

# Review of Original Equipment Manufacturer Web Sites to Assess Availability of Emissions- Related Vehicle Service Information



# **Review of Original Equipment Manufacturer Web Sites to Assess Availability of Emissions-Related Vehicle Service Information**

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Office of Transportation and Air Quality  
U.S. Environmental Protection Agency

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## Executive Summary

EPA's service information rule, finalized on June 27, 2003, requires each Original Equipment Manufacturer (OEM) to develop and maintain a website that includes information on the use of On Board Diagnostics (OBD) systems and emissions-related repairs for model year 1996 and newer vehicles. As part of an overall effort to gain feedback on OEM websites, EPA facilitated an evaluation by independent service technicians. Nearly 150 technicians voluntarily evaluated one or more of the sites using a questionnaire developed by an independent Steering Committee comprised of a cross-section of automotive industry representatives.

The auditors submitted their questionnaire results and comments on numerous aspects of the OEM websites, including ease of use, accessibility, navigation features, data on OBD system monitors and repair, information on reprogramming and reinitialization, cost, and the overall structure and organization of the site. The auditors provided positive feedback on most of the OEM websites, indicating that they were generally an excellent source for obtaining their electronic service information. However, some comments and observations identified potential areas for improvement for many of the OEM websites.

The technicians generally stressed the importance of a well-organized website that allows the user to easily access and find the information they need. In addition, while most of the websites are structured in a manner that provides short-, mid-, and long-term access options for the technician, some of the sites offer access only on a per-document approach. This design generally was rated less favorably by the auditors because it does not allow the user to easily browse through the site, identify the relevant documents, and obtain all of the desired data or information. The auditors' comments indicate that a well-designed keyword search is crucial to locating the desired information on the site and that, although this feature is available in most cases, some of the OEMs need to add or improve this feature on their site. Some auditors observed that there is a large disparity between the different websites with respect to their organizational structure and expressed their preference for the implementation of common structural features across all OEM websites.

Most of the auditors use the OEM websites on an as-needed basis using short-term subscriptions. The cost of longer term subscriptions as well as the availability of affordable and readily accessible aftermarket sources with a common organizational structure across multiple makes and models (e.g., ALLDATA), are some of the reasons why the auditors indicated that OEM websites are generally used as a supplemental source of information. Some auditors indicated that certain information or data were missing from the site, but most were generally able to locate the information they were seeking.

The OEM website audit obtained valuable feedback from the service technicians, which can be used by the OEMs to identify additional improvements to their service information websites. Nearly all of the auditors indicated that the OEM websites are a useful resource for obtaining electronic service information.

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## **1. Introduction**

EPA finalized regulations on June 27, 2003 (68 FR 38427) requiring Original Equipment Manufacturers (OEM) to make available all information necessary to use On Board Diagnostic (OBD) systems and any information for making automotive emissions-related repairs, including any emissions-related information provided by the OEMs to franchised dealers. This rule required each OEM to launch a full text website that contains this service information for all 1996 and later model year vehicles and trucks below 14,000 pound gross vehicle weight. As part of a broader effort to evaluate the OEM websites, EPA initiated a website audit process to gather feedback directly from the technician community on their experiences with the websites. In order to help maintain a neutral approach to this process, EPA formed a small steering committee to design and oversee the evaluation. EPA and the Steering Committee worked with OEMs to arrange free access to the websites for the technicians participating in the audit. Each auditor then used a questionnaire developed by the Steering Committee to evaluate one or more websites. This report compiles and summarizes the results of the technicians' evaluations.

The intent of this audit is to obtain some preliminary feedback from independent service technicians in order to help identify potential improvements to the OEM service information websites. This audit was not a scientific study with a statistically valid number of participating technicians. The number of technicians that audited each OEM website varies widely and generally, the selection and recruitment process was not designed to ensure a statistical representation of the entire service technician community. Any conclusions, analyses, or auditor comments presented in this report cannot and should not be used on their own to derive conclusions regarding any given OEM's compliance with EPA's service information regulations. This audit is only one of many elements that EPA will consider when making regulatory compliance determinations. Further, the recommended website improvements or observations put forth by the audit participants do not necessitate the implementation of any revisions by the OEMs to their service information websites. EPA will work with individual OEMs to ensure that the relevant findings of the audit are implemented as appropriate.

## **2. Background**

### **2.1 Summary of Regulation**

EPA's service information regulations were initially finalized on August 9, 1995 (60 FR 40474). These regulations required each OEM to: 1) list all of its emissions-related service and repair information on the FedWorld website; 2) provide enhanced information to equipment and tool companies or make its diagnostic tool available for purchase; and 3) provide any reprogramming capability to independent service and repair professionals. The intent of these requirements was to ensure that independent technicians have access to the same information and tools as the franchised dealerships, particularly since these technicians perform up to 80 percent of all vehicle service and repairs and tend to service older vehicles with higher emissions. The experience gained through the implementation of these service information requirements as well as changing technology in the industry has led to revised requirements, which were finalized in 2003.

On June 27, 2003 (68 FR 38428), EPA finalized revised service information requirements, which require OEMs to provide information on the operation of OBD systems as well as any information needed for making emissions-related repairs, including any information already provided to franchised dealers. This regulation specifically requires each OEM to provide, at a minimum, the following types of technical information:

- Manuals, technical service bulletins (TSBs), diagrams, and charts;
- Descriptions for each monitor (and parameter being monitored);
- Typical OBD diagnostic trouble codes (DTCs) for each monitor;
- Typical enabling conditions for each monitor to execute during vehicle operation (e.g., minimum/maximum intake air, vehicle speed range);
- Sequence, execution frequency, and typical duration for each monitor;
- Typical malfunction thresholds for each monitor;
- Deviations from typical OBD parameters for each applicable vehicle;
- Identification and scaling information to allow for interpretation of data available to a generic scan tool through Mode 6;
- Service, repair, installation or replacement information for parts/systems developed by third party suppliers for OEMs and provided to franchised dealerships;
- Information on other systems that could affect emissions system (for multiplexed systems); and
- Information on systems, components, or parts that could cause the malfunction indicator light (MIL) of the OBD system to illuminate.

The regulation also includes a general requirement for OEMs to provide any other information relevant to the diagnosis and completion of an emissions-related repair. OEMs must also provide computer or anti-theft system initialization information necessary for the proper installation of on-board computers on motor vehicles that employ integral vehicle security systems or the repair or replacement of any other emissions-related part. Although they are not necessarily required to provide this information directly on their website, they are required to include on their website, the means for obtaining the information and/or ability to perform reinitialization.

EPA also outlines specific requirements in the regulations with respect to website accessibility and structure. OEMs must provide accessibility with common software and without any limitations on modem speed, inform users of the hardware and software requirements needed to access data or information, and provide a search mechanism on the website so that users may search by model year, vehicle, or other factors. OEMs must ensure that the required information

is available on their website within six months of (and for at least 15 years after) model introduction, and are required to track the total number of data requests (including successful and failed requests) along with the amount of data transferred. Information on model years from 1996 and forward should be accessible directly on the website, with a document link or contact information for 1994 and 1995 data as well as any data that applies to models produced more than 15 years prior. Each OEM website should also have a varying price structure with at least a short-, mid-, and long-term accessibility option for the user. Each OEM website should also allow for direct hyperlinking from government and automotive-related websites.

The regulation also includes specific requirements for how training materials are made available. The OEM website should also include training manuals, videos and other tools that are currently available to franchised dealerships. Independent technicians should be able to order these training materials through information posted on the website. In addition, OEMs must provide specific technical information and guidance with respect to reprogramming vehicles and must ensure the availability of scan tools and any associated equipment and information related to the use of these tools. To access additional background information and the specific rule requirements, see: <http://www.epa.gov/fedrgstr/EPA-AIR/2003/June/Day-27/a14461.pdf>.

## **2.2 Steering Committee**

To maintain a neutral approach to the process, EPA initiated the formation of a small steering committee to oversee the evaluation. The OEM Website Audit Steering Committee is comprised of industry representatives from OEMs, tool companies, independent technicians, and after-market associations. The complete list of Steering Committee members is provided in Appendix A.

## **2.3 Development of Audit Questionnaire and Process**

The Steering Committee developed a recommended overall methodology for conducting the audit, including developing a plan for recruiting independent technicians/shops, providing access to the sites, and developing a feedback mechanism on the sites. The Committee sought input on the audit plan from industry stakeholders and EPA. EPA's involvement ensured that the audit plan was within EPA's authority and met other legal obligations.

The audit questionnaire was designed by the Committee in order to seek an assessment of the data elements and information that OEMs are required to include on their websites with respect to OBD systems and emissions-related repairs and was generally developed with the regulatory requirements in mind. The Steering Committee, along with EPA, created a questionnaire that would allow for an assessment of each OEM's website and that would also lend itself to a logical compilation and summary of the results. The questionnaire was subject to an internal EPA review and a review by the Office of Management and Budget (OMB) prior to initiation of the audit.

OMB's review was necessary under the Paperwork Reduction Act, which ensures that any information collection activities by the government do not place undue burden on the respondents. An "Information Collection Request" or ICR provides OMB with an overview of the information to be collected, including the cost and amount of time associated with collecting

the information. The ICR for the OEM audit was published in the Federal Register on April 27, 2005 and allowed for a sixty day public comment period. There were two minor comments submitted in response to this ICR. OMB reviewed the comments and approved the ICR on October 19, 2005. During the interim, EPA initiated a small pilot project to test the audit questionnaire and to gather some preliminary results. Five technicians were selected from the overall list of potential OEM audit volunteers. These technicians reviewed the websites of Chrysler, Ford, GM, Honda, Mercedes, and Toyota. The results of the pilot audit were analyzed and incorporated into a preliminary report, which was reviewed by the Steering Committee.

The questionnaire is organized into six separate segments that mirror the EPA regulations, and each one is preceded by introductory text that explains the intent of the questions within that segment. The six segments address issues related to 1) ease of use, accessibility, and website navigation; 2) OBD system monitors; 3) OBD repair; 4) reprogramming and reinitialization; 5) structure and cost; and 6) other general information. The auditor may answer each question with a Yes/No response. For Segment 1, the auditor may also insert a numerical rank from 1 (poor) to 5 (excellent). A "Notes" field is provided for each question so that the auditor may submit additional detailed comments as necessary. The questionnaire also requests that the auditor provide information related to their browser and operating system in order to help discern whether any problems noted on the questionnaire are related to issues of incompatibility. As described above, the six segments address different components and features of the site. The following table provides a brief description of each segment.

**Table 1  
Summary Description of OEM Audit Questionnaire**

Segment	Segment Description
<u>Segment 1:</u> Ease of Use, Accessibility and Website Navigation	Segment 1 addresses issues related to how the website is designed. The purpose of this segment is to determine whether each OEM website is user-friendly and accessible from the standpoint of the technician. EPA regulations require that OEMs launch websites that meet certain use, accessibility, and navigation requirements. The questions in this segment are intended to gain insight into the technicians' experiences with searching, navigating, and accessing the information that they need. The auditor was requested to rank each aspect of the site with respect to ease of use, accessibility and website navigation on a scale of 1 (poor) to 5 (excellent).
<u>Segment 2:</u> OBD System Monitors	Segment 2 addresses issues related to OBD system monitors. EPA regulations require that OEMs make available information on OBD system monitors such as DTC and enable criteria. The questions in this segment are intended to gain insight into the availability of this information on the sites.

(cont.)



**Table 1**  
**Summary Description of OEM Audit Questionnaire (cont.)**

Segment	Segment Description
<u>Segment 3:</u> OBD Repair	Segment 3 addresses issues related to the repair of OBD systems. EPA regulations require that OEMs make available basic service and repair information such as service manuals and TSBs. Some of the questions in this segment are intended to provide insight into the availability of standard service information. In addition, EPA regulations require that OEMs make available information related to the functioning of the OBD system itself such as Mode 6 data and multiplexing. The questions in this segment are intended to gain insight into the availability of this information on the sites.
<u>Segment 4:</u> Reprogramming and Reinitialization Information	Segment 4 addresses issues related to more advanced diagnostics. EPA regulations require that OEMs make available information on advanced repair and diagnostic capabilities such as reprogramming and reinitialization. Reprogramming refers to the installation of new or updated software during the replacement of programmable modules such as PCMs or the updating of software or parameters within the software of in-service programmable modules. Reinitialization in the context of the regulation applies to units such as instrument panels, body control units, and anti-theft immobilizers, which would directly affect the ability of the vehicle to start and/or run within the original design parameters. Questions in this segment are intended to provide insight into the availability of the information, equipment, and tools needed to perform these services.
<u>Segment 5:</u> Structure and Cost of OEM Websites	Segment 5 addresses issues related to the nature and scope of access to the OEM websites including information that can be downloaded, saved, printed, and/or purchased from the website as well as the associated costs. EPA regulations require that OEM websites be available for short-term, mid-term, and long-term access for set fees. The questions in this segment are intended to gain insight into how the OEMs have structured their sites and the fees associated with accessing these sites. In order to help put the responses in perspective, this segment also requests that the auditor provide additional information regarding their specialty, primary sources of service information, how much they typically spend to obtain this information, the frequency with which they access OEM service information websites, and the type of subscription they typically purchase.
<u>Segment 6:</u> General Information and Comments	Segment 6 provides the auditors with the opportunity to submit comments on other general aspects of the OEM websites including, but not limited to, the relevance and usefulness of the information provided and the availability of help links, training, and other guidance materials. This segment provides the auditor with the opportunity to submit additional discussion and analysis on any aspect of the website that is not already covered in the preceding five segments.

**2.4 Recruitment and Selection of Technicians**

Technicians that voluntarily participated in the audit the OEM websites were recruited through a variety of sources. EPA made several presentations at industry events to recruit volunteers and numerous sources such as the National Automotive Service Task Force (NASTF)

and the Automotive Service Association (ASA) encouraged technicians to volunteer through press releases, newsletters and other public forums. In order to facilitate and promote communication and outreach to the technician community regarding the audit process, the Steering Committee set up a website at [www.oemaudit.com](http://www.oemaudit.com). The Steering Committee created this website to provide background information and an ongoing summary of the process including notes for each Steering Committee conference call. The Steering Committee launched the website to provide a convenient means of communicating with the technician community and others interested in the project. Technicians interested in auditing an OEM website through this project could submit their name and contact information through the website. In addition, auditors were asked to fill out an application that provided information about their work experience, their preferences for which website they would like to audit, and other basic information to help the steering committee in aligning auditors with the OEM websites. Every technician who applied to participate was assigned at least one OEM website. The Steering Committee maintained a list of interested technicians based on the website responses as well as interest generated through other means, such as presentations at industry conferences and trade publications. In addition to establishing the OEM Audit website, announcements were made in various trade publications to help communicate the purpose of the audit to the automotive industry in general and to promote interest in the technician community.

Two-hundred and thirty-one technicians applied to participate in the audit either through the website or by directly contacting EPA. EPA and a subcommittee of the Steering Committee selected between 7 and 10 auditors to audit most OEM websites, although over ten auditors were assigned to the BMW, DaimlerChrysler, Ford, General Motors, and Mercedes websites due to the overwhelming interest in these sites. Auditors were assigned based primarily on their experience and interest with the OEM website. Most technicians were assigned to a single OEM website, but 46 of the technicians were assigned to review two OEM websites. The final assignments made by EPA and the subcommittee were reviewed and approved by the full Steering Committee. Additional information regarding the background, years of experience, and other information provided by the auditor in their initial application is included in Appendix B. Note that the Appendix B tables only include information on those auditors that submitted a completed questionnaire.

The following table includes a list of the manufacturers, the associated OEM website link, and the number of technicians assigned to audit the website. The last column provides the final response rate for each website.

**Table 2**  
**OEM Websites Audited**

<b>Manufacturer</b>	<b>Website Audited</b>	<b>Number of Technicians Assigned to Audit Site</b>	<b>Number of Technician Audits Received</b>
Acura	<a href="http://www.ServiceExpress.Honda.com">http://www.ServiceExpress.Honda.com</a>	8	5
Audi	<a href="http://www.ebahn.com/AUDI">http://www.ebahn.com/AUDI</a>	8	4
BMW	<a href="http://www.bmwtechinfo.com">http://www.bmwtechinfo.com</a>	14	11
Chrysler, Dodge, Eagle, Jeep, Plymouth	<a href="http://www.techauthority.com">http://www.techauthority.com</a>	21	11
Ford, Lincoln, Mercury	<a href="http://www.motorcraftservice.com/">http://www.motorcraftservice.com/</a>	23	9
General Motors	<a href="http://www.gmtechinfo.com">http://www.gmtechinfo.com</a>	23	11
Honda	<a href="http://www.ServiceExpress.Honda.com">http://www.ServiceExpress.Honda.com</a>	10	6
Hyundai	<a href="http://www.hmaservice.com">http://www.hmaservice.com</a>	9	4
Infiniti	<a href="http://www.infinititechinfo.com">http://www.infinititechinfo.com</a>	7	3
Isuzu	<a href="http://www.isuzutechinfo.com">http://www.isuzutechinfo.com</a>	9	5
Jaguar	<a href="http://www.jaguartechno.com">http://www.jaguartechno.com</a>	10	5
Kia	<a href="http://www.kiatechinfo.com/dealerlogon.aspx">http://www.kiatechinfo.com/dealerlogon.aspx</a>	9	2
Land Rover	<a href="http://www.landrovertchinfo.com">http://www.landrovertchinfo.com</a>	8	4
Lexus	<a href="http://techinfo.lexus.com">http://techinfo.lexus.com</a>	8	5
Mazda	<a href="http://www.mazdatechinfo.com">http://www.mazdatechinfo.com</a>	9	6
Mercedes Benz	<a href="http://www.startekinfo.com">http://www.startekinfo.com</a>	12	4
Mini	<a href="http://www.minitechinfo.com">http://www.minitechinfo.com</a>	8	7
Mitsubishi	<a href="http://www.mitsubishitechinfo.com">http://www.mitsubishitechinfo.com</a>	8	5
Nissan	<a href="http://www.nissantechinfo.com">http://www.nissantechinfo.com</a>	10	6
Porsche	<a href="http://techinfo.porsche.com">http://techinfo.porsche.com</a>	9	6
Saab	<a href="http://www.saabtechinfo.com">http://www.saabtechinfo.com</a>	9	4
Subaru	<a href="http://techinfo.subaru.com">http://techinfo.subaru.com</a>	8	7
Suzuki	<a href="http://www.suzukitechinfo.com">http://www.suzukitechinfo.com</a>	8	1
Toyota	<a href="http://techinfo.toyota.com">http://techinfo.toyota.com</a>	10	6
Volkswagen	<a href="http://www.ebahn.com/VW">http://www.ebahn.com/VW</a>	10	6
Volvo	<a href="http://www.volvotechinfo.com">http://www.volvotechinfo.com</a>	10	3

Section 3 below, includes a summary analysis of the audit results for each OEM website.

### **3. Discussion of OEM Audit Results**

As described above, the questions in each segment were intended to gain insight into the technicians' experiences with respect to: 1) ease of use, accessibility, and website navigation; 2) information on OBD system monitors; 3) information on OBD repairs; 4) information and procedures for reprogramming and reinitialization; 5) structure and cost; and 6) other general information. For all segments, the technicians were requested to enter a Yes or No response and to use the "Notes" column to explain their response or provide additional information as necessary. Auditors were advised to enter "NA" (not applicable) if they could not answer a specific question or if the question did not apply in the context of their needs and experience. In cases where an entry was left blank by the technician, it was assumed to be an "NA" response. Table 3, below provides a summary of the questionnaire results for each manufacturer. The names of the auditors were replaced by a unique identifier (e.g. Acura Auditor 1) to maintain the anonymity of the auditors. All associated comments and notes that were provided in addition to the responses to each individual question can be viewed in the individual questionnaires as they were received from the auditors. These are available (by manufacturer) on the OEM audit website ([www.oemaudit.com](http://www.oemaudit.com)) as an additional resource.

**Table 3  
OEM Audit Questionnaire Summary Table**

OEM Website	Number of Auditors	1.1				1.2				1.3				1.3a				1.4				1.5				1.6			
		Yes	No	Average Ranking	NA	Yes	No	Average Ranking	NA	Yes	No	Average Ranking	NA	Yes	No	Average Ranking	NA	Yes	No	Average Ranking	NA	Yes	No	Average Ranking	NA	Yes	No	Average Ranking	NA
Acura	5	4		4.75	1	4		4.75	1	4		4.25	1	4		4.75	1	5	5		5		4.6		4	4	5	1	
Audi	4	4		2		4		5		4		5		2	2	ND		1	3	3		4		5		1	2	4	1
BMW	11	11		4.38		10	1	3.88		10	1	4.5		11		4.75		2	9	3.83		4	6	3.86	1	3	5	4	3
Chrysler/Dodge/Eagle/Jeep/Plymouth	11	11		4.22		11		3.89		11		4		8		3.5	3	3	8	3.14		10		3	1	2	6	3.25	3
Ford/Lincoln/Mercury	9	9		4.57		8	1	3		9		4.14		9		4.86		3	6	3.57		7	2	3.71		1	4	4.5	4
General Motors	11	10	1	4.5		11		4.18		11		4.36		9		4	2	3	8	3.55		8	3	4		1	5	4.8	5
Honda	6	6		5		6		4.5		6		4.67		5	1	4.2		1	5	4.67		6		4.16		1	3	4.67	2
Hyundai	4	4		4.5		4		4.25		4		4.5		4		4.5		2	2	4.75		4		4.25		1	3	4.5	
Infiniti	3	3		4		2	1	2.67		3		5		3		4.33		3	5			2	1	3		2	5	1	
Isuzu	5	5		4.2		5		4.2		4	1	4.25		4	1	4.2		1	4	4.4		4	1	3.6		1	1	3.5	3
Jaguar	5	4	1	5		4	1	4.5		5		5		4	1	5		5	5			2	3	4.5		3	5	2	
Kia	2	2		4.5		2		4		2		5		1	1	5		1	1	3		1	1	1			1	2	
Land Rover	4	3	1	ND		4		4		4		ND		3	1	ND		4	ND			2	2	ND		4	ND		
Lexus	5	5		4		5		4.4		5		5		4		4.75	1	1	4	4.5		3	2	3.8		5	5		
Mazda	6	4	1	4	1	6		4		5		4.6	2	6		4.33		6	4.33			5	1	3.67		4	4.33	2	
Mercedes-Benz	4	4		3.33		4		2.67		3	1	2		4		3.33		1	3	3.67		4		3		1	3	3.33	
Mini	7	6	1	4.67		7		4.5		7		4.5		7		4.4		1	6	4.25		7		4.4		3	1	4.5	3
Mitsubishi	5	5		5		5		4.2		5		4.5		5		5		5	5			5		4.4		3	5	2	
Nissan	6	5		3.8	1	4	2	3.17		5	1	3.5		5	1	2.83		6	3.83		4	2	2.83		4	4	2		
Porsche	6	6		4.2		6		2.2		6		4.6		6		4.2		6	4.8			5	1	3.8		1	3	4.67	2
Saab	4	4		3.25		3	1	3		3		3.5	1	2	1	4	1	1	3	3.75		4		4.33		4	5		
Subaru	7	6	1	3.67		7		4.5		7		4.67		6	1	4.33		7	4.6			7		4.16		4	5	3	
Suzuki	1	1		ND		1		ND		1		ND		1		ND		1	ND			1		ND		1	ND		
Toyota	6	6		4		6		4.33		6		4.33		6		4		6	4.2			6		3.83		4	3.33	2	
Volkswagen	6	5		4.8	1	6		4.33		5	1	4		3	2	4.33	1	6	4.33			6		4.83		3	4	3	
Volvo	3	3		3.5		1	2	1.33		2	1	3		1	1	2	1	2	1	2		2		3	1	3		1	

**\* Note: The rankings range from 1 (poor) to 5 (excellent).**

*Question 1.1: Does the website provide users with a description of the minimum computer hardware and software needed by the user to access that OEM's information (e.g., computer processor speed and operating system software)? This description or a link to it should appear when users first log on to the homepage of the OEM's website.*

*Question 1.2: Did the website allow you to search the OEM website by various topics including but not limited to model, model year, keywords or phrases, etc.?*

*Question 1.3: Did the website provide accessibility using common, readily available software and shall not require the use of proprietary software, hardware, viewers, or browsers?*

*Question 1.3a: Did the OEM website provide hyperlinks to any plug-ins, viewers, or browsers (e.g., Adobe Acrobat or Netscape) needed to access the OEM website?*

*Question 1.4: Did you have any difficulty connecting to the website?*

*Question 1.5: Were you able to navigate the website without returning to the OEM service information home page or a search engine in order to access a different portion of the site?*

*Question 1.6: If you were a first time user, does the website involve a waiting period for registration to receive a password, PIN code, or some other approval (such as PayPal)?*

*Data Assumptions: Blanks were treated as "N/A" Averages for responses were taken among those responding only (no N/A or Blanks included) ND = No data*

*All averages were rounded to the nearest hundredth, when necessary.*

(cont.)

**Table 3**  
**OEM Audit Questionnaire Summary Table (cont.)**

OEM Website	Number of Auditors	2.1			2.1a			2.2			2.3			2.3a			2.4			2.5			2.6		
		Yes	No	NA	Yes	No	NA	Yes	No	NA	Yes	No	NA	Yes	No	NA	Yes	No	NA	Yes	No	NA	Yes	No	NA
Acura	5	5				5		4	1		5			5			4		1	4		1	4		1
Audi	4	4				4		3	1		3	1		3	1		3	1		3	1		3	1	
BMW	11	9		2	2	7	2	8	1	2	7	3	1	7	2	2	9		2	8		3	9		2
Chrysler/Dodge/Eagle/Jeep/Plymouth	11	10		2		10	1	10		1	7	2	2	9		2	9	1	1	9	2		6	4	1
Ford/Lincoln/Mercury	9	8		1	1	8		9			9			9			9			9			8		1
General Motors	11	10	1		2	8	1	9	1	1	9	1	1	9	1	2	10		1	10		1	10		1
Honda	6	6				5	1	6			6			6			5	1		5	1		5		1
Hyundai	4	4			1	3		4			4			3		1	3	1		3	1		4		
Infiniti	3	2	1		1	2		2	1		3			2	1		3			3			3		
Isuzu	5	3	1	1		5		3	2		5			4	1		5			5			4	1	
Jaguar	5	4		1	1	3	1	4	1		4	1		4	1		4	1		4	1		4	1	
Kia	2	1	1		2				2		2			2			1	1			2		1	1	
Land Rover	4	3		1	1	2	1	2	2		2	2		3	1		2	2		2	2		2	2	
Lexus	5	5			1	4		4	1		5			5			5			5			4	1	
Mazda	6	6				6		6			6			5		1	5			4	2		5	1	
Mercedes-Benz	4	3	1		2	2		3	1		4			3	1		3	1		3	1		3	1	
Mini	7	7			1	6		7			6	1		6		1	7			6	1		6	1	
Mitsubishi	5	5			1	3	1	5			5			4		1	4	1		4	1		5		
Nissan	6	3	2	1	2	2	2	2	3	1	4		2	3	2	1	2	3	1	2	2	2	3	1	2
Porsche	6	6			2	4		2	4		6			5	1		3	3		2	3	1	3	3	
Saab	4	2	2		1	3		3	1		2	1	1	4			3		1	3		1	3		1
Subaru	7	5	2		3	4		6	1		6	1		6	1		6	1		4	2	1	5	2	
Suzuki	1	1				1		1			1			1			1			1			1		
Toyota	6	6				6		6			5		1	5		1	6			6			6		
Volkswagen	6	5			1	5		6			6			6			6			4	1	1	4	1	1
Volvo	3	2	1		1	2		2	1		2	1		1	2		2	1		2	1		2	1	

Question 2.1: Are there descriptions of all the OBD monitors and their operation?

Question 2.1a: Did any of these monitor descriptions lack sufficient information? If so, please explain in the "Notes" column.

Question 2.2: Were you able to find a description of all parameters (strategies) being monitored? Parameters can refer to either PID descriptions or the general monitoring strategies of the ECU.

Question 2.3: Was there a list of Diagnostic Trouble Codes relating to these monitors?

Question 2.3a: Did you find the list sufficient to assist in the diagnosis and/or repair of the vehicle? If your answer is "No," please explain in the "Notes" column.

Question 2.4: Were you able to determine the enable criteria for each monitor?

Question 2.5: Are the sequence, execution frequency, and duration of the monitor explained?

Question 2.6: Were you able to find the malfunction thresholds for the monitor?

(cont.)

**Table 3  
OEM Audit Questionnaire Summary Table (cont.)**

OEM Website	Number of Auditors	3.1			3.1a			3.2			3.3			3.4			3.5		
		Yes	No	NA	Yes	No	NA	Yes	No	NA	Yes	No	NA	Yes	No	NA	Yes	No	NA
Acura	5	5			4		1	5			5			5			5		
Audi	4	2	1	1	3		1	4			4			3	1		4		
BMW	11	6	1	4	5		6	4	4	3	7	2	2	11			7	4	
Chrysler/Dodge/Eagle/ Jeep/Plymouth	11	4	4	3	2		9	10	1		11			11			11		
Ford/Lincoln/Mercury	9	8	1		7	1	1	9			9			9			9		
General Motors	11	5	6	1	3	3	5	8	2	1	11	1		10	1		11		
Honda	6	5		1	4		2	6			6			6			6		
Hyundai	4	3		1	3		1	3	1		4			4			4		
Infiniti	3	2	1		2		1	3			2	1		2	1		3		
Isuzu	5	4	1		3		2	5			4	1		5			5		
Jaguar	5	2	1	2		2	3	3		2	3		2	3		2	4		1
Kia	2		2			2		2			2			2			2		
Land Rover	4	2	1	1	1	1	2	2	1	1	3		1	3		1	2	1	1
Lexus	5	5			4	1		5			5			5			5		
Mazda	6	3	3		3		3	6			6			6			6		
Mercedes-Benz	4	2	1	1	2	1	1	3	1		4			4			4		
Mini	7	5		2	5	1	2	4	2	1	7	1		7			6	1	
Mitsubishi	5	4	1		3		2	5			5			5			5		
Nissan	6	2	3	1	2	2	2	4	1	1	4		2	5		1	5		1
Porsche	6	3	1	2	2	1	3	3	3		6			4	2		6		
Saab	4	1	1	2	1		3	3		1	3		1	4			4		
Subaru	7	1	5	1	1	1	5	6	1		7			7			7		
Suzuki	1	1			1			1			1			1			1		
Toyota	6	4	1	1	3	1	2	6			6			6			6		
Volkswagen	6	3	2	1	2		4	6			6			6			6		
Volvo	3	1	1	1	1		2	1	2		1	2			3		3		

*Question 3.1: Does the website provide information necessary to interpret Mode 6 data available in generic scan tool modes?*

*Question 3.1a: If so, was this information useful? Please use the "Notes" column to identify why or why not.*

*Question 3.2: Does the website provide sufficient diagnostic and repair information for any and all DTCs encountered?*

*Question 3.3: Are descriptions of OEM-specific DTCs (i.e., P1XXX codes) available?*

*Question 3.4: Are technical service bulletins readily available?*

*Question 3.5: Are trouble shooting guides or trouble shooting information available? For example, code charts, diagnostic and repair information, or fault finding logic.*

(cont.)

**Table 3  
OEM Audit Questionnaire Summary Table (cont.)**

OEM Website	Number of Auditors	4.1			4.2			4.3			4.4			4.5			4.6			4.7			4.8			4.9			4.10			4.11			4.12			4.13			4.13a		
		Yes	No	NA	Yes	No	NA	Yes	No	NA	Yes	No	NA	Yes	No	NA	Yes	No	NA	Yes	No	NA	Yes	No	NA	Yes	No	NA	Yes	No	NA	Yes	No	NA	Yes	No	NA						
Acura	5	3		2	3	2	1		4	2	3	2	3		5				5	3		2	3		2	3		2	3	2	2	1	2		3	2			5				
Audi	4	4			2	1	1		3	1	1	1	2	1	1	2		4		4	3		1	3		1	1	3		2	1	1		3	1			4					
BMW	11	11			10		1	4	1	6	3	1	7	3	1	7	7	4	4	1	6	8	1	2	8		3	7	1	3	7	2	2										
Chrysler/Dodge/Eagle/Jeep/Plymouth	11	6	1	4	7		4	4		7	5		6	6		5	1	8	2	1		10	2	2	7	1		10	1		10	1	4	6	2	1	8		3	8		11	
Ford/Lincoln/Mercury	9	9			9			4		5	9		8		1	3	5	1	2	1	6	5	3	1	7		2	7		2	2	5	2										
General Motors	11	8	1	2	8	1	2	3	2	6	6	3	3	5	2	4	5	6	3	1	7	6	1	4	6		5	6		5	3	5	3										
Honda	6	6			4	2		5	1	2	2	2	2	2	2	2	5	1		6	6			6			4	2				6						1	5				
Hyundai	4	4			4				3	1	3		1	3		1	4			4	1	2	1	1	3		3		1	3													
Infiniti	3	2	1		2	1		2	1	2	1		2	1			3			3	1	1	1	1	1		2	1		2													
Isuzu	5	4	1		4	1		2	1	2	3	1	1	5			5			5	3	2		3		2	3		2		4	1											
Jaguar	5	3	1	1	4	1		2		3	2		3	2		2		4	1		5		1	4	1		4	1		4		2	3										
Kia	2	2			1	1		1	1	1	1	1	1	1			2			2	1		1	1	1	1		1	1		1												
Land Rover	4	3	1		3	1		2	3	2	3		1	3	1	2	1	1	2	2	2		2	2	2	2	1	1	2	1	1	2	1	1	1	1	1	1	2	2	2		
Lexus	5	5			4		1	3		2	3		2	3		2	2	2	1	1		4	2	1	2	2		3	2		3	1	2	2									
Mazda	6	3	1	2	3	1	2		1	5	1	1	4	1	3	2		6			6	2		4	2	1	3	2	1	3		5	1										
Mercedes-Benz	4	4			3		1	3	1	2	2		2	2		2			1	1	2	4		3	1		2	2		4													
Mini	7	7			7			4		3	5		2	4	1	2	3	4	1	3		4	6		1	5	1	1	6		1	4	3										
Mitsubishi	5	5			5			3		2	5		5				5			5	3	1	1	4		1	3		2		4	1	4	1		1	4		1	4			
Nissan	6	4	1	1	4	1	1	4		2	3	1	2	2	1	3	1	4	1	1		5	3		3	3	1	2	3	1	2	1	4	1									
Porsche	6	5	1		6			3	3	2	1	3	1	2	3	2	4		2		4	6			5		1	4		2	3	3											
Saab	4	3		1	3		1		4	2		2	2	2		2		3	1		1	3	1	1	2	2		2	1	1	2		4										
Subaru	7	2	3	2	1	3	3	1	1	5	1	2	4	1	2	4		5	2		1	6	2	3	2	2	1	4	1	2	4		5	2									
Suzuki	1	1			1				1	1			1				1				1			1	1					1		1											
Toyota	6	5		1	4		2	3		3	4		2	5		1	1	4	1	1		5	3	2	1	3		3	3		3	3											
Volkswagen	6	5		1	3	2	1	2	4	2	2	2	3	1	2		5	1			6	5		1	4	1	1	4	1	1	6		4		1					6			
Volvo	3	3			1	2		1		2	1		2	1		2	3			2	1					2	1		2	1		1	1	1	1	1	1	1	1	1	1		

\* Note: Since Question 4.13b does not request a Yes/No response and requires detailed comments from the auditor, the results are not included in this table.

Question 4.1: Are you able to find information on tools needed to perform reprogramming?
Question 4.2: Are you able to find the procedures to perform reprogramming?
Question 4.3: If reprogramming is performed using a J2534 device was the software available to communicate between the device and the PC?
Question 4.4: Is the information to select the proper calibration for the vehicle available?
Question 4.5: Is the vehicle calibration available?
Question 4.6: Have you performed reprogramming services within the last 12 months for this OEM?
Question 4.7: If applicable, were you able to perform a successful update/reprogram?
Question 4.8: Does this OEM require initialization or reinitialization when the ECU is replaced? If no, skip to Segment 5. For the purposes of this audit, initialization or reinitialization refers to the need to reset a vehicle's security systems by means of an ignition key or access code to allow a vehicle to be restarted after the completion of emissions-related repairs.
Question 4.9: Are you able to find information on tools needed to perform reinitialization?
Question 4.10: Are you able to find the procedures to perform reinitialization?
Question 4.11: Have you performed reinitialization services within the last 12 months for this OEM?
Question 4.12: EPA regulations allow for OEMs to offer an alternative method of reinitialization with prior approval. These companies have received approval to lease their OEM-specific scan tool to the aftermarket to perform this service. Are you able to find information about alternate methods and links to the source of that method?
Question 4.13: Do you have any experience using the alternate method?
Question 4.13a: If so, has it worked to your satisfaction?
Question 4.13b: If not, please explain.

(cont.)



**Table 3  
OEM Audit Questionnaire Summary Table (cont.)**

OEM Website	Number of Auditors	5.1			5.2			5.3			5.4			5.5c			5.6			5.7					5.8				5.9				5.10						5.11					5.12									
		Yes	No	NA	Yes	No	NA	Yes	No	NA	Yes	No	NA	Yes	No	NA	Yes	No	NA	1	2	3	4	5	NA	1	2	3	NA	1	2	3	4	NA	1	2	3	4	5	6	NA	1	2	3	4	5	NA	1	2	3	NA		
Acura	5	5			5			2	1	2	4	1		3	2	1	4		1				4	1			2	3	2	1	1					2	1		1	1			3		1	1		3	2				
Audi	4	4			4			3	1		4			1	3	2	2			3		1		3	1			1	3						1	2		1			1	1		1	1		1	1		2			
BMW	11	11			10	1		6	4	1	10	1		3	8	2	9			3		7	1	6	4	1		3	2	6				4	2		1	3	1	1		6	1	1	2	1	7	1	2	1			
Chrysler/Dodge/Eagle/Jeep/Plymouth	11	8		3	9		2	5		6	9		2	5	6		9	2					9	2	11			2	1	4	4			4	3	1	6	1	1		6	5				4			7				
Ford/Lincoln/Mercury	9	9			8	1		7	1	1	9			3	6	1	7	1			3		5	1	8	1		1	8					1	1	7	2		1	5	1	1	1		5	1	2	1					
General Motors	11	9		2	9	2		8	1	2	10		1	3	8		8	3			2		7	2	9	3		1	6	4			5	3		3		1	1	3	4	1	2		1	5	1		5				
Honda	6	6			6			4	1	1	5		1	1	5		5	1					1	5	6			1	3	2			1	2	1	1		1		5	1				6								
Hyundai	4	2	2		3	1		4			4			2	2		4						4	4				1	3						1										3	1							
Infiniti	3	3			2	1		3			3			2	1		3			1			2	3			1	2						1	2	1	1	1			1	1		1	1		1	1					
Isuzu	5	5			5			4		1	4		1	3	2		5		1		1		3	5			2	2	1				2	2	1		1			2		1	2		3	2							
Jaguar	5	2		3	4		1	3		2	2	1	2	1	4		4	1		2		1	2	3	1	2		1	2	2			4	1	1	1	1		1	1	2	1		1	3		2						
Kia	2	1		1	2			1		1	2			1	1		2			1		1	1					2							2							1	1				2						
Land Rover	4	2	1	1	2	1	1	2	1	1	3		1	1	3		3	1		1		1	1	1	3	1	1			2	2			1	1			1	1	1	2		1		2		1	1					
Lexus	5	4		1	4		1	3	1	1	4		1	2	3		4	1					3	2	4		1	2			2	1		1	1	2		1		1	1	2		1		4		1	3		2		
Mazda	6	6			4	2		6			6			2	4		5	1					5	1	5	1		2	2	1	1		1	1	1		1	1		1	2	1		2	1	1	1	4	1	1			
Mercedes-Benz	4	4			4			3		1	4			1	2	1	1	3		1	1	2		2	1	1		2	2					2						1	3			1		1		4		1			
Mini	7	7			6	1		7			7			3	4		6	1		1		4	1	1	2	3	1	1	2		1	3	1	4			1	1	1		1	1	1		1	2	1	2	5	1	1		
Mitsubishi	5	5			5			5			5			1	2	2		5					5	5			1	2	1	1			3	1			3	1			3	1	1		4		1			1			
Nissan	6	5		1	3	2	1	3		3	5		1	3	3		1	4	1				1	4	1	5	1		1	1	3	1	3	1		1	1		1	3	1	1		2	1	1							
Porsche	6	2	4		4	2		6			5	1		5	1		2	4			3	2		1	3	2			3	2	1	3			1	3					3	1		1	1	3	1	1	1				
Saab	4	4			3	1		1	1	2	2	1	1	1	3		1	3			2		2	3	1				1	2	1	2					1	1	2			1	1	2		1	3		1				
Subaru	7	6		1	7			6		1	6		1	5	2		7		1		1		5	1	7			1	1	4	1	3		1	3				1	3	2	1		2	2	3							
Suzuki	1	1			1			1			1			1			1						1	1					1												1					1							
Toyota	6	6			6			6			6			2	4		5	1	1				1	3	1	4	2		2	1	2	1		5	1	1	2	1		3	1	1		2		2	1	3					
Volkswagen	6	6			6			4		2	4	1	1	4	2		1	5			1		1	4		5	1			3	2	1	1	1		2			1		3		1	1		3		1	2				
Volvo	3	3			1	2		1	2		2	1		1	2		2	1					2	1		1	2			1	2						1	2				1		1	2				3				

\*Note: Since Questions 5.2a, 5.3a, 5.5a, 5.5b, and 5.6a do not request a Yes/No response and require detailed comments from the auditor, the results are not included in this table. Questions 5.10, 5.11, and 5.12 are only applicable if the auditor's primary source of service information is aftermarket services such as ALLDATA or Mitchell1.

Question 5.1: Does the website have short-term, mid-term, and long-term access to service information?
Question 5.2: Were you able to access the entire site?
Question 5.2a: Please identify areas that you could not access for the initial fee (such as reprogramming information) in the "Notes" column.
Question 5.3: Although downloading information is not explicitly required by EPA regulations, did the website allow you to save and store any information to your computer?
Question 5.3a: If so, please identify the information or documents that were downloadable in the "Notes" column.
Question 5.4: Were you able to print the information from the website?
Question 5.5: Audi, Porsche, and Volkswagen websites require the purchase of individual documents to access repair information. For the purposes of this evaluation, how many individual documents would you have had to purchase to acquire all of the information you needed to perform the repair?
Question 5.5a: What would have been the total cost of those documents?
Question 5.5b: What emissions repair were you trying to do?
Question 5.5c: Some manufacturer websites require the purchase of individual documents for downloading before they can be fully viewed. In some cases, only the table of contents is available for viewing before the purchase is made. Did you purchase documents that did not contain the information you were seeking? If yes, then please identify the document and the cost of that document in the "Notes" column.
Question 5.6: Have you purchased service information, training materials, TSBs, CDs, videos, CD-ROMs, etc. from the website?
Question 5.6a: If so, indicate the number and description of materials purchased.
Question 5.7: Does your shop specialize in vehicle repairs from specific OEMs? Please specify 1) Asian; 2) European; 3) Domestic; 4) a specific OEM website; or 5) No specialty.
Question 5.8: What is your primary source for electronic service information? Please indicate 1) Aftermarket (e.g., ALLDATA, Mitchell1, etc.); 2) OEM websites; or 3) Other.
Question 5.9: How much do you spend for an annual subscription to your primary source listed above? Please select 1) \$0 - \$500; 2) 500 - \$1,000; 3) 1,000 - \$2,000; or 4) Over \$2,000.
Question 5.10: What is the primary reason for selecting the primary source listed in question 5.8? Please select: 1) Completeness for the brands I service; 2) Experience/Familiarity with the product; 3) Available off-line; 4) Common organization of information for all manufacturers; 5) Price; or 6) Other (please explain).
Question 5.11: Approximately how many times do you access an OEM website? Please select: 1) Never; 2) 1 to 5 times monthly; 3) 5 to 10 times monthly; 4) 10 to 20 times monthly; 5) Over 20 times monthly.
Question 5.12: Do you typically subscribe to OEM websites? If so, please indicate the type of subscription that you usually purchase. Please select: 1) 24 to 72 hour subscription; 2) Monthly subscription; or 3) Annual subscription.

(cont.)

**Table 3  
OEM Audit Questionnaire Summary Table (cont.)**

OEM Website	Number of Auditors	6.1			6.1a			6.2			6.2a			6.2b			6.3			6.3a			6.4			6.5			6.5b		
		Yes	No	NA	Yes	No	NA	Yes	No	NA	Yes	No	NA	Yes	No	NA	Yes	No	NA	Yes	No	NA	Yes	No	NA	Yes	No	NA	Yes	No	NA
Acura	5	4		1	3		2	5			2	3		3		2	5		4		1	5			5				4	1	
Audi	4	3		1	3		1	3		1	2	2		1		3	3	1	2	2		3	1		1	3		1	3		
BMW	11	5	4	2	3	2	6	11				11			11	10	1	8		3	11			5	6		1	8	2		
Chrysler/Dodge/Eagle/Jeep/Plymouth	11	7	4		7		4	7		4	2	9		1		10	8	1	2	6		5	9		2	2	7	2	1	5	5
Ford/Lincoln/Mercury	9	6	2	1	6		3	9			3	6		2	1	6	9		6	2	1	8	1		3	5	1		6	3	
General Motors	11	8	2	1	6	1	4	10		1	2	9		2	1	9	8	1	2	6	3	2	4	5	2	4	6	1	3	6	2
Honda	6	6			5		1	6			1	5		1		5	5	1	6			6			6				6		
Hyundai	4	3	1		4			4			1	3		1		3	4		4			4			2	2			4		
Infiniti	3	3			2	1		3			2	1		1	1	1	2	1	2		1	1	2		3			1	2		
Isuzu	5	3	2		2	2	1	4		1	1	4		1		4	3	2	4		1	4	1		5			3	2		
Jaguar	5	4	1		4		1	3	1	1	1	3	1	1	1	3	2	2	1	1	1	3	3		2	1	3	1	1	1	3
Kia	2	2			2			2			1	1				2	2		1	1	1	2			1	1		1	1	1	
Land Rover	4	3	1		3		1	3	1		2	2		1	2	1	3	1	1	1	2	3		1	1	2	1	1	2	1	
Lexus	5	4		1	4		1	4		1	1	3	1	2		3	4	1	4		1	4		1	2	2	1	1	3	1	
Mazda	6	6			6			5		1		6		1		5	6	1	3	2	1	2	3	1	1	4	1	2	2	2	
Mercedes-Benz	4	4			4			4			2	2		2		2	2	2	3		1	4			3	1		2	1	1	
Mini	7	7			7			7			3	4		3		4	7		4	2	1	7			1	3	3	1	2	4	
Mitsubishi	5	5			5			5			5		1		4	5		5			5			2	2	1		4	1		
Nissan	6	5		1	5		1	6			2	3	1	1		5	5	1	4		2	6			3	2	1		4	2	
Porsche	6	5	1		4	1	1	6			5	1		1	3	2		6		2	3	1		6		5		1	2	2	2
Saab	4	2	2		2	1	1	3		1	1	3		1		3	3	1	3		1	4			4		1	2	1		
Subaru	7	6	1		5	1	1	6		1	1	6		1		6	5	1	1	5		2	7		3	3	1		7		
Suzuki	1	1			1			1			1		1					1		1		1			1			1		1	
Toyota	6	6			5		1	6			1	5		1		5	6		6			6			1	5		1	4	1	
Volkswagen	6	5			4	1		5			2	3		2		3	5		5			5			1	4		1	2	2	
Volvo	3	3			2	1		2		1	2	1			2	1	2	1	2	1		3			3			1	1	1	1

**\*Note: Since Question 6.5a does not request a Yes/No response and requires detailed comments from the auditor, the results are not included in this table.**

- Question 6.1: Does the website contain information describing how to use the website? Possible sources of such information could be tutorials, "help" links, or lists of "frequently asked questions" (FAQ).
- Question 6.1a: If so, is the information relevant, useful, and readily accessible? Please identify where the information is located in the "Notes" column.
- Question 6.2: The "contact us" link is required to allow users to report problems, omissions or errors with the website, not to assist in vehicle trouble shooting or technical assistance. Does the website provide a "contact us" link for questions and/or reporting of problems, omissions, or errors?
- Question 6.2a: Have you attempted to use the "contact us" link?
- Question 6.2b: Have you received the desired information or answer to your question within 48 hours?
- Question 6.3: Is training information available on the website?
- Question 6.3a: Are lists and sources (contacts or ordering information) identified for training information that is not Internet-capable?
- Question 6.4: Is information available on the website listing available factory tools and ordering information?
- Question 6.5: Did you attempt to find information which was unavailable on the website?
- Question 6.5a: If so, please identify what information you were seeking, how you conducted your search, and results (or lack thereof) you experienced.
- Question 6.5b: Are you aware of other information that may not be available on the website?

In addition to the table summarizing the questionnaire results for each manufacturer as shown above in Table 3, the questionnaire results from each auditor have also been compiled in a summary table (by manufacturer) and are included in Appendix C. As with Appendix B, in order to maintain the anonymity of the respondents, each auditor is listed in the Appendix C tables using an assigned number. The auditors' assigned numbers within Appendix C correspond directly to those used within the Appendix B table so that a cross-reference can be easily established.

The following sections are organized by OEM website and summarize the results of the technicians' audits. These summaries provide a general overview of the audit results for each manufacturer, and include discussion that reflects both the responses to each individual question posed in the questionnaire as well as any additional comments or observations provided by the auditors. Note that the section for each OEM includes a brief introduction followed by four subsections that address access and navigation; obtaining information; OBD system monitors and repair; and reprogramming and reinitialization. A concluding paragraph is also included, and is preceded by a separate section on cost in cases where comments on the cost of the website were received. A draft of this report was distributed for comment to all Steering Committee members and OEM representatives prior to its finalization. There were a small number of comments received, and with the exception of one commenter who requested that their comments not be made available to the public, all of these comments are included in Appendix D. These comments did not result in any substantive revisions to the report (only some minor corrections and editorial revisions). However, the comments do provide some insight regarding how certain OEMs perceive the audit process and results, as well as how and whether the issues raised by the auditors could be addressed in the context of their current service information website.

The objective of this discussion is not to assess compliance by the OEMs with the Service Information Rule, but rather to highlight some of the strengths and weaknesses of the various OEM websites based on the responses from the auditors and identify potential areas for improvement. The results of the questionnaires received from all the auditors indicate that some general observations can be made that apply to most or all of the OEM websites. These observations are summarized in Section 4 following the manufacturer-specific summaries below.

## **3.1 Acura**

### **3.1.1 Introduction**

The five technicians that submitted a completed questionnaire for Acura rated nearly all aspects of the service information site very favorably. These technicians, most of whom did not indicate a specialty in the repair of vehicles from any specific OEM, have an average of 23 years experience in the field. Even though most indicated that they generally use aftermarket sources to obtain electronic service information, almost all the technicians indicated that the Acura website was very well designed and contained helpful data and information. Nearly all of the auditors indicated that they access OEM websites occasionally on an as-needed basis using short-term subscriptions.

### **3.1.2 Access and Navigation**

All auditors acknowledged the existence of the short-, mid-, and long-term options for accessing Acura's service information and indicated that they were able to access the entire site. Nearly all of the technicians indicated that the website provides users with a description of the minimum computer hardware and software requirements and that they could easily connect to and access the site using common and readily available software (although some indicated that the site should allow for the use of Firefox as a browser). In addition, most of the auditors acknowledged the availability of relevant and useful information on how to use the site and tutorials or 'help' links. All auditors acknowledged the existence of the 'contact us' link. Two of these auditors had used the link and had received a timely response.

With respect to the navigation features, virtually all of the technicians indicated that they were able to search the site by topic or keyword and that they were able to navigate the website easily without returning to the home page. There were no specific problems or issues cited by the technicians regarding the access or navigation features of the site. Most technicians provided a positive response along with the highest ranking to almost all questions regarding the site's ease of use, accessibility, and navigation features.

### **3.1.3 Obtaining Information**

The auditors indicated that the information they required was readily available on the site. Two auditors noted that they were able to download and save to their computer certain documents from the website, including manuals, TSBs, and various training documents. However, others indicated that they were not able to download information or documents. One of these auditors noted that Acura includes a message on the website indicating that unauthorized downloads are prohibited. This message states that the user may not download any materials, data, text, images, video, or audio. With the exception of one, all auditors indicated that they were able to print documents and information from the website. Only one auditor noted that they had purchased materials, such as special service tools, from the site.

All of the technicians noted that information on training, including lists and sources for information that is not Internet-capable, available factory tools, and ordering was available. All of the technicians indicated that there were no specific documents, data, or information that they were seeking but could not find on the website.

### **3.1.4 OBD System Monitors and Repair**

With respect to OBD system monitors and OBD repair, all of the Acura auditors noted that they could find both monitor descriptions and parameter (or strategy) descriptions on the site, and that useful information was available for interpreting Mode 6 data. However, one auditor indicated that some of the descriptions of strategies being monitored were somewhat vague and difficult to understand. All of the auditors indicated that DTCs were listed and the information was sufficient to assist in the diagnosis and repair of the vehicle. With respect to OBD system monitors, one auditor indicated that emissions repair and testing could be expedited if the vehicle monitors required a shorter drive-cycle with fewer enable parameters. Overall, the

auditors provided a positive response to essentially all of the questions related to the adequacy of the OBD information.

### **3.1.5 Reprogramming and Reinitialization**

With respect to reprogramming and reinitialization, only three of the auditors indicated that these questions were applicable. There were no auditors that had performed reprogramming and/or reinitialization for an Acura vehicle within the previous year. All three auditors indicated that they were able to find the necessary information on tools needed to perform reprogramming and reinitialization and the associated procedures. The auditors also observed that the software to communicate between the J2534 device and the PC, information to select the proper calibration for the vehicle, and the vehicle calibration are available. One auditor observed that, with respect to obtaining reprogramming and reinitialization information, Acura requires the purchase of an update CD that covers a wide range of model years. This auditor added that they would prefer to pay for a vehicle-specific download that would be compatible with their pass-through device.

### **3.1.6 Cost**

The auditors generally did not express concern with respect to the cost for a subscription to the Acura site. However, one auditor indicated that if price were not a factor, they would use the service information website exclusively. This auditor added that since aftermarket sources such as ALLDATA include information on numerous makes and models, it is currently more economical to use that as a primary source and use the website as a secondary source on an as-needed basis.

### **3.1.7 Conclusion**

Overall, the results of the Acura audit indicate that the site is very well designed. Some auditors indicated that they would highly recommend using the site to other technicians. The auditors suggested some minor changes that could help improve the site. Potential improvements to the site include: offering vehicle-specific downloads for reprogramming and reinitialization; providing additional and/or expanded descriptions with respect to the parameters for OBD monitors; and allowing for the use of browsers other than Internet Explorer (e.g., Firefox).

## **3.2 Audi**

### **3.2.1 Introduction**

The four technicians that submitted a completed questionnaire for Audi rated nearly all aspects of the service information site favorably. Three of these auditors indicated that their shop specializes in European vehicles and that they use aftermarket sources as their primary source of electronic service information. One auditor indicated that they specialize in BMW vehicles and use the website as their primary source of service information. Two of the technicians servicing European vehicles indicated that they access OEM websites as a source of information occasionally using short-term subscriptions and one indicated that they generally do not access the service information websites at all.

### **3.2.2 Access and Navigation**

All auditors acknowledged the existence of the short-, mid-, and long-term options for accessing Audi's service information, and indicated that they could generally access the entire site. Nearly all the technicians indicated that the website provides users with a description of the minimum computer hardware and software requirements and nearly all indicated that they could easily connect to and access the site using common and readily available software. However, one auditor indicated that the hardware requirements are not provided, and along with another technician, noted that links do not appear to be provided on the site for plug-ins, viewers, or browsers needed for access. Regarding the availability of information on how to use the site, most auditors indicated that tutorials or 'help' links are available as well as a 'contact us' link.

With respect to the navigation features, all of the technicians indicated that they were able to search the site by topic or keyword and could navigate to different portions of the site without returning to the home page. However, one auditor indicated that opening or loading the documents and information can be quite slow.

### **3.2.3 Obtaining Information**

The auditors indicated that, in most cases, the information they required is readily available on the site. Three of the auditors noted that they were able to download and save to their computer certain documents from the website, such as maintenance schedules and TSBs. However, one auditor indicated that technical bulletins are only available for printing. All of the auditors indicated that they were able to print documents and information from the website. One auditor indicated that without the search option, some of the information on the website could be difficult to find. This auditor also indicated that much of the information provided appeared to be based on existing information in hard copy manuals.

Two auditors noted that they had purchased training manuals, TSBs or other materials from the site, with one auditor noting that they have purchased many of the Audi CDs currently available. However, one auditor noted that they were not able to access the portion of the site where these materials are offered. Even though most of the technicians noted that information on training including lists and sources for information that is not Internet-capable, available factory tools, and ordering are available, one auditor indicated that they attempted to find information on the site that does not appear to be available. This auditor noted that they needed the programming code for an ABS module and ultimately had to obtain this from the dealer. This individual added that there were some differences between the information available on the website and the information that dealers have access to, although specific deficiencies or discrepancies were not cited.

### **3.2.4 OBD System Monitors and Repair**

With respect to OBD system monitors and OBD repair, nearly all Audi auditors noted that they could find both monitor descriptions and parameter (or strategy) descriptions on the site, a list of DTCs, and useful information for interpreting Mode 6 data. However, one technician indicated that although the monitor descriptions are very thorough, a description of all strategies could not be found either on the website or in any other Audi or VW publication. This

auditor noted that the website does include a brief explanation of major systems but that this cannot be considered an adequate strategy description. In addition, this auditor indicated that the DTCs are not available, and that although adequate testing procedures are provided, there is no way to repair the vehicle if those procedures do not work. This individual added that with the exception of a few major systems, the Audi website does not provide strategies on how the systems work. With respect to the Mode 6 data, the auditor indicated that they could only locate information for the more recent models, such as the A8.

### **3.2.5 Reprogramming and Reinitialization**

None of the auditors indicated that they had performed reprogramming and only one indicated that they had performed reinitialization services for Audi vehicles within the previous year. However, almost all of the Audi auditors indicated that they were able to find the necessary information on tools needed to perform reprogramming and reinitialization and the associated procedures. Only one auditor noted that they were unable to locate procedures for reprogramming, indicating that this required special authorization. All of the respondents indicated that software to communicate between the J2534 device and the PC is not available. The response was mixed regarding the availability of information on the selection of the proper calibration for the vehicle, and the vehicle calibration. Two auditors noted that the question was not applicable to their situation or needs.

### **3.2.6 Conclusion**

Overall, the results of the Audi audit indicate that the site is well designed and contains useful and readily available information for the technicians. The audit results suggest that some minor improvements could be helpful. Potential revisions to the site include: expanding the information provided on OBD systems with respect to strategy descriptions; improving the consistency of information on the service information website as compared to the information currently available to dealers; and ensuring the availability of a description of the hardware requirements along with links to any plug-ins, viewers or browsers that are needed for access.

## **3.3 BMW**

### **3.3.1 Introduction**

The 11 technicians that submitted a completed questionnaire for BMW rated most aspects of the service information site favorably. These auditors have a high degree of familiarity with BMW vehicles and the associated repair and service information, since almost all specialize in the repair of these vehicles. Even though most indicated that they use aftermarket sources to obtain electronic service information, almost all the technicians indicated that the BMW website is well designed and contains some very helpful data and information. All of the auditors have previous experience with the BMW service information website, with most indicating that they purchase short-term subscriptions to access the site occasionally. A few of the technicians purchase longer term subscriptions and use the site almost daily.

### **3.3.2 Access and Navigation**

All auditors acknowledged the existence of the short-, mid-, and long-term options for accessing BMW's service information, and all but one indicated that they were able to access the entire site. All of the technicians indicated that the website provides users with a description of the minimum computer hardware and software requirements and nearly all indicated that they could easily connect to and access the site using common and readily available software. Regarding the availability of information on how to use the site, the response was mixed. Some auditors indicated that tutorials or 'help' links were available, but others indicated that this type of information is not included on the website, with one technician noting that its absence is the one major weakness of the site. All auditors acknowledged the existence of the 'contact us' link, but none had attempted to use it.

With respect to the navigation features, virtually all of the technicians indicated that they were able to search the site by topic or keyword, although some indicated that pertinent topics could not always be found. Even though about half the technicians noted that they could not navigate to different portions of the site without returning to the home page, only one of the technicians indicated that this aspect was somewhat problematic. This technician suggested that BMW modify the site so that the user is able to navigate to different portions of the site without having to return to the main page or re-enter the VIN and Year/Model information. Some auditors noted that navigating the site could be difficult for a technician without BMW experience but overall, the technicians generally provided very high ratings regarding the site's ease of use, accessibility, and navigation features.

### **3.3.3 Obtaining Information**

The auditors indicated that, in most cases, the information they required was readily available on the site. Most auditors noted that they were able to download and save to their computer certain documents from the website, including manuals, TSBs, and various training documents. With the exception of one, all the auditors indicated that they were able to print documents and information from the website. Only two auditors noted that they had purchased training manuals, TSBs, or other materials from the site.

Even though almost all of the technicians noted that information on training including lists and sources for information that is not Internet-capable, available factory tools and ordering are available, some indicated that they attempted to find information on the site that did not appear to be available. For example, one technician indicated that in some cases, electrical schematic diagrams for older vehicles are not always available and that it is generally more difficult to navigate through the section of the site that includes information on the older vehicles. Other technicians noted that the parts bulletins were missing and should be readily available on the site.

### **3.3.4 OBD System Monitors and Repair**

With respect to OBD system monitors and OBD repair, nearly all BMW auditors noted that they could find both monitor descriptions and parameter (or strategy) descriptions on the site and that useful information is available for interpreting Mode 6 data. However, some technicians



indicated that the monitor descriptions do not include adequate and/or complete information and one indicated that the parameter descriptions could not be located. Although most auditors indicated that DTCs are listed, the response was mixed regarding whether the diagnostic and repair information is sufficient for all codes. Some noted that the codes are difficult to locate and too generic, suggesting that this information be expanded to include more trouble shooting ideas and vehicle-specific information. Some technicians also indicated that the relevant information would be difficult to interpret without previous BMW experience and that generally, the site should be designed with a greater focus on diagnosis.

### **3.3.5 Reprogramming and Reinitialization**

Virtually all of the auditors indicated that they were able to find the necessary information on tools needed to perform reprogramming and reinitialization and the associated procedures. Only one auditor noted that they were unable to locate procedures for reinitialization. Most auditors indicated that they had performed reprogramming and/or reinitialization on BMW vehicles within the previous year, with some adding that they use the Autologic scan tool for reprogramming and/or reinitialization. Most respondents indicated that software to communicate between the J2534 device and the PC, information on how to select the proper calibration for the vehicle, and the vehicle calibration are available. One indicated that this information is not available and others noted that the question does not apply to their situation or needs.

### **3.3.6 Cost**

A few auditors expressed some concern with respect to the high cost for a subscription to BMW's site, but most felt that despite the cost, the site was well organized and provided a wealth of valuable information. As noted above, most of the auditors use aftermarket sources such as ALLDATA as their primary source of electronic service and repair information. Some cited price as the primary reason for their selection, while others cited completeness of the information or familiarity with the product. Cost appears to be a deterrent for the use of longer-term subscriptions as almost all auditors purchase short-term subscriptions. One auditor noted that it would be very useful to have the option to purchase access in terms of minutes that could be used in the same manner as a prepaid calling card. This approach would still allow BMW to collect adequate fees while providing some additional flexibility to the technicians.

### **3.3.7 Conclusion**

Overall, the results of the BMW audit indicate that the site is relatively well designed and contains useful and readily available information for the technicians. The audit results suggest that some minor improvements could be helpful. Potential revisions to the site include: improving the information and navigation features on portions of the site that relate to older vehicles; expanding the level of detail for certain DTCs; and offering additional lower-cost subscription options to allow for greater flexibility for those technicians that use the site only occasionally.

## **3.4 Chrysler, Dodge, Eagle, Jeep, Plymouth**

### **3.4.1 Introduction**

The eleven technicians that submitted a completed questionnaire for Chrysler generally rated Chrysler's service information website favorably, but for certain aspects of the site, the response was somewhat mixed. None of these auditors indicated that their shop specialized in Chrysler vehicles, although one auditor noted that he had previously worked for a Chrysler dealer. Nearly all of the technicians indicated that they do not specialize in any particular type of vehicle, and cited aftermarket sources as their primary source of electronic service information. None of the auditors uses OEM websites as his or her primary source of service information and only three of the auditors indicated that they occasionally access an OEM website using a short-term subscription, while the others noted that they have never used OEM websites as a source of data or information.

### **3.4.2 Access and Navigation**

Most of the auditors acknowledged the existence of the short-, mid-, and long-term options for accessing Chrysler's service information, and nearly all indicated that they were ultimately able to connect easily and could access the entire site. All of the auditors indicated that the website provides users with a description of the minimum computer hardware and software needed to access data and information on the site and provides accessibility using commonly available software. However, one auditor indicated that in addition to Internet Explorer, Chrysler should also allow for site access using Firefox. Some auditors also indicated that links are provided for necessary plug-ins or browsers. The auditors generally provided high rankings for these aspects of the site.

With respect to the availability of information on how to use the site, the response was mixed. Seven of the auditors acknowledged the existence of tutorials or 'help' links and indicated that they are readily available and useful. However, one auditor noted that they could not locate help tools for navigation. Most of the auditors noted that the 'contact us' link is available. Two auditors had actually used the link and one indicated that he had received a timely response, while the other auditor indicated that the response they received after several days was not helpful.

Regarding the navigation features, nearly all of the auditors indicated that the site allows the user to search by various topics or keywords and noted that the site allows the user to navigate to different portions of the website without returning to the home page. Some auditors specifically noted that the site is well organized, but others noted that the layout of the site is not particularly intuitive and suggested that the navigation features of the site be improved. Some indicated that the site's layout and reliance on a PDF format can make locating and accessing information somewhat more difficult. One auditor specifically suggested that the user be able to view the information based on categories and sub-categories, and that it be organized further based on specific model components. Another recommended that the site be reorganized based on a more traditional menu system that is more intuitive to use. Some auditors suggested that training for the users of the website could be very helpful.

### **3.4.3 Obtaining Information**

In most cases, the auditors indicated that they were able to find the information they needed. Almost all technicians indicated that training information as well as factory tools and ordering information are available. Most indicated that they were able to save and store information to their computer from the website and all were able to print. Only two auditors indicated that they attempted to find information or documents, such as wiring and vacuum diagrams, that did not appear to be available. None of the auditors has purchased data, documents, or other materials from the site.

### **3.4.4 OBD System Monitors and Repair**

With respect to OBD system monitors and OBD repair, nearly all of the auditors indicated that they could find both monitor descriptions and parameter (or strategy) descriptions on the site, but some auditors noted that this information was difficult to find, with one noting that there should be a separate section for monitors. Only three auditors indicated that useful information is available for interpreting Mode 6 data, and some indicated that there is not enough information available (e.g., factory scan tool). Almost all auditors indicated that the DTCs are readily available and are generally sufficient to assist with diagnosis and/or repair. All auditors indicated that the descriptions of Chrysler's DTCs, TSBs, and trouble shooting information are readily available, and all but one indicated that they were able to determine the enable criteria for each monitor and that the sequence, execution frequency, and duration of the monitor are adequately explained. However, the response was mixed regarding the availability of the malfunction thresholds for the monitor.

### **3.4.5 Reprogramming and Reinitialization**

Only one auditor indicated that they had performed reprogramming or reinitialization services within the last year for Chrysler. Almost all of the auditors indicated that they were able to find the necessary information on tools needed to perform reprogramming. However, one auditor indicated that they had been in contact with some technicians that have had difficulty locating reprogramming information, and added that Chrysler should improve its communication regarding the location of this information. Approximately half of the auditors indicated that the vehicle calibration and the information to select the proper calibration are available on the site. Some also noted that the software to communicate between the J2534 device and the PC is also available. The questions relating to reinitialization did not apply for most auditors. However, one auditor indicated that information could be located on reinitialization and the associated procedures, and two noted that Chrysler's website provides information on alternate methods.

### **3.4.6 Conclusion**

Overall, the auditors rated the Chrysler site somewhat favorably and the audit results indicate that the information on the website is very useful. Some found that the information on the site was difficult to find, due to its organization and reliance on a PDF format. Some potential improvements include: reorganizing the site so that it is more intuitive to use; switching to a more traditional menu system; and providing additional training materials, tools, or other information that would help users locate the information they are seeking.

## **3.5 Ford, Lincoln, Mercury**

### **3.5.1 Introduction**

The nine technicians that submitted a completed questionnaire for Ford rated most aspects of the service information site favorably. Three of these auditors indicated that their shop specializes in vehicles from domestic OEMs and all other auditors indicated that their shop had no particular specialty. Nearly all of the auditors noted that they use aftermarket sources as their primary source of electronic service information. None of the auditors indicated OEM websites are a primary source of information, but eight of the technicians indicated that they access OEM websites as a source of information occasionally. Most of these technicians use short-term subscriptions to access the service information website on an as-needed basis.

### **3.5.2 Access and Navigation**

All of the auditors acknowledged the existence of the short-, mid-, and long-term options for accessing Ford's service information, and most could access the entire site. One auditor indicated that reprogramming information appears to be under a separate fee structure that requires additional payment. All of the technicians indicated that the website provides users with a description of the minimum computer hardware and software requirements and nearly all indicated that they could easily connect to the site using common and readily available software. However, one auditor noted that users should be able to access the information on the site using Firefox as a browser, and another noted that they were not able to access the site using a dial-up connection. Regarding the availability of information on how to use the site, most auditors indicated that tutorials or 'help' links were available as well as a 'contact us' link. Three auditors indicated that they used the 'contact us' link and received a timely response. However, one noted that the response they received was inadequate to solve their problem.

With respect to the navigation features, almost all of the technicians indicated that they were able to search the site by topic or keyword and could navigate to different portions of the site without returning to the home page. However, one auditor noted that Ford's website does not include a keyword search option. Another specifically recommended that the Ford website incorporate an improved general search engine (under 'Search Technical Resources'), a field lookup for special service messages (SSM) since certain SSMs could not be located under the DTC search, and a search field in 'Workshop Manual.' This auditor noted that navigation of the site is not always intuitive and that in some cases, it is unclear whether the information should be sought under 'Service Publications' or 'Diagnostics.' However, another noted that even though the navigation features are somewhat difficult to decipher initially, it works well once the user is familiar with the layout of the site.

### **3.5.3 Obtaining Information**

The auditors indicated that, in most cases, the information they were seeking was available on the site and all the auditors indicated that they were able to print documents and information as needed. Seven of the auditors noted that they were able to download and save to their computer certain documents from the website, such as reprogramming guidance and calibration listings and instructions. Only one auditor noted that they had purchased materials

from the site, which included a subscription for wiring diagrams. All of the technicians noted that information on training could be located on the site, and almost all noted that information on available factory tools and ordering as well as lists and sources for information that is not Internet-capable are also available. Three auditors indicated that they attempted to find information on the site that did not appear to be available, such as how to purchase a scanner that can reprogram and links to certain labeling information.

### **3.5.4 OBD System Monitors and Repair**

With respect to OBD system monitors and OBD repair, all of the Ford auditors noted that they could find both monitor descriptions and parameter (or strategy) descriptions on the site, a list of DTCs, and useful information for interpreting Mode 6 data. However, one technician indicated that the Mode 6 data on the website should include more extensive, in-depth information. Regarding all other aspects of OBD system monitors and repair, the auditors provided positive responses, noting that they were able to find relevant documents including descriptions of DTCs, TSBs, trouble shooting guides, and other information.

### **3.5.5 Reprogramming and Reinitialization**

All of the Ford auditors indicated that they were able to find the necessary information on tools needed to perform reprogramming and reinitialization (if applicable) and the associated procedures. One auditor noted that even though they could locate the information on reprogramming, they could not locate guidance on the necessary hardware and information on purchasing this hardware. A few auditors indicated that they had performed reprogramming and/or reinitialization services for Ford vehicles within the previous year. Four of the respondents indicated that software to communicate between the J2534 device and the PC is available, but one indicated that the Ford website should include information on where the J2534 device can be purchased. All auditors indicated that information on the selection of the proper calibration for the vehicle and the vehicle calibration is available, with one auditor noting that the information on the selection of the proper calibration is difficult to navigate.

### **3.5.6 Conclusion**

Overall, the results of the Ford audit indicate that the site is generally well designed and contains useful and readily available information for the technicians. The audit results suggest that some minor improvements could be helpful. Potential revisions to the site could include: improving the navigation features of the site so that locating information is more intuitive; expanding and improving the search options (e.g., adding a keyword search and a field lookup for SSMs); and ensuring that technicians are able to access the site regardless of the type of connection used.

## **3.6 General Motors**

### **3.6.1 Introduction**

The eleven technicians that submitted a completed questionnaire for GM rated most aspects of the service information site favorably. Two of these auditors indicated that their shop

specializes in vehicles from domestic OEMs, while all of the others indicated that their shop had no particular specialty. Nearly all of the auditors noted that they use aftermarket sources as their primary source of electronic service information, with a couple auditors indicating that OEM websites are their primary source of electronic service information. The most common reasons for selecting aftermarket sources were completeness for the brands serviced and the common organization of information for all manufacturers. Of the seven technicians that use OEM websites, most access the sites occasionally and typically rely on short-term subscriptions.

### **3.6.2 Access and Navigation**

Nearly all of the auditors acknowledged the existence of the short-, mid-, and long-term options for accessing GM's service information, and most could access the entire site. One auditor indicated that he could not access other GM divisions, such as Saab. Almost all the technicians indicated that the website provides users with a description of the minimum computer hardware and software requirements and indicated that they could easily connect to the site using common and readily available software. One auditor noted that the messages on enabling cookies and disabling part of the security patch to view the service information site could potentially cause some confusion with those that are not technically knowledgeable.

Regarding the availability of information on how to use the site, most auditors indicated that tutorials or 'help' links are available, as well as a 'contact us' link. One auditor observed that although there is a link to training resources, no specific information is provided on training activities, such as classes or seminars. Two auditors indicated that they used the 'contact us' link and received a timely and adequate response. However, one auditor indicated that his experience with using the link has been mixed and that even though an automated response is immediate, a more detailed response containing the desired information is not always received.

With respect to the navigation features, almost all of the technicians indicated that they were able to search the site by topic or keyword. However, one auditor noted that the search option is limited to a specific model that has been designated and the user cannot search across different platforms once a vehicle is selected. Most also noted that the user can navigate to different portions of the site without returning to the home page. One auditor added, however, that this determination varies depending on the definition of "home page" and that the user must return to the main page in order to move between different areas, such as navigating from Mode 6 information to vehicle-specific service information.

### **3.6.3 Obtaining Information**

Most auditors indicated that the information they were seeking was available on the site in most cases and all of the auditors indicated that they were able to print documents and information from the website as needed. Almost all of the auditors noted that they were able to download and save to their computer certain documents from the website, such as hub bearing diagnostics and schematics. One observed, however, that the service information graphics are not easily downloaded. None of the auditors had purchased materials from the site.

All but one of the technicians noted that information on training can be located on the site. However, the response was mixed regarding the existence of information on available

factory tools and ordering as well as lists and sources for information that are not Internet-capable. Some auditors noted that information on ordering tools is not available. One auditor indicated that there is very little information on the website for model year 1996 vehicles and earlier. This auditor added that for these earlier models, the only information or documents that could be located are TSBs and recalls. Another noted that information on Mode 6 is lacking, and acknowledged that the user would need to supplement the information obtained from the gmtechinfo.com site with additional data on the service.gm.com site. One auditor indicated that GM restricts access to certain information and features to non-dealer shops.

### **3.6.4 OBD System Monitors and Repair**

With respect to OBD system monitors and OBD repair, nearly all GM auditors noted that they could find both monitor descriptions and parameter (or strategy) descriptions on the site, and a list of DTCs. The response was mixed regarding whether the Mode 6 data were sufficient. Some auditors indicated that this information was lacking and should be more thorough. One auditor noted that GM's Mode 6 scaling is very confusing and ultimately unusable, especially the catalytic converter monitor information. Another auditor mentioned that the information on Mode 6 is inadequate, but also noted that GM's PIDs are very thorough and are usually sufficient to perform a repair without using the Mode 6 data.

Regarding other aspects of OBD system monitors and repair, most auditors generally provided a positive response, noting that they were able to find relevant documents including descriptions of DTCs, TSBs, trouble shooting guides, and other information. However, a small number of auditors raised some concerns regarding the completeness and adequacy of the data, including:

- Insufficient diagnostic and repair information for certain vehicles;
- TSBs that are available to the dealer but not included on the site;
- Inaccurate OBD monitor and DTC descriptions that would not necessarily be apparent to the novice user; and
- Software field fixes (e.g., changes to software behavior) that are not included on the service information website, but impact the accuracy of information such as the enable criteria and the malfunction thresholds.

In the context of these issues, one auditor provided a detailed discussion indicating specific examples and areas for improvement.

### **3.6.5 Reprogramming and Reinitialization**

Almost all of the GM auditors indicated that they were able to find the necessary information on tools needed to perform reprogramming and reinitialization (if applicable) and the associated procedures. One auditor noted that he could locate the information for most models but not all. A few auditors indicated that they had performed reprogramming and/or reinitialization services for GM vehicles within the previous year. Only three of the respondents

indicated that software to communicate between the J2534 device and the PC is available. One auditor indicated that instead of purchasing a disc in order to reprogram with J2534 on GM vehicles, the technicians should be able to download this from the website. About half of the auditors indicated that information on the selection of the proper calibration for the vehicle and the vehicle calibration is available. One auditor noted that in some cases, GM provides two separate solutions as two separate calibrations, which may not allow for the resolution of both issues.

### **3.6.6 Conclusion**

Overall, the results of the GM audit indicate that the site contains some useful information for the technicians. The audit results suggest that some minor improvements could be helpful. Potential revisions to the site include: expanding the information on training seminars or courses; ensuring the availability of information for ordering tools; incorporating current information on software field fixes that may impact the accuracy of the enable criteria, malfunction thresholds, or other data; offering the technicians the option to download the software needed to reprogram with J2534; and expanding the available information for vehicles manufactured prior to model year 1997.

## **3.7 Honda**

### **3.7.1 Introduction**

The six technicians that submitted a completed questionnaire for Honda rated nearly all aspects of the service information site favorably. Almost all of the auditors indicated that their shop did not specialize in any particular type of vehicle. All the auditors noted that they use aftermarket sources as their primary source of electronic service information and use OEM websites only occasionally through short-term subscriptions.

### **3.7.2 Access and Navigation**

All of the auditors acknowledged the existence of the short-, mid-, and long-term options for accessing Honda's service information, and could access the entire site. One auditor observed, however, that accessibility to reprogramming procedures appeared to require the purchase of specific software. All the technicians indicated that the website provides users with a description of the minimum computer hardware and software requirements and indicated that they could easily connect to the site using common and readily available software. Regarding the availability of information on how to use the site, most auditors indicated that tutorials or 'help' links were available as well as a 'contact us' link.

With respect to the navigation features, all of the technicians indicated that they were able to search the site by topic or keyword. The technicians also noted that the user can navigate to different portions of the site without returning to the home page. All of the auditors provided relatively high rankings with regard to the site's access and navigation features.



### **3.7.3 Obtaining Information**

Most auditors indicated that the information they were seeking is available on the site in most cases, and all of the auditors indicated that they were able to print documents and information from the website as needed. Almost all of the auditors noted that they were able to download and save to their computer certain documents from the website, such as wiring diagrams and trouble shooting information, with one auditor indicating that the user could save any documents in PDF form to their computer. However, one auditor observed that the terms and conditions of use prohibits the downloading or copying of information or documents on the website. None of the auditors had purchased materials from the site.

All but one of the technicians noted that information on training can be located on the site. All of the auditors acknowledged the existence of information on available factory tools and ordering as well as lists and sources for information that are not Internet-capable. All of the auditors indicated that they were able to locate the information they needed on the site.

### **3.7.4 OBD System Monitors and Repair**

With respect to OBD system monitors and OBD repair, all of the Honda auditors noted that they could find both monitor descriptions and parameter (or strategy) descriptions on the site, and a list of DTCs. Most of the auditors also noted that useful data on Mode 6 are available. Regarding other aspects of OBD system monitors and repair, the auditors generally provided a positive response, noting that they were able to find relevant documents including descriptions of DTCs, TSBs, trouble shooting guides, and other information. However, one auditor noted that the provision of additional raw data and technical information on system operation would allow the technicians to develop a testing methodology in real time and would help the technicians understand the strategy of a system and isolate faults and repair with greater accuracy and speed.

### **3.7.5 Reprogramming and Reinitialization**

None of the auditors indicated that they had performed reprogramming and/or reinitialization services for Honda vehicles within the previous year. However, all of the Honda auditors indicated that they were able to find the necessary information on tools needed to perform reprogramming and reinitialization, and most indicated that they could find the associated procedures. Two auditors noted that they could not locate the procedures through any links or the search mechanism, but one of these auditors noted that it appeared that the procedures can be obtained by purchasing the programming software.

Most of the respondents indicated that software to communicate between the J2534 device and the PC is available, but only two of the auditors indicated that information on the selection of the proper calibration for the vehicle and the vehicle calibration is available. With respect to alternate methods for reinitialization, all of the auditors indicated that they could locate this information, but none has any experience using the alternate methods. Other than one general comment that Honda should address issues associated with the immobilizer and/or security system access, the auditors' feedback on the reprogramming and reinitialization aspects of the website were generally positive.

### **3.7.6 Conclusion**

Overall, the results of the Honda audit indicate that the site is very well organized, can be easily navigated, and contains some very useful information for the technicians. There were no significant issues or areas for improvement based on the audit results.

## **3.8 Hyundai**

### **3.8.1 Introduction**

The four technicians that submitted a completed questionnaire for Hyundai rated nearly all aspects of the service information site favorably. All of the auditors indicated that their shop did not specialize in any particular type of vehicle, and that they use aftermarket sources as their primary source of electronic service information. These auditors use OEM websites occasionally through short-term subscriptions.

### **3.8.2 Access and Navigation**

Regarding access to Hyundai's service information site, the auditors noted that access is free to all technicians. Three of the auditors indicated that they could access the entire site, with one auditor observing that access to reprogramming procedures appeared to be limited unless a dealer password was used. All of the technicians indicated that the website provides users with a description of the minimum computer hardware and software requirements and indicated that they could connect to the site using common and readily available software. Regarding the availability of information on how to use the site, most auditors indicated that tutorials or 'help' links were available as well as a 'contact us' link.

With respect to the navigation features, all of the technicians indicated that they were able to search the site by topic or keyword, and noted that the user could navigate to different portions of the site without returning to the home page (although one auditor noted that the home page button was difficult to see). All of the auditors provided very high rankings with regard to the site's access and navigation features.

### **3.8.3 Obtaining Information**

Most auditors indicated that the information they were seeking was available on the site in most cases and all auditors indicated that they were able to print documents and information from the website as needed. Almost all of the auditors noted that they were able to download and save to their computer certain documents from the website, such as flow charts for trouble codes. None of the auditors had purchased materials from the site.

All of the technicians noted that information on training could be located on the site, and acknowledged the existence of information on available factory tools and ordering as well as lists and sources for information that are not Internet-capable. Two of the auditors indicated that they were unable to locate certain information on the site related to J2534 reprogramming. Other than this, no other issues or deficiencies with regard to the information on the website were raised.

### **3.8.4 OBD System Monitors and Repair**

With respect to OBD system monitors and OBD repair, all of the Hyundai auditors noted that they could find both monitor descriptions and parameter (or strategy) descriptions on the site, and a list of DTCs. However, one auditor noted that specific threshold data appeared to be missing from the monitor descriptions. Most of the auditors also noted that useful data on Mode 6 are available. Regarding other aspects of OBD system monitors and repair, the auditors generally provided a positive response, noting that they were able to find relevant documents including descriptions of DTCs, TSBs, trouble shooting guides, and other information. With respect to the enable criteria, one auditor noted that enabling conditions were only noted under the individual code repair strategies. This auditor also observed that useful information on OBD can be found through both the search mechanism and the OBD II tab under 'Service Information.'

### **3.8.5 Reprogramming and Reinitialization**

All of the auditors indicated that they were able to find the necessary information on tools needed to perform reprogramming and the associated procedures. None of the auditors indicated that they had performed reprogramming and/or reinitialization services for Hyundai vehicles within the previous year. One auditor indicated that information on the necessary tools is available but noted that the associated procedures are not available and that reinitialization can only be completed with a dealer scan tool. Most of the respondents indicated that software to communicate between the J2534 device and the PC is not available, but three of the auditors indicated that information on the selection of the proper calibration for the vehicle and the vehicle calibration are available.

### **3.8.6 Conclusion**

Overall, the results of the Hyundai audit indicate that the site is very well organized, can be easily navigated, and contains some very useful information for the technicians. Most of the technicians expressed appreciation for the amount and quality of the data and information that was available to the public free of charge. There were only a few minor areas for improvement based on the audit results, including adding specific threshold data to the monitor descriptions and incorporating additional data and information on J2534 reprogramming.

## **3.9 Infiniti**

### **3.9.1 Introduction**

The three technicians that submitted a completed questionnaire for Infiniti rated many aspects of the service information site favorably, but provided some suggestions for improvement. One auditor indicated that their shop specializes in vehicles manufactured by Asian OEMs, while two of the auditors indicated that their shop did not specialize in any particular type of vehicle. All the auditors noted that they use aftermarket sources as their primary source of electronic service information, but the auditors' experience with OEM websites varied. One auditor indicated that they use OEM websites on a regular basis through an annual subscription, and another indicated that they only use OEM websites occasionally through short-

term subscriptions. One auditor indicated that they never use OEM websites as a source of service information.

### **3.9.2 Access and Navigation**

All of the auditors acknowledged the existence of the short-, mid-, and long-term options for accessing Infiniti's service information. One auditor indicated that they could not access certain data and information on the site, such as reprogramming, electronic control unit (ECU) initialization, and some of the TSBs. All of the technicians indicated that the website provides users with a description of the minimum computer hardware and software requirements and indicated that they could easily connect to the site using common and readily available software. Regarding the availability of information on how to use the site, most auditors indicated that tutorials or 'help' links are available as well as a 'contact us' link, although one auditor indicated that these features are not always useful. This auditor noted that they did not receive a timely response from a question they submitted to Infiniti through the 'contact us' link.

With respect to the navigation features, two of the technicians indicated that they were able to search the site by topic or keyword. One technician noted that although the site allows the user to search by year, make, and model, all attempts at using the keyword search indicated that no documents could be found. This auditor indicated that they had used a variety of terms, none of which resulted in the identification of any documents. Two of the technicians also noted that the user could navigate to different portions of the site without returning to the home page. However, the auditors all noted that Infiniti could improve the navigation features of its website to allow the user to easily locate specific information or documents. One suggested that Infiniti provide additional links to data and documents that are commonly sought, such as TSBs and recalls, and added that these data should be searchable by year and model.

### **3.9.3 Obtaining Information**

The auditors indicated that they were able to print documents and information from the website as needed. Almost all of the auditors noted that they were able to download and save to their computer certain documents from the website, such as service manuals. None of the auditors had purchased materials from the site. Two of the technicians noted that information on training could be located on the site as well as contact information for the documents that are not Internet-capable. Only one of the auditors acknowledged the existence of information on available factory tools and ordering.

Even though all of the auditors indicated that they were able to locate specific documents or information they were seeking, some noted that improvements to both search mechanisms and document quality would be helpful. Two of the auditors indicated that improvements to the layout and navigation of the site could help the user find the necessary information. One auditor noted that it was somewhat difficult to locate the necessary PDF documents on the site through the available search mechanisms. This auditor also suggested that the title and placement of the 'Search for Publications' link on the site be modified, since the current placement (i.e., below the purchase publications drop-down menu) and wording implies that this is an additional link to purchase paper or CD manuals. Another auditor indicated that although the information and data within the documents are very useful, the quality of the documents could be improved,

particularly the scanned images in earlier manuals and the formatting within more recent manuals (e.g., overlap of hyperlink boxes with the manual text). The auditors provided other specific suggestions for improving the site layout and search mechanisms so that documents and data could be easily found.

### **3.9.4 OBD System Monitors and Repair**

With respect to OBD system monitors and OBD repair, two of the Infiniti auditors noted that they could find monitor descriptions, parameter (or strategy) descriptions, and useful data on Mode 6. All of the auditors indicated that they were able to locate the list of DTCs, although two auditors indicated that the list and/or the associated diagnostic and repair information is insufficient. One auditor also indicated that the monitor descriptions lack sufficient information but did not provide additional details on specific deficiencies. Regarding other aspects of OBD system monitors and repair, the auditors generally provided a positive response, noting that they were able to find relevant documents including descriptions of DTCs, TSBs, trouble shooting guides, and other information. However, one auditor indicated that they could not locate descriptions of the DTCs and another indicated that they could not find the TSBs. The auditors' responses indicate that although some useful OBD information is available on the site, it may be difficult to locate in many instances.

### **3.9.5 Reprogramming and Reinitialization**

None of the auditors indicated that they had performed reprogramming and/or reinitialization services for Infiniti vehicles within the previous year, and two auditors noted that reinitialization is not required. One of the auditors noted that the necessary information on tools needed to perform reprogramming was difficult to find since it was scattered throughout the site, and another indicated that the associated procedures could not be found since they are included with the purchase of the reprogramming data file.

Two of the auditors indicated that software to communicate between the J2534 device and the PC is available, and one of these auditors observed that it is only available starting with model year 2004 vehicles. One of the auditors indicated that information on the selection of the proper calibration for the vehicle could not be found, while another noted that the vehicle calibration is only available through a scan tool.

### **3.9.6 Conclusion**

Overall, the results of the Infiniti audit indicate that although the site contains some very useful information, it is often difficult to locate. The auditors' responses and comments suggest that an improvement of the organization and layout, navigation features, and search mechanisms on the site would help the user locate and understand the information and/or data they need. In addition, an improvement to the quality of some of the PDF documents would help ensure that the information found is user-friendly.

## **3.10 Isuzu**

### **3.10.1 Introduction**

The five technicians that submitted a completed questionnaire for Isuzu rated most aspects of the service information site favorably. One auditor indicated that their shop specializes in vehicles manufactured by Asian OEMs, another indicated a specialty with domestic vehicles, and all others indicated that their shop did not specialize in any particular type of vehicle. All of the auditors noted that they use aftermarket sources as their primary source of electronic service information, but some indicated that they also use OEM websites. Two of the auditors indicated that they use OEM websites on a regular basis through an annual subscription, while others indicated that they only use OEM websites occasionally using short-term subscriptions.

### **3.10.2 Access and Navigation**

All of the auditors acknowledged the existence of the short-, mid-, and long-term options for accessing Isuzu's service information and indicated that they could access the entire site. All of the technicians indicated that the website provides users with a description of the minimum computer hardware and software requirements and most indicated that they could easily connect to the site using common and readily available software. Regarding the availability of information on how to use the site, most auditors indicated that tutorials or 'help' links are available as well as a 'contact us' link. Two auditors indicated that these links were helpful, and one indicated that they received a timely response to a question submitted through the 'contact us' link.

With respect to the navigation features, all of the technicians indicated that they were able to search the site by topic or keyword. All but one of the technicians also noted that the user could navigate to different portions of the site without returning to the home page. Overall, the technicians' comments indicate that the site's navigation features were well designed and user-friendly.

### **3.10.3 Obtaining Information**

The auditors indicated that they were able to print documents and information from the website as needed and were able to download and save to their computer certain documents from the website, such as vehicle reference guides. However, one auditor noted that some documents, such as service manuals, could not be downloaded or saved. None of the auditors had purchased materials from the site. Most of the technicians noted that information on training, available factory tools and ordering, and contact information for the documents that are not Internet-capable could be located.

### **3.10.4 OBD System Monitors and Repair**

With respect to OBD system monitors and OBD repair, most of the Isuzu auditors noted that they could find monitor descriptions, parameter (or strategy) descriptions, and useful data on Mode 6. All auditors indicated that they were able to locate the list of DTCs, although one auditor indicated that the associated diagnostic and repair information is insufficient. Regarding

other aspects of OBD system monitors and repair, the auditors generally provided a positive response, noting that they were able to find relevant documents including descriptions of DTCs, TSBs, trouble shooting guides, and other information. However, some of the auditors identified specific information that they were unable to locate, such as descriptions of the DTCs and TSBs. One auditor indicated that monitor descriptions, enable criteria, and Mode 6 information were only available for later model year vehicles. Another indicated that the information on enable criteria and the monitors' sequence, execution frequency and duration was vague on the monitor information page but clearly stated within the information for the specific code. The auditors' responses indicate that although some useful OBD information is available on the site, it may be difficult to locate in some instances.

### **3.10.5 Reprogramming and Reinitialization**

None of the auditors indicated that they had performed reprogramming and/or reinitialization services for Isuzu vehicles within the previous year, and two auditors indicated that reinitialization is not required. Most of the Isuzu auditors noted that they could find the necessary information on tools and the associated procedures needed to perform reprogramming and reinitialization. However, one auditor noted that the information is scattered and difficult to locate. Only two of the respondents indicated that software to communicate between the J2534 device and the PC is available. Three of the auditors indicated that they could locate information on the selection of the proper calibration for the vehicle, and all the auditors noted that the vehicle calibration is available on the site as well.

### **3.10.6 Conclusion**

Overall, the results of the Isuzu audit indicate that the site contains some very useful information. The auditors' responses and comments suggest that some improvements to the information on OBD could be helpful, such as expanding monitor descriptions, enable criteria, and Mode 6 data for earlier model year vehicles. In addition, expanding the OBD information on the monitor information page and ensuring that the desired information on OBD is relatively easy to locate could also be helpful improvements.

## **3.11 Jaguar**

### **3.11.1 Introduction**

The five technicians that submitted a completed questionnaire for Jaguar generally rated the service information website favorably, but for certain aspects of the site, the response was somewhat mixed. Three of the auditors indicated that their shop services vehicles manufactured by British or European OEMs, and the others indicated no particular specialty. Most of the technicians cited aftermarket sources as their primary source of electronic service information and only occasionally access OEM websites, but one auditor indicated that OEM websites are their primary source of information. These auditors generally use short-term subscriptions to access the service information websites.

### **3.11.2 Access and Navigation**

Some of the auditors acknowledged the existence of the short-, mid-, and long-term options for accessing Jaguar's service information and most indicated that they could access the entire site. Most of the auditors also indicated that the website provides users with a description of the minimum computer hardware and software needed to access data and information on the site and provides accessibility using commonly available software as well as links for necessary plug-ins or browsers. With respect to the availability of information on how to use the site, most of the auditors acknowledged the existence of a 'contact us' link as well as tutorials or 'help' links and some indicated that these were readily available and useful (only one had used the 'contact us' link and received a timely response).

Regarding the navigation features, most of the auditors indicated that the site allows the user to search by various topics or keywords, but only two of the auditors noted that the user is able to navigate to different portions of the website without returning to the home page. One auditor observed that since the documents and information are in PDF files, the user must open each one individually in separate windows. Another auditor noted generally that although the navigation features were logical, the site seemed to be slow and too many steps were involved in locating and accessing the desired information or documents.

### **3.11.3 Obtaining Information**

Most of the auditors indicated that they were able to find the information they were seeking. Some of the auditors indicated that training information and factory tools and ordering information are available, and only one indicated that contact or ordering information are identified for training resources that are not Internet-capable. One auditor specifically noted that certain information is not available for model year 2004 vehicles and added that the diagnostic and emissions information could be reorganized in a more intuitive manner that follows the actual diagnostic process, which would allow the user to more easily locate the necessary information. Another auditor noted that he was unable to locate certain information on Mode 6 test results criteria and control unit replacements. Regarding the ability to download data or information, three of the auditors indicated that they were able to save information to their computer from the site. However, one of these auditors observed that unlike some of the OBD information, diagnostic information, and service bulletins, the service manuals could not be downloaded.

### **3.11.4 OBD System Monitors and Repair**

With respect to OBD system monitors, most of the auditors indicated that the site includes descriptions of the OBD monitors and their operation, and the parameters or strategies being monitored. In addition, most auditors observed that other OBD information and data, including a list of DTCs sufficient to assist with diagnosis and repair; enable criteria; explanations of the sequence, execution frequency, and duration of the monitor; and malfunction thresholds are included on the site. However, some minor deficiencies were noted. One of the auditors indicated that the monitor descriptions lack sufficient information, and another noted that although the OBD information is sufficient, it would have been helpful to have access to more comprehensive information.



For OBD repair issues, only two of the auditors indicated that the information necessary to interpret Mode 6 data is available, and these technicians noted that the information is not useful. In this context, one auditor observed that while there is information available that would help interpret the results of Mode 6 testing, there are no minimum or maximum accepted values. In addition, there is adequate information on the fault failures of continuous and non-continuous monitors, but no pass/fail criteria for the monitor tests reported in Mode 6. One auditor noted that Jaguar provides good information on system operation and code-specific definitions of enabling and fault threshold data. This auditor observed that overall, the information seems adequate and well organized, and would help facilitate OBD repairs. Most auditors noted that the website provides sufficient diagnostic and repair information for DTCs encountered, adequate descriptions of all manufacturer-specific DTCs, and access to TSBs and trouble shooting guides and information.

### **3.11.5 Reprogramming and Reinitialization**

None of the auditors indicated that they had performed reprogramming services for Jaguar within the past year. In addition, none of the auditors indicated that Jaguar requires initialization or reinitialization when the ECU is replaced. Most of the auditors indicated that they were able to locate information on the tools and associated procedures needed to perform reprogramming. However, one auditor indicated that they were unable to find information on purchasing the tools they were interested in obtaining, and added that the information currently on the site is only for dealers. Only two indicated that software was available to communicate between the J2534 device and the PC. One auditor observed that reprogramming can only be performed if the technician purchases additional tools or procedures (e.g., J2534 subscription).

### **3.11.6 Cost**

Most of the auditors use aftermarket sources or sources other than OEM websites to obtain their service information. The one auditor that identified OEM websites as their primary source of information also indicated that they spent less than \$500 per year on their primary source, whereas the technicians identifying other sources spent over \$1,000 annually. One auditor noted that given current subscription prices for Jaguar and other manufacturers, the overall cost to the shop of subscribing to multiple OEM websites would exceed the amount currently allocated to sources such as ALLDATA, which provide information on vehicles from multiple OEMs. This auditor added that if the cost of each OEM website would drop to between \$500 and \$1,000 per year, technicians would be more likely to rely on OEM websites as their primary source for obtaining service information and data. In addition, this auditor observed that a subscription to an OEM website typically allows the user to access the site from one computer at a time, while other sources (e.g., ALLDATA) allow multiple computers to access the data and information simultaneously, which is generally much more cost-effective and easier from a logistical standpoint.

### **3.11.7 Conclusion**

Overall, the auditors for Jaguar generally felt that the site contains some useful information and is relatively well designed. However, the auditors' responses indicate that some improvements could be helpful. Potential improvements to the site include: modifying the

organizational structure of the site so that specific information (particularly information on diagnostics and emissions) can be quickly and easily located; ensuring the completeness of data and information for all model years, particularly model year 2004; expanding the available information on interpreting Mode 6 data, such as pass/fail criteria for the monitor tests; and ensuring the availability of purchasing information for reprogramming tools.

## **3.12 Kia**

### **3.12.1 Introduction**

The two technicians that submitted a completed questionnaire for Kia generally rated the service information website favorably, but for certain aspects of the site, the response was somewhat mixed. One of the auditors indicated that their shop services vehicles manufactured by both domestic and Asian OEMs, and the other indicated no particular specialty. Both of these technicians cited aftermarket sources as their primary source of electronic service information, but occasionally access an OEM website using a short-term subscription.

### **3.12.2 Access and Navigation**

Both auditors acknowledged the existence of the short-, mid-, and long-term options for accessing Kia's service information and indicated that they could generally access the entire site (although one auditor indicated that they could not access the purchasing information on the site). The auditors also indicated that the website provides users with a description of the minimum computer hardware and software needed to access data and information on the site and provides accessibility using commonly available software. One auditor indicated that links are provided for necessary plug-ins or browsers. Regarding accessibility in general, both auditors provided relatively high rankings for the site. With respect to the availability of information on how to use the site, the auditors acknowledged the existence of a 'contact us' link as well as tutorials or 'help' links and indicated that these are readily available and useful.

Regarding the navigation features, both of the auditors indicated that the site allows the user to search by various topics or keywords and one auditor noted that the site allows the user to navigate to different portions of the website without returning to the home page. One of the auditors indicated that in accessing and navigating the site, it appears that the content of Kia's service information site appears to differ from their dealer site, but did not provide specific discrepancies. The auditors noted that the site is well organized and easy to navigate.

### **3.12.3 Obtaining Information**

Both auditors indicated that they were able to find and print the information they needed and that training information as well as factory tools and ordering information are available. One auditor observed that having the information in a web-based format (as opposed to PDF files) provides for easier access, but that downloading and saving the data is generally not as easy. This auditor added that in cases where the information could not be downloaded, it could be easily printed. One of the auditors noted generally that although the site is easy to navigate, some of the data and information regarding monitors and purchasing appears to be incomplete.

### **3.12.4 OBD System Monitors and Repair**

With respect to OBD systems, both auditors indicated that the monitor and parameter (or strategy) descriptions are insufficient, with one auditor indicating that this information is simply not available on the site. The other auditor noted that the monitor descriptions are very vague and appear to lack information on blocking conditions and the parameters being monitored. This auditor noted specifically that the information on the sequence, execution frequency, and duration of the monitor is unclear for some of the monitors. The auditor added that the monitoring strategy is not described in detail and that there is no specific technical information to aid in diagnosis. However, both auditors acknowledged that the DTCs are included on the site, with one noting specifically that this information was detailed and very useful.

Regarding OBD repair, both of the auditors indicated that no useful information is available for interpreting Mode 6 data. One auditor acknowledged the existence of the Mode 6 link, but noted that the information provided was inadequate. However, the auditors indicated that sufficient diagnostic and repair information was provided for all DTCs. Both auditors also acknowledged the existence of TSBs and trouble shooting information for OBD repair on the site.

### **3.12.5 Reprogramming and Reinitialization**

Neither of the auditors indicated that they had performed reprogramming or reinitialization for Kia within the past year. Although both auditors indicated that they were able to find the necessary information on tools needed to perform reprogramming, only one indicated that they could locate the associated procedures, information to select the proper calibration, the vehicle calibration, and the software to communicate between the J2534 device and the PC. One auditor noted generally that although they could find information on how to purchase a specific tool, they were unable to locate information on how to use the tool.

### **3.12.6 Conclusion**

Overall, the auditors indicated that Kia's service information website is relatively well designed and easy to use and that the available information is useful. The observations provided by these two auditors indicate that some improvements to the site could be useful. Some potential improvements include: providing additional clarification on existing OBD systems and repair information and data; expanding the OBD monitor descriptions to include blocking conditions and the parameters being monitored; incorporating additional information for interpreting Mode 6 data; providing guidance on how to use reprogramming and/or reinitialization tools; and improving the consistency between the information on the service information website and the information available to dealers.

## **3.13 Land Rover**

### **3.13.1 Introduction**

The four technicians that submitted a completed questionnaire for Land Rover generally rated the service information website favorably, but for certain aspects of the site, the response

was somewhat mixed. With regard to the auditors' experience, one of the auditors indicated that their shop services vehicles manufactured by British OEMs, another indicated that they service Asian OEMs, while the others indicated no particular specialty. Most of the technicians indicated that aftermarket sources serve as their primary source of electronic service information and that they only occasionally access OEM websites, if at all. However, one of the auditors indicated that they use both aftermarket sources as well as OEM websites, which they access on a regular basis through an annual subscription.

### **3.13.2 Access and Navigation**

Two of the auditors acknowledged the existence of the short-, mid-, and long-term options for accessing Land Rover's service information and indicated that they could access the entire site. Most of the auditors also indicated that the website provides users with a description of the minimum computer hardware and software needed to access data and information on the site and provides accessibility using commonly available software as well as links for necessary plug-ins or browsers. One auditor noted, however, that obtaining access to data and documents from the site seemed to be slow despite their T1 connection. With respect to the availability of information on how to use the site, most of the auditors acknowledged the existence of a 'contact us' link as well as tutorials or 'help' links and some indicated that these were readily available and useful. Only one auditor had used the 'contact us' link and noted that they received a response after five days.

Regarding the navigation features, all of the auditors indicated that the site allows the user to search by various topics or keywords, but only two of the auditors noted that the user is able to navigate to different portions of the website without returning to the home page. One auditor observed that the user must always return to the main page to access different information, adding that when the user selects a document, it opens in its own window so that the user must return to the main page to search for additional information or documents. Another noted that although the site is relatively easy to navigate, the addition of interactive links would help the user find the information they need.

### **3.13.3 Obtaining Information**

Most of the auditors indicated that they were able to find the information they were seeking, and that training information and factory tools and ordering information are available. Only one auditor indicated that contacts or ordering information are identified for training resources that are not Internet-capable. One auditor specifically noted that they searched for training materials that are not available on the site. One of the auditors indicated that they were able to download documents or information such as repair and diagnostic information and wiring schematics. Another noted that the service information can only be downloaded and/or saved in small segments and that doing so is somewhat cumbersome. Most of the auditors indicated that they were able to print documents and materials.

### **3.13.4 OBD System Monitors and Repair**

With respect to OBD system monitors, most of the auditors indicated that the site includes descriptions of the OBD monitors and their operation. Two auditors indicated that they

were able to locate a description of the parameters or strategies being monitored. These two auditors also observed that other OBD information and data, including a list of DTCs sufficient to assist with diagnosis and repair; enable criteria; explanations of the sequence, execution frequency, and duration of the monitor; and malfunction thresholds are included on the site. However, some minor deficiencies were noted. One auditor indicated that there are very few training materials available on OBD monitors and their operation. This auditor added that there is no easily accessible list of fault codes, and that the site should be designed so that the user can locate information on these codes through the main search window.

For OBD repair issues, only two of the auditors indicated that the information necessary to interpret Mode 6 data was available, and one of these technicians noted that the information was not useful. In this context, one auditor observed that the J1979 Mode 6 data chart is provided but there is no description or guidance on how to use the chart. Another auditor noted that they could not locate any diagnostic information directed at users of generic scan tools and that the information on the site assumes the use of factory tools and training. This auditor added that even though Land Rover provides code descriptions on the site, there are no instructions to assist those technicians using a generic scan tool to determine the cause of a fault or detailed trouble shooting guides and information. The auditor noted that the information currently available to Land Rover dealers should also be available to other technicians as well.

### **3.13.5 Reprogramming and Reinitialization**

Two of the auditors indicated that they had performed reprogramming services for Land Rover within the past year. Most of the auditors indicated that they were able to locate information on the tools and associated procedures needed to perform reprogramming and that the information to select the proper calibration for the vehicle as well as the vehicle calibration is available. Two auditors indicated that software was available to communicate between the J2534 device and the PC. Some auditors noted that although rental of the "Testbook" is offered and information is provided on programming with the Land Rover T4 system, they used the Autologic tool for reprogramming and reinitialization (and as such, did not follow the procedures outlined on the site). One auditor noted that it is necessary to synchronize the ECU and the BECM before the vehicle can be started, and that this information should be included on the site. This auditor added that technicians with a generic scan tool should be able to discover and correct this situation.

### **3.13.6 Conclusion**

Overall, the auditors for Land Rover indicated that the site contains some useful information and is relatively well designed. However, the auditors' responses indicate that some improvements could be helpful. Potential improvements to the site include: ensuring that training materials, including those that are not Internet-capable, are comprehensive and fully available to the technicians; allowing for service information to be easily downloaded; ensuring that a thorough list of fault codes for OBD monitors is available and easily accessible; expanding the information on OBD repair and reprogramming so that diagnostic information, code descriptions, and other relevant data are available to all technicians (including those using generic scan tools); and ensuring consistency between the information available to Land Rover dealers and the information included on the service information website.

## **3.14 Lexus**

### **3.14.1 Introduction**

The five technicians that submitted a completed questionnaire for Lexus generally rated the service information website favorably. None of the auditors indicated that their shop specializes in servicing vehicles from any particular OEMs. Nearly all of the technicians cited aftermarket sources as their primary source of electronic service information, but occasionally access an OEM website using a short-term subscription.

### **3.14.2 Access and Navigation**

The auditors all acknowledged the existence of the short-, mid-, and long-term options for accessing the Lexus service information site and indicated that they could access the entire site (although one auditor indicated that reprogramming information is only available for an additional fee). All of the auditors also indicated that the website provides users with a description of the minimum computer hardware and software needed to access data and information on the site and provides accessibility using commonly available software. Most auditors also indicated that links were provided for necessary plug-ins or browsers. Regarding accessibility in general, all auditors provided very high rankings for the site. With respect to the availability of information on how to use the site, the auditors acknowledged the existence of a 'contact us' link as well as tutorials or 'help' links and indicated that these were readily available and useful.

Regarding the navigation features, all of the auditors indicated that the site allows the user to search by various topics or keywords and three of the auditors noted that the site allows the user to navigate to different portions of the website without returning to the home page. The auditors noted generally that the site was very well organized and easy to navigate.

### **3.14.3 Obtaining Information**

Nearly all of the auditors indicated that they were able to find and print the information they needed, and that training information, including sources for training materials that are not Internet-capable, as well as factory tools and ordering information, are available. Three of the auditors indicated that they were able to download information from the site, including TSBs, reprogramming information, and PDF files. However, one auditor indicated that they could not download any information or documents. Two auditors observed that there was some information that they were unable to locate on the site. One of these auditors indicated that they were unable to find diagnostic tool and accessory software updates and described specific discrepancies between the website and existing TSBs that could potentially be problematic for the technician.

### **3.14.4 OBD System Monitors and Repair**

For nearly every aspect of OBD system monitors and repair, the auditors provided a positive response, noting that the information could be found and was relevant, thorough, and useful. With respect to OBD systems, all of the auditors indicated that sufficient monitor and

parameter (or strategy) descriptions are available. All of the auditors indicated that they were able to locate a list of relevant DTCs, which was sufficient to assist with diagnosis and repair, information to determine the enable criteria, and an explanation of the sequence, execution frequency, and duration of the monitor. Most auditors were also able to locate the malfunction thresholds for the monitor.

Regarding OBD repair, all of the auditors indicated that descriptions of the DTCs for Lexus were available, that useful information is available for interpreting Mode 6 data, and that the information on diagnosis and repair for all DTCs is sufficient. One auditor specifically noted that with regard to the Mode 6 data, the provision of the conversion factor is particularly useful information for technicians using an aftermarket scanner. All of the auditors also acknowledged the existence of TSBs and trouble shooting information for OBD repair on the site.

### **3.14.5 Reprogramming and Reinitialization**

Two of the auditors indicated that they had performed reprogramming, and one indicated that they had performed reinitialization for Lexus within the past year. All of the auditors indicated that they were able to find the necessary information on tools needed for reprogramming as well as the associated procedures. Most auditors also indicated that they could locate information to select the proper calibration, the vehicle calibration, and the software to communicate between the J2534 device and the PC. One auditor noted that when an electronic control module (ECM) is replaced, they are able to reprogram the security system to start the car using the factory scanner and the immobilizer. The auditor added that when the number of ECMs to be replaced due to malfunctions in systems other than the security system increases, the manufacturers' resistance to release the security codes could cause problems in the aftermarket. As a potential solution, this auditor suggested that Lexus allow certain shops to use the immobilizer and factory scanner so that they are able to access the codes for purposes of performing the repair, and so that dealerships do not continue to monopolize this portion of the market.

### **3.14.6 Conclusion**

Overall, the auditors indicated that the Lexus service information website was very well designed and easy to use and navigate, and that the available information is useful. The auditors' responses indicate that there are some minor improvements that could potentially be helpful. These include ensuring the consistency between the service information website and existing TSBs, and setting up a system that allows for technicians other than those associated with a dealer to access the security codes for reprogramming purposes.

## **3.15 Mazda**

### **3.15.1 Introduction**

The six technicians that submitted a completed questionnaire for Mazda generally rated the service information website favorably. None of the auditors indicated that their repair shop specializes in servicing vehicles from any particular OEMs. Nearly all of the technicians cited

aftermarket sources as their primary source of electronic service information, but most indicated that they also occasionally access an OEM website using short-term subscriptions.

### **3.15.2 Access and Navigation**

The auditors all acknowledged the existence of the short-, mid-, and long-term options for accessing the Mazda service information site and most indicated that they could access the entire site (although one auditor indicated that the immobilizer and reprogramming information is only available for an additional fee). Nearly all of the auditors also indicated that the website provides users with a description of the minimum computer hardware and software needed to access data and information on the site and provides accessibility using commonly available software. However, one auditor indicated that the operating system requirements are not included on the site, and another noted generally that the site requires the use of software that is not ideal with respect to security.

All of the auditors indicated that links are provided for necessary plug-ins or browsers. Regarding accessibility in general, all auditors provided relatively high rankings for the site. One auditor observed, however, that the pages were slow to load using a high-speed connection and another noted that the site locks up when the user clicks on certain links. With respect to the availability of information on how to use the site, the auditors acknowledged the existence of a 'contact us' link (although none had attempted to use it) as well as tutorials or 'help' links and indicated that these were readily available and useful.

Regarding the navigation features, all of the auditors indicated that the site allows the user to search by various topics or keywords and most of the auditors noted that the site allows the user to navigate to different portions of the website without returning to the home page. One auditor noted specifically that with regard to the OBD information, it is difficult to navigate back and forth from page to page. Most auditors noted generally that the site is very well organized and easy to navigate.

### **3.15.3 Obtaining Information**

Most of the auditors indicated that they were able to find and print the information they needed and that training information was available. Only two auditors indicated that factory tools and ordering information was available, and three auditors indicated that sources for training materials that are not Internet-capable were available. One auditor indicated that although the site listed available tools, there was no associated information on ordering. Another auditor indicated that he could not locate information on tooling, which was readily available on the National Automotive Service Task Force (NASTF) website. Three of the auditors indicated that they were able to download information from the site, such as training materials, circuit diagrams, and PDF files.

### **3.15.4 OBD System Monitors and Repair**

For nearly every aspect of OBD system monitors and repair, the auditors provided a positive response, noting that the information can be found and is relevant and useful. With respect to OBD systems, all of the auditors indicated that sufficient monitor and parameter (or



strategy) descriptions are available. All of the auditors indicated that they were able to locate a list of relevant DTCs, which is sufficient to assist with diagnosis and repair as well as information to determine the enable criteria (although one auditor indicated that this information was vague in the manual). Most of the auditors were also able to locate an explanation of the sequence, execution frequency, and duration of the monitor as well as the malfunction thresholds.

Regarding OBD repair, all of the auditors indicated that the information on diagnosis and repair for all DTCs as well as the descriptions of the DTCs for Mazda is available and sufficient. However, the response was mixed with regard to useful information for interpreting Mode 6 data. Three of the auditors indicated that this information is not available. One of these auditors noted that they could not find information on Mode 6 data interpretation. Another noted that the information presented on the site is for interpreting Mode 6 data as reported by the OE scan tool. One auditor noted that in general, information on OBD repair is much easier to find through aftermarket sources, such as ALLDATA. All of the auditors acknowledged the existence of TSBs and trouble shooting information for OBD repair on the site. Generally, the auditors indicated that the OBD repair information is useful, well organized, and includes some useful hyperlinks.

### **3.15.5 Reprogramming and Reinitialization**

None of the auditors indicated that they had performed reinitialization or reprogramming for Mazda vehicles within the past year. Three of the auditors indicated that they were able to find the necessary information on tools needed to perform reprogramming as well as the associated procedures, while two auditors indicated that they could find the tools and procedures for reinitialization. Only one auditor indicated that they could locate the vehicle calibration as well as the information needed to select the proper calibration. With respect to vehicle calibration, one auditor noted that the website only indicates that a calibration update number is listed in the TSBs. None of the auditors indicated that the software to communicate between the J2534 device and the PC was available. One auditor noted generally that the waiting period of up to 72 hours for the immobilizer could be problematic.

### **3.15.6 Conclusion**

Overall, the auditors indicated that the Mazda service information website was relatively well designed and easy to use and navigate, and that the available information is useful. The auditors' responses indicate that there are some minor improvements that could potentially be helpful. These include improving the section on factory tools so that the information is complete and ordering information is readily available, updating the site so that the operating system requirements are clearly stated, and ensuring that the user can quickly navigate between pages.

## **3.16 Mercedes Benz**

### **3.16.1 Introduction**

The four technicians that submitted a completed questionnaire for Mercedes generally rated the service information website favorably. Two of these auditors specialize in the repair of

Mercedes vehicles, while the other two specialize in Asian and European vehicle repair. The technicians associated with a shop that specializes in Asian and European vehicles cited aftermarket sources as their primary source of electronic service information. One of the Mercedes specialists noted that they use a variety of sources for their electronic service information. Three of the auditors indicated that they never use OEM websites. However, the other Mercedes specialist indicated that they use OEM websites as their primary source of information and access the site quite frequently using short-term subscriptions.

### **3.16.2 Access and Navigation**

All of the auditors acknowledged that short-, mid-, and long-term options were available for accessing the Mercedes service information site and that they could access the entire site. The auditors also indicated that the website provides users with a description of the minimum computer hardware and software needed to access data and information on the site, and most noted that the site provides accessibility using commonly available software, and links to browsers needed to access the site (some auditors indicated that specific downloads, such as Java Web Start and Whip, are required). With respect to the availability of information on how to use the site, all of the auditors acknowledged the existence of a 'contact us' link (two auditors had used the link successfully) as well as tutorials or 'help' links. However, two auditors noted generally that the site is not particularly user-friendly and requires extensive use to establish familiarity with all aspects of the site.

Regarding the navigation features, all of the auditors indicated that the user could access different portions of the site without returning to the home page. However, some of the auditors (including one with 35 years of experience repairing Mercedes vehicles) observed that it is difficult to navigate and find relevant information on the site, particularly for first-time users. Some auditors noted that even though a search mechanism is available, it does not always yield useful results.

### **3.16.3 Obtaining Information**

Some of the auditors indicated that they were unable to find certain data or information. Two of the auditors observed that overall, the information included on the site is very limited compared to the programs and materials that are provided to Mercedes dealers. Some of the auditors cited specific examples of information that were not available on the site, such as certain dealer service bulletins, training information, and SCN coding. Two of the auditors indicated that training information is available, but others indicated the training information is only available to the dealers. One auditor noted that an additional fee appears to be required to obtain parts and SCN coding data from the site. All of the auditors indicated that information on factory tools and ordering was available and most indicated that sources for training materials that are not Internet-capable were also available. Most auditors indicated that they were able to download information from the site, such as service bulletins, electrical diagrams, and diagnostic procedures. All of the auditors indicated that they were able to print documents from the website.

### **3.16.4 OBD System Monitors and Repair**

Regarding OBD system monitors, the auditors provided a mixed response, noting that although relevant information can be found, it is often vague, too general, or difficult to locate. Some of the auditors indicated that monitor and parameter (or strategy) descriptions are available. However, auditors noted that the descriptions are difficult to find, vague, and not particularly helpful in diagnosis. All of the auditors indicated that they were able to locate a list of relevant DTCs, and most indicated that these are sufficient to assist with diagnosis and repair. One auditor observed that although OBD II codes are listed on the site, they are also included elsewhere on the Internet, and another indicated that additional detail is needed for the code descriptions, the function of logic, and repair information. Three auditors noted that information to determine the enable criteria; an explanation of the sequence, execution frequency, and duration of the monitor; and the malfunction thresholds, are available. However, some of the auditors indicated that this information is also difficult to find.

Regarding OBD repair, most of the auditors indicated that the information on diagnosis and repair for all DTCs as well as the descriptions of the DTCs for Mercedes are available and sufficient. One auditor added that with regard to the DTCs, additional information is needed to properly diagnose a check engine light. Only two auditors indicated that the site included useful information for interpreting Mode 6 data. All of the auditors acknowledged the existence of TSBs and trouble shooting information for OBD repair on the site, although one auditor noted that the bulletins included were not comprehensive and that additional trouble shooting information would be helpful.

### **3.16.5 Reprogramming and Reinitialization**

Two of the auditors indicated that they had performed reprogramming services for Mercedes vehicles within the past year. All of the auditors indicated that they were able to find the necessary information on tools needed to perform reprogramming, and most indicated that they could also locate the associated procedures (one indicated that information was not available on how to perform SCN coding). Two of the auditors indicated that they could locate the vehicle calibration and the information to select the proper calibration. Most auditors indicated that the software to communicate between the J2534 device and the PC is available. Regarding reinitialization, all of the auditors noted that they had performed these services for Mercedes vehicles within the past year. Most indicated that they could locate information on the tools needed to perform reinitialization, and two of these auditors indicated that they were able to find the associated procedures as well.

### **3.16.6 Cost**

For some of the auditors, cost seemed to be a significant consideration with respect to whether they would subscribe to and utilize Mercedes' service information website. One auditor noted that they could obtain more comprehensive data and information through other sources, and that given the limitations associated with the information on the site, subscribing to the site is not a cost-effective approach to obtaining the information they need. Another auditor indicated that although they would use the site for obtaining component location and service bulletins, a

more accurate and complete source for independent technicians to obtain their repair information is the WIS system.

### **3.16.7 Conclusion**

Overall, the auditors indicated that the Mercedes service information website contained some useful information, but the content and navigation features of the site could be improved. The auditors' responses indicate that there are some minor improvements that could potentially be helpful. These include: expanding the data and information on the site to reflect what is currently available to Mercedes dealers; incorporating additional information on training; improving the layout, search mechanisms, and navigation features so that information may be found more easily; incorporating more detailed descriptions for the OBD monitors and DTCs; and expanding information on OBD repair.

## **3.17 Mini**

### **3.17.1 Introduction**

The seven technicians that submitted a completed questionnaire for Mini generally rated the service information website favorably. Most of these auditors have had some experience using the Mini service information website. Four of the auditors indicated that their shop specializes in servicing Mini vehicles, one indicated that they service vehicles manufactured by European OEMs, while the others indicated no particular specialty. Most of the technicians that specialize in the repair of Mini vehicles indicated that OEM websites are their primary source of electronic service information (one of these auditors noted that they use a variety of sources, including OEM websites). Most of the auditors access OEM websites fairly frequently using both short- and long-term subscriptions.

### **3.17.2 Access and Navigation**

All of the auditors acknowledged the existence of the short-, mid-, and long-term options for accessing Mini's service information website and all but one indicated that they could access the entire site. Most of the auditors also indicated that the website provides users with a description of the minimum computer hardware and software needed to access data and information on the site. All of the auditors noted that the site provides accessibility using commonly available software as well as links for necessary plug-ins or browsers. The one auditor who indicated that the hardware and software requirements are not described also observed that the organization and terms used on the site would most likely be difficult to follow for the non-specialist, but that overall, the site is very thorough and appears to be a valuable resource for BMW/Mini technicians. This auditor added that the training portion of the site and the Frequently Asked Questions (FAQs) are quite useful. One auditor recommended that Mini offer the technicians the option to purchase access to the site on an hourly basis (or perhaps the option to purchase a certain number of minutes that could be used as needed over time), which would improve the affordability overall, particularly for small shops. With respect to the availability of information on how to use the site, nearly all of the auditors acknowledged the existence of a 'contact us' link as well as tutorials or 'help' links and indicated that these are

readily available and useful. The one auditor that had used the 'contact us' link indicated that they received a timely response.

Regarding the navigation features, all of the auditors indicated that the site allows the user to search by various topics or keywords, but only three of the auditors noted that the user is able to navigate to different portions of the website without returning to the home page. Most auditors provided very positive comments regarding the layout of the site, with some acknowledging that navigation becomes easier after the technician has had some experience using and accessing information on the site. Overall, the auditors provided very high rankings for both the accessibility and navigation aspects of the Mini website.

### **3.17.3 Obtaining Information**

Most of the auditors indicated that they were able to find the information they were seeking, and all of the auditors indicated that that training information and factory tools and ordering information are available. Most auditors also indicated that contacts or ordering information are identified for training resources that are not Internet-capable. One auditor specifically noted that they searched for some A/C repair materials that are not available on the site. Another provided specific examples of links that do not take the user to the information titled in the link itself (e.g., clicking 'Throttle Potentiometer' takes the user to 'R&R fuel pump relay'). This auditor also added that they were not able to view some of the illustrations properly, and that the information for certain areas is not always thorough (e.g., missing oil pressure specification for certain models). One auditor suggested incorporating a notification to inform first time users that a service tester or pass-through tool hook up is necessary for the diagnosis of Mini vehicles. All of the auditors indicated that they were able to download documents or information such as TSBs, training modules, specifications, system overviews, and other information. All of the auditors indicated that they were able to print documents and materials.

### **3.17.4 OBD System Monitors and Repair**

With respect to OBD system monitors, all of the auditors indicated that the site includes descriptions of the OBD monitors and their operation, with some indicating that the information is extremely thorough and helpful. However, one auditor noted that some of the descriptions seem to be unclear or insufficient. All of the auditors indicated that they were able to locate a description of the parameters or strategies being monitored. Nearly all of the auditors also observed that other OBD information and data, including a list of DTCs sufficient to assist with diagnosis and repair; enable criteria; explanations of the sequence, execution frequency, and duration of the monitor; and malfunction thresholds are included on the site. However, some minor deficiencies were noted. One auditor noted that, with respect to the list of DTCs, there is only a look-up page where the user can access the description of a particular code, and added that this information is very generic. All of the other auditors, however, observed that this information appears to be very thorough. This auditor also observed that although some of the OBD information is detailed and very educational, there is some information that is difficult to access. The auditor added that the data for the sequence, execution frequency, and duration of the monitor, as well as the malfunction thresholds do not appear to be available and that some data is presented on PDF charts, which are too small to read on screen and cannot be enlarged or printed.

Regarding OBD repair issues, most of the auditors indicated that the information necessary to interpret Mode 6 data is available and useful. Most also indicated that the website provides sufficient diagnostic and repair information for the DTCs encountered. One auditor observed that plenty of information is available, such as trouble shooting flow charts, wiring schematics and fault code definitions, but not all of this information can be found in the same location. Another auditor noted that the diagnostic and repair information for specific DTCs that are available to all technicians on the website is not comprehensive since certain information on coding/programming is only available to the dealer. All of the auditors indicated that relevant TSBs are readily available, and nearly all of the auditors indicated that trouble shooting guides or related information are available. One auditor suggested that the OBD portion of the site could be enhanced with a pop-up that contains additional information on recalls or service actions that are related to the specific sections accessed by the user. Other suggestions include ensuring that detailed OBD information that pertains to CVT or the new six speed automatic transmissions are available and adding links to service information bulletins (SIBs) to allow for faster and easier access.

### **3.17.5 Reprogramming and Reinitialization**

Three of the auditors indicated that they had performed reprogramming services for Mini within the past year. All of the auditors indicated that they were able to locate information on the tools and associated procedures needed to perform reprogramming, and most indicated that the information to select the proper calibration for the vehicle as well as the vehicle calibration is available. Four of the auditors indicated that software was available to communicate between the J2534 device and the PC. With respect to reinitialization, nearly all of the auditors indicated that they were able to locate information on the necessary tools as well as the associated procedures. Most of the auditors provided specific information regarding where the information can be located on the site. One auditor noted that it would be helpful if the Mini website listed a known good quality aftermarket tool capable of coding and programming Mini and BMW brand vehicles.

### **3.17.6 Conclusion**

Overall, the auditors for Mini indicated that the site contains some useful information and is relatively well designed. However, the auditors' responses indicate that some improvements could be helpful. Potential improvements to the site include: incorporating a notification for first time users that a service tester or pass-through tool hook-up is necessary for the diagnosis of Mini vehicles; offering access to the website through hourly or 'by minute' subscriptions; providing information on potential aftermarket tool(s) that could be used for coding/programming Mini vehicles; ensuring that all PDF files can be easily viewed and printed; and ensuring consistency between the titles and the information for each link.

## **3.18 Mitsubishi**

### **3.18.1 Introduction**

The five technicians that submitted a completed questionnaire for Mitsubishi generally rated the service information website favorably. All of the auditors indicated that their shop did

not specialize in the repair of any particular vehicles or OEMs, and indicated that aftermarket sources are their primary source of electronic service information. Most of the auditors access OEM websites only occasionally using short-term subscriptions.

### **3.18.2 Access and Navigation**

All of the auditors acknowledged the existence of the short-, mid-, and long-term options for accessing Mitsubishi's service information website and indicated that they could access the entire site. All of the auditors also indicated that the website provides users with a description of the minimum computer hardware and software needed to access data and information on the site and noted that the site provides accessibility using commonly available software as well as links for necessary plug-ins or browsers. With respect to the availability of information on how to use the site, all of the auditors acknowledged the existence of a 'contact us' link as well as tutorials or 'help' links and indicated that these are readily available and useful.

Regarding the navigation features, all of the auditors indicated that the site allows the user to search by various topics or keywords and navigate to different portions of the website without returning to the home page. Most auditors provided very positive comments about the layout of the site, with some acknowledging that navigation becomes easier after the technician has had some experience using and accessing information on the site. Overall, the auditors provided very high rankings for both the accessibility and navigation aspects of the Mitsubishi website.

### **3.18.3 Obtaining Information**

Most of the auditors indicated that they were able to find the information they were seeking, and all of the auditors indicated that training information and factory tools and ordering information are available, as well as contacts or ordering information for training resources that are not Internet-capable. Two auditors indicated that they were not able to find certain information on the site, such as Mode 6 data and parameters and legible wiring diagrams. One of these auditors also noted that searching for specific data or information on the site can be cumbersome, and recommended that the search mechanism be expanded and/or revised. The auditor noted that although the website is fairly easy to use with drop-down menus, using the site map to locate information can be difficult since some of the category descriptions are insufficient, resulting in the need for multiple searches for the same information. The auditor recommended that a 'boolean' or partial-match search mechanism be available since terms can differ between manufacturers, which would allow the user to locate relevant information even if they do not know the exact term used by the manufacturer. With respect to downloading documents or information, all of the auditors indicated that they were able to obtain information such as TSBs, training modules, specifications, system overviews, and other information. All of the auditors indicated that they were able to print documents and materials.

### **3.18.4 OBD System Monitors and Repair**

With respect to OBD system monitors, all of the auditors indicated that the site includes descriptions of the OBD monitors and their operation, with most indicating that the information is sufficient. However, one auditor noted that some of the descriptions seem to be unclear or insufficient. This auditor observed that most monitor descriptions are very vague and do not

provide enough detailed information, and provided a specific example to illustrate how certain terms within the definition should be more clearly defined for the technician. For example, references to 'a period of time' or 'a few minutes' are problematic as they do not define exactly how the technician should interpret these phrases. All of the auditors indicated that they were able to locate a description of the parameters or strategies being monitored and a list of DTCs sufficient to assist with diagnosis and repair. Nearly all of the auditors also observed that other OBD information and data, including enable criteria; explanations of the sequence, execution frequency, and duration of the monitor; and malfunction thresholds are included on the site. However, one auditor noted that, as with the monitor descriptions, some of this information is vague.

Regarding OBD repair issues, most of the auditors indicated that the information necessary to interpret Mode 6 data was available and useful. One auditor indicated that they were unable to find the information they were looking for on Mode 6. Most also indicated that the website provides sufficient diagnostic and repair information for the DTCs encountered. All of the auditors indicated that relevant TSBs as well as trouble shooting guides and related information are readily available. One auditor noted generally that it would be helpful to have an OBD II section that is completely separate from the rest of the data and information on the site, in order to help streamline queries for this type of information.

### **3.18.5 Reprogramming and Reinitialization**

None of the auditors indicated that they had performed reprogramming or reinitialization services for Mitsubishi within the past year. All of the auditors indicated that they were able to locate information on the tools and associated procedures needed to perform reprogramming, and most indicated that the information to select the proper calibration for a vehicle as well as the vehicle calibration are available. Three of the auditors indicated that software is available to communicate between the J2534 device and the PC. With respect to reinitialization, most of the auditors indicated that they were able to locate information on the necessary tools as well as the associated procedures. Regarding both reprogramming and reinitialization, one auditor indicated that Mitsubishi and other OEMs could improve the outreach and communication efforts with respect to the availability and location of this information. This auditor also added that it may not be feasible for repair shops to have all the individual OEM tools for reprogramming, and allowing for the use of an approved generic pass-through device with access to flash files could be beneficial.

### **3.18.6 Conclusion**

Overall, the auditors for Mitsubishi rated the service information site favorably and some noted specifically that the site contains useful information and is relatively well designed. However, the auditors' responses indicate that some improvements could be helpful. Potential improvements to the site include: expanding the search mechanism to allow for additional search options, such as partial word searches; creating a separate section for OBD II data and information; ensuring that the wiring diagrams are completely legible; providing additional detail within the monitor descriptions and other information related to OBD monitors; and providing additional guidance materials for the technician regarding the availability and location of reprogramming and reinitialization tools and procedures.



## **3.19 Nissan**

### **3.19.1 Introduction**

The six technicians that submitted a completed questionnaire for Nissan generally rated the service information website favorably. Most of the auditors indicated that their repair shop does not specialize in servicing vehicles from any particular OEM. Nearly all of the technicians indicated that aftermarket sources are their primary source of electronic service information, but one indicated that they service primarily domestic and Asian vehicles and use OEM websites as their primary source of information. The level of use varied between the auditors, with one indicating that they never use OEM websites and most others indicating that they use OEM websites occasionally through short-term subscriptions. Two of the auditors indicated that they use the websites on a fairly regular basis through monthly and annual subscriptions.

### **3.19.2 Access and Navigation**

Most of the auditors acknowledged that short-, mid-, and long-term options were available for accessing the Nissan service information site, but only three of the auditors indicated that they could access the entire site. Most of the auditors also indicated that the website provides users with a description of the minimum computer hardware and software needed to access data and information on the site, accessibility using commonly available software, and links to browsers needed to access the site (although one auditor indicated that these links are difficult to find). Regarding accessibility in general, the auditors provided above average rankings for the site. With respect to the availability of information on how to use the site, the auditors acknowledged the existence of a 'contact us' link (one auditor had used the link successfully) as well as tutorials or 'help' links. However, one auditor observed that although Nissan provides guidance for the user, it is not particularly intuitive or helpful.

Regarding the navigation features, most of the auditors indicated that the user could access different portions of the site without returning to the home page. However, some of the auditors observed that the site's navigation features are awkward and not particularly intuitive. Some auditors noted that even though a search mechanism is available, it does not always yield useful results. Some auditors noted that the keyword search function for service manuals does not seem to work properly and is not available for numerous makes and models. Others indicated that the search mechanism is often extremely slow and can time out before results are found. One auditor indicated that keyword searches do not provide any results when entering trouble codes and that the technician must access the engine control manual and search the table of contents to locate this information. Another auditor added that some searches yield a result of "not available" after a few minutes of inactivity (instead of a prompt to login again) and that when the content is not available, an accurate error message does not always appear.

### **3.19.3 Obtaining Information**

Some of the auditors indicated that they were able to find the information they needed. Nearly all of the auditors indicated that training information as well as factory tools and ordering information are available, and most indicated that sources for training materials that are not Internet-capable are also available. Some auditors indicated that some materials are only

available for an additional fee, such as reprogramming and training information. Three of the auditors indicated that they were able to download information from the site, such as service manuals, owner's manuals, and TSBs. Most auditors indicated that they were able to print documents from the website.

#### **3.19.4 OBD System Monitors and Repair**

Regarding OBD system monitors and repair, the auditors provided a mixed response, noting that only some of the relevant information could be found. Three of the auditors indicated that monitor and parameter (or strategy) descriptions are available, and two of these auditors noted that the descriptions are inadequate. Some auditors added that searching for information on monitors can be quite slow and cumbersome. Others noted that since service manuals are not searchable by keyword, technicians must access the monitor information through individual DTC descriptions and information on the scan tool (rather than through an organized view of the monitors themselves). One auditor noted that descriptions of the factory and generic scan tools should not be considered an adequate surrogate for providing thorough information on the operation of the monitor. Most of the auditors indicated that they were able to locate a list of relevant DTCs that are sufficient to assist with diagnosis and repair. Only a few auditors noted that information to determine the enable criteria; an explanation of the sequence, execution frequency, and duration of the monitor; and the malfunction thresholds, are available.

With respect to OBD repair, most of the auditors indicated that the information on diagnosis and repair for all DTCs as well as the descriptions of the DTCs for Nissan are available and sufficient. However, only two auditors indicated that the site included useful information for interpreting Mode 6 data. One auditor specifically noted that the site provides some good information on code setting criteria and logic. Most of the auditors acknowledged the existence of TSBs and trouble shooting information for OBD repair on the site.

#### **3.19.5 Reprogramming and Reinitialization**

Only one of the auditors indicated that they had performed reinitialization or reprogramming for Nissan vehicles within the past year. Most auditors indicated that they were able to find the necessary information on tools needed to perform reprogramming as well as the associated procedures, while three auditors indicated that they could find the tools and procedures for reinitialization. Some of the auditors indicated that they could locate the vehicle calibration and the information to select the proper calibration. Most auditors indicated that the software to communicate between the J2534 device and the PC is available, but one auditor indicated that even though it is not required, it would be helpful if Nissan provided J2534 files for model years prior to 2004 along with those currently available for the 2004 and newer vehicles. One auditor observed that Nissan's system is fairly easy to use and that the drop down list of ECM numbers is quite helpful.

#### **3.19.6 Conclusion**

Overall, the auditors indicated that the Nissan service information website contains some useful information, but the layout and navigation features of the site could be improved. The auditors' responses indicate that there are some minor improvements that could potentially be

helpful. These include: improving the guidance available to technicians on how to navigate and obtain information from the site; ensuring that the search mechanisms are working and yield useful results (e.g., keyword search for service manuals) in a timely fashion; improving the layout of the information on the site as well as the navigation features so that it is more intuitive to use; expanding the available information on OBD monitors and ensuring that this information can be easily located; and providing J2534 files for vehicles manufactured prior to model year 2004.

## **3.20 Porsche**

### **3.20.1 Introduction**

The six technicians that submitted a completed questionnaire for Porsche provided a mixed review for the service information website. The Porsche website requires the purchase of individual documents to access repair information. Even though the auditors' comments indicate that these documents contain very useful and thorough information, most indicated that this approach is costly and time consuming, and that locating the desired information, in many cases, is difficult.

All of the auditors indicated that they use OEM websites as a source of information. Most of the auditors indicated that their shop specializes in servicing vehicles from European OEMs. One auditor indicated a specialty in the repair of BMW vehicles and another noted that they specialize in the repair of Porsche vehicles. Three auditors (including the auditor that specializes in the repair of Porsche vehicles) indicated that they use the OEM website as their primary source of information. One auditor cited aftermarket sources as their primary source of electronic service information, while others indicated that they use a variety of sources to obtain their service information. Two of the auditors access the OEM website fairly often and subscribe on a monthly or annual basis. Others indicated that they access an OEM website only occasionally on an as-needed basis, using short-term subscriptions.

### **3.20.2 Access and Navigation**

With regard to the options for accessing the Porsche service information site, most auditors noted that the user accesses information on a per-document basis unless an annual subscription is purchased. Some of the auditors indicated that they could access the entire site. Others observed that unless the user purchases specific documents, the only information available is the table of contents listing available documents, and that some items on the site refer the technician to a toll-free number or other websites for further information.

All of the auditors indicated that the website provides users with a description of the minimum computer hardware and software needed to access data and information on the site and provides accessibility using commonly available software. One auditor noted that the system requirements are compatible with older operating systems, which could prevent the user from having to purchase a new PC system but also precludes the use of diagnostics applications on the site. Some auditors indicated that the system requirements will most likely need to be revised if Porsche implements running diagnostics, coding, or programming on the website. One auditor

observed that the required browsers are listed, but not the operating system. All of the auditors indicated that links were provided for necessary plug-ins or browsers.

With respect to the availability of information on how to use the site, most auditors acknowledged the existence of a 'contact us' link as well as tutorials or 'help' links and indicated that these were readily available. However, the auditors that had used the 'contact us' link indicated that they did not always receive a response with useful information (but one auditor indicated that after using the link, they received useful information from Porsche on a follow-up phone call). One auditor noted that a list of FAQs is available but that it does not seem to be complete. Some of the auditors also indicated that timely and useful correspondence from Porsche in response to other issues (i.e., charges incurred for failed downloads and requests for additional training information) was not always forthcoming.

Regarding the navigation features, most of the auditors noted that the site allows the user to navigate to different portions of the website without returning to the home page. Some noted that the site is well organized, while others noted that the layout is not particularly intuitive. With respect to the search mechanisms, all of the auditors indicated that the site allows the user to search by various topics or keywords, but most auditors indicated that this function is very poor. Some auditors observed that the user must re-enter the vehicle information each time a document is selected for purchase, which can be very time consuming and cumbersome. Others noted that searching for information is difficult since the keywords must be exactly in the form they are written in the document and that even if the search results yield a list of potentially relevant documents, the user must purchase those documents in order to determine whether they actually contain relevant information. For example, one auditor noted that a full text search for "OBD II" did not locate three large OBD manuals that are available to download. The auditors provided additional discussion on this issue and cited specific examples to illustrate the problems associated with navigating the site and the difficulties associated with searching for relevant information and data.

### **3.20.3 Obtaining Information**

All of the auditors acknowledged that the user obtains information from the site through the purchase and download of specific documents. However, the auditors indicated that it was difficult to locate and obtain relevant and useful information from the Porsche website and provided specific comments and discussion regarding the information that they were unable to find. Some auditors indicated that although the information sought may be included in existing documents, the documents and data are poorly indexed and the search mechanism is difficult to use and does not necessarily result in the identification of relevant documents and information. Many of the auditors identified specific information or data that could not be found. All of the auditors noted that training information as well as factory tools and ordering information are not readily available on the site (although two auditors indicated that sources for training materials that are not Internet-capable are available). Some of these auditors also noted that their attempts to use the suggested phone numbers or other websites to obtain information on tools and training were not successful. Other information that auditors could not obtain from the website include parts catalogs and documents or data for the 987 model vehicle. One of the auditors suggested that Porsche expand the scope of the information on the website to include more general

information for the independent technician, and provided specific recommendations for additional sections and subject areas that should be added.

Many of the auditors raised issues regarding the accuracy, quality, and usefulness of the documents purchased. One auditor indicated that although they had purchased and downloaded service manuals from the site, these are no better than the paper manuals they have relied on for years. Some auditors noted that one disadvantage of the downloaded documents or manuals is that the technician is unable to edit or add notes to the files. Some of the auditors also raised the issue of how technicians will be informed of changes or corrections to specific documents once they have been purchased. One auditor indicated that since Porsche requires the download and purchase of the documents (instead of providing short-, mid-, and long-term access options), it would be necessary in the event that corrections or updates are needed, to send any relevant update notices to the technicians that have purchased the documents previously. This auditor also noted that technicians that have not had the opportunity to participate in Porsche training seminars would be at a disadvantage in interpreting the information in the documents purchased, particularly if additional details or updated information is provided as part of the training but not included in the document itself. This auditor provided additional comments and discussion including specific examples of documents that could be problematic.

Some of the auditors also raised logistical issues with respect to obtaining information from the Porsche website. One auditor observed that downloading documents from the Porsche site could be difficult for shops without a high-speed Internet connection and that for the shop with limited disc storage space, downloading multiple documents to use on a regular basis could be problematic or prohibitive. Another issue raised by some of the auditors is the concern that technicians could potentially be charged twice for the same document if the download fails on the first try. One auditor noted that he had been charged the full fee for a document that was never properly downloaded, and that Porsche did not respond in a timely manner to address this issue. Some auditors noted that the technician needs to invest a significant amount of time to search for and identify the relevant documents and information on the Porsche site. Spending this extra time to locate the information can be prohibitive for many shops given limitations associated with labor and budgets as well as customer expectations that repairs will be completed promptly.

#### **3.20.4 OBD System Monitors and Repair**

Regarding OBD system monitors and repair, the auditors provided a somewhat mixed response. With respect to OBD systems, all of the auditors indicated that monitor descriptions are available. However, two of these auditors indicated that the descriptions are inadequate. Only two auditors indicated that parameter (or strategy) descriptions are available. Most auditors indicated that although the information may be there, it is difficult and time consuming to locate and often requires numerous lengthy and expensive downloads, some of which may not be relevant. One noted that even after downloading the information, it is often unclear whether all of the relevant data has been located. Some suggested that improvements to the site's organization could help the user find the information. All of the auditors indicated that they were able to locate a list of relevant DTCs, and although most of the auditors indicated that this list is sufficient to assist with diagnosis and repair, some observed that that this list only provides minimal assistance and there are no case studies to help guide the technician through an actual

situation. Regarding the information to determine the enable criteria; an explanation of the sequence, execution frequency and duration of the monitor; and the malfunction thresholds for the monitor, the auditors provided a mixed response with only about half indicating that this information is available on the site. Most of the auditors provided additional comments and suggestions regarding the availability and organization of OBD system monitor information.

Regarding OBD repair, all of the auditors indicated that descriptions of the DTCs for Porsche were available, and three auditors noted that information for interpreting Mode 6 data and sufficient diagnostic and repair information for all DTCs are available on the site. However, only two auditors indicated that the Mode 6 data are sufficient. Four of the auditors acknowledged the existence of TSBs, but some auditors noted that there is no search function for TSBs and another observed that these bulletins are very difficult to find since they are compiled in manuals with a content sheet but no index. All of the auditors noted that trouble shooting information for OBD repair is available on the site, but some observed that this information is poorly linked together and is too generic to be helpful in real world situations. Even though the auditors acknowledged the existence of OBD repair information on the site, most observed that as with the monitor information, it is difficult and time consuming to locate. Some auditors added that the cost of purchasing and downloading all the documents that potentially contain the desired information can be prohibitive. The auditors provided additional comments regarding specific information or data that they were looking for, the problems or issues encountered, and suggestions for improvement.

### **3.20.5 Reprogramming and Reinitialization**

Only two of the auditors indicated that they had performed reprogramming for Porsche vehicles within the past year, but nearly all of the auditors indicated that they were able to find the necessary information on tools needed to perform reprogramming as well as the associated procedures. One auditor observed that the only process supported on the site is through the Porsche factory tool. Another observed that the site assumes that technicians have already been trained on procedures and tool usage, but that this training information does not appear to be available. A small number of auditors indicated that they could locate the vehicle calibration and the information to select the proper calibration. One auditor noted that the vehicle calibration is not available online, but is within the software for the Porsche scan tool. None of the auditors indicated that the software to communicate between the J2534 device and the PC is available and some noted that this system does not exist.

Some of the auditors expressed concern with the fact that independent shops need to work with a dealer to obtain the codes to program the ECU. One auditor noted that there is currently no aftermarket tool capable of allowing the independent technician to address ECU programming and security lockouts, but that Diagnos of the UK is developing a tool that may be useful in this regard. This auditor added that Porsche should allow non-franchised repair shops to act independently and obtain access to security codes, provided that procedures can be implemented to verify the legitimacy of the shop. Porsche should add a new section to their website where the technician can enter the codes from the car and control unit and receive a response with the necessary programming codes.

Three of the auditors indicated that they had performed reinitialization for Porsche vehicles within the past year, and most indicated that they were able to locate the associated tools and procedures. However, one auditor indicated that the coding and programming security numbers are generally only available through the Porsche dealer, and another observed that they are not familiar with Porsche's referenced source (IPAS) for obtaining reinitialization codes and are unsure whether independent shops have access to this source. One auditor noted generally that as a solution to coding and programming issues, OEMs should consider allowing for the use of the stand-alone Autologic device, which is capable of handling multiple vehicle lines.

### **3.20.6 Cost**

Most of the auditors indicated that the site is too costly given what is currently provided, and that allowing for access only on a per-document or annual basis requires the technician to either purchase multiple documents that could contain irrelevant or extraneous information or incur the significant expense of an annual subscription. The auditors noted that shops can easily end up with a very large bill at the \$110 per-document rate in order to obtain information on certain repairs. One auditor noted that a common fault such as a misfire could potentially cost the technician over \$600 in document fees. Some observed that the alternative of purchasing an annual subscription at \$5,200 is also too costly and unnecessary in cases where the technician may only occasionally need to obtain very specific information from the site. Most of the auditors indicated that Porsche should offer additional options for accessing the data and information on the site to allow for greater flexibility and to provide an affordable option for the smaller shops. Some specifically noted that a daily access option should be offered. One auditor noted that the unreasonable cost burden for using the Porsche site could result in greater use of other information sources that may be inaccurate or in violation of Porsche copyrights.

One auditor also observed that technicians are required to pay for the documents and if the cost is high, the expense will be passed along to the customer. This auditor added that the approach of charging technicians such exorbitant fees to obtain the necessary information, while dealers do not pay for access, is somewhat discriminatory. Another noted that without assistance from a cooperative dealership, their access to information would be extremely limited. Some auditors also observed that charging technicians a standard fee of \$110 for every type of document does not seem to be a reasonable or equitable approach since some documents may be quite lengthy and contain very detailed information, while others may be more generic and brief.

One auditor acknowledged potential cost-related concerns from the perspective of the manufacturer. This auditor acknowledged that if short-term access is available, Porsche may be concerned that with a PDF-based service information website, the technicians would be able to download a large quantity of documents for a very small fee. This auditor recommended that if Porsche maintains a PDF-based site, this issue could be addressed by providing each document in portions (based on chapters or sections) for a lower per-download fee, which would allow the user to purchase only the portions they need and could help prevent technicians from downloading large amounts of information in a short period of time.

### 3.20.7 Conclusion

Overall, the auditors indicated that the Porsche service information website contains some useful information within the vast number of documents available, but that a number of significant improvements are needed in order to ensure that technicians are able to use the site effectively and obtain information at a reasonable cost. The auditors generally expressed dissatisfaction with the per-document approach and felt that regardless of whether the per-document or annual subscription is used, the Porsche site is significantly overpriced given the difficulty associated with searching for and obtaining relevant information. The auditors indicated that the structure, organization, navigation features, and search mechanisms of the site could be improved.

The auditors' comments include some specific recommendations for improvements that could be helpful. These include the following:

- Offer additional lower cost options (e.g., daily and monthly access) and lower the annual subscription fee;
- Revise the purchase options so that the available documents can be downloaded in portions;
- Incorporate variable prices for the documents so that each document is priced in a manner that more accurately reflects its length and content;
- Improve communication and technical or logistical support for technicians that are attempting to obtain specific information and data from the site;
- Ensure that secondary sources for information not contained on the site (e.g., training) are available and accurate;
- Improve the search mechanisms on the site (e.g., keyword search) so that technicians may easily and quickly find all relevant documents;
- Ensure that the search mechanisms yield accurate and relevant results;
- Incorporate links and cross-references within, and in addition to, the documents offered so that all relevant information can be located and fully understood;
- Improve the organization and indexing of the existing list of documents;
- Implement a system of revising or appending documents so that corrections and additional, more current information can be posted on the site and easily found (particularly by those technicians that have already purchased the document subject to the correction or update);
- Incorporate additional training information on the site;



- Expand the list of FAQs to cover additional issues and concerns;
- Expand the scope of the website to include more general information for independent technicians that may not have the same level of experience or training as the dealer technicians; and
- Expand the scope of the website materials to include repair information for older Porsche vehicles.

## **3.21 Saab**

### **3.21.1 Introduction**

The four technicians that submitted a completed questionnaire for Saab, provided reviews that were somewhat favorable but identified some areas for improvement. Two of these auditors specialize in the repair of vehicles manufactured by European OEMs, while the other two indicated no particular specialty. Most of the auditors indicated that aftermarket sources are their primary source of electronic service information. One of the specialists in European vehicle repair noted that they use a variety of sources for their electronic service information. Only one of the auditors noted that they use OEM websites relatively frequently. Most of the auditors indicated that they only use short-term subscriptions on an as-needed basis to access OEM websites.

### **3.21.2 Access and Navigation**

All of the auditors acknowledged that short-, mid-, and long-term options are available for accessing the Saab service information site and most indicated that they could access the entire site. The auditors also indicated that the website provides users with a description of the minimum computer hardware and software needed to access data and information on the site, and most noted that the site provides accessibility using commonly available software. Two auditors indicated that links are provided to browsers needed to access the site. With respect to the availability of information on how to use the site, three of the auditors acknowledged the existence of a 'contact us' link (one auditor had used the link successfully), and two auditors indicated that tutorials or 'help' links are available. However, one auditor noted that there is very little help information on the site.

Regarding the navigation features, all of the auditors indicated that the user could access different portions of the site without returning to the home page. Regarding search mechanisms, most acknowledged that the site allows the user to search by various topics. However, one of the auditors observed that a keyword search is only available after the user selects the applicable model and year.

### **3.21.3 Obtaining Information**

Most of the auditors indicated that they were able to find the data or information they were seeking. One auditor indicated that they were unable to locate any information on Mode 5 or Mode 6 on the site. Most of the auditors also indicated that training information, sources for

training materials that are not Internet-capable, and information on factory tools and ordering are all available. Nearly all of the auditors indicated that they were able to download information from the site, such as wiring diagrams and pictures. However, one auditor indicated that the amount of 'downloadable' information was minimal. Another observed that although technicians can print from the 'print screen' function, there are no documents that can be printed in their entirety.

#### **3.21.4 OBD System Monitors and Repair**

Regarding OBD system monitors, the auditors provided a mixed response. Two auditors indicated that monitor descriptions are available and appeared to provide sufficient information, and most indicated that parameter (or strategy) descriptions are available. Two of the auditors indicated that they were able to locate a list of relevant DTCs, and that these are sufficient to assist with diagnosis and repair. However, one auditor observed that although the codes are listed, there is no information on how the codes relate to standard monitor nomenclature. Similarly, another auditor noted that they could not locate any discussion of monitors, and that even though the fault code descriptions and information on fault analysis are easy to locate and understand, the monitor results or terminology is not available. Three auditors noted that information to determine the enable criteria; an explanation of the sequence, execution frequency, and duration of the monitor; and the malfunction thresholds, are available.

Regarding OBD repair, most of the auditors indicated that the information on diagnosis and repair for all DTCs as well as the descriptions of the DTCs for Saab are available and sufficient. One auditor added that the code information is very detailed with respect to both enabling criteria and the duration or timing of testing. This auditor added that the OBD information is organized in a manner that allows for easy access between different types of information (e.g., links to wiring diagrams and other information are provided for each code). Only one auditor indicated that the site includes useful information for interpreting Mode 6 data, with another specifically noting that Mode 6 information appears to be missing from the site. All of the auditors acknowledged the existence of TSBs and trouble shooting information for OBD repair on the site.

#### **3.21.5 Reprogramming and Reinitialization**

None of the auditors indicated that they had performed reprogramming or reinitialization services for Saab vehicles within the past year. Most of the auditors indicated that they were able to find the necessary information on tools needed to perform reprogramming and the associated procedures. Two of the auditors indicated that they could locate the vehicle calibration and the information to select the proper calibration. With respect to the vehicle calibration, one auditor observed that the TIS2000 program appears to be available to technicians but not as a part of Saab's service information website. Two auditors indicated that they could locate information on the tools needed to perform reinitialization, and one of these auditors indicated that they were able to find the associated procedures as well.

### **3.21.6 Conclusion**

Overall, the auditors indicated that the Saab service information website was useful. The auditors' responses indicate that there are some minor improvements that could potentially be helpful. These include: improving the 'help' information on the website; expanding the monitor descriptions (including monitor results and terminology); incorporating information on Mode 6; and allowing for additional documents and information to be downloaded and printed from the site.

## **3.22 Subaru**

### **3.22.1 Introduction**

The seven technicians that submitted a completed questionnaire for Subaru provided reviews that were somewhat favorable, but identified some areas for improvement. One of the auditors indicated that their shop specializes in the repair of vehicles manufactured by Asian and domestic OEMs, while all of the others indicated no particular specialty. All of the auditors cited aftermarket sources as their primary source of electronic service information. Most of the auditors noted that they use OEM websites less than ten times per month, and three of the auditors indicated that they only access the Subaru site using short-term subscriptions.

### **3.22.2 Access and Navigation**

All of the auditors acknowledged that short-, mid-, and long-term options are available for accessing the Subaru service information site and that they could access the entire site. Most auditors also indicated that the website provides users with a description of the minimum computer hardware and software needed to access data and information on the site. However, one auditor indicated that the system requirements may be difficult to find since they are only included in the FAQs. All of the auditors noted that the site provides accessibility using commonly available software and most indicated that links are provided for the browsers needed to access the site. With respect to the availability of information on how to use the site, most auditors acknowledged the existence of a 'contact us' link (one auditor had used the link successfully), and indicated that tutorials or 'help' links were available.

Regarding the navigation features, all of the auditors indicated that the user could access different portions of the site without returning to the home page, and one auditor specifically noted that the site is fairly easy to navigate. However, one auditor noted that the site was difficult to navigate and that it takes some time for the user to learn how to find the necessary information, but acknowledged that their experience could be due to lack of familiarity with how Subaru organizes their site. Regarding search mechanisms, all of the auditors acknowledged that the site allows the user to search by various topics, but some auditors indicated that the search mechanism is slow and not particularly helpful in locating relevant information. One auditor indicated that searching for information can be difficult since much of the information is included in PDF files, which are not presented in an easy to find format. Some auditors noted that the Subaru site should allow the user to simultaneously search multiple document categories.

### **3.22.3 Obtaining Information**

Most of the auditors indicated that they were able to find the data or information they were seeking, but some indicated that there are some gaps in the information available. Some auditors indicated that they were unable to locate certain information, such as OBD monitor descriptions beyond model year 1999, information to interpret Mode 6 data, reprogramming tools and information, and reinitialization procedures for immobilizer-equipped vehicles. Most of the auditors also indicated that training information, sources for training materials that are not Internet-capable, and information on factory tools and ordering are all available. However, one auditor indicated that the information on factory tools and ordering is incomplete, particularly for reprogramming. Most auditors indicated that they were able to download information from the site, such as TSBs, recalls, training publications, service manuals, and other PDF files.

### **3.22.4 OBD System Monitors and Repair**

Regarding OBD system monitors, the auditors provided a mixed response. Most auditors indicated that monitor descriptions are available, but three indicated that these appear to provide insufficient information. One auditor specifically noted that Subaru provides excellent information on the monitors and their operation, but that the Monitor Description Strategy/Method or Map as referred to in the OBD II Information Summary Sheet could not be found. Others noted that detailed descriptions for OBD monitors could only be found up through model year 1999. Most indicated that parameter (or strategy) descriptions are available, but one auditor indicated that although the strategy descriptions were provided in detail, the referenced materials were difficult to locate. Nearly all of the auditors noted that they were able to locate a list of relevant DTCs that are sufficient to assist with diagnosis and repair. However, one auditor indicated that the list of DTCs are only provided under specific drive cycles and that it is difficult to find clear information relating to setting monitors. Another auditor observed that from the list of DTCs, the user must infer what monitors are being run and what systems are being tested. Most auditors also noted that information to determine the enable criteria; an explanation of the sequence, execution frequency, and duration of the monitor; and the malfunction thresholds, are available.

Regarding OBD repair, most of the auditors indicated that the information on diagnosis and repair for all DTCs, and all of the auditors indicated that descriptions of the DTCs for Subaru were available and sufficient. Only one auditor indicated that the site includes useful information for interpreting Mode 6 data. Most auditors noted that they were unable to locate information on Mode 6 data interpretation, but another auditor observed that Mode 6 data is not necessary or useful for Subaru vehicles since FUJI Heavy Industries has not engineered their systems in a manner that makes Mode 6 useful in diagnostics. All of the auditors acknowledged the existence of TSBs and trouble shooting information for OBD repair on the site.

### **3.22.5 Reprogramming and Reinitialization**

None of the auditors indicated that they had performed reprogramming or reinitialization services for Subaru vehicles within the past year. Only two of the auditors indicated that they were able to find the necessary information on tools needed to perform reprogramming, and only one indicated that they could find the associated procedures. Some auditors noted that Subaru

does not provide reprogramming tools or information on obtaining the tools to the aftermarket, and that both the tools and procedures can only be found through the dealers. Only one auditor indicated that the vehicle calibration, the information to select the proper calibration, and the software to communicate between the J2534 device and the PC, are available. As with the reprogramming information, only two auditors indicated that they could locate information on the tools needed to perform reinitialization, and only one of these auditors indicated that they were able to find the associated procedures. As with reprogramming, most auditors observed that the tools and associated procedures for reinitialization are only available to the dealers.

### **3.22.6 Conclusion**

The auditors indicated that certain portions of the Subaru service information website are useful. The auditors' responses indicate that there are some potential improvements that could be helpful. These include: improving the layout and navigation features so that technicians may locate relevant information quickly and easily; improving the search mechanisms, particularly to allow the user to simultaneously search multiple document categories; indexing the PDF files so that relevant documents can be easily located; expanding information on the OBD monitor descriptions and ensuring that this information is complete for recent model year vehicles; and expanding available information on Mode 6 data interpretation.

## **3.23 Suzuki**

### **3.23.1 Introduction**

Only one technician submitted a completed questionnaire for Suzuki. This auditor rated most aspects of the service information site favorably. The auditor indicated that his shop did not specialize in the repair of vehicles from any particular OEM, and that aftermarket sources serve as their primary source of electronic service information. This auditor indicated that he accesses OEM websites as a source of information less than five times per month using short-term subscriptions.

### **3.23.2 Access and Navigation**

The auditor acknowledged the existence of the short-, mid-, and long-term options for accessing Suzuki's service information, and could access the entire site. The technician indicated that the website provides users with a description of the minimum computer hardware and software requirements and indicated that he could easily connect to the site using common and readily available software. Regarding the availability of information on how to use the site, the auditor indicated that tutorials or 'help' links were available as well as a 'contact us' link. The auditor added that the website is well designed, easy to navigate, and an excellent source of information.

### **3.23.3 Obtaining Information**

The auditor indicated that he did not attempt to download or print information from the site. This technician indicated that the site includes lists and sources identified for training

information that are not Internet-capable, as well as information on available factory tools and ordering.

### **3.23.4 OBD System Monitors and Repair**

With respect to OBD system monitors and repair, the auditor noted that both the monitor descriptions and parameter (or strategy) descriptions are available on the site, along with a list of DTCs and useful information for interpreting Mode 6 data. The auditor provided a positive response with respect to all other aspects of OBD system monitors and repair, noting specifically that the information provided on the site was well written and easy to understand.

### **3.23.5 Reprogramming and Reinitialization**

The auditor indicated that although they have not performed reprogramming or reinitialization services for Suzuki vehicles within the past year, the information on the tools and associated procedures needed to perform reprogramming and reinitialization appear to be readily available on the site. The auditor indicated that information on the selection of the proper calibration for the vehicle and the vehicle calibration is also available. This auditor noted that the software to communicate between the J2534 device and the PC could not be found on the Suzuki website.

### **3.23.6 Conclusion**

Overall, the results of the Suzuki audit indicate that the site is generally well designed, easy to navigate, and contains useful and readily available information for the technicians. The only specific deficiency identified by the auditor is the apparent absence of the software to communicate between the J2534 device and the PC for reprogramming purposes.

## **3.24 Toyota**

### **3.24.1 Introduction**

The six technicians that submitted a completed questionnaire for Toyota, provided reviews that were very favorable overall. One of the auditors indicated that their shop specializes in the repair of vehicles manufactured by Asian OEMs, one indicated a specialty in the repair of GM vehicles, while all others indicated no particular specialty. Most of the auditors cited aftermarket sources as their primary source of electronic service information, with two auditors indicating OEM websites are their primary source. Most of the auditors noted that they use OEM websites less than 10 times per month, and two of the auditors indicated that they only access the site using short-term subscriptions.

### **3.24.2 Access and Navigation**

All of the auditors acknowledged that short-, mid-, and long-term options are available for accessing the Toyota service information site and that they could access the entire site. All of the auditors also indicated that the website provides users with a description of the minimum computer hardware and software needed to access data and information on the site; that the site

provides accessibility using commonly available software; and that links were provided for the browsers needed to access the site. With respect to the availability of information on how to use the site, all of the auditors acknowledged the existence of a 'contact us' link (one auditor had used the link successfully), and indicated that tutorials or 'help' links are available, relevant, and useful.

Regarding the navigation features, all of the auditors indicated that the user could access different portions of the site without returning to the home page. One auditor observed that the requested information shows up in a new window while the repair information links remain visible on the left side of the screen, which is a nice feature. Regarding search mechanisms, all of the auditors acknowledged that the site allows the user to search by various topics and some specifically noted that the site is very user-friendly with respect to searching for relevant data and information.

### **3.24.3 Obtaining Information**

Most of the auditors indicated that they were able to find the data or information they were seeking. One auditor indicated that they were unable to locate information on Mode 6. All of the auditors indicated that training information, sources for training materials that are not Internet-capable, and information on factory tools and ordering are available. All of the auditors also indicated that they were able to download information from the site, such as electrical wiring diagrams, service and repair manuals, emission system repair information, TSBs, and many other documents. The auditors did not recognize any major deficiencies or difficulties associated with finding and obtaining information from the Toyota website.

### **3.24.4 OBD System Monitors and Repair**

Regarding OBD system monitors, the auditors generally provided a positive response. All of the auditors indicated that adequate monitor descriptions and parameter (or strategy) descriptions are available. Nearly all of the auditors noted that they were able to locate a list of relevant DTCs that are sufficient to assist with diagnosis and repair. All of the auditors indicated that information to determine the enable criteria; an explanation of the sequence, execution frequency, and duration of the monitor; and the malfunction thresholds, are available. Some auditors specifically noted that the OBD monitor information is easy to find and very informative overall.

Regarding OBD repair, all of the auditors indicated that the information on diagnosis and repair for all DTCs and descriptions of the DTCs for Toyota are available and sufficient. Three auditors indicated that the site includes useful information for interpreting Mode 6 data. Some auditors noted that they were unable to locate information on Mode 6 data interpretation. All of the auditors acknowledged the existence of TSBs and trouble shooting information for OBD repair on the site. Some auditors added that the OBD repair information is very detailed and presented in a user-friendly manner, and one auditor indicated that the logic interpretation on the Toyota site is useful for other vehicle makes as well.

### **3.24.5 Reprogramming and Reinitialization**

One of the auditors indicated that they had performed reprogramming services for Toyota vehicles within the past year. Most of the auditors indicated that they were able to find the necessary information on tools and associated procedures needed to perform reprogramming. Most auditors also indicated that the vehicle calibration and the information to select the proper calibration are available. One auditor observed that the calibration CD, which contains the most current vehicle calibration files, applicable TSBs, and other information, is compatible with the scan tools and J2534 interfaces. Only three of the auditors indicated that the software to communicate between the J2534 device and the PC are available. One auditor cited information on the site claiming that Toyota works closely with J2534 interface manufacturers to ensure that the hardware operates safely and efficiently with Toyota products. Three of the auditors indicated that they could locate information on the tools and associated procedures needed to perform reinitialization.

### **3.24.6 Conclusion**

The auditors indicated that nearly all aspects of the Toyota service information website were well organized, thorough, user-friendly, and very useful to the technician. The auditors' responses indicate that with the exception of potentially providing additional information on Mode 6, there are no suggestions for additional improvements at this time.

## **3.25 Volkswagen**

### **3.25.1 Introduction**

The six technicians that submitted a completed questionnaire for Volkswagen generally rated the service information website favorably. One of the auditors indicated that their shop specializes in the repair of European vehicles, but most other auditors indicated that their shop does not specialize in servicing vehicles from any particular OEM. One of the auditors noted that they are affiliated with an aftermarket parts distributor. Nearly all of the technicians cited aftermarket sources as their primary source of electronic service information. Three of the auditors noted that they occasionally access an OEM website using a short-term subscription, and two others indicated that they access OEM websites relatively frequently.

### **3.25.2 Access and Navigation**

The auditors all acknowledged the existence of the short-, mid-, and long-term options for accessing the Volkswagen service information site and indicated that they could access the entire site (although one auditor indicated that reprogramming information is only available for an additional fee). Nearly all of the auditors also indicated that the website provides users with a description of the minimum computer hardware and software needed to access data and information on the site and that Volkswagen provides accessibility using commonly available software. Three of the auditors indicated that links were provided for necessary plug-ins or browsers. Regarding accessibility in general, all auditors provided very high rankings for the site. With respect to the availability of information on how to use the site, the auditors acknowledged the existence of a 'contact us' link as well as tutorials or 'help' links, and indicated



that these were readily available and useful. However, one auditor noted that the help information is not clearly visible and that additional information should be added to the home page. With regard to the 'contact us' link, two of the auditors had used the link and had received a timely response.

Regarding the navigation features, all of the auditors indicated that the site allows the user to navigate to different portions of the website without returning to the home page. Most auditors noted generally that the site is very well organized and easy to navigate. However, one auditor observed that on their screen, the font appeared to be too small and the left side frame did not resize properly while navigating to different portions of the site. Some of the auditors cited the recent revisions to the structure of the Volkswagen site, with one auditor specifically noting that the new format and annual cost structure is reasonable and a significant improvement over the previous per-document approach. However, one auditor observed that one disadvantage of the site's structure was Volkswagen's reliance on PDF files.

All of the auditors noted that the site allows the user to search by various topics or keywords. One auditor indicated that it would be helpful to have a 'general search' function in addition to the model-specific search, which would allow the user to quickly locate and filter through all relevant information pertaining to one particular issue or system. This auditor added that being able to review all the data and information pertaining to a particular electronic system across all models would allow technicians to determine whether information that is listed for a particular model may be relevant to other models as well.

### **3.25.3 Obtaining Information**

Nearly all of the auditors indicated that they were able to find and print the information they needed and that training information (including sources for training materials that are not Internet-capable) as well as factory tools and ordering information are available. Most of the auditors indicated that they were able to download information from the site, including information on the OBD II drive cycle, the engine systems training manual, and other PDF documents. Two auditors observed that there was some information that they were unable to locate on the site. One of these auditors indicated that they were unable to find any information pertaining to DTC code #17579 for a 2001 VW Passat 2.8L ATQ engine, while another noted generally that they were unable to locate any information on reprogramming.

### **3.25.4 OBD System Monitors and Repair**

For nearly every aspect of OBD system monitors and repair, the auditors provided a positive response, noting that the information could be found and was relevant, thorough, and useful. With respect to OBD systems, all of the auditors indicated that sufficient monitor and parameter (or strategy) descriptions are available. Only one auditor indicated that the monitor descriptions appear to lack sufficient information, noting that the organization of the information for model years 1996 through 2000 could be improved. All of the auditors indicated that they were able to locate a list of relevant DTCs, which is sufficient to assist with diagnosis and repair; and information to determine the enable criteria. Most auditors noted that they were able to locate an explanation of the sequence, execution frequency, and duration of the monitor and the malfunction thresholds for the monitor.

Regarding OBD repair, all of the auditors indicated that descriptions of the DTCs for Volkswagen were available and that the information on diagnosis and repair for all DTCs is sufficient. Three of the auditors indicated that useful information is available for interpreting Mode 6 data (and two of these auditors indicated that the information is useful). One auditor indicated that the site does not include a thorough explanation of Mode 6 data and how to interpret these data, and that the information would be easier to access if it were included as a sub-category under 'Engine Management.' All of the auditors also acknowledged the existence of TSBs and trouble shooting information for OBD repair on the site. One auditor observed that although the trouble shooting procedures are very specific, they would be difficult to follow if the technician does not have an OE style scan tool. Another noted generally that Volkswagen's OBD II link was very helpful and that in addition to the OBD information on the OEM websites, it would be useful to have a common link for all OEMs that would include all EPA mandated diagnostic and repair information. One auditor observed that the online training that Volkswagen has provided is very valuable and provides some excellent background information on the operation of the OBD systems.

### **3.25.5 Reprogramming and Reinitialization**

None of the auditors indicated that they had performed reprogramming or reinitialization for Volkswagen within the past year. However, most of the auditors indicated that they were able to find the necessary information on tools and the associated procedures needed to perform reprogramming and reinitialization. Only two auditors noted that they could locate information to select the proper calibration, and three indicated that they could find the vehicle calibration. One auditor noted generally that although the information is included on the site, it is difficult to find and use, and another observed that with respect to the reinitialization procedures, there was limited information regarding the actual repair process. Most auditors noted that the information on the alternate method for reinitialization was clearly listed and easy to locate. Some auditors observed that the technician needs a factory scan tool (available for purchase or short-term rental) in order to perform reprogramming services. Most auditors did not have this tool, and one auditor indicated that working with the dealer to arrange service in this regard is quite difficult due to their location.

### **3.25.6 Conclusion**

Overall, the auditors indicated that the Volkswagen service information website is relatively well designed and easy to use and navigate, and that the available information is useful. The auditors' responses indicate that there are some minor improvements that could potentially be helpful. These include: improving the organization of data and information for vehicle model years 1996 through 2000 so that it is consistent with how the more recent model year vehicles are presented; incorporating a 'general search' mechanism so that technicians can search for data and documents pertaining to a specific issue or system that might apply across multiple models; expanding the available information on Mode 6 data; improving the organization of the reprogramming and reinitialization information so that it is more user-friendly; and ensuring that all DTC listings and information are complete.

## **3.26 Volvo**

### **3.26.1 Introduction**

The three technicians that submitted a completed questionnaire for Volvo rated some aspects of the service information site favorably. Two of these auditors indicated that their shops specialize in the repair of Volvo vehicles and the other auditor indicated that his shop had no particular specialty. One auditor indicated that aftermarket sources are used as his primary source of electronic service information. The other two auditors noted that OEM websites are their primary source of information and that they subscribe to the Volvo site on an annual basis. The other auditor indicated that they use short-term subscriptions on an as-needed basis to access the Volvo service information website.

### **3.26.2 Access and Navigation**

All of the auditors acknowledged the existence of the short-, mid-, and long-term options for accessing Volvo's service information but only one could access the entire site. Two auditors indicated that they were unable to access diagnostic software and TSBs. All the technicians indicated that the website provides users with a description of the minimum computer hardware and software requirements and two auditors indicated that they could easily connect to the site using common and readily available software. However, some auditors observed that there are some unique requirements for accessing technical information on the Volvo site, including a subscription to proprietary software.

With respect to the navigation features, only one auditor indicated that they were able to search the website by various topics. However, two auditors indicated that the Volvo site does not allow for the user to search by keyword or phrase, and one of these auditors indicated that although training information, TSBs, and 'Tech Notes' are available, none are searchable by keyword. Two auditors indicated that they could navigate the site without returning to the home page. Regarding the availability of information on how to use the site, all three auditors indicated that tutorials or 'help' links were available as well as a 'contact us' link. Two auditors indicated that they used the 'contact us' link but did not receive a timely response and had to contact other sources (e.g., EPA and NASTF) in order to obtain the information they needed.

All three of the auditors indicated they had password issues. Two of the auditors subscribe to the Volvo site on an annual basis. One of these auditors mentioned that since the password was defined by Volvo, it took two or three phone calls to straighten out the issue. Another auditor with an annual subscription noted that it took weeks to get his passwords to work.

### **3.26.3 Obtaining Information**

Two of the auditors indicated that they were able to print documents. Only one of the auditors noted that they were able to download (and save to their computer) certain PDF files from the website. Two auditors noted that they had purchased materials from the site, including training videos, bulletins, wiring diagrams and a Volvo standard time guide. One auditor observed that prior to the purchase of a document, the technician is only able to view the table of

contents. Two of the technicians noted that information on training could be located on the site, and all noted that information on available factory tools and ordering was available. All the auditors indicated that they attempted to find information on the site that did not appear to be available, including diagnostics, software, bulletins and special tool information. One auditor requested that Volvo attach a copy of all bulletins and tech notes in the weekly "What's New" email that is currently distributed.

#### **3.26.4 OBD System Monitors and Repair**

Two of the auditors mentioned that they were able to locate OBD monitor descriptions. One auditor observed that the OBD monitors are identified only by Volvo's unique numbering system that is accessible through an original equipment Volvo scan tool. This auditor added that the SAE "P" code numbers appear to be missing from the monitor descriptions. Another auditor mentioned that the monitor descriptions lack information and that for many of the codes, it is difficult to locate the parameters that cause the code to trip. Two of the auditors were able to find a description of all parameters being monitored and a list of DTCs. However, only one of the auditors found the list of DTCs to be sufficient to assist with diagnosis and repair. One auditor noted that the information on why the code was set is vague, while another observed that accessing different types of information on the codes is somewhat cumbersome and time consuming. Two of the auditors indicated that they were able to find useful information on determining the enable criteria for each monitor; the sequence, execution frequency and duration of the monitor; and the malfunction thresholds for the monitor.

Only one of the auditors indicated that they were able to locate useful information on interpreting Mode 6 data. In addition, only one auditor found sufficient diagnostic and repair information for DTCs and descriptions of the Volvo-specific DTCs. One auditor indicated that the diagnostic and repair information is insufficient without ready access to the SAE/ISO "P" numbers. Another auditor noted specifically that they were unable to locate a crossover list between the Volvo codes and the "P" codes. All three auditors observed that the TSBs are not readily available on the site. One technician specifically noted that Volvo's warranty extension on throttle modules (i.e., tech notes 25-149A, B, C, D) is not available for all applicable vehicles. Another auditor observed that although the TSBs are not available from the VIDA software, they can be found in the "PDF library" which is searchable by year and model of the vehicle.

#### **3.26.5 Reprogramming and Reinitialization**

All three auditors indicated that they had performed reprogramming services for Volvo vehicles within the past year, while only one auditor indicated that they had performed reinitialization procedures. All of the auditors indicated that they were able to find information on the tools needed to perform reprogramming but only one of the auditors was able to locate information on the associated procedures. Two auditors noted that even though they could locate the information on reprogramming, they were unable to download this information. One auditor indicated that they were unable to perform a successful reprogram without sending the vehicle to the dealer. Only one auditor indicated that the software to communicate between the J2534 device and the PC; information on the selection of the proper calibration for the vehicle; and the vehicle calibration are available. With respect to reinitialization, only one auditor indicated that

they were able to locate information on the tools (and associated procedures) needed to perform this service.

### **3.26.6 Cost**

All three of the auditors noted that the cost of the annual subscription for Volvo is excessive. One auditor observed that the independent technicians pay \$8,000 a year for VIDA, which is offered to dealers for only \$650 per year. Another auditor mentioned that the lower level subscription of \$3,000 per year does not include some basic information, such as wiring diagrams and service bulletins. One of the auditors provided some comments about the cost structure of OEM websites in general. This auditor observed that the current pricing structure for OEM websites have a negative impact on both the consumer and independent service professionals and recommended that EPA reconsider the current pricing policy guidelines.

### **3.26.7 Conclusion**

Overall, results of the Volvo audit indicate that the site contains some useful information for the technicians, but that some improvements could be helpful. Potential revisions to the site include: ensuring that technicians are able to access diagnostic software and TSBs; expanding the options for downloading documents and information; improving the search options so that the technicians may be able to use a topic or keyword search to easily locate relevant information; ensuring that adequate information is provided in response to questions submitted through the "contact us" link; and improving the availability of diagnostic and other information for the DTCs.

## **4. General Observations**

In most cases, the auditors indicated that the OEM websites serve as an excellent resource for obtaining the information or guidance they need and are relatively well organized with helpful search and navigation features. However, along with their responses to the individual questions, some auditors provided additional comments, observations, and recommendations pertaining to potential improvements to the OEM websites. Many of the auditors expressed similar comments and observations regarding the site structure, options for access, subscription costs, search mechanisms, consistency of the sites with respect to organization and data availability, and missing information.

Regarding the options for accessing information on the OEM websites, most auditors provided positive feedback, with a few exceptions. Most of the sites offer three options for access (short-, mid-, and long-term). However, one OEM has designed their site so that the technician is required to purchase documents in order to access the information they need. The auditors generally rated this type of per-document structure much lower than the sites that offered a range of options based on the time period needed for access. The auditors found that locating the information through the per-document approach can be time consuming and costly and often does not allow the auditor to locate all of the necessary information. The short-, mid-, and long-term subscriptions available on most of the OEM websites seem to provide adequate accessibility options for the auditors. However, a few auditors indicated that it would be helpful if the OEMs

offered even more access options than are currently available, such as per-minute or per-hour subscriptions.

For nearly all of the OEM website audits, most auditors indicated that they use aftermarket sources as their primary source of electronic service information. Many of these auditors noted that since their shop services a variety of makes and models, subscribing to aftermarket sources such as ALLDATA allows for the acquisition of nearly all necessary information and data from one familiar source. Some observed that aftermarket sources are organized in a manner that allows the technician to easily locate and obtain the necessary documents and information, and others cited the common organization of the data for different makes and models and/or their familiarity with the product as their primary reason for using aftermarket sources as opposed to OEM websites.

Another factor that contributes to the level and frequency of use appears to be the varying structure and organizational features between the different OEM websites. Several auditors observed that there are significant differences with regard to layout, navigation, and organization. Some of the auditors indicated that the learning curve associated with using each site, particularly if they are servicing numerous makes and models, often led to a search for information that was more time consuming than necessary. These auditors generally felt that improving the consistency between these components could help technicians locate relevant information on the sites with greater ease and efficiency, and as such, would help promote greater use by all technicians.

Although many of the auditors indicated that they could search the websites by topic and keyword, some provided additional comments and suggestions in this regard. A few of the auditors indicated that the website they were evaluating does not have a topic and keyword search mechanism, and observed that the absence of this feature can be problematic, particularly when the user is trying to locate specific data or information. However, some observed that although a topic and keyword search mechanism exists, it does not adequately locate relevant information as needed. A few of these auditors simply noted that the search mechanism did not yield any results or the desired results, while others provided specific suggestions with respect to the design features of the keyword search, such as allowing the user to perform a keyword search either across all categories or based on specific criteria such as model or year. Generally, the auditors felt that a well designed search mechanism is crucial to ensuring that all users are able to easily locate the desired information.

Only a small number of auditors referenced price as their primary reason for using aftermarket sources. However, it seems that cost is a factor that influences the use of OEM websites as a primary source of information, particularly if independent technicians service a wide variety of makes and models. Most auditors access the sites and information they need through short-term subscriptions on an as-needed basis, as this is the most cost-effective strategy. It appears that in many cases, OEM websites serve as a secondary source when the desired data or information cannot be located through other aftermarket sources.

In addition to the cost issues associated with subscribing to multiple sites, some auditors also observed that there are significant differences between some of the OEM website subscription costs. These fees vary widely, ranging from free access (Hyundai) to an \$8,000

annual fee (Volvo). Many of the auditors recommended that the pricing structure of the sites be standardized to some degree, and some noted that the higher prices are prohibitive for many technicians.

In addition to raising issues regarding cost structure differences, some auditors anecdotally observed that there are also disparities between the types of information provided to the dealers and the independent technicians. These auditors added that all technicians should be able to access the same types of data and information currently available to the dealers. Some acknowledged that it may be difficult for OEMs to release certain information to the public (e.g., code information for reprogramming and/or reinitialization), but a few noted that despite these issues, the OEMs should try to ensure that the independent technicians have all the information they need to perform the necessary repairs.

For nearly all of the sites, the auditors acknowledged that the site contained a wealth of valuable information. However, in many cases, these auditors also referenced specific information or data that appeared to be missing. In some of these cases, the information could have been available on the site, but was not found by the auditor. There were certain types of information that were cited as missing or deficient by a number of auditors within numerous OEM websites, including: Mode 6 data, training information and resources, and certain data and information on OBD system monitors and repair.

Some of the auditors indicated that in addition to standardizing the structure, organization, and cost of the OEM websites, EPA and/or the OEMs should facilitate a greater level of outreach to the independent technician community. This type of effort could help disseminate information on the existence, location, and content of the OEM websites and could also generally promote greater use of the websites. Some of the auditors indicated that until they participated in the OEM audit process, they were unaware of the quality and depth of information available on the sites, and in most cases, the auditors noted that the sites are a valuable resource for obtaining electronic service information.

## **5. Conclusion**

The goal of this OEM website audit has been to obtain feedback from independent service technicians on the organization and content of the OEM websites. This audit is part of a broader effort to determine whether the data and information required by the Service Information Rule are available on the OEM websites and whether it can be found and accessed by all technicians in the field. The Steering Committee along with EPA staff designed the OEM website audit process and questionnaire in order to obtain a preliminary assessment of the data elements and information that OEMs are required to include on their websites with respect to OBD systems and emissions-related repairs. The questionnaire provided the framework by which a thorough assessment of all OEM websites could be performed.

The preceding sections of this report provide a summary of the questionnaire responses and additional comments as provided by the auditors, and some potential improvements to the OEM websites based on those responses and comments. The audit results and discussion included in this summary report are not designed to indicate either compliance or noncompliance with the Service Information Rule. The intent is that the audit results along with this summary

document can serve as a resource for the OEMs to help identify potential areas for expansion and improvement within their existing websites.

Overall, the OEM website audit met its goal of obtaining valuable feedback from the service technicians, which may be used to identify improvements to the service information websites. The auditors generally noted that the OEM websites are a useful resource for obtaining electronic service information. EPA will continue to assess whether follow-up analyses or additional audits would be helpful in identifying additional improvements or evaluating ongoing changes to the OEM service information websites as well as promoting their use by all interested technicians.



**Appendix A****OEM Website Audit Project: Steering Committee Members**

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**Appendix B**  
**Auditor Information**

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**Table B-1: Summary of Background and Level of Experience for Technicians Participating in the EPA Service Information Audit**

Auditor	Position	Experience with Diagnosis & Repair of Emission Systems (Years)	ASE Certification				Internet Access	OEM Website Auditor Requested to Evaluate	Percent of Emission System Repairs Attributable to this OEM	Experience with Requested Website (Hours)	Opportunities for Auditor's Shop to Use Requested Website (estimated # times per month)	Other Websites that the Auditor is Interested in Evaluating	Other Websites that the Auditor has Experience With
			Engine Repair	Engine Performance	Electrical/Electronics	L1							
Acura_auditor 1	owner	22					dsl	Volkswagen	10	1 to 5	2 to 4	Acura, Chrysler/Dodge/Eagle/Jeep/Plymouth, Ford/Lincoln/Mercury, MercedesBenz, Nissan, Volvo	General Motors, Toyota
Acura_auditor 3	technician	24	yes	yes	yes	yes	dsl	Honda	15	10+	170	Acura	Toyota
Acura_auditor 5	owner	25	yes	yes	yes	yes	dsl	General Motors	50	0	35	Acura, Chrysler/Dodge/Eagle/Jeep/Plymouth, General Motors, Honda, Mazda, Nissan, Toyota	Ford/Lincoln/Mercury, General Motors
Acura_auditor 6	owner	40	yes	yes	yes	yes	dsl	Volkswagen	5	0	10	Acura, General Motors, Honda, MercedesBenz	Acura, Chrysler/Dodge/Eagle/Jeep/Plymouth, Ford/Lincoln/Mercury, General Motors, Honda, Jaguar, Lexus, Mazda, Toyota
Acura_auditor 8	technician	3	yes	yes	yes	yes	dsl	Toyota	20	5 to 10	25	Honda	Acura, Volkswagen
Audi_auditor 1	owner	20	yes	yes	yes	yes	cable	BMW	100	10+	60	Audi	None
Audi_auditor 4	owner	20	yes				cable	Volkswagen	100	10+	10	Audi	Audi
Audi_auditor 5	owner	24					cable	Audi	35	0	80	MercedesBenz	None
Audi_auditor 7	owner	33	yes	yes	yes		dsl	Audi	50	1 to 5	25	Volkswagen	BMW
BMW_auditor 2	owner	20					dsl	BMW	100	10+	20	None	None
BMW_auditor 3	owner	24	yes	yes	yes	yes	dsl	BMW	100	10+	8	None	None
BMW_auditor 5	owner	29					cable	BMW	100	10+	75	None	None
BMW_auditor 6	owner	12					dsl	BMW	100	0	30+	None	None
BMW_auditor 7	owner	32					dsl	BMW	25	10+	15	None	None
BMW_auditor 8	owner	15	yes	yes	yes		dsl	BMW	100	0	10	None	None
BMW_auditor 9	owner	19					dialup	BMW	70	1 to 5	15	Volvo	None
BMW_auditor 10	technician	22	yes	yes	yes	yes	dsl	BMW	99	0	40	None	None
BMW_auditor 11	owner	25					dsl	BMW	100	10+	15	BMW	BMW
BMW_auditor 12	manager	14	yes	yes	yes		cable	BMW	10	1 to 5	50	MercedesBenz	None
BMW_auditor 14	owner	11	yes	yes	yes	yes	dsl	BMW	22	0	20	MercedesBenz	None
Chrysler_auditor 1	owner	14	yes	yes	yes	yes	dsl	Chrysler/Dodge/Eagle/Jeep/Plymouth	30	0	20	General Motors	None

(cont.)

**Table B-1: Summary of Background and Level of Experience for Technicians Participating in the EPA Service Information Audit (cont.)**

Auditor	Position	Experience with Diagnosis & Repair of Emission Systems (Years)	ASE Certification				Internet Access	OEM Website Auditor Requested to Evaluate	Percent of Emission System Repairs Attributable to this OEM	Experience with Requested Website (Hours)	Opportunities for Auditor's Shop to Use Requested Website (estimated # times per month)	Other Websites that the Auditor is Interested in Evaluating	Other Websites that the Auditor has Experience With
			Engine Repair	Engine Performance	Electrical/Electronics	L1							
Chrysler_auditor 4	owner	10	yes	yes	yes	yes	cable	Chrysler/Dodge/Eagle/Jeep/Plymouth	30	1 to 5	15	Ford/Lincoln/Mercury	General Motors
Chrysler_auditor 5	owner	31	yes	yes	yes	yes	cable	Chrysler/Dodge/Eagle/Jeep/Plymouth	35	1 to 5	25	Ford/Lincoln/Mercury	Ford/Lincoln/Mercury, General Motors
Chrysler_auditor 6	owner	25	yes	yes	yes	yes	dsl	Chrysler/Dodge/Eagle/Jeep/Plymouth	20	0	5	General Motors	BMW, Ford/Lincoln/Mercury, Honda, Toyota
Chrysler_auditor 8	owner	23	yes	yes	yes	yes	cable	Chrysler/Dodge/Eagle/Jeep/Plymouth	15	0	5	Ford/Lincoln/Mercury	None
Chrysler_auditor 9	owner	18	yes	yes	yes	yes	dialup	Chrysler/Dodge/Eagle/Jeep/Plymouth	20	0	10	General Motors	None
Chrysler_auditor 16	owner	25	yes	yes	yes	yes	dsl	General Motors	10	0	15	Chrysler/Dodge/Eagle/Jeep/Plymouth, Ford/Lincoln/Mercury	None
Chrysler_auditor 17	owner	30	yes	yes	yes	yes	dsl	Ford/Lincoln/Mercury	25	0	25	Chrysler/Dodge/Eagle/Jeep/Plymouth	General Motors
Chrysler_auditor 19	owner	25	yes	yes	yes	yes	cable	General Motors	50	1 to 5	15	Chrysler/Dodge/Eagle/Jeep/Plymouth	Ford/Lincoln/Mercury
Chrysler_auditor 20	owner	30					cable	General Motors	30	1 to 5	4	Chrysler/Dodge/Eagle/Jeep/Plymouth	Ford/Lincoln/Mercury
Chrysler_auditor 21	owner	5					dsl	General Motors	20	5 to 10	5	Chrysler/Dodge/Eagle/Jeep/Plymouth, Ford/Lincoln/Mercury	Chrysler/Dodge/Eagle/Jeep/Plymouth, Ford/Lincoln/Mercury, Toyota
Ford_auditor 3	technician	25	yes	yes	yes	yes	cable	Ford/Lincoln/Mercury	40	0	15	Chrysler/Dodge/Eagle/Jeep/Plymouth	General Motors
Ford_auditor 5	owner	31		yes	yes		dsl	Ford/Lincoln/Mercury	26	1 to 5	5	Toyota	Toyota
Ford_auditor 6	technician	27	yes	yes	yes	yes	dialup	Ford/Lincoln/Mercury	60	0	10	Chrysler/Dodge/Eagle/Jeep/Plymouth	General Motors
Ford_auditor 9	manager	15	yes	yes	yes		dsl	Ford/Lincoln/Mercury	60	5 to 10	3	General Motors	Chrysler/Dodge/Eagle/Jeep/Plymouth
Ford_auditor 11	technician	10	yes	yes	yes	yes	dsl	General Motors	20	0	10	Ford/Lincoln/Mercury	Toyota
Ford_auditor 16	technician	13					dsl	Ford/Lincoln/Mercury	35	5 to 10	75	General Motors	General Motors
Ford_auditor 18	owner	25	yes	yes	yes	yes	dsl	General Motors	20	5 to 10	10	Ford/Lincoln/Mercury	Honda

(cont.)

**Table B-1: Summary of Background and Level of Experience for Technicians Participating in the EPA Service Information Audit (cont.)**

Auditor	Position	Experience with Diagnosis & Repair of Emission Systems (Years)	ASE Certification				Internet Access	OEM Website Auditor Requested to Evaluate	Percent of Emission System Repairs Attributable to this OEM	Experience with Requested Website (Hours)	Opportunities for Auditor's Shop to Use Requested Website (estimated # times per month)	Other Websites that the Auditor is Interested in Evaluating	Other Websites that the Auditor has Experience With
			Engine Repair	Engine Performance	Electrical/Electronics	L1							
Ford_auditor 19	technician	20	yes	yes	yes		dsl	Ford/Lincoln/Mercury	40	0	30	Chrysler/Dodge/Eagle/Jeep/Plymouth	General Motors
Ford_auditor 23	owner	25	yes	yes	yes	yes	dsl	Ford/Lincoln/Mercury	40	0	20	Chrysler/Dodge/Eagle/Jeep/Plymouth	General Motors
GM_auditor 1	technician	25	yes	yes	yes		cable	General Motors	75	1 to 5	25	Chrysler/Dodge/Eagle/Jeep/Plymouth	None
GM_auditor 3	technician	10		yes	yes	yes	cable	General Motors	40	0	50+	Chrysler/Dodge/Eagle/Jeep/Plymouth	Honda
GM_auditor 5	technician	31	yes	yes	yes	yes	dsl	General Motors	30	1 to 5	25	Chrysler/Dodge/Eagle/Jeep/Plymouth	None
GM_auditor 8	technician	3	yes	yes	yes		dsl	General Motors	70	0	20	None	None
GM_auditor 13	owner	20					dsl	General Motors	50	1 to 5	20	Ford/Lincoln/Mercury	Chrysler/Dodge/Eagle/Jeep/Plymouth
GM_auditor 15	technician	22	yes	yes	yes	yes	cable	General Motors	100	10+	400	Toyota	None
GM_auditor 16	owner	6		yes	yes	yes	dsl	General Motors	25	10+	20	Ford/Lincoln/Mercury	Toyota
GM_auditor 17	manager	20	yes	yes	yes	yes	dsl	General Motors	40	10+	25	Ford/Lincoln/Mercury	Ford/Lincoln/Mercury
GM_auditor 20	manager	10	yes	yes	yes		cable	General Motors	40	1 to 5	8	Ford/Lincoln/Mercury	Chrysler/Dodge/Eagle/Jeep/Plymouth
GM_auditor 21	manager	12	yes	yes	yes	yes	dsl	General Motors	35	5 to 10	100+	Ford/Lincoln/Mercury	Chrysler/Dodge/Eagle/Jeep/Plymouth
GM_auditor 22	owner	34	yes	yes	yes		cable	General Motors		0	12	Ford/Lincoln/Mercury	Ford/Lincoln/Mercury
Honda_auditor 1	owner	33		yes			cable	Honda	15	1 to 5	12		Chrysler/Dodge/Eagle/Jeep/Plymouth
Honda_auditor 6	owner	20	yes	yes	yes	yes	cable	Ford/Lincoln/Mercury	20	0	15	General Motors, Honda, Toyota	General Motors
Honda_auditor 7	manager	18	yes	yes	yes	yes	dsl	Honda	15	1 to 5	15	Toyota	Nissan
Honda_auditor 8	technician	10	yes	yes	yes	yes	cable	Honda		0		Toyota	Nissan
Honda_auditor 9	technician	30	yes	yes	yes		dialup	General Motors	25	1 to 5	4	Honda	BMW
Honda_auditor 11	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hyundai_auditor 2	owner	15	yes	yes	yes	yes	dsl	Honda	5	0	2	Chrysler/Dodge/Eagle/Jeep/Plymouth, Ford/Lincoln/Mercury, General Motors	Hyundai
Hyundai_auditor 4	owner	30	yes	yes	yes	yes	cable	General Motors	30	0	75	Chrysler/Dodge/Eagle/Jeep/Plymouth, Ford/Lincoln/Mercury	Hyundai
Hyundai_auditor 5	technician	40	yes	yes	yes	yes	dsl	Volkswagen	10	1 to 5	20	Volvo	Acura, Audi, Honda, Hyundai, Lexus, Toyota
Hyundai_auditor 7	manager	26	yes	yes	yes		cable	Chrysler/Dodge/Eagle/Jeep/Plymouth	15	1 to 5	10	Ford/Lincoln/Mercury, Hyundai, Infiniti, Isuzu, Lexus, Mitsubishi	General Motors

(cont.)

**Table B-1: Summary of Background and Level of Experience for Technicians Participating in the EPA Service Information Audit (cont.)**

Auditor	Position	Experience with Diagnosis & Repair of Emission Systems (Years)	ASE Certification				Internet Access	OEM Website Auditor Requested to Evaluate	Percent of Emission System Repairs Attributable to this OEM	Experience with Requested Website (Hours)	Opportunities for Auditor's Shop to Use Requested Website (estimated # times per month)	Other Websites that the Auditor is Interested in Evaluating	Other Websites that the Auditor has Experience With
			Engine Repair	Engine Performance	Electrical/ Electronics	L1							
Infiniti_auditor 3	owner	25	yes	yes	yes	yes	cable	Ford/Lincoln/ Mercury	25	0	5	Acura, Audi, BMW , Chrysler/Dodge/Eagle/Jeep/ Plymouth, Ford/Lincoln/Mercury, Honda, Hyundai, Infiniti, Isuzu, Lexus, Mazda, MercedesBenz, Mitsubishi, Nissan, Toyota, Volkswagen	General Motors
Infiniti_auditor 5	owner	12					cable	Toyota	20	5 to 10	15	Nissan	Acura, Honda, Infiniti, Isuzu, Lexus, Subaru
Infiniti_auditor 7	manager	26	yes	yes	yes		cable	Chrysler/Dodge/ Eagle/Jeep/ Plymouth	15	1 to 5	10	Ford/Lincoln/Mercury	General Motors
Isuzu_auditor 2	owner	26	yes	yes	yes	yes	dsl	Chrysler/Dodge/ Eagle/Jeep/ Plymouth	60	1 to 5	30	Isuzu	General Motors
Isuzu_auditor 3	technician	16	yes	yes	yes	yes	cable	Chrysler/Dodge/ Eagle/Jeep/ Plymouth	10	0	25	Acura, Ford/Lincoln/Mercury, General Motors, Honda, Hyundai, Infiniti, Isuzu, Kia, Lexus, Mazda, Mitsubishi, Nissan, Subaru, Suzuki, Toyota, Volkswagen, Volvo	Hyundai, Kia
Isuzu_auditor 5	technician	15	yes	yes	yes	yes	dsl	BMW	10	10+	4	Chrysler/Dodge/Eagle/Jeep/ Plymouth, Ford/Lincoln/Mercury, Isuzu, Mitsubishi, Subaru	Chrysler/Dodge/Eagle/ Jeep/Plymouth, Ford/Lincoln/Mercury, General Motors, Isuzu, Subaru
Isuzu_auditor 6	technician	30	yes	yes	yes	yes	cable	Ford/Lincoln/ Mercury	50	10+	30	Chrysler/Dodge/Eagle/Jeep/ Plymouth	BMW , General Motors, Isuzu, Land Rover, Lexus, MercedesBenz, Nissan, Toyota, Volkswagen
Isuzu_auditor 8	owner	12					cable	Toyota	20	5 to 10	15	Infiniti, Isuzu, Lexus, Nissan	Acura, Honda, Infiniti, Isuzu, Lexus, Subaru

(cont.)



**Table B-1: Summary of Background and Level of Experience for Technicians Participating in the EPA Service Information Audit (cont.)**

Auditor	Position	Experience with Diagnosis & Repair of Emission Systems (Years)	ASE Certification				Internet Access	OEM Website Auditor Requested to Evaluate	Percent of Emission System Repairs Attributable to this OEM	Experience with Requested Website (Hours)	Opportunities for Auditor's Shop to Use Requested Website (estimated # times per month)	Other Websites that the Auditor is Interested in Evaluating	Other Websites that the Auditor has Experience With
			Engine Repair	Engine Performance	Electrical/Electronics	L1							
Jaguar_auditor 2	owner	16	yes	yes	yes	yes	cable	Jaguar	2	1 to 5	10	Ford/Lincoln/Mercury	Chrysler/Dodge/Eagle/Jeep/Plymouth, Ford/Lincoln/Mercury, General Motors, Honda, Lexus, Nissan, Toyota
Jaguar_auditor 4	owner	20					dsl	MercedesBenz	40	1 to 5	5	Jaguar	Ford/Lincoln/Mercury
Jaguar_auditor 7	owner	18	yes	yes	yes	yes	dialup	Chrysler/Dodge/Eagle/Jeep/Plymouth	20	0	10	General Motors, Hyundai, Infiniti, Isuzu, Jaguar, Kia, Land Rover, Lexus, Mazda, Mitsubishi, Saab, Suzuki	None
Jaguar_auditor 8	owner	25	yes	yes	yes	yes	dsl	BMW	25	10+	30	Jaguar, MercedesBenz	Acura, Audi, BMW, General Motors, Honda, Infiniti, Jaguar, Land Rover, Lexus, MercedesBenz, Nissan, Porsche, Saab, Volkswagen, Volvo
Jaguar_auditor 10	owner	21	yes	yes	yes	yes	dsl	LandRover	50	1 to 5	20	Jaguar	Jaguar
Kia_auditor 6	technician	15	yes	yes	yes	yes	dsl	Volkswagen		0		Kia, Lexus, Mitsubishi	
Kia_auditor 9	technician	10	yes	yes	yes	yes	dsl	Toyota	20	10+	5	Honda, Hyundai, Isuzu, Kia, Mazda	Subaru
Land Rover_auditor 1	technician	34	yes	yes	yes	yes	dsl	MercedesBenz	10	10+	15	BMW	Land Rover
Land Rover_auditor 3	owner	21	yes	yes	yes	yes	dsl	LandRover	50	1 to 5	20	Jaguar	Jaguar
Land Rover_auditor 4	owner	30	yes	yes	yes	yes	cable	LandRover	25	10+	10	BMW, MercedesBenz, Porsche	BMW, Jaguar, Land Rover, MercedesBenz, Porsche
Land Rover_auditor 8	technician	39	yes	yes	yes		dsl	MercedesBenz	75	0		BMW, Lexus, Land Rover	
Lexus_auditor 2	technician	10	yes	yes	yes	yes	cable	Lexus	20	10+	10	Acura, Audi, Honda, Infiniti, Isuzu, Mazda, Mini, Nissan, Subaru, Toyota, Volkswagen	Chrysler/Dodge/Eagle/Jeep/Plymouth, Ford/Lincoln/Mercury, General Motors, Lexus, Toyota
Lexus_auditor 3	technician	26	yes	yes	yes	yes	cable	Lexus	30	0	5	None	General Motors, Hyundai, Toyota

(cont.)

**Table B-1: Summary of Background and Level of Experience for Technicians Participating in the EPA Service Information Audit (cont.)**

Auditor	Position	Experience with Diagnosis & Repair of Emission Systems (Years)	ASE Certification				Internet Access	OEM Website Auditor Requested to Evaluate	Percent of Emission System Repairs Attributable to this OEM	Experience with Requested Website (Hours)	Opportunities for Auditor's Shop to Use Requested Website (estimated # times per month)	Other Websites that the Auditor is Interested in Evaluating	Other Websites that the Auditor has Experience With
			Engine Repair	Engine Performance	Electrical/Electronics	L1							
Lexus_auditor 4	owner	25	yes	yes	yes	yes	cable	Ford/Lincoln/Mercury	25	0	5	Acura, Audi, BMW, Chrysler/Dodge/Eagle/Jeep/Plymouth, Ford/Lincoln/Mercury, Honda, Hyundai, Infiniti, Isuzu, Lexus, Mazda, MercedesBenz, Mitsubishi, Nissan, Toyota, Volkswagen	General Motors
Lexus_auditor 7	technician	6	yes	yes	yes	yes	dsl	Ford/Lincoln/Mercury	30	1 to 5	10	Lexus, Subaru	None
Lexus_auditor 8	owner	19	yes	yes	yes	yes	dsl	Ford/Lincoln/Mercury	25	1 to 5	15	General Motors	Chrysler/Dodge/Eagle/Jeep/Plymouth
Mazda_auditor 1	technician	20	yes	yes	yes	yes	cable	Chrysler/Dodge/Eagle/Jeep/Plymouth	33	0	50	Acura, Mazda, Mitsubishi, Nissan, Volvo	Ford/Lincoln/Mercury, General Motors, Toyota
Mazda_auditor 2	owner	35	yes	yes	yes		dsl	Mazda	10	0	10	Acura, Chrysler/Dodge/Eagle/Jeep/Plymouth, Honda, Infiniti, Isuzu, Jaguar, Land Rover, Lexus, Mitsubishi, Nissan, Subaru, Toyota, Volvo	Ford/Lincoln/Mercury, General Motors, Hyundai, Kia
Mazda_auditor 3	technician	10	yes	yes	yes	yes	cable	Lexus	20	10+	10	Acura, Audi, Honda, Infiniti, Isuzu, Mazda, Mini, Nissan, Subaru, Toyota, Volkswagen	Chrysler/Dodge/Eagle/Jeep/Plymouth, Ford/Lincoln/Mercury, General Motors, Lexus, Toyota
Mazda_auditor 5	owner	20	yes	yes	yes	yes	cable	General Motors	20	10+	30	Mazda, Nissan, Toyota	Acura, Chrysler/Dodge/Eagle/Jeep/Plymouth, Ford/Lincoln/Mercury, Honda, Mazda, Toyota
Mazda_auditor 6	technician	7	yes	yes	yes		cable	Mini	10	0	6	Ford/Lincoln/Mercury, Mazda	Toyota
Mazda_auditor 8	manager	20	yes	yes	yes	yes	dsl	General Motors	40	10+	25	Ford/Lincoln/Mercury, Mazda	Ford/Lincoln/Mercury
Mercedes_auditor 2	owner	37	yes	yes	yes		dsl	MercedesBenz	100	10+	30	None	None
Mercedes_auditor 7	technician	15	yes	yes	yes	yes	cable	MercedesBenz	100	0	50+	None	None
Mercedes_auditor 9	technician	39	yes	yes	yes		dsl	MercedesBenz	75	0		BMW	
Mercedes_auditor 10	technician	8	yes	yes	yes	yes	dsl	MercedesBenz	60	0	40+	BMW	None
Mini_auditor 1	manager	37	yes	yes	yes		dsl	BMW	95	0	60	Mini	None

(cont.)

**Table B-1: Summary of Background and Level of Experience for Technicians Participating in the EPA Service Information Audit (cont.)**

Auditor	Position	Experience with Diagnosis & Repair of Emission Systems (Years)	ASE Certification				Internet Access	OEM Website Auditor Requested to Evaluate	Percent of Emission System Repairs Attributable to this OEM	Experience with Requested Website (Hours)	Opportunities for Auditor's Shop to Use Requested Website (estimated # times per month)	Other Websites that the Auditor is Interested in Evaluating	Other Websites that the Auditor has Experience With
			Engine Repair	Engine Performance	Electrical/Electronics	L1							
Mini_auditor 2	owner	35	yes	yes	yes	yes	cable	Ford/Lincoln/Mercury	40	5 to 10	50	Mini	None
Mini_auditor 3	owner	30					dsl	BMW	98	10+	20	Mini	BMW
Mini_auditor 4	technician	7	yes	yes	yes		cable	Mini	10	0	6	Ford/Lincoln/Mercury	Toyota
Mini_auditor 6	owner	28					dsl	BMW	100	10+	5	Mini	Mini
Mini_auditor 7	owner	23					cable	BMW	100	10+	12+	Mini	None
Mini_auditor 8	owner	20					dsl	BMW	100	5 to 10	10	Mini	None
Mitsubishi_auditor 1	technician	16	yes	yes	yes	yes	cable	Chrysler/Dodge/Eagle/Jeep/Plymouth	10	0	25	Acura, Ford/Lincoln/Mercury, General Motors, Honda, Hyundai, Infiniti, Isuzu, Kia, Lexus, Mazda, Mitsubishi, Nissan, Subaru, Suzuki, Toyota, Volkswagen, Volvo	Hyundai, Kia
Mitsubishi_auditor 3	owner	35	yes	yes	yes	yes	dsl	Chrysler/Dodge/Eagle/Jeep/Plymouth	20	1 to 5	10	Ford/Lincoln/Mercury, General Motors, Mini, Mitsubishi, Nissan, Volkswagen, Volvo	Ford/Lincoln/Mercury, General Motors, Hyundai
Mitsubishi_auditor 4	owner	11	yes	yes	yes		cable	Toyota	60	0	30+	Chrysler/Dodge/Eagle/Jeep/Plymouth, Ford/Lincoln/Mercury, General Motors, Honda, Hyundai, Kia, MercedesBenz, Mitsubishi, Nissan, Subaru, Suzuki, Toyota, Volkswagen, Volvo	Chrysler/Dodge/Eagle/Jeep/Plymouth, Ford/Lincoln/Mercury, General Motors, Honda, Mitsubishi, Toyota
Mitsubishi_auditor 5	technician	25	yes	yes	yes	yes	cable	Honda	50	0	15	BMW, MercedesBenz, Mitsubishi, Volkswagen, Volvo	Chrysler/Dodge/Eagle/Jeep/Plymouth, Ford/Lincoln/Mercury, General Motors
Mitsubishi_auditor 6	owner	30					cable	General Motors	30	1 to 5	4	Chrysler/Dodge/Eagle/Jeep/Plymouth, Hyundai, Mitsubishi	Ford/Lincoln/Mercury

(cont.)

**Table B-1: Summary of Background and Level of Experience for Technicians Participating in the EPA Service Information Audit (cont.)**

Auditor	Position	Experience with Diagnosis & Repair of Emission Systems (Years)	ASE Certification				Internet Access	OEM Website Auditor Requested to Evaluate	Percent of Emission System Repairs Attributable to this OEM	Experience with Requested Website (Hours)	Opportunities for Auditor's Shop to Use Requested Website (estimated # times per month)	Other Websites that the Auditor is Interested in Evaluating	Other Websites that the Auditor has Experience With
			Engine Repair	Engine Performance	Electrical/Electronics	L1							
Nissan_auditor 2	manager	35	yes	yes	yes	yes	cable	Nissan	10	1 to 5	20	Audi, Subaru, Volkswagen	Acura, Chrysler/Dodge/Eagle/Jeep/Plymouth, Ford/Lincoln/Mercury, General Motors, Honda, Hyundai, Isuzu, Lexus, Mazda, Toyota
Nissan_auditor 4	manager	30	yes	yes	yes	yes	dsl	Nissan	5	1 to 5	6	Chrysler/Dodge/Eagle/Jeep/Plymouth	Toyota
Nissan_auditor 5	owner	30	yes	yes	yes	yes	cable	Nissan	15	0	10	BMW	None
Nissan_auditor 6	owner	20		yes	yes	yes	dsl	Ford/Lincoln/Mercury	20	1 to 5	10	Chrysler/Dodge/Eagle/Jeep/Plymouth, General Motors, Honda, Nissan, Toyota	None
Nissan_auditor 7	owner	30	yes	yes	yes	yes	cable	Nissan	15	0	20	Acura	Toyota
Nissan_auditor 8	owner	36					dsl	Nissan	10	1 to 5	10	Hyundai	Ford/Lincoln/Mercury, General Motors, Kia, Subaru, Toyota
Porsche_auditor 1	owner	30	yes	yes	yes	yes	dsl	Porsche	30	0	10	BMW, MercedesBenz	BMW
Porsche_auditor 3	owner	30	yes	yes	yes	yes	cable	LandRover	25	10+	10	BMW, MercedesBenz, Porsche	BMW, Jaguar, Land Rover, MercedesBenz, Porsche
Porsche_auditor 4	manager	22	yes	yes	yes	yes	dsl	BMW	20	10+	20	Porsche	
Porsche_auditor 5	owner	17	yes	yes	yes		dialup	Porsche	100	1 to 5	4	None	Volkswagen
Porsche_auditor 6	technician	35	yes	yes	yes	yes	dsl	BMW	40	1 to 5	10	Porsche	Honda
Porsche_auditor 9	owner	20	yes	yes	yes	no	dsl	Porsche	10	0	10	BMW, Mini	BMW, Mini
Saab_auditor 2	technician	29	yes	yes	yes	yes	dsl	Volkswagen	25	0	200	Acura, Audi, BMW, Chrysler/Dodge/Eagle/Jeep/Plymouth, Ford/Lincoln/Mercury, General Motors, Honda, Infiniti, Isuzu, Jaguar, Land Rover, Lexus, Mazda, MercedesBenz, Mitsubishi, Nissan, Saab, Subaru, Suzuki, Toyota, Volvo	General Motors, Toyota

(cont.)

**Table B-1: Summary of Background and Level of Experience for Technicians Participating in the EPA Service Information Audit (cont.)**

Auditor	Position	Experience with Diagnosis & Repair of Emission Systems (Years)	ASE Certification				Internet Access	OEM Website Auditor Requested to Evaluate	Percent of Emission System Repairs Attributable to this OEM	Experience with Requested Website (Hours)	Opportunities for Auditor's Shop to Use Requested Website (estimated # times per month)	Other Websites that the Auditor is Interested in Evaluating	Other Websites that the Auditor has Experience With
			Engine Repair	Engine Performance	Electrical/Electronics	L1							
Saab_auditor 5	owner	25	yes	yes	yes	yes	dsl	BMW	25	10+	30	MercedesBenz	Acura, Audi, BMW, General Motors, Honda, Infiniti, Jaguar, Land Rover, Lexus, MercedesBenz, Nissan, Porsche, Saab, Volkswagen, Volvo
Saab_auditor 7	technician	8	yes	yes	yes	yes	dialup	Volkswagen	40	0	20	Lexus, Saab, Volvo	BMW
Saab_auditor 8	owner	15					dsl	Volkswagen	40	1 to 5	30	BMW, Jaguar, Land Rover, Lexus, Saab	BMW, Jaguar, Land Rover
Subaru_auditor 2	technician	16	yes	yes	yes	yes	dsl	Subaru	18	5 to 10	25	Honda	Acura, Honda, Hyundai, Lexus, Toyota
Subaru_auditor 3	owner	27					cable	Subaru	15	0	10	General Motors	BMW
Subaru_auditor 4	technician	30	yes	yes	yes	yes	dsl	Subaru	25	1 to 5	30	None	None
Subaru_auditor 5	technician	6	yes	yes	yes	yes	dsl	Ford/Lincoln/Mercury	30	1 to 5	10	Subaru	None
Subaru_auditor 6	technician	16	yes	yes	yes	yes	cable	Subaru	18	0	30	General Motors	Toyota
Subaru_auditor 7	technician	33	yes	yes	yes		cable	General Motors	75	0	5	Subaru	None
Subaru_auditor 8	technician	10	yes	yes	yes	yes	dsl	Toyota	20	10+	5	Honda	Subaru
Suzuki_auditor 7	owner	13	yes	yes	yes	yes	cable	General Motors	20	0	5	Mazda, Saab, Suzuki, Volkswagen	Chrysler/Dodge/Eagle/Jeep/Plymouth
Toyota_auditor 1	technician	20	yes	yes	yes	yes	dsl	Toyota	25	0	5 to 10	Ford/Lincoln/Mercury	General Motors
Toyota_auditor 2	owner	27	yes	yes	yes		dsl	Toyota	80	1 to 5	15+	Honda	Nissan
Toyota_auditor 3	technician	26	yes	yes	yes	yes	dsl	General Motors	50	0	60	Toyota	
Toyota_auditor 4	manager	20	yes	yes	yes	yes	cable	Chrysler/Dodge/Eagle/Jeep/Plymouth	33	0	10	Toyota	General Motors
Toyota_auditor 5	manager	10	yes	yes	yes	yes	dsl	Toyota	2	10+	1	Chrysler/Dodge/Eagle/Jeep/Plymouth, Ford/Lincoln/Mercury, General Motors	Honda
Toyota_auditor 6	technician	23	yes	yes	yes	yes	cable	Toyota	4	0	2 to 4	Chrysler/Dodge/Eagle/Jeep/Plymouth, Ford/Lincoln/Mercury, General Motors, Honda	General Motors
VW_auditor 1	owner	13	yes	yes	yes	yes	cable	General Motors	20	0	5	Volkswagen	Chrysler/Dodge/Eagle/Jeep/Plymouth
VW_auditor 2	technician	18	yes	yes	yes		cable	MercedesBenz	1	10+	30	BMW, Mini, Volkswagen, Volvo	None

(cont.)

**Table B-1: Summary of Background and Level of Experience for Technicians Participating in the EPA Service Information Audit (cont.)**

Auditor	Position	Experience with Diagnosis & Repair of Emission Systems (Years)	ASE Certification				Internet Access	OEM Website Auditor Requested to Evaluate	Percent of Emission System Repairs Attributable to this OEM	Experience with Requested Website (Hours)	Opportunities for Auditor's Shop to Use Requested Website (estimated # times per month)	Other Websites that the Auditor is Interested in Evaluating	Other Websites that the Auditor has Experience With
			Engine Repair	Engine Performance	Electrical/Electronics	L1							
VW_auditor 4	technician	25	yes	yes	yes	yes	dsl	BMW	35	0	5	Volkswagen	General Motors
VW_auditor 5	technician	15	yes	yes	yes	yes	dsl	Volkswagen		0		None	None
VW_auditor 9	technician	8	yes	yes	yes	yes	dialup	Volkswagen	40	0	20	Volvo	BMW
VW_auditor 11	owner	20	yes				cable	Volkswagen	100	10+	10	Audi	Audi
Volvo_auditor 1	technician	34	yes	yes	yes	yes	cable	Volvo	75	10+	200	Toyota	Nissan
Volvo_auditor 2	owner	20	yes	yes	yes	yes	dsl	Volvo	100	10+	200	None	None
Volvo_auditor 3	owner	30	yes	yes	yes	yes	dsl	Volvo	15	0	15	None	Acura, Audi, Honda, Hyundai, Lexus, Subaru, Toyota, Volkswagen

**Table B-2: Summary of Technical and Training Resource Usage Patterns for Auditors Participating in the EPA Service Information Audit**

Auditor	Use of Technical Resources in Diagnosis & Repair of Emission Systems (1-Never; 2-Seldom; 3-Occasionally; 4-Often; 5-Always)					Use of Training Resources for Emission Systems (1-Never; 2-Seldom; 3-Occasionally; 4-Often; 5-Always)				
	Repair Manuals & Printed Publications (e.g., MOTOR, Chilton, OEM)	Electronic Service Information (e.g., ALLDATA, Mitchell1)	OEM Service Information Websites	Technical Assistance (e.g., IATN, Identifix)	Clinics and Seminars	Trade Magazines	Technical Bulletins	Training Schools	On-Site Training	Trade Shows
Acura_auditor 1	2	5	3	0	4	4	4	2	2	2
Acura_auditor 3	4	3	5	3	2	3	4	5	4	5
Acura_auditor 5	2	5	2	4	4	4	5	2	1	2
Acura_auditor 6	2	5	3	4	3	3	4	3	3	3
Acura_auditor 8	2	5	3	5	4	3	5	4	2	2
Audi_auditor 1	3	1	4	3	5	2	4	2	1	4
Audi_auditor 4	5	5	4	4	5	5	5	2	1	5
Audi_auditor 5	3	5	1	4	2	3	5	1	0	5
Audi_auditor 7	2	5	2	2	4	4	3	3	1	3
BMW_auditor 2	4	1	4	3	4	4	4	1	4	1
BMW_auditor 3	2	1	5	2	3	4	5	3	1	3
BMW_auditor 5	4	4	4	1	3	2	4	3	3	2
BMW_auditor 6	5	1	1	4	1	4	5	2	3	2
BMW_auditor 7	3	3	2	4	3	3	2	1	2	1
BMW_auditor 8	4	1	2	2	3	3	3	2	3	1
BMW_auditor 9	4	5	2	1	5	4	5	4	4	1
BMW_auditor 10	5	5	1	3	5	5	5	5	5	2
BMW_auditor 11	4	5	3	3	3	3	4	1	2	3
BMW_auditor 12	2	4	2	2	2	3	4	2	1	1
BMW_auditor 14	3	5	1	4	4	4	5	2	1	4
Chrysler_auditor 1	2	4	2	5	2	3	4	2	2	2
Chrysler_auditor 4	1	5	3	5	4	3	5	4	2	3
Chrysler_auditor 5	0	5	3	3	4	4	5	2	1	1

(cont.)

**Table B-2: Summary of Technical and Training Resource Usage Patterns for Auditors Participating in the EPA Service Information Audit (cont.)**

Auditor	Use of Technical Resources in Diagnosis & Repair of Emission Systems (1-Never; 2-Seldom; 3-Occasionally; 4-Often; 5-Always)					Use of Training Resources for Emission Systems (1-Never; 2-Seldom; 3-Occasionally; 4-Often; 5-Always)				
	Repair Manuals & Printed Publications (e.g., MOTOR, Chilton, OEM)	Electronic Service Information (e.g., ALLDATA, Mitchell1)	OEM Service Information Websites	Technical Assistance (e.g., IATN, Identifix)	Clinics and Seminars	Trade Magazines	Technical Bulletins	Training Schools	On-Site Training	Trade Shows
Chrysler_auditor 6	3	5	2	4	4	4	3	3	4	4
Chrysler_auditor 8	1	4	1	2	4	2	4	3	1	3
Chrysler_auditor 9	2	5	1	5	2	5	5	2	3	1
Chrysler_auditor 16	2	5	1	4	4	5	3	1	1	3
Chrysler_auditor 17	2	4	1	2	4	3	4	4	2	4
Chrysler_auditor 19	4	5	3	3	4	5	5	4	2	4
Chrysler_auditor 20	3	4	4	2	3	4	4	3	1	3
Chrysler_auditor 21	2	5	2	3	4	4	5	4	2	3
Ford_auditor 3	4	4	3	3	4	3	4	2	2	4
Ford_auditor 5	2	5	3	5	5	5	4	1	2	3
Ford_auditor 6	3	4	1	4	4	3	4	3	2	3
Ford_auditor 9	2	5	2	3	4	4	4	2	1	2
Ford_auditor 11	2	5	1	4	3	4	5	2	1	2
Ford_auditor 16	1	5	3	3	5	3	5	4	5	1
Ford_auditor 18	2	4	2	4	3	4	4	3	2	4
Ford_auditor 19	2	5	2	4	4	5	5	3	2	2
Ford_auditor 23	3	5	2	1	4	5	5	2	2	2
GM_auditor 1	3	4	3	3	4	3	4	4	2	2
GM_auditor 3	4	5	3	5	4	2	5	5	5	2
GM_auditor 5	2	5	3	4	4	4	5	3	3	1
GM_auditor 8	1	5	2	1	2	4	4	1	1	1
GM_auditor 13	4	0	4	5	2	3	3	1	1	1
GM_auditor 15	1	1	5	1	3	2	4	3	3	3

(cont.)



**Table B-2: Summary of Technical and Training Resource Usage Patterns for Auditors Participating in the EPA Service Information Audit (cont.)**

Auditor	Use of Technical Resources in Diagnosis & Repair of Emission Systems (1-Never; 2-Seldom; 3-Occasionally; 4-Often; 5-Always)					Use of Training Resources for Emission Systems (1-Never; 2-Seldom; 3-Occasionally; 4-Often; 5-Always)				
	Repair Manuals & Printed Publications (e.g., MOTOR, Chilton, OEM)	Electronic Service Information (e.g., ALLDATA, Mitchell1)	OEM Service Information Websites	Technical Assistance (e.g., IATN, Identifix)	Clinics and Seminars	Trade Magazines	Technical Bulletins	Training Schools	On-Site Training	Trade Shows
GM_auditor 16	1	5	2	5	5	5	5	1	1	5
GM_auditor 17	2	5	3	4	3	3	3	4	2	3
GM_auditor 20	5	3	3	5	3	5	3	2	1	2
GM_auditor 21	1	5	2	4	5	4	4	3	5	5
GM_auditor 22	0	4	3	1	4	4	4	3	4	2
Honda_auditor 1	3	5	3	5	5	4	5	3	4	5
Honda_auditor 6	3	5	2	4	4	4	5	2	3	3
Honda_auditor 7	2	5	3	5	5	5	5	5	3	2
Honda_auditor 8	2	5	2	3	4	3	4	4	3	3
Honda_auditor 9	5	5	3	3	3	3	5	4	1	1
Honda_auditor 11	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hyundai_auditor 2	5	5	2	4	5	4	5	1	3	3
Hyundai_auditor 4	2	5	2	4	5	5	5	4	4	5
Hyundai_auditor 5	3	5	3	5	5	3	5	4	2	2
Hyundai_auditor 7	2	5	2	5	4	3	4	4	1	2
Infiniti_auditor 3	5	4	3	4	5	5	5	4	5	3
Infiniti_auditor 5	2	4	5	4	4	4	5	3	2	2
Infiniti_auditor 7	2	5	2	5	4	3	4	4	1	2
Isuzu_auditor 2	3	5	5	3	4	4	5	4	3	3
Isuzu_auditor 3	2	5	2	3	5	4	5	5	2	3
Isuzu_auditor 5	3	5	4	3	3	4	5	1	2	3
Isuzu_auditor 6	2	5	3	4	5	3	4	1	1	3
Isuzu_auditor 8	2	4	5	4	4	4	5	3	2	2

(cont.)

**Table B-2: Summary of Technical and Training Resource Usage Patterns for Auditors Participating in the EPA Service Information Audit (cont.)**

Auditor	Use of Technical Resources in Diagnosis & Repair of Emission Systems (1-Never; 2-Seldom; 3-Occasionally; 4-Often; 5-Always)					Use of Training Resources for Emission Systems (1-Never; 2-Seldom; 3-Occasionally; 4-Often; 5-Always)				
	Repair Manuals & Printed Publications (e.g., MOTOR, Chilton, OEM)	Electronic Service Information (e.g., ALLDATA, Mitchell1)	OEM Service Information Websites	Technical Assistance (e.g., IATN, Identifix)	Clinics and Seminars	Trade Magazines	Technical Bulletins	Training Schools	On-Site Training	Trade Shows
Jaguar_auditor 2	4	5	4	2	4	4	5	1	3	4
Jaguar_auditor 4	3	5	3	5	3	4	4	2	1	3
Jaguar_auditor 7	2	5	1	5	2	5	5	2	3	1
Jaguar_auditor 8	2	5	5	5	5	2	5	3	2	4
Jaguar_auditor 10	3	5	2	4	3	3	4	2	1	1
Kia_auditor 6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Kia_auditor 9	2	5	4	3	4	3	5	3	1	4
Land Rover_auditor 1	4	5	3	4	3	4	4	3	2	2
Land Rover_auditor 3	3	5	2	4	3	3	4	2	1	1
Land Rover_auditor 4	5	5	3	2	3	5	5	5	3	1
Land Rover_auditor 8	0	5	4	5	0	5	5	2	3	4
Lexus_auditor 2	3	5	3	4	4	3	5	2	3	4
Lexus_auditor 3	3	5	2	5	4	3	4	0	4	2
Lexus_auditor 4	5	4	3	4	5	5	5	4	5	3
Lexus_auditor 7	2	5	1	4	3	2	4	3	4	3
Lexus_auditor 8	2	4	2	4	4	2	4	3	2	4
Mazda_auditor 1	0	2	1	1	1	3	1	1	1	1
Mazda_auditor 2	3	4	4	5	4	4	3	2	3	3
Mazda_auditor 3	3	5	3	4	4	3	5	2	3	4
Mazda_auditor 5	2	5	2	3	4	4	2	1	2	2
Mazda_auditor 6	1	3	4	4	3	1	3	1	1	4
Mazda_auditor 8	2	5	3	4	3	3	3	4	2	3

(cont.)

**Table B-2: Summary of Technical and Training Resource Usage Patterns for Auditors Participating in the EPA Service Information Audit (cont.)**

Auditor	Use of Technical Resources in Diagnosis & Repair of Emission Systems (1-Never; 2-Seldom; 3-Occasionally; 4-Often; 5-Always)					Use of Training Resources for Emission Systems (1-Never; 2-Seldom; 3-Occasionally; 4-Often; 5-Always)				
	Repair Manuals & Printed Publications (e.g., MOTOR, Chilton, OEM)	Electronic Service Information (e.g., ALLDATA, Mitchell1)	OEM Service Information Websites	Technical Assistance (e.g., IATN, Identifix)	Clinics and Seminars	Trade Magazines	Technical Bulletins	Training Schools	On-Site Training	Trade Shows
Mercedes_auditor 2	3	5	3	2	5	2	3	5	1	2
Mercedes_auditor 7	4	1	1	3	3	3	4	3	1	1
Mercedes_auditor 9	0	5	4	5	0	5	5	2	3	4
Mercedes_auditor 10	3	2	2	4	5	4	4	3	1	2
Mini_auditor 1	4	3	1	4	5	4	5	2	2	2
Mini_auditor 2	3	5	3	4	4	4	5	2	3	4
Mini_auditor 3	3	1	5	1	4	4	5	1	1	3
Mini_auditor 4	1	3	4	4	3	1	3	1	1	4
Mini_auditor 6	4	1	3	1	2	4	4	1	4	2
Mini_auditor 7	3	4	3	1	4	4	5	4	5	2
Mini_auditor 8	3	3	4	4	3	2	3	2	1	1
Mitsubishi_auditor 1	2	5	2	3	5	4	5	5	2	3
Mitsubishi_auditor 3	2	5	3	5	5	5	5	5	5	5
Mitsubishi_auditor 4	4	5	3	3	4	3	4	3	2	1
Mitsubishi_auditor 5	1	5	4	4	5	5	5	1	1	3
Mitsubishi_auditor 6	3	4	4	2	3	4	4	3	1	3
Nissan_auditor 2	3	5	4	2	5	2	4	5	2	2
Nissan_auditor 4	2	5	3	5	5	4	5	4	2	5
Nissan_auditor 5	3	5	1	5	4	3	4	5	2	4
Nissan_auditor 6	4	5	2	4	3	3	5	2	2	3
Nissan_auditor 7	3	5	2	4	5	3	4	3	3	4
Nissan_auditor 8	3	3	4	4	3	3	3	1	1	5
Porsche_auditor 1	5	5	3	0	3	2	4	3	5	2

(cont.)

**Table B-2: Summary of Technical and Training Resource Usage Patterns for Auditors Participating in the EPA Service Information Audit (cont.)**

Auditor	Use of Technical Resources in Diagnosis & Repair of Emission Systems (1-Never; 2-Seldom; 3-Occasionally; 4-Often; 5-Always)					Use of Training Resources for Emission Systems (1-Never; 2-Seldom; 3-Occasionally; 4-Often; 5-Always)				
	Repair Manuals & Printed Publications (e.g., MOTOR, Chilton, OEM)	Electronic Service Information (e.g., ALLDATA, Mitchell1)	OEM Service Information Websites	Technical Assistance (e.g., IATN, Identifix)	Clinics and Seminars	Trade Magazines	Technical Bulletins	Training Schools	On-Site Training	Trade Shows
Porsche_auditor 3	5	5	3	2	3	5	5	5	3	1
Porsche_auditor 4	3	2	3	1	3	3	3	2	3	2
Porsche_auditor 5	5	1	2	1	3	5	5	2	1	1
Porsche_auditor 6	4	5	3	4	3	4	4	1	1	4
Porsche_auditor 9	1	1	5	1	3	4	4	1	1	1
Saab_auditor 2	2	5	3	4	4	4	5	4	3	1
Saab_auditor 5	2	5	5	5	5	2	5	3	2	4
Saab_auditor 7	1	5	3	4	4	3	2	2	3	3
Saab_auditor 8	0	5	3	5	4	5	5	3	0	2
Subaru_auditor 2	2	5	4	5	5	3	5	3	2	2
Subaru_auditor 3	1	5	3	4	3	4	4	3	1	1
Subaru_auditor 4	2	5	3	5	3	3	5	4	2	2
Subaru_auditor 5	2	5	1	4	3	2	4	3	4	3
Subaru_auditor 6	2	5	3	5	4	4	5	2	2	4
Subaru_auditor 7	3	5	1	4	5	4	5	5	5	1
Subaru_auditor 8	2	5	4	3	4	3	5	3	1	4
Suzuki_auditor 7	2	5	3	3	4	2	4	2	1	3
Toyota_auditor 1	2	5	2	3	2	4	4	2	2	3
Toyota_auditor 2	4	5	2	3	3	4	5	3	3	1
Toyota_auditor 3	3	5	1	4	4	3	4	3	2	2
Toyota_auditor 4	3	3	5	5	4	5	5	3	3	1
Toyota_auditor 5	5	5	2	5	5	5	3	5	2	2
Toyota_auditor 6	4	1	5	2	3	4	5	4	3	2

(cont.)

**Table B-2: Summary of Technical and Training Resource Usage Patterns for Auditors Participating in the EPA Service Information Audit (cont.)**

Auditor	Use of Technical Resources in Diagnosis & Repair of Emission Systems (1-Never; 2-Seldom; 3-Occasionally; 4-Often; 5-Always)					Use of Training Resources for Emission Systems (1-Never; 2-Seldom; 3-Occasionally; 4-Often; 5-Always)				
	Repair Manuals & Printed Publications (e.g., MOTOR, Chilton, OEM)	Electronic Service Information (e.g., ALLDATA, Mitchell1)	OEM Service Information Websites	Technical Assistance (e.g., IATN, Identifix)	Clinics and Seminars	Trade Magazines	Technical Bulletins	Training Schools	On-Site Training	Trade Shows
VW_auditor 1	2	5	3	3	4	2	4	2	1	3
VW_auditor 2	4	5	5	3	5	1	5	3	5	3
VW_auditor 4	3	5	2	4	5	3	4	5	2	4
VW_auditor 5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
VW_auditor 9	1	5	3	4	4	3	2	2	3	3
VW_auditor 11	5	5	4	4	5	5	5	2	1	5
Volvo_auditor 1	1	1	5	3	5	3	5	5	5	3
Volvo_auditor 2	5	5	5	5	3	2	5	1	1	1
Volvo_auditor 3	3	5	5	5	5	5	5	0	3	3

## Appendix C

### Manufacturer Specific Result Tables

- C1: Acura Summary Table.pdf
- C2: Audi Summary Table.pdf
- C3: BMW Summary Table.pdf
- C4: Chrysler Summary Table.pdf
- C5: Ford Summary Table.pdf
- C6: General Motors Summary Table.pdf
- C7: Honda Summary Table.pdf
- C8: Hyundai Summary Table.pdf
- C9: Infiniti Summary Table.pdf
- C10: Isuzu Summary Table.pdf
- C11: Jaguar Summary Table.pdf
- C12: Kia Summary Table.pdf
- C13: LandRover Summary Table.pdf
- C14: Lexus Summary Table.pdf
- C15: Mazda Summary Table.pdf
- C16: Mercedes Benz Summary Table.pdf
- C17: Mini Summary Table.pdf
- C18: Mitsubishi Summary Table.pdf
- C19: Nissan Summary Table.pdf
- C20: Porsche Summary Table.pdf
- C21: Saab Summary Table.pdf
- C22: Subaru Summary Table.pdf
- C23: Suzuki Summary Table.pdf
- C24: Toyota Summary Table.pdf
- C25: Volkswagen Summary Table.pdf
- C26: Volvo Summary Table.pdf

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**Appendix D**  
**Comments Received on OEM Audit Draft Report**



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## Appendix D

### Comments Received on OEM Audit Draft Report

#### I. Introduction

The OEM Audit report was distributed to all Steering Committee members and OEM representatives, prior to its finalization. The following sections include the comments from four OEMs as well as the observations of multiple individuals as submitted through the Equipment and Tool Institute (ETI). This document generally reproduces the comments in verbatim fashion as submitted. The Volkswagen comments were concise and submitted along with portions of the report itself. So, this document includes some additional text to help explain the context of each comment, and then reproduces the comment in quotes. For the ETI comments, this document incorporates basic formatting changes to the table, but the substance of their comments is reproduced in verbatim text. All other comments are generally included below as submitted.

#### II. Chrysler Comments (verbatim)

Auditor 1 had several issues with our website (e.g., difficulty finding information, ban the use of PDF based websites). In general, the other auditors were neutral or positive on our website. Auditor 9 stated the website was very well laid out and Chrysler did a good job. Auditor 16 stated the website was fairly easy to use. Auditor 19 stated the website was good and contained much useful information. DaimlerChrysler agrees with the conclusion of the audit review that the auditors rated our website favorably. DaimlerChrysler would like to point out that PDFs are used for the older service information and HTML is used for the newer service information.

Auditor 16 stated that the website involved a waiting period for registration but did not specify the waiting time. Most of the other auditors stated there was no waiting period. Auditor 1 stated the website was up and going in a matter of minutes. Auditor 6 got right into the site. These data are not reflected correctly in EPA's Draft Website Audit which states that nearly all indicated there is a waiting period for initial registration. Contrary to this statement, most auditors stated there was no waiting period.

Auditor 19 stated DaimlerChrysler's website contains much useful information. DaimlerChrysler believes the information on the website is useful and assumes that since the other auditors did not specifically state that the information is useful, the conclusion of the audit review is silent on the usefulness of the information.

### **III. Equipment and Tool Institute (ETI) Comments (verbatim)**

#### **A. ETI Commenter #1**

For the most part, the nature of each specific question the auditors answered was clearly either subjective or objective. For example: Q3.1 (objective) -- Does the website provide information necessary to interpret Mode 6 data available in generic scan tool modes? Q3.1a (subjective) -- If so, was this information useful?

The first question is black and white: The information is there or it's not. Despite this, all of the auditors gave the same answer in only 7 out of 26 OEMs. The responses to the follow-up question (3.1a) add to the confusion. Logically the total number of Yes and No responses to this question should match the number of Yes answers in Q3.1, but they don't always. In the Kia responses, for example, both auditors reported that the information does not exist, but then say the information (which does not exist) is not useful. It's not pervasive, but a similar pattern continues throughout the different tables. As you said: Some of the auditors have to be wrong. Most of this is probably caused by an individual not being able to find something that exists, which seems more likely than someone seeing something that's not there.

Despite this, it seems like there is enough consistency in the responses to be able to draw some conclusions about the strengths and weaknesses of each website. This would appear to be valuable information to share with the OEMs with the hope that they're willing to consider appropriate changes. While our company does maintain subscriptions to the OEM websites, I personally don't use them. I may be able to find some resources internally to do our own audit of the websites using these same sets of questions. But I'm not sure what benefit there would be in that. Finally, and most importantly, I believe this report validates the role of third-party information providers and the critical importance of keeping OEM doors open to them.

#### **B. ETI Commenter #2**

I asked selected editors from our company to review the draft summary report, indicate whether they agreed or disagreed with the observations, and clarify with comments as needed. Their unedited findings are included below. As you will see, my folks are in general agreement with the findings of the auditors, with a limited number of exceptions. I did note that for Volkswagen/Audi, the audit questions were prepared for the old Erwin site, while the audits were performed on the Ebahn site -- a dramatic improvement. To the extent possible, we tried to look at this comparison from the perspective of technicians trying to find information to diagnose and repair vehicles. In our real world as editors and publishers of massive amounts of information, the usefulness to us of any of these websites may be quite different.

**Table D-1  
Comments Received through ETI**

OEM	Report Section	Agree	Disagree	Comment
<b>Acura</b>				
	Introduction			
	Access and Navigation	X		
	Obtaining Information	X		
	OBD System Monitors and Repair	X		
	Reprogramming and Reinitialization	X		
	Conclusion	X		
<b>Audi</b>				
	Introduction			
	Access and Navigation	X		Ebahn site focus of comments. Erwin site discontinued. The erwin website was very difficult to navigate/find data.
	Obtaining Information	X		
	OBD System Monitors and Repair	X		
	Reprogramming and Reinitialization	X		
	Conclusion	X		
<b>BMW</b>				
	Introduction			
	Access and Navigation	X		
	Obtaining Information	X		
	OBD System Monitors and Repair	X		
	Reprogramming and Reinitialization	X		
	Conclusion	X		
<b>Chrysler, Dodge, Eagle, Jeep, Plymouth</b>				
	Introduction	X		

(cont.)

**Table D-1  
Comments Received through ETI (cont.)**

OEM	Report Section	Agree	Disagree	Comment
<b>Chrysler, Dodge, Eagle, Jeep, Plymouth</b>				
	Access and Navigation	X		Access to specific wiring can be difficult. Wiring is grouped by component, not by system. Finding missing system wiring can be difficult.
	Obtaining Information	X		
	OBD System Monitors and Repair	X		
	Reprogramming and Reinitialization	X		Non-standardized locations for reprogramming information make it difficult to find between years on some vehicles.
	Conclusion	X		Information is generally located in one place, though additional information is sometimes spread out to other areas. Example: trip information is generally in group 25, but sometimes in the diagnostics manual or group 14.
<b>Ford, Lincoln, Mercury</b>				
	Introduction	X		I agree that most aspects of the service information site are favorable.
	Access and Navigation	X	X	I agree with the following: "Ford's website does not include a keyword search option" and "even though the navigation features are somewhat difficult to decipher initially, it works well when the user is familiar with the layout of the site." I disagree with the following: "reprogramming information is under a separate fee structure."
	Obtaining Information	X		I agree that information on training and factory tools is located on site and printable.
	OBD System Monitors and Repair	X		I agree that monitor and parameter descriptions, DTC's, TSB's, and trouble shooting guides are on site.
	Reprogramming and Reinitialization	X		I agree that all the necessary information, including what tools are needed to reprogram, are easy to find on site. Also, Ford should indicate where these tools can be purchased.
	Conclusion	X		
<b>General Motors</b>				
	Introduction			
	Access and Navigation	X		
	Obtaining Information	X		

(cont.)

**Table D-1  
Comments Received through ETI (cont.)**

OEM	Report Section	Agree	Disagree	Comment
<b>General Motors</b>				
	OBD System Monitors and Repair	X		
	Reprogramming and Reinitialization	X		
	Conclusion	X		
<b>Honda</b>				
	Introduction			
	Access and Navigation	X		
	Obtaining Information	X		
	OBD System Monitors and Repair	X		
	Reprogramming and Reinitialization	X		
	Conclusion	X		
<b>Hyundai</b>				
	Introduction			
	Access and Navigation	X		Re: the search -- yes it is very good. Re: free to all techs - - I specifically created a new username to test this point -- I think it is great. Re: navigation helps and contact us -- with the exception of search help (which is great) and the brief Welcome to WebTech , I have never found that data. The free site has 5 fewer tabs 2 after the TSB tab and 3 between the TSB tab and the DTC/OBD-II tab -- none of these tabs help with the limited reprogramming concern mentioned by one auditor.
	Obtaining Information	X		Good printing -- good searching - the DTC/OBD-II tab is indeed worth looking at, but a bit cumbersome.
<b>Hyundai</b>				
	OBD System Monitors and Repair	X		
	Reprogramming and Reinitialization	X		Re: SAE J2534 -- Indeed I find no information on either site regarding passthru device programming
	Conclusion	X		I agree with the very well organized.

(cont.)

**Table D-1  
Comments Received through ETI (cont.)**

OEM	Report Section	Agree	Disagree	Comment
<b>Infiniti</b>				
	Introduction	X		
	Access and Navigation	X		The 'Search' Function is for publications, not TSB's., or DTC's.
	Obtaining Information	X		
	OBD System Monitors and Repair		X	Service Manuals in PDF format ARE searchable by word. Details of monitor & DTC Strategies and causes are provided in the Manuals.
	Reprogramming and Reinitialization	X		
	Conclusion	X		
<b>Isuzu</b>				
	Introduction	X		
	Access and Navigation	X		
	Obtaining Information		X	Able to order training materials and tools on line
	OBD System Monitors and Repair	X		
	Reprogramming and Reinitialization		X	Able to locate SAE J2534 compliant reprogramming software
	Conclusion	X		
<b>Jaguar</b>				
	Introduction			
	Access and Navigation	X		
	Obtaining Information	X		Information downloadable in sections only, not as a whole manual.
<b>Jaguar</b>				
	OBD System Monitors and Repair	X		
	Reprogramming and Reinitialization	X		
	Conclusion	X		

(cont.)

**Table D-1  
Comments Received through ETI (cont.)**

OEM	Report Section	Agree	Disagree	Comment
<b>Kia</b>				
	Introduction			
	Access and Navigation	X		
	Obtaining Information	X		
	OBD System Monitors and Repair	X		
	Reprogramming and Reinitialization	X		
	Conclusion	X		
<b>Land Rover</b>				
	Introduction			
	Access and Navigation	X		
	Obtaining Information	X		
	OBD System Monitors and Repair	X		
	Reprogramming and Reinitialization	X		
	Conclusion	X		
<b>Lexus</b>				
	Introduction			
	Access and Navigation	X		
	Obtaining Information	X		
	OBD System Monitors and Repair	X		
<b>Lexus</b>				
	Reprogramming and Reinitialization	X		
	Conclusion	X		
<b>Mazda</b>				
	Introduction			
	Access and Navigation	X		

(cont.)



**Table D-1  
Comments Received through ETI (cont.)**

OEM	Report Section	Agree	Disagree	Comment
<b>Mazda</b>				
	Obtaining Information	X		
	OBD System Monitors and Repair	X		
	Reprogramming and Reinitialization	X		
	Conclusion	X		
<b>Mercedes Benz</b>				
	Introduction			
	Access and Navigation	X		
	Obtaining Information	X		
	OBD System Monitors and Repair	X		
	Reprogramming and Reinitialization	X		
	Conclusion	X		
<b>Mini</b>				
	Introduction			
	Access and Navigation	X		
	Obtaining Information	X		
	OBD System Monitors and Repair	X		
	Reprogramming and Reinitialization	X		
	Conclusion	X		
<b>Mitsubishi</b>				
	Introduction			
	Access and Navigation	X		
	Obtaining Information	X		
	OBD System Monitors and Repair	X		

(cont.)

**Table D-1  
Comments Received through ETI (cont.)**

OEM	Report Section	Agree	Disagree	Comment
<b>Mitsubishi</b>				
	Reprogramming and Reinitialization	X		
	Conclusion	X		
<b>Nissan</b>				
	Introduction	X		
	Access and Navigation	X		The 'Search' Function is for publications, not TSB's., or DTC's.
	Obtaining Information	X		
	OBD System Monitors and Repair		X	Service Manuals in PDF format ARE searchable by word. Details of monitor & DTC Strategies and causes are provided in the Manuals.
	Reprogramming and Reinitialization	X		
	Conclusion	X		
<b>Porsche</b>				
	Introduction	X		
	Access and Navigation	X		
	Obtaining Information	X		
	Reprogramming and Reinitialization	X		
	OBD System Monitors and Repair	X		

(cont.)

**Table D-1  
Comments Received through ETI (cont.)**

OEM	Report Section	Agree	Disagree	Comment
<b>Porsche</b>				
	Conclusion	X		Overall, the comments of the auditors are accurate; however, there are two concerns to address: 1) It was noted that information could not be found for the 987 model. This model was released in the U.S. in January'05; the information was found at the time of this review in May '06, and 2) Other comments of not finding diagnostic or repair information may be due to the manner in which Porsche releases information on their website. The information released for new versions of a given model is incomplete at first and then supplemented throughout the life of that particular model. For example, comparing the same diagnostic chapter between the previous boxster 986 model and the latest boxster 987 model shows a significant difference in the amount of coverage. The older 986 model has eight sections containing 33mb of information while the newer 987 model has only one section with less than 1mb of information available.
<b>Saab</b>				
	Introduction			
	Access and Navigation		X	The Auditors have conflicting statements/opinions. Re: link to the specialty browser -- yes it is there. Re: contact us -- yes it is there. Re: tutorials -- the one is correct -- a lot of information exists (such as training about vehicles), none shown helps with website navigation -- Saab's old site had some wonderful tutorials (web site navigation assistance) which I have yet to find on the current site. Re: search -- it is superb, but indeed only works after selecting Car Model and year.
	Obtaining Information	X		Mode 6 data is right where it always has been however I just noticed searching is ONLY successful for mode 06, NOT for mode 6 -- interesting. Re: printing -- yes, I have a detailed repair article with text and 30 images, it takes 31 print button clicks to get hardcopy in addition to the 29 clicks to view the 30 images (first one autoexecutes) I know of no other site more cumbersome in this regard.

(cont.)

**Table D-1  
Comments Received through ETI (cont.)**

OEM	Report Section	Agree	Disagree	Comment
<b>Saab</b>				
	OBD System Monitors and Repair		X	I consider this the sites largest challenge -- search for a P0300 (as an example) follow the links and you go to a description of the code and symptom, for the actual troubleshooting, you need to click on the button just below the lightning bolt that looks like a stethoscope, then you get a very cumbersome Yes/No diagnostic procedure.
	Reprogramming and Reinitialization	X		The Tech 2 scan Tool and the TIS 2000 Diagnostic Software are indeed described on the site -- no reference is made to "off board programming availability" -- control module calibration information must be obtained by using the tech 2 scan tool and connecting to the vehicle. A search of the site for calibration yielded information on the headlight leveling and the window pinch protection control module.
	Conclusion		X	The mode 6 vs. mode 06 search fix should be easy for the OE to complete, the printing modifications would be a welcome fix indeed, but referencing back to 3.21.4 OBD repair is a challenge -- I can easily use the site to change my O2 sensor, but if I have a DTC, I'll have a very difficult time identifying that the O2 sensor is the cause.
<b>Subaru</b>				
	Introduction			
	Access and Navigation	X		
	Obtaining Information	X		
	OBD System Monitors and Repair	X		
	Reprogramming and Reinitialization	X		
	Conclusion	X		
<b>Suzuki</b>				
	Introduction			
	Access and Navigation	X		
	Obtaining Information	X		
	OBD System Monitors and Repair	X		

(cont.)

**Table D-1  
Comments Received through ETI (cont.)**

OEM	Report Section	Agree	Disagree	Comment
<b>Suzuki</b>				
	Reprogramming and Reinitialization		X	Able to locate reprogramming software.
	Conclusion		X	Reprogramming software available.
<b>Toyota</b>				
	Introduction			
	Access and Navigation	X		
	Obtaining Information	X		
	OBD System Monitors and Repair	X		
	Reprogramming and Reinitialization	X		
	Conclusion	X		
<b>Volkswagen</b>				
	Introduction			
	Access and Navigation	X		Ebahn site focus of comments. Erwin site discontinued. The erwin website was very difficult to navigate/find data.
	Obtaining Information	X		
	OBD System Monitors and Repair	X		
	Reprogramming and Reinitialization	X		
	Conclusion	X		
<b>Volvo</b>				
	Introduction			
	Access and Navigation	X		
	Obtaining Information	X		
	OBD System Monitors and Repair	X		
	Reprogramming and Reinitialization	X		
	Conclusion	X		Generally speaking, the Volvo site is of limited use to technicians using third party diagnostic tools

#### **IV. Mercedes Benz Comments (verbatim)**

MBUSA has always offered a very robust website to its dealers and independent repairers and we were looking forward to obtaining some valuable user feedback. Unfortunately, there was not much to work with. From the 12 anticipated testers, feedback from only 4 users was submitted. Of the four, only two provided little more than Yes or No answers. After reading the verbatim results of the survey, we were a little concerned that one auditor was comparing our website to a copy of our Workshop Information System (WIS) that was illegally obtained on eBay! He failed to notice that the same program (WIS) was included on our website. The same auditor was also concerned that we offer one package to the dealers and another to Independents. In fact, Star TekInfo is our main medium for delivering technical information to our dealers. We offer the same information to Dealers and Independents except Mercedes-Benz Dealers have the ability to interact with our Technical Assistance Center.

Even with the low returns, we were able to confirm that we will need to reorganize our web page index. Our dealers and field staff had given us similar feedback and two of your auditors confirmed it. MBUSA has already begun to reorganize the index and expect to be done by early fourth quarter.

#### **V. Subaru Comments (verbatim)**

Subaru, like other OEMs, has committed significant monetary and manpower resources to develop and maintain our service information website to fulfill the intent of the promulgated EPA (and California) Service Information rule requirements. Subaru is committed to making available the same service repair and tool information that is available to our franchised Subaru dealerships, to all independent aftermarket service technicians and tool companies seeking such information in a timely manner. To that affect, the information in our website is exactly the same as that provided to our dealers.

While we acknowledge the agency's effort attempts to retrieve all OEM conducted audit questionnaires in this project, we question the validity of the overall reported OEM audit results as debatable based on the wide variance of the number of captured technician questionnaires. For example, intermediate volume manufacturers, Subaru and Mini, achieved the highest questionnaire capture rate with a percentage at 87.5% (7 out of 8 questionnaires), while large volume domestic OEMs (GM, Ford, & DCX) ranged 39% to 52%. All large Japanese OEMs (Toyota, Honda, and Nissan) achieved the same capture rate of 60% (6 out of 10). The worst cases being Volvo at 30%, Kia at 22.2%, and Suzuki at 12.5% (1 out of 8).

Regarding the "3.22.2 - Access and Navigation" assessment of our website, all auditors could access the different portions of the site. However, some "auditors noted that the Subaru site should allow the user to simultaneously search multiple document categories, a feature that is currently incorporated on the Toyota site." This is an enhancement that we will study from the convenience versus cost factor. We question why PQA believes it is important to compare the Subaru site to the more available resource developed Toyota website. Furthermore, PQA fails to capture Auditor #2's follow-up statement "Perhaps I'm not familiar with how Subaru organizes their information" and Auditor #6 statement, "Overall the (Subaru) site is fairly easy to navigate."

Questionnaire section "3.22.5 - Reprogramming and Reinitialization" provided some interesting technician questionnaire responses. Immediately found on our home page of the Subaru (STIS) website, we incorporated website user assist features "What's New," "Frequently Asked Questions," and "Special Tool Information." Under the "Special Tool Information" button, it clearly states:

- We currently do not offer reprogramming information as stated on [www.nastf.org](http://www.nastf.org).
- Subaru dealers have an ECM re-initialization procedure for 2005 and later models equipped with an engine immobilizer, but the cartridge is not available to the aftermarket due to the inclusion of proprietary Subaru information.
- Subaru further states that Blue Streak Electronics (BSE) is evaluating their business plan to include this function (ECM re-initialization) into their ASIAN software cartridge, which is projected to be available (to the aftermarket) mid-2006.
- Subaru's new diagnostic scan tool, the Subaru Select Monitor III (SSMIII), has not been made available to our dealer body. This tool will have ECU re-initialization capability. Once our dealers have received the tool, we will post the availability information on the Subaru Technical Information System as well as on Kent-Moore's website. The generic version of SSMIII will also be available through Blue Streak Electronics.

Six of the seven auditor responses suggest based on the posted "Special Tool Information" tab, they understood Subaru does not currently offer reprogramming and all had no Subaru experience performing Subaru reprogramming or re-initialization. We are, in particular, concerned with Auditor #8 negative 3.22.5 section responses. It is clear that he did not follow the established EPA/Steering Committee questionnaire completion guidelines, by inclusion of his comment, "They (responses) were not found by searching the website, but were found by contacting a local dealer."

With the exception of Auditor #8, overall, there are very few auditor comment notations and, in general, they are positive and constructive. Based on this information, we agree that potential enhancement improvement (mode \$06 data and 1996 model year OBD monitor description issues) could be made to our website based on the auditor feedback and combined with the experience of our Subaru technician experiences.

## **VI. Volkswagen Comments**

Volkswagen (VW) provided some comments and responses regarding the VW section of the OEM Audit report. VW included portions of the report text followed by a brief response. The following text summarizes the comments submitted in the context of specific report sections.

### **A. Section 3.25.2: Access and Navigation**

VW notes that with respect to the access fee, the "additional fee was intentional and part of our strategy." In response to the comment regarding improvements to the visibility of help

information and other information on the home page, VW notes that they "will investigate." This same comment is provided in response to issues raised by one auditor related to font size and the size of the left frame. VW notes in response to the comment regarding the site's reliance on PDF files, that this approach was "intentional for ease of construction and updates." In response to the auditors' comments regarding additional search functions, VW notes that this is "not a compliance issue and too complex" and that the information sought is "available in the self study programs."

### **B. Section 3.25.3: Obtaining Information**

VW notes in response to the comment on the DTC code, that "DTC code 17579 related to SAE P1171 (not used in this application)" and that "We will add the word 'reprogramming' to the Pass thru folder icon."

### **C. Section 3.25.4: OBD System Monitors and Repair**

VW notes in response to the comment on the monitor descriptions, that "Improvements in earlier information, specifically GST books, are scheduled." In response to the comment suggesting that Mode 6 data should be a sub-category under Engine Management, VW notes that "we called it 'OBDII information.'" Also, in response to the comment on the difficulty associated with following the troubleshooting procedures, VW notes that "Improvement in earlier GST books, which were based on the VAG tester Address word 33 section, are scheduled for revision. All new books are based on common SAE aftermarket scan tool functionality and terminology." Finally, VW references "Self Study programs" in response to the positive comment on VW's online training.

### **D. Section 3.25.5: Reprogramming and Reinitialization**

Some auditors indicated that they had some difficulty associated with locating and using information regarding selection of the proper calibration and vehicle repair, VW notes that "additional information has been added to the website since the start of the audit" and that these auditors may have visited the site prior to the addition of this information. In response to the comment on the need for a factory scan tool to perform reprogramming services, VW notes that this is "part of our current compliance strategy. Pass thru also available."

### **E. Section 3.25.6 Conclusion**

In response to the potential improvements cited in the conclusions section, VW notes that improvements to the 1996 through 2000 data are "being addressed in GST updates." VW notes that with regard the 'general search' mechanism suggested by one auditor, this modification is "not being considered at this time" since the information can be found in the Self Study programs, and that other issues, such as ensuring that all DTC listings are complete, are "being addressed."