V3031

REPORT NUMBER: CAL-99-6

NEW CAR ASSESSMENT PROGRAM (NCAP)
FRONTAL BARRIER IMPACT TEST

FUJI HEAVY INDUSTRIES, LTD., JAPAN
1999 SUBARU FORESTER
4-DOOR WAGON

NHTSA NUMBER: MX5500

CALSPAN TEST NUMBER: 8413-30

CALSPAN CORPORATION
TRANSPORTATION SCIENCE CENTER
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BUFFALO, NEW YORK 14225

January 11, 1999

FINAL REPORT

PREPARED FOR:

U. S. DEPARTMENT OF TRANSPORTATION
National Highway Traffic Safety Administration
Safety Performance Standards
Office of Crashworthiness Standards
Mail Code: NPS-10
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FINAL REPORT ACCEPTANCE BY OCS:

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Manager, New Car Assessment Program (NCAP)
NHTSA, Office of Crashworthiness Standards

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NHTSA, Office of Crashworthiness Standards

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15. *Supplementary Notes*		

16. *Abstract*

A frontal load cell barrier test of a 1999 Subaru Forester 4-Door Wagon was performed at Calspan Corporation crash test facility in Buffalo, New York, on January 11, 1999.

The impact velocity was 56.3 kph and the temperature at the barrier face was 20°C. The maximum post-test vehicle crush was 643.7 mm. The test vehicle was equipped with 3-point restraint systems, knee bolsters, and airbags at both the driver and right outboard passenger seating positions.

With respect to FMVSS 208 "Occupant Crash Protection - Injury Criteria" both the driver and passenger appear to comply with head, chest, and femur requirements.

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Section 1

PURPOSE AND SUMMARY OF TEST MX5500

PURPOSE

This 56.3 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 56.3 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 Subaru Forester 4-Door Wagon at a velocity of 56.3 kph. The test was performed at the Calspan Corporation on January 11, 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. 150) and the right-front passenger (position 2) ATD (Serial No. 245) were calibrated previous to this test. Certification details, along with instrumentation calibration data, are found in Appendix C.

The 131 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 driver's HIC was 674.6. The maximum chest deceleration over 3 milliseconds was 46.8 g's and maximum chest deflection was 45.72 mm. Femur loads were 4848.3 Newtons on the left and 5755.0 Newtons on the right.

The right front passenger's HIC was 496.0. Maximum chest deceleration over 3 milliseconds was 47.1 g's and maximum chest deflection was 35.56 mm. Femur loads were 5373.7 Newtons on the left and 5269.9 Newtons on the right.

Seat belt spool out displacement sensors were not located in this vehicle due to the proximity of the seatbelt trim panel opening to the D-ring. The overall right side camera view (camera no. 8) is not available. The film broke during the event. The driver left lower tibia mx and right lower tibia mx load cells did not record during the event. The passenger chest y redundant accelerometer has a data spike at 199 ms. The passenger right lower tibia fz load cell clipped during the event, this data is not accurate. The right caliper vehicle accelerometer (accelerometer #5) sustained a cut wire during the event. The data is not accurate. The right side redundant vehicle cross member accelerometer (accelerometer #9) did not record during the event.

SECTION 2

GENERAL TEST AND VEHICLE PARAMETER DATA

DATA SHEET NO. 1 CRASH TEST SUMMARY

Vehicle NHTSA No. : MX5500 Test Mode : 56.3 kph Frontal Barrier

Test Date : January 11, 1999 Time: 12:30 Temperature : -11 °C

Vehicle Make/Model/Body Style : 1999 Subaru Forester 4-Door Wagon

Vehicle Test Weight : 1654 kg

Vehicle/Barrier Impact Angle : 0 °

Impact Velocity : 56.3 kph

Maximum Static Crush : 643.7 mm

Vehicle Rebound : 619 mm

DUMMIES:	DRIVER	PASSENGER
Type :	572E	572E
Restraint System :	Seatbelt, Airbag, Knee Bolster	Seatbelt, Airbag, Knee Bolster

Number of Data Channels : 131

Number of Cameras : 1 Real Time

16 High Speed

DOOR OPENING DATA : Closed/Operable - Left Front

Closed/Operable - 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 :	The face to the top right of center of the airbag. The back of the head to the center of the headrest.	Face to the center of airbag. The back of the head to the right of center of the headrest.
Abdomen :	-	-
Chest	Bag	Bag
Knees	Bolster	Bolster

DATA SHEET NO. 2 GENERAL TEST AND VEHICLE PARAMETER DATA

TEST VEHICLE INFORMATION :

Year/Make/Model/Body Style : 1999 Subaru Forester 4-Door Wagon

NHTSA No. : MX5500 ; VIN: JF1SF6554XG713263 ; Color : Silver

Engine Data: 4 cylinders; - CID; 2.5 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

X Pwr. Windows; X Pwr. Door Locks; X Tilt Wheel

Date Received : 12/22/98 ; Odometer Reading 32 km

Selling Dealer : West Herr Oldsmobile-Subaru, Inc.

& Address: 3565 Southwestern Boulevard Orchard Park, New York 14127

DATA FROM TIRE VEHICLE'S CERTIFICATION LABEL:

Vehicle Manufactured by : Fuji Heavy Industries, Ltd., Japan

Date of Manufacture 09/98

GVWR : 1895 kg; GAWR: 915 kg FRONT; 980 kg REAR

DATA FROM TIRE PLACARD:

Tire Pressure with Maximum Capacity Vehicle Load : 300 kpa FRONT

300 kpa REAR

Recommended Tire Size : P215/60R16

* Recommended Cold Tire Pressure : 200 kpa FRONT; 250 kpa REAR

Size of Tires on Test Vehicle: P215/60R16 ; Manufacturer: Yokahama

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) = 410 kg

No. of Occupants x 68 kg = 340 kg

Rated Cargo/Luggage Weight (RCLW) = 70 kg

*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 =	387.0 kg	Right Rear =	325.0 kg
Left Front =	388.5 kg	Left Rear =	337.5 kg
TOTAL FRONT =	775.5 kg	TOTAL REAR =	662.5 kg

TOTAL DELIVERED WEIGHT = 1,438.0 kg

% of Total Front of Vehicle Weight = 53.9 % of Total Rear Weight = 46.1 %

CALCULATION OF VEHICLE'S TARGET TEST WEIGHT :

Total Delivered Weight (UDW)	=	1,438.0 kg
Rated Cargo/Luggage Weight (RCLW)	=	70.0 kg
Weight of 2 p.572 Dummies @ 76 each	=	152 kg
TARGET TEST WEIGHT	=	1,660.0 kg

WEIGHT OF TEST VEHICLE WITH TWO DUMMIES AND 64 KG OF CARGO WEIGHT:

Right Front =	411.0 kg	Right Rear =	396.5 kg
Left Front =	421.0 kg	Left Rear =	425.5 kg
TOTAL FRONT =	832.0 kg	TOTAL REAR =	822.0 kg

TOTAL TEST WEIGHT = 1,654.0 kg

% of Total Front Weight = 50.3 % % of Total Rear Weight = 49.7 %

Weight of Ballast Secured in Vehicle Trunk Area = 0 kg

Vehicle Components Removed for Weight Reduction: None

VEHICLE ATTITUDE (all dimension in millimeters):

AS DELIVERED :	RF	753	LF	753	RR	768	LR 760
FULLY LOADED :	RF	737	LF	736	RR	743	LR 730
AS TESTED :	RF	739	LF	736	RR	743	LR 732

Vehicle's Wheel Base : 2533 mm

Location of Vehicle's C.G. : 1,258.8 mm rearward of front wheel center.

FUEL SYSTEM DATA :

Fuel System Capacity From Owner's Manual = 60.2 liters

Usable Capacity Figure Furnished by COTR = 60.2 liters

Test Volume Range (92 to 94% of Usable Capacity) = 55.4 to 56.6 liters

ACTUAL TEST VOLUME= 55.7 liters (with entire fuel system filled)

Test Fluid Type: Stoddard Solution ; Spec. Grav. = 0.764

Kinematic Viscosity = 0.96 centistokes; Color = Orange

Type of Fuel Pump: Electric- X ; Mechanical- -

Does Electric Pump operate with ignition switch "ON" & engine "OFF" Yes- X No- -

Details of Fuel System Tank - center of the vehicle, ahead of the rear axle and over the driveshaft. Lines left side of the vehicle interior along the sill. Filler neck right side behind rear axle.

DATA SHEET NO. 3 POST IMPACT DATA

TYPE OF TEST:

Type of Test : Frontal Barrier Impact Angle : 0°

Test Date : January 11, 1999 Time: 12:30 Temperature: -11 °C

Vehicle NHTSA No. : MX5500

Required Impact Velocity Range : 55.5 to 57.1 kph

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

Trap No. 1 = 56.3 kph; Trap No. 2 = 56.3 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 =	4503.9	; C/L =	4539.7	; Left =	4503.7
Post-Test	Right =	3932.0	; C/L =	3896.0	; Left =	3945.0
Crush	Right =	571.9	; C/L =	643.7	; Left =	558.7
AVERAGE	=	591.4	mm			

VEHICLE REBOUND: (From rigid barrier only.)

Distance from front of test vehicle to impact point :

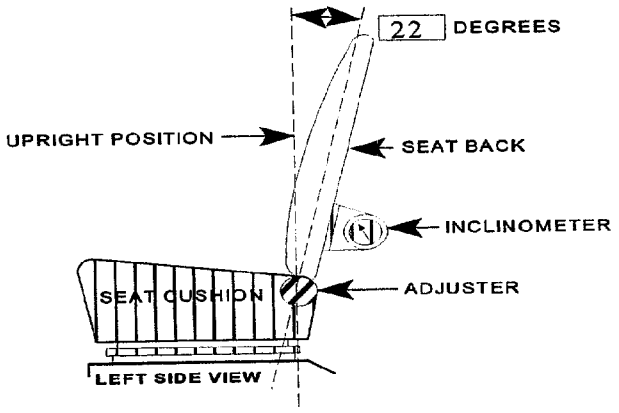
	Right =	634	; C/L =	616	; Left =	608
AVERAGE	=	619.3	mm			

DATA SHEET NO. 4 TEST VEHICLE INFORMATION

VEHICLE IDENTIFICATION:

Model Year : 1999 Vehicle Model: Subaru Forester Body Style : 4-Door Wagon

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 : 22°

Measurement instructions : The seatback is reclined to the fourth locking position with the full upright locking position labeled position 1.

Seat back angle for passenger's seat : 22°

Measurement instructions : Same as the driver's seat.

2. Seat Fore and Aft Positioning

Positioning of the driver's seat : There are 18 seat latch positions. Test position is located at detent number 9 with the forward most detent labeled number 1.

Positioning of the passenger's seat (if applicable) : Same as the driver's seat.

3. Fuel Tank Capacity Data

3.1

A. "Usable Capacity" of the standard equipment fuel tank is 60.2 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 = 60.2 liters

3.2 Amount of Stoddard solvent added to vehicle(s) used for certification test(s) = 56.0 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.

Pump operates a few seconds after the ignition switch is turned on. Then only while the engine is running.

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

4. STEERING COLUMN ADJUSTMENTS :

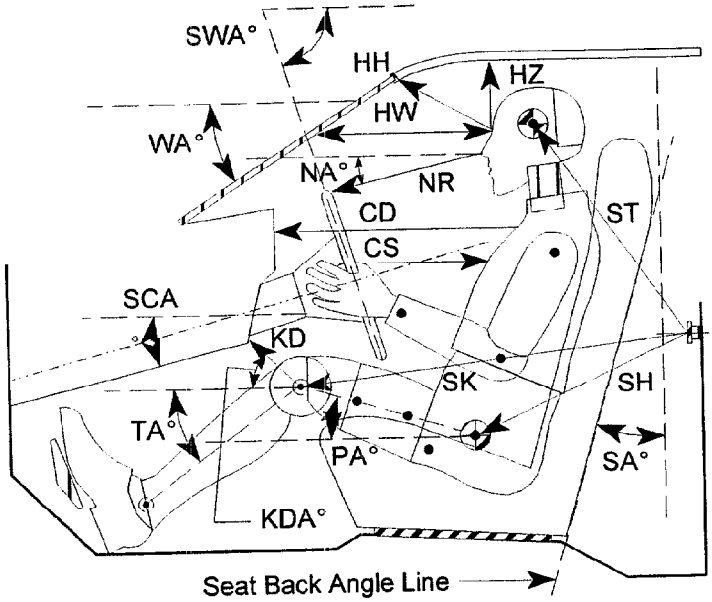
Steering wheel and column adjustments are made so that the steering wheel hub is at the geometric center of the locus it describes when it is moved through its full range of driving positions. If the tested vehicle has any of these adjustments, does your company use any specific procedures to determine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

Operational Instructions: Steering column has infinite number of adjustments. Place wheel in top-most position, measure height L1. Place wheel in lowest position, measure height L2. Mid position is found by adding L1 and L2 and dividing by 2.

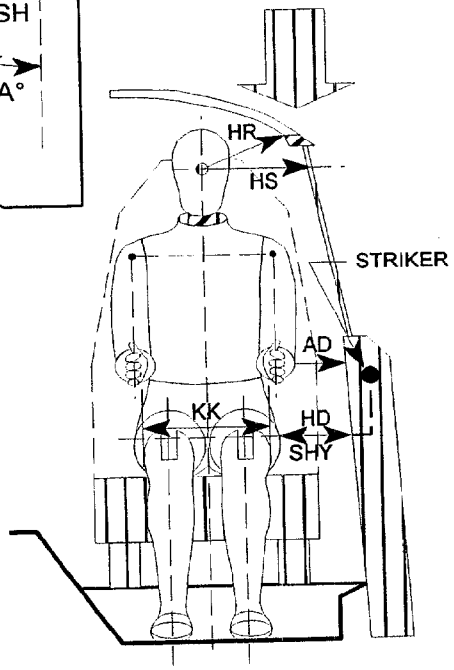
5. SEAT BELT UPPER ANCHORAGE

Nominal design riding position: There are five locking positions. Test position is position number 2 with the uppermost position labeled position 1.

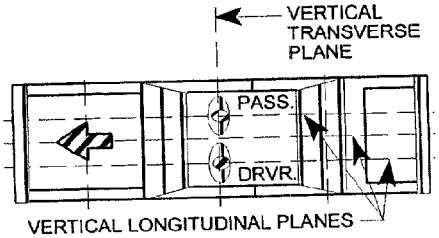
DUMMY MEASUREMENT FOR FRONT SEAT PASSENGERS



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



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



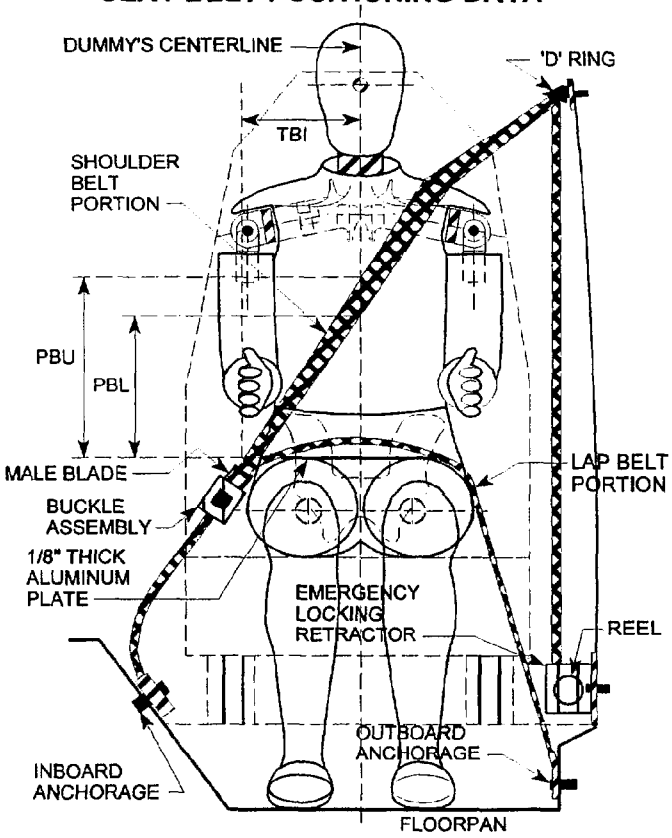
DATA SHEET NO. 5 FRONT SEAT DUMMY POSITIONING MEASUREMENTS IN VEHICLE

	DRIVER (Serial #150)			PASS. (Serial # 245)		
WA°	36.3 deg.			N/A		
SWA°	64 deg.			N/A		
SCA°	26 deg.			N/A		
SA°	22 deg.			22 deg.		
HZ	230			220		
HH	409			391		
HW	628			603		
HR	228			227		
NR	428	Angle	-12 deg.	N/A		
CD	527			537		
CS	315			N/A		
RA	213			N/A		
KDL	191	Angle (KDA)	30 deg.	162		
KDR	186			165	Angle (KDA)	37 deg.
PA°	23.7 deg.			23.8 deg.		
TA°	35.1 deg.			42.7 deg.		
KK	287			261		
ST	548	Angle	3 deg.	541	Angle	2 deg.
SK	520	Angle	95 deg.	519	Angle	85 deg.
SH	190	Angle	139 deg.	182	Angle	124 deg.
SHY	220			231		
HS	289			288		
HD	126			120		
AD	96			107		

Dimensions in millimeters

DATA SHEET NO. 6 SEAT BELT POSITIONING DATA

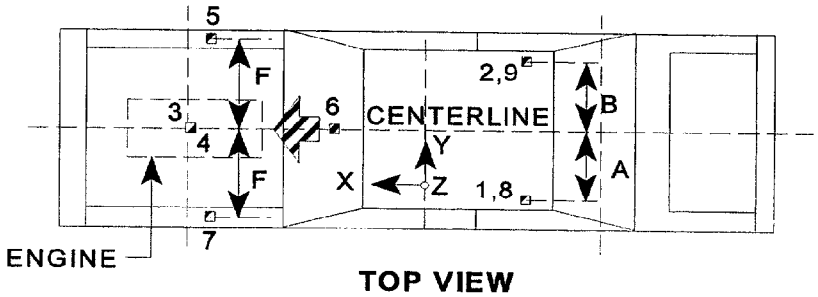
SEAT BELT POSITIONING DATA



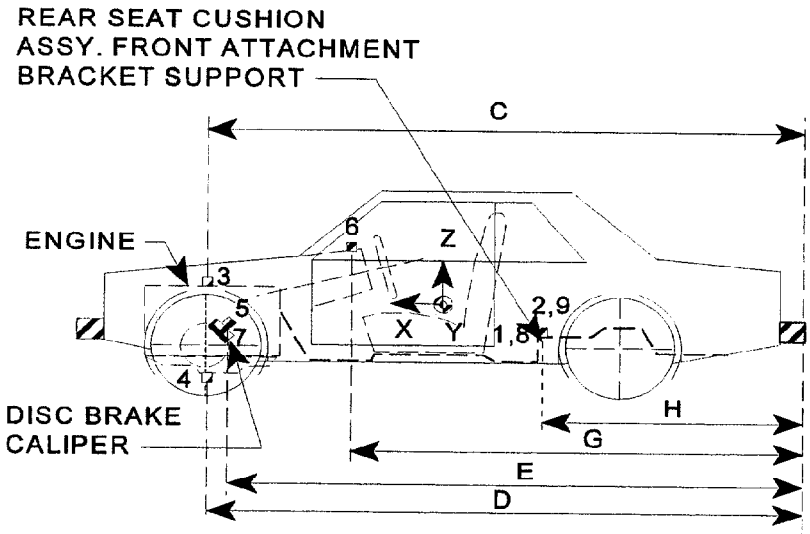
FRONT VIEW OF DUMMY

	DRIVER DUMMY (mm)	PASSENGER DUMMY (mm)
PBU -- Top surface of alum. plate to upper edge	350	300
PBL-- Top surface of alum. plate to belt lower edge	270	223
LAP BELT TENSION	10 N	10 N
SHOULDER BELT TENSION	Retractor	Retractor

VEHICLE ACCELEROMETER LOCATION AND DATA SUMMARY



TOP VIEW



LEFT SIDE VIEW

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	-392.0
B Right Rear Seat Crossmember Y	498.4
C Top of Engine X	3770.4
D Bottom of Engine X	3685.8
E Disc Brake Calipers X	3537.3
F Disc Brake Calipers Y	835.6
G Instrument Panel X	2809.7
H Rear Seat Crossmembers X	1773.2

LOCATION NUMBER	DESCRIPTION	MAXIMUM VALUE (g's)			
		Pos.	msec.	Neg.	msec.
1	Rear Seat X-Member @ Left Side	2.7	131.1	-49.1	35.6
2	Rear Seat X-Member @ Right Side	2.4	125.8	-45.5	35.5
3	Top of Engine Block	43.8	38.4	-129.1	45.6
4	Bottom of Engine	47.0	52.6	-101.6	29.1
5	Disc Brake Caliper @ Right Side	*	*	*	*
6	Instrument Panel	95.4	73.0	-95.0	35.9
7	Disc Brake Caliper @Left Side	8.6	64.9	-71.1	40.1
8	Rear Seat X-Member @ Left-Redundant	2.7	131.3	-50.4	35.5
9	Rear Seat X-Member @ Right-Redundant	**	**	**	**

* Sustained a cut wire during the event.
** This data channel did not record during the event.

DATA SHEET NO. 8 DUMMY INJURY CRITERIA VALUES

NHTSA Test No.: MX5500 Vehicle: 1999 Subaru Forester 4-Door Wagon

DESCRIPTION	UNIT	MAXIMUM VALUE			
		Pos.	msec.	Neg.	msec.
Pos. 1 Head X	g's	4.2	263.3	-66.1	93.1
Pos. 1 Head Y	g's	7.5	93.1	-1.4	31.4
Pos. 1 Head Z	g's	37.2	77.1	-6.7	104.5
Pos. 1 Head Resultant	g's	67.3	93.1	0.0	-67.5
Pos. 2 Head X	g's	3.8	363.4	-45.9	87.0
Pos. 2 Head Y	g's	10.5	60.5	-4.2	131.1
Pos. 2 Head Z	g's	39.5	79.8	-1.4	599.9
Pos. 2 Head Resultant	g's	56.7	79.8	0.0	18.1
Pos. 1 Chest X	g's	2.0	325.9	-45.6	76.3
Pos. 1 Chest Y	g's	4.3	69.0	-8.6	50.0
Pos. 1 Chest Z	g's	14.6	77.3	-12.1	108.9
Pos. 1 Chest Resultant	g's	47.8	76.4	0.0	-77.9
Pos. 1 Chest Displacement	mm	0.0	-3.0	-45.9	82.1
Pos. 2 Chest X	g's	2.3	354.4	-47.9	62.7
Pos. 2 Chest Y	g's	9.7	50.7	-7.7	88.1
Pos. 2 Chest Z	g's	13.7	78.9	-9.4	112.0
Pos. 2 Chest Resultant	g's	48.7	62.8	0.0	-75.7
Pos. 2 Chest Displacement	mm	0.0	24.2	-35.8	81.7
Pos. 1 Left Femur	N	335.7	271.7	-4848.3	48.5
Pos. 1 Right Femur	N	199.2	89.3	-5755.0	48.8
Pos. 2 Left Femur	N	496.2	37.5	-5373.7	44.2
Pos. 2 Right Femur	N	367.3	38.1	-5269.9	44.4
Pos. 1 Left Belt Load	N	8065.7	60.3	-2.2	455.1
Pos. 1 Torso Belt Load	N	5970.5	56.3	-20.4	502.4
Pos. 2 Right Belt Load	N	5139.4	52.2	-4.3	525.2
Pos. 2 Torso Belt Load	N	5970.5	62.6	-2.6	-45.7

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

NHTSA Test No.: MX5500 Vehicle: 1999 Subaru Forester 4-Door Wagon

	HEAD INJURY CRITERIA (HIC)			
	HIC**	t_1 (msec)	t_2 (msec)	Average Acceleration t_1 to t_2
Position #1 - Driver	674.6	66.7	102.7	51.2
Position #2 - Passenger	496.0	61.9	97.9	45.3

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

	CLIP SUMMARY*			
	CLIP (g's)	t_1 (msec)	t_2 (msec)	CSI
Position #1 - Driver	46.8	74.2	77.2	496.0
Position #2 - Passenger	47.1	61.7	64.7	433.6

* 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 Subaru Forester 4-Door Wagon

NHTSA Test No.: MX5500 Test Date: January 11, 1999

DESCRIPTION	UNIT	MAXIMUM VALUE			
		Pos.	msec	Neg.	msec
Pos. 1 Upper Neck Fx	N	255.8	96.5	-286.0	127.4
Pos. 1 Upper Neck Fy	N	97.5	50.6	-303.0	85.9
Pos. 1 Upper Neck Fz	N	2244.3	74.5	-301.5	105.3
Pos. 1 Neck Force Result	N	2249.5	74.5	0.7	-74.2
Pos. 1 Upper Neck Mx	N-m	22.2	59.8	-9.0	95.8
Pos. 1 Upper Neck My	N-m	43.2	99.9	-23.4	283.4
Pos. 1 Upper Neck Mz	N-m	4.9	141.1	-17.2	83.7
Pos. 1 Neck Moment Result	N-m	44.8	99.9	0.0	-73.6
Pos. 2 Upper Neck Fx	N	169.5	66.7	-745.6	122.3
Pos. 2 Upper Neck Fy	N	108.5	59.4	-238.3	132.4
Pos. 2 Upper Neck Fz	N	1734.0	79.8	-61.4	599.9
Pos. 2 Neck Force Result	N	1735.7	79.8	2.3	-83.0
Pos. 2 Upper Neck Mx	N-m	20.3	90.1	-10.7	56.9
Pos. 2 Upper Neck My	N-m	47.4	131.9	-20.4	193.3
Pos. 2 Upper Neck Mz	N-m	6.9	100.4	-8.1	62.9
Pos. 2 Neck Moment Result	N-m	48.0	131.9	0.1	-52.0
Pos. 1 Pelvic (X)	g's	2.8	130.3	-72.2	48.2
Pos. 1 Pelvic (Y)	g's	12.1	97.2	-8.5	46.2
Pos. 1 Pelvic (Z)	g's	3.7	19.8	-17.5	58.5
Pos. 1 Pelvic (R)	g's	74.0	48.3	0.0	-64.2
Pos. 2 Pelvic (X)	g's	2.1	129.7	-73.6	44.5
Pos. 2 Pelvic (Y)	g's	18.8	41.7	-8.7	47.1
Pos. 2 Pelvic (Z)	g's	2.5	29.8	-18.5	56.7
Pos. 2 Pelvic (R)	g's	75.4	44.4	0.0	-26.7

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

Vehicle Year/Make/Model/Body Style: 1999 Subaru Forester 4-Door Wagon

NHTSA Test No.: MX5500 Test Date: January 11, 1999

DESCRIPTION	UNIT	MAXIMUM VALUE			
		Pos.	msec	Neg.	msec
P1 Lt Upper Tibia Mx	N-m	16.5	142.3	-36.7	61.7
P1 Lt Upper Tibia My	N-m	114.0	57.5	-68.9	42.0
P1 Lt Lower Tibia Fz	N	215.2	61.3	-1841.4	34.1
P1 Lt Lower Tibia Mx	N-m	*	*	*	*
P1 Lt Lower Tibia My	N-m	26.9	42.5	-79.3	92.3
P1 Rt Upper Tibia Mx	N-m	43.2	49.7	-46.9	35.9
P1 Rt Upper Tibia My	N-m	32.4	150.9	-122.9	48.4
P1 Rt Lower Tibia Fz	N	167.8	291.1	-4949.0	36.3
P1 Rt Lower Tibia Mx	N-m	*	*	*	*
P1 Rt Lower Tibia My	N-m	24.7	46.0	-123.8	72.1
Pos. 2 Lt Upper Tibia Mx	N-m	31.2	42.1	-40.1	88.8
Pos. 2 Lt Upper Tibia My	N-m	20.3	137.5	-101.9	42.3
Pos. 2 Lt Lower Tibia Fz	N	96.5	134.6	-2140.7	40.4
Pos. 2 Lt Lower Tibia Mx	N-m	13.2	89.4	-68.7	40.8
Pos. 2 Lt Lower Tibia My	N-m	37.8	39.4	-50.7	77.8
Pos. 2 Rt Upper Tibia Mx	N-m	32.2	506.4	-58.6	66.0
Pos. 2 Rt Upper Tibia My	N-m	27.0	66.6	-83.9	32.4
Pos. 2 Rt Lower Tibia Fz	N	**	**	**	**
Pos. 2 Rt Lower Tibia Mx	N-m	23.7	32.4	-75.0	39.3
Pos. 2 Rt Lower Tibia My	N-m	27.0	32.4	-43.0	93.7

* This data channel did not record during the event.
** This data channel clipped during the event.

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

Vehicle Year/Make/Model/Body Style: 1999 Subaru Forester 4-Door Wagon

NHTSA Test No.: MX5500 Test Date: January 11, 1999

DESCRIPTION	UNIT	MAXIMUM VALUE			
		Pos.	msec	Neg.	msec
Pos. 1 Left Ankle X	g's	36.8	87.2	-42.0	60.7
Pos. 1 Left Ankle Z	g's	17.9	45.9	-49.3	38.9
Pos. 1 Left Toe Z	g's	36.4	48.4	-58.6	38.6
Pos. 1 Right Ankle X	g's	29.7	69.1	-91.9	42.3
Pos. 1 Right Ankle Z	g's	19.7	45.7	-66.3	39.2
Pos. 1 Right Toe Z	g's	51.6	35.1	-125.4	39.2
Pos. 2 Left Ankle X	g's	18.0	71.4	-75.5	38.0
Pos. 2 Left Ankle Z	g's	6.0	52.6	-64.3	36.7
Pos. 2 Left Toe Z	g's	22.3	12.9	-79.3	35.2
Pos. 2 Right Ankle X	g's	31.9	44.8	-95.2	31.4
Pos. 2 Right Ankle Z	g's	22.0	46.3	-66.1	37.7
Pos. 2 Right Toe Z	g's	777.8	134.9	-1010.1	45.9

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

NHTSA Test No.: MX5500 Vehicle: 1999 Subaru Forester 4-Door Wagon

DESCRIPTION	UNIT	MAXIMUM VALUE			
		Pos.	msec	Neg.	msec
Pos. 1 Head X(R)	**g's**	4.9	271.9	-78.3	93.1
Pos. 1 Head Y(R)	**g's**	9.4	55.6	-5.7	78.8
Pos. 1 Head Z(R)	**g's**	42.0	72.4	-14.7	104.1
Pos. 1 Head Resultant(RR)	**g's**	79.5	93.1	0.0	-77.7
Pos. 2 Head X(R)	**g's**	3.8	364.1	-50.5	88.1
Pos. 2 Head Y(R)	**g's**	11.2	60.2	-4.5	133.3
Pos. 2 Head Z(R)	**g's**	38.2	79.8	-3.7	132.7
Pos. 2 Head Resultant(RR)	**g's**	58.5	79.8	0.0	7.5
Pos. 1 Chest X(R)	**g's**	1.9	322.8	-41.1	76.5
Pos. 1 Chest Y(R)	**g's**	3.5	69.2	-10.1	50.0
Pos. 1 Chest Z(R)	**g's**	17.1	77.5	-14.0	109.0
Pos. 1 Chest Resultant(RR)	**g's**	44.4	76.5	0.0	-80.1
Pos. 2 Chest X(R)	**g's**	2.9	354.5	-53.9	63.1
Pos. 2 Chest Y(R)	**g's**	10.5	50.9	*	*
Pos. 2 Chest Z(R)	**g's**	17.7	78.9	-11.6	112.0
Pos. 2 Chest Resultant(RR)	**g's**	76.8	199.1	0.0	-79.1

* Data spike present at 199 ms.

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

NHTSA Test No.: MX5500 Vehicle: 1999 Subaru Forester 4-Door Wagon

	HEAD INJURY CRITERIA (HIC) **REDUNDANT**			
	HIC**	t_1 (msec)	t_2 (msec)	Average Acceleration t_1 to t_2
Position #1 - Driver	1025.3	66.5	102.5	60.5
Position #2 - Passenger	590.2	62.1	98.1	48.5

** 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	43.1	74.5	77.5	421.7
Position #2 - Passenger	52.8	61.9	64.9	631.7

* 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:	Driver	Passenger
Belt length from trim panel exit to bolt hole anchor point for continuous webbing systems.	1802	1878
Shoulder belt length as measured on Part 572 Dummy.	860	925
Lap belt length as measured on Part 572 Dummy.	825	839
SHOULDER BELT SPOOL-OFF DATA:		
As determined by film analysis.	127	76
As determined mechanically.	124	70
As determined electronically.	*	*
BELT STRETCH DATA:		
Measured electronically between shoulder belt load cell and the "D" ring.	3.7 mm/M	4.4 mm/M
Measured mechanically.	1 mm/M	1 mm/M

Dimensions in millimeters

* Spool-out pots were not placed in this vehicle due to the proximity of the D-ring to the trim panel exit.

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.

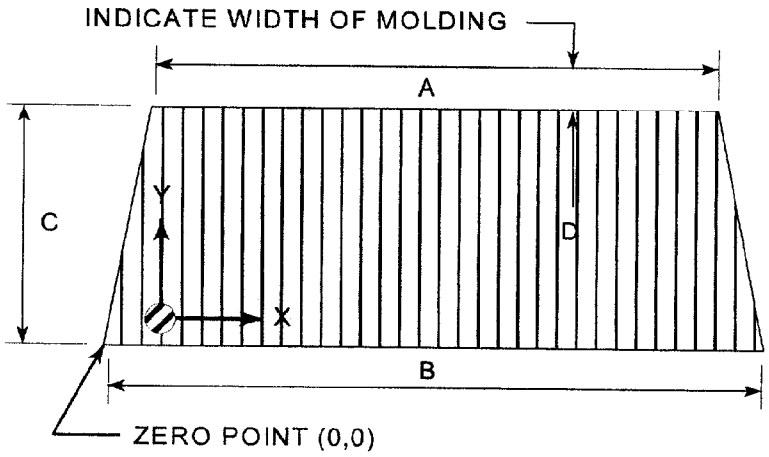
FMVSS 212 REQUIREMENTS:

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		
	PRE-TEST (mm)	POST-TEST(mm)	% OF RETENTION
RIGHT SIDE	2073	2073	100
LEFT SIDE	2073	2073	100
TOTAL	4,146	4,146	100

AREA OF RETENTION FAILURE:



FRONT VIEW OF WINDSHIELD

DIMENSIONS (mm)	
A	1132
B	1536
C	739
D	23

FAILURE DETAILS: None

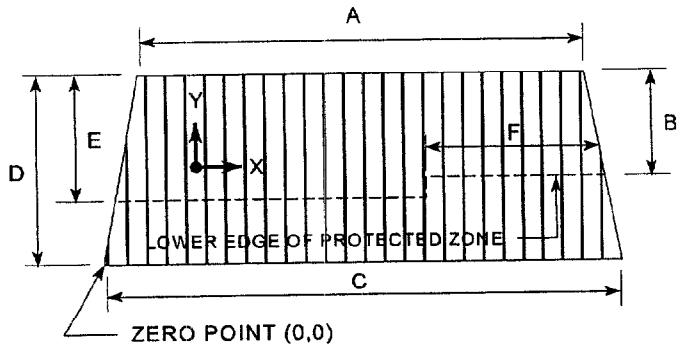
DATA SHEET NO. 11 FMVSS NO. 219 (PARTIAL) - "WINDSHIELD ZONE INTRUSION" DATA

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)



FRONT VIEW OF WINDSHIELD

DIMENSIONS	
A	1132
B	492
C	1536
D	739
E	485
F	514

DETAILS OF WINDSHIELD GLASS PENETRATION GREATER THAN 6 mm:

None

(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.: MX5500 TEST DATE: January 11, 1999

VEHICLE MAKE/MODEL: 1999 Subaru Forester

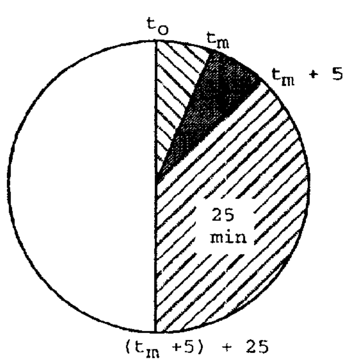
The test vehicle was filled from 92% to 94% of the manufacture's "usable" capacity. The electric fuel pump was operating if it will operate without engine operation. Two Part 572 anthropomorphic test devices were located at each of the front designated seating positions.

= =

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:



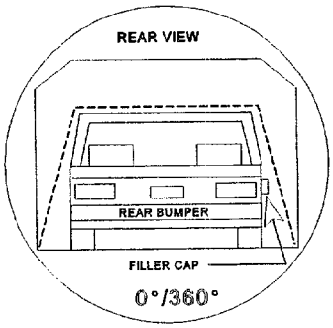
	ACTUAL	MAX ALLOWED
1. From impact until vehicle motion ceases	0	28 g
2. For 5 minute period after vehicle motion ceases	0	141 g
3. For next 25 minutes	0	28 g/min.

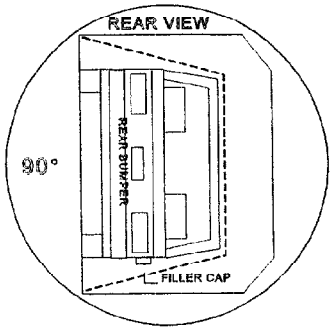
SOLVENT SPILLAGE DETAILS: None

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

TEST PHASE:
0-90 deg.

NHTSA Test No.:
MX5500





INDETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90 deg. Rotation Time (Spec. Range = 1 to 3 minutes)	1	minutes	12	seconds
FMVSS 301 Position Hold Time +	5	minutes	00	seconds
TOTAL	6	minutes	12	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

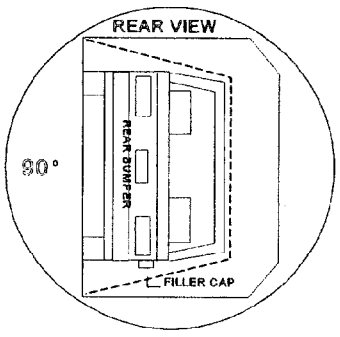
Note: Record spillage for whole minute intervals only as determined above.

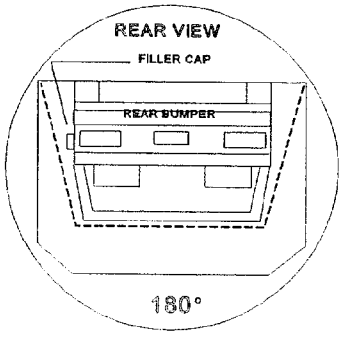
IV. SOLVENT SPILLAGE LOCATION(S): None

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

TEST PHASE:
90-180 deg.

NHTSA Test No.:
MX5500





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

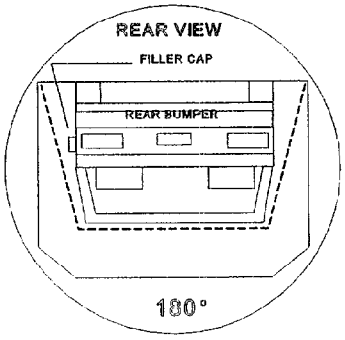
Note: Record spillage for whole minute intervals only as determined above.

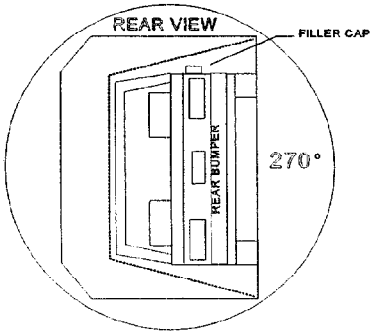
IV. SOLVENT SPILLAGE LOCATION(S): None

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

TEST PHASE:
180-270 deg.

NHTSA Test No.:
MX5500





I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90 deg. Rotation Time (Spec. Range = 1 to 3 minutes)	1	minutes	04	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

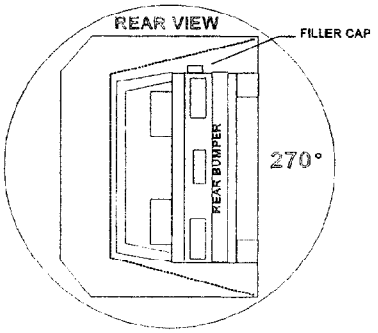
Note: Record spillage for whole minute intervals only as determined above.

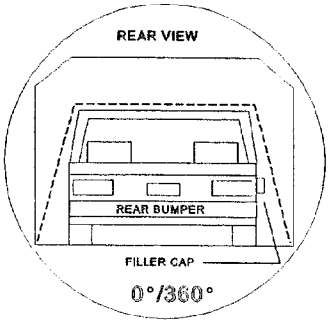
IV. SOLVENT SPILLAGE LOCATION(S): None

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

TEST PHASE:
270-360 deg.

NHTSA Test No.:
MX5500





I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90 deg. Rotation Time (Spec. Range = 1 to 3 minutes)	1	minutes	10	seconds
FMVSS 301 Position Hold Time +	5	minutes	00	seconds
TOTAL	6	minutes	10	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

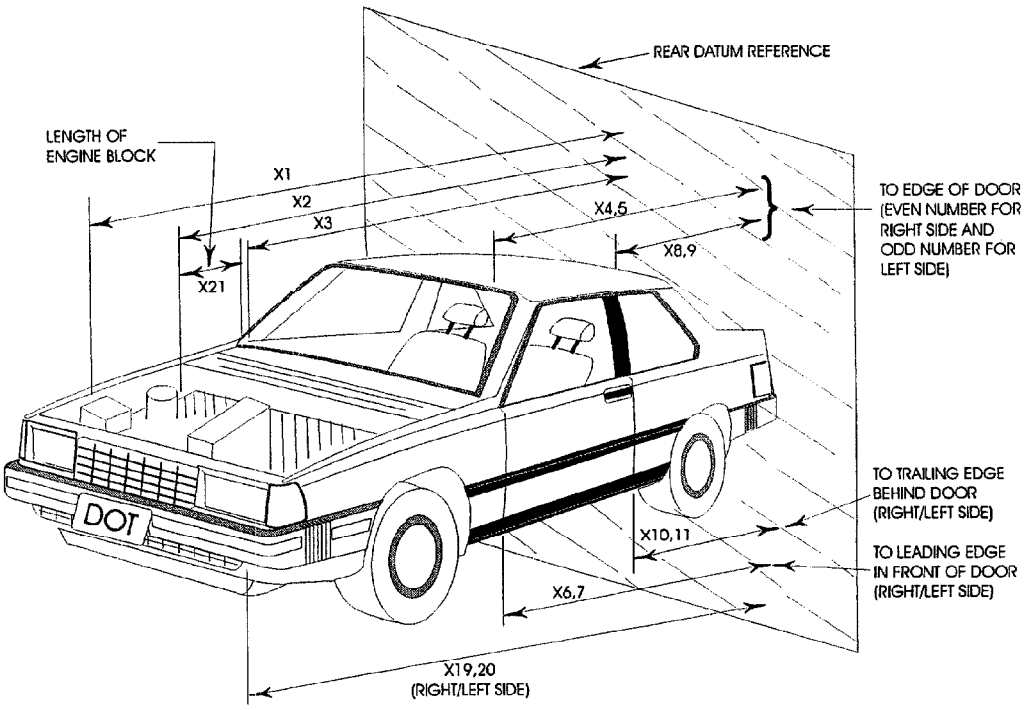
III. ACTUAL TEST VEHICLE SOLVENT SPILLAGE:

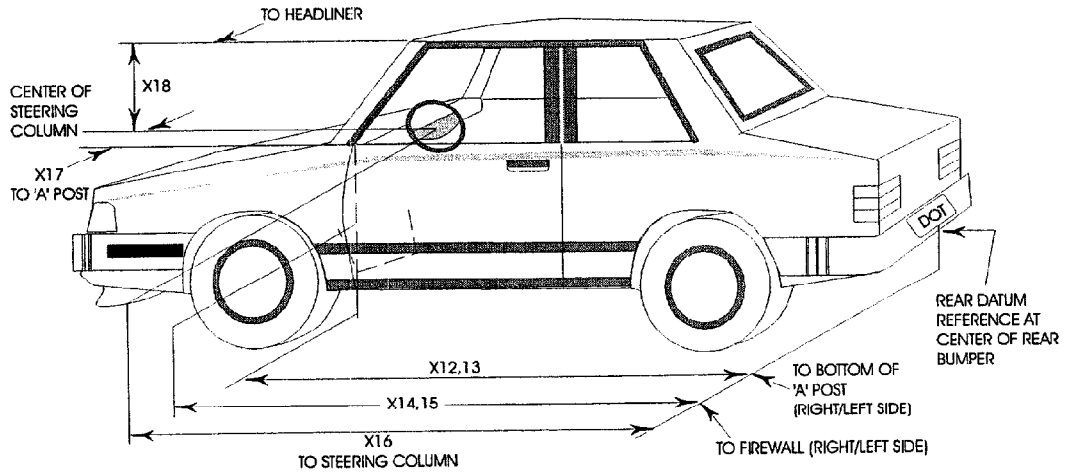
0	0	0	N/A

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

IV. SOLVENT SPILLAGE LOCATION(S): None

TEST VEHICLE MEASUREMENTS





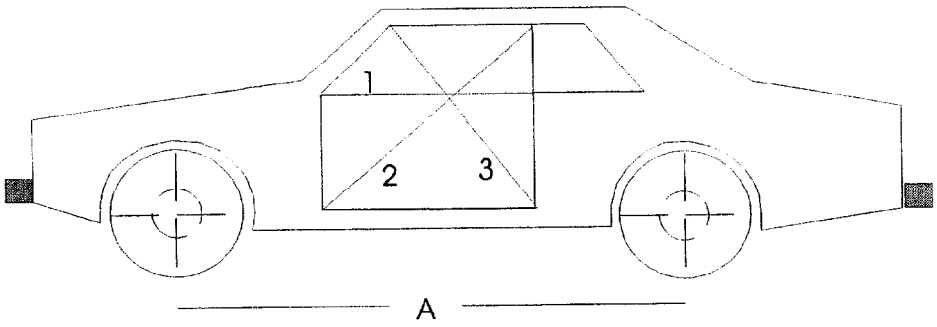
DATA SHEET NO.14 VEHICLE MEASUREMENTS

No.		All Dimensions in mm		
		Pre-Test	Post-Test	Differences
X1	Total Length of Vehicle at Centerline	4539.7	3896.0	643.7
X2	Rear Surface of Vehicle to Front of Engine	3958.2	3490.0	468.2
X3	Rear Surface of Vehicle to Firewall	3402.6	3270.0	132.6
X4	Rear Surface of Vehicle to Upper Leading Edge of Right Door	3037.3	3028.0	9.3
X5	Rear Surface of Vehicle to Upper Leading Edge of Left Door	3076.9	3008.0	68.9
X6	Rear Surface of Vehicle to Lower Leading Edge of Right Door	3072.7	3070.0	2.7
X7	Rear Surface of Vehicle to Lower Leading Edge of Left Door	3097.8	3033.0	64.8
X8	Rear Surface of Vehicle to Upper Trailing Edge of Right Door	2049.6	2047.0	2.6
X9	Rear Surface of Vehicle to Upper Trailing Edge of Left Door	2063.9	2013.0	50.9
X10	Rear Surface of Vehicle to Lower Trailing Edge of Right Door	2058.0	2057.0	1.0
X11	Rear Surface of Vehicle to Lower Trailing Edge of Left Door	2105.8	2016.0	89.8
X12	Rear Surface of Vehicle to Bottom of "A" Post of Right Side	3081.5	3070.0	11.5
X13	Rear Surface of Vehicle to Bottom of "A" Post of Left Side	3123.6	3046.0	77.6
X14	Rear Surface of Vehicle to Firewall, Right Side	3394.1	3210.0	184.1
X15	Rear Surface of Vehicle to Firewall, Left Side	3415.1	3297.0	118.1
X16	Rear Surface of Vehicle to Steering Column	2650.7	2569.0	81.7
X17	Center of Steering Column to "A" Post	335.3	336.0	-0.7
X18	Center of Steering Column to Headliner	471.0	460.0	11.0
X19	Rear Surface of Vehicle to Right Side of Front Bumper	4503.9	3932.0	571.9
X20	Rear Surface of Vehicle to Left Side of Front Bumper	4503.7	3945.0	558.7
X21	Length of Engine Block	497.0	497.0	0.0
RD	Rear Surface of Vehicle to Right Side of Dash Panel	2827.2	2782.0	45.2
CD	Rear Surface of Vehicle to Center of Dash Panel	2857.8	2788.0	69.8
LD	Rear Surface of Vehicle to Left Side of Dash Panel	2849.7	2775.0	74.7

DATA SHEET NO.14 VEHICLE MEASUREMENTS (cont.)

VEHICLE INTRUSION MEASUREMENTS

DOOR OPENING WIDTH



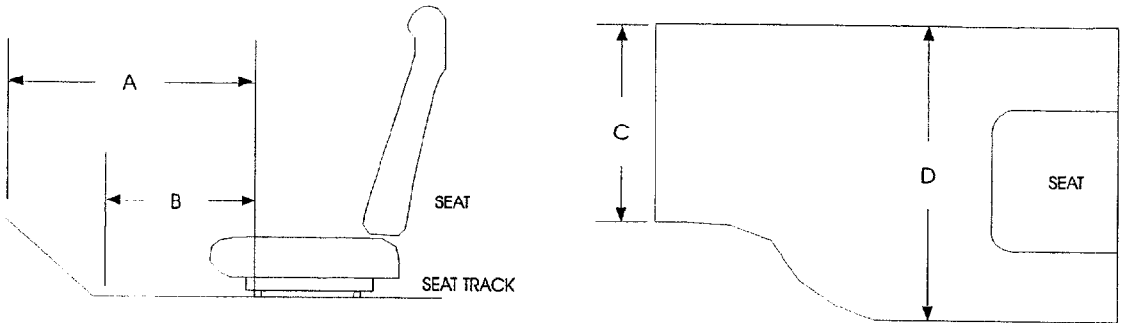
UNITS (mm)	LEFT			RIGHT		
MEASUREMENT	1	2	3	1	2	3
BEFORE TEST	945	1397	972	975	1398	987
AFTER TEST	925	1395	1001	927	1360	995
DIFFERENCE	20	1	-29	48	38	-8

UNITS (mm)	A = WHEELBASE LEFT	A = WHEELBASE RIGHT
BEFORE TEST	2539.6	2527.9
AFTER TEST	2487.4	2448.2
DIFFERENCE	52.2	79.7

DATA SHEET NO.14 VEHICLE MEASUREMENTS (cont.)

VEHICLE INTRUSION MEASUREMENTS

STATIC FOOTWELL DEFORMATION



DRIVER

Measurement	Pre-Test	Post-Test	Difference
A	627.6	564.7	62.9
B	510.1	498.6	11.5
C	407.6	367.2	40.4
D	399.6	406.5	-6.9

PASSENGER

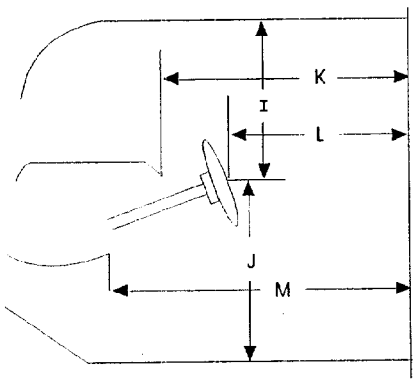
Measurement	Pre-Test	Post-Test	Difference
A	606.1	484.7	121.4
B	472.6	442.3	30.3
C	374.1	369.1	5.0
D	413.3	402.0	11.3

Units = mm

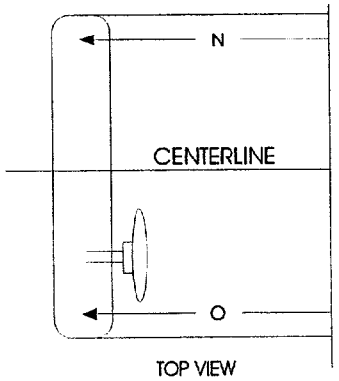
DATA SHEET NO.14 VEHICLE MEASUREMENTS (cont.)

VEHICLE INTRUSION MEASUREMENTS

STATIC PASSENGER COMPARTMENT INTRUSION

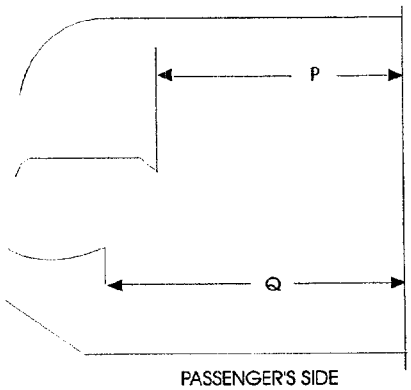


DRIVER'S SIDE



TOP VIEW

MEASUREMENTS
FROM C-PILLAR
BELT ANCHORAGE



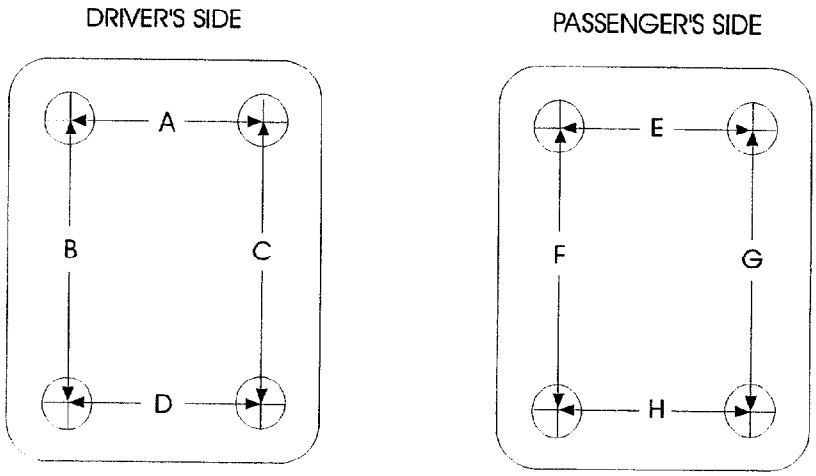
PASSENGER'S SIDE

Measurement	Pre-Test	Post-Test	Difference
I	472.4	453.5	19
J	636.8	632.4	4
K	691.8	672.0	20
L	503.1	474.4	29
M	777.5	744.5	33
N	729.5	734.6	-5
O	703.5	681.8	22
P = K (PASS.)	680.6	695.3	-15
Q = M (PASS.)	732.4	752.9	-21

Units = mm

DATA SHEET NO.14 VEHICLE MEASUREMENTS (cont.)

FLOORBOARD DEFORMATION



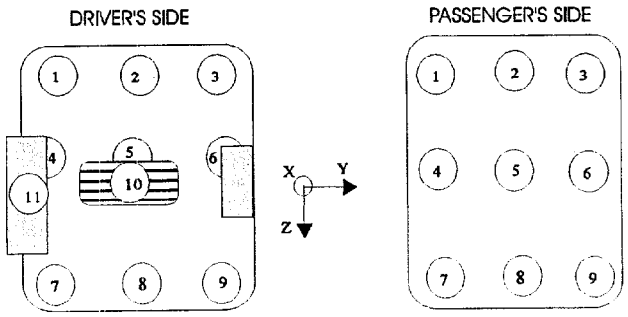
TOP VIEW THROUGH FLOOR PAN

Measurement	Pre-Test	Post-Test	Difference
A	150	150	0
B	333	333	0
C	323	323	0
D	179	179	0
E	153	153	0
F	353	353	0
G	333	333	0
H	177	177	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	3287.1	3083.0	204	-451.5	-412.2	-39
2	3275.7	3091.5	184	-452.5	-406.6	-46
3	3270.9	3022.8	248	-433.1	-386.5	-47
4	3223.1	3074.9	148	-394.4	-338.6	-56
5	3226.3	3052.8	174	-354.8	-338.5	-16
6	3215.3	3060.2	155	-392.1	-326.1	-66
7	3143.4	3019.2	124	-332.2	-255.0	-77
8	3138.4	3012.3	126	-328.3	-250.1	-78
9	3133.9	3024.4	110	-337.6	-235.8	-102
10	3165.3	2938.3	227	-430.5	-465.9	35
11	3150.3	3040.3	110	-507.2	-341.2	-166

Passenger Side Floorpan Measurements

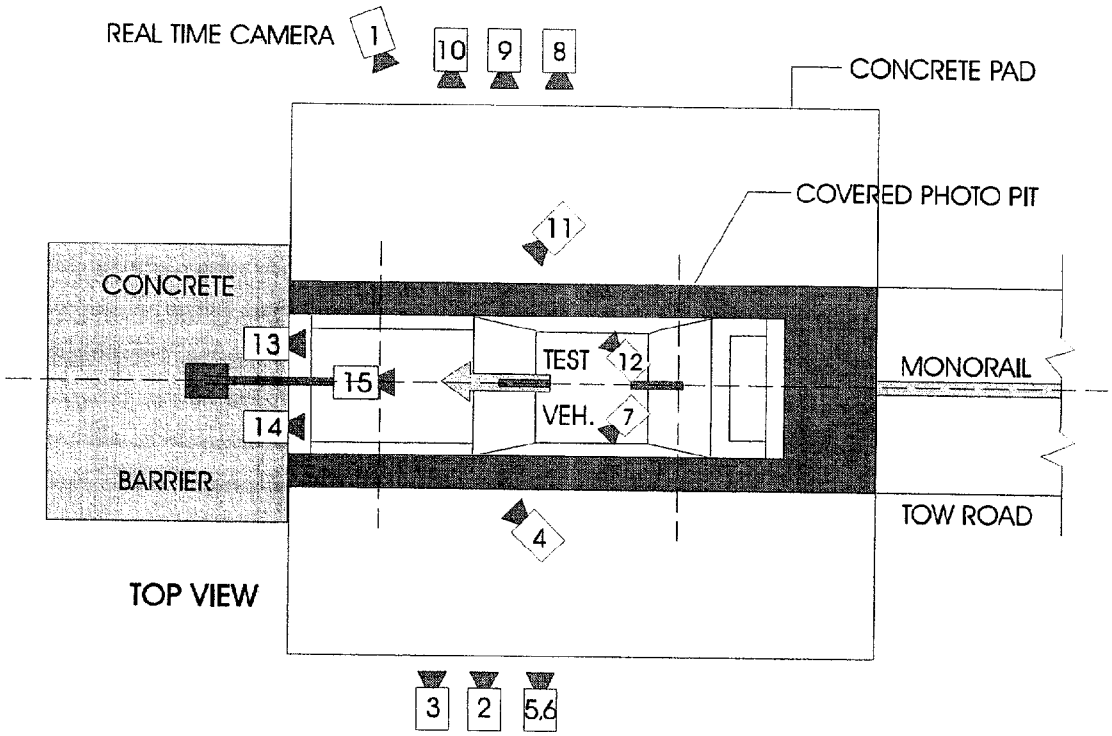
Reference: X = Rear Bumper; Z = Ground

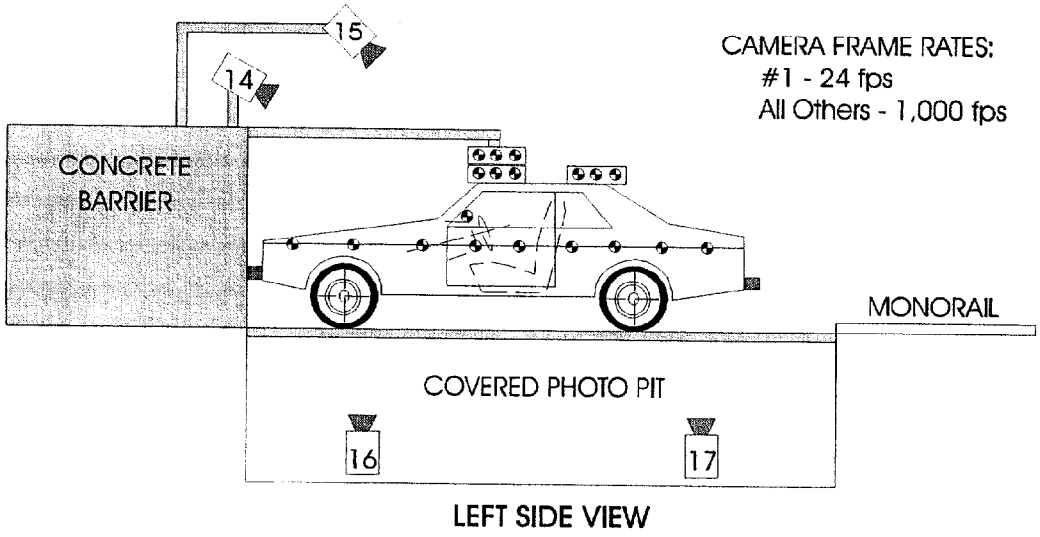
Floorpan Location	X Deformation			Z Deformation		
	Pre-Test	Post-Test	Difference	Pre-Test	Post-Test	Difference
1	3081.3	3032.0	49	-456.7	-493.2	37
2	3208.6	3024.6	184	-487.1	-515.4	28
3	3197.6	3085.1	113	-502.2	-490.7	-12
4	3126.2	3013.4	113	-405.1	-420.7	16
5	3139.8	3003.3	137	-421.9	-443.5	22
6	3127.6	3033.2	94	-409.7	-418.1	8
7	3053.4	2984.7	69	-320.8	-313.7	-7
8	3064.3	2986.2	78	-333	-322.3	-11
9	3062.6	3014.6	48	-333.5	-324.4	-9

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.: MX5500 Vehicle: 1999 Subaru Forester 4-Door Wagon

CAMERA NO.	VIEW	CAMERA POSITIONS (mm)* X	Y	Z	ANGLE** (deg)	FILM PLANE TO HEAD TARGET	LENS (mm)	SPEED (fps)
1	Real-Time Camera	-	-	-	-	-	-	24
2	Overall Left Side	6353	1330	1042	-3	1102	12.5	1000
3	Left Side View	7625	1002	1050	-3	774	25	1000
4	Driver and Interior View	4572	2736	2027	-12	-	25	1000
5	Steering Column (Bottom)	6696	1918	1174	-4	1690	25	1000
6	Steering Column (Top)	6696	1918	1774	-8	1690	25	1000
7	Left Belt	-	-	-	-	-	13	1000
8	Overall Right Side	6434	1984	1082	-5	2212	12.5	N.A.
9	Right Side View	7895	1257	1088	-5	1485	25	1000
10	Right Passenger View	7907	1802	1357	-3	2030	35	1020
11	Passenger and Interior View	4676	2820	2025	-13	-	25	1000
12	Right Belt	-	-	-	-	-	13	1050
13	Passenger Front View	436	54	2083	-39	-	13	1030
14	Driver Front View	-436	54	2083	-37	-	13	1020
15	Windshield View	0	-528	3374	-52	-	13	1030
16	Pit View of Engine	0	120	-3048	90	-	13	1000
17	Pit View of Fuel Tank	0	2340	-3048	90	-	13	1050

*X = film plane to monorail centerline

Y = film plane to impact location

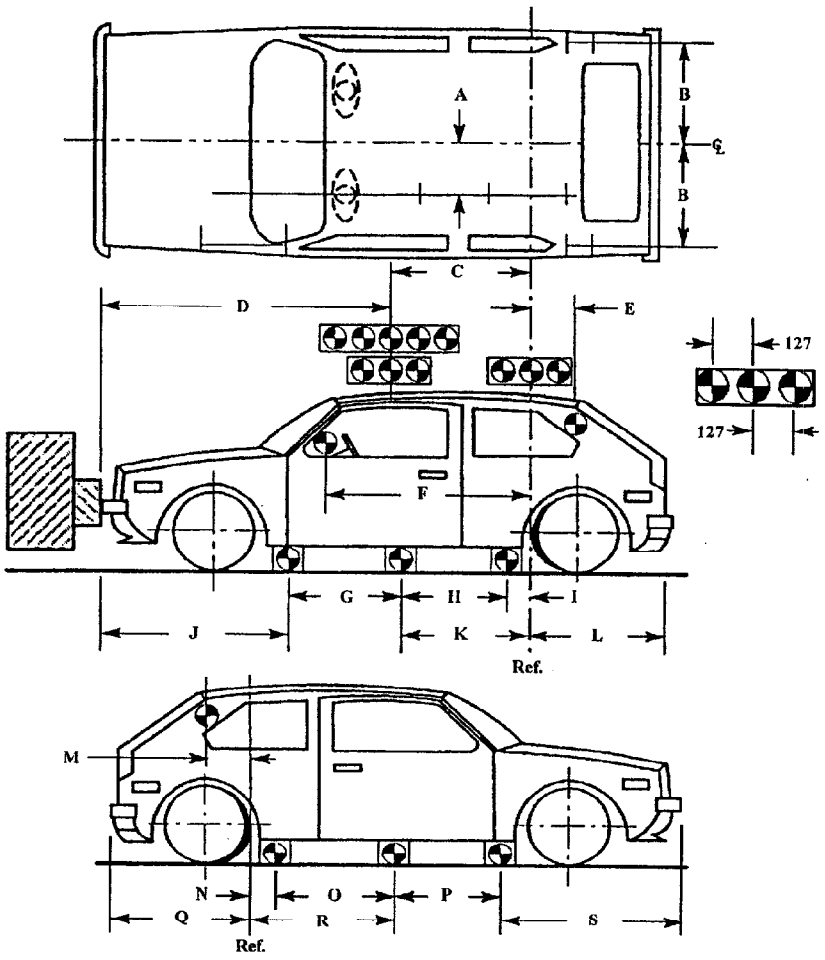
Z = film plane to ground

** = referenced to horizontal plane

N.T. indicates No Timing

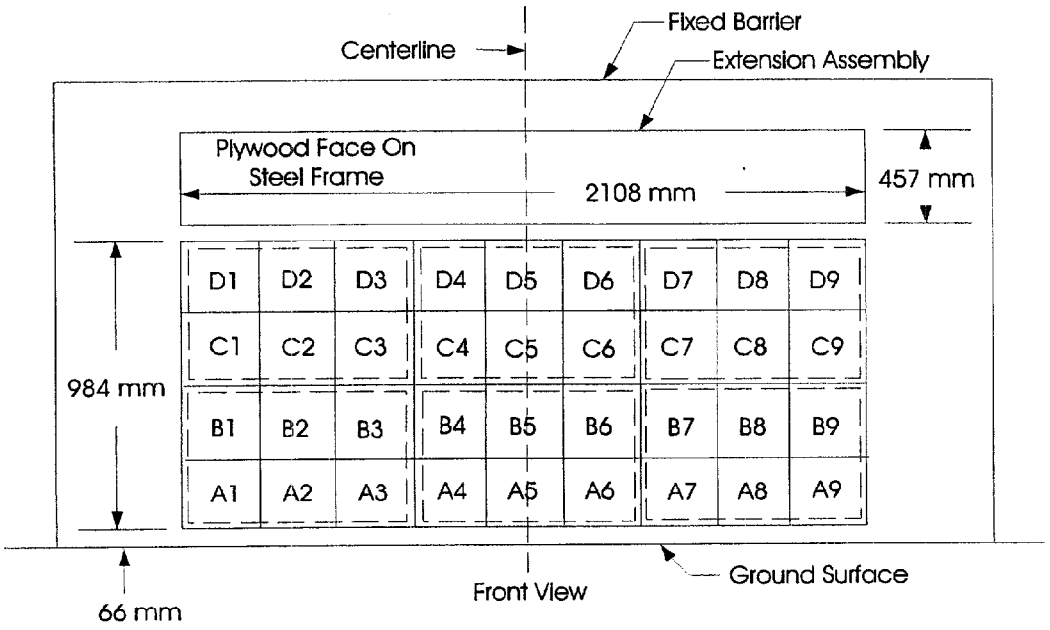
(Dimensions in millimeters)

A	348
B	576
C	1219
D	1936
E	281
F	1485
G	768
H	762
I	144
J	1437
K	906
L	1371
M	290
N	144
O	774
P	760
Q	1336
R	918
S	1467



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. : MX5500; Test Date: January 11, 1999; Technician: P. MacDiarmid

Vehicle Model Year/Make/Model: 1999 Subaru Forester

A. No. of vent holes: 2 -Driver 2 -Passenger

B. Size of vent holes: (mm^2) 491 -Driver 2827 -Passenger

C. Total vent area: (mm^2) 982 -Driver 5655 -Passenger

D. Deflated air bag length and width dimensions or, if round, diameter. (mm)

Driver: 420 -Height; 600 -Width; 320 -Depth

Passenger: 740 -Height; 430 -Width; 700 -Depth

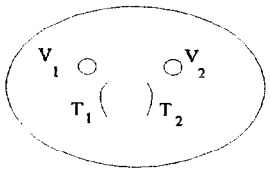
E. Is the air bag tethered?

Driver: X -Yes; - -No; If yes, record length of tether- 200

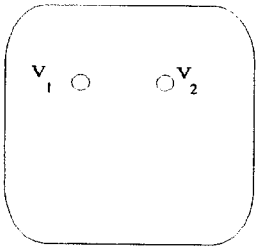
Passenger: - -Yes; X -No; If yes, record length of tether- -

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



Passenger



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

Driver: Air bag: 95212-AC360 1ES28079804

Generator: IHT38079804 202003098Y21

Passenger: Air bag: 98275-F00201

Generator: XZ8032632 A11954398H09

DATA SHEET NO.19 ACCIDENT INVESTIGATION DIVISION DATA

FOR 56.3 KPH FRONTAL BARRIER IMPACT

Vehicle Make/Model/Body Style: Subaru Forester 4-Door Wagon

NHTSA Test No.: MX5500 VIN: JF1SF6554XG713263

Model Year: 1999 Build Date: 09/98 Test Date: January 11, 1999

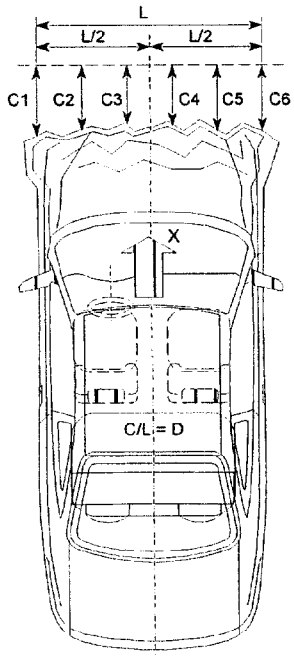
Vehicle Size Category: Special Purpose 4WD Test Weight: 1654 kg

Vehicle Wheelbase: 2537 mm; Front Overhang: 1437 mm; Overall Width: 1702 mm

Collision Deformation Classification (CDC) Code: 12FDEW3

Crush Depth Dimensions:

	PRE	POST	DIFF	
C1 =	4383.7	3847.8	-535.9	mm
C2 =	4492.7	3915.9	-576.8	mm
C3 =	4481.8	3884.4	-597.4	mm
C4 =	4461.5	3915.4	-546.1	mm
C5 =	4483.7	3898.5	-585.2	mm
C6 =	4361.5	3821.9	-539.6	mm



Midpoint of Damage: D = Vehicle Centerline (Longitudinal)

Length of Damaged Region:

L1 = 1365 mm

L2 = 682.5 mm

L3 = 455 mm

Appendix A

PHOTOGRAPHS

PHOTOGRAPHS

PHOTOGRAPHS (continued)

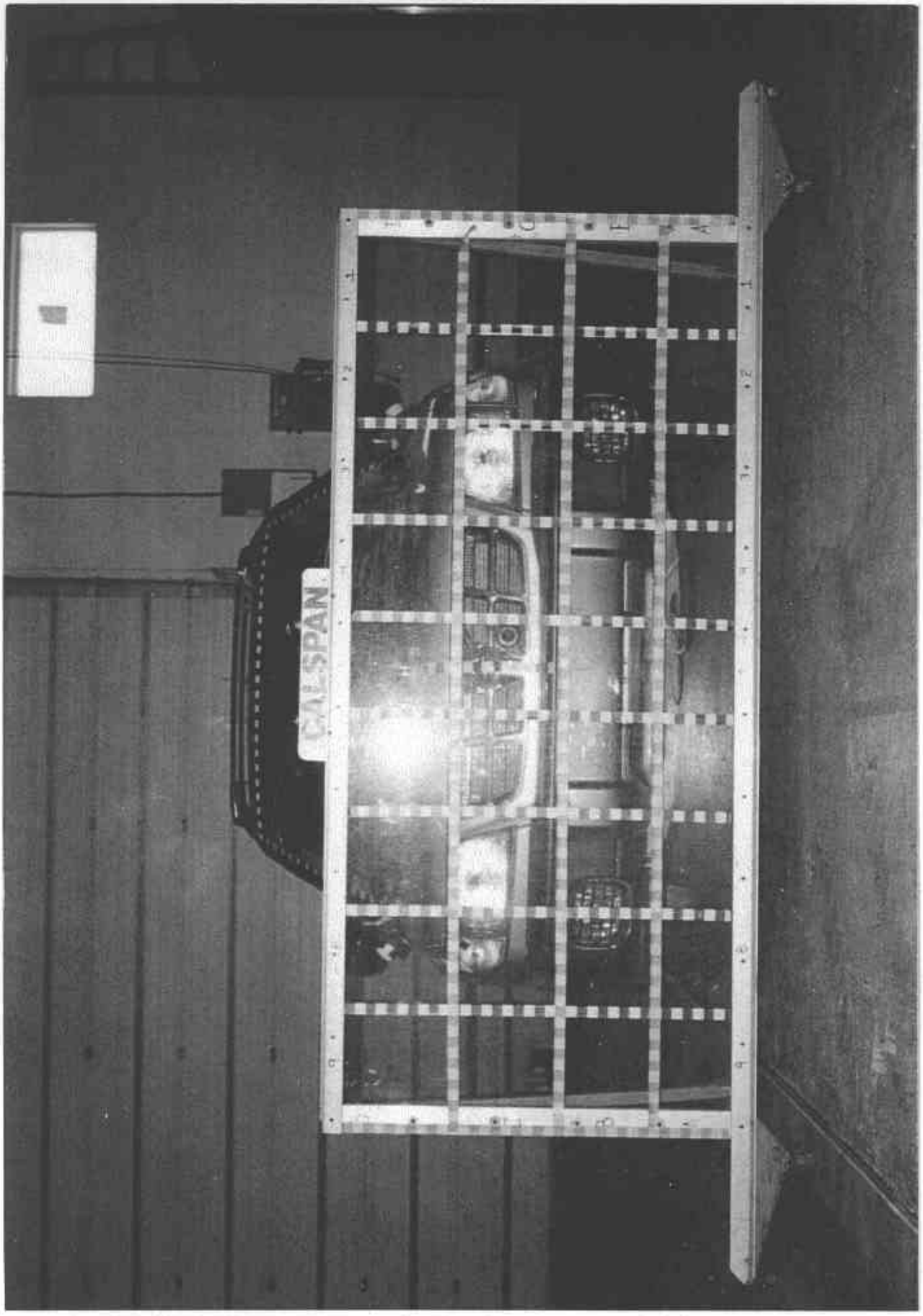


Figure A-1 LOAD CELL LOCATIONS

Figure A-2 PRE-TEST FRONT VIEW

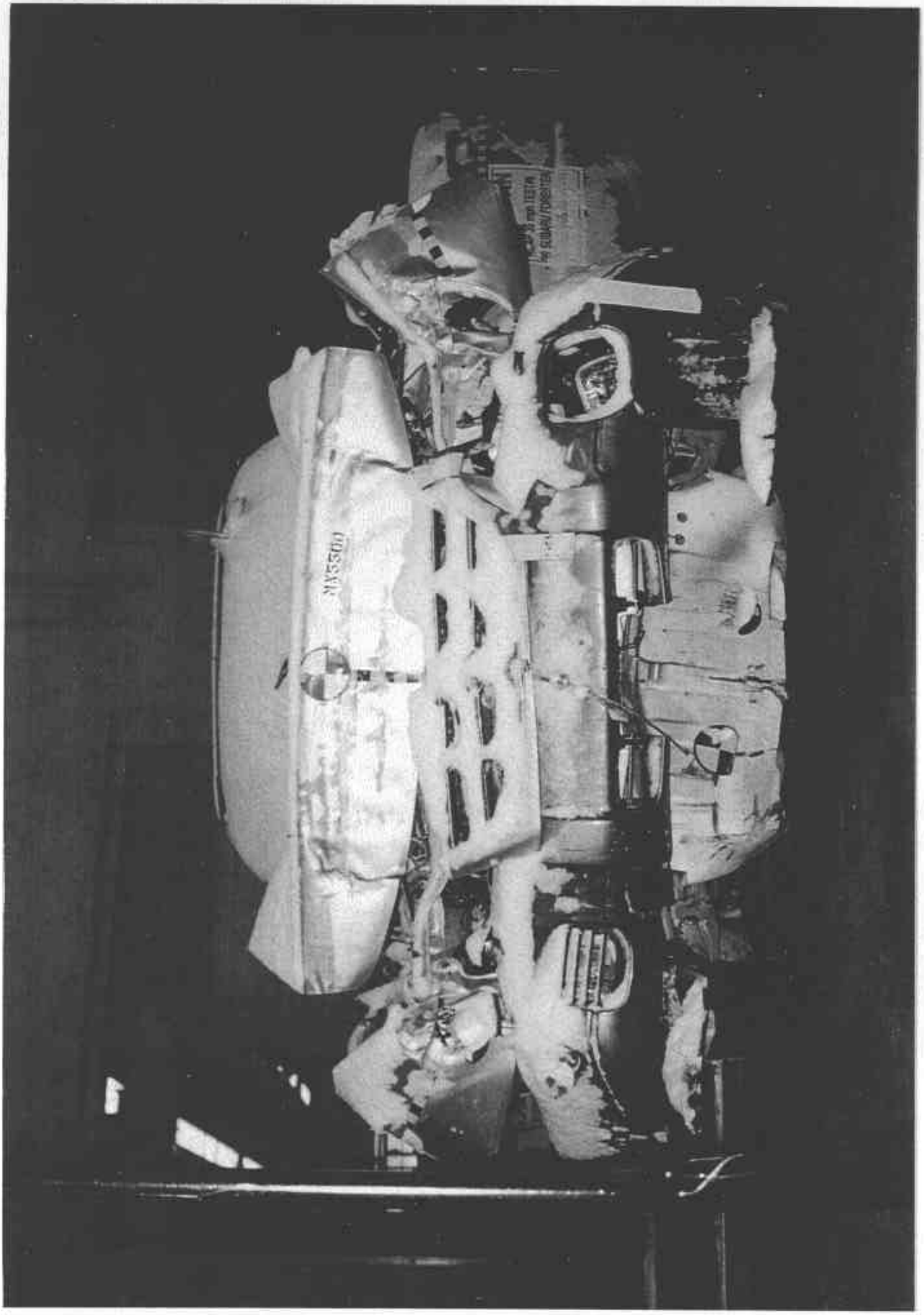


Figure A-3 POST-TEST FRONT VIEW

Figure A-4 PRE-TEST LEFT SIDE VIEW

Figure A-5 POST-TEST LEFT SIDE VIEW

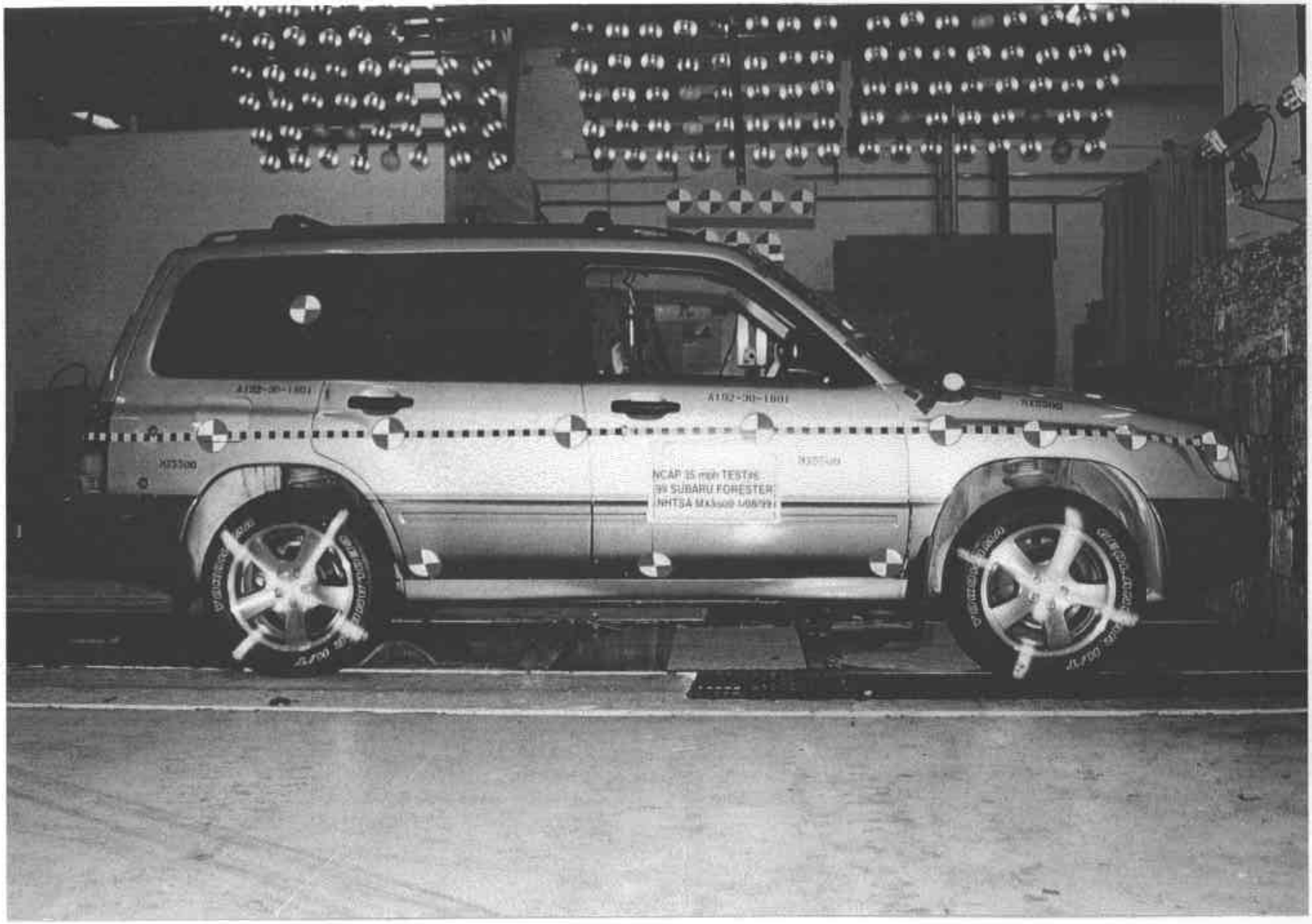


Figure A-6 PRE-TEST RIGHT SIDE VIEW

Figure A-7 POST-TEST RIGHT SIDE VIEW

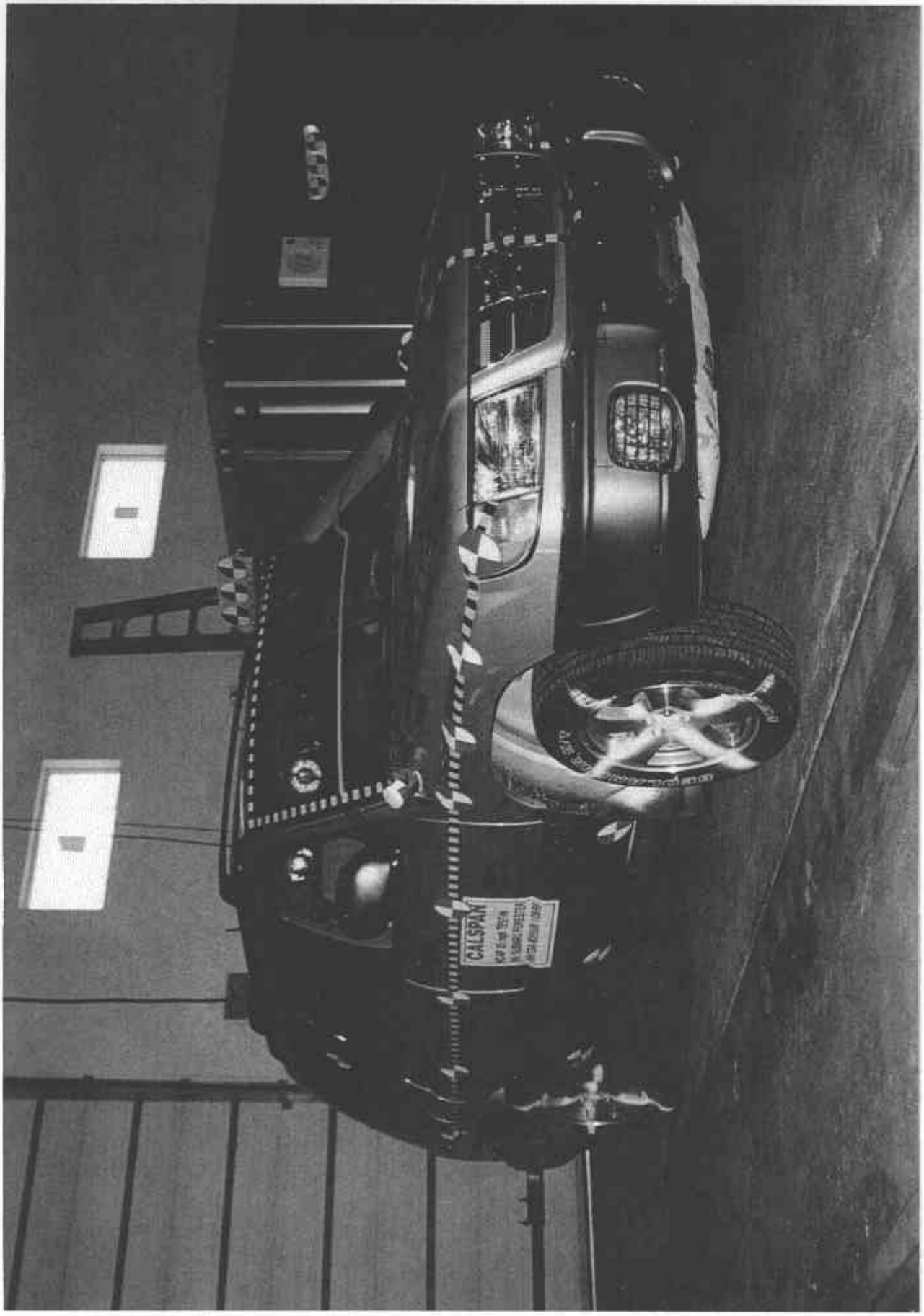


Figure A-8 PRE-TEST RIGHT FRONT THREE-QUARTER VIEW

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

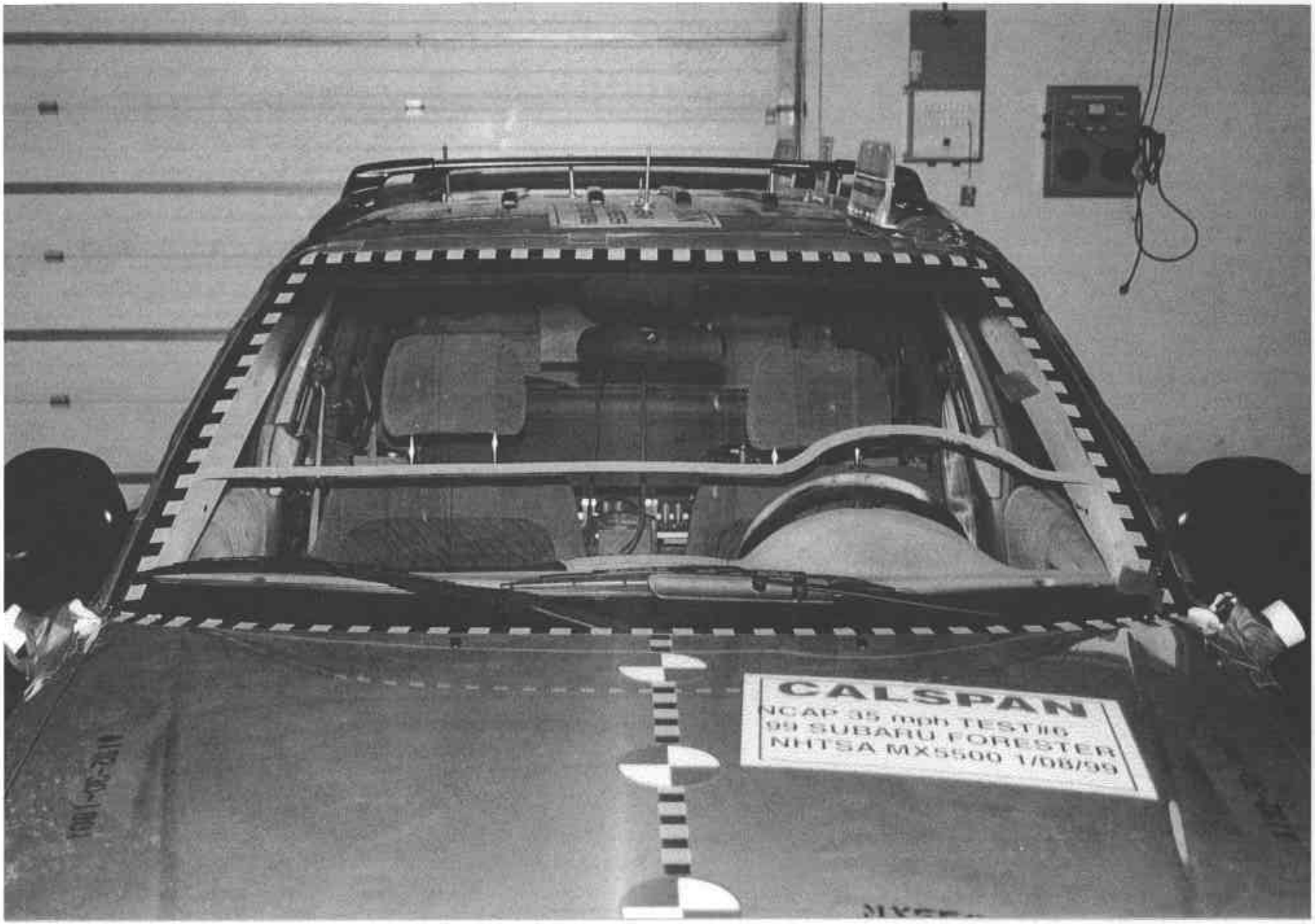


Figure A-12 PRE-TEST WINDSHIELD VIEW

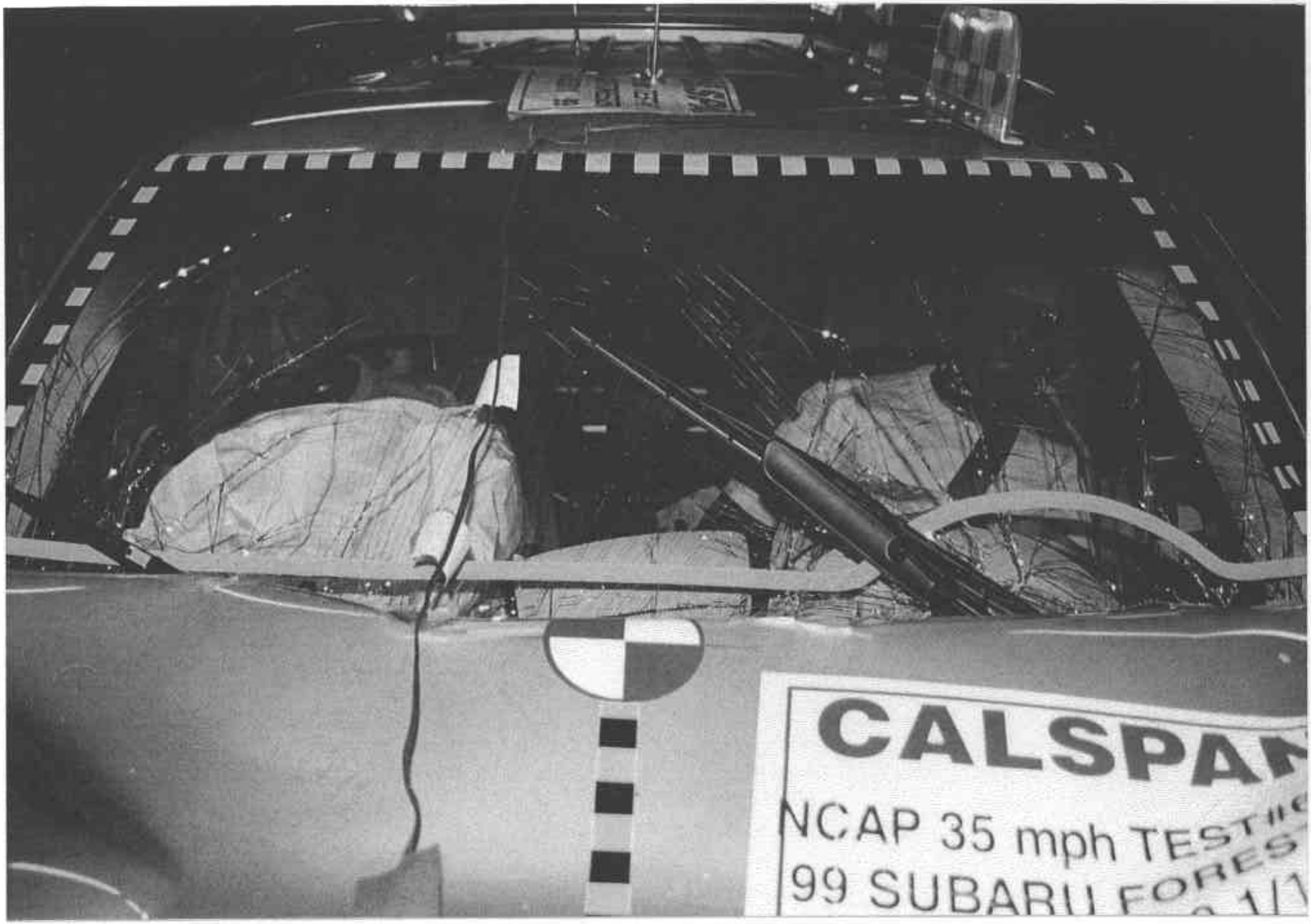


Figure A-13 POST-TEST WINDSHIELD VIEW

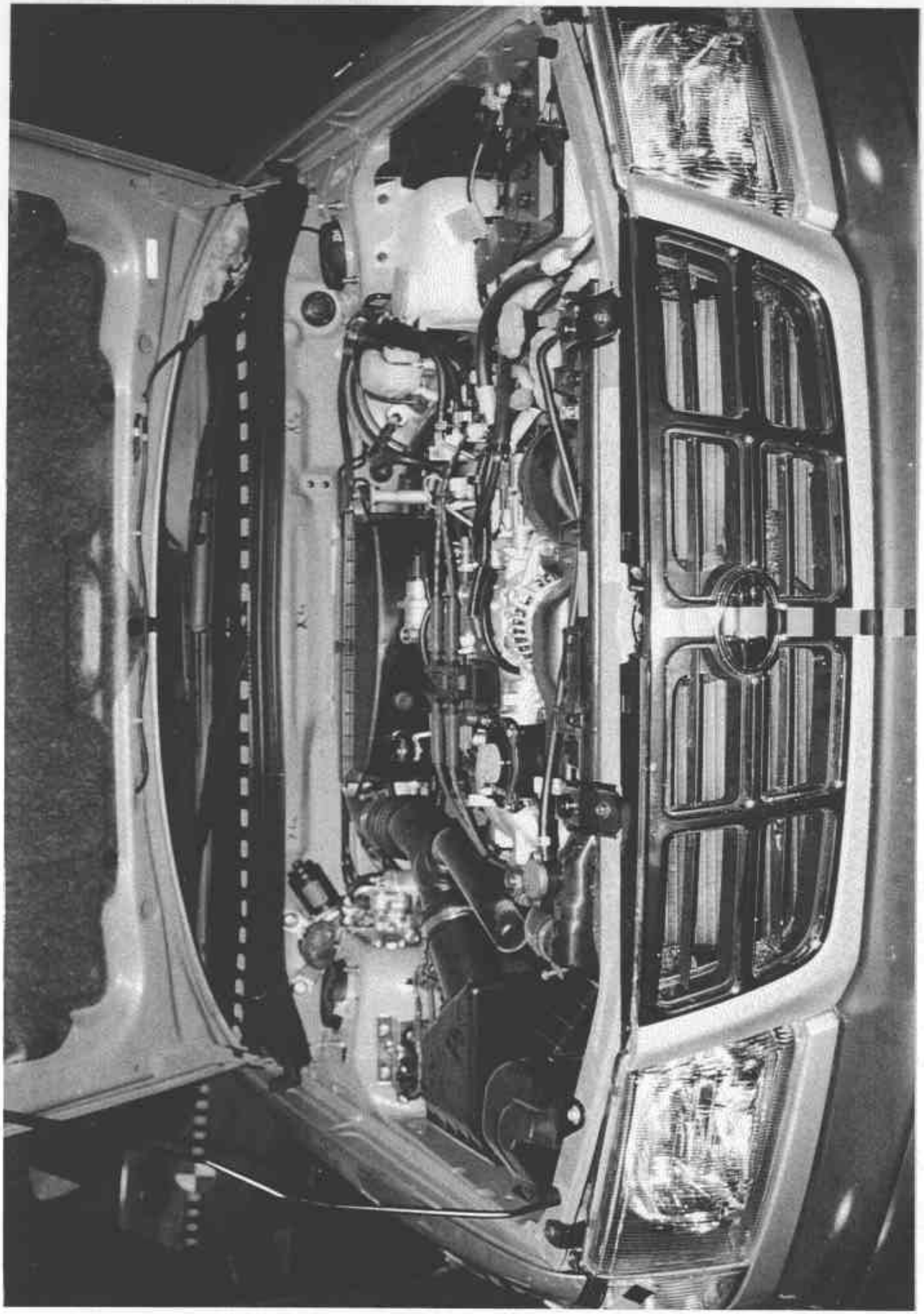


Figure A-14 PRE-TEST ENGINE COMPARTMENT VIEW

Figure A-15 FUEL CAP VIEW

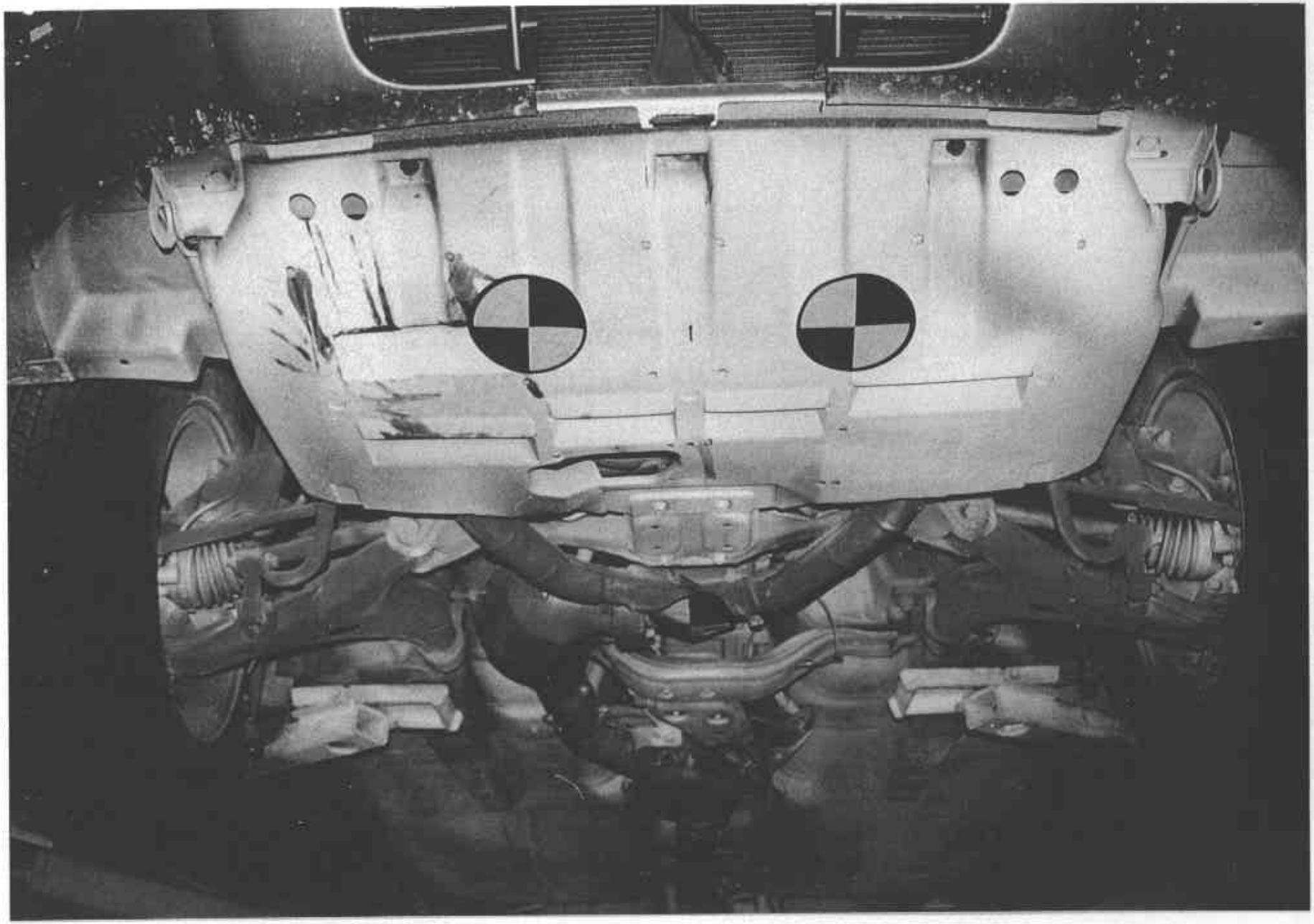


Figure A-16 PRE-TEST FRONT UNDERBODY VIEW

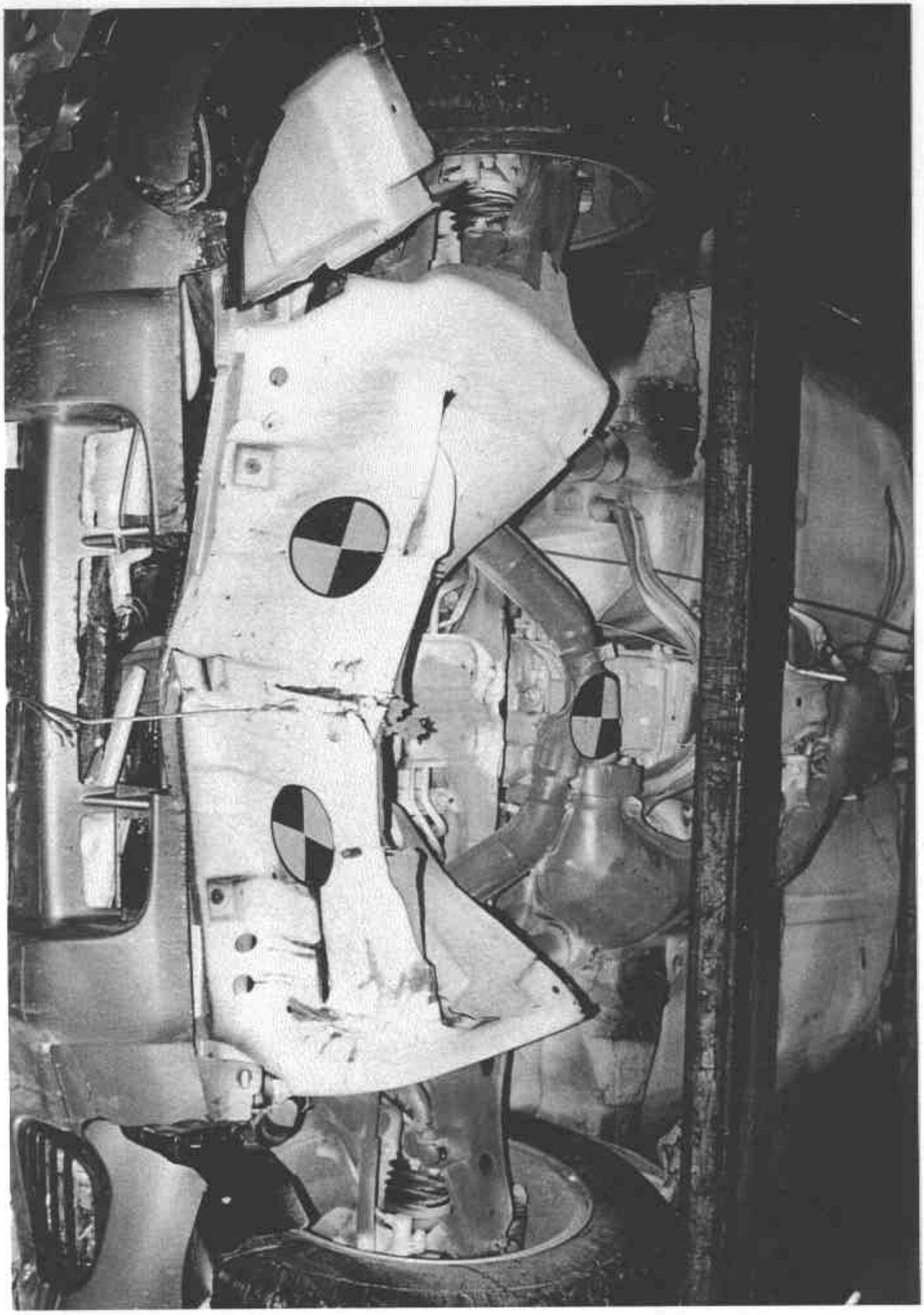


Figure A-17 POST-TEST FRONT UNDERBODY VIEW

Figure A-18 PRE-TEST FRONT SIDE UNDERBODY VIEW

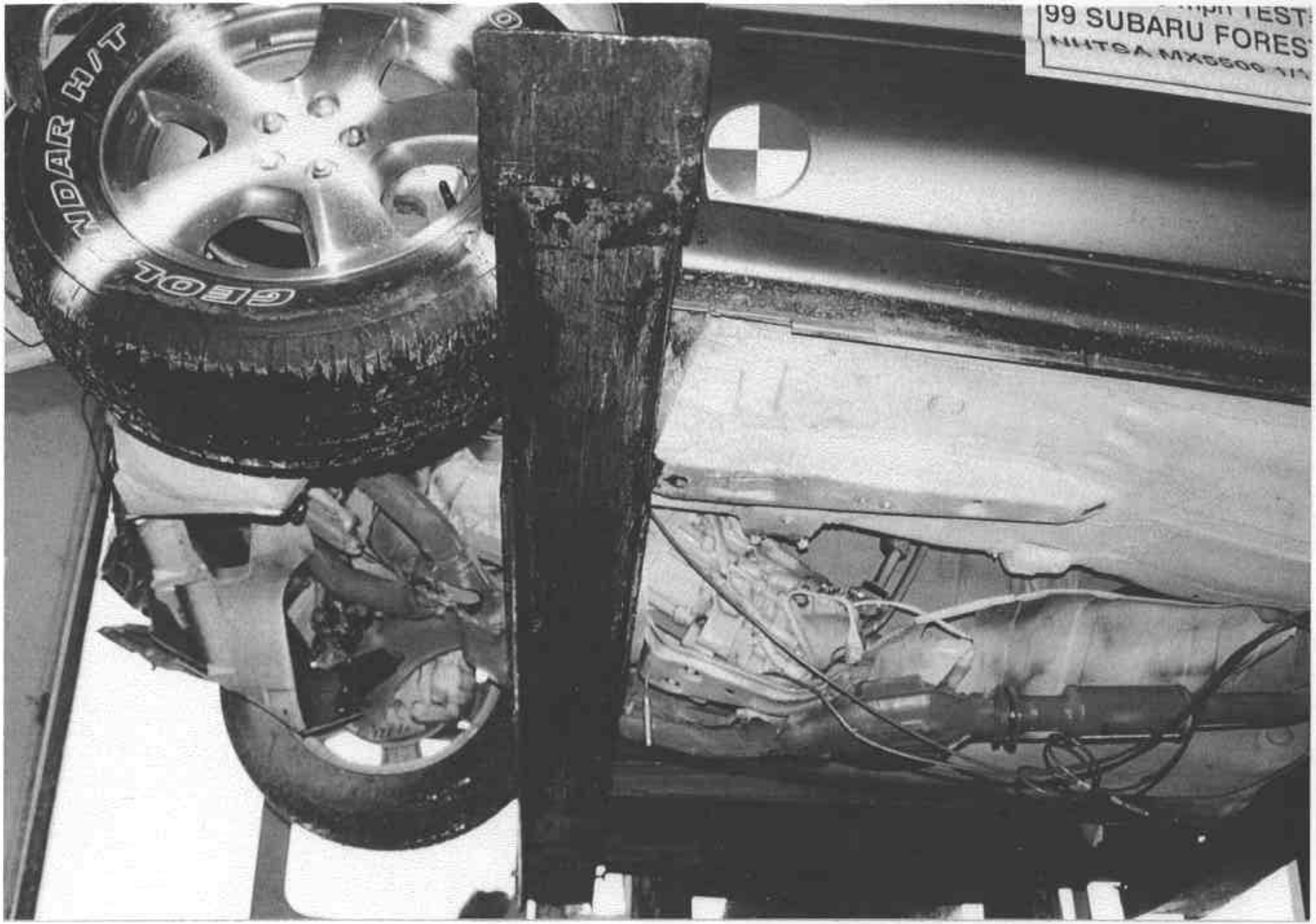


Figure A-19 POST-TEST FRONT SIDE UNDERBODY VIEW

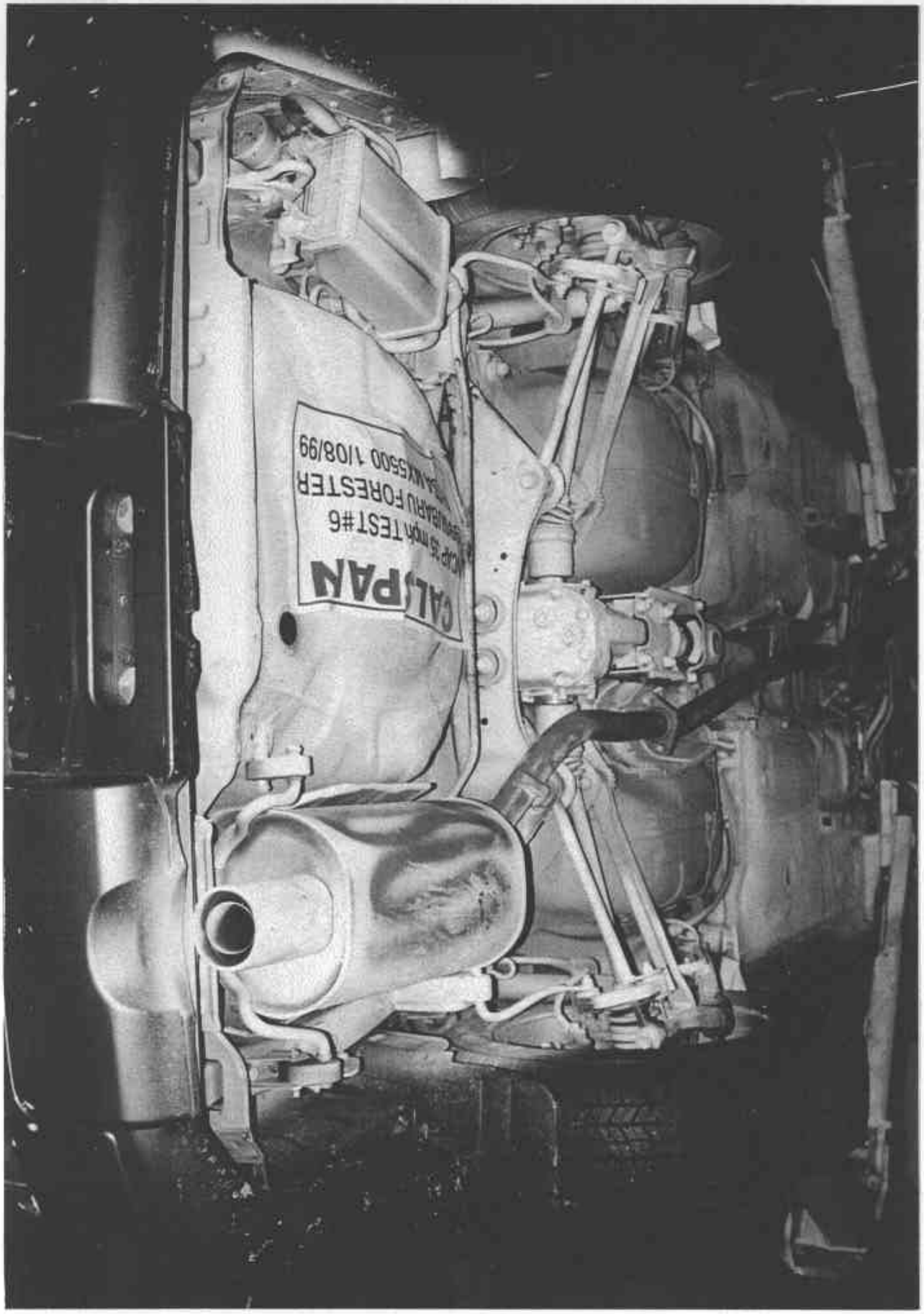


Figure A-20 PRE-TEST REAR UNDERBODY VIEW

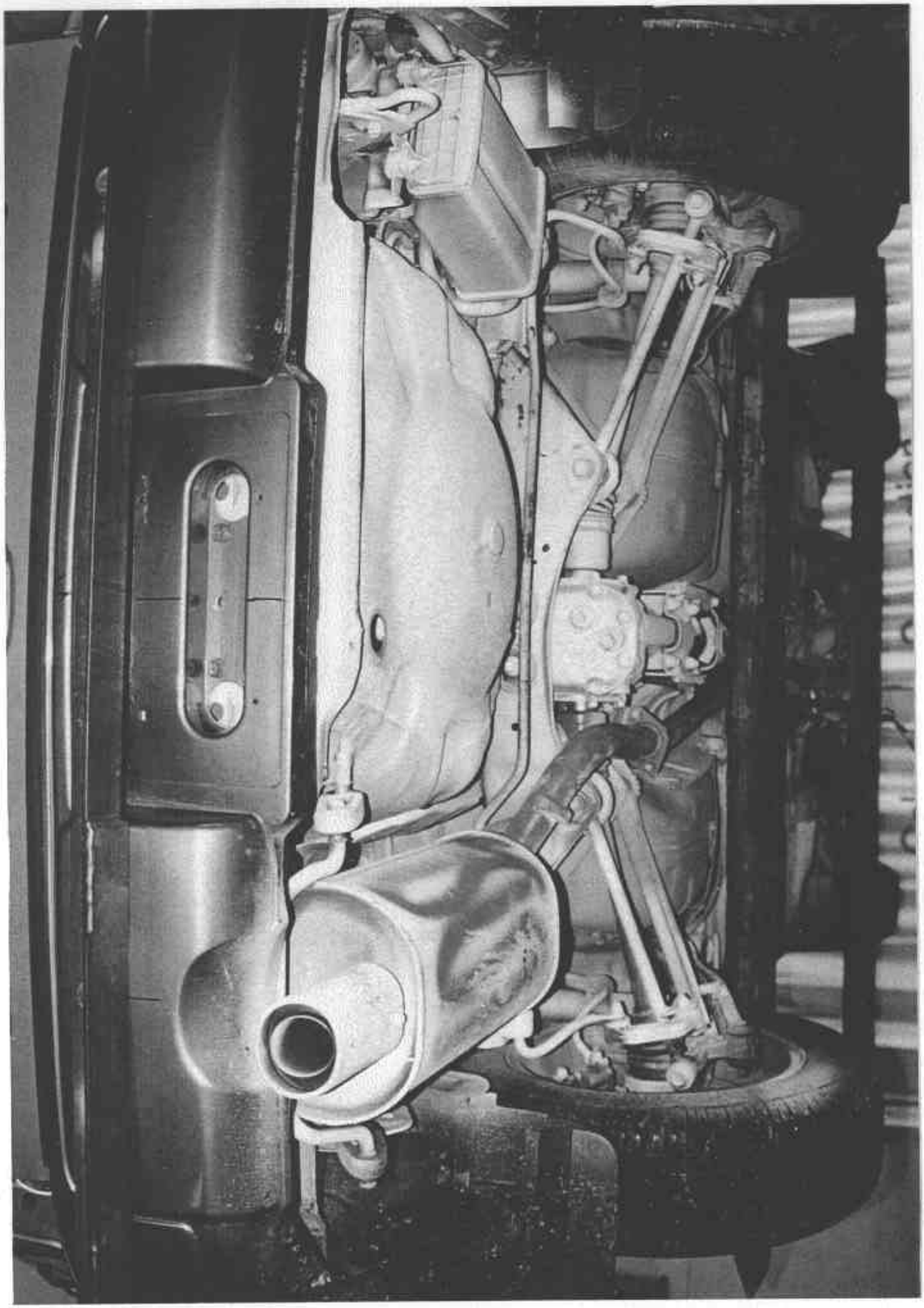


Figure A-21 POST-TEST REAR UNDERBODY VIEW

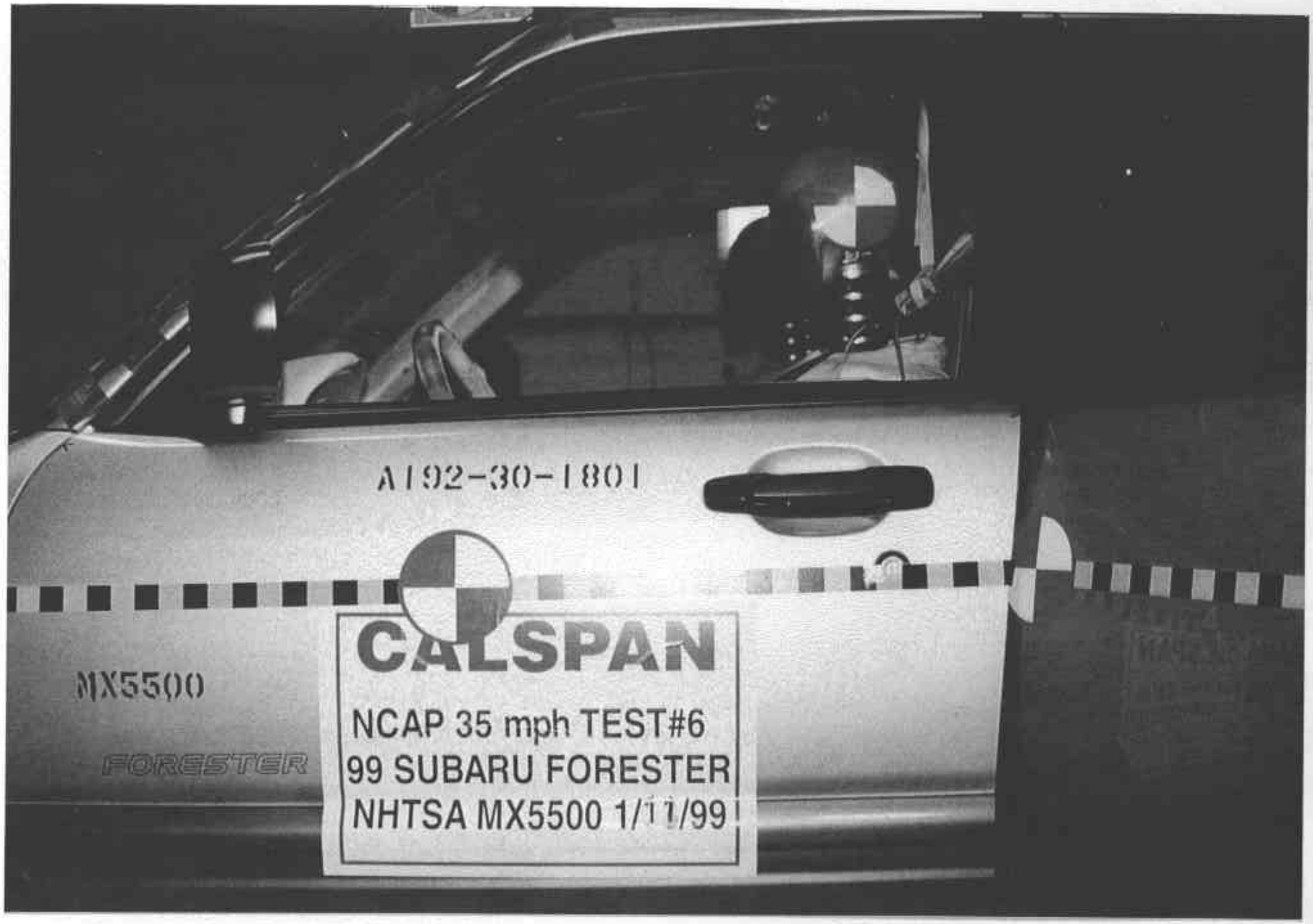


Figure A-22 PRE-TEST DRIVER POSITION VIEW

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-26 PRE-TEST DRIVER AND INTERIOR VIEW

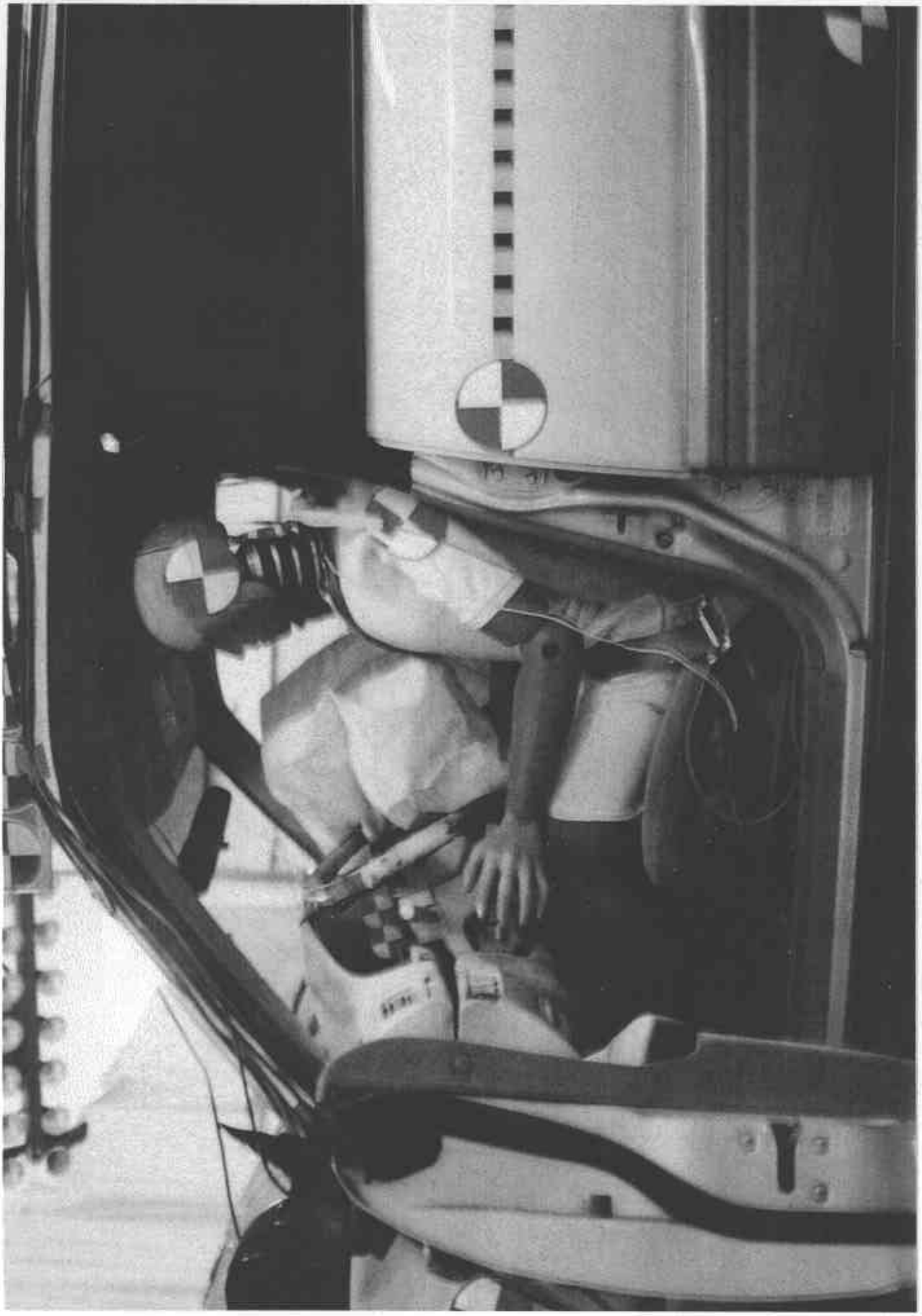


Figure A-27 POST-TEST DRIVER AND INTERIOR VIEW

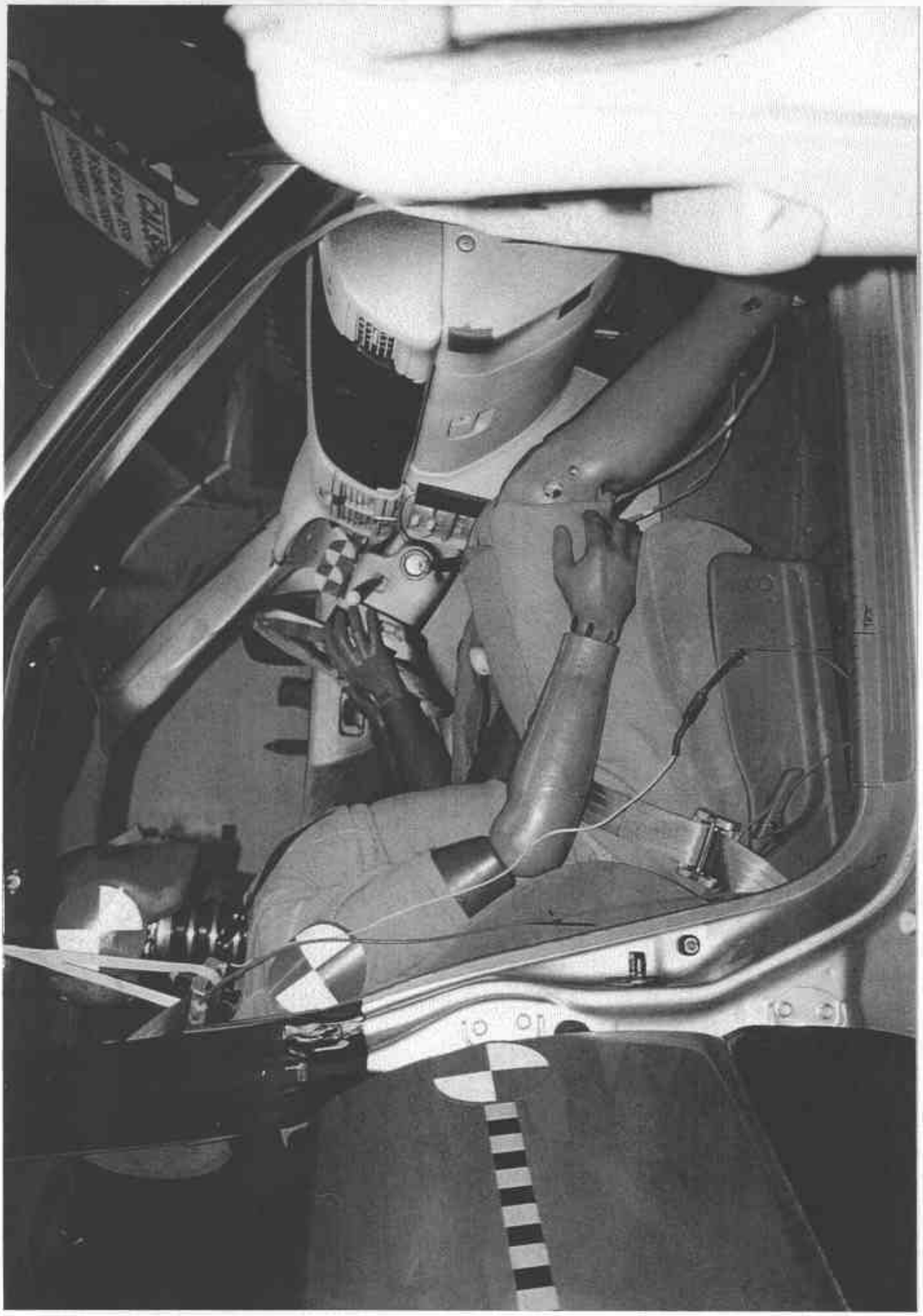


Figure A-28 PRE-TEST PASSENGER AND INTERIOR VIEW

Figure A-29 POST-TEST PASSENGER AND INTERIOR VIEW

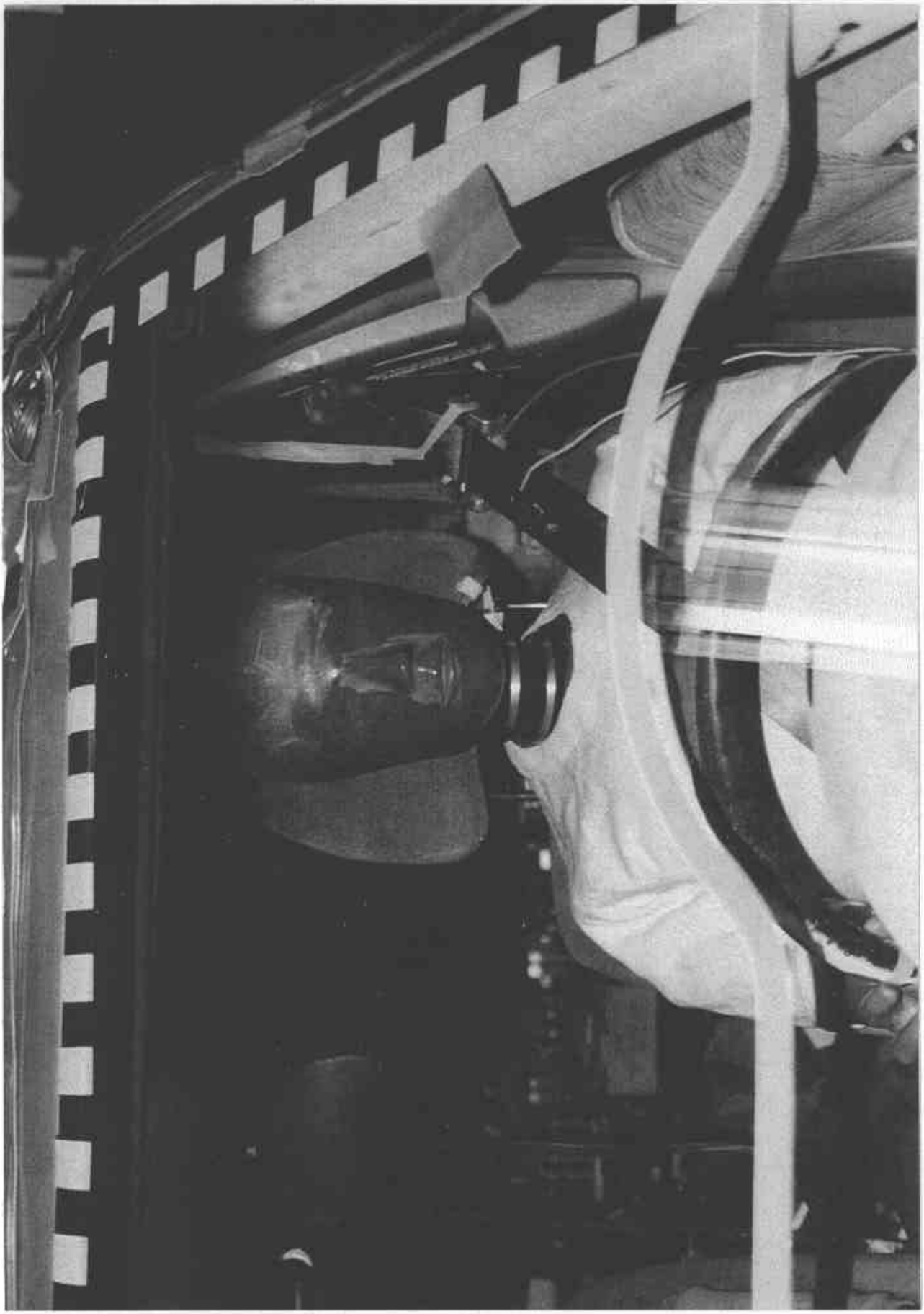


Figure A-30 PRE-TEST DRIVER HEAD LOCATION

PHOTOGRAPH NOT AVAILABLE

Figure A-31 POST-TEST DRIVER HEAD LOCATION

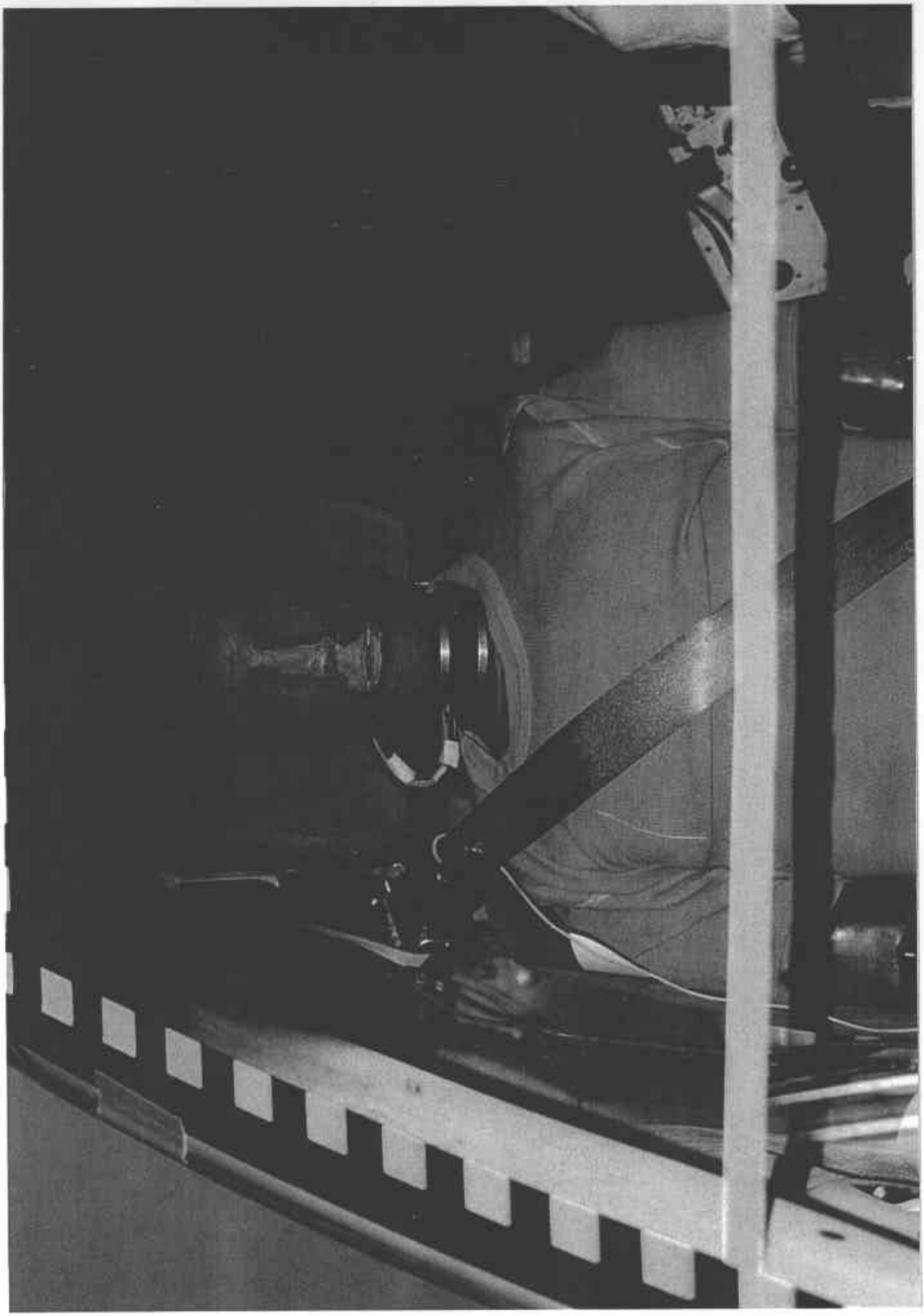


Figure A-32 PRE-TEST PASSENGER HEAD LOCATION

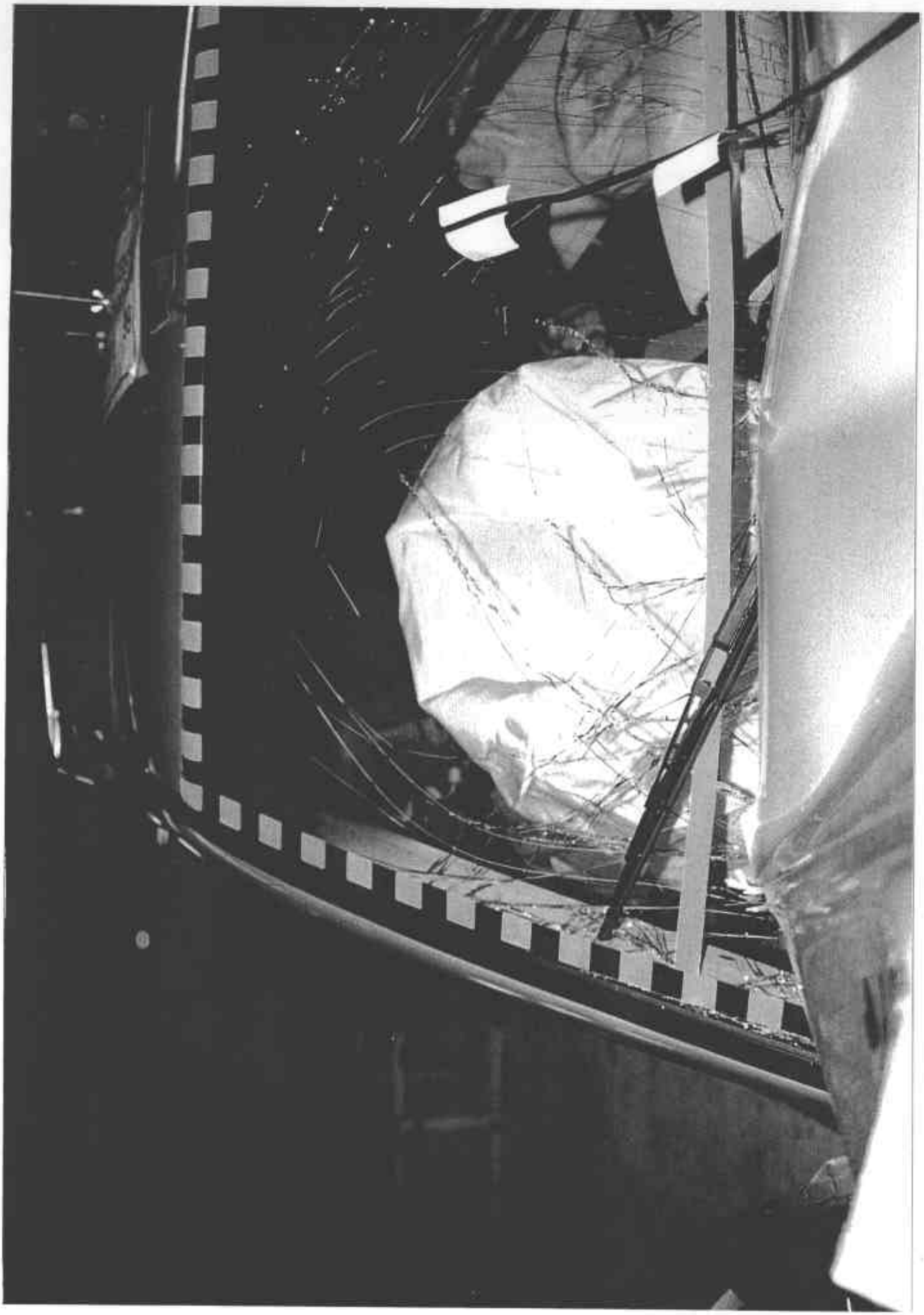


Figure A-33 POST-TEST PASSENGER HEAD LOCATION

Figure A-34 PRE-TEST DRIVER FLOOR PAN VIEW

Figure A-35 POST-TEST DRIVER FLOOR PAN VIEW

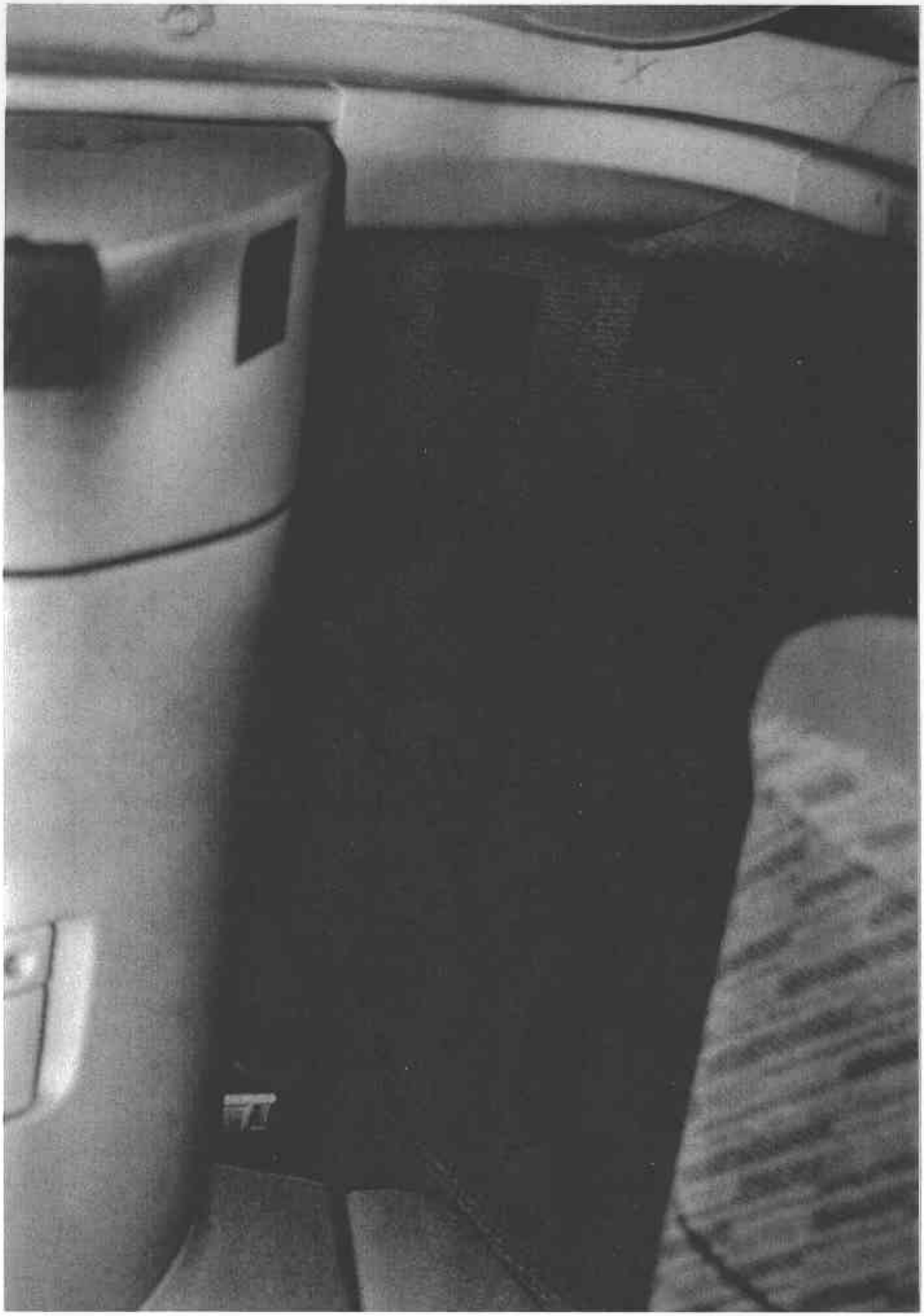


Figure A-36 PRE-TEST PASSENGER FLOOR PAN VIEW

Figure A-37 POST-TEST PASSENGER FLOOR PAN VIEW

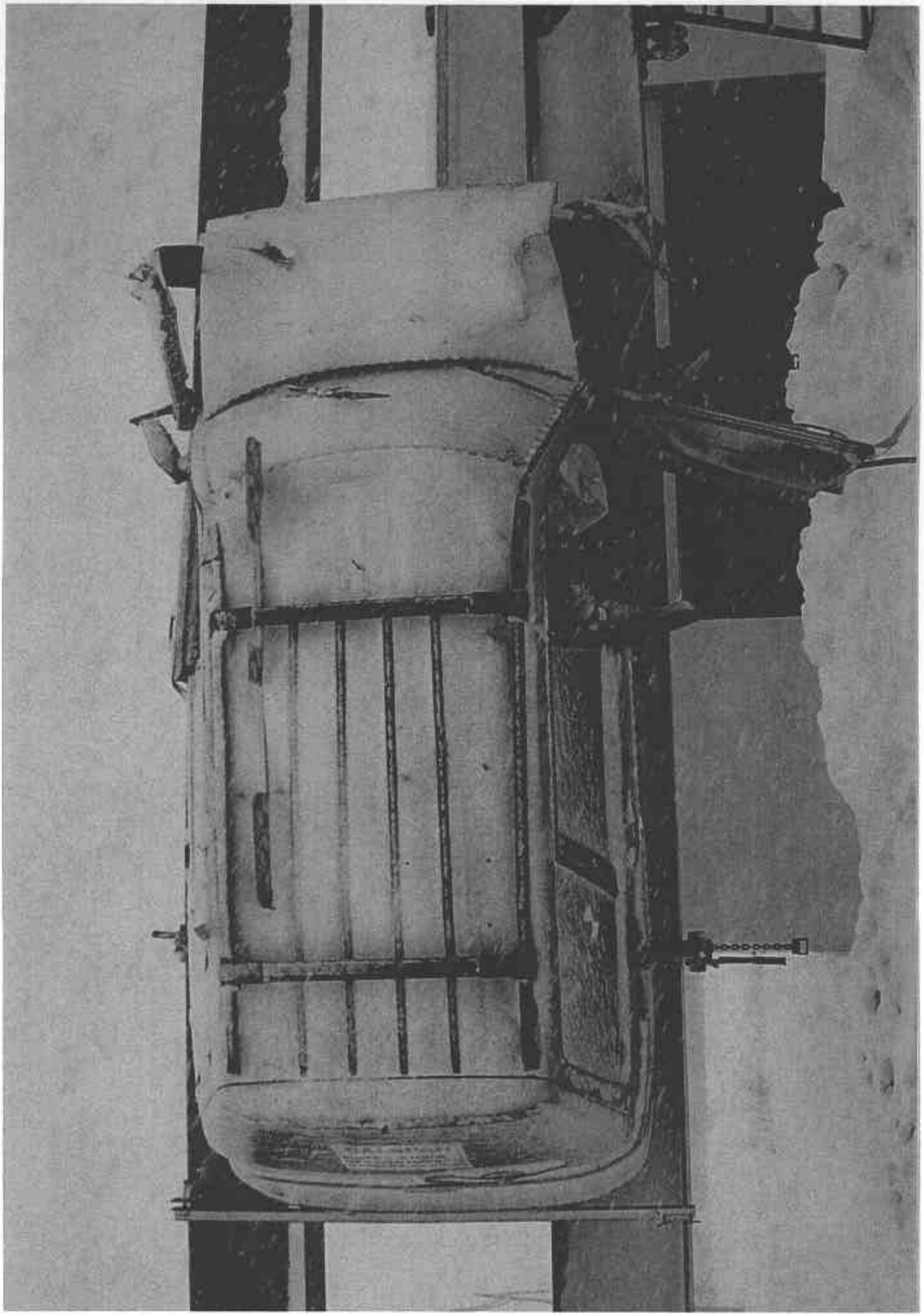


Figure A-38 ROLLOVER VIEW

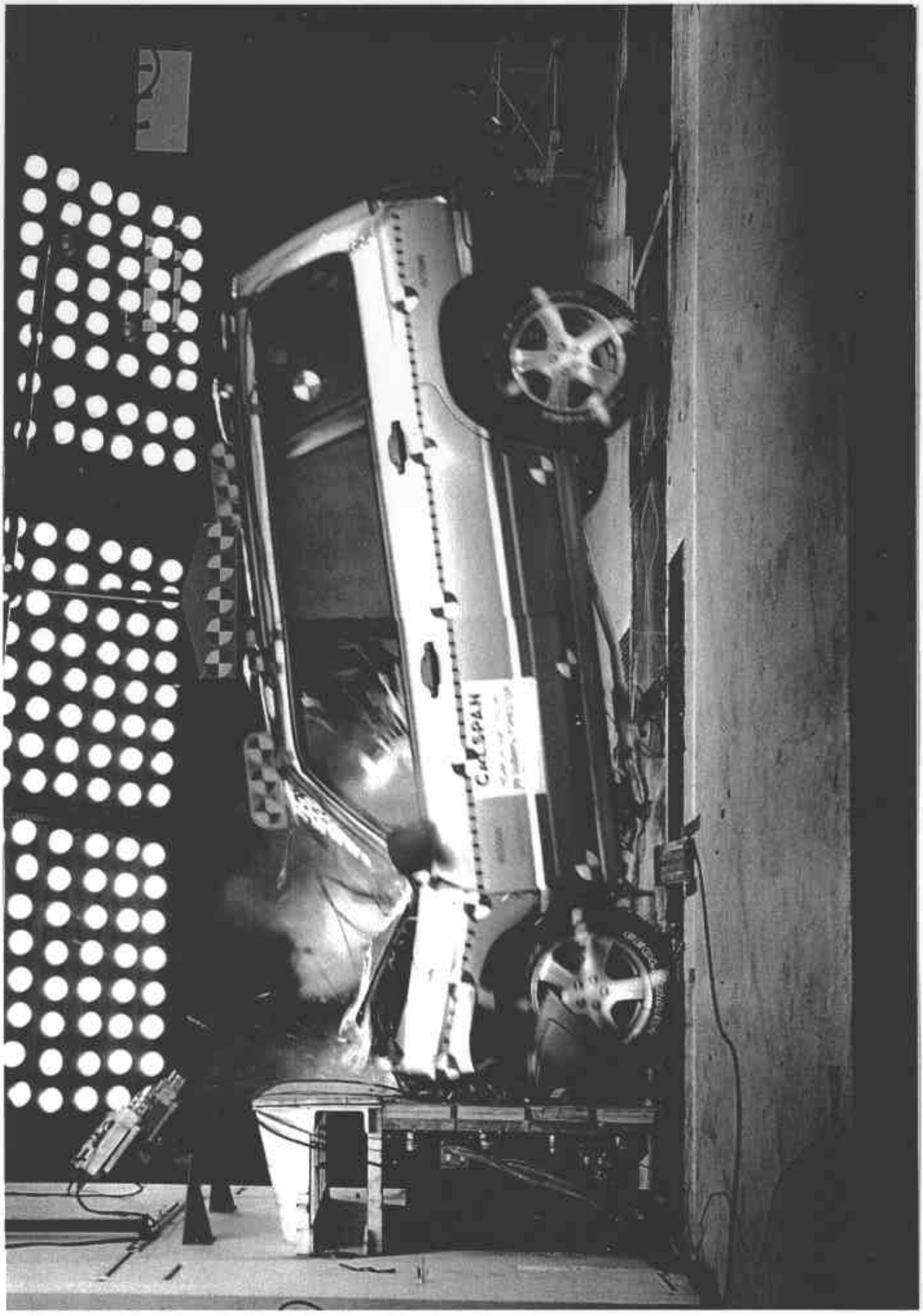


Figure A-39 IMPACT VIEW

Appendix B

DUMMY, VEHICLE AND LOAD CELL BARRIER RESPONSE DATA

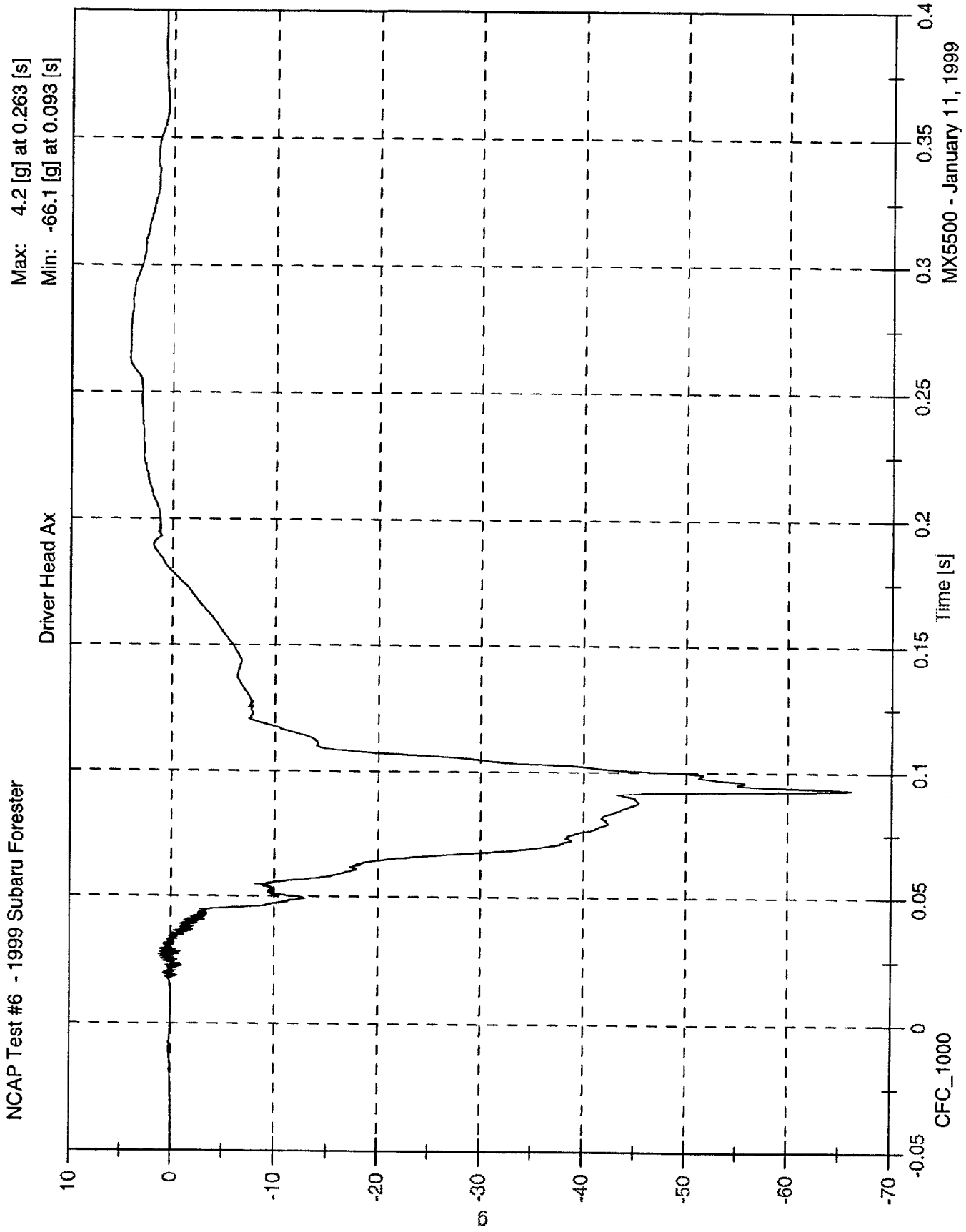
Hybrid III Dummy Sign Conventions
Load Cells and Special Transducers

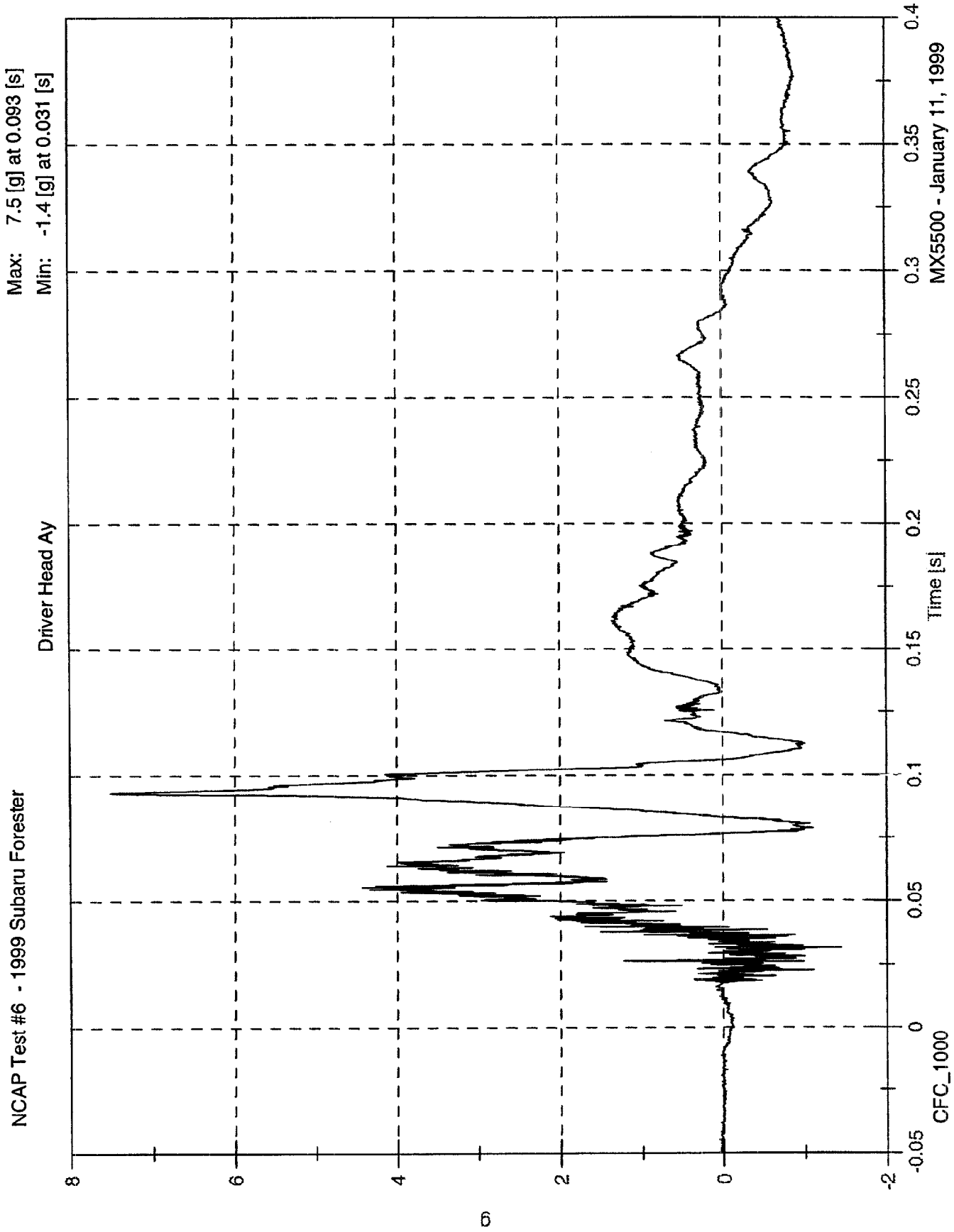
Transducer	SAE Sign Convention (positive unless noted)
Upper Neck Load Cell	Fx Head rearward Fy Head left Fz Neck in tension Mx Left ear to left shoulder My Chin to chest (flexion) Mz Chin to left shoulder (look left)
Chest Displacement Potentiometer	Compression is negative
Pelvic Load Cell (Lower Lumbar)	Fx Chest rearward Fy Chest left Fz Spine in tension
Femur Load Cell	Compression is negative
Upper Tibia Load Cell (right and left leg)	Mx Support tibia at ends, load left side center My Support tibia at ends, load front (shin) center
Lower Tibia Load Cell (right and left leg)	Fz Tibia in tension Mx Support tibia at ends, load left side center My Support tibia at ends, load front (shin) center

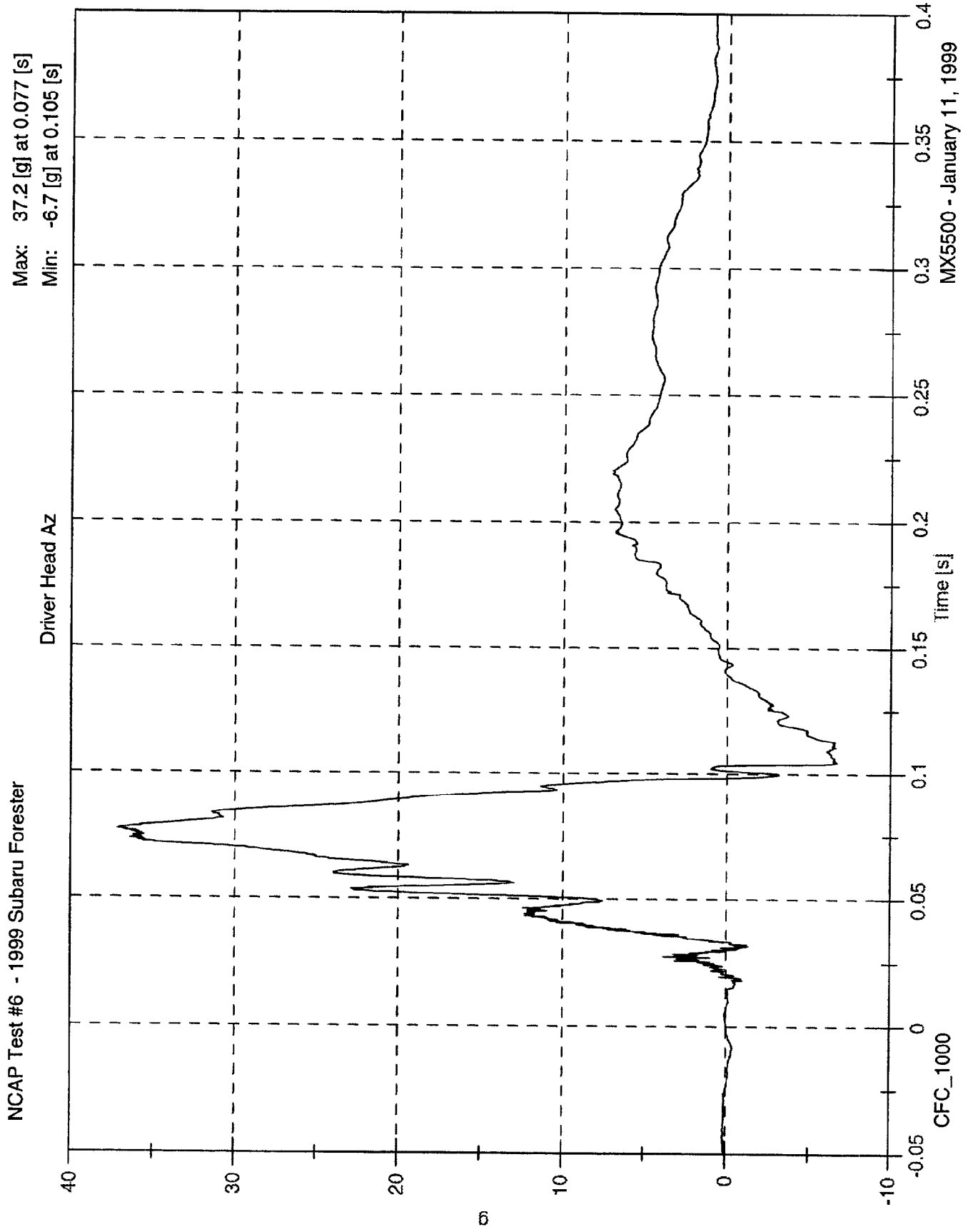
NHTSA TEST NO. MX5500

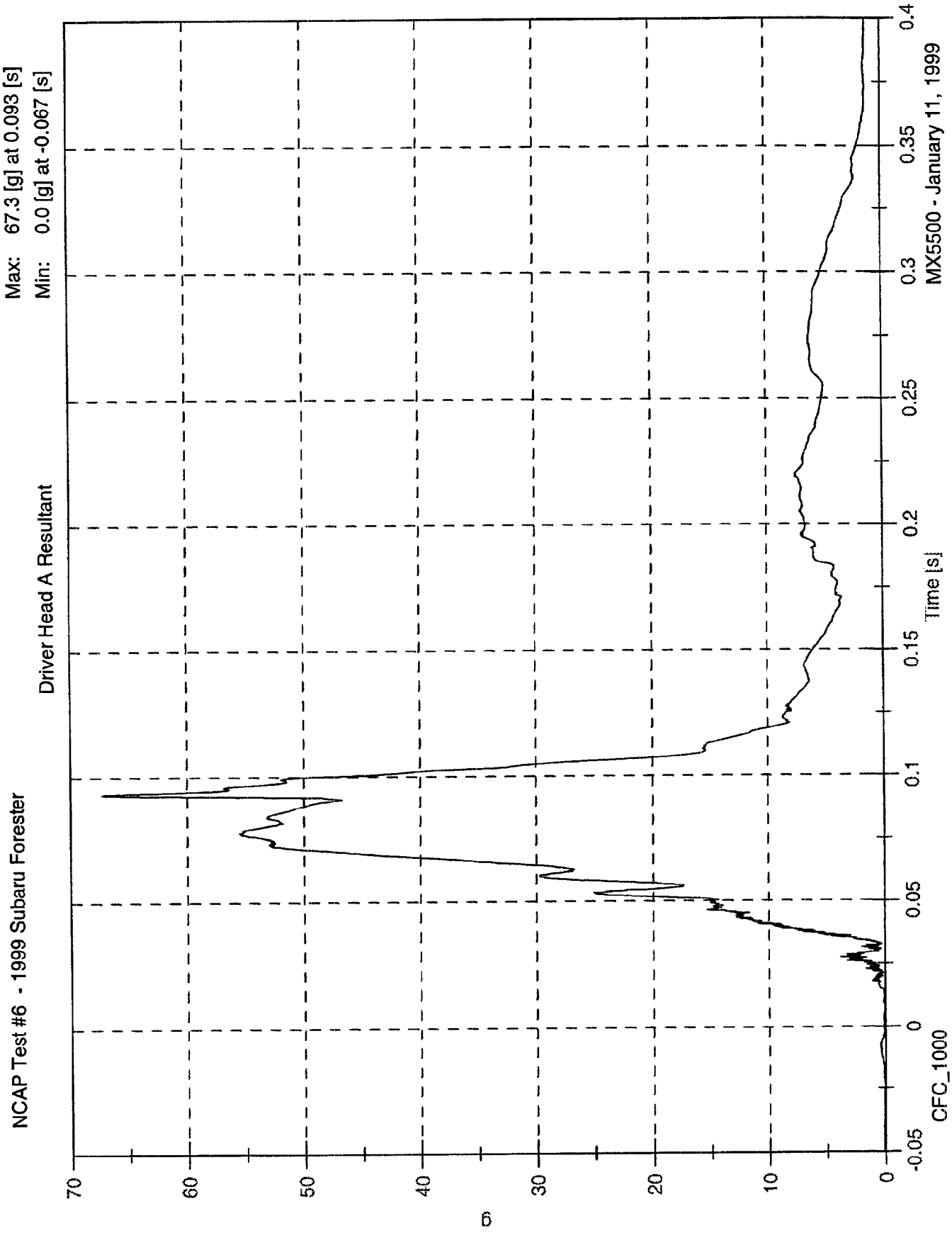
DUMMY DATA

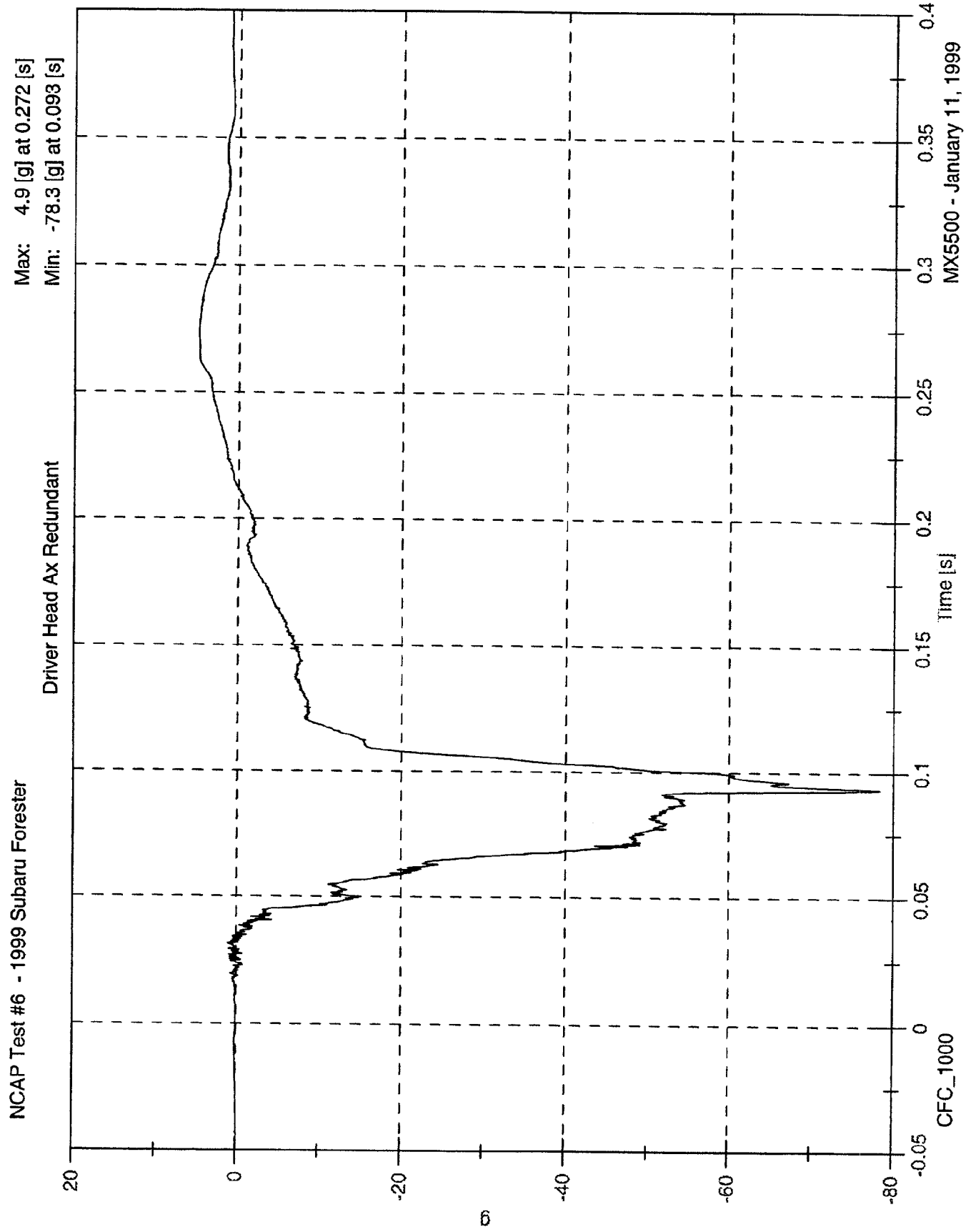
CLASS	FILTER CHANNEL
Head Accelerations	1000
Chest Accelerations	180
Chest Displacements	60
Femur Forces	600
Belt Loads	60
Belt Displacements	180
Neck Forces	1000
Neck Moments	600

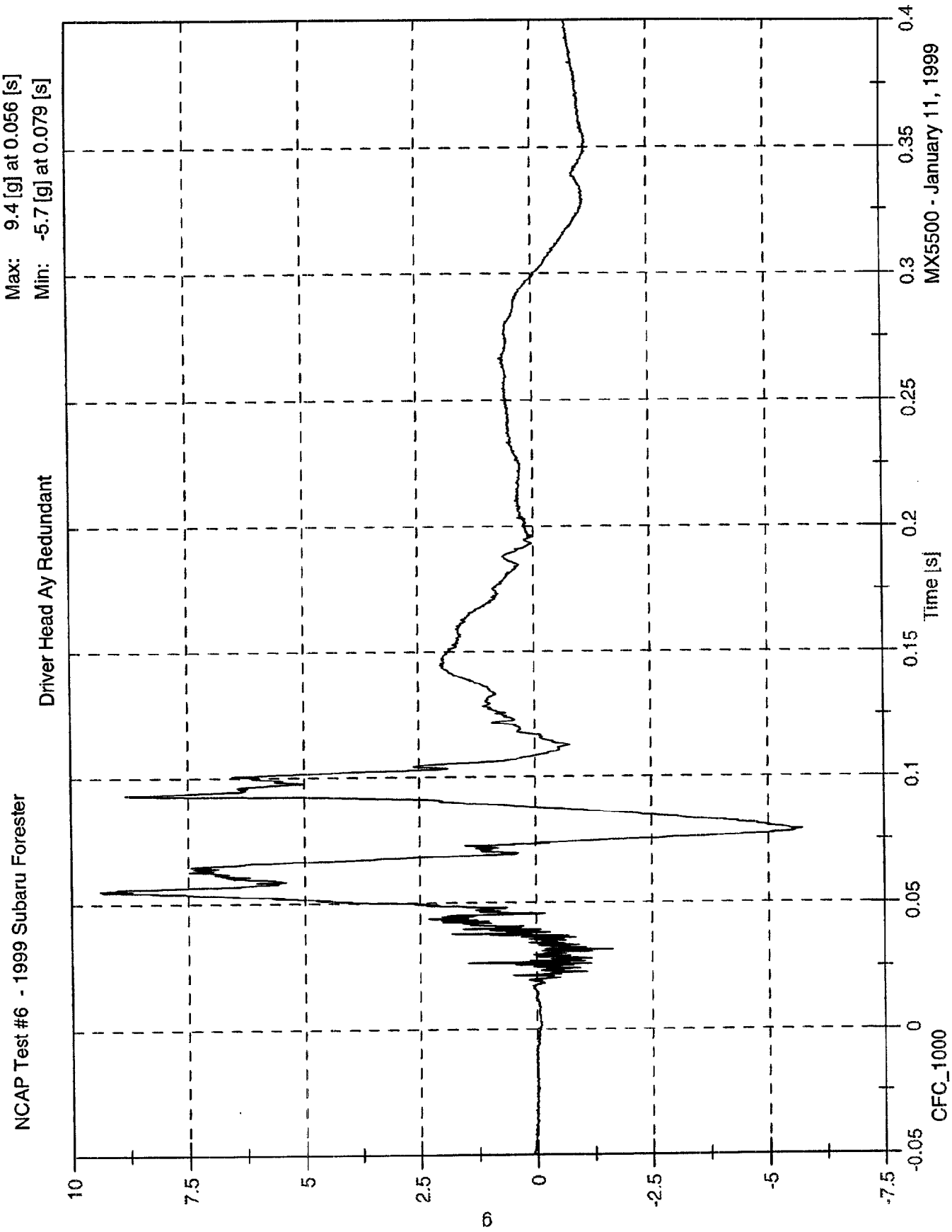

NCAP Test #6 - 1999 Subaru Forester
Max: 4.2 [g] at 0.263 [s]
Min: -66.1 [g] at 0.093 [s]
Driver Head Ax
MX5500 - January 11, 1999
CFC_1000
Time [s]
g
10
0
-10
-20
-30
-40
-50
-60
-70
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4

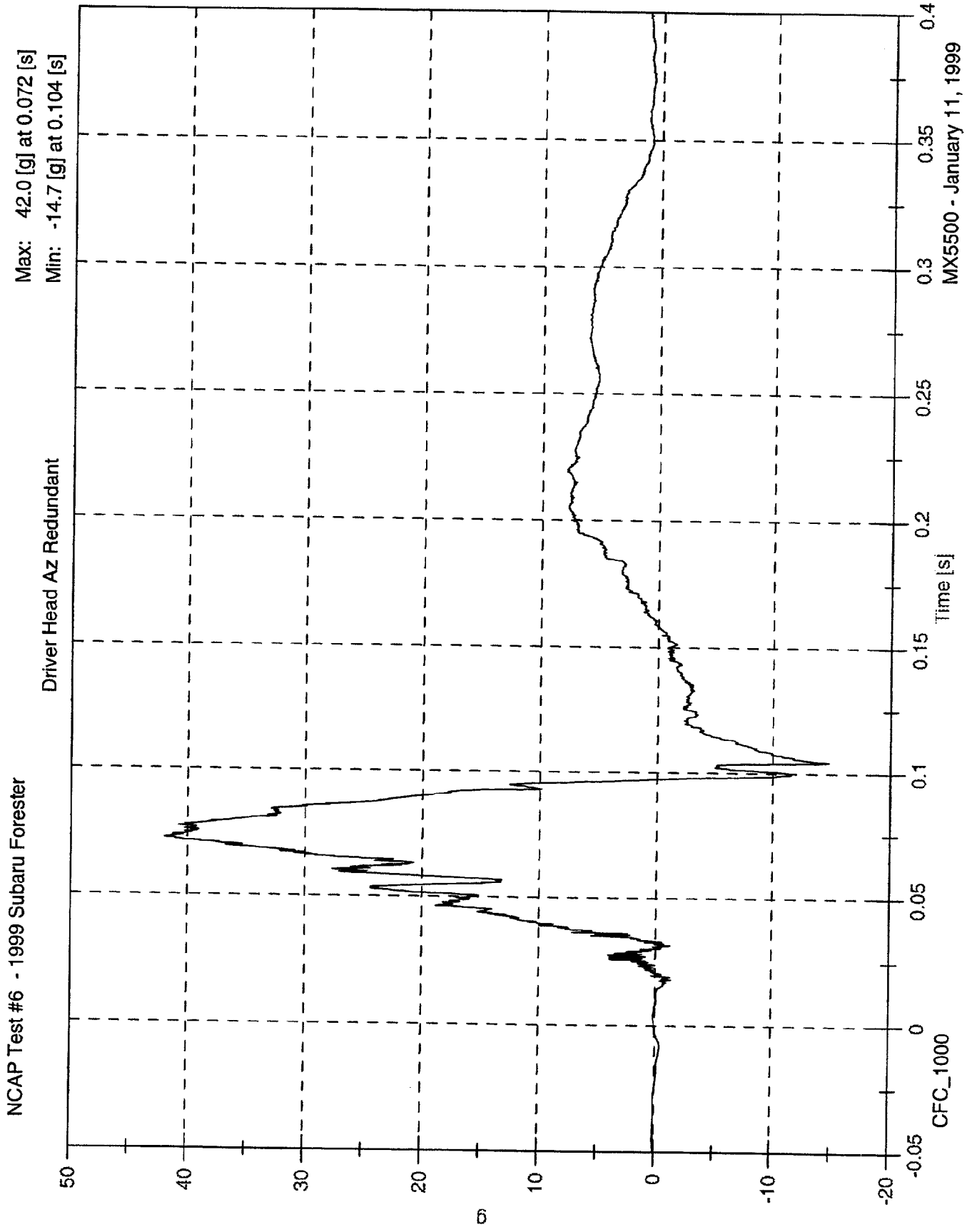

NCAP Test #6 - 1999 Subaru Forester
Max: 7.5 [g] at 0.093 [s]
Min: -1.4 [g] at 0.031 [s]
Driver Head Ay
MX5500 - January 11, 1999
CFC_1000
Time [s]
8
6
4
2
0
-2
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
6

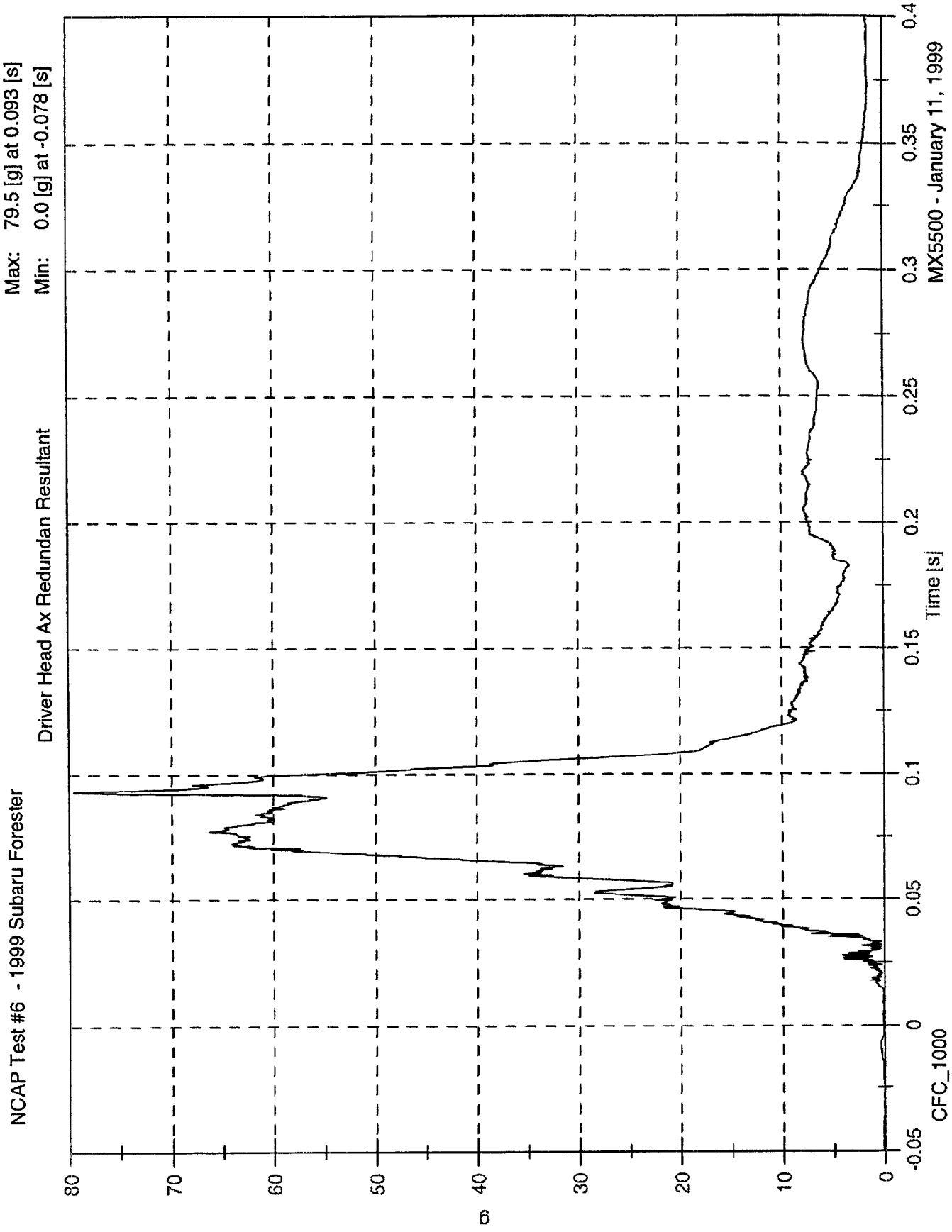

NCAP Test #6 - 1999 Subaru Forester
Max: 37.2 [g] at 0.077 [s]
Min: -6.7 [g] at 0.105 [s]
Driver Head Az
g
40
30
20
10
0
-10
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
Time [s]
CFC_1000
MX5500 - January 11, 1999

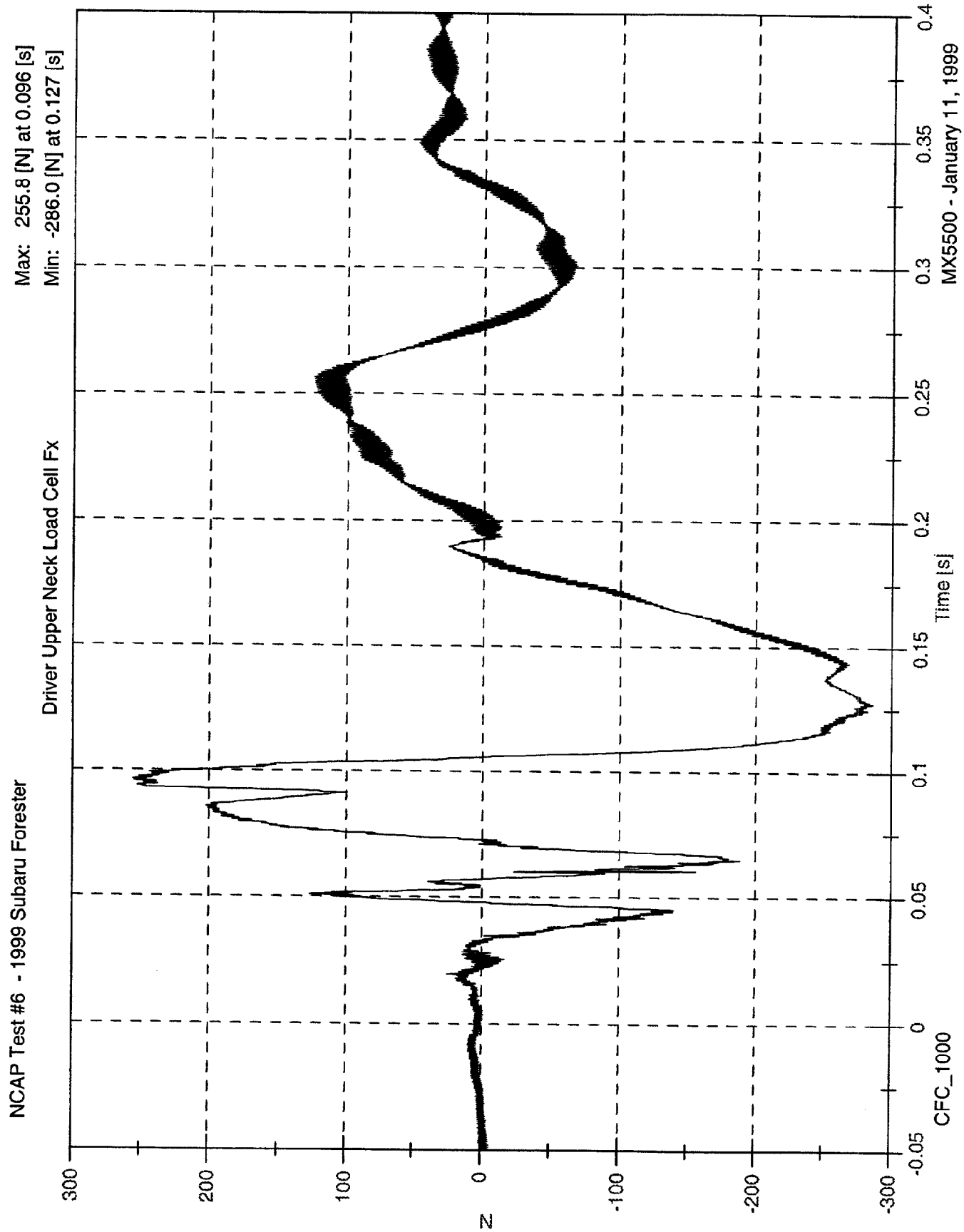

NCAP Test #6 - 1999 Subaru Forester
Max: 67.3 [g] at 0.093 [s]
Min: 0.0 [g] at -0.067 [s]
Driver Head A Resultant
MX5500 - January 11, 1999
CFC_1000
Time [s]
g
70
60
50
40
30
20
10
0
-0.05
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4

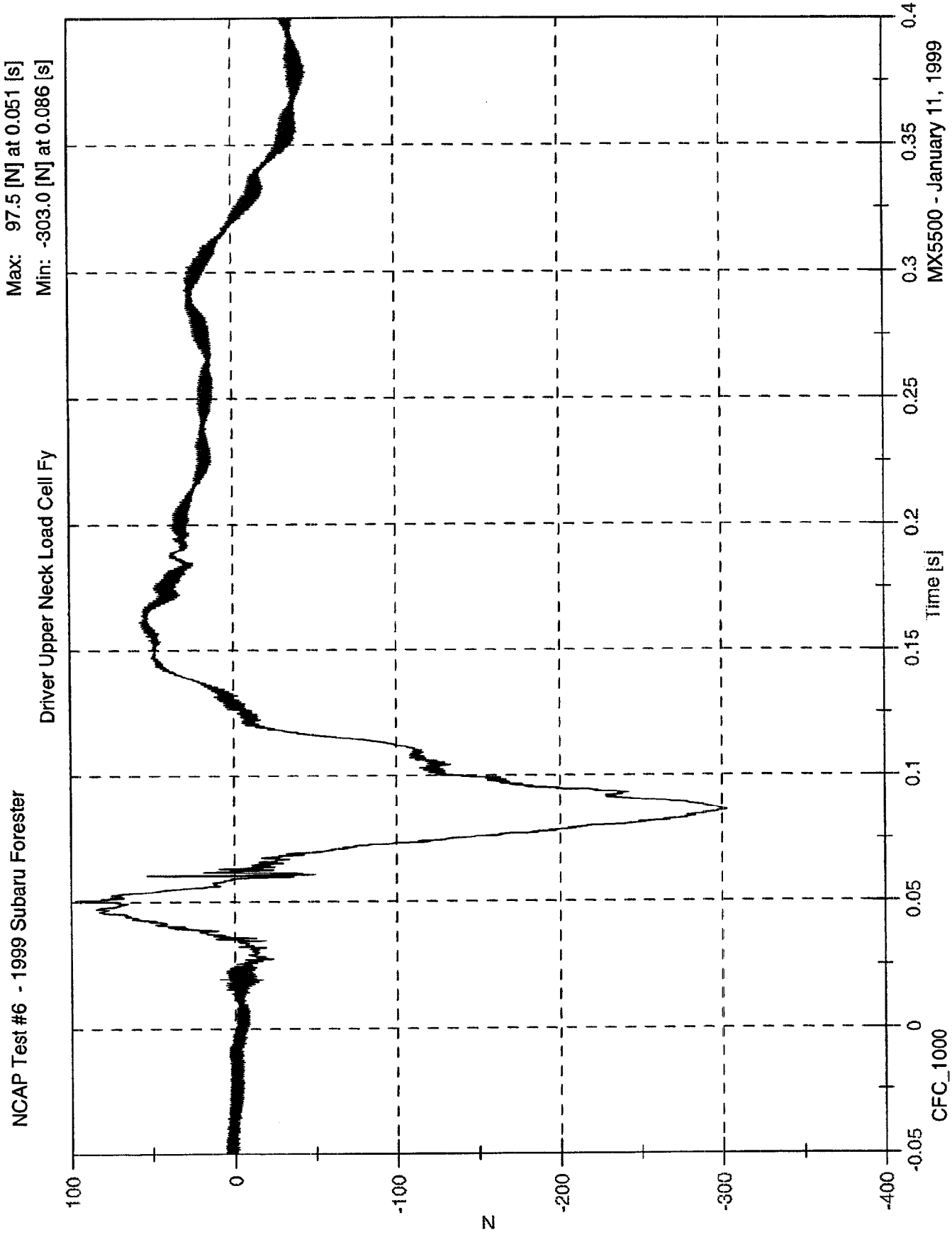

NCAP Test #6 - 1999 Subaru Forester
Max: 4.9 [g] at 0.272 [s]
Min: -78.3 [g] at 0.093 [s]
Driver Head Ax Redundant
MX5500 - January 11, 1999
CFC_1000
Time [s]
g
20
0
-20
-40
-60
-80
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4

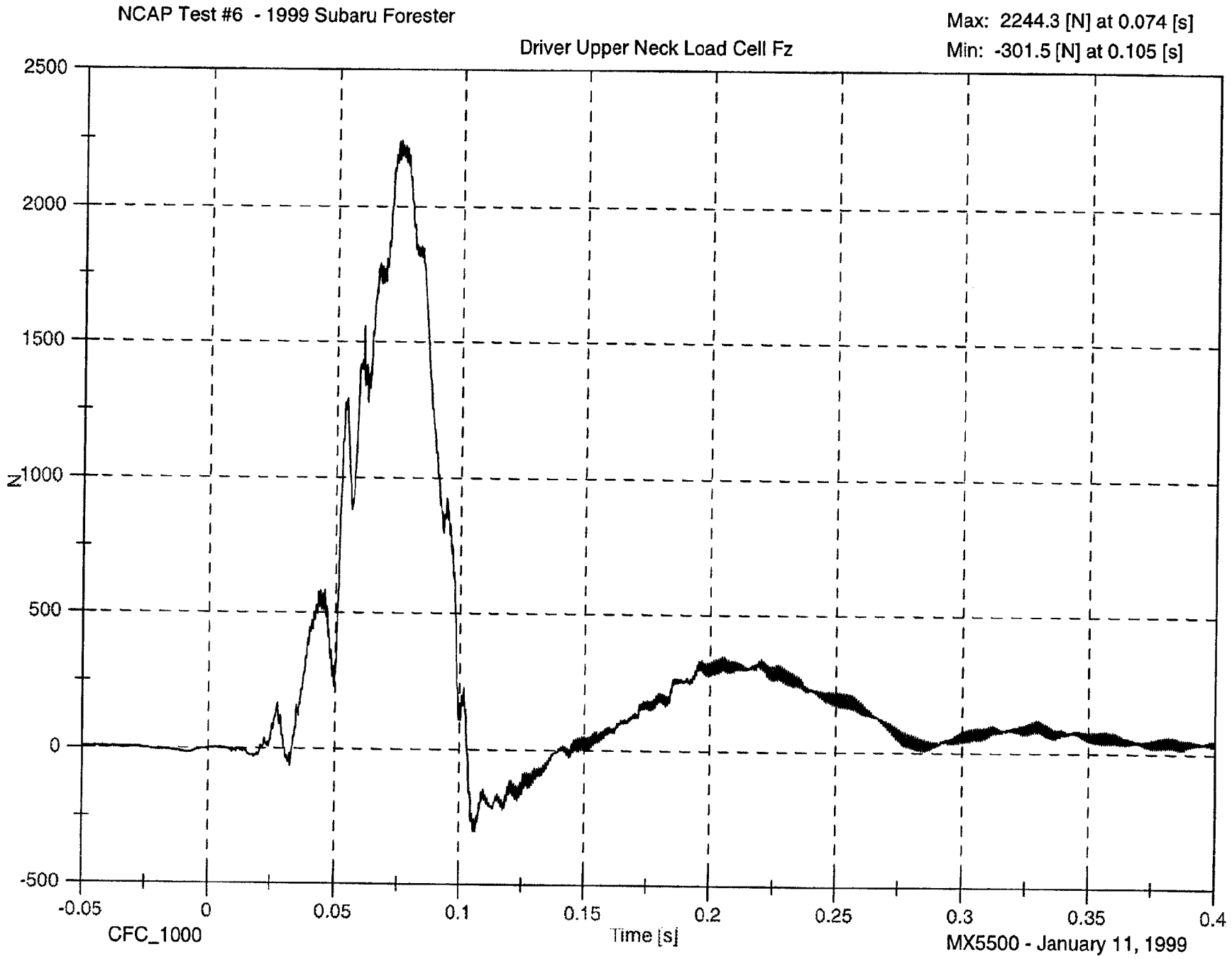

NCAP Test #6 - 1999 Subaru Forester
Driver Head Ay Redundant
Max: 9.4 [g] at 0.056 [s]
Min: -5.7 [g] at 0.079 [s]
MX5500 - January 11, 1999
CFC_1000
Time [s]
g
10
7.5
5
2.5
0
-2.5
-5
-7.5
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4

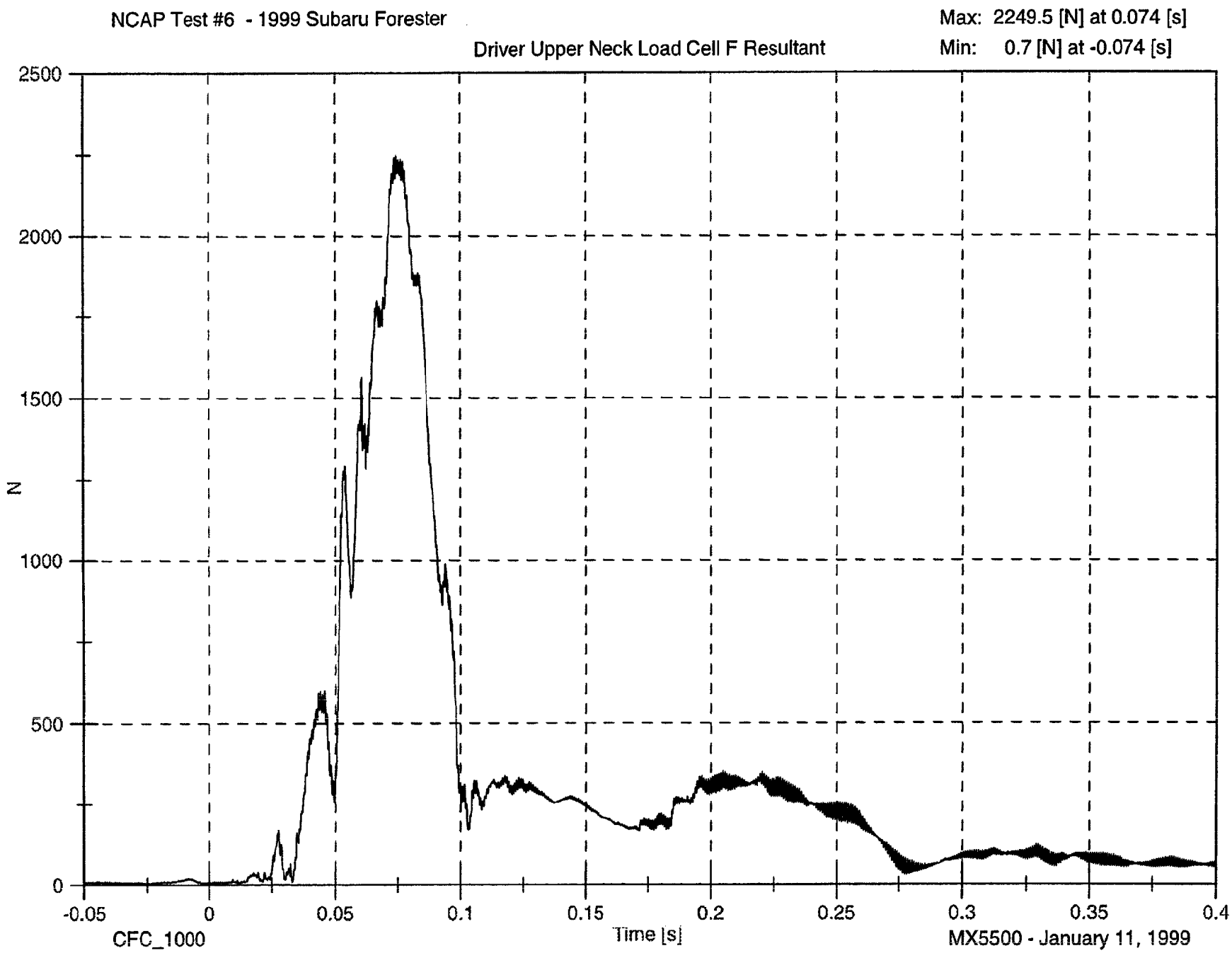

NCAP Test #6 - 1999 Subaru Forester
Max: 42.0 [g] at 0.072 [s]
Min: -14.7 [g] at 0.104 [s]
Driver Head Az Redundant
MX5500 - January 11, 1999
CFC_1000
Time [s]
g
50
40
30
20
10
0
-10
-20
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4

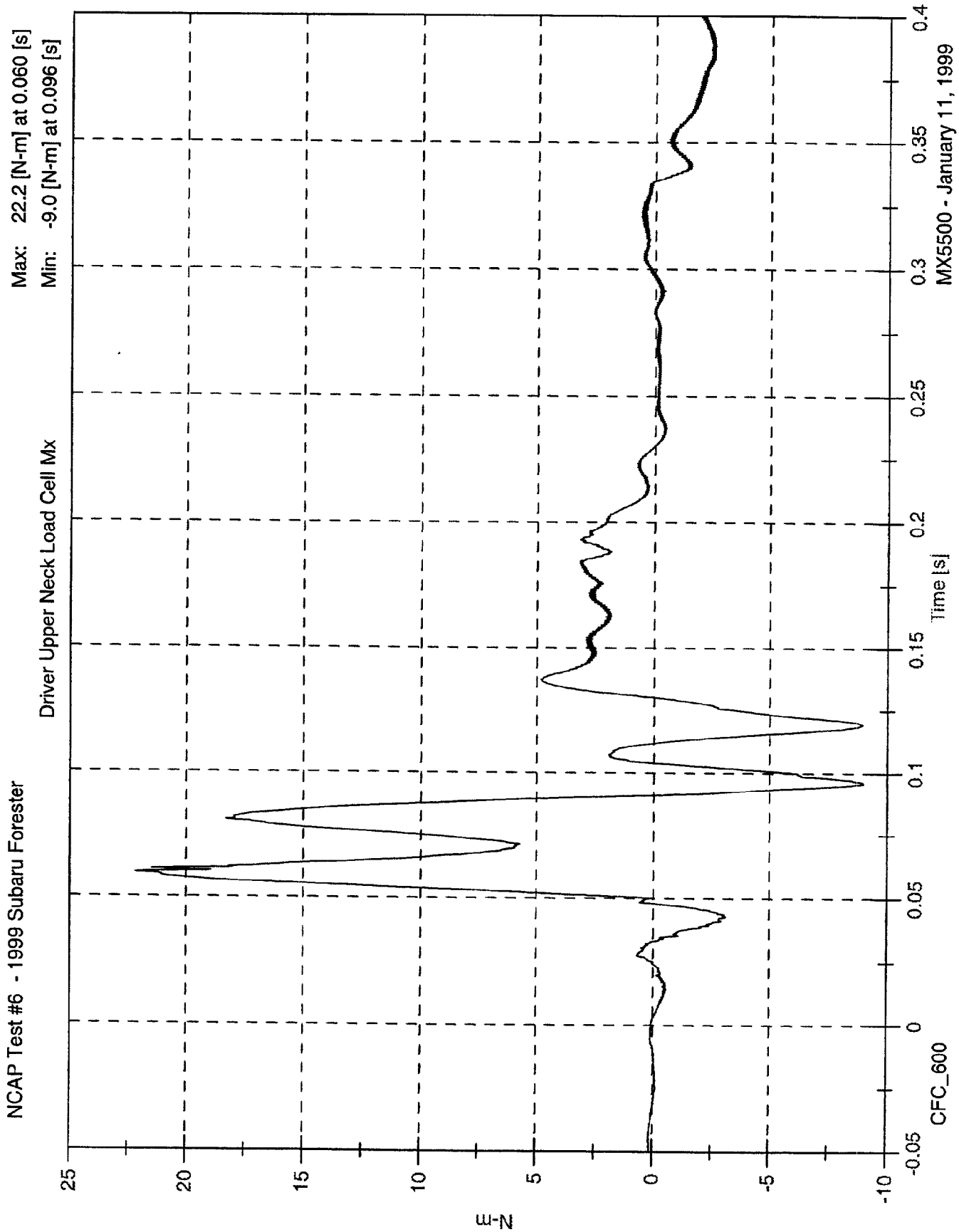

NCAP Test #6 - 1999 Subaru Forester
Driver Head Ax Redundan Resultant
Max: 79.5 [g] at 0.093 [s]
Min: 0.0 [g] at -0.078 [s]
MX5500 - January 11, 1999
CFC_1000
Time [s]
g
80
70
60
50
40
30
20
10
0
-0.05
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4

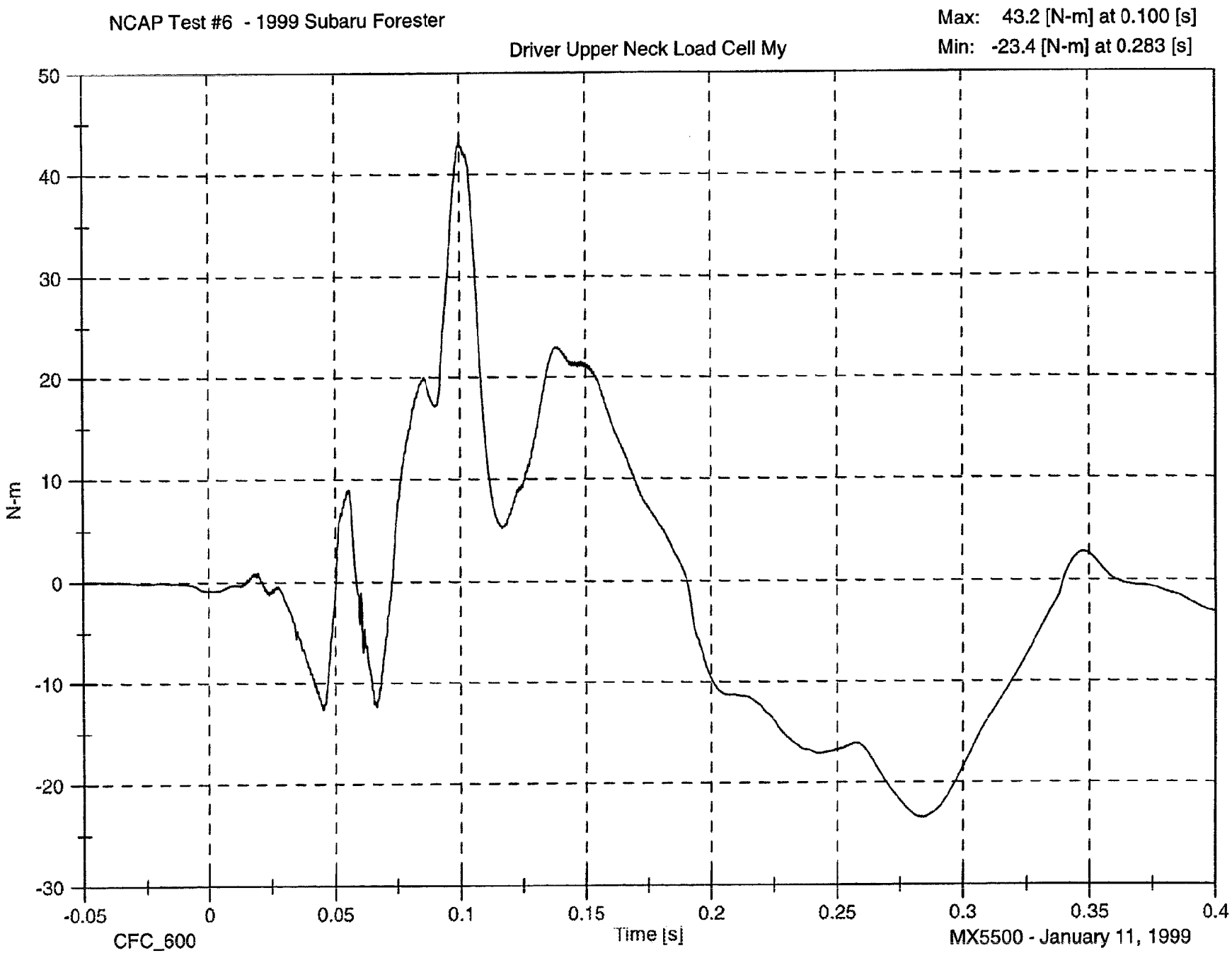

NCAP Test #6 - 1999 Subaru Forester
Max: 255.8 [N] at 0.096 [s]
Min: -286.0 [N] at 0.127 [s]
Driver Upper Neck Load Cell Fx
MX5500 - January 11, 1999
CFC_1000
N
Time [s]
300
200
100
0
-100
-200
-300
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4

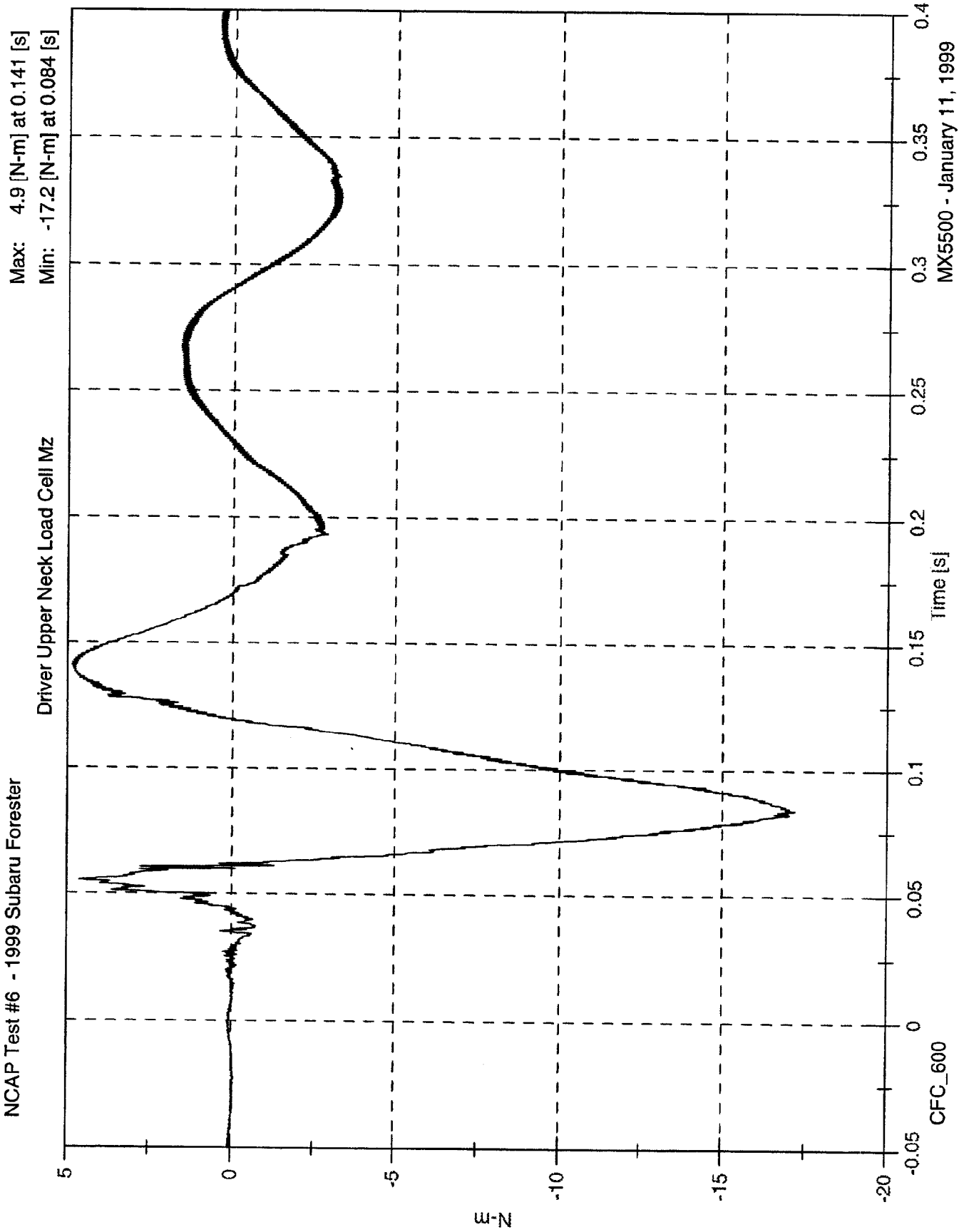

NCAP Test #6 - 1999 Subaru Forester
Max: 97.5 [N] at 0.051 [s]
Min: -303.0 [N] at 0.086 [s]
Driver Upper Neck Load Cell Fy
MX5500 - January 11, 1999
CFC_1000
Time [s]
N
100
0
-100
-200
-300
-400
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4

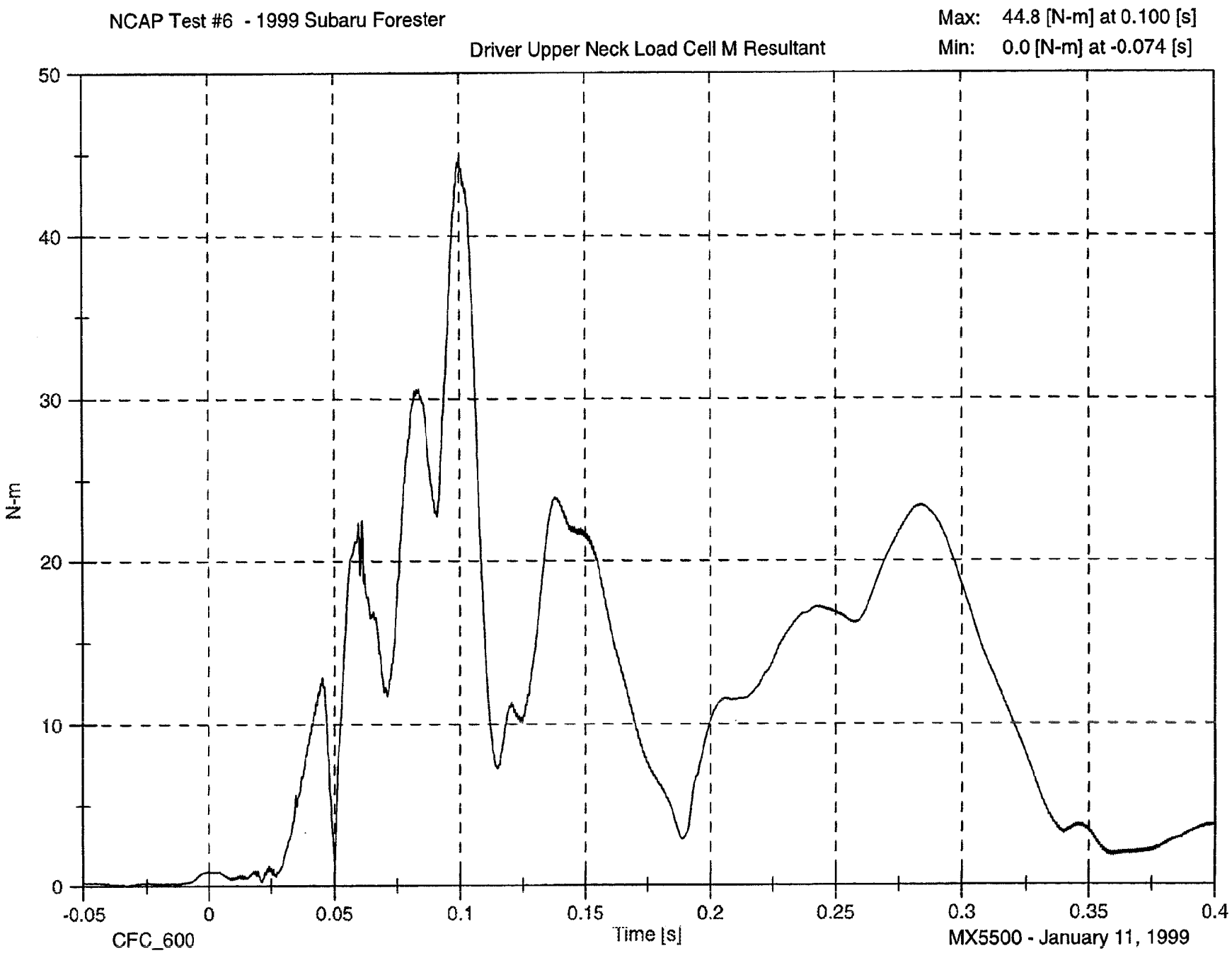

NCAP Test #6 - 1999 Subaru Forester
Driver Upper Neck Load Cell Fz
Max: 2244.3 [N] at 0.074 [s]
Min: -301.5 [N] at 0.105 [s]
2500
2000
1500
1000
500
0
-500
N
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
Time [s]
CFC_1000
MX5500 - January 11, 1999

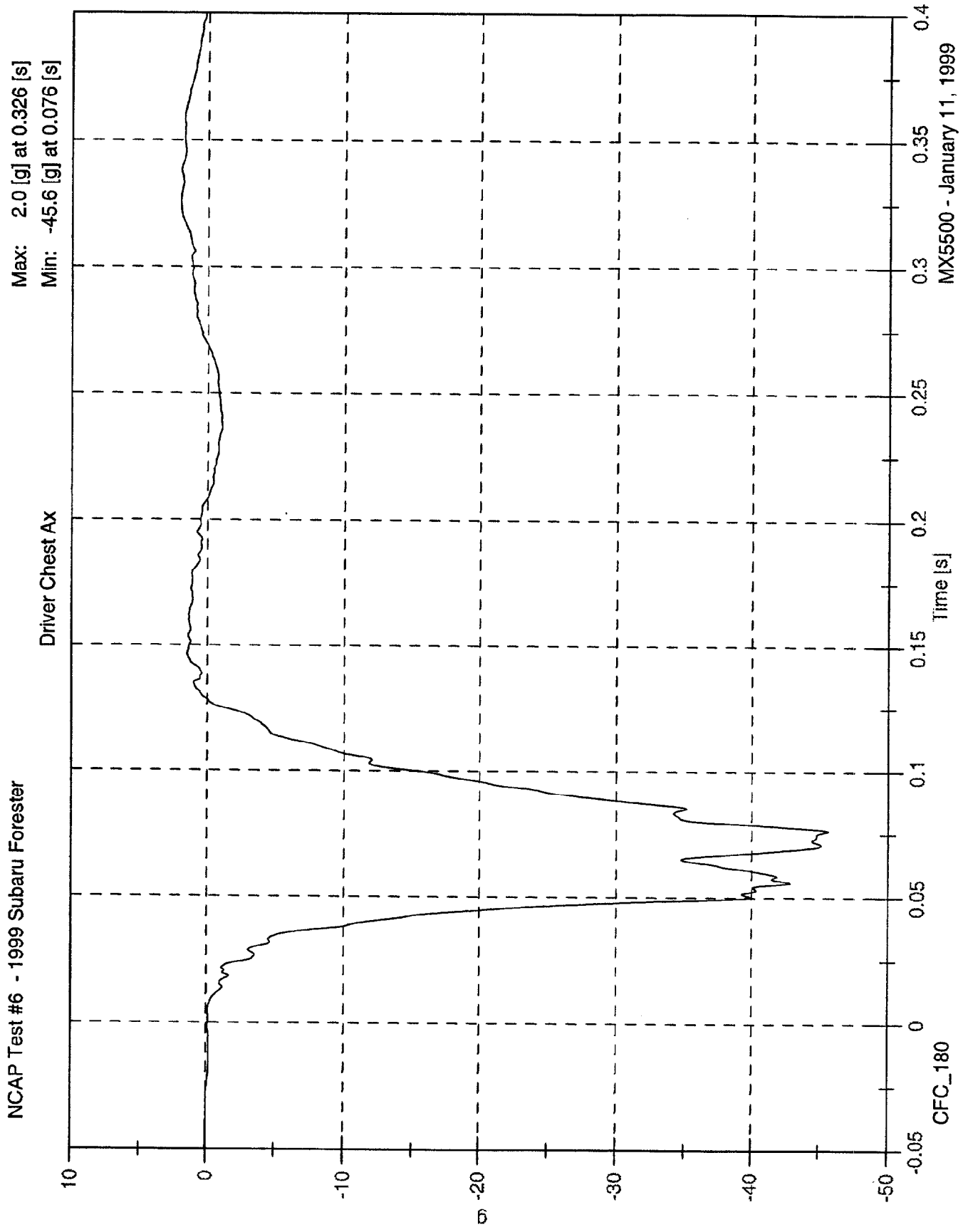

NCAP Test #6 - 1999 Subaru Forester
Driver Upper Neck Load Cell F Resultant
Max: 2249.5 [N] at 0.074 [s]
Min: 0.7 [N] at -0.074 [s]
2500
2000
1500
1000
500
0
N
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
Time [s]
CFC_1000
MX5500 - January 11, 1999

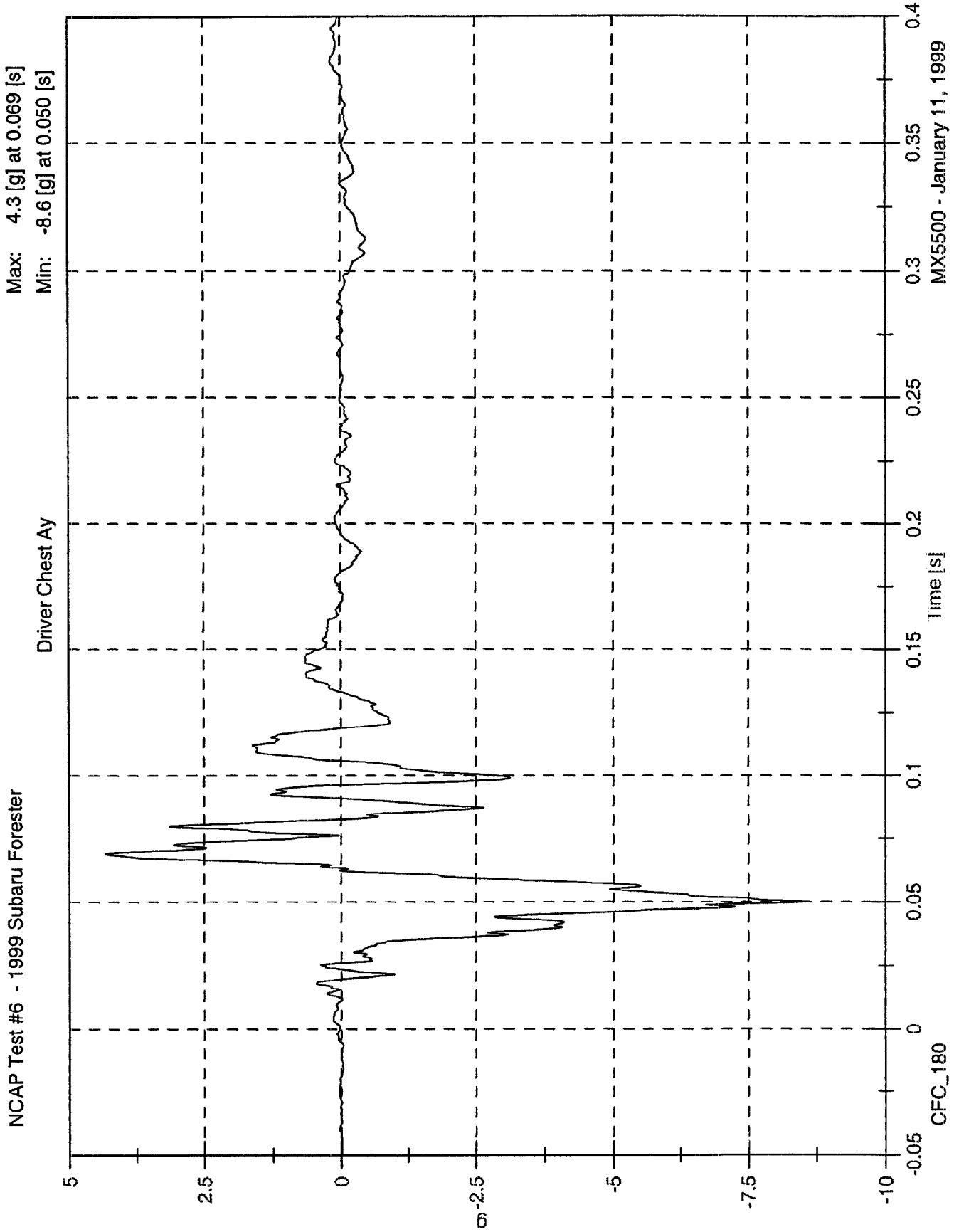

NCAP Test #6 - 1999 Subaru Forester
Max: 22.2 [N-m] at 0.060 [s]
Min: -9.0 [N-m] at 0.096 [s]
Driver Upper Neck Load Cell Mx
MX5500 - January 11, 1999
CFC_600
N-m
Time [s]
25
20
15
10
5
0
-5
-10
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4

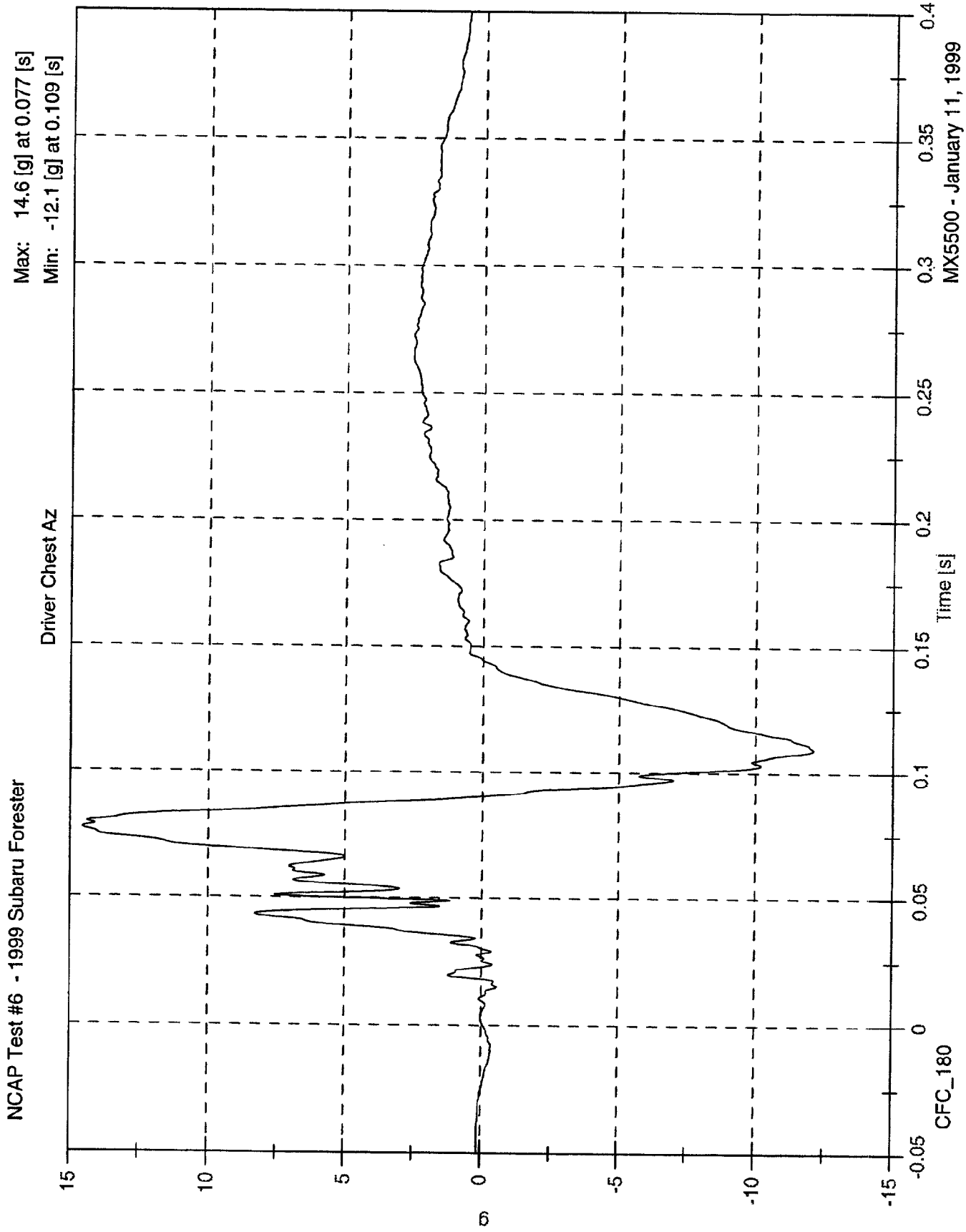

NCAP Test #6 - 1999 Subaru Forester
Driver Upper Neck Load Cell My
Max: 43.2 [N-m] at 0.100 [s]
Min: -23.4 [N-m] at 0.283 [s]
N-m
50
40
30
20
10
0
-10
-20
-30
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
Time [s]
CFC_600
MX5500 - January 11, 1999

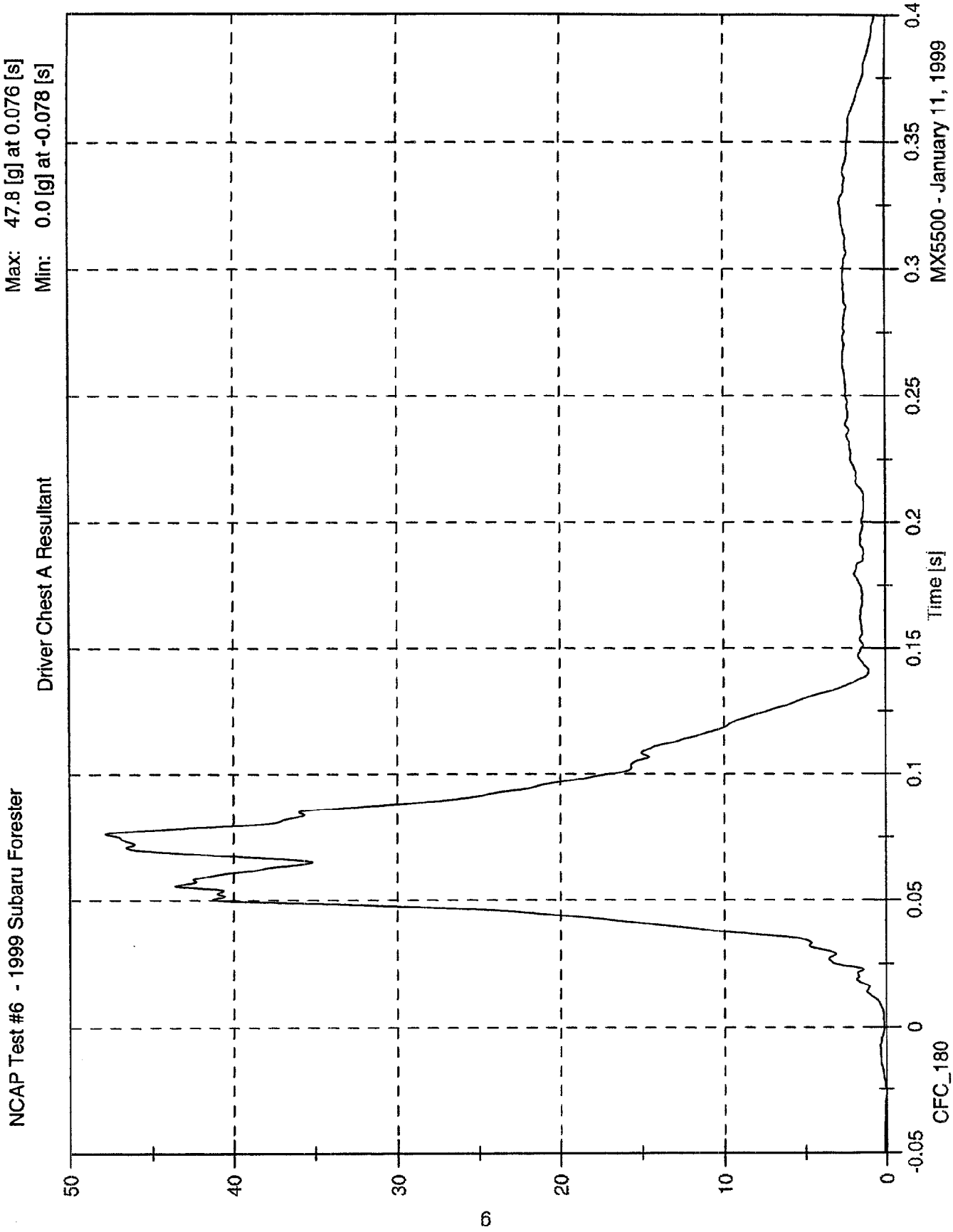

NCAP Test #6 - 1999 Subaru Forester
Max: 4.9 [N-m] at 0.141 [s]
Min: -17.2 [N-m] at 0.084 [s]
Driver Upper Neck Load Cell Mz
MX5500 - January 11, 1999
CFC_600
N-m
Time [s]
5
0
-5
-10
-15
-20
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4

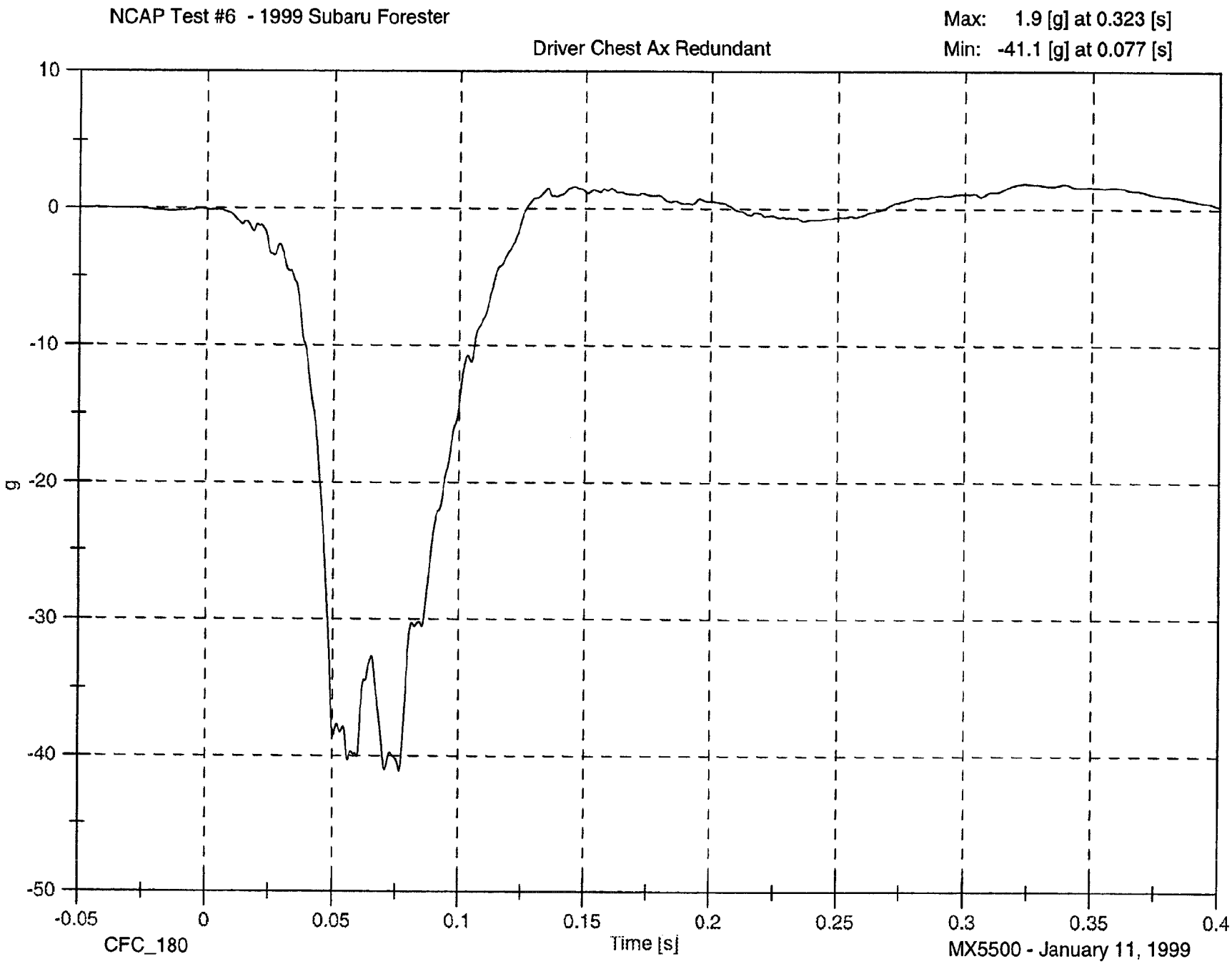

NCAP Test #6 - 1999 Subaru Forester
Driver Upper Neck Load Cell M Resultant
Max: 44.8 [N-m] at 0.100 [s]
Min: 0.0 [N-m] at -0.074 [s]
50
40
30
20
10
0
N-m
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
Time [s]
CFC_600
MX5500 - January 11, 1999

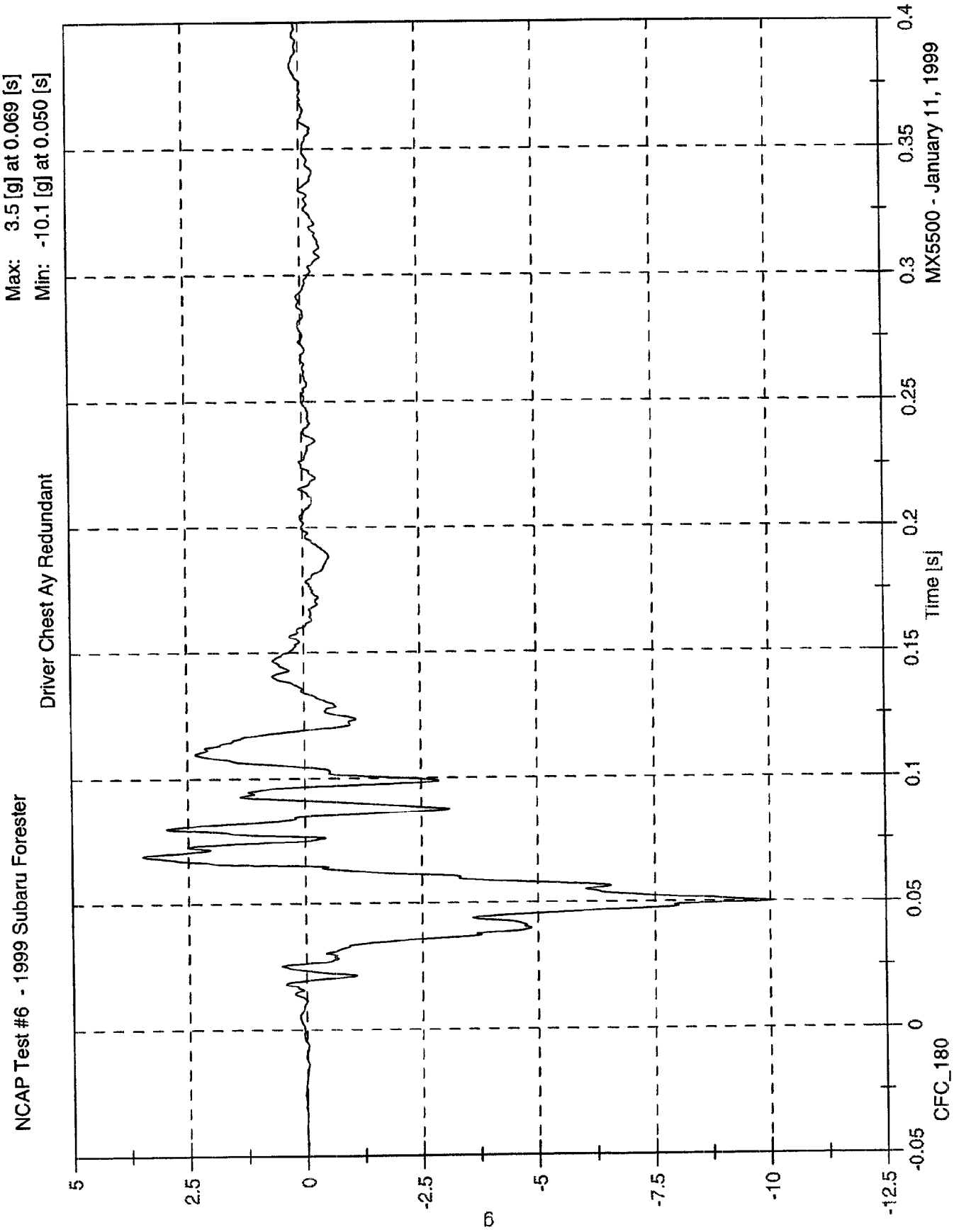

NCAP Test #6 - 1999 Subaru Forester
Max: 2.0 [g] at 0.326 [s]
Min: -45.6 [g] at 0.076 [s]
Driver Chest Ax
MX5500 - January 11, 1999
Time [s]
CFC_180
G
10
0
-10
-20
-30
-40
-50
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4

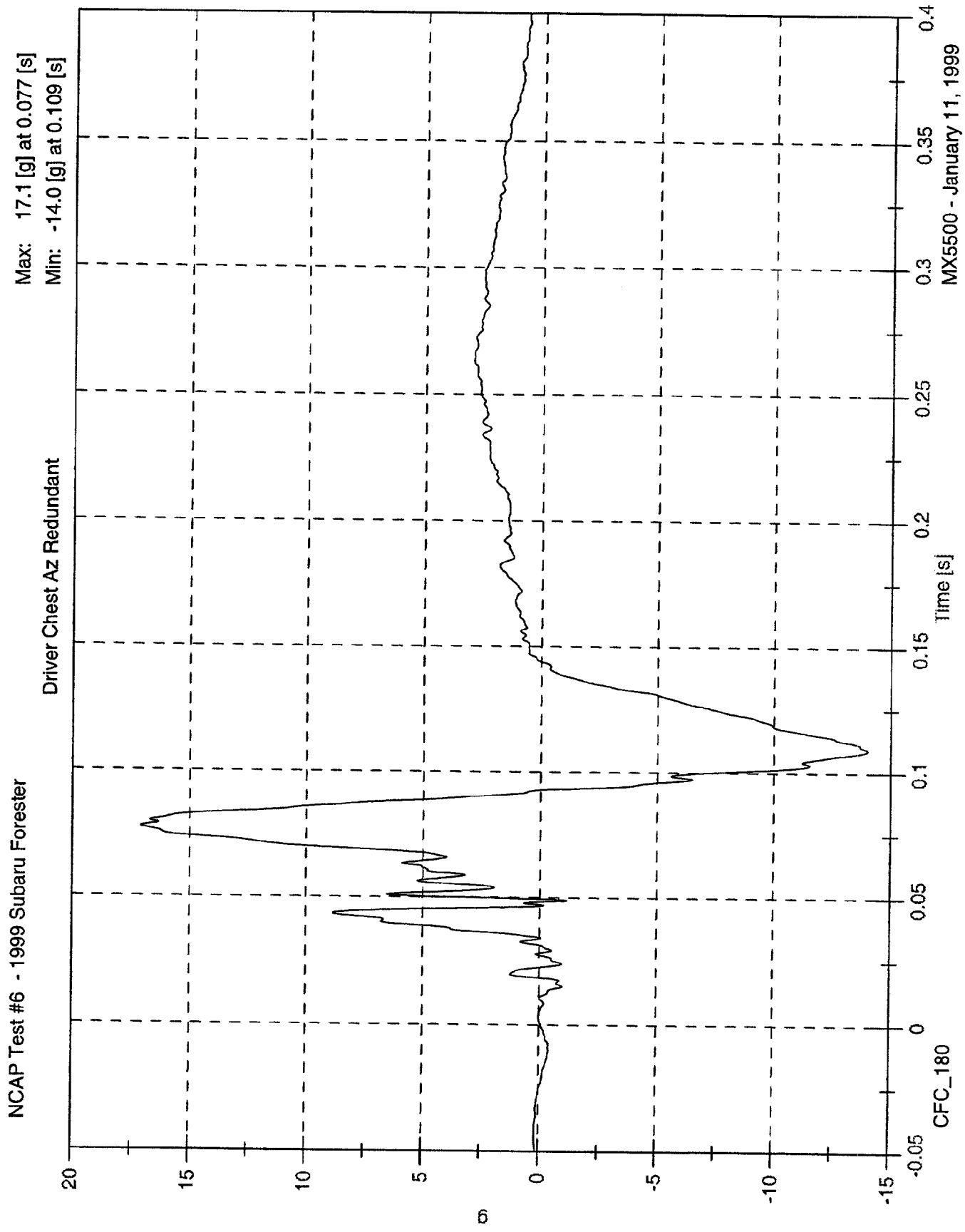

NCAP Test #6 - 1999 Subaru Forester
Max: 4.3 [g] at 0.069 [s]
Min: -8.6 [g] at 0.050 [s]
Driver Chest Ay
MX5500 - January 11, 1999
CFC_180
Time [s]
g
5
2.5
0
-2.5
-5
-7.5
-10
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4

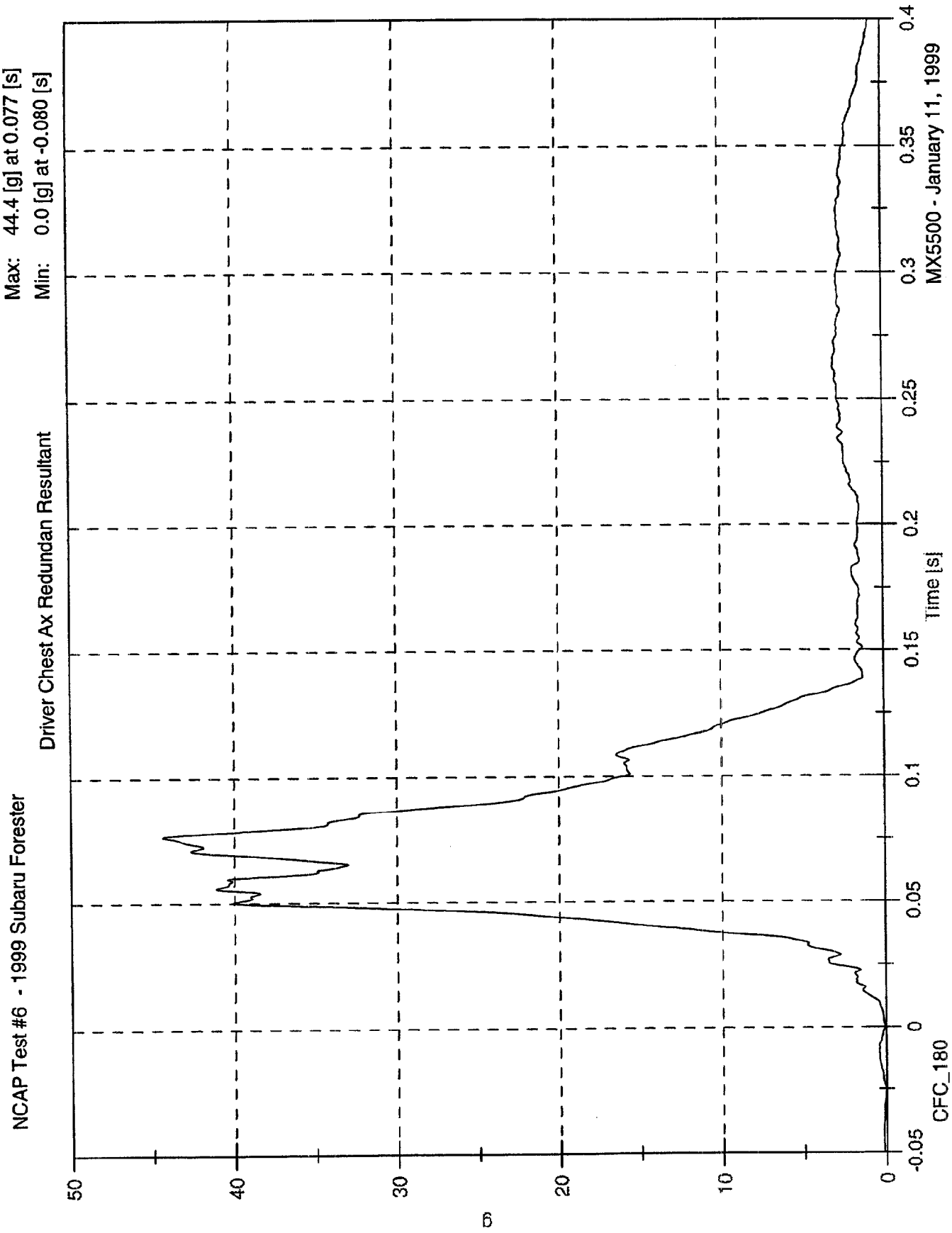

NCAP Test #6 - 1999 Subaru Forester
Max: 14.6 [g] at 0.077 [s]
Min: -12.1 [g] at 0.109 [s]
Driver Chest Az
MX5500 - January 11, 1999
CFC_180
Time [s]
g
15
10
5
0
-5
-10
-15
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4

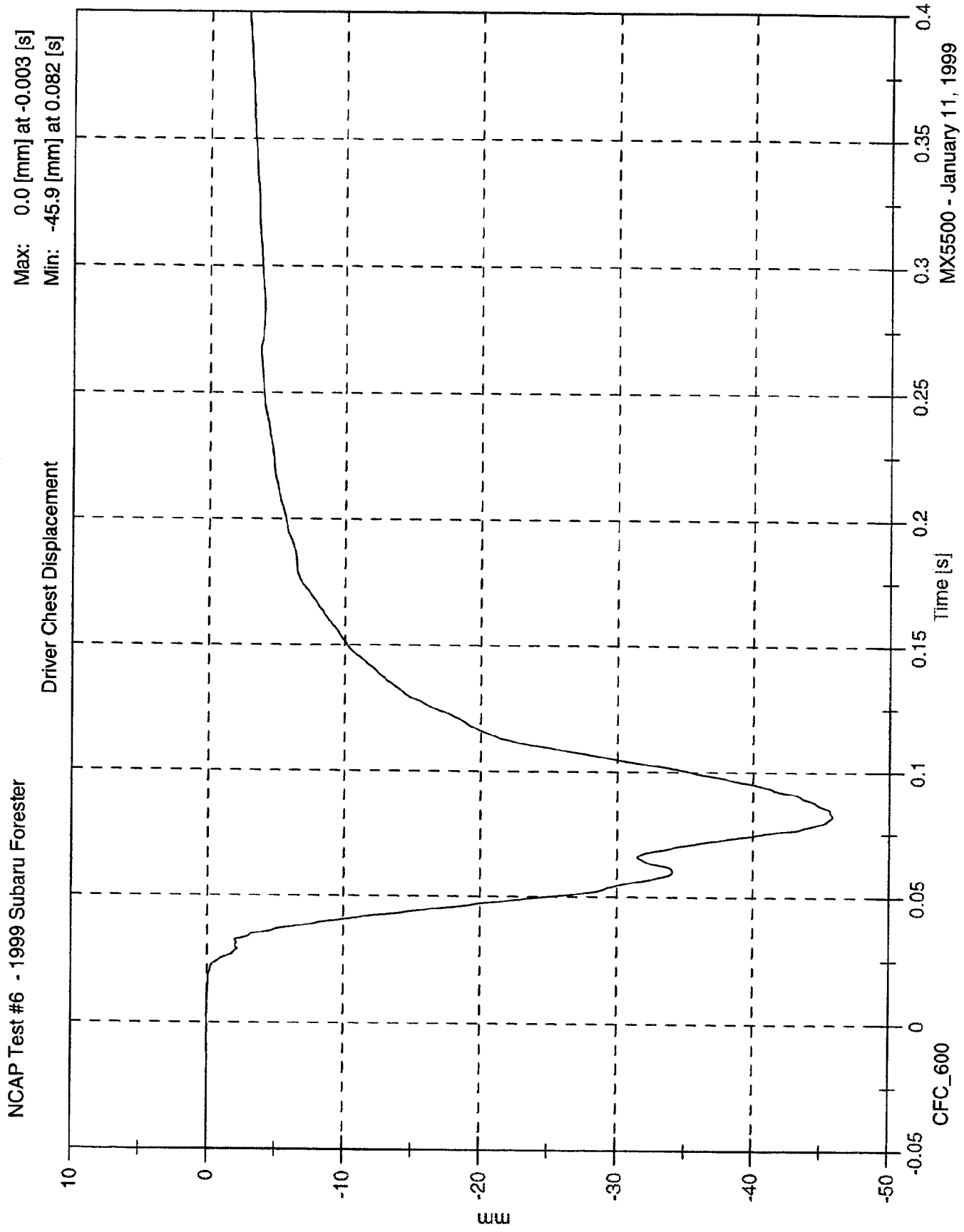

NCAP Test #6 - 1999 Subaru Forester
Max: 47.8 [g] at 0.076 [s]
Min: 0.0 [g] at -0.078 [s]
Driver Chest A Resultant
MX5500 - January 11, 1999
CFC_180
Time [s]
g
50
40
30
20
10
0
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4

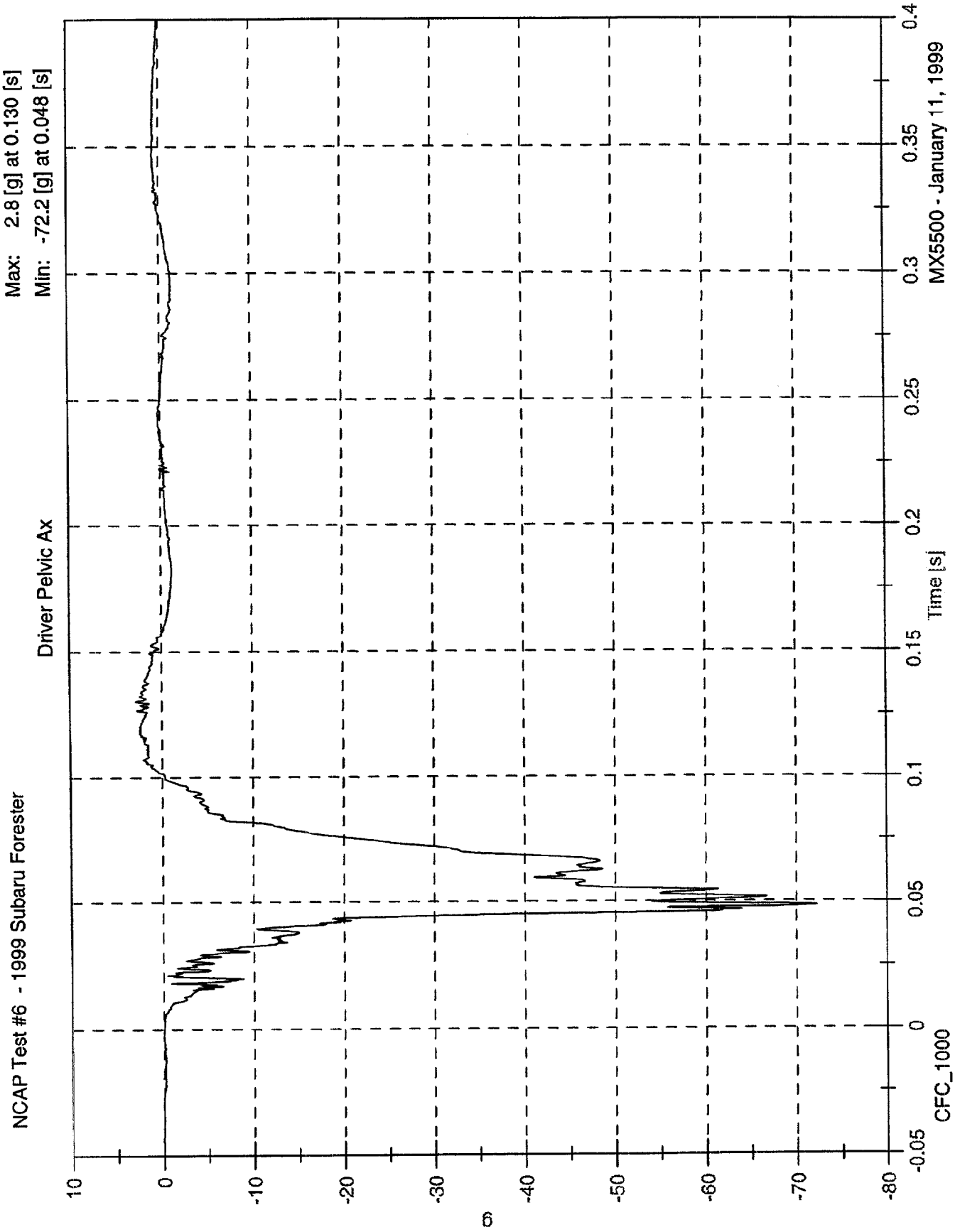

NCAP Test #6 - 1999 Subaru Forester
Driver Chest Ax Redundant
Max: 1.9 [g] at 0.323 [s]
Min: -41.1 [g] at 0.077 [s]
10
0
-10
-20
-30
-40
-50
g
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
Time [s]
CFC_180
MX5500 - January 11, 1999

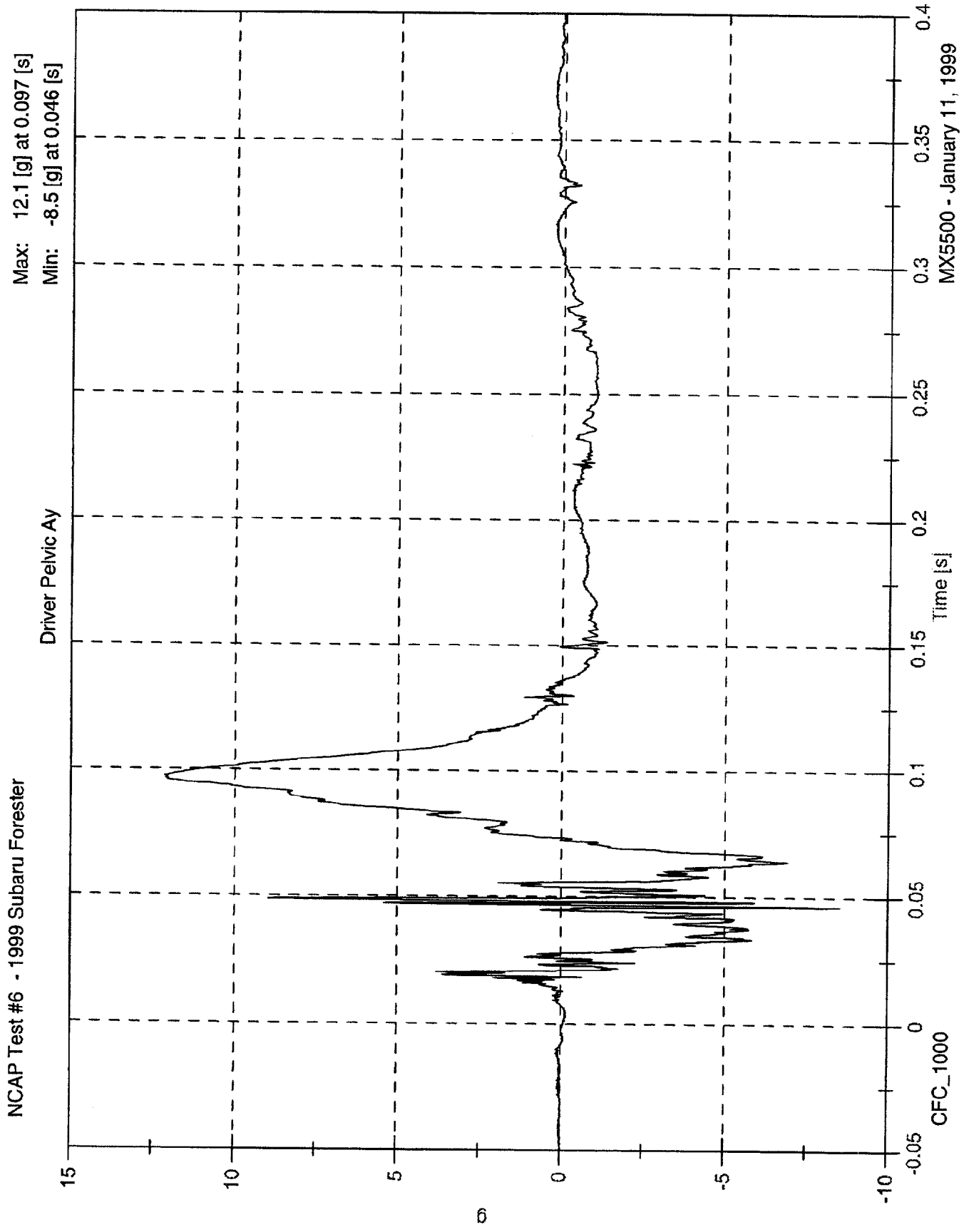

NCAP Test #6 - 1999 Subaru Forester
Max: 3.5 [g] at 0.069 [s]
Min: -10.1 [g] at 0.050 [s]
Driver Chest Ay Redundant
MX5500 - January 11, 1999
CFC_180
Time [s]
g
5
2.5
0
-2.5
-5
-7.5
-10
-12.5
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4

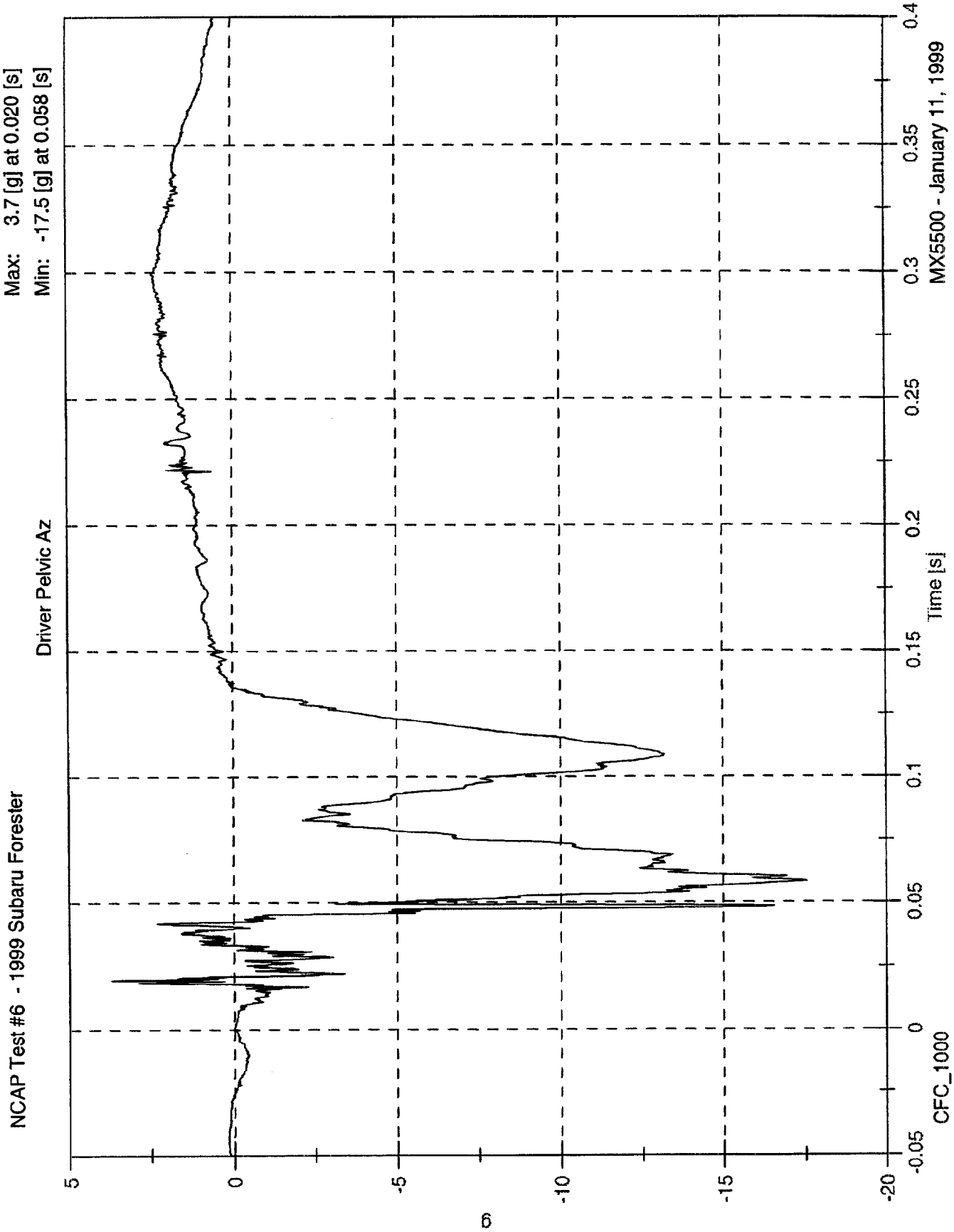

NCAP Test #6 - 1999 Subaru Forester
Driver Chest Az Redundant
Max: 17.1 [g] at 0.077 [s]
Min: -14.0 [g] at 0.109 [s]
MX5500 - January 11, 1999
CFC_180
Time [s]
g
20
15
10
5
0
-5
-10
-15
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4

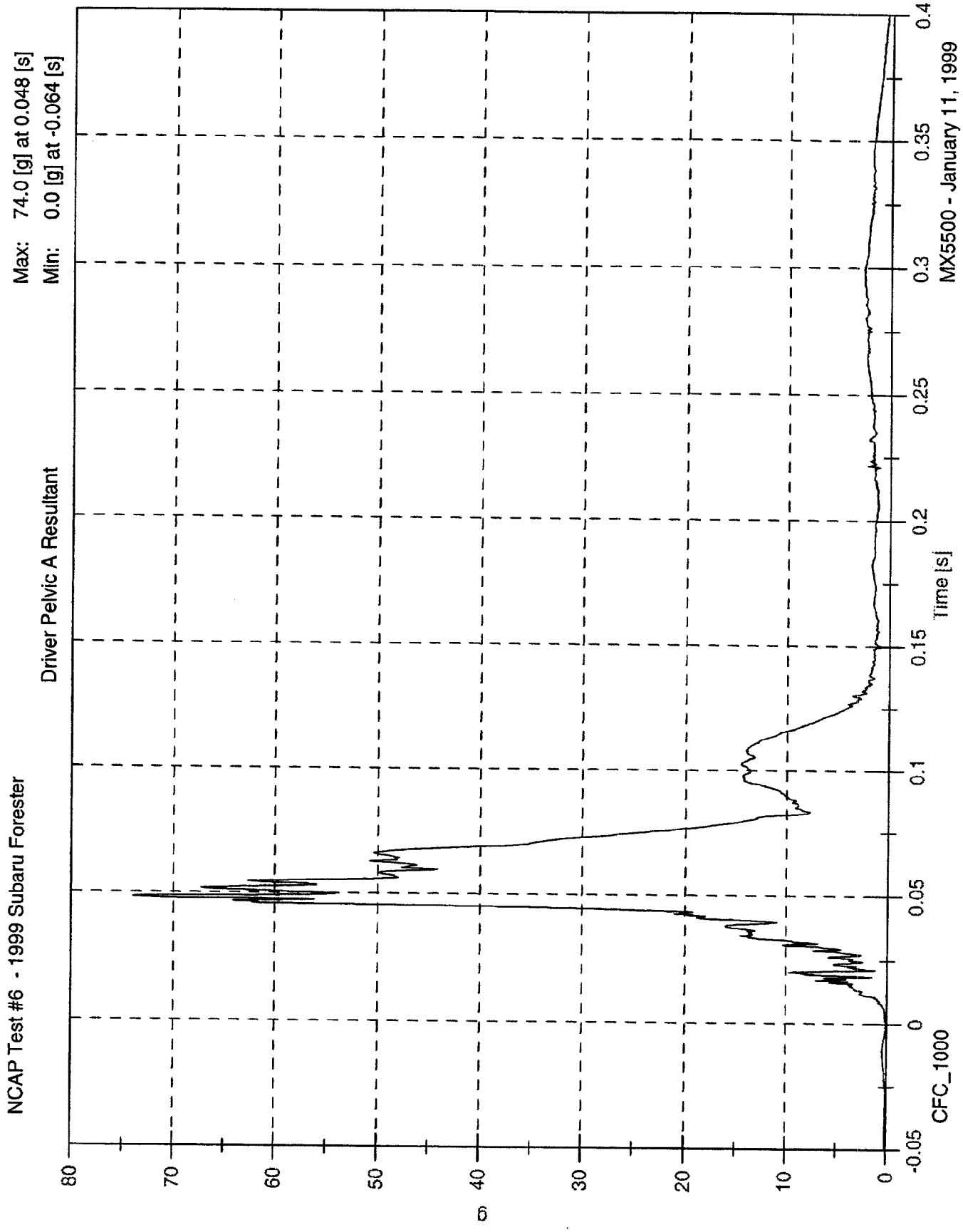

NCAP Test #6 - 1999 Subaru Forester
Driver Chest Ax Redundan Resultant
Max: 44.4 [g] at 0.077 [s]
Min: 0.0 [g] at -0.080 [s]
MX5500 - January 11, 1999
CFC_180
Time [s]
g
50
40
30
20
10
0
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4

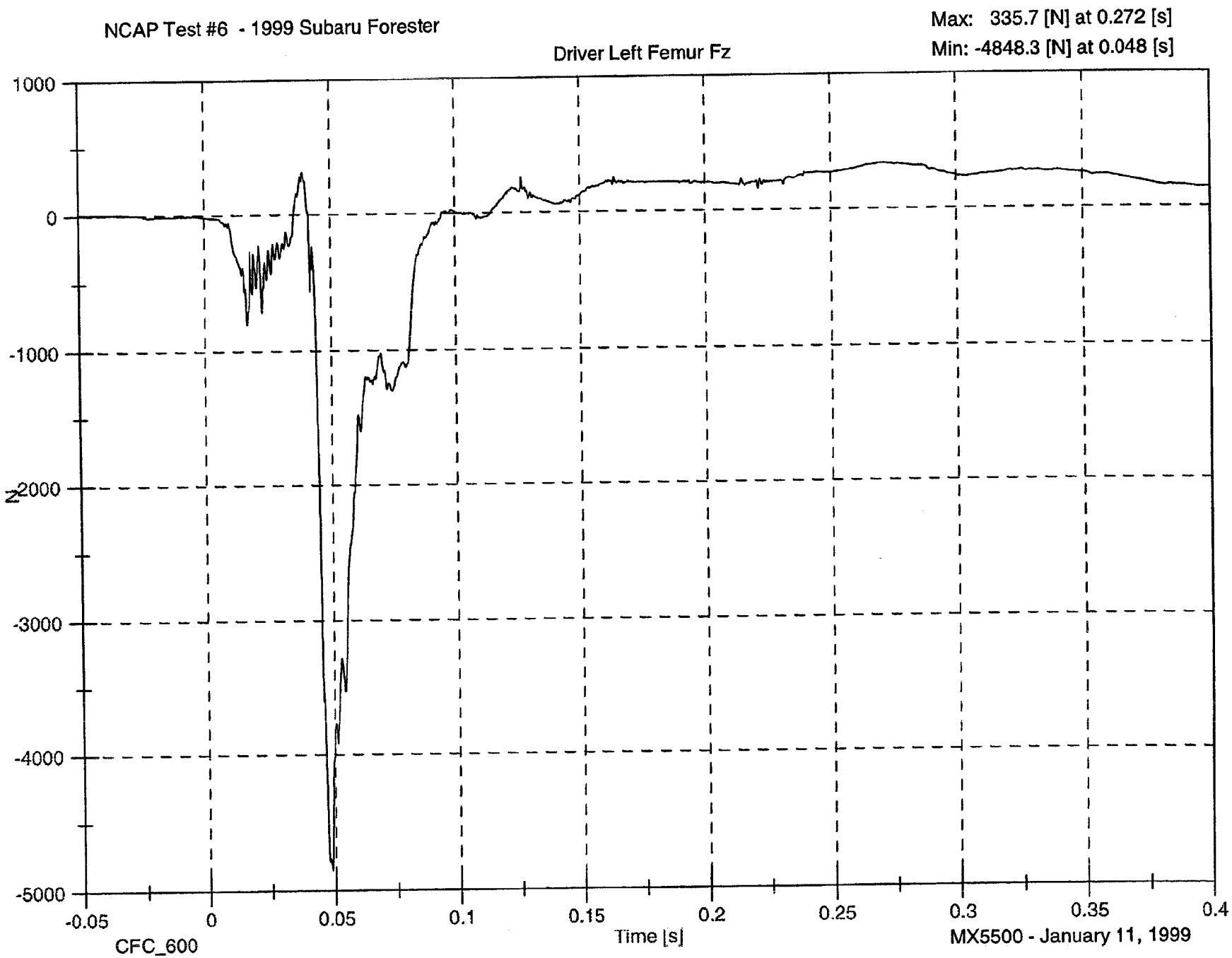

NCAP Test #6 - 1999 Subaru Forester
Max: 0.0 [mm] at -0.003 [s]
Min: -45.9 [mm] at 0.082 [s]
Driver Chest Displacement
MX5500 - January 11, 1999
CFC_600
Time [s]
mm
10
0
-10
-20
-30
-40
-50
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4

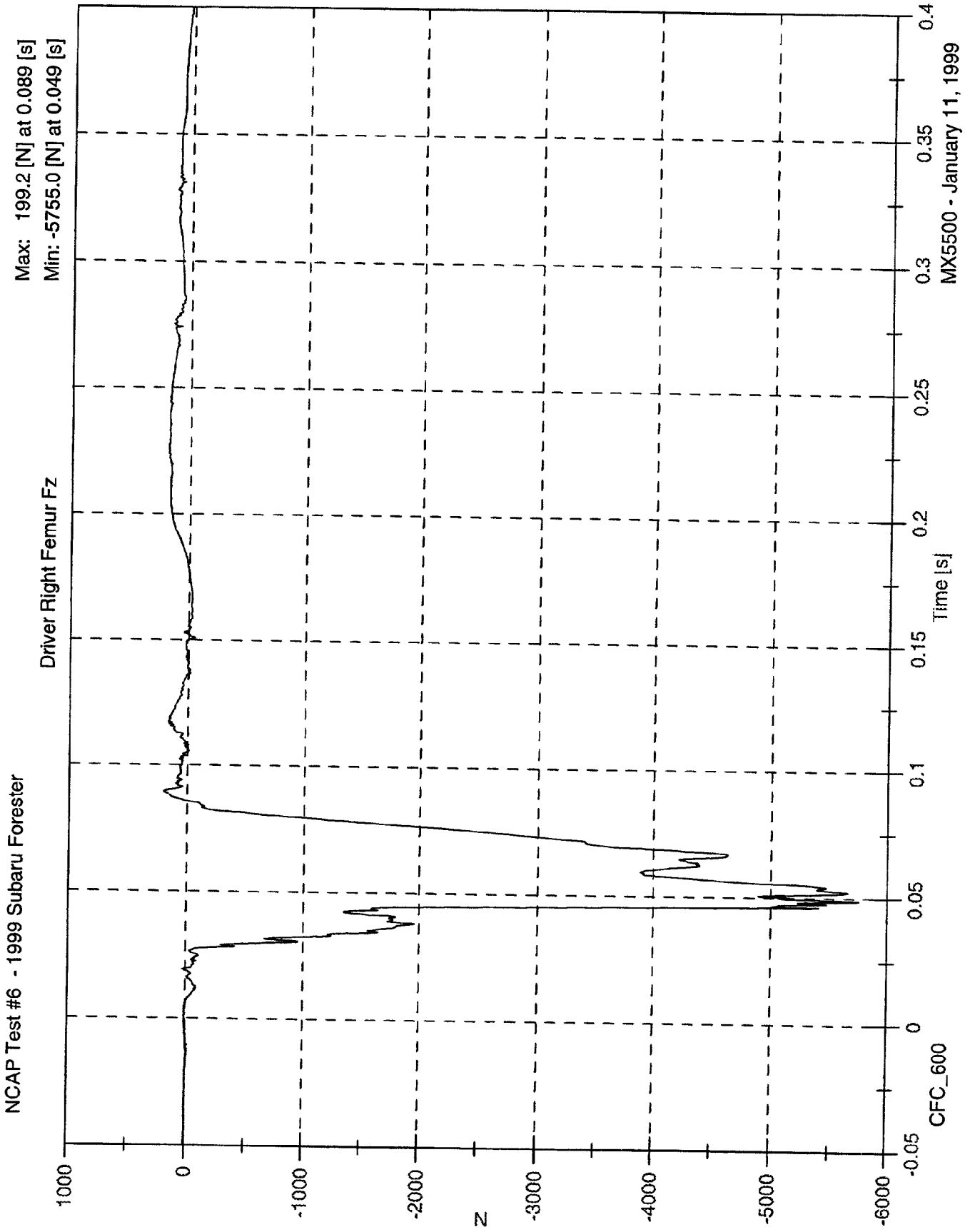

NCAP Test #6 - 1999 Subaru Forester
Max: 2.8 [g] at 0.130 [s]
Min: -72.2 [g] at 0.048 [s]
Driver Pelvic Ax
MX5500 - January 11, 1999
CFC_1000
Time [s]
g
10
0
-10
-20
-30
-40
-50
-60
-70
-80
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4

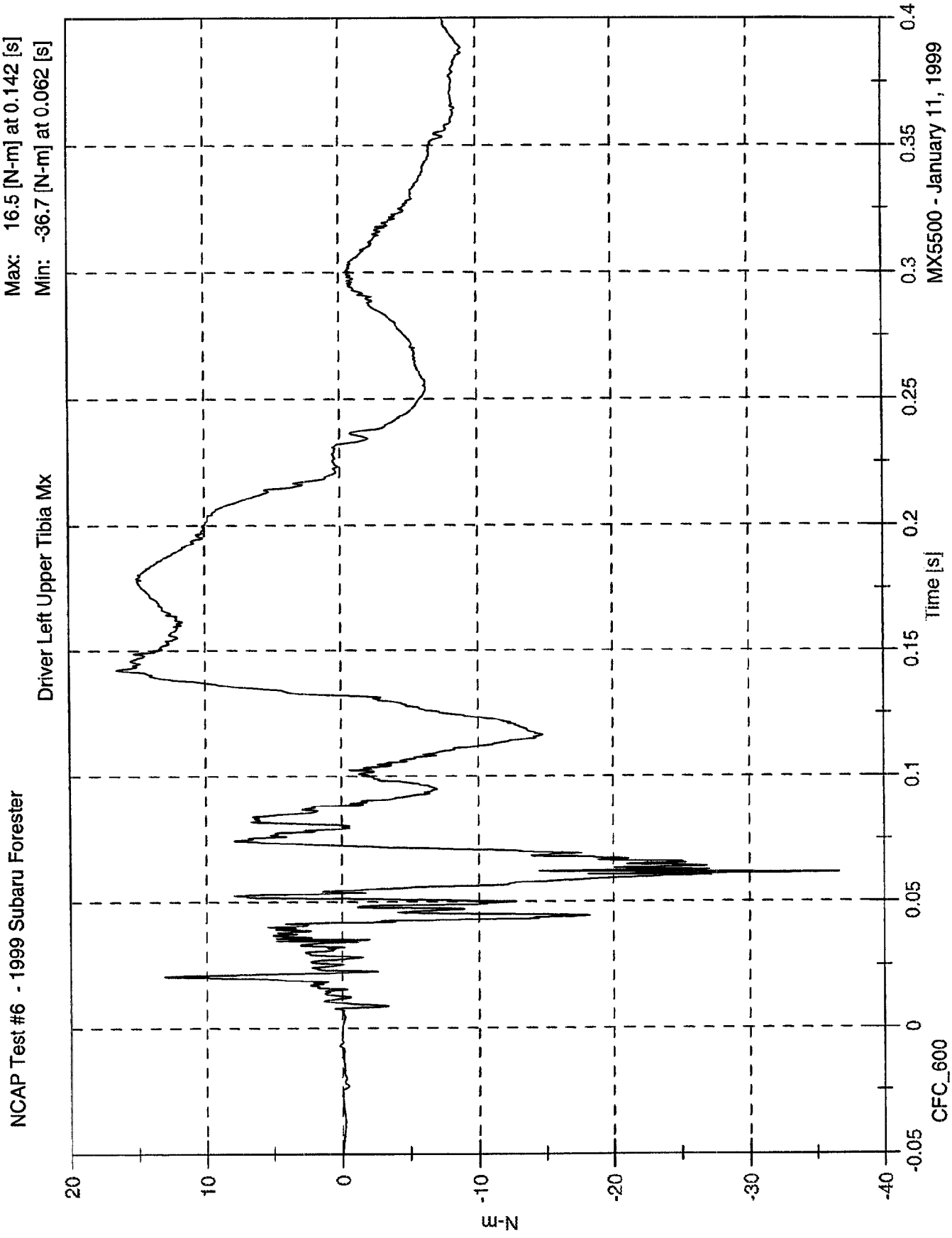

NCAP Test #6 - 1999 Subaru Forester
Max: 12.1 [g] at 0.097 [s]
Min: -8.5 [g] at 0.046 [s]
Driver Pelvic Ay
MX5500 - January 11, 1999
CFC_1000
Time [s]
g
15
10
5
0
-5
-10
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4

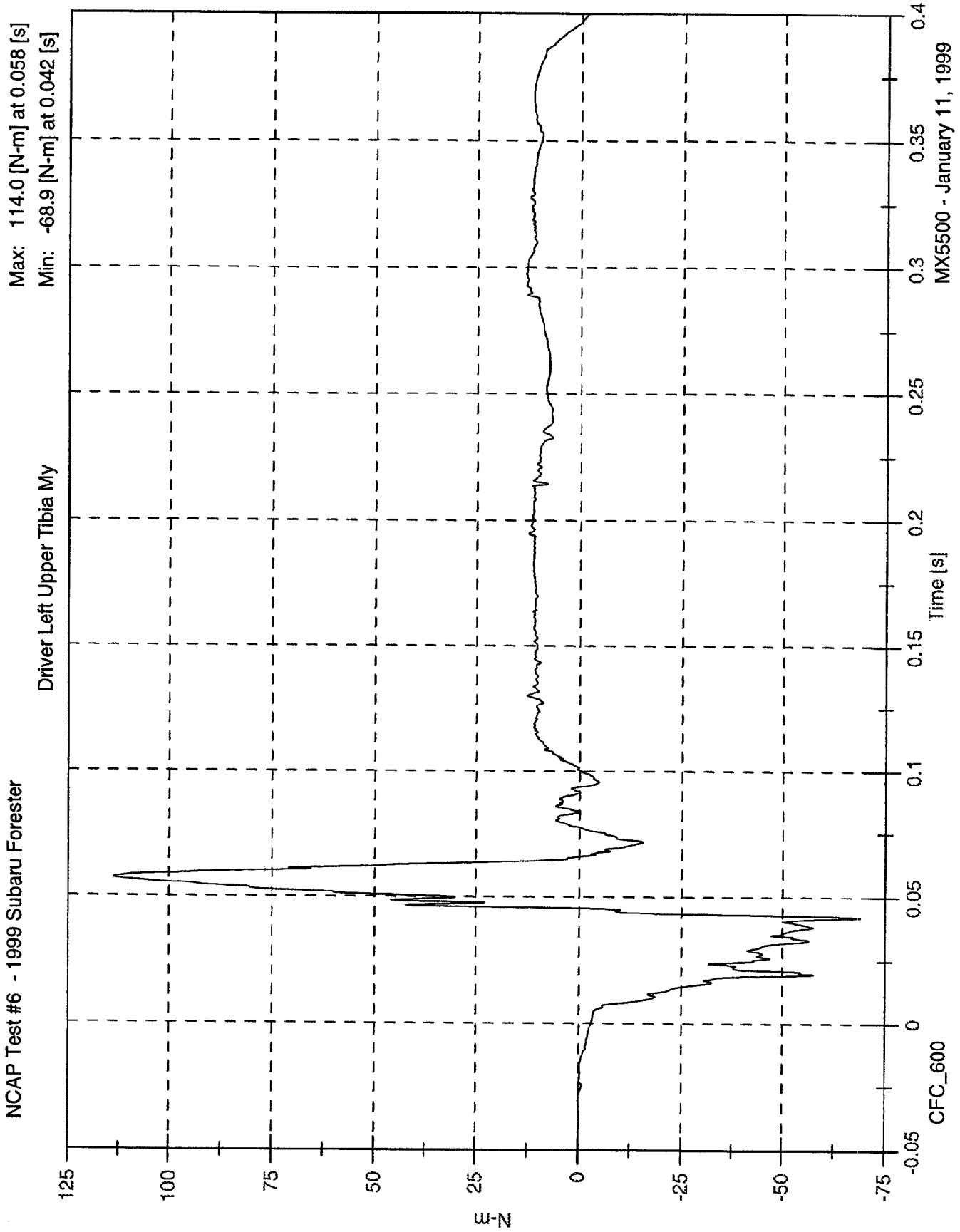

NCAP Test #6 - 1999 Subaru Forester
Max: 3.7 [g] at 0.020 [s]
Min: -17.5 [g] at 0.058 [s]
Driver Pelvic Az
MX5500 - January 11, 1999
CFC_1000
Time [s]
g
5
0
-5
-10
-15
-20
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4

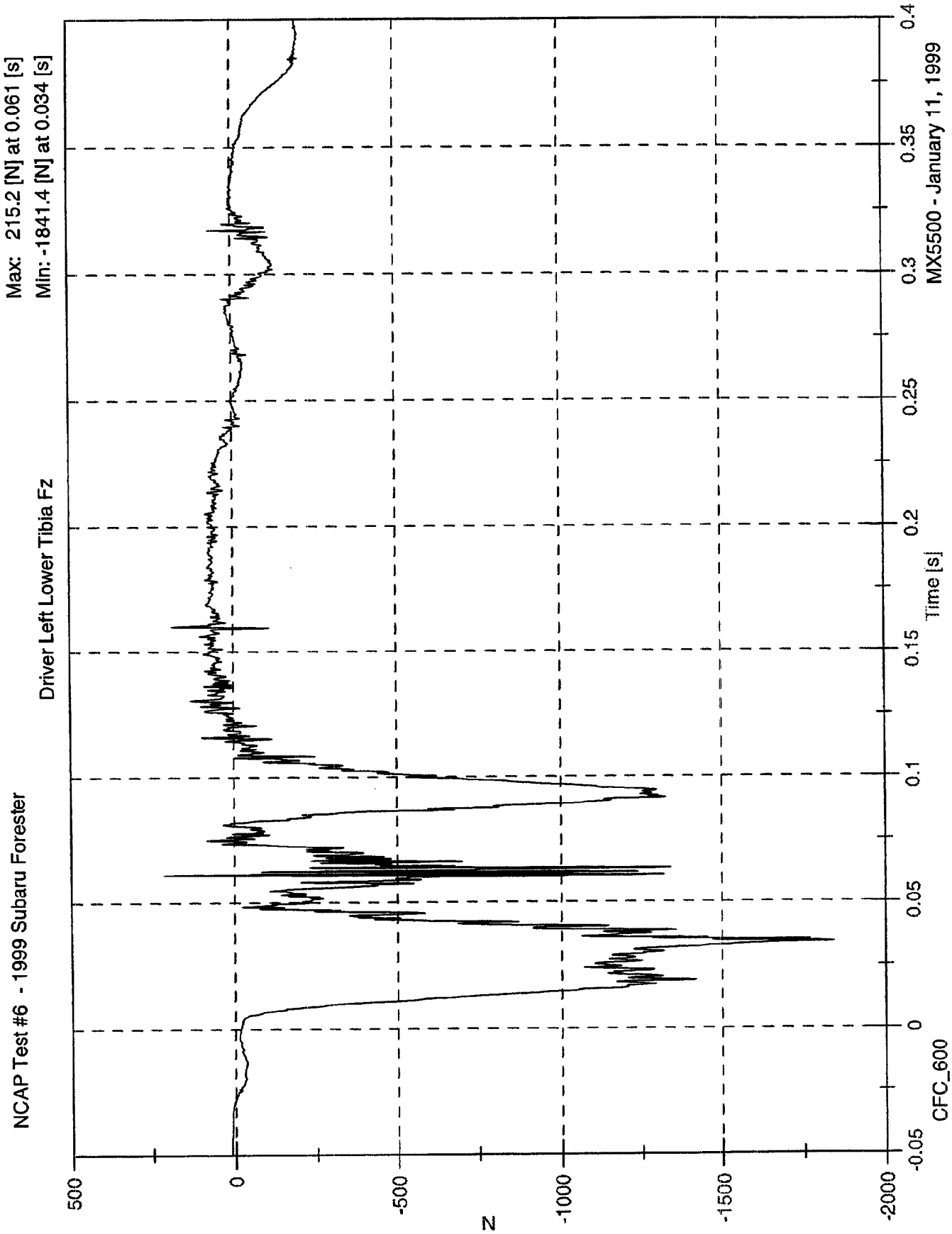

NCAP Test #6 - 1999 Subaru Forester
Max: 74.0 [g] at 0.048 [s]
Min: 0.0 [g] at -0.064 [s]
Driver Pelvic A Resultant
MX5500 - January 11, 1999
CFC_1000
Time [s]
g
80
70
60
50
40
30
20
10
0
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4

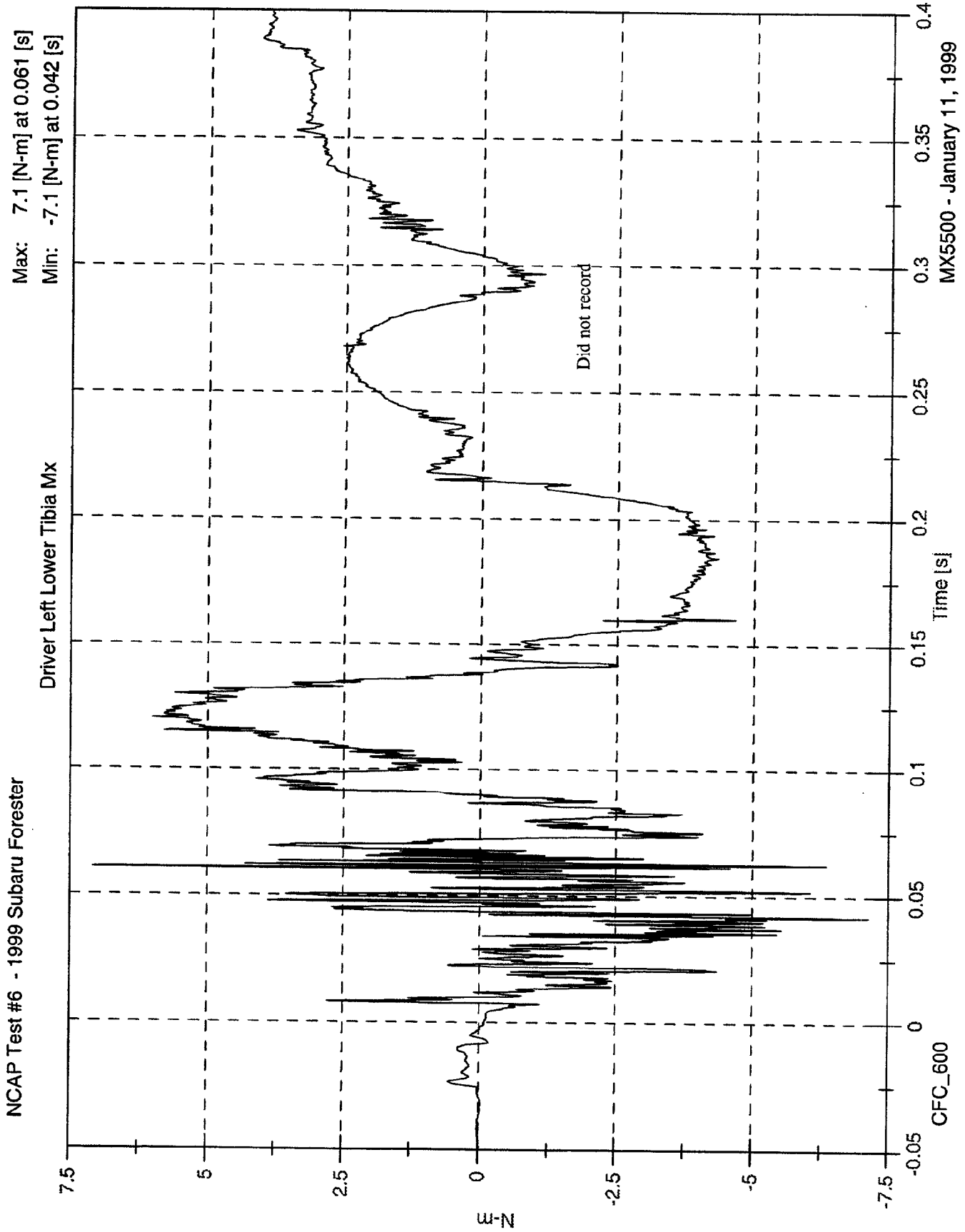

NCAP Test #6 - 1999 Subaru Forester
Driver Left Femur Fz
Max: 335.7 [N] at 0.272 [s]
Min: -4848.3 [N] at 0.048 [s]
1000
0
-1000
-2000
-3000
-4000
-5000
N
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
Time [s]
CFC_600
MX5500 - January 11, 1999

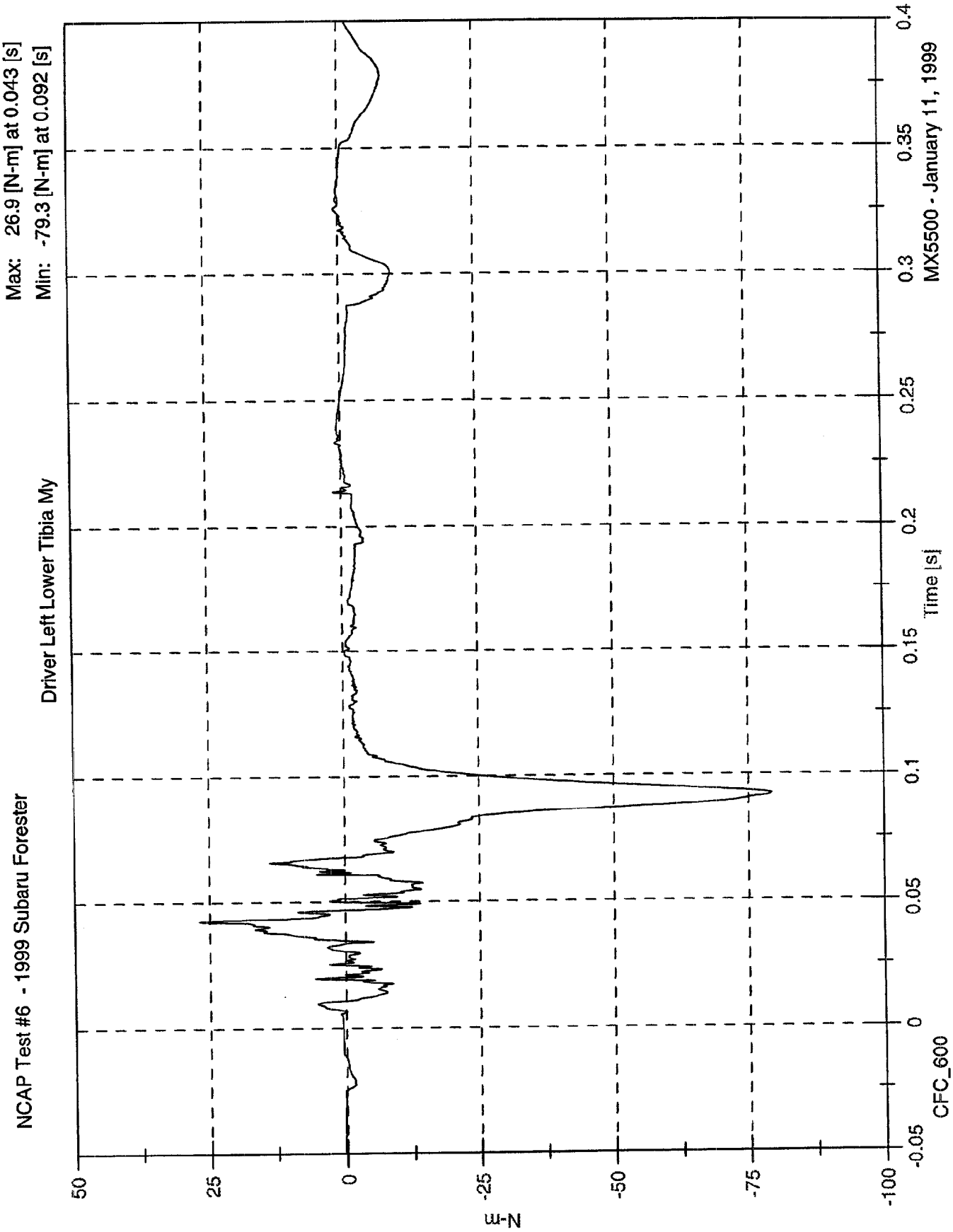

NCAP Test #6 - 1999 Subaru Forester
Max: 199.2 [N] at 0.089 [s]
Min: -5755.0 [N] at 0.049 [s]
Driver Right Femur Fz
MX5500 - January 11, 1999
CFC_600
N
Time [s]
1000
0
-1000
-2000
-3000
-4000
-5000
-6000
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4

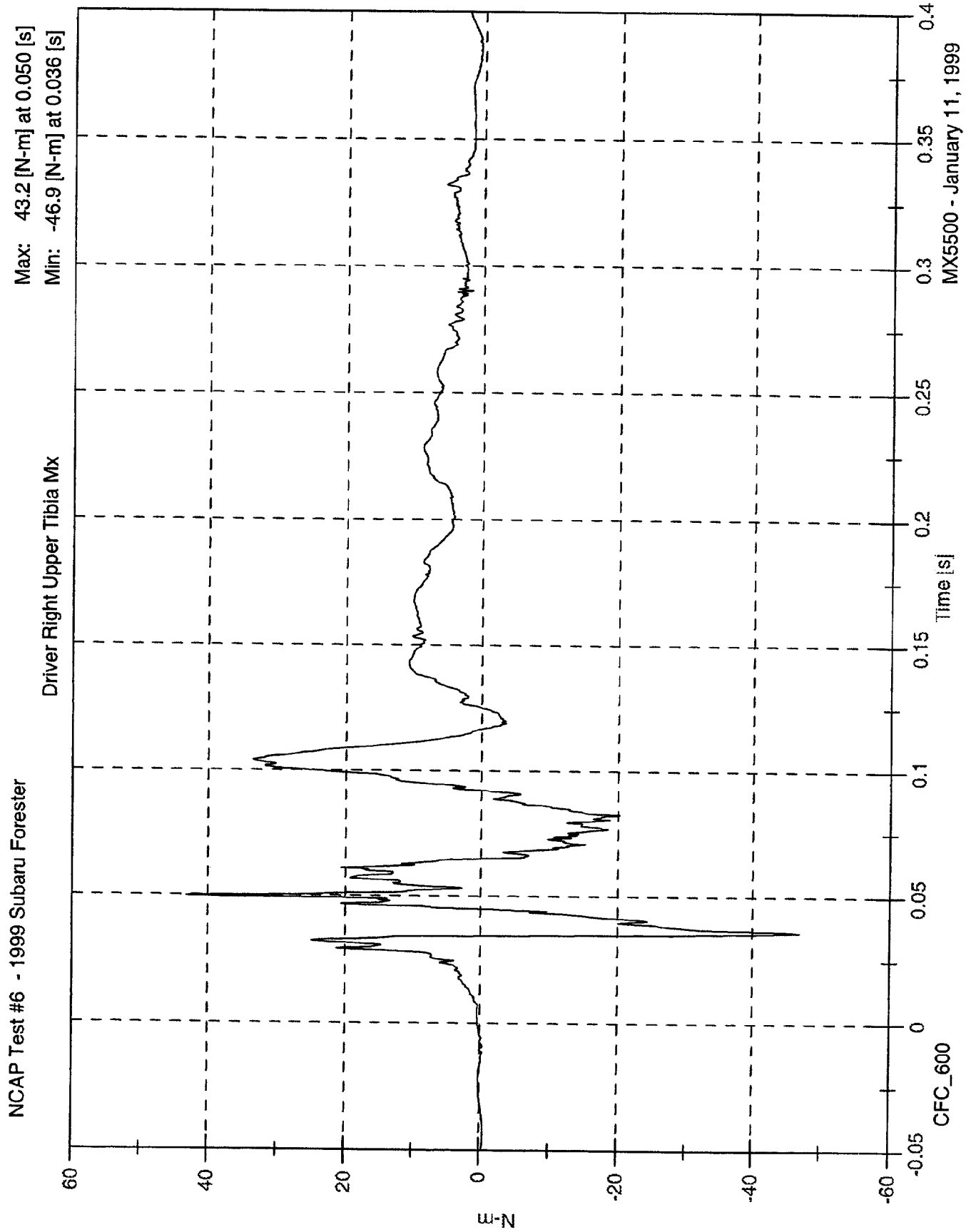

NCAP Test #6 - 1999 Subaru Forester
Max: 16.5 [N-m] at 0.142 [s]
Min: -36.7 [N-m] at 0.062 [s]
Driver Left Upper Tibia Mx
N-m
Time [s]
MX5500 - January 11, 1999
CFC_600
20
10
0
-10
-20
-30
-40
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4

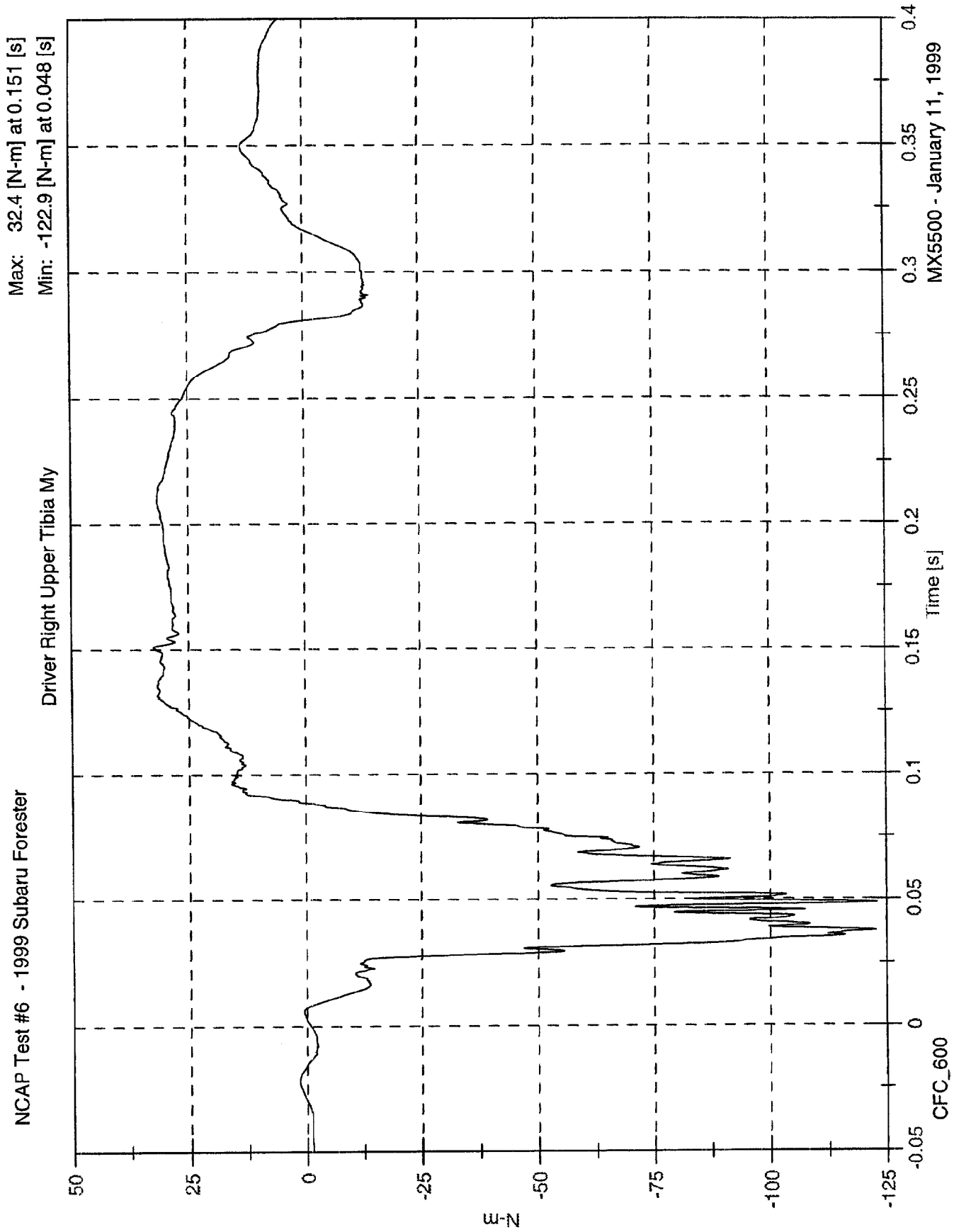

NCAP Test #6 - 1999 Subaru Forester
Max: 114.0 [N-m] at 0.058 [s]
Min: -68.9 [N-m] at 0.042 [s]
Driver Left Upper Tibia My
N-m
125
100
75
50
25
0
-25
-50
-75
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
Time [s]
CFC_600
MX5500 - January 11, 1999

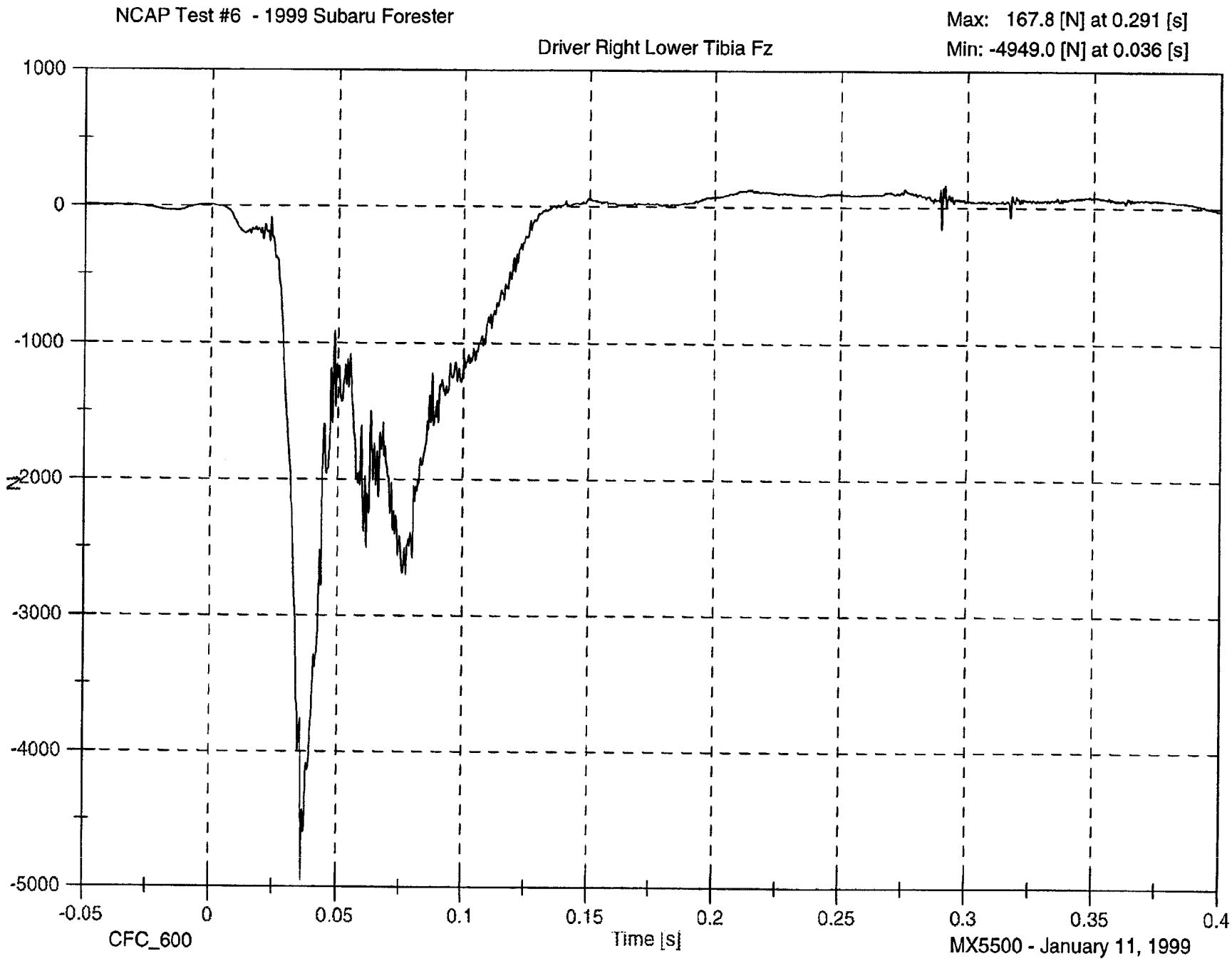

NCAP Test #6 - 1999 Subaru Forester
Max: 215.2 [N] at 0.061 [s]
Min: -1841.4 [N] at 0.034 [s]
Driver Left Lower Tibia Fz
MX5500 - January 11, 1999
CFC_600
N
Time [s]
500
0
-500
-1000
-1500
-2000
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4

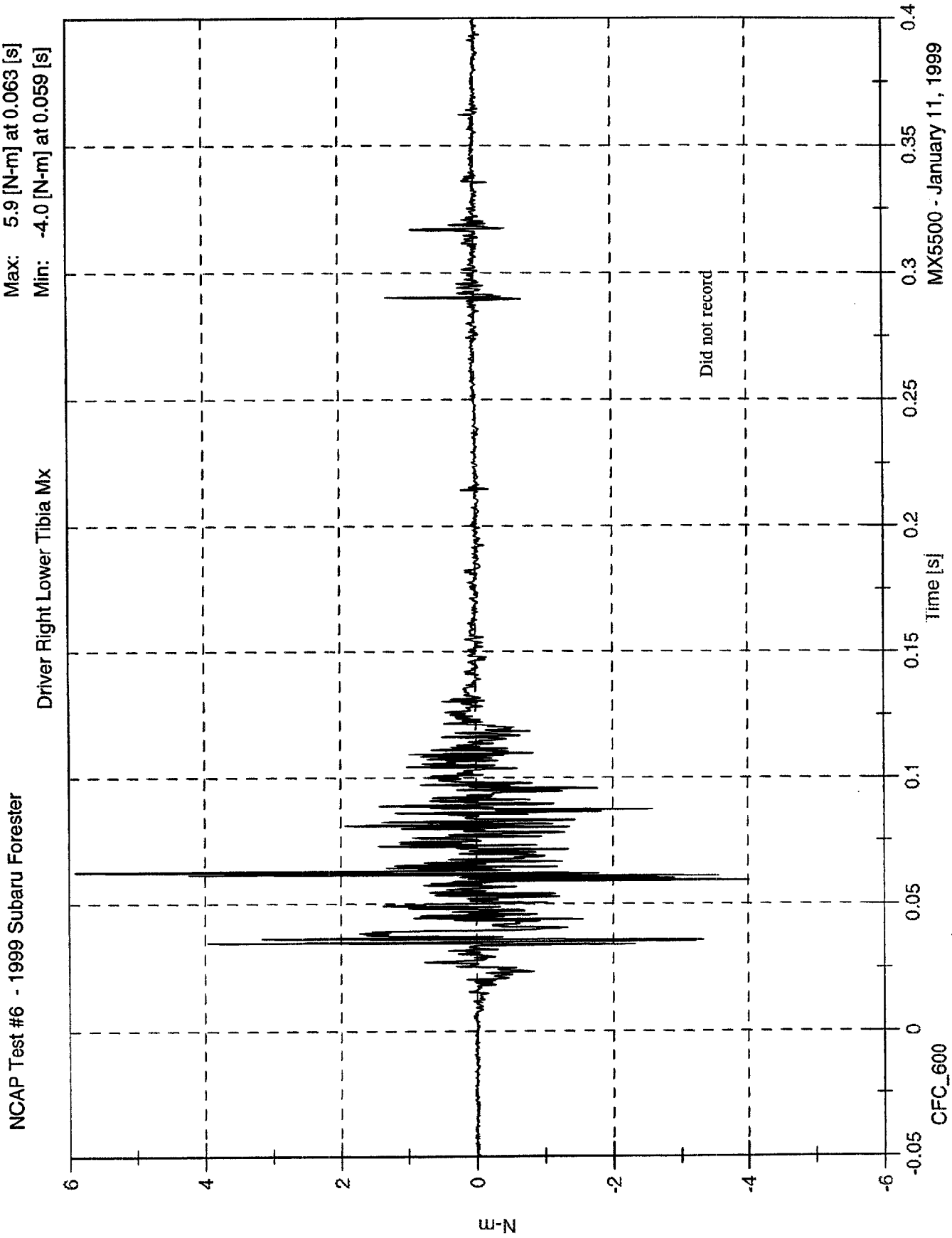

NCAP Test #6 - 1999 Subaru Forester
Max: 7.1 [N-m] at 0.061 [s]
Min: -7.1 [N-m] at 0.042 [s]
Driver Left Lower Tibia Mx
Did not record
MX5500 - January 11, 1999
CFC_600
N-m
Time [s]
7.5
5
2.5
0
-2.5
-5
-7.5
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4

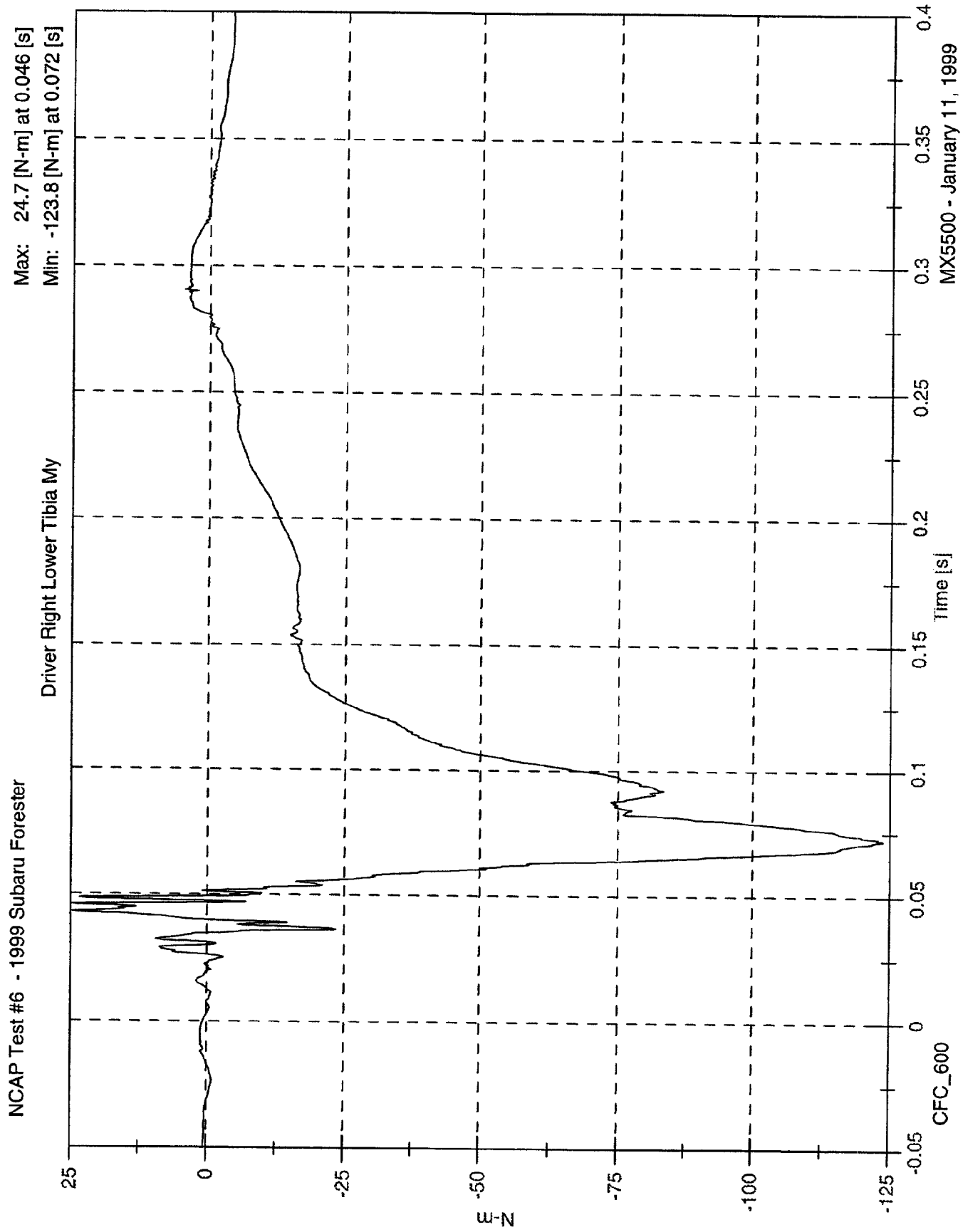

NCAP Test #6 - 1999 Subaru Forester
Max: 26.9 [N-m] at 0.043 [s]
Min: -79.3 [N-m] at 0.092 [s]
Driver Left Lower Tibia My
MX5500 - January 11, 1999
CFC_600
N-m
Time [s]
50
25
0
-25
-50
-75
-100
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4

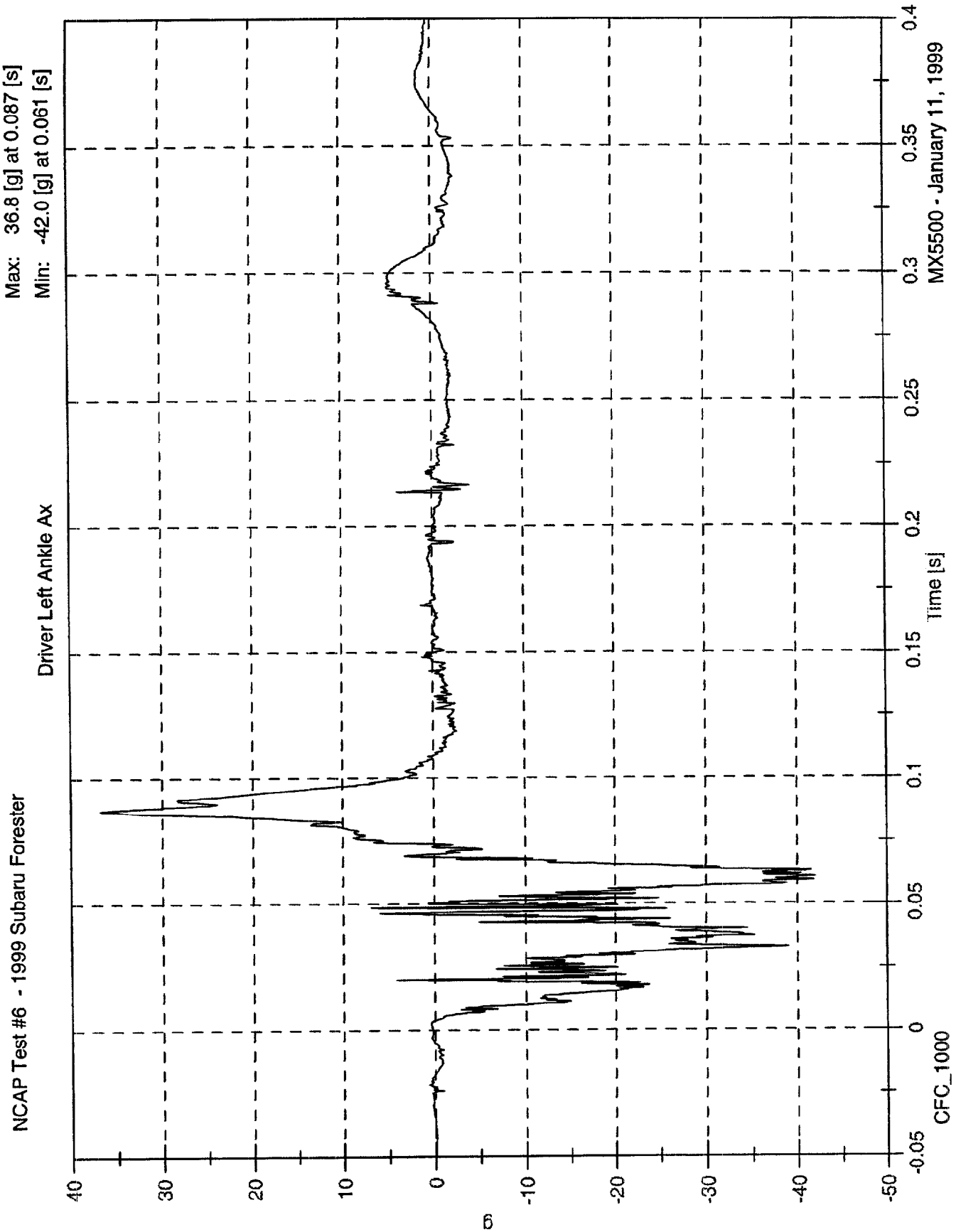

NCAP Test #6 - 1999 Subaru Forester
Max: 43.2 [N-m] at 0.050 [s]
Min: -46.9 [N-m] at 0.036 [s]
Driver Right Upper Tibia Mx
MX5500 - January 11, 1999
CFC_600
N-m
Time [s]
60
40
20
0
-20
-40
-60
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4

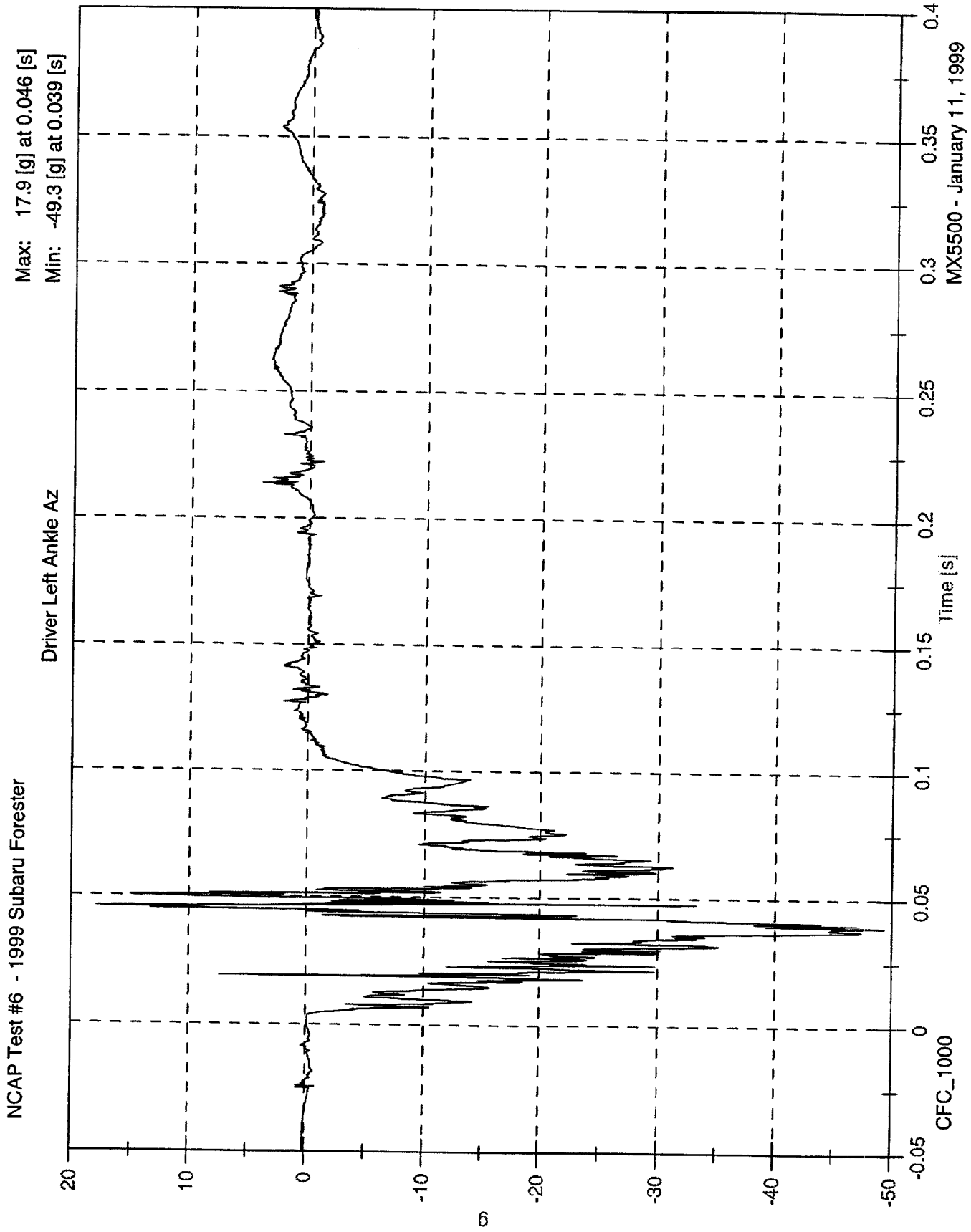

NCAP Test #6 - 1999 Subaru Forester
Max: 32.4 [N-m] at 0.151 [s]
Min: -122.9 [N-m] at 0.048 [s]
Driver Right Upper Tibia My
MX5500 - January 11, 1999
CFC_600
N-m
Time [s]
50
25
0
-25
-50
-75
-100
-125
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4

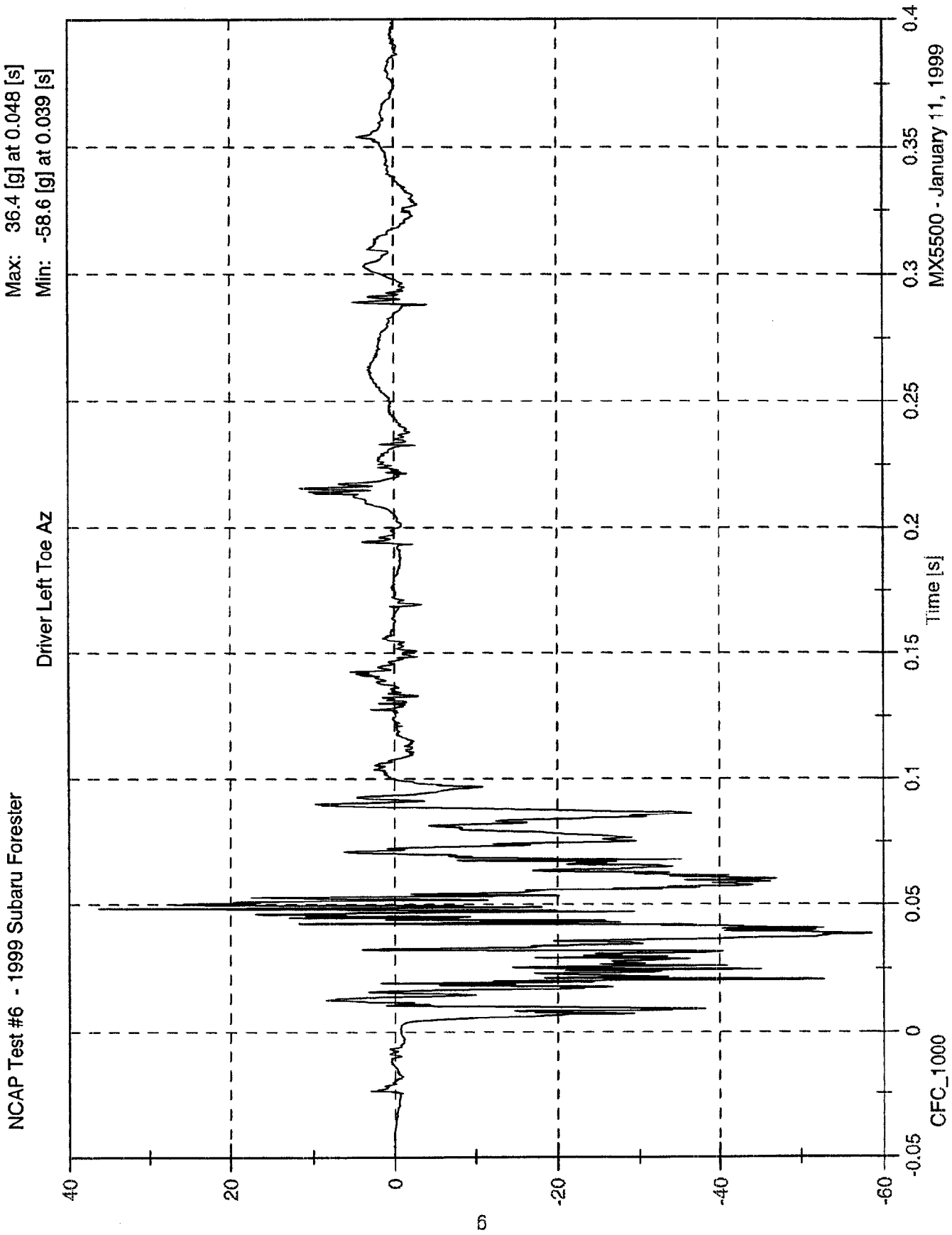

NCAP Test #6 - 1999 Subaru Forester
Driver Right Lower Tibia Fz
Max: 167.8 [N] at 0.291 [s]
Min: -4949.0 [N] at 0.036 [s]
1000
0
-1000
-2000
-3000
-4000
-5000
N
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
Time [s]
CFC_600
MX5500 - January 11, 1999

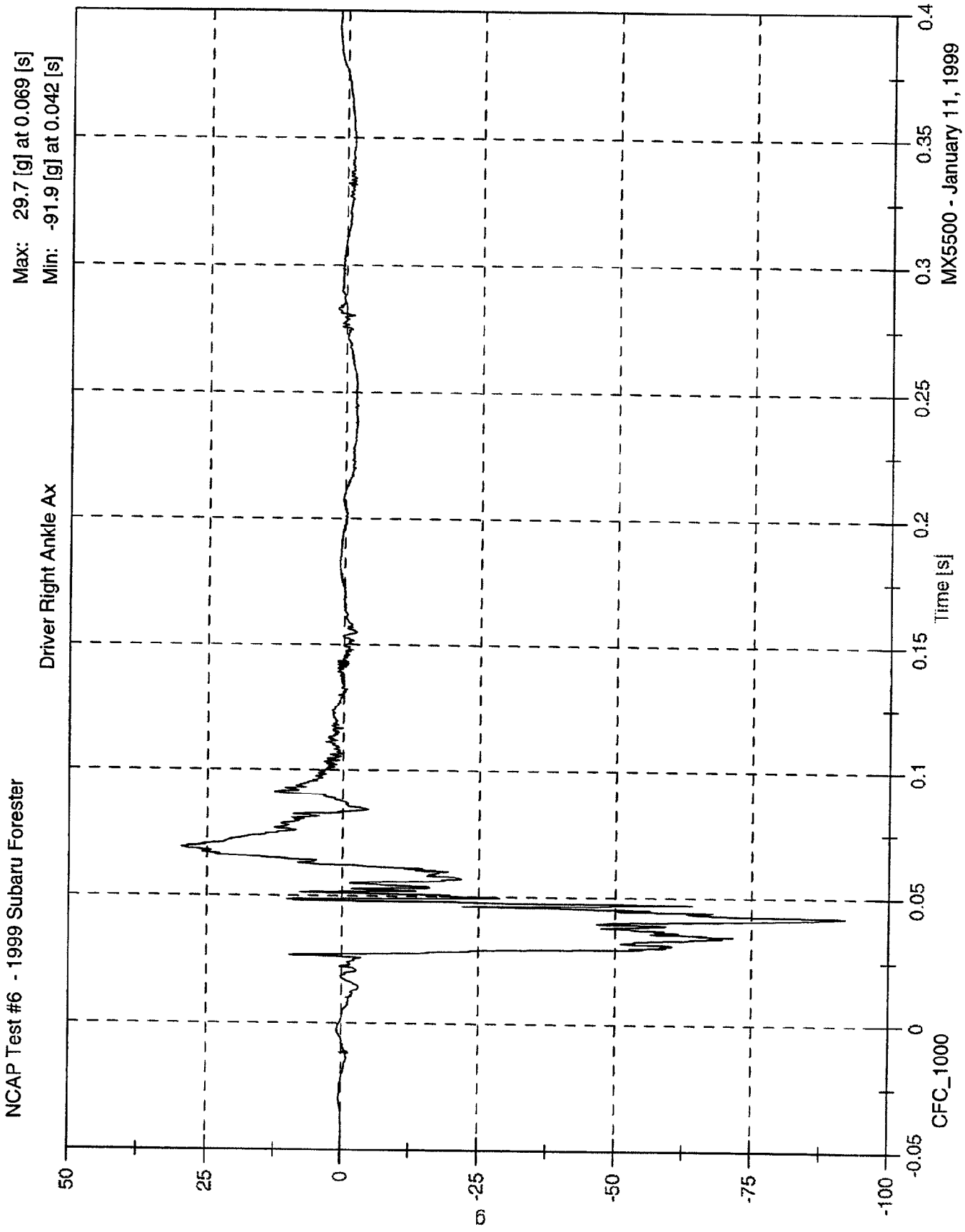

NCAP Test #6 - 1999 Subaru Forester
Max: 5.9 [N-m] at 0.063 [s]
Min: -4.0 [N-m] at 0.059 [s]
Driver Right Lower Tibia Mx
Did not record
MX5500 - January 11, 1999
CFC_600
Time [s]
N-m
6
4
2
0
-2
-4
-6
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4

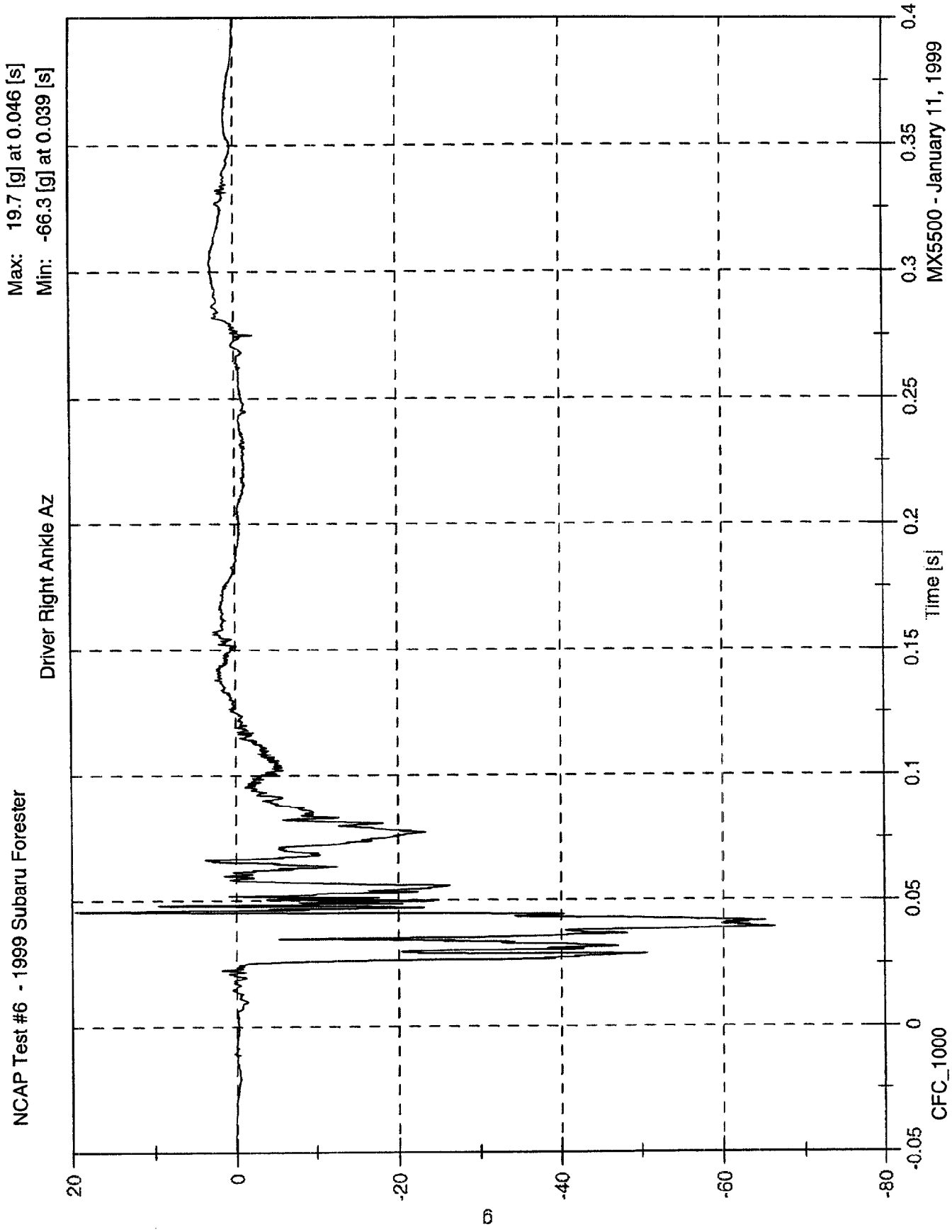

NCAP Test #6 - 1999 Subaru Forester
Max: 24.7 [N-m] at 0.046 [s]
Min: -123.8 [N-m] at 0.072 [s]
Driver Right Lower Tibia My
N-m
25
0
-25
-50
-75
-100
-125
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
Time [s]
CFC_600
MX5500 - January 11, 1999

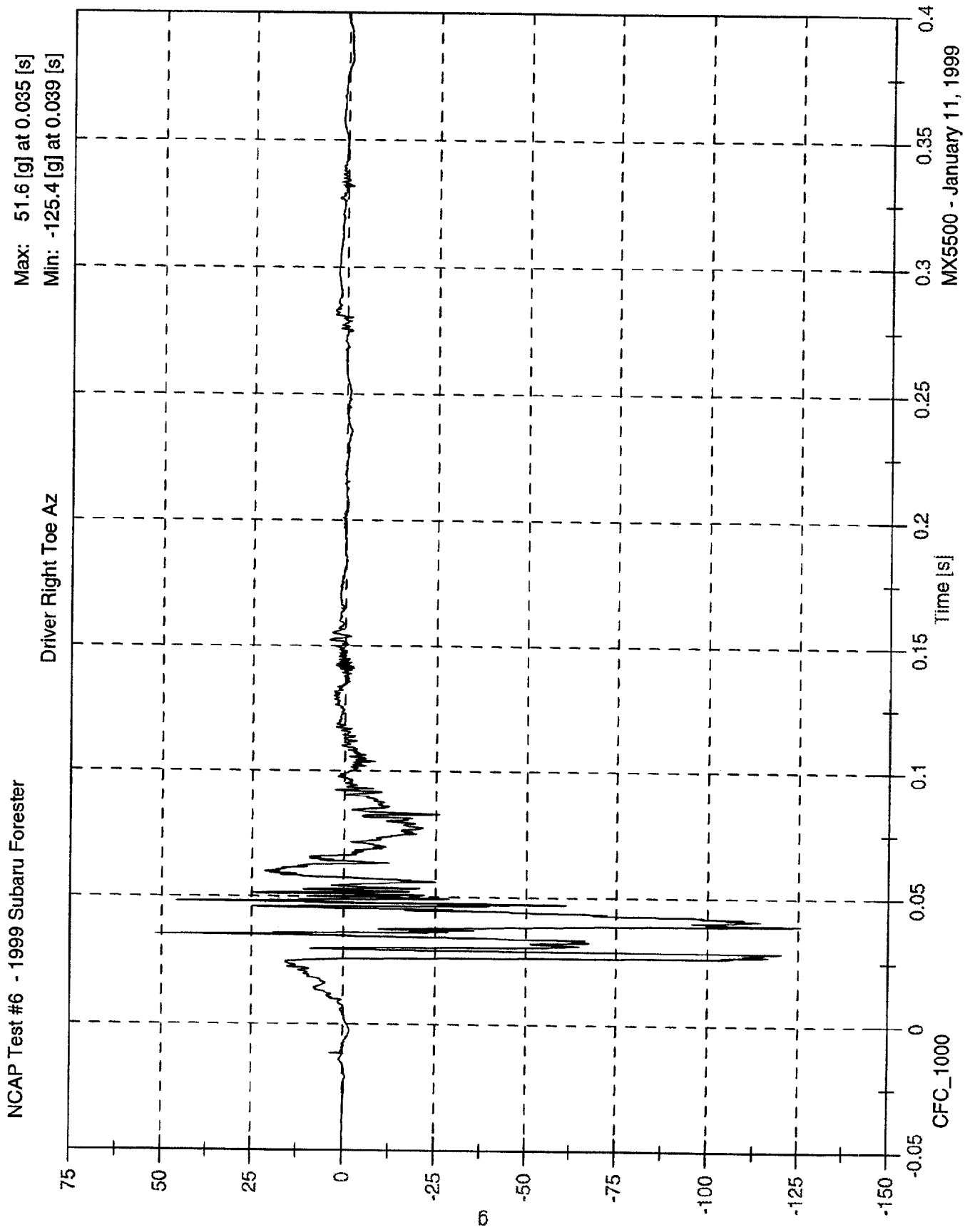

NCAP Test #6 - 1999 Subaru Forester
Max: 36.8 [g] at 0.087 [s]
Min: -42.0 [g] at 0.061 [s]
Driver Left Ankle Ax
MX5500 - January 11, 1999
CFC_1000
Time [s]
g
40
30
20
10
0
-10
-20
-30
-40
-50
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4

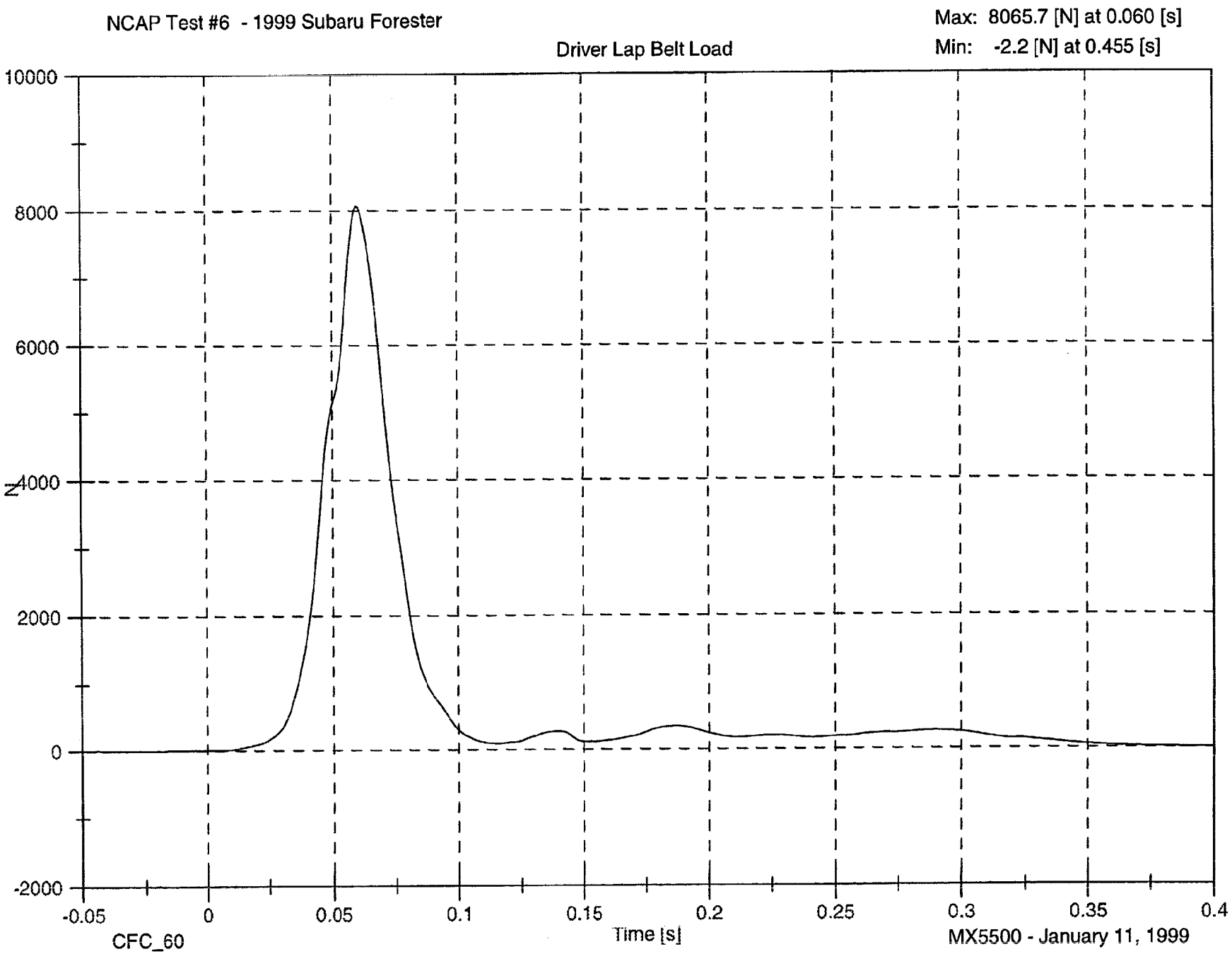

NCAP Test #6 - 1999 Subaru Forester
Max: 17.9 [g] at 0.046 [s]
Min: -49.3 [g] at 0.039 [s]
Driver Left Ankle Az
MX5500 - January 11, 1999
CFC_1000
Time [s]
g
20
10
0
-10
-20
-30
-40
-50
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4

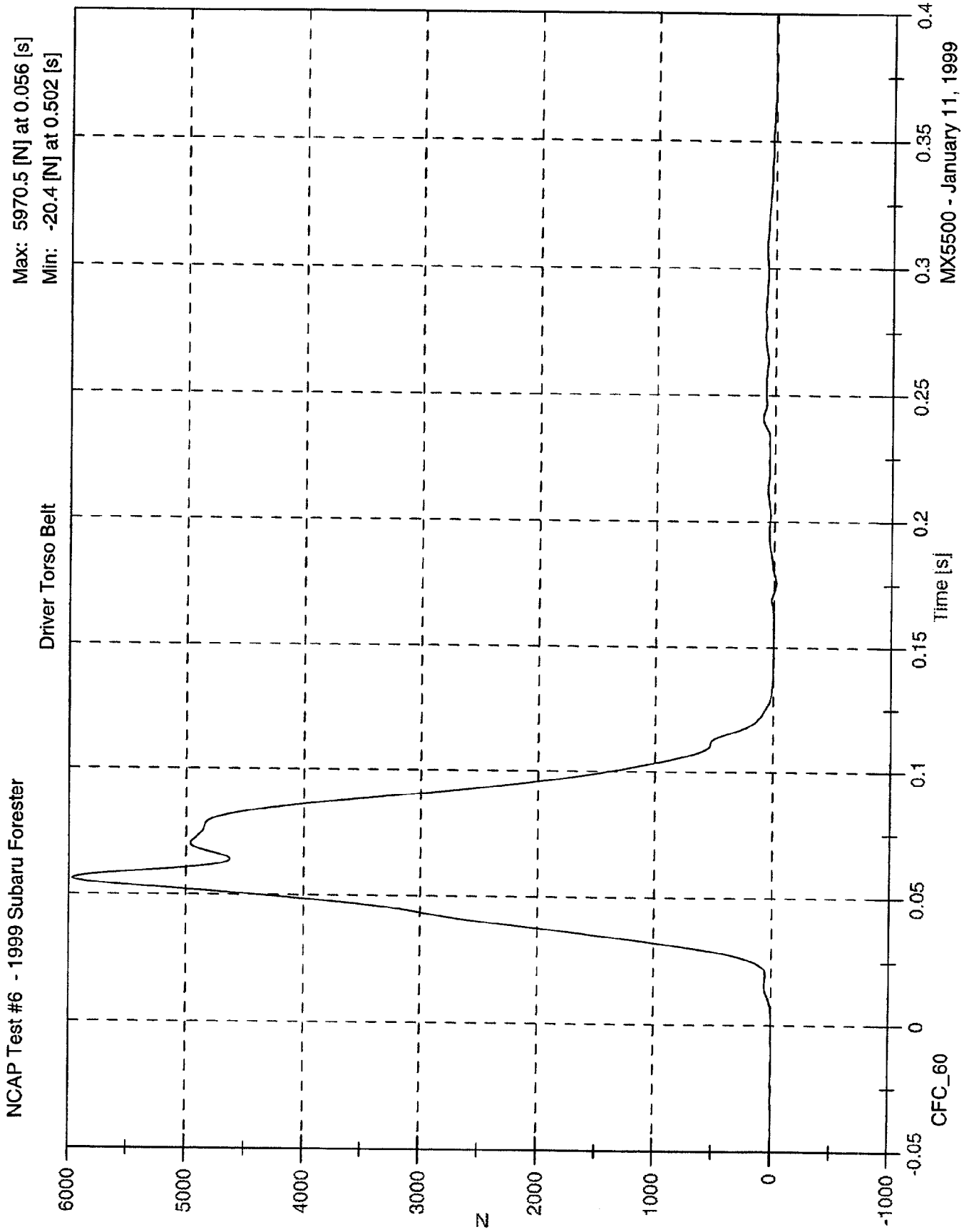

NCAP Test #6 - 1999 Subaru Forester
Max: 36.4 [g] at 0.048 [s]
Min: -58.6 [g] at 0.039 [s]
Driver Left Toe Az
MX5500 - January 11, 1999
CFC_1000
Time [s]
g
40
20
0
-20
-40
-60
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4

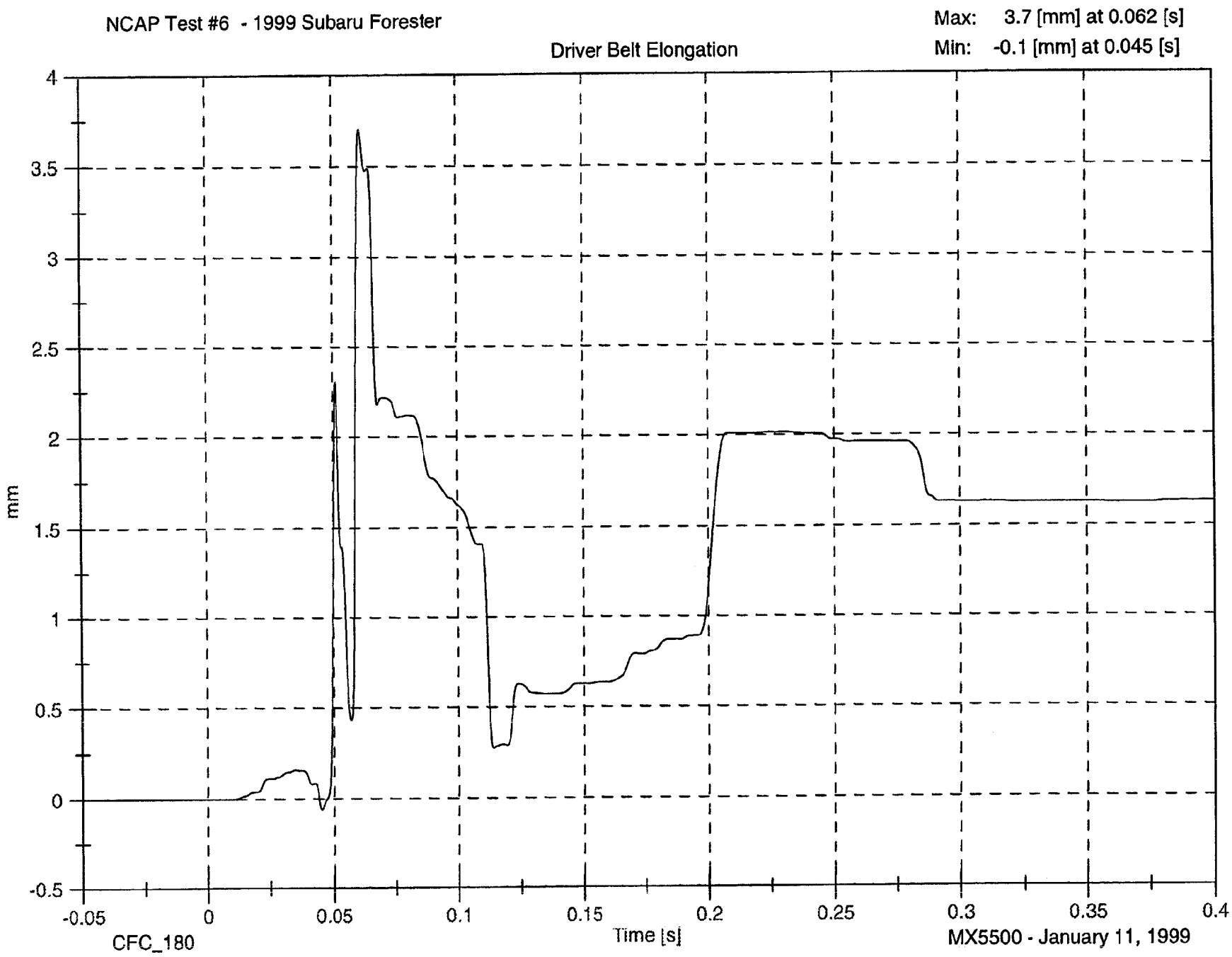

NCAP Test #6 - 1999 Subaru Forester
Max: 29.7 [g] at 0.069 [s]
Min: -91.9 [g] at 0.042 [s]
Driver Right Ankle Ax
MX5500 - January 11, 1999
CFC_1000
Time [s]
g
50
25
0
-25
-50
-75
-100
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4

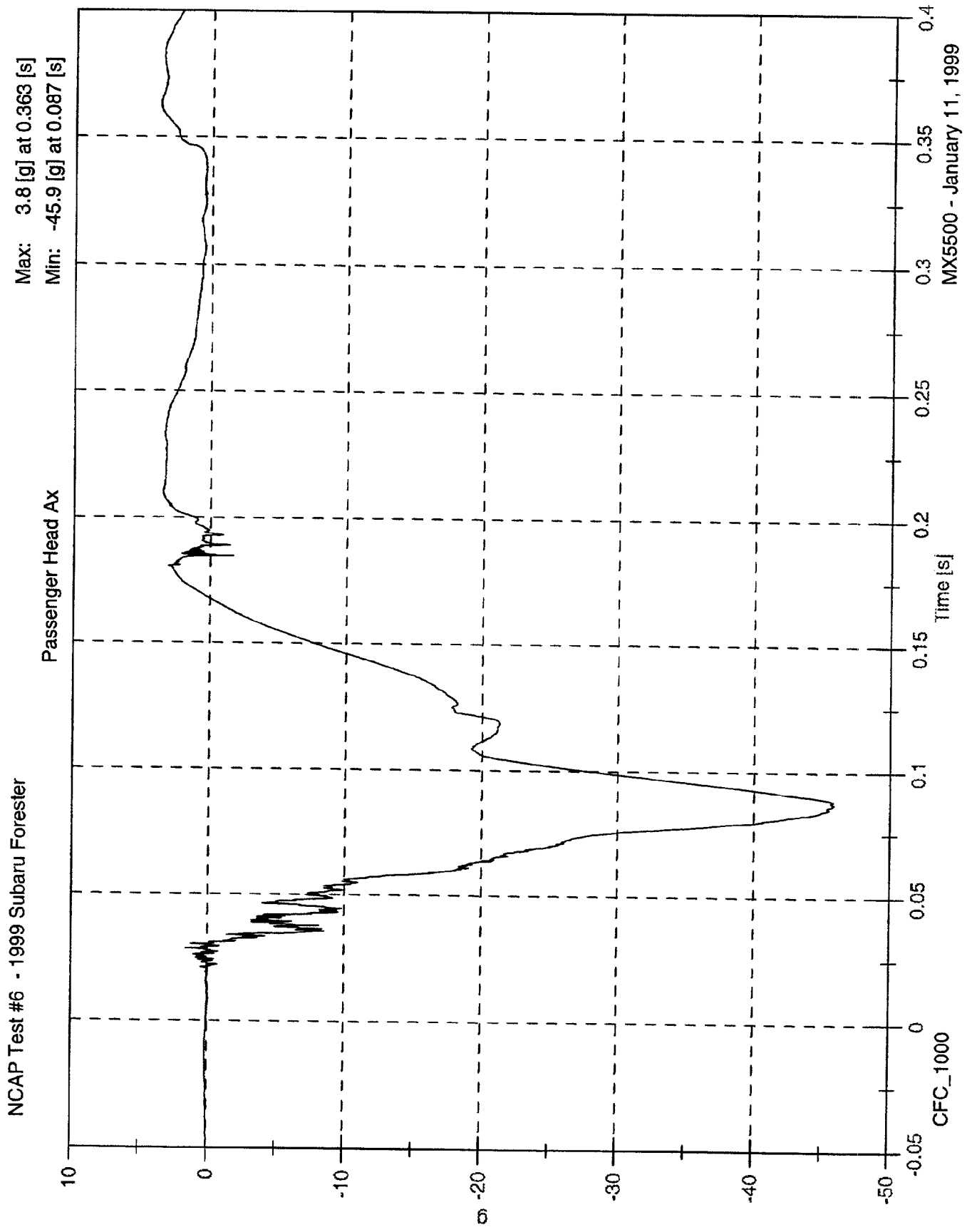

NCAP Test #6 - 1999 Subaru Forester
Max: 19.7 [g] at 0.046 [s]
Min: -66.3 [g] at 0.039 [s]
Driver Right Ankle Az
MX5500 - January 11, 1999
CFC_1000
Time [s]
g
20
0
-20
-40
-60
-80
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4

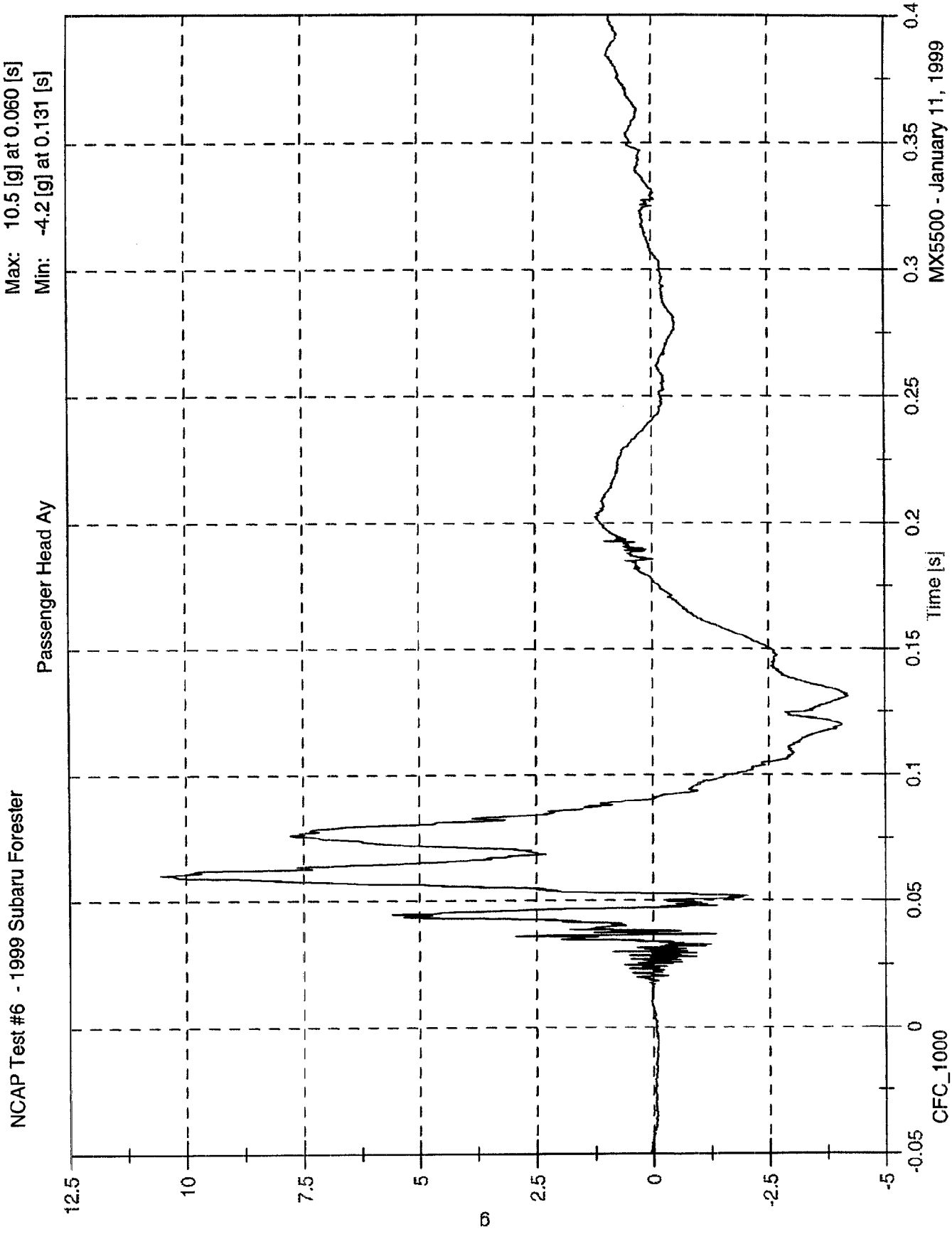

NCAP Test #6 - 1999 Subaru Forester
Max: 51.6 [g] at 0.035 [s]
Min: -125.4 [g] at 0.039 [s]
Driver Right Toe Az
MX5500 - January 11, 1999
CFC_1000
Time [s]
g
75
50
25
0
-25
-50
-75
-100
-125
-150
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4

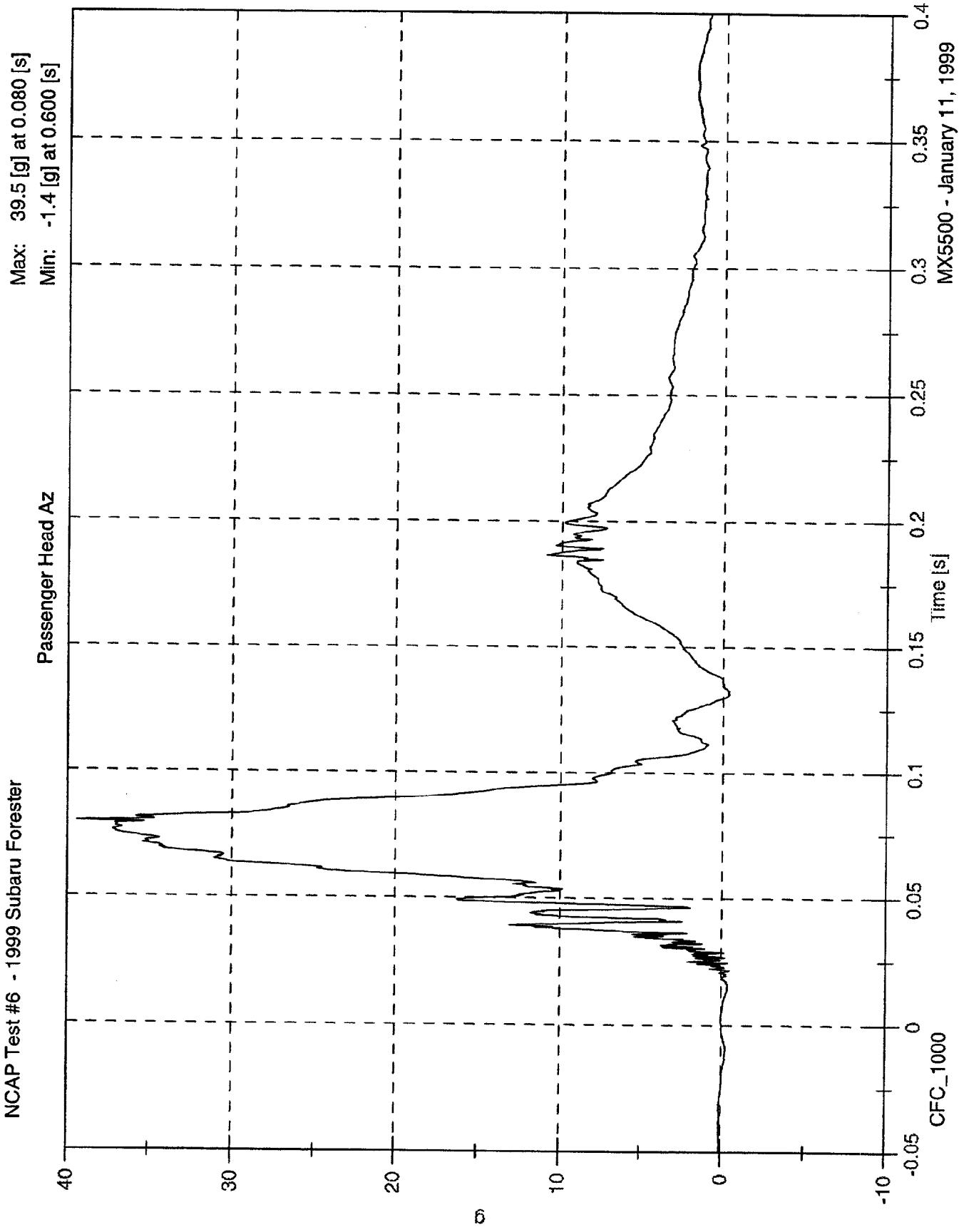

NCAP Test #6 - 1999 Subaru Forester
Driver Lap Belt Load
Max: 8065.7 [N] at 0.060 [s]
Min: -2.2 [N] at 0.455 [s]
10000
8000
6000
4000
2000
0
-2000
N
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
Time [s]
CFC_60
MX5500 - January 11, 1999

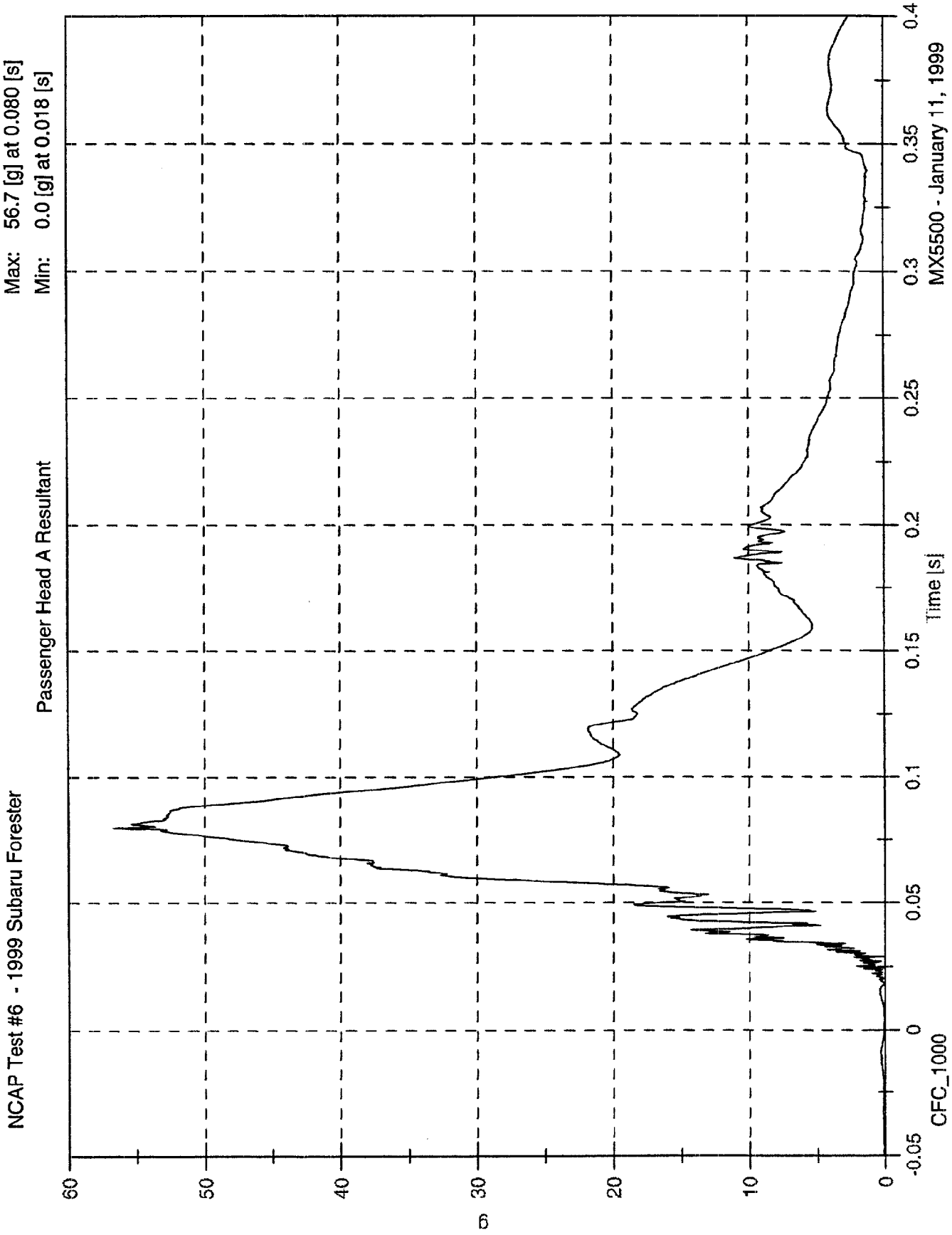

NCAP Test #6 - 1999 Subaru Forester
Max: 5970.5 [N] at 0.056 [s]
Min: -20.4 [N] at 0.502 [s]
Driver Torso Belt
MX5500 - January 11, 1999
CFC_60
N
Time [s]
6000
5000
4000
3000
2000
1000
0
-1000
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4

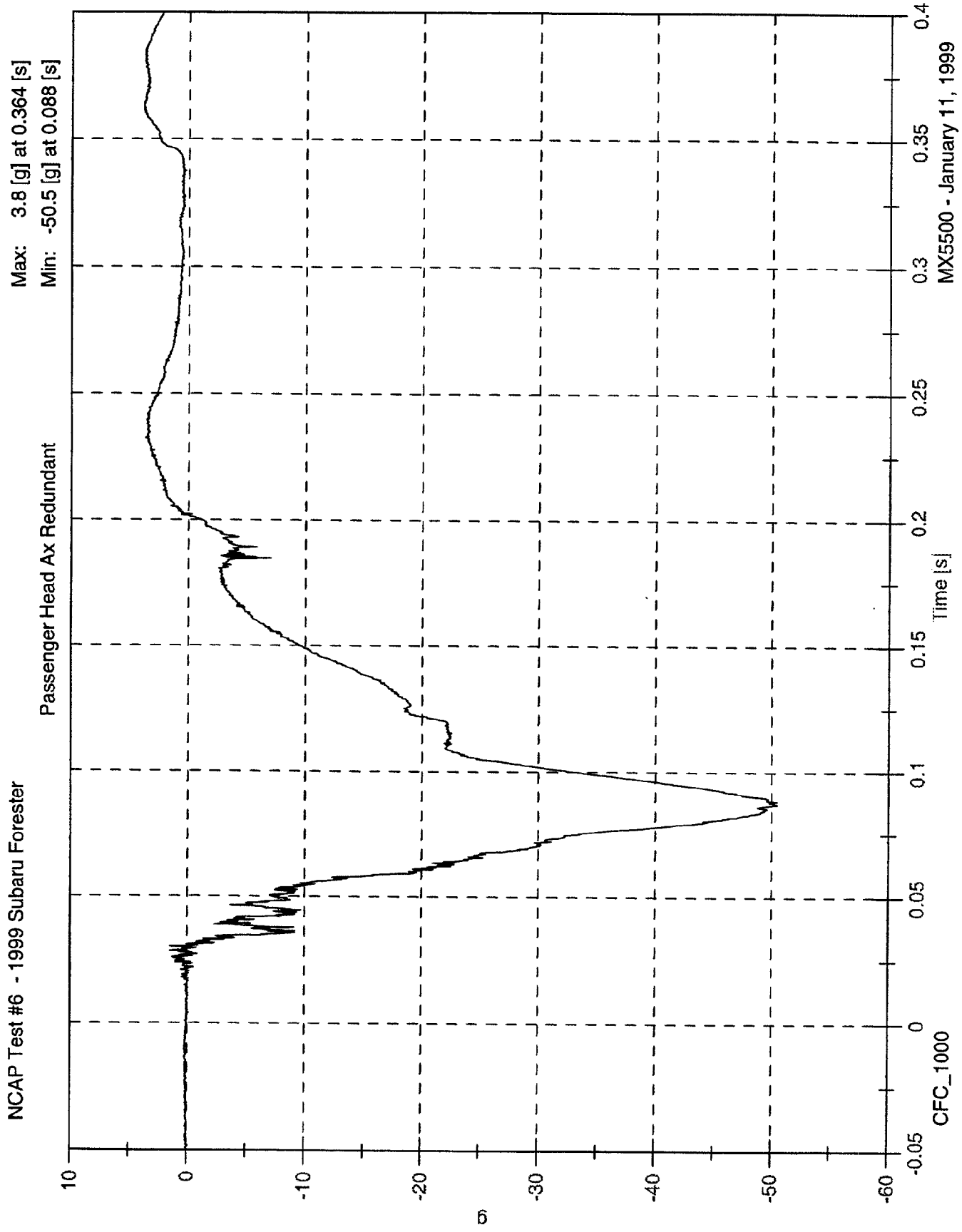

NCAP Test #6 - 1999 Subaru Forester
Driver Belt Elongation
Max: 3.7 [mm] at 0.062 [s]
Min: -0.1 [mm] at 0.045 [s]
mm
4
3.5
3
2.5
2
1.5
1
0.5
0
-0.5
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
Time [s]
CFC_180
MX5500 - January 11, 1999

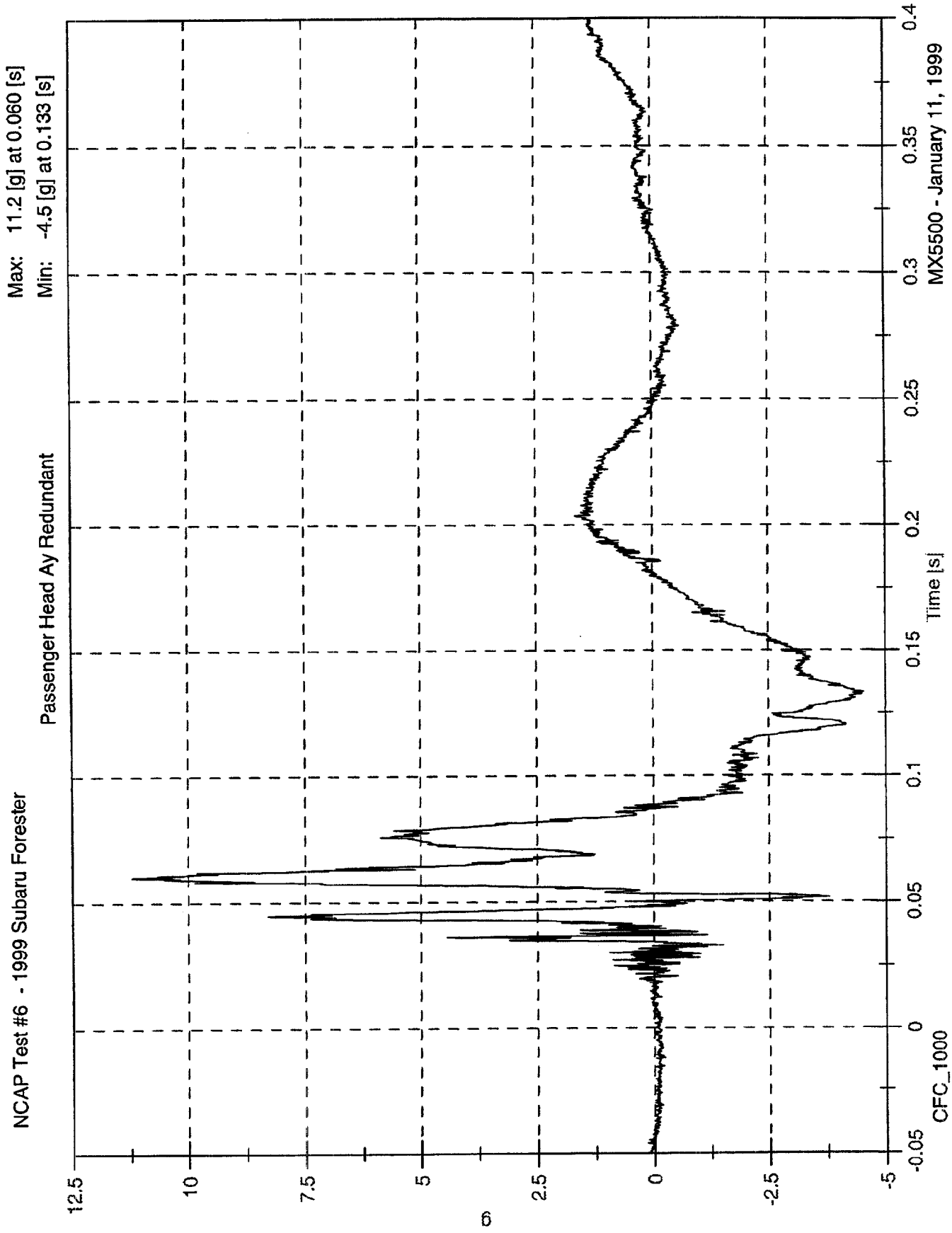

NCAP Test #6 - 1999 Subaru Forester
Passenger Head Ax
Max: 3.8 [g] at 0.363 [s]
Min: -45.9 [g] at 0.087 [s]
MX5500 - January 11, 1999
CFC_1000
Time [s]
g
10
0
-10
-20
-30
-40
-50
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4

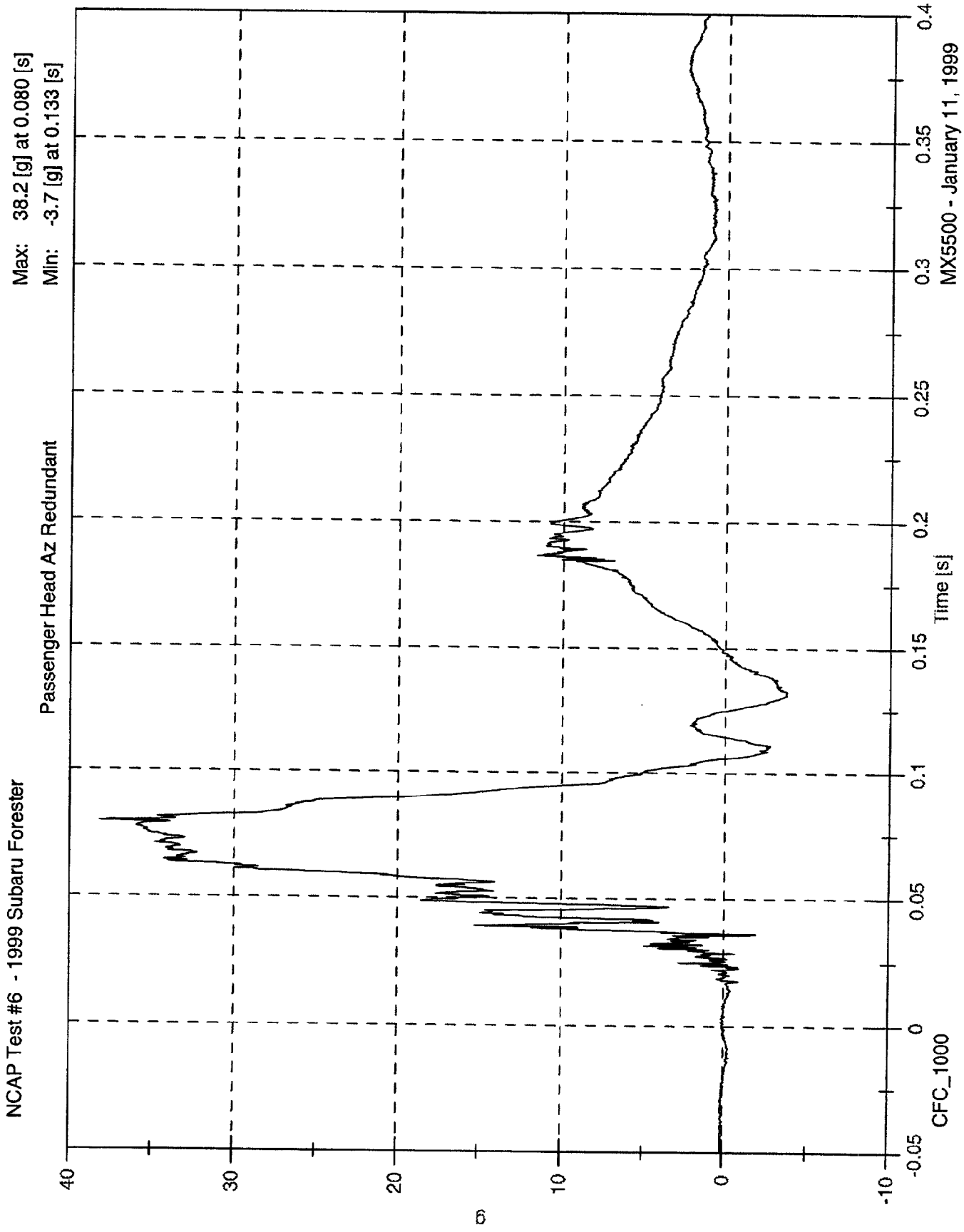

NCAP Test #6 - 1999 Subaru Forester
Max: 10.5 [g] at 0.060 [s]
Min: -4.2 [g] at 0.131 [s]
Passenger Head Ay
MX5500 - January 11, 1999
CFC_1000
Time [s]
g
12.5
10
7.5
5
2.5
0
-2.5
-5
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4

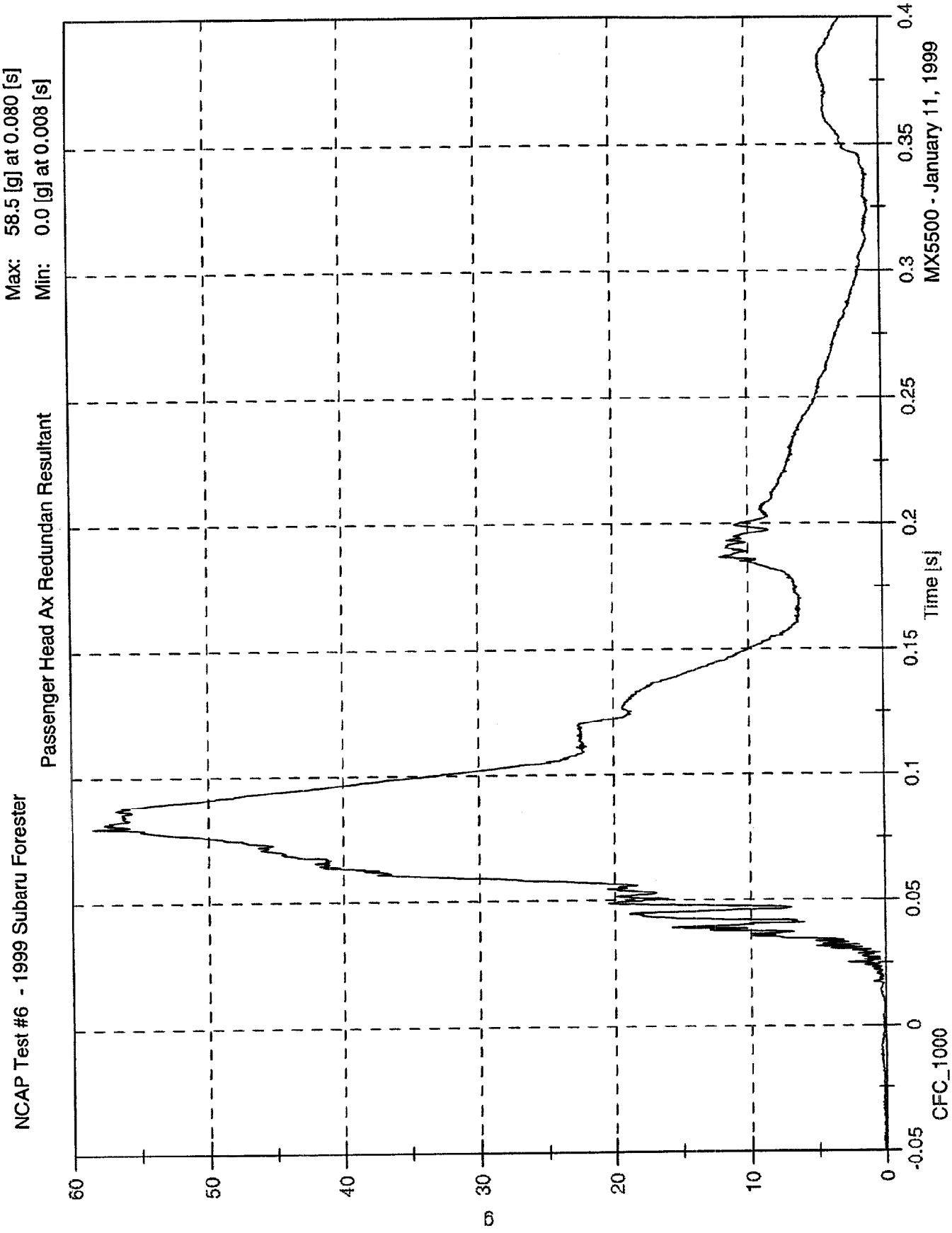

NCAP Test #6 - 1999 Subaru Forester
Max: 39.5 [g] at 0.080 [s]
Min: -1.4 [g] at 0.600 [s]
Passenger Head Az
MX5500 - January 11, 1999
CFC_1000
Time [s]
g
40
30
20
10
0
-10
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4

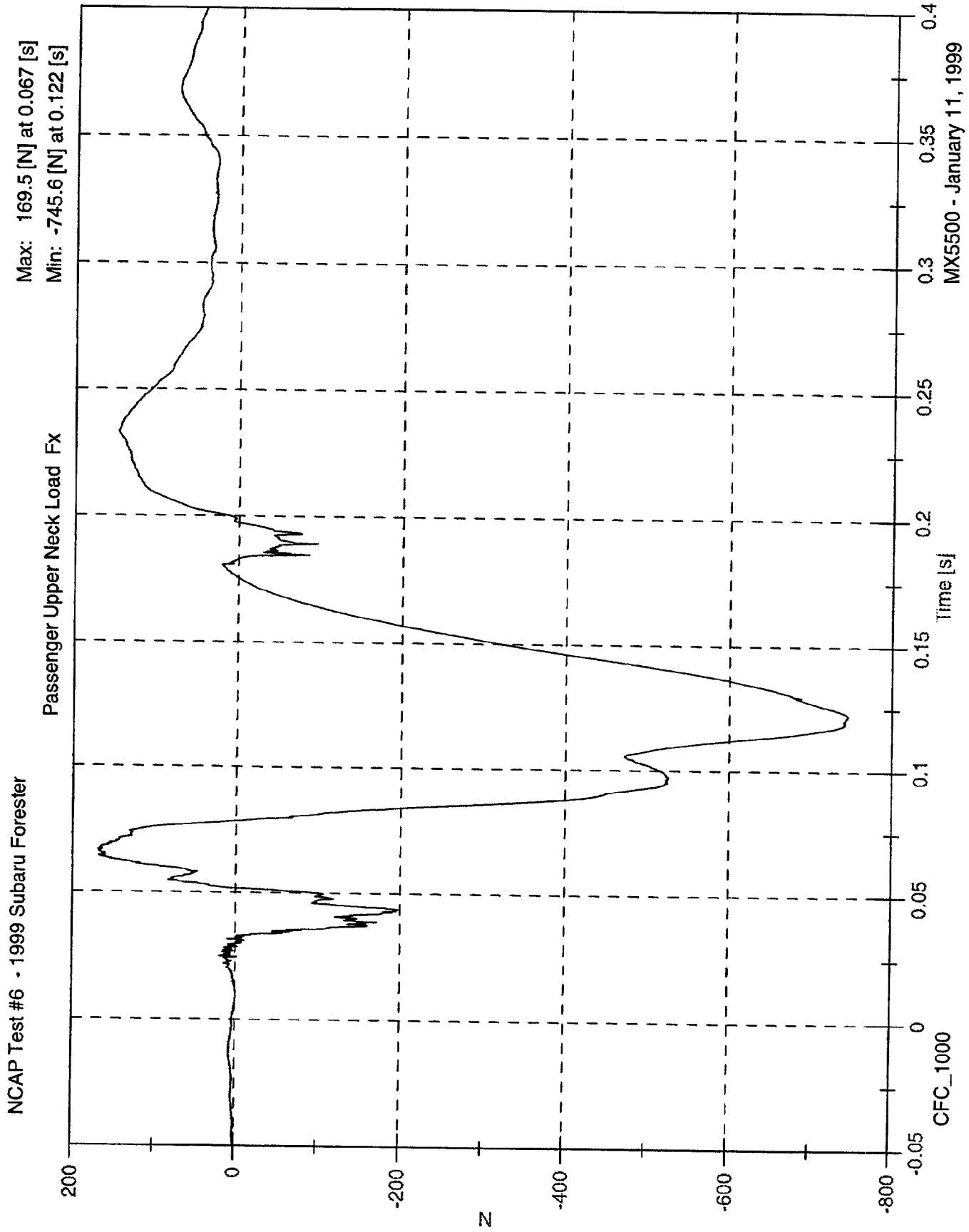

NCAP Test #6 - 1999 Subaru Forester
Max: 56.7 [g] at 0.080 [s]
Min: 0.0 [g] at 0.018 [s]
Passenger Head A Resultant
MX5500 - January 11, 1999
CFC_1000
Time [s]
g
60
50
40
30
20
10
0
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4

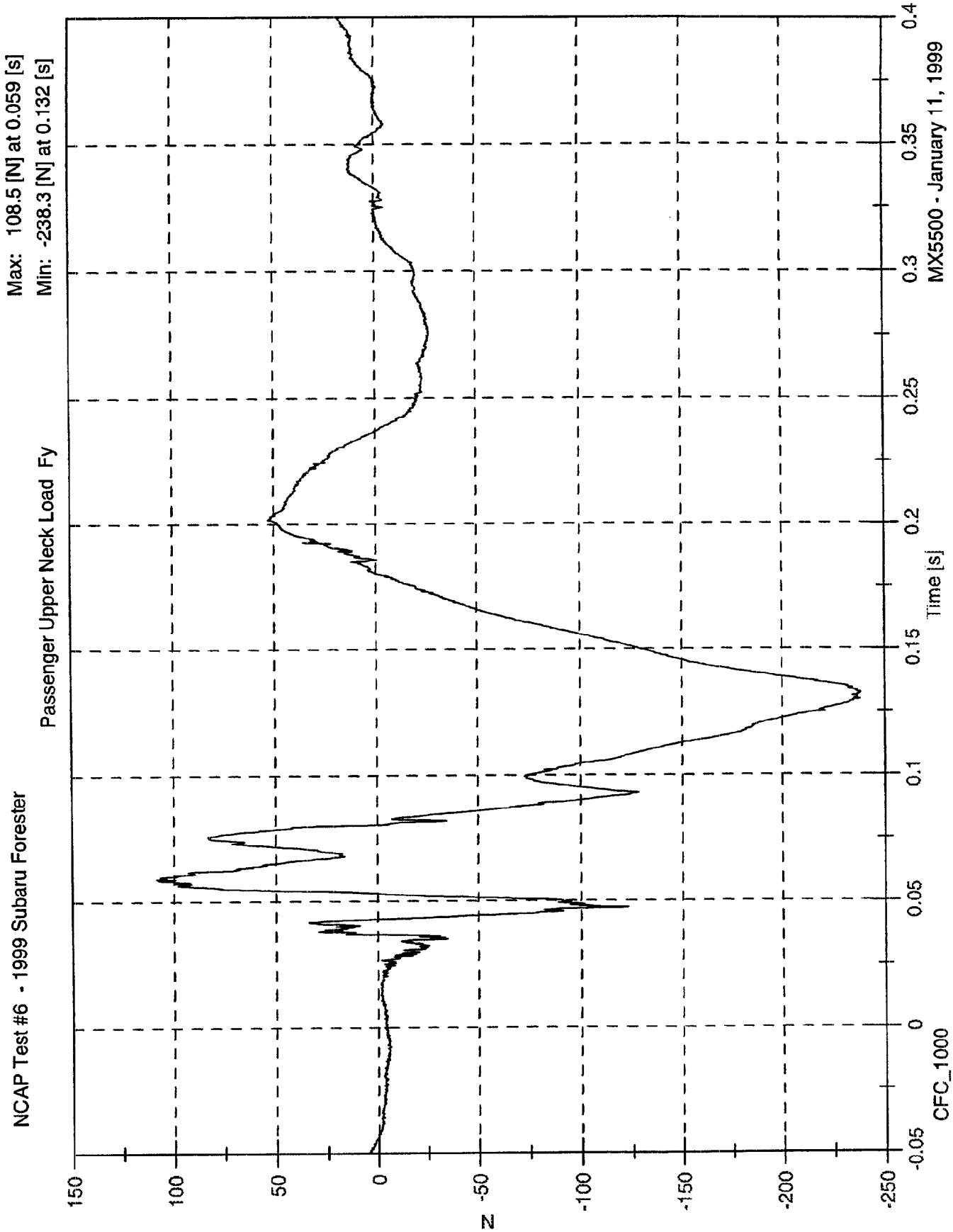

NCAP Test #6 - 1999 Subaru Forester
Max: 3.8 [g] at 0.364 [s]
Min: -50.5 [g] at 0.088 [s]
Passenger Head Ax Redundant
MX5500 - January 11, 1999
CFC_1000
Time [s]
g
10
0
-10
-20
-30
-40
-50
-60
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4

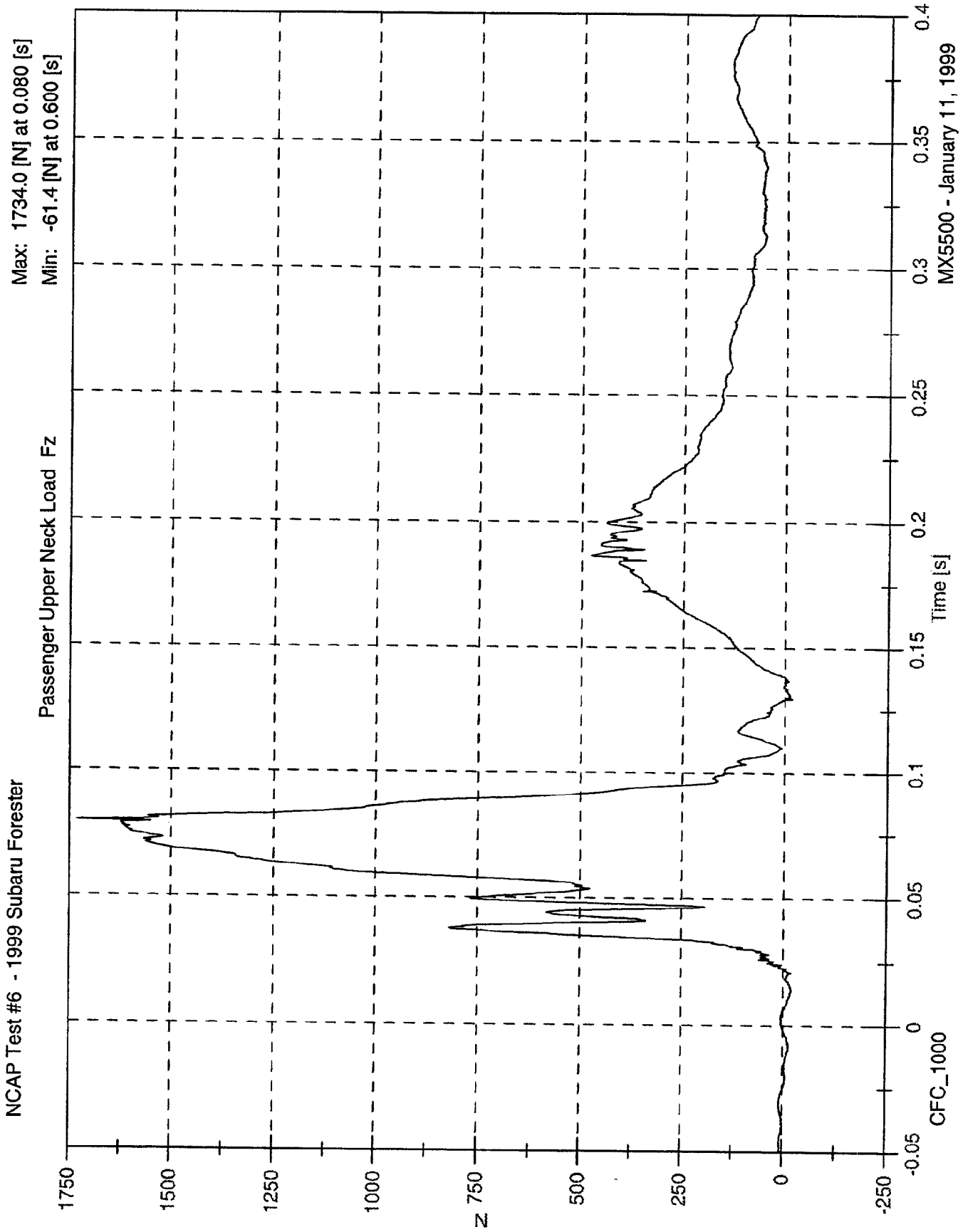

NCAP Test #6 - 1999 Subaru Forester
Passenger Head Ay Redundant
Max: 11.2 [g] at 0.060 [s]
Min: -4.5 [g] at 0.133 [s]
MX5500 - January 11, 1999
CFC_1000
Time [s]
g
12.5
10
7.5
5
2.5
0
-2.5
-5
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4

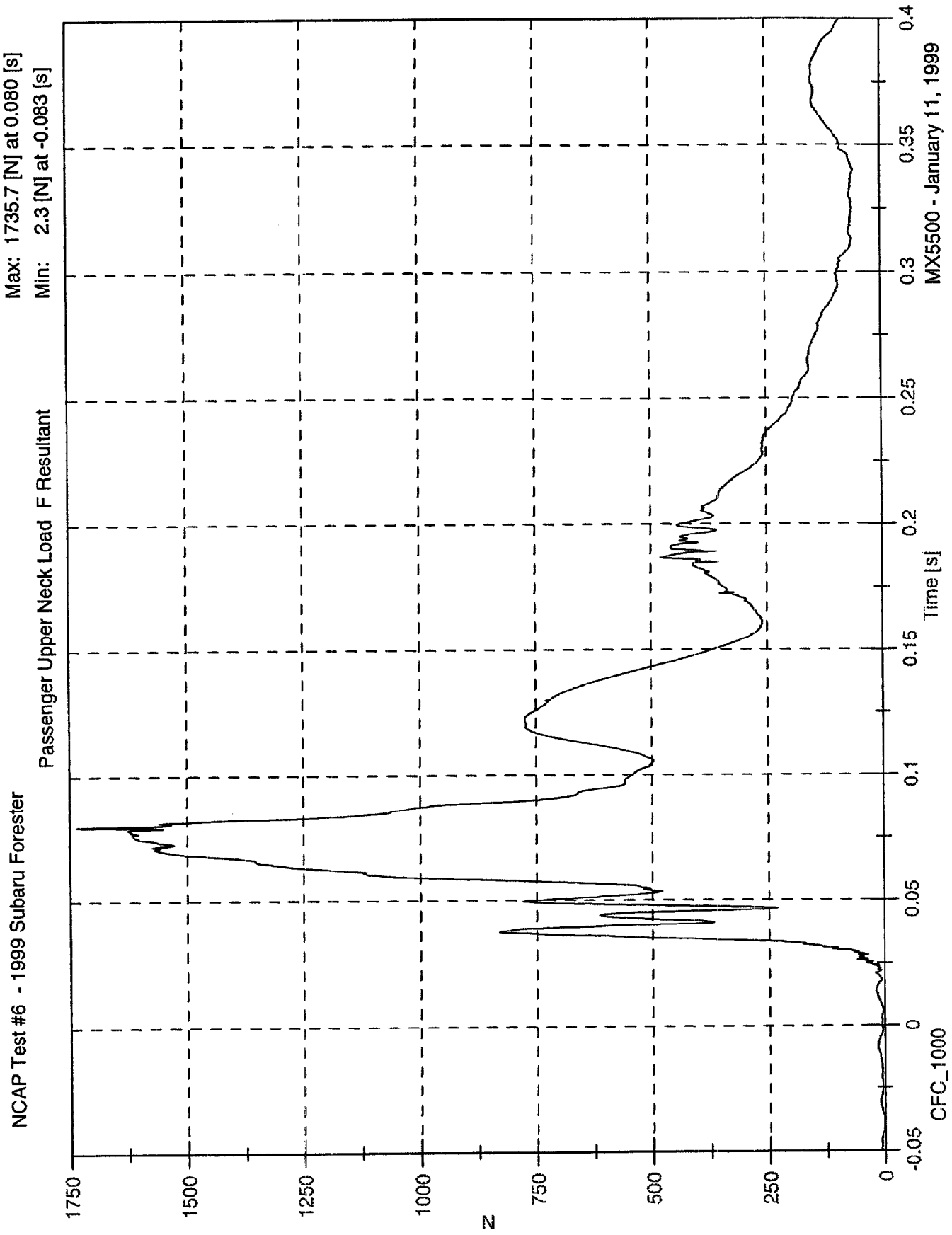

NCAP Test #6 - 1999 Subaru Forester
Passenger Head Az Redundant
Max: 38.2 [g] at 0.080 [s]
Min: -3.7 [g] at 0.133 [s]
MX5500 - January 11, 1999
CFC_1000
Time [s]
g
40
30
20
10
0
-10
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4

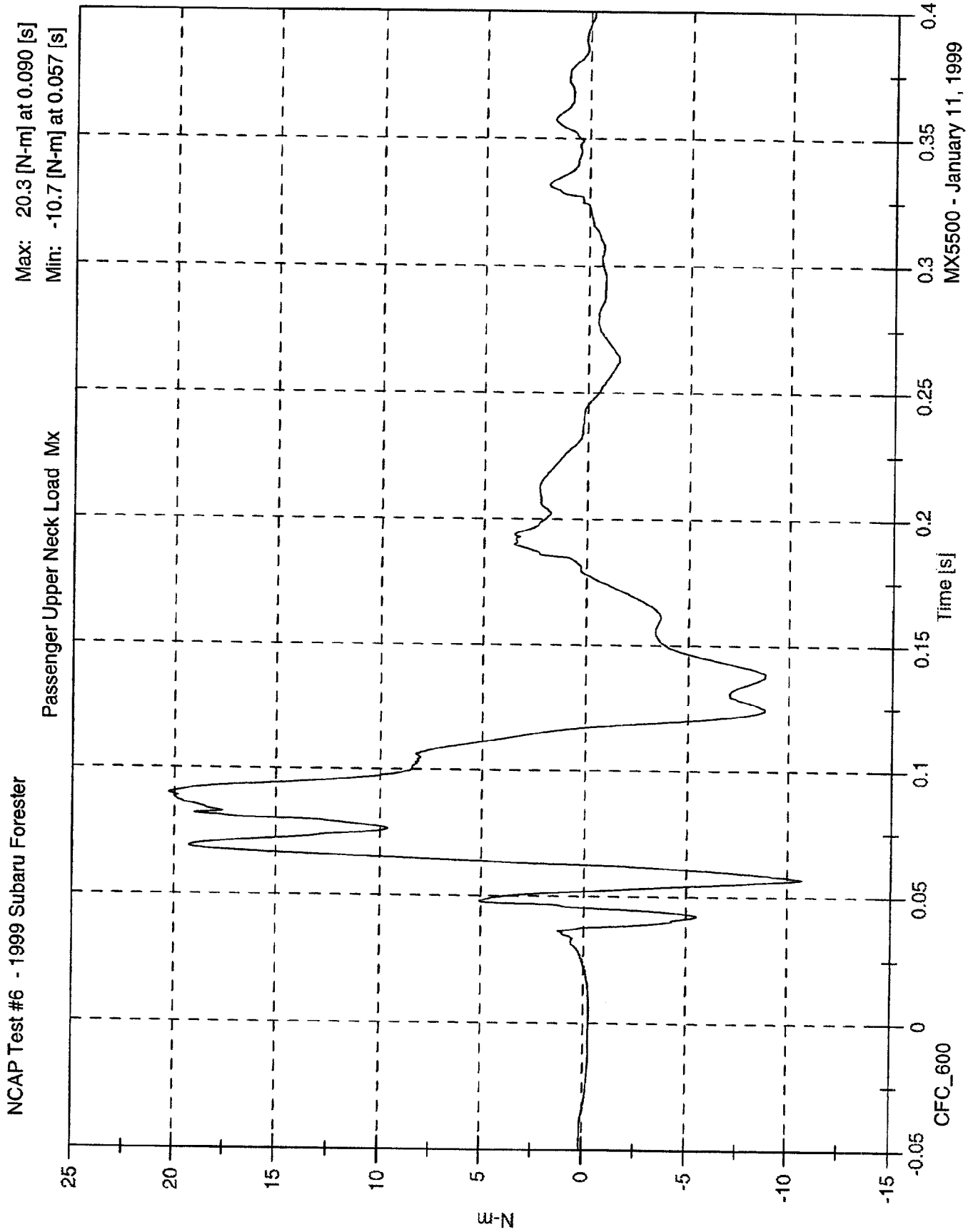

NCAP Test #6 - 1999 Subaru Forester
Passenger Head Ax Redundan Resultant
Max: 58.5 [g] at 0.080 [s]
Min: 0.0 [g] at 0.008 [s]
MX5500 - January 11, 1999
CFC_1000
Time [s]
g
60
50
40
30
20
10
0
-0.05
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4

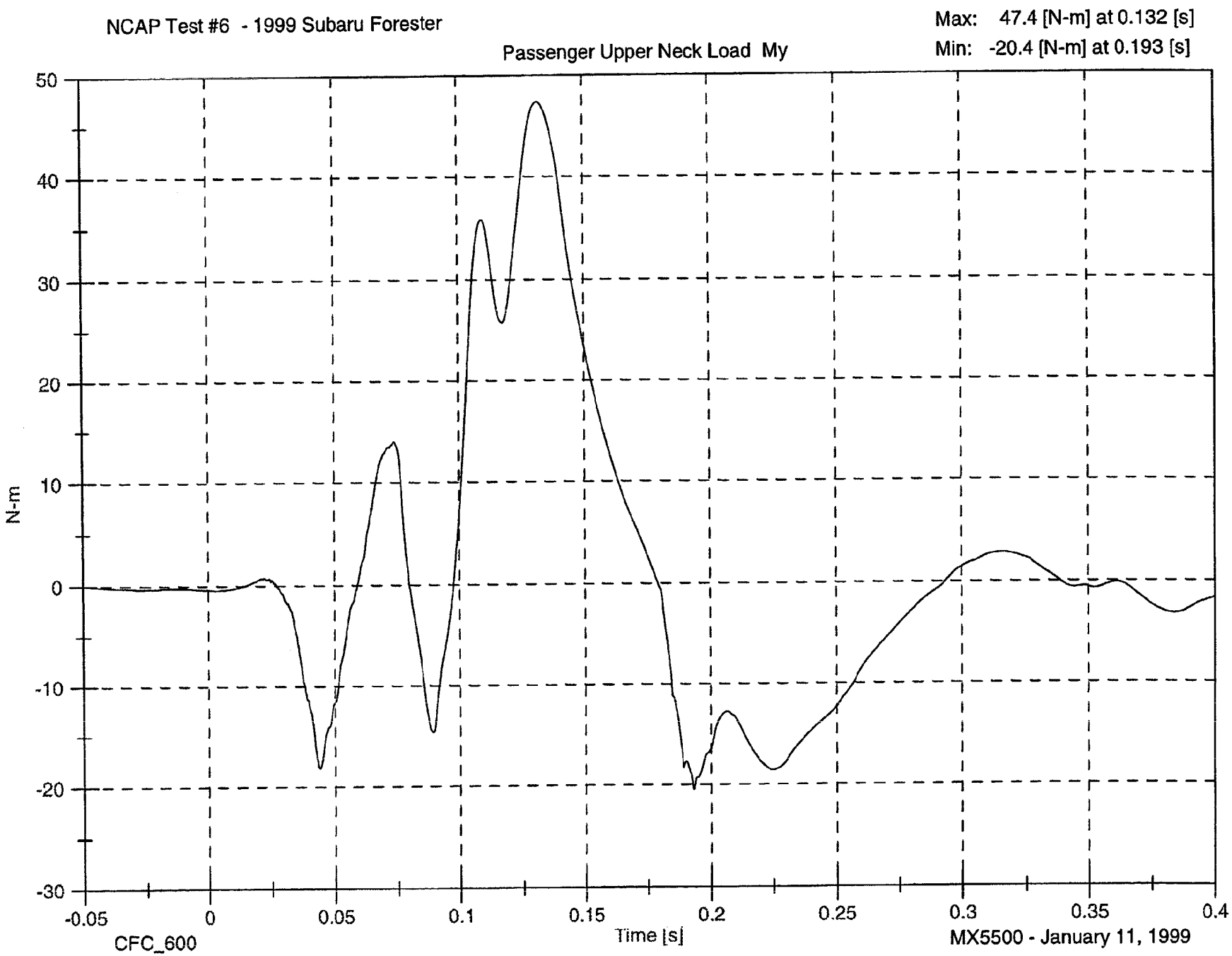

NCAP Test #6 - 1999 Subaru Forester
Passenger Upper Neck Load Fx
Max: 169.5 [N] at 0.067 [s]
Min: -745.6 [N] at 0.122 [s]
MX5500 - January 11, 1999
CFC_1000
N
Time [s]
200
0
-200
-400
-600
-800
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4

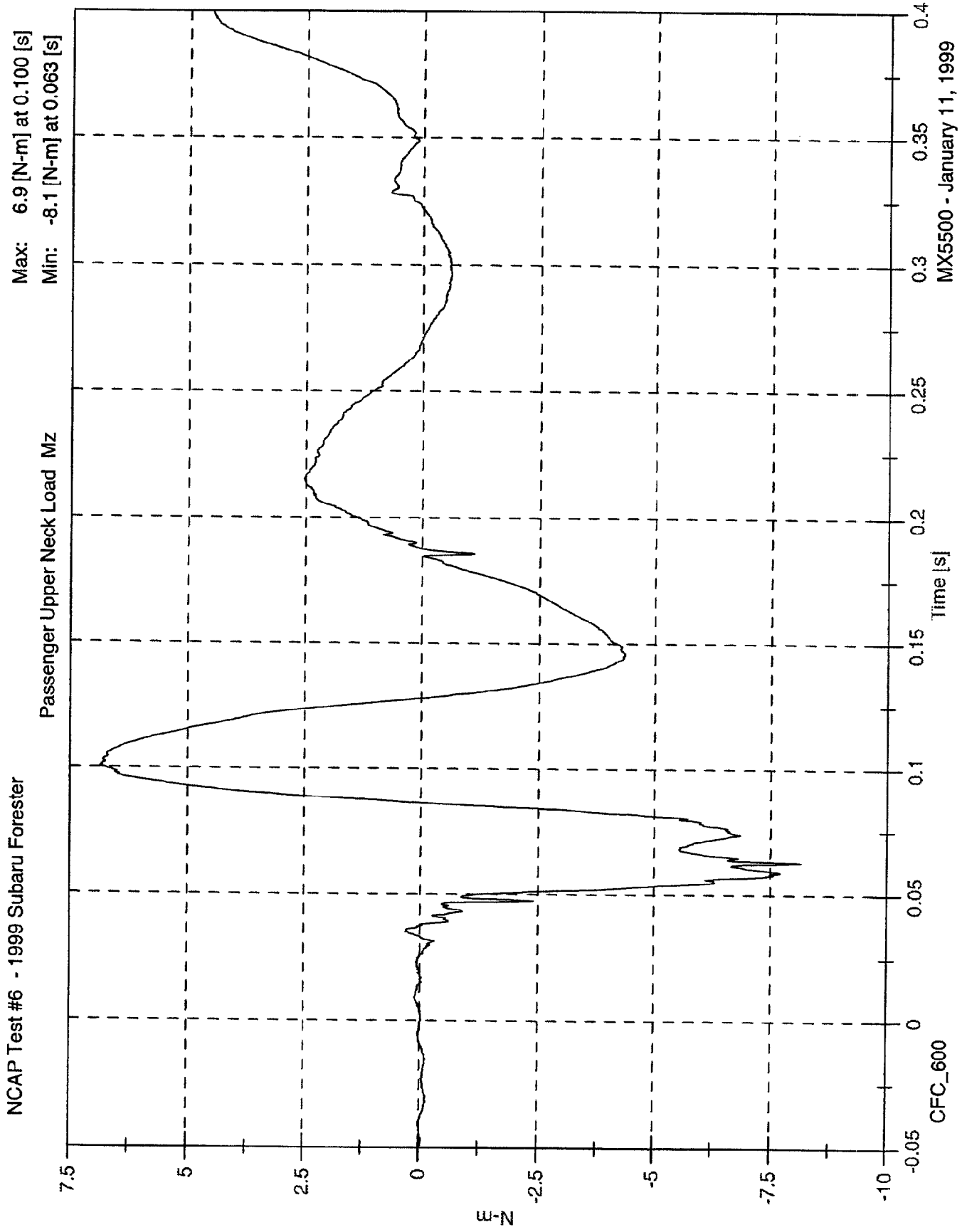

NCAP Test #6 - 1999 Subaru Forester
Passenger Upper Neck Load Fy
Max: 108.5 [N] at 0.059 [s]
Min: -238.3 [N] at 0.132 [s]
MX5500 - January 11, 1999
CFC_1000
N
Time [s]
150
100
50
0
-50
-100
-150
-200
-250
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4

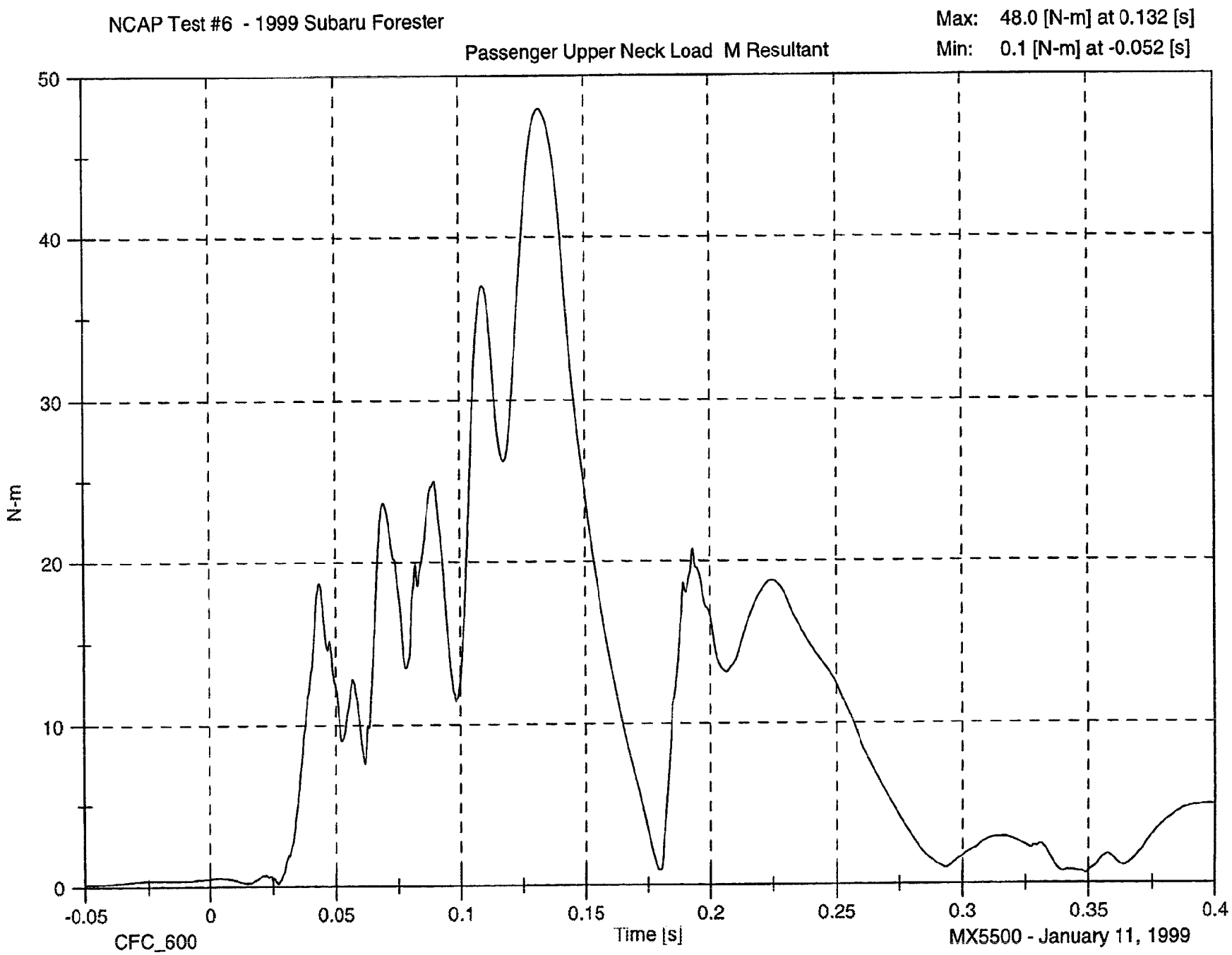

NCAP Test #6 - 1999 Subaru Forester
Max: 1734.0 [N] at 0.080 [s]
Min: -61.4 [N] at 0.600 [s]
Passenger Upper Neck Load Fz
N
1750
1500
1250
1000
750
500
250
0
-250
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
Time [s]
CFC_1000
MX5500 - January 11, 1999

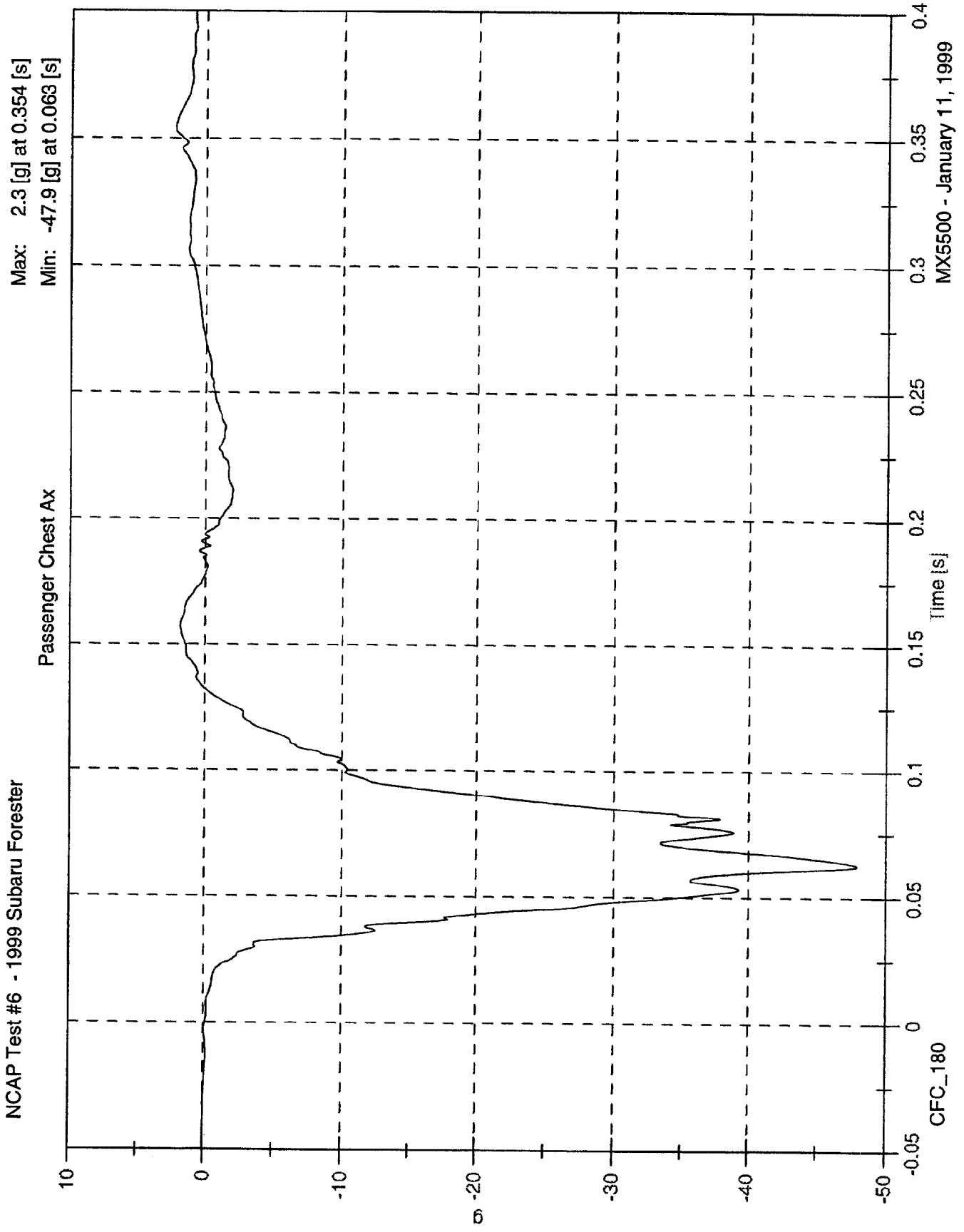

NCAP Test #6 - 1999 Subaru Forester
Passenger Upper Neck Load F Resultant
Max: 1735.7 [N] at 0.080 [s]
Min: 2.3 [N] at -0.083 [s]
N
Time [s]
CFC_1000
MX5500 - January 11, 1999
1750
1500
1250
1000
750
500
250
0
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4

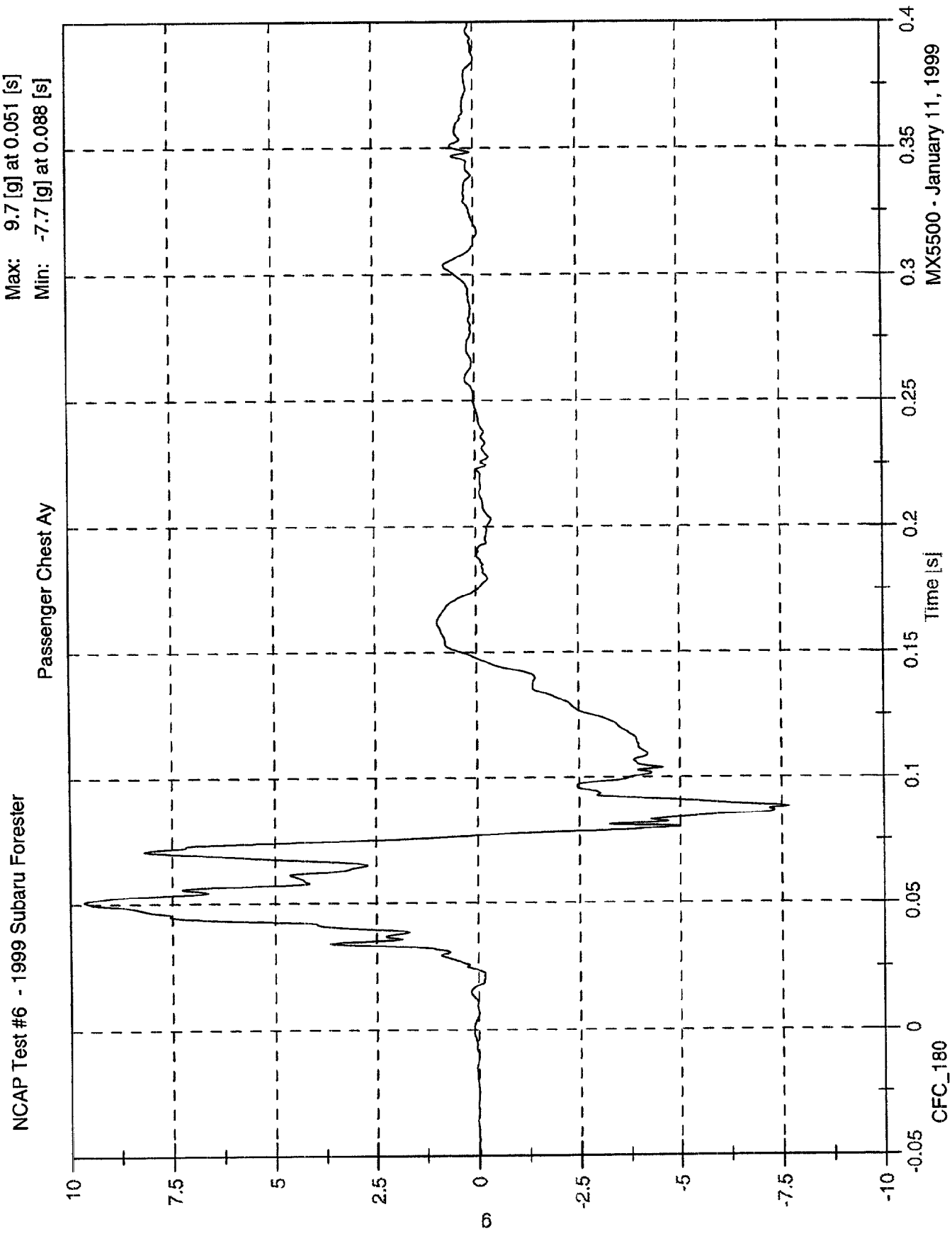

NCAP Test #6 - 1999 Subaru Forester
Max: 20.3 [N-m] at 0.090 [s]
Min: -10.7 [N-m] at 0.057 [s]
Passenger Upper Neck Load Mx
N-m
25
20
15
10
5
0
-5
-10
-15
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
Time [s]
CFC_600
MX5500 - January 11, 1999

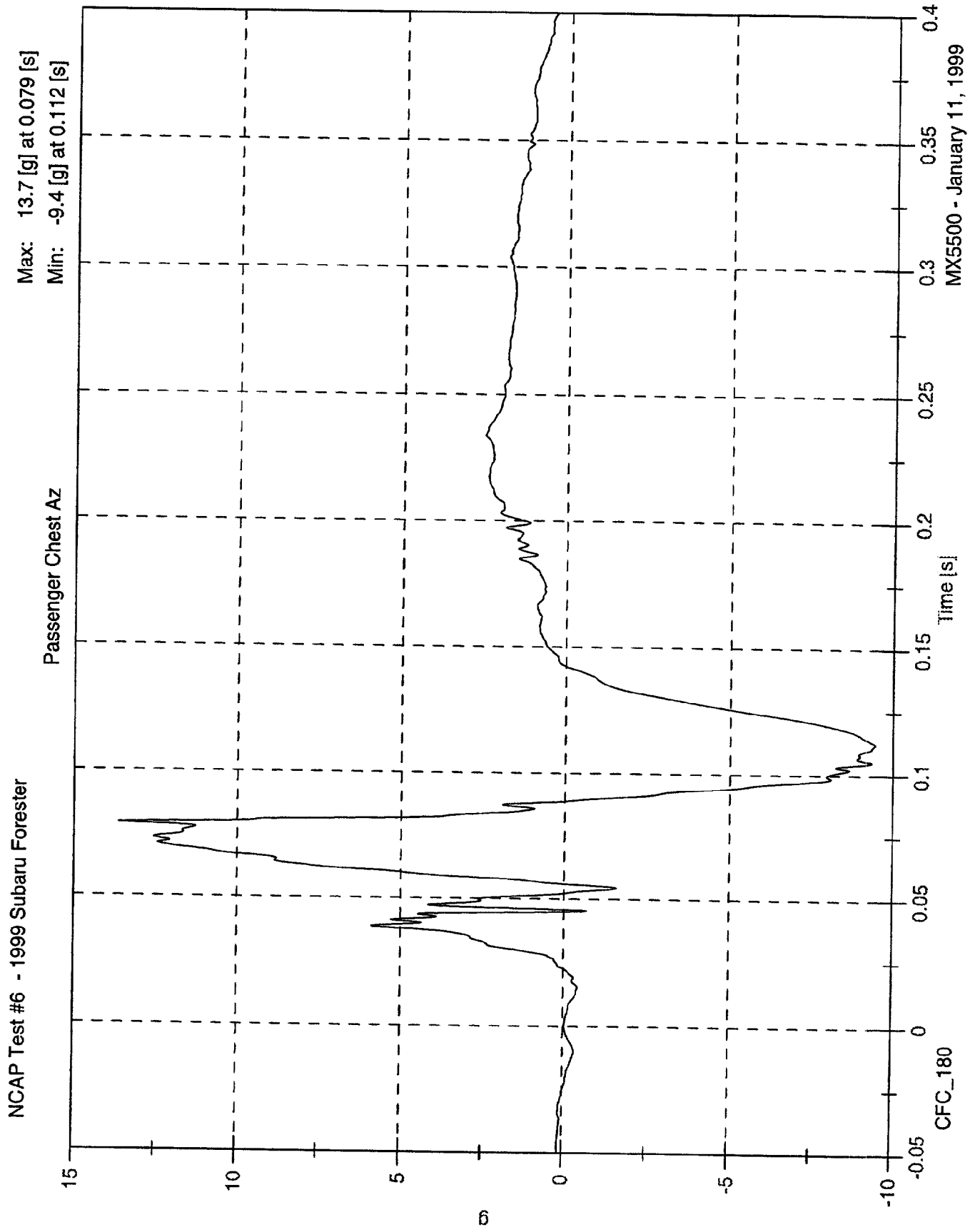

NCAP Test #6 - 1999 Subaru Forester
Passenger Upper Neck Load My
Max: 47.4 [N-m] at 0.132 [s]
Min: -20.4 [N-m] at 0.193 [s]
N-m
50
40
30
20
10
0
-10
-20
-30
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
Time [s]
CFC_600
MX5500 - January 11, 1999

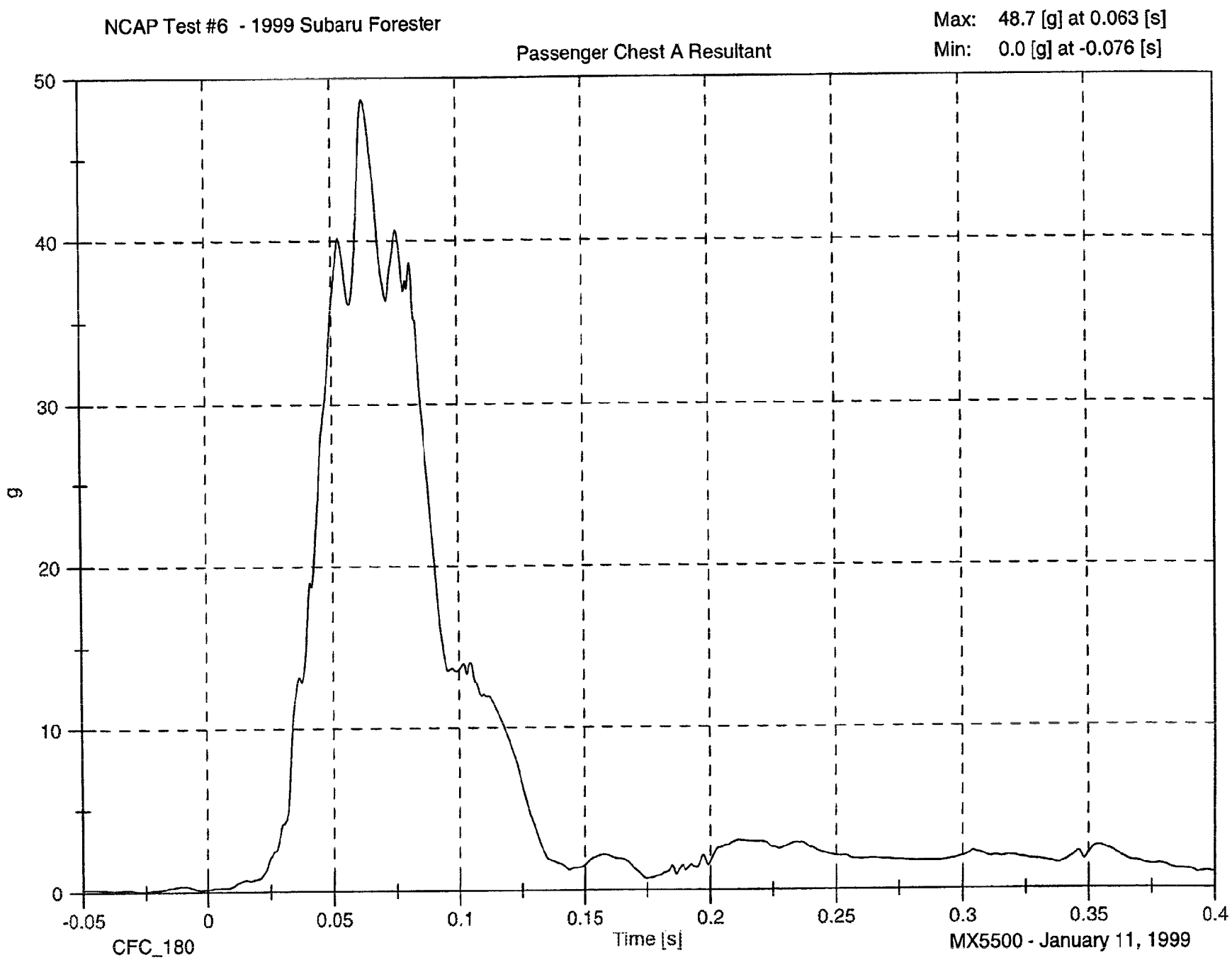

NCAP Test #6 - 1999 Subaru Forester
Max: 6.9 [N-m] at 0.100 [s]
Min: -8.1 [N-m] at 0.063 [s]
Passenger Upper Neck Load Mz
N-m
Time [s]
CFC_600
MX5500 - January 11, 1999
7.5
5
2.5
0
-2.5
-5
-7.5
-10
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4

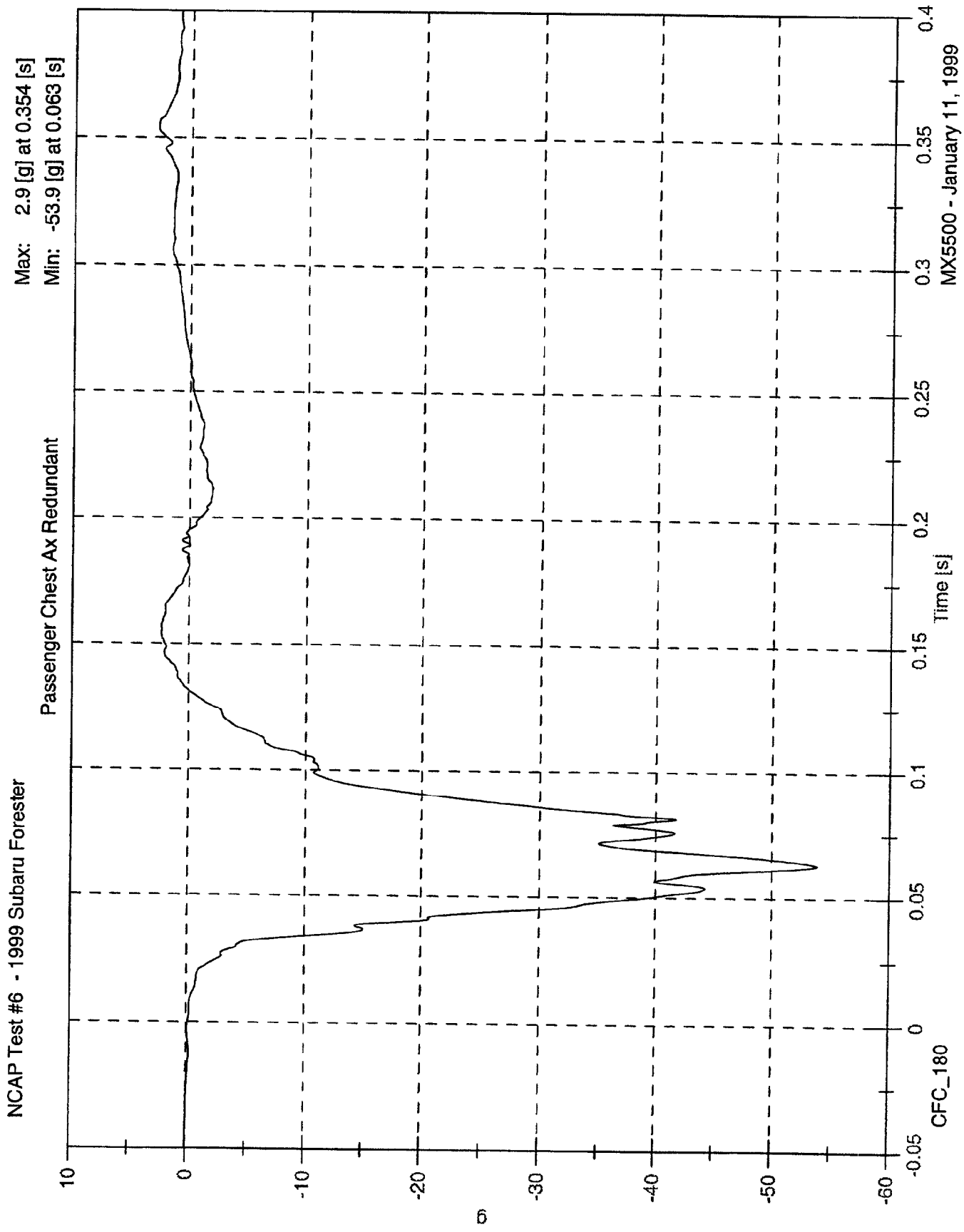

NCAP Test #6 - 1999 Subaru Forester
Passenger Upper Neck Load M Resultant
Max: 48.0 [N-m] at 0.132 [s]
Min: 0.1 [N-m] at -0.052 [s]
N-m
50
40
30
20
10
0
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
Time [s]
CFC_600
MX5500 - January 11, 1999

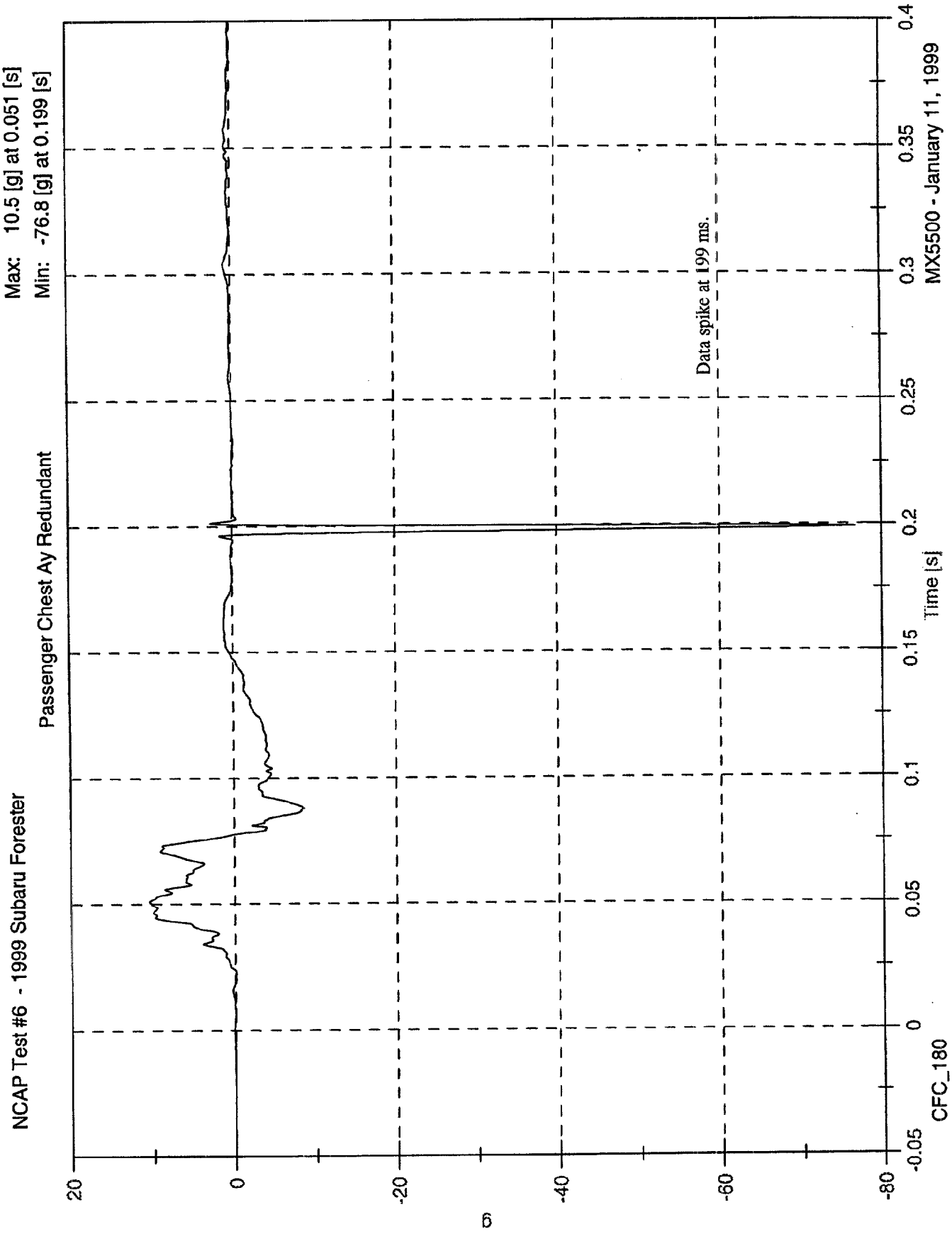

NCAP Test #6 - 1999 Subaru Forester
Passenger Chest Ax
Max: 2.3 [g] at 0.354 [s]
Min: -47.9 [g] at 0.063 [s]
MX5500 - January 11, 1999
CFC_180
Time [s]
g
10
0
-10
-20
-30
-40
-50
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4

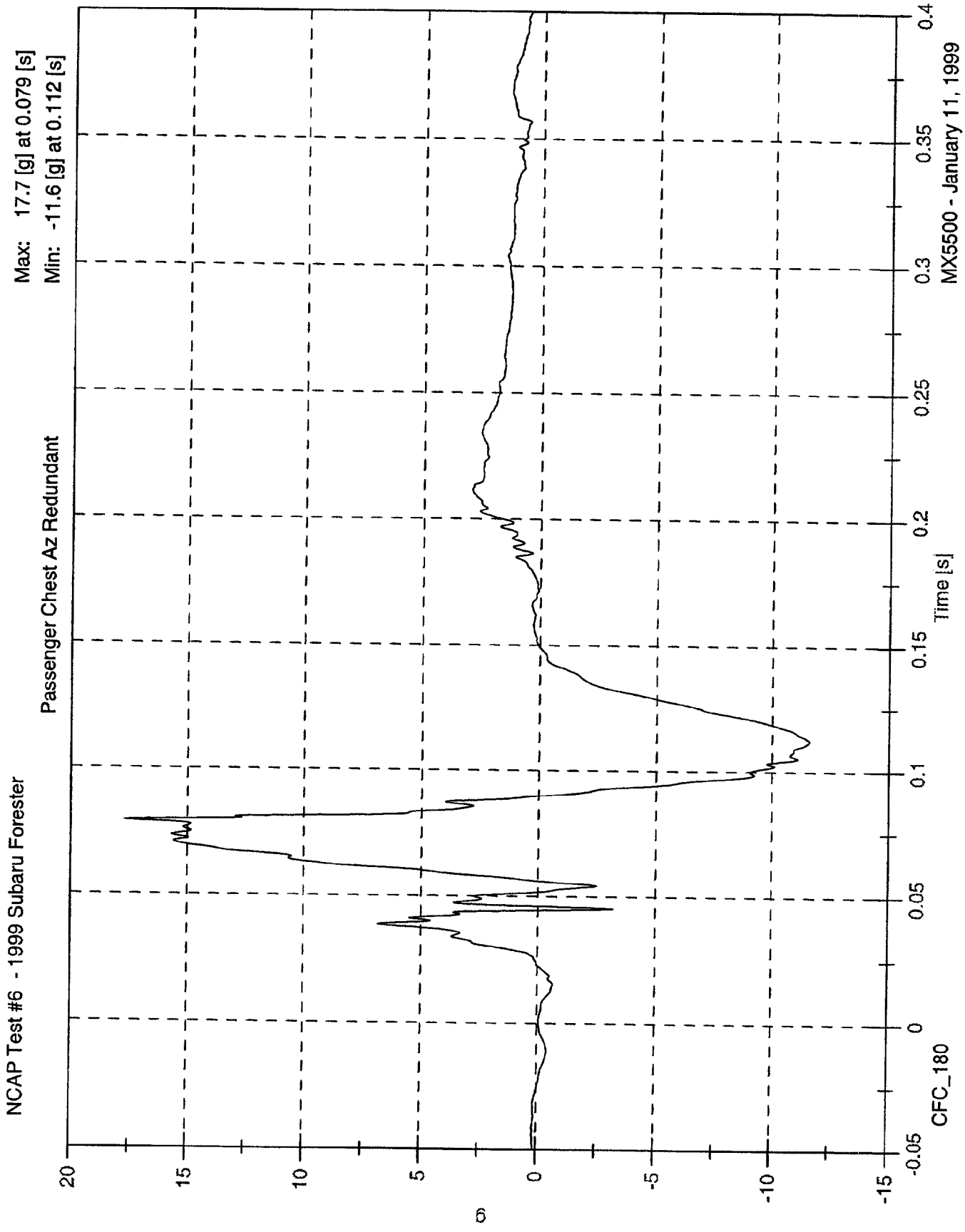

NCAP Test #6 - 1999 Subaru Forester
Passenger Chest Ay
Max: 9.7 [g] at 0.051 [s]
Min: -7.7 [g] at 0.088 [s]
MX5500 - January 11, 1999
CFC_180
Time [s]
g
10
7.5
5
2.5
0
-2.5
-5
-7.5
-10
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4

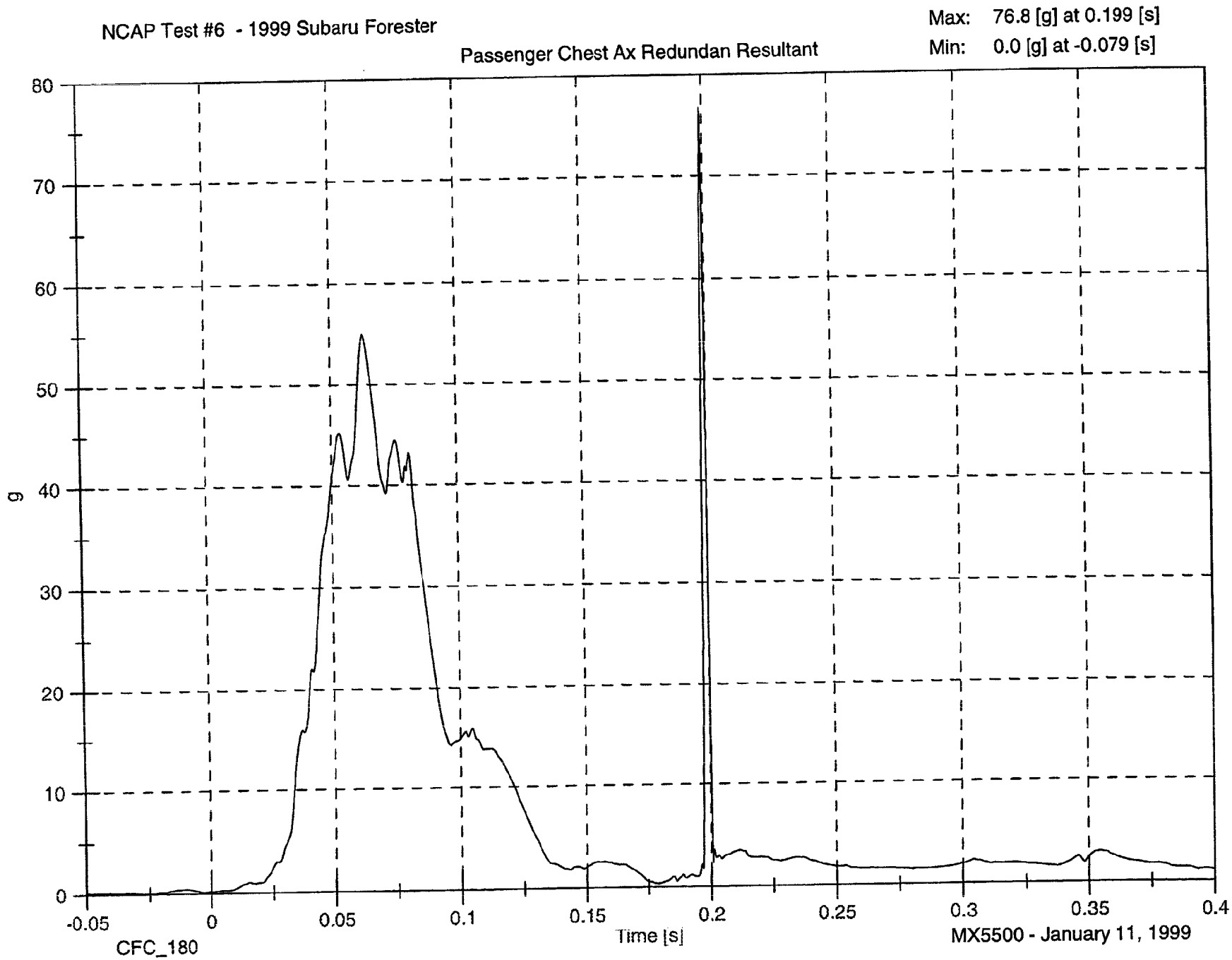

NCAP Test #6 - 1999 Subaru Forester
Max: 13.7 [g] at 0.079 [s]
Min: -9.4 [g] at 0.112 [s]
Passenger Chest Az
MX5500 - January 11, 1999
CFC_180
Time [s]
g
15
10
5
0
-5
-10
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4

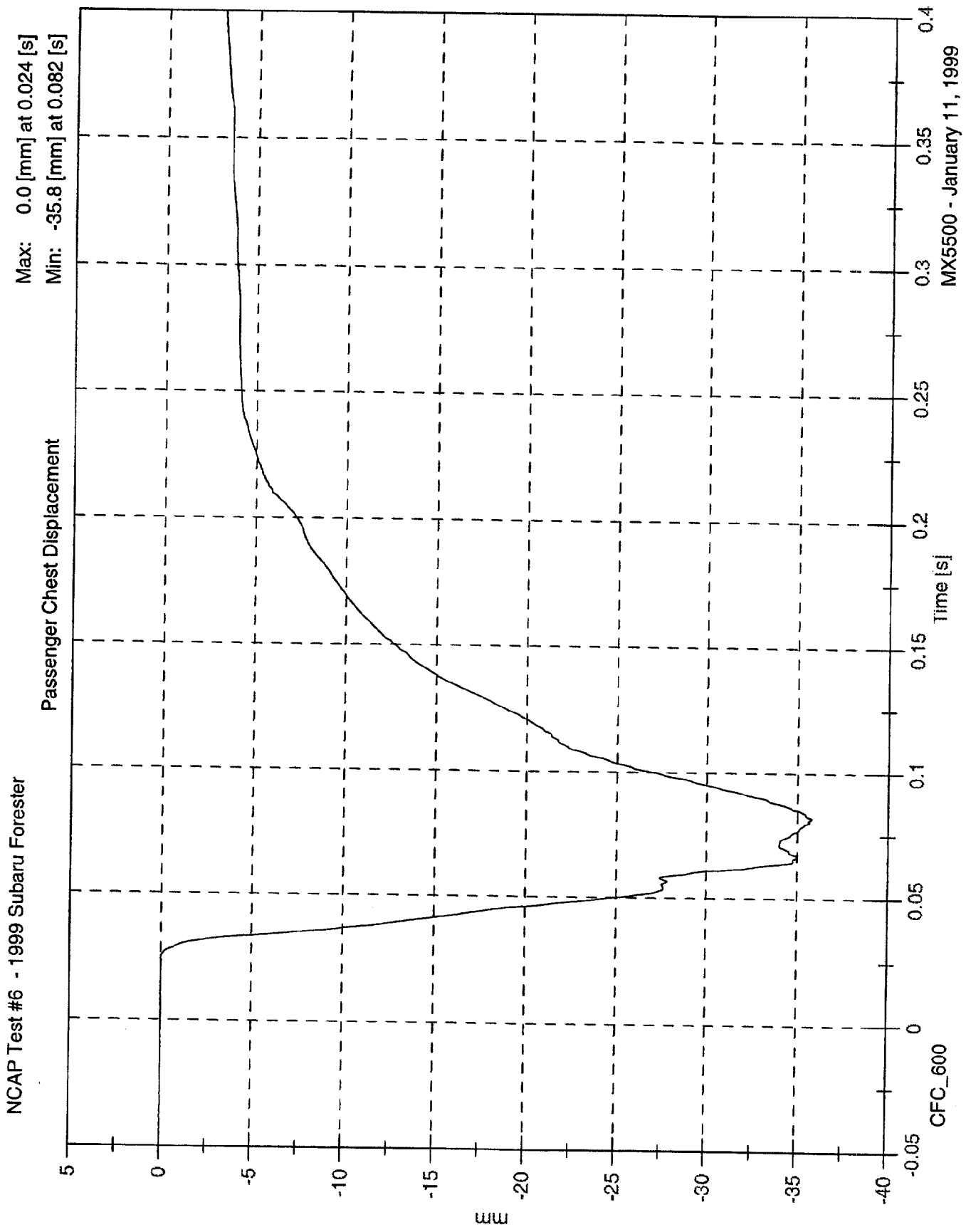

NCAP Test #6 - 1999 Subaru Forester
Passenger Chest A Resultant
Max: 48.7 [g] at 0.063 [s]
Min: 0.0 [g] at -0.076 [s]
50
40
30
20
10
0
g
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
Time [s]
CFC_180
MX5500 - January 11, 1999

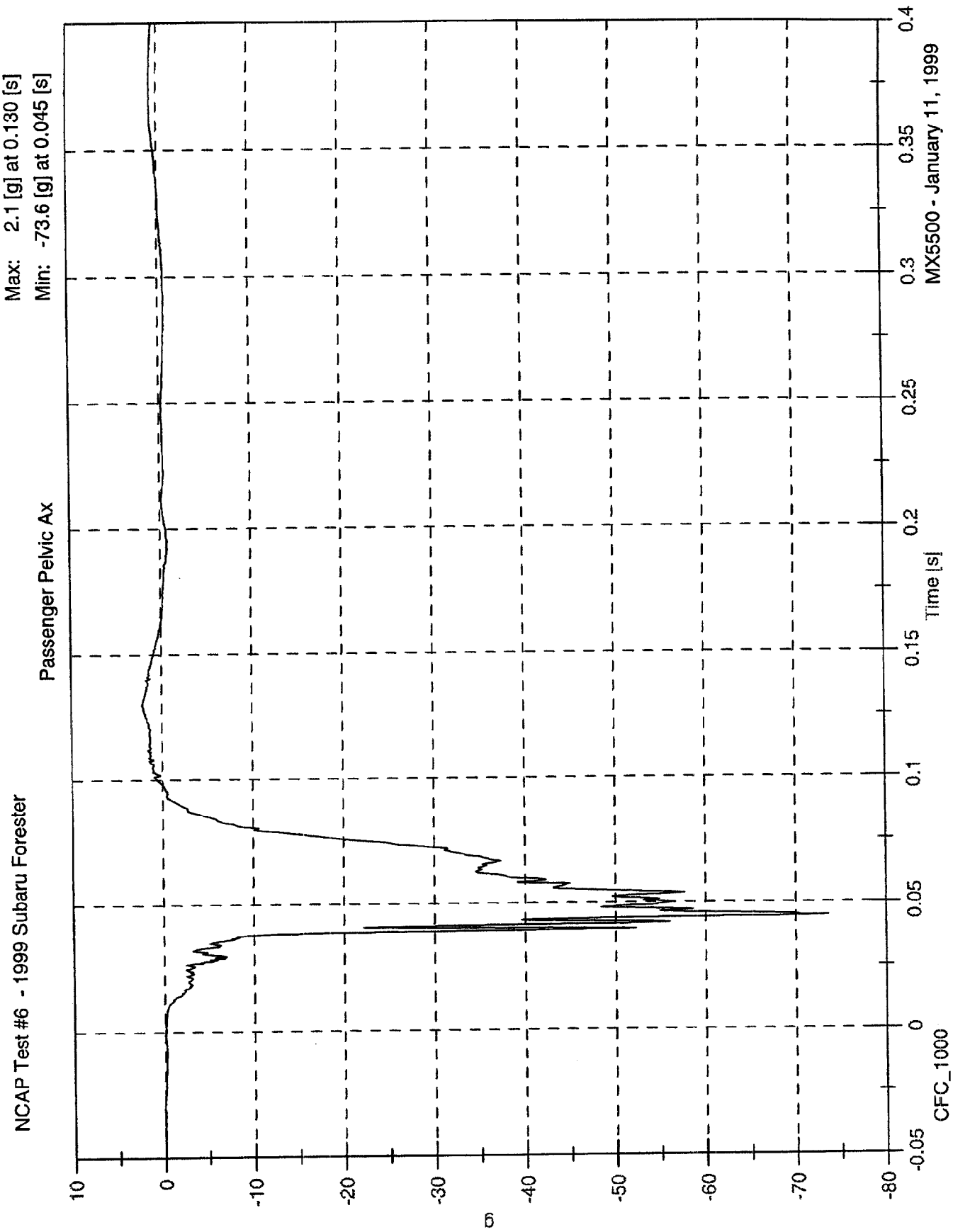

NCAP Test #6 - 1999 Subaru Forester
Passenger Chest Ax Redundant
Max: 2.9 [g] at 0.354 [s]
Min: -53.9 [g] at 0.063 [s]
MX5500 - January 11, 1999
CFC_180
Time [s]
g
10
0
-10
-20
-30
-40
-50
-60
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4

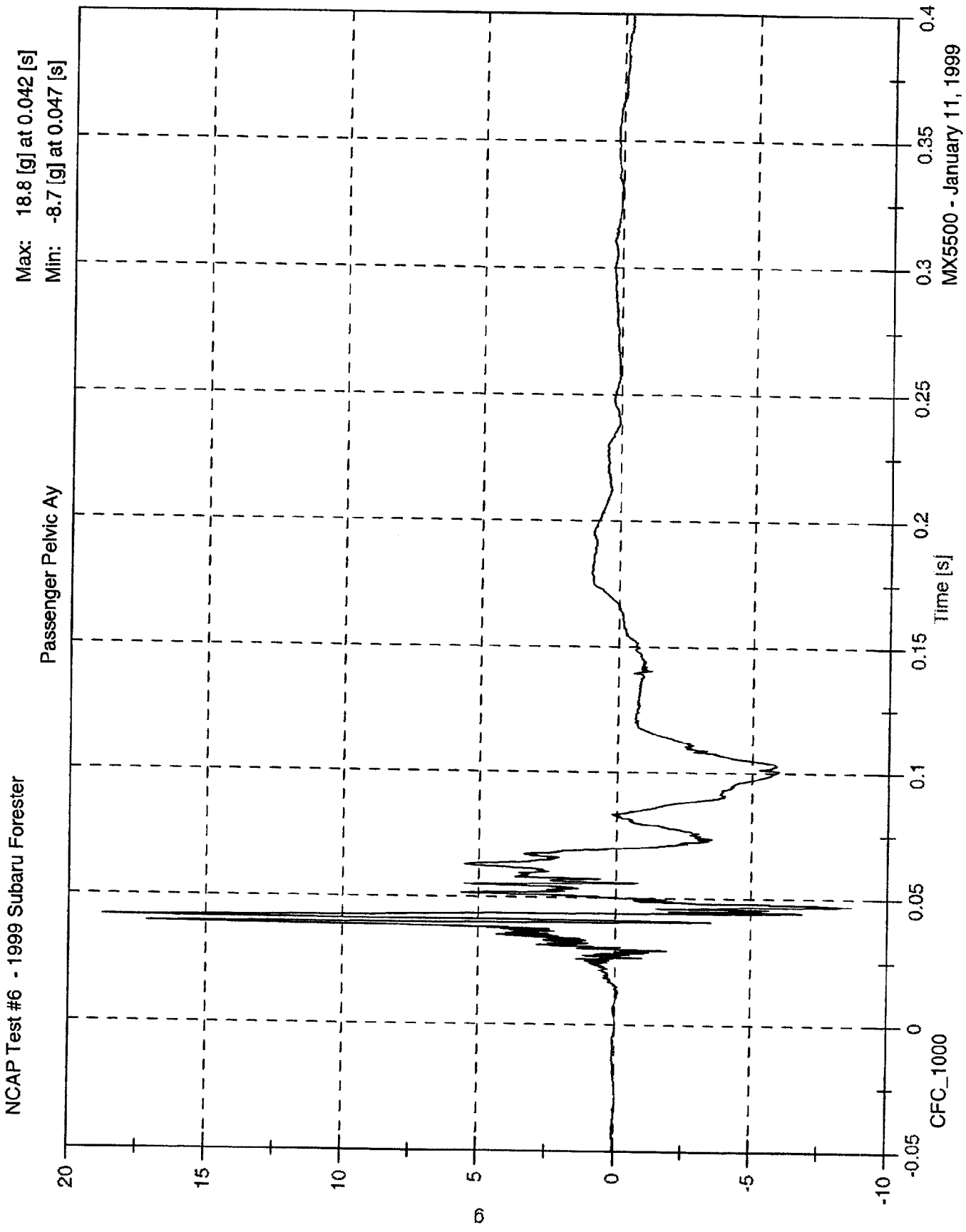

NCAP Test #6 - 1999 Subaru Forester
Passenger Chest Ay Redundant
Max: 10.5 [g] at 0.051 [s]
Min: -76.8 [g] at 0.199 [s]
Data spike at 199 ms.
MX5500 - January 11, 1999
CFC_180
Time [s]
g
20
0
-20
-40
-60
-80
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4

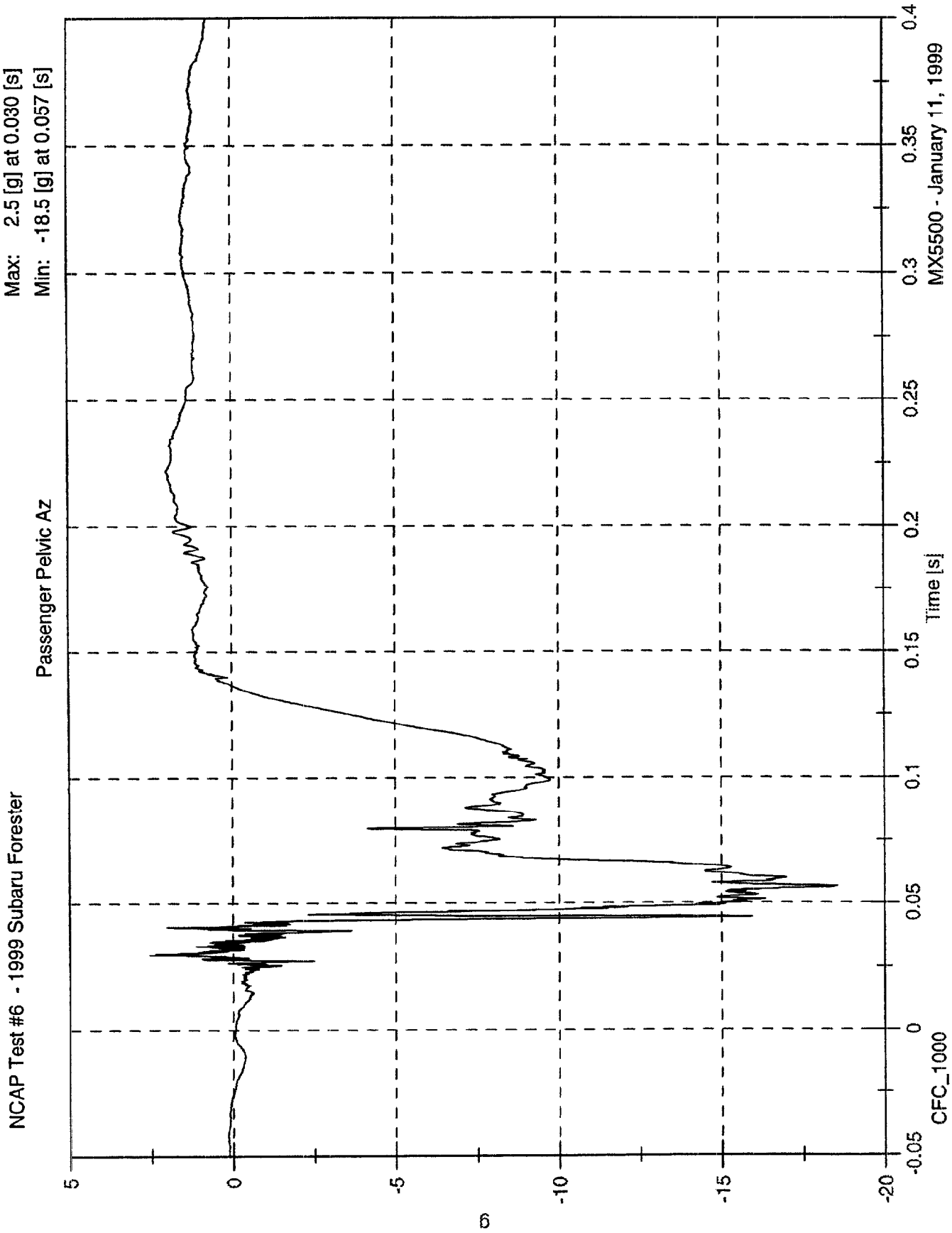

NCAP Test #6 - 1999 Subaru Forester
Passenger Chest Az Redundant
Max: 17.7 [g] at 0.079 [s]
Min: -11.6 [g] at 0.112 [s]
MX5500 - January 11, 1999
CFC_180
Time [s]
g
20
15
10
5
0
-5
-10
-15
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4

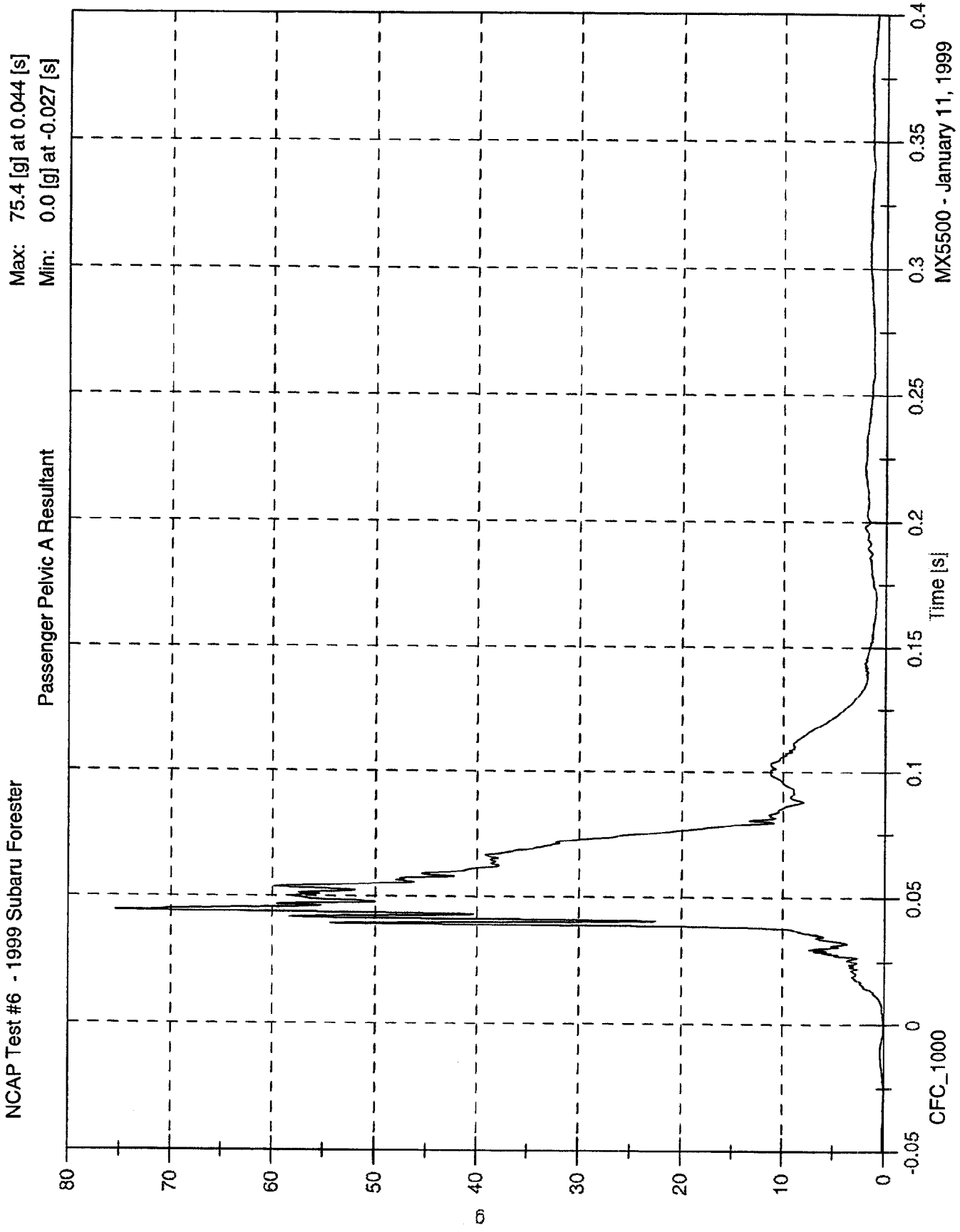

NCAP Test #6 - 1999 Subaru Forester
Passenger Chest Ax Redundan Resultant
Max: 76.8 [g] at 0.199 [s]
Min: 0.0 [g] at -0.079 [s]
g
80
70
60
50
40
30
20
10
0
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
Time [s]
CFC_180
MX5500 - January 11, 1999

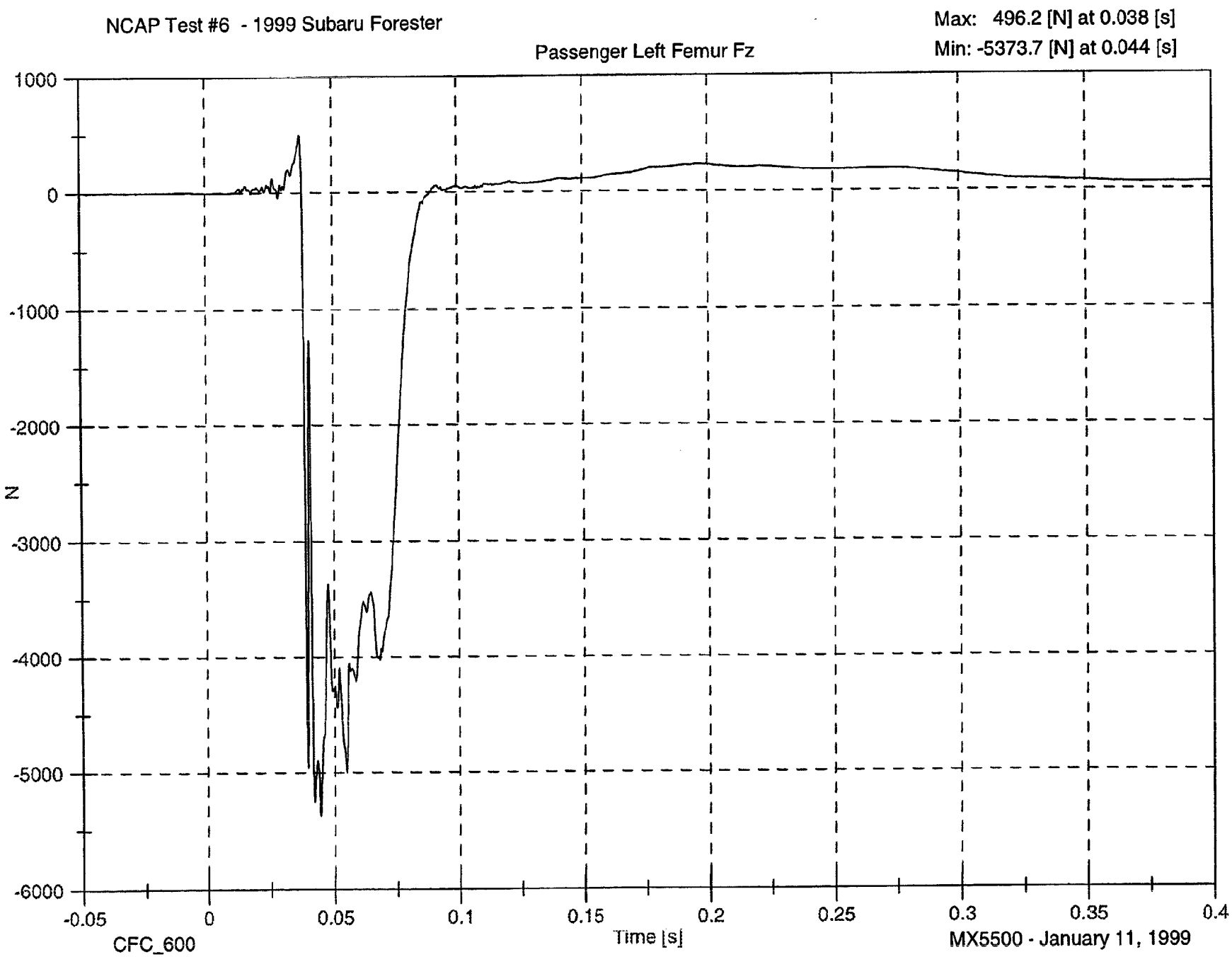

NCAP Test #6 - 1999 Subaru Forester
Passenger Chest Displacement
Max: 0.0 [mm] at 0.024 [s]
Min: -35.8 [mm] at 0.082 [s]
mm
5
0
-5
-10
-15
-20
-25
-30
-35
-40
Time [s]
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
CFC_600
MX5500 - January 11, 1999

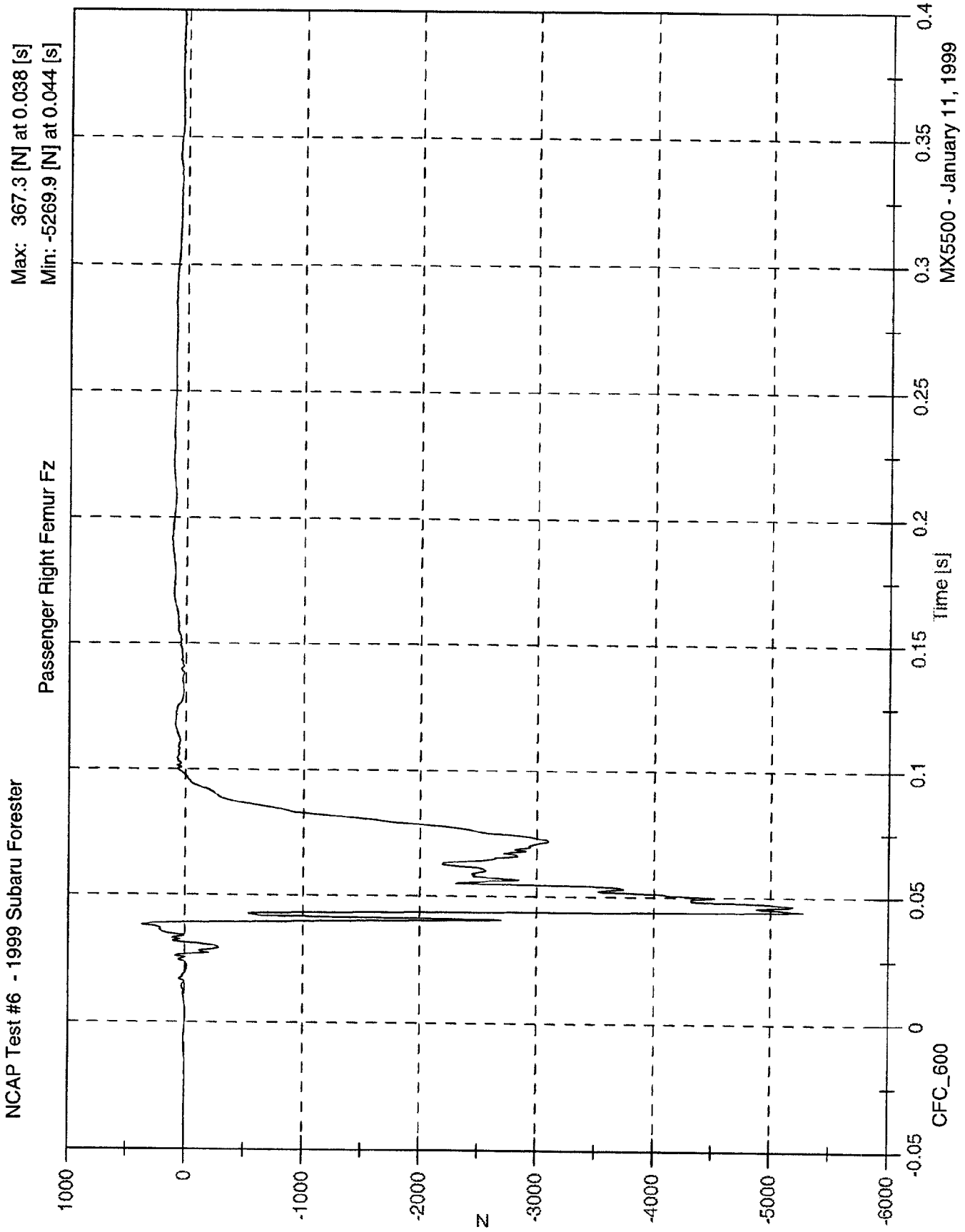

NCAP Test #6 - 1999 Subaru Forester
Passenger Pelvic Ax
Max: 2.1 [g] at 0.130 [s]
Min: -73.6 [g] at 0.045 [s]
MX5500 - January 11, 1999
CFC_1000
Time [s]
g
10
0
-10
-20
-30
-40
-50
-60
-70
-80
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4

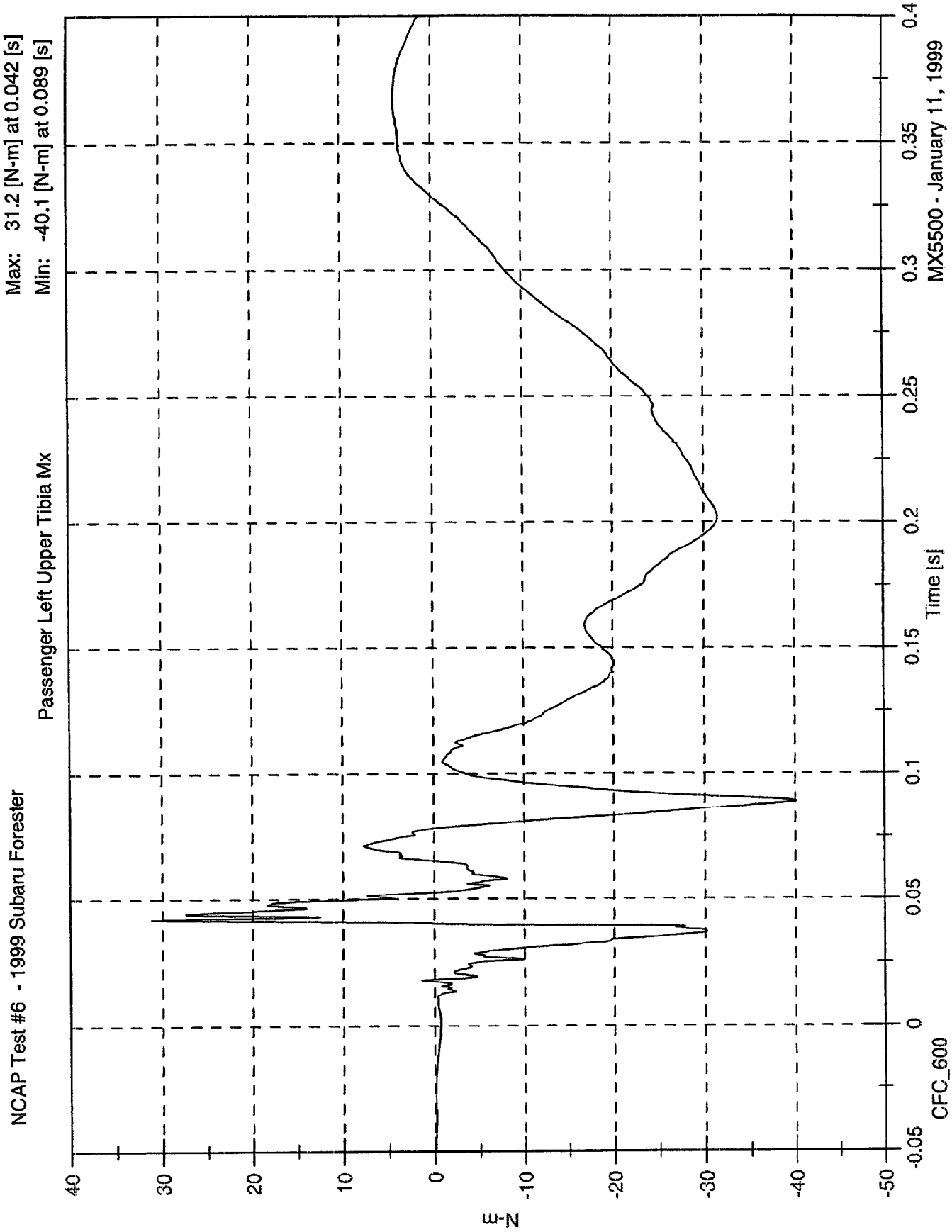

NCAP Test #6 - 1999 Subaru Forester
Passenger Pelvic Ay
Max: 18.8 [g] at 0.042 [s]
Min: -8.7 [g] at 0.047 [s]
MX5500 - January 11, 1999
CFC_1000
Time [s]
g
20
15
10
5
0
-5
-10
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4

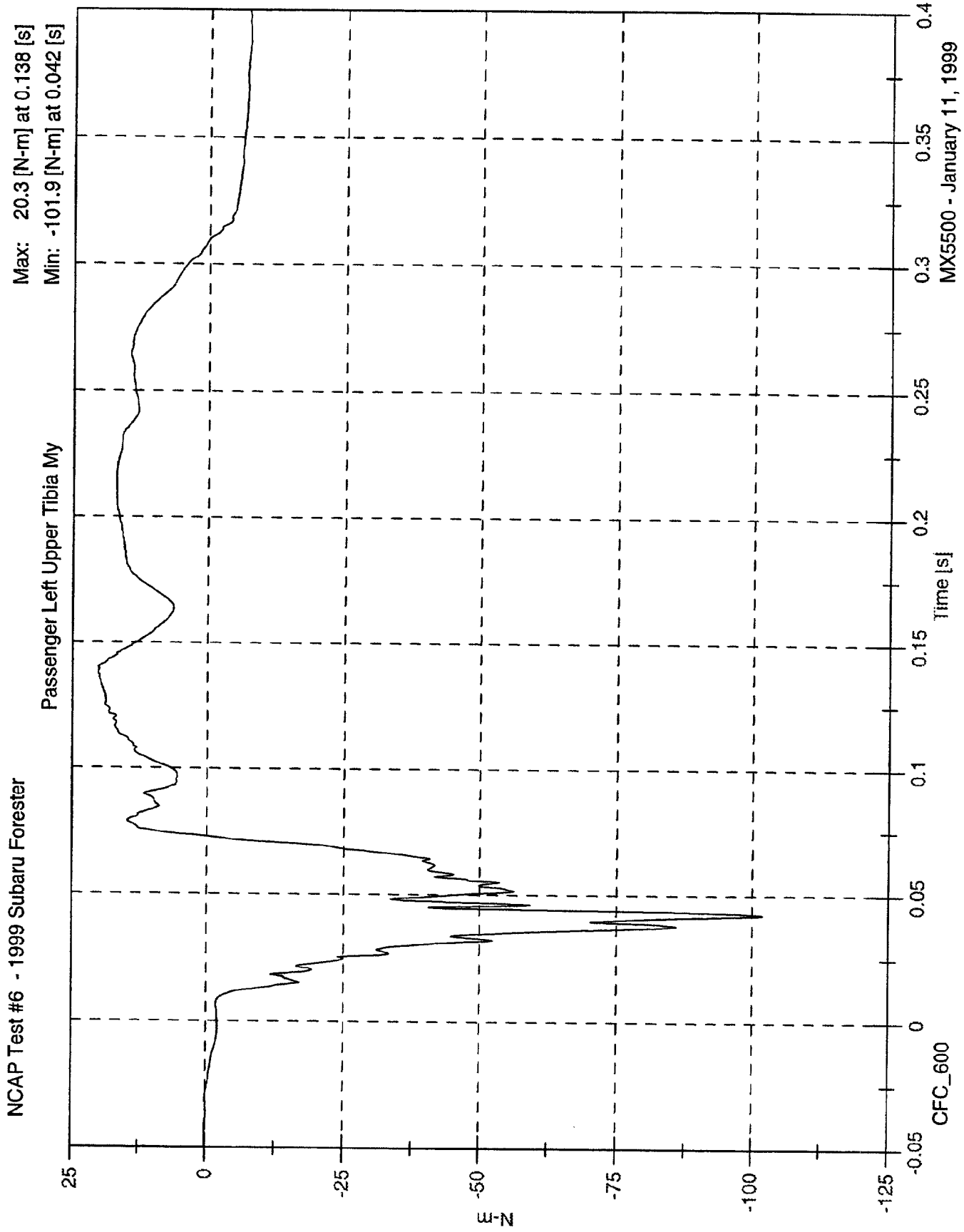

NCAP Test #6 - 1999 Subaru Forester
Max: 2.5 [g] at 0.030 [s]
Min: -18.5 [g] at 0.057 [s]
Passenger Pelvic Az
MX5500 - January 11, 1999
CFC_1000
Time [s]
g
5
0
-5
-10
-15
-20
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4

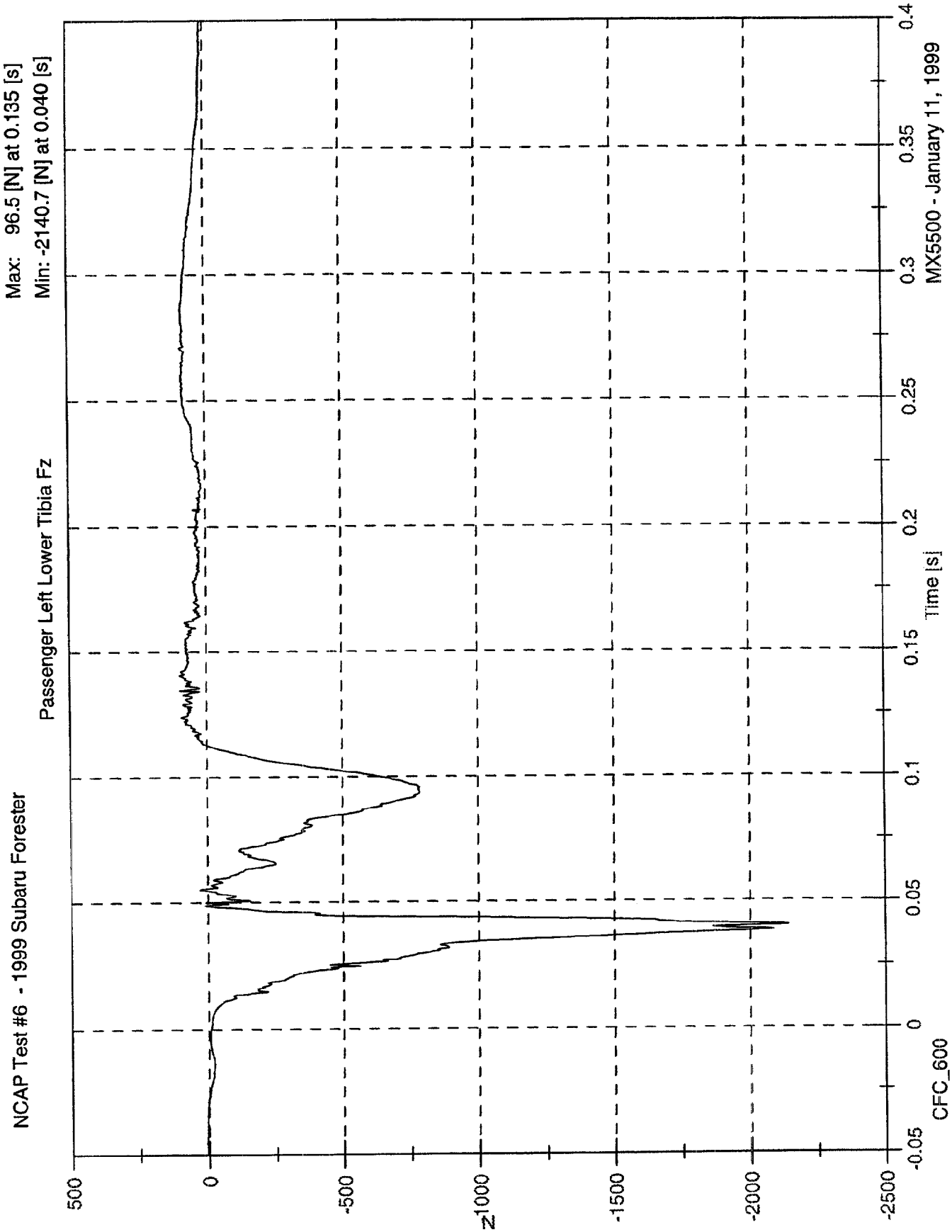

NCAP Test #6 - 1999 Subaru Forester
Passenger Pelvic A Resultant
Max: 75.4 [g] at 0.044 [s]
Min: 0.0 [g] at -0.027 [s]
MX5500 - January 11, 1999
CFC_1000
Time [s]
g
80
70
60
50
40
30
20
10
0
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4

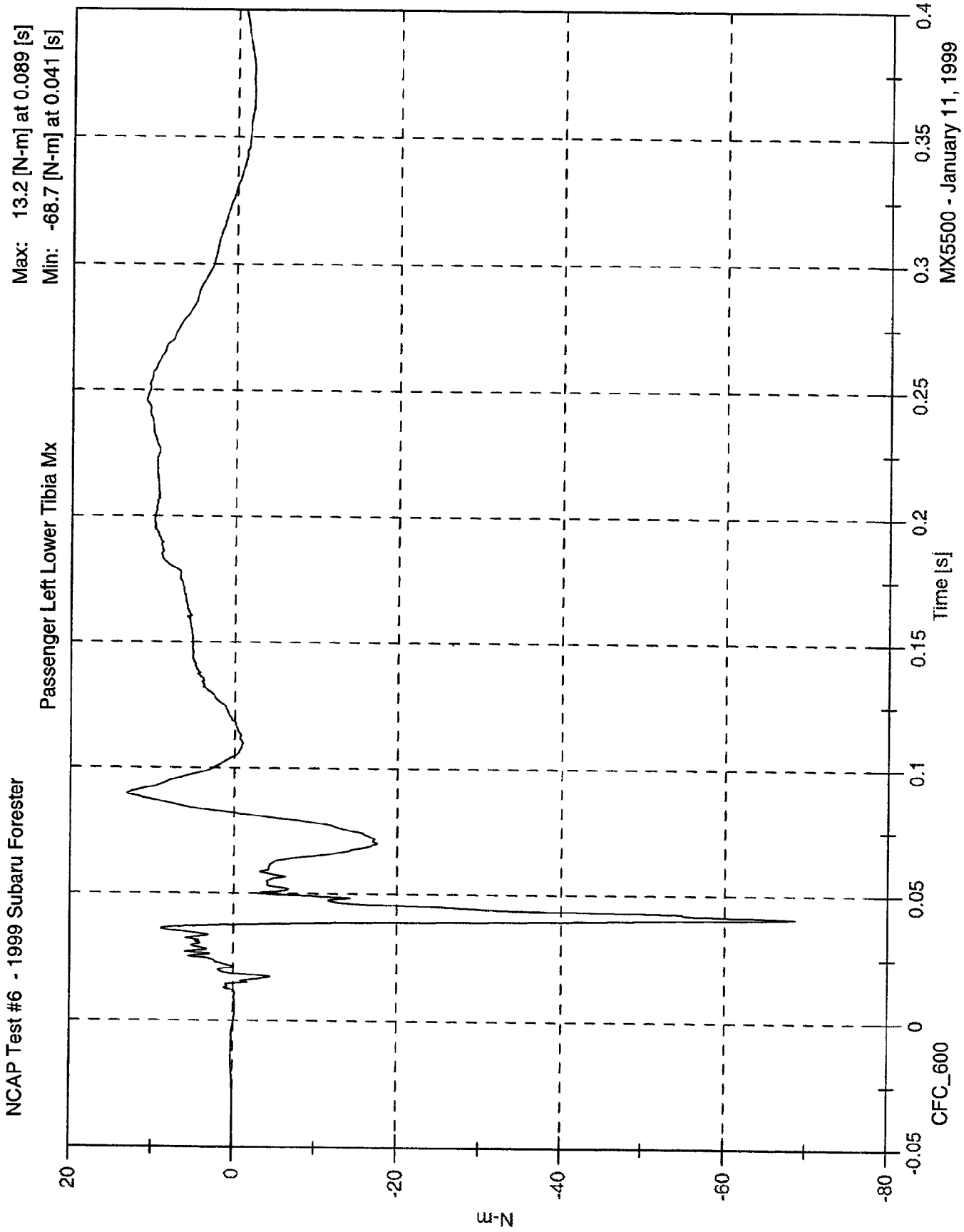

NCAP Test #6 - 1999 Subaru Forester
Passenger Left Femur Fz
Max: 496.2 [N] at 0.038 [s]
Min: -5373.7 [N] at 0.044 [s]
1000
0
-1000
-2000
-3000
-4000
-5000
-6000
N
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
Time [s]
CFC_600
MX5500 - January 11, 1999

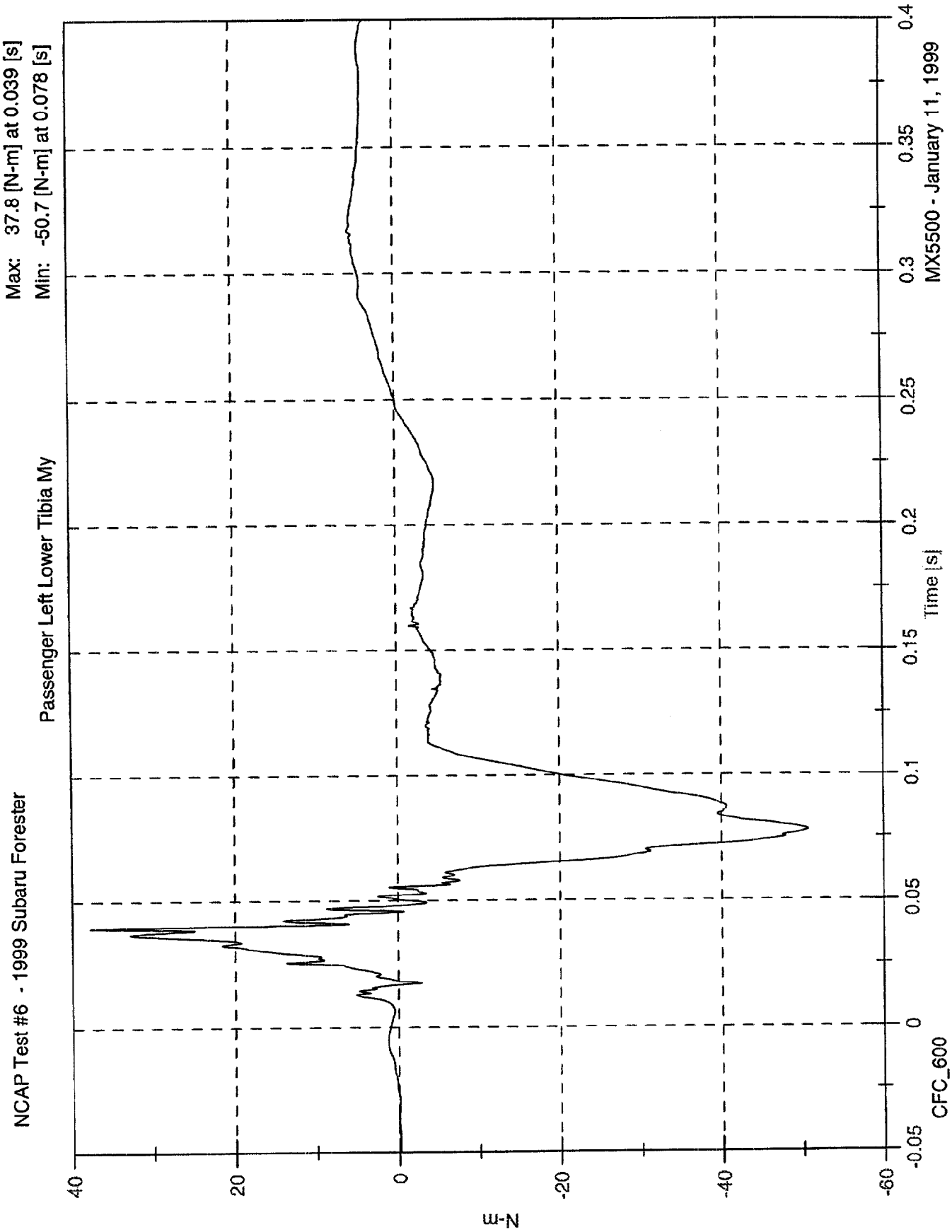

NCAP Test #6 - 1999 Subaru Forester
Max: 367.3 [N] at 0.038 [s]
Min: -5269.9 [N] at 0.044 [s]
Passenger Right Femur Fz
MX5500 - January 11, 1999
CFC_600
N
Time [s]
1000
0
-1000
-2000
-3000
-4000
-5000
-6000
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4

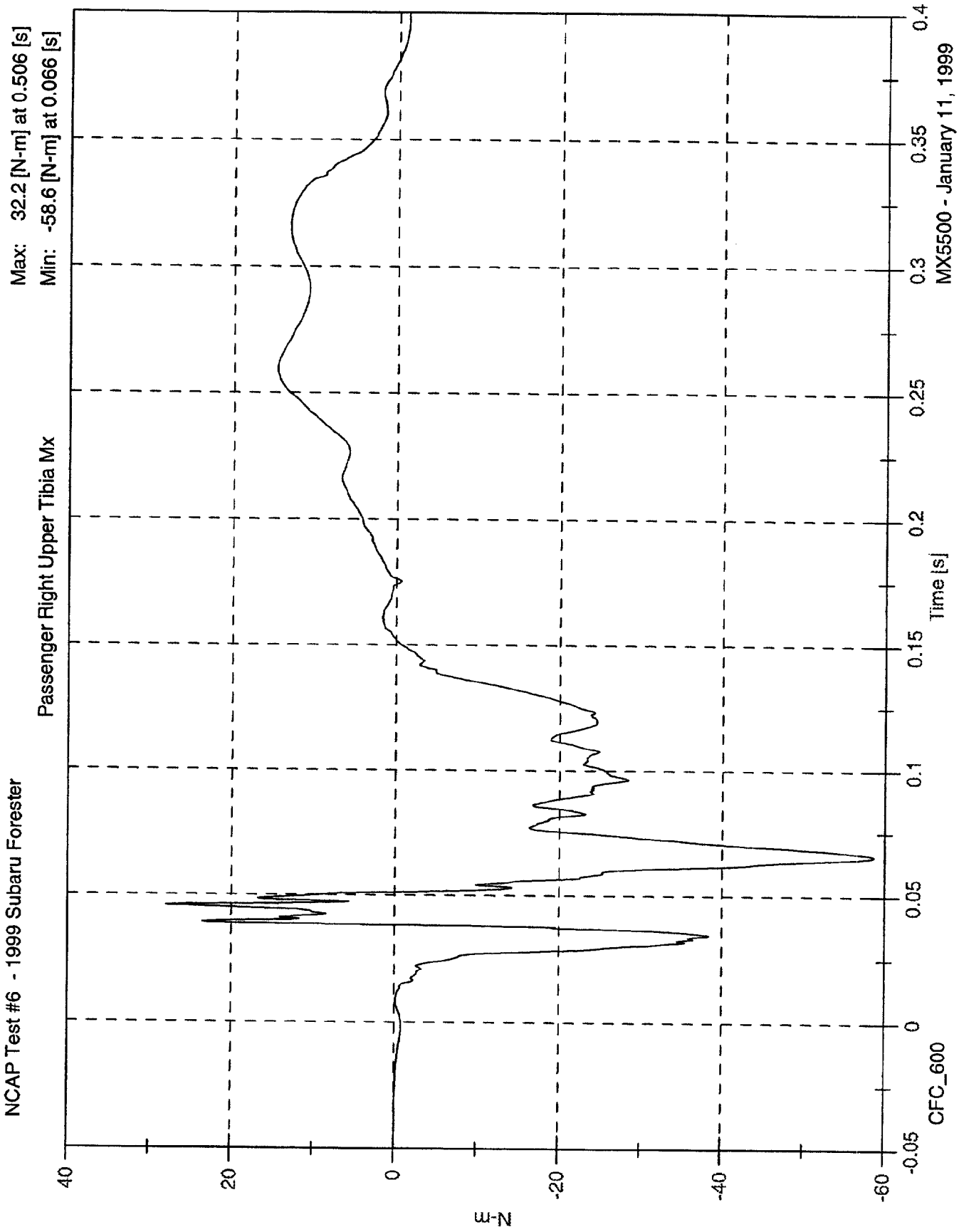

NCAP Test #6 - 1999 Subaru Forester
Passenger Left Upper Tibia Mx
Max: 31.2 [N-m] at 0.042 [s]
Min: -40.1 [N-m] at 0.089 [s]
MX5500 - January 11, 1999
CFC_600
N-m
Time [s]
40
30
20
10
0
-10
-20
-30
-40
-50
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4

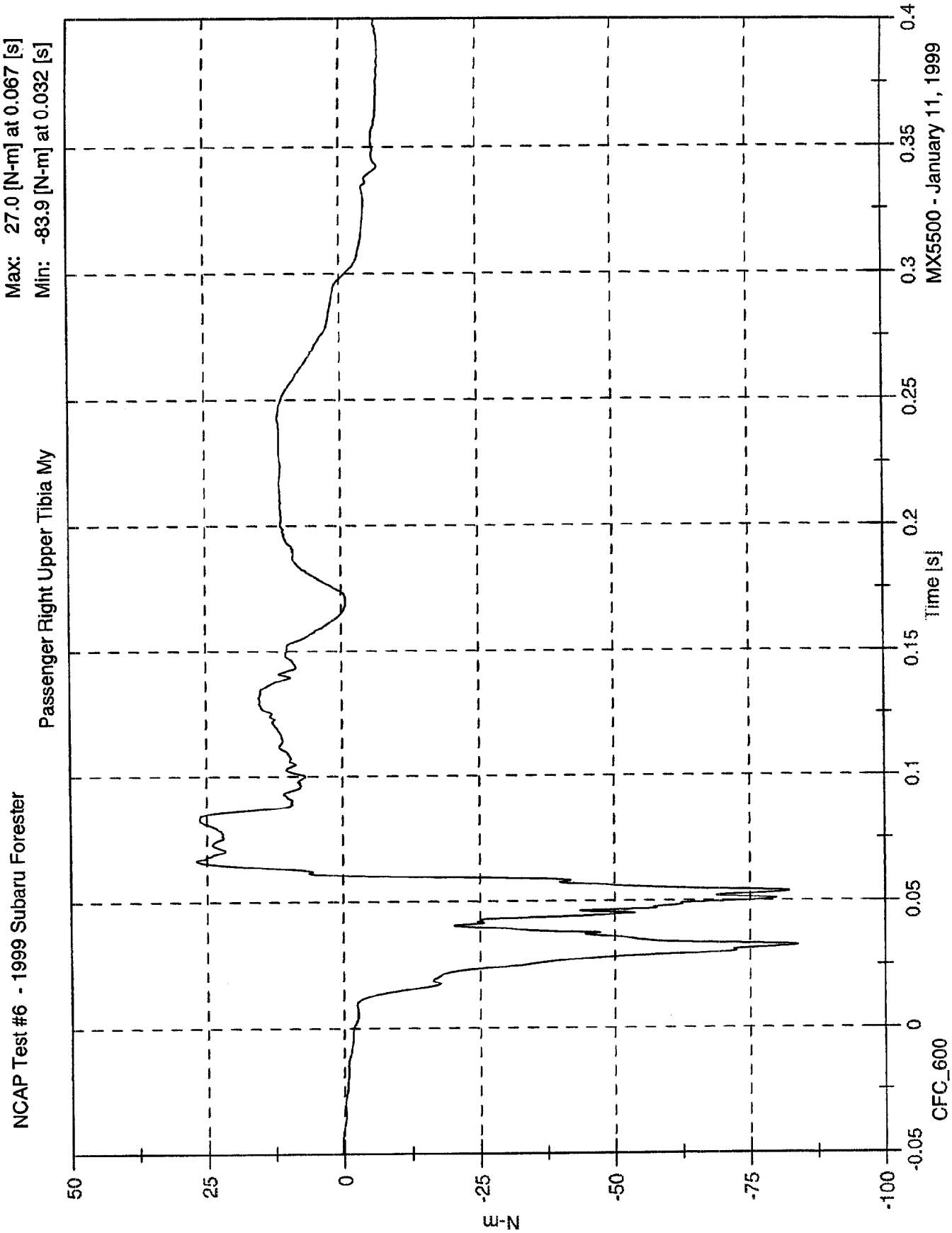

NCAP Test #6 - 1999 Subaru Forester
Max: 20.3 [N-m] at 0.138 [s]
Min: -101.9 [N-m] at 0.042 [s]
Passenger Left Upper Tibia My
N-m
25
0
-25
-50
-75
-100
-125
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
Time [s]
CFC_600
MX5500 - January 11, 1999

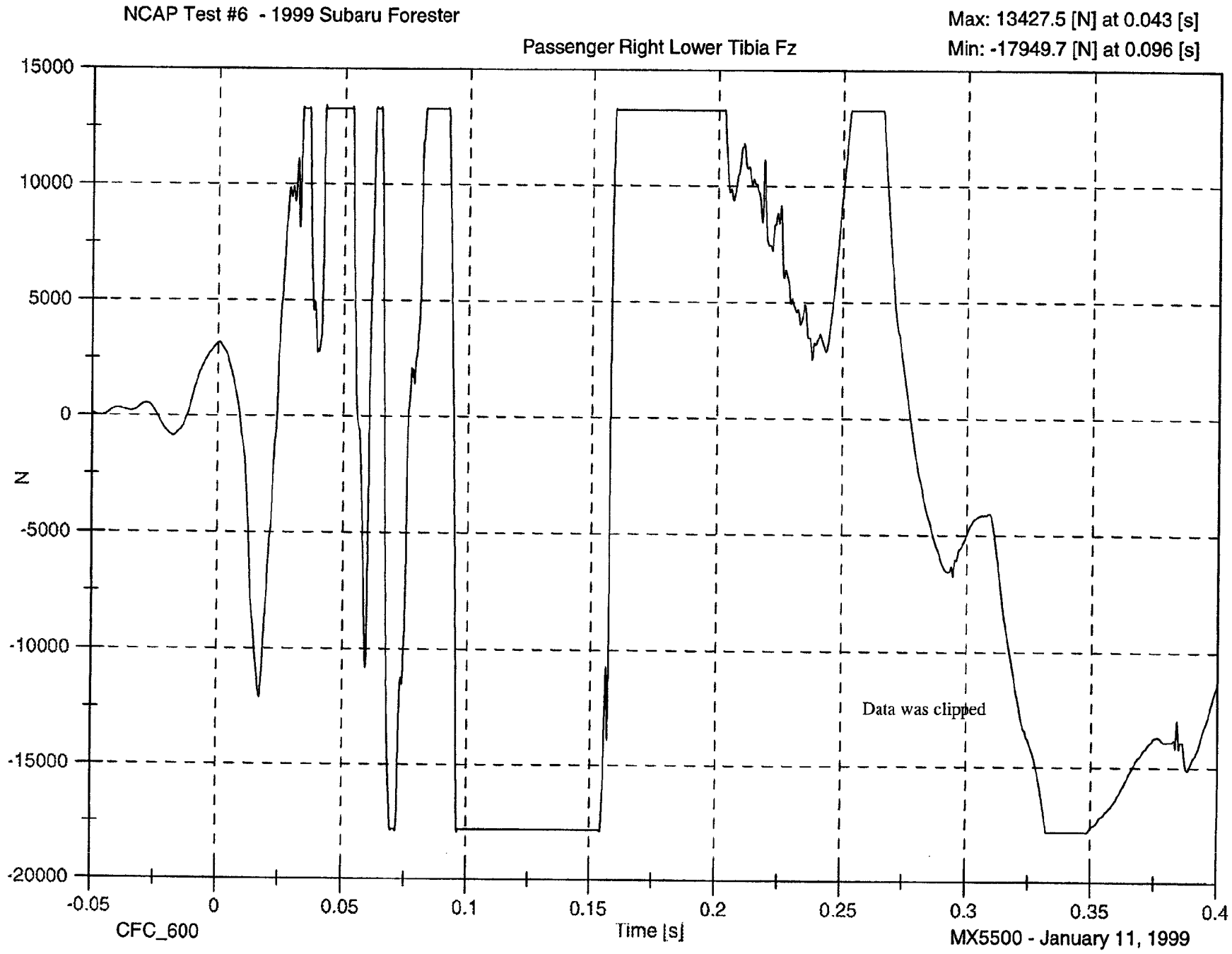

NCAP Test #6 - 1999 Subaru Forester
Passenger Left Lower Tibia Fz
Max: 96.5 [N] at 0.135 [s]
Min: -2140.7 [N] at 0.040 [s]
MX5500 - January 11, 1999
CFC_600
Time [s]
Fz [N]
500
0
-500
-1000
-1500
-2000
-2500
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4

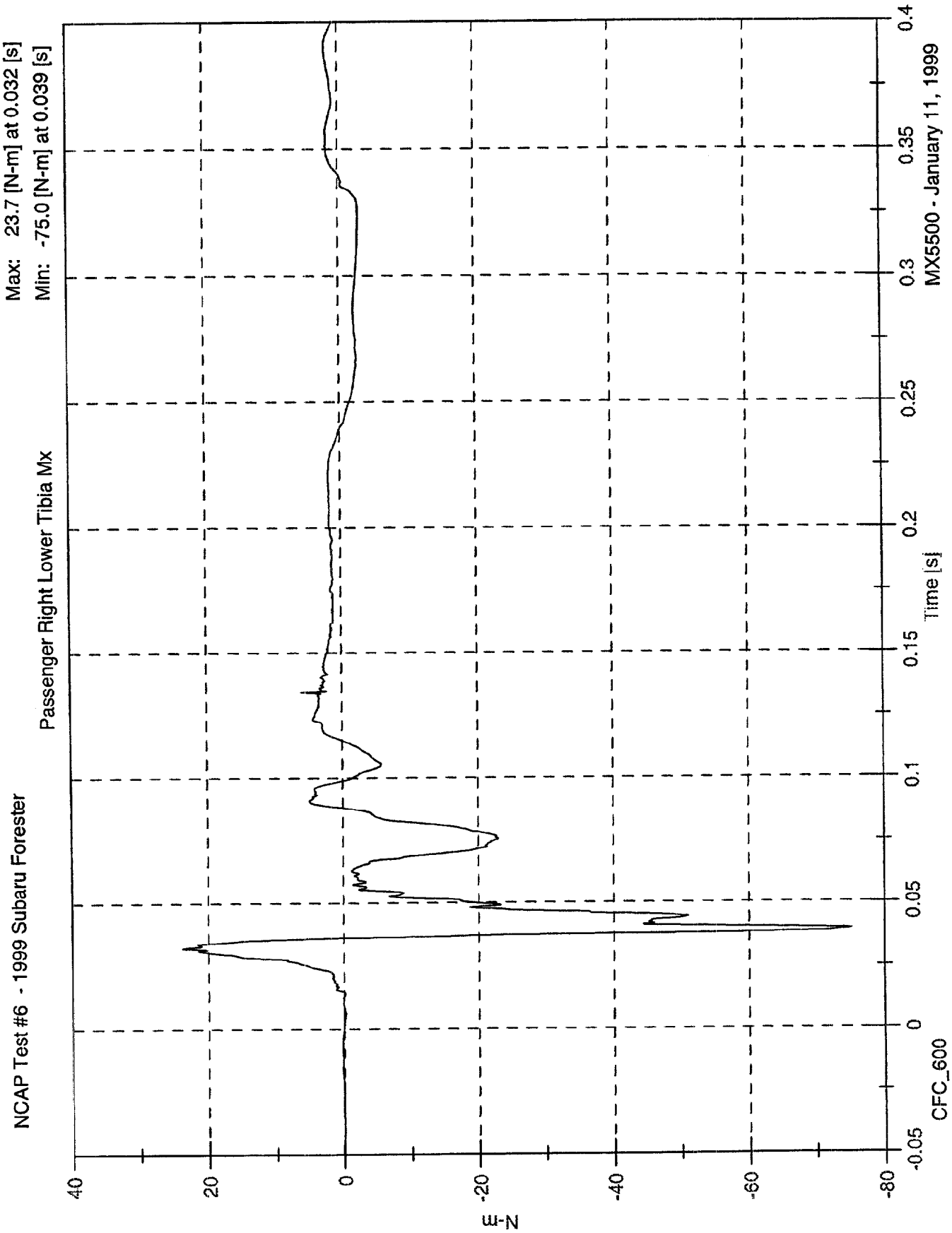

NCAP Test #6 - 1999 Subaru Forester
Max: 13.2 [N-m] at 0.089 [s]
Min: -68.7 [N-m] at 0.041 [s]
Passenger Left Lower Tibia Mx
MX5500 - January 11, 1999
CFC_600
N-m
Time [s]
20
0
-20
-40
-60
-80
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4

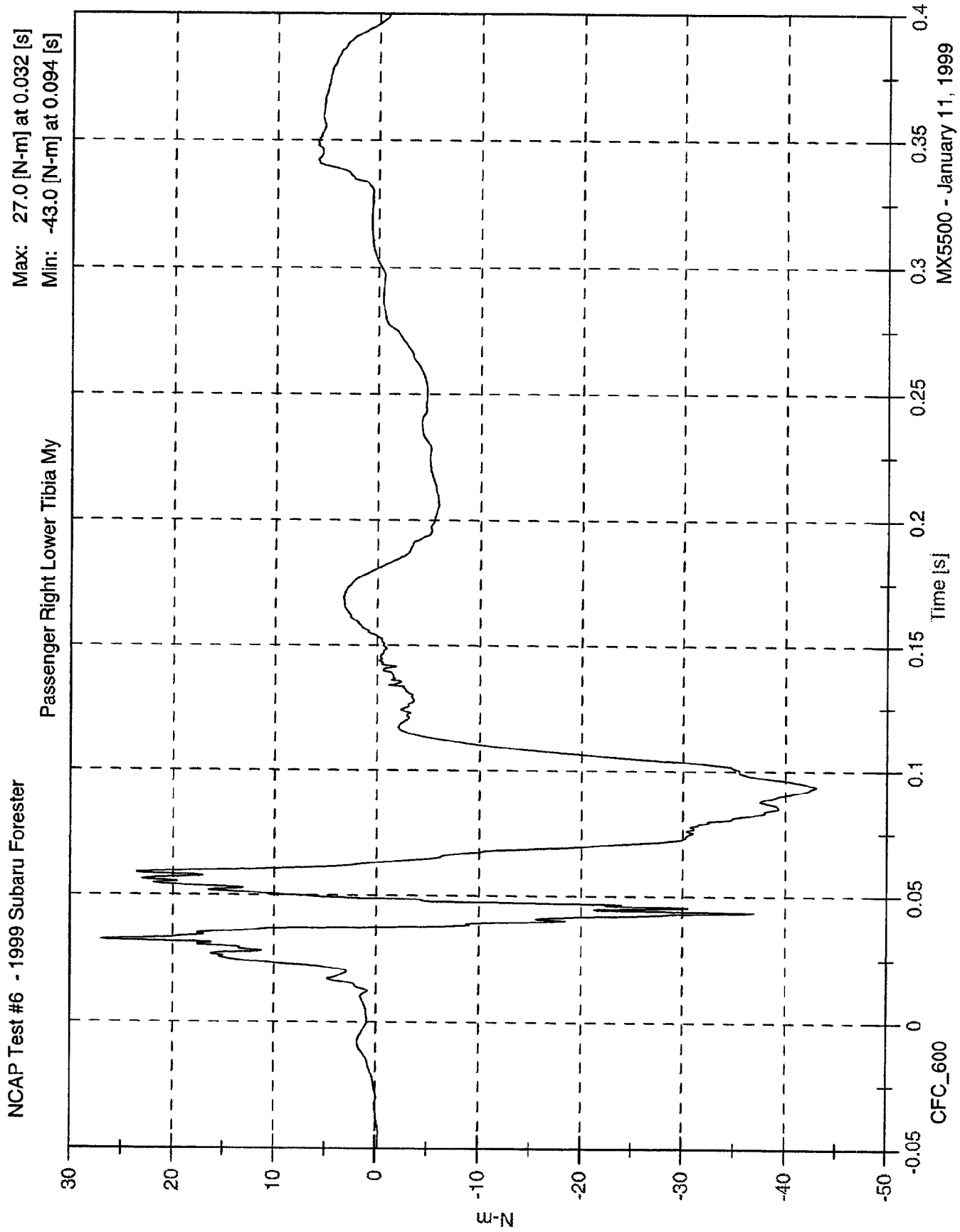

NCAP Test #6 - 1999 Subaru Forester
Passenger Left Lower Tibia My
Max: 37.8 [N-m] at 0.039 [s]
Min: -50.7 [N-m] at 0.078 [s]
MX5500 - January 11, 1999
CFC_600
N-m
Time [s]
40
20
0
-20
-40
-60
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4

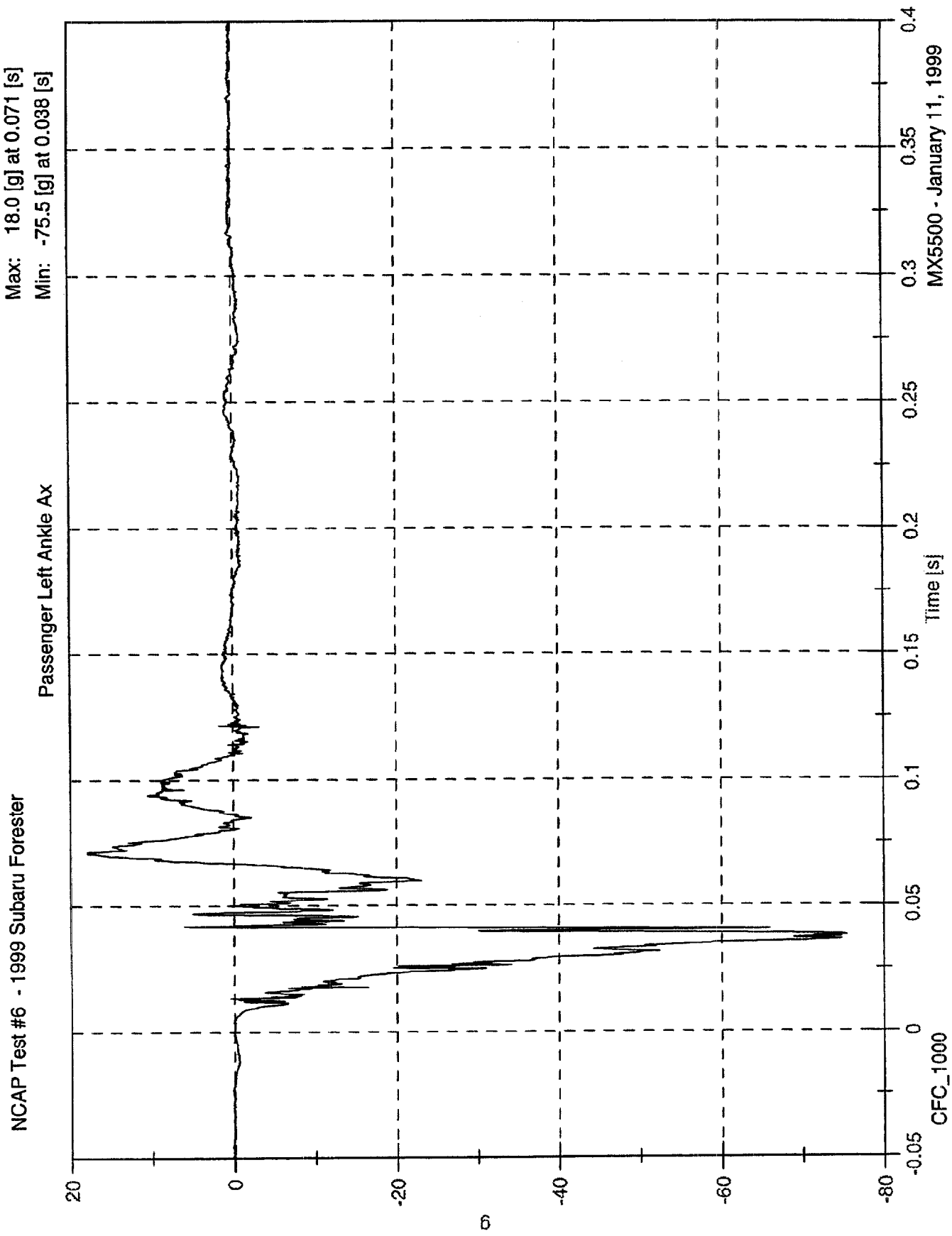

NCAP Test #6 - 1999 Subaru Forester
Max: 32.2 [N-m] at 0.506 [s]
Min: -58.6 [N-m] at 0.066 [s]
Passenger Right Upper Tibia Mx
MX5500 - January 11, 1999
CFC_600
Time [s]
N-m
40
20
0
-20
-40
-60
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4

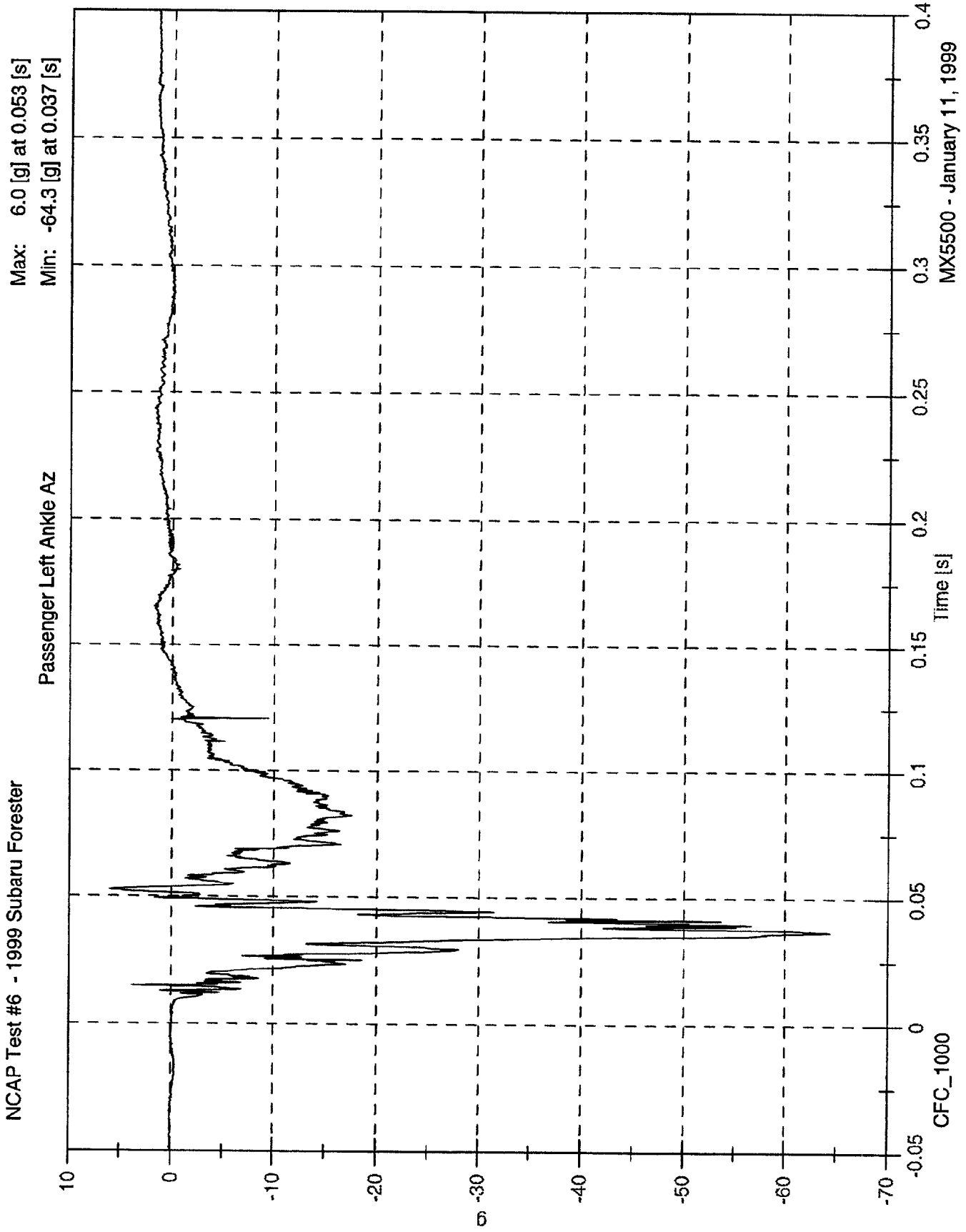

NCAP Test #6 - 1999 Subaru Forester
Max: 27.0 [N-m] at 0.067 [s]
Min: -83.9 [N-m] at 0.032 [s]
Passenger Right Upper Tibia My
MX5500 - January 11, 1999
CFC_600
N-m
Time [s]
50
25
0
-25
-50
-75
-100
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4

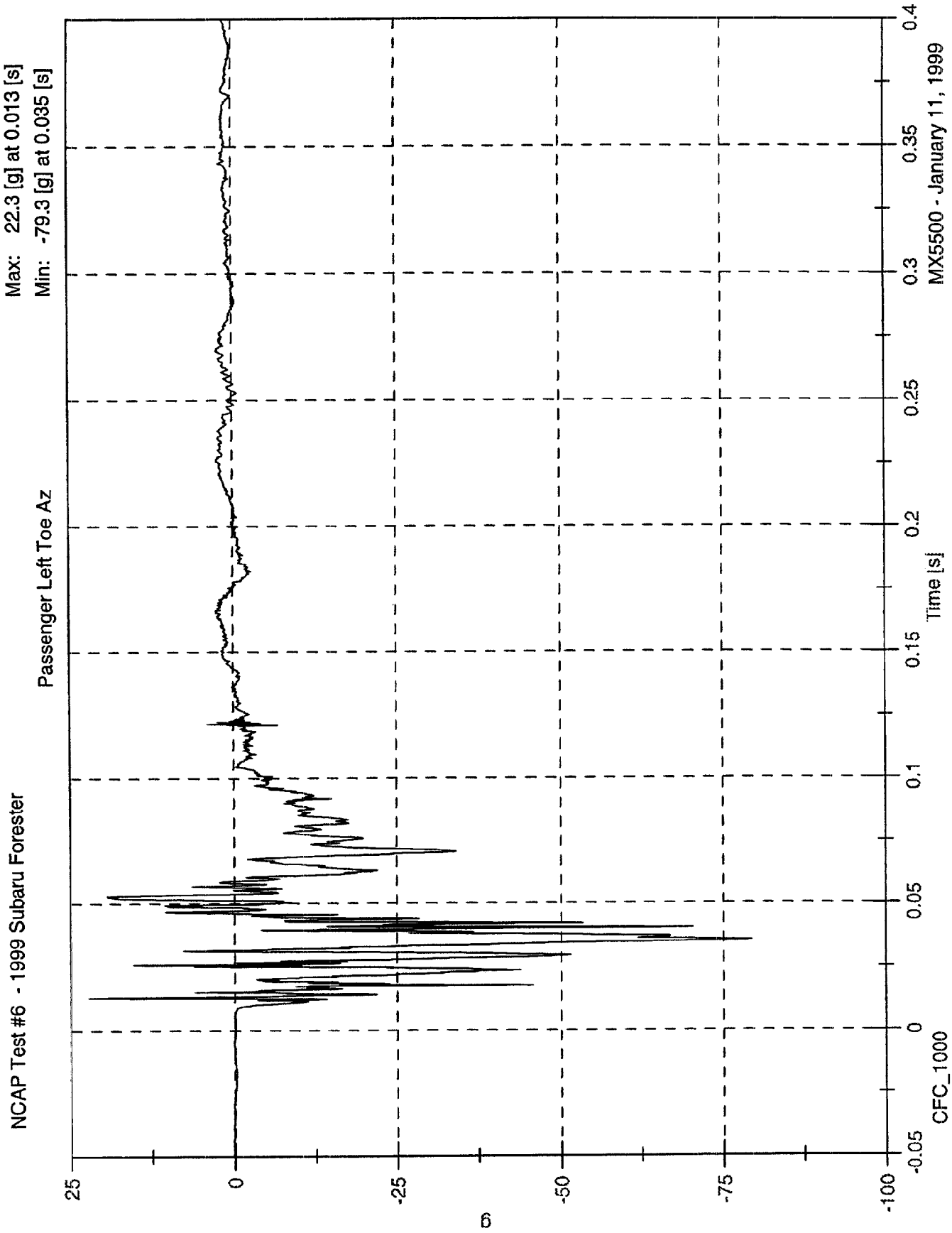

NCAP Test #6 - 1999 Subaru Forester
Passenger Right Lower Tibia Fz
Max: 13427.5 [N] at 0.043 [s]
Min: -17949.7 [N] at 0.096 [s]
15000
10000
5000
0
-5000
-10000
-15000
-20000
N
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
Time [s]
Data was clipped
CFC_600
MX5500 - January 11, 1999

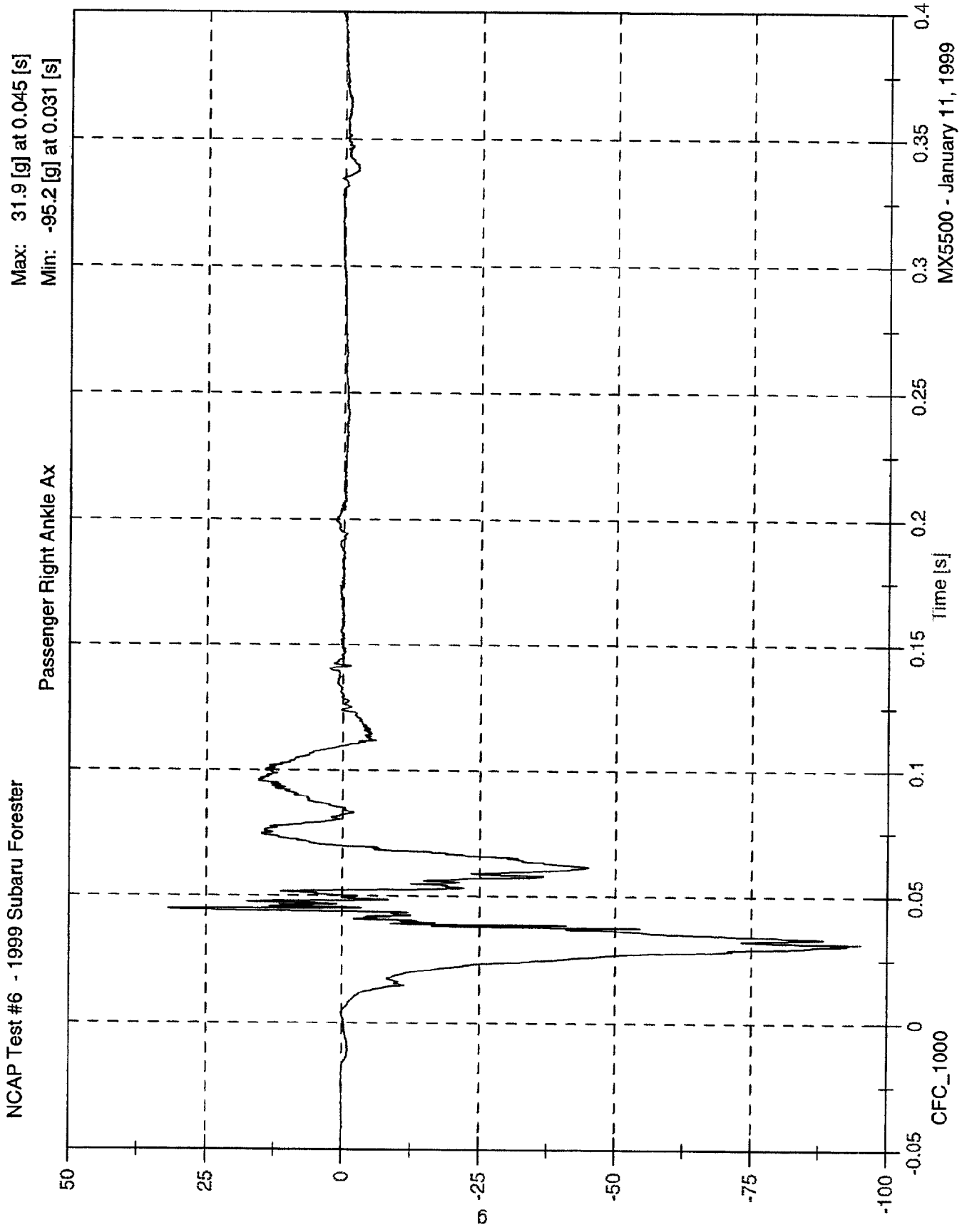

NCAP Test #6 - 1999 Subaru Forester
Passenger Right Lower Tibia Mx
Max: 23.7 [N-m] at 0.032 [s]
Min: -75.0 [N-m] at 0.039 [s]
MX5500 - January 11, 1999
CFC_600
N-m
Time [s]
40
20
0
-20
-40
-60
-80
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4

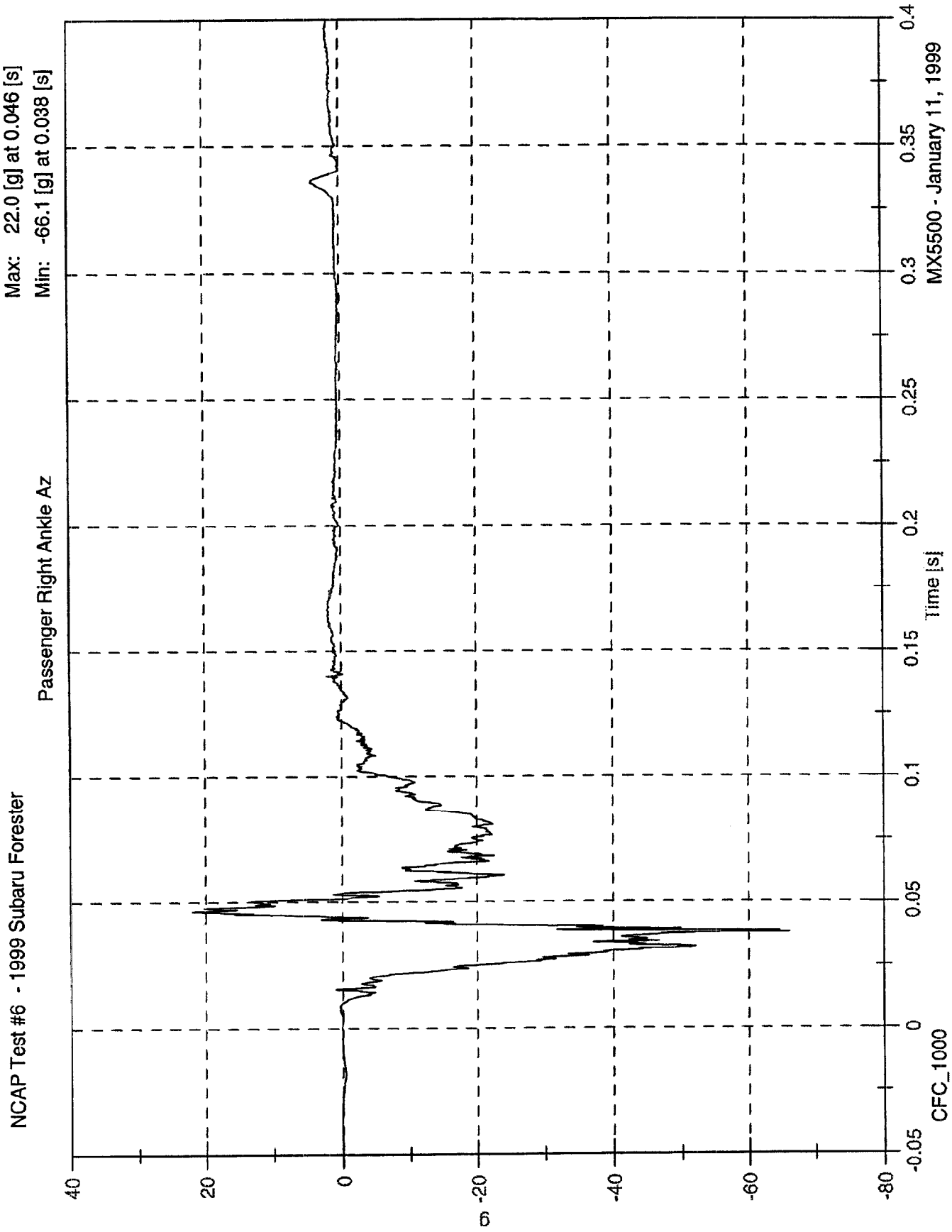

NCAP Test #6 - 1999 Subaru Forester
Max: 27.0 [N-m] at 0.032 [s]
Min: -43.0 [N-m] at 0.094 [s]
Passenger Right Lower Tibia My
MX5500 - January 11, 1999
CFC_600
N-m
Time [s]
30
20
10
0
-10
-20
-30
-40
-50
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4

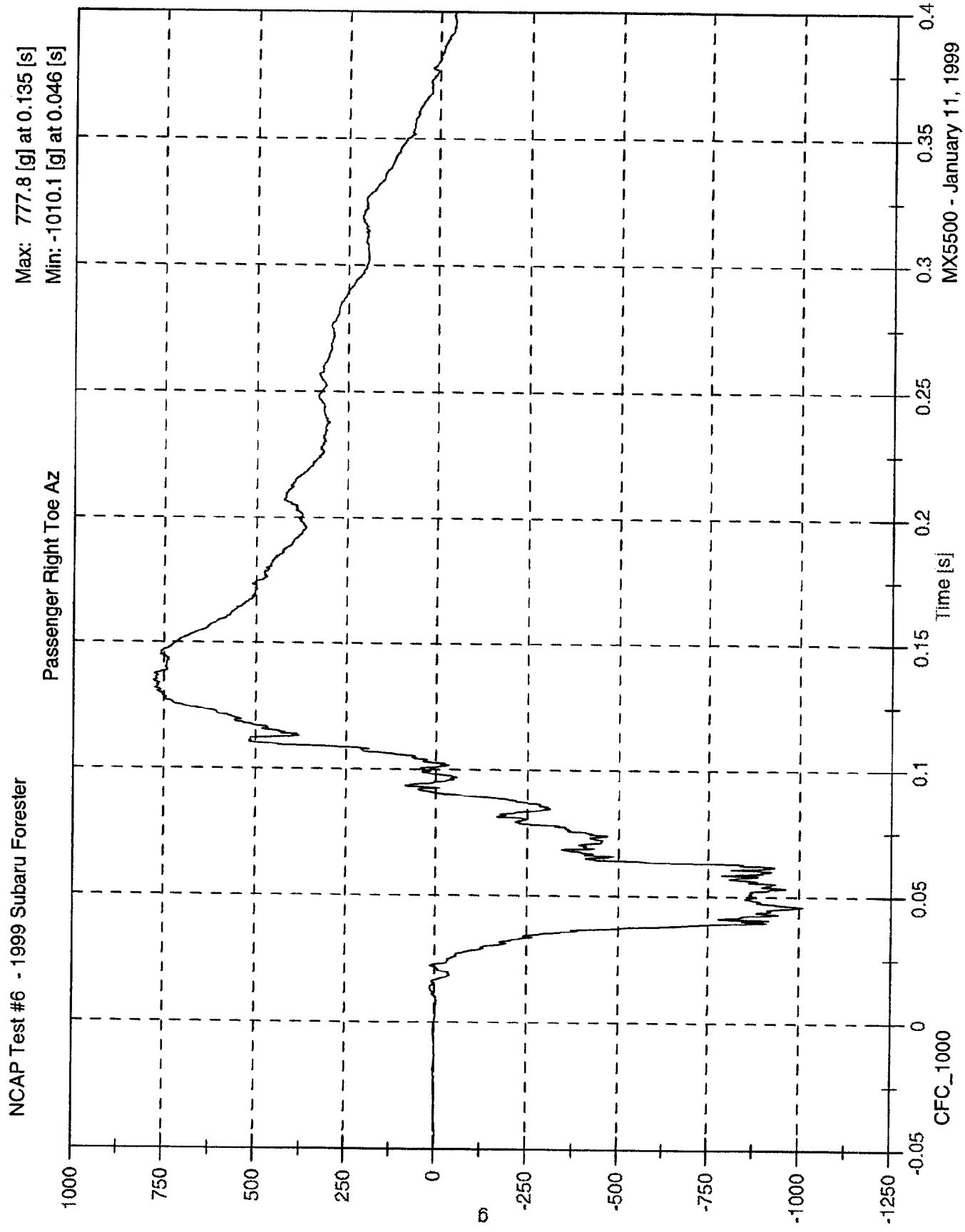

NCAP Test #6 - 1999 Subaru Forester
Max: 18.0 [g] at 0.071 [s]
Min: -75.5 [g] at 0.038 [s]
Passenger Left Ankle Ax
MX5500 - January 11, 1999
CFC_1000
Time [s]
g
20
0
-20
-40
-60
-80
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4

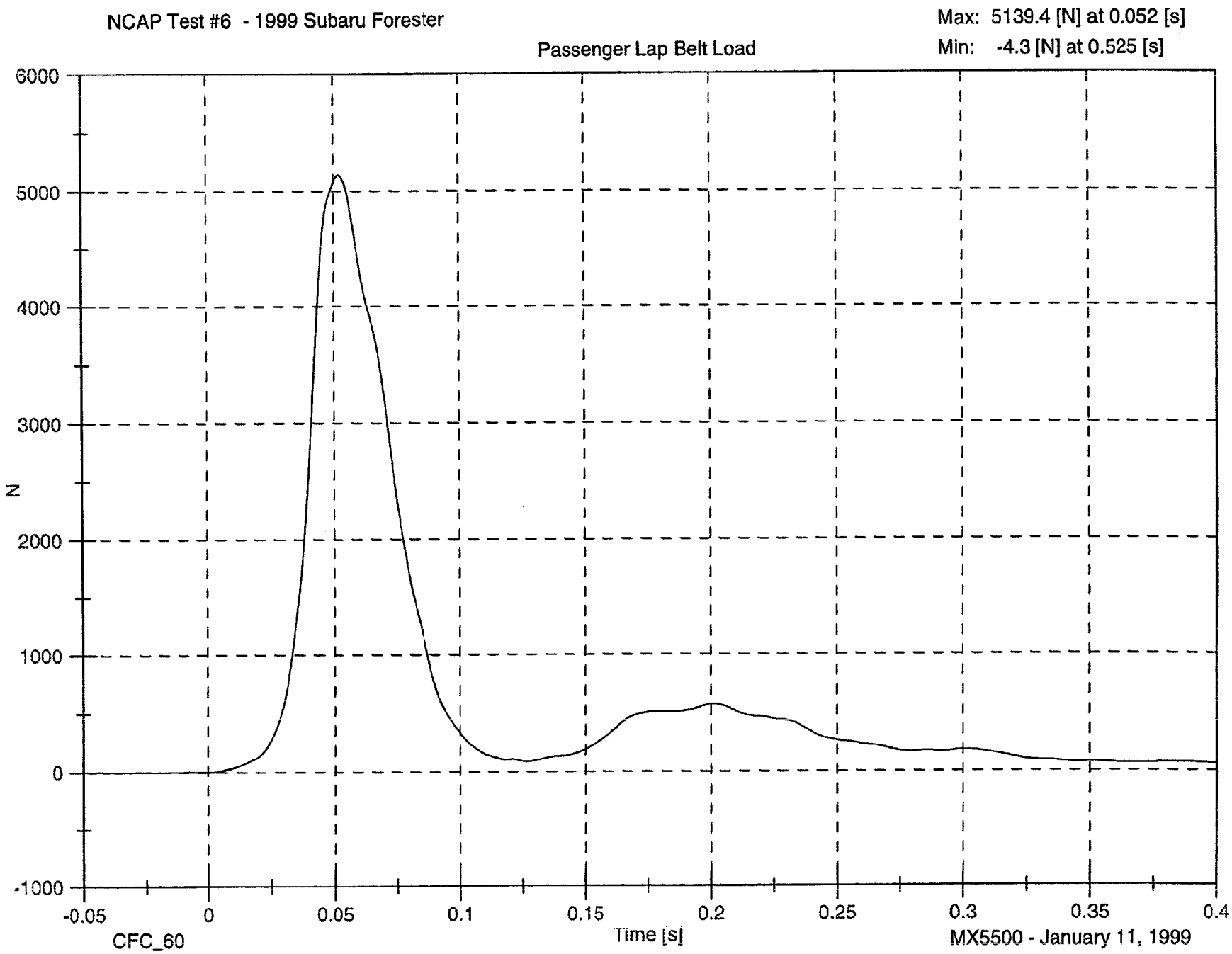

NCAP Test #6 - 1999 Subaru Forester
Max: 6.0 [g] at 0.053 [s]
Min: -64.3 [g] at 0.037 [s]
Passenger Left Ankle Az
MX5500 - January 11, 1999
CFC_1000
Time [s]
g
10
0
-10
-20
-30
-40
-50
-60
-70
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4

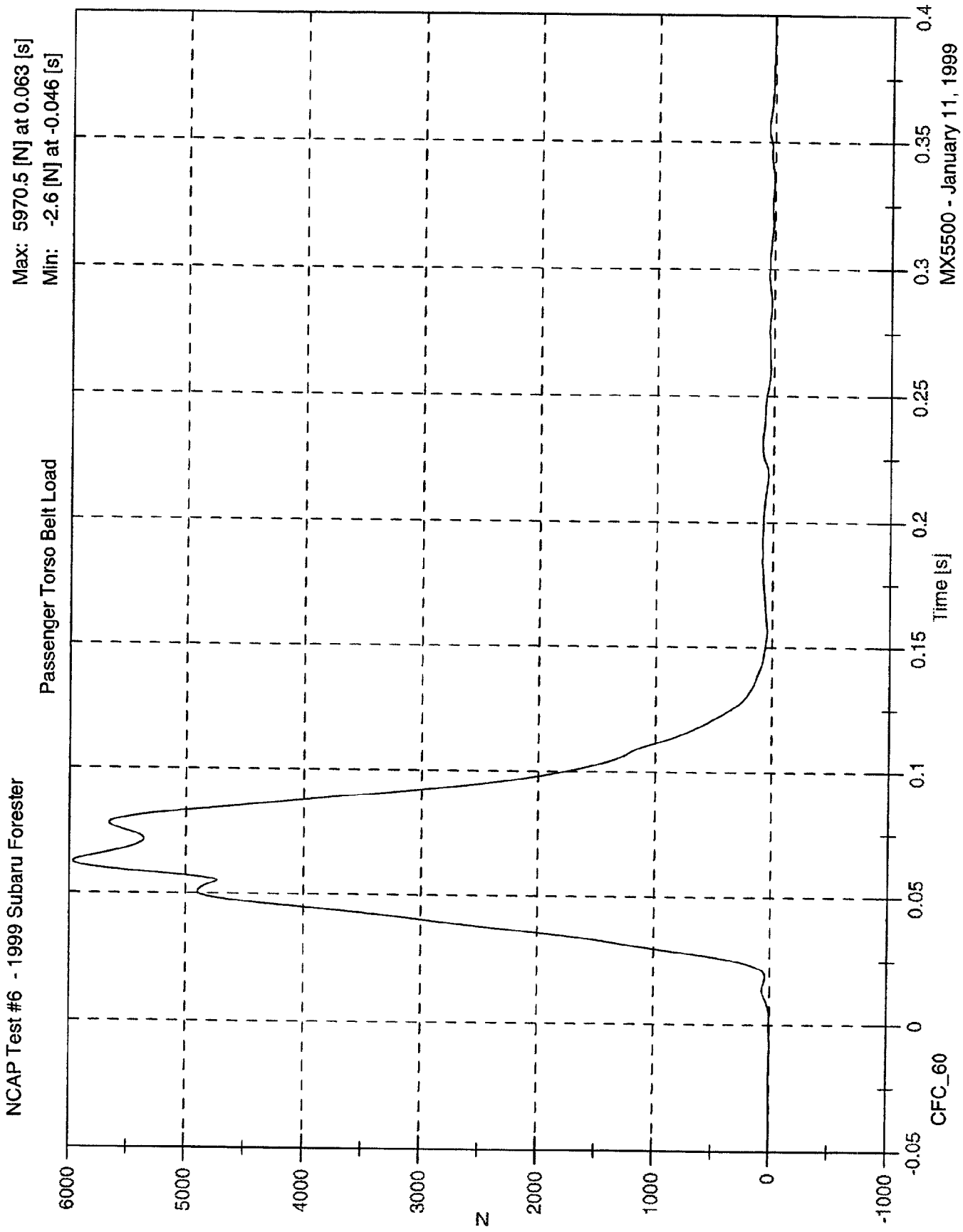

NCAP Test #6 - 1999 Subaru Forester
Max: 22.3 [g] at 0.013 [s]
Min: -79.3 [g] at 0.035 [s]
Passenger Left Toe Az
MX5500 - January 11, 1999
CFC_1000
Time [s]
g
25
0
-25
-50
-75
-100
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4

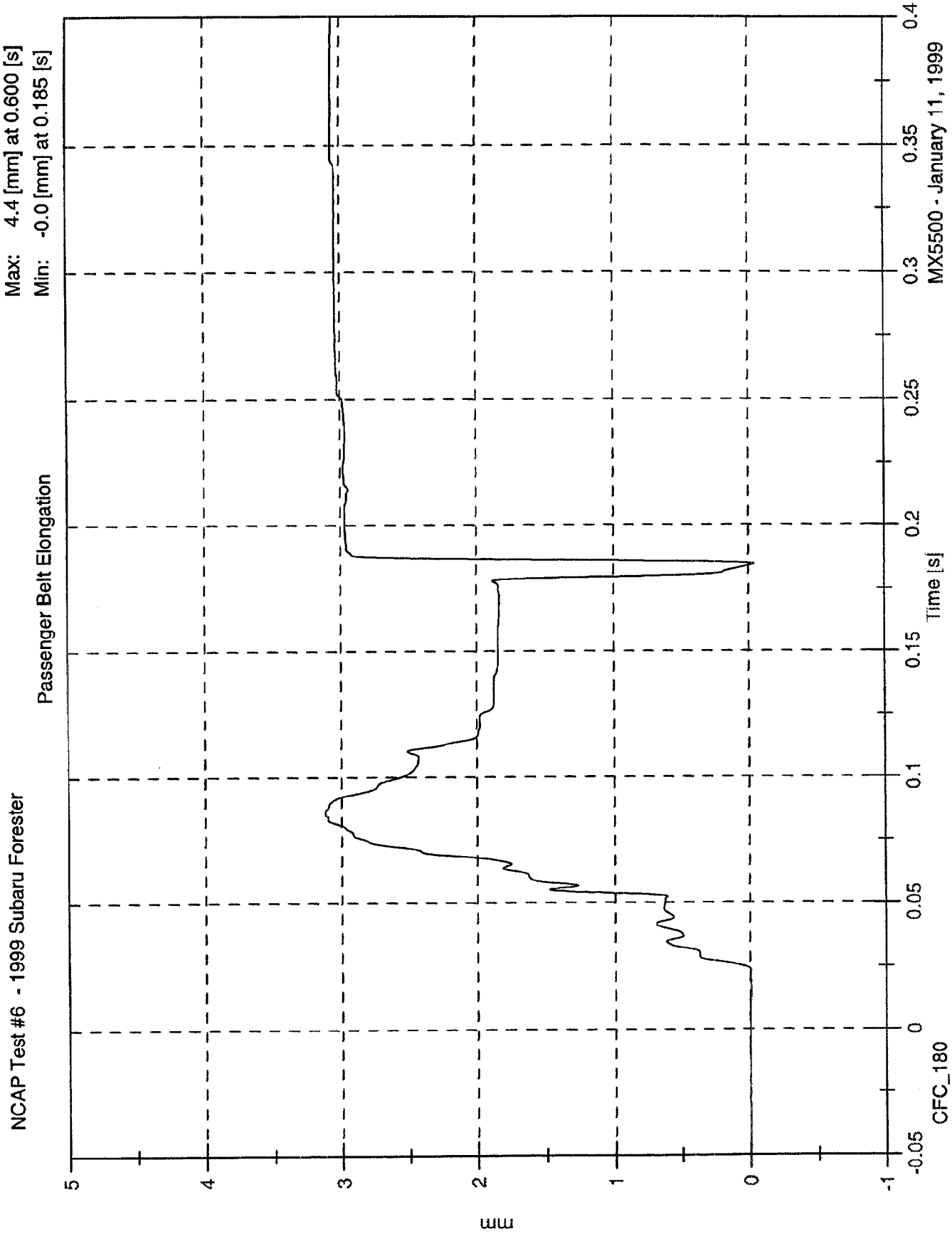

NCAP Test #6 - 1999 Subaru Forester
Max: 31.9 [g] at 0.045 [s]
Min: -95.2 [g] at 0.031 [s]
Passenger Right Ankle Ax
MX5500 - January 11, 1999
CFC_1000
Time [s]
g
50
25
0
-25
-50
-75
-100
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4


NCAP Test #6 - 1999 Subaru Forester
Max: 22.0 [g] at 0.046 [s]
Min: -66.1 [g] at 0.038 [s]
Passenger Right Ankle Az
MX5500 - January 11, 1999
CFC_1000
Time [s]
g
40
20
0
-20
-40
-60
-80
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4


NCAP Test #6 - 1999 Subaru Forester
Max: 777.8 [g] at 0.135 [s]
Min: -1010.1 [g] at 0.046 [s]
Passenger Right Toe Az
MX5500 - January 11, 1999
CFC_1000
Time [s]
g
1000
750
500
250
0
-250
-500
-750
-1000
-1250
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4

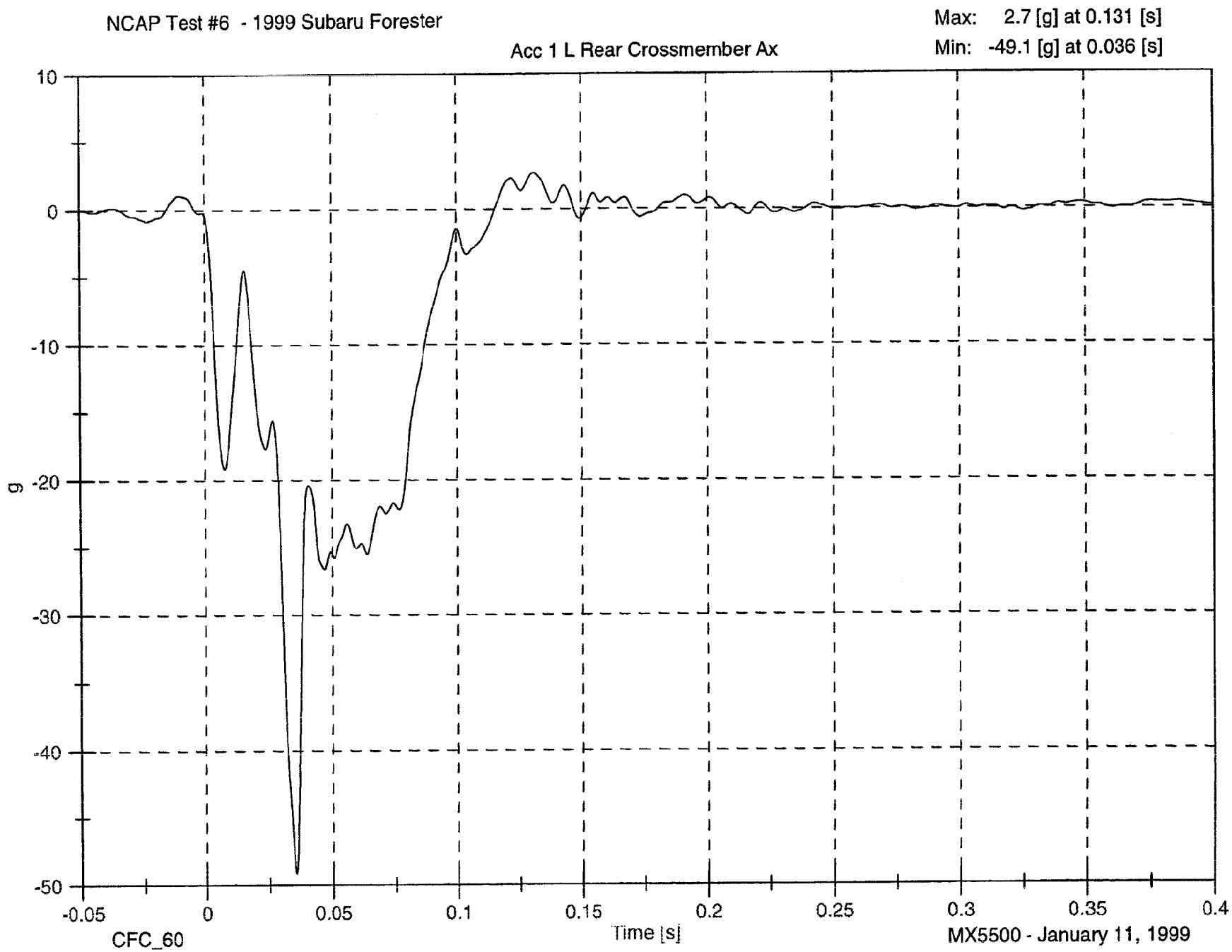

NCAP Test #6 - 1999 Subaru Forester
Passenger Lap Belt Load
Max: 5139.4 [N] at 0.052 [s]
Min: -4.3 [N] at 0.525 [s]
6000
5000
4000
3000
2000
1000
0
-1000
N
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
Time [s]
CFC_60
MX5500 - January 11, 1999

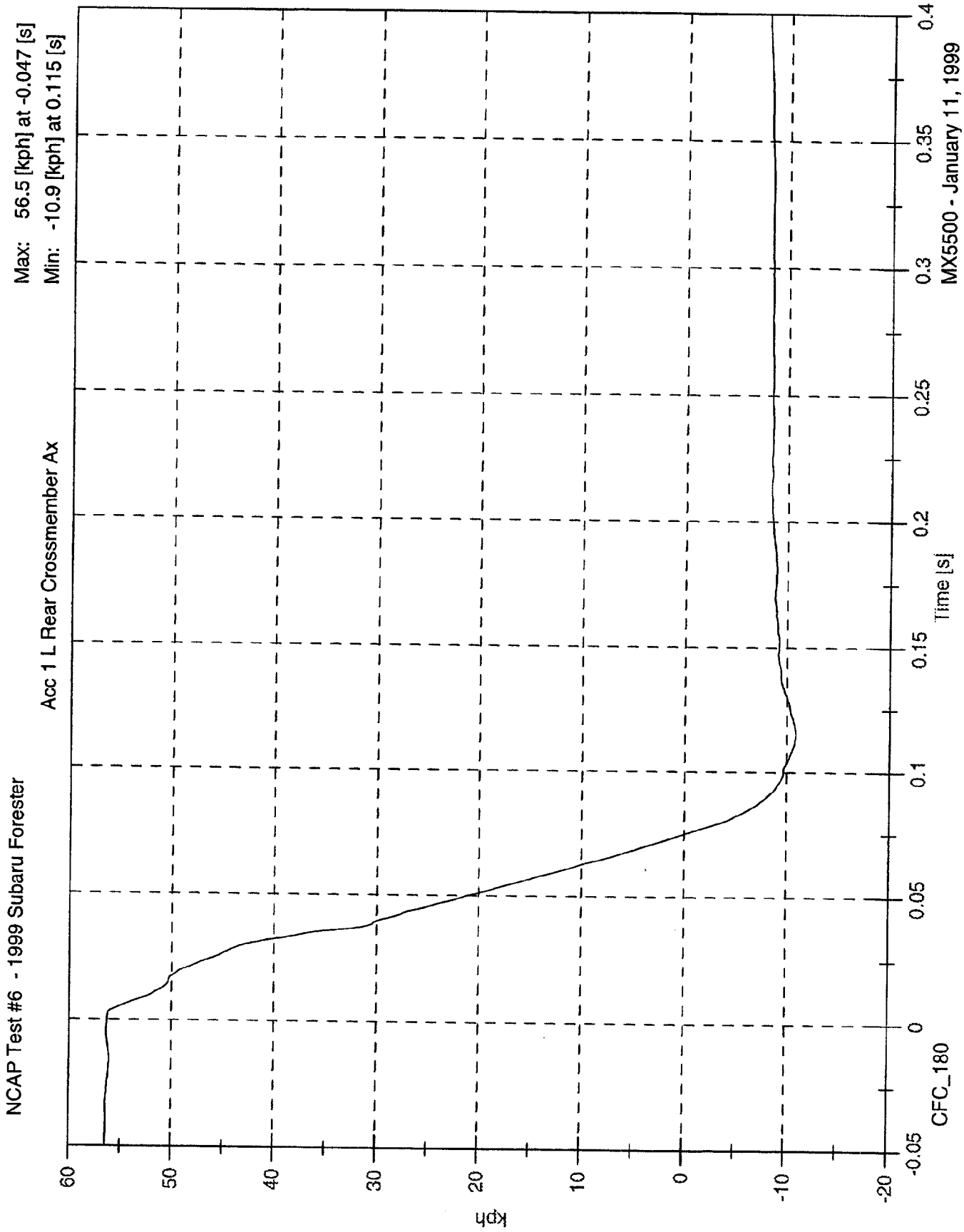

NCAP Test #6 - 1999 Subaru Forester
Passenger Torso Belt Load
Max: 5970.5 [N] at 0.063 [s]
Min: -2.6 [N] at -0.046 [s]
MX5500 - January 11, 1999
CFC_60
N
Time [s]
6000
5000
4000
3000
2000
1000
0
-1000
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4

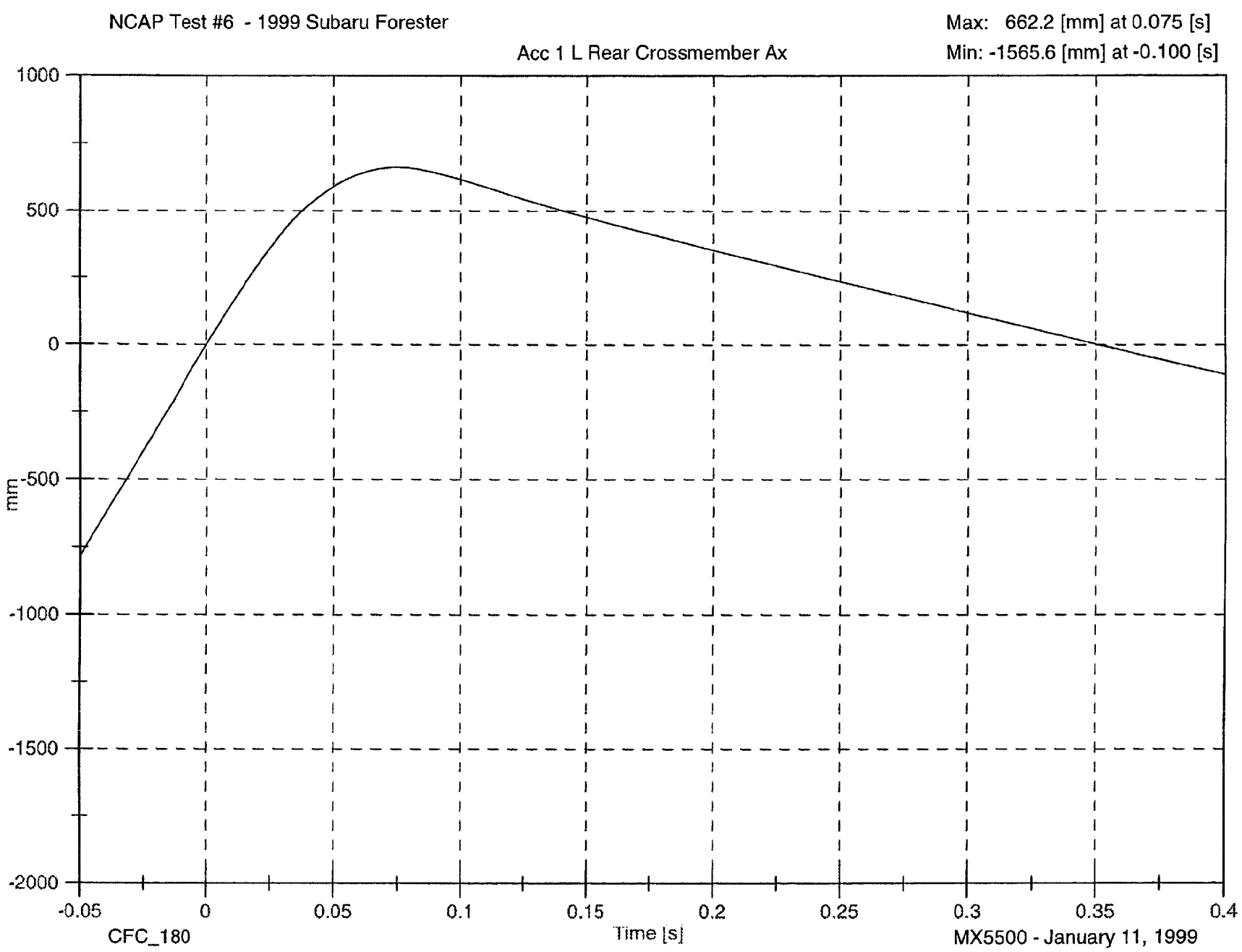

NCAP Test #6 - 1999 Subaru Forester
Passenger Belt Elongation
Max: 4.4 [mm] at 0.600 [s]
Min: -0.0 [mm] at 0.185 [s]
mm
5
4
3
2
1
0
-1
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
Time [s]
CFC_180
MX5500 - January 11, 1999

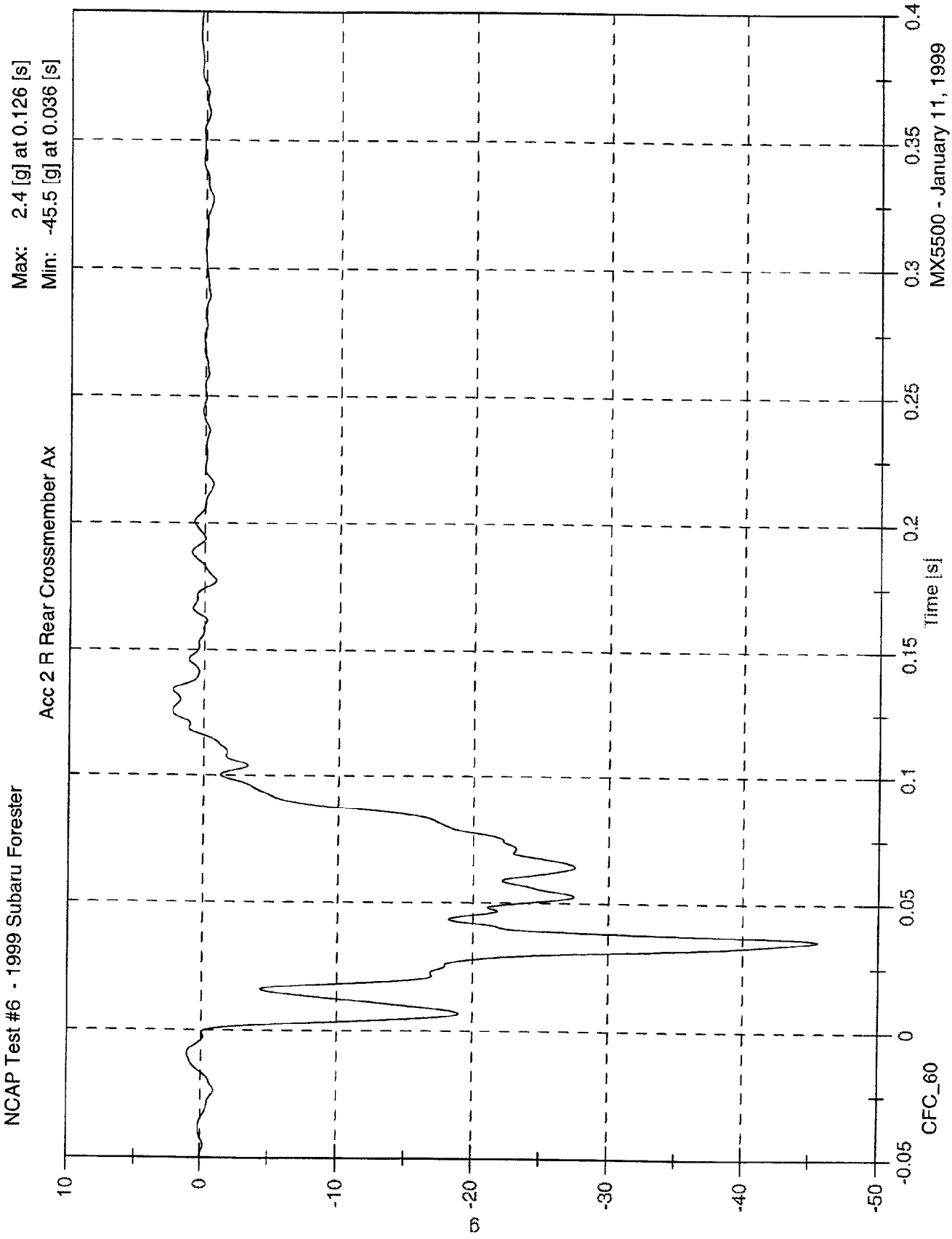
NHTSA TEST NO. MX5500

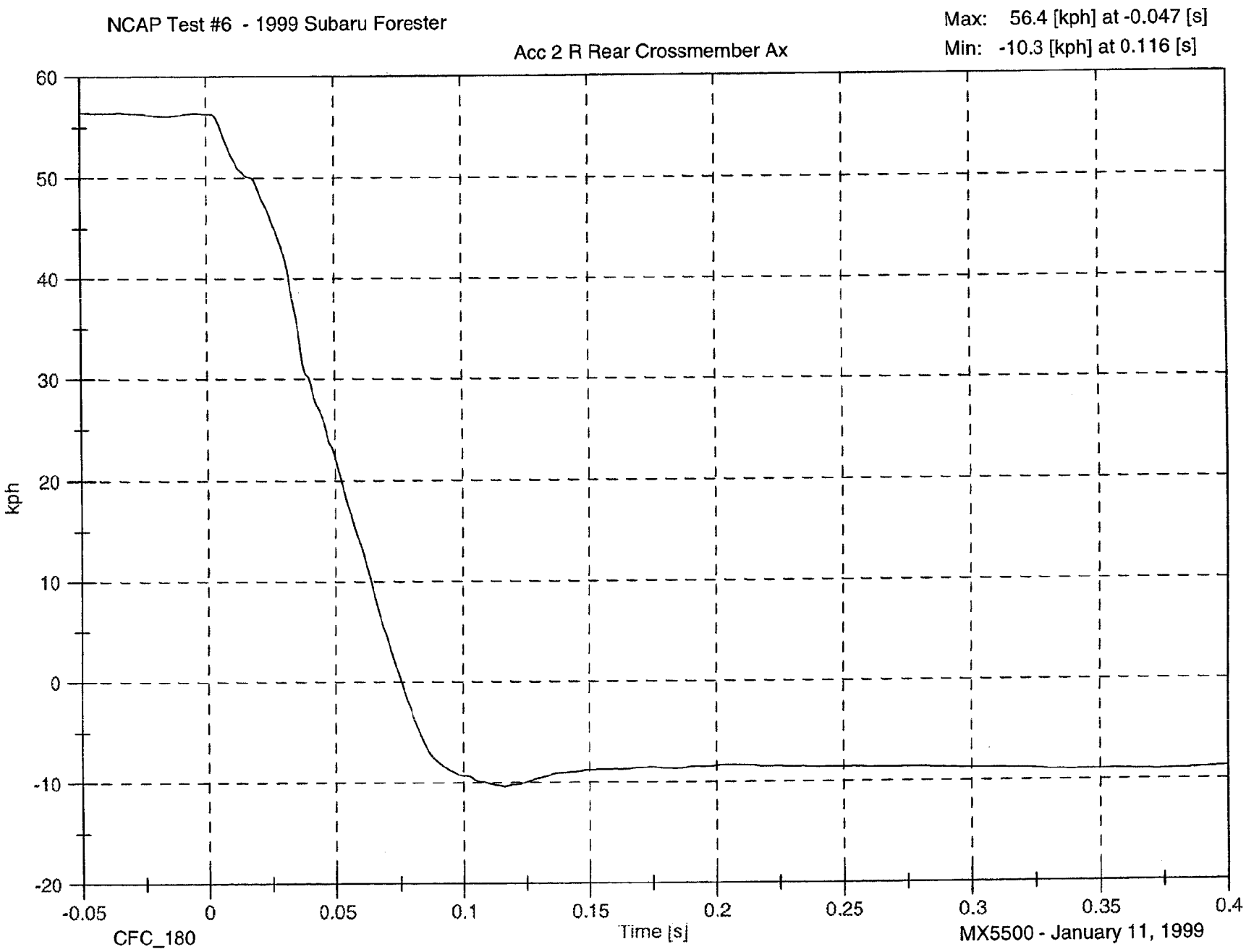
VEHICLE DATA	FILTER CHANNEL CLASS
Acceleration	60
Velocity	180
Displacement	180

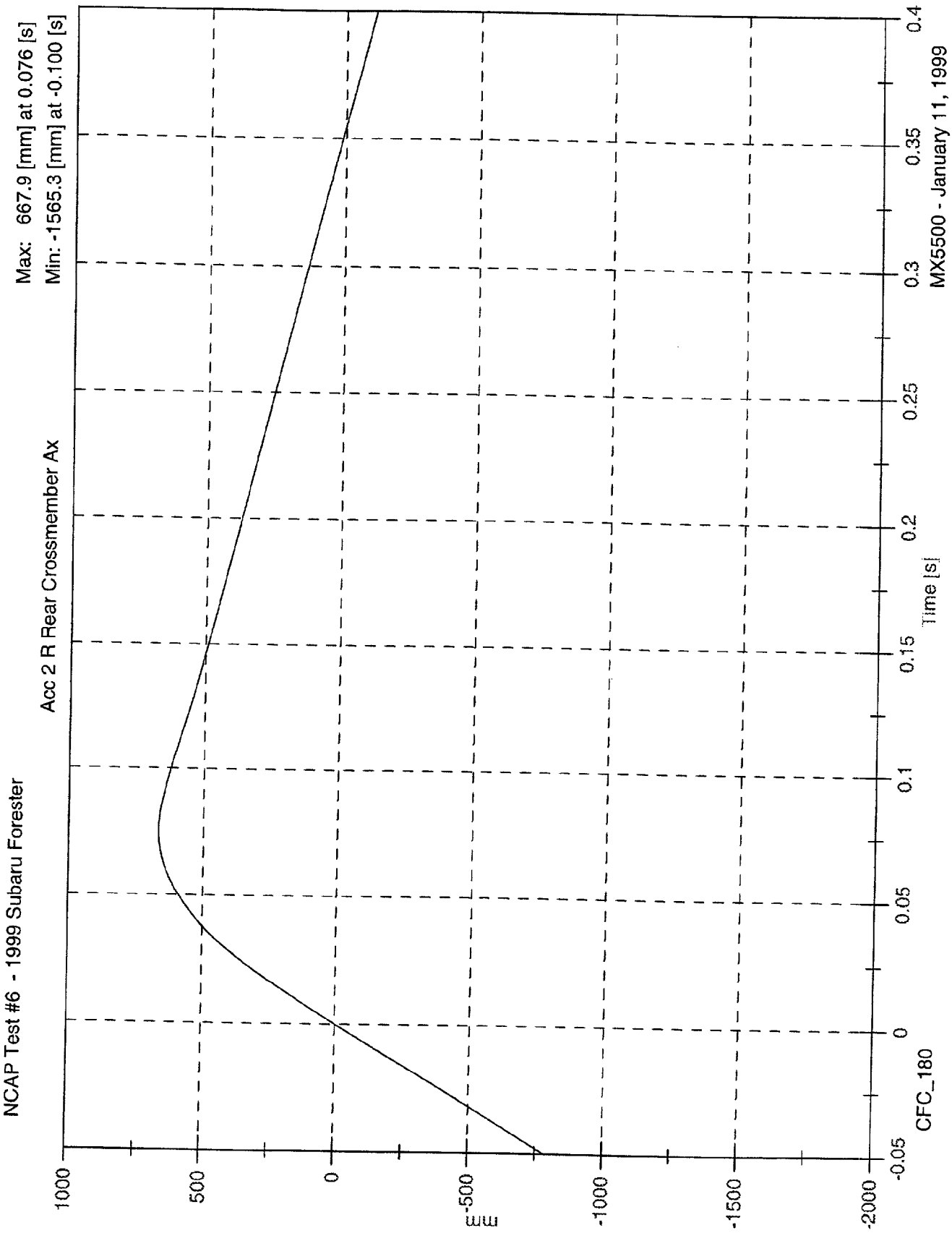

NCAP Test #6 - 1999 Subaru Forester
Acc 1 L Rear Crossmember Ax
Max: 2.7 [g] at 0.131 [s]
Min: -49.1 [g] at 0.036 [s]
10
0
-10
-20
-30
-40
-50
g
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
Time [s]
CFC_60
MX5500 - January 11, 1999

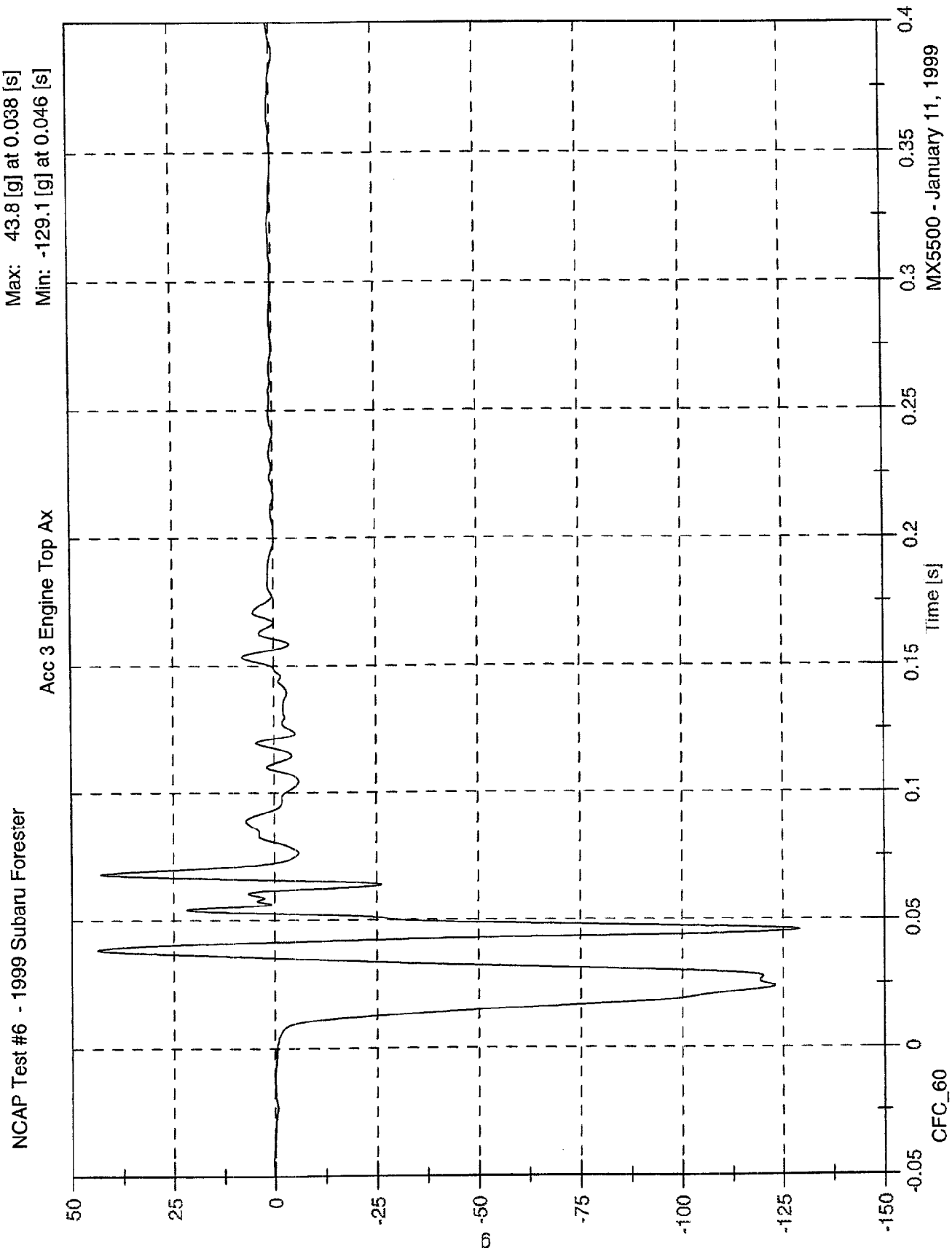

NCAP Test #6 - 1999 Subaru Forester
Max: 56.5 [kph] at -0.047 [s]
Min: -10.9 [kph] at 0.115 [s]
Acc 1 L Rear Crossmember Ax
MX5500 - January 11, 1999
CFC_180
kph
Time [s]
60
50
40
30
20
10
0
-10
-20
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4

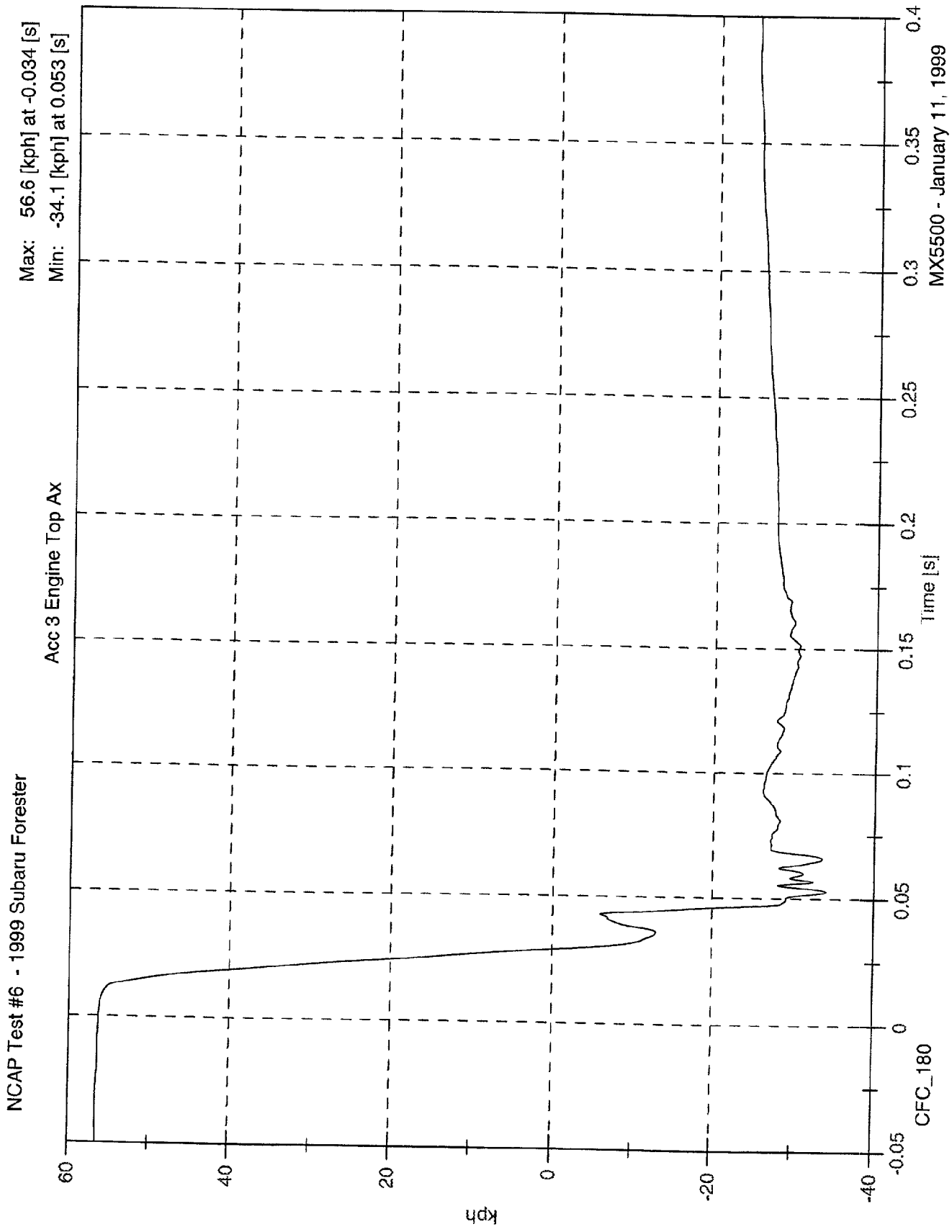

NCAP Test #6 - 1999 Subaru Forester
Max: 662.2 [mm] at 0.075 [s]
Acc 1 L Rear Crossmember Ax
Min: -1565.6 [mm] at -0.100 [s]
1000
500
0
-500
-1000
-1500
-2000
mm
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
Time [s]
CFC_180
MX5500 - January 11, 1999

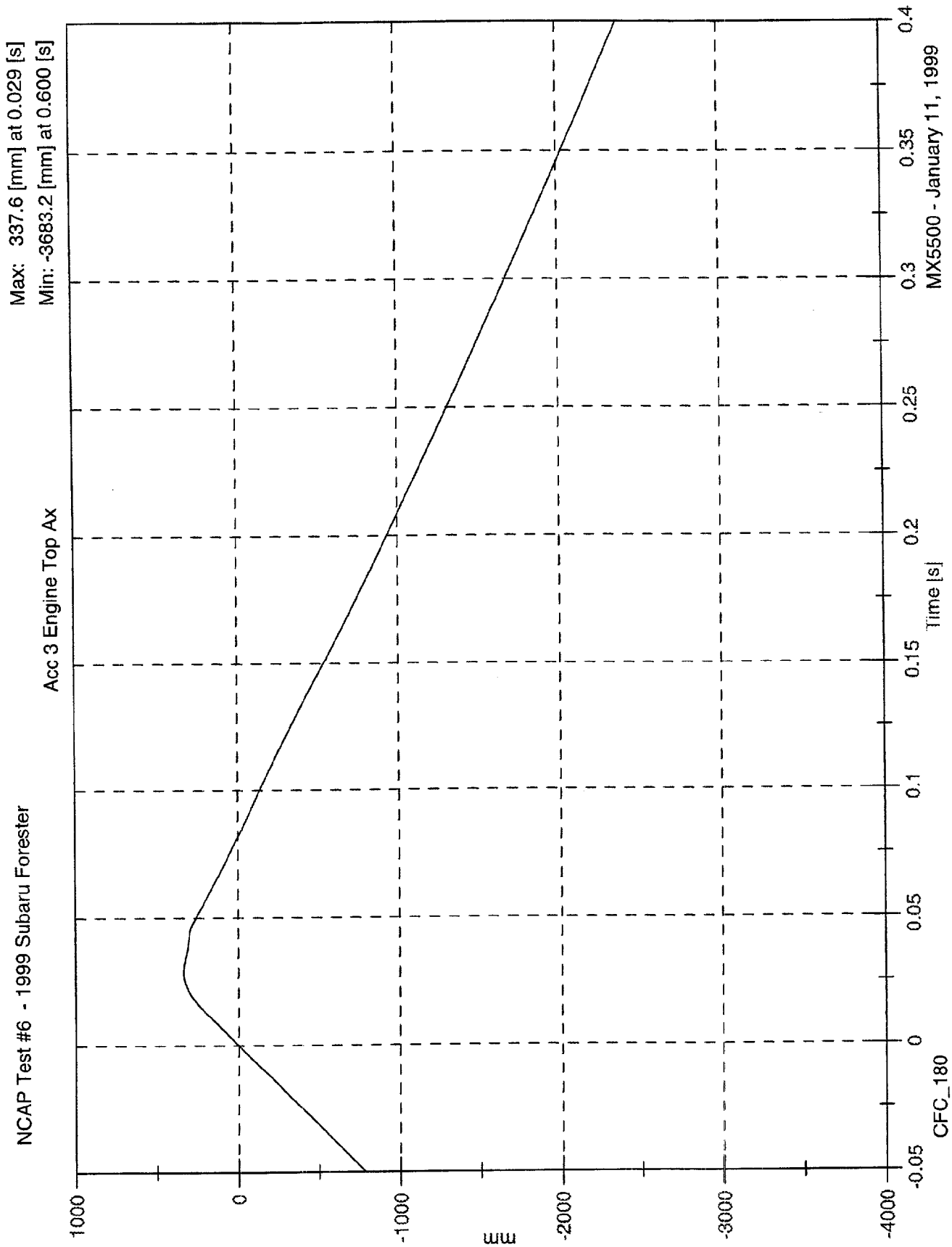

NCAP Test #6 - 1999 Subaru Forester
Acc 2 R Rear Crossmember Ax
Max: 2.4 [g] at 0.126 [s]
Min: -45.5 [g] at 0.036 [s]
MX5500 - January 11, 1999
CFC_60
Time [s]
G
10
0
-10
-20
-30
-40
-50
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4

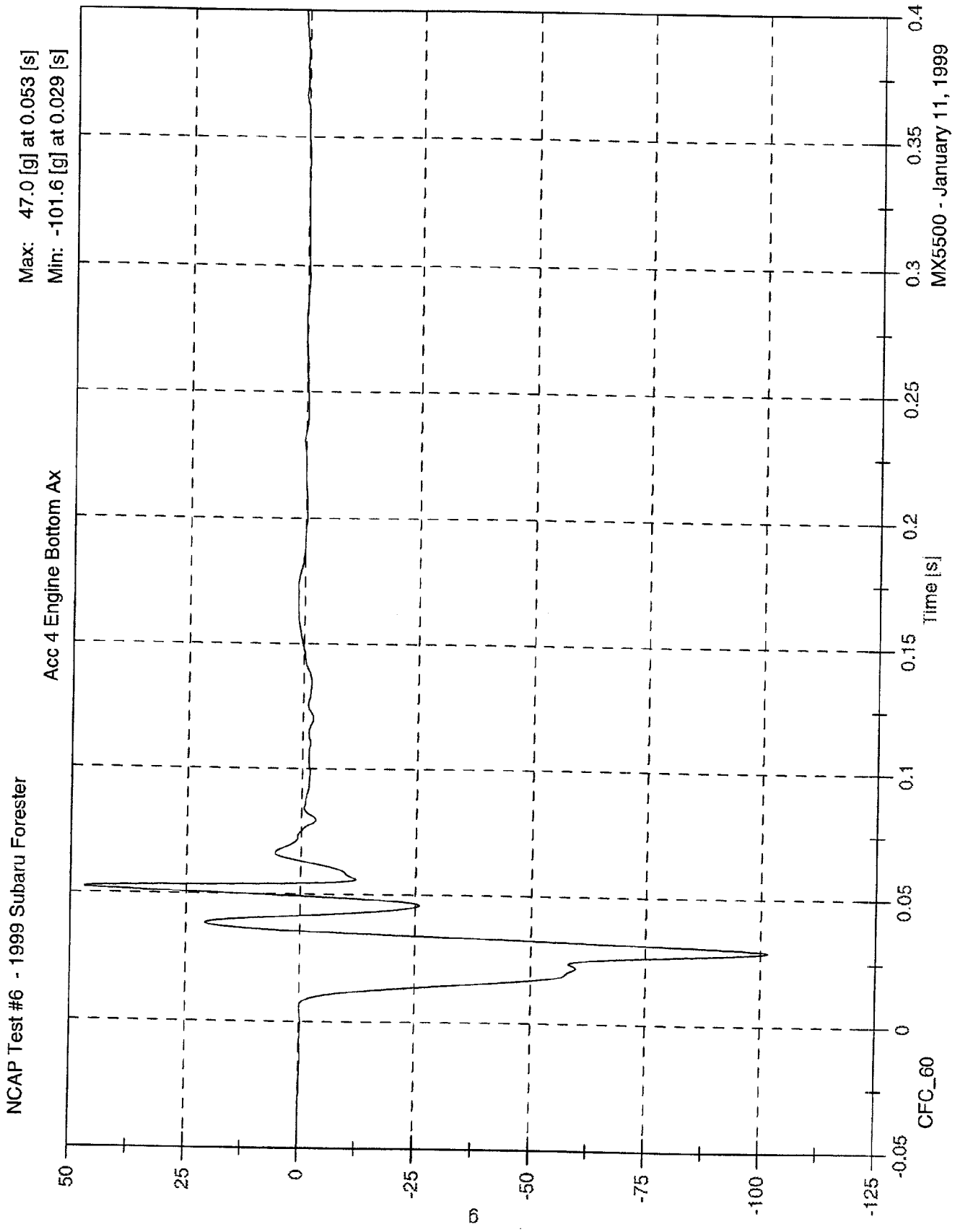

NCAP Test #6 - 1999 Subaru Forester
Acc 2 R Rear Crossmember Ax
Max: 56.4 [kph] at -0.047 [s]
Min: -10.3 [kph] at 0.116 [s]
60
50
40
30
20
10
0
-10
-20
kph
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
Time [s]
CFC_180
MX5500 - January 11, 1999

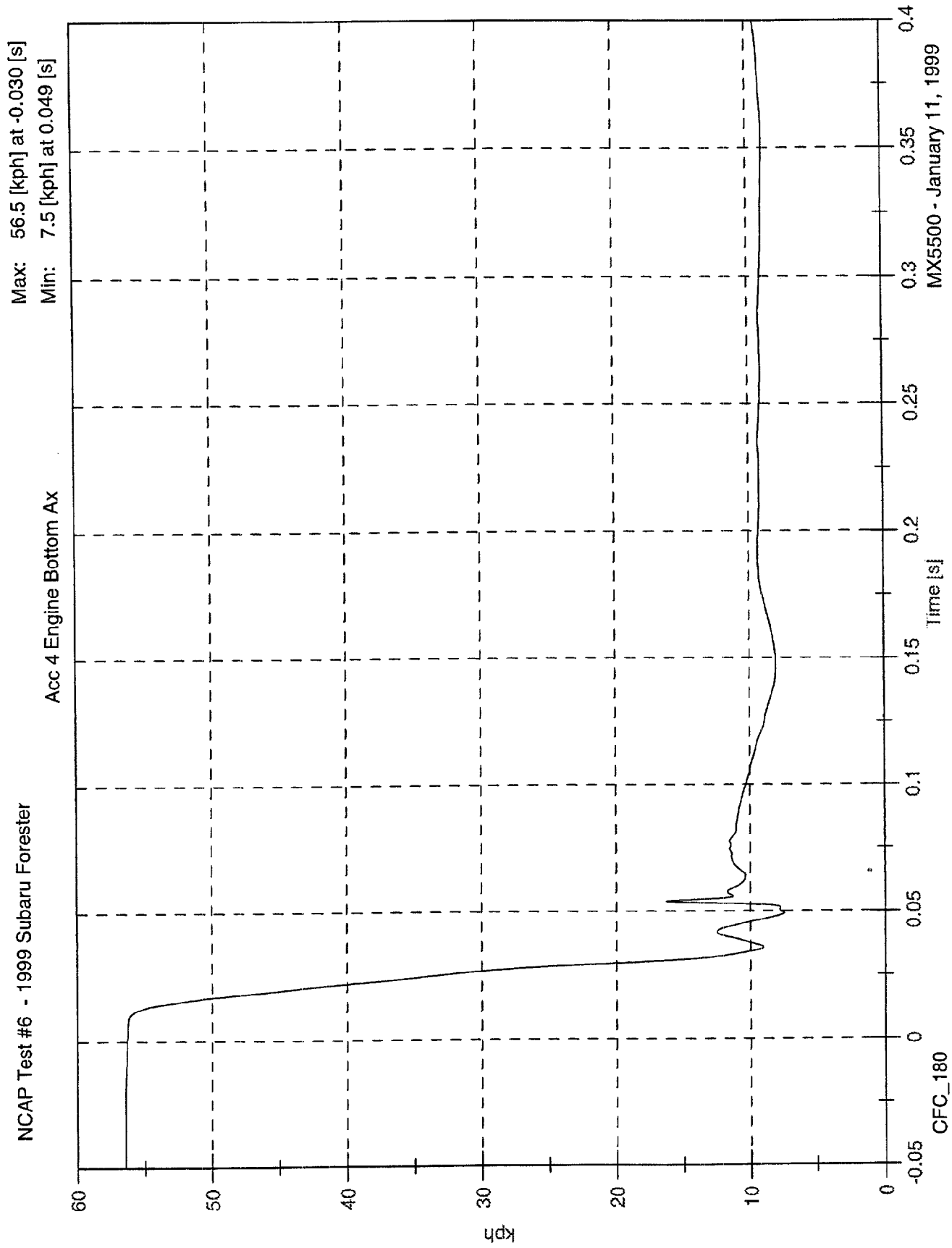

NCAP Test #6 - 1999 Subaru Forester
Acc 2 R Rear Crossmember Ax
Max: 667.9 [mm] at 0.076 [s]
Min: -1565.3 [mm] at -0.100 [s]
MX5500 - January 11, 1999
mm
1000
500
0
-500
-1000
-1500
-2000
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
Time [s]
CFC_180

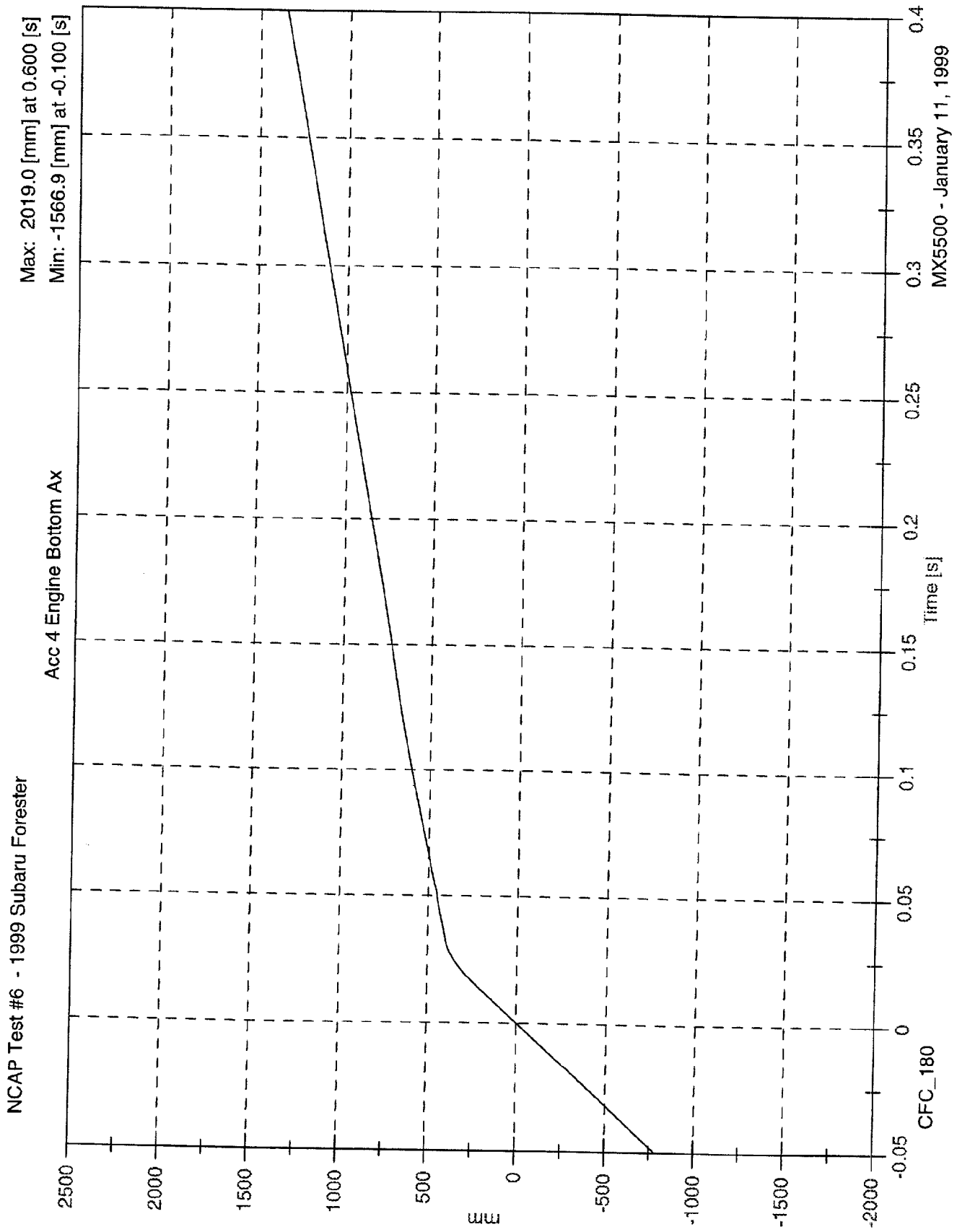

NCAP Test #6 - 1999 Subaru Forester
Max: 43.8 [g] at 0.038 [s]
Min: -129.1 [g] at 0.046 [s]
Acc 3 Engine Top Ax
MX5500 - January 11, 1999
CFC_60
Time [s]
g
50
25
0
-25
-50
-75
-100
-125
-150
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4

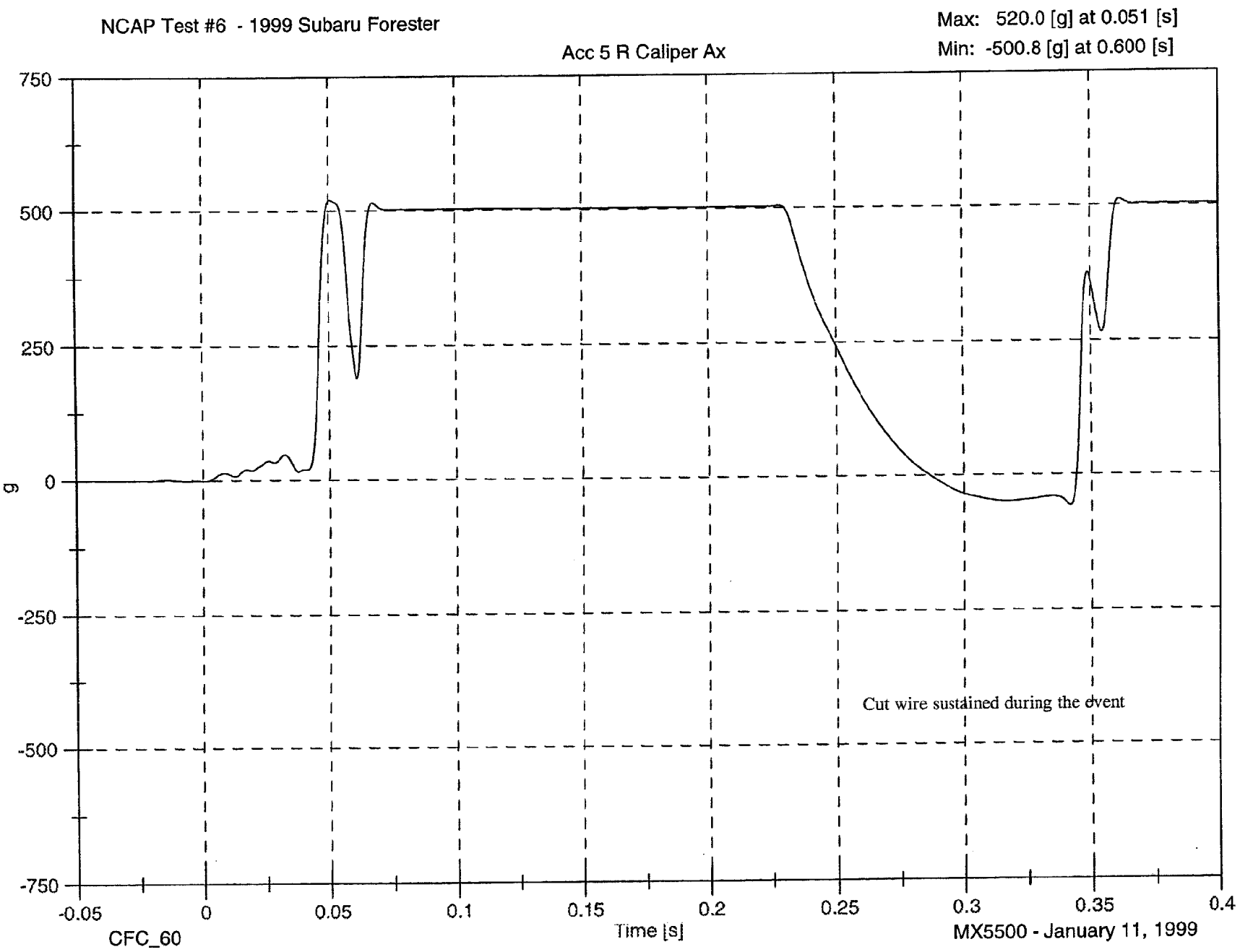

NCAP Test #6 - 1999 Subaru Forester
Max: 56.6 [kph] at -0.034 [s]
Min: -34.1 [kph] at 0.053 [s]
Acc 3 Engine Top Ax
MX5500 - January 11, 1999
CFC_180
kph
Time [s]
60
40
20
0
-20
-40
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4

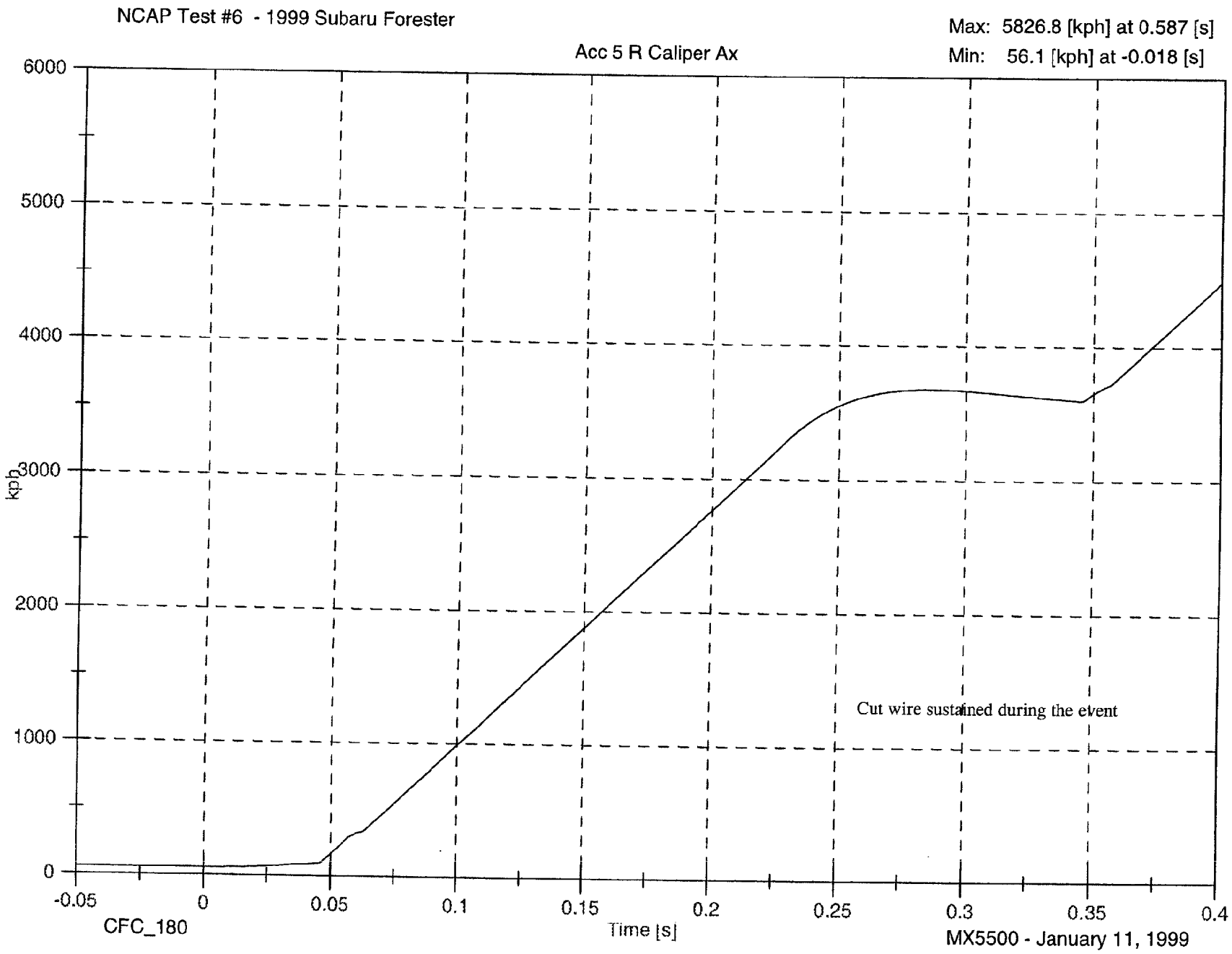

NCAP Test #6 - 1999 Subaru Forester
Acc 3 Engine Top Ax
Max: 337.6 [mm] at 0.029 [s]
Min: -3683.2 [mm] at 0.600 [s]
MX5500 - January 11, 1999
CFC_180
mm
Time [s]
1000
0
-1000
-2000
-3000
-4000
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4

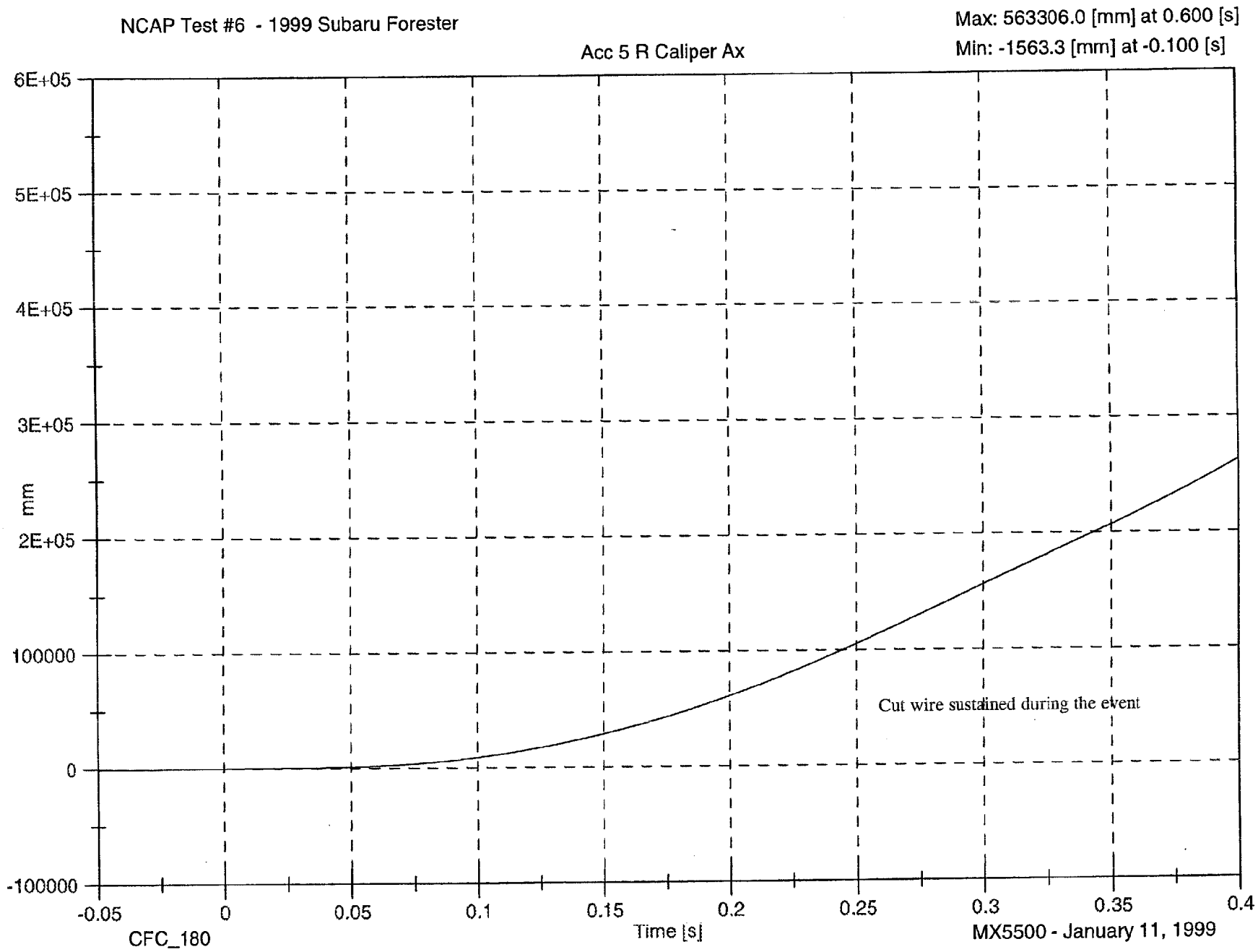

NCAP Test #6 - 1999 Subaru Forester
Acc 4 Engine Bottom Ax
Max: 47.0 [g] at 0.053 [s]
Min: -101.6 [g] at 0.029 [s]
MX5500 - January 11, 1999
Time [s]
CFC_60
g
50
25
0
-25
-50
-75
-100
-125
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4

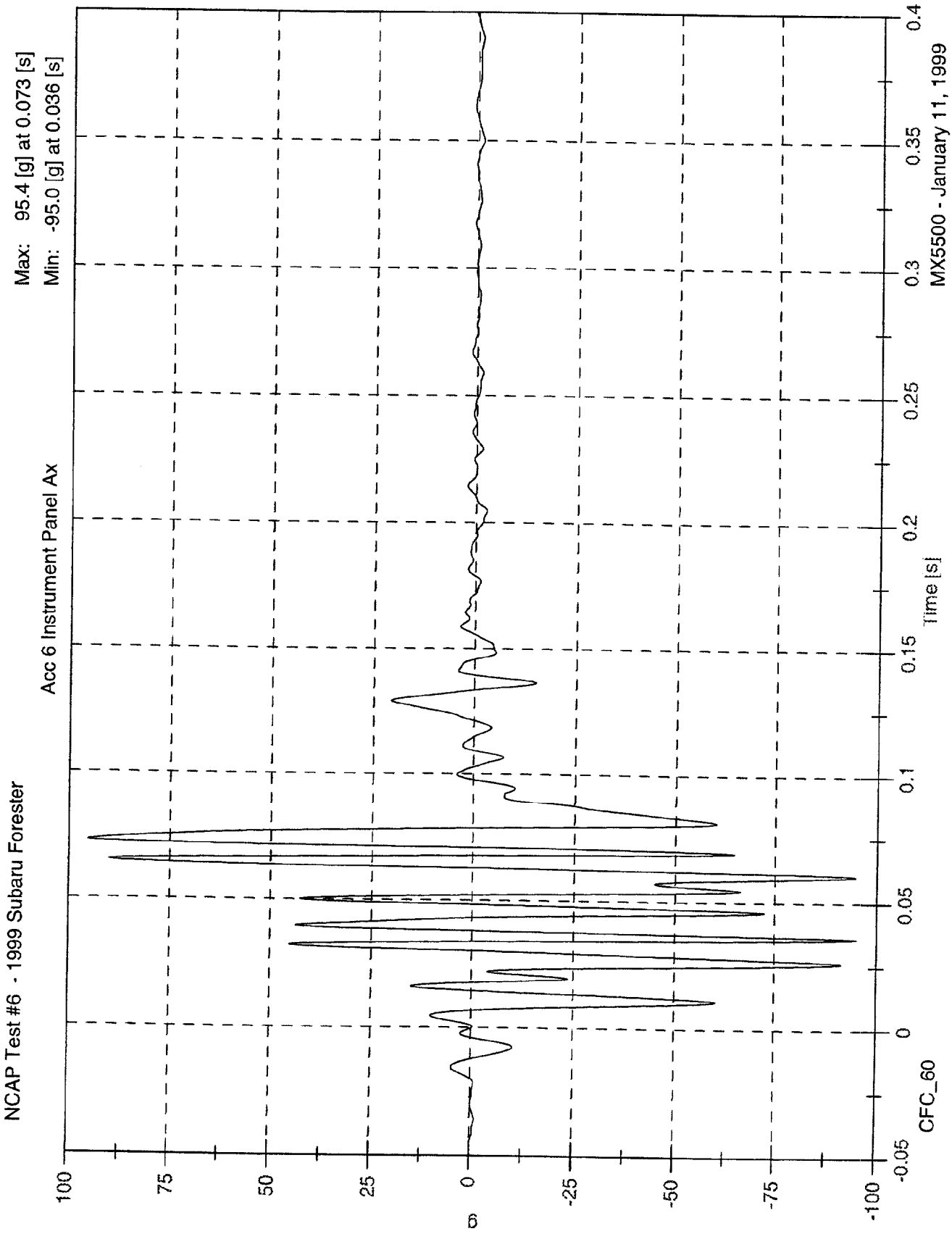

NCAP Test #6 - 1999 Subaru Forester
Max: 56.5 [kph] at -0.030 [s]
Min: 7.5 [kph] at 0.049 [s]
Acc 4 Engine Bottom Ax
MX5500 - January 11, 1999
CFC_180
kph
Time [s]
60
50
40
30
20
10
0
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4

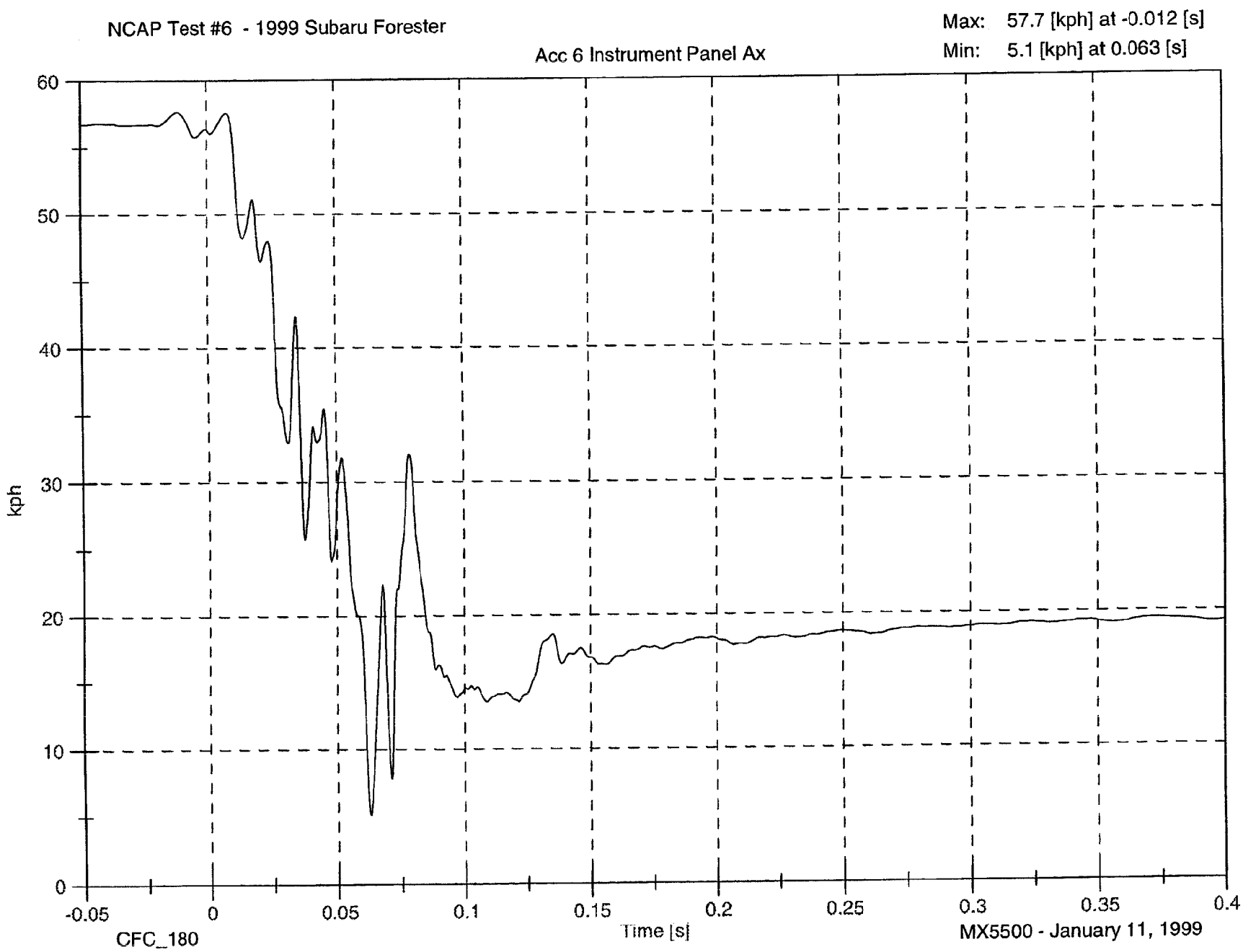

NCAP Test #6 - 1999 Subaru Forester
Max: 2019.0 [mm] at 0.600 [s]
Min: -1566.9 [mm] at -0.100 [s]
Acc 4 Engine Bottom Ax
MX5500 - January 11, 1999
mm
Time [s]
CFC_180
2500
2000
1500
1000
500
0
-500
-1000
-1500
-2000
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4

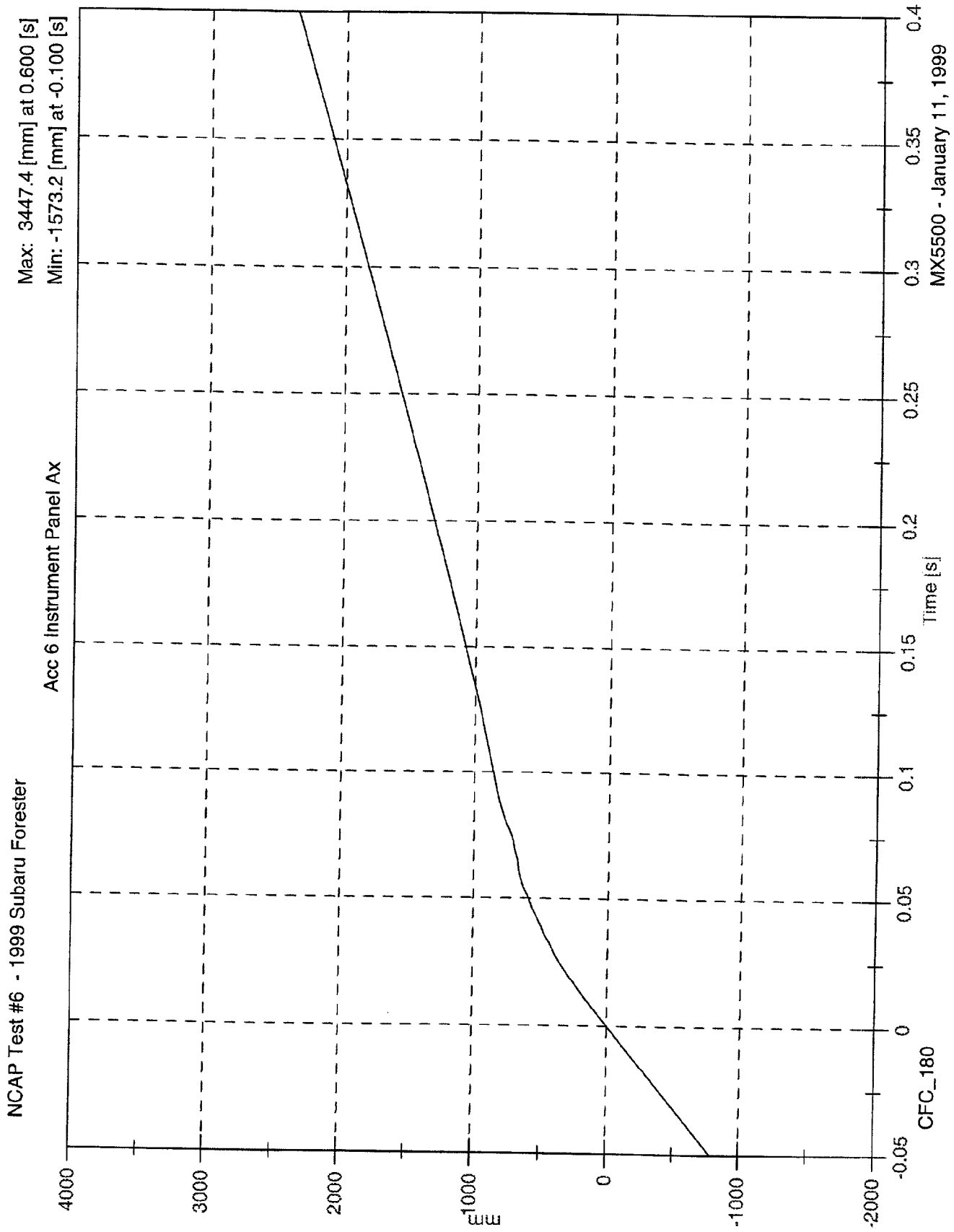

NCAP Test #6 - 1999 Subaru Forester
Acc 5 R Caliper Ax
Max: 520.0 [g] at 0.051 [s]
Min: -500.8 [g] at 0.600 [s]
750
500
250
0
-250
-500
-750
g
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
Time [s]
Cut wire sustained during the event
CFC_60
MX5500 - January 11, 1999

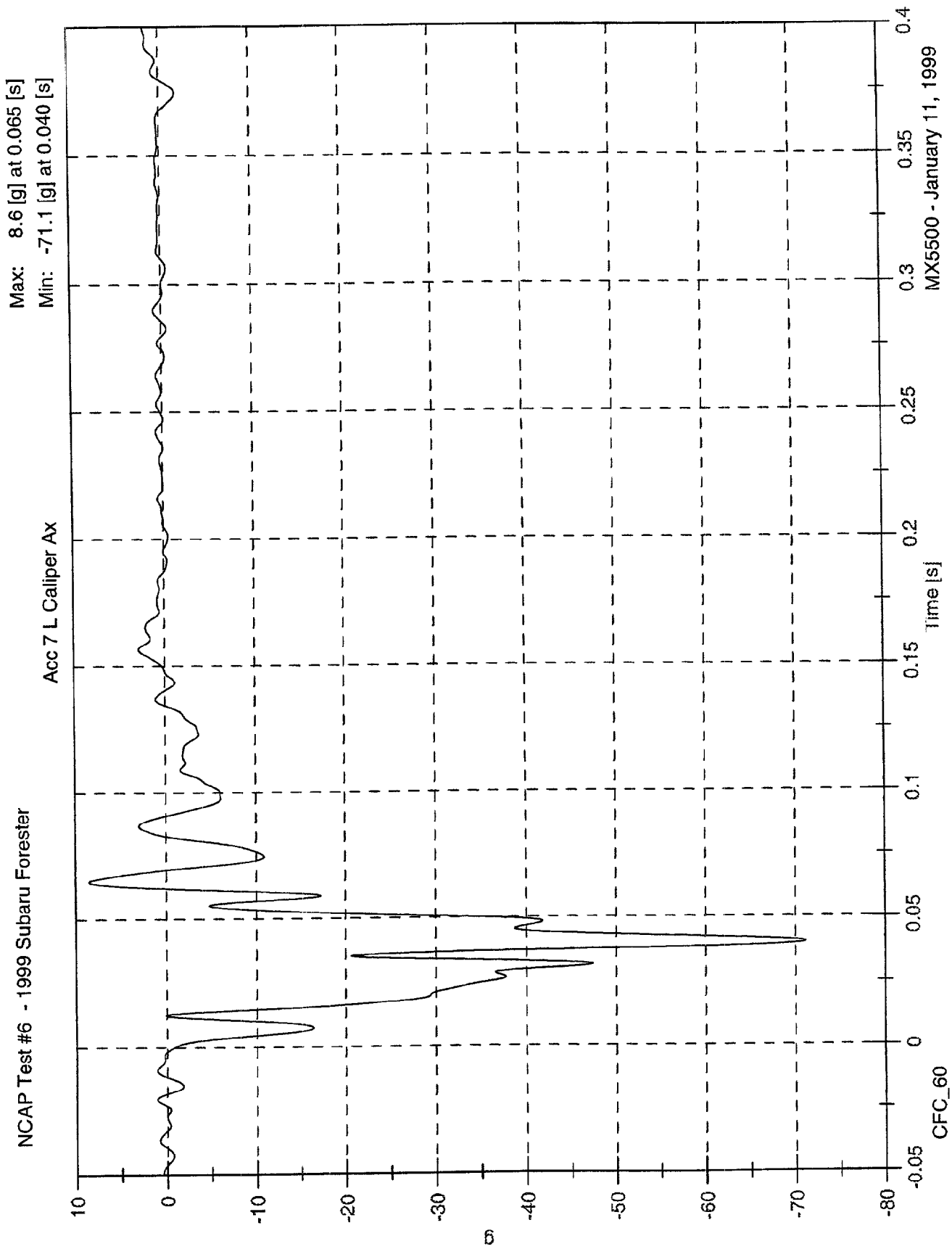

NCAP Test #6 - 1999 Subaru Forester
Acc 5 R Caliper Ax
Max: 5826.8 [kph] at 0.587 [s]
Min: 56.1 [kph] at -0.018 [s]
6000
5000
4000
3000
2000
1000
0
kph
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
Time [s]
Cut wire sustained during the event
CFC_180
MX5500 - January 11, 1999

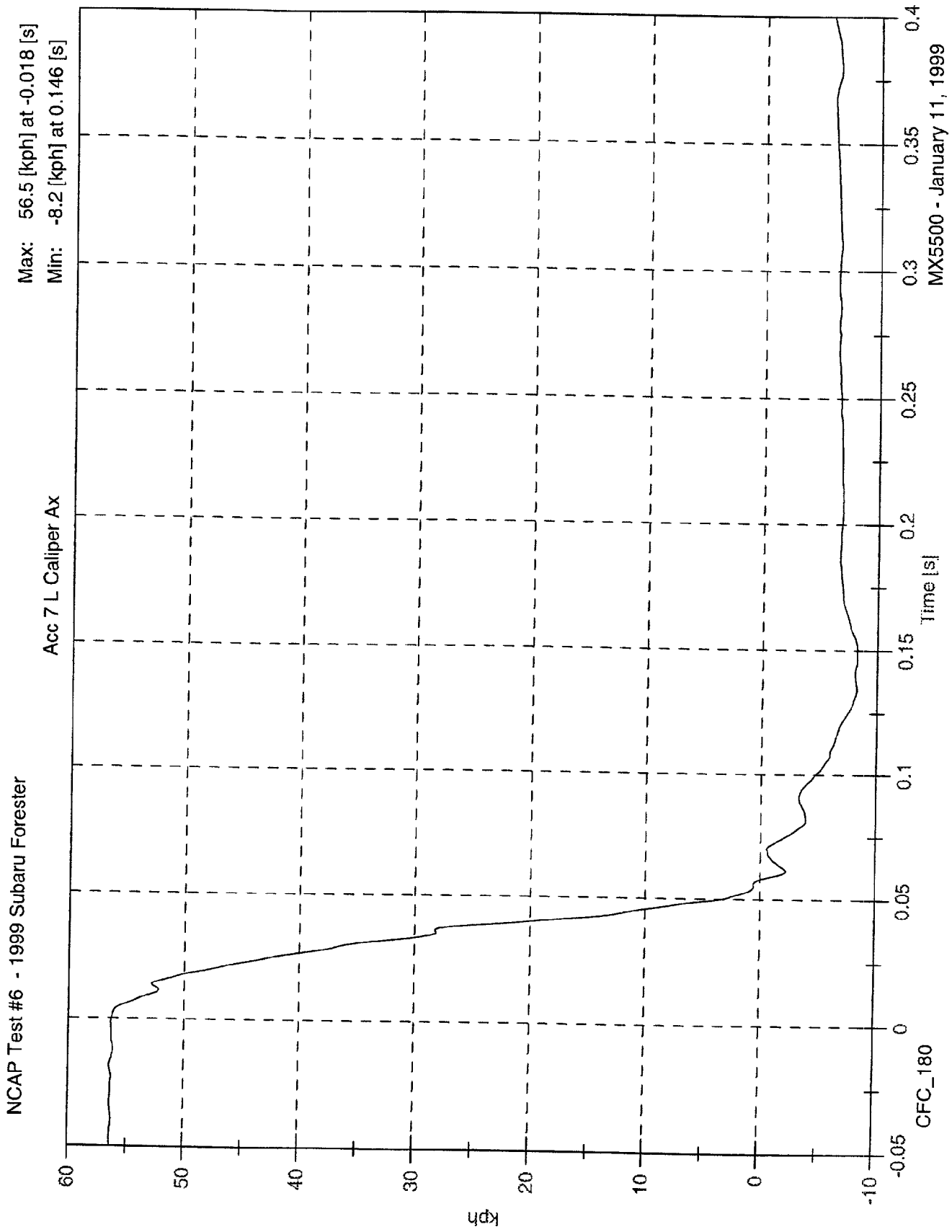

NCAP Test #6 - 1999 Subaru Forester
Acc 5 R Caliper Ax
Max: 563306.0 [mm] at 0.600 [s]
Min: -1563.3 [mm] at -0.100 [s]
6E+05
5E+05
4E+05
3E+05
2E+05
100000
0
-100000
mm
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
Time [s]
Cut wire sustained during the event
CFC_180
MX5500 - January 11, 1999

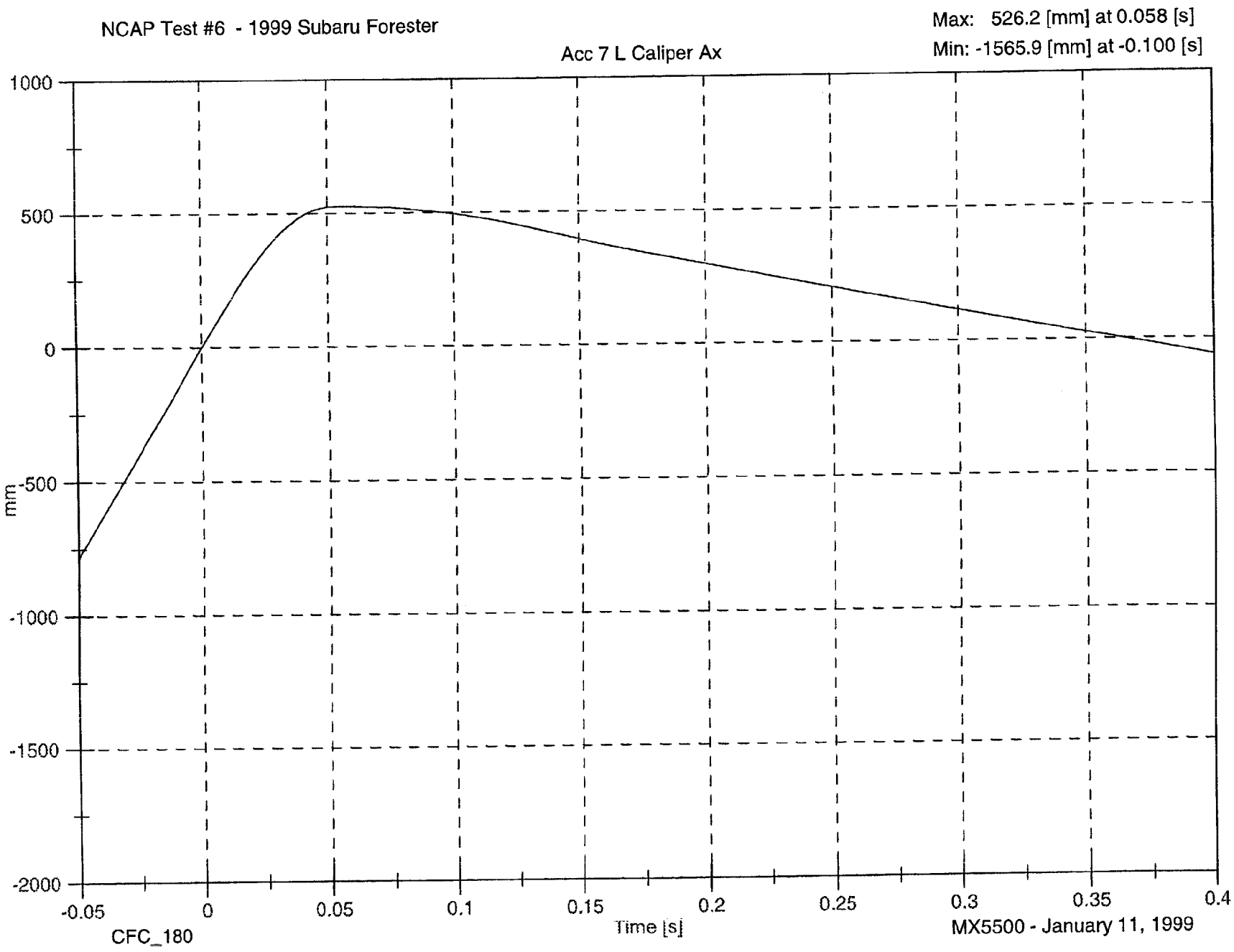

NCAP Test #6 - 1999 Subaru Forester
Acc 6 Instrument Panel Ax
Max: 95.4 [g] at 0.073 [s]
Min: -95.0 [g] at 0.036 [s]
MX5500 - January 11, 1999
CFC_60
Time [s]
G
100
75
50
25
0
-25
-50
-75
-100
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4

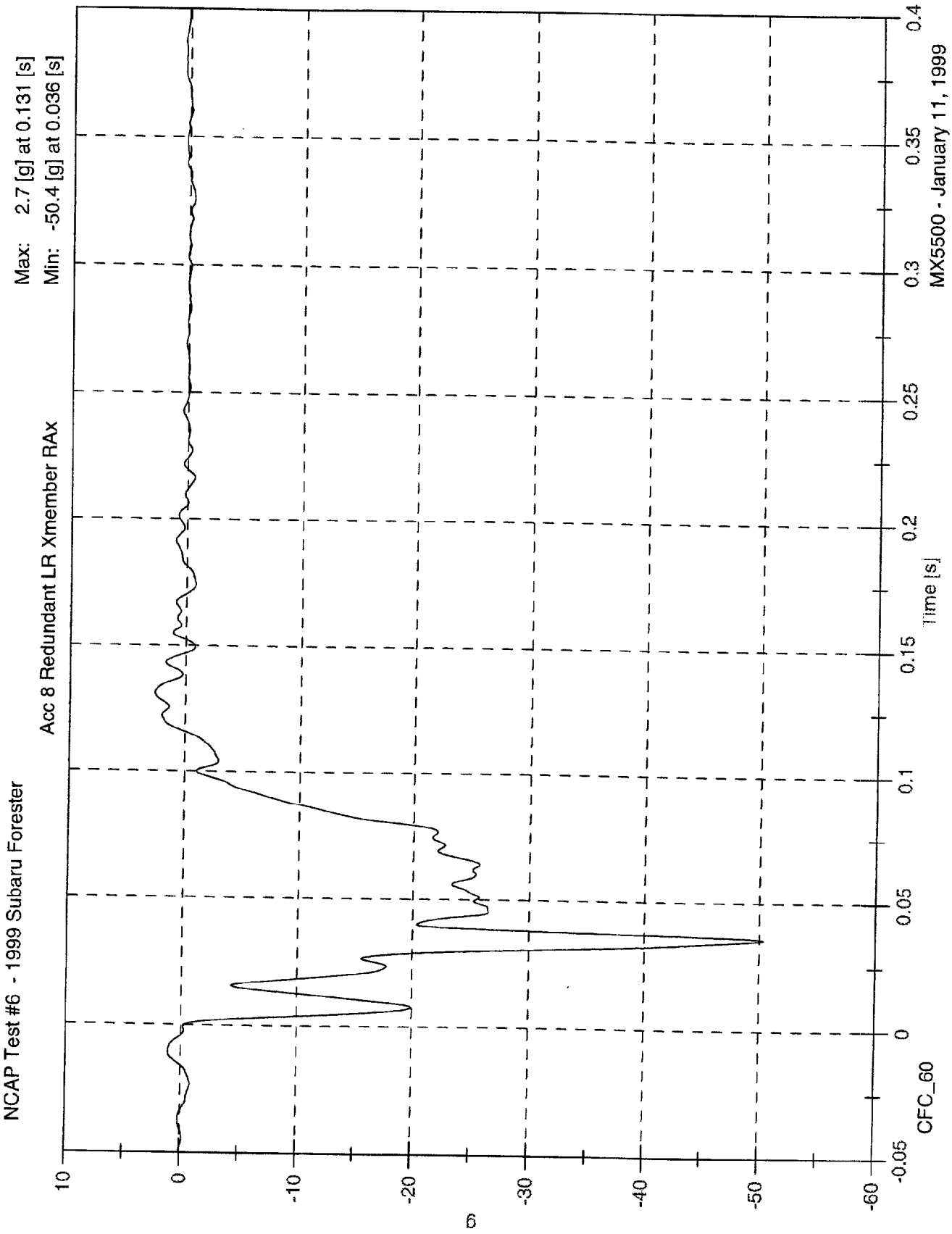

NCAP Test #6 - 1999 Subaru Forester
Acc 6 Instrument Panel Ax
Max: 57.7 [kph] at -0.012 [s]
Min: 5.1 [kph] at 0.063 [s]
kph
60
50
40
30
20
10
0
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
Time [s]
CFC_180
MX5500 - January 11, 1999

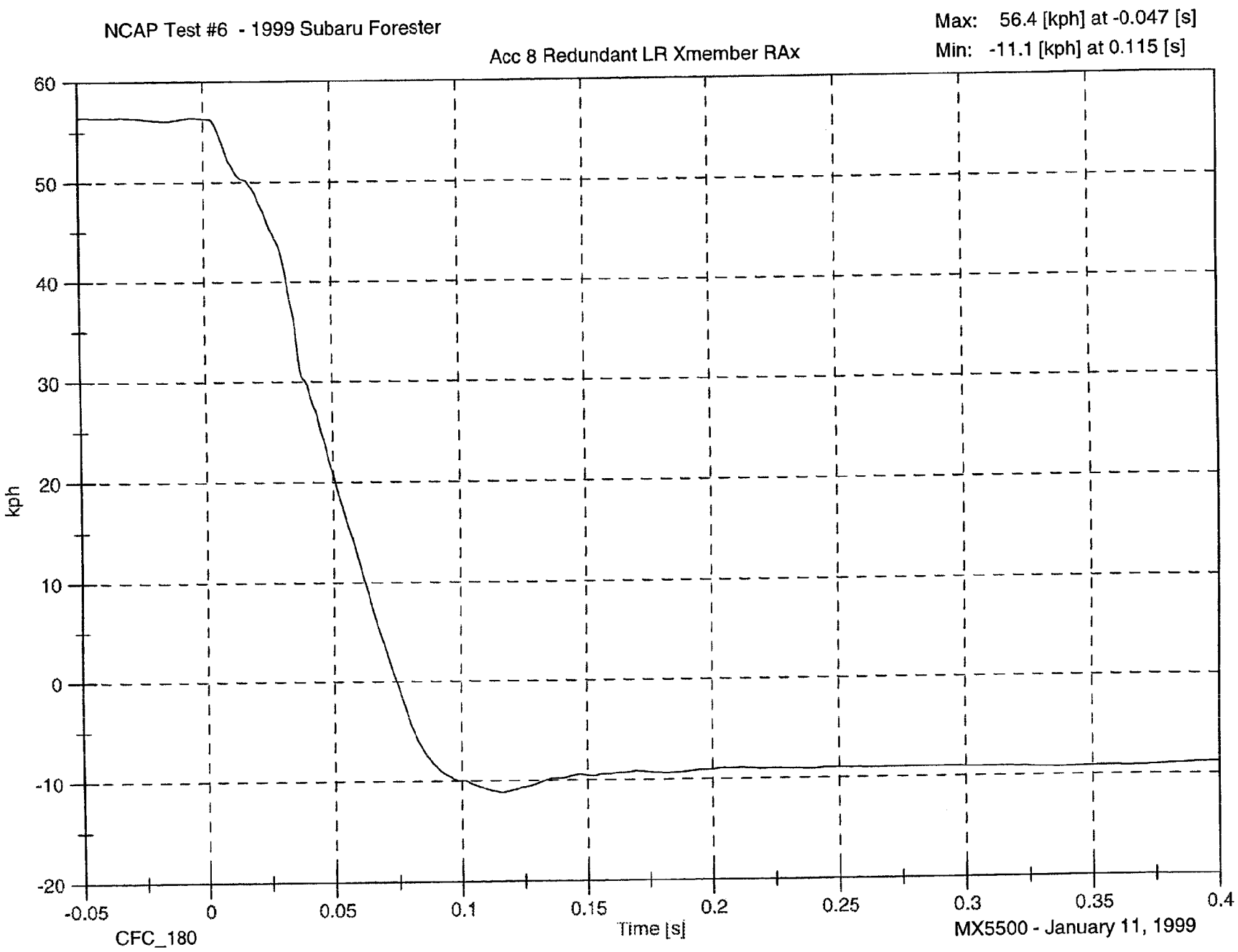

NCAP Test #6 - 1999 Subaru Forester
Acc 6 Instrument Panel Ax
Max: 3447.4 [mm] at 0.600 [s]
Min: -1573.2 [mm] at -0.100 [s]
MX5500 - January 11, 1999
CFC_180
mm
Time [s]
4000
3000
2000
1000
0
-1000
-2000
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4

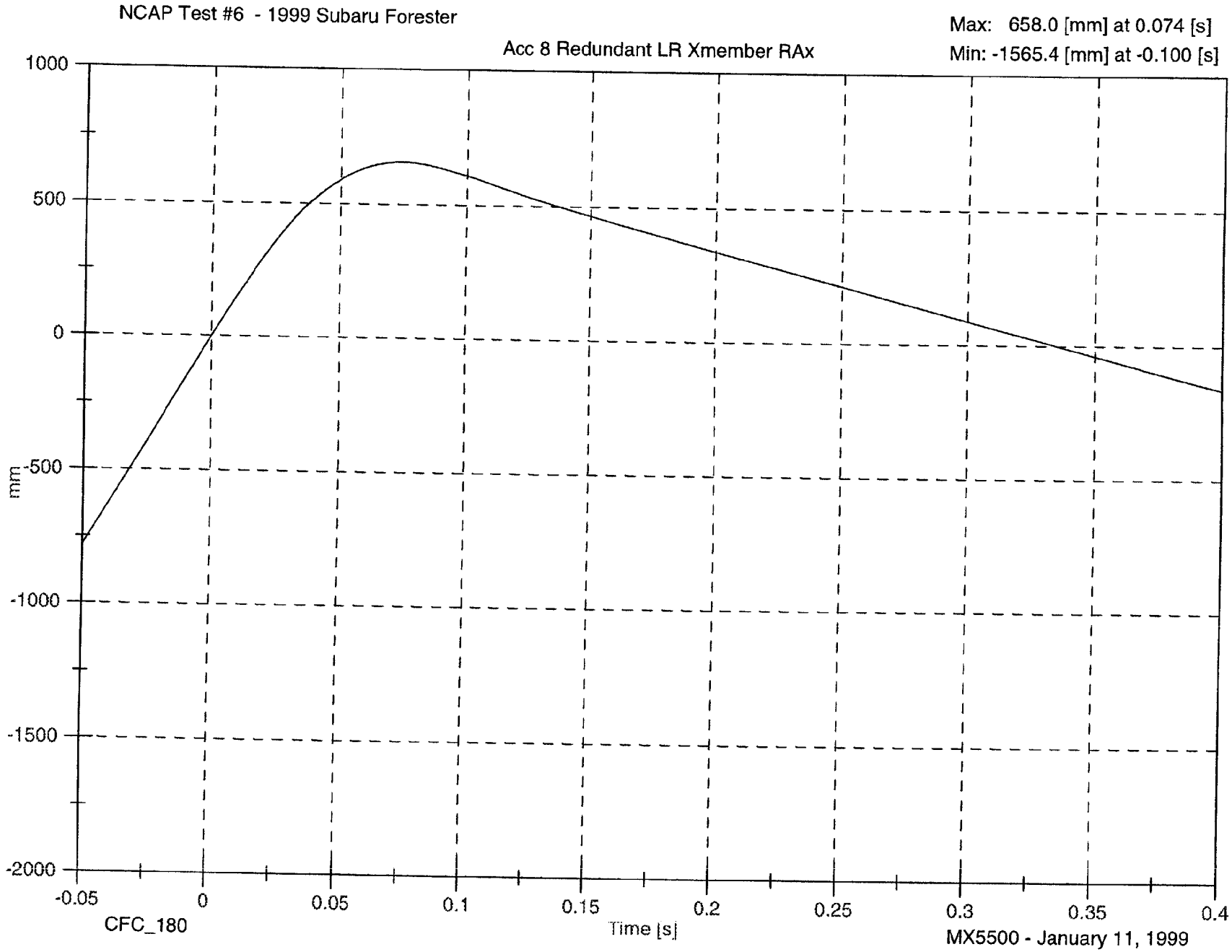

NCAP Test #6 - 1999 Subaru Forester
Acc 7 L Caliper Ax
Max: 8.6 [g] at 0.065 [s]
Min: -71.1 [g] at 0.040 [s]
MX5500 - January 11, 1999
CFC_60
Time [s]
g
10
0
-10
-20
-30
-40
-50
-60
-70
-80
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4

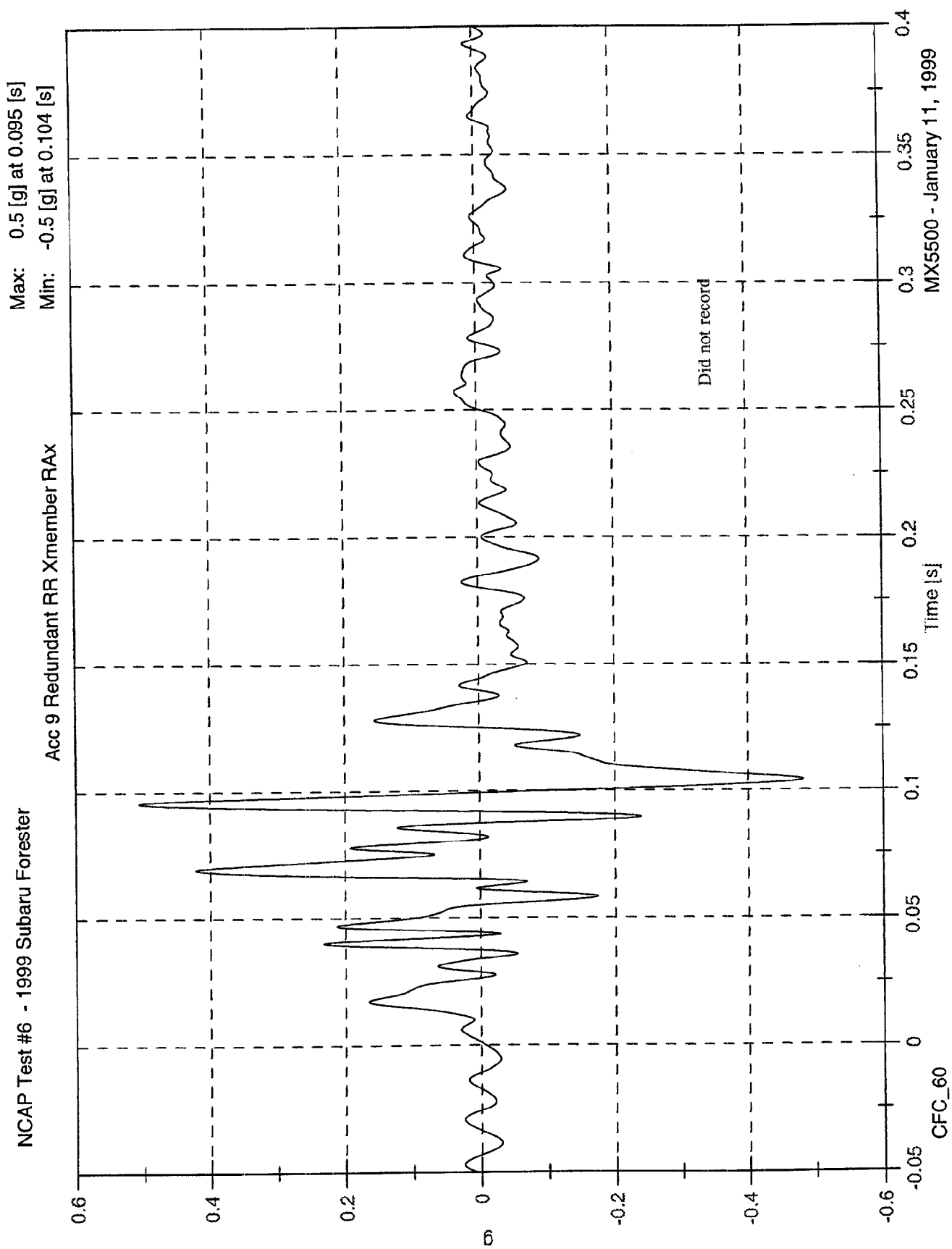

NCAP Test #6 - 1999 Subaru Forester
Acc 7 L Caliper Ax
Max: 56.5 [kph] at -0.018 [s]
Min: -8.2 [kph] at 0.146 [s]
MX5500 - January 11, 1999
kph
Time [s]
CFC_180
60
50
40
30
20
10
0
-10
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4

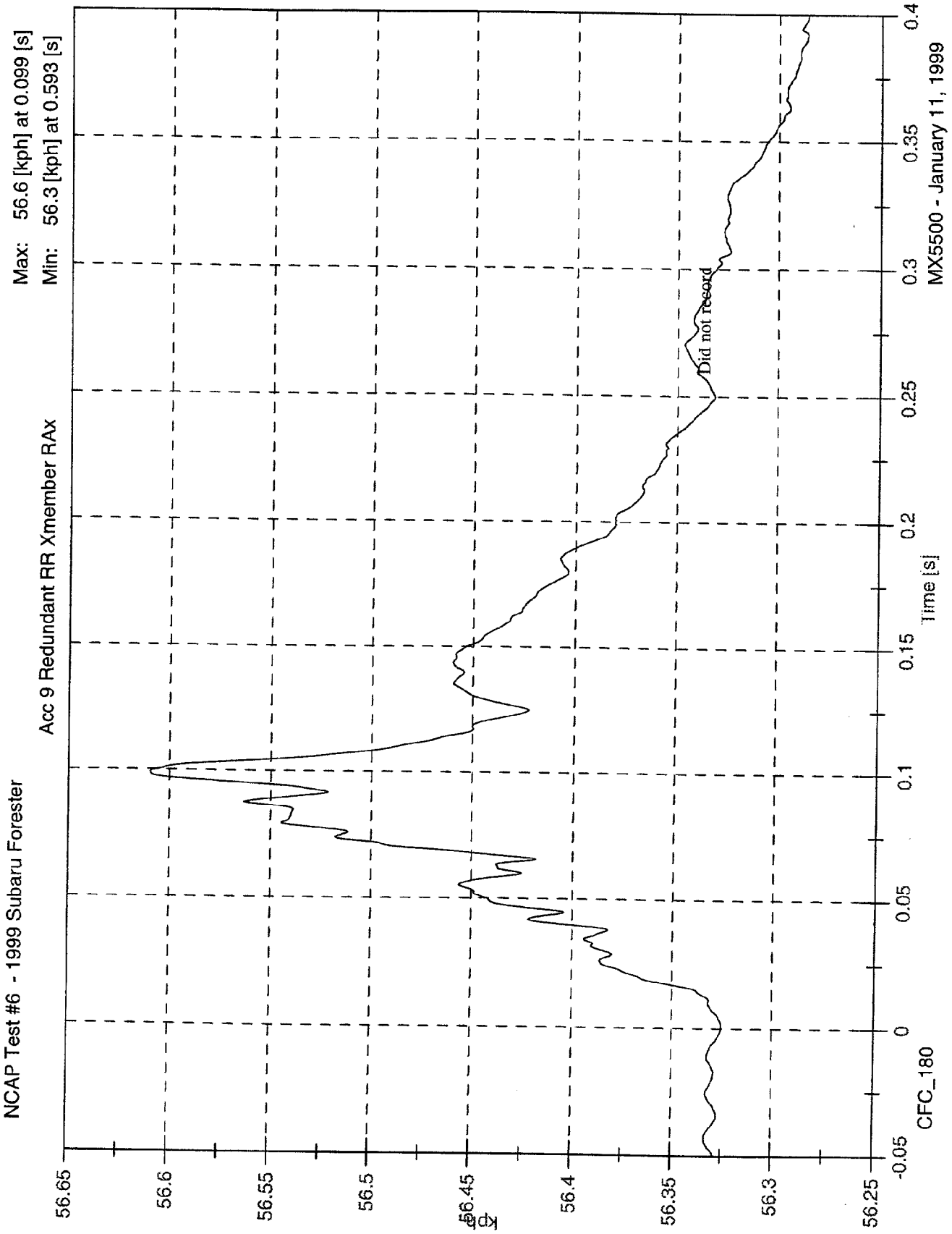

NCAP Test #6 - 1999 Subaru Forester
Acc 7 L Caliper Ax
Max: 526.2 [mm] at 0.058 [s]
Min: -1565.9 [mm] at -0.100 [s]
1000
500
0
-500
-1000
-1500
-2000
mm
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
Time [s]
CFC_180
MX5500 - January 11, 1999

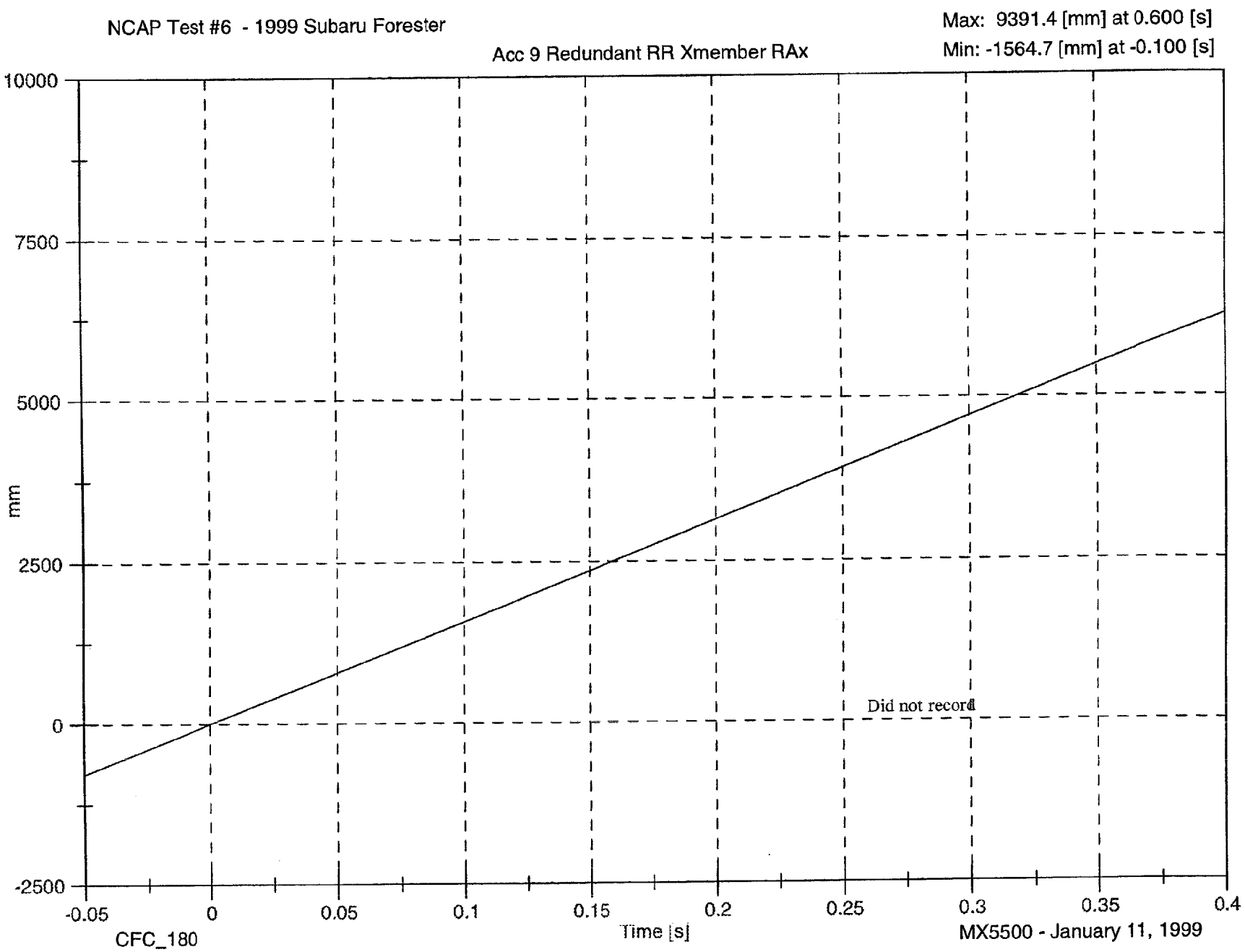

NCAP Test #6 - 1999 Subaru Forester
Acc 8 Redundant LR Xmember RAx
Max: 2.7 [g] at 0.131 [s]
Min: -50.4 [g] at 0.036 [s]
MX5500 - January 11, 1999
CFC_60
Time [s]
g
10
0
-10
-20
-30
-40
-50
-60
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4


NCAP Test #6 - 1999 Subaru Forester
Acc 8 Redundant LR Xmember RAx
Max: 56.4 [kph] at -0.047 [s]
Min: -11.1 [kph] at 0.115 [s]
60
50
40
30
20
10
0
-10
-20
kph
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
Time [s]
CFC_180
MX5500 - January 11, 1999


NCAP Test #6 - 1999 Subaru Forester
Acc 8 Redundant LR Xmember RAx
Max: 658.0 [mm] at 0.074 [s]
Min: -1565.4 [mm] at -0.100 [s]
1000
500
0
-500
-1000
-1500
-2000
mm
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
Time [s]
CFC_180
MX5500 - January 11, 1999


NCAP Test #6 - 1999 Subaru Forester
Acc 9 Redundant RR Xmember RAx
Max: 0.5 [g] at 0.095 [s]
Min: -0.5 [g] at 0.104 [s]
Did not record
MX5500 - January 11, 1999
CFC_60
Time [s]
g
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4


NCAP Test #6 - 1999 Subaru Forester
Acc 9 Redundant RR Xmember RAx
Max: 56.6 [kph] at 0.099 [s]
Min: 56.3 [kph] at 0.593 [s]
Did not record
MX5500 - January 11, 1999
CFC_180
Time [s]
kph
56.65
56.6
56.55
56.5
56.45
56.4
56.35
56.3
56.25
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4

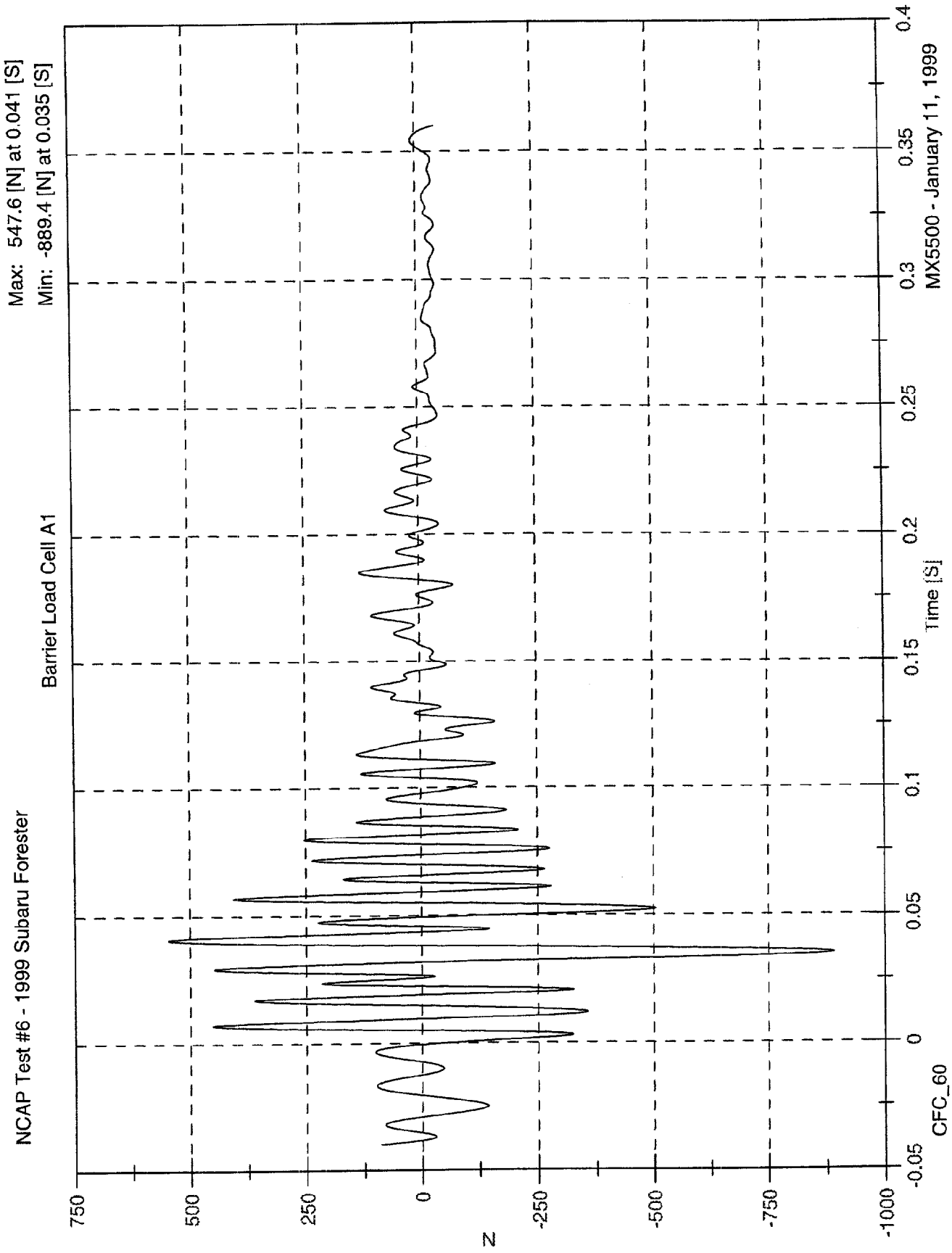

NCAP Test #6 - 1999 Subaru Forester
Acc 9 Redundant RR Xmember RAx
Max: 9391.4 [mm] at 0.600 [s]
Min: -1564.7 [mm] at -0.100 [s]
10000
7500
5000
2500
0
-2500
mm
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
Time [s]
Did not record
CFC_180
MX5500 - January 11, 1999

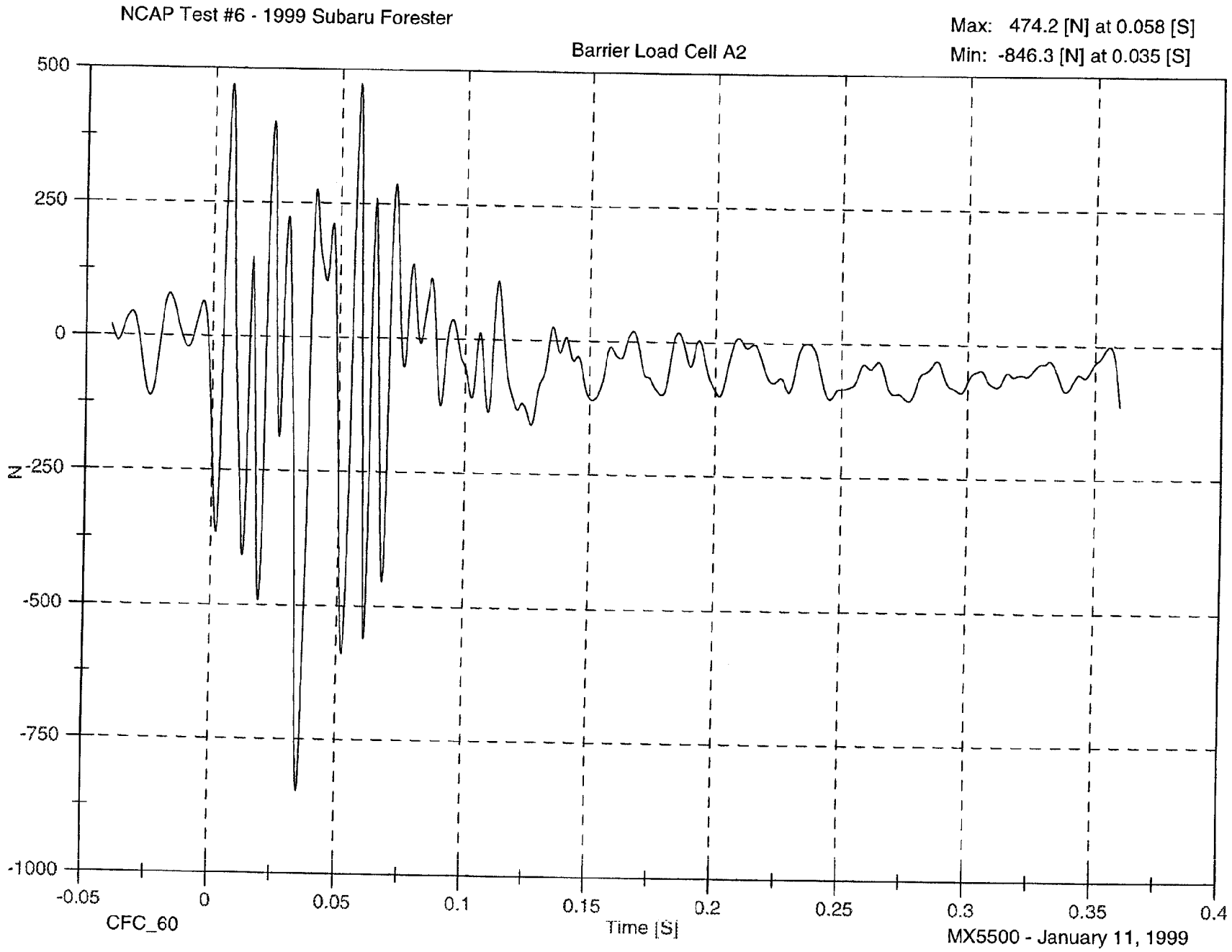
NHTSA TEST NO. MX5500

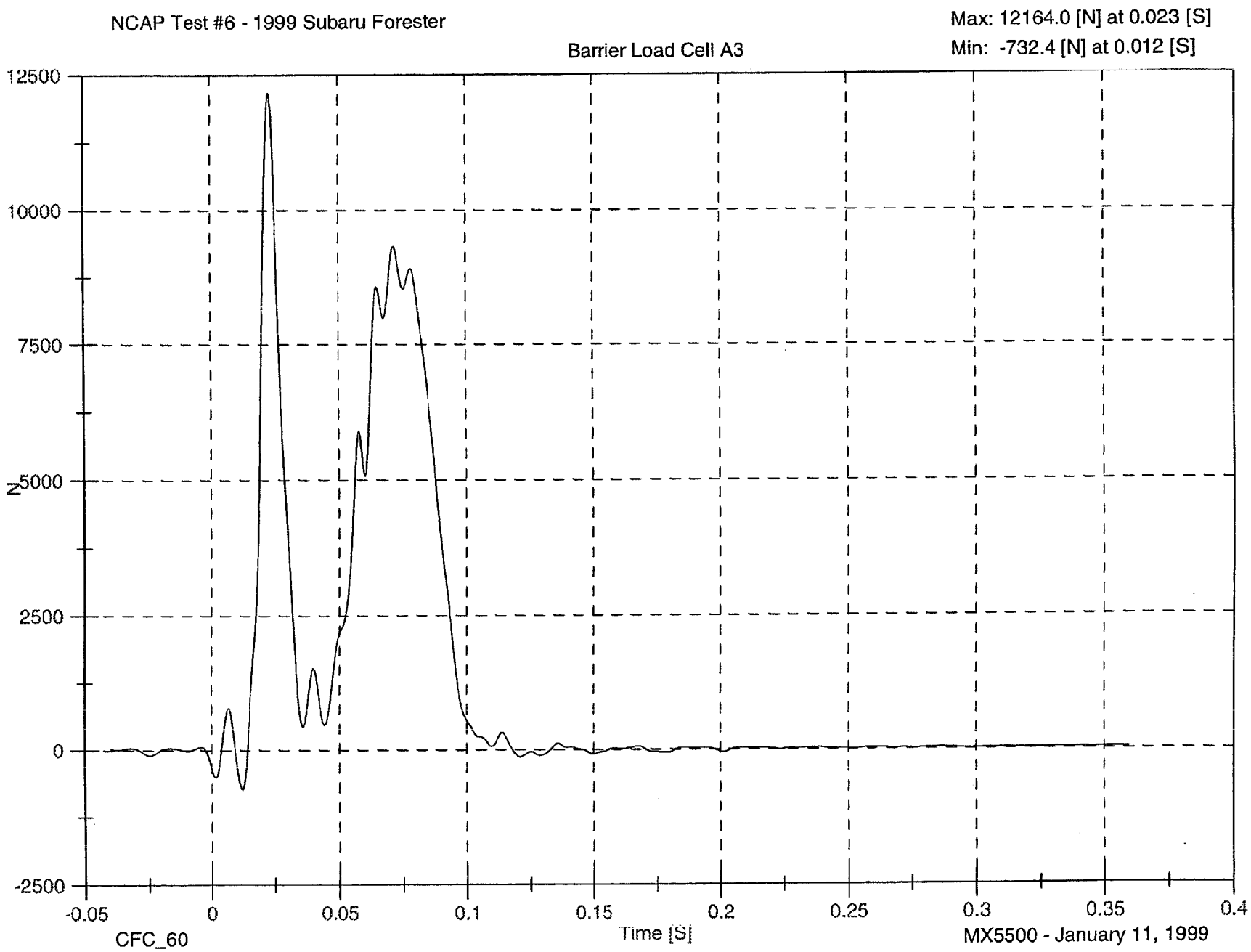
LOAD CELL BARRIER DATA

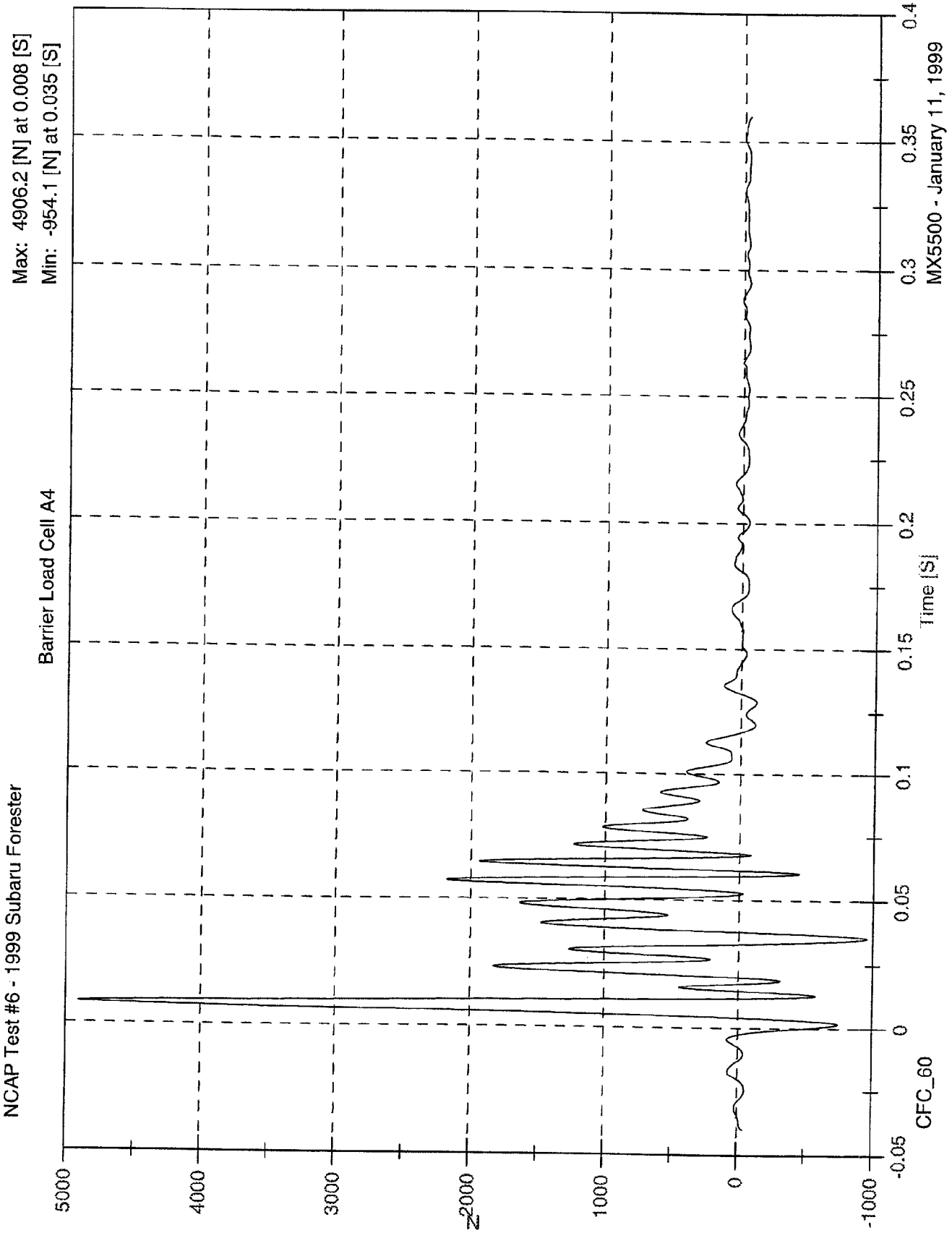
FILTER CHANNEL CLASS

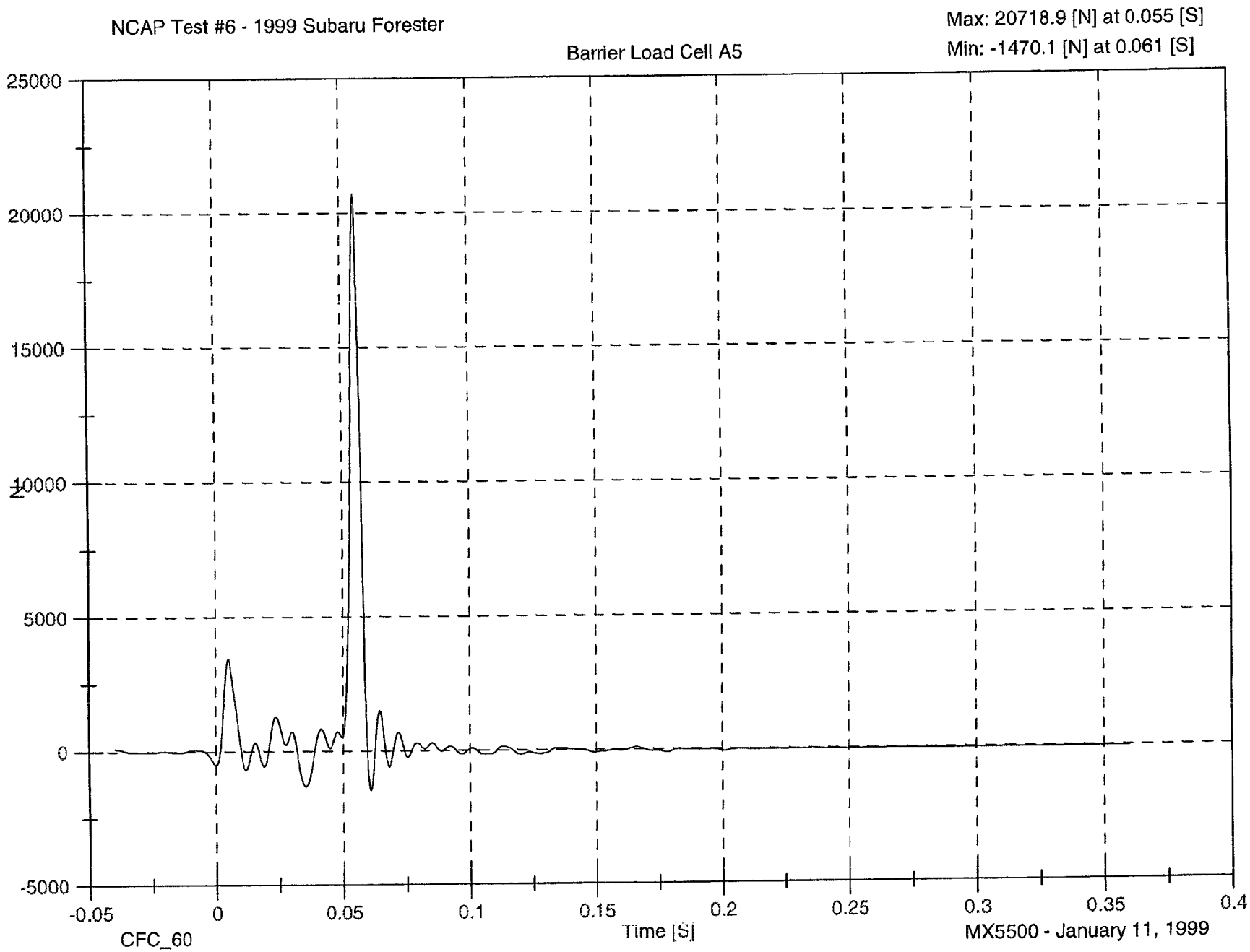
60

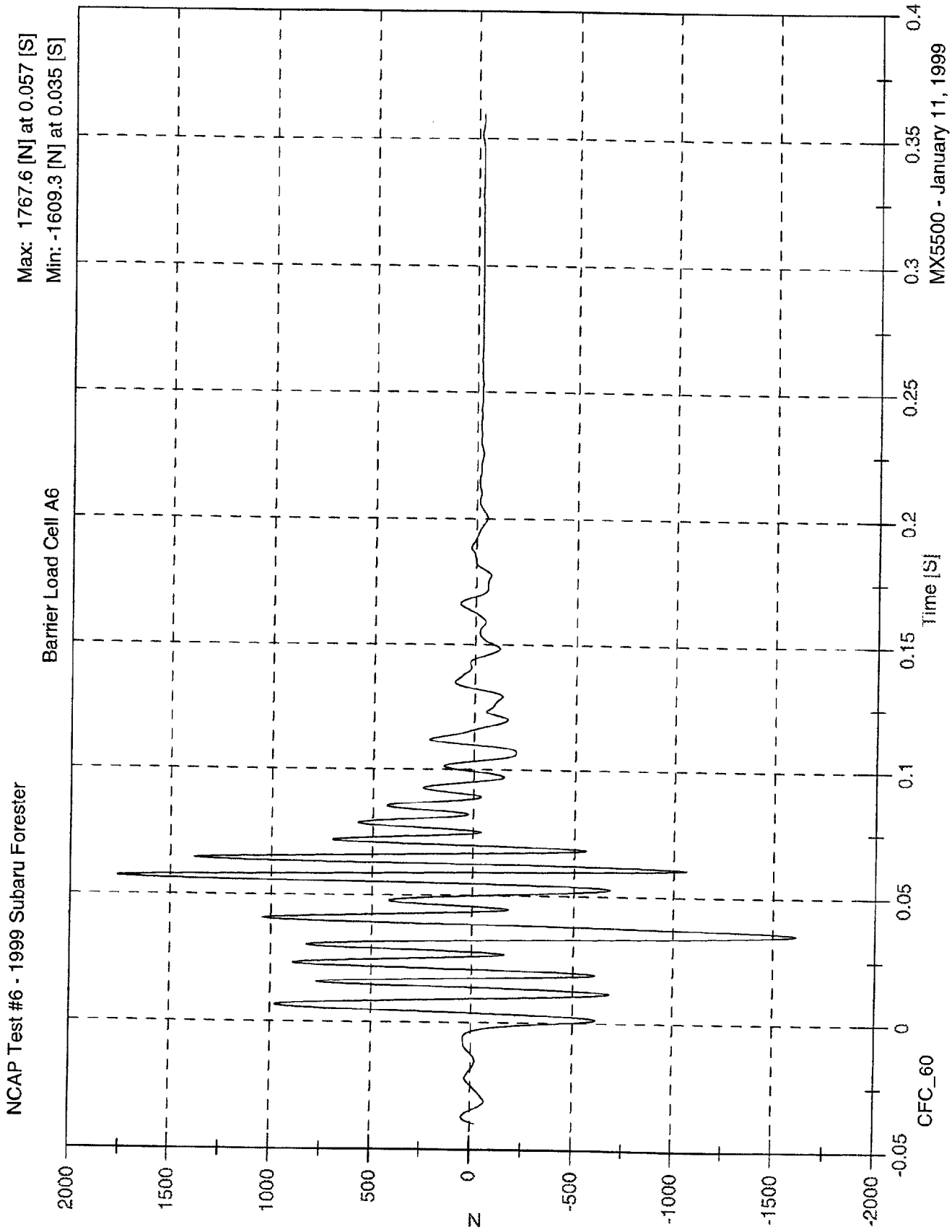

NCAP Test #6 - 1999 Subaru Forester
Barrier Load Cell A1
Max: 547.6 [N] at 0.041 [S]
Min: -889.4 [N] at 0.035 [S]
MX5500 - January 11, 1999
CFC_60
N
Time [S]
750
500
250
0
-250
-500
-750
-1000
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4

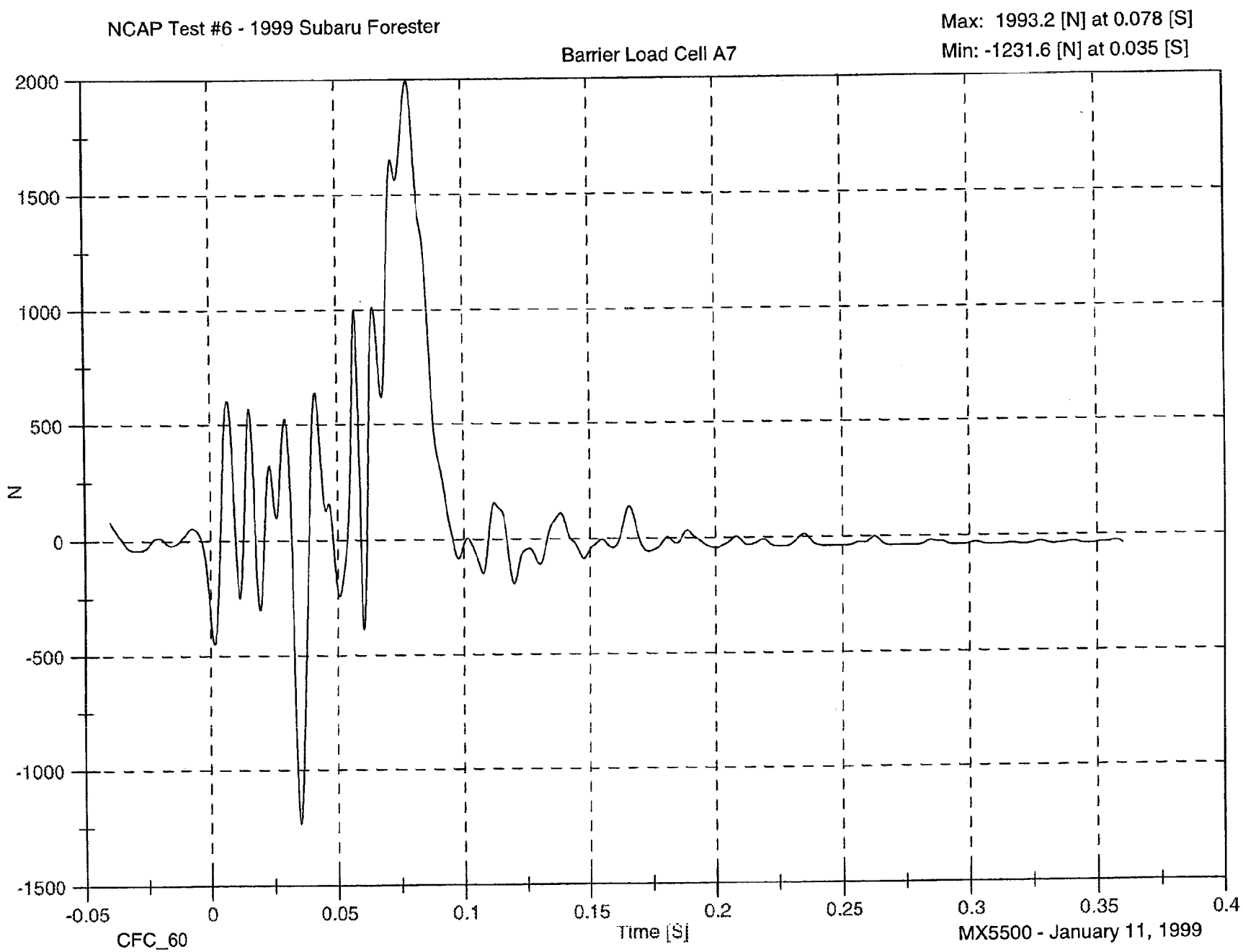

NCAP Test #6 - 1999 Subaru Forester
Barrier Load Cell A2
Max: 474.2 [N] at 0.058 [S]
Min: -846.3 [N] at 0.035 [S]
500
250
0
-250
-500
-750
-1000
N
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
Time [S]
CFC_60
MX5500 - January 11, 1999

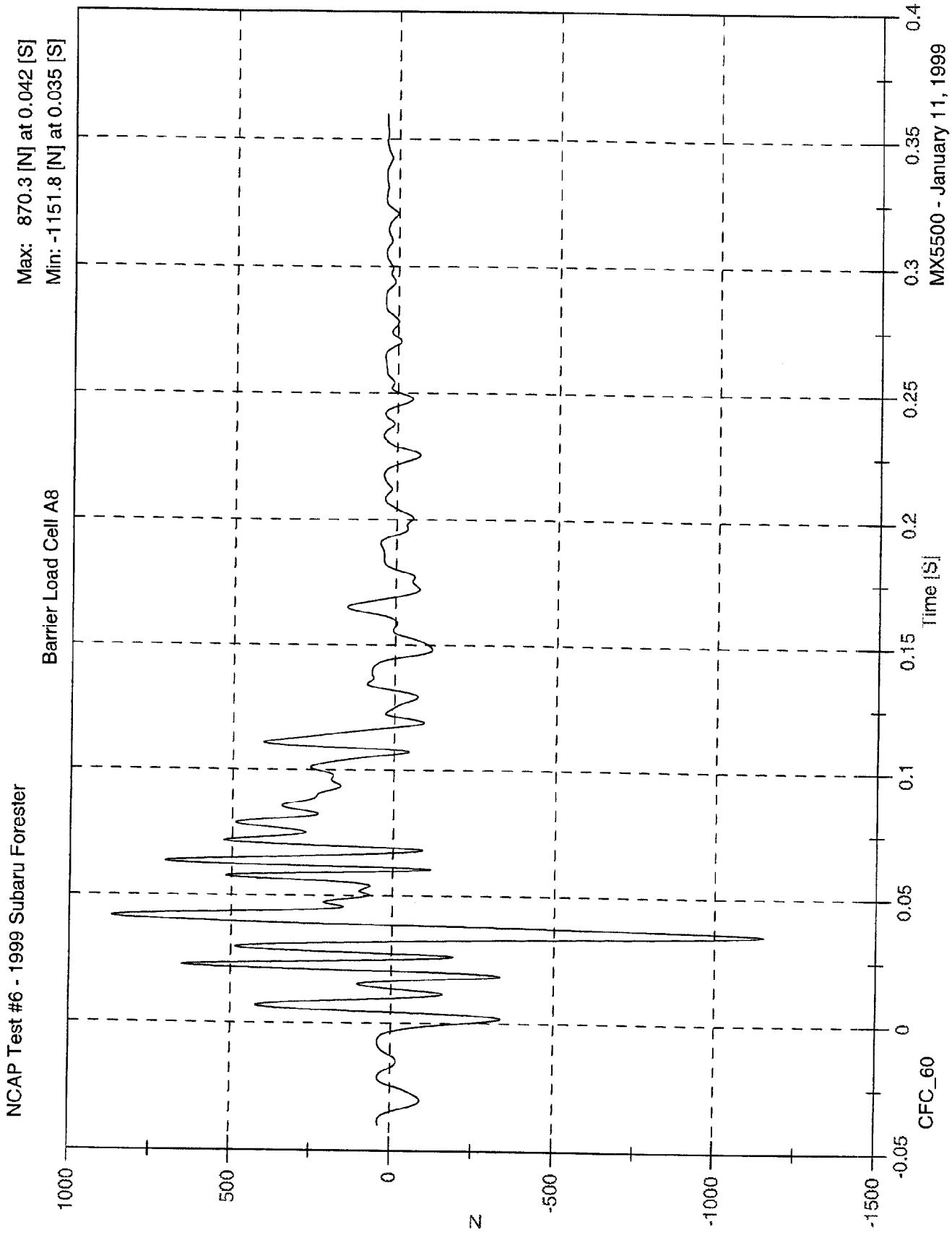

NCAP Test #6 - 1999 Subaru Forester
Barrier Load Cell A3
Max: 12164.0 [N] at 0.023 [S]
Min: -732.4 [N] at 0.012 [S]
12500
10000
7500
5000
2500
0
-2500
N
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
Time [S]
CFC_60
MX5500 - January 11, 1999

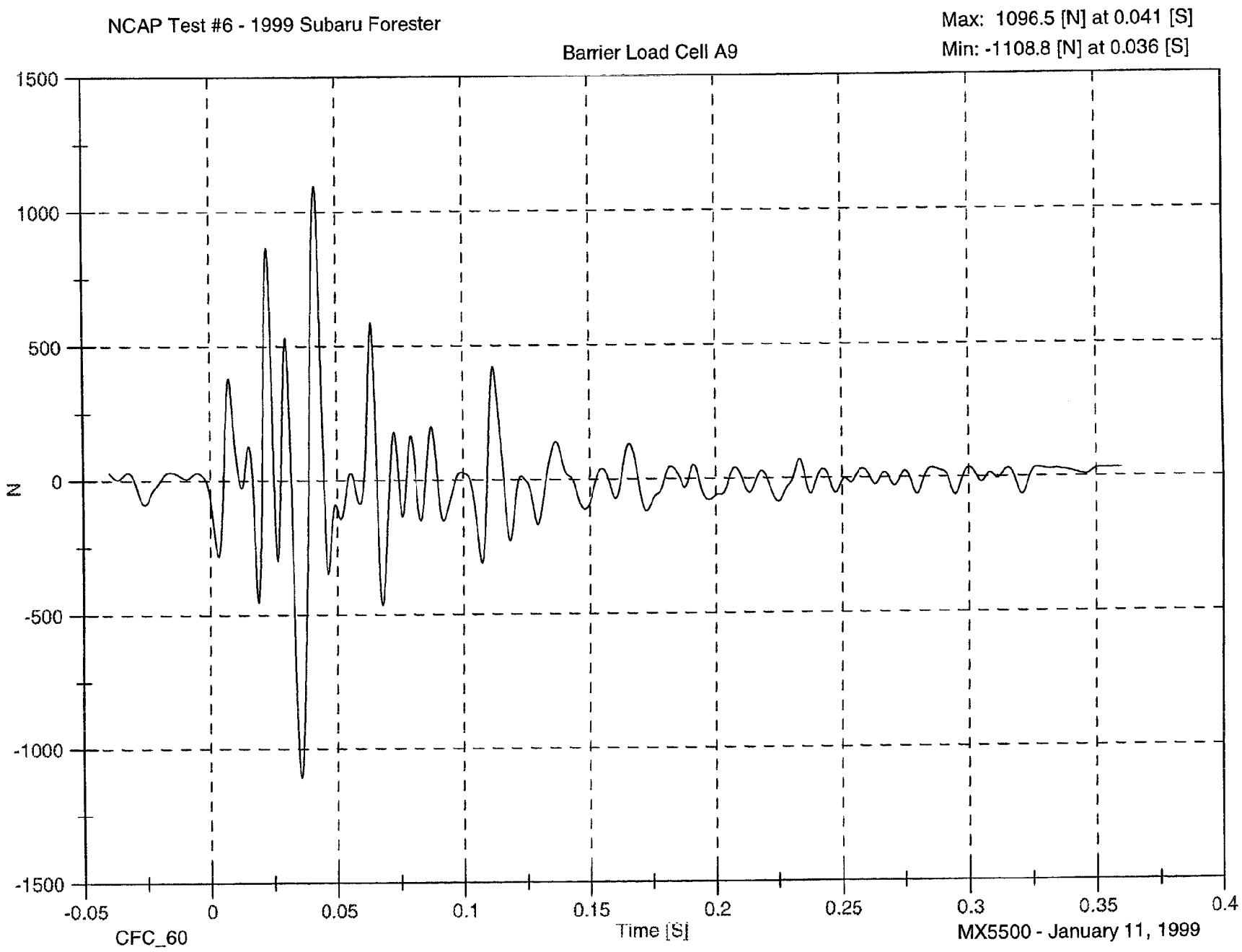

NCAP Test #6 - 1999 Subaru Forester
Barrier Load Cell A4
Max: 4906.2 [N] at 0.008 [S]
Min: -954.1 [N] at 0.035 [S]
MX5500 - January 11, 1999
CFC_60
Time [S]
Z
5000
4000
3000
2000
1000
0
-1000
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4

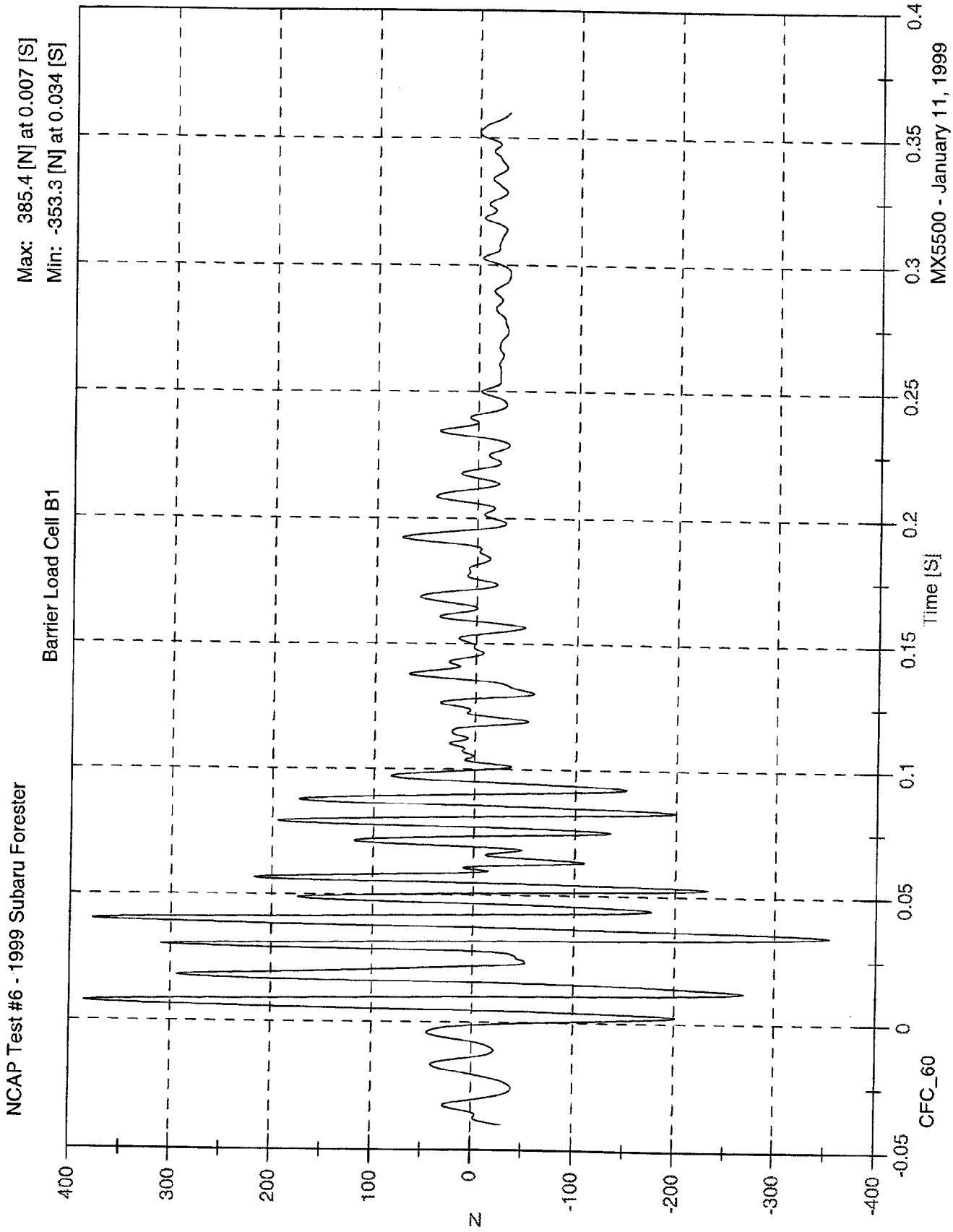

NCAP Test #6 - 1999 Subaru Forester
Barrier Load Cell A5
Max: 20718.9 [N] at 0.055 [S]
Min: -1470.1 [N] at 0.061 [S]
25000
20000
15000
10000
5000
0
-5000
N
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
Time [S]
CFC_60
MX5500 - January 11, 1999

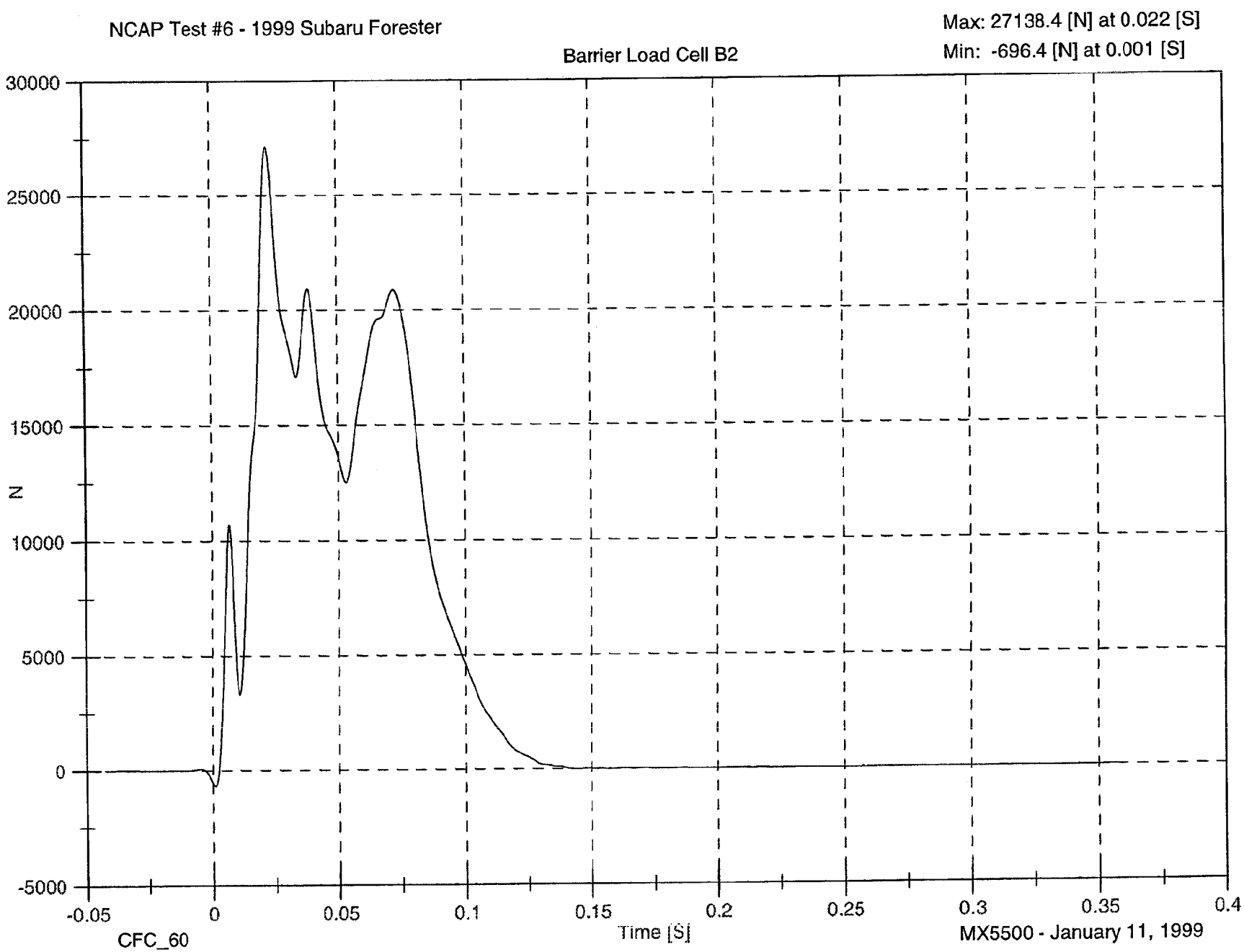

NCAP Test #6 - 1999 Subaru Forester
Max: 1767.6 [N] at 0.057 [S]
Min: -1609.3 [N] at 0.035 [S]
Barrier Load Cell A6
MX5500 - January 11, 1999
CFC_60
N
Time [S]
2000
1500
1000
500
0
-500
-1000
-1500
-2000
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4

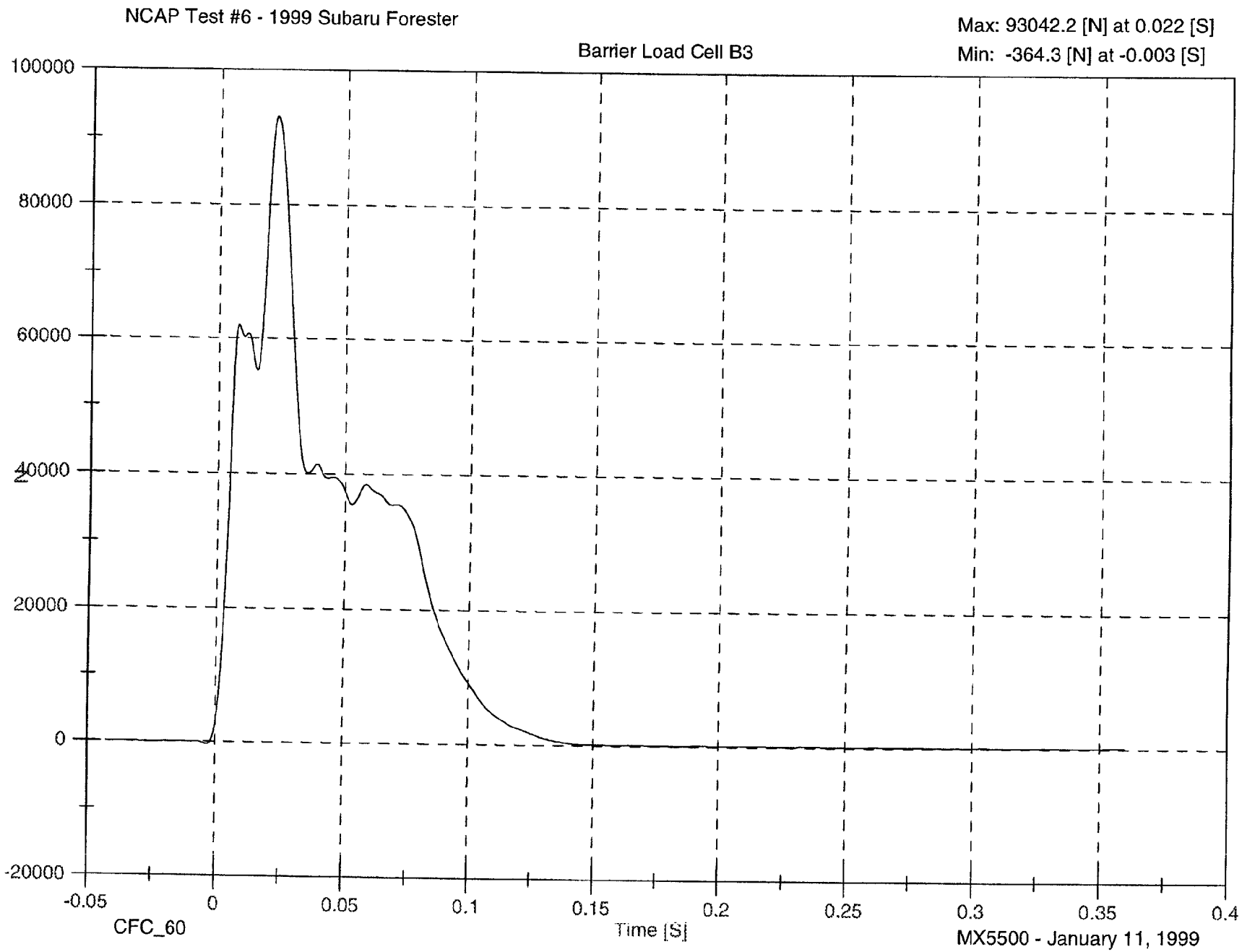

NCAP Test #6 - 1999 Subaru Forester
Barrier Load Cell A7
Max: 1993.2 [N] at 0.078 [S]
Min: -1231.6 [N] at 0.035 [S]
2000
1500
1000
500
0
-500
-1000
-1500
N
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
Time [S]
CFC_60
MX5500 - January 11, 1999

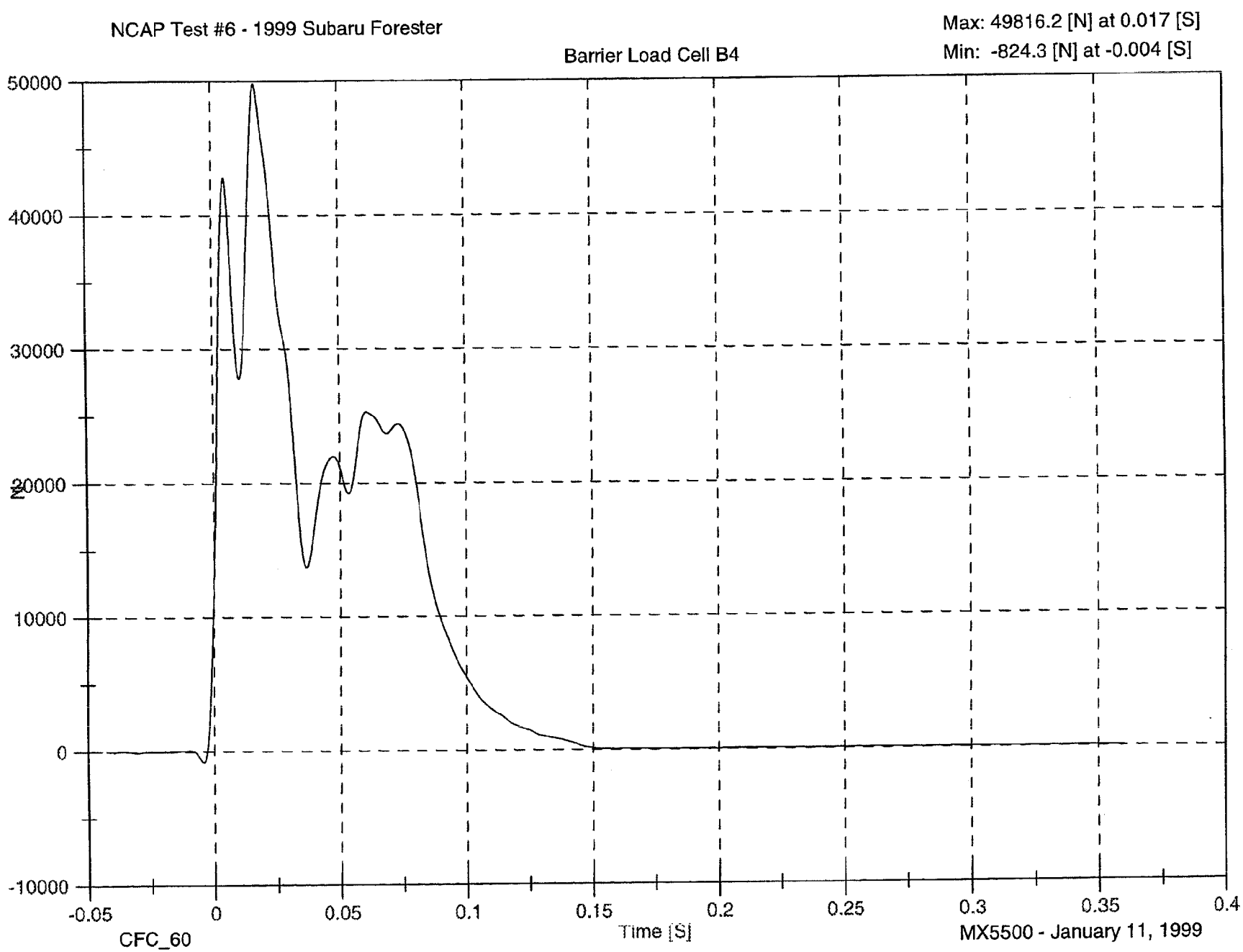

NCAP Test #6 - 1999 Subaru Forester
Barrier Load Cell A8
Max: 870.3 [N] at 0.042 [S]
Min: -1151.8 [N] at 0.035 [S]
MX5500 - January 11, 1999
CFC_60
N
Time [S]
1000
500
0
-500
-1000
-1500
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4

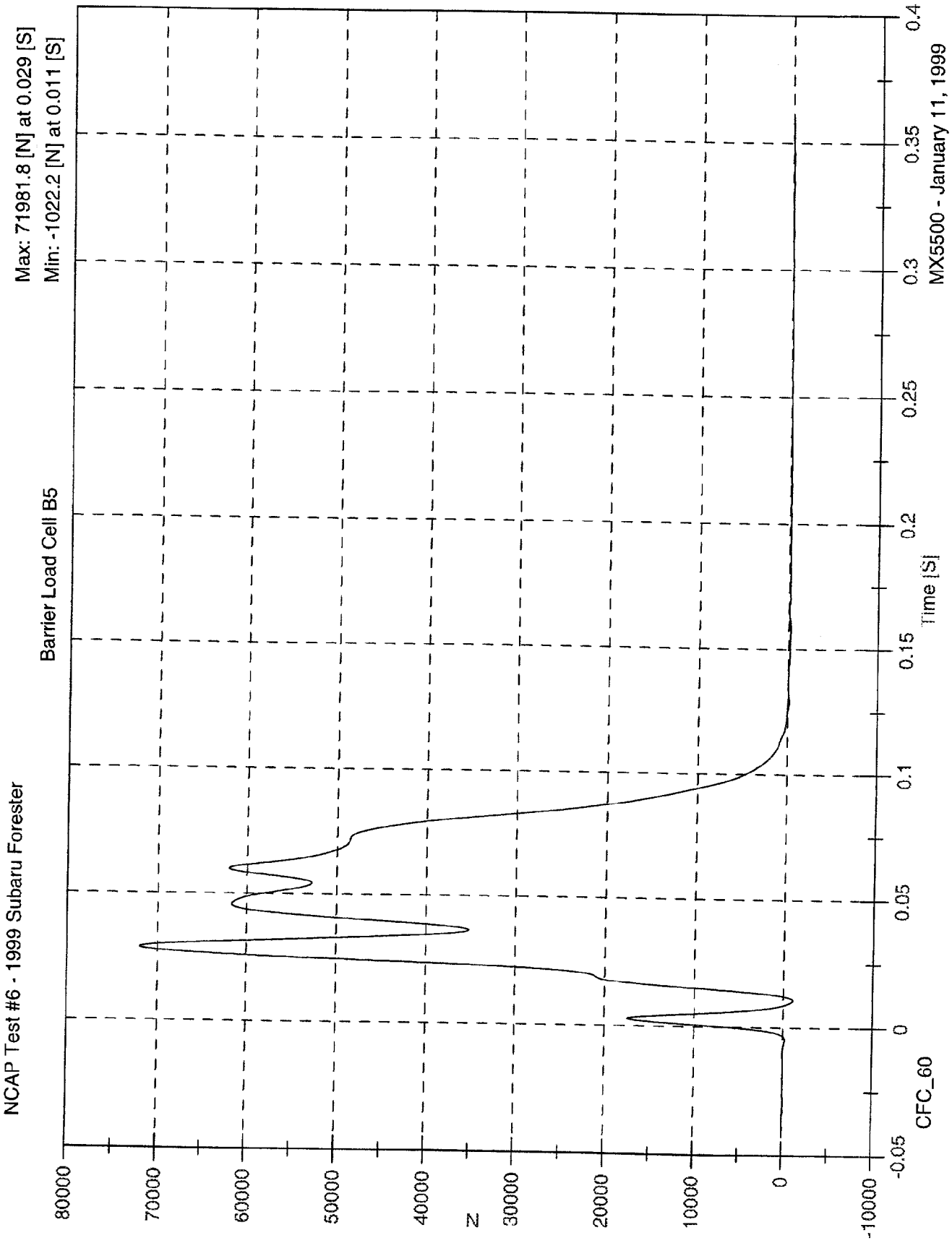

NCAP Test #6 - 1999 Subaru Forester
Barrier Load Cell A9
Max: 1096.5 [N] at 0.041 [S]
Min: -1108.8 [N] at 0.036 [S]
1500
1000
500
0
-500
-1000
-1500
N
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
Time [S]
CFC_60
MX5500 - January 11, 1999

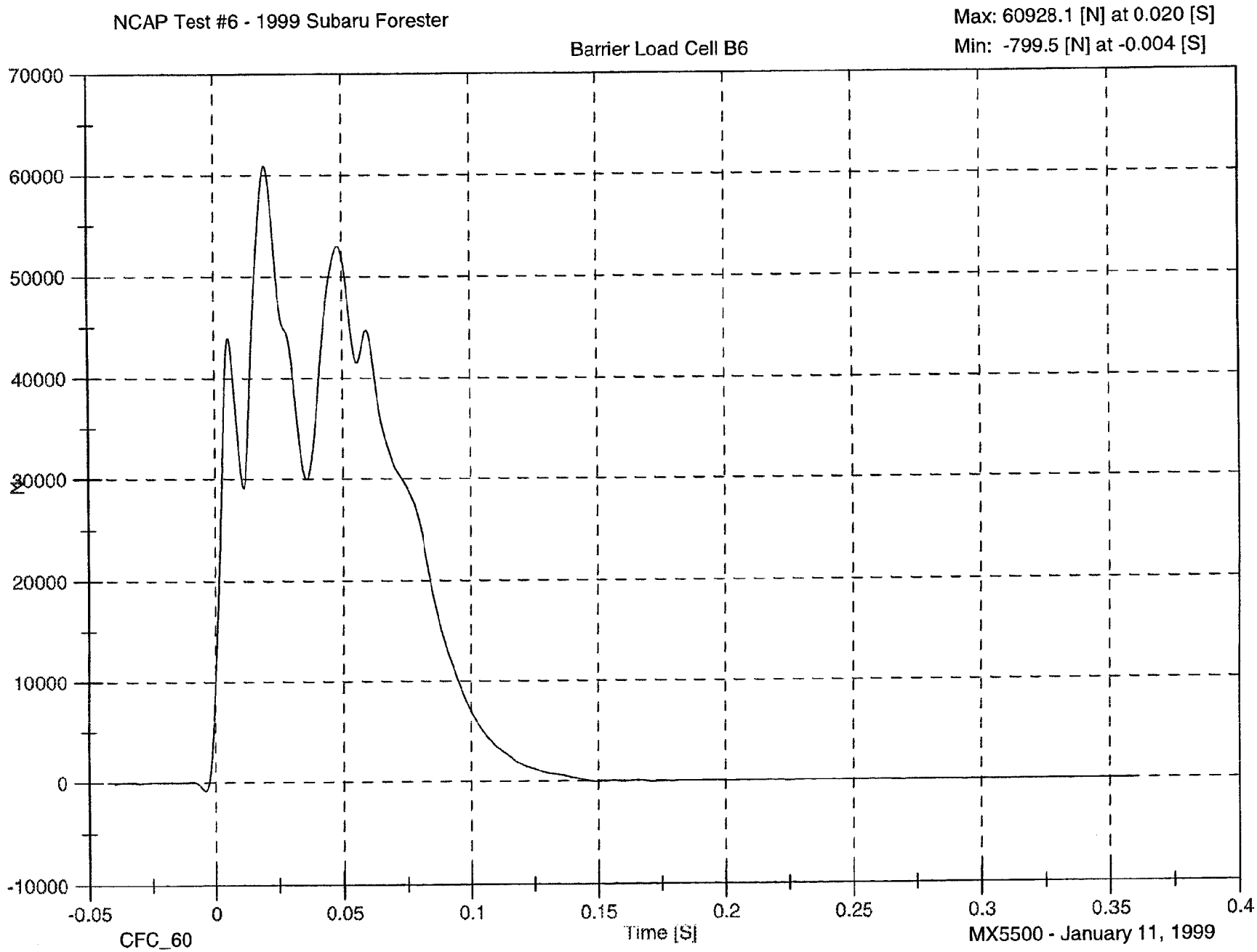

NCAP Test #6 - 1999 Subaru Forester
Max: 385.4 [N] at 0.007 [S]
Min: -353.3 [N] at 0.034 [S]
Barrier Load Cell B1
MX5500 - January 11, 1999
CFC_60
N
Time [S]
400
300
200
100
0
-100
-200
-300
-400
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4

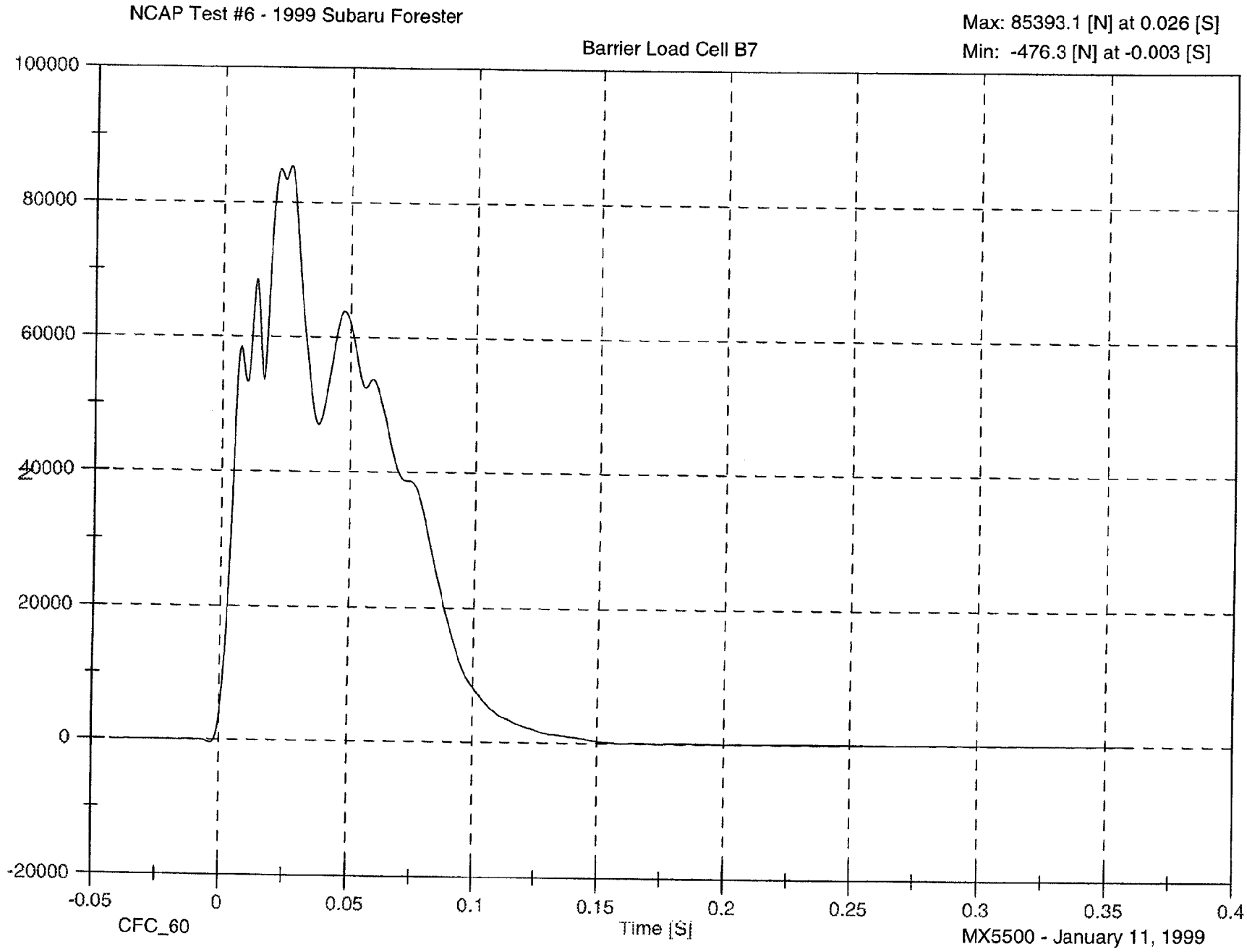

NCAP Test #6 - 1999 Subaru Forester
Barrier Load Cell B2
Max: 27138.4 [N] at 0.022 [S]
Min: -696.4 [N] at 0.001 [S]
30000
25000
20000
15000
10000
5000
0
-5000
N
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
Time [S]
CFC_60
MX5500 - January 11, 1999

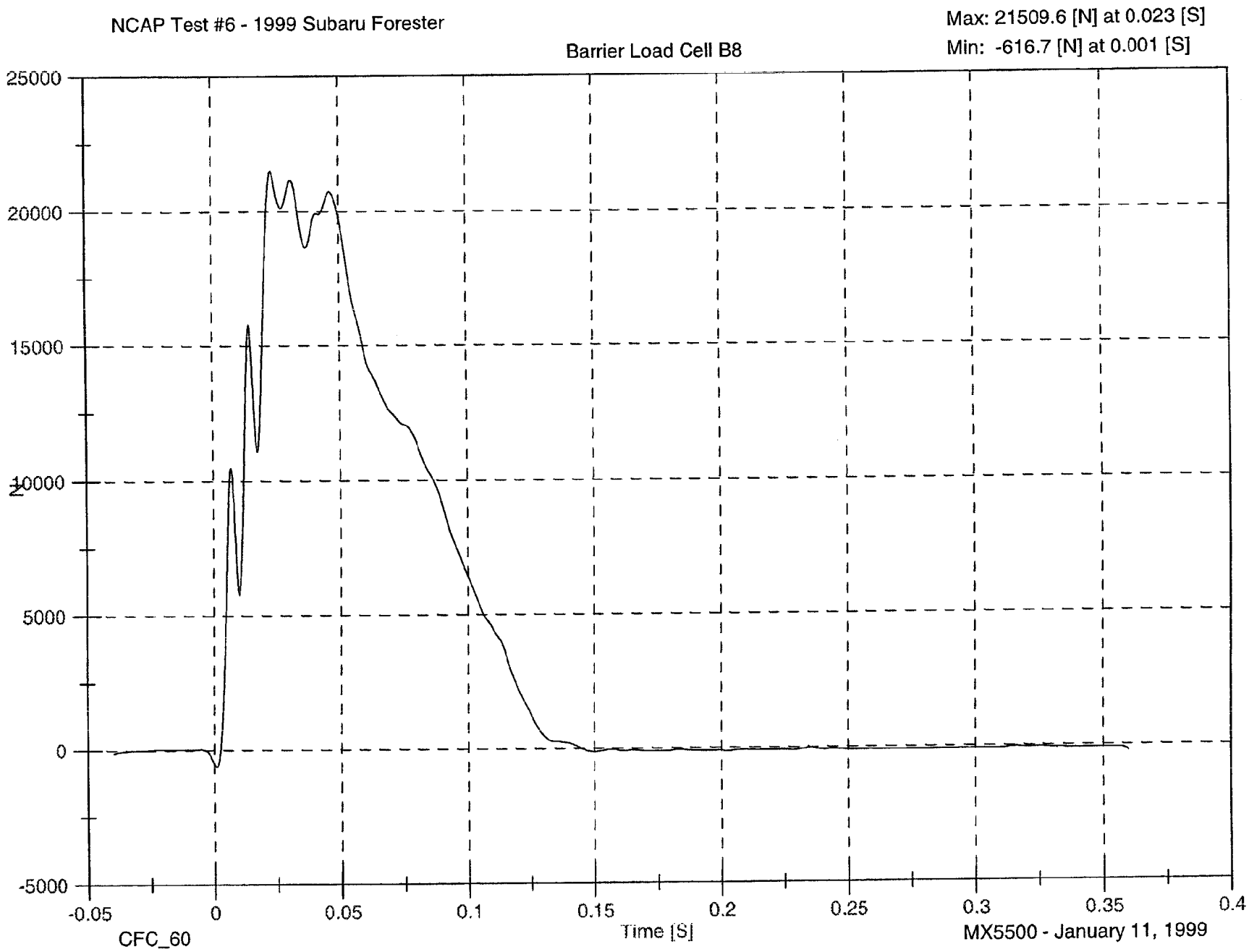

NCAP Test #6 - 1999 Subaru Forester
Barrier Load Cell B3
Max: 93042.2 [N] at 0.022 [S]
Min: -364.3 [N] at -0.003 [S]
100000
80000
60000
40000
20000
0
-20000
N
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
Time [S]
CFC_60
MX5500 - January 11, 1999

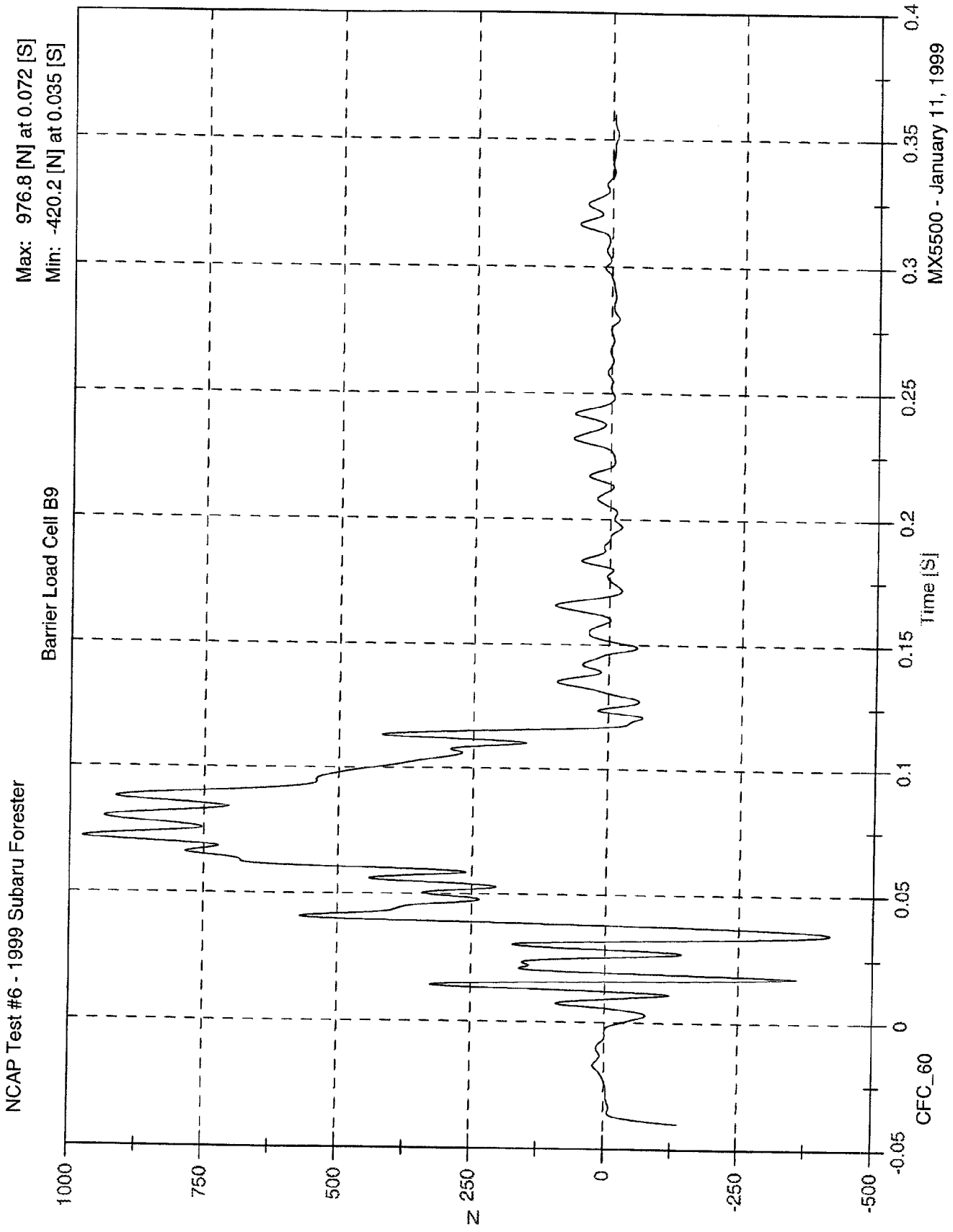

NCAP Test #6 - 1999 Subaru Forester
Barrier Load Cell B4
Max: 49816.2 [N] at 0.017 [S]
Min: -824.3 [N] at -0.004 [S]
50000
40000
30000
20000
10000
0
-10000
N
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
Time [S]
CFC_60
MX5500 - January 11, 1999

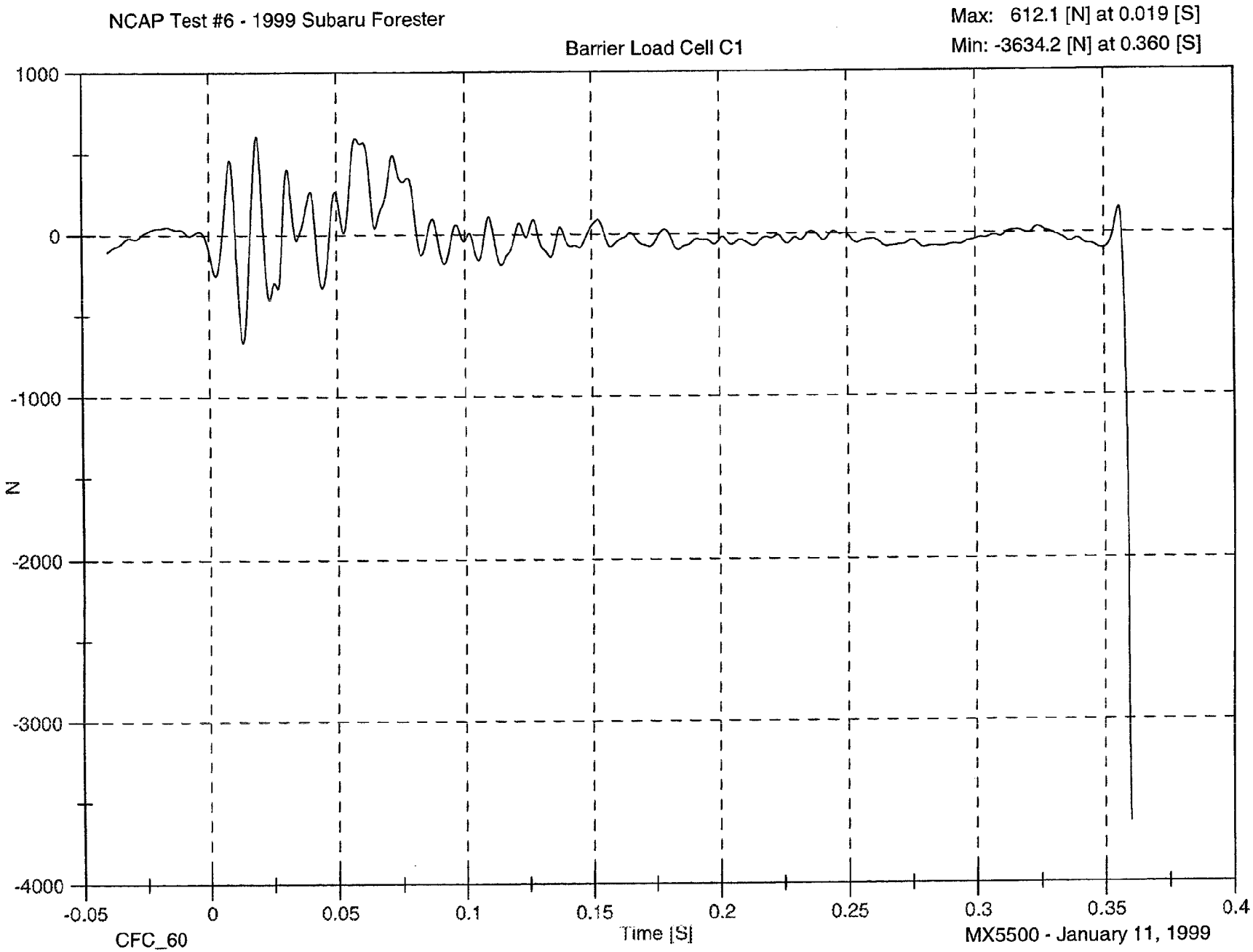

NCAP Test #6 - 1999 Subaru Forester
Barrier Load Cell B5
Max: 71981.8 [N] at 0.029 [S]
Min: -1022.2 [N] at 0.011 [S]
MX5500 - January 11, 1999
CFC_60
N
Time [S]
80000
70000
60000
50000
40000
30000
20000
10000
0
-10000
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4

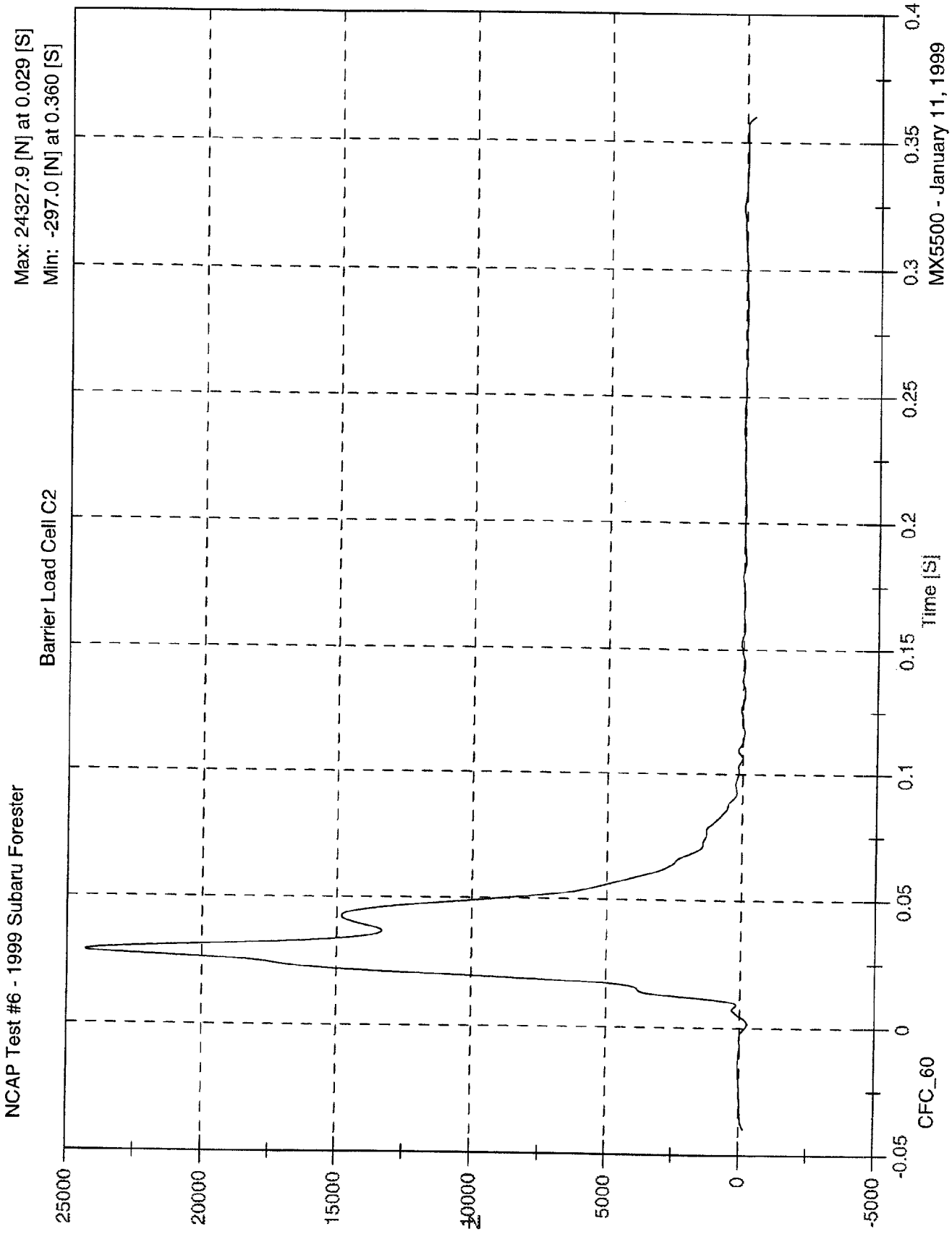

NCAP Test #6 - 1999 Subaru Forester
Barrier Load Cell B6
Max: 60928.1 [N] at 0.020 [S]
Min: -799.5 [N] at -0.004 [S]
70000
60000
50000
40000
30000
20000
10000
0
-10000
N
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
Time [S]
CFC_60
MX5500 - January 11, 1999

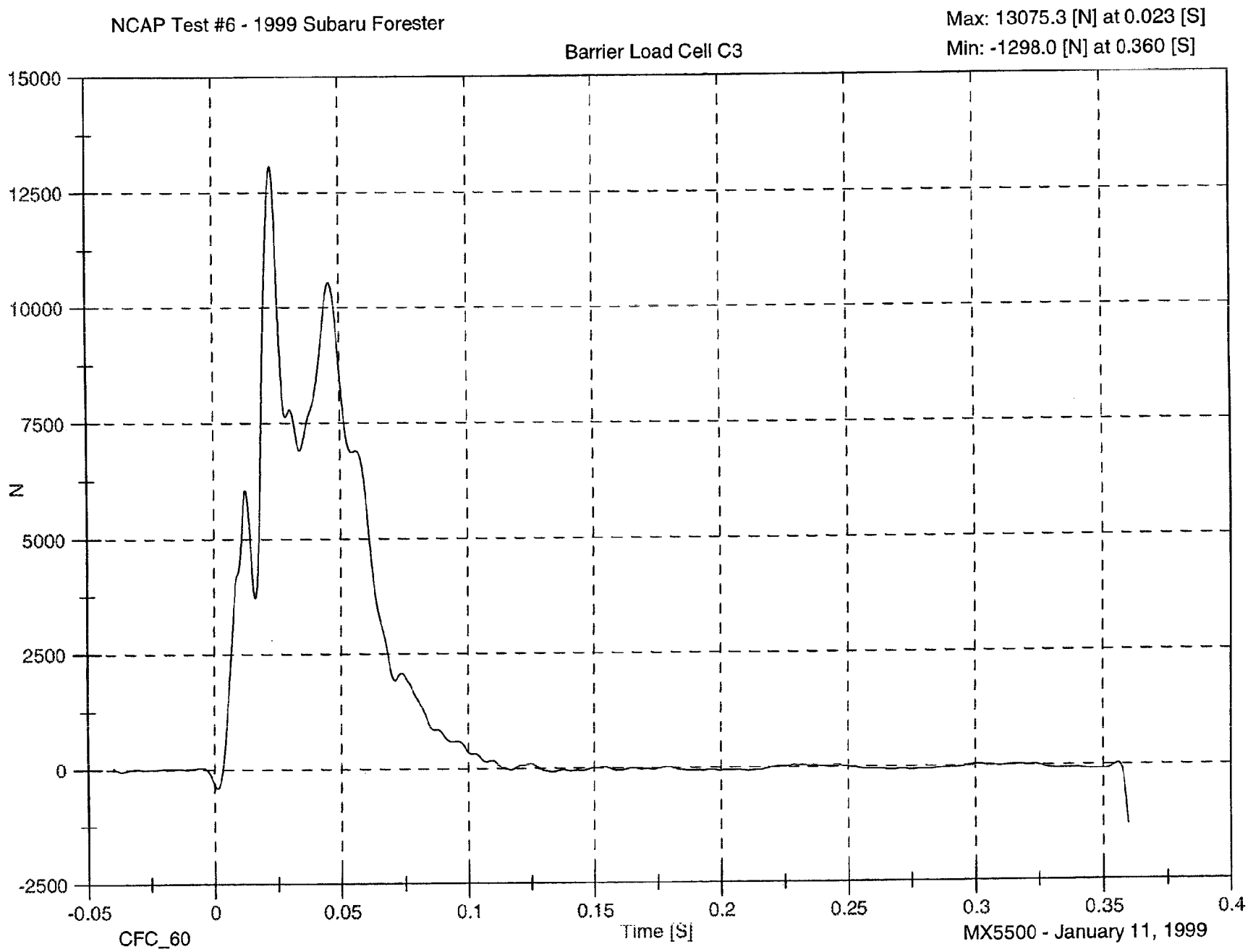

NCAP Test #6 - 1999 Subaru Forester
Barrier Load Cell B7
Max: 85393.1 [N] at 0.026 [S]
Min: -476.3 [N] at -0.003 [S]
100000
80000
60000
40000
20000
0
-20000
N
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
Time [S]
CFC_60
MX5500 - January 11, 1999

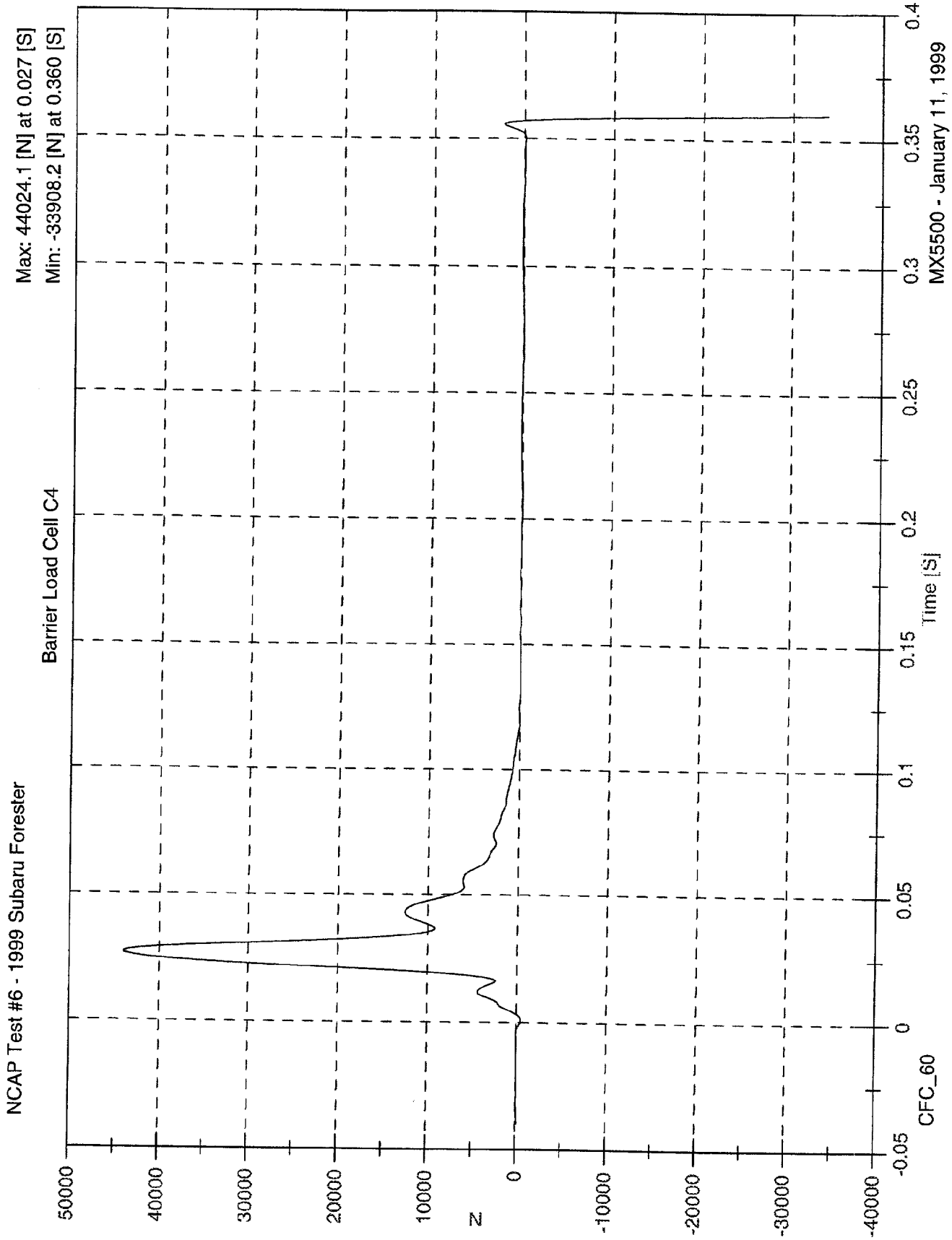

NCAP Test #6 - 1999 Subaru Forester
Barrier Load Cell B8
Max: 21509.6 [N] at 0.023 [S]
Min: -616.7 [N] at 0.001 [S]
25000
20000
15000
10000
5000
0
-5000
N
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
Time [S]
CFC_60
MX5500 - January 11, 1999

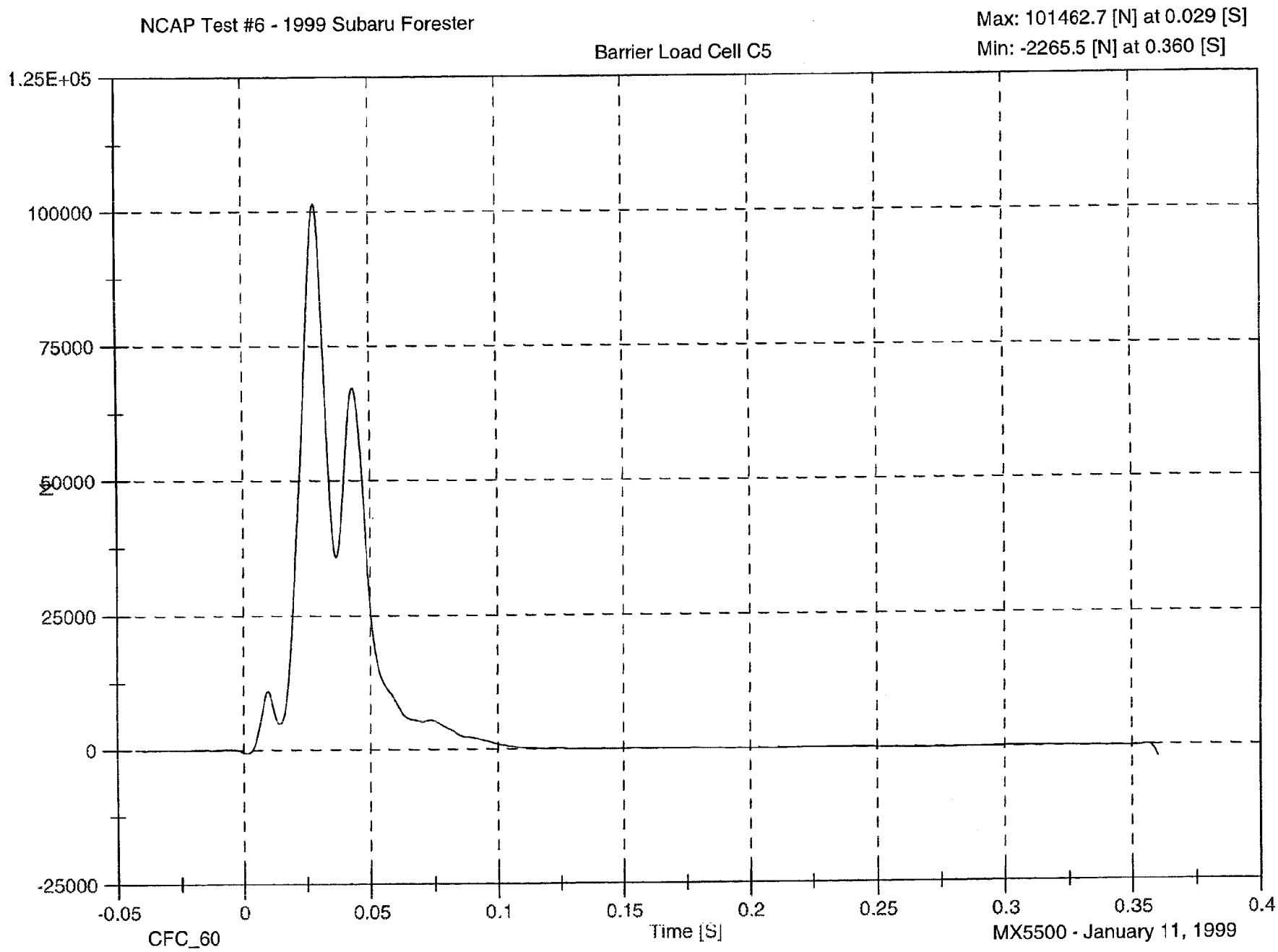

NCAP Test #6 - 1999 Subaru Forester
Barrier Load Cell B9
Max: 976.8 [N] at 0.072 [S]
Min: -420.2 [N] at 0.035 [S]
MX5500 - January 11, 1999
CFC_60
Z
Time [S]
1000
750
500
250
0
-250
-500
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4

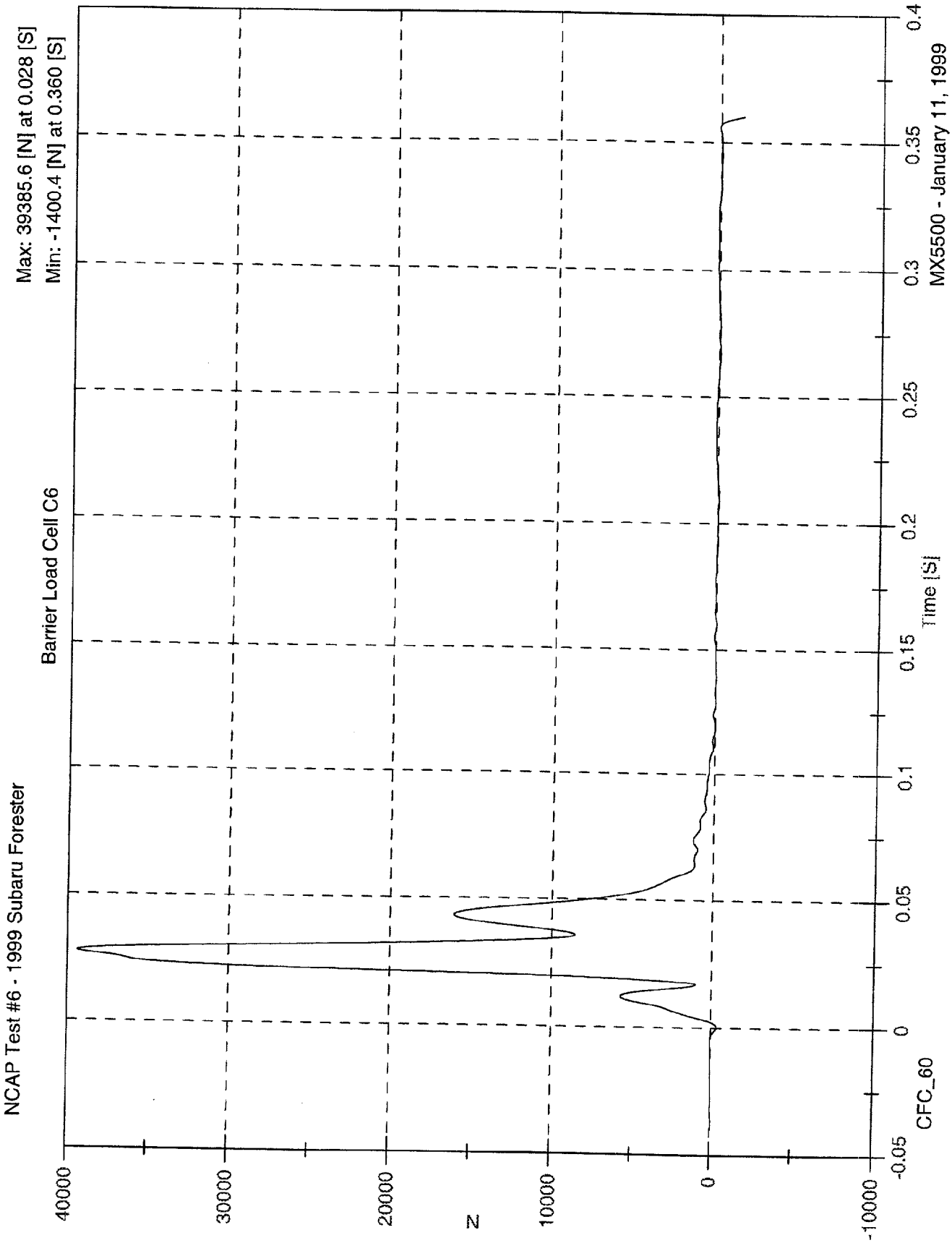

NCAP Test #6 - 1999 Subaru Forester
Barrier Load Cell C1
Max: 612.1 [N] at 0.019 [S]
Min: -3634.2 [N] at 0.360 [S]
1000
0
-1000
-2000
-3000
-4000
N
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
Time [S]
CFC_60
MX5500 - January 11, 1999

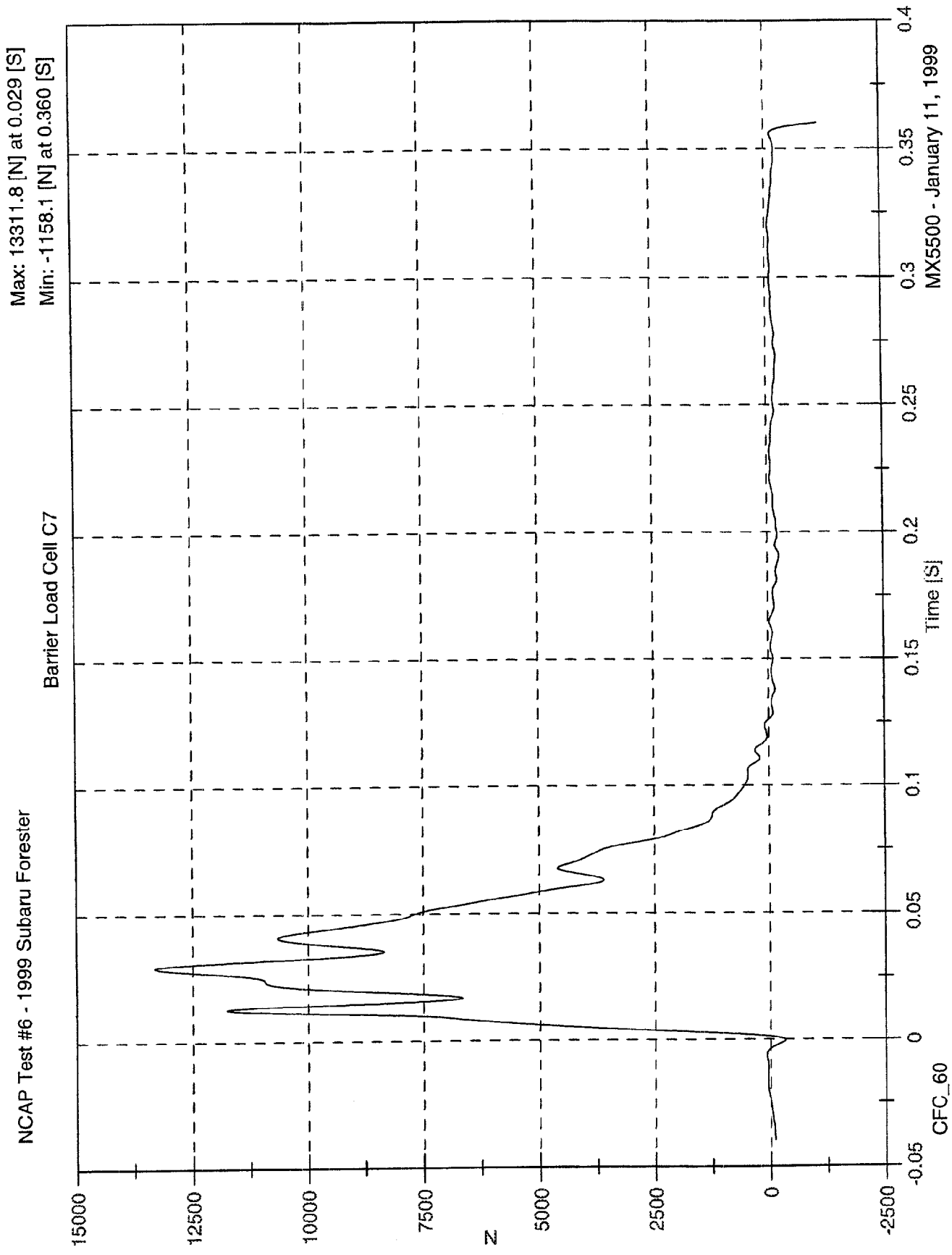

NCAP Test #6 - 1999 Subaru Forester
Barrier Load Cell C2
Max: 24327.9 [N] at 0.029 [S]
Min: -297.0 [N] at 0.360 [S]
MX5500 - January 11, 1999
CFC_60
Time [S]
25000
20000
15000
10000
5000
0
-5000
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4

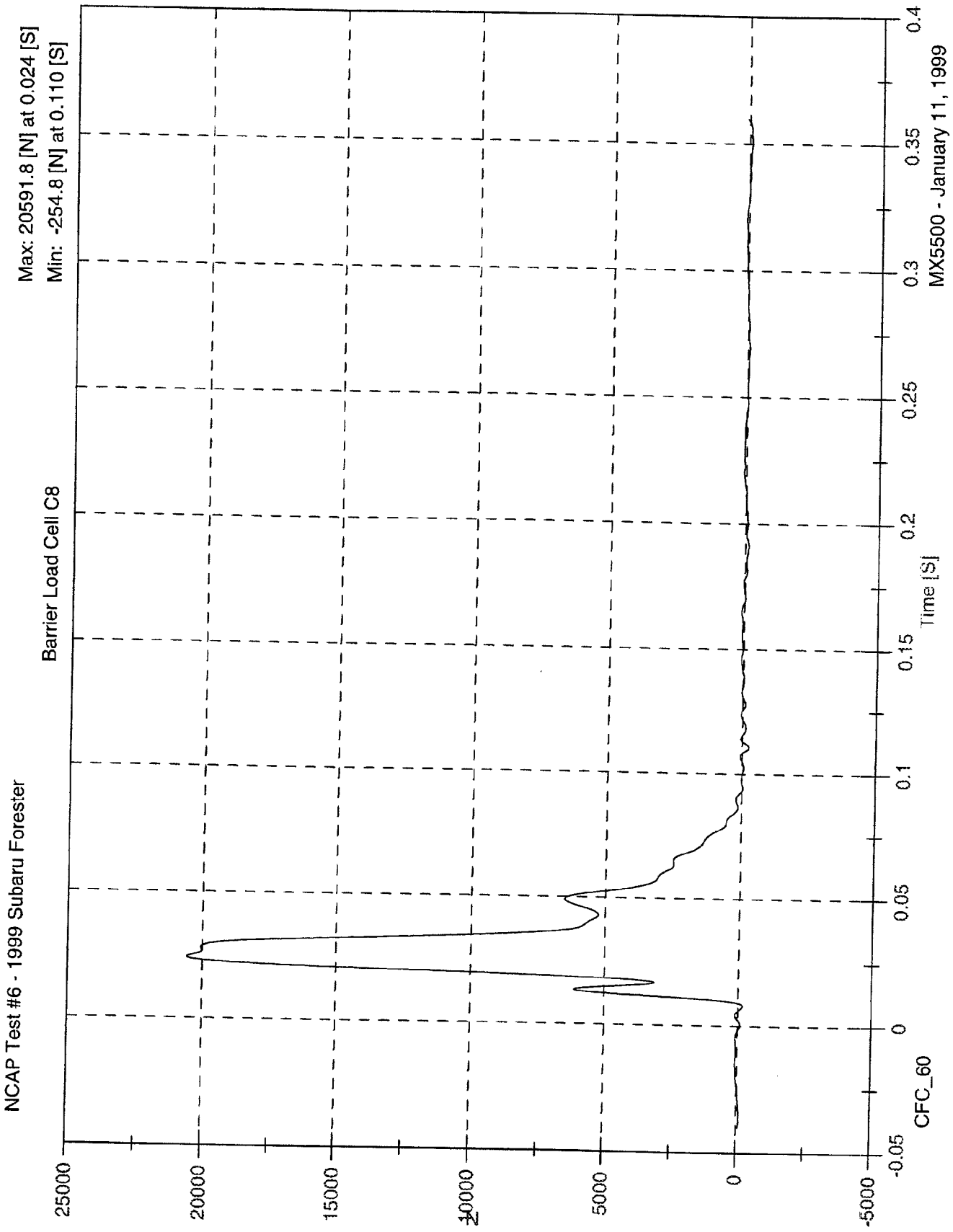

NCAP Test #6 - 1999 Subaru Forester
Barrier Load Cell C3
Max: 13075.3 [N] at 0.023 [S]
Min: -1298.0 [N] at 0.360 [S]
15000
12500
10000
7500
5000
2500
0
-2500
N
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
Time [S]
CFC_60
MX5500 - January 11, 1999

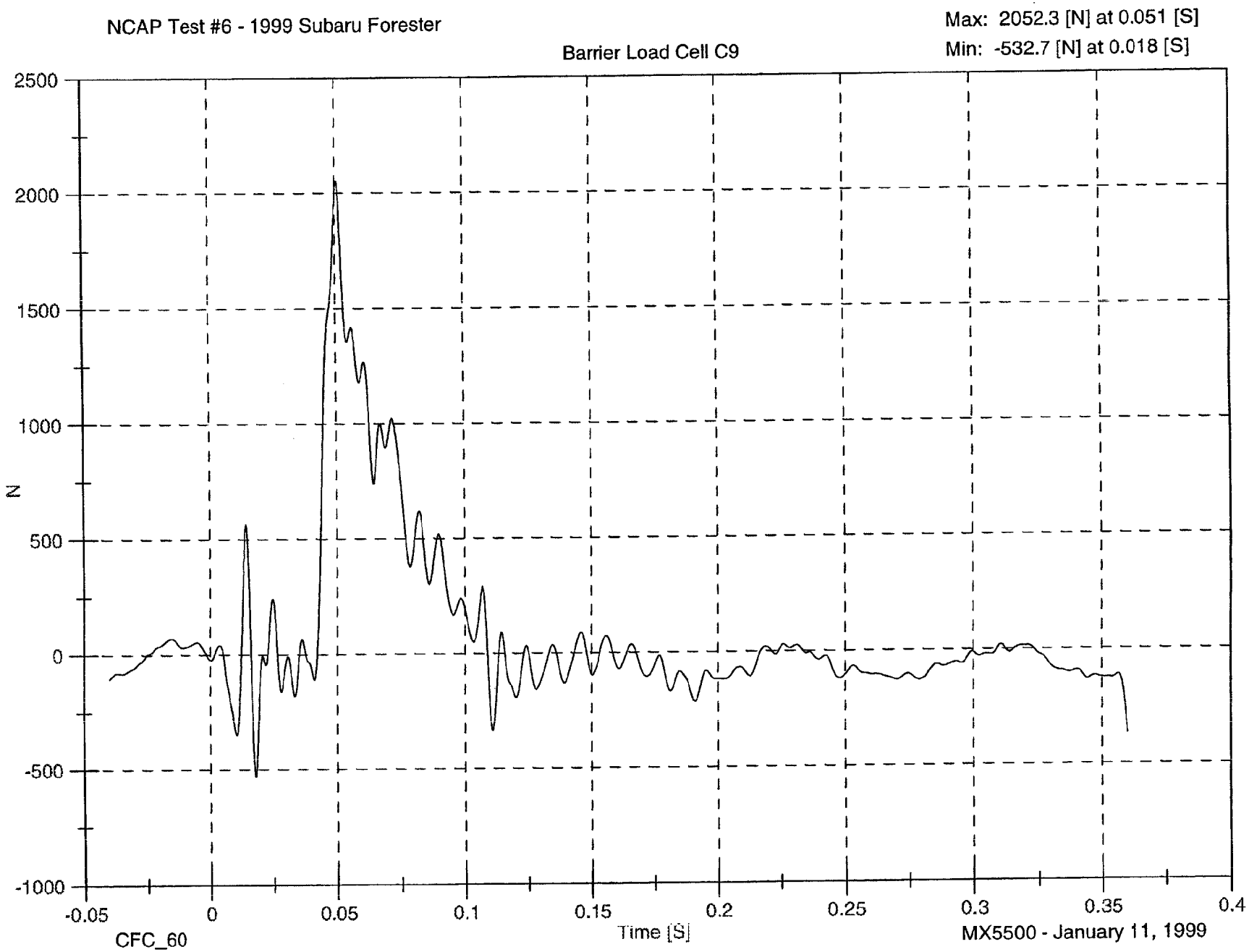

NCAP Test #6 - 1999 Subaru Forester
Max: 44024.1 [N] at 0.027 [S]
Min: -33908.2 [N] at 0.360 [S]
Barrier Load Cell C4
MX5500 - January 11, 1999
CFC_60
N
Time [S]
50000
40000
30000
20000
10000
0
-10000
-20000
-30000
-40000
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4

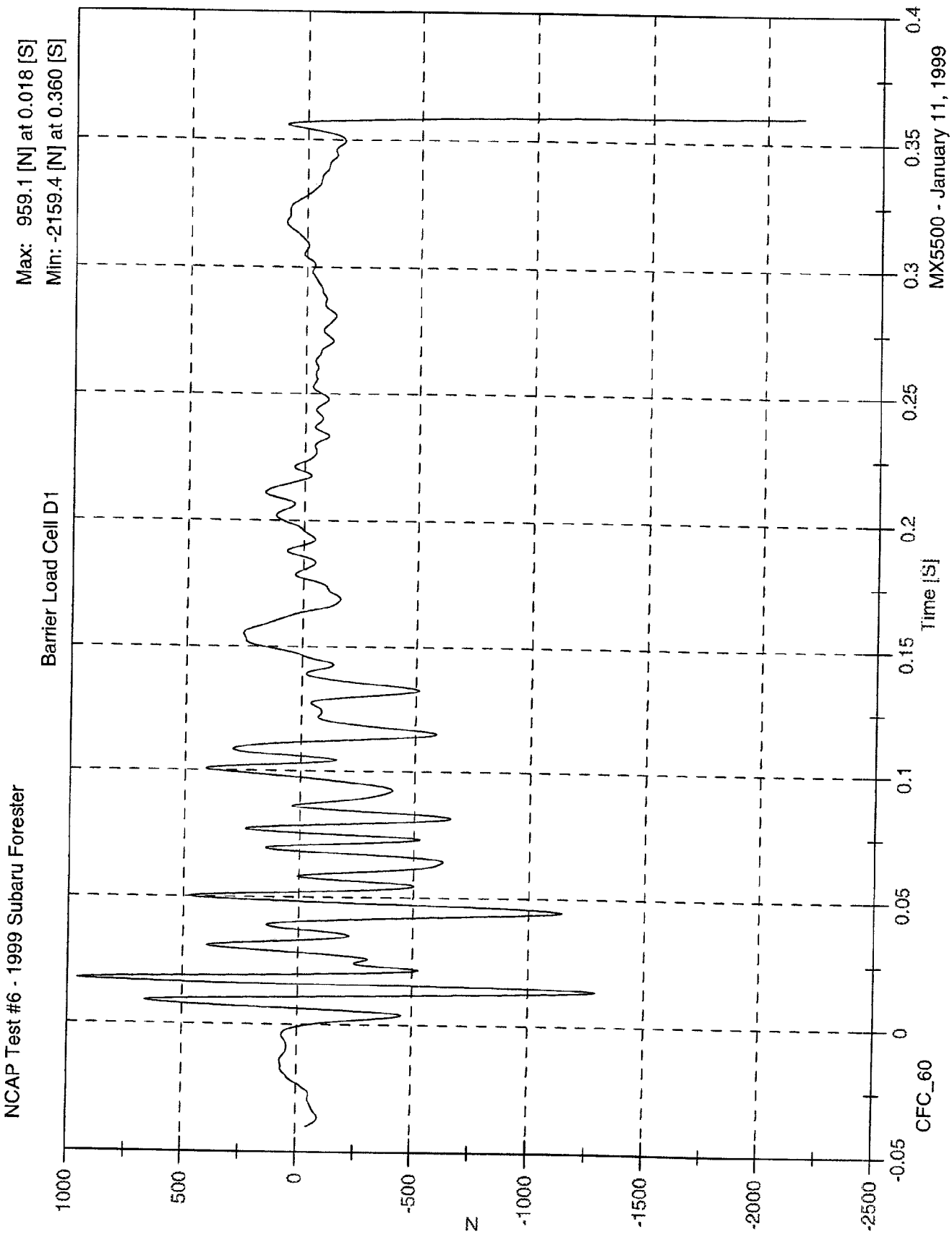

NCAP Test #6 - 1999 Subaru Forester
Barrier Load Cell C5
Max: 101462.7 [N] at 0.029 [S]
Min: -2265.5 [N] at 0.360 [S]
1.25E+05
100000
75000
50000
25000
0
-25000
N
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
Time [S]
CFC_60
MX5500 - January 11, 1999


NCAP Test #6 - 1999 Subaru Forester
Barrier Load Cell C6
Max: 39385.6 [N] at 0.028 [S]
Min: -1400.4 [N] at 0.360 [S]
MX5500 - January 11, 1999
CFC_60
Time [S]
N
40000
30000
20000
10000
0
-10000
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4

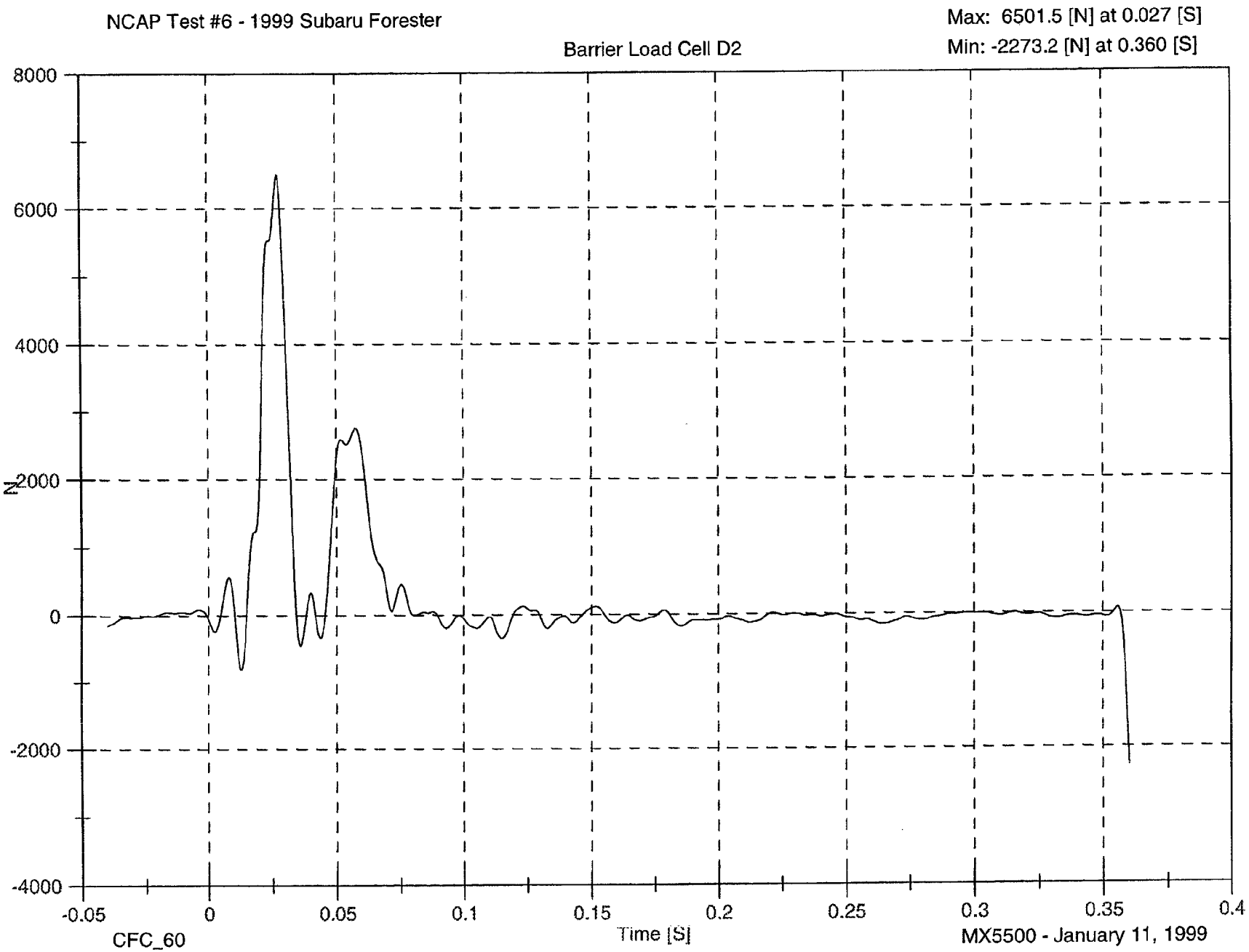

NCAP Test #6 - 1999 Subaru Forester
Barrier Load Cell C7
Max: 13311.8 [N] at 0.029 [S]
Min: -1158.1 [N] at 0.360 [S]
MX5500 - January 11, 1999
CFC_60
N
Time [S]
15000
12500
10000
7500
5000
2500
0
-2500
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4

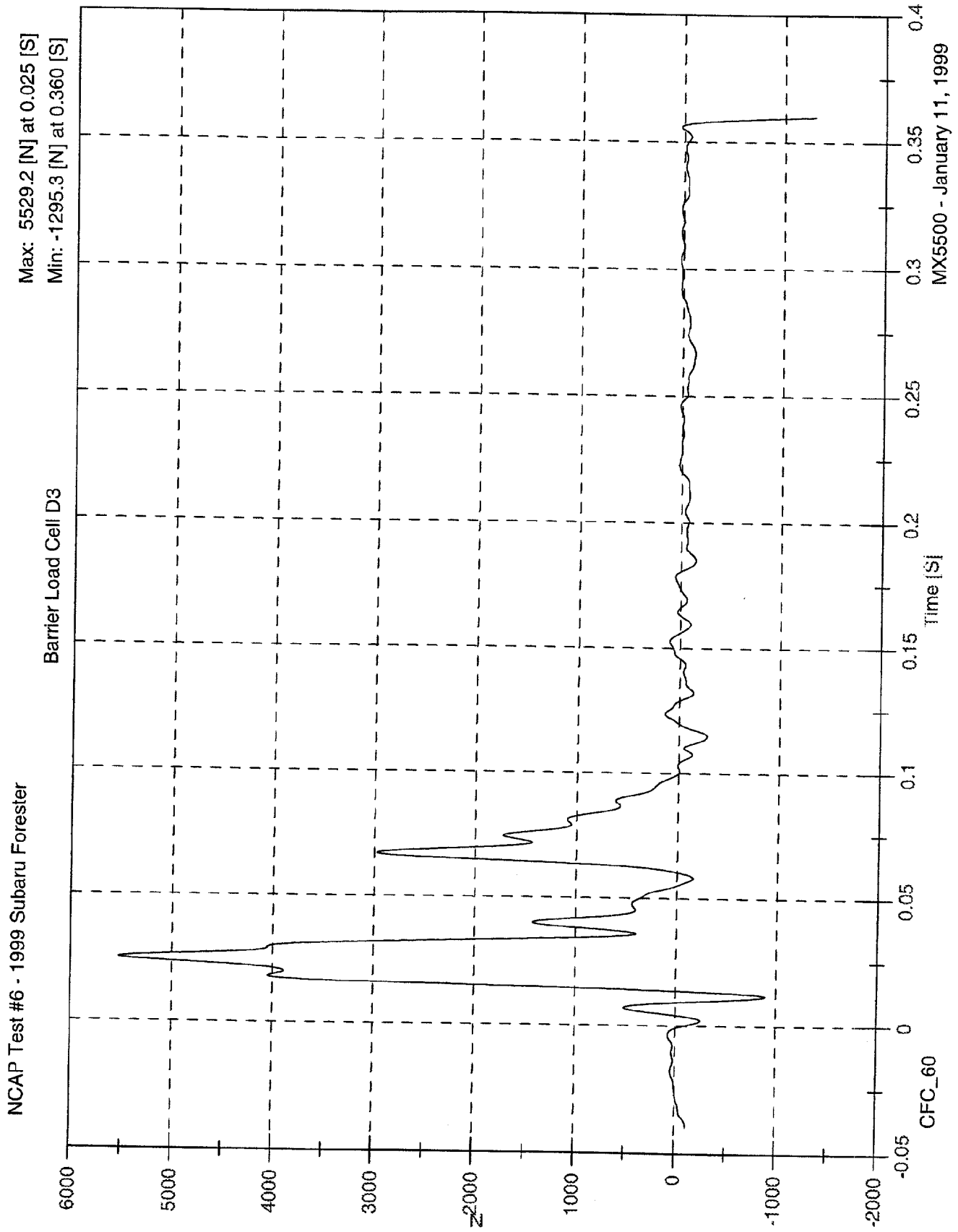

NCAP Test #6 - 1999 Subaru Forester
Barrier Load Cell C8
Max: 20591.8 [N] at 0.024 [S]
Min: -254.8 [N] at 0.110 [S]
MX5500 - January 11, 1999
Time [S]
CFC_60
25000
20000
15000
10000
5000
0
-5000
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4

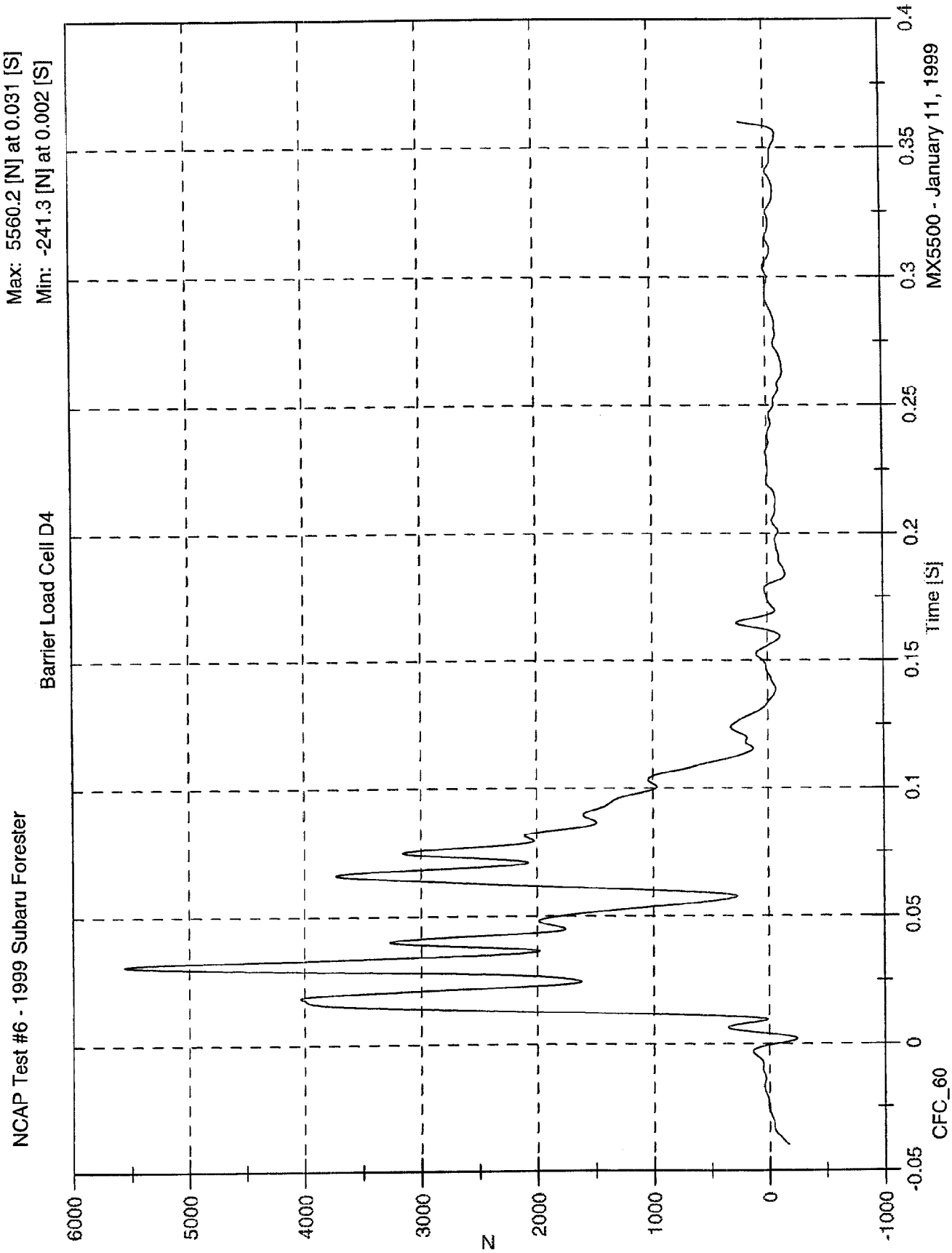

NCAP Test #6 - 1999 Subaru Forester
Barrier Load Cell C9
Max: 2052.3 [N] at 0.051 [S]
Min: -532.7 [N] at 0.018 [S]
2500
2000
1500
1000
500
0
-500
-1000
N
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
Time [S]
CFC_60
MX5500 - January 11, 1999

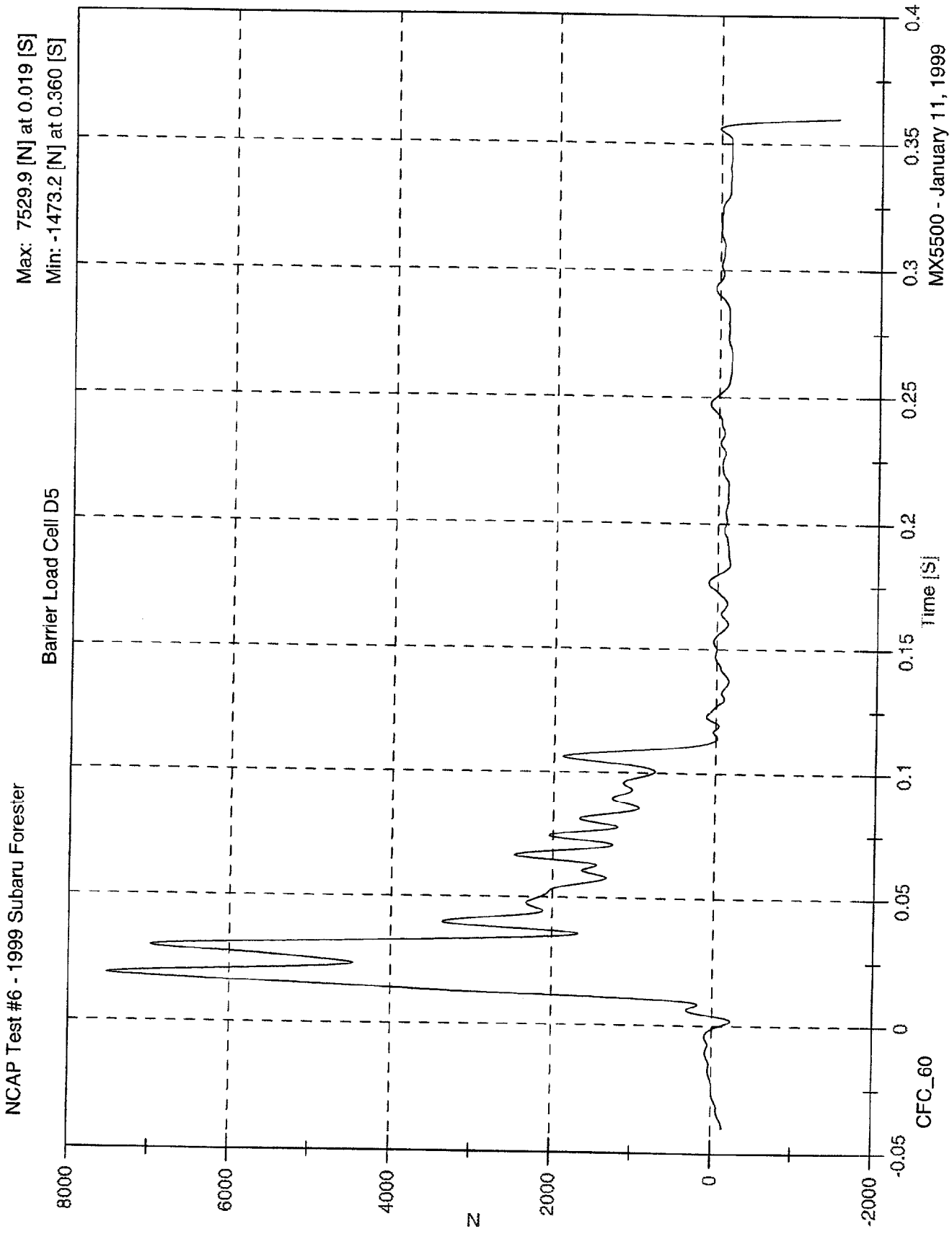

NCAP Test #6 - 1999 Subaru Forester
Barrier Load Cell D1
Max: 959.1 [N] at 0.018 [S]
Min: -2159.4 [N] at 0.360 [S]
MX5500 - January 11, 1999
CFC_60
N
Time [S]
1000
500
0
-500
-1000
-1500
-2000
-2500
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4

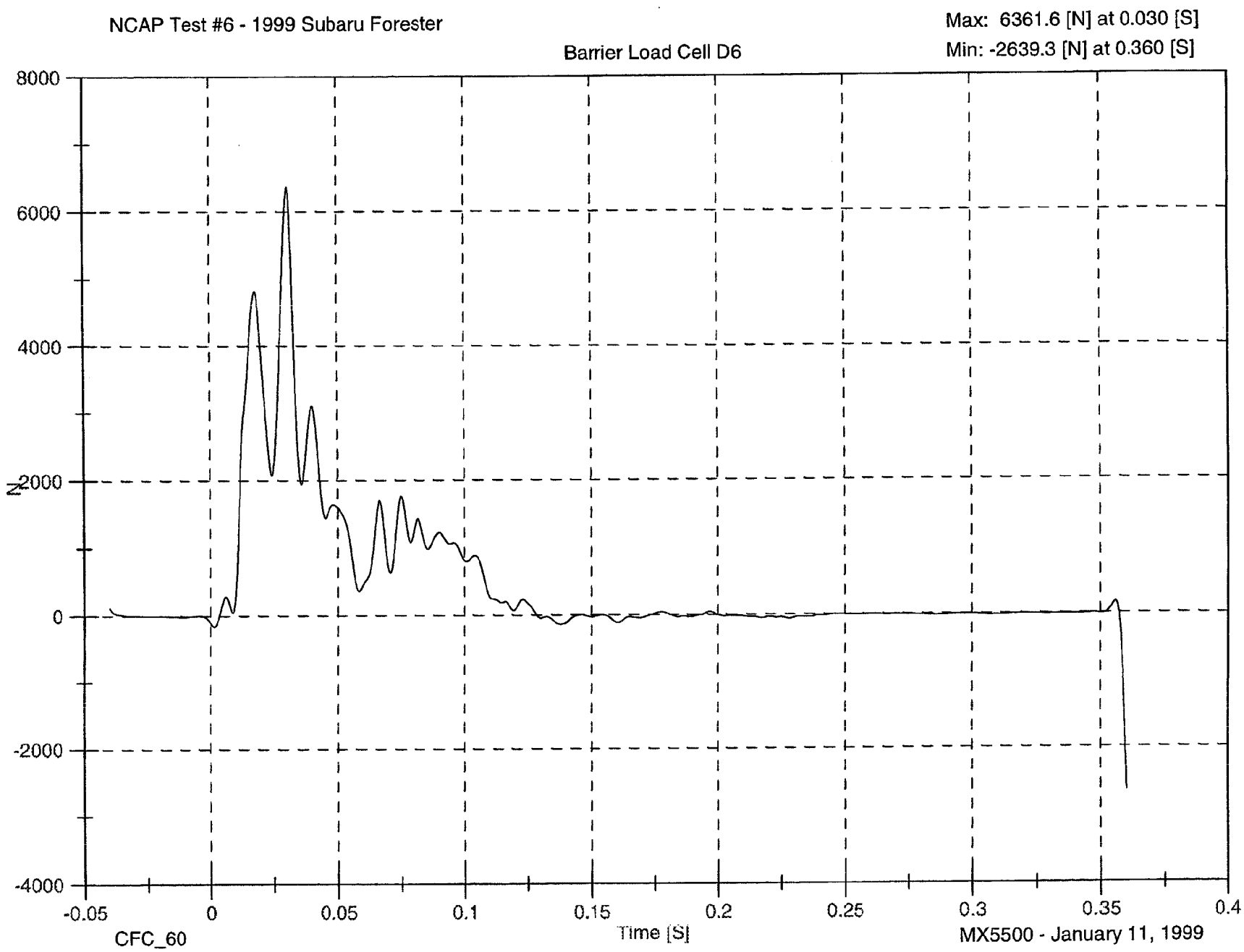
8413-30

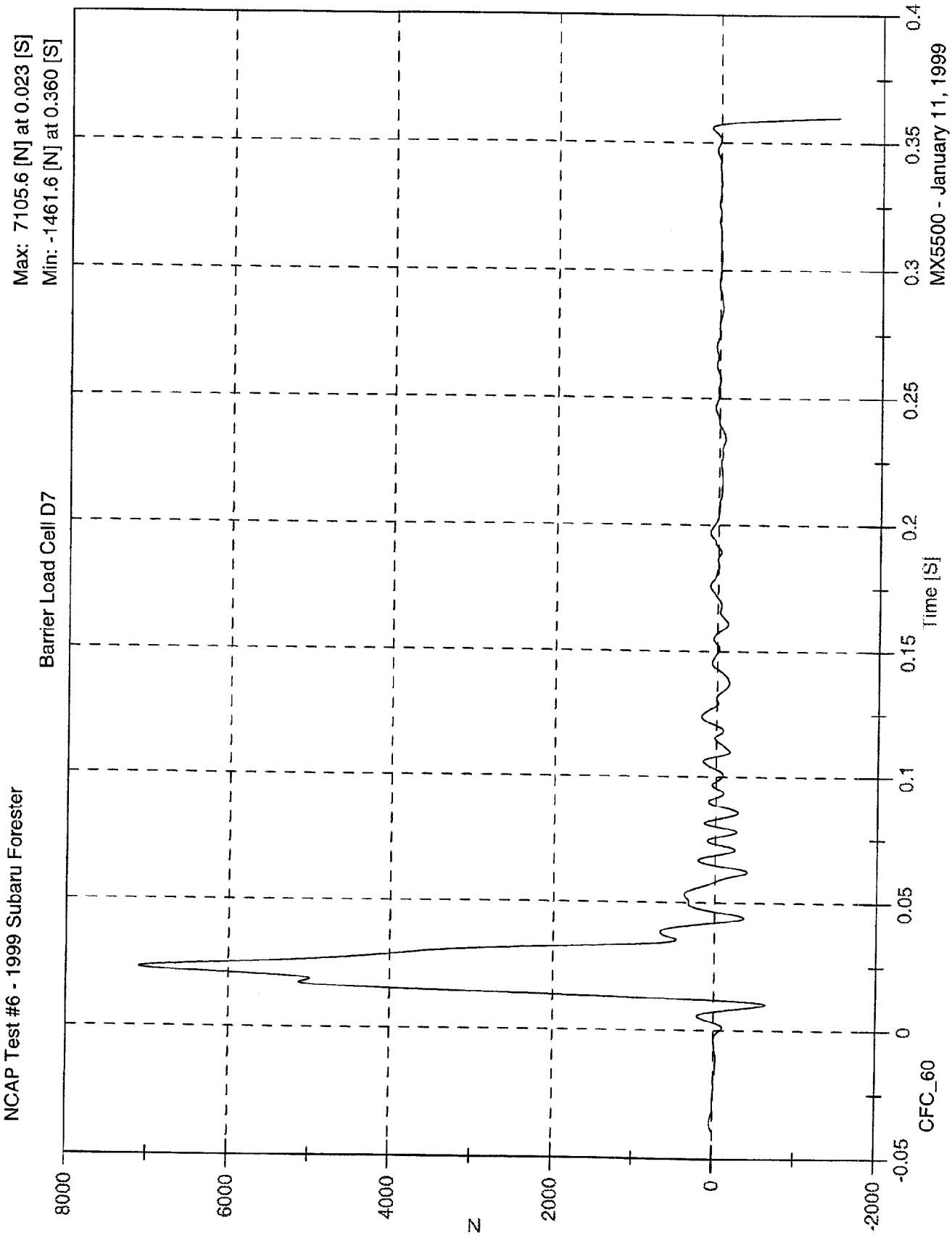

NCAP Test #6 - 1999 Subaru Forester
Barrier Load Cell D2
Max: 6501.5 [N] at 0.027 [S]
Min: -2273.2 [N] at 0.360 [S]
8000
6000
4000
2000
0
-2000
-4000
N
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
Time [S]
CFC_60
MX5500 - January 11, 1999

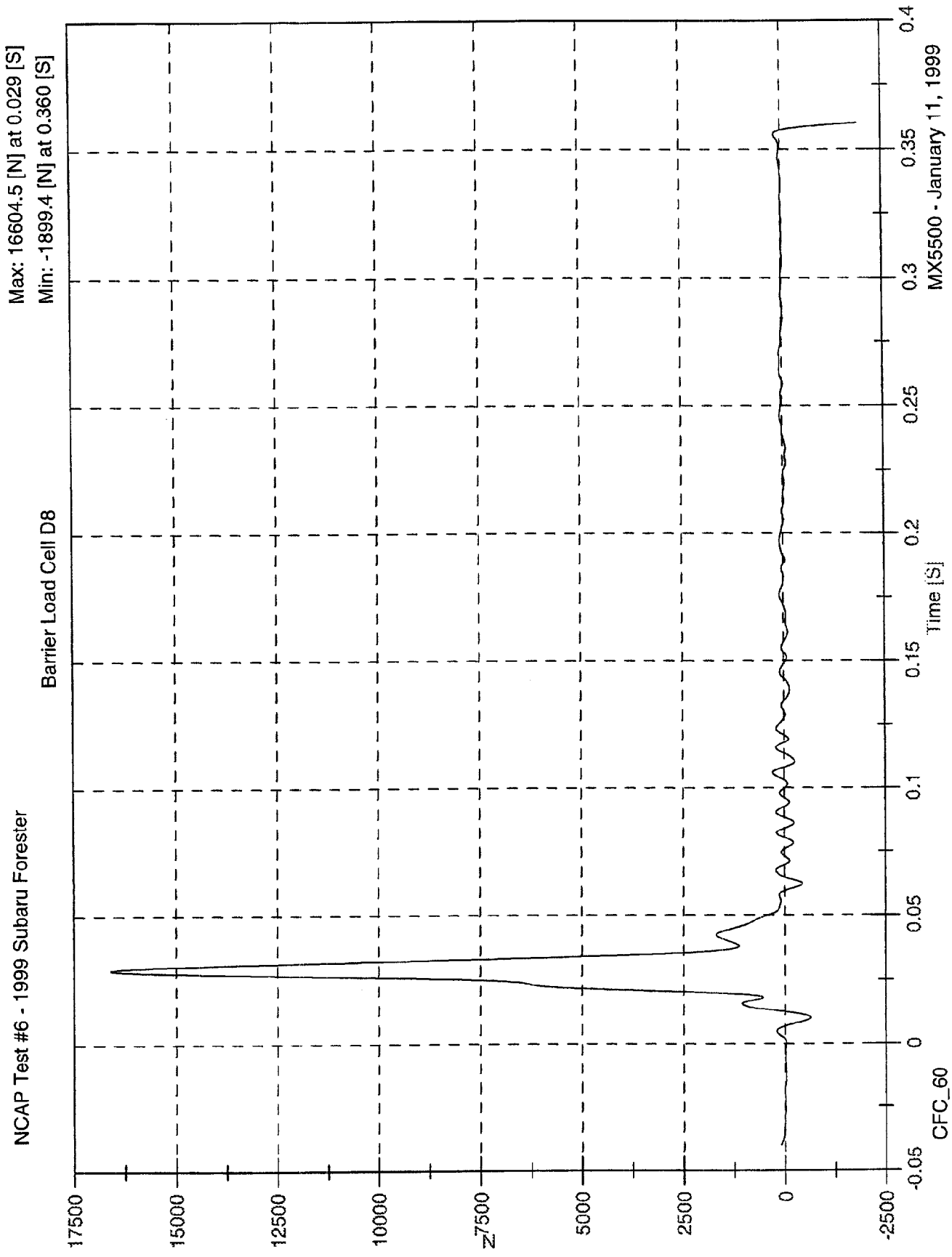

NCAP Test #6 - 1999 Subaru Forester
Max: 5529.2 [N] at 0.025 [S]
Min: -1295.3 [N] at 0.360 [S]
Barrier Load Cell D3
MX5500 - January 11, 1999
CFC_60
Time [S]
N
6000
5000
4000
3000
2000
1000
0
-1000
-2000
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4

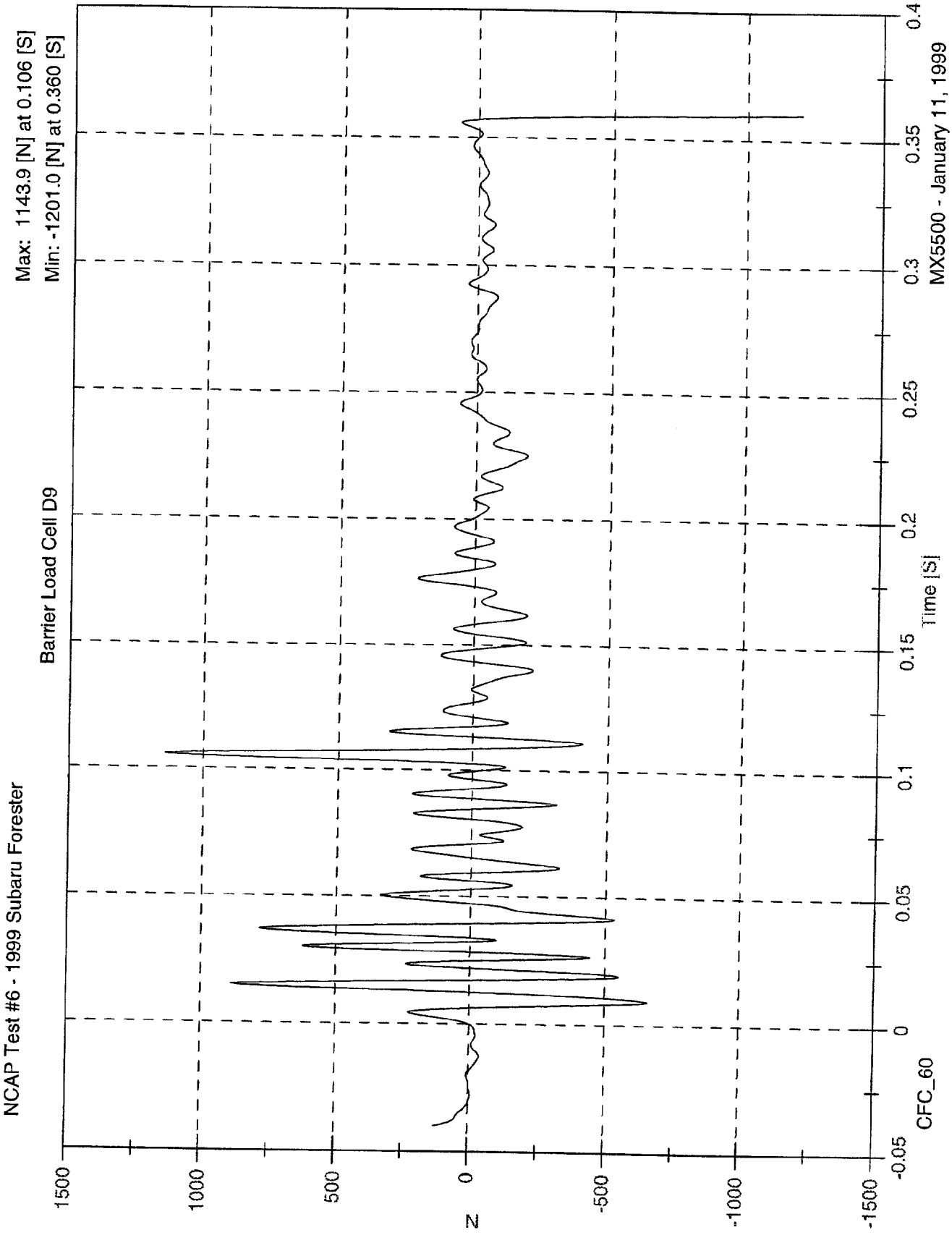

NCAP Test #6 - 1999 Subaru Forester
Barrier Load Cell D4
Max: 5560.2 [N] at 0.031 [S]
Min: -241.3 [N] at 0.002 [S]
MX5500 - January 11, 1999
CFC_60
N
Time [S]
6000
5000
4000
3000
2000
1000
0
-1000
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4


NCAP Test #6 - 1999 Subaru Forester
Max: 7529.9 [N] at 0.019 [S]
Min: -1473.2 [N] at 0.360 [S]
Barrier Load Cell D5
MX5500 - January 11, 1999
CFC_60
N
Time [S]
8000
6000
4000
2000
0
-2000
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4

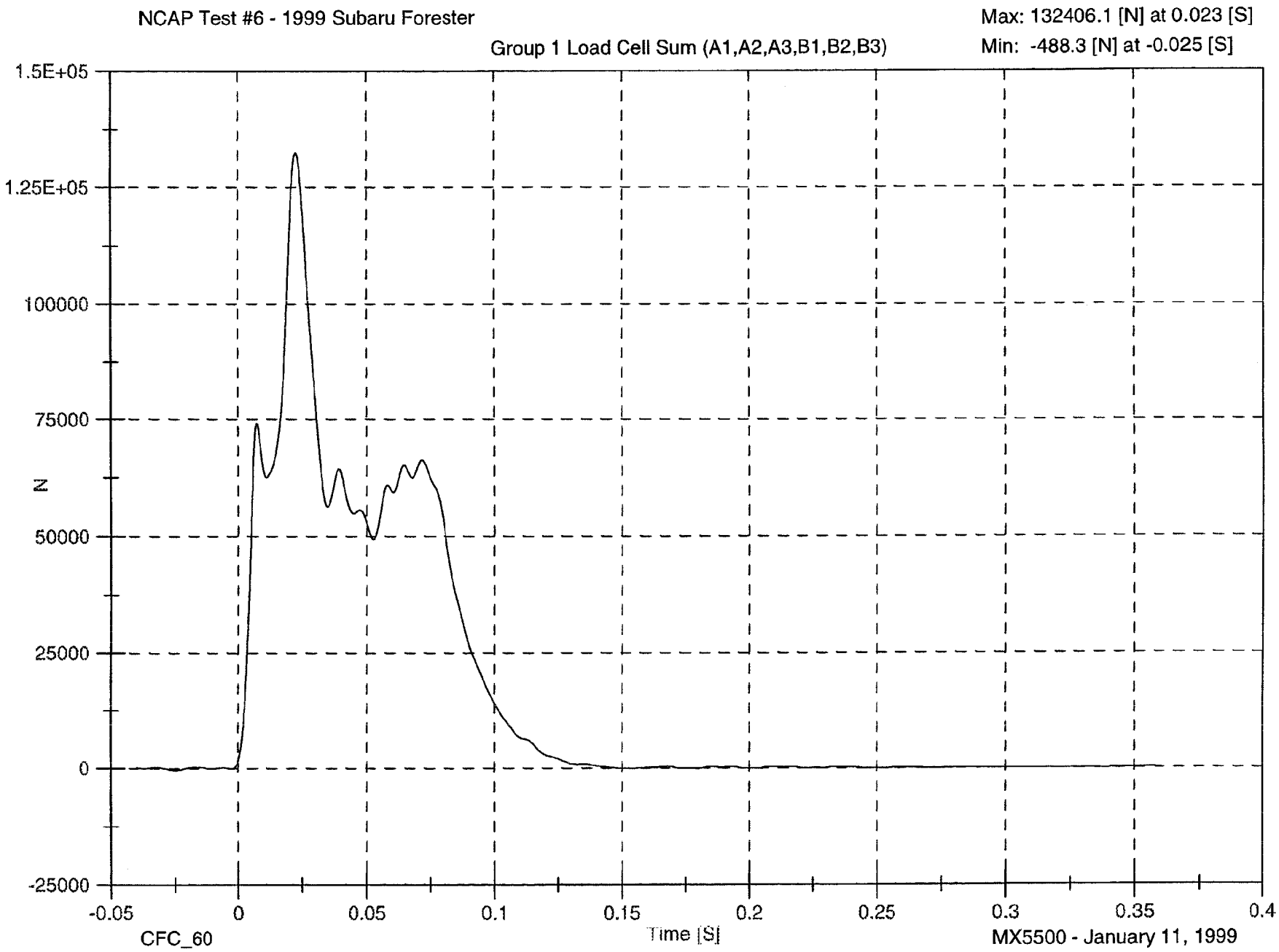

NCAP Test #6 - 1999 Subaru Forester
Barrier Load Cell D6
Max: 6361.6 [N] at 0.030 [S]
Min: -2639.3 [N] at 0.360 [S]
8000
6000
4000
2000
0
-2000
-4000
N
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
Time [S]
CFC_60
MX5500 - January 11, 1999

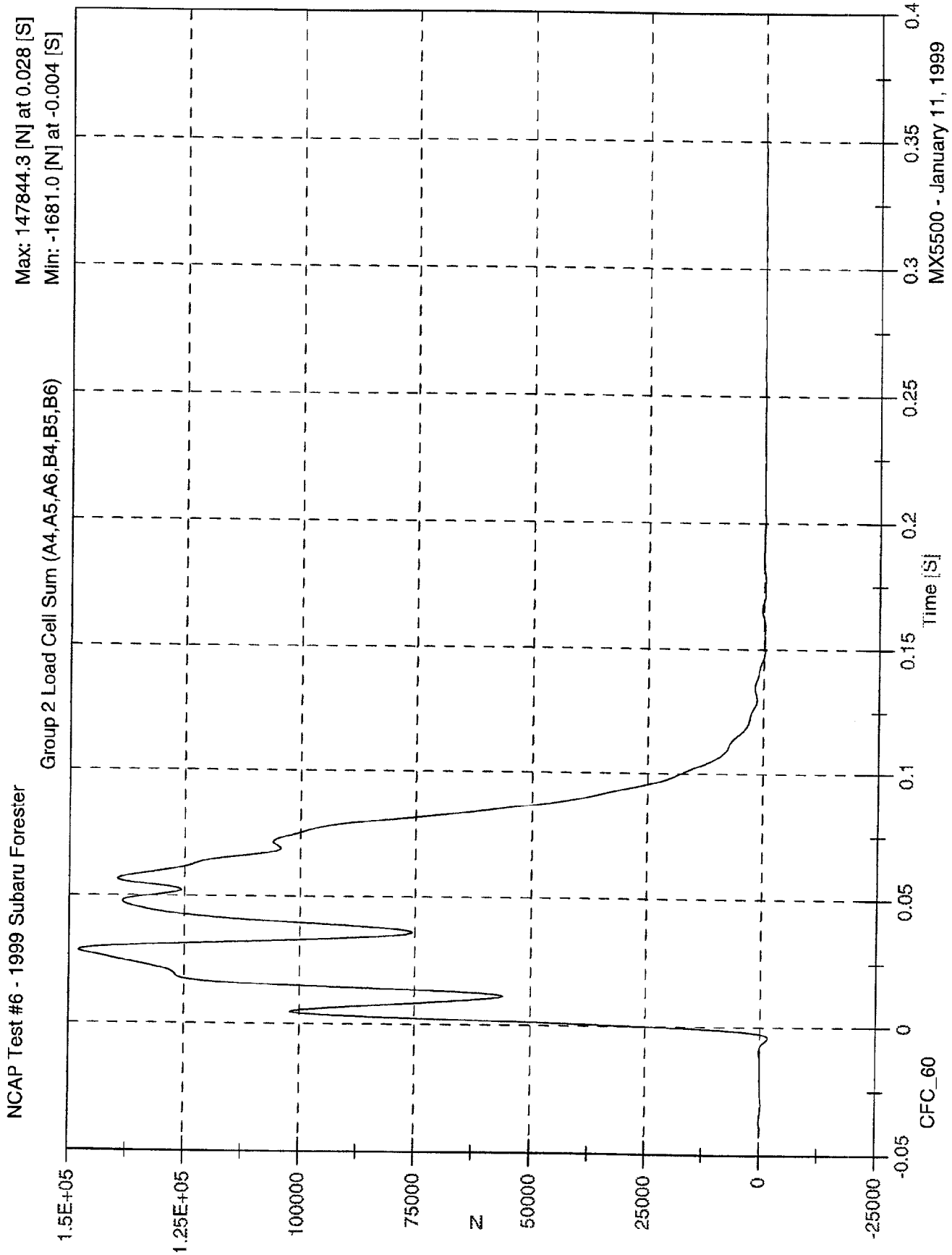

NCAP Test #6 - 1999 Subaru Forester
Max: 7105.6 [N] at 0.023 [S]
Min: -1461.6 [N] at 0.360 [S]
Barrier Load Cell D7
MX5500 - January 11, 1999
CFC_60
N
Time [S]
8000
6000
4000
2000
0
-2000
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4

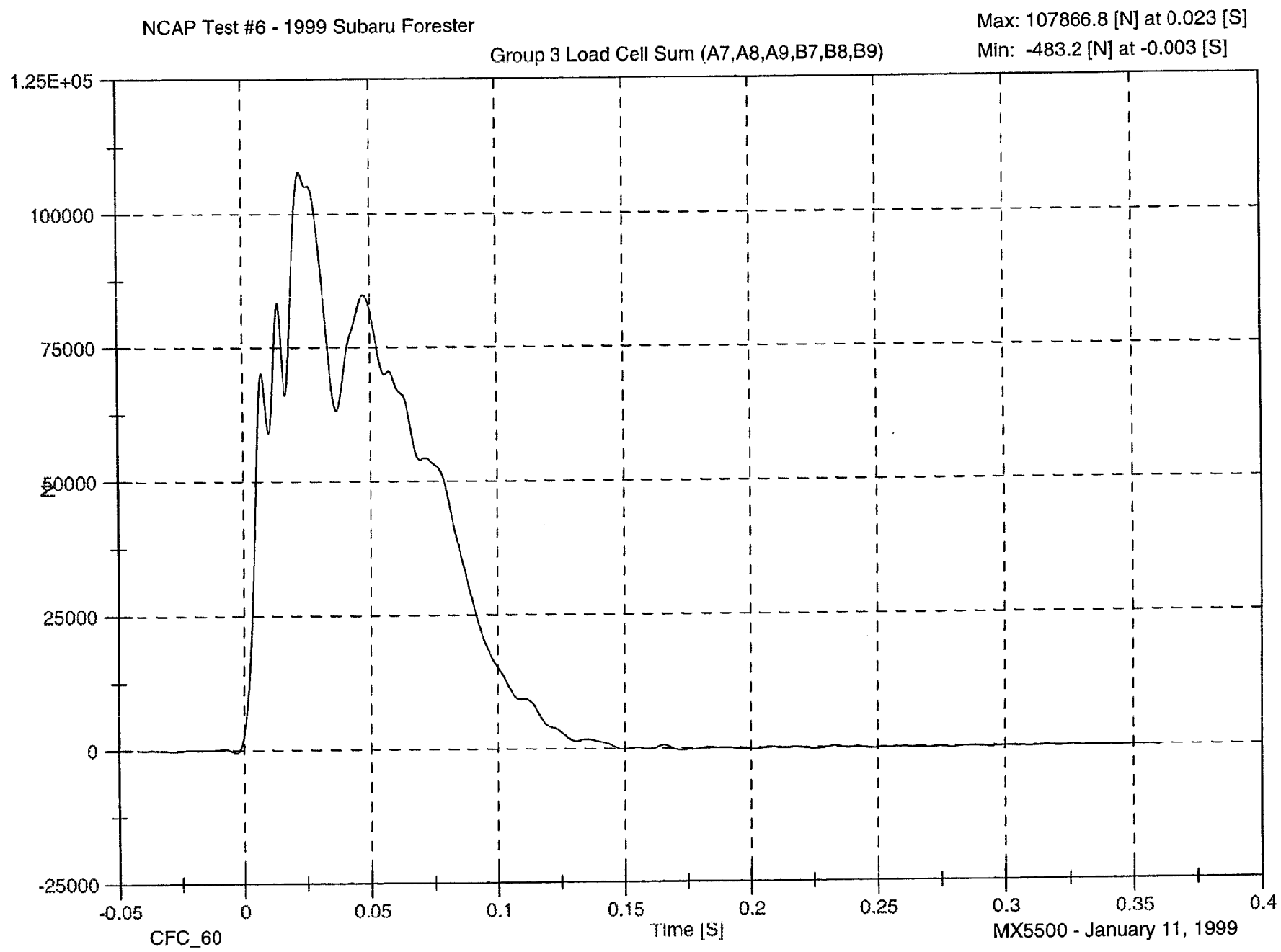

NCAP Test #6 - 1999 Subaru Forester
Max: 16604.5 [N] at 0.029 [S]
Min: -1899.4 [N] at 0.360 [S]
Barrier Load Cell D8
MX5500 - January 11, 1999
CFC_60
Time [S]
N
17500
15000
12500
10000
7500
5000
2500
0
-2500
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4

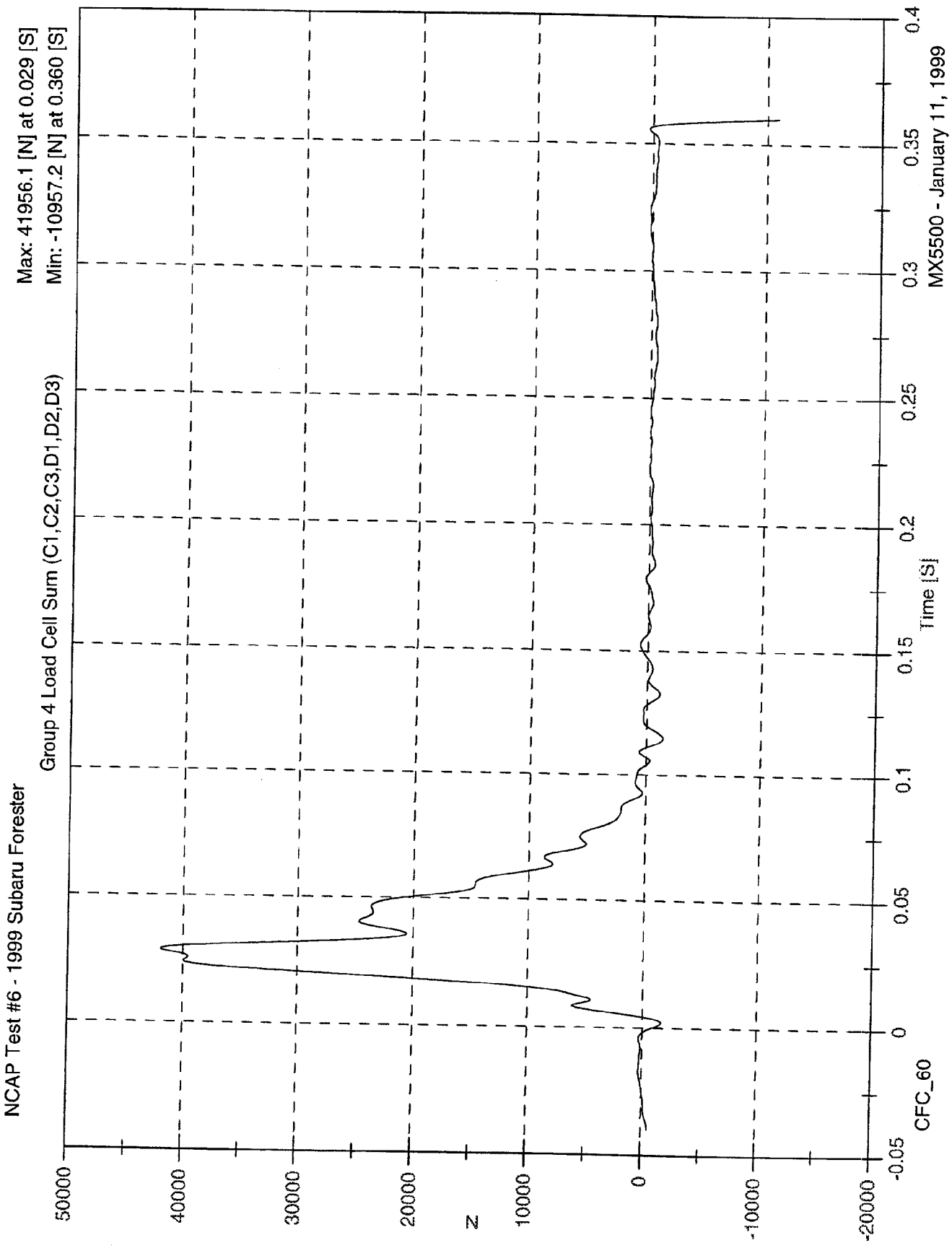

NCAP Test #6 - 1999 Subaru Forester
Barrier Load Cell D9
Max: 1143.9 [N] at 0.106 [S]
Min: -1201.0 [N] at 0.360 [S]
MX5500 - January 11, 1999
CFC_60
N
Time [S]
1500
1000
500
0
-500
-1000
-1500
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4

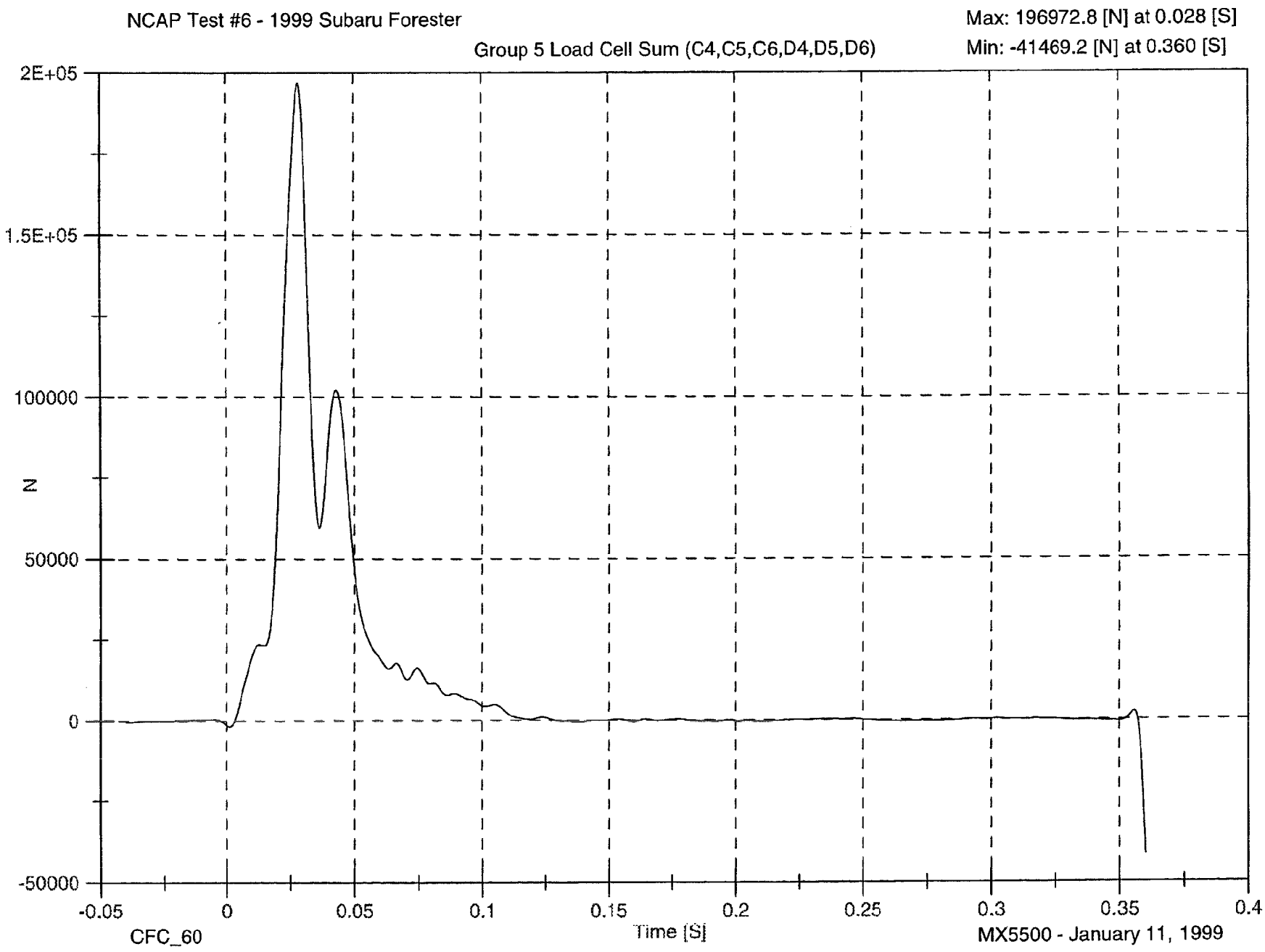
8413-30

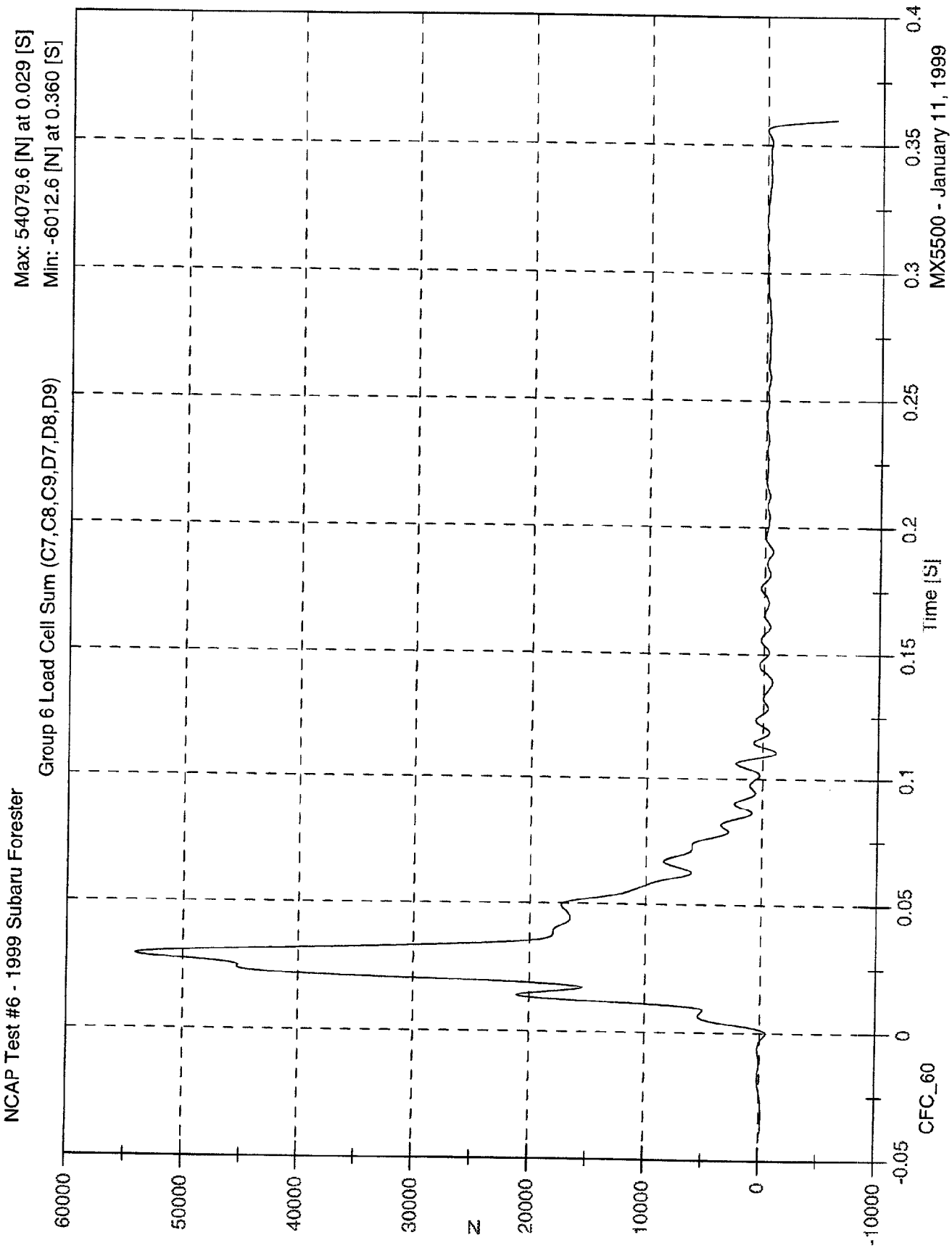

NCAP Test #6 - 1999 Subaru Forester
Group 1 Load Cell Sum (A1,A2,A3,B1,B2,B3)
Max: 132406.1 [N] at 0.023 [S]
Min: -488.3 [N] at -0.025 [S]
1.5E+05
1.25E+05
100000
75000
50000
25000
0
-25000
N
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
Time [S]
CFC_60
MX5500 - January 11, 1999

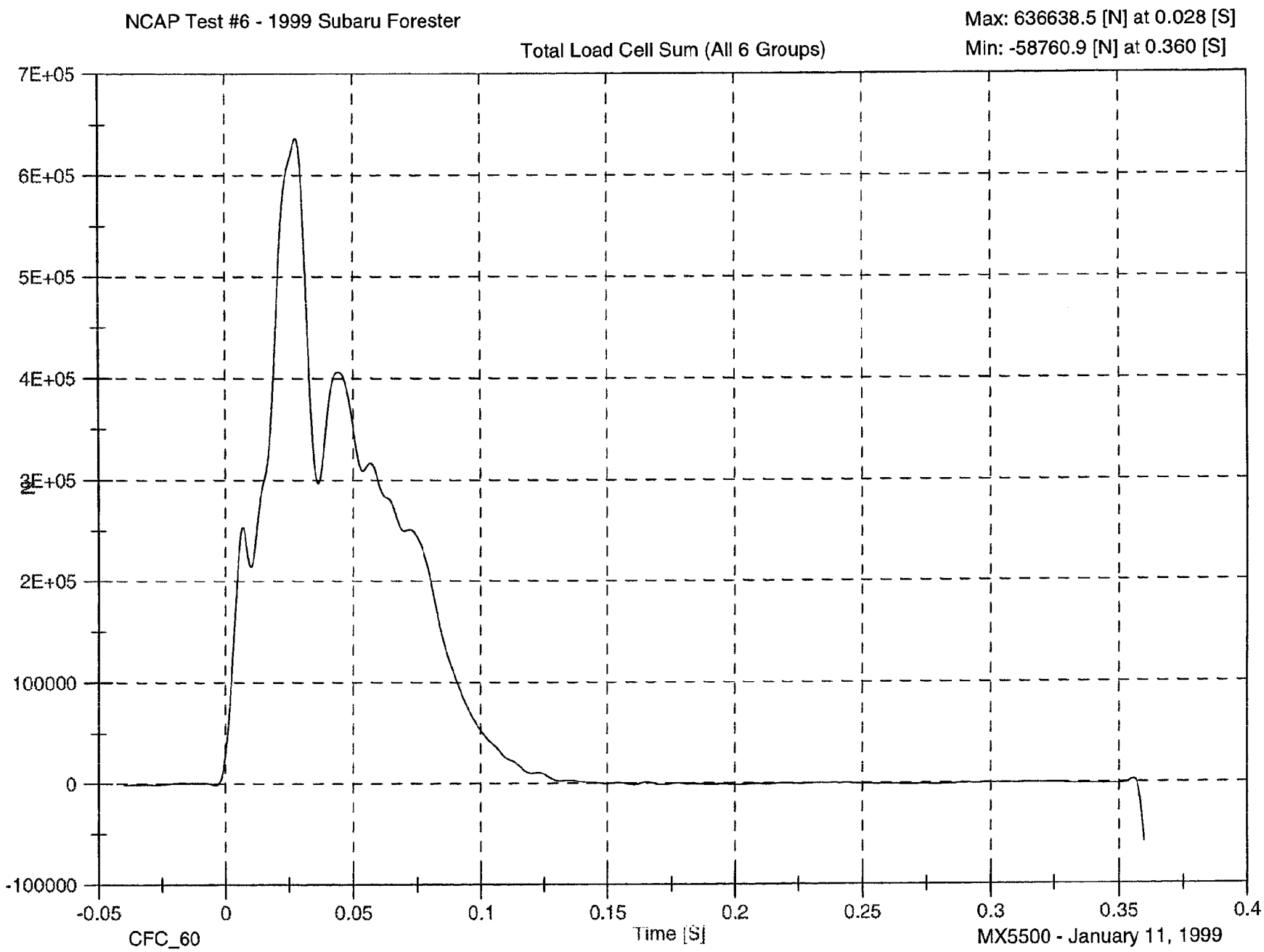

NCAP Test #6 - 1999 Subaru Forester
Group 2 Load Cell Sum (A4,A5,A6,B4,B5,B6)
Max: 147844.3 [N] at 0.028 [S]
Min: -1681.0 [N] at -0.004 [S]
MX5500 - January 11, 1999
CFC_60
N
Time [S]
1.5E+05
1.25E+05
100000
75000
50000
25000
0
-25000
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4


NCAP Test #6 - 1999 Subaru Forester
Group 3 Load Cell Sum (A7,A8,A9,B7,B8,B9)
Max: 107866.8 [N] at 0.023 [S]
Min: -483.2 [N] at -0.003 [S]
1.25E+05
100000
75000
50000
25000
0
-25000
N
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
Time [S]
CFC_60
MX5500 - January 11, 1999


NCAP Test #6 - 1999 Subaru Forester
Group 4 Load Cell Sum (C1,C2,C3,D1,D2,D3)
Max: 41956.1 [N] at 0.029 [S]
Min: -10957.2 [N] at 0.360 [S]
MX5500 - January 11, 1999
CFC_60
N
Time [S]
50000
40000
30000
20000
10000
0
-10000
-20000
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4


NCAP Test #6 - 1999 Subaru Forester
Group 5 Load Cell Sum (C4,C5,C6,D4,D5,D6)
Max: 196972.8 [N] at 0.028 [S]
Min: -41469.2 [N] at 0.360 [S]
2E+05
1.5E+05
100000
50000
0
-50000
N
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
Time [S]
CFC_60
MX5500 - January 11, 1999


NCAP Test #6 - 1999 Subaru Forester
Max: 54079.6 [N] at 0.029 [S]
Min: -6012.6 [N] at 0.360 [S]
Group 6 Load Cell Sum (C7,C8,C9,D7,D8,D9)
MX5500 - January 11, 1999
N
Time [S]
CFC_60
60000
50000
40000
30000
20000
10000
0
-10000
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4


NCAP Test #6 - 1999 Subaru Forester
Total Load Cell Sum (All 6 Groups)
Max: 636638.5 [N] at 0.028 [S]
Min: -58760.9 [N] at 0.360 [S]
7E+05
6E+05
5E+05
4E+05
3E+05
2E+05
100000
0
-100000
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
CFC_60
Time [S]
MX5500 - January 11, 1999

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.

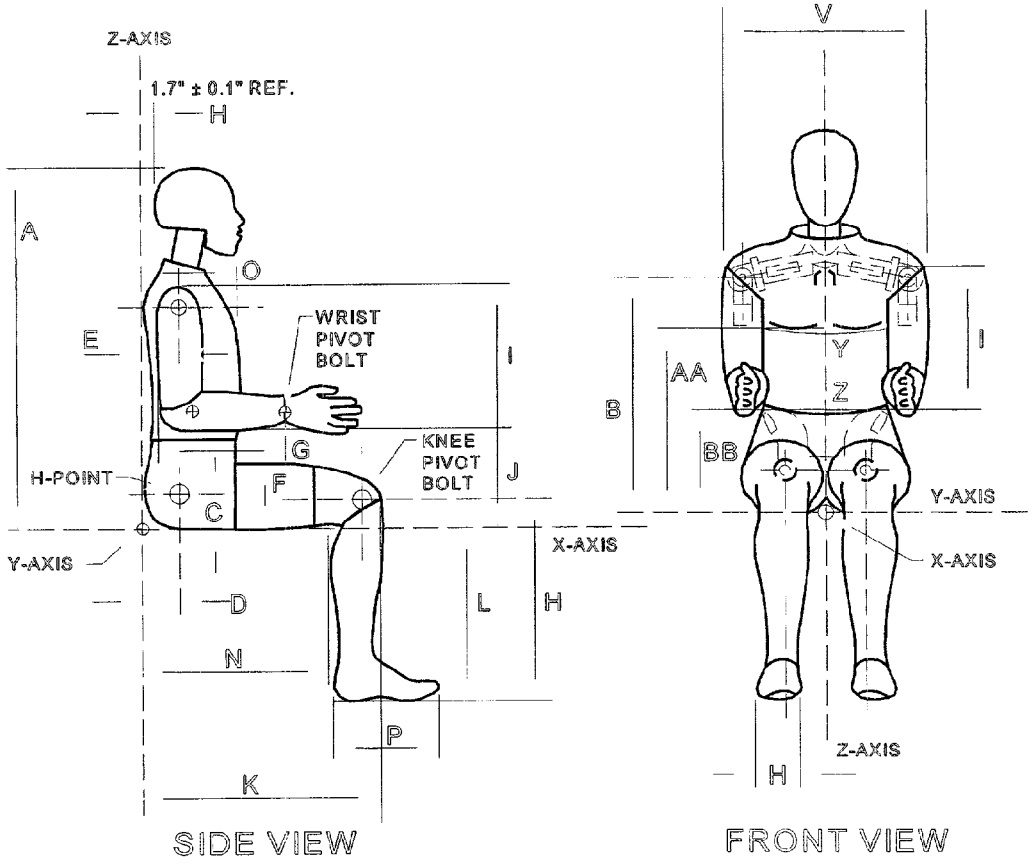
Dummy serial numbers and certification dates are:

Position No./Location	Serial No.	Completion Date
#1/Driver	150	1/7/99
#2/Right Front Passenger	245	1/5/99

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 Indicant Testing Final Report No. 6525-V-1.

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)(6))

PART 572E
HEAD DROP TEST

Dummy Serial Number	150
Calspan Sequential Test Number	5
Date	01/06/99
Workfile	150598.hdp

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	66-78 Deg F	71
Relative Humidity	10% - 70%	15
Peak Resultant Acceleration	225-275 G's	225.5
Peak Lateral Acceleration	15 G's Max	4.5
Is Acceleration Curve Unimodal?	YES	YES

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
NECK FLEXION TEST

Dummy Serial Number	150
Calspan Sequential Test Number	5
Date	01/07/99
Workfile	150598.nfl

6 Axis Neck Transducer

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature		69-72 Deg F	71
Relative Humidity		10% - 70%	15
Impact Velocity		22.60 - 23.40 Ft/s	23.30
Pendulum Deceleration	10 ms	22.50 - 27.50 G's	24.64
	20 ms	17.60 - 22.60 G's	20.64
	30 ms	12.50 - 18.50 G's	14.93
Max Pendulum G's Above 30 ms		29 G's Max	14.93
Deceleration - Time Curve Decay Time to 5 G's		34 - 42 ms	40.00
D Plane Rotation	Max	64 - 78 Deg	77.90
	Time	57 - 64 ms	53.38
Moment About Occipital Condyle	Max	65 - 80 Ft-Lbs	74.66
	Time	47 - 58 ms	54.25
Rotation Angle - Time Curve Decay Time to Zero		113 - 128 ms	124.63
Positive Moment - Time Curve Decay Time to Zero		97 - 107 ms	107.00

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
NECK EXTENSION TEST

Dummy Serial Number	150
Calspan Sequential Test Number	5
Date	01/07/99
Workfile	150598.nex

6 Axis Neck Transducer

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature		69-72 Deg F	71
Relative Humidity		10% - 70%	15
Impact Velocity		19.50 - 20.30 Ft/s	19.60
Pendulum Deceleration	10 ms	17.20 - 21.20 G's	18.87
	20 ms	14.00 - 19.00 G's	16.74
	30 ms	11.00 - 16.00 G's	13.45
Max Pendulum G's Above 30 ms		22 G's Max	13.45
Deceleration - Time Curve Decay Time to 5 G's		38 - 46 ms	43.75
D Plane Rotation	Max	81 - 106 Deg	102.05
	Time	72 - 82 ms	77.25
Moment About Occipital Condyle	Max	-59.0 - -39.0 Ft-Lbs	-48.19
	Time	65 - 79 ms	72.75
Rotation Angle - Time Curve Decay Time to Zero		147 - 174 ms	160.13
Positive Moment - Time Curve Decay Time to Zero		120 - 148 ms	148.00

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
THORAX IMPACT TEST

Dummy Serial Number	150
Calspan Sequential Test Number	5
Date	01/07/99
Workfile	150598.th3

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	69-72 Deg F	71
Relative Humidity	10% - 70%	15
Pendulum Velocity	21.6 - 22.4 Ft/s	21.65
Maximum Deflection	2.50 - 2.86 in	2.51
Maximum Resistive Force	1160 - 1325 Lbs	1180.34
Internal Hysteresis	69 - 85 %	72.3

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
KNEE IMPACT TEST

Dummy Serial Number	150
Calspan Sequential Test Number	5
Date	01/06/99
Workfile	150598

TEST PARAMETER	SPECIFICATION	TEST RESULTS
LEFT KNEE		
Temperature	66 - 78 Deg F	70
Relative Humidity	10% - 70%	15
Probe Velocity	6.8 - 7.0 Ft/s	6.90
Peak Knee Impact Force	1060 - 1300 Lbs	1199.00
RIGHT KNEE		
Temperature	66 - 78 Deg F	70
Relative Humidity	10% - 70%	15
Probe Velocity	6.8 - 7.0 Ft/s	6.90
Peak Knee Impact Force	1060 - 1300 Lbs	1292.00

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
EXTERNAL DIMENSIONS

Dummy Serial Number 150
Calspan Sequential Test Number 5
Date 01/06/99

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature			71
Relative Humidity			15
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	39.2
Waist Circumference	Z	32.9 - 34.1 in	34.0
Chest Depth	O	8.4 - 9.0 in	8.4
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	5.7
Buttock Knee Length	K	22.8 - 23.8 in	23.4
Buttock Popliteal Length	N	17.8 - 18.8 in	18.4
Popliteal Height	L	16.9 - 17.9 in	17.8
Knee Pivot Height	M	19.1 - 19.7 in	19.6
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	3.7
Shoulder Breadth	V	16.6 - 17.2 in	16.9
Shoulder Pivot Height	B	19.9 - 20.5 in	20.2
Elbow Rest Height	J	7.5 - 8.3 in	8.1
Shoulder - Elbow Length	I	13.0 - 13.6 in	13.2
Back of Elbow to Wrist Pivot	G	11.4 - 12.0 in	11.5

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
HEAD DROP TEST

Dummy Serial Number	245
Calspan Sequential Test Number	4
Date	01/05/99
Workfile	245498.hdp

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	66-78 Deg F	70
Relative Humidity	10% - 70%	32
Peak Resultant Acceleration	225-275 G's	233.0
Peak Lateral Acceleration	15 G's Max	7.6
Is Acceleration Curve Unimodal?	YES	YES

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
NECK FLEXION TEST

Dummy Serial Number	245
Calspan Sequential Test Number	4
Date	12/18/98
Workfile	245498.nfl

6 Axis Neck Transducer

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature		69-72 Deg F	70
Relative Humidity		10% - 70%	20
Impact Velocity		22.60 - 23.40 Ft/s	22.90
Pendulum Deceleration	10 ms	22.50 - 27.50 G's	24.25
	20 ms	17.60 - 22.60 G's	20.96
	30 ms	12.50 - 18.50 G's	14.36
Max Pendulum G's Above 30 ms		29 G's Max	14.36
Deceleration - Time Curve Decay Time to 5 G's		34 - 42 ms	39.13
D Plane Rotation	Max	64 - 78 Deg	74.95
	Time	57 - 64 ms	63.00
Moment About Occipital Condyle	Max	65 - 80 Ft-Lbs	65.24
	Time	47 - 58 ms	54.63
Rotation Angle - Time Curve Decay Time to Zero		113 - 128 ms	120.05
Positive Moment - Time Curve Decay Time to Zero		97 - 107 ms	105.88

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
NECK EXTENSION TEST

Dummy Serial Number	245
Calspan Sequential Test Number	4
Date	12/18/98
Workfile	245498.nex

6 Axis Neck Transducer

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature		69-72 Deg F	70
Relative Humidity		10% - 70%	20
Impact Velocity		19.50 - 20.30 Ft/s	20.00
Pendulum Deceleration	10 ms	17.20 - 21.20 G's	18.43
	20 ms	14.00 - 19.00 G's	15.81
	30 ms	11.00 - 16.00 G's	13.38
Max Pendulum G's Above 30 ms		22 G's Max	13.38
Deceleration - Time Curve Decay Time to 5 G's		38 - 46 ms	44.25
D Plane Rotation	Max	81 - 106 Deg	89.73
	Time	72 - 82 ms	73.63
Moment About Occipital Condyle	Max	-59.0 - -39.0 Ft-Lbs	-52.02
	Time	65 - 79 ms	68.88
Rotation Angle - Time Curve Decay Time to Zero		147 - 174 ms	148.00
Positive Moment - Time Curve Decay Time to Zero		120 - 148 ms	131.63

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
THORAX IMPACT TEST

Dummy Serial Number	245
Calspan Sequential Test Number	4
Date	12/18/98
Workfile	245498.th3

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	69-72 Deg F	70
Relative Humidity	10% - 70%	20
Pendulum Velocity	21.6 - 22.4 Ft/s	21.70
Maximum Deflection	2.50 - 2.86 in	2.55
Maximum Resistive Force	1160 - 1325 Lbs	1226.59
Internal Hysteresis	69 - 85 %	74.7

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
KNEE IMPACT TEST

Dummy Serial Number	245
Calspan Sequential Test Number	4
Date	01/05/99
Workfile	245498

TEST PARAMETER	SPECIFICATION	TEST RESULTS
LEFT KNEE		
Temperature	66 - 78 Deg F	70
Relative Humidity	10% - 70%	30
Probe Velocity	6.8 - 7.0 Ft/s	7.00
Peak Knee Impact Force	1060 - 1300 Lbs	1242.00
RIGHT KNEE		
Temperature	66 - 78 Deg F	70
Relative Humidity	10% - 70%	30
Probe Velocity	6.8 - 7.0 Ft/s	7.00
Peak Knee Impact Force	1060 - 1300 Lbs	1179.00

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
EXTERNAL DIMENSIONS

Dummy Serial Number 245
Calspan Sequential Test Number 4
Date 12/18/98

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature			71
Relative Humidity			15
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	39.0
Waist Circumference	Z	32.9 - 34.1 in	33.7
Chest Depth	O	8.4 - 9.0 in	8.4
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	17.5
Knee Pivot Height	M	19.1 - 19.7 in	19.2
Foot Length	P	9.9 - 10.5 in	10.2
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	20.2
Elbow Rest Height	J	7.5 - 8.3 in	8.4
Shoulder - Elbow Length	I	13.0 - 13.6 in	13.2
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 150)	Serial #	Manufacturer	Calibration	
			Last	Next
Head X	AF5P8	ENDEVCO	10/98	4/99
Y	C14948	ENDEVCO	10/98	4/99
Z	AH5F3	ENDEVCO	12/98	6/99
Chest X	ADL50	ENDEVCO	12/98	6/99
Y	AC2P5	ENDEVCO	12/98	6/99
Z	AL6C8	ENDEVCO	12/98	6/99
Right Femur Load Cell	F551	GSE	9/98	3/99
Left Femur Load Cell	F548	GSE	9/98	3/99
Neck Load Cell X	076	DENTON	8/98	2/99
Y	076	DENTON	8/98	2/99
Z	076	DENTON	8/98	2/99
Neck Moment X	076	DENTON	8/98	2/99
Y	076	DENTON	8/98	2/99
Z	076	DENTON	8/98	2/99
Chest Deflection Gauge	CP150	HUMANOID	9/98	3/99
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	-	MAGNETEK	-	-
Belt Stretch Transducer	E2	CALSPAN	10/98	4/99

INSTRUMENT CALIBRATION FOR DRIVER DUMMY

(6 Month Calibration Minimum)

DRIVER DUMMY		Serial #	Manufacturer	Calibration	
				Last	Next
Head	X (R)	A14150	ENDEVCO	10/98	4/99
	Y (R)	B10954	ENDEVCO	10/98	4/99
	Z (R)	A14126	ENDEVCO	10/98	4/99
Chest	X (R)	A13939	ENDEVCO	12/98	6/99
	Y (R)	A14181	ENDEVCO	10/98	4/99
	Z (R)	A14124	ENDEVCO	10/98	4/99
Pelvic	X	C15018	ENDEVCO	9/98	3/99
	Y	C14883	ENDEVCO	9/98	3/99
	Z	C14972	ENDEVCO	9/98	3/99
Left Upper Tibia	Mx	016	DENTON	9/98	3/99
Left Upper Tibia	My	016	DENTON	9/98	3/99
Left Lower Tibia	Fz	123	DENTON	8/98	2/99
Left Lower Tibia	Mx	123	DENTON	8/98	2/99
Left Lower Tibia	My	123	DENTON	8/98	2/99
Right Upper Tibia	Mx	015	DENTON	9/98	3/99
Right Upper Tibia	My	015	DENTON	9/98	3/99
Right Lower Tibia	Fz	122	DENTON	8/98	2/99
Right Lower Tibia	Mx	122	DENTON	8/98	2/99
Right Lower Tibia	My	122	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	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	14485	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 PASSENGER DUMMY

(6 Month Calibration Minimum)

PASSENGER DUMMY (S/N 245)		Serial #	Manufacturer	Calibration	
				Last	Next
Head	X	C15021	ENDEVCO	9/98	3/99
	Y	AL511	ENDEVCO	10/98	4/99
	Z	AH5N0	ENDEVCO	10/98	4/99
Chest	X	AE8K1	ENDEVCO	10/98	4/99
	Y	AH5M8	ENDEVCO	11/98	5/99
	Z	AF5C4	ENDEVCO	10/98	4/99
Right Femur Load Cell		F420	GSE	9/98	3/99
Left Femur Load Cell		F732	GSE	9/98	3/99
Neck Load Cell	X	269	DENTON	10/98	4/99
	Y	269	DENTON	10/98	4/99
	Z	269	DENTON	10/98	4/99
Neck Moment	X	269	DENTON	10/98	4/99
	Y	269	DENTON	10/98	4/99
	Z	269	DENTON	10/98	4/99
Chest Deflection Gauge		245	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		-	MAGNETEK	-	-
Belt Stretch Transducer		E4	CALSPAN	10/98	4/99

INSTRUMENT CALIBRATION FOR PASSENGER DUMMY

(6 Month Calibration Minimum)

PASSENGER DUMMY		Serial #	Manufacturer	Calibration	
				Last	Next
Head	X (R)	A14367	ENDEVCO	11/98	5/99
	Y (R)	A14501	ENDEVCO	11/98	5/99
	Z (R)	A14570	ENDEVCO	11/98	5/99
Chest	X (R)	A13506	ENDEVCO	10/98	4/99
	Y (R)	A14058	ENDEVCO	10/98	4/99
	Z (R)	B10481	ENDEVCO	10/98	4/99
Pelvic	X	AF5B5	ENDEVCO	9/98	3/99
	Y	AF5F7	ENDEVCO	9/98	3/99
	Z	AC2R5	ENDEVCO	9/98	3/99
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	9/98	3/99
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	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 VEHICLE ACCELEROMETERS

(6 Month Calibration Minimum)

	Serial #	Manufacturer	Calibration	
			Last	Next
Left Seat Rear Crossmember	D29	ICS	1/99	7/99
Right Rear Seat Crossmember	D25	ICS	12/98	6/99
Top of Engine	D33	ICS	11/98	5/99
Bottom of Engine	D78	ICS	10/98	4/99
Left Disc Brake Caliper	D37	CEC	12/98	6/99
Right Disc Brake Caliper	A164	CEC	12/98	6/99
Instrument Panel	D53	CEC	8/98	2/99
Left Seat Rear Crossmember (R)	Y93	ICS	12/98	6/99
Right Seat Rear Crossmember (R)	D80	ICS	12/98	6/99