SAFETY COMPLIANCE TESTING FOR
FMVSS NO. 301L
FUEL SYSTEM INTEGRITY

FORD MOTOR CO. IN U.S.A.
2003 FORD ESCAPE MPV
NHTSA NO. C30206

GENERAL TESTING LABORATORIES, INC.
1623 LEEDSTOWN ROAD
COLONIAL BEACH, VIRGINIA 22443

JUNE 04, 2003
FINAL REPORT
PREPARED FOR
U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
ENFORCEMENT
OFFICE OF VEHICLE SAFETY COMPLIANCE
400 SEVENTH STREET, SW
ROOM 6111 (NVS-220)
WASHINGTON, D.C. 20590
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Prepared By: [Signature]

Approved By: [Signature]

Approval Date: 01/04/03

FINAL REPORT ACCEPTANCE BY OVSC:

Accepted By: [Signature]

Acceptance Date: 01/25/03
<table>
<thead>
<tr>
<th><strong>1. Report No.</strong></th>
<th>301L-GTL-03-003</th>
<th><strong>2. Government Accession No.</strong></th>
<th>N/A</th>
<th><strong>3. Recipient’s Catalog No.</strong></th>
<th>N/A</th>
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<tbody>
<tr>
<td><strong>7. Author(s)</strong></td>
<td>Grant Farrand, Project Engineer Debbie Messick, Project Manager</td>
<td><strong>8. Performing Organ. Rep#</strong></td>
<td>GTL-DOT-03-301L-003</td>
<td><strong>9. Performing Organization Name and Address</strong></td>
<td>General Testing Laboratories, Inc. 1623 Leedstown Road Colonial Beach, Va 22443</td>
</tr>
<tr>
<td><strong>10. Work Unit No. (TRAIS)</strong></td>
<td>N/A</td>
<td><strong>11. Contract or Grant No.</strong></td>
<td>DTNH22-01-C-11025</td>
<td><strong>12. Sponsoring Agency Name and Address</strong></td>
<td>U.S. Department of Transportation National Highway Traffic Safety Admin. Safety Enforcement Office of Vehicle Safety Compliance (NVS-220) 400 7th Street, S.W., Room 6111 Washington, DC 20590</td>
</tr>
<tr>
<td><strong>16. Abstract</strong></td>
<td>Compliance tests were conducted on the subject, 2003 Ford Escape MPV in accordance with the specifications of the Office of Vehicle Safety Compliance Test Procedure No. TP-301-02 for the determination of FMVSS 301 compliance. Test failures identified were as follows: NONE</td>
<td><strong>17. Key Words</strong></td>
<td>Compliance Testing Safety Engineering FMVSS 301</td>
<td><strong>18. Distribution Statement</strong></td>
<td>Copies of this report are available from NHTSA NHTSA Technical Reference Div., Rm. 5108 (NPO-230) 400 7th St., S.W. Washington, DC 20590 Telephone No. (202) 366-4946</td>
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<td>Form DOT F 1700.7 (8-72)</td>
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SECTION 1
PURPOSE OF COMPLIANCE TEST

1.0 PURPOSE OF COMPLIANCE TEST

A 2003 Ford Escape MPV was subjected to Federal Motor Vehicle Safety Standard (FMVSS) No. 301 testing to determine if the vehicle was in compliance with the requirements of the standard. The purpose of this standard is to reduce deaths and injuries occurring from fires that result from fuel spillage during and after motor vehicle crashes, and resulting from ingestion of fuels during siphoning.

1.1 The test vehicle was a 2003 Ford Escape MPV. Nomenclature applicable to the test vehicle are:

A. Vehicle Identification Number: 1FMYU02163KB54830

B. NHTSA No.: C30206

C. Manufacturer: FORD MOTOR CO. IN U.S.A.

D. Manufacture Date: 11/02

1.2 TEST DATE

The test vehicle was subjected to FMVSS No. 301 testing on May 19, 2003.
SECTION 2

COMPLIANCE TEST RESULTS SUMMARY

2.0 TEST RESULTS

All tests were conducted in accordance with NHTSA, Office of Vehicle Safety Compliance (OVSC) Laboratory Procedure, TP-301-02 dated 8 November 1994 and General Testing Laboratories, Inc. (GTL) Test Procedure, TP-301-02, "Fuel System Integrity".

Based on the test performed, the 2003 Ford Escape MPV appears to meet the lateral impact requirements of FMVSS 301 testing.
SECTION 3

COMPLIANCE TEST DATA

3.0 TEST RESULTS

The following data sheets document the results of testing on the 2003 Ford Escape MPV.
SUMMARY OF RESULTS

Vehicle's NHTSA No.: C30206 Test Model: ESCAPE

Test Date: 05/19/03 Time: 15:00 Temperature 70 °F

Vehicle Model Year, Make, Model and Body Style:
2003 FORD ESCAPE MPV

Vehicle Test Weight: 3656 lbs. Impact Velocity: 19.6 mph

Type of Front Occupant Restraint System Installed in Test Vehicle:

Driver's DSP: TYPE 2 BELT WITH FRONTAL AIR BAG IN STEERING WHEEL

Right Passenger's DSP: TYPE 2 BELT WITH FRONTAL AIR BAG IN DASH

Stoddard solvent spillage from Vehicle's Fuel System: None

REMARKS:

RECORDED BY: DATE: 05/20/03
APPROVED BY:
DATA SHEET 1
TEST VEHICLE SPECIFICATIONS

TEST VEHICLE INFORMATION:

NHTSA No.: C30206
Year/Make/Model/Body Style: 2003 FORD ESCAPE MPV
Engine Data: 3.0 LITERS V6
Transmission Data: 4 SPEED AUTOMATIC
Final Drive Data: 2 WHEEL DRIVE
Major Options: NONE
Date Received: 04/09/03; Odometer Reading: 74,1 miles

DATA FROM VEHICLE'S CERTIFICATION LABEL:

Vehicle Manufactured By: FORD MOTOR CO. IN U.S.A.
Date of Manufacture: 11/02
VIN: 1FMYU02163KB54830
GVWR: 1888 kg (4380 lbs); GAWR Front: 1080 kg (2339 lbs); GAWR Rear: 1008 kg (2224 lbs.)

DATA FROM VEHICLE'S TIRE PLACARD:

Location of Placard on Vehicle: DRIVER'S "B" PILLAR
Tire Pressure With Maximum Capacity Vehicle Load —
  Front: 30 psi; Rear: 30 psi
Recommended Tire Size: P225/70R15
Recommended Load Range: 1752 lbs. (795 kg)
Recommended Cold Tire Pressure: Front = 207 kPa (30 psi) Rear = 207 kPa (30 psi)
Size of Tires on Test Vehicle: P225/70R15
Type of Spare Tire: SPACE SAVER

Vehicle Capacity Data —

Type of Front Seat(s): BUCKET
Number of Occupants: Front = 2; Mid = Rear = 3; Total = 5

A. VEHICLE CAPACITY WEIGHT (VCW) = 899 lbs.
B. Number of Occupants x 150 lbs. = 750 lbs.
RATED CARGO AND LUGGAGE WEIGHT (RCLW) = A - B = 149 lbs.

RECORDED BY: [Signature] DATE: 05/18/03
APPROVED BY: [Signature]
DATA SHEET 2  
PRE-TEST DATA

WEIGHT OF TEST VEHICLE:

A. As Received At Laboratory (Maximum Fluids) —

Right Front = \textbf{447.24} kg (986 lbs.) \hspace{1cm} Right Rear = \textbf{271.70} kg (599 lbs.)

Left Front = \textbf{439.07} kg (968 lbs.) \hspace{1cm} Left Rear = \textbf{290.75} kg (641 lbs.)

TOTAL FRONT = \textbf{886.31} kg (1954 lbs.) \hspace{1cm} TOTAL REAR = \textbf{562.45} kg (1240 lbs.)

\% of TOTAL = \textbf{51} \% \hspace{1cm} \% of TOTAL = \textbf{39} \%

TOTAL DELIVERED WEIGHT = \underline{1448.77} kg (3194 lbs.)

B. Calculation of Target Test Weight —

1. Total Delivered Weight = \underline{1448.77} kg (3194 lbs.)

2. Rated Cargo & Lugg. Weight (RCLW) = \underline{67.58} kg (149 lbs.)

3. Weight of 2 Dummies (164 lbs. each) = \underline{148.77} kg (328 lbs.)

\textbf{TARGET TEST WEIGHT} = 1 + 2 + 3 = \underline{1655.13} kg (3671 lbs.)

C. Vehicle, Dummies and \underline{79.37} kg (175 lbs.) of Cargo Weight —

Right Front = \textbf{473.55} kg (1044 lbs.) \hspace{1cm} Right Rear = \textbf{327.49} kg (722 lbs.)

Left Front = \textbf{470.82} kg (1038 lbs.) \hspace{1cm} Left Rear = \textbf{364.23} kg (803 lbs.)

TOTAL FRONT = \textbf{944.37} kg (2082 lbs.) \hspace{1cm} TOTAL REAR = \textbf{691.72} kg (1525 lbs.)

\% of TOTAL = \textbf{58} \% \hspace{1cm} \% of TOTAL = \textbf{42}\%

TOTAL TEST WEIGHT = \underline{1658.78} kg (3657 lbs.)

Weight of Ballast secured in cargo area = \underline{79.37} kg (175 lbs)

Type of Ballast: \textbf{SAND BAGS}

Method of Securing Ballast: \textbf{VEHICLE TIE DOWN HOOKS}

Vehicle Components Removed for Weight Reduction:

\underline{\textbf{NONE}}
DATA SHEET 2
PRE-TEST DATA CONTINUED

TEST VEHICLE ATTITUDE:

As Delivered —
Right Front: 815 mm (32.08 inches)
Left Front: 810 mm (31.88 inches)
Right Rear: 850 mm (33.46 inches)
Left Rear: 845 mm (33.26 inches)

As Tested —
Right Front: 804 mm (31.65 inches)
Left Front: 800 mm (31.49 inches)
Right Rear: 820 mm (32.28 inches)
Left Rear: 815 mm (32.08 inches)

Vehicle's Wheelbase = 2620 mm (103.1 inches)

FUEL SYSTEM DATA:

Fuel System Capacity Listed in Owner's Manual = 61 liters (16 gallons)
Usable Capacity Figure Furnished By COTR = 61 liters (16 gallons)

Test Volume Range (91 to 94% of Usable Capacity) — 92.5%

55.64 liters (14.7 gallons) TO 57.15 liters (15.1 gallons)

ACTUAL TEST VOLUME = 56.40 liters (14.9 gallons) (with entire fuel system filled)

Test Fluid Type: Stoddard solvent
Test Fluid Specific Gravity:.7583
Test Fluid Kinematic Viscosity: .17 centistokes at 77°F
Test Fluid Color: BLUE ("red" is preferred)
Type of Vehicle Fuel Pump: HIGH PRESSURE ELECTRIC
Electric Fuel Pump Operation with Ignition Switch ON and Engine OFF — NO, PUMP ONLY OPERATES WITH ENGINE RUNNING

Details of Fuel System: HIGH PRESSURE ELECTRIC PUMP SUPPLYING FUEL INJECTORS WITH LOW PRESSURE RETURN LINE TO FUEL TANK.

REMARKS:

RECORDED BY: ___________________________ DATE: _______________ 05/19/03 ______________
APPROVED BY: ___________________________
DATA SHEET 3
POST IMPACT DATA

TYPE OF TEST: 301L

TEST DATE: 05/19/03; TIME: 17:00; TEMP.: 70 °F

VEH. NHTSA NO.: C30206; VIN: 1FMYU02163KB54830

REQUIRED IMPACT VELOCITY RANGE: 18.9 to 19.9 mph

ACTUAL IMPACT VELOCITY: (speed traps located within 5 feet of impact plane)

Trap No. 1 = 19.65 mph
Trap No. 2 = 19.60 mph
Average Impact Speed = 19.6 mph

REMARKS:

RECORDED BY: [Signature] DATE: 05/20/02
APPROVED BY: [Signature]
DATA SHEET 4
SUMMARY OF FMVSS 301 DATA

TEST VEHICLE NHTSA NO.: _C30206_ ; TEST DATE: __05/19/03__

VEHICLE YEAR/MAKE/MODEL/BODY STYLE: 
2003 FORD ESCAPE MPV

TYPE OF IMPACT: __301L__

STODDARD SOLVENT SPILLAGE MEASUREMENT:

A. From impact until vehicle motion ceases —

   Actual = __0__ oz.  Maximum Allowable = 1 ounce

B. For 5 minute period after vehicle motion ceases —

   Actual = __0__ oz.  Maximum Allowable = 5 ounces

C. For next 25 minutes —

   Actual = __0__ oz.  Maximum Allowable = 1 oz./minute

D. Provide Spillage Details: NONE

REMARKS:

RECORDED BY: [Signature]  DATE: __05/19/03__
APPROVED BY: [Signature]
DATA SHEET 5
STATIC ROLLOVER TEST DATA:

A. Test Phase = 0° to 90°

Determination of Stoddard Solvent Collection Time Period:

1. Rollover Fixture 90° Rotation Time = 1 minute, 36 seconds

(Specified Range is 1 to 3 minutes)

2. FMVSS 301 Position Hold Time = 5 minutes, 0 seconds

3. TOTAL = 6 minutes, 36 seconds

4. NEXT WHOLE MINUTE INTERVAL = 7 minutes

Actual Test Vehicle Stoddard Solvent Spillage:

1. First 5 minutes from onset of rotation = 0 oz.
   (5 oz. allowed)

2. 6th minute = 0 oz.
   (1 oz. allowed)

3. 7th minute = 0 oz.
   (1 oz. allowed)

4. 8th minute (if required) = N/A oz. (1 oz. allowed)

Provide Details of Stoddard Solvent Spillage Locations — NONE
B. Test Phase = 90° to 180°

Determination of Stoddard Solvent Collection Time Period:

1. Rollover Fixture 90°
   Rotation Time = ___ minutes, ___ seconds
   (Specified Range is 1 to 3 minutes)

2. FMVSS 301 Position Hold
   Time = 5 minutes, 0 seconds

3. TOTAL = ___ minutes, ___ seconds

4. NEXT WHOLE MINUTE INTERVAL = ___ minutes

Actual Test Vehicle Stoddard Solvent Spillage:

1. First 5 minutes from onset of rotation = ___ oz.
   (5 oz. allowed)

2. 6th minute = ___ oz.
   (1 oz. allowed)

3. 7th minute = ___ oz.
   (1 oz. allowed)

4. 8th minute (if required) = N/A oz. (1 oz. allowed)

Provide Details of Stoddard Solvent Spillage Locations — NONE

---
C. Test Phase = 180° to 270°

Determination of Stoddard Solvent Collection Time Period:

1. Rollover Fixture 90°
   Rotation Time = ___ minutes, ___ seconds
   (Specified Range is 1 to 3 minutes)

2. FMVSS 301 Position Hold
   Time = 5 minutes, 0 seconds

3. TOTAL = ___ minutes, ___ seconds

4. NEXT WHOLE MINUTE
   INTERVAL = ___ minutes

Actual Test Vehicle Stoddard Solvent Spillage:

1. First 5 minutes from onset of rotation = ___ oz.
   (5 oz. allowed)

2. 6th minute = ___ oz.
   (1 oz. allowed)

3. 7th minute = ___ oz.
   (1 oz. allowed)

4. 8th minute (if required) = N/A oz. (1 oz. allowed)

Provide Details of Stoddard Solvent Spillage Locations — NONE
D. Test Phase = 270° to 360°

Determination of Stoddard Solvent Collection Time Period:

1. Rollover Fixture 90° Rotation Time = _1_ minutes, _40_ seconds

(Specified Range is 1 to 3 minutes)

2. FMVSS 301 Position Hold Time = 5 minutes, 0 seconds

3. TOTAL = _6_ minutes, _40_ seconds

4. NEXT WHOLE MINUTE INTERVAL = _7_ minutes

Actual Test Vehicle Stoddard Solvent Spillage:

1. First 5 minutes from onset of rotation = _0_ oz.
   (5 oz. allowed)

2. 6th minute = _0_ oz.
   (1 oz. allowed)

3. 7th minute = _0_ oz.
   (1 oz. allowed)

4. 8th minute (if required) = N/A oz. (1 oz. allowed)

Provide Details of Stoddard Solvent Spillage Locations — _NONE_
DATA SHEET 6
CAMERA LOCATION

VEHICLE NHTSA NO.: C30206
TEST DATE: 05/19/03

PHOTO
PIT

TEST
VEHICLE

NO STEEL GRATING
ALLOWED OVER
PHOTO PIT

CONCRETE PAD

TOW ROAD

MONORAIL

TOP VIEW

CAMERA 1 – REAR SIDE VIEW OF VEHICLE DURING CRASH
CAMERA 2 – FRONT SIDE VIEW OF VEHICLE DURING CRASH
CAMERA 3 – OVERHEAD VIEW OF ENTIRE IMPACT
CAMERA 4 – UNDERBODY VIEW OF FUEL TANK LOCATED IN PIT
# SECTION 4
INSTRUMENTATION AND EQUIPMENT LIST

## TABLE 1 - INSTRUMENTATION & EQUIPMENT LIST

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<td>STOP WATCH</td>
<td>ACCUSPLIT</td>
<td>ACT 1 A&amp;B</td>
<td>05/03</td>
<td>05/04</td>
</tr>
<tr>
<td>STOP WATCH</td>
<td>ACCUSPLIT</td>
<td>ACT 2 A&amp;B</td>
<td>05/03</td>
<td>05/04</td>
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<tr>
<td>SCALES</td>
<td>INTERCOMP</td>
<td>199744</td>
<td>05/03</td>
<td>05/04</td>
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<tr>
<td>TIRE PRESSURE GAUGE</td>
<td>WEKSLER</td>
<td>0-100</td>
<td>05/03</td>
<td>05/04</td>
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<tr>
<td>STEEL SCALES</td>
<td>STARRETT</td>
<td>C416R</td>
<td>05/03</td>
<td>05/04</td>
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<td>STANLEY</td>
<td>GF2</td>
<td>05/03</td>
<td>05/04</td>
</tr>
<tr>
<td>LEVEL</td>
<td>STANLEY</td>
<td>42-449</td>
<td>05/03</td>
<td>05/04</td>
</tr>
<tr>
<td>TEMP. INDICATOR</td>
<td>OMEGA</td>
<td>B/5562/14/1</td>
<td>05/03</td>
<td>05/04</td>
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<tr>
<td>TEMP. RECORDER</td>
<td>OMEGA</td>
<td>B/5562/14/1</td>
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<tr>
<td>SCALES</td>
<td>FAIRBANKS</td>
<td>N/A</td>
<td>06/02</td>
<td>06/03</td>
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</tbody>
</table>
Figure 5.13
Underbody view of fuel lines mid-view pre-test.
2003 FORD ESCAPE
NHTSA NO. C30206
FMVSS NO. 3011.

FIGURE 5.17
UNDERBODY VIEW OF FUEL FILL LINES AT TOP
PRE-TEST
<table>
<thead>
<tr>
<th>TIRE SIZE</th>
<th>TIRE PRESSURE FRONT</th>
<th>TIRE PRESSURE REAR</th>
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</thead>
<tbody>
<tr>
<td>225/55R18</td>
<td>210 kPa / 31 psi</td>
<td>210 kPa / 31 psi</td>
</tr>
<tr>
<td>225/60R18</td>
<td>200 kPa / 29 psi</td>
<td>200 kPa / 29 psi</td>
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</tbody>
</table>

**VEHICLE CAPACITY**

<table>
<thead>
<tr>
<th>SEATING CAPACITY</th>
<th>FRONT SEAT</th>
<th>BACK SEAT</th>
<th>TOTAL</th>
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<tbody>
<tr>
<td>2</td>
<td>3</td>
<td>5</td>
<td></td>
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</tbody>
</table>

**VEHICLE INFORMATION**

To avoid serious injury or death from loss of vehicle control, replace tires with the same size, type, and speed rated tires as shown on the certification label.

FIGURE 5.19
VEHICLE TIRE INFORMATION LABEL
SECTION 6

BARRIER INFORMATION
NOTES:
1. Face Plate 0.50 in. (19mm) thick cold rolled steel
2. All Inner Reinforcements 4.0 x 2.0 x 0.19 in. (102 x 51 x 5mm) Steel Tubing
3. Impact Surface above shown without .75 x 48 x 96 in. Plywood Face attached
<table>
<thead>
<tr>
<th>LETTER</th>
<th>INCHES</th>
<th>MILLIMETERS</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>20.5*</td>
<td>521*</td>
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<tr>
<td>B</td>
<td>60.0</td>
<td>1524</td>
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<tr>
<td>C</td>
<td>5.0</td>
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<tr>
<td>D</td>
<td>39.0</td>
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<tr>
<td>E</td>
<td>78.0</td>
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</tbody>
</table>

TEST SET-UP OF COMMON CARRIAGE WITH 60" x 78" FLAT FACE IMPACT SURFACE INSTALLED:

LEFT FRONT WEIGHT 1081
RIGHT FRONT WEIGHT 1079
LEFT REAR WEIGHT 882
RIGHT REAR WEIGHT 873

TOTAL WEIGHT 3915

* EXCLUDING 3/4" PLYWOOD FACE

DIMENSIONS FOR GTL 60" x 78" FLAT FACE IMPACT SURFACE