fires [10g] likely to be encountered. Consideration should also be given to the agent's ratio of extinguishing ability to quantity required, toxicity,[10h] corrosive properties, freezing point, and to the unit's gross weight, ease of operation, and maintenance requirements. Aircraft hand fire extinguishers using agents having a rating in toxicity Group 4 or under should not be installed in airplanes for which an application for a type certificate was made on or after March 5, 1952.[10i]

[(c) *Types of extinguishers.*

(1) *Carbon dioxide extinguishers.*[10j] Carbon dioxide extinguishers are acceptable when the principal hazard is a Class B or Class C fire. Carbon dioxide portable installations should not exceed five pounds of agent per unit to insure extinguisher portability and to minimize crew compartment CO_2 concentrations.

[(2) *Water extinguishers.*[10k] Water extinguishers are acceptable when the principal hazard is a Class A fire and where a fire might smolder if attacked solely by such agents as carbon dioxide or dry chemical.

[(3) *Vaporizing liquid extinguishers.*[10l] Vaporizing liquid type fire extinguishers are acceptable when the principal hazard is a Class B or Class C fire.

[(4) *Dry chemical extinguishers.*[10m] Dry chemical extinguishers are acceptable where the principal hazard is a Class B or Class C fire. The extinguisher should not be used in crew compartments because of interference with visibility during discharge and because of the possibility of the nonconductive powders being discharged on electrical contacts not otherwise involved.]

(21 F. R. 5735, Aug. 1, 1956, effective Sept. 1, 1956.)

[4b.381–1 *Hand fire extinguishers for cabin interiors (CAA policies which apply to sec. 4b.381 (e) and (f)).*

(a) *Crew compartment.* At least one hand fire extinguisher suitable for Class B and C fires should be installed in the crew compartment. Additional extinguishers may be required as dictated by potential fire hazards, extinguisher accessibility, and agent capacity.

(1) The extinguisher(s) should be readily accessible to crew members and mounted so as to facilitate quick removal from its mounting bracket.

(b) *Passenger compartments.* Fire extinguisher type and capacity should be based on the hazard, e. g., if a unit must protect large accessible baggage compartments, galleys, or electrical equipment racks, portables larger than minimum size should be provided. The size of the extinguisher should not, however, preclude ready portability by a flight attendant or even a passenger.

(1) Each fire extinguisher should be located adjacent to the most prominent hazard such as a baggage compartment, galley, etc.

(i) Where no such obvious hazard exists, or when only one unit is required, the extinguisher should be located at the flight attendant's station or at the entrance door on aircraft with no flight attendant.

(ii) Where two or more extinguishers are required and location is not dictated by

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[[10g] *Class A fires*—Fires in ordinary combustible materials where the quenching and cooling effects of quantities of water, or solutions containing large percentages of water, are of first importance.

Class B fires—Fires in flammable liquids, greases, etc., where a blanketing effect is essential.

Class C fires—Fires in electrical equipment, where the use of a nonconducting extinguishing agent is of first importance.]

[[10h] The toxicity ratings listed by the Underwriters' Laboratories for some of the commonly known fire extinguisher chemicals are as follows:

Bromochloromethane	Group 3
Bromotrifluoromethane	Group 6
Carbon dioxide	Group 5
Carbon tetrachloride	Group 3
Dibromodifluoromethane	Group 4
Methyl bromide	Group 2]

[[10i] Many transport type airplanes, due to their type certification basis, are not required to comply with § 4b.380. For such airplanes, it is recommended that hand fire extinguishers employing agents in toxicity Group 4 or higher be installed when renewing or replacing hand fire extinguishers employing toxic agents.]

[[10j] Carbon dioxide is noncorrosive and will not injure food or fabric. Extinguishers must be winterized if they are to operate at temperatures below −40° F. Approved unit capacity ranges upwards from two pounds. These extinguishers have only limited value for the extinguishment of Class A fires, the action of the agent being to blanket the fire by excluding oxygen.]

[[10k] Certain antifreeze agents may be corrosive. Approved extinguishers are either protected against freezing to −40° F. or must be handled as any other unprotected water on the airplane. Technical Standard Order C19a covers a minimum 1⅜ quart capacity approved water extinguisher. Water extinguishers of the kinds currently on the market are not acceptable for flammable liquid or electrical fires.]

[[10l] These agents are not normally corrosive to aircraft structure and approved units will be satisfactorily protected against freezing to at least −40° F. Up to the effective date of this policy, no vaporizing liquid extinguisher with Underwriters' Laboratories toxicity rating higher than Group 4 is commercially available. Approved units have a minimum capacity of one quart. They are of only limited value for the extinguishment of Class A fires, having a cooling effect of about one-tenth that of water.]

[[10m] The powder is nontoxic and noncorrosive and approved units are protected against freezing to at least −40° F. Minimum capacity of approved units is two pounds.]

be one which could be easily overridden such as a spring-loaded ball type latch.

(b) Flexible gates such as those made from webbing are not acceptable on the basis that persons may become entangled during an emergency egress. The use of a barrier to prevent persons from inadvertently opening the door in flight does not eliminate the need for a safety means to provide for possible malfunctioning of the primary locking mechanism; however, the auxiliary safetying means of section 4b.356–2 may eliminate the need for a restricted zone.

(20 F. R. 2279, Apr. 8, 1955, effective Apr. 30, 1955.)

4b.356–5 *Direct visual inspection (CAA policies which apply to sec. 4b.356 (e)).* The means of complying with section 4b.356 (e) will depend upon the type of door and locking mechanism used. It should be determined in all cases that means are provided to ascertain that an unsatisfactory condition does not exist after closing the door. In some instances a central window for viewing the position of the mechanism may be sufficient while other cases may require one or more windows in the door frame to permit inspection of the bayonet location relative to that portion of the lock in the door frame. The need for and/or the number and location of inspection openings or windows will depend on the type of door and locking mechanism used.

(20 F. R. 2279, Apr. 8, 1955, effective Apr. 30, 1955.)

4b.356–6 *Visual indicating system (CAA policies which apply to sec. 4b.356 (e)).*[10b]

(a) The visual indicating system may consist of an indicator for each individual door, or a system connecting all doors in series. If the latter system is used, it need not necessarily show which door is not fully locked.

(b) It is not necessary that more than one crew member be able to ascertain by a visual signal that all external doors, normally used by the crew in supplying the airplane, or in loading and unloading passengers and cargo, are fully closed and locked. The visual signal should be located so that it may easily be seen by the appropriate crew member from his station.

(20 F. R. 2279, Apr. 8, 1955, effective Apr. 30, 1955.)

4b.358–1 *Application of loads (CAA policies which apply to sec. 4b.358).* The actual forces acting on seats, berths, and supporting structure in the various flight, ground and emergency landing conditions will consist of many possible combinations of forward, sideward, downward, upward, and aft loads. However, in order to simplify the structural analysis and testing of these structures, it will be permissible to assume that the critical load in each of these directions, as determined from the prescribed flight, ground, and emergency landing conditions, acts separately. If the applicant desires, selected combinations of loads may be used, provided the required strength in all specified directions is substantiated. (TSO C–25, Aircraft Seats and Berths, outlines acceptaple methods for testing seats and berths.)

4b.371–1 *Carbon monoxide detection (CAA policies which apply to sec. 4b.371).* Policies outlined in section 4b.467–1 will apply.

(19 F. R. 4463, July 20, 1954, effective Sept. 1, 1954.)

4b.372–1 *Combustion heaters equipped with carbon dioxide fire extinguishers (CAA policies which apply to sec. 4b.372).* The policies as outlined in section 4b.484–1 apply.

(19 F. R. 4463, July 20, 1954, effective Sept. 1, 1954.)

4b.380–1 *Protective breathing equipment (CAA policies which apply to sec. 4b.380 (c)).* The policies outlined in section 4b.651–2 apply.

(19 F. R. 4463, July 20, 1954, effective Sept. 1, 1954.)

[4b.380–2 *Approved hand fire extinguishers (CAA policies which apply to sec. 4b.380 (a)).*

[(a) *Standards for approval.* An approved type fire extinguisher includes those approved by the Underwriters' Laboratories, Inc., Factory Mutual Laboratories, Underwriters' Laboratories of Canada, or any other agency deemed qualified by the Administrator, or approved by the Administrator in accordance with the provisions of section 4b.18.

[(b) *General.* When selecting a hand fire extinguisher for use in aircraft, consideration should be given to the most appropriate extinguishing agent for the type and location of

[10b] The objective herein is to be able to ascertain by visual means that the door and/or locking means is sufficiently engaged to eliminate hazards emanating from an improperly closed door. Outward opening doors present a different problem from inward opening doors.

special hazards, the units should be located at opposite ends of the passenger cabin.

(2) An extinguisher should be installed in each separate cabin, lounge, or smoking compartment unless the extinguisher in the adjacent compartment is in close proximity and easily accessible.

(3) All extinguishers should be easily accessible and clearly visible to the crew and passengers; however, if they cannot be clearly visible, their location should be indicated by a clearly legible placard or sign visible to the crew and passengers.][10a]

(21 F. R. 5735, Aug. 1, 1956, effective Sept. 1, 1956.)

4b.384-1 *Cargo and baggage compartments equipped with carbon dioxide fire extinguishers (CAA policies which apply to sec. 4b.384).* The policies outlined in section 4b.484-1 apply.

(19 F. R. 4463, July 20, 1954, effective Sept. 1, 1954.)

4b.400-1 *Engine and propeller operation (CAA policies which apply to sec. 4b.400).* The engines and propellers should be observed during the flight test program to determine satisfactory operation of these systems and their associated components.

(19 F. R. 4463, July 20, 1954, effective Sept. 1, 1954.)

4b.401-1 *Approval of automatic propeller feathering system (CAA policies which apply to sec. 4b.401 (c)).* All parts of the feathering device which are integral with the propeller or attached to it in a manner that may affect propeller airworthiness should be considered from the standpoint of the applicable provisions of Part 14. The determination of the continuing eligibility of the propeller under the existing type certificate, when the device is installed or attached, will be made on the following basis:

(a) The automatic propeller feathering system should not adversely affect normal propeller operation and should function properly under all temperature, altitude, airspeed, vibration, acceleration, and other conditions to be expected in normal ground and flight operation.

(b) The automatic device should be demonstrated to be free from malfunctioning which may cause feathering under any conditions other than those under which it is intended to operate. For example, it should not cause feathering during:

(1) Momentary loss of power.

(2) Approaches with reduced throttle settings.

(c) The automatic propeller feathering system should be capable of operating in its intended manner whenever the throttle control is in the normal position to provide takeoff power. No special operations at the time of engine failure should be necessary on the part of the crew in order to make the automatic feathering system operative.

(d) The automatic propeller feathering installation should be such that not more than one engine will be feathered automatically even if more than one engine fails simultaneously.

(e) The automatic propeller feathering installation should be such that normal operation may be regained after the propeller has begun to feather automatically.

(f) The automatic propeller feathering installation should incorporate a switch or equivalent means by which to make the system inoperative. (See also sec. 4b.10-2.)

(19 F. R. 1818, Apr. 2, 1954, effective Apr. 2, 1954.)

4b.401-2 *Propeller feathering system operational tests (CAA policies which apply to sec. 4b.401 (c)).*

(a) Tests should be conducted to determine the time required for the propeller to change from windmilling (with the propeller controls set for takeoff) to the feathered position at the takeoff safety speed, V_2.

(b) The propeller feathering system should be tested to demonstrate nonrotation up to 1.2 times the maximum level flight speed with one engine inoperative or the speed employed in emergency descents whichever is higher with:

Critical engine—inoperative.
Wing flaps—retracted.
Landing gear—retracted.
Cowl flaps—closed.

A sufficient speed range should be covered to assure that the propeller feathering angle established on the basis of the high speed requirement should not permit rotation in reverse at the lower speeds. In addition, the

[[10a] It is recommended that signs indicating location of extinguishers have letters at least ⅜ inch in height mounted on a contrasting background.]

propeller should not inadvertently unfeather during these tests.

(c) In order to demonstrate that the feathering system operates satisfactorily, the propeller should be feathered and unfeathered at the maximum operating altitude established in accordance with section 4b.722. The following data should be recorded:

Time to feather propeller at the one-engine-inoperative cruising speed.

Time to unfeather propeller to 1000 r. p. m. at maximum operating altitude and one-engine-inoperative cruising speed.

Altitude of propeller feathering tests.

Ambient air temperature of propeller feathering tests.

(19 F. R. 4463, July 20, 1954, effective Sept. 1, 1954.)

4b.402-1 *Reverse thrust propeller installations (CAA policies which apply to sec. 4b.402).* The Administrator may approve reverse thrust propeller installations which comply with the following:

(a) Exceptional pilot skill should not be required in taxying or any condition in which reverse thrust is to be used.

(b) Necessary operating procedures, operating limitations and placards should be established.

(c) The airplane control characteristics should be satisfactory with regard to control forces encountered, and buffeting should not be likely to cause structural damage.

(d) The directional control should be adequate using normal piloting skill.

(e) It should be determined that no dangerous condition is encountered in the event of sudden failure of one engine in any likely operating condition.

(f) The operating procedures and airplane configuration should be such as to provide reasonable safeguards against serious structural damage to parts of the airplane due to the reverse airflow.

(g) It should be determined that the pilot's vision is not dangerously obscured under normal operating conditions on dusty or wet runways and where light snow is on the runway.

(h) It should be determined that the pilot's vision is not dangerously obscured by spray due to reverse airflow under normal water operating conditions with seaplanes.

(i) The procedure and mechanisms for reversing should provide a reverse idle setting such that without requiring exceptional piloting skill at least the following conditions are met:

(1) Sufficient power is maintained to keep the engine running at an adequate speed to prevent engine stalling during and after the propeller reversing operation.

(2) The propeller does not overspeed during and after the propeller reversing operation.

(3) This idle setting does not exceed 25% of the maximum continuous rating.

(j) The engine cooling characteristics should be satisfactory in any likely operating condition.

(k) The use of reverse thrust will be permitted, in combination with the brakes installed, in establishing the accelerate-stop distance, if it is shown that such use provides a level of safety equivalent to that when wheel brakes alone are used, taking into consideration pilot skill required and the likelihood of attaining the necessary performance under conditions of simulated engine failure. Either of the following conditions and limitations should be used:

(1) Symmetrical reverse thrust on (n-2) engines with power not to exceed the maximum continuous rating, where n is equal to the number of engines.

(2) Asymmetrical reverse thrust on (n-1) engines in reverse idle setting. This operation should be permitted only where it can be shown that with use of this asymmetrical reverse thrust the airplane can be satisfactorily controlled on a wet runway.

(l) On four engine aircraft the use of reverse thrust will be permitted in combination with the brakes installed in establishing the landing distance if it is shown that such use provides a level of safety equivalent to that when wheel brakes alone are used taking into consideration pilot skill required and the likelihood of attaining the necessary performance under conditions of simulated engine failure. Determination of landing distance should be conducted in accordance with section 4b.122 and section 4b.123 with the following additional provisions:

(1) A steady gliding approach should be made on an ILS flight path corresponding to

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the average value of 2½ degrees, except that this prescribed approach will not be required if the application of reverse thrust credit is limited to operations on dry and ice free runways under VFR conditions.

(2) The two most critical symmetrical engines may be placed in the reverse idle position not sooner than four seconds after the aircraft is firmly on the ground.

(3) An accelerated service test should be conducted in accordance with section 4b.16 (b) to establish reliability of the installation which should include not less than 25 landings, covering a range of power settings during the approach and a range of altitudes for which approval is desired.

(20 F. R. 2279, Apr. 8, 1955, effective Apr. 30, 1955.)

4b.406–1 *Fluid type propeller de-icing test (CAA policies which apply to sec. 4b.406).* If the propellers are equipped with fluid type de-icers, the flow test should be conducted starting with a full tank of fluid and operated at maximum flow for a 15-minute timed period. The operation should be checked at all engine speeds and powers. The tank should be refilled to determine the amount of fluid used after the airplane is landed.

(19 F. R. 4463, July 20, 1954, effective Sept. 1, 1954.)

4b.416–1 *Unusable fuel (CAA interpretation which applies to sec. 4b.416).* The unusable fuel should be considered that fuel drainable from the tank sump with the airplane on the ground in a normal attitude with the wings leveled laterally after a fuel tank runout [11] test has been made.

4b.416–2 *Determination of unusable fuel supply and fuel system operation (CAA policies which apply to sec. 4b.416).*

(a) *General test program.* Tests for unusable fuel may be conducted at optional altitudes with all engines operating. The auxiliary fuel pumps should be turned "off" or "on" during the tests depending upon the normal operating procedure established for the airplane, or if the auxiliary pumps are being considered for use as emergency pumps they should be inoperative to at least 6,000 feet. The unusable fuel should be determined in each unique tank selection arrangement used for takeoff and landing by making runouts during the most critical of the three conditions specified in (b), (c), and (d). When a runout occurs, the fuel selector switch should be turned to a full tank. It should be possible to regain engine fuel pressure in not more than 20 seconds after switching to any full tank when engine malfunctioning has become apparent due to depletion of the fuel supply in any tank from which the engine can be fed after the airplane has been restored to a level flight condition. The tanks should be drained after landing to determine the unusable fuel quantity. In the case of fuel in tanks other than those used for takeoff and landing, the unusable fuel should be determined in the manner prescribed in (b) or during ground tests.

(b) *Level flight at maximum continuous power or at the power required for level flight at* V_C *whichever is the lesser, section 4b.416 (b) (1).*

(1) *Configuration.* This test should be conducted in the configuration that follows:

Weight—optional.
C. G. position—optional.
Wing flaps—retracted.
Landing gear—retracted.
Cowl flaps—optional.

(2) *Test procedure.* See (a).

(c) *Climb with takeoff power at speed* V_2*, section 4b.416 (b) (2).*

(1) *Configuration.* This test should be conducted in the configuration that follows:

Weight—not more than maximum landing weight.
C. G. position—optional.
Wing flaps—takeoff position.
Landing gear—retracted.
Cowl flaps—optional.

(2) *Test procedure.* See (a).

(d) *Rapid application of maximum continuous power and subsequent transition to a climb at a speed* V_2 *determined in accordance with section 4b.114 (b), with retraction of flaps and landing gear, from a power-off glide at 1.3* V_{s_0} *with flaps and landing gear down at landing weight, section 4b.416 (b) (3).*

[11] A fuel tank runout is considered to have occurred when the engine fuel pressure shows a marked decrease and/or the first evidence of engine malfunctioning occurs.

(1) *Configuration.* This test should be conducted in the configuration that follows:

C. G. position—optional.

Cowl flaps—optional.

(2) *Test procedure.* See (a).

(19 F. R. 4463, July 20, 1954, effective Sept. 1, 1954.)

4b.417–1 *Hot weather fuel system tests (CAA policies which apply to sec. 4b.417).*

(a) Hot weather fuel system tests should be conducted with fuel in the tanks normally used for takeoff and landing and with the maximum number of engines drawing fuel from the tank as would normally occur in flight. In the case of symmetrical fuel tank systems, the tests may be confined to one of each such system. Unweathered fuel should be used during these demonstrations. The fuel temperature should be 110° F. just prior to takeoff. If the fuel must be heated to this temperature, caution should be taken to prevent overheating during the process. The auxiliary fuel pumps should be turned "off" or "on" during the tests depending upon the normal operating procedure established for the airplane. If the auxiliary pumps are being considered for use as emergency pumps they should be inoperative to at least 6,000 feet. A fuel pressure failure is considered to occur when the fuel pressure decreases below the minimum prescribed by the engine manufacturer.

(b) *Configuration.* This test should be conducted in the configuration that follows:

Weight—corresponding to operation with full fuel tanks, minimum crew and ballast required to maintain airplane within center of gravity limits.

C. G. position—optional, within allowable limits.

Wing flaps—most favorable position.

Landing gear—retracted.

Cowl flaps—in a position that provides adequate cooling in the hot day condition.

Engines—See (c).

(c) *Test procedure and required data.* The takeoff and climb should be made as soon as possible after the fuel in the tank has been heated to 110° F. All engines should be operating at the takeoff power from 1,000 feet below through the takeoff critical altitude for a time not exceeding the takeoff time limitation. The power should be reduced to maximum continuous power for the remainder of the climb. The airspeed during the climb should not exceed that speed used in demonstrating the requirements specified in section 4b.119 (a). If the engines are normally operated with the auxiliary pumps "off," they should be turned "on" when a fuel pressure failure occurs. Restoration of fuel pressure should be noted and the climb continued to the maximum operating altitude selected by the applicant for certification. The following data should be recorded at reasonable time intervals:

Fuel temperature at start of test.

Fuel pressure at start of test and continuously during climb noting any pressure failures.

Auxiliary fuel pump operation.

Pressure altitude.

Ambient air temperature.

Airspeed.

Engines, r. p. m. and manifold pressure.

Comments on engine operation.

(19 F. R. 4463, July 20, 1954, effective Sept. 1, 1954.)

4b.418–1 *Determination of fuel flow between interconnected tanks (CAA policies which apply to sec. 4b.418).* If there is a possibility of flow between interconnected tanks, it should be demonstrated that this flow is not sufficient to cause fuel to overflow from the tank vents during the conditions specified in section 4b.416 (b) for the determination of unusable fuel. These maneuvers should be accompanied by side slips, skids and other uncoordinated maneuvers that might occur in normal service. The tests should be conducted with full tanks.

(19 F. R. 4464, July 20, 1954, effective Sept. 1, 1954.)

4b.420–1 *Minimum quantity of anti-detonant fluid required (CAA policies which apply to sec. 4b.420 (e)).*

(a) *Airplanes equipped with a common tank for two engines.* The usable capacity of the tank should be sufficient for operation of the engines served by that tank for a duration equal to that determined by Case A, B, or C, whichever is applicable and results in the greater value (see table 2). The capacity

Table 2. Anti-Detonant Tank Capacity

(Total for tank equals sum of totals for both engines served by tank.)

	Case A		Case B		Case C	
	Engine #1	Engine #2	Engine #1	Engine #2	Engine #1	Engine #2
Takeoff	X[1]	X	X	X	X	X
Approach[2]			X		X	X
Landing[3]	X/2[4]	X/2[4]				
Reserve	X/2[1,4]	X/2[1,4]	X		X	X

[1] Wherever "X" appears in the table, it denotes a duration equal to the maximum time for which the use of wet takeoff power is used for determination of the takeoff flight path of the airplane. However, in no case should the value of either "X" or "X/2" be considered to be less than one minute.

[2] Applies as indicated by "X" only if wet takeoff power is used to demonstrate compliance with the approach climb requirement of section 4b.120 (d).

[3] Applies as indicated by "X" only if wet takeoff power is used to demonstrate compliance with the landing climb requirement of section 4b.119 (b).

[4] "X/2" is specified for the reserve in the all-engine operating case rather than "X" because this type of operation is considered less critical than operation with one engine inoperative and the reserve need not therefore be as large.

should be based on the flow rate approved during engine type certification.

Case A. Case A is intended to provide for conditions with all engines operating and, therefore, the approach climb requirement is not involved.

Case B. Case B is intended to provide for failure of one engine during the course of a flight between takeoff and landing and may, therefore, involve the approach climb requirement but not the landing climb requirement.

Case C. Case C provides for failure of an engine during the course of a flight between takeoff and landing on a four-engine aircraft which has two tanks; each feeding a pair of engines on one side of the airplane. The tables show the quantities required to assure an adequate supply of fluid on the side of the airplane opposite to the side on which the failure occurs since this is the critical consideration for determining the tank quantity. Both tanks on the airplane should, of course, have this capacity. For the same reason as in Case B, the landing climb is not involved for Case C, but the approach climb requirement may be involved.

(b) *Airplanes equipped with a separate tank for each engine.* The capacity of the tank should be sufficient for operation of the engine for a duration equal to the greatest value specified for engine #1 in the three cases listed in table 2. However, in no case should the quantity be less than that required for three minutes of engine operation.

(20 F. R. 2280, Apr. 8, 1955, effective Apr. 30, 1955.)

4b.426–1 *Determination of syphoning of fuel system vents (CAA policies which apply to sec. 4b.426).* Taxiing tests should be conducted which involve sharp turns followed by rapid acceleration into the takeoff run and other ground maneuvers to assure that fuel will not escape from, or syphon from, the tank vents; nor should syphoning occur under the flight conditions specified in the test program for section 4b.418–1. All tests should be conducted with full tanks.

(19 F. R. 4464, July 20, 1954, effective Sept. 1, 1954.)

4b.430–1 *Main fuel pump operational tests (CAA policies which apply to sec. 4b.430 (a)).* The ability to operate engines at an altitude of 6,000 feet using engine-driven fuel pumps alone should be demonstrated. The same procedure as outlined in section 4b.417–1 (c) for hot fuel tests should be followed. (This may be a ground test.)

(19 F. R. 4464, July 20, 1954, effective Sept. 1, 1954.)

4b.437–1 *Test procedure for fuel jettisoning (CAA policies which apply to sec. 4b.437).*

(a) In the case where the maximum takeoff weight exceeds 105 percent of the maximum landing weight, provisions should be available for jettisoning fuel from the maximum takeoff weight to the maximum landing weight at the corresponding altitude range of airports for which certification is sought. If the applicant has made sufficient jettisoning tests [12] to prove the safety of the jettisoning system, the tests

[12] The basic purpose of these tests is to determine that the required amount of fuel may be safely jettisoned under reasonably anticipated operating conditions within the prescribed time limit without danger from fire, explosion, or adverse effects on the flying qualities.

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Item	*Test Description*	*Special Instrumentation*
25	Stalls—one engine out.	Rudder control force indicator required only when rudder control forces are critical.
26	Control—takeoff and landing in crosswind.	Wind velocity and direction measurement instrumentation.

3. Power Plant Tests

Item	*Test Description*	*Special Instrumentation*
33, 34, and 35	Cooling tests.	Temperature indicators for critical head, base, oil inlet, coolant temperatures.
36	Carburetor air heat rise.	Temperature indicator for carburetor.

4. Functional and Miscellaneous Tests

Item	*Test Description*	*Special Instrumentation*
41 (a)	Exhaust system—carbon monoxide.	Carbon monoxide detection indicator.
42	Altimeter calibration.	Instrument for precisely determining airplane elevation.

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