Secondary Air Injection System - Water Intrusion: MIL "ON" DTC P0418, P0419, and/or P244#

Service Category: Engine/Hybrid System
Section: Engine Control
Market: USA

### Applicability

<table>
<thead>
<tr>
<th>YEAR(S)</th>
<th>MODEL(S)</th>
<th>ADDITIONAL INFORMATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008 – 2011</td>
<td>Sequoia</td>
<td></td>
</tr>
<tr>
<td>2007 – 2011</td>
<td>Tundra</td>
<td></td>
</tr>
</tbody>
</table>

### REVISION NOTICE

July 12, 2012 Rev2:
- The Warranty Information, Parts Information, and Repair Procedure sections have been updated.

February 9, 2012 Rev1:
- The Introduction, Warranty Information, Parts Information, and Repair Procedure sections have all been updated.

Any previous printed versions of this bulletin should be discarded.

### SUPERSESSION NOTICE

The information contained in this bulletin supersedes SB Nos. T-SB-0329-08 and T-SB-0350-09.
- Applicability has been updated to include 2009 – 2011 model year Sequoia and Tundra vehicles.
- The air pump inlet has been updated to prevent water intrusion.

SB Nos. T-SB-0329-08 and T-SB-0350-09 are Obsolete and any printed versions should be discarded. Be sure to review the entire content of this bulletin before proceeding.

### Introduction

Some 2008 – 2011 model year Sequoia and 2007 – 2011 model year Tundra vehicles may exhibit a MIL "ON" condition with the following Diagnostic Trouble Codes (DTCs):
- P0418/P0419: Secondary Air Injection System Control “A/B” Circuit
- P2440/P2442: Secondary Air Injection System Switching Valve Stuck Open Bank 1/Bank 2
- P2441/P2443: Secondary Air Injection System Switching Valve Stuck Closed Bank 1/Bank 2
Secondary Air Injection System - Water Intrusion: MIL "ON" DTC P0418, P0419, and/or P244#

Introduction (Continued)

- P2445/P2447: Secondary Air Injection System Pump Stuck Off Bank 1/Bank 2

This condition may be caused by water intrusion into the air injection pump assemblies. Use the following procedure to address this condition.

Warranty Information

<table>
<thead>
<tr>
<th>OP CODE</th>
<th>DESCRIPTION</th>
<th>MODEL</th>
<th>ENGINE</th>
<th>TIME</th>
<th>OPF</th>
<th>T1</th>
<th>T2</th>
</tr>
</thead>
<tbody>
<tr>
<td>EG9024</td>
<td>R &amp; R Air Pump Inlet, Air Pump Assembly, and Emission Control Valve Set</td>
<td>Sequoia, Tundra</td>
<td>1GR-FE (until '10 MY)</td>
<td>4.0</td>
<td>17610-0S010</td>
<td>8A</td>
<td>99</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1UR-FE</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2UZ-FE</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3UR-FE/FBE</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Tundra</td>
<td>1GR-FE (from '11 MY)</td>
<td>4.0</td>
<td>17610-0P010</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**APPLICABLE WARRANTY**

- This repair is covered under the Toyota Basic Warranty. This warranty is in effect for 36 months or 36,000 miles, whichever occurs first, from the vehicle’s in-service date.

- For California specification vehicles sold, registered, and operated in California, Connecticut (starting with '08 MY), Maine, Maryland (starting with '11 MY), Massachusetts, New Jersey (starting with '09 MY), New Mexico ('11 MY only), Oregon (starting with '09 MY), Pennsylvania (starting with '08 MY), Rhode Island (starting with '08 MY), Vermont, and Washington (starting with '09 MY), this repair is covered under the California Emission Warranty. This warranty is in effect for 84 months or 70,000 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.

Required Tools & Equipment

<table>
<thead>
<tr>
<th>REQUIRED EQUIPMENT</th>
<th>SUPPLIER</th>
<th>PART NUMBER</th>
<th>QTY</th>
</tr>
</thead>
<tbody>
<tr>
<td>TIS Techstream* or Techstream Lite</td>
<td>ADE</td>
<td>TSPKG1 or TSLITEDLR01</td>
<td>1</td>
</tr>
</tbody>
</table>

* Essential SST.

**NOTE**

Additional Techstream units may be ordered by calling Approved Dealer Equipment (ADE) at 1-800-368-6787.
### Secondary Air Injection System - Water Intrusion: MIL "ON" DTC P0418, P0419, and/or P244#

#### Parts Information

<table>
<thead>
<tr>
<th>ENGINE</th>
<th>PREVIOUS PART NUMBER</th>
<th>CURRENT PART NUMBER</th>
<th>PART NAME</th>
<th>QTY</th>
</tr>
</thead>
<tbody>
<tr>
<td>1GR-FE</td>
<td>(–8/08)*</td>
<td>N/A</td>
<td>Clamp</td>
<td>2</td>
</tr>
<tr>
<td>2UZ-FE</td>
<td>(–8/08)*</td>
<td>90467-28007</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>3UR-FE</td>
<td>(–8/08)*</td>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>1GR-FE</td>
<td>(11/06–10/10)*</td>
<td>17610-0S010</td>
<td>Same</td>
<td>2</td>
</tr>
<tr>
<td>1GR-FE</td>
<td>(10/10– )*</td>
<td>17610-0P010</td>
<td>Same</td>
<td>1</td>
</tr>
<tr>
<td>1UR-FE</td>
<td></td>
<td>17610-0S010</td>
<td>Pump Assembly, Air</td>
<td>2</td>
</tr>
<tr>
<td>2UZ-FE</td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>3UR-FE</td>
<td></td>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>3UR-FBE</td>
<td></td>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>1GR-FE</td>
<td>(11/06–10/10)*</td>
<td>25710-31010</td>
<td>25710-31011</td>
<td>1</td>
</tr>
<tr>
<td>1GR-FE</td>
<td>(10/10–05/11)*</td>
<td>25701-31010</td>
<td>25701-31011</td>
<td>1</td>
</tr>
<tr>
<td>1GR-FE</td>
<td>(05/11– )*</td>
<td>25701-31011</td>
<td>Same</td>
<td>1</td>
</tr>
<tr>
<td>1UR-FE</td>
<td></td>
<td>25701-38100</td>
<td>Same</td>
<td>1</td>
</tr>
<tr>
<td>2UZ-FE</td>
<td>(11/06–4/07)*</td>
<td>25710-50030</td>
<td>25710-50031</td>
<td>2</td>
</tr>
<tr>
<td>2UZ-FE</td>
<td>(5/07–4/09)*</td>
<td>25710-50030</td>
<td>25710-50031</td>
<td>1</td>
</tr>
<tr>
<td>3UR-FE</td>
<td></td>
<td>25701-38060</td>
<td>25701-38061</td>
<td>1</td>
</tr>
<tr>
<td>3UR-FBE</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1GR-FE</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1UR-FE</td>
<td></td>
<td>17621-0S011</td>
<td>17621-0S012</td>
<td>1</td>
</tr>
<tr>
<td>3UR-FE</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3UR-FBE</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2UZ-FE</td>
<td>N/A</td>
<td>04001-7310F</td>
<td>Air Inlet Cover Kit</td>
<td>1</td>
</tr>
</tbody>
</table>

© 2012 Toyota Motor Sales, USA
### Secondary Air Injection System - Water Intrusion: MIL "ON" DTC P0418, P0419, and/or P244#

#### Parts Information (Continued)

<table>
<thead>
<tr>
<th>ENGINE</th>
<th>PREVIOUS PART NUMBER</th>
<th>CURRENT PART NUMBER</th>
<th>PART NAME</th>
<th>QTY</th>
</tr>
</thead>
<tbody>
<tr>
<td>1GR-FE</td>
<td>17376-50010</td>
<td>Same</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>(11/06–10/10)*</td>
<td>17377-31010</td>
<td>Same</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>1GR-FE</td>
<td>17377-38010</td>
<td>Same</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>(10/10– )*</td>
<td>17376-38030</td>
<td>Same</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>1UR-FE</td>
<td>17376-38010</td>
<td>Same</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>1GR-FE</td>
<td>17377-38010</td>
<td>Same</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>(10/10– )*</td>
<td>17377-50010</td>
<td>Same</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>2UZ-FE</td>
<td>17376-50010</td>
<td>Same</td>
<td>Gasket, Air Tube</td>
<td>2</td>
</tr>
<tr>
<td>(11/06–04/09)*</td>
<td>17377-50010</td>
<td>Same</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>3UR-FE</td>
<td>17376-38010</td>
<td>Same</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>3UR-FBE</td>
<td>17171-0S030</td>
<td>Same</td>
<td>Gasket, Intake Manifold</td>
<td>2</td>
</tr>
<tr>
<td>3UR-FE</td>
<td>17376-38020</td>
<td>Same</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>3UR-FBE</td>
<td>17377-38010</td>
<td>Same</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>3UR-FE</td>
<td>17171-0S020</td>
<td>Same</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>3UR-FBE</td>
<td>17171-0S020</td>
<td>Same</td>
<td></td>
<td>2</td>
</tr>
</tbody>
</table>

* MM/YY.

**NOTE**

- **For 1GR/1UR/3UR Vehicles:** If moisture/water is found to be present in the Air Injection Pumps and/or Air Switching Valves, it is imperative that ALL air pumps AND the emission control valves are replaced. All parts listed for the applicable model in this bulletin must be replaced in order to ensure the condition is properly addressed. Failure to replace all parts may result in comeback repairs.

- **For 2UZ Vehicles:** Most vehicles will NOT require the replacement of the Bank 1 Air Pump. If replacement is necessary, a vehicle health check must be attached to the R.O. showing the vehicle has one of the following DTCs: P2444, P2445, or P0418. Inappropriate replacement of the Bank 1 Air Pump on 2UZ-FE vehicles will result in a warranty claim debit.
Secondary Air Injection System - Water Intrusion: MIL "ON" DTC P0418, P0419, and/or P244#

Repair Procedure

1. Using TIS Techstream, check if DTCs P0418, P0419, P2440, P2441, P2442, P2443, P2445, and/or P2447 are present.

2. Using TIS Techstream, perform the manual Air Injection Active Test (options 1 and 2) to verify if the signal from the air injection control driver is reaching the air pumps.

   The pumps should be heard turning on at this point and there should be battery voltage on pin 2 of the pumps during this test. If there is NO voltage, refer to Service Bulletin T-SB-0029-08, “Air Injection Control Driver” for control driver diagnostic procedures.

3. If during the test, voltage is present at the pump and the pump is NOT running, or the Air Pressure (gauge) value did NOT increase from 0 to 1 psi on TIS Techstream with the pump running, remove the air pump assemblies for inspection.

   Refer to the Technical Information System (TIS), applicable model and model year Repair Manual:

   **2008 – 2011 Sequoia:**
   

   - 2008 Sequoia: 3UR-FE / 2UZ-FE (Bank 2)
   - 2009 Sequoia: 3UR-FE / 3UR-FBE / 2UZ-FE (Bank 2)
   - 2010 Sequoia: 3UR-FE / 3UR-FBE / 1UR-FE
   - 2011 Sequoia: 3UR-FE / 3UR-FBE / 1UR-FE

   **2007 – 2011 Tundra:**
   

   - 2007 Tundra: 3UR-FE / 2UZ-FE (Bank 2) / 1GR-FE
   - 2008 Tundra: 3UR-FE / 2UZ-FE (Bank 2) / 1GR-FE
   - 2009 Tundra: 3UR-FE / 3UR-FBE / 2UZ-FE (Bank 2) / 1GR-FE
   - 2010 Tundra: 3UR-FE / 3UR-FBE / 1GR-FE / 1UR-FE
   - 2011 Tundra: 3UR-FE / 3UR-FBE / 1GR-FE / 1UR-FE

4. With the pumps removed from the vehicle, verify if there is liquid or evidence that liquid entered the pumps.

   - **YES** — If there is liquid evidence, go to step 5.
   - **NO** — If there is NO evidence of liquid, go to step 7.
Secondary Air Injection System - Water Intrusion: MIL "ON" DTC P0418, P0419, and/or P244#

Repair Procedure (Continued)

5. If liquid evidence is present, follow the steps below.
   
   A. Replace the air pump inlet.
   B. Install the inlet cover (2UZ-FE only).
   C. Replace all air pumps under the fender well.
   D. Install clamps on the inlet pipe to air pump hose joint where not currently installed, as shown in Figures 2 and 3.

**NOTE**

ONLY install clamps on vehicles where they are not currently installed. If already present, reuse the currently installed clamps.

**FOR 2UZ-FE EQUIPPED VEHICLES**

- ONLY replace the Bank 2 pump.
- Install the foam seal to the top of the air inlet along the inlet’s edge and then attach the cover with zip ties as shown below. The zip tie length should be a minimum of 2.5 in. (64 mm) in length when tightened.

Figure 1.

<table>
<thead>
<tr>
<th>Foam Seal</th>
<th>3 Air Inlet — Located Above RH Front Wheel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cover</td>
<td>4 Zip Ties</td>
</tr>
</tbody>
</table>
Secondary Air Injection System - Water Intrusion: MIL "ON" DTC P0418, P0419, and/or P244#

Repair Procedure (Continued)

Refer to TIS, applicable model and model year Repair Manual:

**2008 – 2011 Sequoia:**

- 2008 Sequoia: **3UR-FE / 2UZ-FE (Bank 2)**
- 2009 Sequoia: **3UR-FE / 3UR-FBE / 2UZ-FE (Bank 2)**
- 2010 Sequoia: **3UR-FE / 3UR-FBE / 1UR-FE**
- 2011 Sequoia: **3UR-FE / 3UR-FBE / 1UR-FE**

**2007 – 2011 Tundra:**

- 2007 Tundra: **3UR-FE / 2UZ-FE (Bank 2) / 1GR-FE**
- 2008 Tundra: **3UR-FE / 2UZ-FE (Bank 2) / 1GR-FE**
- 2009 Tundra: **3UR-FE / 3UR-FBE / 2UZ-FE (Bank 2) / 1GR-FE**
- 2010 Tundra: **3UR-FE / 3UR-FBE / 1GR-FE / 1UR-FE**
- 2011 Tundra: **3UR-FE / 3UR-FBE / 1GR-FE / 1UR-FE**

**IMPORTANT**

Make sure the clamp orientation is as shown in Figures 2 and 3.
Secondary Air Injection System - Water Intrusion: MIL "ON" DTC P0418, P0419, and/or P244#

Repair Procedure (Continued)

Figure 2. 1GR-FE/3UR-FE/1UR-FE Air Injection Pump Assembly (with clamps)

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Clamp 1 Installation Orientation</td>
</tr>
<tr>
<td>2</td>
<td>Clamp 2 Installation Orientation</td>
</tr>
<tr>
<td>3</td>
<td>Clamp Installation Location (Typical)</td>
</tr>
<tr>
<td>4</td>
<td>90°</td>
</tr>
<tr>
<td>5</td>
<td>Upper</td>
</tr>
<tr>
<td>6</td>
<td>RH</td>
</tr>
<tr>
<td>7</td>
<td>LH</td>
</tr>
<tr>
<td>8</td>
<td>Hose Stopper Must Remain Within Clip Tabs</td>
</tr>
<tr>
<td>9</td>
<td>Air Pump</td>
</tr>
<tr>
<td>10</td>
<td>Air Hose</td>
</tr>
<tr>
<td>11</td>
<td>Inlet</td>
</tr>
<tr>
<td>12</td>
<td>Approximately 0 – 5 mm (0 – 0.2 in.)</td>
</tr>
</tbody>
</table>
Secondar\n\n\nSecondary Air Injection System - Water Intrusion: MIL "ON" DTC P0418, P0419, and/or P244#

Repair Procedure (Continued)

Figure 3. 2UZ-FE Air Injection Pump Assembly (with clamps)

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Clamp Installation Orientation</td>
<td>5</td>
</tr>
<tr>
<td>2</td>
<td>Clamp Installation Location</td>
<td>6</td>
</tr>
<tr>
<td>3</td>
<td>Upper</td>
<td>7</td>
</tr>
<tr>
<td>4</td>
<td>Hose Stopper Must Remain Within Clip Tabs</td>
<td>8</td>
</tr>
</tbody>
</table>
Secondary Air Injection System - Water Intrusion: MIL "ON" DTC P0418, P0419, and/or P244#

Repair Procedure (Continued)

6. In some instances where water may have entered the system, DTCs P2440/P2441/P2442/P2443 may set. Replacement of the emission control valves is necessary to ensure reliability.

Refer to TIS, applicable model and model year Repair Manual to replace the emission control valves:

2008 – 2011 Sequoia:

• 2008 Sequoia: 3UR-FE / 2UZ-FE
• 2009 Sequoia: 3UR-FE / 3UR-FBE / 2UZ-FE
• 2010 Sequoia: 3UR-FE / 3UR-FBE / 1UR-FE
• 2011 Sequoia: 3UR-FE / 3UR-FBE / 1UR-FE

2007 – 2011 Tundra:

• 2007 Tundra: 3UR-FE / 2UZ-FE / 1GR-FE
• 2008 Tundra: 3UR-FE / 2UZ-FE / 1GR-FE
• 2009 Tundra: 3UR-FE / 3UR-FBE / 2UZ-FE / 1GR-FE
• 2010 Tundra: 3UR-FE / 3UR-FBE / 1GR-FE / 1UR-FE
• 2011 Tundra: 3UR-FE / 3UR-FBE / 1GR-FE / 1UR-FE

7. If there is NO liquid found in the air pump assemblies, or the DTCs are still present after replacement, inspect the air injection system.

Refer to TIS, applicable model and model year Repair Manual:

2008 – 2011 Sequoia:

• P0412/P0415:

  • 2008 Sequoia: 3UR-FE / 2UZ-FE
  • 2009 Sequoia: 3UR-FE / 3UR-FBE / 2UZ-FE
  • 2010 Sequoia: 3UR-FE / 3UR-FBE / 1UR-FE
  • 2011 Sequoia: 3UR-FE / 3UR-FBE / 1UR-FE
Secondary Air Injection System - Water Intrusion: MIL "ON" DTC P0418, P0419, and/or P244#

Repair Procedure (Continued)

- **P0418/P0419:**
  
  
  - 2008 Sequoia: 3UR-FE / 2UZ-FE
  - 2009 Sequoia: 3UR-FE / 3UR-FBE / 2UZ-FE
  - 2010 Sequoia: 3UR-FE / 3UR-FBE / 1UR-FE
  - 2011 Sequoia: 3UR-FE / 3UR-FBE / 1UR-FE

- **P2440 – P2443:**
  
  
  - 2008 Sequoia: 3UR-FE / 2UZ-FE
  - 2009 Sequoia: 3UR-FE / 3UR-FBE / 2UZ-FE
  - 2010 Sequoia: 3UR-FE / 3UR-FBE / 1UR-FE
  - 2011 Sequoia: 3UR-FE / 3UR-FBE / 1UR-FE

- **P2445/P2447:**
  
  
  - 2008 Sequoia: 3UR-FE / 2UZ-FE
  - 2009 Sequoia: 3UR-FE / 3UR-FBE / 2UZ-FE
  - 2010 Sequoia: 3UR-FE / 3UR-FBE / 1UR-FE
  - 2011 Sequoia: 3UR-FE / 3UR-FBE / 1UR-FE

2007 – 2011 Tundra:

- **P0412/P0415:**
  
  
  - 2007 Tundra: 3UR-FE / 2UZ-FE / 1GR-FE
  - 2008 Tundra: 3UR-FE / 2UZ-FE / 1GR-FE
  - 2009 Tundra: 3UR-FE / 3UR-FBE / 2UZ-FE / 1GR-FE

© 2012 Toyota Motor Sales, USA
Secondary Air Injection System - Water Intrusion: MIL "ON" DTC P0418, P0419, and/or P244#

Repair Procedure (Continued)

• 2010 Tundra: 3UR-FE / 3UR-FBE / 1GR-FE / 1UR-FE

• 2011 Tundra: 3UR-FE / 3UR-FBE / 1GR-FE / 1UR-FE

• P0418/P0419:
  • 2007 Tundra: 3UR-FE / 2UZ-FE / 1GR-FE
  • 2008 Tundra: 3UR-FE / 2UZ-FE / 1GR-FE
  • 2009 Tundra: 3UR-FE / 3UR-FBE / 2UZ-FE / 1GR-FE
  • 2010 Tundra: 3UR-FE / 3UR-FBE / 2UZ-FE / 1GR-FE
  • 2011 Tundra: 3UR-FE / 3UR-FBE / 1GR-FE / 1UR-FE

• P2440 – P2443:
  • 2007 Tundra: 3UR-FE / 2UZ-FE / 1GR-FE
  • 2008 Tundra: 3UR-FE / 2UZ-FE / 1GR-FE
  • 2009 Tundra: 3UR-FE / 3UR-FBE / 2UZ-FE / 1GR-FE
  • 2010 Tundra: 3UR-FE / 3UR-FBE / 1GR-FE / 1UR-FE
  • 2011 Tundra: 3UR-FE / 3UR-FBE / 1GR-FE / 1UR-FE

• P2445/P2447:
  • 2007 Tundra: 3UR-FE / 2UZ-FE / 1GR-FE
  • 2008 Tundra: 3UR-FE / 2UZ-FE / 1GR-FE
  • 2009 Tundra: 3UR-FE / 3UR-FBE / 2UZ-FE / 1GR-FE
  • 2010 Tundra: 3UR-FE / 3UR-FBE / 1GR-FE / 1UR-FE
  • 2011 Tundra: 3UR-FE / 3UR-FBE / 1GR-FE / 1UR-FE

8. Clear the DTC(s) and road test the vehicle to confirm the condition has been corrected.