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

TOYOTA MOTOR MANUFACTURING INDIANA INC.
2003 TOYOTA SEQUOIA LIMITED, MPV
NHTSA NO. C35112

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

SEPTEMBER 10, 2003
FINAL REPORT

PREPARED FOR

U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
SAFETY ENFORCEMENT
OFFICE OF VEHICLE SAFETY COMPLIANCE
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Prepared By: [Signature]
Approved By: [Signature]
Approval Date: [Date]

FINAL REPORT ACCEPTANCE BY OVSC:

Accepted By: [Signature]
Acceptance Date: [Date]
This test was conducted on the subject, 2003 Toyota Sequoia Limited 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.
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SECTION 1

INTRODUCTION

1.0 PURPOSE OF INDICANT TEST

A 2003 Toyota Sequoia Limited 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 Toyota Sequoia Limited MPV. Nomenclature applicable to the test vehicle are:

A. Vehicle Identification Number: 5TDBT48A23S184296

B. NHTSA No.: C35112

C. Manufacturer: TOYOTA MOTOR MANUFACTURING INDIANA INC.

D. Manufacture Date: 03/03

1.2 TEST DATE

The test vehicle was subjected to testing on June 11, 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 Toyota Sequoia Limited 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 TOYOTA SEQUOIA LIMITED MPV
VEHICLE NHTSA NO.: C35112; VIN: 5TDBT48223S184296
LABORATORY: GENERAL TESTING LABORATORIES
TEST DATE: 06/11/03

REQUIREMENT

Yes/No

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.

Yes

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 sealing position (FMVSS 120, S5.3).

Yes

REMARKS:

RECORDED BY: [Signature] DATE: 06/11/03

APPROVED BY: [Signature]
DATA SHEET 2
TEST VEHICLE INFORMATION/RECEIVING INSPECTION

LABORATORY: GENERAL TESTING LABORATORIES       DATE: 06/11/03

VEHICLE MODEL YEAR/MAKE/MODEL/BODY STYLE: 2003 TOYOTA SEQUOIA LIMITED MPV

MANUFACTURE DATE: 03/03       NHTSA NO.: C35112       BODY COLOR: WHITE

VIN: 5TDBT48A23S184296       VEHICLE TYPE: MPV

GVWR 2994 kg (6600 lbs)      GAWR(F/R) 1434 kg (3160 lbs)  GAWR(R/F) 1769 kg (3900 lbs)

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

ENGINE DATA: ___ 8 Cylinders ___ 4.7 Liters ___ Cubic Inches

TRANSMISSION DATA: X ___ Automatic ___ Manual 4 ___ No. of Speeds

FINAL DRIVE DATA: ___ Rear Drive ___ Front Drive X ___ 4 Wheel Drive

INSTALLED TIRE DATA: Size ___ P235/65R17 ___ Mfr. ___ DUNLOP ___

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>X</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>X</td>
<td>Power Brakes</td>
<td>Tilt Steering Wheel</td>
<td>X</td>
<td>Rear Disc Brakes</td>
</tr>
<tr>
<td>X</td>
<td>Anti-lock 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: 06/11/03

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

VEHICLE MAKE/MODEL/BODY STYLE: 2003 TOYOTA SEQUOIA LIMITED MPV
VEHICLE NHTSA NO.: C35112; VIN: 5TDGT48A23S184296
LABORATORY: GENERAL TESTING LABORATORIES
TEST DATE: 06/11/03

Full Fluid Levels:
Fuel _____ Full __; Coolant _____ Full __; Other Fluids _____ Full __

Tire Pressure:  
LF 220 KPA (32 psi)  LR 220 KPA (32 psi)
RF 220 KPA (32 psi)  RR 220 KPA (32 psi)

A. MEASURED CURB WEIGHT WITH INSTALLED OPTIONS AND ACCESSORIES

<table>
<thead>
<tr>
<th>Wheel</th>
<th>Weight (KG, LB)</th>
</tr>
</thead>
<tbody>
<tr>
<td>LF</td>
<td>559 (1453 LB)</td>
</tr>
<tr>
<td>RF</td>
<td>584 (1288 LB)</td>
</tr>
<tr>
<td>LR</td>
<td>566 (1247 LB)</td>
</tr>
<tr>
<td>RR</td>
<td>590 (1300 LB)</td>
</tr>
</tbody>
</table>

Front Axle: 1243 KG (2741 LB)
Rear Axle: 1155 KG (2547 LB)
Total Vehicle: 2399 KG (5288 LB)

B. MEASURED VEHICLE WEIGHT IN NORMAL LOAD CONDITION

1. Seating Capacity (from Tire Information Placard) = N/A
   Seating Capacity (# of belted seating positions) = 8

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)

<table>
<thead>
<tr>
<th>Wheel</th>
<th>Weight (KG, LB)</th>
</tr>
</thead>
<tbody>
<tr>
<td>LF</td>
<td>707 (1559 LB)</td>
</tr>
<tr>
<td>RF</td>
<td>633 (1395 LB)</td>
</tr>
<tr>
<td>LR</td>
<td>617 (1361 LB)</td>
</tr>
<tr>
<td>RR</td>
<td>642 (1415 LB)</td>
</tr>
<tr>
<td>Frt Axle</td>
<td>1340 (2954 LB)</td>
</tr>
<tr>
<td>Rr Axle</td>
<td>1269 (2776 LB)</td>
</tr>
</tbody>
</table>

Total Vehicle: 2599 KG (5730 LB)
DATA SHEET 3 – CONTINUED

(5) Calculated Vehicle Normal Load on the Tire
Front Tires (measured front axle normal load/2) = ___ 670 KG (1477 LB)
Rear Tires (measured front axle normal load/2) = ___ 630 KG (1388 LB)

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

<table>
<thead>
<tr>
<th>Front</th>
<th>Rear</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) Installed Tire Size</td>
<td>P265/65R17</td>
</tr>
<tr>
<td>Max. Load Rating on Sidewall</td>
<td>1060 KG (2337 LBS)</td>
</tr>
<tr>
<td>Reduced Sidewall Load Rating</td>
<td>964 KG (2125 LBS)</td>
</tr>
<tr>
<td>(if applicable)*</td>
<td></td>
</tr>
<tr>
<td>High Speed Test Load</td>
<td></td>
</tr>
<tr>
<td>(88% of sidewall max. load rating)</td>
<td>848 KG (1870 LBS)</td>
</tr>
<tr>
<td>(b) Optional Tire Size(s)</td>
<td>NONE</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 Vehicle Normal Load on the Tire is not greater than the High Speed Test Load.

RECORDED BY: [Signature]             DATE: 06/11/03
APPROVED BY: [Signature]
DATA SHEET 4
TIRE INFORMATION LABEL OR PLACARD

VEHICLE MAKE/MODEL/BODY STYLE: 2003 TOYOTA SEQUOIA LIMITED MPV
VEHICLE NHTSA NO.: C35112; VIN: 5TDBT48A23S184296
LABORATORY: GENERAL TESTING LABORATORIES
TEST DATE: 06/11/03

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 "B" Pillar ______________
Description of Label: ______________ Vinyl ______________

Vehicle has a separate Tire Information Label or Placard (X) Yes ( ) No
Is Label Permanently Affixed: (X) Yes ( ) No
Label Location: ______________ Driver's Side "B" Pillar ______________
Description of Label: ______________ Vinyl ______________

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

Vehicle Capacity Weight - ______________ N/A (see remarks) ______________

Designated Seating Capacity (DSC) - ______________ N/A (see remarks) ______________
Expressed in—
(1) Total No. of Occupants ( ) Yes ( ) No
(2) Terms of Occupants for Each Seat Location ( ) Yes ( ) No

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

P265/65R17 220 kPa (32 psi)
FRONT - 220 kPa (32 psi)
REAR - 220 kPa (32 psi)

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

REMARKS: The vehicle labeling requirements of FMVSS 120 for an MPV do not include
Vehicle Capacity Weight (VCW) or Designated Seating Capacity (DSP) as required by FMVSS
110 passenger car labeling.

RECORDED BY: [Signature] DATE: 06/11/03

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

VEHICLE MAKE/MODEL/BODY STYLE: 2003 TOYOTA SEQUOIA LIMITED MPV

VEHICLE NHTSA NO.: C35112; VIN: 5TDBT48A23S184286

LABORATORY: GENERAL TESTING LABORATORIES

TEST DATE: 06/11/03

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

INFORMATION FROM TIRE SIDEWALL:

Right Front Tire

Tire Size Designation:
P265/65R17

Tire Load Index/Speed Symbol:
110S

Maximum inflation Pressure:
350 kPa (51 psi)

Maximum Load Rating:
1060 KG (2337 LBS.)

Mfr. Name or Brand & Code:
DUNLOP GRANDTREK

Tube or Tubeless:
TUBELESS

Treadwear/Traction/Temp. Grades:
300/B/B

Sidewall (Plies & Composition):
2 PLY POLYESTER

Tread (Plies & Composition):
2 PLY POLYESTER
2 PLY STEEL
1 PLY NYLON

Serial Number: Right Front - DOT-DBAH D5AR 0903

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

REMARKS:

RECORDED BY: [Signature]

DATE: 06/11/03

APPROVED BY: [Signature]
### SECTION 4
INSTRUMENTATION AND 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>
</tr>
<tr>
<td></td>
<td>#4 199744RR</td>
<td>199744RR</td>
<td>06/02</td>
<td>06/03</td>
</tr>
<tr>
<td>PRESSURE GAGE</td>
<td>WESKLER</td>
<td>0-100</td>
<td>05/03</td>
<td>05/04</td>
</tr>
<tr>
<td>SURFACE LEVEL</td>
<td>GYL</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.