

ATTACHMENT 9

Procedures and Specifications Manual

Part a) Quality Control Procedures for On-Board Diagnostic (OBD) Emissions Testing

I. General Requirements for a Decentralized Vehicle Emissions Testing Program

- (A) Quality control measures shall be implemented by the contractor and will ensure that the vehicle information database (VID) is maintained according to procedures listed in the contract between Missouri Department of Natural Resources (MDNR) and the contractor. All VID inspection records shall be accurately created, recorded, and maintained. Quality control requirements are enforced by MDNR.
- (B) Quality control standards and criteria for all test equipment installed in the state licensed emissions inspection stations shall be as follows:
 - 1. The only authorized equipment to be used to conduct on-board diagnostic (OBD) vehicle emissions testing will be that which was purchased from the state's contractor, SysTech International (STI).
 - 2. STI will be the sole provider of preventive maintenance on all vehicle emissions inspection testing equipment.
 - 3. To assure quality control, the VID will automatically record quality control check information, lockouts, attempted tampering and any circumstances which require a STI service representative to work on the equipment.
 - 4. To assure test accuracy, the VID shall be maintained according to demonstrated good engineering practices.
 - 5. Computer control of quality assurance checks and quality control charts shall be used whenever possible.
 - 6. Licensed emissions testing stations shall be electronically locked out of service by STI, the MDNR or the Missouri State Highway Patrol (MSHP) when testing procedures are not performed according to procedures established by MDNR.

II. Quality Control Procedures

The contractor shall use established procedures to assure quality control throughout the basic I/M program test network.

Part b) Record Keeping and Document Security

I. Record Keeping

- (A) The contractor shall be responsible for completing and retaining emissions equipment maintenance records for a period of at least two (2) months after being audited by MDNR personnel. Emissions equipment maintenance and calibration

records may be transmitted electronically to MDNR on a daily, weekly or monthly basis, or as otherwise determined acceptable to MDNR.

- (B) Emissions test data. The contractor shall make available on a real-time basis to MDNR, the MSHP, and the Missouri Department of Revenue (MDOR), the results of each emissions test conducted. The requirements for data collection and transmission shall be as specified in the contract between MDNR and the contractor.

The contractor shall maintain a duplicate off-site electronic backup that is located on a different power grid, of all test results and other transactions, in the event that there are problems with the on-line transmission. This electronic backup may be erased only after notification by MDNR that the data from the original transmission has been satisfactorily transferred for data processing.

MDNR shall maintain all test results and other transactions on electronic backup for three (3) years.

- (C) Repair performance monitoring. The licensed inspection emissions stations shall be responsible for recording emissions repair information, via the VID, concerning subject vehicles that have failed the emissions inspection and have been returned for a reinspection.

1. When a vehicle that has failed an initial inspection is returned for a reinspection, information as prescribed by 10 CSR 10-5.381(3)(J)1.A, will be loaded into the VID by the licensed emissions inspector.
2. The requirements for maintaining repair information records stored by computer shall be as follows:
 - a. The contractor will keep the repair information for use in preparing repair effectiveness reports.
 - b. The contractor will transmit this information to MDNR and may erase this information at the individual inspection stations after the contractor has verified that all information was accurately and fully transmitted.

II. Document Security

Measures shall be taken by STI and MDNR to maintain the security of all documents which verify compliance with inspection requirements. Paper VIRs will not be used for registration purposes with MDOR, because STI will be providing STI with a real time, electronic means of verifying vehicle compliance with the emissions inspection requirements.

Part c) Equipment Specifications

I. General Requirements

- (A) Specifications for the test equipment used in the Missouri Inspection and Maintenance (I/M) program can be found in 10 CSR 10-5.381. Testing is automated to the highest degree possible. All data from calibrations, self-checks, testing, etc. are recorded and instantaneously transmitted electronically to the host computer system. This information is then reported to MDNR on a routine basis. Analyzers and software will be updated as necessary to accommodate new test procedures and vehicle technology.
- (B) Summary of analyzer specifications.
 - 1. The OBD pass/fail determination is performed automatically by the analyzer. A vehicle must pass all five elements of the OBD test to be considered a passing vehicle: Malfunction Indicator Lamp, Data Link Connector, Communications, Readiness, Diagnostic Trouble Codes.
 - 2. The analyzer includes an OBD verification port that will be used to prevent falsely failing a vehicle for OBD communications. When a vehicle won't communicate with the analyzer, the lane software will require the emissions inspector to plug the OBD cable into the OBD verification port, which will automatically test the cable to confirm whether the cable is capable of communicating on all OBD protocols. If the cable passes the OBD verification test, then the vehicle will be retested for communications, and the result of that test will be the result for the communication element. If the cable fails the OBD verification test, then the analyzer will be locked out and further testing will be prevented until the cable is replaced.
- (B) Acceptance Testing.

Acceptance testing for equipment and operations will be conducted after program start-up during October and November 2007.

Part d) Enforcement Procedures

I. Enforcement of Registration Requirements

The penalty for not complying with the requirements of the vehicle inspection program is registration denial. If a motorist has not received a certificate of pass or waiver, the MDOR shall not renew the vehicle's registration. Exceptions to this are vehicles that have received an exemption, discussed in subsection 3 of section 643.315.2, RSMo.

- (A) Penalties for Expired Registration.

A vehicle owner driving on expired tabs (registration) is subject to receiving a citation from local, county or state law enforcement officials. All city, county or state law enforcement officials or parking meter enforcement staff have the authority to issue a citation for expired license plate stickers/tabs. This authorization is contained in Missouri statute.

Tab expiration can easily be determined by comparing the renewal month displayed on the license plate with the year displayed on the tab. Tabs are produced in different colors each year to assist law enforcement officials with this determination. In addition, agents of the state, county or local law enforcement agencies can verify if a registration has expired by calling MDOR. Many law enforcement officials have the ability to directly access from their squad cars the vehicle registration database.

If a vehicle owner is cited (ticketed) for an expired registration the owner is assessed a fine which ranges from \$20 to \$60, including court costs. Specific fines vary depending on the county the citation was issued in. A separate fine is assessed in some of the covered counties for failure to have a certificate of inspection.

II. Enforcement of Emissions Inspection Requirements

The emissions inspection requirements are enforced through the vehicle registration process. Passing vehicle emissions test results are up loaded to MDOR on a real time basis directly from the VID. Motorists do not need to submit an emissions document for registration purposes. Motorists whose vehicles have been identified by MDOR as being subject to testing must bring the original Waiver or Exemption with them to the MDOR Motor Vehicle Registration Office to renew their registration if their vehicle failed the emissions test and was issued a waiver or were otherwise exempted. If the appropriate certificate is not presented, registration renewal is denied.

Waivers or Exemptions are part of the vehicle inspection requirements. Each vehicle inspection report (VIR) contains a date of issue, vehicle license plate number, vehicle identification number, vehicle make, vehicle year, the expiration date when applicable and the inspection result. All of the above information, and complete testing statistics, are available to MDNR and the contractor staff using the VID system.

The Missouri I/M program uses either a separate emissions windshield sticker or a combined safety and emissions windshield sticker to identify compliance with emissions testing. Thus, compliance can be easily determined by visually observing whether an emissions sticker or combined safety and emissions sticker is current. Additionally, the vehicle's license plate tab may be visually observed to identify compliance with emissions testing since registration renewal is denied if the emissions testing requirements are not satisfied.

(A) Preventing Avoidance to Emissions Testing.

Vehicles are identified as subject to emissions testing by the MDOR. The MDOR classifies vehicles based on their make, model year and weight when the vehicle is first registered into the state motor vehicle database. The MDOR identifies all light-duty passenger vehicles and light-duty trucks, matches these classes with the appropriate zip code to identify those registered in the four county St. Louis metropolitan area, and prints an inspection equipment on their annual registration renewal notice. These are the vehicles identified as subject to emissions testing.

Some vehicles slip through the identification process either by being incorrectly classified or because the vehicle owner has registered the vehicle outside the five (5) county St. Louis metropolitan area, even though that person actually lives inside the five (5) county St. Louis metropolitan area.

Vehicles that have been classified incorrectly generally show up either at the vehicle inspection station or at MDOR where the correction is made.

Vehicles where the owner is trying to avoid testing because the vehicle is registered outside the five (5) county St. Louis metropolitan area are more difficult to identify. When renewing a vehicle registration, the vehicle owner is asked to supply their permanent residence address; most of the time the address displayed on the driver's license is used for this purpose. The same question is asked when a resident of the state is applying for or renewing their driver's license. There is no direct cross check made between the addresses claimed on the driver's license and the vehicle registration. However, every precaution is made by MDOR and MDNR to assure that these addresses are the same and therefore vehicles are not being excluded from the emissions testing requirement due to manipulating the registration address.

III. Compliance Rate

(A) General Requirements.

Compliance rate, as understood by the Missouri I/M program, is a percent based on the number of vehicles that should be tested compared to the number of vehicles that did get inspected.

The compliance rate is driven by the number of vehicles that did not get tested that should have been tested. It is assumed that as this number gets smaller the compliance rate would increase. MDNR will strive for one hundred percent (100%) compliance; however, we conclude that minor changes in the statistics would not yield significant changes in the compliance rate.

(B) Commitment to an Enforcement Level.

The Missouri I/M program will strive to achieve an enforcement level which ensures that all of the motor vehicles subject to inspection are actually inspected. MDNR commits to a compliance rate of ninety six percent (96%), and a waiver rate not to exceed eight percent (8%) of initially failed vehicles.

Part e) Enforcement Oversight Procedures

I. General Requirements

MDNR and the MSHP are charged with administrative oversight of the I/M program and provides this oversight by enforcing all provisions of the law, rule, and contract between MDNR and the contractor. To oversee quality control and assure motorist compliance, the MDNR relies on the established MDOR motor vehicle registration system and the I/M on-line host computer system.

II. Oversight of Information

(A) Verification of Exempt Vehicle Status.

Vehicles exempted from the Missouri I/M program include vehicles that are not subject to testing as required by statute in Attachment 1 and vehicles exempted by MDNR as required by rule in Attachment 2.

Each month the MDOR assesses which vehicles are subject to testing based on their registration record and mails out a notice for registration renewal containing the emissions inspection fee if appropriate. Vehicle status changes are administered through MDOR and the database is updated accordingly. For example, if a motorist is not subject to emissions testing because the motorist lives outside the five (5) county St. Louis metropolitan area but now has moved inside the area, the MDOR would update the registration record to assure that the vehicle is now subject to testing.

(B) Data Accuracy.

Test data accuracy is assured through automation of the testing process and utilization of the motor vehicle registration database maintained by the MDOR. A complete copy of the motor vehicle registration database will be loaded into STI's VID computer system. The I/M program will be "on-line" with the MDOR database, on a real time basis. The MDOR will supply MDNR with an electronic data tape at regular intervals. The data tape, incorporated into the I/M program database, reflects changes in ownership and registration status and includes vehicles added to or removed from the system.

Independent of the updated registration database, the contractor will maintain a separate database which contains all pertinent testing statistics. These two

databases are used interactively to assure that the vehicle obtaining an emissions test is required to be tested, is the correct vehicle being tested, and that all specifics to the test are accurately recorded and maintained. This entire process is done automatically.

(C) Audit Trail.

A complete audit trail is maintained within the Missouri I/M program through the VID and interactive software at MDNR. Interactive software, developed by STI, allows complete real-time access to all test statistics, and operational statistics. In addition to real-time information, summary statistical reports are routinely generated through the host computer system.

III. Evaluation of Program Effectiveness

Evaluation of program effectiveness is based on quality assured information for the subject vehicle population, registration database, and the testing database.

MDNR, in conjunction with STI, shall conduct a monthly review of testing statistics and enforcement information to determine program effectiveness. When a performance issue has been identified, immediate corrective action is taken to resolve the problem. This action may involve a simple change in testing procedure, training of personnel, or maintenance scheduling.

MDNR does not currently use parking lot surveys or roadside pullovers to assess the compliance status of the in-use fleet. MDNR uses the VID to make a monthly comparison between the testing database and the registration database to determine how many vehicles have evaded the emissions test requirement by renewing vehicle registration without receiving a Certificate of Pass, Waiver or Exemption.

Part f) Quality Assurance Procedures

I. General Requirements

(A) MDNR and the MSHP will conduct performance audits on a periodic basis to determine whether inspectors are correctly performing all tests and other required functions. STI will provide MDNR and MSHP auditors with laptop or tablet PCs that will have wireless access to the VID, as well as digital cameras and printers. These tools will enable all state auditors to record the results of their audits directly to the VID from the field. Additionally, it will enable auditors to run real time trigger reports from the field and to remotely watch inspection stations conduct vehicle inspections via the VID reporting tools.

1. Performance audits may be of two types:

a. Overt performance audits which may include the following:

- i. A check for appropriate document security.
 - ii. A check to see that required record keeping practices are being followed.
 - iii. A check for licenses or certificates and other required display information.
 - iv. Observation and written evaluation of each inspector's ability to properly perform an inspection.
 - b. Covert performance audits which may include the following:
 - i. Remote visual observation of inspector and inspection station personnel performance, which may include the use of binoculars or video cameras.
 - ii. Site visits using covert vehicles.
 - iii. Data queries and trigger reports designed to identify testing or repair anomalies.
 - iv. Other activities deemed appropriate by the department as necessary to maintain the level of inspection and maintenance program quality assurance required by federal law.
- 2. Number of audits conducted. To the extent practical, the following number of audits will be conducted by MDNR or MSHP for the entire inspection and maintenance area:
 - a. Overt audits:
 - i. At a minimum, two (2) per year, per public test station bay.
 - ii. At a minimum, two (2) per year, per private test station, i.e. facilities at fleet sites.
 - b. Covert audits:
 - i. At a minimum, one (1) per year, for each inspector in high-volume stations, i.e., those performing more than 4,000 tests per year, shall receive a covert audit consisting of remote visual observation of inspector performance.
 - ii. At a minimum, three (3) percent per year, of the total number of inspectors, shall receive a site visit using covert vehicles set to fail.
 - iii. At a minimum, three (3) percent per year, of the total number of stations that conduct both testing and repairs, shall receive a site visit using covert vehicles set to fail, using a full range of introduced malfunctions, including the purchase of repairs and subsequent retesting.

3. Each audit may satisfy more than one (1) of the previous criteria. Additional audits may be conducted on the basis of motorist complaints or suspicion by the quality assurance officer that a violation of contractual agreement, state rules, or state law has occurred.
4. Documentation of the audit sufficient for building a legal case and establishing a performance record shall be kept. A summary of the audits shall be included as part of the annual reports presented to EPA and Missouri General Assembly.
5. STI and all employees of STI will make available all information requested by MDNR and will fully cooperate with MDNR personnel who conduct the audits and other duly authorized State representatives or agents.
6. MDNR will maintain a sufficient number of covert vehicles and covert auditors to allow for frequent rotation of both to prevent detection by station personnel. STI will provide the electronic means to protect the identity of MDNR covert vehicles from inspector identification.

(B) MDNR shall conduct record audits on a periodic basis to assess station performance and identify problems that may identify potential fraud or incompetence. Such review shall include:

1. Software-based, computerized analysis to identify statistical inconsistencies, unusual patterns, and other discrepancies.
2. Visits to inspection stations to review records not already covered in the electronic analysis.
3. Comprehensive accounting for all official forms that can be used to demonstrate compliance with the program.

(C) MDNR shall conduct equipment audits on a periodic basis during overt performance audits to evaluate quality control of required test equipment. Such evaluation shall include a check for tampering or other conditions that would impede accurate testing.