



## Comments, Questions and Answers for BAR OBD Inspection System (OIS) DAD Design

### Comments:

1. In paragraph 3.2.31.2 the term "comprehensive components" is used but not defined. This is small but it needs to be clarified.

The pertinent requirement is 3.2.31.3. The Comprehensive Component Monitor (CCM) is one of the three continuous monitors that the OBDII System evaluates. If the BAR-OIS Software is only seeing the CCM, the BAR-OIS Software will command the DAD to end communication on the current protocol and begin on the next protocol.

2. The DAD specification still has business requirements in it. Please see 3.1.8.1 where it requires the provision of "no cost" updates. Another example is at 5.1.5 where the cost of the certification fee is stated. If you want to separate business requirements from how to technical requirements, than cost issues should be in the NWA-DAD Business Requirements document not in the DAD specification.

At the time this question was asked, there were three documents that were related to the BAR DAD. The first is the "BAR OBD Inspection System Data Acquisition Device Specification", which contains the requirements that potential DAD Vendors must meet. The second document is the "DAD Communication Specification" which contains the method and form in which the DAD must communicate with the BAR-OIS Software, formerly known as the NGET Web Application (NWA). The potential DAD Vendors are required to produce DADs which use this Interface Specification. The third document was the "NWA-DAD Business Requirements", which details the business functions that will be accomplished using the DAD. These business functions will be accomplished by the **BAR-OIS Software Contractor and the BAR.**

3. In many places the DAD specification refers to the DAD specification, please see 3.2.36 for an example of this where it states "per the BAR DAD Interface Specification". This is probably the result of cut and paste editing from the NWA-DAD Business Requirements specification.

The "DAD Communication Specification" is a distinct and separate document from the "BAR OBD Inspection System Data Acquisition Device Specification". The "DAD Communication Specification" can be obtained from SGS Testcom.

4. The testing requirements are generally much better than the previous specification but one issue that could occur is the tests in paragraph 3.2.61 describes driving over the cable but no mention on tire configurations or tire pressure. I like this type of testing, but it needs to address tire type and tire pressure to avoid arguments and legal problems later on. Single or dual axle? Large soft low pressure tires or cold high pressure tires?

The BAR deleted this requirement.

5. Regarding the NWA-DAD Business Requirements Specification version 00.0003. Due to the splitting off of part of this specification to make the NWA-DAD Business Requirements there is now the possibility of conflicts between the two specifications. There are many requirements for

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the DAD in NWA-DAD Business Requirements document. One good example of DAD requirements in the NWA-DAD Business Requirements document at paragraph 3.2.32. Any sentence in the NWA-DAD Business Requirements document that starts with "the DAD shall be capable of ..." is a requirement for the DAD. From my experience with writing an SAE specification you never want two places defining the same thing because you have the risk of only one place getting changed during updates.

The requirements within the "NWA-DAD Business Requirements Specification" are between the BAR-OIS Software Contractor and the BAR. Any "DAD shall..." Requirements were included to give the BAR-OIS Software Contractor a reference of what they can expect the DAD to do. The document was in draft form and is no longer available.

6. Regarding the NWA-DAD Business Requirements Specification version 00.0003. In paragraph 3.2.161 the DAD shall do a functionality test when requested by the BAR-OIS Software. This will need some human effort as well to connect the cable to the tester connection.

This is also section 3.2.81 of the BAR OBD Inspection System Data Acquisition Device Specification. Agreed, the BAR-OIS Software screens will instruct the Smog Check Technician to connect and disconnect the DAD during the functionality check.

7. The SAE J1962 document has been updated and is currently at the SAE Motor Vehicle Council for approval. It will then be published shortly thereafter. Publication should coincide closely with the full release of your document. You may want to look into this.

The BAR has frozen the referenced version of SAE J1962 at April 2002 for the purposes of this project.

8. The link to the VW K-line document at the OBD Clearinghouse, in section 3.2.21.1, should point to "get\_file&id=1380", 1343 was a duplicate with missing information inside.

Thank you. This has been fixed.

9. Regarding 3.2.84 Alternate DAD Power: As a leading manufacturer of OEM and aftermarket scan tools and vehicle communication interfaces, we believe this requirement is problematic, while creating complexity and cost for the DAD. We suggest a light (LED) on the tool that indicates Power is present at PIN16. If the LED is not lit, the vehicle should be repaired to be compliant with J1962.

We believe the purpose of this requirement is the BAR's reluctance to fail a vehicle if the only problem is no power at Pin 16 on the DLC. It becomes problematic when a vehicle fails the OBDII test (DTCs or Not Ready) AND the DLC fuse is blown.

It appears a MFG could comply with this requirement by adding an adapter to the DAD that obtains power from the accessory plug on the vehicle (AKA 'cigarette lighter', if present). However, many vehicles (e.g. GM) use the same fuse for that circuit as Pin 16 (note, there would still be no power). Therefore, the requirement adds cost and variables while appearing to provide no benefit.

The 12VDC signal at Pin16 of the DLC is an integral part of the OBDII system on the vehicle. We feel if there is no power at pin 16 of the DLC, the problem should be corrected.

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Thank you for your suggestions.

10. Regarding Appendix B Decertified Statement: We believe the third bullet item - "At the end of the one year certification period, the DAD will be decertified" should be reworded to something similar to the following: "At the end of the one year period, the DAD may be decertified if the following conditions are not met"... and then list the conditions.

Thank you for your suggestion.

11. <Vendor's Name> is aware that several of the protocols have timeouts that can be as long as a minute, which may result in an overall test time that is considerably longer than existing OBDII tests now, particularly if the BAR-OIS Software attempts to interrogate parameters and modes that are not supported, not available, not valid items, or have lengthy response times.

Thank you for your comment.

12. <Vendor's Name> feels that the DAD Vendors will need to make extensive use of logging to diagnose potential communication/interrogation failures and that these logs should be transmitted directly from the DAD to the DAD Vendor.

The DAD Vendor logs will be made available to the DAD Vendor on the local computer.

13. We understand from the Overview (2. On Board Diagnostic (OBD) Data Acquisition Device (DAD) Overview) that the BAR-OIS Software will control the Smog Check inspection. We also note that the NWA – DAD Business Requirements document Section 3.1.1 refers to "BAR DAD Interface Specification" document as the description of the services and parameters for communication between the BAR-OIS Software and DAD. If the BAR DAD Interface Specification is completed, it needs to be published and posted publically as soon as possible. To accomplish certification, the DAD Vendor's units will have to communicate with the BAR-OIS Software, and this specification appears to be the key document for Vendors to understand the connection method, calls, message format(s), serial-to-asynchronous message correlation method, and data passing parameters at a minimum. It is not possible for Vendors to successfully certify DAD units without prior publication of this information.

The DAD Communication Specification is currently available from the BAR-OIS Software Contractor, SGS Testcom.

14. (2.On Board Diagnostic (OBD) Data Acquisition Device (DAD) Overview) - We understand that the OBD DAD specification does not extend to other necessary OIS devices such as bar code scanner and printers. However, with respect to printers, our practical experience is that the BAR would be well advised to create specification documents with at least minimum requirements for these devices as well. As a consumer affairs organization focused on protecting consumers, the BAR has an interest in making certain that test documents given to consumers, especially the Vehicle Inspection Report (VIR) are permanently printed, for instance through xerography rather than the various other impermanent methods of printing (pigments, dyes, etc.). The fading, discoloration and corruption due to water exposure invalidate the data printed using these impermanent methods.

Thank you for your suggestion. The BAR does plan on publishing guidelines on the other equipment as well as a list of devices known to work with the OIS.

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15. Section 3.2.2 – editorial: SAE J1978 document is currently being opened for updates. If there are any desired changes then please submit changes to the Task Force chairman.

Thank you for your comment.

16. Section 3.2.5 – editorial: a more recent version of SAE J1979 recommended practice document dated February 2012 is currently available.

Thank you for your comment. The BAR has frozen the referenced version of SAE J1979 at September 2010 for the purposes of this project.

17. Section 3.2.7.1 – modify the current sentence to read “If collected, the log file shall be automatically sent to the NWA, and then automatically on to the DAD supplier”

Requirement 3.2.7.3 states that “the BAR Certified DAD Vendor may retrieve the log file(s) from the local computer.”

18. The BAR appears to desire DAD communication to a vehicle emission ECU system (e.g. OBD II) regardless of any noncompliant shortcomings that the vehicle communication system may have. This approach runs counter to industry efforts to ensure that proper emission ECU to external test device communications are implemented, which are currently tested using SAE J1699-3 Golden Scan tool. The BAR should consider only supporting noncompliant systems when the issue is known, the issue is released into public information (such as SAE J1699-4 Generic Scan Tool Anomalies), the issue is testable, and each noncompliance condition is tested on each DAD device. The approach to noncompliance should not be left to each DAD supplier.

In the BAR OBD Inspection System Data Acquisition Device Specification, please see the paragraph under “Connectivity Rate” for information on how the BAR will deal with this process.

19. Does the BAR have a plan to test the DAD connectivity rate as a part of the initial certification process? This seems to be not practical from our experience. It seems that only after the DAD is deployed to the field for some period of time will the BAR be able to assess if the DAD is able to successfully meet the connectivity requirement. If the DAD supplier is not able to meet the requirement, or the BAR does not have confidence the supplier will be able to meet the requirement, we assume the BAR will not grant the Supplier the annual Recertification. As such, those inspection stations that purchased the DAD from this supplier will no longer be allowed to use the DAD and will be required to purchase a new, certified DAD. Is our understanding correct?

The understanding is correct.

20. If this high level connectivity is an important consideration for the BAR, we suggest considering a business model where by the BAR evaluates and selects a single supplier for the DAD (like OEMs do for their dealership service bay solutions) vs. the supplier certification model outlined in the DAD specification.

Thank you for your comment.

21. Note that inside the latest specification for SAE J1979 there may be additional Mode \$09 Info Types that could be of use to an I/M program.

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**Thank you for your comment. The BAR has frozen the referenced version of SAE J1979 at September 2010 for the purposes of this project.**

22. Section 3.2.73 – note that SAE J1962 document is currently under revision. A review of connector hardware dimensions against the BAR DAD cable requirements might be a good check.

**Thank you for your comment. The BAR has frozen the referenced version of SAE J1962 at April 2002 for the purposes of this project.**

23. Section 3.2.75 thru 78 – note that SAE J1962 document is currently under revision. A review of connector hardware dimensions against the BAR DAD cable requirements might be a good check.

**Thank you for your comment. The BAR has frozen the referenced version of SAE J1962 at April 2002 for the purposes of this project.**

24. Given the character of the BAR OIS program and the associated performance requirements (in particular, the connectivity rate, the ability to support non-compliant vehicles and the technical support services) it seems a typical “single-source” supplier business model would be more practical vs. a business model which attempts to certify multiple DAD suppliers – the DAD is not a commodity device like a bar code reader.

**Thank you for your comment.**

25. Regarding the BAR NWA-DAD Business Requirements Specification portion, Version 00.0003, Section 3.1.1.2 – Terms used results in an unclear requirement. Perhaps rephrase “...shall include capturing last request message followed by response message which contained the error”. Note that obtaining the entire communication sequence or message content and storing that data into memory may not always be possible due to timing of when the link was interrupted.

**Thank you for your comment.**

26. Regarding the BAR NWA-DAD Business Requirements Specification portion, Version 00.0003, Section 3.2.48 – please note that a newer version of SAE J1979, dated February 2012, is available for reference

**Thank you for your comment. The BAR has frozen the referenced version of SAE J1979 at September 2010 for the purposes of this project.**

27. Regarding the BAR NWA-DAD Business Requirements Specification portion, Version 00.0003, 3.2.55.1. To keep consistent with automotive vehicle communication terminology, and assist those who would be reviewing such data files (logs, tables, and so forth) that contain this kind of stored data, could the BAR possibly conform to existing standards? For consideration, report SAE J1850 PWM as “J1850PWM”

**The BAR is not aware of an existing SAE or ISO standard for OBD nomenclature. The protocol naming conventions are contained within the DAD Communication Specification.**

28. Regarding the BAR NWA-DAD Business Requirements Specification portion, Version 00.0003, 3.2.55.2. For consideration, report SAE J1850 PWM as “J1850VPW”

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The BAR is not aware of an existing SAE or ISO standard for OBD nomenclature. The protocol naming conventions are contained within the DAD Communication Specification.

29. Regarding the BAR NWA-DAD Business Requirements Specification portion, Version 00.0003, 3.2.55.3. For consideration, report ISO 9141-2 as "ISO9141-2\_KBKB" (i.e., "ISO9141-2\_0808" or "ISO9141-2\_9494")

The BAR is not aware of an existing SAE or ISO standard for OBD nomenclature. The protocol naming conventions are contained within the DAD Communication Specification.

30. Regarding the BAR NWA-DAD Business Requirements Specification portion, Version 00.0003, 3.2.55.4. For consideration, report ISO 14230-4 as "ISO14230-4\_SLOW\_KBKB" (i.e., "ISO14230-4\_SLOW\_8FE9")

The BAR is not aware of an existing SAE or ISO standard for OBD nomenclature. The protocol naming conventions are contained within the DAD Communication Specification.

31. Regarding the BAR NWA-DAD Business Requirements Specification portion, Version 00.0003, 3.2.55.5. For consideration, report ISO 14230-4 fast initialization as "ISO14230-4\_FAST\_KBKB" (i.e., "ISO14230-4\_SLOW\_8F6B"). The asterisk character (\*) shall be used as a filler character in vehicles that do not properly report two full keybytes.

The BAR is not aware of an existing SAE or ISO standard for OBD nomenclature. The protocol naming conventions are contained within the DAD Communication Specification.

32. Regarding the BAR NWA-DAD Business Requirements Specification portion, Version 00.0003, 3.2.55.6.? For consideration, report ISO 15765 11 bit header 500 Kbit/s, report as "ISO15765\_500K\_11bit"

The BAR is not aware of an existing SAE or ISO standard for OBD nomenclature. The protocol naming conventions are contained within the DAD Communication Specification.

33. Regarding the BAR NWA-DAD Business Requirements Specification portion, Version 00.0003, 3.2.55.7. For consideration, report ISO 15765 29 bit header 500 Kbit/s, report as "ISO15765\_500K\_29bit"

The BAR is not aware of an existing SAE or ISO standard for OBD nomenclature. The protocol naming conventions are contained within the DAD Communication Specification.

34. Regarding the BAR NWA-DAD Business Requirements Specification portion, Version 00.0003, Section 3.2.84.5. – Please note that a newer version of SAE J1979, dated February 2012, is available for reference

The BAR has frozen the referenced version of SAE J1979 at September 2010 for the purposes of this project.

35. Regarding the BAR NWA-DAD Business Requirements Specification portion, Version 00.0003, Section 3.2.117. – defined in this section is a case where DAD would have to comply with P2 timing, which supports robust test planning. Consider referencing the date/year of SAE J1979 as the section 6.2.4.3 "Data Not Available within P2 Timing" may change (note: the latest SAE J1979 document is February 2012).

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This is now in Requirement 3.2.50 of the BAR OBD Inspection System Data Acquisition Device Specification. Refer to Requirement 3.2.5 for the version date of the SAE J1979 document. Thank you for your comment.

36. Regarding 3.1.7. Hardwired configuration: The specification states, "The BAR Certified DAD Vendor shall supply the DAD in a hardwired configuration." However, there are multiple references to "wireless technology" through the document. This section needs to be clarified regarding hardwired and wireless configurations. We suggest that the DAD Vendor must provide a hard wired version and may optionally provide a wireless version that is identical in OBD communication.

Thank you for your comment. We also agree that the DAD Vendor must provide a hard wired version and may optionally provide a wireless version that complies with the BAR OBD Inspection System Data Acquisition Device Specification.

### Questions and Answers prior to October 2012

Q001: For wired communications, you mention USB 2.0. Is it your experience that a typical USB 2.0 connector is functional after being run over with a 14000 lb. truck?

A001: The BAR has deleted this requirement.

Q002: For wireless, what are your thoughts on Bluetooth, Zigbee, 900MHz packet radio, and Wi-Fi?

A002: The BAR will consider any technology that can meet the presented requirements.

Q003: You indicate communications should still function if there is no power, so in the wireless scenario are you anticipating a battery or an external connector?

A003: In the situation where no power is being supplied to the DAD from Pin 16 of the DLC, the DAD must still request the data from the vehicle.

Q004: If powering from USB, do you suggest a 12V boost converter to provide ISO communications power in case 12V isn't available?

A004: In the situation where no power is being supplied to the DAD from Pin 16 of the DLC, the DAD must still request the data from the vehicle.

Q005: What is the objection to the J1962 metal clip?

A005: The BAR has no objection to a metal clip securing the DAD to the vehicle data port. The requirement has been deleted. However, we caution Vendors to make sure that use of the clip does not cause mechanical interference problems on some model vehicles and new model vehicles yet to be introduced into the market place.

Q006: Why should Type B J1962 connectors be excluded, if the device is capable of handling both 12V and 24V systems?

A006: The BAR agrees and has modified the BAR OBD Inspection System Data Acquisition Device Specification to include the Type-B DLC.



Q007: If our device includes a J1962 connector, does that mean the entire device must be functional after being run over by a truck?

A007: **This requirement has been deleted.**

Q008: Is the simulator envisioned as an external test box or internal circuitry within the unit?

A008: **The mechanism is envisioned as having a J1962 connector that the DAD can plug into. The functionality of the DAD connector pins and cabling can then be tested.**

Q009: What does the BAR anticipate device pricing to be?

A009: **The pricing of the DAD units will be market driven.**

Q010: What volume of units is projected in California?

A010: **Based on the BAR's 2012 Executive Summary, there were 8,303 Smog Check stations. This number can fluctuate and the BAR cannot provide an exact number. In general, Model Year 2000 and newer vehicles with a GVWR less than 14,000 lbs. will be tested using the new devices.**

Q011: How many devices might you expect to be used at a given site?

A011: **The BAR does not know how many DADs will be at a given station.**

Q012: I just wanted to clarify a certain point, as I read through the new DAD specification; it looks like there is basically a \$10,000 "fee" to see the full DAD specification. Can you confirm that this the case?

A012: **This requirement has been changed. To receive certification, the DAD Vendor must submit a non-refundable DAD Certification Fee, which is limited to \$10,000 by statute (see A015).**

Q013: If the potential DAD Vendor feels they are not capable, or they may have difficulty making a viable DAD for this program, then they would just be out the \$10,000.

A013: **Yes. See A012.**

Q014: I have read the latest DAD specification and I am not clear on the availability of the Interface Specification. Is it available now?

A014: **The DAD Communication Specification is currently available from SGS Testcom.**

Q015: Why is the certification fee \$10,000? Is that an arbitrary amount? What is the justification and purpose of this fee?

A015: **The DAD Certification Fee is fixed by the department based upon its actual costs of certification testing. It is calculated from the time that the equipment is submitted for testing until the time that certification testing is complete, and shall in no event exceed the dollar limit specified in Section 44036(b) of the Health and Safety Code, which is \$10,000.**

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Q016: Why is there a requirement to pay a \$10,000 deposit just to get a copy of the requirement specification? This fee seems like it will reduce competition for providers of the DAD. Is it normal for the State of California to require deposits like this? Unfortunately it has the appearance of an effort to reduce the number of companies competing for the chance to provide DAD hardware.

A016: **The question is no longer valid. See A012.**

Q017: Regarding the NWA-DAD Business Requirements Specification version 00.0003. In paragraph 3.2.49.1 and .2 the term "Verification of Responses" is used but not defined. What is intended?

A017: **"Verification of Responses" will be handled by SGS Testcom.**

Q018: Regarding the NWA-DAD Business Requirements Specification version 00.0003. In paragraph 3.2.95.1 requires the DAD to request confirmed DTCs from the vehicle. Is there a difference between confirmed DTC and just requesting DTCs from the vehicle?

A018: **This question is no longer applicable. The BAR's OIS application will request data by Mode and PID.**

Q019: I am writing in regards to the new OBD specification. We would like to know if the workshop will be held on the July 20, 2012. Is there someone I can talk to about the details of the workshop?

A019: **The BAR scheduled the workshop for Thursday, July 26, 2012 from 9:00am to 12:00 noon. It was held in Sacramento.**

Q020: With regard to wireless/hard-wired DAD configuration (sections 3.1.7 and 3.2.88), does the BAR intend to allow wireless connections to the DLC? If wireless DLC connections are allowed, does that change the functional validation testing requirements (specifically 4.1.3, 4.1.4.2)? Are wireless connections between the DAD and computer allowable? Pursuant to 3.1.7, will the BAR require that a wired DLC interface be supplied as a pre-requisite to certifying a wireless solution?

A020: **A hard-wired DAD configuration is required. In addition, a DAD Vendor may offer a wireless DAD configuration. Requirement 4.1.3 would apply to the hard-wire DAD, but not the wireless DAD unless the wireless DAD uses strain reliefs. Wireless connections are allowed between the DAD and the computer.**

Q021: In order to best satisfy the intent of section 3.2.89 as it pertains to "Future OBD" capabilities, as well as to maximize connection rate and minimize exception vehicles (with regard to connection rate calculations), it has been our experience that complete control of low-level OBD interface code is essential. Since access to device control at that level may be prohibited by third party suppliers, does the BAR intend to hold all applicants for certification to the same standard regarding the capability to make whatever device modifications are necessary to adapt to future vehicle technology?

A021: **Yes. The BAR believes the scope of the requirement is narrow enough to be met by the DAD Vendors.**

Q022: We are unable to provide comment on the DAD driver/software interface prior to reviewing the BAR DAD Interface Specification. If possible, we would appreciate the opportunity to review and provide comments on this specification.

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- A022: **The DAD Communication Specification is available from SGS Testcom.**
- Q023: We would like to see the program timeline for the OIS concurrent with deployment of the DAD specification - as this will help guide development and reimbursement costs- namely sales of DAD. If, for example we develop a DAD and get certified, however the OIS is not deployed for another 6 months to a year, our spend/investment sits idle without recovering those costs
- A023: **The BAR provided a milestone summary at the July 26, 2012 workshop and published the milestones on the BAR web site subsequent to the workshop. Check the BAR's website for the latest version of the milestone summary.**
- Q024: Regarding 1.2 Scope: Since the BAR is not purchasing anything from the Vendors and DAD would be sold directly to the stations, are there any agreements that will be required between the DAD Vendors and the BAR/DCA - beyond the Application for Certification and Disclosure Agreement? (See 3.1.20)
- A024: **Although there are no additional contractual requirements, the DAD Vendor will be required to meet the requirements of the BAR OBD Inspection System Data Acquisition Device Specification and the DAD Communication Specification.**
- Q025: Regarding 3.1.7 Wired Configuration submittal and Wireless: We assume the certification fee allows for a hardwired and a wireless DAD version to be certified concurrently. Please confirm.
- A025: **This is correct.**
- Q026: Regarding 3.1.8 Updates: The intent of this section is unclear. There appears to be plans for regularly scheduled (quarterly?) updates, but the purpose of the updates seems to be to make the tool compliant with the specification. If the DAD is certified to meet the specification, what updates would be required?
- A026: **If at any time the BAR finds that the Vendor's DAD does not meet the requirements of the Specifications, the BAR will require an update to the Vendor's DAD. If the Vendor's DAD continues to meet the requirements of the Specifications, no update would be required.**
- Q027: Regarding 3.1.8 Updates: We understand IF a certain DAD is found to have a deficiency post certification, then it should be corrected via some update mechanism at no cost to the state or station. However, since potential DAD Vendors currently have no knowledge of what updates may be required, we do not believe providing updates in general, at no cost is a good idea. We believe this section should be modified to clarify between updates to add BAR features (chargeable), and updates to fix deficiencies (provided at no cost to stations or the BAR).
- A027: **The BAR agrees. If the BAR adds features or functions to the Specifications, the DAD Vendors would be allowed to charge the stations for the BAR enhancements to the Specifications.**
- Q028: Regarding 3.1.9 Updates: We assume the BAR-OIS Software server will be the mechanism for providing updates to the DAD firmware and/or software through the OIS computer. Please confirm.
- A028: **This is an incorrect assumption. Per 3.1.9.1, the DAD Vendor shall develop a plan that is agreed to by the BAR. The BAR will be confirming your compliance with 3.1.9.**

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- Q029: Regarding 3.1.11 Interface Specification: When does the BAR expect the DAD interface specification will be available?
- A029: **A current version of the DAD Communication Specification is available from SGS Testcom, pending a signed non-disclosure agreement (NDA) with SGS Testcom.**
- Q030: Regarding 3.1.15 & 3.1.16 Response Time Metrics: How does the BAR intend to standardize the data tracking and reporting for response times for the various DAD suppliers? For example, will there be a 'centralized' call center for the whole state that will be time stamping calls made to various DAD Vendors? Please describe in detail, or provide a flowchart to ensure consistent measurement across DAD Vendors.
- A030: **The DAD Vendors are responsible for tracking and monitoring their own response time metrics. The BAR will audit this information as necessary.**
- Q031: Regarding 3.1.20 Disclosure Agreement: Will the BAR allow for alternative methods for providing a Disclosure Agreement generically to purchasers (vs. individually)? For example, registering their DAD via a website that requires acceptance of the Disclosure Agreement. This approach would be less cumbersome for all parties.
- A031: **No, that will not be allowed.**
- Q032: Regarding 3.1.20 Disclosure Agreement: The purpose of the disclosure agreement is unclear because it focuses solely on the requirements for certification, which is exactly the same for all potential DAD Vendors. All participating DAD Vendors would be using the exact same form – so the purchasing parties would obtain no valuable information from the form. If however, the purpose of the form is to protect the consumer, we feel there should be more information disclosed about the company selling the DAD. For example, experience at developing OBDII interfaces, number of I/M programs using their equipment, tenure in various IM programs, financial strength, etc.
- A032: **The purpose of this form was to inform the DAD purchaser of the risks associated with purchasing a DAD and participating in the Smog Check Program.**
- Q033: Regarding 3.2.3 IP43: Is it the BAR's intention for the DAD to have watertight connectors on the tool? In other words, would the water spray test be performed with the cables connected to the tool?
- A033: **The BAR deleted this requirement.**
- Q034: Regarding 3.2.64 Cable Length: What is the BAR's intent to limiting the cable to 15' (+/- 6")? If a DAD Vendor opted to provide an additional 10' of cable (total 25' for example), the way the specification reads, they would need to either provide 2 cables (one 15' and one 25'), or introduce an inline connection to add 10' (which would be a failure point). We believe requiring 15' cables may introduce customer dissatisfaction and/or quality problems. Our experience shows that 25ft of cable is the optimal length for OBDII testing in a shop environment.
- A034: **The BAR requirement is for a DAD to be offered with a total cable length of 15 feet. The DAD Vendor may place the DAD at either end, or anywhere in between. The BAR's intent for the 15**

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foot length is to comply with the USB standard for maximum cable length. Per Requirement 3.2.65, the DAD Vendor may offer optional lengths.

Q035: Regarding 3.2.74 Dad Connectors: This requirement may need to be modified if the connectors at the DAD are required to be waterproof – as these types of connectors may not come disconnected by simply ‘pulling’.

A035: **The BAR deleted the water resistance requirement.**

Q036: Regarding 3.2.80 Simulator: Does the BAR have a preference as to whether the device/simulator is integral to the DAD vs. a separate device that the DAD plugs into? The DRAFT spec can be interpreted to mean either method is acceptable.

A036: **The DAD must plug into the device. Whether the device is physically part of the DAD or a separate device is not a requirement. The requirements have changed in this area of the BAR OBD Inspection System Data Acquisition Device Specification.**

Q037: Regarding 3.2.85 & 3.2.86 Vehicle Ground: These sections are confusing. Together they suggest the DAD should be able to communicate with the vehicle even if there is no ground on either Pin 4 or Pin 5. Without a common ground between the OIS computer and the vehicle, reliable communication cannot be guaranteed. Can the BAR explain what the intention of this set of grounding requirements is?

A037: **A vehicle ground must be obtained. The DAD will need to confirm to the user that vehicle ground and vehicle power exists at the DAD, either through the DLC, or alternative connections.**

Q038: Regarding 3.2.89 Future OBD Data: Will the BAR allow other functionality- e.g. Live OBD Data and/or code clearing from the DAD? Could this be presented as an optional feature?

A038: **The BAR believes that “Live OBD Data” is the same as the BAR specified Dynamic Data. In addition, the BAR has been evaluating the invoking of Mode \$04. Any DAD functionality beyond the Specifications can be looked upon as options; however the BAR will not be evaluating any options.**

Q039: Regarding 4.1.4.3 Connector: Please clarify this section. Is this a requirement to drive over the connectors on the DAD cables while they are unplugged from the DAD?

A039: **The BAR deleted this requirement.**

Q040: Regarding 5.1.5 Certification: Does the BAR have an anticipated timeline for when the 2 week collection period will begin?

A040: **The BAR provided a milestone summary at the July 26, 2012 workshop and published it on the web. Check the BAR’s website for the latest version of the milestone summary.**

Q041: Regarding 5.1.9 BETA Testing: Does the BAR expect the selected BETA sites will have already purchased the rest of the OIS equipment (computer, printer, barcode reader) in order to be selected as a BETA site? Is there already a plan for how these BETA sites will be operating in conjunction with the existing Smog Check program PRIOR to the program being launched?

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A041: Any agreements regarding other required equipment are between the DAD Vendors and the Beta Stations. The BAR is currently planning how Beta will be integrated with the existing program.

Q042: What is the timing for Alpha and BETA?

A042: The BAR provided a milestone summary at the July 26, 2012 workshop. Check the BAR's website for the latest version of the milestone summary.

Q043: How will DAD's be distributed?

- a. Will they only be allowed to purchase directly from DAD supplier
- b. Can DAD Sell them thru multiple distributors
- c. Will the BAR-OIS Software Contractor offer DAD's for sale

A043: a) The stations will be allowed to purchase directly from the DAD Vendors. If the DAD Vendors wish to sell to distributors, this would also be allowed.

- b) Yes.
- c) No.

Q044: Will the BAR-OIS Software Contractor be allowed to only promote their choice of approved DAD device thru the BAR-OIS Software, or will they be required to list either a) NO devices or b) all devices.

A044: The BAR-OIS Software Contractor will not promote any particular DAD Vendor or another. The BAR-OIS Software will support all BAR-Certified DADs.

Q045: Has the BAR-OIS Software Contractor been selected yet? If not, when is that process taking place?

A045: The BAR has a BAR-OIS Software Contractor.

Q046: Will all users of DAD have persistent high speed internet connection?

A046: The stations will be required to have an internet connection. The service levels that the station experiences will be impacted by the speed that they choose.

Q047: How will DAD's be advertised to IM stations? Will they be given a list of certified DADs?

A047: The BAR is not involved with advertising the DADs. The BAR will publish a list of BAR-Certified DADs.

Q048: Regarding 3.1.8.2: Requirements state that quarterly updates are required. What if no updates are necessary or requested in the period of a quarter? Can the DAD Vendor simply release updates as requested if request duration is beyond a quarter?

A048: If no updates are required, then no updates are necessary. The BAR will direct when updates may occur.

Q049: Regarding 3.1.8.4: Will the DAD Vendor be responsible for making sure that all users of DAD device apply updates within 2 weeks of receiving approval from the BAR? Does the DAD Vendor need to create audit trail for device updates to prove that all devices have been updated? What if users do not turn on their computer for two weeks?

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- A049: **The BAR intends to prevent any DAD that has not been updated at the conclusion of the two week period from testing. No audit trail is required from the DAD Vendor.**
- Q050: Regarding 3.1.10: Will ARB consider supporting J2534 API instead of proposed proprietary DAD API if <Vendor Name> can show that it offers the same level of security and <Vendor Name> proposes ways to further improve DAD and smog check application security to reduce risk of tampering?
- A050: **The BAR is not considering J2534 at this time.**
- Q051: Regarding 3.1.12: Will the DAD Vendor be responsible for only tech support related to DAD installation and troubleshooting, or will the DAD Vendor also be responsible for tech support related to general use of the smog check software?
- A051: **The DAD Vendor is only responsible for supporting their device and its interface to the OIS.**
- Q052: Regarding 3.2.7: Can DAD Vendor collect usage statistics?
- A052: **Yes.**
- Q053: Regarding 3.2.25.1: Can we get a copy of this Chrysler document?
- A053: **Yes. Each DAD Vendor should contact the BAR if they want a copy.**
- Q054: Regarding 3.2.80: Does ARB want DAD to run thru complete self-test prior to each smog inspection? Can the DAD Vendor give the BAR-OIS Software Contractor a command that they must execute to run self-test in their procedure prior to running each Smog Check? Or must DAD automatically execute self-test each time it is accessed?
- A054: **The BAR-OIS Software will prompt the Technician to initiate a DAD Functionality Check. This will primarily be done when a vehicle fails to communicate with the OIS. The purpose is to ensure that the DAD is still operating correctly and that the fault lies with the vehicle under test.**
- Q055: Regarding 3.2.81: Can device simulator be a separate piece of hardware that smog inspection technician has to plug in to confirm it is working?
- A055: **Yes. The intent is to test the DAD's pins, cables and circuits.**
- Q056: Regarding 3.2.85.2: What if ground is not present on pin 4 or pin 5. Does the technician have to hook up an external ground to the vehicle chassis or can vehicle be failed? If external ground is required, how would they be directed to do so? Via our software or the IM test software? Are we required to determine if the external ground is connected correctly?
- A056: **A vehicle ground must be obtained. The DAD will need to confirm to the user that power and ground exist.**
- Q057: Regarding 3.2.88.1: is it OK if DAD Device does not offer any wireless technology?
- A057: **Yes.**

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- Q058: Regarding 3.2.88: If DAD is using wireless, is it OK to require power and ground be present on the J1962 connector?
- A058: For power, see requirement 3.2.84: “The DAD shall not require power to be present on pin sixteen (16) in order to communicate with the vehicle.” For ground, see requirement 3.2.85.2: “If ground is not present on pin four (4), the DAD shall be supplied with an alternate means of grounding.”
- Q059: Regarding 4.1.4.2: Will DAD enclosure be driven over by 14,000lb vehicle for this testing? Tests only mention cables and connectors.
- A059: The BAR deleted this requirement.
- Q060: Regarding 4.1.4.3: Which connectors will be driven over for the test? All? Including the USB 2.0 connector?
- A060: The BAR deleted this requirement.
- Q061: Regarding 5.1.8: Will the BAR supply Smog Check stations with required computer software for smog testing?
- A061: The Smog Check software is a web application. The host computer will require Windows 7 32-bit (or better) operating system.
- Q062: Regarding Section 2 32 bit BAR OIS: Is the specification intended to prohibit 64 bit versions of Windows 7? This seems to be unnecessarily restrictive. Also, what is the intention of the specification when Windows 8 is released and Windows 7 is no longer supported? We suggest you add the words “at a minimum”: “...shall at a minimum run “Windows 7, 32 bit”...”
- A062: Agreed. The BAR OBD Inspection System Data Acquisition Device Specification has been revised.
- Q063: Regarding 3.2.12-13 Connectivity for pre-2000 vehicles: Since AB2289, Section 3 authorizes OBD testing of gasoline powered vehicles only for model year 2000 vehicles and newer, what is the purpose in the specification of requiring ninety-nine point nine zero percent (99.90%) connectivity for pre-2000 vehicles?
- A063: The BAR anticipates that in the future, the DAD will be used to test the OBDII Systems on applicable pre-2000 vehicles.
- Q064: Regarding 3.2.12-3.2.20 Connectivity Rate/Successful communication: There is potential conflict between the requirement that DAD connects to vehicles even if the vehicle does not meet ISO/SAE standard, and the specification’s definition of successful communication (i.e. reports all information requested per the ISO/SAE standard.). The specification needs to define the difference (if any) between “connectivity” and “communication”. The 99.90% rate shall be for “connectivity”, not “successful communication”, so that is the key measure.
- A064: The BAR OBD Inspection System Data Acquisition Device Specification was modified to include a different rate for data other than Priority 1 data.

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- Q065: Regarding 3.2.64 Cable: The specification needs clarification to ensure the 15' length does not include the length of the USB or other cable connecting the DAD to the computer. The 15' cable should be between the SAE J1962 connector and the DAD, not the OIS computer as stated in specification.
- A065: The BAR requirement is for a DAD to be offered with a total cable length of 15 feet. The DAD Vendor may place the DAD at either end, or anywhere in between. The BAR's intent for the 15 foot length is to comply with the USB standard maximum cable length. Per Requirement 3.2.65, the DAD Vendor may offer optional lengths.
- Q066: <Vendor's Name> is concerned about the potential for a he said/she said situation occurring between the BAR-OIS Software developer/provider, the DAD Vendor, and the BAR, when a customer or shop owner has an "unfavorable" test experience, and there is a question about which services/parameters were sent by the BAR through the BAR-OIS Software to the DAD and, ultimately, to the vehicle and whether or not they were sent and received correctly at each stage of the interrogation process.
- A066: The BAR is aware of the potential for this situation to arise. To assist during these situations, the BAR is collecting log files to determine what was and what was not sent and received by the BAR-OIS Software and the DAD.
- Q067: <Vendor's Name> feels that updates to the DAD software and firmware should be handled directly by the DAD Vendor rather than by the BAR or a third party contractor.
- A067: The DAD Vendors are to develop a plan for the update of the DAD hardware/firmware/software that is agreed to by the BAR. The intent is that the DAD Vendors will be responsible for the updates, per the plan.
- Q068: Help Desk. Can the BAR further explain what roles it expects the DAD Vendor's help desk to play since the DAD Vendor will not be responsible for the BAR-OIS Software or customer computer?
- A068: The DAD Vendor is only responsible for supporting their device and its software interface to the host computer web client.
- Q069: (5.2 Annual Recertification) – The description in this section indicates that after initial certification, and 90 days prior to the anniversary of the first year of certification, the DAD Vendor will meet with the BAR to discuss any issues, submit additional units for recertification, at which point if the BAR determines that the DAD continues to meet the requirements of the OBD specification, the DAD will be re-certified. However, Appendix B, Disclosure Agreement states, "at the end of the one year certification period, the DAD will be decertified". These statements of the recertification process are inconsistent and need to be aligned. The description in "5.2 Annual Recertification" seems the correct process and description of the BAR's intent for same.
- A069: "At the end of the one-year certification period, the DAD may be decertified." The BAR believes that the two sections are in agreement.
- Q070: Section 1.1 Purpose – term "OBD Community" definition. Does this cover only folks who create I/M test lane products?
- A070: If an interested party believes that they can comply with the requirements of the Specifications, they are welcomed to participate.

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Q071: Section 1.1 Purpose – regarding the BAR is aware of shortcomings, shouldn't the BAR acknowledge known vehicle build or ECU communication issues and use those vehicles as "DAD test cases"?

A071: The BAR has attempted to solicit this type of information. However most of the information regarding problematic vehicles that the BAR has received is anecdotal in nature. If interested parties are able to provide information on problematic vehicles, the BAR would accept the information.

Q072: Section 1.2 Scope – a difference from DAD spec 1.01 to this spec is a change from IE 8 or Firefox 3.6 to IE 9. Can the BAR elaborate on what drove this decision?

A072: The BAR-OIS Software uses the IE 9 engine to render the applications pages; therefore IE 9 is required to be on the computer. As IE is updated, the BAR will evaluate the feasibility of updating the BAR-OIS Software.

Q073: Section 1.2 Scope – what are the plans for the creation of the BAR-OIS Software? Is it an internal BAR task, or will the BAR go to Industry from a solution? Will the job be let out by contract, or? What is the timeline for this project?

A073: The BAR has a BAR-OIS Software Contractor and development is underway. The BAR provided a milestone summary at the July 26, 2012 workshop and published it on the web. Check the BAR's website for the latest version of the milestone summary.

Q074: Section 2 – Environmental conditions of "shock, vibration, and environmental exposure" are mentioned here and also Durability Section 3.2.x (pp. 15). Does the BAR have a specific shock specification to reference? Does the BAR have a specific vibration specification to reference? Does the BAR have a specific environmental exposure (believed to be sunlight related) specification to reference?

A074: The BAR does not have a reference specification for shock or vibration, however 3.2.72 is the requirement and 4.1.4.1 is the test that the BAR will use. The environmental exposure requirement (3.2.3) was deleted by the BAR.

Q075: Section 3.1.8.1 – what is the definition of an "update"? Are updates only for bug fixes? If the BAR submits a specification change request, where the result is a change that goes into a hardware or software update, is this considered "no cost"? We realize the "specification" can change; however, there is no mention that this requirement would have to address said change request(s) at "no cost".

A075: If the BAR adds features or functions to the Specifications, the DAD Vendors would be allowed to charge the stations for the BAR additions to the Specifications.

Q076: Section 3.1.9 – considering there are many methods to update DAD HW, FW, and SW, is there a BAR preference or guideline for how an update shall be performed? Or will the DAD Vendor be responsible for proposing the mechanism to update the DAD HW, FW and SW?

A076: The DAD Vendors are to develop a plan for the update of the DAD hardware/firmware/software that is agreed to by the BAR. The intent is that the DAD Vendors will be responsible for the updates, per the plan.

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Q077: Section 3.1.11 – Will the DAD Vendor have input into the creation/development of the BAR DAD Interface Specification?

A077: **No. The DAD Communication Specification is complete. This specification is the property of SGS Testcom, the BAR-OIS Software Contractor.**

Q078: Section 3.1.12 through 3.1.16 (Technical Support) – (a) Clearly, the inspection stations needs support services. In the case of the BAR OIS, it seems it would be most practical if the BAR-OIS Software suppliers provided level 1 technical support services and the DAD supplier provides level 2 (more related to DAD failures). In our experience, if the inspection station is having a problem with the system, it will be difficult for the inspection station staff to assess if the problem is with the BAR-OIS Software, the DAD or just some routine computer problem. It makes sense (particularly in the supplier certification business model envisioned by the BAR) for all certified DAD supplier to effectively provide this level of technical support.

(b) Technical support services of the scope described in the DAD specification are typically covered under a technical support contract. Is the BAR planning to enter into support agreements with each certified DAD supplier?

A078: **Help Desk services will be supplied by the BAR, the BAR-OIS Software Contractor, and the DAD Vendors. Each entity will be responsible for support in their area. The BAR is not planning to enter into support agreements with each certified DAD supplier. The BAR is considering better definition of service level roles. The BAR Industry Help Desk will be the initial point of contact if it is not clear whether the problem exists with the DAD or the BAR-OIS Software. A troubleshooting guide will be available on the BAR Smog Check web site.**

Q079: Section 3.2.7 – consider modifying the current sentence to read “The BAR Certified DAD Vendor may choose to collect a DAD-to-Vehicle communication log file from the DAD if needed to perform system diagnostic purposes.”

A079: **The BAR has added an additional requirement for the DAD to collect the DAD-to-Vehicle communication log file and to deliver the DAD-to-Vehicle communication log file to the BAR-OIS Software when requested.**

Q080: Section 3.2.11 – the requirement here is to request OBDII SAE J1979 defined data from all hybrid vehicles which are equipped with the OBDII system. There may be some hybrid vehicles that do not report OBD II data when the gasoline engine is not running. What is the approach for properly moding the vehicle into the correct operating condition such that the hybrid vehicle emission system reports OBD II data? Otherwise, a communication failure condition could be flagged here, when indeed the condition is not correct.

A080: **The BAR-OIS Software will look for minimum RPM limits, which can be set to zero if need be. In addition context sensitive help will be provided to the Technicians to inform them on how to test the vehicles.**

Q081: Section 3.2.12 through 3.2.15 – in review of the non-diesel fueled vehicles, MY1996 to 1999 cover the period where OEMs were adjusting to a new communication means, as well as obtaining exemptions from CARB with respect to OBD II serial communication implementation(s). On some MY2000 and newer vehicles there are also special cases that have made their way into the field. Known OBD II communication issues have be identified and documented. For these reasons, maintaining a 99.9% connectivity rate may not be possible. Further, this requirement

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mentions vehicles that are "...non-compliant with the required SAE and ISO standards..." Is the BAR defining in this requirement a need to get 99.9% communication rate even if DAD serial communication has to be implemented in a manner just to make it work (and possibly outside OBD II serial communication definition documentation)?  
How will the BAR measure the 99.9% connectivity rate?

- A081: **Yes, it is the BAR's intent to collect OBDII information on as many vehicles as technically feasible. The BAR has included a mechanism to adjust the connectivity rate if necessary. Please see the paragraph under "Connectivity Rate" for information on how the BAR will deal with measuring the connectivity rate.**
- Q082: More, for non-Diesel engine vehicles, the breakdown of model years is 1996-1999 and 2000 and newer? What is the reasoning behind this?
- A082: **The BAR considered vehicle technology and program needs in this decision.**
- Q083: More, For Diesel engine vehicles, the breakdown of model years is 1998-2003 and 2004 and newer? What is the reasoning behind this?
- A083: **The BAR considered vehicle technology and program needs in this decision.**
- Q084: Section 3.2.16 – Regarding "connectivity rate" the subject appears to need more discussion and definition within this document. The list of OBD II vehicles inside the California Smog Check program is large and of varied complexity (e.g. one emission ECU vs. five emission ECUs). A DAD test plan could be devised where known compliant vehicles from the above ranges could be tested and results obtained to determine DAD pass/fail acceptance. With respect to OBD II vehicle types, could a test plan that prescribes such an approach satisfy a "connectivity rate" definition for the BAR?
- A084: **The BAR feels the Specifications are appropriate in these areas. The BAR does not yet have a list of known compliant vehicles.**
- Q085: Section 3.2.21.2 – does it seem reasonable to set a P2 min = 0 when this is different than what the ECU (and communication specification) is indicating? It is realized that this is required to retrieve data from a noncompliant vehicle (reference statement made earlier about "connectivity rate"), yet, this condition is a known condition and is properly being called out (as are those conditions of noncompliance mentioned in sections 3.2.22.1 and 3.2.23.1). The point here is that if there is no known recall fix from the OEM, then all known noncompliant departures should follow this same approach of disclosure.
- A085: **To the extent the BAR is aware of noncompliant vehicles where the noncompliance has been documented and that there is no available remedy from the vehicle manufacturer, the Specification, where feasible, has been written to make the DAD tolerant of those noncompliant vehicles. As an alternative, the BAR considered simply referencing the disclosed noncompliances and requiring the DAD Vendors to determine on their own how best to accommodate the vehicles. However, given the current plan to have multiple brands of DADs certified, the BAR chose to prescribe methods to deal with the noncompliances to increase the likelihood of all DADs performing identically in lieu of individual solutions that may have varying degrees of success and result in different data collected for the identical car. Further, the BAR has no illusions that all noncompliant vehicles or anomalies have been documented and thus, this specification cannot call them out or address them directly. In those cases, the BAR is relying on**

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the past experience of the DAD Vendors to have addressed many more issues than those that are clearly known and will be using the connectivity rate specification to ensure such vehicles are addressed.

In this particular example regarding P2min, ISO 9141 allows a vehicle to use either a P2 specification of 25 msecs or 0 msecs as indicated by the keywords. The known noncompliance involves a vehicle that returns keywords indicating 25msec but in actuality, uses a P2min of 0 msecs. Given that the very same protocol allows a 0 msec P2min, it seems reasonable and not particularly risky to require the DADs to use a 0 msec P2min regardless of the keywords returned from the vehicle. For compliant vehicles that use 25msec, having the DADs 'listen' for messages starting at 0 msecs instead of 25 msecs is not expected to have any detrimental impact.

- Q086: Section 3.2.28 and sub-bullets – allowing each DAD Vendor to implement its own “default” automatic protocol detection order will lead to a lack of national I/M standardization for acquiring OBD II data. Shouldn't the default automatic protocol detection order be defined by Industry? For example, the I/M Flowchart, which is a guidance that has been available for several years, may be a more thorough solution for this. Note that prior to existence of the I/M Flowchart guidance, there were external test equipment connecting to ECUs using a non-valid data link, and thus the data was also not correct. Because there are ECUs out in the field which can connect to more than one OBD II protocol, this led to confusion by tool users until the flowchart presented an ordered communication strategy.
- A086: While the order that protocols are tried should not technically matter with compliant vehicles, various DAD Vendors have indicated to the BAR in the past that the order they use has been optimized to deal with various anomalies or for speed of establishing communication and that order has been refined with many years of experience. To that extent, the BAR did not feel it was appropriate to dictate the order of protocols and rather that it would be beneficial to use the experience gained by the DAD Vendors. Several States have expressed increased success in their program by being able to identify the expected protocol of the vehicle and try that protocol first so the BAR has included provisions for that. Such a mechanism has been used by other States to speed up establishing communication as well as to partially address some known noncompliant vehicles that have one or more emission-related ECUs that support multiple (or a different) protocol than other ECUs. Beyond that, however, it seems appropriate to use the experience of the DAD Vendors as to what order the DAD tries protocols to achieve the highest degree of communication success.
- Q087: Section 3.2.30.1 – this requirement first mentions changing the order of protocol order attempts. Does research of field operation as well as application of good programming qualify this as a sound requirement? Second, changing tolerances on repeat 2<sup>nd</sup> or later initialization attempts makes software development, and more specifically, the number of test cases, go up considerably. So, does SAE J1699-3 and vehicle communication implementation requirements play a role here? If the vehicle has a communication anomaly(s), for the sake of connectivity, should the DAD have to be built so loose with so many special retry cases? An approach like this can increase cost and extend schedule.
- A087: As noted in the BAR OBD Inspection System Data Acquisition Device Specification, the intent is to maximize successful communication with in-use vehicles and to leverage off the experience of the DAD Vendors as to any workarounds, tricks, or other features that the DAD Vendors have developed over the years. Accordingly, this section does not prescribe certain things other than that the DAD Vendors need to maximize successful communication rates and the BAR is open to whatever mechanisms the DAD Vendors have developed over the years to achieve that. The

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items listed were simply suggestions for the DAD Vendors to consider that have been used by other DAD-like equipment in the past but the BAR is not mandating the use of any of these items in particular. SAE J1699-3 does not play a direct role here other than that since the deployment of that tool and testing requirements by the California Air Resources Board in the 2005 model year, the number of vehicles with communication anomalies or noncompliances has greatly diminished.

Q088: Section 3.2.30.2 – regarding simultaneous communication, there are known anomalies where a single ECU will respond to OBD II data requests on multiple protocols, where returned OBD II data on one of the protocols is not accurate. Does research of field operation qualify this as a sound requirement? More investigation may be required. Also, reference comment to section 3.2.28.

A088: See response to previous question.

Q089: Section 3.2.31 – there is no mention of message responses that are returned using one protocol on one data link connection. This requirement could be interpreted as a case where a vehicle gives external test equipment the impression that more than one data link connection is available with OBD II data, thus returning valid and invalid Mode \$01 data from an ECU on two different data links. Such a scenario is not acceptable.

A089: This section is targeting two scenarios which have been observed in other State's inspection data. The first involved establishing communication with the vehicle on one of the OBD protocols but no OBD data was actually supported on that protocol. Such a scenario indeed would be a noncompliant vehicle but to the extent such a scenario exists and that the vehicle does actually support all of the required OBD information on one of the other OBD protocols, this requirement to terminate communication on the first successful protocol and attempt to establish communication on one of the other protocols seems a prudent and easy step to take (and is not unlike what J1699-3 does by trying all protocols even if it has already previously established communication on one of the others). And, as indicated in the Specification, if a second attempt again only establishes communication on the same protocol and still has no OBD data supported, the inspection proceeds.

The second scenario involves a commonly observed item in several other States IM data where, for whatever unknown reason, communication has not successfully established with all of the emission related ECUs as indicated by the only readiness monitor supported being the comprehensive components bit (e.g., is successfully communicating only with a transmission ECU). Again, the Specification, in an attempt to increase the likelihood of getting all of the OBD data out of the vehicle, includes requirements to terminate communication upon recognizing this scenario and attempt communication on all other OBD protocols before returning to this protocol to see if another protocol could result in more ECUs responding (or even re-establishing communication on the same protocol could result in all ECUs responding). Again, if the same data is observed after attempting this, the inspection proceeds.

Q090: Section 3.2.32.1 – what functional need is driving the 10ms requirement? For what (or which) vehicle communication protocol does the BAR desire this requirement? How does the BAR know that an “as built” vehicle ECU can indeed accept a request in such a timeframe? The data being requested for an I/M test (e.g. Monitor Status, DTCs, Commanded MIL, VIN, Cal ID) is considered more “static” than “dynamic”, therefore to have such a tight specification can increase complexity and cost for no clear benefit.

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- A090: The intent of this section is to require the DAD to have the capability to capture a set of multiple dynamic (not static) parameters at the fastest possible sampling rate. This capability is intended to be a future method to help identify various fraudulent activities during testing and this capability would be undermined if the DAD was slower than it need be in being able to request the data from the vehicle. As far as the question regarding how the BAR knows as built vehicles can accept such a request in this timeframe, it should be noted that the Specification is clear that the DAD needs to be able to send out the next request for data within 10 msec of the vehicle being ready to accept such a request (as defined by the relevant SAE and ISO specifications) so such a requirement is clearly within SAE and ISO specifications for communication. That said, the BAR is open to alternative suggestions as to what time should be used or even alternative criteria that would be able to similarly distinguish DADs that can request subsequent information as soon as possible from DADs that, for whatever reason, are excessively slow to send out subsequent requests. On older protocols, such delays can be very significant in reduced data sampling frequency and greatly reduce the usefulness of this feature.
- Q091: Section 3.2.34.2. – There are some early diesel engine powertrain control modules that were found in the field to have incorrect NRC \$78 handling. Given the earlier desire to have noncompliant vehicles “supported” by DAD, desiring communication to vehicles in this category should again be revisited (for the reasons previously mentioned).
- A091: The intent behind this requirement is to address known noncompliant vehicles that do respond with an NRC \$78 before correctly reporting the requested data in modes or messages where the SAE specifications technically do not allow them (e.g., upon requesting VIN). Requiring the DAD to be tolerant to an NRC \$78 in all modes and messages in lieu of only for calibration verification number (CVN) requests as required by SAE specifications did not appear to be a risky implementation that would accommodate these known noncompliances. However, to the extent the commenter is aware of other noncompliant or compliant vehicles that would be problematic with such a design, the BAR is open to alternative suggestions to address the issue.
- Q092: Section 3.2.39 – what is the BAR’s definition of a non-standard protocol? Further, what is the BAR’s definition of a permutation of a standard protocol? Referenced earlier, these scenarios will make for a complex system with exceptions, will require a very elaborate test plan, and overall, it is not even clear what communication protocols could fall into this category. CCR 1968.2 requires SAE J1979 E/E diagnostic test modes on top of a) SAE J1850 VPW, b) SAE J1850 PWM, c) ISO 15765-4, d) ISO 9141-2, and e) ISO 14230-4. These protocols are defined through industry documentation that is publically available. Other than the possibility of allowing known communication scenarios, any departure from the previous a thru e list of protocol standards, which could be defined as “not allowed exceptions”, should not be allowed.
- A092: As noted in the answer to question 087, the BAR's intent is for the DAD Vendors to use their experience with initialization methods to maximize successful communication and indicated that the BAR was open to whatever mechanisms DAD Vendors wanted to use to achieve that including going outside of the SAE and ISO specifications to tolerate noncompliant vehicles. And, as noted, none of the suggestions 3.2.30 are mandatory requirements. However, to the extent a DAD Vendor does use a method that involves attempting communication in a manner beyond what SAE and ISO specifications prescribe (e.g., accepting responses later than allowed, accepting incorrectly formatted responses to a Start Communication request, etc.) after previous attempts to initialize within SAE and ISO specifications have failed, 3.2.39 requires DAD Vendors to denote that they used such an initialization variant by naming the protocol differently. This will allow the BAR to see how often and which particular vehicles need such a mechanism to successfully establish communication as well as potentially allow more discernment for fraud detection.

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- Q093: Sections 3.2.42 thru 3.2.xx – in section 3.2.40 the DAD shall request Mode \$01 PID Count, but did not specify use of PIDs \$00, \$20, \$40, ... \$E0. Further, it was not determined if the DAD shall determine supported PIDs, then return data for known supported PIDs when/if the desired data is requested by the BAR-OIS Software.
- A093: **The determination of PID Count will be done by the BAR-OIS Software. The DAD will request PIDs \$00, \$20, \$40, ... \$E0 when requested by the BAR-OIS Software. The BAR-OIS Software will determine which PIDs are supported and which PIDs to request.**
- Q094: Part two of this is, what shall the DAD return if the BAR-OIS Software requests PID data that is not supported by any of the Vehicle ECUs?
- A094: **See Requirement 3.2.36.**
- Q095: Part three of this is, what shall the DAD return to the BAR-OIS Software if there are more than one emission controller that supports the same PID number?
- A095: **The DAD shall report the data from all ECU's. The BAR-OIS Software will reconcile the multiple ECU data.**
- Q096: Section 3.2.60 – what is the need for In-Use Monitor Performance Ratio data and how is it applicable to the BAR OIS I/M emission test analyzer system?
- A096: **The BAR believes that this data will be useful.**
- Q097: Section 3.2.65 – if there is a technical limitation for CAN communications diagnostic stub, and if the BAR's requirement is longer than 15 feet, how shall this requirement be fulfilled? The requirement is not fully clear and needs more definition.
- A097: **The BAR requirement is for a DAD to be offered with a total cable length of 15 feet. The DAD Vendor may place the DAD at either end, or anywhere in between. The BAR's intent for the 15 foot length is to comply with the USB standard maximum cable length. Per Requirement 3.2.65, the DAD Vendor may offer optional lengths.**
- Q098: Section 3.2.80 – Is the BAR envisioning another unit that is similar to the DAD that is to be used for simulating protocols?
- A098: **The device is envisioned as having a J1962 connector that the DAD can plug into. The functionality of the DAD connector pins, cabling, and circuitry can then be tested.**
- Q099: Section 3.2.84.2. – What are allowed means of alternate powering of DAD unit? Note: Battery voltage is required as a reference for K-Line.
- A099: **The BAR has no requirements limiting what alternate powering method may be used.**
- Q100: Section 3.2.86.1. – SAE documentation specifies that J1962 pin four shall not be used for ground. Requirement must be revised. Also, Pins 4 and 5 are now allowed to be connected together inside the test equipment per J1962. ISO 9141 references pin 5 for ground; pin 5 is used as a reference for all signal measurements.

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- A100: With respect to Section 3.2.86.1 of the Specification that requires the use of pin 5 (when available) or pin 4 (if pin 5 is determined to be ungrounded) for signal ground, SAE J1962 requires the use of pin 5 for signal ground. Therefore, the only requirement going above and beyond SAE specifications is the requirement to attempt to use pin 4 as the signal ground if pin 5 is determined to be not grounded. The BAR's intent, as stated many times, is to maximize communication with as many vehicles as possible. Vehicles have been built without proper grounding of both pins 4 and 5 and this feature was intended to enable communication with such vehicles. In practice, the BAR is aware of many vehicles, as designed by the vehicle manufacturer, that have pins 4 and 5 directly connected on the vehicle side to each other. Further, the BAR is aware that some external tools exist that can and do use pin 4 as signal ground and can successfully establish communication on cars that do not have pin 5 grounded. Lastly, it is not clear to the BAR that a requirement to design the DAD to be able to use pin 4 in lieu of pin 5 for signal ground would necessitate that the DAD has to be designed to connect the two pins internally in the DAD. For example, it seems possible that the ground source could be switched between pins 4 and 5 depending on which is connected to ground on the vehicle side.
- Q101: Does the BAR wish to control engine speed automatically using a serial data command? Or, does this request have to do with simply discarding data that is captured outside of the desired\_engine\_speed  $\pm$  100rpm?
- A101: No. The BAR will not control engine speed automatically using a serial data command.
- Q102: Section 4.1.1 – What types of chemicals, liquids, etc. will be used to test for corrosion?
- A102: The requirement was deleted.
- Q103: Section 4.1.4.2, 4.1.4.3, and 4.1.4.3 – is the spec value of the vehicle 14000 $\pm$ 500lbs? Or, is the spec value a vehicle which is capable of a 14000lb GVWR vehicle weight  $\pm$ 500lbs?
- A103: The requirement has been deleted.
- Q104: Regarding the BAR NWA-DAD Business Requirements Specification portion, Version 00.0003, Section 3.1.1.4 – What is meant by requesting data by the BAR-OIS Software to the DAD? Is this simply calling out a requirement where the BAR-OIS Software can make data requests to DAD?
- A104: The BAR and the BAR-OIS Software Contractor developed the DAD Communication Specification. This Requirement is addressing the purpose of the DAD Communication Specification.
- Q105: Regarding the BAR NWA-DAD Business Requirements Specification portion, Version 00.0003, Section 3.1.1.5 – Similar to above...what is meant by responding with data by DAD to the BAR-OIS Software? Is this simply calling out a requirement where the BAR-OIS Software can accept data responses from DAD?
- A105: Yes.
- Q106: Regarding the BAR NWA-DAD Business Requirements Specification portion, Version 00.0003, Section 3.1.1.6 – To confirm, this is a feature which logically tests data that DAD has currently received from OBD II emission ECUs against the expected data that DAD should receive from the OBD II emission ECUs?

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- A106: **The Requirement is to ensure that there is a mechanism to determine that the data collection is complete.**
- Q107: Regarding the BAR NWA-DAD Business Requirements Specification portion, Version 00.0003, Section 3.2.1 – In the event of a conflict, if this NWA-DAD specification overrides national or global vehicle communication standard document, it would seem that the BAR does not expect the DAD device to be compliant to such industry “build-to” documents, such as SAE J1979. Is this the correct approach for the BAR to take?
- A107: **The intent is to maximize successful communication with and data collection from in-use vehicles. The BAR is attempting to leverage off the experience gained from previous OBD endeavors and the DAD Vendors as to any workarounds, tricks, or other features that the OBD Community and the DAD Vendors have developed over the years.**
- Q108: Regarding the BAR NWA-DAD Business Requirements Specification portion, Version 00.0003, Sections 3.2.11, 3.2.16, 3.2.18 – is there a preferred encryption/ decryption algorithm to use?
- A108: **The Requirements were based on an older approach to the collection of the data. These requirements are no longer valid and were revised.**
- Q109: Regarding the BAR NWA-DAD Business Requirements Specification portion, Version 00.0003, Sections 3.2.23, and 3.2.26 – is there a preferred encryption/ decryption algorithm to use?
- A109: **The Requirements were based on an older approach to the collection of the data. These requirements are no longer valid and were revised.**
- Q110: Regarding the BAR NWA-DAD Business Requirements Specification portion, Version 00.0003, Section 3.2.32.2 – does it seem reasonable to set a P2 min = 0 when this is different than what the ECU (and communication specification) is indicating? Points to the proposed discussion of an “approved” nonconforming vehicle list.
- A110: **Please see the response to question Q085 above.**
- Q111: Regarding the BAR NWA-DAD Business Requirements Specification portion, Version 00.0003, Section 3.2.33.1 – Points to the proposed discussion of an “approved” nonconforming vehicle list.  
Section 3.2.34.1 – Points to the proposed discussion of an “approved” nonconforming vehicle list.
- A111: **The BAR has not been provided a comprehensive nonconforming vehicle list.**
- Q112: Regarding the BAR NWA-DAD Business Requirements Specification portion, Version 00.0003, Section 3.2.35.3 – Points to the proposed discussion of an “approved” nonconforming vehicle list.
- A112: **The BAR has not been provided a comprehensive nonconforming vehicle list.**
- Q113: Regarding the BAR NWA-DAD Business Requirements Specification portion, Version 00.0003, Section 3.2.53 – Why shall every request message have a requirement to be repeated three times? Are there vehicles in the field that behave in this manner? If so, should they be mentioned in a Test Plan? And perhaps on an approved non-compliance vehicle list?
- A113: **The request will not be repeated three times for all messages, but only for those specified.**

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- Q114: Regarding the BAR NWA-DAD Business Requirements Specification portion, Version 00.0003, Section 3.2.62 – it is not clear why the PID Supported PID is not proposed to be used in performing a PID count. Also please reference response given by <Vendor's Name> for the DAD specification, section 3.2.42
- A114: **This is how the BAR has chosen to count the PIDs. The determination of PID Count will be done by the BAR-OIS Software. The DAD will request PIDs \$00, \$20, \$40 ... \$E0 when requested by the BAR-OIS Software. The BAR-OIS Software will determine which PIDs are supported and which PIDs to request.**
- Q115: Regarding the BAR NWA-DAD Business Requirements Specification portion, Version 00.0003, Section 3.2.72. – If indicated as supported, shall PIDs \$20, 40 ... E0 be included (or not included) in the list?
- A115: **The determination of PID Count will be done by the BAR-OIS Software. The DAD will request PIDs \$00, \$20, \$40 ... \$E0 when requested by the BAR-OIS Software. The BAR-OIS Software will determine which PIDs are supported and which PIDs to request.**
- Q116: Regarding the BAR NWA-DAD Business Requirements Specification portion, Version 00.0003, Section 3.2.100.1 – requesting data even though the vehicle OBD II emission system indicated it was not supported. Shouldn't this be another case for an approved noncompliance vehicle list?
- A116: **The BAR may choose to exercise this functionality in some specific cases.**
- Q117: Regarding the BAR NWA-DAD Business Requirements Specification portion, Version 00.0003, Section 3.2.101.5.1 – Recording data even though the vehicle OBD II emission system indicated a less-than-expected character count. Shouldn't this be another case for an approved noncompliance vehicle list?
- A117: **This is how the BAR has chosen to store the data.**
- Q118: Regarding the BAR NWA-DAD Business Requirements Specification portion, Version 00.0003, Section 3.2.101.6 – trying to understand the use case here: receive a VIN from any OBD II emission ECU that might be capable of reporting VIN even if a Mode \$09 IT \$00 response indicated that VIN was not supported from any ECU. Then, when received, per this specification, a lower case “u” is to be appended to the VIN chars. Will this cause more confusion and discussion? How does the use of used/reman ECUs fit into this discussion? What if an ECU was replaced yet the receiving vehicle's VIN was not written into the ECU?
- A118: **The BAR-OIS Software may request VIN, even if Mode \$09 has indicated that VIN is not supported. In all cases for VIN, the DAD should pass the request through to the vehicle.**
- Q119: Regarding the BAR NWA-DAD Business Requirements Specification portion, Version 00.0003, Section 3.2.142.2 – are ASCII 0x7C and 0x2F a preferred industry standard means of delimiting data? The use of 0x7C “vertical bar”, along with 0x2F “forward slash”, are specified in other areas of the specification as well.
- A119: **The BAR has chosen which delimiters to use.**



Q120: Regarding the BAR NWA-DAD Business Requirements Specification portion, Version 00.0003, Section 3.2.154 to 3.2.157.3 – what is the need for In-Use Monitor Performance Ratio data and how is it applicable to a BAR OIS I/M emission test analyzer system?

A120: **The BAR believes that this data will be useful.**

Q121: Regarding the BAR NWA-DAD Business Requirements Specification portion, Version 00.0003, Section 3.2.60 and sub-bullets – is the goal of the functionality test to confirm that the communication circuits are complete? Or, is the goal to check communication circuits and communication components? Use of the term “simulate” implies something more than what is asked here, and also increases cost. Also please reference response given by <Vendor's Name> for the DAD specification

A121: **The intent is to test the DAD's pins, cables and circuits.**

Q122: Regarding the BAR NWA-DAD Business Requirements Specification portion, Version 00.0003, Functional Validation Tests, Question: how could this section not be applicable? The BAR-OIS Software works with the DAD, therefore, the complete system would need a Test Plan and executed Test Results.

A122: **The section is appropriate to the DAD. The BAR-OIS Software has more requirements than what is presented in the NWA-DAD Business Requirements Specification. These additional requirements include integration testing with the Vendor's DADs.**

Q123: Regarding the BAR NWA-DAD Business Requirements Specification portion, Version 00.0003, Question: the BAR-OIS Software does not have a Certification and Decertification on its own? Is overall Certification and Decertification left to the DAD specification (which does contain a section on Certification and Decertification)?

A123: **The BAR-OIS Software will undergo User Acceptance Testing (UAT) by the BAR. The DAD is the only component subject to Certification and Decertification.**

## Questions and Answers since October 2012

Q124: What is the DAD update approval process?

A124: **Upon receipt of an update from a DAD Vendor, the BAR will install DAD updates onto DAD devices at the BAR (left behind by the DAD Vendors after certification testing) for BAR testing. Once the BAR approves the DAD update, the BAR will notify the DAD Vendor, and will require release of the update to Beta (limited number of stations as specified by the BAR), upon BAR Beta approval, the DAD Vendor shall update all the DADs within the specified period.**

Q125: How do DAD updates affect extending DAD certification beyond the one year term?

A125: **DAD updates will not extend the one year certification term, re-certification terms still apply. See the BAR OBD Inspection System Data Acquisition Device Specification Requirement 5.2 “Annual Recertification” for terms.**

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Q126: We have received the DAD Communication Specification, and noticed there is a method defined in 2.6.3 – Get Voltage. Can you clarify exactly what voltage you are expecting to obtain from this method? Are you looking for a measured voltage at Pin 16, or the reported control module voltage via PID 42?

A126: **Measured voltage at Pin 16.**

Q127: The DAD specification in various locations states the DAD (and cable) must be USB 2.0 compliant. We want to ensure we fully understand the BAR's intent for this requirement. Would the BAR accept a DAD that is technically a serial device, but the cable interface includes a USB-Serial adapter? In other words, the connection to the computer would be USB. At this point, we do not know if the DAD would be certifiable to USB 2.0 – specifically due to the 480 Mbit/s maximum signaling rate requirement. We believe what the BAR really needs/requires is that the DAD will be able to plug into a USB 2.0 compliant computer without having to add any special hardware adapters to the computer.

A127: **The intent of the requirement is for the DAD to be able to communicate with the computer via USB. Your understanding is correct, as long as the adapter cannot be separated from the cable. However, be cautioned that we have already seen problems with certain brands of serial/USB converters working with Windows 8.**

Q128: Section 3.2.84 of the DAD specification pertains to power on pin 16 of the vehicle. If power is not present on Pin 16 then the user would have the option to plug in an off-vehicle power source to provide the necessary power to attempt communications with the vehicle. Does this method meet the intent of the BAR's power requirement?

A128: **Yes.**

Q129: Sections 3.2.85 and 3.2.86 pertain to the grounding of the DAD. A solution to the requirement is to tie pins 4 and 5 together in the J1962 connector. Does this method meet the intent of the BAR's ground requirements?

A129: **Should you choose to tie pins 4 and 5 as your final solution, it is unlikely that this will become apparent to the BAR unless problems occur. Per SAE J1962, section 6.3.4, it appears your solution may be acceptable. External equipment may not draw more than 1.5A through this contact.**

Q130: Section 3.1.9 implies that the DAD hardware may be required to be updated in the future. Our proposed solution will not allow for users to be able to easily update any hardware on the DAD. The software and firmware will be updateable via the NWA interface, but if any hardware in or on the DAD needs to be updated in the future, this would likely require some sort of a tool trade-in scenario. Does this method meet the intent of the BAR's requirement?

A130: **Yes. Free updates (or replacement) are required for certified devices to continue meeting the specification during the certified period in the DAD Specification. FYI, firmware will NOT be updateable via the BAR-OIS Software – each DAD Vendor shall provide firmware updates without relying on the BAR-OIS Software. DAD Vendors will be paid for any updates resulting from changes to the specification.**



Q131: Regarding 'Testable Vehicles' (sections 3.2.8 through 3.2.11) – our proposed solution will not work on / communicate with 24 Volt vehicles, but will withstand (i.e. not be damaged by) being plugged into a 24V vehicle. Does this meet the intent of the BAR's requirement?

A131: Yes. The BAR OBD Inspection System Data Acquisition Device Specification allows the use of the Type-A External Test Equipment Connector which prevents connection to 24v (nominal) vehicles. We do not plan to inspect 24v vehicles. Testing may result in 24 +/- 1.0v being delivered to the DAD.

Q132: I see nothing in the DAD specification that requires the actual hardware to include the ability to measure voltage, including anything regarding the required accuracy (or resolution) for that actual measurement. I believe if the intent is to measure the pin 16 voltage, the DAD specification should have something in the hardware requirements to do that.

A132: BAR Engineers believe it is adequately addressed by the SAE specs:

- J1962 item 6.3.10 states the Pin 16 is for external tool power supply and REFERENCE VOLTAGE for K-line communication. This implies the ability to measure the voltage at pin 16 is necessary in order to communicate with a protocol using the K-line. The DAD Specification item 3.2.6 requires compliance with J1962.
- J1978 item 9.1 states the voltage range that the external test equipment must operate within, 8.0V to 18.0V. The statement of this voltage in the specification is given in tenths of a volt, which implies the required resolution of voltage measurement required by J1962 item 6.3.10. The DAD Specification item 3.2.2 requires compliance with J1978.

Q133: The timeline states that Alpha testing ends on July 1, 2013. This implies there will be no 'Alpha testing' performed after 7/1/13. Is that what the BAR intends? In other words, is there a set time window when candidate DAD MFGs are required to submit, and if that window is missed, it's "too late". For example, what if a DAD Vendor wasn't ready to submit until 7/2/13 – would the BAR accept that submission?

A133: Late submissions will have to wait until the following testing cycle is initiated, which may be as much as a year. The spec states: "The BAR will accept DADs for Certification Testing during a two (2) week collection period, as designated by the BAR. At the conclusion of this collection period, the BAR will close Certification for this round and no additional Certification Submittal Packages will be accepted."... "The BAR will conduct Certification Testing at least on a yearly basis. The BAR reserves the right to schedule additional collection periods as program needs dictate."

Q134: Sandbox Testing -- When does it start?

A134: Sandbox Testing is currently planned to begin February 1, 2013.

Q135: Sandbox Testing -- When are the DAD's due at the BAR?

A135: Sandbox Testing will be done by the DAD Vendor at the DAD Vendor's facilities. It is anticipated that the collection period will begin when Sandbox Testing concludes.



Q136: “OBD Regulations Package Approved” -- What is this, and how does it impact the BAR-DAD solutions? The reference is the timeline from the OBD DAD Workshop on 26July12 (date is 31Jan13).

A136: **The regulation package includes the BAR OBD Inspection System Data Acquisition Device Specification, which is not final until the regulations are adopted. It may delay the Alpha-Testing start date. It must be adopted before certification can begin.**

Q137: “Certification Submittal Package” -- When should this be submitted?

A137: **During the two-week period prior to Alpha-Testing. We currently anticipate collection of submittals at the end of Sandbox Testing.**

Q138: I wanted to find a little more about the Sandbox testing. As this is a device that will be designed to your specifications and new, we would like to be present during the testing. I think it is important to be there as this can facilitate any needs that you may have during the testing – including questions, comments and possible requests that may be positive to the program and its users.

A138: **The BAR expects that sandbox testing will be performed by the DAD Vendor in the DAD Vendor's facilities.**

## Questions and Answers since January 8, 2013

Q139: We have experience using a product known as the \*ABC\*. Is the BAR aware of this product, and if so, can you confirm this device would enable a DAD to successfully meet the Functionality Check requirements in section 3.2.80?

A139: **If packaging the \*ABC\* with your DAD allows you to meet all of the requirements for the 'self-functionality check', then the BAR will not have a problem with it not being integrated into the DAD. Remember that it cannot be used to simulate an inspection.**

Q141: What security level will the BAR-OIS Software run at? Will the application be running in administrator mode, or will the application be running in user mode? The answer will help me determine if I will need to create a separate program to initialize an update of the device. On Windows 7 you need to have administrative privileges to write to the program files or any of the system folders.

A141: **Your question about the BAR-OIS Software security level may actually be irrelevant. You referred to “initialize an update of the device”. We have already answered the “firmware update” question in the Q&A's – the BAR-OIS Software will NOT be used to update DAD firmware. Firmware or device update will be the DAD Vendor's responsibility.**

Q142: In Requirement 3.2.74 can you clarify which connectors fall under this requirement:

- Does this requirement apply to the J1962 Female cable end that is connected to the vehicle?
- Does this requirement apply to the J1962 Male cable end used for the functional cable-test?
- Does this requirement apply to the USB A male connector that will connect to a computer? Please note that computer USB female connector on any computer is typically only rated for 1,000 – 1500 insertions

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- Does this requirement apply for any connectors associated with detachable cables? For example, the J1962 vehicle cable may be removable from the DAD via a D-SUB 9 pin connector. Does the D-SUB 9 connector on the DAD and vehicle cable also need to be rated for 5,000 insertions even though it will only be disconnected when the J1962 cable is replaced?

A142: Y-Y-N-N. Requirements 3.2.73 and 3.2.74 were both intended to apply to the J1962 diagnostic link connector. Requirement 3.2.73 provided expectations for performance of the connector itself, while Requirement 3.2.74 provided expectations for performance of the cable attachment to the connector.

Q143: Please clarify 3.2.80 after the previous telephone conference. Is it correct that the DAD test mechanism must verify both that the cable is functional, and that the device is communicating correctly on all protocols?

A143: At the present time, the BAR is only requiring a functional check of the cable and connector pins (i.e., continuity check). The BAR intends to accept functional check solutions that offer additional checks of DAD functionality (i.e., testing each protocol).

Q146: Negative Response Codes wrt ISO15765. We noticed a couple problems specifically with the section dealing with Negative response codes and ISO15765. Below is a breakdown of the requirements with questions per section as outlined.

“3.2.34.1. The DAD shall handle negative response codes per Table 11 of SAE J1979.”  
What is table 11 and how does it reflect handling negative response codes?  
Table 11 in SAE J1979 v003:

TABLE 11 - NEGATIVE RESPONSE MESSAGE FORMAT FOR ISO 14230-4, ISO 15765-4

Data Byte	Parameter Name	Cvt	Hex Value	Mnemonic
#1	Negative Response Service Identifier	M	7F	SIDNR
#2	Request Service Identifier	M	xx	SIDRQ
#3	ResponseCode	M	xx	RC_

While it may say the format, there’s nothing describing how to handle the response codes. What does the BAR mean by this?

A146: The table used in DAD Vendor’s example was from the wrong version of J1979. The Sept 2010 version of J1979 has the correct Table 11 [note that the 2010 Edition of SAE HS-3000 contains the 5/2007 version of J1979]. Correct table is below. The intent of the requirement was to ensure that the DAD Vendor was very aware of the existence of NRCs and the J1979 recommendations/instructions for what each NRC meant and what a tool would be expected to do upon receipt of a particular NRC in a particular Mode. Highlighted areas are where NRCs are called out as to expected behavior for a particular Mode (which essentially is all about Mode \$09 and particularly when requesting CVN):



*Table 11 - Proper response from server/ECU for ISO 15765-4 protocol*

Condition	ISO 15765-4
• Service \$01 not supported	All ECUs shall respond to Service \$01 PID \$00 if Service \$01 is supported. If Service \$01 is not supported, no response is allowed.
• Service \$01 unsupported PID requested	The ECU shall not respond
• Service \$01 supported PID requested	Respond within P2 timing (no negative response message with response code \$78 allowed)
• Service \$02 not supported	The ECU shall not respond
• Service \$02 supported PID, frame xx requested, no Freeze Frame stored	1) The ECU shall respond to PID \$02 frame xx within P2 timing; PID \$02 frame xx shall indicate \$0000. 2) The ECU shall respond with supported PIDs for frame xx (\$00,) within P2 timing. 3) If PIDs other than support PID \$00 or PID \$02 are requested, the ECU shall not respond.
• Service \$02 unsupported PID, frame xx requested, no Freeze Frame stored	PID \$02 frame xx indicates \$0000, but if any other PIDs are requested, ECU shall not respond.
• Service \$02 supported PID, frame xx requested, Freeze Frame stored	1) The ECU shall respond to PID \$02 frame xx within P2 timing. 2) The ECU shall respond with supported PIDs for frame xx (\$00, \$20 ...) within P2 timing and shall respond to PIDs frame xx indicated as supported within P2 timing.
• Service \$02 unsupported PID, frame xx requested, Freeze Frame stored	The ECU shall not respond
• Service \$03/\$07/\$0A not supported	The ECU shall not respond
• Service \$03/\$07/\$0A supported, no DTCs stored	Positive response indicating no DTCs is required
• Service \$03/\$07/\$0A supported, DTCs stored	Positive response including the stored DTCs is required
• Service \$04 not supported	The ECU shall not respond
• Service \$04 supported, conditions not correct	Negative response is required (\$7F, \$04, \$22)
• Service \$04 supported, conditions correct	Positive response message required. Negative response messages(s) (\$7F, \$04, \$78) allowed until positive response message available.
• Service \$06 not supported	The ECU shall not respond
• Service \$06 supported OBDMID requested, no stored data available	Positive response required, test values, min and max limits must be set to \$00
• Service \$06 unsupported OBDMID requested, no stored data available	The ECU shall not respond
• Service \$06 supported OBDMID requested, stored data available	Respond within P2 timing
• Service \$06 unsupported OBDMID requested, stored data available	The ECU shall not respond
• Service \$08 not supported	The ECU shall not respond
• Service \$08 supported TID requested, conditions correct	Respond within P2 timing
• Service \$08 supported TID requested, conditions not correct	Negative response required (\$7F, \$08, \$22)
• Service \$08 unsupported TID requested	The ECU shall not respond
• Service \$09 not supported	The ECU shall not respond
• Service \$09 supported INFOTYPE requested, data available (VIN, CVN, CALID)	Respond within P2 timing
• Service \$09 supported INFOTYPE requested, data not available, conditions correct (CVN)	Initial negative response message (\$7F \$09, \$78) required within P2max (50 ms) and consecutive negative response message(s) (\$7F, \$09, \$78) is (are) required within P2max (5.0 seconds) until positive response is sent
• Service \$09 supported INFOTYPE requested, data not available, conditions not correct (CVN), prior to	Negative response required (\$7F, \$09, \$22)

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Condition	ISO 15765-4
2005 MY only	
• Service \$09 unsupported INFOTYPE requested	The ECU shall not respond
• Service \$00, \$05 or \$0B through \$0F	The ECU shall not respond

Q150: Consider the following plan: We provide a separate/secondary cable with alligator clips to connect to the vehicle battery. If the user plugs the DAD into the vehicle DLC, and the Power LED (on our DAD) does not illuminate, the user will have to connect the alligator clips to the vehicle battery, and plug the other end of the power cable into the DAD (or upstream in the cable that connects to the user computer – either way providing power into the DAD). Can the BAR confirm this design plan is acceptable, and meets the various alternate power and ground requirements?

A150: **With the disclaimer that the BAR staff really cannot promise to accept anything until we actually attempt to certify a device; yes, this seems to be an acceptable approach.**

Q151: Assuming the design plan summarized above is acceptable, what exactly does the BAR require to be recorded as the measured pin 16 voltage(which is required elsewhere in the DAD spec and discussed in Q&A #132) in the use case scenario where there is no power at Pin 16, but alternate power from the vehicle battery is used?

A151: **The BAR will expect to see the DAD measure and provide a voltage value from Pin 16. When the DAD is provided alternate vehicle power because no or insufficient voltage exists at Pin 16, the Pin 16 measured voltage sent to the DAD should be the measured voltage. Note: If some voltage exists at Pin 16, that voltage value must be sent to the BAR-OIS Software.**

Q152: 3.2.30 – This section discusses how the communication initialization will be conducted. The requirement states that the DAD is to relax tolerances/specifications on repeat requests to communicate to be more tolerant of non-compliant vehicles. There are several variables for each protocol that could be adjusted. We do not see a corresponding reference in the DAD Communication Specification to pass timing variables to the firmware. Can additional detail be supplied to clarify this mechanism?

A152: **This requirement pertains to Initialization only, not Mode/PID requests. Only revised protocol orders will be sent from the BAR-OIS Software during Initialization. P2 timing does not apply here. This is independent of the methods called in the DAD Communication Specification and allows the DAD to do what is necessary to communicate. In addition to the SAE/ISO prescribed protocol methods, the DAD can use alternate parameters to communicate.**

Q153: 3.2.31.1 – *"The DAD shall request all received responses to a Mode \$01 PID \$00 request when requested by the NWA."* This appears to contradict section 3.2.31 which indicates the DAD will automatically request Mode \$01 PID \$00 to establish communication. Can the BAR clarify when the Mode \$01 PID \$00 is requested and whether it originates from the DAD or the BAR-OIS Software?

A153: **3.2.31 – The DAD must successfully communicate with the vehicle. This requirement gives two examples of how the BAR/ARB is aware of how this is done. These two examples are not requirements. After successful communication is established with the vehicle and reported to the BAR-OIS Software, the BAR-OIS Software may request a Mode\$01 PID\$00 for the data. The**



**DAD will be requested by the BAR-OIS Software to break or establish communication with the vehicle.**

Q154: 3.2.31.1.1 – *"The DAD shall again request Mode \$01 PID \$00 to see if any non-zero responses are received. If at least one (1) ECU responds with support for some Mode \$01 PIDs, the DAD shall proceed with the inspection/data collection when requested by the NWA."* Again, does the DAD request this automatically on its own on receipt of the Mode \$01 PID \$00 response by the vehicle or does the DAD need to be directed to do this by the BAR-OIS Software?

A154: **The DAD will be requested by the BAR-OIS Software to request Mode/PIDs. The DAD will not do this automatically.**

Q158: Would the state consider adding and setting properties to the DLL for VIN, make, model, year, and engine size? We would like to include this information in its communication logging to aid diagnosing vehicle connectivity issues.

A158: **No. VIN will already be captured from the vehicle. However, the BAR will share inspection data with the DAD Vendors.**

## Questions and Answers since January 28, 2013

Q169: There will be multiple prompts from the BAR-OIS Software prompting the user to "do something", then the user will need to respond back to the BAR-OIS Software that that action "has been done" (e.g. "I have now plugged into alternate power, and plugged in the loopback connector, now it is time to run the self-diagnostic test...") So, the BAR-OIS Software should respond just as if the user had hit a key (or clicked the mouse on a button on the screen) telling the application: "I am now ready to move to the next step in the sequence." Our point here is that the current design of the BAR-OIS Software does not allow this interaction with the user to happen from the vehicle (where the user will be operating the tool); rather the user will have to travel back and forth to the workstation/computer to interact with the BAR-OIS Software. This is why we are proposing the BAR-OIS Software (and .DLL) add handling for the DAD to send acknowledgement actions (via keystrokes) – it would greatly simplify the test station user interaction with the system. Additionally – will the BAR-OIS Software application prompt the user for KOEO / KOER MIL checks? If so, this would also be a benefit for keystrokes from the tool. It is not my understanding there will be any 'hand-off' to a separate application that would guide the user through a software-driven sequence.

A169: **The BAR and SGS Testcom engineers are planning only two steps on the BAR-OIS Software for the self-test. The first step is a screen with a button that basically says "The DAD has been locked – click to perform the self-test." The request is sent to the DAD. The second step would be when response is sent from the DAD and the BAR-OIS Software resumes normal operations. The inspector should know what to do to self-test the DAD (e.g., disconnect from vehicle, plug into self-test device, wait for blinky LED, disconnect self-test device and plug back into vehicle DLC, (and either press a button or DAD auto-detects connection)), and the DAD would know when the self-test is complete and the response should be sent from the DAD. Yes, the BAR-OIS Software will prompt the inspector to cycle the ignition key.**

Q170: The DAD specification version 2.5 says: *"3.2.79: For hardwired DAD devices, the connector between the DAD and the BAR OIS Computer shall be USB 2.0"*. Our DAD has been designed for this project to use a cable will have a USB type A male connector for connection to a standard

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computer. The other end of our cable uses a d-sub connector for connection to the DAD. This is done because USB is not a positive locking connector. If we used a USB connector from the DAD to the cable, it would be possible for the cable to come loose during DAD testing. We also chose this because the D-SUB connector on the DAD is more durable and has a much higher insertion count than a standard USB "B" connection. Using a USB "B" connector from the DAD cable to the DAD would be less than desirable for durability and reliability. Please confirm if our device will pass certification as long as we have a USB A connector from the DAD cable to the computer. Also please confirm that it will be acceptable for us to use a d-sub connector from the DAD to the USB cable.

A170: We do not have a problem with using a D-SUB on the DAD end of the cable as long as proper grounding and EMI shielding are maintained. We expect you will use the USB cabling rather than serial-spec cabling up to the USB connector. We will be performing EMI testing. Please also see Q&A's #127 and #142.

Q171: Does the interface to the BAR-OIS Software key upon connection characteristics that rely on specific elements unique to Windows 7?

A171: It is our intent that the BAR-OIS Software can run on a Windows system, with a minimum version of Windows 7 32-bit. The BAR and SGS Testcom will be testing the BAR-OIS Software on Windows 8 as well. In the future, the specification may be revised to allow operation of the BAR-OIS Software on tablets or other portable devices, depending on the needs of the industry. It currently depends on Windows, but not necessarily Windows 7.

Q172: If we could offer the customer an OIS solution incorporating the Chrome browser we would further improve the opportunity for successful implementation using an even broader selection of off-the-shelf computers as part of an effective DAD-interface solution.

A172: When you submit your DLL and receive the BAR-OIS Software ("NWA-Direct" for sandbox testing), you will see that it will load as a web app in IE-9. It uses basic components of IE-9 as a hardened shell and disables much of the normal browser functionality. If IE-9 is not available on the computer, the BAR-OIS Software will not load locally from the SGS Testcom server. The inspection system MUST use the GUI that the BAR is providing through SGS Testcom. After the system is fully implemented in production and operating for a period of time, the BAR may offer other browser implementations if a clear need is determined.

Q173: Will the BAR-OIS Software (and subsequently any DAD compliant device) be able to run on a Chrome OS system? I know the DAD specification says the BAR OIS shall run "Windows 7, 32 bit"... but the same sentence goes on to say "... or an operating system and browser approved by the BAR." We do not know the specifics of what (or IF) the BAR plans to support for any other operating system, and I suspect the SGS team would have to provide additional resources to support the Chrome OS, which is why we are asking the question.

A173: Currently, the BAR-OIS Software ("NWA-Direct" for sandbox testing) uses basic components of IE-9 as a hardened shell and disables much of the normal browser functionality. If IE-9 is not available on the computer, the BAR-OIS Software will not load locally from the SGS Testcom server. After the system is fully implemented in production and operating for a period of time, the BAR may allow other operating systems and offer other browser implementations if a clear need is determined.

Q175: In the case where the DAD fails to retrieve the correct modes and PIDs (Mode \$01 PID \$00) and the CalVIS application errors out sending the results to the server, clicking the Cancel button

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leaves the CalVIS application in a state where the only option is to close it and restart to be able to do any further operations. Can the application go back to the main menu page at this point?

A175: **The cancel button should ultimately be returning the user to the OBD test setup screen. This bug will be fixed in the next round of sandbox updates.**

Q177: Is the USB logo required to be on the DAD itself, or just on the USB cable that can be attached to the device, or both?

A177: **Just on the USB cable connectors per the USB 2.0 specification. The USB female connectors also require the symbol to be present within some proximity of the connector, which may require one on the DAD depending on your use of USB connections. Please refer to the USB 2.0 specification.**

Q181: Does the BAR-OIS Software work through NAT proxies?

A181: **Yes, BAR-OIS Software should work through NAT provided you do not have other firewalls or network configuration preventing access to our server.**

Q184: 3.1.20 – *“The BAR certified DAD Vendor shall supply the DAD purchaser with a copy of the Disclosure Agreement.”* Can the DAD Vendor provide the copy of the disclosure agreement electronically during the DAD installation?

A184: **The DAD Vendor must have the purchaser sign a physical paper copy. The DAD Vendor must provide the purchaser with a copy of the signed Disclosure Agreement. The DAD Vendor must retain the original signed copy and provide the BAR with a copy. The copy provided to the BAR may be an electronic copy of the signed Disclosure Agreement.**

Q185: 3.1.20.1 – *“The BAR Certified DAD Vendor shall obtain the signature of the purchaser acknowledging the provisions of the Disclosure Agreement.”* Can the purchaser of the DAD electronically acknowledge the provisions of the disclosure agreement by accepting an on-screen version, or does the BAR require a physically signed sheet of paper?

A185: **The DAD Vendor must have the purchaser sign a physical paper copy. The DAD Vendor must provide the purchaser with a copy of the signed Disclosure Agreement. The DAD Vendor must retain the original signed copy and provide the BAR with a copy. The copy provided to the BAR may be an electronic copy of the signed Disclosure Agreement.**

Q186: 3.1.20.2 – *“The BAR Certified DAD Vendor shall provide BAR with a copy of the signed Disclosure Agreement.”* If electronic signature is provided above, can the DAD Vendor provide the BAR with some electronic records for purchasers that have acknowledged the electronic disclosure?

A186: **The DAD Vendor must have the purchaser sign a physical paper copy. The DAD Vendor must provide the purchaser with a copy of the signed Disclosure Agreement. The DAD Vendor must retain the original signed copy and provide the BAR with a copy. The copy provided to the BAR may be an electronic copy of the signed Disclosure Agreement.**

Q188: 3.2.12 - 3.2.15 specifies the required connectivity rate for priority one and non-priority data. The data list for priority one data should be adjusted based on each of these sections. For example,

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we do not believe that any 1996-1999 vehicles are going to support Mode \$09 and Mode \$0A. We would suggest the following:

- For 3.2.12 MY 96-99 non-Diesel: Priority one data should only include Mode \$01 PID \$00, Mode \$01 PID \$01, Mode \$01 PID \$1C, Mode \$03
- For 3.2.13 MY 98-03 Diesel: Priority one data should only include Mode \$01 PID \$00, Mode \$01 PID \$01, Mode \$01 PID \$1C, Mode \$03
- For 3.2.14 - MY 2000+ non-Diesel: Priority one data should only include Mode \$01 PID \$00, Mode \$01 PID \$01, Mode \$01 PID \$1C, Mode \$03, Mode \$09 infotype \$00, Mode \$09 infotype \$01, Mode \$09 infotype \$02
- Mode \$0A should be removed from priority one because it is not present on most existing vehicles.

A188: As stated in the BAR OBD Inspection System Data Acquisition Device Specification, the BAR-OIS Software will be collecting data that is supported on the vehicle and requested by the BAR-OIS Software. If the data is not supported by the vehicle or is not requested by the BAR-OIS Software, it will not be included in the connectivity rate calculation.

Q189: 3.2.28 – “The DAD shall have a default communication protocol sequence for the order in which the various communication protocols are attempted when establishing communication with the vehicle.” Is the DAD Vendor allowed to modify more than just the sequence for which protocols are tested in the default communication protocol sequence? For example, can the DAD Vendor use different messages and/or timing in addition to changing the sequence in which protocols are initialized? Can the DAD Vendor’s sequence be dynamic and determined by previous results or a database to determine which protocol to try next (I.E. more than just a simple list)?

A189: The DAD Vendors are allowed to create and use special protocols (special protocols, created by the DAD Vendors, may include modified protocol sequences, timing, messages, etc.) to communicate with the vehicles. As stated in 3.2.39 “If the BAR Certified DAD Vendor uses a non-standard protocol or a permutation of a standard protocol to communicate with ‘Problem Vehicles’, the BAR Certified DAD Vendor shall define each unique non-standard protocol name in conjunction with the BAR-OIS Software Contractor and the BAR.” This process could be dynamic and based on previous results or any other method that the DAD Vendors need to communicate with the vehicles.

Q190: In section 3.2.37 it states “The DAD shall NOT request data from the vehicle unless the specified data is requested by the NWA”. During the initialization, our understanding is that the DAD Vendor is allowed to use their own method to initialize protocols and is not prevented from requesting data from the vehicle in order to do so. Please confirm that this is allowed, and excluded from the language above.

A190: The DAD is allowed to request data from the vehicle during initialization to confirm successful communication. The requirement has been included because the BAR is aware that in some I/M programs, DAD Vendors have requested ALL data from a vehicle and then only passed the data the State has requested to the State’s computers. This practice in some circumstances can harm consumer’s vehicles.

Q191: 3.2.28.2 – “The default communication protocol sequence shall be provided to the BAR in writing prior to DAD certification.” Can a DAD Vendor change its initialization sequence after certification? If so, how much notice will the DAD Vendor have to give the BAR and provide a new copy of the default communications protocol sequence? What if the sequence is more complicated than just a simple list? What if it is programmatically determined and driven by

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previous vehicle responses and/or database lookups or other vehicle heuristics and cannot be described simply?

- A191: **The DAD Vendors are allowed to change the initialization sequence after certification. The specific mechanism that the DAD Vendors use to update the currently in-use DAD's would need to be discussed with the BAR. If the update is to be done, it would have to follow the agreed upon process mentioned in Requirements 3.1.9 and 3.1.9.1. As part of any update, the BAR would need to test and approve the update prior to the update being released to the DADs.**
- Q192: 3.2.31.1.1 – *“The DAD shall again request mode \$01 PID \$00 to see if any non-zero responses are received.”* QA #154 states that *“the DAD will be requested by the NWA to request mode/pids. The DAD will not do this automatically”*. These two items contradict each other. Is the DAD supposed to again request Mode \$01 PID \$00 as stated in section 3.2.31.1.1 in the event that no vehicle ECU supports any Mode \$01 PIDs from \$00 - \$20?
- A192: **After successful Initialization, the DAD will only request Mode/PIDs when commanded by the BAR-OIS Software.**
- Q198: 3.2.34.1 – *“The DAD shall handle negative response codes per Table 11 of SAE J1979.”*  
3.2.35.1 – *“The DAD shall handle negative response codes per Table 10 of SAE J1979.”* Table 10 and 11 in J1979 details ECU behavior, but it does not explain how the tester must respond. We suggest the BAR specify figure 6 (ISO9141-2), Figure 7 (J1850), Figure 8 (ISO15765 Single Frame Responses), Figure 9 (ISO15765 Multi Frame Responses, not finished within P2), and Figure 10 (ISO15765 Multiple frame response, finished within P2), Figure 12 (ISO9141 data not available within P2), figure 13 (ISO14230 \$78), Figure 14 (J1850 Data not available within P2), and Figure 15 (ISO15765 \$78) in J1979 as these describe the tester behavior.
- A198: **The referencing of these two tables was to make the DAD Vendors aware of under what conditions the vehicle would return negative response codes, not how the DAD should deal with them.**
- Q199: 3.2.36 – *“Whenever data is requested by the NWA and the only responses received from ECUs are invalid responses (e.g., the data does not have the expected number of data bytes, error checking indications indicate the data was not properly received, data collision that cannot be reconciled with data collision handling specified in the applicable protocol specifications, etc.), the DAD shall report the invalid Responses to the NWA.”* In many cases it may not be possible for the DAD to report back all data when bus errors occur. We don't believe any DAD Vendor can send 100% of all error data because there are many protocol errors that don't result in any data being received, and because many protocol controllers used in the industry for vehicle protocol communication block or filter messages received in error. Does the BAR acknowledge this?
- A199: **Yes. The intent here is for the DAD to send to the BAR-OIS Software any data that the DAD has collected when this situation arises.**
- Q200: 3.2.38.2 – *“for all other protocols, the ECU Address shall be reported as Hex represented as ASCII with a value between 00 and FF.”* Can the BAR detail how it wants 29-bit CAN IDs to be reported?
- A200: **29-bit CAN falls under the 'all other protocols' of 3.2.38.2 and will be between 00 and FF. 11-bit CAN was called out because it uses two byte addressing instead of one byte.**

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- Q203: 3.2.41 - 3.2.60a – Our understanding is that because of section 3.2.89 the BAR-OIS Software will only be able to access PIDs not defined in this section for ISO15765 vehicles. For all other protocols, these are the only modes and PIDs that can be requested. Is this correct? If so, shall the DAD reject a request for PIDs or modes not listed in this section? If so, how is the error indicated? Why is this restriction in place?
- A203: Requirement 3.2.89 applies to the ISO 15765-4 CAN protocol only. For all protocols, the DAD shall request the Modes/PIDs requested by the BAR-OIS Software. The Mode/PIDs indicated in Requirements 3.2.41 through 3.2.60a are not the only Mode/PIDs that may be requested.
- Q234: In the response to the question and answer #154, the answer seems to introduce a new specification requirement. Essentially with this answer, the DAD device is prevented from sending mode/PIDs to the vehicle that are not requested by the BAR-OIS Software. This was not part of the original specification. We recommend that a DAD should be able to send anything to the vehicle as long as it does not interfere in the inspection.
- A234: The BAR expects the DAD to manage communication with the vehicle, but also receive and process commands from the BAR-OIS Software (formerly NWA Software).
- Q236: With the current system design, the BAR-OIS Software determines when and where to send mode/ PID commands for the inspection software. Because there is no security on the computer, a user could accidentally cause interruptions in the timing of the test by running other applications. DADs could be easily done which don't allow the performance of the test to be interrupted by the performance of the DLLs on the computer as many devices have the ability to function without a dll. Right now the entire performance on the system seems 100% reliant on the speed of the computer and the background processes on the computer. This will be a problem as users use the computer for other applications.
- A236: The BAR agrees the OBD inspection theoretically could be delayed by other applications consuming the computer's resources or poorly performing computers. We expect stations will either be OK with this, or will not allow it to occur. We do not feel it should affect the DAD's ability to initialize or maintain communication with the vehicle.
- Q237: The specification allows for the DAD Vendors to have full access to the log files. Questions were asked and the answers were given that the DAD Vendors have full access to the log files. Because of this, DAD Vendors may essentially collect all of the inspection data through the internet. Is this allowed by the specification?
- A237: Yes. However, data collected during the California Smog Check inspection can ONLY be used to investigate and diagnose problems with the DAD and or the inspection taking place as they relate to the California Smog Check inspection.
- Q238: The specification allows for the DAD Vendors to have full access to the log files. Questions were asked and the answers were given that the DAD Vendors have full access to the log files. May a DAD Vendors use this access to offer additional apps that run on the local computer such as a diagnostic tool using the DAD? May DAD Vendors offer a diagnostic tool that accesses the DAD not using the DLLs or log files?
- A238: No, the DAD Vendors cannot use the log files for other than Smog Check inspection purposes. Yes, DAD Vendors may offer diagnostic tools that access the DAD not using the DLLs or log files.

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Q240: The beta requirements of 10 DADs and then 40 DADs essentially seem to amount to a sole source contract for the companies who get certified immediately. At a later date in the future, it would seem difficult, if not impossible to find 10 available sites around Sacramento and another 40 around the state that are not already in the program. This would essentially limit the BAR to the DAD Vendors who get certified now. Would the BAR consider an alternative method of beta certification where the BAR has certain stations that will run any DAD Vendors DAD? This would seem to provide a fair and consistent beta process that works now and later.

A240: Stations may use more than one DAD and from more than one DAD Vendor. Beta testing sites will be secured by the DAD Vendors and will have individual agreements with the DAD Vendors. Incentives to participate may be offered by the DAD Vendors.