

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

Service Category Engine/Hybrid System

Section Engine Control

Market USA

Toyota Supports ASE Certification 

Applicability

YEAR(S)	MODEL(S)	ADDITIONAL INFORMATION
2008 – 2011	Sequoia	
2007 – 2011	Tundra	

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

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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

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

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

REQUIRED EQUIPMENT	SUPPLIER	PART NUMBER	QTY
TIS Techstream* or Techstream Lite NOTE: Software version 7.10.030 or later is required.	ADE	TSPKG1 or TSLITEDLR01	1

* Essential SST.

NOTE

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

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Parts Information

ENGINE	PREVIOUS PART NUMBER	CURRENT PART NUMBER	PART NAME	QTY
1GR-FE (-8/08)*	N/A	90467-28007	Clamp	2
2UZ-FE (-8/08)*				1
3UR-FE (-8/08)*				2
1GR-FE (11/06-10/10)*	17610-0S010	Same	Pump Assembly, Air	2
1GR-FE (10/10-)*	17610-0P010	Same		1
1UR-FE	17610-0S010	Same		2
2UZ-FE				1
3UR-FE				2
3UR-FBE				2
1GR-FE (11/06-10/10)*	25710-31010	25710-31011		Valve Set, Emission Control
1GR-FE (10/10-05/11)*	25701-31010	25701-31011	1	
	25702-31010	25702-31011	1	
1GR-FE (05/11-)*	25701-31011	Same	1	
	25702-31011	Same	1	
1UR-FE	25701-38100	Same	1	
	25702-38050	Same	1	
2UZ-FE (11/06-4/07)*	25710-50030	25710-50031	2	
2UZ-FE (5/07-4/09)*	25710-50030	25710-50031	1	
	25710-50040	25710-50041	1	
3UR-FE	25701-38060	25701-38061	1	
3UR-FBE				
1GR-FE	17621-0S011	17621-0S012	Air Pump Inlet	1
1UR-FE				
3UR-FE				
3UR-FBE				
2UZ-FE	N/A	04001-7310F	Air Inlet Cover Kit	1

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Parts Information (Continued)

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

* 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.

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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:

Engine/Hybrid System – Emission Control – "3UR-FE / 3UR-FBE / 2UZ-FE / 1UR-FE Emission Control: Air Pump: Removal"

- 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:

Engine/Hybrid System – Emission Control – "3UR-FE / 3UR-FBE / 2UZ-FE / 1GR-FE / 1UR-FE Emission Control: Air Pump: Removal"

- 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.

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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.

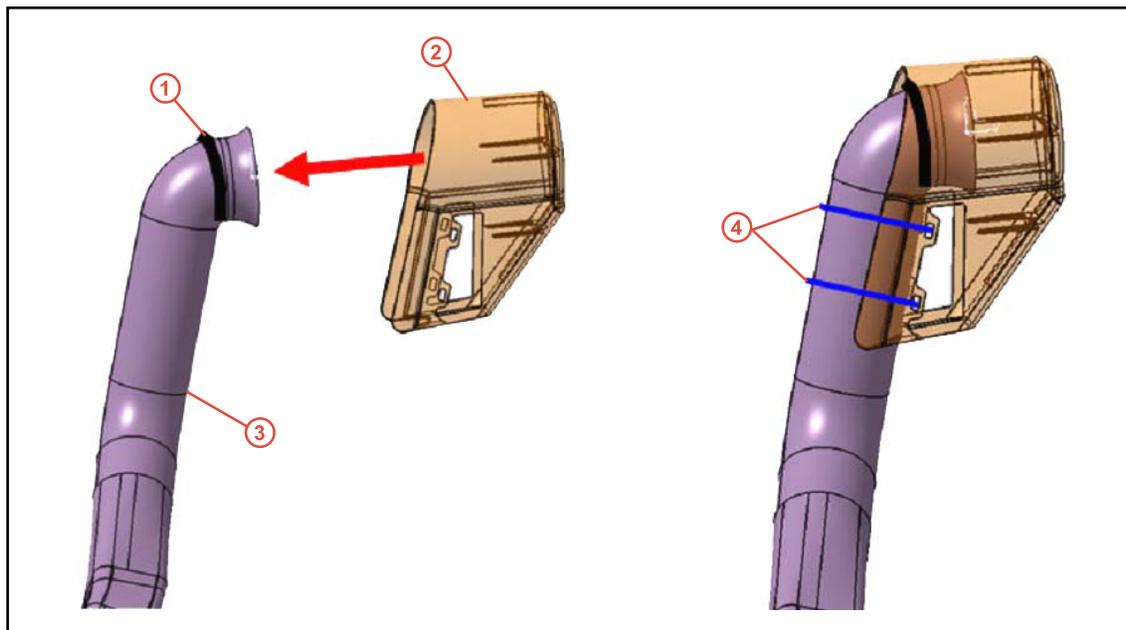
NOTE

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.



1	Foam Seal
2	Cover

3	Air Inlet — Located Above RH Front Wheel
4	Zip Ties

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Repair Procedure (Continued)

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

2008 – 2011 Sequoia:

Engine/Hybrid System – Emission Control – “3UR-FE / 3UR-FBE / 2UZ-FE / 1UR-FE Emission Control: Air Pump: Installation”

- 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:

Engine/Hybrid System – Emission Control – “3UR-FE / 3UR-FBE / 2UZ-FE / 1GR-FE / 1UR-FE Emission Control: Air Pump: Installation”

- 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](#)

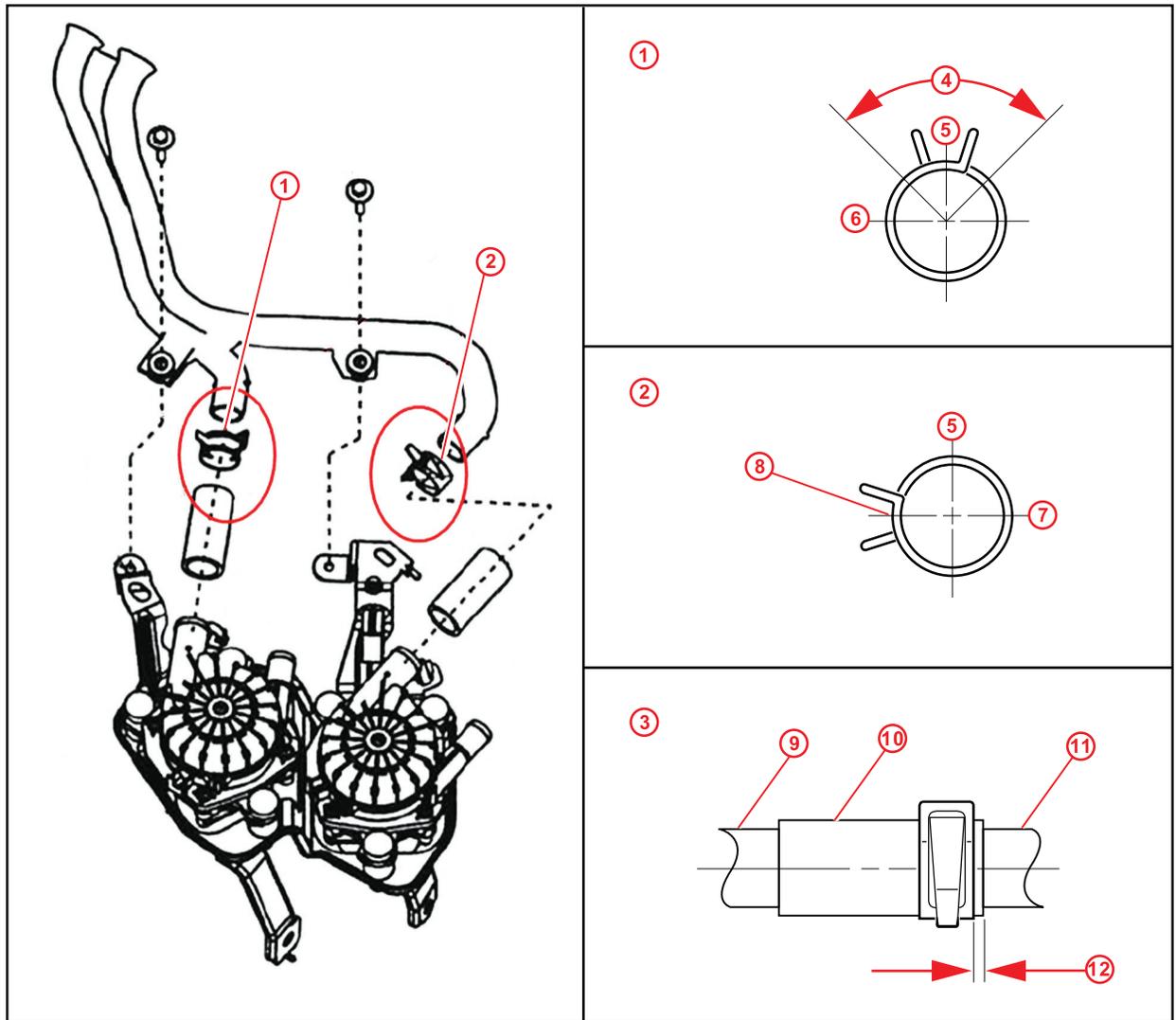
IMPORTANT

Make sure the clamp orientation is as shown in Figures 2 and 3.

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Repair Procedure (Continued)

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



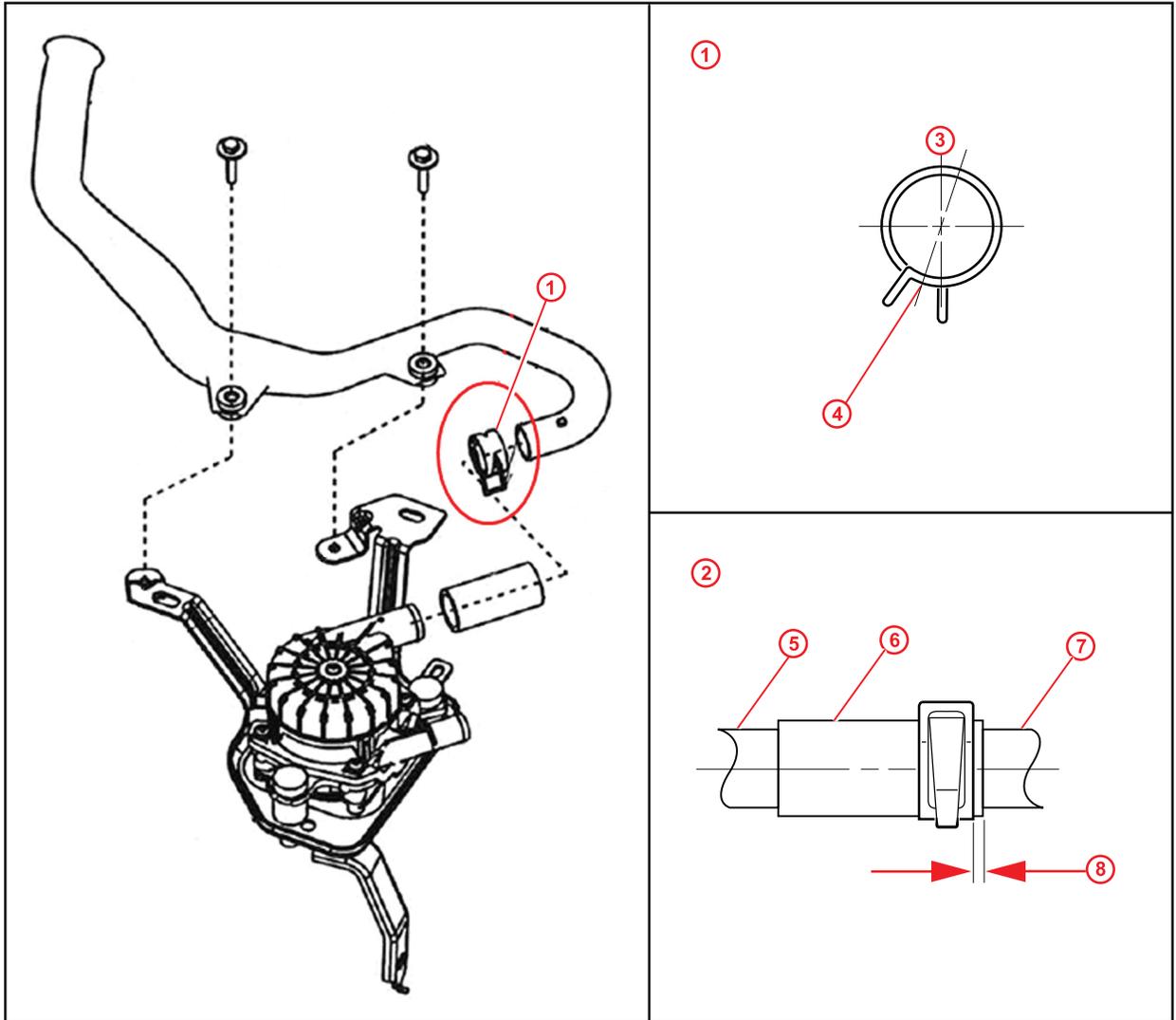
1	Clamp 1 Installation Orientation
2	Clamp 2 Installation Orientation
3	Clamp Installation Location (Typical)
4	90°
5	Upper
6	RH

7	LH
8	Hose Stopper Must Remain Within Clip Tabs
9	Air Pump
10	Air Hose
11	Inlet
12	Approximately 0 – 5 mm (0 – 0.2 in.)

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Repair Procedure (Continued)

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



1	Clamp Installation Orientation
2	Clamp Installation Location
3	Upper
4	Hose Stopper Must Remain Within Clip Tabs

5	Air Pump
6	Air Hose
7	Inlet
8	Approximately 0 – 5 mm (0 – 0.2 in.)

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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:

Engine/Hybrid System – Engine Control – “3UR-FE / 3UR-FBE / 2UZ-FE / 1UR-FE Engine Control System: SFI System: P2440–P2443 Secondary Air Injection System Switching Valve Stuck Bank 1”

- 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:

Engine/Hybrid System – Engine Control – “3UR-FE / 2UZ-FE / 1GR-FE / 1UR-FE Engine Control System: SFI System: P2440–P2443 Secondary Air Injection System Switching Valve Stuck Bank 1”

- 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:
Engine/Hybrid System – Engine Control – “3UR-FE / 3UR-FBE / 2UZ-FE / 1UR-FE Engine Control: SFI System: P0412: Secondary Air Injection System Control A Circuit” (P0415: Secondary Air Injection System Switching Valve “B” Circuit)
 - 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:
Engine/Hybrid System – Engine Control – “3UR-FE / 3UR-FBE / 2UZ-FE / 1UR-FE Engine Control: SFI System: P0418: Secondary Air Injection System Control A Circuit” (P0419: Secondary Air Injection System Control “B” Circuit)
 - 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:
Engine/Hybrid System – Engine Control – “3UR-FE / 3UR-FBE / 2UZ-FE / 1UR-FE Engine Control: SFI System: P2440–P2443 Secondary Air Injection System Switching Valve Stuck Bank 1”
 - 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:
Engine/Hybrid System – Engine Control – “3UR-FE / 3UR-FBE / 2UZ-FE / 1UR-FE Engine Control: SFI System: P2444–P2447: Secondary Air Injection System Pump Stuck On Bank 1” (P2445: Secondary Air Injection System Pump Stuck Off Bank 1, P2447: Secondary Air Injection System Pump Stuck Off Bank 2)
 - 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:
Engine/Hybrid System – Engine Control – “3UR-FE / 3UR-FBE / 2UZ-FE / 1GR-FE / 1UR-FE Engine Control System: SFI System: P0412: Secondary Air Injection System Switching Valve A Circuit” (P0415: Secondary Air Injection System Switching Valve “B” Circuit)
 - 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](#)

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:
Engine/Hybrid System – Engine Control – “3UR-FE / 2UZ-FE / 1GR-FE / 1UR-FE Engine Control System: SFI System: P0418: Secondary Air Injection System Control A Circuit” (P0419: Secondary Air Injection System Control “B” Circuit)
 - 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](#)
- P2440 – P2443:
Engine/Hybrid System – Engine Control – “3UR-FE / 3UR-FBE / 2UZ-FE / 1GR-FE / 1UR-FE Engine Control System: SFI System: P2440–P2443 Secondary Air Injection System Switching Valve Stuck Bank 1”
 - 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:
Engine/Hybrid System – Engine Control – “3UR-FE / 2UZ-FE / 1GR-FE / 1UR-FE Engine Control System: SFI System: P2444–P2447: Secondary Air Injection System Pump Stuck On Bank 1” (P2445: Secondary Air Injection System Pump Stuck Off Bank 1, P2447: Secondary Air Injection System Pump Stuck Off Bank 2)
 - 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.