SAFETY COMPLIANCE TESTING FOR
FMVSS 401
Interior Trunk Release

2003 Toyota Corolla 4-Door
NHTSA No. C35104

Prepared by:
NHTSA
OFFICE OF VEHICLE SAFETY COMPLIANCE
400 7th Street, SW
Washington, D.C. 20590

July 25, 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-221)
WASHINGTON, D.C. 20590
This publication is distributed by the U.S. Department of Transportation, National Highway Traffic Safety Administration in the interest of information exchange. The opinions, findings and conclusions expressed in this publication are those of the author(s) and not necessarily those of the Department of Transportation or the National Highway Traffic Safety Administration. The United States Government assumes no liability for its contents or use thereof. If trade or manufacturers' names or products are mentioned, it is only because they are considered essential to the object of the publication and should not be construed as an endorsement. The United States Government does not endorse products or manufacturers.

Prepared By: __________________________
Stuart Seigel, Safety Compliance Engineer

Accepted By: __________________________
Stuart Seigel

Date: __________________________
1. Report No. 401-NSA-03-002
2. Government Accession No.
3. Recipient's Catalog No.

4. Title and Subtitle
   Final Report of FMVSS 401 Compliance Testing of a 2003 Toyota Corolla 4-Door, NHTSA No. C35104

5. Report Date
   July 30, 2003

6. Performing Organization Code
   OVSC

7. Author(s)
   Stuart Seigel, Safety Compliance Engineer

   401-NSA-03-002

9. Performing Organization Name and Address
   U.S. Department of Transportation
   National Highway Traffic Safety Administration
   Enforcement Office of Vehicle Safety Compliance (NVS-221)
   400 Seventh Street, SW
   Room 6111
   Washington, DC 20590

10. Work Unit No.

11. Contract or Grant No.

12. Sponsoring Agency Name and Address
    U.S. Department of Transportation
    National Highway Traffic Safety Administration
    Enforcement Office of Vehicle Safety Compliance (NVS-221)
    400 Seventh Street, SW
    Room 6111
    Washington, DC 20590

13. Type of Report and Period Covered
    Final Test Report

    NVS-220

15. Supplementary Notes

16. Abstract
   A compliance test was conducted on the subject 2003 Toyota Corolla 4-Door, NHTSA No. C35104 in accordance with the specifications of the Office of Vehicle Safety Compliance Test Procedure No. TP-401-01 for the determination of FMVSS 401 compliance. The test was conducted at Karco Testing Laboratories in Adelanto, California by NHTSA personnel on July 16, 2003. Test failures identified were as follows: NONE

17. Key Words
    Compliance Testing
    Safety Engineering
    FMVSS 401
    2003 Toyota Corolla 4-Door

18. Distribution Statement
    Copies of this report are available from: NHTSA Technical Reference Division, Mail Code: NAD-5Z
    400 Seventh Street, SW, Room 5108
    Washington, D.C. 20590
    Telephone No. (202) 366-4946

19. Security Classif. (of this report) Unclassified
20. Security Classif. (of this page) Unclassified

21. No. of Pages
22. Price
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>SECTION NO.</th>
<th>DESCRIPTION</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0</td>
<td>PURPOSE OF COMPLIANCE TEST</td>
<td>5</td>
</tr>
<tr>
<td>2.0</td>
<td>TEST PROCEDURE AND DISCUSSION OF RESULTS</td>
<td>6</td>
</tr>
<tr>
<td>3.0</td>
<td>COMPLIANCE TEST DATA</td>
<td>7</td>
</tr>
<tr>
<td>4.0</td>
<td>TEST EQUIPMENT LIST AND CALIBRATION INFORMATION</td>
<td>11</td>
</tr>
<tr>
<td>5.0</td>
<td>PHOTOGRAPHS</td>
<td>12</td>
</tr>
<tr>
<td>--------------</td>
<td>-------------------------------------------------------</td>
<td>------</td>
</tr>
<tr>
<td></td>
<td>List of Photographs</td>
<td></td>
</tr>
<tr>
<td></td>
<td>A. Vehicle Front</td>
<td></td>
</tr>
<tr>
<td></td>
<td>B. Vehicle Rear</td>
<td></td>
</tr>
<tr>
<td></td>
<td>C. Trunk Open</td>
<td></td>
</tr>
<tr>
<td></td>
<td>D. Trunk Open - Closeup</td>
<td></td>
</tr>
<tr>
<td></td>
<td>E. Vehicle Certification Label</td>
<td></td>
</tr>
<tr>
<td></td>
<td>F. Trunk Release Lever</td>
<td></td>
</tr>
<tr>
<td></td>
<td>G. Force Transducer Attached to Release</td>
<td></td>
</tr>
<tr>
<td>6.0</td>
<td>VEHICLE OWNER'S MANUAL (applicable pages)</td>
<td>13</td>
</tr>
</tbody>
</table>
1.0 PURPOSE OF COMPLIANCE TEST

The purpose of this compliance test was to determine whether the subject vehicle, a 2003 Toyota Corolla 4-Door, meets the performance requirements of FMVSS 401, Interior Trunk Release.

The test was conducted in accordance with the U. S. Department of Transportation, National Highway Traffic Safety Administration's Laboratory Test Procedure TP-401-01.

The test was conducted at Karco Testing Laboratories in Adelanto, California on July 16, 2003 by a NHTSA Office of Safety Compliance test engineer.
2.0 TEST PROCEDURE AND DISCUSSION OF RESULTS

Based on the test performed, the 2003 Toyota Corolla 4-Door, NHTSA No. C35104 appeared to meet the requirements of FMVSS 401.

The vehicle was tested by entering the trunk and closing the lid. The release handle was easily observed in the darkened, enclosed trunk. A force gauge was attached to the release handle and 3 separate attempts were made to exit the trunk by applying a load to the instrument. For each attempt, the trunk released from the single latching position at a force level of 11 newtons (2.5 lbs.) or less.
3.0 COMPLIANCE TEST DATA

DATA SHEET 1

FMVSS 401 - VEHICLE DESCRIPTION

VEHICLE MY/MAKE/MODEL: 2003/TOYOTA/COROLLA
BODY STYLE: 4-DOOR
VEH. NHTSA NO.: C35104 ; VIN: 1NXBR32E93Z115536

DATE OF TEST: 07/16/03 TEST LAB: BY OVSC @ KARCO
GVWR: 1629 KG MANUFACTURED DATE: 11/02

TRUNK LOCATION: REAR X FRONT ________
If Front, Front Opening? na
NUMBER OF TRUNK LID LATCHING POSITIONS: 1

INTERIOR TRUNK RELEASE: MANUAL X AUTOMATIC _______
BOTH ______

POWER OPERATED CLOSURE: na

OWNER'S MANUAL DESCRIPTION OF TRUNK RELEASE: YES X
NO ______

REMOVABLE EQUIPMENT DELIVERED IN TRUNK:

SPARE TIRE: X (SIZE) T125/70R1696M
TIRE JACK: X
LUG WRENCH: X
TOOL BOX: ______ (SIZE) ______
PARTITIONS: ______
OTHER: ______

REMARKS:

RECORDED BY: Se DATE: 7/16/03
APPROVED BY: S Seigel
DATA SHEET 2 (1 of 2)

FMVSS 401 - All trunks except for front trunk compartments with front opening hoods

MANUAL TRUNK RELEASE OPERATION

VEHICLE MY/MAKE/MODEL/BODY STYLE: 2003/TOYOTA/COROLLA/4-DR
VEH. NHTSA NO.: C35104_________; VIN: 1NXBR32E93Z115536
DATE OF TEST: 7/16/03
Method used to actuate interior trunk release: Rotating Lever (Grab handle, Rotating lever, etc.)
Can test personnel enter trunk and be closed within: Yes X No
If Yes, size of occupant: At least 50th percentile male
Is there access to the trunk compartment by folding down rear seat or partition: Yes X No
Does Release Mechanism require electric power: Yes X No
Can release mechanism be easily seen inside the closed trunk: Yes X No
Describe method used by vehicle manufacturer to ensure that release mechanism is visible in a closed trunk compartment: Phosphorescence (Phosphorescence, auxiliary lighting, etc.)

Describe laboratory test method used to determine visibility of release mechanism: Trunk Entry (Trunk entry, darkened room, etc.)

<table>
<thead>
<tr>
<th>Vehicle Stationary (0 km/h)</th>
<th>Force Required to Release Trunk Lid (Newtons)</th>
<th>Trunk Released from All Latching positions</th>
<th>Pass/Fail</th>
</tr>
</thead>
<tbody>
<tr>
<td>NO KEY IN IGNITION</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attempt 1</td>
<td>11 N - 2.5 pounds</td>
<td>Yes</td>
<td>pass</td>
</tr>
<tr>
<td>Attempt 2</td>
<td>11 N - 2.5 pounds</td>
<td>Yes</td>
<td>pass</td>
</tr>
<tr>
<td>Attempt 3</td>
<td>11 N - 2.5 pounds</td>
<td>Yes</td>
<td>pass</td>
</tr>
<tr>
<td>Average</td>
<td>11N - 2.5 pounds</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note: Force applied at end of lever (5" from pivot point)
DATA SHEET 2 (2 of 2)

FMVSS 401 - MANUAL TRUNK RELEASE OPERATION (continued)

NOTE: Interior Trunk Release is a totally mechanical system with its operation and functioning not dependant upon engine operation or vehicle speed. The release mechanism will function identical to that of the stationary vehicle with the no key in the ignition (as previously tested) and thus the following tests were not required to be conducted.

<table>
<thead>
<tr>
<th>Vehicle Stationary (0 km/h)</th>
<th>Force Required to Release Trunk Lid (Newtons) [no requirement]</th>
<th>Trunk Released from All latching positions</th>
<th>Pass/Fail</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attempt 1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attempt 2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attempt 3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average -</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Vehicle Speed (km/h)</th>
<th>Force Required to Release Trunk Lid (Newtons) [no requirement]</th>
<th>Trunk Released from All latching positions</th>
<th>Pass/Fail</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Describe method used to propel vehicle:

PASS  X  FAIL  ____________

REMARKS:

RECORDED BY: SSe  DATE: 7/16/03

APPROVED BY: S. Seigel
### DATA SHEET 3
**FMVSS 401 - TEST SUMMARY**

<table>
<thead>
<tr>
<th>Description</th>
<th>PASS</th>
<th>FAIL</th>
<th>COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Automatic or Manual release mechanism inside the trunk compartment. S4.1</td>
<td></td>
<td>X</td>
<td>Manual release lever handle</td>
</tr>
<tr>
<td>If manual release, lighting feature is included. S4.2(a)</td>
<td></td>
<td>X</td>
<td>Self Lighting</td>
</tr>
<tr>
<td>If automatic release, unlauches trunk lid within 5 minutes. S4.2(b)</td>
<td>na</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Except as provided by S4.3(b), actuation of release mechanism required by S4.1 completely releases trunk lid from all latching positions of the trunk lid latch. S 4.3(a)</td>
<td></td>
<td>X</td>
<td>Single Latch Position Only</td>
</tr>
<tr>
<td>For front trunk compartments, front opening hoods, when vehicle is stationary latch releases trunk lid from all locking positions. When moving forward at a speed less than 5km/h, must release the primary latch and may release all latches. At speeds greater than 5km/h must release the primary latch only. S4.3(b)</td>
<td>na</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

PASS **X**  FAIL

REMARKS: **RECORDED BY:** SSe

APPROVED BY: **S.Seigel**

DATE: **7/16/03**
### 4.0 - Test Equipment List and Calibration Information

<table>
<thead>
<tr>
<th>EQUIPMENT</th>
<th>DESCRIPTION</th>
<th>MODEL/SERIAL NO.</th>
<th>CALIBRATION DATE</th>
<th>NEXT CAL. DATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Force Transducer</td>
<td>Jonard Tools</td>
<td>Part #G3P-72</td>
<td>Manufacturer</td>
<td>Manufacturer</td>
</tr>
</tbody>
</table>
5.0 - Photographs
6.0 Vehicle Owner’s Manual (applicable pages)
If a person is locked in the trunk, he/she can pull down the phosphorescent handle on the inside of trunk lid to open the trunk lid. The phosphorescent (glow-in-the-dark) handle will continue to glow for a time after the trunk lid is closed. Exposing the handle to stronger light will cause it to glow longer.

CAUTION

- Always lock the trunk lid and doors, and keep away the vehicle keys out of children's reaches.
- Never leave children unattended in the vehicle. Unsupervised children may lock themselves in the vehicle or trunk and suffer serious injury or death.

TVIP is a theft deterrent system. If someone attempts to damage or break into your vehicle, the system sounds the alarm while flashing the lights.

Toyota vehicle intrusion protection system (TVIP)