

Report Number: 201-EXI-2004-001

**Safety Compliance Testing
for FMVSS 201
Rigid Pole Side Impact Test**

**Mazda Motor Corporation
2004 Mazda 6
NHTSA No: C45401**

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**Test Date: May 17, 2004
Report Date: August 4, 2004**

Final Report

Prepared for:

**U.S. Department of Transportation
National Highway Traffic Safety Administration
Office of Vehicle Safety Compliance (NVS-221)
400 Seventh Street, S.W., Room 6111
Washington, DC 20590**

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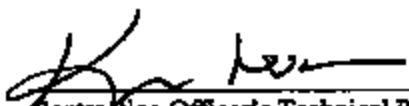
Date August 4, 2004

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Contracting Officer's Technical Representative (COTR),
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16. Abstract A rigid pole side impact test was conducted on a 2004 Mazda 6 4-door sedan in accordance with FMVSS 201, "Occupant Protection in Interior Impact", S6.2(b)(3), and the Office of Vehicle Safety Compliance Test Procedure No. TP-201P-02, "Rigid Pole Side Impact Test." The test was conducted by the Exponent Test and Engineering Center in Phoenix, Arizona, on May 17, 2004. The impact velocity of the vehicle was 27.3 kph, and the ambient temperature at the driver side of the vehicle at the time of impact was 21.7 °C. The posttest maximum crush was 437 mm at level 3. The test vehicle's performance follows: HIC: Required: <1000 Measured: 425.1 Test Failures: None The doors on the struck side of the vehicle did not separate from the body at the hinges or latches and the opposite doors did not open during the side impact event.			
17. Key Words Compliance Testing Rigid Pole Side Impact Test FMVSS 201		18. Distribution Statement Copies of this report are available from: National Highway Traffic Safety Adm. Technical Information Services (TIS) 400 Seventh Street, S.W. Washington, DC 20590 Telephone No. (202) 366-4946	
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Section 1 – Purpose and Test Procedure

This side impact test is part of the 2004 FMVSS 201 "Occupant protection in interior impact" compliance test program sponsored by the National Highway Traffic Safety Administration (NHTSA), under contract No. DTNH22-01-D-11033. The purpose of this test was to evaluate the dynamic head protection system in a 2004 Mazda 6 4-door sedan. The rigid pole side impact test was conducted in accordance with the Office of Vehicle Safety Compliance's Laboratory Test Procedure (TP-201P-02, dated October 21, 2001).

Section 2 – Summary of Rigid Pole Side Impact Test

A rigid pole side impact test was conducted on a 2004 Mazda 6 4-door sedan. The subject vehicle was towed into the rigid pole at a velocity of 27.3 kph. The test was conducted by the Exponent Test and Engineering Center in Phoenix, Arizona, on May 17, 2004. Pretest and posttest photographs of the test vehicle and the side impact dummy (SID/HIII) are included in Appendix A of this report.

One SID/HIII was placed in the left front outboard designated seating position according to instructions specified in TP-201P-02, dated October 21, 2001. The side impact event was documented by 13 cameras. Camera locations and other pertinent camera information are included in this report.

The SID/HIII was instrumented with the following accelerometers:

1. Head CG triaxial accelerometers
2. Upper neck 6-channel load cell (X, Y, and Z force and moment)
3. Left Upper Rib uniaxial accelerometer (Y-direction)
4. Left Lower Rib uniaxial accelerometer (Y-direction)
5. Lower Thoracic Spine uniaxial accelerometer (Y-direction)
6. Pelvic section uniaxial accelerometer (Y-direction)

Appendix B contains the vehicle and dummy response data traces. A summary of the side impact dummy (SID/HIII) configuration and performance verification test data is shown in Appendix C. Dummy and vehicle calibration data can be found in Appendix D of this report.

The following table summarizes the results of the test.

Injury Criteria	Front SID/HIII
HIC (* 1000)	425.1
TTI (g)*	41.8
Pelvic Acceleration (g)*	50.0
Neck X Force (N)*	-275.6
Neck Y Force (N)*	601.5
Neck Z force (N)*	583.1
Neck Moment X (N-m)*	-67.6
Neck Moment Y (N-m)*	-14.5
Neck Moment Z (N-m)*	20.8

*For informational purposes only

Section 3 – Side Impact Dummy (SID/HIII) and Vehicle Test Summary Data

Data Sheet 1 – General Test Vehicle Parameter Data

Data Sheet 2 – Test Vehicle Summary of Results

Data Sheet 3 – Posttest Observations

**DATA SHEET 1
GENERAL TEST VEHICLE PARAMETER DATA**

TEST VEHICLE INFORMATION:

Model Year/Make/Model: 2004 Mazda 6

Body Style/Color: 4-door sedan / Silver VIN: 1YVHP80D345N

NHTSA No.: C45401 Build Date: 10/03

Engine Data: 6 cylinders CID 3.0 Liter cc

Placement: longitudinal X lateral

Transmission: 5 speeds X manual automatic overdrive

Final Drive: rear wheel drive X front wheel drive four wheel drive

Odometer Reading: 57.9 km

Options: X A/C X pwr. steering X pwr. brakes X pwr. windows

DATA RECORDED FROM VEHICLE'S TIRE PLACARD:

Tire Pressure (at capacity): 32 psi Front 32 psi Rear

Recommended Tire Size: P205/60R16, P215/50R17

Tires on Vehicle: P215/50R17 Mfr.: MICHELIN

VEHICLE CAPACITY DATA:

Number of Occupants: 2 front 3 rear 5 Total

Type of Front Seat(s): X buckets bench split bench

Type of Front Seat Back: fixed X adjustable with: X lever knob

Vehicle Maximum Capacity Loading = 365 kg (A)

Number of Occupants X 68.04 kg = 340 kg (B)

Vehicle Cargo Capacity (A-B) = 45 kg

DATA SHEET 1
GENERAL TEST VEHICLE PARAMETER DATA (CONTINUED)

TEST VEHICLE DELIVERED WEIGHT WITH MAXIMUM FLUIDS:

Right Front = 455 kg Right Rear = 285 kg
Left Front = 450 kg Left Rear = 284 kg
Total Front = 905 kg Total Rear = 579 kg
Total Weight = 1484 kg (UVW)
Percent of Total Weight: Percent Front = 61 Percent Rear = 39

CALCULATION OF TEST VEHICLE TARGET WEIGHT:

A. Total Vehicle Delivered Weight/Max Fluids = 1484 kg (UVW)
B. Rated Cargo and Luggage Weight of Vehicle = 45 kg (RCLW (<136 kg))
C. Weight of Instrumented SID/HIII Dummy = 80 kg
Test Vehicle Target Weight (A+B+C) = 1609 kg (TVTW)

FULLY LOADED TEST VEHICLE (UVW + SID/HIII + CARGO):

Right Front = 461 kg Right Rear = 324 kg
Left Front = 474 kg Left Rear = 349 kg
Total Front = 935 kg Total Rear = 673 kg
Percent Front = 58 Percent Rear = 42
Total Weight = 1608 kg

DATA SHEET 1
GENERAL TEST VEHICLE PARAMETER DATA (CONTINUED)

AS-TESTED WEIGHT OF VEHICLE (SID/HIN DUMMY + CARGO + EQUIPMENT & INSTRUMENTATION):

Right Front =	<u>469</u> kg	Right Rear =	<u>322</u> kg
Left Front =	<u>471</u> kg	Left Rear =	<u>339</u> kg
Total Front =	<u>940</u> kg	Total Rear =	<u>661</u> kg
Total Weight =	<u>1601</u> kg		
Percent Front =	<u>59</u>	Percent Rear =	<u>41</u>

TEST VEHICLE ATTITUDE: nose down – negative pitch, left down – negative roll

	As Delivered	Fully Loaded	Ready for Test
Right Front	<u>692</u> mm	<u>688</u> mm	<u>689</u> mm
Left Front	<u>690</u> mm	<u>681</u> mm	<u>686</u> mm
Right Rear	<u>685</u> mm	<u>668</u> mm	<u>667</u> mm
Left Rear	<u>685</u> mm	<u>660</u> mm	<u>660</u> mm
Right Door Sill Angle	<u>-0.8</u> deg	<u>0.4</u> deg	<u>-0.5</u> deg
Left Door Sill Angle	<u>-0.5</u> deg	<u>0.5</u> deg	<u>-0.1</u> deg
Front Bumper Angle	<u>-0.3</u> deg	<u>-0.8</u> deg	<u>-0.8</u> deg
Rear Bumper Angle	<u>0.1</u> deg	<u>-0.2</u> deg	<u>0.0</u> deg
Test Vehicle Wheelbase =	<u>2870</u> mm		
C.G. =	<u>1104</u> mm rearward of front wheel centerline		

DATA SHEET 1
GENERAL TEST VEHICLE PARAMETER DATA (CONTINUED)

TOTAL VEHICLE LENGTH:

Right Side = 4389 mm Left Side = 4382 mm Centerline = 4740 mm

FRONT SEAT CUSHION PLACEMENT:

Total length of Adjustment Travel = 173 mm

Total Number of Adjustment Positions or Detents = 25

Final Seat Position = 12 detents aft of full forward

FRONT SEAT BACK ADJUSTMENT POSITION:

Initial Seat Back Torso Angle = 13.5° degrees

Final Seat Back Torso Angle = 8.5° degrees

*Measurements taken with inclinometer positioned on headrest pole

ADJUSTABLE STEERING COLUMN POSITION:

Telescopic = Mid-focus

Angle = Mid-focus (23.7 degrees from vertical)

WINDOW POSITIONS:

Right Front = Down Right Rear = Down

Left Front = Down Left Rear = Down

AMOUNT OF STODDARD SOLVENT IN FUEL TANK:

Volume = 63.2 liters (92% to 94% of useable capacity)

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

Wheelbase = 2870 mm

Impact Reference Line Is 1407 mm rearward of front axle centerline

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DATE: May 17, 2004

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DATA SHEET 2
TEST VEHICLE SUMMARY OF RESULTS

Model Year/Make/Model: 2004 Mazda 6

Body Style: 4-door sedan VIN: 1YVHP80D345N

NHTSA No. C45401 Build Date: 10/03

Test Date: 5/17/04

Vehicle Overall Length = 4740 mm Vehicle Overall Width 1781 mm

VEHICLE TEST WEIGHT (PRETEST):

Left Front = 471 kg Left Rear = 339 kg

Right Front = 469 kg Right Rear = 322 kg

Total Front = 940 kg Total Rear = 661 kg

Total Vehicle Test Weight = 1601 kg

Wheelbase = 2670 mm

Longitudinal C.G. from center of front axle = 1104 mm

Impact Angle with respect to Impactor = 90 degrees

IMPACT POINT:

Actual Impact Point = 8 mm rearward of nominal impact ref. line

DATA SHEET 2
TEST VEHICLE SUMMARY OF RESULTS (CONTINUED)

MAXIMUM EXTERIOR STATIC CRUSH:

Level 1 (292 mm above ground) = 397 mm

Level 2 (540 mm above ground) = 493 mm

Level 3 (803 mm above ground) = 437 mm

Level 4 (878 mm above ground) = 404 mm

Level 5 (1403 mm above ground) = 192 mm

Maximum Posttest Intrusion = 437 mm

OCCUPANTS:

Dummy ID: 051 SID/HIII No. 051

Restraint Used: 3-Point Active Restraint

INSTRUMENTATION:

Number of Data Channels = 37

Number of Cameras:

Onboard = 3

Offboard = 10

Total Cameras = 13

Remarks: None

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**DATA SHEET 3
POSTTEST OBSERVATIONS**

Test Vehicle: 2004 Mazda 6 NHTSA No.: C45401

VISIBLE DUMMY CONTACT POINTS:

	SID/HILL
Face	Side curtain airbag
Top of the Head	Side curtain airbag
Left Side of the Head	Side curtain airbag
Back of the Head	Headrest, side curtain airbag
Left Hip	Driver seat, seat belt, door panel
Left Shoulder	Door panel, left seat bolster, thoracic airbag, seat belt

DOOR OPENING:

	Left Side	Right Side
Front	Tools Needed	Easy
Rear	Tools Needed	Easy

ARM REST LOCATION:

Front = N/A

Rear = N/A

SEAT MOVEMENT:

Front = None

Rear = None

DATA SHEET 3
POSTTEST OBSERVATIONS (CONTINUED)

GLAZING DAMAGE:

Windshield: Broken

Window: Driver side window broken, all others were not broken

PILLAR PERFORMANCE:

A- and B-pillars intact, deformation noted only at impact point forward of B-pillar

SILL SEPARATION:

No structural separation

OTHER NOTABLE IMPACT EFFECTS:

None

REMARKS:

None

RECORDED BY:

DATE: May 17, 2004

APPROVED BY:

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Section 4 – Occupant and Vehicle Information

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Data Sheet 5 – Vehicle Pretest and Posttest Measurements

Data Sheet 6 – SID/HIII Longitudinal Clearance Dimensions

Data Sheet 7 – SID/HIII Lateral Clearance Dimensions

Data Sheet 8 – Vehicle Side Measurements

Data Sheet 9 – Vehicle Exterior Crush Profiles – All Levels

Data Sheet 10 – Vehicle Damage Profile Distances

Data Sheet 11 – High-Speed Camera Locations and Data

Data Sheet 12 – Dummy Damage Checklist – SID/HIII

Data Sheet 13 – Test Vehicle Accelerometer Locations Summary

Data Sheet 14 – Fuel System Integrity Summary

DATA SHEET 4
SID/HIII INSTRUMENTATION DATA

Test Vehicle: 2004 Mazda 6

NHTSA No.: C45401

SID/HIII ID# 051

Description	Units	Filter	Max Data	Max Data Time	Min Data	Min Data Time
<i>MHEAD.FEU (Results calculated from -0.1 to 0.4 sec.)</i>						
Driver ATD Head (Ax)	g	CFC 1000	3.8	0.214	-12.8	0.060
Driver ATD Head (Vx)	kph	CFC 180	1.8	0.283	-12.8	0.109
Driver ATD Head (Ay)	g	CFC 1000	71.1	0.059	-7.9	0.184
Driver ATD Head (Vy)	kph	CFC 180	16.7	0.117	-28.0	0.037
Driver ATD Head (Az)	g	CFC 1000	11.8	0.049	-3.5	0.083
Driver ATD Head (Vz)	kph	CFC 180	36.5	0.400	0.0	-0.200
Driver ATD Head (Ar)	g	CFC 1000	72.1	0.059	0.0	-0.114
Driver HIC: 425.1 from 0.0608 to 0.0689 s.						
<i>MUNCK.FEU (Results calculated from -0.1 to 0.4 sec.)</i>						
Driver ATD Neck (Fx)	N	CFC 1000	141.9	0.193	-275.6	0.059
Driver ATD Neck (Fy)	N	CFC 1000	801.5	0.059	-327.3	0.183
Driver ATD Neck (Fz)	N	CFC 1000	583.1	0.051	-267.5	0.072
Driver ATD Neck (Mx)	N-m	CFC 600	12.2	0.101	-67.6	0.080
Driver ATD Neck (My)	N-m	CFC 600	13.3	0.318	-14.5	0.204
Driver ATD Neck (Mz)	N-m	CFC 600	20.8	0.060	-8.1	0.037
<i>MRBLSPL.FEU (Results calculated from -0.1 to 0.4 sec.)</i>						
Driver ATD Upper Rib (Ay)	g	CFC 1000	51.1	0.043	-20.0	0.149
Driver ATD Lower Rib (Ay)	g	CFC 1000	49.5	0.047	-30.1	0.149
Driver ATD Lower Spine (Ay)	g	CFC 1000	44.2	0.045	-20.5	0.078
Driver ATD Pelvis (Ay)	g	CFC 1000	50.6	0.042	-11.6	0.082
<i>MFIR100.FEU (Results calculated from -0.1 to 0.4 sec.)</i>						
Driver ATD Upper Rib (Ay)	g	Fir 100	40.7	0.044	-3.6	0.165
Driver ATD Upper Rib (Vy)	kph	Fir 100	5.0	0.086	-27.4	0.015
Driver ATD Lower Rib (Ay)	g	Fir 100	42.2	0.049	-12.0	0.077
Driver ATD Lower Rib (Vy)	kph	Fir 100	4.5	0.073	-27.4	0.015
Driver ATD Lower Spine (Ay)	g	Fir 100	41.4	0.045	-13.0	0.080
Driver ATD Lower Spine (Vy)	kph	Fir 100	7.0	0.070	-27.4	-0.100
Driver ATD Pelvis (Ay)	g	Fir 100	50.0	0.042	-11.2	0.082
Driver ATD Pelvis (Vy)	kph	Fir 100	2.5	0.060	-27.5	0.014
Driver TTI [g]: 41.8						

(Continued on next page)

REFERENCE:

Positive Direction:

Longitudinal (X) =

Lateral (Y) =

Vertical (Z) =

Forward

To Right

Down

Negative Direction:

Longitudinal (X) =

Lateral (Y) =

Vertical (Z) =

Rearward

To Left

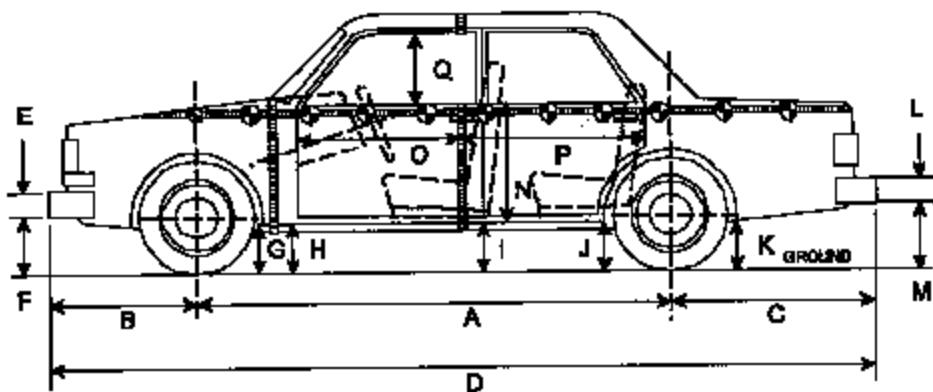
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REMARKS:

None

**DATA SHEET 6
VEHICLE PRETEST AND POSTTEST MEASUREMENTS**

Test Vehicle: 2004 Mazda 6 NHTSA No.: C45401



LEFT SIDE VIEW

ALL MEASUREMENTS IN MILLIMETERS (mm) WITH TOLERANCE OF ± 3 mm

	PRETEST	POSTTEST	CHANGE
A	2870	2665	-105
B	978	978	0
C	1092	1082	-10
D	4740	4699	-41
E	116	116	0

(Continued on next page)

	PRETEST			
	As-Delivered	As-Tested	POSTTEST	CHANGE
*F	411	402	434	32
*G	170	165	160	-5
*H	170	164	162	-2
*I	178	165	119	-46
*J1/J2	178/185	159/167	188/213	29/46
*K	236	208	236	28
L	315		315	0
*M	315	295	307	12
O	968		927	-41
P	963		787	-196
Q	259		276	17

D = Length at Centerline
 E & L = Bumper thickness
 J1 = To Pinch Weld
 J2 = To Sill

* THESE MEASUREMENTS ARE TO BE TAKEN IN THE "AS DELIVERED" AND IN THE "AS TESTED" CONFIGURATION (WHICH INCLUDES SID/HIII DUMMY, INSTRUMENTATION, CAMERAS, ETC.)

REMARKS:

None

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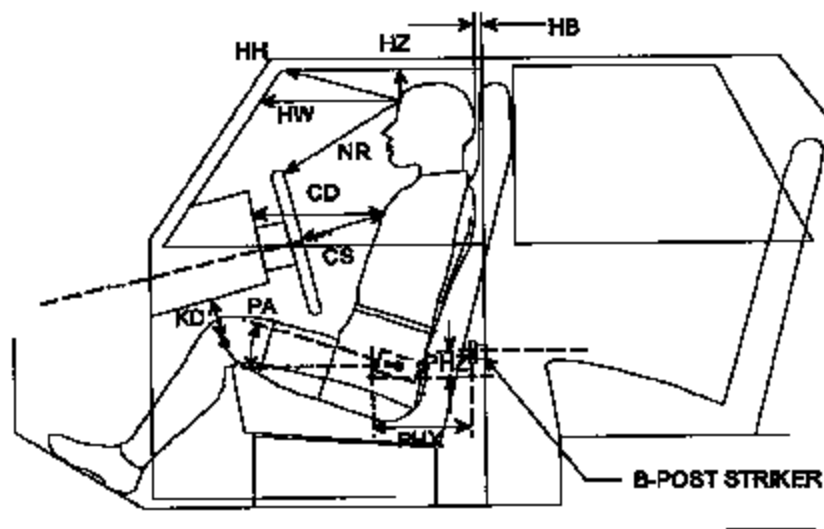
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DATA SHEET 6
SID/HIII LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: 2004 Mazda 6 NHTSA No.: C45401

SID/HIII DUMMY LONGITUDINAL MEASUREMENTS



LEFT SIDE VIEW

SID/HIII ID# 051	MEASUREMENT (mm)
HB	51
HH	338
HW	559
HZ	155
NR	434
CD	508
CS	310

(Continued on next page)

SID/HIII ID# 061	MEASUREMENT (mm)
KDL/(KDA°)	175/ (30°) WRTH*
KDR	175
PA°	25°
PHX	170
PHY	88
PHZ	81

REMARKS:

PHX, PHY, PHZ taken from forward-most point on striker to outside edge of SID/HIII H-point tool
which extended 165 mm out from hip flesh.

*WRTH = With Respect to Horizontal

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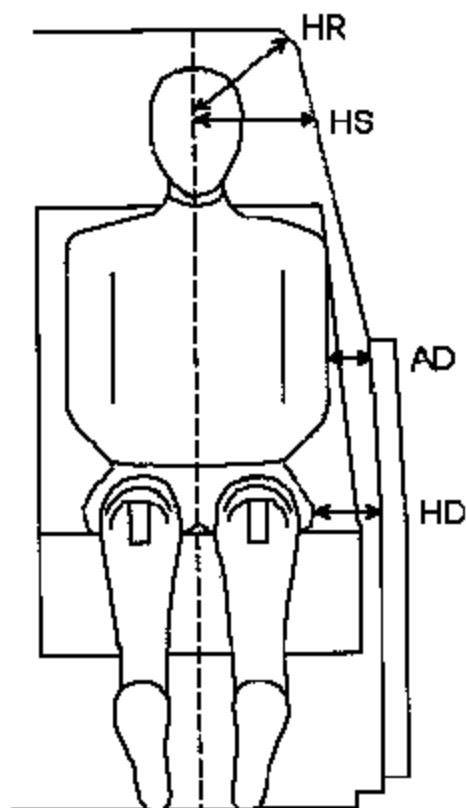
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DATA SHEET 7
SID/HII DUMMY LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2004 Mazda 6 NHTSA No.: C45401

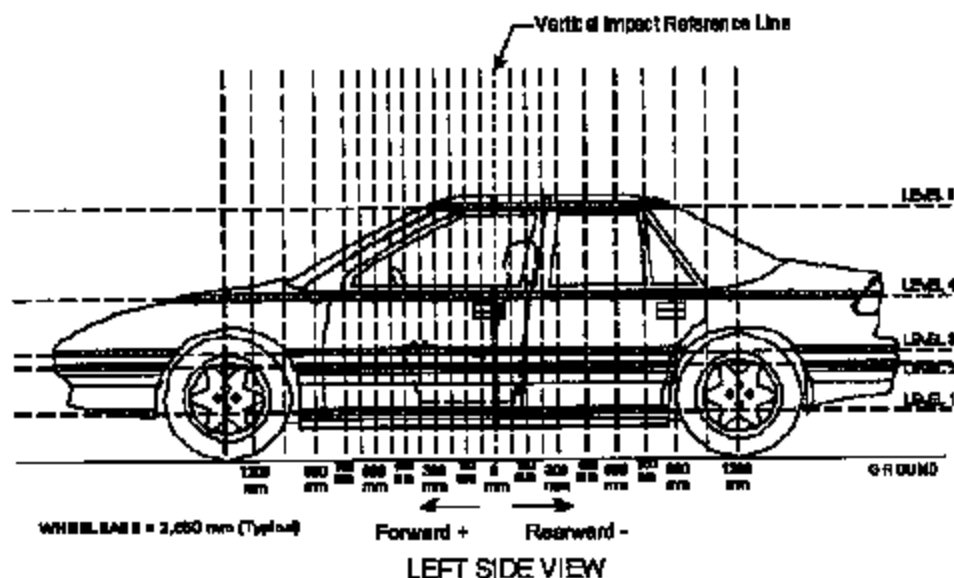


SID/HII ID# 051	MEASUREMENT (mm)
HR	191
HS	315
AD	117
HD	157

**DATA SHEET 8
VEHICLE SIDE MEASUREMENTS**

Test Vehicle: 2004 Mazda 6 NHTSA No.: C45401

PRETEST AND POSTTEST EXTERIOR PROFILE MEASUREMENTS

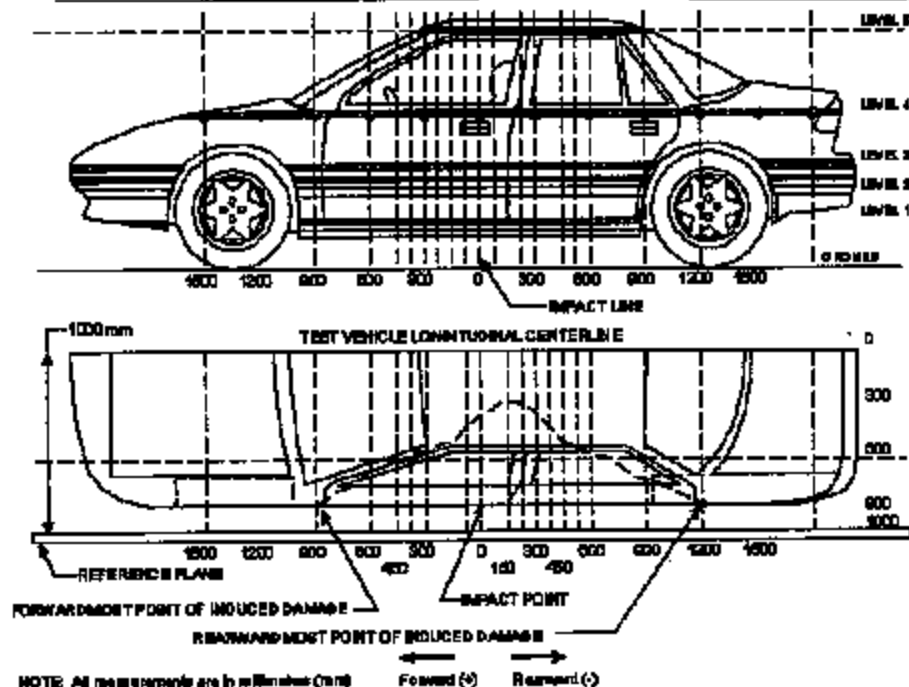


VERTICAL MEASUREMENTS ALONG THE 0-mm LINE SHOWN ABOVE:

	Pretest		Posttest
LEVEL 5 @ Window Top =	<u>1403</u> mm		<u>1407</u> mm
LEVEL 4 @ Window Sill =	<u>878</u> mm		<u>878</u> mm
LEVEL 3 @ Mid Door =	<u>803</u> mm		<u>810</u> mm
LEVEL 2 @ Occupant H-Point =	<u>540</u> mm		<u>540</u> mm
LEVEL 1 @ Sill Top Height =	<u>292</u> mm		<u>302</u> mm

DATA SHEET 9
VEHICLE EXTERIOR CRUSH PROFILES - ALL LEVELS

Test Vehicle: 2004 Mazda 6 NHTSA No.: C45401



DATA SHEET 9
VEHICLE EXTERIOR CRUSH PROFILES - ALL LEVELS (CONTINUED)

Test Vehicle: 2004 Mazda 6 NHTSA No.: C45401

LOCATION	HEIGHT		DISTANCE IN MILLIMETERS (mm) FROM IMPACT POINT (Measurements Continued on Next Page)						
			1500	1350	1200	1050	900	825	750
LEVEL 1 SIDE SILL	292	PRE					131	132	128
		POST					178	195	213
		CRUSH					47	63	85
LEVEL 2 H-POINT	540	PRE				98	106	106	105
		POST				137	157	179	207
		CRUSH				39	51	73	102
LEVEL 3 MID-DOOR	603	PRE				102	107	105	105
		POST				143	162	194	224
		CRUSH				41	55	89	119
LEVEL 4 WINDOW SILL	676	PRE	291	280	236	214	199	191	182
		POST	306	280	259	252	246	245	245
		CRUSH	15	20	23	38	47	54	63
LEVEL 5 WINDOW TOP	1403	PRE							
		POST							
		CRUSH							

DATA SHEET 9
VEHICLE EXTERIOR CRUSH PROFILES - ALL LEVELS (CONTINUED)

Test Vehicle: 2004 Mazda 6

NHTSA No.: C45401

LOCATION	HEIGHT		DISTANCE IN MILLIMETERS (mm) FROM IMPACT POINT (Measurements Continued on Next Page)						
			875	600	525	450	375	300	225
LEVEL 1 SIDE SILL	292	PRE	127	125	124	124	123	124	122
		POST	232	251	270	293	314	341	384
		CRUSH	105	126	148	168	191	217	262
LEVEL 2 H-POINT	540	PRE	105	104	104	103	102	102	102
		POST	235	264	294	323	350	380	419
		CRUSH	130	160	190	220	248	278	317
LEVEL 3 MID-DOOR	603	PRE	104	104	103	103	102	101	101
		POST	253	284	317	345	371	397	430
		CRUSH	149	180	214	242	269	296	329
LEVEL 4 WINDOW SILL	876	PRE	177	171	166	161	159	155	152
		POST	259	291	322	355	388	423	458
		CRUSH	82	120	156	194	229	266	304
LEVEL 5 WINDOW TOP	1403	PRE						413	405
		POST						535	543
		CRUSH						122	138

DATA SHEET 9
VEHICLE EXTERIOR CRUSH PROFILES - ALL LEVELS (CONTINUED)

Test Vehicle: 2004 Mazda 6

NHTSA No.: C45401

LOCATION	HEIGHT		DISTANCE IN MILLIMETERS (mm) FROM IMPACT POINT (Measurements Continued on Next Page)						
			150	75	0	-75	-150	-225	-375
LEVEL 1 SIDE SILL	282	PRE	124	122	123	124	133	125	127
		POST	442	490	520	500	456	381	308
		CRUSH	318	368	397	376	323	258	181
LEVEL 2 H-POINT	640	PRE	101	102	103	101	100	100	98
		POST	469	513	538	502	415	373	327
		CRUSH	368	411	433	401	315	273	228
LEVEL 3 MID-DOOR	803	PRE	101	100	100	100	100	98	99
		POST	473	519	537	505	456	372	341
		CRUSH	372	419	437	405	358	274	242
LEVEL 4 WINDOW SILL	876	PRE	149	148	143	141	139	137	134
		POST	493	532	547	521	480	407	383
		CRUSH	344	386	404	380	321	270	229
LEVEL 5 WINDOW TOP	1403	PRE	399	398	395	393	398	390	389
		POST	556	590	584	575	573	568	523
		CRUSH	157	192	189	182	177	176	134

DATA SHEET 9
VEHICLE EXTERIOR CRUSH PROFILES - ALL LEVELS (CONTINUED)

Test Vehicle: 2004 Mazda 6

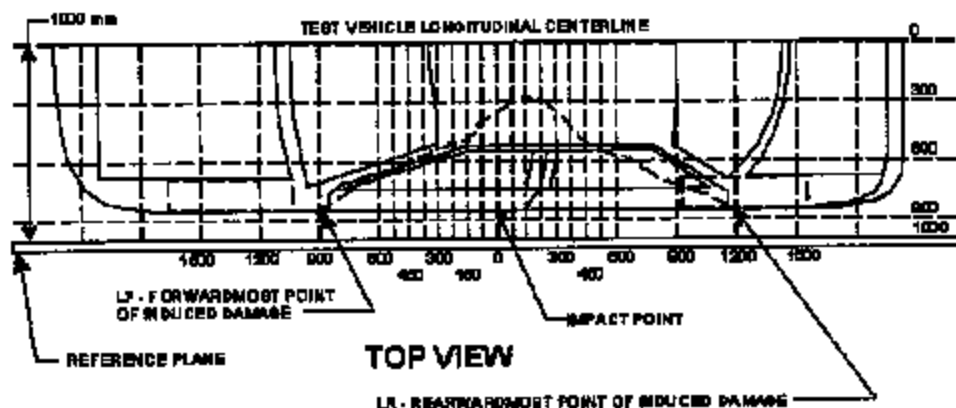
NHTSA No.: C45401

LOCATION	HEIGHT		DISTANCE IN MILLIMETERS (mm) FROM IMPACT POINT (Measurements Continued on Next Page)						
			-525	-675	-825	-975	-1125	-1275	
LEVEL 1 SIDE SILL	292	PRE	130	131	128				
		POST	232	190	142				
		CRUSH	102	59	14				
LEVEL 2 H-POINT	540	PRE	96	99	107	100			
		POST	266	212	165	131			
		CRUSH	170	113	58	31			
LEVEL 3 MID-DOOR	603	PRE	101	103	105	99			
		POST	294	242	187	129			
		CRUSH	193	139	62	30			
LEVEL 4 WINDOW SILL	876	PRE	131	129	129	121	126	136	
		POST	320	278	237	214	156	164	
		CRUSH	189	149	108	93	30	26	
LEVEL 5 WINDOW TOP	1403	PRE	394	394	404	430			
		POST	500	475	460	469			
		CRUSH	106	81	56	39			

REMARKS: None

**DATA SHEET 10
VEHICLE DAMAGE PROFILE DISTANCES**

Test Vehicle: 2004 Mazda 6 NHTSA No.: C45401



MEASUREMENT CONVENTIONS:
Forward of the impact point (towards front of vehicle) is considered positive (+).
Rearward of the impact point (toward rear of vehicle) is considered negative (-).

NOTE: All measurements are in millimeters (mm) and should be accurate to ± 3 mm.

DPO MEASUREMENTS	POSTTEST (mm)	PRETEST (mm)	STATIC CRUSH (mm)
1 (LR = <u>-975</u> mm)	129	99	30
2 <u>-675</u>	242	103	139
3 <u>-225</u>	372	98	274
4 <u>225</u>	430	101	320
5 <u>675</u>	253	104	149
6 (LF = <u>1060</u> mm)	143	102	41

REMARKS:

Data from measured locations on Level 3 that best approximated an even distribution along the vehicle length.

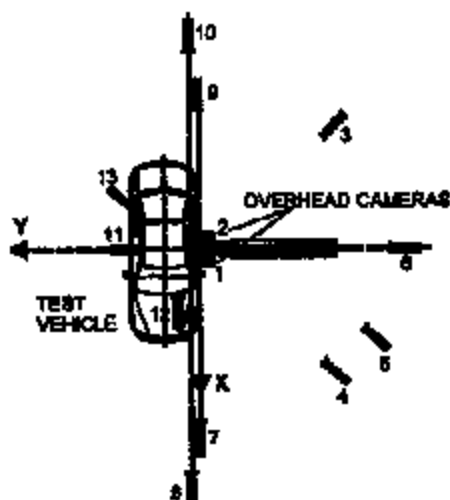
RECORDED BY: *[Signature]*

APPROVED BY: *[Signature]*

DATE: May 17, 2004

**DATA SHEET 11
HIGH SPEED CAMERA LOCATIONS AND DATA**

Test Vehicle: 2004 Mazda 6 NHTSA No.: C45401



REFERENCE (from Point of Impact): + X = Forward, + Y = To Right, + Z = Down from Ground, +θ = Clockwise from +X-axis

* All measurements accurate to ± 8 mm.

CAMERA NO.	VIEW	COORDINATES (mm)			ANGLE (deg)	LENS (mm)	FILM SPEED (fps)
		X*	Y*	Z*			
1	Overhead view of test vehicle	162	0	-6949	N/A	13	1000
2	Overhead close-up view of impact plane	0	0	-6949	N/A	25	1000
3	Left side 45° - rearward pole view	-3962	-3962	-1372	225	13	1000
4	Left side 45° - forward pole view	3962	-3962	-1372	315	13	1000
5	Real time (24 fps) film coverage of test	2896	-5182	-1402	299	N/A	24
6	Left side - rear pole view	0	-7010	-1372	270	13	1000
7	Front ground level - vehicle/pole impact	8596	0	-1219	0	25	1000
8	Front ground level - vehicle roof targets and vehicle/pole impact	8778	457	-1372	0	25	1000
9	Rear ground level - vehicle/pole impact	-7163	0	-1219	180	25	1000
10	Rear ground level	-7285	457	-1372	180	25	1000
11	Test vehicle onboard driver - side view	N/A	N/A	N/A	N/A	7.5	1000
12	Test vehicle onboard driver - front view	N/A	N/A	N/A	N/A	7.5	1000
13	Test vehicle onboard driver - 3/4 rear view	N/A	N/A	N/A	N/A	7.5	1000

**DATA SHEET 12
DUMMY DAMAGE CHECKLIST - SID/HIII**

Dummy Serial No. 2004 Mazda B Date: C45401

DATE: 08/09/2004
SID/HIII NUMBER: 051

PART	ITEMS CHECKED	COMMENTS
SKIN	VISUAL INSPECTION	OK
HEAD	VISUAL, BALLAST, ACCELEROMETER MOUNT	OK
NECK	VISUAL, BROKEN OR CRACKS IN RUBBER, UPPER BRACKET FIRMLY ATTACHED TO LOWER BRACKET, LOOSE CONDYLE JOINT, NODDING BLOCKS- CRACKED OR OUT OF POSITION	OK
SPINE BOX	VISUAL, BALLAST, WELDMENT, ACCELEROMETER MOUNT, RUBBER CRACKS	OK
RIB CAGE	VISUAL, MEASURE, STIFFENERS, BUMPERS IN PLACE	OK
STERNUM	VISUAL	OK
LUMBAR SPINE	VISUAL	OK
ABDOMEN	VISUAL	OK
PELVIS	VISUAL, PALPATE, ACCELEROMETER MOUNT	Tear in flesh by upper femur bolt hole
UPPER LEGS	VISUAL	OK
KNEES	VISUAL, STOPS, INSERTS	OK
LOWER LEGS	VISUAL, RANGE OF MOTION	OK
ANKLES	VISUAL, RANGE OF MOTION	OK
FEET	VISUAL, RANGE OF MOTION	OK
JOINTS	1 TO 2 g RANGE	OK
HEAD/NECK	BRACKET ATTACHMENT CRACKED OR BROKEN	OK
OTHER		N/A

TEST DATES: 05/17/04

RECORDED BY: 

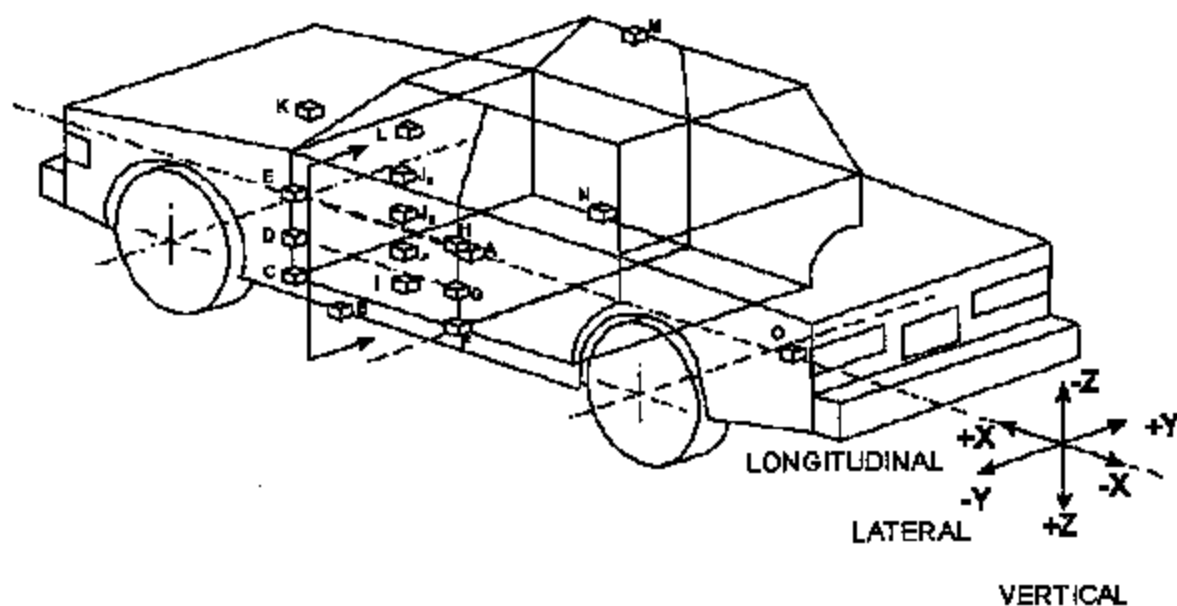
DATE: 08/09/04

APPROVED BY: 

DATE: 08/09/04

DATA SHEET 13
TEST VEHICLE ACCELEROMETER LOCATIONS SUMMARY

Test Vehicle: 2004 Mazda 6 NHTSA No.: C45401



A	VEHICLE CG	I	DRIVER SEAT
B	LEFT FLOOR SILL	J1, J2& J3	DRIVER DOOR (LOW, MID, UPPER)
C	A PILLAR SILL	K	ENGINE
D	A PILLAR LOW	L	FIREWALL
E	A PILLAR MID	M	RIGHT ROOF
F	B PILLAR SILL	N	RIGHT FLOOR SILL
G	B PILLAR LOW	O	REAR DECK
H	B PILLAR MID		

DATA SHEET 13
TEST VEHICLE ACCELEROMETER LOCATIONS SUMMARY

Accelerometers	LOCATION	Coord. $\pm 3\text{mm}$		
		X	Y	Z
A	VEHICLE CG	1604	12	-405
B	LEFT FLOOR SILL	1676	-801	-314
C	A PILLAR SILL	2105	-753	-361
D	A PILLAR LOW	2129	-781	-536
E	A PILLAR MID	2141	-723	-763
F	B PILLAR SILL	1148	-836	-319
G	B PILLAR LOW	1136	-814	-571
H	B PILLAR MID	1126	-806	-810
I	DRIVER SEAT	1326	-813	-317
J1*	DRIVER DOOR LOW	1766	-710	-358
J2*	DRIVER DOOR MID	1756	-751	-785
J3*	DRIVER DOOR UPPER	1756	-742	-910
K	ENGINE	3027	-2	-760
L	FIRE WALL	2564	-29	-866
M	RIGHT ROOF	1282	408	-1390
N	RIGHT FLOOR SILL	1280	841	-315
O	REAR DECK	-910	-4	-491

Note: Positive X-direction measurements forward of rear axle centerline, positive Y-direction measurements right of vehicle longitudinal centerline, positive Z-direction measurements down from ground

REMARKS:

None

DATA SHEET 14
FUEL SYSTEM INTEGRITY SUMMARY

Test Vehicle: 2004 Mazda 6 NHTSA No.: C45401

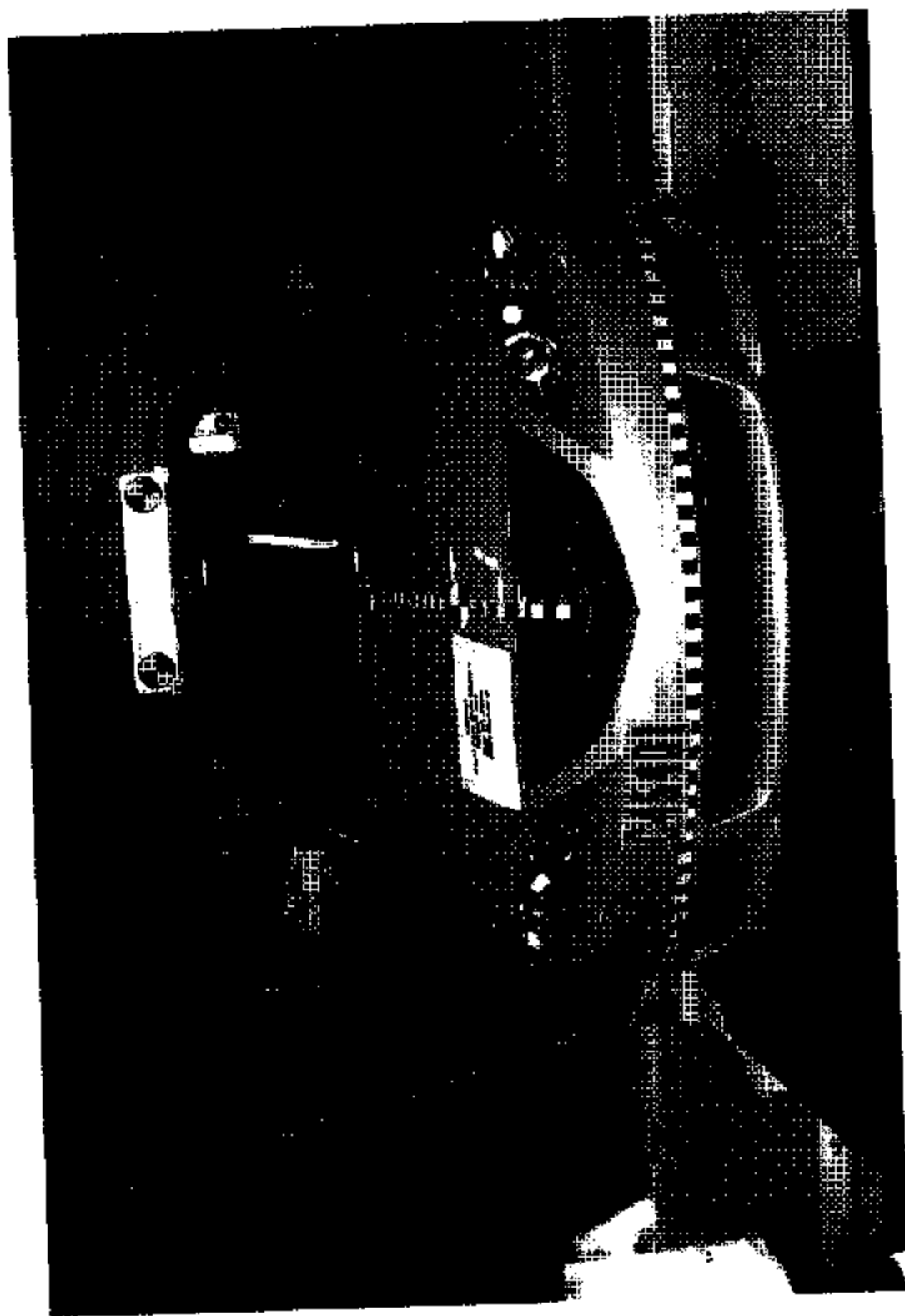
Amount of spillage from time of impact to static rollover test commencement = 0

TIME AND LEAKAGE LOG		
Cumulative Time	Description	Stoddard Spillage [mL]
0m, 0s	Begin driver side down rotation to -90 degrees	0
1m, 11s	End roll to -90 degrees	0
6m, 11s	End of 5-minute interval at -90 degrees; begin rotation to -180 degrees	0
7m, 20s	End roll to -180 degrees	0
12m, 20s	End of 5-minute interval at -180 degrees; begin rotation to -270 degrees	0
13m, 28s	End roll to -270 degrees	0
18m, 28s	End of 5-minute interval at -270 degrees; begin rotation to -360 degrees	0
19m, 36s	End roll to -360 degrees	0
24m, 36s	End of 5-minute interval at -360 degrees	0

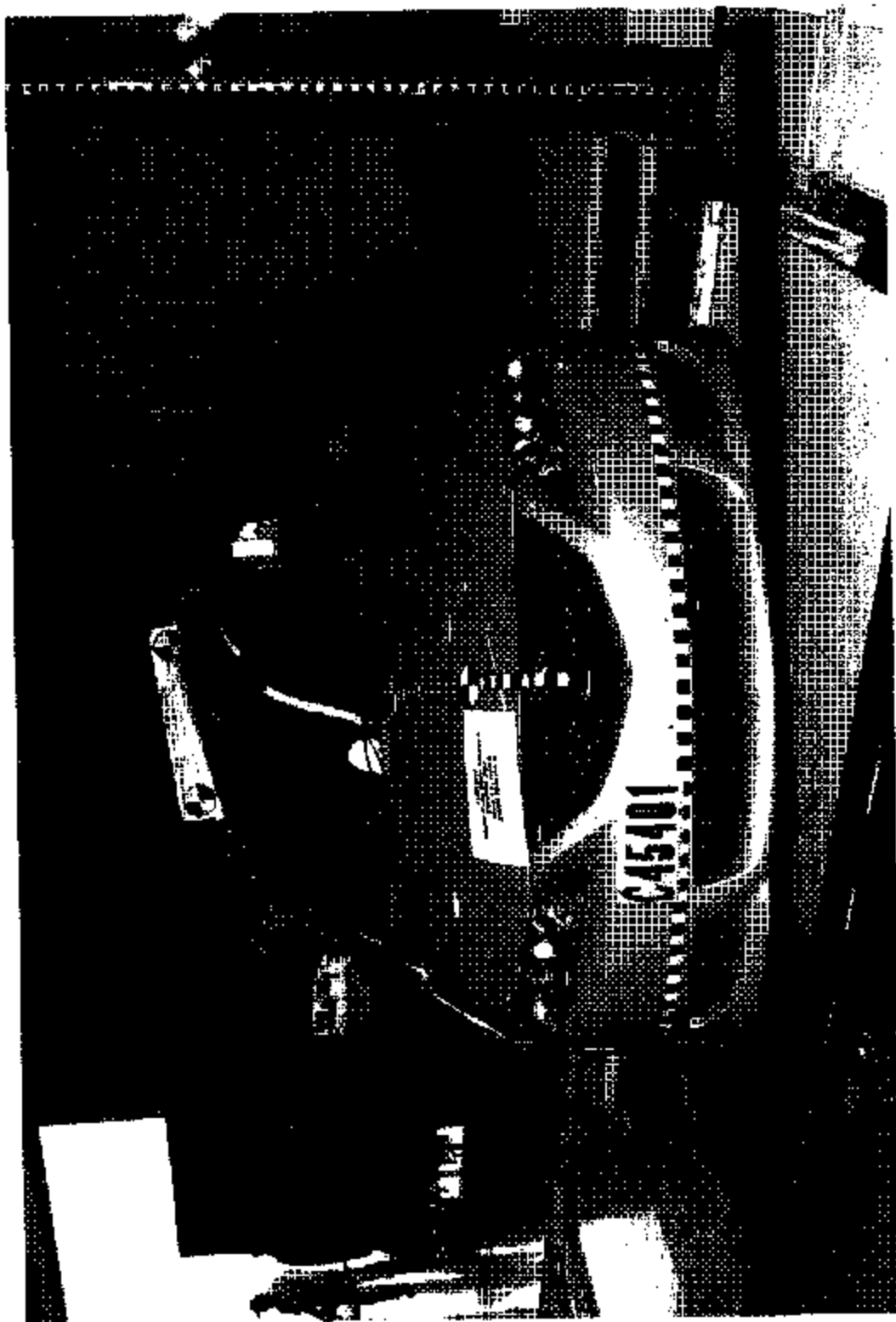
REMARKS:

None

Appendix A – Photographs

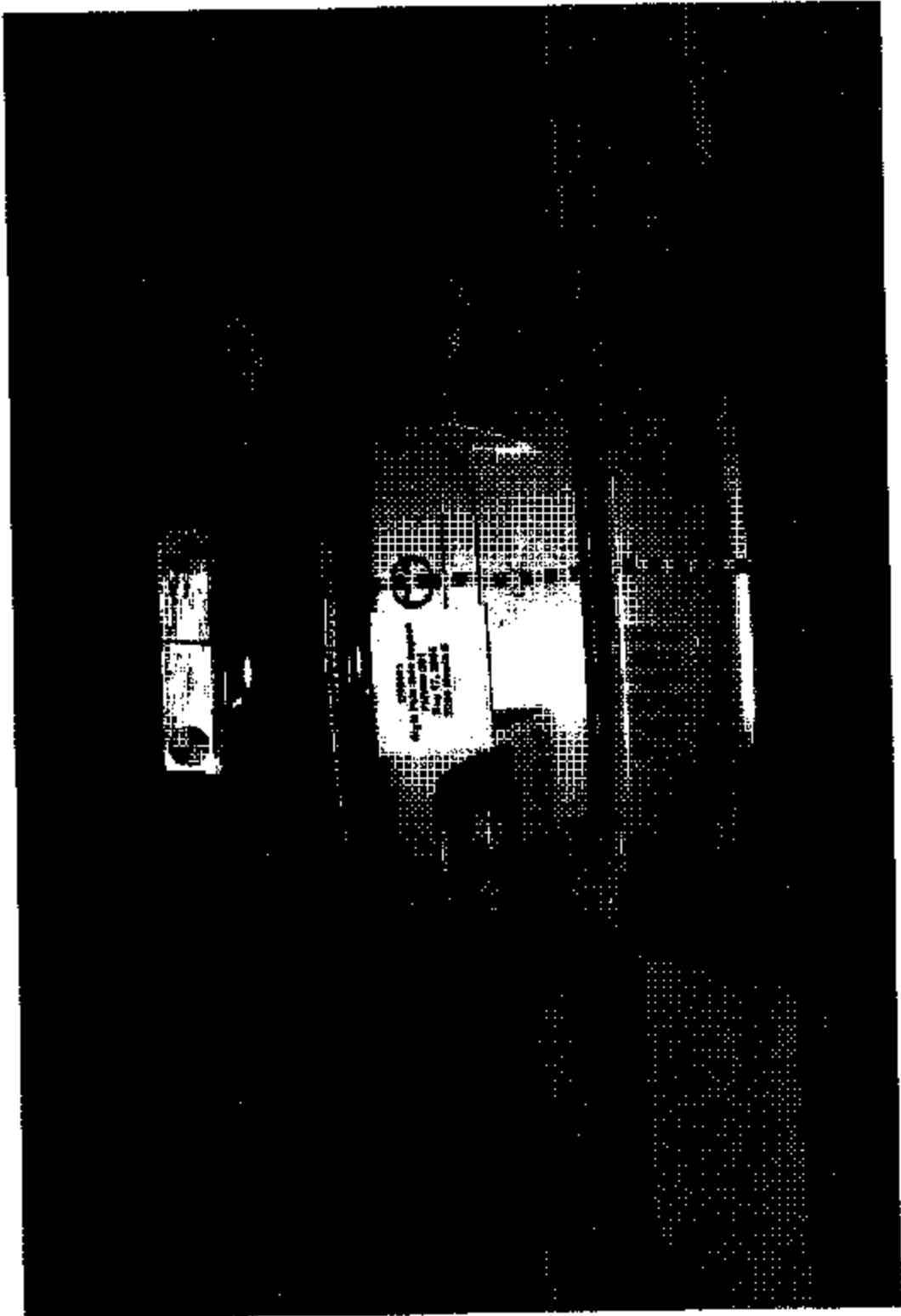


Pretest Frontal View of Test Vehicle
A-2



Post Test Frontal View of Test Vehicle

A-3



Pretest Rear View of Test Vehicle



Post Test Rear View of Test Vehicle

A-5

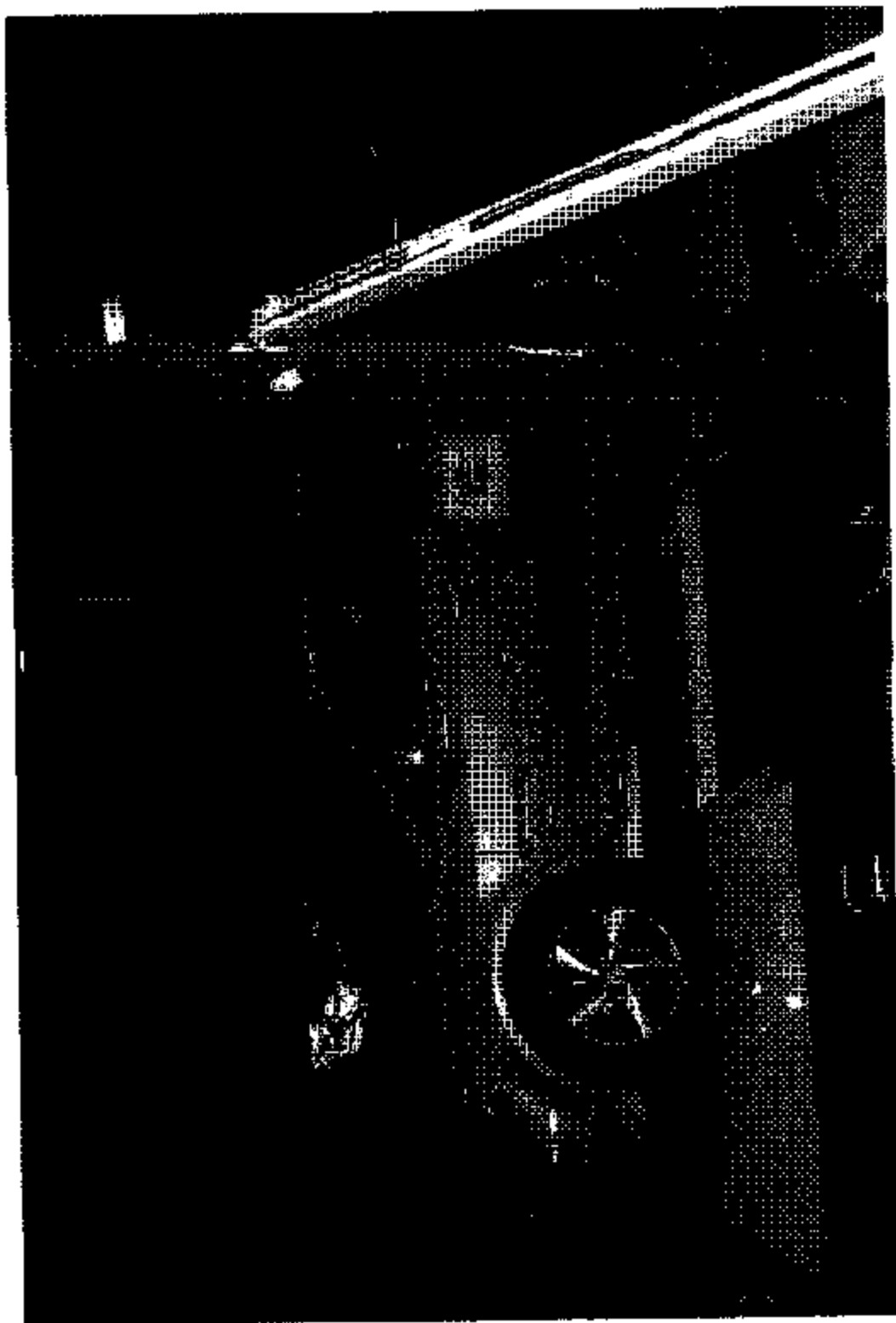


Pretest Impacted Side View of Test Vehicle

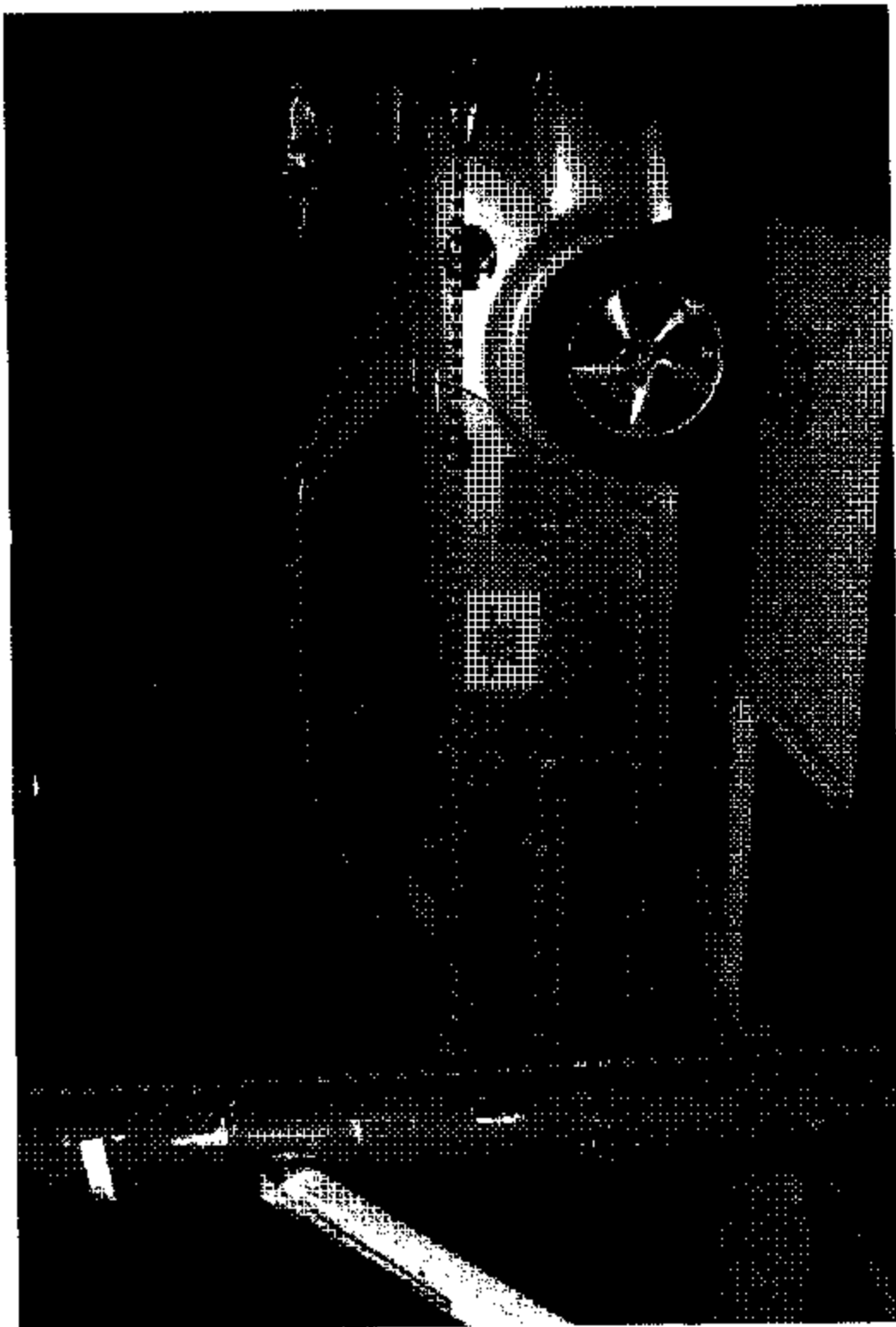
A-6



Post Test Impacted Side View of Test Vehicle
A-7



Pretest Left $\frac{3}{4}$ Front View of Vehicle and Pole
A-8

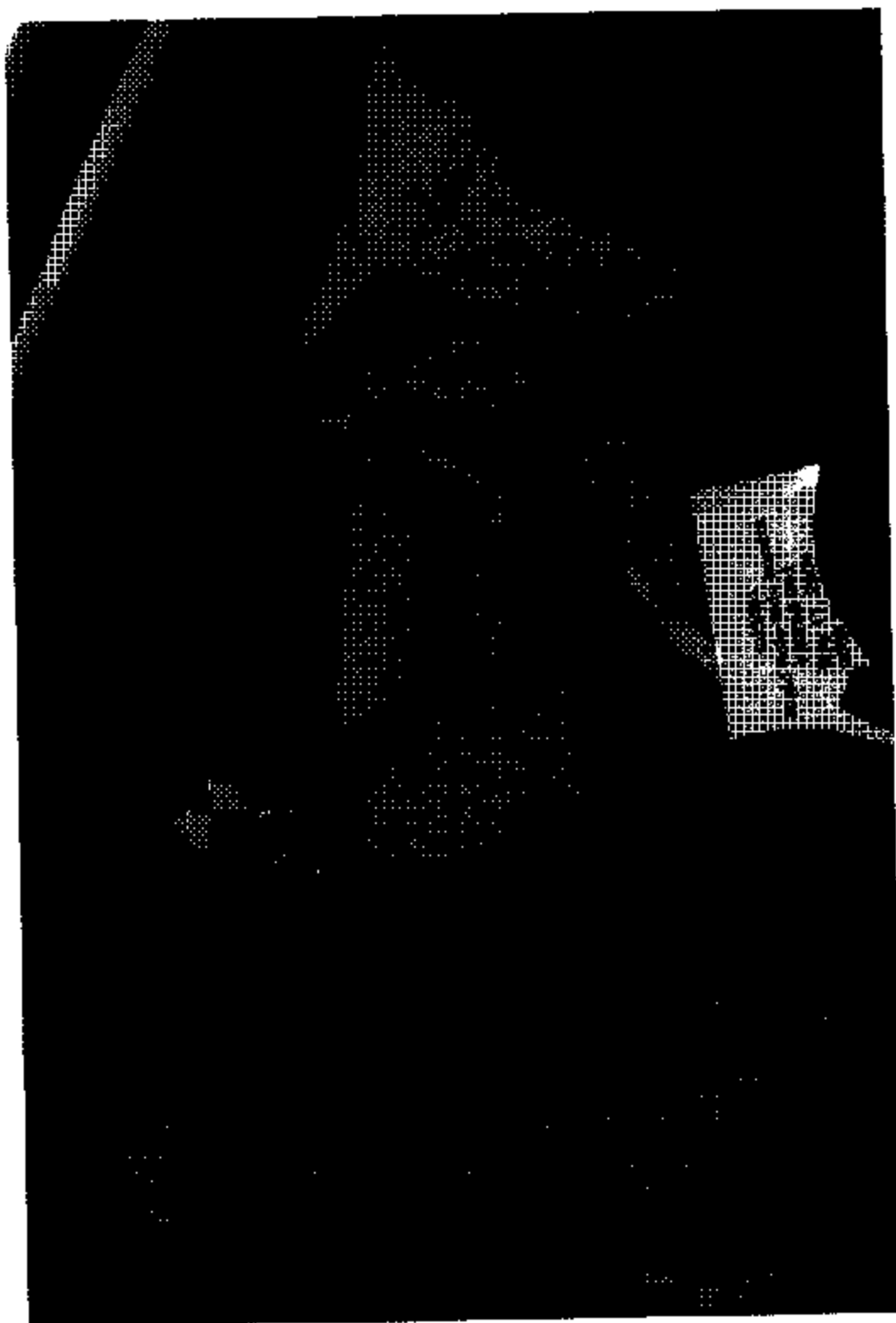


Pretest Left $\frac{3}{4}$ Rear View of Vehicle and Pole

A-9

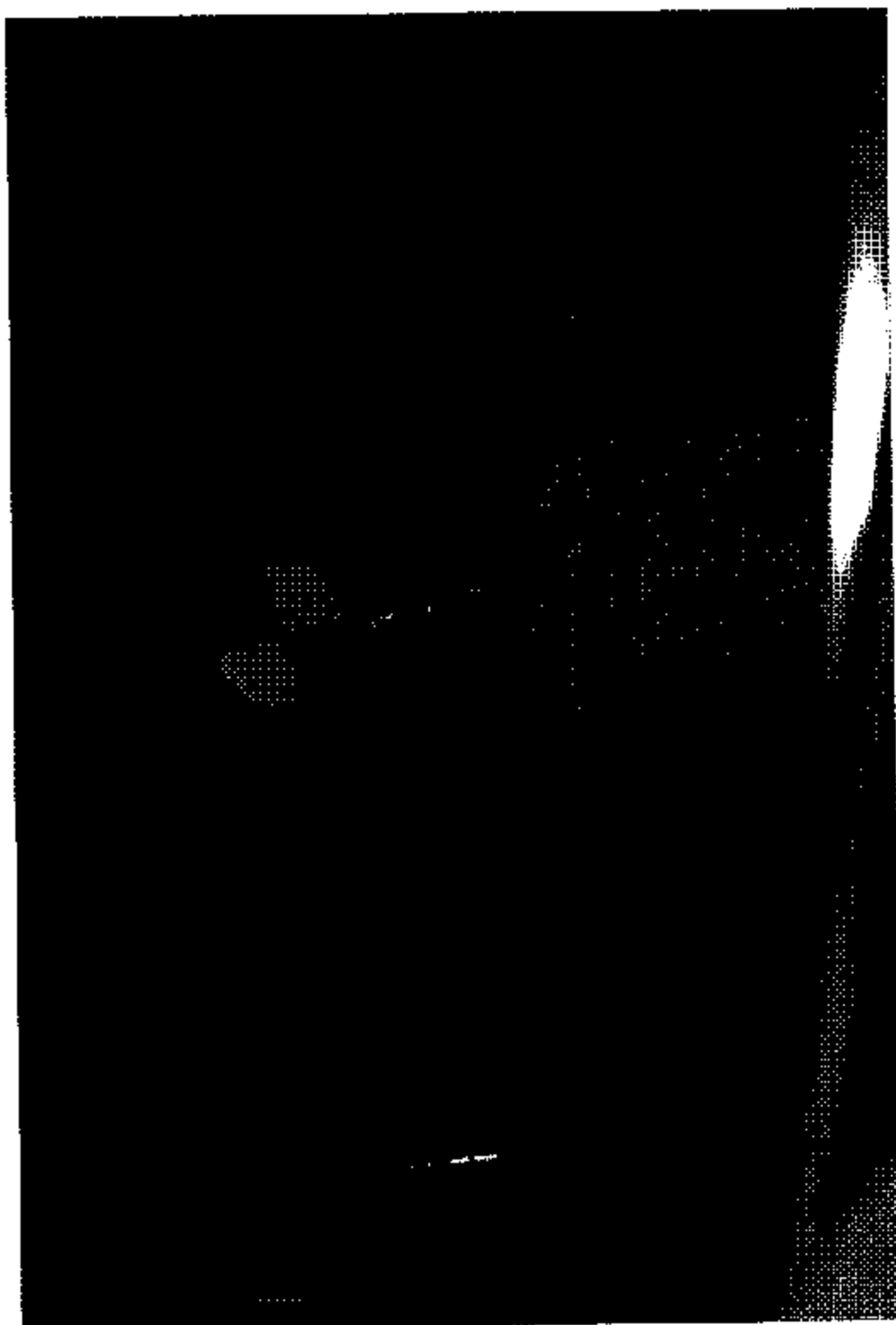


Post Test Overhead View of Impact location on Test Vehicle
A-10

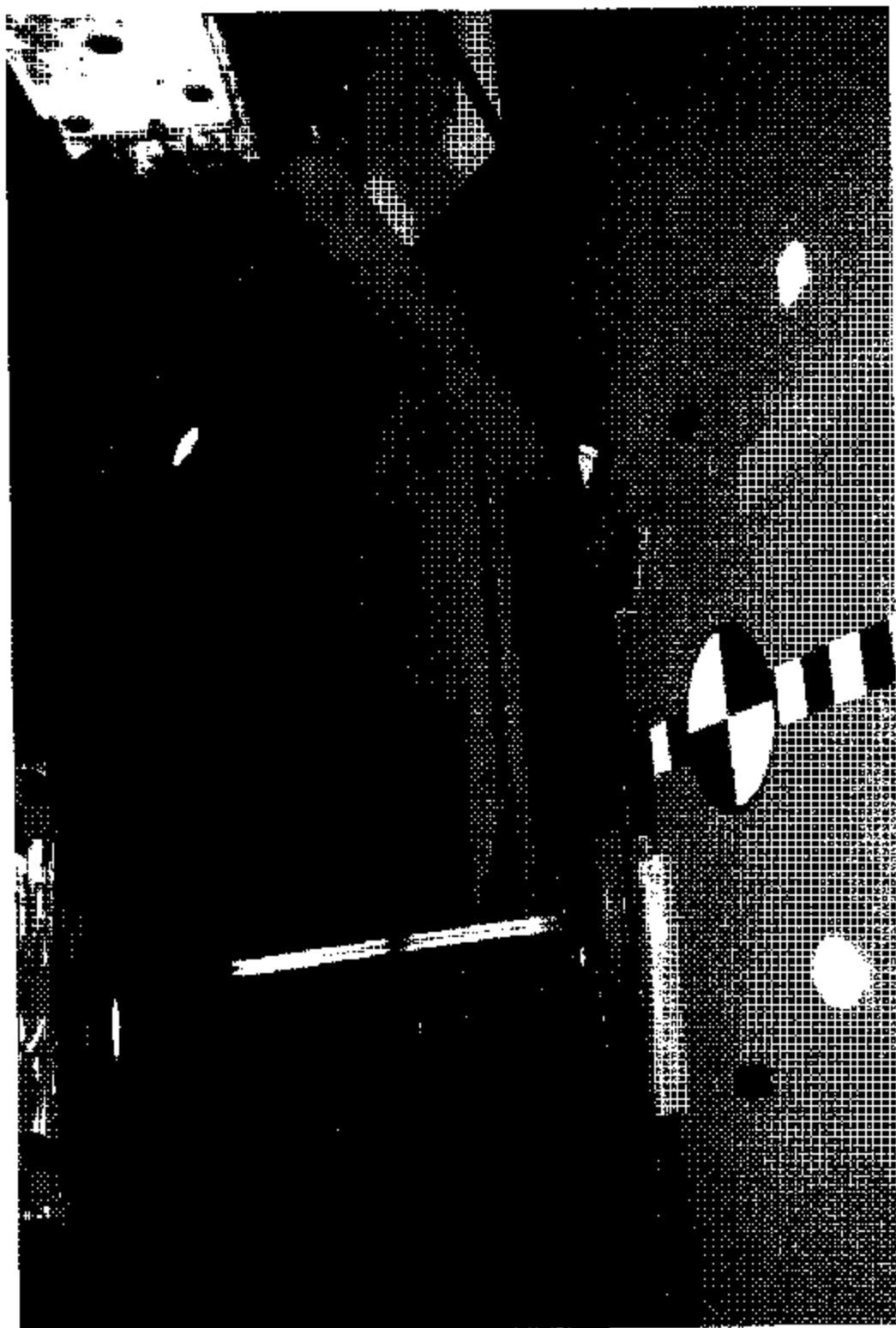


Pretest Dummy thru Opposite Window

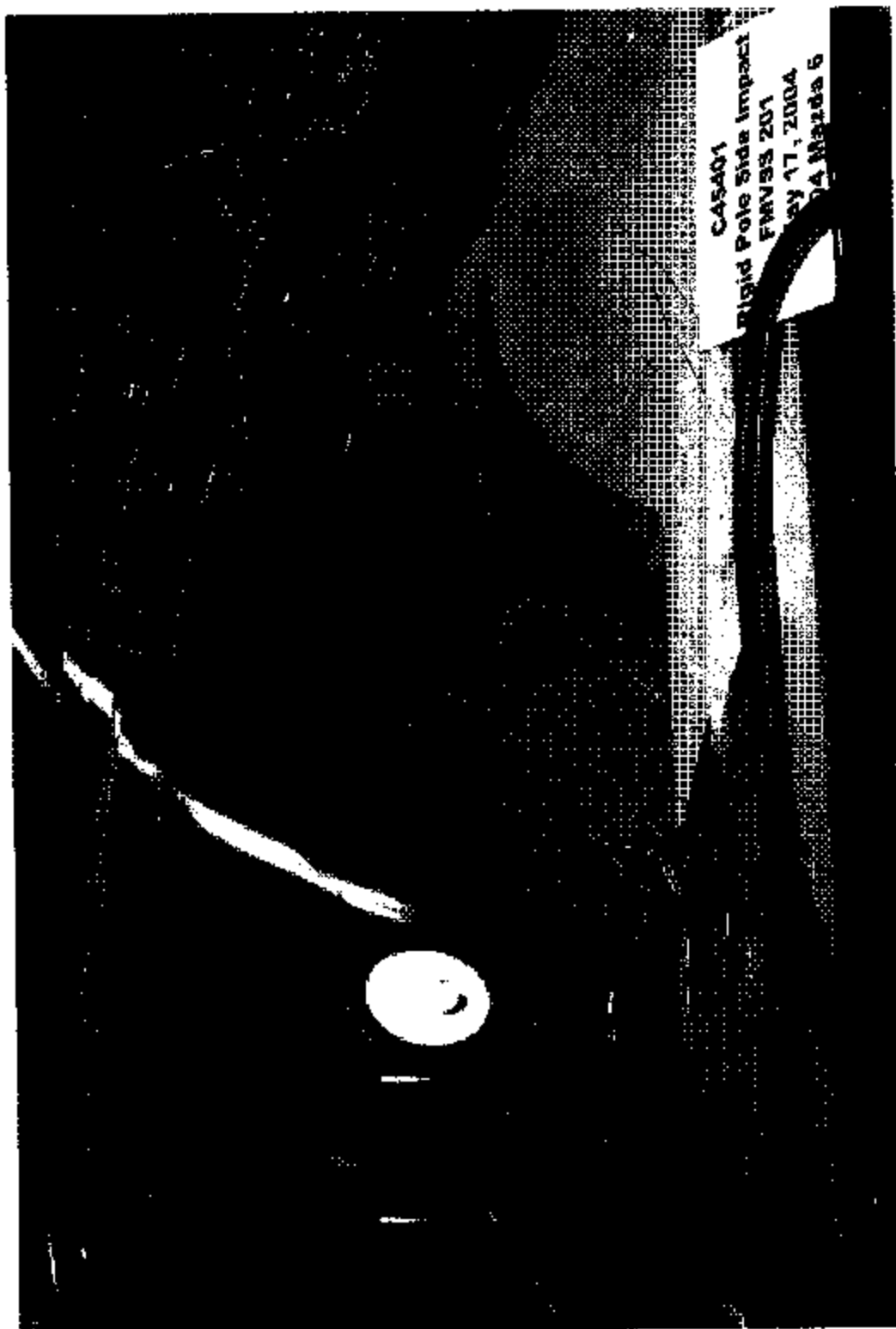
A-11



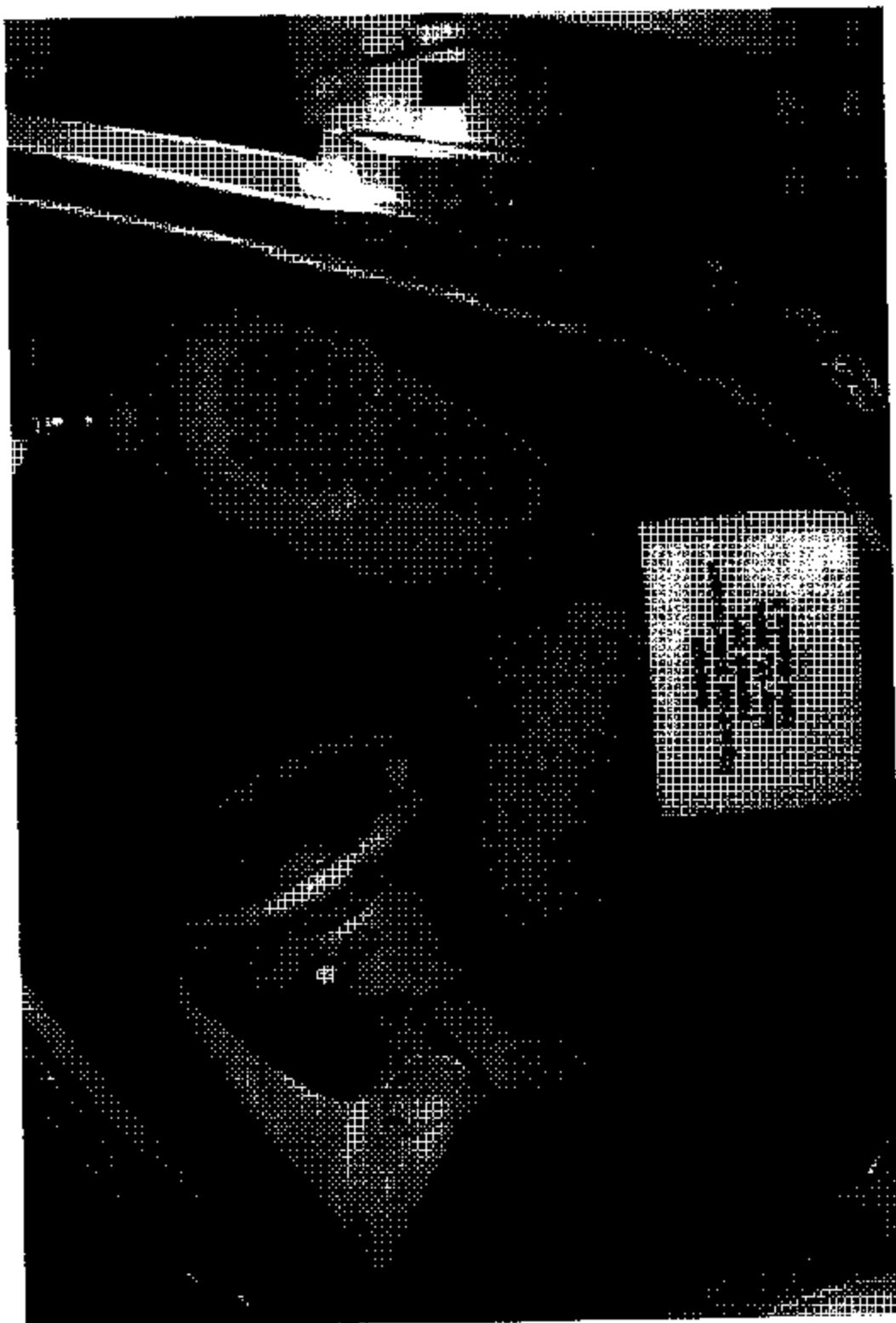
Post Test Dummy thru Opposite Window
A-12



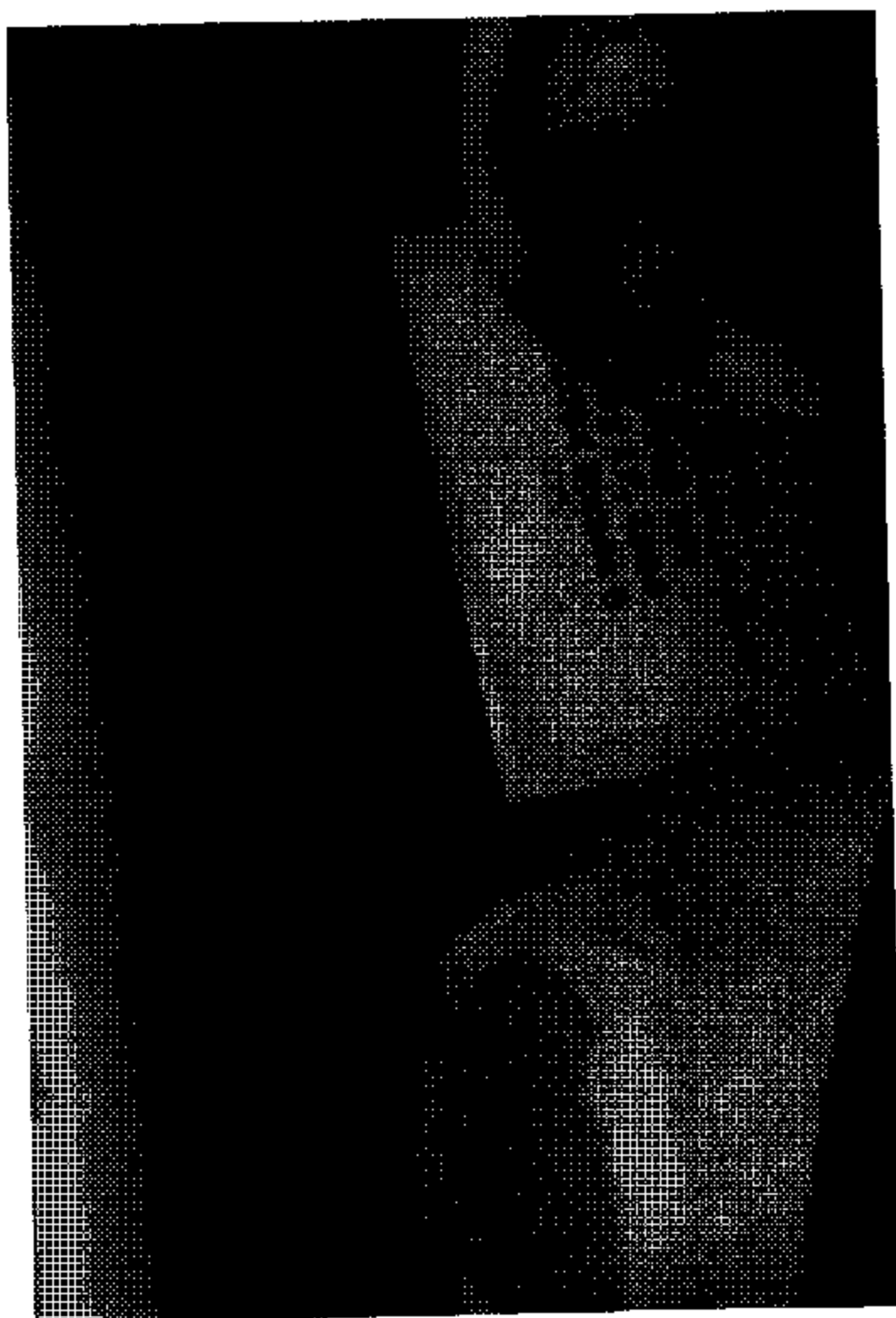
Pretest Dummy Front View thru Windshield



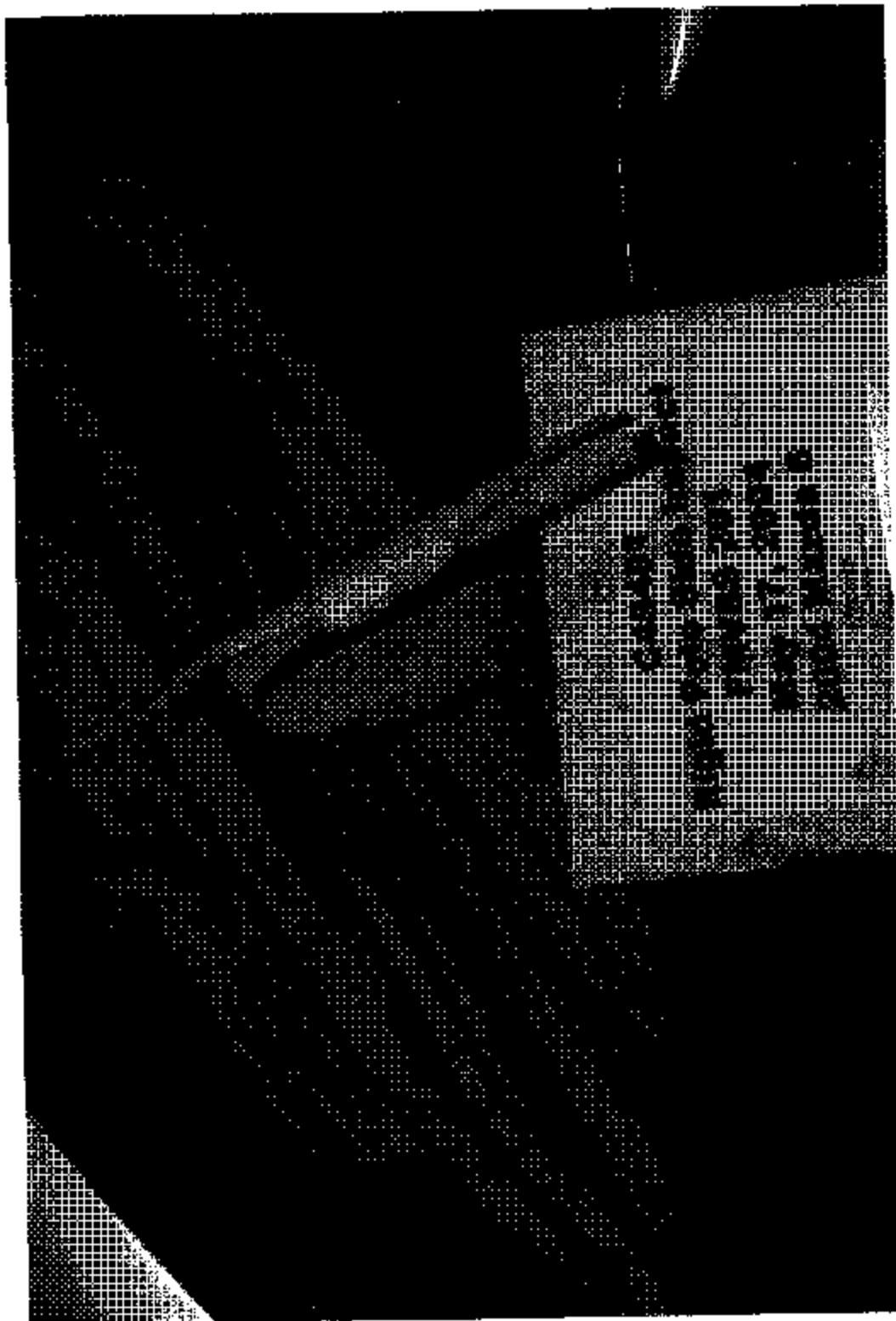
Post Test Dummy Front View thru Windshield



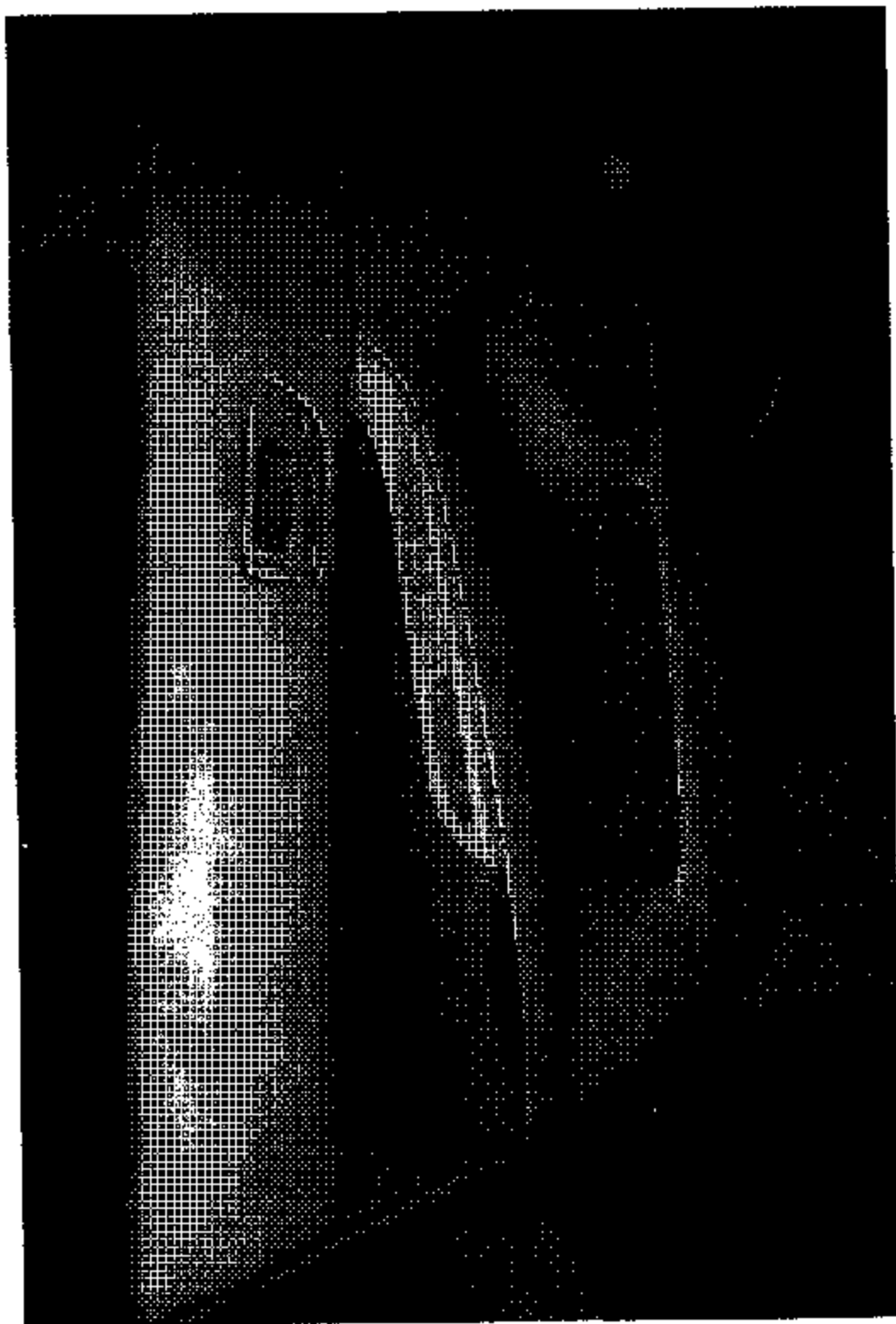
Pretest Dummy Door Open



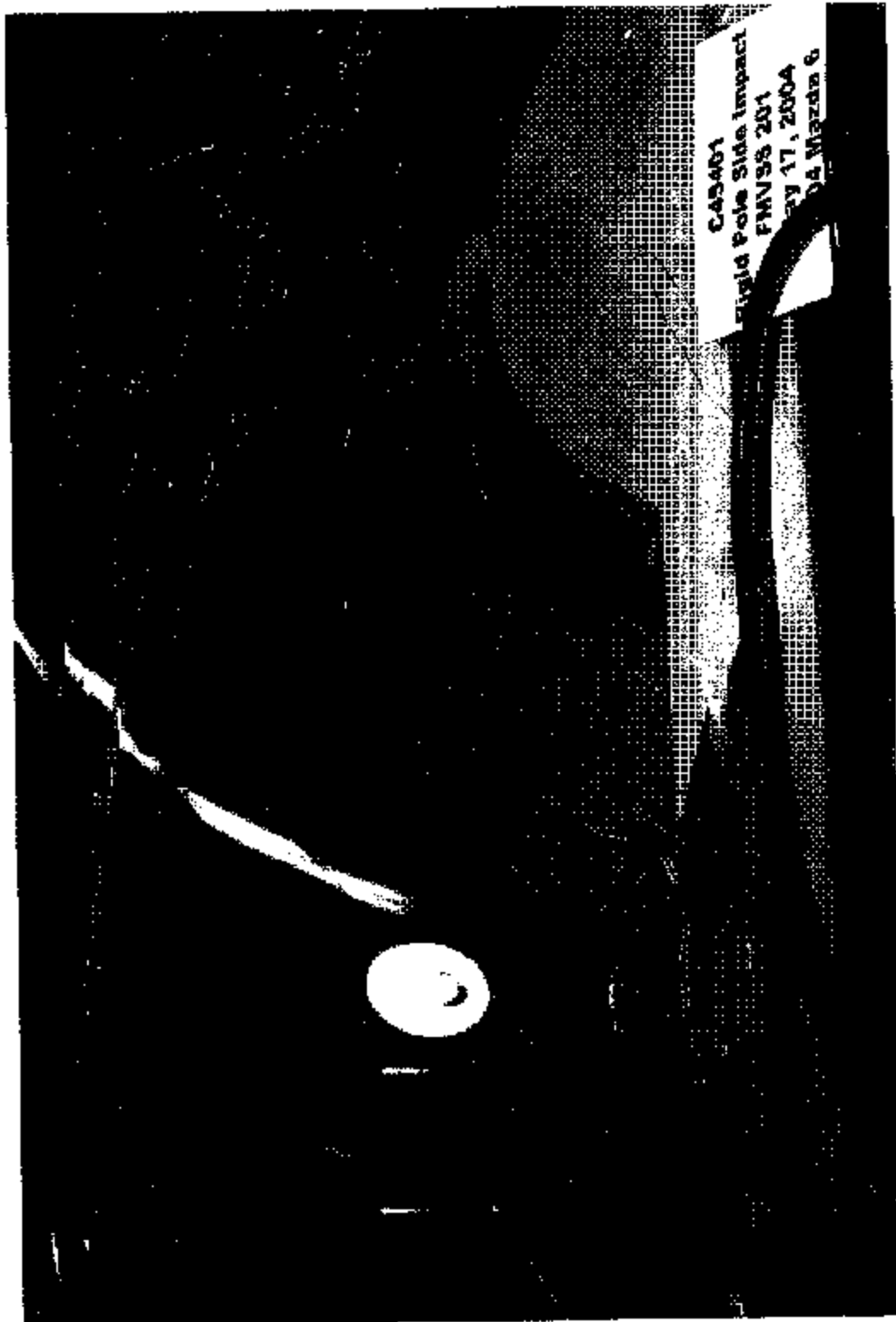
Pretest Dummy Shoulder and Door Top View



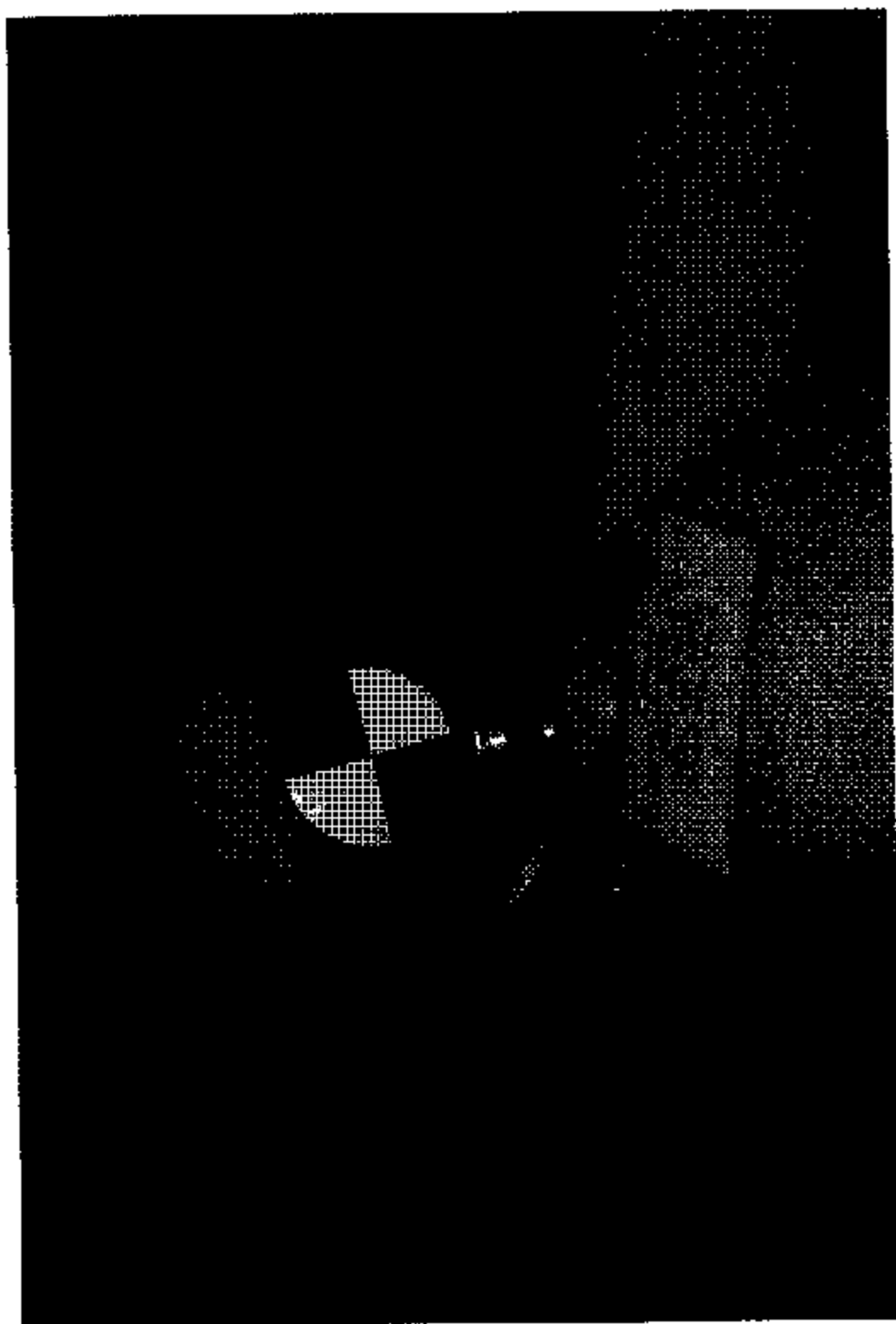
Post Test Dummy Shoulder and Door Top View



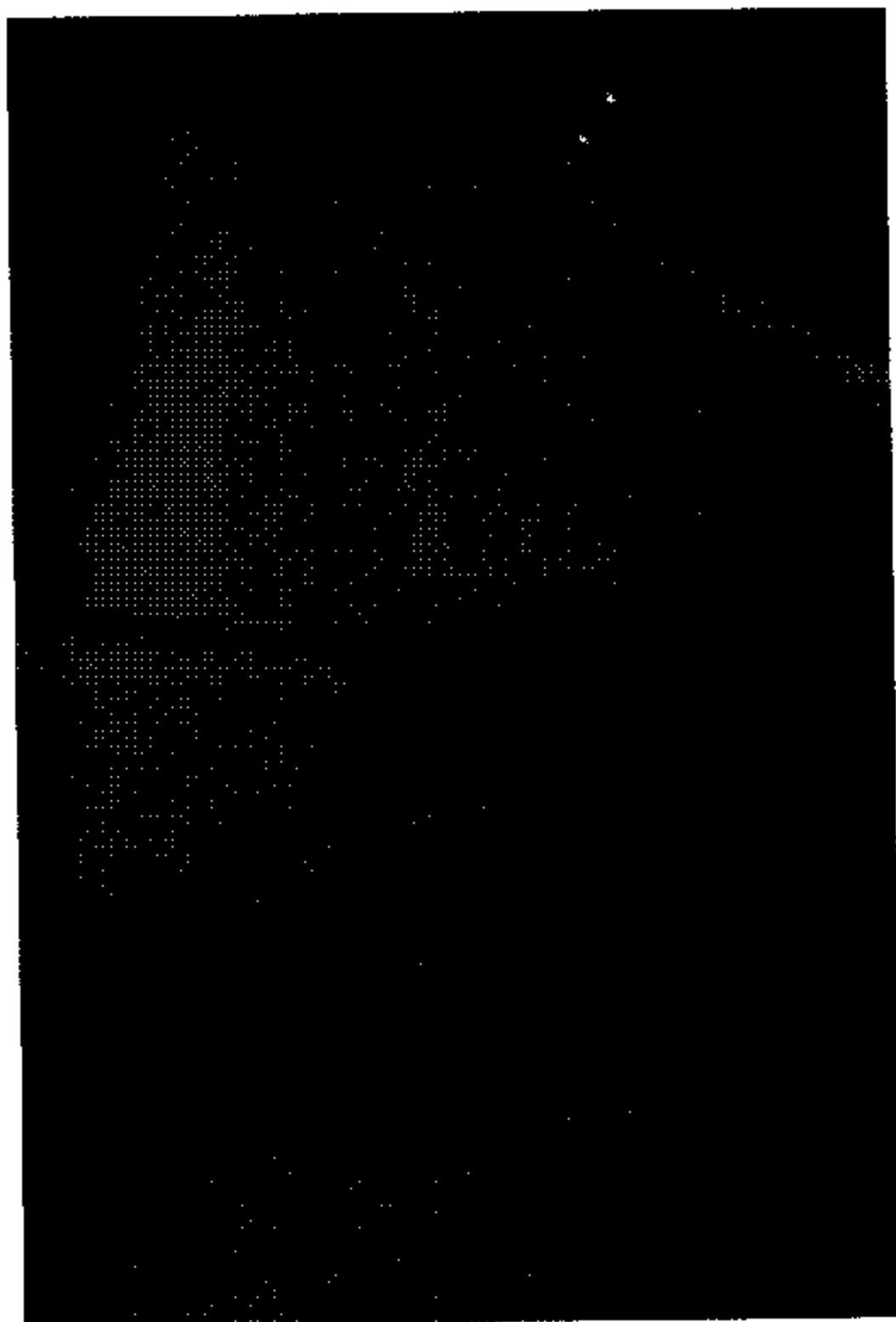
Pretest Interior of Front Door



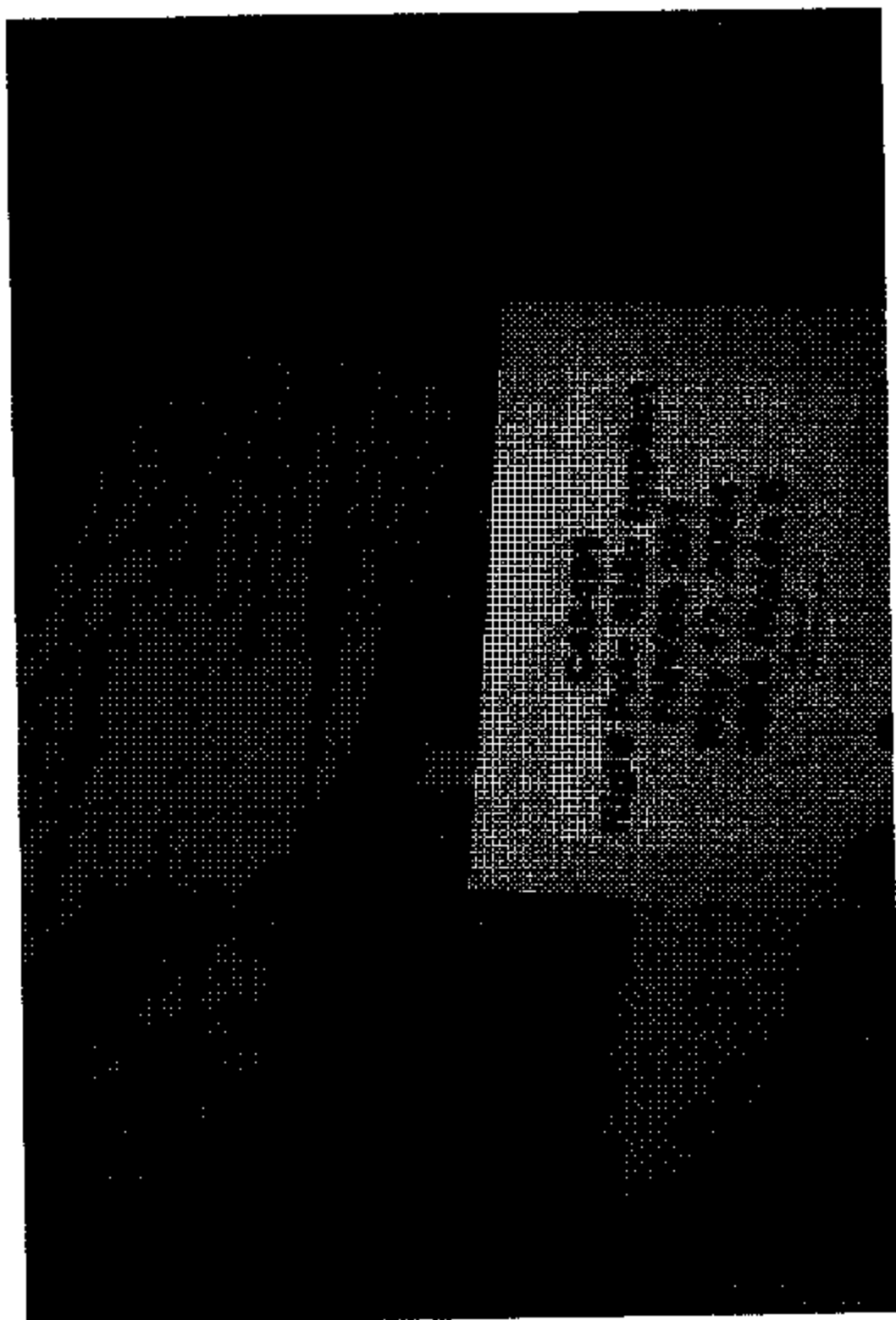
Post Test Interior of SID/HIII Impact Location – Front View



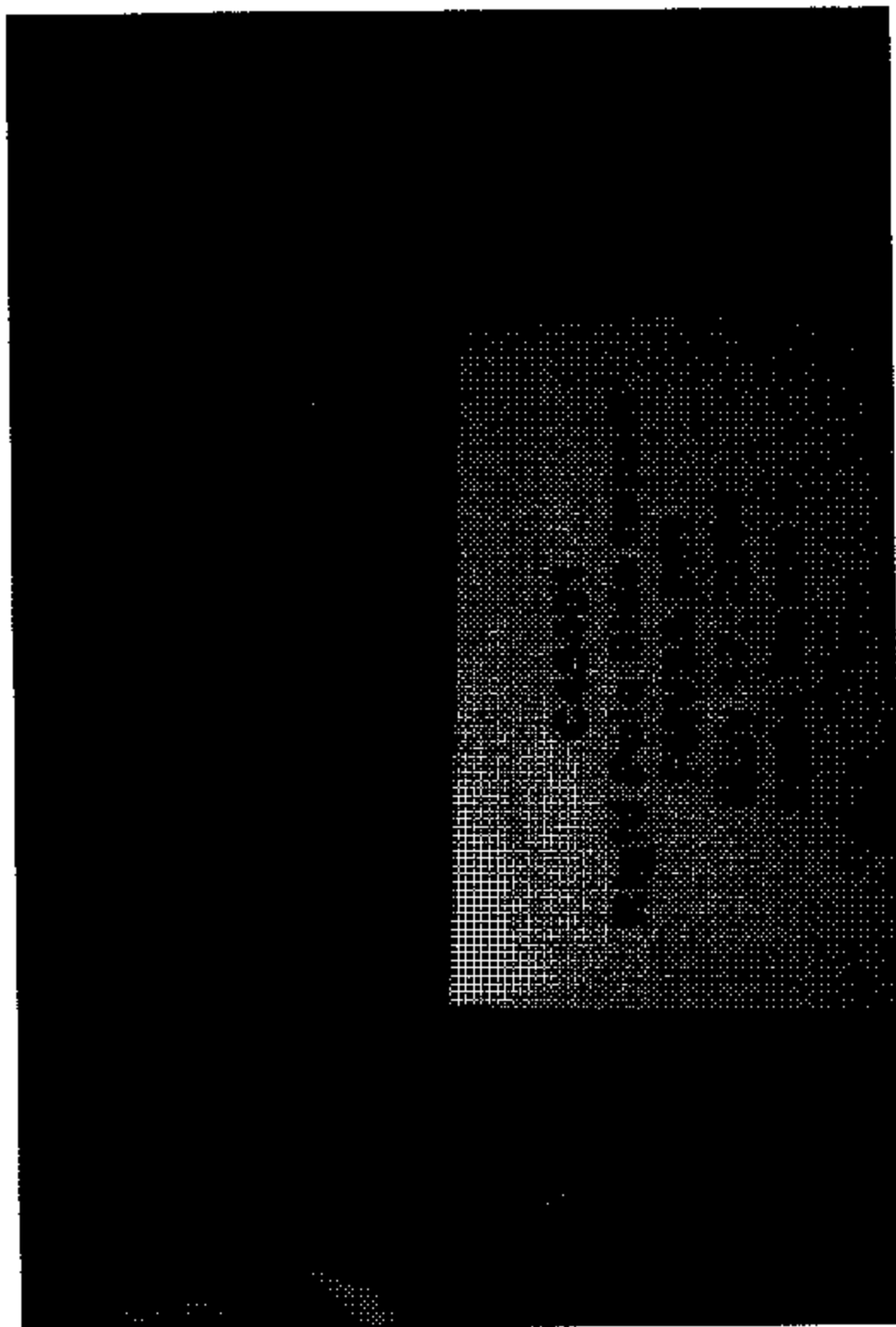
Post Test Interior of SID/HIII Impact Location – Side View



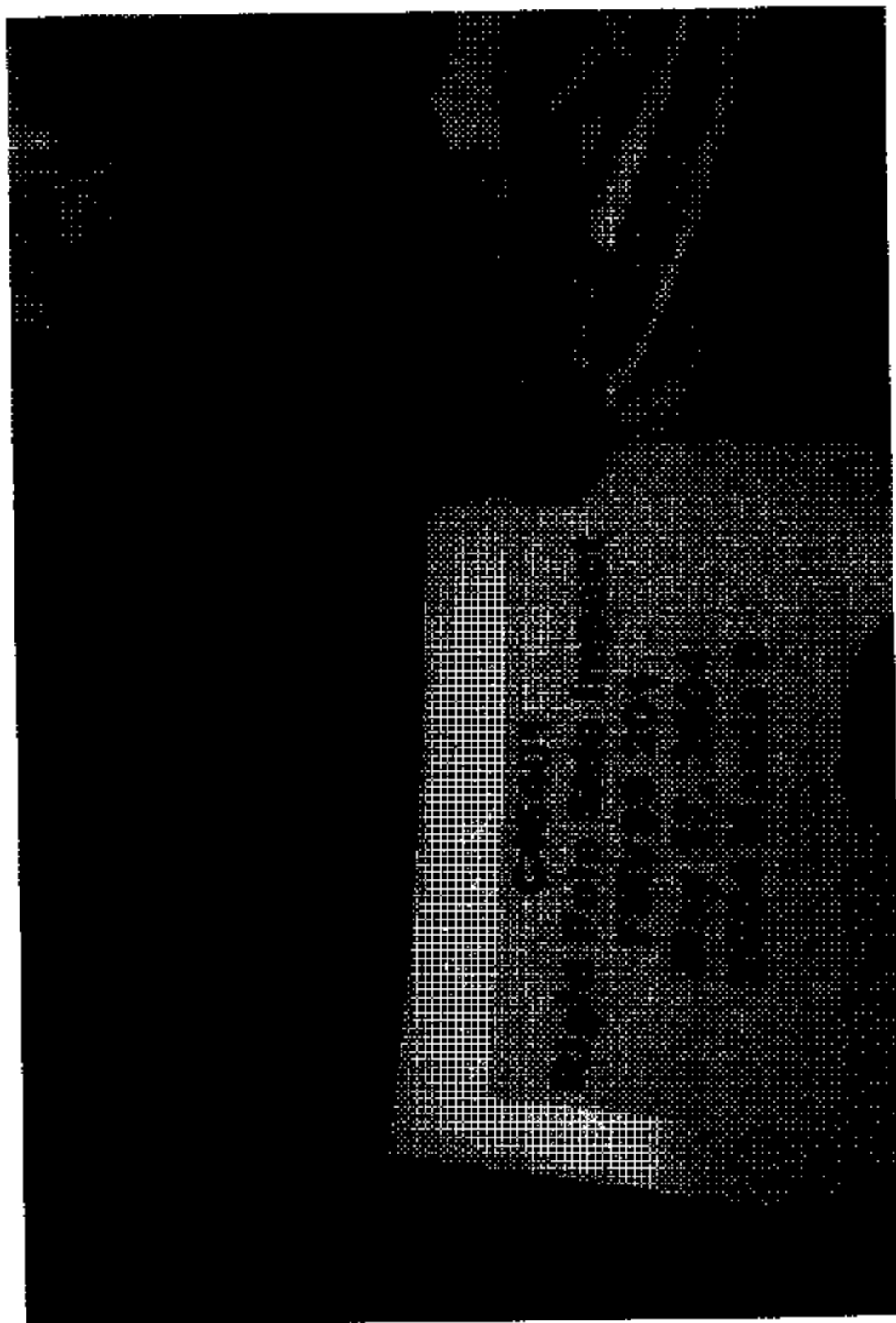
Post Test Interior of SID/HIII Impact Location –
Shoulder Contact Point



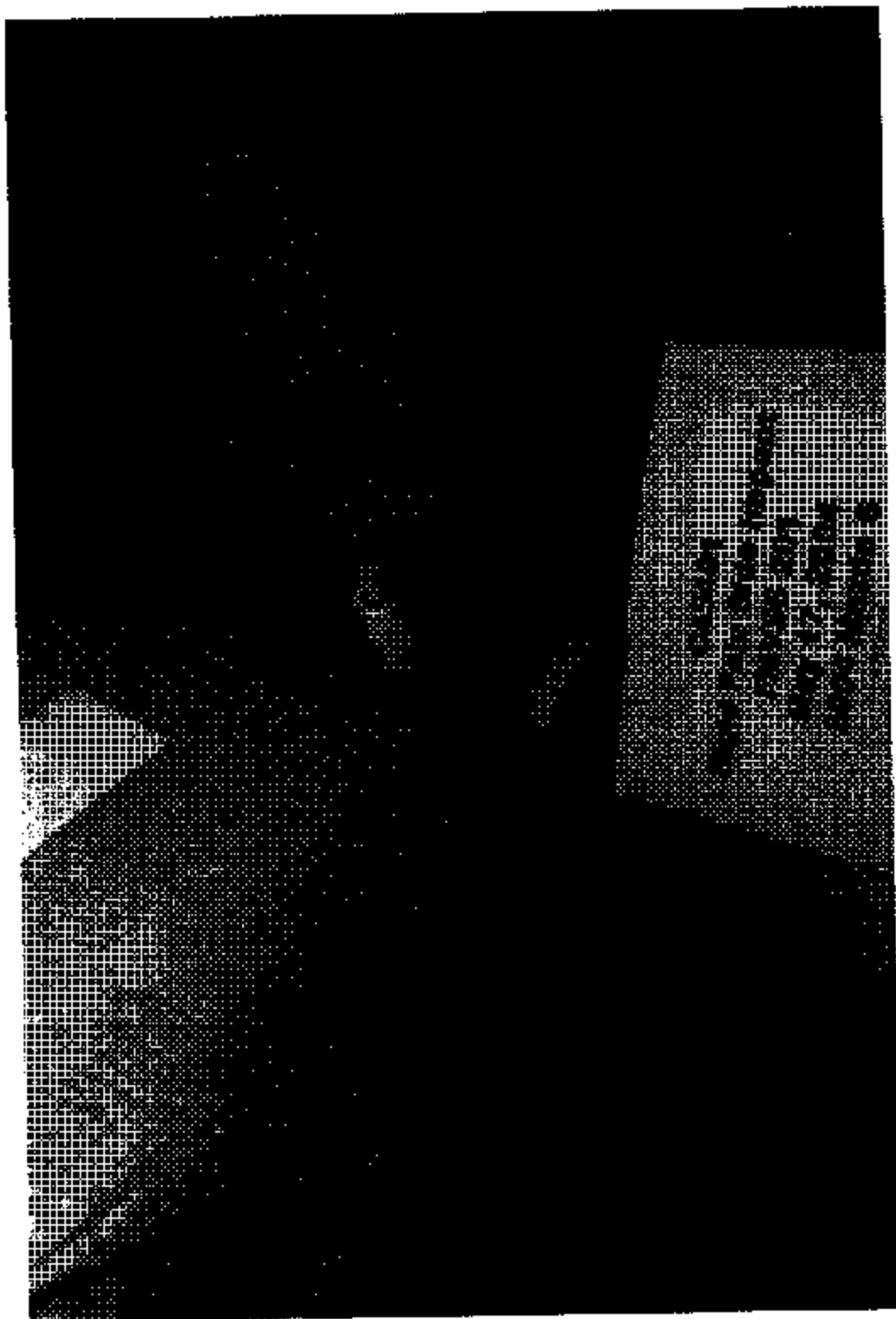
Post Test Interior of SID/HIII Impact Location –
Head Contact Point



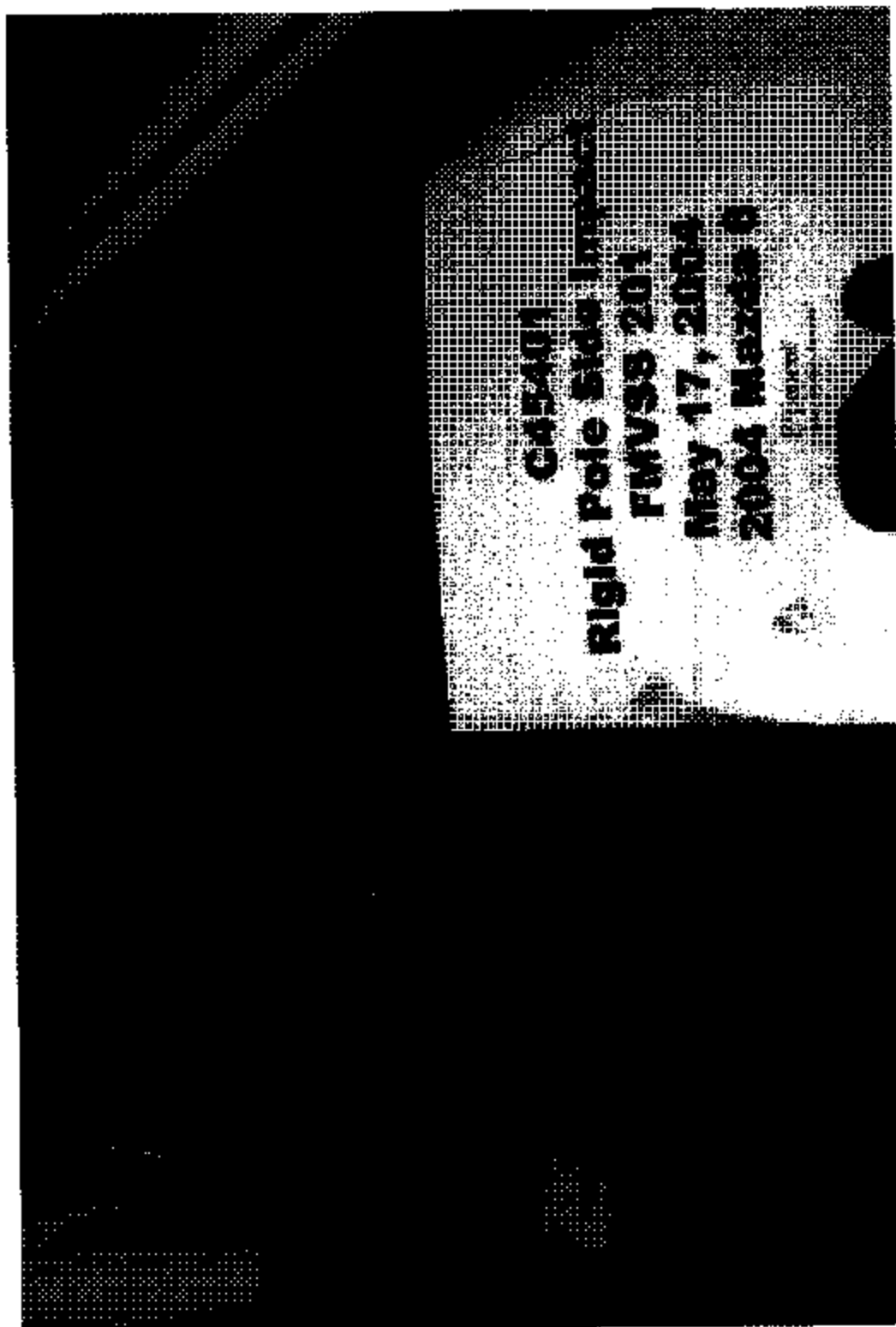
Post Test Interior of SID/HIII Impact Location --
Head Contact Point



Post Test Interior of SID/HIII Impact Location –
Head Contact Point



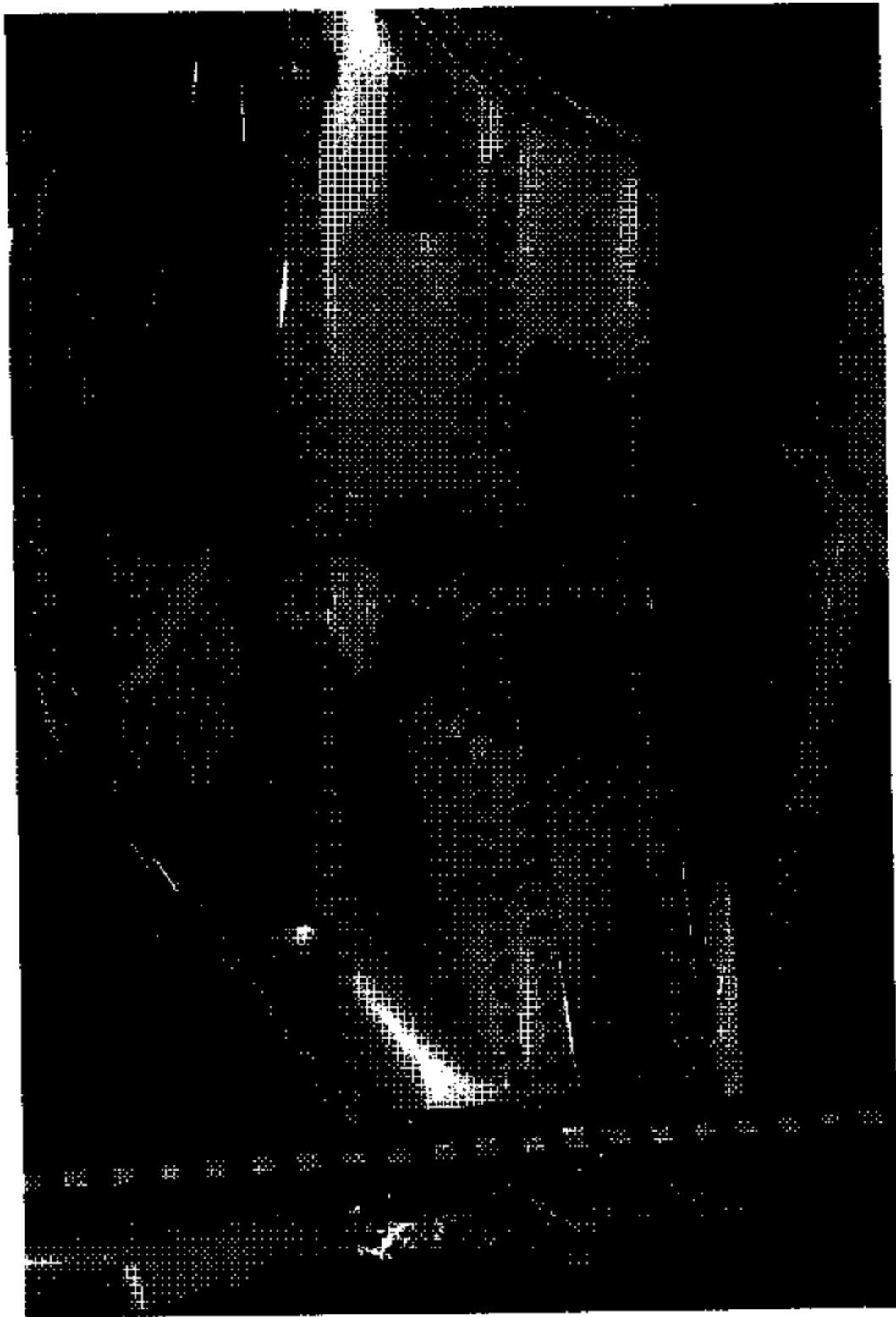
Post Test Interior of SID/HIII Impact Location –
Contact with Parking Brake Lever



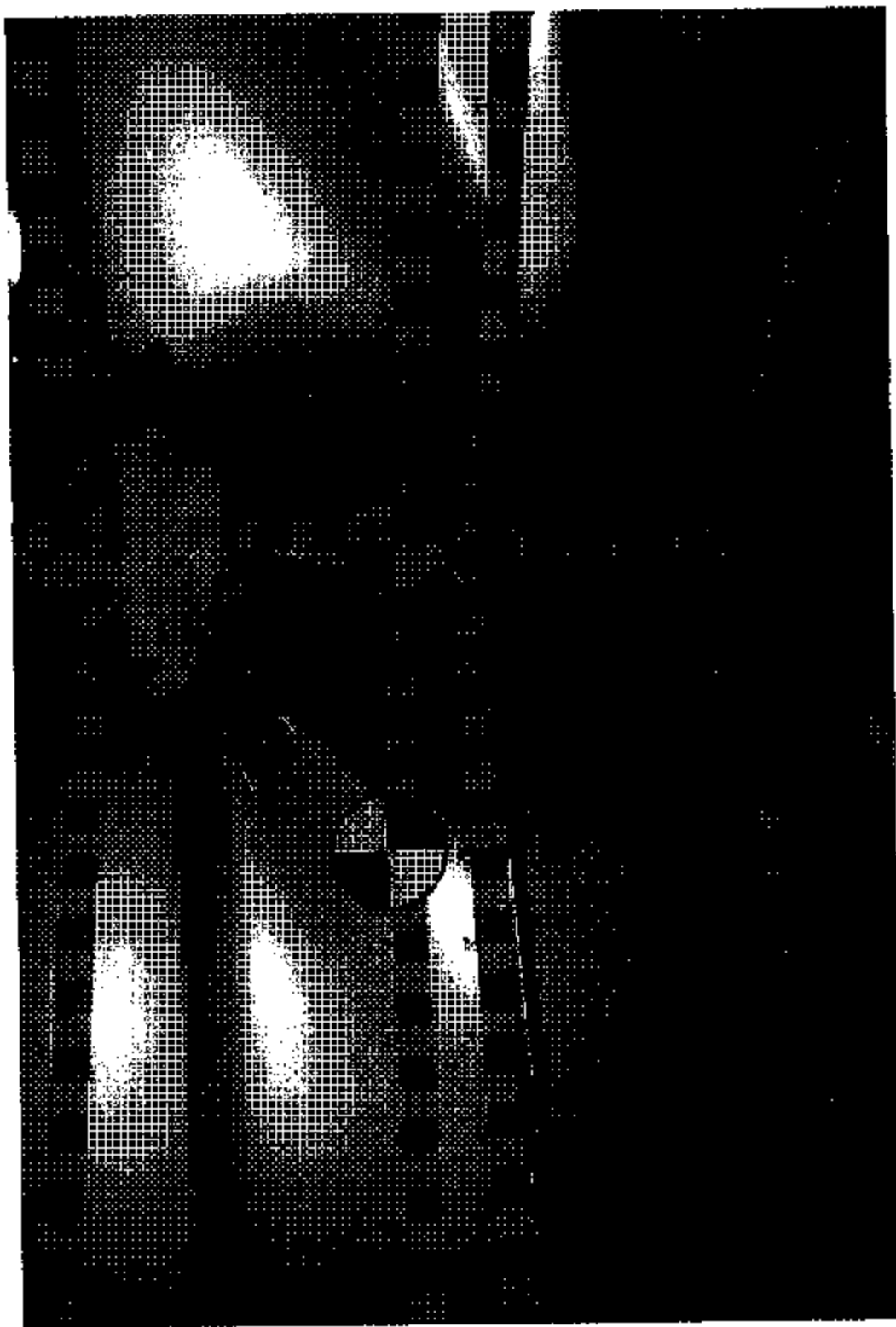
Post Test Interior of SID/HIII Impact Location --
Shoulder Contact Point



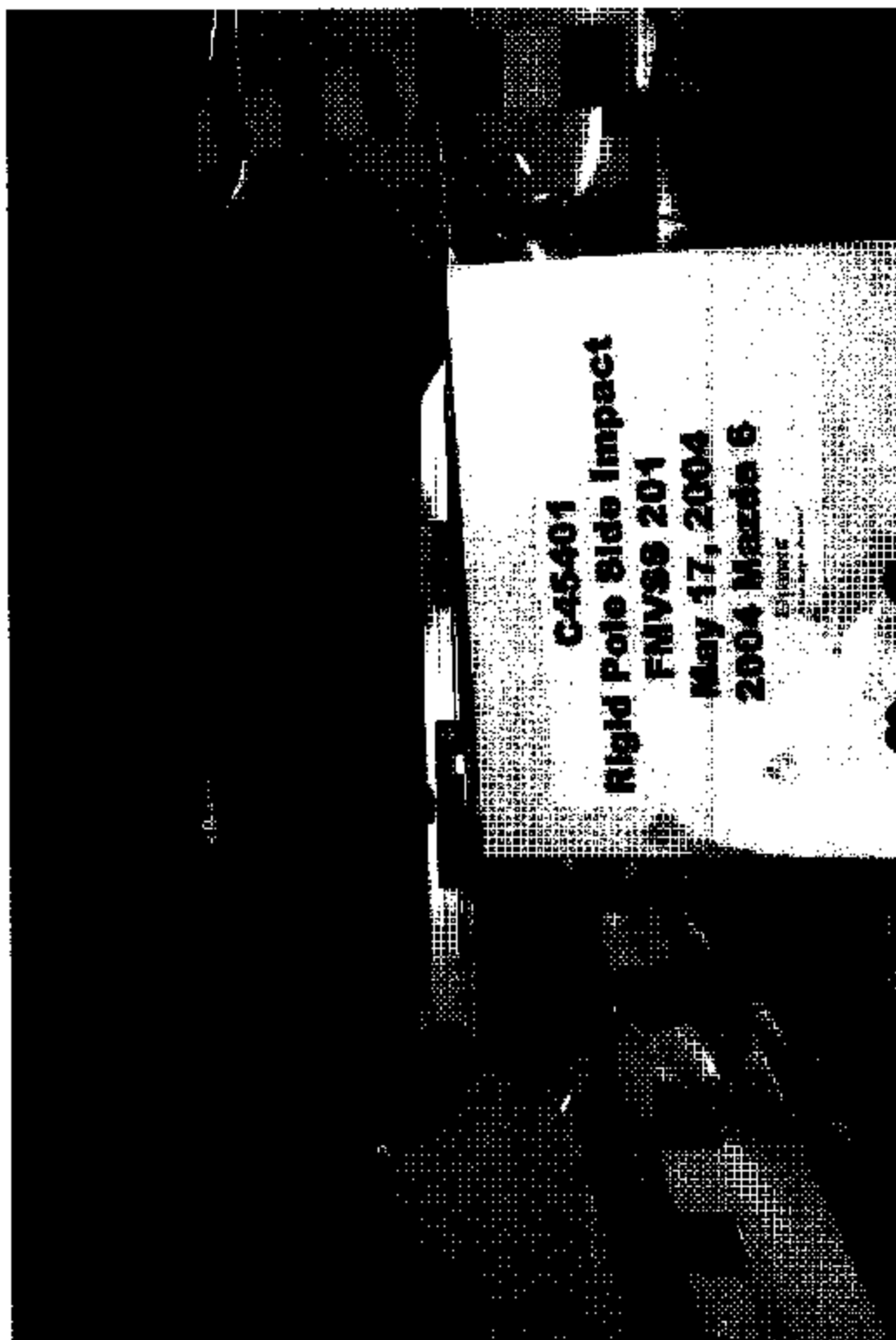
Post Impact
A-27



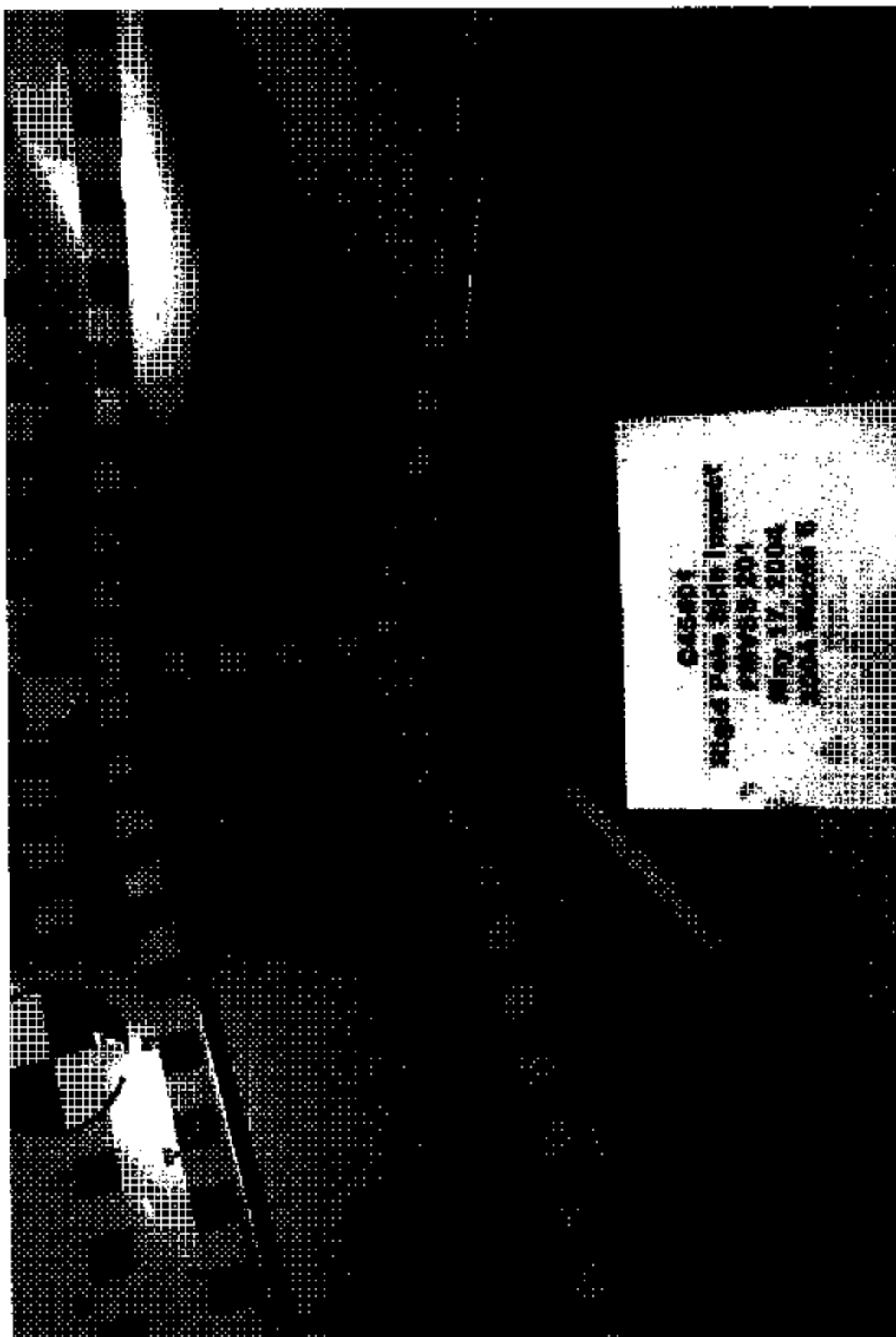
Post Impact Zone — Close-up View
A-28



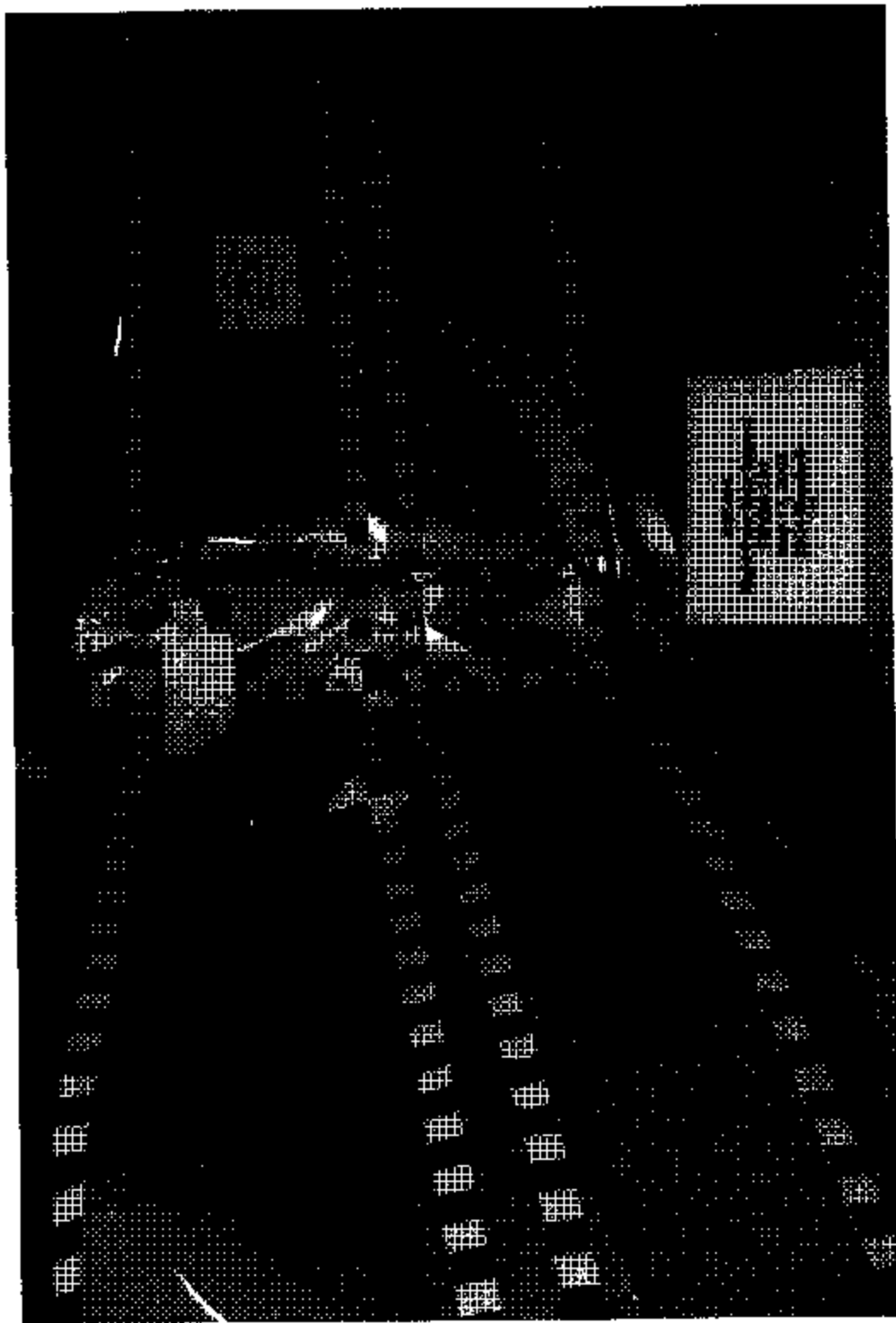
Post Impact Zone – Close-up View



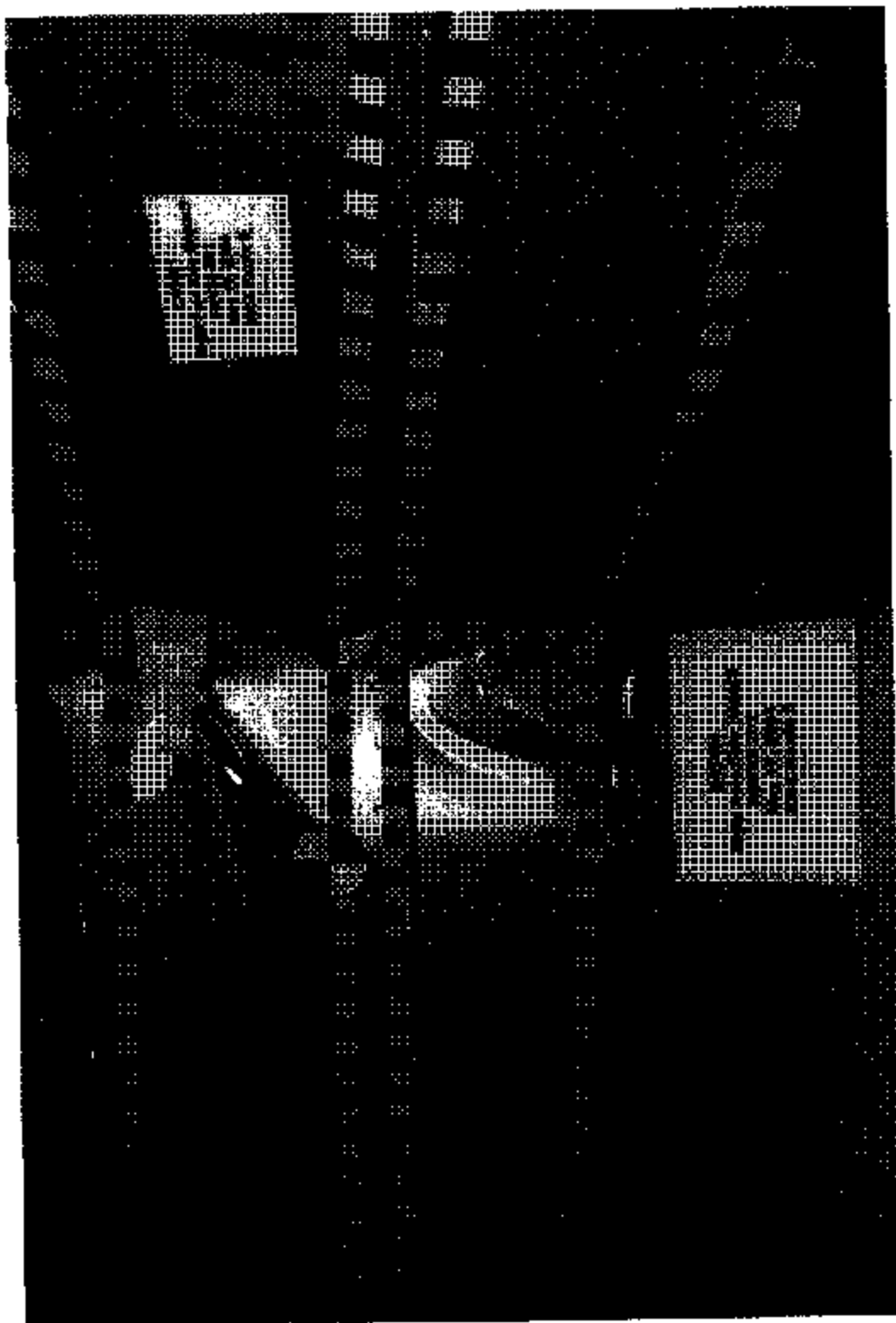
Post Impact Zone – Close-up View of Roof



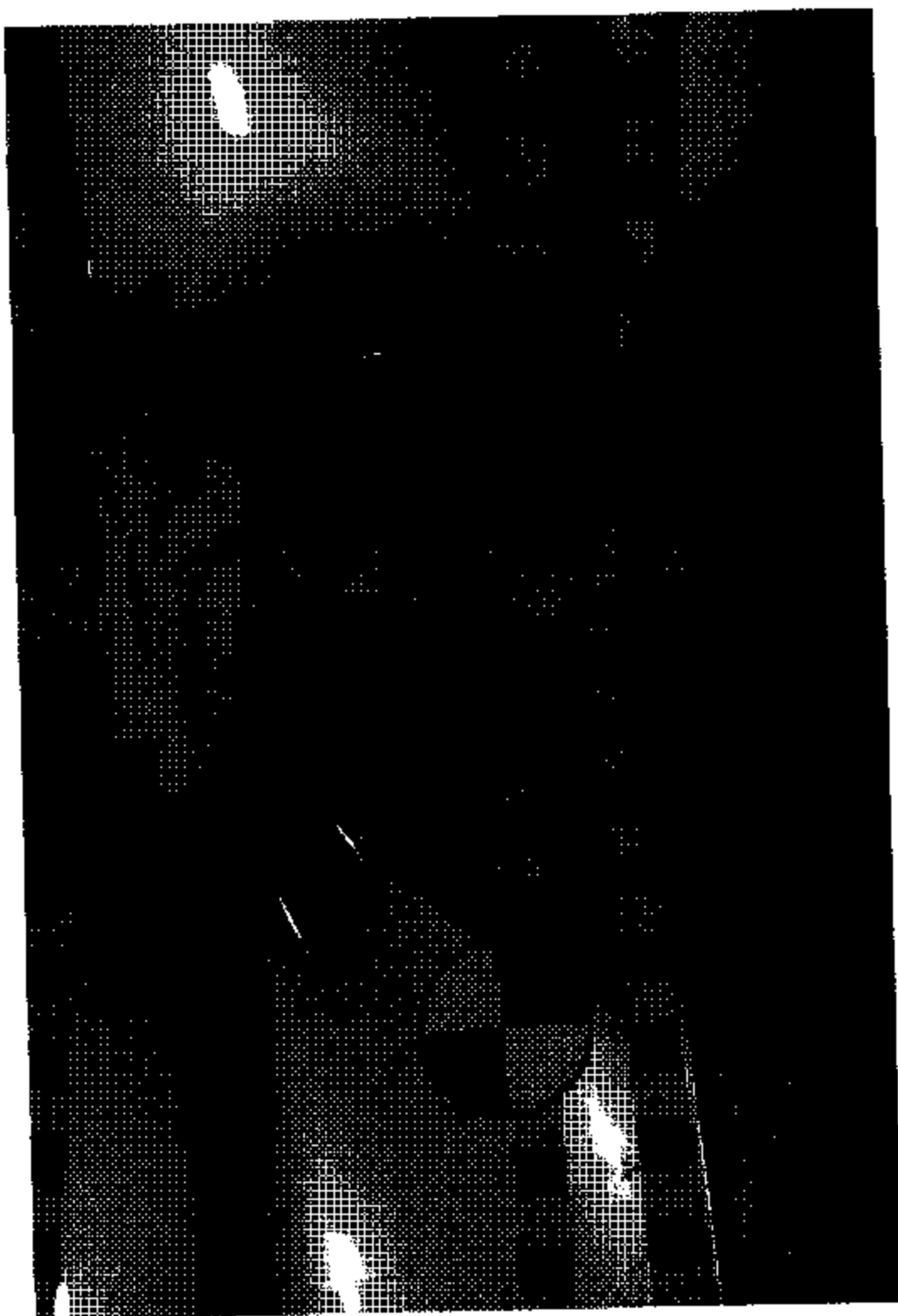
Post Impact Zone – Close-up View of Sill
A-31



Post Impact Zone - $\frac{3}{4}$ Front View
A-32

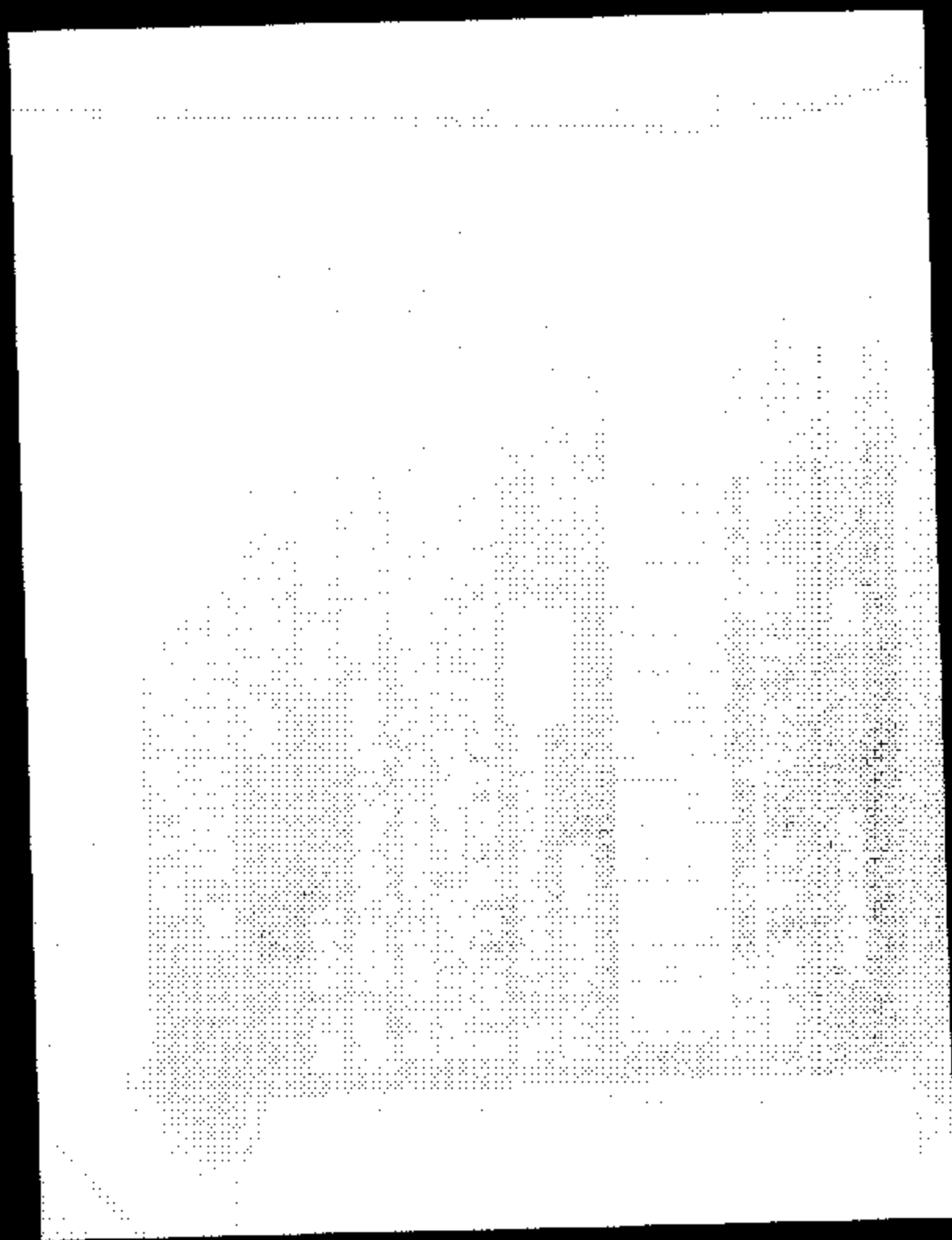


Post Impact Zone - $\frac{3}{4}$ Rear View
A-33

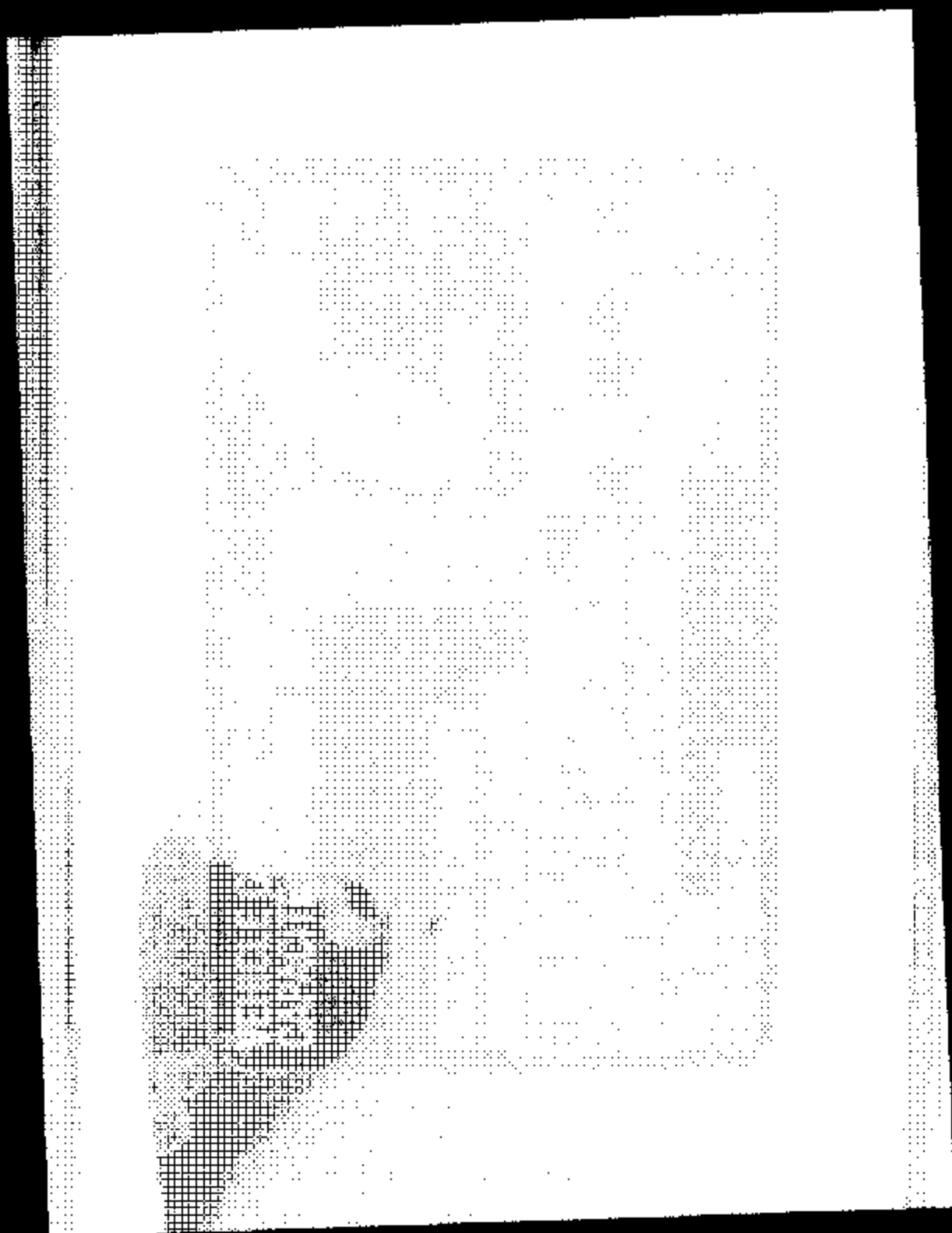


Impact Point Target and Cement Tack

A-34



Test Vehicle Certification Label
A-35



Test Vehicle Tire Placard Label
A-36

Appendix B – Vehicle and SID/HIII Response Data

TEST DATA SUMMARY (CONTINUED)
NHTSA No. C45401
Rigid Pole Side Impact Test

Description	Units	Filter	Max Data	Max Data Time	Min Data	Min Data Time	*
<i>ROOFFLR.FEU (Results calculated from -0.1 to 0.4 sec.)</i>							
Right Roof Rail (Ay)	g	CFC 80	16.2	0.060	-7.6	0.072	
Right Roof Rail (Vy)	kph	CFC 180	5.3	0.238	-27.4	-0.200	
Right Floor Sill (Ay)	g	CFC 80	8.9	0.012	-1.4	0.275	
Right Floor Sill (Vy)	kph	CFC 180	-4.1	0.166	-27.5	0.002	
Rear Deck (Ax)	g	CFC 60	3.6	0.056	-1.9	0.088	
Rear Deck (Vx)	kph	CFC 180	5.8	0.400	-0.1	0.016	
Rear Deck (Ay)	g	CFC 60	13.8	0.067	-2.0	0.209	
Rear Deck (Vy)	kph	CFC 180	14.4	0.174	-27.4	-0.100	
<i>MFIR100.FEU (Results calculated from -0.1 to 0.4 sec.)</i>							
Driver ATD Upper Rib (Ay)	g	Fir 100	40.7	0.044	-3.6	0.155	
Driver ATD Upper Rib (Vy)	kph	Fir 100	5.0	0.086	-27.4	0.015	
Driver ATD Lower Rib (Ay)	g	Fir 100	42.2	0.046	-12.0	0.077	
Driver ATD Lower Rib (Vy)	kph	Fir 100	4.5	0.073	-27.4	0.015	
Driver ATD Lower Spine (Ay)	g	Fir 100	41.4	0.045	-19.0	0.080	
Driver ATD Lower Spine (Vy)	kph	Fir 100	7.0	0.070	-27.4	-0.100	
Driver ATD Pelvis (Ay)	g	Fir 100	50.0	0.042	-11.2	0.082	
Driver ATD Pelvis (Vy)	kph	Fir 100	2.5	0.060	-27.5	0.014	
Driver TTI [g]: 41.8							

*** Comments:**

1:

Data spike recorded or A/D saturation that affects the maximum or minimum values (and corresponding resultant calculations, if applicable)

2:

Channel failure

Notes for electronic files:

-File root names are listed above (e.g., MHEAD, MUNCK); all have extension FEU (formatted engineering units) unless otherwise noted.

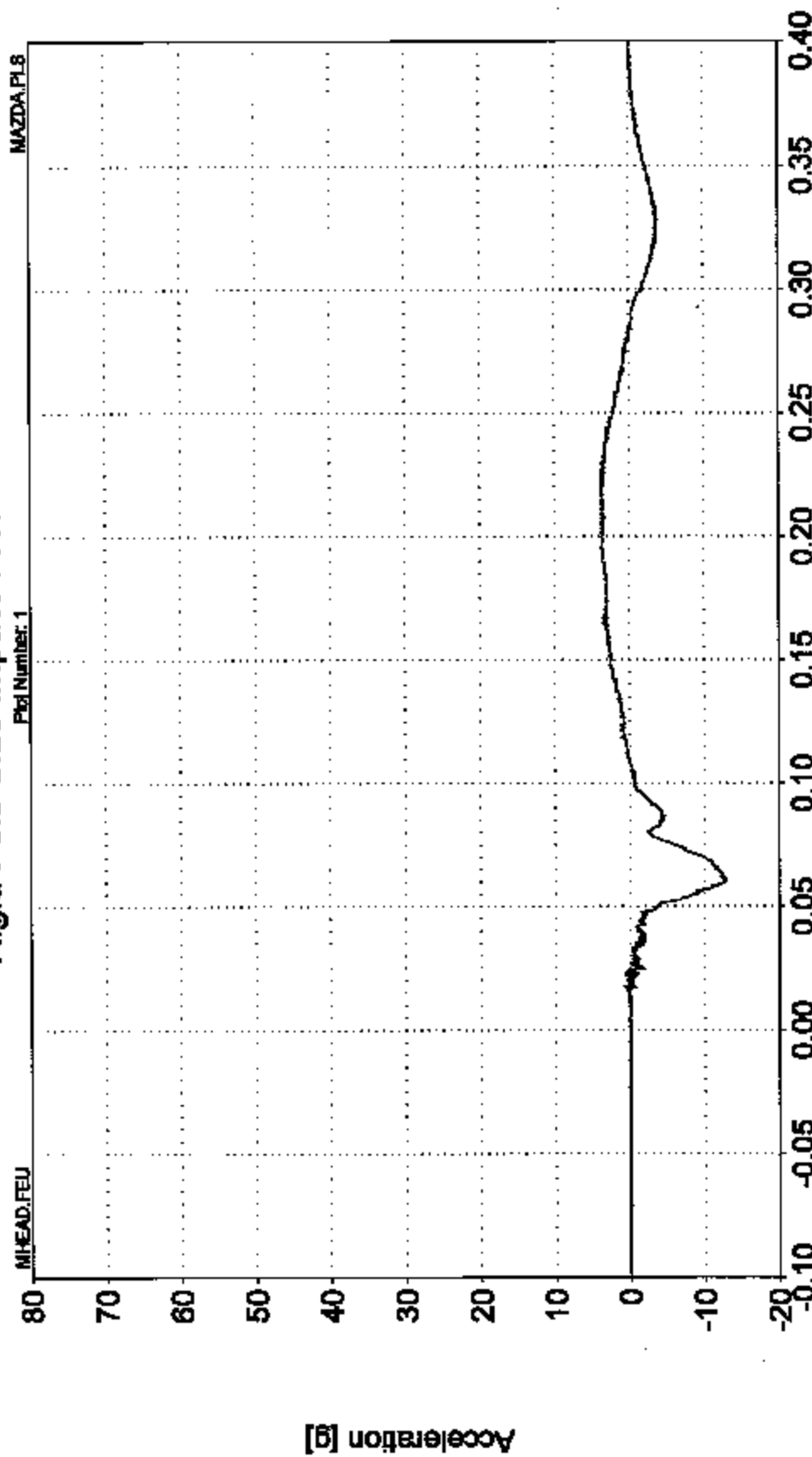
-Each file has time (seconds) in the first column, followed by the data listed above, in the order listed (excluding HIC, TTI).

Longitudinal Acceleration v Time

Driver ATD Head

2004 Mazda 6 - NHTSA No. C45401

Rigid Pole Side Impact Test - 5/17/04



Filter: CFC 1000
Data Rate: 5.0 g @ 0.2141 sec.
Data Min: -12.0 g @ 0.0603 sec.

201P Side Pole Impact Testing
PH08882

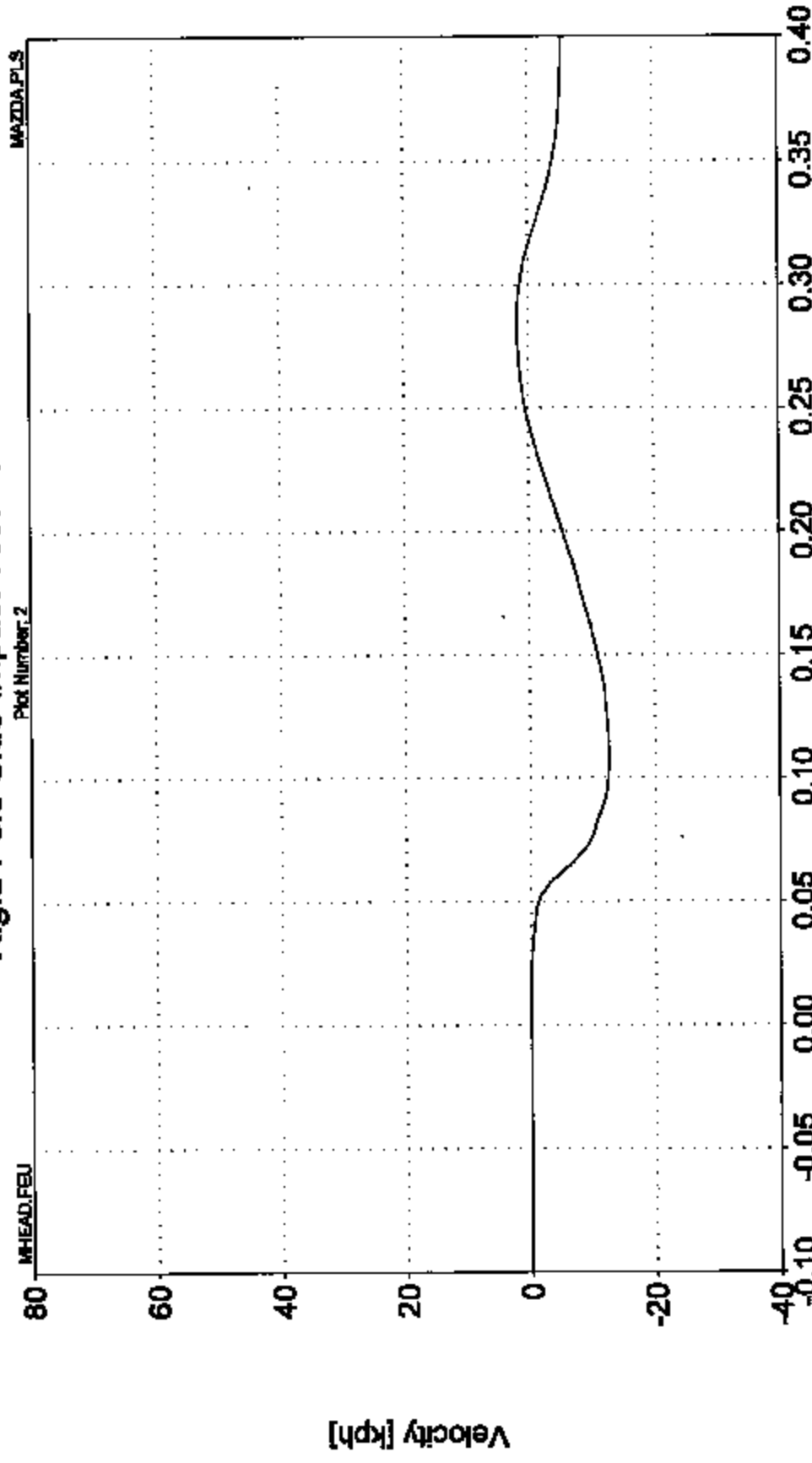
Time [s]

B-5

Exponent
Failure Analysis Associates[®]

Longitudinal Velocity v Time

Driver ATD Head
2004 Mazda 6 - NHTSA No. C45401
Rigid Pole Side Impact Test - 5/17/04



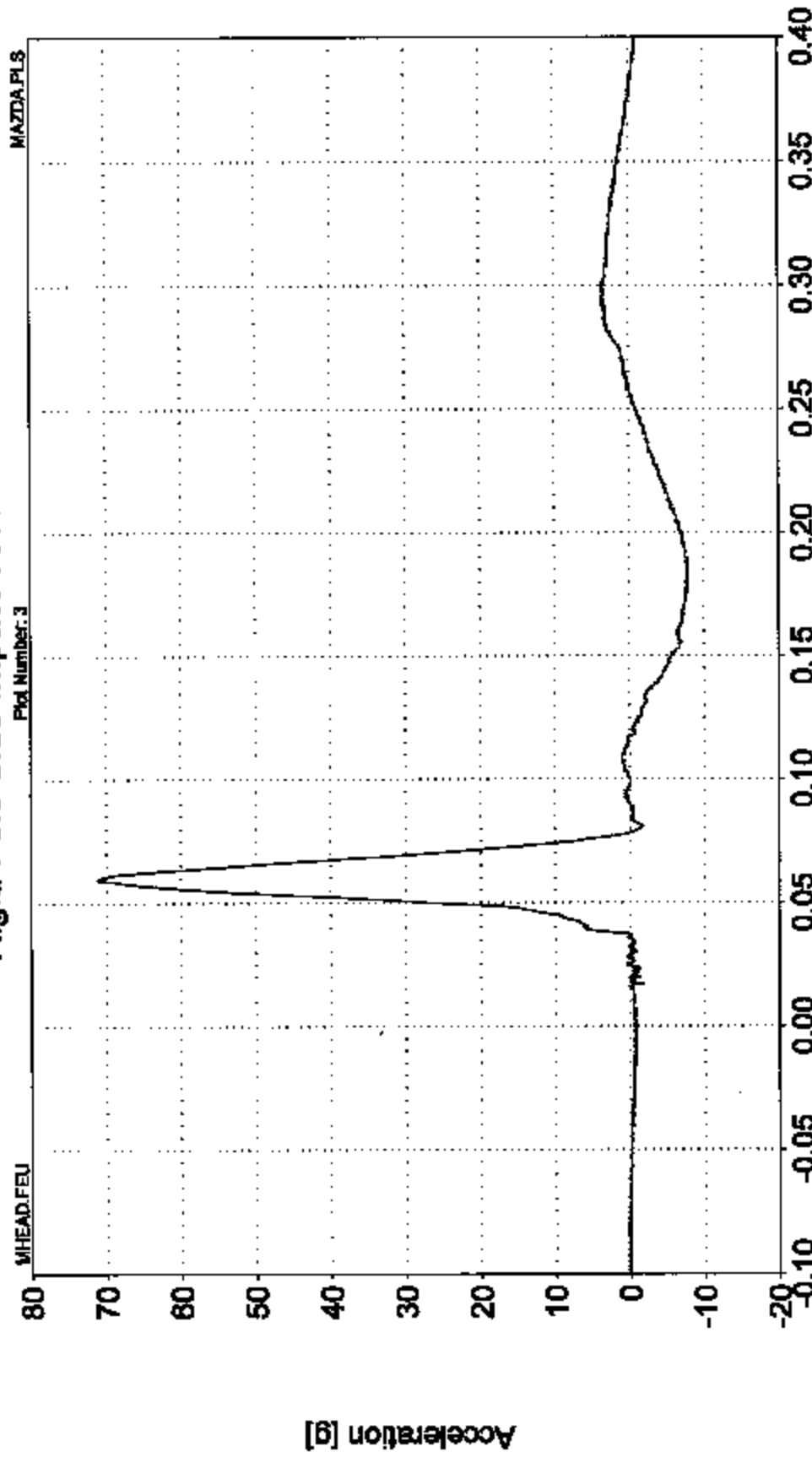
Filter: GFC 100
Data Max: 1.8 kph @ 0.2835 sec.
Data Min: -12.5 kph @ 0.1000 sec.
2010 Side Pole Impact Testing
PH06092

Time [s]

B-6

Lateral Acceleration v Time

Driver ATD Head
2004 Mazda 6 - NHTSA No. C45401
Rigid Pole Side Impact Test - 5/17/04



File: CFC 1000
Data Max: 71.1 g @ 0.0545 sec
Data Min: -7.9 g @ 0.1836 sec
201P Side Pole Impact Testing
PH00002

Time [s]

B-7

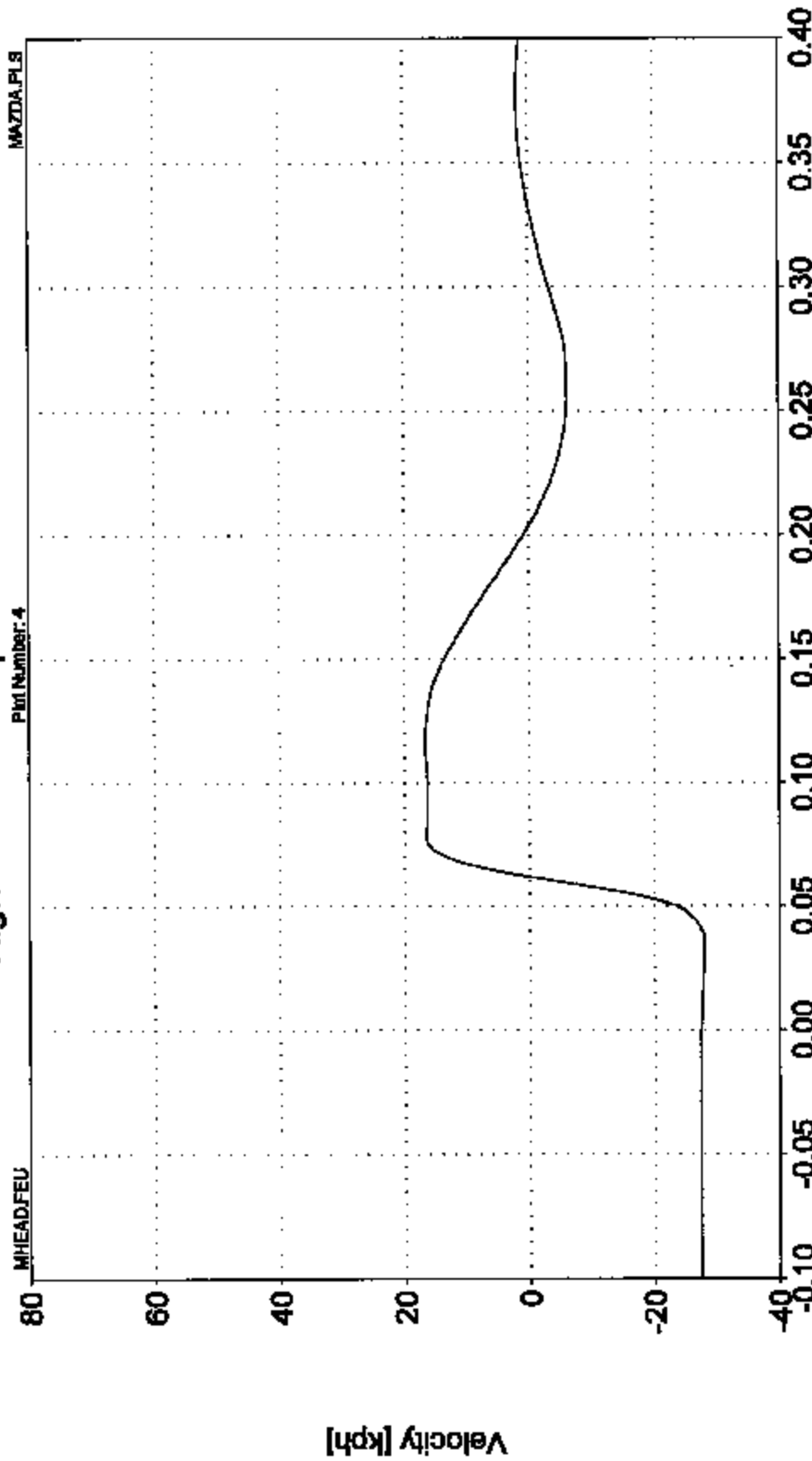
Exponent
Failure Analysis Associates[®]

Lateral Velocity v Time

Driver ATD Head

2004 Mazda 6 - NHTSA No. C45401

Rigid Pole Side Impact Test - 5/17/04



Filter: CPG 100
Data Max: 15.7 kph @ 0.1172 sec.
Data Min: -25.0 kph @ 0.0368 sec.

201P Side Pole Impact Testing

PH06002

Time [s]

B-8

Exponent

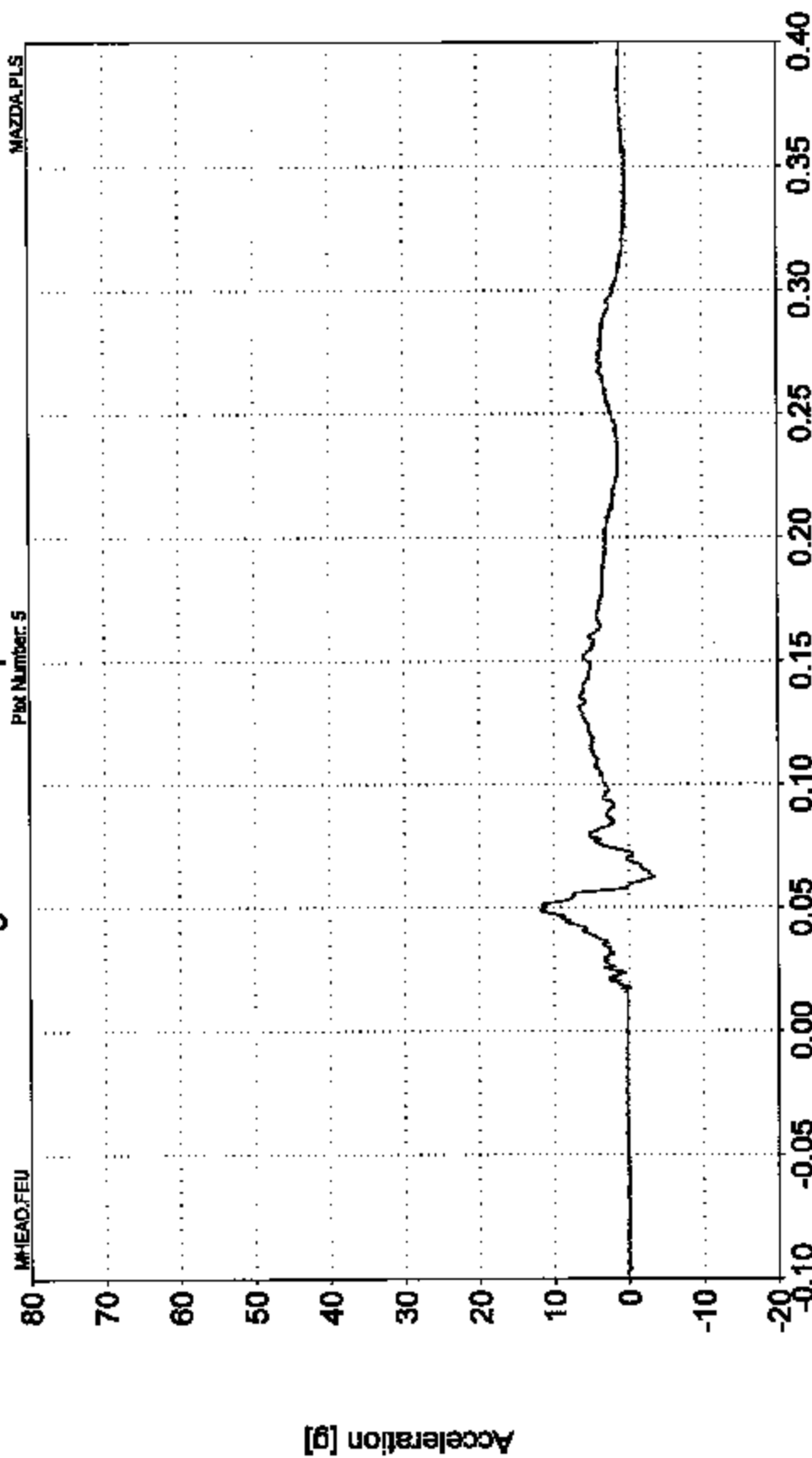
Failure Analysis Associates®

Vertical Acceleration v Time

Driver ATD Head

2004 Mazda 6 - NHTSA No. C45401

Rigid Pole Side Impact Test - 5/17/04



Filter: CFC 1000
Data Max: 11.0 g @ 0.0485 sec.
Data Min: -3.5 g @ 0.0628 sec.

201P Side Pole Impact Testing
PH030022

Time [s]

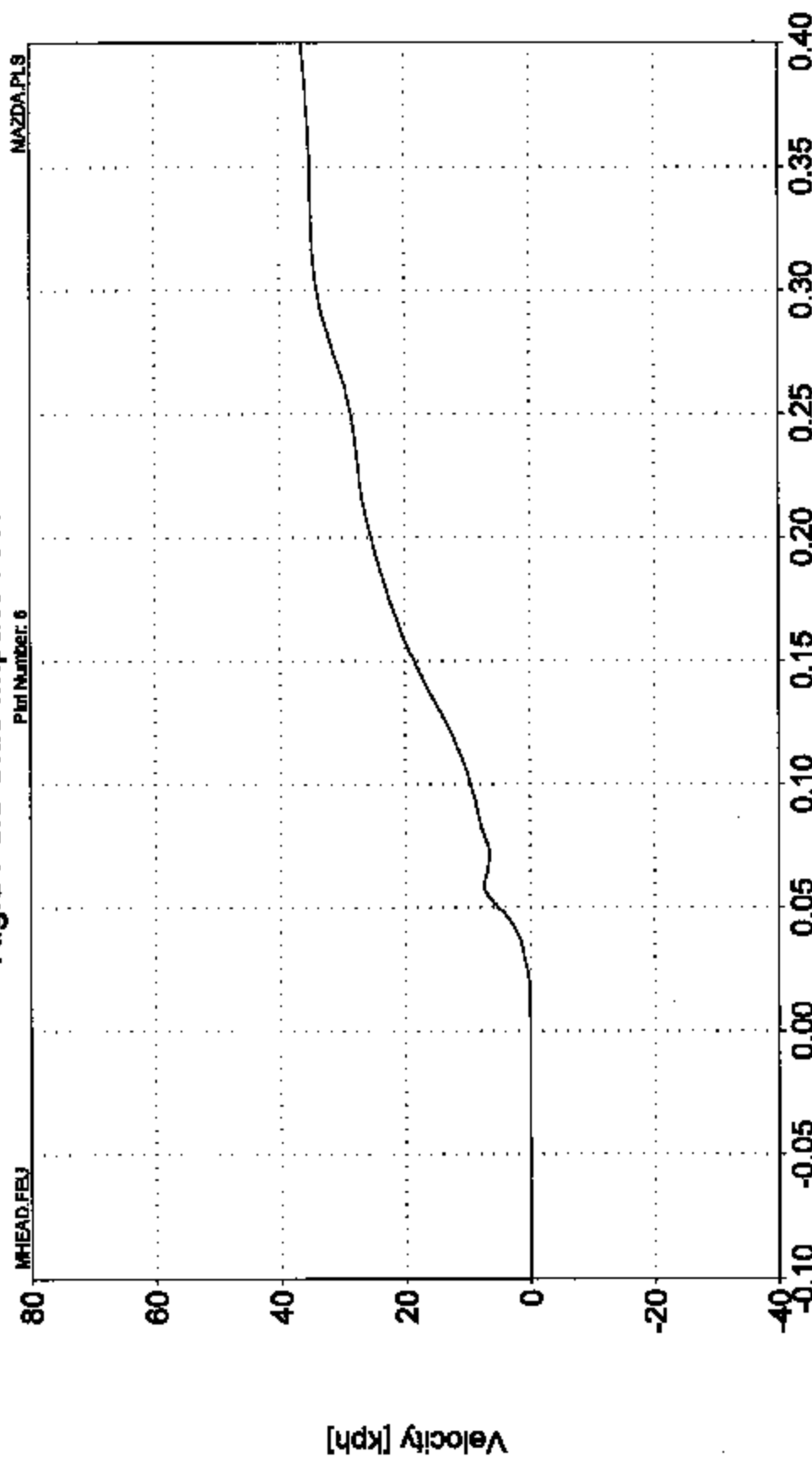
B-9

Exponent

Failure Analysis Associates®

Vertical Velocity v Time

Driver ATD Head
2004 Mazda 6 - NHTSA No. C45401
Rigid Pole Side Impact Test - 5/17/04



Filter: CFC 100
Data Max: 35.2 kph @ 0.000 sec.
Data Min: 0.0 kph @ -0.2500 sec.

201P Side Pole Impact Testing
PI-000002

Time [s]

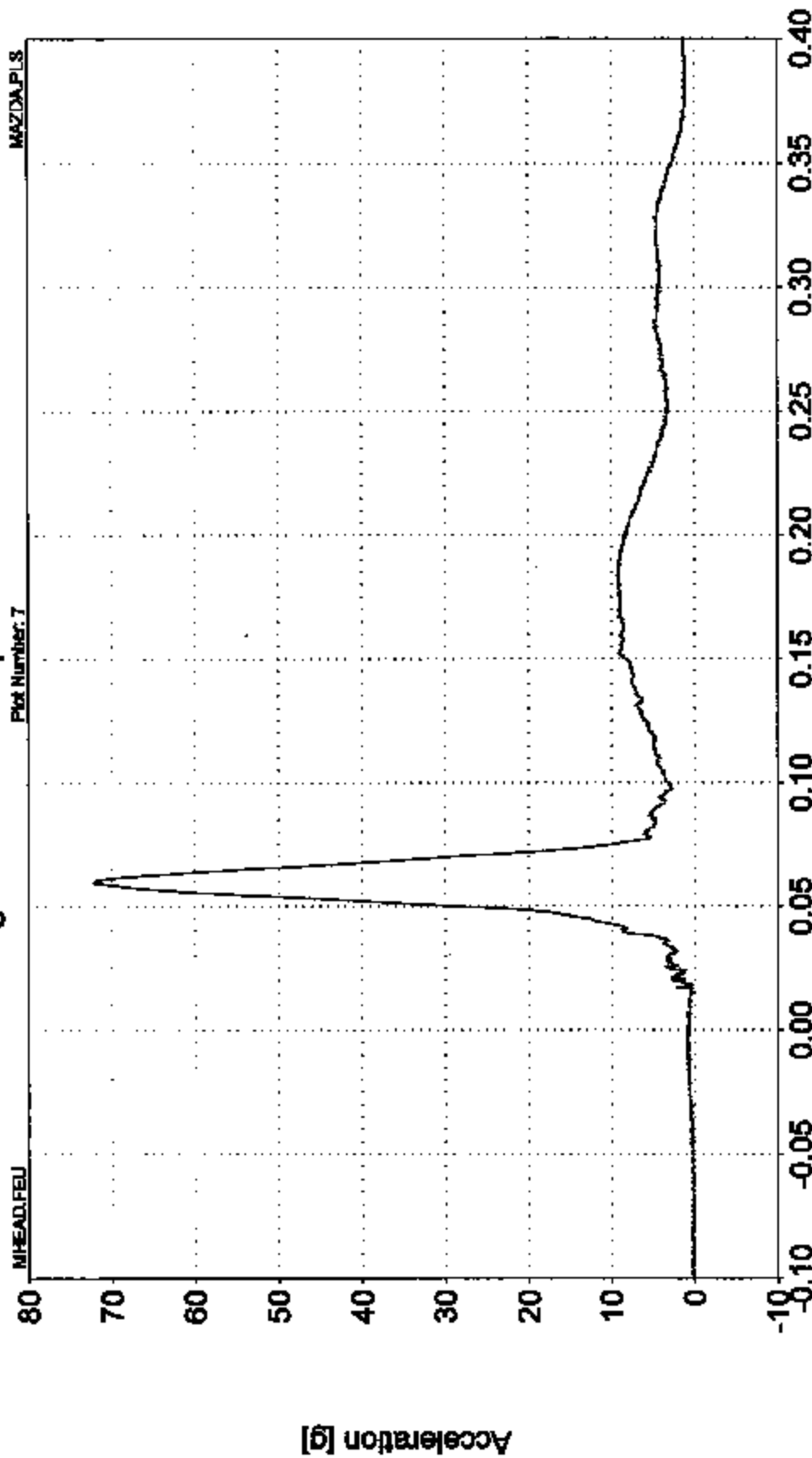
B-10

Exponent

Failure Analysis Associates*

Resultant Acceleration v Time

Driver ATD Head
2004 Mazda 6 - NHTSA No. C45401
Rigid Pole Side Impact Test - 5/17/04



Filter: CFC 1000
Data Rate: 72.1 g @ 0.0500 sec.
Data Rate: 0.0 g @ -0.1143 sec.
201P Side Pole Impact Testing
PH05552

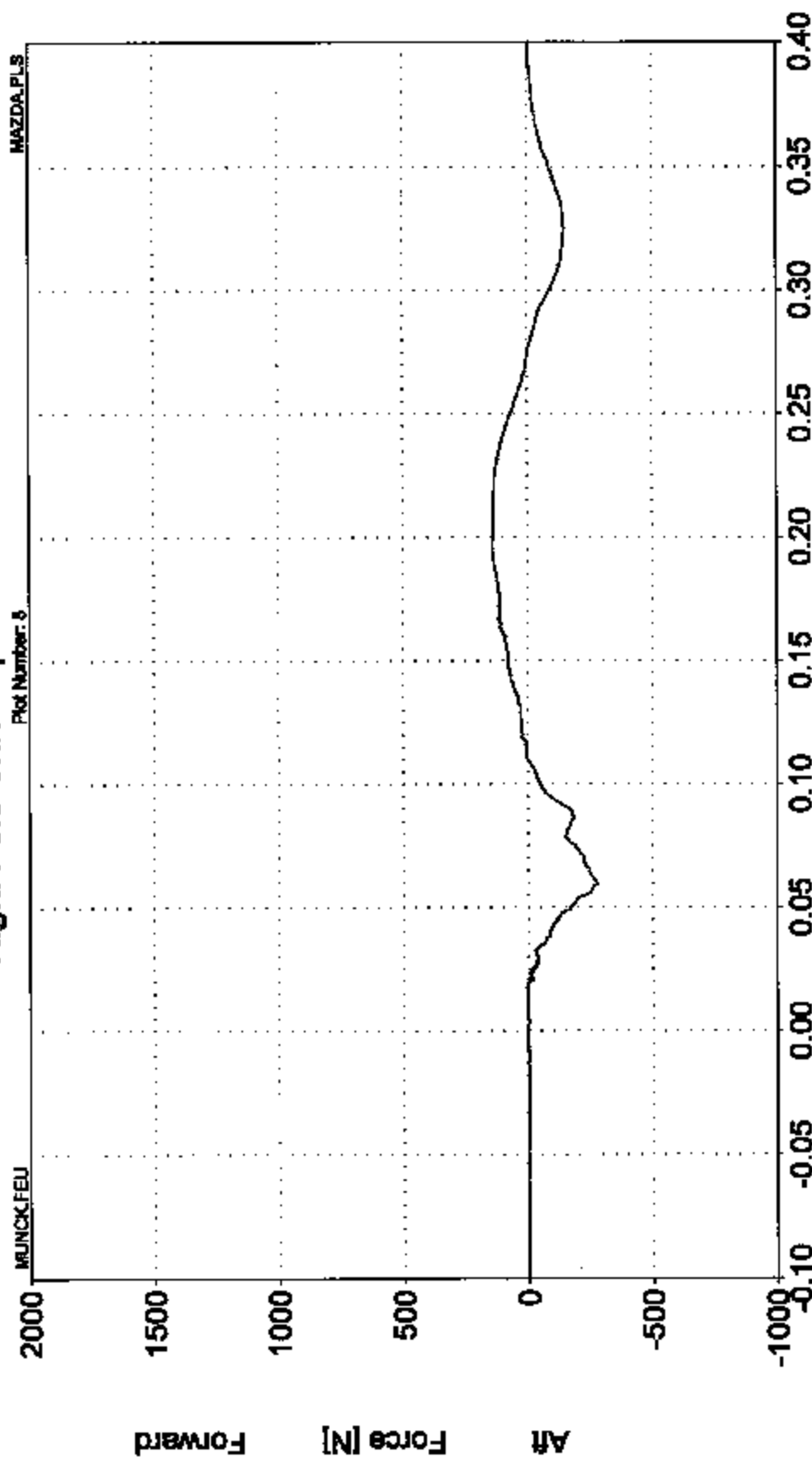
Time [s]

B-11

Exponent
Failure Analysis Associates®

Longitudinal Neck Force on Head (Fx) v Time

Driver ATD Neck
2004 Mazda 6 - NHTSA No. C45401
Rigid Pole Side Impact Test - 5/17/04



Filter: CFC 1000
Data Rate: 141.9 Hz @ 0.0031 sec.
Data File: 275.6 Hz @ 0.0064 sec.

201P Side Pole Impact Testing
PH00002

Time [s]

B-12

Exponent

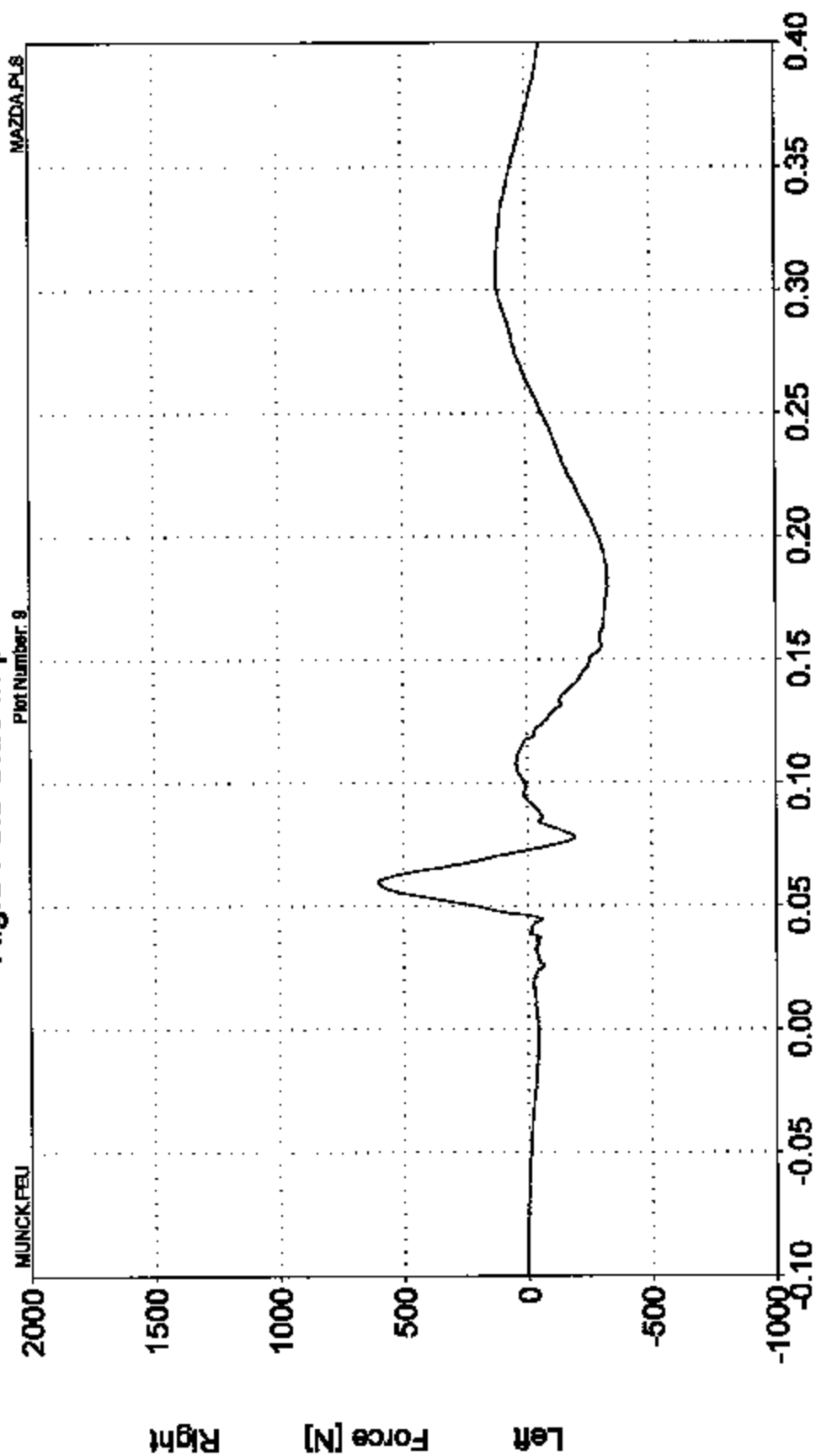
Failure Analysis Associates®

Lateral Neck Force on Head (Fy) v Time

Driver ATD Neck

2004 Mazda 6 - NHTSA No. C45401

Rigid Pole Side Impact Test - 5/17/04



Filter: CFC 1000
Data Minc: 601.6 N @ 0.0500 sec.
Data Max: -527.8 N @ 0.1528 sec.

201P Side Pole Impact Testing
PH00682

Time [s]

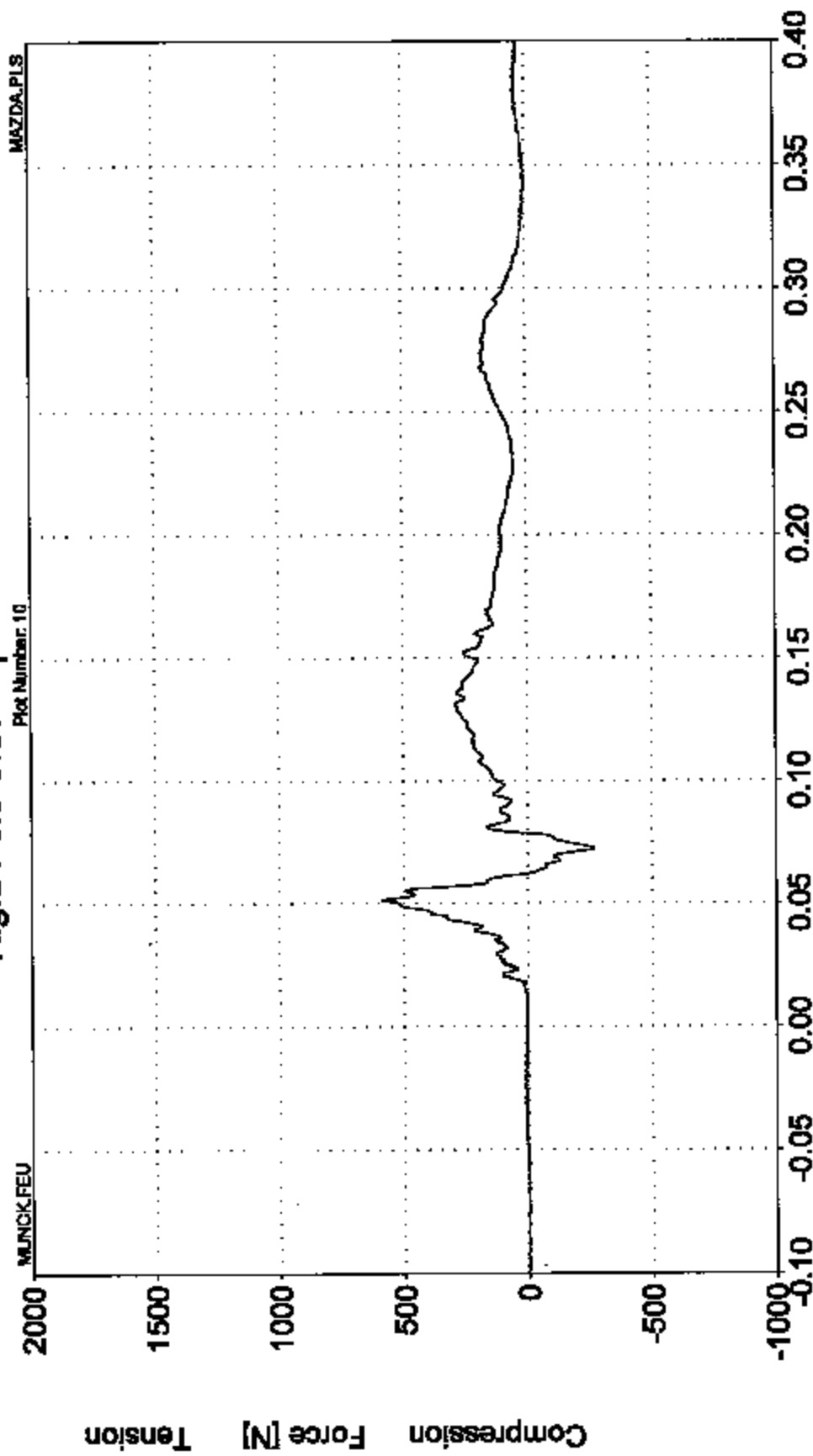
B-13

Exponent

Failure Analysis Associates*

Vertical Neck Force on Head (Fz) v Time

Driver ATD Neck
2004 Mazda 6 - NHTSA No. C45401
Rigid Pole Side Impact Test - 5/17/04



Filter: CFC 1000
Data Rate: 800.1 Hz @ 0.0012 sec.
Data File: 2007.5 N @ 0.0722 sec.
201P Side Pole Impact Testing
PH03062

Time [s]

B-14

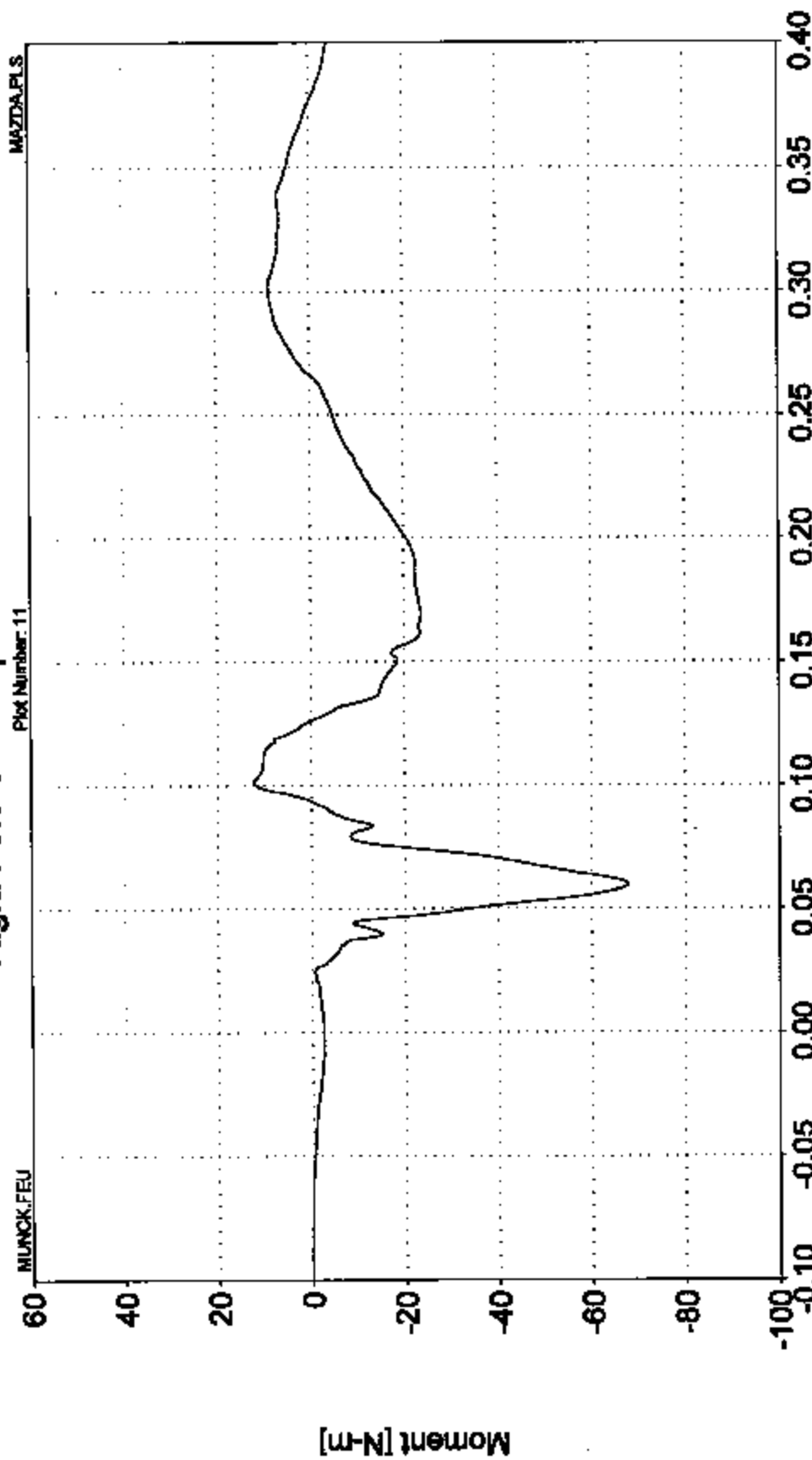
Exponent
Failure Analysis Associates®

Lateral Neck Moment (Mx) v Time

Driver ATD Neck

2004 Mazda 6 - NHTSA No. C45401

Rigid Pole Side Impact Test - 5/17/04



Filter: CFC 800
Data Max: 12.2 N-m @ 0.1011 sec.
Data Min: -67.8 N-m @ 0.0598 sec.

201P Side Pole Impact Testing
FR00002

Time [s]

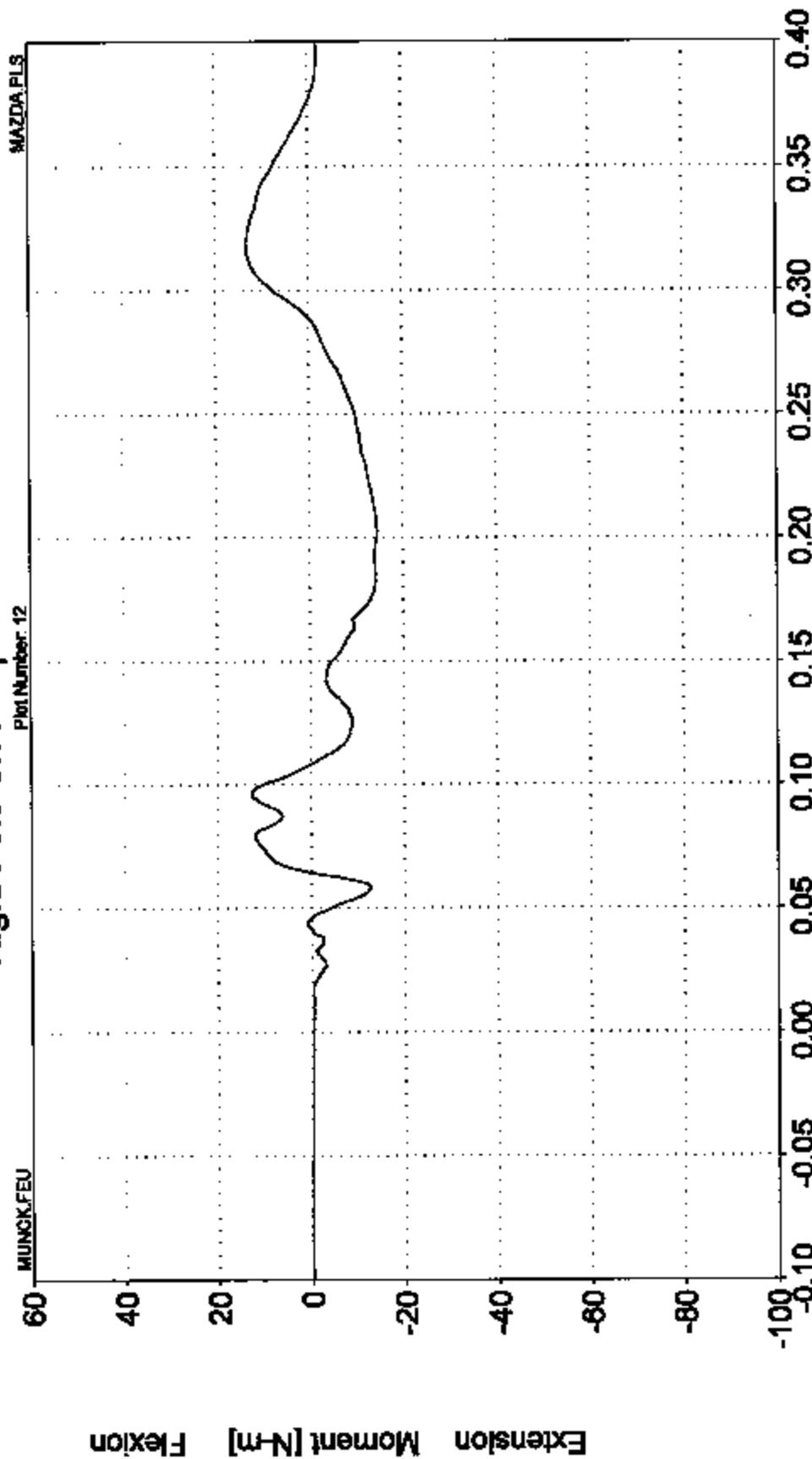
B-15

Exponent

Failure Analysis Associates

Fore/Aft Neck Moment (My) v Time

Driver ATD Neck
2004 Mazda 6 - NHTSA No. C45401
Rigid Pole Side Impact Test - 5/17/04



Filter: CFC 800
Data Min: 13.3 N-m @ 0.3178 sec
Data Max: -14.5 N-m @ 0.2085 sec

201P Side Pole Impact Testing
PT-106002

Time [s]

B-16

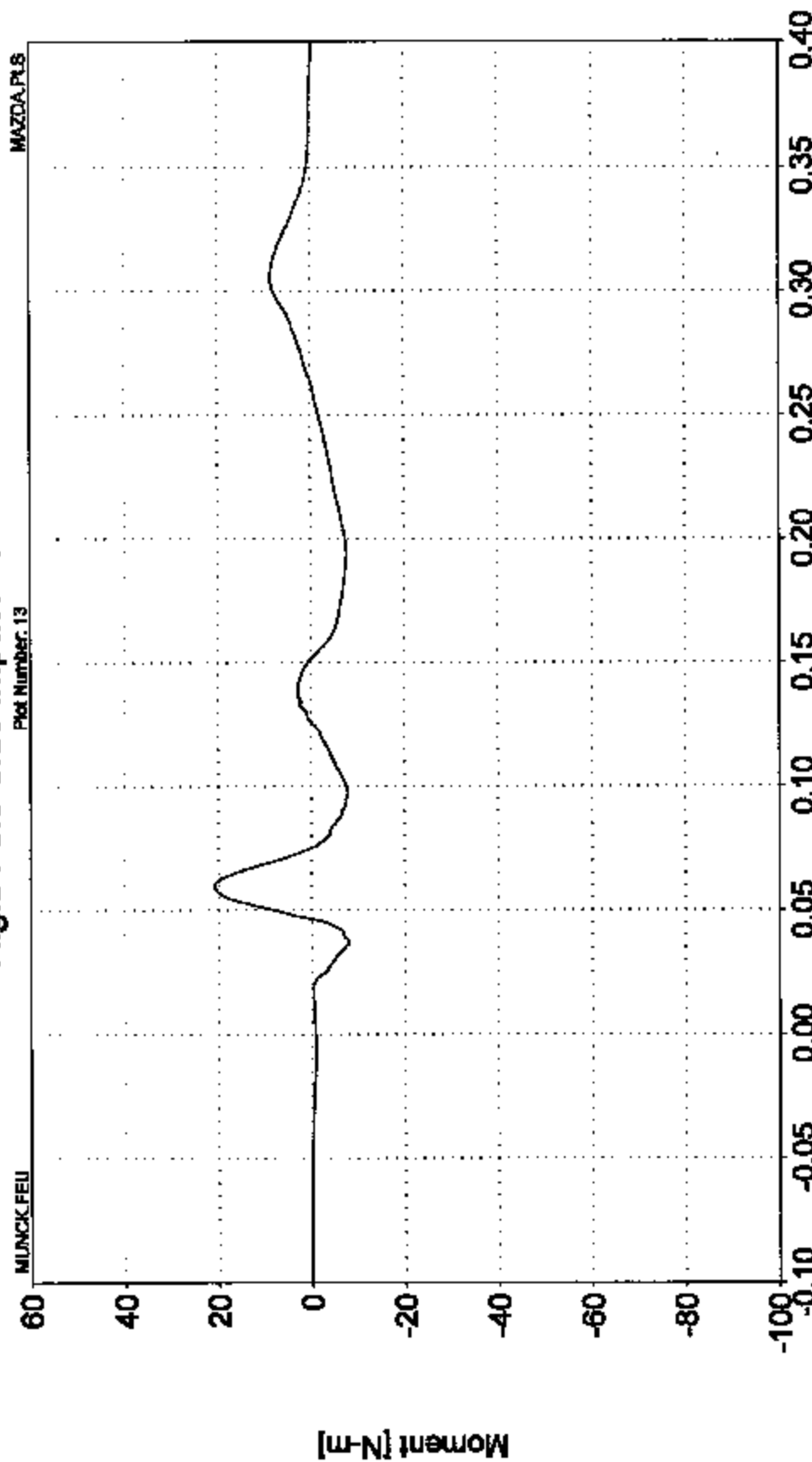
Exponent
Failure Analysis Associates[®]

Torsional Neck Moment (Mz) v Time

Driver ATD Neck

2004 Mazda 6 - NHTSA No. C45401

Rigid Pole Side Impact Test - 5/17/04



Filter: CFC 800
Data Max: 20.8 N-m @ 0.0504 sec.
Data Min: -6.1 N-m @ 0.0806 sec.

201P Side Pole Impact Testing

PH08082

Time [s]

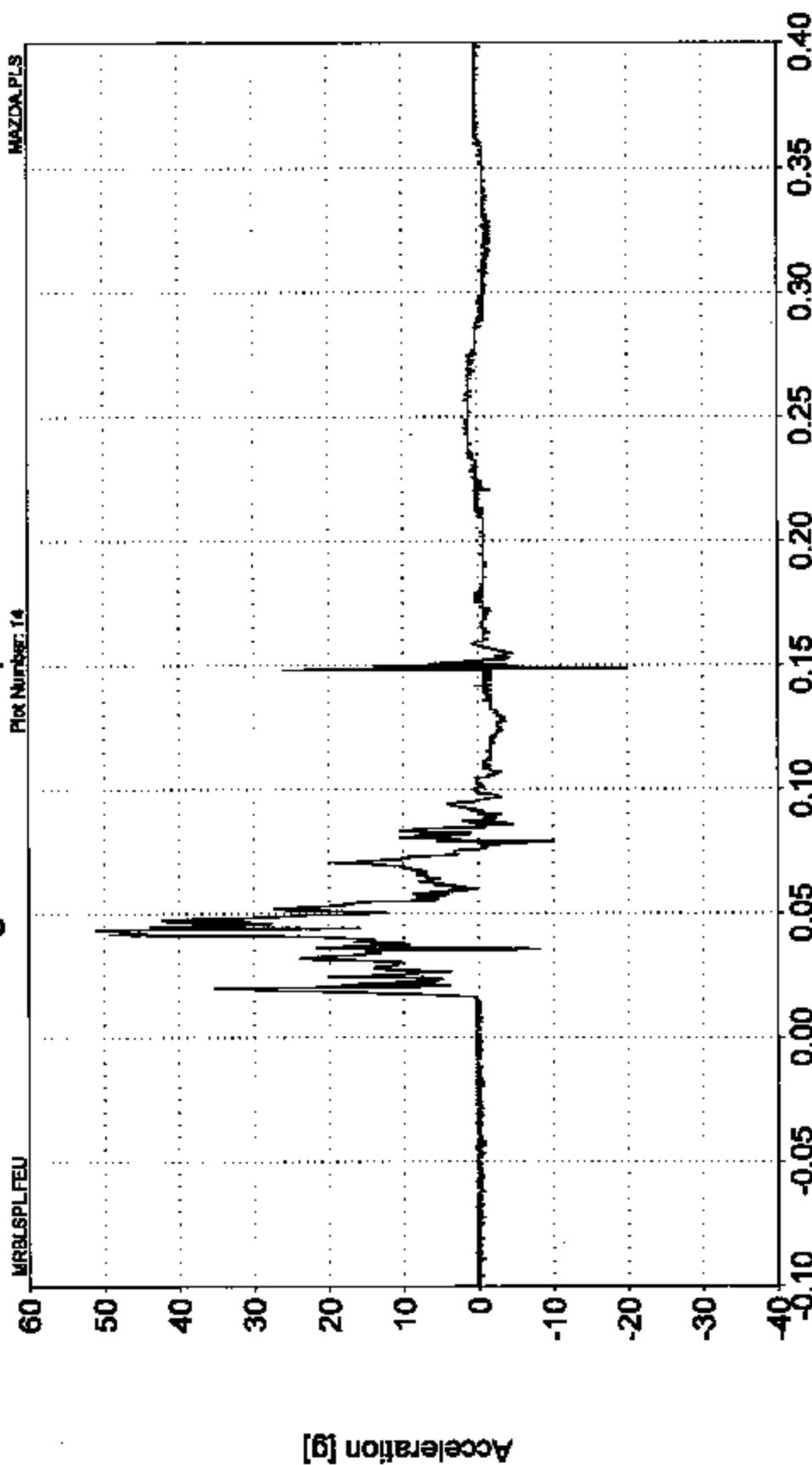
B-17

Exponent

Failure Analysis Associates*

Lateral Acceleration v Time

Driver ATD Upper Rib
2004 Mazda 6 - NHTSA No. C45401
Rigid Pole Side Impact Test - 5/17/04



Filter: CFC 1000
Data Max: 51.1 g @ 0.0451 sec.
Data Min: -50.0 g @ 0.1467 sec.

201P Side Pole Impact Testing
PH000002

Time [s]

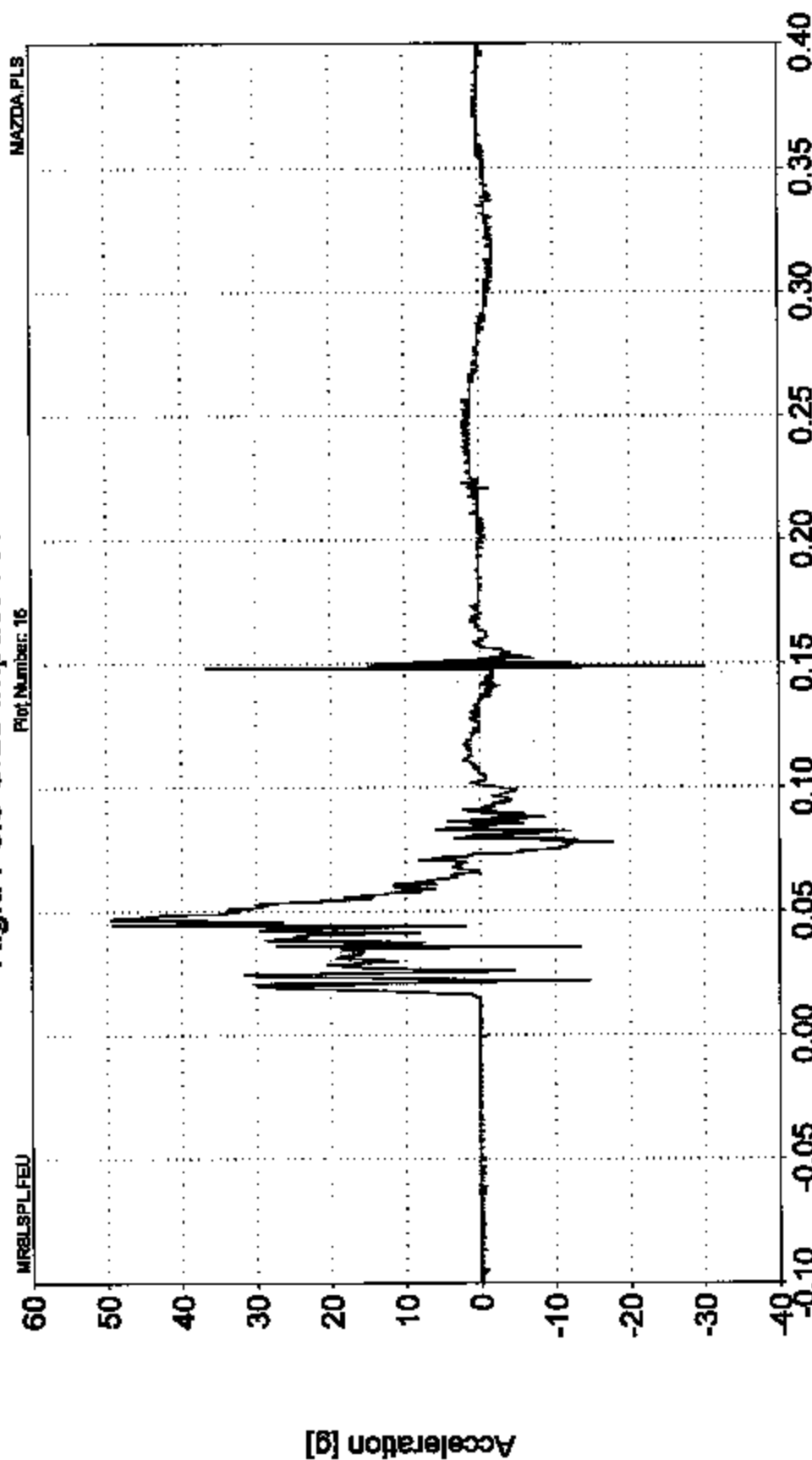
B-18

Exponent

Failure Analysis Associates

Lateral Acceleration v Time

Driver ATD Lower Rib
2004 Mazda 6 - NHTSA No. C45401
Rigid Pole Side Impact Test - 5/17/04



Filter: CFC 1000
Data Min: 49.5 g @ 0.0466 sec.
Data Max: -30.1 g @ 0.1466 sec.
201P Side Pole Impact Testing
PH09952

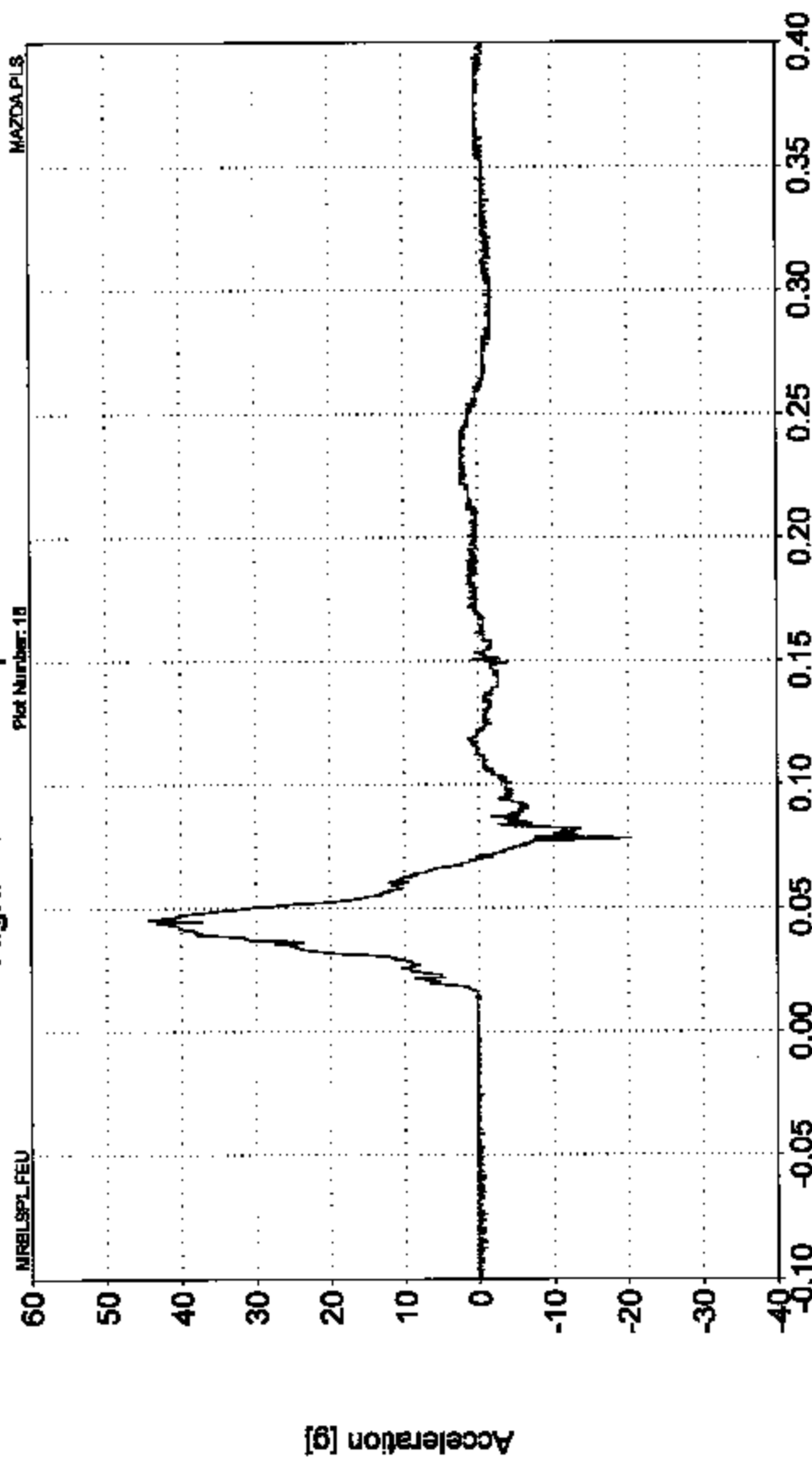
Time [s]

B-19

Exponent
Failure Analysis Associates™

Lateral Acceleration v Time

Driver ATD Lower Spine
2004 Mazda 6 - NHTSA No. C45401
Rigid Pole Side Impact Test - 5/17/04



Filter: CFC 1000
Data Min: 44.3 g @ 0.0464 sec
Data Max: -20.5 g @ 0.0782 sec

201P Side Pole Impact Testing
PH00682

Time [s]

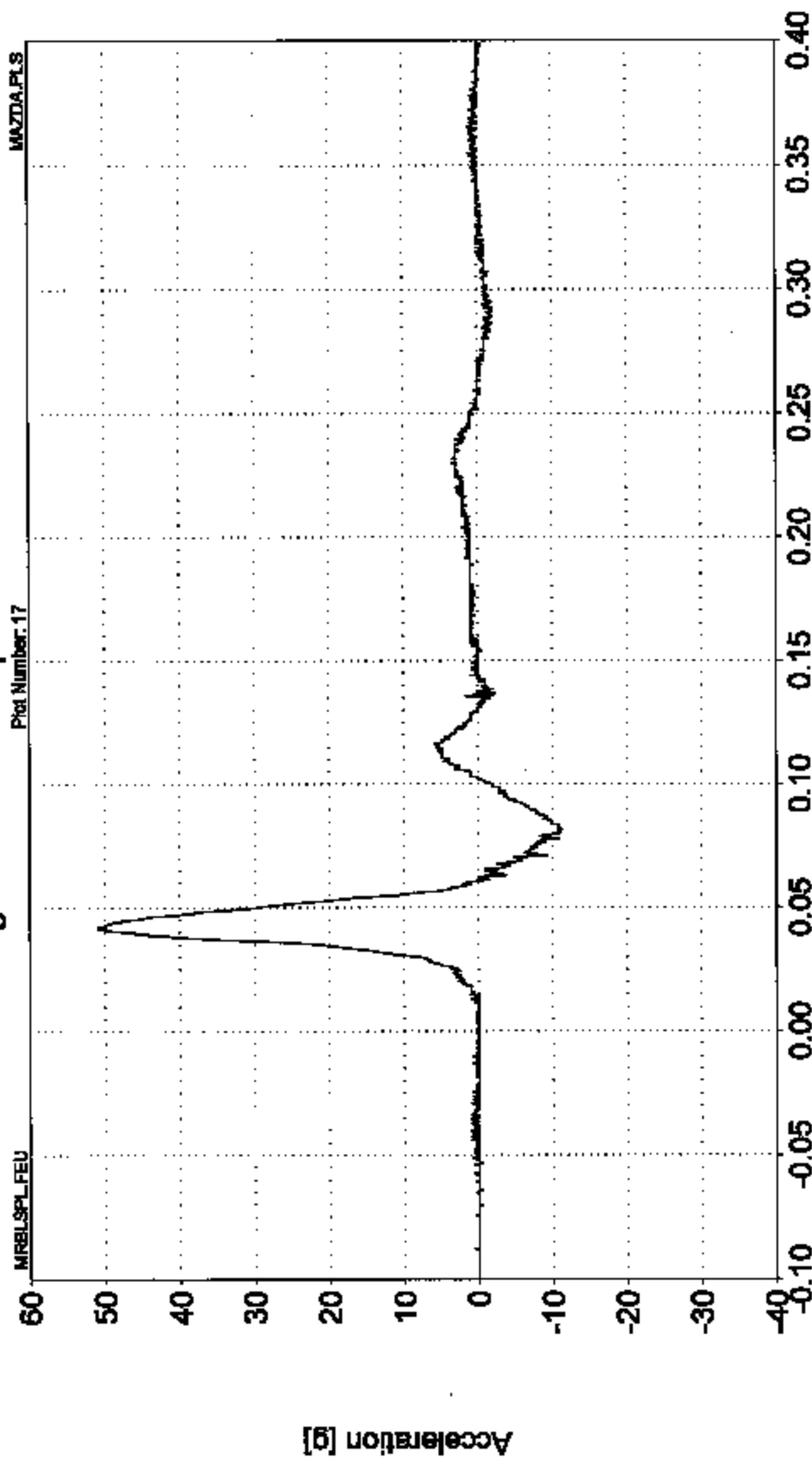
B-20

Exponent

Failure Analysis Associates

Lateral Acceleration v Time

Driver ATD Pelvis
2004 Mazda 6 - NHTSA No. C45401
Rigid Pole Side Impact Test - 5/17/04



Filter: CFC 1000
Data Rate: 50.0 g @ 0.0417 sec.
Data Rate: -11.5 g @ 0.0817 sec.

201P Side Pole Impact Testing
P100893

Time [s]

B-21

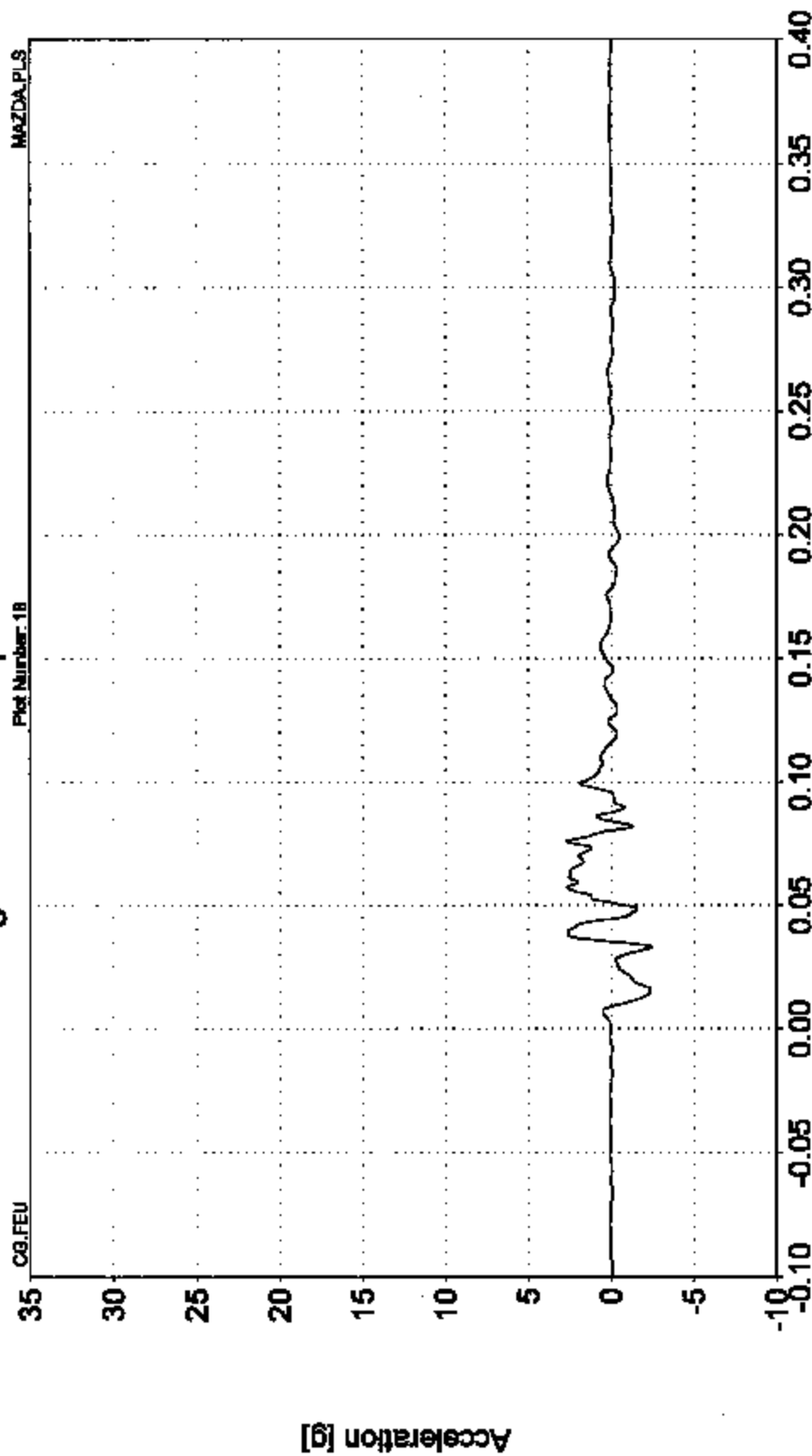
Exponent
Failure Analysis Associates®

Longitudinal Acceleration v Time

Vehicle Tunnel Near C.G.

2004 Mazda 6 - NHTSA No. C45401

Rigid Pole Side Impact Test - 5/17/04



Filter: CRG 60
Data Min: 2.7 g @ 0.0769 sec.
Data Max: -2.5 g @ 0.0330 sec.

201P Side Pole Impact Testing
PH00002

Time [s]

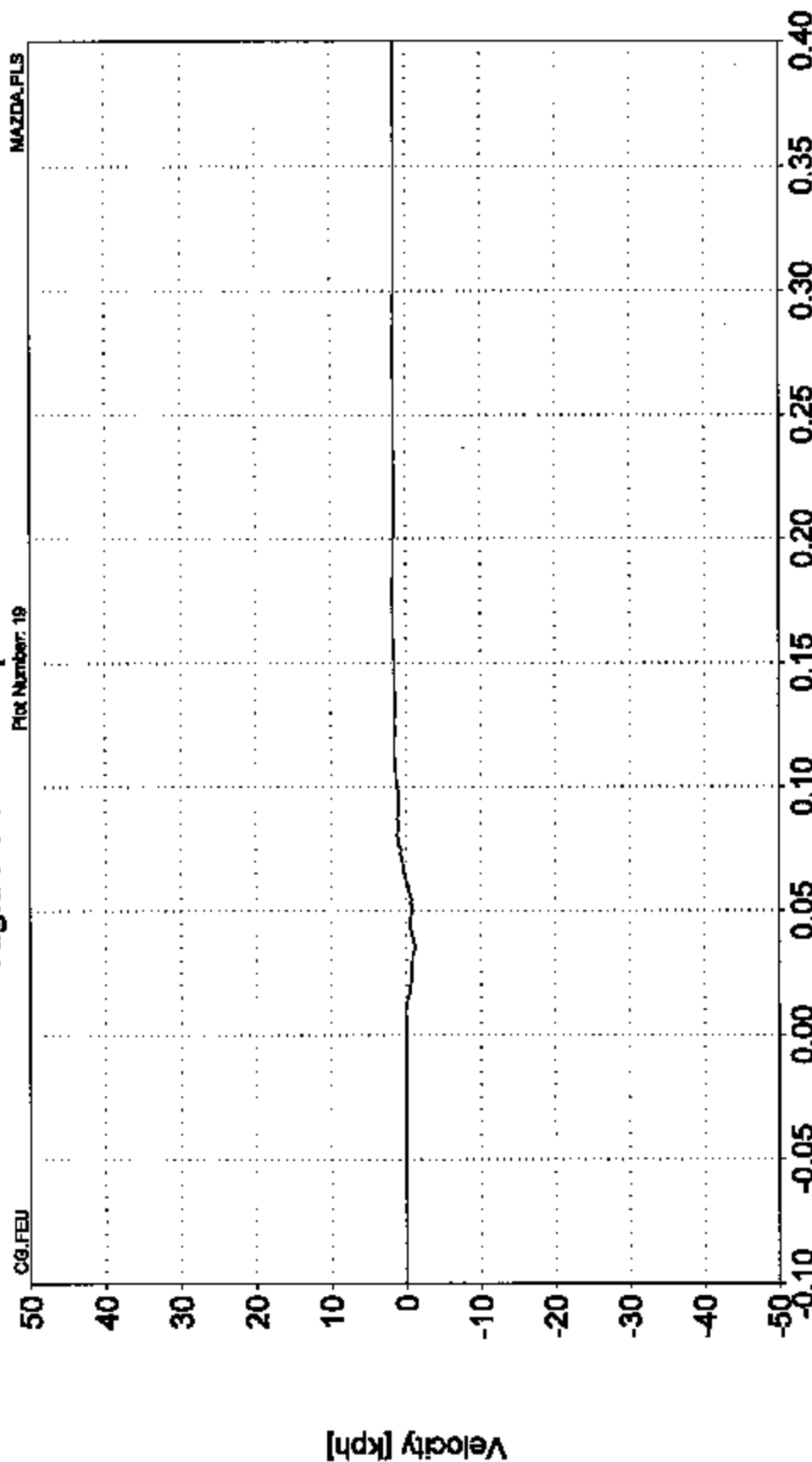
B-22

Exponent

Failure Analysis Associates[®]

Longitudinal Velocity v Time

Vehicle Tunnel Near C.G.
2004 Mazda 6 - NHTSA No. C45401
Rigid Pole Side Impact Test - 5/17/04



Filter: CFC 180
Data Min: 1.0 kph @ 0.1704 sec.
Data Max: -1.2 kph @ 0.0348 sec.

201F Side Pole Impact Testing
PH06082

Time [s]

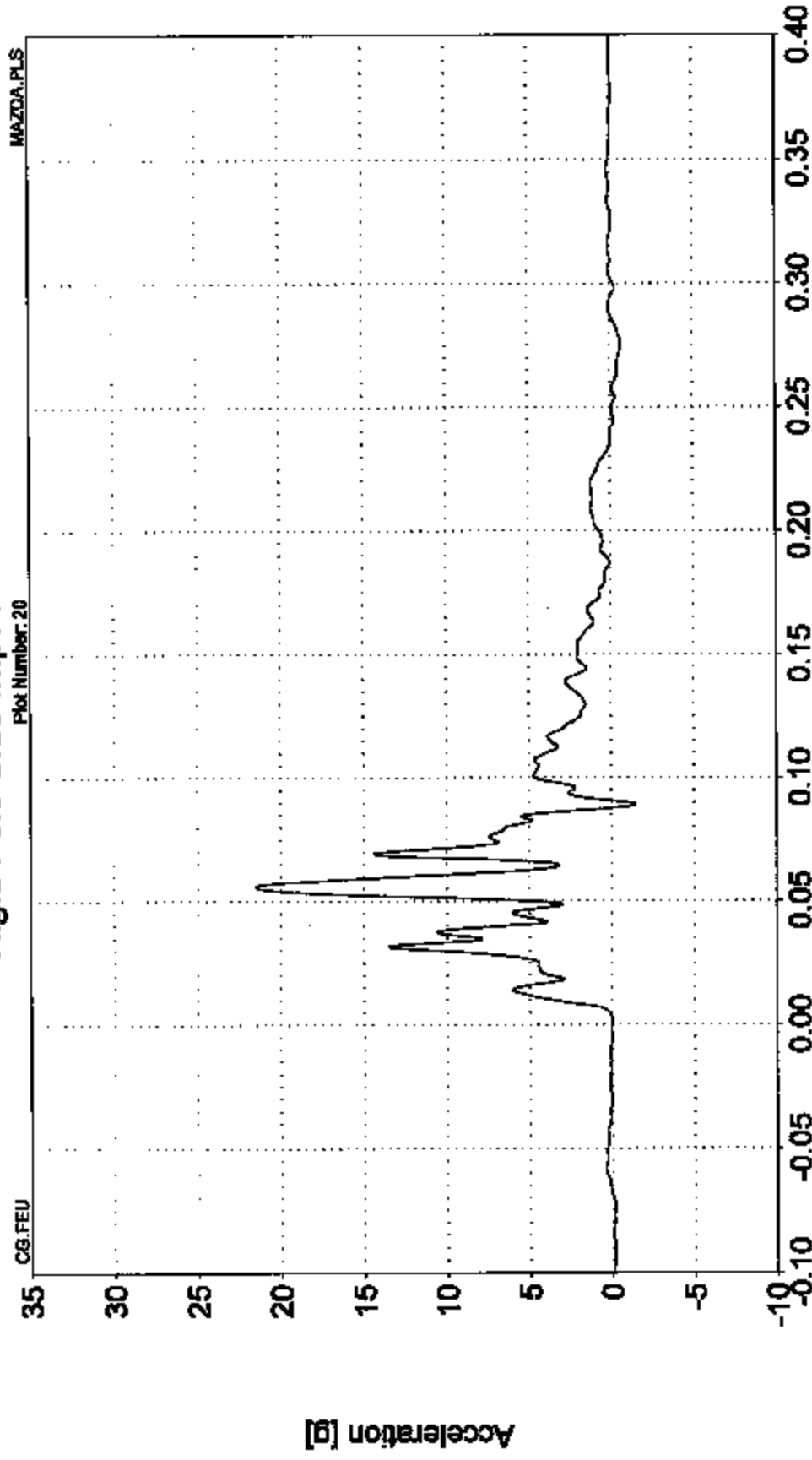
B-23

Exponent

Failure Analysis Associates*

Lateral Acceleration v Time

Vehicle Tunnel Near C.G.
2004 Mazda 6 - NHTSA No. C45401
Rigid Pole Side Impact Test - 5/17/04



Filter: CFC 80
Data Min: 21.6 g @ 0.0000 sec.
Data Max: -1.3 g @ 0.0681 sec.

201P Side Pole Impact Testlog
PH06002

Time [s]

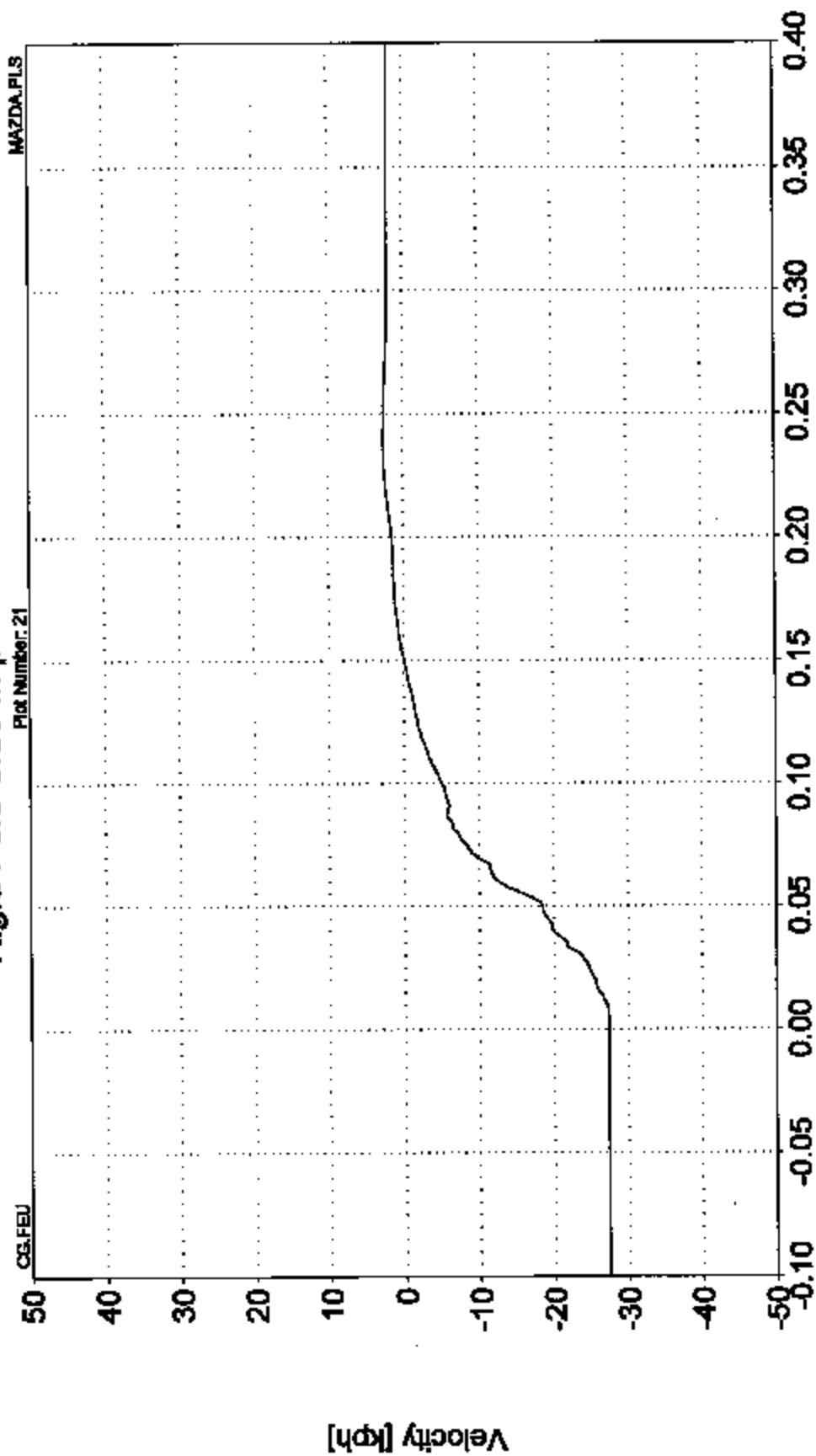
B-24

Exponent

Failure Analysis Associates[®]

Lateral Velocity v Time

Vehicle Tunnel Near C.G.
2004 Mazda 6 - NHTSA No. C45401
Rigid Pole Side Impact Test - 5/17/04



Filter: CFC 180
Data Minc: 2.0 kph @ 0.0344 sec.
Data Minc: -27.4 kph @ 0.0082 sec.

201P Side Pole Impact Testing
PH00982

Time [s]

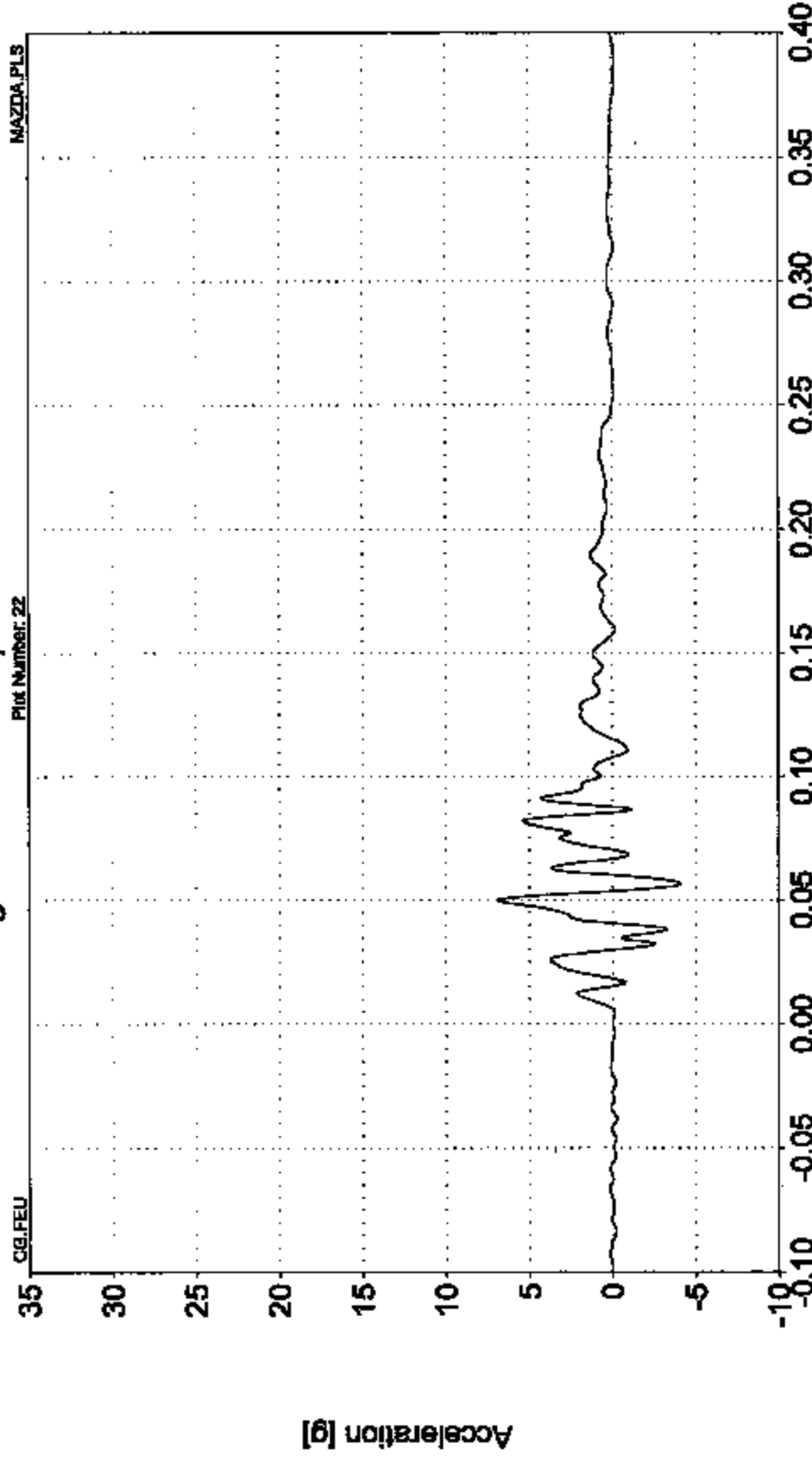
B-25

Exponent

Failure Analysis Associates®

Vertical Acceleration v Time

Vehicle Tunnel Near C.G.
2004 Mazda 6 - NHTSA No. C45401
Rigid Pole Side Impact Test - 5/17/04



Filter: CFC 80
Data Max: 8.9 g @ 0.0497 sec.
Data Min: -4.1 g @ 0.0959 sec.

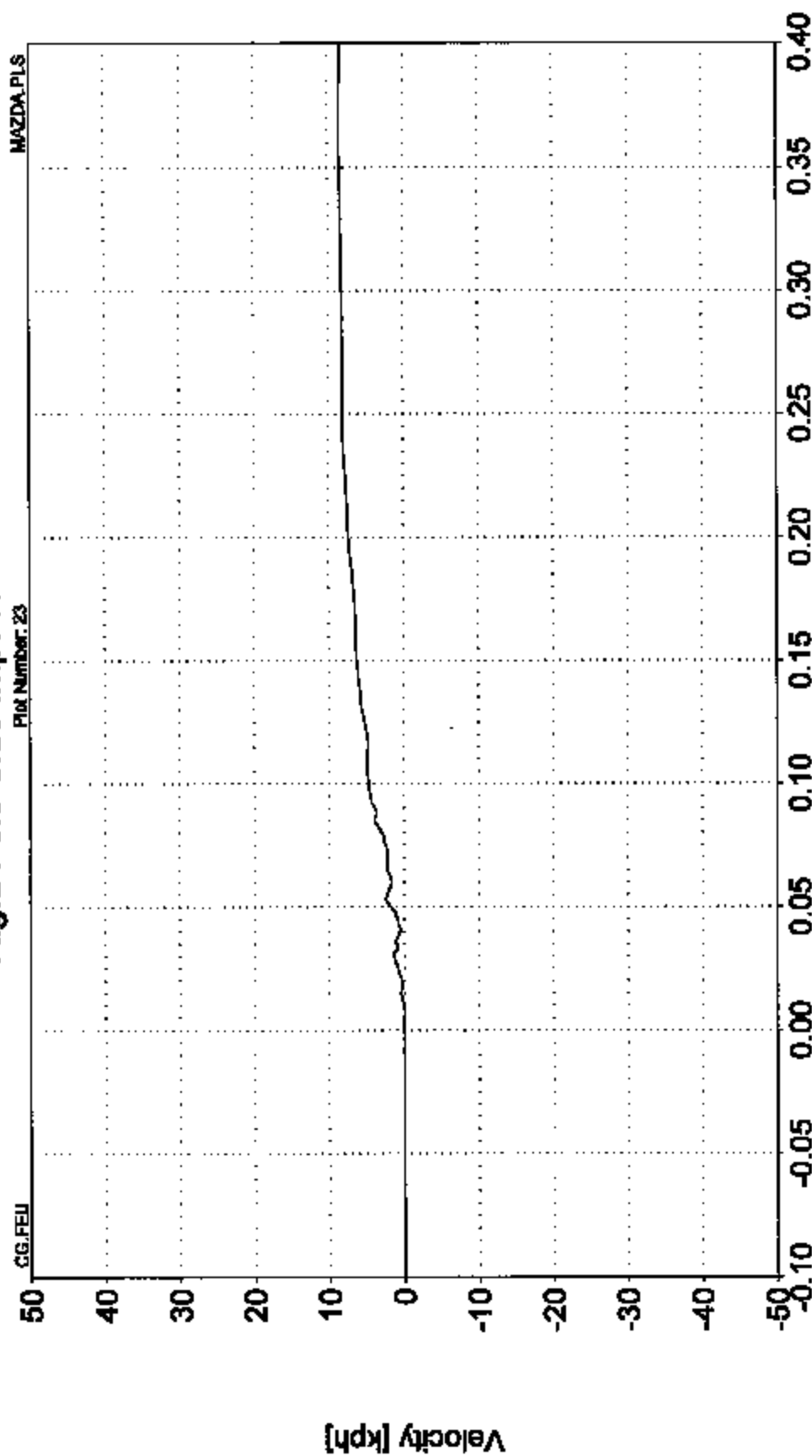
201P Side Pole Impact Testing
PH00002

B-28

Exponent
Failure Analysis Associates*

Vertical Velocity v Time

Vehicle Tunnel Near C.G.
2004 Mazda 6 - NHTSA No. C45401
Rigid Pole Side Impact Test - 5/17/04



Filter: CFC 180
Data Rate: 8.6 kph @ 0.3715 sec.
Data Min: 0.0 kph @ 6.0075 sec.

201P Side Pole Impact Testing
PH00002

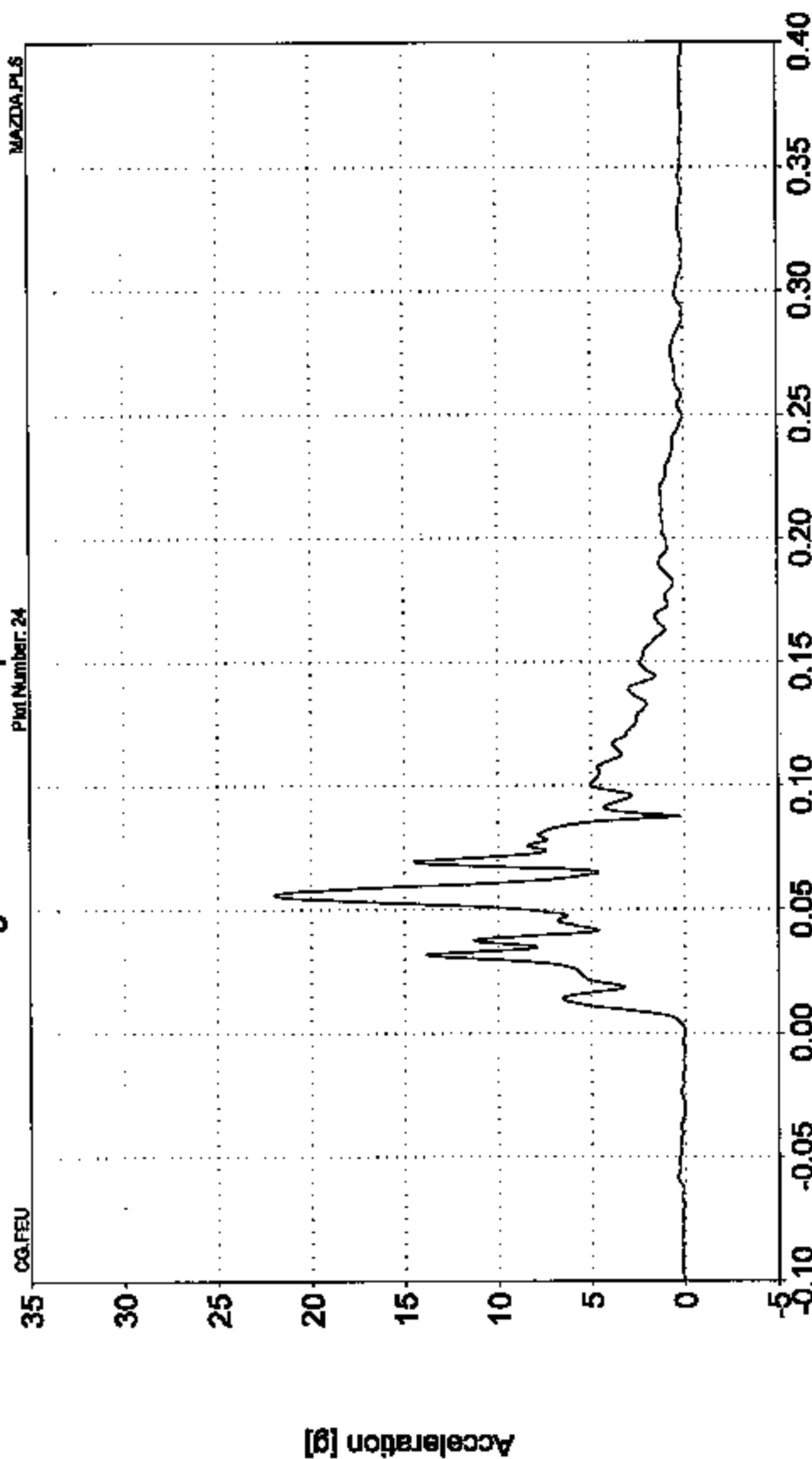
Time [s]

B-27

Exponent
Failure Analysis Associates®

Resultant Acceleration v Time

Vehicle Tunnel Near C.G.
2004 Mazda 6 - NHTSA No. C45401
Rigid Pole Side Impact Test - 5/17/04



Filter: CFC 80
Data Max: 271.2 g @ 0.0040 sec.
Data Min: 0.0 g @ -0.0028 sec.

201P Side Pole Impact Testing
PH-100002

Time [s]

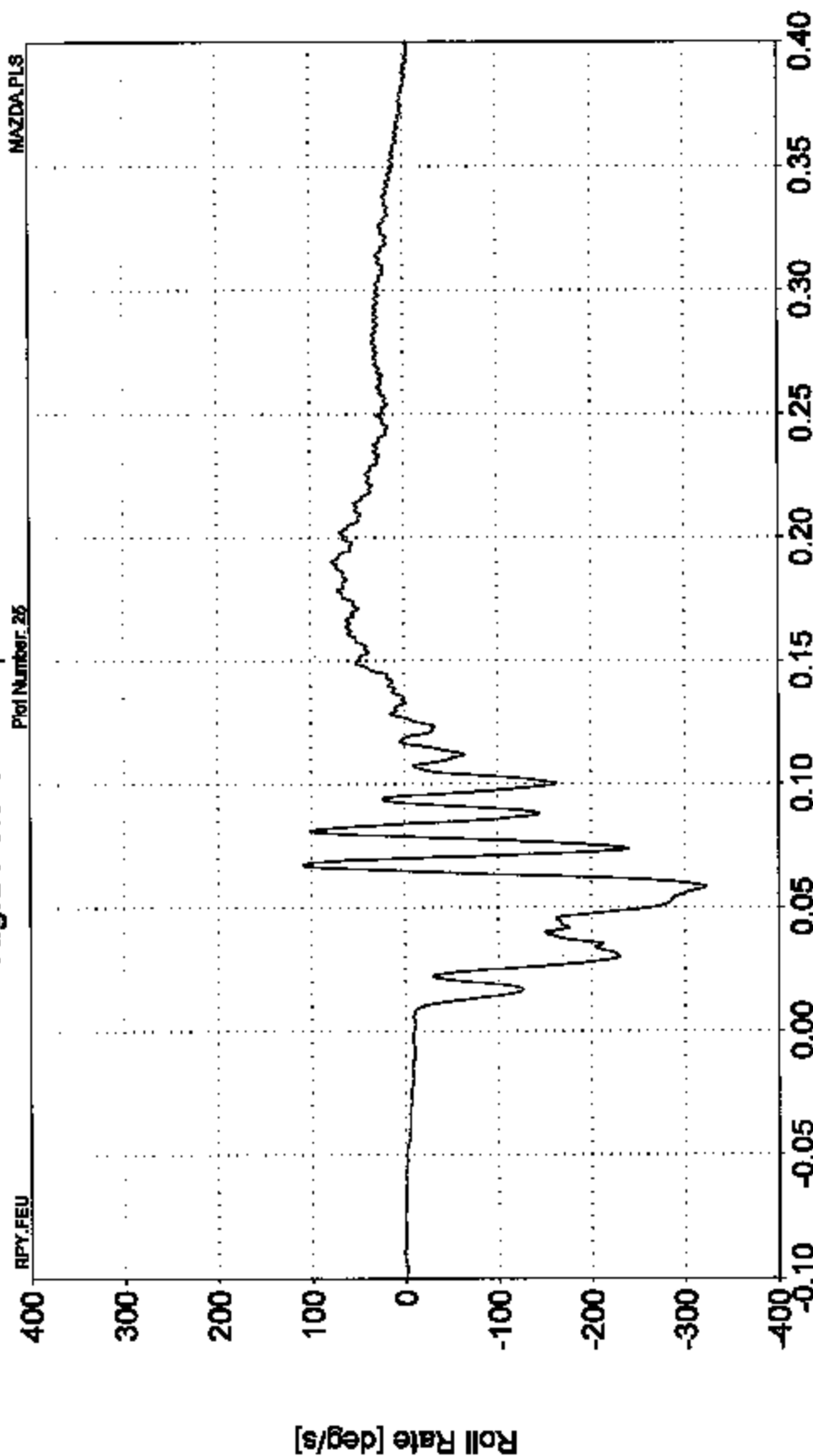
B-28

Exponent

Failure Analysis Associates®

Roll Rate v Time

Vehicle Tunnel Near C.G.
2004 Mazda 6 - NHTSA No. C45401
Rigid Pole Side Impact Test - 5/17/04



Filter: CFC-180
Data Min: 100.0 deg/s @ 0.0071 sec.
Data Max: -322.0 deg/s @ 0.0563 sec.

201P Side Pole Impact Testing

PH09002

Time [s]

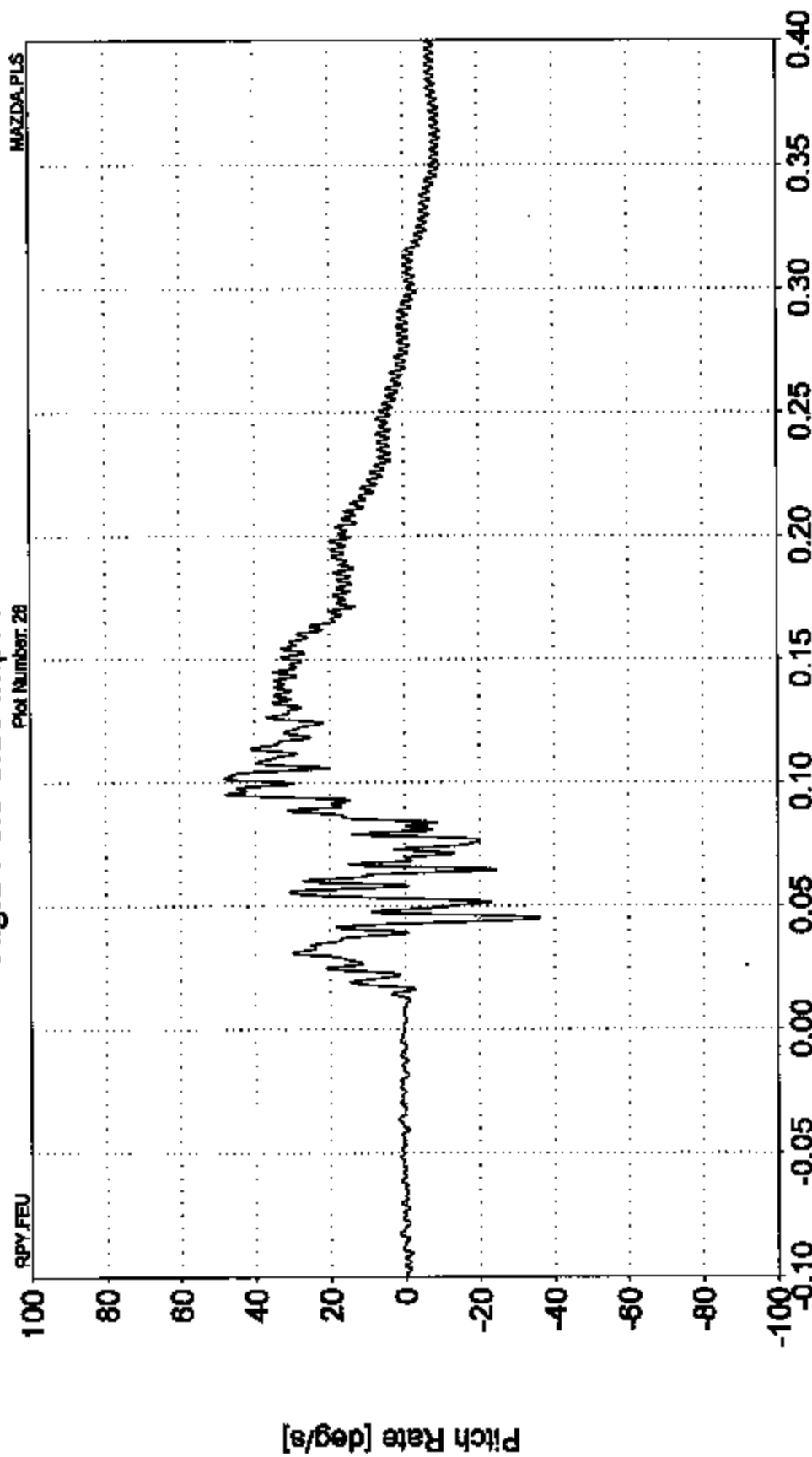
B-29

Exponent

Failure Analysis Associates*

Pitch Rate v Time

Vehicle Tunnel Near C.G.
2004 Mazda 6 - NHTSA No. C45401
Rigid Pole Side Impact Test - 5/17/04



Filter: CFC 100
Data Min: 49.1 deg/s @ 0.1017 sec.
Data Max: -38.1 deg/s @ 0.0448 sec.

201P Side Pole Impact Testing
FH03063

Time [s]

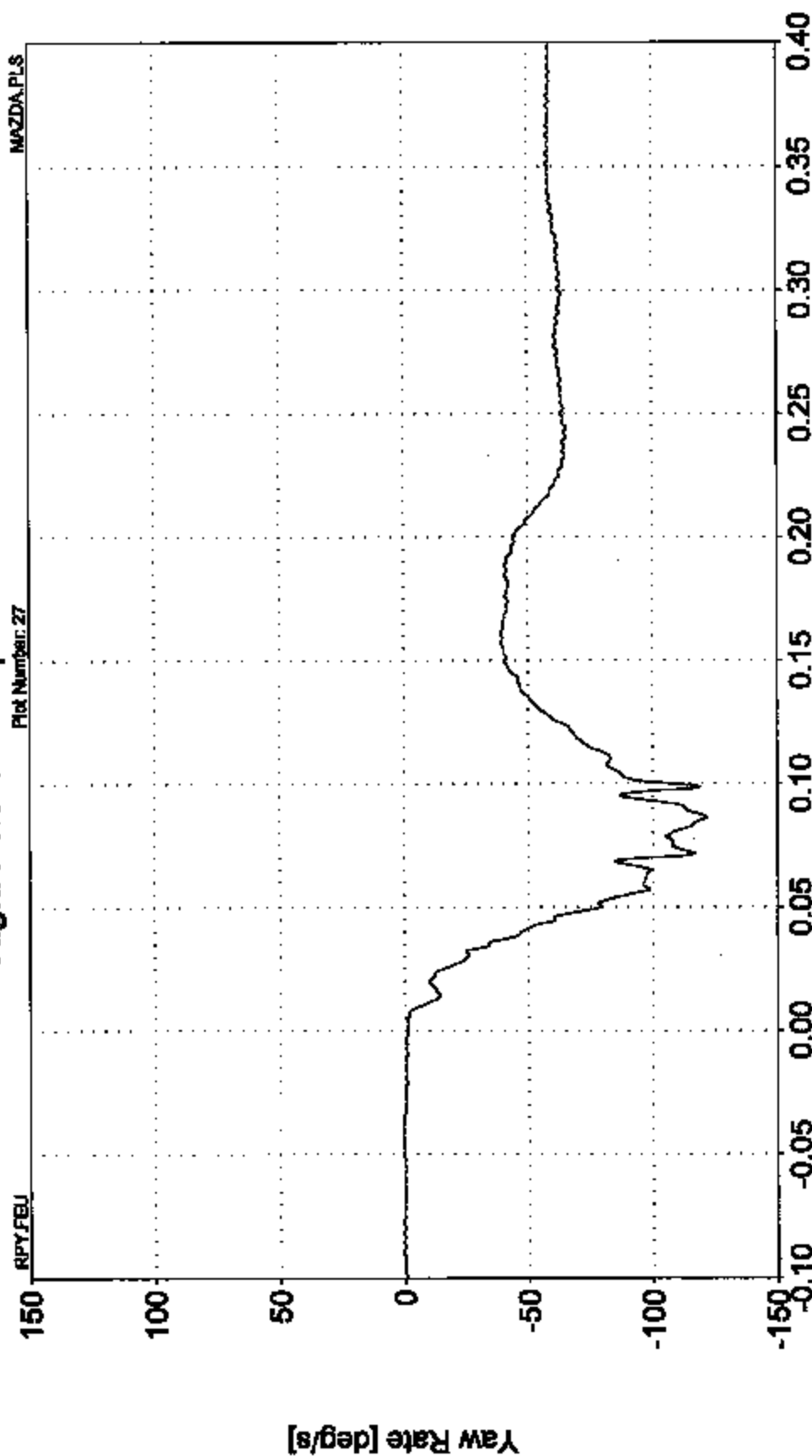
B-30

Exponent

Failure Analysis Associates

Yaw Rate v Time

Vehicle Tunnel Near C.G.
2004 Mazda 6 - NHTSA No. C45401
Rigid Pole Side Impact Test - 5/17/04



Filter: CFC 180
Data Min: 0.7 deg/s @ -0.0026 sec.
Data Max: -121.8 deg/s @ 0.0064 sec.

2012 Side Pole Impact Testing
PH-000002

Time [s]

B-31

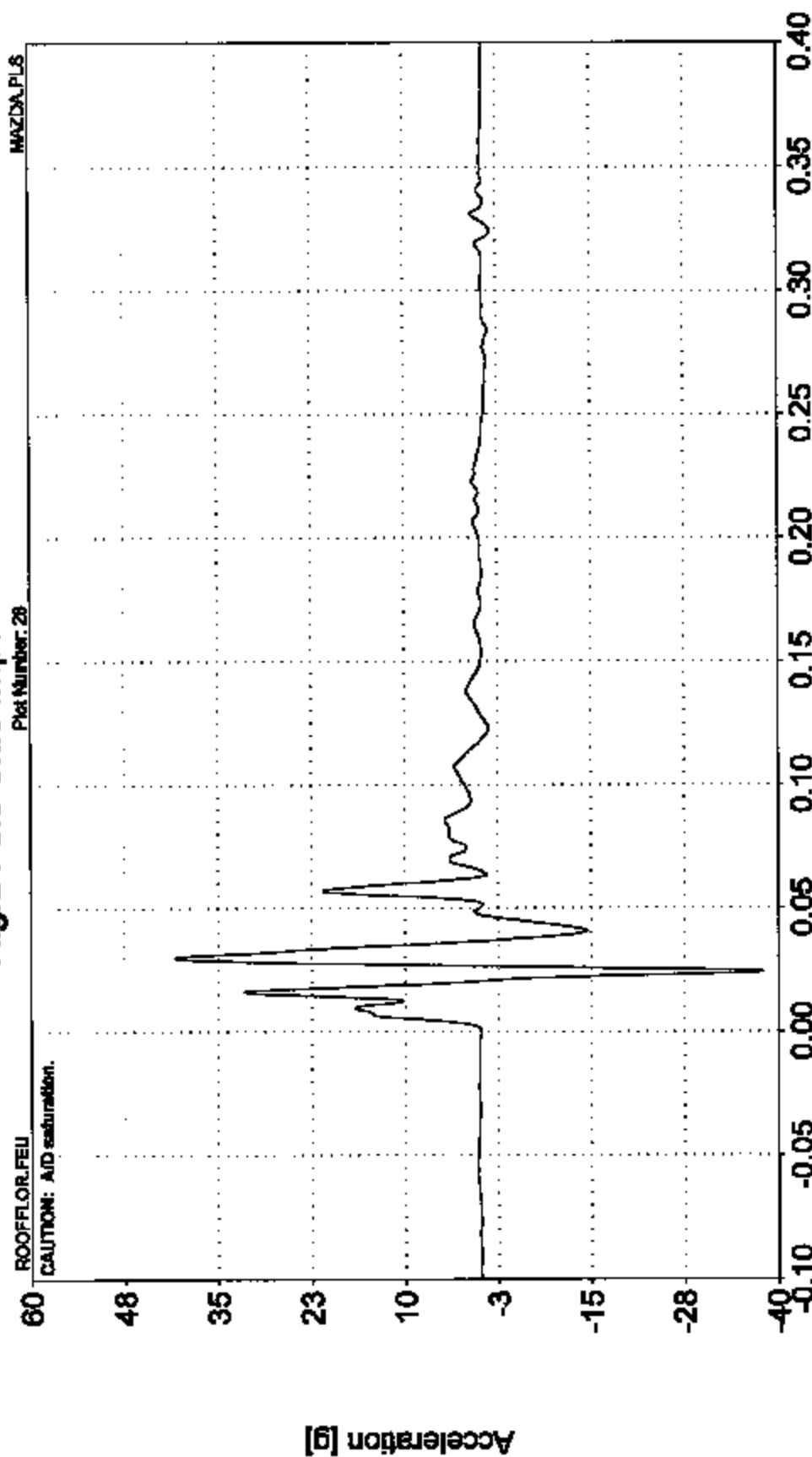
Exponent

Failure Analysis Associates[®]

Lateral Acceleration v Time

Left Floor Sill

2004 Mazda 6 - NHTSA No. C45401
Rigid Pole Side Impact Test - 5/17/04



File: CFC 60
Data Min: -40.0 g @ 0.0241 sec.
Data Max: 35.0 g @ 0.0241 sec.

201P Side Pole Impact Testing
PH00002

Time [s]

B-32

Exponent

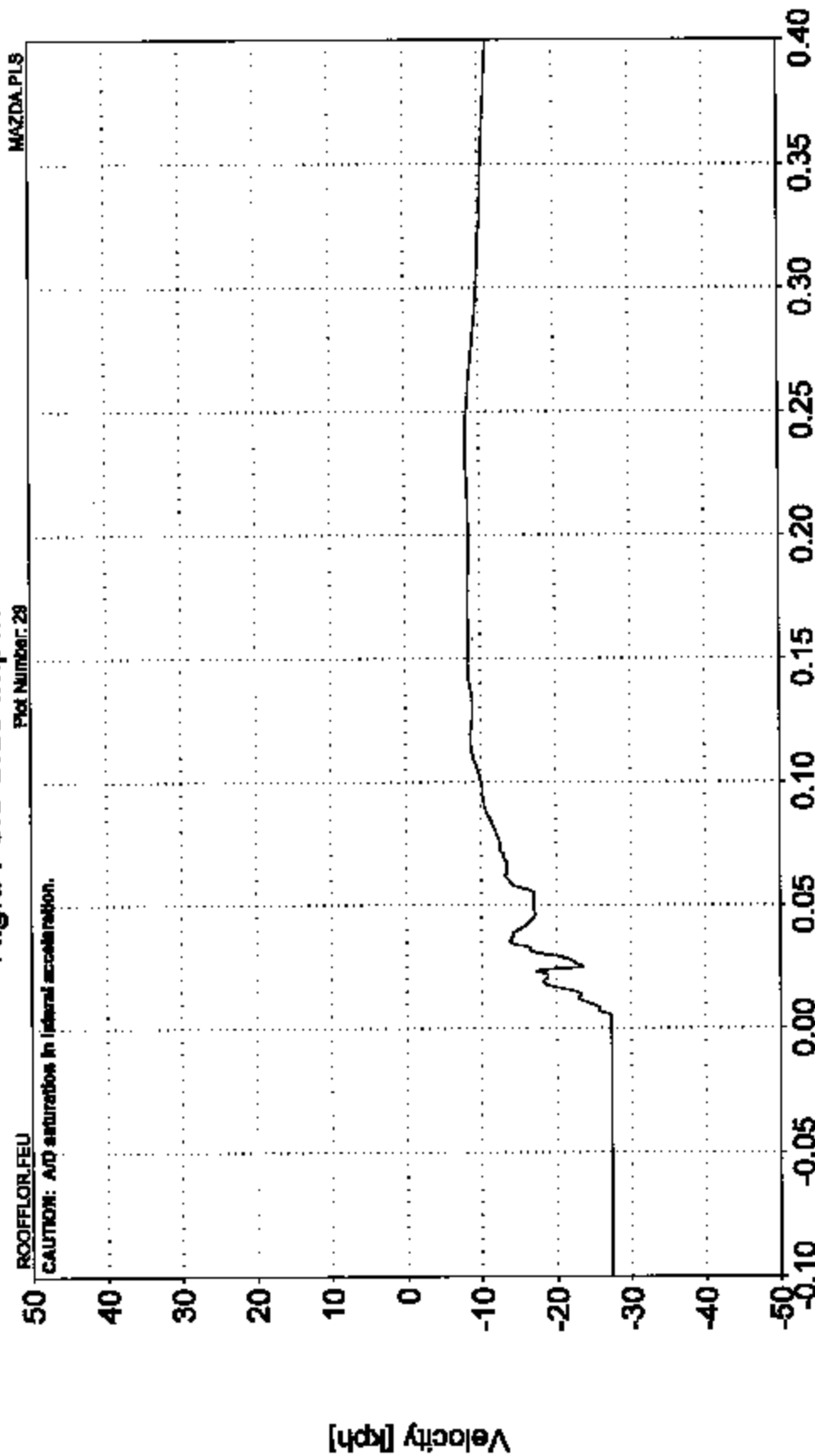
Failure Analysis Associates

Lateral Velocity v Time

Left Floor Sill

2004 Mazda 6 - NHTSA No. C45401

Rigid Pole Side Impact Test - 5/17/04



Filter: CFC 180
Data Max: -6.1 kph @ 0.3340 sec.
Data Min: -27.4 kph @ 0.0022 sec.

201P Side Pole Impact Testing

PH009982

Time [s]

B-33

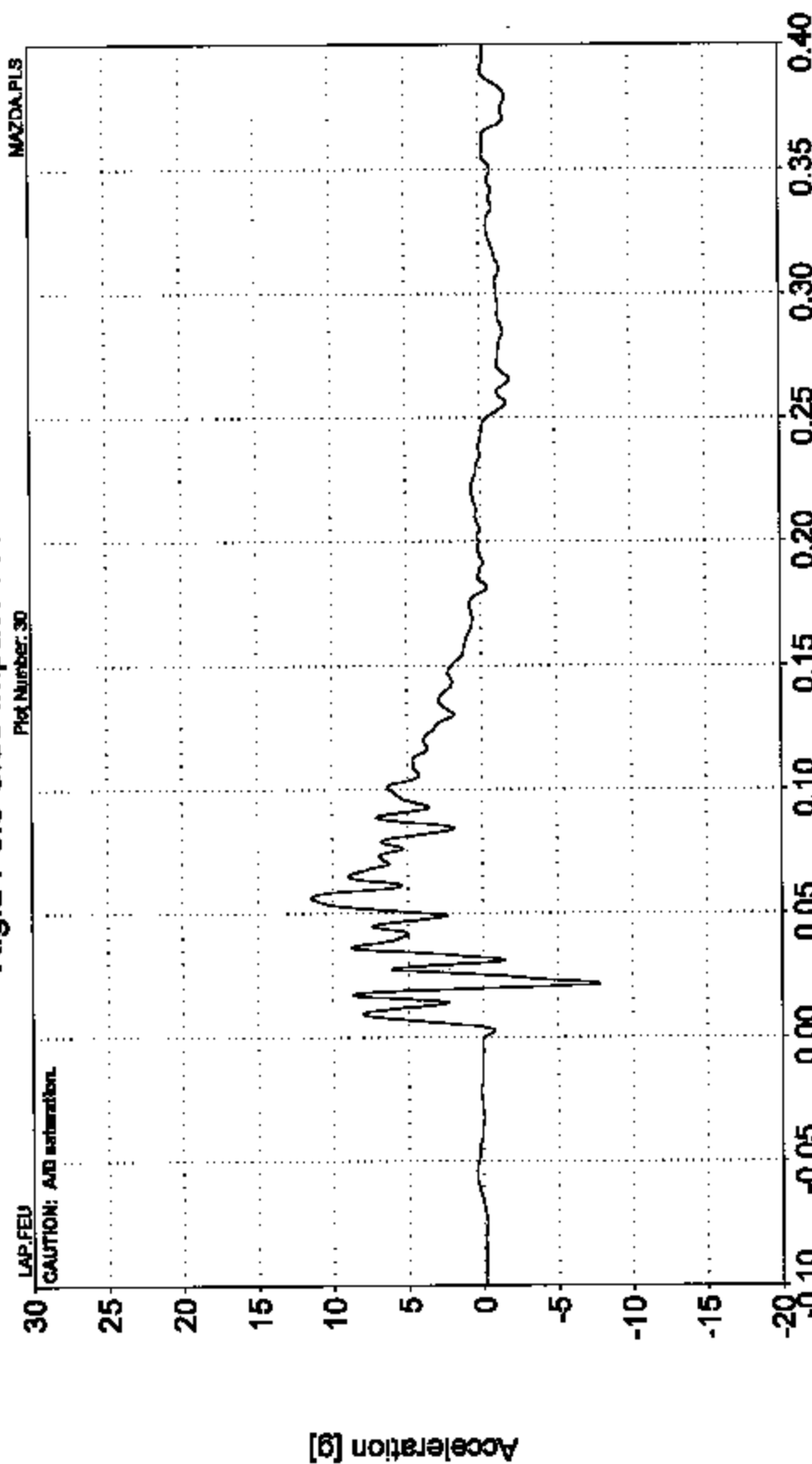
Exponent

Failure Analysis Associates*

Lateral Acceleration v Time

Left A-Pillar Sill

2004 Mazda 6 - NHTSA No. C45401
Rigid Pole Side Impact Test - 5/17/04



Filter: CFC 80
Data Max: 11.4 g @ 0.0000 sec.
Data Min: -7.8 g @ 0.0216 sec.

201P Side Pole Impact Testing
PH00052

Time [s]

B-34

Exponent

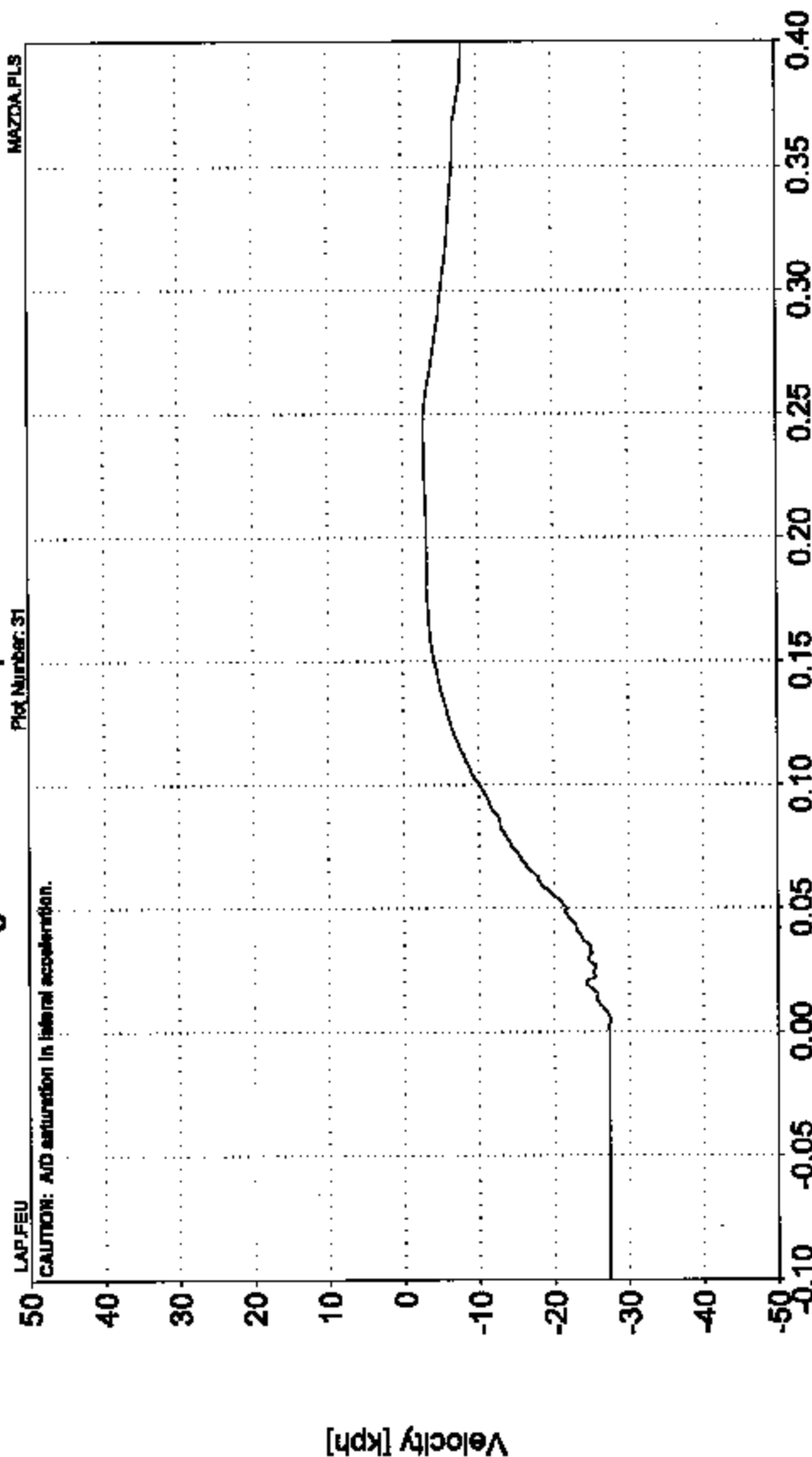
Failure Analysis Associates®

Lateral Velocity v Time

Left A-Pillar Sill

2004 Mazda 6 - NHTSA No. C45401

Rigid Pole Side Impact Test - 5/17/04



Filter: CFC 180
Data Max: -2.9 kph @ 0.2286 sec.
Data Min: -27.4 kph @ 0.0052 sec.

201P Side Pole Impact Testing
FH06882

Time [s]

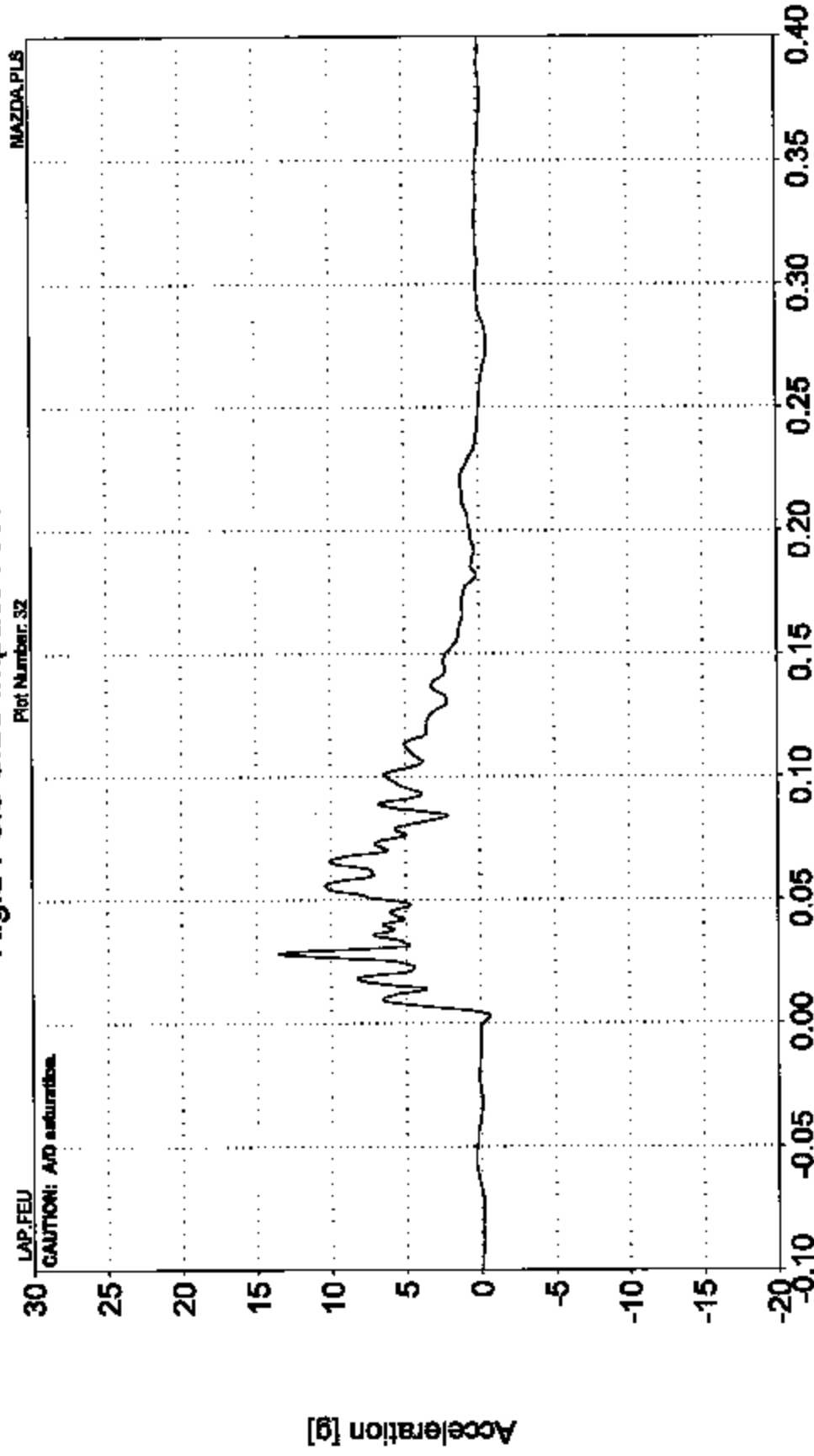
B-35

Exponent

Failure Analysis Associates®

Lateral Acceleration v Time

Left A-Pillar Low
2004 Mazda 6 - NHTSA No. C45401
Rigid Pole Side Impact Test - 5/17/04



Filter: CFC 80
Data Max: 13.6 g @ 0.0202 sec.
Data Min: -0.7 g @ 0.0028 sec.

201P Side Pole Impact Testing
PH08002

Time [s]

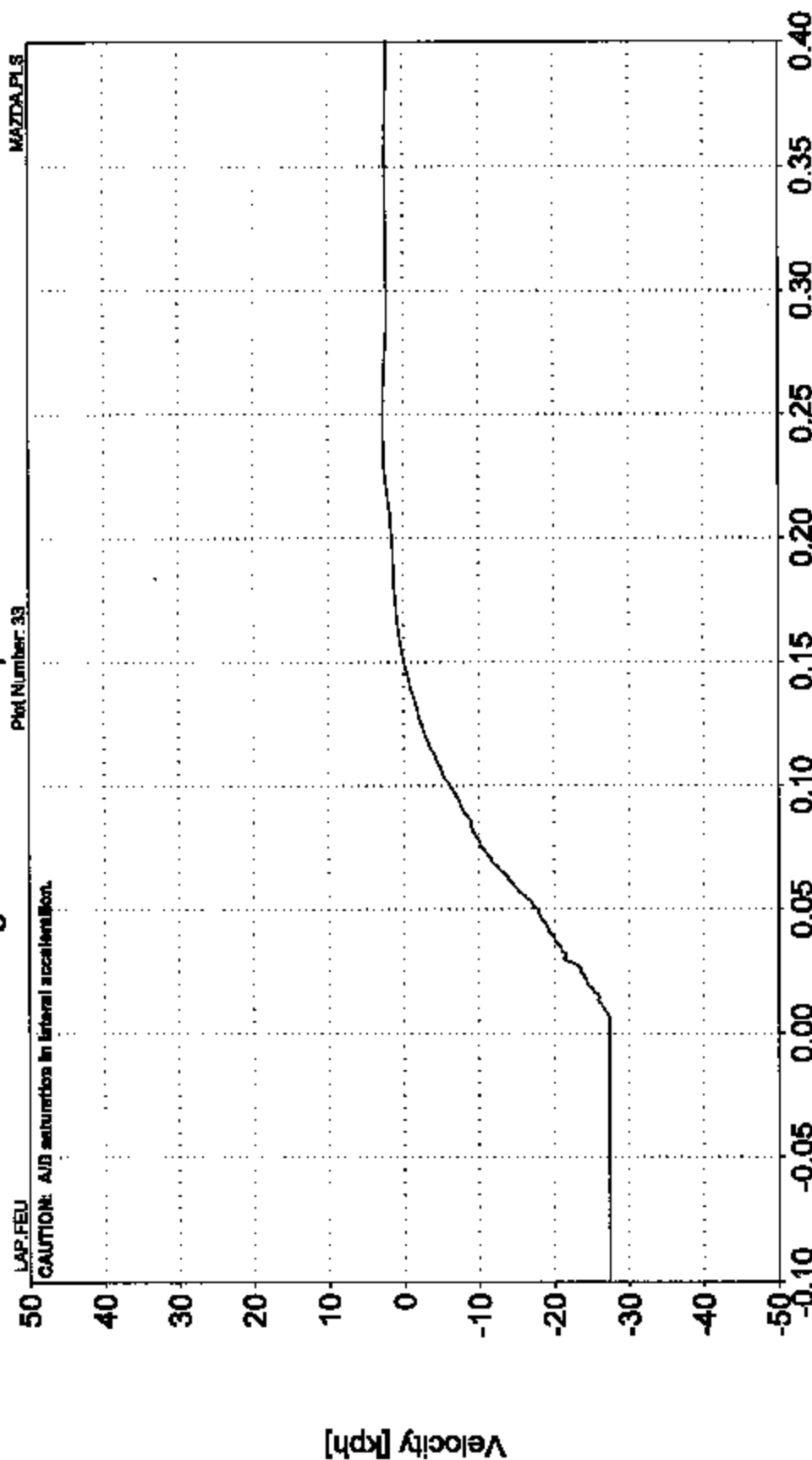
B-36

Exponent

Failure Analysis Associates

Lateral Velocity v Time

Left A-Pillar Low
2004 Mazda 6 - NHTSA No. C45401
Rigid Pole Side Impact Test - 5/17/04



Plot: CFC 180
Data Min: 2.0 kph @ 0.2402 sec.
Data Max: -27.5 kph @ 0.0056 sec.

201P Side Pole Impact Testing
PH0552

Time [s]

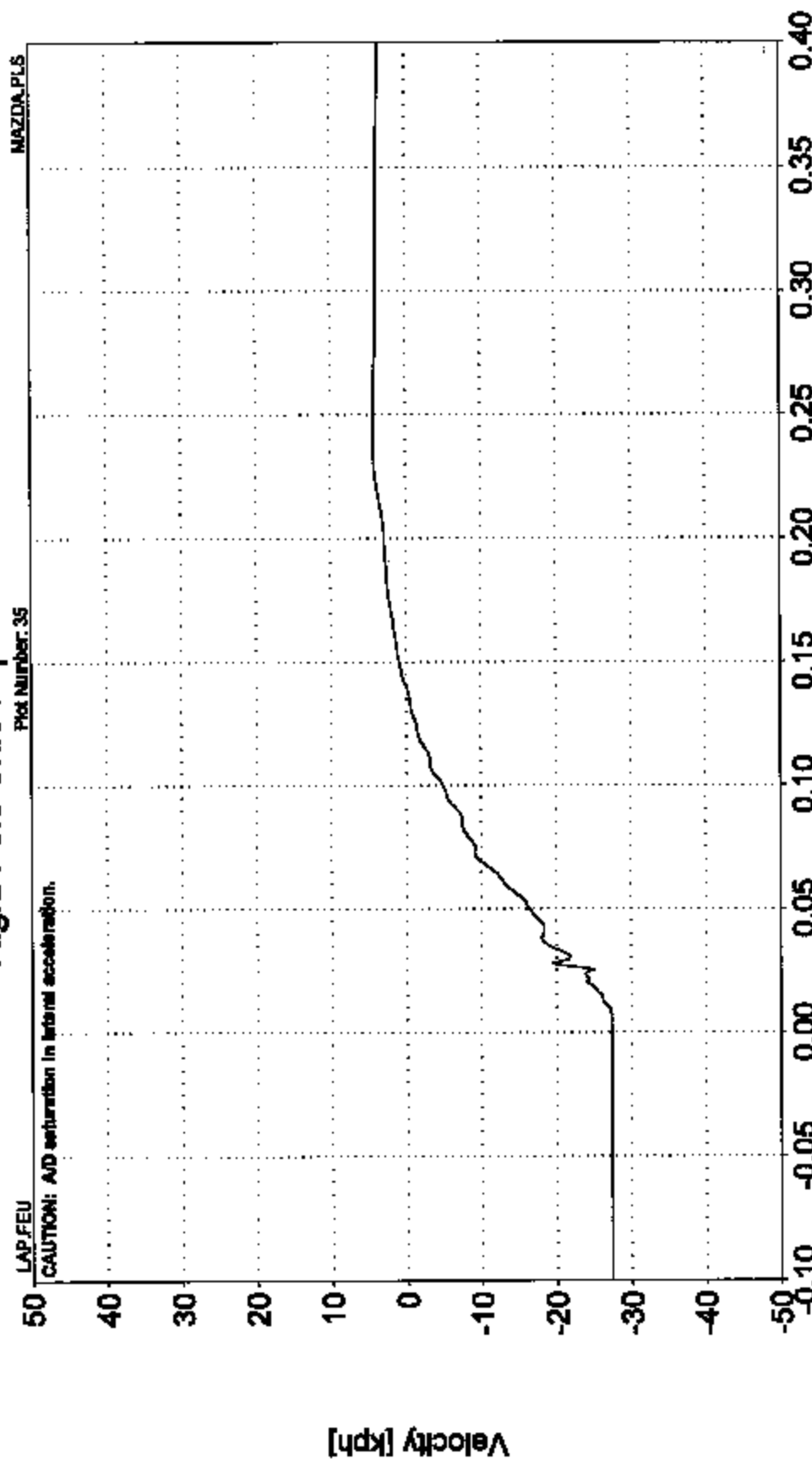
B-37

Exponent

Failure Analysis Associates*

Lateral Velocity v Time

Left A-Pillar Mid
2004 Mazda 6 - NHTSA No. C45401
Rigid Pole Side Impact Test - 5/17/04



Filter: CFC 100
Data Rate: 4.2 kph @ 0.2362 sec.
Data Min: -27.4 kph @ 0.0050 sec.

201P Side Pole Impact Testing
PH00002

Time [s]

B-39

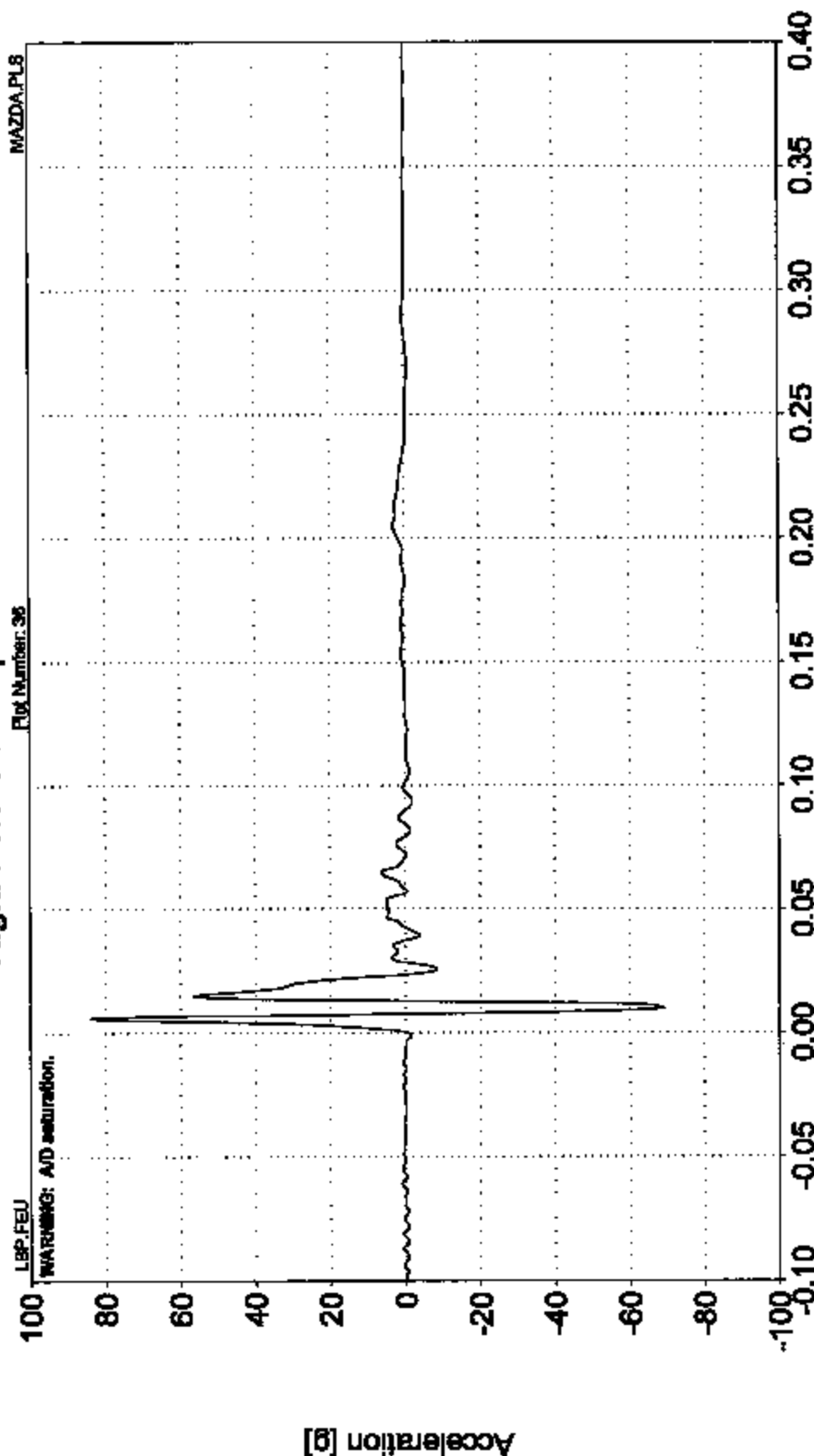
Exponent

Failure Analysis Associates®

Lateral Acceleration v Time

Left B-Pillar Sill

2004 Mazda 6 - NHTSA No. C45401
Rigid Pole Side Impact Test - 5/17/04



Filter: CFC 80
Data Rate: 64.0 g @ 0.0050 sec.
Data Rate: 64.0 g @ 0.0100 sec.
201P Side Pole Impact Testing
PH00042

B-40

Time [s]

Exponent

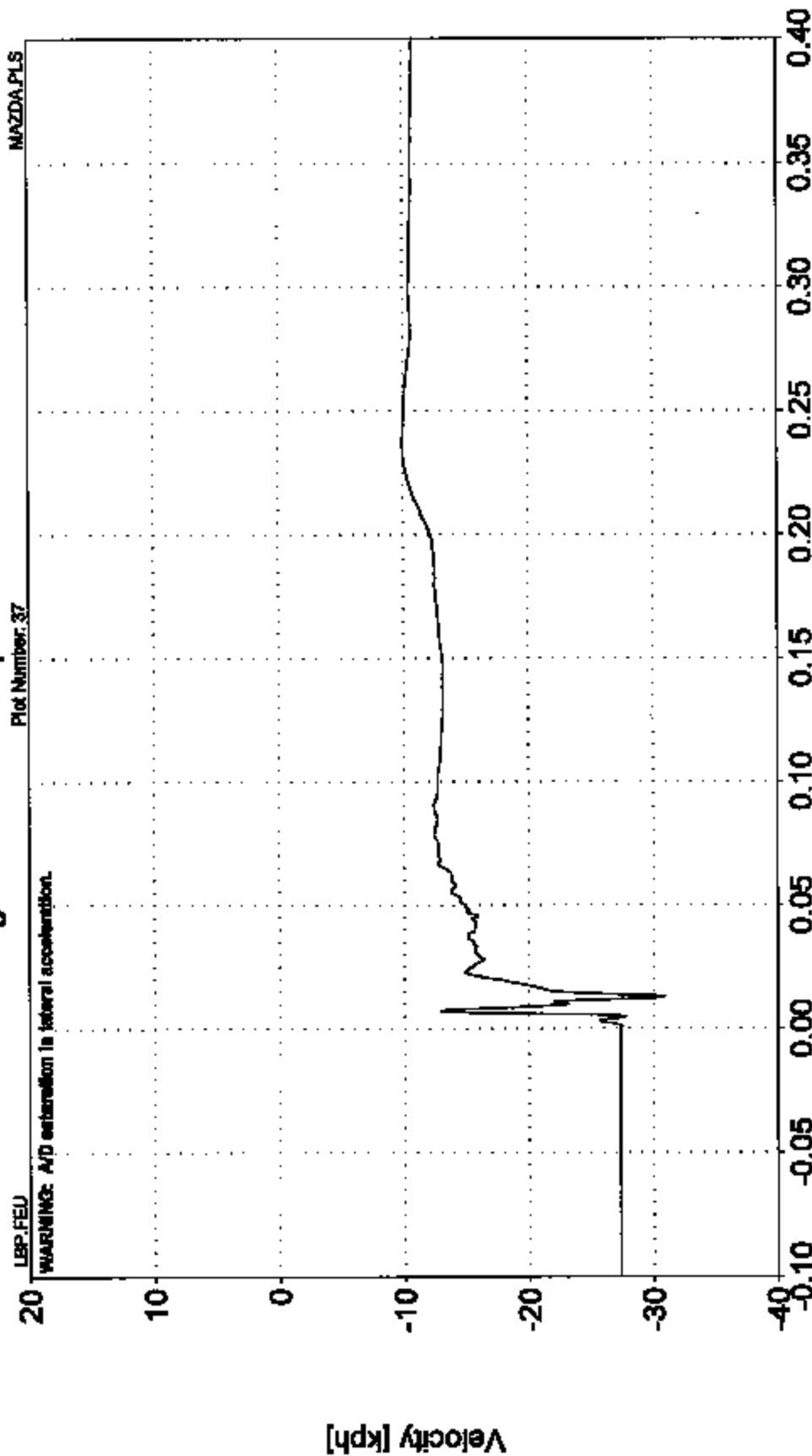
Failure Analysis Associates®

Lateral Velocity v Time

Left B-Pillar Sill

2004 Mazda 6 - NHTSA No. C45401

Rigid Pole Side Impact Test - 5/17/04



Filter: CFC 100
Data Max: -6.8 kph @ 0.2378 sec.
Data Min: -30.0 kph @ 0.0129 sec.

201P Rigid Pole Impact Testing

PH00602

Time [s]

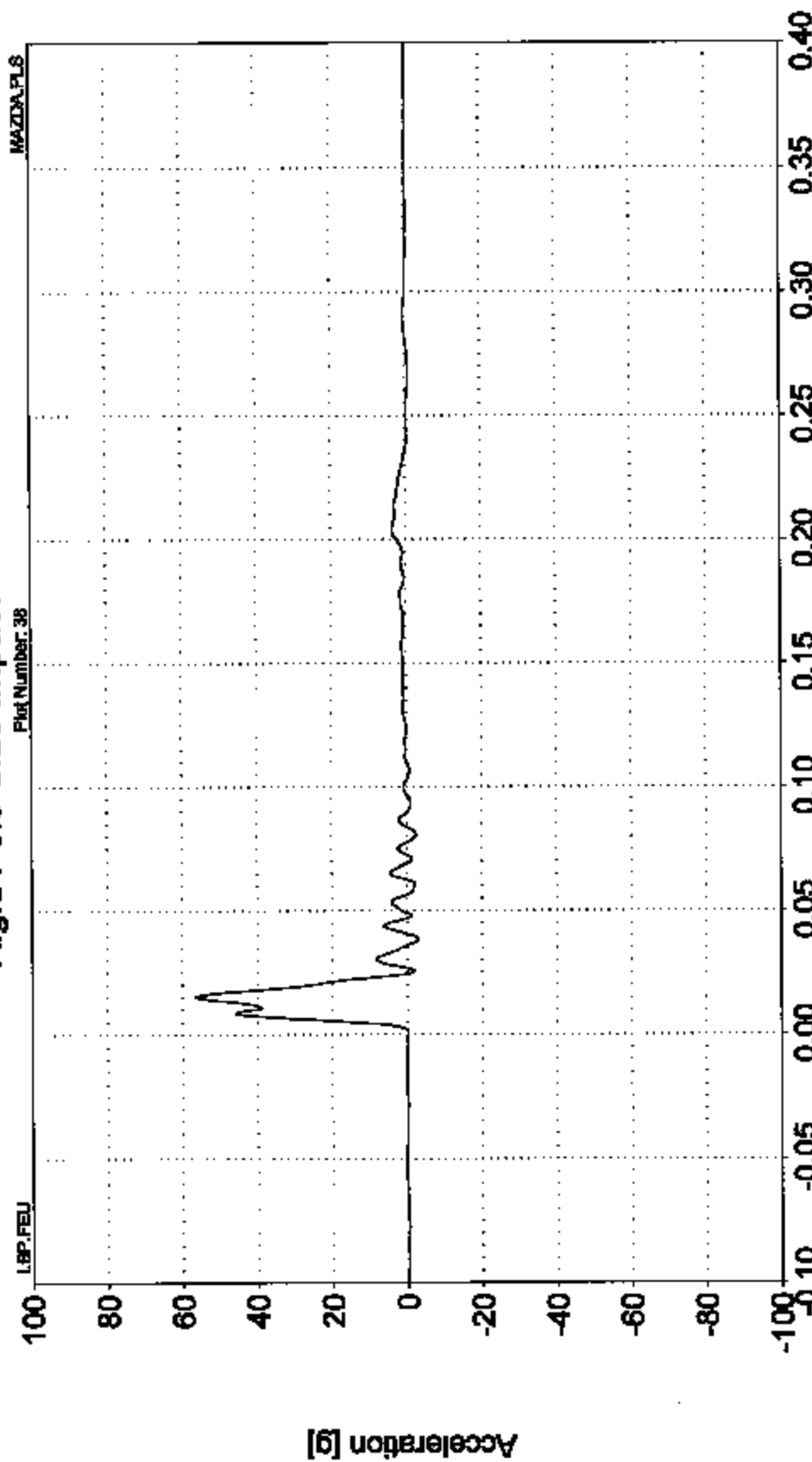
B-41

Exponent

Failure Analysis Associates®

Lateral Acceleration v Time

Left B-Pillar Low
2004 Mazda 6 - NHTSA No. C45401
Rigid Pole Side Impact Test - 5/17/04



Filter: CFC 60
Data Max: 86.9 g @ 0.0152 sec.
Data Min: -3.0 g @ 0.0355 sec.

201P Side Pole Impact Testing
PH09682

Time [s]

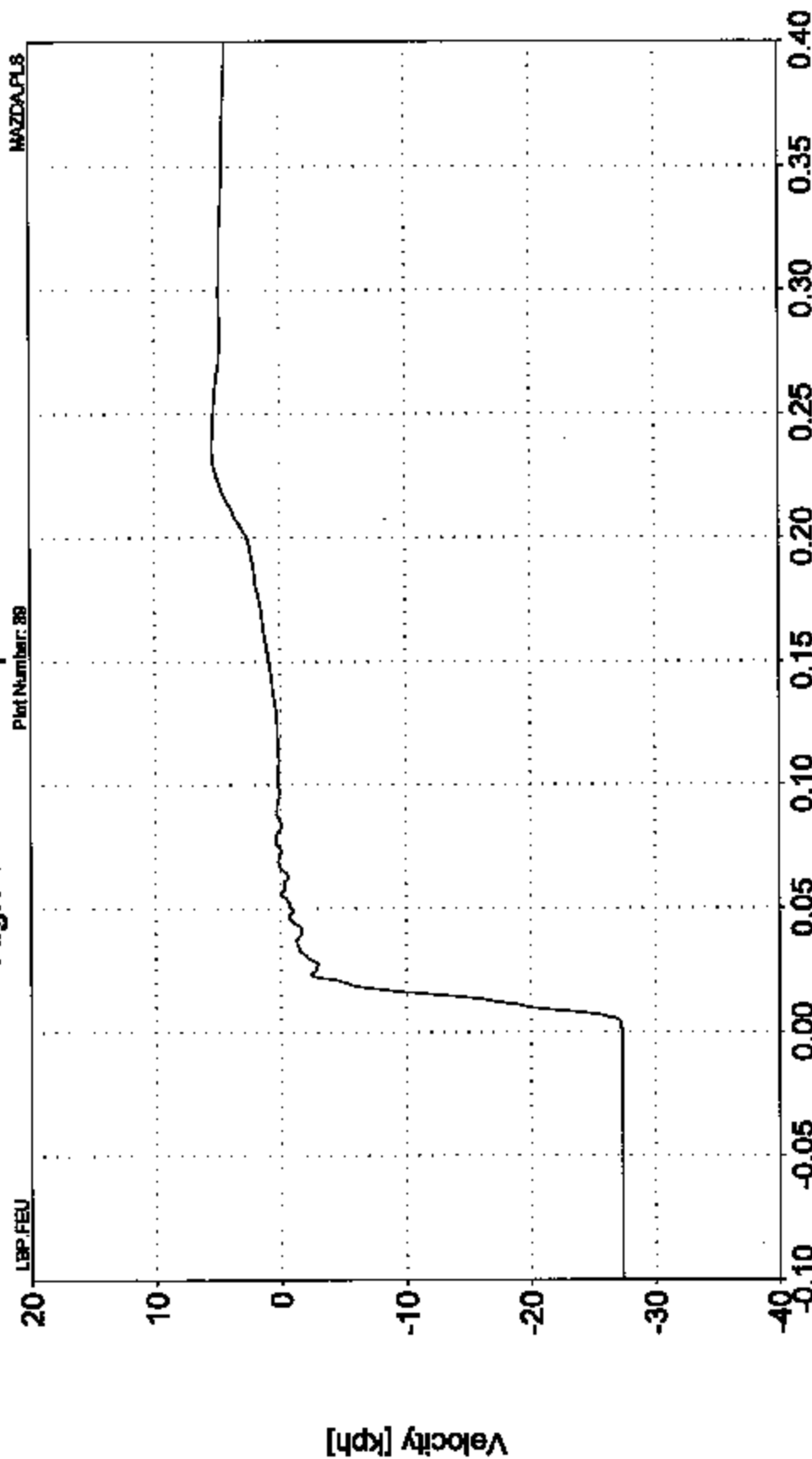
B-42

Exponent
Failure Analysis Associates®

Lateral Velocity v Time

Left B-Pillar Low

2004 Mazda 6 - NHTSA No. C45401
Rigid Pole Side Impact Test - 5/17/04



Filter: CIO 100
Data Min: 5.4 kph @ 0.2500 sec.
Data Max: -27.4 kph @ -0.0000 sec.

201P Side Pole Impact Testing
PH00002

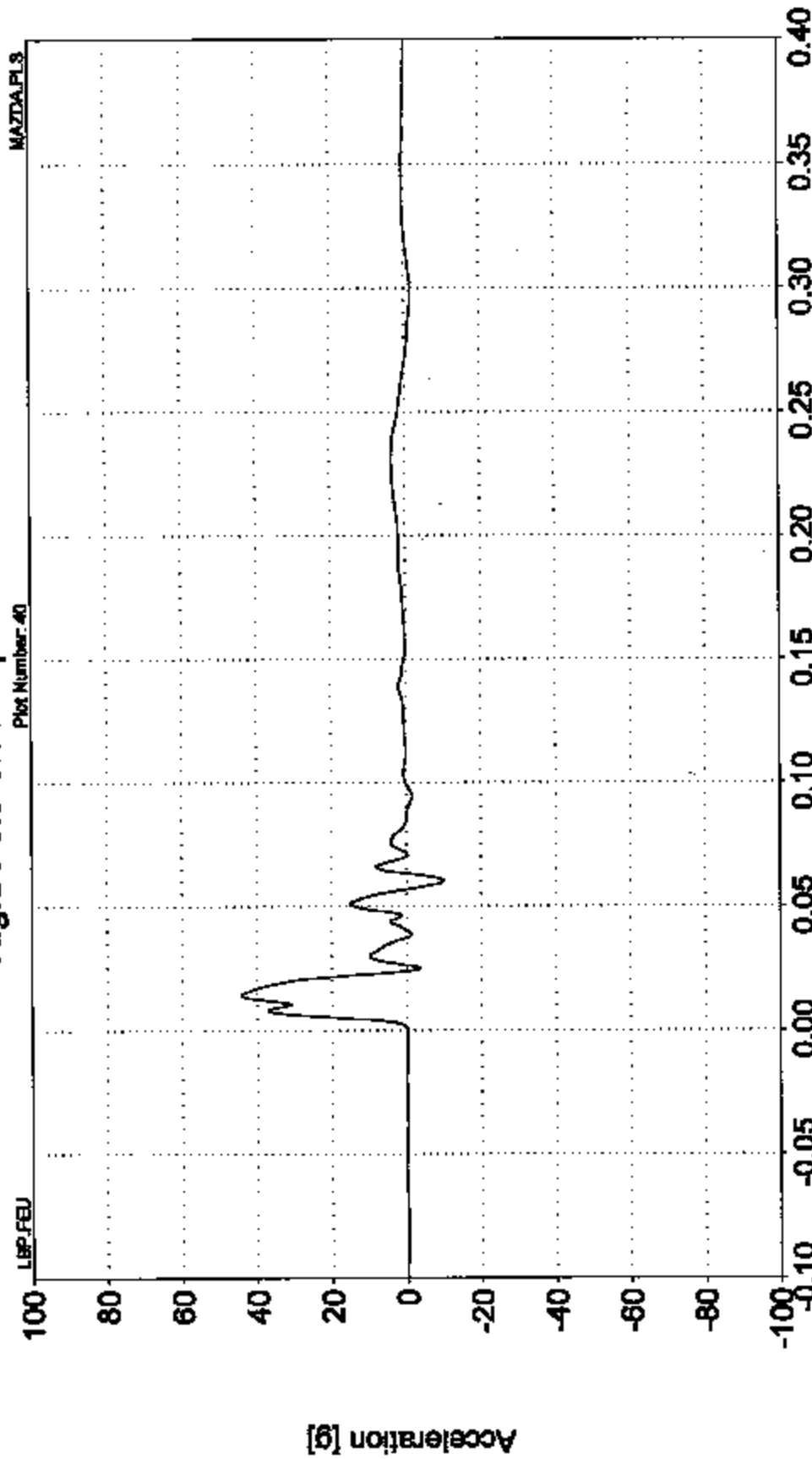
Time [s]

B-43

Exponent
Failure Analysis Associates®

Lateral Acceleration v Time

Left B-Pillar Mid
2004 Mazda 6 - NHTSA No. C45401
Rigid Pole Side Impact Test - 5/17/04



Filter: CFC 60
Data Max: 44.2 g @ 0.0140 sec.
Data Min: -0.9 g @ 0.0603 sec.

201P Side Pole Impact Testing
PH00052

Time [s]

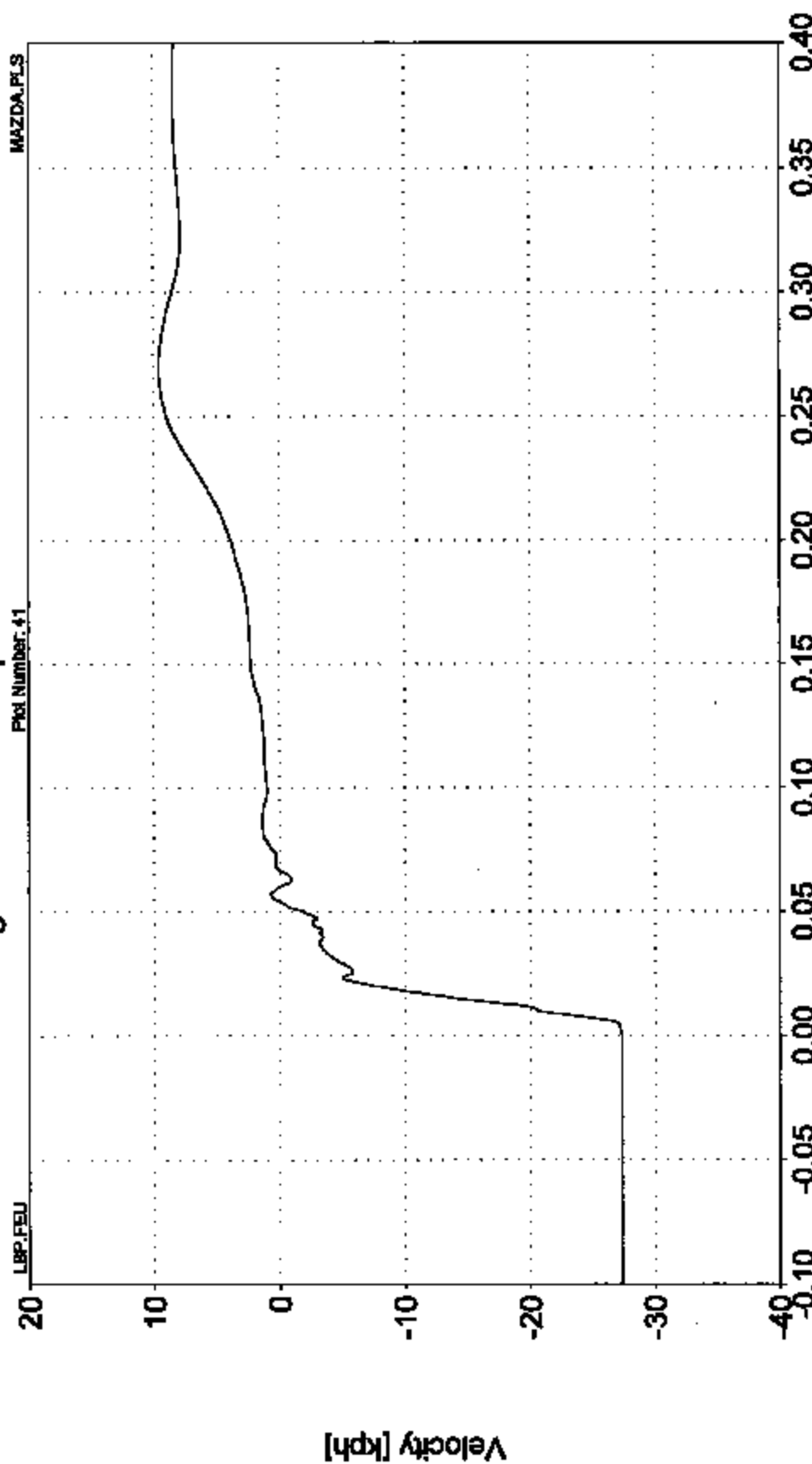
B-44

Exponent

Failure Analysis Associates®

Lateral Velocity v Time

Left B-Pillar Mid
2004 Mazda 6 - NHTSA No. C45401
Rigid Pole Side Impact Test - 5/17/04



Fiber CFC 160
Data Rec: 9.8 kph @ 0.2864 sec.
Data Rec: -27.4 kph @ -0.2000 sec.

201P Side Pole Impact Testing
PH03662

Time [s]

B-45

Exponent

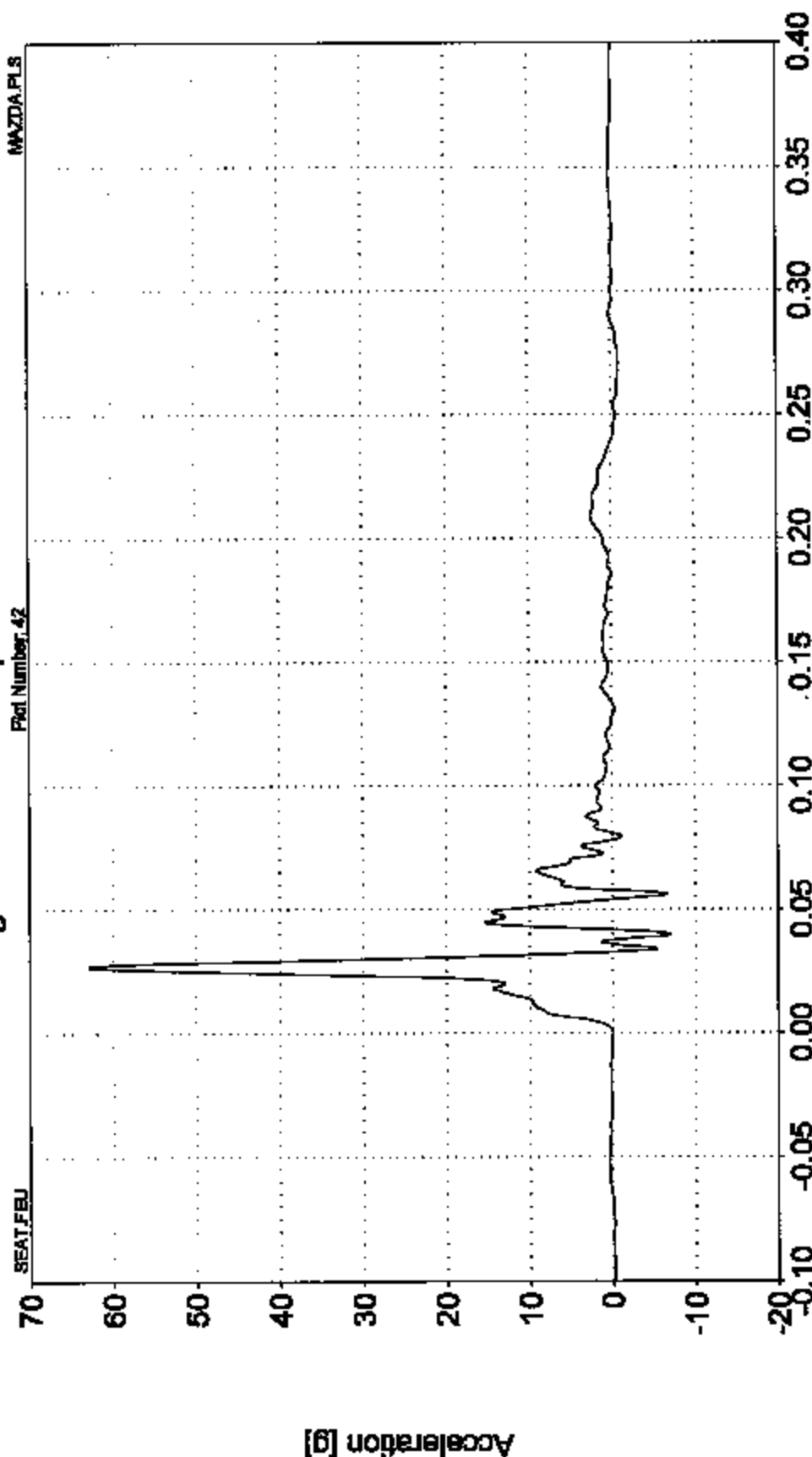
Failure Analysis Associates

Lateral Acceleration v Time

Driver Seat Track

2004 Mazda 6 - NHTSA No. C45401

Rigid Pole Side Impact Test - 5/17/04



Filter: CFC 60
Data Min: 0.02s @ 0.02s sec.
Data Max: 7.0 g @ 0.02s sec.

201P Side Pole Impact Testing
PH00002

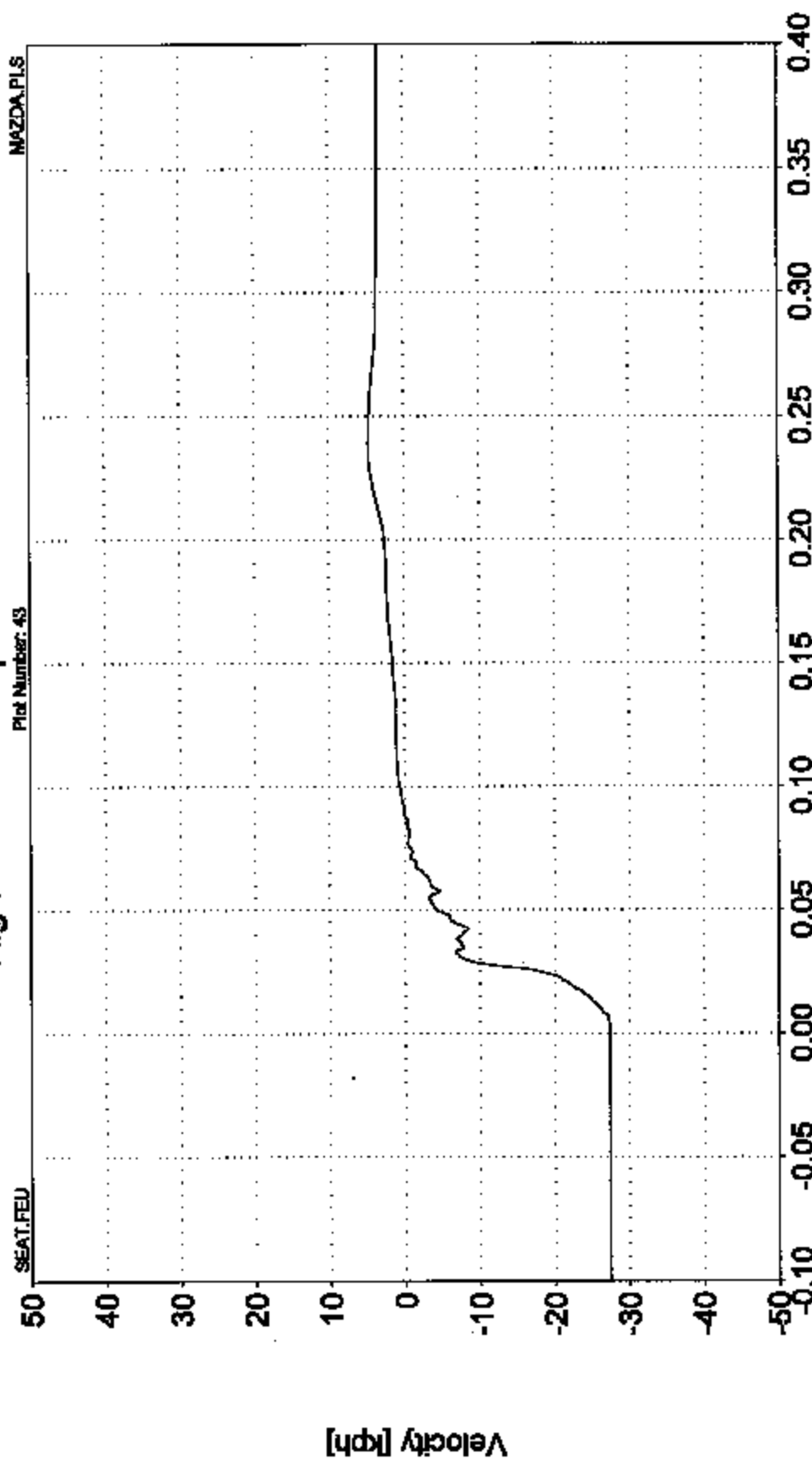
B-46

Exponent

Failure Analysis Associates

Lateral Velocity v Time

Driver Seat Track
2004 Mazda 6 - NHTSA No. C45401
Rigid Pole Side Impact Test - 5/17/04



Filter: GFC 100
Data Rate: 4.7 kpts @ 0.2365 sec.
Data Min: -27.4 Vph @ 0.2000 sec.

201P Side Pole Impact Testing
PH06862

Time [s]

B-47

Exponent

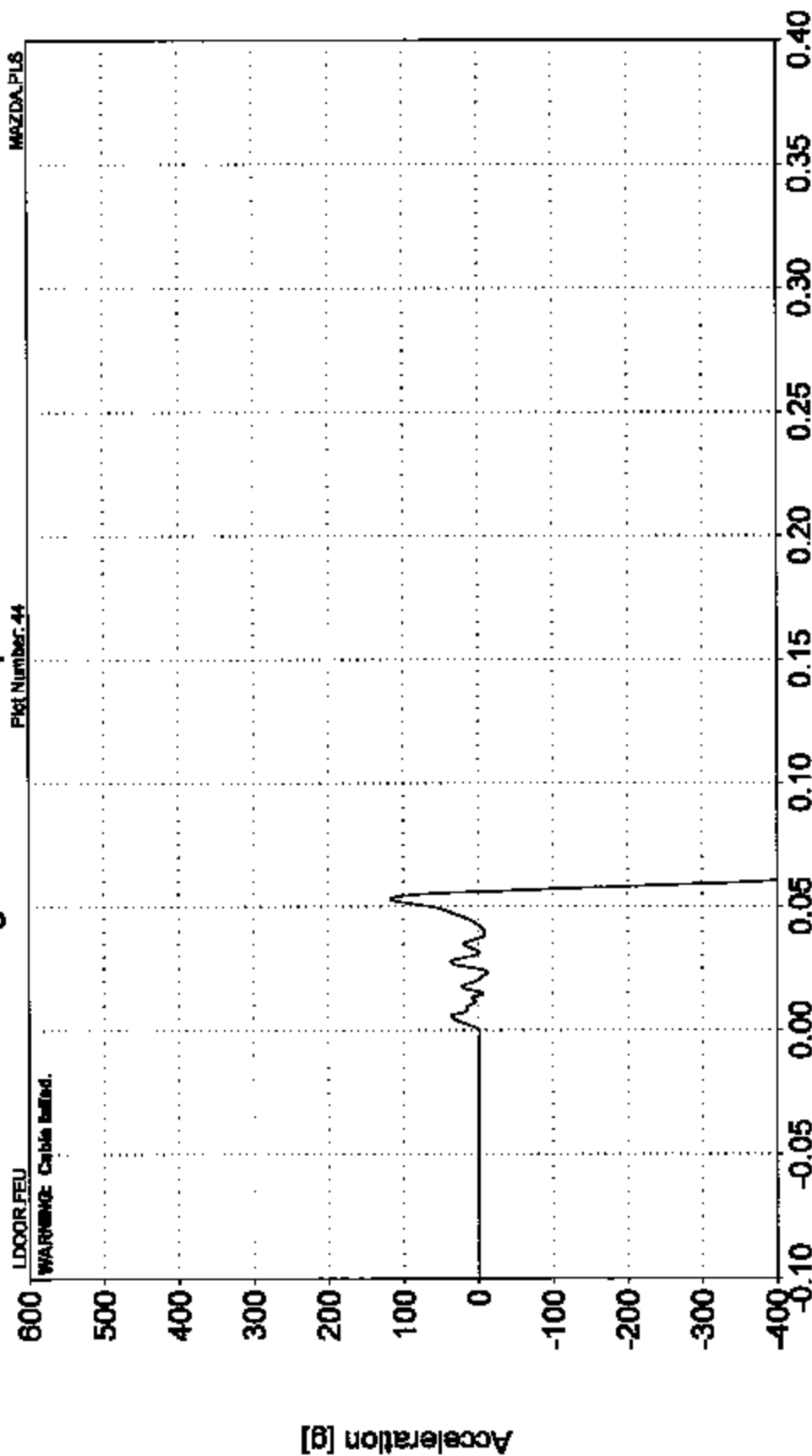
Failure Analysis Associates[®]

Lateral Acceleration v Time

Left Door Lower

2004 Mazda 6 - NHTSA No. C45401

Rigid Pole Side Impact Test - 5/17/04



Filter: CFC 80
Data Min: 118.9 g @ 0.0031 sec.
Data Max: -808.6 g @ 0.0052 sec.

2011 P Side Pole Impact Trailing
PH00002

Time [s]

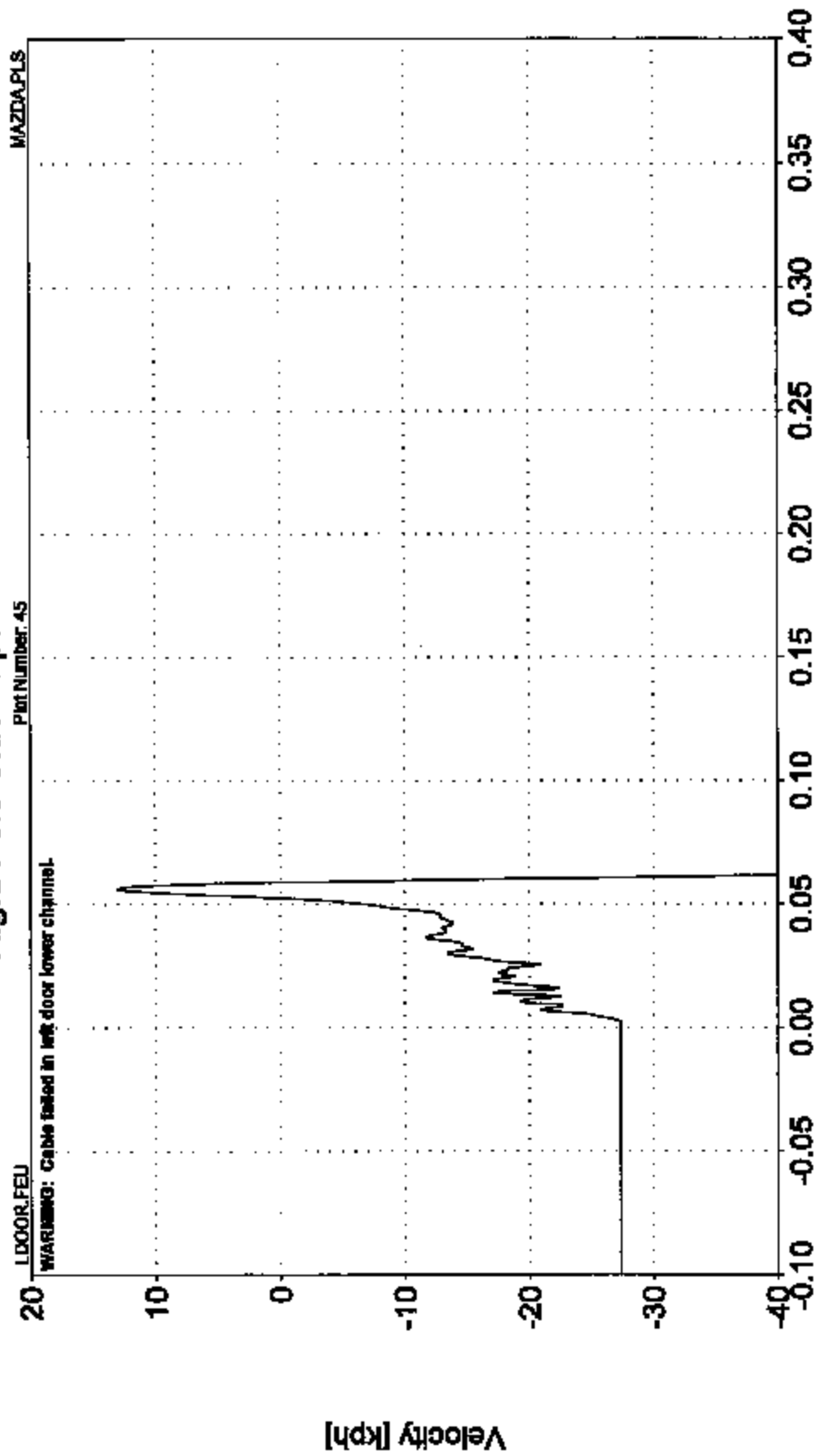
B-48

Exponent

Failure Analysis Associates®

Lateral Velocity v Time

Left Door Lower
2004 Mazda 6 - NHTSA No. C45401
Rigid Pole Side Impact Test - 5/17/04



Filter: CFC 160
Data Max: 13.0 kph @ 0.0083 sec.
Data Min: -8040.3 kph @ 0.4000 sec.

201P Side Pole Impact Testing
FH08B02

Time [s]

B-49

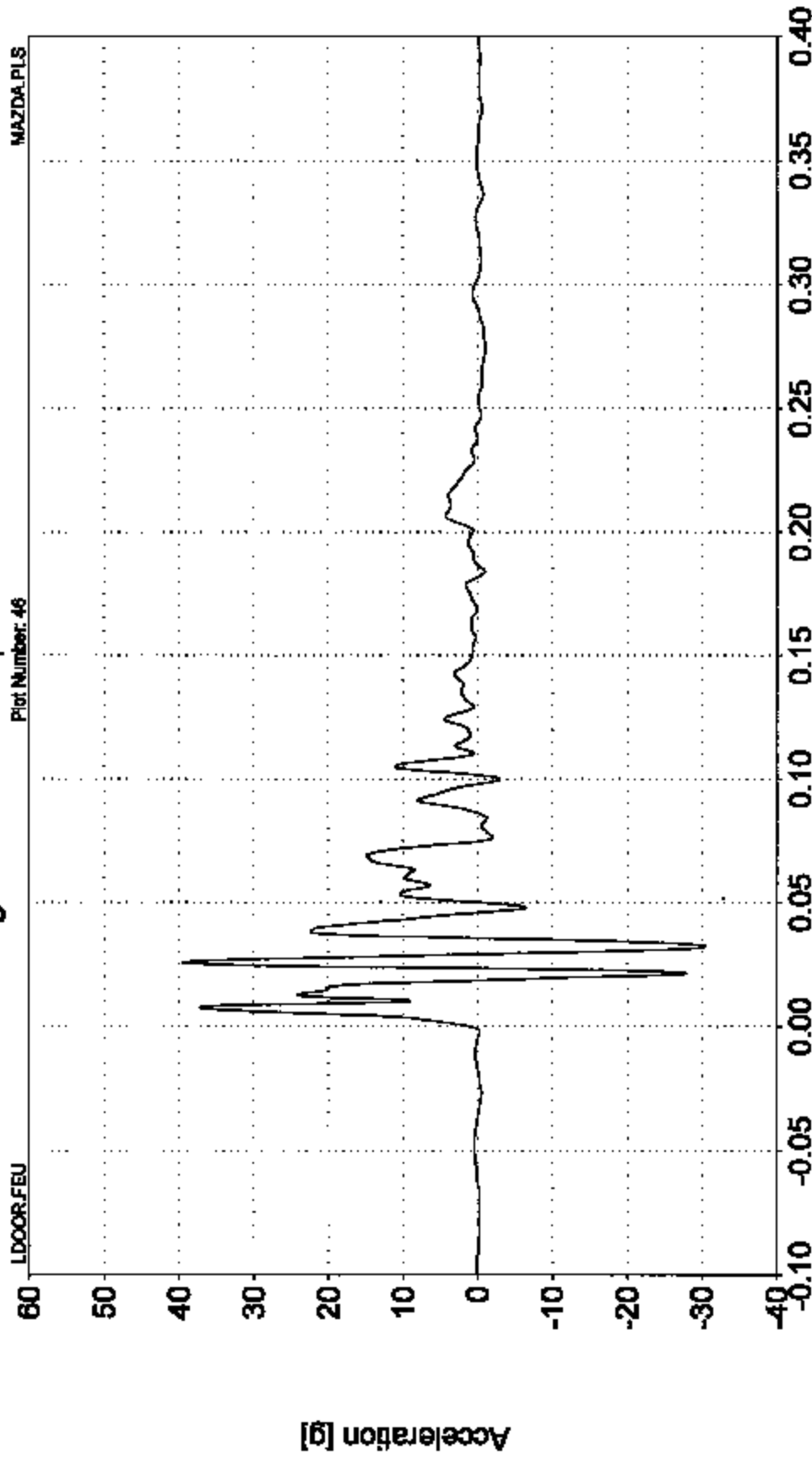
Exponent

Failure Analysis Associates®

Lateral Acceleration v Time

Left Door Middle

2004 Mazda 6 - NHTSA No. C45401
Rigid Pole Side Impact Test - 5/17/04



Filter: CFC 40
Data Max: 20.0 g @ 0.0057 sec.
Data Min: -30.0 g @ 0.0122 sec.

201P Side Pole Impact Testing
FH05032

Time [s]

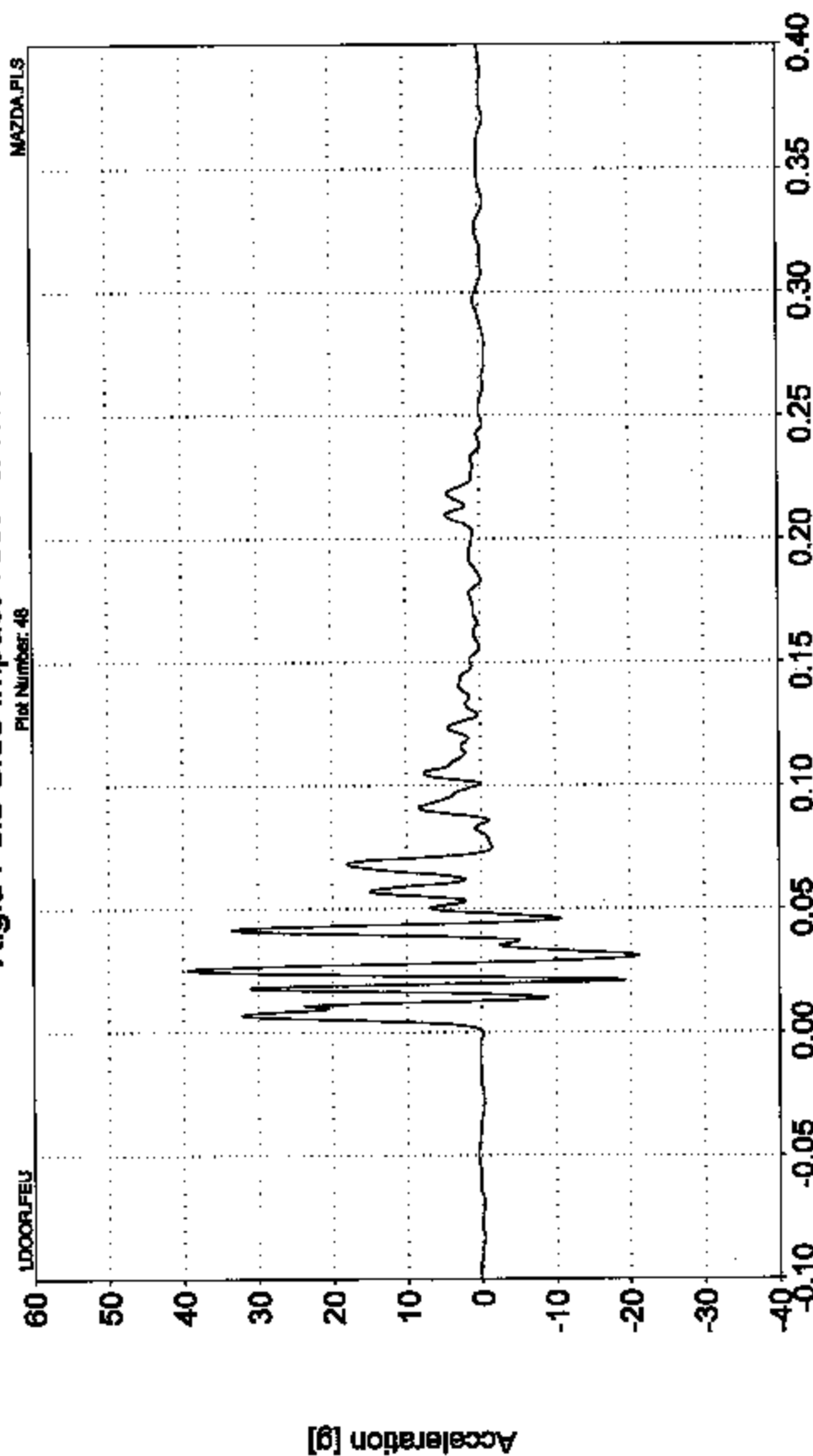
B-50

Exponent

Failure Analysis Associates*

Lateral Acceleration v Time

Left Door Upper
2004 Mazda 6 - NHTSA No. C45401
Rigid Pole Side Impact Test - 5/17/04



Filter: CFC 80
Data Rate: 40.0 g @ 0.0251 ms
Data Min: -21.1 g @ 0.0306 ms

201P Side Pole Impact Testing
PH06052

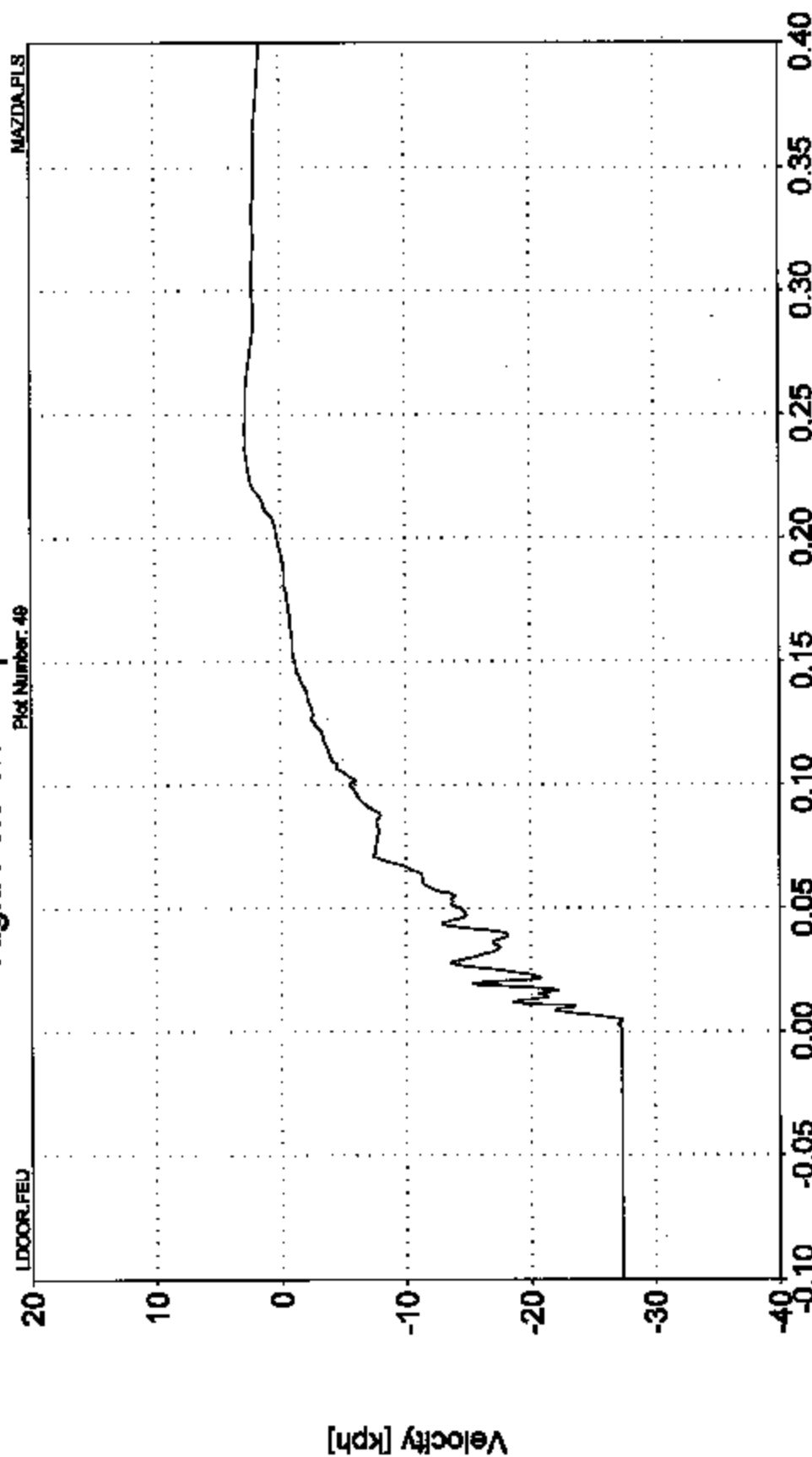
Time [s]

B-52

Exponent
Failure Analysis Associates®

Lateral Velocity v Time

Left Door Upper
2004 Mazda 6 - NHTSA No. C45401
Rigid Pole Side Impact Test - 5/17/04



File: CFC 100
Data Max: 2.8 kph @ 0.2444 sec.
Data Min: -27.4 kph @ 0.0042 sec.

201P Side Pole Impact Testing
PH08062

Time [s]

B-53

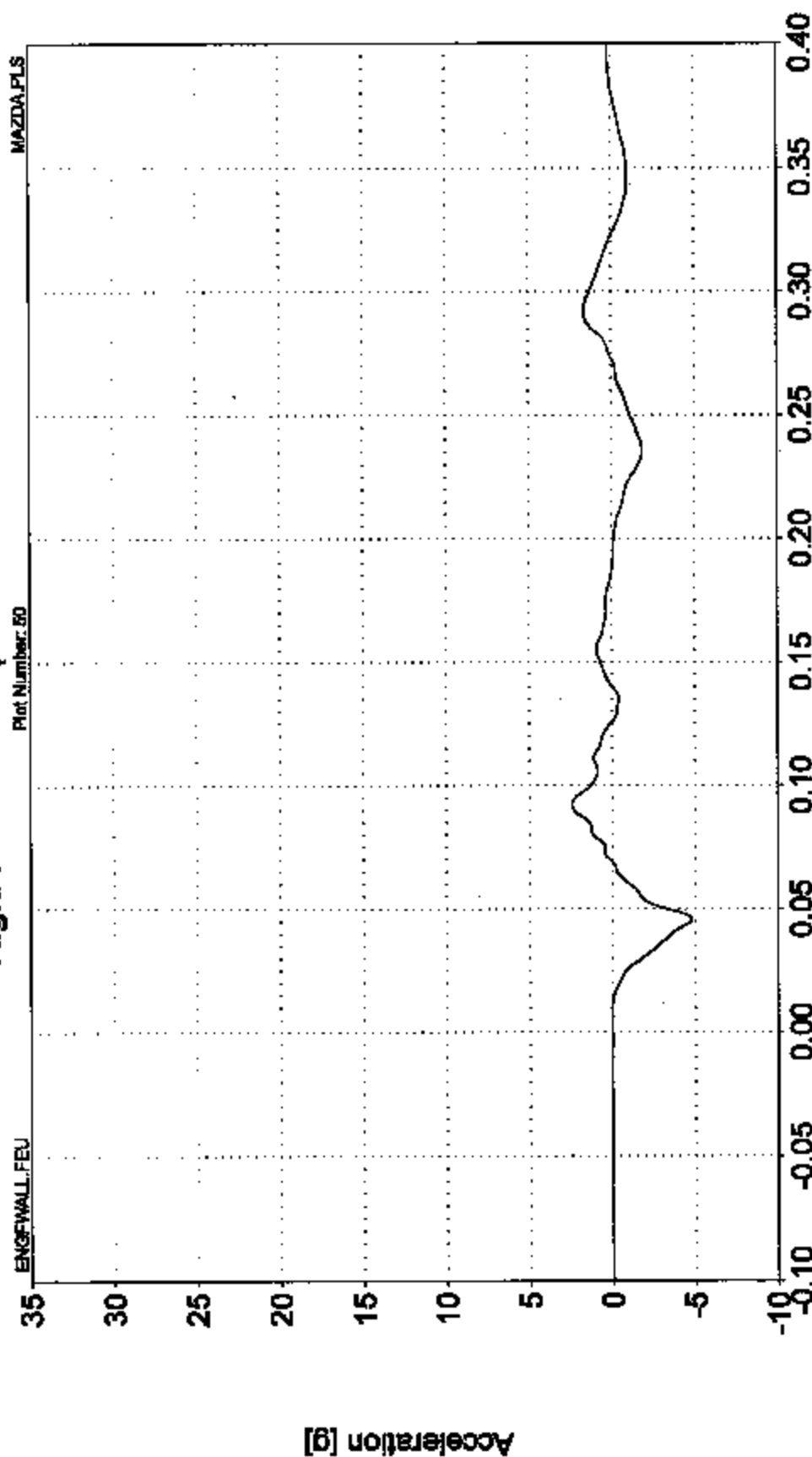
Exponent

Failure Analysis Associates®

Longitudinal Acceleration v Time

Engine

2004 Mazda 6 - NHTSA No. C45401
Rigid Pole Side Impact Test - 5/17/04



Filter: CFC 40
Data Max: 2.4 g @ 0.0018 sec.
Data Min: -6.8 g @ 0.0456 sec.
201P Side Pole Impact Testing
PH00982

Time [s]

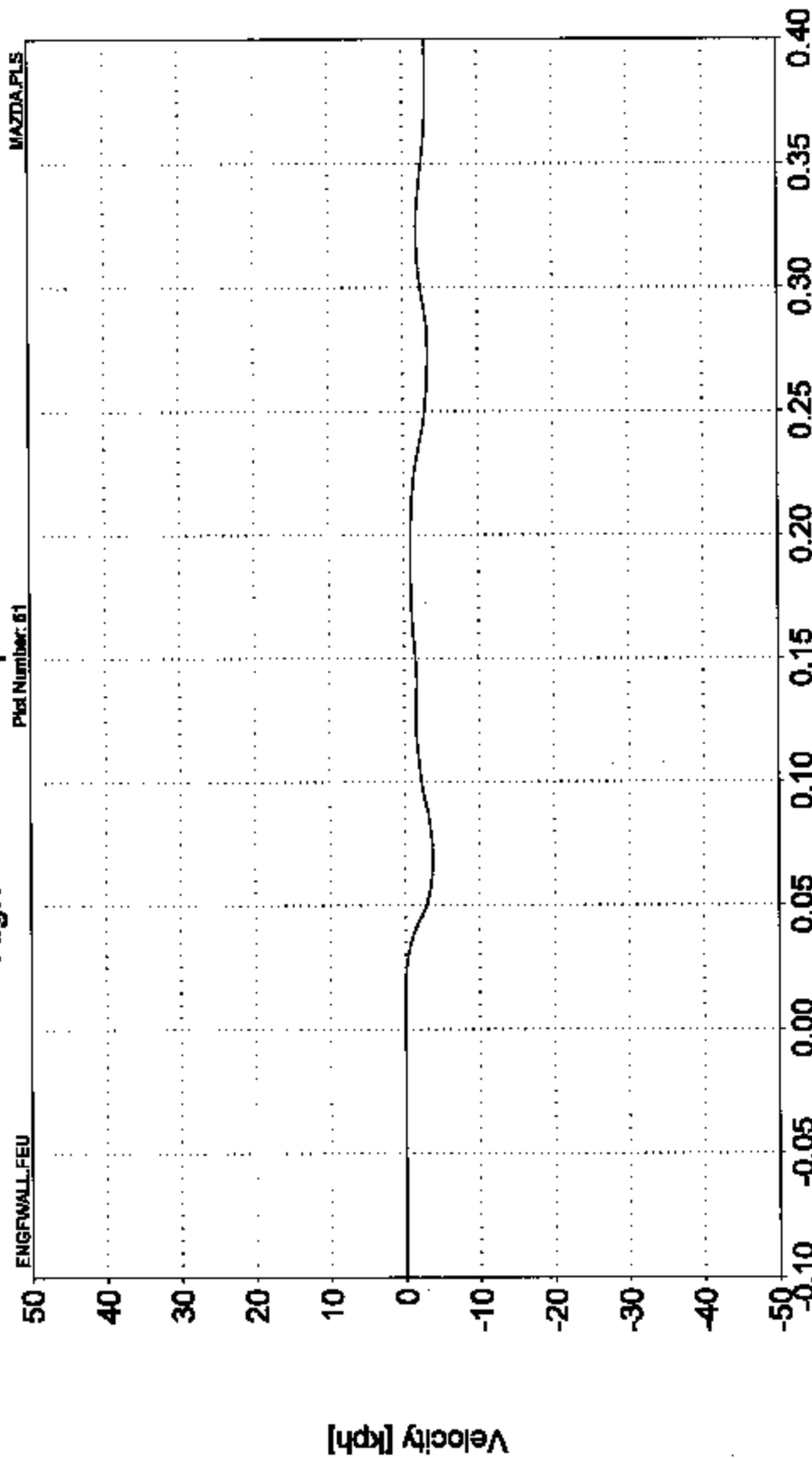
B-54

Exponent
Failure Analysis Associates®

Longitudinal Velocity v Time

Engine

2004 Mazda 6 - NHTSA No. C45401
Rigid Pole Side Impact Test - 5/17/04



Filter: CFC 180
Data Max: 0.0 kph @ 0.0167 sec
Data Min: -3.7 kph @ 0.0696 sec

201P Side Pole Impact Test
PH03552

Time [s]

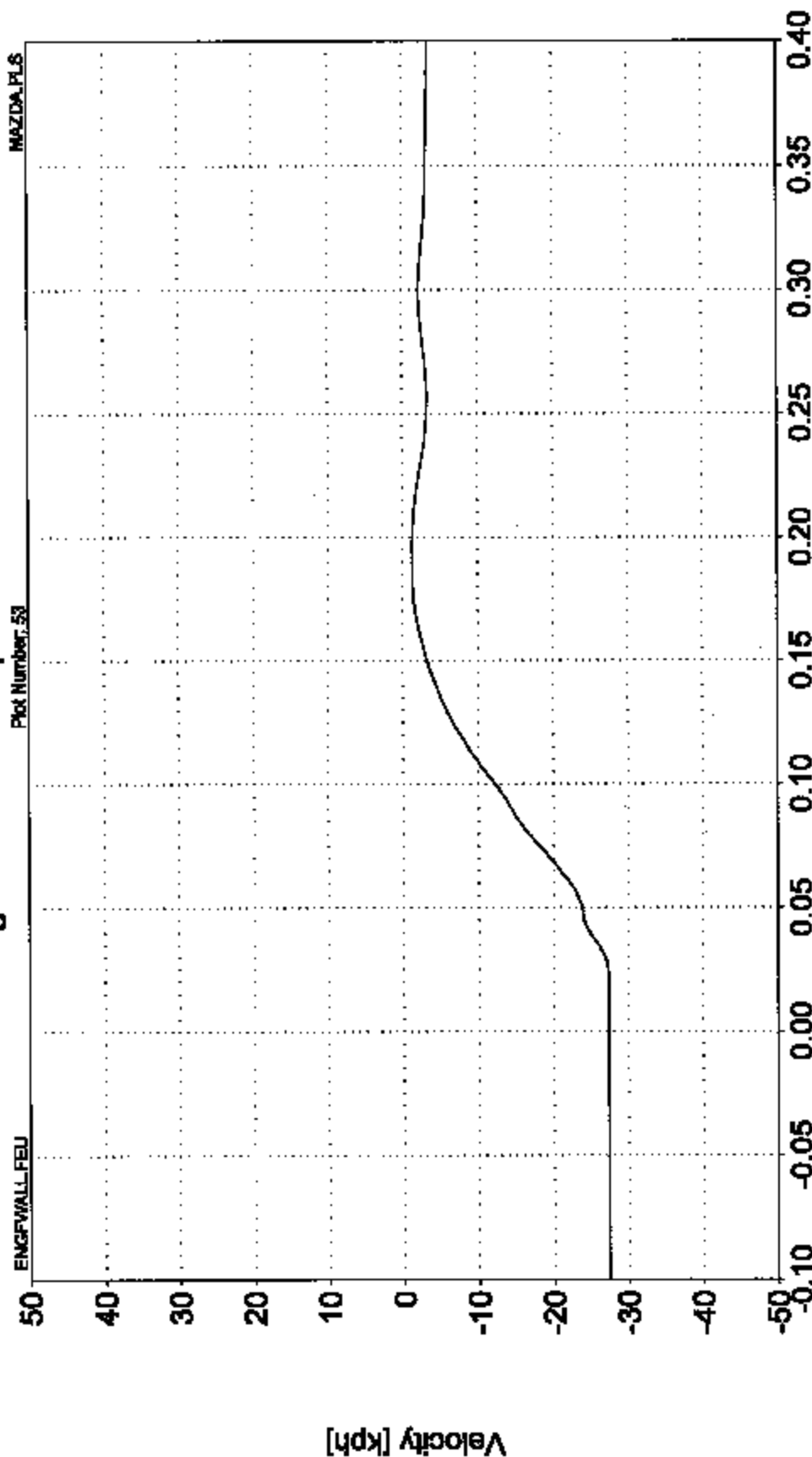
B-55

Exponent
Failure Analysis Associates®

Lateral Velocity v Time

Engine

2004 Mazda 6 - NHTSA No. C45401
Rigid Pole Side Impact Test - 5/17/04



Filter: CPC 100
Data Rate: 1.0 kph @ 0.100 sec.
Data Rate: 27.4 kph @ 0.0100 sec.

2010 Side Pole Impact Testing
PH06002

Time [s]

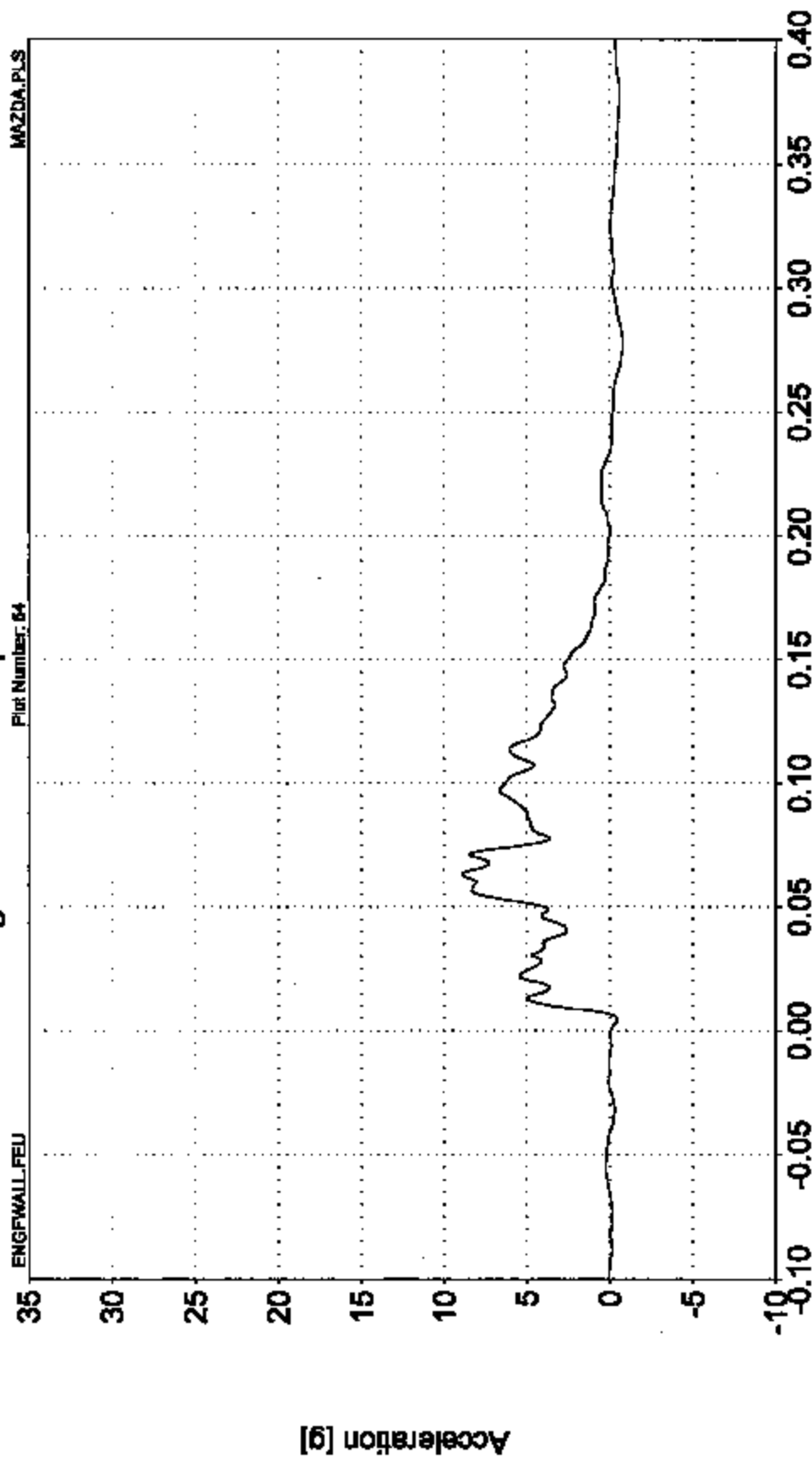
B-57

Exponent
Failure Analysis Associates[®]

Lateral Acceleration v Time

Firewall

2004 Mazda 6 - NHTSA No. C45401
Rigid Pole Side Impact Test - 5/17/04



Filter: CFC 80
Data Rate: 8.0 g @ 0.0004 sec.
Data Rate: 0.8 g @ 0.2776 sec.

201P Side Pole Impact Testing
PH02032

Time [s]

B-58

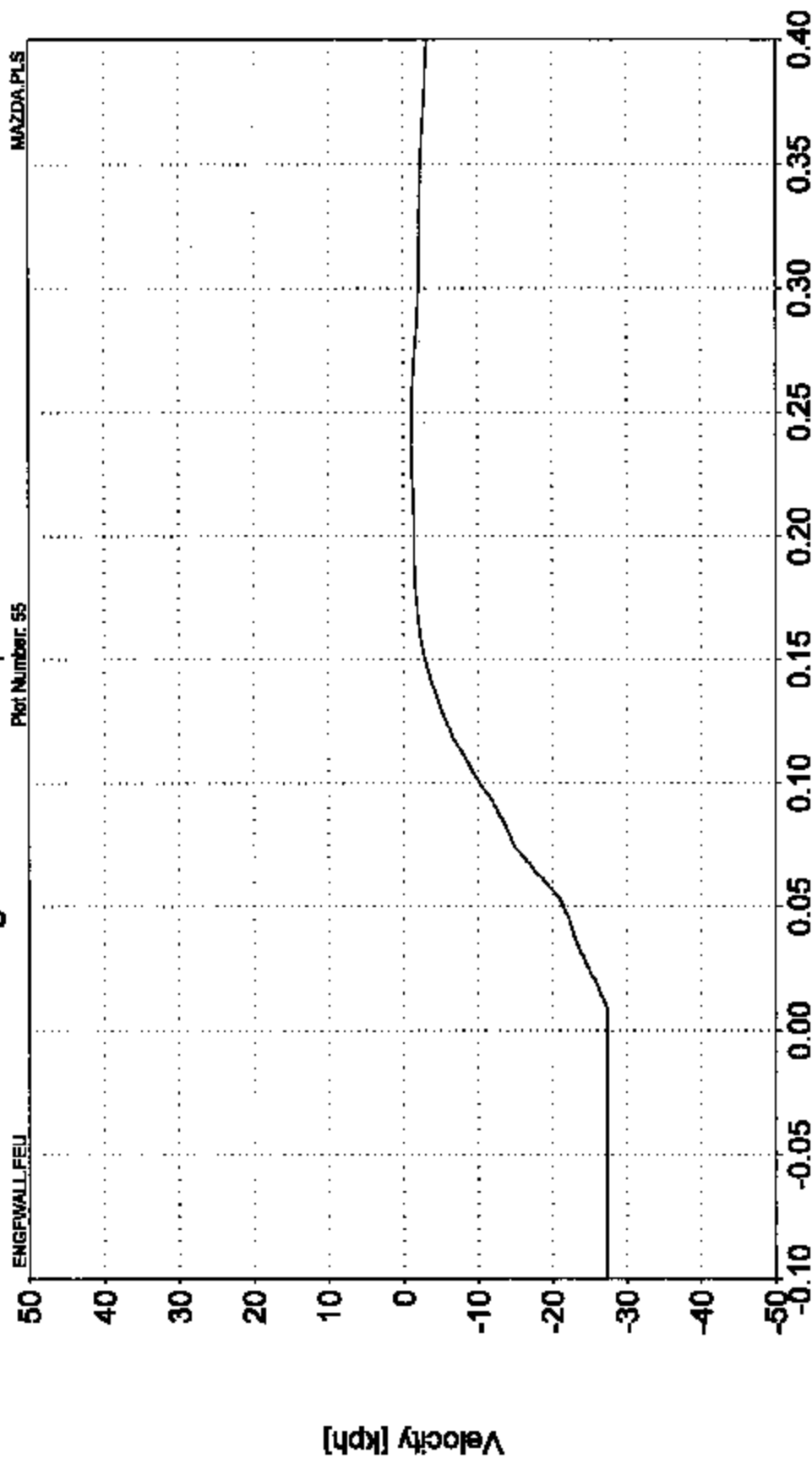
Exponent

Failure Analysis Associates

Lateral Velocity v Time

Firewall

2004 Mazda 6 - NHTSA No. C45401
Rigid Pole Side Impact Test - 5/17/04



Filter: GFC 180
Data Rate: 4.1 kph @ 0.2629 sec.
Data Rate: 27.4 kph @ 0.0078 sec.

201P Side Pole Impact Testing
PH04053

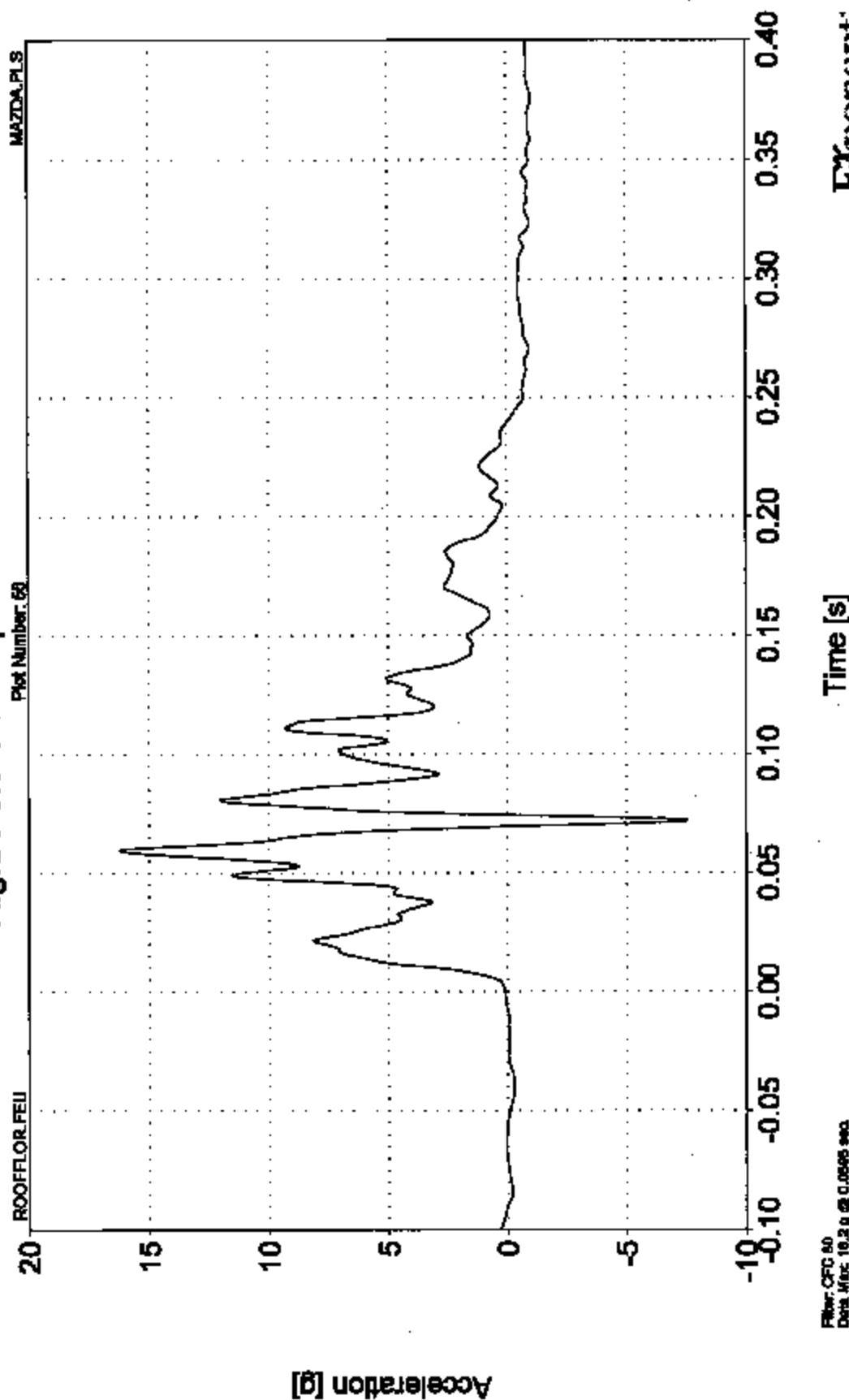
Time [s]

B-59

Exponent
Failure Analysis Associates*

Lateral Acceleration v Time

Right Roof Rail
2004 Mazda 6 - NHTSA No. C45401
Rigid Pole Side Impact Test - 5/17/04



Filter: C50 A0
Data Rate: 10.0 g @ 0.0005 sec
Data Rate: 7.0 g @ 0.0725 sec

201P Side Pole Impact Testing
P100002

B-60

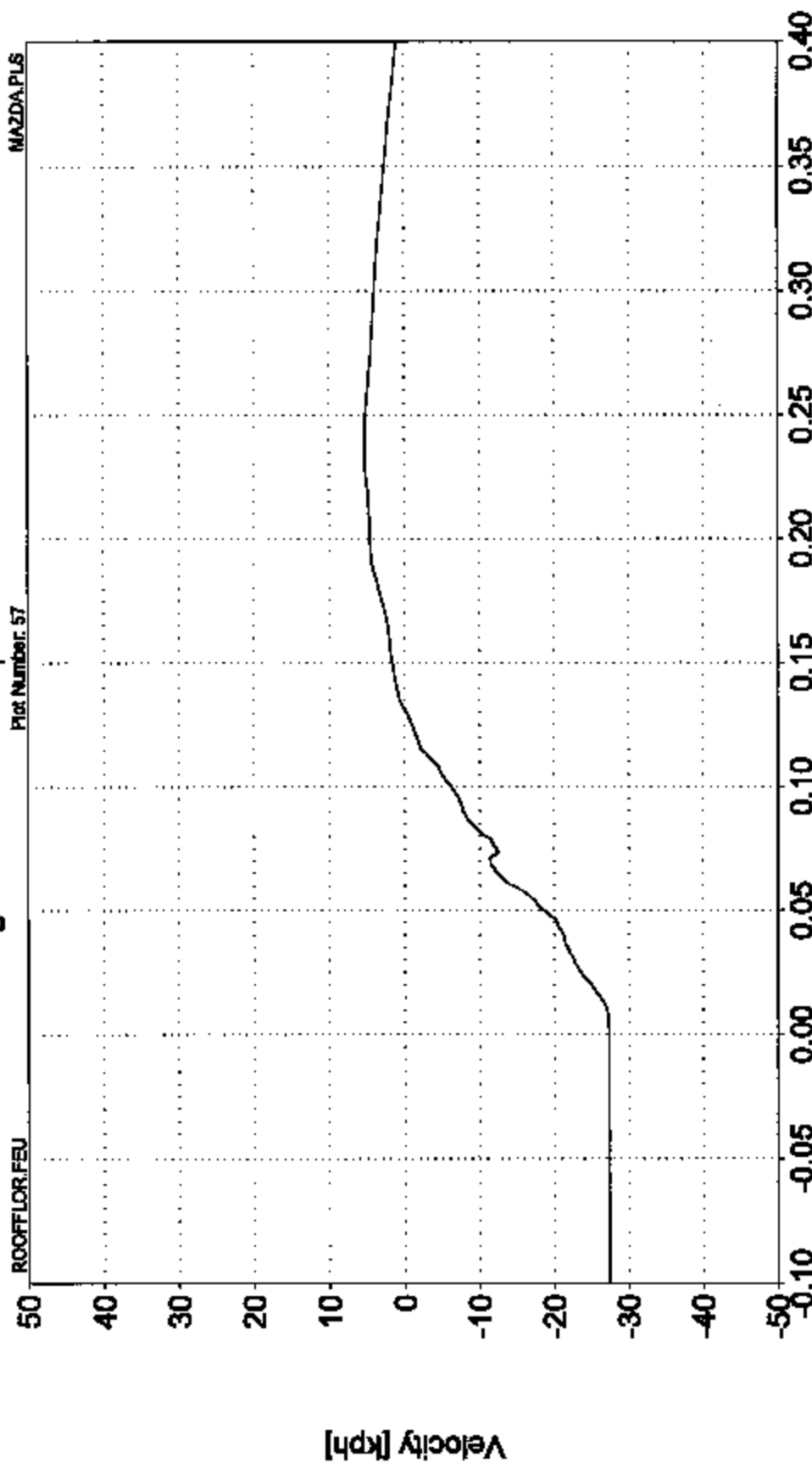
Time [s]

Exponent

Failure Analysis Associates

Lateral Velocity v Time

Right Roof Rail
2004 Mazda 6 - NHTSA No. C45401
Rigid Pole Side Impact Test - 5/17/04



Filter: CFC 160
Data Max: 5.3 kph @ 0.2380 sec.
Data Min: -27.4 kph @ -0.0200 sec.

201P Side Pole Impact Testing
PH000032

Time [s]

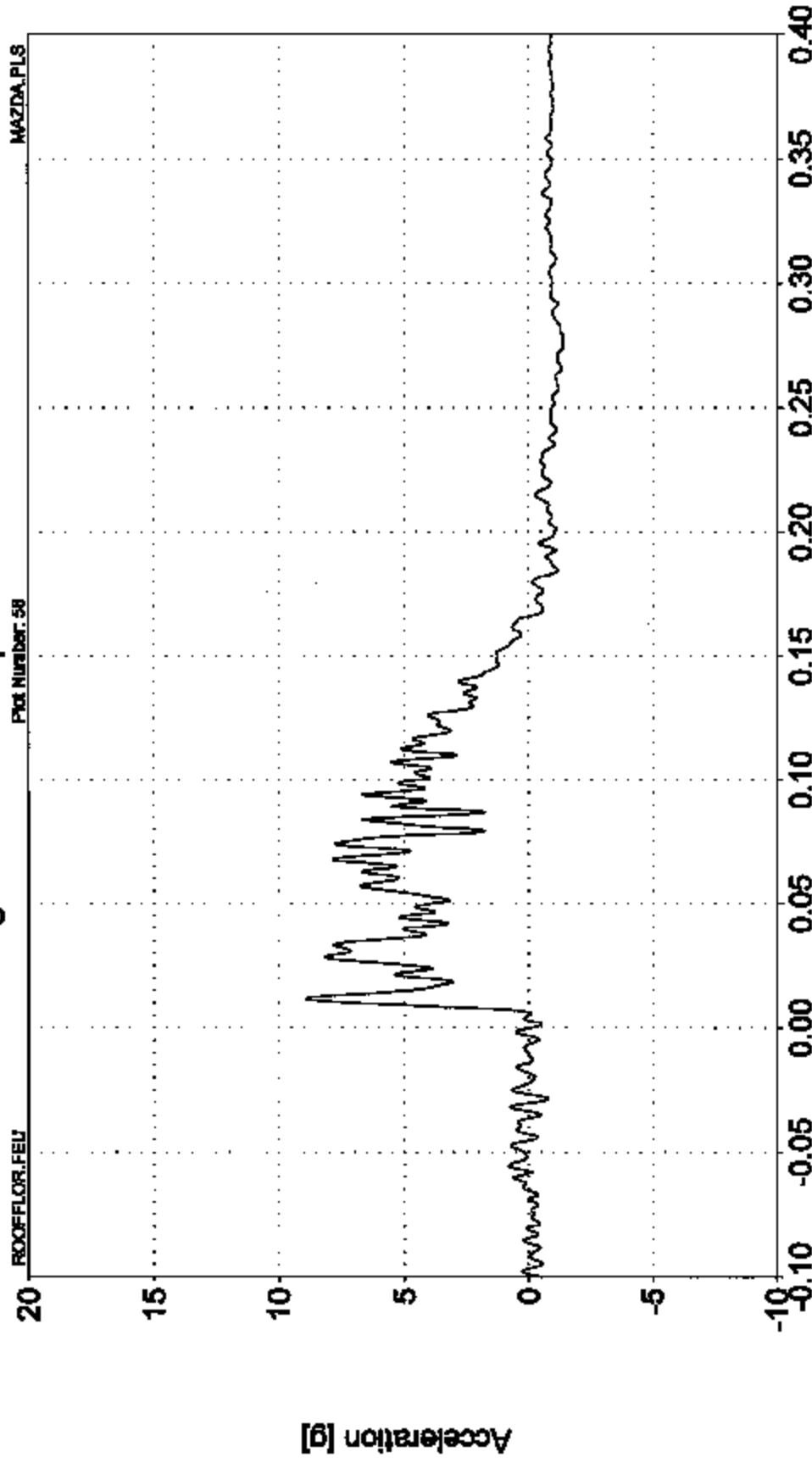
B-61

Exponent
Failure Analysis Associates*

Lateral Acceleration v Time

Right Floor Sill

2004 Mazda 6 - NHTSA No. C45401
Rigid Pole Side Impact Test - 5/17/04



Filter: CFC 80
Data Max: 8.8 g @ 0.0116 sec.
Data Min: -1.4 g @ 0.2749 sec.

201P Side Pole Impact Testing
PH-06602

Time [s]

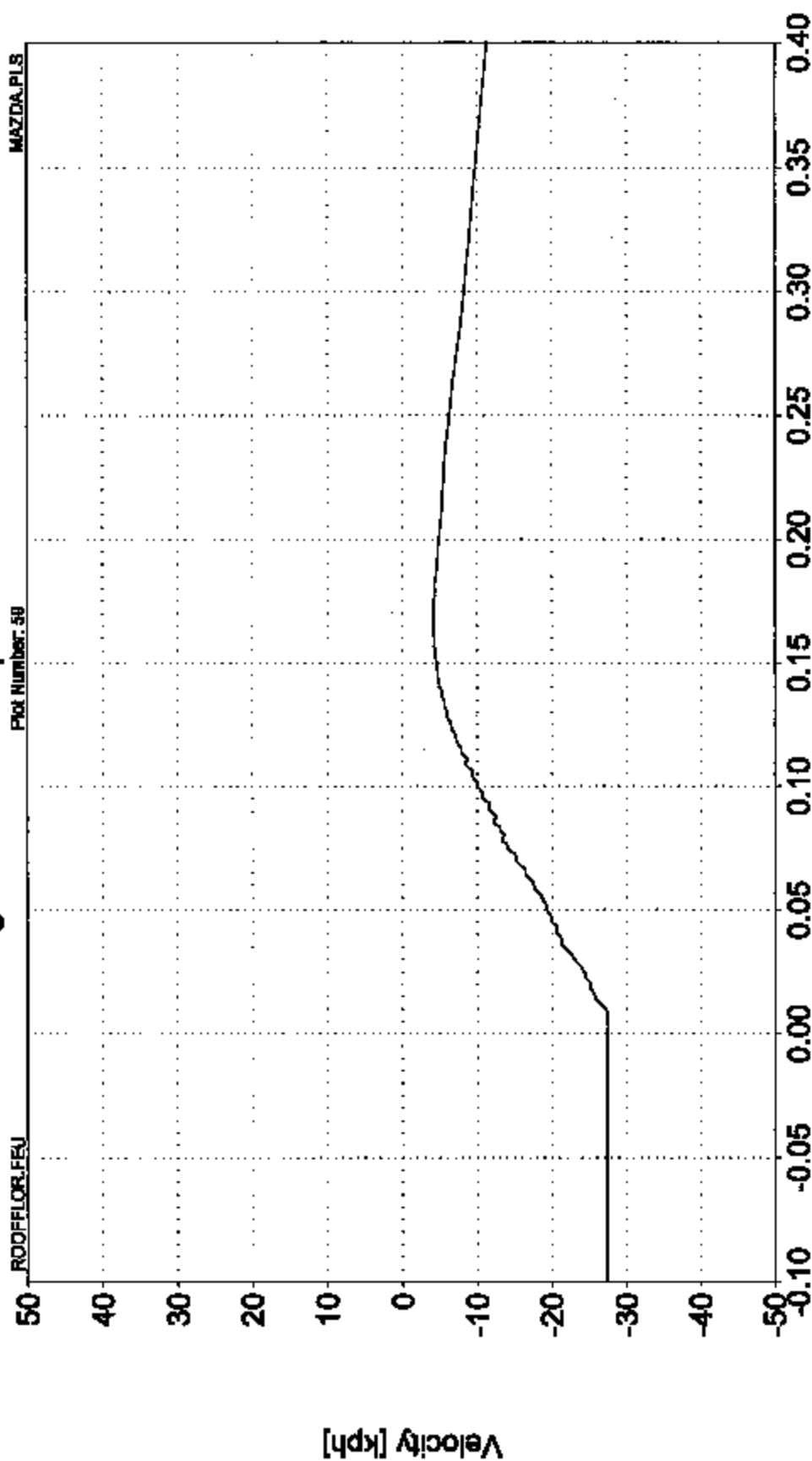
B-62

Exponent

Failure Analysis Associates*

Lateral Velocity v Time

Right Floor Sill
2004 Mazda 6 - NHTSA No. C45401
Rigid Pole Side Impact Test - 5/17/04



Filter: CFC 100
Data Rate: 4.1 kph @ 0.1659 sec.
Data Rate: 27.6 kph @ 0.0024 sec.

2011 P Side Pole Impact Testing
PH000002

Time [s]

B-63

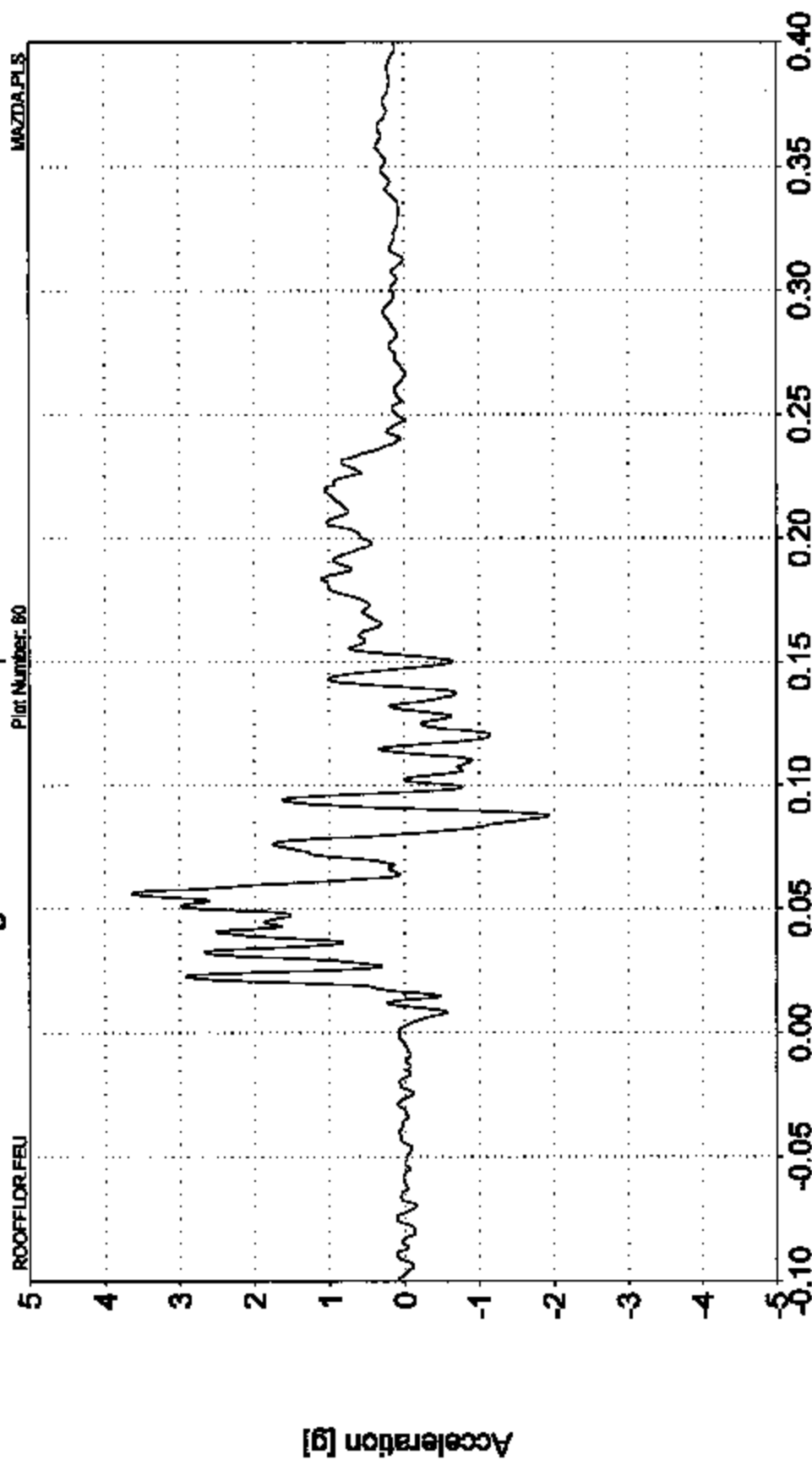
Exponent

Failure Analysis Associates

Longitudinal Acceleration v Time

Rear Deck

2004 Mazda 6 - NHTSA No. C45401
Rigid Pole Side Impact Test - 5/17/04



Filter: CFC 80
Data Max: 3.5 g @ 0.0633 sec
Data Min: -1.8 g @ 0.0870 sec

201P Side Pole Impact Testing
PH03082

Time [s]

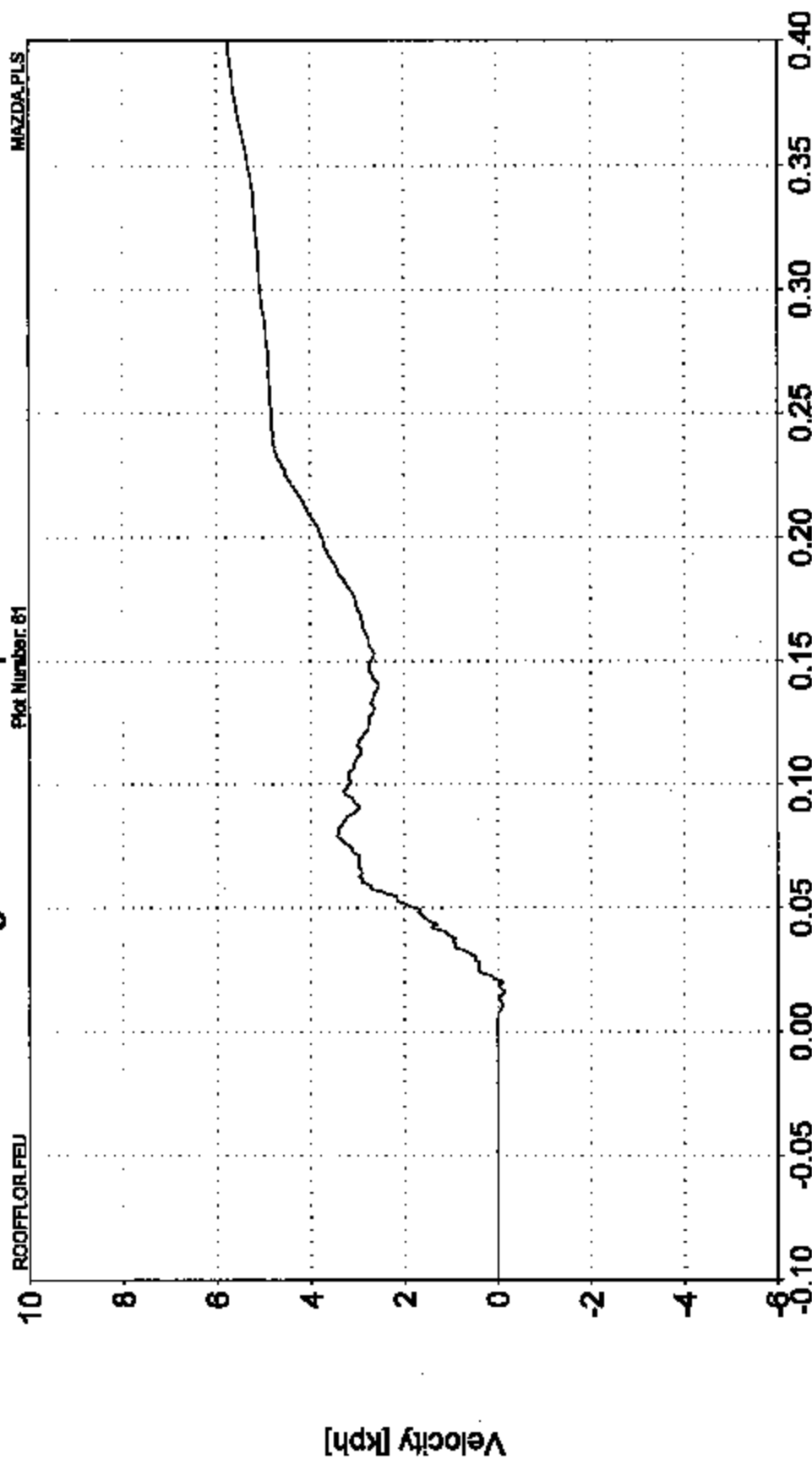
B-64

Exponent
Failure Analysis Associates®

Longitudinal Velocity v Time

Rear Deck

2004 Mazda 6 - NHTSA No. C45401
Rigid Pole Side Impact Test - 5/17/04



Filter: CFC 180
Data Rate: 5.0 kph @ 0.4000 sec.
Data Rate: -0.1 kph @ 0.0100 sec.

201P Side Pole Impact Testing
PH08002

Time [s]

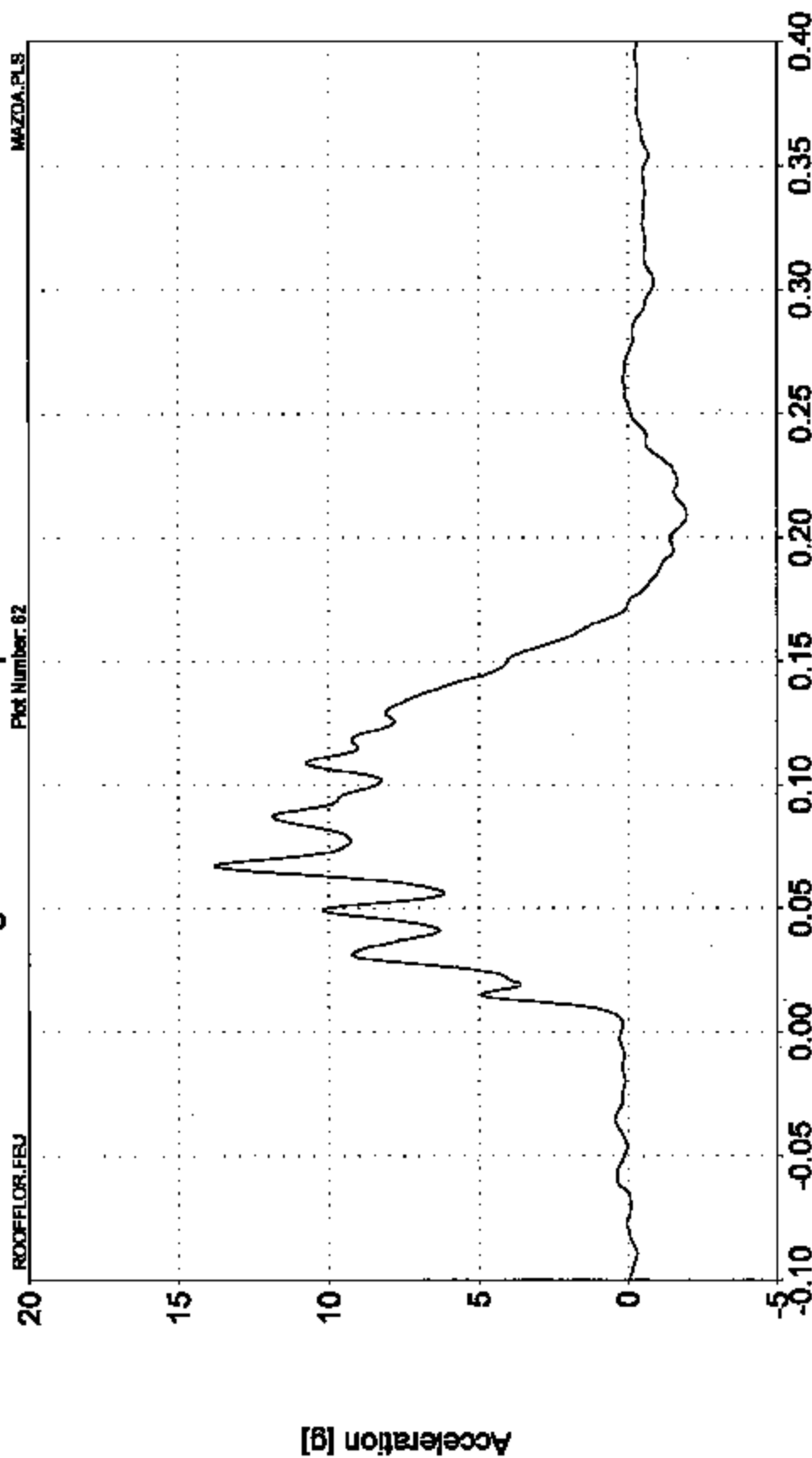
B-65

Exponent
Failure Analysis Associates®

Lateral Acceleration v Time

Rear Deck

2004 Mazda 6 - NHTSA No. C45401
Rigid Pole Side Impact Test - 5/17/04



Filter: CFC 80
Data Rate: 13.8 g @ 0.0072 sec.
Data Rate: -2.0 g @ 0.0014 sec.

201P Side Pole Impact Testing
PH00002

Time [s]

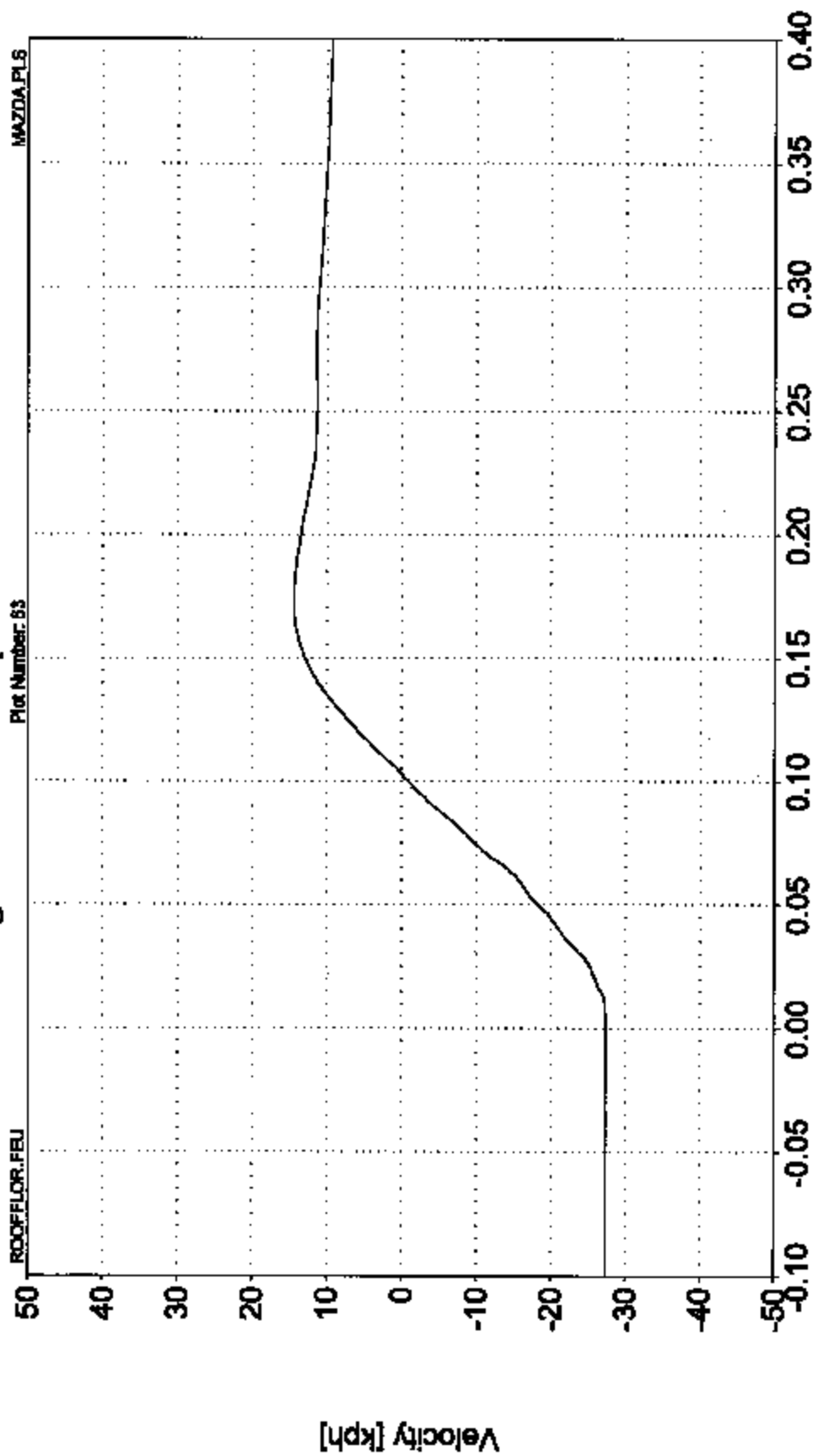
B-68

Exponent
Failure Analysis Associates[®]

Lateral Velocity v Time

Rear Deck

2004 Mazda 6 - NHTSA No. C45401
Rigid Pole Side Impact Test - 5/17/04



Filter: CFC 180
Data Max: 14.4 kph @ 0.1740 sec.
Data Min: -27.4 kph @ 0.0000 sec.

201P Side Pole Impact Testing
PH08882

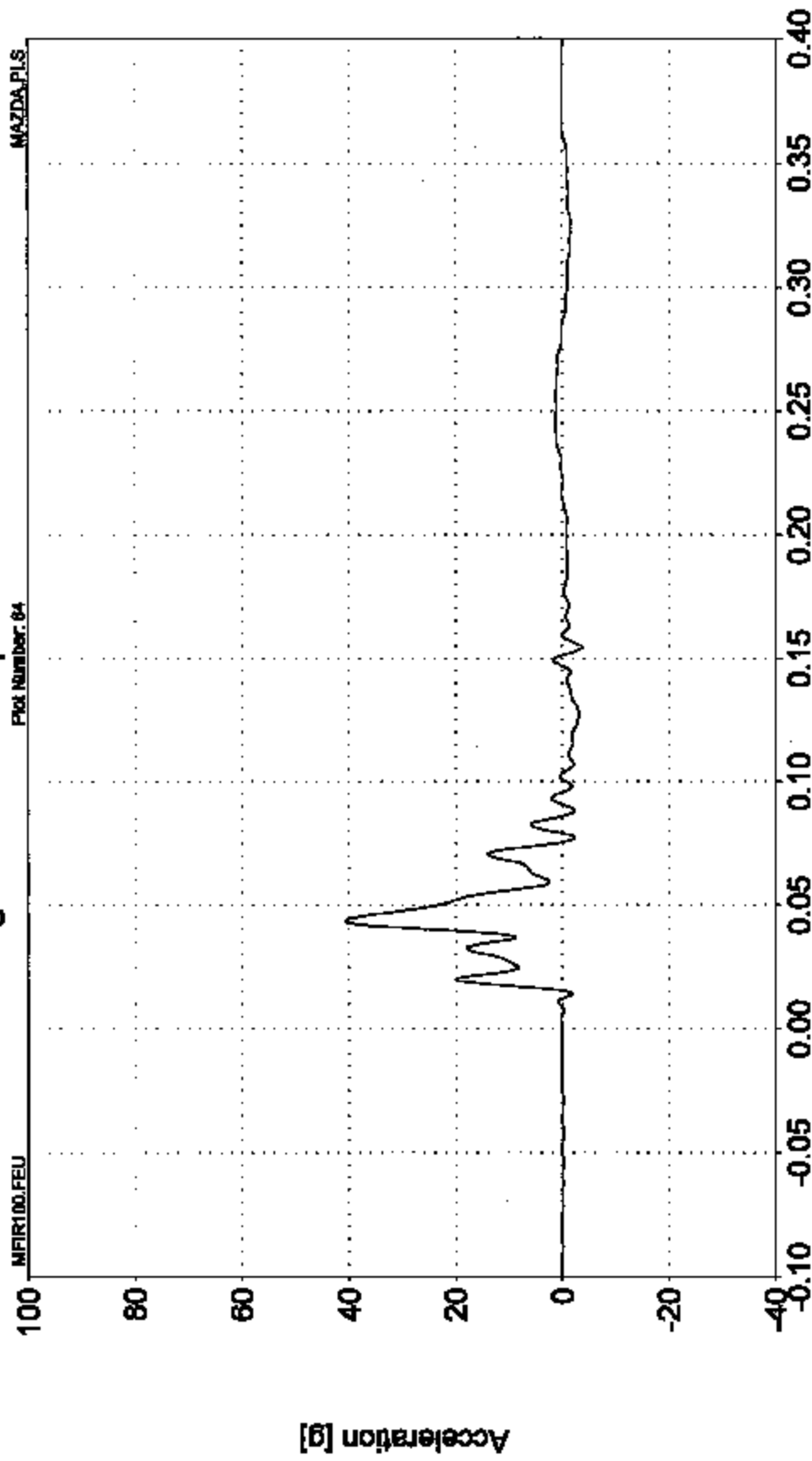
Time [s]

B-67

Exponent
Failure Analysis Associates[®]

Lateral Acceleration v Time

Driver ATD Upper Rib
2004 Mazda 6 - NHTSA No. C45401
Rigid Pole Side Impact Test - 5/17/04



Filter: F1-100
Data Max: 40.7 g @ 0.0438 sec.
Data Min: -3.0 g @ 0.1647 sec.

2011P Side Pole Impact Testing
PI-000002

Time [s]

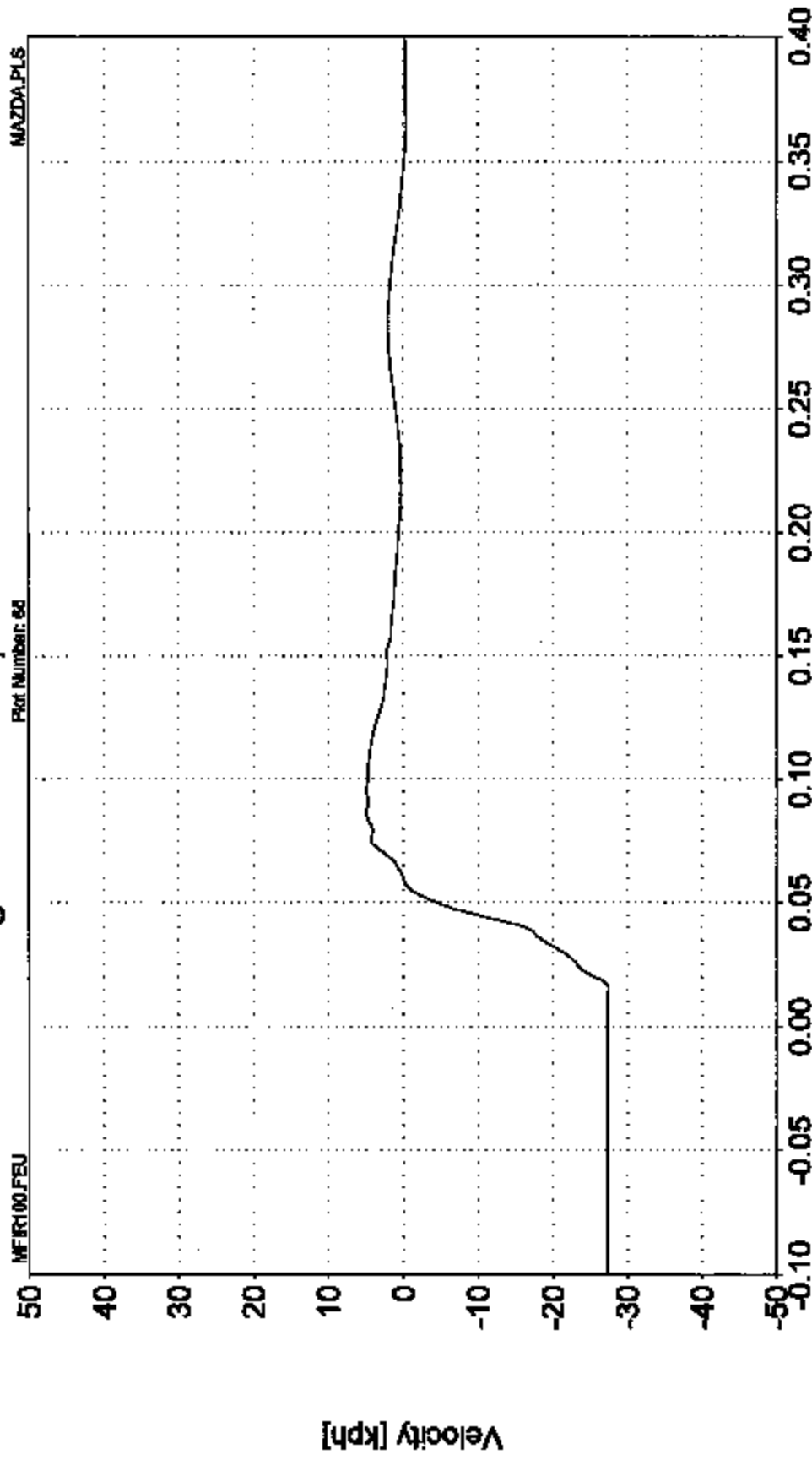
B-68

Exponent

Failure Analysis Associates®

Lateral Velocity v Time

Driver ATD Upper Rib
2004 Mazda 6 - NHTSA No. C45401
Rigid Pole Side Impact Test - 5/17/04



Filter: R1-100
Data Max: 8.0 kph @ 0.0500 sec.
Data Min: -27.4 kph @ 0.0155 sec.

201P Side Pole Impact Testing
PH03032

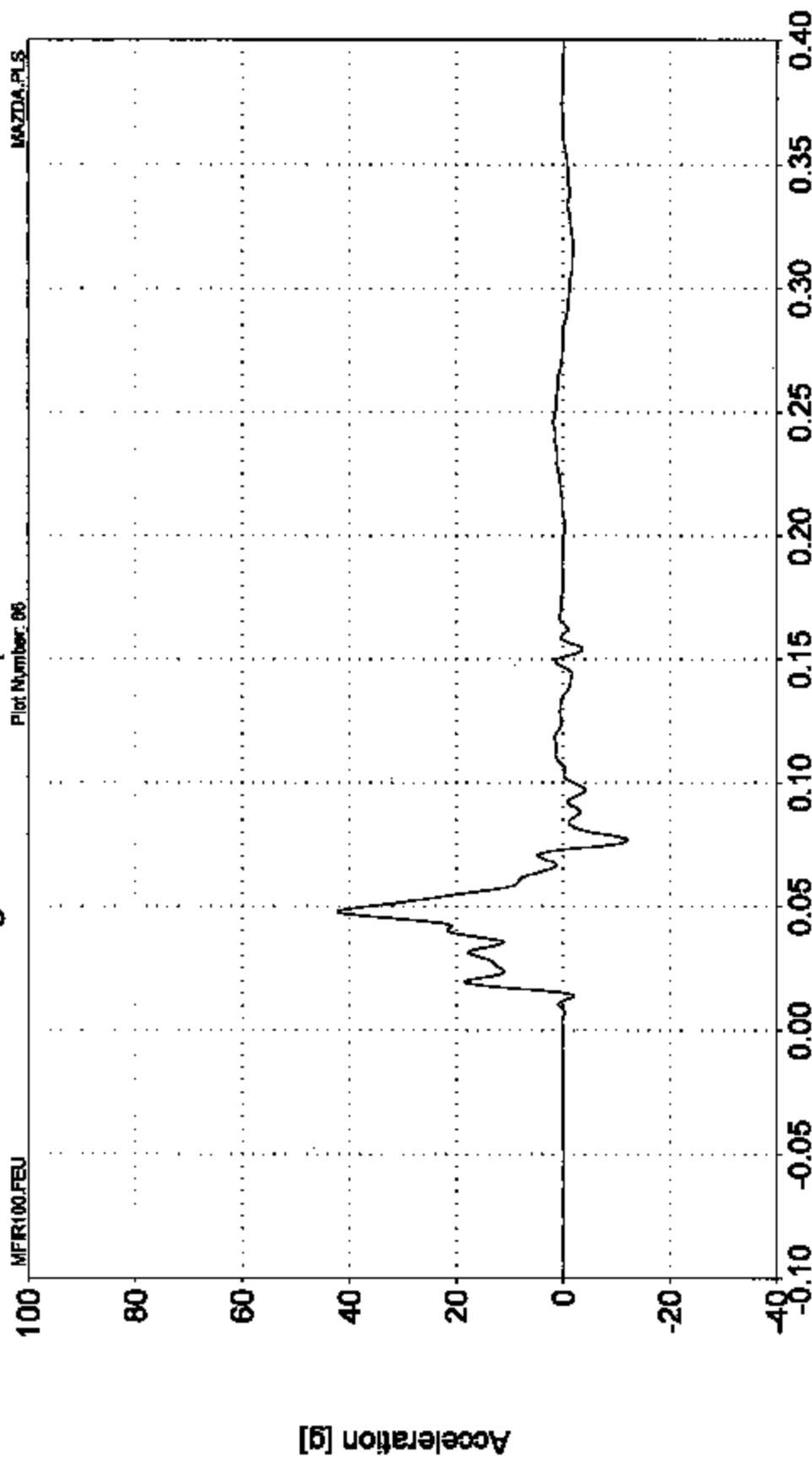
Time [s]

B-69

Exponent[®]
Failure Analysis Associates[®]

Lateral Acceleration v Time

Driver ATD Lower Rib
2004 Mazda 6 - NHTSA No. C45401
Rigid Pole Side Impact Test - 5/17/04



Filter: FR-100
Data Min: 42.2 g @ 0.0479 sec.
Data Max: -12.0 g @ 0.0757 sec.
201P Side Pole Impact Testing
FH00002

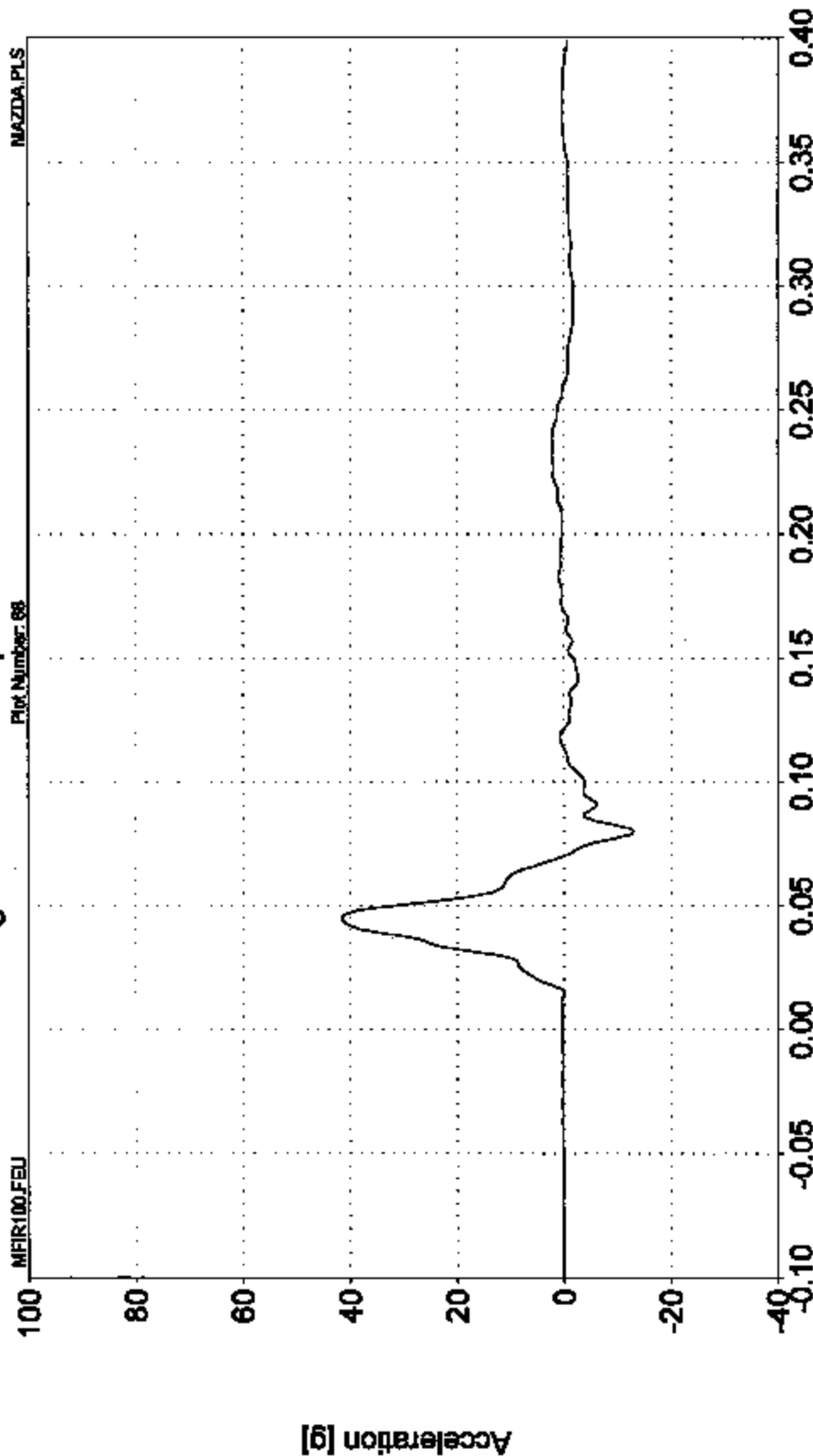
Time [s]

B-70

Exponent
Failure Analysis Associates™

Lateral Acceleration v Time

Driver ATD Lower Spine
2004 Mazda 6 - NHTSA No. C45401
Rigid Pole Side Impact Test - 5/17/04



Filter: Fy 100
Data Max: 41.4 g @ 0.0448 sec.
Data Min: -13.3 g @ 0.0700 sec.

2017 Side Pole Impact Testing
PHD0002

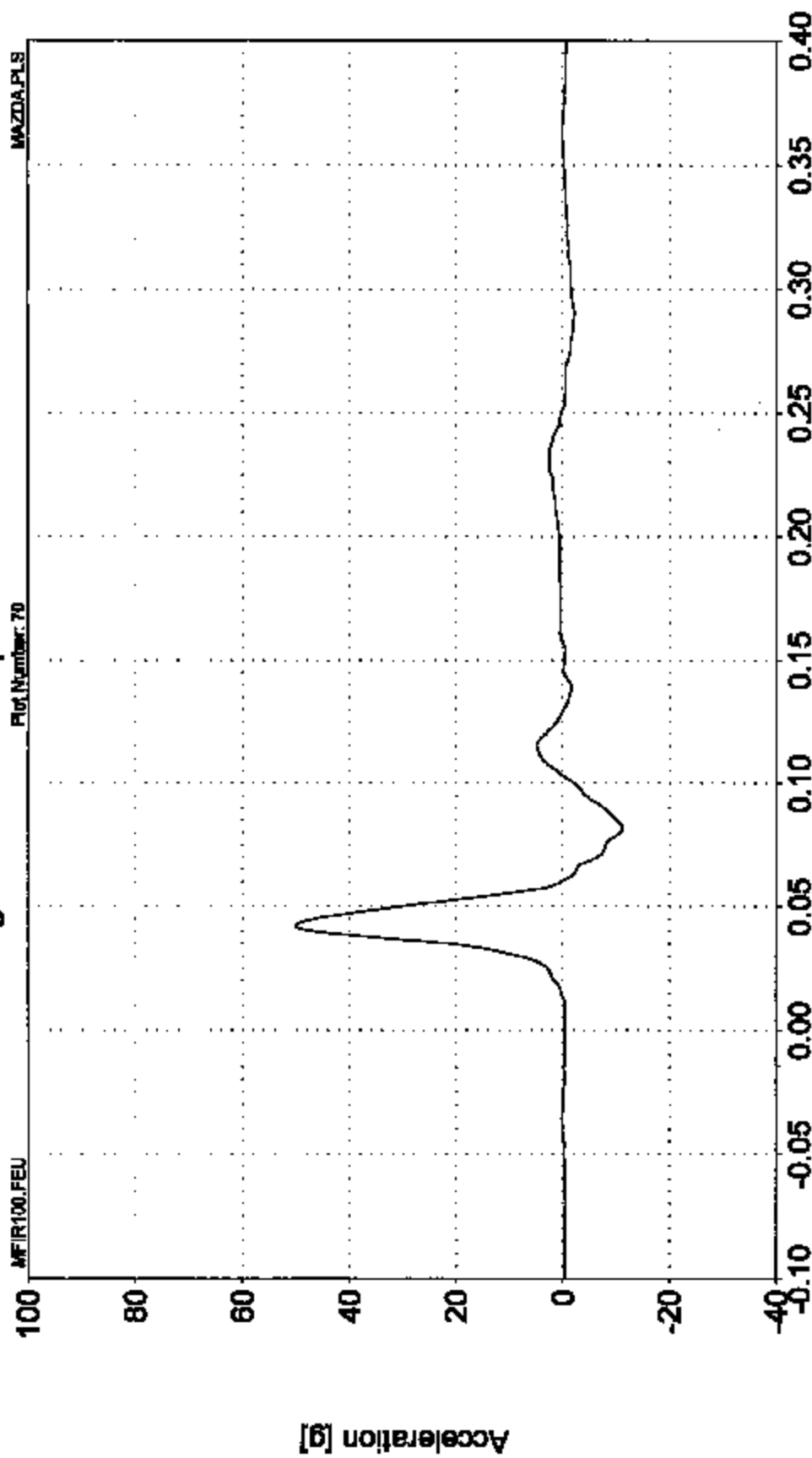
Time [s]

B-72

Exponent
Failure Analysis Associates®

Lateral Acceleration v Time

Driver ATD Pelvis
2004 Mazda 6 - NHTSA No. C45401
Rigid Pole Side Impact Test - 5/17/04



Filter: FV-100
Data Max: 50.0 g @ 0.0428 sec
Data Min: -11.2 g @ 0.0816 sec

201P Side Pole Impact Testing
PH060602

Time [s]

B-74

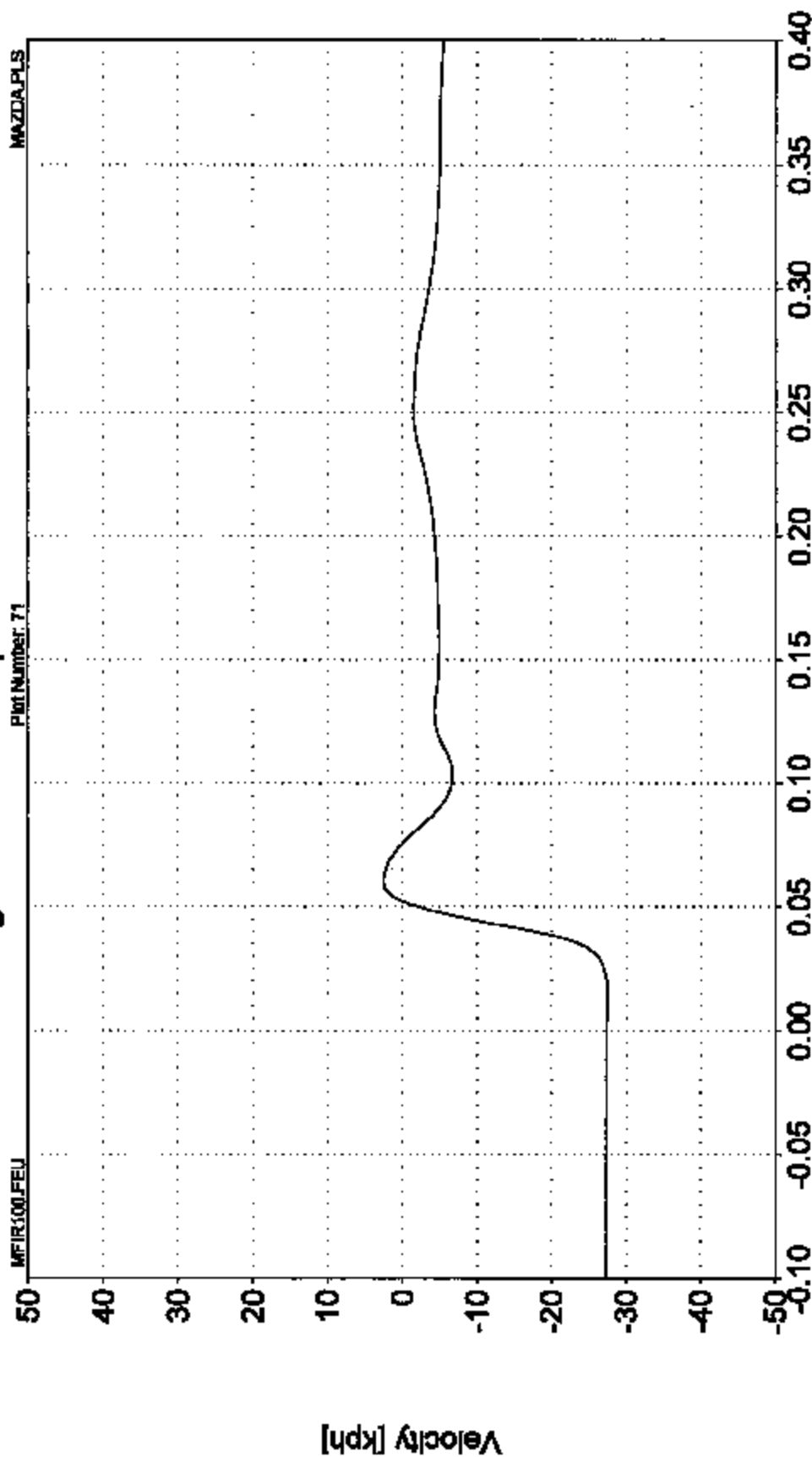
Exponent
Failure Analysis Associates[®]

Lateral Velocity v Time

Driver ATD Pelvis

2004 Mazda 6 - NHTSA No. C45401

Rigid Pole Side Impact Test - 5/17/04



Filter: Fx 100
Data Rate: 2.5 kph @ 0.0004 sec.
Data Rate: -27.5 kph @ 0.0150 sec.

201P Side Pole Impact Testing
P4000002

Time [s]

B-75

Exponent

Failure Analysis Associates*

Appendix C – SID/HIII Configuration and Performance Verification Data

POSTTEST DUMMY INSPECTION LIST

DATE: 06/08/2004

SID/HII NUMBER: 051

PART	ITEMS CHECKED	COMMENTS
SKIN	VISUAL INSPECTION	OK
HEAD	VISUAL, BALLAST, ACCELEROMETER MOUNT	OK
NECK	VISUAL, BROKEN OR CRACKS IN RUBBER, UPPER BRACKET FIRMLY ATTACHED TO LOWER BRACKET, LOOSE CONDYLE JOINT, NODDING BLOCKS- CRACKED OR OUT OF POSITION	OK
SPINE BOX	VISUAL, BALLAST, WELDMENT, ACCELEROMETER MOUNT, RUBBER CRACKS	OK
RIB CAGE	VISUAL, MEASURE, STIFFENERS, BUMPERS IN PLACE	OK
STERNUM	VISUAL	OK
LUMBAR SPINE	VISUAL	OK
ABDOMEN	VISUAL	OK
PELVIS	VISUAL, PALPATE, ACCELEROMETER MOUNT	Tear in flesh by upper femur bolt hole
UPPER LEGS	VISUAL	OK
KNEES	VISUAL, STOPS, INSERTS	OK
LOWER LEGS	VISUAL, RANGE OF MOTION	OK
ANKLES	VISUAL, RANGE OF MOTION	OK
FEET	VISUAL, RANGE OF MOTION	OK
JOINTS	1 TO 2 g RANGE	OK
HEAD/NECK	BRACKET ATTACHMENT CRACKED OR BROKEN	OK
OTHER		N/A

TEST DATES: 05/17/04

RECORDED BY: [Signature]

DATE: 06/08/04

APPROVED BY: [Signature]

DATE: 06/08/04

SUMMARY
SID/HIII PRETEST AND POSTTEST CALIBRATION
CONFIGURED FOR LEFT/RIGHT SIDE IMPACT

DATE: 06/08/04

SID/HIII CONFIGURATION VERIFICATION					
Test Parameter			Spec. (mm)	SID/HIII No. 081	
				Pretest	Posttest
SH	SEATED HEIGHT		889 - 909	907	908
RH	RIB HEIGHT		502 - 520	510	510
HP	HIP PIVOT HEIGHT	LEFT	99 ref.	98	99
		RIGHT		99	100
RD	RIB FROM BACK LINE		229 - 241	233	233
KH	KNEE PIVOT FROM BACK LINE	LEFT	511 - 526	526	525
		RIGHT		525	525
KV	KNEE PIVOT FROM FLOOR	LEFT	490 - 505	490	490
		RIGHT		490	490
HW	HIP WIDTH		358 - 391	377	377

TEST DATES: 05/17/04

RECORDED BY: [Signature]

DATE: 06/08/04

APPROVED BY: [Signature]

DATE: 06/08/04

Head Drop Test (Lateral)			
Test Parameter	Spec.	SID/HIII No. 051	
		Pretest	Posttest
Temperature (°C)	18.8 - 25.6	20.6/20.0	20.0/22.8
Relative Humidity (%)	10 - 70	28/27	43/29
Peak Resultant Accel. (g)	120 - 150	149.0/146.6	149.6/148.8
Is Resultant Curve Unimodal?	Yes	Yes / Yes	Yes / Yes
Peak Longitudinal Accel. (g)	± 15	6.2/5.7	6.4/6.2
Neck Pendulum Test			
Temperature (°C)	18.8 - 25.6	21.1 / 21.1	21.1 / 21.7
Relative Humidity (%)	10 - 70	31/31	37/37
Impact Velocity (m/s)	6.89 - 7.13	7.0 / 7.0	7.0 / 7.0
Pendulum Deceleration	10 ms	1.96 - 2.66	2.1/2.0
	20ms	4.12 - 5.10	4.4/4.3
	30ms	5.73 - 7.01	6.4 / 6.3
	40-70ms	6.27 - 7.84	7.3/7.3
Midsagittal Plane Max Rotation (deg)	68 - 82	71.8/73.3	72.3/71.8
Head Rotation Peak to Zero Decay Time (ms)	58 - 67	61.9/62.6	64.0/61.7
Max Mx at Occipital Condyles (Nm)	73 - 88	85.8/84.8	82.7/84.8
Mx Peak to Zero - Decay Time (ms)	49 - 64	61.7/66.6	62.9/66.2
Mx Peak to Max. Head Rotation (ms)	2 - 16	7.2/9.9	7.2/10.9

TEST DATES: 5/17/04

RECORDED BY: *Mark*

DATE: 06/09/04

APPROVED BY: *Barry*

DATE: 06/09/04

Thorax Impacts			
Test Parameter	Spec.	SID/HIII No. 051	
		Pretest	Posttest
Temperature (°C)	18.9 - 25.5	20.0/21.1	19.4/19.4
Relative Humidity (%)	10 - 70	36/36	34/34
Probe Speed (m/s)	4.27 - 4.33	4.29/4.29	4.23/4.21
Upper Rib (g)	37 - 46	42.5/43.6	44.3/44.6
Lower Rib (g)	37 - 46	40.0/43.1	40.3/40.6
Lower Spine (g)	15 - 22	19.6/19.8	19.6/19.8
Pelvis Impact			
Temperature (°C)	18.9 - 25.5	20.6/20.6	20.5/20.6
Relative Humidity (%)	10 - 70	38/40	29/29
Probe Speed (m/s)	4.27 - 4.33	4.3/4.26	4.28/4.3
Pelvis (g)	40 - 60	42.7/43.2	43.4/44.8

TEST DATES: 05/17/04

RECORDED BY: *[Signature]*

DATE: 06/09/04

APPROVED BY: *[Signature]*

DATE: 06/09/04

CALIBRATION TEST RESULTS SUMMARY

DATE: 06/09/04

SID/HIII NUMBER: 051

Test	Comments
External Dimensions	None
Head Drop Test	None
Neck Pendulum Test	None
Thoracic Shock Absorber Test	None
Lateral Thorax Impact Test	None
Lateral Pelvis Impact Test	None
Abdominal Compression Test	Not Performed
Lumbar Flexion Test	Not Performed

TEST DATES: 05/17/04

RECORDED BY: *[Signature]*

DATE: 06/09/04

APPROVED BY: *[Signature]*

DATE: 06/09/04

SID/HIII CONFIGURATION VERIFICATION without Chest Flash Installed

DATE: 05/15/2004

SID/HIII NUMBER: 051

SEQUENTIAL VERIFICATION NUMBER FOR DUMMY*: SC401

* For NHTSA Compliance testing only (Sequential number beginning with "1" at the start of each fiscal year's crash test program)

Test Parameter			Specification	Measurement
SH	SEATED HEIGHT		889 mm – 909 mm 35.0 in – 35.8 in	907 mm
RH	RIB HEIGHT		602 mm – 620 mm 19.7 in – 20.5 in	610 mm
HP	HIP PIVOT HEIGHT	LEFT	99 mm 3.9 in Ref.	98 mm
		RIGHT		99 mm
RD	RIB FROM BACK LINE		229 mm – 241 mm 9.0 in – 9.5 in	233 mm
KH	KNEE PIVOT FROM BACK LINE	LEFT	511 mm – 528 mm 20.1 in – 20.7 in	525 mm
		RIGHT		525 mm
KV	KNEE PIVOT FROM FLOOR	LEFT	490 mm – 505 mm 19.3 in – 19.9 in	490 mm
		RIGHT		490 mm
HW	HIP WIDTH		356 mm – 391 mm 14.0 in – 15.4 in	377 mm

COMMENTS:

RECORDED BY: [Signature]

DATE: 6/9/04

APPROVED BY: [Signature]

DATE: 6/9/04

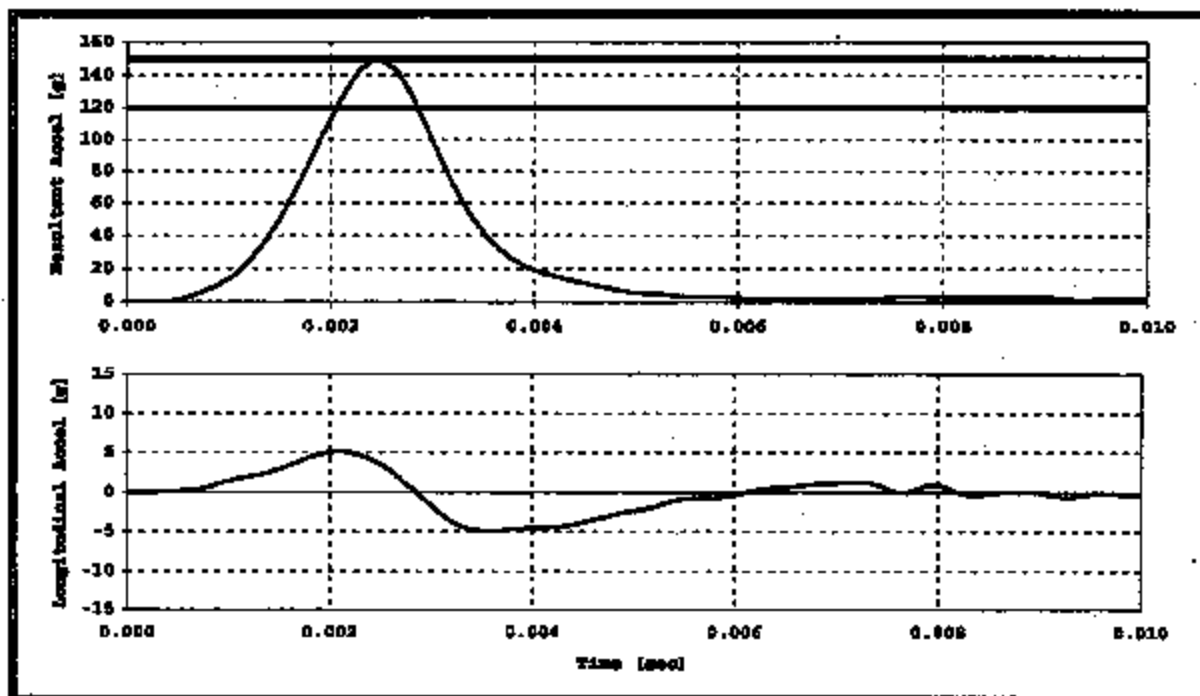
EXPONENT FAILURE ANALYSIS ASSOCIATES

Test and Engineering Center
1850 W. Pinnacle Peak Rd
Phoenix, Arizona * 85027

SID/HIII Head Lateral Impact Test Summary

Test ID Number: SH401	Test Date: 05/03/2004
SID/HIII Number: #51	Test Time: 15:16
Part Serial No: 02107963A	Drop Height: 200 mm
Comments:	

TEST PARAMETER	SPECIFICATION	TEST RESULTS
AMBIENT TEMPERATURE (°C)	18.9 - 25.6	20.6 PASS
RELATIVE HUMIDITY (%)	10 - 70	26.0 PASS
PEAK RESULTANT ACCEL. (g)	120 - 150	149.0 PASS
PEAK LONGITUDINAL ACCEL. (g)	15 g MAX.	5.2 PASS
ACCEL. CURVE UNIMODAL?	15% MAX.	2.8% PASS



RECORDED BY:

RAIC

APPROVED BY:

W. K. F.

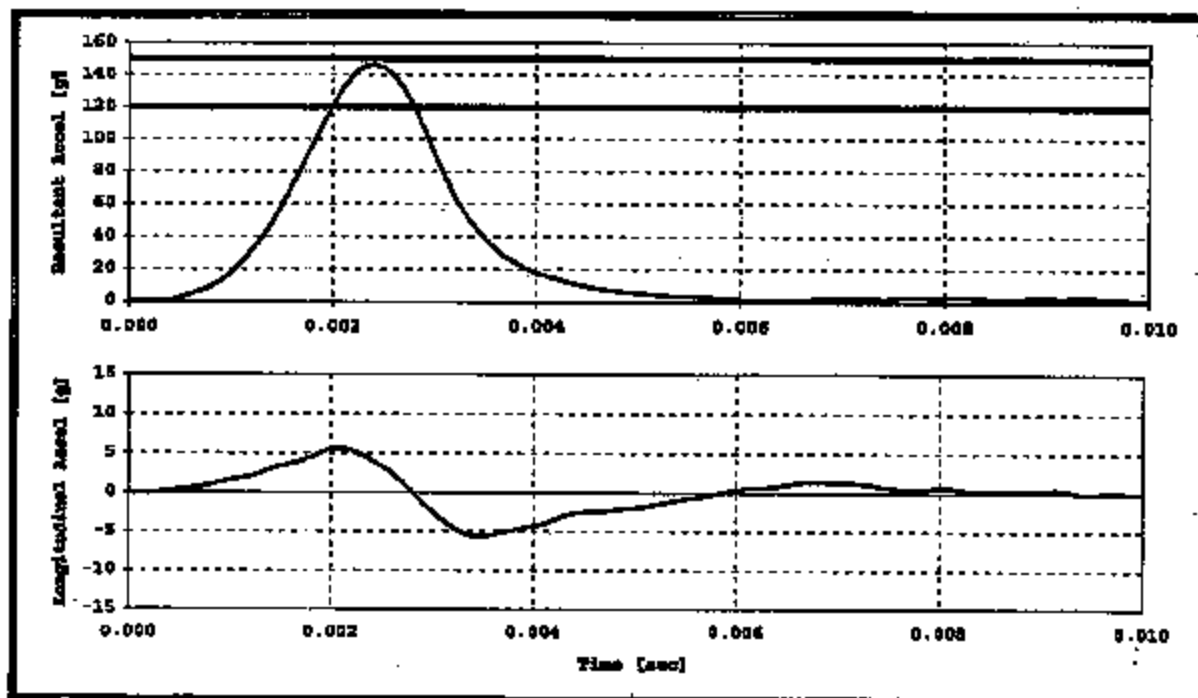
EXPONENT FAILURE ANALYSIS ASSOCIATES

Test and Engineering Center
1850 W. Pinnacle Peak Rd
Phoenix, Arizona 85027

SID/HIII Head Lateral Impact Test Summary

Test ID Number: SH406	Test Date: 05/04/2004
SID/HIII Number: #51	Test Time: 10:53
Part Serial No: 02107963A	Drop Height: 200 mm
Comments:	

TEST PARAMETER	SPECIFICATION	TEST RESULTS
AMBIENT TEMPERATURE (°C)	18.9 - 25.6	20.0 PASS
RELATIVE HUMIDITY (%)	10 - 70	27.0 PASS
PEAK RESULTANT ACCEL. (g)	120 - 150	146.6 PASS
PEAK LONGITUDINAL ACCEL. (g)	15 g max.	5.7 PASS
ACCEL. CURVE UNIMODAL?	15% max.	3.9% PASS



RECORDED BY:

RAZP

APPROVED BY:

[Signature]

EXPONENT FAILURE ANALYSIS ASSOCIATES

Test and Engineering Center
1850 W. Pinnacle Peak Rd
Phoenix, Arizona 85027

SID/HIII Lateral Neck Impact Calibration Test Summary

Test ID Number: SN403	Test Date: 05/05/2004
SID/HIII Number: #051	Test Time: 16:00
Comments: 119 deg, 27 cells	

TEST PARAMETER	SPECIFICATION	TEST RESULTS
AMBIENT TEMPERATURE (°C)	20.6 - 22.2	21.1 PASS
RELATIVE HUMIDITY (%)	10 - 70	31.0 PASS
SPEED TRAP AVERAGE TIME (ms)	---	13.16 ---
IMPACT VELOCITY (m/s)	6.89 - 7.13	7.0 PASS
PENDULUM IMPULSE - 10 ms (m/s)	1.96 - 2.55	2.1 PASS
PENDULUM IMPULSE - 20 ms (m/s)	4.12 - 5.10	4.4 PASS
PENDULUM IMPULSE - 30 ms (m/s)	5.73 - 7.01	6.4 PASS
PENDULUM IMP [max] - 40-70 ms (m/s)	6.27 - 7.64	7.3 PASS
PENDULUM IMP [min] - 40-70 ms (m/s)	6.27 - 7.64	7.1 PASS
PEAK TOTAL HEAD/NECK ROTATION (°)	66 - 82	71.8 PASS
ROTATION PEAK-ZERO DECAY TIME (ms)	58 - 67	61.9 PASS
PEAK Mxoc (N-m)	73 - 88	85.0 PASS
Mxoc PEAK-ZERO DECAY TIME (ms)	49 - 64	51.7 PASS
Mxoc PEAK TO ROTATION PEAK (ms)	2 - 16	7.2 PASS

RECORDED BY:

Rafe

APPROVED BY:

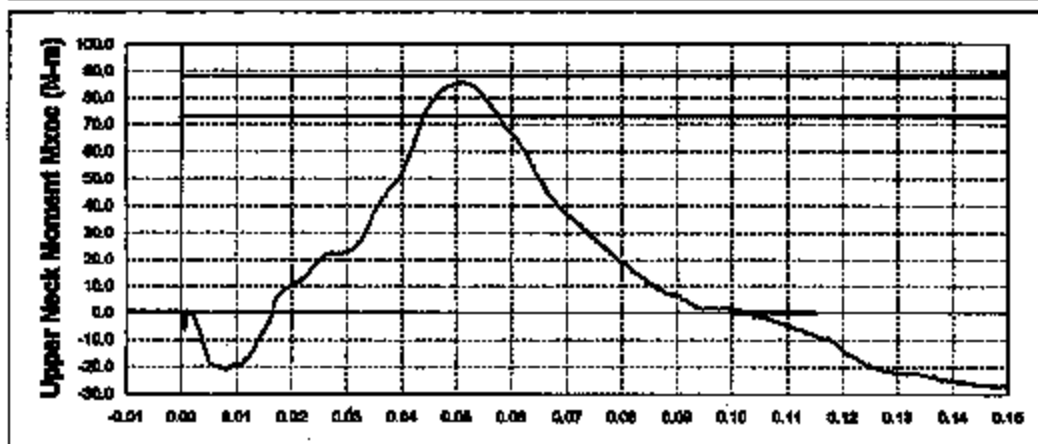
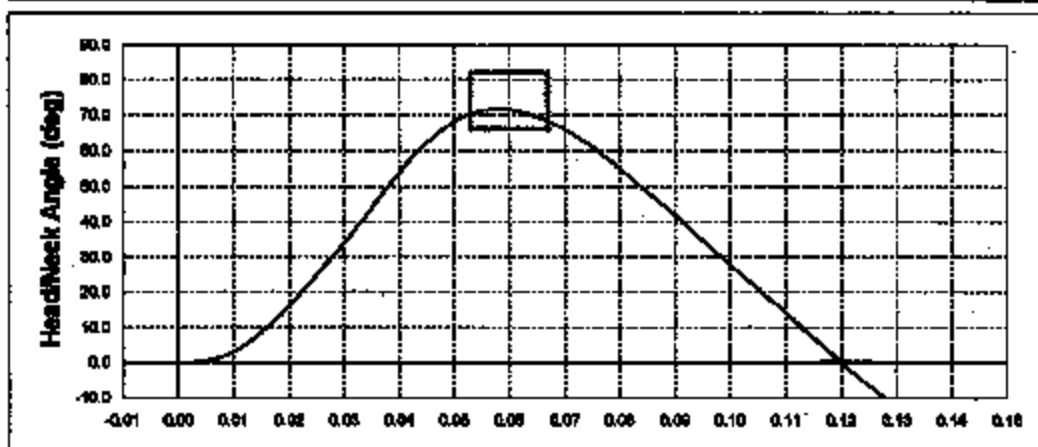
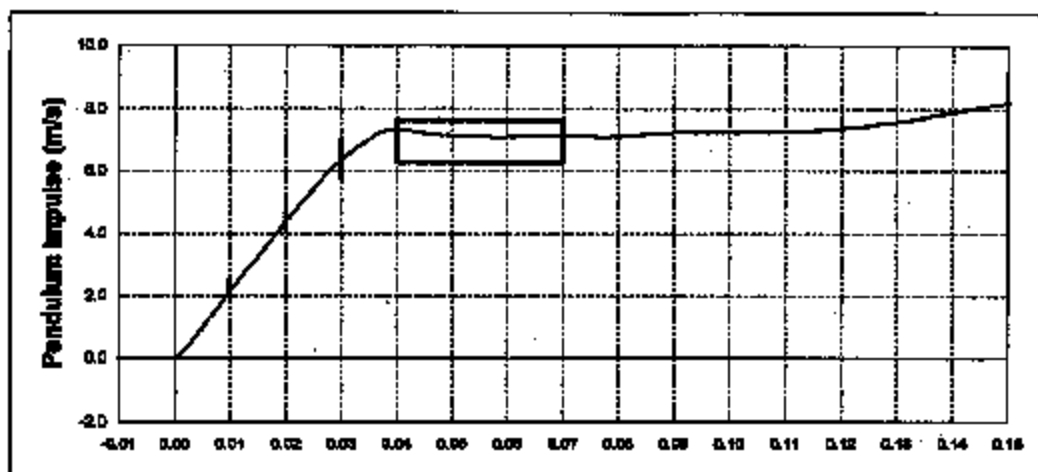
Mark

EXPONENT FAILURE ANALYSIS ASSOCIATES

Neck Lateral Impact Test

Test ID: 6N403

Date: 6/6/2004



EXPONENT FAILURE ANALYSIS ASSOCIATES

Test and Engineering Center
1850 W. Pinnacle Peak Rd
Phoenix, Arizona 85027

SID/HIII Lateral Neck Impact Calibration Test Summary

Test ID Number: SN404	Test Date: 05/05/2004
SID/HIII Number: #051	Test Time: 17:00
Comments: 119 deg, 27 calls	

TEST PARAMETER	SPECIFICATION	TEST RESULTS
AMBIENT TEMPERATURE (°C)	20.6 - 22.2	21.1 PASS
RELATIVE HUMIDITY (%)	10 - 70	31.0 PASS
SPEED TRAP AVERAGE TIME (ms)	---	13.20 ---
IMPACT VELOCITY (m/s)	6.89 - 7.13	7.0 PASS
PENDULUM IMPULSE - 10 ms (m/s)	1.96 - 2.55	2.0 PASS
PENDULUM IMPULSE - 20 ms (m/s)	4.12 - 5.10	4.3 PASS
PENDULUM IMPULSE - 30 ms (m/s)	5.73 - 7.01	6.3 PASS
PENDULUM IMP [max] - 40-70 ms (m/s)	6.27 - 7.64	7.3 PASS
PENDULUM IMP [min] - 40-70 ms (m/s)	6.27 - 7.64	7.1 PASS
PEAK TOTAL HEAD/NECK ROTATION (°)	66 - 82	73.3 PASS
ROTATION PEAK-ZERO DECAY TIME (ms)	58 - 67	62.6 PASS
PEAK Mxoc (N-m)	73 - 88	84.8 PASS
Mxoc PEAK-ZERO DECAY TIME (ms)	49 - 64	55.5 PASS
Mxoc PEAK TO ROTATION PEAK (ms)	2 - 16	9.9 PASS

RECORDED BY:

RAZQ

APPROVED BY:

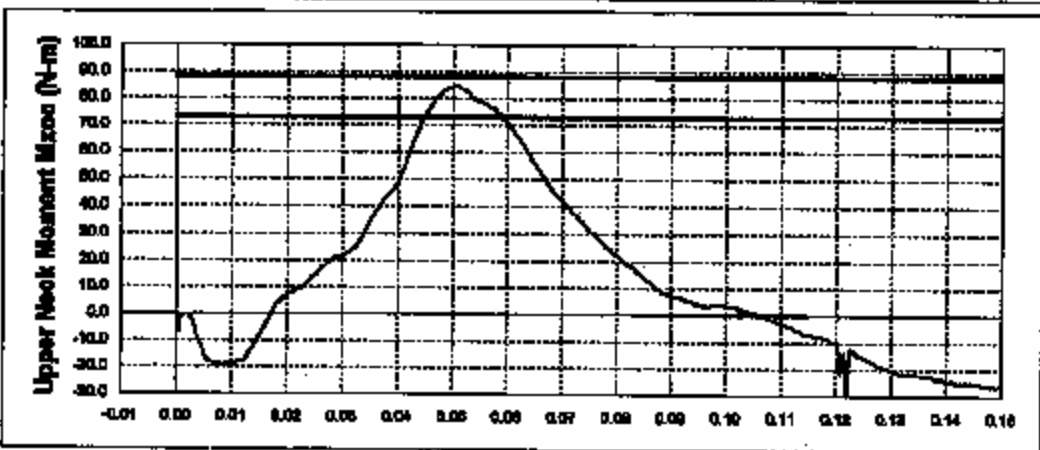
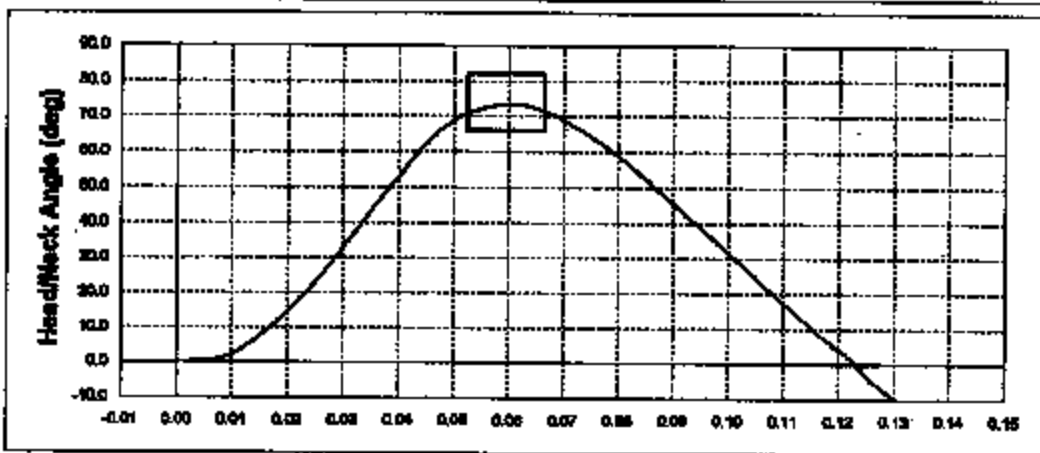
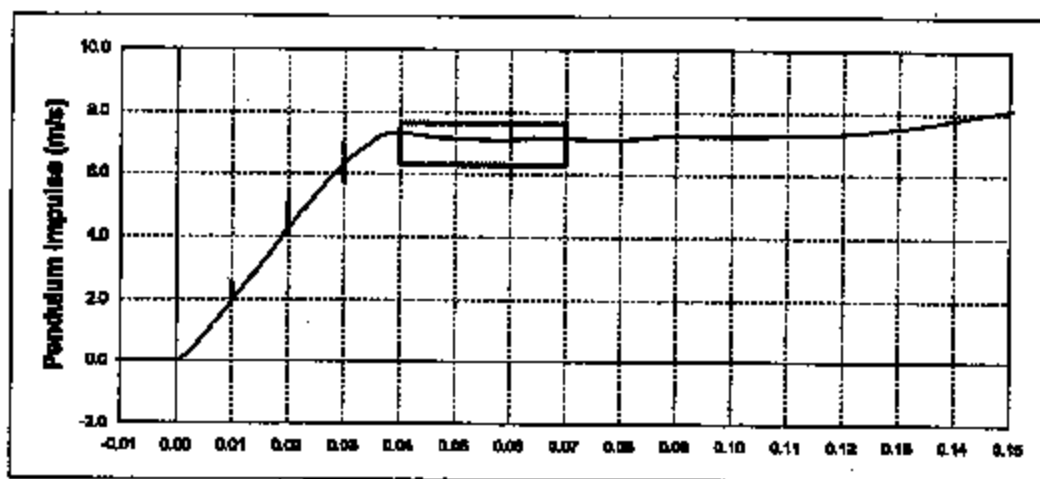
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EXPONENT FAILURE ANALYSIS ASSOCIATES

Neck Lateral Impact Test

Test ID: SN404

Date: 5/5/2004



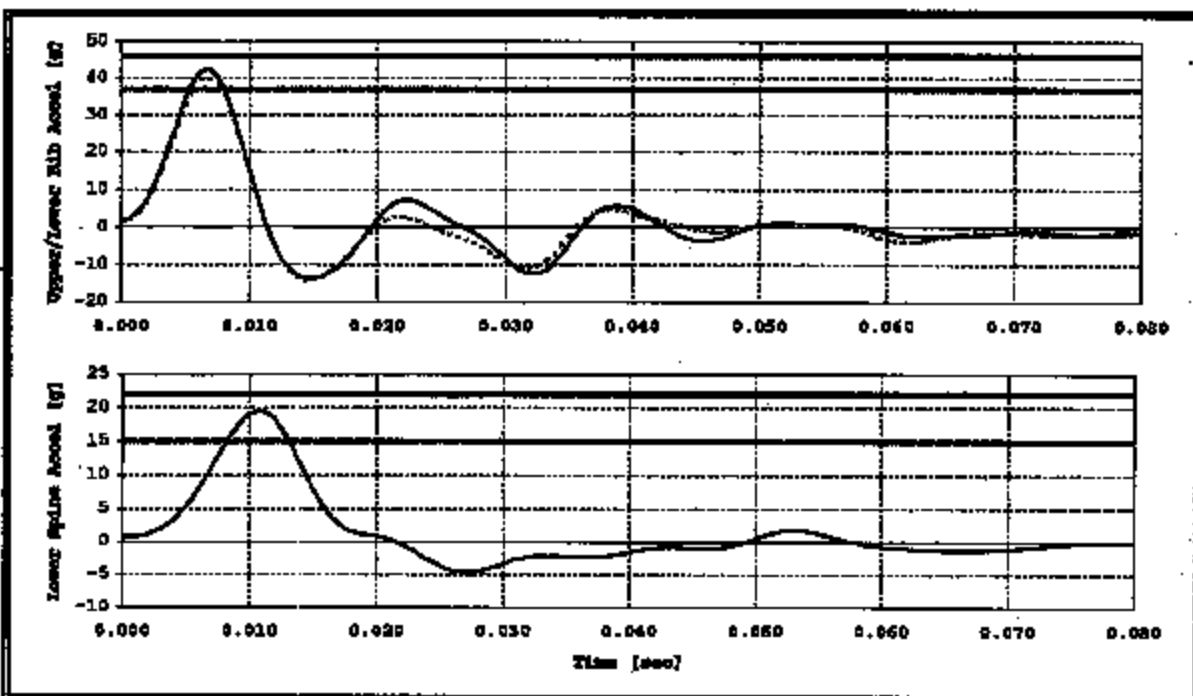
EXPONENT FAILURE ANALYSIS ASSOCIATES

Test and Engineering Center
1850 W. Pinnacle Peak Rd
Phoenix, Arizona 85027

SID/HIII Thorax Lateral Impact Test Summary

Test ID Number: 5T401	Test Date: 05/06/2004
SID/HIII Number: #51	Test Time: 17:34
Comments:	

TEST PARAMETER	SPECIFICATION	TEST RESULTS
AMBIENT TEMPERATURE (°C)	18.9 - 25.6	20.0 PASS
RELATIVE HUMIDITY (%)	10 - 70	36.0 PASS
SPEED TRAP TIME (ms)	---	23.68 ---
IMPACT VELOCITY (m/s)	4.21 - 4.33	4.29 PASS
UPPER RIB ACCELERATION (g)	37 - 46	42.5 PASS
LOWER RIB ACCELERATION (g)	37 - 46	40.0 PASS
LOWER SPINE ACCELERATION (g)	15 - 22	19.6 PASS



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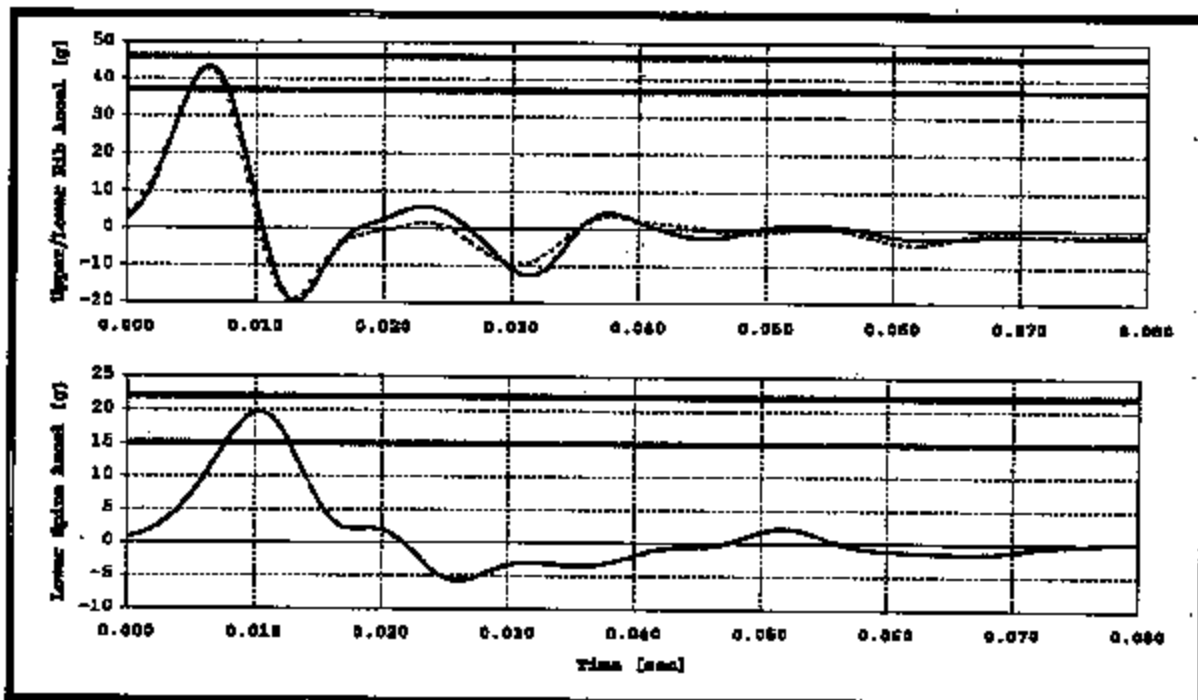
EXPONENT FAILURE ANALYSIS ASSOCIATES

Test and Engineering Center
1850 W. Pinnacle Peak Rd
Phoenix, Arizona 85027

SID/HIII Thorax Lateral Impact Test Summary

Test ID Number: ST402	Test Date: 05/07/2004
SID/HIII Number: #51	Test Time: 9:16
Comments:	

TEST PARAMETER	SPECIFICATION	TEST RESULTS
AMBIENT TEMPERATURE (°C)	18.9 - 25.6	21.1 PASS
RELATIVE HUMIDITY (%)	10 - 70	36.0 PASS
SPEED TRAP TIME (ms)	---	23.67 ---
IMPACT VELOCITY (m/s)	4.21 - 4.33	4.29 PASS
UPPER RIB ACCELERATION (g)	37 - 46	43.6 PASS
LOWER RIB ACCELERATION (g)	37 - 46	43.1 PASS
LOWER SPINE ACCELERATION (g)	15 - 22	19.8 PASS



RECORDED BY:

RAZ

APPROVED BY:

MAK

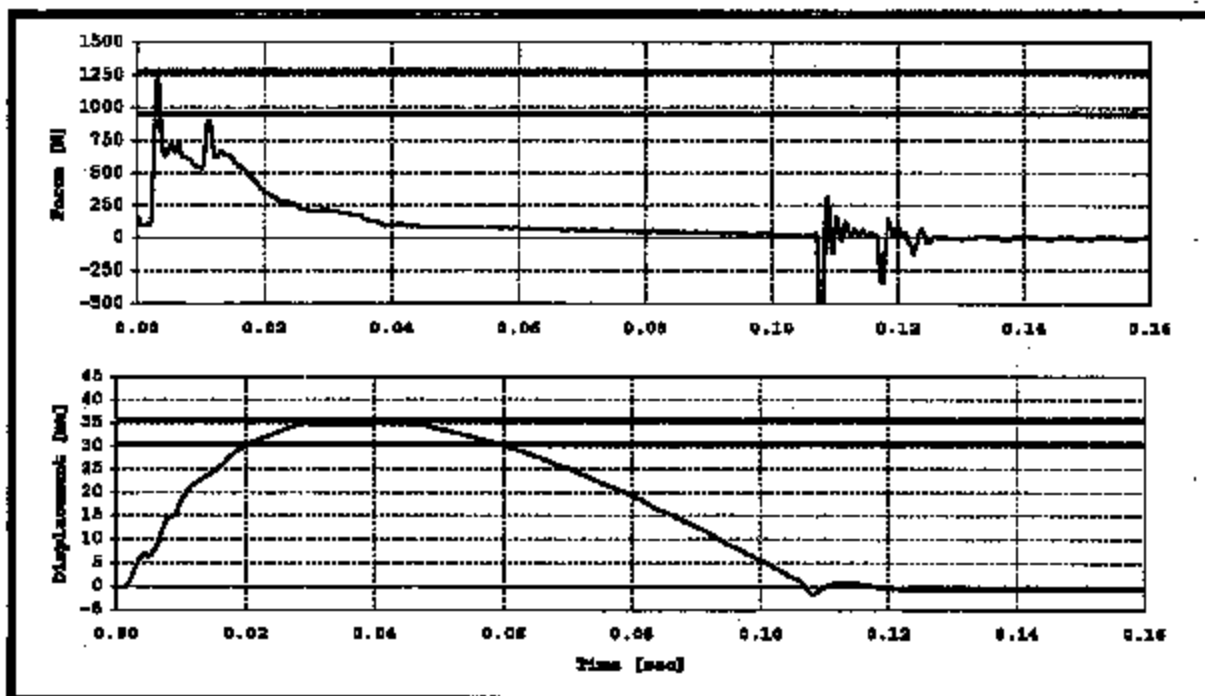
EXPONENT FAILURE ANALYSIS ASSOCIATES

Test and Engineering Center
1850 W. Pinnacle Peak Rd
Phoenix, Arizona 85027

SID/HIII Shock Absorber Bench Test Summary

Test ID Number: SS401	Test Date: 05/12/2004
SID/HIII Number: #051	Test Time: 16:24
Comments:	

TEST PARAMETER		SPECIFICATION	TEST RESULTS
AMBIENT TEMPERATURE	(°C)	18.9 - 25.6	20.6 PASS
RELATIVE HUMIDITY	(%)	10 - 70	40.0 PASS
SPEED TRAP TIME	(ms)	---	31.50 ---
IMPACT VELOCITY	(m/s)	2.74 - 6.40	3.23 PASS
SHOCK ABSORBER FORCE	(N)	948 1274	1223.0 PASS
SHOCK ABSORBER DISPLACEMENT	(mm)	30.4 35.5	34.8 PASS



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APPROVED BY:

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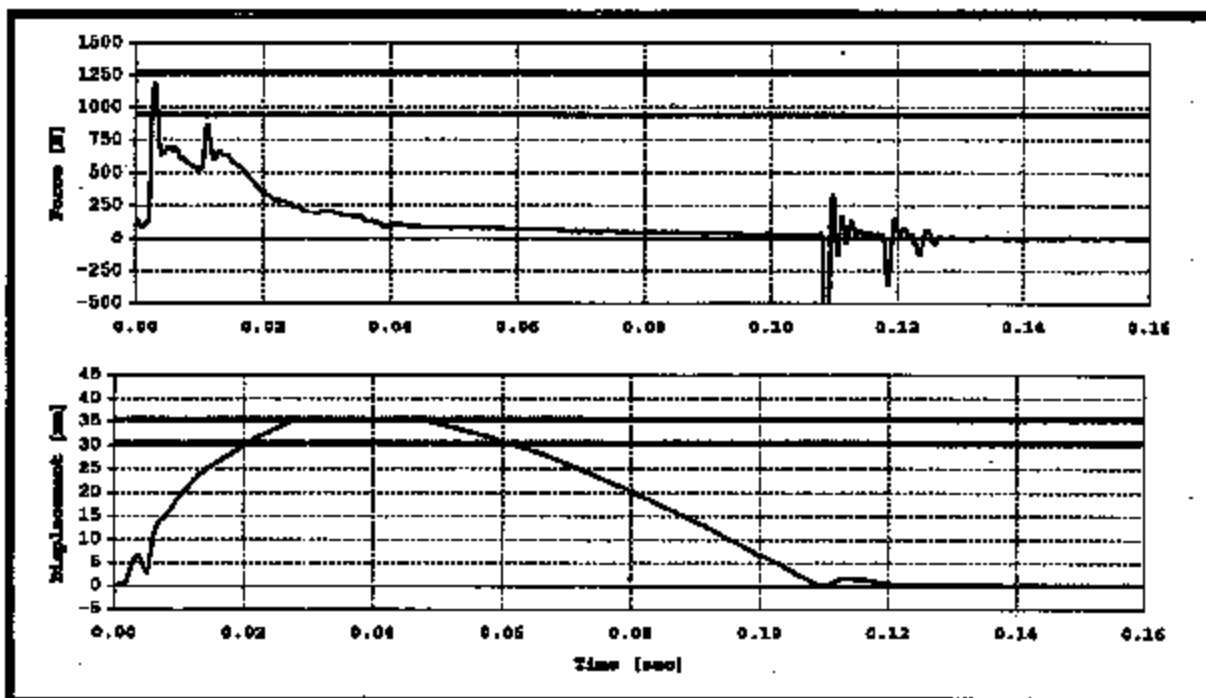
EXPONENT FAILURE ANALYSIS ASSOCIATES

Test and Engineering Center
1850 W. Pinnacle Peak Rd
Phoenix, Arizona 85027

SID/HIII Shock Absorber Bench Test Summary

Test ID Number: SS402	Test Date: 05/12/2004
SID/HIII Number: #051	Test Time: 16:52
Comments:	

TEST PARAMETER	SPECIFICATION	TEST RESULTS
AMBIENT TEMPERATURE (°C)	18.9 - 25.6	20.6 PASS
RELATIVE HUMIDITY (%)	10 - 70	40.0 PASS
SPEED TRAP TIME (ms)	---	31.62 ---
IMPACT VELOCITY (m/s)	2.74 - 6.40	3.21 PASS
SHOCK ABSORBER FORCE (N)	941 1264	1190.9 PASS
SHOCK ABSORBER DISPLACEMENT (mm)	30.4 35.5	35.4 PASS



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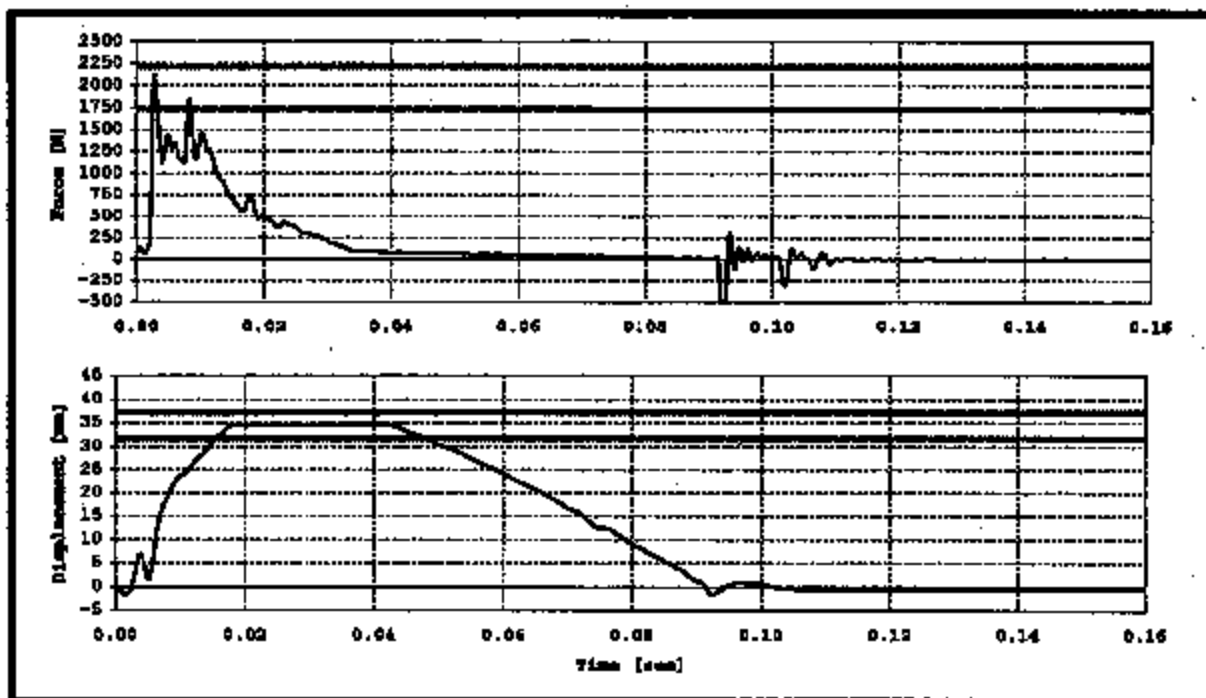
EXPONENT FAILURE ANALYSIS ASSOCIATES

Test and Engineering Center
1850 W. Pinnacle Peak Rd
Phoenix, Arizona 85027

SID/HIII Shock Absorber Bench Test Summary

Test ID Number: SS403	Test Date: 05/13/2004
SID/HIII Number: #051	Test Time: 11:01
Comments:	

TEST PARAMETER	SPECIFICATION	TEST RESULTS
AMBIENT TEMPERATURE (°C)	18.9 - 25.6	21.1 PASS
RELATIVE HUMIDITY (%)	10 - 70	28.0 PASS
SPEED TRAP TIME (ms)	---	23.80 ---
IMPACT VELOCITY (m/s)	2.74 - 6.40	4.27 PASS
SHOCK ABSORBER FORCE (N)	1736 2207	2120.3 PASS
SHOCK ABSORBER DISPLACEMENT (mm)	31.7 37.2	34.7 PASS



RECORDED BY:

RA7R

APPROVED BY:

MMK

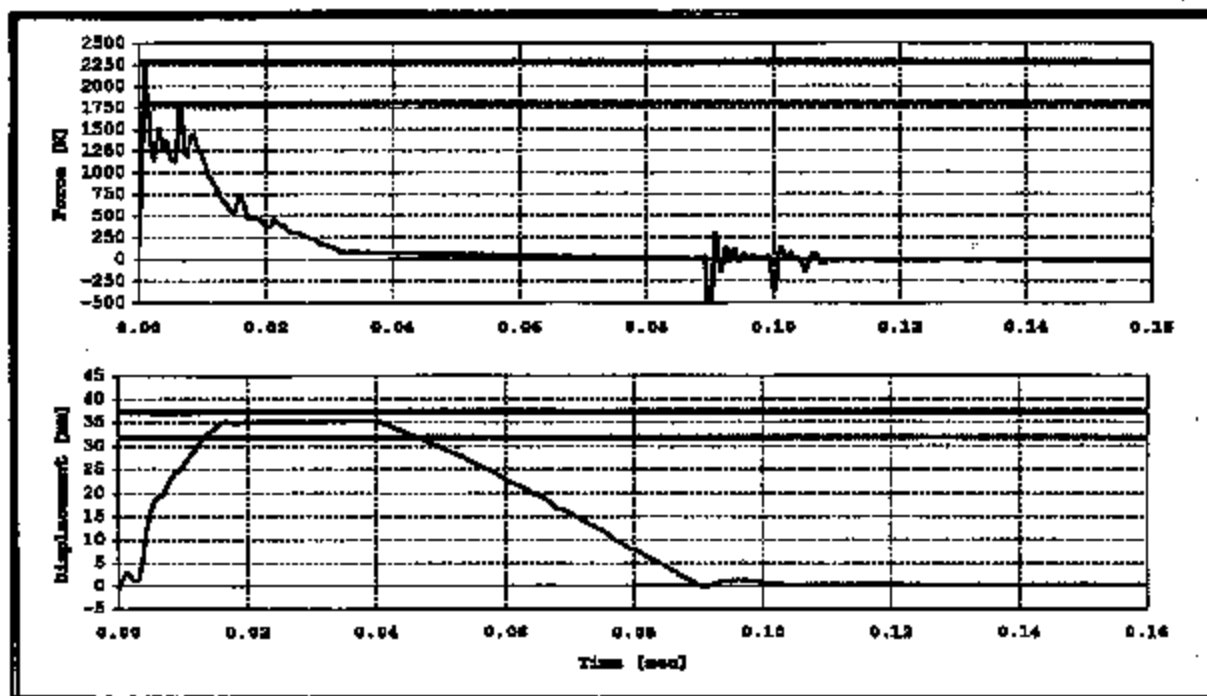
EXPONENT FAILURE ANALYSIS ASSOCIATES

Test and Engineering Center
1850 W. Pinnacle Peak Rd
Phoenix, Arizona 85027

SID/HIII Shock Absorber Bench Test Summary

Test ID Number: SS404	Test Date: 05/13/2004
SID/HIII Number: #051	Test Time: 11.37
Comments:	

TEST PARAMETER	SPECIFICATION	TEST RESULTS
AMBIENT TEMPERATURE (°C)	18.9 - 25.6	21.1 PASS
RELATIVE HUMIDITY (%)	10 - 70	28.0 PASS
SPEED TRAP TIME (ms)	---	23.40 ---
IMPACT VELOCITY (m/s)	2.74 - 6.40	4.34 PASS
SHOCK ABSORBER FORCE (N)	1801 2282	2220.7 PASS
SHOCK ABSORBER DISPLACEMENT (mm)	31.8 37.3	35.1 PASS



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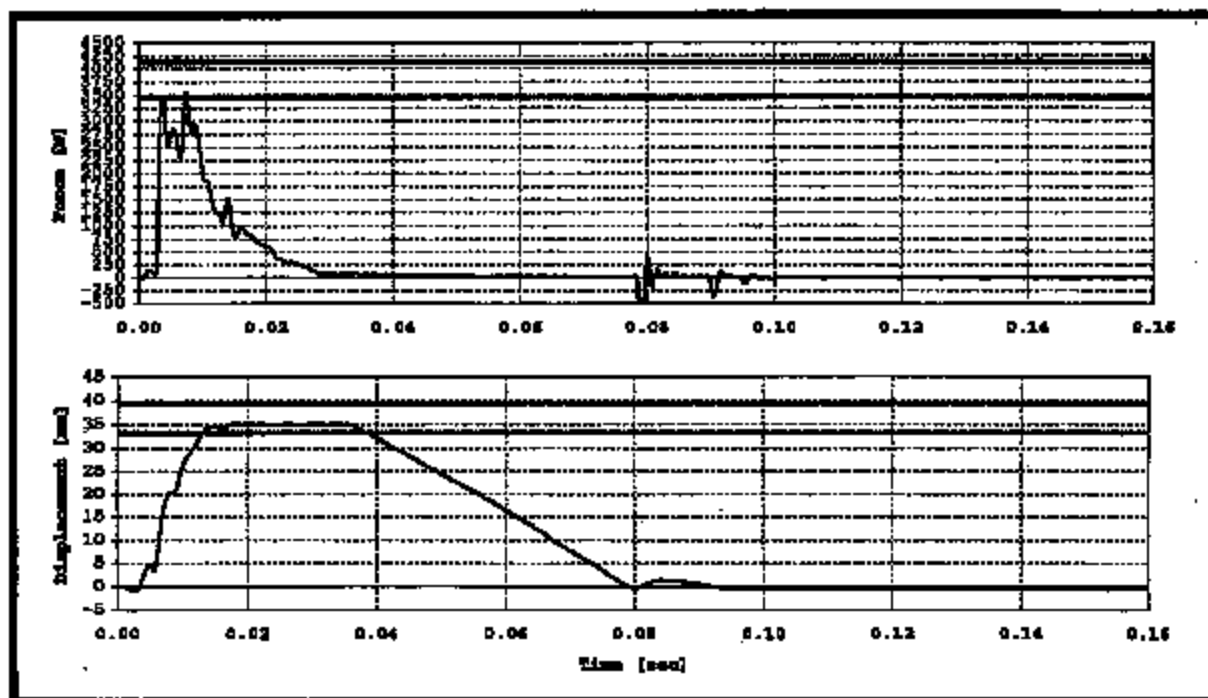
EXPONENT FAILURE ANALYSIS ASSOCIATES

Test and Engineering Center
1850 W. Pinnacle Peak Rd
Phoenix, Arizona 85027

SID/HIII Shock Absorber Bench Test Summary

Test ID Number: 88405	Test Date: 05/13/2004
SID/HIII Number: #051	Test Time: 14:16
Comments:	

TEST PARAMETER		SPECIFICATION	TEST RESULTS
AMBIENT TEMPERATURE	(°C)	18.9 - 25.6	21.1 PASS
RELATIVE HUMIDITY	(%)	10 - 70	28.0 PASS
SPEED TRAP TIME	(ms)	---	17.30 ---
IMPACT VELOCITY	(m/s)	2.74 - 6.40	5.87 PASS
SHOCK ABSORBER FORCE	(N)	3455 4126	3556.6 PASS
SHOCK ABSORBER DISPLACEMENT	(mm)	33.2 39.3	35.1 PASS



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APPROVED BY:

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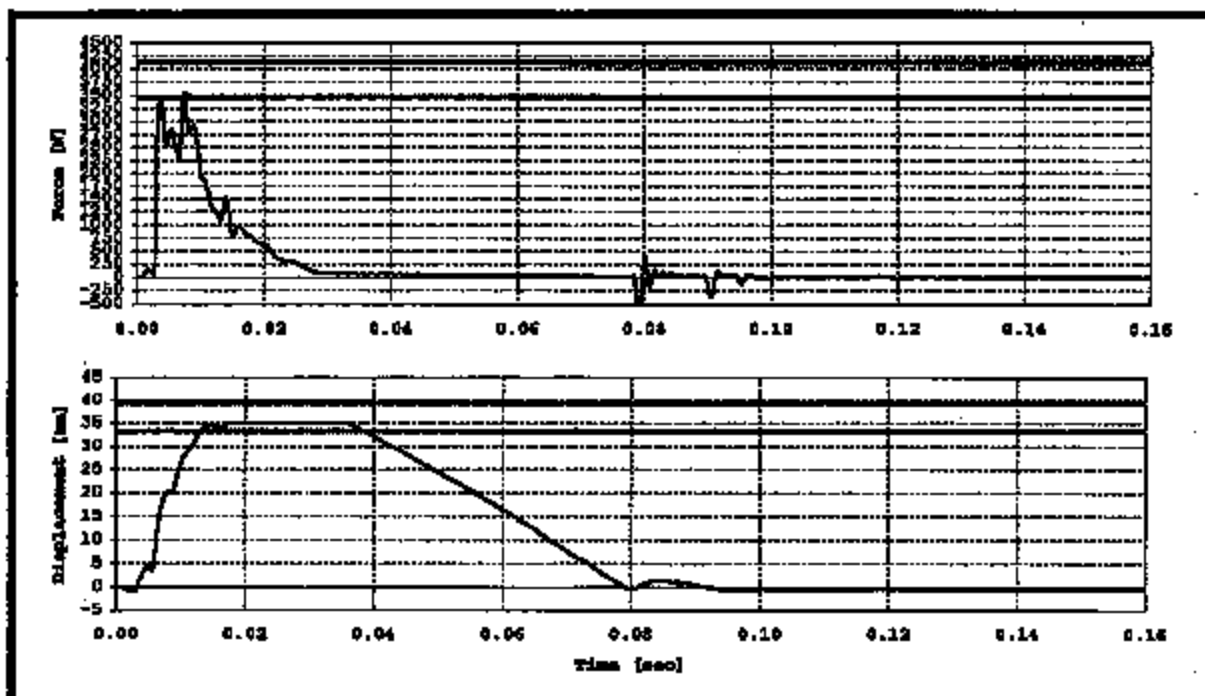
EXPONENT FAILURE ANALYSIS ASSOCIATES

Test and Engineering Center
1850 W. Pinnacle Peak Rd
Phoenix, Arizona 85027

SID/HIII Shock Absorber Bench Test Summary

Test ID Number: 88406	Test Date: 05/13/2004
SID/HIII Number: #051	Test Time: 14:36
Comments:	

TEST PARAMETER		SPECIFICATION	TEST RESULTS
AMBIENT TEMPERATURE	(°C)	18.9 - 25.6	21.1 PASS
RELATIVE HUMIDITY	(%)	10 - 70	28.0 PASS
SPEED TRAP TIME	(ms)	---	17.30 ---
IMPACT VELOCITY	(m/s)	2.74 - 6.40	5.87 PASS
SHOCK ABSORBER FORCE	(N)	3455 4126	3556.6 PASS
SHOCK ABSORBER DISPLACEMENT	(mm)	33.2 39.3	35.1 PASS



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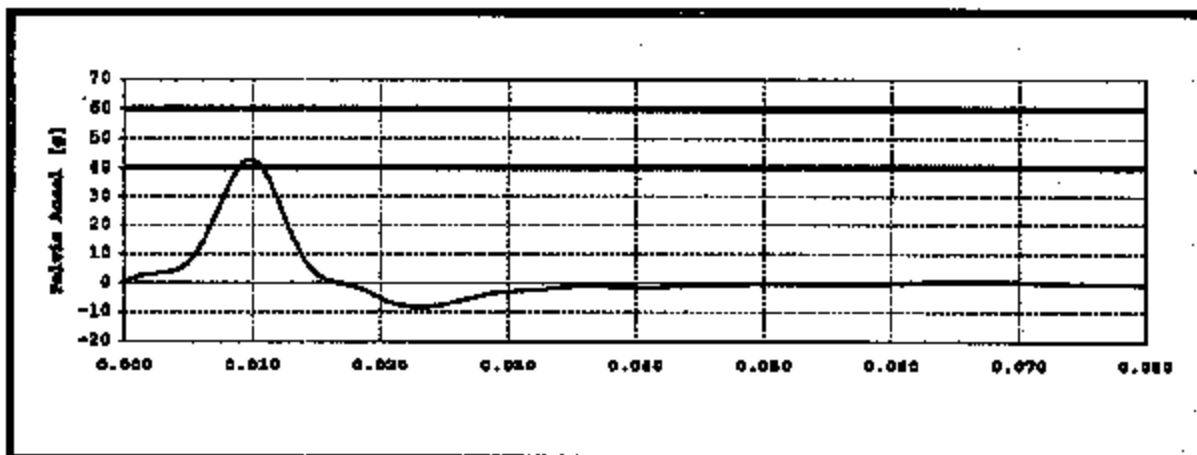
EXPONENT FAILURE ANALYSIS ASSOCIATES

Test and Engineering Center
1850 W. Pinnacle Peak Rd
Phoenix, Arizona 85027

SID/HIII Lumbar Spine and Pelvis Lateral Impact Test Summary

Test ID Number: SP405	Test Date: 05/11/2004
SID/HIII Number: #051	Test Time: 10:10
Comments:	

TEST PARAMETER	SPECIFICATION	TEST RESULTS
AMBIENT TEMPERATURE (°C)	18.9 - 25.6	20.6 PASS
RELATIVE HUMIDITY (%)	10 - 70	38.0 PASS
SPEED TRAP TIME (ms)	---	23.65 ---
IMPACT VELOCITY (m/s)	4.21 - 4.33	4.30 PASS
PELVIS ACCELERATION (g)	40 - 60	42.7 PASS
ACCEL CURVE UNIMODAL?	10% max	1.4% PASS
PELVIS ACCEL TIME > 20 g (ms)	3 - 7	6.3 PASS



RECORDED BY:

RSZC

APPROVED BY:

[Signature]

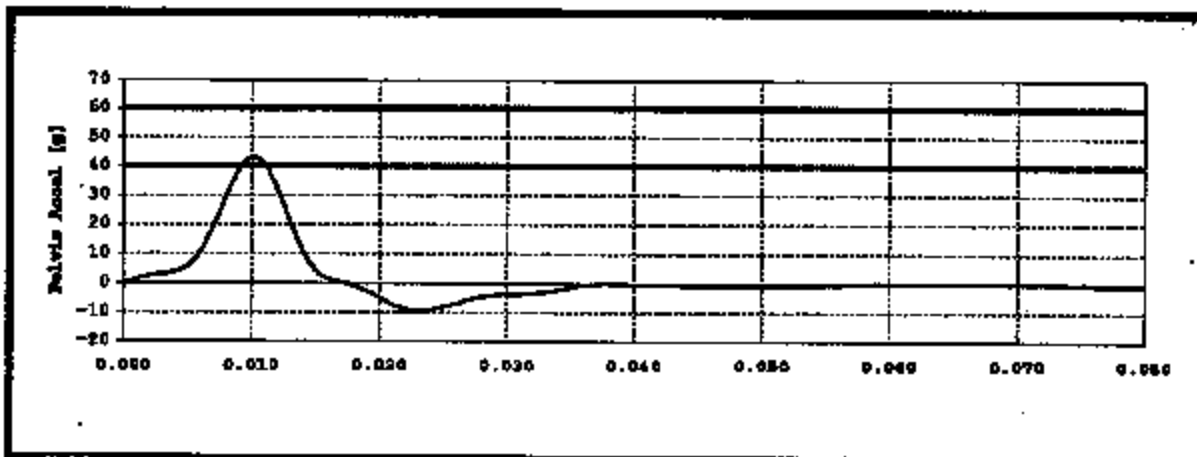
EXPONENT FAILURE ANALYSIS ASSOCIATES

Test and Engineering Center
1850 W. Pinnacle Peak Rd
Phoenix, Arizona 85027

SID/HIII Lumbar Spine and Pelvis Lateral Impact Test Summary

Test ID Number: SP406	Test Date: 05/11/2004
SID/HIII Number: #051	Test Time: 11:01
Comments:	

TEST PARAMETER	SPECIFICATION	TEST RESULTS
AMBIENT TEMPERATURE (°C)	18.9 - 25.6	20.6 PASS
RELATIVE HUMIDITY (%)	10 - 70	40.0 PASS
SPEED TRAP TIME (ms)	---	23.75 ---
IMPACT VELOCITY (m/s)	4.21 - 4.33	4.28 PASS
PELVIS ACCELERATION (g)	40 - 60	43.2 PASS
ACCEL CURVE UNIMODAL?	10% max	0.7% PASS
PELVIS ACCEL TIME > 20 g (ms)	3 - 7	6.3 PASS



RECORDED BY:

RAZD

APPROVED BY:

[Signature]

SID/HIII CONFIGURATION VERIFICATION without Chest Flesh Installed

DATE: 06/08/2004

SID/HIII NUMBER: 061

SEQUENTIAL VERIFICATION NUMBER FOR DUMMY*: SC404

* For NHTSA Compliance testing only (Sequential number beginning with "1" at the start of each fiscal year's crash test program)

Test Parameter			Specification	Measurement
SH	BEATED HEIGHT		889 mm – 909 mm 35.0 in – 35.8 in	906 mm
RH	RIB HEIGHT		502 mm – 520 mm 19.7 in – 20.5 in	510 mm
HP	HIP PIVOT HEIGHT	LEFT	99 mm 3.9 in Ref.	99 mm
		RIGHT		100 mm
RD	RIB FROM BACK LINE		229 mm – 241 mm 9.0 in – 9.5 in	233 mm
KH	KNEE PIVOT FROM BACK LINE	LEFT	511 mm – 528 mm 20.1 in – 20.7 in	525 mm
		RIGHT		525 mm
KV	KNEE PIVOT FROM FLOOR	LEFT	490 mm – 505 mm 19.3 in – 19.9 in	490 mm
		RIGHT		490 mm
HW	HIP WIDTH		368 mm – 391 mm 14.0 in – 15.4 in	377 mm

COMMENTS:

RECORDED BY: *TRJL*

DATE: 4/9/04

APPROVED BY: *[Signature]*

DATE: 06/09/2004

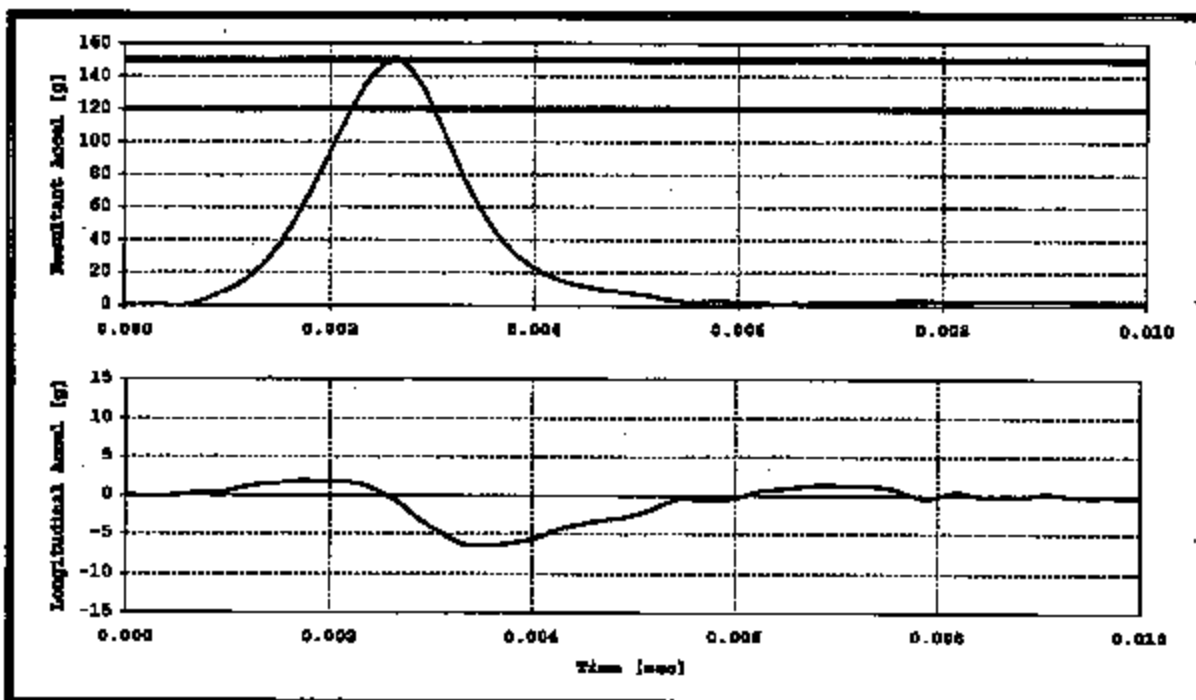
EXPONENT FAILURE ANALYSIS ASSOCIATES

Test and Engineering Center
1850 W. Pinnacle Peak Rd
Phoenix, Arizona 85027

SID/HIII Head Lateral Impact Test Summary

Test ID Number: SH407	Test Date: 06/04/2004
SID/HIII Number: #51	Test Time: 14:48
Part Serial No: 02107963A	Drop Height: 200 mm
Comments:	

TEST PARAMETER	SPECIFICATION	TEST RESULTS
AMBIENT TEMPERATURE (°C)	18.9 - 25.6	20.0 PASS
RELATIVE HUMIDITY (%)	10 - 70	43.0 PASS
PEAK RESULTANT ACCEL. (g)	120 - 150	149.6 PASS
PEAK LONGITUDINAL ACCEL. (g)	15 g max.	6.4 PASS
ACCEL. CURVE UNIMODAL?	15% max.	3.8% PASS



RECORDED BY:

[Signature]

APPROVED BY:

[Signature]

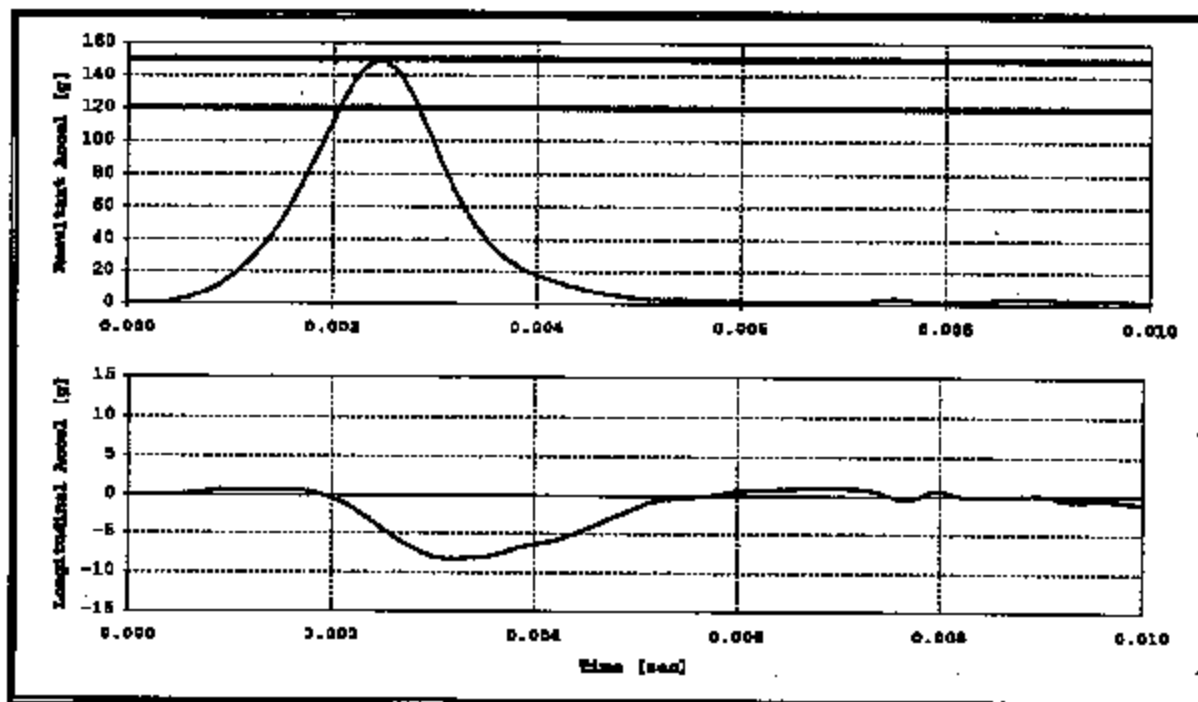
EXPONENT FAILURE ANALYSIS ASSOCIATES

Test and Engineering Center
1850 W. Pinnacle Peak Rd
Phoenix, Arizona 85027

SID/HIII Head Lateral Impact Test Summary

Test ID Number: SH408	Test Date: 06/07/2004
SID/HIII Number: #51	Test Time: 11:19
Part Serial No: 02107963A	Drop Height: 200 mm
Comments:	

TEST PARAMETER	SPECIFICATION	TEST RESULTS
AMBIENT TEMPERATURE (°C)	18.9 - 25.6	22.8 PASS
RELATIVE HUMIDITY (%)	10 - 70	29.0 PASS
PEAK RESULTANT ACCEL. (g)	120 - 150	148.8 PASS
PEAK LONGITUDINAL ACCEL. (g)	15 g max.	8.2 PASS
ACCEL. CURVE UNIMODAL?	15% max.	3.8% PASS



RECORDED BY:

Boyle

APPROVED BY:

W.K.

EXPONENT FAILURE ANALYSIS ASSOCIATES

Test and Engineering Center
1850 W. Pinnacle Peak Rd
Phoenix, Arizona 85027

SID/HIII Lateral Neck Impact Calibration Test Summary

Test ID Number: SN409	Test Date: 06/07/2004
SID/HIII Number: #051	Test Time: 15:26
Comments: 120.0 deg, 27 calls	

TEST PARAMETER	SPECIFICATION	TEST RESULTS
AMBIENT TEMPERATURE (°C)	20.6 - 22.2	21.1 PASS
RELATIVE HUMIDITY (%)	10 - 70	37.0 PASS
SPEED TRAP AVERAGE TIME (ms)	---	13.17 ---
IMPACT VELOCITY (m/s)	6.89 - 7.13	7.0 PASS
PENDULUM IMPULSE - 10 ms (m/s)	1.96 - 2.58	2.0 PASS
PENDULUM IMPULSE - 20 ms (m/s)	4.12 - 5.10	4.4 PASS
PENDULUM IMPULSE - 30 ms (m/s)	5.73 - 7.01	6.4 PASS
PENDULUM IMP [max] - 40-70 ms (m/s)	6.27 - 7.64	7.4 PASS
PENDULUM IMP [min] - 40-70 ms (m/s)	6.27 - 7.64	7.2 PASS
PEAK TOTAL HEAD/NECK ROTATION (°)	66 - 82	72.3 PASS
ROTATION PEAK-ZERO DECAY TIME (ms)	58 - 67	64.0 PASS
PEAK Mxoc (N-m)	73 - 88	82.7 PASS
Mxoc PEAK-ZERO DECAY TIME (ms)	49 - 64	52.9 PASS
MXOC PEAK TO ROTATION PEAK (ms)	2 - 16	7.2 PASS

RECORDED BY:

TR/LE

APPROVED BY:

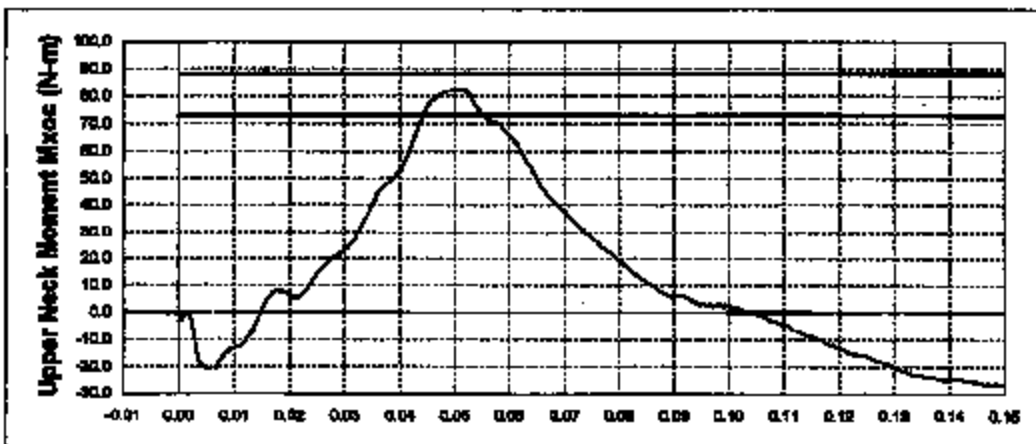
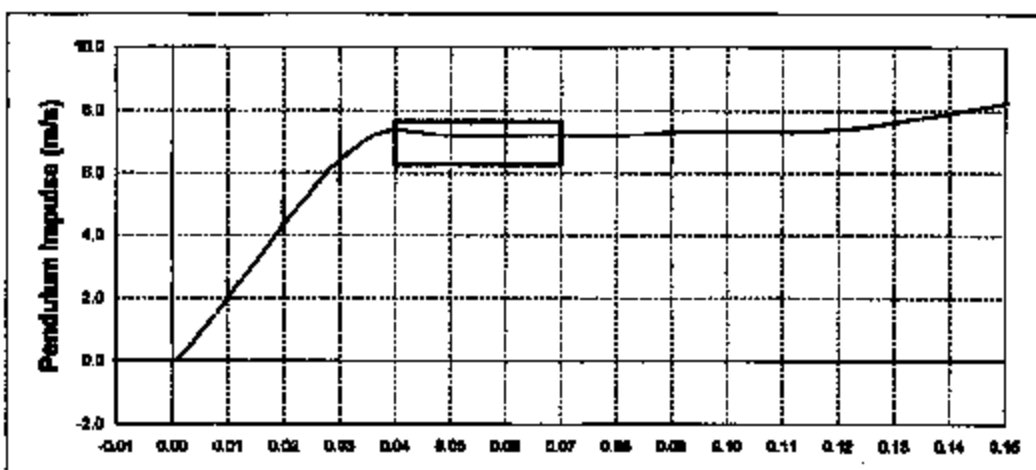
ME/LE

EXPONENT FAILURE ANALYSIS ASSOCIATES

Neck Lateral Impact Test

Test ID: BN409

Date: 6/7/2004



EXPONENT FAILURE ANALYSIS ASSOCIATES

Test and Engineering Center
1850 W. Pinnacle Peak Rd
Phoenix, Arizona 85027

SID/HIII Lateral Neck Impact Calibration Test Summary

Test ID Number: SN410	Test Date: 06/07/2004
SID/HIII Number: #051	Test Time: 15:19
Comments: 120.0 deg, 27 cells	

TEST PARAMETER	SPECIFICATION	TEST RESULTS
AMBIENT TEMPERATURE (°C)	20.6 - 22.2	21.7 PASS
RELATIVE HUMIDITY (%)	10 - 70	37.0 PASS
SPRED TRAP AVERAGE TIME (ms)	---	13.22 ---
IMPACT VELOCITY (m/s)	6.89 - 7.13	7.0 PASS
PENDULUM IMPULSE - 10 ms (m/s)	1.96 - 2.55	2.1 PASS
PENDULUM IMPULSE - 20 ms (m/s)	4.12 - 5.10	4.5 PASS
PENDULUM IMPULSE - 30 ms (m/s)	5.73 - 7.01	6.6 PASS
PENDULUM IMP [max] - 40-70 ms (m/s)	6.27 - 7.64	7.3 PASS
PENDULUM IMP [min] - 40-70 ms (m/s)	6.27 - 7.64	7.1 PASS
PEAK TOTAL HEAD/NECK ROTATION (°)	66 - 82	71.8 PASS
ROTATION PEAK-ZERO DECAY TIME (ms)	58 - 67	61.7 PASS
PEAK Mxoc (N-m)	73 - 88	84.8 PASS
Mxoc PEAK-ZERO DECAY TIME (ms)	49 - 64	56.2 PASS
Mxoc PEAK TO ROTATION PEAK (ms)	2 - 16	10.9 PASS

RECORDED BY:



APPROVED BY:

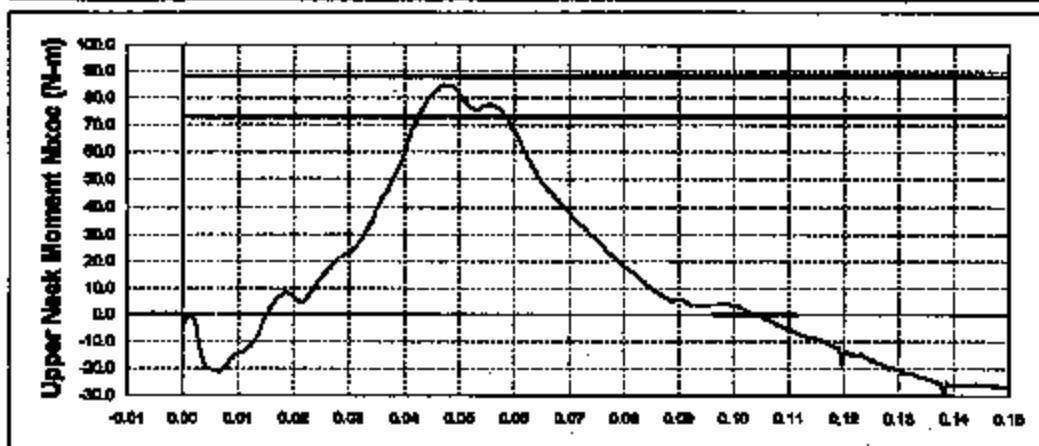
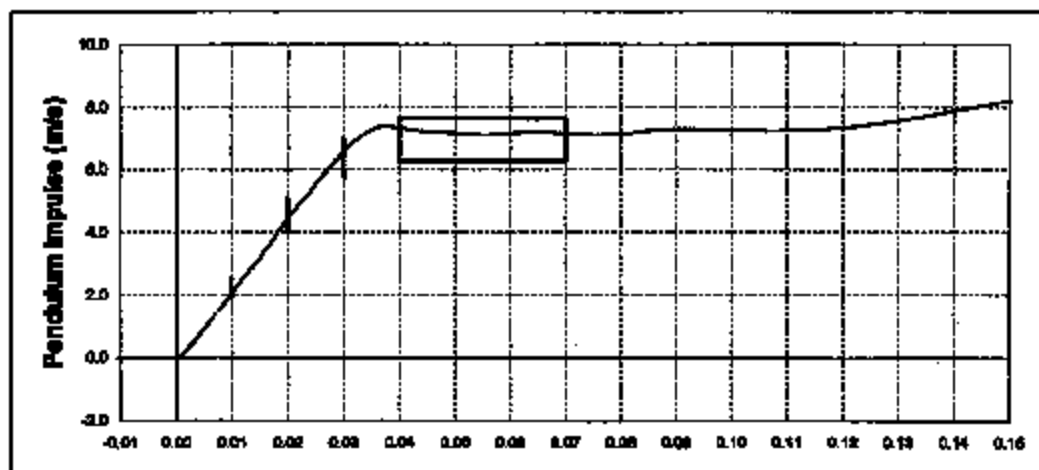


EXPONENT FAILURE ANALYSIS ASSOCIATES

Neck Lateral Impact Test

Test ID: 8N410

Date: 6/7/2004



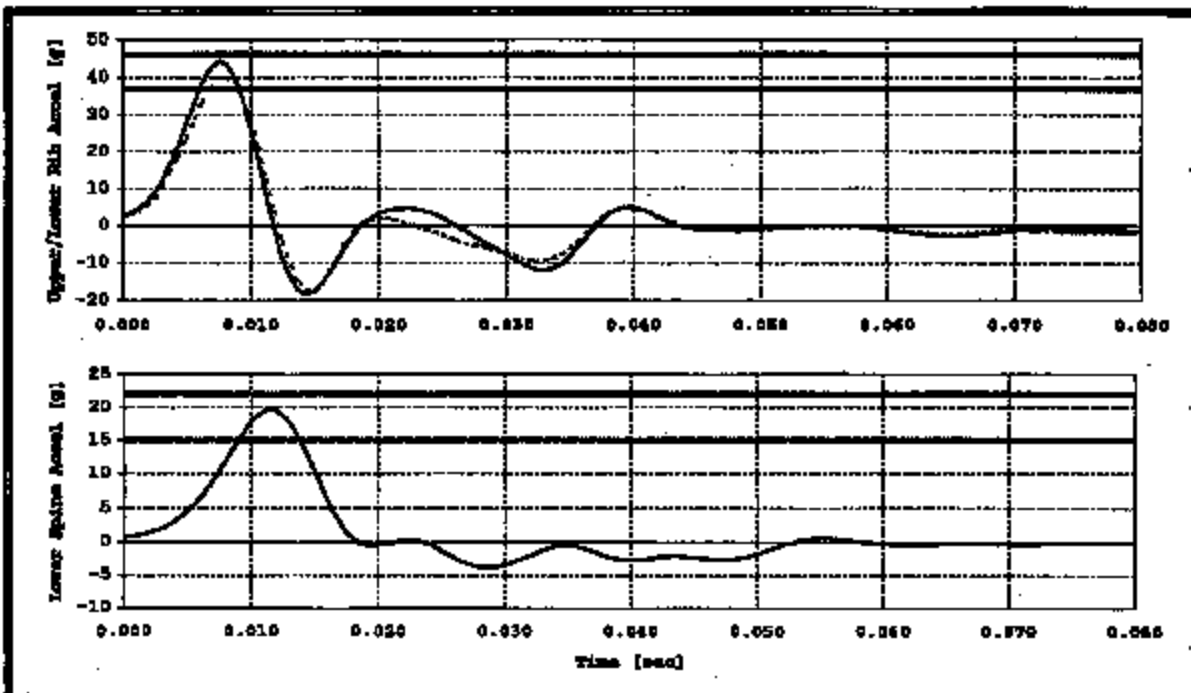
EXPONENT FAILURE ANALYSIS ASSOCIATES

Test and Engineering Center
1850 W. Pinnacle Peak Rd
Phoenix, Arizona 85027

SID/HIII Thorax Lateral Impact Test Summary

Test ID Number: ST411	Test Date: 06/04/2004
SID/HIII Number: #51	Test Time: 12:49
Comments:	

TEST PARAMETER		SPECIFICATION	TEST RESULTS
AMBIENT TEMPERATURE	(°C)	18.9 - 25.6	19.4 PASS
RELATIVE HUMIDITY	(%)	10 - 70	34.0 PASS
SPEED TRAP TIME	(ms)	---	24.02 ---
IMPACT VELOCITY	(m/s)	4.21 - 4.33	4.23 PASS
UPPER RIB ACCELERATION	(g)	37 - 46	44.3 PASS
LOWER RIB ACCELERATION	(g)	37 - 46	40.3 PASS
LOWER SPINE ACCELERATION	(g)	15 - 22	19.6 PASS



RECORDED BY:

RAJ

APPROVED BY:

WKE

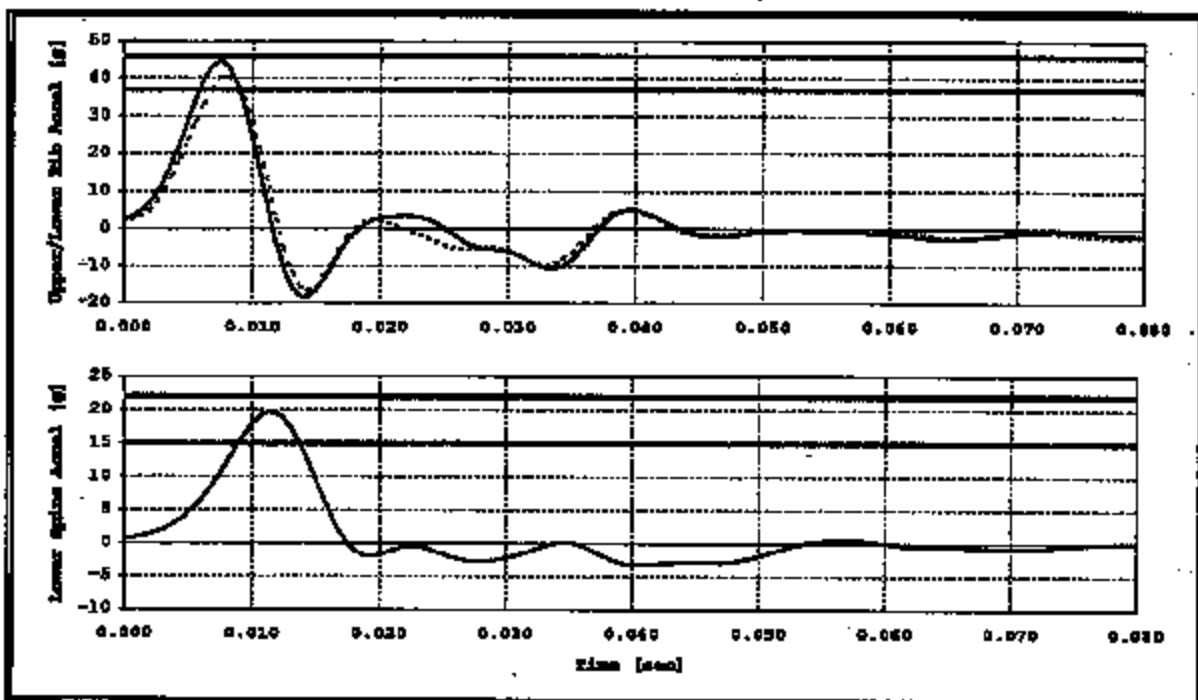
EXPONENT FAILURE ANALYSIS ASSOCIATES

Test and Engineering Center
1850 W. Pinnacle Peak Rd
Phoenix, Arizona 85027

SID/HIII Thorax Lateral Impact Test Summary

Test ID Number: ST412	Test Date: 06/04/2004
SID/HIII Number: #51	Test Time: 13:16
Comments:	

TEST PARAMETER		SPECIFICATION	TEST RESULTS
AMBIENT TEMPERATURE	(°C)	18.9 - 25.6	19.4 PASS
RELATIVE HUMIDITY	(%)	10 - 70	34.0 PASS
SPEED TRAP TIME	(ms)	---	24.12 ---
IMPACT VELOCITY	(m/s)	4.21 - 4.33	4.21 PASS
UPPER RIB ACCELERATION	(g)	37 - 46	44.6 PASS
LOWER RIB ACCELERATION	(g)	37 - 46	40.5 PASS
LOWER SPINE ACCELERATION	(g)	15 - 22	19.8 PASS



RECORDED BY:

T. J. ZL

APPROVED BY:

[Signature]

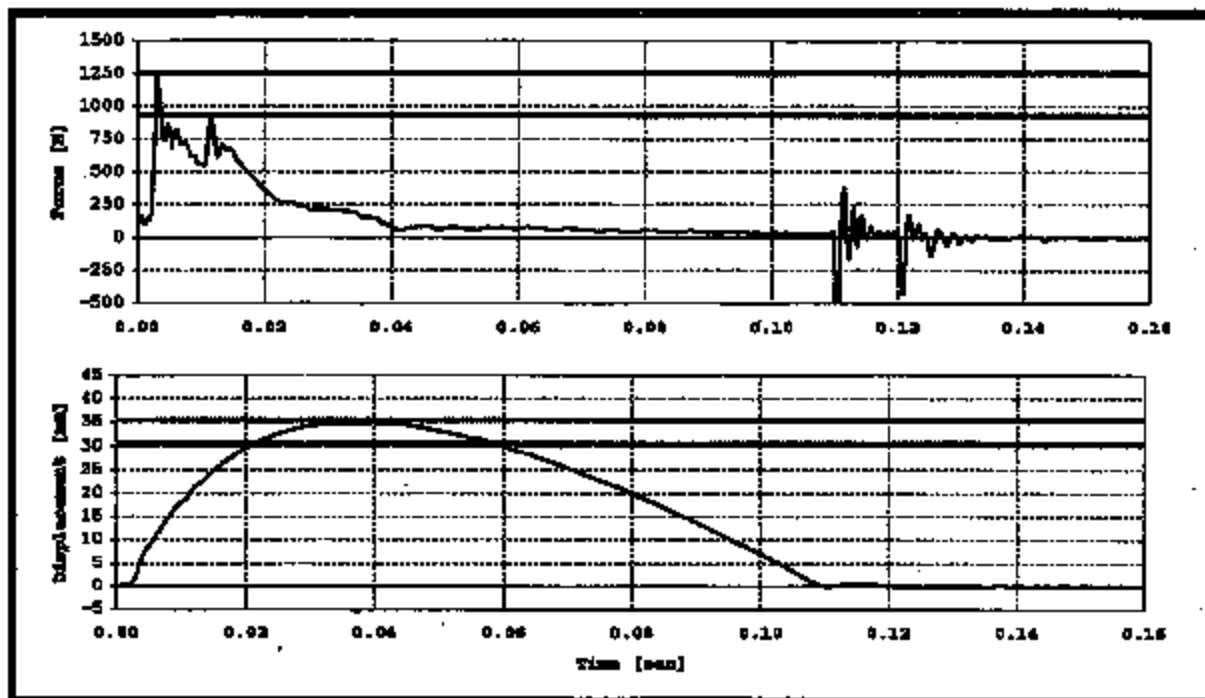
EXPONENT FAILURE ANALYSIS ASSOCIATES

Test and Engineering Center
1850 W. Pinnacle Peak Rd
Phoenix, Arizona 85027

SID/HIII Shock Absorber Bench Test Summary

Test ID Number: SS419	Test Date: 06/02/2004
SID/HIII Number: #051	Test Time: 8:25
Comments:	

TEST PARAMETER		SPECIFICATION	TEST RESULTS
AMBIENT TEMPERATURE	(°C)	18.9 - 25.6	20.6 PASS
RELATIVE HUMIDITY	(%)	10 - 70	26.0 PASS
SPEED TRAP TIME	(ms)	---	31.78 ---
IMPACT VELOCITY	(m/s)	2.74 - 6.40	3.20 PASS
SHOCK ABSORBER FORCE	(N)	930 1252	1245.0 PASS
SHOCK ABSORBER DISPLACEMENT	(mm)	30.4 35.4	34.8 PASS



RECORDED BY:

Pat

APPROVED BY:

[Signature]

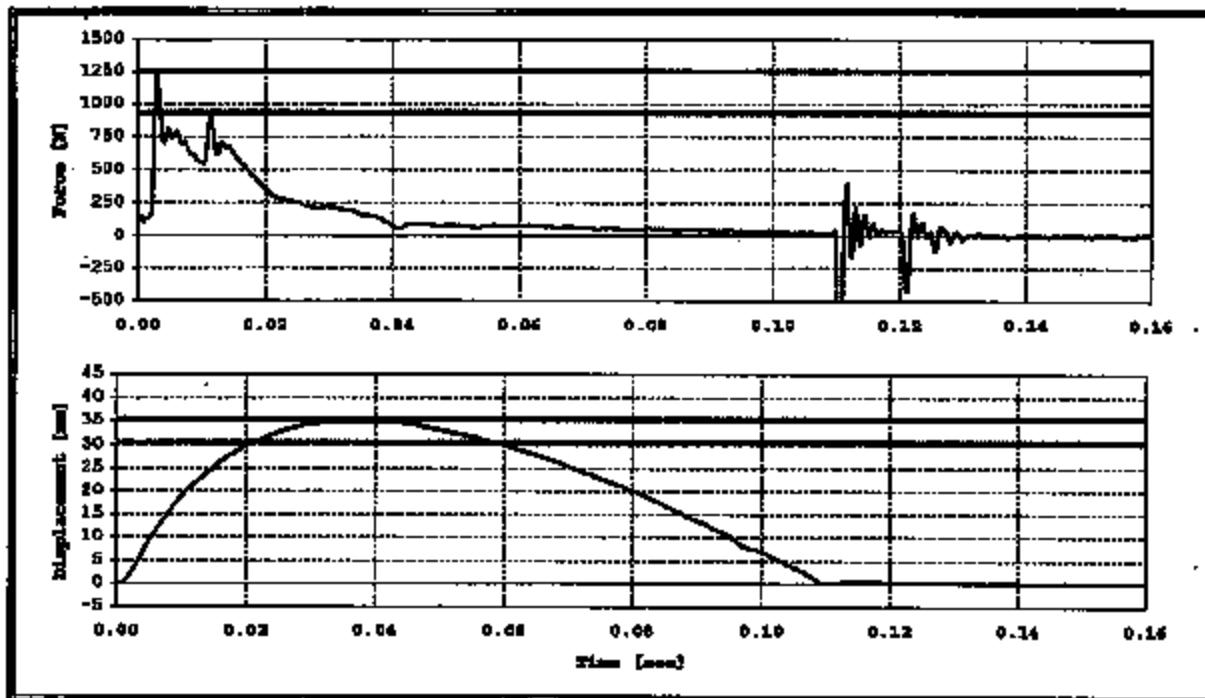
EXPONENT FAILURE ANALYSIS ASSOCIATES

Test and Engineering Center
1850 W. Pinnacle Peak Rd
Phoenix, Arizona 85027

SID/HIII Shock Absorber Bench Test Summary

Test ID Number: SS420	Test Date: 06/02/2004
SID/HIII Number: #051	Test Time: 8:35
Comments:	

TEST PARAMETER		SPECIFICATION	TEST RESULTS
AMBIENT TEMPERATURE	(°C)	18.9 - 25.6	20.6 PASS
RELATIVE HUMIDITY	(%)	10 - 70	26.0 PASS
SPEED TRAP TIME	(ms)	---	31.75 ---
IMPACT VELOCITY	(m/s)	2.74 - 6.40	3.20 PASS
SHOCK ABSORBER FORCE	(N)	932 1254	1252.1 PASS
SHOCK ABSORBER DISPLACEMENT	(mm)	30.4 35.4	34.8 PASS



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RSZ

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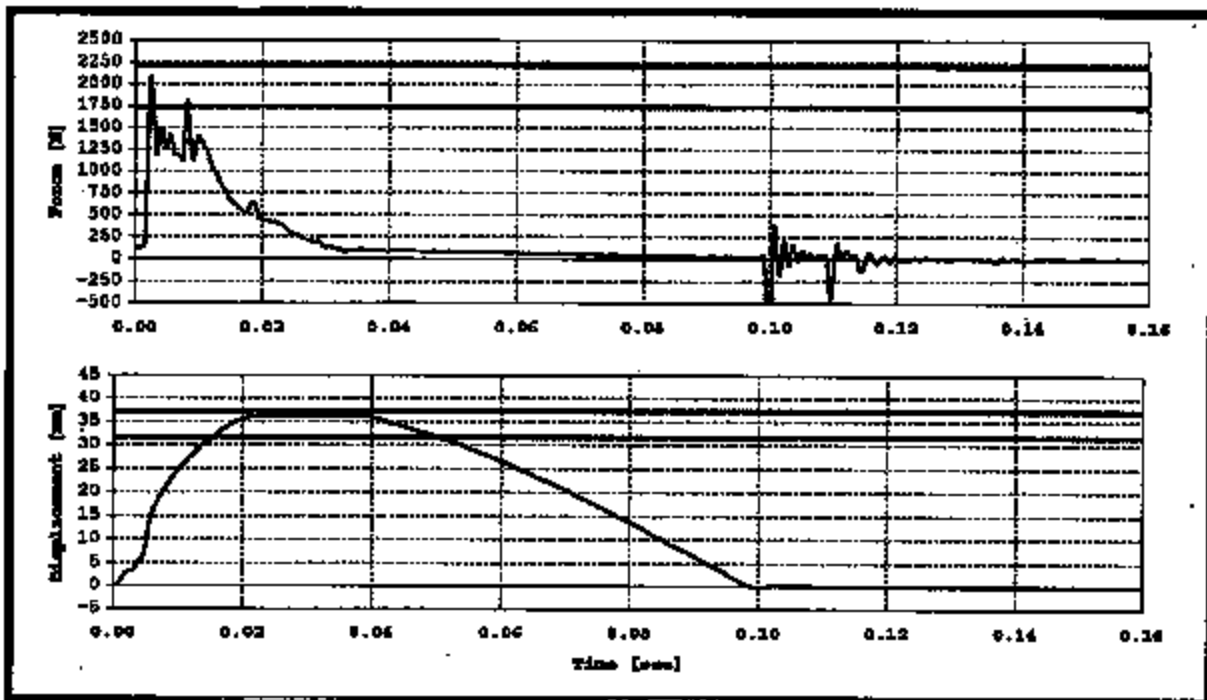
EXPONENT FAILURE ANALYSIS ASSOCIATES

Test and Engineering Center
1850 W. Pinnacle Peak Rd
Phoenix, Arizona 85027

SID/HIII Shock Absorber Bench Test Summary

Test ID Number: 88421	Test Date: 06/02/2004
SID/HIII Number: #051	Test Time: 8:51
Comments:	

TEST PARAMETER		SPECIFICATION	TEST RESULTS
AMBIENT TEMPERATURE	(°C)	18.9 - 25.6	20.6 PASS
RELATIVE HUMIDITY	(%)	10 - 70	26.0 PASS
SPEED TRAP TIME	(ms)	---	23.77 ---
IMPACT VELOCITY	(m/s)	2.74 - 6.40	4.27 PASS
SHOCK ABSORBER FORCE	(N)	1741 2213	2100.0 PASS
SHOCK ABSORBER DISPLACEMENT	(mm)	31.7 37.2	36.2 PASS



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RJL

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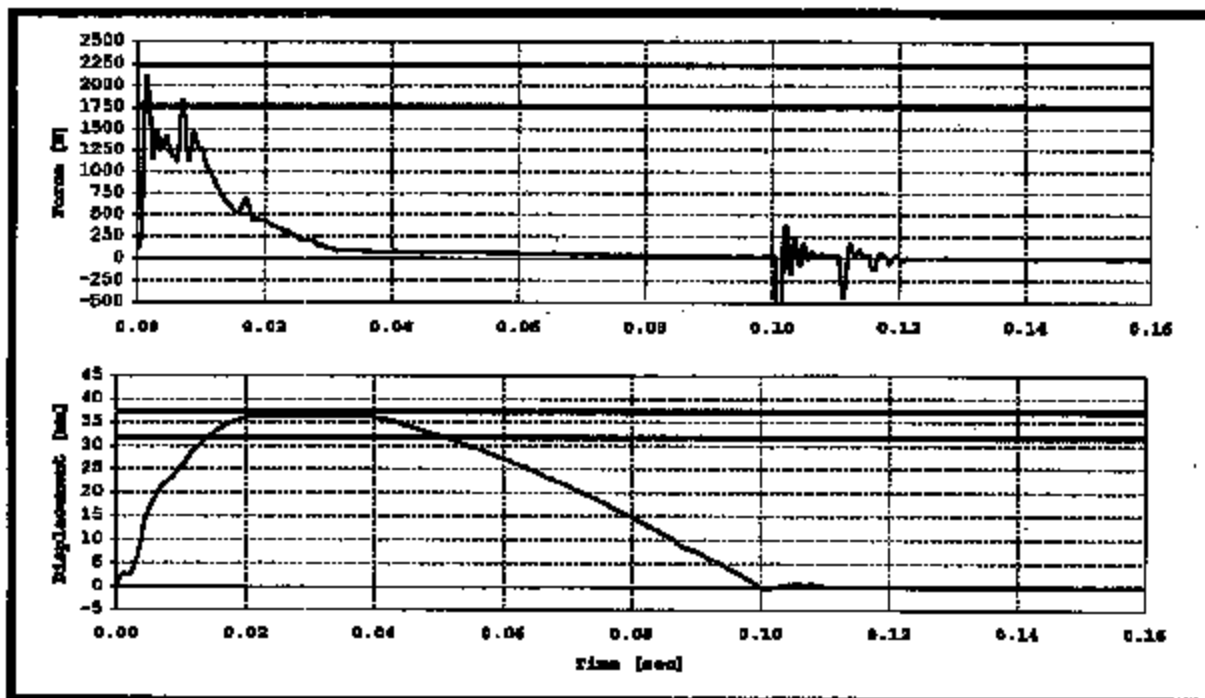
EXPONENT FAILURE ANALYSIS ASSOCIATES

Test and Engineering Center
1850 W. Pinnacle Peak Rd
Phoenix, Arizona 85027

SID/HIII Shock Absorber Bench Test Summary

Test ID Number: SS422	Test Date: 06/02/2004
SID/HIII Number: #051	Test Time: 8:57
Comments:	

TEST PARAMETER	SPECIFICATION	TEST RESULTS
AMBIENT TEMPERATURE (°C)	18.9 - 25.6	20.6 PASS
RELATIVE HUMIDITY (%)	10 - 70	25.0 PASS
SPEED TRAP TIME (ms)	---	23.67 ---
IMPACT VELOCITY (m/s)	2.74 - 6.40	4.29 PASS
SHOCK ABSORBER FORCE (N)	1757 2231	2108.9 PASS
SHOCK ABSORBER DISPLACEMENT (mm)	31.7 37.3	36.4 PASS



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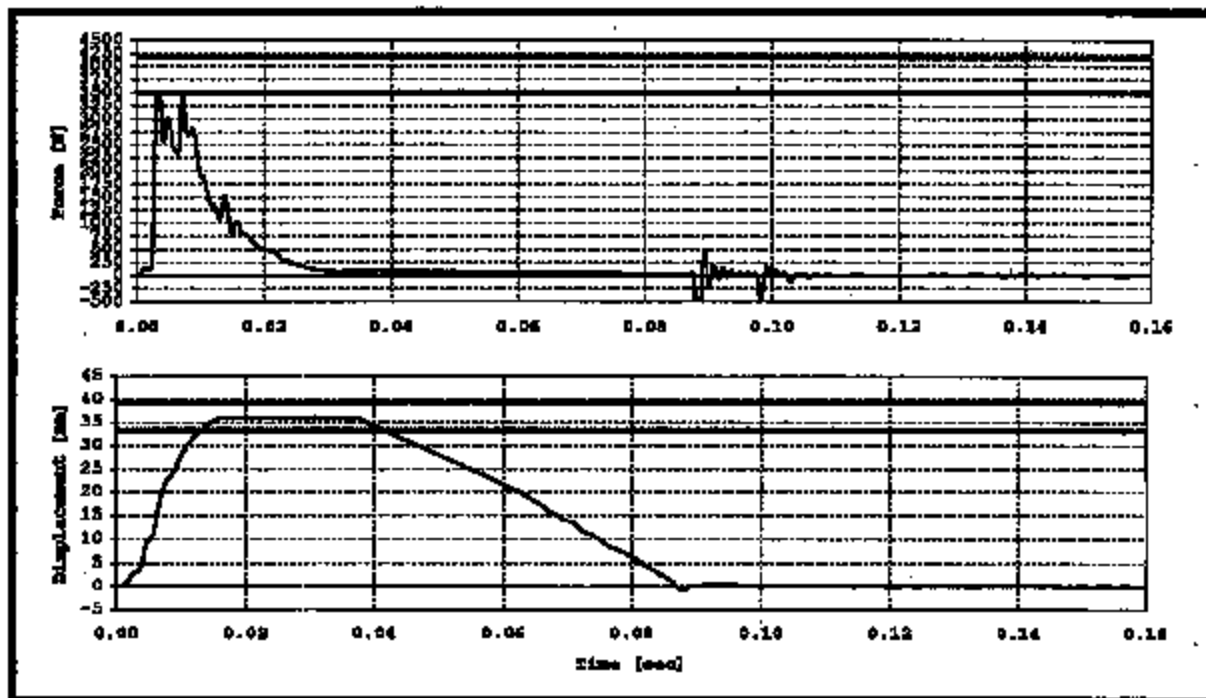
EXPONENT FAILURE ANALYSIS ASSOCIATES

Test and Engineering Center
1850 W. Pinnacle Peak Rd
Phoenix, Arizona 85027

SID/HIII Shock Absorber Bench Test Summary

Test ID Number: SS423	Test Date: 06/02/2004
SID/HIII Number: #051	Test Time: 9:23
Comments:	

TEST PARAMETER		SPECIFICATION	TEST RESULTS
AMBIENT TEMPERATURE	(°C)	18.9 - 25.6	20.6 PASS
RELATIVE HUMIDITY	(%)	10 - 70	26.0 PASS
SPEED TRAP TIME	(ms)	---	17.21 ---
IMPACT VELOCITY	(m/s)	2.74 - 6.40	5.90 PASS
SHOCK ABSORBER FORCE	(N)	3494 4169	3512.4 PASS
SHOCK ABSORBER DISPLACEMENT	(mm)	33.2 39.4	36.1 PASS



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RAL

APPROVED BY:

W. K.

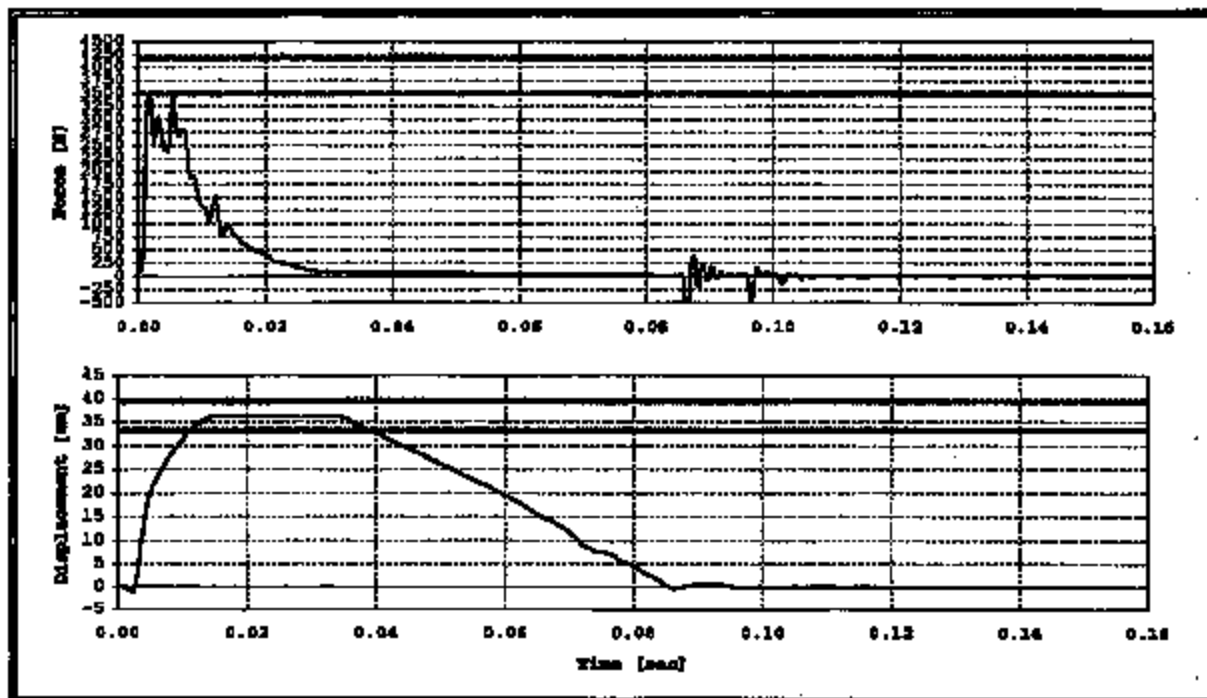
EXPONENT FAILURE ANALYSIS ASSOCIATES

Test and Engineering Center
1850 W. Pinnacle Peak Rd
Phoenix, Arizona 85027

SID/HIII Shock Absorber Bench Test Summary

Test ID Number: SS424	Test Date: 06/02/2004
SID/HIII Number: #051	Test Time: 9:31
Comments:	

TEST PARAMETER		SPECIFICATION	TEST RESULTS
AMBIENT TEMPERATURE	(°C)	18.9 - 25.6	20.6 PASS
RELATIVE HUMIDITY	(%)	10 - 70	26.0 PASS
SPEED TRAP TIME	(ms)	---	17.20 ---
IMPACT VELOCITY	(m/s)	2.74 - 6.40	5.91 PASS
SHOCK ABSORBER FORCE	(N)	3498 4173	3507.9 PASS
SHOCK ABSORBER DISPLACEMENT	(mm)	33.2 39.4	36.2 PASS



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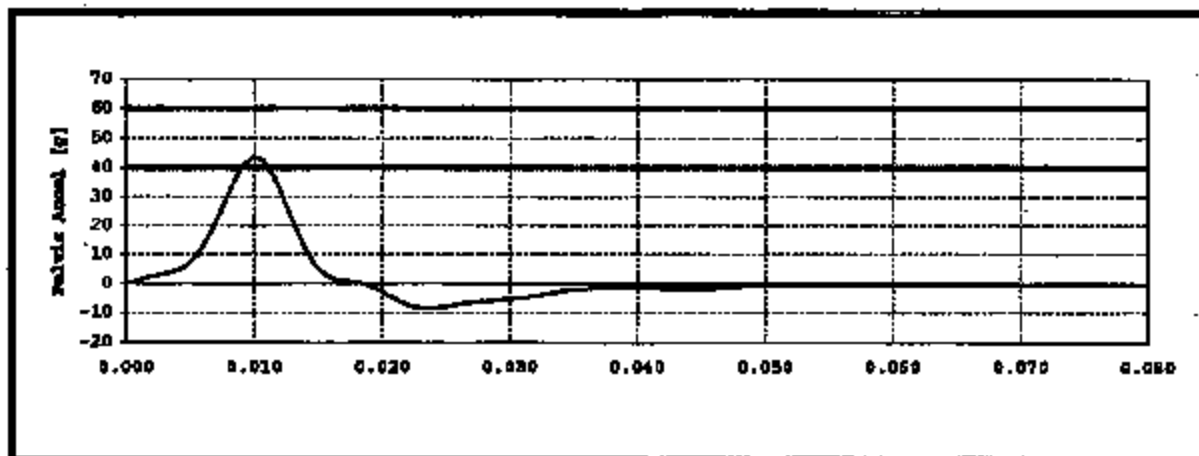
EXPONENT FAILURE ANALYSIS ASSOCIATES

Test and Engineering Center
1850 W. Pinnacle Peak Rd
Phoenix, Arizona 85027

SID/HIII Lumbar Spine and Pelvis Lateral Impact Test Summary

Test ID Number: SP411	Test Date: 06/04/2004
SID/HIII Number: #051	Test Time: 9:44
Comments:	

TEST PARAMETER		SPECIFICATION	TEST RESULTS
AMBIENT TEMPERATURE	(°C)	18.9 - 25.6	20.5 PASS
RELATIVE HUMIDITY	(%)	10 - 70	29.0 PASS
SPEED TRAP TIME	(ms)	---	23.67 ---
IMPACT VELOCITY	(m/s)	4.21 - 4.33	4.29 PASS
PELVIS ACCELERATION	(g)	40 - 60	43.4 PASS
ACCEL CURVE UNIMODAL?	(%)	10% max	0.0% PASS
PELVIS ACCEL TIME > 20 g	(ms)	3 - 7	6.3 PASS



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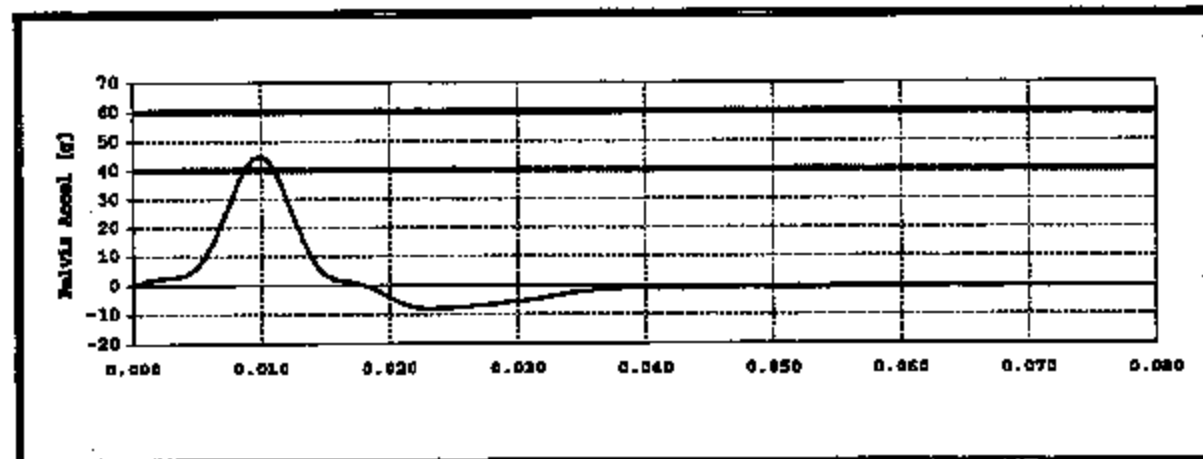
EXPONENT FAILURE ANALYSIS ASSOCIATES

Test and Engineering Center
1850 W. Pinnacle Peak Rd
Phoenix, Arizona 85027

SID/HIII Lumbar Spine and Pelvis Lateral Impact Test Summary

Test ID Number: SP412	Test Date: 06/04/2004
SID/HIII Number: #051	Test Time: 10:14
Comments:	

TEST PARAMETER	SPECIFICATION	TEST RESULTS
AMBIENT TEMPERATURE (°C)	18.9 - 25.6	20.5 PASS
RELATIVE HUMIDITY (%)	10 - 70	29.0 PASS
SPEED TRAP TIME (ms)	---	23.62 ---
IMPACT VELOCITY (m/s)	4.21 - 4.33	4.30 PASS
PELVIS ACCELERATION (g)	40 - 60	44.8 PASS
ACCEL CURVE UNIMODAL?	10% max	0.0% PASS
PELVIS ACCEL TIME > 20 g (ms)	3 - 7	6.3 PASS



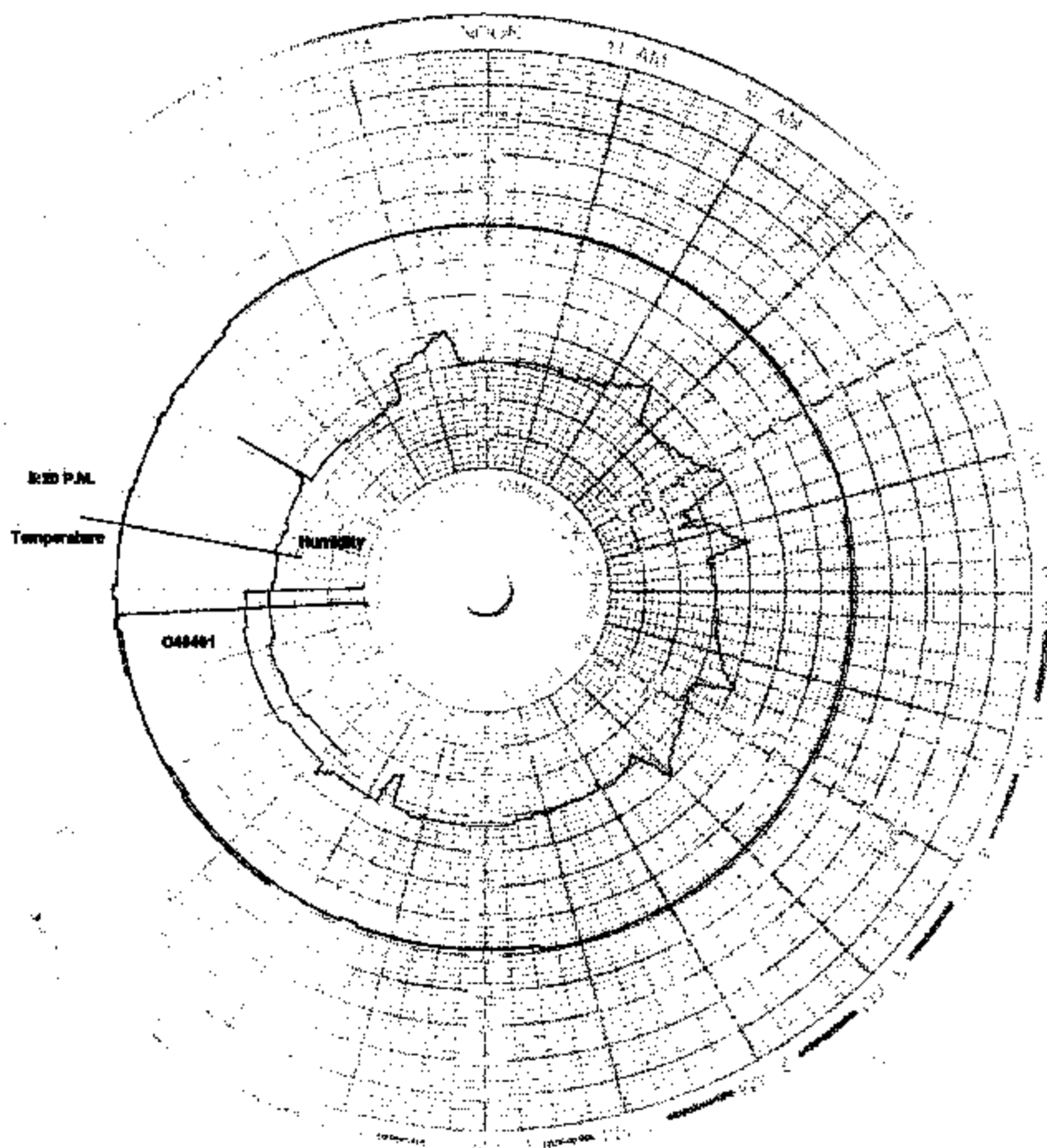
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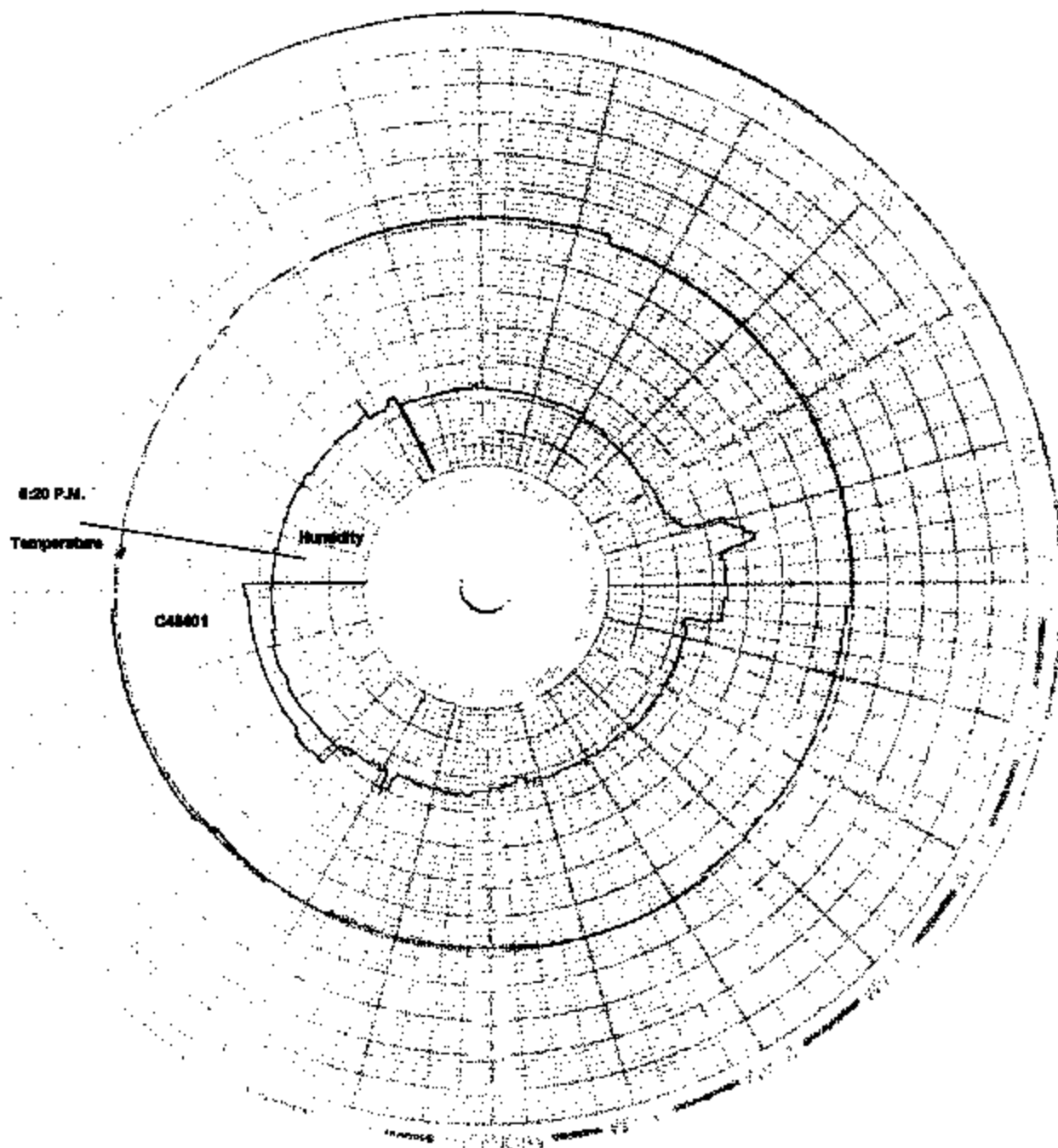
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ATD TEMPERATURE/HUMIDITY DATA



TEST DATE TIME	JOB NAME: Rigid Pole Side Impact Test	JOB NO.: PH08682
C45401 5/17/04 5:20 P.M.	Omega Temperature/Humidity Recorder Model No.: CT485-RS Serial No.: Z1986 Cal. Due: 6/30/04	Exponent Failure Analysis Associates

VEHICLE TEMPERATURE/HUMIDITY DATA



TEST DATE TIME	JOB NAME: Rigid Pole Side Impact Test	JOB NO.: PH08682
C45401 5/17/04 5:20 P.M.	Omega Temperature/Humidity Recorder Model No.: CT485-RS Serial No.: Z1985 Cal. Due: 6/30/04	Exponent <i>Failure Analysis Associates</i>

Appendix D— Test Equipment List and Calibration Information

TEST EQUIPMENT LIST AND CALIBRATION INFORMATION

	Dummy Instrumentation		
	Serial No.	Manufacturer	Last Calibration Date
Head CG X	C12823	Endevco	02/26/04
Head CG Y	C15643	Endevco	02/26/04
Head CG Z	C15677	Endevco	02/26/04
Neck Force X	88	Denton	03/02/04
Neck Force Y	88	Denton	03/02/04
Neck Force Z	88	Denton	03/02/04
Neck Moment X	88	Denton	03/02/04
Neck Moment Y	88	Denton	03/02/04
Neck Moment Z	88	Denton	03/02/04
Upper Rib	AETR5	Endevco	03/09/04
Lower Rib	A13118A	Endevco	03/09/04
Lower Spine	A13195A	Endevco	03/09/04
Pelvis	A13115A	Endevco	03/19/04

Remarks: None

TEST EQUIPMENT LIST AND CALIBRATION INFORMATION (CONTINUED)

	Vehicle Instrumentation		
	Serial No.	Manufacturer	Last Calibration Date
Vehicle CG (X)	A65A	Endevco	03/26/04
Vehicle CG (Y)	A56E	Endevco	03/26/04
Vehicle CG (Z)	A65M	Endevco	03/26/04
Vehicle CG Roll Rate	36638	Systron Donner	11/03/03
Vehicle CG Pitch Rate	12577	Systron Donner	11/03/03
Vehicle CG Yaw Rate	9273	Systron Donner	11/03/03
Left Floor Sill (Y)	Z2228	Entran	03/22/04
Left A-Pillar Sill (Y)	9844-095	I.C.Sensors	05/13/04
Left A-Pillar Low (Y)	9844-004	I.C.Sensors	05/13/04
Left A-Pillar Mid (Y)	9844-011	I.C.Sensors	05/13/04
Left B-Pillar Sill (Y)	9844-013	I.C.Sensors	05/13/04
Left B-Pillar Low (Y)	9844-042	I.C.Sensors	05/13/04
Left B-Pillar Mid (Y)	9844-040	I.C.Sensors	05/13/04
Driver Seat (Y)	9844-003	I.C.Sensors	05/13/04
Left Door Low (Y)	9844-096	I.C.Sensors	05/13/04
Left Door Mid (Y)	9844-001	I.C.Sensors	05/13/04
Left Door Upper (Y)	9844-102	I.C.Sensors	05/13/04
Engine (X)	Z1881	Entran	03/20/04
Engine (Y)	Z1885	Entran	03/20/04
Firewall (Y)	Z1889	Entran	03/22/04
Right Roof (Y)	Z1831	Entran	03/22/04
Right Floor Sill (Y)	Z1836	Entran	03/22/04
Rear Deck (X)	Z2179	Entran	03/19/04
Rear Deck (Y)	Z2086	Entran	03/18/04

Remarks: None