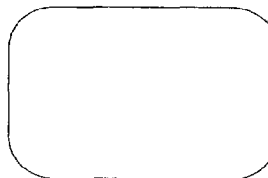
- A. No. of vent holes: 0 -Driver 0 -Passenger
- B. Size of vent holes: (mm²) 0 -Driver 0 -Passenger
- C. Total vent area: (mm²) 0 -Driver 0 -Passenger
- D. Deflated air bag length and width dimensions or, if round, diameter. (mm)
- Driver: - -Length; - -Width; 610 -Diameter
- Passenger: 550 -Height; 510 -Width; 630 -Depth
- E. Is the air bag tethered?
- Driver: x -Yes; - -No; If yes, record length of tether- 140
- Passenger: - -Yes; x -No; If yes, record length of tether- -

Sketch the air bag showing the location of the vent holes, how the bag is tethered, and where the bag is tethered. Also describe how the tethers are attached to the bag and the steering wheel.
(Note: Not to scale; V_n = Vent hole_n, T_n = Tether_n).

DRIVER
vents underneath bag



PASSENGER
vents underneath bag



- F. Record part numbers and manufacturer name of the air bag and gas generator.

Driver: Air bag: P118137-02C TMJ2578D0481

Generator: P5GC51LAZAB TCLDM2608U0865

Passenger: Air bag: P116064-02N TMJ2578D0588

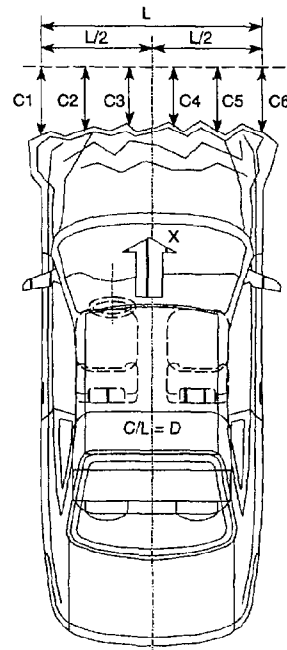
Generator: P5GE02LAZAA TCEPM2603T1195

DATA SHEET NO.19 ACCIDENT INVESTIGATION DIVISION DATA
FOR 56.3 KPH FRONTAL BARRIER IMPACT

Vehicle Make/Model/Body Style: Jeep Cherokee 4 -Door SE 4WD
 NHTSA Test No.: MX0309 VIN: 1J4FF28S1XL532287
 Model Year: 1999 Build Date: 9/98 Test Date: January 7, 1999
 Vehicle Size Category: SUV Test Weight: 1850 kg
 Vehicle Wheelbase: 2579 mm; Front Overhang: 1235 mm; Overall Width: 1699 mm
 Collision Deformation Classification (CDC) Code: 12FDEW3

Crush Depth Dimensions:

	PRE	POST	DIFF	
C1 =	4190	3731	-459	mm
C2 =	4209	3673	-536	mm
C3 =	4233	3674	-559	mm
C4 =	4226	3679	-547	mm
C5 =	4215	3683	-532	mm
C6 =	4200	3765	-435	mm



Midpoint of Damage: $D = \frac{\text{Vehicle Centerline}}{(\text{Longitudinal})}$

Length of Damaged Region:

L1= - mm
 L2= - mm
 L3= - mm

Appendix A
PHOTOGRAPHS

PHOTOGRAPHS

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A-7	POST-TEST RIGHT SIDE VIEW	A-10
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A-11	POST-TEST LEFT REAR THREE-QUARTER VIEW	A-14
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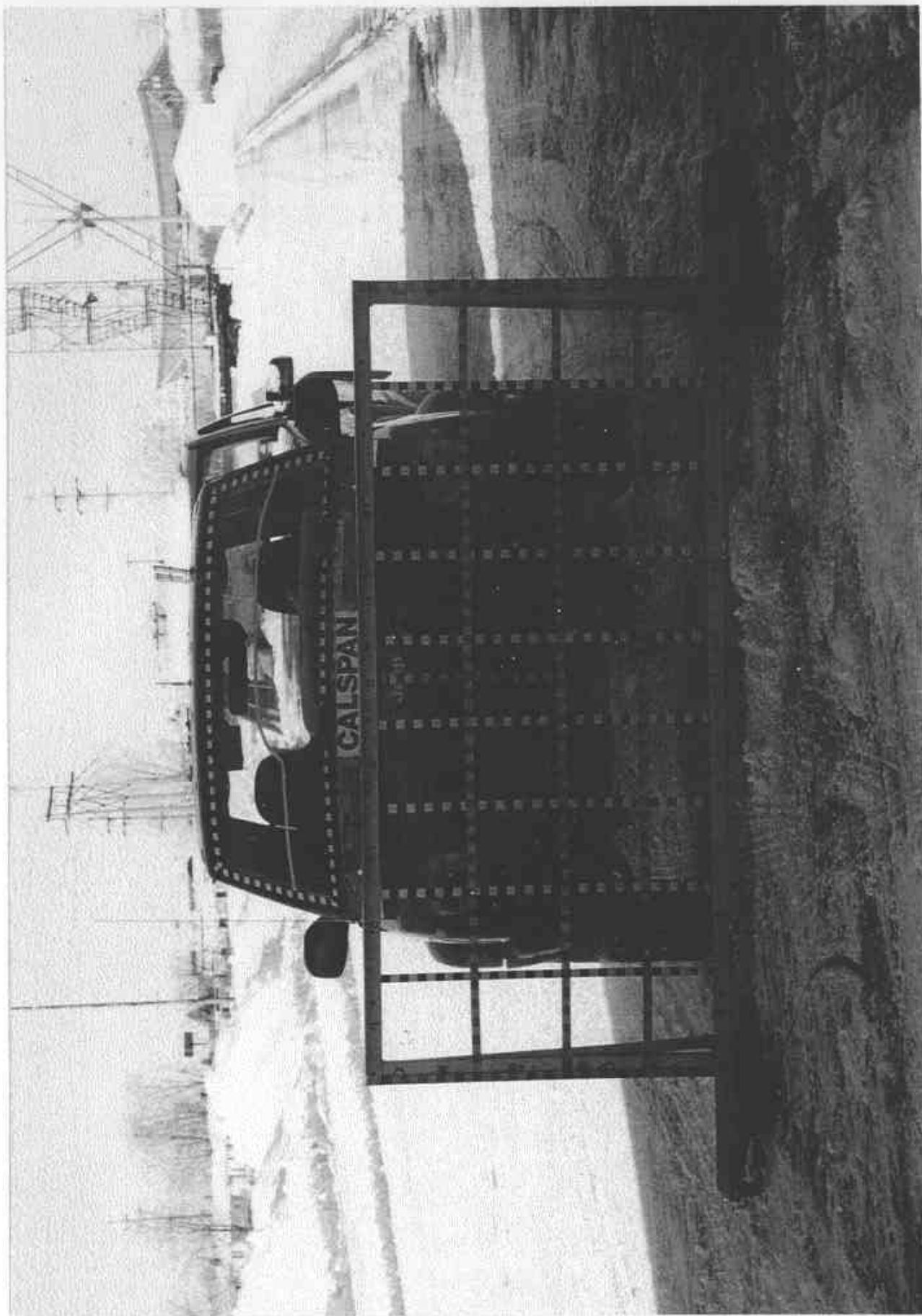


Figure A-1 LOAD CELL LOCATIONS

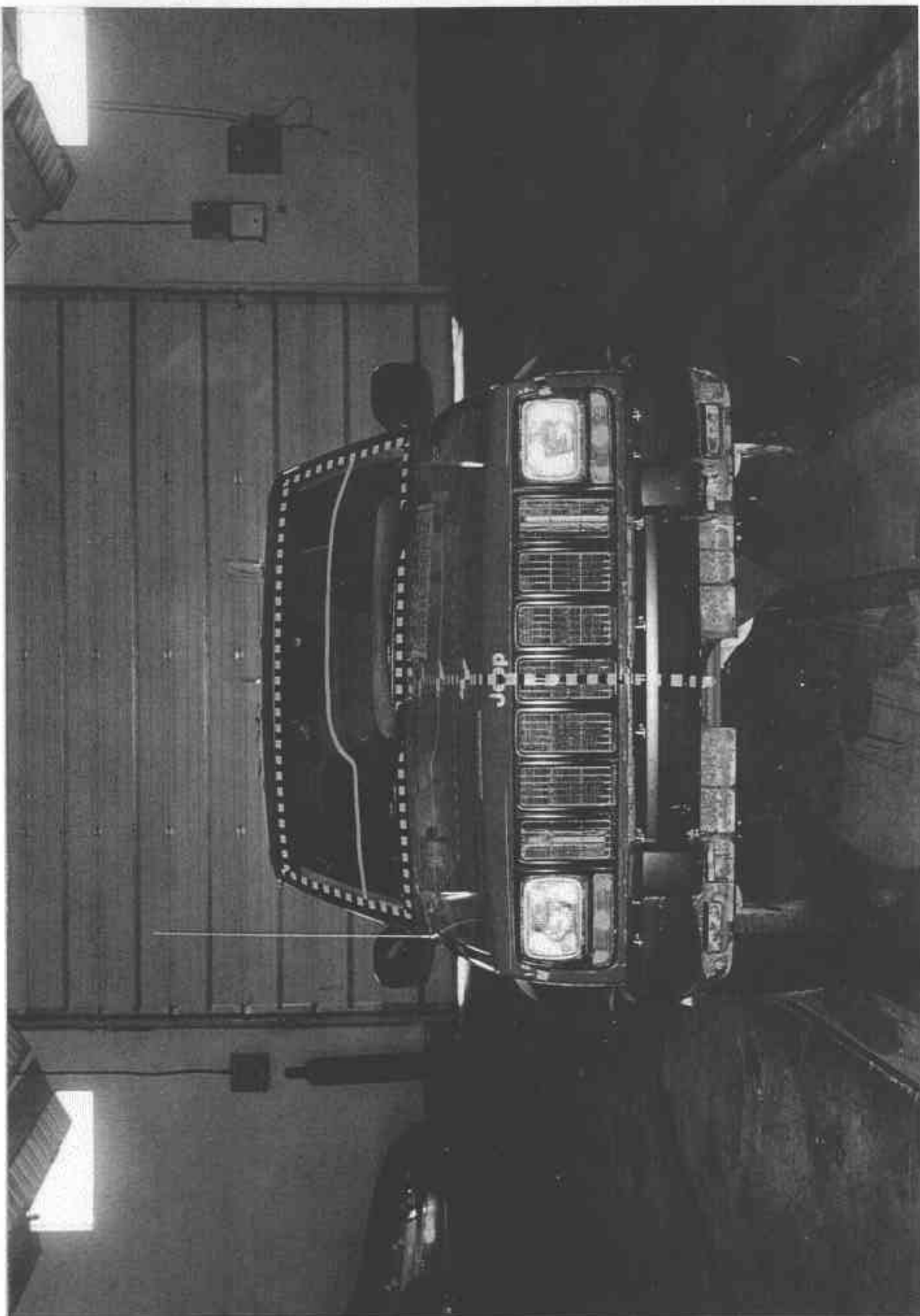


Figure A-2 PRE-TEST FRONT VIEW

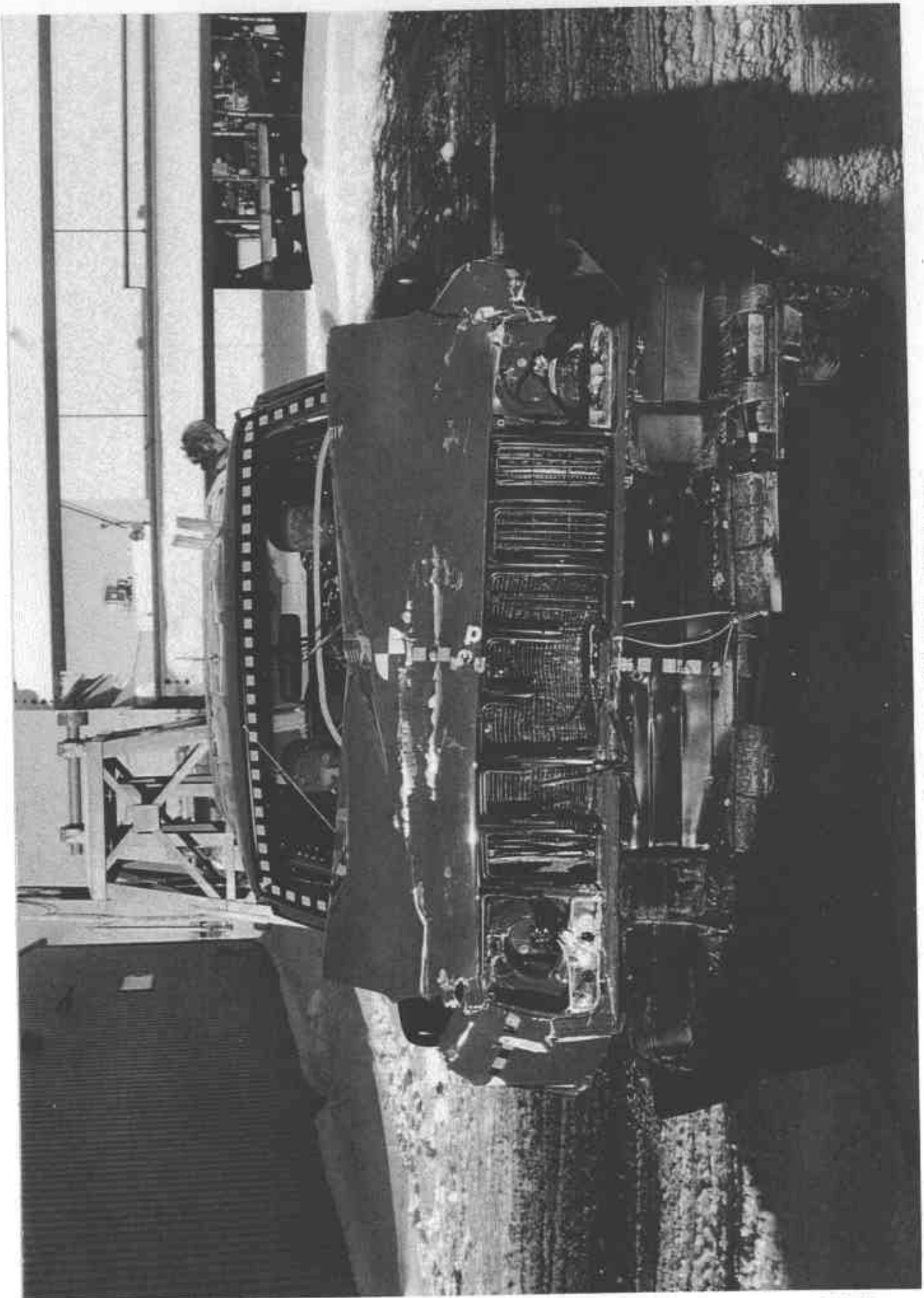


Figure A-3 POST-TEST FRONT VIEW

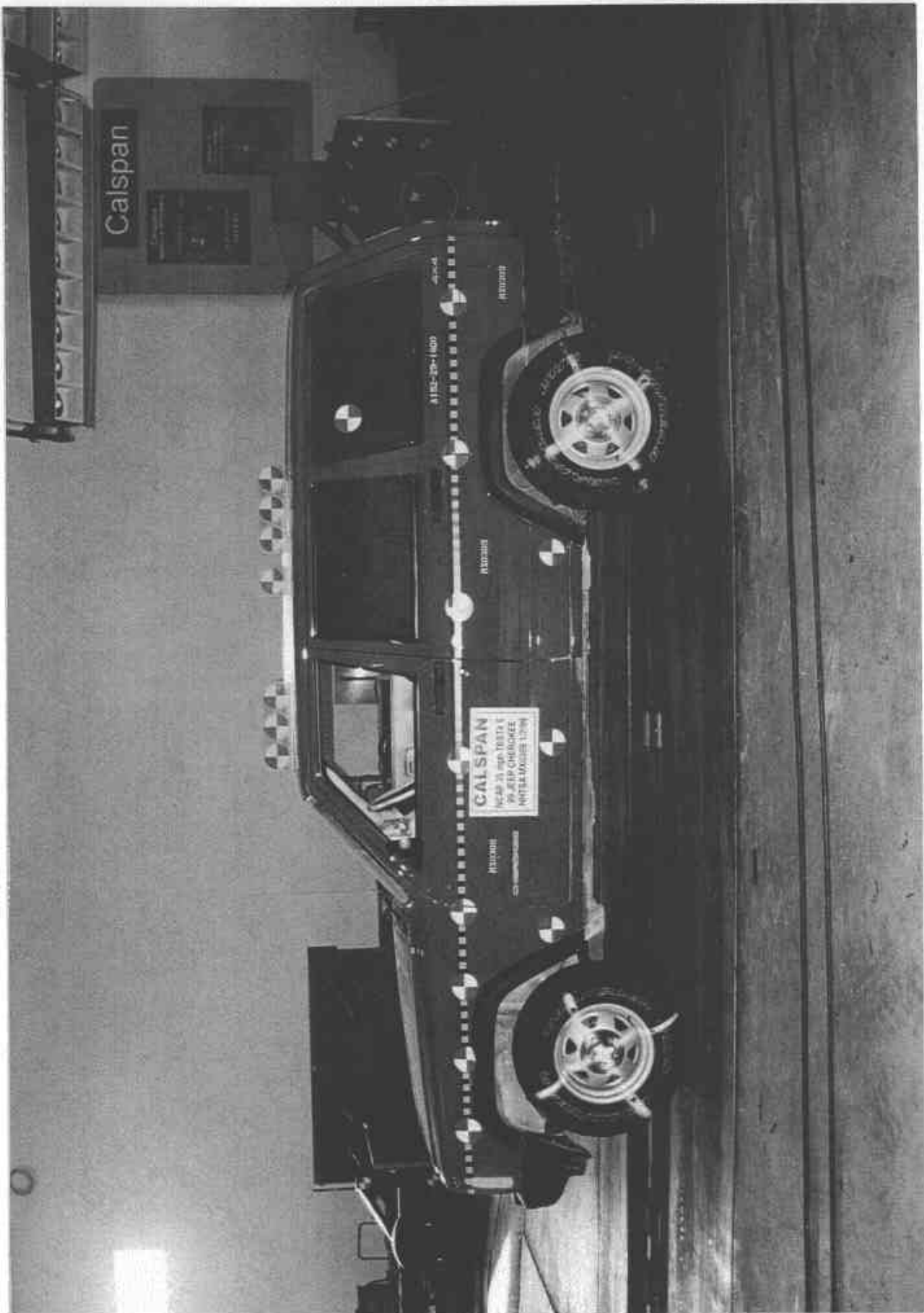


Figure A-4 PRE-TEST LEFT SIDE VIEW

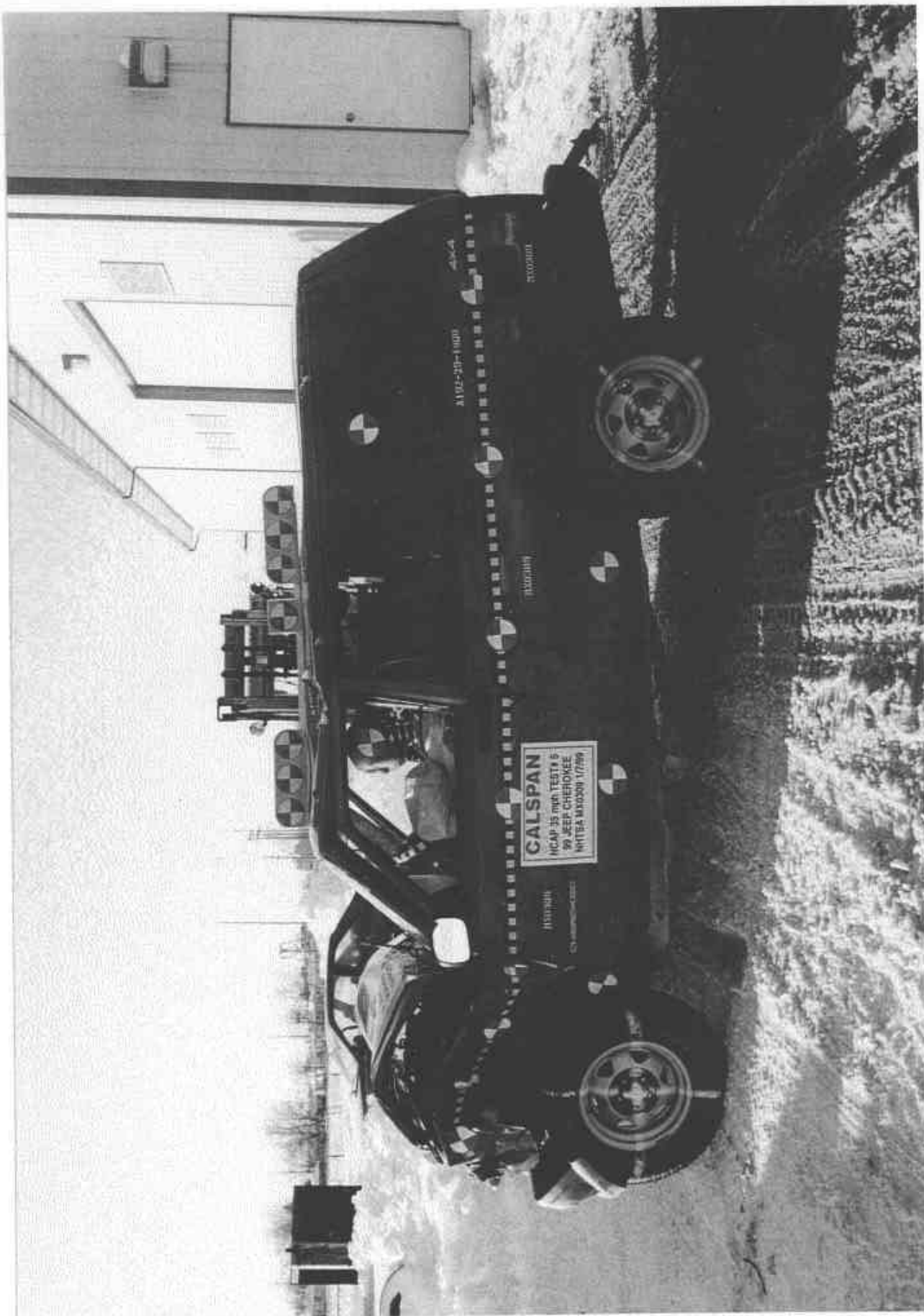


Figure A-5 POST-TEST LEFT SIDE VIEW

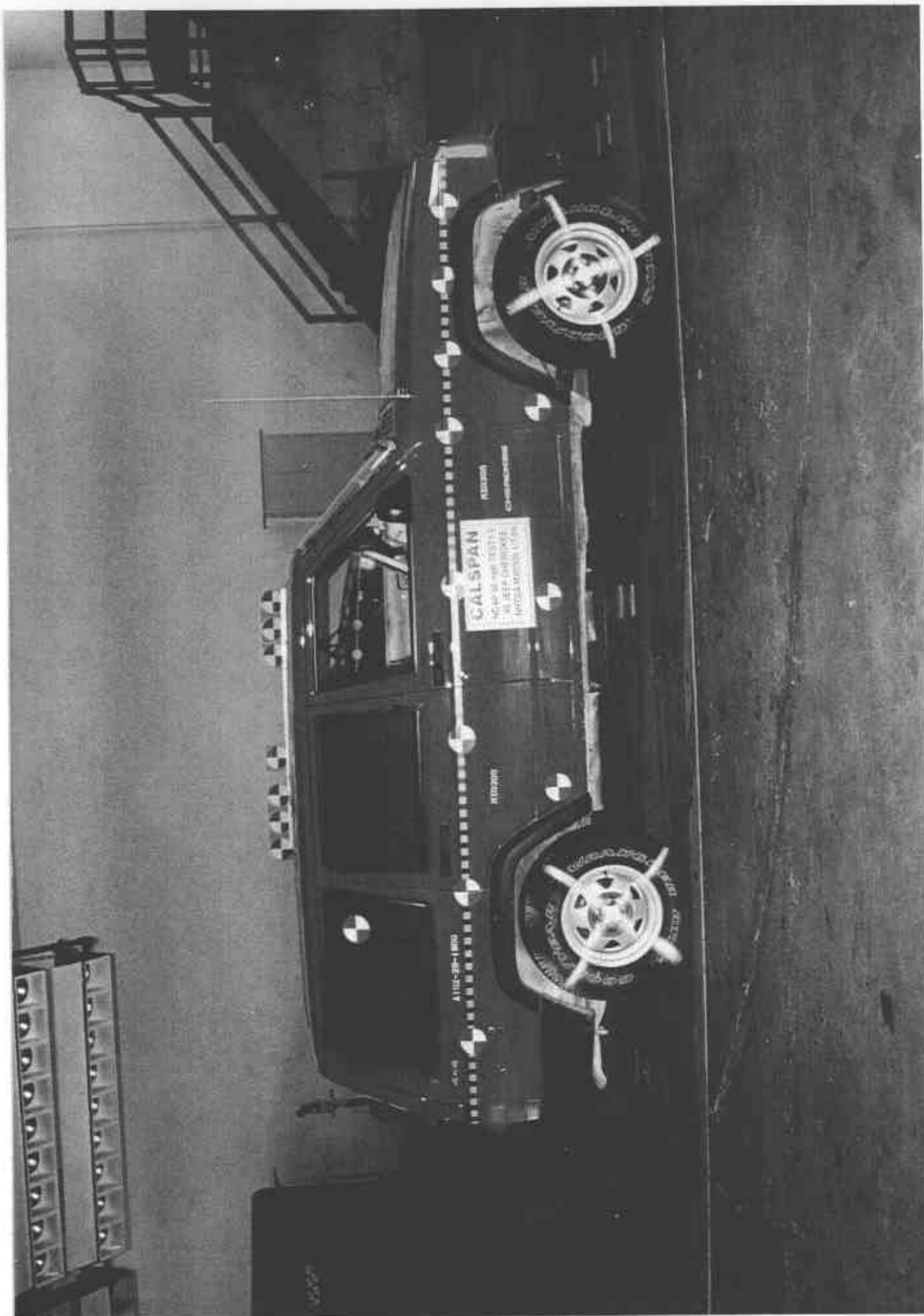


Figure A-6 PRE-TEST RIGHT SIDE VIEW

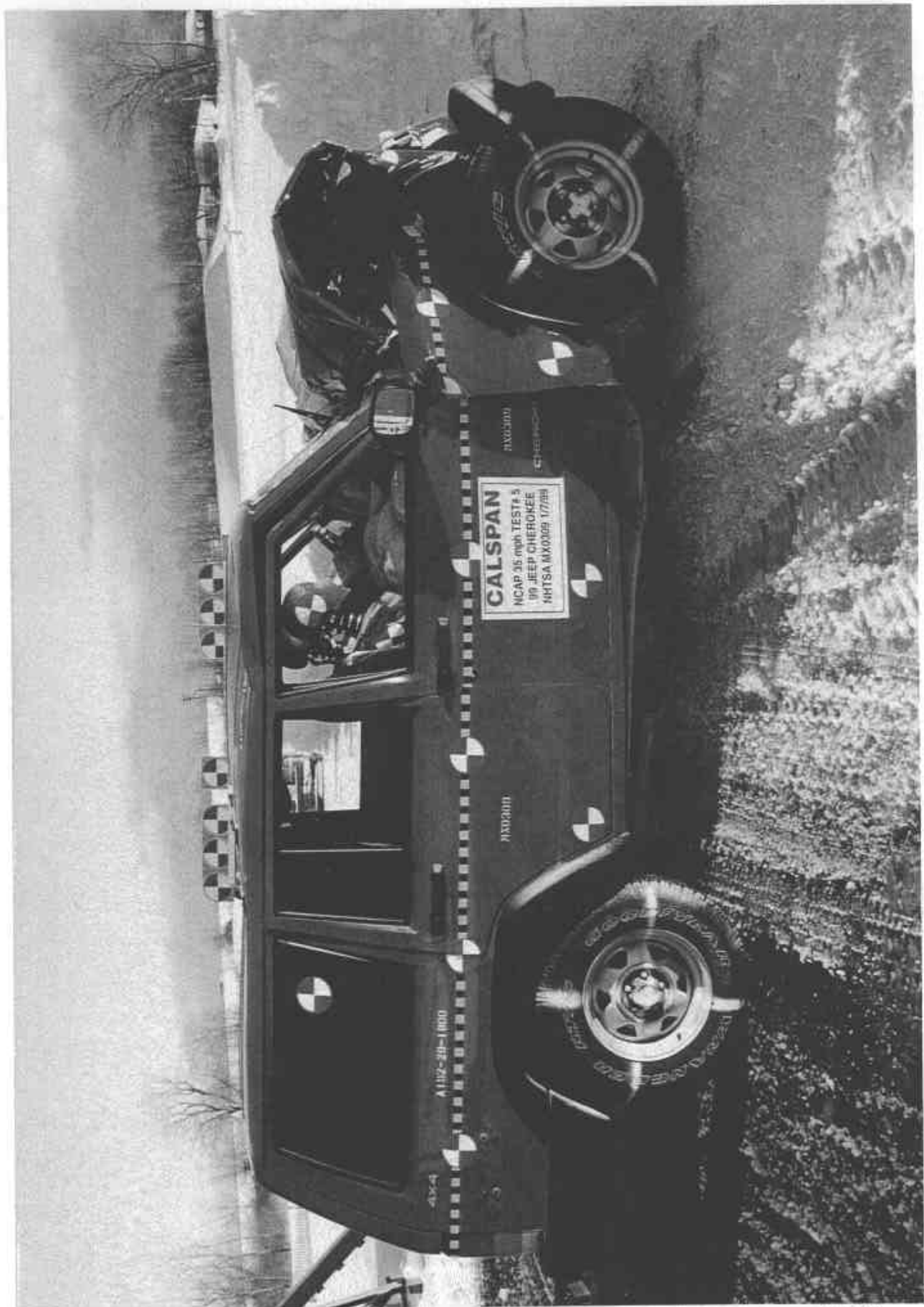


Figure A-7 POST-TEST RIGHT SIDE VIEW



Figure A-8 PRE-TEST RIGHT FRONT THREE-QUARTER VIEW

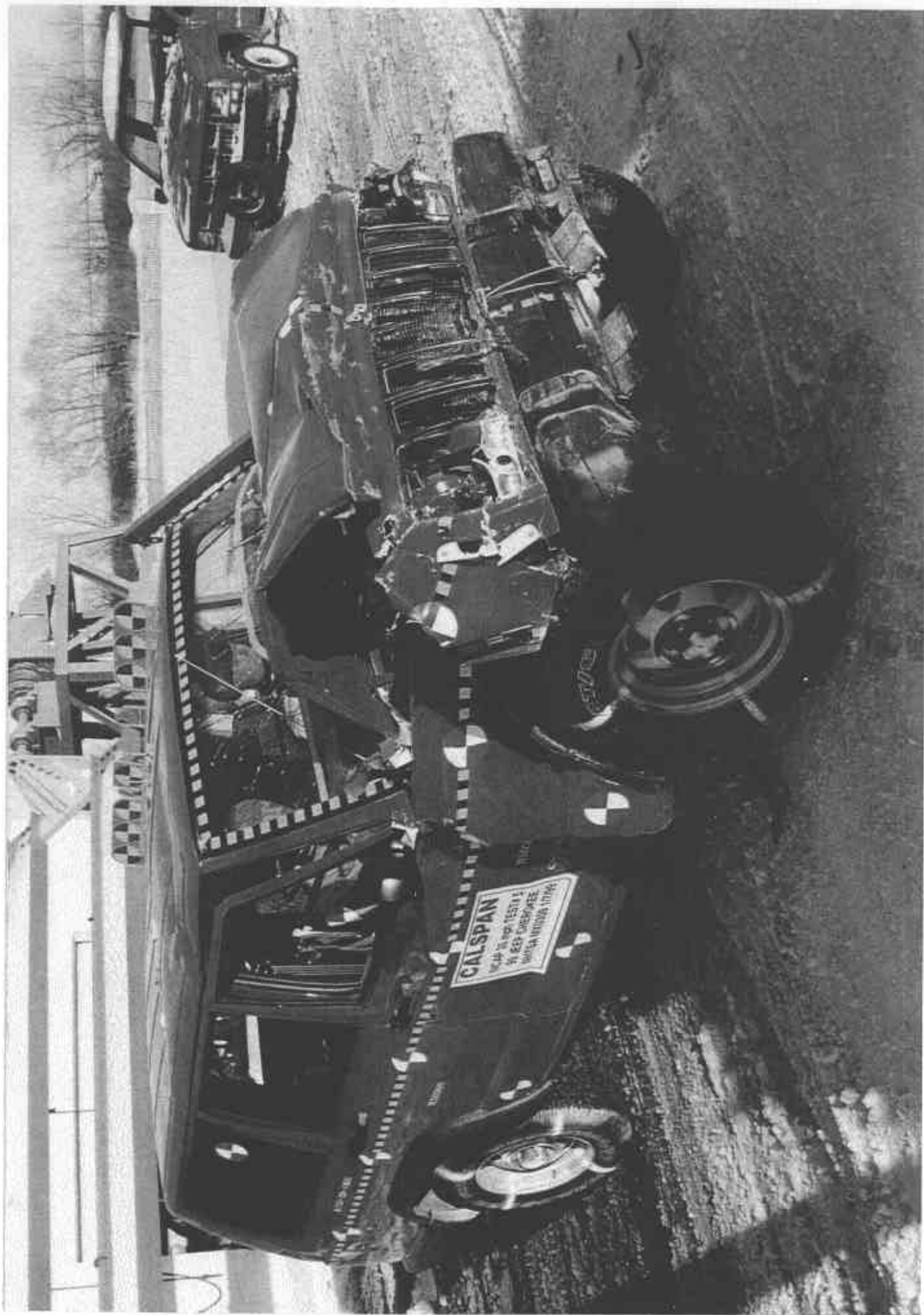


Figure A-9 POST-TEST RIGHT FRONT THREE-QUARTER VIEW



Figure A-10 PRE-TEST LEFT REAR THREE-QUARTER VIEW



Figure A-11 POST-TEST LEFT REAR THREE-QUARTER VIEW

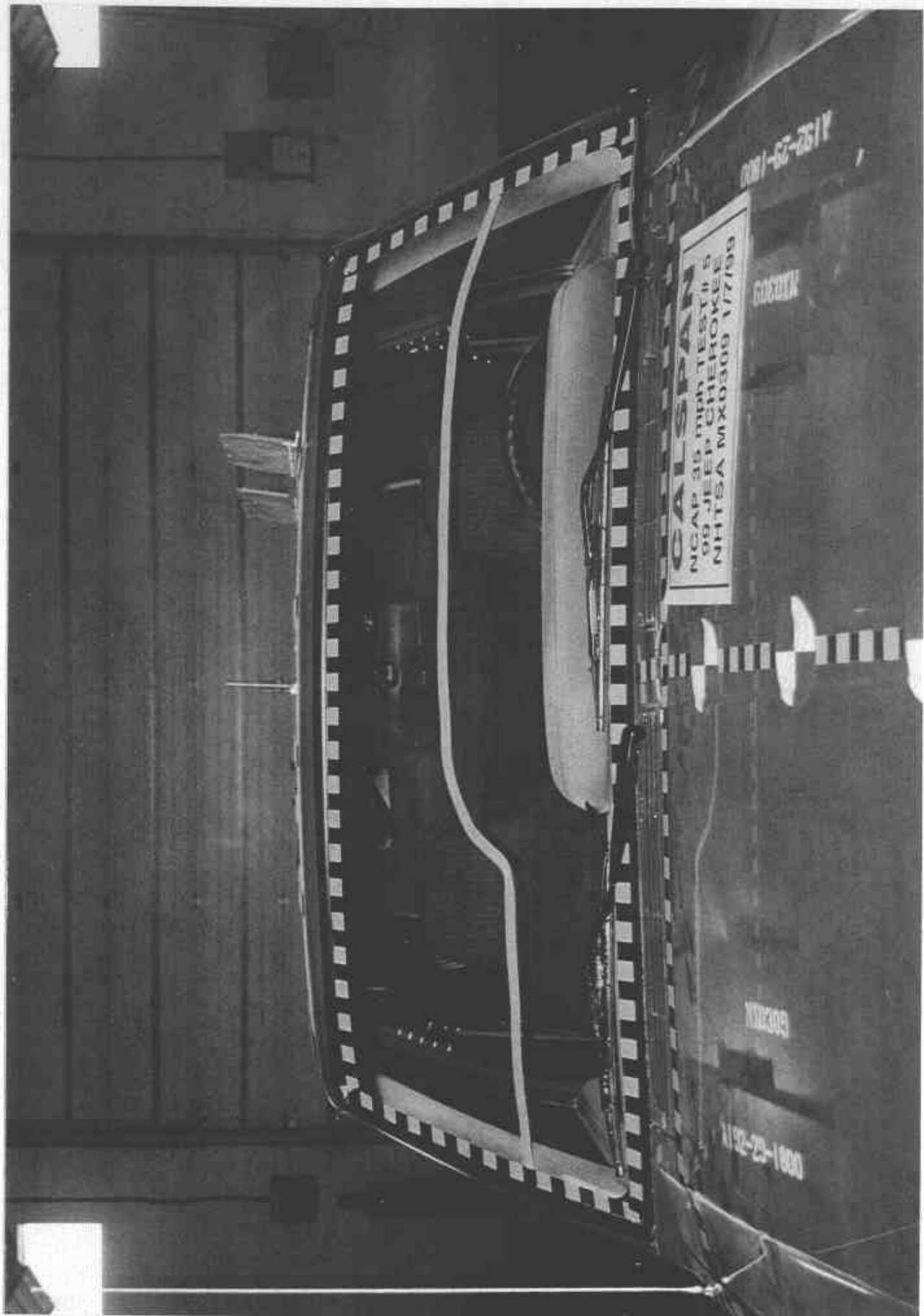


Figure A-12 PRE-TEST WINDSHIELD VIEW

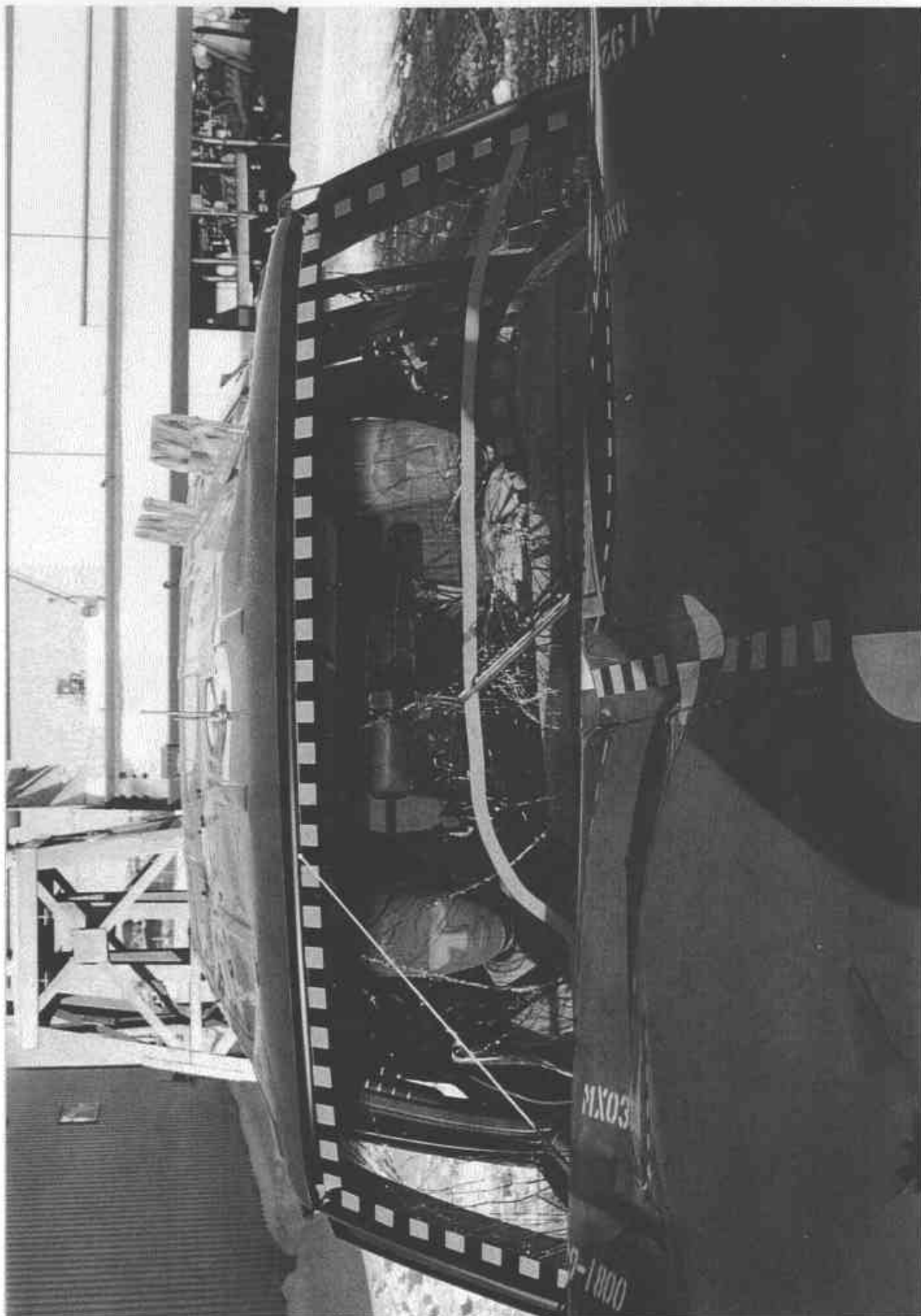


Figure A-13 POST-TEST WINDSHIELD VIEW

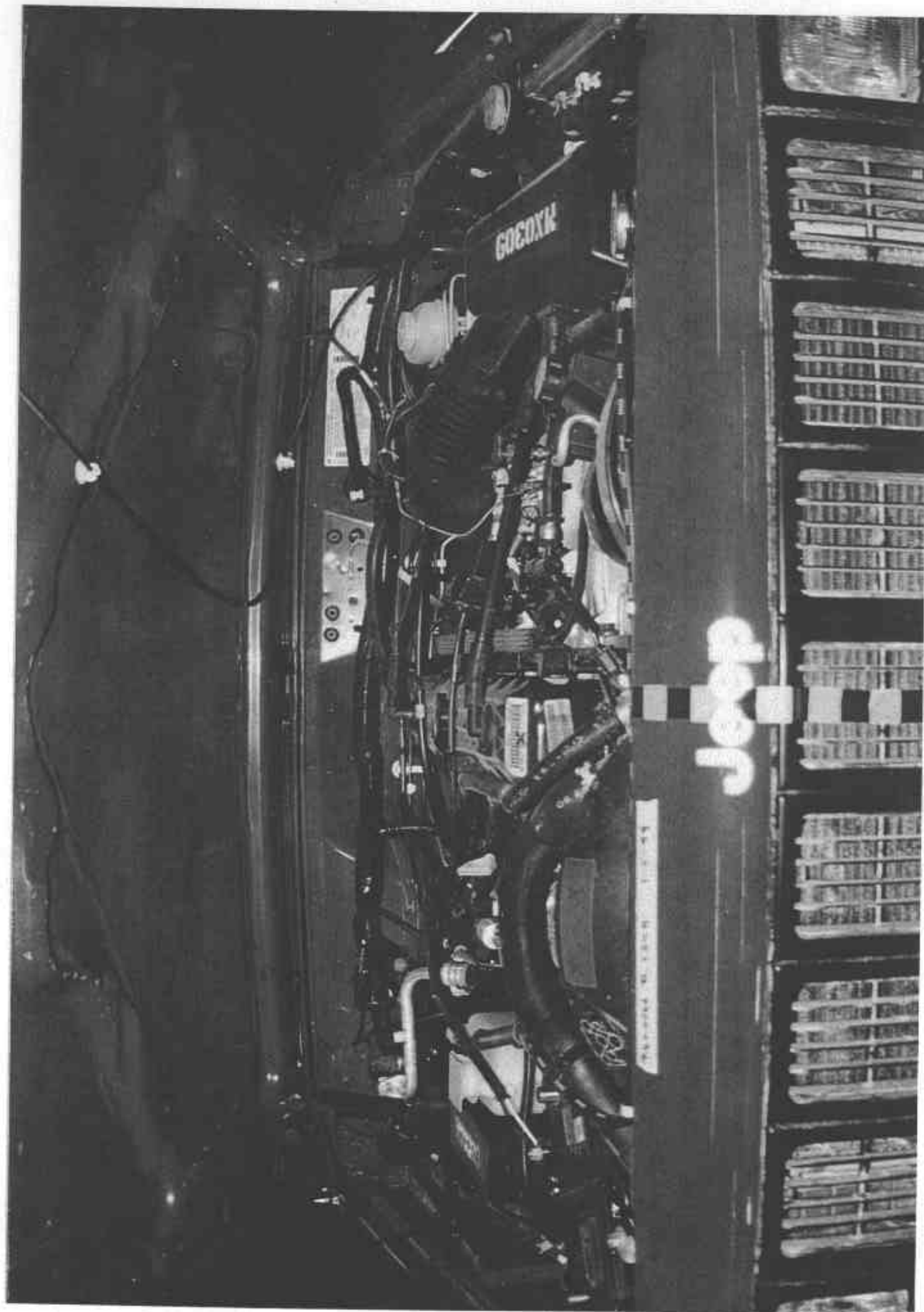


Figure A-14 PRE-TEST ENGINE COMPARTMENT VIEW



Figure A-15 FUEL CAP VIEW

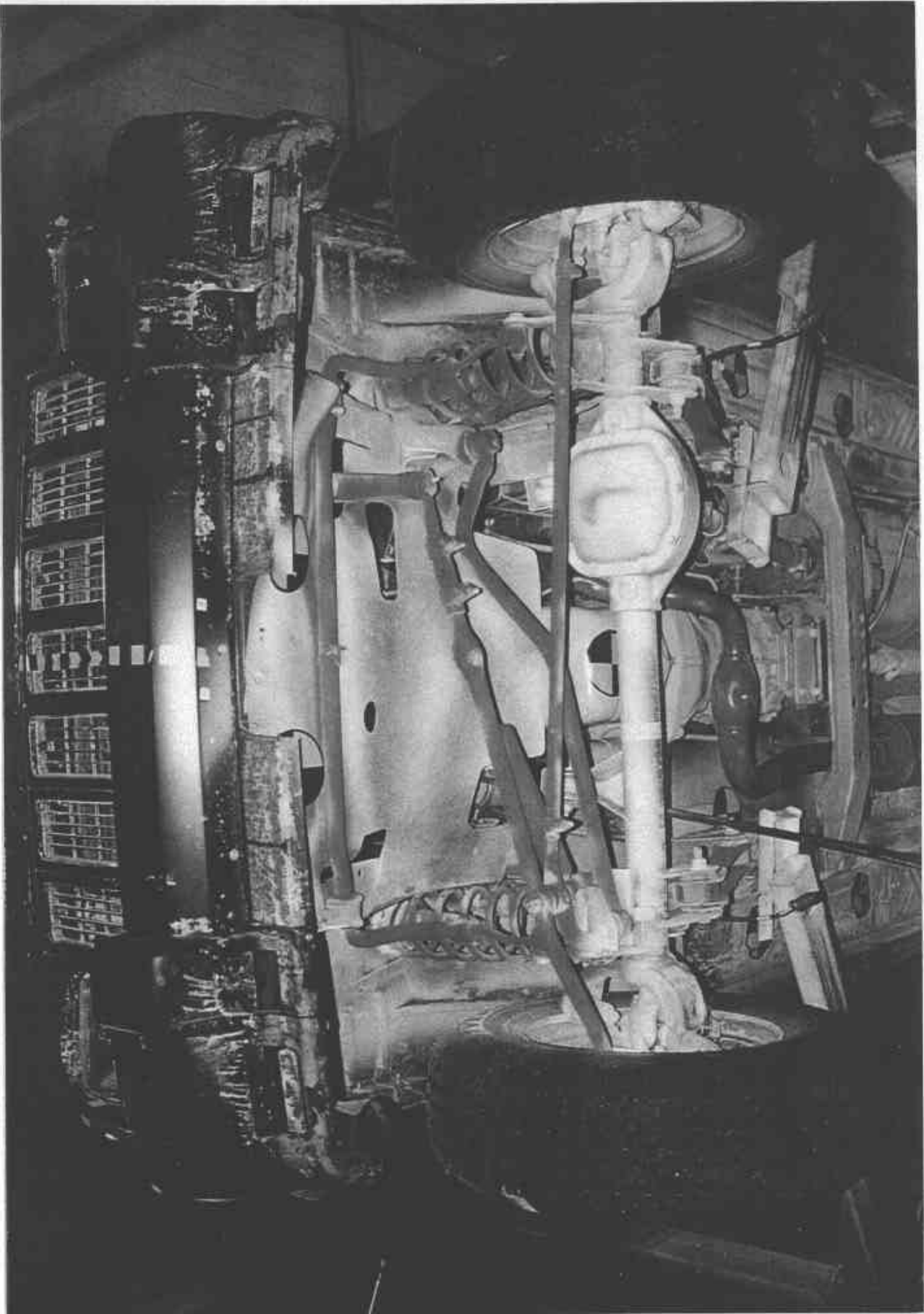


Figure A-16 PRE-TEST FRONT UNDERBODY VIEW

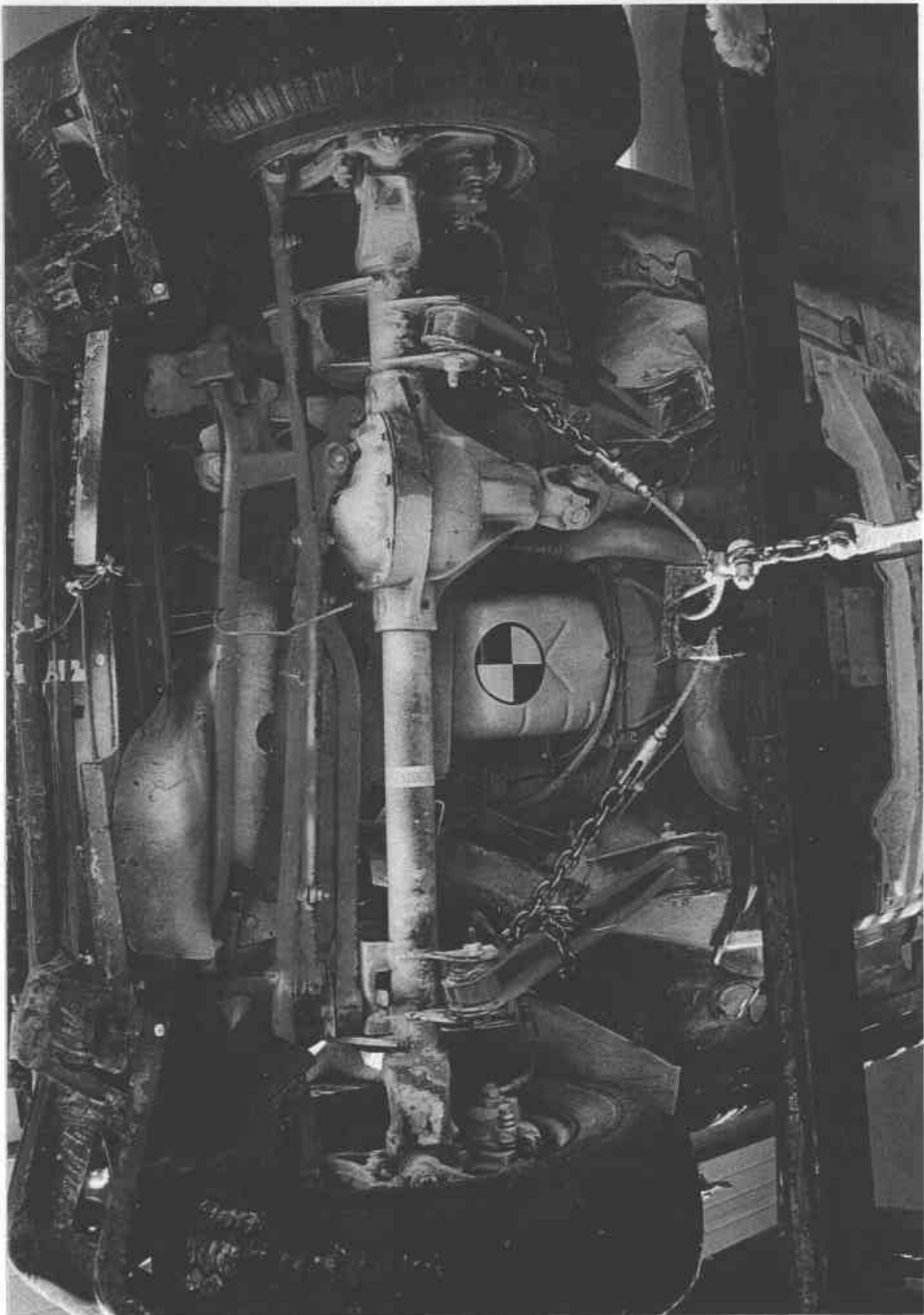


Figure A-17 POST-TEST FRONT UNDERBODY VIEW

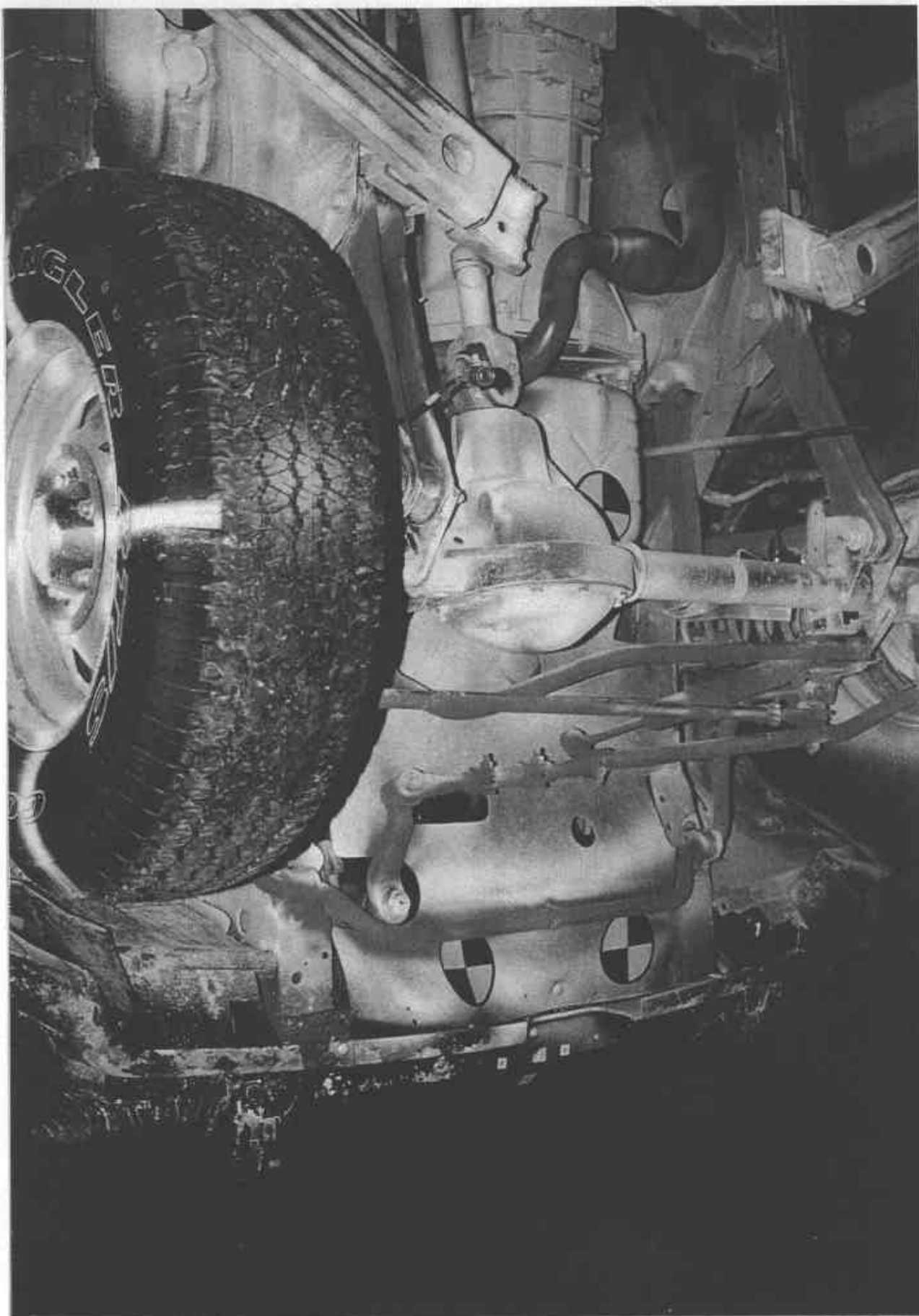


Figure A-18 PRE-TEST FRONT SIDE UNDERBODY VIEW



Figure A-19 POST-TEST FRONT SIDE UNDERBODY VIEW

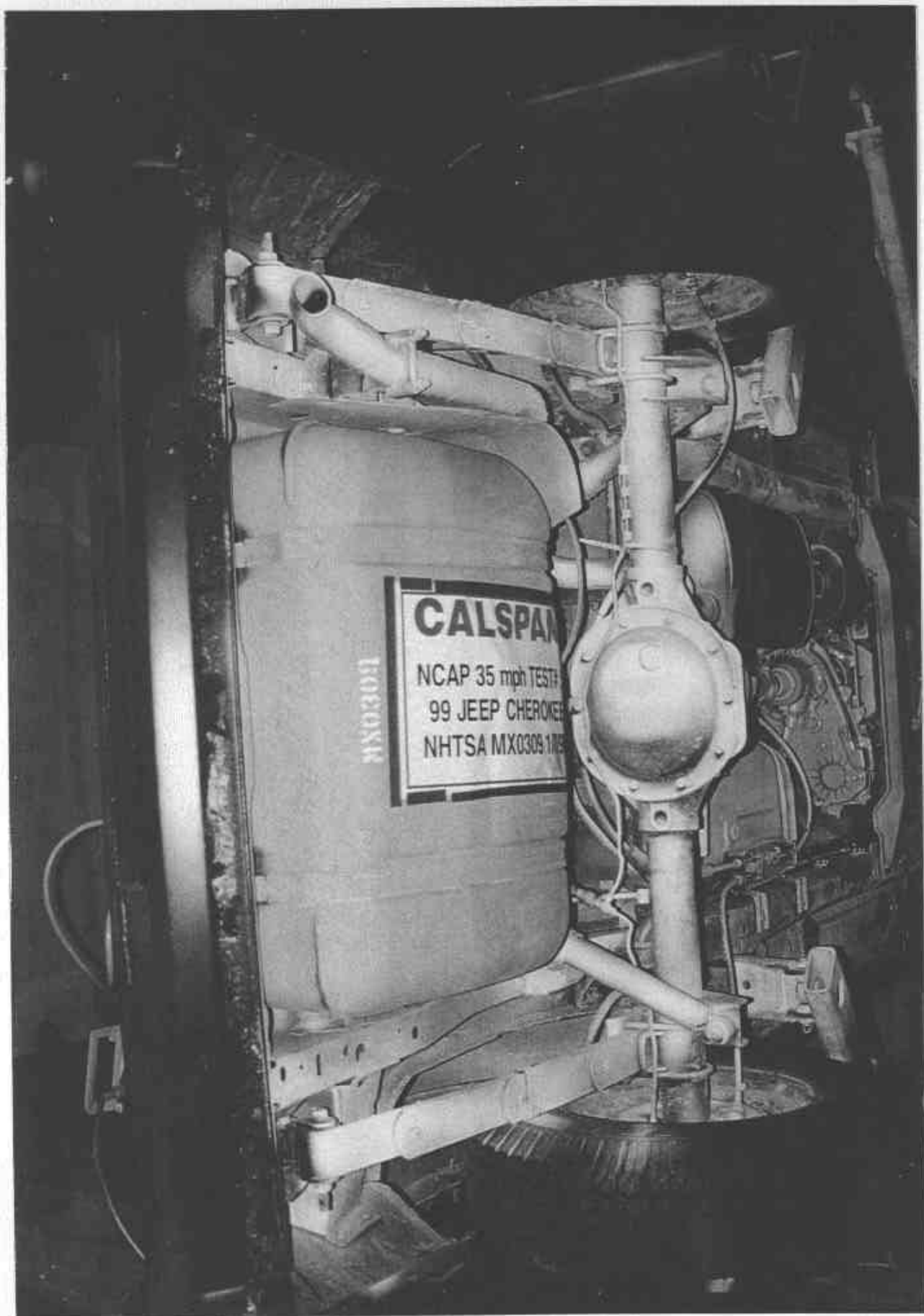


Figure A-20 PRE-TEST REAR UNDERBODY VIEW



Figure A-21 POST-TEST REAR UNDERBODY VIEW

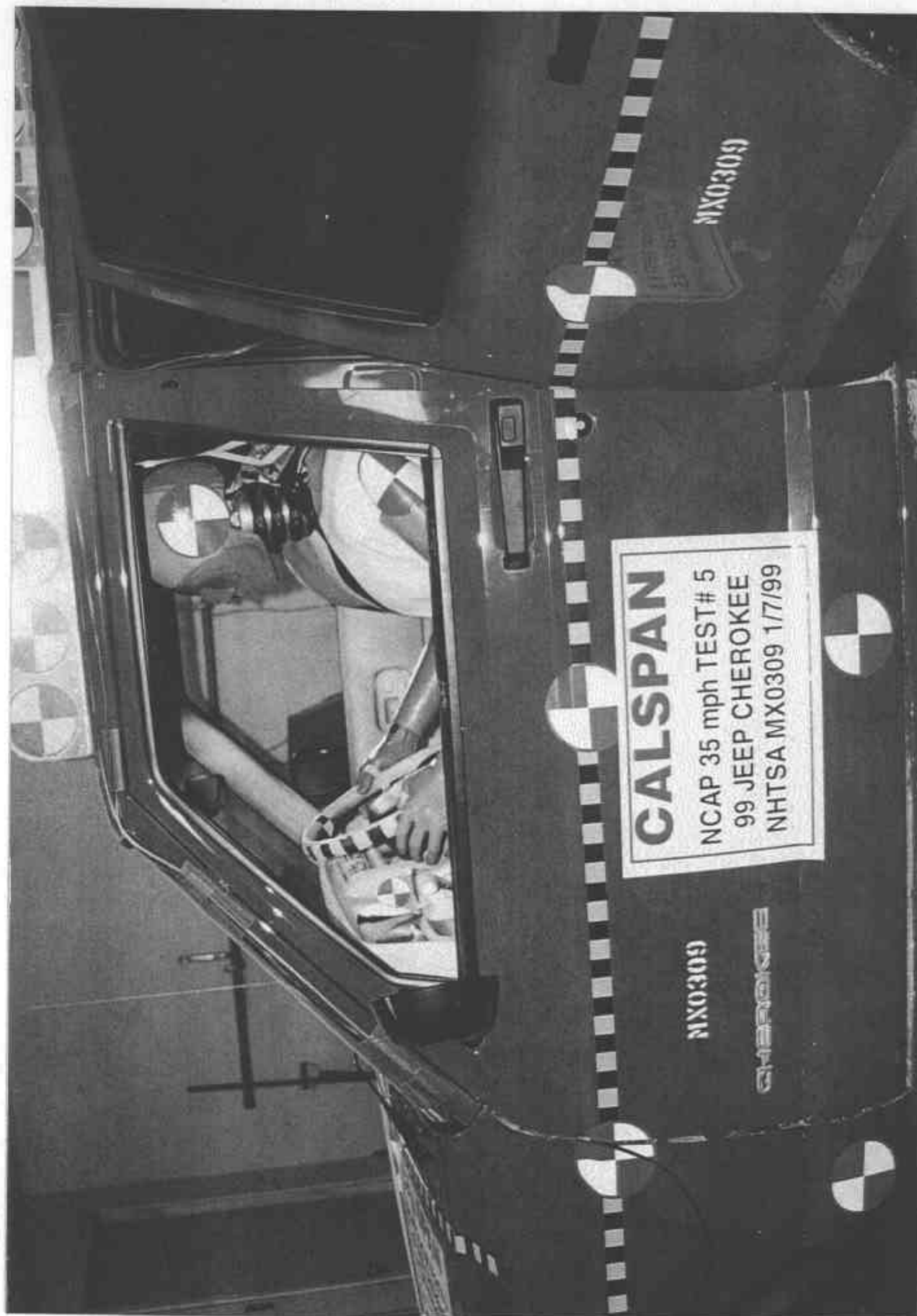


Figure A-22 PRE-TEST DRIVER POSITION VIEW



Figure A-23 POST-TEST DRIVER POSITION VIEW

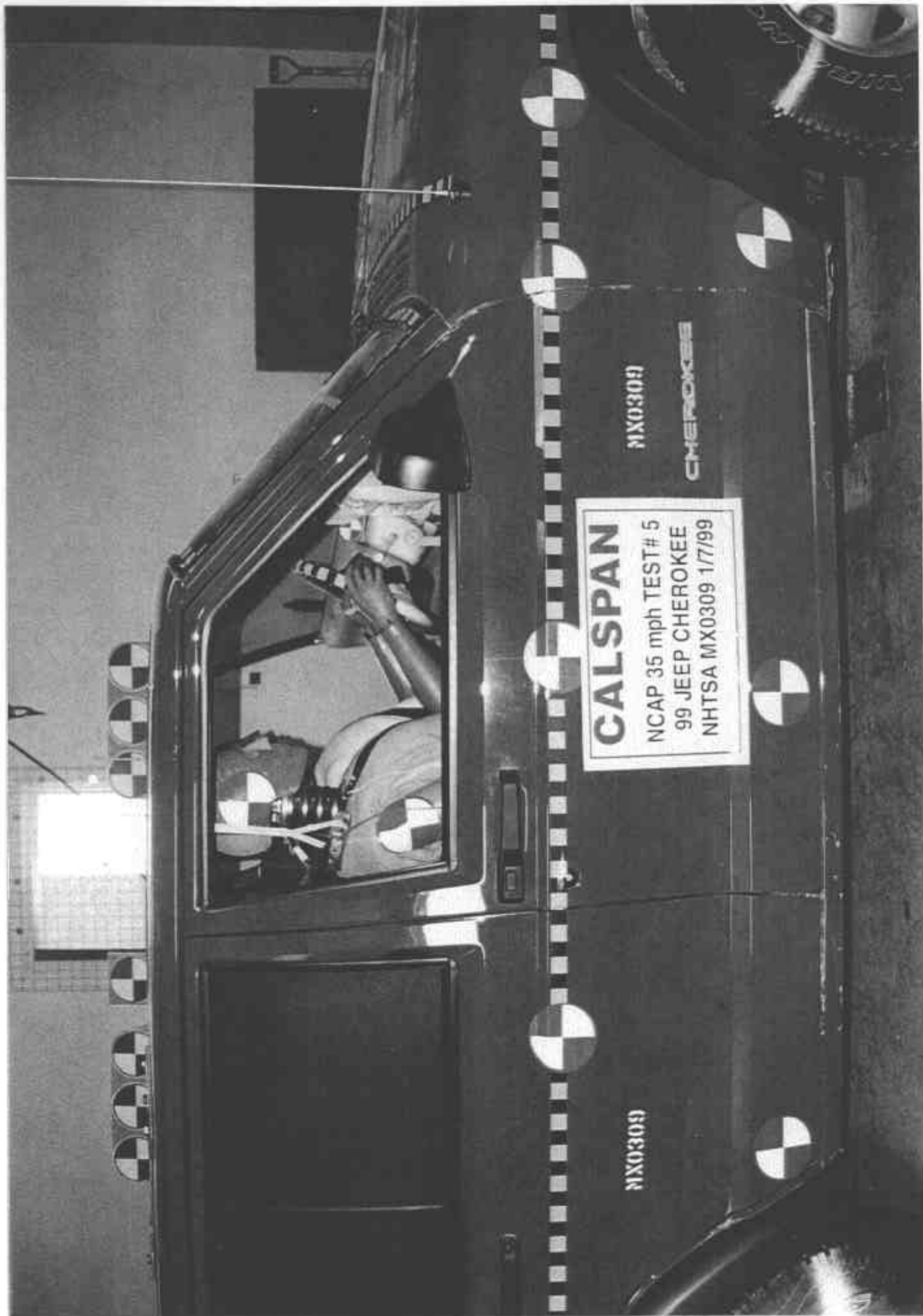


Figure A-24 PRE-TEST PASSENGER POSITION VIEW

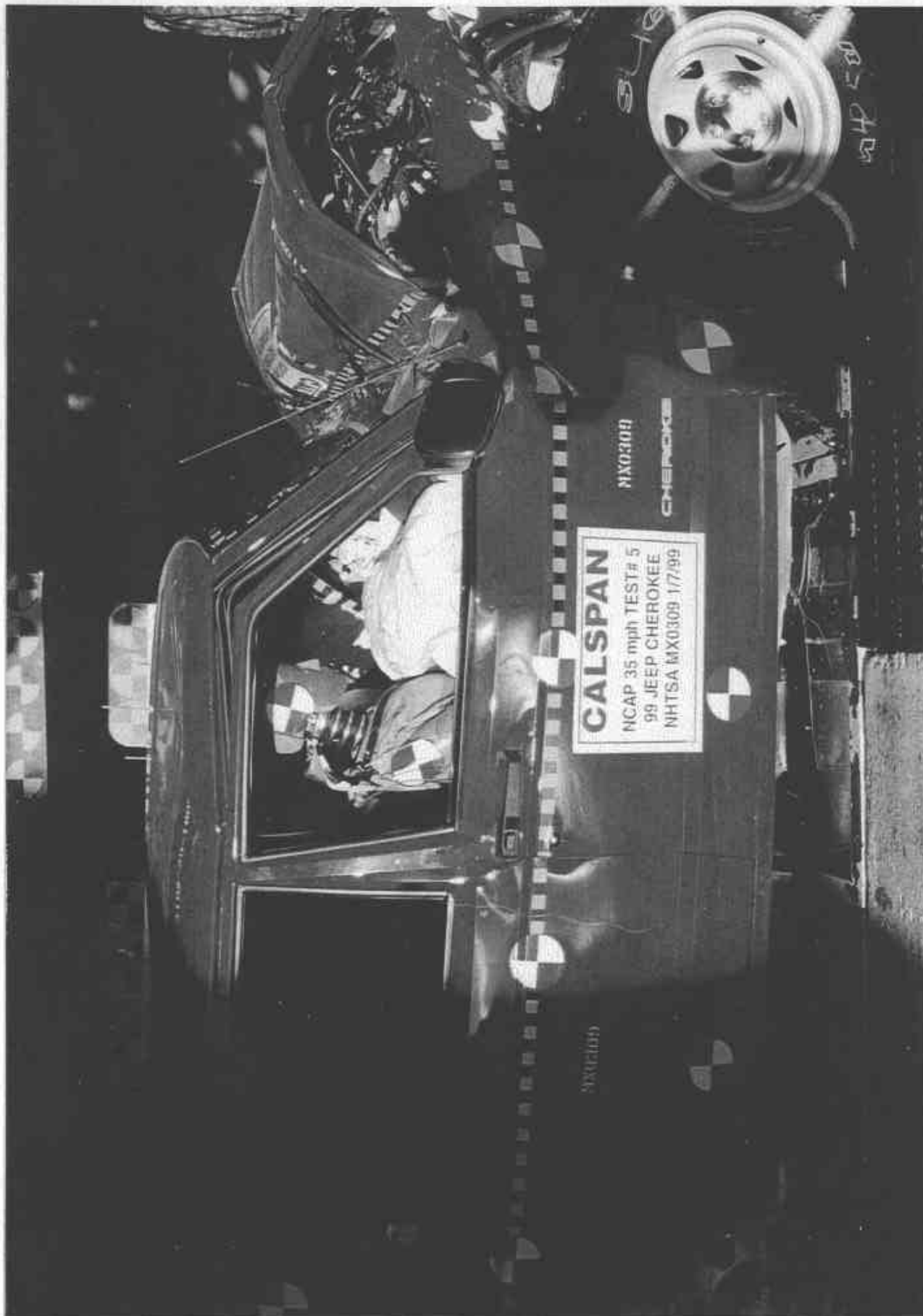


Figure A-25 POST-TEST PASSENGER POSITION VIEW



Figure A-27 POST-TEST DRIVER AND INTERIOR VIEW



Figure A-28 PRE-TEST PASSENGER AND INTERIOR VIEW



Figure A-29 POST-TEST PASSENGER AND INTERIOR VIEW



Figure A-30 PRE-TEST DRIVER HEAD LOCATION



Figure A-31 POST-TEST DRIVER HEAD LOCATION

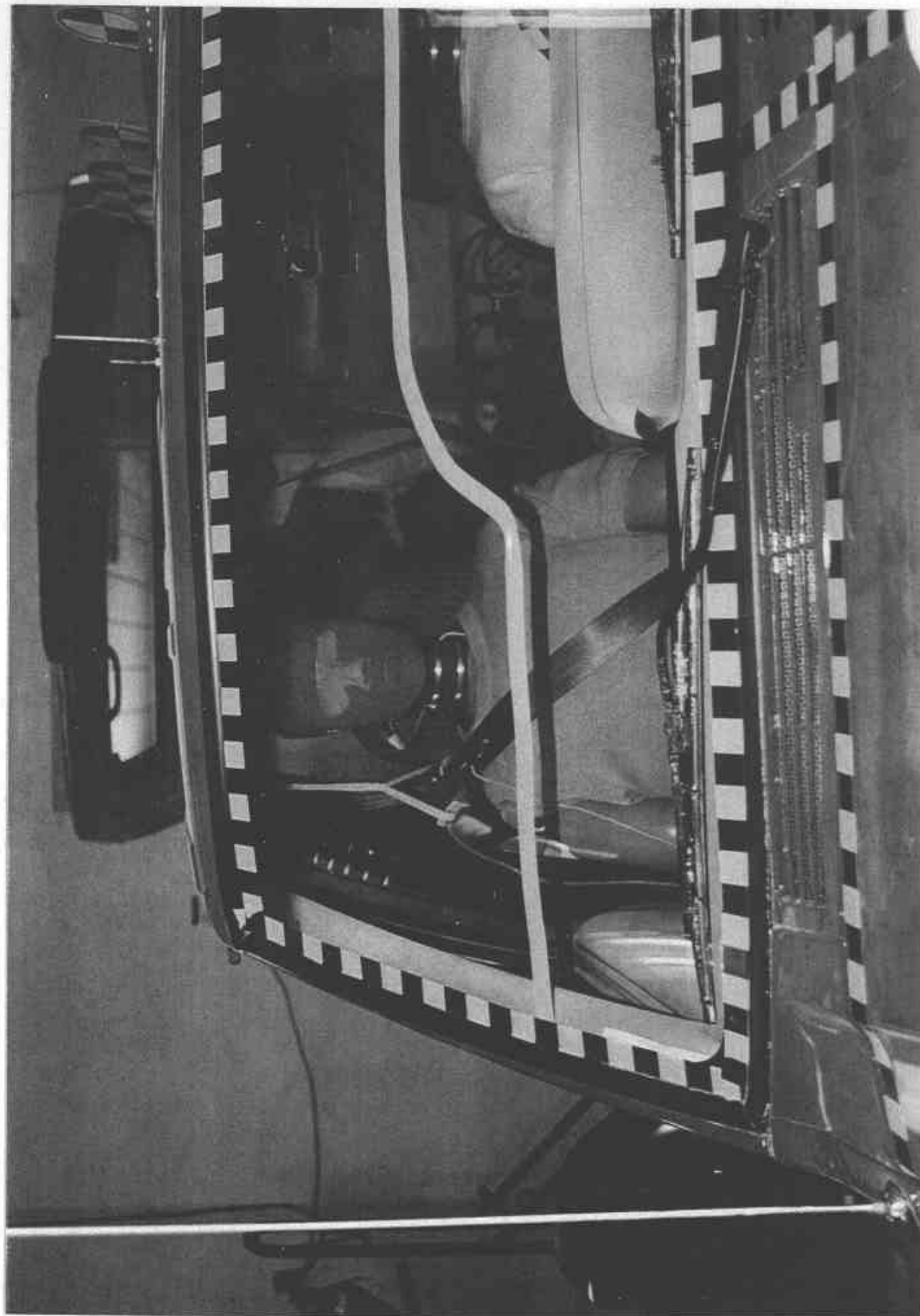


Figure A-32 PRE-TEST PASSENGER HEAD LOCATION



Figure A-33 POST-TEST PASSENGER HEAD LOCATION

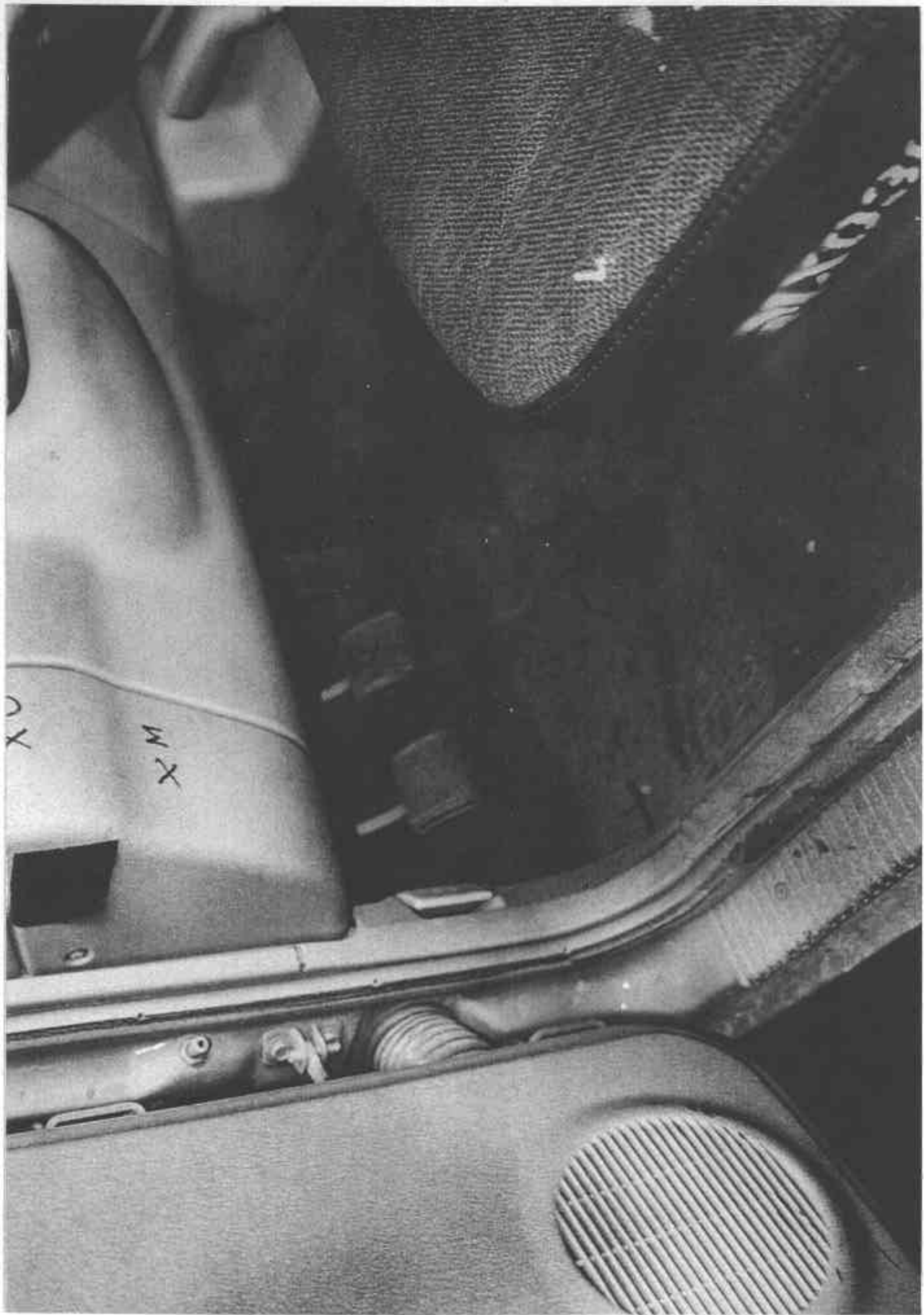


Figure A-34 PRE-TEST DRIVER FLOOR PAN VIEW



Figure A-35 POST-TEST DRIVER FLOOR PAN VIEW

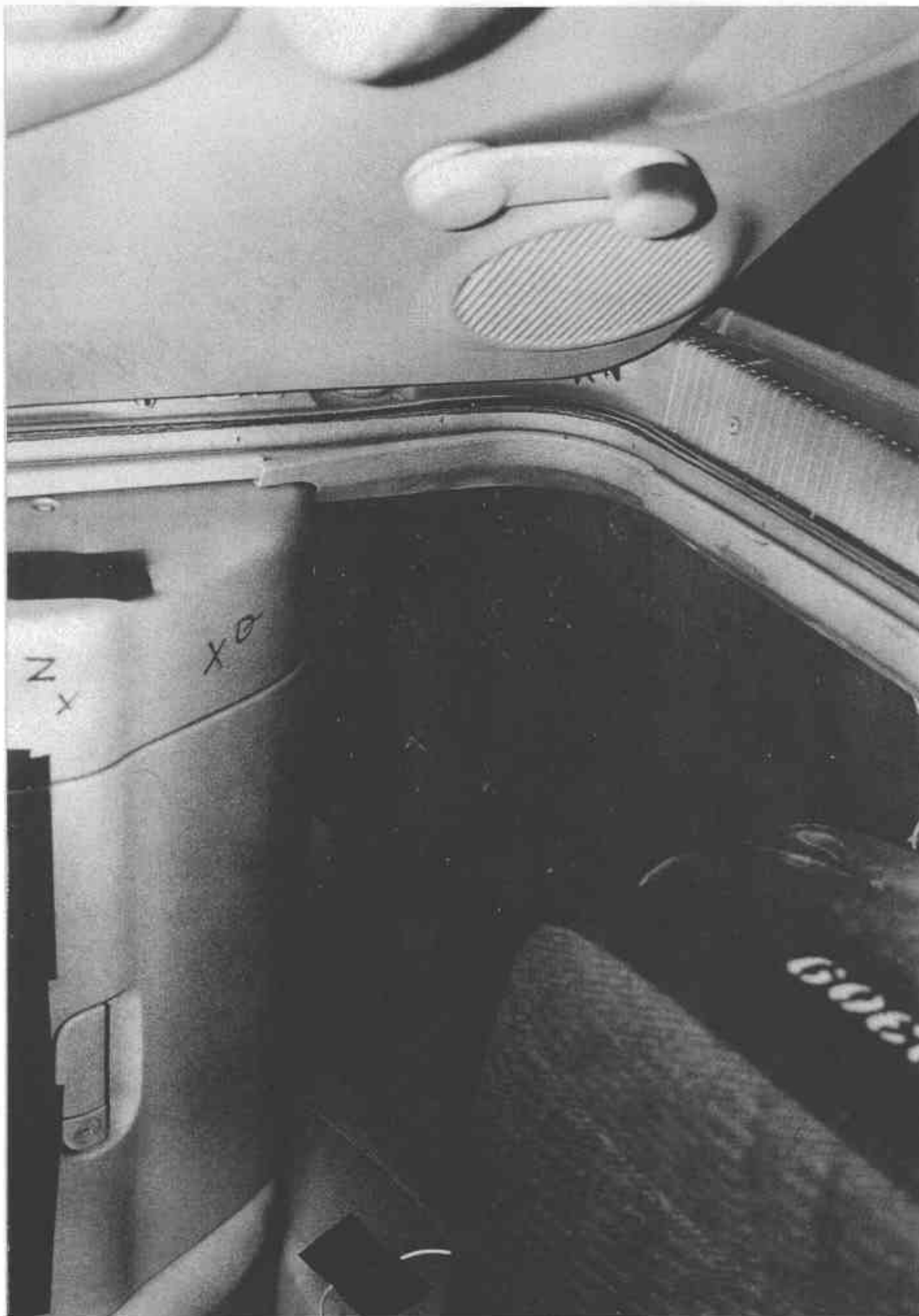


Figure A-36 PRE-TEST PASSENGER FLOOR PAN VIEW

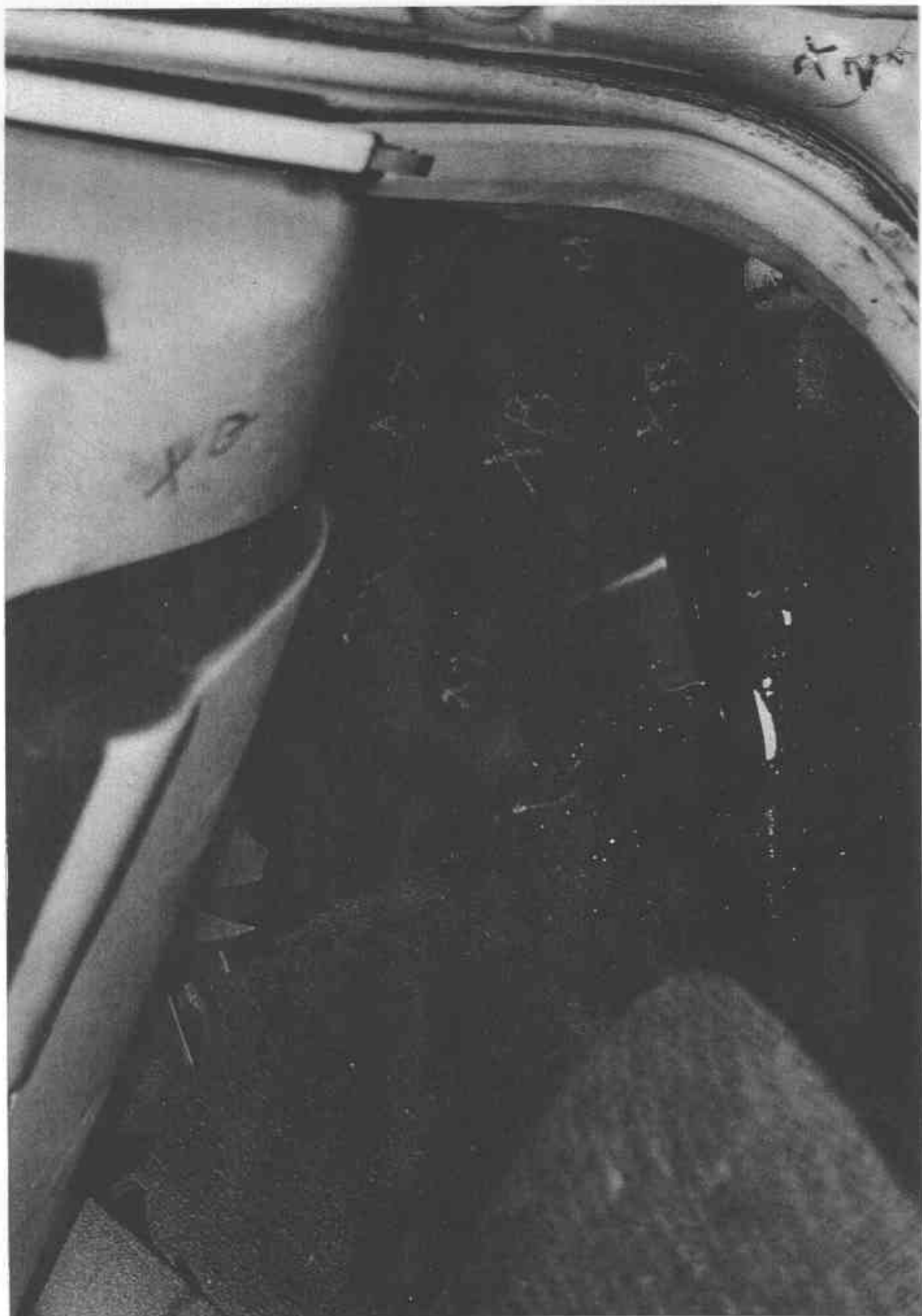


Figure A-37 POST-TEST PASSENGER FLOOR PAN VIEW



Figure A-38 ROLLOVER VIEW

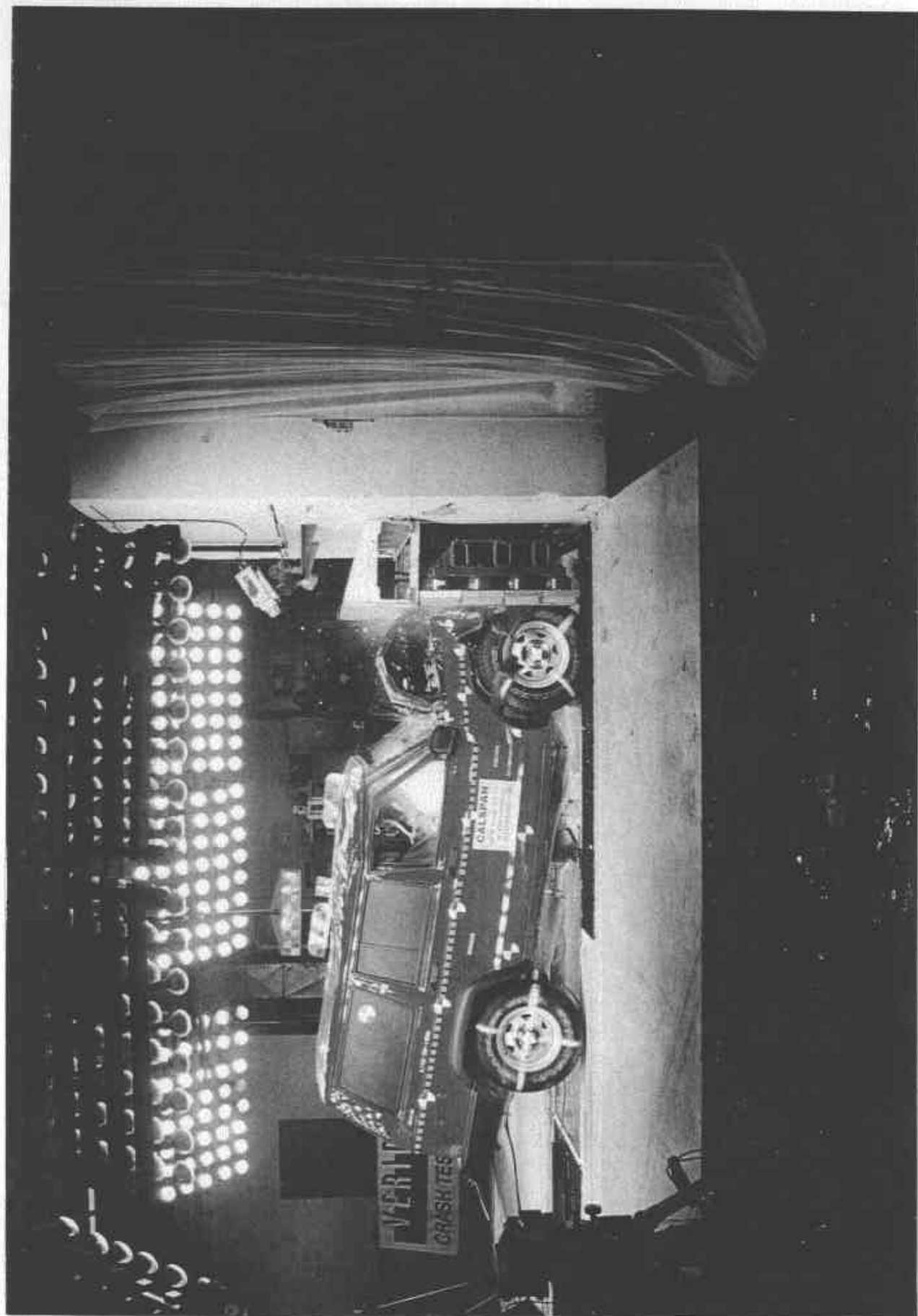


Figure A-39 IMPACT VIEW

Appendix B
DUMMY, VEHICLE AND LOAD CELL BARRIER RESPONSE DATA

NHTSA TEST NO. MX0309

DUMMY DATA

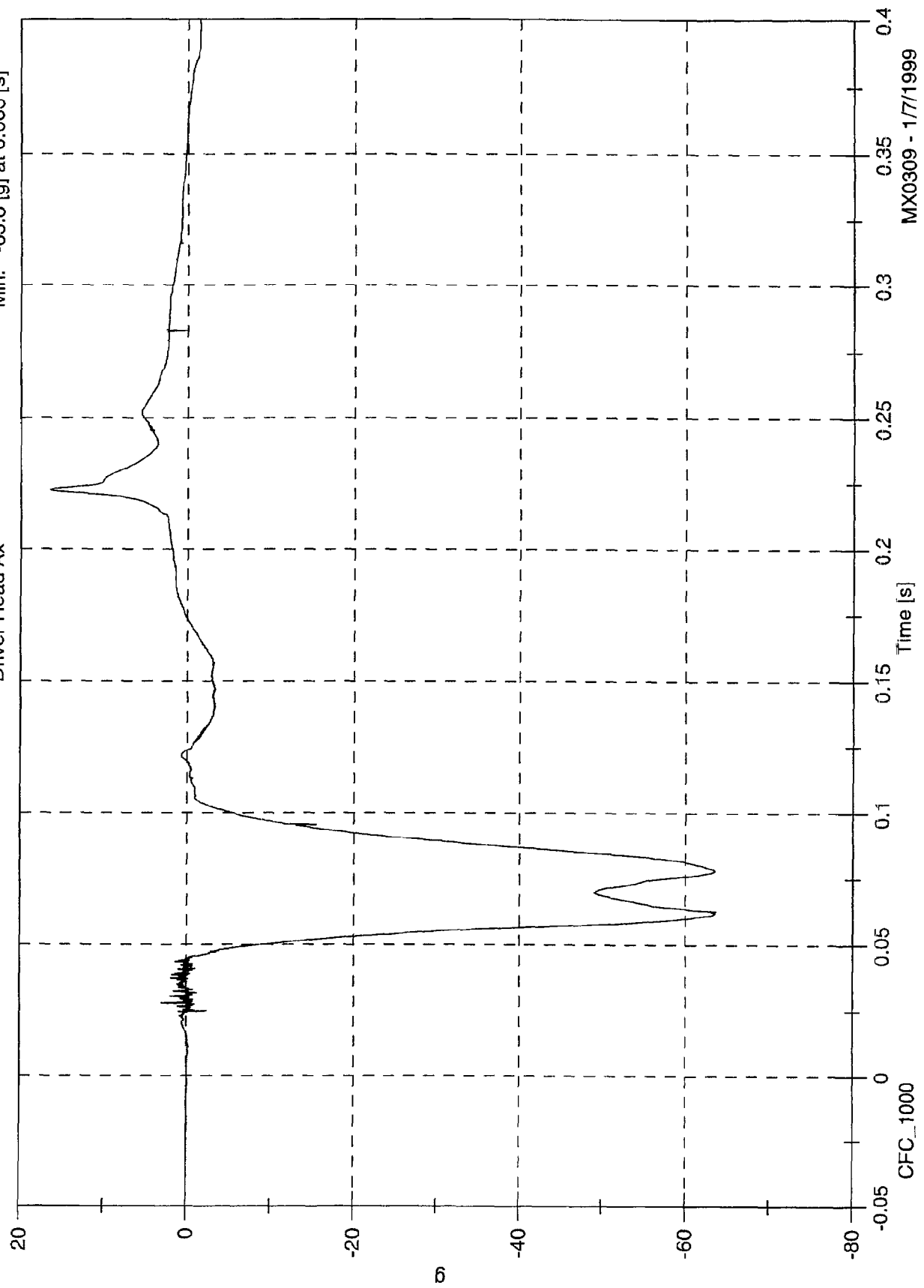
CLASS	FILTER CHANNEL
Head Accelerations	1000
Chest Accelerations	180
Chest Displacements	60
Femur Forces	600
Belt Loads	60
Belt Displacements	180
Neck Forces	1000
Neck Moments	600

NCAP #5 - 1999 Jeep Cherokee

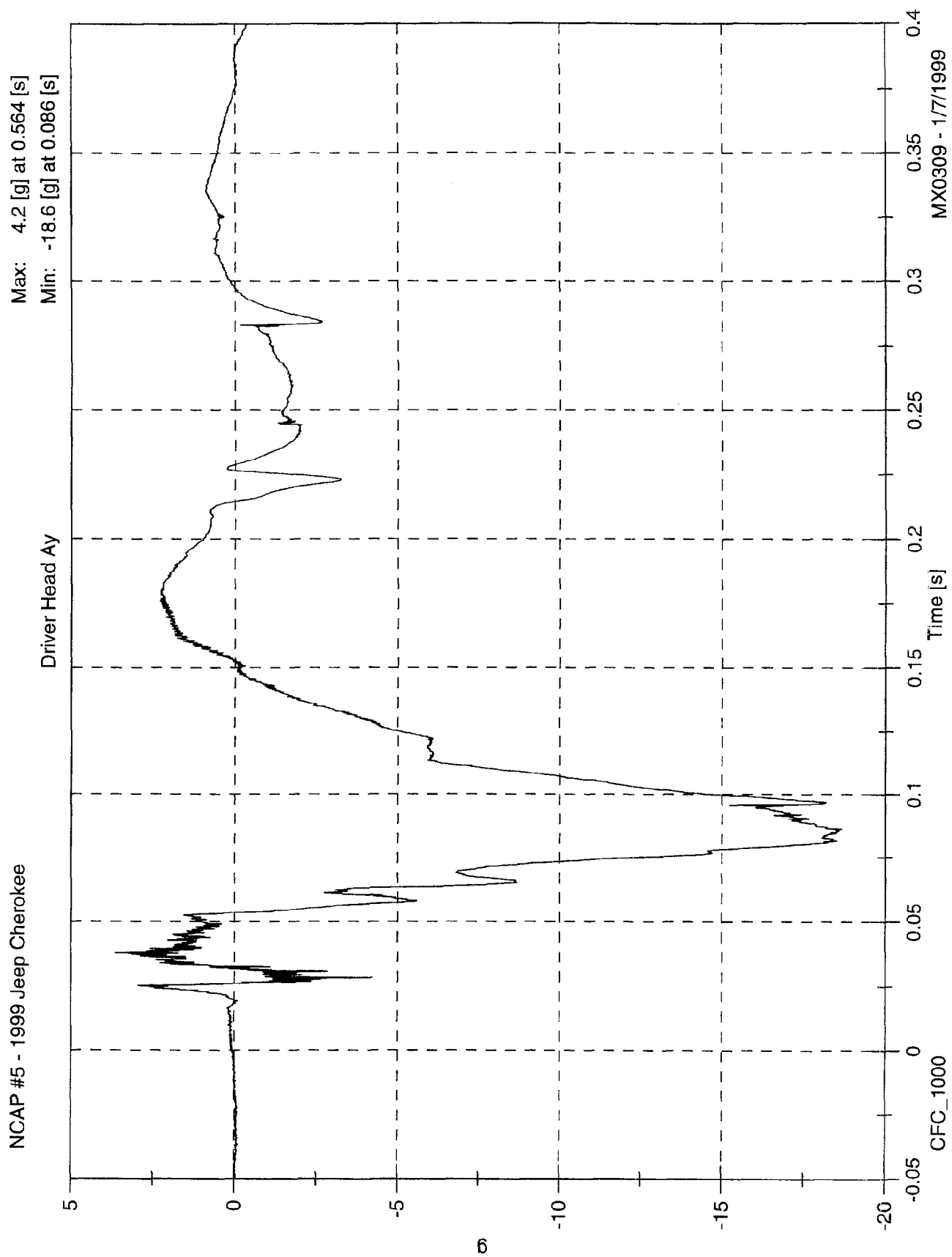
Max: 16.5 [g] at 0.222 [s]

Min: -63.6 [g] at 0.063 [s]

Driver Head Ax



MX0309 - 1/7/1999

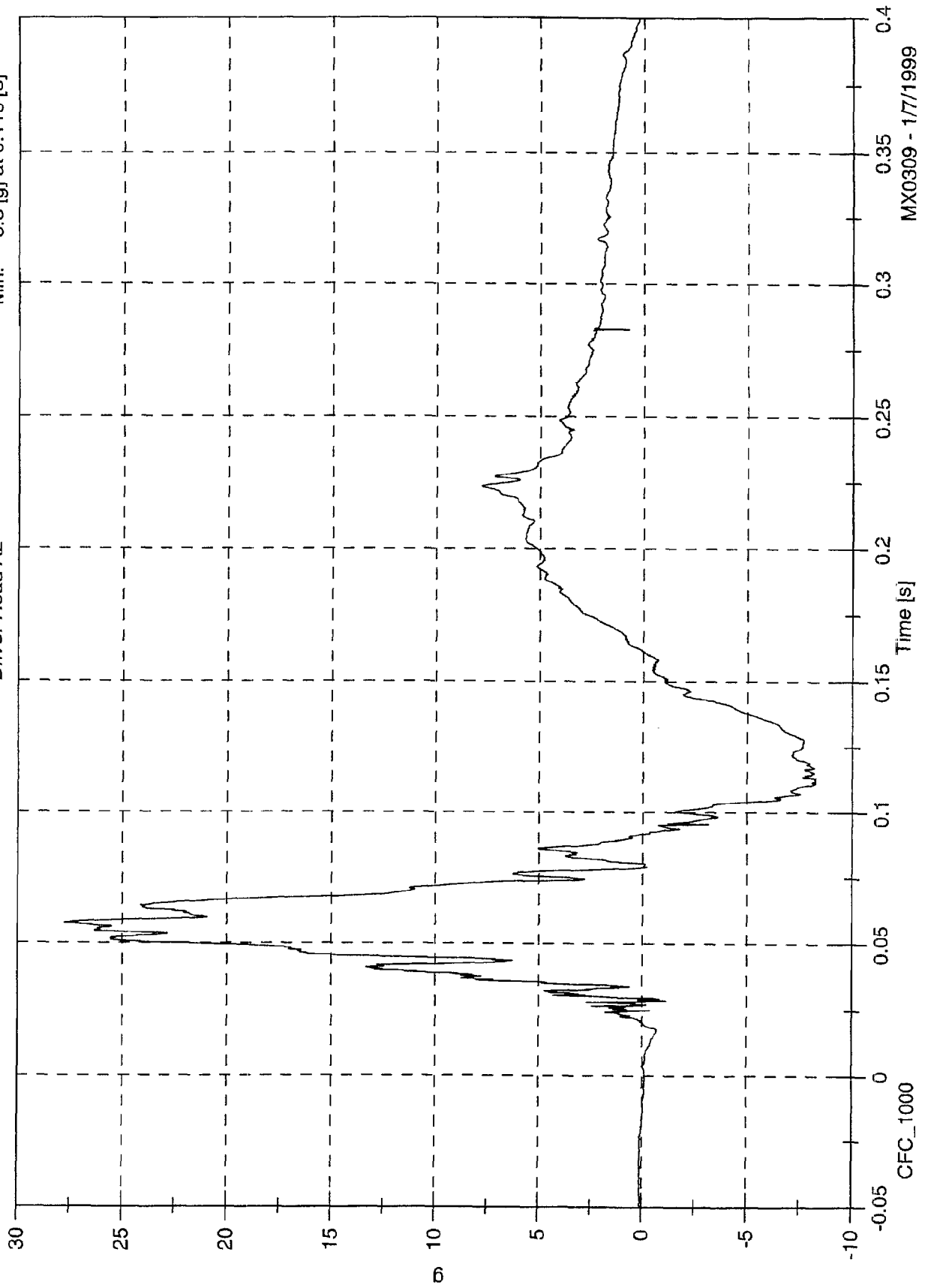


NCAP #5 - 1999 Jeep Cherokee

Max: 27.8 [g] at 0.058 [s]

Min: -8.3 [g] at 0.113 [s]

Driver Head Az

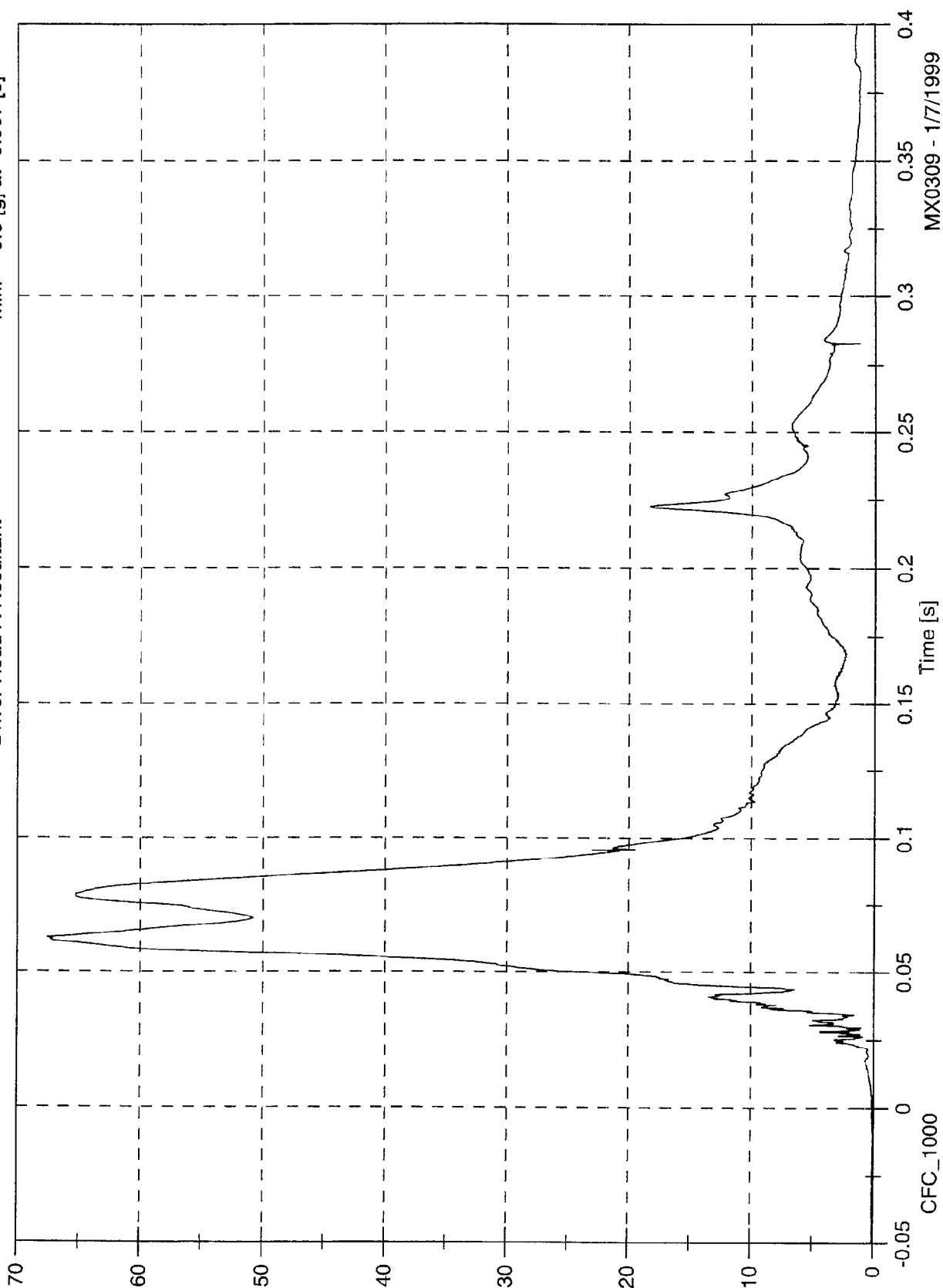


MX0309 - 1/7/1999

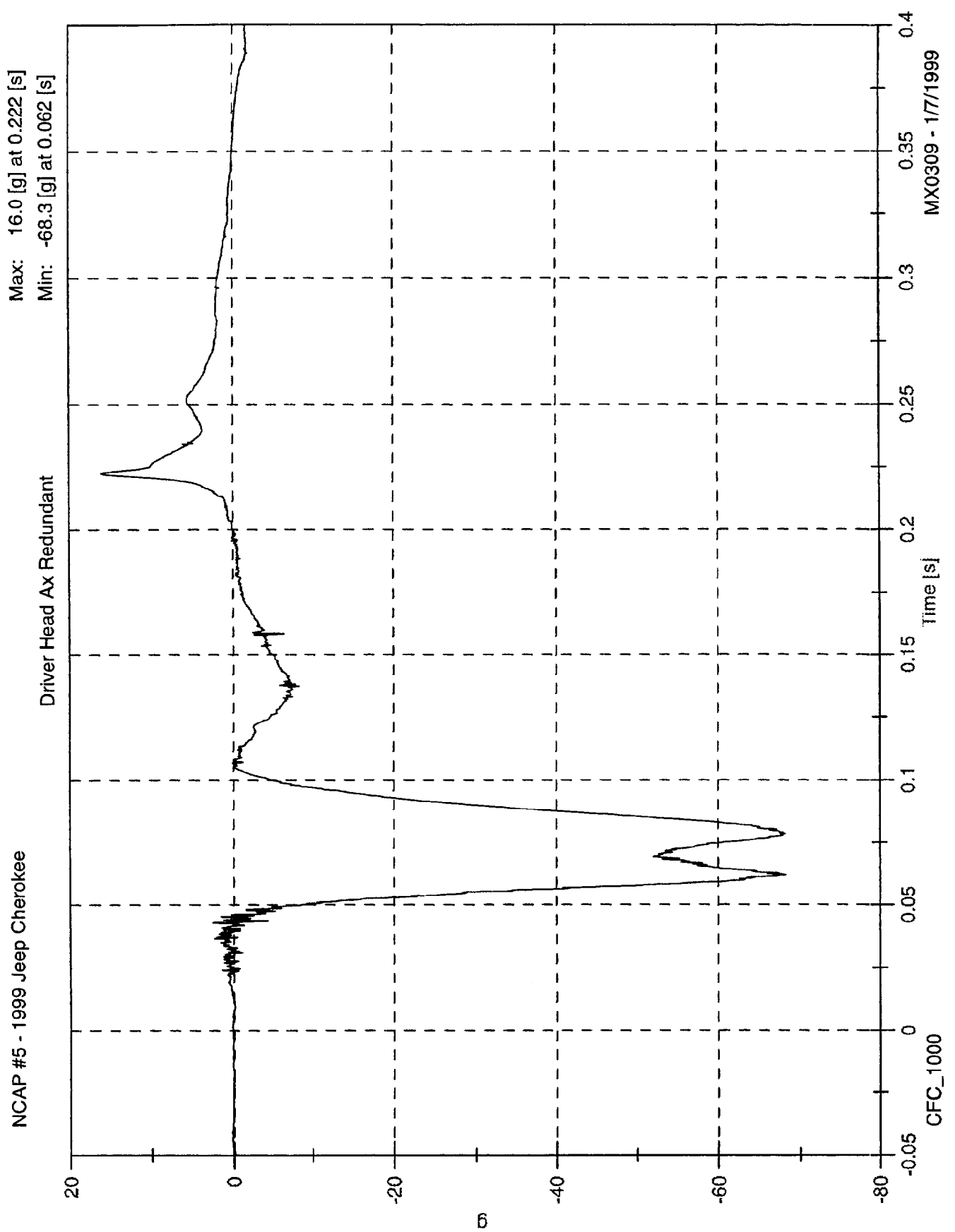
Max: 67.6 [g] at 0.063 [s]
Min: 0.0 [g] at -0.067 [s]

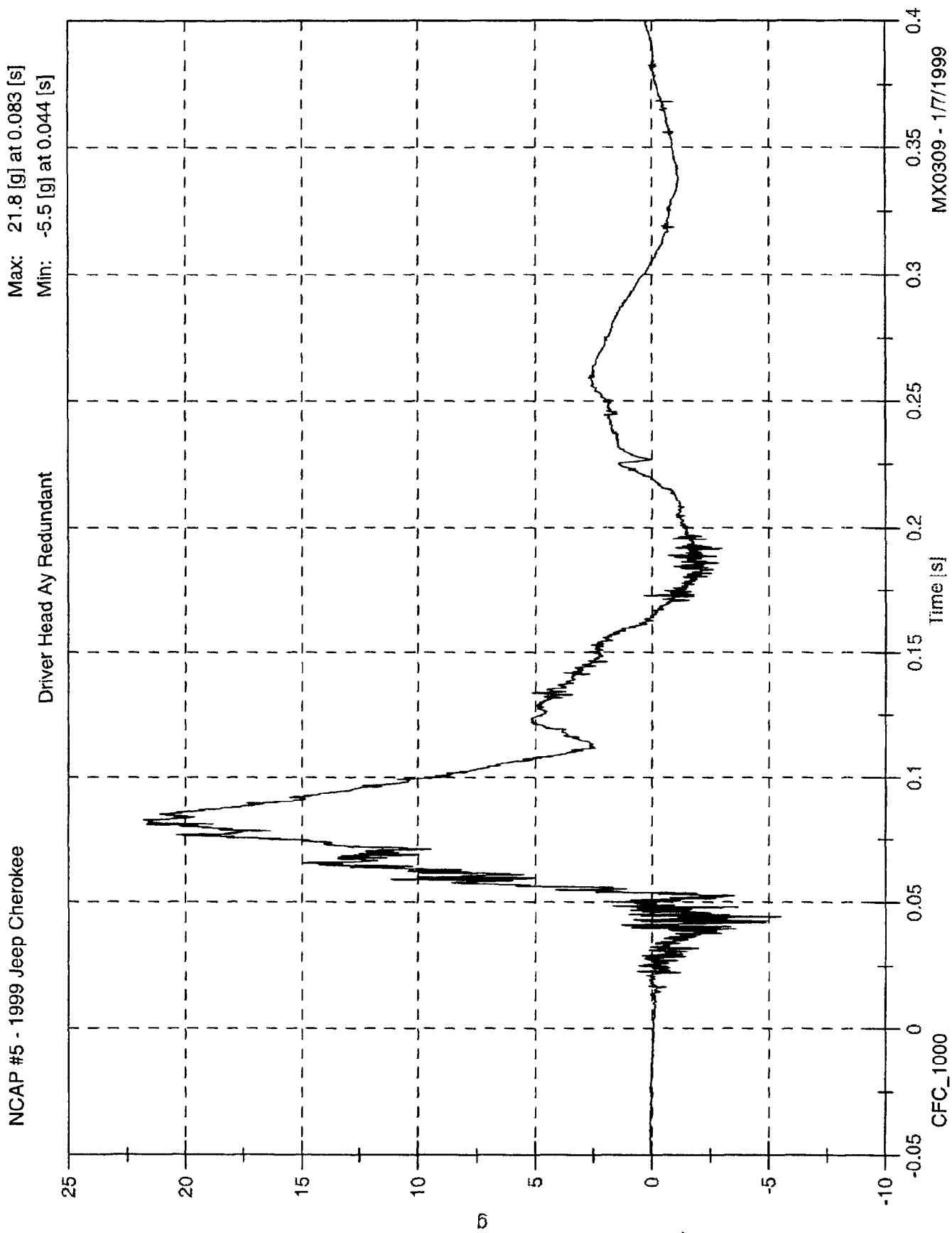
Driver Head A Resultant

NCAP #5 - 1999 Jeep Cherokee



MX0309 - 1/7/1999



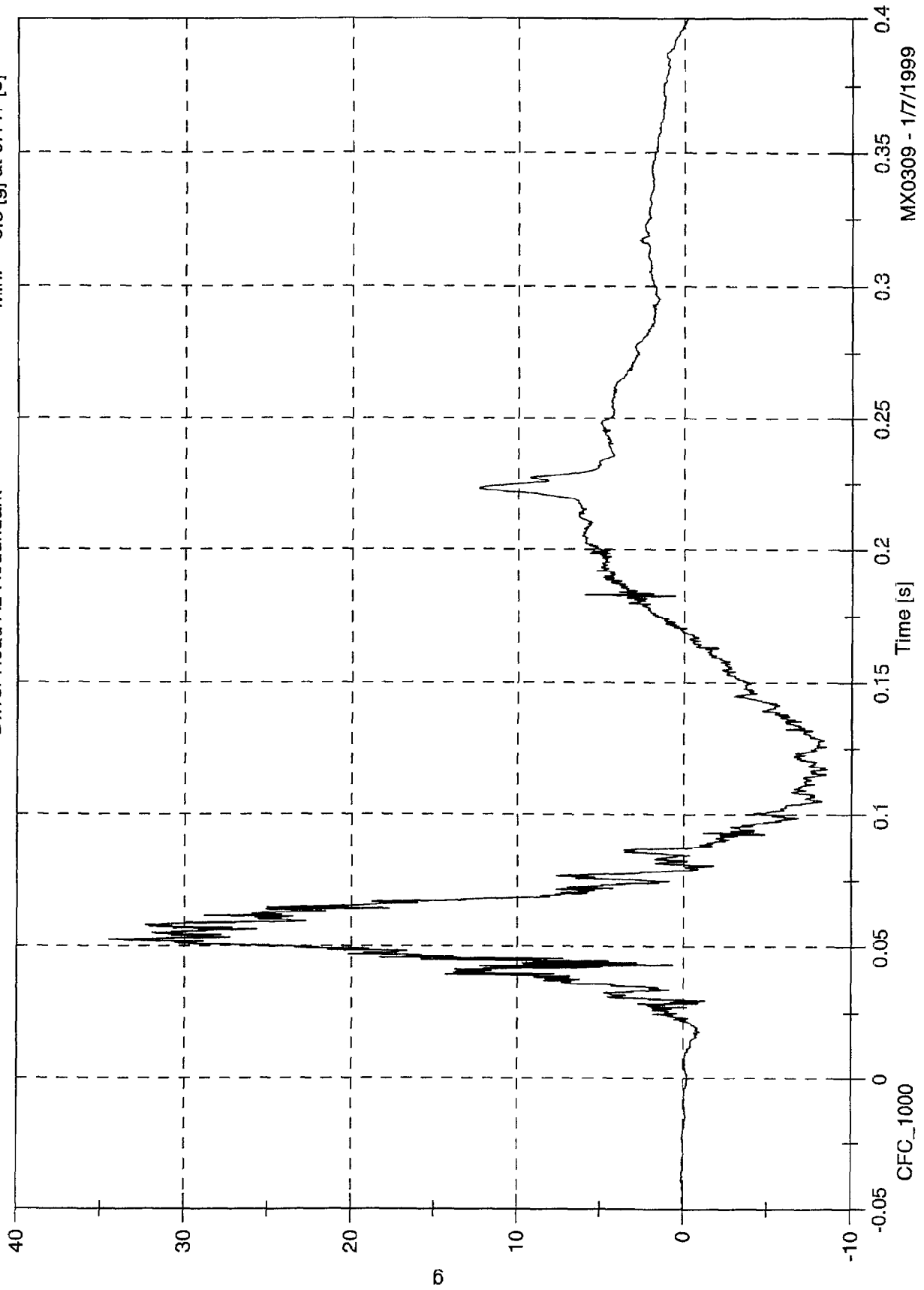


NCAP #5 - 1999 Jeep Cherokee

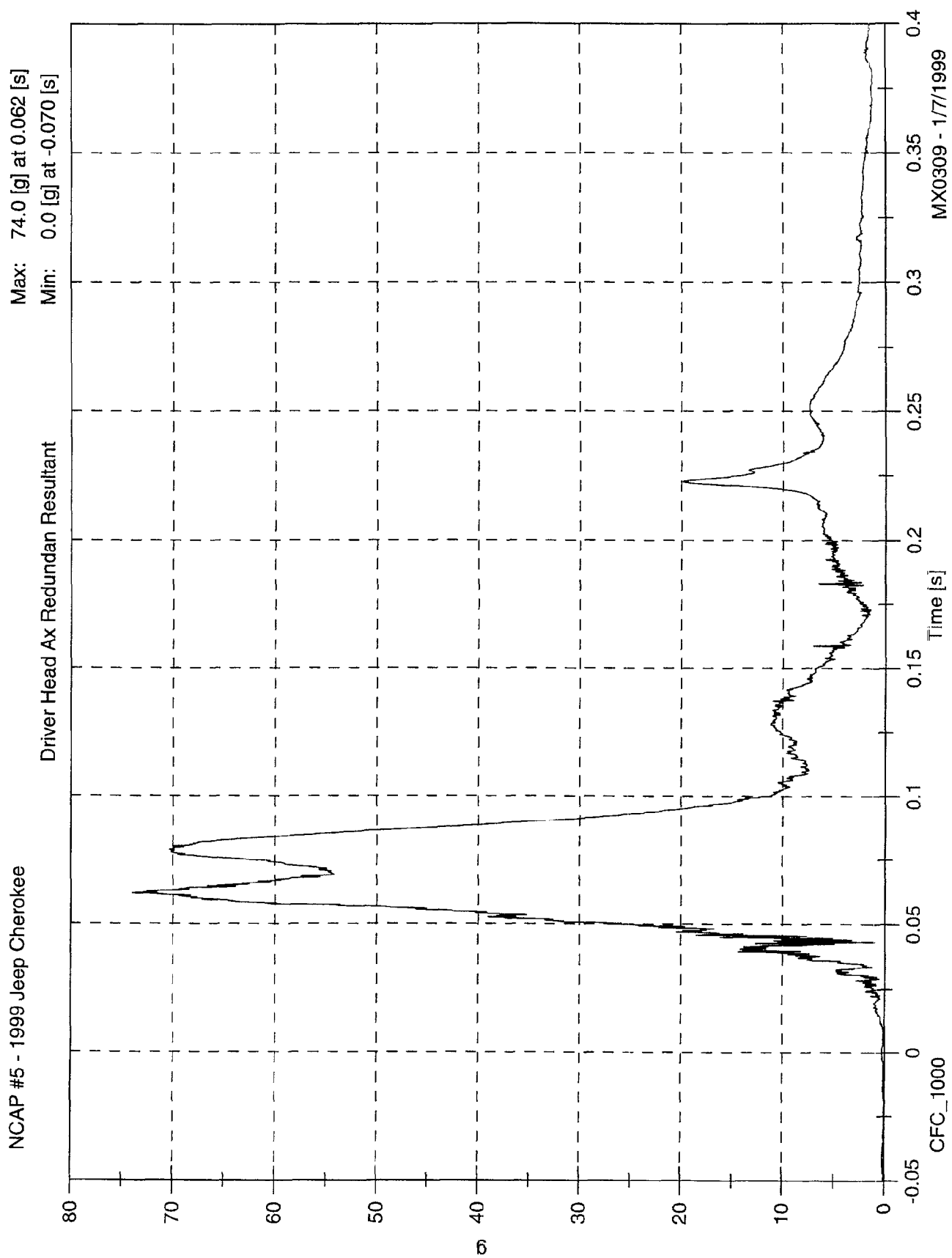
Driver Head Az Redundant

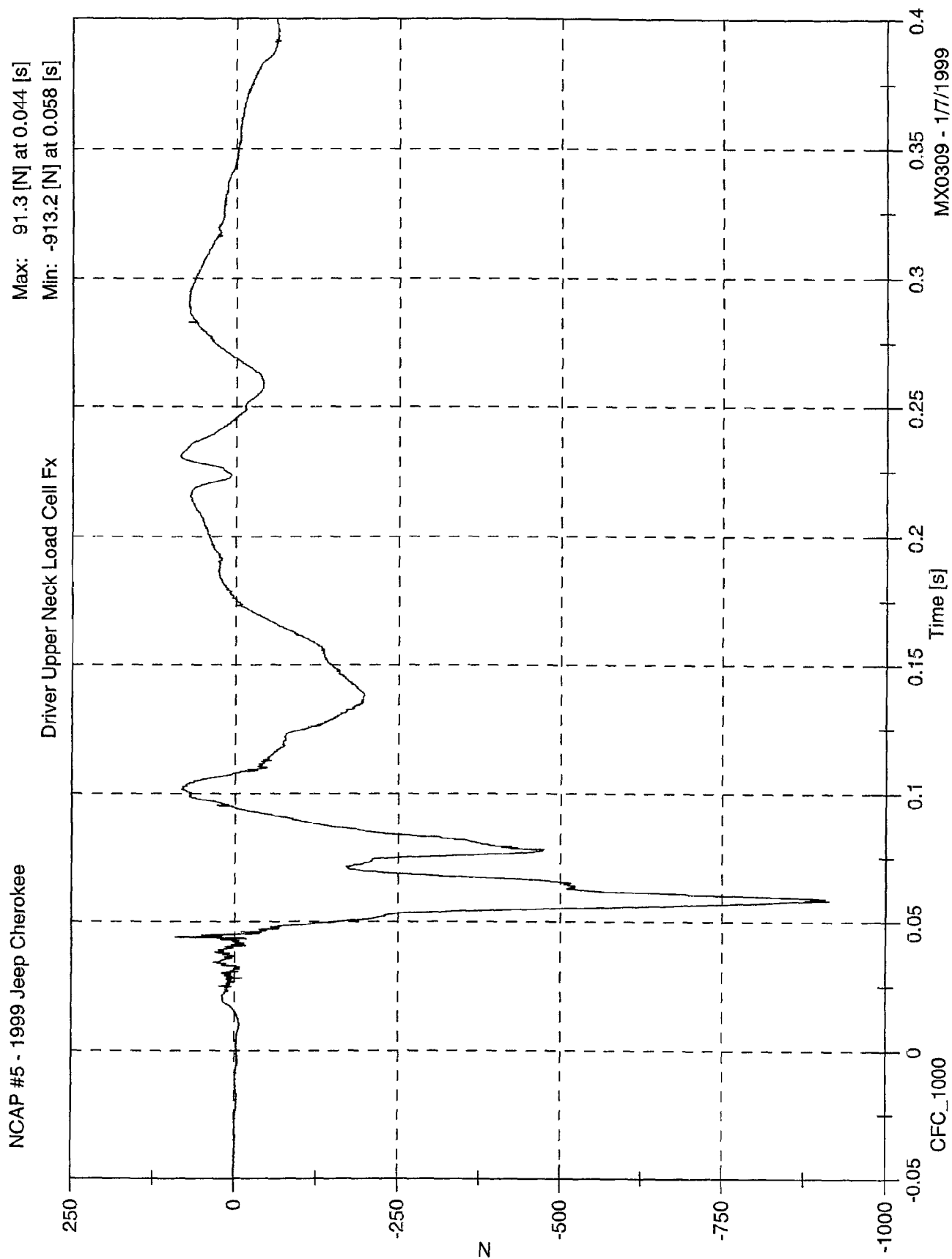
Max: 34.5 [g] at 0.053 [s]

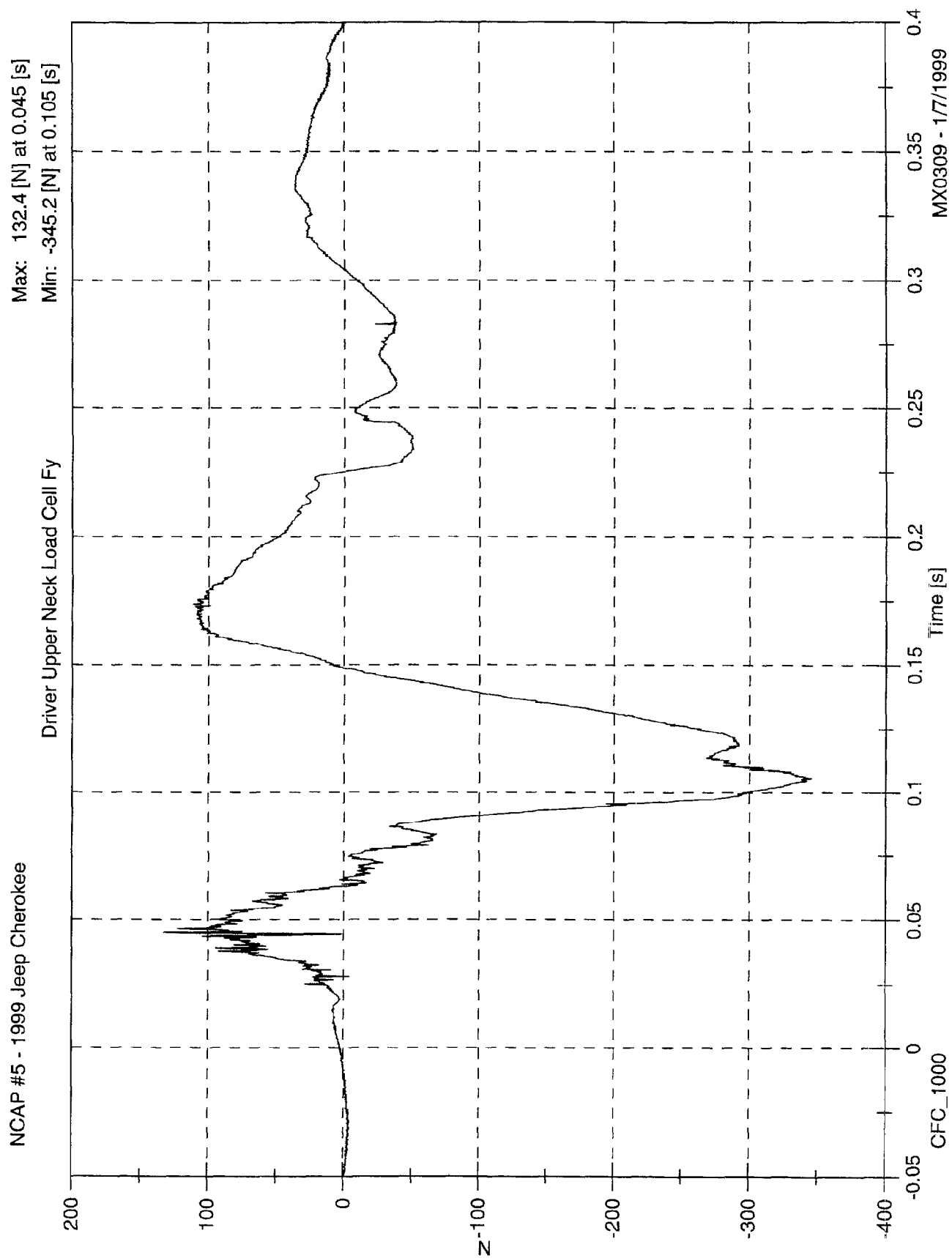
Min: -8.5 [g] at 0.117 [s]

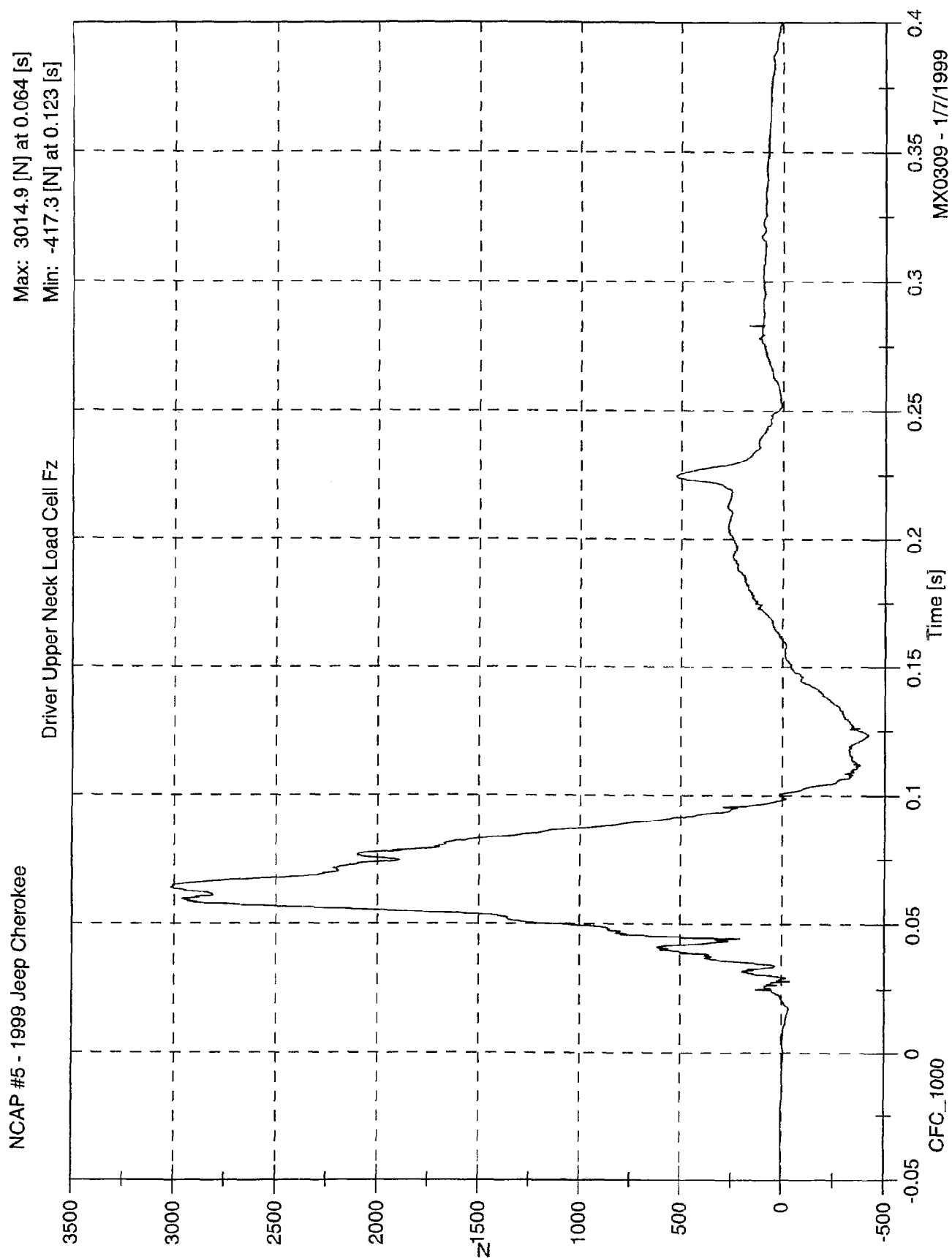


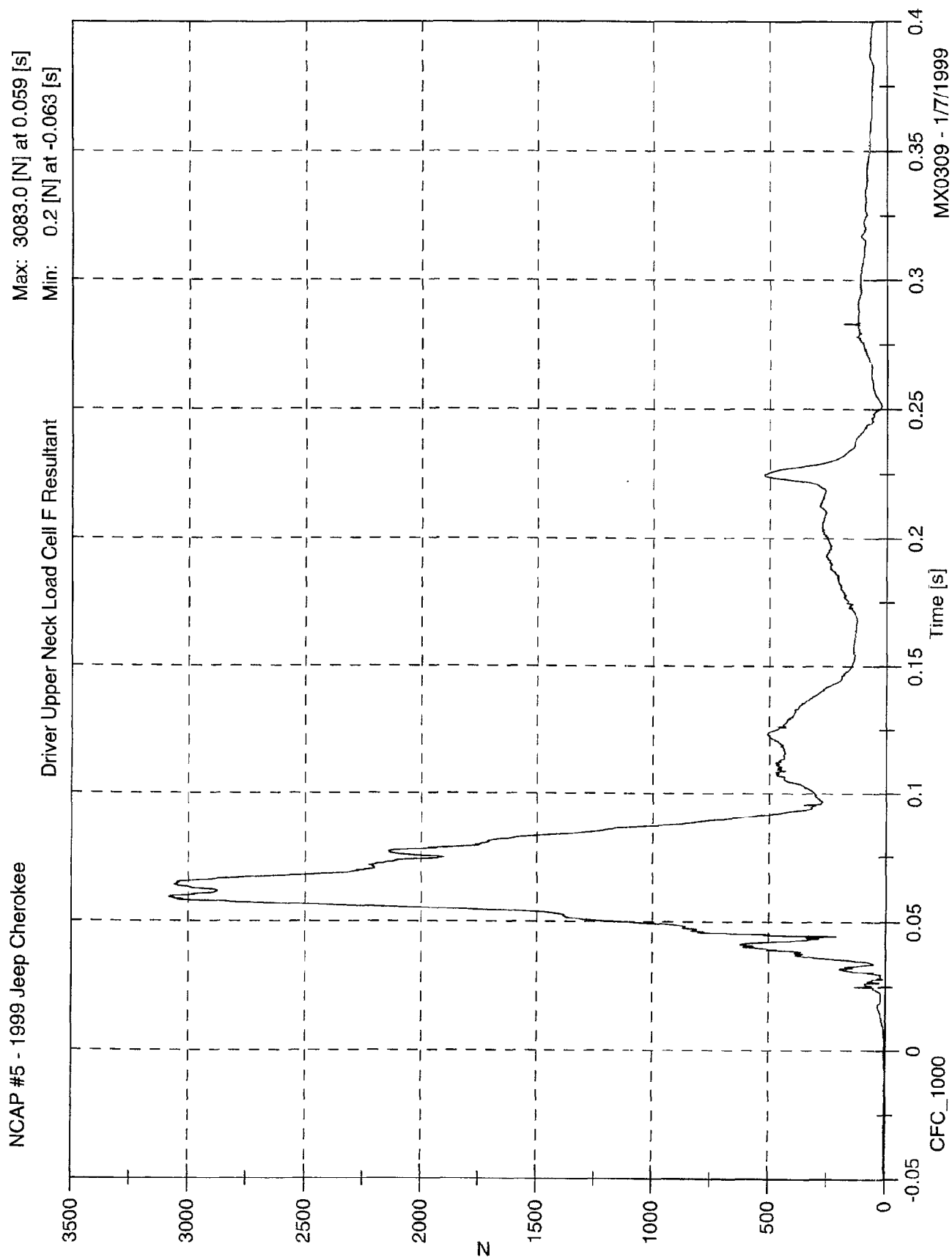
MX0309 - 1/7/1999

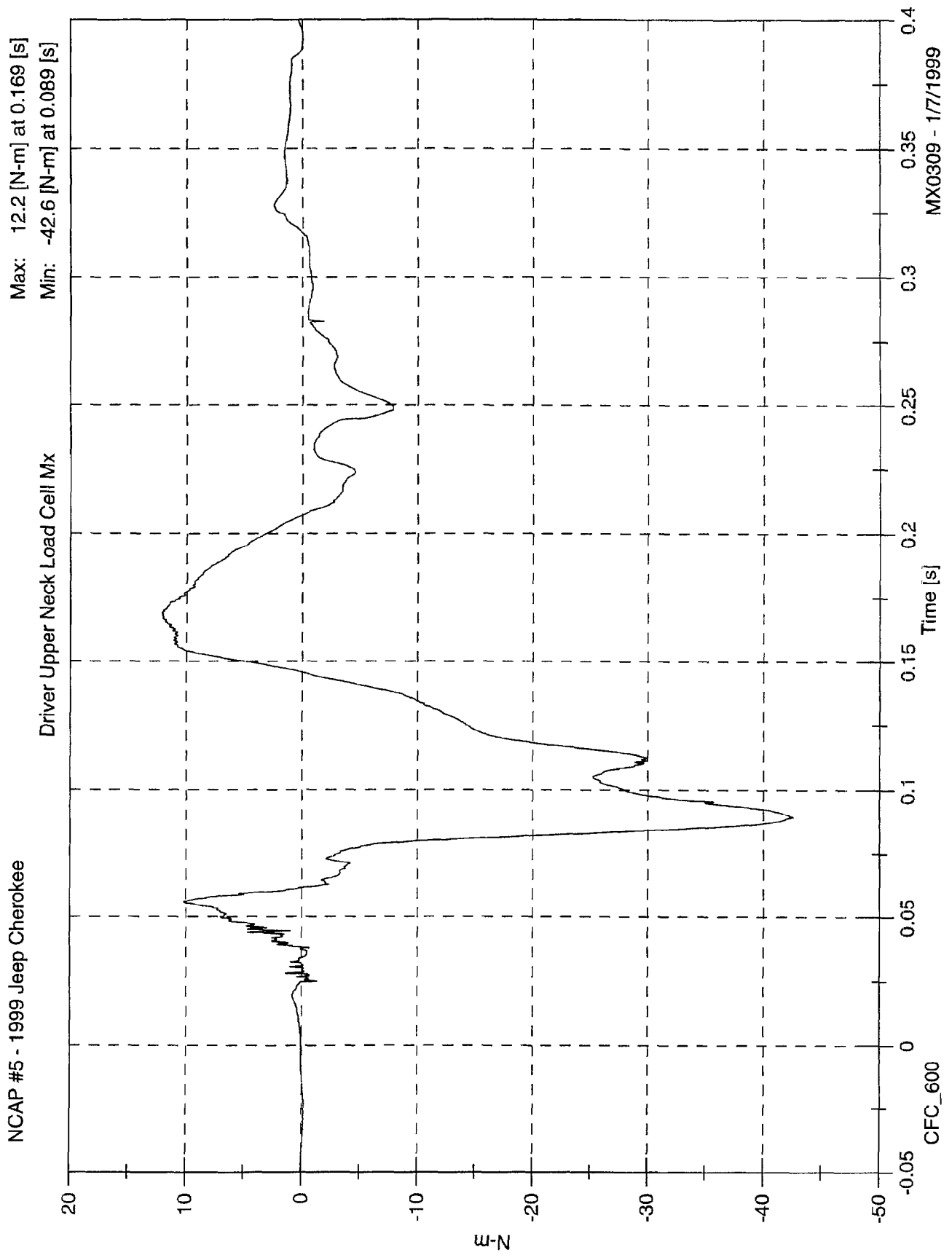


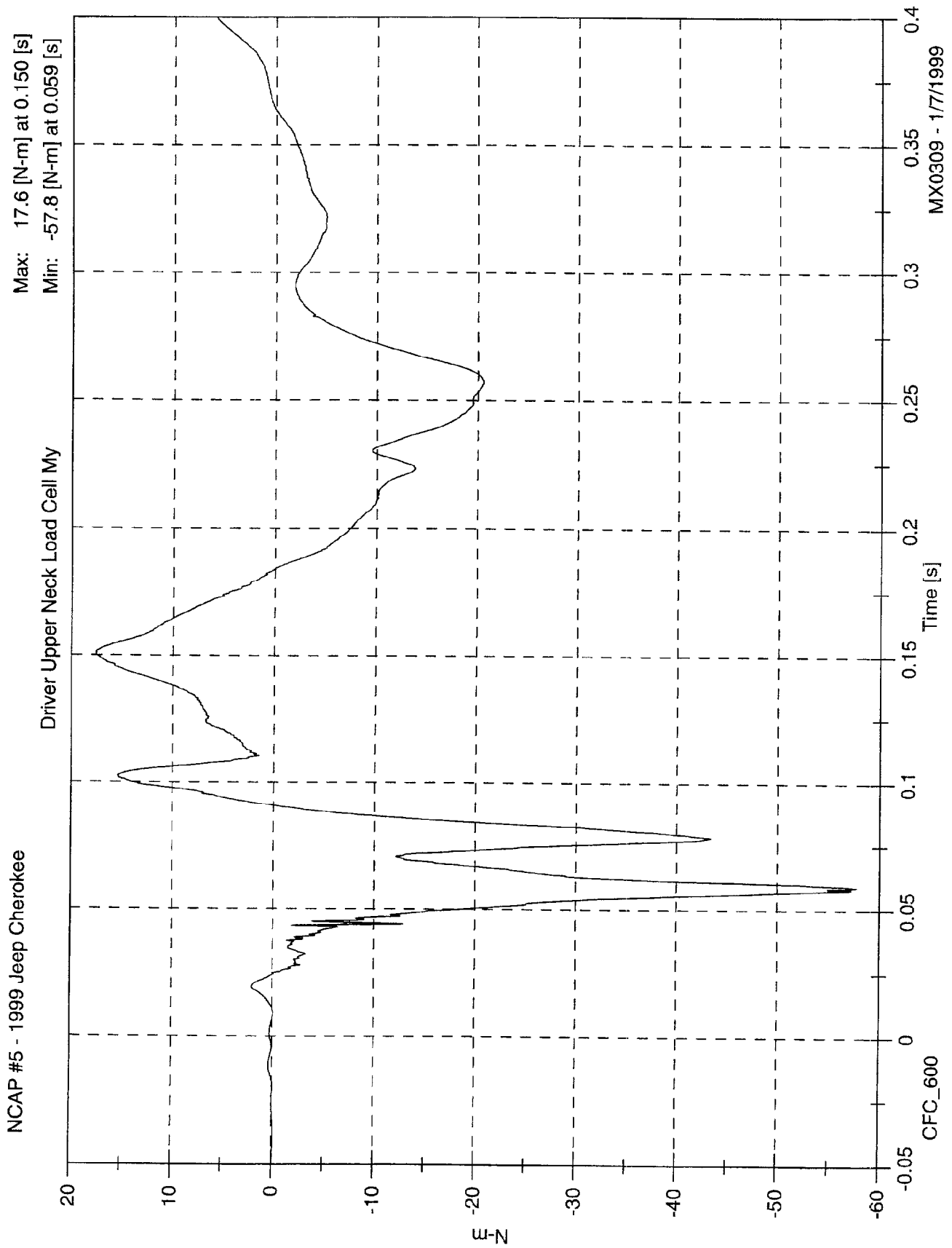








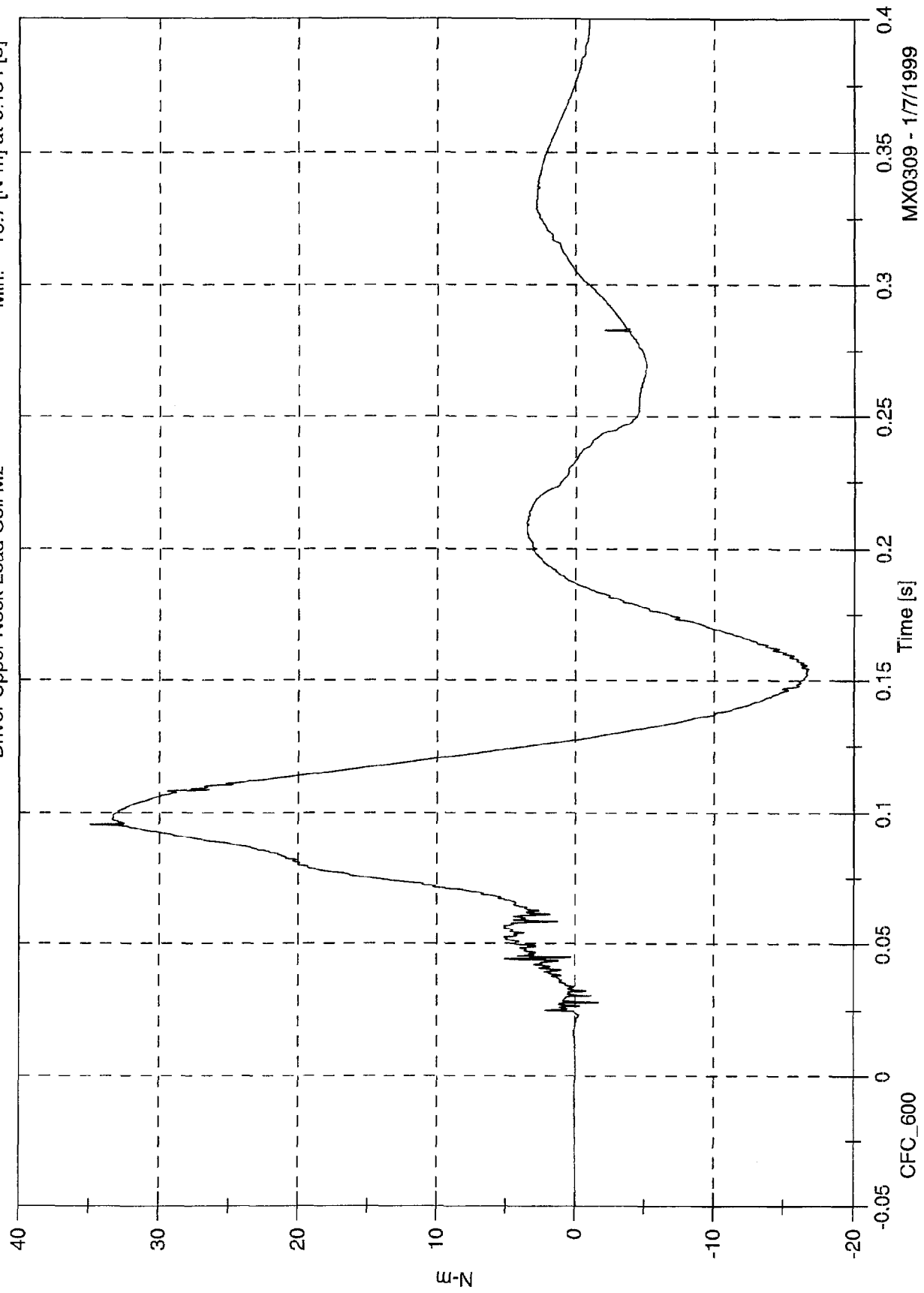




NCAP #5 - 1999 Jeep Cherokee

Max: 35.0 [N-m] at 0.096 [s]
Min: -16.7 [N-m] at 0.154 [s]

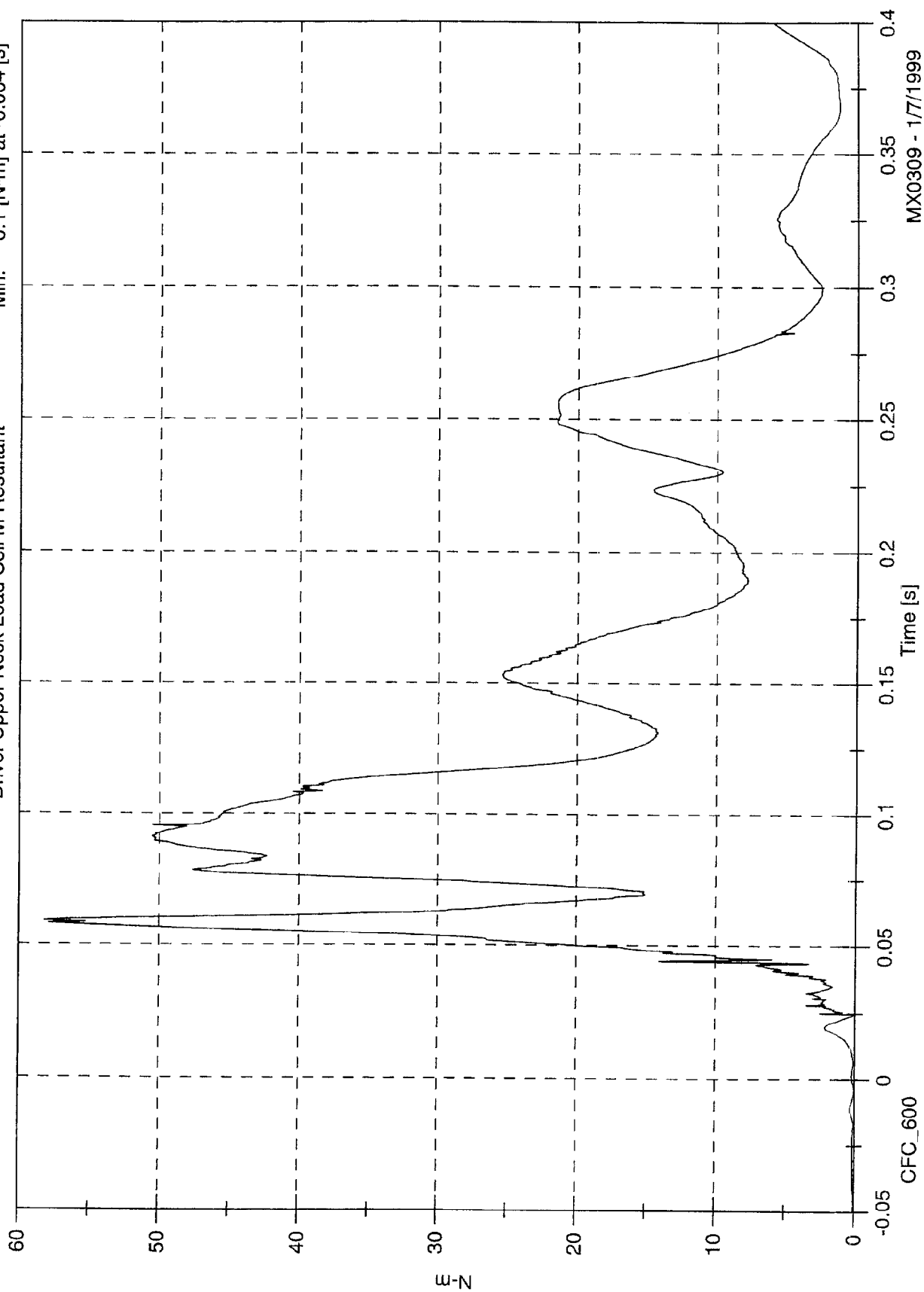
Driver Upper Neck Load Cell Mz



NCAP #5 - 1999 Jeep Cherokee

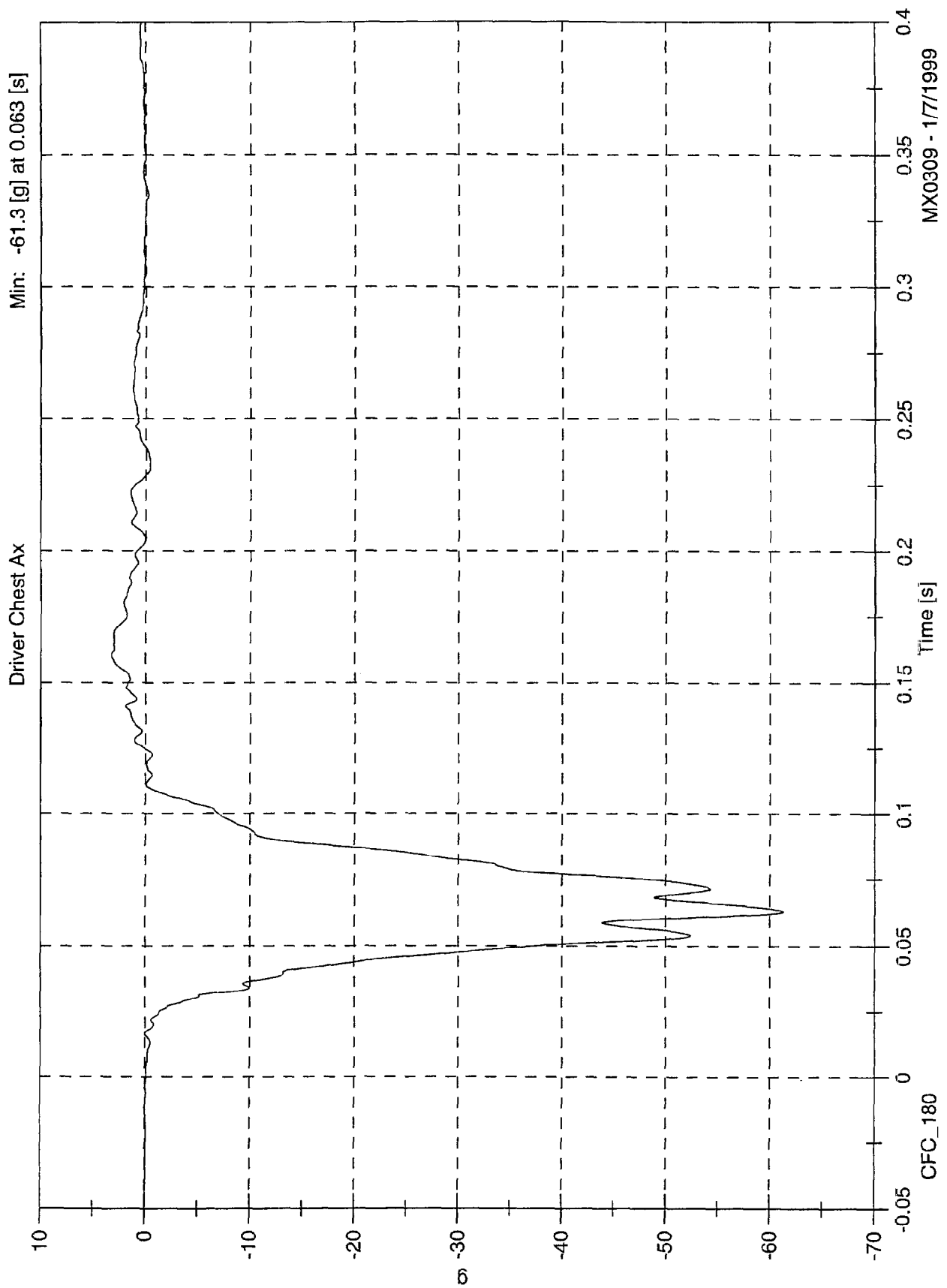
Driver Upper Neck Load Cell M Resultant

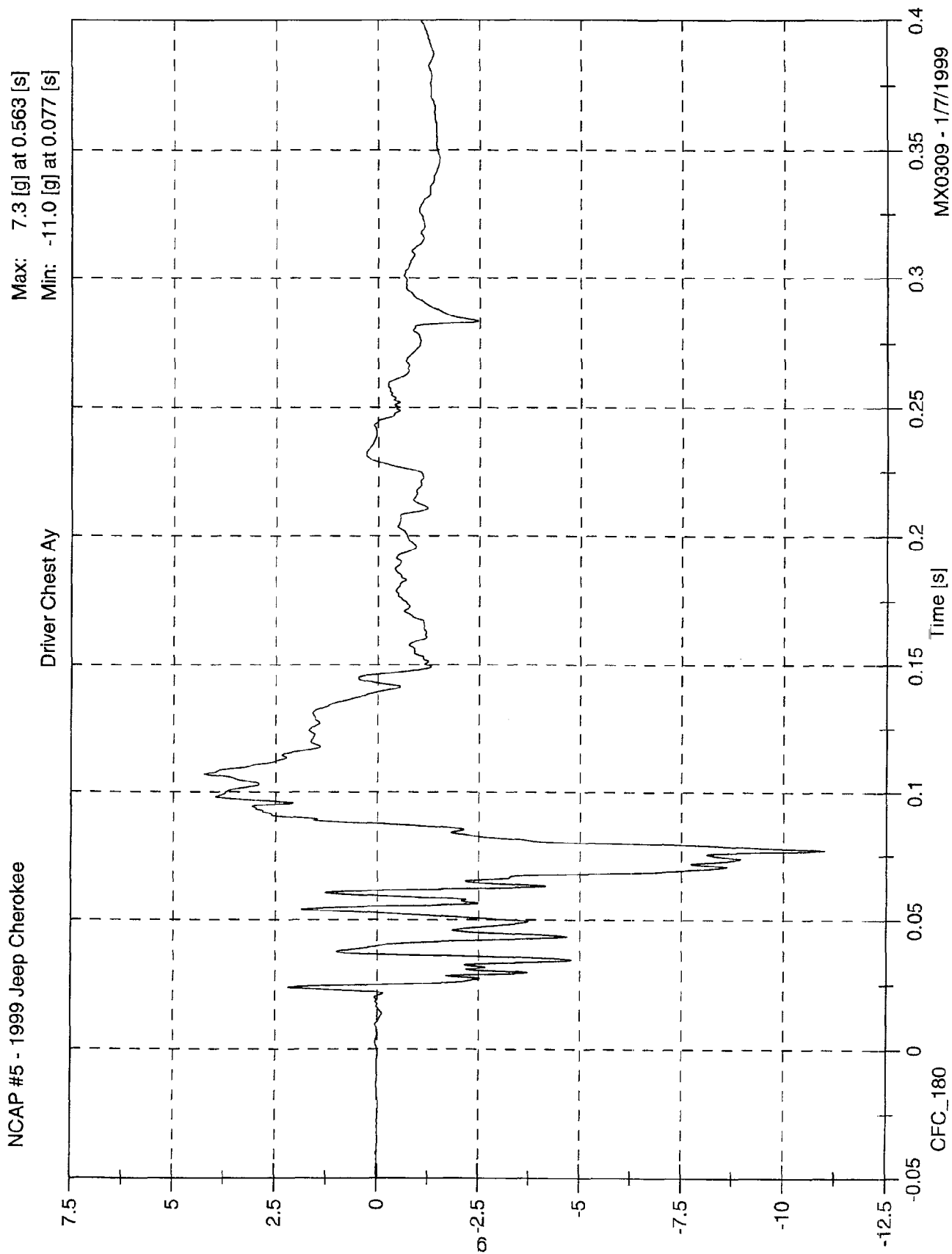
Max: 58.2 [N-m] at 0.059 [s]
Min: 0.1 [N-m] at -0.004 [s]



NCAP #5 - 1999 Jeep Cherokee

Max: 3.3 [g] at 0.161 [s]
Min: -61.3 [g] at 0.063 [s]



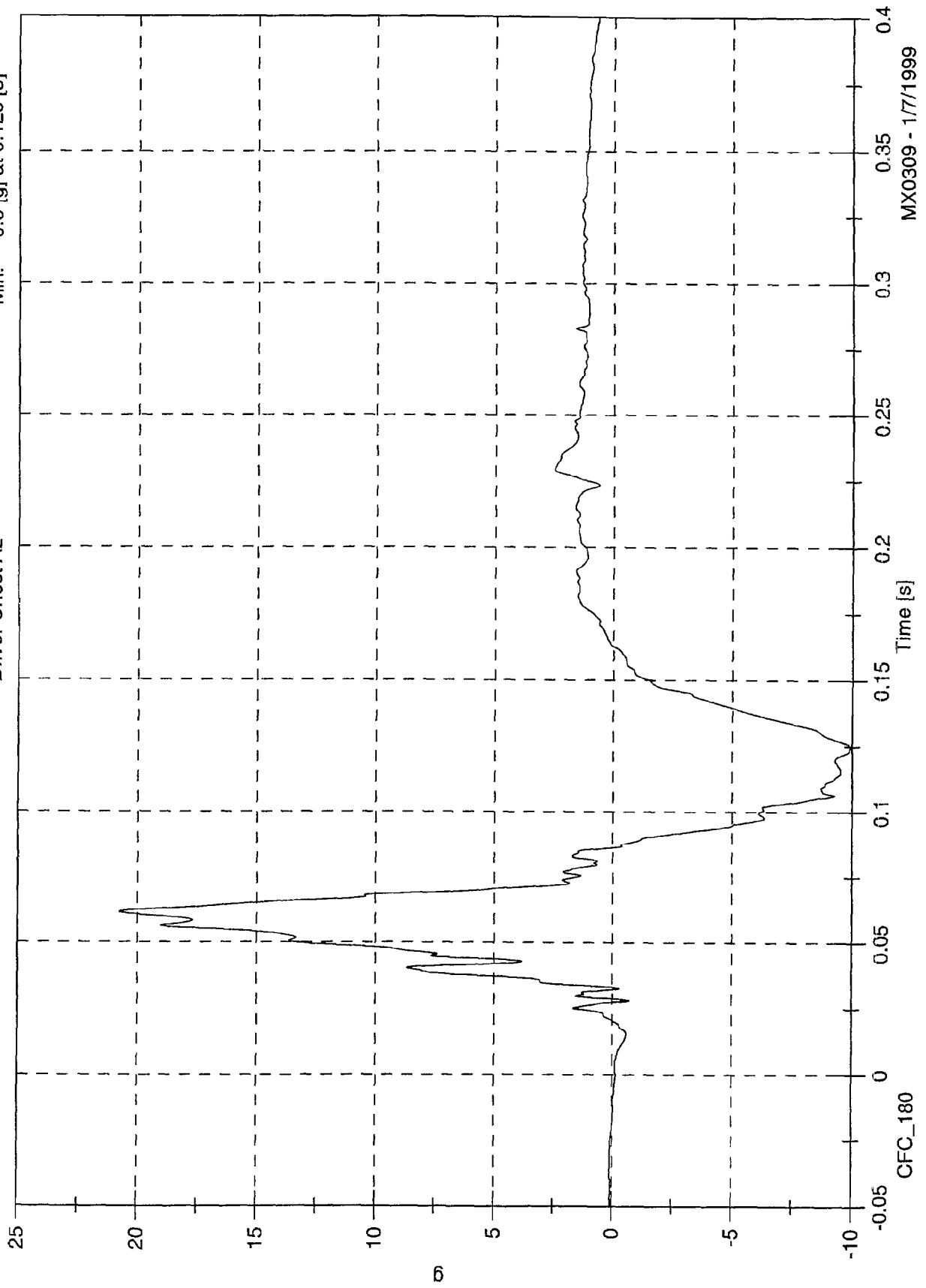


NCAP #5 - 1999 Jeep Cherokee

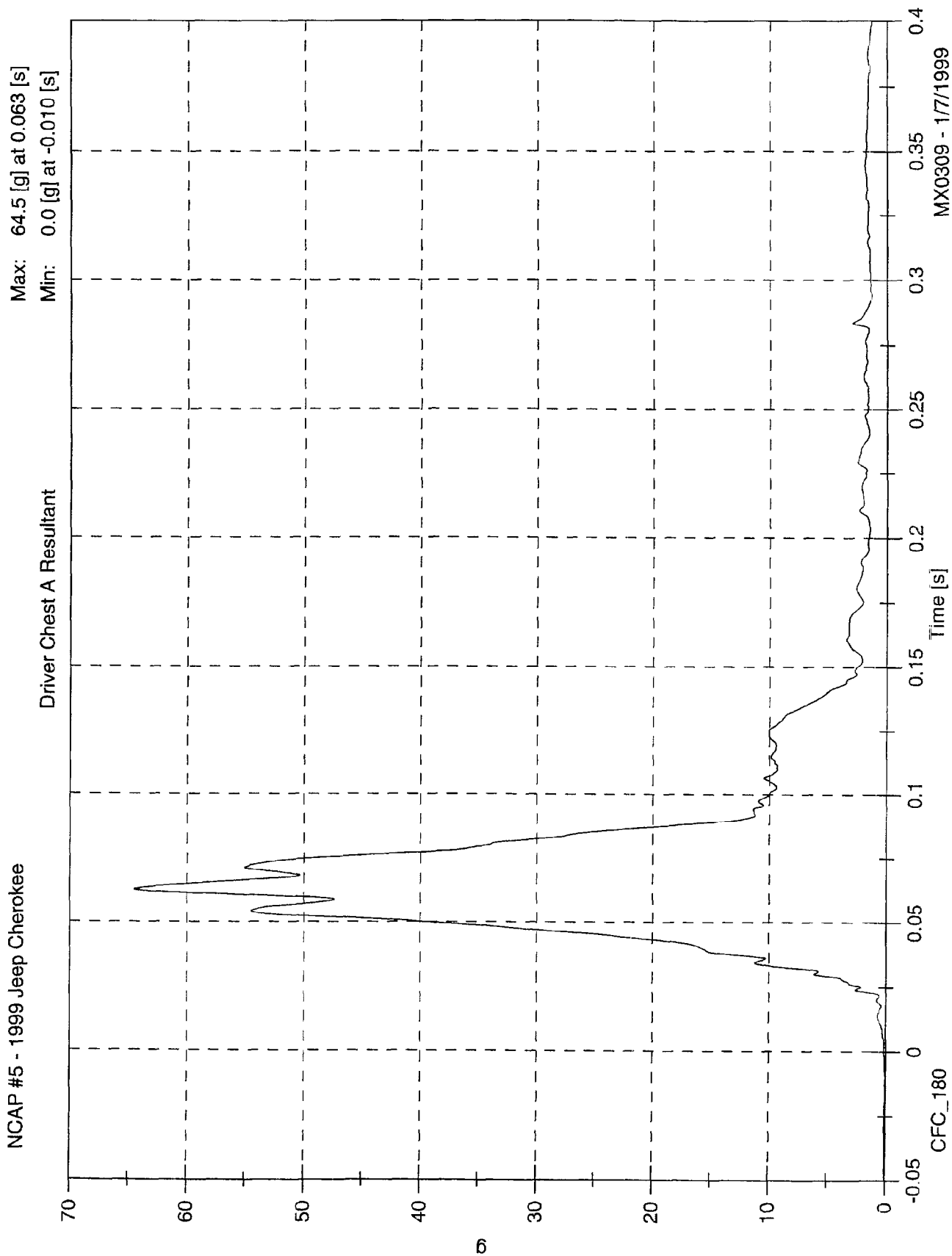
Max: 20.8 [g] at 0.062 [s]

Min: -9.9 [g] at 0.125 [s]

Driver Chest Az



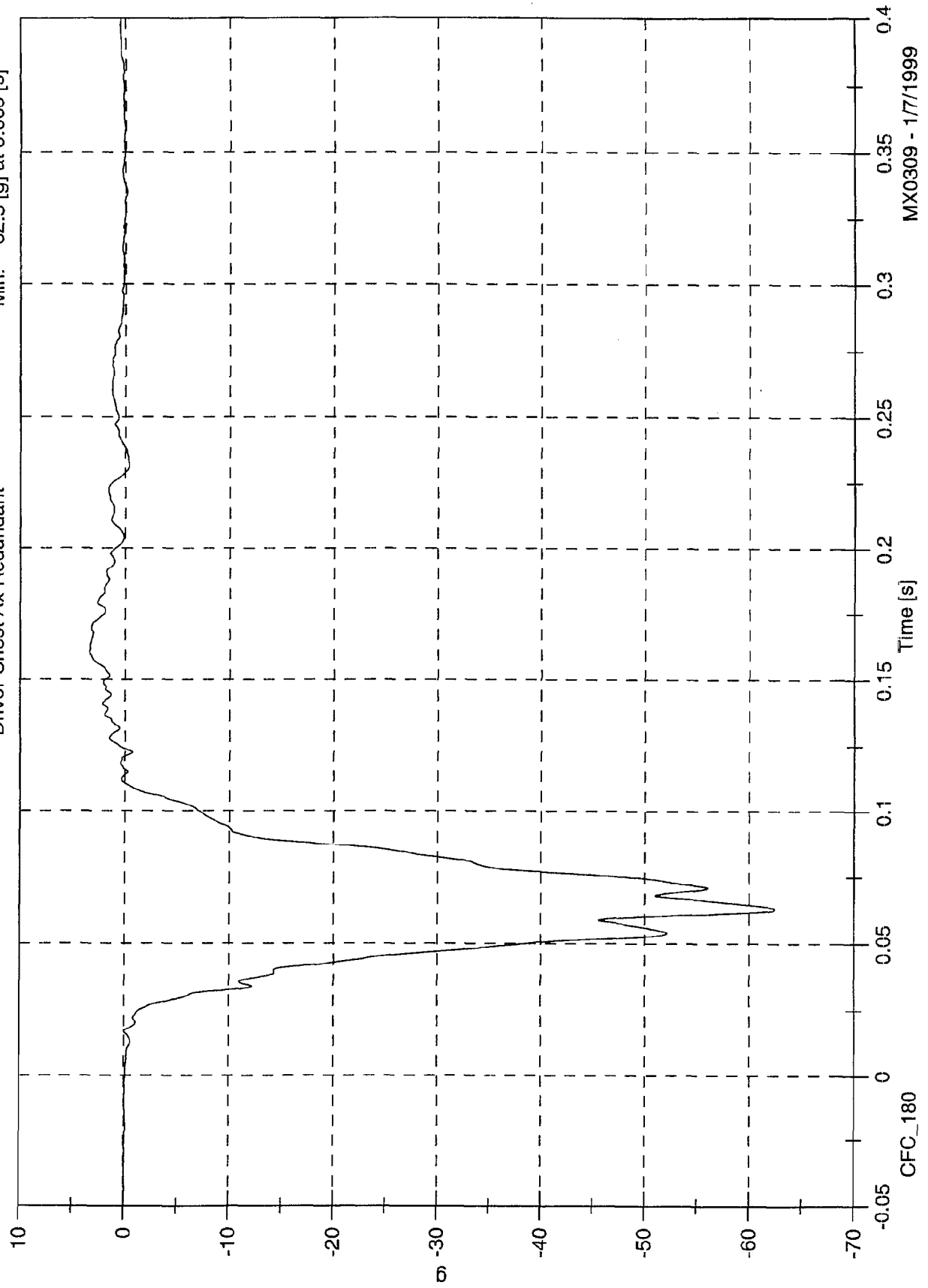
MX0309 - 1/7/1999



NCAP #5 - 1999 Jeep Cherokee

Max: 3.4 [g] at 0.161 [s]
Min: -62.5 [g] at 0.063 [s]

Driver Chest Ax Redundant

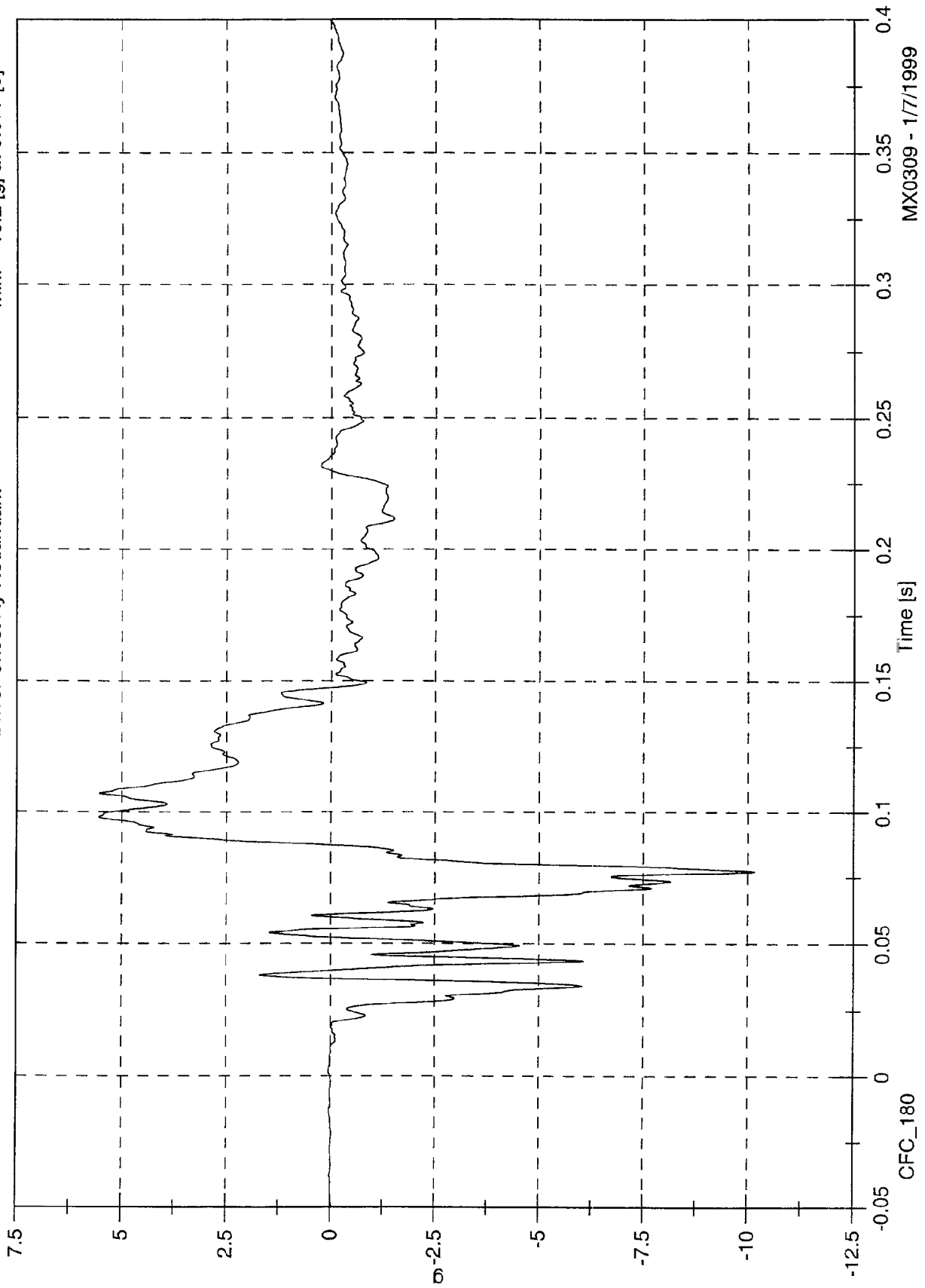


MX0309 - 1/7/1999

Max: 5.5 [g] at 0.098 [s]
Min: -10.2 [g] at 0.077 [s]

NCAP #5 - 1999 Jeep Cherokee

Driver Chest Ay Redundant

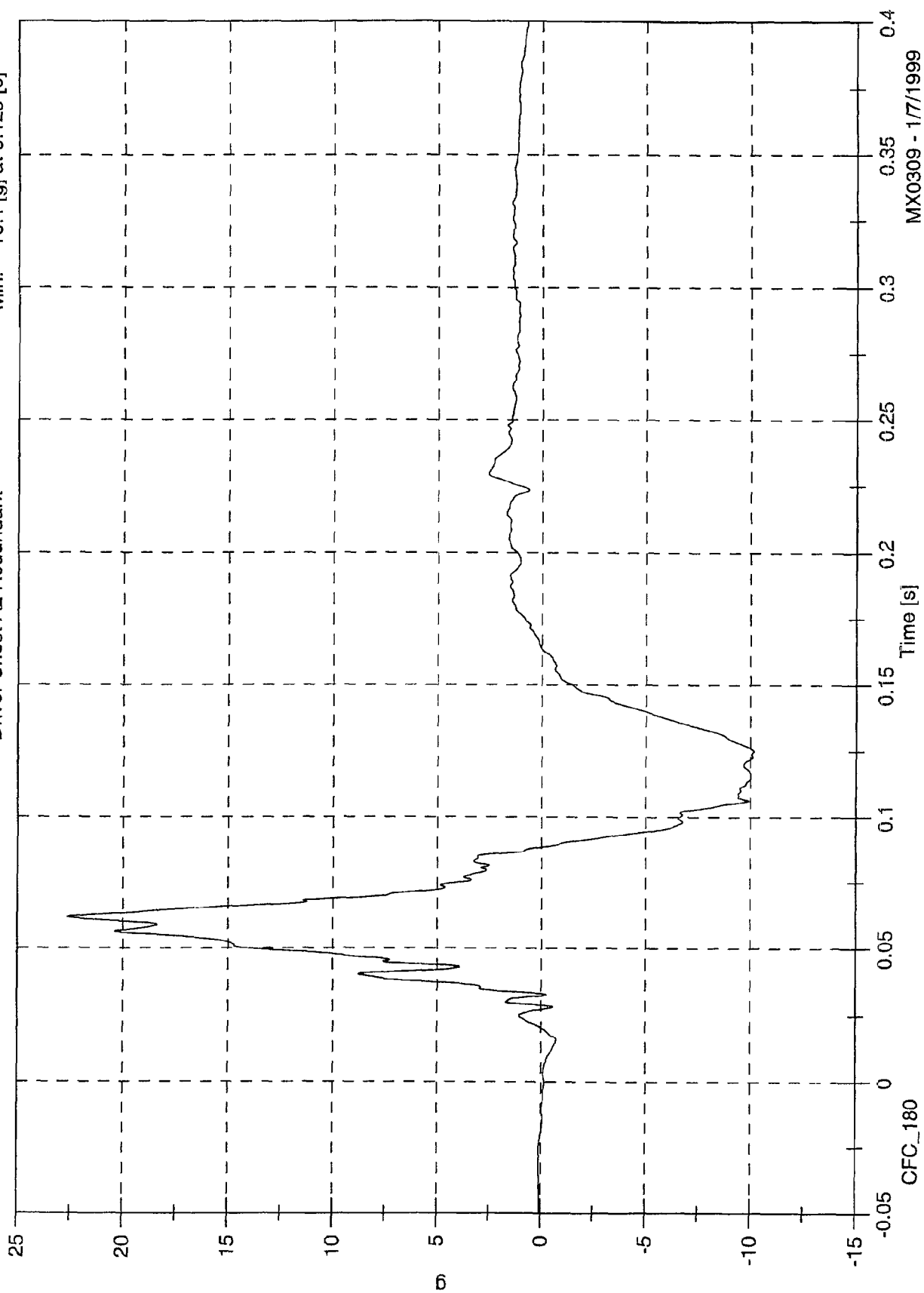


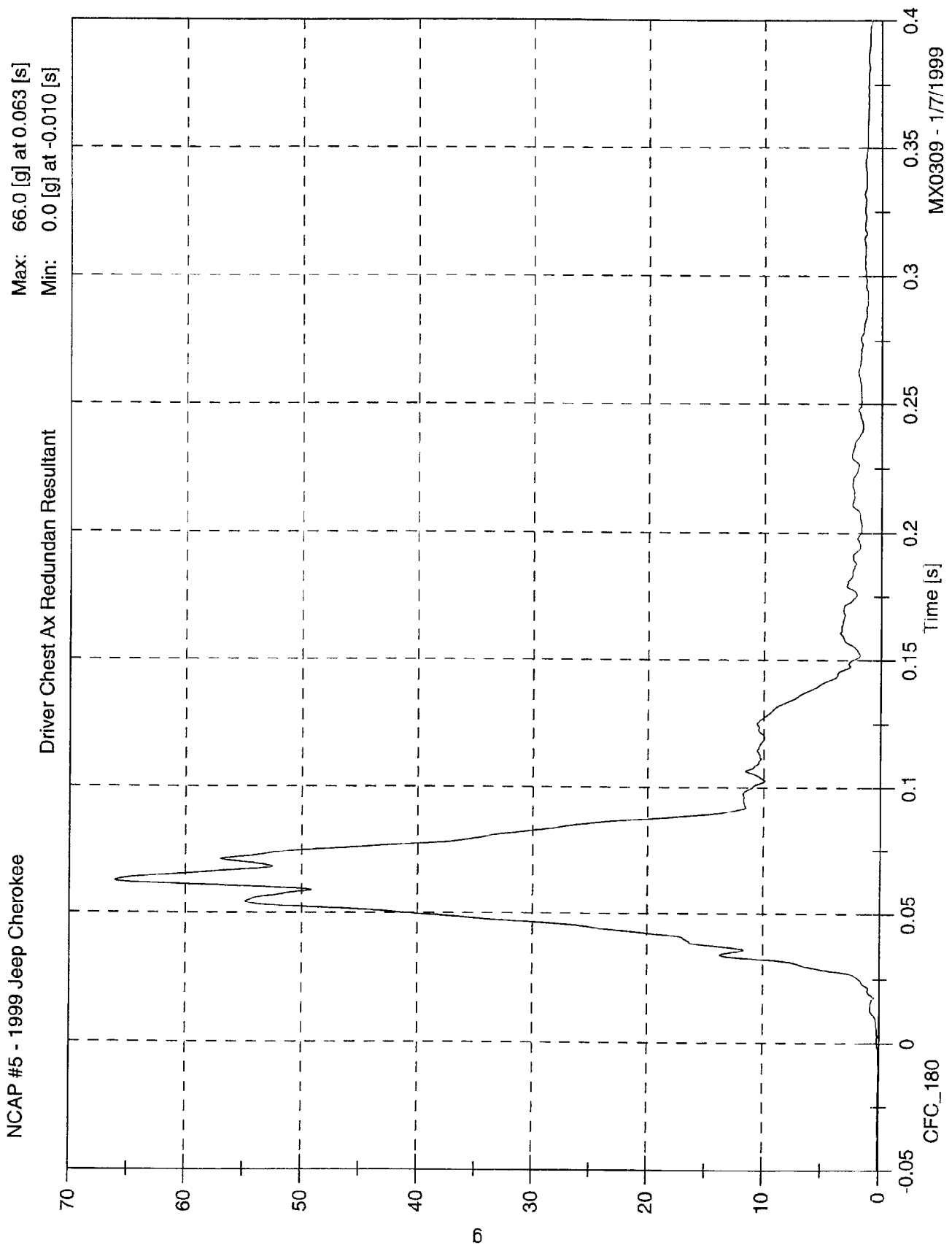
NCAP #5 - 1999 Jeep Cherokee

Max: 22.6 [g] at 0.062 [s]

Min: -10.1 [g] at 0.125 [s]

Driver Chest Az Redundant

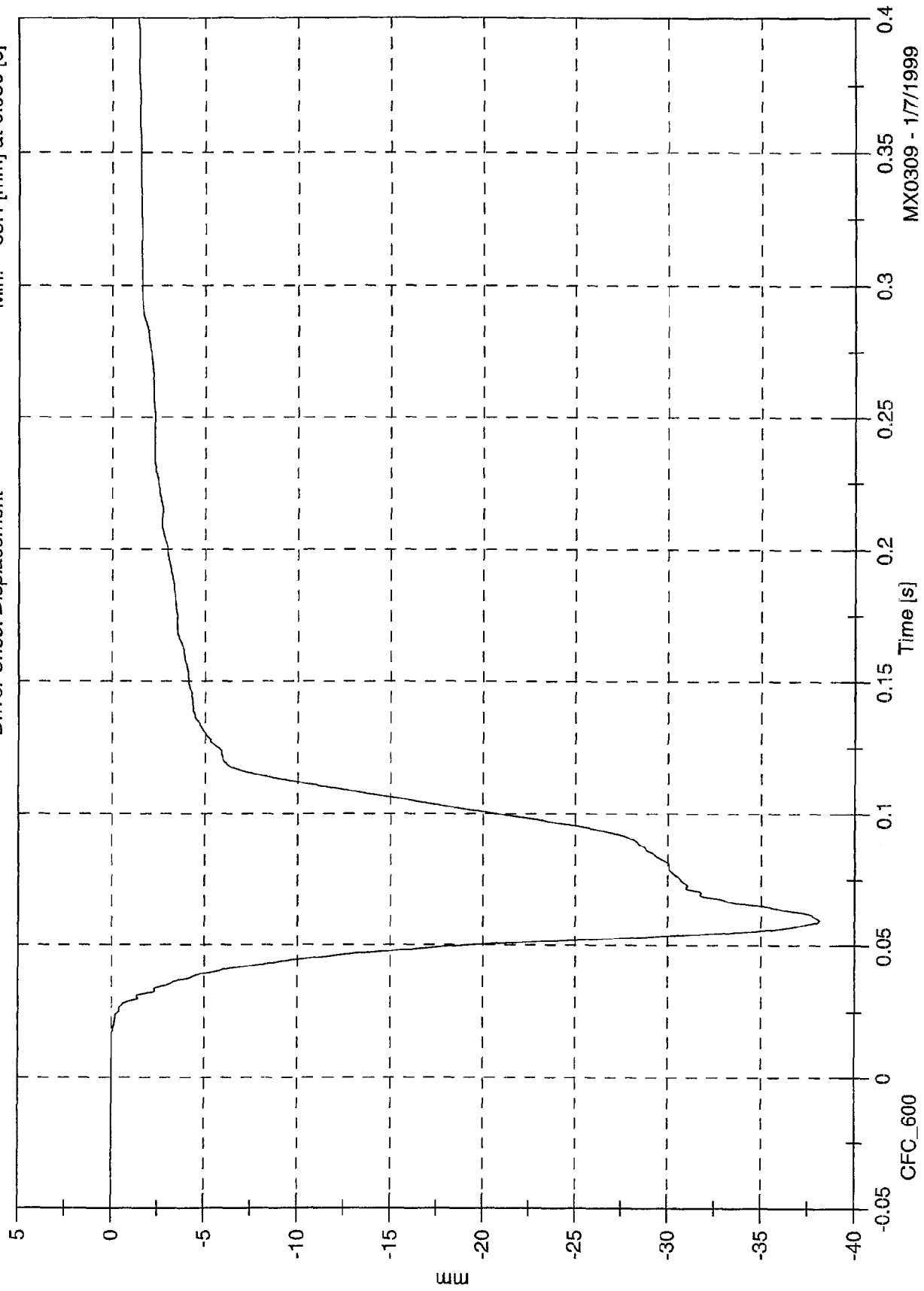




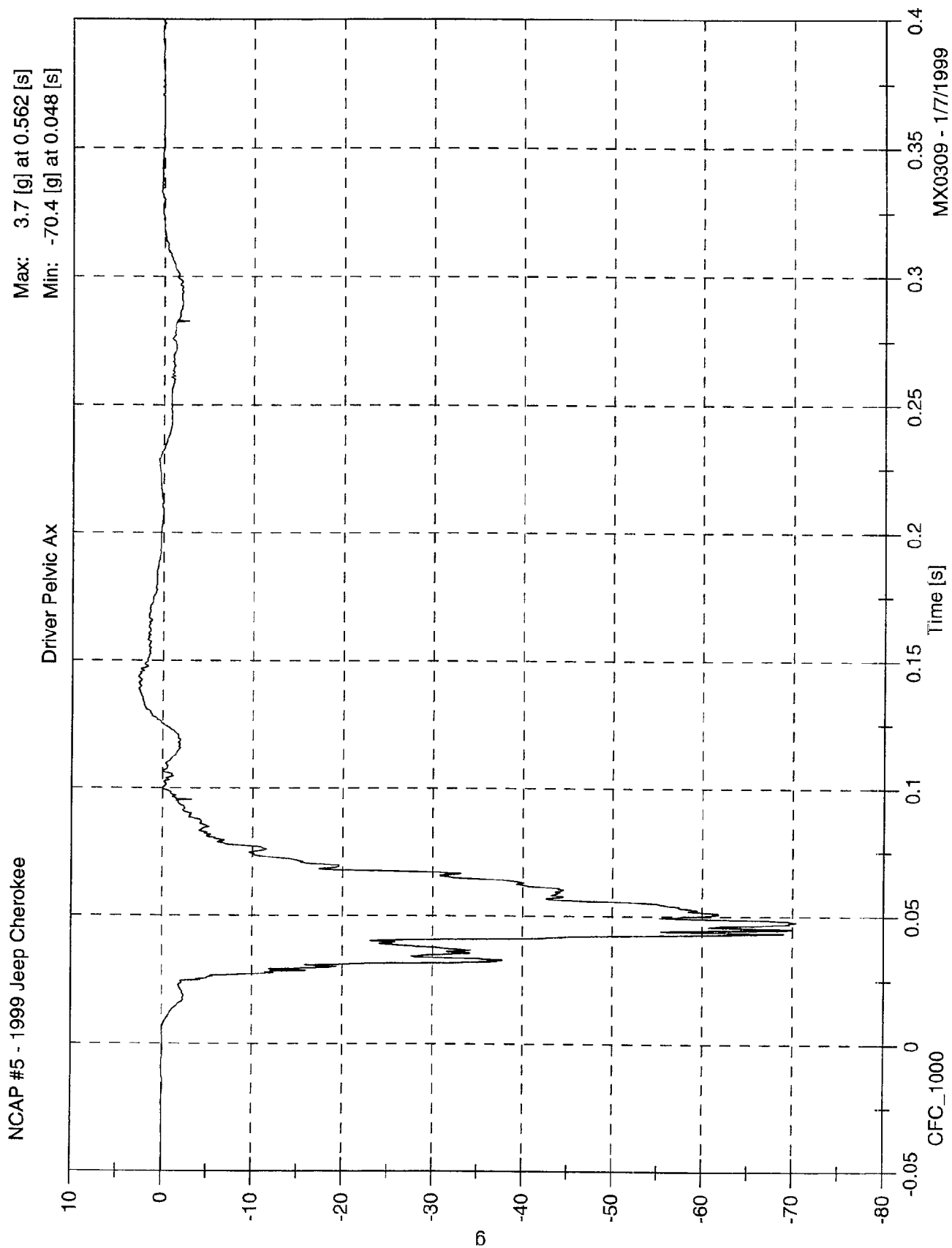
NCAP #5 - 1999 Jeep Cherokee

Max: 0.0 [mm] at -0.000 [s]
Min: -38.1 [mm] at 0.060 [s]

Driver Chest Displacement

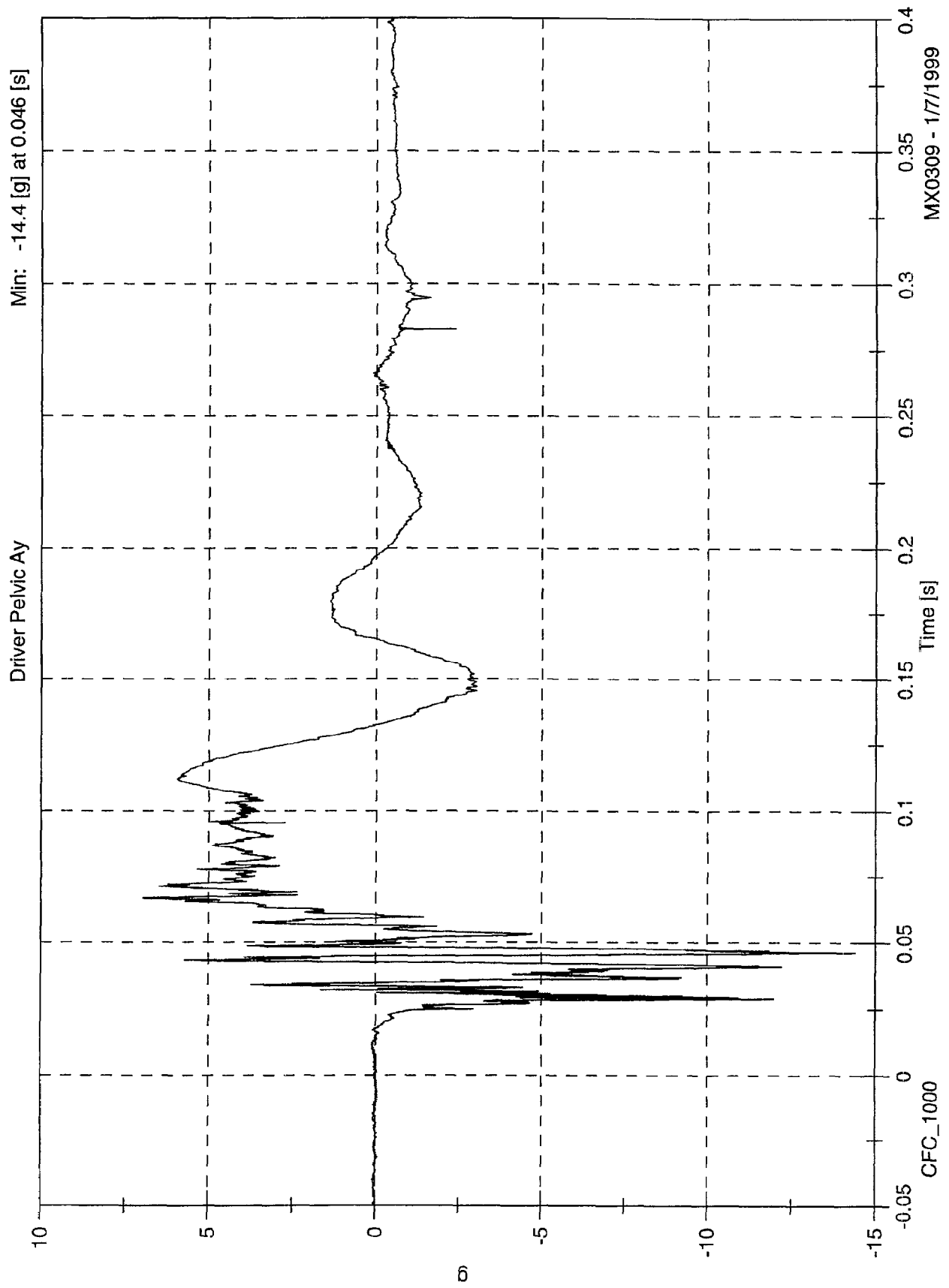


MX0309 - 1/7/1999



NCAP #5 - 1999 Jeep Cherokee

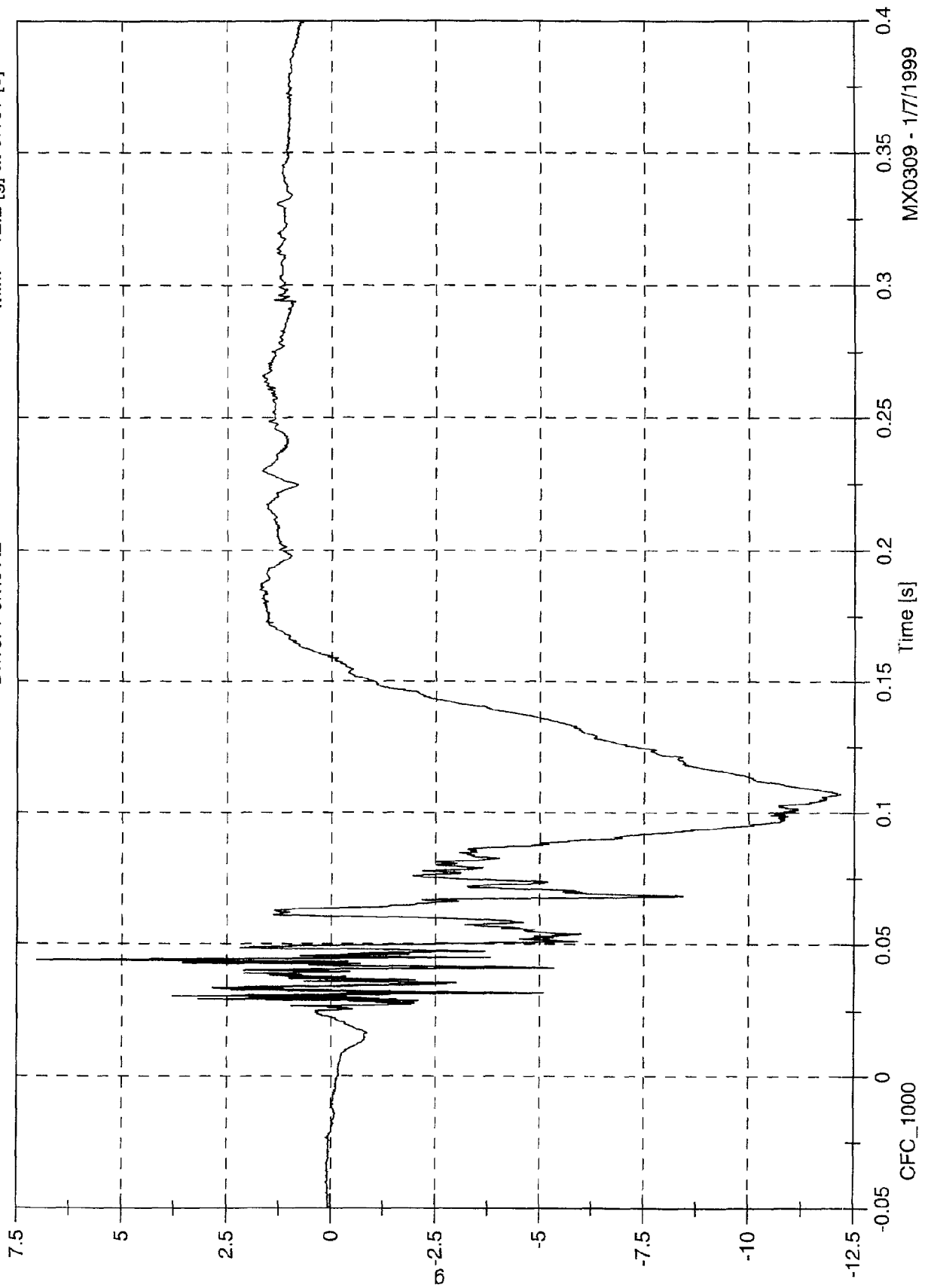
Max: 7.0 [g] at 0.067 [s]
Min: -14.4 [g] at 0.046 [s]



NCAP #5 - 1999 Jeep Cherokee

Max: 7.0 [g] at 0.044 [s]
Min: -12.2 [g] at 0.107 [s]

Driver Pelvic Az

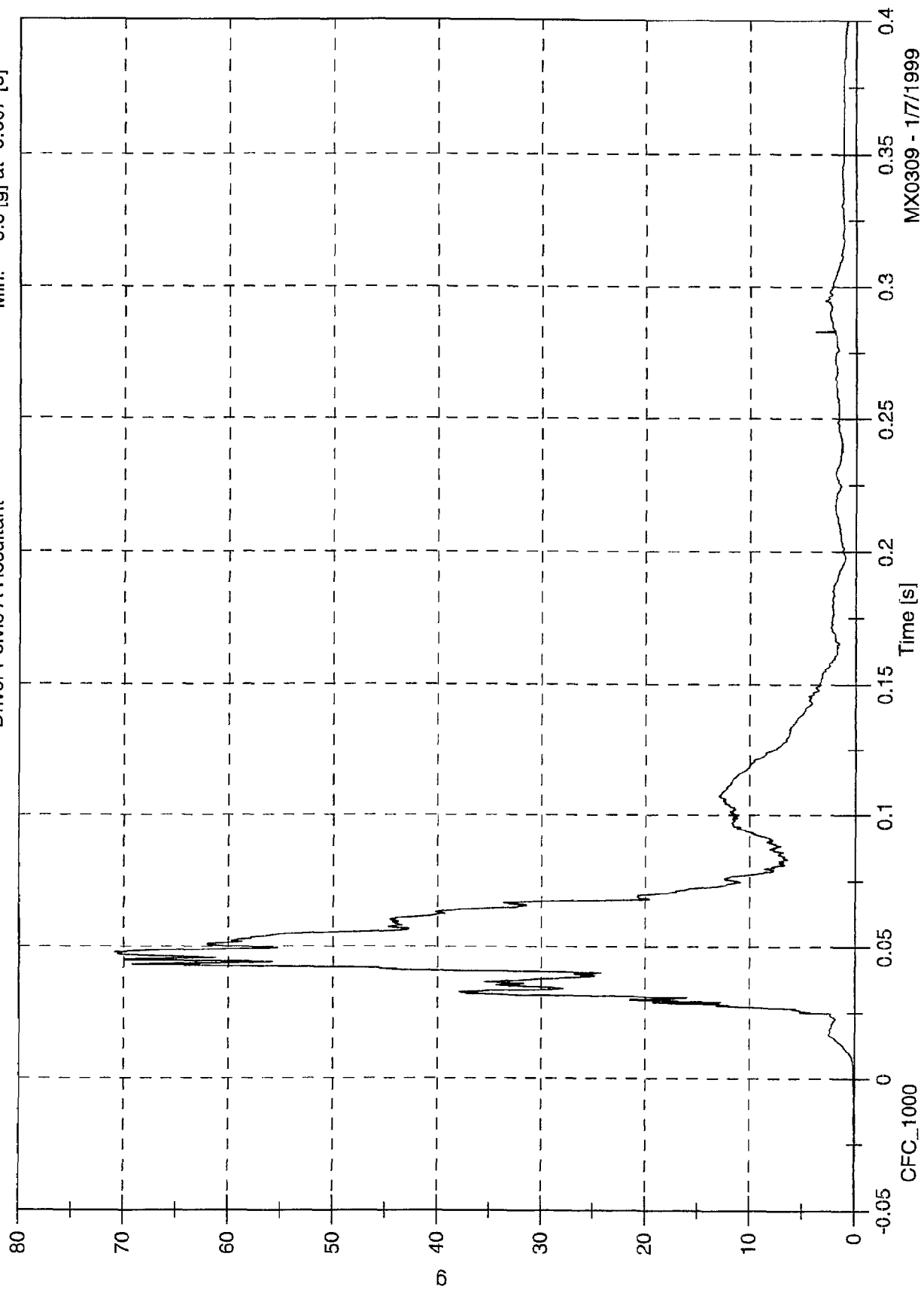


MX0309 - 1/7/1999

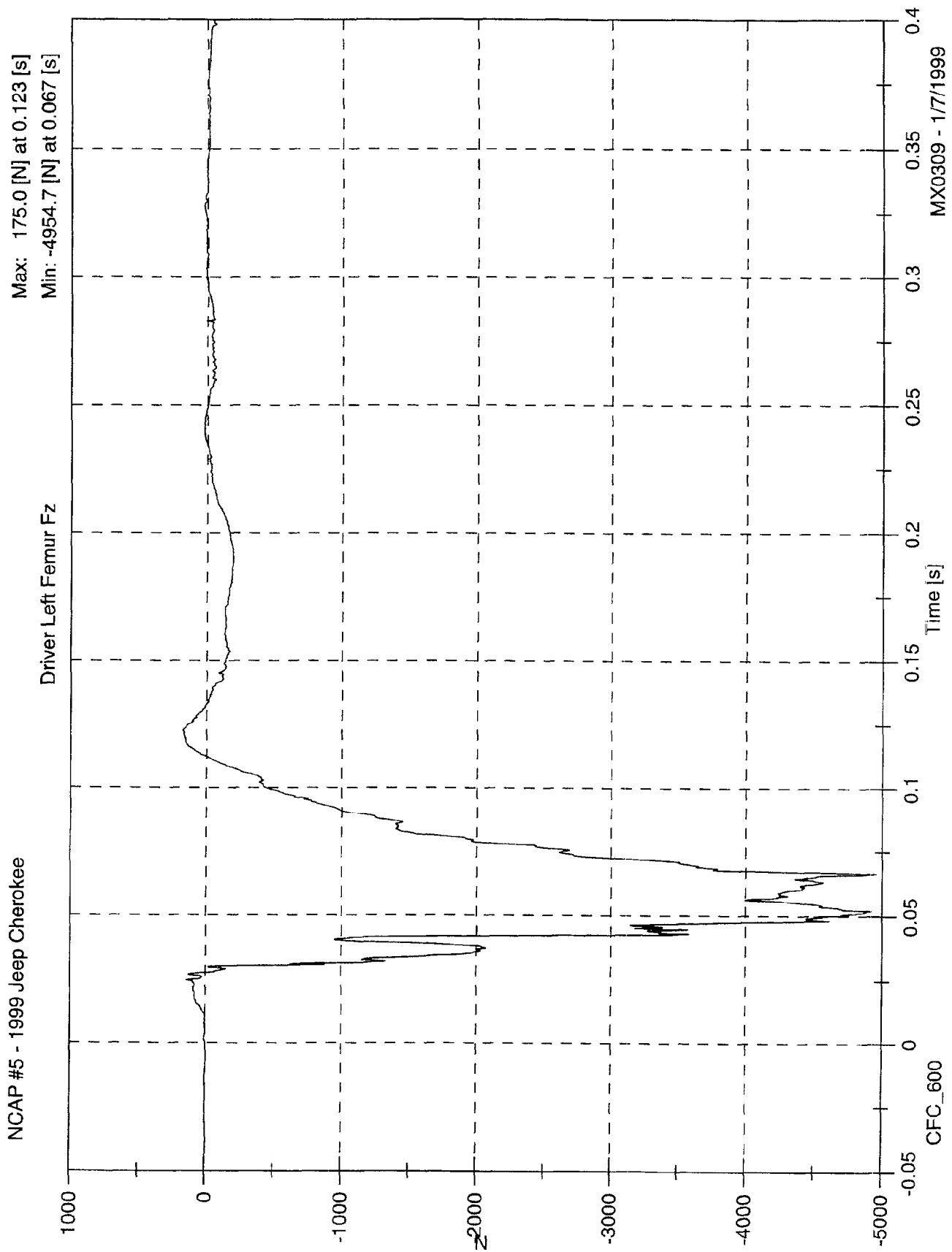
NCAP #5 - 1999 Jeep Cherokee

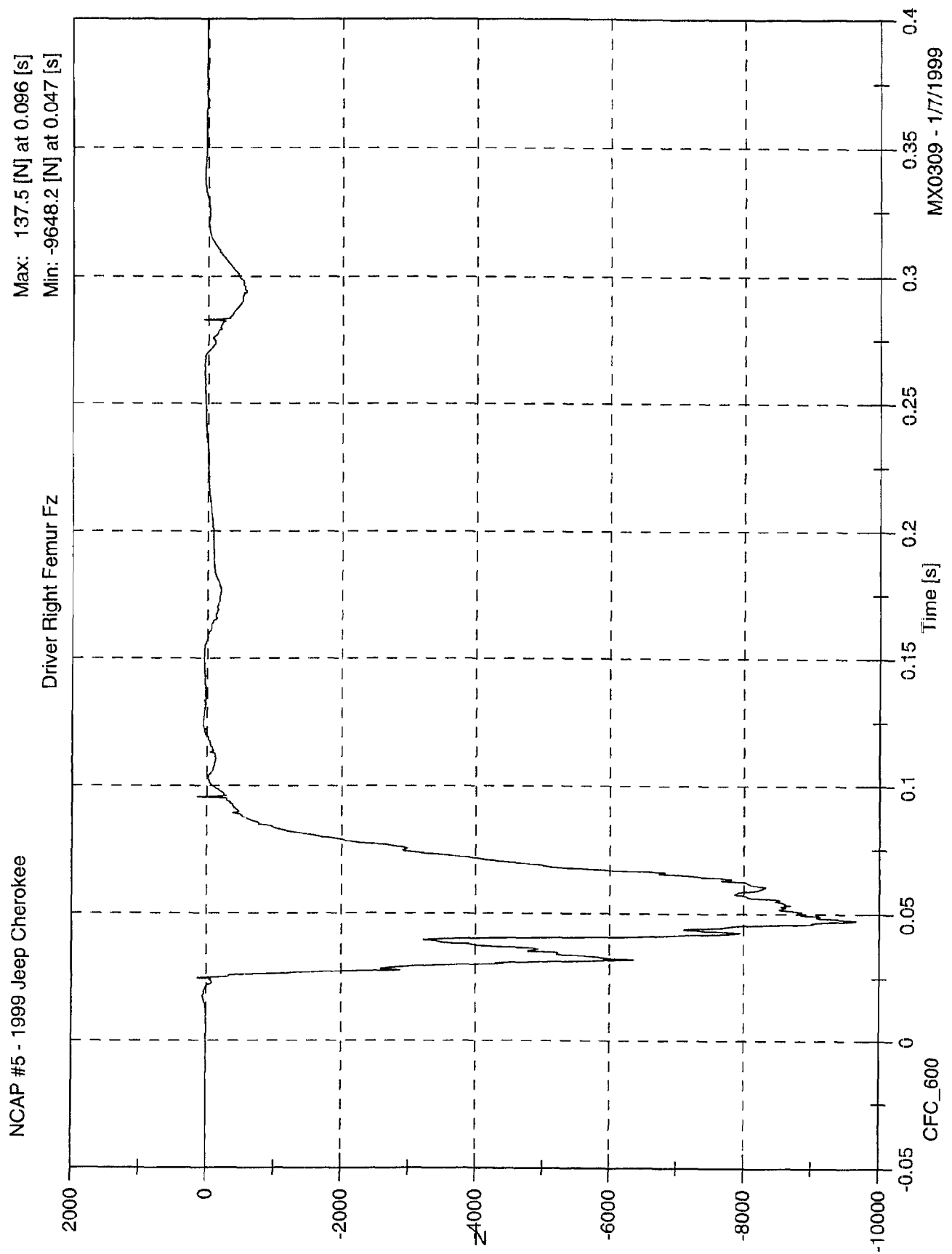
Max: 70.8 [g] at 0.048 [s]
Min: 0.0 [g] at -0.067 [s]

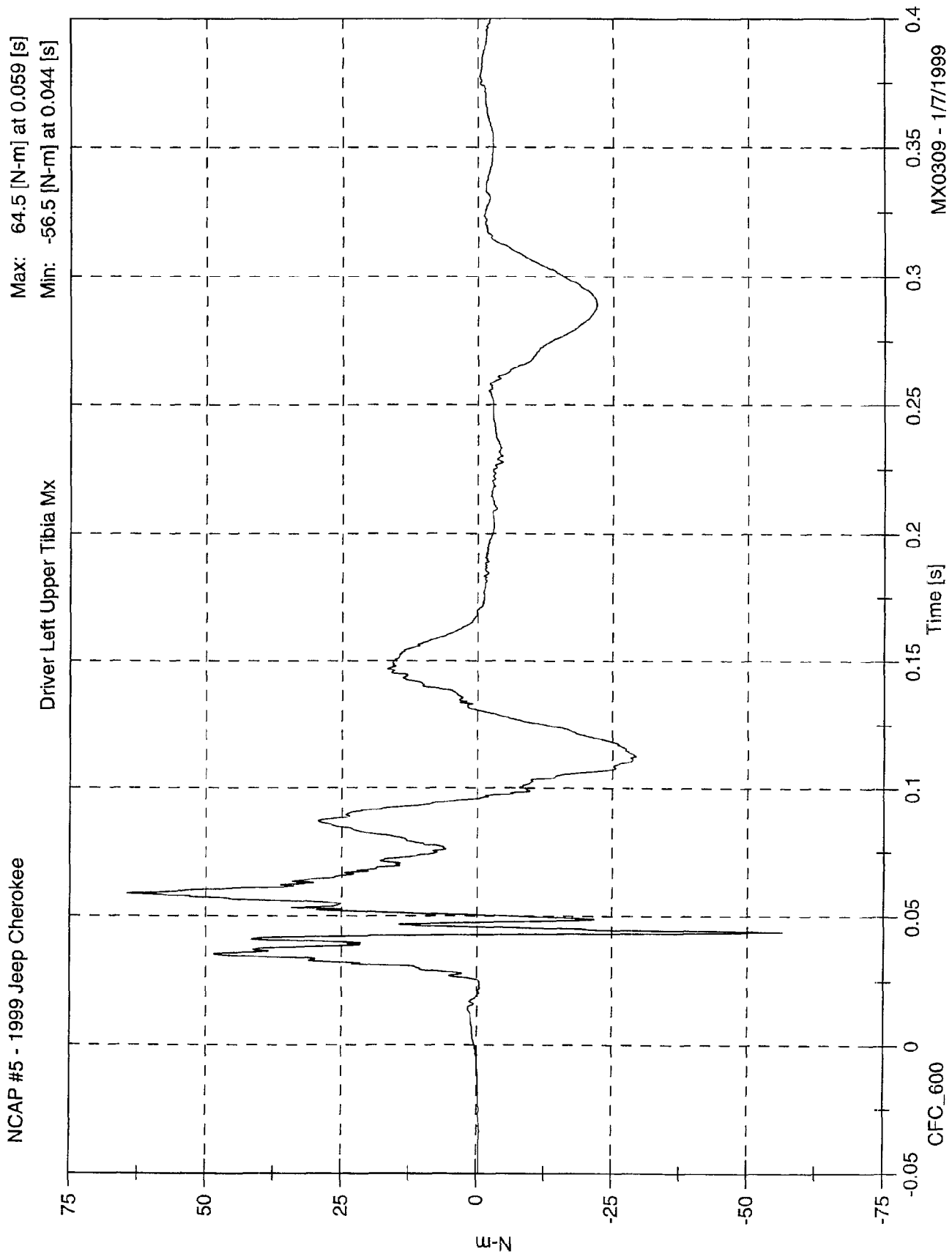
Driver Pelvic A Resultant

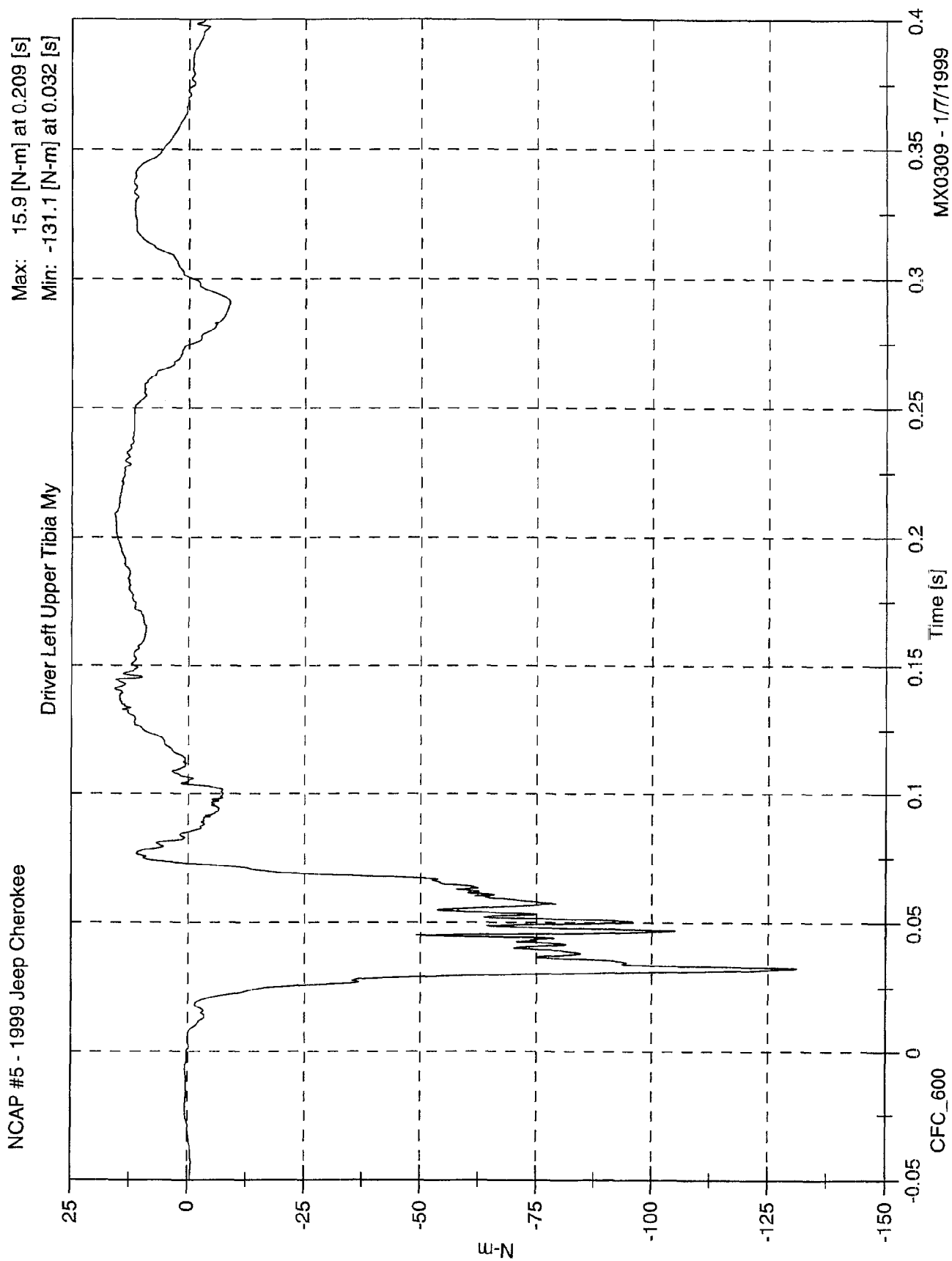


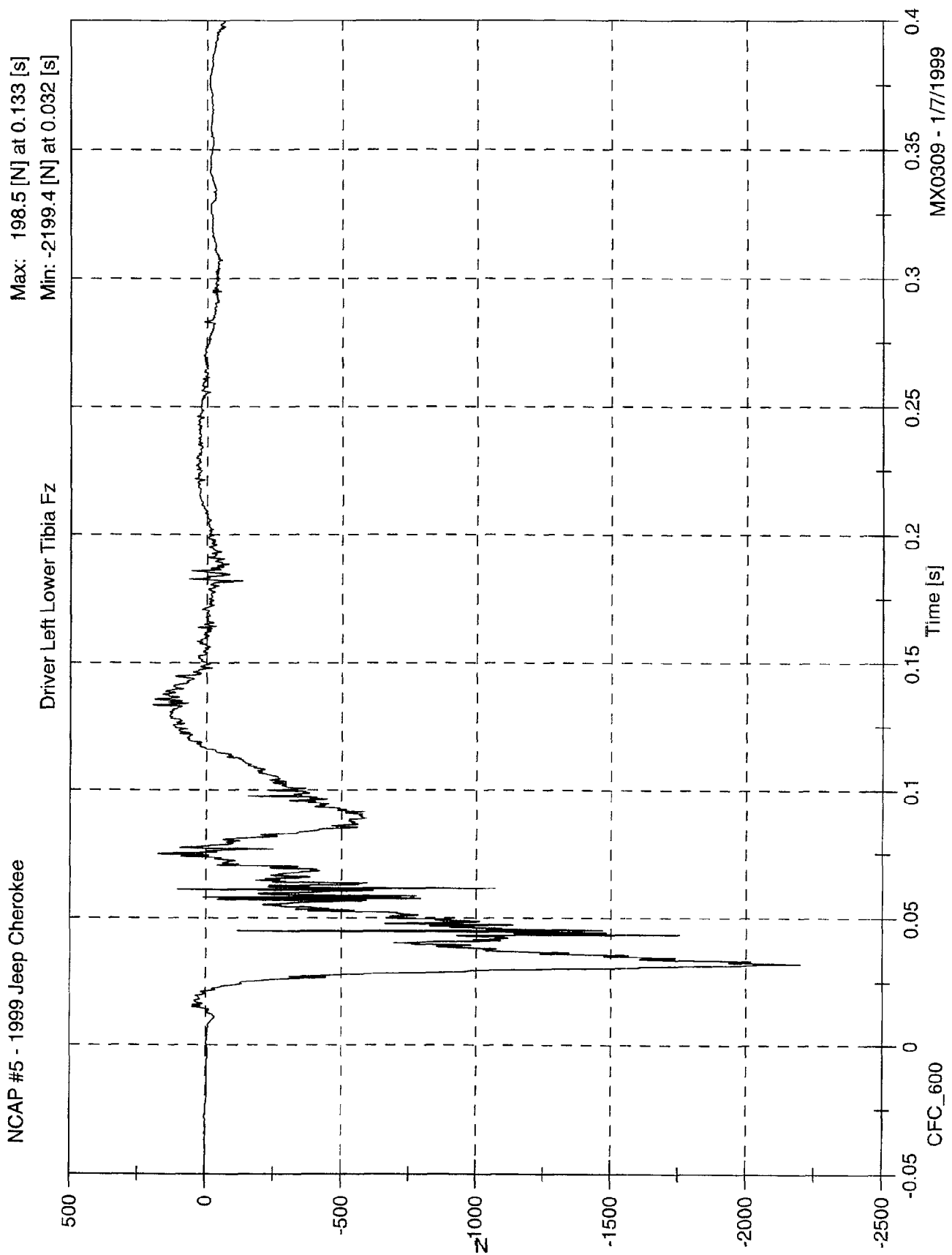
MX0309 - 1/7/1999







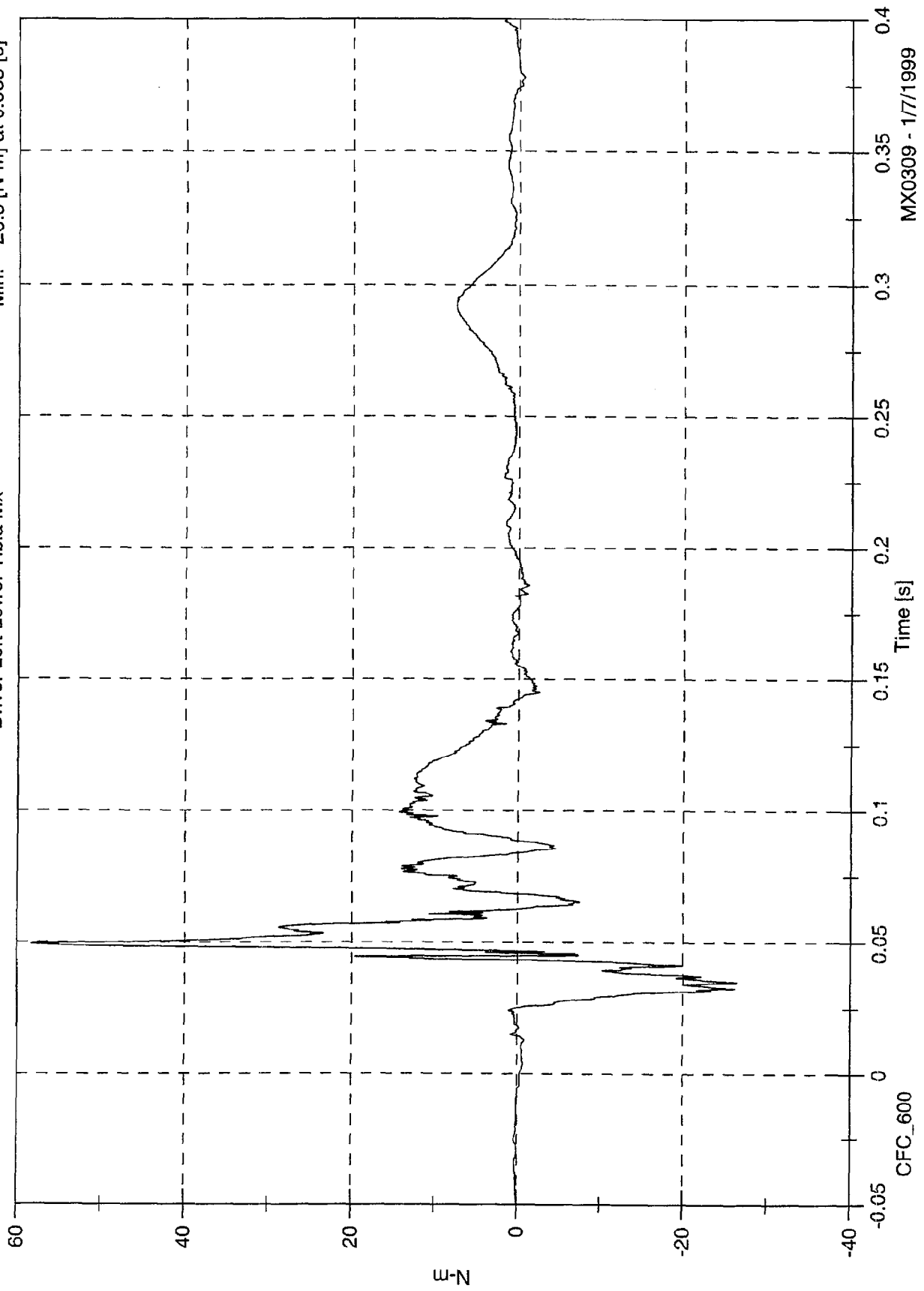




NCAP #5 - 1999 Jeep Cherokee

Driver Left Lower Tibia Mix

Max: 58.3 [N-m] at 0.049 [s]
Min: -26.5 [N-m] at 0.035 [s]

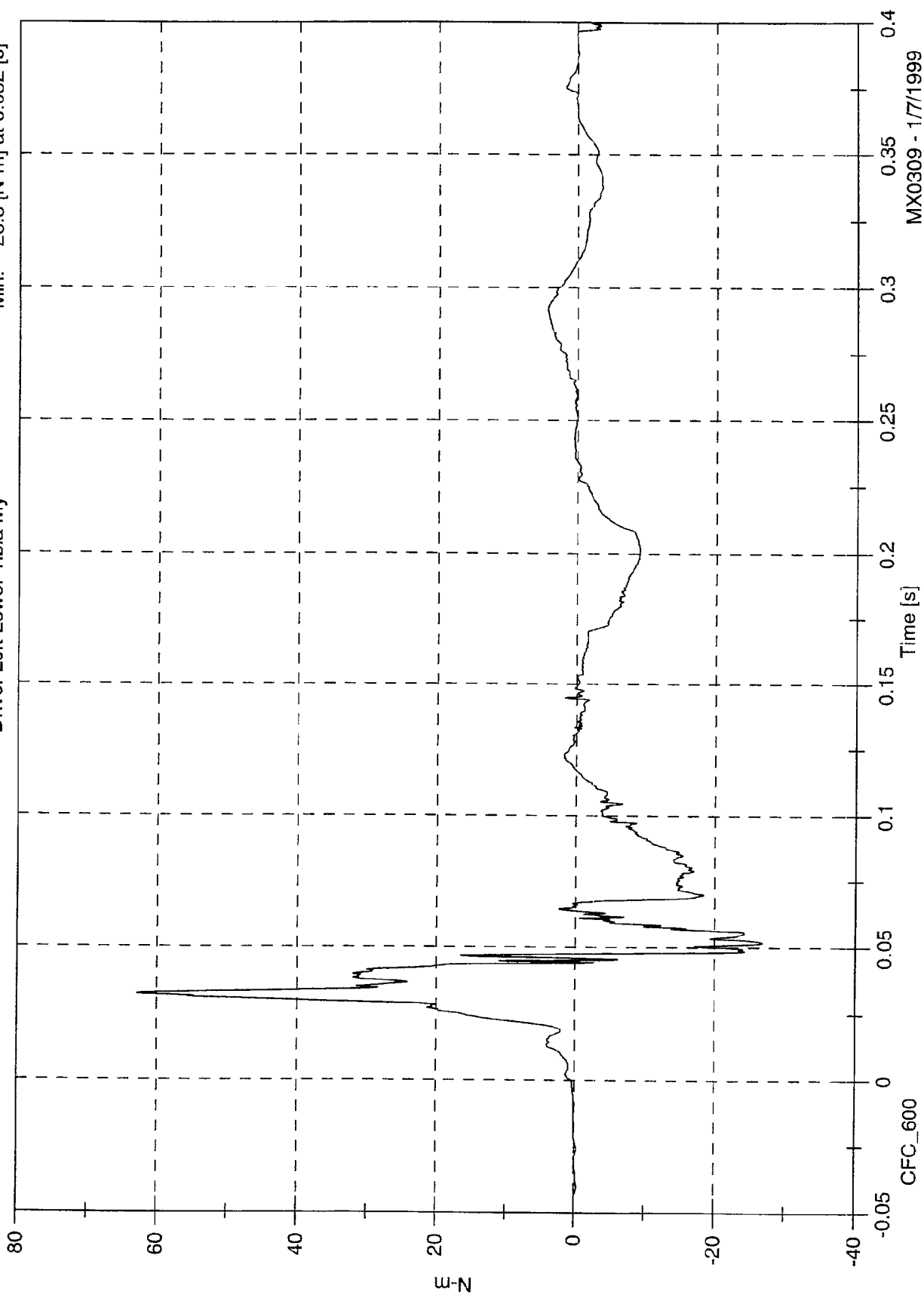


MX0309 - 1/7/1999

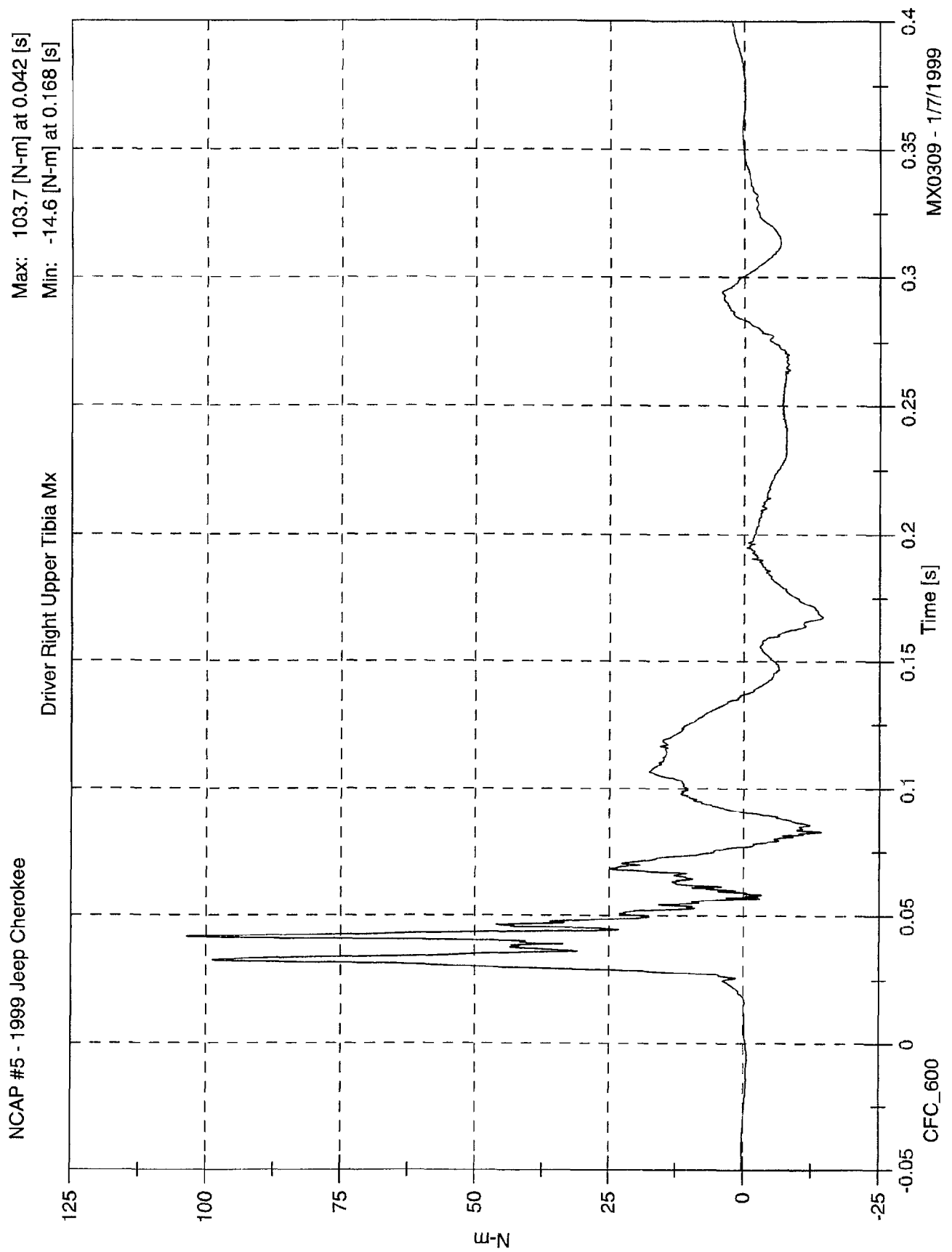
NCAP #5 - 1999 Jeep Cherokee

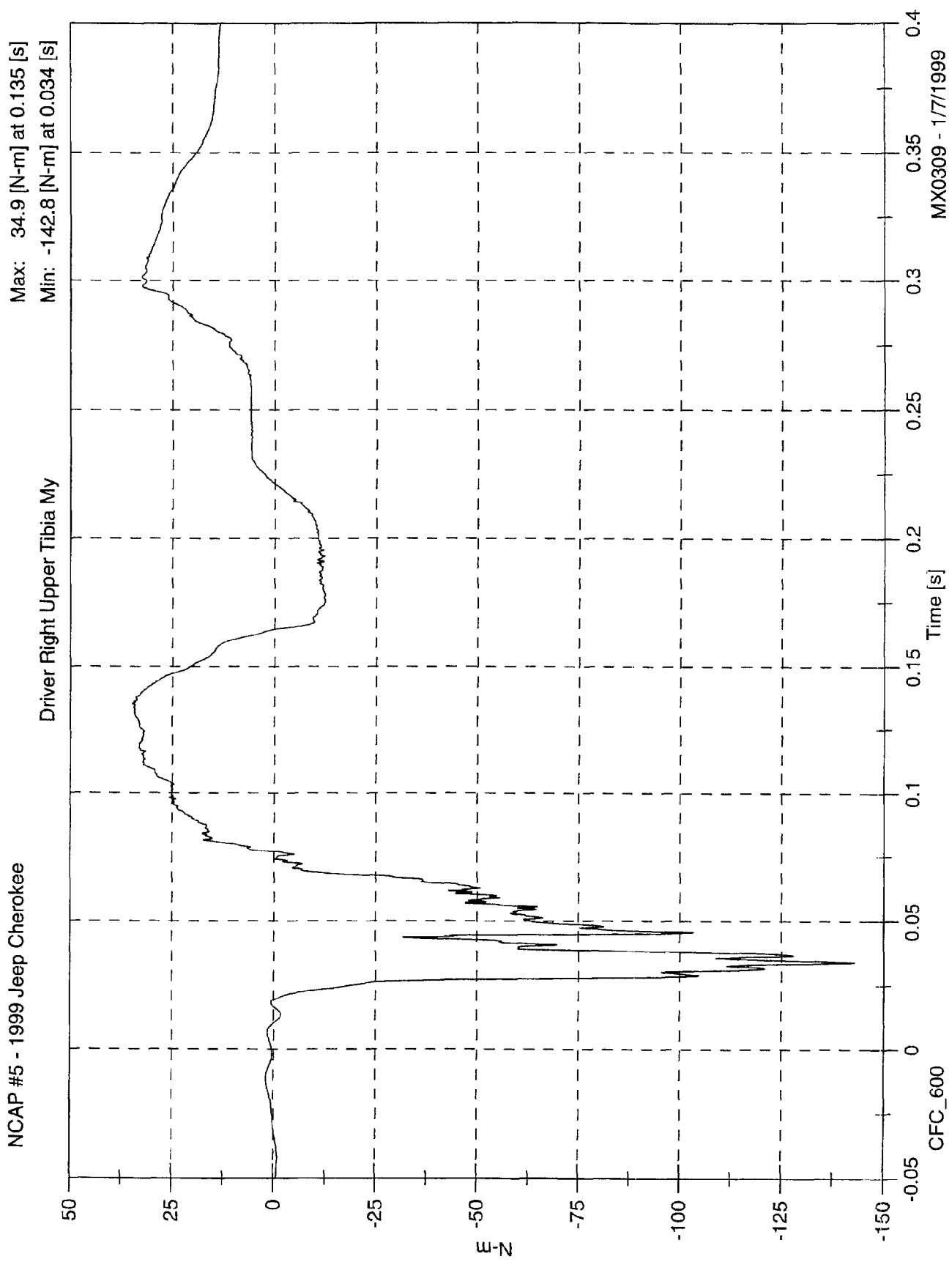
Driver Left Lower Tibia My

Max: 62.8 [N-m] at 0.032 [s]
Min: -26.8 [N-m] at 0.052 [s]



MX0309 - 1/7/1999

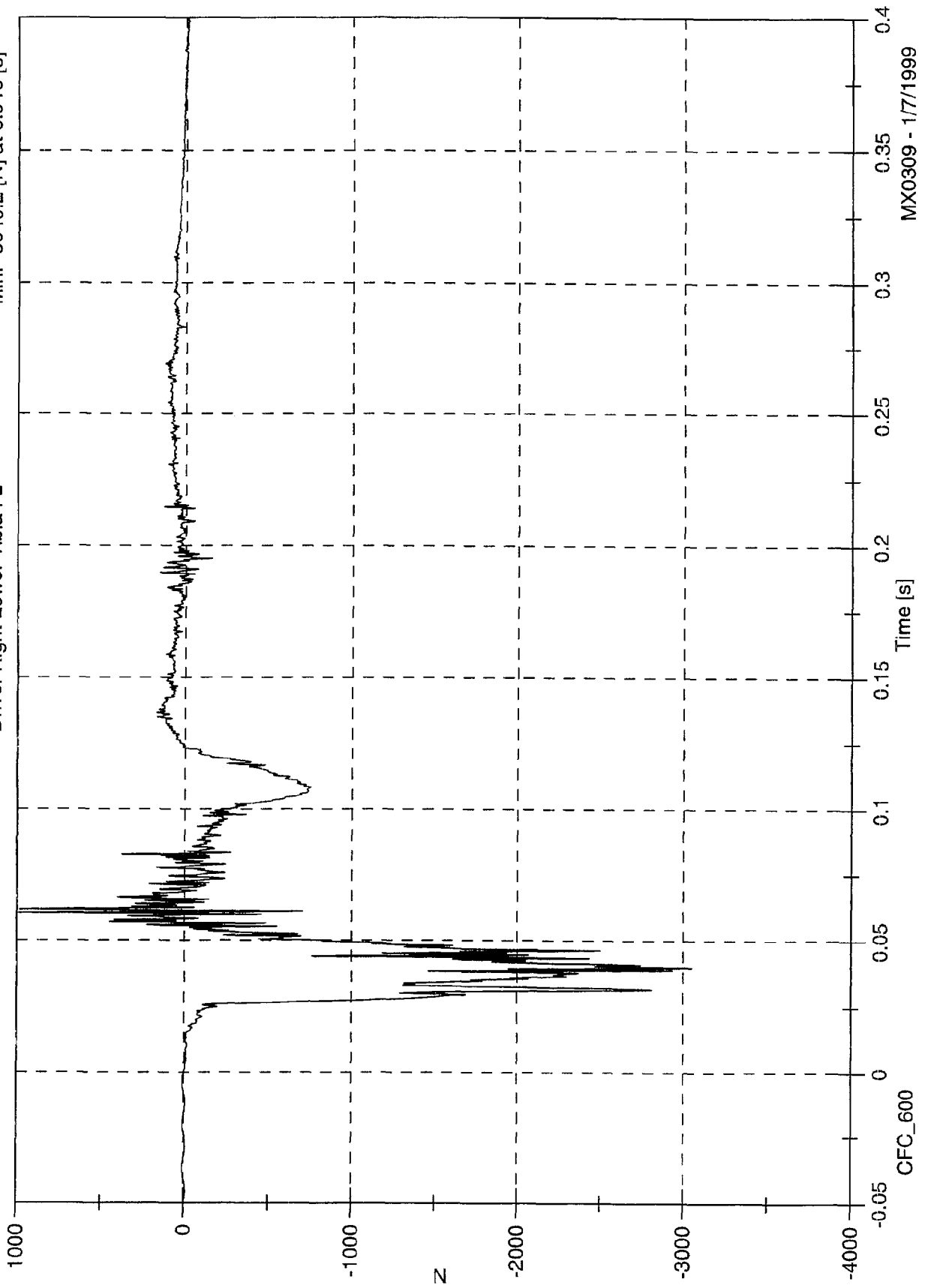




NCAP #5 - 1999 Jeep Cherokee

Max: 991.6 [N] at 0.061 [s]
Min: -3049.2 [N] at 0.040 [s]

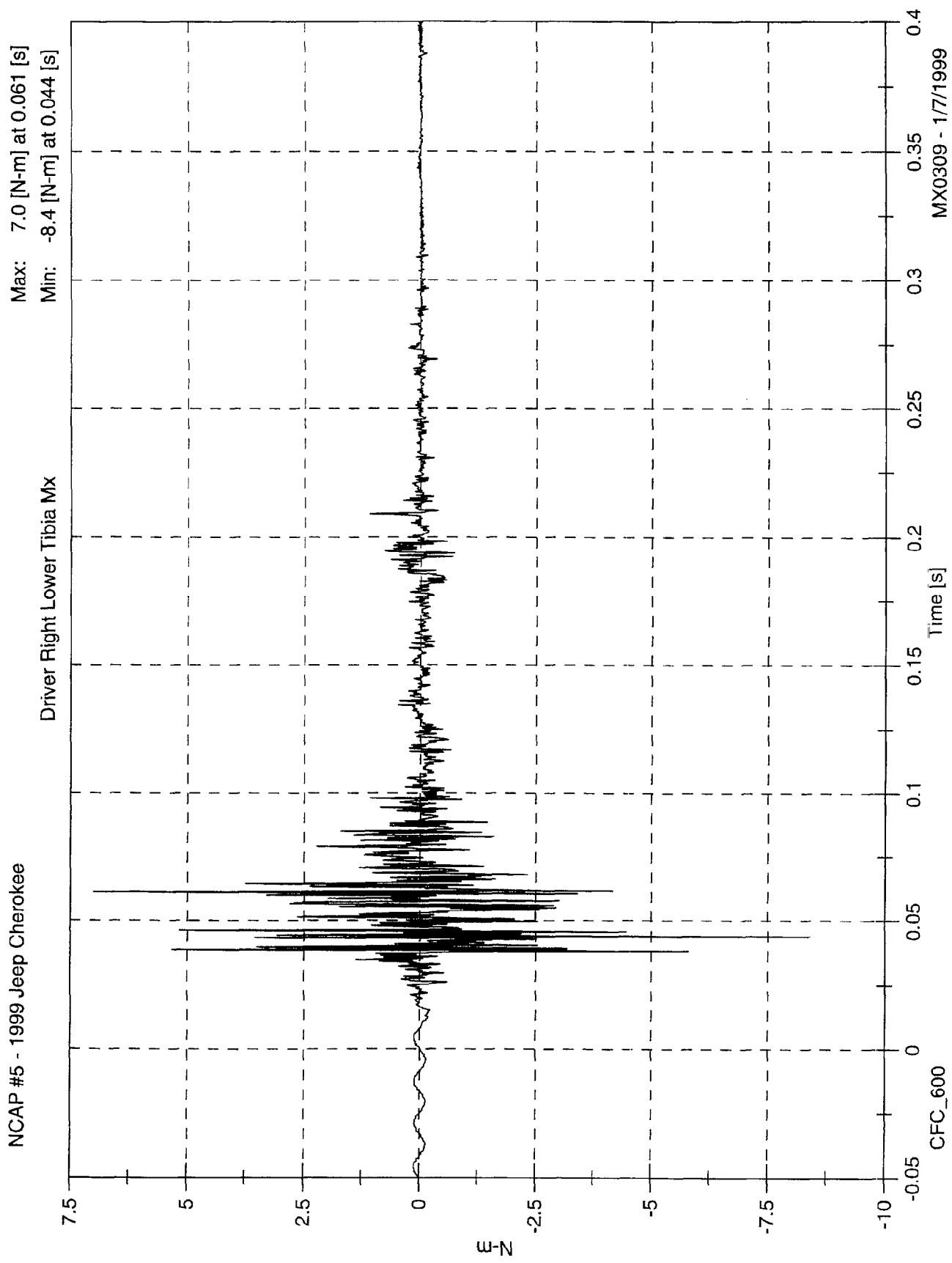
Driver Right Lower Tibia Fz



CFC_600

Time [s]

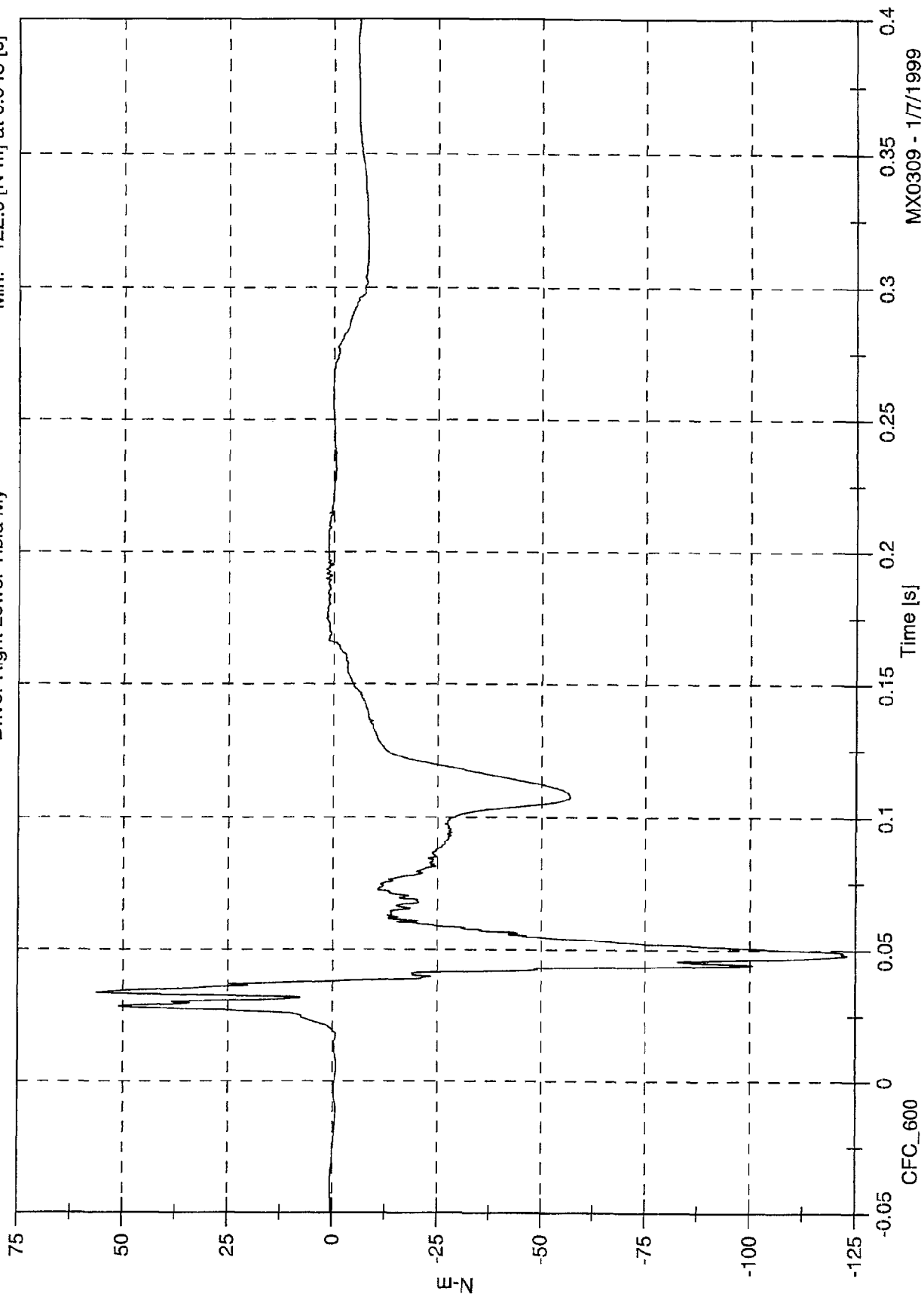
MX0309 - 1/7/1999



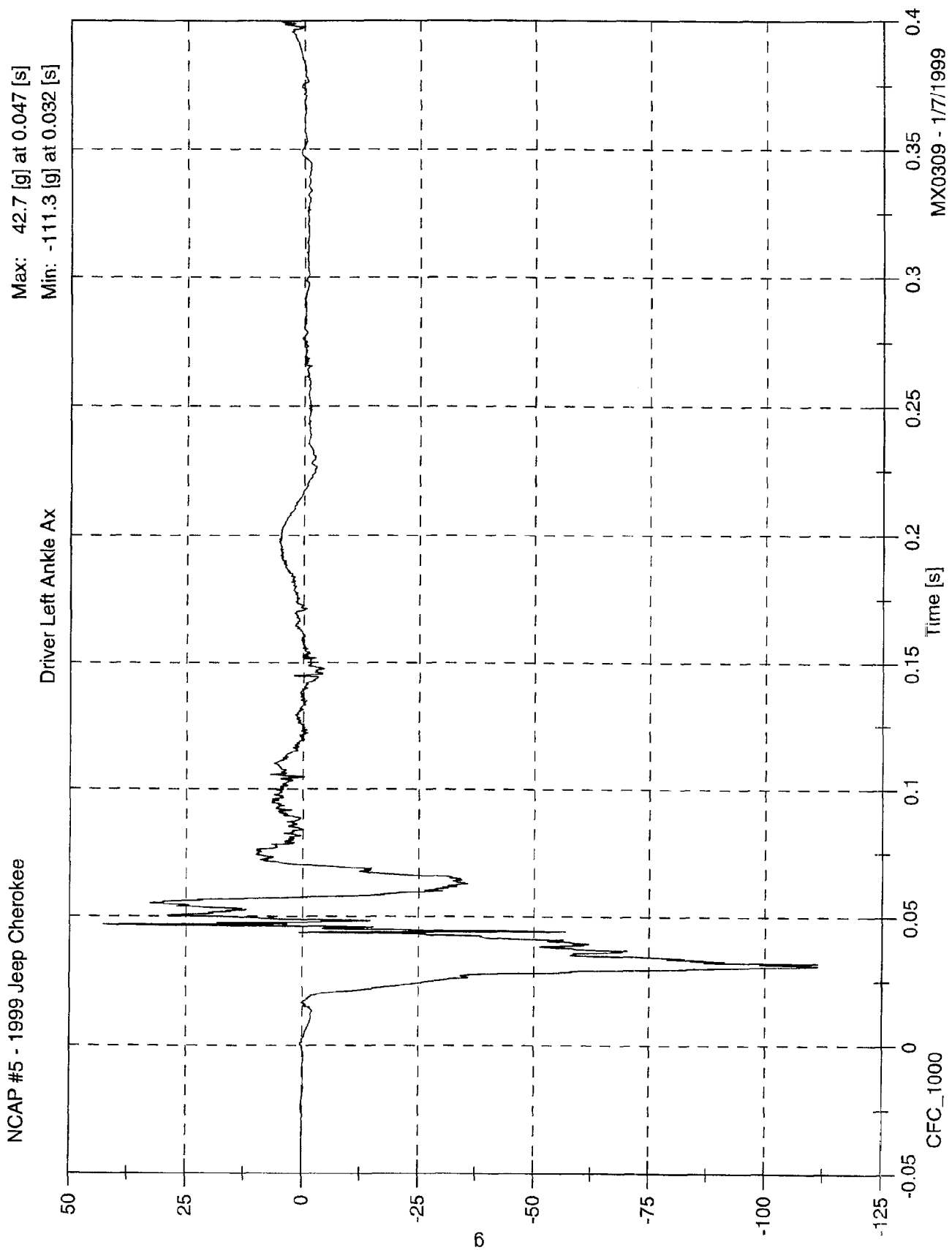
NCAP #5 - 1999 Jeep Cherokee

Driver Right Lower Tibia My

Max: 56.3 [N-m] at 0.033 [s]
Min: -122.9 [N-m] at 0.048 [s]



MX0309 - 1/7/1999

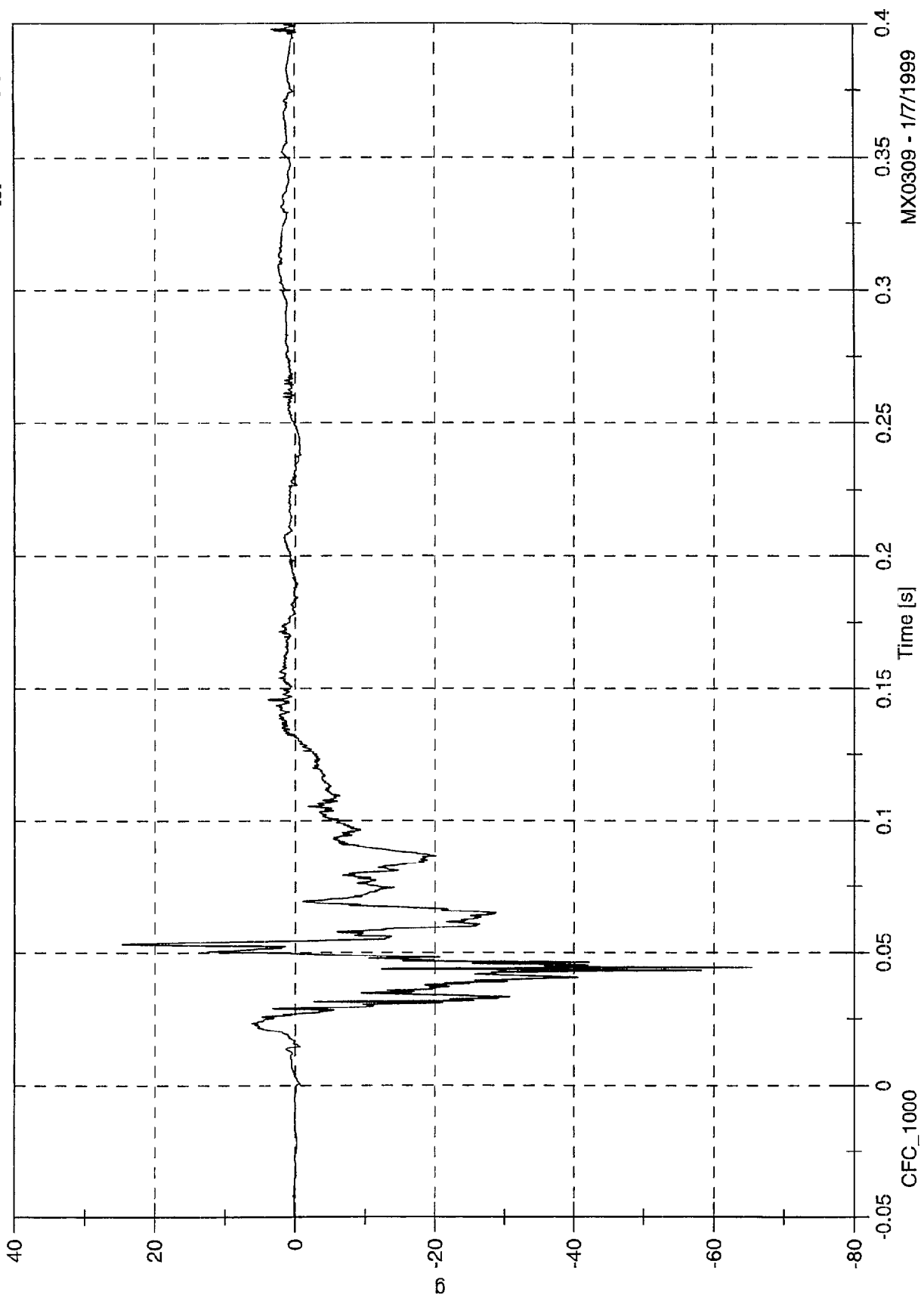


NCAP #5 - 1999 Jeep Cherokee

Max: 24.7 [g] at 0.053 [s]

Min: -65.4 [g] at 0.044 [s]

Driver Left Ankle Az

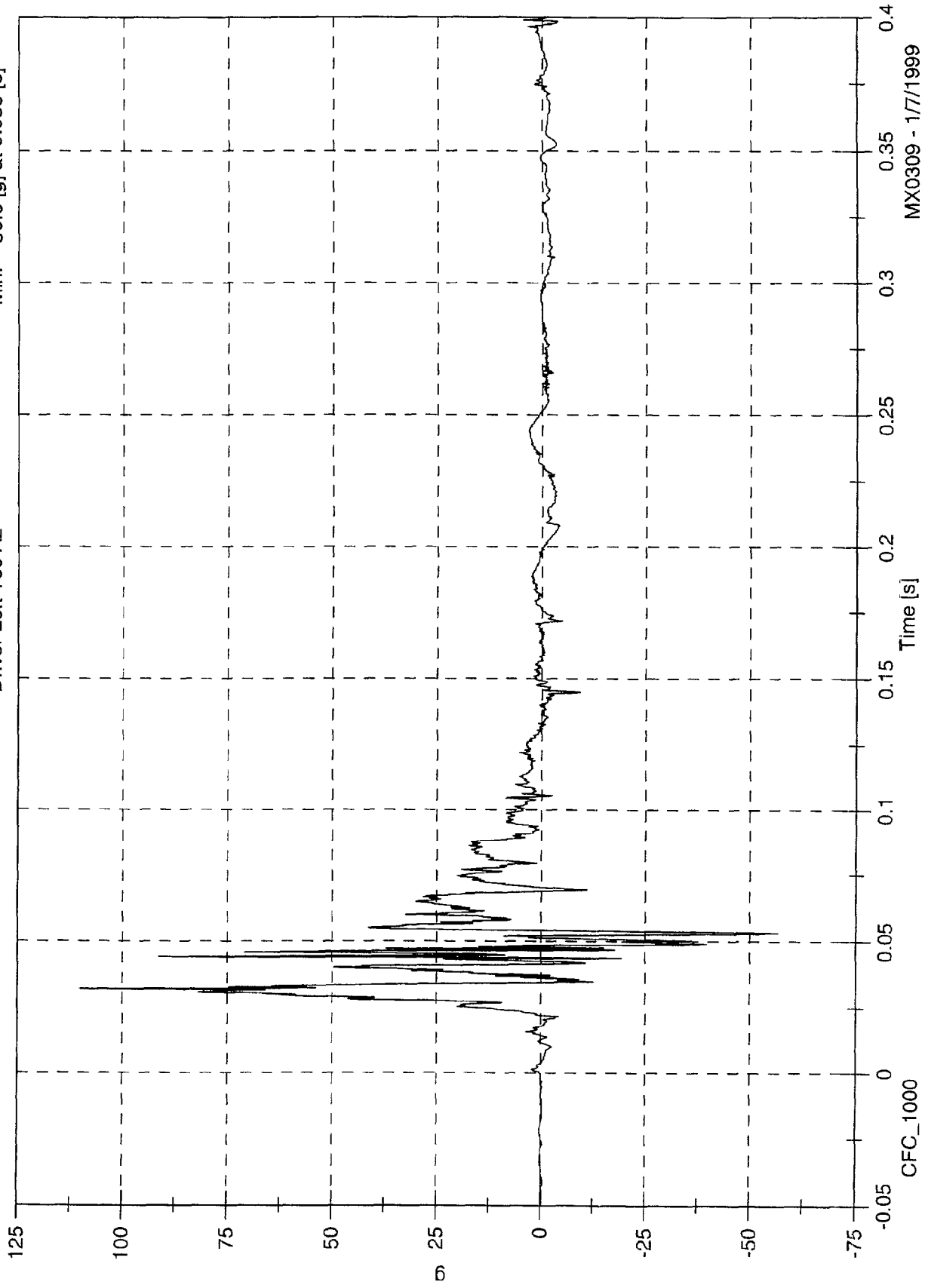


MX0309 - 1/7/1999

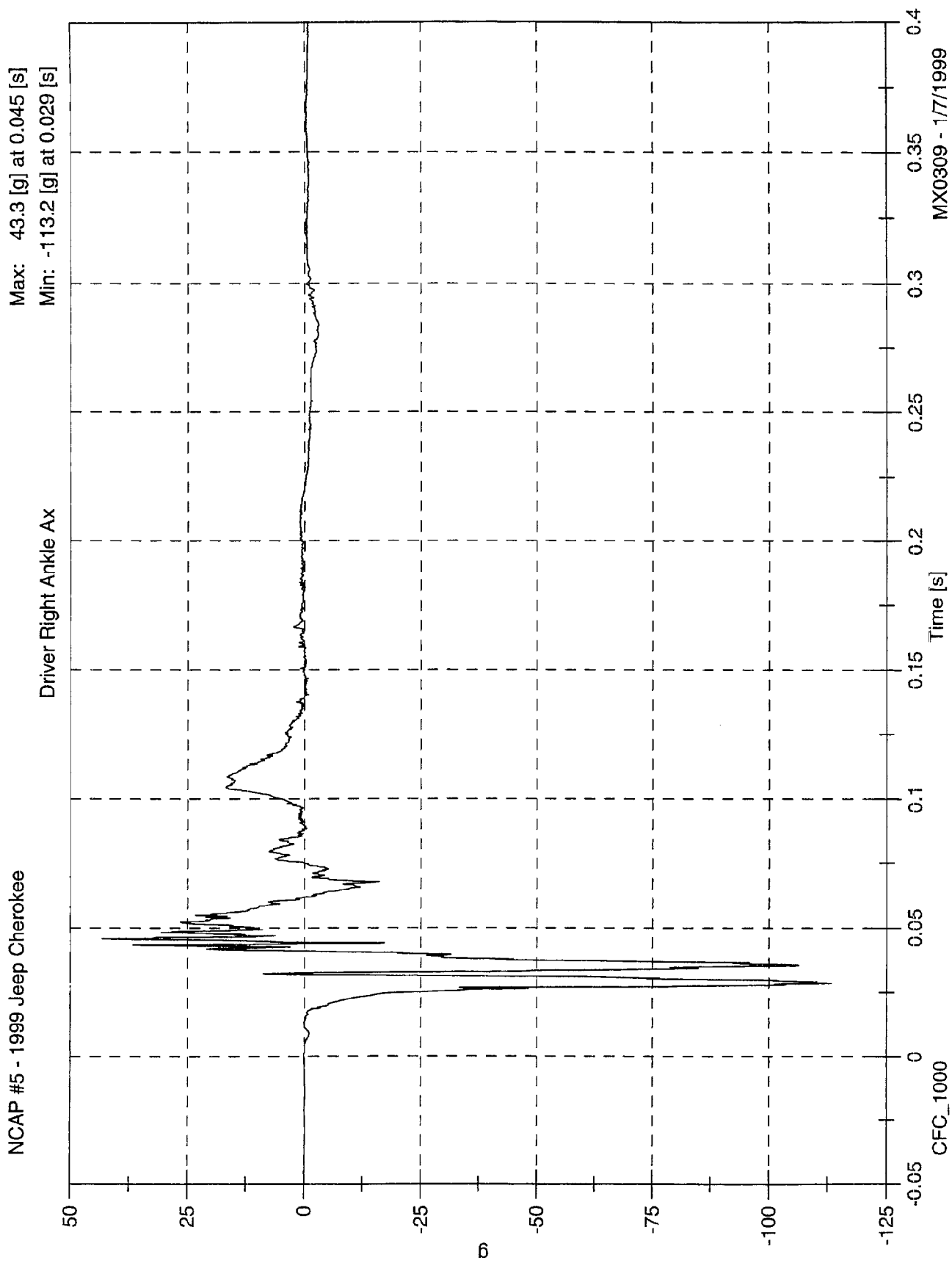
NCAP #5 - 1999 Jeep Cherokee

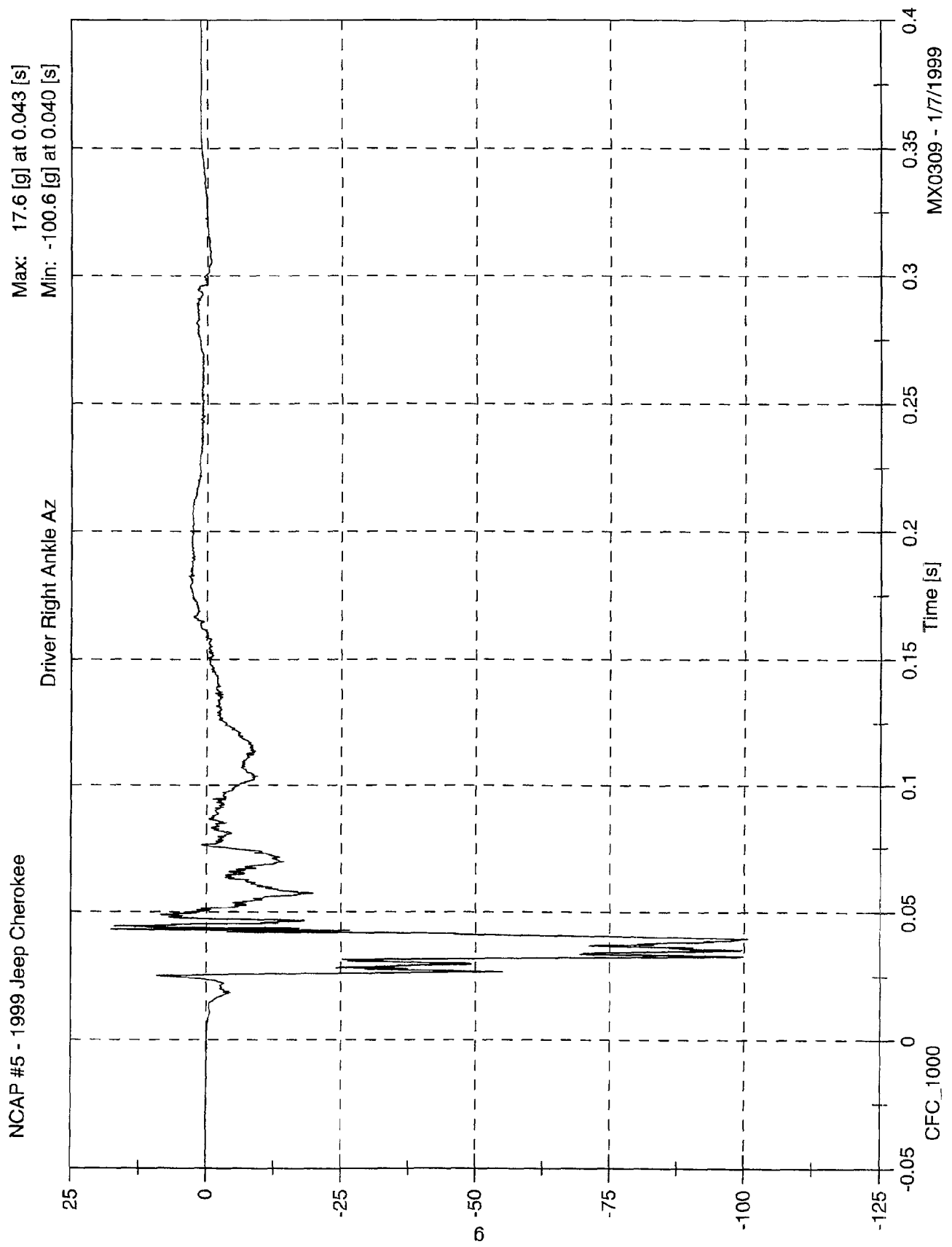
Max: 110.1 [g] at 0.032 [s]
Min: -56.6 [g] at 0.053 [s]

Driver Left Toe Az



MX0309 - 1/7/1999



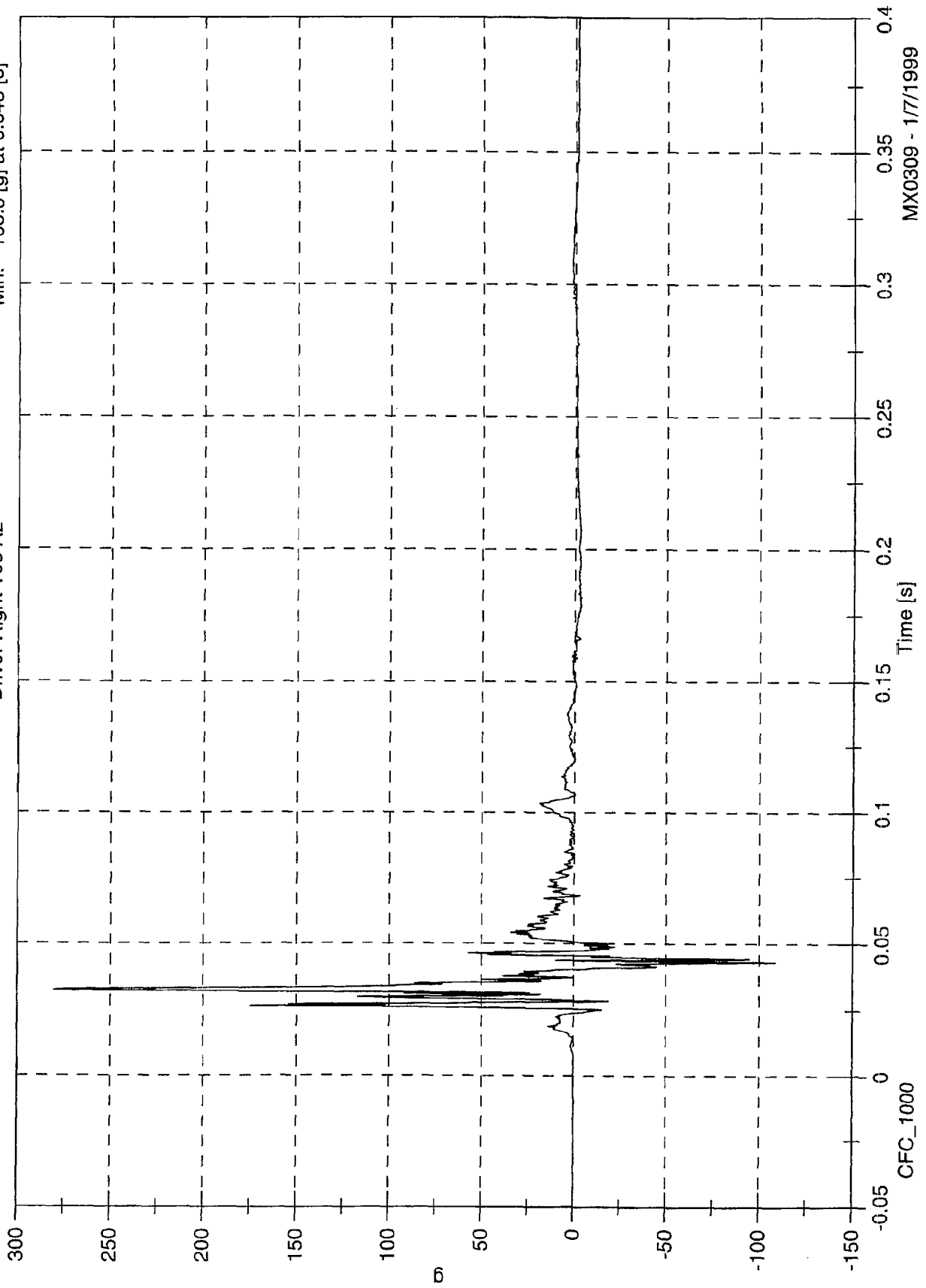


NCAP #5 - 1999 Jeep Cherokee

Max: 280.3 [g] at 0.032 [s]

Min: -108.3 [g] at 0.043 [s]

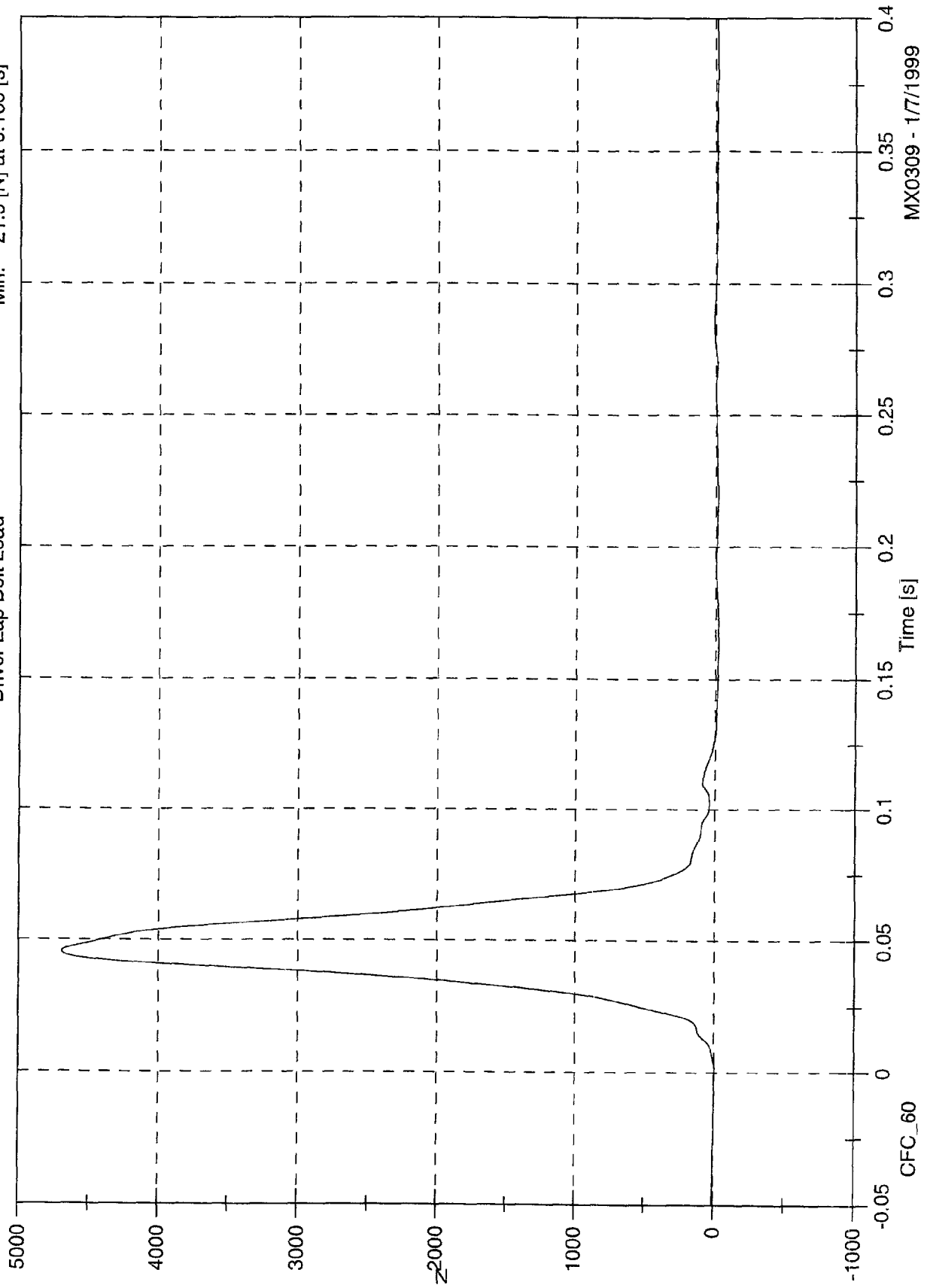
Driver Right Toe Az



NCAP #5 - 1999 Jeep Cherokee

Max: 4693.9 [N] at 0.046 [s]
Min: -21.9 [N] at 0.160 [s]

Driver Lap Belt Load



CFC_60

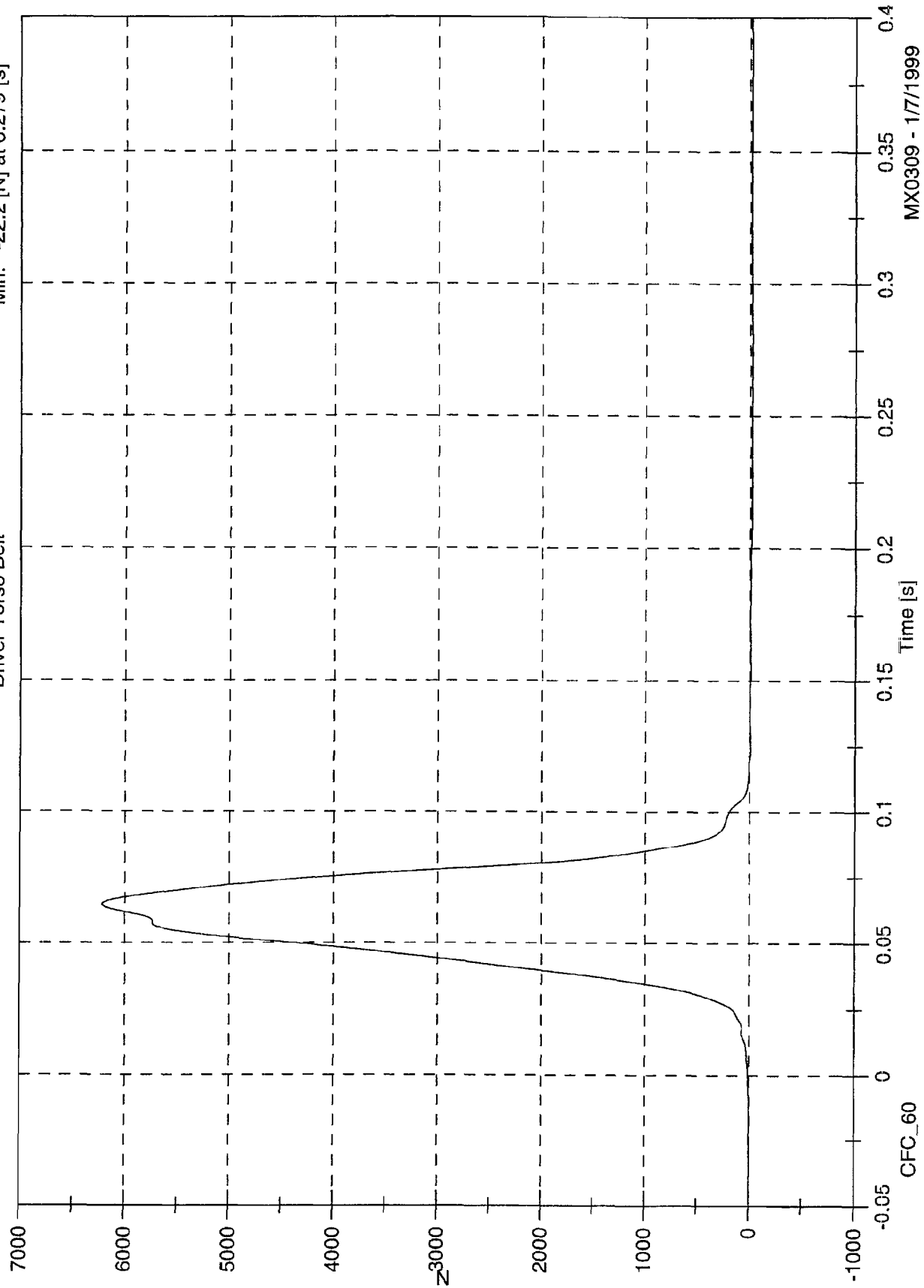
Time [s]

MX0309 - 1/7/1999

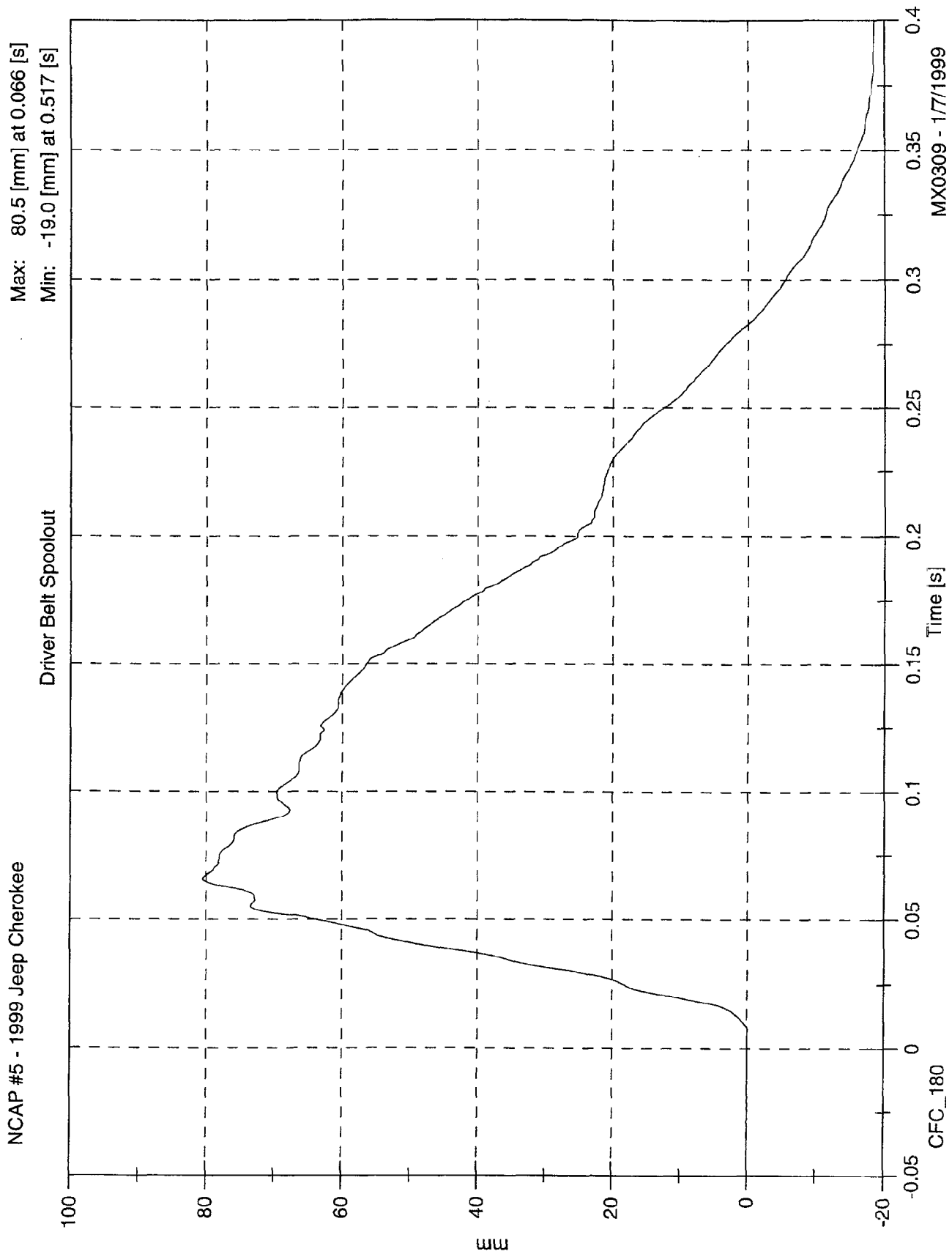
NCAP #5 - 1999 Jeep Cherokee

Driver Torso Belt

Max: 6222.1 [N] at 0.065 [s]
Min: -22.2 [N] at 0.279 [s]



MX0309 - 1/7/1999

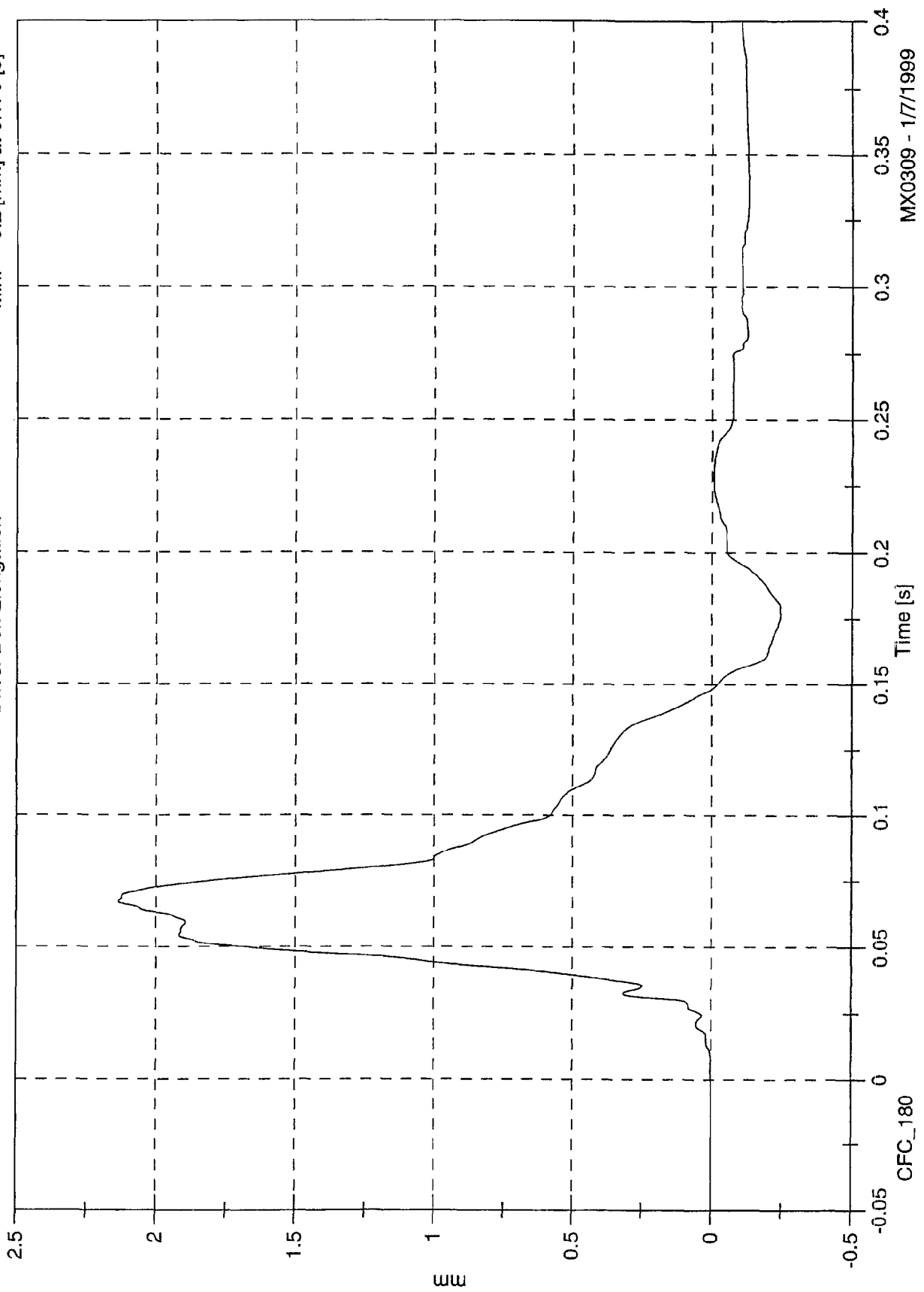


NCAP #5 - 1999 Jeep Cherokee

Max: 2.1 [mm] at 0.067 [s]

Min: -0.2 [mm] at 0.176 [s]

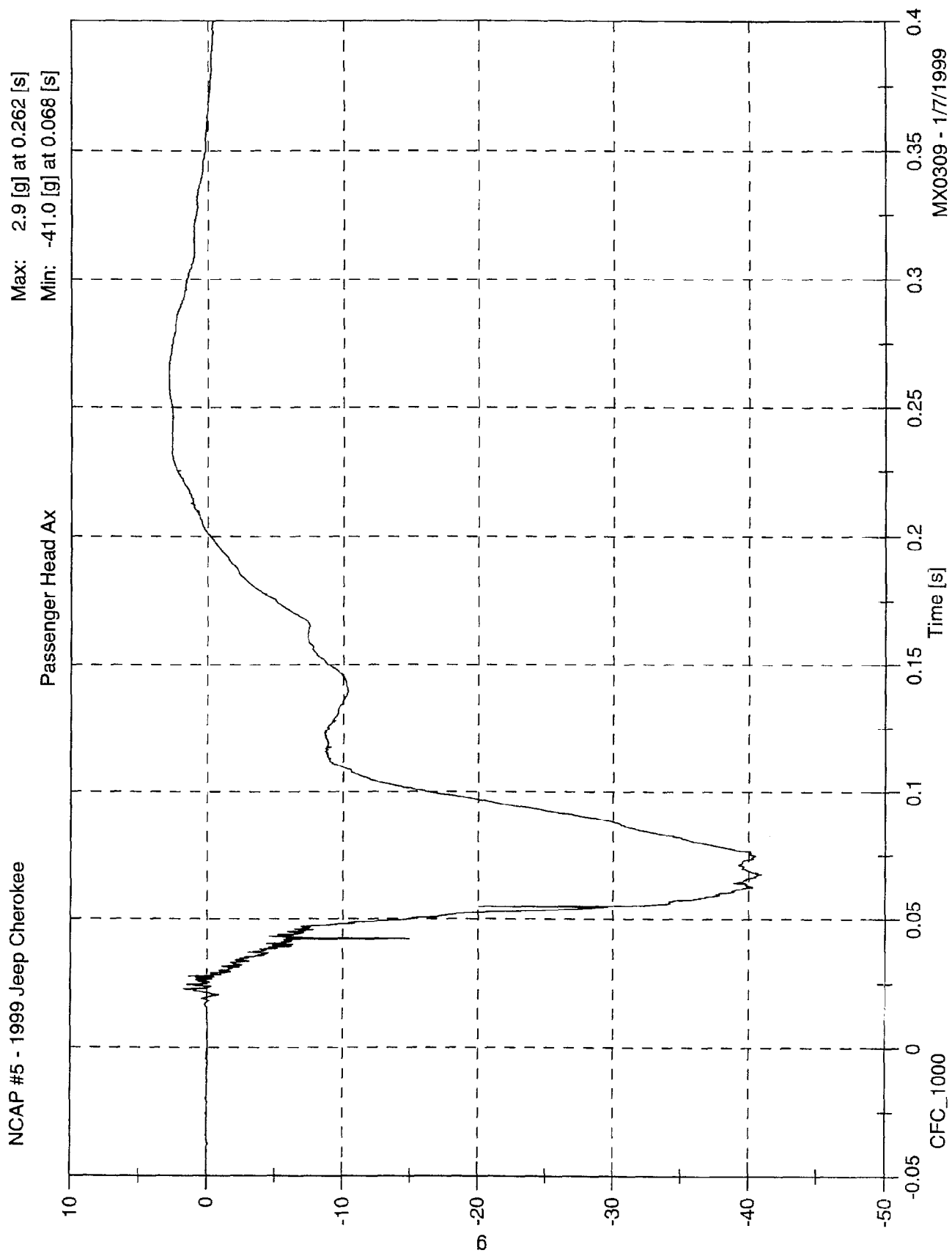
Driver Belt Elongation



CFC_180

Time [s]

MX0309 - 1/7/1999

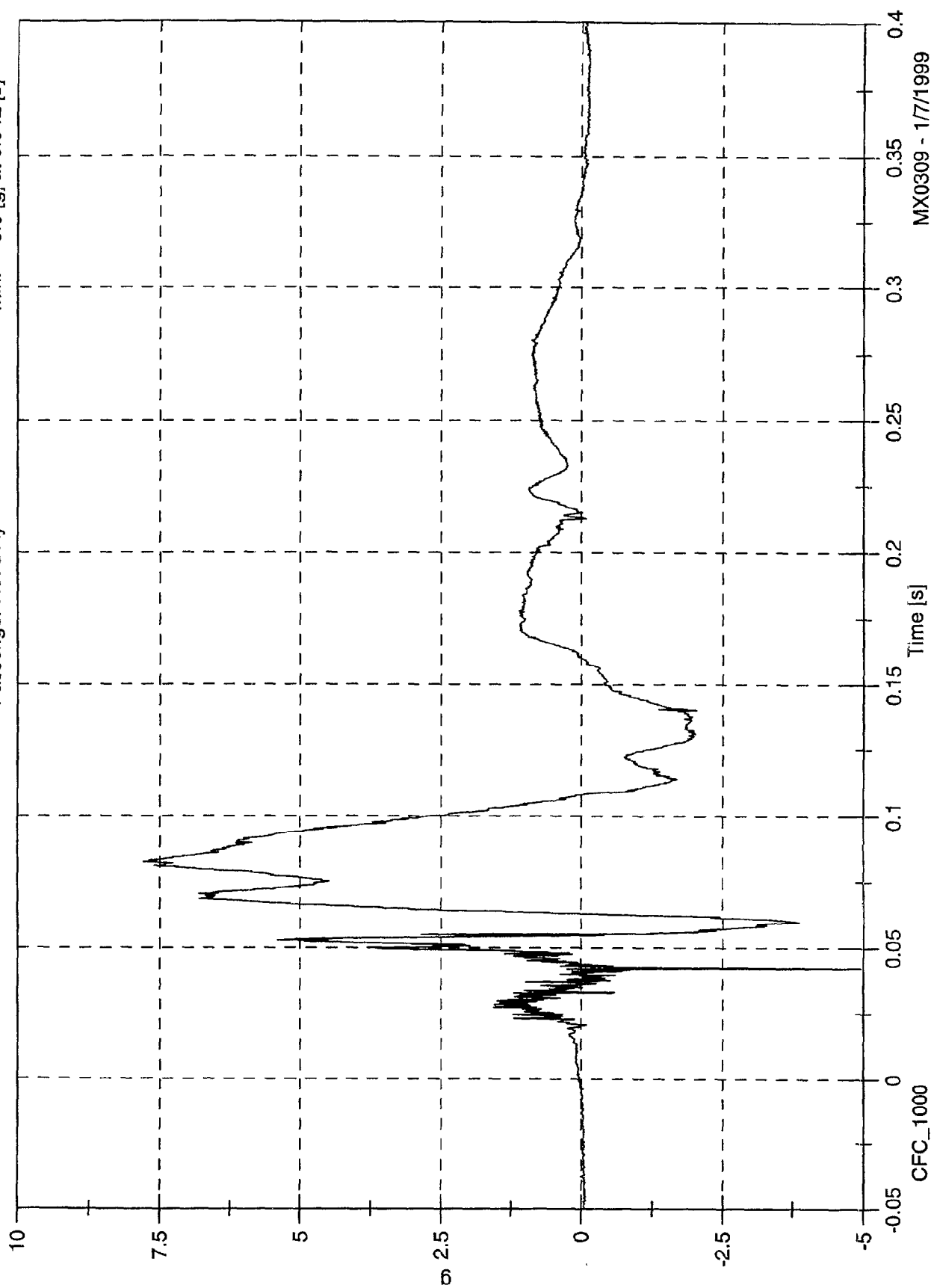


NCAP #5 - 1999 Jeep Cherokee

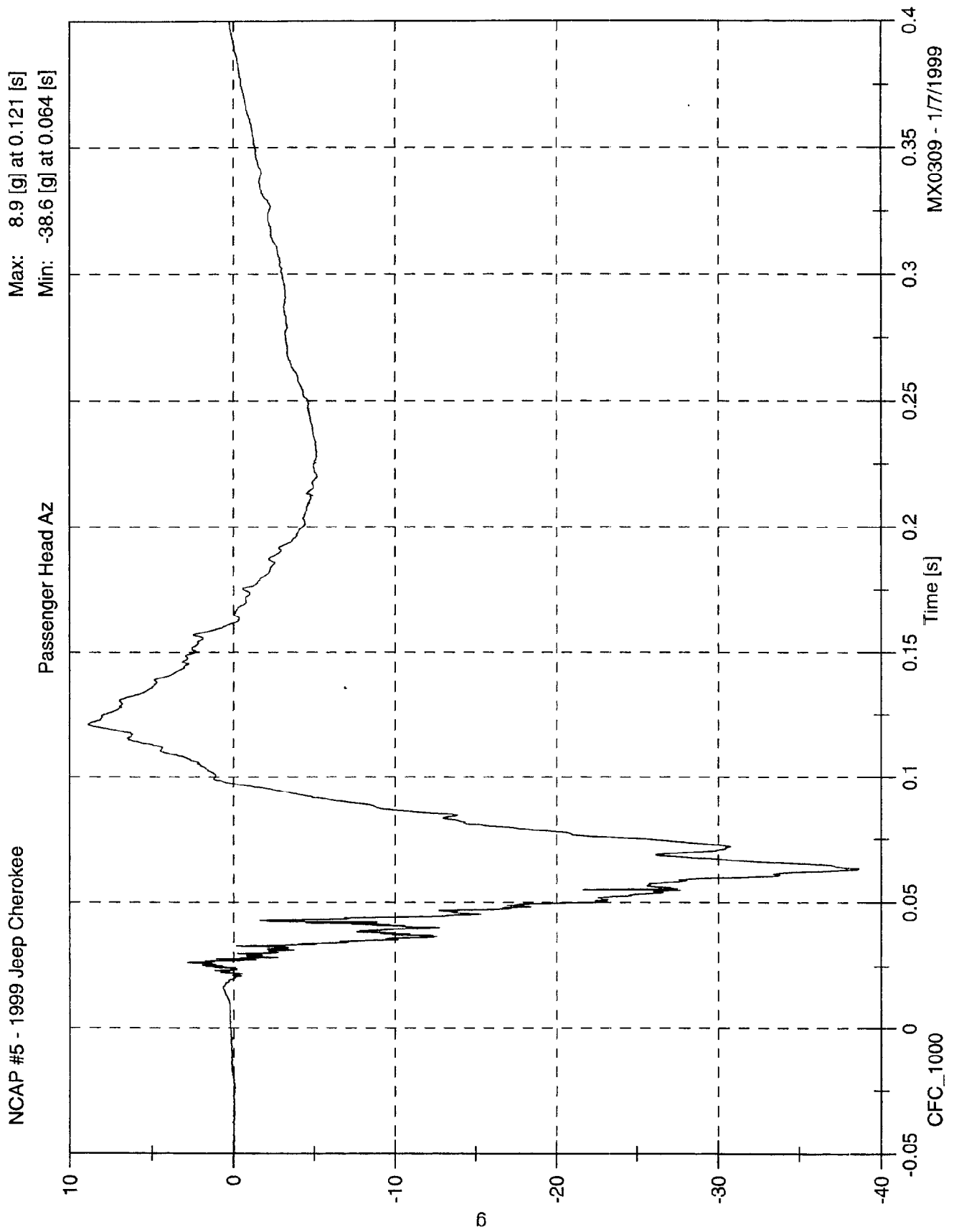
Max: 7.8 [g] at 0.083 [s]

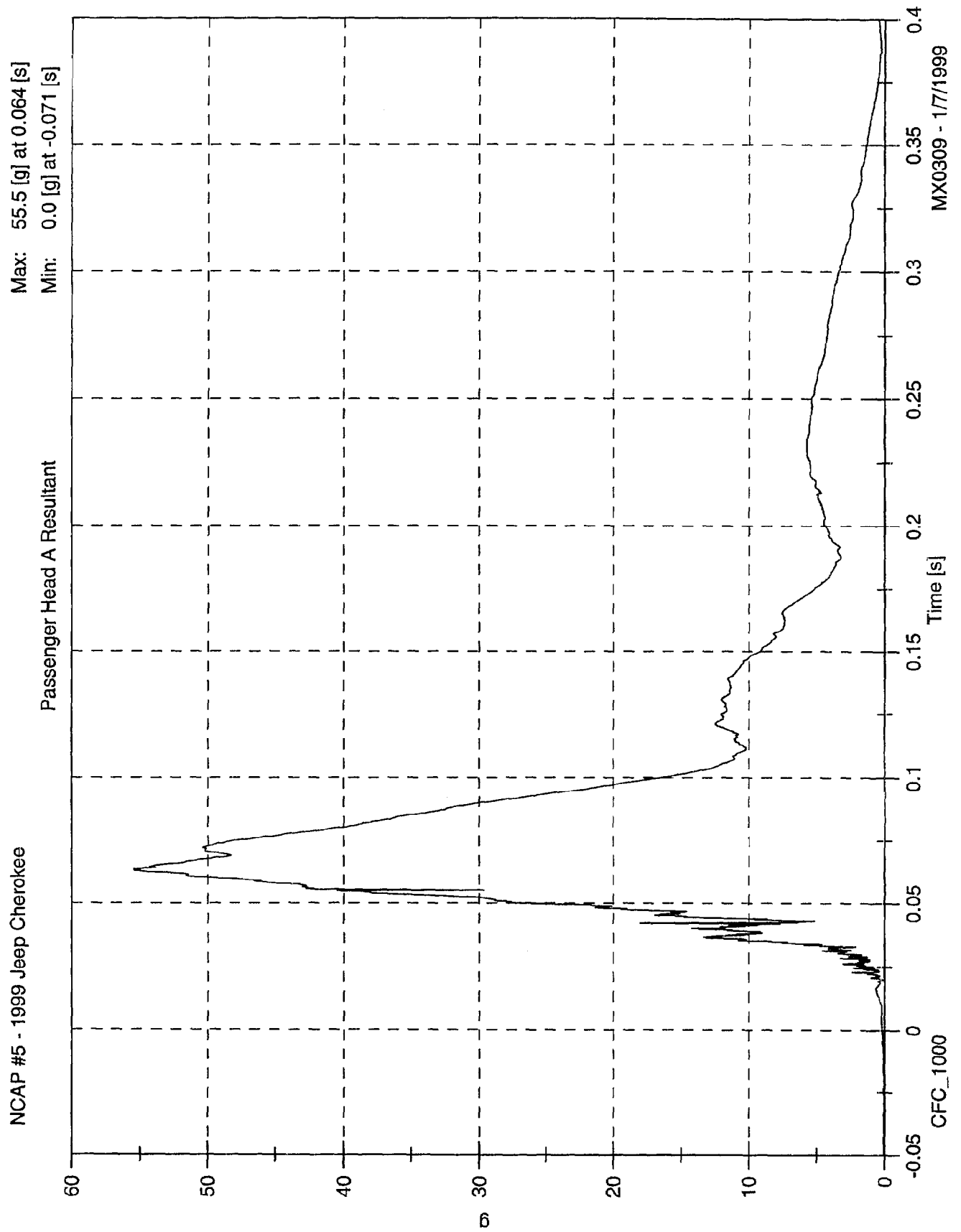
Min: -5.0 [g] at 0.042 [s]

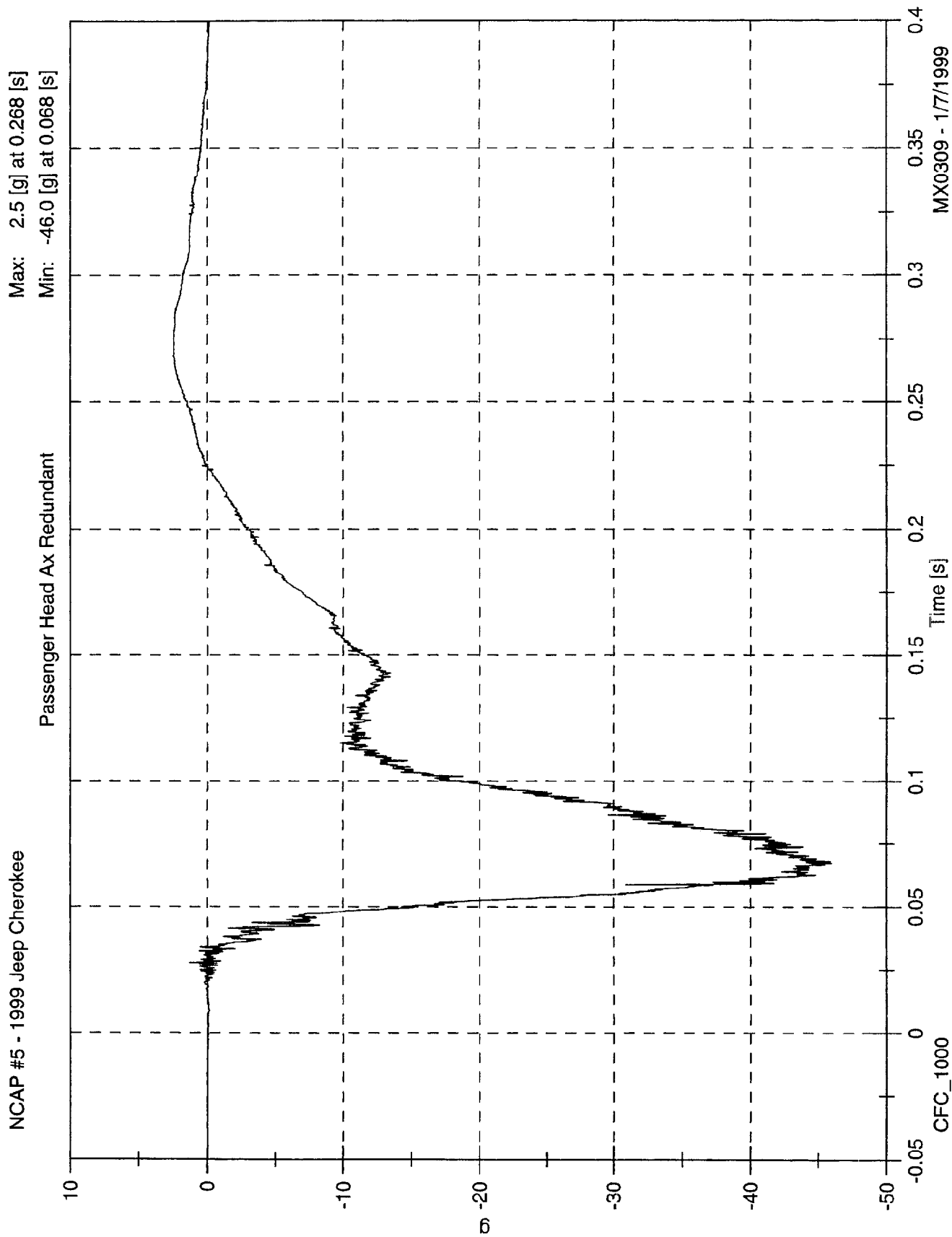
Passenger Head Ay

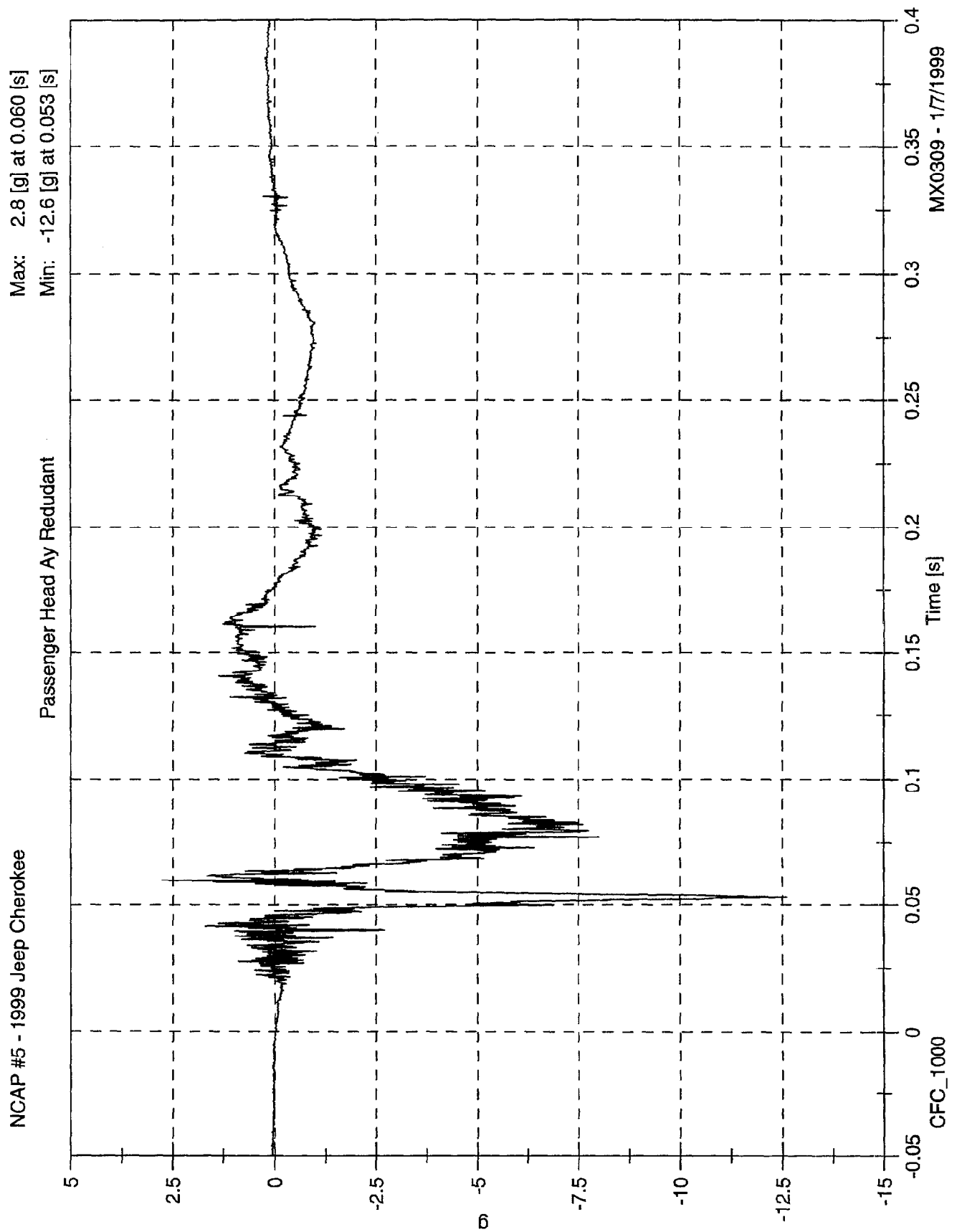


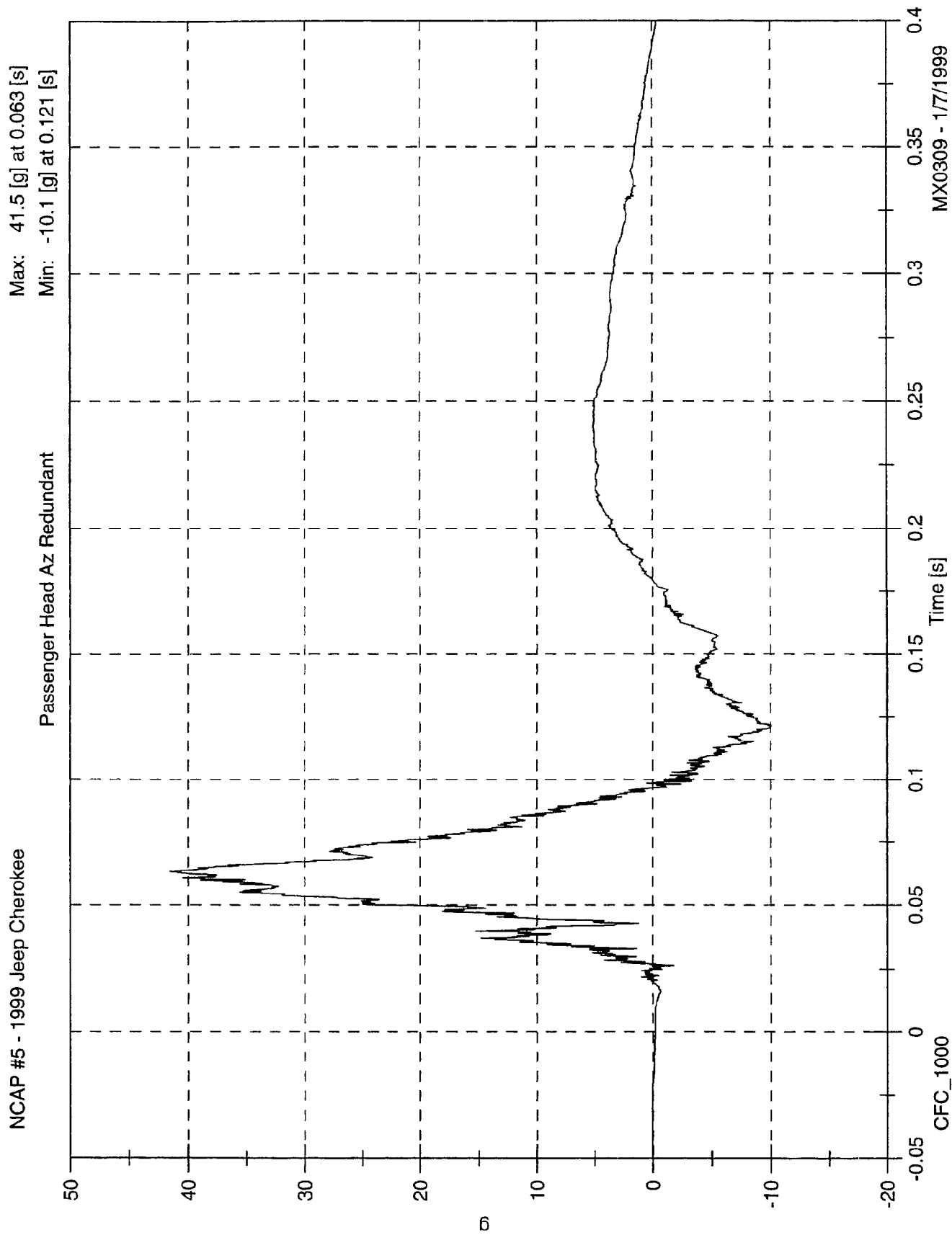
MX0309 - 1/7/1999

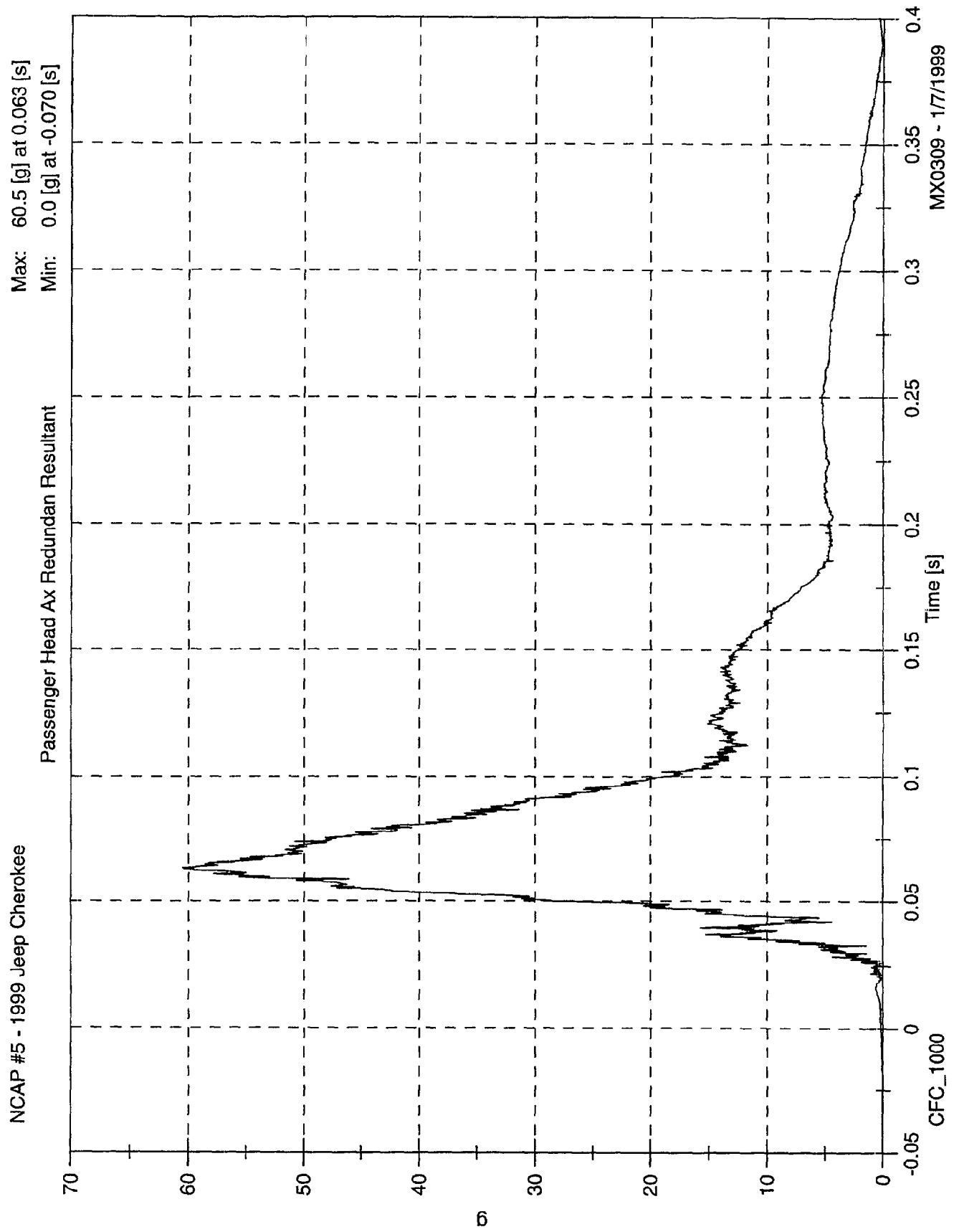


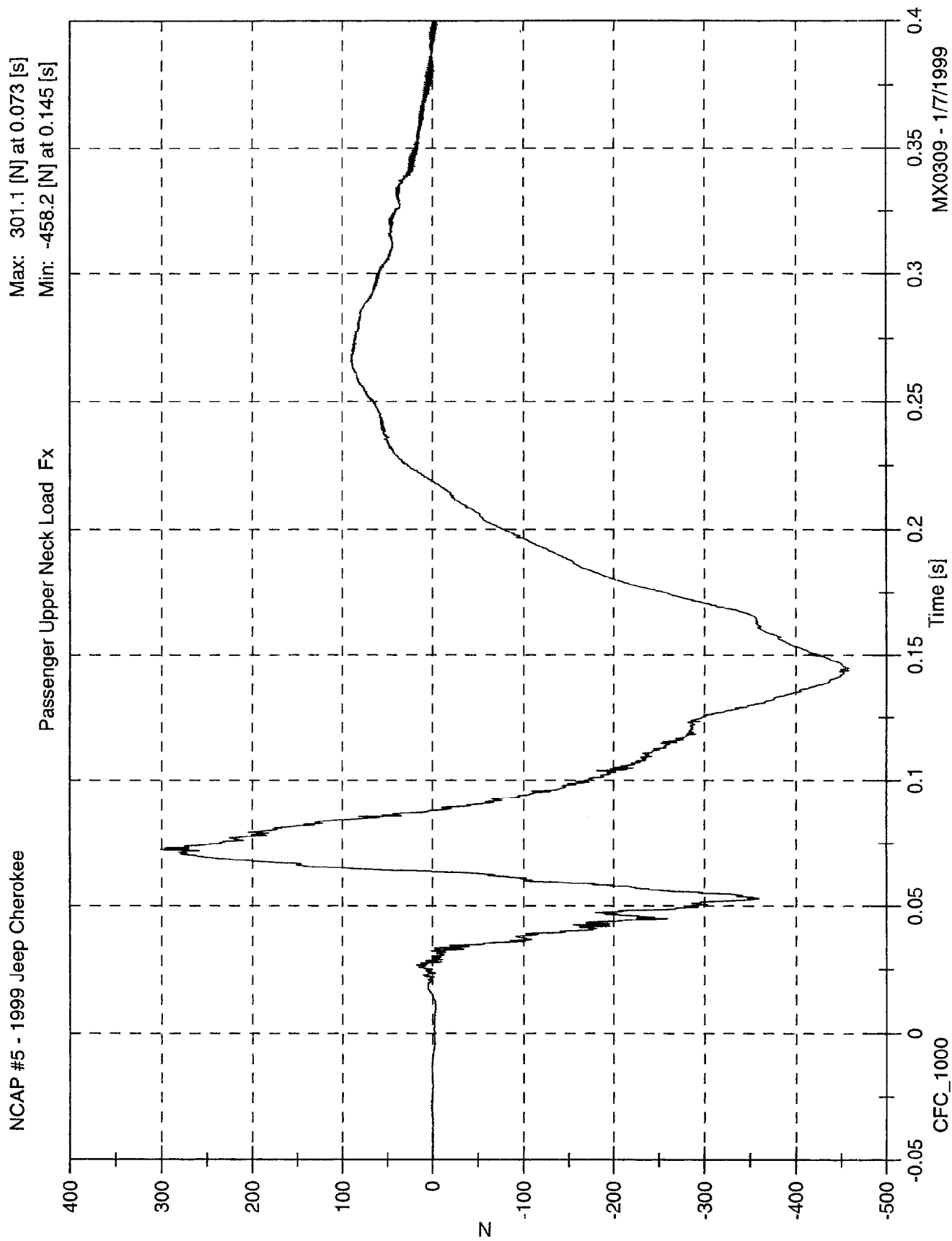


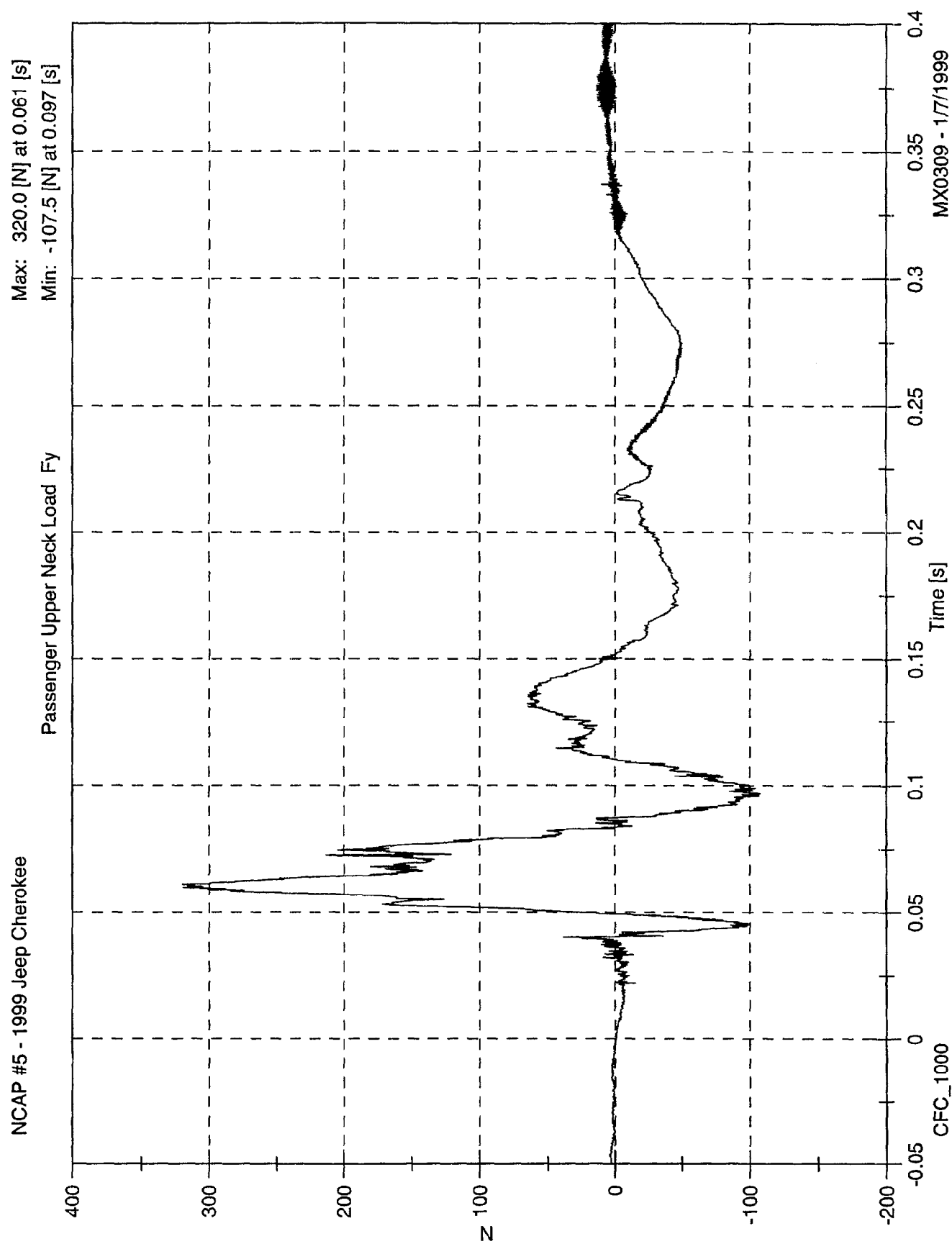


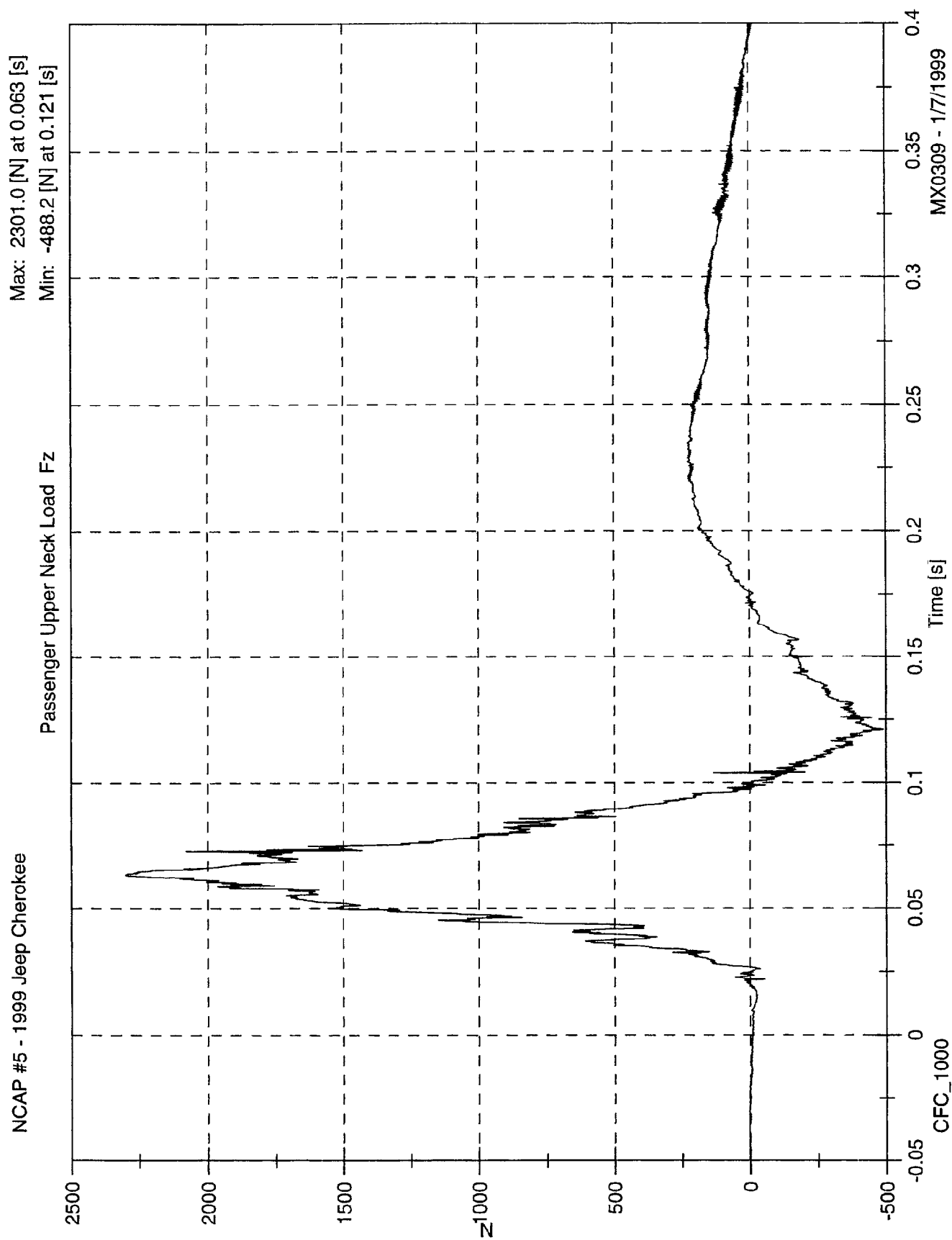


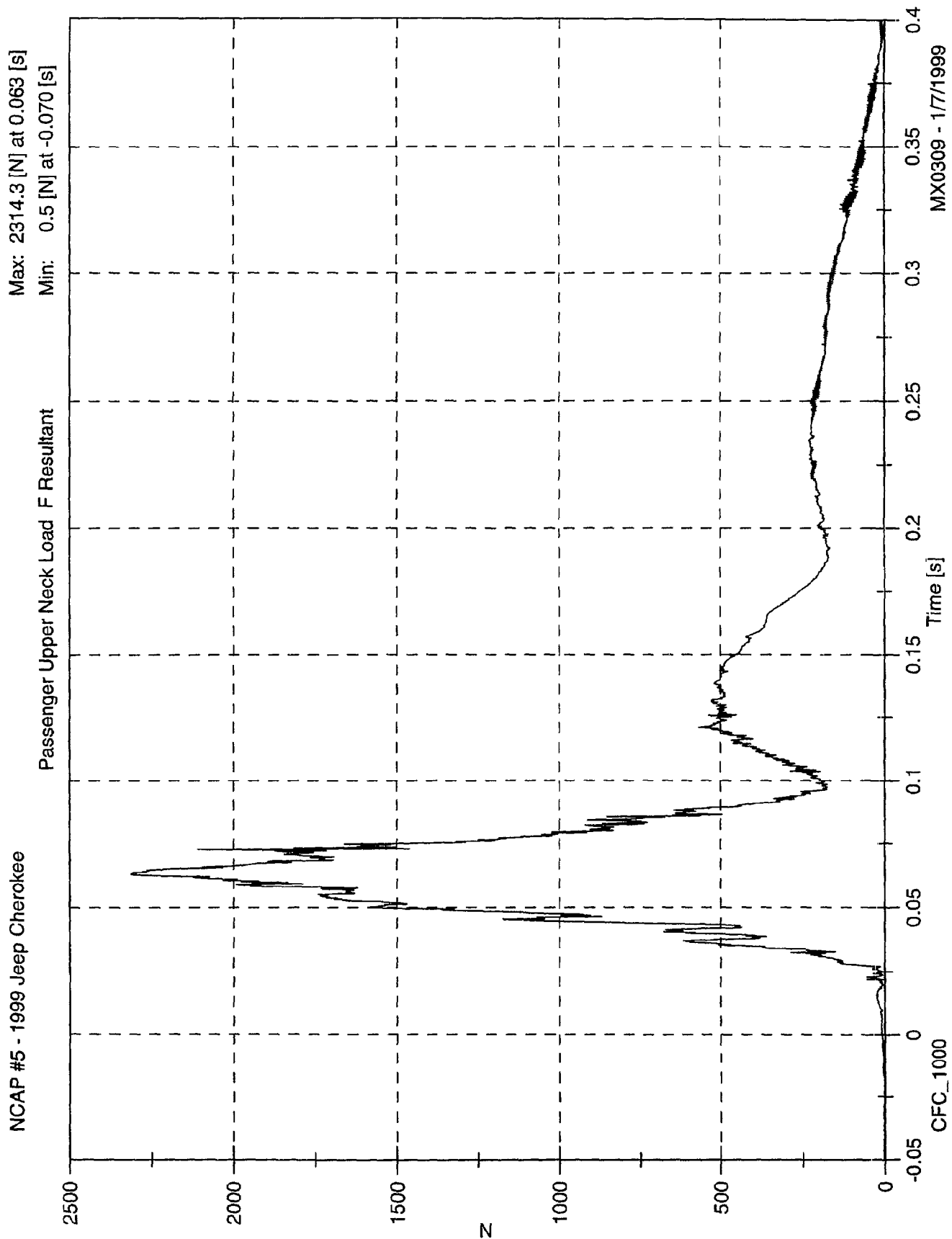


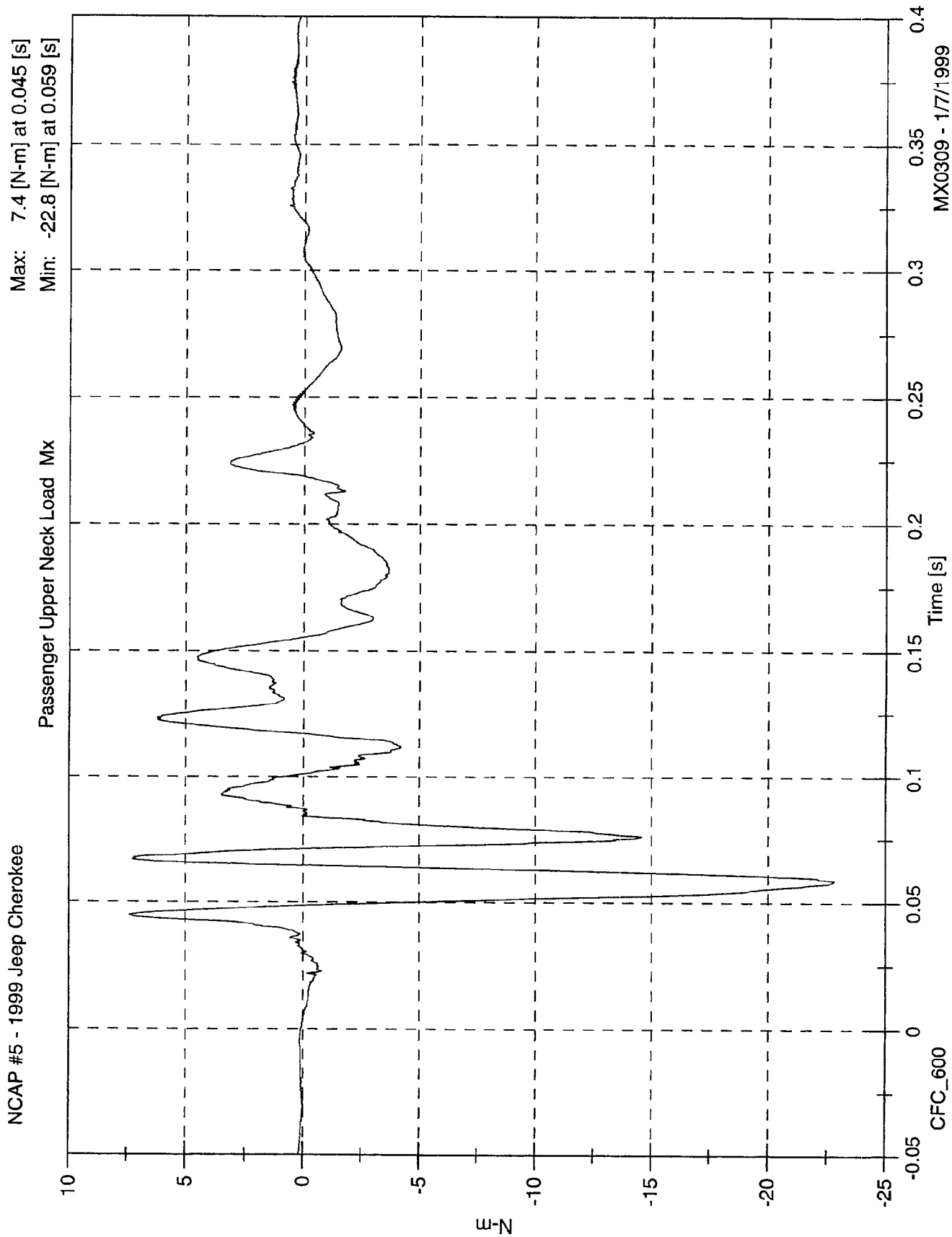










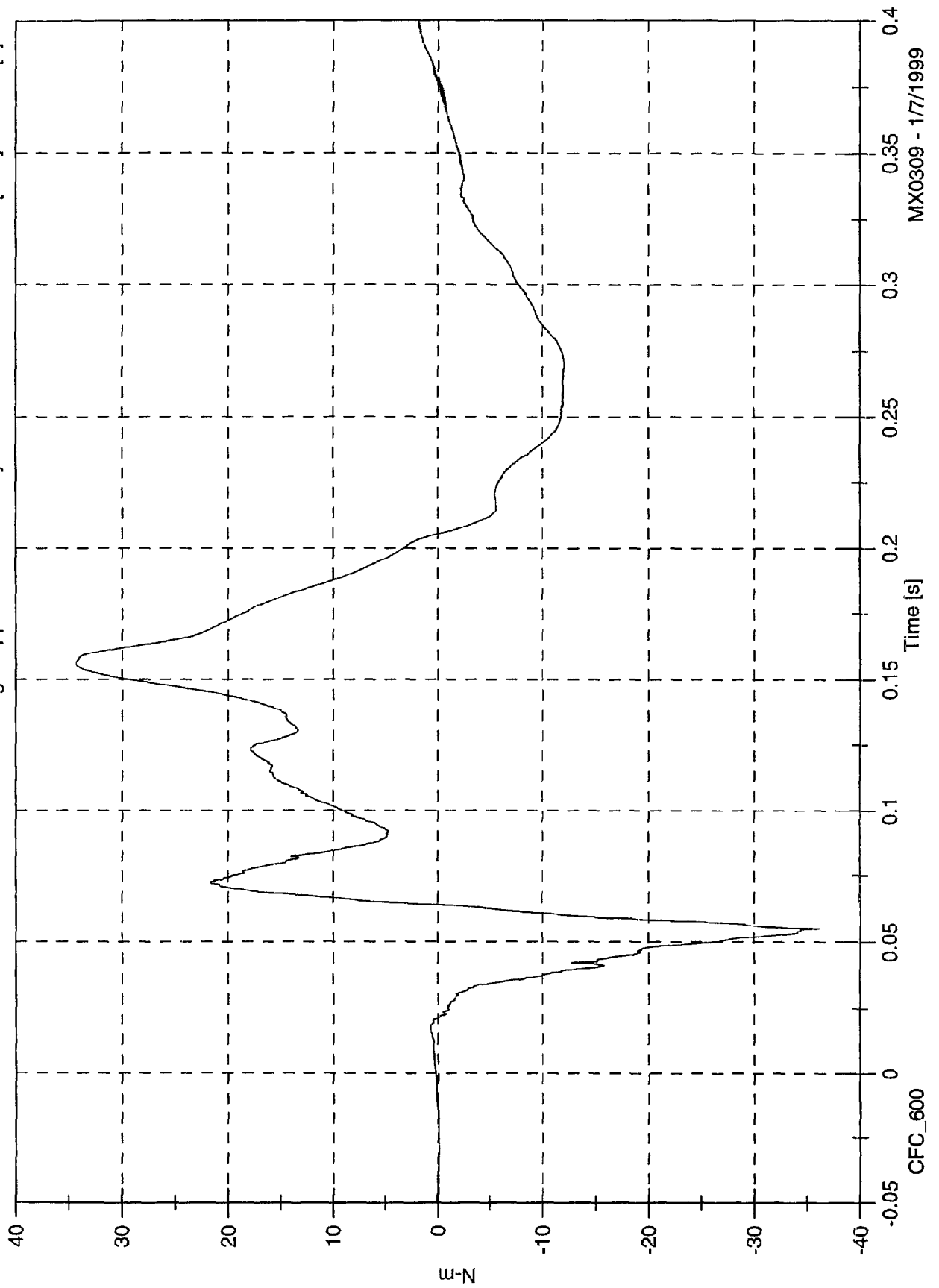


NCAP #5 - 1999 Jeep Cherokee

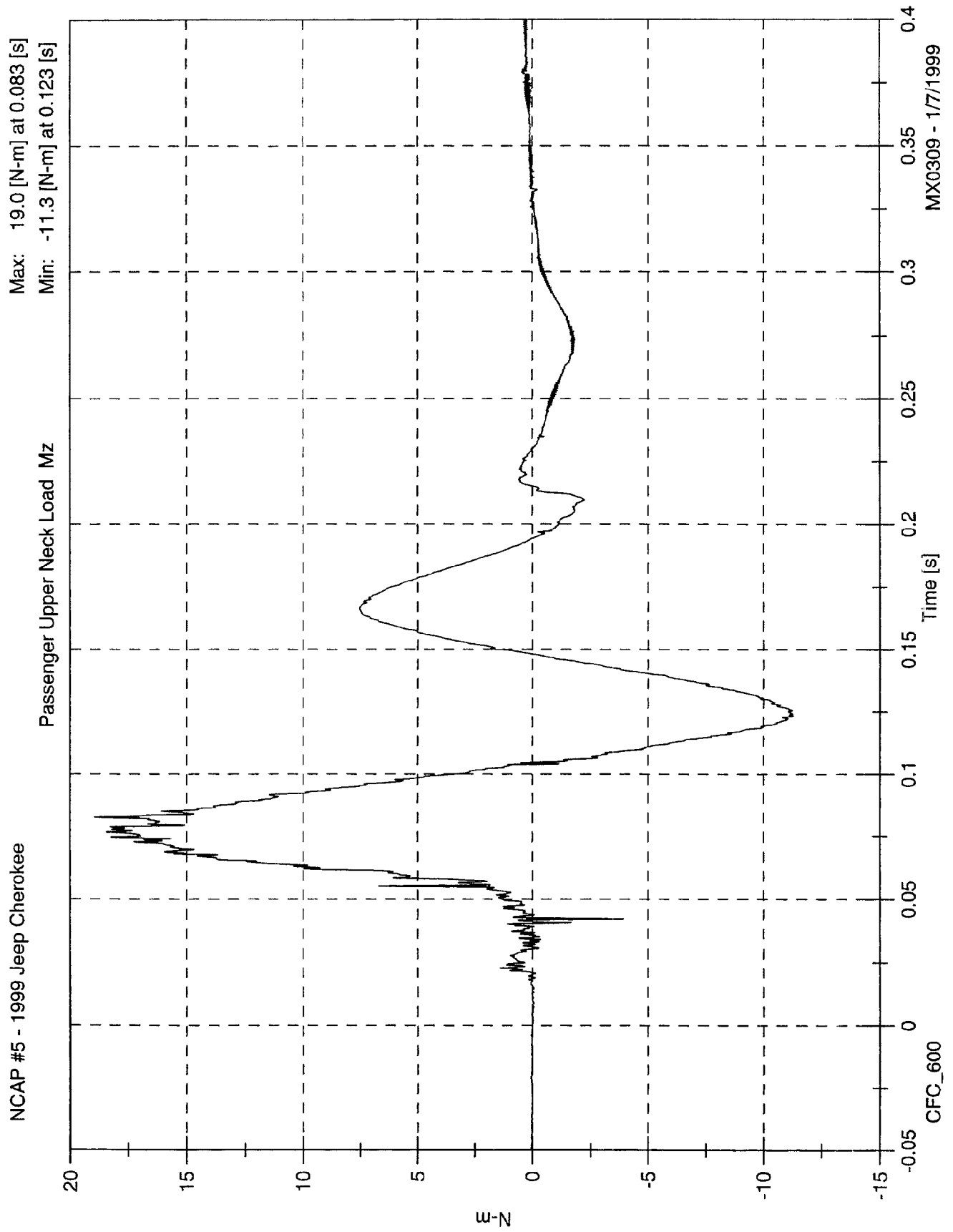
Max: 34.3 [N-m] at 0.156 [s]

Min: -36.1 [N-m] at 0.055 [s]

Passenger Upper Neck Load My



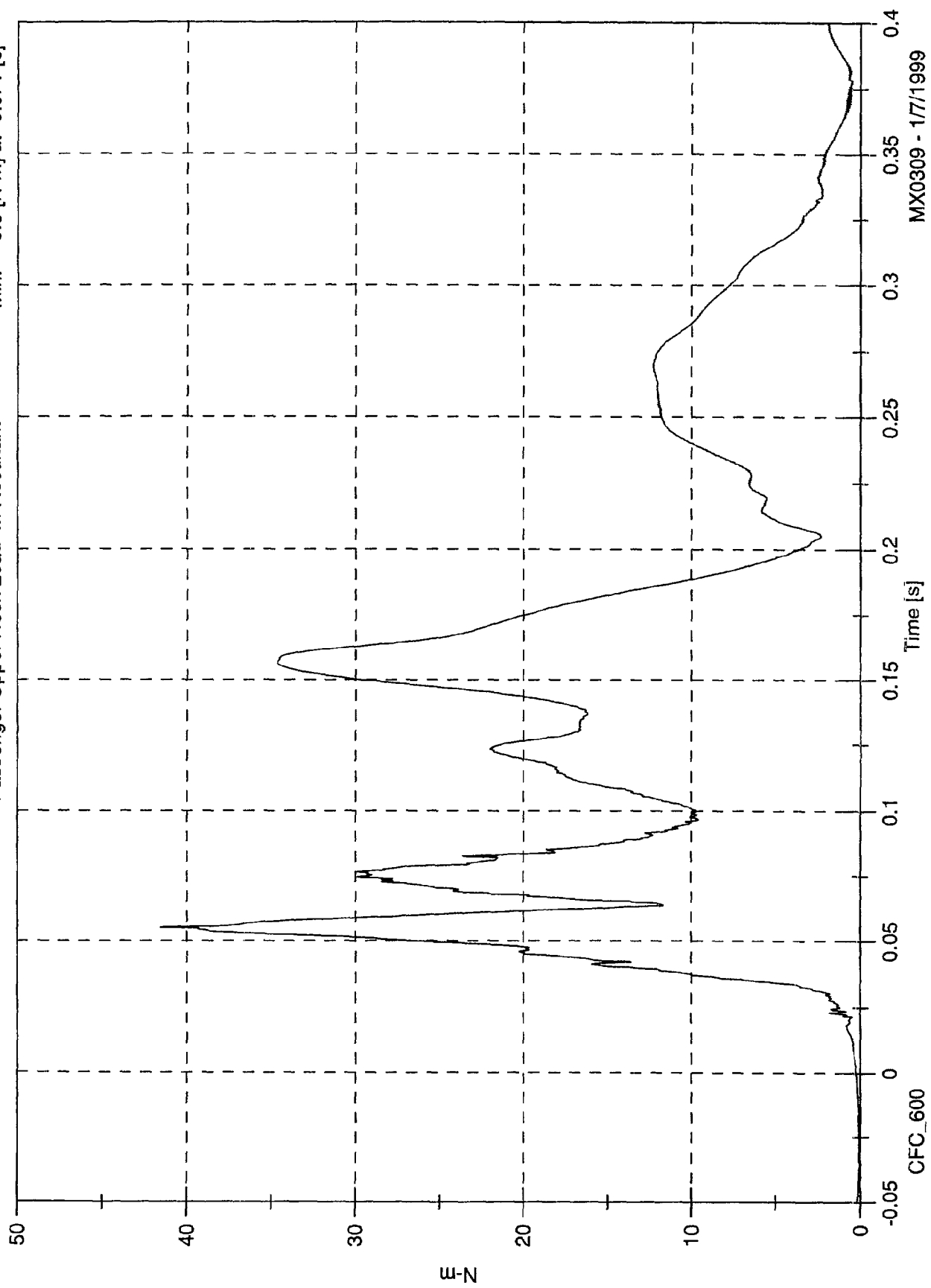
MX0309 - 17/1999



NCAP #5 - 1999 Jeep Cherokee

Passenger Upper Neck Load M Resultant

Max: 41.6 [N-m] at 0.055 [s]
Min: 0.0 [N-m] at -0.071 [s]



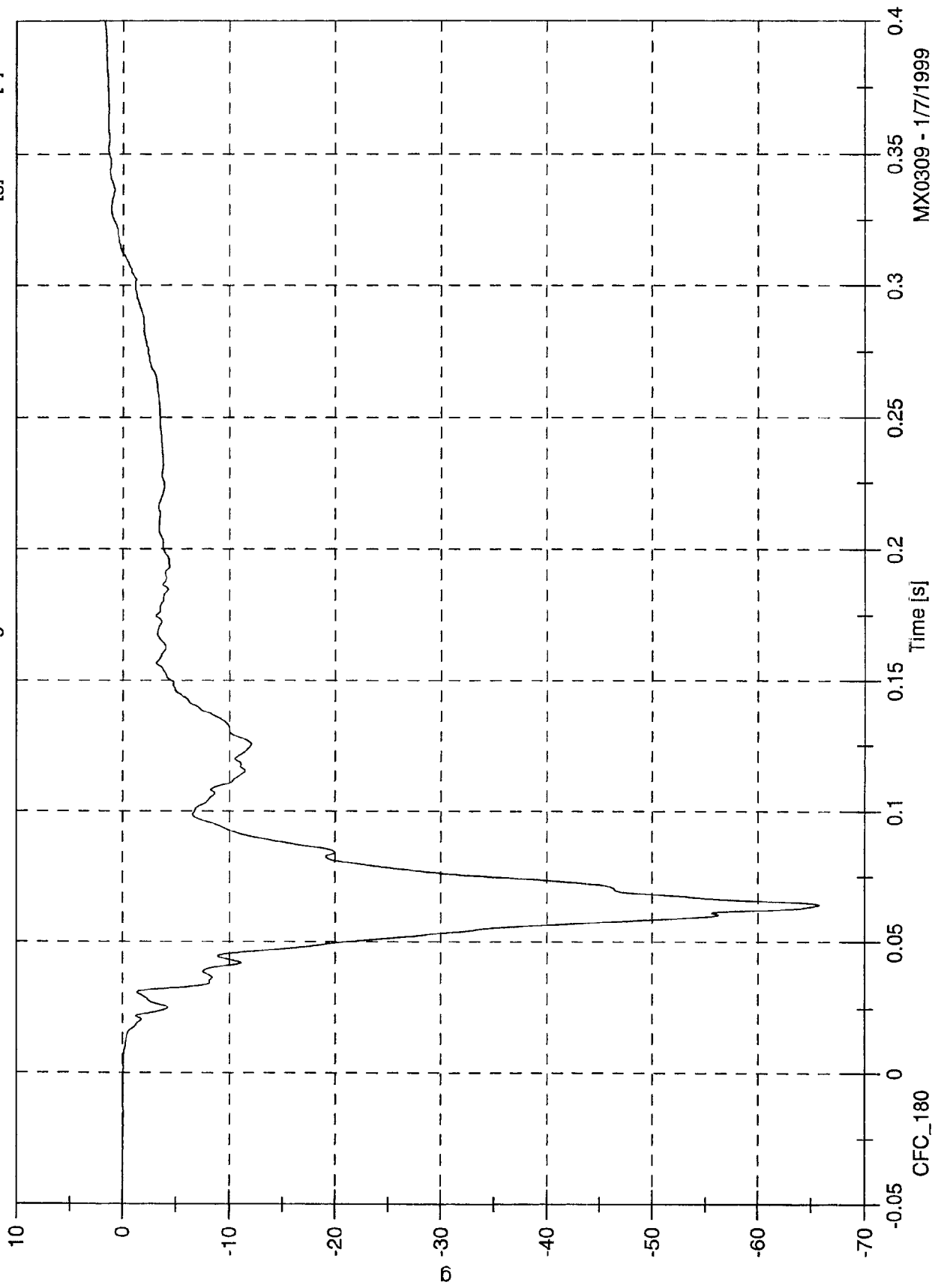
CFC_600

MX0309 - 1/7/1999

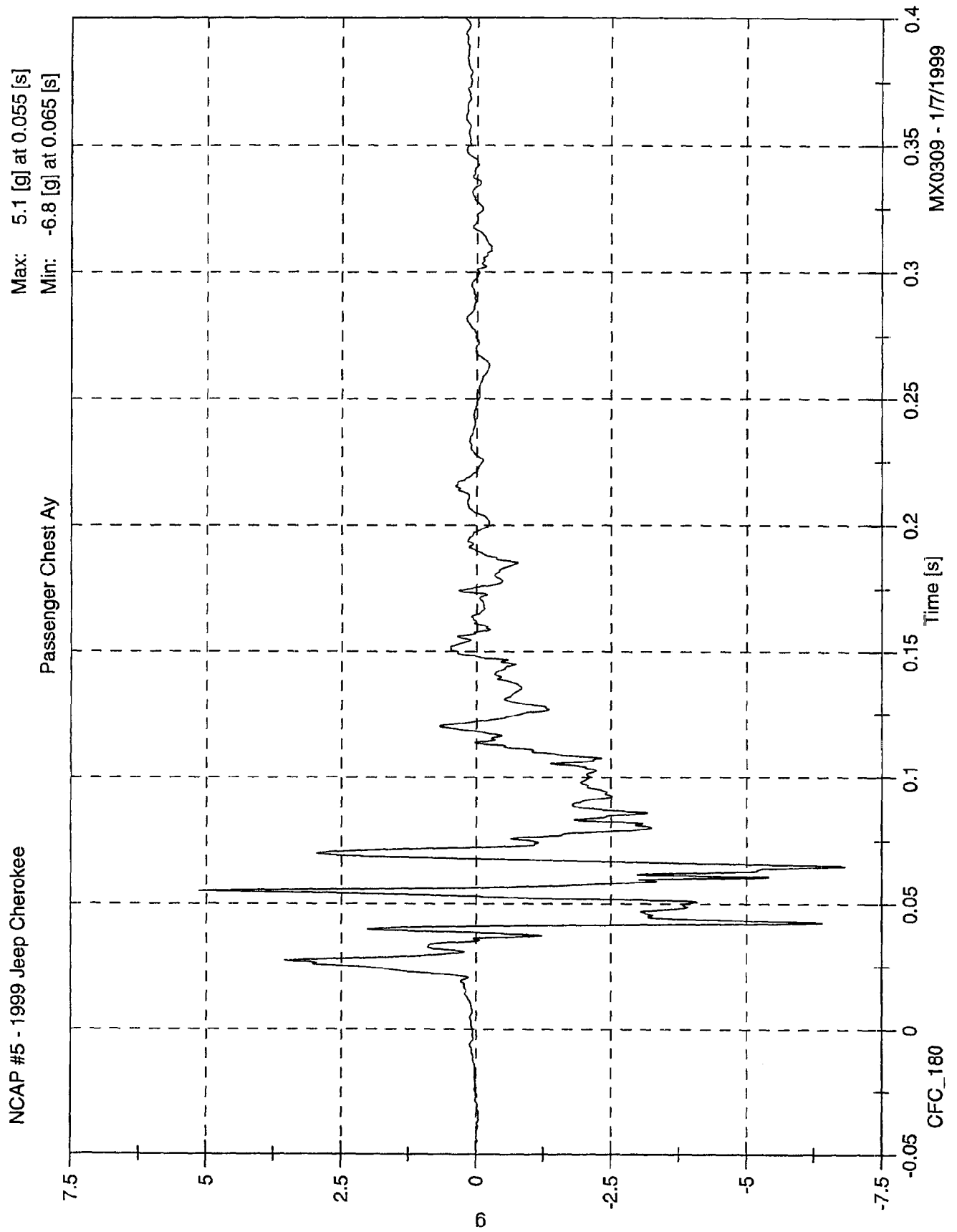
NCAP #5 - 1999 Jeep Cherokee

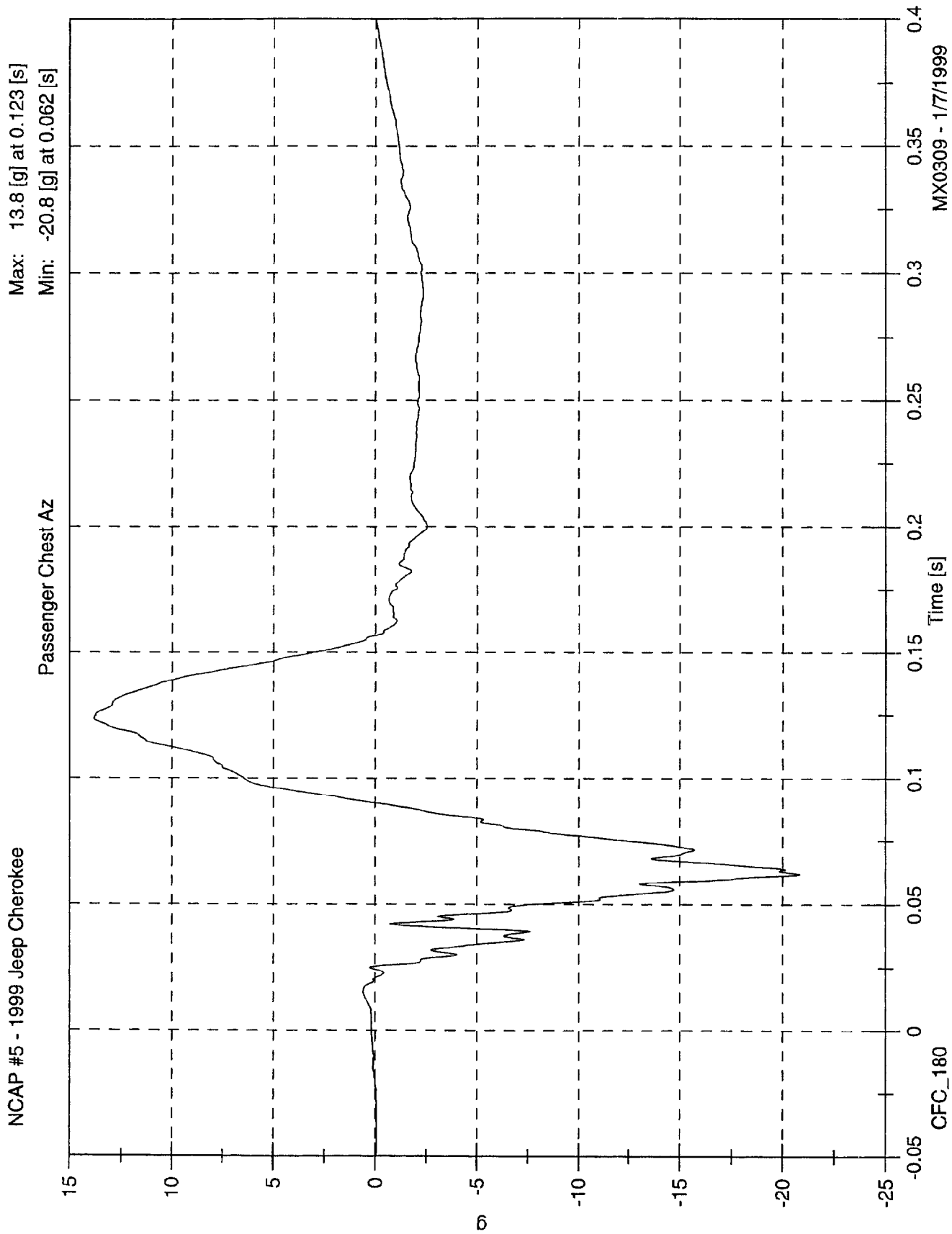
Max: 2.1 [g] at 0.434 [s]
Min: -65.8 [g] at 0.064 [s]

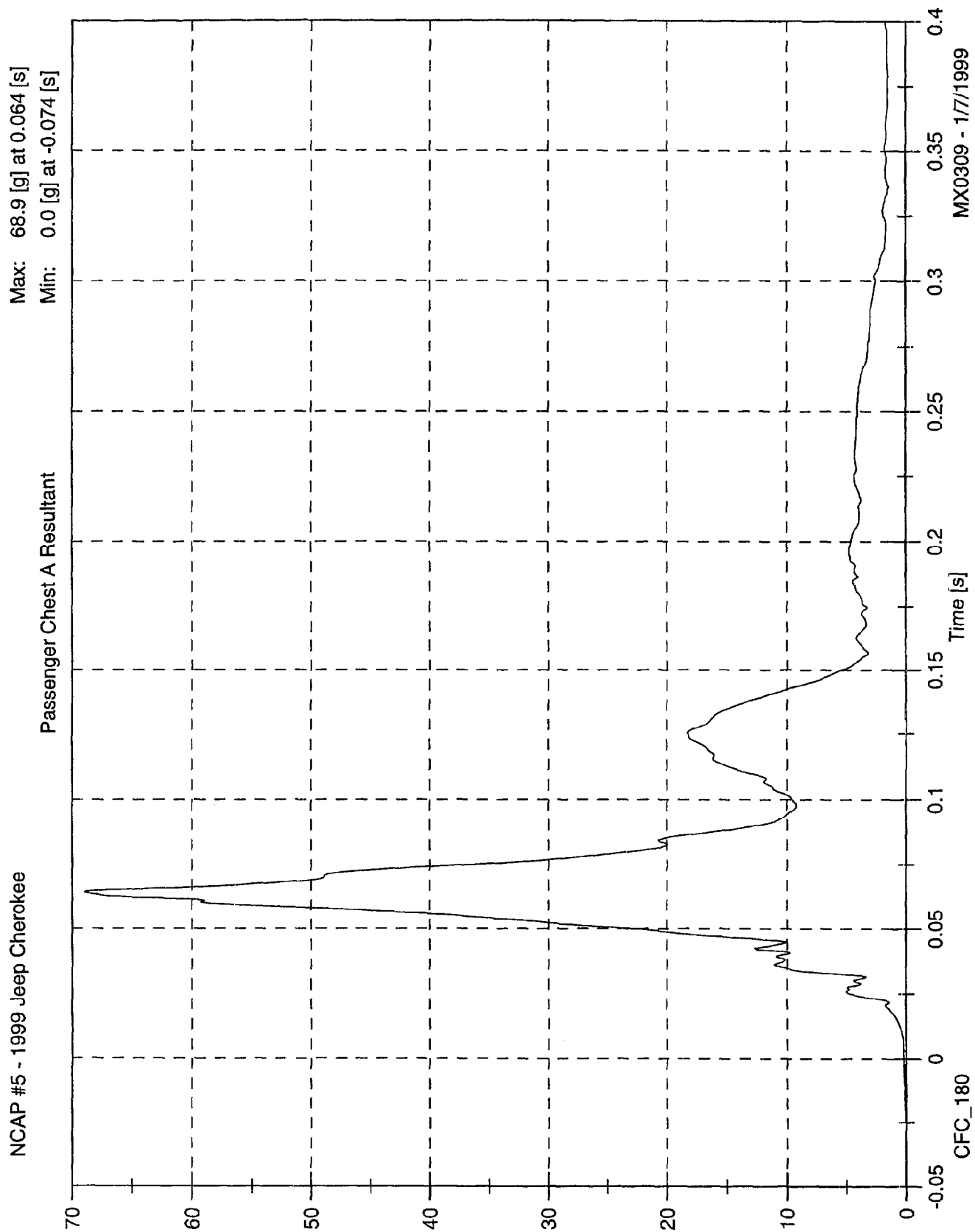
Passenger Chest Ax

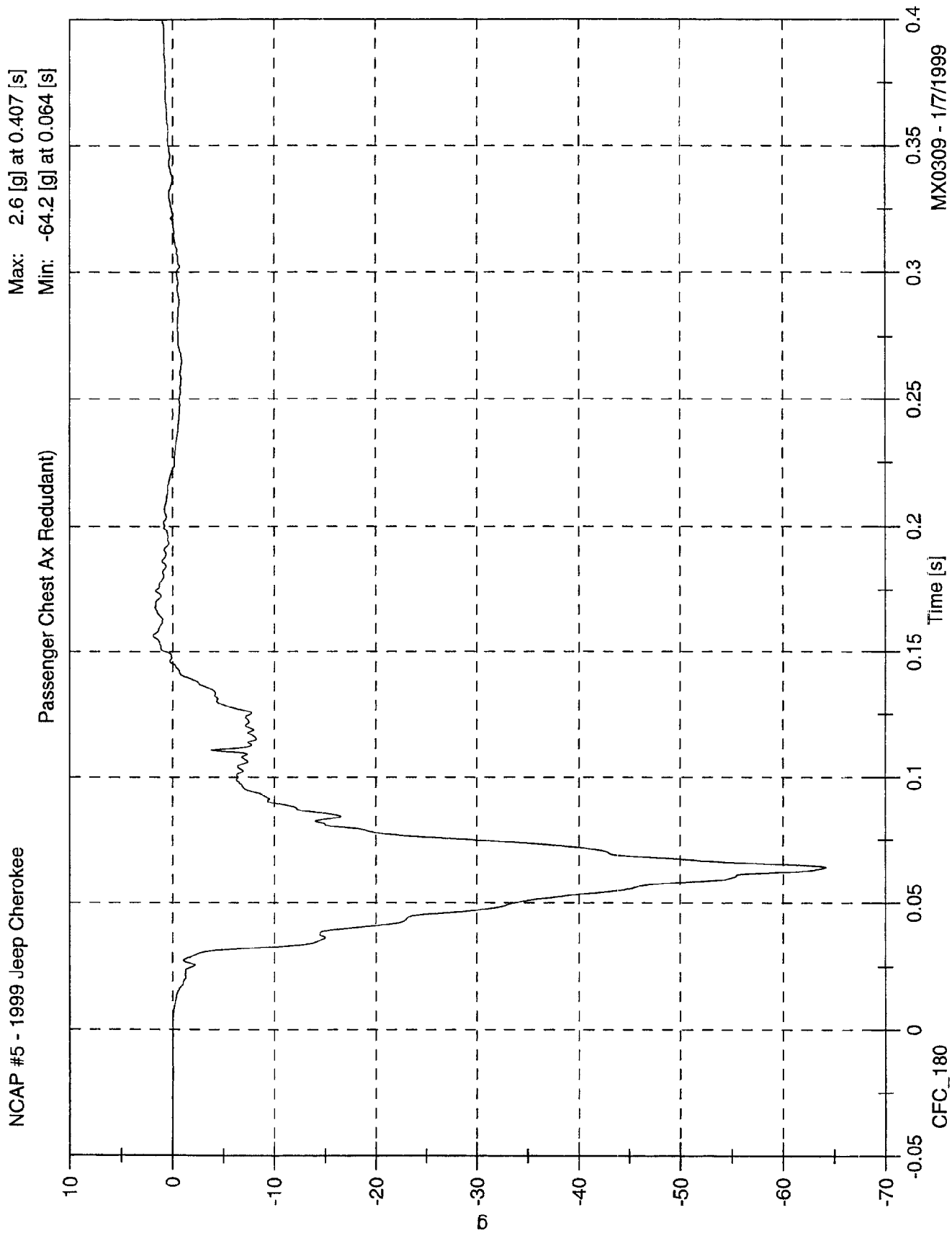


MX0309 - 1/7/1999





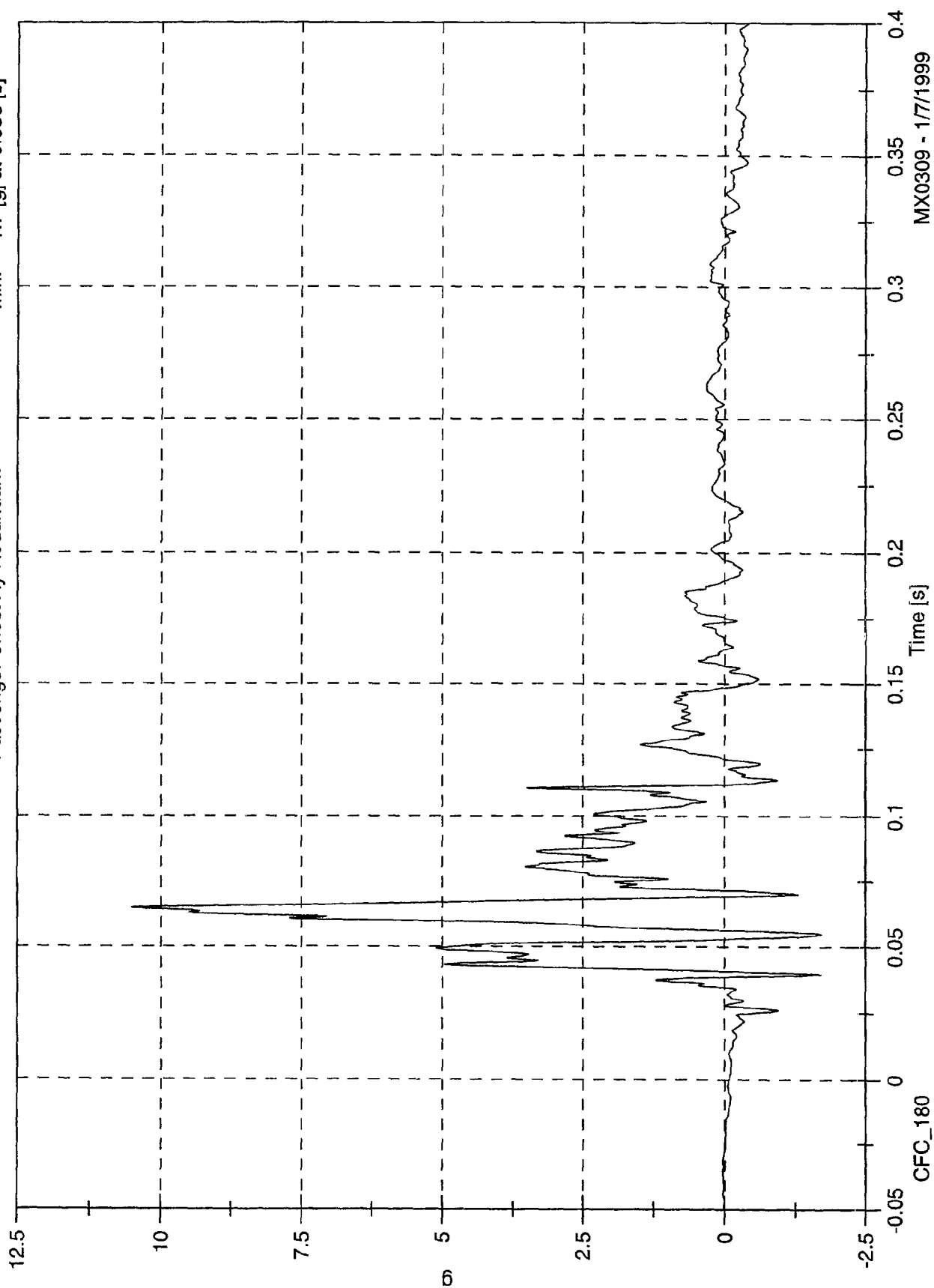




Max: 10.5 [g] at 0.065 [s]
Min: -1.7 [g] at 0.055 [s]

Passenger Chest Ay Redundant

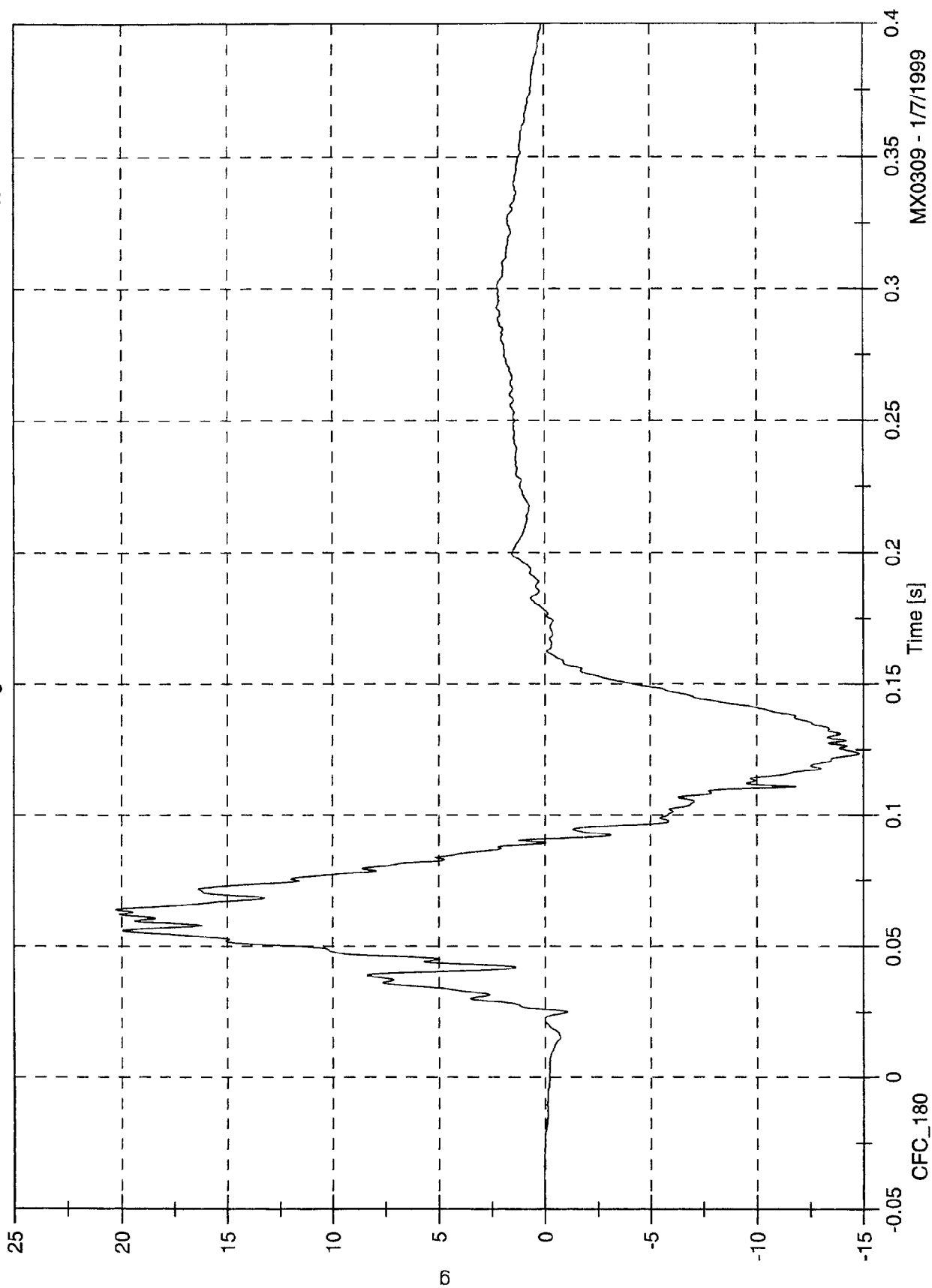
NCAP #5 - 1999 Jeep Cherokee



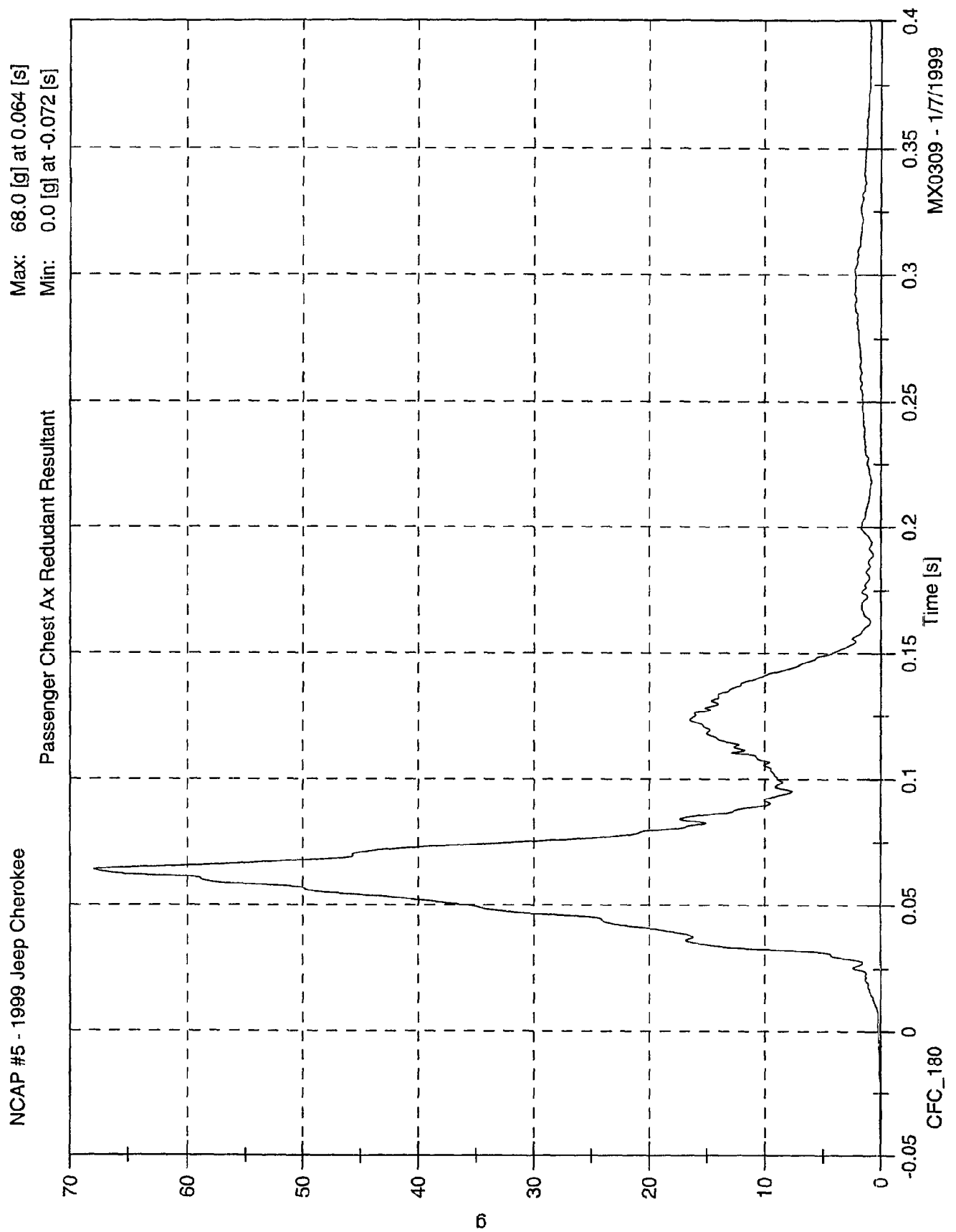
Max: 20.3 [g] at 0.064 [s]
Min: -14.8 [g] at 0.123 [s]

Passenger Chest Az Redundant

NCAP #5 - 1999 Jeep Cherokee



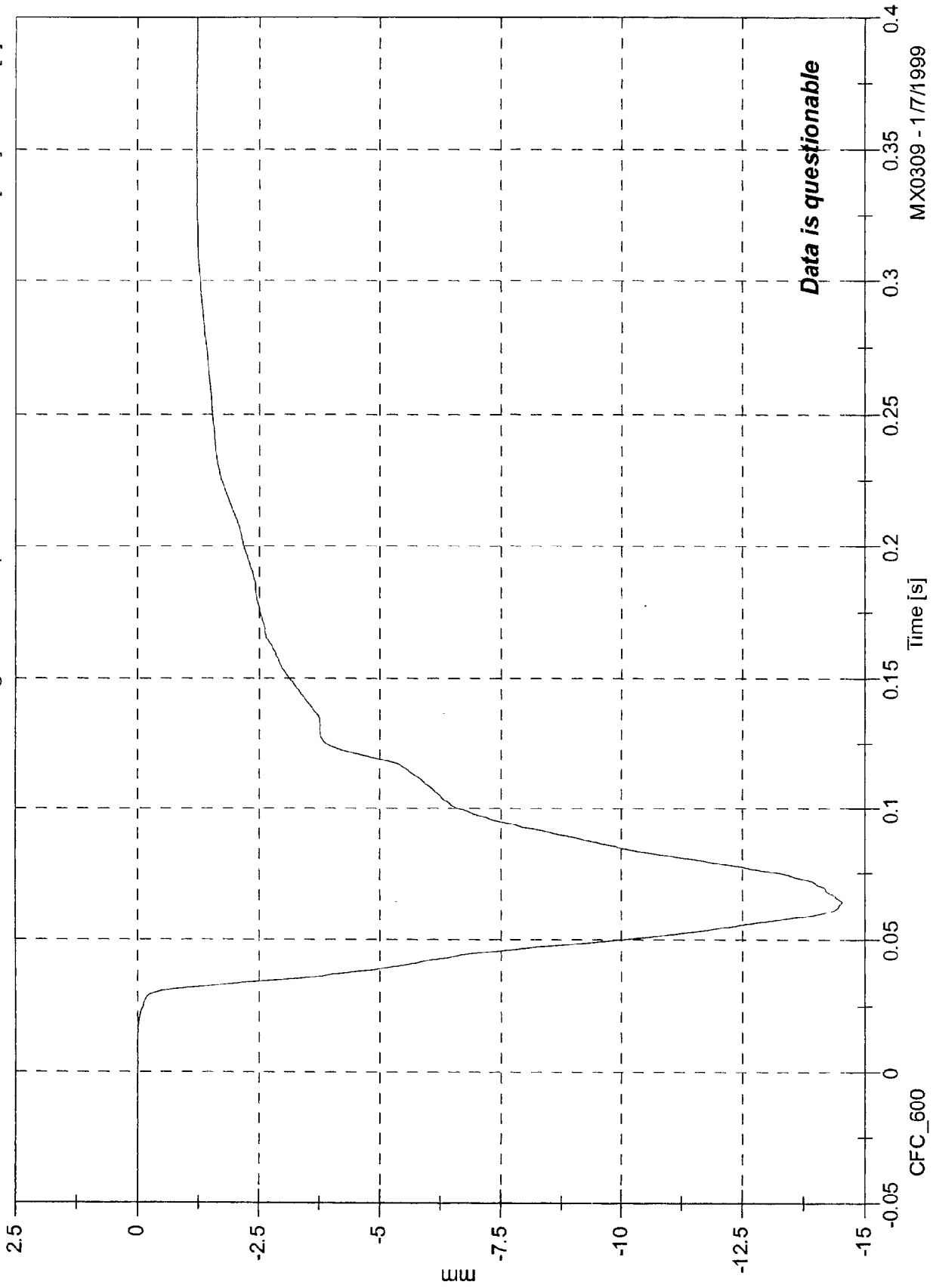
MX0309 - 1/7/1999



NCAP #5 - 1999 Jeep Cherokee

Max: 0.0 [mm] at -0.004 [s]
Min: -14.5 [mm] at 0.064 [s]

Passenger Chest Displacement

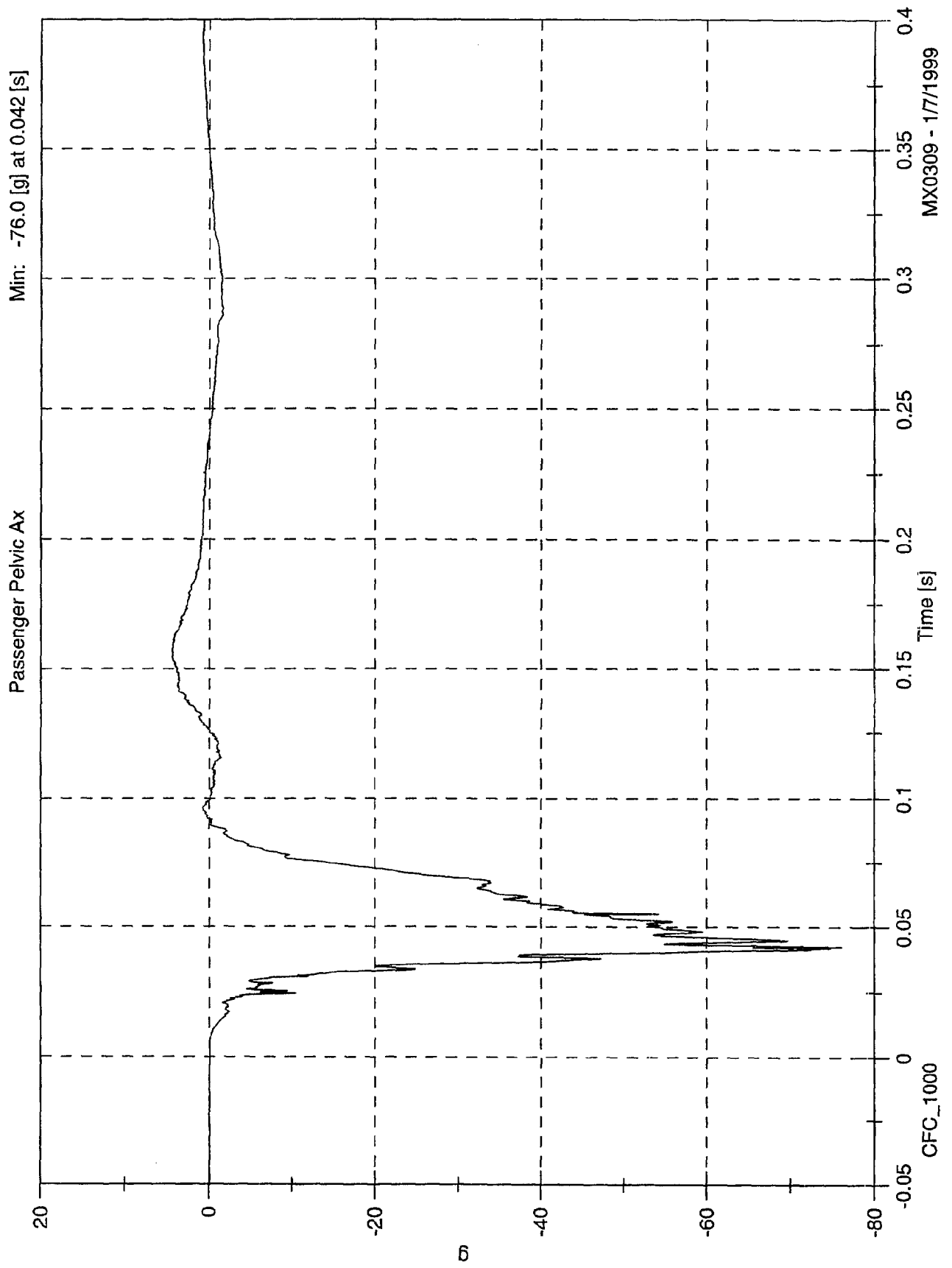


Data is questionable

MX0309 - 1/7/1999

NCAP #5 - 1999 Jeep Cherokee

Max: 4.4 [g] at 0.157 [s]
Min: -76.0 [g] at 0.042 [s]



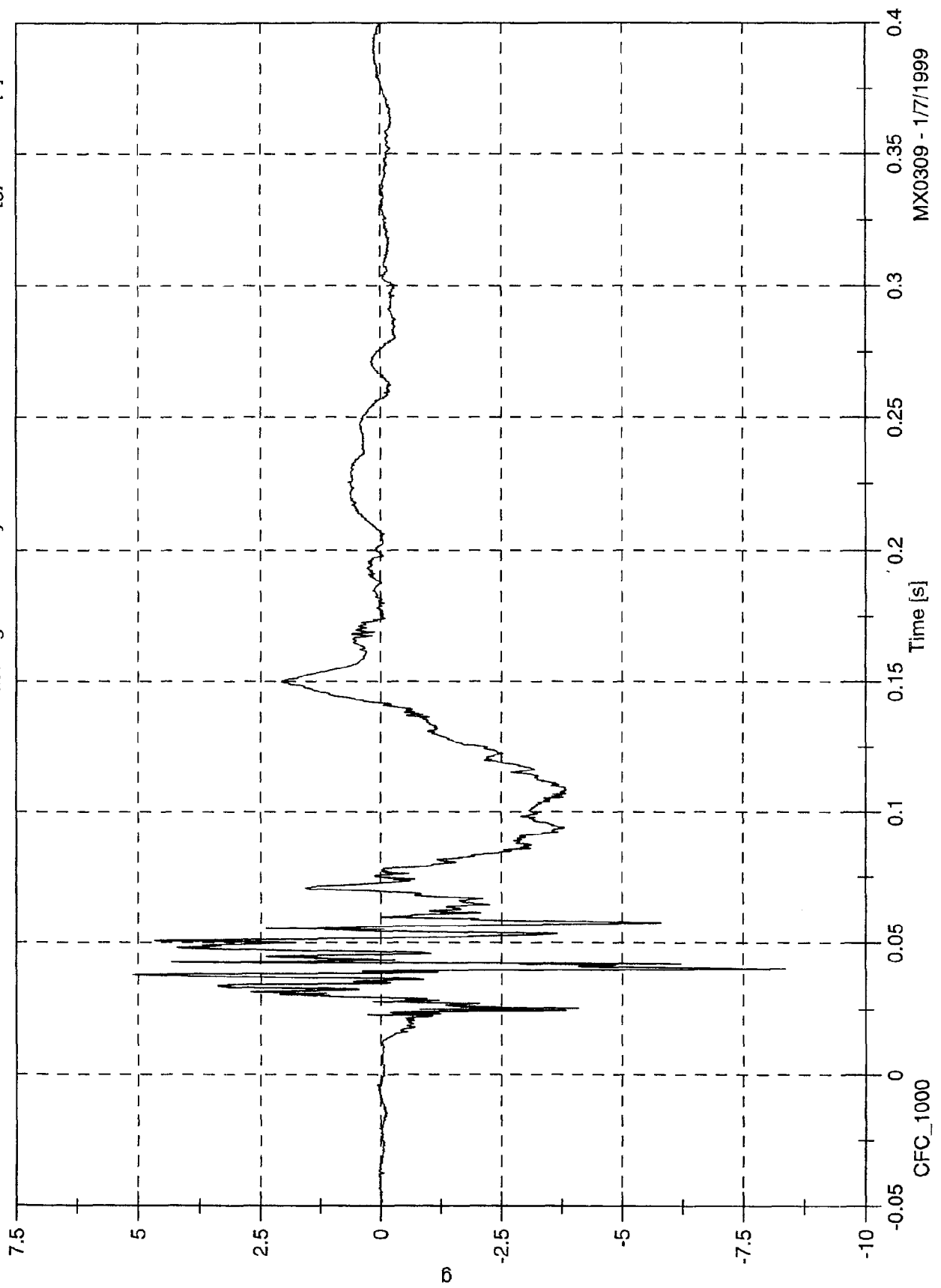
MX0309 - 1/7/1999

NCAP #5 - 1999 Jeep Cherokee

Passenger Pelvic Ay

Max: 5.1 [g] at 0.038 [s]

Min: -8.4 [g] at 0.040 [s]



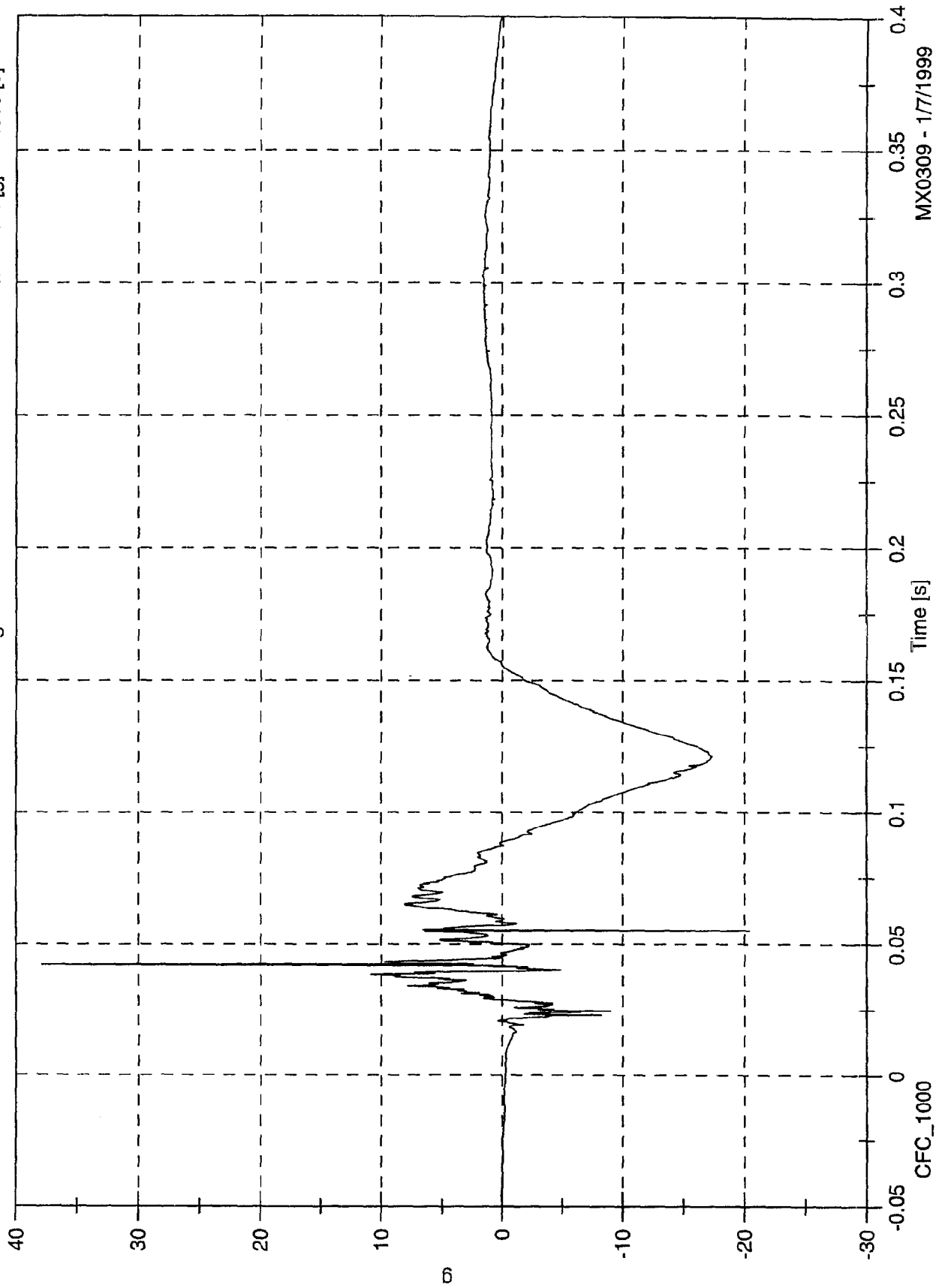
MX0309 - 1/7/1999

NCAP #5 - 1999 Jeep Cherokee

Max: 37.9 [g] at 0.042 [s]

Min: -20.4 [g] at 0.055 [s]

Passenger Pelvic Az

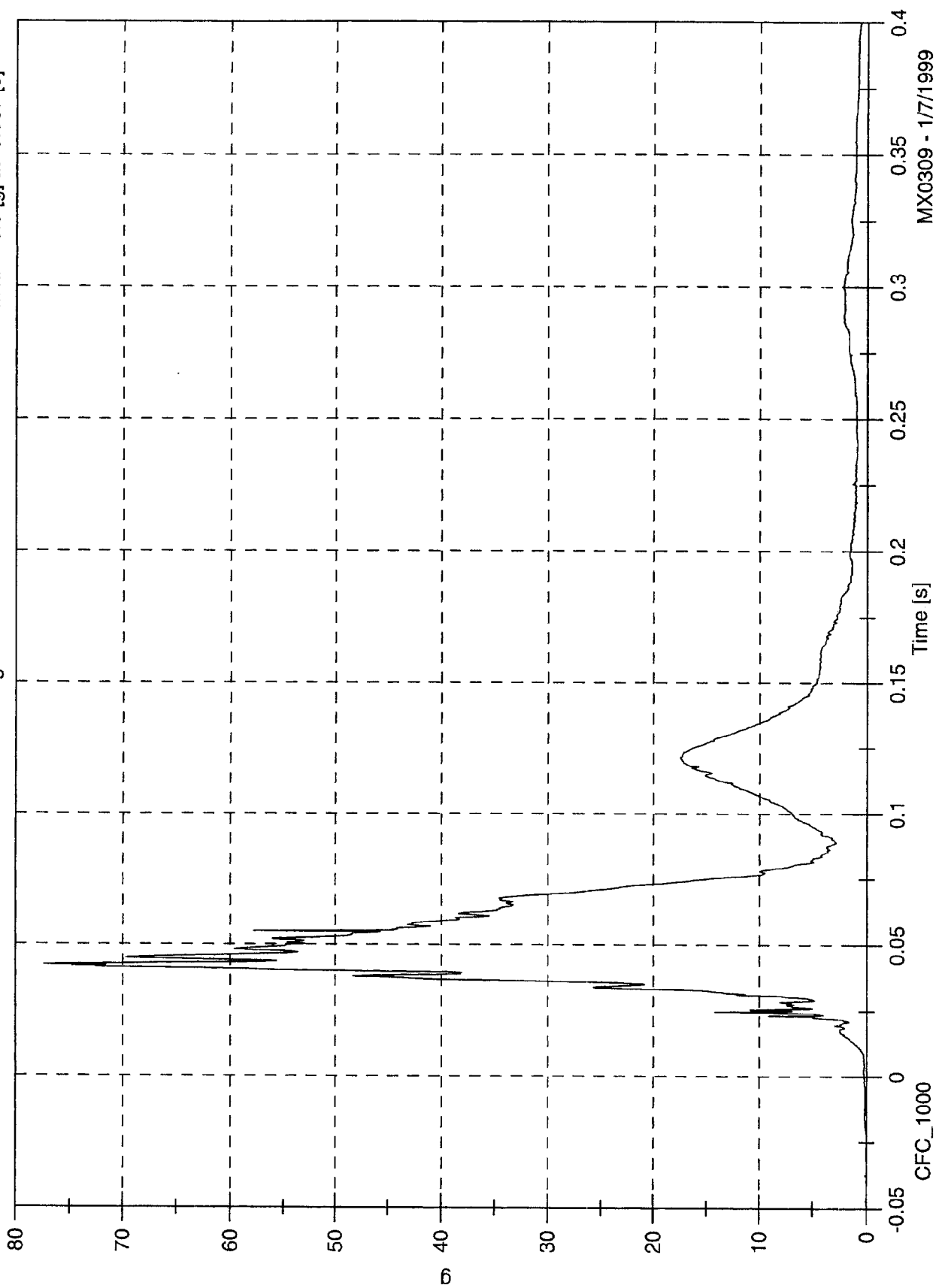


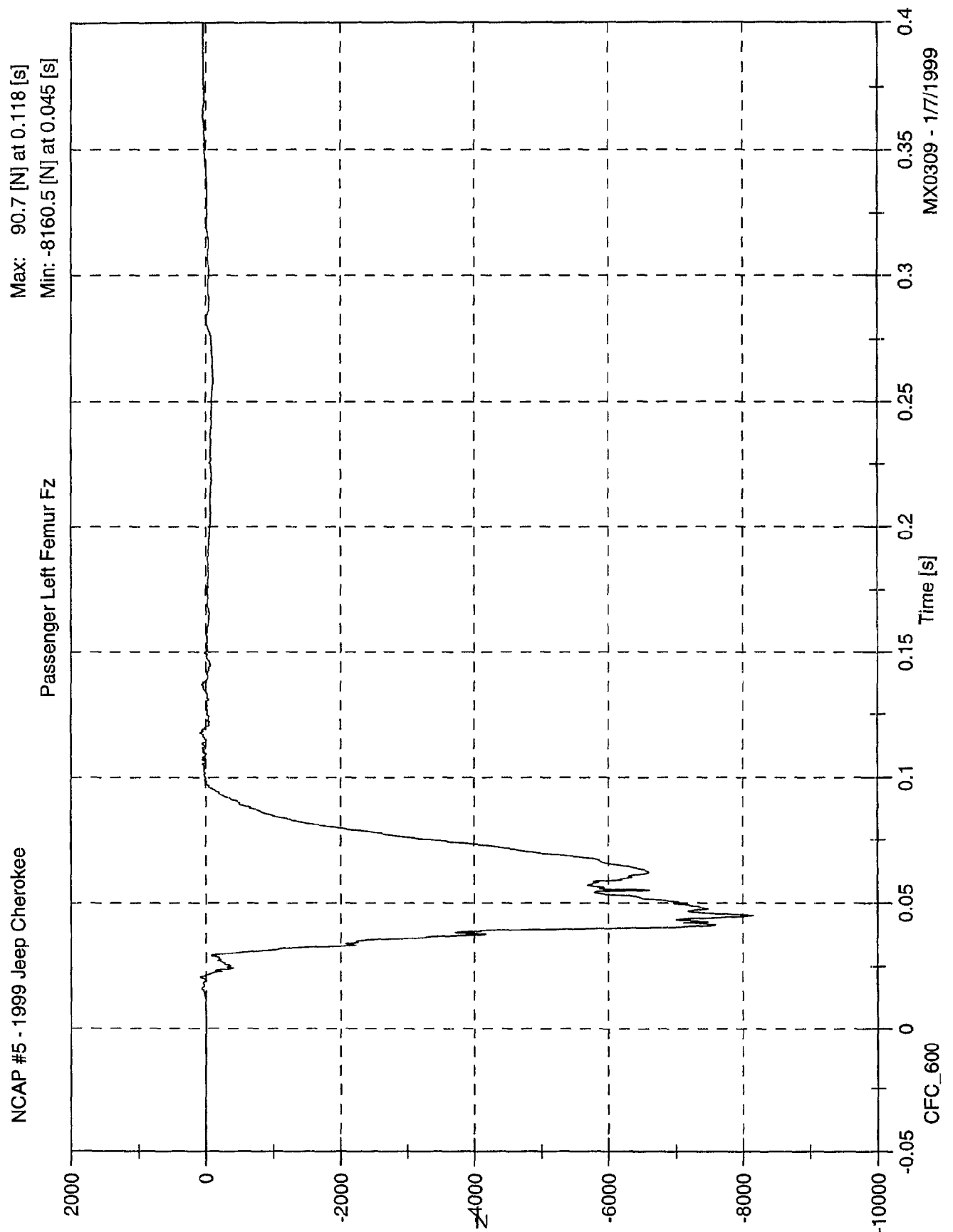
MX0309 - 1/7/1999

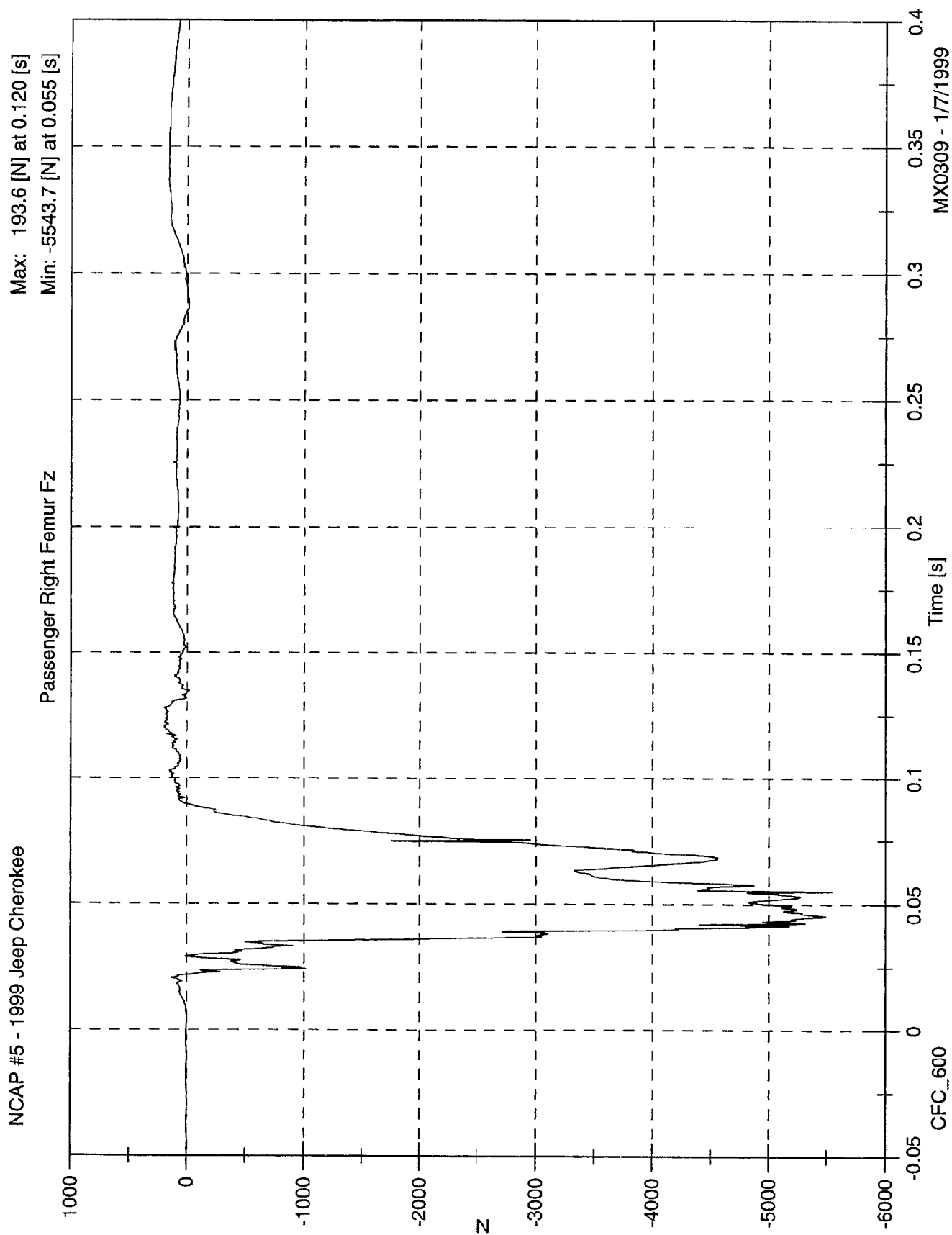
NCAP #5 - 1999 Jeep Cherokee

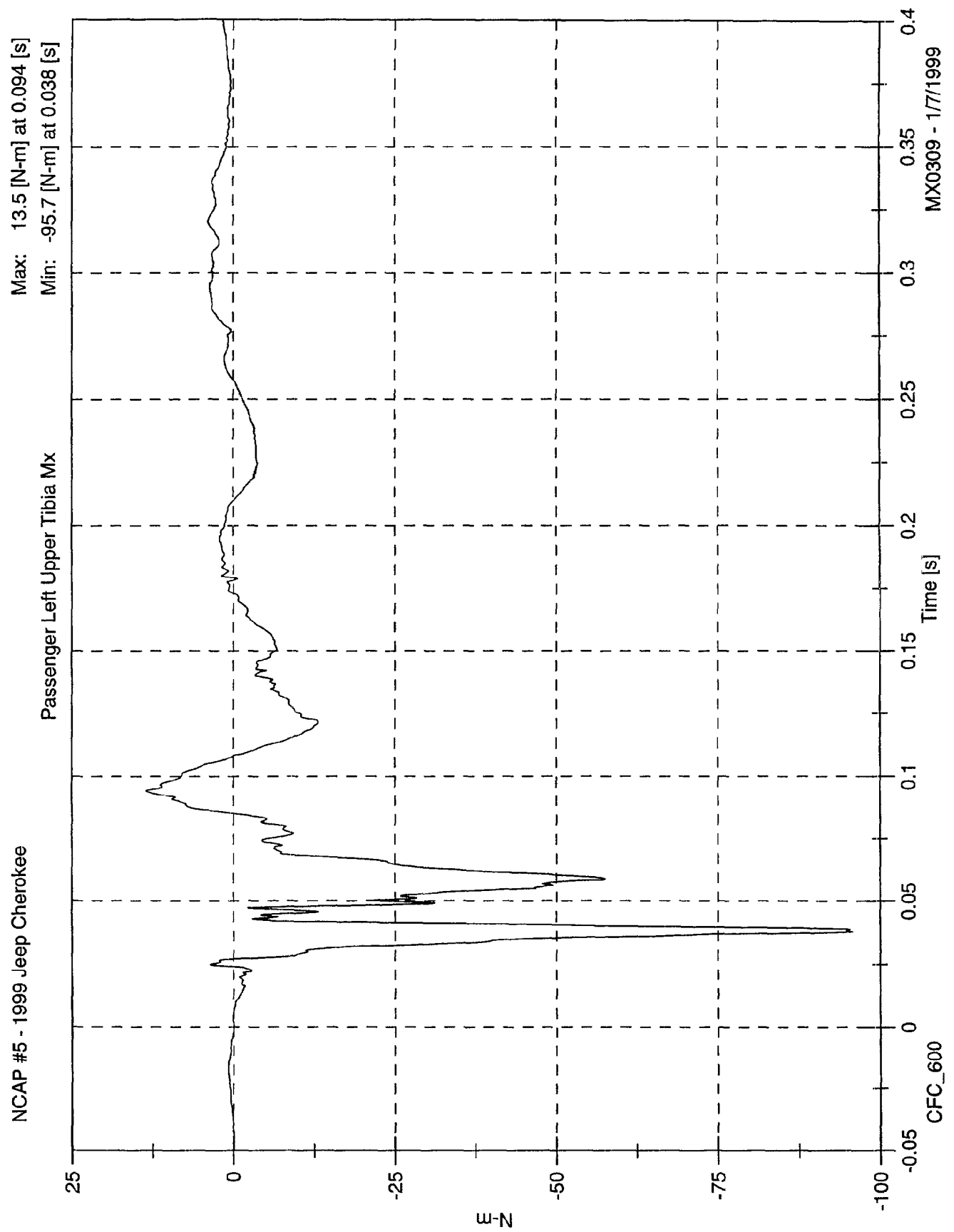
Max: 77.4 [g] at 0.042 [s]
Min: 0.0 [g] at -0.087 [s]

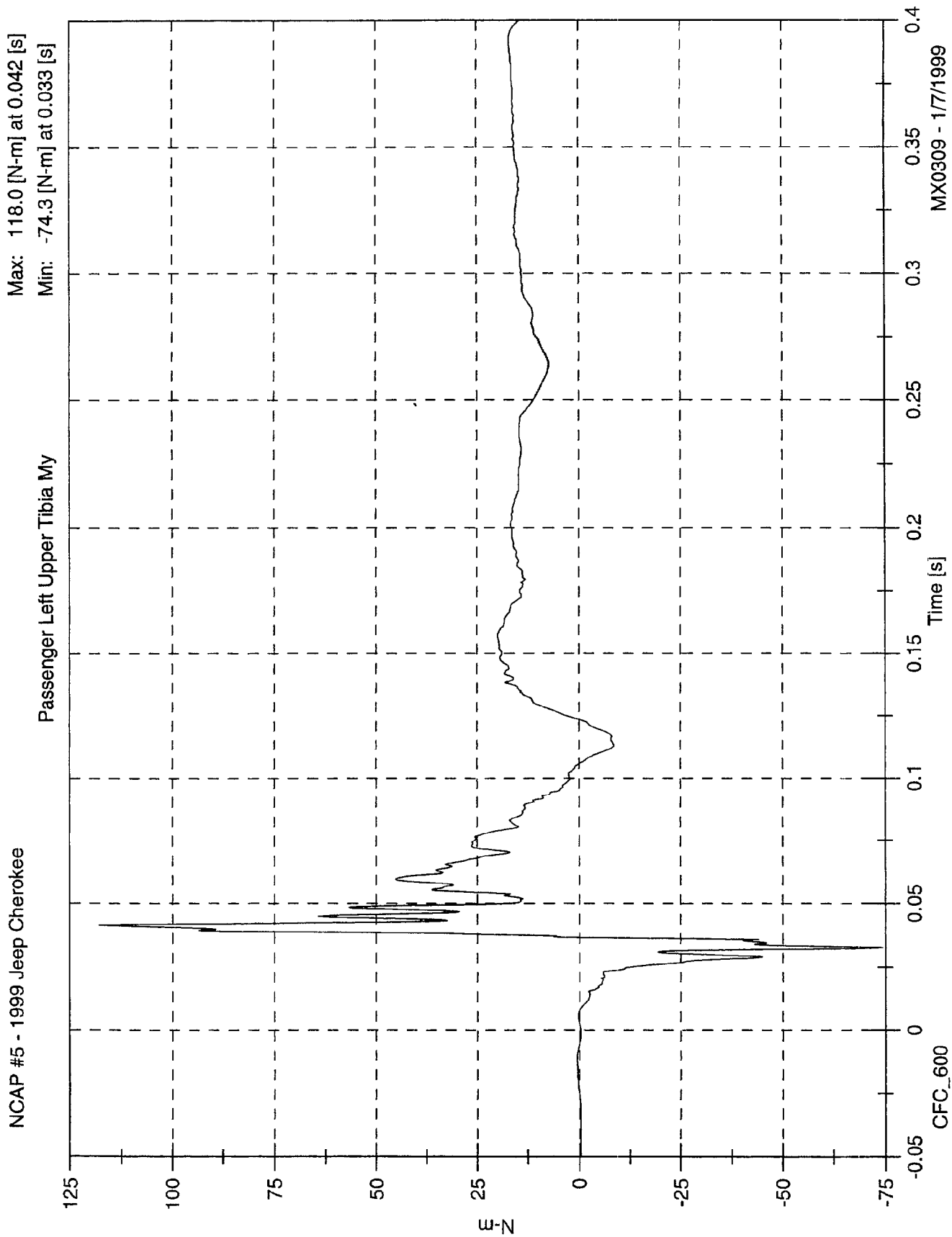
Passenger Pelvic A Resultant

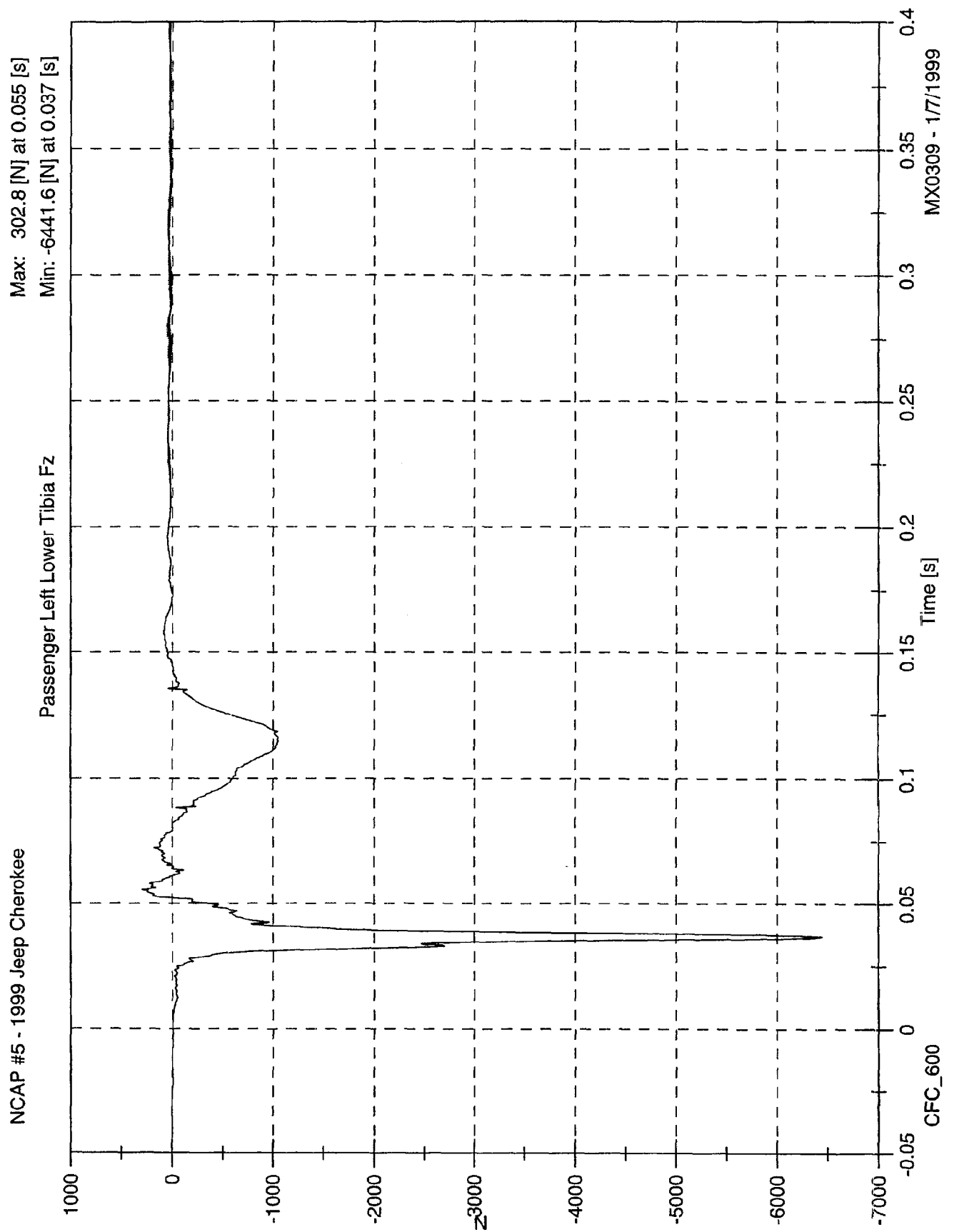


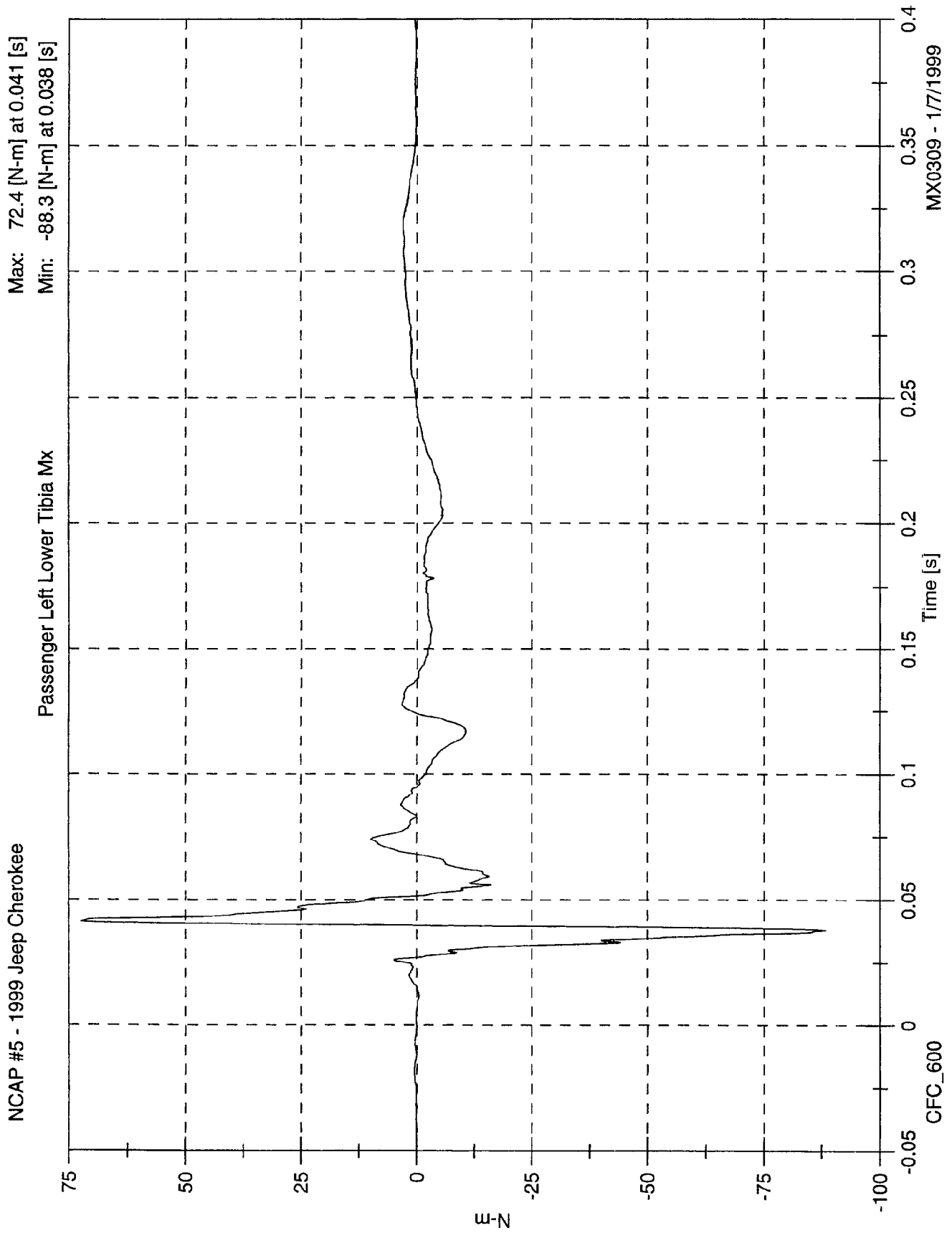








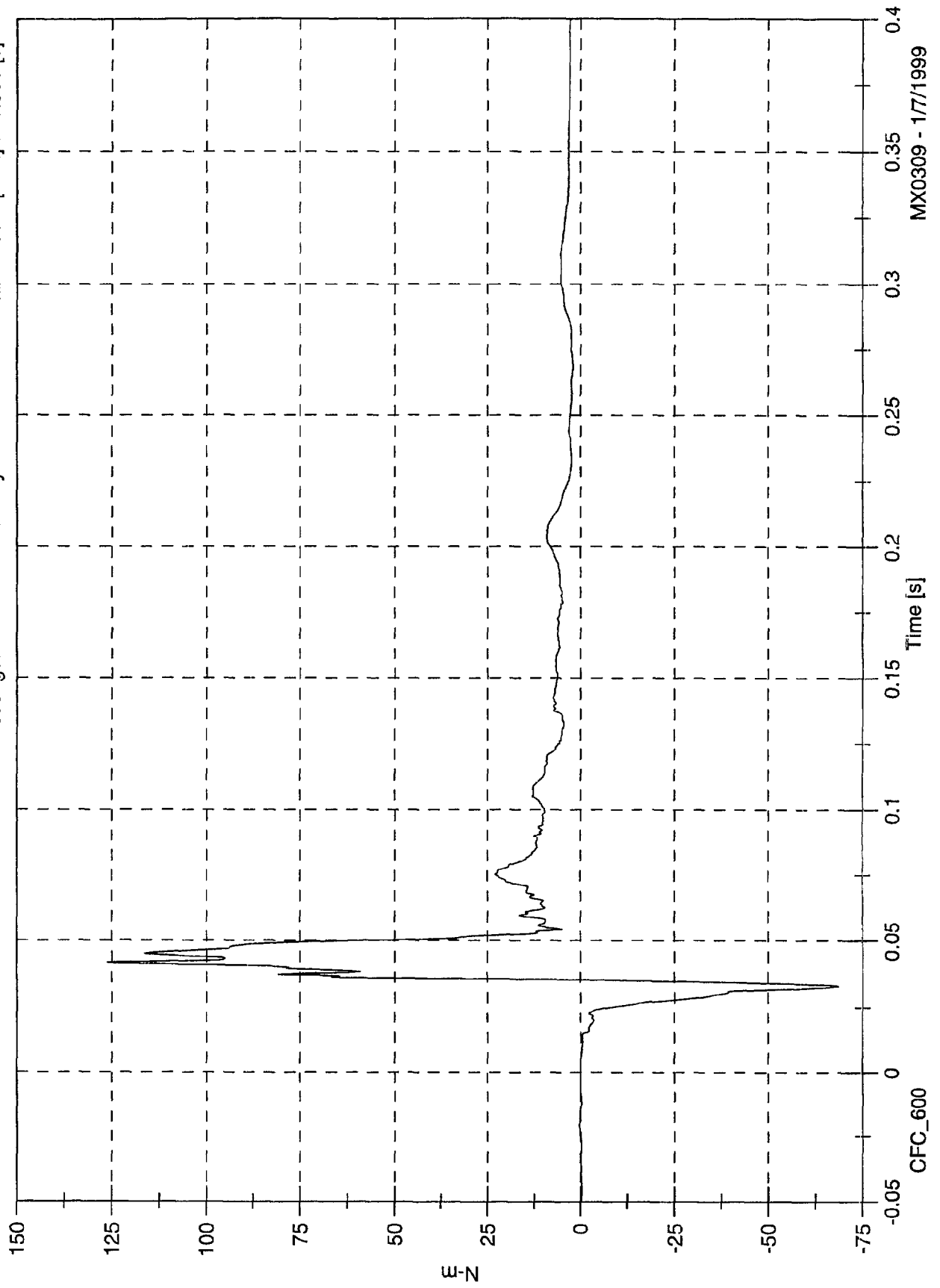




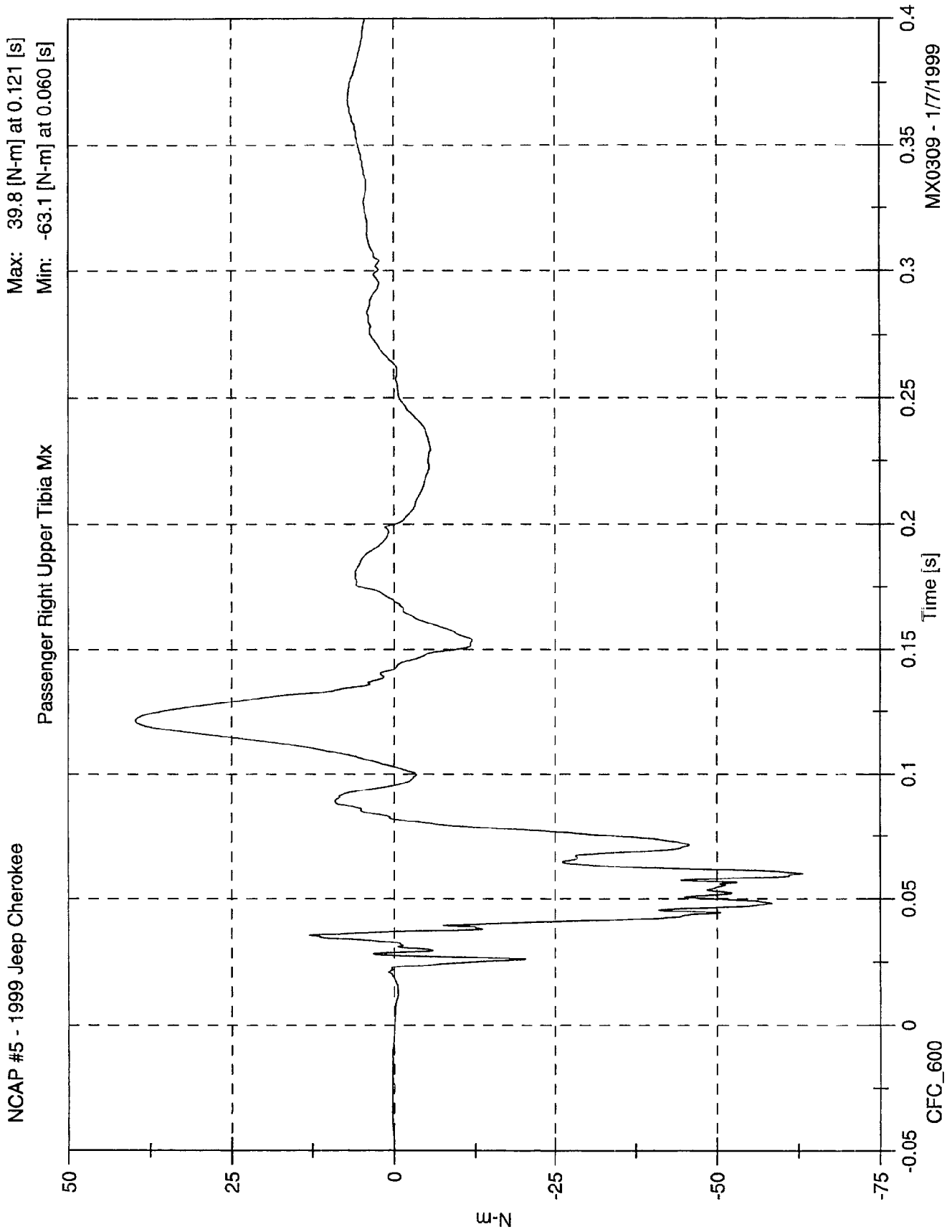
NCAP #5 - 1999 Jeep Cherokee

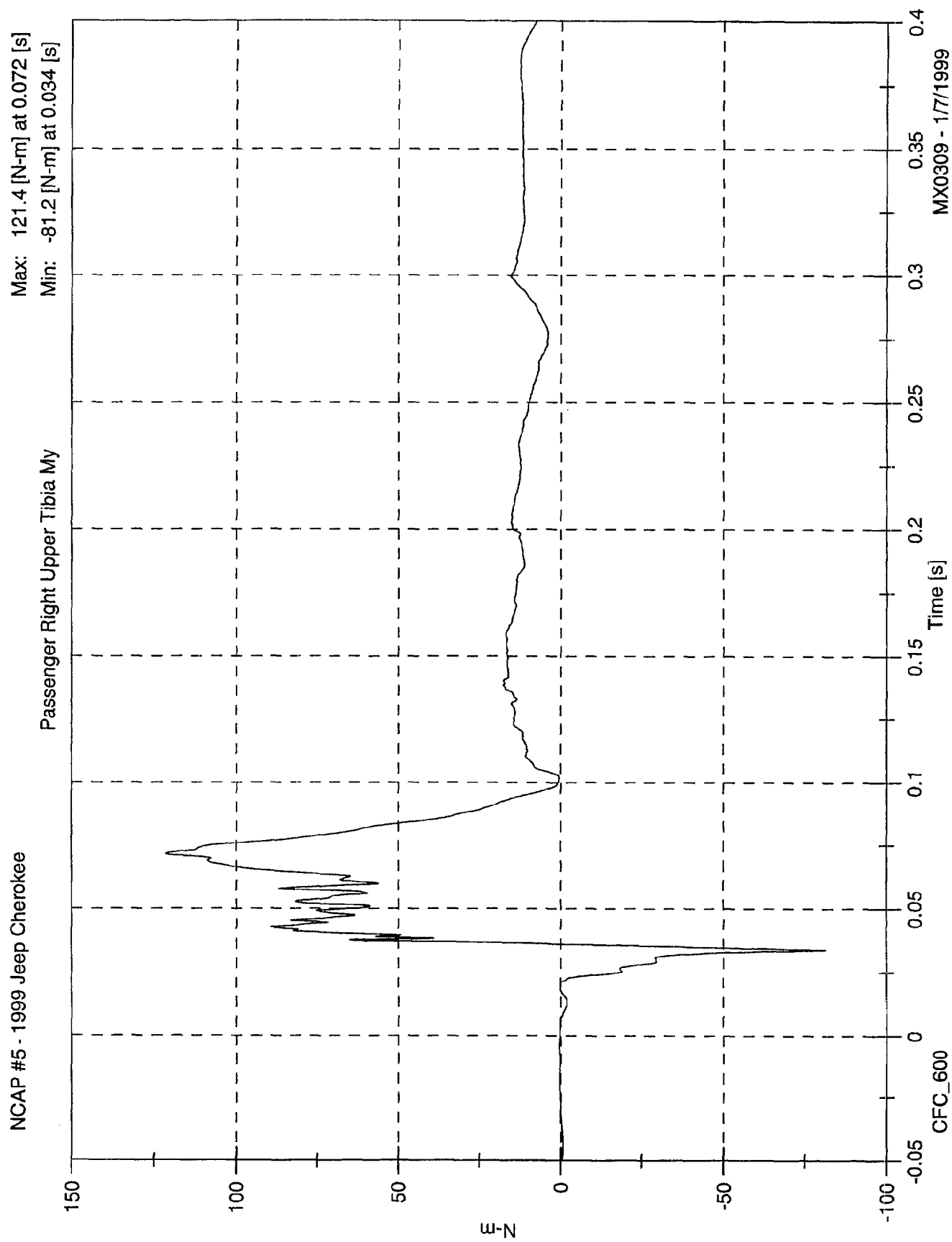
Max: 126.2 [N-m] at 0.042 [s]
Min: -68.6 [N-m] at 0.033 [s]

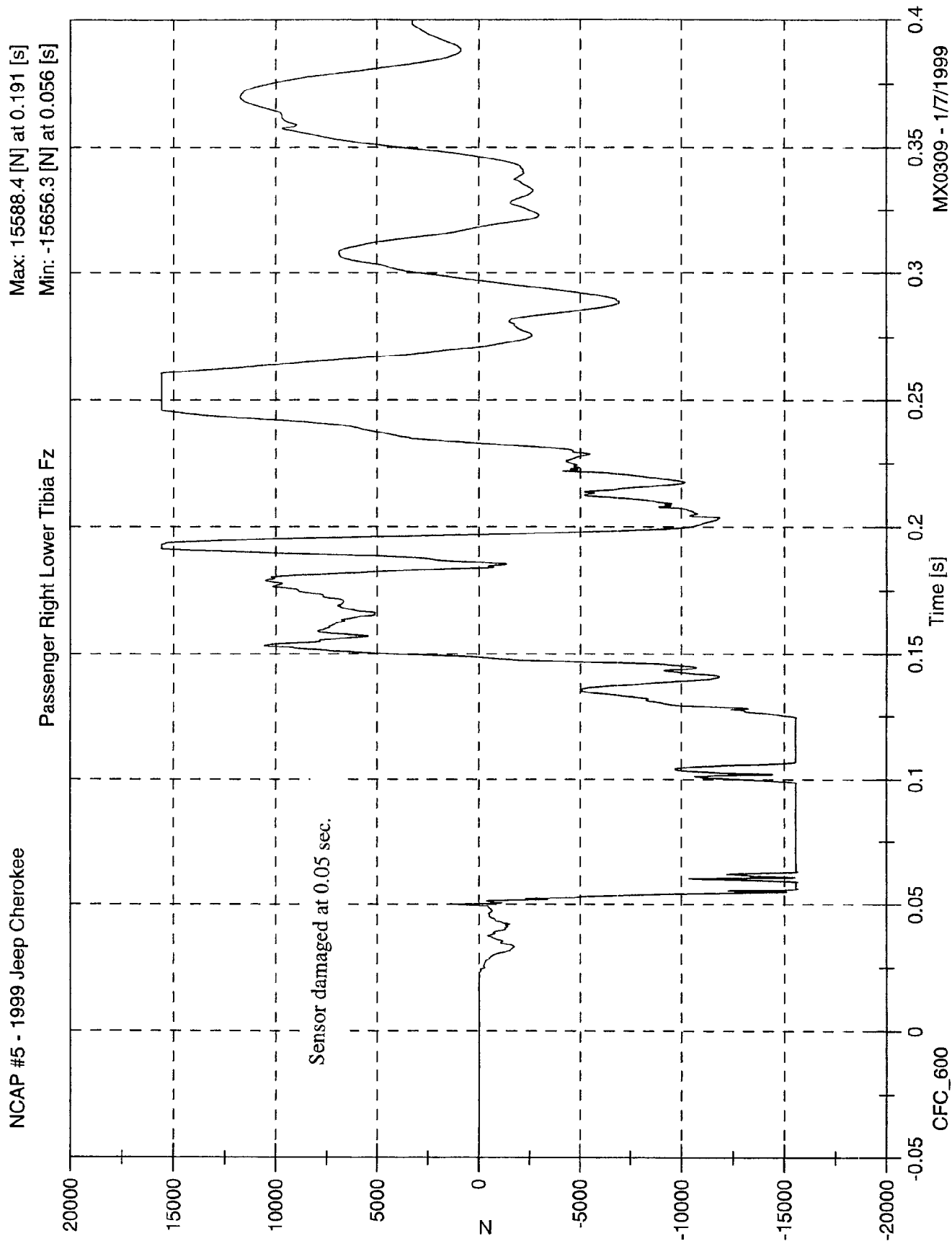
Passenger Left Lower Tibia My



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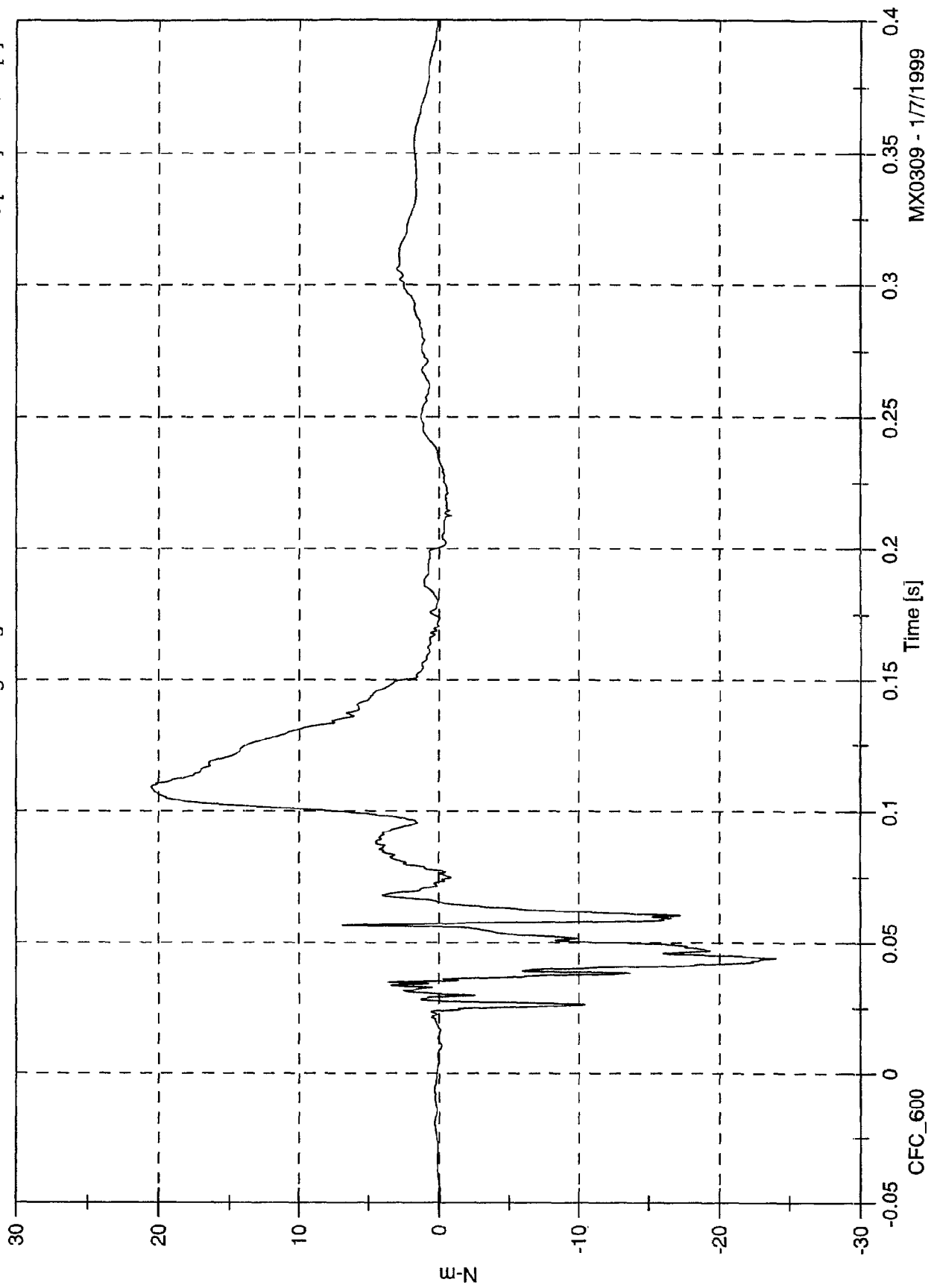


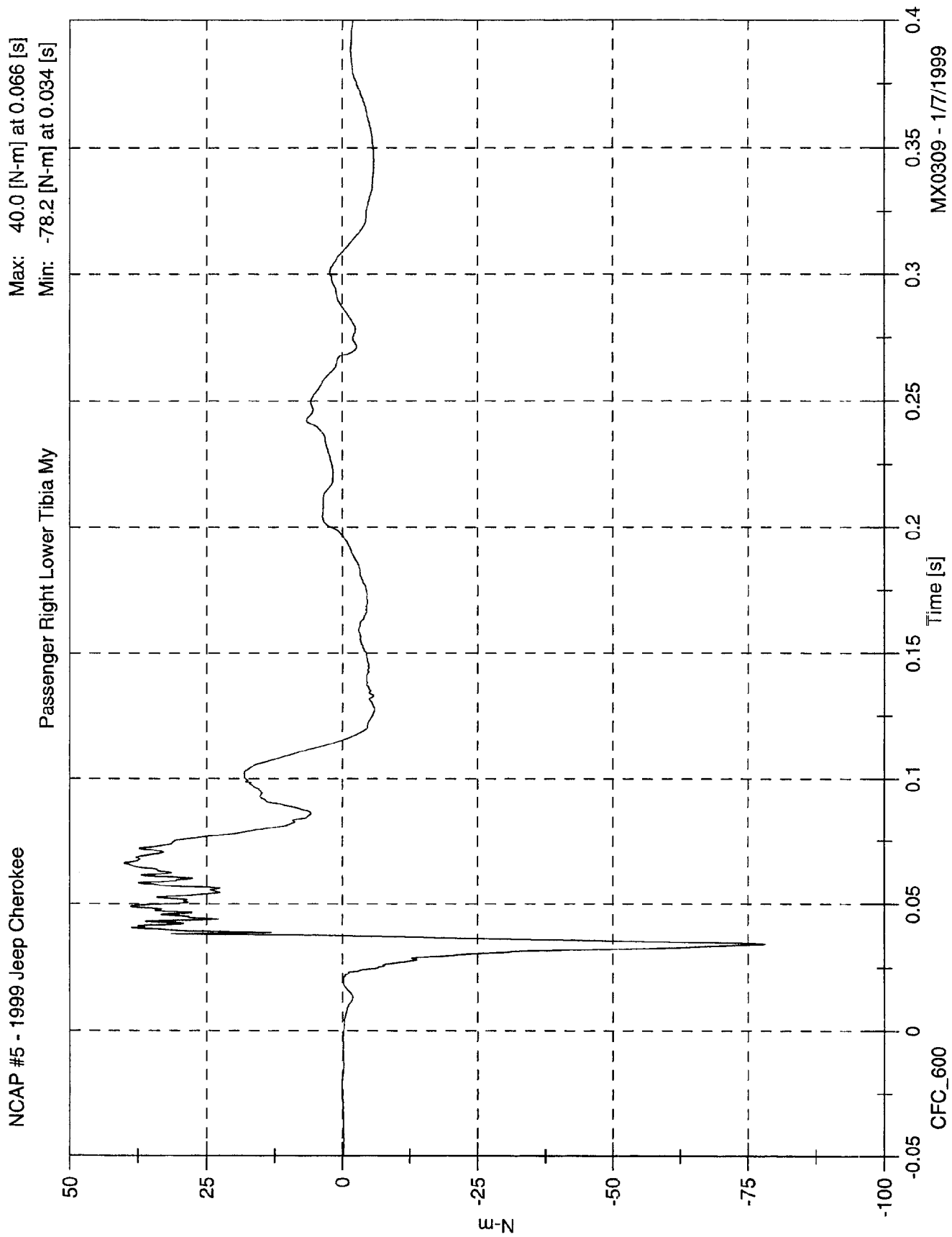
NCAP #5 - 1999 Jeep Cherokee

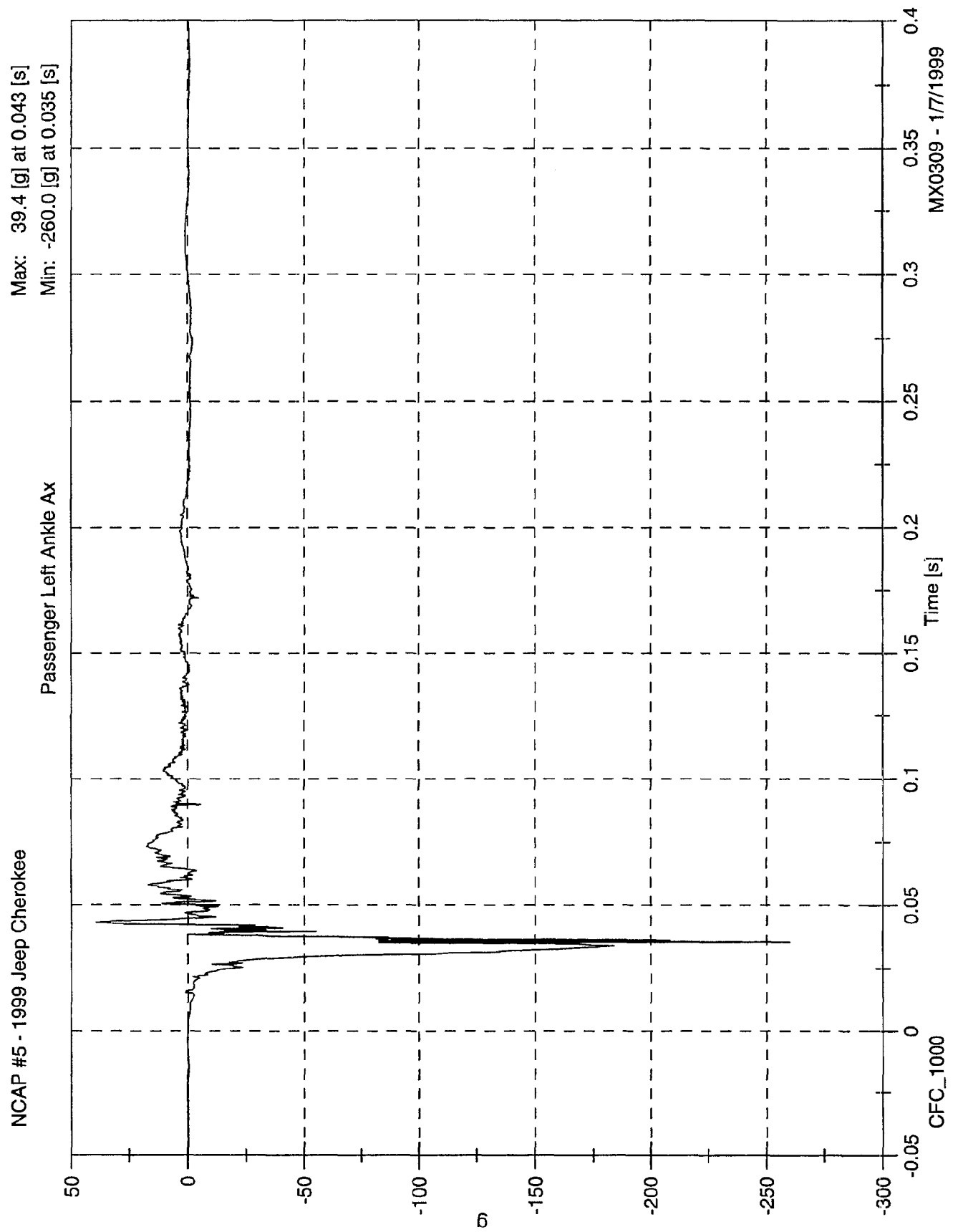
Max: 20.5 [N-m] at 0.109 [s]

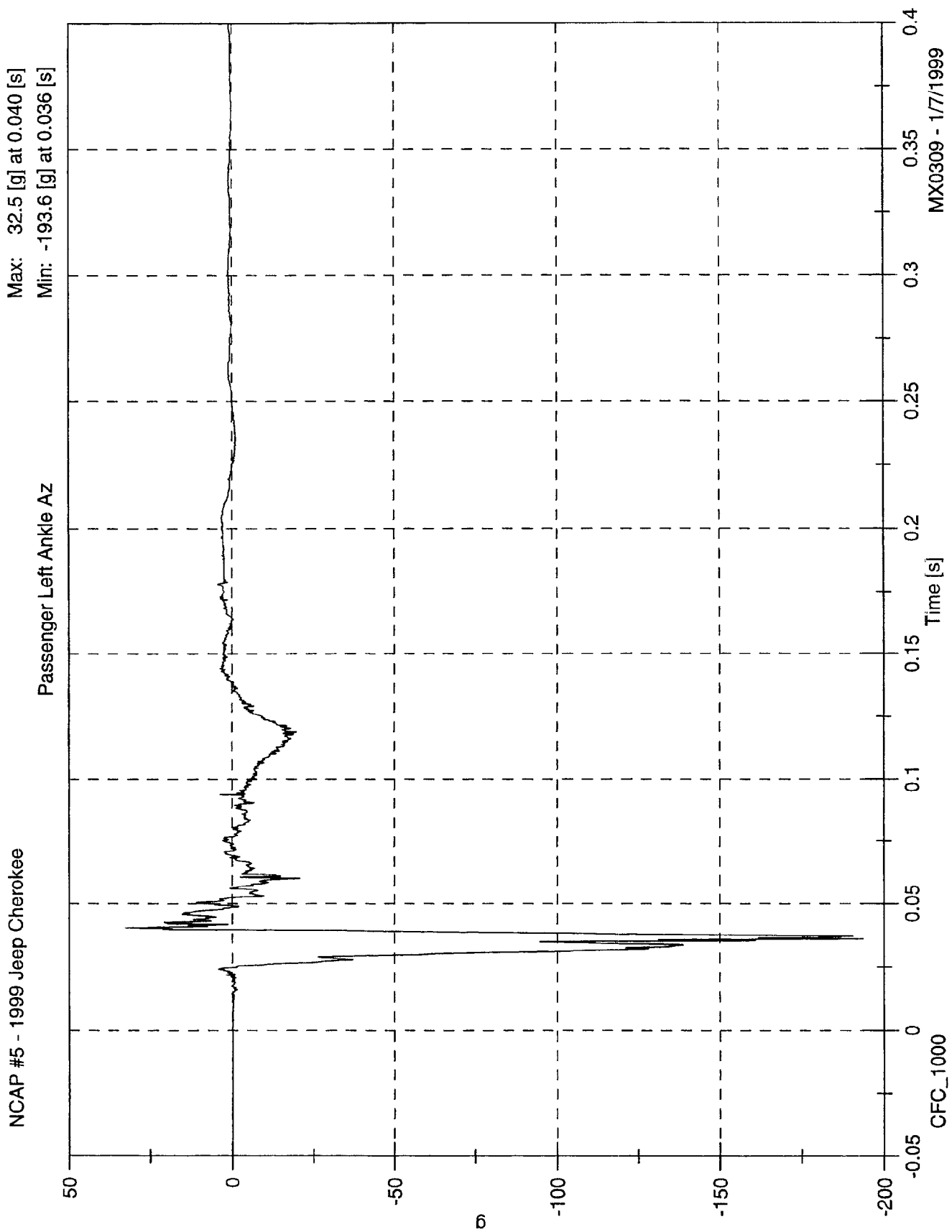
Min: -24.0 [N-m] at 0.044 [s]

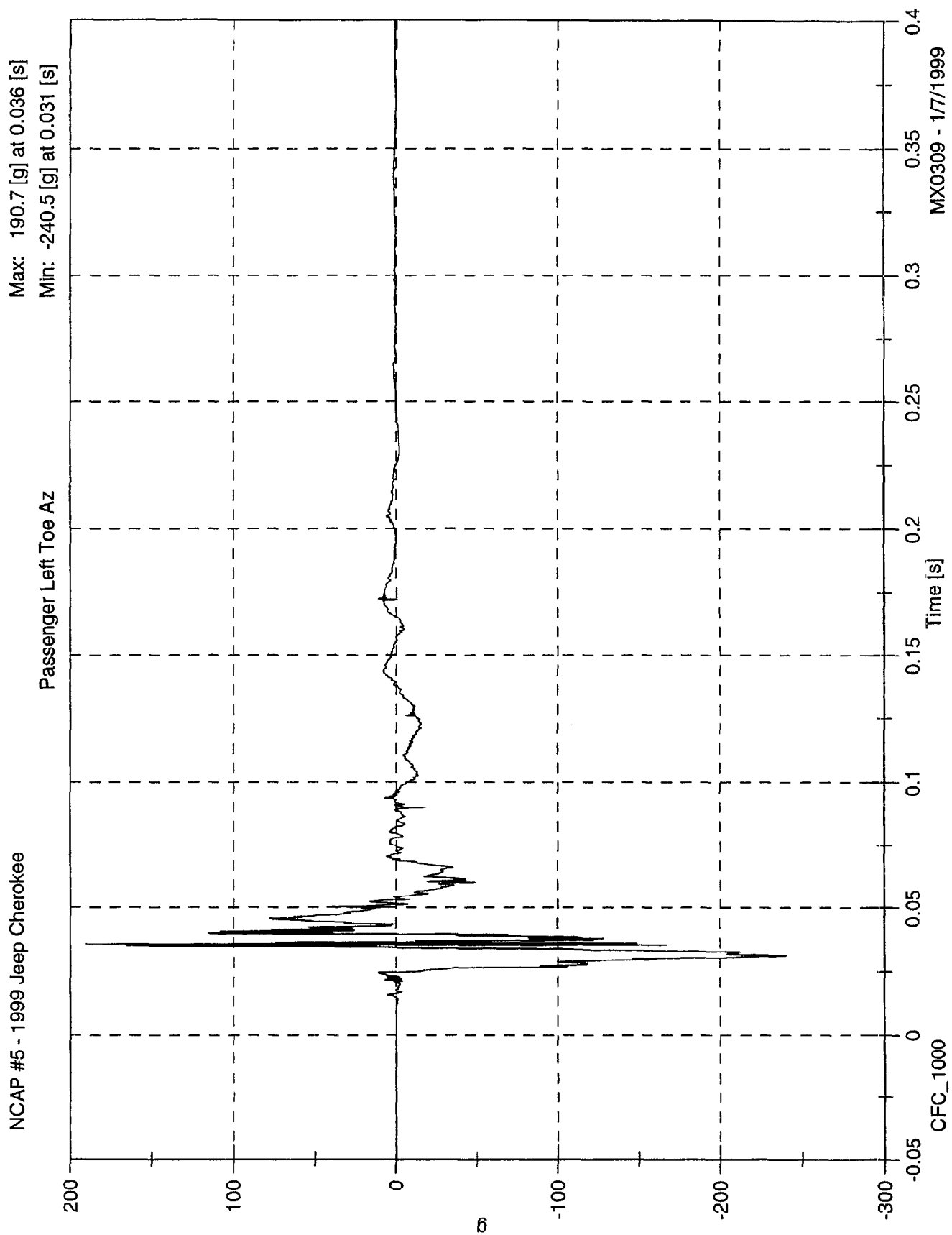
Passenger Right Lower Tibia Mx

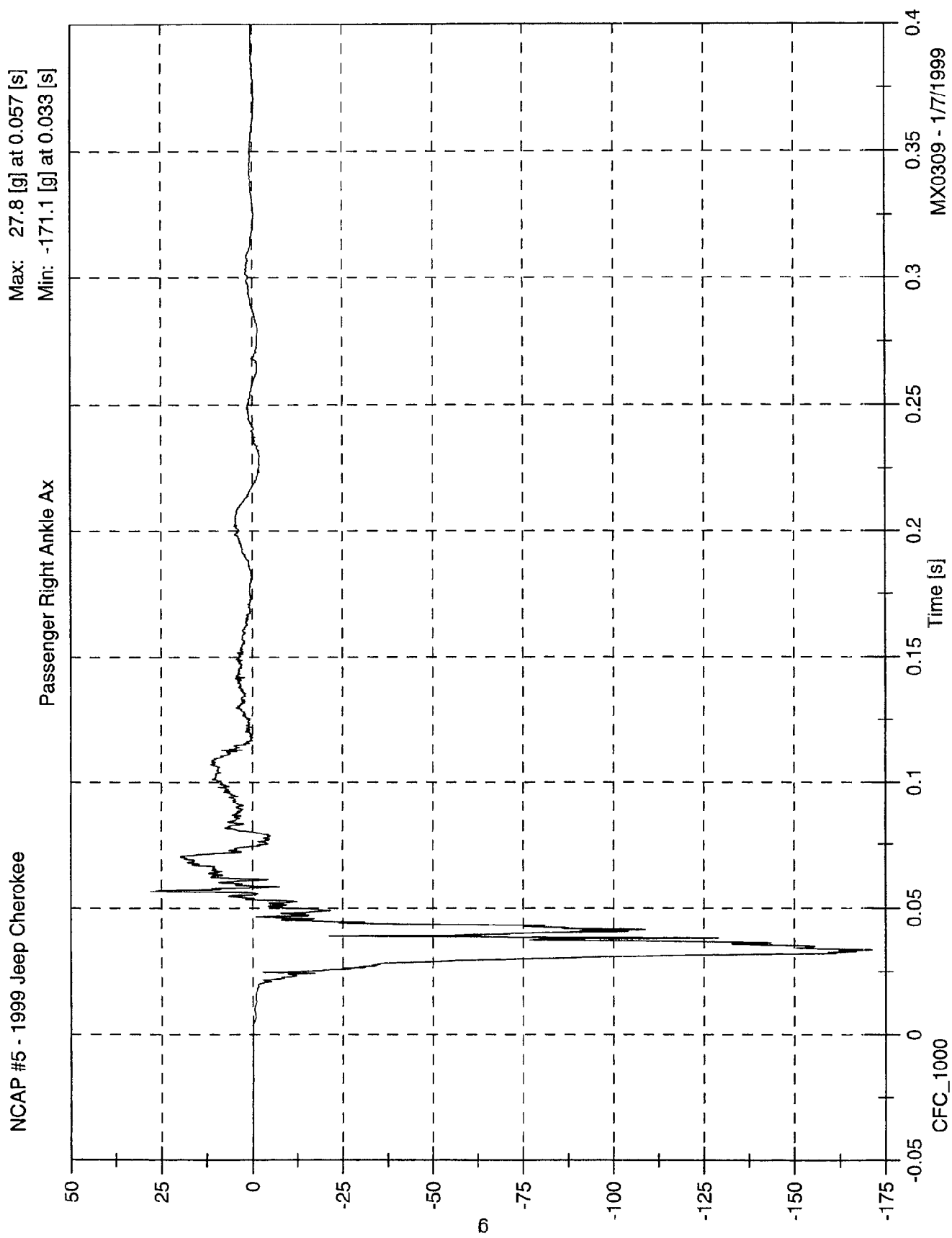










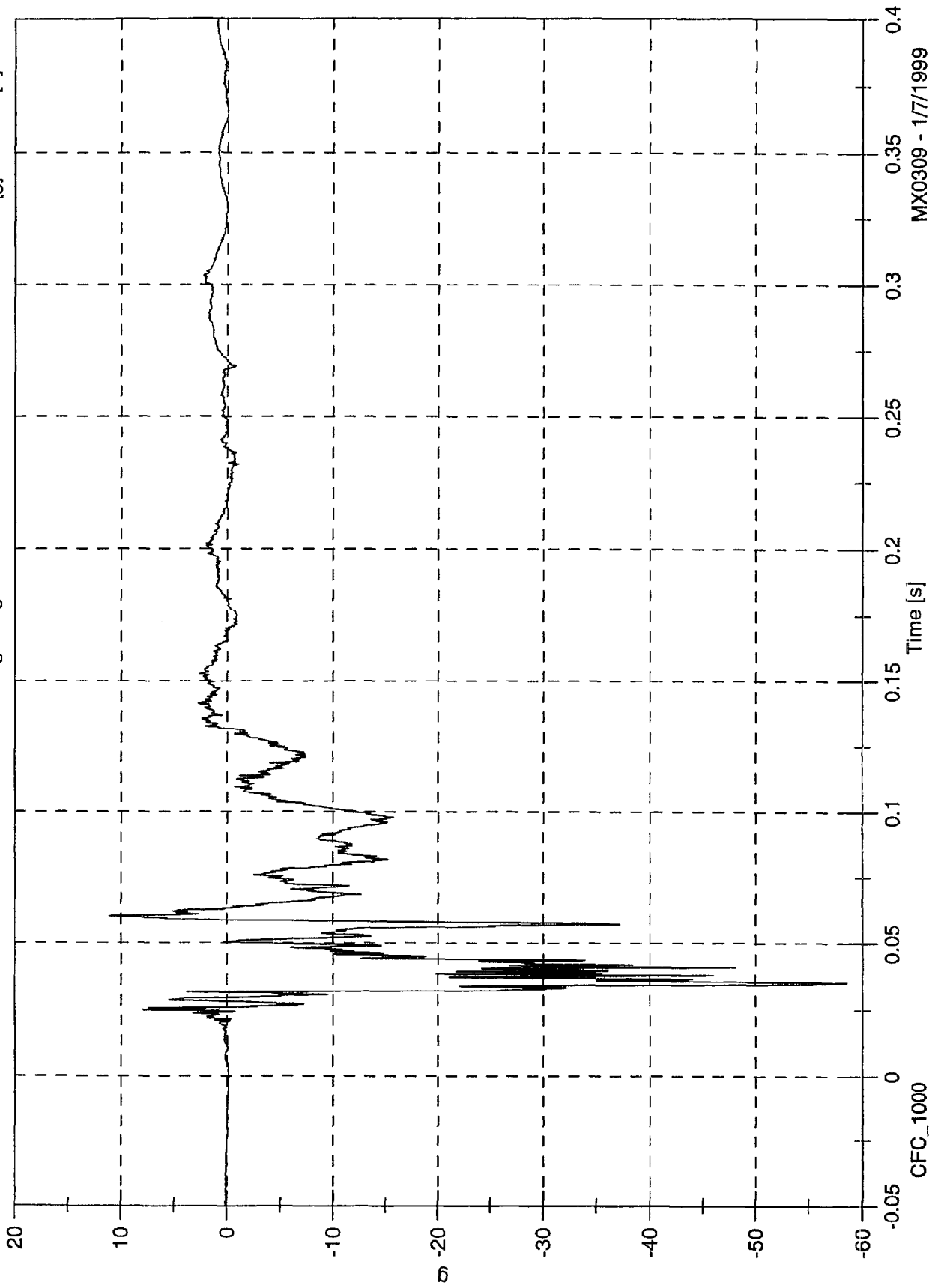


NCAP #5 - 1999 Jeep Cherokee

Max: 11.1 [g] at 0.060 [s]

Min: -58.5 [g] at 0.035 [s]

Passenger Right Ankle Az



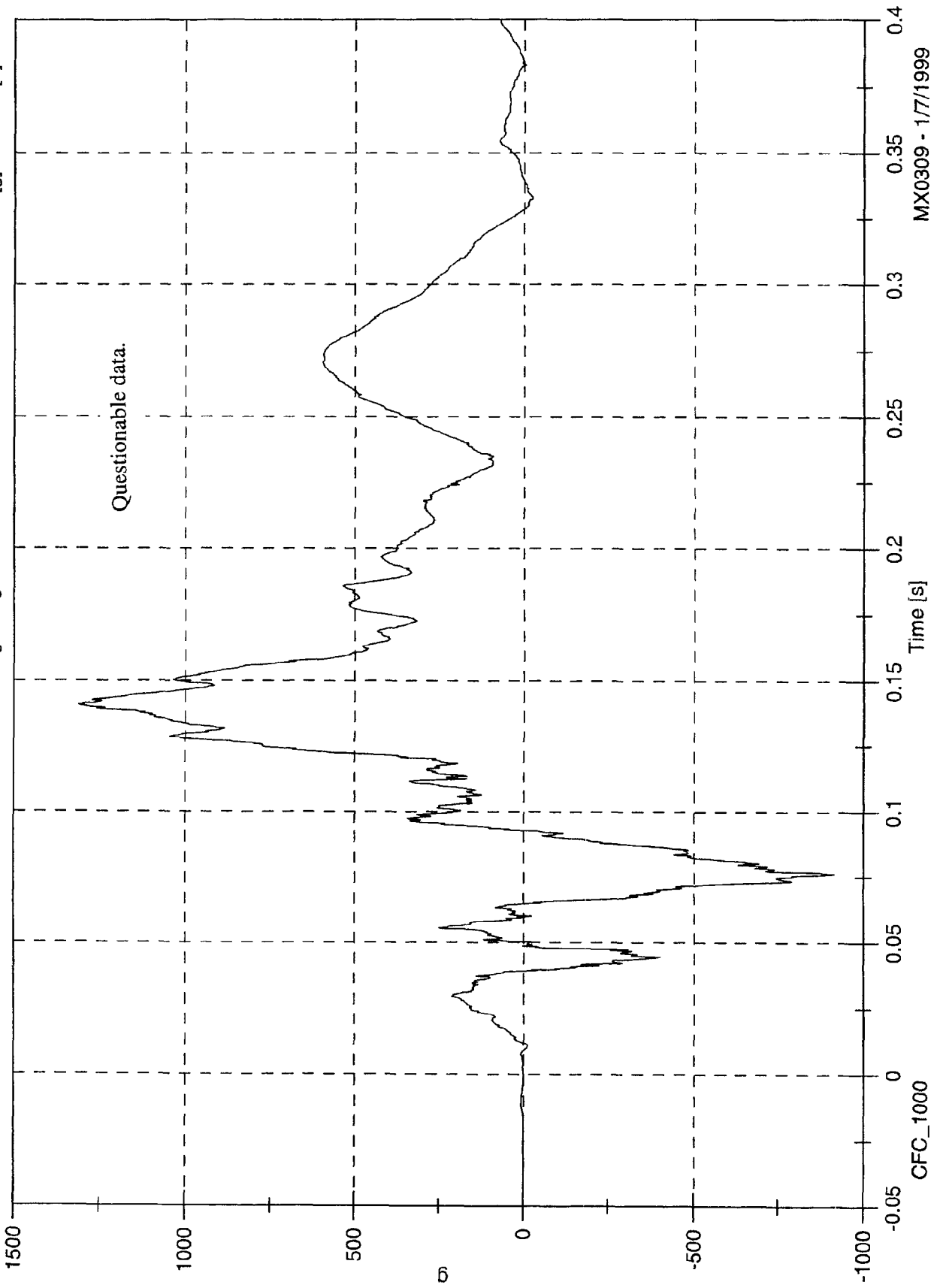
MX0309 - 1/7/1999

NCAP #5 - 1999 Jeep Cherokee

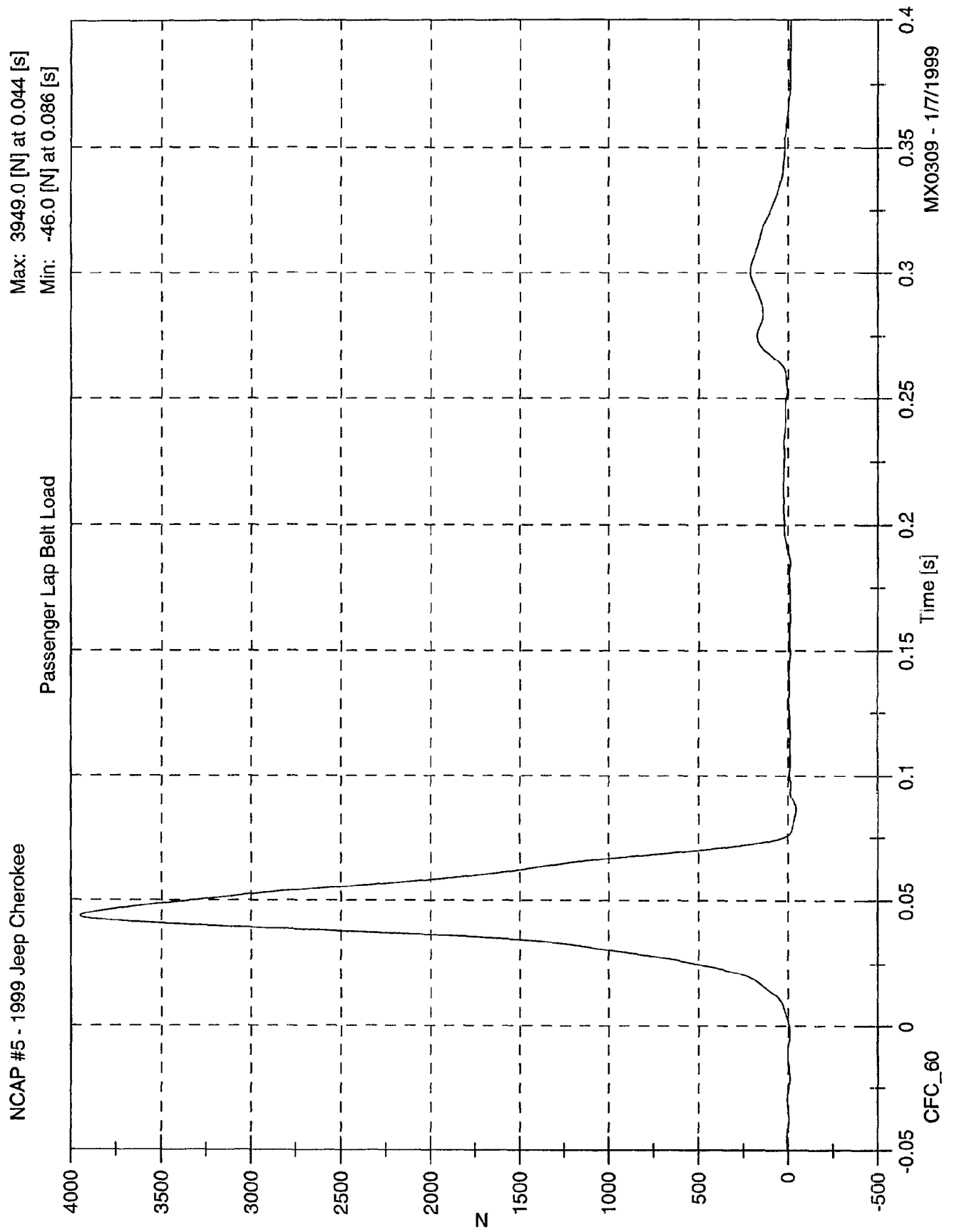
Max: 1312.1 [g] at 0.141 [s]

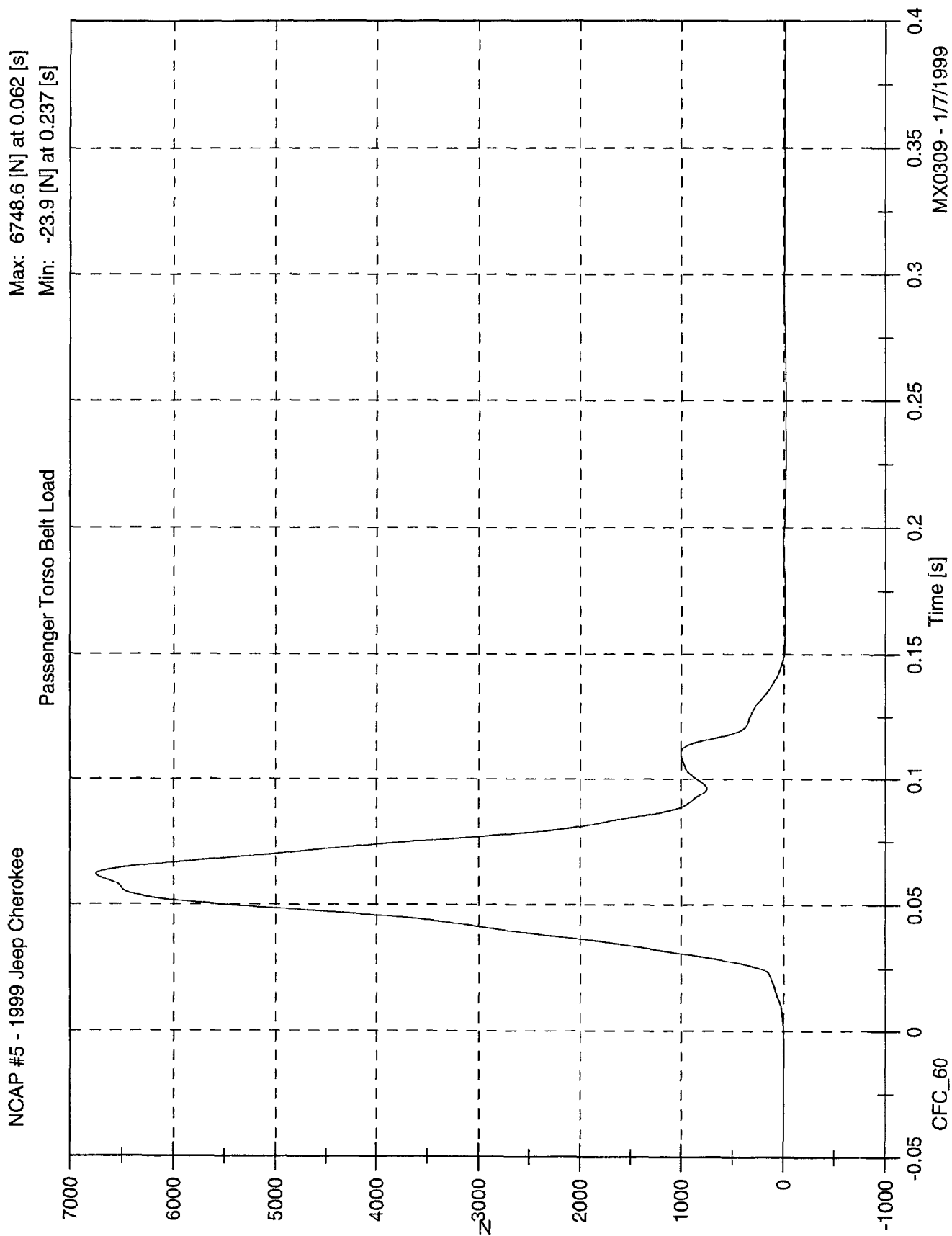
Min: -913.2 [g] at 0.076 [s]

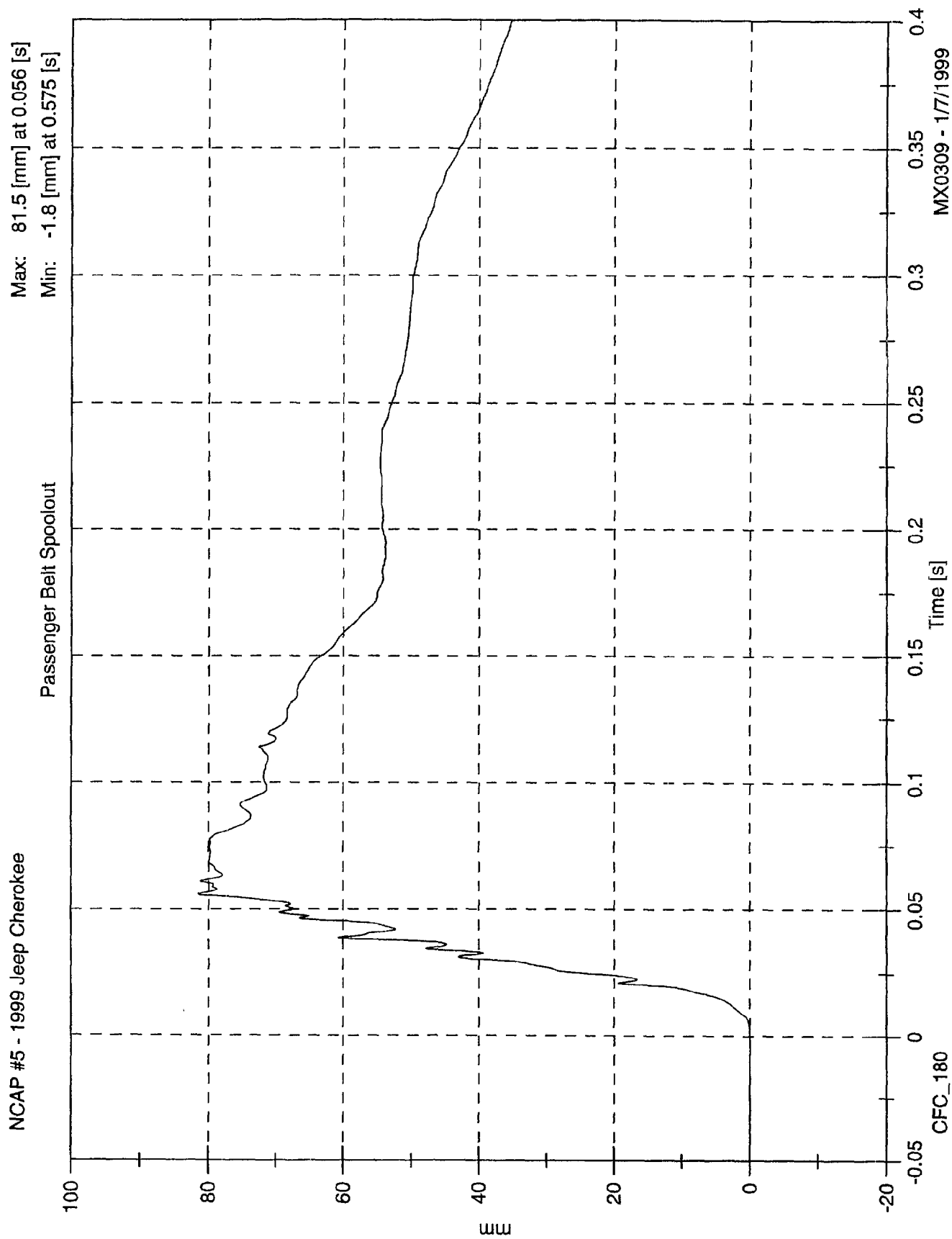
Passenger Right Toe Az



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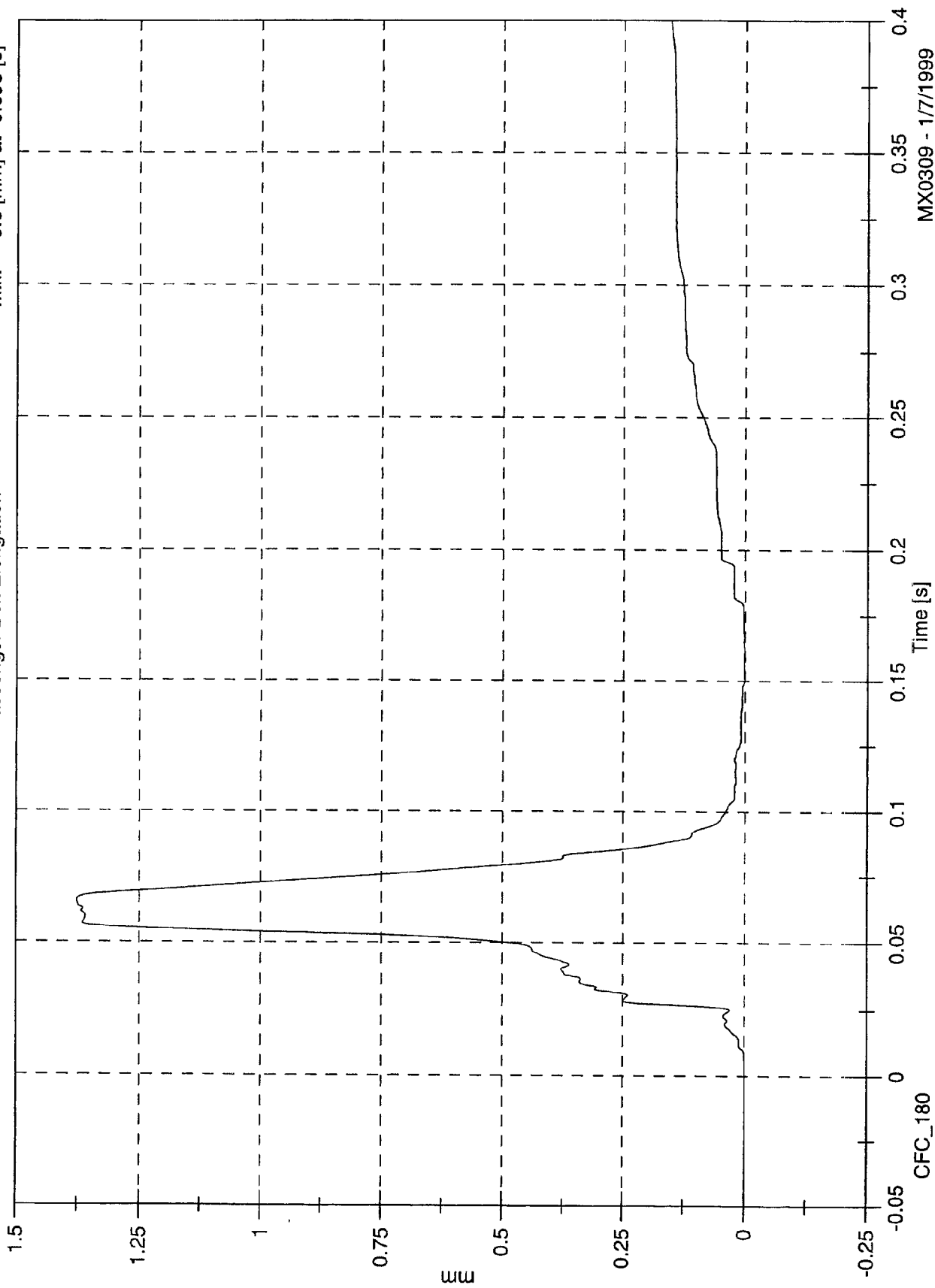




NCAP #5 - 1999 Jeep Cherokee

Max: 1.4 [mm] at 0.066 [s]
Min: -0.0 [mm] at -0.098 [s]

Passenger Belt Elongation



CFC_180

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NHTSA TEST NO. MX0309

VEHICLE DATA

FILTER CHANNEL CLASS

Acceleration

60

Velocity

180

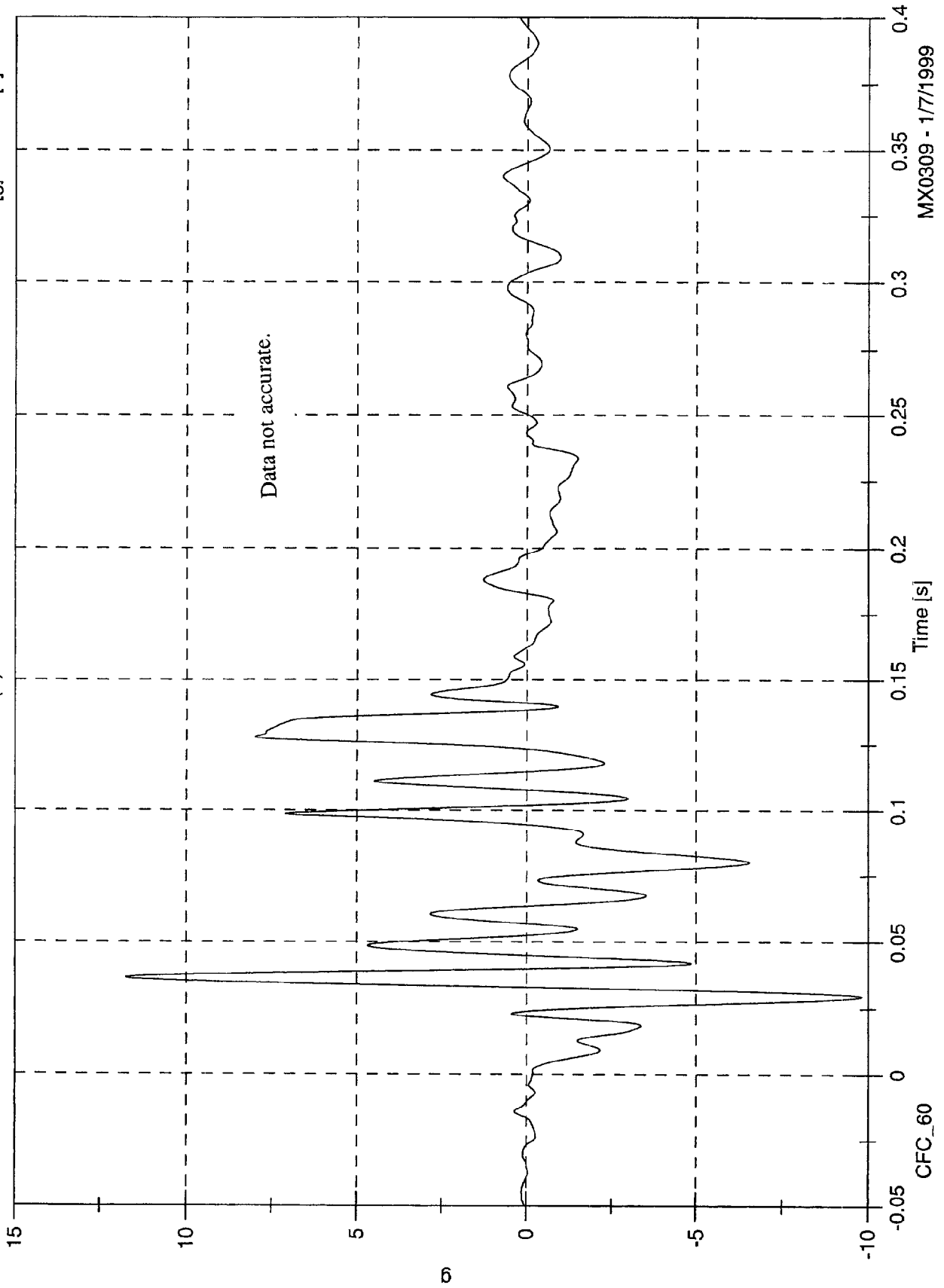
Displacement

180

NCAP #5 - 1999 Jeep Cherokee

Max: 11.8 [g] at 0.036 [s]
Min: -9.8 [g] at 0.029 [s]

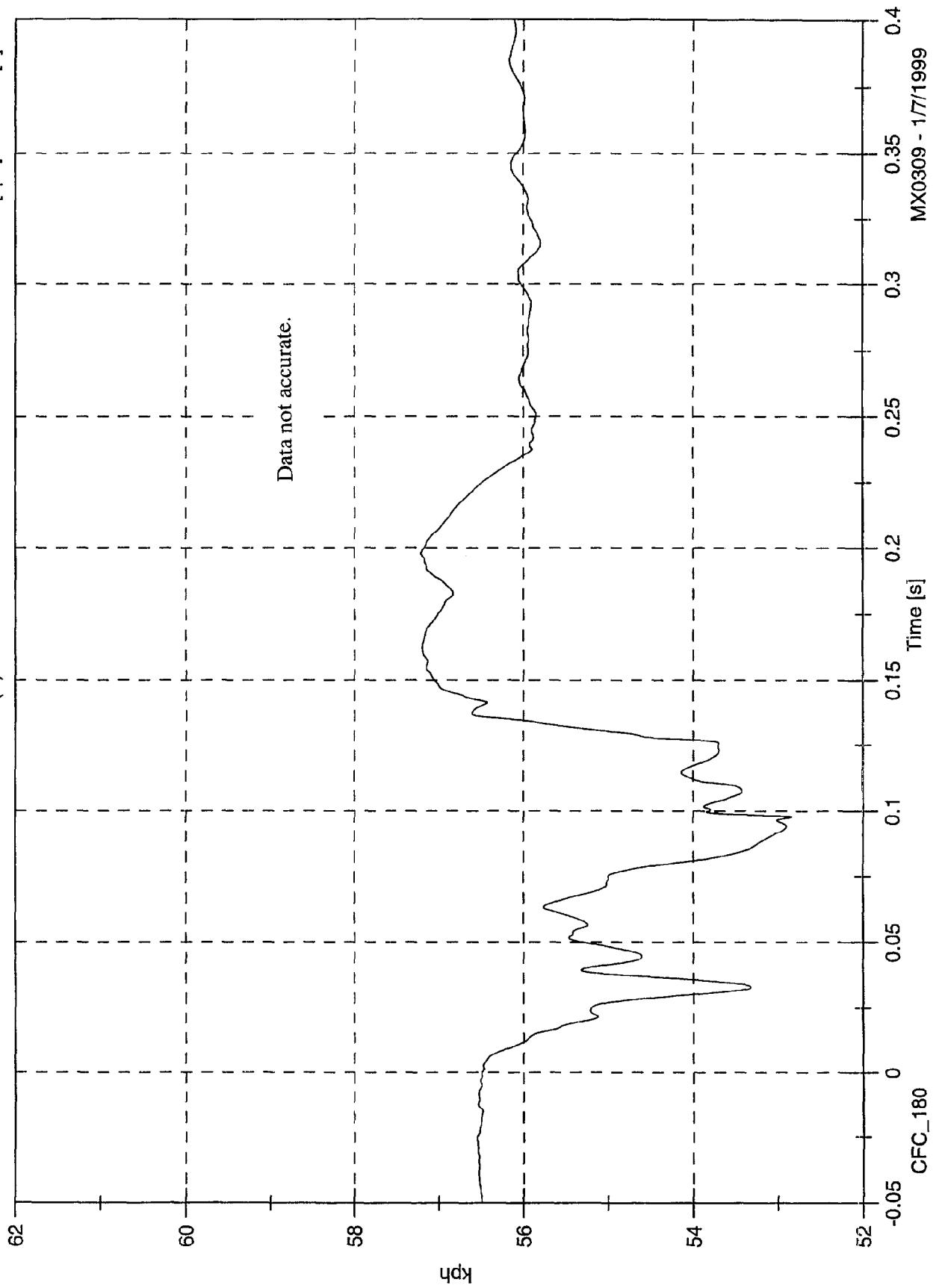
Acc 1(X) L Rear Crossmember



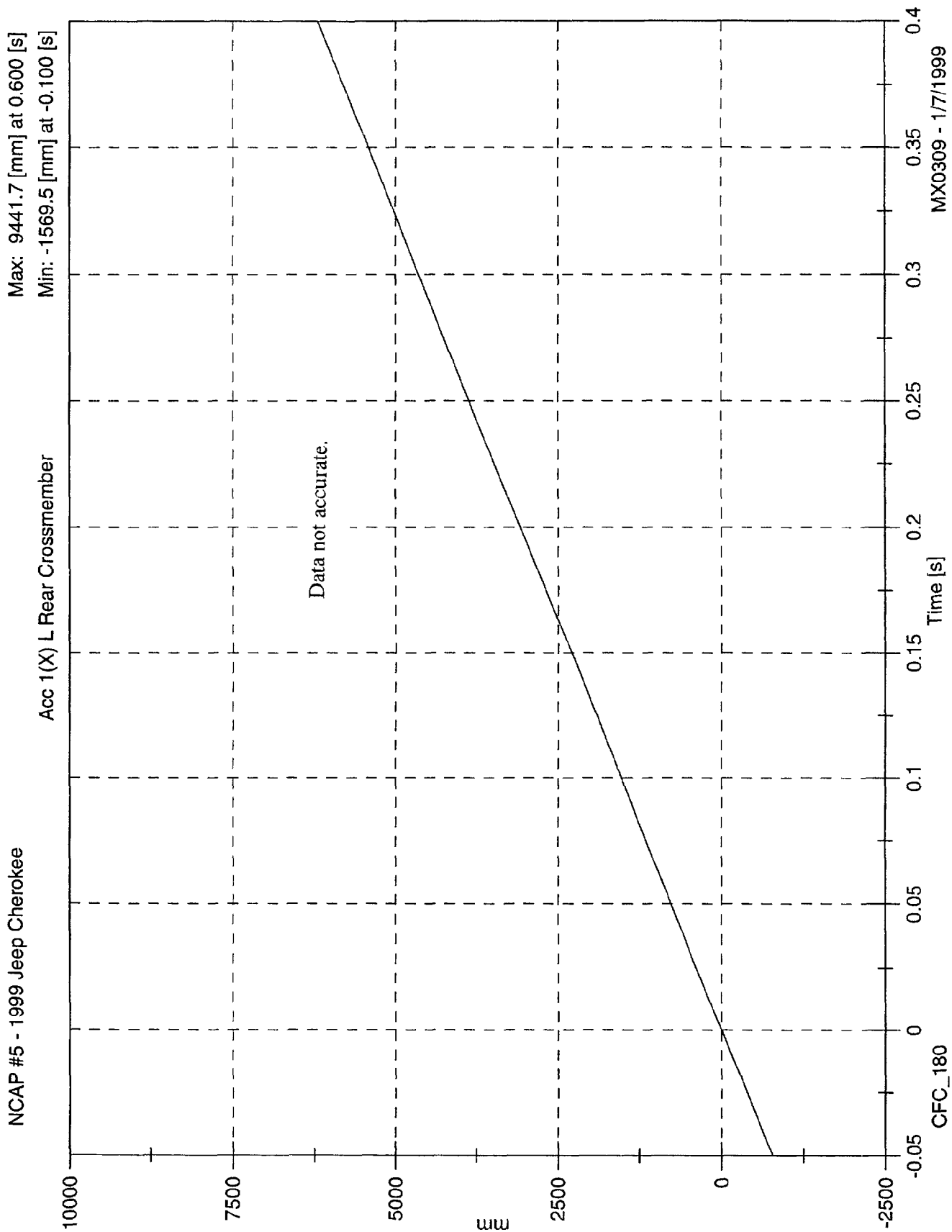
NCAP #5 - 1999 Jeep Cherokee

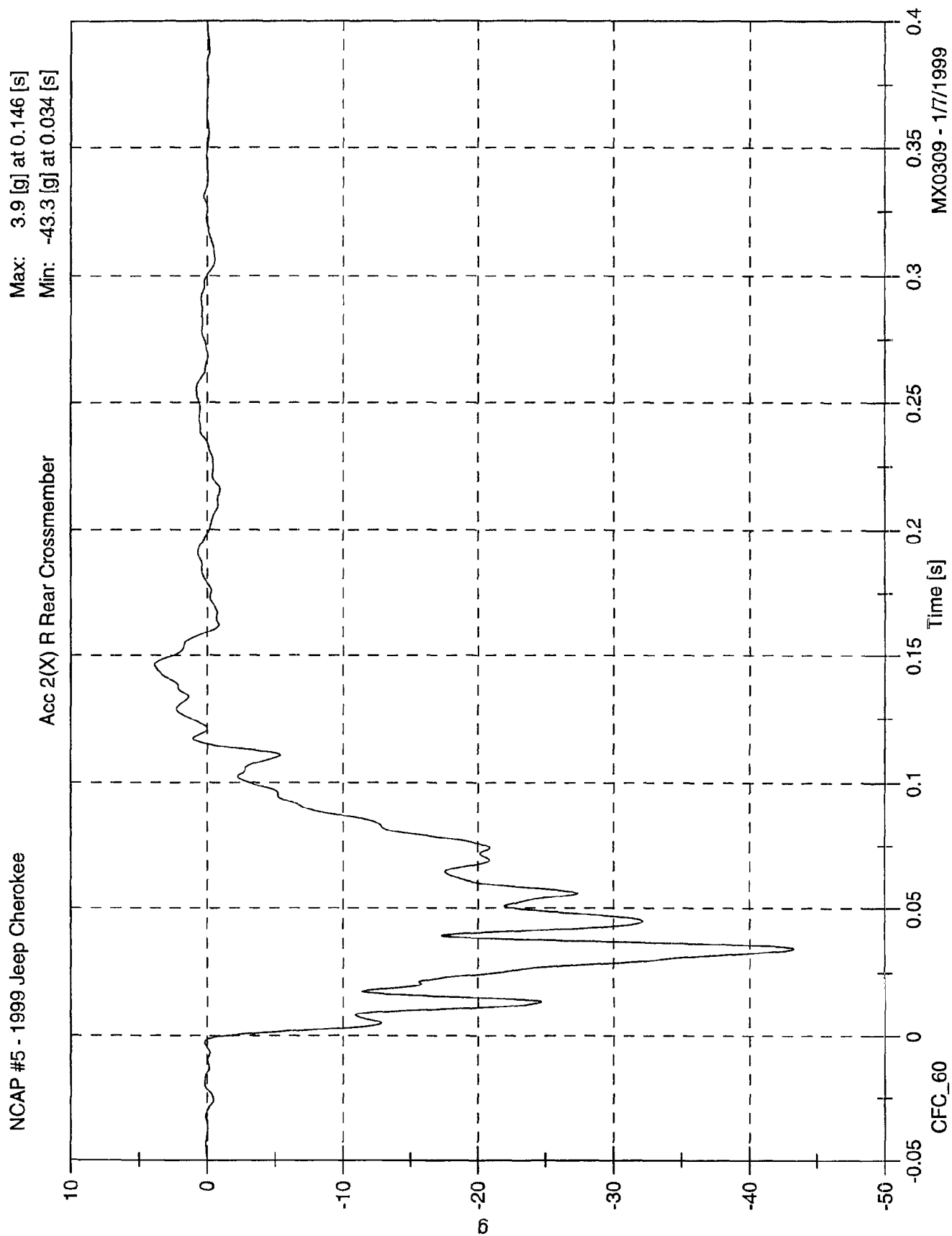
Max: 61.0 [kph] at 0.594 [s]
Min: 52.8 [kph] at 0.098 [s]

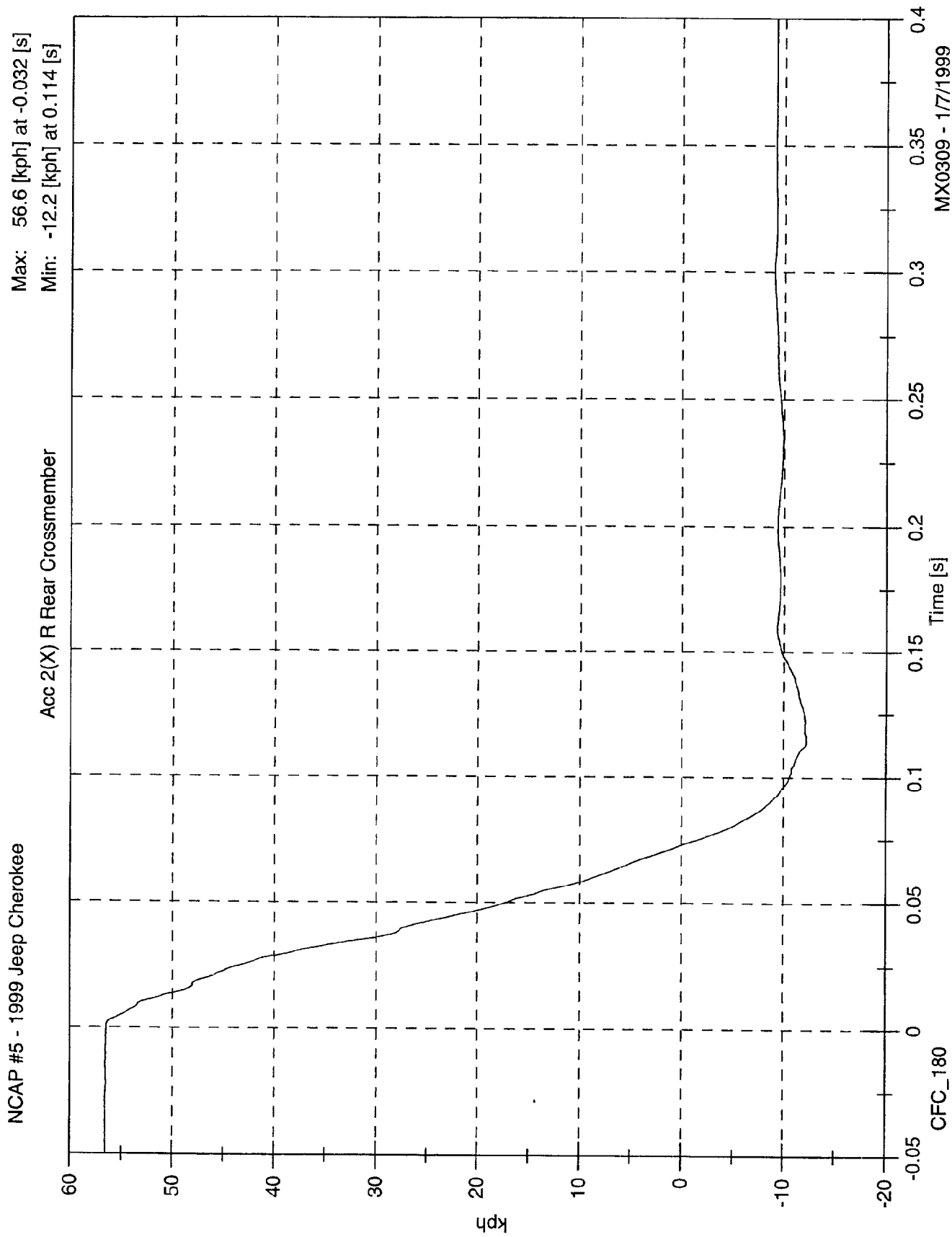
Acc 1(X) L Rear Crossmember

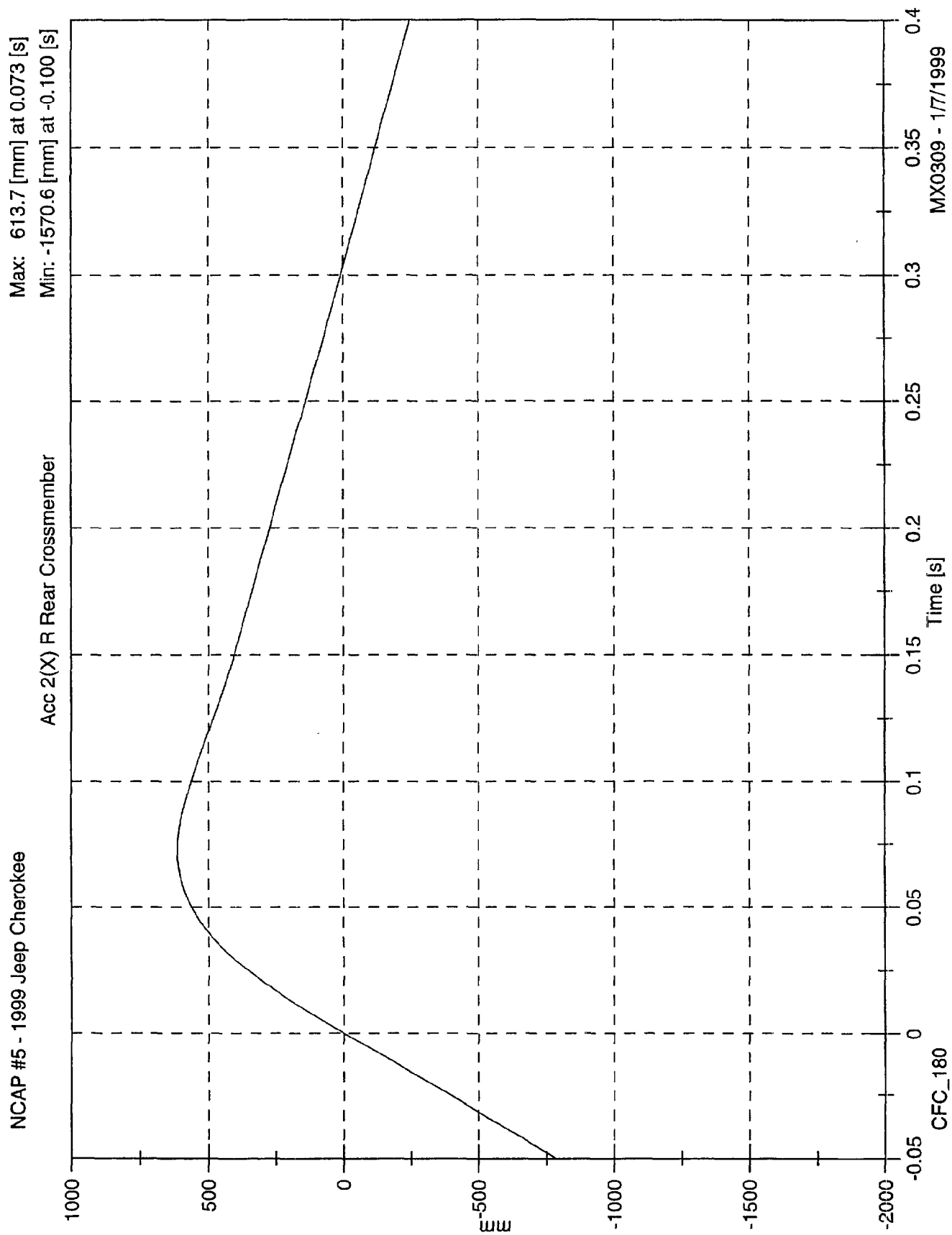


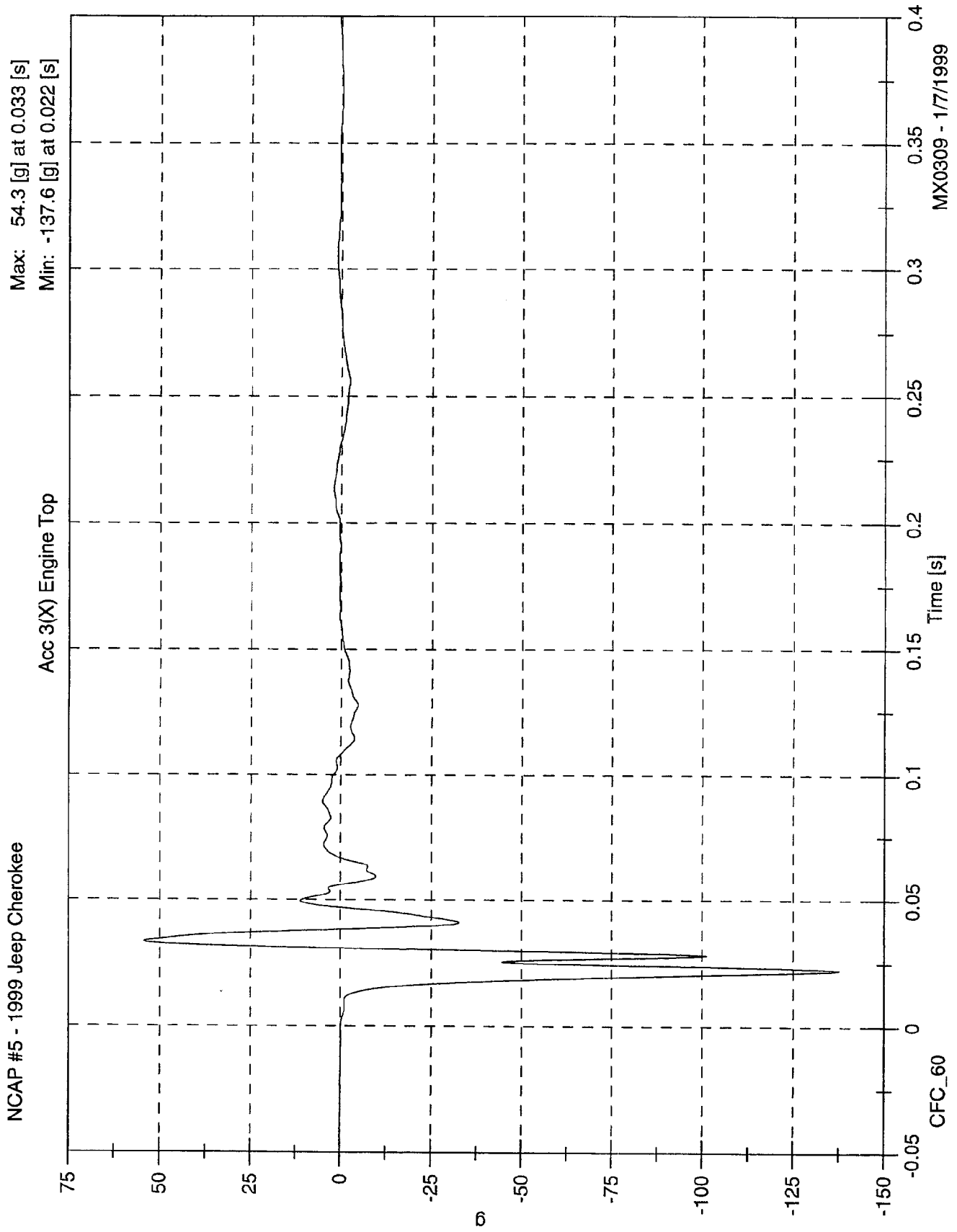
MX0309 - 1/7/1999

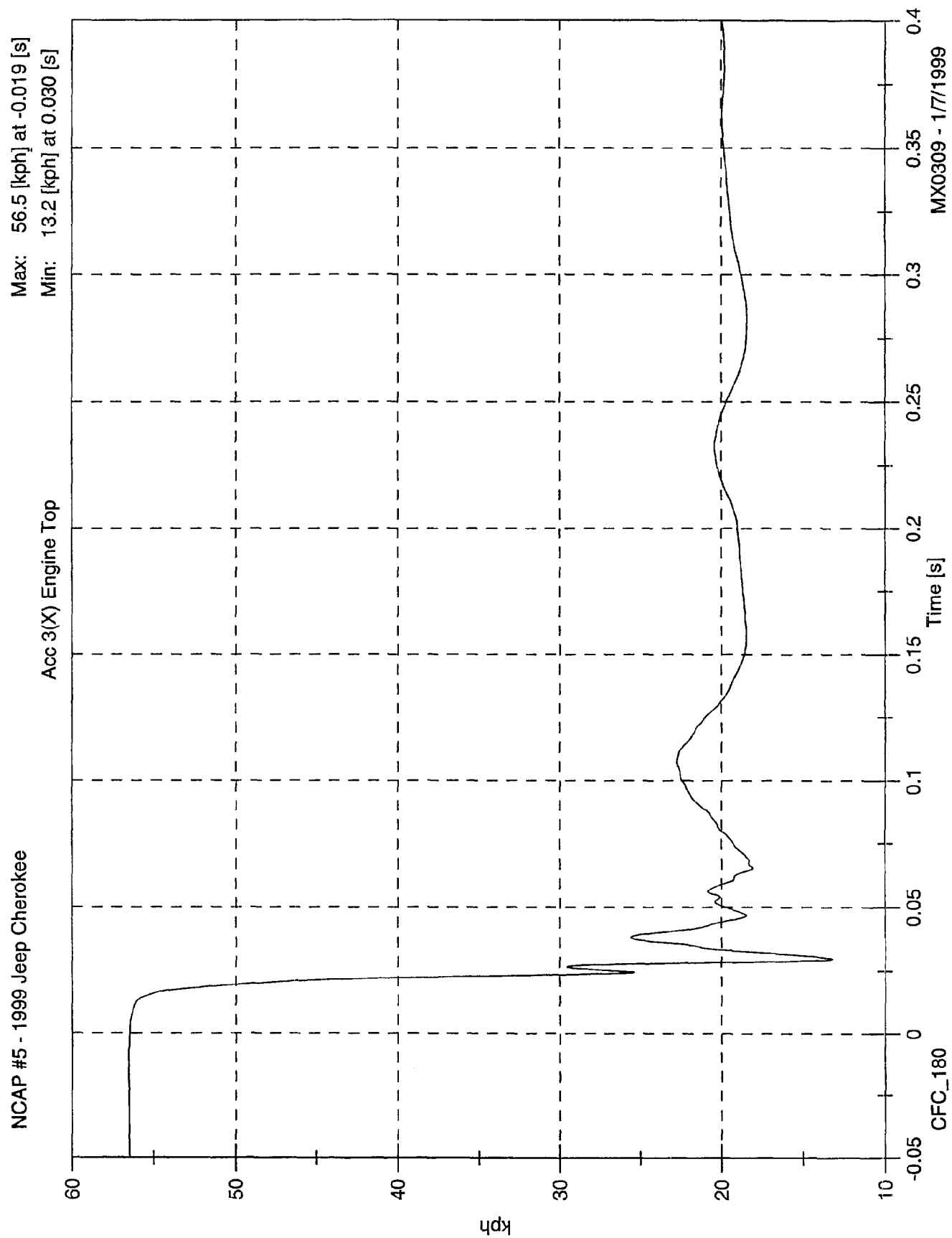








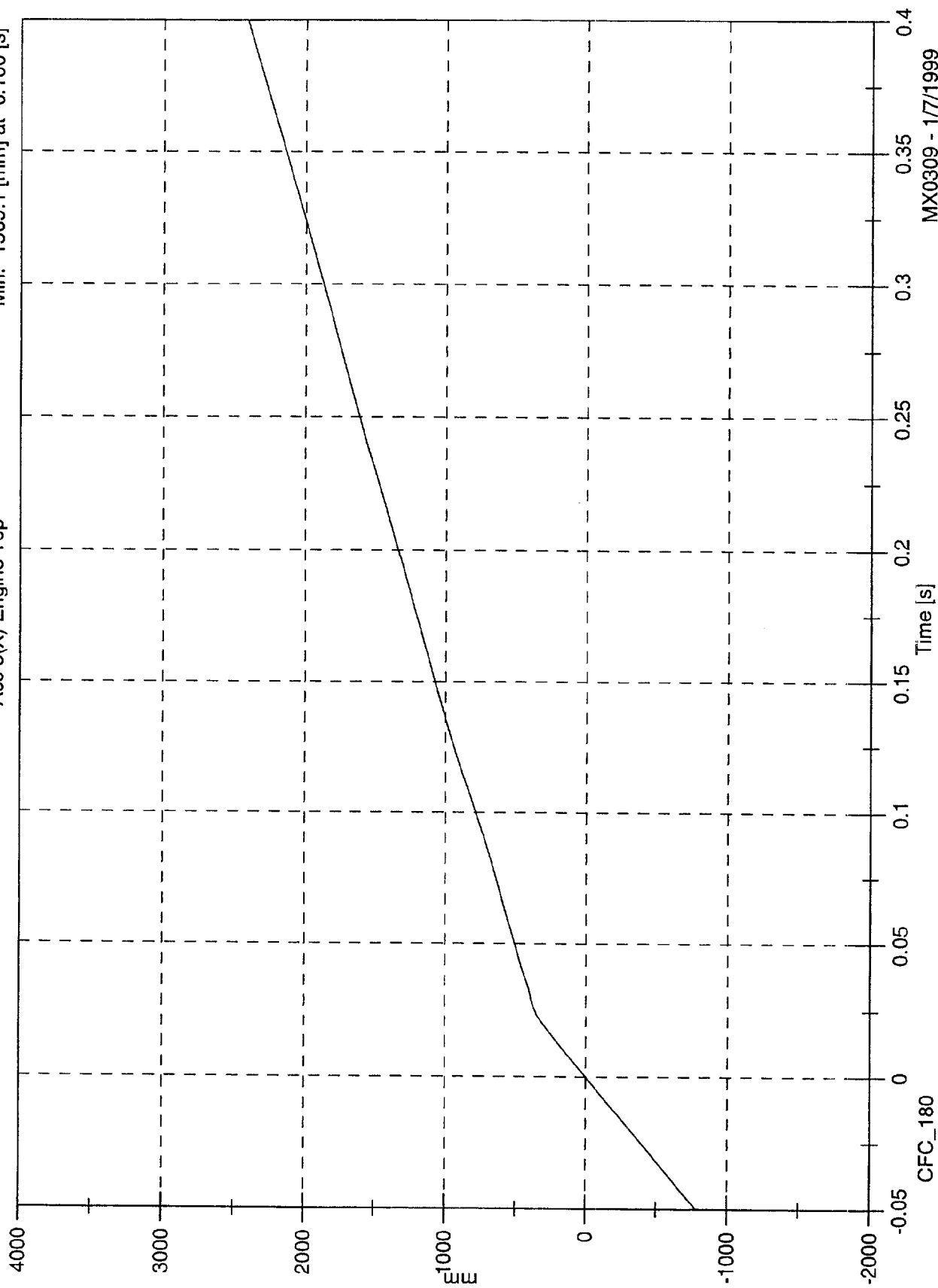




NCAP #5 - 1999 Jeep Cherokee

Max: 3689.4 [mm] at 0.600 [s]
Min: -1569.1 [mm] at -0.100 [s]

Acc 3(X) Engine Top



CFC_180

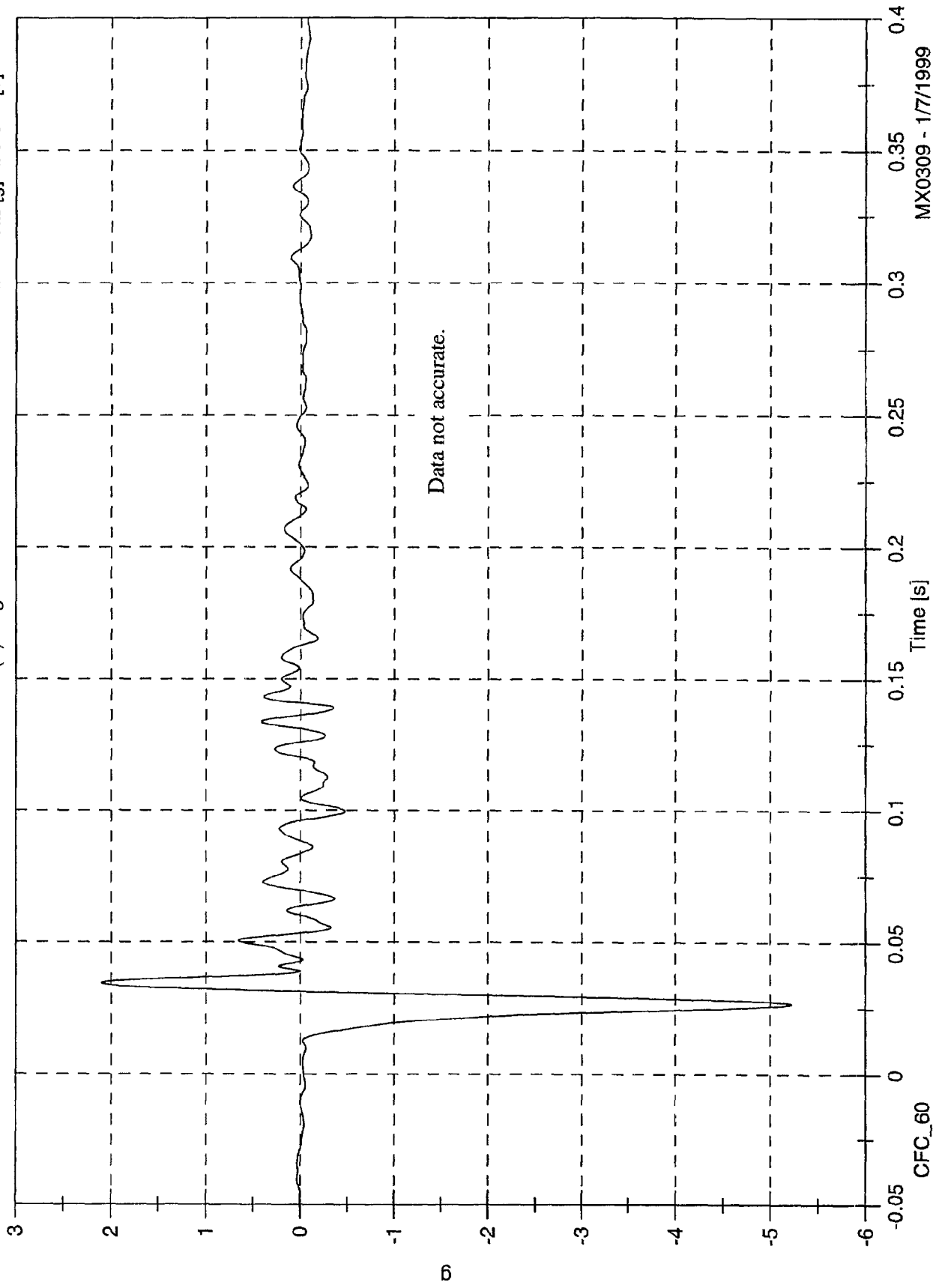
MX0309 - 1/7/1999

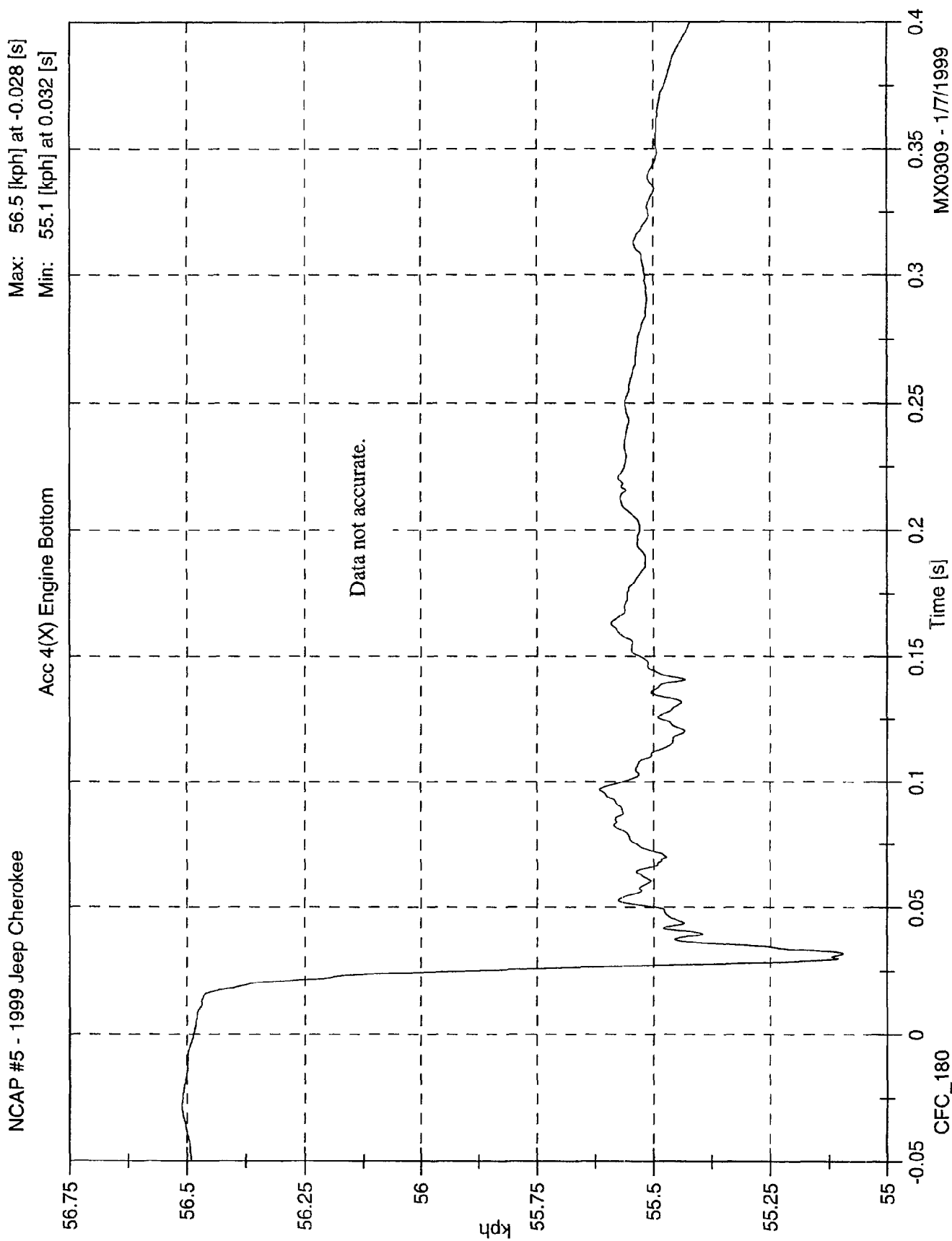
NCAP #5 - 1999 Jeep Cherokee

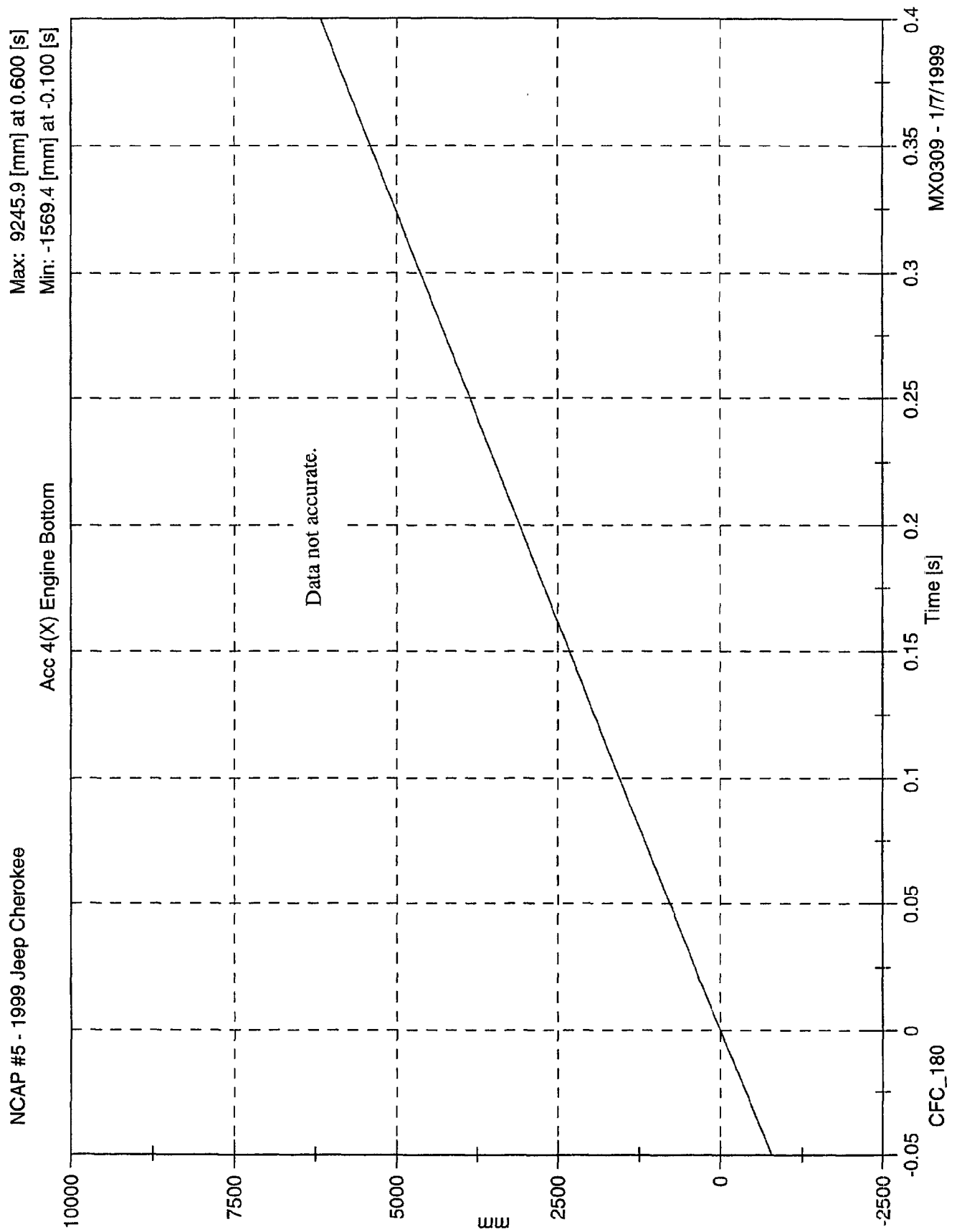
Max: 2.1 [g] at 0.035 [s]

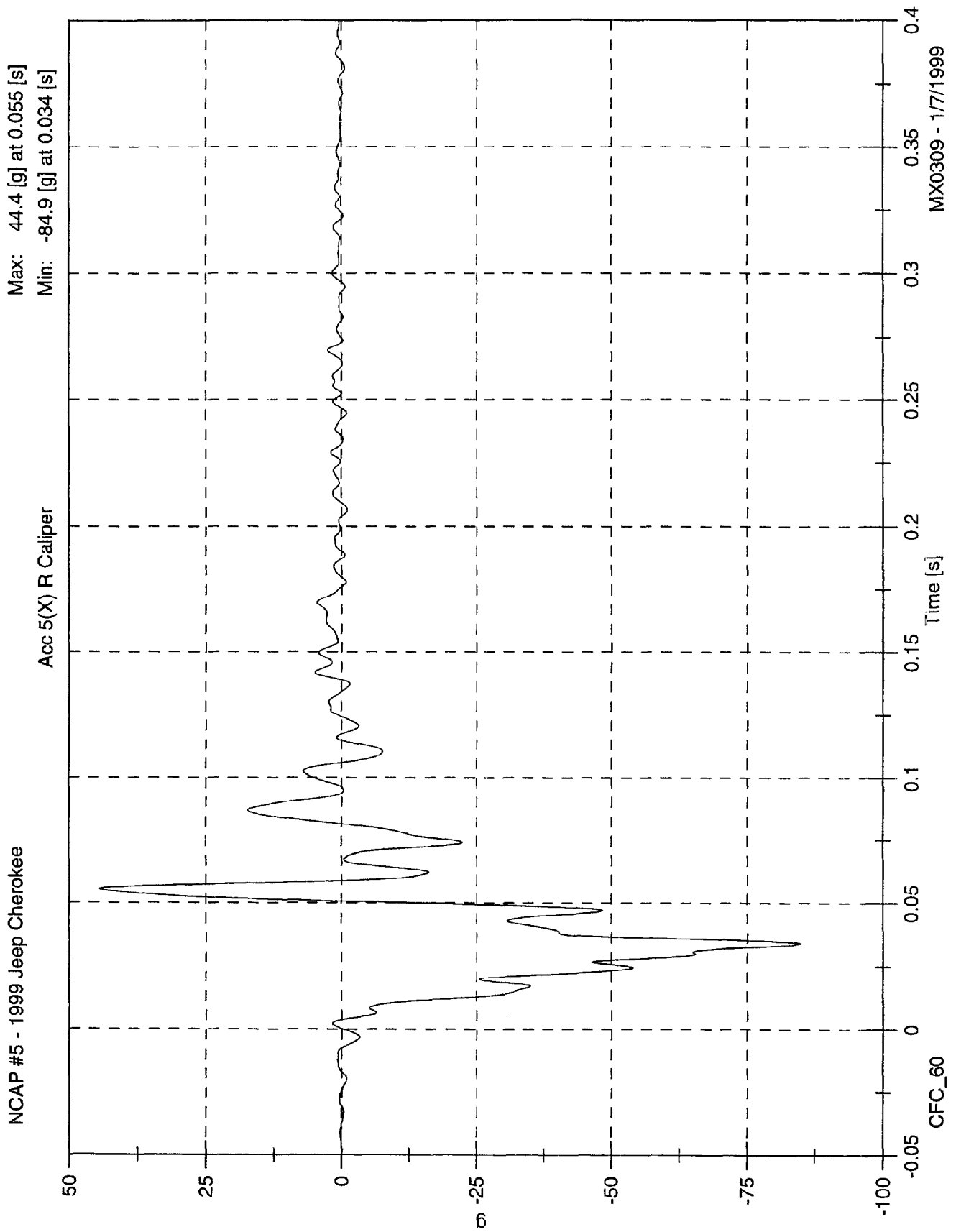
Min: -5.2 [g] at 0.027 [s]

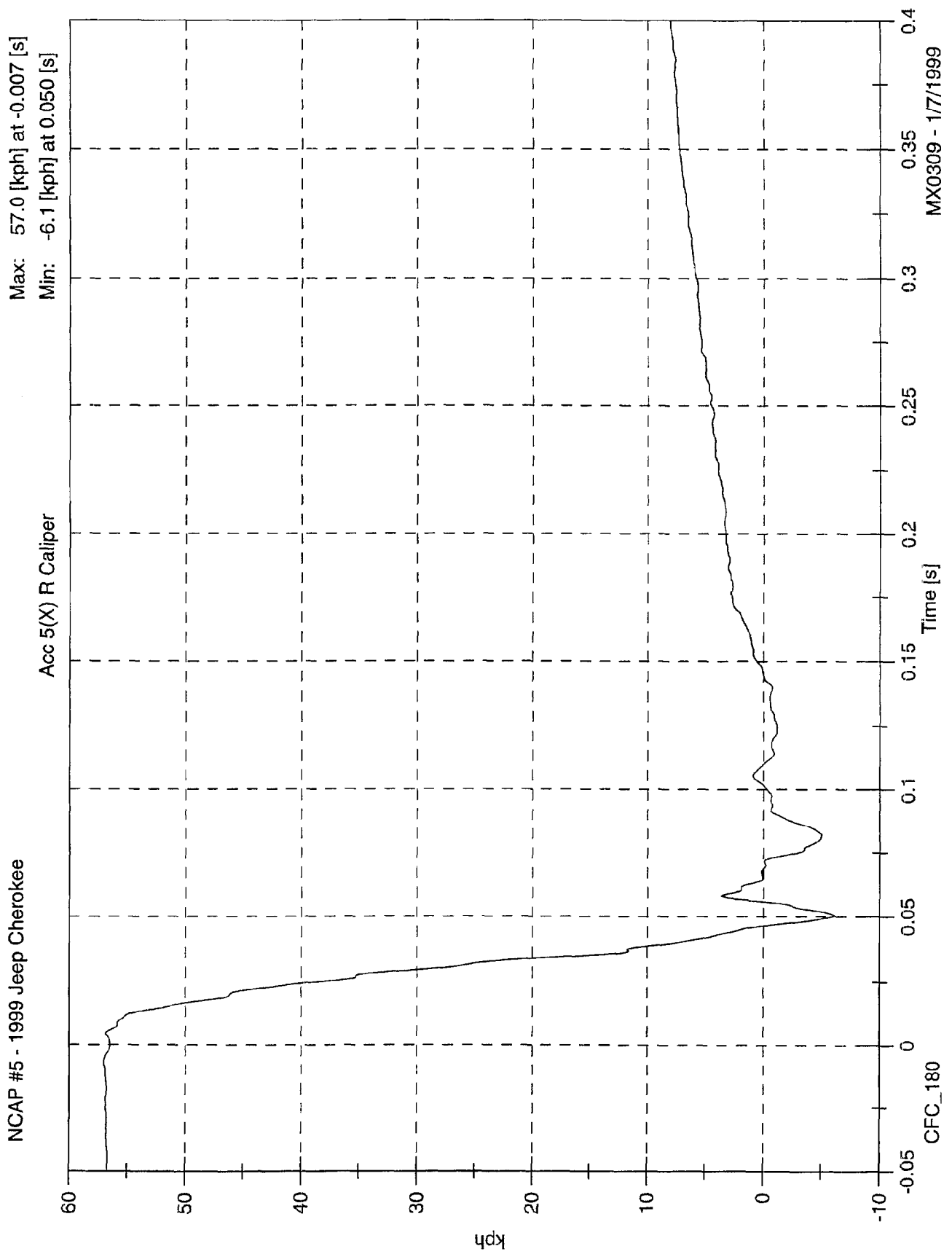
Acc 4(X) Engine Bottom







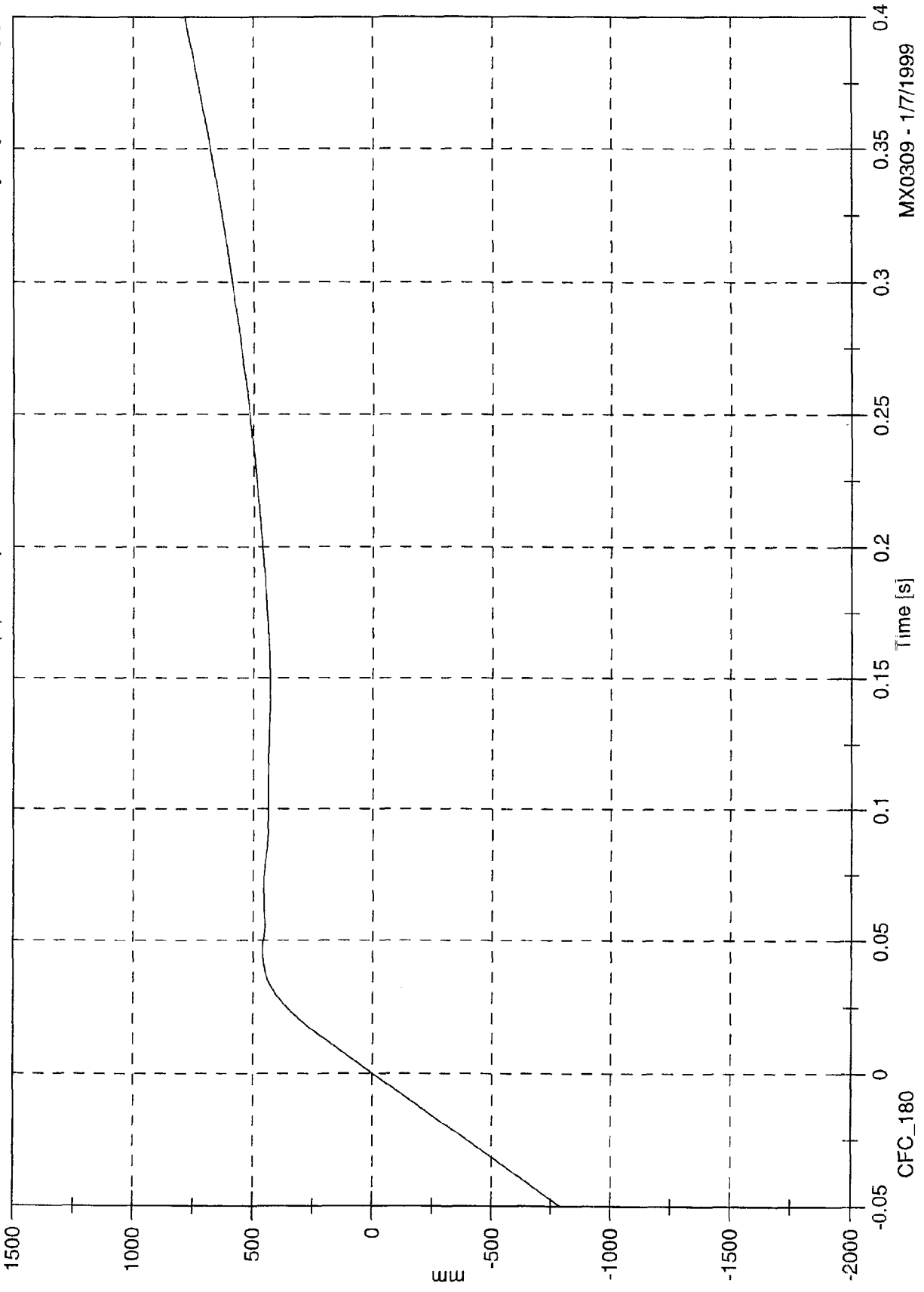




NCAP #5 - 1999 Jeep Cherokee

Acc 5(X) R Caliper

Max: 1499.9 [mm] at 0.600 [s]
Min: -1574.6 [mm] at -0.100 [s]

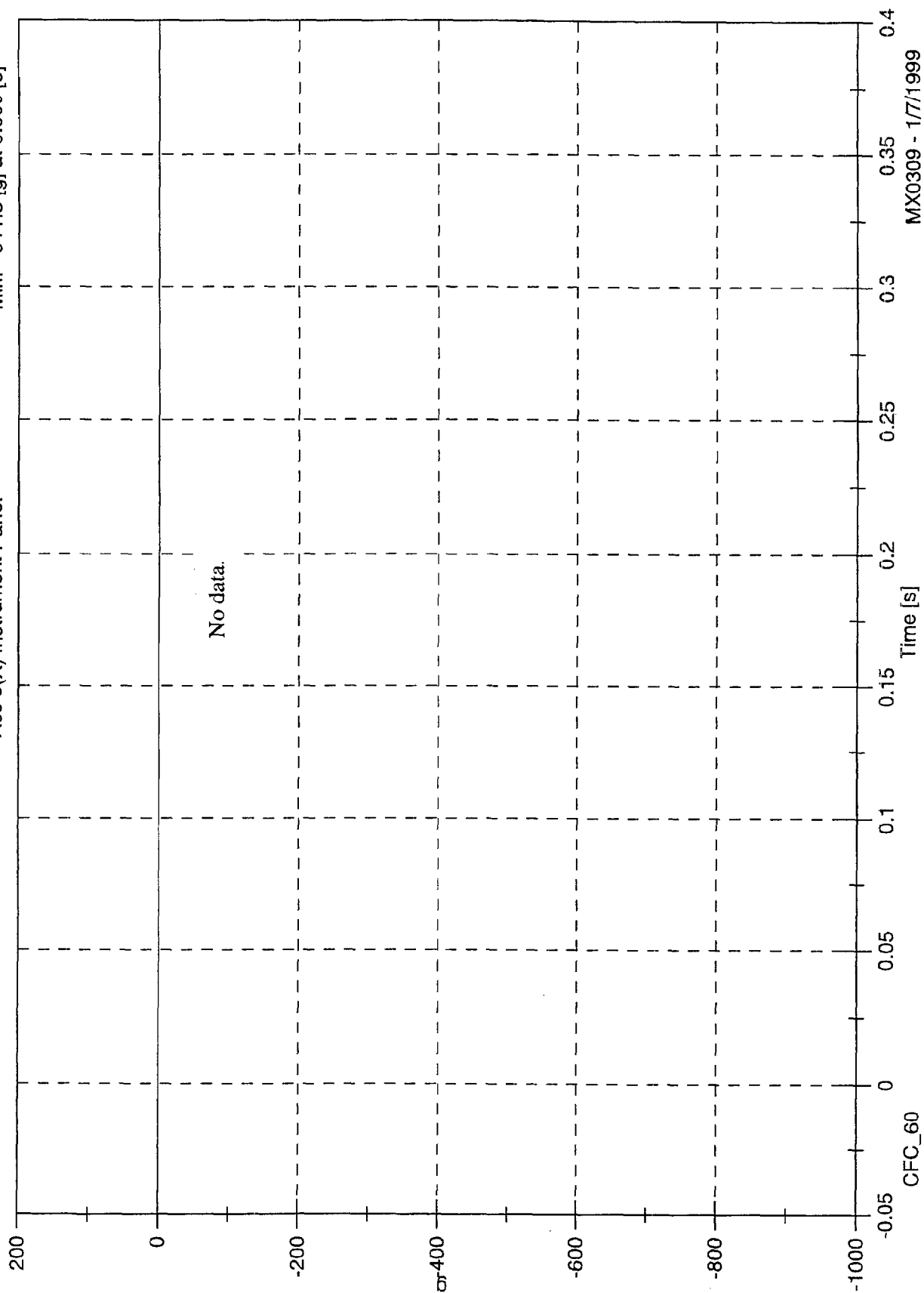


MX0309 - 1/7/1999

NCAP #5 - 1999 Jeep Cherokee

Max: 29.5 [g] at 0.000 [s]
Min: -911.5 [g] at 0.000 [s]

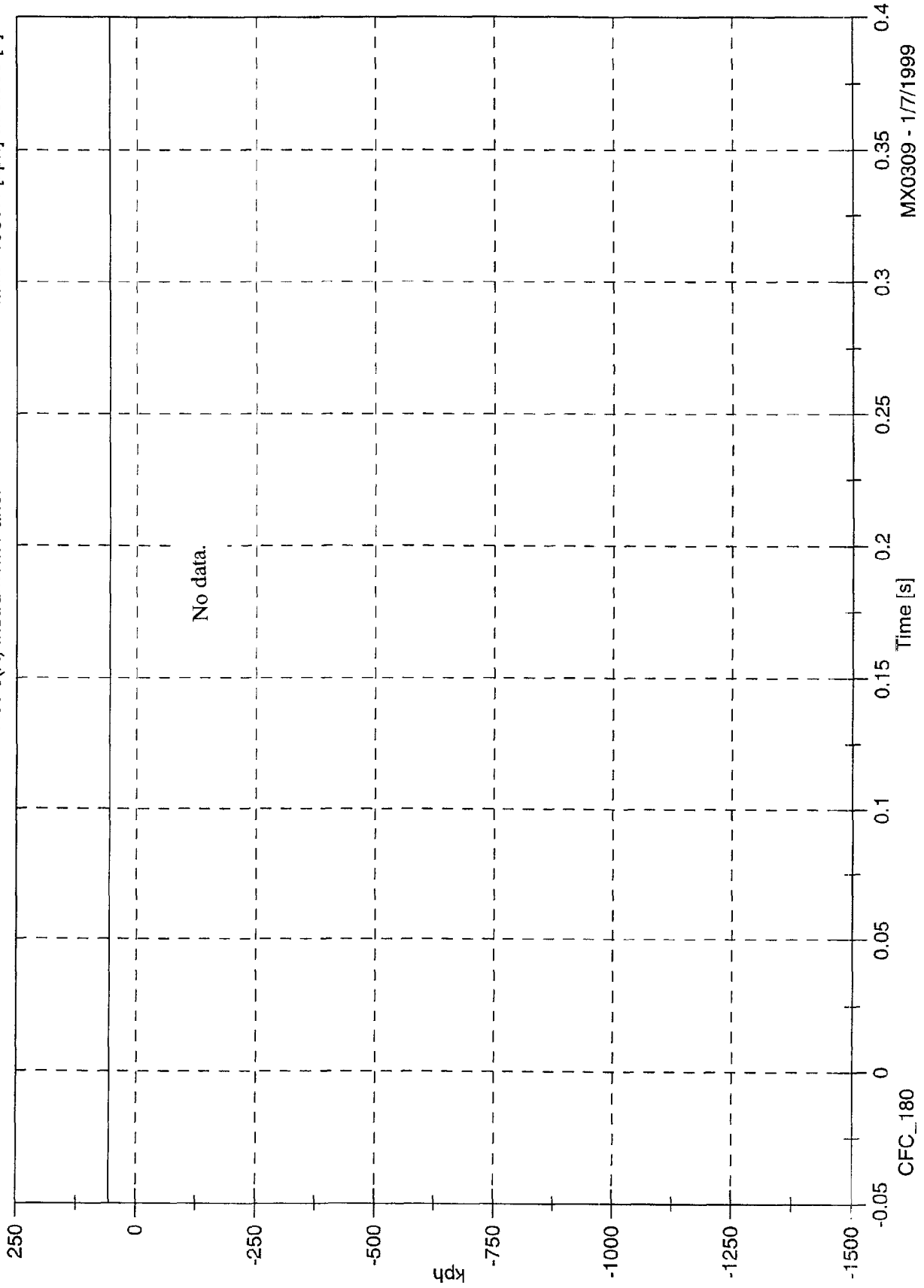
Acc 6(X) Instrument Panel



NCAP #5 - 1999 Jeep Cherokee

Acc 6(X) Instrument Panel

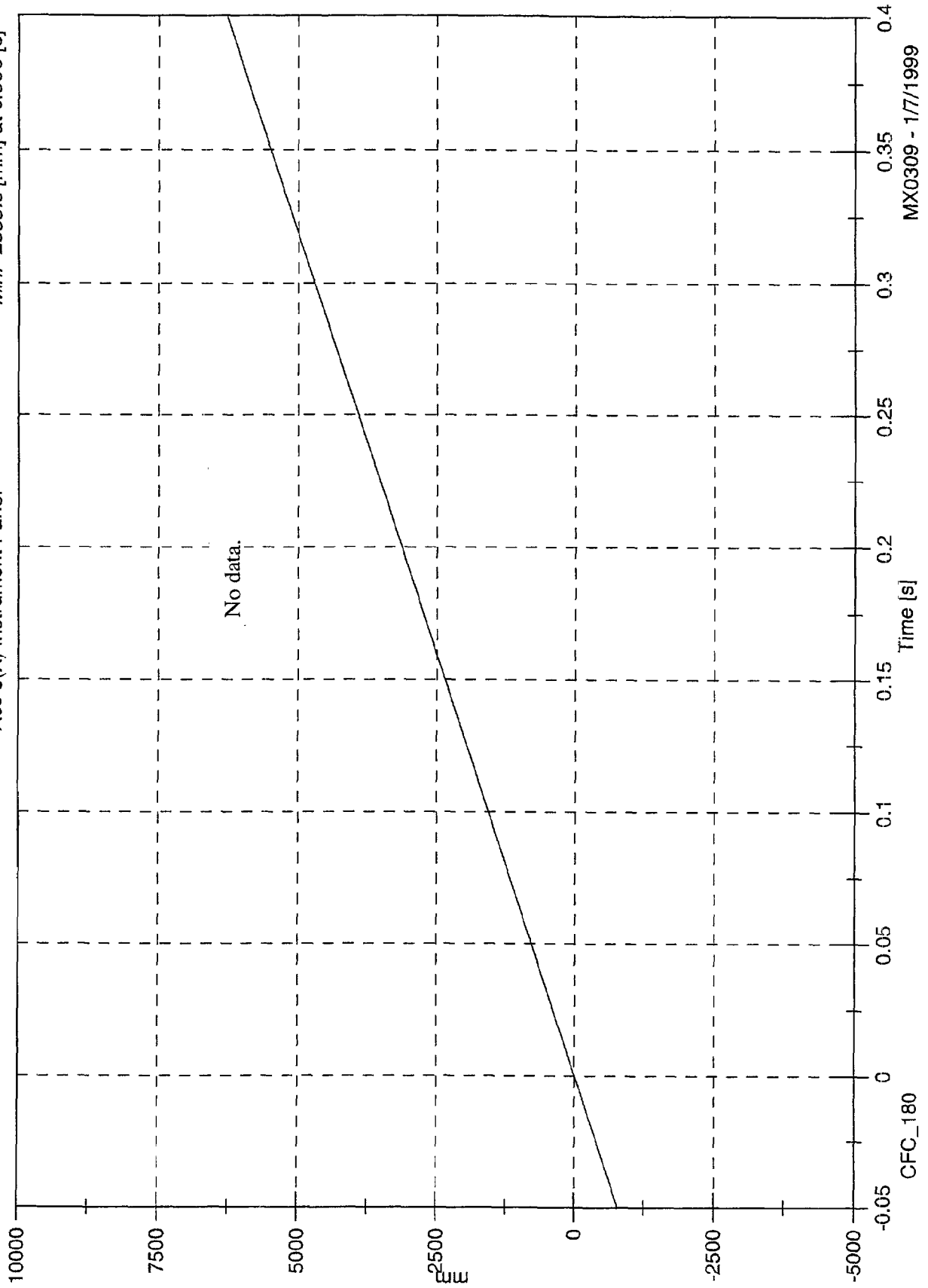
Max: 56.5 [kph] at 0.514 [s]
Min: -1380.1 [kph] at 0.600 [s]

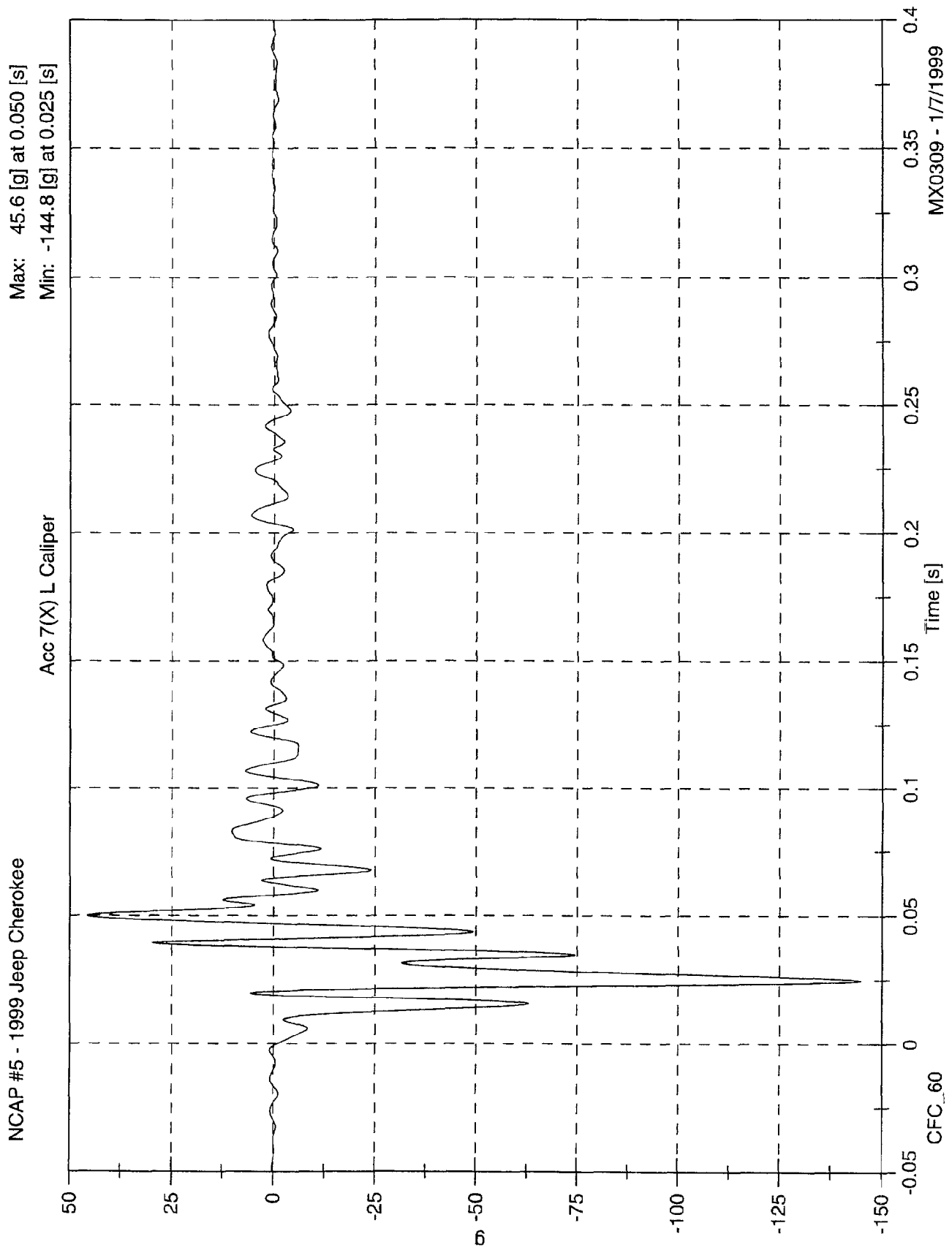


NCAP #5 - 1999 Jeep Cherokee

Acc 6(X) Instrument Panel

Max: 8225.3 [mm] at 0.530 [s]
Min: -2535.3 [mm] at 0.600 [s]

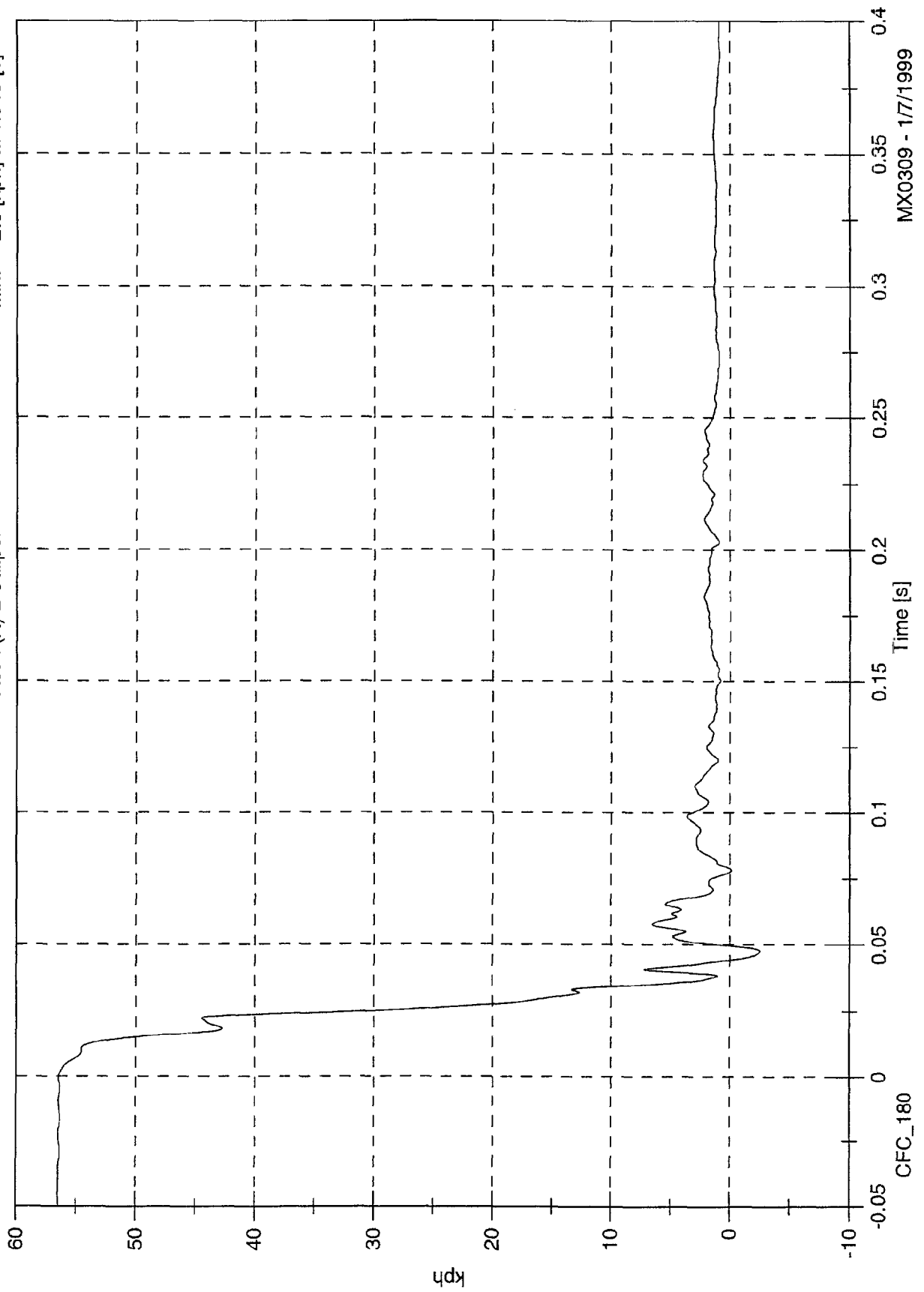




NCAP #5 - 1999 Jeep Cherokee

Max: 56.5 [kph] at -0.022 [s]
Min: -2.5 [kph] at 0.048 [s]

Acc 7(X) L Caliper

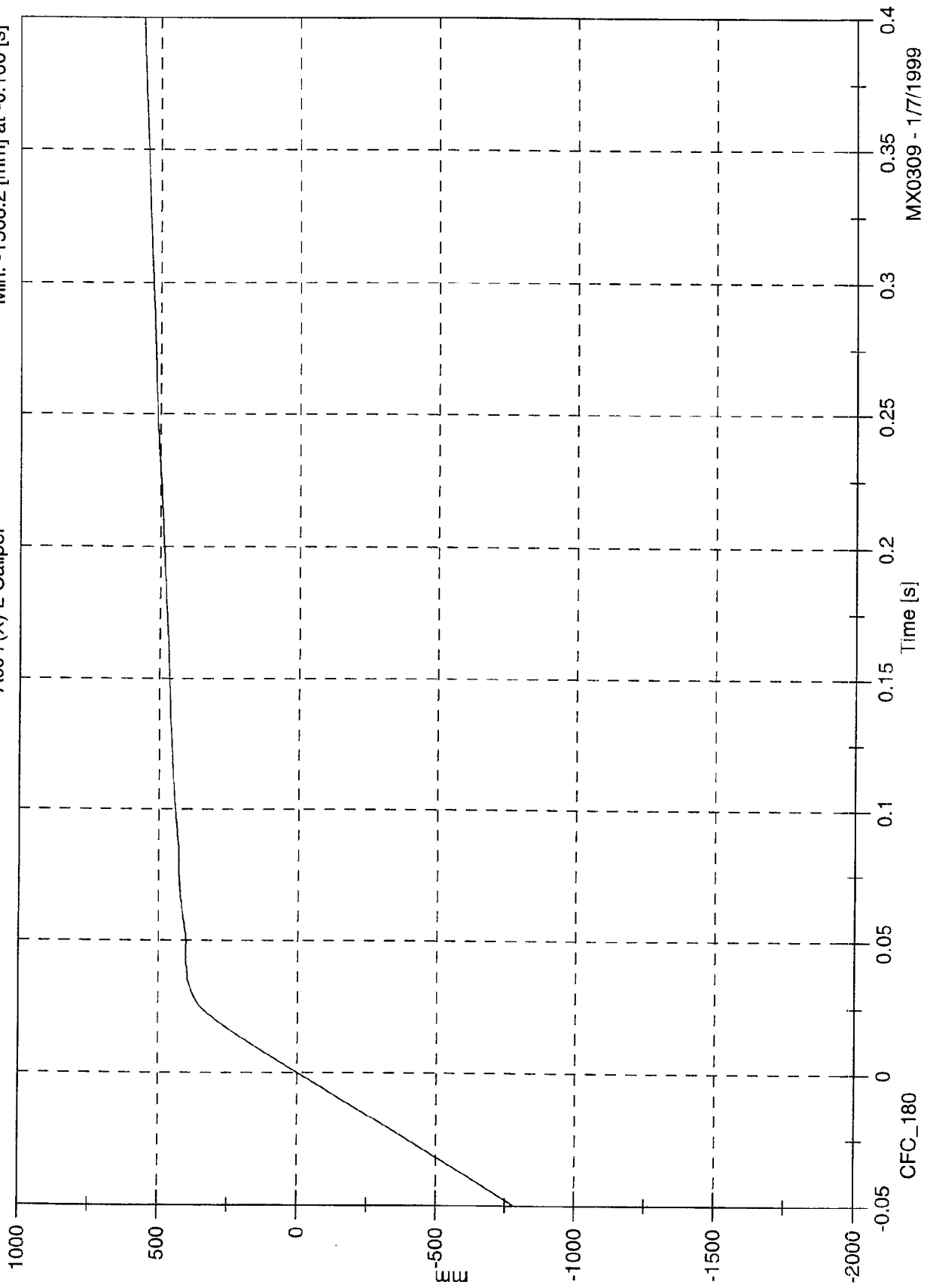


MX0309 - 1/7/1999

NCAP #5 - 1999 Jeep Cherokee

Max: 774.9 [mm] at 0.600 [s]
Min: -1568.2 [mm] at -0.100 [s]

Acc 7(X) L Caliper



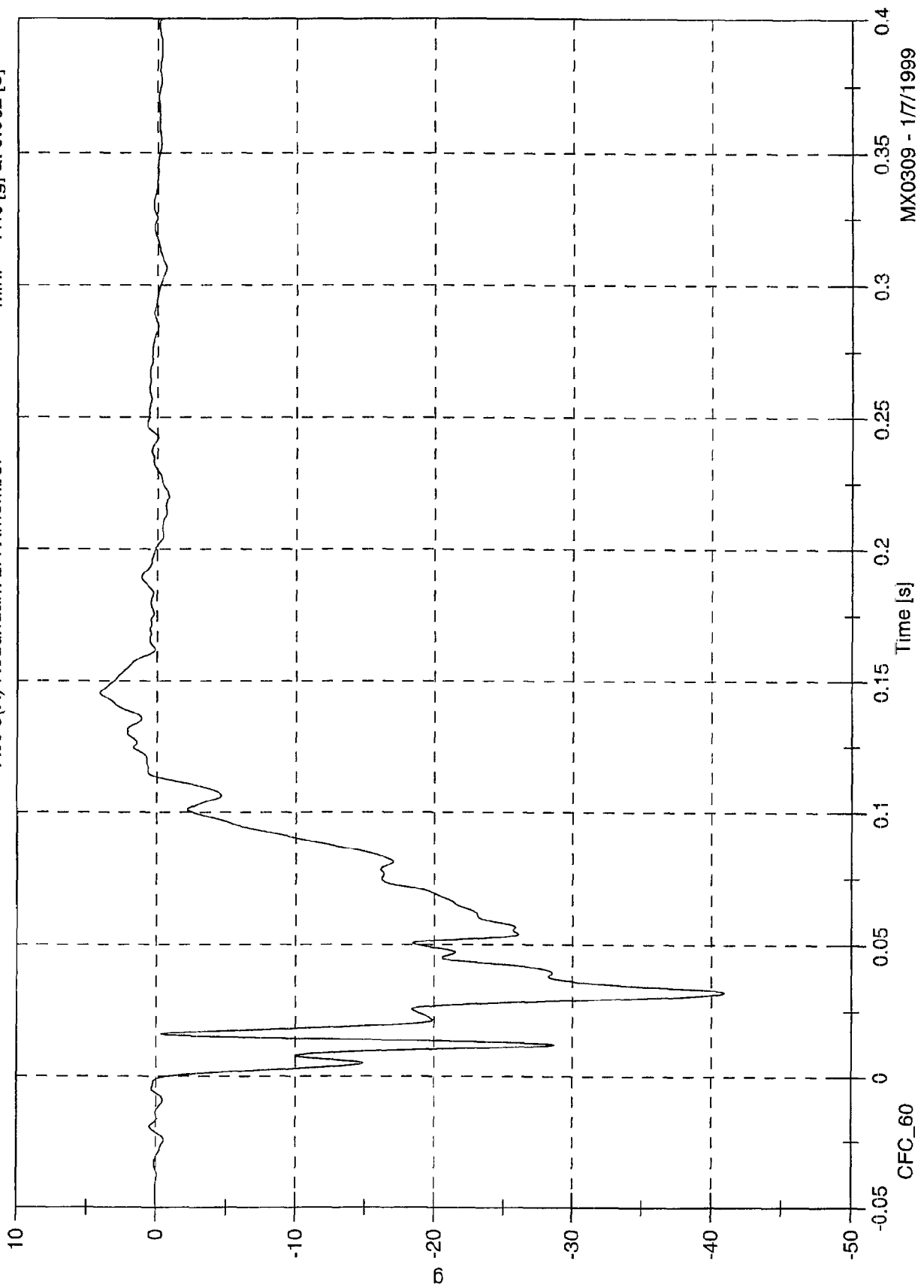
MX0309 - 1/7/1999

NCAP #5 - 1999 Jeep Cherokee

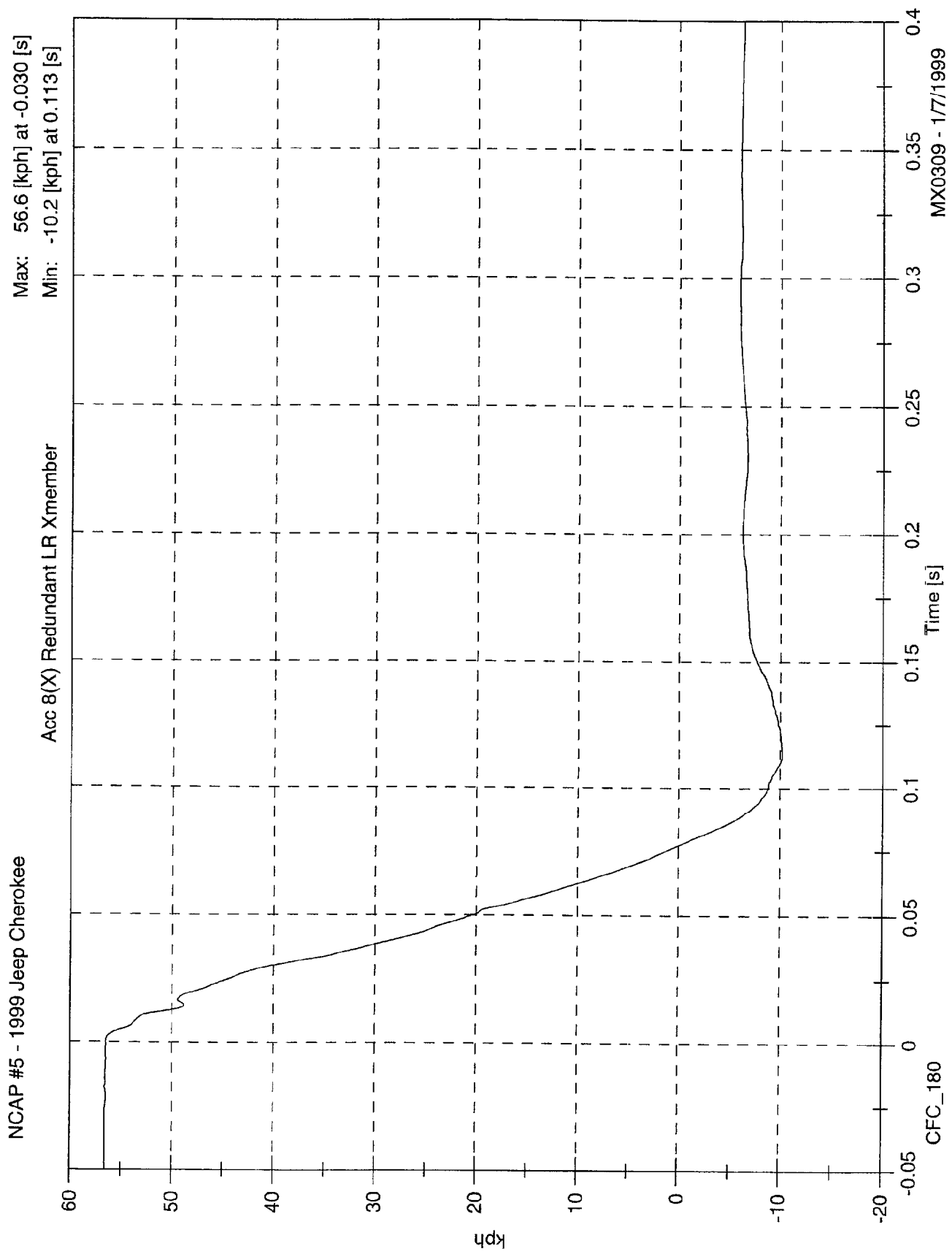
Max: 4.1 [g] at 0.145 [s]

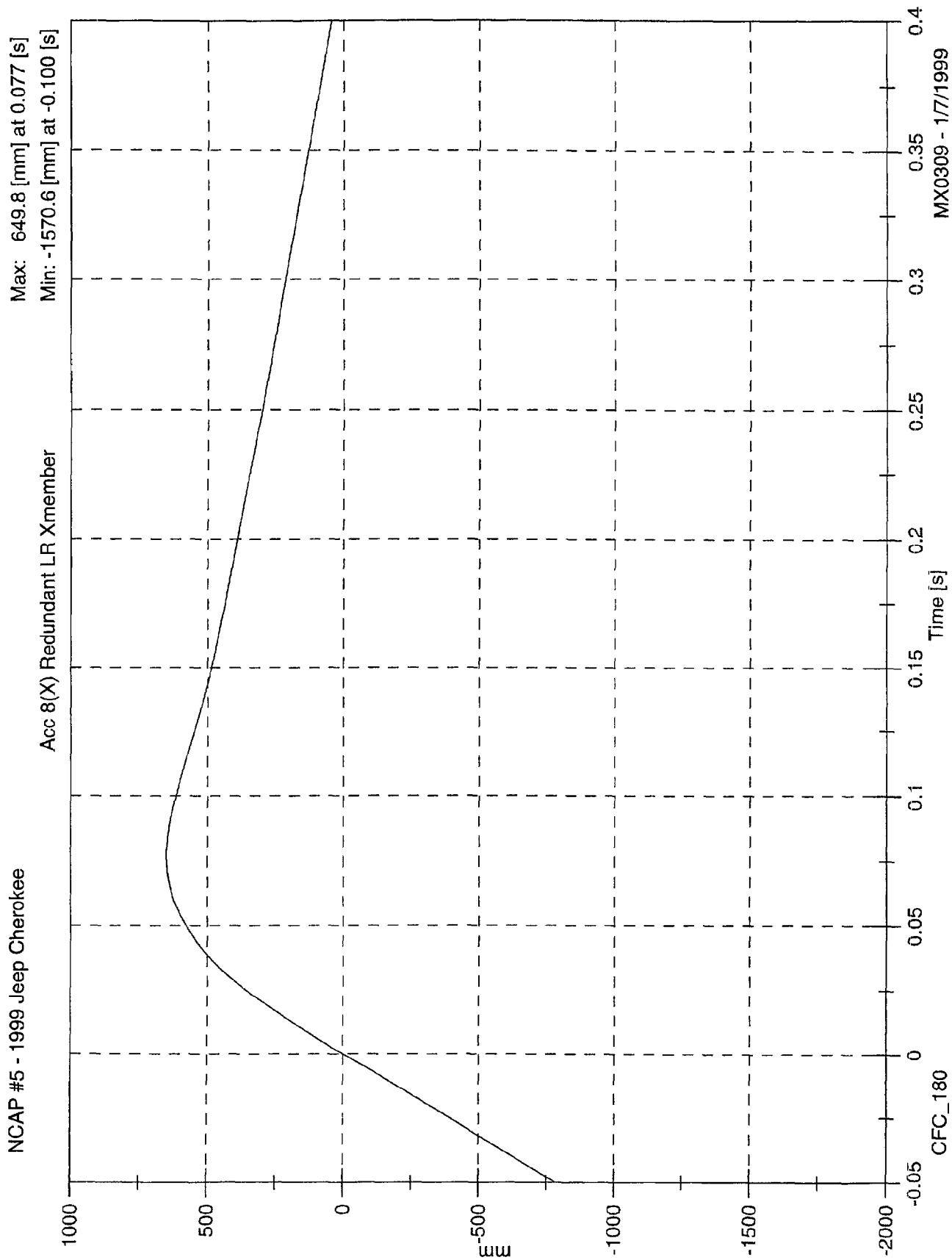
Min: -41.0 [g] at 0.032 [s]

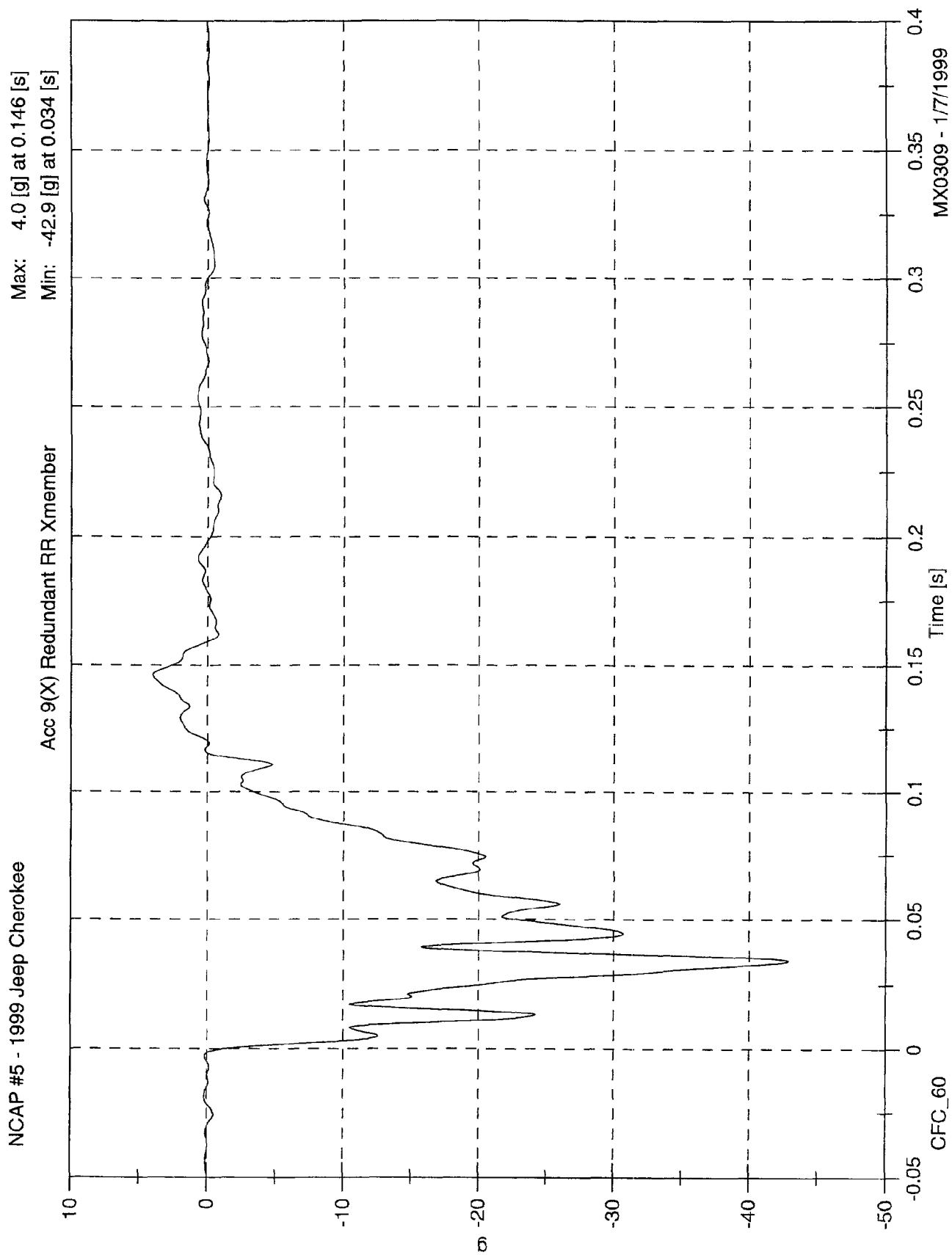
Acc 8(X) Redundant LR Xmember



MX0309 - 1/7/1999



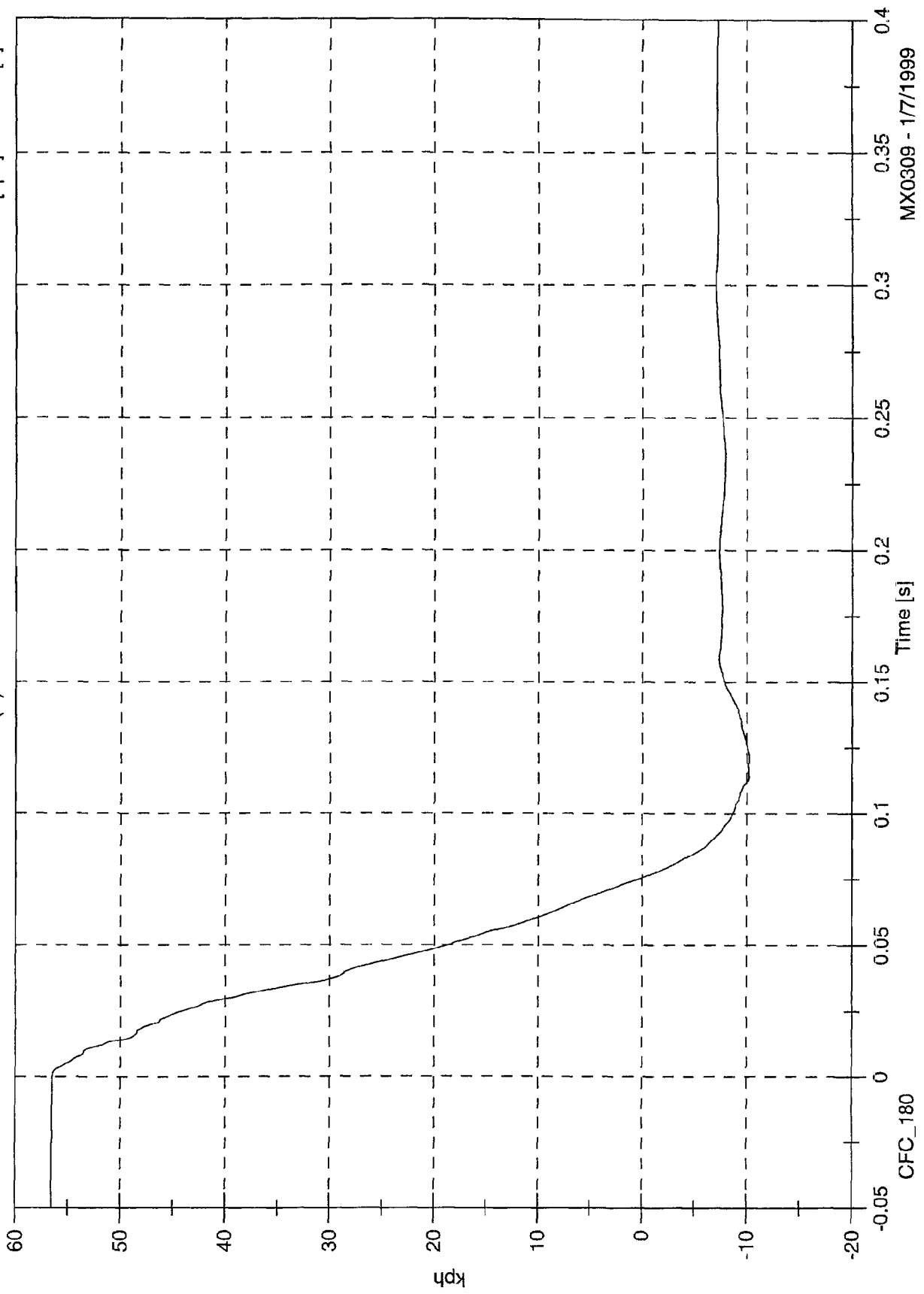




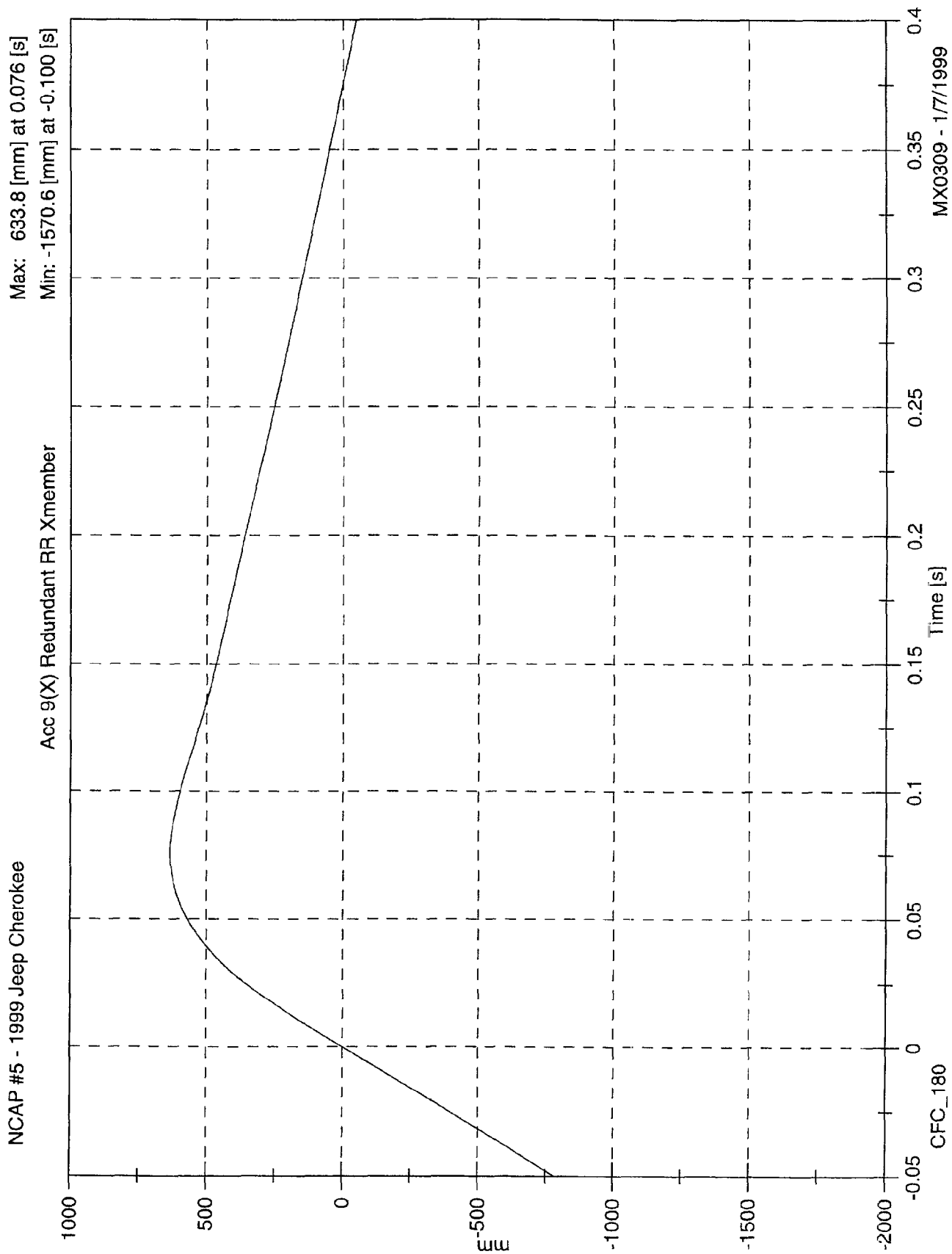
NCAP #5 - 1999 Jeep Cherokee

Acc 9(X) Redundant RR Xmember

Max: 56.6 [kph] at -0.032 [s]
Min: -10.2 [kph] at 0.114 [s]



MX0309 - 1/7/1999



NHTSA TEST NO. MX0309

LOAD CELL BARRIER DATA

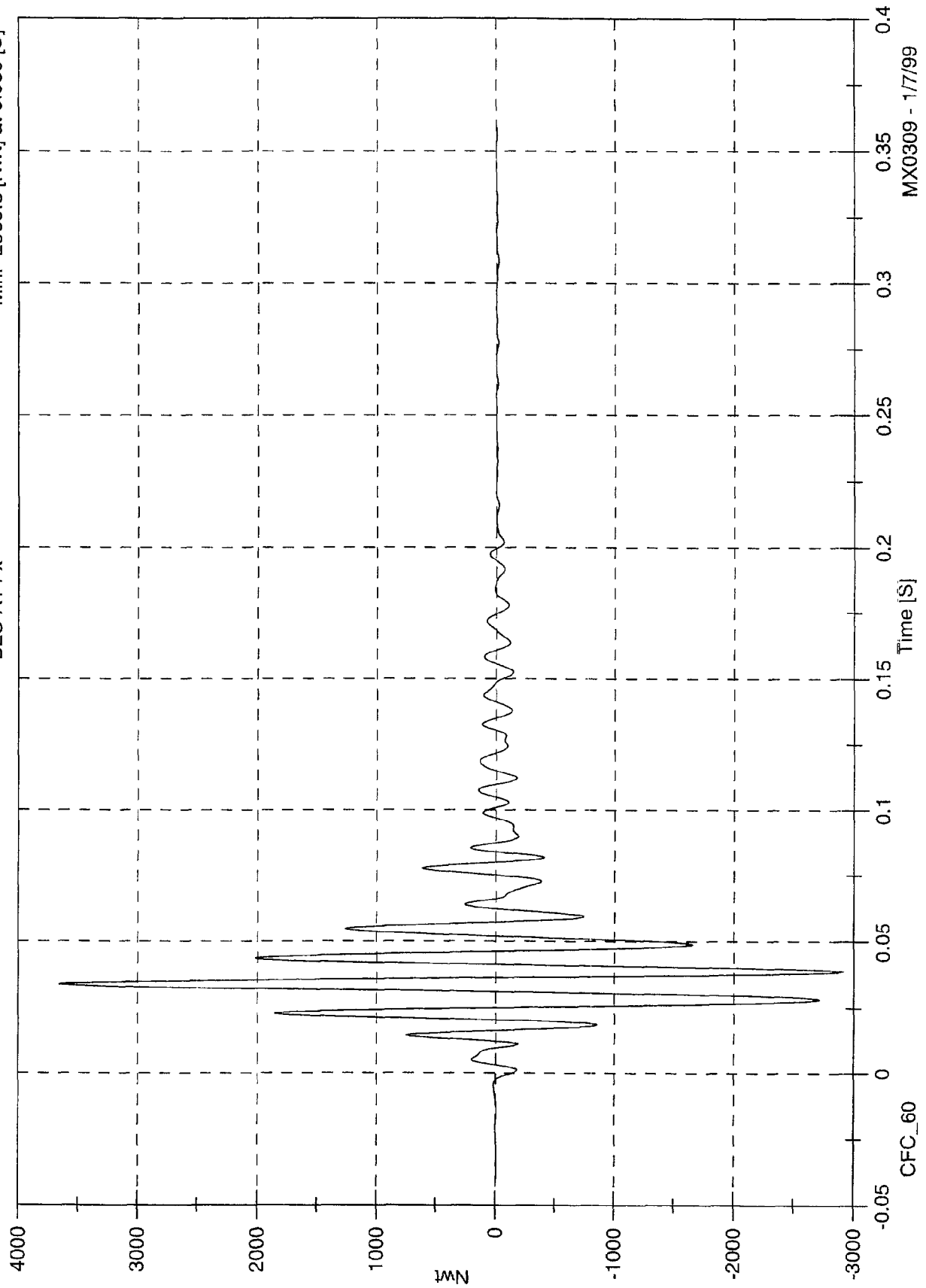
FILTER CHANNEL CLASS

60

NCAP #5 - 1999 JEEP CHEROKEE

Max: 3655.8 [Nwt] at 0.034 [S]
Min: -2909.8 [Nwt] at 0.039 [S]

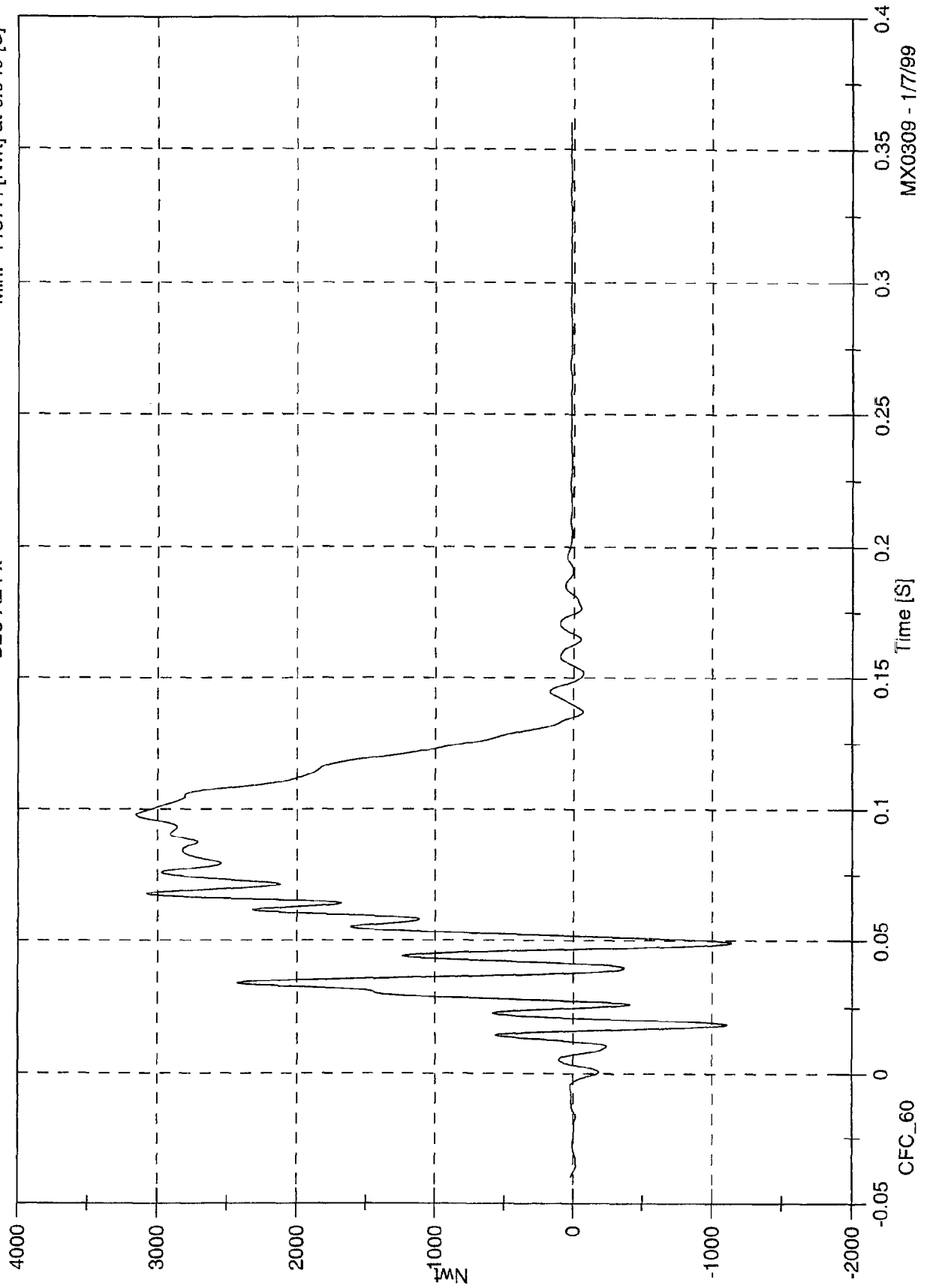
BLC A1 Fx



NCAP #5 - 1999 JEEP CHEROKEE

Max: 3156.2 [Nwt] at 0.098 [S]
Min: -1137.4 [Nwt] at 0.049 [S]

BLC A2 Fx

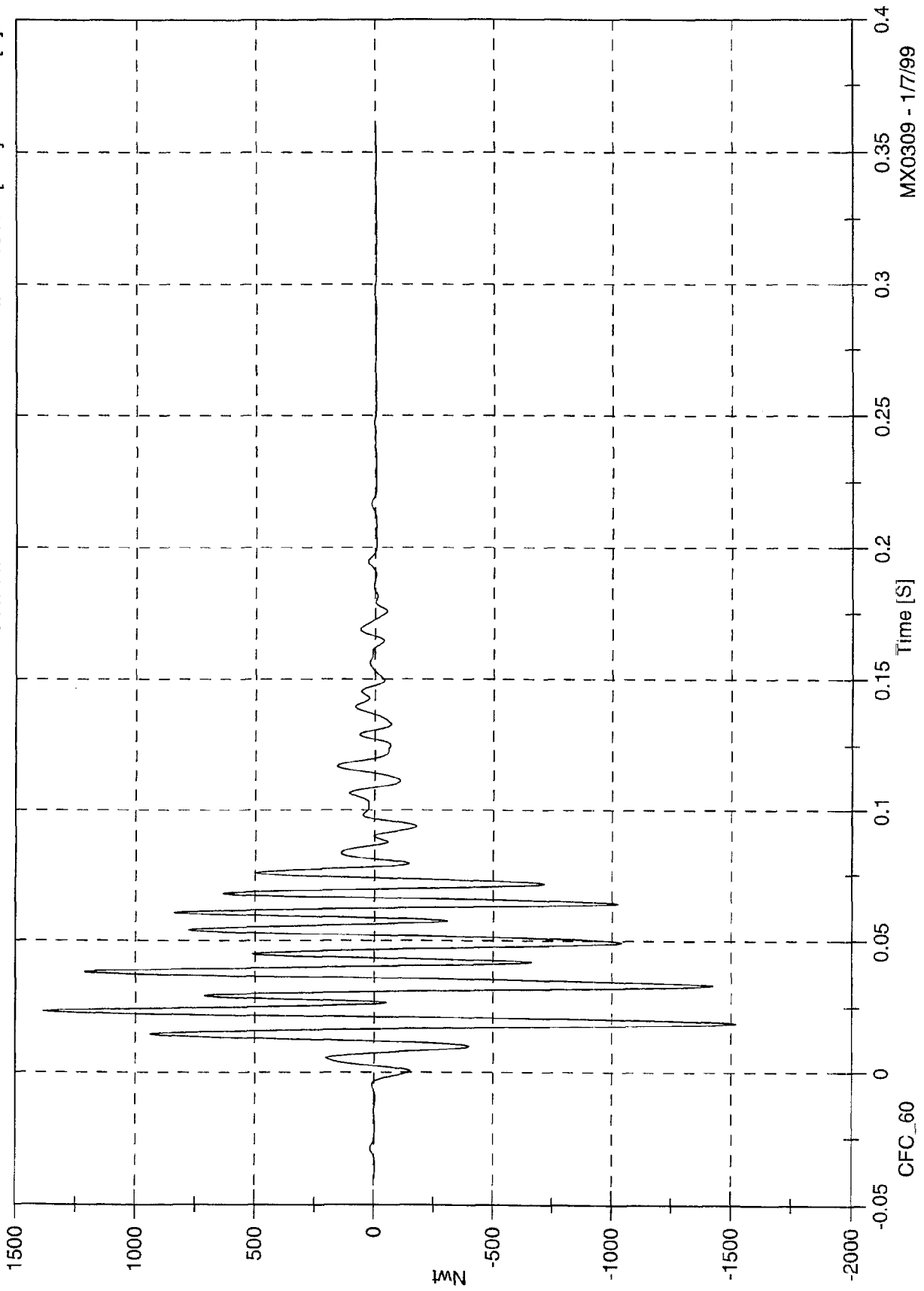


MX0309 - 1/7/99

NCAP #5 - 1999 JEEP CHEROKEE

BLC A3 Fx

Max: 1384.2 [Nwt] at 0.023 [S]
Min: -1519.7 [Nwt] at 0.019 [S]

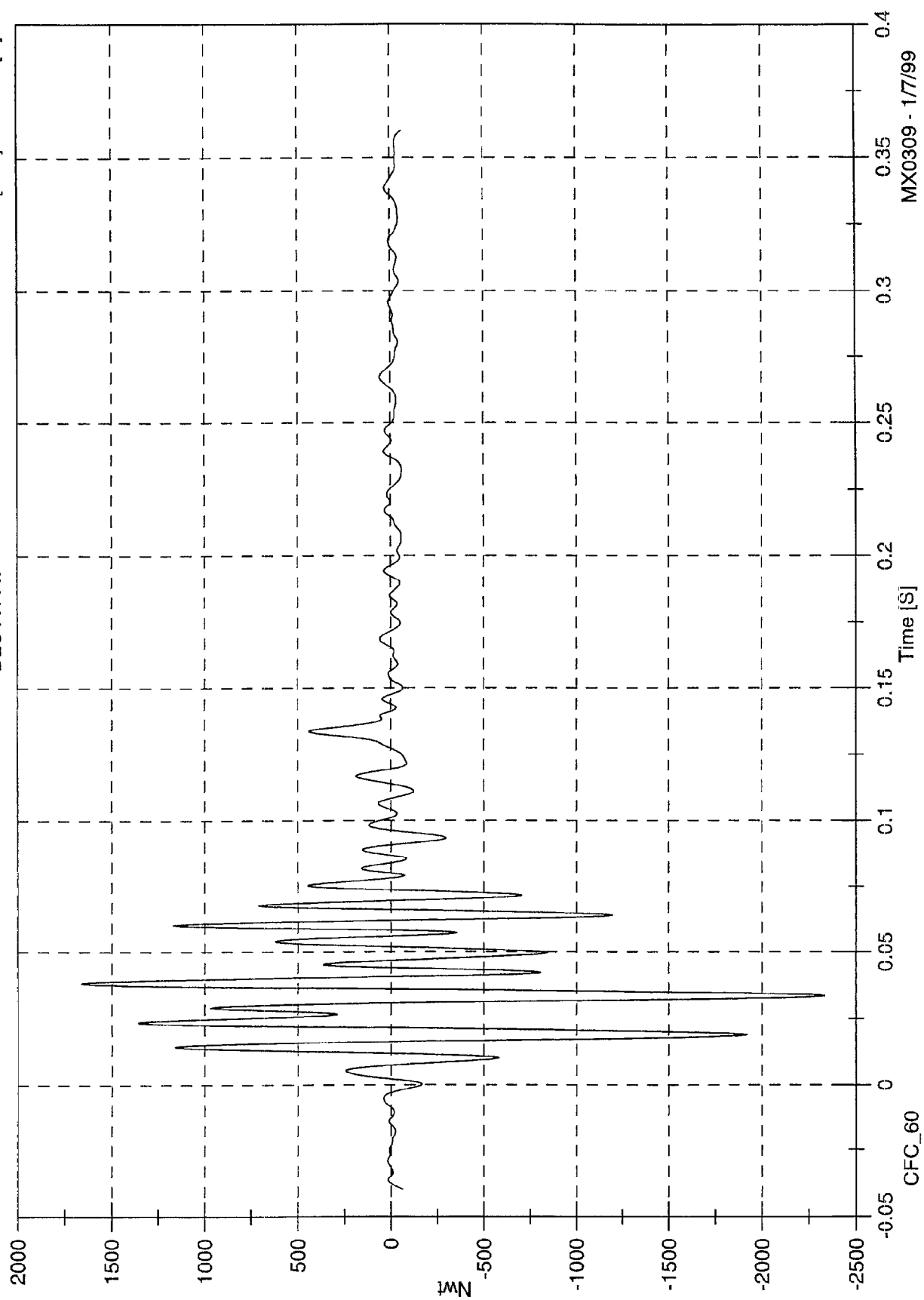


NCAP #5 - 1999 JEEP CHEROKEE

Max: 1662.0 [Nwt] at 0.038 [S]

Min: -2331.7 [Nwt] at 0.033 [S]

BLC A4 Fx

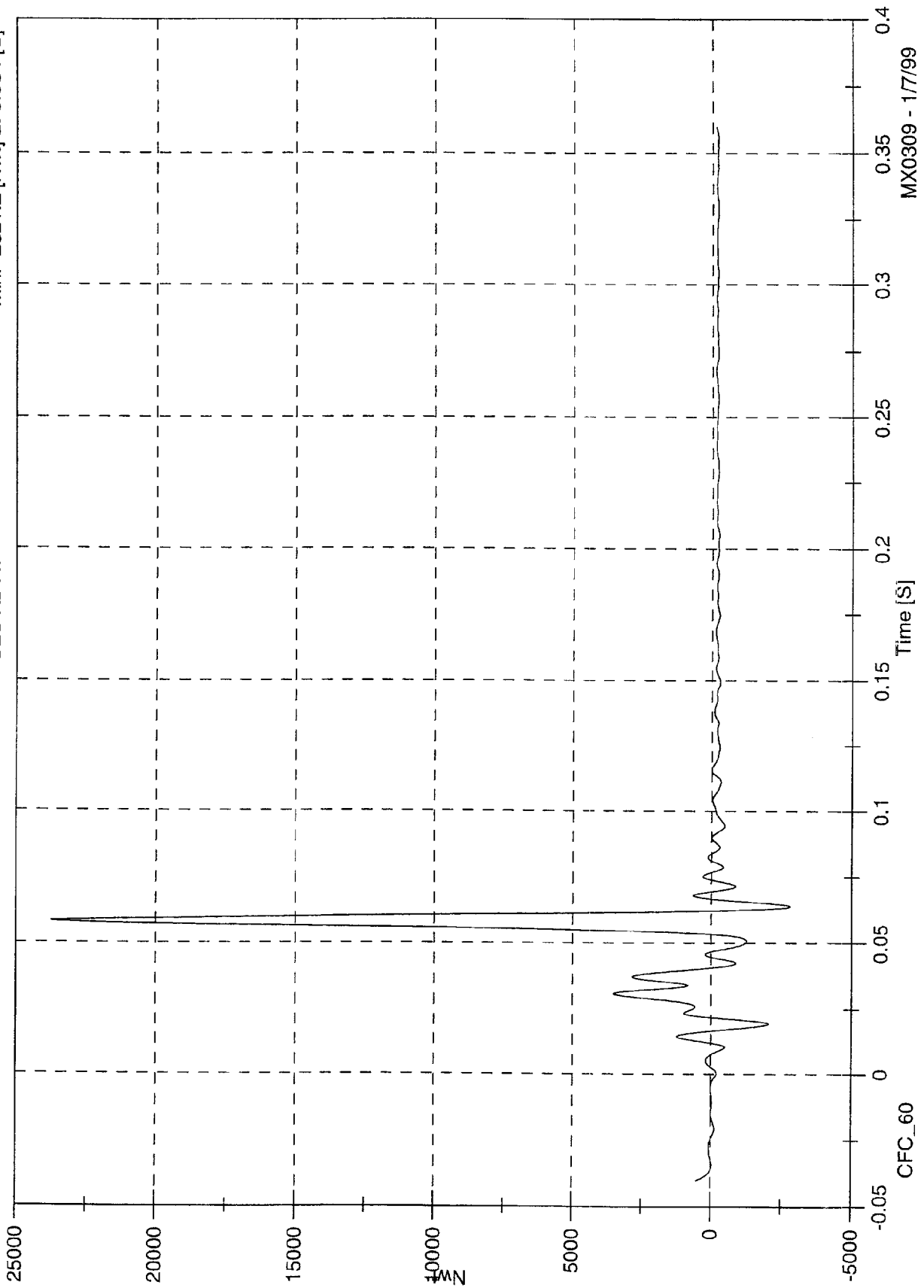


MX0309 - 17/99

NCAP #5 - 1999 JEEP CHEROKEE

BLC A5 Fx

Max: 23734.9 [Nwt] at 0.058 [S]
Min: -2821.2 [Nwt] at 0.064 [S]

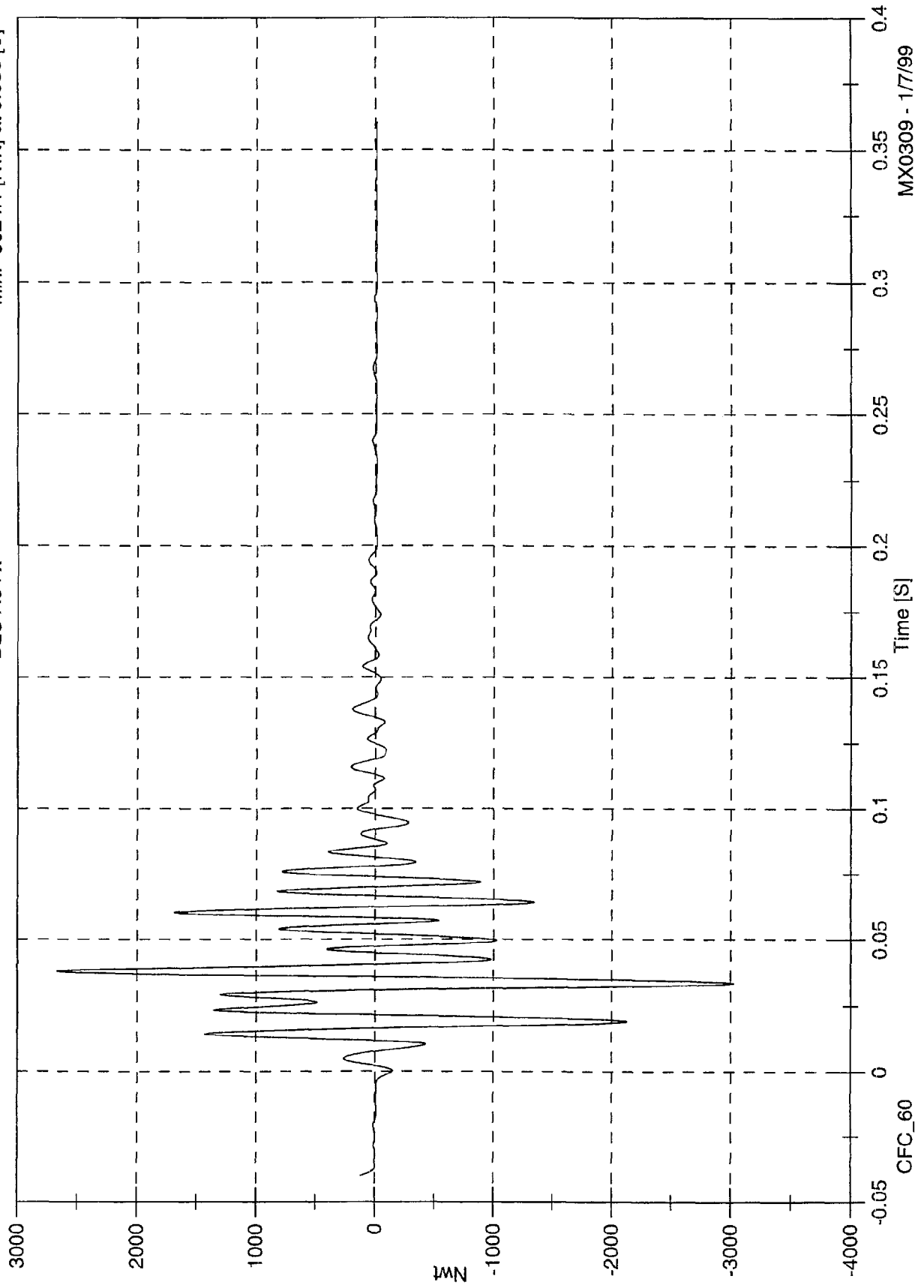


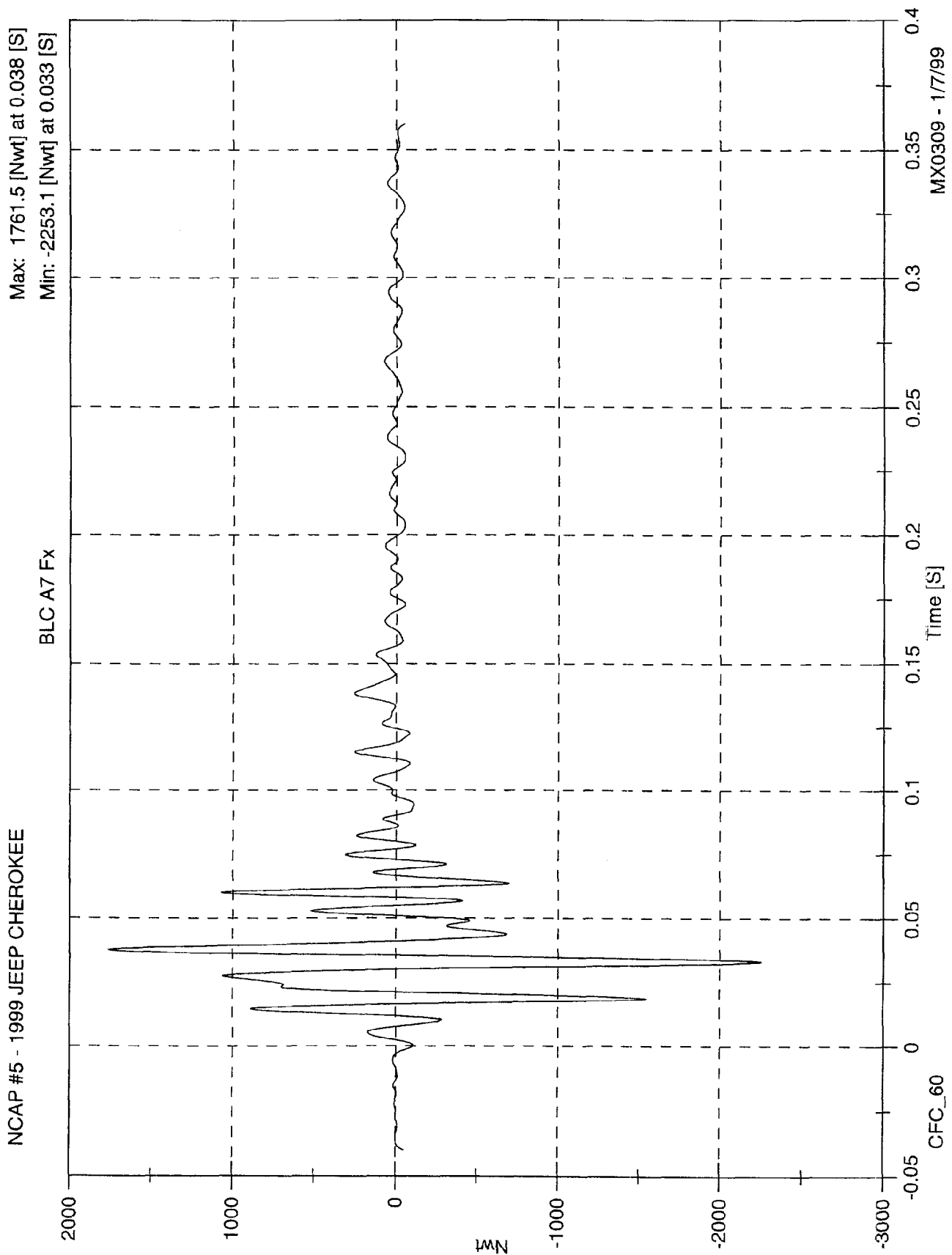
MX0309 - 1/7/99

NCAP #5 - 1999 JEEP CHEROKEE

BLC A6 Fx

Max: 2668.8 [Nwt] at 0.038 [S]
Min: -3024.1 [Nwt] at 0.033 [S]

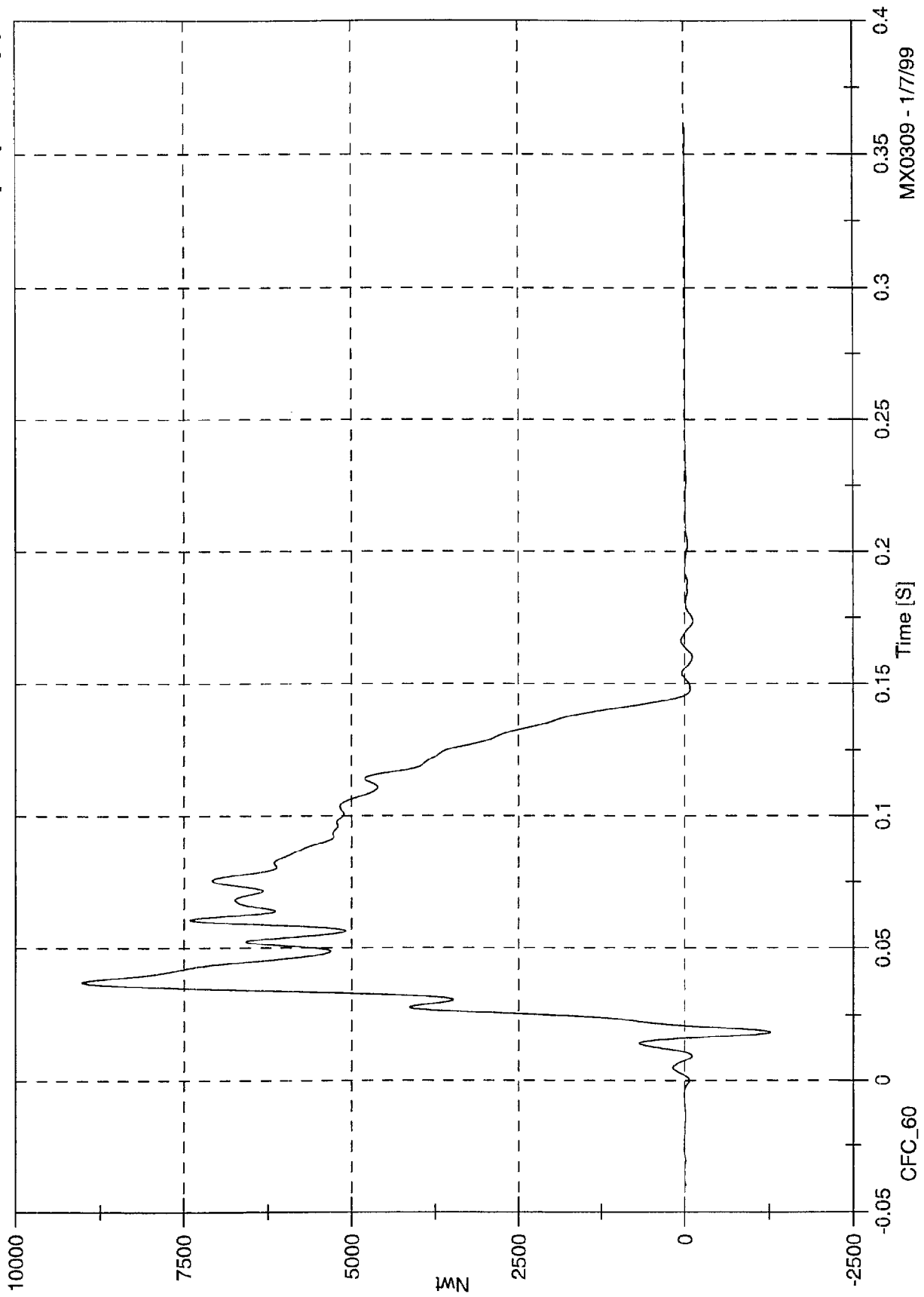




NCAP #5 - 1999 JEEP CHEROKEE

Max: 9022.0 [Nwt] at 0.037 [S]
Min: -1268.0 [Nwt] at 0.018 [S]

BLC A8 Fx

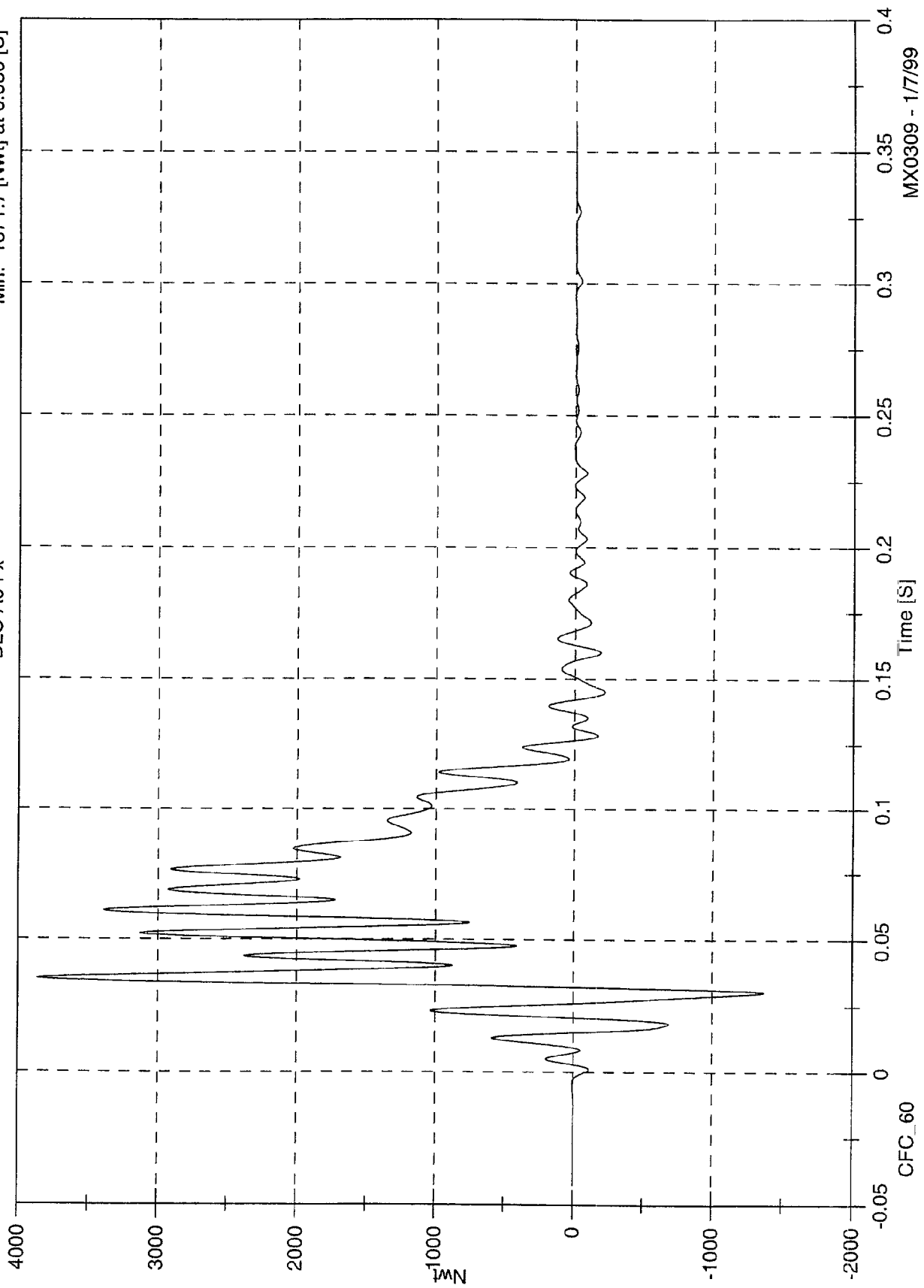


MX0309 - 1/7/99

NCAP #5 - 1999 JEEP CHEROKEE

Max: 3862.7 [Nwt] at 0.035 [S]
Min: -1371.7 [Nwt] at 0.030 [S]

BLC A9 Fx



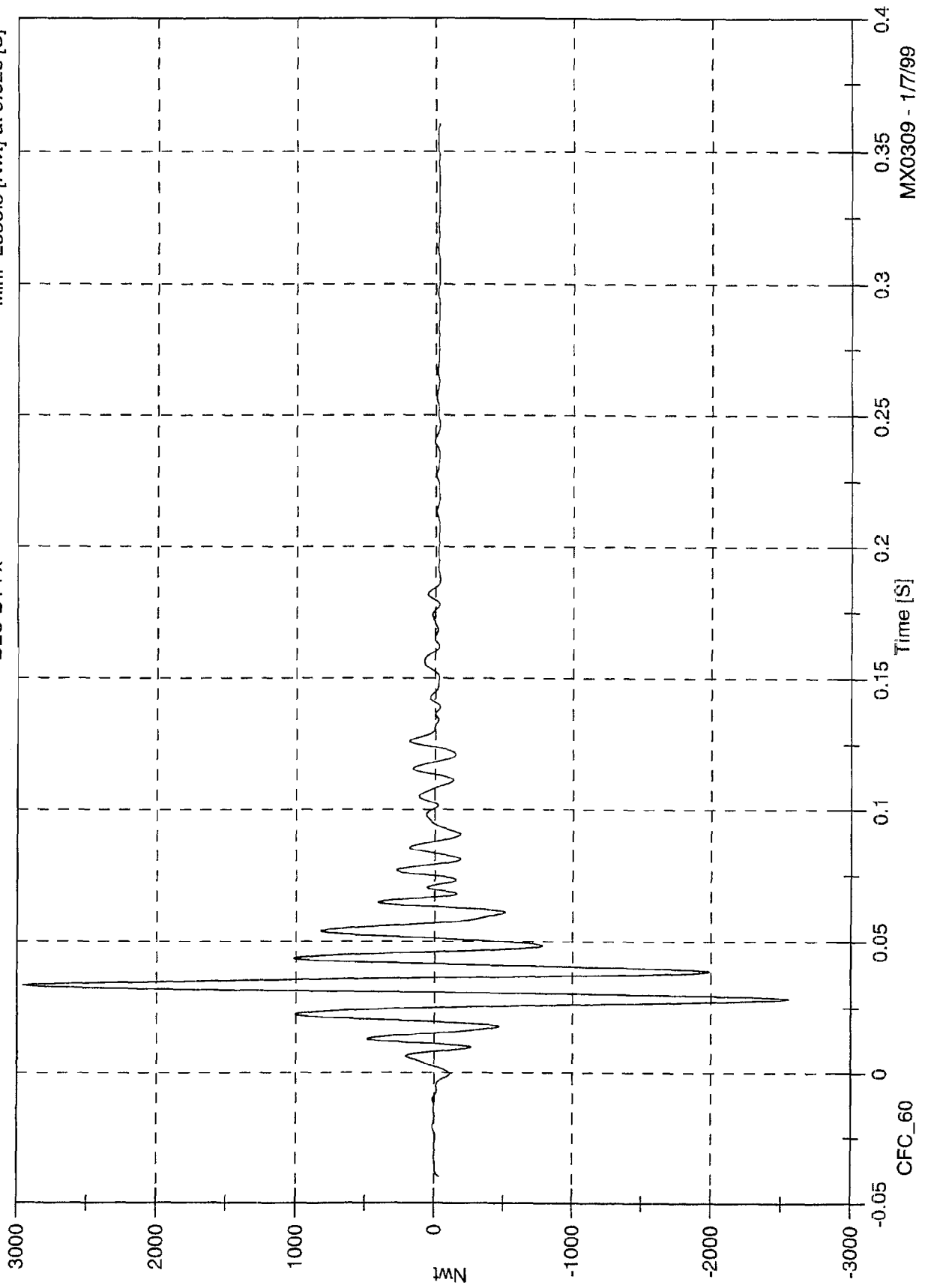
MX0309 - 1/7/99

NCAP #5 - 1999 JEEP CHEROKEE

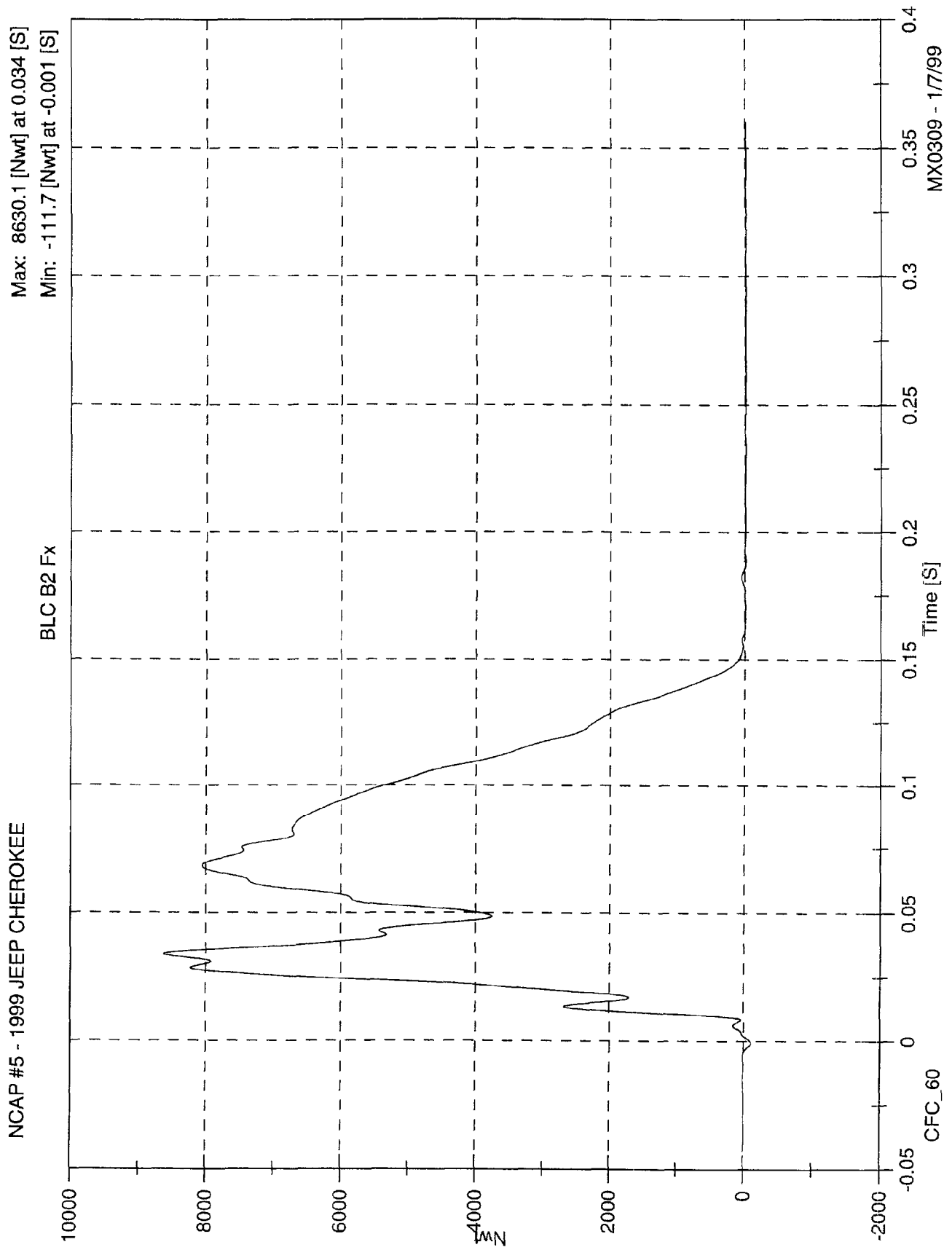
BLC B1 Fx

Max: 2958.2 [Nwt] at 0.033 [S]

Min: -2553.3 [Nwt] at 0.028 [S]



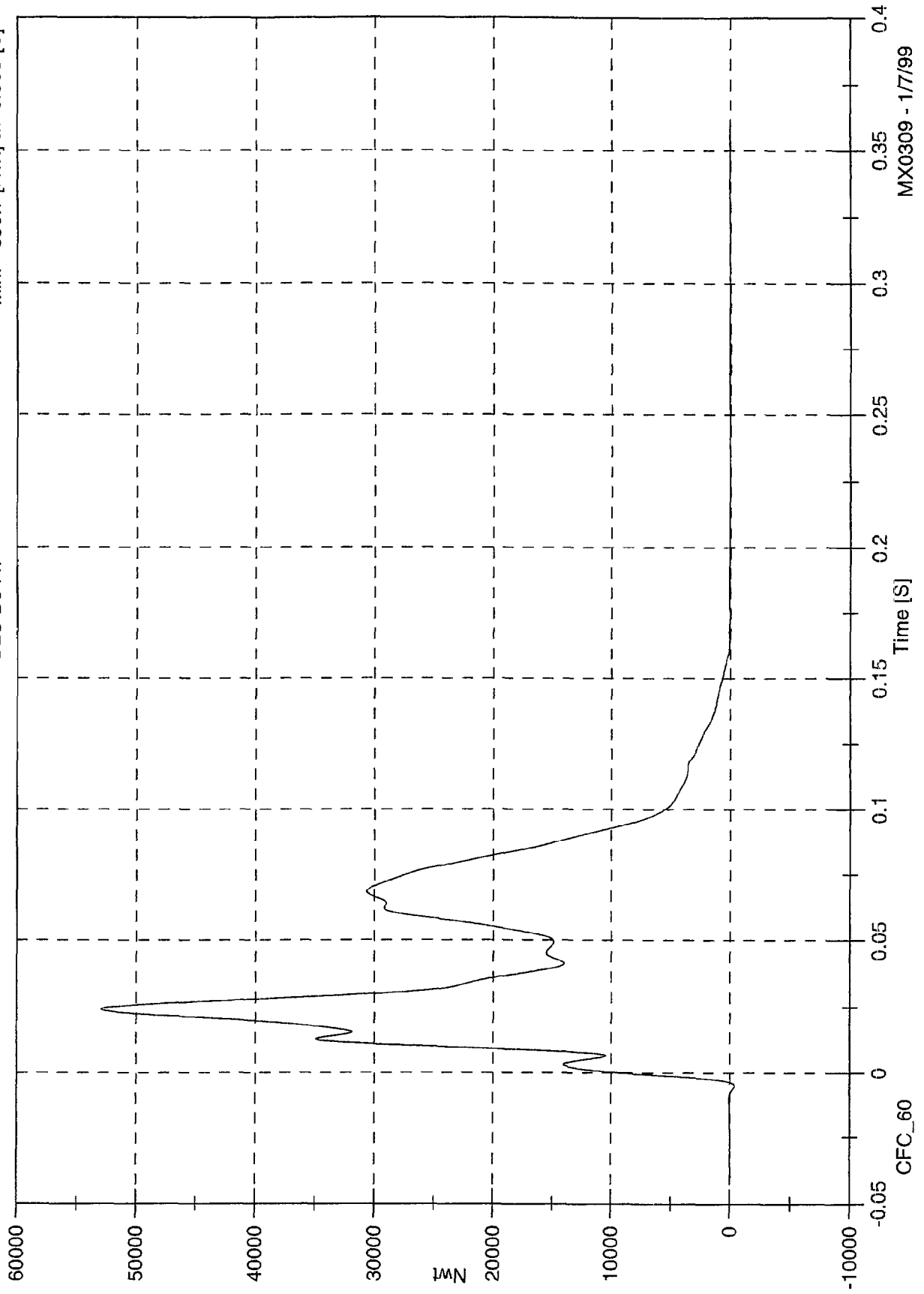
MX0309 - 17/99



NCAP #5 - 1999 JEEP CHEROKEE

Max: 52955.5 [Nwt] at 0.024 [S]
Min: -390.7 [Nwt] at -0.005 [S]

BLC B3 Fx



CFC_60

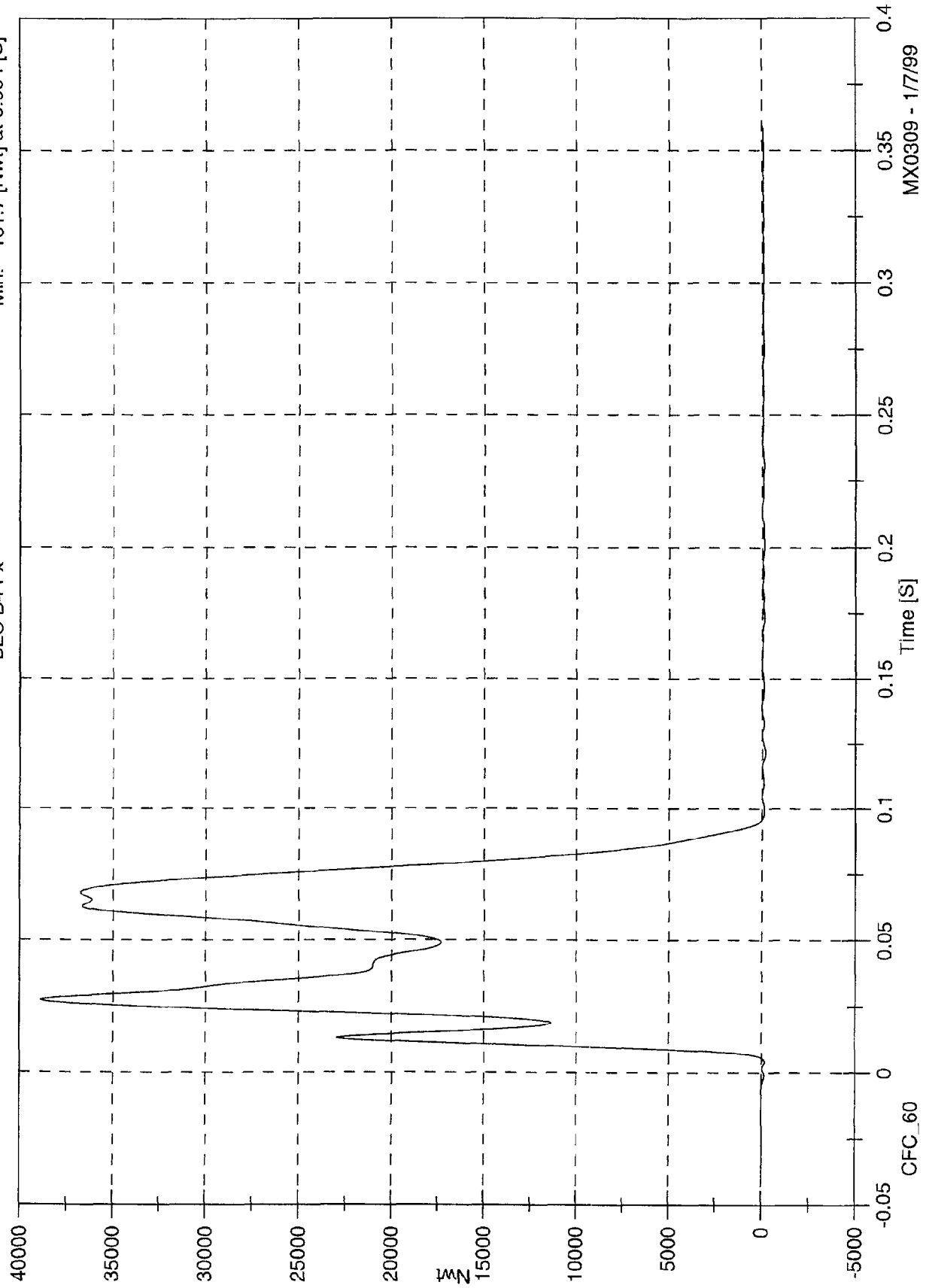
Time [S]

MX0309 - 1/7/99

NCAP #5 - 1999 JEEP CHEROKEE

Max: 38901.2 [Nwt] at 0.027 [S]
Min: -161.7 [Nwt] at 0.004 [S]

BLC B4 Fx



CFC_60

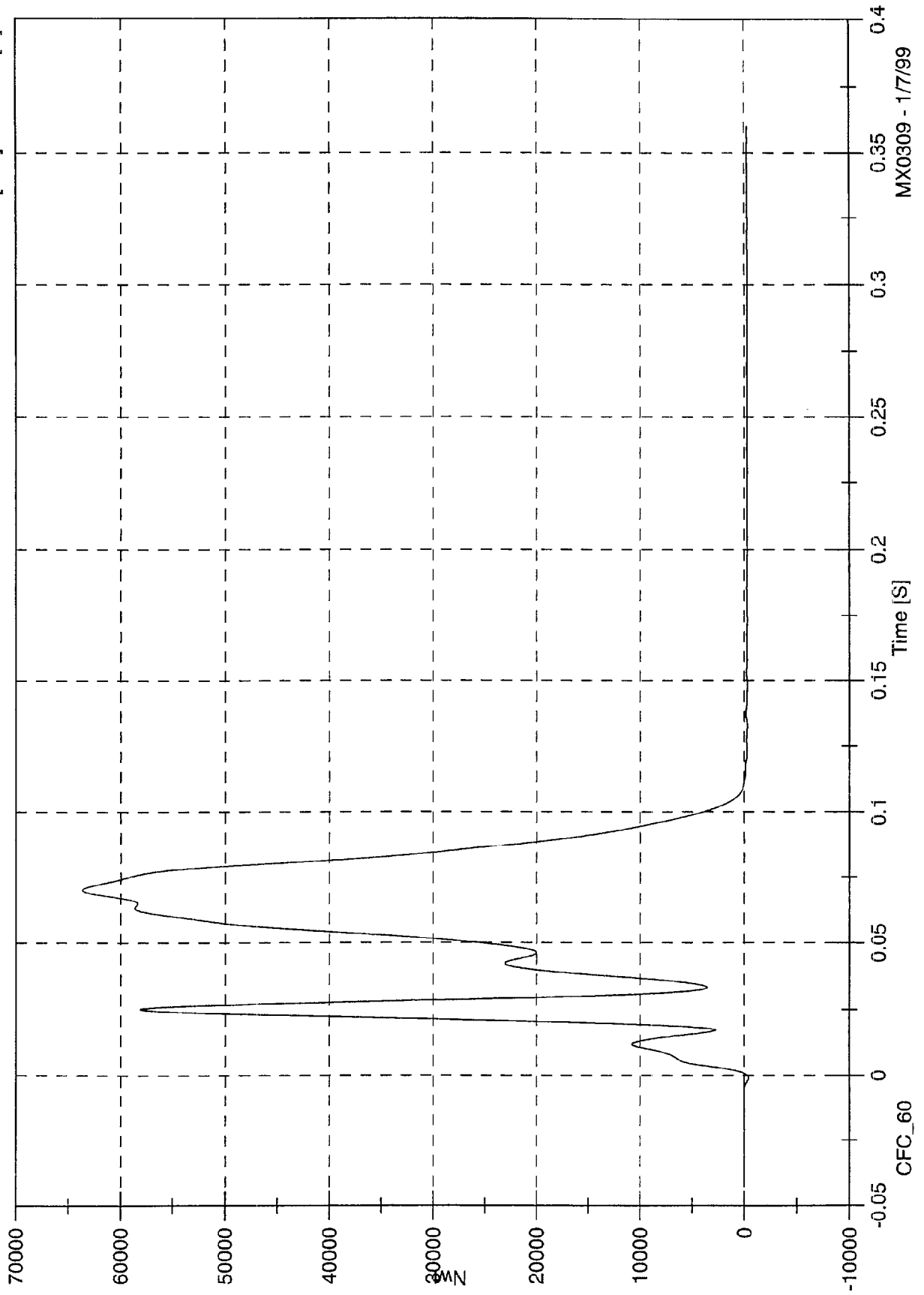
Time [S]

MX0309 - 1/7/99

NCAP #5 - 1999 JEEP CHEROKEE

Max: 63664.8 [Nwt] at 0.070 [S]
Min: -393.6 [Nwt] at -0.001 [S]

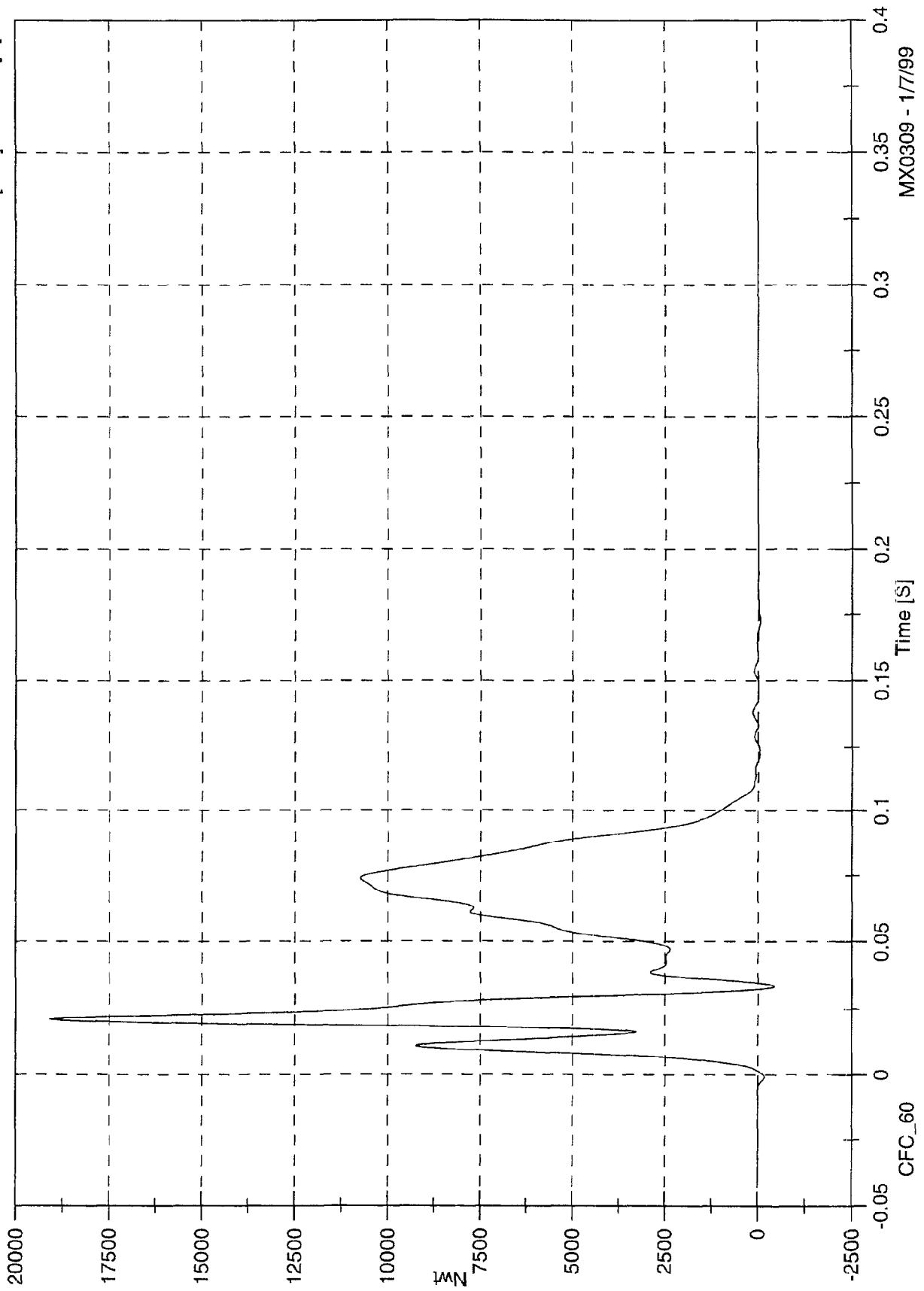
BLC B5 Fx



NCAP #5 - 1999 JEEP CHEROKEE

Max: 19089.6 [Nwt] at 0.021 [S]
Min: -427.5 [Nwt] at 0.033 [S]

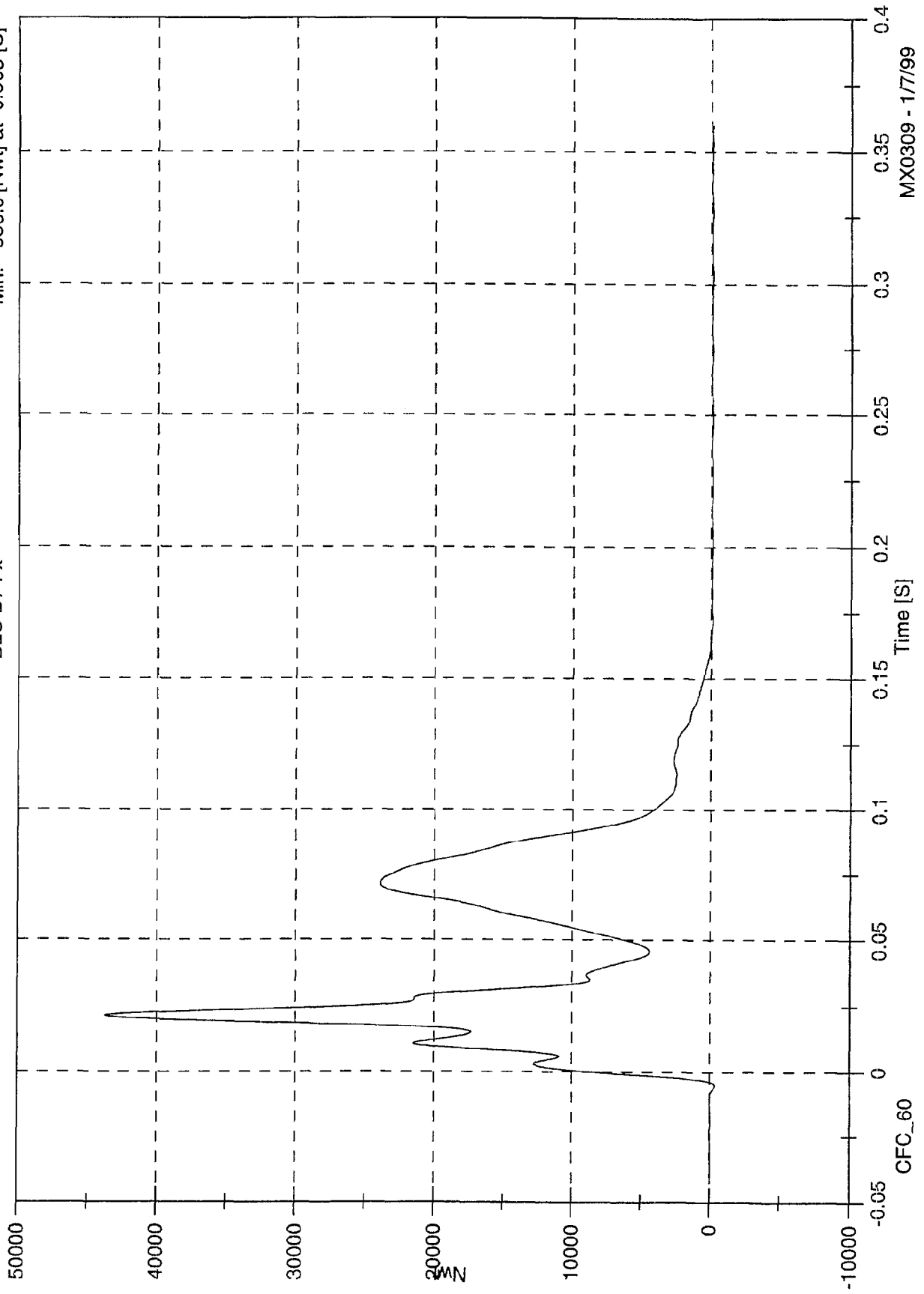
BLC B6 Fx



NCAP #5 - 1999 JEEP CHEROKEE

BLC B7 Fx

Max: 43714.8 [Nwt] at 0.021 [S]
Min: -386.0 [Nwt] at -0.005 [S]

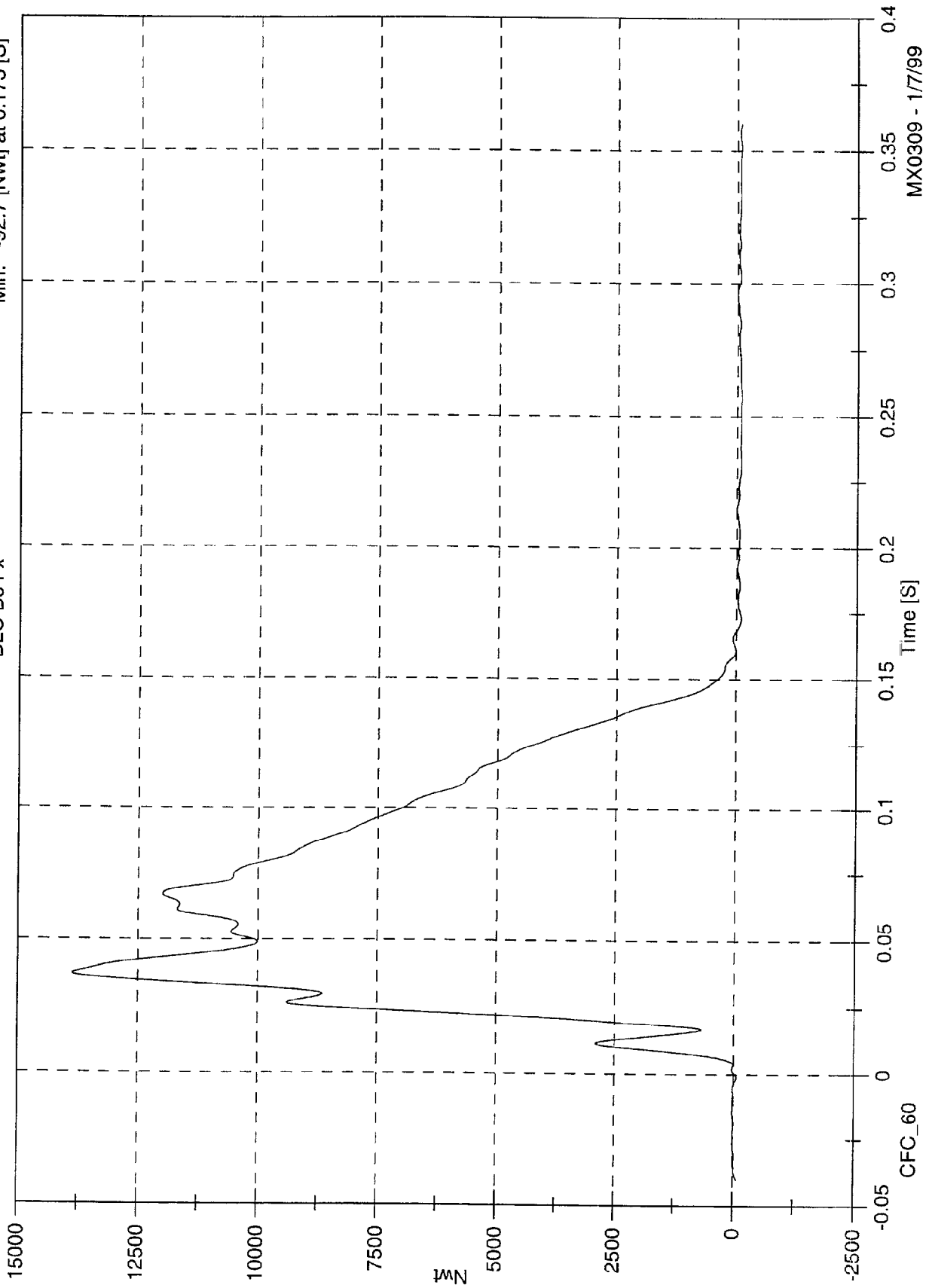


MX0309 - 1/7/99

NCAP #5 - 1999 JEEP CHEROKEE

Max: 13867.6 [Nwt] at 0.037 [S]
Min: -92.7 [Nwt] at 0.173 [S]

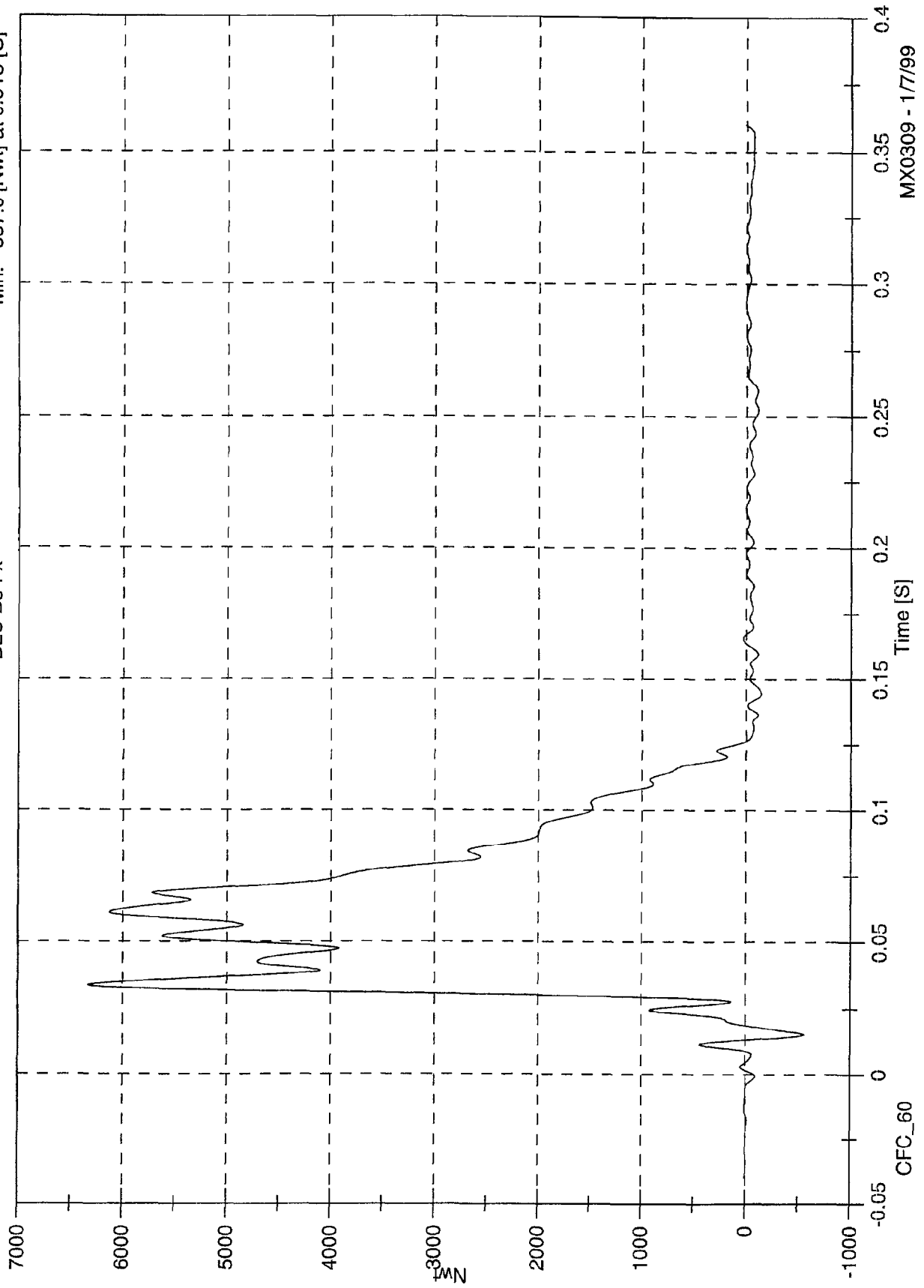
BLC B8 Fx

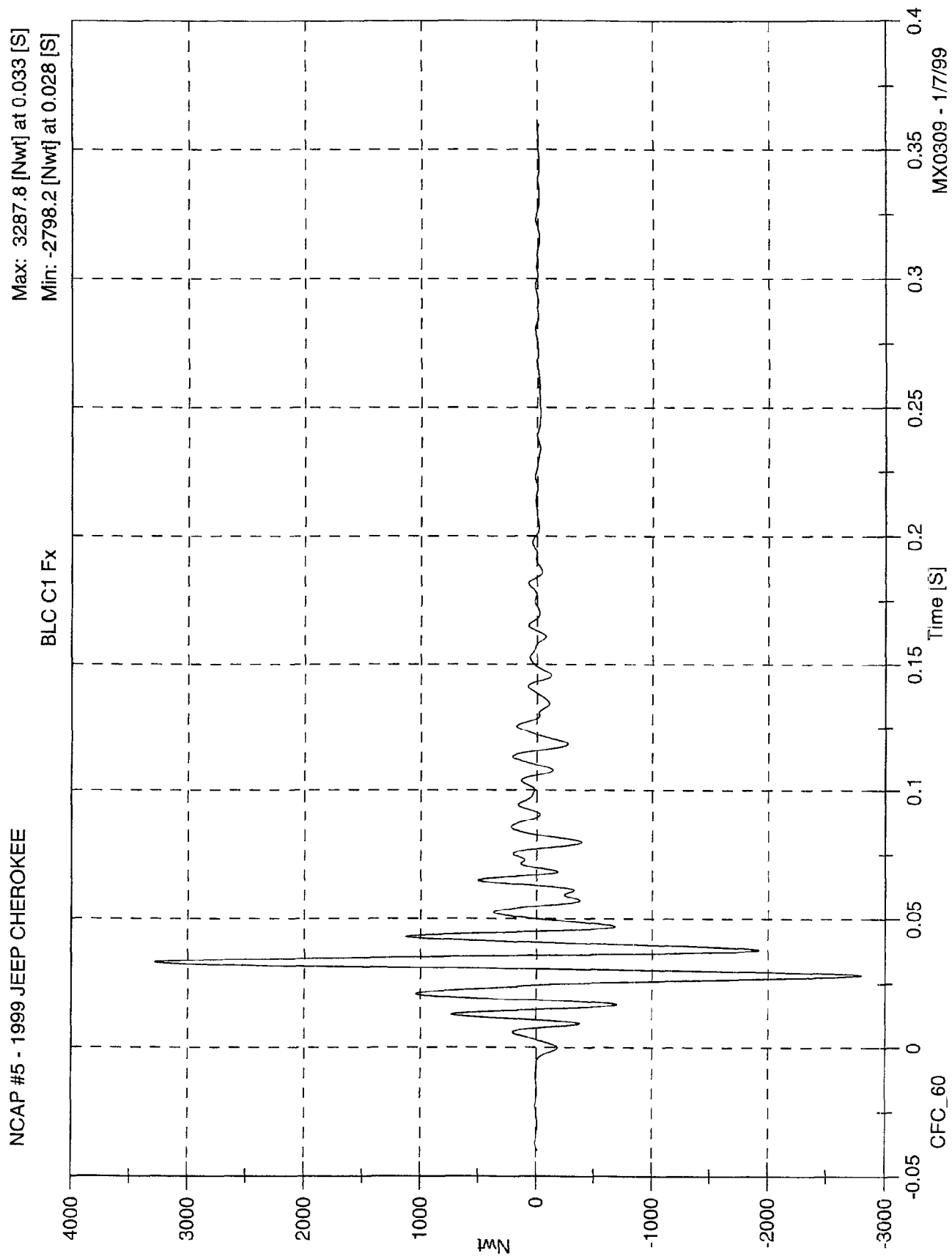


NCAP #5 - 1999 JEEP CHEROKEE

Max: 6328.1 [Nwt] at 0.034 [S]
Min: -557.6 [Nwt] at 0.015 [S]

BLC B9 Fx

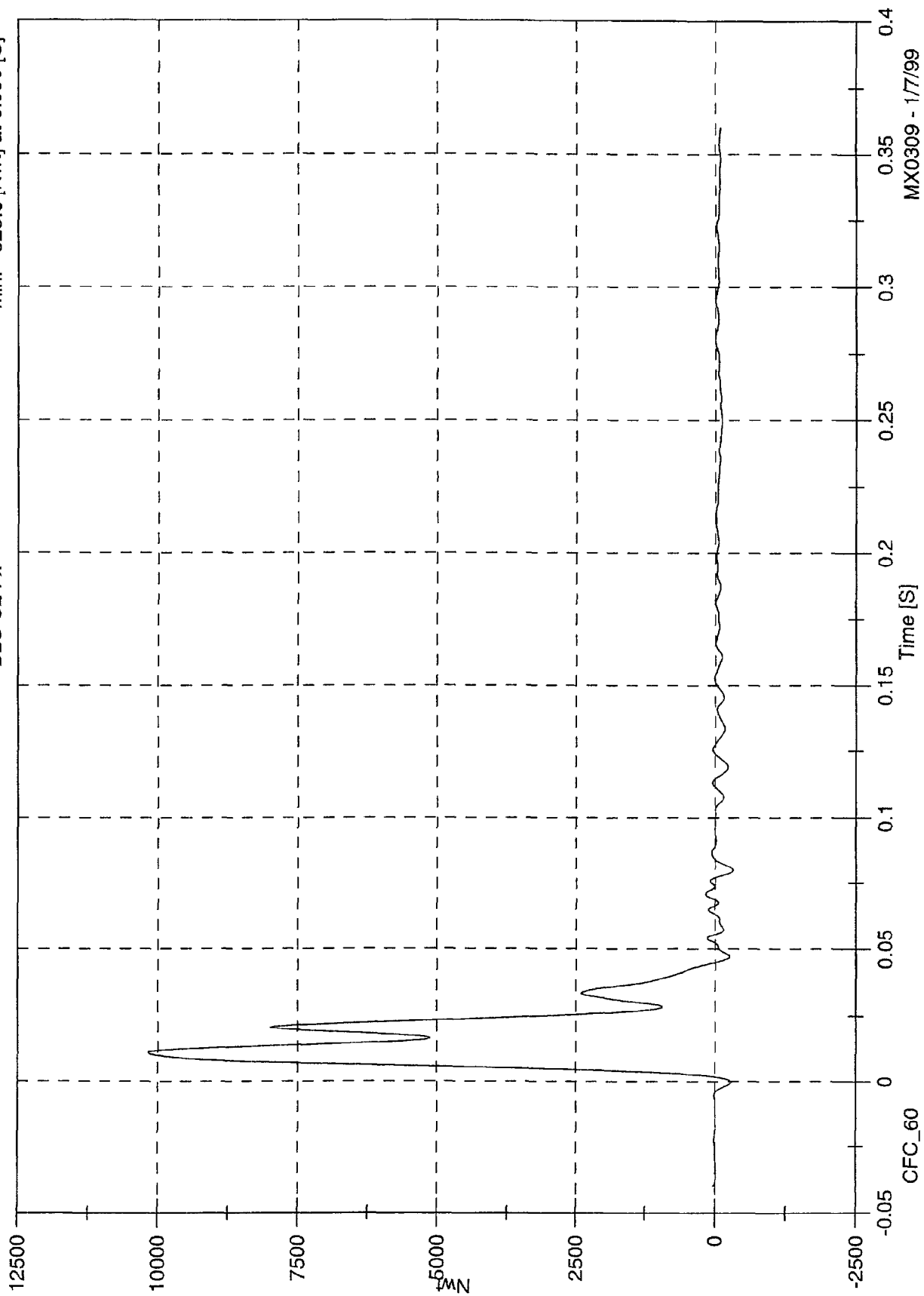




NCAP #5 - 1999 JEEP CHEROKEE

Max: 10181.6 [Nwt] at 0.011 [S]
Min: -325.0 [Nwt] at 0.080 [S]

BLC C2 Fx

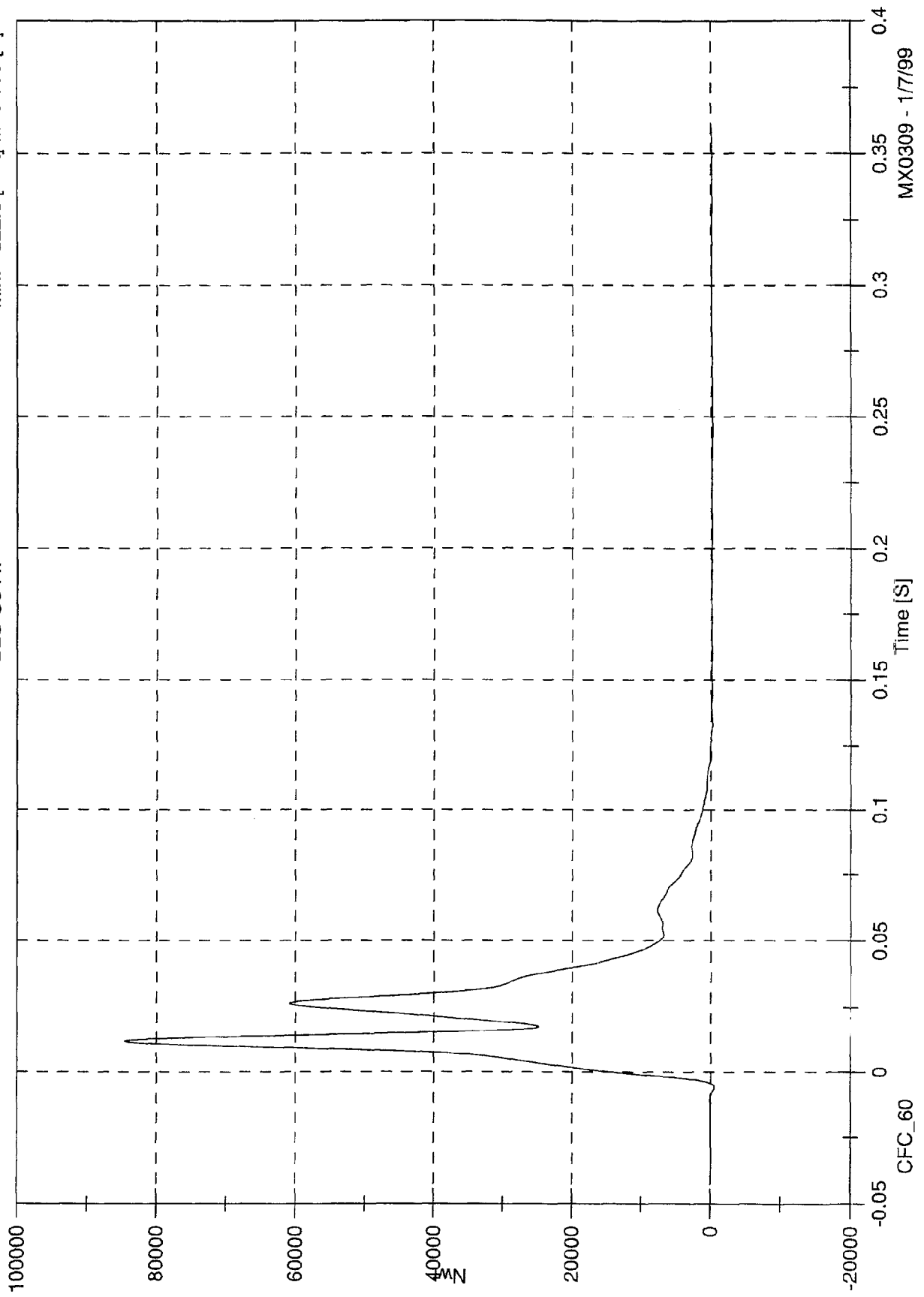


MX0309 - 1/7/99

NCAP #5 - 1999 JEEP CHEROKEE

BLC C3 Fx

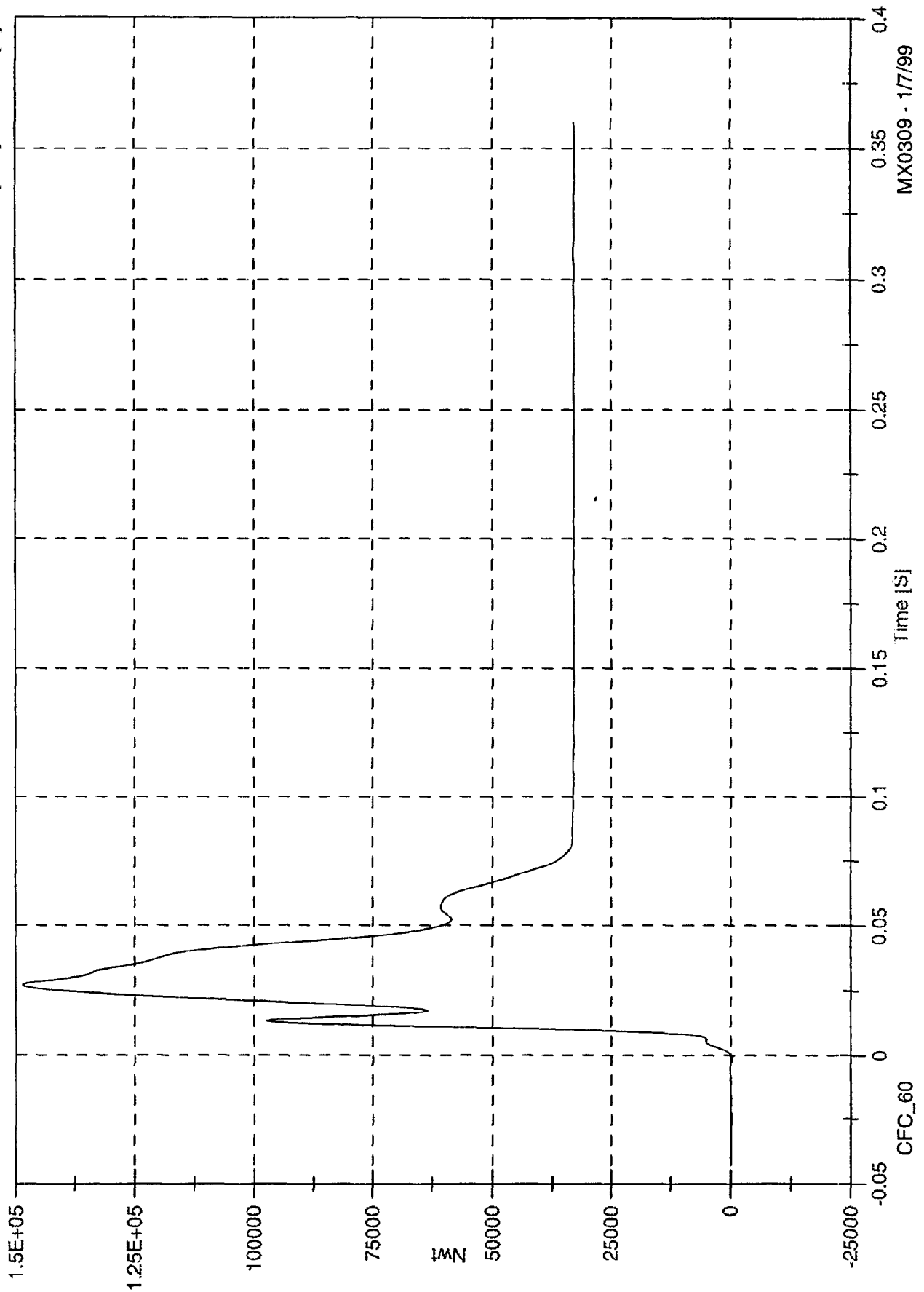
Max: 84524.4 [Nwt] at 0.012 [S]
Min: -522.9 [Nwt] at -0.006 [S]



NCAP #5 - 1999 JEEP CHEROKEE

Max: 148585.4 [Nwt] at 0.027 [S]
Min: -288.5 [Nwt] at -0.001 [S]

BLC C4 Fx

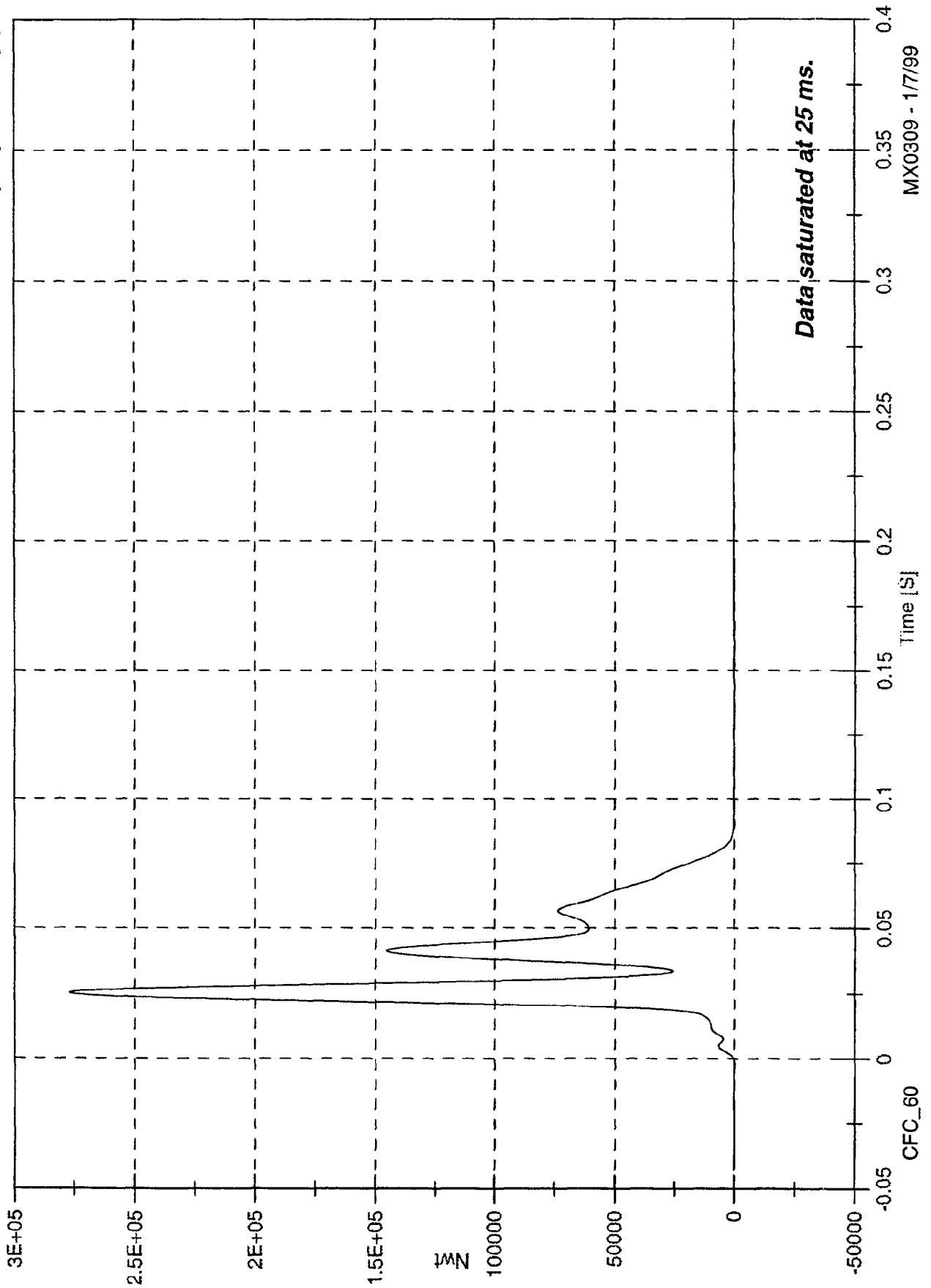


MX0309 - 1/7/99

NCAP #5 - 1999 JEEP CHEROKEE

Max: 276892.7 [Nwt] at 0.025 [S]
Min: -353.1 [Nwt] at -0.001 [S]

BLC C5 Fx

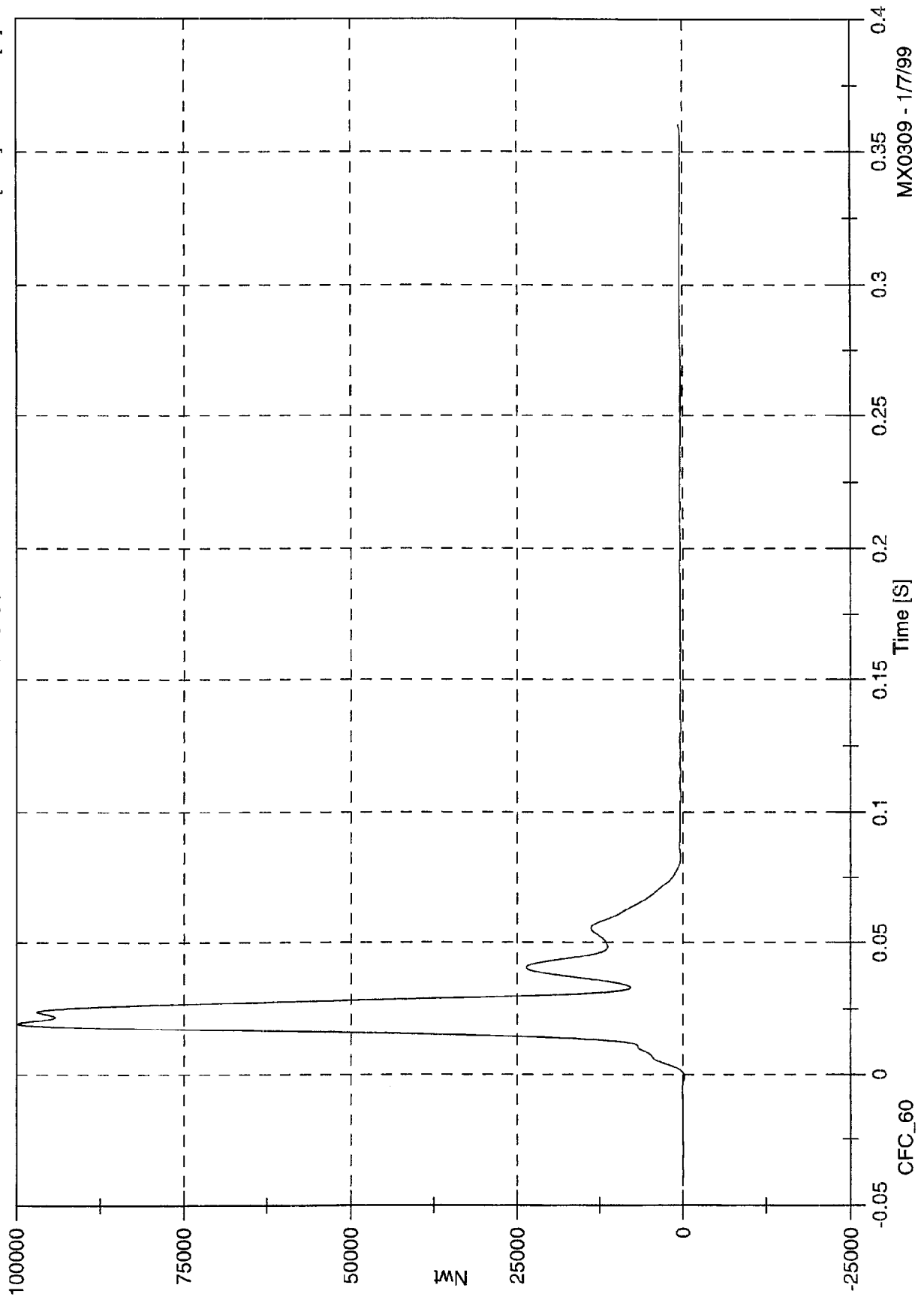


MX0309 - 1/7/99

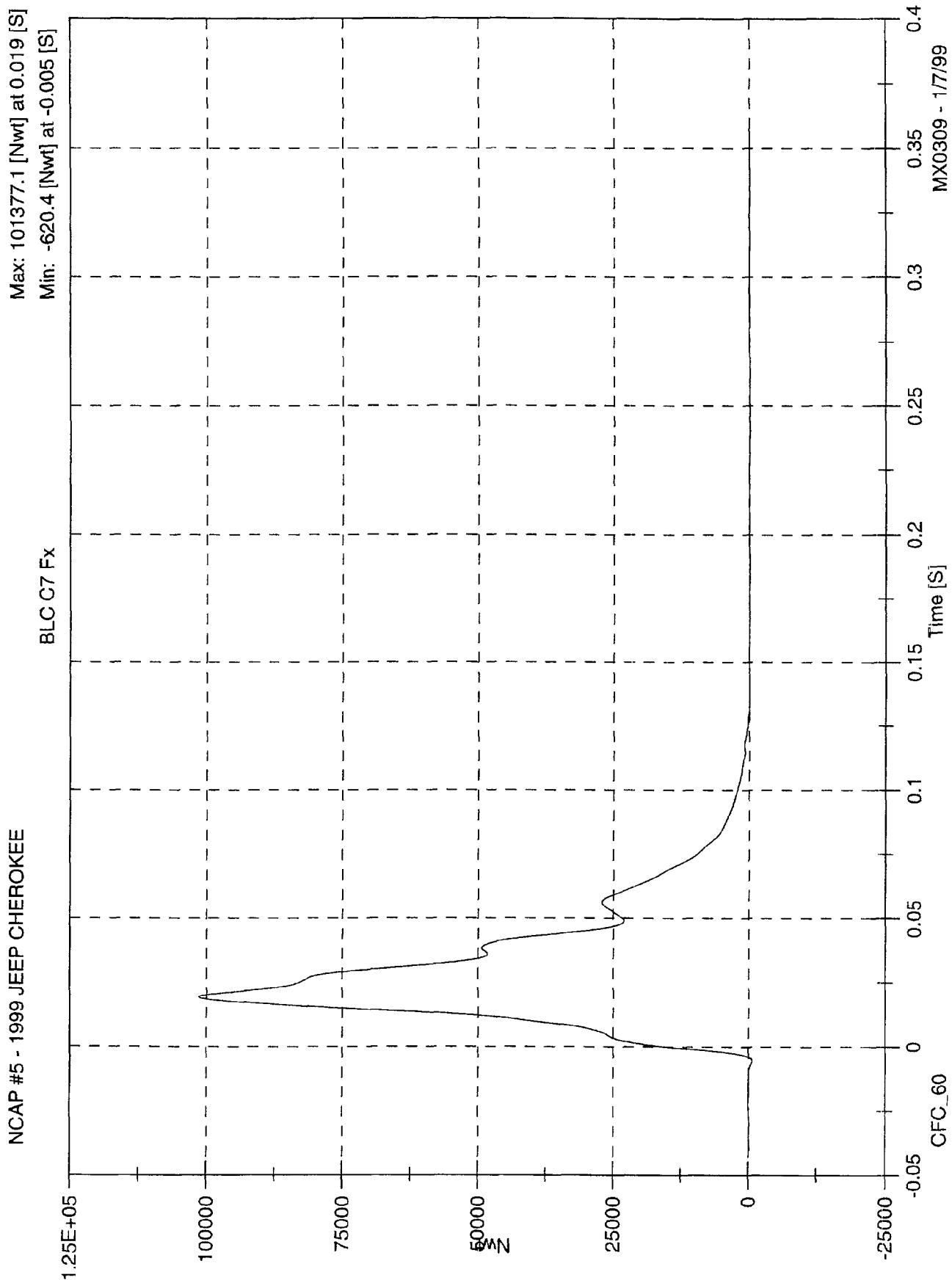
NCAP #5 - 1999 JEEP CHEROKEE

Max: 99891.0 [Nwt] at 0.019 [S]
Min: -238.5 [Nwt] at -0.001 [S]

BLC C6 Fx



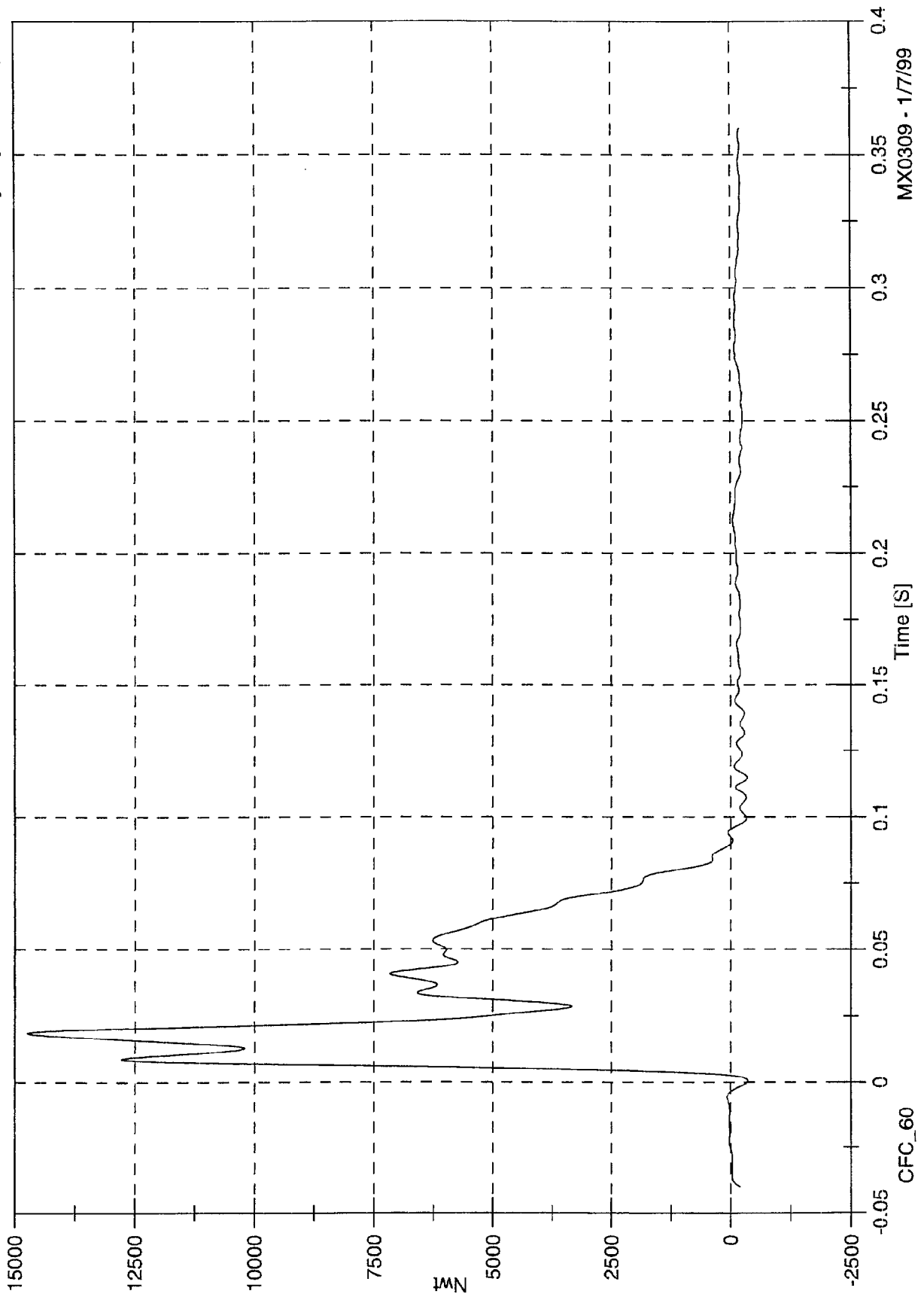
MX0309 - 1/7/99



NCAP #5 - 1999 JEEP CHEROKEE

BLC C8 Fx

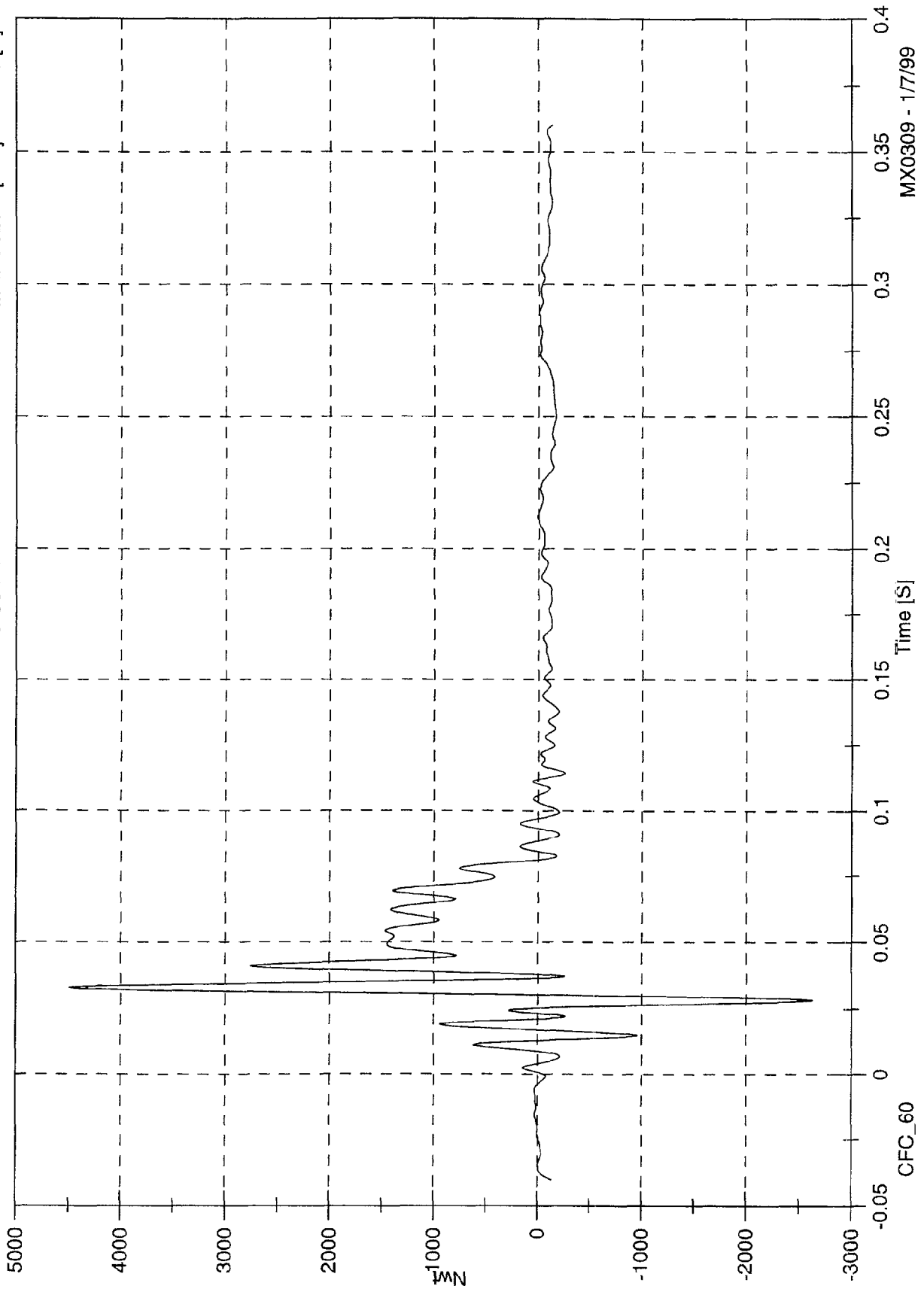
Max: 14731.1 [Nwt] at 0.018 [S]
Min: -358.4 [Nwt] at 0.000 [S]



NCAP #5 - 1999 JEEP CHEROKEE

Max: 4494.1 [Nwt] at 0.033 [S]
Min: -2626.7 [Nwt] at 0.028 [S]

BLC C9 Fx

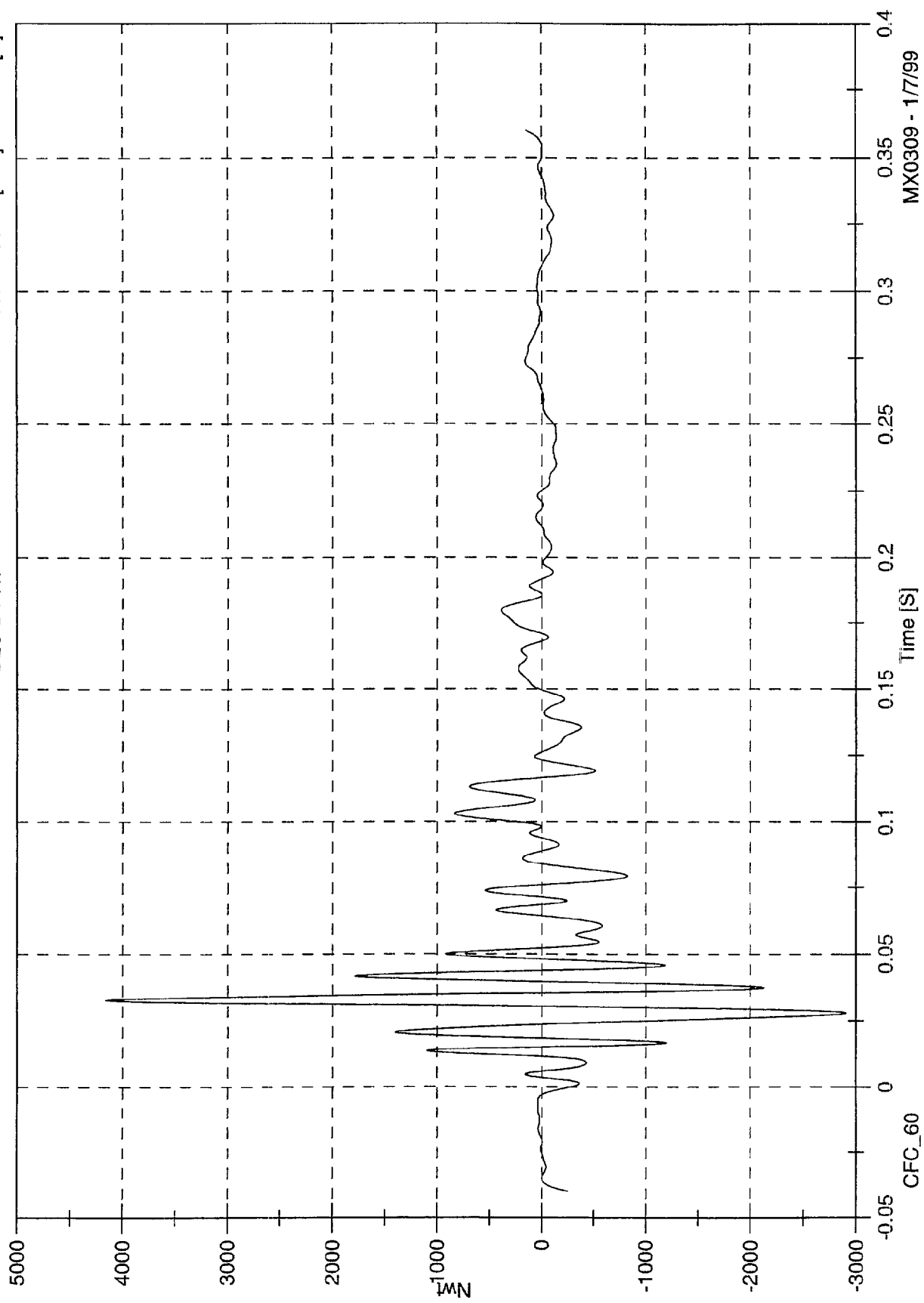


MX0309 - 1/7/99

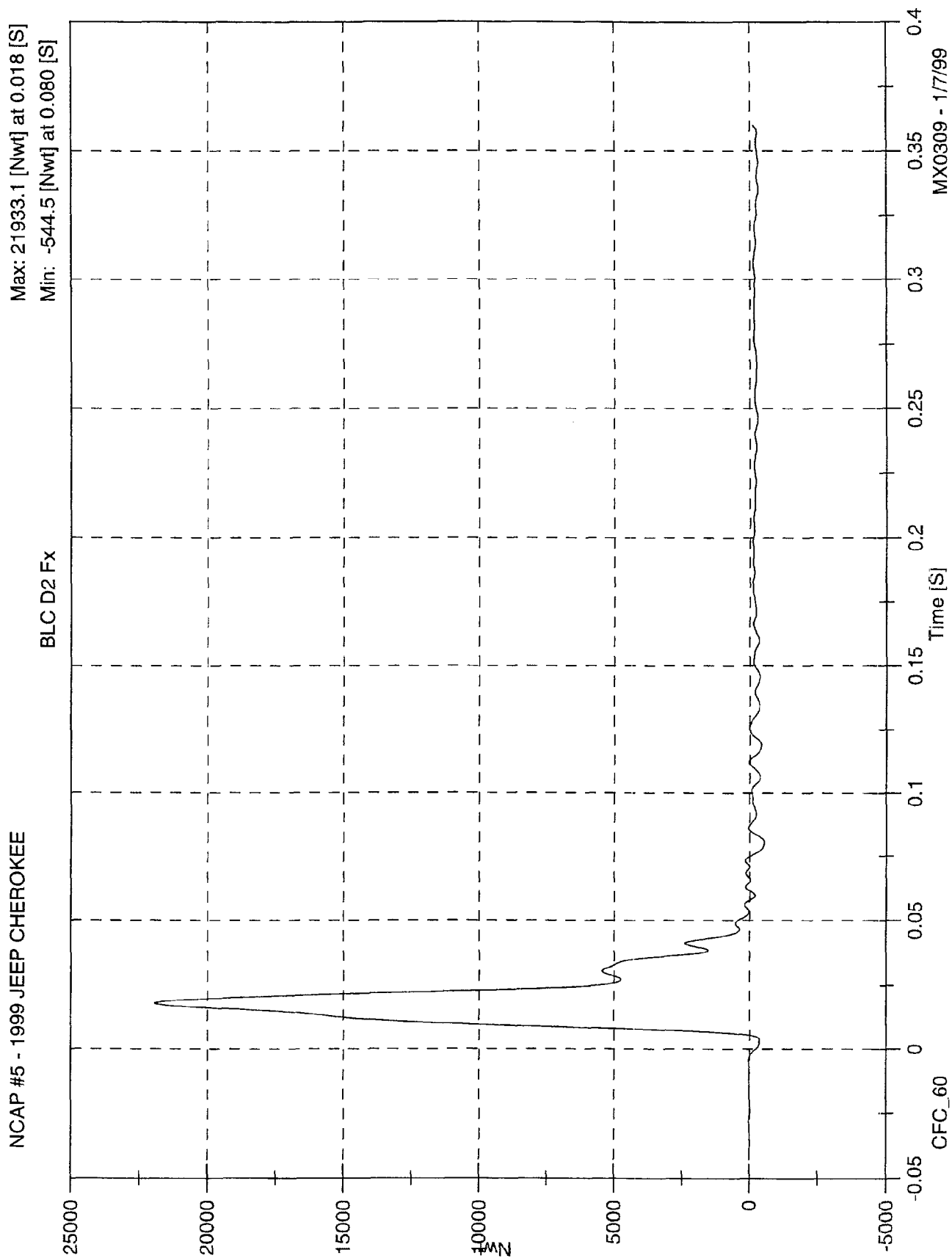
NCAP #5 - 1999 JEEP CHEROKEE

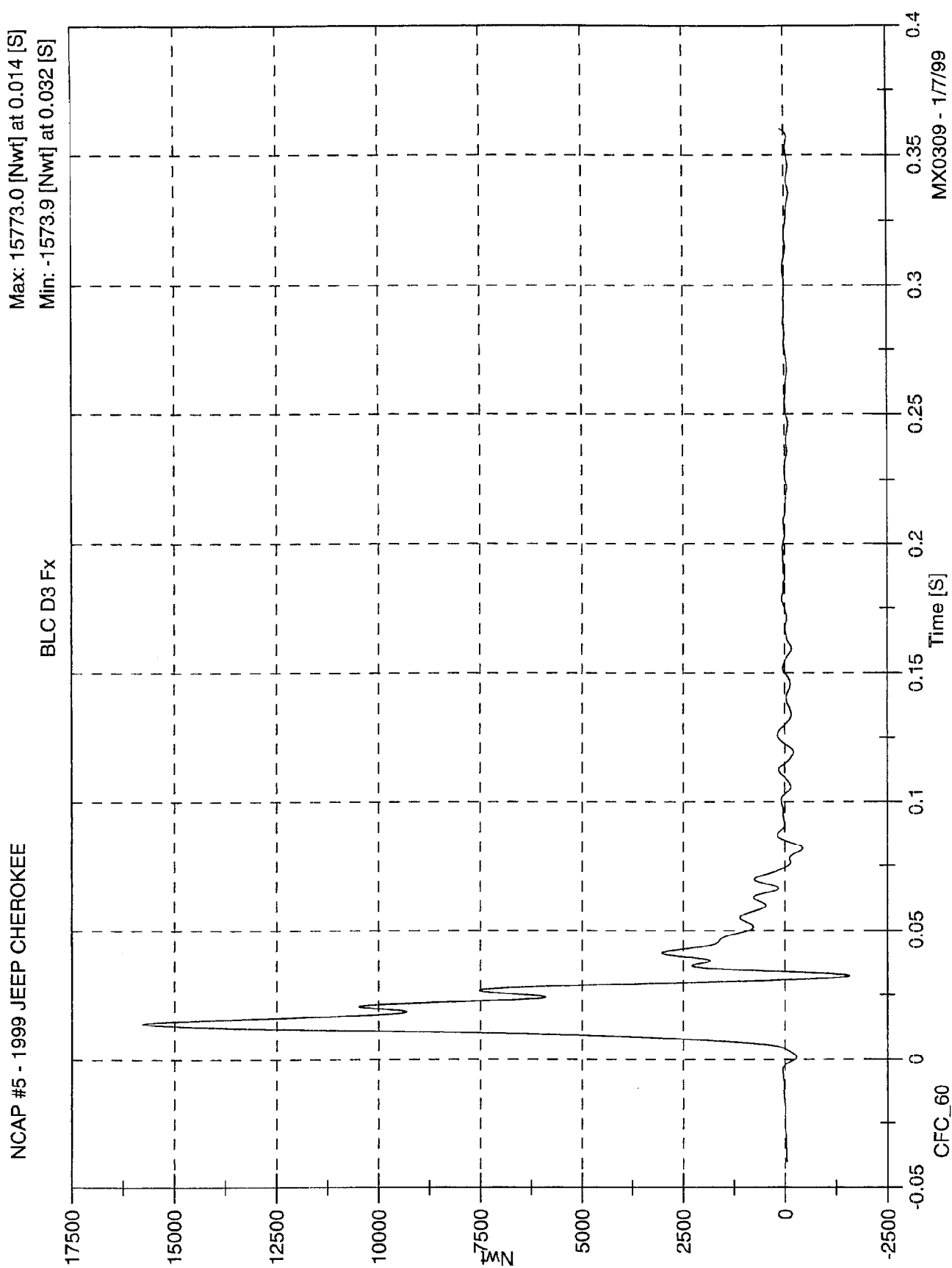
Max: 4157.7 [Nwt] at 0.033 [S]
Min: -2904.7 [Nwt] at 0.028 [S]

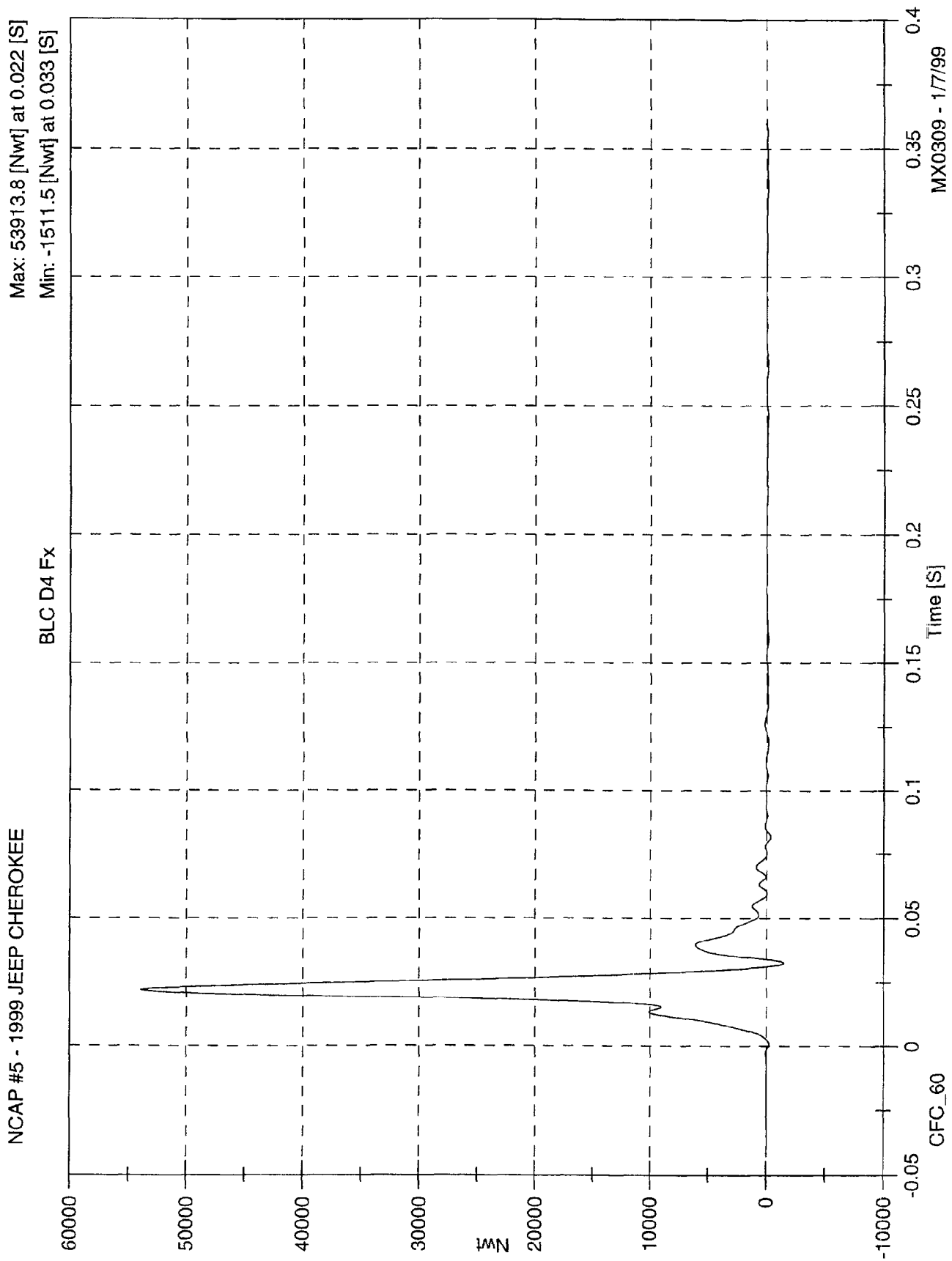
BLC D1 Fx



MX0309 - 1/7/99



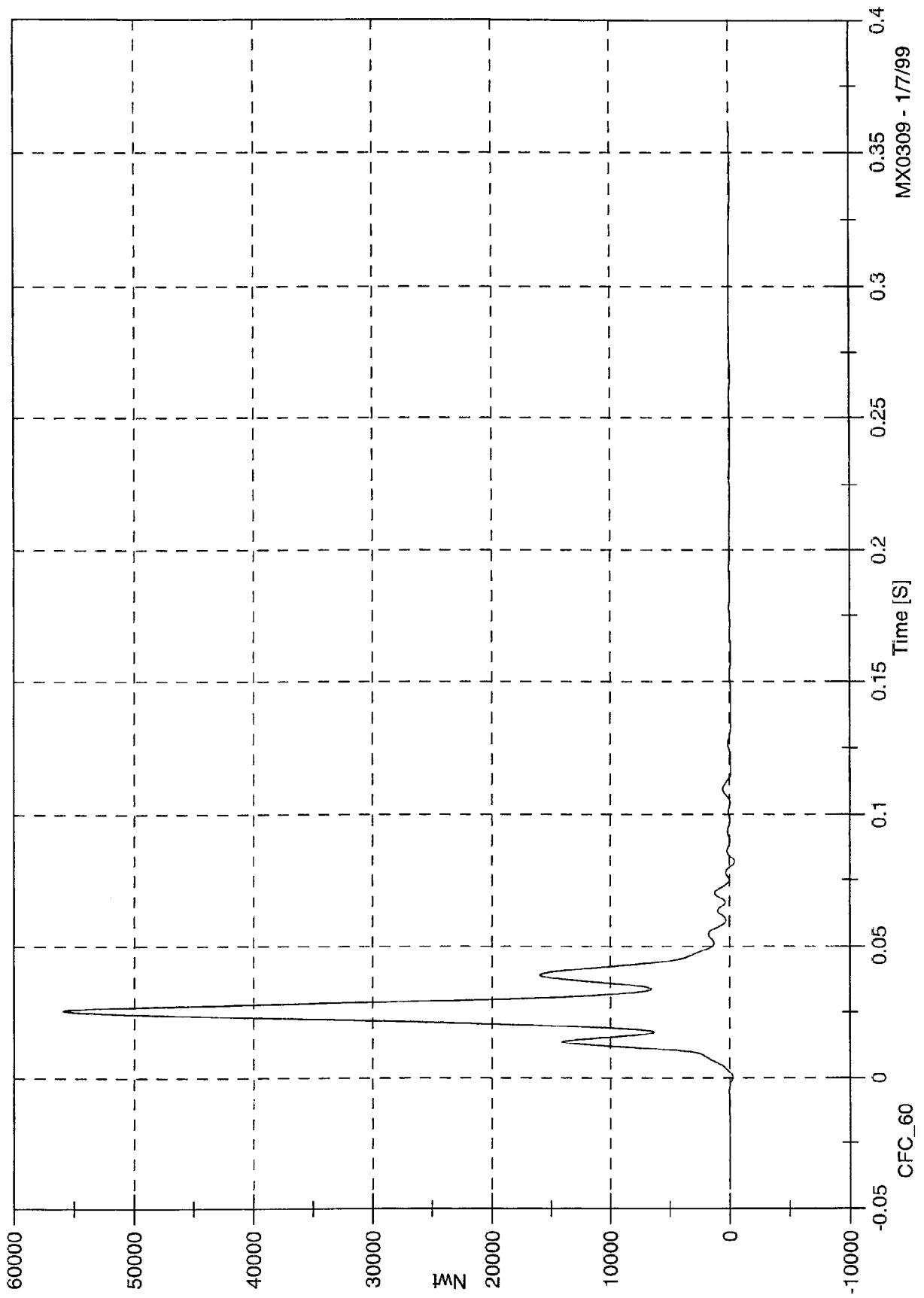




NCAP #5 - 1999 JEEP CHEROKEE

BLC D5 Fx

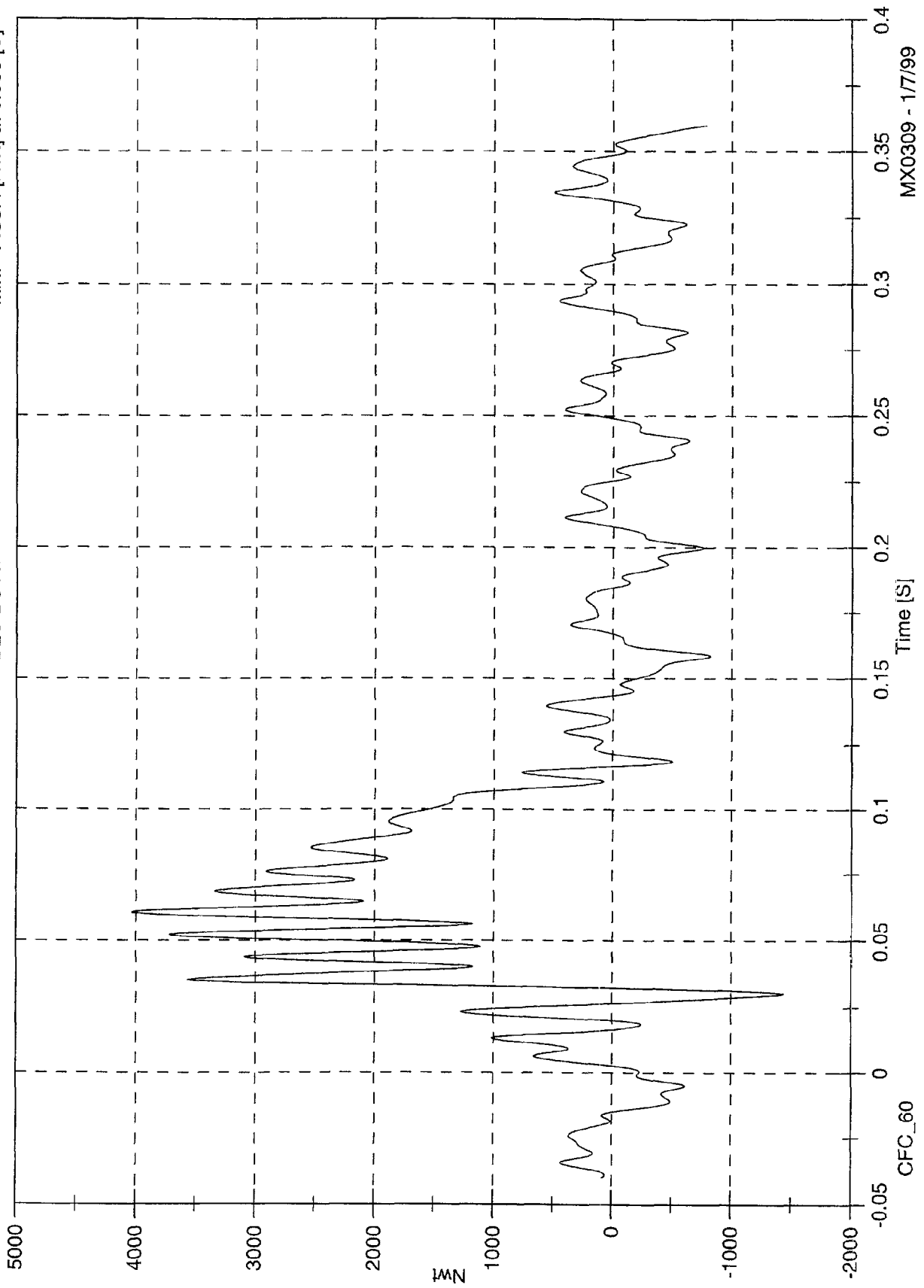
Max: 55939.1 [Nwt] at 0.025 [S]
Min: -426.1 [Nwt] at 0.082 [S]



NCAP #5 - 1999 JEEP CHEROKEE

Max: 4034.0 [Nwt] at 0.061 [S]
Min: -1436.4 [Nwt] at 0.030 [S]

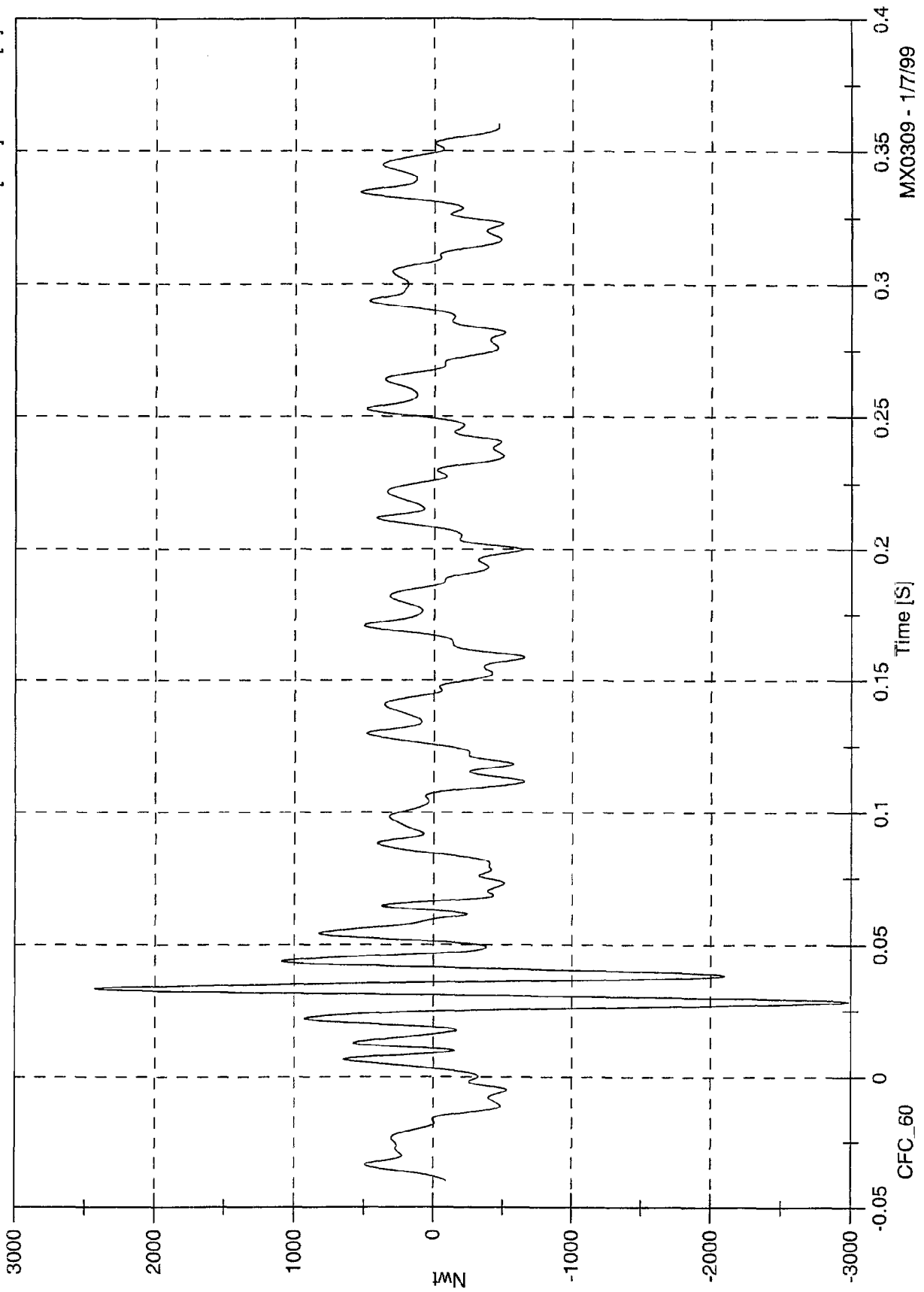
BLC D6 Fx



NCAP #5 - 1999 JEEP CHEROKEE

BLC D7 Fx

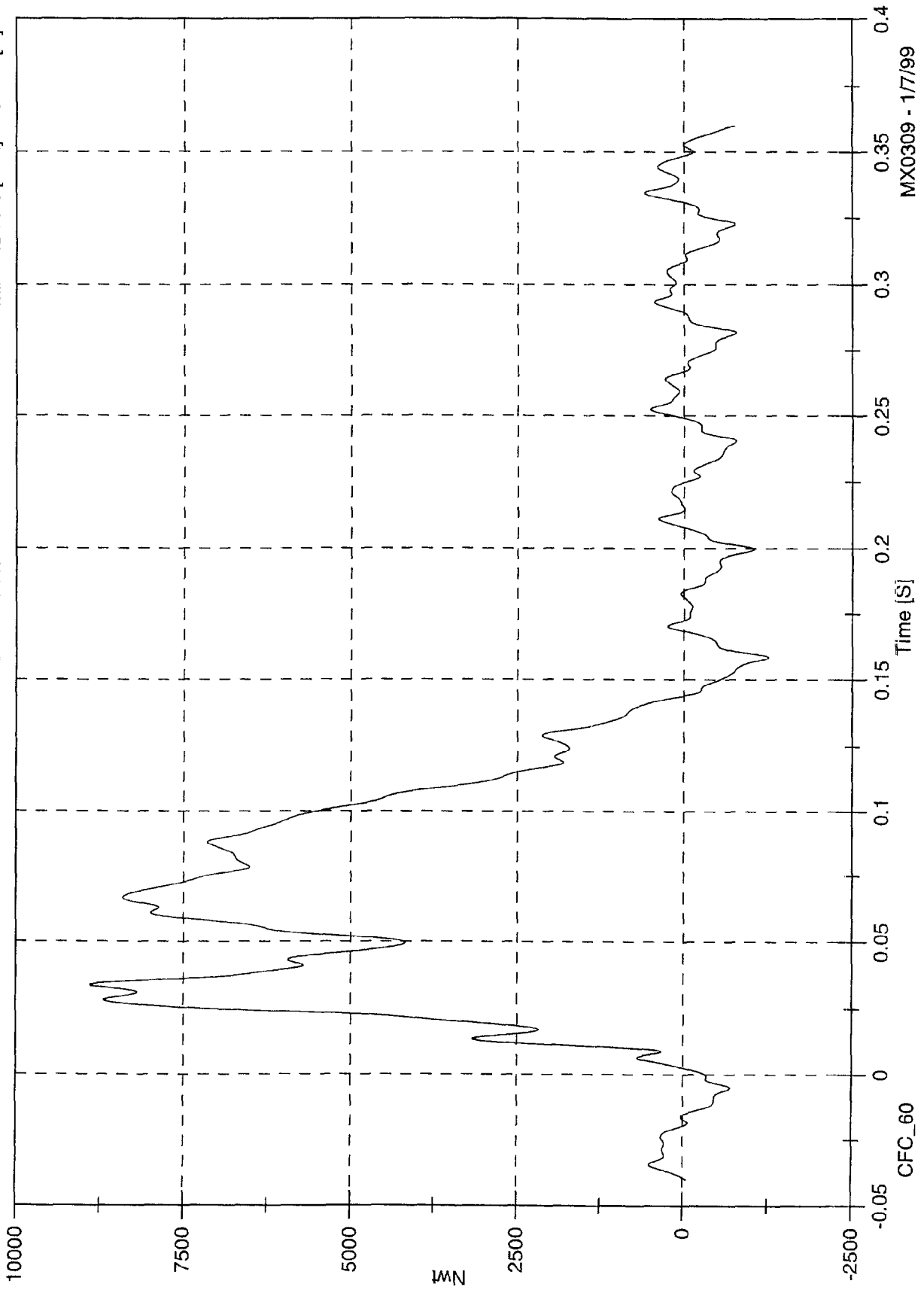
Max: 2432.7 [Nwt] at 0.033 [S]
Min: -2982.2 [Nwt] at 0.028 [S]



NCAP #5 - 1999 JEEP CHEROKEE

Max: 8898.4 [Nwt] at 0.034 [S]
Min: -1260.6 [Nwt] at 0.159 [S]

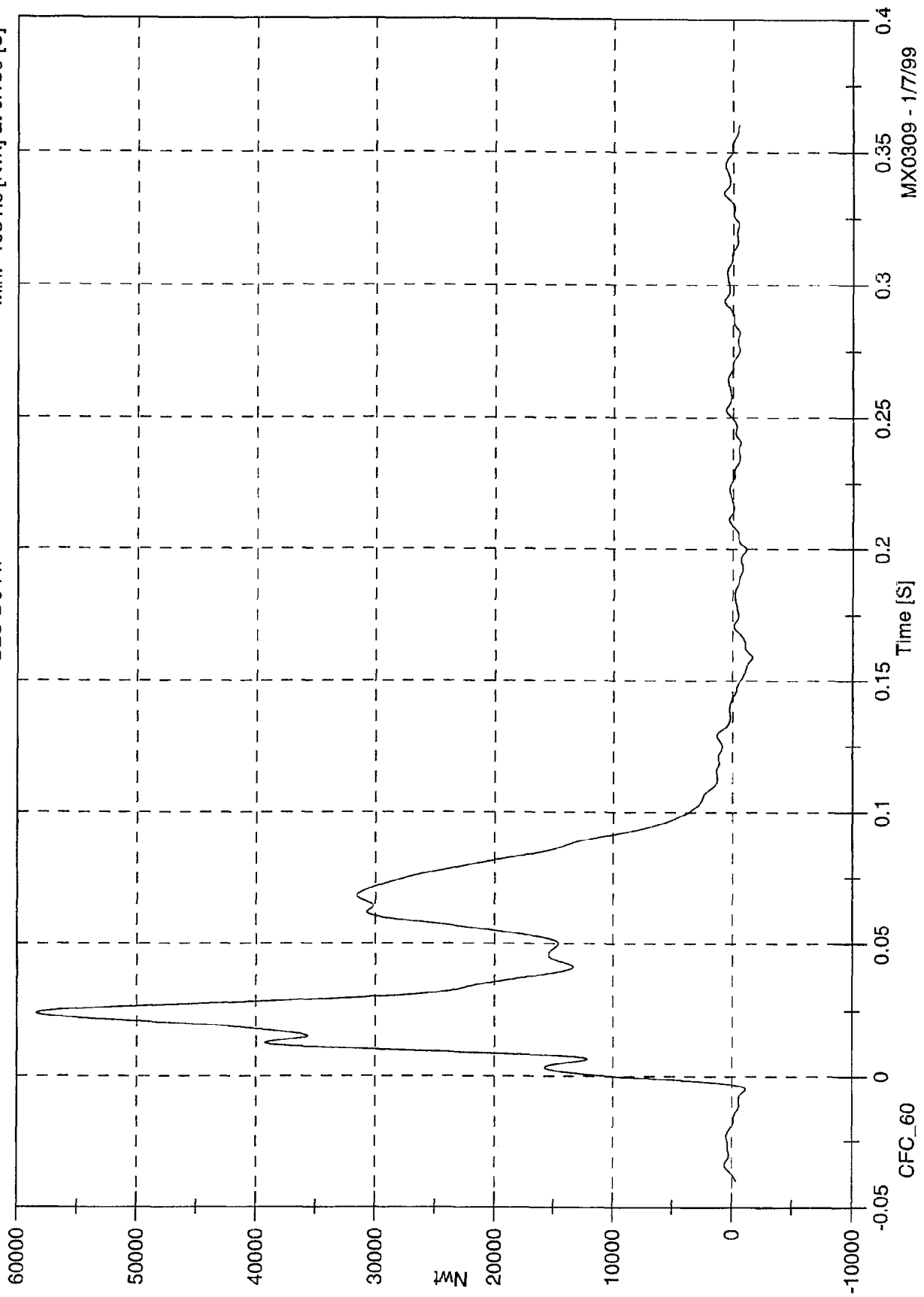
BLC D8 Fx



NCAP #5 - 1999 JEEP CHEROKEE

Max: 58392.8 [Nwt] at 0.024 [S]
Min: -1631.8 [Nwt] at 0.159 [S]

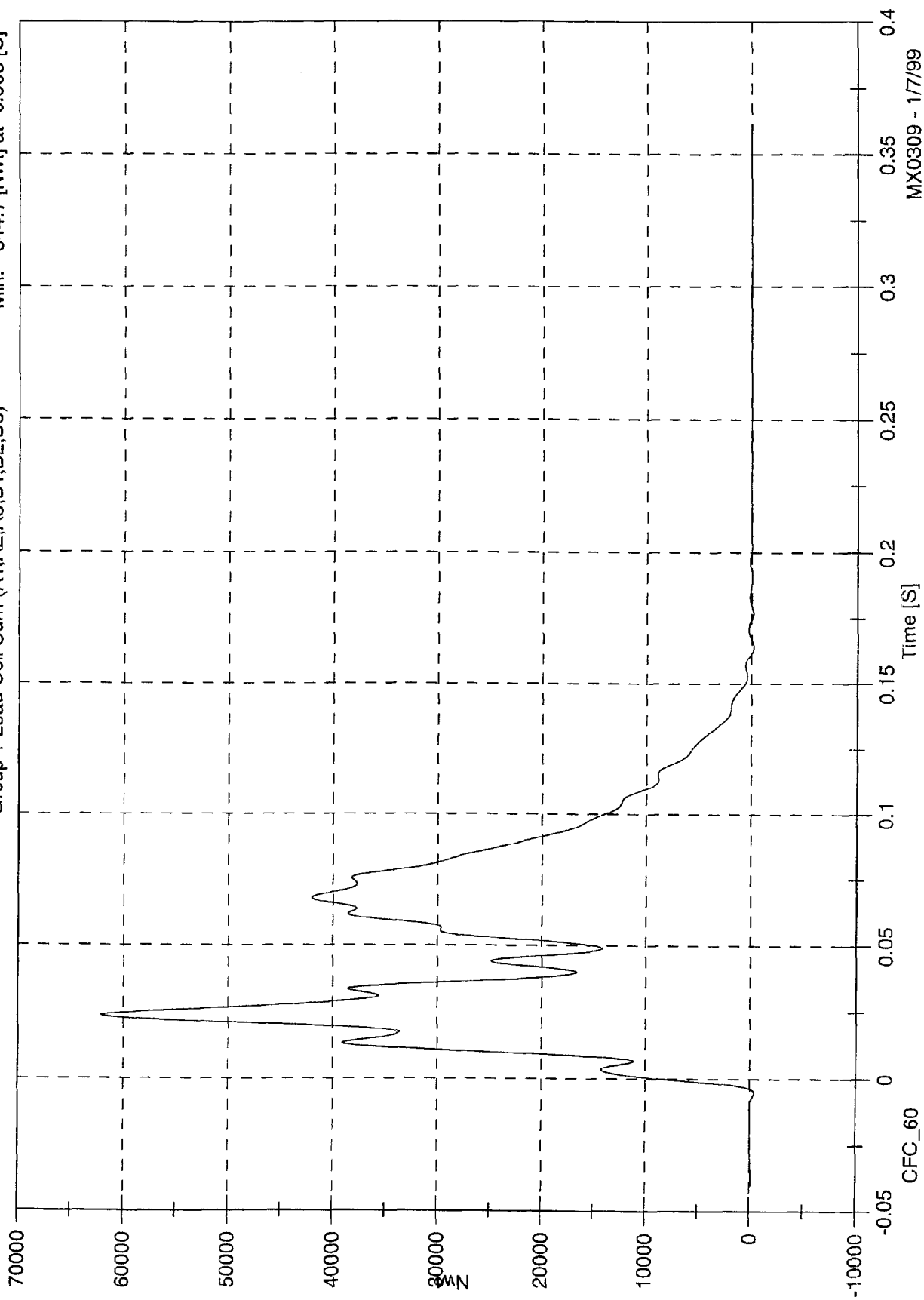
BLC D9 Fx



NCAP #5 - 1999 JEEP CHEROKEE

Max: 62081.2 [Nwt] at 0.024 [S]
 Min: -344.7 [Nwt] at -0.005 [S]

Group 1 Load Cell Sum (A1,A2,A3,B1,B2,B3)

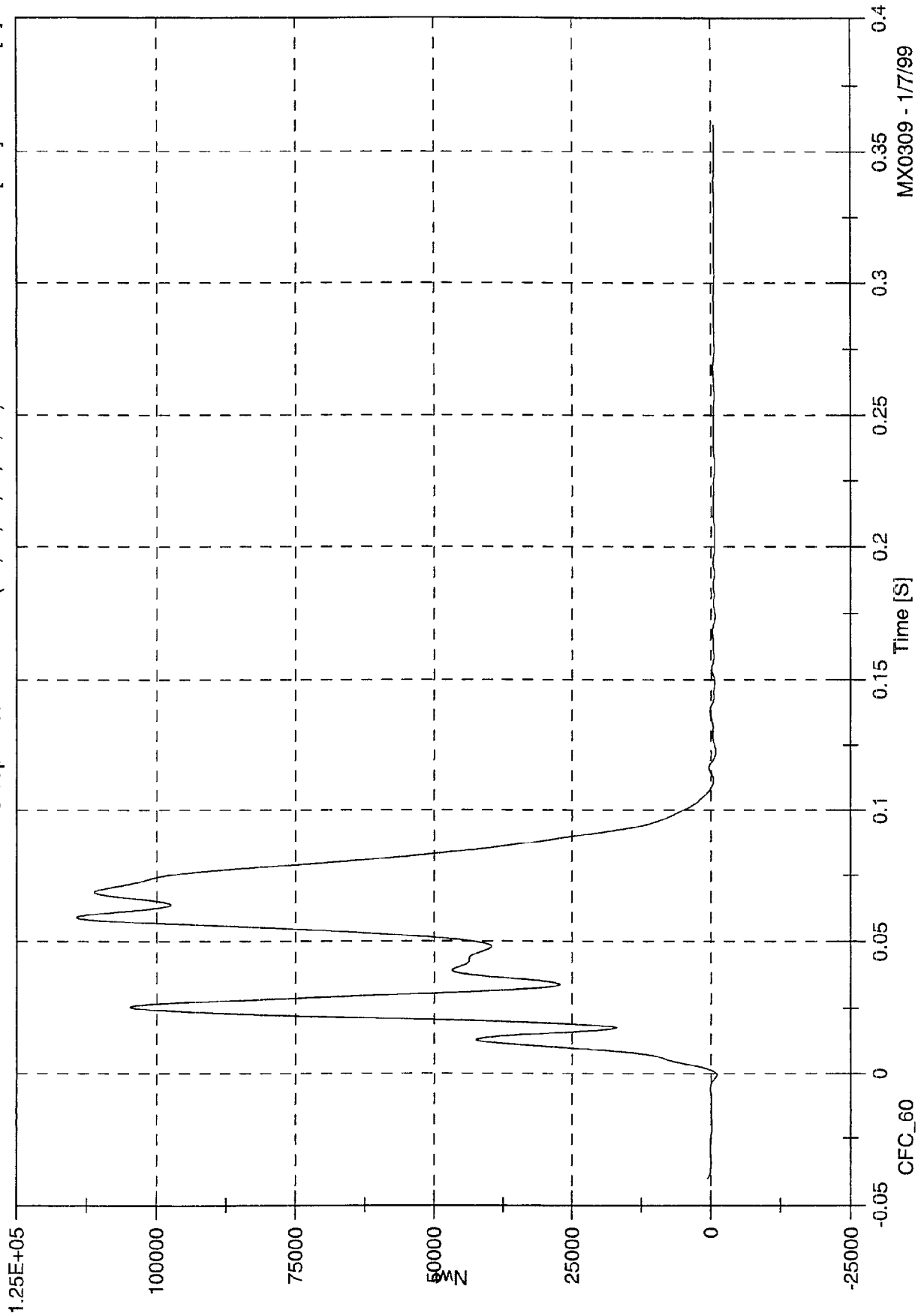


MX0309 - 1/7/99

NCAP #5 - 1999 JEEP CHEROKEE

Max: 114343.2 [Nwt] at 0.059 [S]
 Min: -1129.9 [Nwt] at -0.000 [S]

Group 2 Load Cell Sum (A4,A5,A6,B4,B5,B6)



CFC_60

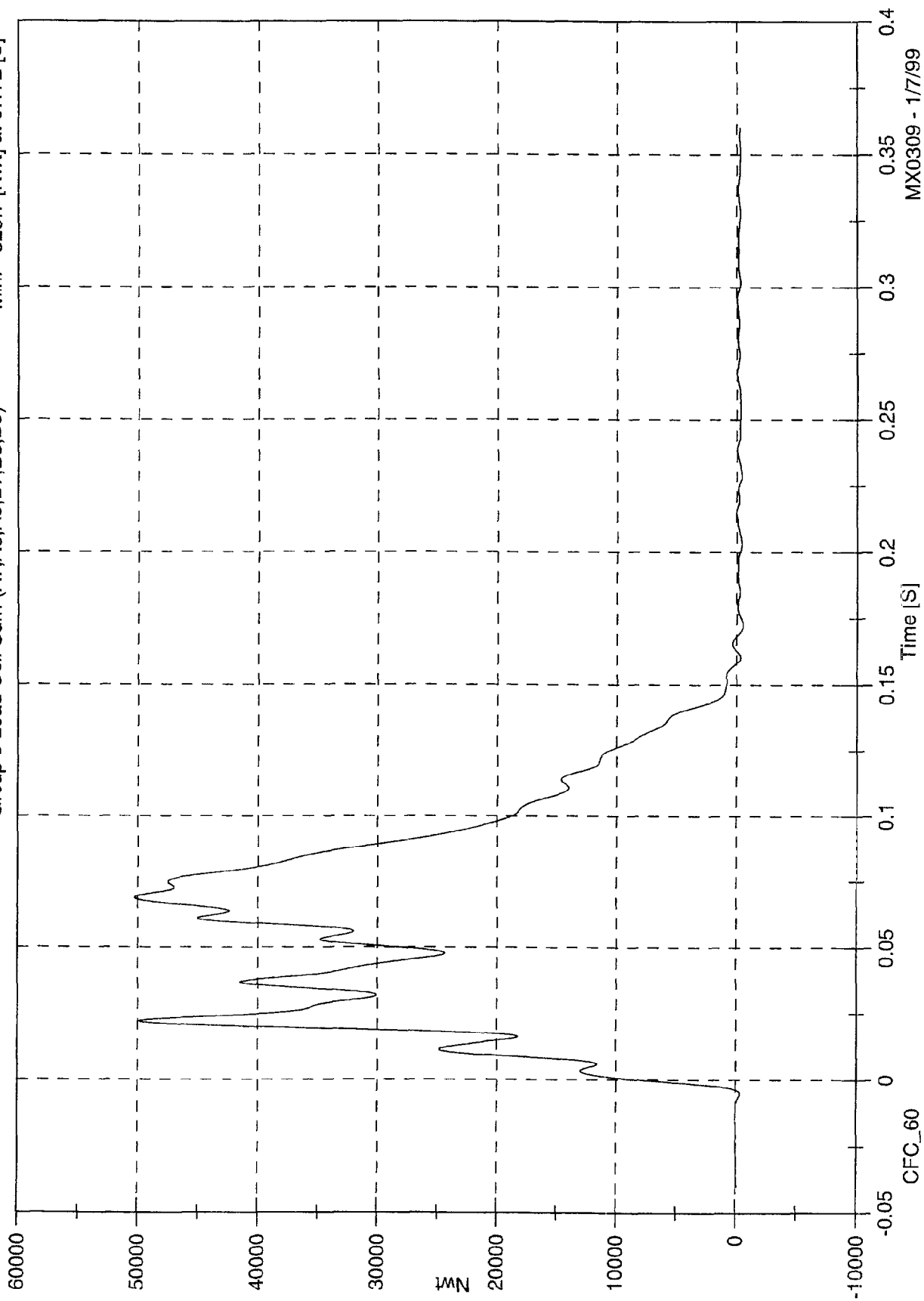
Time [S]

MX0309 - 1/7/99

NCAP #5 - 1999 JEEP CHEROKEE

Max: 50284.4 [Nwt] at 0.069 [S]
 Min: -528.7 [Nwt] at 0.172 [S]

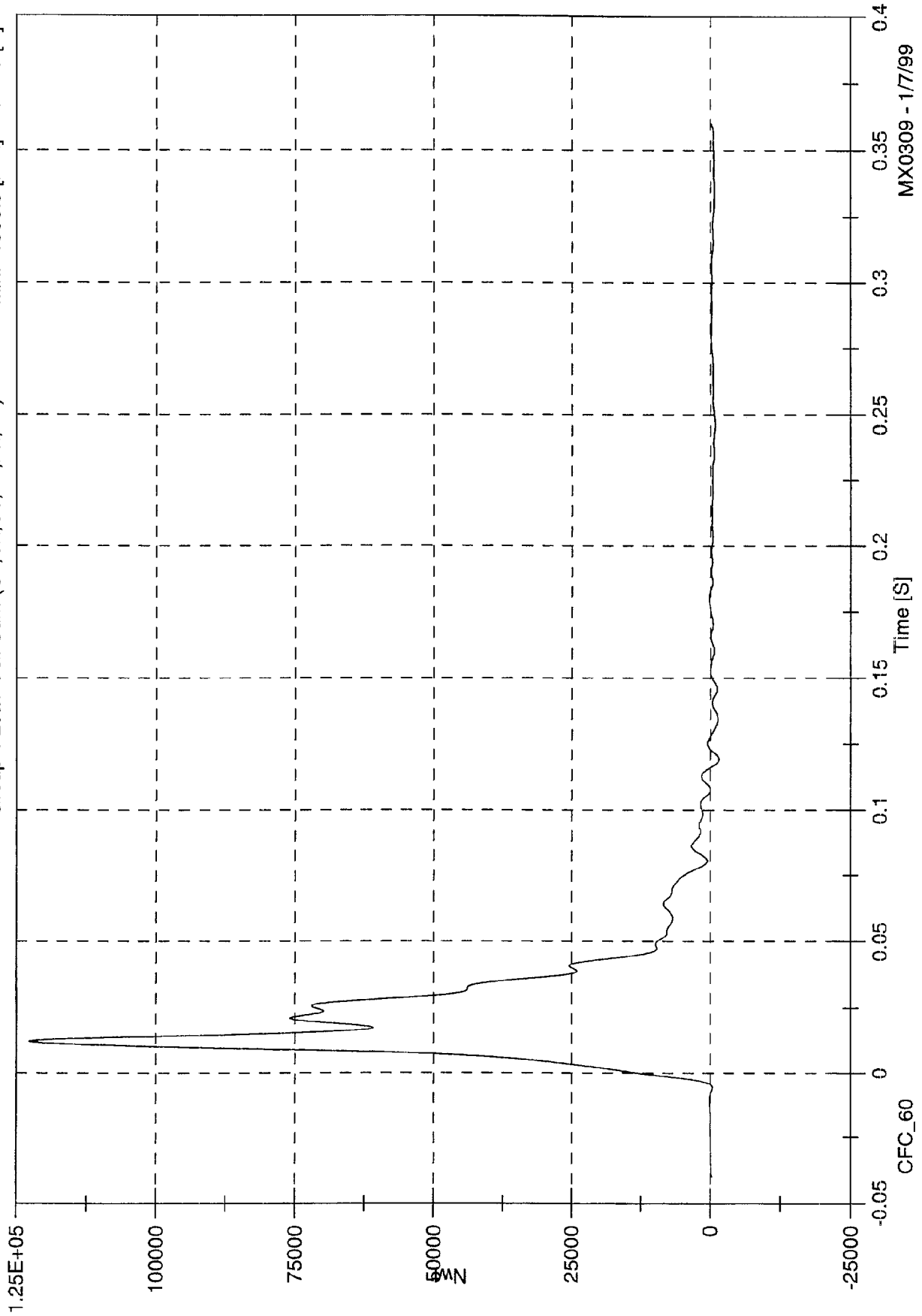
Group 3 Load Cell Sum (A7,A8,A9,B7,B8,B9)



NCAP #5 - 1999 JEEP CHEROKEE

Max: 122733.3 [Nwt] at 0.012 [S]
 Min: -1550.5 [Nwt] at 0.119 [S]

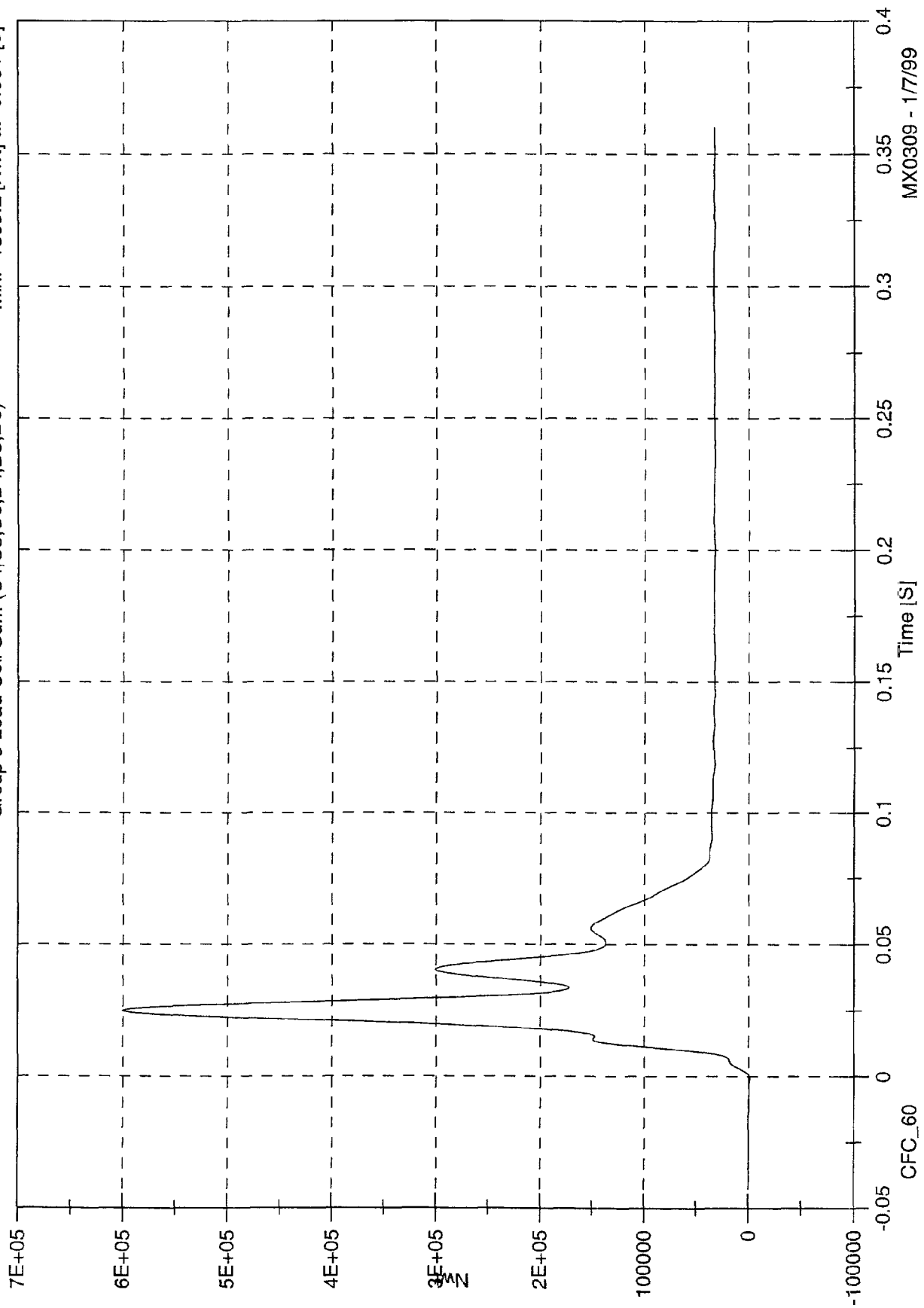
Group 4 Load Cell Sum (C1,C2,C3,D1,D2,D3)



NCAP #5 - 1999 JEEP CHEROKEE

Max: 600490.1 [Nwt] at 0.025 [S]
 Min: -1309.2 [Nwt] at -0.001 [S]

Group 5 Load Cell Sum (C4,C5,C6,D4,D5,D6)

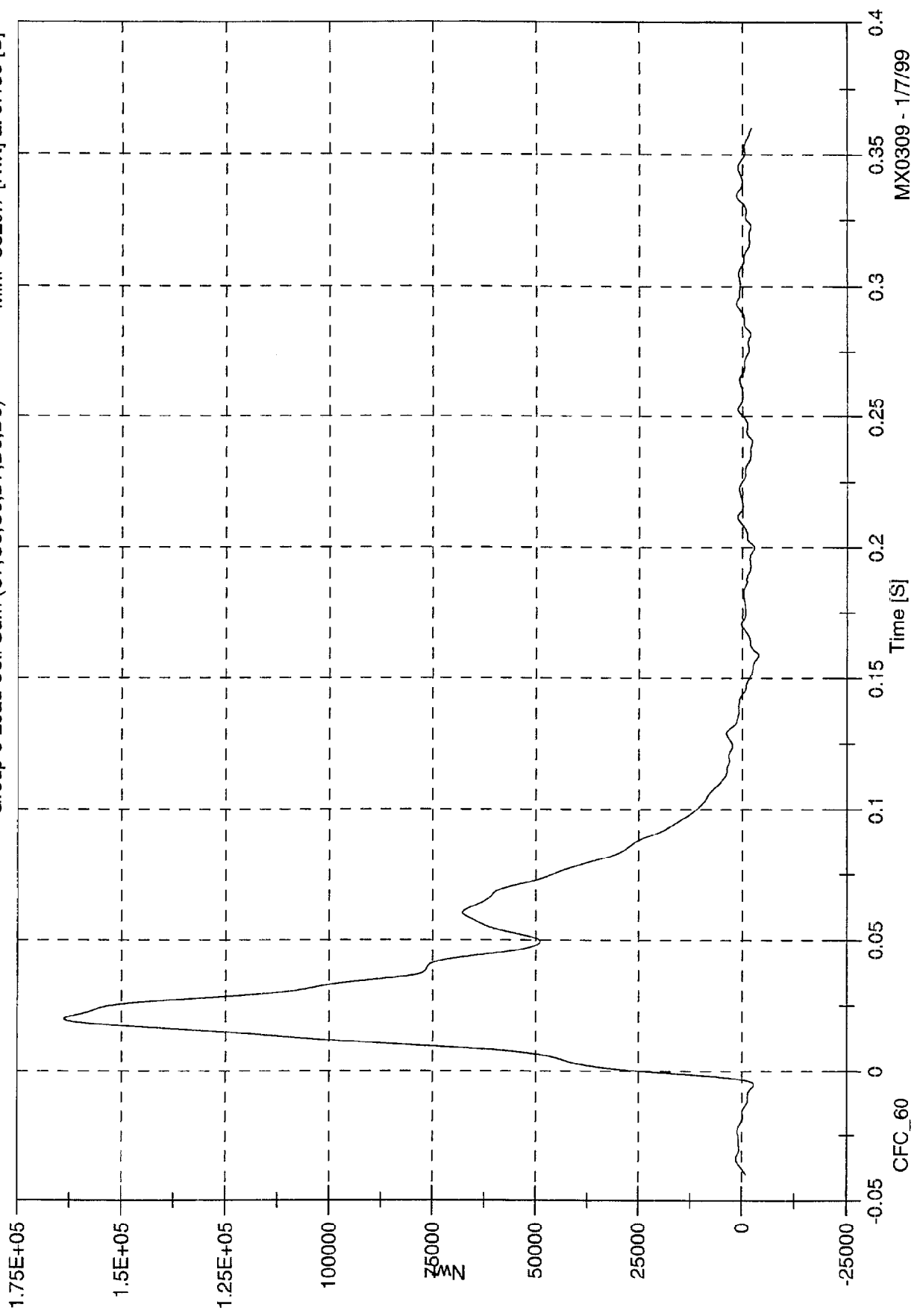


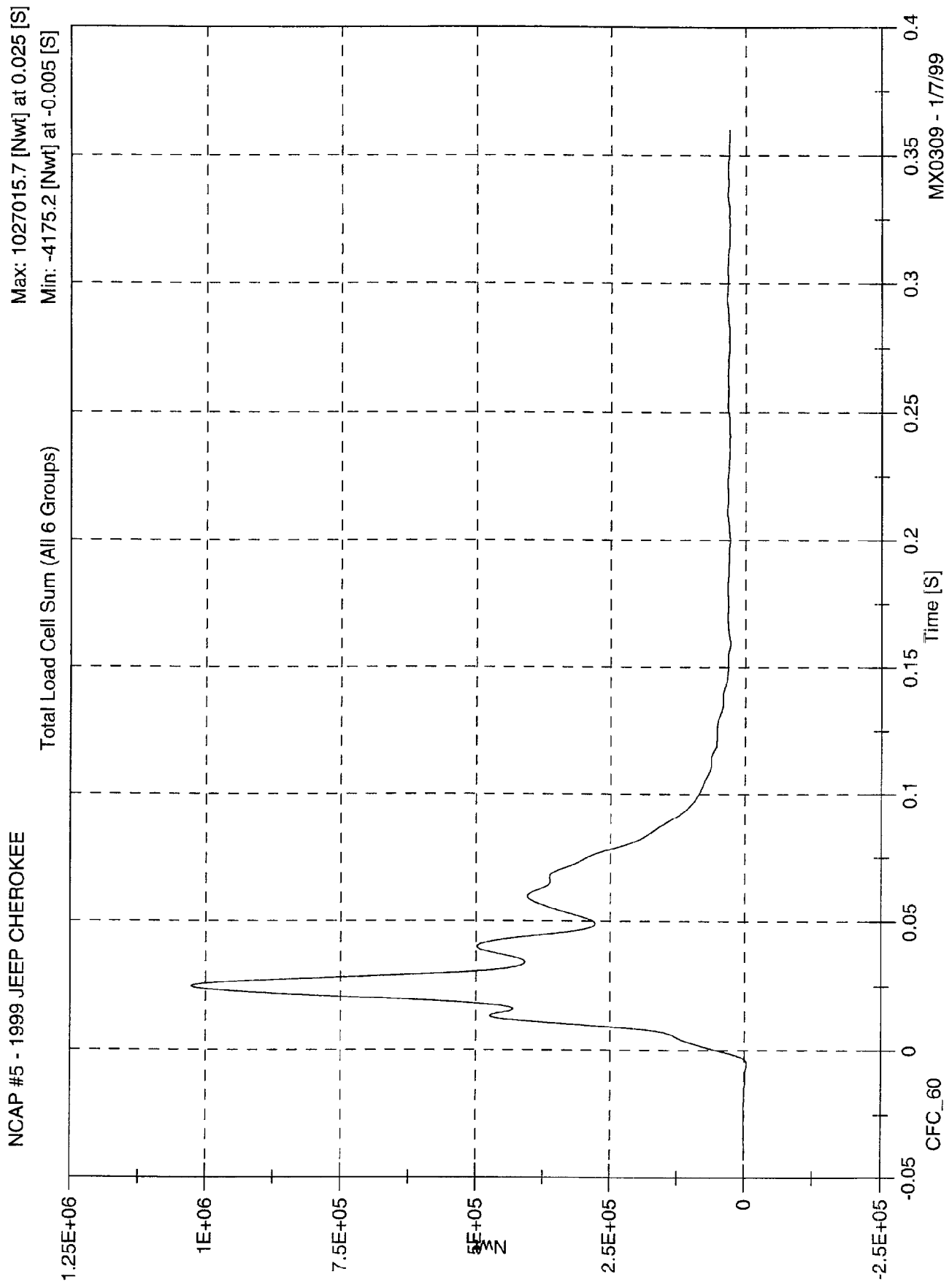
MX0309 - 1/7/99

NCAP #5 - 1999 JEEP CHEROKEE

Max: 163926.5 [Nwt] at 0.020 [S]
 Min: -3829.7 [Nwt] at 0.159 [S]

Group 6 Load Cell Sum (C7,C8,C9,D7,D8,D9)





Appendix C

PART 572B/E DUMMY CONFIGURATION

AND PERFORMANCE VERIFICATION DATA SHEETS

Appendix C contains the results from certification tests performed on the 50th percentile male anthropomorphic test devices utilized for this crash test. The results indicate that the dummies meet all of the performance requirements of the six standard tests as specified in 49 CFR Part 572, Federal Register, Volume 42, No. 25, dated February 7, 1977.

The tests were conducted at the Dummy Certification Test Facility of Calspan Corporation. A summary of the test results, and Part 572 specifications are included in this Appendix.

Dummy serial numbers and certification dates are:

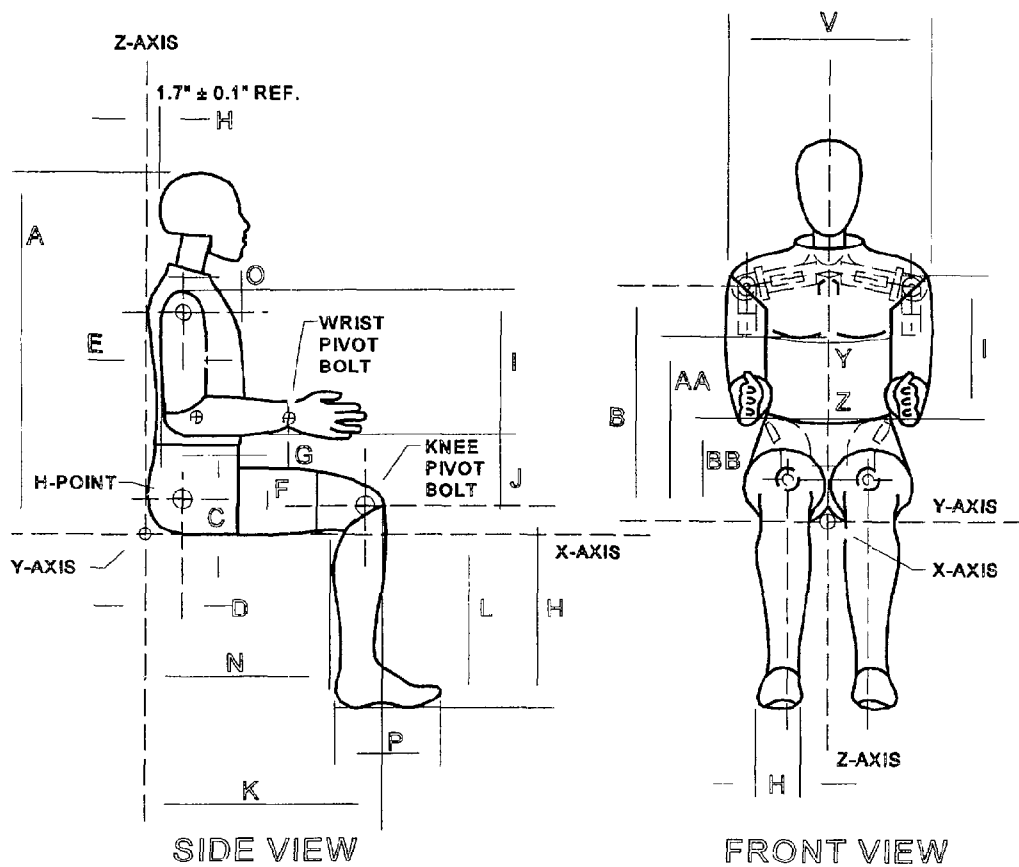
<u>Position No./Location</u>	<u>Serial No.</u>	<u>Completion Date</u>
#1/Driver	061	12/17/98
#2/Right Front Passenger	064	12/17/98

Electronic Test Equipment

The complement of signal conditioning, recording and display equipment, in conjunction with dummy certification testing, can be found in New Car Assessment and Standards Inducant Testing Final Report No. 6525-V-1.

DUMMY CONFIGURATION DIMENSIONS

EXTERNAL DIMENSIONS SPECIFICATIONS



NOTE: Figure is referenced to the erect seated position. The curved lumbar does not allow the Hybrid III to be positioned in a perfect erect attitude.
(REF: S572.31(A)(8))

PART 572E
HEAD DROP TEST

Dummy Serial Number 061
Calspan Sequential Test Number 5
Date 12/17/98
Workfile 061598.hdp

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	66-78 Deg F	70
Relative Humidity	10% - 70%	20
Peak Resultant Acceleration	225-275 G's	273.9
Peak Lateral Acceleration	15 G's Max	2.3
Is Acceleration Curve Unimodal?	YES	yes

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
NECK FLEXION TEST

Dummy Serial Number 061
Calspan Sequential Test Number 5
Date 12/17/98
Workfile 061598.nfl

6 Axis Neck Transducer

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature		69-72 Deg F	70
Relative Humidity		10% - 70%	23
Impact Velocity		22.60 - 23.40 Ft/s	22.80
Pendulum Deceleration	10 ms	22.50 - 27.50 G's	25.19
	20 ms	17.60 - 22.60 G's	20.34
	30 ms	12.50 - 18.50 G's	16.49
Max Pendulum G's Above 30 ms		29 G's Max	16.49
Deceleration - Time Curve Decay Time to 5 G's		34 - 42 ms	37.25
D Plane Rotation	Max	64 - 78 Deg	77.46
	Time	57 - 64 ms	57.63
Moment About Occipital Condyle	Max	65 - 80 Ft-Lbs	70.76
	Time	47 - 58 ms	52.13
Rotation Angle - Time Curve Decay Time to Zero		113 - 128 ms	120.63
Positive Moment - Time Curve Decay Time to Zero		97 - 107 ms	101.38

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
NECK EXTENSION TEST

Dummy Serial Number 061
 Calspan Sequential Test Number 5
 Date 12/17/98
 Workfile 061598.nex

6 Axis Neck Transducer

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature		69-72 Deg F	70
Relative Humidity		10% - 70%	23
Impact Velocity		19.50 - 20.30 Ft/s	19.70
Pendulum Deceleration	10 ms	17.20 - 21.20 G's	19.04
	20 ms	14.00 - 19.00 G's	16.27
	30 ms	11.00 - 16.00 G's	13.67
Max Pendulum G's Above 30 ms		22 G's Max	13.67
Deceleration - Time Curve Decay Time to 5 G's		38 - 46 ms	42.88
D Plane Rotation	Max	81 - 106 Deg	91.22
	Time	72 - 82 ms	74.50
Moment About Occipital Condyle	Max	-59.0 - -39.0 Ft-Lbs	-58.37
	Time	65 - 79 ms	68.63
Rotation Angle - Time Curve Decay Time to Zero		147 - 174 ms	148.25
Positive Moment - Time Curve Decay Time to Zero		120 - 148 ms	137.50

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
THORAX IMPACT TEST

Dummy Serial Number 061
Calspan Sequential Test Number 5
Date 12/17/98
Workfile 061598.th3

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	69-72 Deg F	70
Relative Humidity	10% - 70%	24
Pendulum Velocity	21.6 - 22.4 Ft/s	21.70
Maximum Deflection	2.50 - 2.86 in	2.52
Maximum Resistive Force	1160 - 1325 Lbs	1205.95
Internal Hysteresis	69 - 85 %	73.73

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
KNEE IMPACT TEST

Dummy Serial Number 061
Calspan Sequential Test Number 5
Date 11/21/98
Workfile 061598

TEST PARAMETER	SPECIFICATION	TEST RESULTS
LEFT KNEE		
Temperature	66 - 78 Deg F	70
Relative Humidity	10% - 70%	32
Probe Velocity	6.8 - 7.0 Ft/s	7.00
Peak Knee Impact Force	1060 - 1300 Lbs	1228
RIGHT KNEE		
Temperature	66 - 78 Deg F	70
Relative Humidity	10% - 70%	32
Probe Velocity	6.8 - 7.0 Ft/s	7.00
Peak Knee Impact Force	1060 - 1300 Lbs	1214

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
EXTERNAL DIMENSIONS

Dummy Serial Number 061
Calspan Sequential Test Number 5
Date 12/17/98

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature			70
Relative Humidity			24
Location for Chest Circumference	AA	16.9 - 17.1 in	17.0
Location for Waist Circumference	BB	8.9 - 9.1 in	9.0
Chest Circumference (With Jacket)	Y	38.2 - 39.4 in	39.3
Waist Circumference	Z	32.9 - 34.1 in	33.4
Chest Depth	O	8.4 - 9.0 in	8.6
H-Point Height	C	3.3 - 3.5 in	3.4
H-Point from Backline	D	5.3 - 5.5 in	5.4
Skull Cap to Backline	H	1.6 - 1.8 in	1.7
Total Sitting Height	A	34.6 - 35.0 in	34.9
Thigh Clearance	F	5.5 - 6.1 in	6.0
Buttock Knee Length	K	22.8 - 23.8 in	23.4
Buttock Popliteal Length	N	17.8 - 18.8 in	18.3
Popliteal Height	L	16.9 - 17.9 in	17.6
Knee Pivot Height	M	19.1 - 19.7 in	19.5
Foot Length	P	9.9 - 10.5 in	10.1
Foot Breadth	W	3.6 - 4.2 in	3.9
Shoulder Pivot from Backline	E	3.3 - 3.7 in	3.5
Shoulder Breadth	V	16.6 - 17.2 in	16.8
Shoulder Pivot Height	B	19.9 - 20.5 in	20.2
Elbow Rest Height	J	7.5 - 8.3 in	7.8
Shoulder - Elbow Length	I	13.0 - 13.6 in	13.4
Back of Elbow to Wrist Pivot	G	11.4 - 12.0 in	11.6

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
HEAD DROP TEST

Dummy Serial Number 064
Calspan Sequential Test Number 4
Date 12/11/98
Workfile 064498.HDP

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	66-78 Deg F	70
Relative Humidity	10% - 70%	20
Peak Resultant Acceleration	225-275 G's	244.6
Peak Lateral Acceleration	15 G's Max	2.7
Is Acceleration Curve Unimodal?	YES	Yes

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
NECK FLEXION TEST

Dummy Serial Number 064
 Calspan Sequential Test Number 4
 Date 12/17/98
 Workfile 064498.NFL

6 Axis Neck Transducer

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature		69-72 Deg F	70
Relative Humidity		10% - 70%	23
Impact Velocity		22.60 - 23.40 Ft/s	22.9
Pendulum Deceleration	10 ms	22.50 - 27.50 G's	24.54
	20 ms	17.60 - 22.60 G's	21.45
	30 ms	12.50 - 18.50 G's	16.30
Max Pendulum G's Above 30 ms		29 G's Max	16.30
Deceleration - Time Curve Decay Time to 5 G's		34 - 42 ms	38.25
D Plane Rotation	Max	64 - 78 Deg	71.12
	Time	57 - 64 ms	62.75
Moment About Occipital Condyle	Max	65 - 80 Ft-Lbs	72.77
	Time	47 - 58 ms	51.63
Rotation Angle - Time Curve Decay Time to Zero		113 - 128 ms	121.88
Positive Moment - Time Curve Decay Time to Zero		97 - 107 ms	97.88

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
NECK EXTENSION TEST

Dummy Serial Number 064
 Calspan Sequential Test Number 4
 Date 12/17/98
 Workfile 064498.NEX

6 Axis Neck Transducer

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature		69-72 Deg F	70
Relative Humidity		10% - 70%	23
Impact Velocity		19.50 - 20.30 Ft/s	19.50
Pendulum Deceleration	10 ms	17.20 - 21.20 G's	19.44
	20 ms	14.00 - 19.00 G's	16.86
	30 ms	11.00 - 16.00 G's	13.85
Max Pendulum G's Above 30 ms		22 G's Max	13.85
Deceleration - Time Curve Decay Time to 5 G's		38 - 46 ms	40.63
D Plane Rotation	Max	81 - 106 Deg	96.63
	Time	72 - 82 ms	72.88
Moment About Occipital Condyle	Max	-59.0 - -39.0 Ft-Lbs	-56.78
	Time	65 - 79 ms	69.13
Rotation Angle - Time Curve Decay Time to Zero		147 - 174 ms	148.88
Positive Moment - Time Curve Decay Time to Zero		120 - 148 ms	136.00

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
THORAX IMPACT TEST

Dummy Serial Number 064
Calspan Sequential Test Number 4
Date 12/17/98
Workfile 064498.TH3

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	69-72 Deg F	70
Relative Humidity	10% - 70%	24
Pendulum Velocity	21.6 - 22.4 Ft/s	21.70
Maximum Deflection	2.50 - 2.86 in	2.52
Maximum Resistive Force	1160 - 1325 Lbs	1260.78
Internal Hysteresis	69 - 85 %	76.76

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
KNEE IMPACT TEST

Dummy Serial Number 064
Calspan Sequential Test Number 4
Date 11/21/98
Workfile 064498

TEST PARAMETER	SPECIFICATION	TEST RESULTS
LEFT KNEE		
Temperature	66 - 78 Deg F	70
Relative Humidity	10% - 70%	32
Probe Velocity	6.8 - 7.0 Ft/s	7.00
Peak Knee Impact Force	1060 - 1300 Lbs	1181.0
RIGHT KNEE		
Temperature	66 - 78 Deg F	70
Relative Humidity	10% - 70%	32
Probe Velocity	6.8 - 7.0 Ft/s	7.00
Peak Knee Impact Force	1060 - 1300 Lbs	1185.0

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
EXTERNAL DIMENSIONS

Dummy Serial Number 064
Calspan Sequential Test Number 4
Date 12/17/98

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature			70
Relative Humidity			24
Location for Chest Circumference	AA	16.9 - 17.1 in	17.0
Location for Waist Circumference	BB	8.9 - 9.1 in	9.0
Chest Circumference (With Jacket)	Y	38.2 - 39.4 in	38.9
Waist Circumference	Z	32.9 - 34.1 in	33.4
Chest Depth	O	8.4 - 9.0 in	8.6
H-Point Height	C	3.3 - 3.5 in	3.4
H-Point from Backline	D	5.3 - 5.5 in	5.4
Skull Cap to Backline	H	1.6 - 1.8 in	1.7
Total Sitting Height	A	34.6 - 35.0 in	34.8
Thigh Clearance	F	5.5 - 6.1 in	6.0
Buttock Knee Length	K	22.8 - 23.8 in	23.6
Buttock Popliteal Length	N	17.8 - 18.8 in	18.4
Popliteal Height	L	16.9 - 17.9 in	17.3
Knee Pivot Height	M	19.1 - 19.7 in	19.4
Foot Length	P	9.9 - 10.5 in	10.1
Foot Breadth	W	3.6 - 4.2 in	3.8
Shoulder Pivot from Backline	E	3.3 - 3.7 in	3.6
Shoulder Breadth	V	16.6 - 17.2 in	16.8
Shoulder Pivot Height	B	19.9 - 20.5 in	20.4
Elbow Rest Height	J	7.5 - 8.3 in	8.0
Shoulder - Elbow Length	I	13.0 - 13.6 in	13.3
Back of Elbow to Wrist Pivot	G	11.4 - 12.0 in	11.6

Remarks:

Laboratory Technician: B. Swiecicki

Appendix D

DUMMY, VEHICLE AND LABORATORY INSTRUMENT CALIBRATION

INSTRUMENT CALIBRATION FOR DRIVER DUMMY

(6 Month Calibration Minimum)

DRIVER DUMMY (S/N 061)	Serial #	Manufacturer	Calibration	
			Last	Next
Head				
X	AL553	ENDEVCO	8/98	2/99
Y	A83G	ENDEVCO	12/98	6/99
Z	C14901	ENDEVCO	8/98	2/99
Chest				
X	A26A	ENDEVCO	8/98	2/99
Y	FP60	ENDEVCO	12/98	6/99
Z	AL6H7	ENDEVCO	12/98	6/99
Right Femur Load Cell	954	GSE	9/98	3/99
Left Femur Load Cell	955	GSE	9/98	3/99
Neck Load Cell	205	DENTON	8/98	2/99
X	205	DENTON	8/98	2/99
Y	205	DENTON	8/98	2/99
Z	205	DENTON	8/98	2/99
Neck Moment	205	DENTON	8/98	2/99
X	205	DENTON	8/98	2/99
Y	205	DENTON	8/98	2/99
Z	205	DENTON	8/98	2/99
Chest Deflection Gauge	061	HUMANOID	10/98	4/99
Hybrid III Use Only				
Lap Belt Load Cells	706	LEBOW	9/98	3/99
Shoulder Belt Load Cells	707	LEBOW	9/98	3/99
Spool-Out Potentiometer	M10	MAGNETEK	10/98	4/99
Belt Stretch Transducer	E5	CALSPAN	10/98	4/99

INSTRUMENT CALIBRATION FOR DRIVER DUMMY

(6 Month Calibration Minimum)

DRIVER DUMMY	Serial #	Manufacturer	Calibration	
			Last	Next
Head	X (R)	ENDEVCO	10/98	4/99
	Y (R)	ENDEVCO	10/98	4/99
	Z (R)	ENDEVCO	10/98	4/99
Chest	X (R)	ENDEVCO	12/98	6/99
	Y (R)	ENDEVCO	9/98	3/99
	Z (R)	ENDEVCO	8/98	2/99
Pelvic	X	ENDEVCO	10/98	4/99
	Y	ENDEVCO	10/98	4/99
	Z	ENDEVCO	10/98	4/99
Left Upper Tibia	Mx	DENTON	9/98	3/99
	My	DENTON	9/98	3/99
	Fz	DENTON	8/98	2/99
Left Lower Tibia	Mx	DENTON	8/98	2/99
	My	DENTON	8/98	2/99
	Fz	DENTON	8/98	2/99
Right Upper Tibia	Mx	DENTON	9/98	3/99
	My	DENTON	9/98	3/99
	Fz	DENTON	8/98	2/99
Right Lower Tibia	Mx	DENTON	8/98	2/99
	My	DENTON	8/98	2/99
	Fz	DENTON	8/98	2/99

INSTRUMENT CALIBRATION FOR DRIVER DUMMY

(6 Month Calibration Minimum)

DRIVER DUMMY	Serial #	Manufacture	Calibration	
			Last	Next
Left Foot Front Z	A14239	ENDEVCO	12/98	6/99
Left Foot Rear X	A14488	ENDEVCO	12/98	6/99
Left Foot Rear Z	A14306	ENDEVCO	12/98	6/99
Right Foot Front Z	A14484	ENDEVCO	12/98	6/99
Right Foot Rear X	A14481	ENDEVCO	12/98	6/99
Right Foot Rear Z	A14433	ENDEVCO	12/98	6/99

INSTRUMENT CALIBRATION FOR PASSENGER DUMMY

(6 Month Calibration Minimum)

PASSENGER DUMMY (S/N 064)	Serial #	Manufacturer	Calibration	
			Last	Next
Head X	AD4A9	ENDEVCO	11/98	5/99
Y	AE8T7	ENDEVCO	11/98	5/99
Z	AF5R1	ENDEVCO	11/98	5/99
Chest X	A08A	ENDEVCO	11/98	5/99
Y	ADL42	ENDEVCO	11/98	5/99
Z	A28F	ENDEVCO	11/98	5/99
Right Femur Load Cell	F658	GSE	10/98	4/99
Left Femur Load Cell	F659	GSE	10/98	4/99
Neck Load Cell X	440	DENTON	9/98	3/99
Y	440	DENTON	9/98	3/99
Z	440	DENTON	9/98	3/99
Neck Moment X	440	DENTON	9/98	3/99
Y	440	DENTON	9/98	3/99
Z	440	DENTON	9/98	3/99
Chest Deflection Gauge	064	HUMANOID	10/98	4/99
Hybrid III Use Only				
Lap Belt Load Cells	711	LEBOW	9/98	3/99
Shoulder Belt Load Cells	712	LEBOW	9/98	3/99
Spool-Out Potentiometer	M6	MAGNETEK	10/98	4/99
Belt Stretch Transducer	E6	CALSPAN	10/98	4/99

INSTRUMENT CALIBRATION FOR PASSENGER DUMMY

(6 Month Calibration Minimum)

PASSENGER DUMMY	Serial #	Manufacturer	Calibration	
			Last	Next
Head				
X (R)	A13924	ENDEVCO	12/98	6/99
Y (R)	A13827	ENDEVCO	11/98	5/99
Z (R)	A13921	ENDEVCO	11/98	5/99
Chest				
X (R)	A14077	ENDEVCO	11/98	5/99
Y (R)	A13882	ENDEVCO	11/98	5/99
Z (R)	ACCW0	ENDEVCO	11/98	5/99
Pelvic				
X	AF480	ENDEVCO	12/98	6/99
Y	AC2M6	ENDEVCO	12/98	6/99
Z	AF5C1	ENDEVCO	12/98	6/99
Left Upper Tibia				
Mx	045	DENTON	9/98	3/99
Left Upper Tibia				
My	045	DENTON	9/98	3/99
Left Lower Tibia				
Fz	0125	DENTON	8/98	2/99
Left Lower Tibia				
Mx	0125	DENTON	8/98	2/99
Left Lower Tibia				
My	0125	DENTON	8/98	2/99
Right Upper Tibia				
Mx	038	DENTON	9/98	3/99
Right Upper Tibia				
My	038	DENTON	9/98	3/99
Right Lower Tibia				
Fz	0124	DENTON	8/98	2/99
Right Lower Tibia				
Mx	0124	DENTON	8/98	2/99
Right Lower Tibia				
My	0124	DENTON	8/98	2/99

INSTRUMENT CALIBRATION FOR PASSENGER DUMMY

(6 Month Calibration Minimum)

PASSENGER DUMMY	Serial #	Manufacture	Calibration	
			Last	Next
Left Foot Front Z	A14307	ENDEVCO	12/98	6/99
Left Foot Rear X	A14510	ENDEVCO	12/98	6/99
Left Foot Rear Z	A14383	ENDEVCO	12/98	6/99
Right Foot Front Z	A14485	ENDEVCO	12/98	6/99
Right Foot Rear X	A14321	ENDEVCO	12/98	6/99
Right Foot Rear Z	A14381	ENDEVCO	12/98	6/99

INSTRUMENT CALIBRATION FOR VEHICLE ACCELEROMETERS

(6 Month Calibration Minimum)

	Serial #	Manufacturer	Calibration	
			Last	Next
Left Seat Rear Crossmember	D85	ICS	12/98	6/99
Right Rear Seat Crossmember	D69	ICS	8/98	2/99
Top of Engine	D74	ICS	10/98	4/99
Bottom of Engine	D63	ICS	8/98	2/99
Left Disc Brake Caliper	A175	CEC	11/98	5/99
Right Disc Brake Caliper	Z08	CEC	11/98	5/99
Instrument Panel	A156	CEC	11/98	5/99
Left Seat Rear Crossmember (R)	D71	ICS	8/98	2/99
Right Seat Rear Crossmember (R)	D61	ICS	8/98	2/99