SAFETY COMPLIANCE TESTING FOR
FMVSS NO. 110(INDICANT)
TIRE SELECTION AND RIMS

FORD MOTOR CO.
2003 FORD WINDSTAR, MPV
NHTSA NO. C30208

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

SEPTEMBER 15, 2003
FINAL REPORT

PREPARED FOR

U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
SAFETY ENFORCEMENT
OFFICE OF VEHICLE SAFETY COMPLIANCE
400 SEVENTH STREET, SW
ROOM 6111 (NVB-220)
WASHINGTON, D.C. 20590
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Approved By: M.A. Allen
Approval Date: 09/15/03

FINAL REPORT ACCEPTANCE BY O/VSC:

Accepted By: John Stevenson
Acceptance Date: 9/24/03
   110(IND)-GTL-03-019

2. Government Accession No.

3. Recipient's Catalog No.

4. Title and Subtitle
   Final Report of FMVSS 110 (Indicant) Test of
   2003 FORD WINDSTAR MPV
   NHTSA No. C30208

5. Report Date
   September 15, 2003

   GTL

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   GTL-DOT-03-110(INDICANT)-019

9. Performing Organization Name and Address
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10. Work Unit No. (TRAIS)

11. Contract or Grant No.
    DTNH22-01-C-11025

12. Sponsoring Agency Name and Address
    U.S. Department of Transportation
    Safety Enforcement
    Office of Vehicle Safety Compliance (NVS-220)
    400 7th Street, S.W., Room 6111
    Washington, DC 20590

13. Type of Report and Period Covered
    Final Test Report
    May 20, 2003

    NVS-120 & NVS 220

15. Supplementary Notes

16. Abstract
   This test was conducted on the subject 2003 Ford Windstar MPV in accordance with the
   specifications of the Office of Vehicle Safety Compliance Test Procedure No. TP-110-02
   (partial), to gather data relating to the normal load requirements specified in FMVSS 110.
   NHTSA's Office of Safety Performance Standards requested this data to support the agency's
   TREAD tire rulemaking efforts.

17. Key Words
    Vehicle Testing
    Safety Engineering
    FMVSS 110

18. Distribution Statement
    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

19. Security Classif. (of this report)
    UNCLASSIFIED

20. Security Classif. (of this page)
    UNCLASSIFIED

21. No. of Pages
    23

22. Price

Form DOT F 1700.7 (8-72)
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5.7 Vehicle Ballasted to Simulate Normal Load Condition

APPENDIX – Normal Load Occupation Distribution
SECTION 1

INTRODUCTION

1.0 PURPOSE OF INDICANT TEST

A 2003 Ford Windstar MPV was subjected to a FMVSS No. 110 (Indicant) test intended to gather data relating to the normal load requirements specified in FMVSS 110. NHTSA’s Office of Safety Performance Standards requested this data to support the agency’s TREAD tire rulemaking efforts.

1.1 TEST VEHICLE

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

A. **Vehicle Identification Number**: 2FMZA63483BA03994

B. **NHTSA No.**: C30208

C. **Manufacturer**: FORD MOTOR CO.

D. **Manufacture Date**: 08/02

1.2 TEST DATE

The test vehicle was subjected to testing on May 20, 2003.
SECTION 2

TEST PROCEDURE AND SUMMARY OF RESULTS

2.0 TEST PROCEDURE

The vehicle was inspected, photographed and filled with fuel. It was then weighed to establish total curb weight and the weights of all wheels were measured and recorded. The vehicle was then ballasted to its normal load condition (refer to appendix) and the weights of all wheels were measured and recorded. Tire information labeling data and tire sidewall data were recorded.

This indicant test did not include any other requirements in FMVSS 110.

2.1 SUMMARY OF RESULTS

Currently FMVSS 110 applies only to passenger cars. The subject Ford Windstar is a multipurpose passenger vehicle (MPV) and therefore it is not required to meet FMVSS 110 requirements. It was subjected to the normal load testing as executed for FMVSS 110 compliance verification for information only.
SECTION 3
TEST DATA
VEHICLE MAKE/MODEL/BODY STYLE: 2003 FORD WINDSTAR MPV
VEHICLE NHTSA NO.: C30208; VIN: 2FMZA53493BA03994
LABORATORY: GENERAL TESTING LABORATORIES
TEST DATE: 05/20/03

REQUIREMENT

The vehicle is equipped with tires that meet the requirements of FMVSS 109 or FMVSS 119. YES

The vehicle normal load on the tire is not greater than the high speed performance test load specified in FMVSS 109 paragraph S5.5 or FMVSS 119 paragraph S7.4. NO

For passenger cars, the tire information placard is permanently affixed to the glove compartment door or equally accessible location; and displays the required information (FMVSS 110, S4.3). N/A

For vehicles other than passenger cars, a combined certification/tire information label or separate tire information label is permanently affixed to either the hinge pillar, door-latch post or to the inward-facing surface of the door next to the driver's seating position. YES

REMARKS: *Normal Load on the front axle tires is greater than the high speed performance test load specified in FMVSS 119 paragraph S7.4.

RECORDED BY: Signed

APPROVED BY: Signed

DATE: 05/20/03
DATA SHEET 2
TEST VEHICLE INFORMATION/RECEIVING INSPECTION

LABORATORY: GENERAL TESTING LABORATORIES       DATE: 05/20/03

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

MANUFACTURE DATE: 08/02      NHTSA NO.: C303208       BODY COLOR: SPRUCE GREEN

VIN: 2FMZA53493B03994       VEHICLE TYPE: MPV

GVWR 2549 kg (5620 lbs)      GAWR(Fr) 1315 kg (2900 lbs)      GAWR(Rr) 1251 kg (2760 lbs)

BELTED SEATING POSITIONS: FRONT 2     MID 2     REAR 3     OTHER N/A

ENGINE DATA:       Cylinders 3.8 Liters       Cubic inches

TRANSMISSION DATA:       Automatic 4 Manual 4 No. of Speeds

FINAL DRIVE DATA:       Rear Drive 4 Wheel Drive AWD

INSTALLED TIRE DATA: Size P225/60R16       Mfr. MICHELIN

CHECK APPROPRIATE BOXES FOR VEHICLE EQUIPMENT/MAKE SURE ALL OPTIONS ON WINDOW STICKER ARE LISTED:

<table>
<thead>
<tr>
<th>X</th>
<th>Air Conditioning</th>
<th>Traction Control</th>
<th>X</th>
<th>Clock</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td>Tinted Glass</td>
<td>All Wheel Drive</td>
<td>X</td>
<td>Roof Rack</td>
</tr>
<tr>
<td>X</td>
<td>Power Steering</td>
<td>Cruise Control</td>
<td>X</td>
<td>Console</td>
</tr>
<tr>
<td>X</td>
<td>Power Windows</td>
<td>Rear Window Defroster</td>
<td>X</td>
<td>Driver Air Bag</td>
</tr>
<tr>
<td></td>
<td>Power Door Locks</td>
<td>Sun Roof or T-Top</td>
<td>X</td>
<td>Passenger Air Bag</td>
</tr>
<tr>
<td>X</td>
<td>Power Seat(s)</td>
<td>Tachometer</td>
<td>X</td>
<td>Front Disc Brakes</td>
</tr>
<tr>
<td></td>
<td>Power Brakes</td>
<td>Tilt Steering Wheel</td>
<td>Rear Disc Brakes</td>
<td></td>
</tr>
<tr>
<td>X</td>
<td>Antilock Brake System</td>
<td>AM/FM/CD</td>
<td>Other</td>
<td></td>
</tr>
</tbody>
</table>

ARE ALL OPTIONS LISTED ON "WINDOW STICKER" PRESENT ON THE TEST VEHICLE: (YES/NO)     Yes

REMARKS:

RECORDED BY: ___________________________ DATE: 05/20/03

APPROVED BY: ___________________________
DATA SHEET 3
CURB WEIGHT WITH OPTIONS AND NORMAL LOAD

VEHICLE MAKE/MODEL/BODY STYLE: 2003 FORD WINDSTAR MPV
VEHICLE NHTSA NO.: C30208; VIN: 2FMZA534938A03994
LABORATORY: GENERAL TESTING LABORATORIES
TEST DATE: 05/20/03

Full Fluid Levels:
Fuel _______ Full; Coolant _______ Full; Other Fluids _______ Full

Tire Pressure:
LF 241 KPA (35 psi) LR 241 KPA (35 psi)
RF 241 KPA (35 psi) RR 241 KPA (35 psi)

A. MEASURED CURB WEIGHT WITH INSTALLED OPTIONS AND ACCESSORIES

LF 582 KG (1283 LB) LR 406 KG (894 LB)
RF 568 KG (1252 LB) RR 397 KG (875 LB)

Front Axle 1150 KG (2555 LB) Rear Axle 802 KG (1769 LB)

Total Vehicle 1952 KG (4304 LB)

B. MEASURED VEHICLE WEIGHT IN NORMAL LOAD CONDITION

1. Seating Capacity (from Tire Information Placard) = _______ 7 _______
   Seating Capacity (# of belted seating positions) = _______ 7 _______

2. Normal Load # of Occupants from Appendix
   Occupant Distribution: Front Seat-__2__ Second Seat-__1__
   Third Seat-__N/A__ Fourth Seat-__N/A__

3. Total Normal Occupant Load _______ 204 KG (450 LB) _______
   (# of occupants x 68 KG per occupant)

4. Measured Normal Load on each Wheel and Axles (Sum)

   LF 624 KG (1376 LB) LR 446 KG (984 LB)
   RF 632 KG (1364 LB) RR 453 KG (998 LB)

   Frt Axle 1256 KG (2770 LB) Rr Axle 899 KG (1982 LB)

   Total Vehicle 2155 KG (4752 LB)
### DATA SHEET 3 – CONTINUED

(5) Calculated Vehicle Normal Load on the Tire
- **Front Tires** (measured front axle normal load/2) = 628 KG (1385 LB)
- **Rear Tires** (measured front axle normal load/2) = 450 KG (991 LB)

(6) High Speed Test Load from ( ) FMVSS 109 (S5.5), or (X) FMVSS 119 (S7.4)

<table>
<thead>
<tr>
<th></th>
<th>Front</th>
<th>Rear</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Installed Tire Size</td>
<td>P225/60R16</td>
<td>P225/60R16</td>
</tr>
<tr>
<td>Max. Load Rating on Sidewall</td>
<td>730 KG (1609 LBS)</td>
<td>730 KG (1609 LBS)</td>
</tr>
<tr>
<td>Reduced Sidewall Load Rating (if applicable)*</td>
<td>664 KG (1463 LBS)</td>
<td>664 KG (1463 LBS)</td>
</tr>
<tr>
<td>High Speed Test Load (88% of sidewall max. load rating)</td>
<td>584 KG (1287 LBS)</td>
<td>584 KG (1287 LBS)</td>
</tr>
<tr>
<td>(b)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Optional Tire Size(s)</td>
<td>P215/65R16</td>
<td>P215/65R16</td>
</tr>
<tr>
<td>Max. Load Rating on Sidewall (From the 2003 Tire and Rim Association Yearbook)</td>
<td>710 KG (1565 LBS)</td>
<td>710 KG (1565 LBS)</td>
</tr>
<tr>
<td>Reduced Sidewall Load Rating (if applicable)*</td>
<td>645 KG (1423 LBS)</td>
<td>645 KG (1423 LBS)</td>
</tr>
<tr>
<td>High Speed Test Load (88% of sidewall max. load rating)</td>
<td>568 KG (1252 LBS)</td>
<td>568 KG (1252 LBS)</td>
</tr>
</tbody>
</table>

* If a passenger car tire is installed on a multipurpose passenger vehicle (MPV), truck or bus, the tire's load rating shall be reduced by dividing by 1.10.

**REMARKS:** The Front Axle Normal Load on the Tire is greater than the High Speed Test Load for the P225/60R16 and P215/65R16 size tires.

**RECORDED BY:** [Signature]

**DATE:** 05/20/03

**APPROVED BY:** [Signature]
DATA SHEET 4
TIRE INFORMATION LABEL OR PLACARD

VEHICLE MAKE/MODEL/BODY STYLE: 2003 FORD WINDSTAR MPV

VEHICLE NHTSA NO.: C30208 ; VIN: 2FMZA53493BA03994

LABORATORY: GENERAL TESTING LABORATORIES
TEST DATE: 05/20/03

A. Vehicle Type from Certification Label: ______MPV_____

B. Identify Vehicle Labeling:

Vehicle has a combined Certification Tire Information Label (X) Yes ( ) No
Is Label Permanently Affixed: (X) Yes ( ) No
Label Location: ______Driver's Side Lower "B" Pillar_____
Description of Label: ______Vinyl Sticker_____

Vehicle has a separate Tire Information Label or Placard ( ) Yes (X) No
Is Label Permanently Affixed: ( ) Yes ( ) No
Label Location: _________________________
Description of Label: ______________________

C. Enter Information from Combined or Separate Tire Information Label/Placard

Vehicle Capacity Weight - "Maximum Load" 544 KG (1200 LBS)

Designated Seating Capacity (DSC) - ______7_____
Expressed In—
(1) Total No. of Occupants (X) Yes ( ) No
(2) Terms of Occupants for Each Seat Location (X) Yes ( ) No

Manufacturer's Recommended Tire Size(s) and Cold Tire Inflation Pressure(s) for Maximum Load Vehicle Weight:

____ P215/65R16 ______
FRONT - ______241 kPa (35 psi) ______
REAR - ______241 kPa (35 psi) ______

Manufacturer's Recommended Tire Size(s) and Cold Tire Inflation Pressure(s) for Other Load Conditions: NONE

REMARKS: The Windstar is equipped with an FMVSS 110 type label Information even though it is an MPV required to meet the requirements of FMVSS 120.

RECORDED BY: [Signature]
DATE: 05/20/03

APPROVED BY: [Signature]
DATA SHEET 5
VEHICLE TIRE DATA

VEHICLE MAKE/MODEL/BODY STYLE: 2003 FORD WINDSTAR MPV
VEHICLE NHTSA NO.: C30208; VIN: 2FMZA53493BA03994
LABORATORY: GENERAL TESTING LABORATORIES
TEST DATE: 05/20/03

All tires on the vehicle are the same size: (Yes/No) Yes

INFORMATION FROM TIRE SIDEWALL:

Tire Size Designation: P225/60R16
Tire Load Index/Speed Symbol: 97S
Maximum Inflation Pressure: 240 kPa (35 psi)
Maximum Load Rating: 730 KG (1609 LBS)
Mfr. Name or Brand & Code: MICHELIN SYMMETRY
 Tube or Tubeless: TUBELESS
Treadwear/Traction/Temp. Grades: 460/A/B
Sidewall (Plies & Composition): 1 PLY POLYESTER
Tread (Plies & Composition): 1 PLY POLYESTER
2 PLY STEEL
Serial Number: Right Front - DOT-APXO D89X 2702

Tire has "DOT" markings: (X) YES ( ) NO ( ) UNDETERMINED

REMARKS:

RECORDED BY: [Signature] DATE: 05/20/03
APPROVED BY: [Signature]
### TABLE 1 - INSTRUMENTATION & EQUIPMENT LIST

<table>
<thead>
<tr>
<th>EQUIPMENT</th>
<th>DESCRIPTION</th>
<th>MODEL/ SERIAL NO.</th>
<th>CAL. DATE</th>
<th>NEXT CAL. DATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>PAD SCALES</td>
<td>#1 199744LF</td>
<td>199744LF</td>
<td>06/02</td>
<td>06/03</td>
</tr>
<tr>
<td></td>
<td>#2 199744RF</td>
<td>199744RF</td>
<td>06/02</td>
<td>06/03</td>
</tr>
<tr>
<td></td>
<td>#3 199744LR</td>
<td>199744LR</td>
<td>06/02</td>
<td>06/03</td>
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<tr>
<td></td>
<td>#4 199744RR</td>
<td>199744RR</td>
<td>06/02</td>
<td>06/03</td>
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<tr>
<td>PRESSURE GAGE</td>
<td>WESKLER</td>
<td>0-100</td>
<td>08/02</td>
<td>05/04</td>
</tr>
<tr>
<td>SURFACE LEVEL</td>
<td>GTL</td>
<td>N/A</td>
<td>BEFORE USE</td>
<td>BEFORE USE</td>
</tr>
</tbody>
</table>
SECTION 5
PHOTOGRAPHS
APPENDIX

Table 1 – Occupant Loading and Distribution for Vehicle Normal Load for Various Designated Seating Capacities

<table>
<thead>
<tr>
<th>Designated Seating Capacities, numbers of Occupants</th>
<th>Vehicle normal load, number of occupants</th>
<th>Occupant distribution in a normally loaded vehicle</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 through 4</td>
<td>2</td>
<td>2 in front</td>
</tr>
<tr>
<td>5 through 10</td>
<td>3</td>
<td>2 in front, 1 in second seat</td>
</tr>
<tr>
<td>11 through 15</td>
<td>5</td>
<td>2 in front, 1 in second seat, 1 in third seat, 1 in fourth seat</td>
</tr>
<tr>
<td>16 through 22</td>
<td>7</td>
<td>2 in front, 2 in second seat, 2 in third seat, 1 in fourth seat</td>
</tr>
</tbody>
</table>

NOTE: For the indicant test each seat was adjusted to its full down and mid forward to aft position with the seat back adjusted to a 25° reclined angle. Each designated seat position was ballasted with 54 KG (120 LBS) in the seat and 14 KG (30 LBS) on the floor directly in front of the respective seat position.