§ 33.85 Calibration tests.

(a) Each engine must be subjected to those calibration tests necessary to establish its power characteristics and the conditions for the endurance test specified §33.87. The results of the power characteristics calibration tests form the basis for establishing the characteristics of the engine over its entire operating range of speeds, pressures, temperatures, and altitudes. Power ratings are based upon standard atmospheric conditions with no airbleed for aircraft services and with only those accessories installed which are essential for engine functioning.

(b) A power check at sea level conditions must be accomplished on the endurance test engine after the endurance test and any change in power characteristics which occurs during the endurance test must be determined. Measurements taken during the final portion of the endurance test may be used in showing compliance with the requirements of this paragraph.

(c) In showing compliance with this section, each condition must stabilize before measurements are taken, except as permitted by paragraph (d) of this section.

(d) In the case of engines having 30-second OEI, and 2-minute OEI ratings, measurements taken during the applicable endurance test prescribed in §33.87(f) (1) through (8) may be used in showing compliance with the requirements of this section for these OEI ratings.

§ 33.87 Endurance test.

(a) General. Each engine must be subjected to an endurance test that includes a total of at least 150 hours of operation and, depending upon the type and contemplated use of the engine, consists of one of the series of runs specified in paragraphs (b) through (g) of this section, as applicable. For engines tested under paragraphs (b), (c), (d), (e) or (g) of this section, the prescribed 6-hour test sequence must be conducted 25 times to complete the required 150 hours of operation. Engines for which the 30-second OEI and 2-minute OEI ratings are desired must be further tested under paragraph (f) of this section. The following test requirements apply:

1. The runs must be made in the order found appropriate by the FAA for the particular engine being tested.

2. Any automatic engine control that is part of the engine must control the engine during the endurance test except for operations where automatic control is normally overridden by manual control or where manual control is otherwise specified for a particular test run.

3. Except as provided in paragraph (a)(5) of this section, power or thrust, gas temperature, rotor shaft rotational speed, and, if limited, temperature of