

135-TRC-03-003

SAFETY COMPLIANCE TESTING FOR FMVSS 135
Passenger Car Brake Systems

Ford Motor Company, in U.S.A.
2003 Ford Expedition XLT, 4-Door MPV
NHTSA No. C30200

TRANSPORTATION RESEARCH CENTER INC.

10820 State Route 347
East Liberty, Ohio 43319



Final Report Completed: April 17, 2003

FINAL REPORT

Prepared Under Contract No.: DTNH22-01-C-21025

U.S. DEPARTMENT OF TRANSPORTATION
National Highway Traffic Safety Administration
Safety Assurance
Office of Vehicle Safety Compliance
400 Seventh Street, SW
Room 6115 (NSA-30)
Washington, DC 20590

Prepared for the Department of Transportation, National Highway Traffic Safety Administration, under Contract No. DTNH22-01-C-21025.

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Prepared By

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Kimberly White

Approval Date:

4/18/03

Final Report Acceptance By OVSC:

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Contract Technical Manager, Office of
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4/28/03

Acceptance Date

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7. AUTHOR(S): Project Manager: VIRGINIA WATERS Project Engineer: RANDALL A. LANDES				8. PERFORMING ORGANIZATION REPORT NO.: TRC-DOT-135-041	
9. PERFORMING ORGANIZATION NAME AND ADDRESS: Transportation Research Center Inc. 10820 State Route 347 East Liberty, Ohio 43519				10. WORK UNIT NUMBER:	
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15. SUPPLEMENTARY NOTES:					
16. ABSTRACT: Compliance tests were conducted on the subject 2003 Ford Expedition XLT, 4-Door MPV, in accordance with the specifications of the Office of Vehicle Safety Compliance Test Procedure No. TP 135-00 for the determination of FMVSS 135 compliance. Test failures identified were as follows: None					
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1.0 INTRODUCTION

Tests were conducted on a 2003 Ford Expedition XLT, 4-dr. MPV, manufactured by the Ford Motor Company in U.S.A., to determine compliance with FMVSS 135 "Passenger Car Brake Systems." All tests were conducted in accordance with the U.S. D.O.T., NHTSA Laboratory Procedure TP 135-00 and/or the corresponding TRC Inc. test procedure that was submitted to NHTSA for their approval. The test procedure was clearly described in the submitted document and has not been repeated in this report.

All stops were performed manually.

All tests were conducted by TRC Inc. personnel using the following TRC facilities:

7.5-Mile Test Track

Vehicle Maximum Speed

Burnish

Skid Pad

Cold Effectiveness Stops

High Speed Effectiveness Stops

Stops with Engine Off

Failed Antilocks

Failed Variable Proportioning Valve (if applicable)

Failed Hydraulic Circuits

Brake Power Assist Unit Failures

Heating Snubs and Hot Performance Stops

Brake Cooling and Recovery Stops

Brake Slope

Parking Brake

Average PFC during the test period was 0.96 utilizing the ASTM E1337 w/E1336 tire method.

The test vehicle was ABS equipped. Therefore, the Wheel Lock Sequence and Adhesion Utilization Tests were not performed.

DATA SHEET 1 - VEHICLE INFORMATION

VEHICLE SPECS

Year: 2003	NHTSA No: C30200
Mfr: FORD MOTOR CO	GVWR (Kg): 3129.8
Make: FORD	GAWR Front(Kg): 1338.1
Model: EXPEDITION XLT	GAWR Rear(Kg): 1814.4
Body Style: 4-DOOR MPV	Wheelbase (mm): 3022.0
Mfr. Date: 09/02	Odometer: Start:125 MI. Enc:864
VIN: 1FMRU15W73LAB0166	

BUSES ONLY

Chassis Mfg.: N/A
 Serial No.: N/A
 No. of Seats: N/A
 Manufacture Date: N/A

Engine Type: GASOLINE,V-8CYL.,SOHC,EFI,PISTON,TRITON	Tire Size: P265/70R17 1135
Displacement: 4.6 LITER	Tire Type: TUBELESS RADIAL,M&S,SUV,STEEL
Engine Hspwr: N/A	Tire Mfr.: CONTINENTAL
Idle Speed(rpm): 652	GVWR Front Press.(kpa): 241.32
Transmission Type: AUTO 4-SPD, OVERDRIVE	GVWR Rear Press.(kpa): 241.32
No. of Axles: 2	

BRAKE APPLY SYSTEM

Brake Series: Front:DISC Rear:DISC	Power Assist Unit: YES
Brake Actuation	Pwr Unit w/Accumulator: NO
(Hydr. Circuit Split): FRONT/REAR	Pwr Asst./Pwr Unit w/Backup: NO
Power Unit: VACUUM	Variable Prop. System: YES
Anti-Skid unit Mfr: FORD	Anti-Skid Device: YES
Parking Mechanism: YES	
Type of Parking Unit: AUTOMATIC TRANSMISSION W/PARK DETENT	
Mstr Cylinder Dia(mm): 28.55	Pedal Ratio: 3.75:1

FRONT SYSTEM BRAKE COMPONENT MATERIALS AND CONSTRUCTION:

BRAKE TYPE: DISC	Material: CAST
Drum Construction: N/A	LF Drum Shoe Cage Dia.(mm): 0.00
Disc Construction: INTEGRAL CAST, VENTED	RF Drum Shoe Cage Dia.(mm): 0.00
Front Brake Dia.(mm): 329.87	LF Drum Dia. RESET(mm): 0.00
Fr Disc Thickness(mm): 30.05	RF Drum Dia. RESET(mm): 0.00
Lining Construction: Bonded	
FRONT BRAKE COMPONENT DIMENSIONS AND CODES:	
Inboard (Leading)	Outboard (Trailing)
Width(mm): 48.29	Width(mm): 48.31
Length(mm): 150.47	Length(mm): 150.52
Thickness(mm): 13.77	Thickness(mm): 13.72
Lining Code/Color: JURID 687 035-02	Lining Code/Color: JURID 687 035-02
Hyd. Piston Dia.(mm): 53.90	

DATA SHEET 1 - (CONTINUED)

REAR SYSTEM

BRAKE COMPONENT MATERIALS AND CONSTRUCTION:

BRAKE TYPE: DISC	Material: CAST
Drum Construction: N/A	LR Drum Shoe Cage Dia.(mm): 0.00
Disc Construction: INTEGRAL CAST	RR Drum Shoe Cage Dia.(mm): 0.00
Lining Construction: BONDED	LR Drum Dia. RESET(mm): 0.00
Rear Brake Dia.(mm): 341.91	RR Drum Dia. RESET(mm): 0.00
Rr Disc Thickness(mm): 22.02	

REAR BRAKE COMPONENT DIMENSIONS AND CODES

Inboard (Leading)	Outboard (Trailing)
Width(mm): 41.63	Width (mm): 38.89
Length(mm): 93.09	Length (mm): 92.56
Thickness(mm): 14.05	Thickness (mm): 14.00
Lining Code/Color: FER 4088/2L FF 499645	Lining Code/Color: FER 4088/2L 5F 38829
Hyd Piston Dia (mm): 51.89	

OTHER COMPONENT INFORMATION:

Friction Type Park Brake: N/A
Non-Service Brake Type
Parking Brake: FOOT OPERATED

NOTE: If at any time after the test series has begun, any brake system part requires replacement or the brake system requires adjustments other than permitted in burnish and reburnish procedures, discontinue testing and notify the CONTR immediately.

Technician: David Dulin
DAVID DULIN

Date: 4-18-03

Quality Assurance:

Ken Webster
KEN WEBSTER

3.0 SUMMARY OF TESTING

		Specification and Limit:				TEST RESULTS (In compliance if one stop meets requirement)			
TEST	Loading Condition	Speed (km/h)	Min. Pedal Force (N)	Max. Pedal Force (N)	Stopping Distance Requirement (m)	Shortest Stop Min. Pedal Force (N)***	Shortest Stop Max. Pedal Force Newtons (Average - N)	Shortest Stop Stopping Distance (m) (Corrected)	PASS Fail
Equipment Requirements					Specified Equipment	Vehicle contains specified equipment			Pass
Vehicle Maximum Speed	LLVW	NA				164.8 km/h avg.			NA
Burnish	GVWR	80				200, 80 + 0 km/h stops @ 3.0 mpsps			NA
Wheel Lockup Sequence w/o	GVWR				Lockup of front wheels prior to rear	ABS Equipped			NA
Wheel Lockup Sequence w/o	LLVW					ABS Equipped			NA
Adhesion Utilization w/o ABS	LLVW				Rear axle adhesion utilization curve below specified value	ABS Equipped			NA
Adhesion Utilization w/o ABS	GVWR					ABS Equipped			NA
Cold Effectiveness	GVWR	100	65	500	70	5	310.3	51.7	Pass
High Speed Effectiveness	GVWR	131.8	65	500	spd. depend -129.6	5	401.2	78.2	Pass
Stops with Engine Off	GVWR	100	65	500	70	5	428.1	49.2	Pass
Cold Effectiveness	LLVW	100	65	500	70	5	410.5	46.5	Pass
High Speed Effectiveness	LLVW	131.8	65	500	spd. depend -129.6	5	435.5	79.4	Pass
Failed Antilock	LLVW	100	65	500	85	5	265.4	49.0	Pass
Failed Proportioning Valve	LLVW	100	65	500	110	5	NA	NA	NA
Failed Hydraulic Circuit #1	LLVW	100	65	500	168	5	403.7	64.5	Pass
Failed Hydraulic Circuit #2	LLVW	100	65	500	168	5	461.4	104.7	Pass
Failed Hydraulic Circuit #1	GVWR	100	65	500	168	5	395.7	74.2	Pass
Failed Hydraulic Circuit #2	GVWR	100	65	500	168	5	468.0	107.2	Pass
Failed Antilock	GVWR	100	65	500	85	5	213.4	50.7	Pass*
Failed Proportioning Valve	GVWR	100	65	500	110	5	NA	NA	NA
Power Brake Unit Failure	GVWR	100	65	500	168	5	495.7	152.0	Pass
Parking Brake - Uphill	GVWR	-	-	500	Hold for 5 min.?	NA	179.5	Yes-Holds	Pass
Parking Brake - Downhill	GVWR	-	-	500	Hold for 5 min.?	NA	452.6	Yes-Holds	Pass
Heating Snubs	GVWR	120-80	NA	NA	15 Snubs- 3.0 mpsps	5	48 Vis. Avg.	NA	NA
Hot Performance Stop #1	GVWR	100	65	226 avg.	80.8	5	513.7 (191.2)	49.9	Pass*
Hot Performance Stop #2	GVWR	100	65	500	89	5	351.1	49.6	Pass
Brake Cooling	GVWR	50	NA	NA	4 Stops - 3.0 mpsps	5	44 Vis. Avg.	NA	NA
Recovery Performance Stop	GVWR	100	65	226 avg.	One of the two stops between 70.7 and 38.4 meters	5	236.8 (149.0)	54.8	Pass
Recovery Performance Stop	GVWR	100	65	500		5	281.9 (161.0)	48.3	
Final Inspection-Brake Integrity	Check components for detachment, fracture or lubricants.					No detachments or fractures-normal appear. & color.			Pass
Final Inspection-Reservoirs/Warning Indicators	Master cylinder or brake power reservoir shall meet the volume and label requirements of S5.4.2 and S5.4.3.					Brake system has sufficient capacity and indicators are in compliance.			Pass

*** Note: The Shortest Stop Minimum Pedal Force represents the minimum force value required to engage the data acquisition's recording mode. *See Appendix C.

DATA SHEET 3 - VEHICLE WEIGHT

VEHICLE: 2003 FORD EXPEDITION XL7

NHTSA No. G30200 Date: 12/23/02

Tire Pressure(cold): Front (kpa) 241 Rear (kpa) 241

Odometer: Start 125 MI End 864

Scale(s) Used: TRC Toledo Scales

NOTE: GVWR, LLVW and axle weights to be measured within +0% and -1%

GVWR/GAWR INFORMATION

(From Veh. Certification Label)

GVWR(Kg): 3130

GAWR Front(Kg): 1338

GAWR Rear(Kg): 1814

UNLOADED VEHICLE WEIGHT(UVW)

L Front(Kg): 572 L Rear(Kg): 637

R Front(Kg): 583 R Rear(Kg): 622

T Front(Kg): 1155 T Rear(Kg): 1259

Total UVW(Kg): 2414

TARGET LIGHT LOADED WEIGHT(LLVW):

ACTUAL LIGHT LOADED WEIGHT(LLVW):

NOTE 1: LLVW = UVW+181.4Kg

NOTE 2: Weight distributed in front passenger seat area.

NOTE 3: Neither axle load at LLVW less than at UVW; ballast as required.

L Front(Kg): 617 L Rear(Kg): 681

R Front(Kg): 635 R Rear(Kg): 665

T Front(Kg): 1252 T Rear(Kg): 1347

Total LLVW(Kg): 2599

L Front(Kg): 615 L Rear(Kg): 695

R Front(Kg): 637 R Rear(Kg): 651

T Front(Kg): 1252 T Rear(Kg): 1346

Total Actual Test LLVW(Kg): 2599

Load: Driver/Observer 93(Kg) + Instru. 41(Kg) + Ballast 47(Kg) = 181(Kg)

FULLY LOADED TEST WEIGHT (ACTUAL GVWR)

NOTE 1: Vehicle loaded so axle loads proportional to GAWR shown previously.

NOTE 2: But no axle weight to be less than at LLVW.

NOTE 3: If weight on any axle at LLVW exceeds the axle's proportional share of the GVWR, the load required to reach GVWR is placed so that the weight on that axle remains the same as at LLVW.

L Front(Kg): 661 L Rear(Kg): 912

R Front(Kg): 668 R Rear(Kg): 888

T Front(Kg): 1329 T Rear(Kg): 1800

Total Fully Loaded GVWR(Kg): 3128

Load: Driver/Observer 93(Kg) + Instru. 41(Kg) + Ballast 580(Kg) = 714(kg)

Technician: David Nolin KEE

DAVID NOLIN

Date: 4-18-03

Quality Assurance:

Ken Webster
KEN WEBSTER

DATA SHEET 4 - EQUIPMENT REQUIREMENTS (S5)

SERVICE BRAKE SYSTEM (S5.1)

Vehicle equipped with a service brake system acting on all wheels? YES

Wear Adjustment (S5.1.1).

Service Brakes are compensated for wear by means of a system of automatic adjustment? YES

Describe: DISC AUTOMATIC CLEARANCE TAKE-UP.

Wear Status (S5.1.2)

Wear status of service brakes is indicated by:

(A) Acoustic or optical device? YES

Describe: METAL TAB EMITS HIGH FREQUENCY SQUEAL WHEN WORN.

(B) Visual check outside or under vehicle? YES

Describe: FRONT:LOOK THROUGH CALIPER; REAR:LOOK THROUGH CALIPER

PARKING BRAKE SYSTEM (S5.2)

Vehicle equipped with a parking brake system of a friction type with solely mechanical means to retain engagement: YES

CONTROLS (S5.3)

(A) Service brakes activated by means of a foot control? YES

(B) Parking brake control is independent of the service brake control? YES

(C) Parking brake control is hand or foot operated? YES

(D) ABS, if equipped, cannot be manually disabled? YES

DATA INDICATES COMPLIANCE: YES

COMMENTS: NONE.

Tester/Technician: David Dolin
DAVID DOLIN

Date: 4-18-03

Quality Assurance:

Ken Webster
KEN WEBSTER

DATA SHEET 5 - VEHICLE MAX SPEED

VEHICLE: 2003 FORD EXPEDITION XLT

NHTSA No. C30200 Date: 12/27/02

Ambient Temperature: 19.00°F

Wind Velocity: 7.00(MPH)

Road PFC .96

Wind Direction: 219°

Odometer: Start 165(mi) End 172(mi)

TEST WEIGHT: Total (Kg): 2599

Front (Kg): 1252

Rear (Kg) 1046

ESTABLISH VEHICLE MAXIMUM SPEED

VEHICLE LOAD: LLVW

IBT: N/A

GEAR: Drive

DECEL RATE: N/A

PEDAL FORCE: N/A

WHEEL LOCKUP: N/A

TEST SPEED: Maximum attainable from

INTERVAL: N/A

a standing start in 3.2 km.

1. Ballast Vehicle to LLVW
2. Accelerate at a maximum rate from a standing start for a distance of 3.2 km on a level surface.
3. Repeat in opposite direction.
4. Record speed attained in each direction and use the average of the two runs.

	DIRECTION	MAX SPEED (km/h)		Time 0 - 100 KPH (seconds)
		Visual	Recorded	
Run No. 1	South	165.1km/h	165.1	12.03
Run No. 2	North	164.4km/h	164.4	12.07

AVERAGE = 164.7 km/h

COMMENTS: INV DATA, Section 0001, 12/27/02, 11:40:49

Tester/Technician:

David Dulin KEE
DAVID DULIN

Date: 4-18-03

Quality Assurance:

Ken Webster
KEN WEBSTER

Vehicle: 2003 FORD MOTOR CO. QNTA NUMBER: C30200
 Make: FORD
 Model: EXPEDITION XLT
 Body Style: 4-DOOR MPV
 Front Cold Tire Pressure: 241 (Kpa)
 Rear Cold Tire Pressure: 241 (Kpa)

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 10820 State Route 347
 East Liberty, Ohio 43119
 (614) 666-2011 www.trcpg.com

Date Tested: 12/30/02

DATA SHEET 6 - BURNISH AT GVWR

Testing Conditions: INV DATA, Section CU02, 12/30/02, 19:08:38

Weather Conditions: 26°F Wind: 5 mph 1° Start Odo.: 176 End Odo.: 475

Schedule:

Initial Brake Temperature Less Than 100°C
 Initial Speed 80 km/h to zero
 100 stops with transmission in gear

Performance Requirements:

Interval between runs: Time necessary to reduce IBT to 100 °C or
 2 km distance, whichever occurs first.
 Constant decel rate: 3.0 m/s²
 Pedal force adjusted to maintain constant decel.
 No Lock-Up allowed longer than 0.1 sec above 15 km/h
 Vehicle must stay in lane of 3.5m

STOP	INIT	LEFT	RIGHT	LEFT	RIGHT	MAX.	AVG.	AVG.
#	SPD	FRONT	FRONT	REAR	REAR	PEDAL	PEDAL	pkCML
#	(kph)	(°C)	(°C)	(°C)	(°C)	(N)	(N)	(m/sec ²)
1	82.17	93	87	71	74	75.56	53.97	2.51
10	80.17	92	85	95	83	53.39	48.41	2.79
20	79.63	96	92	93	84	45.85	47.46	2.88
30	79.95	97	92	94	83	68.92	44.56	2.86
40	80.78	87	85	72	63	68.77	44.23	2.69
50	81.01	103	97	87	82	73.14	43.86	2.93
60	78.69	99	91	85	82	78.30	49.01	2.97
70	79.82	94	87	83	77	78.18	45.03	2.94
80	81.71	104	88	82	78	75.37	54.71	3.10
90	81.17	101	80	86	83	79.30	53.69	3.22
100	81.33	101	97	88	81	78.18	49.71	2.99
110	79.32	96	97	84	77	57.55	46.55	2.87
120	79.42	98	94	82	79	67.95	50.64	3.10
130	79.59	93	94	84	75	72.63	46.32	2.96
140	79.60	97	97	86	79	66.43	48.77	3.03
150	79.51	104	103	87	83	71.15	55.32	3.11
160	80.45	99	97	88	85	69.73	56.63	3.15
170	79.43	81	84	91	81	98.26	56.18	2.91
180	81.11	106	90	126	106	62.99	60.26	3.08
190	79.59	87	82	112	104	79.65	58.51	2.98
200	80.24	88	73	103	107	61.38	55.72	3.22

COMMENTS: THIS VEHICLE ABS EQUIPPED. DATA SHEETS 7-10 NOT INCLUDED.

BRAKE ADJUSTMENT

Schedule:

Adjust service brakes: record procedure and amount adjusted.

Left Front: DTSC NONE
 Right Front: DTSC NONE
 Left Rear: DTSC NONE
 Right Rear: DTSC NONE
 DATA INDICATES COMPLIANCE: YES (X) NO ()

Driver: DAVID DULIN Observer: NONE
 Recorded Data Processed by: CHUCK JENKINS Date: 3/28/03
 Approving Laboratory Official: FRM WREATER Date: 4/2/03

Vehicle: 2003 FORD MOTOR CO. NHTSA NUMBER: C39200
 Make: FORD
 Model: EXPEDITION XLT
 Body Style: 4 DOOR MPV
 Front Cold Tire Pressure: 291 (Kpa)
 Rear Cold Tire Pressure: 291 (Kpa)

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 19371686-2011 www.tlcpd.com

Date Tested: 01/09/03

DATA SHEET 11 - COLD EFFECTIVENESS AT GVWR

Testing Conditions: IXV DATA, Section 0015, 01/09/03, 12:59:22

Weather Conditions: 43°F Wind: 16 MPH 213° Start Odo.: 493 End Odo.: 538

Schedule:

Initial Brake Temperature 65 - 100 C
 Initial Speed 100 km/h to zero
 6 stops with transmission in neutral

Performance Requirements:

One Stop with:
 Stopping Distance less than 70m
 Pedal force between 65N and 500N
 No Lock-Up allowed longer than 0.1 sec above 15 km/h
 Vehicle must stay in lane of 3.5m

STOP #	INIT	LEFT	RIGHT	LEFT	RIGHT	ACTUAL DISTANCE (meters)	CORRECTED DISTANCE (SAE 299) (meters)	MAX. PEDAL FORCE (N)	AVE. PEDAL FORCE (N)	MAX. DECEL (m/sec ²)	AVE. DECEL (m/sec ²)
	SPD (km/h)	FRONT (°C)	FRONT (°C)	REAR (°C)	REAR (°C)						
1	99.62	82	86	62	64	72.4	72.0	129.85	94.19	6.99	5.53
2	99.97	89	84	70	59	66.8	66.9	147.57	110.86	8.21	6.26
3	99.66	89	83	73	53	57.9	58.3	244.80	164.25	10.64	6.53
4	100.79	94	87	72	51	53.7	52.8	483.83	273.12	12.43	6.99
5	100.86	93	87	74	57	53.0	52.9	439.57	292.31	13.05	7.00
6	100.77	77	79	62	52	52.5	51.7	310.25	226.13	14.32	6.85

STOP #	DRIVER VEHICLE STOP COMMENTS		
#	(Wheel Lock up - Direction of Stop - Stay in Lane)		
1	NOX	SOUTH	YES
2	NOX	SOUTH	YES
3	NOX	SOUTH	YES
4	NOX	SOUTH	YES
5	NOX	SOUTH	YES
6	NOX	SOUTH	YES

Corrected Distances are used to determine shortest stopping distance.

DATA INDICATES COMPLIANCE: YES (1) NO ()

Driver: DAVID DYLIN Observer: RONK
 Recorded Data Processed by: CHEUCK JENKINS Date: 3/28/03
 Approving Laboratory Official: BEN WEBSTER Date: 4/2/03

Vehicle: 2003 FORD MOTOR CO. NHTSA NUMBER: Cjcx00
 Make: FORD
 Model: EXPEDITION XLT
 Body Style: 4-DOOR MPV
 Front Cold Tire Pressure: 241 (Kpa)
 Rear Cold Tire Pressure: 241 (Kpa)

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 10220 State Route 387
 East Liberty, Ohio 43319
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Date Tested: 01/10/03

DATA SHEET 12 - HIGH SPEED EFFECTIVENESS AT GVWR

Testing Conditions: INV DATA, Section 0020, 01/10/03, 09:06:56

Weather Conditions: 26°F Wind: 15 mph 264° Start Odo: 548 End Odo: 564

Schedule:

Initial Brake Temperature: 65-100°C
 Initial Speed: 80± max km/h, not greater than 160km/h
 6 stops with transmission in gear

Performance Requirements:

One Stop with:
 Stopping Distance less than: 129.6 meter
 Pedal force between 65N and 500N
 No Lock-up allowed longer than 0.3 sec above 15 km/h
 Vehicle must stay in lane of 3.5m

STOP	INIT	LEFT	RIGHT	LEFT	RIGHT	ACTUAL	CORRECTED	MAX.	AVG.	MAX.	AVG.
#	SPD	FRONT	FRONT	REAR	REAR	DISTANCE	{SAM 299}	PEDAL	PEDAL	DECEL	DECEL
#	(kph)	(°C)	(°C)	(°C)	(°C)	(meter)	(meter)	(N)	(N)	(m/sec²)	(m/sec²)
1	131.63	92	89	72	67	89.5	89.5	503.50	396.51	13.44	7.49
2	131.50	92	91	75	63	83.5	83.9	444.78	327.97	12.59	7.89
3	132.40	91	88	77	64	81.5	80.8	402.15	329.43	14.22	7.82
4	131.87	89	86	73	62	83.0	83.0	399.95	290.14	12.64	7.97
5	131.26	90	83	72	61	81.9	82.6	369.03	277.19	12.69	7.45
6	132.81	90	80	63	57	79.4	78.2	401.21	320.12	12.36	8.01

STOP	DRIVER	VEHICLE	STOP	COMMENTS
#	(Wheel)	Lock up	-	Direction of Stop - Stay in Lane
1	.	NOX		SOUTH YES
2	.	NOX		SOUTH YES
3	.	NOX		SOUTH YES
4	.	NOX		SOUTH YES
5	.	NOX		SOUTH YES
6	.	NOX		SOUTH YES

DATA INDICATES COMPLIANCE: YES (X) NO ()

Driver: DAVID BOLIN
 Recorded Data Processed by: CHUCK JENKINS
 Approving Laboratory Official: KEN WEBSTER
 Observer: NOWX
 Date: 3/26/03
 Date: 4/2/03

Vehicle: 2003 FORD MOTOR CO. NHTSA NUMBER: C30390
 Make: FORD
 Model: EXPLORER XLT
 Body Style: 4-DOOR MPV
 Front Cold Tire Pressure: 241 (Kpa)
 Rear Cold Tire Pressure: 241 (Kpa)

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Date Tested: 01/10/03

DATA SHEET 13 - STOPS WITH ENGINE OFF AT GVWR

Testing Conditions: IMV DATA, Section 0025, 01/10/03, 10:50:29

Weather Conditions: 27°F Wind: 17 mph 278° Start Odo.: 568 End Odo.: 581

Schedule:

Initial Brake Temperature: 65-100°C
 Initial Speed 100 km/h to zero
 6 stops with transmission in neutral

Performance Requirements:

One stop with:
 Stopping distance less than 73m
 Pedal force between 55N and 500N
 No lock-up allowed longer than 0.1 sec above 15 km/h
 vehicle must stay in lane of 3.5m

STOP #	INIT SPD (kph)	LEFT FRONT	RIGHT FRONT	LEFT REAR	RIGHT REAR	ACTUAL DISTANCE (m/sec)	CORRECTED DISTANCE (m/sec)	MAX. PEDAL FORCE (N)	AVG.	
		IST (°C)	IBT (°C)	IBT (°C)	IBT (°C)				PEDAL FORCE (N)	DECEL (m/sec²)
1	100.55	87	81	67	53	52.5	50.9	415.00	311.35	12.59
2	100.36	87	80	72	57	51.6	51.2	407.16	306.53	11.44
3	100.79	84	77	67	55	51.3	50.5	322.32	267.16	11.75
4	100.14	82	72	61	38	51.3	51.1	392.01	284.29	12.79
5	100.66	86	78	66	54	49.9	49.2	428.06	343.95	12.82
6	100.65	87	78	59	48	50.9	50.8	428.27	325.35	12.15

STOP #	DRIVER VEHICLE STOP COMMENTS		
	Wheel lock-Up - Direction of Stop - Stay in Lane		
1	NOX	SOUTH	YES
2	NOX	SOUTH	YES
3	NOX	SOUTH	YES
4	NOX	SOUTH	YES
5	NOX	SOUTH	YES
6	NOX	SOUTH	YES

DATA INDICATE COMPLIANCE: YES (X) NO ()

Driver: DAVID DULIN Observer: NONE
 Recorded Data Processed by: CHUCK JENKINS Date: 3/28/03
 Approving Laboratory Official: KEN WEBSTER Date: 4/2/03

Vehicle: 2003 FORD MOTOR CO. NHTSA NUMBER: C83299
 Make: FORD
 Model: EXPEDITION XLT
 Body Style: 4-DOOR MPV
 Front Cold Tire Pressure: 341 (Kpa)
 Rear Cold Tire Pressure: 341 (Kpa)

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Date Tested: 01/10/03

DATA SHEET 14 - COLD EFFECTIVENESS AT LLVM

Testing Conditions: INV DATA, Section C830, 01/10/03, 13:39:45

Weather Conditions: 26°F Wind: 25 mph 263° Start Odu.: 584 End Odu.: 597

Schedule

Initial Brake Temperature: 65-100°C
 Initial Speed 100 km/h to zero
 6 stops with transmission in neutral

Performance Requirements

One Stop with:
 Stopping Distance less than 20m
 Pedal force between 65N and 500N
 No Lock-Up allowed longer than 0.1 sec above 15 km/h
 Vehicle must stay in lane of 3.5m

STOP #	INIT SPD (mph)	LEFT FRONT	RIGHT FRONT	LEFT REAR	RIGHT REAR	ACTUAL DISTANCE (meter)	CORRECTED DISTANCE (SAE 199) (meter)	MAX. PEDAL FORCE (N)	AVG.	
		LAT (°C)	IBT (°C)	IBT (°C)	IBT (°C)				PEDAL FORCE (N)	DECEL (m/sec²)
1	99.26	78	73	58	56	48.3	49.0	371.43	220.66	13.36
2	99.64	80	81	62	54	47.5	47.9	411.45	280.93	15.20
3	100.31	88	87	63	52	47.8	47.5	416.15	309.16	14.32
4	99.57	88	81	66	53	47.6	48.0	484.27	326.71	15.49
5	99.99	82	74	72	58	47.7	47.7	384.28	293.38	15.56
6	100.87	88	82	71	56	47.4	46.5	410.51	326.50	15.82

STOP #	DRIVER VEHICLE STOP COMMENTS		
	(Wheel Lock-Up	- Direction of Stop	Stay in Lane)
1	NOX	SOUTH	YES
2	NOX	SOUTH	YES
3	NOX	SOUTH	YES
4	NOX	SOUTH	YES
5	NOX	SOUTH	YES
6	NOX	SOUTH	YES

DATE INDICATES COMPLIANCE: YES (X) NO ()

Driver: DAVID DOLIN
 Recorded Data Processed by: CHUCK JENKINS
 Approving Laboratory Official: KEN WEBSTER

Observer: WONE
 Date: 3/28/03
 Date: 4/2/03

Vehicle: 2003 FORD MOTOR CO. NHTSA NUMBER: C30200
 Make: FORD
 Model: EXPEDITION XLT
 Body Style: 4-DOOR MPV
 Front Cold Tire Pressure: 341 (Kpa)
 Rear Cold Tire Pressure: 241 (Kpa)

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 19371666-2011 www.trcrg.com

Date Tested: 01/10/03

DATA SHEET 15 - HIGH SPEED EFFECTIVENESS AT LLVM

Testing Conditions: INV DATA, Section 0035, 01/10/03, 14:44:08

Weather Conditions: 25°F Wind: 20 mph 272° Start Odo.: 597 End Odo.: 613

Schedule:

Initial Brake Temperature: 65-100°C
 Initial Speed: 80± max km/h
 6 stops with transmission in gear

Performance Requirements:

One Stop with:
 Stopping Distance less than 129.5m
 Pedal force between 65N and 500N
 No Lock-Up allowed longer than 0.1 sec above 15 km/h
 Vehicle Must stay in lane of 3.5m

STOP	INIT	LEFT	RIGHT	LEFT	RIGHT		CORRECTED	MAX.	AVG.		MAX.	AVG.
#	SPD	FRONT	FRONT	REAR	REAR	ACTUAL	DISTANCE	PEDAL	PEDAL		DECEL	DECEL
#	(km/h)	(°C)	(°C)	(°C)	(°C)	(meter)	(meter)	(N)	(N)		(m/sec ²)	(m/sec ²)
1	130.06	59	79	57	44	77.8	79.9	302.58	247.41	12.50	8.55	
2	131.65	83	84	64	47	78.7	79.8	190.86	104.56	14.12	8.30	
3	130.73	93	83	56	40	78.5	78.8	418.60	339.25	11.35	8.37	
4	132.00	81	61	67	44	79.6	79.4	435.48	275.20	12.01	8.52	
5	132.09	94	84	50	44	80.2	79.8	298.29	216.07	13.58	8.31	
6	132.75	93	81	45	44	81.1	79.9	430.78	301.32	14.77	8.16	

STOP	DRIVER VEHICLE STOP COMMENTS		
#	(Wheel Lock-Up - Direction of Stop - Stay in Lane)		
1	.	NOX	SOUTH YES
2	.	NOX	SOUTH YES
3	.	NOX	SOUTH YES
4	.	NOX	SOUTH YES
5	.	NOX	SOUTH YES
6	.	NOX	SOUTH YES

DATA INDICATES COMPLIANCE: YES (X) NO ()

Driver: DAVID DOLIN Observer: NONE
 Recorded Data Processed by: CHUCK JENKINS Date: 3/28/03
 Approving Laboratory Official: KEN WEBSTER Date: 4/2/03

Vehicle: 2003 FORD MOTOR CO. NHTSA NUMBER: C30700
 Make: FORD
 Model: EXPEDITION LXT
 Body Style: 4-DOOR MPV
 Front Cold Tire Pressure: 242 (Kpa)
 Rear Cold Tire Pressure: 241 (Kpa)

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Date Tested: 01/13/03

DATA SHEET 16 - ANTILOCK FUNCTIONAL FAILURE AT LLVW

Testing Conditions: INV DATA. Session 0040, 01/13/03, 10:25:34

Weather Conditions: 38°F Wind: 12 mph 285° Start Odo.: 624 End Odo.: 642

Schedule:

Initial Brake Temperature: 65-100°C
 Initial Speed 100 km/h to zero
 6 stops with transmission in neutral

Performance Requirements:

One Stop with:
 Stopping Distance less than 31m
 Pedal force between 65N and 500N
 No Lock-Up allowed longer than 0.1 sec above 15 km/h
 Vehicle Must stay in lane of 3.5m

	LEFT	RIGHT	LEFT	RIGHT								
	INIT	FRONT	FRONT	REAR	REAR	ACTUAL	CORRECTED	MAX.	AVG.			
STOP	SPD	IBT	IBT	IBT	IBT	DISTANCE	IBAB 1991	FORCE	FORCE	DECEL	DECEL	
#	(kph)	(°C)	(°C)	(°C)	(°C)	(meter)	(meter)	(N)	(N)	(m/sec²)	(m/sec²)	
1	99.36	88	87	72	66	46.4	49.0	265.44	189.85	12.49	7.76	
2	99.92	87	85	77	71	60.1	60.4	158.06	124.38	10.51	6.70	
3	100.08	88	86	70	62	55.7	55.4	162.07	137.75	10.83	7.15	
4	100.84	87	89	65	67	54.3	53.4	180.58	147.71	10.94	7.09	
5	100.28	87	82	68	66	59.5	59.1	211.12	131.37	11.23	6.89	
6	99.80	86	77	62	59	49.1	49.3	233.41	156.18	12.34	7.68	

STOP

DRIVER VEHICLE STOP COMMENTS

#	Wheel Lock-Up	Direction of Stop	Stay in Lane
1	NOX	SOUTH	YES
2	NOX	SOUTH	YES
3	NOX	SOUTH	YES
4	NOX	SOUTH	YES
5	NOX	SOUTH	YES
6	NOX	SOUTH	YES

How was the ABS failure induced: REMOVED FUSE NO 103 FROM FUSE PANEL, PASSENGER'S FOOTWELL, RT SIDE

Is brake system indicator lamp activated: YES (X) NO ()

Variable proportioning valve integral w/ABS ctrl separately engaged. Data sheet 17 not included.

DATA INDICATES COMPLIANCE: YES (X) NO ()

Driver: DAVID DUGIN Observer: NONE
 Recorded Data Processed by: CHUCK JENKINS Date: 3/28/03
 Approving Laboratory Official: KEN WEBSTER Date: 4/2/03

Vehicle: 2004 FORD MOTOR CO. NHTSA NUMBER: C30200
 Make: FORD
 Model: EXPEDITION XLT
 Body Style: 4-DOOR MPV
 Front Cold Tire Pressure: 241 [Kpa]
 Rear Cold Tire Pressure: 241 [Kpa]

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Date Tested: 01/14/03

DATA SHEET 18 - HYDRAULIC CIRCUIT FAILURE #1 AT LLWW

Testing Conditions: INV DATA, Section 0050, 01/16/03, 09:06:56

Weather Conditions: 12°F Wind: 10 mph 151° Start Odo.: 658 End Odo.: 665

Method of simulating failure: Disconnected brake line w/ M/C brake port

System Portion Failed: LR & RR

Schedule:

Initial Brake Temperature: 65-100°C
 Initial Speed 100 km/h to zero
 4 stops with transmission in neutral

Performance Requirements:

One Stop with:
 Stopping distance less than 166m
 Pedal force between 65N and 500N
 No Lock-Up allowed longer than 0.3 sec above 15 km/h
 Vehicle must stay in lane of 3.5m

STOP #	INIT SPD (xph)	LEFT FRONT	RIGHT FRONT	LEFT REAR	RIGHT REAR	ACTUAL DISTANCE (meter)	CORRECTED DISTANCE (SAB 200) (meter)	MAX. FORCE (N)	AVG. FORCE (N)	MAX. DECEL (m/sec²)	AVG. DECEL (m/sec²)
		TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)						
1	95.62	82	87	-1	-1	64.3	64.5	403.68	278.55	11.83	5.70
2	95.83	81	88	-1	-1	61.7	65.2	370.18	278.75	9.75	5.52
3	95.86	82	89	-1	-1	65.1	65.3	460.97	336.05	9.87	5.68
4	95.49	83	91	-1	-2	64.5	65.2	269.78	201.94	10.54	5.58

STOP #	DRIVER VEHICLE STOP COMMENTS			
	Wheel Lock-Up - Direction of Stop - Stay in Lane			
1		NOX	SOUTH	YES
2		NOX	SOUTH	YES
3		NOX	SOUTH	YES
4		NOX	SOUTH	YES

Force Needed to Activate Brake Failure Lamp (N): N/A
 Fluid Removed (mL) to Activate Brake Failure Lamp: 364

Is brake system indicator lamp activated: YES (X) NO ()

DATA INDICATES COMPLIANCE: YES (X) NO ()

Driver: DAVID DULIN Observer: NONE
 Recorded Data Processed by: CHUCK JENKINS Date: 1/28/03
 Approving Laboratory Official: KEN WEBSTER Date: 4/2/03

Vehicle: 2003 FORD MOTOR CO. NHTSA NUMBER: C30200
 Make: FORD
 Model: XEDDITION KIT
 Body Style: 4 DOOR MPV
 Front Cold Tire Pressure: 241 (kpa)
 Rear Cold Tire Pressure: 241 (kpa)

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Date Tested: 01/16/03

DATA SHEET 19 - HYDRAULIC CIRCUIT FAILURE #2 AT LLWN

Testing Conditions: INV DATA, Section 0255, 01/16/03, 10:40:30

Weather Conditions: 14°F Wind: 10 mph 148° Start Odo.: 669 End Odo.: 678

Method of simulating failure: Disconnected Brake Line @ M/C Rear Port

System Portion Failed: LF & RF

Schedule:

Initial Brake Temperature 66-100°C
 Initial Speed 100 km/h to zero
 4 stops with transmission in neutral

Performance Requirements:

One Stop with:
 Stopping Distance less than 168m
 Pedal force between 65N and 500N
 No lock up allowed longer than 0.1 sec above 15 km/h
 Vehicle must stay in lane of 3.5m

STOP	INIT SPD # (kph)	LEFT FRONT IBT (°C)	RIGHT FRONT IBT (°C)	LEFT REAR IBT (°C)	RIGHT REAR IBT (°C)	ACTUAL DISTANCE (meter)	CORRECTED DISTANCE (SAE 299) (meter)	MAX. PEDAL FORCE (N)	AVG. PEDAL FORCE (N)	MAX. DECEL (m/sec²)	AVG. DECEL (m/sec²)
		IBT (°C)	IBT (°C)	IBT (°C)	IBT (°C)						
1	99.27	1	1	97	84	103.1	104.7	461.39	402.01	6.13	3.58
2	99.31	-2	-1	97	77	105.0	106.5	447.93	402.53	6.35	3.76
3	100.93	-2	-2	99	74	107.7	108.9	436.97	367.96	5.60	3.64
4	99.77	-3	-2	95	71	106.9	106.9	437.59	385.93	5.58	3.59

STOP	DRIVER VEHICLE STOP COMMENTS			
#	(Wheel Lock-Up - Direction of Stop - Stay in Lane)			
1		NOX	SOUTH	YES
2		NOX	SOUTH	YES
3		NOX	SOUTH	YES
4		NOX	SOUTH	YES

Force Needed to Activate Brake Failure Lamp (N): N/A
 Fluid Removed (mL) to Activate Brake Failure Lamp: 164

Is brake system indicator lamp activated: YES (X) NO :

DATA INDICATES COMPLIANCE: YES (X) NO ()

Driver: DAVID DULIN Observer: NONE
 Recorded Data Provided by: CHUCK JANKINS Date: 1/28/03
 Approving Laboratory Official: KEN WEBSTER Date: 4/2/03

Vehicle: 2003 FORD MOTOR CO. XMTSA NUMBER: C30200
 Make: FORD
 Model: EXFESTICR XLT
 Body Style: 4-DOOR MFV
 Front Cold Tire Pressure: 241 (Kpa)
 Rear Cold Tire Pressure: 241 (Kpa)

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Date Tested: 01/20/03

DATA SHEET 20 - HYDRAULIC CIRCUIT FAILURE #1 AT GVWR

Testing Conditions: IXV DATA, Section 0060, 01/20/03, 05:00:47

Weather Conditions: 19°F Wind: 8 mph 306° Start Odo.: 508 End Odo.: 704

Method of Simulating Failure: Disconnected Brake Line w/ M/C Front Box

System Portion Failed: LR & RR

Schedule:

Initial Brake Temperature 65-100°C
 Initial Speed 100 KM/H TO ZERO
 6 stops with transmission in neutral

Performance Requirements:

One Stop with:
 Stopping Distance less than 168m
 Pedal force between 65N and 500N
 No Lock-Up allowed longer than 0.1 sec above 15 km/h
 Vehicle must stay in lane of 3.5m

STOP #	INIT SPD	LEFT FRONT	RIGHT FRONT	LEFT REAR	RIGHT REAR	ACTUAL DISTANCE	CORRECTED DISTANCE	MAX. PEDAL FORCE	AVG. PEDAL FORCE	MAX. DECEL	AVG. DECEL
	(km/h)	(°C)	(°C)	(°C)	(°C)	(meter)	(meter)	(N)	(N)	(m/sec²)	(m/sec²)
1	99.92	05	67	6	5	74.0	74.2	395.55	294.79	8.16	4.97
2	100.07	07	68	7	6	77.0	76.9	394.20	305.13	8.36	4.75
3	100.18	08	69	7	5	75.7	75.5	345.69	257.47	5.06	4.83
4	100.70	09	74	6	5	70.3	70.2	318.62	257.08	7.55	4.66

STOP #	DRIVER VEHICLE STOP COMMENTS			
	(Wheel Lock-Up - Direction of Stop - Stay in Lane)			
1	NOX SOUTH YES			
2	NOX SOUTH YES			
3	NOX SOUTH YES			
4	NOX SOUTH YES			

Is brake system indicator lamp activated: YES (X) NO ()

DATA INDICATES COMPLIANCE: YES (X) NO ()

Driver: DAVID DULIN Observer: NONE
 Recorded Data Processed by: CHUCK JENKINS Date: 3/28/03
 Approving Laboratory Official: KEN WEBSTER Date: 4/2/03

Vehicle: 2004 FORD MOTOR CO. MYISA NUMBER: C10200
 Make: FORD
 Model: EXPEDITION XLT
 Body Style: 4-DOOR MPV
 Front Cold Tire Pressure: 241 (Kpa)
 Rear Cold Tire Pressure: 241 (Kpa)

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Date Tested: 01/20/03

DATA SHEET 21 - HYDRAULIC CIRCUIT FAILURE #2 AT GVWR

Testing Conditions: INV DATA, Section 0065, 01/20/03, 10:30:29

Weather Conditions: 20°F Wind: 8 mph 116° Start Odo.: 708 End Odo.: 715

Method of simulating failure: Disconnected Brake Line @ R/C Rear Port

System Portion Failed: RR & LR

Schedule:

Initial Brake Temperature 65-100°C
 Initial Speed 100 km/h to zero
 4 stops with transmission in neutral

Performance Requirements:

One Stop with:
 Stopping Distance less than 160m
 Pedal Force between 65N and 500N
 No Lock-Up allowed longer than 0.1 sec above 15 km/h
 Vehicle Must stay in lane of 3.5m

STOP #	INIT SPD (kph)	LEFT FRONT	RIGHT FRONT	LEFT REAR	RIGHT REAR	ACTUAL DISTANCE (meters)	CORRECTED DISTANCE (FEAR 299) (meters)	MAX. PEDAL FORCE (N)	AVG. PEDAL FORCE (N)	MAX. DECEL (m/sec²)	AVG. DECEL (m/sec²)
		IBT (°C)	IBT (°C)	IBT (°C)	IBT (°C)						
1	100.66	13	12	90	84	109.7	108.0	466.42	409.36	5.21	3.77
2	100.05	7	6	91	88	114.3	114.2	455.12	419.29	5.46	3.51
3	100.44	4	2	89	89	108.1	107.2	468.94	432.61	5.50	3.55
4	100.11	3	2	83	93	110.9	109.9	468.31	427.65	5.51	3.79

STOP #	DRIVER VEHICLE STOP COMMENTS			
	(Wheel Lock-Up - Direction of Stop - Stay in Lane)			
1	.	NOX	SOUTH	YES
2	.	NOX	SOUTH	YES
3	.	NOX	SOUTH	YES
4	.	NOX	SOUTH	YES

Is brake system indicator lamp activated: YES (X) NO ()

DATA INDICATES COMPLIANCE: YES (X) NO ()

Driver: DAVID DULIN Observer: NONE
 Recorded Data Processed by: CHUCK JENKINS Date: 3/28/03
 Approving Laboratory Official: RAN WEBSTER Date: 4/2/03

Vehicle: 2003 FORD MOTOR CO. EXTRA NUMBER: C30200
 Make: FORD
 Model: EXPEDITION ELT
 Body Style: 4-DOOR MPV
 Front Cold Tire Pressure: 241 (Kpa)
 Rear Cold Tire Pressure: 241 (Kpa)

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 East Liberty, Ohio 43319
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Date Tested: 01/20/03

DATA SHEET 22 - ANTILOCK FUNCTIONAL FAILURE AT GVER

Testing Conditions: TRV DATA, Section 0070, 01/20/03, 12:56:45

Weather Conditions: 22°F Wind: 10 mph 282° Start Odo.: 717 End Odo.: 737

Schedule:

Initial Brake Temperature 65-100°C
 Initial Speed 100 km/h to zero
 6 stops with transmission in neutral

Performance Requirements:

One Stop with:
 Stopping Distance less than 85m
 Lateral force between 65N and 500N
 No Lock-Up allowed longer than 0.1 sec above 15 km/h
 Vehicle must stay in lane of 3.5m

STOP	INIT	LEFT	RIGHT	LEFT	RIGHT	ACTUAL	CORRECTED	MAX.	AVG.	MAX.	AVG.
#	SPD	FRONT	FRONT	ASAR	REAR	DISTANCE	(EAS 299)	PEDAL	FORCE	FORCE	FORCE
#	(kph)	(°C)	(°C)	(°C)	(°C)	(meters)	(meters)	(N)	(N)	(m/sec ²)	(m/sec ²)
1	99.87	82	75	74	64	50.6	50.7	213.35	46.94	11.66	7.66
2	99.09	84	82	73	67	55.1	56.1	182.10	145.41	11.42	7.06
3	100.18	88	84	77	63	62.3	62.7	179.80	133.70	9.58	5.65
4	100.48	87	87	72	64	56.4	55.9	238.86	171.02	10.80	6.96
5	100.22	89	84	74	62	67.1	66.8	213.04	130.56	9.86	5.80
6	99.68	88	82	73	62	56.2	57.3	280.78	167.15	10.65	6.81

STOP	#	Wheel Lock-Up	Direction of Stop	Stay in Lane
1	1	NOX	SOUTH	YES
2	2	NOX	SOUTH	YES
3	3	NOX	SOUTH	YES
4	4	NOX	SOUTH	YES
5	5	NOX	SOUTH	YES
6	6	NOX	SOUTH	YES

How was the ABS failure induced: REMOVED FUSE NO 103 FROM FUSE PANEL, PASSENGER'S FOOTWELL, RT SIDE

Is brake system indicator lamp activated: YES (X) NO ()

Variable proportioning valve integral w/ABS can't separately engage. Data Sheet 23 not included.
 COMMENTS: SEE APPENDIX C.

DATA INDICATES COMPLIANCE: YES (X) NO ()

Driver: DAVID DUBLIN Observer: NONE
 Recorded Data Processed by: CHUCK JENKINS Date: 3/28/03
 Approving Laboratory Official: KEN WEBSTER Date: 4/2/03

Vehicle: 2003 FORD MOTOR CO. MUTSA NUMBER: C30240
 Make: FORD
 Model: MXPEDITION XLT
 Body Style: 4-DOOR MPV
 Front Cold Tire Pressure: 241 (Kpa)
 Rear Cold Tire Pressure: 241 (Kpa)

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 (937)666-1211 www.trecpg.com

Date Tested: 01/20/03

DATA SHEET 24 - BRAKE POWER UNIT OR PWR ASSIST UNIT IN/OP AT GVWR

Testing Conditions: IMV Data, Section 0006, 01/20/03, 14:59:27

Weather Conditions: 22°F Wind: 12 mph 271° Start Odo.: 742 End Odo.: 755

Failure Simulation: Disconnect primary source of power.

Method of rendering inoperative: removed negative vacuum hose at booster

Schedule:

Initial Brake Temperature 65-100°C
 Initial Speed 100 km/h to zero
 6 stops with transmission in neutral

Performance Requirements:

One Stop with:
 Stopping Distance less than 160m
 Pedal force between 65N and 800N
 No lock-Up allowed longer than 0.1 sec above 15 km/h
 Vehicle Must stay in lane of 3.5m

STOP #	INIT SPEED (km/h)	LEFT FRONT TEMP (°C)	RIGHT FRONT TEMP (°C)	LEFT REAR TEMP (°C)	RIGHT REAR TEMP (°C)	ACTUAL DISTANCE (meter)	CORRECTED DISTANCE (BASE 259) (meter)	MAX. PEDAL FORCE (N)	AVG. PEDAL FORCE (N)	MAX. DECEL (m/sec²)	AVG. DECEL (m/sec²)
1	99.72	87	82	66	58	170.0	171.0	494.34	464.55	1.50	2.49
2	99.68	87	85	66	57	160.5	161.6	498.94	464.34	3.73	2.69
3	98.83	86	83	62	54	163.7	167.7	486.71	454.83	3.95	2.65
4	100.22	86	82	62	45	158.8	158.1	496.32	463.09	3.84	2.76
5	99.74	84	81	64	54	151.2	152.0	495.70	471.97	4.79	2.87
6	99.92	88	87	66	64	150.9	159.1	502.60	460.40	1.86	2.68

STOP # DRIVER VEHICLE STOP COMMENTS
 (Wheel Lock-Up - Direction of Stop - Stay in Lane)

STOP #	WHEEL LOCK-UP	DIRECTION OF STOP	STAY IN LANE
1	NOX	SOUTH	YES
2	NOX	SOUTH	YES
3	NOX	SOUTH	YES
4	NOX	SOUTH	YES
5	NOX	SOUTH	YES
6	NOX	SOUTH	YES

Is the brake system indicator lamp activated: YES () NO (X)

DATA INDICATES COMPLIANCE: YES (X) NO ()

Driver: DAVID DULIN Observer: NONE
 Recorded Data Processed by: CHUCK JENKINS Date: 3/28/03
 Approving Laboratory Official: KEF WEBSTER Date: 4/2/03

Vehicle: 2003 FORD MOTOR CO. NHTSA NUMBER: C30200
 Make: FORD
 Model: EXPEDITION XLT
 Body Style: 4-DOOR MPV
 Front Cold Tire Pressure: 241 (Kpa)
 Rear Cold Tire Pressure: 241 (Kpa)

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Date Tested: 01/22/03

DATA SHEET 25 - PARKING BRAKE AT GVWR

Testing Conditions: INV DATA, Section 0085, 01/22/03, 09:41:17

Parking brake: AUTOMATIC TR Non-service type: FOOT OPERATED

Service type: N/A

Weather Conditions: 12°F Wind: 2 mph 313°

Start Oda.: 767

Rnd Oda.: 769

Test Weight: Total: 1128kg

Front: 1149kg

Rear: 1800kg

Schedule:

Initial Brake Temperature <100°C or (Ambient temp.

If non-service brake type materials)

Loaded to GVWR with transmission in neutral

Drive onto 20% slope in forward and reverse directions.

Performance Requirements:

Up to Three Applies in each direction.

Parking brake must hold the vehicle stationary in both directions for 5 minutes each.

Pedal force: Hand control: <400 N

Foot control: <500 N

NOTE: For vehicles with parking brake systems not utilizing the service brake friction elements, the friction elements of such systems are to be burnished prior to parking brake tests according to the manufacturer's published recommendation as furnished to the purchaser. If no recommendations are furnished, test the system in an unburnished condition. If recommendations are furnished, record method used.

	MAX SERVICE	MAX P-BRAKE	LEFT REAR	RIGHT REAR	AVG REAR	DRIVER VEHICLE STOP COMMENTS			
APPLY	FORCE	FORCE	1BT	1BT	1BT	(direction of stop (up/down) - Brake holds/rolls)			
#	(N)	(N)	(°C)	(°C)	(°C)				
1	76.4	478.5	19	14	16.9	0 REAPPLY	UPHILL	HOLDS	20%
2	66.0	452.6	19	22	21.6	0 REAPPLY	DOWNHILL	HOLDS	20%

Is brake system indicator lamp activated: YES (X) NO ()

DATA INDICATES COMPLIANCE: YES (X) NO ()

Driver: DAVID DULIN

Observer: NONE

Recorded Data Processed by: CHUCK JENKINS

Date: 3/28/03

Approving Laboratory Official: KEN WEBSTER

Date: 4/2/03

Vehicle: 2003 FORD MOTOR CO. NHTSA NUMBER: C30200
 Make: FORD
 Model: EXPLORATION XLT
 Body Style: 4-DOOR MPV
 Front Cold Tire Pressure: 241 (Kpa)
 Rear Cold Tire Pressure: 241 (Kpa)

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Date Tested: 03/12/03

DATA SHEET 26 - HEATING SNUBS AT GVWR

Testing Conditions: IMV DATA, Section 0800, 03/12/03, 15:21:56

Schedule:

Conduct 15 snubs from 120 km/h or 80% Vmax, whichever is slower, to 1/2 of initial speed.
 Attain required decel in 1 second and maintain that decel.
 Interval between snubs is 45 seconds and NOT to initial speed.

Performance Requirements:

Initial IST for first snub is 55-65°C
 Maintain 3.0 m/s/s deceleration
 Vehicle must stay in lane of 3.5m

SNUB #	AVG DECEL (m/sec²)	Time Between Snubs (seconds)	AVG. PERCENT FORCE (N)	LEFT FRONT IST (°C)	RIGHT FRONT IST (°C)	LEFT REAR IST (°C)	RIGHT REAR IST (°C)	INITIAL SPD (kph)
1	3.05	--NA--	48.83	57	57	66	59	120.68
2	2.83	47	43.25	97	108	107	96	119.91
3	2.68	45	45.76	143	152	138	128	121.16
4	2.84	45	43.40	175	188	166	156	120.39
5	3.11	44	44.90	207	220	191	178	121.46
6	2.75	45	46.15	228	242	217	201	119.43
7	2.76	45	43.80	244	259	234	217	119.34
8	2.63	46	47.34	254	268	254	232	120.35
9	2.59	44	50.01	267	278	266	247	120.09
10	2.86	46	53.55	271	281	279	258	120.13
11	3.08	44	52.52	282	287	287	269	119.69
12	2.71	45	45.63	288	290	296	279	120.76
13	2.76	45	46.85	291	294	304	288	120.35
14	2.88	46	49.93	290	297	311	292	120.11
15	3.25	49	50.45	291	301	316	297	119.10

STOP DRIVER VEHICLE SNUB COMMENTS
 # (Wheel Lock-Up - Direction of Stop - Stay in Lane)

SNUB #	WHEEL LOCK-UP	DIRECTION OF STOP	STAY IN LANE
1	NOX	NORTH	YES
2	NOX	EAST	YES
3	NOX	EAST	YES
4	NOX	SOUTH	YES
5	NOX	SOUTH	YES
6	NOX	SOUTH	YES
7	NOX	WEST	YES
8	NOX	WEST	YES
9	NOX	NORTH	YES
10	NOX	NORTH	YES
11	NOX	NORTH	YES
12	NOX	EAST	YES
13	NOX	EAST	YES
14	NOX	SOUTH	YES
15	NOX	SOUTH	YES

DATA INDICATES COMPLIANCE: YES (X) NO ()

Driver: DAVID DYLLIN Observer: NONE
 Recorded Date Provided by: KEVIN JENKINS Date: 3/28/03
 Approving Laboratory Official: KEM WABSTER Date: 4/2/03

Vehicle: 2003 FORD MOTOR CO. NHTSA NUMBER: C30200
 Make: FORD
 Model: EXPEDITION ILT
 Body Style: 4 DOOR SUV
 Front Cold Tire Pressure: 241 (Kpa)
 Rear Cold Tire Pressure: 201 (Kpa)

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Date Tested: 03/12/03

DATA SHEET 27 - HOT PERFORMANCE AT GVWR

Testing Conditions: IMV DATA, Section 004b, 03/12/03, 15:11:03

Schedule:

Make 2 stops from 100 kph
 Pedal Force: 1st stop is done with an average force
 less than the average recorded in the
 shortest GVWR Cold Effectiveness stop.
 2nd stop is done with a force less
 than 500 N.

No Lock-Up allowed longer than 0.1 sec above 15 km/h.

Distance Requirements are based on the following:

shortest stop in Data Sheet 11 is: 6
 Initial speed of stop: 100.77 (kph)
 Actual distance of stop: 51.5 (meter)
 Average pedal force: 226.1 (N)

Performance Requirements:

Stop Number 1 must be less than: 60.8 (meter)
 In addition the stopping distance for at least one of the
 of the two hot stops must be less than: 69 (meter)

STOP #	INIT SPD (kph)	LEFT FRONT	RIGHT FRONT	LEFT REAR	RIGHT REAR	ACTUAL DISTANCE (meter)	CORRECTED DISTANCE (SAE 259) (meter)	MAX. PEDAL FORCE (N)	AVG. PEDAL FORCE (N)	MAX. DECEL (m/sec ²)	AVG. DECEL (m/sec ²)
		1BT (°C)	1BT (°C)	1BT (°C)	1BT (°C)						
1	98.99	313	330	328	314	48.9	49.9	* 515.65	191.23	11.52	7.51
2	99.91	336	349	336	321	49.5	49.6	351.08	191.23	11.92	7.69

* SEE APPENDIX C

STOP #	DRIVER VEHICLE STOP COMMENTS			
	(Wheel Lock-Up - Direction of Stop - Stay in Lane)			
1	NOX		SOUTH	YES
2	NOX		SOUTH	YES

DATA INDICATES COMPLIANCE: YES (X) NO ()

Driver: DAVID POLIN Observer: NONE
 Recorded Data Processed by: CHUCK JENKINS Date: 3/26/03
 Approving Laboratory Official: KEN WAGSTEN Date: 4/2/03

Vehicle: 2003 FORD MOTOR CO. NHTSA NUMBER: E30200
 Make: FORD
 Model: EXPEDITION ELT
 Body Style: 4-DOOR SUV
 Front Cold Tire Pressure: 241 (Kpa)
 Rear Cold Tire Pressure: 241 (Kpa)

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Date Tested: 03/12/03

DATA SHEET 28 - BRAKE COOLING STOPS AT GVWR

Testing Conditions: INV DATA, Section 0100, 03/12/03, 15:35:37

Schedule:

Initial Brake Temperature:
 Achieved on completing Hot Performance
 Initial Speed 50 km/h to zero
 4 stops with transmission in gear

Performance Requirements:

Constant Decel rate: 3.0 m/s/s
 Pedal force adjusted as necessary
 No Lock-Up allowed longer than 0.1 sec above 15 km/h
 Vehicle must stay in lane of 3.5m

STOP	INTR	AVG.	AVG.	LEFT	RIGHT	LEFT	RIGHT
#	[kph]	[m/sec ²]	PEDAL FORCE [N]	FRONT TBT (°C)	FRONT TBT (°C)	REAR TBT (°C)	REAR TBT (°C)
1	50.31	3.25	54.48	257	271	285	284
2	50.50	2.72	39.39	199	211	241	221
3	49.30	2.87	39.56	157	163	199	197
4	50.68	2.68	43.48	128	130	166	172

STOP

DRIVER VEHICLE STOP COMMENTS

#	Wheel lock up - Direction of Stop - Stay in Lane
1	NOX WRST YEN
2	NOX NORTH YES
3	NOX NORTH YES
4	NOX NORTH YES

DATA INDICATES COMPLIANCE: YES (I) NO ()

Driver: DAVID DULIN Observer: MUSH
 Recorded Data Processed by: CHUCK JRMKINS Date: 3/28/03
 Approving Laboratory Official: KEN WEBSTER Date: 4/2/03

Vehicle: 2002 FORD MOTOR CO. NHTSA NUMBER: C30209
 Make: FORD
 Model: EXPLORER XLT
 Body Style: 4-DOOR MPV
 Front Cold Tire Pressure: 242 (Kpa)
 Rear Cold Tire Pressure: 242 (Kpa)

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 Data Taken: 03/12/03

DATA SHEET 29 - RECOVERY PERFORMANCE AT GVWR

Testing Conditions: IMV DATA, Section 6102, 03/12/03, 15:43:23

Weather Conditions: 55°F Wind: 4 mph 257° Start Odo.: 792 End Odo.: 808

Schedule:

Make 2 stops from 100 kph
 Pedal Force: Both stops are performed with an average force less than the average recorded in the shortest GVWR Cold Effectiveness Stop.

Performance Requirements:

One of the two stops must be within the following limits:
 Upper limit of corrected stopping distance: 70.7 (meter)
 Lower limit of corrected stopping distance: 38.4 (meter)

No Lock-Up allowed longer than 0.1 sec above 15 km/h.

Distance Requirements are based on the following:

shortest stop in Data Sheet 11 is: Stop 5
 Initial speed of stop: 100.77 (kph)
 Actual distance of stop: 53.5 (meter)
 Average pedal force: 225.1 (N)

STOP #	INIT SPD (kph)	LEFT FRONT	RIGHT FRONT	LEFT REAR	RIGHT REAR	ACTUAL DISTANCE (meter)	CORRECTED DISTANCE (SAR 299) (meter)	MAX. PEDAL FORCE (N)	AVG. PEDAL FORCE (N)	MAX. DECEL (m/sec ²)	AVG. DECEL (m/sec ²)
		IST (°C)	IST (°C)	IST (°C)	IST (°C)						
1	99.67	113	116	151	158	54.2	54.6	236.75	149.00	11.23	7.17
2	99.08	161	171	183	189	47.4	48.3	281.34	160.96	12.22	7.42

STOP #	DRIVER VEHICLE STOP COMMENTS			
	(Wheel Lock-Up - Direction of Stop - stay in Lane)			
1	NOX		EAST	YES
2	NOX		EAST	YES

DATA INDICATES COMPLIANCE: YES (X) NO ()

Driver: DAVID DULTM Observer: NONE
 Recorded Data Processed by: CROCK JENKINS Date: 3/28/03
 Approving Laboratory Official: KEN WEBSTER Date: 4/2/03

Vehicle: 2003 FORD MOTOR CO. NHTSA NUMBER: C30260
 Make: FORD
 Model: EXPEDITION XLT
 Body Style: 4-DOOR MPV
 Front Cold Tire Pressure: 241 (Kpa)
 Rear Cold Tire Pressure: 241 (Kpa)

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Date Tested: 03/17/03

DATA SHEET 22A - ADDITIONAL ABS FAILURE STOPS

(SEE APPENDIX C)

Testing Conditions: LMV DATA, Section 0075, 03/17/03, 09:15:23

Weather Conditions: 62°F Wind: 3 mph 134° Start Odo.: 817 End Odo.: 858

Schedule:

Initial Brake Temperature 85-100°C
 Initial Speed 100 km/h to zero
 6 stops with transmission in neutral

Performance Requirements:

One Stop with:
 Stopping Distance less than 84 m
 Pedal force between 65N and 500N
 No lock-up allowed longer than 0.1 sec above 15 km/h
 Vehicle Must Stay in lane of 3.5m

STOP #	INIT SPD (xmph)	LEFT FRONT TST (°C)	RIGHT FRONT TST (°C)	LEFT REAR TST (°C)	RIGHT REAR TST (°C)	ACTUAL DISTANCE (meter)	CORRECTED DISTANCE (SAR 299) (meter)	MAX. PEDAL FORCE (N)	AVG. PEDAL FORCE (N)	MAX. DECEL (m/sec²)	AVG. DECEL (m/sec²)
1	100.40	73	77	97	81	58.4	57.9	226.53	133.43	11.00	5.02
2	95.74	86	90	98	71	56.6	56.9	224.70	146.09	10.07	6.69
3	100.55	84	91	95	71	80.2	79.4	214.90	89.24	12.17	4.80
4	99.57	84	87	86	73	65.3	66.5	247.84	127.30	11.31	3.05
5	99.74	88	90	90	71	103.3	103.8	261.37	80.60	12.11	3.65
6	100.40	89	89	94	85	70.1	69.5	219.85	115.59	10.48	4.43
7	99.57	86	84	83	78	103.1	104.0	277.01	92.47	11.98	3.72
8	95.98	91	92	75	82	97.3	97.4	273.32	93.18	12.19	4.03
9	99.31	90	89	79	87	98.8	100.2	268.44	87.28	12.07	4.18
10	100.40	88	90	74	83	107.1	107.4	415.48	76.35	11.74	3.60
11	99.77	89	92	72	84	85.1	85.5	379.15	111.41	11.77	9.19
12	95.98	86	91	74	66	81.3	81.8	336.77	90.01	12.22	4.70

STOP # DRIVER VEHICLE STOP COMMENTS
 (Wheel Lock-Up - Direction of Stop - Stay in Lane)

STOP #	DRIVER VEHICLE STOP COMMENTS
1	WHEEL LOCK-UP - SOUTH - YES
2	WHEEL LOCK-UP - SOUTH - YES
3	WHEEL LOCK-UP - SOUTH - YES
4	WHEEL LOCK-UP - SOUTH - YES
5	WHEEL LOCK-UP - SOUTH - YES
6	WHEEL LOCK-UP - SOUTH - YES
7	WHEEL LOCK-UP - SOUTH - YES
8	WHEEL LOCK-UP - SOUTH - YES
9	WHEEL LOCK-UP - SOUTH - YES
10	WHEEL LOCK-UP - SOUTH - YES
11	WHEEL LOCK-UP - SOUTH - YES
12	WHEEL LOCK-UP - SOUTH - YES

DATA INDICATES COMPLIANCE. YES (X) NO ()

Driver: DAVID DULIN Observer: NONE
 Recorded Data Processed by: CHUCK JENKINS Date: 3/28/03
 Approving Laboratory Official: KEN WEBSTER Date: 4/2/03

DATA SHEET 30 (Part 1 of 5)
6.0 Test Completion Inspection (7.17)

VEHICLE: 2003 Ford Expedition XLT NHTSA NO.: C30200 DATE: 03/27/03

System Integrity (S5.6)

Each vehicle shall meet the complete performance requirements of this standard without:

(a) Detachment or fracture of any component of the braking system such as brake springs and brake shoes or disc pad facings, other than minor cracks, that do not impair attachment of the friction facings. All mechanical components of the braking system shall be intact and functional. Friction facing tearout (complete detachment of lining) shall not exceed 10 percent of the lining on any single frictional element.

(b) Any visible brake fluid or lubricant on the friction surface of the brake or leakage at the master cylinder or brake power unit reservoir cover, seal, and filler openings.

Friction Material Condition: Primary/Inner		Friction Material Condition: Secondary/Outer	
LF	Normal Appearance & Color	LF	Normal Appearance & Color
RF	Normal Appearance & Color	RF	Normal Appearance & Color
LR	Normal Appearance & Color	LF	Normal Appearance & Color
RR	Normal Appearance & Color	RR	Normal Appearance & Color
Drum (or Rotor) Condition:		Brake Fluid/Lubricant Inside Brakes:	
LF	Normal Appearance & Color	LF	None
RF	Normal Appearance & Color	RF	None
LR	Normal Appearance & Color	LR	None
RR	Normal Appearance & Color	RR	None
Hydraulic Component Condition:		Mechanical Component Condition:	
LF	Good	Brk/Pedal	Good
RF	Good	Power Brk	Good
LR	Good	Stop/Lamp	Good
RR	Good	Linkage	Good
M/Cyl	Good	Other	NA

COMPLIANCE: Yes X No

Comments: None

Technician: D. Dulin

DATA SHEET 30 (Part 2 of 5)
TEST COMPLETION INSPECTION (S7.17)

VEHICLE: 2003 Ford Expedition XLT; NHTSA NO.: C30200; GVWR: 3130 kg
MASTER CYLINDER RESERVOIR:

DATE	03/27/03	Requirements	Pass	Fail
Reservoir Compartments (S5.4.1)				
(1) Does master cylinder have a reservoir compartment for each brake subsystem?	<u>Yes</u>	Master cylinder shall have a reservoir compartment for each subsystem.	X	
	No			
(2) Does loss of fluid in one compartment result in complete loss from another compartment?	Yes	Loss of fluid from one compartment shall not cause complete loss from another compartment.	X	
	<u>No</u>			
Reservoir Capacity (S5.4.2)				
Shall conform to requirements (1) or (2), state units:				
(1) For reservoirs having completely separate compartments for each subsystem (two separate, independent reservoirs):				
Subsystem 1: Subsystem reservoir capacity		Each compartment (reservoir) shall have a minimum capacity equivalent to the fluid displacement resulting when all wheel cylinders or caliper pistons serviced by that independent compartment/reservoir moves from a new lining, fully retracted position to a fully worn, properly adjusted, fully applied position. (Use Data Sheet 31 and Appendix 1A)	NA	NA
Subsystem 1: Fluid displaced from new to worn lining				
Subsystem 2: Subsystem reservoir capacity			NA	NA
Subsystem 2: Fluid displaced from new to worn lining				
2) For reservoirs utilizing a portion of the reservoir for a common supply to two or more subsystems:				
Total minimum capacity for the entire master cylinder reservoir (includes individual compartment reservoirs)	534 ml	Shall have total minimum capacity for entire reservoir for displacement resulting from all subsystem wheel cylinders or caliper pistons moving from new lining to full worn condition as above.	X	
Fluid displaced from new to worn linings (ALL linings)	330.3 ml*			
*Value calculated from Data Sheet 31				

Comments: None

DATA SHEET 30 (Part 3 of 5)
TEST COMPLETION INSPECTION (\$7.18)

VEHICLE: 2003 Ford Expedition XLT; NHTSA NO.: C30200; GVWR: 3130 kg

MASTER CYLINDER RESERVOIR:

DATE	03/27/03	Requirements	Pass	Fail
Master Cylinder Piston Displacement(\$5.4.2) [If Common Reservoir Supply - continued from previous page]				
Fluid displaced by three strokes of master cylinder piston for Primary (Subsystem No. 1)	21 ml	Individual partial compartments of reservoir shall each have a minimum of fluid equal to at least the volume displaced by the master cylinder piston servicing the subsystem during a <u>full stroke</u> of the piston. NOTE: Procedure uses three strokes to ensure an accurate measurement.		
Fluid displaced by three strokes of master cylinder piston for Secondary (Subsystem No. 2)	59 ml			
Fluid displaced per stroke, Primary	7.0 ml			
Fluid displaced per stroke, Secondary	19.7 ml			
Fluid available in partial compartment Subsystem No. 1	47 ml		X	
Fluid available in partial compartment Subsystem No. 2	41 ml		X	
Brake Power Unit Reservoir (\$5.4.2)				
Volume displaced in charging system piston or accumulator to normal operating pressure plus wheel cylinder or caliper piston displacement.		Shall have a capacity at least equal to fluid displacement required to charge the system pistons or accumulators to normal operating pressure plus displacement when wheel cylinders or caliper pistons move from new lining to full worn condition as above.	NA	
Reservoir Labeling (\$5.4.3)				
Exact copy of reservoir label: On master cylinder reservoir cap: <u>WARNING.</u> <u>USE ONLY DOT 3 BRAKE FLUID FROM A</u> <u>SEALED CONTAINER.</u> <u>CLEAN FILLER CAP BEFORE REMOVING.</u>		Label shall read: "Warning, clean filler cap before removing; use only * fluid from a sealed container". * Fluid type specified in 49 CFR 571.116	X	
Measure letter height	3.2 mm	Letters shall be at least 3.2 mm/ 0.125" high	X	
Describe label attachment method and location. <u>Embossed on the top of the master cylinder reservoir cap.</u>		Lettering shall be permanently affixed, engraved or embossed and located so as to be visible by direct view either on or within 100 mm/3.94 inches of the brake fluid reservoir filler plug or cap.	X	
Does the lettering contrast with the background?	Yes	If label is not engraved or embossed, letters shall be of a color that contrasts with the background	NA	
	No			

Comments: None
 Technician: D. Dulin

DATA SHEET 30 (Part 4 of 5)
TEST COMPLETION INSPECTION (\$7.18)

VEHICLE: 2003 Ford Expedition XLT; NHTSA NO.: C30200; DATE: 03/27/03
BRAKE SYSTEM WARNING INDICATOR (\$5.5)

CONDITION	ANSWER	REQUIREMENTS	PASS	FAIL
Brake Systems Indicator Lamp Function Check (\$5.5.2) (Bulb and systems check)				
Describe location of brake indicator lamp: <u>Lower left quadrant of the instrument cluster.</u>	NA	Shall be in front, and in clear view, of driver.	X	
Does lamp light with ignition (start) switch at ON/RUN?	Yes	Automatic activation when ignition switch is "on" when engine not running , or ignition between "on" and "start" if is manufacturer check position- OR -single manual action by driver	X	
Does lamp light with ignition between ON and Start?	Yes			
Brake check description in owner's manual?	Yes	Manufacturer shall explain the brake check function test procedure in the owner's manual.	X	
Brake System Warning Indicator ACTIVATION (\$5.5.1) DURATION (\$5.5.3) FUNCTION (\$5.5.4)				
CONDITION	Light ON?	REQUIREMENT	PASS	FAIL
A. In event of hydraulic leak (1) On or before appearance of pressure differential of 218 psi (split system)	NA	When ignition (Start) switch is ON , lamp must light whenever (A), (B), (C), or (D) occurs. In addition, if service brake system is not a split system, audible warning must be activated when any condition in (A) exists. Visual warning indicator for non-split systems must be flashing.	X	
(2) If any reservoir falls below either "safe" level or 25% of capacity, whichever is greater.	Yes			
(3) On or before supply pressure to brake power unit falls to 50%	NA			
B. Electrical functional failure in an antilock or variable brake proportioning system.	Yes		X	
C. Application of the parking brake.	Yes			
D. Brake lining wear-out if optical warning	NA			
Must have Audible alarm if <u>not split system</u> and a condition in (a) above exists?	NA			
If condition (A) (2) above does not exist, then fluid reservoir must be transparent for fluid check without the need for reservoir to be opened? (\$5.4.4)	NA			
Indicator lamps remain activated as long as condition exists - Ignition "on", and engine on or off? _____ (\$5.5.3 DURATION)	Yes			
Visual warning - continuous or flashing?	Yes Cont.			
Audible warning - continuous or flashing?	No			

Comments: None.

Technician: D. Dulin

DATA SHEET 30 (Part 5 of 5)
TEST COMPLETION INSPECTION (S7.18)

VEHICLE: 2003 Ford Expedition XLT; NHTSA NO.: C30200; DATE: 03/27/03

BRAKE SYSTEM WARNING INDICATOR LABELING (S5.5.5)

CONDITION AND REQUIREMENT	ANSWER NOTE: Standard requires that the answer to questions be YES	PASS	FAIL
Are visual indicators legible to driver in daylight and nighttime conditions when activated?	Yes	X	
Are visual indicator words 3.2 mm (.125") high minimum? Record Height <u>3.2 mm</u>	Yes	X	
Visual indicator words and background contrasting colors, one of which is red. Record colors <u>Letters - Red, Lens - Black</u>	Yes	X	
If split system, is there one brake indicator? If yes, does it say the word "Brake"? <u>"BRAKE", w/one symbol.</u>	Yes	X	
If not split system, is there a separate indicator for loss of fluid or fluid pressure? Does this indicator say "Stop-Brake Failure"? Are the letters block and not less than 6.4 mm (.25") in height? Record letter height <u>NA</u>	NA		
If separate indicator for: 1. Low brake fluid per S5.5.1(a)(1), does indicator say "Brake Fluid"? NOTE: not required for mineral oil system Record wording <u>NA</u> 2. Gross pressure loss per S5.5.1(a)(2), does indicator say "Brake Pressure"? Record wording <u>NA</u> 3. Electrical functional failure in antilock or variable proportioning system per S5.5.1(b), letters and background contrasting colors one of which is yellow? Record colors <u>Lens - Black, Letters - Yellow (or Amber)</u> Does indicator say "Antilock" or "ABS" or "Brake Proportioning"? Record wording <u>"ABS" within a symbol.</u> 4. Parking brake per S5.5.1(c), does indicator say "Park" or "Parking Brake"? Record wording <u>NA</u> 5. Brake lining wear-out per S5.5.1(d), does indicator say "Brake Wear"? Record wording <u>NA</u> 6. For any other function? If yes, Record <u>NA</u>	NA NA Yes Yes NA NA NA	X	

Comments: None
Technician: D. Dulin

DATA SHEET 31 (Part 1 of 2)

CALCULATION OF MINIMUM RESERVOIR VOLUME REQUIREMENTS

VEHICLE: 2003 Ford Expedition XLT; NHTSA NO.: C30200; DATE: 12/11/02

BRAKE		LINING		
LOCATION	TYPE	DESCRIPTION	MINIMUM THICKNESS	THICKNESS TO FULLY WORN (1) mm*
Left Front	Drum	Leading	Pre-test 13.77 mm	1.5
		Primary	Post Test 12.70 mm	
		Inboard X	Δ 1.07 mm	
	Disc X	Trailing	Pre-test 13.72 mm	1.5
		Secondary	Post Test 12.45 mm	
		Outboard X	Δ 1.27 mm	
LINING CLEARANCE:		Diametrical (2): N/A	Inboard - 0.13 mm	Outboard - 0.13 mm
WHEEL CYLINDER DIAMETER (3): N/A		CALIPER PISTON DIAMETER (3): 53.90 mm (x2 pistons)		
SHOE CAGE DIAMETER (4): N/A; CENTER POINT OF BRAKE ASSY TO CENTER POINT OF W.C.: N/A				
Right Rear	Drum X	Leading	Pre-test 14.05 mm	2.5
		Primary	Post Test 12.80 mm	
		Inboard X	Δ 1.25 mm	
	Disc	Trailing	Pre-test 14.00 mm	2.5
		Secondary	Post Test 12.90 mm	
		Outboard X	Δ 1.10 mm	
LINING CLEARANCE:		Diametrical (2) - N/A	Inboard - 0.15 mm	Outboard - 0.15 mm
WHEEL CYLINDER DIAMETER (3): N/A		CALIPER PISTON DIAMETER (3): 51.89 mm		
SHOE CAGE DIAMETER (4): N/A		CENTER POINT OF BRAKE ASSY TO CENTER PT. OF W.C.: N/A		
CIRCUIT #1 CONSISTS OF:	LF	LR - X	RF	RR - X
CIRCUIT #2 CONSISTS OF:	LF - X	LR	RF - X	RR
(1) MFRS. RECOMMENDATIONS: Fronts - 1.6 mm; Rears - 1.6 mm.				
(2) REAR - TOP OF RIVET HEADS - N/A.				
FRONT - 1/32 INCH - N/A. MFRS. DATA - Inb. & Outb.: 0.1 - 0.15 mm				
(2) DRUM BRAKES, MEASURED AT HORIZONTAL CENTERLINE: N/A				
(3) MFRS. DATA: Front 54 mm, Number per Caliper: 2; Rear: 52 mm.				
(4) RESET POSITION: N/A				

Comments: Manufacturer's new lining thickness: Frt.: 14 mm; Rear: 14 mm.
Technician: D. Dulin

DATA SHEET 31 – SECTION CONTINUED (Part 2 of 2)Vehicle: 2003 Ford Expedition XLT;NHTSA No.: G30200;Date: 04/08/03**Procedure and Example for Determining Master Cylinder Volume Requirement**

The procedure followed for determining the minimum volume requirements is outlined in the example shown below. The required data is taken from the previous page.

DISC BRAKES

Volume Required, $V_r = (\Delta t_i + t_{ic} + \Delta t_o + t_{oc}) \times [\pi (D^2)/4]$, where –

- V_r = Volume required per wheel
- Δt = Change in thickness (average)
- i = Inboard
- o = Outboard
- D = Caliper cylinder diameter
- c = Average clearance

Using the above equations, the volume requirements for Subsystem No. 1 (LF, RR) and Subsystem No. 2 (RF, LR) were calculated utilizing measured and manufacturer's provided data to create the greatest displacement, as shown below:

Disc Brake:
(Front)

$$V_r = (\Delta t_i + t_{ic} + \Delta t_o + t_{oc}) \times \frac{\pi d^2}{4}$$

$$\Delta t_i = 12.5 \text{ mm}$$

$$\Delta t_o = 12.5 \text{ mm}$$

$$t_{ic} + t_{oc} = 0.30 \text{ mm}$$

$$d = 54 \text{ mm}$$

$$V_r = (12.5 + 0.15 + 12.5 + 0.15) \frac{\pi (54)^2}{4}$$

$$= 25.3 (2290.2)$$

$$= 57942.1 \text{ mm}^3 = 57.9 \text{ ml (x2 pistons)} = 115.9 \text{ ml}$$

Disc Brake:
(Rear)

$$V_r = (\Delta t_i + t_{ic} + \Delta t_o + t_{oc}) \times \frac{\pi d^2}{4}$$

$$\Delta t_i = 11.5 \text{ mm}$$

$$\Delta t_o = 11.5 \text{ mm}$$

$$t_{ic} + t_{oc} = 0.2 \text{ mm}$$

$$d = 52 \text{ mm}$$

$$V_r = (11.5 + 0.1 + 11.5 + 0.1) \frac{\pi (52)^2}{4}$$

$$= 23.2 (2123.7)$$

$$= 49270.2 \text{ mm}^3 = 49.3 \text{ ml}$$

For System 1 (RR, LR)

$$V_{r1} = 49270.2 \text{ mm}^3 + 49270.2 \text{ mm}^3$$

$$V_{r1} = 98540.5 \text{ mm}^3 = (98.5 \text{ ml})$$

For System 2 (LF, RR)

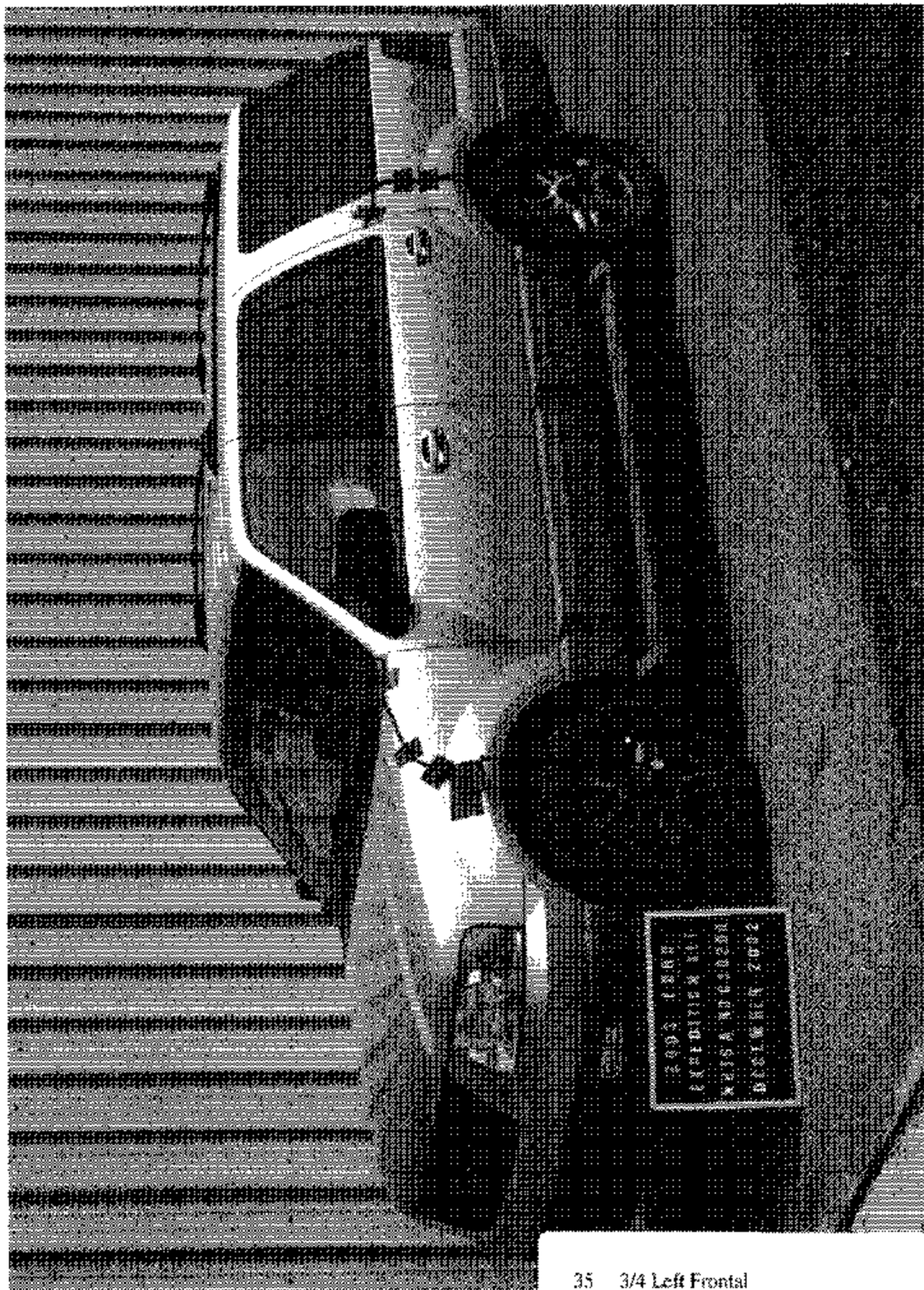
$$V_{r2} = 115884.2 \text{ mm}^3 + 115884.2 \text{ mm}^3$$

$$V_{r2} = 231768.4 \text{ mm}^3 = (231.8 \text{ ml})$$

$$\text{TOTAL VOLUME REQUIRED} = V_t = V_{r1} + V_{r2} = 330308.9 \text{ mm}^3 = 330.3 \text{ ml}^*$$

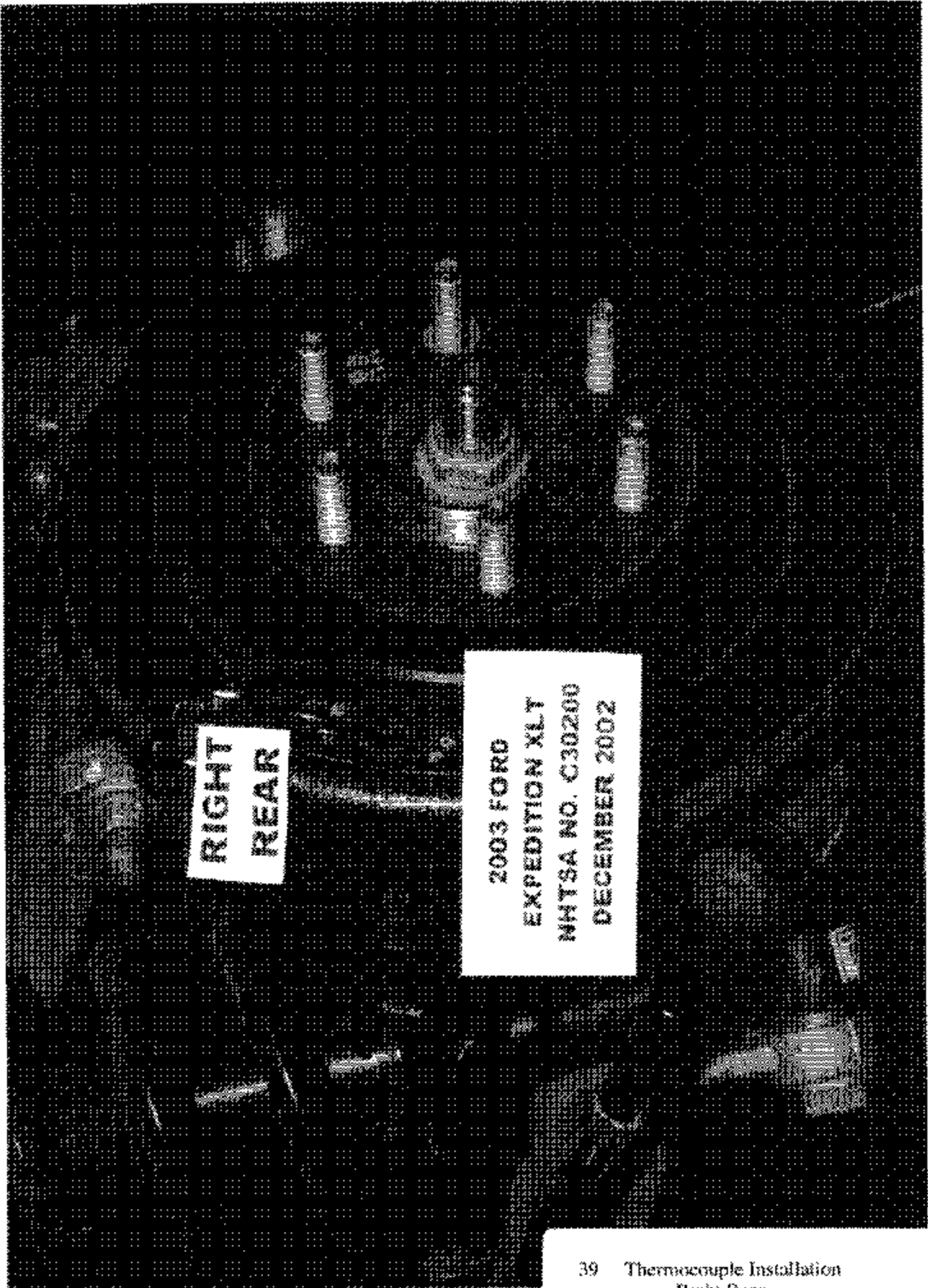
SECTION 6.0

Photographs



**LEFT
FRONT**

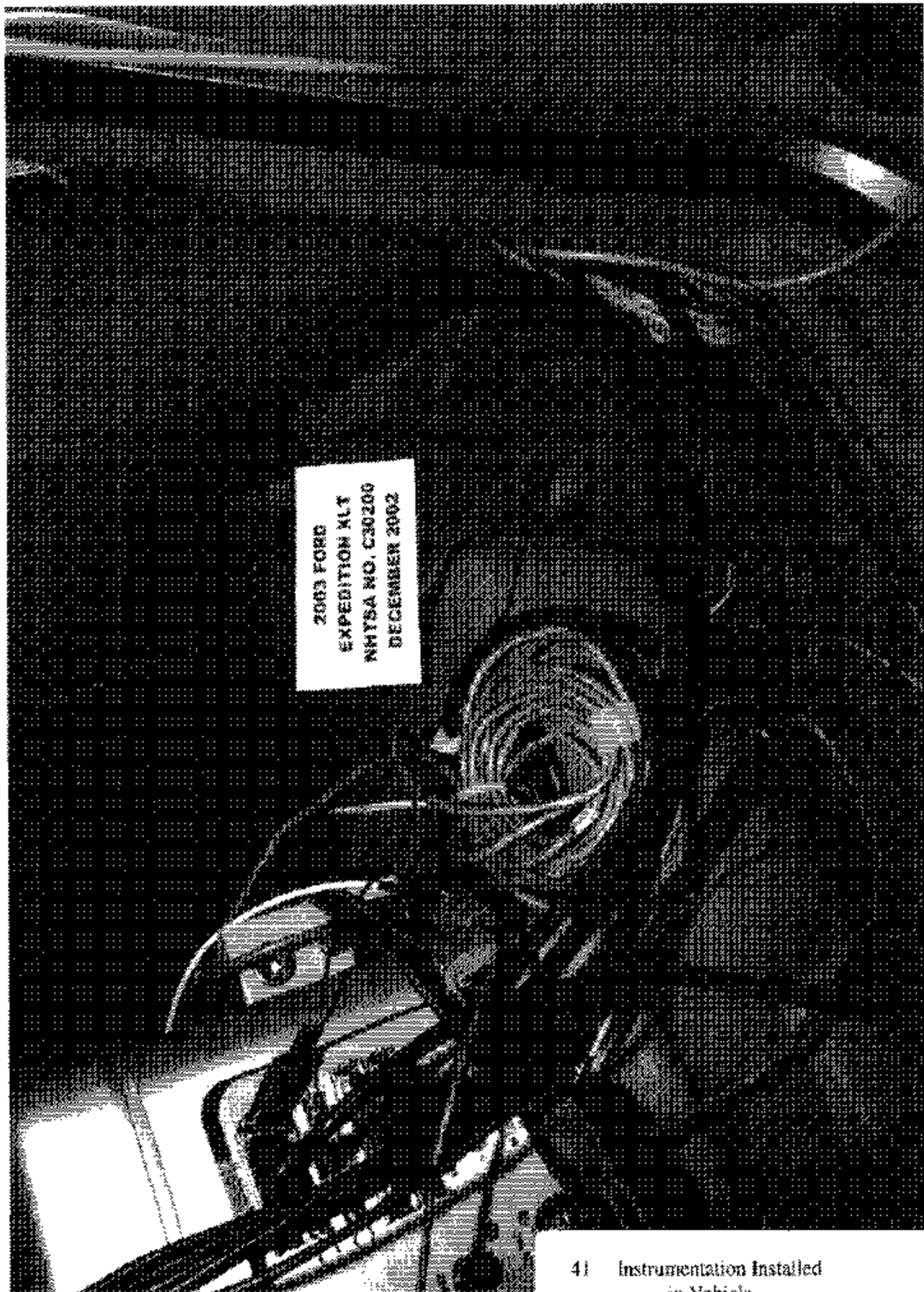
**2003 FORD
EXPEDITION XLT
NHTSA NO. C30200
DECEMBER 2002**



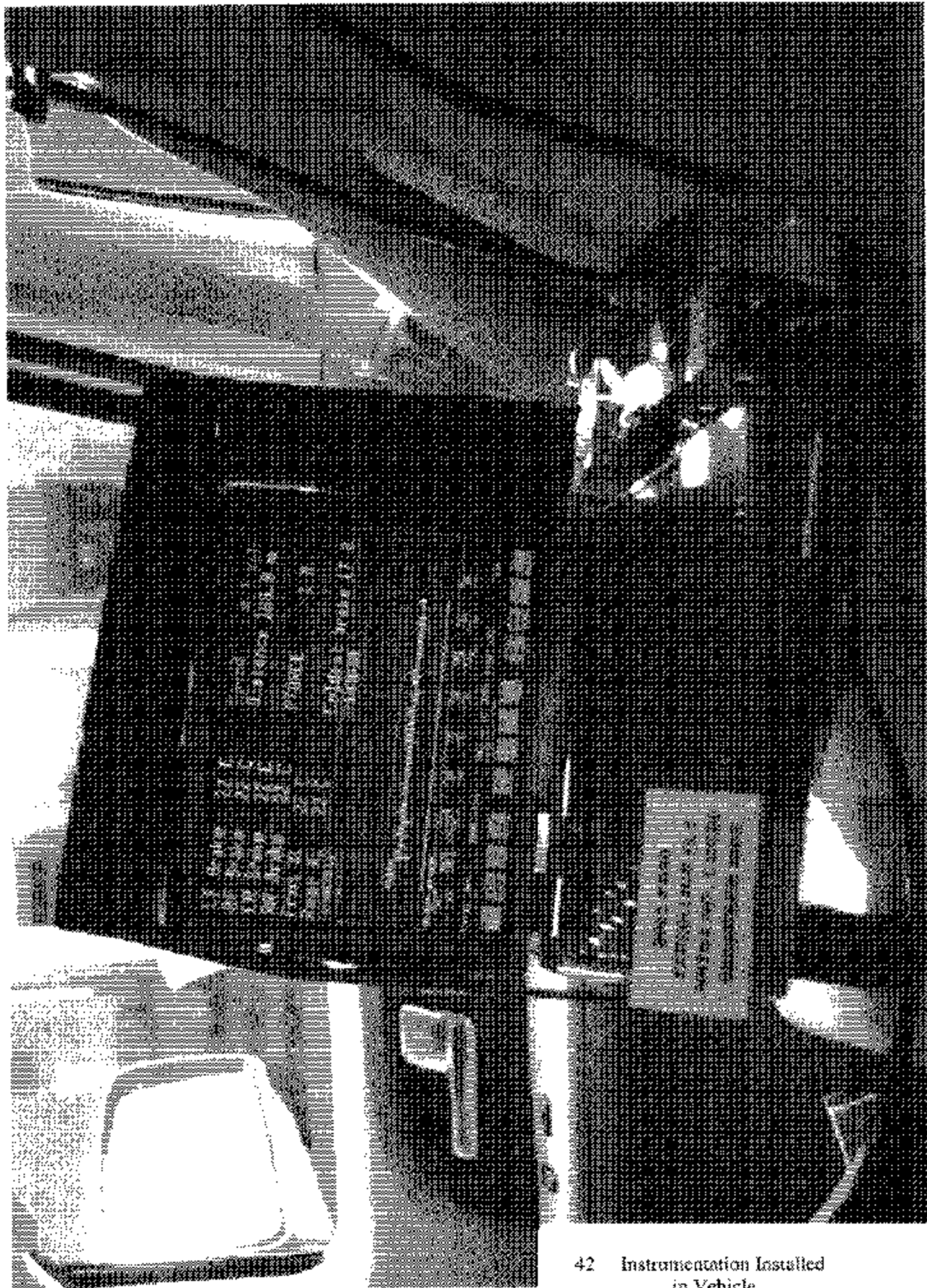
**RIGHT
REAR**

**2003 FORD
EXPEDITION XLT
NHTSA NO. C30200
DECEMBER 2002**





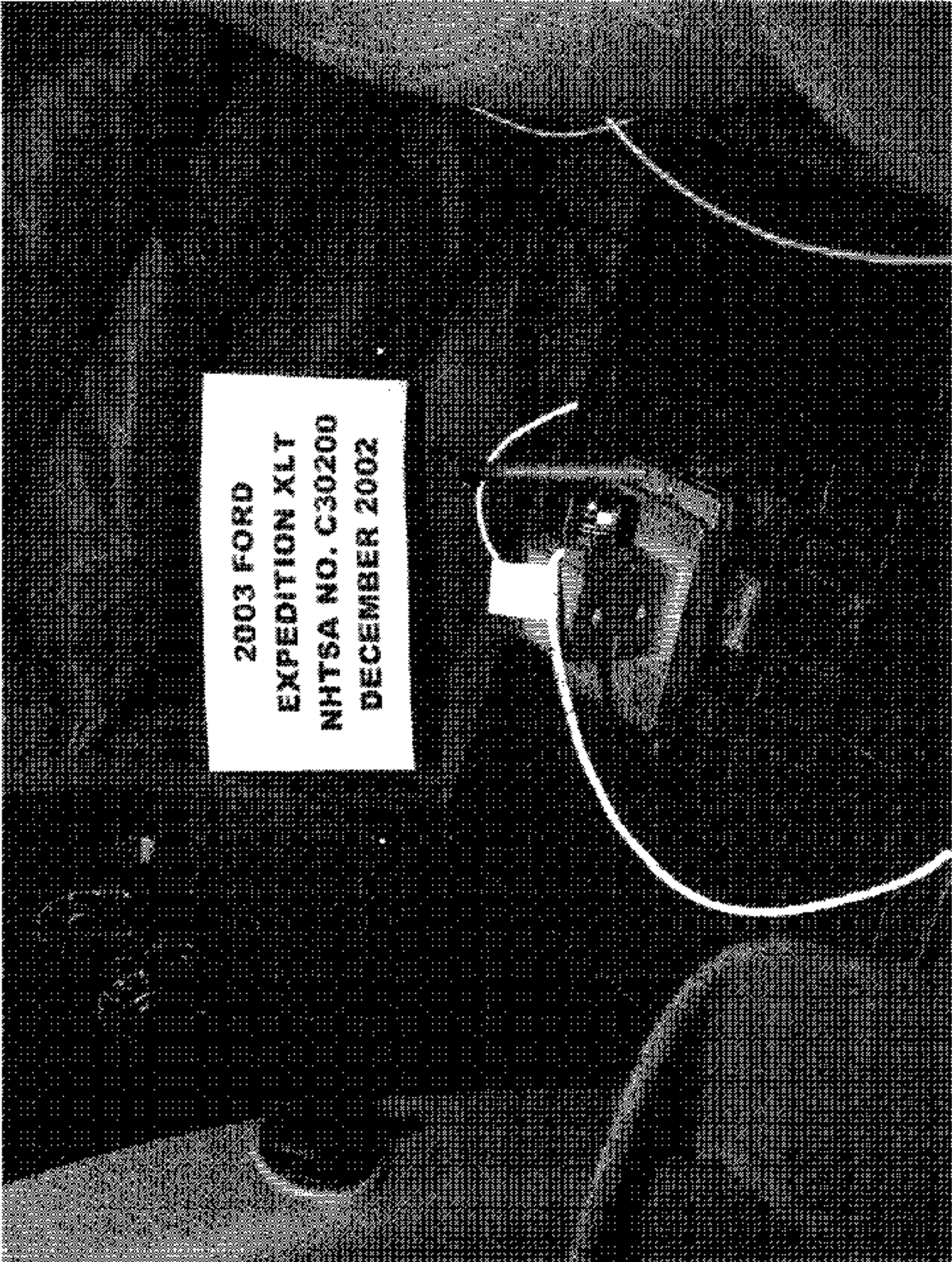
41 Instrumentation Installed
in Vehicle



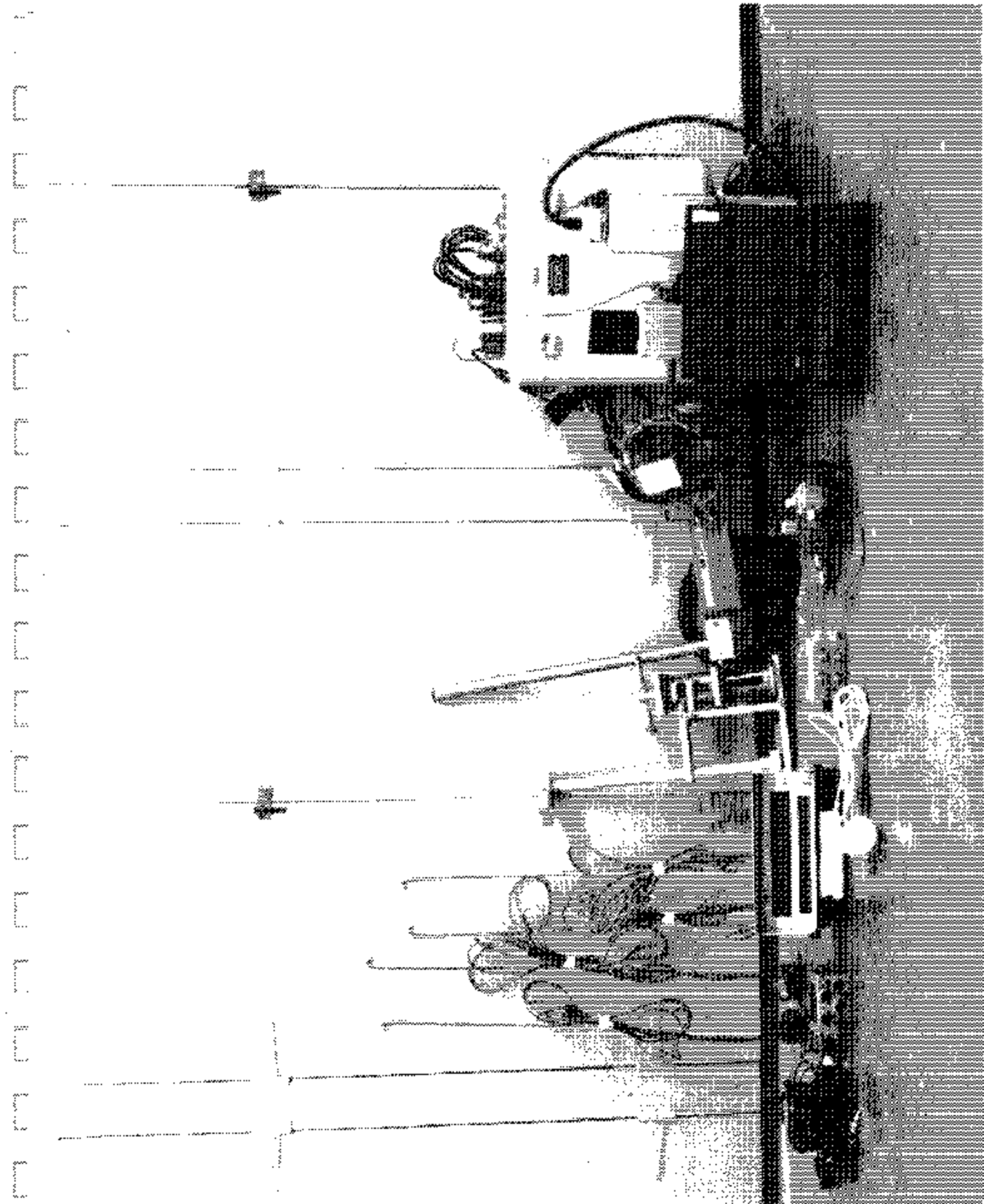
42 Instrumentation Installed
in Vehicle



**2003 FORD
EXPEDITION XLT
NHTSA NO. C30200
DECEMBER 2002**

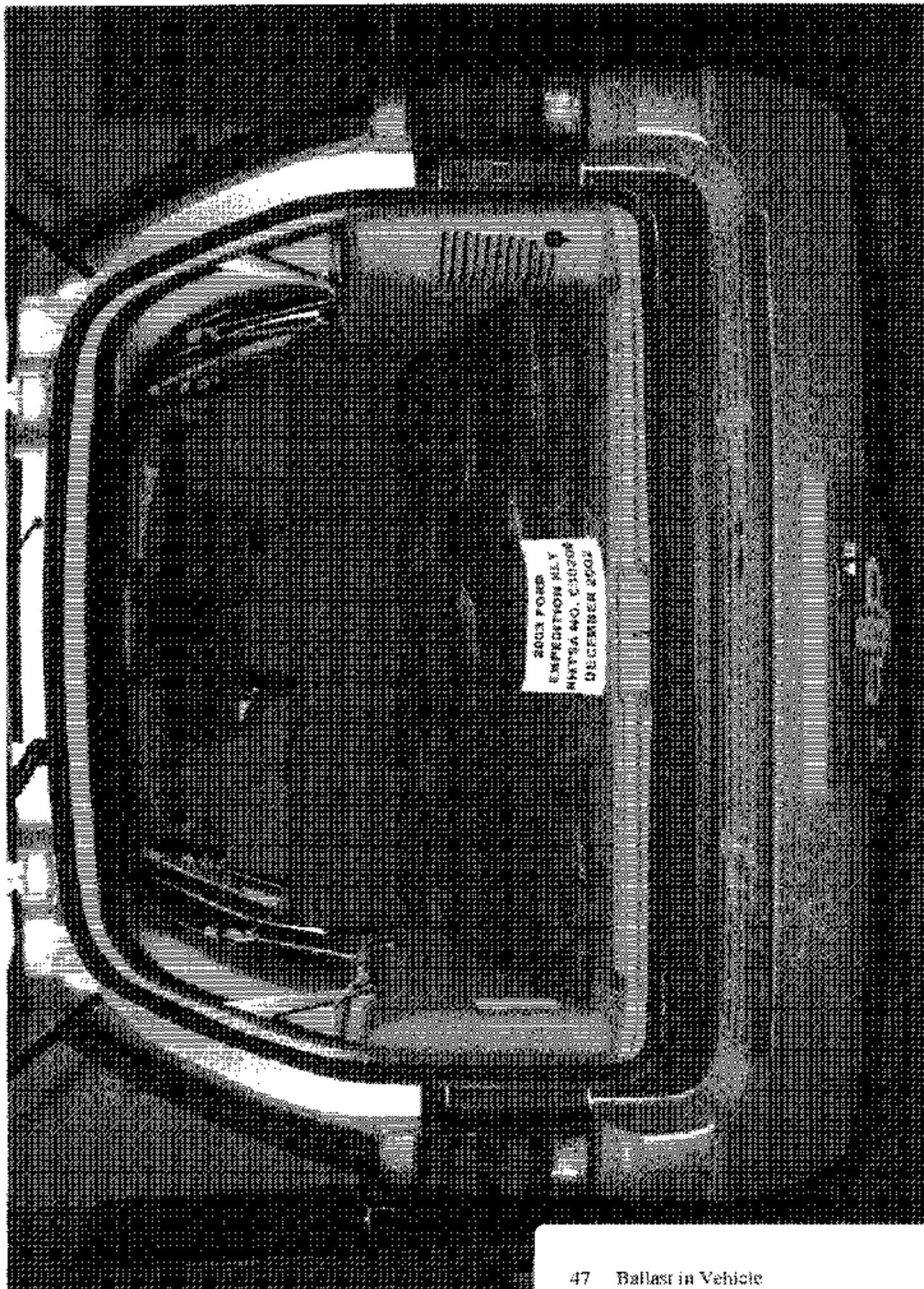


**2003 FORD
EXPEDITION XLT
NHTSA NO. C30200
DECEMBER 2002**





2003 FORD
EXPEDITION XLT
WHITE NO. C20200
DECEMBER 2002





2003 FORD
EXPEDITION XLT
NHTSA NO. C30200
DECEMBER 2002



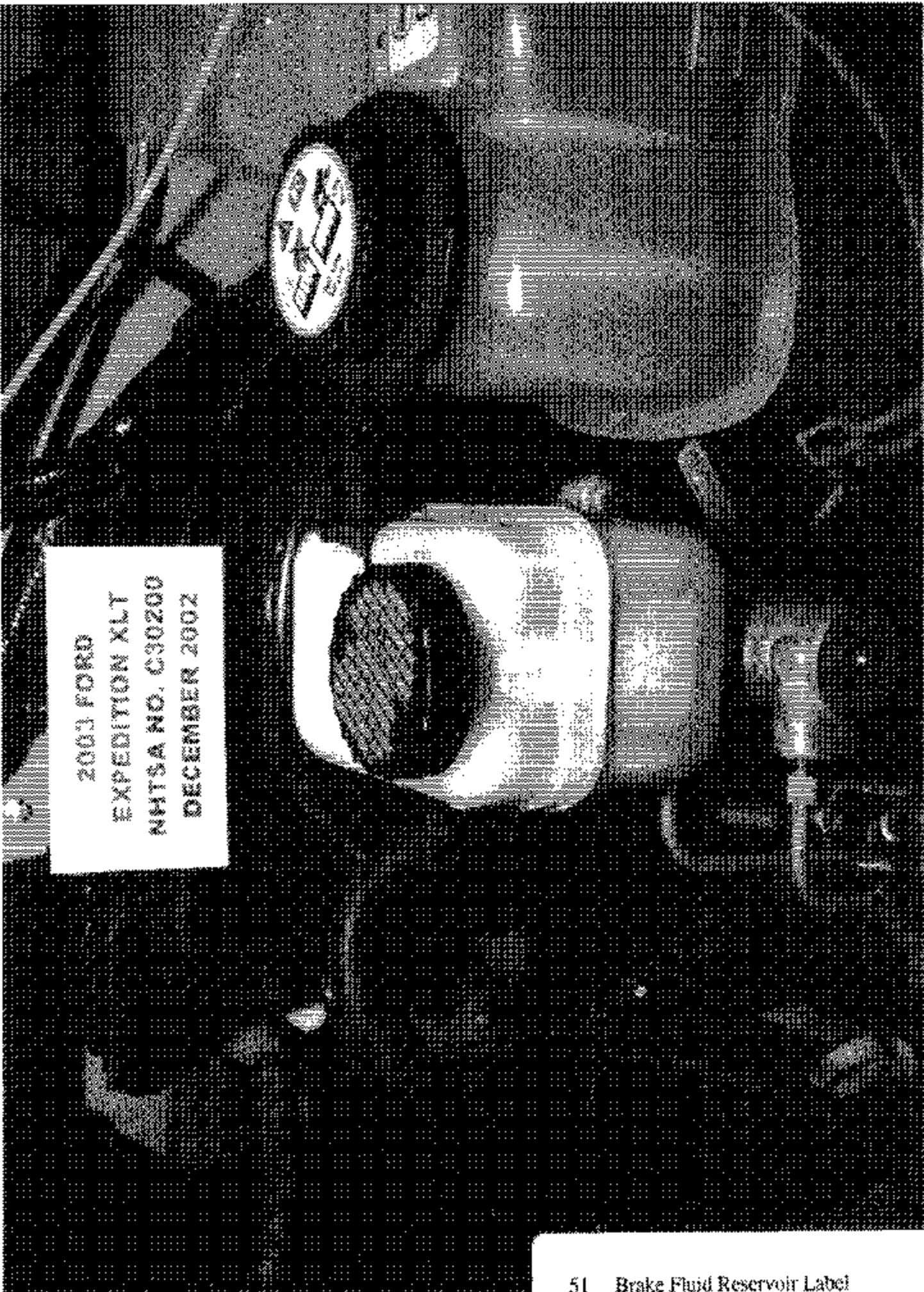
**2003 FORD
EXPEDITION XLT
NHTSA NO. C30200
DECEMBER 2002**

2003 FORD

EXPEDITION XLT

NHTSA NO. C30200

DECEMBER 2002



2003 FORD
EXPEDITION XLT
NHTSA NO. C30200
DECEMBER 2002

7.0 INSTRUMENT CALIBRATION (12 MONTH MAXIMUM INTERVAL)
VEHICLE: 2003 Ford Expedition XLT; NHTSA NO.: C30200; DATE: 12/20/02

INSTRUMENT	SERIAL NUMBER	CALIBRATION DATE	NEXT CALIBRATION
Data Acquisition System - Link DAS 2030	955009	04/09/02	04/09/03
Computer - Toshiba Satellite/Link Engrg.	TRC-43366	Not Applicable	Not Applicable
Software - Link Engrg. Rev Data	TRC Propr.	NA	NA
LF Torque Wheel	Not Utilized		
RF Torque Wheel	Not Utilized		
LR Torque Wheel	Not Utilized		
RR Torque Wheel	Not Utilized		
Stopwatch - Radio Shack	SW ST04	04/10/02	04/10/03
Tire Pressure Gauge - Ashcroft	AG-05	11/05/02	11/05/03
Frequency Counter - Hewlett Packard	M-1128A00670	09/19/02	09/19/03
Voltage Multimeter - Dana 4300	M-108639	11/16/02	11/16/03
Pedal Force Transducer - GSE	LC-981374	Each Test	Each Test
Asst. Pipe-Handle Steel Weights - Ohaus	LB-0002	02/06/02	02/13/03
Park Brake Force Transducer - Interface	41721	Each Test	Each Test
LF Hydraulic Pressure Transducer	Not Utilized		
RF Hydraulic Pressure Transducer	Not Utilized		
LR Hydraulic Pressure Transducer	Not Utilized		
RR Hydraulic Pressure Transducer	Not Utilized		
Accelerometer - Setra (+ or - 15 g)	A-118555	Each Test	Each Test
Fifth Wheel - ADAT DSR-06 Radar	140.0027	Each Test	Each Test
Wind Velocity/Direct. - Davis Model 6410	021023ND9	10/24/02	10/24/03
Ambient Temp. Cage - Davis Model 6320	021024N11	10/29/02	10/29/03
LF Brake Thermocouple - Temprel/Link	T52-0B-24K	Ea. Test w/Link	Ea. Test w/Link
RF Brake Thermocouple - Temprel/Link	T52-0B-24K	Ea. Test w/Link	Ea. Test w/Link
LR Brake Thermocouple - Temprel/Link	T52-0B-24K	Ea. Test w/Link	Ea. Test w/Link
RR Brake Thermocouple - Temprel/Link	T52-0B-24K	Ea. Test w/Link	Ea. Test w/Link
Lock-up Detection System	TRC Propr.	Each Test	Each Test
Vehicle Weight - Toledo/Mettler	7561RD4011 SN 116641-KD	02/11/03	05/11/03

QUALITY ASSURANCE

DAILY CALIBRATIONS (1 of 3)

Vehicle: 2003 Ford Expedition XLT

NHTSA No.: C30200

Deceleration Calibration Data for Unit 3351

Desired full scale value is: 9.81 m/s/s

Allowed deviation is: + or - 0.16 m/s/s

Accelerometer Level to zero, then tilt to full scale

'Date'	'Time'	Zero	Cal
"stp"	"stp"	"Decel"	"Decel"
12/23/2002	14:53:08	-0.05	9.79
12/27/2002	11:02:26	0.01	9.81
12/27/2002	14:18:48	0.00	9.81
12/30/2002	13:46:42	0.01	9.80
1/2/2003	10:33:52	0.00	9.81
1/9/2003	8:31:41	0.03	9.79
1/9/2003	16:04:12	0.03	9.79
1/10/2003	8:34:12	0.00	9.79
1/10/2003	15:28:17	-0.01	9.80
1/13/2003	10:05:20	0.00	9.80
1/13/2003	15:21:50	-0.01	9.80
1/16/2003	8:47:38	0.01	9.78
1/16/2003	13:29:01	-0.02	9.82
1/20/2003	8:42:16	0.01	9.81
1/20/2003	15:37:14	0.01	9.82
1/22/2003	9:11:03	0.01	9.80
1/22/2003	10:15:46	0.01	9.80
3/12/2003	10:47:30	0.01	9.81
3/18/2003	13:00:46	0.02	9.80

PRETEST CAL

POST TEST CAL

Pre-Test Linearity Check 12/23/02

Actual (m/s/s)	Rec. (m/s/s)
0.0	0.0
3.0	3.0
6.1	6.1
9.8	9.8

Post-Test Linearity Check 03/17/03

Actual (m/s/s)	Rec. (m/s/s)
0.0	0.0
3.0	3.0
6.1	6.1
9.8	9.8

Allowed deviation is: 3 m

Light beam Drive from 0 to 100 to 0 km/h
distance sensor on a measured kilometer

'Date'	'Time'	Distance for
"stp"	"stp"	1000 meters
12/23/2002	15:35:54	1000.1
12/27/2002	11:21:36	999.1
12/27/2002	14:36:01	999.6
12/30/2002	13:59:29	995.4
1/2/2003	10:38:17	1001.2
1/9/2003	8:45:55	1000.7
1/9/2003	16:07:31	1000.6
1/10/2003	8:40:41	1000.7
1/10/2003	15:34:54	1001.1
1/13/2003	10:12:53	1001.1
1/13/2003	15:27:14	1000.3
1/16/2003	8:52:24	1000.7
1/16/2003	13:36:54	1000.9
1/20/2003	8:47:27	999.8
1/20/2003	15:42:10	1000.9
1/22/2003	9:15:49	1000.4
1/22/2003	10:19:49	1001.2
3/12/2003	10:52:12	1001.4
3/17/2003	8:54:31	1000.9

PRETEST CAL

POST TEST CAL

DAILY CALIBRATIONS CONTINUED (2 of 3)

VEHICLE: 2003 Ford Expedition XLT

NHTSA No.: C30200

Wheel Tachometer Calibrations for Unit 3551

Wheel tachometer calibrations: all wheel speeds should be 10 m/h

	"Date"	"Time"	Zero		@15km/h		Zero		@15km/h		Zero	@15km/h
			LF	RF	LF	RF	LF	RF	LF	RF		
Wheel lock detector	12/23/2002	17:11:55	0.2	15.9	0.0	16.2	-0.1	16.0	-0.2	15.5		
	1/9/2003	8:33:37	0.0	1.2	0.0	2.7	0.0	2.7	0.0	0.8		
	1/9/2003	15:05:23	-0.2	16.8	-0.2	20.0	-0.2	16.3	-0.1	16.5		
	1/10/2003	8:37:14	-0.2	16.8	-0.3	16.8	-0.3	17.2	-0.2	17.2		
	1/10/2003	15:33:14	-0.2	15.5	-0.3	22.5	-0.3	15.7	-0.2	16.1		
	1/13/2003	10:09:58	-0.1	16.3	-0.3	22.2	-0.2	16.6	-0.2	17.1		
	1/13/2003	15:23:47	-0.1	16.8	-0.4	20.6	-0.3	16.8	-0.3	17.3		
	1/16/2003	8:49:29	-0.2	16.9	-0.2	19.5	-0.2	16.9	-0.1	17.3		
	1/16/2003	13:30:31	-0.1	16.0	-0.1	19.2	-0.1	18.3	-0.2	16.6		
	1/20/2003	8:44:20	-0.3	14.8	-0.2	19.3	-0.3	16.6	-0.3	16.5		
	1/20/2003	15:38:54	-0.2	16.2	-0.3	19.3	-0.1	17.8	-0.1	16.5		
	1/22/2003	9:12:41	-0.1	15.5	-0.2	15.7	-0.1	15.9	-0.1	16.0		
	1/22/2003	10:17:02	-0.2	15.5	-0.3	16.8	-0.1	16.3	-0.1	16.1		
	3/12/2003	10:49:35	-0.2	16.2	-0.3	20.3	-0.3	16.0	-0.1	16.4		
	3/17/2003	8:50:49	-0.1	24.3	-0.3	33.9	-0.2	26.9	-0.1	18.1	POST TEST CAL	

When driven over 15 km/hr and the wheel tach generators are shunted to zero volts, do all four wheel lock indicators align?: ☒ Yes, ☐ No.

Pedal Force Meter Calibration for Unit 3551

Target: shunt calibration is 1664 N

Desired recorded value is: 1664 N

Allowed deviation is: 1.5 lb

	"Date"	"Time"	Zero		Cal Val
			Force	Force lb	
Service brk. pedal effort	12/23/2002	13:54:23	-22.8	1623.6	PRETEST CAL
	12/30/2002	13:44:32	-4.3	1624.0	
	1/2/2003	10:30:10	-7.2	1627.0	
	1/2/2003	10:55:24	-9.3	1627.1	
	1/9/2003	8:29:43	-3.5	1624.0	
	1/9/2003	11:28:37	-3.4	1666.6	NEW PF TRANSDUCER
	1/9/2003	16:02:13	-4.7	1666.7	
	1/10/2003	8:31:05	-3.8	1667.1	
	1/10/2003	15:26:03	-3.9	1667.7	
	1/13/2003	10:01:36	-3.8	1665.9	
	1/13/2003	15:19:48	-4.0	1666.3	
	1/16/2003	8:45:00	-3.7	1666.3	
	1/16/2003	13:26:21	-4.1	1666.2	
	1/20/2003	8:40:14	-4.2	1667.5	
	1/20/2003	15:35:03	-4.3	1666.9	
	1/22/2003	9:09:08	-2.0	1667.1	
	1/22/2003	10:13:54	-2.1	1667.0	
	3/12/2003	10:45:21	-1.6	1667.2	
	3/16/2003	13:43:37	-2.5	1667.8	POST TEST CAL

Pre-Test Linearity Check - 12/27/02

Actual	Recorded
Force (N)	Force (N)
0	0
222	223
445	444
498	498

Post-Test Linearity Check - 03/7/03

Actual	Recorded
Force (N)	Force (N)
0	1
222	221
445	442
498	496

Note: New service brake pedal force sensor installed on 01/19/03. Calibration value changed.

DAILY CALIBRATIONS CONTINUED (3 of 3)

VEHICLE: 2003 Ford Expedition XLT

NHTSA No. C30200

Dynamic Speed Calibration for Unit 3351

Desired speed value is: 100 km/h

Allowed deviation is: 1.6 km/h

Desired time value is: 36 seconds

Allowed deviation is: + or - 0.6 seconds

Light beam
speed sensor

Drive vehicle
at a steady
100 km/h
through a
kilometer.

"Date"	"Time"	"Speed"	"Time"
stp	stp	km/h	sec
12/27/2002	11:25:45	99.9	36.21
12/27/2002	14:38:57	99.5	36.46
12/30/2002	13:57:45	100.2	35.85
1/2/2003	10:41:32	100.2	36.04
1/9/2003	8:49:44	100.5	35.98
1/9/2003	16:10:21	100.2	36.24
1/10/2003	8:44:13	99.4	36.32
1/10/2003	15:37:40	100.5	36.02
1/13/2003	10:16:19	100.8	36.20
1/13/2003	15:30:47	100.1	36.34
1/16/2003	8:55:52	100.7	36.09
1/16/2003	13:40:09	100.5	36.13
1/20/2003	8:50:52	100.7	35.89
1/20/2003	15:45:11	100.1	36.07
1/22/2003	9:19:10	100.5	36.15
1/22/2003	10:23:12	99.9	36.33
3/12/2003	10:56:02	99.5	36.45
3/17/2003	8:58:38	100.6	36.16

POST TEST CAL

APPENDIX A

Copy of Manufacturer's Sticker



no boundaries

www.fordvehicles.com

VEHICLE DESCRIPTION

EXPEDITION

2003 XLT 4X2
XLT 8-PASSENGER
4.6L FIVE ENGINE
4-SPD AUTO TRANSMISSION

1FMRU15W73LA80166

A80100

EXTERIOR
SILVER BIRCH CLEARCOAT MET
INTERIOR
MED PARCHMENT CAPT CHAIR,CL

STANDARD EQUIPMENT INCLUDED AT NO EXTRA CHARGE

- EXTERIOR
 - 17" x 7" P17 OVERLAYS TIRE
 - 17" x 7" P17 ALLOYS W/ HILLS
 - 17" x 7" P17 ALLOYS W/ HILLS
 - RUNNING BOARD
 - LIGHTS W/ FIP CLASS
 - AUTO WASH WIPERS
 - LOWER BODY SIDE CLADDING
 - REAR WIPER W/ WASH & DEFROST
 - KEYLESS ENTRY: KEYPAD
 - POWER WINDOWS
 - POWER LOCKS
 - CLASSIC TRAILER TOW
 - FULL UNDERBODY SHIELDING
 - REAR WIPER W/ WASH & DEFROST
 - REAR WIPER W/ WASH & DEFROST
 - REAR WIPER W/ WASH & DEFROST
- INTERIOR
 - REAR WIPER W/ WASH & DEFROST
 - REAR WIPER W/ WASH & DEFROST
 - REAR WIPER W/ WASH & DEFROST
 - REAR WIPER W/ WASH & DEFROST
 - REAR WIPER W/ WASH & DEFROST
 - REAR WIPER W/ WASH & DEFROST
 - REAR WIPER W/ WASH & DEFROST
 - REAR WIPER W/ WASH & DEFROST
 - REAR WIPER W/ WASH & DEFROST
 - REAR WIPER W/ WASH & DEFROST

Compare this vehicle to others in the FREE FUEL ECONOMY GUIDE available at the dealer.

CITY MPG

14

Actual Mileage will vary with options, driving conditions, driving habits and vehicle condition. Results reported in EPA indicate the mileage of vehicles with these estimates will achieve between 11 and 17 mpg in the city and between 16 and 23 mpg on the highway.

HIGHWAY MPG

19

For more information see www.fueleconomy.gov
2003 EXPEDITION 4X2, 4.6 LITER ENGINE (FEEDBACK FUEL SYSTEM), 8 CYLINDERS FUEL INJECTION, 4-SPEED AUTOMATIC TRANS, CATALYST.
Estimated Annual Fuel Cost: \$1406

A RANGE OF FUEL ECONOMY VALUES FOR OTHER VEHICLES CLASSIFIED AS SPECIAL PURPOSE IS NOT AVAILABLE AT THIS TIME.

PRICE INFORMATION

STANDARD VEHICLE PRICE **\$32,805.00**

KEY STANDARD EQUIPMENT

UPPER CODE 110A
3.75 RATIO LIMITED SLIP AXLE
RUNNING BOARDS
AUX HEATER/ALR CONDITION(RR)
PRGM STEREO CD/CASS W/CLOCK
EDG LAMPS
THIRD ROW SEAT

OPTIONAL EQUIPMENT

PRGM STEREO IN DASH
CLOTH CAPTAIN'S CHAIRS/CONSOLE
FRONT LICENSE PLATE BRACKET

6-CD/CLOCK
355-00
355-00
ND CHARGE

TOTAL VEHICLE & OPTIONS
DESTINATION & DELIVERY

33,590.00
33,740.00

TROPHY CASE

Full-Size SUV Safety Leader

27 Best-in-Class and Class-Exclusive Features

Best Full-Size Sport Utility Vehicle in Initial Quality Two Years in a Row - J.D. Power

TOTAL MSRP

\$34,330.00



1FMRU15W73LA80166

SHIP THROUGH ITEM#: 47-7702 O/T 2

EXTENDED SERVICE PLAN

1st Extended Service Plan is the ONLY service contract backed by Ford Motor Company and honored by over 5,100 Ford and Lincoln Mercury Dealers. Ask your dealer for price and additional details or see us online at www.fordesp.com.

SNIP TO #COTER INVOICED TO

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471039

MICHIGAN TRUCK

CONVOY/CAIF

2J091 N R8 2X 330 004759 09 09 02

APPENDIX B

Discussion on Data

DISCUSSION ON DATA

Symbols for Brake Components

4	-	4 Wheel	G	-	Groan	DL	-	Deceleration (State FPSPS)
X	-	Skid	SQ	-	Squeal	PF	-	Pedal on Floor
L	-	Left	SQK	-	Squeak	SCP	-	Shoe Scrape
R	-	Right	PO	-	Pinchout	RB	-	Rubber Banding
R	-	Rear	P	-	Pull	O	-	Odor
F	-	Front	R	-	Shudder	NOX	-	No Skid
B	-	Both	M	-	Momentary			

INT or INTT	-	Initial Part of Stop
MID	-	Middle of Stop
END	-	End of Stop

All stops were made manually.

APPENDIX C

Contractor's Comments Procedure Modifications and Test Facility

Comments for vehicle C30200.

For all recorded decelerations:

The recorded *average* deceleration values for the tests are slightly lower than that which is required or targeted for certain test sections. However, in all cases and in reality, the driver maintained the correct required/target deceleration values for the majority of time for each of those stops. The recorded deceleration is acquired from the moment the service brake pedal is moved until the vehicle reaches zero speed. Therefore, the time needed to achieve the target deceleration (rise time) and the time the vehicle goes from the target deceleration to zero (fall time) is included in the average deceleration calculation. The rise and fall times were added to the entire length of the stops. Hence the recorded average deceleration values were generally and slightly less than the required/target deceleration values.

The vehicle is equipped with an Electronic Variable Proportioning system. This system is integral with the ABS system and it cannot be failed separately. Failing the ABS also fails the Variable Proportioning.

For Data Sheet 27 - Hot Performance at GVWR, stop number one, the driver monetarily exceeded the maximum allowable pedal force of 500 N by 16 N. The average pedal force, however, was not exceeded and the stopping distance was less than the maximum allowable by a significant margin. It is believed that, had the driver not exceeded the maximum allowable pedal effort, the vehicle would have complied with this portion of the Standard.

For Data Sheet 22 – Antilock Functional Failure at GVWR, during stop number one, the driver experienced a characteristic of the brake system that he had not before felt. Typically, during the performance of the test stops for Data Sheet 27, the driver would rapidly and fully apply the service brake control until he sensed that it was at incipient wheel slide, and he would attempt to remain at or near this condition to the end of the stop. If the driver, sensed he had applied too great and/or too rapid a force and that wheel lock was ^{imminent} ~~eminent~~, then he would modulate service brake pedal force to avoid wheel lock, but also to keep the tires at or near incipient wheel slide. For stop number one, the driver applied a firm and quick application of the service brake to which the vehicle responded with a high deceleration. The driver sensed wheel lock about to occur and, therefore, significantly reduced application force to the service brake, at one point, essentially zero application force. The vehicle, however, continued at high deceleration for approximately 2.5 seconds while the service brake application force was below 50 N (20 N average). Wheel lock did not occur, but wheel lock was very close toward the end of the stop. The

driver did experience this phenomenon one additional time during what would have been stop number five. However, the driver aborted the stop (stopped data acquisition) due to possible wheel lock. The NHTSA COTR was notified. After discussions with the manufacturer, the COTR related that the experienced phenomenon was likely a result of a "Brake Assist" feature built into the test vehicle's brake system. The owner's manual states the following regarding this system:

"The Brake Assist system provides full braking force during panic braking situations. It detects a rapid application of the brake pedal and maximizes the amount of brake booster assist, helping the driver to achieve maximum braking pressure. Once a panic brake application is detected, the system will remain activated as long as the brake pedal is depressed. The system is deactivated by releasing the brake pedal.

When the system activates, the brake pedal will travel with very little effort; this is normal."

At the end of the test, an attempt was made to duplicate the experienced phenomenon (engage the Brake Assist feature) by performing twelve additional ABS Functional Failure stops. The driver was unable to fully duplicate the phenomenon except for one stop (#3) where the Brake Assist may have been partially activated. Data Sheet 22A – Additional ABS Failure Stops, ~~follows and represents~~ those additional tests.

7.5-MILE TEST TRACK

The 7.5-mile test track encloses a 1,600-acre area, one mile wide and 3.5 miles long.

The track has a downward grade, north to south, of 0.228 percent and a cross slope in the straightaways of 3/16 inch per foot. The 1.88 mile long straightaways flow into transition areas 2,300 feet in length and then into 5,275-foot long curves with a constant radius of 2,400 feet. The 36-foot wide straightaways and the 42-foot wide curves provide three test lanes. Paved berms, 12 feet in width, border the straightaways and the inside of the curves.

As a vehicle moves toward the outside of the track in the curves, it encounters a progressively steeper bank. The inside lane (or "slow" lane) has a bank of 10 degrees allowing a neutral speed of 80 mph with no side forces. In the center lane, the slope increases to 19 degrees resulting in a neutral speed of 110 mph. The outside lane's 28-degree bank allows a 140 mph neutral speed. Rimming the outer lane is a seven-foot safety lane culminating in a 36-degree slope at the guardrail.

The facility is paved with Portland cement concrete. It carries a maximum single axle load of 36,000 pounds and a maximum tandem axle load weight of 48,000 pounds. Special provisions can be made for heavier weight loads.

With 22.5 lane miles, our track will accommodate many vehicles simultaneously. Research which utilizes the track includes component performance and durability studies, brake tests, aerodynamic studies, fuel economy studies, drive line efficiency tests, and the determination of vehicular acceleration and cruise characteristics. In addition, it supports maximum speed determination, road load power, noise and emission measurements and tire durability test programs.

The 7.5-mile test track can be used in conjunction with other facilities at TRC. It provides an excellent area for pre-test conditioning of equipment such as brake burnishing, tire break-in, and vehicle warm-up.

TRC SKID PAD

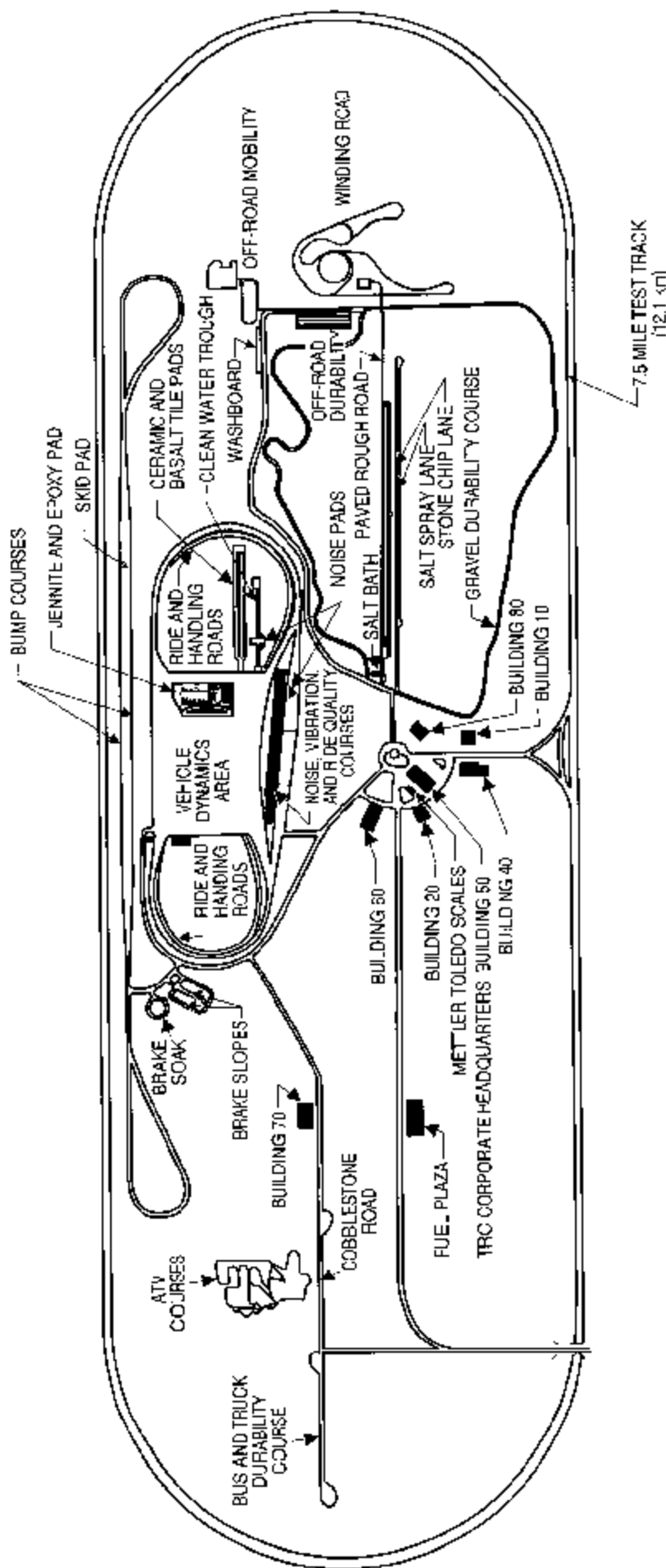
The Skid Pad is a test facility which is utilized primarily for the evaluation of tire and brake systems.

The overall dimensions of the pad are 9,000 feet by 84 feet with loops on the north and south ends. Both turnaround loops have a 309-foot radius and are 16 feet wide with a 25 percent super elevation. They will accommodate speeds of 45 mph with zero side force and 60 mph with .5 g's lateral acceleration. The acceleration/deceleration lanes at each end are 3,280 feet in length.

A test area of 210,000 square feet is situated in the center of the skid pad containing several test pads with varying surface textures. Skid numbers in this area range from 30 (wet) to 80 (dry).

The skid pad is paved with Portland cement. The load capacity of the skid pad is 36,000 pounds maximum single axle weight and 48,000 pounds maximum tandem axle weight.

Varying surface textures in the main test area are ideal for testing tire and/or brake system performance on different surfaces as characterized by "skid numbers." The skid pad is also used for acceleration studies, aerodynamics, rolling resistance, noise testing, and vehicle top speed determination.



NOT TO SCALE

TEST FACILITY DETAIL



TRANSPORTATION RESEARCH CENTER INC.

EAST LIBERTY, OHIO 43017-2387

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Diagram illustrating the layout of the test track, showing dimensions and lane specifications.

Track Dimensions and Layout:

- Overall Length:** 9000 ft (2743 m)
- Segment 1 (Left):** 6300 ft (1920 m)
- Segment 2 (Middle):** 3600 ft (1097 m)
- Segment 3 (Right):** 2700 ft (823 m)
- Entrance/Exit:** 3300 ft (1006 m)
- Radius:** 309 ft r (94 m)
- Lane Widths:**
 - Each lane is 14 ft (4.3 m) wide.
 - 16 ft (5 m) wide lane (at ends)
- Speed Limits:**
 - 14% or 25% super-elevation
 - Neutral speed 34 mph (55 kph)
- Other Features:**
 - SPRINKLER SYSTEM (84 ft (26 m) wide)
 - TEST PAD SURFACES (1 - PCC POLISHED WET)
 - DURABILITY BUMP COURSE

1 - PCC POLISHED WET
2 - PCC SMOOTH TROWELLED WET
3 - PCC PCC COURSE BROOMED DRY

LANE 7 GVW = 8000 lbs (3629 kgs)
GVW = 80,000 LBS (36,298 kgs)

NOTE: BUMP COURSES PARALLEL THE PERIMETERS OF LANES 1 AND 7.

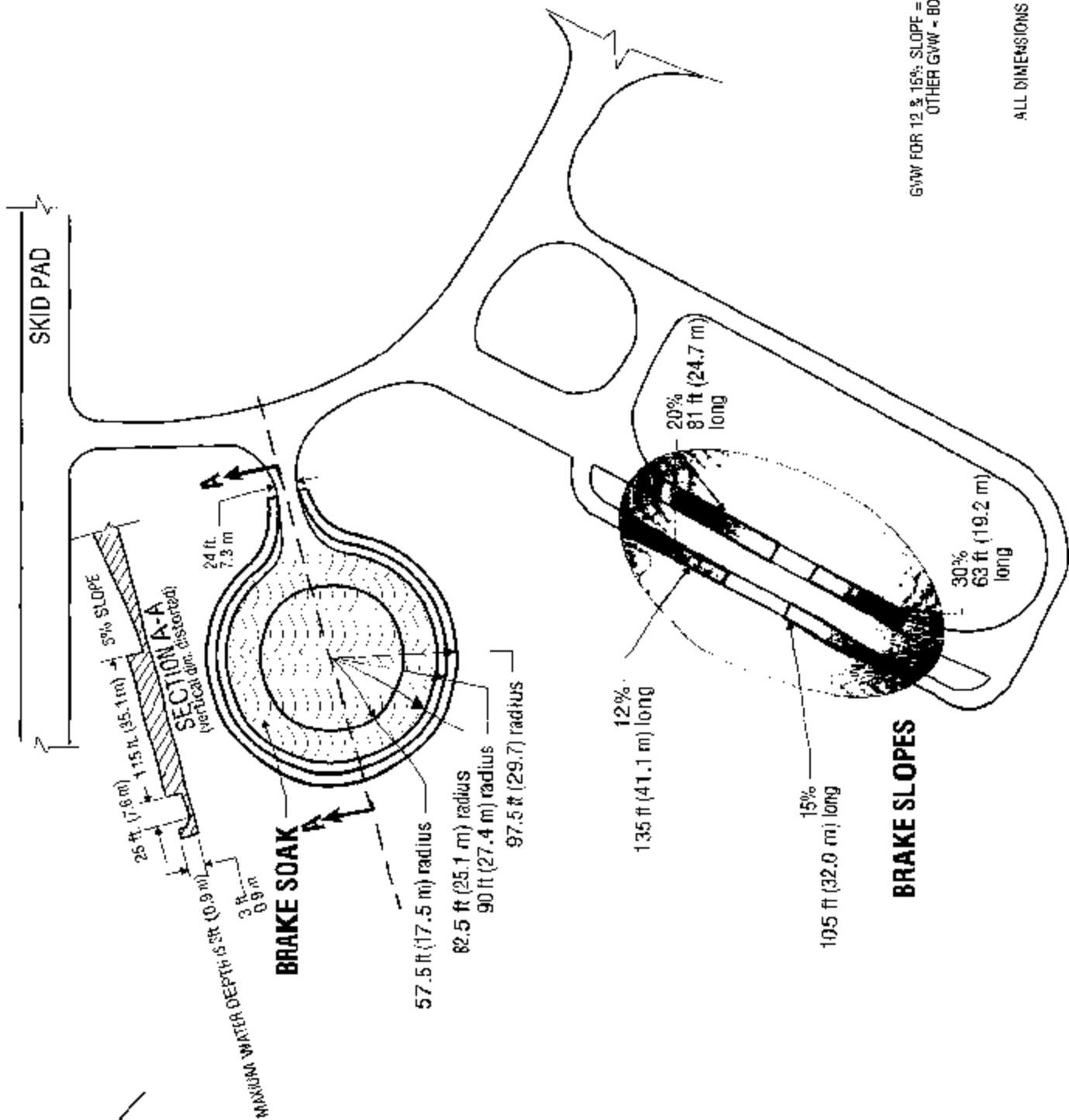
Not to scale
All dimensions are approximate

SKID PAD

FILE

TRANSPORTATION RESEARCH CENTER INC.
EAST LIBERTY, OHIO 43319-0367

CO2L'6.2



GVW FOR 12 & 15% SLOPE = 4000 lbs. (1814 kgs)
OTHER GVW = 80,000 lbs (36,296 kg)

NOT TO SCALE
ALL DIMENSIONS ARE APPROXIMATE

ELEVATIONS

Point A.....	1105.857 ft.....	337.873 m
Point B.....	1057.000 ft.....	323.000 m
Point C.....	1086.429 ft.....	331.937 m
Point D.....	1086.429 ft.....	331.937 m

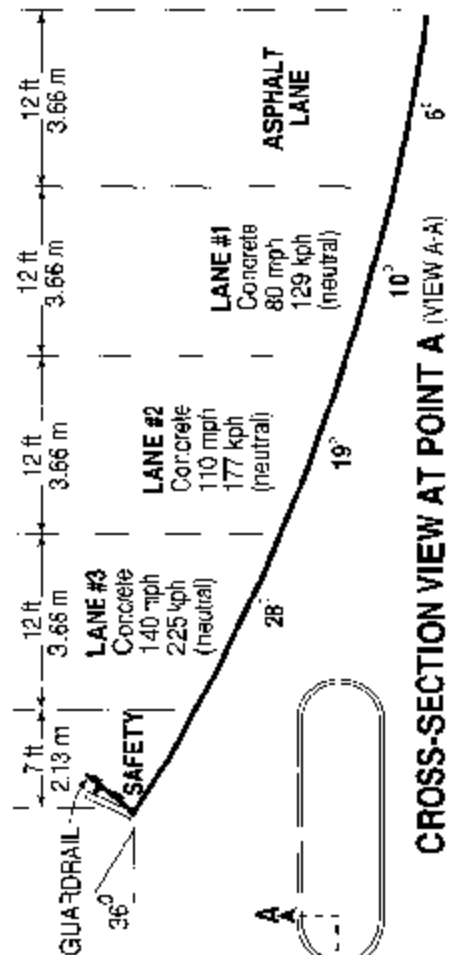
GVW = 80,000 lbs (36,258 kgs)

DISTANCES

Lane 3.....	7.539 mi.....	12.133 km
Lane 2.....	7.521 mi.....	12.104 km
Lane 1.....	7.507 mi.....	12.081 km

Point A to Point B.....	3.333 mi.....	5.364 km
Point C to Point D.....	.947 mi.....	1.524 km

NOT TO SCALE



7.5-MILE TEST TRACK

APPENDIX D
Notice of Possible Non-Compliance

This vehicle (C30200) met the requirements.