

may be encountered in the conduct of the Emission Control System Performance Warranty Short Tests, described in part 85, subpart W of this chapter. Emission sampling may occur during idle, 2500 rpm, and loaded modes. Specific conditions defined by this test procedure include fuel characteristics, ambient temperature, and waiting periods prior to being tested.

(b) *Testing by the manufacturer for certification data submittal.* (1) The options provided for testing under this subpart include a cold temperature test with Cold CO fuel, a moderate temperature test with Cold CO fuel, and a warm temperature test with FTP Otto-cycle test fuel, as described in table O-96-1 of § 86.1430. The manufacturer must complete testing for the data submittal (as required by the provisions of § 86.096-23(c)) under a minimum of one of these scenarios.

(2) In addition to testing under one of the sets of conditions specified in this subpart, the manufacturer may optionally test under conditions outside the ranges specified in this subpart.

(c) *Testing by the Administrator.* The Administrator reserves the right to conduct testing in accordance with the test procedures described in § 86.1439, under test conditions within the ranges specified in this subpart. The options provided for testing under this subpart include a cold temperature test with Cold CO fuel, a moderate temperature test with Cold CO fuel, a moderate temperature test with Otto-cycle test fuel, and a warm temperature test with Otto-cycle test fuel, as described in table O-96-2 of § 86.1430. In order for an engine family to be eligible for certification, each of its test vehicles that is subjected to one or more CSTs must obtain a passing result for each combination of fuel, temperature, and test procedure employed in those CSTs, subject to the Administrator's discretion.

(d) *Alternative test procedures and exemptions.* (1) The manufacturer may request an exemption from any specific test(s) described in § 86.1439 for any engine family for which the specific test(s) is not appropriate. The requester will supply relevant test data

and technical support to substantiate the request for an Administrator-granted exemption.

(2) The manufacturer may request alternative test procedures for any engine family for which none of the test procedures described in § 86.1439 is appropriate. The alternative test procedure(s) must be approved in advance by the Administrator in accordance with the provisions of § 85.2208 of this chapter.

(3) If the manufacturer does not submit a written application for use of alternative test procedures or for exemptions from specific test procedures described in § 86.1439 but the Administrator determines that an engine family is not susceptible to satisfactory testing by the procedures set forth in this part, the Administrator shall notify the manufacturer in writing and set forth the reasons for such rejection in accordance with the provisions of § 86.090-22(c).

(4) The emission control information label for any vehicle for which approval of exemptions or alternative test procedure(s) has been granted must note such approval, in accordance with § 86.096-35, in order for the exemptions or alternative procedures to be effective for that vehicle.

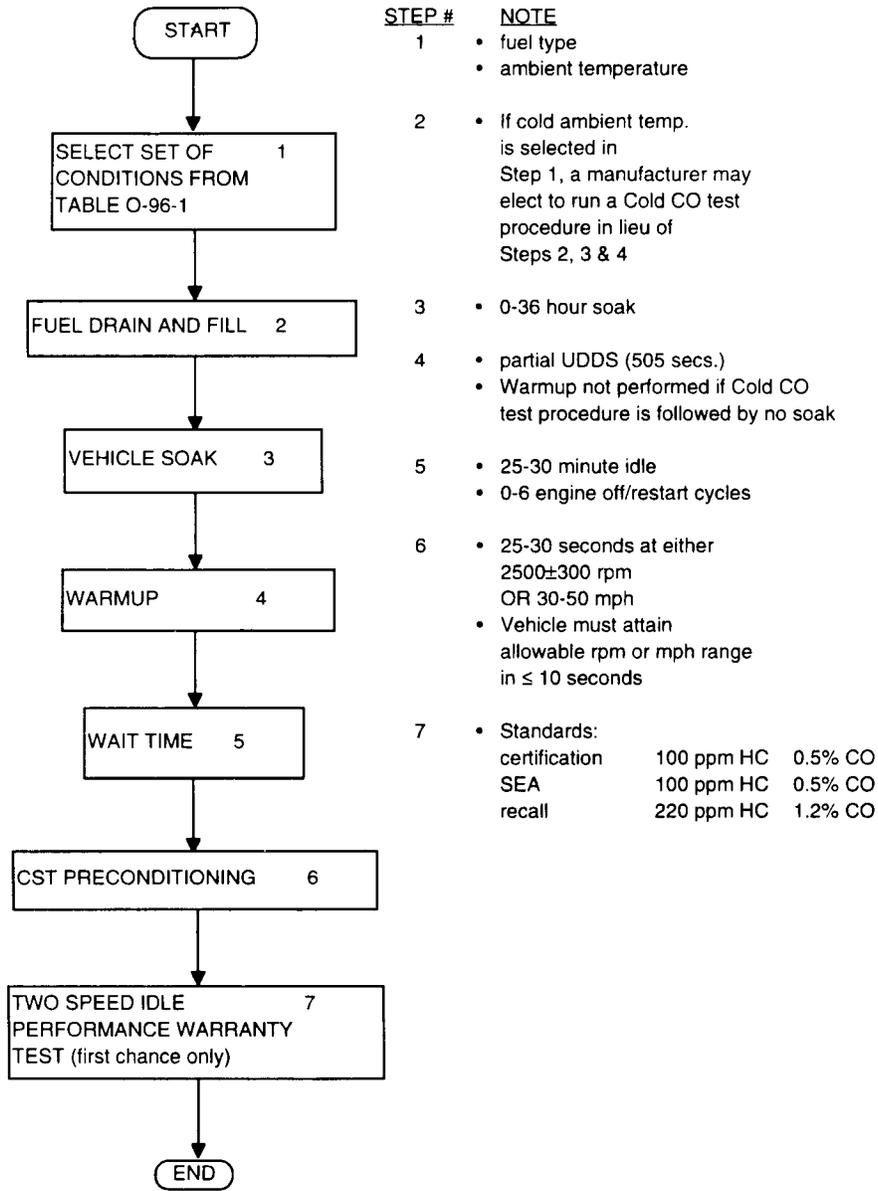
**§§ 86.1428–86.1429 [Reserved]**

**§ 86.1430 Certification Short Test sequence; general requirements.**

(a) The following sequence lists the major steps encountered during the CST. These steps are described in paragraph (b) of this section and in §§ 86.1432, 86.1437, 86.1438, and 86.1439. Testing conducted for the manufacturer's data submittal must be in accordance with the provisions of §§ 86.096-23 and 86.1442.

(1) *Test conditions and procedures.* (i) *Manufacturer's data submittal.* Test conditions must be selected from table O-96-1 of paragraph (b) of this section. Further, the vehicle preparation and test run must be those described in §§ 86.1432 and 86.1437. Figure O96-1 shows the steps encountered as the test vehicle undergoes the procedures subsequently described.

**FIGURE O96-1  
MANUFACTURER CST DATA SUBMITTAL REQUIREMENTS**



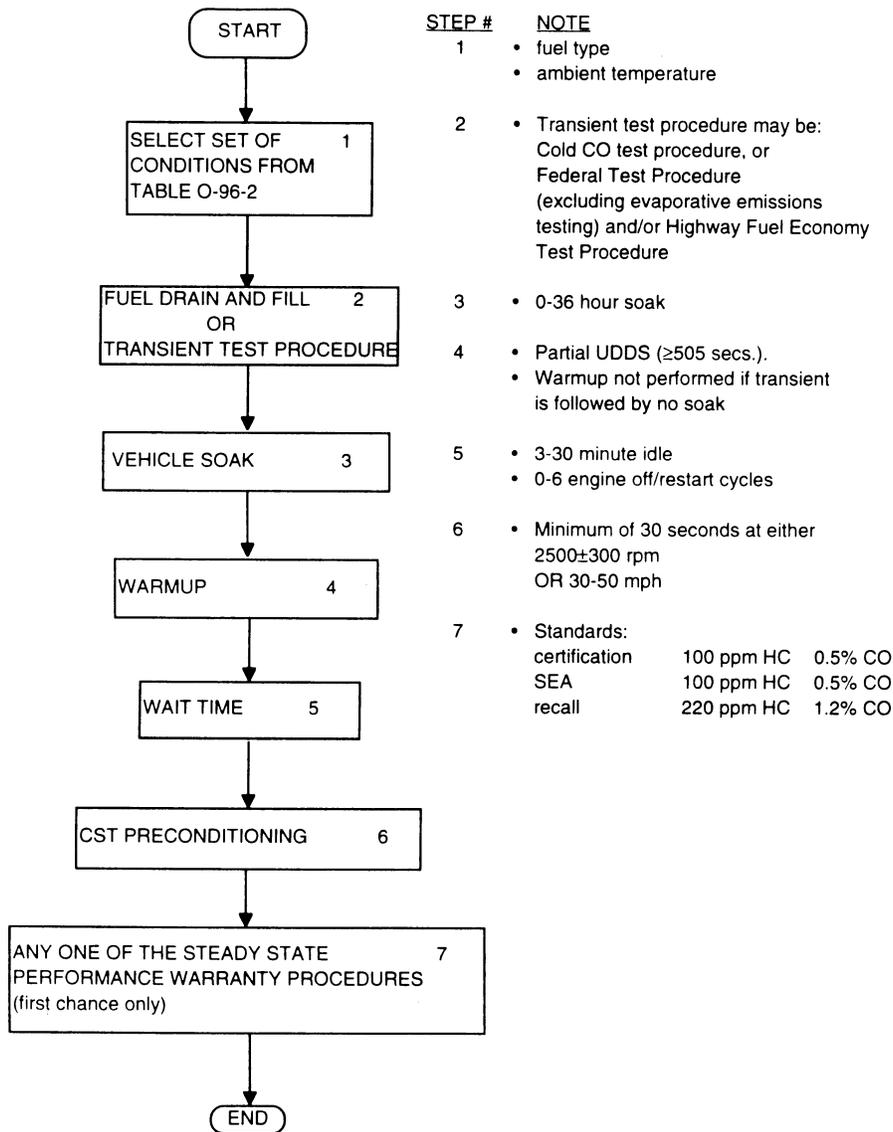
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(ii) *Testing by the Administrator.* Test conditions are selected from among the set of conditions in table O-96-2 of paragraph (b) of this section. Further, one or more CST(s) are performed in

accordance with the provisions of §§ 86.1432, 86.1438, and 86.1439. Figure O96-2 shows the steps encountered as the test vehicle undergoes the procedures subsequently described.

**FIGURE O96-2  
EPA CST COMPLIANCE TESTING REQUIREMENTS**



(2) Fuel tank drain and refill, or transient test procedure. Fuel tank drain and fill is performed or a transient test procedure is performed, as described in §86.1432(b).

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(3) *Soak.* A soak lasting up to 36 hours in duration may optionally be performed as specified in § 86.1432(c).

(4) *Warmup operation—(i) Manufacturer’s data submittal.* The test vehicle may optionally be administered the first 505 seconds of the Urban Dynamometer Driving Schedule (UDDS), as described in § 86.1432(d)(1). If the test vehicle was subjected to a Cold CO Test Procedure in lieu of the steps listed in paragraphs (a) (2) through (4) of this section, it will not receive a warmup.

(ii) *Testing by the Administrator.* (A) If the test vehicle has not been subjected to a transient loaded test procedure as permitted in § 86.1432(b)(2) prior to the wait time, or if the vehicle has undergone a soak period exceeding 60 seconds, the test vehicle must be administered, at minimum, the first 505 seconds of the UDDS, as described in § 86.1432(d)(2).

(B) If the test vehicle is exposed to ambient temperatures outside of the specified temperature range between an initial test and a retest, it will receive a full UDDS, as described in § 86.1438.

(5) *Wait time—(i) Manufacturer’s data submittal.* A 25 to 30 minute vehicle wait time of free idle, with optional engine off/restart cycles, must be performed as specified in § 86.1437(b).

(ii) *Testing by the Administrator.* A three to 30 minute vehicle wait time of free idle with optional engine off/restart cycles must be performed as specified in § 86.1438(b).

(6) *Preconditioning—(i) Manufacturer’s data submittal.* Optional preconditioning

consisting of 2500 rpm (±300 rpm) idle operation or loaded operation at 30 mph to 50 mph (48 kph to 80 kph) may be performed for 25 to 30 seconds as specified in § 86.1437(c).

(ii) *Testing by the Administrator.* Preconditioning consisting of 2500 rpm (±300 rpm) idle operation or loaded operation at 30 mph to 50 mph (48 kph to 80 kph) must be performed for a minimum of 30 seconds as specified in § 86.1438(c).

(7) *Test procedure—(i) Manufacturer’s data submittal.* The test procedure consists of the Two Speed Idle Test (first chance only), which is performed as specified in § 86.1437 (e) through (g).

(ii) *Testing by the Administrator.* The Administrator will perform one or more test procedures described in § 86.1439. For recall program testing, in-use vehicles will be set to the manufacturer’s specifications, if appropriate.

(b) The sets of test conditions identified in this subpart are based on the test fuel type present in the vehicle fuel tank and the ambient temperature during the test. Tables O-96-1 and O-96-2 outline the specific ranges of conditions to be employed in the CST. The manufacturer must perform the CST described in this subpart under at least one of the three sets of conditions shown in table O-96-1 for data submittal under the provisions of § 86.096-23. The set of conditions selected is the one that, in the manufacturer’s best judgment, represents the worst case, meaning the highest probability that the test vehicle would fail.

TABLE O—96-1—SETS OF CONDITIONS TO BE EMPLOYED FOR MANUFACTURER’S DATA SUBMITTAL IN THE CST

	Test Option 1	Test Option 2	Test Option 3
	Cold Temperature	Moderate Temperature	Warm Temperature
Fuel Type .....	Cold CO fuel (see table in § 86.213-94).	Cold CO fuel (see table in § 86.213-94).	Otto-cycle test fuel (see table in § 86.113-94(a)(1))
Ambient temperature .....	15 °F—25 °F (–9 °C—–4 °C)	68 °F—86 °F (20 °C—30 °C) ...	86 °F—96 °F (30 °C—36 °C)

TABLE O—96-2—SETS OF CONDITIONS TO BE EMPLOYED BY THE ADMINISTRATOR IN THE CST

	Test Option 1	Test Option 2	Test Option 3
	Cold Temperature	Moderate Temperature	Warm Temperature
Fuel Type .....	Cold CO fuel (see table in § 86.213-94).	Otto-cycle test fuel or Cold CO fuel (see table in § 86.113-94(a)(1) or in § 86.213-94).	Otto-cycle test fuel (see table in § 86.113-94)

TABLE O-96-2—SETS OF CONDITIONS TO BE EMPLOYED BY THE ADMINISTRATOR IN THE CST—Continued

	Test Option 1	Test Option 2	Test Option 3
	Cold Temperature	Moderate Temperature	Warm Temperature
Ambient temperature .....	15 °F—25 °F (−9 °C—−4 °C)	68 °F—86 °F (20 °C—30 °C) ...	86 °F—96 °F (30 °C—36 °C)

(c) For testing conducted in accordance with this subpart, the ambient temperature to which the test vehicle is exposed must not fall outside the range specified in this paragraph.

(1) *For the cold temperature compliance pathways—(i) For the manufacturer's data submittal.* The ambient temperature for the steps following the fuel drain and fill or transient test procedure must remain between 15 °F and 25 °F (between −9 °C and −4 °C).

(ii) *For testing by the Administrator.* The ambient temperature for the remainder of the compliance pathway beginning with the step following the fuel drain and fill must remain between 15 °F and 68 °F (between −9 °C and 20 °C). In addition, from the warmup operation step (if performed) or the wait time step forward through the remainder of the CST, the ambient temperature must be maintained within ± 5 °F (3 °C) of the selected ambient temperature of the CST.

(2) *For the moderate and warm temperature compliance pathways—(i) For the manufacturer's data submittal.* The ambient temperature for the steps preceding the warmup operation (if performed) or the wait time (if no warmup is performed) must remain within the specific ambient temperature range selected for the CST, that is, either moderate or warm, as specified in table O-96-1.

(ii) *For testing by the Administrator.* The ambient temperature for the steps preceding the warmup operation (if performed) or the wait time (if no warmup is performed) must remain between 68 °F and 96 °F (between 20 °C and 36 °C), except as provided in paragraph (c)(3) of this section.

(iii) The warmup operation (if performed) and the entire test run from the wait time forward, as described in § 86.1437 or § 86.1438, must remain within the specific ambient temperature range selected for the CST, that is, either

moderate or warm, as specified in tables O-96-1 and O-96-2.

(3) *For testing by the Administrator only.* If Cold CO fuel is selected in conjunction with the moderate temperature compliance pathway, the specific provisions described in paragraphs (c)(3) (i) and (ii) of this section apply.

(i) The ambient temperature must be maintained within the moderate temperature range, as specified in table O-96-2, from the drain and fuel step forward throughout the remainder of the compliance pathway.

(ii) The ambient temperature of the test cell may not exceed 80 °F (27 °C) for the warmup operation (if performed) nor for the entire test run from the wait time forward, as described in §§ 86.1438 and 86.1439.

(d) If the engine stalls at any time during the test run, the CST is void unless the stall falls during the wait time within the guidelines for engine off time described in § 86.1437 (b) and (d) and § 86.1438(d)(1)(i).

[58 FR 58426, Nov. 1, 1993; 59 FR 33913, July 1, 1994]

§ 86.1431 [Reserved]

§ 86.1432 Vehicle preparation.

(a) The test conditions to be employed in the CST procedure must be selected from the applicable options specified in table O-96-1 or table O-96-2 of § 86.1430(b). The fuel tank must be fitted, as required, to accommodate a fuel drain at the lowest point possible in the tank(s) as installed on the vehicle.

(b) *Fuel tank drain and fill, or transient test procedure—(1) CST performed as a stand-alone procedure.* For the first CST compliance pathway performed as a stand-alone procedure on a particular test vehicle, the fuel tank(s) must be filled to approximately the prescribed "tank fuel volume" (as defined in § 86.082-2) with the specified test fuel.