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of the cycle, then the quality control requirements shall be met during the time of testing only. Any vehicle available for rent in the I/M area or for use in the I/M area shall be subject. Fleet vehicles not being tested in normal I/M test facilities in enhanced I/M programs, however, shall be inspected in independent, test-only facilities, according to the requirements of § 51.353(a) of this subpart.

(3) Subject vehicles which are registered in the program area but are primarily operated in another I/M area shall be tested, either in the area of primary operation, or in the area of registration. Alternate schedules may be established to permit convenient testing of these vehicles (e.g., vehicles belonging to students away at college should be rescheduled for testing during a visit home). I/M programs shall make provisions for providing official testing to vehicles registered elsewhere.

(4) Vehicles which are operated on Federal installations located within an I/M program area shall be tested, regardless of whether the vehicles are registered in the State or local I/M area. This requirement applies to all employee-owned or leased vehicles (including vehicles owned, leased, or operated by civilian and military personnel on Federal installations) as well as agency-owned or operated vehicles, except tactical military vehicles, operated on the installation. This requirement shall not apply to visiting agency, employee, or military personnel vehicles as long as such visits do not exceed 60 calendar days per year. In areas without test fees collected in the lane, arrangements shall be made by the installation with the I/M program for reimbursement of the costs of tests provided for agency vehicles, at the discretion of the I/M agency. The installation shall provide documentation of proof of compliance to the I/M agency. The documentation shall include a list of subject vehicles and shall be updated periodically, as determined by the I/M program administrator, but no less frequently than each inspection cycle. The installation shall use one of the following methods to establish proof of compliance:

(i) Presentation of a valid certificate of compliance from the local I/M program, from any other I/M program at least as stringent as the local program, or from any program deemed acceptable by the I/M program administrator.

(ii) Presentation of proof of vehicle registration within the geographic area covered by the I/M program, except for any program whose enforcement is not through registration denial.

(iii) Another method approved by the State or local I/M program administrator.

(5) Special exemptions may be permitted for certain subject vehicles provided a demonstration is made that the performance standard will be met.

(6) States may also exempt MY 1996 and newer OBD-equipped vehicles that receive an OBD-I/M inspection from the tailpipe, purge, and fill-neck pressure tests (where applicable) without any loss of emission reduction credit.

(b) *SIP requirements.* (1) The SIP shall include a detailed description of the number and types of vehicles to be covered by the program, and a plan for how those vehicles are to be identified, including vehicles that are routinely operated in the area but may not be registered in the area.

(2) The SIP shall include a description of any special exemptions which will be granted by the program, and an estimate of the percentage and number of subject vehicles which will be impacted. Such exemptions shall be accounted for in the emission reduction analysis.

(3) The SIP shall include the legal authority or rule necessary to implement and enforce the vehicle coverage requirement.

[57 FR 52987, Nov. 5, 1992, as amended at 66 FR 18177, Apr. 5, 2001]

### § 51.357 Test procedures and standards.

Written test procedures and pass/fail standards shall be established and followed for each model year and vehicle type included in the program.

(a) *Test procedure requirements.* Emission tests and functional tests shall be conducted according to good engineering practices to assure test accuracy.

(1) Initial tests (*i.e.*, those occurring for the first time in a test cycle) shall

be performed without repair or adjustment at the inspection facility, prior to the test, except as provided in paragraph (a)(10)(i) of this section.

(2) The vehicle owner or driver shall have access to the test area such that observation of the entire official inspection process on the vehicle is permitted. Such access may be limited but shall in no way prevent full observation.

(3) An official test, once initiated, shall be performed in its entirety regardless of intermediate outcomes except in the case of invalid test condition, unsafe conditions, fast pass/fail algorithms, or, in the case of the on-board diagnostic (OBD) system check, unset readiness codes.

(4) Tests involving measurement shall be performed with program-approved equipment that has been calibrated according to the quality procedures contained in appendix A to this subpart.

(5) Vehicles shall be rejected from testing if the exhaust system is missing or leaking, or if the vehicle is in an unsafe condition for testing. Coincident with mandatory OBD-I/M testing and repair of vehicles so equipped, MY 1996 and newer vehicles shall be rejected from testing if a scan of the OBD system reveals a “not ready” code for any component of the OBD system. At a state’s option it may choose alternatively to reject MY 1996–2000 vehicles only if three or more “not ready” codes are present and to reject MY 2001 and later model years only if two or more “not ready” codes are present. This provision does not release manufacturers from the obligations regarding readiness status set forth in 40 CFR 86.094–17(e)(1): “Control of Air Pollution From New Motor Vehicles and New Motor Vehicle Engines: Regulations Requiring On-Board Diagnostic Systems on 1994 and Later Model Year Light-Duty Vehicles and Light-Duty Trucks.” Once the cause for rejection has been corrected, the vehicle must return for testing to continue the testing process. Failure to return for testing in a timely manner after rejection shall be considered non-compliance with the program, unless the motorist can prove that the vehicle has been sold, scrapped, or is otherwise no

longer in operation within the program area.

(6) Vehicles shall be retested after repair for any portion of the inspection that is failed on the previous test to determine if repairs were effective. To the extent that repair to correct a previous failure could lead to failure of another portion of the test, that portion shall also be retested. Evaporative system repairs shall trigger an exhaust emissions retest (in programs which conduct an exhaust emission test as part of the initial inspection).

(7) *Steady-state testing.* Steady-state tests shall be performed in accordance with the procedures contained in appendix B to this subpart.

(8) *Emission control device inspection.* Visual emission control device checks shall be performed through direct observation or through indirect observation using a mirror, video camera or other visual aid. These inspections shall include a determination as to whether each subject device is present and appears to be properly connected and appears to be the correct type for the certified vehicle configuration.

(9) *Evaporative system purge test procedure.* The purge test procedure shall consist of measuring the total purge flow (in standard liters) occurring in the vehicle’s evaporative system during the transient dynamometer emission test specified in paragraph (a)(11) of this section. The purge flow measurement system shall be connected to the purge portion of the evaporative system in series between the canister and the engine, preferably near the canister. The inspector shall be responsible for ensuring that all items that are disconnected in the conduct of the test procedure are properly reconnected at the conclusion of the test procedure. Alternative procedures may be used if they are shown to be equivalent or better to the satisfaction of the Administrator. Except in the case of government-run test facilities claiming sovereign immunity, any damage done to the evaporative emission control system during this test shall be repaired at the expense of the inspection facility.

(10) *Evaporative system integrity test procedure.* The test sequence shall consist of the following steps:

(i) Test equipment shall be connected to the fuel tank canister hose at the canister end. The gas cap shall be checked to ensure that it is properly, but not excessively tightened, and shall be tightened if necessary.

(ii) The system shall be pressurized to 14 ±0.5 inches of water without exceeding 26 inches of water system pressure.

(iii) Close off the pressure source, seal the evaporative system and monitor pressure decay for up to two minutes.

(iv) Loosen the gas cap after a maximum of two minutes and monitor for a sudden pressure drop, indicating that the fuel tank was pressurized.

(v) The inspector shall be responsible for ensuring that all items that are disconnected in the conduct of the test procedure are properly re-connected at the conclusion of the test procedure.

(vi) Alternative procedures may be used if they are shown to be equivalent or better to the satisfaction of the Administrator. Except in the case of government-run test facilities claiming sovereign immunity, any damage done to the evaporative emission control system during this test shall be repaired at the expense of the inspection facility.

(11) *Transient emission test.* The transient emission test shall consist of mass emission measurement using a constant volume sampler (or an Administrator-approved alternative methodology for accounting for exhaust volume) while the vehicle is driven through a computer-monitored driving cycle on a dynamometer. The driving cycle shall include acceleration, deceleration, and idle operating modes as specified in appendix E to this subpart (or an approved alternative). The driving cycle may be ended earlier using approved fast pass or fast fail algorithms and multiple pass/fail algorithms may be used during the test cycle to eliminate false failures. The transient test procedure, including algorithms and other procedural details, shall be approved by the Administrator prior to use in an I/M program.

(12) *On-board diagnostic checks.* Beginning January 1, 2002, inspection of the on-board diagnostic (OBD) system on MY 1996 and newer light-duty vehicles

and light-duty trucks shall be conducted according to the procedure described in 40 CFR 85.2222, at a minimum. This inspection may be used in lieu of tailpipe, purge, and fill-neck pressure testing. Alternatively, states may elect to phase-in OBD-I/M testing for one test cycle by using the OBD-I/M check to screen clean vehicles from tailpipe testing and require repair and retest for only those vehicles which proceed to fail the tailpipe test. An additional alternative is also available to states with regard to the deadline for mandatory testing, repair, and retesting of vehicles based upon the OBD-I/M check. Under this third option, if a state can show good cause (and the Administrator takes notice-and-comment action to approve this good cause showing as a revision to the State's Implementation Plan), up to an additional 12 months' extension may be granted, establishing an alternative start date for such states of no later than January 1, 2003. States choosing to make this showing will also have available to them the phase-in approach described in this section, with the one-cycle time limit to begin coincident with the alternative start date established by Administrator approval of the showing, but no later than January 1, 2003. The showing of good cause (and its approval or disapproval) will be addressed on a case-by-case basis by the Administrator.

(13) *Approval of alternative tests.* Alternative test procedures may be approved if the Administrator finds that such procedures show a reasonable correlation with the Federal Test Procedure and are capable of identifying comparable emission reductions from the I/M program as a whole, in combination with other program elements, as would be identified by the test(s) which they are intended to replace.

(b) *Test standards—(1) Emissions standards.* HC, CO, and CO+CO<sub>2</sub> (or CO<sub>2</sub> alone) emission standards shall be applicable to all vehicles subject to the program with the exception of MY 1996 and newer OBD-equipped light-duty vehicles and light-duty trucks, which will be held to the requirements of 40 CFR 85.2207, at a minimum. Repairs shall be required for failure of any standard regardless of the attainment status of

the area. NO<sub>x</sub> emission standards shall be applied to vehicles subject to a loaded mode test in ozone nonattainment areas and in an ozone transport region, unless a waiver of NO<sub>x</sub> controls is provided to the State under § 51.351(d).

(2) *Visual equipment inspection standards.* (i) Vehicles shall fail visual inspections of subject emission control devices if such devices are part of the original certified configuration and are found to be missing, modified, disconnected, or improperly connected.

(ii) Vehicles shall fail visual inspections of subject emission control devices if such devices are found to be incorrect for the certified vehicle configuration under inspection. Aftermarket parts, as well as original equipment manufacture parts, may be considered correct if they are proper for the certified vehicle configuration. Where an EPA aftermarket approval or self-certification program exists for a particular class of subject parts, vehicles shall fail visual equipment inspections if the part is neither original equipment manufacture nor from an approved or self-certified aftermarket manufacturer.

(3) *Functional test standards—(i) Evaporative system integrity test.* Vehicles shall fail the evaporative system pressure test if the system cannot maintain a system pressure above eight inches of water for up to two minutes after being pressurized to 14 ± 0.5 inches of water or if no pressure drop is detected when the gas cap is loosened as described in paragraph (a)(10)(iv) of this section. Additionally, vehicles shall fail the evaporative test if the canister is missing or obviously damaged, if hoses are missing or obviously disconnected, or if the gas cap is missing.

(ii) *Evaporative canister purge test.* Vehicles with a total purge system flow measuring less than one liter, over the course of the transient test required in paragraph (a)(9) of this section, shall fail the evaporative purge test.

(4) *On-board diagnostic test standards.* Vehicles shall fail the on-board diagnostic test if they fail to meet the requirements of 40 CFR 85.2207, at a minimum. Failure of the on-board diagnostic test need not result in failure of the vehicle inspection/maintenance

test until January 1, 2002. Alternatively, states may elect to phase-in OBD-I/M testing for one test cycle by using the OBD- I/M check to screen clean vehicles from tailpipe testing and require repair and retest for only those vehicles which proceed to fail the tailpipe test. An additional alternative is also available to states with regard to the deadline for mandatory testing, repair, and retesting of vehicles based upon the OBD-I/M check. Under this third option, if a state can show good cause (and the Administrator takes notice-and-comment action to approve this good cause showing), up to an additional 12 months' extension may be granted, establishing an alternative start date for such states of no later than January 1, 2003. States choosing to make this showing will also have available to them the phase-in approach described in this section, with the one-cycle time limit to begin coincident with the alternative start date established by Administrator approval of the showing, but no later than January 1, 2003. The showing of good cause (and its approval or disapproval) will be addressed on a case-by-case basis.

(c) *Fast test algorithms and standards.* Special test algorithms and pass/fail algorithms may be employed to reduce test time when the test outcome is predictable with near certainty, if the Administrator approves by letter the equivalency to full procedure testing.

(d) *Applicability.* In general, section 203(a)(3)(A) of the Clean Air Act prohibits altering a vehicle's configuration such that it changes from a certified to a non-certified configuration. In the inspection process, vehicles that have been altered from their original certified configuration are to be tested in the same manner as other subject vehicles with the exception of MY 1996 and newer, OBD-equipped vehicles on which the data link connector is missing, has been tampered with or which has been altered in such a way as to make OBD system testing impossible. Such vehicles shall be failed for the on-board diagnostics portion of the test and are expected to be repaired so that the vehicle is testable. Failure to return for retesting in a timely manner after failure and repair shall be considered non-compliance with the program,

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unless the motorist can prove that the vehicle has been sold, scrapped, or is otherwise no longer in operation within the program area.

(1) Vehicles with engines other than the engine originally installed by the manufacturer or an identical replacement of such engine shall be subject to the test procedures and standards for the chassis type and model year including visual equipment inspections for all parts that are part of the original or now-applicable certified configuration and part of the normal inspection. States may choose to require vehicles with such engines to be subject to the test procedures and standards for the engine model year if it is newer than the chassis model year.

(2) Vehicles that have been switched from an engine of one fuel type to another fuel type that is subject to the program (e.g., from a diesel engine to a gasoline engine) shall be subject to the test procedures and standards for the current fuel type, and to the requirements of paragraph (d)(1) of this section.

(3) Vehicles that are switched to a fuel type for which there is no certified configuration shall be tested according to the most stringent emission standards established for that vehicle type and model year. Emission control device requirements may be waived if the program determines that the alternatively fueled vehicle configuration would meet the new vehicle standards for that model year without such devices.

(4) Mixing vehicle classes (e.g., light-duty with heavy-duty) and certification types (e.g., California with Federal) within a single vehicle configuration shall be considered tampering.

(e) *SIP requirements.* The SIP shall include a description of each test procedure used. The SIP shall include the rule, ordinance or law describing and establishing the test procedures.

[57 FR 52987, Nov. 5, 1992, as amended at 61 FR 40945, Aug. 6, 1996; 63 FR 24433, May 4, 1998; 65 FR 45533, July 24, 2000; 66 FR 18178, Apr. 5, 2001]

### § 51.358 Test equipment.

Computerized emission test systems are required for performing an official emissions test on subject vehicles.

(a) *Performance features of computerized emission test systems.* The emission test equipment shall be certified by the program, and newly acquired emission test systems shall be subjected to acceptance test procedures to ensure compliance with program specifications.

(1) Emission test equipment shall be capable of testing all subject vehicles and shall be updated from time to time to accommodate new technology vehicles as well as changes to the program. In the case of OBD-based testing, the equipment used to access the onboard computer shall be capable of testing all MY 1996 and newer, OBD-equipped light-duty vehicles and light-duty trucks.

(2) At a minimum, emission test equipment:

(i) Shall make automatic pass/fail decisions;

(ii) Shall be secured from tampering and/or abuse;

(iii) Shall be based upon written specifications; and

(iv) Shall be capable of simultaneously sampling dual exhaust vehicles in the case of tailpipe-based emission test equipment.

(3) The vehicle owner or driver shall be provided with a record of test results, including all of the items listed in 40 CFR part 85, subpart W as being required on the test record (as applicable). The test report shall include:

(i) A vehicle description, including license plate number, vehicle identification number, and odometer reading;

(ii) The date and time of test;

(iii) The name or identification number of the individual(s) performing the tests and the location of the test station and lane;

(iv) The type(s) of test(s) performed;

(v) The applicable test standards;

(vi) The test results, by test, and, where applicable, by pollutant;

(vii) A statement indicating the availability of warranty coverage as required in section 207 of the Clean Air Act;

(viii) Certification that tests were performed in accordance with the regulations and, in the case of decentralized programs, the signature of the individual who performed the test; and