

MIL "ON" DTC P0705

Service Category Drivetrain

Section Automatic Transmission/Transaxle

Market USA

Toyota Supports
 ASE Certification 

Applicability

| YEAR(S) | MODEL(S) | ADDITIONAL INFORMATION |
|-------------|----------|------------------------|
| 2005 – 2009 | Tacoma | |

Introduction

Some 2005 – 2009 model year Tacoma vehicles may exhibit a MIL "ON" condition with DTC P0705 (Transmission Range Sensor Circuit Malfunction (PRNDL Input)) stored. Common symptoms with this DTC can include possible delayed engagement into Reverse or Drive and possible harsh gear engagement when shifting between Park or Neutral into all other gears. Follow the procedure in this TSB to determine if this service bulletin is applicable and to repair the vehicle.

Repair Procedure Overview

1. Review DTC P0705 Freeze Frame Data to determine if this TSB may be applicable.
2. Attempt to duplicate DTC using testing procedure shown in this TSB to confirm TSB application.
3. If DTC cannot be duplicated, examine indicated wire harness electrical connector and Junction Block for evidence of liquid or corrosion.
4. If liquid or corrosion is observed in indicated wire harness connector and Junction Block, replacement of the Engine Room Main Wire Harness and Junction Block connector No. 1 will be required to repair the vehicle.

Warranty Information

| OP CODE | DESCRIPTION | TIME | OFF | T1 | T2 |
|---------|--|------|-------------|----|----|
| TC9010 | R & R Engine Room Main Wire Harness & Junction Block No. 1 | 4.5 | 82111-04### | 8A | 73 |

APPLICABLE WARRANTY

- This repair is covered under the Toyota Comprehensive Warranty. This warranty is in effect for 36 months or 36,000 miles, whichever occurs first, from the vehicle's in-service date.
- Warranty application is limited to occurrence of the specified condition described in this bulletin.

MIL "ON" DTC P0705

Parts Information

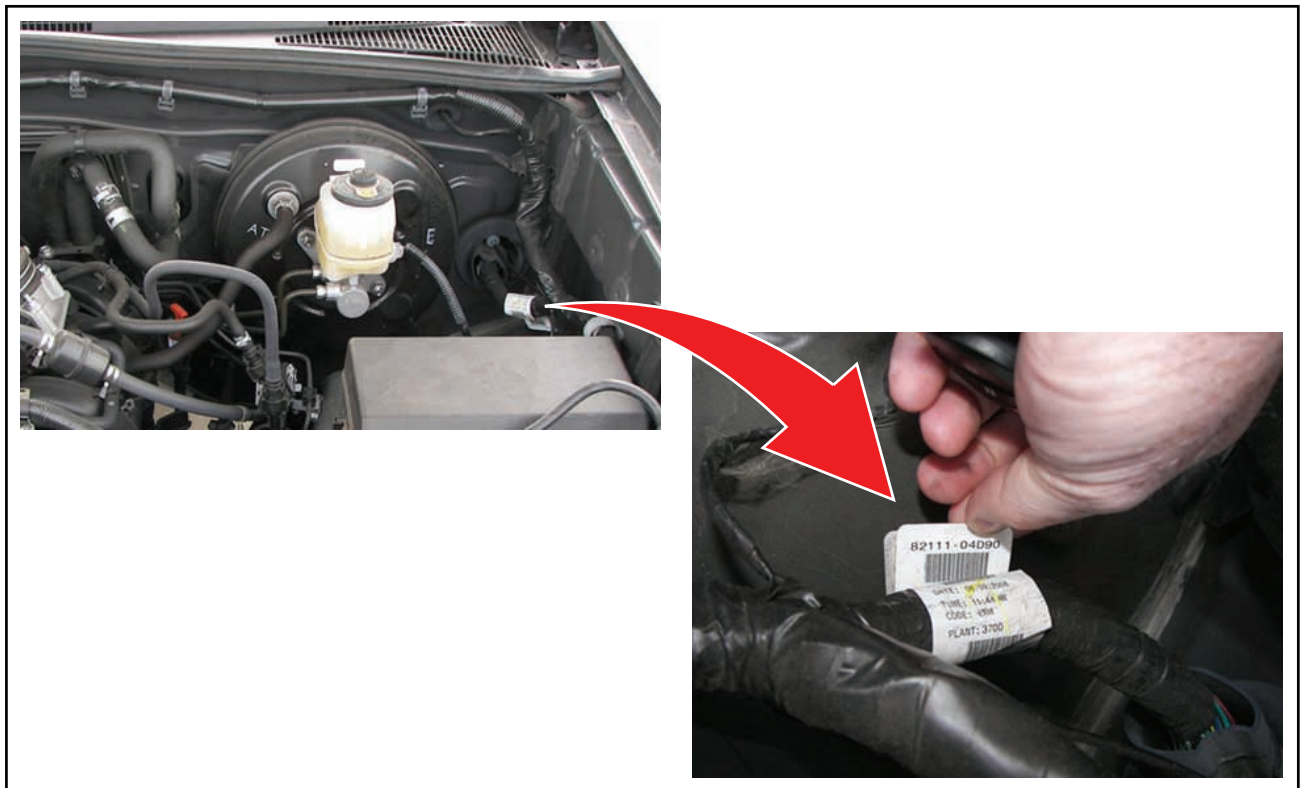
| MODEL YEAR | PREVIOUS PART NUMBER | CURRENT PART NUMBER | PART NAME | QTY |
|-------------|----------------------|---------------------|--|-----|
| 2005 – 2008 | 82732-04020 | Same | Block, Instrument Panel Junction No. 3 | 1 |
| 2009 | 82732-04022 | Same | | |
| 2005 – 2009 | 82111-04###* | Same | Wire, Engine Room Main | 1 |

* To order the correct Engine Room Main Wire Harness part number, refer to the part label on the wire harness in the vehicle (see Figure 1) and/or enter VIN into Electronic Parts Catalog (EPC).

NOTE

The part named "Block, Instrument Panel Junction No. 3" is referred to as "Junction Block No. 1" in the Electrical Wiring Diagram (EWD) and this TSB.

Figure 1. Engine Room Main Wire Harness Part Number Location



MIL "ON" DTC P0705

Required Tools & Equipment

| REQUIRED EQUIPMENT | SUPPLIER | PART NUMBER | QTY |
|--|----------|-------------|-----|
| TIS Techstream* NOTE: Software version 4.20.018 or later is required. | ADE | TSPKG1 | 1 |

* Essential SST.

NOTE

Additional TIS Techstream units may be ordered by calling Approved Dealer Equipment (ADE) at 1-800-368-6787.

Repair Procedure

1. Confirm that DTC P0705 (Transmission Range Control Circuit Malfunction (PRNDL Circuit)) is stored in the Freeze Frame Data.
2. Print out the Freeze Frame Data for P0705 to allow easy review of data values.

Note the values of the following parameters in the Data List:

- Neutral Position SW Signal
- Shift SW Status (R Range)
- Shift SW Status (D Range)
- Shift SW Status (4 or D)
- Shift SW Status (3 Range)
- Shift SW Status (2 Range)
- Shift SW Status (L Range)
- Stop Light Switch

MIL "ON" DTC P0705

Repair Procedure (Continued)

Figure 2. Sample of Freeze Frame Data for DTC P0705

| Freeze Frame Data | | | | | | |
|---|-------|-------|-------|-------|-------|------------|
| P0705 Transmission Range Sensor Circuit (PRNDL Input) | | | | | | |
| Parameter | -3 | -2 | -1 | 0 | 1 | Unit |
| Neutral Position SW Signal | ON | ON | ON | ON | ON | |
| Electrical Load Signal | OFF | OFF | OFF | OFF | OFF | |
| Stop Light Switch | ON | ON | ON | ON | ON | |
| Battery Voltage | 13.7 | 13.7 | 13.7 | 13.7 | 13.7 | V |
| Atmosphere Pressure | -1 | -1 | -1 | -1 | -1 | psi(gauge) |
| Fuel Pump Speed Control | ON | ON | ON | ON | ON | |
| ACIS VSV | OFF | OFF | OFF | OFF | OFF | |
| ACT VSV | OFF | OFF | OFF | OFF | OFF | |
| VVT Control Status (Bank2) | ON | ON | ON | ON | ON | |
| EVAP Purge VSV | OFF | OFF | OFF | OFF | OFF | |
| Fuel Pump/Speed Status | ON | ON | ON | ON | ON | |
| VVT Control Status (Bank1) | ON | ON | ON | ON | ON | |
| Vacuum Pump | OFF | OFF | OFF | OFF | OFF | |
| EVAP System Vent Valve | OFF | OFF | OFF | OFF | OFF | |
| TC and TE1 | OFF | OFF | OFF | OFF | OFF | |
| Engine Speed of Cyl #1 | 51199 | 51199 | 51199 | 51199 | 51199 | rpm |
| Engine Speed of Cyl #2 | 51199 | 51199 | 51199 | 51199 | 51199 | rpm |
| Engine Speed of Cyl #3 | 51199 | 51199 | 51199 | 51199 | 51199 | rpm |
| Engine Speed of Cyl #4 | 51199 | 51199 | 51199 | 51199 | 51199 | rpm |
| Engine Speed of Cyl #5 | 51199 | 51199 | 51199 | 51199 | 51199 | rpm |
| Engine Speed of Cyl #6 | 51199 | 51199 | 51199 | 51199 | 51199 | rpm |
| Av Engine Speed of All Cyl | 51199 | 51199 | 51199 | 51199 | 51199 | rpm |
| VVT Aim Angle (Bank1) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | % |
| VVT Change Angle (Bank1) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | DegFR |
| VVT OCV Duty (Bank1) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | % |
| VVT Aim Angle (Bank2) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | % |
| VVT Change Angle (Bank2) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | DegFR |
| VVT OCV Duty (Bank2) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | % |
| Idle Fuel Cut | OFF | OFF | OFF | OFF | OFF | |
| FC TAU | OFF | OFF | OFF | OFF | OFF | |
| Shift Status | 1st | 1st | 1st | 1st | 1st | |
| Shift SW Status (R Range) | ON | ON | ON | ON | ON | |
| Shift SW Status (D Range) | OFF | OFF | OFF | OFF | OFF | |
| Shift SW Status (4 or D) | OFF | OFF | OFF | OFF | OFF | |
| Shift SW Status (3 Range) | OFF | OFF | OFF | OFF | OFF | |
| Shift SW Status (2 Range) | OFF | OFF | OFF | OFF | OFF | |
| Shift SW Status (L Range) | OFF | OFF | OFF | OFF | OFF | |
| A/T Oil Temperature 1 | 77.0 | 77.0 | 77.0 | 77.0 | 77.0 | F |
| A/T Oil Temperature 2 | 77.0 | 77.0 | 77.0 | 77.0 | 77.0 | F |
| Lock Up | OFF | OFF | OFF | OFF | OFF | |

MIL "ON" DTC P0705

Repair Procedure (Continued)

3. Is the Neutral Position SW Signal value "ON" or "OFF" in the Freeze Frame Data?

Figure 3. Sample of Freeze Frame Data where Neutral Position Switch Is "OFF"

| Freeze Frame Data | | | | | | | |
|---|-------|-------|-------|-------|-------|-------|--|
| P0705 Transmission Range Sensor Circuit (PRNDL Input) | | | | | | | |
| Parameter | -3 | -2 | -1 | 0 | 1 | Unit | |
| Neutral Position SW Signal | OFF | OFF | OFF | OFF | OFF | | |
| Stop Light Switch | ON | ON | ON | ON | ON | | |
| A/C Signal | OFF | OFF | OFF | OFF | OFF | | |
| Closed Throttle Position SW | ON | ON | ON | ON | ON | | |
| Electrical Load Signal | ON | ON | ON | ON | ON | | |
| Time after DTC Cleared | 5771 | 5771 | 5771 | 5771 | 5771 | min | |
| Distance from DTC Cleared | 2920 | 2920 | 2920 | 2920 | 2920 | mile | |
| Warmup Cycle Cleared DTC | 142 | 142 | 142 | 142 | 142 | | |
| TC and TE1 | OFF | OFF | OFF | OFF | OFF | | |
| Ignition Trig. Count | 175 | 194 | 213 | 216 | 216 | | |
| Cylinder #1 Misfire Count | 0 | 0 | 0 | 0 | 0 | | |
| Cylinder #2 Misfire Count | 0 | 0 | 0 | 0 | 0 | | |
| Cylinder #3 Misfire Count | 0 | 0 | 0 | 0 | 0 | | |
| Cylinder #4 Misfire Count | 0 | 0 | 0 | 0 | 0 | | |
| All Cylinders Misfire Count | 0 | 0 | 0 | 0 | 0 | | |
| Misfire RPM | 0 | 0 | 0 | 0 | 0 | rpm | |
| Misfire Load | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | g/rev | |
| Misfire Margin | 57.81 | 57.81 | 58.59 | 58.59 | 58.59 | % | |
| Catalyst OT MF F/C | Avail | Avail | Avail | Avail | Avail | | |
| Cat OT MF F/C History | OFF | OFF | OFF | OFF | OFF | | |
| Cat OT MF F/C Cylinder#1 | OFF | OFF | OFF | OFF | OFF | | |
| Cat OT MF F/C Cylinder#2 | OFF | OFF | OFF | OFF | OFF | | |
| Cat OT MF F/C Cylinder#3 | OFF | OFF | OFF | OFF | OFF | | |
| Cat OT MF F/C Cylinder#4 | OFF | OFF | OFF | OFF | OFF | | |
| ACT VSV | ON | ON | ON | ON | ON | | |
| Idle Fuel Cut | OFF | OFF | OFF | OFF | OFF | | |
| FC TAU | OFF | OFF | OFF | OFF | OFF | | |
| SPD (NC0) | 1000 | 1000 | 1000 | 1000 | 1000 | rpm | |
| SPD (SP2) | 0 | 0 | 0 | 0 | 0 | MPH | |
| Shift SW Status (R Range) | OFF | OFF | OFF | OFF | OFF | | |
| Shift SW Status (2 Range) | OFF | OFF | OFF | OFF | OFF | | |
| Shift SW Status (L Range) | OFF | OFF | OFF | OFF | OFF | | |
| Shift SW Status (D Range) | OFF | OFF | OFF | OFF | OFF | | |
| Shift SW Status (3 Range) | OFF | OFF | OFF | OFF | OFF | | |
| A/T Oil Temperature 1 | 93.7 | 93.7 | 93.7 | 93.7 | 93.7 | F | |
| A/T Oil Temperature 3 | 107.2 | 107.2 | 107.2 | 107.2 | 107.2 | F | |
| Lock Up | OFF | OFF | OFF | OFF | OFF | | |
| Lock Up Solenoid Status | OFF | OFF | OFF | OFF | OFF | | |
| Shift Status | 1st | 1st | 1st | 1st | 1st | | |
| SLT Solenoid Status | ON | ON | ON | ON | ON | | |
| SLU Solenoid Status | OFF | OFF | OFF | OFF | OFF | | |

NOTE
 In Figure 3, transmission is not in any gear position on this vehicle.

- If the Neutral Position SW Signal is "OFF" — **This TSB does NOT apply.**
 Refer to the applicable model year Tacoma Repair Manual for diagnostics for DTC P0705.
- If the Neutral Position SW Signal is "ON" — Go to step 4.

MIL "ON" DTC P0705

Repair Procedure (Continued)

4. Are any of the following Data List parameters "ON" when the Neutral Position SW Signal is "ON"?

- Shift SW Status (R Range)
- Shift SW Status (D Range)
- Shift SW Status (4 or D)
- Shift SW Status (3 Range)
- Shift SW Status (2 Range)
- Shift SW Status (L Range)

Figure 4. Sample of Freeze Frame Data with Neutral & Reverse "ON" at Same Time

| Parameter | -3 | -2 | -1 | 0 | 1 | Unit |
|-----------------------------------|-----------|-----------|-----------|-----------|-----------|-------|
| Starter Signal | OFF | OFF | OFF | OFF | OFF | |
| Power Steering Signal Record | OFF | OFF | OFF | OFF | OFF | |
| Power Steer. Sig. Record | ON | ON | ON | ON | ON | |
| Neutral Position SW Signal | ON | ON | ON | ON | ON | |
| Stop Light Switch | OFF | OFF | OFF | OFF | OFF | |
| A/C Signal | OFF | OFF | OFF | OFF | OFF | |
| Closed Throttle Position SW | ON | ON | ON | ON | ON | |
| Electrical Load Signal | OFF | OFF | OFF | OFF | OFF | |
| Time after DTC Cleared | 1 | 1 | 1 | 1 | 1 | min |
| Distance from DTC Cleared | 0 | 0 | 0 | 0 | 0 | mile |
| Warmup Cycle Cleared DTC | 0 | 0 | 0 | 0 | 0 | |
| TC and TE1 | OFF | OFF | OFF | OFF | OFF | |
| Ignition Trig. Count | 0 | 0 | 0 | 0 | 0 | |
| Cylinder #1 Misfire Count | 0 | 0 | 0 | 0 | 0 | |
| Cylinder #2 Misfire Count | 0 | 0 | 0 | 0 | 0 | |
| Cylinder #3 Misfire Count | 0 | 0 | 0 | 0 | 0 | |
| Cylinder #4 Misfire Count | 0 | 0 | 0 | 0 | 0 | |
| Cylinder #5 Misfire Count | 0 | 0 | 0 | 0 | 0 | |
| Cylinder #6 Misfire Count | 0 | 0 | 0 | 0 | 0 | |
| All Cylinders Misfire Count | 0 | 0 | 0 | 0 | 0 | |
| Misfire RPM | 0 | 0 | 0 | 0 | 0 | rpm |
| Misfire Load | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | g/rev |
| Misfire Margin | -100.00 | -100.00 | -100.00 | -100.00 | -100.00 | % |
| ACT VSV | ON | ON | ON | ON | ON | |
| Idle Fuel Cut | OFF | OFF | OFF | OFF | OFF | |
| FC TAU | OFF | OFF | OFF | OFF | OFF | |
| SPD (NT) | 0 | 0 | 0 | 0 | 0 | rpm |
| SPD (SP2) | 0 | 0 | 0 | 0 | 0 | MPH |
| Shift SW Status (R Range) | ON | ON | ON | ON | ON | |
| Shift SW Status (2 Range) | OFF | OFF | OFF | OFF | OFF | |
| Shift SW Status (L Range) | OFF | OFF | OFF | OFF | OFF | |
| Shift SW Status (D Range) | OFF | OFF | OFF | OFF | OFF | |
| Shift SW Status (4 or D) | OFF | OFF | OFF | OFF | OFF | |
| Shift SW Status (3 Range) | OFF | OFF | OFF | OFF | OFF | |
| A/T Oil Temperature 1 | 75.7 | 75.7 | 75.7 | 75.7 | 75.7 | F |
| A/T Oil Temperature 2 | 74.7 | 74.7 | 74.7 | 74.7 | 74.7 | F |
| Lock Up | OFF | OFF | OFF | OFF | OFF | |
| Lock Up Solenoid Status | ON | ON | ON | ON | ON | |
| Shift Status | 1st | 1st | 1st | 1st | 1st | |
| SLT Solenoid Status | ON | ON | ON | ON | ON | |
| SLU Solenoid Status | ON | ON | ON | ON | ON | |

If YES — Go to step 5.

MIL "ON" DTC P0705

Repair Procedure (Continued)

If **NO** — This TSB does **NOT** apply. Refer to the applicable model year Tacoma Repair Manual for diagnostics for DTC P0705.

5. Using Techstream, clear all stored DTCs and then attempt to duplicate the MIL "ON" DTC P0705.
6. Prepare Techstream Data List for performing the testing/duplication procedure in step 7.

HINT

- Using the Snapshot feature of Techstream makes it easier to review data and confirm duplication of this issue.
- Refer to the University of Toyota online training class P901C "Techstream InDepth" for information about taking snapshots and graphing snapshots on Techstream.

A. Data List setup:

Select AT Datalist

B. Configure Snapshot as follows:

30 second duration

Trigger point at Start (0%)

C. Select Data Graph Display.

Select the following Data Parameters for display on the line graphs:

- Shift SW Status (R Range)
- Shift SW Status (D Range)
- Neutral Position SW Signal
- Stop Light Switch

7. Duplication test procedure.

NOTE

The following inspection procedure can be performed with the vehicle on the lift or while driving the vehicle. If driving, select an area with **NO** traffic since extensive stopping and shifting between the Park, Neutral, Reverse, and Drive positions is required with the brake pressed and released in all gear positions.

A. Clear all stored DTCs using Techstream.

B. Start the vehicle.

C. Start Snapshot.

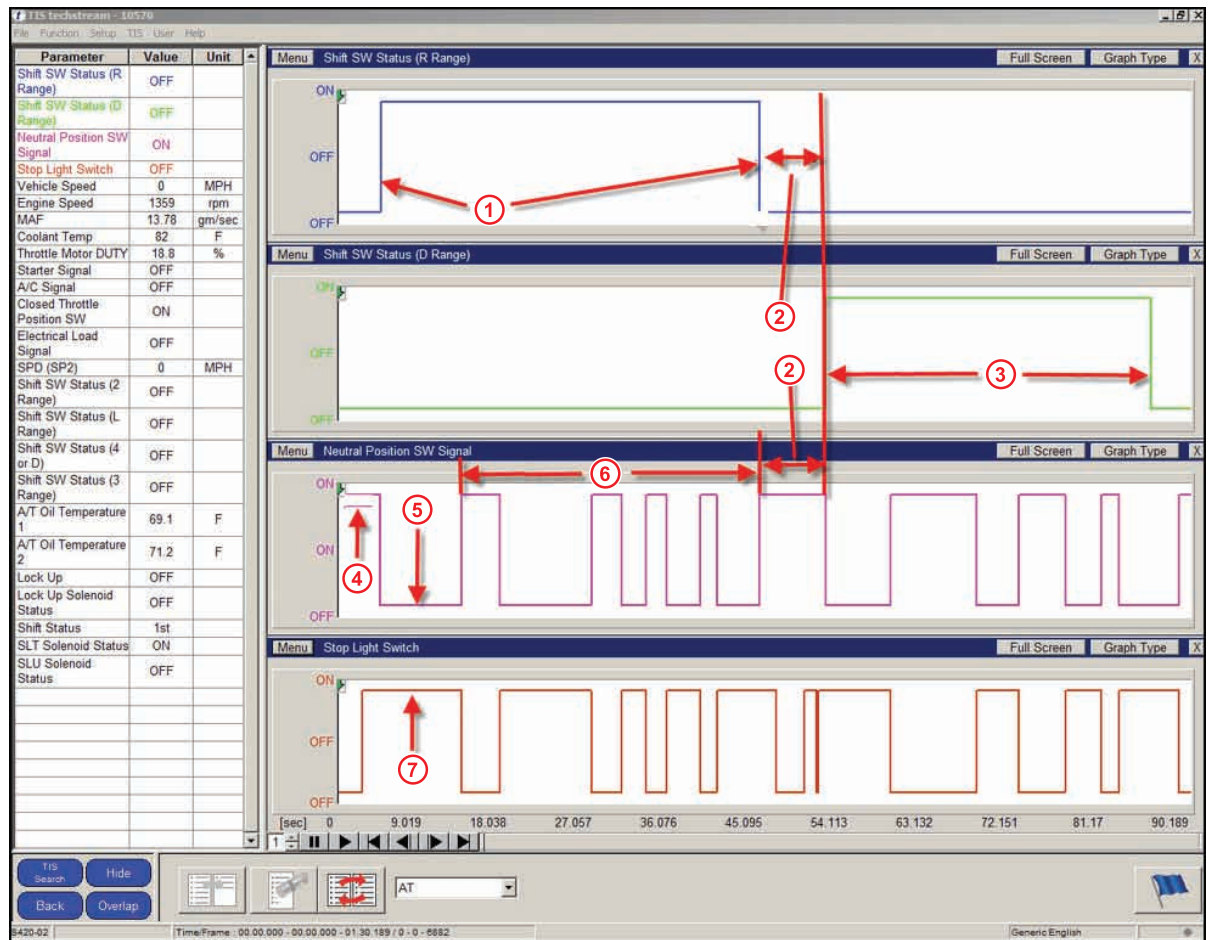
D. Shift between Park, Reverse, Neutral, and Drive positions.

MIL "ON" DTC P0705

Repair Procedure (Continued)

- E. Ensure engagement in all gear positions selected.
- F. Press and release brake pedal when in all gear positions (this can be performed multiple times).
- G. Review Snapshot after completing test to confirm if abnormal readings are observed.

Figure 5. Sample of Techstream Snapshot with Neutral Position SW Signal "ON" in Reverse and Drive when Stop Light Switch is "OFF" (brake pedal released)



| | |
|---|----------------------|
| 1 | Reverse "ON" |
| 2 | Shifted Into Neutral |
| 3 | Drive "ON" |
| 4 | Shifter in Park |

| | |
|---|---|
| 5 | Neutral Position SW Signal is OK |
| 6 | Neutral Position SW Signal Input Changes Based on Brake Pedal Input When in Reverse |
| 7 | Brake Pedal Depressed |

MIL "ON" DTC P0705

Repair Procedure (Continued)

H. Does the Neutral Position SW Signal show "ON" at any time when in Reverse or Drive?

- If **YES** — **Go to next step (7.I).**
- If **NO** — **Go to step 8.**

NOTE

Neutral Position SW Signal can show "ON" either with Stop Lamp Switch "ON" or "OFF".

I. Does the Neutral Position SW Signal change based on brake pedal input (Stop Lamp Switch "ON" or "OFF") when in Reverse or Drive?

- If **YES** — **Ground through Stop Lamp Circuit confirmed. Go to step 9.**
- If **NO** — **TSB does NOT apply.** Refer to the applicable model year Tacoma Repair Manual for diagnostics for DTC P0705.

8. Inspect connector DD and Junction Block No. 1 for liquid contamination or corrosion.

A. Disconnect battery.

B. Locate connector DD and Junction Block No. 1.

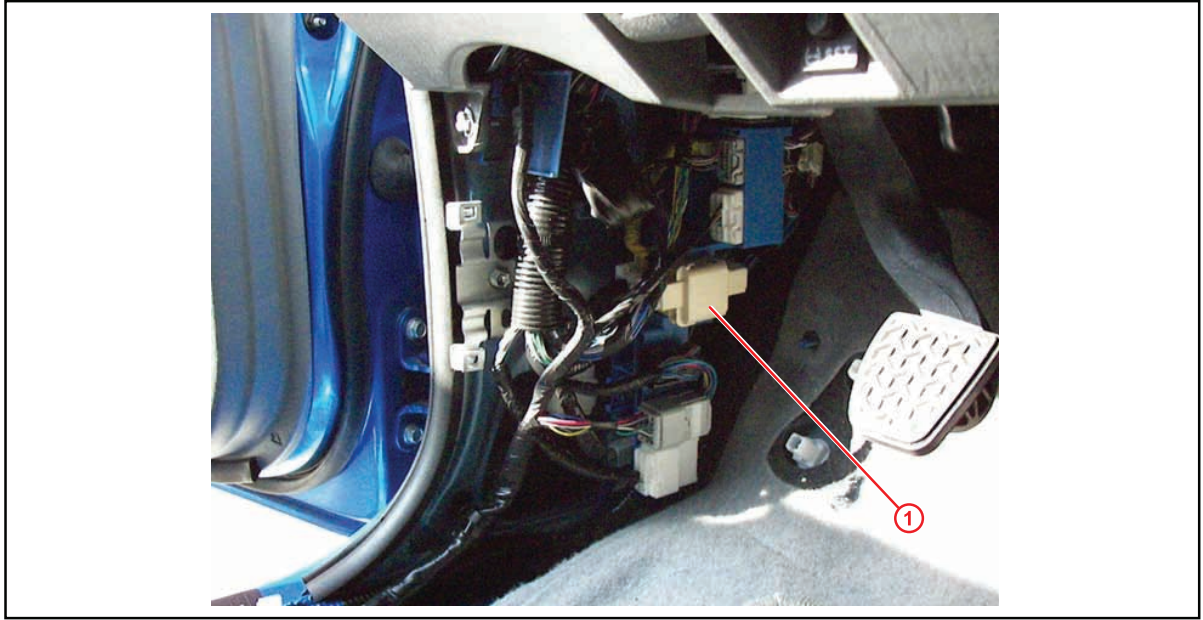
C. Remove the left front kick panel.

D. Identify connector DD and Junction Block No. 1 (see Figures 6 and 7).

MIL "ON" DTC P0705

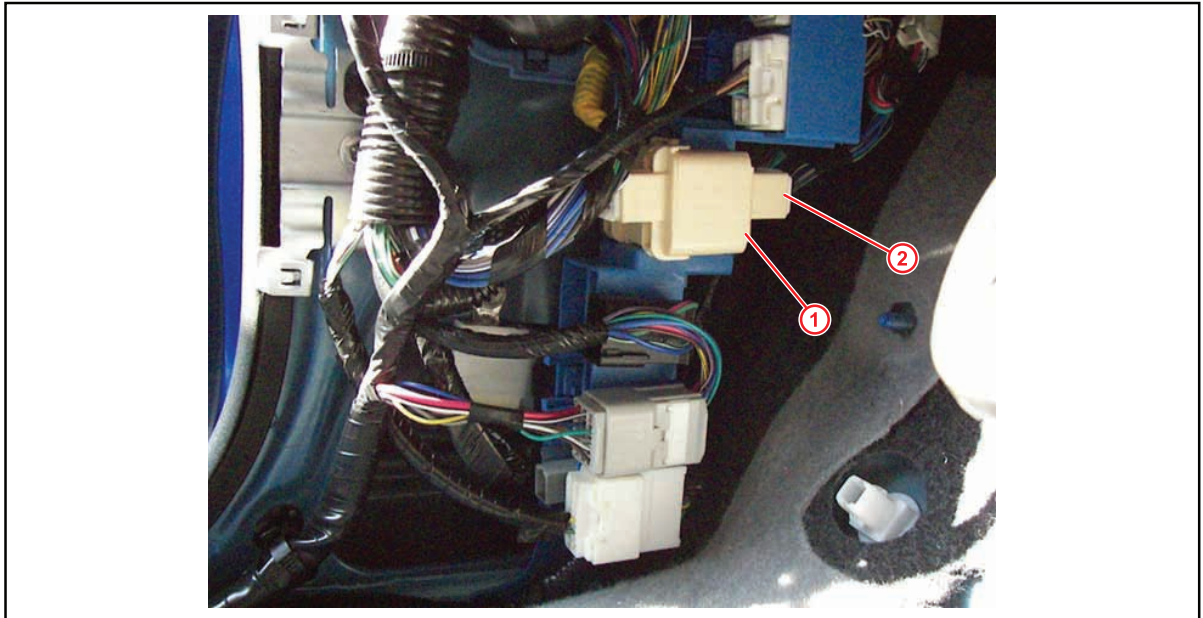
Repair Procedure (Continued)

Figure 6. Location of Connector DD and Junction Block No. 1 (Left Front Kick Panel Area)



| | |
|---|---------------------------------------|
| 1 | Junction Block No. 1 and Connector DD |
|---|---------------------------------------|

Figure 7. Close-up View of Junction Block No. 1 and Connector DD Position



| | |
|---|----------------------|
| 1 | Junction Block No. 1 |
|---|----------------------|

| | |
|---|--------------|
| 2 | Connector DD |
|---|--------------|

MIL "ON" DTC P0705

Repair Procedure (Continued)

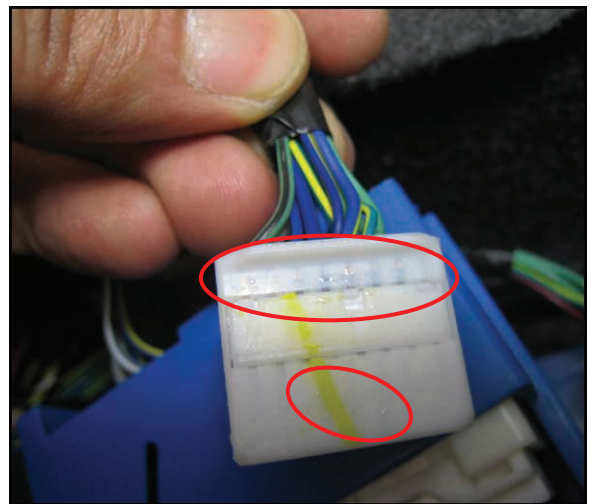
- E. Disconnect connector DD from Junction Block No. 1.
- F. Carefully inspect both components for liquid or corrosion in the connector and the Junction Block (especially the male and female terminals).

See Figures 8 and 9 below for examples of liquid observed within the connector/Junction Block.

Figure 8. Liquid Droplets in Junction Block No. 1



Figure 9. Liquid Droplets on Connector DD



If liquid droplets or corrosion is observed on connector DD or Junction Block No. 1, go to step 9.

- 9. Replace the Engine Room Main Wire Harness and Junction Block No. 1.
- 10. Reconnect the battery.
- 11. Confirm proper operation of vehicle.
- 12. Repair is complete.