

Pennsylvania
Department of Transportation
Visual Test Procedure
Final Stand Alone
Equipment and Software Specifications

Foreword

In order to integrate the VISUAL-I/M check into the I/M program, the Department of Transportation, Bureau of Motor Vehicles, pursuant to the authority contained in Sections 4351, 4701, 4706, 4707 and 4721 of the Vehicle Code, Act of June 17, 1976, P.L. 162, No. 81, as amended (75 Pa. C.S. §§ 4351, 4701, 4706, 4707, and 4721), previously announced its intention to amend **Title 67 of the Pennsylvania Code** by providing for equipment specifications to be used for VISUAL testing in Pennsylvania's enhanced vehicle emissions inspection program and solicited comments on draft equipment and software specifications.

These are the final technical specifications for any qualifying party that wishes to provide "stand alone" VISUAL testing equipment for use in Pennsylvania's VISUAL testing program.

All VISUAL-I/M check equipment must be certified by PENNDOT to be in compliance with these specifications. *Manufacturers will submit a written request for certification to PENNDOT no later than September 2, 2003.* Manufacturers will supply PENNDOT (or make available to PENNDOT) the equipment with the PAS software loaded, any user documentation for certification, and any other information necessary for certification requested by PENNDOT. Manufacturers will not deliver/upgrade any equipment to any certified emissions test stations without written confirmation of certification from PENNDOT. Questions concerning these specifications may be directed to Peter Gertz, Vehicle Inspection Divisions, 3rd Floor, Riverfront Office Center, 1101 South Front Street, Harrisburg, PA, 17104, or to pgertz@state.pa.us.

Table of Contents

1 SECTION ONE - TERMS AND GENERAL SPECIFICATIONS.....6

1.1 ACRONYMS6

1.2 DIRECTORY AND FILE STRUCTURES.....7

1.3 DUPLICATION OF FILES ON THE FLOPPY DRIVE/REMOVABLE MEDIUM.....9

1.4 REQUIRED PRINTER.....10

1.5 VEHICLE REPAIR AND DIAGNOSTIC APPLICATIONS.....10

1.6 SOFTWARE MODIFICATIONS.....10

1.7 BAR CODE READERS.....11

1.8 TRAINING.....11

1.9 CLOCK/CALENDAR.....12

1.10 LOCKOUT NOTIFICATION.....12

1.11 MANUAL TESTING MODE.....12

1.12 SOFTWARE LOADING.....12

1.13 TECHNICAL AND SYSTEM DOCUMENTATION.....13

1.14 HARDWARE/SOFTWARE SECURITY.....14

1.15 AVAILABILITY OF CIRCUITRY.....14

1.16 PENNDOT ACCESS.....14

1.17 DATA AND FILE TRANSFER.....14

1.18 MANUAL DATA ENTRY.....15

1.19 FUEL CAP TEST EQUIPMENT.....16

2 SECTION TWO – SOFTWARE FUNCTIONS.....17

2.1 GENERAL.....18

2.2 INSPECTOR ACCESS PROCEDURE.....18

2.3 VEHICLE INFORMATION ENTRY.....19

2.4 APPLICABLE MODEL YEARS.....19

2.5 BLIND TEST.....20

2.6 DATA STORAGE AND RECALL CAPABILITY.....20

2.7 WARRANTY MESSAGE ON VIR.....20

2.8 DECISION CRITERIA.....21

2.9 VIID COMMUNICATION PROCESSES.....21

2.10 RECEIVE SYSTEM DATE/TIME UPDATE.....21

2.11 LOCKOUT PROCESSING.....21

2.12 RECEIVE PENNDOT MESSAGES.....22

2.13 RECEIVE UPDATES TO VEHICLE REFERENCE TABLE.....22

2.14 RECEIVE UPDATES OF EQUIPMENT LOCKOUT STATUS.....23

2.15 RECEIVE UPDATES TO INSPECTOR(S) DATA.....24

2.16 RECEIVE UPDATES TO COUNTY DATA.....24

2.17 RECEIVE UPDATES TO SYSTEM DATA.....25

2.18 RECEIVE OTHER COMMUNICATIONS TRANSACTIONS AND STATUS.....25

2.19 IN USE WARNING MESSAGES (IF APPLICABLE).....25

2.20 PRINT SCREEN CAPABILITY.....25

2.21 INCOMPLETE AND COMPLETED INSPECTION COUNTING.....25

3 SECTION THREE – DISPLAY AND PROGRAM REQUIREMENTS.....27

3.1	GENERAL DESCRIPTION.....	27
3.2	MAIN MENU.....	28
3.3	VEHICLE EMISSIONS INSPECTION MENU.....	30
3.4	VEHICLE EMISSIONS INSPECTION.....	30
3.5	ABORT PROCEDURE.....	31
3.6	INSPECTOR ID.....	32
3.7	TEST TYPE.....	33
3.8	VIN, TITLE AND LICENSE PLATE.....	33
3.9	VIID COMMUNICATIONS.....	35
3.10	RECEIVE TSB AND RECALL INFORMATION.....	38
3.11	VERIFY TEST TYPE.....	40
3.12	RECEIVE PRIOR YEARS INFORMATION.....	41
3.13	MODEL YEAR.....	42
3.14	VEHICLE MAKE.....	42
3.15	VEHICLE MODEL.....	43
3.16	VEHICLE BODY TYPE.....	44
3.17	GROSS VEHICLE WEIGHT RATING (GVWR).....	45
3.18	COUNTY OF REGISTRATION.....	45
3.19	ADDITIONAL VEHICLE INFORMATION DATA ENTRY.....	47
3.20	VEHICLE DATA ENTRY CONFIRMATION.....	49
3.21	VISUAL INSPECTION TEST PROCESS.....	50
3.22	FUEL CAP TEST PROCEDURE.....	52
3.23	ASM AND TSI TEST PROCEDURE.....	56
3.24	OBD-I/M CHECK PROCEDURE.....	56
3.25	TEST EVALUATION AND MESSAGES.....	56
3.26	REPAIR DATA ENTRY PROCEDURE.....	57
3.27	STICKER NUMBER, STICKER EXPIRATION AND TEST FEE CHARGED TO MOTORIST.....	60
3.28	FINAL RESULTS AND PRINTING OF VIR.....	61
3.29	EQUIPMENT MAINTENANCE MENU.....	62
3.30	VIR REPRINT.....	64
3.31	TRAINING MODE.....	64
3.32	REPLACEMENT/MISSING/EXEMPTION STICKER NUMBERS.....	64
3.33	STATION MENU.....	72
3.34	STATE MENU.....	78
3.35	UPDATE STATION INFORMATION.....	80
3.36	INSTALL NEW REMOVABLE MEDIUM.....	80
3.37	PRACTICAL/DEMO TEST.....	81
3.38	LOCKOUT PAS.....	81
3.39	EMERGENCY SOFTWARE UPDATE.....	81
3.40	TEST RECORD SEARCH AND RETRIEVAL.....	82
3.41	REFEREE INSPECTION.....	82
3.42	MANUFACTURER’S TECHNICIAN MENU.....	83
4	SECTION 4 - VIR AND PRINTER FUNCTION SPECIFICATIONS.....	85
	EXHIBIT A.....	88
	EXHIBIT B.....	90

EXHIBIT D	91
EXHIBIT E	92
EXHIBIT F	93
EXHIBIT G	94
EXHIBIT H	95
EXHIBIT I	96
APPENDIX A – FILE LAYOUTS.	97
APPENDIX B – OVERVIEW OF AN AAMVA COMPLIANT PDF417 SYMBOLOGY.	111

1 Section One - Terms and General Specifications.

1.1 Acronyms

Acronym	Definition
ASM:	Acceleration Simulation Mode
AAMVA:	American Association of Motor Vehicle Administrators
BMV:	Bureau of Motor Vehicles
DLC:	Data Link Connector
DTC:	Diagnostic Trouble Codes
KOEO:	Key On Engine Off
KOER:	Key On Engine Running
MIL:	Malfunction Indicator Light
MY:	Model Year
OBD:	Onboard Diagnostic
PA 97/PA 97 with Dynamometer System:	Pennsylvania Emissions Test Analyzer
PCM:	Powertrain Control Module
PAS:	Pennsylvania Analytical System
PID:	Parameter Identification
SAE:	Society of Automotive Engineers
TIN:	Transaction Identification Number
TSB:	Technical Service Bulletins
TSI:	Two Speed Idle
VIID:	Vehicle Inspection Information Database
VIN:	Vehicle Identification Number
VIR:	Vehicle Inspection Report

1.2 Directory and File Structures.

- A. The hard disk/permanent storage will have directories with the following names in the root directory: DOS, PASDATA and MAIL.
- B. The manufacturer may name directories for use of the PAS software but must provide the previously mentioned directories for PENNDOT use.
- C. The directory path must include at a minimum the ROOT, the PAS software directory, and the PASDATA subdirectory.
- D. The PASDATA directory will contain the following files:
 - “AUDIT.DAT”
 - “CAL.DAT”
 - “COUNTY.DAT”
 - “EIS.DAT”
 - “EIS.HST”
 - “INCOMPLT.DAT”
 - “INCOMPLT.HST”
 - “LOCKOUT.DAT”
 - “REPAIR.DAT”
 - “STATION.DAT”
 - “STICKER.DAT”
 - “SYSTEM.DAT”
 - “TECH.DAT”
 - “VRT.DAT”
 - “USED_S.DAT”.
- E. The DOS directory will contain the version of MS-DOS (or equivalent) for the PAS. If the manufacturer chooses to use another acceptable operating system the name of the subdirectory where the operating system is to be stored is left to the discretion of the manufacturer.
- F. **EIS.DAT**: This file will contain test records, from the start of any test, which have not been transferred to the VIID. A mirror copy of this file, having the same name, will be stored on the root directory of the floppy disk/removable medium. Both files will be updated at the same time by the test software. This mirror file will contain all the records that have not been successfully uploaded to the VIID and will be used as a backup in case of hard drive/permanent storage failure. The software must also test for the existence of both files before writing to the file and if not found will create either or both of the files. The equipment will purge records from both files that have successfully been transmitted to the VIID.

- G. **EIS.HST**: This file will contain archived test records that have been transmitted to the VIID. This file will be appended each time the test record is successfully transmitted to the VIID. The EIS.HST file will maintain an equipment test record history for at least 150 days or 500 tests whichever is met first. This file will be purged on an automatic basis of records older than 150 days or reduce the file to the newest 500 test records.
- H. **CAL.DAT**: This file will contain calibration records from the start of any calibration test, which have not been transferred to the VIID. A mirror copy of this file, having the same name, will be stored on the root directory of the floppy disk/removable medium. Both files will be updated at the same time by the test software. This mirror file will contain all the records that have not been successfully uploaded to the VIID and will be used as a backup in case of hard drive/permanent storage failure. The software must also test for the existence of both files before writing to the file and if not found will create either or both of the files. The equipment will purge records from both files that have successfully been transmitted to the VIID.
- I. **LOCKOUT.DAT**. This file will contain the lockout data (**Y** or **N**) for multiple conditions and must be read each time the PAS software is loaded.
- J. **TECH.DAT**: This file will contain the information on each inspector currently able to perform emissions inspections at this station, on this equipment. Updates to this file will be transmitted during the contact with the VIID if necessary.
- K. **REPAIR.DAT**: This file will contain repair information records from either the emissions tests, which have not been transferred to the VIID. A mirror copy of this file, having the same name, will be stored on the root directory of the floppy disk/removable medium. Both files will be updated at the same time by the test software. This mirror file will contain all the records that have not been successfully uploaded to the VIID and will be used as a backup in case of hard drive/permanent storage failure. The software must also test for the existence of both files before writing to the file and if not found will create either or both of the files. The equipment will purge records, from both files, that have successfully been transmitted to the VIID.
- L. **STICKER.DAT**: This file will contain sticker replacement, missing, damaged or stolen sticker data, which have not been transferred to the VIID. A mirror copy of this file, having the same name, will be stored on the root directory of the floppy disk/removable medium. Both files will be updated at the same time by the test software. This mirror file will contain all the records that have not been successfully uploaded to the VIID and will be used as a backup in case of hard drive/permanent storage failure. The software must also test for the existence of both files before writing to the file and if not found will create either or both of the files. The equipment will purge records, from both files, that have successfully been transmitted to the VIID.
- M. **INCOMPLT.DAT**: This file will contain counters for all emissions inspections started, aborted and completed. A record will be maintained for each inspector for every month. At the start of a new month the records for each inspector on file for the previous month will be transferred to the file INCOMPLT.HST and then purged from INCOMPLT.DAT.
- N. **INCOMPLT.HST**: This file will be used to transfer the previous month's inspector inspection statistics record to the VIID. The equipment will purge records that have successfully been transmitted to the VIID.

- O. **USED_S.DAT**: This file will store the stickers issued by the equipment for the past 31 calendar days. This file will allow the station personnel to print a report of sticker usage from the equipment for the past 31-day period.
- P. **COUNTY.DAT**: (A reference file) This file will contain county information for all counties in the emissions testing program.
- Q. **VRT.DAT**: (A reference file) This file will contain vehicle information for all vehicles.
- R. **SYSTEM.DAT**: A reference file that contains analyzer based settings and global settings relative to how an emissions inspection is to be conducted. All values contained in this file are VIID updateable and ultimately controlled by the VIID.
- S. **STATION.DAT**: This file contains station related data including PAS number, station address, station number, station name, maximum number of days and inspections without communication etc.
- T. **AUDIT.DAT**: This file contains information relative to station audit data.
- U. **REC_LIST.DAT**: This file is transmitted to the VIID for use in determining which records need to be added/ changed/ deleted. The record count may be used by the VIID to determine if the table is corrupt. Use of this file will be described in the communications specification.
- V. **VIN.DAT**: This file is transmitted to the VIID with a request for vehicle information. Use of this file will be described in the communications specification.
- W. **VIN.REC**: This file is received from the VIID with the status of the request for vehicle information. Use of this file will be described in the communications specification.

1.3 Duplication of Files on the Floppy Drive/removable medium.

- A. In order to limit PAS downtime after serious hard disk/permanent storage malfunctions, which may require new or reformatted hard disk/permanent storage, the manufacturer will store duplicate files on the floppy disk drive/removable medium. The files to be duplicated, at a minimum, are the CAL.DAT, EIS.DAT, LOCKOUT.DAT, REPAIR.DAT, STATION.DAT, STICKER.DAT, SYSTEM.DAT and TECH.DAT.
- B. Each time the files are modified, the changes must be written to both sets of the file.
- C. If the file cannot be found on the hard disk/permanent storage, the PAS can restore the file from the floppy disk/removable medium. This will mean less downtime for the station in restoring access codes and station information.
- D. PAS must write the above files to the floppy disk/removable medium any time a new floppy disk/removable medium is installed into the secure floppy drive/removable medium. The files will be moved to a new disk any time a service technician or a PENNDOT representative installs a new floppy disk/removable medium. In the event loaner equipment is placed in a testing station or complete replacement of the hard drive/permanent storage is required the manufacturer will have a method and procedure to replace the station data, equipment ID and data stored on the floppy disk/removable

medium in the new hard drive/permanent storage. This routine will also remove any and all data remaining from a previous station or equipment.

1.4 Required Printer.

- A. The printer will be a laser printer capable of printing the VIR and other reports as defined in Section 4 of this document.

1.5 Vehicle Repair and Diagnostic Applications.

- A. The equipment's primary purpose will be to run the emissions inspection process and to record emissions test data in accordance with this specification.
- B. Manufacturers may offer a diagnostics and repair software application program as an option to the equipment purchaser. Methods for diagnosing or repairing components or systems will be allowed provided that they will in no way interfere with any aspect of the emissions inspection.
- C. As an option, the equipment manufacturer may establish a mechanism to obtain access to off-site repair information systems requested by the purchaser using the telephone modem contained in the PAS so long as it does not interfere with the Vehicle Emissions Inspection System.

1.6 Software Modifications.

- A. Equipment manufacturers will provide up to a total of two (2) PENNDOT-approved software updates during the first calendar year beginning at the implementation date of the Pennsylvania VISUAL emissions inspection program at no additional cost to the purchaser of new VISUAL PAS equipment. Both updates will consist of a combined total of no more than 750 hours software development time. Each manufacturer will provide PENNDOT the number of hours they anticipate the update to take and PENNDOT will use the average of all manufacturers when determining if it exceeds the number of hours set aside for the update.
- B. The software version will be indicated on the equipment status screen, on each vehicle test record and the VIR. The version number will consist of a four (4) digit code to be made up of two digits for the year, followed by a digit for the major revision number followed by a digit for sub versions of the software (i.e. 0211). The version of software used in running every vehicle test will be indicated on the test record.
- C. The equipment providers will notify PENNDOT in writing if they wish to make a software update and schedule installation of the modifications on PENNDOT's Equipment for PENNDOT to certify the software update. Manufacturers must obtain written PENNDOT approval prior to use of the software update in official PENNDOT Inspections. All installed software must have the correct software version number installed, so that it is recorded to the test record and printed on each VIR. The manufacturer will notify PENNDOT in writing when the update is complete and provide PENNDOT a list of all the equipment that was updated.
- D. All software updates done by the manufacturer will cause the software version number to change as indicated on the Equipment Status screen (see Section 3). In addition, the updated software version number will be recorded on the test record and VIR as soon as it is installed.

- E. Additional software updates required between the updates described above will be prepared by the equipment providers on 3.5" PC/MS-DOS standard 1.44 Mb diskettes, CD-ROM or down loadable and designed to be installed by PENNDOT representatives or other authorized representatives. If the manufacturer chooses to download the updated software, the following requirements must be adhered to when performing the download.
- The VISUAL PAS equipment cannot automatically acquire the newest software version when the unit is powered on.
 - The manufacturer must submit to PENNDOT or PENNDOT's representative the updated software for evaluation and certification prior to making the updated software available for download to the VISUAL PAS equipment.
 - The manufacturer must submit a request for PENNDOT's approval of any changes to the VISUAL PAS software not required by PENNDOT for the emissions program prior to the software development. The request will contain a description of the proposed change, timeline for the software development, and estimated cost to the owners of the VISUAL PAS equipment. In order for PENNDOT to maintain the integrity of emissions program, the manufacturer will be limited to a maximum of one manufacturer initiated software upgrade per year.
 - The manufacturer will supply a menu option under the ADDITIONAL SITE SPECIFIC SOFTWARE menu option to initiate the download process.
 - VISUAL PAS equipment will receive from the VIID a message to upgrade their software. The inspector will proceed to the above menu option and upgrade the PAS equipment.

1.7 Bar Code Readers.

- A. Non-contact bar code scanners and necessary interface software and hardware designed to read labels meeting the specifications, as defined in Appendix B, will be required on the equipment. The information scanned will be stored on the test record and will be used to identify the vehicle.
- B. In addition to the optional use for collecting the VIN, scanners will be required to enter VIR information and other emissions information as required. Another function will include reading emissions inspector licenses and PENNDOT inspector identification badges.
- C. PENNDOT recommends that the equipment manufacturers contact the vehicle manufacturers to inquire about obtaining bar coded labels for testing purposes.

1.8 Training.

- A. The equipment will contain a training feature that will allow an inspector or student to complete the inspection procedure and generate a "training" VIR. All training VIRs will indicate to the satisfaction of PENNDOT that they are for training only and cannot be used for certification. The word "VOID" will be printed in large letters on the face of the VIR and the overall result will not be printed on the VIR.

- B. The inspection record will not be stored on the PAS. In addition, the TIN field of the VIR will be printed with the word "VOID".
- C. The training feature will be used by the authorized PENNDOT representatives for evaluating emissions inspector performance or by the manufacturers for training purchasers of the equipment.
- D. The training feature will not require the use of an inspector's access code or allow access to secured areas of hardware or software. The display will show a message throughout the inspection that this is a training exercise and not a test for inspector certification.

1.9 Clock/Calendar.

- A. The PAS unit will have a real time clock/calendar which will make available the current date and time. Both time and date will be in standard "IBM PC format" and used to set the PAS unit's date and time on power up.
- B. The equipment will store the date and time on the test record. For the display, the date will be indicated as follows: **MM/DD/YYYY**. The time will be on a twenty-four (24)-hour clock.
- C. The date/time, along with the time the inspection or test started and when it ended, is to be included on the test record. The start time is when the connection to PENNDOT was established or when the attempt to establish the connection to PENNDOT failed. The end time is when the test record is saved.
- D. The equipment clock/calendar will be equipped with a battery backup feature and a battery with a five (5)-year expected life.
- E. The PAS will update its clock/calendar so it will match the clock/calendar of the VIID Computer. This update will be performed on the initial contact to the VIID for every test that the equipment performs.

1.10 Lockout Notification.

- A. The equipment will display a message on-screen to the operator when any lockout situation occurs.

1.11 Manual Testing Mode.

- A. The PAS may be capable of being switched to an operations mode that will allow the PAS to be used as an ordinary garage analyzer for general automotive repair work and diagnostics.
- B. If, during an inspection, an attempt to switch the PAS over to the diagnostic mode is made, the command will be ignored.

1.12 Software Loading.

- A. The inspector will not have to load the operating or applications software to operate the PAS. On each POWER ON of the PAS, the PAS will automatically do all component diagnostics, memory checking and loading of all necessary operating software without intervention by the inspector.

- B. Upon satisfactory computer component check out, the applications software is to present a menu of available PAS operations.
- C. All offered features are to be menu-driven.
- D. For each feature, a context sensitive, on-line help facility is to be provided which can be accessed preferably with a single keystroke or double click of the mouse.
- E. If the PAS does not have a satisfactory component check out, the applications software is to lockout the unit and displays the message “System component failure! Please contact your repair technician “.

1.13 Technical and System Documentation.

- A. The PAS software will be fully documented. Two (2) copies of the documentation listed below will be submitted to PENNDOT. Manufacturers will agree, in writing (signed by the chief executive officer (CEO) of the company), to submit copies of the program listings to PENNDOT upon request, within a time frame satisfactory to PENNDOT, or whenever a decision is made by the manufacturer to voluntarily suspend or terminate production of the PAS. PENNDOT does not expect to have a need to review the program listings and, therefore, will not require that they be included with the application for certification. PENNDOT reserves the right to require that copies be provided, if the need does arise. Software documentation will include at least the following.
 - i) Complete program listings, including the source code as well as the object code, in both machine-readable and paper form, will be provided upon request. They are not required to be submitted with the application for certification;
 - ii) Functional specifications and Functional flowcharts of the manufacturer’s software;
 - iii) All file layouts with file names, file types, file security, field names, field types, field sizes and field editing criteria.
- B. Documentation provided by the manufacturer will be treated as proprietary information by PENNDOT, provided such material is clearly marked as confidential. Any trade secrets or similar proprietary data that the manufacturer does not wish disclosed to other than PENNDOT personnel (and/or the subcontractor assigned to assist in the certification process) will be kept confidential if identified as described below
 - i) Each page will be identified in boldface type at the top and bottom as “Confidential”. Any section of documentation, which is to remain confidential, should, in addition, be so marked in boldface type on the title page of the section. Marking of all material as confidential is not acceptable; only that material which is proprietary should be marked.
- B. The purpose of the requirement for detailed code is to provide PENNDOT with a mechanism to assure continued performance of inspection stations in the event that a major supplier of testing equipment should fail. PENNDOT is not interested in any disclosure of proprietary information, nor in the detailed operations of manufacturer code; however, it is essential that all of the necessary working code, schematics, drawings and so forth be available in case of such demise.

1.14 Hardware/Software Security.

- A. Only PENNDOT personnel or its authorized representatives will have access to the internal hardware components of the equipment. (i.e. hard disk/permanent storage)
- B. The inspector will not have the authority to add, change, or delete any files or software directly from the operating system.

The manufacturers are not required to add hardware to the PAS to detect tampering. If the above two security features are implemented, the PAS and the inspection data should not be able to be tampered with.

1.15 Availability of Circuitry.

- A. All integrated circuits used in the PAS will be types and brands that are presently in common usage. Custom ROM programs developed by the manufacturer for building the equipment are allowed.

1.16 PENNDOT Access.

- A. PENNDOT personnel or its authorized representatives will have access to update the equipment software. The software will be designed to include a State Menu as indicated in Section 3. Access to the State Menu will require that PENNDOT representatives enter via the keyboard the PENNDOT daily access code.
- B. Information contained in the files associated with PENNDOT representative Menu will be hidden in software to PENNDOT's satisfaction.

1.17 Data and File Transfer.

A. Modem

- i) A telephone line, separated from the power cord, will be provided for the modem. The telephone line will be enclosed in a protective cable meeting PENNDOT and UL or ETL approval. Alternative methods to protect the telephone line may be submitted to PENNDOT for approval.
- ii) If a dial tone is not found, the modem contact does not get an answer or receives a busy signal or if inspection data is not transferred to the VIID in the specified time, an appropriate message will be displayed. The PAS will allow the station to continue performing inspections. At the end of each inspection a message will be displayed to the operator informing them of the problem that exists.
- iii) The equipment will lock out the operator after performing a set number of inspections that have been performed in a set number of calendar days. The values of these elements are stored in the STATION.DAT file.

B. Diskettes/Removable Medium

- i) The medium must be removable and show full compatibility with existing PENNDOT microcomputers. Both the medium and the medium access port must be secured logically and

physically to permit only duly authorized PENNDOT and manufacturer access. Manufacturer methodology to restrict such access will be approved by PENNDOT.

- ii) Test Record Storage Capacity.
- iii) The PAS floppy disk drive/removable medium will have the capability to store at least one hundred (100) current test records not counting those on backup. Current records are considered records stored in EIS.DAT that have not been transmitted to PENNDOT. Storage will be maintained with power off.

C. Telephone Requirements

- i) Each emissions inspection station will be equipped with a dedicated telephone line utilizing an RJ11 jack connector, or PENNDOT approved functional equivalent, to which the emissions equipment will be connected at times specified by PENNDOT. (Note: The dedicated phone line can only be used for the emission equipment and it is recommended that no more than two PAS units share the same dedicated phone line)
- ii) PENNDOT personnel or its authorized representatives are not responsible for providing this line but must verify its existence.

1.18 Manual Data Entry.

- A. If bar-code scanner or other automatic data capture systems are not available, the equipment will require redundant (double blind) data entry to facilitate accurate collection of critical vehicle identification data. The VIN, if entered manually, will be entered at least twice and automatically compared for consistency. Manufacturers may also provide additional methods of ensuring proper VIN entry.
- B. Manual entry of tampering inspection item results requires individual keystrokes for each inspection item. Holding down a single key to enter the same result in multiple fields is not allowed. Repeated pressing of the same key is allowed.
- C. Double blind entry is defined as:
 - i) The inspector will enter the value on the screen and when data entry is completed press the <ENTER> key to continue.
 - ii) The equipment will blank the field and require the inspector to enter the value again without the benefit of seeing the first entry.
 - iii) At the completion of the second data entry the inspector will again press the <ENTER> key to indicate that the process has been completed.
 - iv) If the two (2) values do not match then the process must begin again.
 - v) The inspector will be forced to enter the same exact value twice in a row before the process will proceed.

1.19 Fuel Cap Test Equipment.

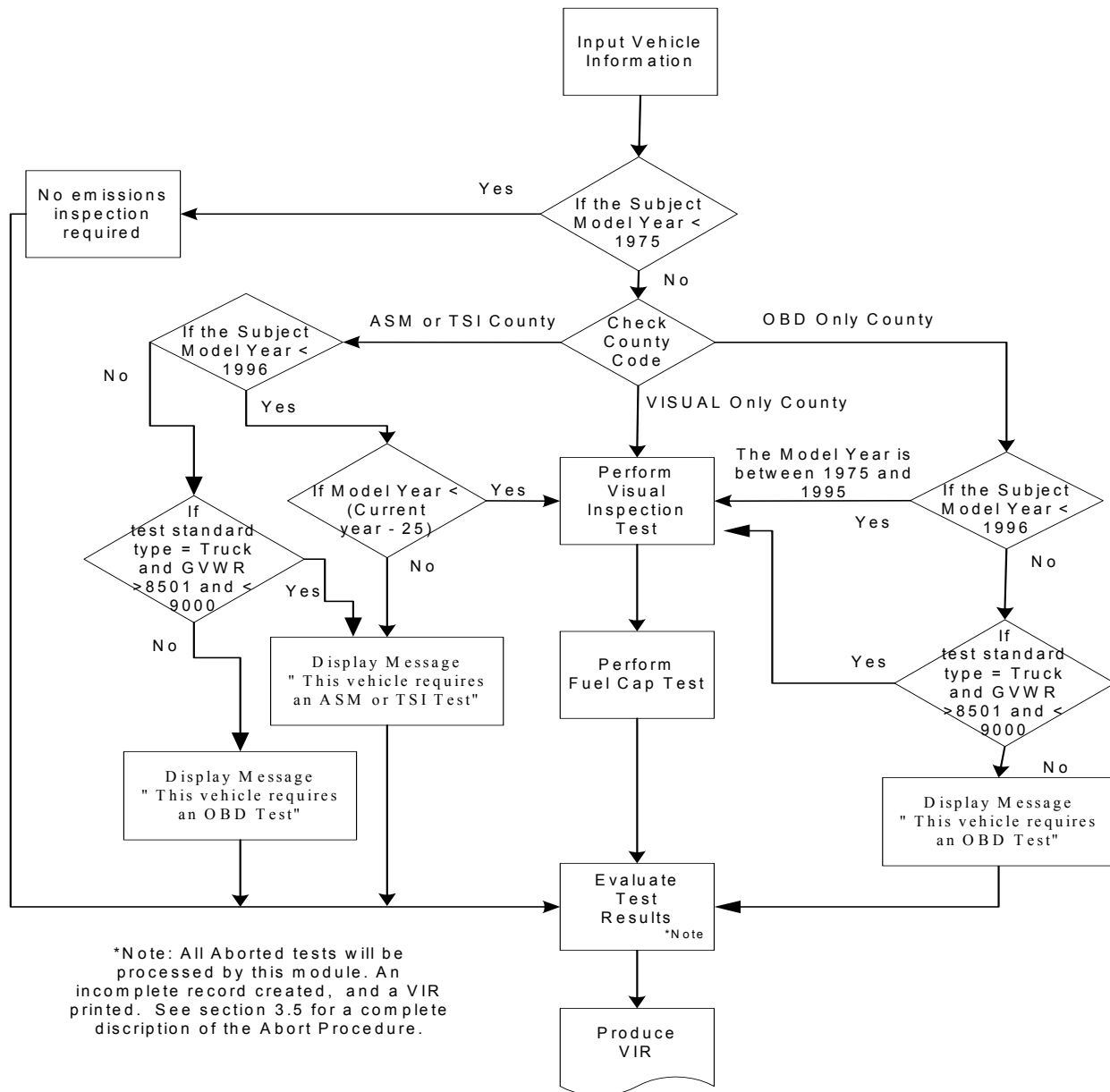
- A. The PAS will be equipped with a fuel cap tester that has the ability to test the vehicle fuel cap as set forth by EPA (EPA420-R-00-007 4/00) and transmit the results of the test to the PAS electronically. Electronic communication between the testing apparatus and the equipment does not indicate that the device cannot be connected to the PAS internally. It simply means that whatever the results the testing apparatus derives will be passed back to the inspection sequence as to require no data entry on the part of the inspector.

- B. The Fuel Cap Test Equipment will come with the necessary adapters to allow the station to test fuel caps on most vehicles with a model year of 1975 or later.

2 Section Two – Software Functions.

This section describes the software functions of the PAS

Software Overview Flowchart.



2.1 General.

- A. The equipment software will control the inspection sequence and equipment processes.
- B. This software, at a minimum, will require the inspector to proceed in the following sequence when performing a vehicle inspection:
 - i) Enter the Inspector License Id Number and the Inspector Access Code;
 - ii) Enter VIN;
 - iii) For vehicles with a model year newer than 1975 and prior to 1996 and registered in OBD county or for vehicles with a model year newer than 1975 and prior to 1996 and model year is less than the current year minus 25 and registered in ASM or TSI county or registered in VISUAL county.
 - (1) Conduct the visual anti-tampering inspection
 - (2) Perform the fuel cap test.
 - iv) For vehicles with a model year newer than 1975 and prior to 1996 and model year is not less than the current year minus 25 and registered in ASM or TSI county
 - (1) Display Message “This vehicle requires an ASM or TSI test”
 - v) For vehicles with a model year greater than or equal to 1996 and registered in OBD county
 - (1) Display Message “This vehicle requires an OBD test”
 - vi) When the inspection of the vehicle is complete, the inspector information, vehicle identification information and the inspection results will be printed on the VIR and transmitted to the VIID.
- C. A description of these tasks is detailed in the following sections.

2.2 Inspector Access Procedure.

- A. The PAS will be designed to require the inspector to scan their Vehicle Emissions Inspector License. If the bar code reader is not operational the inspector will be allowed to manually enter the inspector’s 8-digit Inspector License ID Number from the keyboard before a Vehicle Emissions Inspection can begin.
- B. Following entry of the Inspector License ID the inspector will be required to enter a 5-digit access code.
- C. The access code will neither be displayed nor printed at any time on the equipment.
- D. PENNDOT will assign both the Inspector Identification Number and the access code number.
- E. The equipment software will be designed to automatically abort the inspection if the inspector:
 - i) Has not been issued an appropriate license;

- ii) Access code does not match the license ID;
 - iii) License has expired, based on the expiration date in the file;
 - iv) Listed as locked out from testing privilege;
 - v) Not listed as an inspector for the current station; or
 - vi) A invalid emissions certification was found, valid values are "EI", "EO", "EV", "CI", "CO", "CV", "MI", "MO", or "MV".
- F. A message will be displayed indicating that the test has been aborted because of the appropriate reason shown above.
- G. The test will not proceed. Nothing will be printed on the printer.
- H. The software will be designed to compare the inspector's license number, access code and the inspector's license expiration date against the local TECH.DAT file.
- I. The inspector's name and a line for his/her signature will be printed on the VIR.

2.3 Vehicle Information Entry.

- A. The equipment software must be designed to collect vehicle information like vehicle make, model year, etc.
- B. If known, the five (5) position vehicle make code as identified on the vehicle registration credential must be displayed and printed on the VIR, this five (5) position code will also be recorded on the test record. The software will be designed to first display a list of vehicle makes. The inspector will then be instructed to: select a vehicle make by using the cursor and scrolling through the list; or by typing in the first letter or two of the vehicle make so that the cursor goes directly to the first vehicle make with that letter; or by a combination thereof.
- C. The inspector may also choose to enter the complete vehicle make code which will be edited against the displayed list of valid vehicle makes. The inspector will not be prompted to enter the make if the data was available from the bar code on the BMV Vehicle Registration Credential or a VIR.
- D. The equipment will store the Title number issued by BMV. The inspector will not be prompted to enter the Title number if the data was available from the bar code on the BMV Vehicle Registration Credential or a VIR.
- E. The equipment will store the License Plate number issued by BMV. The inspector will not be prompted to enter the License Plate if the data was available from the bar code on the BMV Vehicle Registration Credential or a VIR.

2.4 Applicable Model Years.

- A. The PAS will not accept any vehicle older than 1975 for an emissions inspection.

- B. An attempt to make such an entry will cause the PAS to display the following message ***“DO NOT TEST VEHICLES OLDER THAN 1975 FOR EMISSIONS”*** and the equipment will not allow the inspection to continue.
- C. For vehicles with a model year prior to 1996 and the vehicle is registered in an OBD county by checking the COUNTY.DAT file.
 - i) Conduct the visual anti-tampering inspection (section 3.21)
 - ii) Perform the fuel cap test. (Section 3.22)
- D. For vehicles with a model year prior to 1996 and the vehicle is registered in an ASM or TSI county by checking the COUNTY.DAT file and model year is less than the current year minus 25.
 - i) Conduct the visual anti-tampering inspection (section 3.21)
 - ii) Perform the fuel cap test. (Section 3.22)
- E. For vehicles the registered in an VISUAL county by checking the COUNTY.DAT file
 - i) Conduct the visual anti-tampering inspection (section 3.21)
 - ii) Perform the fuel cap test (section 3.22)

2.5 Blind Test.

- A. Once the emissions analysis has begun, no results are to be displayed until after the test record is written to storage and a final pass/fail determination has been made, unless the test is aborted in which case the equipment will print the appropriate message on the VIR.

2.6 Data Storage And Recall Capability.

- A. The equipment will have the capability to store (a minimum of 150 days of emissions tests and associated records) or (a minimum 500 emissions tests and associated records) whichever condition is met first.

2.7 Warranty Message On VIR.

- A. Federal law for most emissions related defects (except certain fuel metering and ignition parts) covers most major emissions control components, for two (2) years or twenty four thousand (24,000) miles or in accordance with Clean Air Act amendments. However on 1998 and newer vehicles the major emissions control components are covered by federal law for most emissions related defects, for eight (8) years or eighty thousand (80,000) miles or in accordance with Clean Air Act amendments.
- B. The equipment will print the appropriate warranty message “Vehicles that fail the Emissions Inspection may be eligible for warranty coverage for the required repairs. Check with your service providers on your vehicle’s Emissions Warranty.” on the display as well as on the VIR.

2.8 Decision Criteria.

- A. The PAS will be programmed to print the VIR and record the test results. See the sample VIR layout in Section 4 Exhibit A. VIRs for vehicles failing the emissions test will also include information on the possible causes of failure, and warranty repairs.

2.9 VIID Communication Processes.

- A. All phone/modem call activities, including transactions and data files, will be handled by the communication software in accordance with the "PAS Communications Interface to VIID Functional Specification for Pennsylvania I/M Program Phase II". The current communications software and host provider for PENNDOT is MCI Communications Corporation (MCI). Proprietary MCI documentation and communications software is provided to authorized equipment manufacturers.

2.10 Receive System Date/Time Update.

- A. The communication software resets the current equipment date/time settings only when:
 - i) During a Begin Test communications session when the equipment transmits the VIN, title and license plate number information to the VIID; or
 - ii) During a Data File Refresh communications session.
- B. During these two types of sessions the VIID will pass via the communication software the current date/time settings to the equipment.
- C. The communications software will not update the PAS clock during "End-of-Test" contact (passing emissions inspection results) or "communications system test" session.
- D. The communication interface program will set a response status bit in the response status words notifying the equipment that the PAS clock has been reset.
- E. If the equipment uses more than one clock, the equipment will be required to update all appropriate system clocks.
- F. The inspection start date and time stamp for an emissions inspection will be set in the test record following the receipt of the system date/time update by the equipment just after the initial VIID contact. If communications attempts fail for the initial VIID contact, the date and time stamp will be set using the appropriate equipment system clock settings.

2.11 Lockout Processing.

- A. The status (on/off) of the lockouts will be transmitted by the VIID to the equipment. If a lockout(s) is set, then subsequent emissions inspections will be prohibited until the applicable lockout(s) has been cleared. Lockouts received from the VIID during a Begin Test communications session will affect all inspections following the current inspection in process. This is to avoid motorist inconvenience.
- B. The equipment will lockout from emissions testing if the number of inspections performed exceeds the maximum number of offline inspections or the last successful VIID contact has exceeded the maximum number of days. The values for maximum tests and maximum number of days are stored in the

STATION.DAT file and can be adjusted for each station by PENNDOT. The software will count the number of offline tests and will keep track of the last time the VIID has been contacted with the successful transmission of EIS.DAT data or data file refresh. If the maximum number of offline tests has not been exceeded or the last VIID contact is within the maximum number of days the software will allow new emissions inspections. If this lockout is set, by exceeding the offline test number or the number of days with no VIID contact, the equipment must make contact with the VIID and upload all stored records using the data file refresh process. At that time the lockout is to be reset by the equipment and the software will reset the offline counters and allow emissions testing to proceed. The offline counters will also be reset every time the EIS.DAT file is successfully transmitted to the VIID or a data file refresh is completed.

2.12 Receive PENNDOT Messages.

- A. PENNDOT messages will be transmitted by the VIID to the equipment. Even if multiple messages are in queue in the VIID only one (1) message is sent to the equipment in any communications session.
- B. All messages will be in a text file formatting of variable length with up to seventy-six (76) characters per display line.
- C. If a message is received during an emissions inspection it will be displayed at the end of the emissions inspection.
- D. The equipment will display PENNDOT messages on the screen and will always print a copy of the message to the printer. A prompt for the option to print additional copies will also be provided.
- E. Once a message has been displayed and printed, the equipment will delete the message.

2.13 Receive Updates to Vehicle Reference Table.

- A. The Vehicle Reference Table will be in ASCII format. This table provides information about all vehicles.
 - i) Manufacturers are required to integrate the information from the table into the equipment software so information is properly utilized (in accordance with the specifications) during inspection process.
 - ii) Manufacturers are required to allow periodic partial updates of the VRT.DAT through the VIID or full periodic updates via floppy disk and/or CD during later software updates.
 - iii) Manufacturers will provide a method for service personnel to refresh the current version (less VIID updates) if the equipment files become corrupted.
 - iv) This service routine must also reset the VRT Version date and number of records, described below, which the equipment transmits to the VIID. The date must be reset to reflect the date of the service source version being installed. This will allow the VIID to bring the VRT.DAT to current update level.
 - v) The equipment will send the VRT version date and number of records to the VIID on every communication transaction as part of the security login, with the exception of diagnostic

transactions. The VIID will compare the transmitted VRT version date and number of records on the equipment to the current version date and number of records of the VRT on the VIID. If an update is required, the VIID will prepare a differential update to be sent to the equipment during a subsequent transaction. If the transmitted version date and number of records does not match an approved VRT version date and number of records then a VRT corrupt lockout will be sent.

1. The differential update will consist of each VRT.DAT Rows that have been revised since the date of the most recent approved VRT version date and number of records.
2. When an “VRT.DAT Update” file is received from the VIID, the PAS will store the file to the hard drive/permanent storage device until a period of relative inactivity (e.g. between emissions inspections). During periods of relative inactivity the PAS unit shall perform the VRT table maintenance function. Each VRT.DAT update record will be preceded by a single character and will be processed as follows:
 - i. “C” = replace record (same row ID),
 - ii. “A” = append record (new row ID),
 - iii. “D” = delete record (same row ID).
3. After the update, the VRT version date and number of records on the equipment will be changed to the version date and number of records as transmitted from the VIID.

vi) The VRT.DAT file may appear to be corrupted if either of the following conditions exist:

1. The version date sent by the equipment does not match any dates stored in the “VRT Update History” table in the VIID (second consecutive occurrence); or
2. The number of records in the equipment’s VRT.DAT does not match the appropriate number of records for that version date (determined at the VIID).
 - (i) If possible corruption is detected by the VIID, the VIID will send a response bit to the equipment. The equipment, upon receiving the response bit, will be locked out from performing further inspections and display the following prompt:
 1. THE VRT DATABASE IS CORRUPT. CALL SERVICE.
 - (ii) This lockout can only be cleared by the VIID upon replacing the file providing the VIID has verified that the VRT data has been replaced.

2.14 Receive Updates of Equipment Lockout Status.

A. The status (on/off) of the lockouts will be transmitted by the VIID to the equipment during every inspection logon and upon request by the equipment (Data File Refresh and Lockout Status menu items). The VIID will return the state of the following lockout conditions to the equipment:

1. QA/State PAS Lockout

2. Station License Suspended
 3. Station License Revoked
 4. Station License Expired
 5. Failure to pay for Communication Services
- B. If a lockout(s) is set, then subsequent emissions inspections will be prohibited until the applicable lockout(s) has been cleared.
- i) The current inspection can proceed.
 - ii) Lockouts received from the VIID during a Begin Test communications session will affect all inspections following the current inspection in process. This is to avoid motorist inconvenience.

2.15 Receive Updates to Inspector(s) Data.

- A. When the inspector table for a station is updated on the VIID, the complete updated inspector table will be transmitted by the VIID to the equipment.
- B. This file will contain the license information for both emissions and safety inspectors, including name, license number, certification status and expiration dates.
- C. The equipment software will not allow changes to the “Inspector Information File” from the equipment. Inspector information can only be changed from the VIID.
- D. Upon receiving the inspector information from the VIID, the equipment software will not be required to validate the inspector information received from the VIID.
 - i) Upon receiving data from the VIID, if the inspector’s license number that is performing the current:
 - VISUAL inspection has been deleted; the equipment will allow the inspector to complete the inspection.
- E. The equipment will display instructions on where and how to review the updated list of inspector license numbers. An option to print the list will be provided, if desired. During any screen display or printing of the inspector information the equipment will not display the actual inspector access codes at any time.

2.16 Receive Updates to County Data.

- A. When the COUNTY.DAT file is modified on the VIID the complete updated file will be transmitted by the VIID to the equipment.
- B. This file is used to list counties included in the emissions testing areas and define the default emissions inspection type for that county.

2.17 Receive Updates to System Data.

- A. When the STATION.DAT file or SYSTEM.DAT file is modified on the VIID the complete updated file will be transmitted by the VIID to the equipment for the SYSTEM.DAT file and the Max # of tests in # of day with no modem contact field and the Max # of days for # of tests with no modem contact field for the STATION.DAT file.
- B. This file is used to define and set the equipment or inspection parameters for various settings in the equipment such as calibration frequency, etc.
- C. The equipment application must utilize the values defined in this file for each defined variable in the file.
- D. Because some equipment in use is never turned off, the application must be capable of resetting the values contained in STATION.DAT and SYSTEM.DAT at a minimum of when a new file is received in the equipment.

2.18 Receive other communications transactions and status.

- A. The communications data stream, as received from the VIID, will contain the command response status such as “No Match”, “Station License Expired”, “Previous Failed Test “, etc. Data that may be received by the equipment, in addition to the aforementioned, is defined in subsequent sections.

2.19 IN USE warning messages (if applicable).

- A. When data is being stored or accessed, a message or icon will be displayed indicating that the equipment should not be moved or otherwise disturbed.

2.20 Print screen capability.

- A. The PAS will have a print screen feature, which prints any current text screen by depressing no more than three (3) keys.
- B. Print screen output will be directed to the printer.
- C. The print screen function will not be enabled during the emissions inspection process.

2.21 Incomplete and Completed Inspection Counting.

- A. The equipment must be designed to track inspection started, aborted and completed by each inspector on a monthly basis.
- B. The file INCOMPLT.DAT will be used to track this data.
- C. Each inspector in the equipment will have a record in the file for each month where the inspector begins an emissions test on the equipment. When beginning a test, following login by the inspector, the equipment will increment the field TEST STARTED by one.
 - i) If a record does not exist for the inspector one will be created at this time.

- D. When a test is aborted the equipment will increment the field TEST ABORTED by one. When a test is completed following printing of the VIR and writing the final test record the equipment will increment the field TEST COMPLETED by one. When seeking the correct record to update on abort or test completion the correct month and year will be determined by the month and year of the TEST START DATE value.
- E. On the first communication of any month the equipment will send to the VIID all records stored in the file INCOMPLT.DAT for any previous months. All records sent to the VIID will be purged.

3 Section Three – Display and Program Requirements.

PURPOSE: This section describes the computer screen displays and the software programming requirements of the PAS.

3.1 General Description.

This section describes the display prompts and programming criteria for the emissions inspection procedure. These items will be standardized to facilitate training of licensed inspector. Manufacturers may propose, for PENNDOT approval, alternative methodologies for the presentation of information and data entry as long as the substance and the priority of the sequence is not modified. Approval of alternative methodologies is necessary prior to the manufacturer developing the PAS.

The PAS manufacturers will utilize the following to make the equipment more user friendly:

- i) Direct cursor addressing or first letter selection versus a scrolling display;
 - ii) Data entry using the bar code scanner on bar coded VIN, VIR, BMV Issued Registration Credential, Emissions Inspector Licenses and other credentials as PENNDOT deems appropriate;
 - iii) Method of displaying DATA ENTRY ERROR MESSAGES;
 - iv) Development of HELP screens to assist inspectors with data entry; and
 - v) Other options may be proposed for approval by PENNDOT.
- B. Data entry from one (1) item to another will not proceed until a valid entry has been made. The Emissions inspector will utilize vehicle identification and visual information to determine what inspection criteria and emissions test standards are appropriate for the particular vehicle being inspected. Once the emissions inspection or test sequences have been initiated, the inspector will be prohibited from editing any vehicle identification or inspection information. Where editing is allowed, the inspector will have the ability to return to a previous display prompt without depressing more than three (3) keys. At that point the inspector will see the prior information and be permitted to insert and delete characters without having to retype the whole field.
- C. Unless otherwise specified in the programming criteria of this specification, the equipment will display an appropriate error message in response to an invalid or missing entry by the inspector and ask that the data be re-entered.
- D. Data that is entered using the keyboard and a bar code scanner will indicate successful entry/scanning and immediately display the data for the operator to review. The following sections include the minimum of menus manufacturers are required to provide. Manufacturers may break the menus down further to increase user friendliness or expedite certain operations. PENNDOT reserves the right to require modification of any menu it determines does not meet the minimum requirements. Buffering of keys from the keyboard is to be prevented on all PAS units.
- E. Double blind entry will be required for the entry of the Vehicle Identification Number if it is not input from the bar code scanner or decoded from the lookup table. No exceptions will be considered.

- F. Data contained in memory will be written to storage, unless otherwise specified in the document at the following points in the testing procedures:
- i) After completion of the inspection, following determination of passing or failing.
 - ii) After entry of repair information if this is a retest.
 - iii) After sticker number is entered if passing inspection.
 - iv) After TIN is calculated if passing inspection.
 - v) After motorist fee is entered.

These are minimum requirements. If a manufacturer wishes, additional file writes will be allowed.

- G. License cards will be issued to inspectors, quality assurance auditors and Commonwealth staff. The license cards will be bar-coded in 1D, 3 of 9-symbol technology. The format will be the similar for all licenses, a leading identifier character followed by 8 characters. The leading identifier for an inspector license will be a “/”, a QA auditor will be a “Q” and Commonwealth personnel an “S”. Thus an inspector license could decode to “/12345678”. The leading identifier character is never displayed or stored in a record.

3.2 Main Menu.

- A. When the equipment is turned on the equipment will prompt the inspector to perform any required equipment maintenance. After the operator has performed these items the equipment screen will display the following menu options:

Display Prompt:

(1) VEHICLE EMISSIONS INSPECTION MENU

(2) ADDITIONAL SITE SPECIFIC SOFTWARE

(3) DIAGNOSTIC FUNCTIONS

(4) STATION MENU

(5) STATE MENU

(6) MANUFACTURER’S TECHNICIAN MENU

- B. Activation of Menu Items. The equipment will allow the inspector to activate the Vehicle Emissions Inspection Menu options by entering a “1”, the Diagnostic Functions by entering a “3”, and so forth, or the functional equivalents approved by PENNDOT. Other menu structures may be submitted to PENNDOT for approval. A brief description of each item in the menu follows.

- C. Main Menu Item Descriptions.

i) Vehicle Emissions Inspection Menu.

The Vehicle Emissions Inspection Menu will list the procedures available relevant to Vehicle Emissions inspections. The description of Vehicle Emissions Inspection Menu is contained in Section (3.3).

ii) Additional Site Specific Software

The manufacturer may offer additional software to enhance the emissions testing procedure such as on-line manuals, access to bulletin boards, and other vehicle information. These types of options should be contained under this menu. The scope and limitation of these applications are described in Section 1.5. The manufacturer may offer an additional option for downloading software updates to the PAS equipment. Requirements for the download of software are described in section 1.6.

iii) Diagnostic Functions

The manufacturer may offer a diagnostics and repair software application to the equipment purchaser. The scope and limitations of these applications are described in Section 1.5.

iv) Station Menu

The Station Menu will list procedures available to station staff which are not directly related to emissions inspections. Communications procedures will be placed on this menu. The description of the Station Menu is included in Section (3.33).

v) State Menu.

The State Menu will list the procedures that are available only to PENNDOT authorized representatives. The selection of Item 4 from the Main Menu will cause the equipment to prompt the operator to scan their Identification Badge and enter the state generated daily access code to gain access to the menu. The State Menu option will be accessible upon power-up of the PAS. The description of the State Menu is included in Section (3.34).

vi) Manufacturer's Technician Menu.

The Manufacturer's Technician Menu will list the procedures that are available only to manufacturer representatives. The selection of "T" from the Main Menu will cause the equipment to display the Manufacturer's Technician Menu. Security for this menu option is to be provided by the manufacturer. However PENNDOT will require that the manufacturer describe in writing to PENNDOT's satisfaction how this security will be implemented. The Manufacturer's Technician Menu option will be accessible upon power-up of the PAS. The description of the Manufacturer's Technician Menu is included in Section (3.42).

3.3 Vehicle Emissions Inspection Menu.

A. Items:

1. Vehicle Emissions Inspection
2. Equipment Maintenance
3. VIR Reprint plus Test Record Search and Retrieval
4. Training Mode
5. Print Rejection From Testing Forms
6. Enter Replacement/Missing/Exemption Sticker Numbers
7. Return to Main Menu

Select Option Desired; Enter Number _____

- B. When the emissions inspector has entered a valid menu option number, the equipment will initiate the associated procedure. If the value entered is not a valid number, an error message will be displayed to the screen. After three (3) successive invalid entries are made, the equipment will automatically return to the Main Menu.
- C. If option 5 is selected the software will print the Rejection From Inspection Form without the vehicle information filled in. (See Section 4 Exhibit I for sample of Rejection From Inspection Form)

3.4 Vehicle Emissions Inspection

An Emissions Inspection sequence will be initiated by an entry of 1 from the Vehicle Emissions Inspection Menu. This section will describe the programming criteria and the sequence of menus used in the Emissions Inspection.

A. The PAS will not allow entry into the Vehicle Emissions Inspection Menu unless the PAS has passed the fuel cap calibration within 72 hours.

B. Check for lockouts

i) **Programming Criteria:**

- (1) The PAS will also confirm that no lockout indicators have been set. If a lockout indicator is present the lockout message will be displayed, the procedure will be aborted and the system will return to the Vehicle Emissions Inspection Menu.

ii) **Suggested Display Messages:**

- **You Are Locked Out From Emissions Testing. A State Installed Lockout Has Been Set. Contact Penndot Or Technical Support For Further Instructions.**
- **You Are Locked Out From Emissions Testing. The Station License Has Expired. Contact Penndot Or Technical Support For Further Instructions.**
- **You Are Locked Out From Emissions Testing. The Station License Has Been Revoked Or Suspended. Contact Penndot Or Technical Support For Further Instructions.**

- **You Are Locked Out From Emissions Testing. A Lockout Has Been Set Due To Failure To Pay For Communications Services. Contact MCI Customer Service For Further Instructions.**
- **You Are Locked Out From Emissions Testing. A Lockout Has Been Set Due To Failure To Communicate With The Host Computer. This Equipment Has Exceeded The Allowed Number Of Inspections Without Modem Connection. Attempt A Data Refresh To Restore Communications With The Host. If This Procedure Fails Contact Technical Support For Further Instructions.**
- **You Are Locked Out From Emissions Testing. A Lockout Has Been Set Due To A Corrupt Data File Or Other Equipment Problem. Check The Equipment Status Screen For Details. You May Need To Contact The Manufacturer For Service.**

3.5 Abort Procedure

A. Programming Criteria:

- i) The PAS will display the appropriate test information on the screen (test time, etc.) The inspector should be able to abort the inspection by pressing the “Escape” key. If the inspector presses the “Escape” key, the PAS will display the following message:

- **Display Prompt:**

- 1. **ARE YOU SURE YOU WANT TO ABORT THIS TEST? (YES/NO)**

- **Programming Criteria:**

- 1. If the inspector enters “Y”, then the PAS will abort the inspection and issue a VIR with the abort reason “Incomplete Inspection” printed in the “Overall Test Result” area (see Section 4 Exhibit D for sample VIR).
 - 2. If the inspector enters “N”, the PAS shall resume the inspection at the point where the Escape key was pressed.
 - 3. If the inspection is aborted any time prior to the completion of the Vehicle Data Entry Confirmation section, the inspection will end and the PAS will NOT print a VIR and the abort will NOT be tracked in the INCOMPLETE.DAT file.
 - 4. If the inspection is aborted any time after the completion of the Vehicle Data Entry Confirmation section, the inspection will end and the PAS will print “Invalid” next to all test fields on the VIR, the vehicle data will be printed on the VIR, and the abort will be tracked in the INCOMPLETE.DAT file. (See Section 4 Exhibit D for sample VIR).
 - 5. Aborted test records are not stored or transmitted to the VIID.

6. "THIS INSPECTION WAS ABORTED BY THE INSPECTOR" will be printed on the VIR.
 7. A test will no longer be allowed to be aborted when the PAS software reaches the TEST EVALUATION and MESSAGES section.
- ii) Aborts by inspectors will be tracked in a file, INCOMPLT.DAT, on the equipment, which will record the number of aborts in a month for each inspector license number.
- (1) The equipment must be designed to increment the TEST ABORTED counter field in the file INCOMPLT.DAT for the inspector and the proper month if an inspection is aborted
 - (2) At the beginning of each month the equipment will send the previous months records to the VIID and deleted the sent records from the equipment file.
 - (3) Each record will contain the month, year, station license number, equipment ID, inspector ID and a count of aborted inspections for that inspector.
 - (4) If a record does not exist for the inspector the equipment will create one when the test is started.

3.6 Inspector ID

- A. When the Vehicle Emissions Inspection Option is selected from the Vehicle Emissions Inspection Menu, the operator will then be prompted to scan or enter from the keyboard their: If the Inspector ID is scanned, the format will be the similar for all licenses, a leading identifier character followed by 8 characters. The leading identifier for an inspector license will be a "/", a QA auditor will be a "Q" and Commonwealth personnel an "S". Thus an inspector license could decode to "/12345678". The leading identifier character is never displayed or stored in a record.
- i) Eight (8) character Emissions Inspector License Number; and Enter from the keyboard their five (5) digits Access Code.
 - ii) The equipment will search the file TECH.DAT containing the authorized Inspectors for a matching identification number. If the following conditions are met the test can proceed:
 - (1) A valid emissions inspector license is found matching the entered license number;
 - (2) The Identification Number entered and the Access Code must match;
 - (3) A valid emissions certification must be found, valid values are "EI", "EO", "EV", "CI", "CO", "CV", "MI", "MO", or "MV";
 - (4) Inspector Emissions Lockout flag must not be set; and
 - (5) The system date will not be greater than the inspector license expiration date.
 - iii) After any failed attempt to scan and enter the proper identification number with matching access code, the equipment will display the appropriate error message and then will return to the Main Menu. If a correct identification number is entered, the equipment will then initiate a new test

record and record the station number, the PAS number, the software version, the emissions inspector number, date and time.

- iv) The equipment must be designed to increment the TEST STARTED counter field in the file INCOMPLT.DAT for the inspector and the proper month as an inspection is started.

(1) If a record does not exist for the inspector the equipment will create one when the test is started.

- v) **Display Prompts:**

Please Scan or Enter your Inspector License ID Number

Please Enter your Access Code

- vi) **Error Messages:**

(1) **This license number is not found on file – Try Again or Contact the Helpline**

(2) **This license is not valid to conduct emissions tests**

(3) **Your access code is incorrect**

(4) **Your license has expired**

(5) **Your license has been suspended or revoked – Contact PENNDOT**

3.7 Test Type

A. Display Prompts:

- i) **Select Test Type**

(1) **Initial**

(2) **After Repairs**

B. Error Message:

- i) **Invalid entry – Try Again**

C. If Initial is selected then the test type is “I”. If After Repairs is selected then the test type is “R”.

3.8 VIN, Title and License Plate

A. The VIN must either be scanned from the BMV Registration Credential, vehicle, a previous VIR or manually entered twice by the emissions inspector. The VIN and Title number will be the primary means of tracking the inspection history of a vehicle.

B. Display Prompts:

- (1) Please ask the customer for their BMV Registration Credential or previous VIR.
- (2) Please scan the Bar Code on the BMV Registration Credential, VIR or scan VIN from the vehicle and enter the Title number and License Plate using the keyboard or enter the VIN, Title number and License Plate using the keyboard.
- (3) Please re-enter the VIN using the keyboard.
- (4) Please enter the vehicle Title Number
- (5) Please enter the vehicle license plate number
- (6) Is this vehicle information correct? Yes or No

C. Error Messages:

- (1) Scan could not be read – Please enter from the keyboard
- (2) Both entries of the VIN do not match.
- (3) VIN exceeds 17 characters in length – please recheck the VIN
- (4) Title must be between 5 and 10 characters long – please recheck the Title

D. Programming criteria:

- (1) The equipment will show display prompt (1) on the screen.
- (2) The equipment will show display prompts 2, 4, & 5 and accept input from the bar code scanner or the keyboard.
- (3) Input from barcode scanner
 - If the equipment receives proper input from the bar code scanner the inspector will be shown display prompt 6.
- (4) Input from keyboard
 - Manual entry from the keyboard will require a second entry of the VIN in the double blind manner described in Section 1.18 above and will require use of prompt 3. If the second entry does not match the first error message 2 will be displayed and the VIN process will start again from the beginning.
 - When error message 3 is displayed the equipment will prompt the inspector with the question: **Is the VIN greater than 17 characters? Yes or No.** If the VIN is greater than 17 characters then proceed to display prompt 4 or 5. If the VIN is not greater than 17 characters then restart the VIN process from the beginning.

- The equipment will not allow entry or proceed to display prompt 4 or 5 until proper entry is obtained or the inspection is aborted. If after 3 attempts no match is made, the equipment will abort the inspection procedure. No record will be written and nothing will print.
- If the equipment receives proper input from the keyboard the inspector will be shown display prompt 6.

3.9 VIID Communications

A. The PAS will attempt the initial VIID contact immediately after entering the VIN, title and license plate number of the vehicle to be inspected. Contact will be attempted for every emissions inspection. Following conformation of the VIN, title and vehicle license plate number the equipment will automatically initiate a call to the VIID.

i) **Display Prompts:**

- **PERFORMING NETWORK ACCESS, PLEASE WAIT.**

B. The equipment will make the telephone call and wait for a response from the VIID. If after 45 seconds the equipment doesn't receive a response from the VIID the equipment will hang-up and redial.

i) The equipment will make a total of two (2) phone calls attempting to connect to the VIID. If VIID communications have not been achieved, the equipment will proceed with the emissions inspection without connecting to the VIID.

ii) At the end of a second unsuccessful attempt, the equipment will display the following prompt:

- **CANNOT ACCESS NETWORK. PROCEED WITH THE EMISSIONS TEST.**

iii) Programming Criteria:

(1) In such an event, the equipment will proceed with the inspection in the same manner as if a "No Match" message has been received following the second VIID access call. The equipment will enable the inspector to enter the vehicle information (Year, Make, Model, etc.) into the equipment.

C. Each unit will be allotted a certain number of Emissions Tests that can be performed without VIID contact over a period of time. Both the number of no contacts and the number of days over which they are allotted will be set through the VIID in the STATION.DAT file. If either condition is exceeded the equipment will be locked out from performing any additional test until communication with the VIID is reestablished and a data file refresh is completed.

i) For most stations, the initial allowance in the STATION.DAT file will be 50 tests or 30 days whichever comes first.

ii) Any failure in the communications session at the start of the emissions test will be the only point that will be counted as a communications failure for the purpose of incrementing the running total.

iii) If the equipment is locked out display the following message:

➤ **COMMUNICATION SECURITY VIOLATION. TOO MANY EMISSIONS TESTS SINCE LAST COMMUNICATION WITH THE VIID. THE INSPECTION CANNOT PROCEED, PERFORM DATA FILE REFRESH.**

D. If security log in fails due to a “TOKEN” violation, the VIID will send the following message to the equipment and the equipment will display the following message:

➤ **COMMUNICATION SECURITY VIOLATION - INCORRECT IDENTIFICATION PASSWORD. CONTACT TECHNICAL SUPPORT IF THIS PROBLEM PERSISTS.**

i) The inspector will note the violation and continue the test.

E. After connecting to the VIID, the equipment will transmit at a minimum the following data:

- i) VIN/Title Number/License plate number;
- ii) Stored emissions test records, if any;
- iii) Fuel Cap Calibration records, if applicable;
- iv) Request Current Lockout Status; and
- v) VRT version date and the number of records.

F. Programming Criteria

i) If a vehicle match is found, the VIID will transmit to the equipment the following information for the vehicle under test, in addition to any other pending transactions. This data can be verified and confirmed/changed by the inspector on the vehicle data review screen.

1. Vehicle Model Year
2. Vehicle Body Type
3. Vehicle Standards Type Code
4. GVWR
5. Vehicle Make
6. Vehicle Model Name
7. Number of cylinders

8. Engine size (cc)
 9. Transmission type
 10. Fuel type
 11. County of Registration
 12. Previous DLC Test Result [*Not used for VISUAL-I/M Check*]
 13. Previous Odometer Reading (if available)
 14. Previous inspection date (if available)
 15. Previous overall inspection result (if available)
 16. VID id (Field 171)
- ii) Once a match has been made and the vehicle data has been transferred from the VIID to the equipment no changes or corrections are allowed to the VIN, title or license plate number. If changes or corrections have to be made, the inspector must abort the inspection. The new test will again require entry of correct VIN, title and license plate number.
- iii) If a “No Match” condition is returned by the VIID on the first attempt (note: attempts are to be counted by the equipment) for a Pennsylvania-licensed vehicle, then the equipment will prompt the inspector as follows:
- (1) This message will not be displayed and the test will proceed if
 1. Two VIID calls have already been made on VIN/title/license plate.
 2. The initial call was based on data scanned from a PENNDOT registration credential.
 3. **Display Prompts:**
 - (i) **Display VIN, Title and Plate**
 - (ii) ***NO VEHICLE MATCH HAS BEEN FOUND. VERIFY THAT THE VIN, TITLE AND LICENSE PLATE HAVE BEEN ENTERED CORRECTLY. MAKE ANY NECESSARY CHANGES AND PRESS (function key) TO PROCEED.***
 - (iii) The equipment will allow the inspector to reenter the VIN, title and/or vehicle license plate number, and after such changes the equipment will prompt the inspector to press a “Function Key” to initiate a second call to the VIID. If no changes are made, the “Function key” will cause the test to proceed directly to manual entry.
 - (2) If “No Match” is found after two attempts, then the equipment will proceed with the emissions inspection in accordance with the “No Match” criteria. The equipment must be able to

differentiate between the first and the second “*No Match*” message. The equipment will display the following message:

- ***NO MATCH OF THIS VEHICLE INFORMATION HAS BEEN FOUND. PLEASE ADVISE THE CONSUMER THAT NO VEHICLE DATA MATCH WAS MADE WITH THE COMMONWEALTH REGISTRATION RECORDS. THE CONSUMER SHOULD RETAIN THE VEHICLE INSPECTION REPORT FOR FUTURE REFERENCE DURING ANY REGISTRATION PROCESS. PLEASE PROCEED WITH THE EMISSIONS TEST.***

H. As the low level communication interface protocol makes contact with the VIID and establishes a session, the VIID will respond with stored transaction and messages (appropriate response bits), which are waiting for transmission to the equipment. These messages are listed below. The automatic transaction and message updates will occur on every session initiated by the equipment except during communications system test transaction. The communications interface will provide the equipment application with the appropriate status information to determine which transactions occurred following VIID session initiation.

1. Receive Vehicle Data
2. Receive TSB and Recall Information
3. Receive System Date/Time Update
4. Receive Lockout Status
5. Receive Inspector Data (TECH.DAT)
6. Receive Lockout Data (LOCKOUT.DAT)
7. Receive PENNDOT Messages
8. Receive Program Data (SYSTEM.DAT)
9. Receive Updates to the Vehicle Reference Table (VRT.DAT) The VRT.DAT file updates will be transmitted and processed on the second contact to the VIID after the completion of the current emission test. If the updates are transmitted on the first contact, the updating will be processed at the completion of the current emission test.
10. Receive Updates to the County Table (COUNTY.DAT)

3.10 Receive TSB and Recall Information.

- A. Emissions related Technical Service Bulletins (TSB) or recall information, if available from the VIID, should be transmitted to the equipment for use during the emission inspection.
- B. The initial information that will appear on the equipment screen will be the pertinent vehicle information as provided by the VIID. The inspector will review this information to ensure its accuracy. If manufacturer issued emission-related TSB or recall information is transmitted by the VIID, the

equipment will display the emission-related information in the following format prior to continuing with the inspection.

C. The equipment will provide the option to print a summary of the TSB and emissions recall information at time of display.

D. Examples:

***** EMISSION-RELATED TSB INFORMATION *****

TSB #: 81-4 Make: AMC

Reference: Motor TSB Manual Model(s): Concord

Edition: 1981-83 Domestic Model Year (range): 1981 Page #: 23

Affected Vehicles: All 1981 49-State high altitude AMC Concorde with four-cylinder engine and M/T.

Defects: EGR valve changed to improve performance.

Fix: Install appropriate EGR valve and forward delay valve.

***** EMISSIONS RECALL *****

Model Year: 1982 Engine Family: FAD1.6V6FBC2

Make: AUDI Recall Initiated: 06/01/90

Engine Size: 1.6L Recall #: GL

Model: 4000 Source: MFG/CARB

Class: PC

Affected Vehicles: ALL

Defects: AIR/FUEL CHECKING PROCEDURES ON EMISSION LABEL ARE NOT CONSISTENT WITH INSTRUCTIONS IN THE REPAIR MANUAL.

Fix:

REPLACE LABEL. NEW LABEL SHOULD BE WHITE WITH BLACK LETTERS AND SHOULD NOT HAVE AIR/FUEL MIXTURE CHECKING PROCEDURE.

E. For vehicles that fail the emission inspection, a summary of the TSB and recall information consisting of the first line (beginning with "&", no quotes) of the recall message, will be printed on the VIR.

3.11 Verify Test Type

This section will be processed to allow the PAS Software to warn the inspector that they may have entered an incorrect value. The inspector will be the final determining factor when determining the Test Type.

A. If the current test type has been selected as “I” (Initial) and the data returned from the VIID or EIS.HST indicates that the previous inspection failed, the inspector will be advised and prompted to adjust the test type to “After Repairs”.

i) The VIID may also send down status bits indicating that the inspection should be at no-charge to the motorist. If this is the case display the message below related to “The motorist may be entitled to a No charge re-inspection”

ii) **Display Prompt:**

(1) A previous initial inspection is on file for this vehicle. This inspection may be an after repairs test.

(2) The motorist may be entitled to a no charge re-inspection at your station.

(3) If no repairs have been performed or no repair form is available you may want to abort this inspection and inquire about repairs.

(4) Do you want to change the inspection to an After Repairs Inspection? Yes or No

iii) Programming Criteria:

(1) If a Previous Inspection Date is found and Previous Overall Inspection Result is “F”, the program will display prompts 1, 2, 3, and 4.

(2) If a Previous Inspection Date is found and Previous Overall Inspection Result is “P”, the program will continue to the next section.

(3) If the response to display prompt 4 is ‘Yes’, the “I” test will be changed to an “R” test, because the status returned indicated a previous test failure, the inspection will follow the normal “R” test procedures.

(4) If the response to display prompt 4 is ‘NO’, then continue to Receive Prior Years Information section.

B. If the current test type has been selected as “R” (After Repairs) and the data returned from the VIID or EIS.HST indicate that no previous failed inspection (not passing) is on file for this vehicle the inspector will be advised and prompted to verify the test type is “After Repairs”.

i) **Display Prompt:**

(1) No previous inspection information is on file for this vehicle. Please verify that repairs have been performed. If no repairs have been performed or no repair form is available

you may want to abort this inspection by pressing the escape key. This inspection may be an initial test.

(2) Do you want to change the inspection to an Initial Inspection? Yes or No

ii) Programming Criteria:

- (1) If a Previous Inspection Date is not found, the program will display prompts 1, and 2.
- (2) If the response to display prompt 2 is 'Yes', the "R" test will be changed to an "I" test and the inspection will follow the normal "I" test procedures.
- (3) If the response to display prompt 2 is 'NO', then continue to Receive Prior Years Information section.

3.12 Receive Prior Years Information.

- A. Create a new EIS.DAT record and initialize the record to spaces or zeros depending on the data type.
- B. The following vehicle data in the proper test record format, if available, will be transmitted by the VIID to the equipment and used as defaults. This data can be verified and confirmed/changed by the inspector on vehicle data review screen.
 1. Vehicle Model Year
 2. Vehicle Body Type
 3. Vehicle Standards Type Code
 4. GVWR
 5. Vehicle Make
 6. Vehicle Model Name
 7. Number of cylinders
 8. Engine size (cc)
 9. Transmission type
 10. Fuel type
 11. County of Registration
 12. Previous DLC Test Result *[Not used for VISUAL-I/M Check]*
 13. Previous Odometer Reading (if available)
 14. Previous inspection date (if available)

15. Previous overall inspection result (if available)

16. VID id (Field 171)

- C. **Failing contact with the VIID or a “No Match” status from the VIID**, the equipment will search the EIS.DAT and EIS.HST file for the VIN, title and plate.
- i) If a previous vehicle inspection is found then all appropriate vehicle data will be taken for use by the inspection process as though it had been received from the VIID.
- D. If a previous vehicle inspection is found the VISUAL PAS SOFTWARE program will perform the validations from sections 3.13 through 3.19 and then proceed to section 3.20.

3.13 Model Year.

A. Display prompts:

- i) **Enter the vehicle Model Year**

B. Error Messages:

- i) **This vehicle’s model year is prior to 1975 and will not be inspected.**
- ii) **Enter a valid Model Year**

C. Programming criteria:

- i) Verify that the current vehicle needs to be inspected.
- ii) Vehicles older than 1975 do not need to be inspected.
- iii) Allow entry of model year equal to current year plus one (e.g. in 2001: $2001+1 = 2002$ as maximum model year)

3.14 Vehicle Make.

A. Display prompts:

- i) **Enter the vehicle Make**
- ii) **Select the appropriate make from the list below, if the make is not listed type in the full make name.**

B. Error Messages:

- i) **No Make has been selected – Try Again**

C. Programming criteria:

- i) Vehicle make names will be entered by a method, approved by PENNDOT, which maximizes user friendliness, preferably via direct cursor selection or the first few letters of the name.
- ii) A list, from the VRT.DAT file, will be displayed of all Make names for the previously entered model year.
 - (1) For example, the inspector should be able to enter the first letter of the vehicle make which would cause the cursor to go to the first make on the list which would also be highlighted.
 - (2) If that is the correct make, the "enter" key would be pressed. If this is not the correct make, the inspector would at least be close and only have to move the cursor a short distance to the right one.
 - (3) Duplicate make-names for the model year should not be displayed.
- iii) A minimum of two characters must be entered to be considered a valid make name.

3.15 Vehicle Model.

A. Display prompts:

- i) **Enter the vehicle Full Model Name**
- ii) **Select the appropriate model from the list below, if the model is not listed type in the full model name.**

B. Error Messages:

- i) **No Model has been entered – Try Again**

C. Programming criteria:

- i) Vehicle model names will be entered by a method, approved by PENNDOT, which maximizes user friendliness, preferably via direct cursor selection or the first few letters of the model name.
- ii) A list, from the VRT.DAT file, will be displayed of all Model names for the previously entered model year & Make name.
 - (1) The list should also display the Vehicle Body Type (1 – 6) along side the model name.
 - (2) For example, the inspector should be able to enter the first letter of the vehicle model, which would cause the cursor to go to the first make model on the list that would also be highlighted.
 - (3) If that were the correct model, the "enter" key would be pressed. If this is not the correct model, the inspector would at least be close and only have to move the cursor a short distance to the right one.
- iii) A minimum of two characters must be entered.

- iv) When the PAS performs the model search in the Vehicle Reference Table (VRT), duplicate models with duplicate Vehicle Body Type should not be displayed. For example, for a 1978 Chevrolet, the VRT may contain several listings for "CAMARO," "CHEVELLE," "CORVETTE," etc. The PAS should only display each unique name and Vehicle Body Type once. This does not apply to model names that contain additional information that makes it unique. For example, the VRT may list "CORVETTE L-48" and "CORVETTE L-82." Those model listings are unique and would both be listed.

3.16 Vehicle Body Type.

A. Display prompts:

- i) Select the Appropriate Vehicle Body Type From The List Below:

1. SEDAN
2. STATION WAGON
3. PICKUP
4. SPORT/UTILITY VEHICLE
5. MINIVAN
6. FULL-SIZE VAN

B. Error Messages:

- i) **No Body Style Type has been selected – Try Again**

C. Programming criteria:

- i) If the model year, make and model entered describe a unique vehicle (i.e., a single VRT Row number), the body type may be taken directly from the VRT record and the inspector only needs to approve the body style type.
- ii) The Vehicle Body Type Code will be used to determine the vehicle test standards group (Passenger car or Truck)
 - (1) Vehicle body type codes 1 and 2 will be tested as Passenger cars, while body type code 3-6 will be tested as Trucks. The Vehicle Standards Type Code will be stored in the test record.
 - (2) Acceptable vehicle test standards group codes are:
 1. "P" = PASSENGER CAR
 2. "T" = TRUCK

3.17 Gross Vehicle Weight Rating (GVWR)

A. If Vehicle Standards Type is “T” (Truck) then Prompt for GVWR

B. Display prompts:

- i) Please enter the vehicle's Gross Vehicle Weight Rating (GVWR) as indicated on the vehicle's permanent identification plate.
- ii) DO NOT INCLUDE DECIMAL POINTS OR COMMA'S.
- iii) IF THE VEHICLE IS A SMALL PICKUP, SPORT/UTILITY VEHICLE OR MINIVAN OR IS A FULL-SIZE PICKUP OR VAN RATED AS A ½ TON (FOR EXAMPLE: GM 10 OR 15 SERIES, FORD OR DODGE 100 OR 150 SERIES) ENTER 5999 FOR GVWR.

C. Error Messages:

- i) No Value Has Been Entered - Try Again
- ii) Too Many Characters Have Been Entered - Try Again
- iii) Gross Vehicle Weight Rating Must Be At Least 2500 lbs - Try Again
- iv) The GVWR of this vehicle is greater than 9,000 pounds. The current emissions program does not inspect vehicles in this weight class.

D. Programming criteria:

- i) GVWR must be printed on the VIR
- ii) If GVWR of this vehicle is greater than 9,000 pounds, the program will display error message iv) and then return to the vehicle emissions inspection menu.

3.18 County of Registration.

A. Display prompts:

- i) Enter the vehicle County of Registration
- ii) Select the appropriate County from the list below.

B. Error Messages:

- i) No County has been selected – Try Again

C. Programming criteria:

- i) County of Registration will be entered by a method, approved by PENNDOT, which maximizes user friendliness, preferably via direct cursor selection or the County Code.

- ii) A list, from the COUNTY.DAT file, will be displayed of all County Codes & County names contained in the file.
 - (1) If a County Code was received from the VIID the equipment will highlight the appropriate county from the list.
 - (2) In addition to the list of PA counties in the file there are four additional file entries which will be treated as any other county:
 - 1. Selection of “96” will make the Emissions Test Required equal to VISUAL only.
 - 2. Selection of “97” will make the Emissions Test Required equal to OBD only.
 - 3. Selection of “98” will make the Emissions Test Required equal to OBD for vehicles with a model year greater than 1995 or TSI for vehicles with a model year prior to 1996.
 - 4. Selection of “99” will make the Emissions Test Required equal to OBD for vehicles with a model year greater than 1995 or ASM for vehicles with a model year prior to 1996.
 - (3) For example, the inspector should be able to enter the numeric County Code which would cause the cursor to go to the appropriate County name on the list which would also be highlighted.
 - (4) If the correct County was highlighted, the “enter” key would be pressed otherwise, the inspector would be able to move the cursor to the right one.
- iii) The Emissions Test required will be taken from the COUNTY.DAT file for the selected County.
- iv) If County of Registration Emission Test Required value, from COUNTY.DAT equals “T” or “A” and the vehicle’s Model Year is prior to 1996.
 - (1) If the vehicle’s model year is less than the current year minus 25 the program will proceed to Additional Vehicle Information Data Entry.
 - (2) If the vehicle’s model year is equal to or greater than the current year minus 25 the equipment will display the message “**THIS VEHICLE REQUIRES AN ASM OR TSI TEST. THE INSPECTION CANNOT PROCEED**” and the program will proceed to TEST EVALUATION and MESSAGES section.
- v) If County of Registration Emission Test Required value, from COUNTY.DAT equals “T” or “A” and the vehicle’s Model Year is after 1995 and the Vehicle Standards Type is “T” (Truck) and the GVWR is equal to or greater than 8501 and less than 9000 the equipment will display the message “**THIS VEHICLE REQUIRES AN ASM OR TSI TEST. THE INSPECTION CANNOT PROCEED**” and the program will proceed to TEST EVALUATION and MESSAGES section.
- vi) If County of Registration Emission Test Required value, from COUNTY.DAT equals “T” or “A” and the vehicle’s Model Year is after 1995 and (the Vehicle Standards Type is not “T” (Truck) or the Vehicle Standards Type is “T” (Truck) and the GVWR is less than 8501) the equipment will display the message “**THIS VEHICLE REQUIRES AN OBD TEST. THE INSPECTION**

CANNOT PROCEED” and the program will proceed to TEST EVALUATION and MESSAGES section.

vii) If County of Registration Emission Test Required value, from COUNTY.DAT equals “O”

- (1) If the vehicle’s model year is less than 1996 the program will proceed to Additional Vehicle Information Data Entry.
- (2) If the vehicle’s model year is equal to or greater than the 1996 and (the Vehicle Standards Type is not “T” (Truck) or the Vehicle Standards Type is “T” (Truck) and the GVWR is less than 8501) the equipment will display the message **“THIS VEHICLE REQUIRES AN OBD TEST. THE INSPECTION CANNOT PROCEED”** and the program will proceed to TEST EVALUATION and MESSAGES section.
- (3) If the vehicle’s model year is equal to or greater than the 1996 and the Vehicle Standards Type is “T” (Truck) and the GVWR is equal to or greater than 8501 and less than 9000 the program will proceed to Additional Vehicle Information Data Entry.

viii) If County of Registration Emission Test Required value, from COUNTY.DAT is not equal “O”, “V”, “T”, or “A” the equipment will display the message **“THIS VEHICLE IS REGISTERED IN A COUNTY THAT DOES NOT REQUIRE AN EMISSION TEST. PRESS THE ESCAPE KEY TO ABORT THE TEST OR SELECT THE REQUESTED EMISSIONS TEST TO BE PERFORMED.”** and the program will allow the inspector to select a different county from the COUNTY.DAT file.

3.19 Additional Vehicle Information Data Entry.

A. Display prompts:

- i) **Enter the Number of Cylinders. For Rotary engines enter “R”**
- ii) **Enter the Vehicles Engine Size followed by one of the following codes:**
 - (1) **I = Cubic Inches**
 - (2) **L = Liters**
 - (3) **C = Cubic Centimeters**
- iii) **Enter the Vehicle Transmission Type:**
 - (1) **M = Manual**
 - (2) **A = Automatic**
- iv) Please select the code that indicates the primary fuel type for the vehicle from the following list:
 1. **G GASOLINE**
 2. **B BI-FUELED (alternate fuel and gasoline)**
 3. **P LIQUID PROPANE GAS (LPG)**

4. **N LIQUID/COMPRESSED NATURAL GAS (LNG/CNG)**
5. **M METHANOL (greater than 20%)**
6. **E ETHANOL (greater than 20%)**
7. **A BI-FUELED (alternate fuel only)**
8. **D DIESEL**
9. **L ELECTRIC**

v) Please enter the vehicle's odometer reading as it appears on the odometer:

(1) DO NOT INCLUDE THE TENTH OF A MILE INDICATOR OR DECIMAL POINT IF PRESENT.

(2) PLEASE CHECK SAFETY STICKER TO DETERMINE OPERATING MILEAGE IN THE PREVIOUS YEAR – IF THE VEHICLE HAS BEEN OPERATED LESS THAN 5000 MILES THE VEHICLE IS EXEMPT FROM EMISSIONS TESTING – ABORT THE TEST AND ISSUE EXEMPT STICKER

B. Error Messages:

- i) No Value has been entered – Try Again
- ii) Invalid Number of Cylinders – Try Again
- iii) A valid Engine Size or Units Code has not been entered – Try Again
- iv) Engine Size is less than 500 cc – Be sure this is correct.
- v) Engine Size is greater than 610 CID (9.999 Liters) – Is this correct? Yes or No
- vi) A minimum of one numeric entry is required for the Odometer reading, do not enter tenths of a mile.

C. Programming criteria:

- i) Number of Cylinders
 - (1) The minimum Number of Cylinders is '3' and the maximum is '16.' Any entries outside of “3-16” or “R” will be rejected by the system.
 - (2) For Rotary engines, the inspector shall be prompted to enter an "R".
- ii) Engine Size
 - (1) Entry shall be designed to allow up to five characters to be the engine size plus one character for the units code. Unit used for the engine size shall be "L" for liters, "I" for cubic inches and "C" for cubic centimeters. The analyzer software shall be designed so that only an I, L or C can be entered for the units.
 - (2) Decimal point entry must be allowed for Liter size entries.
 - (3) Although the internal storage on the EIS.DAT record is to cubic centimeters and shall be automatically converted to cubic centimeters if required, the display shall remain in the original units entered.
 - (4) To convert from cubic inches to cubic centimeters, multiply by 16.387. To convert from liters to cubic centimeters, multiply by 1000. Products shall be rounded to the nearest cubic centimeter. If

a correct engine size is greater than 9999, the value of 9999 will be stored on the EIS.DAT record and the entered value will be displayed on the VIR otherwise the program will allow the engine size to be corrected.

iii) Fuel Type Code

(1) The selection list default code will be “G”.

(2) Any fuel codes other than ‘G’ or ‘B’ will cause the test to abort

- Display Message **ONLY GAS POWERED VEHICLES AND BI-FUELED VEHICLES OPERATING ON GAS ARE SUBJECT TO AN EMISSIONS INSPECTION**
- Inspection will end, no record will be written, nothing will print

iv) Odometer reading

(1) If the odometer reading is less than 5000 miles display the following:

1. **Display Prompt:**

(i) Has this vehicle ever been registered before? *Yes or No*

(ii) If the answer is *No* then display:

1. **Confirm – the vehicle has less than 5000 miles on the odometer and has never been registered anywhere before? Yes or No**
2. If the answer is *Yes* then display following message and allow the inspector to read it, then abort the inspection, do not write record, and do not print anything.
3. Message: ***THIS VEHICLE IS EXEMPT FROM THIS INSPECTION BECAUSE IT IS A NEW REGISTRATION WITH LESS THAN 5000 OPERATED MILES. GO TO THE STICKER MENU AND ISSUE AN EXEMPT STICKER TO THIS VEHICLE.***

(iii) If the answer is *Yes* then proceed to the next section.

3.20 Vehicle Data Entry Confirmation.

A. The PAS will display all previous entries and allow the inspector to edit, the information. The software will be designed to require the inspector to confirm that previous entries are correct before allowing the emissions test to be initiated. If the vehicle information is retrieved from the VIID or EIS.HST, the odometer reading must be reentered to ensure that the value is the most current.

B. Display prompts:

(1) Review the vehicle information entries for accuracy. If the information is correct Press Continue. If not, make the necessary corrections.

- (2) Make
- (3) Model Year
- (4) Vehicle Model
- (5) Body Type
- (6) County of Registration
- (7) Fuel Type
- (8) Odometer Reading
- (9) GVWR
- (10) Number of Cylinders
- (11) Engine Size
- (12) Transmission Type

3.21 Visual Inspection Test Process.

(This test is **only** performed for

- 1) Vehicles with a model year prior to 1996 and the vehicle is registered in an OBD county by checking the COUNTY.DAT file or
- 2) Vehicles with a model year prior to 1996 and the vehicle is registered in an ASM or TSI county by checking the COUNTY.DAT file and model year is less than the current year minus 25 or
- 3) Vehicles with a model year is equal to or greater than the 1996 and the Vehicle Standards Type is "T" (Truck) and the GVWR is equal to or greater than 8501 and less than 9000 or
- 4) Vehicles the registered in an VISUAL county by checking the COUNTY.DAT file.)

A. Display Prompts:

i) Tampering Inspection Checklist

1. Air Injection System
2. PCV System
3. Catalytic Converter
4. EGR System
5. Fuel Inlet Restrictor

6. Fuel Evaporation Control System

ii) **Enter P = Pass, F = Fail, or N = Not Applicable for each item.**

iii) **Press Continue to Proceed**

B. Error Messages:

i) Invalid Entry – Try Again

ii) A Valid Entry is required for this field – Try Again

C. Programming Criteria:

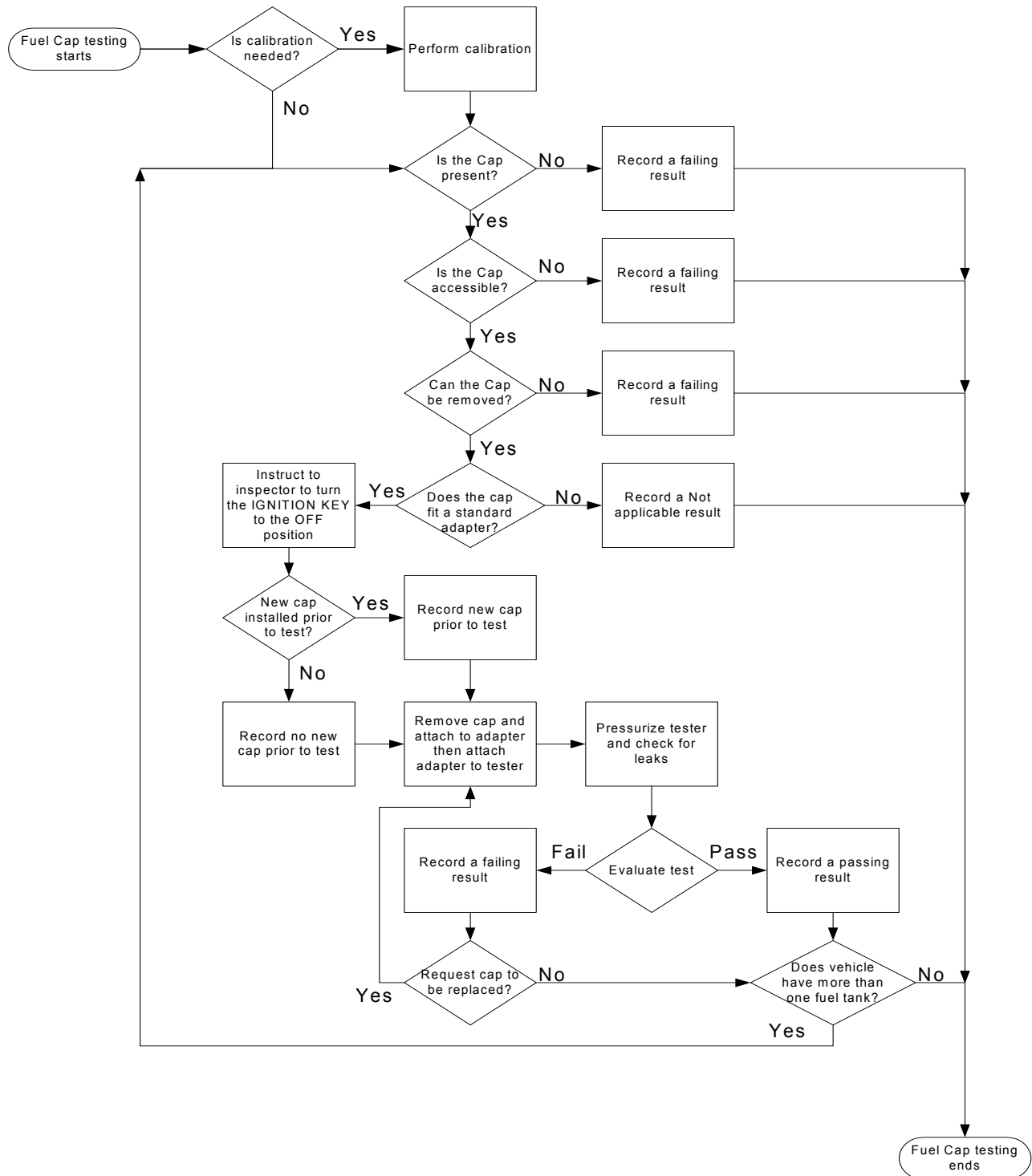
i) The equipment will display the Tampering Inspection Checklist. The equipment will then require entry of a P, F, or N for each remaining item. If the inspector determines that a component requested is not applicable to this vehicle, he / she may enter an *N* in the appropriate field. The test will not proceed unless each entry has a value.

ii) If the inspector fails any component, the overall test result will be a “**FAIL**” and the Overall Visual Inspection Result field of the EIS.DAT will be set to ‘F’.

iii) For the purposes of determining whether a vehicle has passed the inspection overall, entries of “*N*” (not applicable) for any of the components will be considered the equivalent of a PASS. If all visual components pass the Overall Visual Inspection Result field of the EIS.DAT will be set to ‘P’.

iv) Set the TEST ROUTINE PERFORMED field in EIS.DAT to “V”.

3.22 Fuel Cap Test Procedure.



A. General

1. All vehicles subject to an emissions test require a Fuel Cap Pressure Test.
2. The PAS must be able to test the fuel cap separately. The basic testing procedure is as follows. PENNDOT may accept alternative testing procedures, such as provisions for fast pass, if documentation of equivalence is presented.
3. The fuel cap is connected to an adapter on a separate fuel cap testing apparatus and the fuel cap is pressurized to a pressure of 28 ± 1.0 inches of water. The flow is then turned off and the decay of pressure monitored for ten seconds. If at any time during the ten seconds that the fuel cap testing apparatus is being monitored the pressure drops from the starting pressure by more than 6 inches of water, the test will be terminated and the vehicle will be determined to fail the fuel cap test; otherwise the vehicle will pass the test.
4. Alternatively, the fuel cap leak rate may be compared to an orifice with a National Institute of Standards and Technology traceable flow rate which will result in a pass/fail flow rate threshold of 60 cubic centimeters per minute of air at 30 inches of water column. If the leak rate exceeds 60 cubic centimeters per minute at a pressure of 30 inches of water column, the cap will fail the test.
5. Additionally, a vehicle will fail the test if fuel cap is missing.

B. Check Fuel Cap Status

i) Display Prompts

(1) Gas Cap Test Status – Please Answer The Following Questions

1. **Is the vehicle's Fuel Cap present? *Yes or No***
2. **Is the Fuel Cap accessible? *Yes or No***
3. **Can the Fuel Cap be removed? *Yes or No***
4. **Does it fit a standard adapter? *Yes or No***

(2) Error Messages

1. **Invalid Entry – Try Again**

(3) Programming Criteria:

1. If *No* is entered for display prompt one (1), store the item number one (1) to the ***Fuel Cap Status*** field of **EIS.DAT**. Write an *F* to ***Overall Fuel Cap Test Result*** field of **EIS.DAT** and ***Overall Visual Inspection Result*** field of the **EIS.DAT**. Additionally, no Fuel Cap pressure test will be performed.
2. If *Yes* is entered for display prompt one (1), proceed to test display prompt two (2) above.

3. If *No* is entered for display prompt two (2), then store the item number two (2) to the ***Fuel Cap Status*** field of **EIS.DAT**. Write an *F* to ***Overall Fuel Cap Test Result*** field of **EIS.DAT** and ***Overall Visual Inspection Result*** field of the **EIS.DAT**. Additionally, no Fuel Cap pressure test will be performed.
4. If *Yes* is entered for display prompt two (2), proceed to test display prompt three (3) above.
5. If *No* is entered for display prompt three (3), then store the item number three (3) to the ***Fuel Cap Status*** field of **EIS.DAT**. Write an *F* to ***Overall Fuel Cap Test Result*** field of **EIS.DAT** and ***Overall Visual Inspection Result*** field of the **EIS.DAT**. Additionally, no Fuel Cap pressure test will be performed.
6. If *Yes* is entered for display prompt three (3), proceed to test display prompt four (4) above.
7. If *No* is entered for display prompt four (4), then store the item number four (4) to the ***Fuel Cap Status*** field of **EIS.DAT**. Write an *N* to ***Overall Fuel Cap Test Result*** field of **EIS.DAT**. If the ***Overall Visual Inspection Result*** field of the **EIS.DAT** is not 'F', the program will record a 'P' in the ***Overall Visual Inspection Result*** field of the **EIS.DAT**. Additionally, no Fuel Cap pressure test will be performed and Overall Inspection Result will disregard the Fuel Cap Pressure Test.
8. If *Yes* is entered for display prompt four (4), then store the item number nine (9) to the ***Fuel Cap Status*** field of **EIS.DAT** and proceed to the Fuel Cap pressure Test sequence below.

C. Fuel Cap Pressure test sequence

i) Display Prompts:

- (1) **Turn the IGNITION KEY OFF**
- (2) **Was a New Fuel Cap installed immediately prior to start of Test? Yes or No**
- (3) **Remove Fuel cap.**
- (4) **Select the appropriate Fuel Cap adapter if required**
- (5) **Connect the Fuel Cap to the Fuel Cap adapter**
- (6) **Connect the Fuel Cap and adapter (if required) to the Fuel Cap pressure tester.**
- (7) **Press Continue to begin Fuel Cap pressure test.**
- (8) **Fuel Cap Pressure Test in progress**
- (9) **Fuel Cap Pressure Test Results: Fuel Cap (P = Pass, F = Fail)**
- (10) **Remove the Fuel Cap adapter (if required) and return Fuel Cap to vehicle.**
- (11) **Press *Continue* to Proceed**

ii) Programming Criteria:

- (1) If *Yes* was entered for **“Was a New Fuel Cap installed immediately prior to test?”** write a *Y* (YES) to the **Fuel Cap Replaced Prior to Test** field in **EIS.DAT** and initiate fuel cap pressure test sequence.
- (2) If *No* was entered for **“Was a New Fuel Cap installed immediately prior to test?”** write a *N* (NO) to the **Fuel Cap Replaced Prior to Test** field in **EIS.DAT** and initiate fuel cap pressure test sequence
- (3) If the fuel cap meets the pressure requirements above (or alternative requirements approved by PENNDOT), indicate a Pass and record a **“P”** to the **Overall Fuel Cap Test Result** field in **EIS.DAT** and on the VIR. If the **Overall Visual Inspection Result** field of the **EIS.DAT** is not ‘F’, the program will record a ‘P’ in the **Overall Visual Inspection Result** field of the **EIS.DAT**. The program will proceed to the **“Does this Vehicle have more than ONE Fuel Tank/Fuel Cap? Yes or No” prompt.**
- (4) If the fuel cap does not meet the pressure requirements above (or alternative requirements approved by PENNDOT), indicate a Fail and record an **“F”** to the **Overall Fuel Cap Test Result** field in **EIS.DAT**, **Overall Visual Inspection Result** field of the **EIS.DAT**, and on the VIR and proceed to the **“Did the Customer request that the Fuel Cap be replaced? Yes or No” prompt.**

NOTE: If any one fuel cap fails, allow ONLY one second-chance test per fuel tank. If second chance test results in Fuel Cap Pressure Test Result = F (Fail) then proceed to the **“Does this Vehicle have more than ONE Fuel Tank/Fuel Cap? Yes or No” prompt.**

1. **Display Prompt:**

- (i) Did the Customer request that the Fuel Cap be replaced? *Yes or No*

Programming Criteria:

- (i) If *No* is entered indicating Fuel Cap is not replaced then, **write an “N” to the Fuel Cap Replaced During Test field of EIS.DAT and write an F to the Overall Fuel Cap Test Result field in EIS.DAT, Overall Visual Inspection Result field of the EIS.DAT, and proceed to “Does this Vehicle have more than ONE Fuel Tank/Fuel Cap?” Yes or No.**
- (ii) If *Yes* is entered indicating Fuel Cap is replaced then proceed to **Replace Fuel Cap display prompt** below.
- (iii) **Display Prompt:**

1. **Replace Fuel Cap and Press *Continue* to Begin Fuel Cap Pressure test.**

- a. Programming Criteria:

- Repeat the pressure test as above including determination of PASS/FAIL. **Additionally, write a “Y” to the Fuel Cap Replaced During Test field of EIS.DAT.**

iii) Determine if the vehicle has multiple fuel caps

(1) Display Prompt:

- Does this Vehicle have more than ONE Fuel Tank/Fuel Cap? *Yes or No*

(2) Programming Criteria:

1. Default value will be *No* and proceed to TEST EVALUATION and MESSAGES section.
2. If *YES* is entered, repeat the pressure test as above including determination of PASS/FAIL.

Note: A failure for one cap in a multiple set will be a failure result for all fuel caps. Record the results to the **Overall Fuel Cap Test Result** field in **EIS.DAT**, **Overall Visual Inspection Result** field of the **EIS.DAT**, and on the VIR, and continue with the inspection process. When testing multiple fuel caps, the program will record the results of fuel cap replacement both prior to inspection and during inspection as follows. Once the **Fuel Cap Replaced Prior to Test** field in **EIS.DAT** or **Fuel Cap Replaced during Test** field in **EIS.DAT** is set to a “Y” the value will not be overlaid by any additional fuel cap being tested during the current inspection.

3.23 ASM and TSI Test Procedure.

(This test cannot be performed on VISUAL (stand-alone) equipment.)

3.24 OBD-I/M Check Procedure.

(This test cannot be performed on VISUAL (stand-alone) equipment.)

3.25 TEST EVALUATION and MESSAGES.

- A. If the vehicle’s is registered in an ASM or TSI county and the vehicle’s model year is greater than the current year minus 25, this vehicle could not be tested on VISUAL stand-alone equipment and needs an ASM or TSI or OBD test. The software will print the Rejection From Inspection Form with the vehicle information filled in. (See Section 4 Exhibit I for sample of Rejection From Inspection Form)
- B. If the vehicle’s Model Year is after 1995, registered in an ASM or TSI county, and the Vehicle Standards Type is “T” (Truck) and the GVWR is greater than or equal to 8501 and less than 9000 the program will print the Rejection From Inspection Form with the vehicle information filled in. (See Section 4 Exhibit I for sample of Rejection From Inspection Form)
- C. If the vehicle’s Model Year is after 1995, registered in an OBD county, and the Vehicle Standards Type is “T” (Truck) and the GVWR is greater than or equal to 8501 and less than 9000 the program will check that the Overall Fuel Cap Test Result field of the EIS.DAT is “N” or “P” and the Overall Visual Inspection Result field of the EIS.DAT is set to “P” and the program will store a “P” in the OVERALL TEST RESULT field of the EIS.DAT record. (See Section 4 Exhibit B for sample VIR) If either field

is set to “F” then the OVERALL TEST RESULT field of the EIS.DAT record will be set to “F”. (See Section 4 Exhibit A for sample VIR)

- D. If the vehicle’s is registered in an OBD county and the vehicle’s model year is greater than 1995 and (the Vehicle Standard Type is not “T” (truck) or the Vehicle Standard Type is “T” (truck) and the GVWR is less than or equal to 8500), this vehicle could not be tested on VISUAL stand-alone equipment and needs an OBD test. The software will print the Rejection From Inspection Form with the vehicle information filled in. (See Section 4 Exhibit I for sample of Rejection From Inspection Form)
- E. If the vehicle’s Model Year is prior to 1996, in an ASM or TSI county and the vehicle’s model year is less than the current year minus 25, the program will check that the Overall Fuel Cap Test Result field of the EIS.DAT is “N” or “P” and the Overall Visual Inspection Result field of the EIS.DAT is set to “P” and the program will store a “P” in the OVERALL TEST RESULT field of the EIS.DAT record. (See Section 4 Exhibit B for sample VIR) If either field is set to “F” then the OVERALL TEST RESULT field of the EIS.DAT record will be set to “F”. (See Section 4 Exhibit A for sample VIR)
- F. If the vehicle’s Model Year is prior to 1996 and in an OBD county, the program will check that the Overall Fuel Cap Test Result field of the EIS.DAT is “N” or “P” and the Overall Visual Inspection Result field of the EIS.DAT is set to “P” and the program will store a “P” in the OVERALL TEST RESULT field of the EIS.DAT record. (See Section 4 Exhibit B for sample VIR) If either field is set to “F” then the OVERALL TEST RESULT field of the EIS.DAT record will be set to “F”. (See Section 4 Exhibit A for sample VIR)
- G. If the vehicle is registered in a VISUAL county, the program will check that the Overall Fuel Cap Test Result field of the EIS.DAT is “N” or “P” and the Overall Visual Inspection Result field of the EIS.DAT is set to “P” and the program will store a “P” in the OVERALL TEST RESULT field of the EIS.DAT record. (See Section 4 Exhibit B for sample VIR) If either field is set to “F” then the OVERALL TEST RESULT field of the EIS.DAT record will be set to “F”. (See Section 4 Exhibit A for sample VIR)

3.26 Repair Data Entry Procedure.

- A. The Repair Entry Data Procedure is to be considered a separate logical module. This module will be used at the completion of the after repair “R” test or called from the Replacement/Missing/Exemption Sticker Module for sticker issuance.
- B. If the inspector indicates that this is a retest the following procedure will be performed. The inspector will be prompted that this is a retest and asked for the repair data.
 - i) **Display Prompts:**
 - (1) **Does the customer have receipts for repair work performed or a valid Emissions Repair Data Form? Yes or No Please obtain the Emissions Repair Data Form from the customer.**
 - ii) If the answer is **NO** perform the following **Display Prompts:**
 - 1. Please verify that the customer has made the required repairs.

iii) If the answer is **YES** perform the following sequence.

(1) Display Prompts:

1. Please enter the date the repair work was performed:
2. Where the repairs made at this station? **Yes or No**
 - (i) If answer is **NO**, then ask:
 - **Did the owner make these repairs? Yes or No**
 1. If answer is **YES** to owner repaired, then skip to display prompt 5.
 2. If answer is **NO** to owner repaired, then ask:
 - **If known, enter the Repair Facility Number from the Emissions Repair Data Form or Work Order**
 - **If the Repair Facility Number is not known then change response to “repair by owner”**
3. **Please enter the Inspectors Identification Number who performed the repairs**
4. **If known, enter the Work Order Number from the Emissions Repair Data Form or Work Order**
5. **Please enter the parts costs**
6. **Please enter the labor costs**
7. **Please enter “S” (Service Performed), “R” (Recommended, but not performed), or “D” (Diagnosed and Recommended, but not performed) beside as many categories that best describe the type(s) of emissions related repair work that was performed.**

(i) Display Prompts:

Categories

1. ___ **Spark Plugs/Wires**
2. ___ **Other Ignition**
3. ___ **Timing/Spark Advance**
4. ___ **Air/Fuel Mixture Adjustment**
5. ___ **Idle Speed Adjustment**
6. ___ **Choke System**

- 7. ___ **Other Carburetor Repairs**
- 8. ___ **Vacuum Leaks**
- 9. ___ **Fuel Injection System**
- 10. ___ **Other Induction System**
- 11. ___ **Air Filter**
- 12. ___ **Oil Change**
- 13. ___ **Thermostatic Air Cleaner**
- 14. ___ **PCV System**
- 15. ___ **Air Injection/Reaction System**
- 16. ___ **EGR System**
- 17. ___ **Fuel Evaporative System**
- 18. ___ **Catalytic Converter(s)**
- 19. ___ **Oxygen (O2) Sensor(s)**
- 20. ___ **MAP Sensor**
- 21. ___ **Mass Air Flow Sensor**
- 22. ___ **Coolant Temp. Sensor**
- 23. ___ **Throttle Position Sensor**
- 24. ___ **Other Sensors/Switches**
- 25. ___ **Computer/PROM**
- 26. ___ **Internal Engine Repair**
- 27. ___ **Other Repairs/Unknown**

(ii) Error Messages:

- 1. **An entry is required in at least one repair category.**
- 2. **Invalid entry – only valid entries are “R”, “S”, or “D”**

(2) Prompt for additional repair data and stay in this loop until the inspector answers No.

1. **Display Prompts:**

- (i) Does the customer have an additional Emissions Repair Data Form or other repair data to enter? **Yes or No**

2. **Error Messages:**

- (i) *An entry in this field is required.*
- (ii) *This is not a valid entry for this field -Try Again*

3. **Programming Criteria:**

- (i) The inspector will be allowed to create multiple repair data entries.
- (ii) If any of the repair entries are “R” then a “Y” will be stored in the Recommended Repairs not made field of the REPAIR.DAT file. Otherwise an “N” will be stored in the Recommended Repairs not made field of the REPAIR.DAT file.
- (iii) Each repair data entry will write a record to the REPAIR.DAT file.

3.27 Sticker Number, Sticker Expiration and Test Fee Charged To Motorist.

A. If test result is a **Pass**

i) **Display Prompts:**

- (1) **Enter Emissions Sticker Number Issued:**
- (2) **Enter Month of Sticker Expiration: MM**
- (3) **Enter Year of Sticker Expiration: YYYY**

ii) **Error Messages:**

- (1) *Invalid Emissions Sticker Number.*
- (2) *Sticker Expiration is less than six months or greater than 15 months, please adjust expiration date.*

iii) **Programming Criteria**

- (1) The Emissions Sticker Number is required to be in the format 2 alphabetic characters followed by 8 numbers.
- (2) The Expiration Date of the sticker cannot be less than six months from the system date or greater than fifteen months from the system date.

B. Gather Test Fee Charged data at conclusion of each test, regardless of Pass or Fail result.

i) During the “begin test” communications session the VIID may have sent down status bits indicating that the inspection should be at no-charge to the motorist. If this is the case display the message below related to “Records indicate that this vehicle may be entitled to a No charge re-inspection”

ii) **Display Prompts:**

(1) **Records indicate that this vehicle may be entitled to a no charge re-inspection at your station.**

(2) **Enter the Test Fee Charged to the Motorist:**

iii) **Error Messages:**

(1) *An entry in this field is required.*

(2) *This is not a valid entry for this field -Try Again*

3.28 Final results and printing of VIR.

A. The equipment will write the final EIS.DAT record.

B. Once the equipment has received the proper responses to its prompts, the equipment will determine the overall inspection results, write the final data record, and initiate a phone call to the VIID. After the equipment has attempted to initiate a phone call to the VIID, successful or not, the equipment will print the VIR on the equipment’s printer.

C. **Display Prompts:**

(1) Attempting to transmit data to PENNDOT / BMV.

(2) Printing VIR. This report must be presented to the customer.

(3) Please ask the motorist to have the repair facility complete the Repair Data Form and bring it and the receipts when they return for re-inspection.

D. **Error Messages:**

(1) *The test results could not be transmitted to PENNDOT / BMV.*

(2) *The printer is out of paper. Please correct this problem and press any key to continue.*

(3) *The printer is not responding. Please correct the problem and press any key to continue. If the problem cannot be resolved, please contact your service vendor.*

E. **Programming Criteria:**

i) The equipment will issue the result determined in section 3.25 (Test Evaluation).

ii) The equipment will write the entire test record to EIS.DAT.

- iii) The equipment must be designed to increment the TEST COMPLETED counter field, in the file INCOMPLT.DAT, for the inspector and the proper month if an inspection is completed
- iv) The equipment will show the display prompt (1) and attempt to initiate a contact with the VIID. If no contact is made or the equipment does not receive confirmation of a successful transmission from the VIID, the equipment will show error message (1).
 - (1) If the inspection record is successfully transmitted to the VIID, it will be deleted from EIS.DAT and moved into EIS.HST.
 - (2) All stored CAL.DAT records, REPAIR.DAT records and STICKER.DAT records will be transmitted to the VIID during this VIID contact.
- v) The equipment will show display prompt (2) and will then attempt to print the VIR.
- vi) If the equipment finds any problem during the printing process, the equipment will show the appropriate error message and will await entry from the keyboard to retry. The equipment will not continue until the printer problem is corrected. The equipment will prompt the inspector to inform the motorist of the results of the emissions test and if the data has been transmitted to PENNDOT.
- vii) If the vehicle failed the emissions portion of the test a second, report will be printed. This Repair Data Form report will be used by the repair facility to record the types of emissions related repairs that were performed on this vehicle. A sample of this report is located in Section 4 Exhibit E.
- viii) If the vehicle passes the inspection write a record in the USED_S.DAT file, with issued code of "E" for emissions inspection.
- ix) The equipment will then return the inspector to the Vehicle Emissions Inspection Menu.

3.29 Equipment Maintenance Menu.

- A. Equipment Maintenance Menu will be activated by an entry from the Vehicle Emissions Inspection Menu. This will present a set of maintenance functions that may be performed by the inspector.
 - i) Display prompt one (1) will be displayed to the screen. The inspector will select from the options listed, the maintenance function to be performed. Display prompt one (1):

Equipment Maintenance Menu

1. Status Screen

2. Fuel Cap Pressure Test Calibration

99. Return to Main Menu.

- ii) When the inspector has selected one “1” at display prompt one (1), the equipment will display the Status Screen. The equipment will use information stored in the CAL.DAT file and other sources to generate the Status Screen.

(1) The structure of the status screen -

Equipment Status Screen

Station Number: XXXXX

Equipment Number: XXXX

Date and Time of the last Fuel Cap calibration: MM/DD/YYYY HH:MM:SS

Number of test records stored on system: XXX

Total Number of Inspections Since the Last Data Transfer: NNNN

Date equipment was last serviced: MM/DD/YYYY

Current Date and time: MM/DD/YYYY HH:MM:SS

Software Version Number: XXXX

Press the *Enter* key when ready to continue.

(Note: The number of tests is computed by adding the records stored in EIS.DAT and EIS.HST)

- (2) After the inspector has pressed the Enter key, the **equipment** will return to the Equipment Maintenance Menu.
- iii) When the inspector selects two “2” from the Equipment Maintenance menu the Fuel Cap Pressure Test calibration procedure will begin. The inspector will first be required to enter their inspector id prior to starting the calibration procedure. The system will be required to pass a calibration every seventy two (72) hours. The specific procedures for this test will be determined by the manufacturer but subject to the approval of PENNDOT. (NOTE: The calibration frequency will be adjustable by PENNDOT)
- iv) When the inspector selects “99” from the Equipment Maintenance Menu, the equipment will return to the Main Menu.

3.30 VIR Reprint.

Item from the Vehicle Emissions Inspection Menu.

- A. The equipment will list the last 30 days of inspections in order by date/begin time of inspection.
- B. The list to select from will display the date; begin time, VIN, vehicle license, year, make, model, and inspector ID.
- C. The software will permit the user to scroll the list and select a single vehicle inspection record for display.
- D. The user will be allowed to review the selected vehicle inspection record and given the option to print the record using the VIR printer.
 - i) Both the on-screen and printed information will be presented in an easy to read format with clearly labeled field identifiers for all data fields.
 - ii) The equipment will also be capable of printing a replacement VIR from the selected test record.
 - (1) The replacement VIR must clearly be labeled “REPLACEMENT VIR”
 - (2) If any data is not available to be printed on VIR the field must print “Data not available”
- E. A function key or other entry method will return the user to the previous menu.

3.31 Training Mode.

The Training Mode function will be activated by an entry from the Vehicle Emissions Inspection Menu.

- A. The Training Mode function will allow the operator to conduct training and to generate a “training” VIR that is a voided VIR. The choice of inspections will be the same as for regular Emissions inspection. The VIR will have the words, “Training Mode,” instead of inspection results at the top of the form. The word “VOID” will be printed in large letters on the face of the VIR. In addition, the TIN field of the VIR will be printed with the word “VOID”. The operator may select any inspection listed in the Emissions Inspection Menu.
 - i) The equipment will not record the training record and will not initiate a modem connection to the VIID. The equipment will print a TEST VIR without any emissions readings or test results.
 - ii) When the Training Mode inspection is complete, the equipment will return to the Vehicle Emissions Inspection Menu.

3.32 Replacement/Missing/Exemption Sticker Numbers.

The Replacement/Missing/Exemption Sticker Numbers function will be activated by an entry from the Vehicle Emissions Inspection Menu.

A. Inspector ID

- i) When the Replacement/Missing/Exemption Sticker Numbers Option is selected from the Vehicle Emissions Inspection Menu, the operator will then be prompted to scan or enter from the keyboard their:
 - (1) Eight (8) character Emissions Inspector License Number; and
 - (2) Enter from the keyboard their five (5) digits Access Code.
- ii) The equipment will search the file TECH.DAT using '0' and the Eight (8) character Emissions Inspector License Number for an authorized Inspector for a nine (9) digits identification number. If the following conditions are met the test can proceed:
 - (1) A valid emissions inspector license if found matching the entered license number;
 - (2) The Identification Number entered and the Access Code must match;
 - (3) Inspector Emissions Lockout flag must not be set; and
 - (4) The system date will not be greater than the inspector license expiration date.
- iii) After any failed attempt to scan and enter the proper identification number with matching access code, the equipment will display the appropriate error message and then will return to the Main Menu.

iv) **Display Prompts**

- (1) Please Scan or Enter your Inspector License ID Number
- (2) Please Enter your access code

v) **Error Messages**

- (1) *This license number is not found on file – Try Again or Contact the Helpline*
- (2) *This license is not valid to conduct emissions tests*
- (3) *Your access code is incorrect*
- (4) *Your license has expired*
- (5) *Your license has been suspended or revoked – Contact PENNDOT*

B. Menu Display Prompt: (select appropriate message)

i) **Select Action Type From List Below**

- 1. Vehicle Operated Less Than 5000 Miles This Year**
- 2. New Vehicle Exemption**

3. Issue Replacement Sticker

4. Record a Sticker Which is Voided or Damaged

5. Record a Sticker Which is Missing or Has Been Stolen

6. Issue a Diagnostic Exemption

7. Exit

ii) **Programming Criteria:**

- (1) Menu choice number 6, Issue a Diagnostic Exemption will be a disabled option from the inspection menu unless activated by PENNDOT using the Inspector Hardship Waiver Menu field in the SYSTEM.DAT file.
- (2) Access to the Diagnostic Exemption software routine/option will always be active from the State Menu, as it is normally a Referee procedure.

(3) **Error Message:**

(i) Your Inspector license is not classified with the "Repair" status required to issue Diagnostic Exemptions.

C. If Issue Less Than 5000 Mile exemption, New Vehicle Exemption, Diagnostic Exemption, or Replacement Sticker menu items are selected get VIN, Title and License Plate data

i) **VIN, Title and License Plate**

- (1) The VIN must either be scanned from the BMV Registration Credential or manually entered twice by the emissions inspector. The VIN and Title number will be the primary means of tracking the inspection history of a vehicle.

(2) **Display Prompts:**

1. Please ask the customer for their BMV Registration Credential or VIR.
2. Please scan the Bar Code on the BMV Registration Credential, or VIR, or enter the VIN, Title number and License Plate using the keyboard.
3. Please re-enter the VIN using the keyboard.
4. Please enter the vehicle Title Number
5. Please enter the vehicle license plate number
6. Is this vehicle information correct? **Yes or No**

(3) **Error Messages:**

1. *Scan could not be read – Please enter from the keyboard*
2. *Both entries of the VIN do not match.*
3. *VIN exceeds 17 characters in length – please recheck the VIN*

(4) Programming criteria:

1. The equipment will show display prompt 1 on the screen.
 - (i) The equipment will show display prompts 2, 4, & 5 and accept input from the bar code scanner or the keyboard.
 - (ii) If the equipment receives proper input from the bar code scanner or keyboard the inspector will be shown display prompt 6.
 - (iii) Manual entry from the keyboard will require a second entry of the VIN in the double blind manner described in Section 2 above and will require use of prompt 3. If the second entry does not match the first error message 2 will be displayed and the VIN process will start again from the beginning.
 - (iv) The equipment will not proceed until proper entry is obtained or the procedure escaped. If after 3 attempts no match is made, the equipment will escape/abort the sticker procedure. No record will be written and nothing will print.

D. If Less Than 5000 Mile Exemption selected

i) **Display Prompt:**

(1) **Enter Odometer Reading**

(2) **This vehicle is eligible for this exemption only if it has been operated less than 5000 miles in the past year.**

1. **If vehicle is eligible enter the Exemption Sticker number:**
2. **Enter Month of Sticker Expiration: MM**
3. **Enter Year of Sticker Expiration: YYYY**
4. **Record Sticker Issuance? Yes or No**

(3) **Error Messages:**

1. *Invalid Emissions Sticker Number.*
2. *Sticker Expiration is less than six months or greater than 15 months, please adjust expiration date.*

(4) Programming Criteria

1. The Emissions Sticker Number is required to be in the format 2 alphabetic characters followed by 8 numbers.
2. The Expiration Date of the sticker cannot be less than six months from the system date or greater than fifteen months from the system date.
3. If the reply to 'Record Sticker Issuance' is 'Yes' then print the Sticker Issuance Report (Exhibit F). If "No", then return to the Vehicle Emissions Inspection Menu.

E. If New Vehicle Exemption selected

i) **Display Prompt:**

(1) **Enter Odometer Reading**

(2) **This vehicle is eligible for this exemption only if it has never been registered anywhere before and has less than 5000 miles on the odometer.**

1. **If vehicle is eligible enter the Exemption Sticker number:**
2. **Enter Month of Sticker Expiration: MM**
3. **Enter Year of Sticker Expiration: YYYY**
4. **Record Sticker Issuance? Yes or No**

iv) **Error Messages:**

(1) *Invalid Emissions Sticker Number.*

(2) *Sticker Expiration is less than six months or greater than 15 months, please adjust expiration date.*

v) **Programming Criteria**

- (1) The Emissions Sticker Number is required to be in the format 2 alphabetic characters followed by 8 numbers.
- (2) The Expiration Date of the sticker cannot be less than six months from the system date or greater than fifteen months from the system date.
- (3) If the reply to 'Record Sticker Issuance' is 'Yes' then print the Sticker Issuance Report (Exhibit F). If "No", then return to the Vehicle Emissions Inspection Menu.

F. If Replacement Sticker selected

i) **Display Prompt:**

(1) **Enter Odometer Reading**

(2) **This vehicle is eligible for a Replacement Sticker only if the old Sticker is physically present and can be verified as requiring replacement on the vehicle it was originally issued to.**

(3) **Enter the Sticker number of the OLD Sticker, the one that is being replaced:**

1. **Enter the number of the NEW Replacement Sticker:**
2. **Enter Month of Sticker Expiration: MM**
3. **Enter Year of Sticker Expiration: YYYY**
4. **Record Sticker Issuance? Yes or No**

ii) **Error Messages:**

(1) *Invalid Emissions Sticker Number.*

(2) *Sticker Expiration is greater than 15 months, please adjust expiration date.*

iii) **Programming Criteria**

- (1) The Emissions Sticker Number is required to be in the format 2 alphabetic characters followed by 8 numbers.
- (2) The Expiration Date of the sticker cannot be greater than fifteen months from the system date.
- (3) If the reply to 'Record Sticker Issuance' is 'Yes' then print the Sticker Issuance Report (Exhibit F). If "No", then return to the Vehicle Emissions Inspection Menu.

G. If Voided or Damaged Sticker selected

i) **Display Prompt:**

- (1) **Record the number of the Voided or Damaged Sticker and retain the sticker for audit purposes.**
- (2) **Enter the Voided or Damaged Sticker number:**
- (3) **Record Sticker? Yes or No**

ii) **Programming Criteria**

- (1) If the reply to 'Record Sticker' is 'Yes' then print the Sticker Issuance Report (Exhibit F). If "No", then return to the Vehicle Emissions Inspection Menu.
- (2) The Emissions Sticker Number is required to be in the format 2 alphabetic characters followed by 8 numbers.

iii) **Error Messages:**

(1) ***Invalid Emissions Sticker Number.***

H. If Missing or Stolen Sticker selected

i) **Display Prompt:**

(1) Record the number of the Missing or Stolen for audit purposes.

(2) Enter the Missing or Stolen Sticker number:

(3) Record Sticker? **Yes or No**

ii) **Programming Criteria**

(1) If the reply to 'Record Sticker' is '**Yes**' then print the Sticker Issuance Report (Exhibit F). If "No", then return to the Vehicle Emissions Inspection Menu.

(2) The Emissions Sticker Number is required to be in the format 2 alphabetic characters followed by 8 numbers.

iii) **Error Messages:**

(1) ***Invalid Emissions Sticker Number.***

I. If Diagnostic Exemption process gather Odometer reading and phone VIID or VIID representative for authorization.

i) **Display Prompt:**

(1) **Enter Odometer Reading**

(2) **Request a previously authorized Diagnostic Exemption Yes or No**

(**Note:** Diagnostic Exemptions require specific authorization.)

ii) **Programming Criteria**

1. If the response is "**Yes**" then perform contact VIID for authorization.

iii) **Contact VIID or VIID representative for Exemption Authorization**

1. Once the equipment has received the proper responses to its prompts, the equipment will format an exemption authorization request and the inspector will initiate a phone call to the VIID or VIID representative.

2. The VIID representative will make a determination of the vehicle eligibility and will return an authorization approval or denial. The VIID will always transmit a transaction number along with the approval or denial.

3. For Authorization type use "D" for Diagnostic Exemption

4. Data to be sent to the VIID

- (i) VIN,
- (ii) Plate,
- (iii) Title,
- (iv) Inspector ID,
- (v) Authorization type = "D".

iv) The VIID will make a determination of the vehicle exemption eligibility and will return an authorization approval or denial. The VIID will always transmit a transaction number along with the approval or denial.

1. Data to be sent from the VIID

- (i) VIN,
- (ii) Plate,
- (iii) Title,
- (iv) Authorization Y/N,
- (v) Authorization ID,
- (vi) Refusal Reason Message.

2. Denial transactions from the VIID will have associated logic to explain reason(s) for denial.

3. **Error Message:**

- *Failure Contacting the Main Host Computer – Diagnostic Exemption Can*
- *Not Be Issued.*

4. **Programming Criteria**

(i) If authorization received then complete sticker issuance.

1. **Display Prompt:**

- a. **DIAGNOSTIC EXEMPTION IS AUTHORIZED**
- b. **Enter Sticker Number Issued For Exemption:**
- c. **Enter Month of Sticker Expiration: MM**

- d. **Enter Year of Sticker Expiration: YYYY**
 - e. **Record Sticker Issuance? Yes or No**
 2. **Error Messages:**
 - a. *Invalid Emissions Sticker Number.*
 - b. *Sticker Expiration is less than six months or greater than 15 months, please adjust expiration date.*
 3. **Programming Criteria**
 - a. The Emissions Sticker Number is required to be in the format 2 alphabetic characters followed by 8 numbers.
 - b. The Expiration Date of the sticker cannot be less than six months from the system date or greater than fifteen months from the system date.
 - c. If the reply to 'Record Sticker Issuance' is 'Yes' then print the Sticker Issuance Report (Exhibit F). If "No", then return to the Vehicle Emissions Inspection Menu.
 - d. In all cases if the response to Record Sticker Issuance is "Yes", then write a new STICKER.DAT record for transmission to the VIID.
 - e. Also write a record in the USED_S.DAT file
- (ii) If authorization is denied then display message regarding denial.
1. **Display Prompt:**
 - a. **DIAGNOSTIC EXEMPTION ISSUANCE DENIED**
 - b. **Display text of error messages returned from the VIID**
5. Return to the Main Menu as described in section (2) when "99" is selected from the menu.

3.33 Station Menu.

A. The equipment will display the following prompt:

i) Station Menu

(1) Print Sticker Used Report

(2) Network Communications Diagnostics

(3) Data File Refresh

(4) Previous Inspection History Report For a Vehicle

(5) Print a Communications log

(6) Test Record Search and Retrieval

(7) Request Lockout Status

B. Station Menu Choice: Print Sticker Used Report

i) This selection will display and print a report of stickers issued by the equipment for a maximum of the past 31 days. See Section 4 Exhibit G for a sample report.

ii) Data will be printed from the USED_S.DAT file in sticker number order.

iii) Display Prompt:

(1) Enter date range for Issued Sticker Report (maximum 31 days): MM/DD/YYYY to MM/DD/YYYY

(2) Proceed with report? Yes or No

iv) Programming Criteria:

1. Default date range will be current date in both fields

2. Maximum range is last 31 days

3. Report will display:

4. Date of Report

5. Station License

6. Station name, address, and phone number

7. Equipment ID

8. Sticker details

(i) Date of issue

(ii) Sticker number

(iii) Vehicle data

(iv) Reason for issue (Emissions Inspection, replacement, missing, etc.)

(v) Use all details in sticker file

C. Station Menu Choice: Network Communications Diagnostics

- i) "Network Communications Diagnostics" will be used to diagnose communication-related problems. The following diagnostic tests will be provided:

(1) MODEM SERIAL PORT DIAGNOSTICS

1. Modem serial port diagnostics will be manufacturer provided pursuant to manufacturer-specific hardware configurations.
2. Following completion of the diagnostics the equipment will report the results on-screen.

(i) Messages:

1. ***MODEM DIAGNOSTICS PASSED***
2. ***MODEM DIAGNOSTICS FAILED. CALL SERVICE.***

(2) DIAL TONE CHECK

1. The equipment will attempt to determine if the modem detects dial tone.
2. Following completion of the dial tone check the equipment will report the results on-screen.

(i) Messages:

1. ***DIAL TONE DETECTED - PASSED***
2. ***NO DIAL TONE DETECTED - FAILED. CHECK TO SEE THAT PHONE CORD IS CONNECTED. POSSIBLE FAULTS CAN BE CHECKED USING A STANDARD PHONE AT BOTH THE EQUIPMENT END OF PHONE CABLE OR AT THE WALL PLUG FOR PHONE. IF NO DIAL TONE ON PHONE CABLE - CONTACT PHONE COMPANY. IF DIAL TONE DETECTED USING PHONE THE FAULT IS IN EQUIPMENT - CALL SERVICE.***

(3) NETWORK DIAGNOSTICS

1. It is the responsibility of each PAS manufacturer to work with the PENNDOT's vendor to ensure that the modem strings are set up automatically and correctly.
2. The modem strings will be set up in a data file (refer to the communications Protocol) for the vendor's software.
3. The equipment will provide the data needed to conduct network diagnostics. Each individual equipment manufacturer creates this data. During the network diagnostics routine, the equipment will transmit the data to the VIID and subsequently the same data will be transmitted back from the VIID to the equipment. The data on the sent and received files should be identical upon completion of the network diagnostics routine for this test to pass. The equipment will display the following message:

(i) **TRANSMITTING DATA, PLEASE WAIT**

4. **Programming Criteria:**

- (i) If, upon completion of VIID access, the data transmitted by the equipment to the VIID is the same as the data received by the equipment from the VIID, then display the following message:

1. ***NETWORK COMMUNICATIONS PASSED.***

- (ii) If, upon completion of VIID access, the data transmitted by the equipment to the VIID is not the same as the data received by the equipment from the VIID, then display the following message:

1. ***NETWORK COMMUNICATIONS FAILED.***

- (iii) If VIID communications access is not achieved display the following message:

1. ***CANNOT ACCESS NETWORK. CALL TECHNICAL SUPORT.***

D. Station Menu choice: Data File Refresh

- i) This feature will allow station personnel to place a request to the VIID to update key equipment data files, such as reference tables, inspector information, lockout status, and program data
- ii) The equipment will overwrite the existing tables with the refreshed data received from the VIID.
- iii) The equipment will transmit the following data:
- (1) Stored emissions test (EIS.DAT) records, if any;
 - (2) Stored repair information (REPAIR.DAT) records, if any;
 - (3) Stored sticker issuance information (STICKER.DAT) records, if any;
 - (4) Fuel Cap Calibration (CAL.DAT) records, if applicable.
- iv) Programming Criteria
- (1) The equipment will use the communications software to contact the VIID with a data file refresh request.
 - (2) Upon completion of the "Data File Refresh" procedure the equipment will display the following message:
 1. ***THE INSPECTOR LICENSE NUMBERS AND ACCESS CODES HAVE BEEN UPDATED BY THE VIID. IN CASE THERE ARE PROBLEMS CONTACT PENNDOT OR TECHNICAL SUPPORT.***

- (3) The equipment will display or print the updated list, including the Station name, address, station license number, and date of report as well as each inspector's license number and full name. See Section 4 Exhibit H for a sample report.
- (4) During screen display or printing of the inspector information the equipment will never display the inspector access codes.
- (5) If, access to the VIID is not achieved display the following message:

1. CANNOT ACCESS NETWORK

E. Station Menu choice: Request Lockout Status

- i) Upon selection, VIID access will be attempted and, if successful, the VIID will return the revised lockout status even though the lockout might not have been removed.
- ii) **Programming Criteria**
 - (1) The equipment will use the communications software to contact the VIID with a lockout update request.
 - (2) The VIID will return the lockout status in the normal manner and the equipment will apply the received lockout status.
 - (3) Upon completion of VIID access, the equipment will display current lockout status, which can be done by displaying the status page.
 - (4) If, access to the VIID is not achieved display the following message:

1. CANNOT ACCESS NETWORK

F. Station Menu choice: Previous Inspection History Report For a Vehicle

- ii) Upon selection, after gathering some vehicle information VIID access will be attempted and, if successful, the equipment will request the production of a report.
 - (1) **Display Prompts:**
 1. **A Previous Inspection History Report for a Vehicle Has Been Started.**
 2. **This report will list previous emissions inspections, exemptions and emissions related repairs on file in the central host computer for this vehicle. There will be a charge to the station equivalent to an emissions inspection communications charge for this report. You may exit at any time prior to final placing of the call to the main host computer.**
 3. **Do you wish to proceed? Yes or No**
 - (2) If the user chooses not to proceed return to Station Menu.

- (3) The VIN must either be scanned from the BMV Registration Credential or manually entered twice by the emissions inspector. The VIN and Title number are the primary means of tracking the inspection history of a vehicle.

(4) Display Prompts:

1. **GATHERING VEHICLE DATA FOR A PREVIOUS INSPECTION HISTORY REPORT**
2. **Please ask the customer for the vehicle BMV Registration Credential.**
3. **Please scan the Bar Code on the BMV Registration Credential or enter the VIN, Title number and License Plate using the keyboard.**
4. **Please enter the VIN (required)**
5. **Please enter the vehicle Title Number (optional)**
6. **Please enter the vehicle license plate number (optional)**
7. **Is this vehicle information correct? Yes or No**

(2) Error Messages:

1. *Scan could not be read – Please enter from the keyboard*
2. *Both entries of the VIN do not match.*
3. *VIN exceeds 17 characters in length – please recheck the VIN*
4. *(If entered) Title must be 10 characters long – please recheck the Title*

(3) Programming criteria:

1. The equipment will not proceed until proper entry is obtained.
2. The equipment will allow escape from this process and return to the Station Menu.
3. VIN must be entered to proceed, title and plate are optional.
4. The equipment will use the communications software to contact the VIID with the report request.
5. The VIID will return the report as mail and will display and print in the normal manner for received mail.
6. If, access to the VIID is not achieved display the following message:

➤ ***CANNOT ACCESS NETWORK***

G. Station Menu choice: Print a Communications Log

- i) Selection of this menu item will print to the VIR printer a text listing of all communications session logs recorded by the equipment for a minimum of the past 100 communication sessions.
 - (1) The equipment will provide a method to list and print each communication session.
 - (2) The minimum method is to ask the user how many sessions should be printed. Sessions to be printed should be calculated from the most recent going backwards in time.

H. Station Menu choice: Test Record Search and Retrieval

- i) Test Record Search and Retrieval will be performed when seven (7) is selected from the Station Menu.
 - (1) The equipment will list the last 30 days of inspections in order by date/begin time of inspection.
 - 1. The list will display the date; begin time, VIN, vehicle license, year, make, model and inspector id.
 - (2) The software will permit the user to scroll the list and select a single vehicle inspection record for display.
 - (3) Once a record is located, the user will be allowed to review the complete vehicle inspection record and print an individual record using the VIR printer.
 - (a) Both the on-screen and printed report will be the same, an easily read formatted report of the data. Field identifiers will be clear labels of the data fields.
 - (b) A function key or other entry method will return the user to the Station Menu

3.34 State Menu.

- A. Initiation. When the State Menu is selected from the Main Menu, the operator will be prompted to enter via the keyboard the PENNDOT daily access code. After the third failed attempt to scan and enter a valid license number, the equipment will return to the Main Menu. The daily access code software for PENNDOT is MCI Communications Corporation (MCI) property. Proprietary MCI documentation and daily access code software will be provided to authorized equipment manufacturers.

- 1. When the equipment has accepted a valid license number, a record will be written to PENNDOT Audit File containing all fields. The equipment will then display the following prompt:

State Menu

1. State Equipment Maintenance

2. Update Station Information

- 3. Install New Removable Medium**
- 4. Practical/Demo Test Record**
- 5. Lockout Functions**
- 6. Perform Emergency Software Update**
- 7. Test Record Search and Retrieval**
- 8. Referee Inspection**
- 9. Issue a Diagnostic Exemption**
- 99. Return to Main Menu**

Select Option Desired; Enter Number _____

- 2. When PENNDOT inspector has entered a valid menu option number, the equipment will initiate the associated procedure. If the value entered is not a valid number, an error message will be displayed to the screen. After three (3) successive invalid entries are made, the equipment will automatically return to the Main Menu.
- B. State Equipment Maintenance Menu. State Equipment Maintenance Menu will be activated by an entry of one (1) from the State Menu. This will present a set of maintenance functions that may be performed by the operator.
- 1. Display prompt one (1) will be displayed to the screen. The operator will select from the options listed the maintenance function to be performed. Display prompt one (1),

State Equipment Maintenance Menu

- 1. Status Screen**
 - 2. Fuel Cap Pressure Test Calibration**
 - 99. Return to State Menu**
- 2. When the inspector has selected one (1) at display prompt one (1), the equipment will display the Status Screen. The equipment will use information stored in the CAL.DAT file and other sources to generate the Status Screen.
 - 3. The structure of the status screen -

Equipment Status Screen

Station Number: XXXXX

Equipment Number: XXXX

Date and Time of the last fuel cap calibration: MM/DD/YYYY HH:MM:SS

Number of test records stored on system: XXX

Total Number of Inspections Since the Last Data Transfer: NNNN

Date equipment was last serviced: MM/DD/YYYY

Current Date and time: MM/DD/YYYY HH:MM:SS

Software Version Number: XXXX

Press the *Enter* key when ready to continue.

(**Note:** Number of tests is computed by adding the records stored in EIS.DAT and EIS.HST)

4. After the inspector has pressed the Enter key, the equipment will return to the State Equipment Maintenance Menu.
5. When the inspector selects two (2) from the State Equipment Maintenance menu the Fuel Cap Pressure Test calibration procedure will begin. The inspector will first be required to enter their inspector id prior to starting the calibration procedure. The system will be required to pass a calibration every seventy two (72) hours. The specific procedures for this test will be determined by the manufacturer but subject to the approval of PENNDOT. (NOTE: The calibration frequency will be adjustable by PENNDOT)
6. When the inspector selects 99 from the State Equipment Maintenance Menu, the equipment will return to the State Menu.

3.35 Update Station Information.

Update Station Information sequences will be initiated when two (2) is selected from the State Menu.

- A. A screen will be displayed and will allow all the values in STATION.DAT to be changed, except Max Number of Days, Max Number of Tests and Last Test Number.

3.36 Install New Removable Medium.

Install New Removable Medium sequence will be initiated when three (3) is selected from the State Menu.

- A. The equipment will display instructions, on a single screen, for changing the removable medium. This procedure will properly format the removable medium, and transfer all the files from the old removable medium. The instructions must be approved by PENNDOT.
- B. When the change is complete and the equipment security devices (doors, etc.) are secure, the equipment will return to the State Menu.

3.37 Practical/Demo Test.

Practical/Demo (Training) Test function will be activated by an entry of four (4) from the State Menu. The Training Mode function will allow the operator to conduct training and to generate a "training" VIR that is a voided VIR. The choice of inspections will be the same as for regular Emissions inspection. The PAS test record will indicate an Overall Test Result of 'T' and the VIR will have the words, "Training Mode," instead of inspection results at the top of the form. The word "VOID" will be printed in large letters on the face of the VIR. In addition, the TIN field of the VIR will be printed with the word "VOID".

- A. The equipment will not record the training record and will not initiate a modem connection to PENNDOT. The equipment will print a TEST VIR without any emissions readings or test results.
- B. When the Practical/Demo Test is complete, the equipment will then return to the State Menu.

3.38 Lockout PAS.

Lockout PAS sequence will be initiated when five (5) is selected from the State Menu.

- A. The equipment manufacturer will devise a method to allow the inspection operations to be disabled and still allow all other options to work normally. The equipment will display a message if it is locked out.
- B. The equipment software will allow PENNDOT to set or clear the lockouts on a particular unit from the VIID, using the telephone modem.
- C. The equipment will allow a State representative to set or clear only the State Lockout from the keyboard. All other lockout status can be viewed only.
- D. The file storing the lockout codes (either a Y or N) will be named LOCKOUT.DAT.
- E. The lockout screen -

Current LOCKOUT Status: (ON or OFF).

LOCKOUT TYPE LOCKED OUT

STATE Lockout Y or N

(Continue with List from LOCKOUT .DAT)

- F. The equipment will return to the State Menu.

3.39 Emergency Software Update.

Emergency Software Update will be performed when six (6) is selected from the State Menu.

- A. When emergency software updates are required between software updates, the manufacturer is responsible to develop the update and provide the update to PENNDOT on a three and one-half inch (3 ½") floppy diskette, CD ROM, or downloadable. PENNDOT may install the update, but reserves the

right to have it done by the manufacturer. If PENNDOT performs the update, multiple copies may be required.

- B. The update will be made as simple as possible for the operator by using display driven instructions, batch files, etc. This update may be distributed by the modem.
- C. Emergency Software Updates will cause the software version number to change.
- D. When the update is complete, the equipment will return to the State Menu and / or restart the equipment.

3.40 Test Record Search and Retrieval.

Test Record Search and Retrieval will be performed when seven (7) is selected from the State Menu.

- A. The equipment will list the last 30 days of inspections in order by date/begin time of inspection.
 - i) The list will display the date; begin time, VIN, vehicle license, year, make, model and inspector id.
 - ii) The software will permit the user to scroll the list and select a single vehicle inspection record for display.
 - iii) Once a record is located, the user will be allowed to review the complete vehicle inspection record and print an individual record using the VIR printer.
 - (2) Both the on-screen and printed report will be the same, an easily read formatted report of the data. Field identifiers will be clear labels of the data fields.
 - (3) A function key or other entry method will return the user to the State Menu.

3.41 Referee Inspection.

Referee Inspection function will be activated by an entry from the State Menu.

- A. The equipment will ask the operator to verify that they do want to conduct a Referee Emissions Inspection.

- 1. **Display Prompt:**

- (i) **Perform a Referee Emissions Inspection? Yes or No**

- B. This function allows the operator to have an inspector perform an inspection. The inspection process will be the same as a standard Emissions inspection, but the test record will indicate a Record Inspection Disposition of "R". The inspection will follow the entire emissions inspection process from the beginning, except that no access code is required for the inspector ID to be accepted.
 - 1. Test type can be either Initial or After Repairs.
 - 2. The VIR will indicate an Overall Test Result of "P" or "F".

- C. The equipment will record the Inspector Number, the VIN and the date and time to the test record.
- D. At the completion of the test, the equipment will indicate the test result and then prompt the operator for the final test result of a “P” for pass, or “F” for fail. The result entered by the operator will override all other results.

(1) Display Prompt:

- 1. **Overall Test Result is:**
- 2. **If required override is allowed, enter (P)ass, or (F)ail.**

(2) Programming Criteria:

- 1. If ‘F’ for fail is entered then print VIR.
- 2. If ‘P’ for pass is entered the print VIR with the modifications described above and follow the procedures described in the Sticker Number, Sticker Expiration and Test Fee Charged to Motorist section.
- 3. The equipment will record the test record to EIS.DAT and EIS.HST and will initiate the modem connections to the VIID.
- 4. When the Test Record is complete, the equipment will return to the State Menu.

E. Issue a Diagnostic Exemption

- (1) When selected the equipment will perform a Diagnostic Sticker authorization routine as described above from 3.31 Replacement/Missing/Exemption Sticker Numbers (off of the “Vehicle Emissions Inspection Menu”) and will be performed as though it had been selected directly from that submenu.
- (2) This option will always be active.

Return to the Main Menu Return to the Main Menu as described in section (2) when **99** is selected from the menu.

3.42 Manufacturer’s Technician Menu.

- A **Initiation.** When the Manufacturer’s Technician Menu is selected from the Main Menu, the operator will be prompted to enter via the keyboard their access code. The manufacturer will provide to PENNDOT a written description of the technique that will be used to secure this menu option and this method must be approved by PENNDOT.
 - 1. When the equipment has accepted a valid identification number, a record will be written to PENNDOT Audit File containing all fields. PENNDOT Audit File is designed to allow easy tracking of who entered the system and when. The equipment will then display the Manufacturer’s Technician Menu. The PAS manufacturer will

define the functionality of this menu. All tests and calibrations will be recorded to the appropriate files for PENNDOT review.

4 Section 4 - VIR and Printer Function Specifications

PURPOSE: This section describes the VIR and printer functions for the PAS.

1. VIR.

- A. The completed VIR must be identical to the format described in this section and as shown in Exhibit A or Exhibit B or Exhibit D below.
- B. The size of the completed report will be eight and one-half by eleven inches (8 ½” x 11”). Final layout is subject to approval by PENNDOT. The appropriate report will be automatically printed by the PAS at the conclusion of each Emissions inspection, regardless of the inspection disposition. These are not pre-printed forms.
- C. Report Field Format.
 - i) The date and time recorded on the VIR will be the date and time of the start time of the inspection as stored on the record.
 - ii) The disposition (PASS, FAIL or INCOMPLETE INSPECTION) will be printed in capital letters.
 - iii) If PAS Menu Item to Reprint VIR Report, is selected, the title of the report will include the word DUPLICATE in all capital letters. The word DUPLICATE will be prominently displayed, to PENNDOT’s satisfaction, on the front of each reprinted VIR in the upper left corner.
- D. The station number and vehicle information will be retrieved from the test record. The vehicle model will be spelled out completely up to the maximum number of characters available.
- E. The emissions inspection summary will list all emissions inspection results and emissions inspection standards.
- F. Each report page will include a line for the inspector’s signature with his / her name printed below the line.
- G. The VIR will present the information as shown on the sample Report form contained in this specification. The software version number of the software, which generated the Report, will also be presented on the form.
- H. The “Report Number” as presented on the form is the PAS Record Number from the PAS test record.
- I. The TIN will be printed only if the vehicle passes the emissions test. The formula for creating the TIN is a confidential document and will be delivered, on request, only to PENNDOT certified test equipment manufacturers.
- J. The following message will be printed at the bottom of the VIR:

- i) ***“VEHICLE EMISSIONS INSPECTION QUESTIONS: For additional information, please contact the Customer Hotline at (800) 265-0921”.***

2. This section describes the informational messages that will be printed in the message area of the VIR depending on the test result, possible warranty conditions, retest possibilities, and if the test results have been transmitted to BMV.

- i) If the vehicle passes the emissions test the following message will be printed.

(1) ***“RETAIN THIS DOCUMENT FOR YOUR RECORDS”***

- ii) If the vehicle fails the emissions inspection or is issued a failed/invalid inspection, the following messages will be printed.

(1) ***“RETAIN THIS DOCUMENT FOR USE ON REINSPECTION.”***

(2) If this is the initial inspection performed on the vehicle, print the following message:
“RETURN THE VEHICLE TO THE SAME STATION WITHIN THIRTY (30) DAYS FOR ONE (1) FREE RETEST.”

(3) If the vehicle meets the requirements for possible warranty repairs, the following messages will be printed.

1. For model year eight (8) years old and newer:

- (i) “Vehicles that fail the Emissions Inspection may be eligible for warranty coverage for the required repairs. Check with your service providers on your vehicles’ Emissions Warranty.”

(4) If the vehicle fails the emissions inspection, the following messages will be printed.

1. ***“This vehicle has failed the emissions inspection. REPAIRS SHOULD BE MADE TO PASS REINSPECTION. All emissions related repairs performed must be documented by the inspection station. This inspection report, the Emissions Related Repair Data form, and copies of the repair receipts must be made available to the inspection station at the time of re-inspection.” THIS VEHICLE IS NOT ELIGIBLE FOR A WAIVER.***

3. Emissions Related Repair Data Form.

- i) If the inspection disposition is Fail or Failed/Invalid, the PAS will print an Emissions Related Repair Data form. The form must be identical to the format shown at Exhibit E. The form will be automatically printed by the PAS immediately following the printing of the VIR.

- ii) The equipment will print bar codes and vehicle data in the appropriate places on the form.

4. Printer Functions and Specifications.

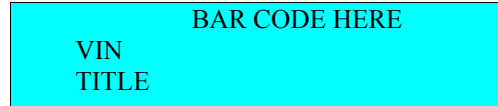
- A. The PAS will be equipped with a laser printer to print VIRs. This printer will accept eight and one-half by eleven-inch (8 ½" x 11") 20 lb bond paper. The printer will be able to print the VIR as shown in Exhibit A and Exhibit B and Exhibit D.

5. VIR, and Repair Form Bar Code Requirements

A. General Symbology Specifications.

- i) Code 39 Symbology. The VIN bar code conforms to Bar Code Symbology for 3 of 9 Bar Codes published by the Automotive Industry Action Group (AIAG B-1). All aspects of the bar-code symbology codes follow this specification except as described in the following sections.
- ii) Code Density and Dimensions (Reference AIAG B-2 Appendix A). The average width of the narrow element is within the range of 0.19 mm (0.0075 inches) and 0.317 mm (0.0125 inches). The ratio is three to one (3:1) with an allowable range of 2.8 to 3.2. The minimum bar height is 9.5 mm (0.375 inches) or fifteen percent (15%) of the bar code length.
- iii) No check digit will be used.
- iv) The documents will have two different bar codes printed on them in 3 of 9 symbology (1D).
- v) The VIN will be printed as the top bar code with a leading identifier of '+' followed by the VIN
- vi) The Title Number will be printed below the VIN barcode (with appropriate white space)
- vii) The Title number bar code will be printed with the leading identifier of "%" followed by the title number
- viii) Human readable characters will be printed immediately below each of the bar codes; the leading identifier characters will not be printed as part of the human readable string.

EXHIBIT A



**COMMONWEALTH OF PENNSYLVANIA
VEHICLE EMISSIONS INSPECTION REPORT**

Test Date/Time: 06/22/2002 @ 08:50

VEHICLE INFORMATION			
Year:	1994	Make:	XXXX
VIN:	A1234567890B12345	Engine Size:	5.0 L
Odometer:	100000	GVWR:	6500
License :	XXX1234	Inspection Type:	INITIAL
County:	Philadelphia	Model:	XXXXXXXXXXXX
		Cylinders:	8
		Estimated Test	
		Weight:	4500
		Record Number:	123456
EMISSIONS CONTROL SYSTEMS VISUAL/FUNCTIONAL INSPECTION			
Air Inj. System:	PASS	Catalytic Converter:	PASS
EGR System:	PASS	Evaporative Control System:	PASS
PCV System:	PASS	Fuel Inlet Restrictor	FAILED
OVERALL TEST RESULTS: FAILED			
Emissions Control Systems Visual/Functional Inspection: FAILED			
TIN: 123456789012			
RETAIN THIS DOCUMENT FOR USE ON RE-INSPECTION.			
RETURN THE VEHICLE TO THE SAME STATION WITHIN THIRTY (30) DAYS FOR ONE (1) FREE RETEST.			
This vehicle has failed the emissions inspection. REPAIRS SHOULD BE MADE TO PASS RE-INSPECTION. All emissions related repairs performed must be documented by the inspection station. <u>This inspection report, Emissions Related Repair Data form, and copies of the repair receipts</u> must be made available to the inspection station at the time of re-inspection. THIS VEHICLE IS NOT ELIGIBLE FOR A WAIVER. Vehicles that fail the emissions inspection may be eligible for warranty coverage for the required repairs. Check with your service providers on your vehicles' Emissions Warranty.			
Vehicle tested in accordance with Pa. Code Title 67, Chapter 177			
EMISSIONS INSPECTION STATION			
STATION #:	123456	INSPECTOR NAME:	JOHN T. SMITH
STATION NAME:	I/M Quality Inspection	EQUIPMENT #:	Z1234567
ADDRESS:	13901 CROWN COURT, ANYTOWN 12345	SOFTWARE VERSION:	0211
PHONE:	215- 123-4567		
VEHICLE EMISSIONS INSPECTION QUESTIONS: For additional information, please contact the Customer Hotline at (800) 265-0921.		Inspector's Signature: _____	

Possible Causes For Emissions Test Failures

Since your vehicle did not pass the emissions inspection, it is producing more pollution than was intended for your car or truck's model year. You have been given a copy of the Motor Vehicle Emissions Inspection Report (VIR) indicating which item(s) your vehicle failed, and an Emissions Related Repair Data Form, which will be completed by the repair technician describing which items were repaired. These reports will help your repair technician in recommending possible repairs. The list below provides information on what malfunctions may have caused your vehicle to fail. The Emissions Related Repair Data form, along with the Motor Vehicle Emissions Inspection Report (VIR), should be presented to the repair facility. The repair invoice(s) or work order(s) must then accompany the Emissions Related Repair Data form and the VIR upon return to the emissions inspection station for a retest.

Note: Some malfunctioning equipment may cause more than one type of failure.

EGR SYSTEM
CATALYTIC CONVERTER
AIR INJECTION SYSTEM
PCV SYSTEM
EVAPORATIVE CONTROL SYSTEM
FUEL INLET RESTRICTOR
FUEL CAP

EXHIBIT B

**COMMONWEALTH OF PENNSYLVANIA
VEHICLE EMISSIONS INSPECTION REPORT**
Test Date/Time: 06/22/2002 @ 08:50

BAR CODE HERE VIN TITLE

VEHICLE INFORMATION					
Year:	1993	Make:	XXXX	Model:	XXXXXXXXXXXX
VIN:	A1234567890B12345	Engine Size:	5.0 L	Cylinders:	8
Odometer:	100000	GVWR:	6500	Estimated Test	
License :	XXX1234	Inspection Type:	INITIAL	Weight:	4500
County:	Philadelphia			Record Number:	123456

EMISSIONS CONTROL SYSTEMS VISUAL/FUNCTIONAL INSPECTION					
Air Inj. System:	PASS	Catalytic Converter:	PASS	Fuel Cap Integrity:	PASS
EGR System:	PASS	Evaporative Control System:	PASS		
PCV System:	PASS	Fuel Inlet Restrictor	PASS		

OVERALL TEST RESULTS: PASSED

Emissions Control Systems Visual/Functional Inspection: **PASS**
 Sticker: **AA12345678**
 TIN: **123456789012**

RETAIN THIS DOCUMENT FOR YOUR RECORDS.

Vehicle tested in accordance with Pa. Code 67, Chapter 177

EMISSIONS INSPECTION STATION			
STATION #:	123456	INSPECTOR NAME:	JOHN T. SMITH
STATION NAME:	I/M Quality Inspection		
ADDRESS:	13901 CROWN COURT, ANYTOWN 12345	EQUIPMENT #:	Z1234567
PHONE:	215- 123-4567	SOFTWARE VERSION:	0211

VEHICLE EMISSIONS INSPECTION QUESTIONS: For additional information, please contact the Customer Hotline at (800) 265-0921.	Inspector's Signature:
--	------------------------

BAR CODE HERE
 VIN
 TITLE

EXHIBIT D

**COMMONWEALTH OF PENNSYLVANIA
 VEHICLE EMISSIONS INSPECTION REPORT
 Test Date/Time: 06/22/2002 @ 08:50**

VEHICLE INFORMATION			
Year:	1998	Make:	XXXX
VIN:	A1234567890B12345	Engine Size:	5.0 L
Odometer:	100000	GVWR:	6500
License :	XXX1234	Inspection Type:	INITIAL
County:	Philadelphia	Model:	XXXXXXXXXXXX
		Cylinders:	8
		Estimated Test	
		Weight:	4500
		Record Number:	123456
EMISSIONS CONTROL SYSTEMS VISUAL/FUNCTIONAL INSPECTION			
Air Inj. System:	INVALID	Catalytic Converter:	INVALID
EGR System:	INVALID	Evaporative Control System:	INVALID
PCV System:	INVALID	Fuel Inlet Restrictor	INVALID
OBD EMISSIONS INSPECTION			
MIL BULB KOEO:	INVALID	OBD FAULT CODE RESULT:	INVALID
MIL BULB KOER:	INVALID	OBD READINESS RESULT:	INVALID
MIL COMMAND STATUS:	INVALID	OBD-I/M CHECK RESULT:	INVALID
OVERALL TEST RESULTS: INCOMPLETE INSPECTION			
Emissions Control Systems Visual/Functional Inspection: INVALID			
OBD Emissions Inspection: INVALID			
TIN: INVALID			
THIS INSPECTION WAS ABORTED BY THE INSPECTOR			
EMISSIONS INSPECTION STATION			
STATION #:	123456	INSPECTOR NAME:	JOHN T. SMITH
STATION NAME:	I/M Quality Inspection	EQUIPMENT #:	Z1234567
ADDRESS:	13901 CROWN COURT, ANYTOWN 12345	SOFTWARE VERSION:	0211
PHONE:	215- 123-4567		
VEHICLE EMISSIONS INSPECTION QUESTIONS: For additional information, please contact the Customer Hotline at (800) 265-0921.		Inspector's Signature: _____	

Pennsylvania Analytical System (PAS) VISUAL (Stand Alone) Display and Program Requirements

EXHIBIT E

Emissions Related Repair Data

VIN
TITLE

BAR CODE HERE

PLEASE READ THESE INSTRUCTIONS CAREFULLY:

This form, along with the Motor Vehicle Emissions Inspection Report (VIR), should be presented to the repair facility of your choice. The repair invoice(s) or work order(s) must then accompany this form and your VIR upon return to the emissions inspection station for a retest. This form must be completed in its entirety by the repair technician. A Certified Repair Technician or other Commonwealth approved inspector is required to inspect for and confirm all repairs.

Note to Repair Technician: It is important to complete this form accurately so that repairs may be properly credited and to accumulate repair data for program evaluation. Your signature below certifies that all repairs and recommendations were necessary and appropriate to the cause of the emissions inspection failure, and that you either performed or supervised the diagnosis & repair of the vehicle.

REPAIR FACILITY INFORMATION (PLEASE PRINT):

STATION ID (IF APPLICABLE)	PHONE
STATION NAME	
STATION ADDRESS	

EMISSIONS REPAIR INFORMATION: INDICATE ITEMS SERVICED (S) OR RECOMMENDED FOR SERVICE (R) OR DIAGNOSED FOR SERVICE (D)

Note: Some malfunctioning equipment may cause more than one type of failure.

CODE/DESCRIPTION	CODE/DESCRIPTION	CODE/DESCRIPTION
01 SPARK PLUGS/WIRES	10 OTHER INDUCTION SYSTEM	19 OXYGEN (O2) SENSOR
02 OTHER IGNITION	11 AIR FILTER	20 MAP SENSOR
03 TIMING/SPARK ADVANCE	12 OIL CHANGE	21 MASS AIR FLOW SENSOR
04 AIR/FUEL MIX ADJUSTMENT	13 THERMOSTATIC AIR CLEANER	22 COOLANT TEMP. SENSOR
05 IDLE SPEED ADJUSTMENT	14 PCV SYSTEM	23 THROTTLE POSITION SENSOR
06 CHOKE SYSTEM	15 AIR INJECTION/REACTION SYS.	24 OTHER SENSORS/SWITCHES
07 OTHER CARBURETOR REPAIR	16 EGR SYSTEM	25 COMPUTER/PROM
08 VACUUM LEAKS	17 FUEL EVAPORATIVE SYSTEM	26 INTERNAL ENGINE REPAIR
09 FUEL INJECTION SYSTEM	18 CATALYTIC CONVERTER(S)	27 OTHER REPAIRS/UNKNOWN

VEHICLE IDENTIFICATION #	EMISSIONS REPAIRS PARTS COSTS
VEHICLE YEAR	EMISSIONS REPAIRS LABOR COSTS
VEHICLE MAKE/MODEL	TOTAL EMISSIONS RELATED REPAIR COSTS (Include Sales Tax*)
WORK ORDER #	DATE OF REPAIRS
TECHNICIAN'S NAME	TECHNICIAN'S ID #
TECHNICIAN'S SIGNATURE	DATE

*Sales tax should be calculated to include emissions related parts only. Do NOT include any charges for shop fees, environmental fees, disposal fees, or any other similar charge that is not separately itemized as emissions related. Electronic diagnostic charges may be included.

EXHIBIT F

STICKER ISSUANCE REPORT

Date:

Model Year: XXXX

Make:

Model:

VIN: A1234567890B12345

Plate:

Title:

Odometer Reading:

Sticker Number:

Sticker Expiration:

Reason Sticker was issued:

Previous Sticker Number: (if appropriate)

STATION #: 123456

STATION NAME: I/M Quality Inspection

ADDRESS: 13901 CROWN COURT, ANYTOWN 12345

PHONE: 215- 123-4567

INSPECTOR ID: 12345678

INSPECTOR NAME: JOHN T. SMITH

EQUIPMENT #: Z1234567

SOFTWARE VERSION: 0211

Signed: _____

EXHIBIT G

STATION USED STICKER REPORT

Report Date: 02/01/98
Station #: **123456**
Station Name: **I/M Quality Inspection**
Address: **13901 CROWN COURT, ANYTOWN 12345**
Phone: **(215) 123-4567**
Equipment ID #: **Z1234567**

This report covers the dates from 07/01/02 to 07/31/02, a period of 31 days.

Sticker No	Date Issued	Reason	VIN	Plate	Title
IM00123456	07/01/02	Emission	12345678901234567	456EOM	1234567890
IM00123457	07/01/02	Emission	12345678901234567	456EOM	1234567890
IM00123458	07/01/02	Emission	12345678901234567	456EOM	1234567890
IM00123459	07/02/02	Replacement	12345678901234567	456EOM	1234567890
IM00123460	07/02/02	5000 Exempt	12345678901234567	456EOM	1234567890
IM00123463	07/05/02	Emission	12345678901234567	456EOM	1234567890
IM00123464	07/05/02	Emission	12345678901234567	456EOM	1234567890
IM00123465	07/05/02	New Car Exempt	12345678901234567	456EOM	1234567890
IM00123466	07/06/02	Emission	12345678901234567	456EOM	1234567890
IM00123467	07/06/02	Emission	12345678901234567	456EOM	1234567890

EXHIBIT H

STATION and INSPECTOR INFORMATION
Report Date: MM/DD/YYYY

Station #: **123456**
Station Name: **I/M Quality Inspection**
Address: **13901 CROWN COURT, ANYTOWN 12345**
Phone: **(215) 123-4567**
Equipment ID #: **Z1234567**

Inspector ID	Name	Emissions Certification	Expiration
1234567890	John Smith	VI	09/04/2002
8383838383	Kamish Heminey	CR	01/23/2005

This report must be posted in a place in the station where the public can easily view it.

VEHICLE INSPECTION QUESTIONS: If the station cannot answer your questions, please contact the Department of Transportation, Vehicle Inspection Division at (717) 783-5842 or the Customer Hotline at (800) 265-0921.

EXHIBIT I

Rejection From Inspection Form

VIN:	A1234567890B12345	Make:	Ford	Station ID:	123456
License :	XXX1234	Model:	F150 XXXXXXXX	Station Name:	I/M Quality Inspection
County:	Philadelphia	Year:	1994	Station Phone:	215- 123-4567
Date:	05 / 05 / 03			Inspector ID:	12345678
				Inspector Name:	John Smith

Your vehicle has been rejected for inspection for the following reason(s):



	<p>1. This 1995 or older vehicle is registered in a county that requires either an ASM test or Two Speed Idle test.</p> <p>Please take the vehicle to a station that can conduct the required test.</p>
	<p>2. This 1996 or newer vehicle is registered in a county that requires an OBD test.</p> <p>Please take the vehicle to a station that can conduct the required test.</p>
	<p>3. Other (explain below)</p>

Comments: _____

Signed: _____

Appendix A – File Layouts.

AUDIT.DAT

Field #	Description	Offset	Length	Data Type	Format
1	Station Number	0	8	AN	
2	Equipment Number	8	8	AN	
3	Representative ID Number	16	9	AN	
4	Audit Date	25	10	AN	MM/DD/YYYY
5	Audit Time	35	8	AN	HH:MM:SS
6	Spare	43	25		
7	<CR><LF>	68	2		
	Total Length		70		

CAL.DAT

Field #	Description	Offset	Length	Data Type	Format
1	Equipment Number	0	8	AN	
2	Bench Serial Number	8	12	AN	N/A for VISUAL
3	Fuel Cap tester Serial Number	20	12	AN	
4	Dyne Serial Number	32	12	AN	N/A for VISUAL
5	Nox Cell Serial Number	44	8	AN	N/A for VISUAL
6	Station Number	52	8	AN	
7	Inspector number	60	9	AN	
8	Calibration Date	69	10	AN	MM/DD/YYYY
9	Dynamometer Warmup Time	79	8	AN	HH:MM:SS
10	HC Zero Pre-Cal Reading	87	5	N	N/A for VISUAL
11	HC Span Pre-Cal Reading	92	5	N	N/A for VISUAL
12	HC Mid Span Pre-Cal Reading	97	5	N	N/A for VISUAL
13	HC Span Gas	102	5	N	N/A for VISUAL
14	HC Zero Reading	107	5	N	N/A for VISUAL
15	HC Span Reading	112	5	N	N/A for VISUAL
16	HC Mid Span Gas	117	5	N	N/A for VISUAL
17	HC Mid Span Reading	122	5	N	N/A for VISUAL
18	CO Zero Pre-Cal Reading	127	6	N	N/A for VISUAL
19	CO Span Pre-Cal Reading	133	6	N	N/A for VISUAL
20	CO Mid Span Pre-Cal Reading	139	6	N	N/A for VISUAL
21	CO Span Gas	145	6	N	N/A for VISUAL
22	CO Zero Reading	151	6	N	N/A for VISUAL

Pennsylvania Analytical System (PAS) VISUAL (Stand Alone) Display and Program Requirements

23	CO Span Reading	157	6	N		N/A for VISUAL
24	CO Mid Span Gas	163	6	N		N/A for VISUAL
25	CO Mid Span Reading	169	6	N		N/A for VISUAL
26	NO Zero Pre-Cal Reading	175	5	N		N/A for VISUAL
27	NO Span Pre-Cal Reading	180	5	N		N/A for VISUAL
28	NO Mid Span Pre-Cal Reading	185	5	N		N/A for VISUAL
29	NO Span Gas	190	5	N		N/A for VISUAL
30	NO Zero Reading	195	5	N		N/A for VISUAL
31	NO Span Reading	200	5	N		N/A for VISUAL
32	NO Mid Span Gas	205	5	N		N/A for VISUAL
33	NO Mid Span Reading	210	5	N		N/A for VISUAL
34	Low PEF	215	4	N		N/A for VISUAL
35	High PEF	219	4	N		N/A for VISUAL
36	Leak Check	223	1	A	P=Pass or F=Fail	N/A for VISUAL
37	Dyno Calibration Date	224	10	AN	MM/DD/YYYY	N/A for VISUAL
38	Roll Diameter (inches)	234	4	N		N/A for VISUAL
39	Base Inertia	238	4	N		N/A for VISUAL
40	Dead Weight Test	242	4	N		N/A for VISUAL
41	Dead Weight Result	246	1	A	P=Pass or F=Fail	N/A for VISUAL
42	Dyno Warm Up	247	1	A	P=Pass or F=Fail	N/A for VISUAL
43	Coast Down HP @25 MPH	248	4	N		N/A for VISUAL
44	Coast Down Time @25 MPH	252	3	N		N/A for VISUAL
45	25MPH Coast Down Result	255	1	A	P=Pass or F=Fail	N/A for VISUAL
46	Coast Down HP @15 MPH	256	4	N		N/A for VISUAL
47	Coast Down Time @15 MPH	260	3	N		N/A for VISUAL
48	15MPH Coast Down Result	263	1	A	P=Pass or F=Fail	N/A for VISUAL
49	Calculated Parasitic Loss (hp)	264	4	N		N/A for VISUAL
50	Fuel Cap Calibration	268	1	A	P=Pass or F=Fail	
51	Pressure Test Calibration	269	1	A	P=Pass or F=Fail	N/A for VISUAL
52	Purge Test Calibration	270	1	A	P=Pass or F=Fail	N/A for

Pennsylvania Analytical System (PAS) VISUAL (Stand Alone) Display and Program Requirements

53	Calibration Start Time	271	8	A	HH:MM:SS	VISUAL
54	Calibration End Time	279	8	A	HH:MM:SS	
55	Overall Zero Result	287	1	A	P=Pass or F=Fail	N/A for VISUAL
56	Overall Span Result	288	1	A	P=Pass or F=Fail	N/A for VISUAL
57	Overall Mid Span Result	289	1	A	P=Pass or F=Fail	N/A for VISUAL
58	Overall Calibration Result	290	1	A	P=Pass or F=Fail	
59	Spare	291	27		Blank	
60	<CR><LF>	318	2			
	Total Length		320			

COUNTY.DAT

Field #	Description	Offset	Length	Data Type	Format
1	County ID	0	2	N	99
2	County Name	2	25	A	
3	Emissions Test Required	27	1	A	A = ASM or OBD, T = TSI or OBD, O = OBD, V = VISUAL ONLY
4	<CR><LF>	28	2		
	Total Length		30		

EIS.DAT

Field #	Description	Offset	Length	Data Type	Format
1	Test Record Number	0	6	N	999999 Right Justified leading zeros
2	Station License Number	6	8	AN	Left Justified with trailing spaces
3	Equipment Number	14	8	AN	Left Justified with trailing spaces
4	Inspector License Number	22	9	AN	Left Justified with trailing spaces
5	Inspector License Input Source	31	1	A	B = bar code, M = manual, blank = default
6	VIN	32	22	AN	Left Justified with trailing spaces
7	VIN Input Source	54	1	A	B = bar code, M = manual, blank = default
8	Title Number	55	10	AN	Scanned or manual entry
9	License Plate Number	65	7	AN	Left Justified with trailing spaces
10	Plate Type	72	6	AN	Left Justified with trailing spaces
11	Plate Input Source	78	1	A	B = bar code, M = manual, blank = default
12	Vehicle Standards Type	79	1	A	P = passenger, T = truck,
13	Vehicle Body Type	80	1	N	1 = SEDAN, 2 = STATION WAGON, 3 = PICKUP, 4 = SPORT/UTILITY VEHICLE, 5 = MINIVAN, 6 = FULL-SIZE VAN
14	Spare	81	12	N	Not used in PA defaulted to spaces
15	Registration County ID	93	2	N	From County table
16	Spare	95	22	AN	Not used in PA defaulted to space
17	Empty Weight	117	5	N	99999 not used in PA defaulted to zeros
18	Pervious Test Date	122	10	AN	MM/DD/YYYY
19	Previous Test Routine	132	1	A	I = initial, R = after repairs
20	Previous Visual Insp. Result	133	1	A	P = Pass, F = Fail
21	Previous Fuel Cap Result	134	1	A	P = Pass, F = Fail
22	Spare	135	1	AN	Not used in PA defaulted to space
23	Previous Emissions Result	136	1	A	P = Pass, F = Fail, N = NA
24	Previous Overall Test Result	137	1	A	P = Pass, F = Fail, N= Not ready for testing
25	Previous Inspection Station Number	138	8	AN	Left Justified with trailing spaces

Pennsylvania Analytical System (PAS) VISUAL (Stand Alone) Display and Program Requirements

26	Previous DLC Test Result	146	1	A	P = Pass, C = Connector, D = Damaged/Tampered, I = Inaccessible/Obstructed, N = No Signal, R = No RPM signal
27	Test Type	147	1	A	I = initial, R = after repairs
28	Paid Test	148	1	A	Y = Yes, N = No
29	Test Date	149	10	AN	MM/DD/YYYY
30	Test Start Time (24 hour time)	159	8	TIME	HH:MM:SS
31	Test End Time (24 hour time)	167	8	TIME	HH:MM:SS
32	TIN Number	175	12	AN	Calculated for passing inspections, default = blank
33	Software Version	187	4	N	9999 Right Justified leading zeros
34	GVWR	191	5	N	99999 Right Justified leading zeros
35	Vehicle Test Lbs - ASM - ETW	196	4	N	9999 Right Justified leading zeros
36	Test Lbs Source	200	1	AN	Not used in PA defaulted to space
37	Vehicle Model Year	201	4	N	9999 in YYYY format
38	Make	205	17	AN	Left Justified with trailing spaces
39	Model	222	23	AN	Left Justified with trailing spaces
40	Engine Make	245	17	AN	Left Justified with trailing spaces
41	Engine Year	262	4	N	9999 in YYYY format
42	Number of Cylinders	266	2	N	99 Right Justified leading zeros
43	Engine Size (cc)	268	4	N	9999 Right Justified leading zeros
44	Transmission Type	272	1	A	M=Manual, A=Automatic
45	Dual Exhaust	273	1	A	Default = N, Y=Yes, N=No
46	Odometer Reading	274	7	N	9999999 Right Justified leading zeros
47	Mileage Exemption Code	281	1	N	0 = default, 1 = Mileage Exemption, 2 = New Vehicle Exemption
48	Fuel Type	282	1	A	G=GASOLINE B=BI-FUELED (alternate fuel and gasoline) P=LIQUID PROPANE GAS (LPG) N=LIQUID/COMPRESSED NATURAL GAS (LNG/CNG) M=METHANOL (greater than 20%) E=ETHANOL (greater than 20%) A=BI-FUELED (alternate fuel only) D=DIESEL L=ELECTRIC
49	Fuel Code	283	4	AN	Not used in PA defaulted to space
50	Test Routine Performed	287	1	A	A=ASM, T = TSI, O=OBD, V=Visual
51	VRT Record ID Number	288	8	N	99999999
52	Emissions Standards Category	296	5	N	99999
53	Spare	301	20	AN	Not used in PA defaulted to space
54	ASM Restart Counter	321	1	N	9 defaulted to zero
55	ASM Bypass - ASM Not Performed	322	1	N	1 = FULL-TIME FOUR WHEEL DRIVE, 2 = ANTILOCK BRAKES, 3 = TRACTION CONTROL, 4 = OTHER
56	ASM Testable - from VRT	323	1	A	Default = blank, Y = Yes, N = No
57	Relative Humidity	324	4	N	99.9 Right Justified leading zeros
58	Ambient Temperature	328	6	N	999.99 Right Justified leading zeros
59	Barometric Pressure	334	5	N	99.99 Right Justified leading zeros
60	Humidity Correction Factor	339	4	N	9.99 Right Justified leading zeros
61	Preconditioning Procedure	343	1	N	9 Right Justified leading zeros
62	Fuel Cap Status	344	1	N	1=Cap Missing, 2=Not Accessible, 3=Cannot be Removed, 4=Does Not Fit , 9=Testable fuel cap
63	Fuel Cap replaced prior to test	345	1	A	Y = Yes, N = No
64	Fuel Cap replaced during test	346	1	A	Y = Yes, N = No

Pennsylvania Analytical System (PAS) VISUAL (Stand Alone) Display and Program Requirements

65	Fuel Cap configuration	347	1	A	A,B,C,E,F,G,H,Z,U,N
66	Overall Fuel Cap Test Result	348	1	A	P = Pass, F = Fail, N = NA
67	Tire Drying	349	1	A	Y = Yes, N = No
68	Dilution Correction Factor ASM5015	350	4	N	9.99 Right Justified leading zeros
69	Acceleration Violations - ASM5015	354	1	N	9 Right Justified leading zeros
70	Dilution Corrected Value HC	355	4	N	9999 Right Justified leading zeros
71	Dilution Corrected Value CO	359	5	N	99.99 Right Justified leading zeros
72	Measured Value CO2	364	4	N	99.9 Right Justified leading zeros
73	Dilution Corrected Value NO	368	4	N	9999 Right Justified leading zeros
74	ASM5015 RPM	372	4	N	9999 Right Justified leading zeros
75	Final Result ASM5015	376	1	A	P = Pass, F = Fail
76	2nd Chance Dilution Correction Factor ASM515	377	4	N	9.99 Right Justified leading zeros
77	2nd Chance Acceleration Violations ASM5015	381	1	N	9 Right Justified leading zeros
78	2nd Chance Dilution Corrected Value HC	382	4	N	9999 Right Justified leading zeros
79	2nd Chance Dilution Corrected Value CO	386	5	N	99.99 Right Justified leading zeros
80	2nd Chance Measured Value CO2	391	4	N	99.9 Right Justified leading zeros
81	2nd Chance Dilution Corrected Value NO	395	4	N	9999 Right Justified leading zeros
82	2nd Chance ASM5015 RPM	399	4	N	9999 Right Justified leading zeros
83	2nd Chance Final Result ASM5015	403	1	A	P = Pass, F = Fail
84	ASM5015 Cutpoint HC	404	4	N	9999 Right Justified leading zeros
85	ASM5015 Cutpoint CO	408	5	N	99999 Right Justified leading zeros
86	ASM5015 Cutpoint NO	413	4	N	9999 Right Justified leading zeros
87	ASM5015 HP Value used	417	4	N	99.9 Right Justified leading zeros
88	HC Hangup Check - Port Value	421	4	N	9999 PPM Right Justified leading zeros
89	HC Hangup Check - Probe Value	425	4	N	9999 PPM Right Justified leading zeros
90	MIL Bulb KOEO	429	1	A	P = Pass, F = Fail
91	MIL Bulb KOER	430	1	A	P = Pass, F = Fail
92	MIL Command Status	431	1	A	P = Pass, F = Fail
93	OBD Fault Code Result	432	1	A	P = Pass, F = Fail
94	DLC Test Result	433	1	A	P = Pass, C = Connector, D = Damaged/Tampered, I = Inaccessible/Obstructed, N = No Signal R = No RPM signal
95	OBD Readiness Result	434	1	A	P = Pass, F = Fail
96	Readiness Code 1 (Misfire)	435	1	N	0 = Not Enabled, 1 = Ready, 2 = Not Ready
97	Readiness Code 2 (Fuel system)	436	1	N	0 = Not Enabled, 1 = Ready, 2 = Not Ready
98	Readiness Code 3 (Comprehensive component)	437	1	N	0 = Not Enabled, 1 = Ready, 2 = Not Ready
99	Readiness Code 4 (Catalyst)	438	1	N	0 = Not Enabled, 1 = Ready, 2 = Not Ready
100	Readiness Code 5 (Heated catalyst)	439	1	N	0 = Not Enabled, 1 = Ready, 2 = Not Ready
101	Readiness Code 6 (Evaporative system)	440	1	N	0 = Not Enabled, 1 = Ready, 2 = Not Ready
102	Readiness Code 7 (Secondary air system)	441	1	N	0 = Not Enabled, 1 = Ready, 2 = Not Ready
103	Readiness Code 8 (Air conditioning system)	442	1	N	0 = Not Enabled, 1 = Ready, 2 = Not Ready
104	Readiness Code 9 (Oxygen sensor)	443	1	N	0 = Not Enabled, 1 = Ready, 2 = Not Ready
105	Readiness Code 10 (Oxygen sensor heated)	444	1	N	0 = Not Enabled, 1 = Ready, 2 = Not Ready
106	Readiness Code 11 (ERG system)	445	1	N	0 = Not Enabled, 1 = Ready, 2 = Not Ready
107	Readiness Code 12 (future use)	446	1	N	0 = Not Enabled, 1 = Ready, 2 = Not Ready
108	Readiness Code 13 (future use)	447	1	N	0 = Not Enabled, 1 = Ready, 2 = Not Ready
109	Readiness not Set	448	2	N	99 value between 00 – 13
110	DTC Stored	450	2	N	99 Right Justified leading zeros

Pennsylvania Analytical System (PAS) VISUAL (Stand Alone) Display and Program Requirements

111	DTC 1	452	5	AN	A9999 numeric portion is right justified leading zeros
112	DTC 2	457	5	AN	A9999 numeric portion is right justified leading zeros
113	DTC 3	462	5	AN	A9999 numeric portion is right justified leading zeros
114	DTC 4	467	5	AN	A9999 numeric portion is right justified leading zeros
115	DTC 5	472	5	AN	A9999 numeric portion is right justified leading zeros
116	PCM ID	477	2	AN	Left Justified with trailing spaces
117	PID Count	479	2	AN	Left Justified with trailing spaces
118	OBD VIN	481	17	AN	Left Justified with trailing spaces
119	Spare	498	2	AN	Not used in PA defaulted to space
120	Spare	500	12	AN	Not used in PA defaulted to space
121	AWD or 4WD Vehicle	512	1	A	Y = Yes, blank is default
122	Record Inspection Disposition	513	1	A	R if Referee Test, default is blank
123	TSI Test Sequence Number	514	1	N	9 Right Justified leading zeros
124	Max Idle Speed	515	4	N	9999 Right Justified leading zeros
125	Dilution Correction Factor - TSI 1st Speed (2500)	519	4	N	9.99 Right Justified leading zeros
126	RPM TSI 1st Speed (2500)	523	4	N	9999 Right Justified leading zeros
127	Dilution Corrected Value HC (TSI 2500)	527	4	N	9999 Right Justified leading zeros
128	Dilution Corrected Value CO (TSI 2500)	531	5	N	99.99 Right Justified leading zeros
129	Measured Value CO2 (TSI 2500)	536	4	N	99.9 Right Justified leading zeros
130	Final Result - TSI 1st Speed (2500)	540	1	A	P = Pass, F = Fail
131	Dilution Correction Factor - TSI Idle Speed	541	4	N	9.99 Right Justified leading zeros
132	RPM TSI Idle Speed	545	4	N	9999 Right Justified leading zeros
133	Dilution Corrected Value HC (Idle)	549	4	N	9999 Right Justified leading zeros
134	Dilution Corrected Value CO (Idle)	553	5	N	99.99 Right Justified leading zeros
135	Measured Value CO2 (Idle)	558	4	N	99.9 Right Justified leading zeros
136	Final Result - Idle Speed	562	1	A	P = Pass, F = Fail
137	2nd Chance Dilution Correction Factor - TSI 1st Speed (2500)	563	4	N	9.99 Right Justified leading zeros
137	2nd Chance RPM - TSI 1st Speed (2500)	567	4	N	9999 Right Justified leading zeros
139	2nd Chance Dilution Corrected Value HC (TSI 2500)	571	4	N	9999 Right Justified leading zeros
140	2nd Chance Dilution Corrected Value CO (TSI 2500)	575	5	N	99.99 Right Justified leading zeros
141	2nd Chance Measured Value CO2 (TSI 2500)	580	4	N	99.9 Right Justified leading zeros
142	2nd Chance Final Result - TSI 1st Speed (2500)	584	1	A	P = Pass, F = Fail
143	2nd Chance Dilution Correction Factor - Idle Speed	585	4	N	9.99 Right Justified leading zeros
144	2nd Chance RPM - Idle Speed	589	4	N	9999 Right Justified leading zeros
145	2nd Chance Dilution Corrected Value HC (Idle)	593	4	N	9999 Right Justified leading zeros
146	2nd Chance Dilution Corrected Value CO (Idle)	597	5	N	99.99 Right Justified leading zeros
147	2nd Chance Measured Value CO2 (Idle)	602	4	N	99.9 Right Justified leading zeros
148	2nd Chance Final Result - 2nd Idle Speed	606	1	A	P = Pass, F = Fail, N = NA

Pennsylvania Analytical System (PAS) VISUAL (Stand Alone) Display and Program Requirements

149	TSI Cutpoint HC	607	4	N	9999 Right Justified leading zeros
150	TSI Cutpoint CO	611	5	N	99999 Right Justified leading zeros
151	Overall Emissions Result	616	1	A	P = Pass, F = Fail, N= NA
152	Spare	617	20	AN	Not used in PA defaulted to spaces
153	Air Injection System	637	1	A	P = Pass, F = Fail, N = NA
154	PCV System	638	1	A	P = Pass, F = Fail, N = NA
155	Spare	639	1	AN	Not used in PA defaulted to space
156	Catalyst	640	1	A	P = Pass, F = Fail, N = NA
157	EGR	641	1	A	P = Pass, F = Fail, N = NA
158	Fuel Inlet Restrictor	642	1	A	P = Pass, F = Fail, N = NA
159	Evaporative System Components	643	1	A	P = Pass, F = Fail, N = NA
160	Overall Visual Inspection Results	644	1	A	P = Pass, F = Fail required field
161	Spare	645	1	AN	Not used in PA defaulted to space
162	Spare	646	20	AN	Not used in PA defaulted to space
163	Fuel System Purge Test	666	1	A	P = Pass, F = Fail, N = NA
164	Fuel System Pressure Test	667	1	A	P = Pass, F = Fail, N = NA
165	Fuel System Result	668	1	A	P = Pass, F = Fail, N = NA
166	Fault Codes - OBD II	669	1	A	P = Pass, F = Fail, N = NA
167	Overall Test Result	670	1	A	P = Pass, F = Fail, N= Not ready for testing
168	Manufacturer's Recall	671	1	A	Y=Yes, N=No
169	Manufacturer's Recall Date	672	10	AN	MM/DD/YYYY
170	RPM Bypass	682	1	A	Y=Yes, N=No
171	VID ID	683	11	AN	Default is blank or VID assigned
172	Inspection Fee Charged	694	5	N	99.99 Right Justified leading zeros
173	Sticker Number Issued	699	10	AN	AA99999999 numeric portion is right justified leading zeros
174	Spare	709	20	AN	Not used in PA defaulted to space
175	<CR><LF>	729	2	AN	Carriage Control Line Feed characters
	Total Length		731		

INCOMPLT.DAT

Field #	Description	Offset	Length	Data Type	Format
1	Station License Number	0	8	AN	
2	Equipment Number	8	8	AN	
3	Inspector License Number	16	9	AN	
4	Month	25	2	N	MM (01 - 12)
5	Year	27	4	N	YYYY
6	Test Started	31	3	N	999
7	Test Aborted	34	3	N	999
8	Test Completed	37	3	N	999
9	<CR><LF>	40	2		
	Total Length		42		

One record each month for each inspector using the equipment. A new record is created at the start of an emissions inspection if no record is found for the inspector for the current month/year. Record is incremented each time an emissions inspection is started, aborted or completed.

LOCKOUT.DAT

Field #	Description	Offset	Length	Data Type	Format
1	QA/State PAS lockout	0	1	A	Y=Yes, N=No
2	QA/State ASM Lockout (not used on VISUAL equipment)	1	1	A	Y=Yes, N=No
3	Cabinet tampering (not used on VISUAL equipment)	2	1	A	Y=Yes, N=No
4	State disk drive tampering (not used on VISUAL equipment)	3	1	A	Y=Yes, N=No
5	State Safety Lockout (not used on VISUAL equipment)	4	1	A	Y=Yes, N=No
6	Station license has been suspended	5	1	A	Y=Yes, N=No
7	Station license has been revoked	6	1	A	Y=Yes, N=No
8	Station license has expired	7	1	A	Y=Yes, N=No
9	Spare	8	1	A	Y=Yes, N=No
10	Failure to pay for communications services	9	1	A	Y=Yes, N=No
11	Spare	10	1	A	Y=Yes, N=No
12	nnn (TBD) Emissions tests performed without communications within XXX day period	11	1	A	Y=Yes, N=No
13	VRT.DAT Corrupt	12	1	A	Y=Yes, N=No
14	ESC_ASM.DAT Corrupt (not used on VISUAL equipment)	13	1	A	Y=Yes, N=No
15	<CR><LF>	14	2	Control Chars.	
	TOTAL		16		

REPAIR.DAT					
Field #	Description	Offset	Length	Data Type	Format
1	Test Record Number	0	6	N	999999 Right Justified leading zeros
2	Record Date	6	10	AN	MM/DD/YYYY
3	Record Time (24 hours)	16	8	TIME	HH:MM:SS
4	Station License Number	24	8	AN	Left Justified with trailing spaces
5	Equipment Number	32	8	AN	Left Justified with trailing spaces
6	Inspector License Number	40	9	AN	Left Justified with trailing spaces
7	VIN	49	22	AN	Scanned or manual entry, Left Justified with trailing spaces
8	Title Number	71	10	AN	Scanned or manual entry, Left Justified with trailing spaces
9	License Plate Number	81	7	AN	Scanned or manual entry, Left Justified with trailing spaces
10	Repair Date	88	10	AN	MM/DD/YYYY
11	Repair Codes	98	27	A	Default = blank, each byte position represents a repair item and contains an S = Serviced or R = Recommended for Service or D = Diagnosed for Service
12	Repair this station	125	1	A	Y=Yes, N=No
13	Owner Repair	126	1	A	Y=Yes, N=No
14	Recommended Repairs not made	127	1	A	Y=Yes, N=No
15	Spare	128	24	AN	Not used in PA defaulted to spaces
16	Repair Technician License #	152	9	AN	Left Justified with trailing spaces
17	Repair Facility Number	161	5	AN	Left Justified with trailing spaces
18	Parts Cost	166	7	N	9999.99 Right Justified leading zeros
19	Labor Cost	173	7	N	9999.99 Right Justified leading zeros
20	Work Order Number	180	8	AN	Left Justified with trailing spaces
21	VID ID	188	11	AN	If known from VID and Left Justified with trailing spaces
22	<CR><LF>	199	2	AN	Carriage Control Line Feed characters
	Total Length		201		

STATION.DAT

Field #	Description	Offset	Length	Data Type	Format
1	Equipment Number	0	8	AN	
2	Emissions Inspection Station Number	8	8	AN	
3	Emissions Inspection Station Name	16	50	AN	
4	Emissions Inspection Station Address 1	66	50	AN	
5	Emissions Inspection Station Address 2	116	35	AN	
6	Emissions Inspection Station City	151	35	AN	
7	Emissions Inspection Station State	186	2	AN	
8	Emissions Inspection Station Zip	188	10	AN	99999-9999
9	Emissions Inspection Station Phone	198	14	AN	(999) 999-9999
10	Communications phone number	212	14	AN	(999) 999-9999
11	Max # of tests in # of day with no modem contact	226	3	N	999
12	Max # of days for # of tests with no modem contact	229	3	N	999
13	Last Test Number Used	232	6	N	999999 from equipment
14	<CR><LF>	238	2		
	Total Length		240		

STICKER.DAT

Field #	Description	Offset	Length	Data Type	Format	Required for Reason Code
1	Date	0	10	AN	MM/DD/YYYY	all
2	Station License Number	10	8	AN		all
3	Inspector License Number	18	9	AN		all
4	Sticker Number	27	10	AN	AA99999999	all
5	Reason Code	37	1		1 - 8 (see list below)	
6	VIN	38	22	AN	Scanned or manual entry	1,2,3,4,7,8
7	Title Number	60	10	AN	Scanned or manual entry	1,2,3,4,7,8
8	Plate	70	7	AN	Scanned or manual entry	1,2,3,4,7,8
9	Waiver Approval Number	77	11	AN	Generated by VIID	1,7,8
10	Previous Sticker (if known)	88	10	AN	AA99999999	4
11	Odometer Reading	98	6	N		1,2,3,4,7,8
12	Sticker Expiration Month	104	2	N	MM 01-12	1,2,3,4,7,8
13	Sticker Expiration Year	106	4	N	YYYY 1998 -2100	1,2,3,4,7,8
14	Spare	110	20	A	Spaces	
15	<CR><LF>	130	2			
	Total Length		132			

REASON CODES

- 1 = Waiver
- 2 = Operated Less 5000 Miles Exemption
- 3 = New Vehicle Exemption
- 4 = Sticker replacement
- 5 = Damaged/Voided
- 6 = Stolen
- 7 = Diagnostic Waiver
- 8 = Hardship Exemption

SYSTEM.DAT

Field #	Description	Offset	Length	Data Type	Format
1	Calibration Frequency (hours)	0	3	N	default = 72
2	Maximum duration of Idle Test	3	2	N	default = 30
3	Maximum duration of 2500 Test	5	2	N	default = 30
4	Waiver Cut Point	7	4	N	9999
5	ASM Preconditioning time (seconds)	11	3	N	default = 30
6	Speed Tolerance Limit (mph)	14	1	N	default = +/- 1
7	TSI Preconditioning time	15	3	N	default = 180
8	Dilution Threshold	18	4	N	default is 6.00%
9	HC Hangup Limit	22	2	N	default is 7 ppm
10	Inspector Hardship Waiver Menu	24	1	N	1 = Menu Item Active, 0 = Not Active
11	OBD Usage Switch 1	25	1	A	Y=yes, or N=no
12	Spare	26	9	A	
13	Date last updated	35	10	AN	MM/DD/YYYY
14	<CR><LF>	45	2		
	Total Length		47		

TECH.DAT

Field #	Description	Offset	Length	Data Type	Format
1	Inspector License	0	9	AN	
2	Inspector Last Name	9	30	A	
3	Inspector First Name	39	15	A	
4	Inspector Middle Initial	54	1	A	
5	Access Code	55	5	N	99999
6	Emissions Lock Out Flag	60	1	A	Y=Yes, N=No
7	Emissions License Classification	61	2	AN	*see list below
8	Emissions License Expiration Date	63	10	AN	MM/DD/YYYY
9	Safety Lockout Flag	73	1	A	Y=Yes, N=No
10	Safety License Classification	74	2	AN	S1 to S7
11	Safety License Expiration Date	76	10	AN	MM/DD/YYYY
12	Spare	86	10		
13	<CR><LF>	96	2		
	Total Length		98		

*Emissions License Types
 EI = Emissions only - ASM ,TSI, Visual, or OBD
 EO = Emissions only - Visual, or OBD
 EV = Emissions only – Visual
 CR = Certified Repair only - no testing
 CI = Certified Repair with emissions testing (all tests)
 CO = Certified Repair with emissions testing (OBD and Visual tests)
 CV = Certified Repair with emissions testing (Visual tests)MR = Master Repair only - no testing
 MI = Master Repair with emissions testing (all tests)
 MO = Master Repair with emissions testing (OBD and Visual tests)
 MV = Master Repair with emissions testing (Visual tests)

Pennsylvania Analytical System (PAS) VISUAL (Stand Alone) Display and Program Requirements

USED_S.DAT						
Field #	Description	Offset	Length	Data Type	Format	Required for Reason Code
1	Date	0	10	AN	MM/DD/YYYY	all
2	Station License Number	10	8	AN		all
3	Inspector License Number	18	9	AN		all
4	Sticker Number	27	10	AN	AA99999999	all
5	Reason Code	37	1		1 - 8, and "E" (see list below)	
6	VIN	38	22	AN	Scanned or manual entry	1,2,3,4,7,8,E
7	Title Number	60	10	AN	Scanned or manual entry	1,2,3,4,7,8,E
8	Plate	70	7	AN	Scanned or manual entry	1,2,3,4,7,8,E
9	Waiver Approval Number	77	11	AN	Generated by VIID	1,7,8
15	<CR><LF>	88	2			
	Total Length		90			

REASON CODES

- 1 = Waiver
- 2 = Operated Less 5000 Miles Exemption
- 3 = New Vehicle Exemption
- 4 = Sticker replacement
- 5 = Damaged/Voided
- 6 = Stolen
- 7 = Diagnostic Waiver
- 8 = Hardship Exemption
- E = Emissions Inspection

VRT.DAT

Field #	Description	Offset	Length	Data Type	Format
1	VRT record id	0	5	N	Numeric
2	Model year	5	4	N	YYYY
3	Vehicle body type	9	1	N	1 = SEDAN, 2 = STATION WAGON, 3 = PICKUP, 4 = SPORT/UTILITY VEHICLE, 5 = MINIVAN, 6 = FULL-SIZE VAN
4	Vehicle standards type	10	1	A	P = passenger, T = truck
5	Vehicle make	11	17	A	
6	Vehicle model name	28	23	AN	
7	Num cylinders	51	2	AN	1 - 16, R=Rotary
8	Engine size	53	4	N	Engine size in cubic centimeters (cc)
9	Transmission	57	1	A	A=Auto, M=Manual, E=Either
10	Vehicle Reference Number	58	8	AN	Row source reference
11	GVWR	66	5	N	Nnnnn
12	Vehicle Test Weight	71	4	N	Nnnn
13	ASM5015 HP 8.65	75	4	N	99.9
14	ASM5015 HP 20.0	79	4	N	99.9
15	ASM2525 HP 8.65	83	4	N	Not used in PA
16	ASM2525 HP 20.0	87	4	N	Not used in PA
17	Dyno testing possible?	91	1	A	Y = Yes, M = Maybe
18	Cap Adapter	92	1	A	A = BLUE, B = YELLOW, C = RED, E = GREEN, F = BLACK, G = GRAY, H = THREADED, Z = VARIES, U = UNTESTABLE, N = unknown or no adapter required
19	ASM Cutpoint Row ID	93	5	N	
20	OBD Problem Vehicle/ Vehicle has a problem with detecting the RPM signal	98	1	A	Y=yes, or N=no
21	MCount	99	1	N	
22	Date last update	100	8	AN	MMDDYYYY
23	<CR><LF>	108	2		Control Chars.

110

REC_LIST.DAT

Field #	Description	Offset	Length	Data Type	Format
1	Table name	0	8	A	VRT = Vehicle Reference Table
2	Record date	8	14	N	YYYYMMDDHHMMSS
3	Record count (i.e. number of records in table)	22	6	N	999999
	Total Length		28		

VIN.DAT					
Field #	Description	Offset	Length	Data Type	Format
1	VIN	0	22	AN	
2	VIN source	22	1	A	B = Bar-code M = Manual entry
3	Title number	23	10	AN	
4	License plate number	33	7	AN	
5	License plate number source	40	1	A	B = Bar-code M = Manual entry
6	Inspector license number	41	9	AN	
7	Test equipment type	50	1	A	A = PAS can perform ASM and TSI tests B = PAS can perform TSI test only C = PAS can perform OBD and VISUAL tests D = PAS can perform VISUAL test only
8	VIN/title/license match attempt	51	1	N	1 = first attempt to match VIN/title/license plate 2 = second attempt to match VIN/title/license plate
9	Authorization type	52	1	A	W = Waiver D = Diagnostic waiver H = Hardship exemption (Can only be used on an ASM or TSI test) S = Safety sticker issuance after a t-dot (Can only be used on an ASM or TSI test) R = Previous inspection history report T = Vehicle Emissions Inspection
Total Length			53		

VIN.REC					
Field #	Description	Offset	Length	Data Type	Format
1	Match Flag	0	1	A	O = OK N = No Match I = Invalid VIN
2	Technician Error	1	1	A	Blank = OK X = License expired R = License Revoked N = Not authorized for enhanced area I = Invalid Technician ID
3	Station Error	2	1	A	Blank = OK L = Locked Out N = Test type incompatible with Station type
4	Paid Test	3	1	A	P = Paid F = Free U = Unknown
5	Valid Vehicle	4	1	A	Y = Yes N = No
6	VID ID	5	11	AN	
Total Length			16		

Appendix B – Overview of an AAMVA Compliant PDF417 Symbology.

An AAMVA compliant PDF417 symbol is made up of a HEADER and at least one SUBFILE. The HEADER is made of two parts: the HEADER and one or more SUBFILE DESIGNATORS. Each SUBFILE DESIGNATORS defines a related SUBFILE.

SUBFILES can contain collections of related text data or they can contain Binary Large Objects (BLOBs). BLOBs by their nature must be understood by the application using them and are likely to appear as a long string of ASCII data until presented to an interpretive routine. In the AAMVA community's use of BOLBs the data therein is likely to be a data stream which when interpreted correctly will provide a facial image, a signature image or perhaps a biometric data stream. Other uses may evolve.

Text data will have some relationship to the "document" that contains the AAMVA PDF417 symbol. On a TITLE DOCUMENT a PDF417 symbol is likely to contain information about the document itself, the owner(s) of the vehicle, etc.

There are only a few rules, but the few that exist need to be followed by all if they wish other public and private user to be able to read their coded documents.

RULES:

The first DATA ELEMENT IDENTIFIER in any SUBFILE will always follow the two byte SUBFILE IDENTIFIER. A DATA ELEMENT SEPARTOR is not required prior to the first data field.

Notwithstanding the above, the first DATA ELEMENT IDENTIFIER in a SUBFILE will not be considered invalid if it is preceded by a DADT ELEMENT SEPARATOR.

When a RECORD SEPARATOR is used, it serves both the function of a RECORD SEPARATOR and a DATA ELEMENT SEPARATOR. Stated differently, there is no need to follow a RECORD SEPARATOR with a DATA ELEMENT SEPARATOR.

The RECORD SEPARATOR character is used to distinguish multiple occurrences of similar data in any given SUBFILE.

By inference, the first occurrence of a data element in a SUBFILE is considered to be the primary occurrence, the next secondary and so on.

If text data is being carried in a SUBFILE, which also contains a string of non-text data, the text data must precede any non-test string.

The SEGMENT TERMINATOR is always used as the last character in any SUBFILE.