

DEPARTMENT OF CONSUMER AFFAIRS

BAR

Bureau of Automotive Repair

On-Board Diagnostic Test Reference



1/14/2020

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Purpose

This reference provides both a summary of pass/fail standards for the On Board Diagnostic (OBD) test portion of a Smog Check inspection and instructions for inspecting vehicles with known OBD test difficulties. This reference replaces the “Smog Check OBDII Reference (Testability Issues) document that was formerly known as Appendix J.

This document includes guidance related to vehicles that must obtain recall service before a Smog Check inspection can be successfully performed. Certain vehicles may be eligible to be repaired under manufacturer emissions warranty. Recall and warranty information is available by contacting the California Air Resources Board helpline@arb.ca.gov or (800) 242-4450 or <https://ww2.arb.ca.gov/frequently-asked-questions>.

This document provides guidance to Smog Check inspectors on when to send certain vehicles to a Referee for inspection. The Referee stations are State run and have the expertise and equipment necessary to resolve unique situations. Referee Centers are located throughout California. To find a Referee Center near you or to schedule an appointment, visit asktheref.org or call (800) 622-7733.

Note:

- The correct vehicle identifying information (e.g., VIN, make, model, and certification type) must be entered into the BAR-97 and the OIS in order to receive a special test configuration. This guide includes vehicles where the OIS or BAR-97 inspection has been modified to accommodate certain vehicle design anomalies via modified pass/fail standards, disabled test modules, or OBD data collection.
- Service bulletins and recalls referenced in this document may be obtained by contacting your vehicle manufacturer, aftermarket publisher (e.g., Identifix, Alldata, etc.), or OBDclearinghouse.com.

Revision Table

Revision Number	Revision Description	Revision Date
1.0	Original	9/1/2015
1.1	Added: BMW; Lexus RX400; Toyota Highlander; VW Passat	9/25/2015
1.2	Added: Chevrolet and GMC box trucks; Freightliner M Line; Mitsubishi Fuso	11/13/2015
2.0	Added: Table 5 with BAR-97 vehicles; Audi A4, A6 bulletin; Ford E350; VW Passat bulletin	1/22/2016
2.1	Added: BMW 323i; Chevrolet Cavalier CNG; Chrysler PT Cruiser; Infinity I30; Kia Borrego; Nissan Maxima; Nissan UD1200; Silverado 1500; Silverado 2500 diesel; links to bulletins; ARB's number.	3/11/2016
2.2	Added: Chevrolet: C/K2500, C/K3500, G30, G3500, Sport Van, Cargo P30; Ford: F250, F350, E350, E450, E Super Duty, Econo Comm S-Duty, RV S-Duty; GMC: C/K2500, C/K3500, G3500, Workhorse P30; Dodge: Ram 2500, 3500; DCX Sprinter	9/2/2016
2.3	Updated: Chevrolet 2001 Silverado / Tahoe C/K 1500, 2002 C/K 2500HD (diesel). Added: BMW 2003 M3; Volvo 2000 S40 / V40; Mazda 2000 MPV	10/31/2016
2.4	Added BMW: 323i Sedan, 323iT Touring, 323Ci Coupe, 323 Ci Convertible. Model years: 6/99-7/00. w/M52 engine, model year 2000. Updated Volvo S40 / V40 model year 2000	12/2/2016
2.5	Updated Chrysler 2003 PT Cruiser	1/20/2017
2.6	Added: Ford/Lincoln Explorer, Edge, MKX	2/15/2017
2.7	Reinserted: 2000-2001 Nissan Maxima	4/21/2017
2.8	Continuous Monitors, footnote added to table 1	8/25/2017
2.9	Added: Kia Borrego Drive Cycle Bulletin; Updated Table of Contents	11/28/2017
2.10	Updated 2009 Borrego; Updated 2002 Silverado C/K 2500HD (diesel); Added 2004-2006 Dodge/Daimler Sprinter 2500 3500 (diesel); Added 2004-2006 Freightliner Sprinter (diesel); Added 2002 GMC Sierra C/K 2500HD (diesel)	12/15/2017
2.11	Added owner recall letter for 2004-2006 Freightliner Sprinter (diesel)	1/12/2018
2.12	Added 1996 Mercedes-Benz C220, E320, C280, S320, SL320. Added 2010-2011 Jeep Wrangler 3.8.	4/13/2018
2.13	Updated 2004-2006 Dodge Sprinter (diesel)	6/8/2018
2.14	Updated 2010-2011 Wrangler 3.8L	9/7/2018
2.15	Added Chrysler 1999-2000 Town & Country, Dodge 1999-2000 Caravan, Plymouth 1999-2000 Voyager	10/12/2018
2.16	Added 2007 BMW 328i	3/8/2019
2.17	Added Table 3.5 and Table 6: Permanent DTC Vehicles of Concern	4/26/2019
2.18	Added 2010-2013 Mercedes 350 Bluetec	6/14/2019
2.19	Updated 2004-2006 Dodge and Freightliner Sprinter (diesel)	1/14/2020

Pass/Fail Standards for the OBD Test Portion of a Smog Check Inspection

Table 1 below shows the typical number of incomplete OBD readiness monitors that are allowed to pass the OBD test portion of a Smog Check inspection. See the Table 4: OIS Vehicles of Interest, and Table 5: EIS Vehicles of Interest, for vehicles that have modified standards.

Readiness monitors are self-tests performed by the vehicle's OBD system to verify emission control functionality. While most vehicles complete the various readiness monitors during normal driving, other vehicles have more trouble either because the vehicle design requires unusual operating conditions or because the owner rarely drives the car in the necessary operating mode. On occasion, the vehicle owners-manual contains driving procedures to complete the monitors, but usually this drive cycle information is only available to the OEM or found in repair industry service literature. Since drive cycles require the vehicle experience specific operating conditions: speed, temperature, pressure, engine load, etc., performing certain drive cycles may not be possible in traffic, yet could be performed using dynamometer equipment. Monitor completion is also dependent on properly functioning components, so a vehicle may never complete a monitor until a thorough diagnosis and repair of components enabling the monitor to run is performed. Readiness monitors must be rerun after a repair activity like disconnecting a vehicle's battery or replacing a defective emissions component.

Table 1: OBD Test Monitor Readiness Standards
(Implemented May 4, 2015)

Model Years	Fuel Type	Number of Incomplete Monitors Allowed to Pass OBD Test
1996-1999	Gas ¹	Any one ²
2000 and newer	Gas ¹	Evaporative system ²
1998-2006	Diesel	Zero
2007 and newer	Diesel	Any two

¹ "Gas" includes gasoline, propane, natural gas (CNG, LNG, LPG)

² The continuous monitors (misfire, fuel, comprehensive components are ignored during OBD test of "gas" vehicles.

Pass/Fail Standards for OBD Test Portion of Smog Check Inspection (continued)

Table 2 below shows the current Malfunction Indicator Lamp (aka: "Check Engine" light or MIL) related failure criteria for the OBD test portion of a BAR-97 and OIS inspection.

Table 2: OBD Test MIL Standards

Vehicles	Pass/Fail	Standard
All with OBDII	Pass	MIL illuminates when key on engine off (KOEO)
All with OBDII	Pass	MIL turns off when engine running (KOER)
All with OBDII	Fail	MIL does not illuminate when key on engine off (KOEO)
All with OBDII	Fail	MIL illuminates when engine running (KOER)

Pass/Fail Standards for OBD Test Portion of Smog Check Inspection (continued)

Table 3 below shows the BAR-97- and OIS-to-vehicle communication standards. Vehicles fail for no communication for a variety of reasons. Common reasons include but are not limited to: damaged OBD connector or wiring, aftermarket stereo, transmission computer response instead of engine computer response, and invalid data from the vehicle.

Table 3: OBD Test Communication Standards

Model Years	BAR-97 or OIS	Standard
All with OBDII	BAR-97	Vehicle communicates with BAR-97
All with OBDII	OIS	Vehicle communicates with OIS and transmits required data ¹

¹ Required data typically means data from OBD addresses: Mode \$01 PID \$00, Mode \$01 PID \$01. Mode \$01 PID \$00 returns what data is supported on the vehicle. Mode \$01 PID \$01 returns MIL status, diagnostic trouble codes (DTCs), and monitor status.

Permanent Diagnostic Trouble Codes

On July 1, 2019, a Permanent Diagnostic Trouble Code (PDTC) check was added to the BAR-OIS Smog Check inspection. PDTCs are the same as regular diagnostic trouble codes (DTC), but they cannot be erased by clearing the DTCs with a scan tool or by disconnecting the vehicle's battery. PDTCs can only be cleared by the OBD II system once it has verified that the previously identified defects are no longer present.

Table 3.5 below shows vehicle model years that are subject to the PDTC check.

Table 3.5: PDTC Standards

Model Years	BAR-97 or OIS	Standard
1996-1999	BAR-97	Not applicable
2000-2009	OIS	Not applicable
2010 & Newer ¹	OIS	Vehicles fail when a PDTC is present ^{2,3,4,5}

¹ Some 2010 vehicles do not support PDTC. Those without support for PDTC will not be subject to the PDTC check.

² A vehicle with a PDTC stored will fail the PDTC check regardless of whether the MIL is commanded ON or OFF.

³ PDTC presence will be ignored if the vehicle has completed at least 15 warm-up cycles and been driven at least 200 miles since its OBD information was last cleared (as determined by Mode \$01 PID \$30 and \$31).

⁴ BAR is aware of some vehicles that have trouble properly clearing certain PDTCs. BAR is working with the California Air Resources Board (CARB) to ensure that known problematic vehicles are addressed by vehicle manufacturers. Until then, these codes will be ignored by BAR-OIS. See Table 6 for a list of these vehicles.

⁵ Vehicle manufacturers have issued extended warranties, recalls and repair campaigns for some vehicles that have trouble properly clearing PDTCs. These vehicles will be listed in Table 6. When one of these vehicles fails for the PDTC listed in Table 6, please refer the motorist to the dealer for covered repairs.

OIS Vehicles of Interest

Table 4 below includes 2000 and newer model-year gasoline and flex-fuel vehicles (and 1998 and newer diesel vehicles) that have known pattern issues with the OBD test portion of an OIS inspection. Issues include but are not limited to: no communication with the vehicle, incomplete readiness monitors, OBD test incompatibility, and false MIL illumination. In most cases, the OIS inspection is programmed to accommodate vehicles with a design anomaly. In other cases, the vehicle may require repair.

Table 4: OIS Vehicles of Interest

Make	Year	Model Engine (L); Fuel Type	Issue	Cause and Possible Remedy	Instruction to Inspector
Audi	2000-2004	A4 & A6	Fail for no OBD communication. No response or Only Transmission Control Module responds to DADs requests. ABS and/or brake lamp illuminated in instrument panel cluster	Broken ground bond wire in ABS module causes diagnostic communication issues with the ABS module, ECM, and TCM. Diagnose and repair per Audi TSB #A45-15-10.	Likely Broken Vehicle Repair and Retest
BMW	6/1/99 – 7/31/00	323i Sedan	May not pass inspection due to oxygen sensors readiness monitor not set/not fitted/not supported.	DME Software error. Reprogram DME with the updated software.	Check the DME “programmed control unit” number listed in TSB #SI B12 16 16 and follow TSB instructions.
BMW	9/3/99 – 7/31/00	323iT Touring	May not pass inspection due to oxygen sensors readiness monitor not set/not fitted/not supported.	DME Software error. Reprogram DME with the updated software.	Check the DME “programmed control unit” number listed in TSB #SI B12 16 16 and follow TSB instructions.
BMW	6/1/99 – 7/29/00	323Ci Coupe	May not pass inspection due to oxygen sensors readiness monitor not set/not fitted/not supported.	DME Software error. Reprogram DME with the updated software.	Check the DME “programmed control unit” number listed in TSB #SI B12 16 16 and follow TSB instructions.

Make	Year	Model Engine (L); Fuel Type	Issue	Cause and Possible Remedy	Instruction to Inspector
BMW	6/23/99 – 7/29/00	323 Cic Convertible	May not pass inspection due to oxygen sensors readiness monitor not set/not fitted/not supported.	DME Software error. Reprogram DME with the updated software.	Check the DME “programmed control unit” number listed in TSB #SI B12 16 16 and follow TSB instructions.
BMW	2000	M52 (TU) engine	May not pass inspection due to oxygen sensors readiness monitor not set/not fitted/not supported.	DME Software error. Reprogram DME with the updated software.	Check the DME “programmed control unit” number listed in TSB #SI B12 16 16 and follow TSB instructions.
BMW	2000		Fail for readiness Vehicle may not set oxygen sensor readiness monitor.	Software error in ECM. Reflash ECM per Recall #00E-A01. See BMW bulletin #SI B 12 15 99 , dated November 2000.	Vehicle requires reflash Reflash ECM per recall so oxygen sensor monitor will set
BMW	built 3/98 - 7/99	323i, 323iA, 328i, 328iA	Fail for readiness Vehicle may not set oxygen sensor readiness monitor.	Software error in ECM. Reflash ECM per Recall #00E-A01. See BMW bulletin #SI B 12 15 99 , dated November 2000.	Vehicle requires reflash Reflash ECM per recall so oxygen sensor monitor will set
BMW	built 2/99 - 7/99	328iC, 328iCA, 323iC, 323iCA, 528i, 528iA, 528iT, 528iAT	Fail for readiness Vehicle may not set oxygen sensor readiness monitor.	Software error in ECM. Reflash ECM per Recall #00E-A01. See BMW bulletin #SI B 12 15 99 , dated November 2000.	Vehicle requires reflash Reflash ECM per recall so oxygen sensor monitor will set
BMW	built 9/98 - 7/99	Z3 roadster 2.3	Fail for readiness Vehicle may not set oxygen sensor readiness monitor.	Software error in ECM. Reflash ECM per Recall #00E-A01. See BMW bulletin #SI B 12 15 99 , dated November 2000.	Vehicle requires reflash Reflash ECM per recall so oxygen sensor monitor will set

Make	Year	Model Engine (L); Fuel Type	Issue	Cause and Possible Remedy	Instruction to Inspector
BMW	built 4/99 - 7/99	Z3 roadster coupe/ roadster 2.8	Fail for readiness Vehicle may not set oxygen sensor readiness monitor.	Software error in ECM. Reflash ECM per Recall #00E-A01. See BMW bulletin #SI B 12 15 99 , dated November 2000.	Vehicle requires reflash Reflash ECM per recall so oxygen sensor monitor will set
BMW	2001-2003	Z3 M Roadster/coupe with S54 engine	Fail for no communication when ignition switched off/on. OBD communication always possible with BMW DIS or GT1 tester.	Voluntary Emissions Recall Campaign to reprogram the engine control units (DME) on all affected vehicles. Bulletin #SI B12 11 06 dated October 2007.	Follow OIS prompts - connect/ disconnect DAD when key off
BMW	2000-2003	Z8 & M5 with S62 engine	Fail for no communication when ignition switched off/on. OBD communication always possible with BMW DIS or GT1 tester.	Voluntary Emissions Recall Campaign to reprogram the engine control units (DME) on all affected vehicles. Bulletin #SI B12 11 06 dated October 2007.	Follow OIS prompts - connect/ disconnect DAD when key off
BMW	From series intro. up to 8/27/2004	M3 with S54 engine	Fail for no communication when ignition switched off/on. OBD communication always possible with BMW DIS or GT1 tester.	Voluntary Emissions Recall Campaign to reprogram the engine control units (DME) on all affected vehicles. Bulletin #SI B12 11 06 dated October 2007.	Follow OIS prompts - connect/ disconnect DAD when key off
BMW	2003	M3	Failure to set EGR monitor	Check thermostat	Likely broken vehicle; Repair and Retest
BMW	2007	328i	Engine dies during OBD Test, won't restart.	Separate the vehicle and key. Wait 20+ minutes. Attempt to restart.	Test normally BAR-OIS will not request Cal ID or CVN. Possible keyless ignition related issue. The vehicle will recover by just letting it sit for 20+ minutes with the wireless key fob out of range of the vehicle.

Make	Year	Model Engine (L); Fuel Type	Issue	Cause and Possible Remedy	Instruction to Inspector
Chevrolet	1998-2005	DIESEL C/K2500 & C/K3500 (including Silverado and Suburban), G30, G3500 (including Sport Van, Express Cut-Away & Cargo), P30	Federal diesel vehicle over 8,500 GVWR is not OBD-II certified.	Federal diesel vehicles over 8,500 GVWR were not built to comply with OBD-II or Fed OBD standards.	Test normally BAR-OIS will ignore incomplete continuous monitors. If the vehicle fails to communicate, use the result of the bulb check for the overall result of the OBD Test if the analyzer offers this option.
Chevrolet	1999-2005	3500 W35042 (box truck) [GVWR 10,001 - 14,000] (diesel) [Federal certified]	Vehicle is not equipped with OBD II	OBD not installed in federals during these years	OIS programmed to skip the OBD functional test
Chevrolet	2000-2002	S-10 (2WD), 2.2L I-4 (E85)	Monitors won't set on certain flex fuel models, VINs listed below. YGMXT02.2121 YGMXT02.2122 1GMXT02.2122 2GMXT02.2122 YGMXT02.2121 YGMXT02.2122 (VIN 8 th digit: 5)	System monitors disabled for operation \geq E15 blends: O ₂ Sensor Heater, Secondary Air, Catalyst. System monitors disabled for operation \geq E10 blends: Evaporative leak check. Desensitized O ₂ Sensor monitor implemented; only reports faults during operation \leq E15 blends.	OIS ignores all 11 readiness monitors
Chevrolet	2000-2005	Suburban, Silverado, Express, Avalanche (gasoline) [Federal certified]	Message appears during OIS OBD II test stating, "Unable to confirm this Vehicle's OBD II requirements. Does this vehicle have OBD II?"	Federally certified vehicle may not be certified to OBD II standards.	Check under-hood emission label to determine OBD certification status. Enter correct result into OIS and follow OIS prompts. OIS may state a BAR-97 test is required on vehicles without OBDII.
Chevrolet	2001	Silverado / Tahoe C/K 1500	Failure to set secondary air system monitor	Possible air injection problem (check valve(s), vacuum line, pump, air passages)	Diagnose; repair and retest

Make	Year	Model Engine (L); Fuel Type	Issue	Cause and Possible Remedy	Instruction to Inspector
Chevrolet	2002	Silverado C/K 2500HD (diesel)	Failure to set EGR monitor	Difficult drive cycle.	OIS reprogrammed 10/13/2016 to allow monitor to be incomplete.
Chevrolet	2001-2002	Cavalier CNG First VIN digit "3" (built in Mexico)	Failure to set CAT monitor	Vehicle design anomaly	OIS reprogrammed 02/11/2015 to allow any one monitor to be incomplete
Chrysler	1999-2000	Town & Country with 3.0L engine built after 12/1/1998	EGR Monitor will not complete at high altitude	Reflash available. Confirm all systems functioning. Erase and reprogram PCM per TSB 18-03-00 .	Vehicle requires reflash Repair per TSB, run monitors then retest.
Chrysler	2000	Town and Country 3.3L V-6 (E-85)	Readiness monitors will not set on certain flex fuel models, VINs listed below. WCRXT03.32BP (VIN 8 th digit: G)	All monitors disabled for operation >E30 and ethanol fuel content learning.	OIS ignores all 11 readiness monitors
Chrysler	2003	PT Cruiser 2.4 liter DOHC 16v turbocharged (sales code EDV) with 5- spd manual G288 trans (sales code DDD)	Failure to set catalyst monitor	PCM software error. Dealer must reprogram PCM. Emissions warranty extended to lifetime for this issue. Diagnose and repair per TSB #18-112-16 . Possible repair payment reimbursement, see warranty D-16-26	Vehicle requires reflash Repair per TSB and retest
Chrysler	2010 built prior to 2/20/2010	300, Charger, Challenger 3.5L (5 speed automatic transmission)	Fail for monitor readiness Or MIL illumination: P0456, P0452, P1115	Reflash available. See Chrysler TSB #18-008-10	Vehicle requires reflash Repair per TSB and retest

Make	Year	Model Engine (L); Fuel Type	Issue	Cause and Possible Remedy	Instruction to Inspector
Dodge	1998-2006	Ram 2500, Ram 3500 (diesel) [Federal certified]	Federal diesel vehicle over 8,500 GVWR is not OBD-II certified.	Federal diesel vehicles over 8,500 GVWR were not built to comply with OBD-II or Fed OBD standards.	Test normally BAR-OIS will ignore incomplete continuous monitors. If the vehicle fails to communicate, use the result of the bulb check for the overall result of the OBD Test if the analyzer offers this option.
Dodge	1999-2000	Caravan with 3.0L engine built after 12/1/1998	EGR Monitor will not complete at high altitude	Reflash available. Confirm all systems functioning. Erase and reprogram PCM per TSB 18-03-00 .	Vehicle requires reflash Repair per TSB, run monitors then retest.
Dodge	2003	Dakota, Durango and Ram Trucks with 4.7L engine [California or 50 State certified]	Catalyst monitor readiness status shows as not supported	Broken vehicle, repair per TSB #18-032-10 with lifetime warranty	Test normally OIS ignores unsupported monitors
Dodge	2003	Ram Truck 5.9L (Cummins diesel) [California certified]	MIL light is commanded on but check engine light is not illuminated and no DTCs are stored.	Vehicle design anomaly Recall campaign #K01 for ECM reflash applies to <u>California</u> certified vehicles only.	Test normally OIS ignores MIL Command if no DTCs are present on this vehicle Advise motorist of Recall Campaign #K01 if the vehicle is California certified.
Dodge	2003-2004	25004X2 and Sprinter 35004X2 (diesel) [2003 Federal certified] [2004 Federal certified]	Federal diesel vehicle over 8,500 GVWR is not OBD-II certified.	Federal diesel vehicles over 8,500 GVWR were not built to comply with OBD-II or Fed OBD standards.	Test normally BAR-OIS will ignore incomplete continuous monitors. If the vehicle fails to communicate, use the result of the bulb check for the overall result of the OBD Test if the analyzer offers this option.

Make	Year	Model Engine (L); Fuel Type	Issue	Cause and Possible Remedy	Instruction to Inspector
Dodge	2004-2005 built after 12/7/2003	Ram Truck 5.9L (Cummins diesel) [California certified]	Comprehensive component monitor will not complete.	Vehicle design anomaly Re-flash available per TSB #18-030-10 with lifetime warranty per TSB #18-003-11	Test normally OIS ignores comprehensive component monitor readiness Advise motorist of fix with lifetime warranty per TSB #18-003-11
Dodge	2004-2006	2500 3500 Sprinter (diesel)	EGR/VVT monitor will not complete.	ECU software error.	Test normally. OIS will ignore EGR/VVT monitor.
Dodge	2005	Ram Truck 5.9L (Cummins diesel) [Federal certified]	Misfire and Comprehensive Components monitors will not complete.	Vehicle design anomaly	Test normally OIS ignores misfire and comprehensive component monitor readiness
Dodge	2006-2007	Ram Truck 5.9L, 6.7L (Cummins diesel) [California certified]	Fuel System and Comprehensive Components monitors will not complete.	Recall campaign #K01 for ECM reflash applies to <u>California</u> certified vehicles only.	Test normally OIS ignores fuel and comprehensive component monitor readiness Advise motorist of Recall Campaign #K01 if the vehicle is California certified.
Dodge	2006-2007	Ram Truck with 5.9L (ETC or ETH) built after 1/1/06, [Federal Certified], Cab Chassis with 6.7L (ETJ) built before 1/11/07 (Cummins diesel) [Federal certified]	Fuel System and Comprehensive Components monitors will not complete.	TSB #18-017-10 for ECM reflash applies to <u>Federal</u> certified vehicles only.	Test normally OIS ignores fuel and comprehensive component monitor readiness. Advise motorist of TSB #18-017-10 if the vehicle is Federal certified.
Dodge	2010 built before 2/20/10	300, Charger, Challenger 3.5L (5 speed automatic transmission)	Evaporative monitor will not set	Evaporative leak detection monitor may not set to ready.	Test normally Inform consumer of TSB #18-008-10 Revision A.

Make	Year	Model Engine (L); Fuel Type	Issue	Cause and Possible Remedy	Instruction to Inspector
Ford	1998-2003	Truck 7.3L (diesel)	Engine could shut off when requesting Mode \$09 data with aftermarket scan tool.	Vehicle design anomaly	Test normally OIS programmed to skip Mode \$09 data request on these vehicles
Ford	1998-2004	F250, F350, E350, E450, E Super Duty, Econo Commercial S- Duty, Econo RV S- Duty (diesel) [Federal certified]	Federal diesel vehicle over 8,500 GVWR is not OBD-II certified.	Federal diesel vehicles over 8,500 GVWR were not built to comply with OBD-II or Fed OBD standards.	Test normally BAR-OIS will ignore incomplete continuous monitors. If the vehicle fails to communicate, use the result of the bulb check for the overall result of the OBD Test if the analyzer offers this option.
Ford	2000-2004	F250, F350, E350, Excursion (gasoline) [Federal certified]	Message appears during OBD II test stating, "Unable to confirm this Vehicle's OBD II requirements. Does this vehicle have OBD II?"	Federally certified vehicle may not be certified to OBD II standards.	Check under-hood emission label to determine OBD certification status. Enter correct type into OIS and follow OIS prompts. OIS may state a BAR-97 test is required on vehicles without OBDII.
Ford	2003	Focus	Fail for readiness	Monitors may be difficult to complete.	Broken Vehicle. Reflash PCM per TSB #06-7-5. Then test normally.
Ford	2004	E350 Super duty 5.4 (gas)	Failure to set CAT monitor	Vehicle design anomaly Recall #15E06 dated 1/13/2016 may apply. Reflash ECM so CAT monitor will set.	Vehicle requires reflash. Repair per recall and retest.

Make	Year	Model Engine (L); Fuel Type	Issue	Cause and Possible Remedy	Instruction to Inspector
Ford	2011	Edge, Explorer 3.5L & 3.7L	Vehicle fails for readiness. Some vehicles do not set readiness monitors.	Some vehicles clear the OBD-II diagnostic data on every engine start and/or incorrectly report the VIN. Reprogram or update vehicle's calibration. Perform monitor drive cycle.	Please consult Ford Emission Recall #13E04 for applicability. Owner must ensure recall is performed if required and all monitor drive cycles are completed prior to Smog Check testing.
Freightliner	1998-2004	M Line Walk In Van [GVWR 6,001-14,000] (diesel) [Federal certified]	Vehicle is not equipped with OBD II	OBD not required in federally certified vehicles in this GVWR range during these years	OIS programmed to skip the OBD functional test
Freightliner	2004-2006	Sprinter (diesel)	EGR/VVT monitor will not complete.	ECU software error.	Test normally. OIS will ignore EGR/VVT monitor.
GM	2000 - 2008	Various models, and Silverado 1500	OIS prompts for no vehicle voltage	No power on vehicle's OBDII connector (DLC pin 16). Possible blown fuse.	Use auxiliary DAD cables / power supply per DAD manufacturer's instructions
GM	2015-2017	All gasoline powered	Fail for readiness.	Post catalyst oxygen sensor monitor will not run until after 1,000 mile catalyst break in. See Bulletin #15- NA-010	Inspect vehicle after 1,000 miles or send to Referee.
GMC	1998-2005	DIESEL C/K2500 & C/K 3500 (including Suburban and Sierra), Savana G3500, Workhorse P30 Forward Cntl	Federal diesel vehicle over 8,500 GVWR is not OBD-II certified.	Federal diesel vehicles over 8,500 GVWR were not built to comply with OBD-II or Fed OBD standards.	Test normally. BAR-OIS will ignore incomplete continuous monitors. If the vehicle fails to communicate, use the result of the bulb check for the overall result of the OBD Test if the analyzer offers this option.
GMC	1999-2005	W3500 W35042 (box truck) [GVWR 10,001 - 14,000] (diesel) [Federal certified]	Vehicle is not equipped with OBD II	OBD not required in federally certified vehicles in this GVWR range during these years	OIS programmed to skip the OBD functional test

Make	Year	Model Engine (L); Fuel Type	Issue	Cause and Possible Remedy	Instruction to Inspector
GMC	2000-2002	Sonoma (2WD), 2.2L I-4 (E85)	Monitors won't set on certain flex fuel models, VINs listed below. YGMXT02.2121 YGMXT02.2122 1GMXT02.2122 2GMXT02.2122 YGMXT02.2121 YGMXT02.2122 (VIN 8 th digit: 5)	System monitors disabled for operation \geq E15 blends: O ₂ Sensor Heater, Secondary Air, Catalyst. System monitors disabled for operation \geq E10 blends: Evaporative leak check. Desensitized O ₂ Sensor monitor implemented; only reports faults during operation \leq E15 blends.	All 11 readiness monitors ignored in OIS
GMC	2000-2005	Sierra, Yukon, Savana (gasoline) [Federal certified]	Message appears during OIS OBD II test stating, "Unable to confirm this Vehicle's OBD II requirements. Does this vehicle have OBD II?"	Federally certified vehicle may not be certified to OBD II standards.	Check under-hood emission label to determine OBD certification status. Enter correct type into OIS and follow OIS prompts. OIS may state a BAR-97 test is required on vehicles without OBDII.
GMC	2002	Sierra C/K 2500HD (diesel)	Failure to set EGR monitor	Difficult drive cycle.	OIS reprogrammed 10/13/2016 to allow monitor to be incomplete.
Hyundai	2002	Sonata	Fail for readiness	Monitors are difficult to complete; perform drive cycle two times.	Run drive cycle. See TSB #02-36-030
Hyundai	2003	Tiburon	Will not communicate with generic OBD test equipment.	Pin 5 not grounded. Ground pin 5 by jumping to pin 4 in DLC per TSB.	Test normally on OIS If using generic OBD test equipment, perform recall campaign #057 and Hyundai TSB #03-01-003- 01.
Infiniti	2000 -2001	I30	Failure to set catalyst monitor	Only OEM scan tool shows OBD catalyst code.	Test catalyst and replace if defective
Infiniti	2000 -2001	I30	Fail for readiness	Vehicle has difficulty completing all monitors during normal driving.	Run drive cycle

Make	Year	Model Engine (L); Fuel Type	Issue	Cause and Possible Remedy	Instruction to Inspector
Isuzu	1998-2005	NPR [GVWR 10,001- - 14,000] (diesel) [Federal certified]	Vehicle is not equipped with OBD II	OBD not required in federally certified vehicles in this GVWR range during these years	OIS programmed to skip the OBD functional test
Isuzu	2000-2002	Hombre (2WD) 2.2L I-4 (E85)	Monitors wont set on certain flex fuel models, VINs listed below. YGMXT02.2121 YGMXT02.2122 1GMXT02.2122 2GMXT02.2122 YGMXT02.2121 YGMXT02.2122 (VIN 8 th digit: 5)	System monitors disabled for operation \geq E15 blends: O ₂ Sensor Heater, Secondary Air, Catalyst. System monitors disabled for operation \geq E10 blends: Evaporative leak check. Desensitized O ₂ Sensor monitor implemented; only reports faults during operation \leq E15 blends.	OIS ignores all 11 readiness monitors
Jeep	2005-2006	Wrangler	O ₂ sensor, O ₂ heater, and catalyst readiness monitors may indicate not ready.	Vehicle design anomaly. TSB #25-005-13 Rev. A contains wiring modification to make vehicle ready.	OIS allows incomplete O₂ heater monitor
Jeep	2010-2011	Wrangler 3.8L	Failure to set Oxygen sensor monitor. PCM not running monitor frequently enough.	Recall L34 (m/t) through 9/10/2010. Recall L35 (a/t) through 3/26/2011, and/or OEM drive cycle not working.	Reflash PCM per TSB 18- 027-10. May need to run special drive cycle to set O ₂ monitor. [Coast from 70 to 30mph three times then pullover and restart engine.]
Kia	2009	Borrego LX/EX 3.8L	Fail for readiness. Vehicle may not set EGR monitor	Vehicle has difficulty completing EGR monitor. Difficult to run drive cycle.	OIS reprogrammed 12/7/2017 to allow EGR/VVT monitor to be incomplete.

Make	Year	Model Engine (L); Fuel Type	Issue	Cause and Possible Remedy	Instruction to Inspector
Lexus	2007	RX400 Hybrid	Fail for oxygen sensor (air/fuel) monitor readiness Air conditioning readiness monitor mistakenly set to supported instead of unsupported.	Air Fuel monitor issue. Perform software update to vehicle at no charge per Lexus campaign FLD with TSB #L-SB-0027-15.	If fails for incomplete oxygen sensor monitor, advise motorist recall may be required. Recall status: use http://www.toyota.com/recall
Lincoln	2011	MKX 3.5L & 3.7L	Vehicle fails for readiness. Some vehicles do not set readiness monitors	Some vehicles clear the OBD-II diagnostic data on every engine start and/or incorrectly report the VIN. Reprogram or update vehicle's calibration. Perform monitor drive cycle.	Please consult Ford Emission Recall #13E04 for applicability. Owner must ensure recall is performed if required and all monitor drive cycles are completed prior to Smog Check testing.
Mazda	2000	MPV	Failure to set Catalyst monitor.	May need catalyst and/or oxygen sensor. Diagnose and repair	Likely broken vehicle; Repair and Retest
Mazda	2002-2003	B3000 (2WD) 3.0L V-6 (E-85)	Readiness monitors will not set on certain flex fuel models.	Monitors disabled for operation >E10 blends: Catalyst. Desensitized evaporative leak/purge check monitor to detect gross leak for operation >E75 blends (monitor fully compliant up to E75 blends).	OIS ignores all 11 readiness monitors
Mazda	2003-2004	Mazda 6	Some vehicles may have a false MIL illumination during inspection with multiple U-code DTCs during OBDII test. The following OBD Codes may be set. (U1900-ABS, U2516-ABS, U1900-FF- IC, U2516-FF-IC, U0073-FF- PCM, U0073-FF-TCM, U0100-FF-TCM)	PCM sensitive to OBD tool connect or disconnect to DLC with ignition in the "On" position, or when the engine is running. See Mazda Service Bulletin #01-002/05 Dated 01/13/2005. Erase trouble codes, disconnect tool when ignition switch off. Reset monitors.	Follow OIS prompts - connect/disconnect DAD to vehicle only when key off.

Make	Year	Model Engine (L); Fuel Type	Issue	Cause and Possible Remedy	Instruction to Inspector
Mazda	2005	Mazda 6 (with 2.3 only)	Some vehicles may have a false MIL illumination during inspection with multiple U-code DTCs during OBDII test. The following OBD Codes may be set. (U1900-ABS, U2516-ABS, U1900-FF- IC, U2516-FF-IC, U0073-FF- PCM, U0073-FF-TCM, U0100-FF-TCM)	PCM sensitive to OBD tool connect or disconnect to DLC with ignition in the "On" position, or when the engine is running. See Mazda Service Bulletin #01-002/05 Dated 01/13/2005. Erase trouble codes, disconnect tool when ignition switch off. Reset monitors.	Follow OIS prompts - connect/disconnect DAD to vehicle only when key off.
Mazda	2003-2005	Mazda 6 - 2.3 engine non PZEV (built May 20, 2002 - July 2, 2005) Mazda 6 - 3.0 engine (built May 16, 2002 - August 23, 2004)	Some vehicles may have a false MIL illumination during inspection. This will cause the vehicle to fail the test, although the vehicle itself has no problem.	PCM sensitive to OBD tool connect or disconnect to DLC with ignition in the "On" position, or when the engine is running. See TSB #01-024/05 . If vehicle within VIN range reprogram PCM and TCM. Or Earlier Emission Recall TSB #1303F to Reprogram PCM applicable to certain VINs.	Follow OIS prompts - connect/disconnect DAD when key off.
Mitsubishi Fuso	1998-2004	FE639/FG639 [GVWR 10,001 –14,000] (diesel) [Federal certified]	Vehicle is not equipped with OBDII	OBD not required in federally certified vehicles in this GVWR range during these years	OIS programmed to skip the OBD functional test
Mitsubishi	2000-2001	Montero, Montero Sport, Diamante, 3000GT Mirage, Galant, Expo/Expo LRV, and Eclipse models (except 2.0L non—turbo 420A engine models)	Fail for monitor readiness	Some monitors are difficult to complete.	Follow recommended drive cycles. See Mitsubishi service manual.

Make	Year	Model Engine (L); Fuel Type	Issue	Cause and Possible Remedy	Instruction to Inspector
Nissan	1999-2007	UD1200, [GVWR 10,001-14,000] (Diesel) [Federal certified]	Vehicle is not equipped with OBDII	OBD not required in federally certified vehicles in this GVWR range during these years	OIS programmed 2/26/2016 to skip the OBD functional test
Nissan	2000-2001	Maxima	Failure to set catalyst monitor	Only OEM scan tool shows OBD catalyst code.	Test catalyst and replace if defective
Nissan	2000-2006	All models	Fail for monitor readiness	Incomplete monitors during normal driving. Follow drive cycle for that specific year, make, model, engine, certification, transmission. Run entire drive pattern even if only one monitor unset.	Follow drive cycle. See owner's manual.
Plymouth	1999-2000	Voyager with 3.0L engine built after 12/1/1998	EGR Monitor will not complete at high altitude	Reflash available. Confirm all systems functioning. Erase and reprogram PCM per TSB 18-03-00 .	Vehicle requires reflash Repair per TSB, run monitors then retest.
Plymouth	2000	Voyager 3.3L V-6 (E-85)	Readiness monitors will not set on certain flex fuel models, VINs listed below. WCRXT03.32BP (VIN 8 th digit: G)	All monitors disabled for operation >E30 and ethanol fuel content learning.	OIS ignores all 11 readiness monitors
Suzuki	2001	Aerio	Fail for monitor readiness	Monitors can be difficult to complete.	Follow drive cycle. See OBD Clearinghouse or Suzuki service information.
Suzuki	2004	Forenza	Fail for monitor readiness	Monitors can be difficult to complete.	Follow drive cycle. See OBD Clearinghouse or Suzuki service information.
Toyota	2000-2006	All models	Fail for monitor readiness	Monitors can be difficult to complete.	Follow drive cycle. See Toyota service information.

Make	Year	Model Engine (L); Fuel Type	Issue	Cause and Possible Remedy	Instruction to Inspector
Toyota	2003-2004	4 Runner	Vehicle Stability Control (VSC) light may illuminate if CAN protocol attempted with aftermarket scan tool.	Vehicle loses stability control calibration when CAN protocol attempted. Follow service procedure to reset zero-point calibration.	OIS will not attempt to communicate via CAN protocol on these vehicles.
Toyota	2007	Highlander Hybrid	Fail for oxygen sensor (air/fuel) monitor readiness	Air Fuel monitor issue. Perform software update to vehicle at no charge per Toyota Special Service Campaign FOP, dated August 20, 2015 and TSB #0042-15.	If fails for incomplete oxygen sensor monitor, advise motorist recall may be required. Recall status: use http://www.toyota.com/recall
Volvo	2000	S40 / V40	Failure to set Comprehensive, Oxygen sensor, and Catalyst monitors	Defective ECM	Send to Referee for inspection <u>only</u> if comprehensive, oxygen sensor, and catalyst monitors unset. If any additional failures exist, they must be repaired before the Referee inspection.
Volvo	2004-2006	S40, V50	Air conditioning readiness monitor mistakenly set to supported instead of unsupported.	Vehicle design anomaly	OIS ignores A/C monitor status.
Volvo	2005-2007	XC90	Air conditioning readiness monitor mistakenly set to supported instead of unsupported.	Vehicle design anomaly	OIS ignores A/C monitor status.

Make	Year	Model Engine (L); Fuel Type	Issue	Cause and Possible Remedy	Instruction to Inspector
VW	2000-2005	Passat	<p>May fail for no OBD communication.</p> <p>No response or Only Transmission Control Module responds to DADs requests.</p> <p>ABS and/or brake lamp illuminated in instrument panel cluster</p>	<p>Broken ground bond wire in ABS module causes diagnostic communication issues with the ABS module, ECM, and TCM.</p> <p>Diagnose and repair per VW TSB #45 15 01, dated September 21, 2015.</p>	Likely Broken Vehicle Repair and retest

BAR-97 EIS Vehicles of Interest (OBD)

Table 5 below includes 1996-1999 model-year vehicles that have a monitor readiness issue with the OBD test portion of a BAR-97 EIS inspection. In most cases, the BAR-97 EIS is programmed to accommodate vehicles with a design anomaly.

Table 5: BAR-97 EIS Vehicles of Interest (OBD)

Make	Year	Model Engine (L); Fuel Type	Issue	Cause and Possible Remedy	Instructions to Inspector
BMW	1996	7-Series, 8-Series 5.0L, 5.4L	Monitors difficult to complete.		EIS ignores readiness status.
Chrysler	1996	Cirrus, Concord, LHS Sebring Convertible	All monitors reset to incomplete upon every ignition key-off.	Recall campaign #678 applies to California certified vehicles originally sold in California. TSB #18-005-01 (with lifetime warranty) applies to federal certified and California certified originally sold in northeast states.	Comply with recall, then test as normal.
Chrysler	1996	Concord, LHS, New Yorker, Sebring, Town & Country 2.0L, 2.4L, 2.5L, 3.3L, 3.5L	Monitors difficult to complete.		EIS ignores readiness status.
Chrysler	1998-1999	Town & Country 3.3L Flex Fuel	Monitors may not function when ethanol is detected by the vehicle.		Test as normal
Dodge	1996	Stratus, Intrepid, Neon	All monitors reset to incomplete upon every ignition key-off	Recall campaign #678 applies to California certified vehicles originally sold in California. TSB #18-005-01 (with lifetime warranty) applies to federal certified and California certified originally sold in northeast states.	Comply with recall, then test as normal.
Dodge	1996	Avenger, Stratus 2.0L manual	Monitors difficult to complete.		EIS ignores readiness status.

Make	Year	Model Engine (L); Fuel Type	Issue	Cause and Possible Remedy	Instructions to Inspector
Dodge	1996	Stealth 3.0L	All monitors reset to incomplete upon every ignition key-off	These vehicles are not reflashable.	EIS ignores readiness status.
Dodge	1998-1999	Caravan 3.3L Flex Fuel	Monitors may not function when ethanol is detected by the vehicle.		Test as normal
Eagle	1996	Vision	All monitors reset to incomplete upon every ignition key-off	Recall campaign #678 applies to California certified vehicles originally sold in California. TSB #18-005-01 (with lifetime warranty) applies to federal certified and California certified originally sold in northeast states.	Comply with TSB, then test as normal.
Eagle	1996-1997	Talon 2.0L	Monitors difficult to complete.		EIS ignores readiness status.
Hyundai	1996	Accent 1.5L Elantra 1.8L Sonata 2.0L	Monitors difficult to complete.		EIS ignores readiness status.
Hyundai	1997-1998	Sonata 2.0L, 3.0L	Monitors difficult to complete.		EIS ignores readiness status.
Infiniti	1996	All models	Catalyst and evaporative system monitors are difficult to complete	Follow drive cycle for specific vehicle model per TSB #ITB98-011F, June 7, 2013.	Test as normal.
Kia	1996	Sephia Sportage	Monitors difficult to complete.		EIS ignores readiness status.
Lexus	1996-1999	All models	Monitors can be difficult to complete	Follow drive cycles in Lexus service information.	Test as normal.
Mercedes-Benz	1996	C220, E320, C280, S320, SL320	The MIL illuminates when a scan tool is connected to the DLC. Trouble codes are not stored.	If the OBD II connector is used as the RPM source during the Smog Check, the MIL will illuminate.	Do not connect the OBD II connector until the analyzer prompts for the OBD II functional test. Use the conventional contact or non-contact method to obtain an rpm signal.
Mitsubishi	1996-1997	All Models	Monitors difficult to complete.		EIS ignores readiness status.

Make	Year	Model Engine (L); Fuel Type	Issue	Cause and Possible Remedy	Instructions to Inspector
Mitsubishi	1998	Eclipse (all), Galant 2.4L, Mirage, Montero Sport 2.4L	Monitors difficult to complete.		EIS ignores readiness status.
Mitsubishi	1998	3000GT, Diamante, Galant 2.3L, Montero, Montero Sport 3.0L	Some monitors are difficult to complete.	Follow recommended drive cycles in Mitsubishi service manual.	Test as normal.
Mitsubishi	1999	All models	Some monitors are difficult to complete.	Follow recommended drive cycles in Mitsubishi service manual.	Test as normal.
Nissan	1996	Sentra 1.6L and 2.0L manual, 200SX 1.6L, 240SX 2.4L, Maxima 3.0L, Pickup 2.4L	Monitors difficult to complete.		EIS ignores readiness status.
Nissan	1996-1997	All models	Catalyst and evaporative system monitors are difficult to complete.	Follow recommended drive cycle for specific model per Nissan TSB #NTB98-018G , June 7, 2013.	Comply with TSB, then test as normal.
Nissan	1999	All models	Monitors can be difficult to complete.	Follow owner's manual drive cycle to achieve readiness.	Test as normal.
Plymouth	1996	Breeze, Neon	All monitors reset to incomplete upon every ignition key-off.	Recall campaign #678 applies to California certified vehicles originally sold in California. TSB #18-005-01 (with lifetime warranty) applies to federal certified and California certified originally sold in northeast states.	Comply with recall, then test as normal.
Plymouth	1998-1999	Voyager 3.3L Flex Fuel	Monitors may not function when ethanol is detected by the vehicle.		Test as normal.
Saab	1996-1998	900 2.3L (B234 with Motronic 4.1)	Monitors difficult to complete.		EIS ignores readiness status.
Saab	1996-1998	All models	Catalyst and evaporative system monitors are difficult to complete.	Saab Service Instruction No. 248-9037 describes the correct drive cycle for completion of the monitors.	Comply with TSB, then test as normal.

Make	Year	Model Engine (L); Fuel Type	Issue	Cause and Possible Remedy	Instructions to Inspector
Subaru	1996	All models	Readiness cleared at key-off.		EIS ignores readiness status.
Toyota	1996-1999	All models	Monitors can be difficult to complete.	Follow drive cycles in Toyota service information.	Test as normal.
Toyota	1996-1997	Tercel, Paseo	Evaporative system monitor will never complete or is unsupported.		The EIS allows any one monitor to be incomplete. Test as normal.
VW	1997-1999	Passat	May fail for no OBD communication. No response or Only Transmission Control Module responds to DADs requests. ABS and/or brake lamp illuminated in instrument panel cluster.	Broken ground bond wire in ABS module causes diagnostic communication issues with the ABS module, ECM, and TCM. Diagnose and repair per VW TSB #45 15 01 , dated September 21, 2015.	Likely Broken Vehicle. Repair and retest.
Volvo	1996-1998	All models	Monitors difficult to complete.	Follow recommended drive cycles in Service Bulletin 25-19	EIS ignores readiness status.

Permanent DTC Vehicles of Concern

Table 6: Permanent DTC Vehicles of Concern

Make	Year	Model Engine (L); Fuel Type	Issue	Cause and Possible Remedy	Instructions to Inspector
Ford	2011-2014	Mustang 3.7 L & 5.0 L (gasoline)	Vehicle fails for Permanent Fault Code P0315	Vehicle not self-clearing permanent fault code.	Refer the motorist to Ford for Customer Satisfaction Program 17N01
Ram	2014-2017	Ram 1500 (diesel)	Vehicle fails for Permanent Fault Code P1D30	Vehicle not self-clearing permanent fault code. Seeking solution with OEM.	Test normally. BAR-OIS will ignore this code until a solution becomes available.
Jeep	2014-2017	Grand Cherokee (diesel)	Vehicle fails for Permanent Fault Code P1D30	Vehicle not self-clearing permanent fault code. Seeking solution with OEM.	Test normally. BAR-OIS will ignore this code until a solution becomes available.
Dodge	2012-2015	Challenger, Charger, Dart, Durango (gasoline)	Vehicle fails for Permanent Fault Code U0140	Vehicle not self-clearing permanent fault code. Seeking solution with OEM.	Test normally. BAR-OIS will ignore this code until a solution becomes available.
Jeep	2014	Grand Cherokee (gasoline)	Vehicle fails for Permanent Fault Code U0140	Vehicle not self-clearing permanent fault code. Seeking solution with OEM.	Test normally. BAR-OIS will ignore this code until a solution becomes available.
Ram	2013-2014	Ram 1500 (gasoline)	Vehicle fails for Permanent Fault Code U0140	Vehicle not self-clearing permanent fault code. Seeking solution with OEM.	Test normally. BAR-OIS will ignore this code until a solution becomes available.
Mercedes	2014-2015	Sprinter 2500 Sprinter 3500 (diesel)	Vehicle fails for Permanent Fault Codes P202A, P203A, P208A, P20B9, P20BD, P20BE or P20FA	Vehicle not self-clearing permanent fault code. Seeking solution with OEM.	Test normally. BAR-OIS will ignore these codes until a solution becomes available.
Mercedes	2010-2013	350 Bluetec	Vehicle fails for Permanent Fault Codes P203D, P20B6, P20BD or P20BE	Vehicle not self-clearing permanent fault code. Seeking solution with OEM.	Test normally. BAR-OIS will ignore these codes until a solution becomes available.
Freightliner	2014-2015	Sprinter 2500 Sprinter 3500 (diesel)	Vehicle fails for Permanent Fault Codes P202A, P203A, P208A, P20B9, P20BD, P20BE or P20FA	Vehicle not self-clearing permanent fault code. Seeking solution with OEM.	Test normally. BAR-OIS will ignore these codes until a solution becomes available.