§ 92.122 Smoke meter calibration.

The smokemeter shall be checked according to the following procedure prior to each test:

(a) The zero control shall be adjusted under conditions of ''no smoke'' to give a recorder or data collection equipment response of zero;

(b) Calibrated neutral density filters having approximately 10, 20, and 40 percent opacity shall be employed to check the linearity of the instrument. The filter(s) shall be inserted in the light path perpendicular to the axis of the beam and adjacent to the opening from which the beam of light from the light source emanates, and the recorder response shall be noted. Filters with exposed filtering media should be checked for opacity every six months; all other filters shall be checked every year, using NIST or equivalent reference filters. Deviations in excess of 1 percent of the nominal opacity shall be corrected.

§ 92.123 Test procedure; general requirements.

(a) The locomotive/locomotive engine test procedure is designed to determine the brake specific emissions of hydrocarbons (HC, total or non-methane as applicable), total hydrocarbon equivalent (THCE) and aldehydes (as applicable), carbon monoxide (CO), oxides of nitrogen (NO$_X$), and particulates, and the opacity of smoke emissions. The test procedure consists of measurements of brake specific emissions and smoke opacity at each throttle position and of measurements of smoke opacity during each change in throttle position as engine power is increased. If less than 2 percent of the total exhaust flow is removed for gaseous and particulate sampling in notches 1 through 8, and if less than 4 percent of the total exhaust flow is removed for gaseous and particulate sampling at idle and dynamic brake, all measurements of gaseous, particulate and smoke emissions may be performed during one test sequence. If more than 2 percent, or 4 percent as applicable, of the total exhaust is removed for gaseous and particulate sampling, measurements of gaseous, and particulate emissions are performed during one test sequence, and a second test sequence is performed for the measurement of smoke.

(1) In the raw exhaust sampling procedure, sample is collected directly from the exhaust stream during each throttle setting. Particulates are collected on filters following dilution with ambient air of another raw exhaust sample. The fuel flow rate for each throttle setting is measured.

(2) For locomotives with multiple exhaust stacks, smoke testing is required for only one of the exhaust stacks provided the following conditions are met:

(i) The stack that is not tested is not visibly smokier than the stack that is tested, and

(ii) None of the measured opacity values for the stack tested are greater than three-quarters of the level allowed by any of the applicable smoke standards.

(b) The test consists of prescribed sequences of engine operating conditions (see §§ 92.124 and 92.126) to be conducted either on a locomotive; or with the engine mounted on an engine dynamometer, or attached to a locomotive alternator/generator.

(1) *Locomotive testing.* (i) The electrical power output produced by the alternator/generator at each throttle setting is recorded as measurements of either the wattmeter or the output voltage, phase angle, and current flow through the electrical resistance bank.

(ii) The locomotive fuel supply system shall be disconnected and a system capable of measuring the net rate at which fuel is supplied to the engine (accounting for fuel recycle) shall be connected.

(2) *Engine testing.* (i) When the test is performed using a dynamometer, engine torque and rpm shall be recorded during each throttle setting.

(ii) The complete engine shall be tested, with all emission control devices, and charge air cooling equipment installed and functioning.

(iii) On air-cooled engines, the engine cooling fan shall be installed.

(iv) Additional accessories (e.g., air compressors) shall be installed or their loading simulated if typical of the in-use application. In the case of simulated accessory loadings, the manufacturer shall make available to the Administrator documentation which