

OBD Inspection System for BAR Advisory Group

September 17, 2013



Statutes Amended in 2010

- Health and Safety Code section 44012:
 - Now requires OBD in lieu of ASM / TSI on 2000+ model year vehicles
- Health and Safety Code section 44036:
 - Inspection equipment may block certificate if a vehicle has excessive variance in OBD data

Regulations Adopted 7/1/13

- Regulation text changes:
 - included additional and more stringent OBD test failure criteria
 - Smog Check Manual is incorporated by reference to regulation
 - revised and moved equipment requirements to Smog Check Manual
 - revised inspection procedures in Smog Check Manual
 - retitled Smog Check Manual
 - Start using new Smog Check Manual on new inspection equipment start date. Date pending BAR certification of DAD equipment.

New “Smog Check Manual”

- Inspection Procedure change
 - No tailpipe test on most 2000 and newer model year vehicles, except those without OBDII:
 - For example: over 14,000 GVWR, federal certification with basic OBD
- Testable Vehicles change
 - Hybrid powered vehicles (currently not compatible with BAR-97) are now testable on new equipment
 - OBDII and Visual tests only, no idle snap smoke test
 - Starting on or after new equipment start date
 - DMV registration renewal notice will include Smog Check due message

New “Smog Check Manual”

- Functional test changes
 - Fuel Cap test limited to 1995 and older
 - Timing test limited to 1995 and older
 - OBD readiness monitor standards revised
 - Gasoline powered:
 - One monitor allowed for 1996 to 1999
 - Only the evaporative monitor for 2000 and newer
 - [current standards: 1996 to 2000 two allowed, 2001+ any one allowed]
 - Diesel powered:
 - Zero monitors allowed for 1998 to 2006
 - Only the exhaust after-treatment system* monitor (e.g., particulate filter) for 2007 and newer
 - [current standards: same as gasoline]

[* ‘system’ may include several monitors: PM filter, NOx/SCR treatment, catalyst] 5

New “Smog Check Manual”

- New Test Requirements Table
 - shows which vehicles to inspect with BAR-97 EIS or OBD Inspection System (OIS) equipment
 - summarizes required tailpipe, visual, functional tests by vehicle group
- Table must be used in conjunction with more specific instructions in subsequent pages

TEST REQUIREMENTS

Required Tests	BAR-97		OBD Inspection System (OIS)		
	Gasoline 1976 to 1995 (1)	Gasoline 1996 to 1999 (1)	Hybrid 2000 and newer (2)	Diesel 1998 and newer (3)	Gasoline 2000 and newer (1, 4)
Tailpipe Inspections: (see section 1.2 for specifics)					
Acceleration Simulation Mode (ASM) or Two Speed Idle (TSI) ⁽⁵⁾	√	√			
Visual Inspections: (see section 1.3 for specifics)					
Crankcase Emissions Controls	√	√	√	√	√
Thermostatic Air Cleaner	√	√			
Fuel Evaporative System (EVAP)	√	√	√		√
Exhaust Gas After Treatment Systems	√	√	√	√	√
Exhaust Gas Recirculation (EGR)	√	√	√	√	√
Ignition Spark Controls	√	√	√		√
Fuel Metering Systems	√	√	√	√	√
Air Injection System	√	√	√		√
Computers, Sensors, and Switches	√	√	√	√	√
Other Emission Related Components	√	√	√	√	√
Liquid Fuel Leak (section 1.3.3)	√	√	√		√
Visible Smoke Test (section 1.3.4)	√	√		√	√
Functional Inspections: (see section 1.4 for specifics)					
On-Board Diagnostics (OBD)		√	√	√	√
Malfunction Indicator Light (MIL)	√	√	√	√	√
Exhaust Gas Recirculation (EGR) ⁽⁶⁾	√				
Ignition Timing	√				
Fuel Cap Integrity	√				
Low Pressure Fuel Evaporative Test (LPFET)	√				

(1) Gasoline includes alternative fueled vehicles, e.g., ethanol, methanol, LPG, CNG, etc.

(2) Hybrid vehicles are powered by both internal combustion and electric power sources.

(3) Diesel-powered vehicles with a GVWR greater than 14,000 lbs. are exempt from the Smog Check Program.

(4) Exception: Some model-year 2000 and newer vehicles will require a tailpipe test on the BAR-97 EIS. These include vehicles without OBDII systems, e.g., over 14,000 GVWR, and may also include vehicles with problematic OBDII systems.

(5) ASM required for vehicles registered in Enhanced program areas, unless vehicle is incompatible with dynamometer test, then TSI shall be performed. TSI required in Basic and Change of Ownership Program areas.

(6) The EGR functional inspection is only performed in conjunction with a TSI tailpipe test.

New “Smog Check Manual”

- New “Equipment and Materials Requirements” Table
 - lists requirements for each station type
 - STAR stations must have all equipment (both OIS and BAR-97)
 - STAR Test Only
 - STAR Test and Repair
 - Non-STAR stations may choose equipment that matches their customer base
 - Non-STAR Test Only
 - Non-STAR Test and Repair

What Equipment Does My Station Need?

EQUIPMENT AND MATERIALS REQUIREMENTS

EQUIPMENT / MATERIALS		STATION TYPE				
		STAR Test Only	Test Only	STAR Test and Repair	Test and Repair	Repair Only
BAR Certified Equipment	BAR-97 Emissions Inspection System (EIS) with most current hardware and software	√	(1)	√	(1)	
	OBID Inspection System (OIS) with hardware and software necessary to conduct OBD inspections	√	(2)	√	(2)	
	Low Pressure Fuel Evaporative Tester (LPFET) and Operator's Manual	√	(3)	√	(3)	
	Fuel cap tester, adapters, and adapter guide	√	(3)	√	(3)	
	Ignition Timing Light capable of measuring ignition advance	√	(4)	√	(4, 5)	(5)

- (1) Required when performing a tailpipe emission inspection on vehicles.
- (2) Required when performing the OBD test on model-year 2000 and newer vehicles.
- (3) Required when inspecting 1976-1995 model-year vehicles with evaporative control systems.
- (4) Required when inspecting and / or repairing 1976-1995 model-year vehicles with adjustable timing.
- (5) Required when inspecting and / or repairing vehicles with spark ignition engines.

OBD Inspection System (OIS)

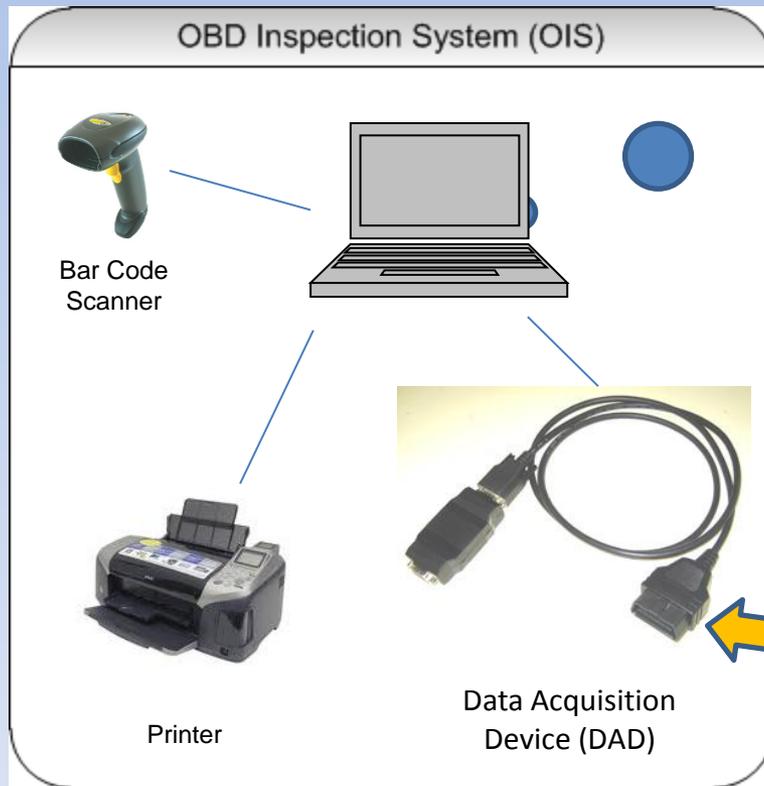
- Data Acquisition Device (DAD) hardware
 - BAR Certified device from equipment manufacturer
 - Only BAR certified piece of OIS
- Ancillary equipment (computer, barcode scanner, printer)
 - Off-the-shelf equipment that meets minimum performance standards (e.g., Windows 7 w/ 32 bit, etc.)
 - May also be sold by DAD vendors
- Web-based inspections
 - Internet connection required during inspection (no off-line tests)
 - Hybrid client approach: Smog Check business via web page hosted by BAR's central database contractor + DAD hardware driver on computer
- State owned software
 - Smog Check Program or vehicle exception related changes at no cost to industry, (e.g., reducing maximum allowable number of OBDII readiness monitors)

OBD Inspection System (OIS) Conceptual Design

Web based software



Internet Connection



DAD from BAR certified vendors.
Other equipment off-the-shelf or from other vendors.

OIS Project Schedule

- 7/1/2013 – Regulations adopted, permitting BAR certification start
- 8/15/2013 – Applus, Drew Technologies, Bosch (SPX), Worldwide Environmental Products submitted applications for BAR certification of DAD equipment
- 8/19/2013 – Same four vendors submitted both wired & wireless DADs for BAR certification
- 8/19/2013 – BAR started the first phase (Alpha) of cert. testing
- 11/7/2013 – Planned start for the second phase (Beta) of BAR cert. testing
 - Only during Beta, DADs used on 1996 and newer OBDII equipped vehicles (real test with certificates)
 - Phase 1 = 10 DADs per vendor in Sacramento; 1,500 valid tests to proceed
 - Phase 2 = 40 more DADs per vendor beyond Sacramento; 18,500 more tests
- At the conclusion of Beta testing, on an OIS Start Date to be specified by BAR, all stations must use an OIS with a BAR certified DAD to inspect 2000 and newer model year vehicles, using the new Smog Check Manual

Common OIS Questions

- Is the DAD separate from the BAR-97?
 - Yes. It operates independently from the BAR-97; if integrated with BAR-97 DAD must connect to separate PC
- What does the OIS cost?
 - Cost set by DAD vendors. BAR does not control cost.
- What does the inspection software cost?
 - There is no cost to access the BAR-OIS Software web application.
- Is there still an Electronic Transfer Fee?
 - Yes. To pay BAR's contractor for the OIS software and central database operation.
- Will the BAR-97 prevent inspection of OIS vehicles?
 - No. It is illegal to violate the Smog Check Manual.
 - The OIS will not issue certificates on pre-2000 vehicles (except during Beta testing when 1996-1999 are tested for data collection).

BAR-OIS Software Effort

- 1,500 Business Requirements
- 34 Development laps
- End to End regression testing
- Various testing and production server environments
 - Sandbox 0 for BAR's Alpha testing (Lap 27 frozen)
 - Sandbox 1 for DAD Vendor testing (Lap 27 frozen)
 - Sandbox 2 for DAD Vendor testing (current Lap)
 - UAT for BAR User Acceptance Testing
 - Production environments in San Diego and Redwood City for station use
- Training materials

OIS Software Preview

BAR LAB #4
TC999990
10240 SYSTEMS PKWY
SACRAMENTO, CA 95827
CV001122



Is this not the right station?

Main Menu



1 Perform Inspection



2 Repair Only



3 Reprint VIR



4 DAD Diagnostics



5 Manage Station



6 Manage Staff



7 Manage Messages



8 Manage Account

Help

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BAR-OIS Access by User Type

	Perform Inspection	DAD Diagnostic	Manage Station	Manage Staff *	Repair Only	Reprint VIR	Manage Message	Manage Account
Inspector	X	X			X	X	X	X
Repair Technician					X	X	X	X
Station Owner			X	X	X	X	X	X
Station Manager			X	X	X	X	X	X
Administrator			X **		X	X	X	X
Junior Administrator					X	X	X	X

* Only BAR can assign the following user types to a station's staff:
Station Owner, Inspector, Repair Technician

** Access limited to Manage Certificates part only

Manage Station Menu

California BAR-OIS
File SGS

SWEET SMOG SHOP 62
RG999962
62 BAR WAY
EL DORADO, CA 95726



Logout

Manage Station Menu

 <u>1</u> Station Settings	 <u>2</u> Manage Analyzers	 <u>3</u> Certificates
 <u>4</u> Reports	 <u>5</u> View Station Information	 <u>6</u> Update Contact Information

Main Menu

About  Manage Station

Help

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OB2 II Test

CaVIS
SGS

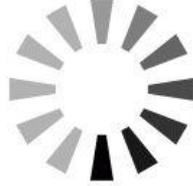
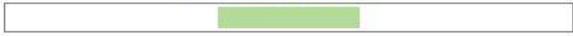


Logout

Static OB2 Test

Please wait while we collect OB2 data.

Collecting priority data...



[About](#)  [Perform Inspection](#)  [Gather Info](#)  [OB2](#)  [Liquid Fuel](#)  [Smoke](#)  [Aftermarket Parts](#)  [Visual](#)

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Visual Inspection

CaVIS
SGS



Emission Control Systems Visual Inspection

Enter one of the following codes for each emission control system:

Catalyst:	<input type="text"/>	Exhaust gas recirculation:	<input type="text"/>
Fuel injection:	<input type="text"/>	Wiring of other sensors/switches/computer:	<input type="text"/>
Other emission related components:	<input type="text"/>	Turbo charger/super charger:	<input type="text"/>
PCV system:	<input type="text"/>	Thermostatic air cleaner:	<input type="text"/>
Fuel evaporative controls:	<input type="text"/>	Ignition spark controls:	<input type="text"/>
Air injection:	<input type="text"/>	Vacuum line connections to sensors/switches:	<input type="text"/>

About Help Perform Inspection Gather Info OBDI Liquid Fuel Smoke Aftermarket Parts Visual

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Enter Repairs - Emissions

CaIVIS
SGS



Enter Repairs

Enter one of the following codes for each of the emission-related system items that have been diagnosed and/or repaired.

- T: Tampered systems repaired/restored
- R: Emissions-related repairs (or replacements or adjustments) - Repairs that were paid by the consumer
- D: Diagnosed - System OK (no problem) - Diagnosis that was paid by the consumer
- E: Estimated additional repairs needed
- S: Sublet repair - Station diagnosed then sublet
- L: Emissions-related repairs (or replacements or adjustments) - Repairs that were paid by the state
- C: Diagnosed - System OK (no problem) - Diagnosis that was paid by the state

Main Systems

Emissions Control | **Computer System** | **Fuel and Ignition Systems** | **Engine Mechanical**

Positive Crankcase Ventilation	Exhaust	Exhaust Gas Recirculation	Air Injection System	Thermostatic Air Cleaner	Evaporative Emission Control
PCV valve: <input type="text"/>	Catalytic converter: <input type="text"/>	Vacuum routing: <input type="text"/>	Air pump: <input type="text"/>	Pre-heat tube: <input type="text"/>	Purge valve (non-computer): <input type="text"/>
PCV hose: <input type="text"/>	Thermal reactor: <input type="text"/>	EGR valve: <input type="text"/>	Pulse valve: <input type="text"/>	Vacuum motor: <input type="text"/>	Vacuum routing: <input type="text"/>
	Exhaust manifold: <input type="text"/>	Passages cleaned: <input type="text"/>	Pump belt: <input type="text"/>	Thermostatic bulb: <input type="text"/>	Fuel cap: <input type="text"/>
		Controls (non computer): <input type="text"/>	Diverter valve: <input type="text"/>	Control valve: <input type="text"/>	Vapor lines: <input type="text"/>
					Charcoal: <input type="text"/>

[About](#)  [Repair Only](#) [Help](#)

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Additional Information

- BAR Website
 - Posting DAD certification status letter



- Questions to BAR Help Desk
 - Email: bar.industryhelpdesk@dca.ca.gov
 - Phone: 1-866-860-8509