

V3419

REPORT NUMBER: 301-CAL-00-10

**SAFETY COMPLIANCE TESTING FOR FMVSS 301
FUEL SYSTEM INTEGRITY**

FUJI HEAVY INDUSTRIES
2000 SUBARU LEGACY GT
4-DOOR WAGON

NHTSA NUMBER: CY5502

VERIDIAN TEST NUMBER: 8480-20

VERIDIAN ENGINEERING
P.O. BOX 400
BUFFALO, NEW YORK 14225



July 18, 2000

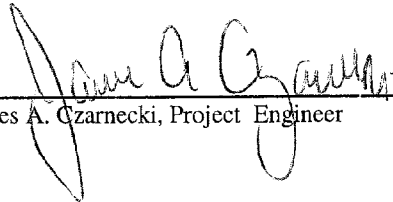
FINAL REPORT

PREPARED FOR:

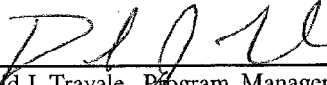
U. S. Department of Transportation
National Highway Traffic Safety Administration
ENFORCEMENT
Office of Vehicle Safety Compliance
400 Seventh Street, S. W.
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Washington, DC 20590

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August 14, 2000

FINAL REPORT ACCEPTANCE BY OVSC:

Accepted By: _____

Acceptance Date: _____

20 AUG 21 19:00
FBI/DOJ

TECHNICAL REPORT STANDARD TITLE PAGE

1. Report No. 301-CAL-00-10		2. Government Accession No.		3. Recipient's Catalog No.	
4. Title and Subtitle Final Report of FMVSS 301 Compliance Testing of a 2000 Subaru Legacy GT 4-Door Wagon NHTSA No. CY5502				5. Report Date July 18,2000	
				6. Performing Organization Code CAL	
7. Author(s) James A. Czarnecki, Project Engineer David J. Travale, Program Manager				8. Performing Organization Report No. 8480-20	
9. Performing Organization Name and Address Veridian Engineering 4455 Genesee Street Buffalo, New York 14225				10. Work Unit No.	
				11. Contract or Grant No. DTNH22-95-D-11000	
12. Sponsoring Agency Name and Address U.S. Department of Transportation National Highway Traffic Safety Administration Office of Vehicle Safety Compliance (NEF-30) 400 Seventh St , S.W., Rm. 6115, Washington, D.C. 20590				13. Type of Report and Period Covered Final Test Report July 2000	
				14. Sponsoring Agency Code NEF-30	
15. Supplementary Notes					
16. Abstract Compliance tests were conducted on the subject 2000 Subaru Legacy GT 4-Door Wagon in accordance with the specifications of the Office of Vehicle Safety Compliance Test Procedure No. TP-301-01 for the determination of FMVSS 301 compliance. The test vehicle appeared to comply with all requirements of FMVSS 301 "Fuel System Integrity."					
17. Key Words Compliance Testing Safety Engineering FMVSS 301				18. Distribution Statement Copies of this report are available from:	
				NHTSA Technical Reference Division Room 5108 (NAD-52), 400 Seventh , S.W., Washington, D.C. 20590 Telephone No. (202) 366-4946	
19. Security Classif. (of this report) UNCLASSIFIED		20. Security Classif. (of this page) UNCLASSIFIED		21. No. of Pages 88	
22. Price					

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Section 1

PURPOSE OF COMPLIANCE TEST

This 30 mph rear moving barrier impact test is part of the Federal Motor Vehicle Safety Standard (FMVSS) 301 Compliance Test Program conducted for the National Highway Traffic Safety Administration (NHTSA) by Veridian Engineering under Contract No. DTNH22-95-D-11000. The purpose of this test was to determine if the subject vehicle, a 2000 Subaru Legacy GT 4-Door Wagon, meets the performance requirements of FMVSS No. 301, "Fuel System Integrity." This compliance test was conducted using the requirements found in the OVSC Laboratory Test Procedure No. TP-301-01, dated March 28, 1994.

Section 2

COMPLIANCE TEST RESULTS SUMMARY

A 3958 pound 2000 Subaru Legacy GT 4-Door Wagon was impacted from the rear by a 3961 pound moving barrier at a velocity of 29.7 mph. The test was performed by Veridian Engineering on July 18, 2000.

One instrumented Part 572 E and one non-instrumented Part 572 B, 50th percentile male Anthropomorphic Test Device (ATD) were placed in the driver and right-front passenger seating positions respectively.

The crash event was recorded by one real-time and eight high-speed cameras. Camera locations and other pertinent camera information are found on pages 3-9 and 3-10 of this report. Pre- and post-test photographs of the vehicle can be found in Appendix A. Vehicle and ATD electronic data plots are presented in Appendix B.

The 16.9 gallon fuel tank was filled to 92 percent capacity with orange Stoddard fluid prior to the impact. After the impact, there was no fluid leakage for the first 30 minutes nor during any phase of the rollover test. Average vehicle longitudinal crush was 9.3 inches. The vehicle appeared to comply with all the requirements of FMVSS No. 301 "Fuel System Integrity." Section 3 presents the results of these tests.

Table 1

CRASH TEST SUMMARY

Vehicle NHTSA No.: CY5502 Test Mode: 30 mph Rear Barrier
 Test Date: July 18,2000 Time: 16:30 Temperature : 71 °F
 Vehicle Make/Model/Body Style: 2000 Subaru Legacy GT 4-Door Wagon
 Vehicle Test Weight: 3958 lbs Impact Velocity: 29.7 mph
 Static Crush: Left Side = 9.7 inches
 Right Side = 8.8 inches
 Centerline = 9.4 inches
 Average Crush: 9.3 inches

TYPE OF FRONT OCCUPANT RESTRAINT SYSTEM INSTALLED IN TEST VEHICLE:

Driver's DSP: 3-point belt system with airbag
 Right Passenger's DSP: 3-point belt system with airbag

VISIBLE DUMMY CONTACT POINTS:

Driver: Back of head to seat head rest

 Passenger: Back of head to seat head rest

DOOR OPENING DATA:

Closed / Operable - Left Front
Closed / Operable - Right Front

Stoddard Solvent Spillage from Vehicle's Fuel System: None

Remarks: The driver seat back reclined approximately 32 degrees during the impact.

Table 2

GENERAL TEST AND VEHICLE PARAMETER DATATEST VEHICLE INFORMATION:

Year/Make/Model/Body Style: 2000 Subaru Legacy GT 4-Door Wagon

NHTSA No.: CY5502 ; VIN: 4S3BH6453Y7306591 ; Color: Gold

Engine Data: 4 cylinders; - CID; 2.5 Liters; - cc

Placement: - Longitudinal or In-Line; x Transverse or Lateral

Transmission Data: 4 speeds; - Manual; x Automatic; x 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: 6/26/00 ; Odometer Reading 134 miles

Selling Dealer: Ann Arbor Subaru

& Address: 4255 Jackson Rd Ann Arbor, MI 48103

DATA FROM TIRE VEHICLE'S CERTIFICATION LABEL:

Vehicle Manufactured by: Fuji Heavy Industries

Date of Manufacture: 11/99

GVWR: 4555 lbs.; GAWR: 2210 lbs. FRONT; 2345 lbs. REAR

DATA FROM TIRE PLACARD:

Location of Placard on Vehicle: Left side door panel

Tire Pressure with Maximum Capacity Vehicle Load: 32 psi FRONT 30 psi REAR

Recommended Tire Size: P205/55R16

* Recommended Cold Tire Pressure: 32 psi FRONT; 30 psi REAR

Size of Tires on Test Vehicle: P205/55R16

Type of Spare Tire: Temporary

Vehicle Capacity Data:

Type of Front Seats:	<u>-</u> Bench;	<u>x</u> Bucket;	<u>-</u> Split Bench
Number of Occupants:	<u>2</u> Front;	<u>3</u> Rear;	<u>5</u> Total
Vehicle Capacity Weight (VCW) =	<u>900</u> lbs.		
No. of Occupants x 150 lbs. =	<u>750</u> lbs.		
Rated Cargo/Luggage Weight (RCLW) =	<u>150</u> lbs.		

*Tire pressure used for test

Table 2

GENERAL TEST AND VEHICLE PARAMETER DATA (cont.)WEIGHT OF TEST VEHICLE AS RECEIVED FROM DEALER (with maximum fluids)= UDW:

Right Front	=	<u>927</u>	lbs.	Right Rear	=	<u>795</u>	lbs.
Left Front	=	<u>972</u>	lbs.	Left Rear	=	<u>801</u>	lbs.
TOTAL FRONT	=	<u>1,899</u>	lbs.	TOTAL REAR	=	<u>1,596</u>	lbs.
TOTAL DELIVERED WEIGHT	=	<u>3,495</u>	lbs.				
% of Total Front of Vehicle Weight	=	<u>54</u>	%	% of Total Rear Weight	=	<u>46</u>	%

CALCULATION OF VEHICLE'S TARGET TEST WEIGHT:

Total Delivered Weight	=	<u>3,495</u>	lbs.
Rated Cargo/Luggage Weight (RCLW)	=	<u>150</u>	lbs.
Weight of 2 p.572 Dummies, 167 & 164 lbs	=	<u>331</u>	lbs.
TARGET TEST WEIGHT	=	<u>3,976</u>	lbs.

WEIGHT OF TEST VEHICLE WITH TWO DUMMIES AND 132 POUNDS OF CARGO WEIGHT:

Right Front	=	<u>1062</u>	lbs.	Right Rear	=	<u>866</u>	lbs.
Left Front	=	<u>1142</u>	lbs.	Left Rear	=	<u>888</u>	lbs.
TOTAL FRONT	=	<u>2,204</u>	lbs.	TOTAL REAR	=	<u>1,754</u>	lbs.
TOTAL TEST WEIGHT	=	<u>3,958</u>	lbs.				
% of Total Front Weight	=	<u>55.7</u>	%	% of Total Rear Weight	=	<u>44.3</u>	%

* Weight of Ballast Secured in Vehicle Trunk Area = 0 lbs.

Type of Ballast: None

Method of Securing Ballast: None

Vehicle Components Removed for Weight Reduction: None

VEHICLE ATTITUDE (all dimension in inches):

AS DELIVERED:	RF	<u>27.8</u>	LF	<u>27.8</u>	RR	<u>27.8</u>	LR	<u>27.8</u>
AS TESTED:	RF	<u>26.9</u>	LF	<u>26.9</u>	RR	<u>27.4</u>	LR	<u>27.4</u>
Vehicle's Wheel Base:		<u>103.9</u>	in.					
Location of Vehicle's C.G.:		<u>46.0</u>	inches rearward of front wheel center.					

FUEL SYSTEM DATA:

Fuel System Capacity From Owner's Manual	=	<u>16.9</u>	gallons
Usable Capacity Figure Furnished by COTR	=	<u>16.9</u>	gallons
Test Volume Range (91 to 94% of Usable Capacity)	=	<u>15.4</u>	to <u>15.9</u> gallons
ACTUAL TEST VOLUME	=	<u>15.5</u>	gallons (with entire fuel system filled)

* Ballast weight includes the RCLW, the weight of drained vehicle fluids and the weight of any removed vehicle components less the weight of onboard instrumentation, cameras, and hardware.

Table 2

GENERAL TEST AND VEHICLE PARAMETER DATA (cont.)FUEL SYSTEM DATA (continued):

Test Fluid Type:	Stoddard Solution
Test Fluid Specific Gravity:	0.764
Test Fluid Kinematic Viscosity:	0.96 centistokes
Test Fluid Color:	Orange ("red" is preferred)
Type of Vehicle Fuel Pump:	Electric
Electric Fuel Pump Operation with Ignition Switch ON and Engine OFF - Fuel pump operated.	
Details of Fuel System:	Fuel tank centered fore of rear axle, fuel lines run along centerline of vehicle and fuel filler is on right side aft of rear axle.

Table 3

MOVING BARRIER PARAMETER DATA

WEIGHT OF MOVING BARRIER:

Right Front	=	<u>1113</u>	lbs.	Right Rear	=	<u>868</u>	lbs.
Left Front	=	<u>1102</u>	lbs.	Left Rear	=	<u>878</u>	lbs.
TOTAL FRONT	=	<u>2,215</u>	lbs.	TOTAL REAR	=	<u>1,746</u>	lbs.
TOTAL BARRIER WEIGHT	=	<u>3,961</u>	lbs.				

MOVING BARRIER DIMENSIONS:

Barrier Face Height:	<u>60.0</u>	in.
Barrier Face Width:	<u>78.0</u>	in.
Barrier Face		
Ground Clearance:	<u>5.0</u>	in.
Tread Width:	<u>59.5</u>	in.
Wheel Base:	<u>120.0</u>	in.
Location of C.G.:	X: <u>52.9</u> inches rearward of front wheel center.	
	Y: <u>0.0</u> inches from longitudinal-vertical plane of symmetry.	
	Z: <u>16.3</u> inches above ground.	

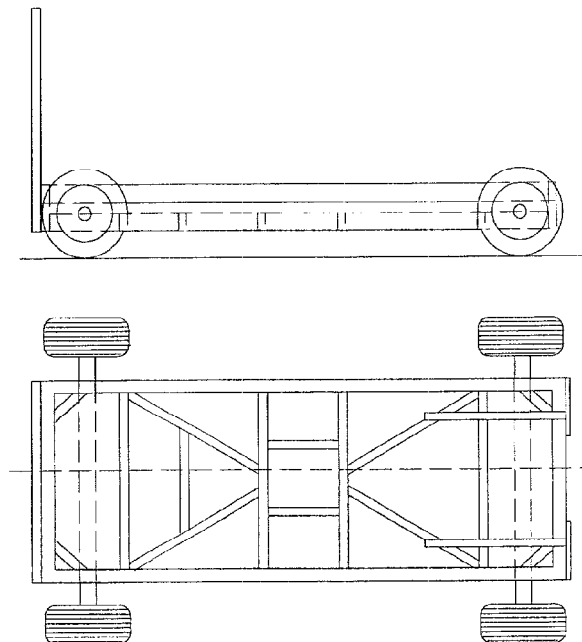


Table 4

POST IMPACT DATA

TYPE OF TEST:

Type of Test: Rear Barrier Impact Angle: 0°
 Test Date: July 18, 2000 Time: 16:30 Temperature: 71 °F
 Vehicle NHTSA No.: CY5502
 Required Impact Velocity Range: 28.9 to 29.9 mph

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

Trap No. 1 = 29.7 mph; Trap No. 2 = 29.7 mph
 Average Impact Speed = 29.7 mph

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

Vehicle Length:

Pre-Test	Right =	<u>182.7</u>	; C/L =	<u>187.6</u>	; Left =	<u>182.7</u>
Post-Test	Right =	<u>173.9</u>	; C/L =	<u>178.2</u>	; Left =	<u>173.0</u>
Crush	Right =	<u>8.8</u>	; C/L =	<u>9.4</u>	; Left =	<u>9.7</u>
AVERAGE	=	<u>9.3</u>	inches			

Section 3

COMPLIANCE TEST DATA

Figure 1

PART 572 DUMMY IN-VEHICLE POSITION
(FOR REAR IMPACTS ONLY)

DUMMY MEASUREMENT FOR FRONT SEAT PASSENGERS

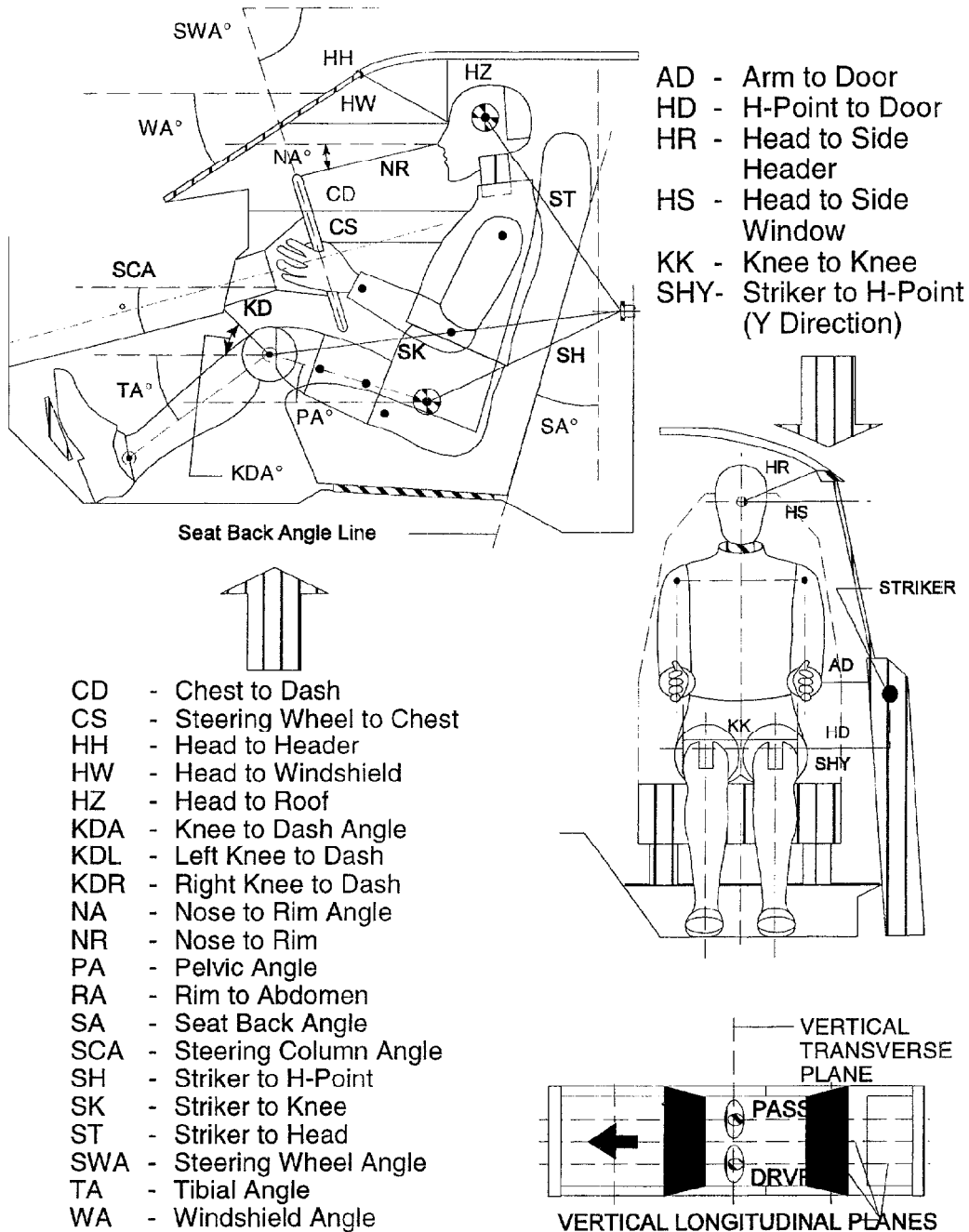


Table 5

FRONT SEAT OCCUPANT MEASUREMENTS
(FOR REAR IMPACT ONLY)

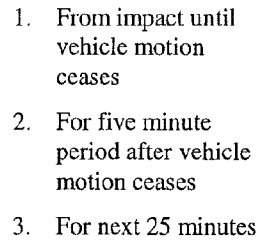
	DRIVER (Serial #116)		
WA°	29 deg.		
SWA°	66 deg.		
SCA°	24 deg.		
SA°	25 deg.		
HZ	7.8		
HH	12.5		
HW	20.8		
HR	10.9		
NR	17.1	Angle	15 deg.
CD	20.2		
CS	12.3		
RA	7.5		
KDL	6	Angle (KDA)	19 deg.
KDR	6		
PA°	23 deg.		
TA°	44 deg.		
KK	9.9		
ST	20.1	Angle	9 deg.
SK	22.8	Angle	4 deg.
SH	9.2	Angle	40 deg.
SHY	9.6		
HS	12.1		
HD	5.0		
AD	4.1		

(Measurements in inches)

FMVSS NO. 301

Vehicle Mfgr./Make/Model: 2000 Subaru Legacy GT 4-Door Wagon

FUEL SPILLAGE MEASUREMENT:



ACTUAL	MAX ALLOWED
0	1 oz.
0	5 oz.
0	1 oz./1 min.

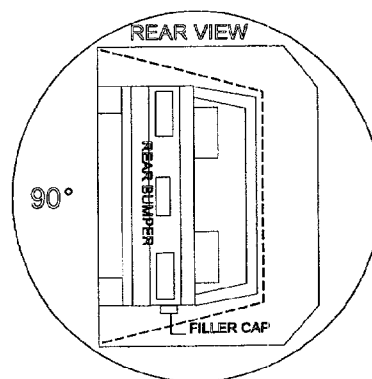
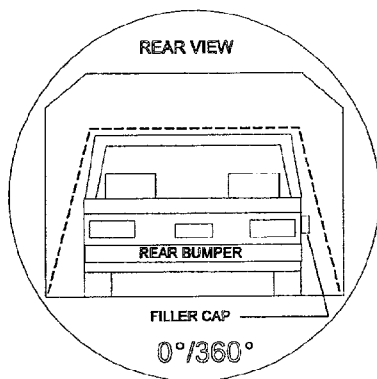
None

Table 7

FMVSS NO. 301 STATIC ROLLOVER DATA SHEET

TEST PHASE :
0-90 Deg.

Vehicle NHTSA ID No. :
CY5502

I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time	<u>1</u>	minutes	<u>15</u>	seconds
(Spec. Range = 1 to 3 minutes)				
FMVSS 301 Position Hold Time +	<u>5</u>	minutes	<u>00</u>	seconds
TOTAL	<u>6</u>	minutes	<u>15</u>	seconds
Next whole minute interval	<u>7</u>	minutes		

II. FMVSS 301 REQUIREMENTS:

(1) Time Period

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

(2) Maximum Allowable Solvent Spillage

5 ounces	1 ounce	1 ounce	1 ounce
----------	---------	---------	---------

III. ACTUAL TEST VEHICLE SOLVENT SPILLAGE:

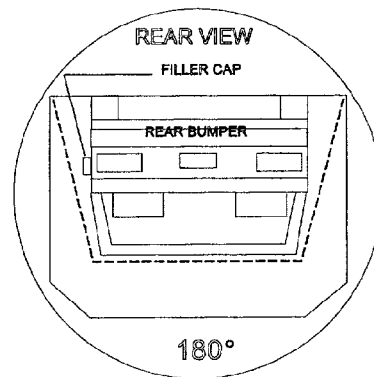
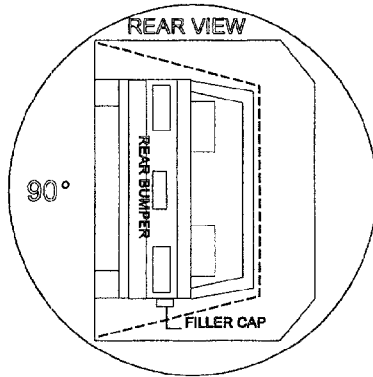
0	0	0	N/A
---	---	---	-----

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

IV. SOLVENT SPILLAGE LOCATION(S):

None

Table 7

FMVSS NO. 301 STATIC ROLLOVER DATA SHEET (cont.)TEST PHASE :90-180 Deg.Vehicle NHTSA ID No.:CY5502I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:Rollover Fixture 90° Rotation Time
(Spec. Range = 1 to 3 minutes)1 minutes 19 seconds

FMVSS 301 Position Hold Time +

5 minutes 00 seconds

TOTAL

6 minutes 19 seconds

Next whole minute interval

7 minutesII. FMVSS 301 REQUIREMENTS:

(1) Time Period

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

(2) Maximum Allowable Solvent Spillage

5 ounces	1 ounce	1 ounce	1 ounce
----------	---------	---------	---------

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):

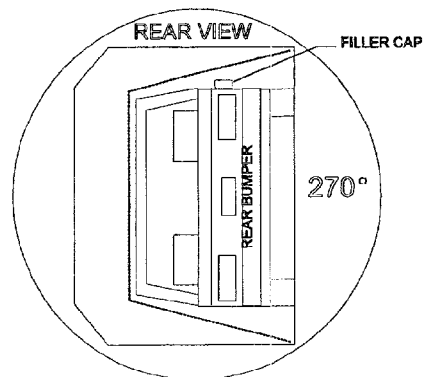
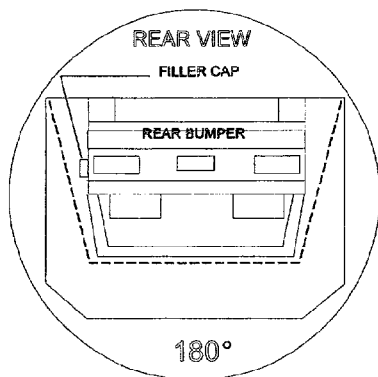
None

Table 7

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

TEST PHASE :
180-270 Deg.

Vehicle NHTSA ID No. :
CY5502

I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time 1 minutes 08 seconds
 (Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time + 5 minutes 00 seconds

TOTAL 6 minutes 8 seconds

Next whole minute interval 7 minutes

II. FMVSS 301 REQUIREMENTS:

(1) Time Period

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

(2) Maximum Allowable Solvent Spillage

5 ounces	1 ounce	1 ounce	1 ounce
----------	---------	---------	---------

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):

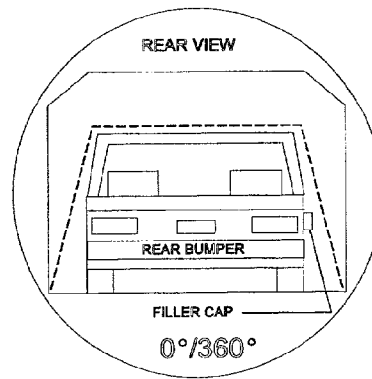
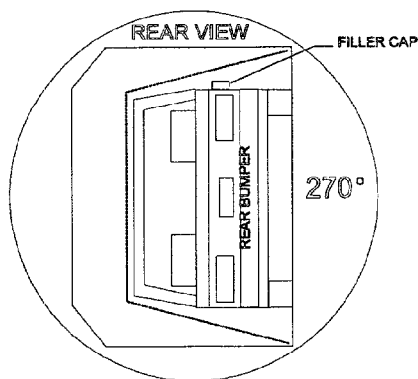
None

Table 7

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

TEST PHASE :
270-360 Deg.

Vehicle NHTSA ID No. :
CY5502

I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° 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

7 minutes

Next whole minute interval

II. FMVSS 301 REQUIREMENTS:

(1) Time Period

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

(2) Maximum Allowable Solvent Spillage

5 ounces	1 ounce	1 ounce	1 ounce
----------	---------	---------	---------

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

Figure 2

CAMERA POSITIONS FOR REAR IMPACTS

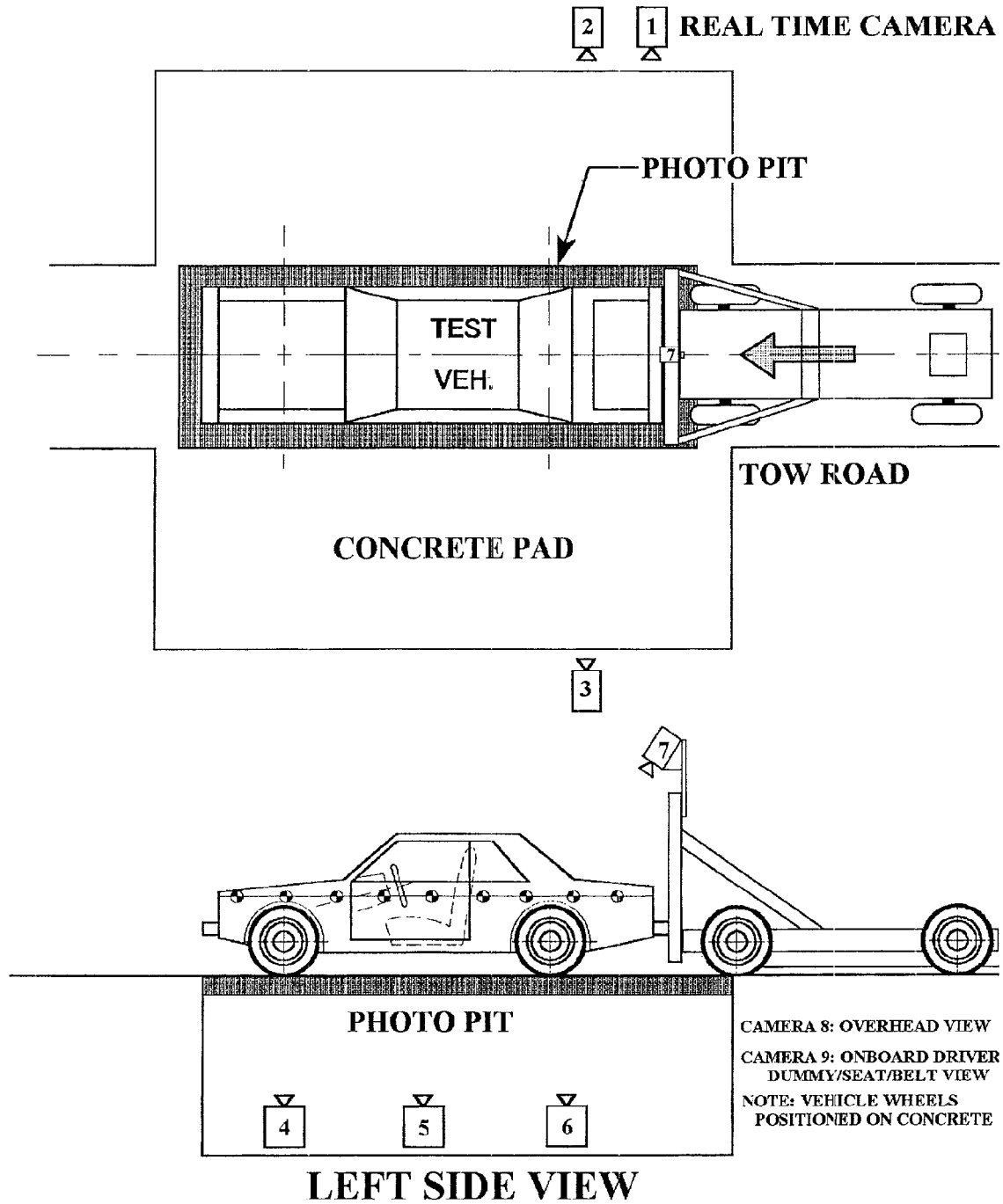


Table 8

HIGH-SPEED CAMERA LOCATIONSNHTSA No. : CY5502 Vehicle : 2000 Subaru Legacy GT 4-Door Wagon

CAMERA NO.	VIEW	CAMERA POSITIONS (inches)*			ANGLE** (degrees)	LENS (mm)	SPEED (fps)
		X	Y	Z			
1	Real-Time Camera	-	-	-	-	-	24
2	Right Side View	563	52.4	42.5	0	25	1000
3	Left Side View	533	79.5	48	0	25	1000
4	Vehicle Front Underbody View	0	145.3	-77	90	13	1000
5	Vehicle Mid-Section Underbody View	0	88.0	-77	90	13	1025
6	Vehicle Rear Underbody View	0	29.5	-77	90	13	1000
7	Moving Barrier View	0	0	99	-105	13	1000
8	Overhead Overall View	-20	0	386	-90	13	1000
9	Onboard Driver Dummy/Seat/Belt View	-	-	-	-	8	650

* X = film plane to monorail centerline (+ to left of rail)

Y = film plane to impact location (+ ahead of impact location)

Z = film plane to ground (+ above ground)

** = referenced to horizontal plane

Appendix A
PHOTOGRAPHS

LIST OF PHOTOGRAPHS

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A-21	ROLLOVER 270°	A-23
A-22	ROLLOVER 360°	A-24

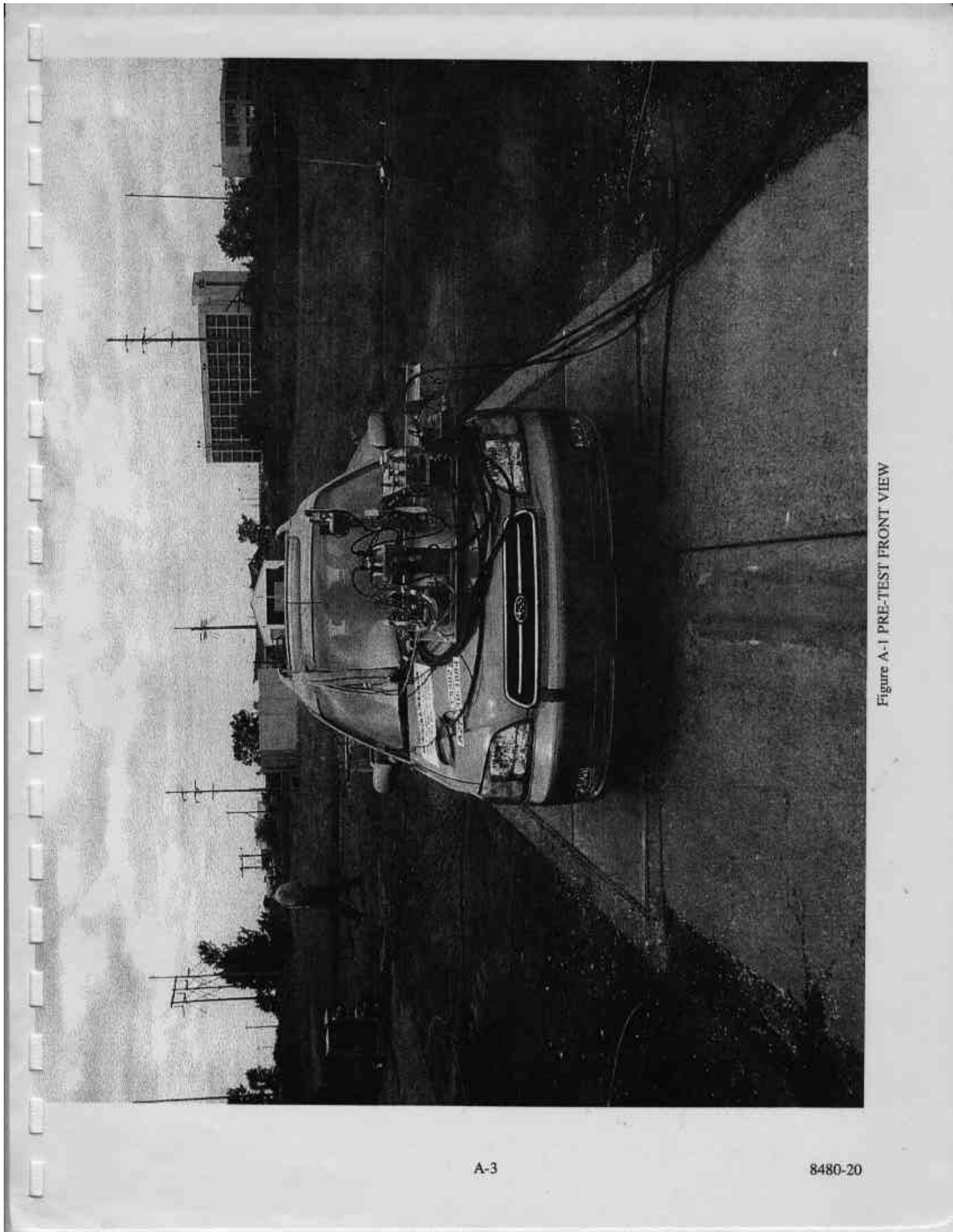


Figure A-1 PRE-TEST FRONT VIEW

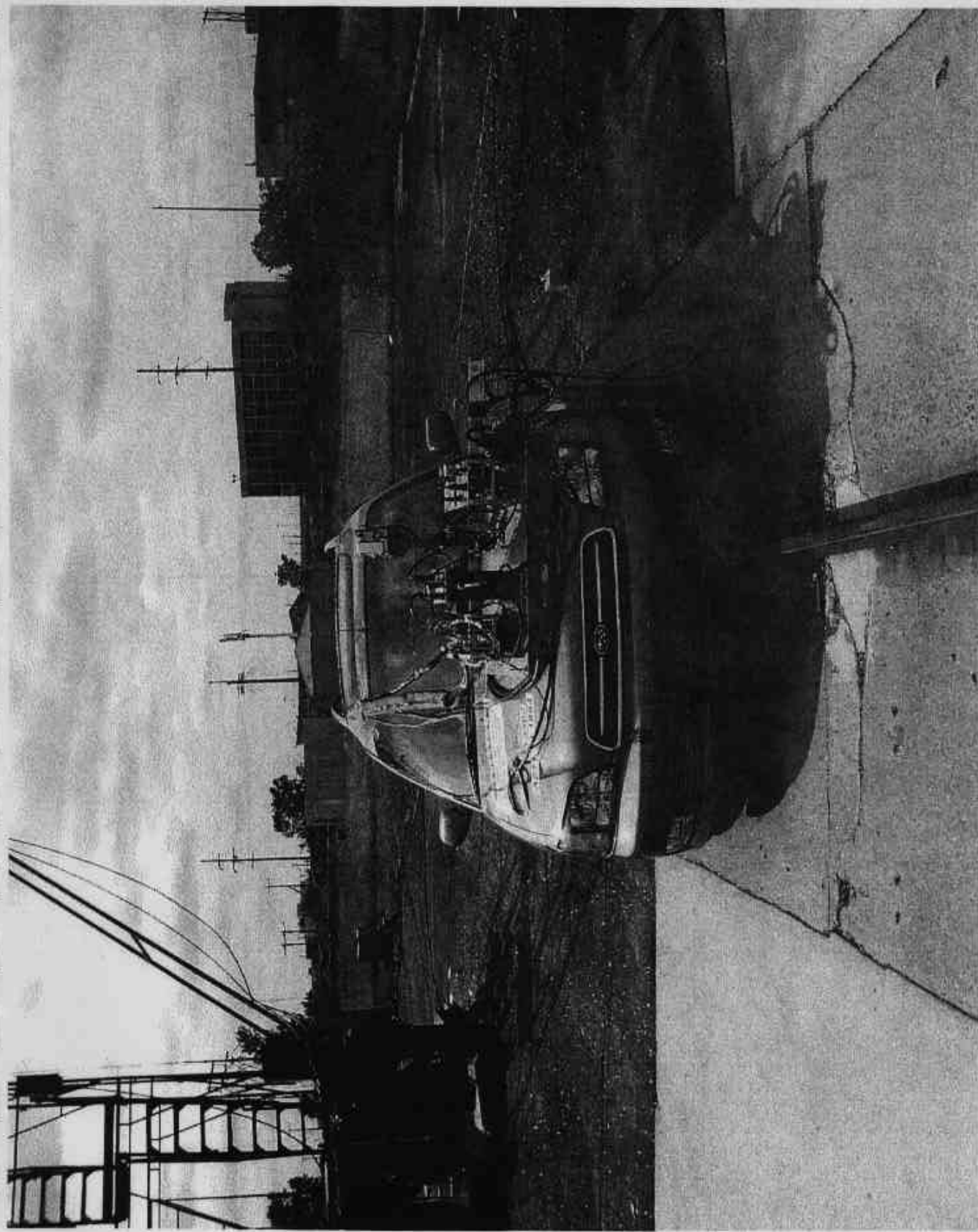


Figure A-2 POST-TEST FRONT VIEW

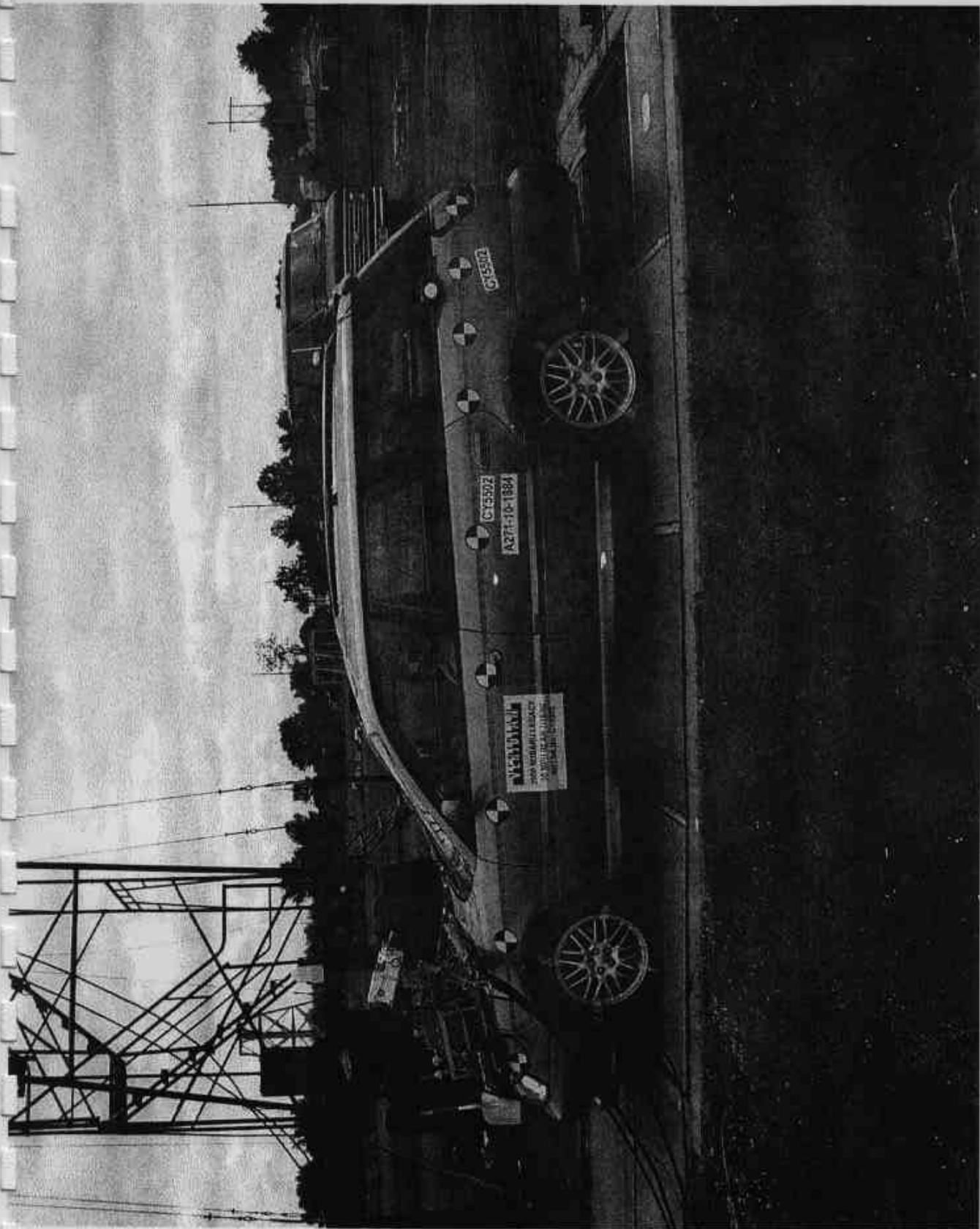


Figure A-3 PRE-TEST LEFT SIDE VIEW

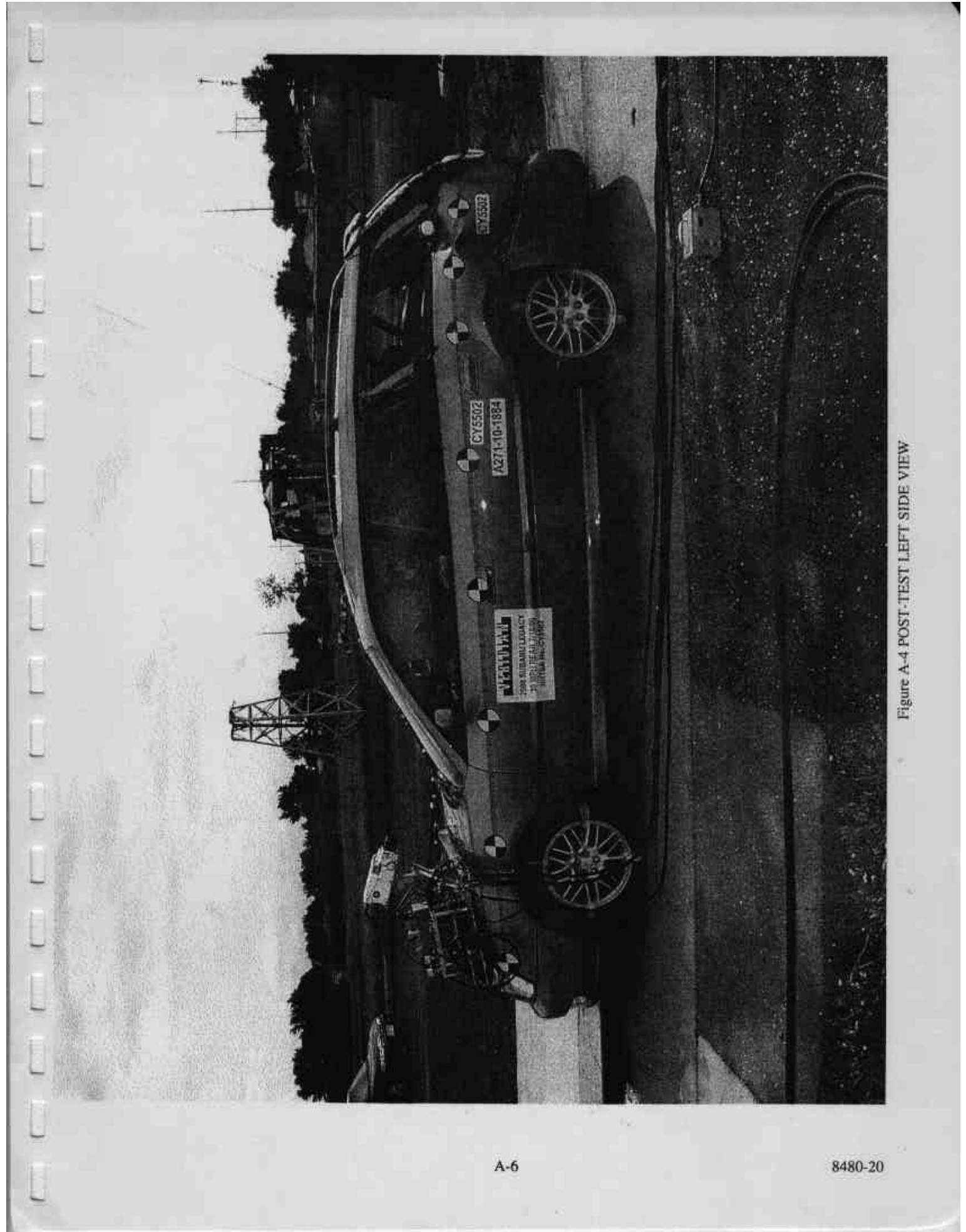


Figure A-4 POST-TEST LEFT SIDE VIEW



Figure A-5 PRE-TEST RIGHT SIDE VIEW

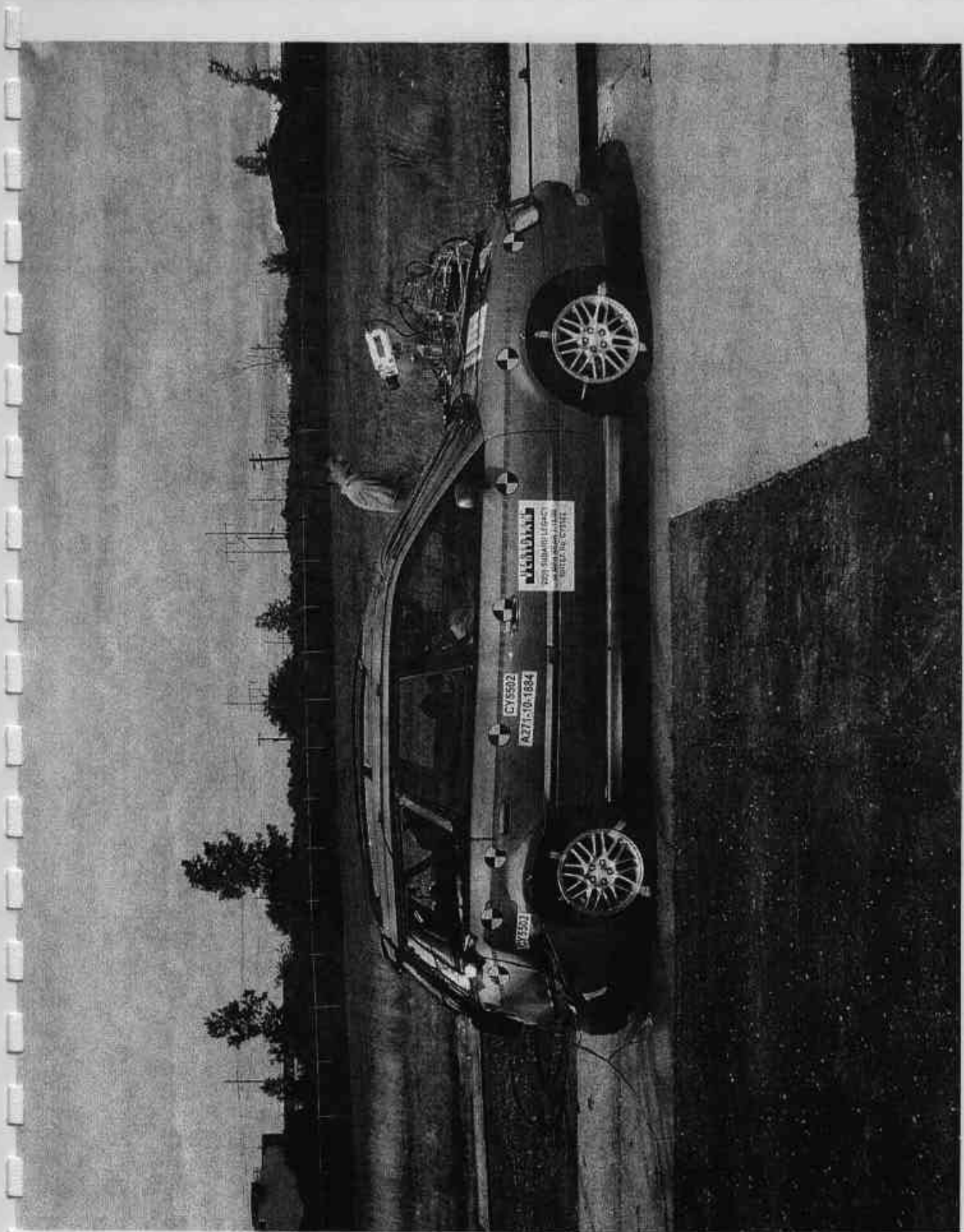


Figure A-6 POST-TEST RIGHT SIDE VIEW



Figure A-7 PRE-TEST REAR VIEW



Figure A-8 POST-TEST REAR VIEW



Figure A-9 PRE-TEST LEFT FRONT THREE-QUARTER VIEW



Figure A-10 POST-TEST LEFT FRONT THREE-QUARTER VIEW



Figure A-11 PRE-TEST RIGHT REAR THREE-QUARTER VIEW



Figure A-12 POST-TEST RIGHT REAR THREE-QUARTER VIEW

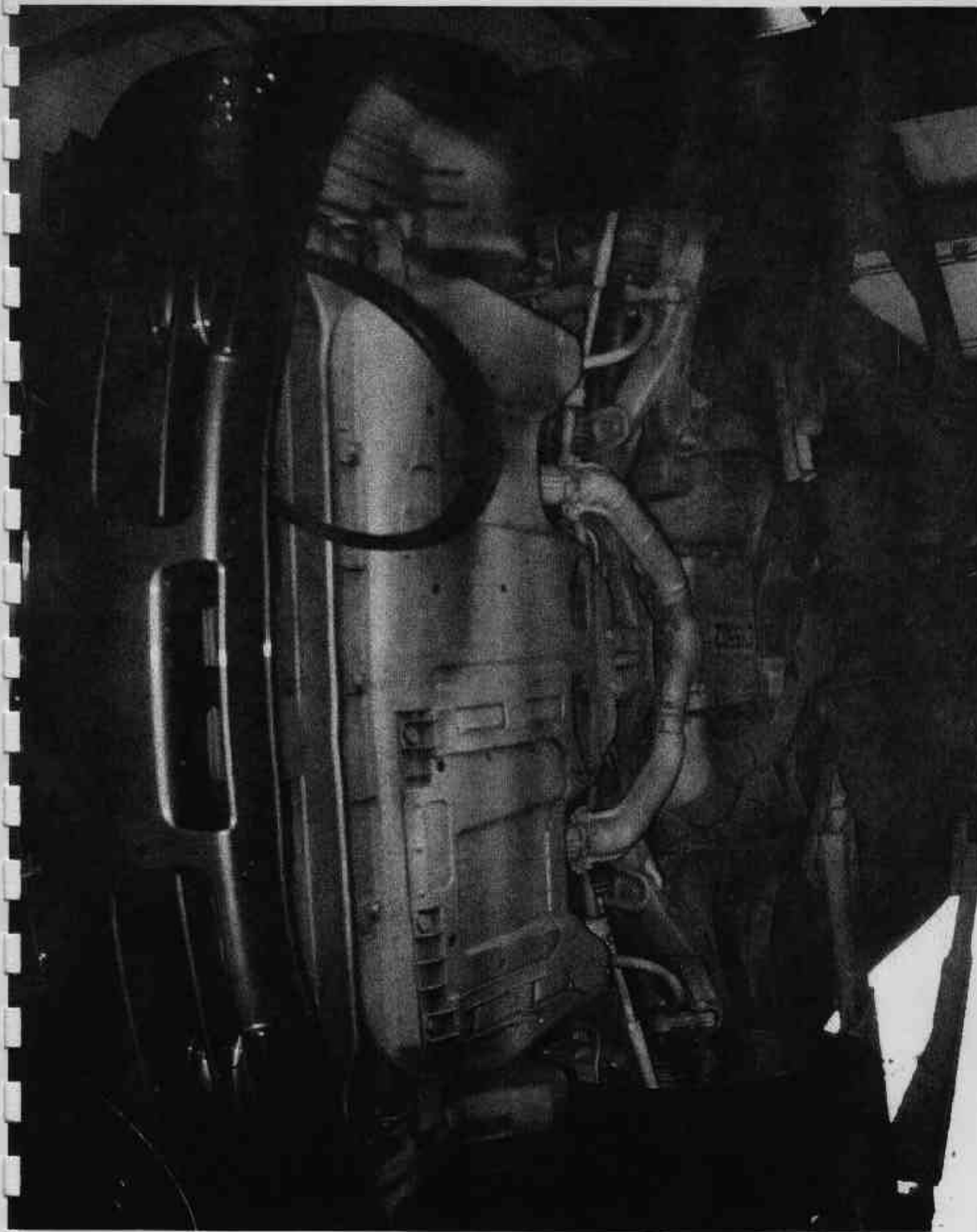


Figure A-13 PRE-TEST FRONT UNDERBODY VIEW



Figure A-14 POST-TEST FRONT UNDERBODY VIEW

2000 SUBARU LEGACY
30 MPH REAR 7/18/00
NHTSA No. CY5502

CY5502



Figure A-15 PRE-TEST REAR UNDERBODY VIEW

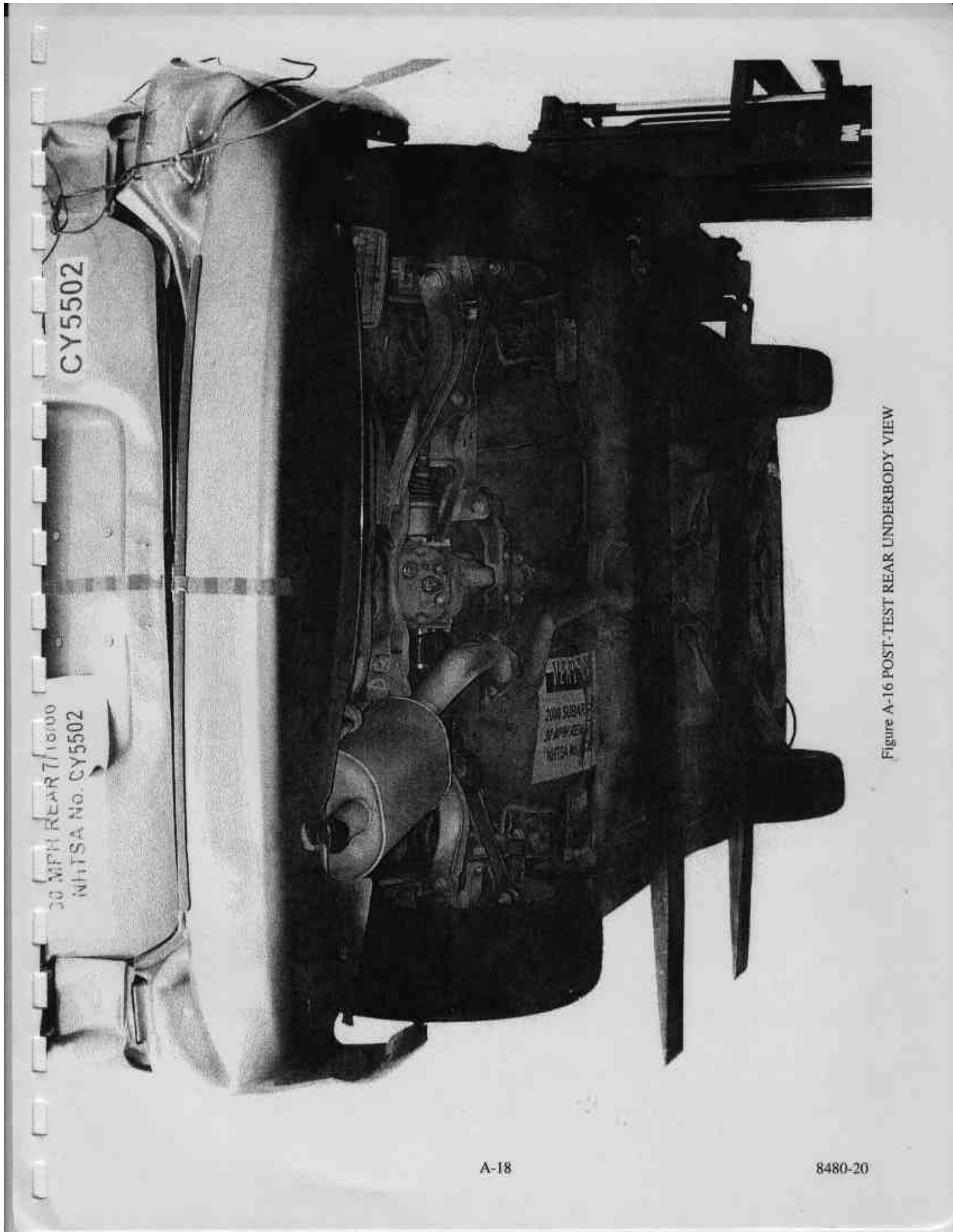


Figure A-16 POST-TEST REAR UNDERBODY VIEW

DATE: 11/99
MFG BY FUJI HEAVY INDUSTRIES LTD.
GAWR: 4655LB(2086KG) GAWR: F 2210LB(1002KG) R 2345LB(1064KG)
THIS VEHICLE CONFORMS TO ALL APPLICABLE FEDERAL MOTOR VEHICLE
SAFETY, BUMPER, AND THEFT PREVENTION STANDARDS IN EFFECT ON
THE DATE OF MANUFACTURE SHOWN ABOVE.

TYPE: PASSENGER CAR

VIN: 4S3BH6453Y7306591



ASSEMBLED BY SUBARU - ISUZU AUTOMOTIVE INC. MADE IN U.S.A.

Figure A-17 CERTIFICATION PLACARD

SUBARU

VEHICLE CAPACITY WEIGHT:
 SEDAN 850LB(386KG)
 WAGON 900LB(408KG)

NUMBER OF OCCUPANTS:
 TOTAL 5 (FRONT 2/REAR 3)

RECOMMENDED TIRE INFLATION PRESSURE psi(kg/cm²)

TIRE SIZE	FRONT	REAR
P205/55R16 89H	32(2.2)	30(2.1)
TEMPORARY SPARE TIRE		
T135/70D16 100M		60(4.2)

ED

Figure A-18 TIRE PLACARD

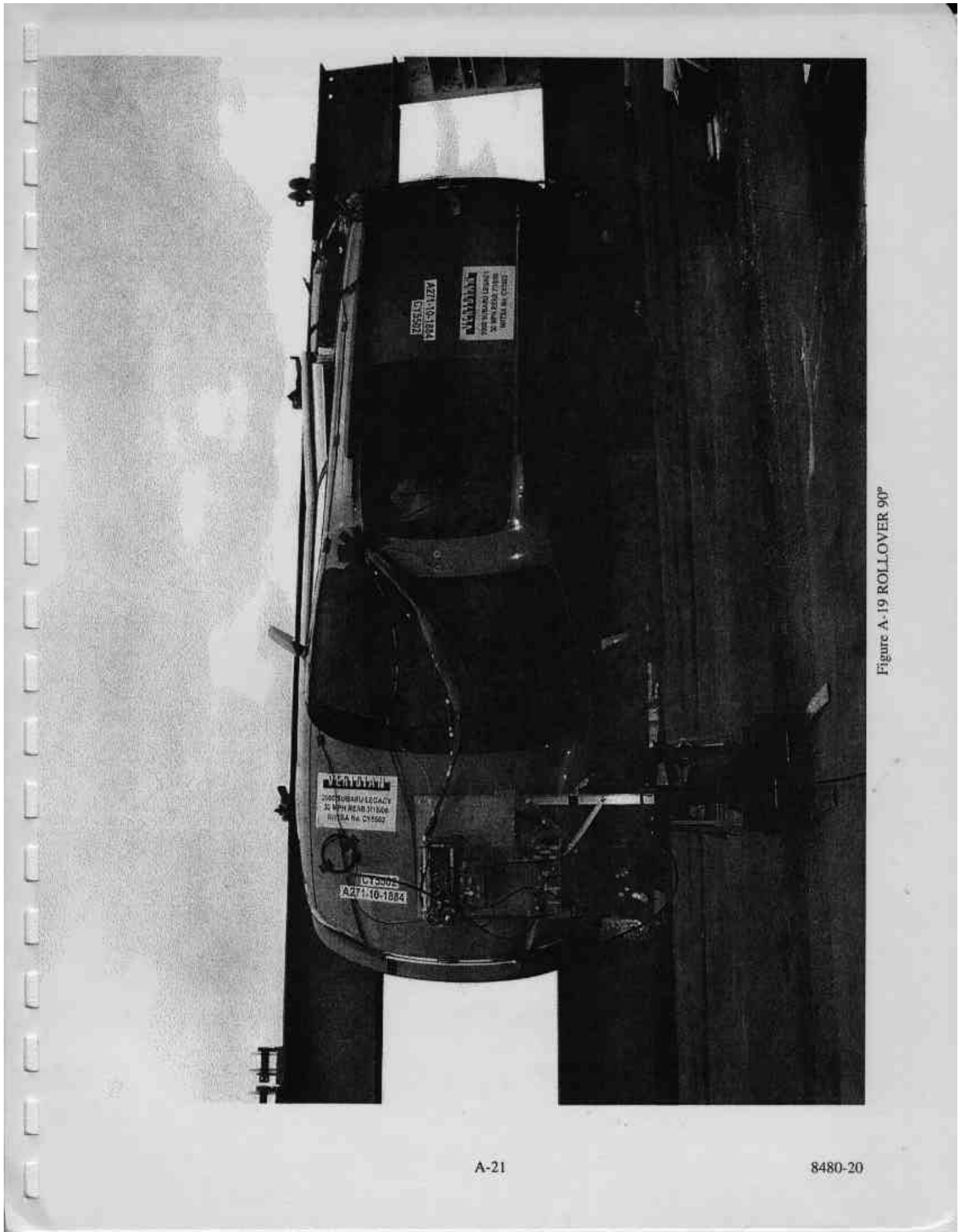


Figure A-19 ROLLOVER 90°



Figure A-20 ROLLOVER 180°

PHOTOGRAPH NOT AVAILABLE

Figure A-21 ROLLOVER 270°



Figure A-22 ROLLOVER 360°

Appendix B

VEHICLE AND DUMMY RESPONSE DATA

(REAR IMPACT ONLY)

FACILITY: VERF
TEST#: A271-0100

DATE: July 18, 2000

TITLE: NHTSA FMVSS 301 Test #10 - 2000 Subaru Legacy CY5502

CHN NAME	Unit	Max	msec	Min	msec	Filt
26 P1 Head x	g	30.2	115.3	-4.6	399.8	CFC_1000
27 P1 Head y	g	1.1	108.7	-4.1	132.6	CFC_1000
28 P1 Head z	g	22.0	102.1	-0.8	345.7	CFC_1000
29 P1 Head Resultant	g	35.2	115.1	0.0	-4.9	CFC_1000
30 P1 Upper Neck Fx	lbf	44.0	399.9	-55.8	123.7	CFC_1000
31 P1 Upper Neck Fy	lbf	32.0	134.8	-8.7	258.3	CFC_1000
32 P1 Upper Neck Fz	lbf	6.8	345.8	-272.4	110.5	CFC_1000
33 P1 Upper Neck Mx	in-lb	34.3	200.1	-19.9	250.6	CFC_600
34 P1 Upper Neck My	in-lb	288.3	145.5	-205.2	79.6	CFC_600
35 P1 Upper Neck Mz	in-lb	72.6	157.3	-42.4	241.8	CFC_600
36 P1 Upper Neck M Resultant	in-lb	296.4	145.5	0.0	-0.3	CFC_600
37 P1 Upper Neck F Resultant	lbf	273.4	110.5	0.0	-2.8	CFC_1000
38 P1 Chest x	g	12.1	69.6	-2.7	363.1	CFC_180
39 P1 Chest y	g	1.0	106.5	-2.3	181.3	CFC_180
40 P1 Chest z	g	4.9	60.3	-1.9	347.3	CFC_180
41 P1 Chest Compression	in	0.0	204.4	-0.1	399.9	CFC_600
42 P1 Chest Resultant	g	12.5	69.4	0.0	-38.3	CFC_180
43 P1 Pelvic x	g	25.1	51.8	-2.1	102.0	CFC_1000
44 P1 Pelvic y	g	3.7	47.1	-1.5	134.5	CFC_1000
45 P1 Pelvic z	g	7.2	47.6	-2.8	361.5	CFC_1000
46 P1 Pelvic Resultant	g	26.0	51.8	0.0	-47.7	CFC_1000
47 P1 Left Femur	lbf	28.0	367.4	-227.4	54.0	CFC_600
48 P1 Right Femur	lbf	29.0	147.9	-241.9	47.3	CFC_600
49 P1 Lap Belt	lbf	22.5	399.9	-24.0	42.4	CFC_60
50 P1 Belt Spoolout	in	2.2	9.7	-1.1	14.5	CFC_180
51 Acc #1(X) Left Rear Xmember	g	22.8	7.1	-3.0	13.4	CFC_60
53 Acc #1(X) Left Rear Xmember Displace	in	99.8	399.9	-0.0	-7.6	CFC_180
54 Acc #2(X) Right Rear Xmember	g	21.4	8.0	-1.7	13.4	CFC_60
56 Acc #2(X) Right Rear Xmember Displace	in	103.7	399.9	-0.0	-10.0	CFC_180
57 Acc #3(X) Upper Seatback	g	32.8	61.5	-15.1	45.9	CFC_60
58 Acc #4(X) Lower Seatback	g	22.4	59.0	-2.5	237.9	CFC_60
61 Seatback Angular Position	deg	32.3	136.6	-0.0	4.4	CFC_180

=====

P1 HIC(36 ms): 139.6

t1: 96.5 msec

t2: 132.5 msec

Duration: 36.0 msec

Average Acceleration: 27.3 g

Input channels: P1 Head x (2) CFC_1000

P1 Head y (3) CFC_1000

P1 Head z (4) CFC_1000

P1 CLIP(3 ms): 12.3 g

t1: 68.0 msec

t2: 71.0 msec

Duration: 3.0 msec

P1 CSI: 27.5

Input channels: P1 Chest x (5) CFC_180

P1 Chest y (6) CFC_180

P1 Chest z (7) CFC_180

P1 CHEST DISP: Max: 0.0 in 204.4 msec

Min: -0.1 in 426.5 msec

Input channel: P1 Chest Compression (11) CFC_600

=====

TEST NO. CY5502

VEHICLE

SAE FILTER CHANNEL CLASS

60

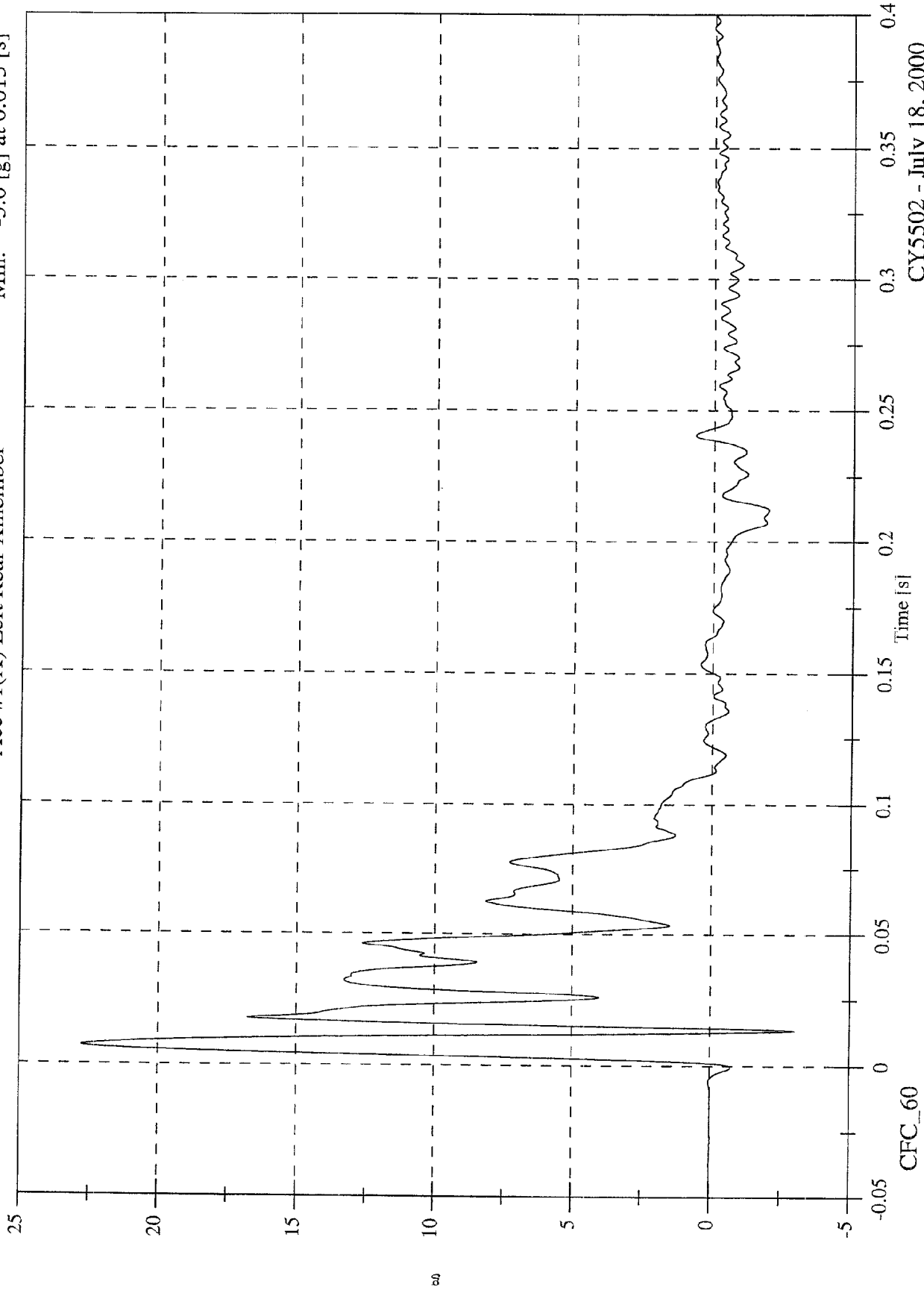
Note: Angular seatback position is measured in degrees of rotation from the initial (design) position.

NHTSA FMVSS 301 Test #10 - 2000 Subaru Legacy

Acc #1(X) Left Rear Xmember

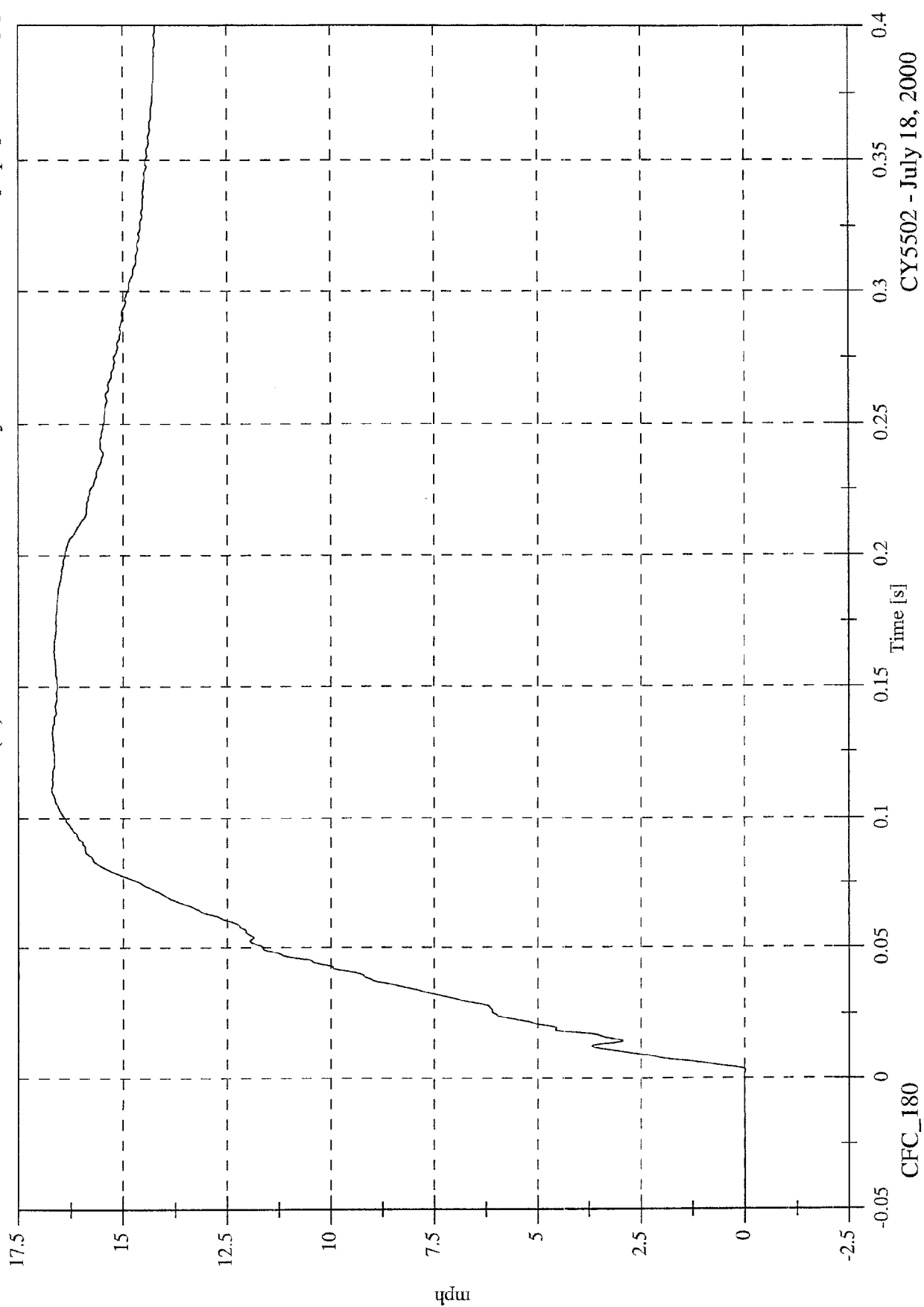
Max: 22.8 [g] at 0.007 [s]

Min: -3.0 [g] at 0.013 [s]



CY5502 - July 18, 2000

NHTSA FMVSS 301 Test #10 - 2000 Subaru Legacy
Acc #1(X) Left Rear Xmember Velocity
Max: 16.7 [mph] at 0.111 [s]
Min: -0.0 [mph] at 0.003 [s]

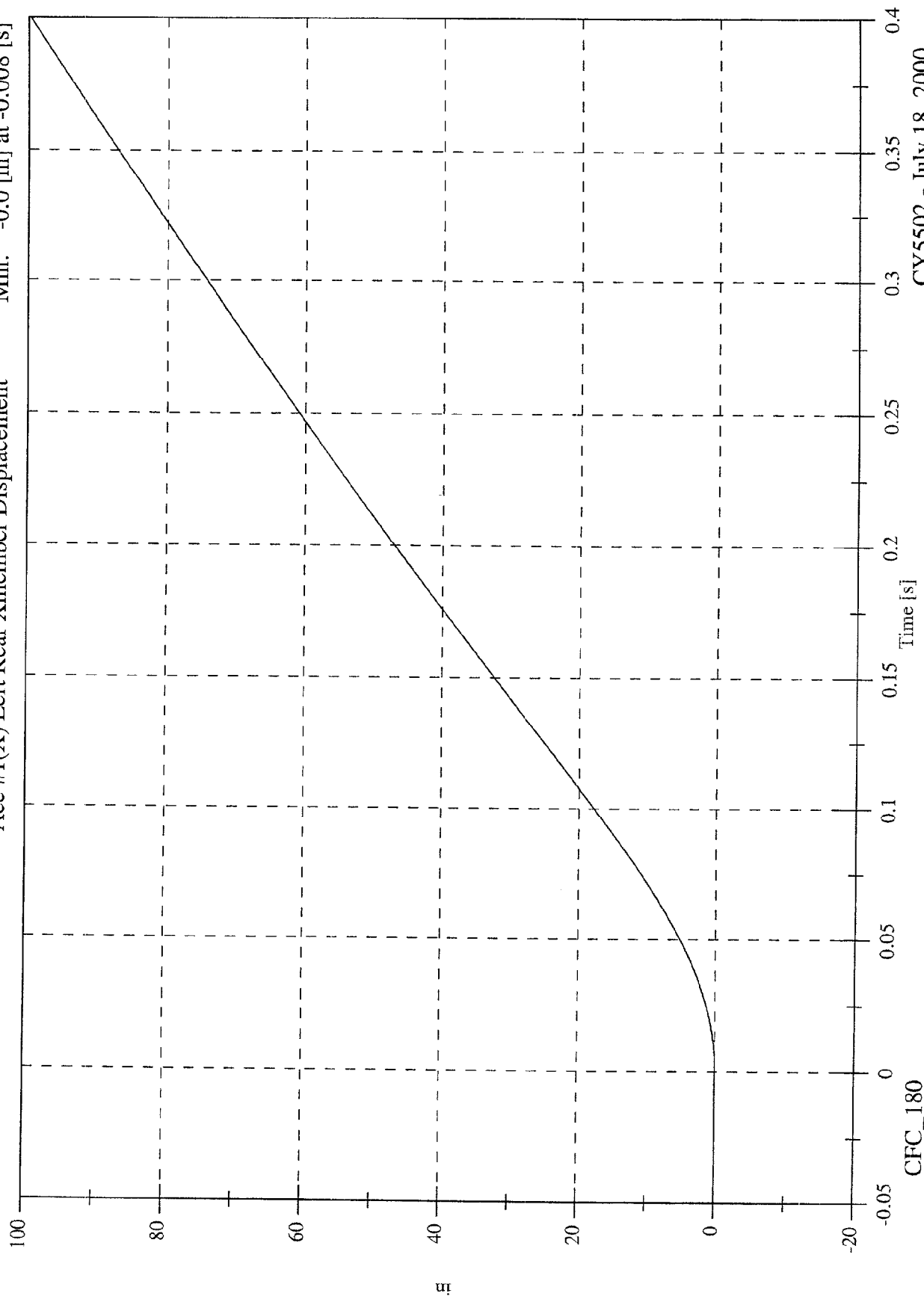


CY5502 - July 18, 2000

NHTSA FMVSS 301 Test #10 - 2000 Subaru Legacy

Acc #1(X) Left Rear Xmember Displacement

Max: 99.8 [in] at 0.400 [s]
Min: -0.0 [in] at -0.008 [s]



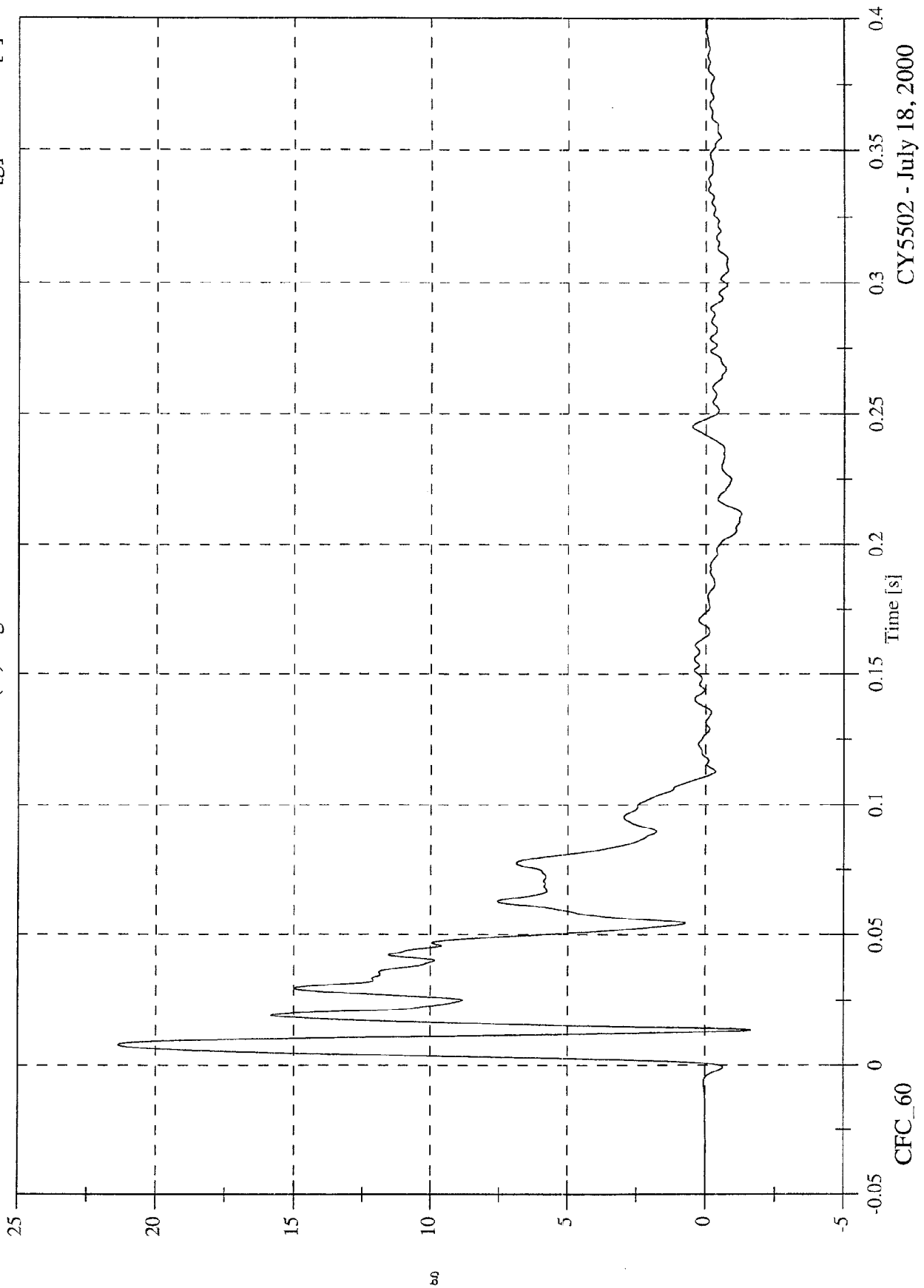
CY5502 - July 18, 2000

NHTSA FMVSS 301 Test #10 - 2000 Subaru Legacy

Acc #2(X) Right Rear Xmember

Max: 21.4 [g] at 0.008 [s]

Min: -1.7 [g] at 0.013 [s]

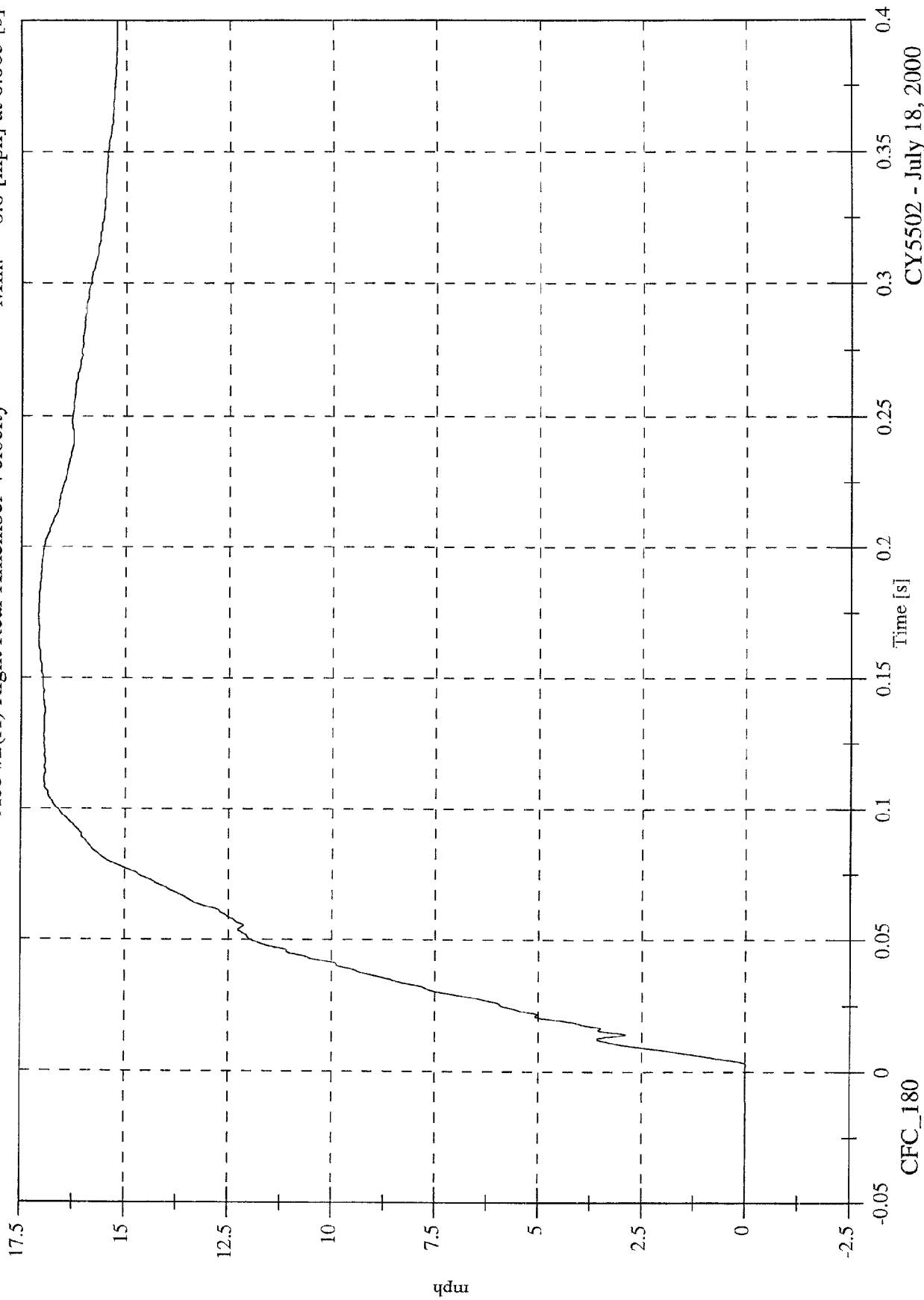


CY5502 - July 18, 2000

NHTSA FMVSS 301 Test #10 - 2000 Subaru Legacy

Max: 17.1 [mph] at 0.174 [s]
Min: -0.0 [mph] at 0.003 [s]

Acc #2(X) Right Rear Xmember Velocity

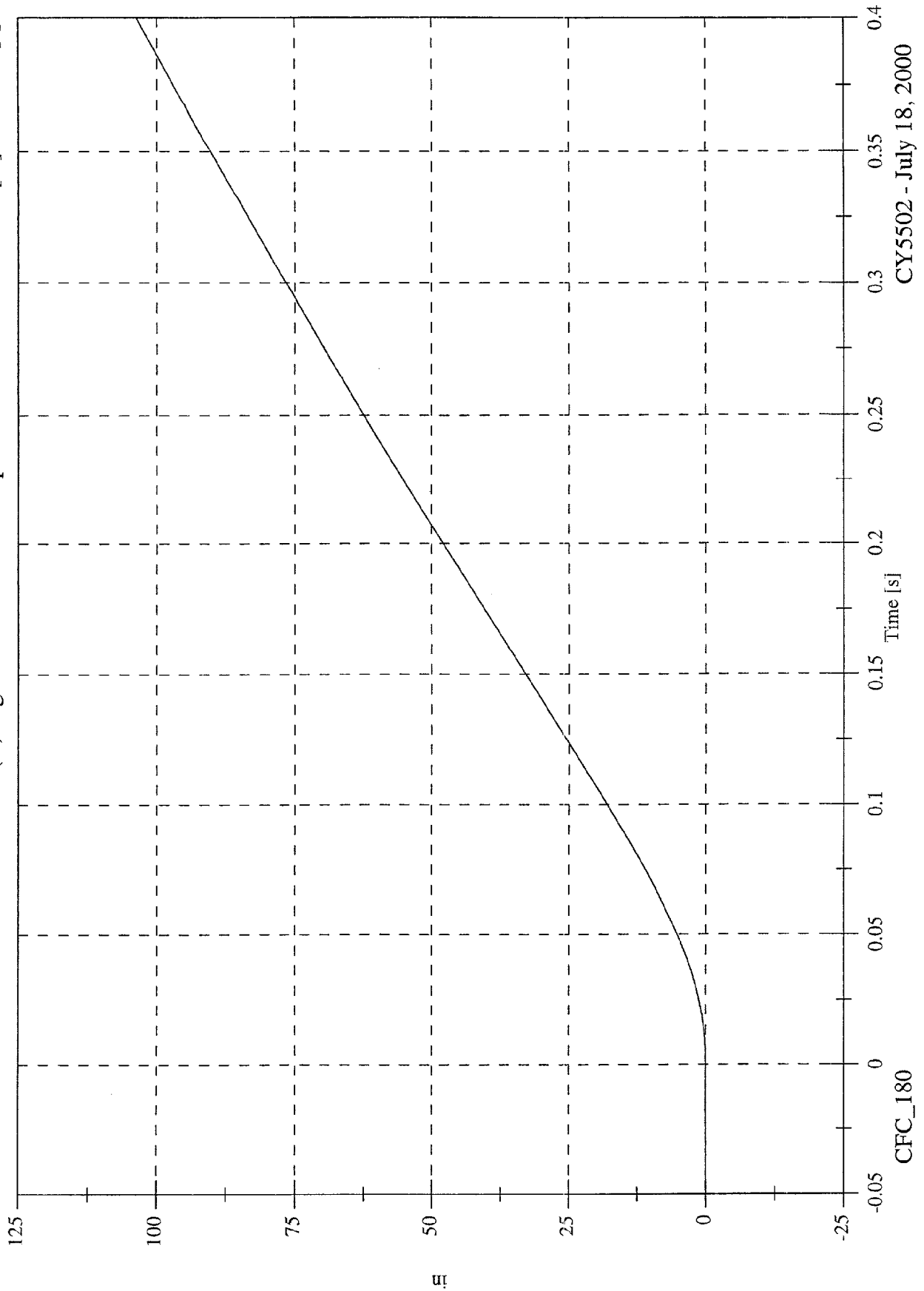


CY5502 - July 18, 2000

NHTSA FMVSS 301 Test #10 - 2000 Subaru Legacy

Max: 103.7 [in] at 0.400 [s]
 Min: -0.0 [in] at -0.010 [s]

Acc #2(X) Right Rear Xmember Displacement



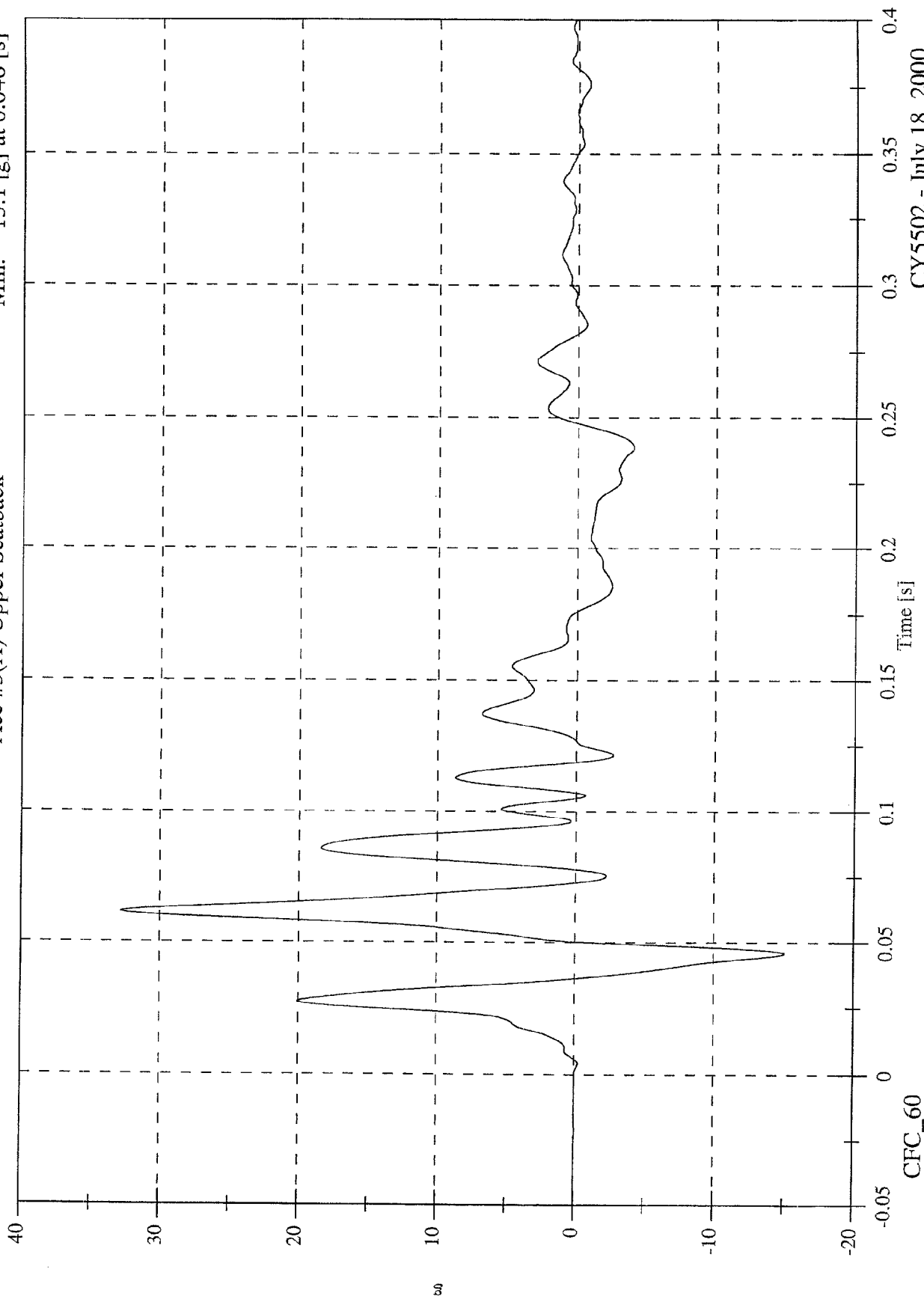
CFC_180

CY5502 - July 18, 2000

NHTSA FMVSS 301 Test #10 - 2000 Subaru Legacy

Acc #3(X) Upper Seatback

Max: 32.8 [g] at 0.062 [s]
Min: -15.1 [g] at 0.046 [s]

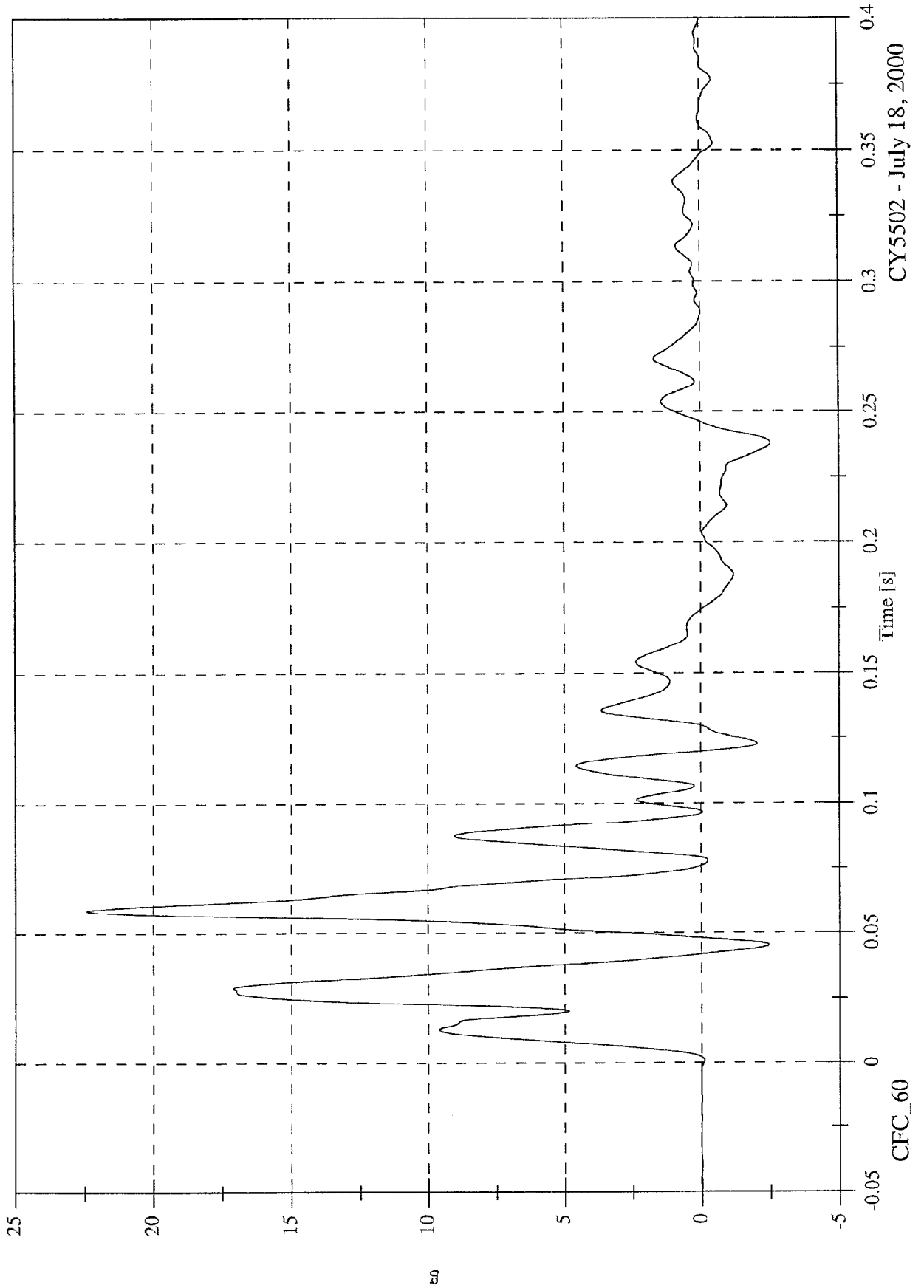


CY5502 - July 18, 2000

NHTSA FMVSS 301 Test #10 - 2000 Subaru Legacy

Max: 22.4 [g] at 0.059 [s]
Min: -2.5 [g] at 0.238 [s]

Acc #4(X) Lower Seatback

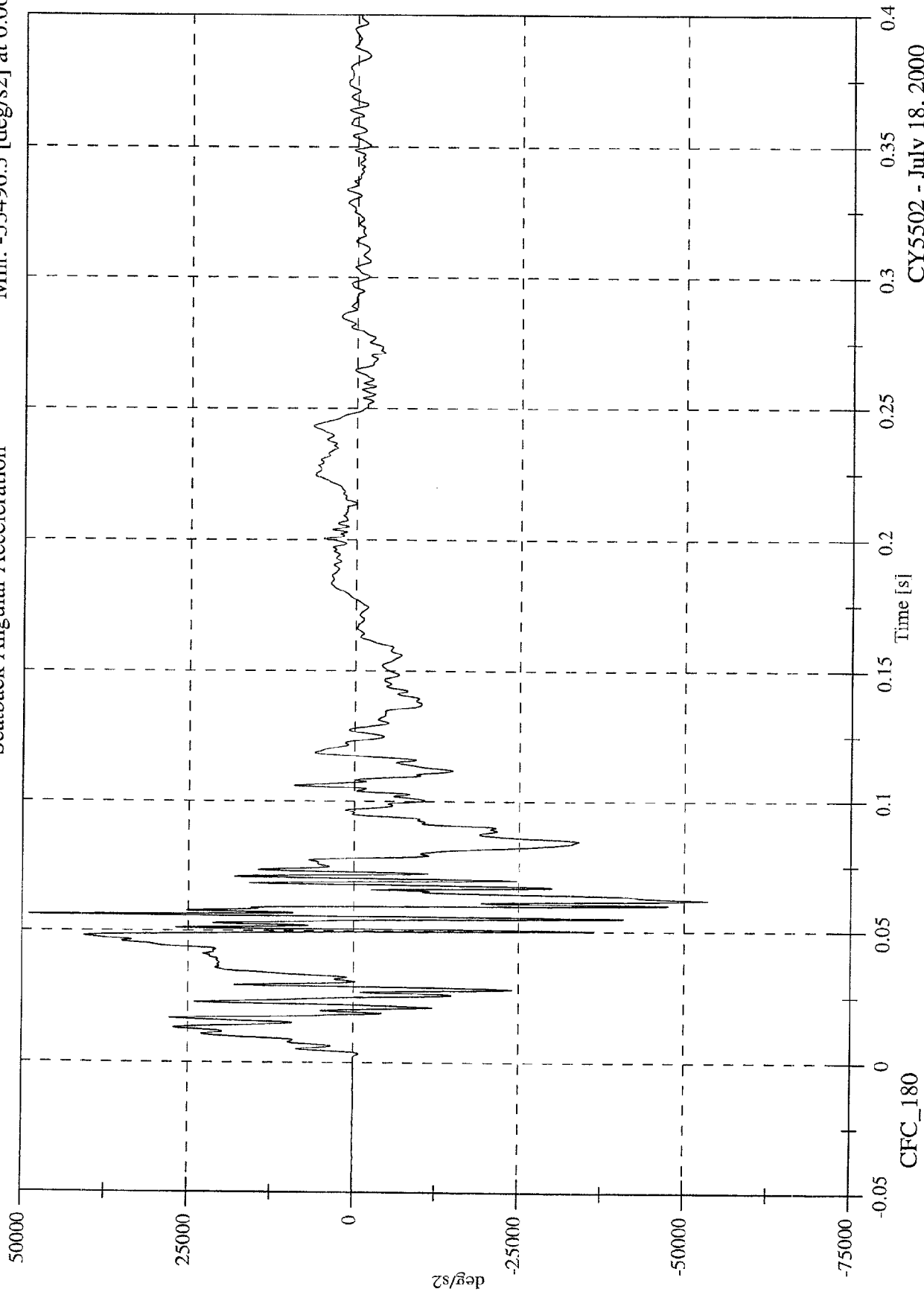


CY5502 - July 18, 2000

NHTSA FMVSS 301 Test #10 - 2000 Subaru Legacy

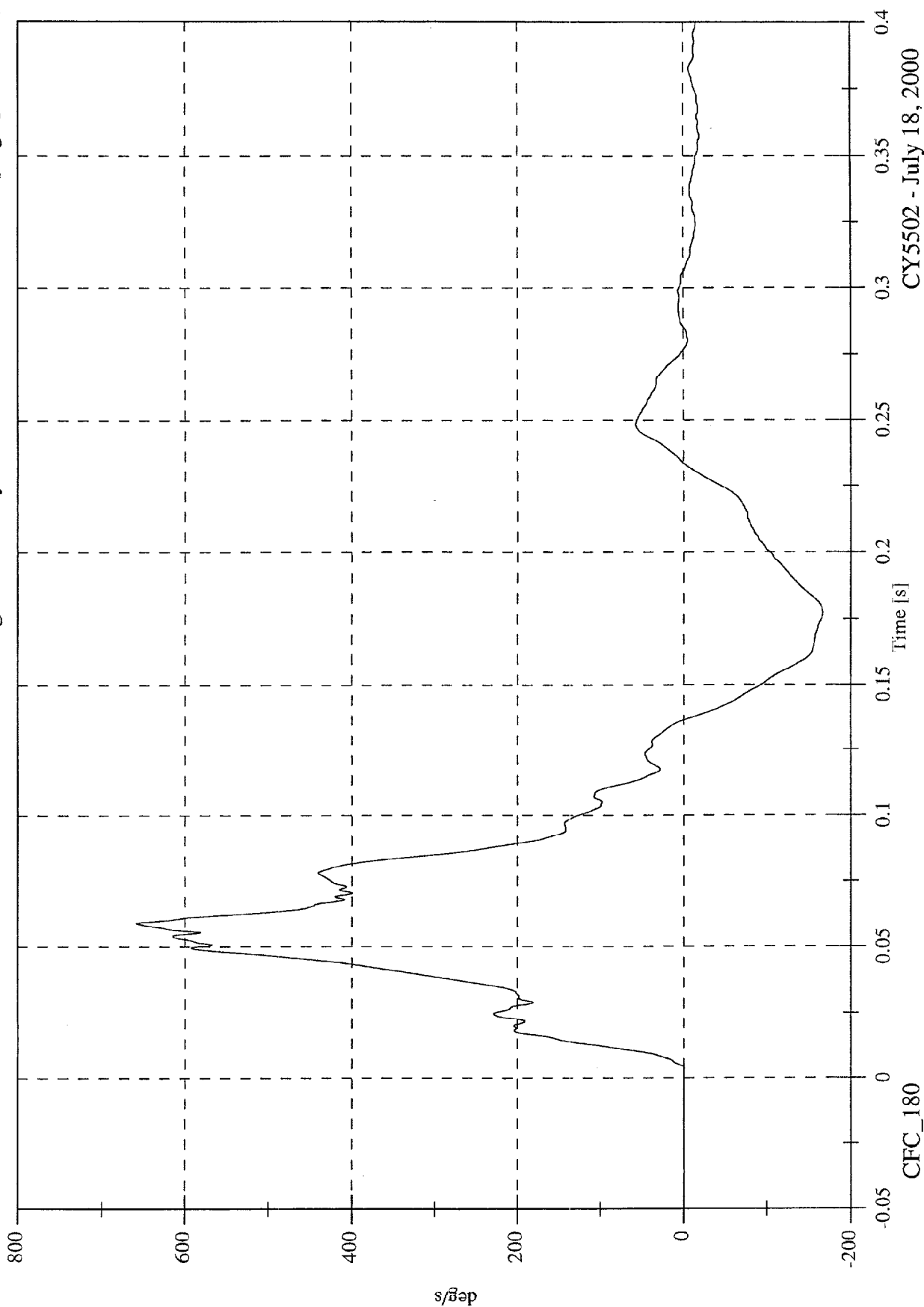
Max: 48981.6 [deg/s²] at 0.056 [s]
 Min: -53496.3 [deg/s²] at 0.062 [s]

Seatback Angular Acceleration



CY5502 - July 18, 2000

NHTSA FMVSS 301 Test #10 - 2000 Subaru Legacy
 Seatback Angular Velocity
 Max: 658.2 [deg/s] at 0.059 [s]
 Min: -166.4 [deg/s] at 0.177 [s]

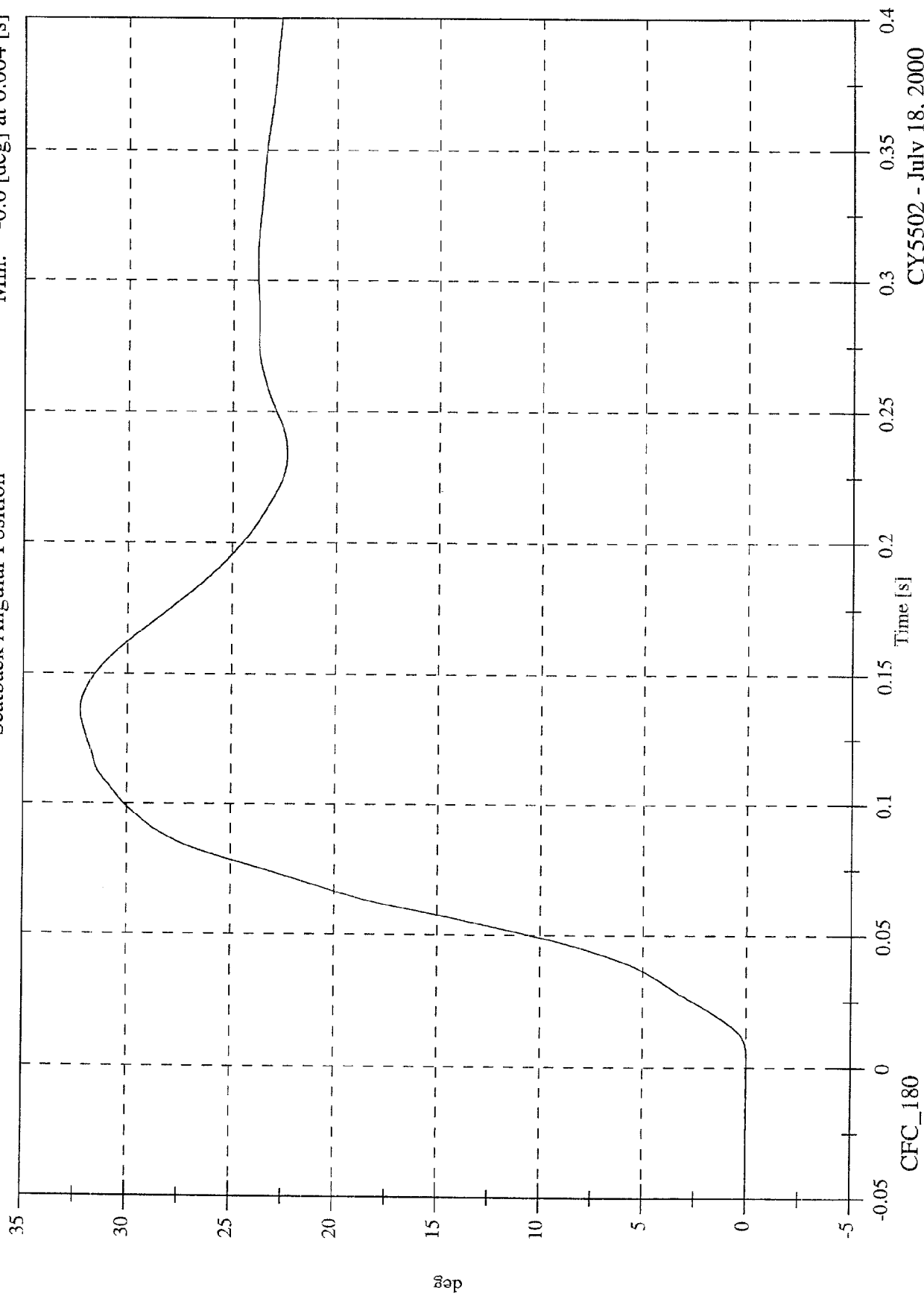


CY5502 - July 18, 2000

NHTSA FMVSS 301 Test #10 - 2000 Subaru Legacy

Seatback Angular Position

Max: 32.3 [deg] at 0.137 [s]
Min: -0.0 [deg] at 0.004 [s]



CY5502 - July 18, 2000

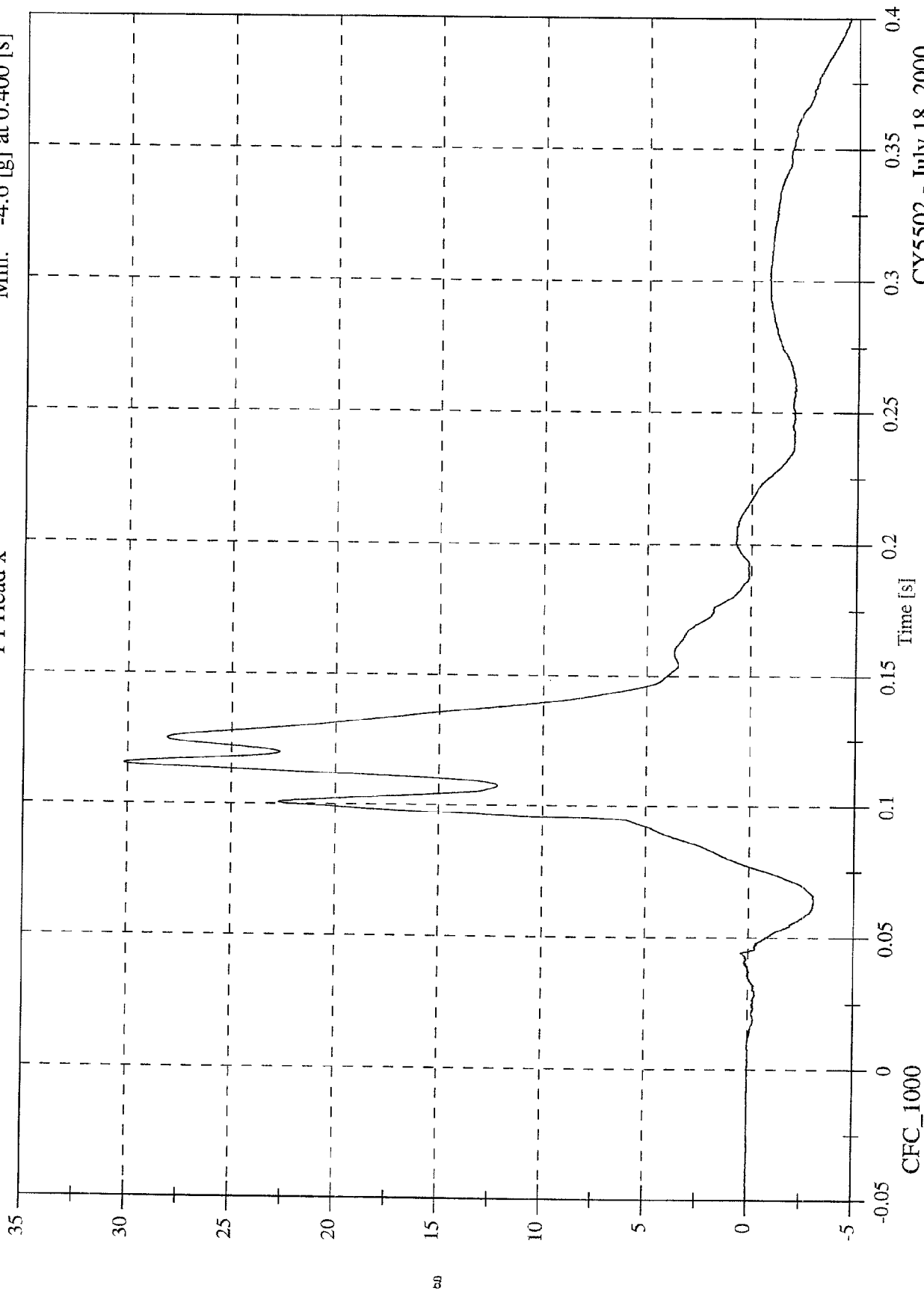
TEST NO. CY5502

DRIVER DUMMY (Pos. 1)	SAE FILTER CHANNEL CLASS
Head Accelerations	1000
Chest Accelerations	180
Pelvic Accelerations	1000
Upper Neck Forces	1000
Upper Neck Moments	600
Belt Forces	60
Belt Spoolout	60

NHTSA FMVSS 301 Test #10 - 2000 Subaru Legacy

Max: 30.2 [g] at 0.115 [s]
Min: -4.6 [g] at 0.400 [s]

PI Head x

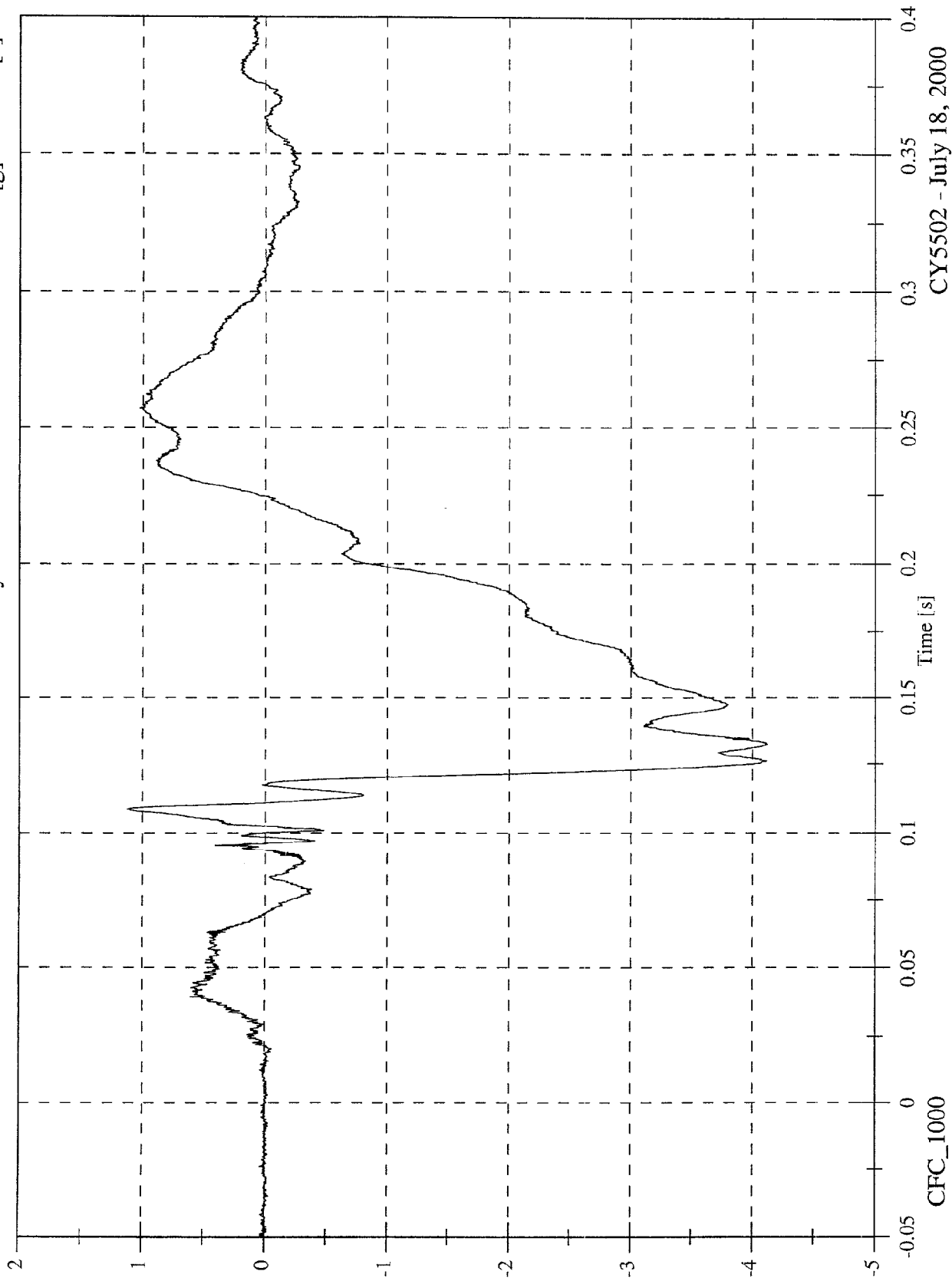


CY5502 - July 18, 2000

NHTSA FMVSS 301 Test #10 - 2000 Subaru Legacy

Max: 1.1 [g] at 0.109 [s]
 Min: -4.1 [g] at 0.133 [s]

P1 Head y

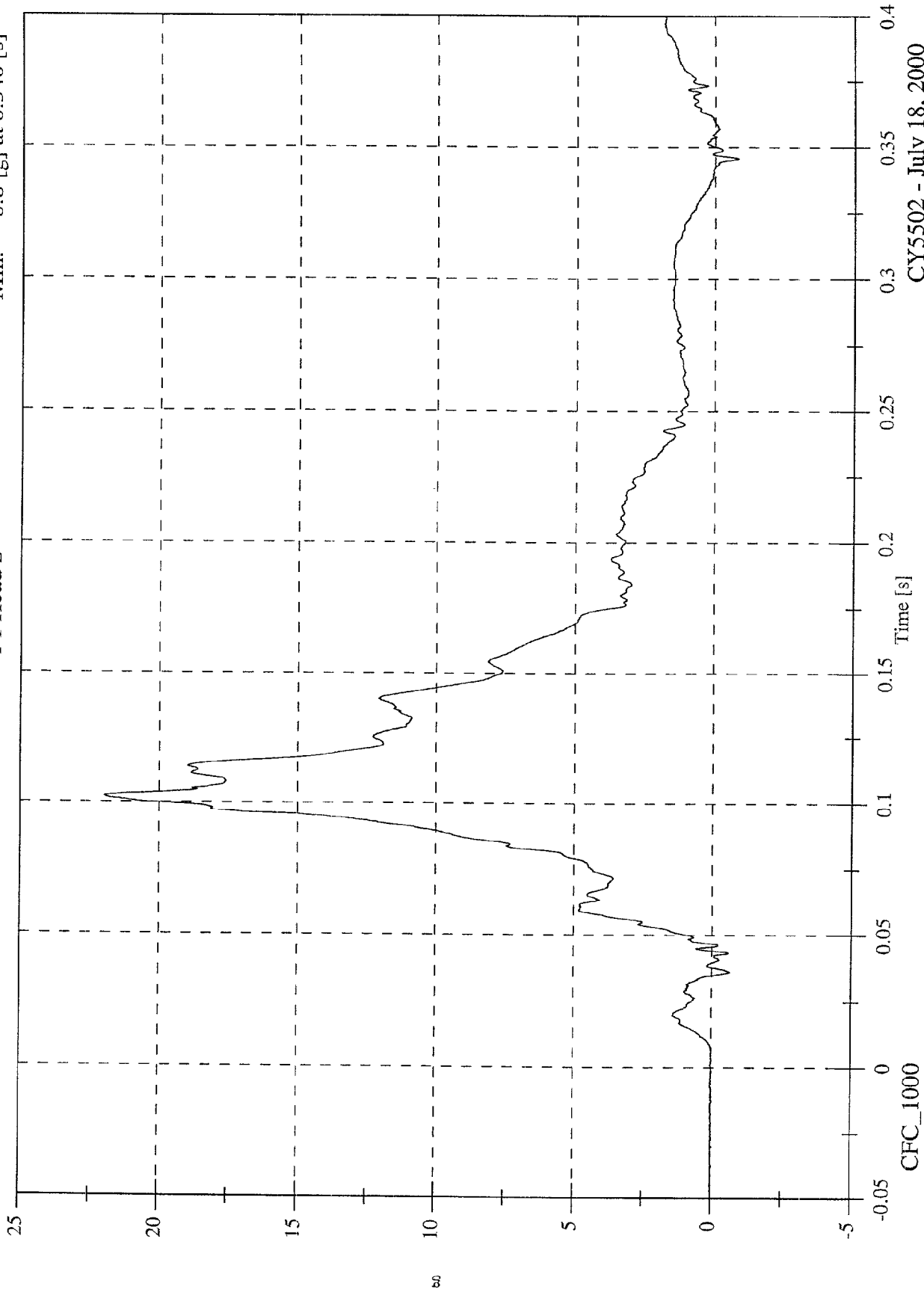


CY5502 - July 18, 2000

NHTSA FMVSS 301 Test #10 - 2000 Subaru Legacy

Max: 22.0 [g] at 0.102 [s]
 Min: -0.8 [g] at 0.346 [s]

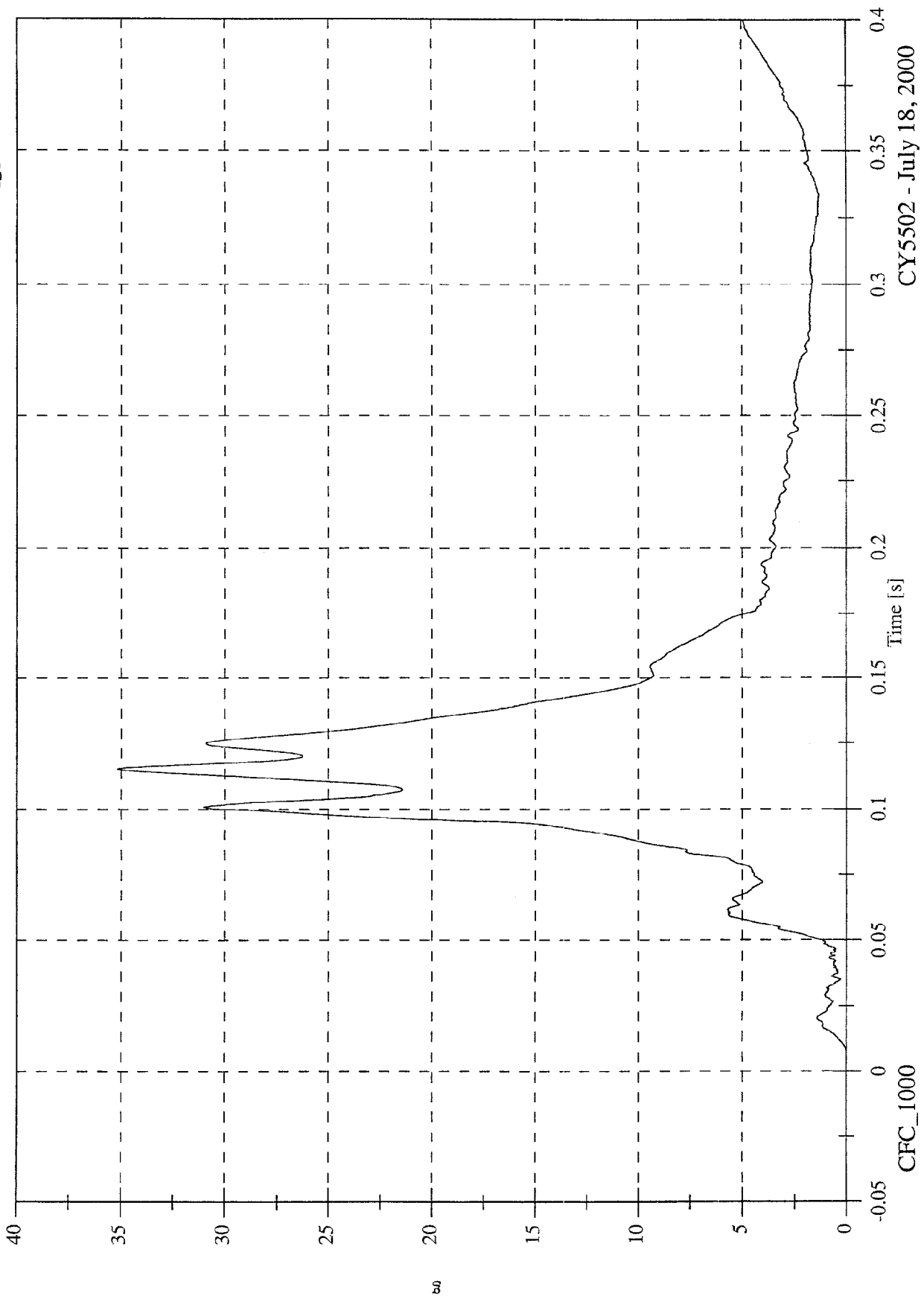
PI Head z



NHTSA FMVSS 301 Test #10 - 2000 Subaru Legacy

P1 Head Resultant

Max: 35.2 [g] at 0.115 [s]
Min: 0.0 [g] at -0.005 [s]

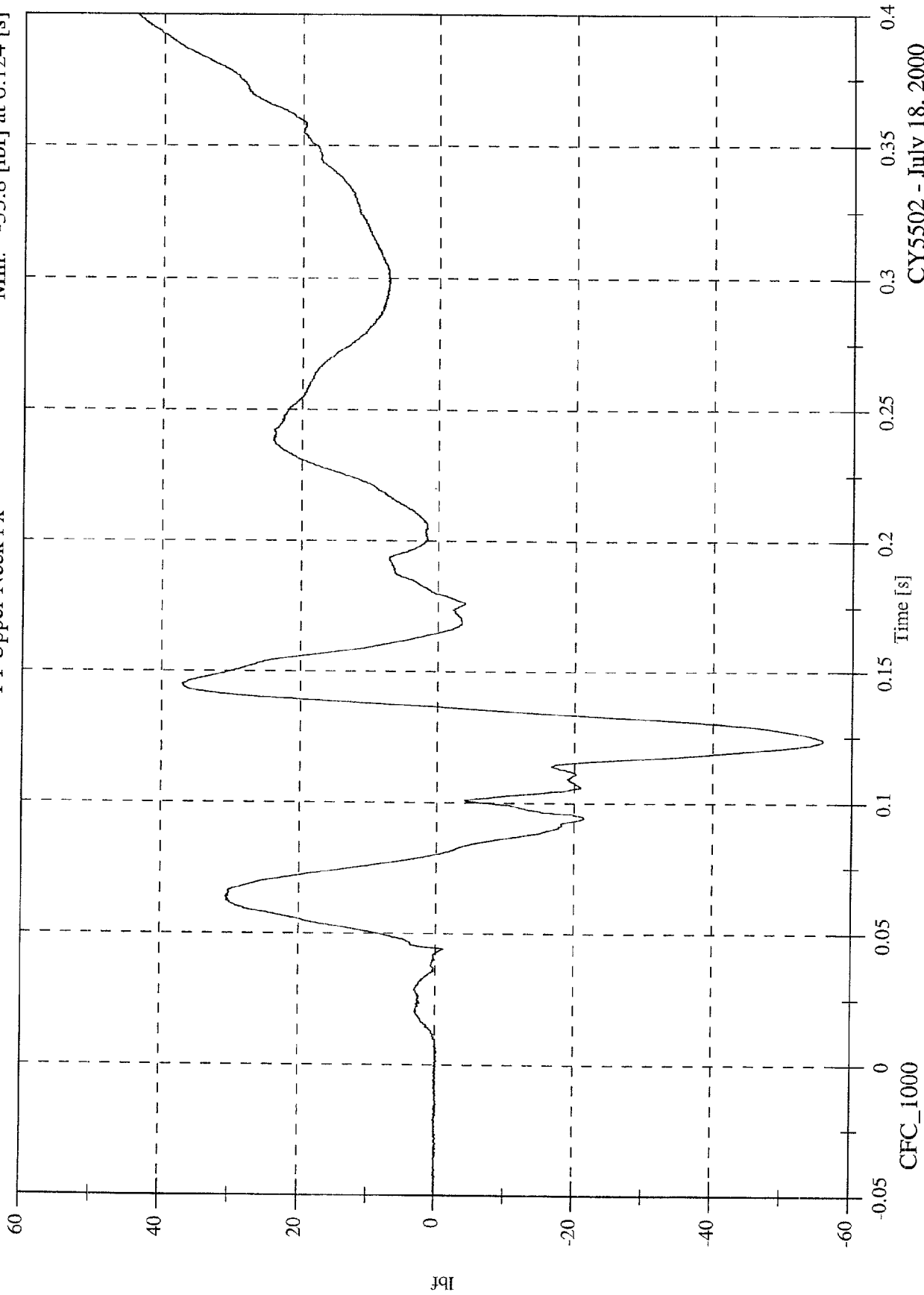


CY5502 - July 18, 2000

NHTSA FMVSS 301 Test #10 - 2000 Subaru Legacy

P1 Upper Neck Fx

Max: 44.0 [lbf] at 0.400 [s]
Min: -55.8 [lbf] at 0.124 [s]

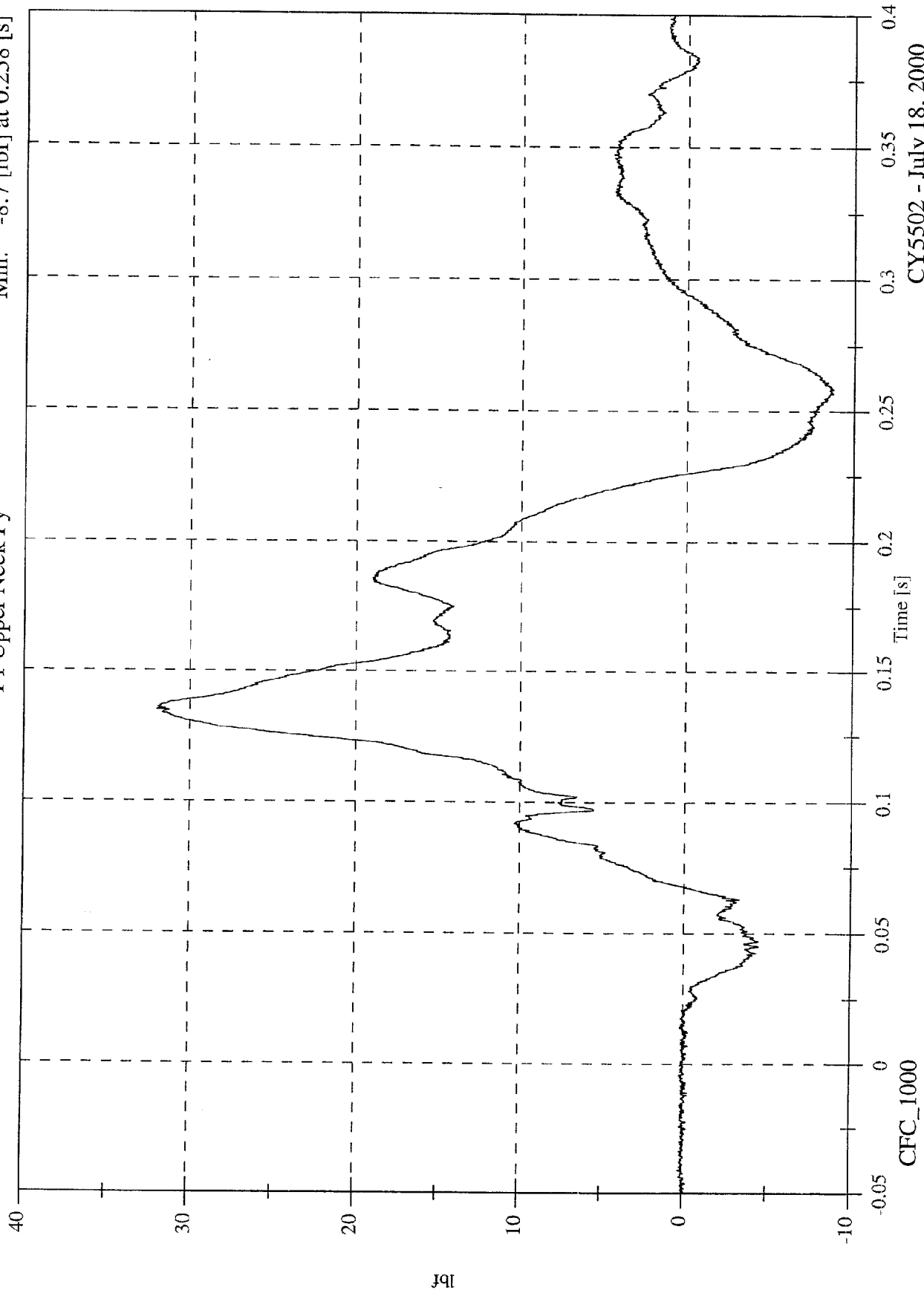


CY5502 - July 18, 2000

NHTSA FMVSS 301 Test #10 - 2000 Subaru Legacy

P1 Upper Neck Fy

Max: 32.0 [lbf] at 0.135 [s]
Min: -8.7 [lbf] at 0.258 [s]



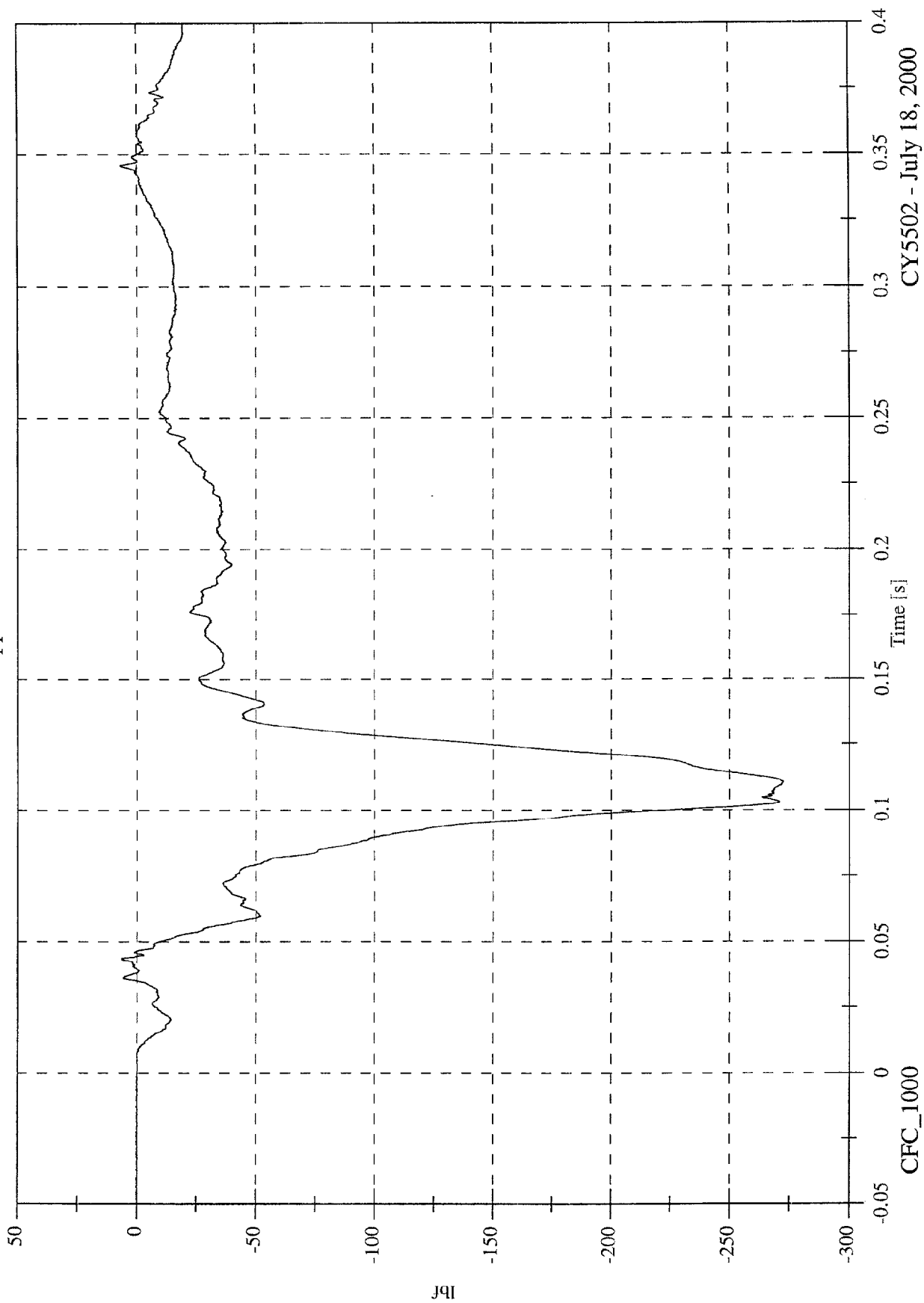
CY5502 - July 18, 2000

NHTSA FMVSS 301 Test #10 - 2000 Subaru Legacy

Max: 6.8 [lbf] at 0.346 [s]

Min: -272.4 [lbf] at 0.110 [s]

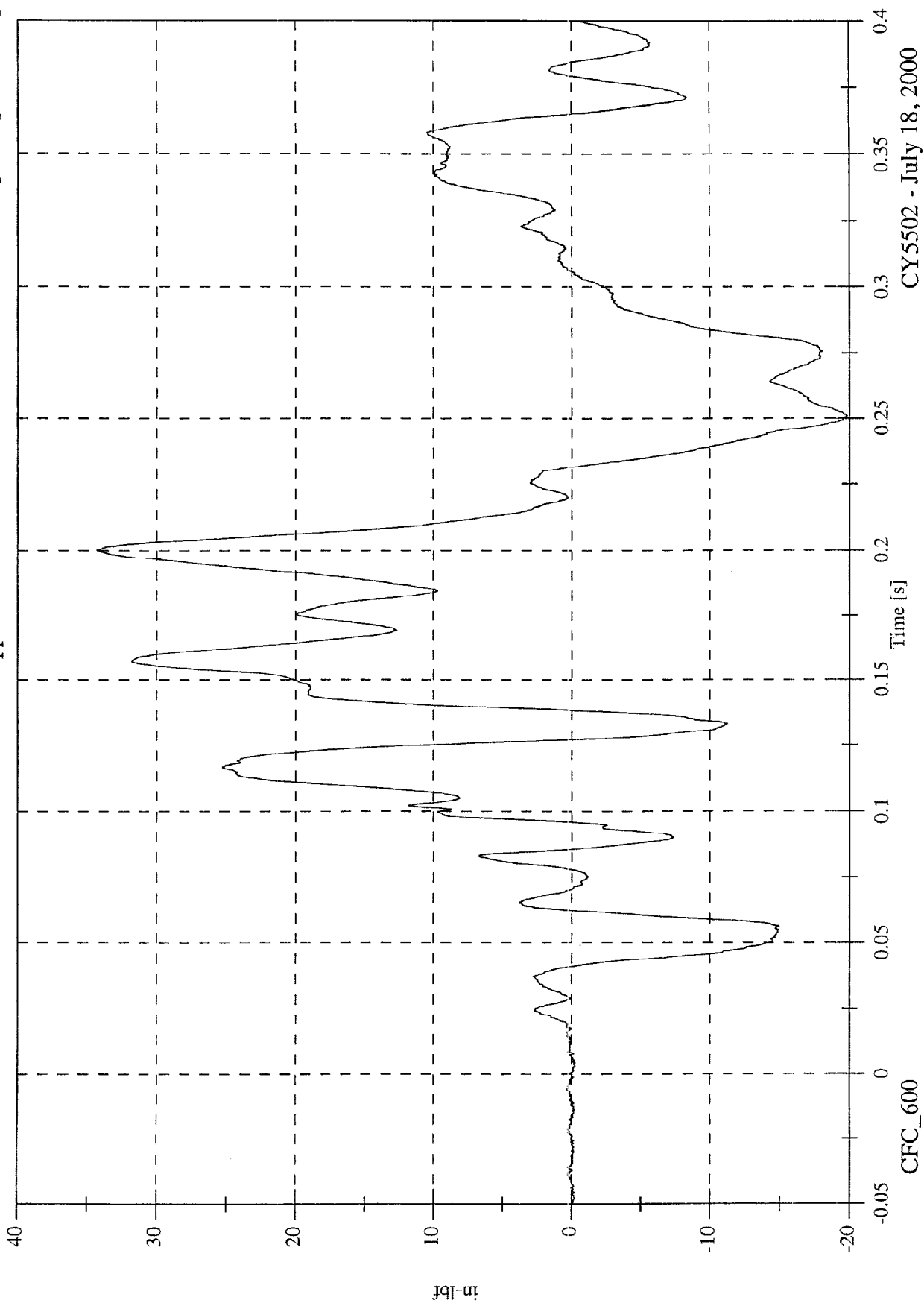
P1 Upper Neck Fz



CY5502 - July 18, 2000

NHTSA FMVSS 301 Test #10 - 2000 Subaru Legacy
P1 Upper Neck Mx

Max: 34.3 [in-lbf] at 0.200 [s]
Min: -19.9 [in-lbf] at 0.251 [s]

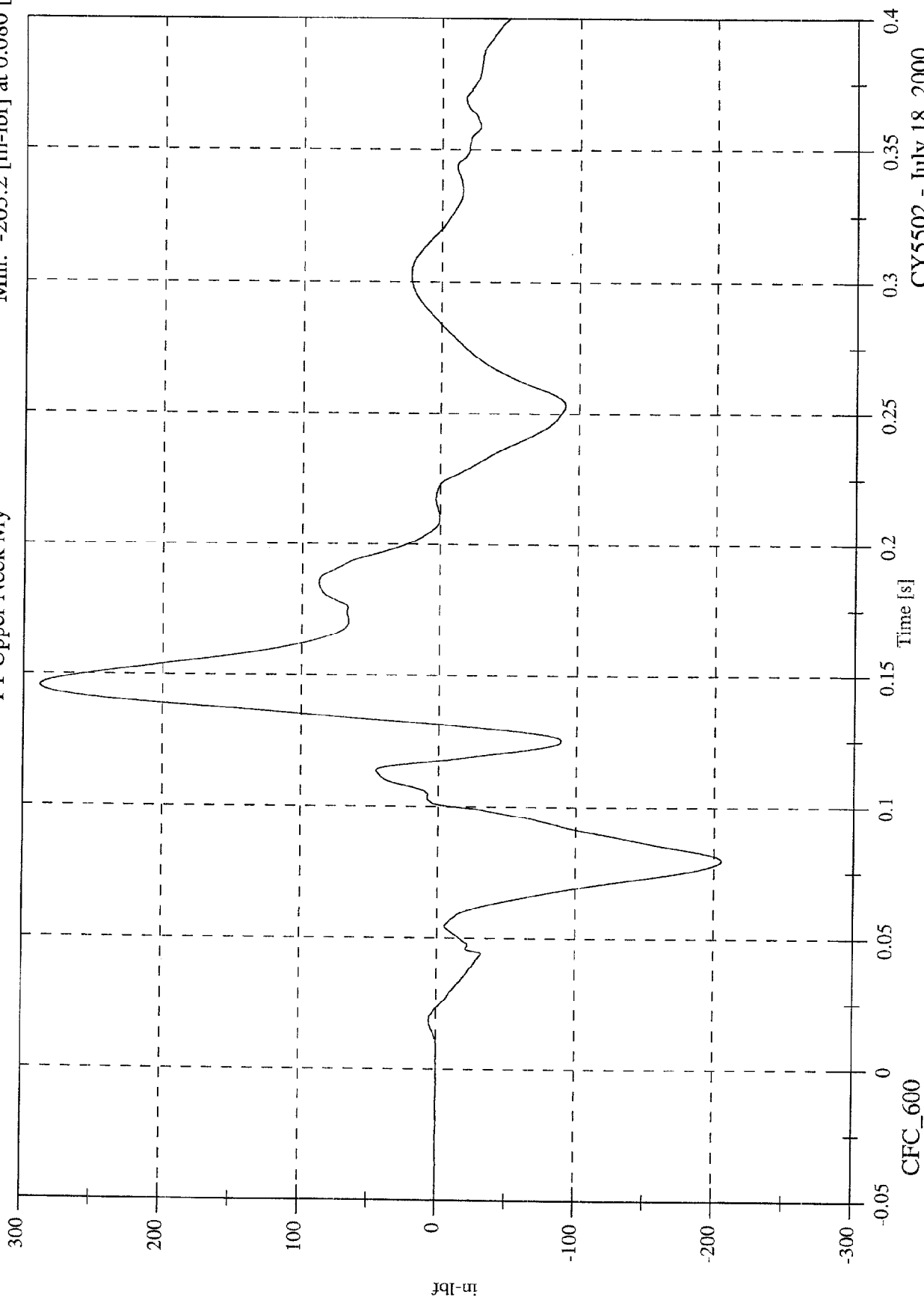


CY5502 - July 18, 2000

NHTSA FMVSS 301 Test #10 - 2000 Subaru Legacy

P1 Upper Neck My

Max: 288.3 [in-lbf] at 0.146 [s]
Min: -205.2 [in-lbf] at 0.080 [s]

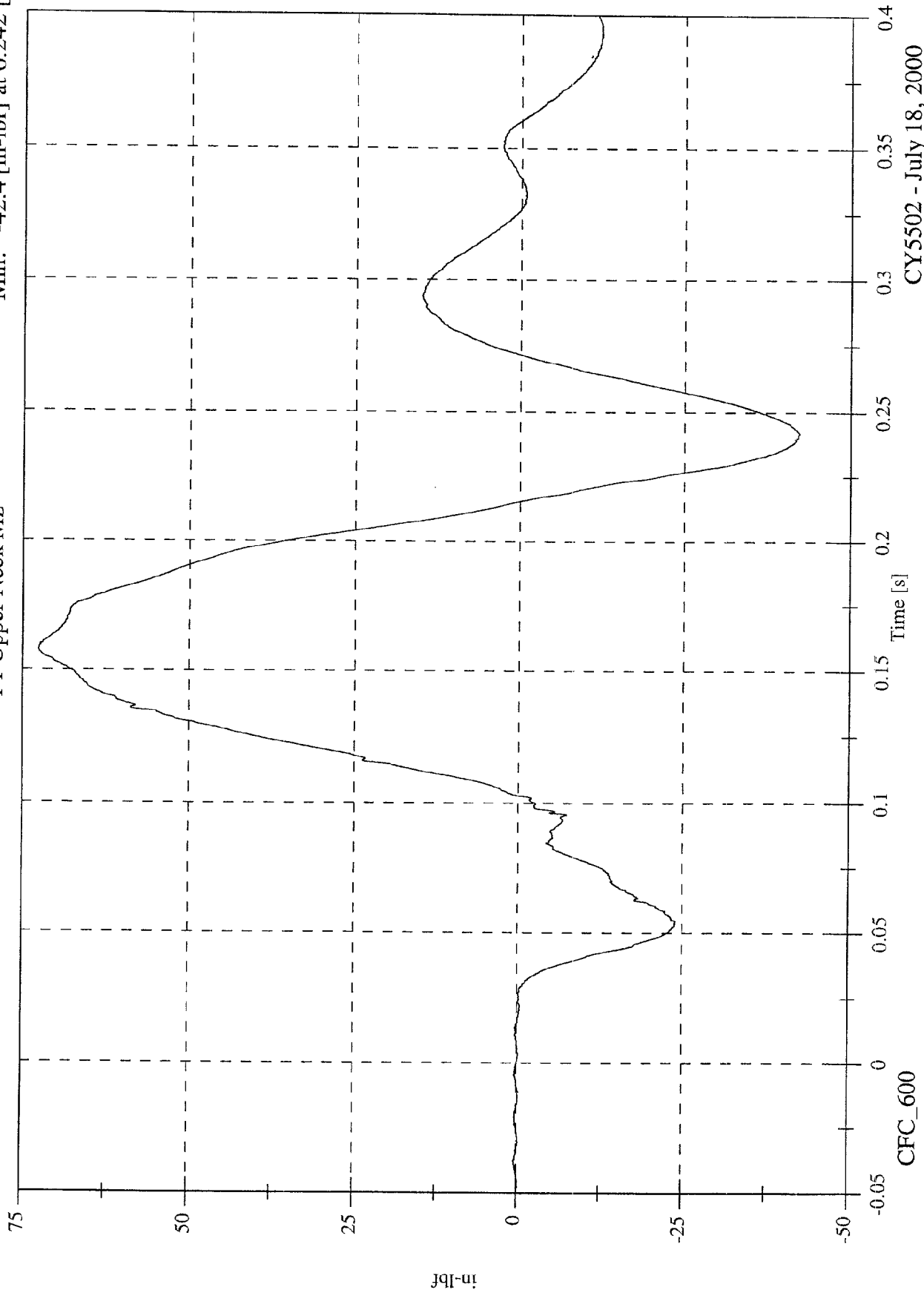


CY5502 - July 18, 2000

NHTSA FMVSS 301 Test #10 - 2000 Subaru Legacy

P1 Upper Neck Mz

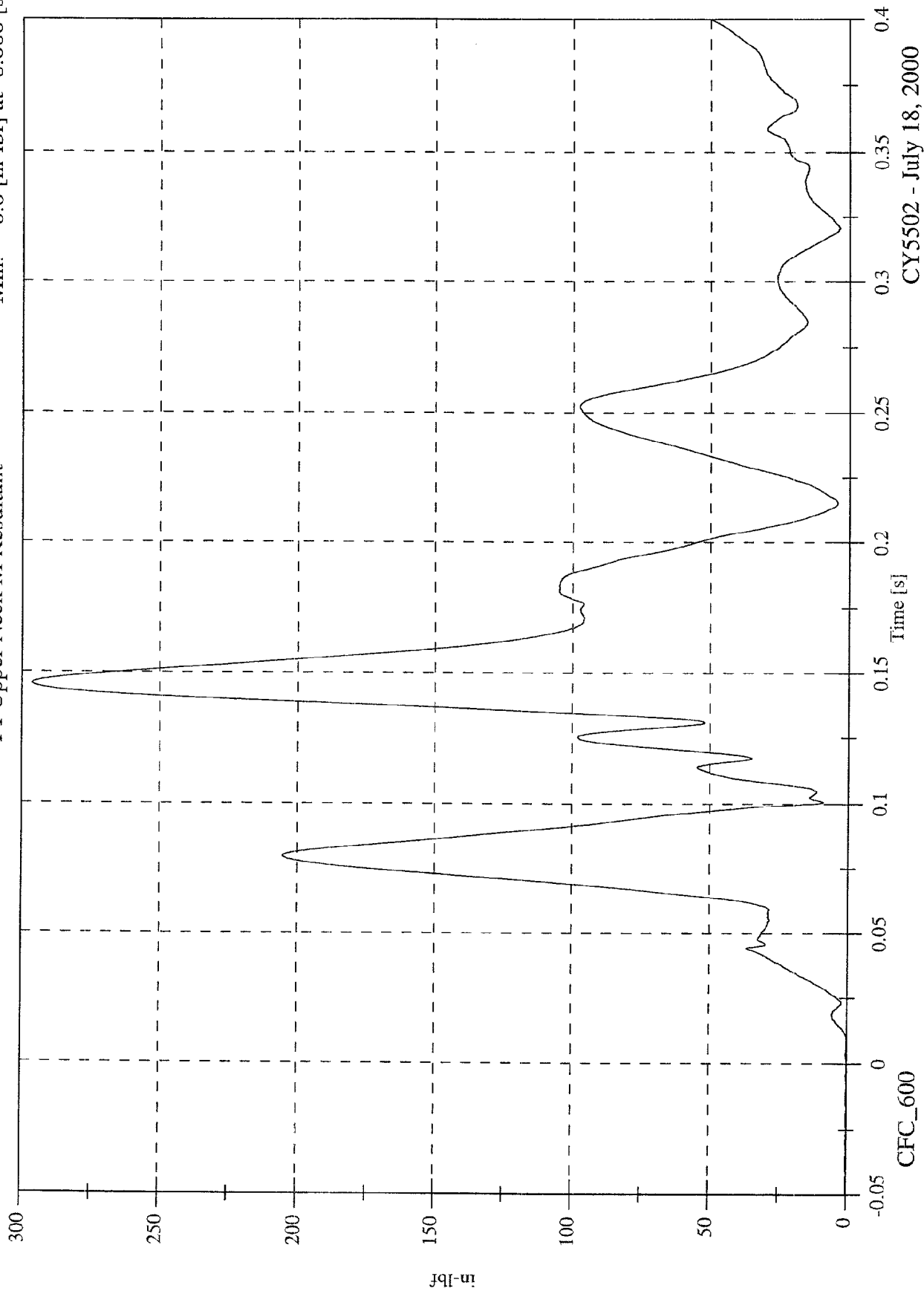
Max: 72.6 [in-lbf] at 0.157 [s]
Min: -42.4 [in-lbf] at 0.242 [s]



CY5502 - July 18, 2000

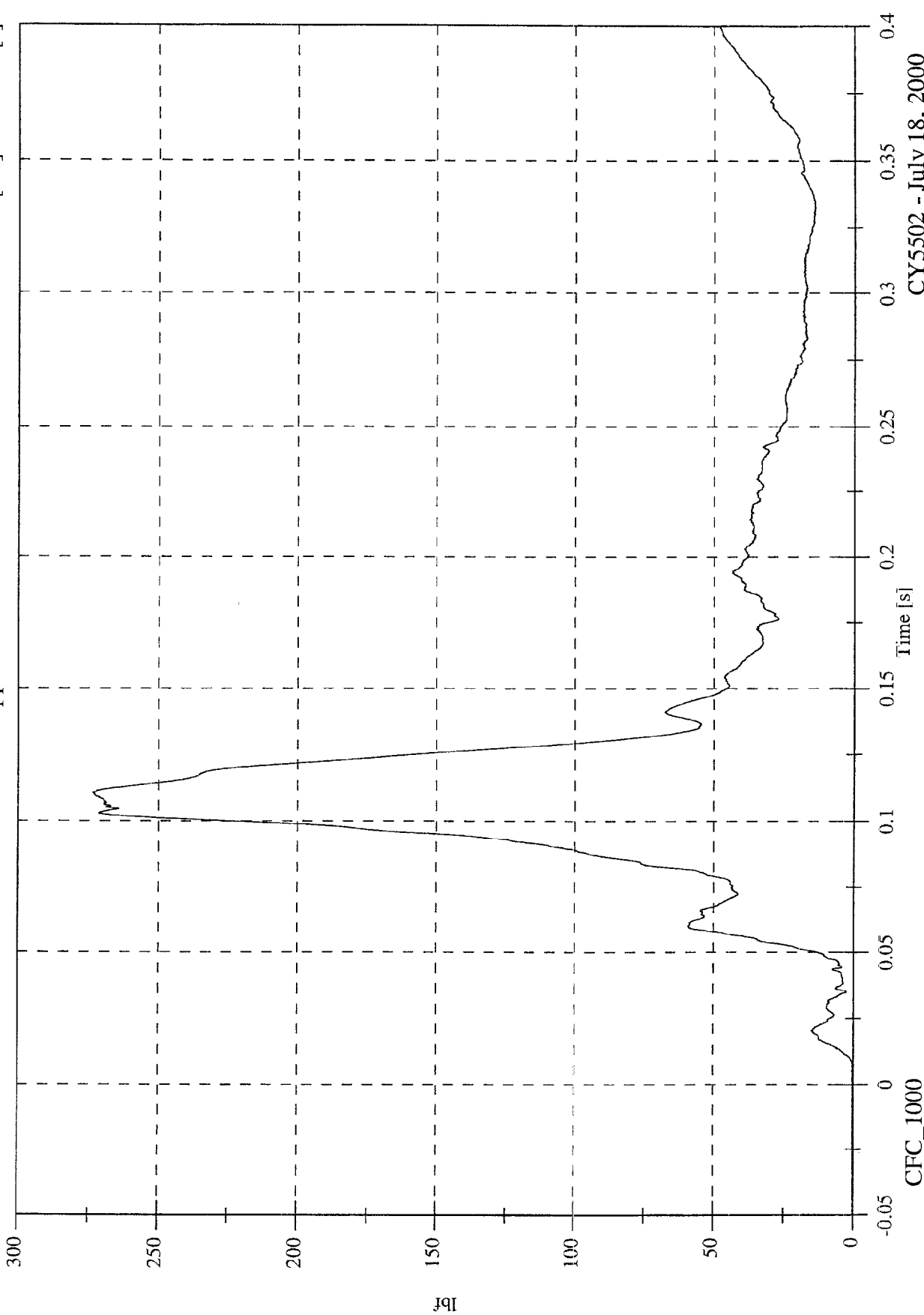
NHTSA FMVSS 301 Test #10 - 2000 Subaru Legacy
P1 Upper Neck M Resultant

Max: 296.4 [in-lbf] at 0.146 [s]
Min: 0.0 [in-lbf] at -0.000 [s]



CY5502 - July 18, 2000

NHTSA FMVSS 301 Test #10 - 2000 Subaru Legacy
P1 Upper Neck F Resultant
Max: 273.4 [lbf] at 0.110 [s]
Min: 0.0 [lbf] at -0.003 [s]

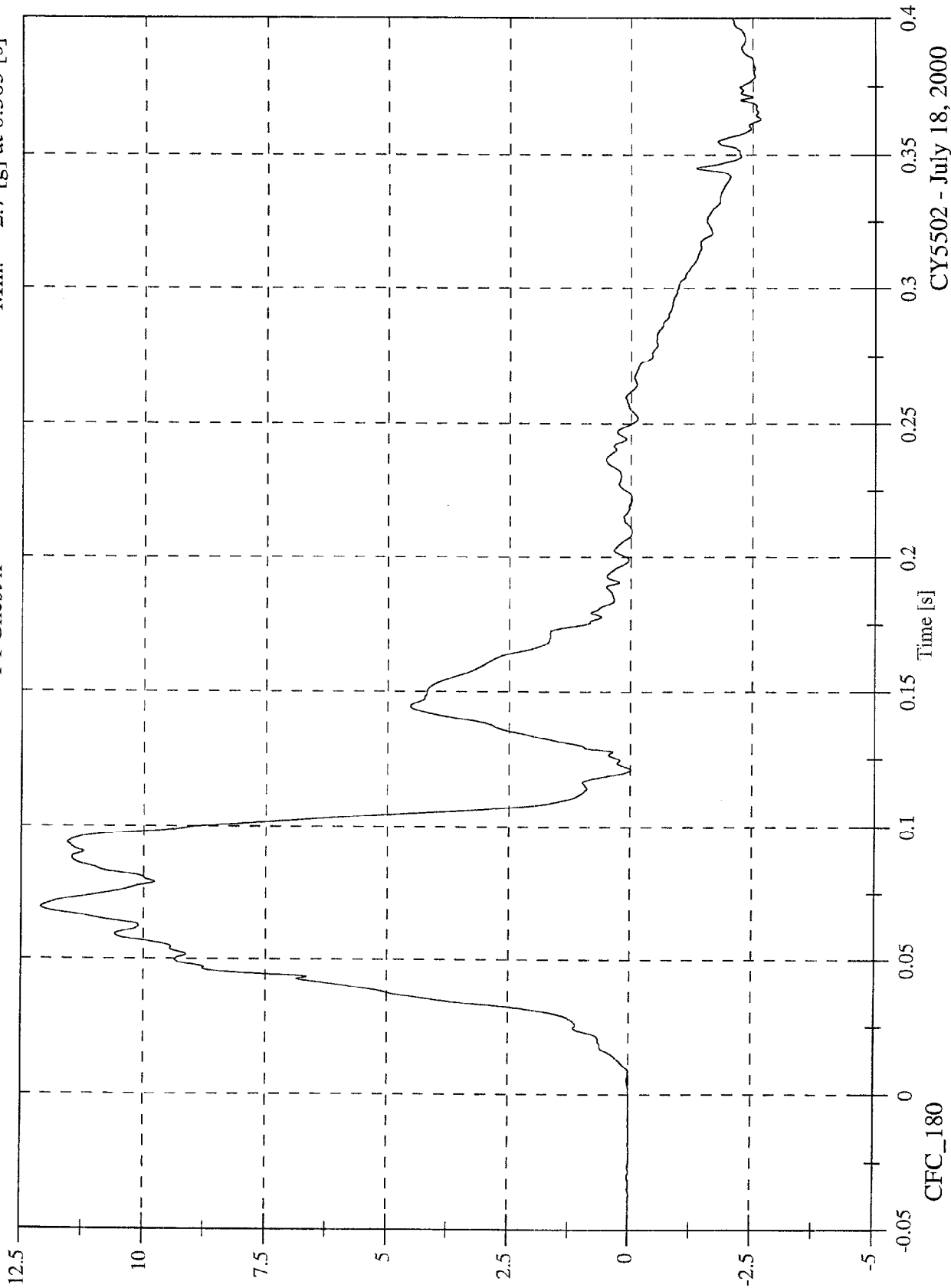


CY5502 - July 18, 2000

NHTSA FMVSS 301 Test #10 - 2000 Subaru Legacy

P1 Chest x

Max: 12.1 [g] at 0.070 [s]
Min: -2.7 [g] at 0.363 [s]

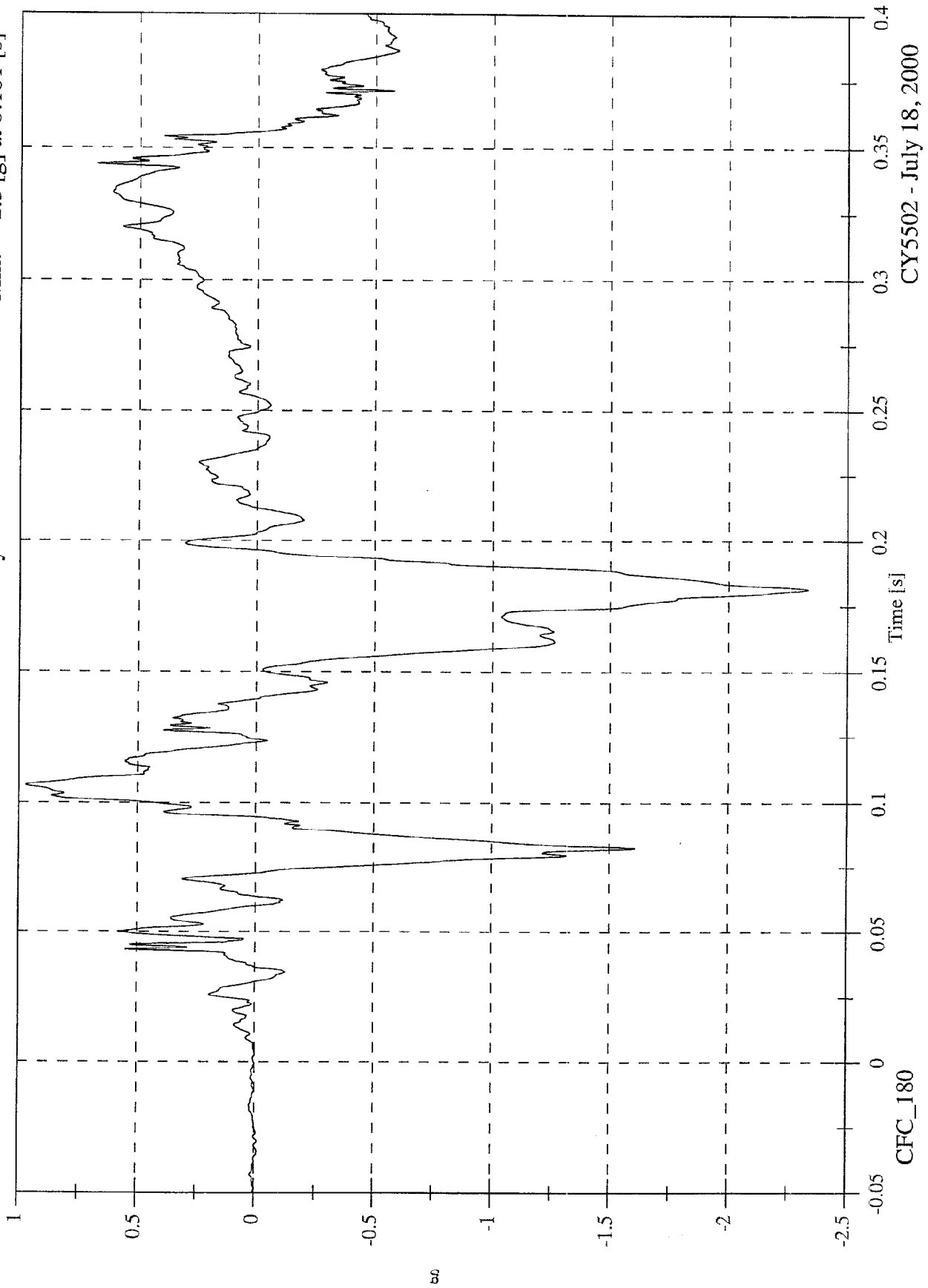


CY5502 - July 18, 2000

NHTSA FMVSS 301 Test #10 - 2000 Subaru Legacy

Max: 1.0 [g] at 0.107 [s]
Min: -2.3 [g] at 0.181 [s]

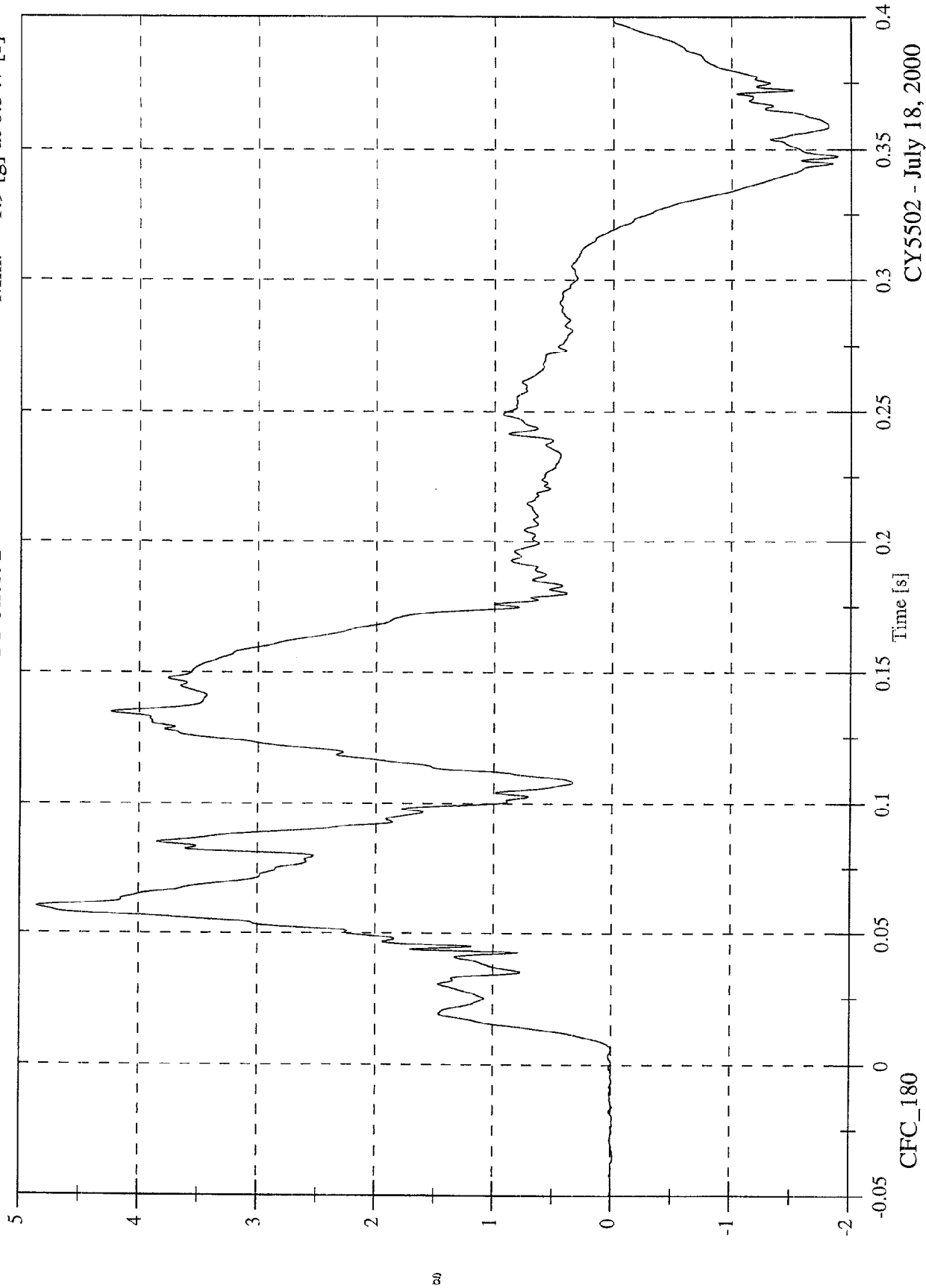
P1 Chest y



NHTSA FMVSS 301 Test #10 - 2000 Subaru Legacy

Max: 4.9 [g] at 0.060 [s]
 Min: -1.9 [g] at 0.347 [s]

P1 Chest z

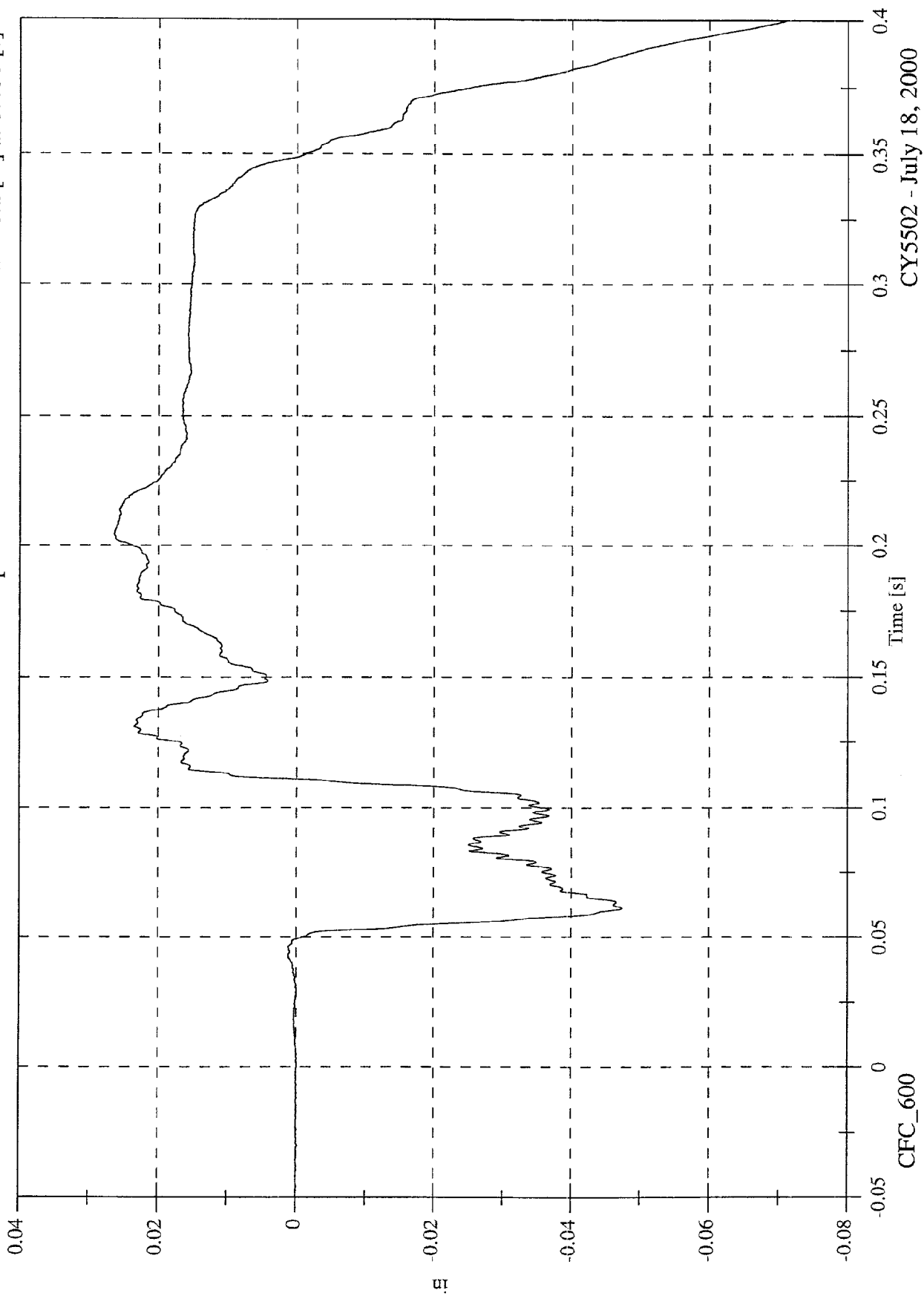


CY5502 - July 18, 2000

NHTSA FMVSS 301 Test #10 - 2000 Subaru Legacy

P1 Chest Compression

Max: 0.0 [in] at 0.204 [s]
Min: -0.1 [in] at 0.400 [s]



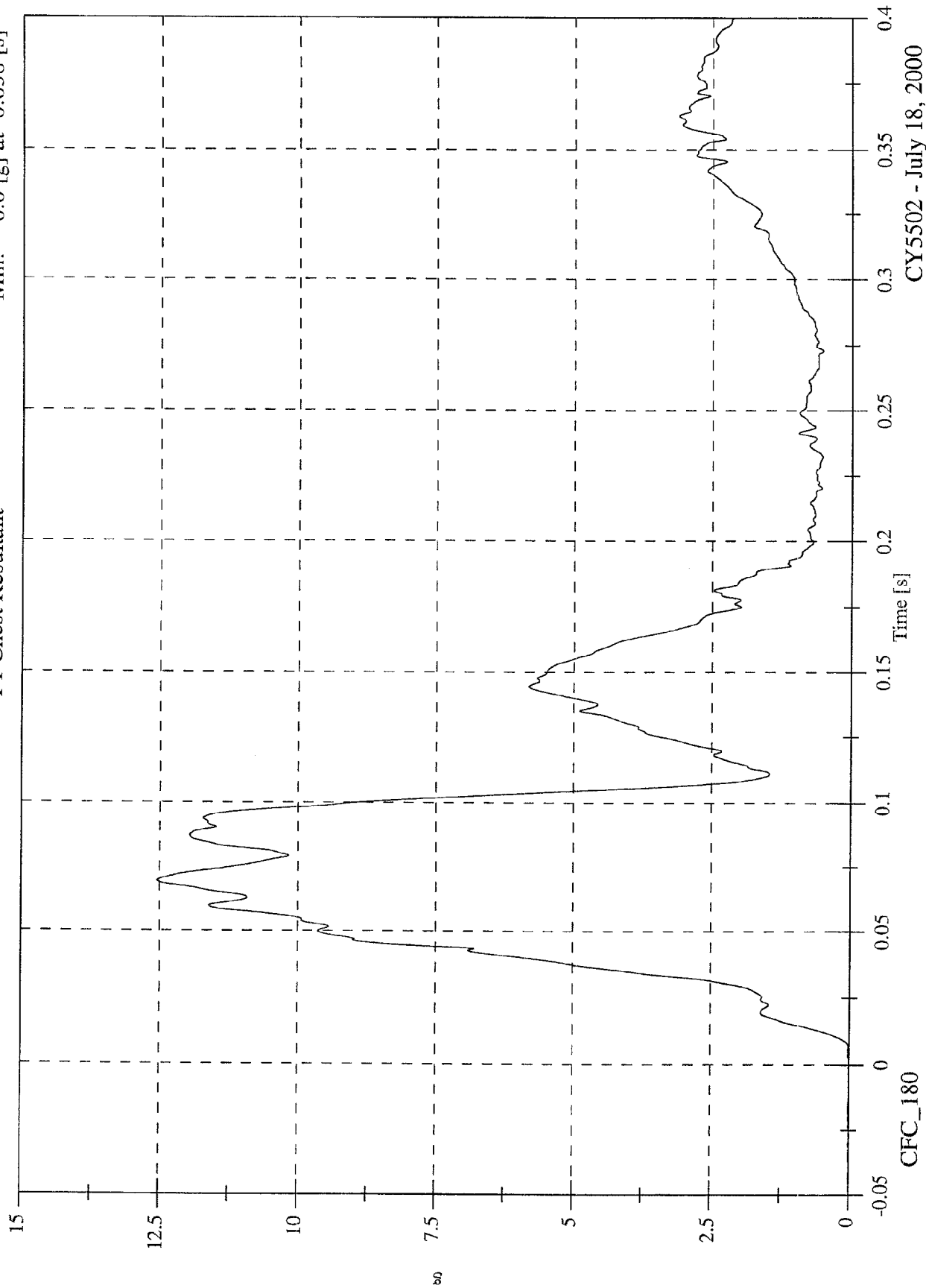
CY5502 - July 18, 2000

NHTSA FMVSS 301 Test #10 - 2000 Subaru Legacy

P1 Chest Resultant

Max: 12.5 [g] at 0.069 [s]

Min: 0.0 [g] at -0.038 [s]

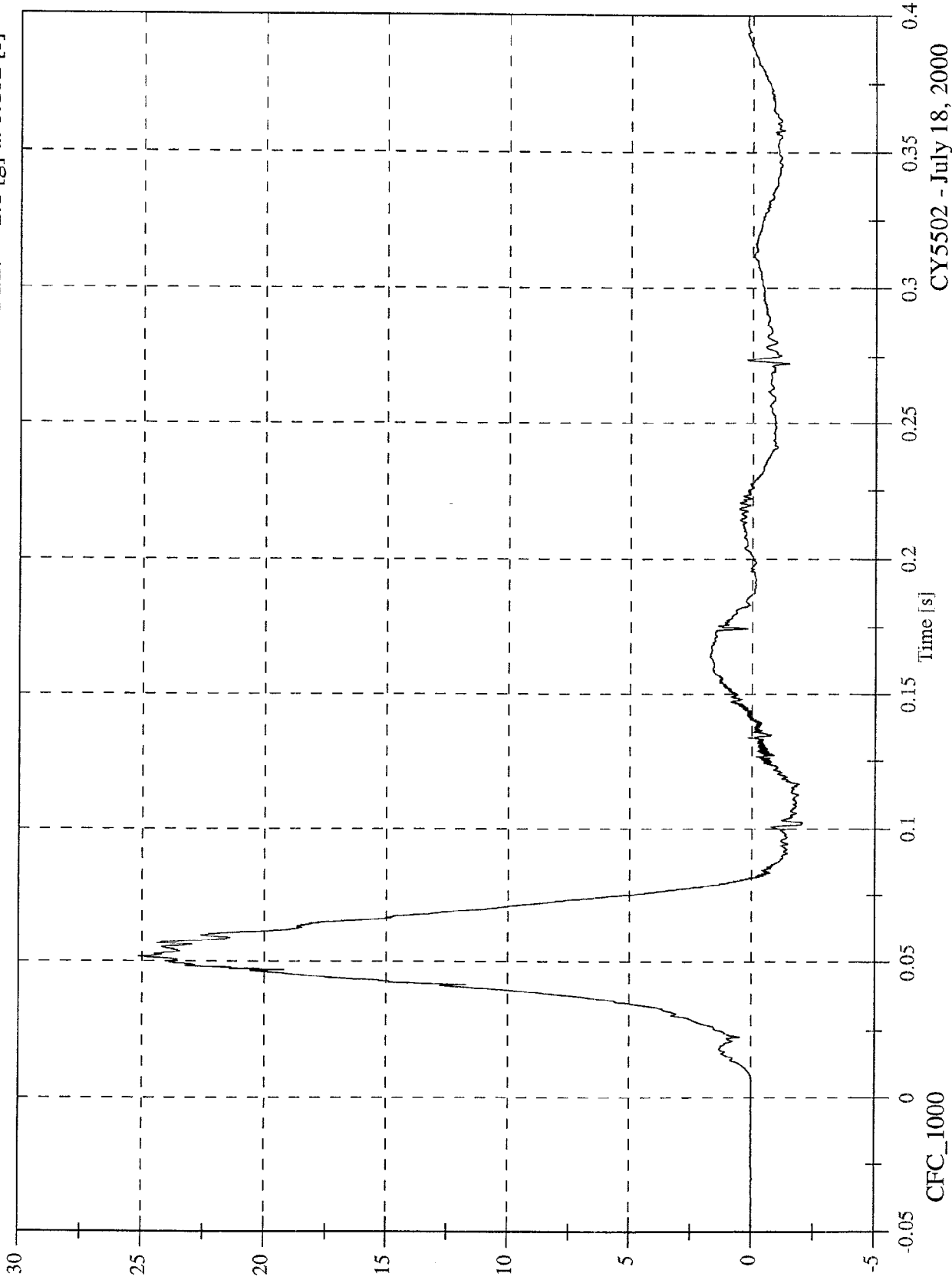


CY5502 - July 18, 2000

NHTSA FMVSS 301 Test #10 - 2000 Subaru Legacy

Max: 25.1 [g] at 0.052 [s]
 Min: -2.1 [g] at 0.102 [s]

P1 Pelvic x

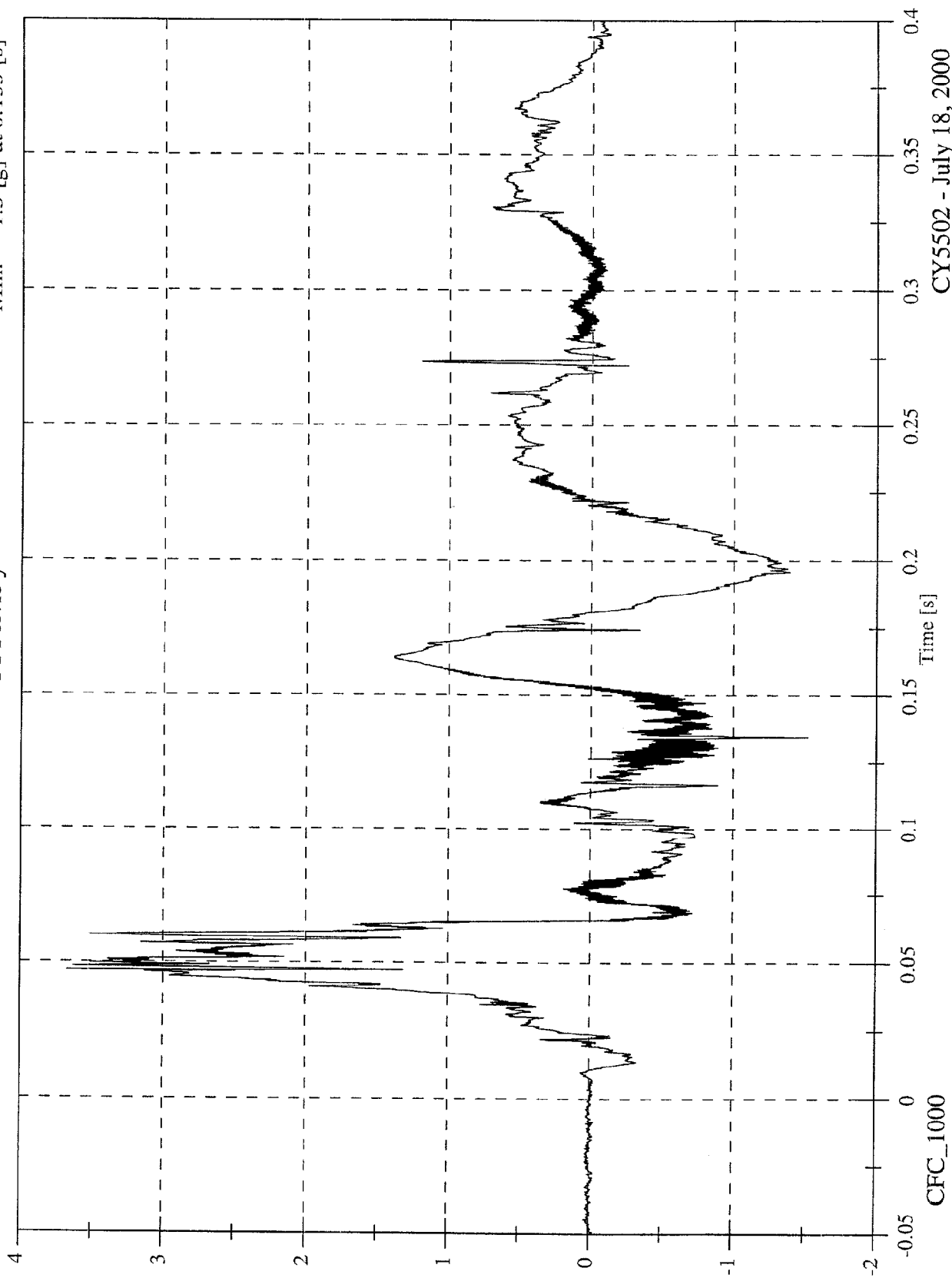


CY5502 - July 18, 2000

NHTSA FMVSS 301 Test #10 - 2000 Subaru Legacy

Max: 3.7 [g] at 0.047 [s]
 Min: -1.5 [g] at 0.135 [s]

P1 Pelvic y

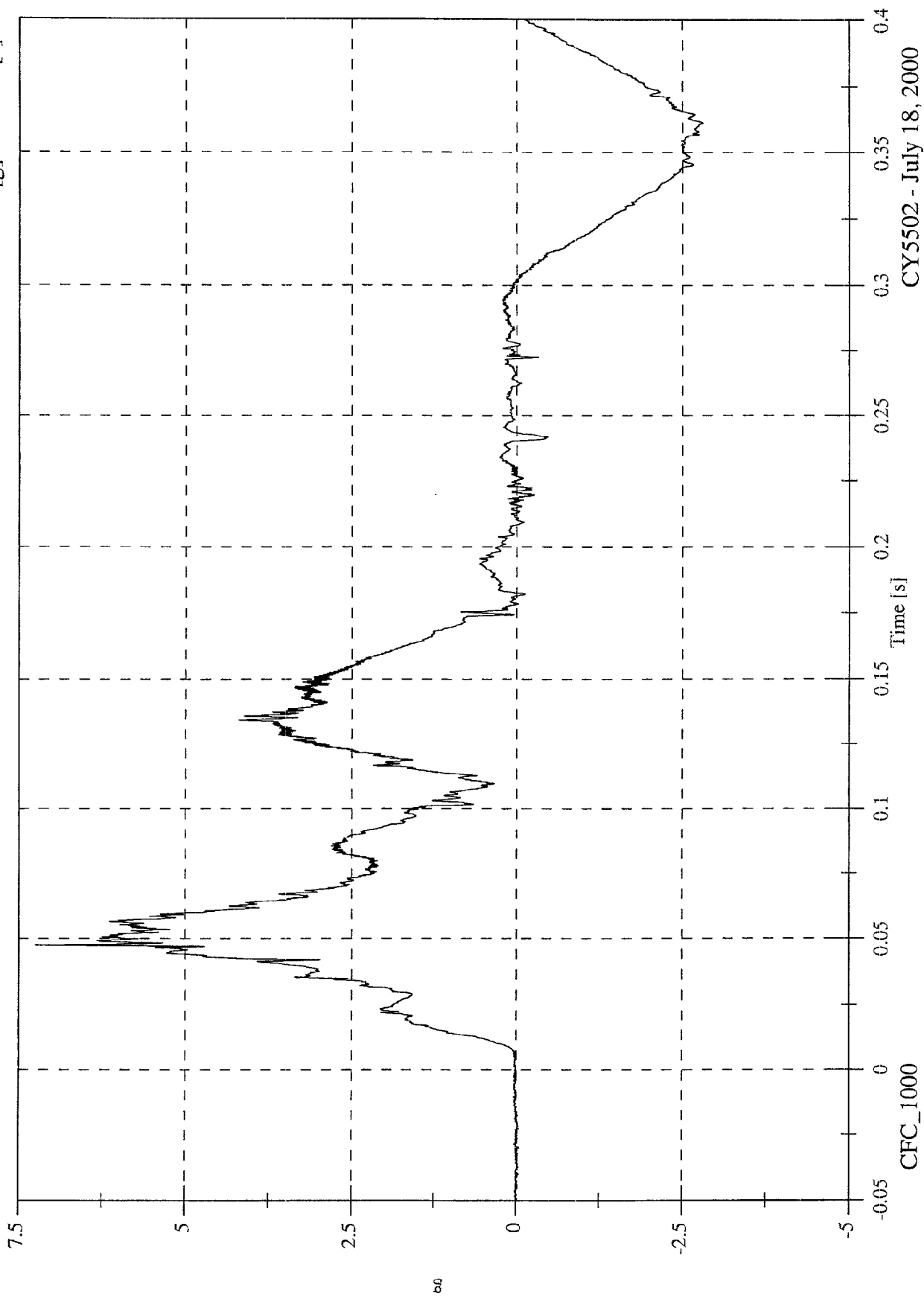


CY5502 - July 18, 2000

NIITSA FMVSS 301 Test #10 - 2000 Subaru Legacy

Max: 7.2 [g] at 0.048 [s]
Min: -2.8 [g] at 0.361 [s]

P1 Pelvic z

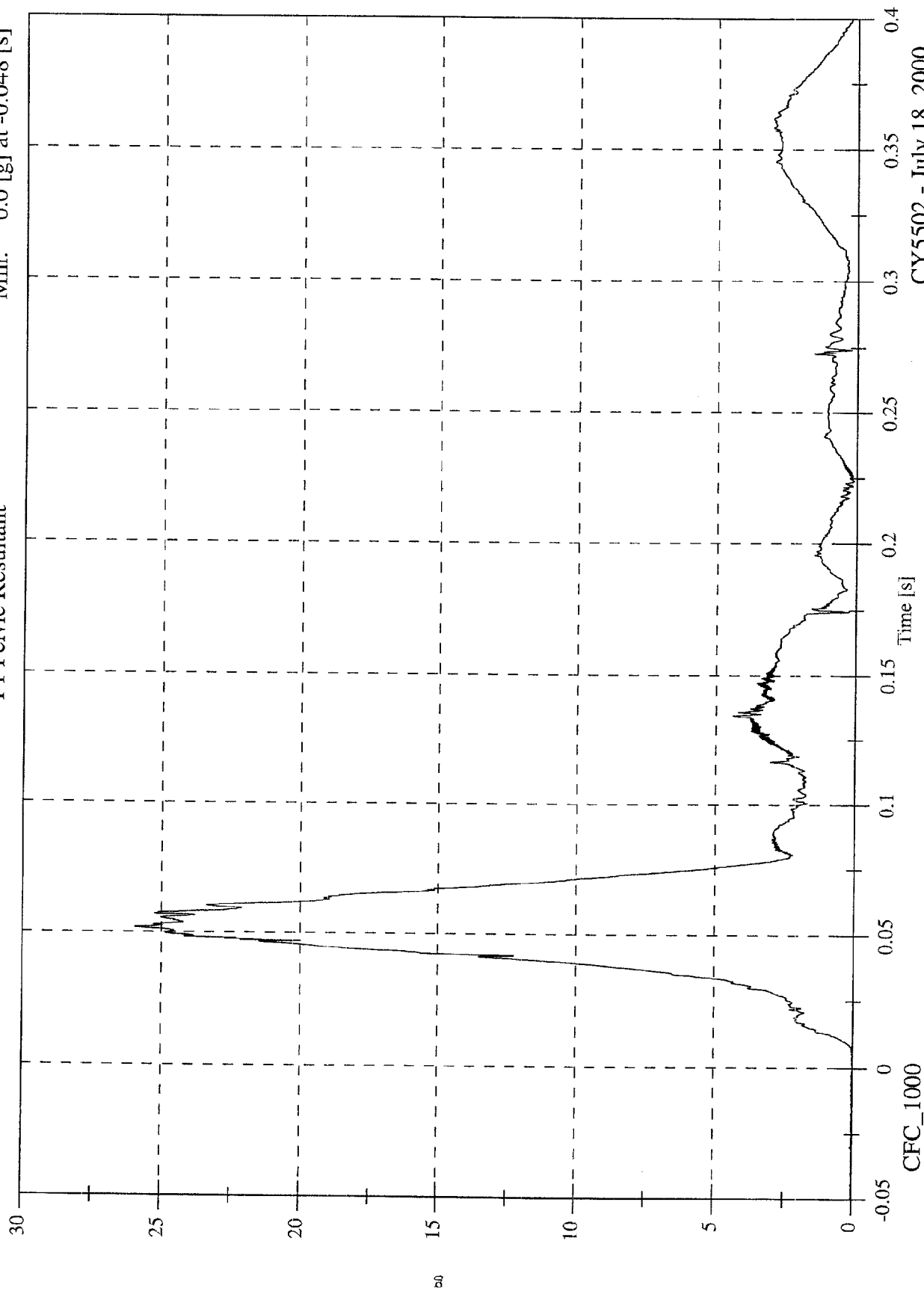


CY5502 - July 18, 2000

NHTSA FMVSS 301 Test #10 - 2000 Subaru Legacy

P1 Pelvic Resultant

Max: 26.0 [g] at 0.052 [s]
 Min: 0.0 [g] at -0.048 [s]

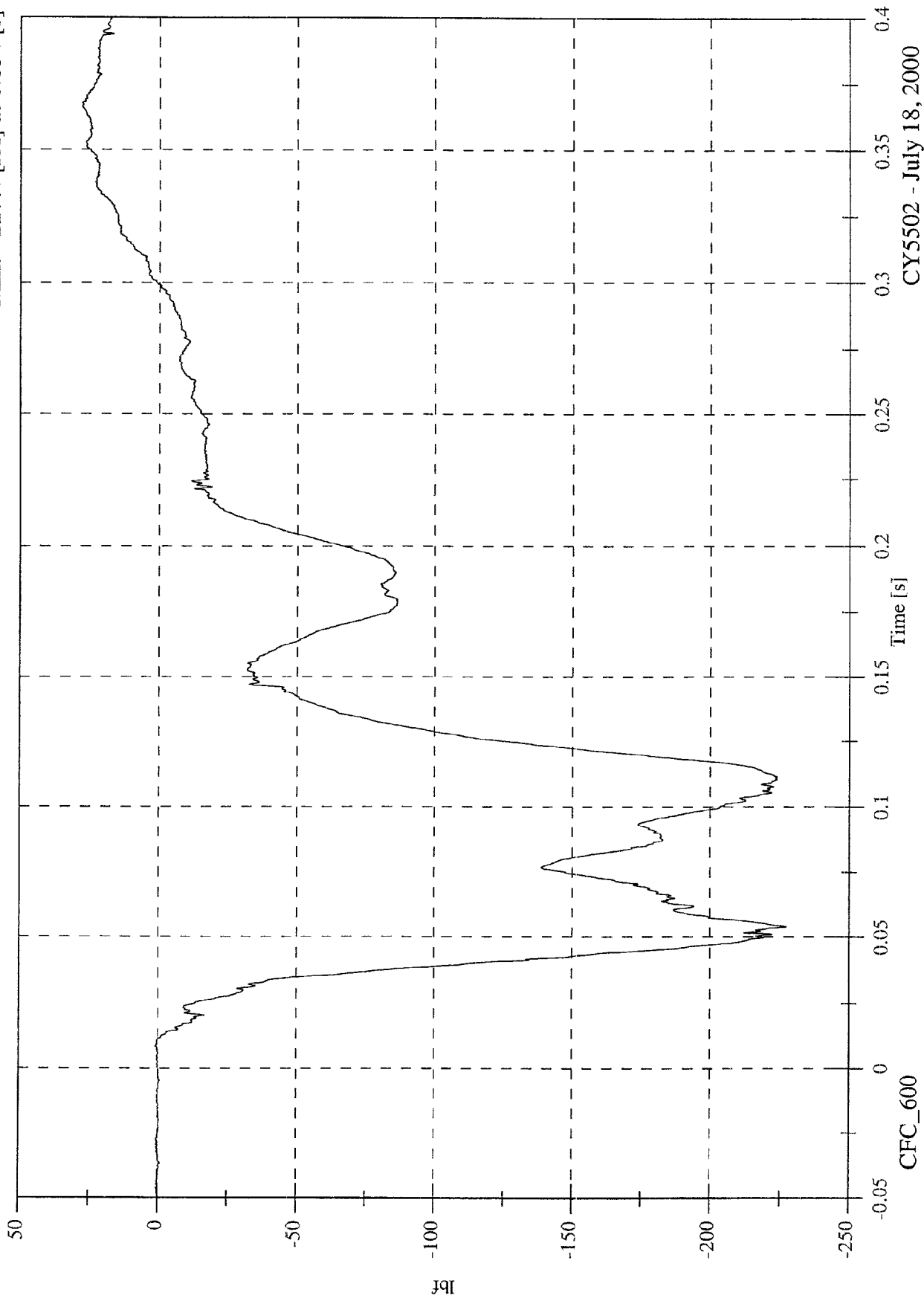


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NIH TSA FMVSS 301 Test #10 - 2000 Subaru Legacy
P1 Left Femur

Max: 28.0 [lbf] at 0.367 [s]

Min: -227.4 [lbf] at 0.054 [s]

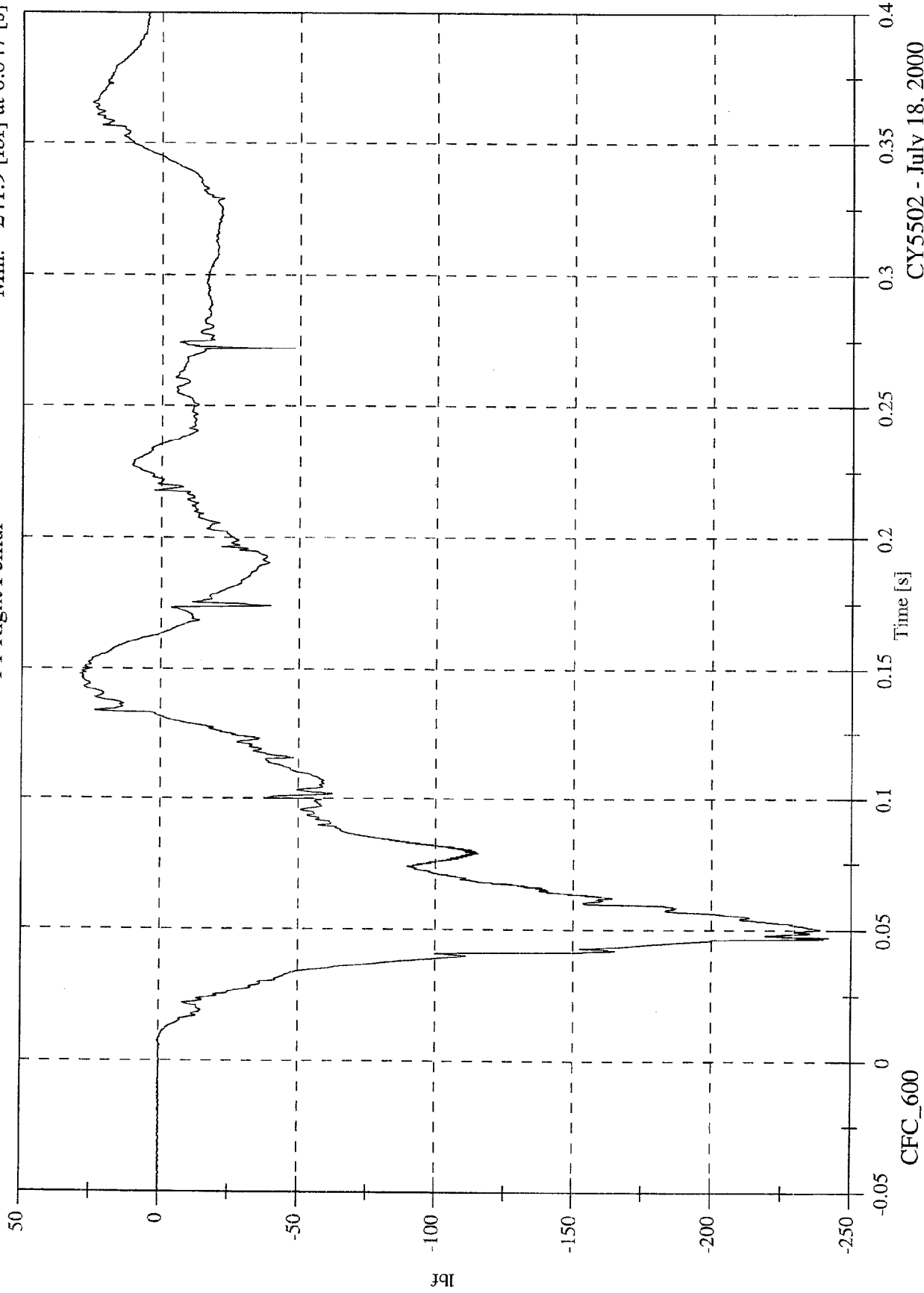


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NHTSA FMVSS 301 Test #10 - 2000 Subaru Legacy

P1 Right Femur

Max: 29.0 [lbf] at 0.148 [s]
Min: -241.9 [lbf] at 0.047 [s]

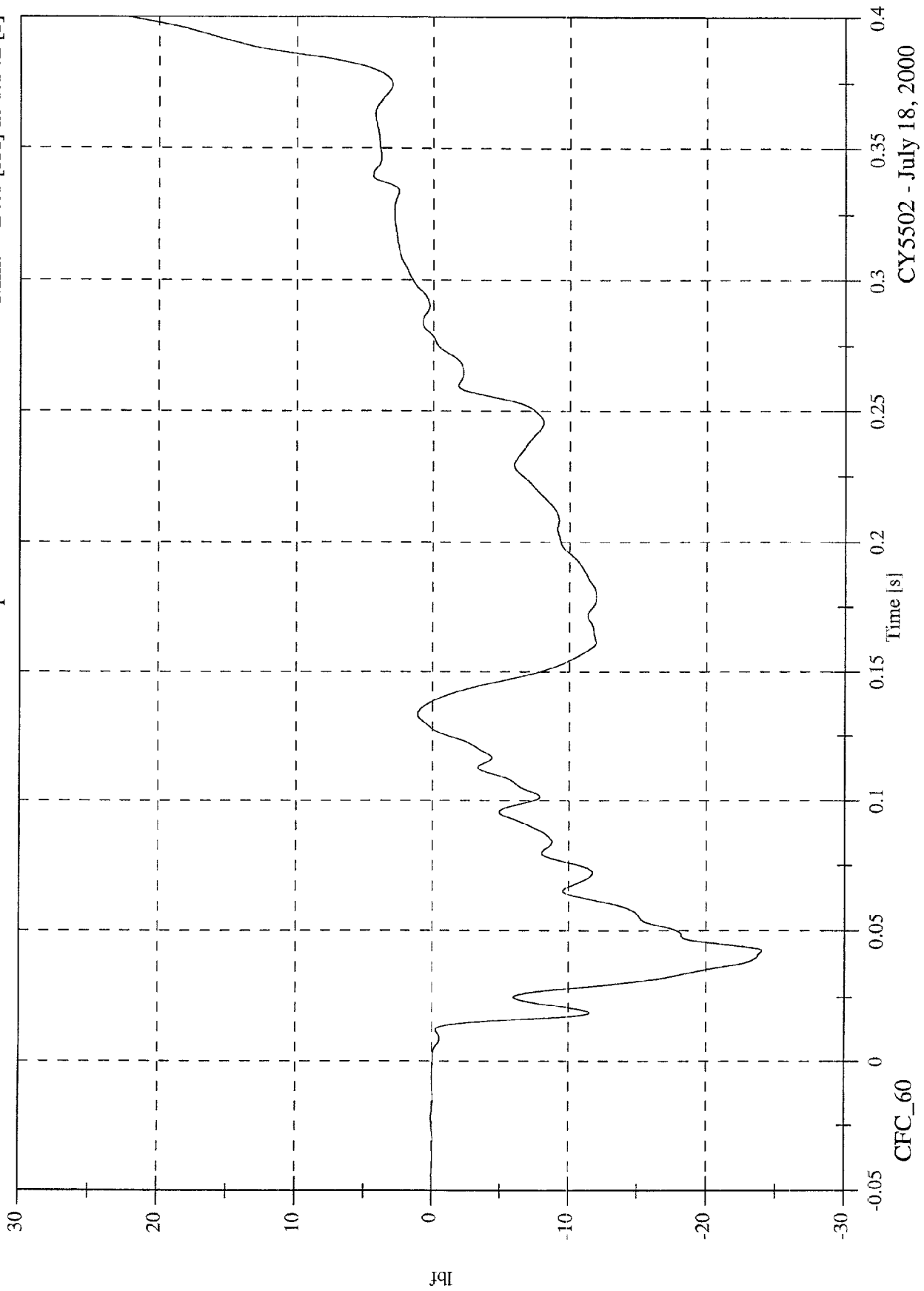


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NHTSA FMVSS 301 Test #10 - 2000 Subaru Legacy

P1 Lap Belt

Max: 22.5 [lbf] at 0.400 [s]
Min: -24.0 [lbf] at 0.042 [s]



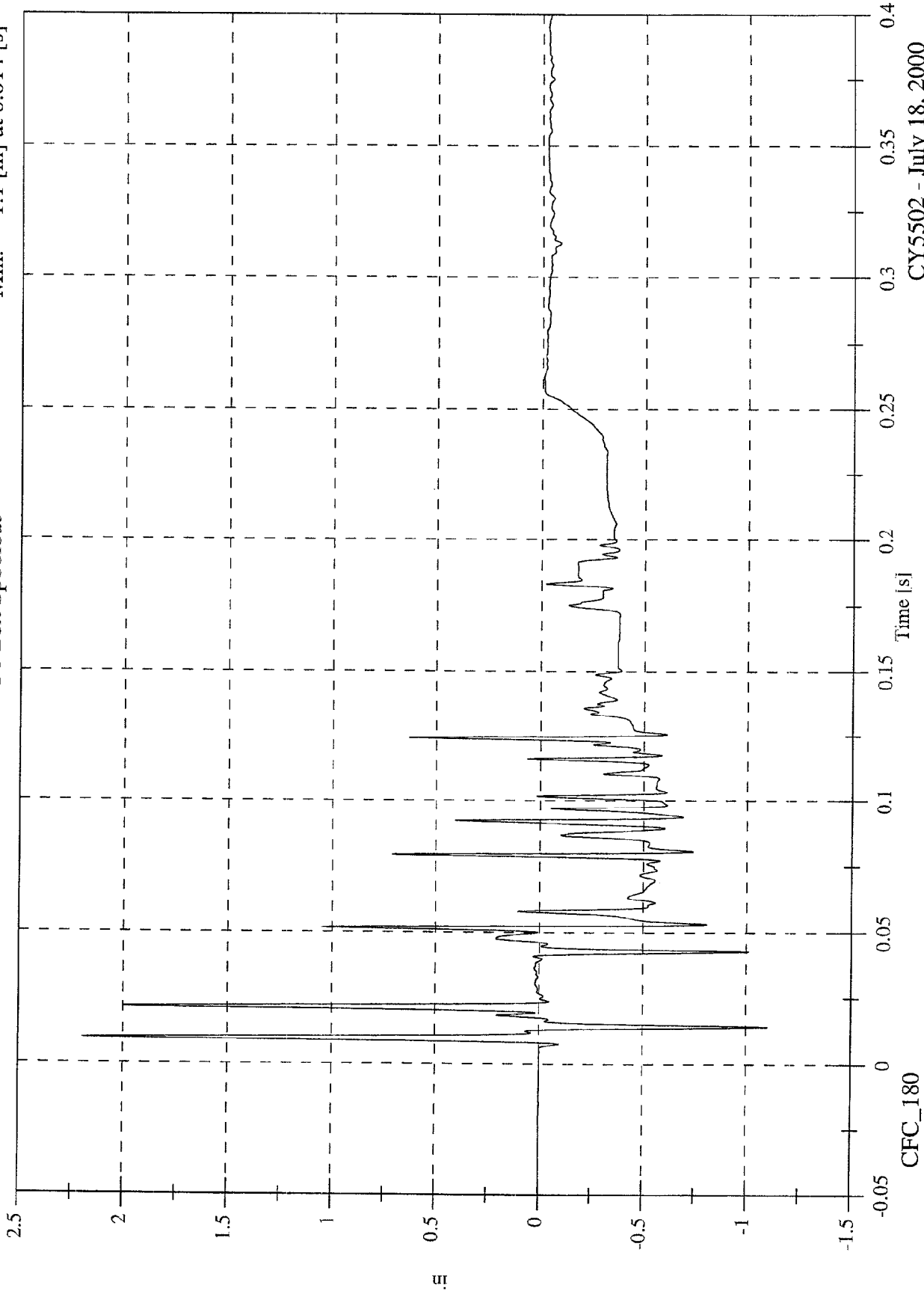
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NHTSA FMVSS 301 Test #10 - 2000 Subaru Legacy

P1 Belt Spoolout

Max: 2.2 [in] at 0.010 [s]

Min: -1.1 [in] at 0.014 [s]



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