United States
Department of
Agriculture

Forest Service
United States
Department of
the Interior

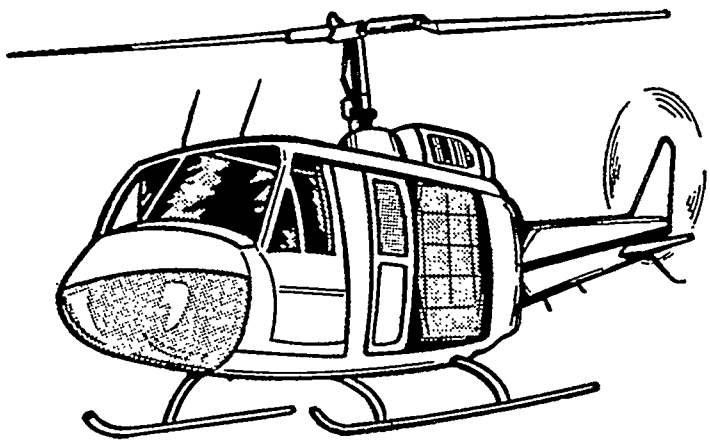
Bureau of Land
Management

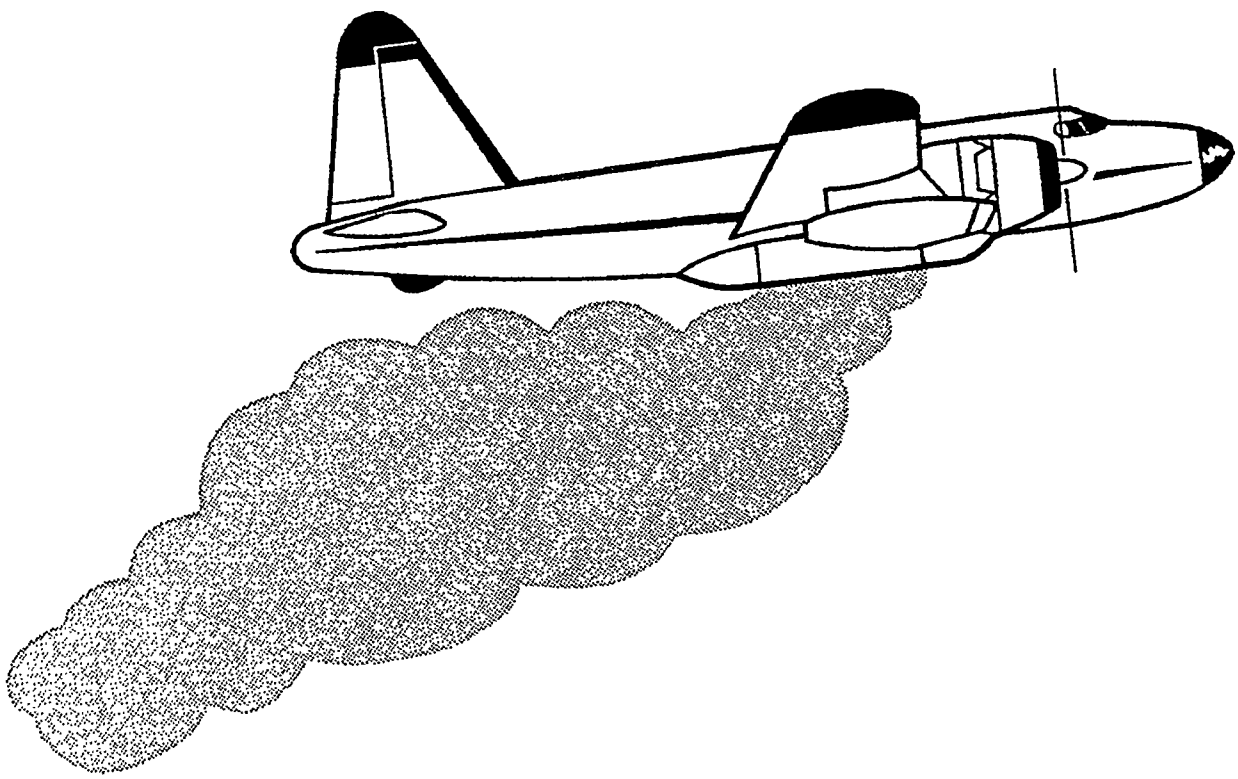
Association of
State Foresters

5100—Fire
November 1991
9157 1806

Interagency Airtanker Board

Charter, Criteria, Forms





Interagency Airtanker Board

Charter, Criteria, Forms

The sponsoring qgencies have developed this information for the guidance of employees, contractors, and cooperating Federal and State agencies, and are not responsible for the interpretation or use of this information by anyone except their own employees. The use of trade, firm, or corporation names in this publication is for the information and convenience of the reader and does not constitute an endorsement by the sponsoring agencies of any product or service to the exclusion of others that may be suitable.

CHARTER

INTERAGENCY AIRTANKER BOARD CHARTER

(Revised at IATB Meeting, 1989)

Purpose of the Board

The purpose of the Interagency Airtanker Board, hereafter referred to as the Board, is to promote the safety, effectiveness, and efficiency of airtankers and Helitankers.

An airtanker is defined as an aerial delivery system that is an aircraft configured for the dispensing of fire retardant or fire suppressant material. Airtanker Board criteria shall apply to fixed-wing aircraft with a maximum capacity of 600 gallons or more and helicopters with a maximum capacity of 400 gallons or more.

Functions of the Board

1. The Board shall administer an evaluation and testing process to determine acceptable types of airtanker aircraft, tanks, and gate designs.

2. The Board shall review and evaluate proposed new or modified airtankers and approve or reject such for use by agencies operating airtankers.

3. The Board shall review the performance of all approved airtankers at a specified time interval to insure their continued conformity to the approval criteria.

4. The Board shall advise the using agencies and industry operators in the overall improvement of airtanker retardant delivery systems.

5. The Board shall maintain a central source of data and information regarding evaluation, testing, selection, and use of airtanker retardant delivery systems for agencies and industry.

6. The Board shall promote cooperation among all using agencies and industry operators in the development, evaluation, improvement, introduction, screening, selection, and approval of experimental and operational airtanker retardant delivery systems.

Operation of the Board

1. Applications proposing airtankers or tank and gate systems shall be submitted to the Chairman of the Board.

2. The Board shall meet annually and other times, at the request of the Chairman, to act on applications and proposals.

3. All requirements of the evaluation procedures, including aircraft modification, tank and gate design, flight and drop tests and certification shall normally be financed by the operator/proponent.

4. A point system, or some other equitable and workable system for evaluation, shall be used by the Board in evaluating all the "operating criteria and evaluation procedures".

5. Changes in the criteria for requirements of airtankers shall be recommended to the authorities appointing members to the Board (Sec 7 below) for approval before inclusion as a requirement.

6. Any airtanker which has significant deficiencies evidenced by use shall be subject to further review by the Board for determination of their continued approval status.

7. Any unresolved Board action shall be jointly submitted to the Director, OAS, Department of the Interior and to the Director, Fire and Aviation Management, USFS, Department of Agriculture for resolution. Acceptance or rejection of the Board action shall be communicated by the Directors to the Board Chairman. In the event of disagreement between the Directors, they may require the Board to supply final agreement.

8. The Board's approval or non-approval of airtankers will be communicated to the appointing authorities. The Chairman of the Board shall communicate the approval of the airtanker(s) to the aircraft owner(s) and airtanker contracting officers of both departments.

9. The appointing authorities shall reserve the right to disapprove the actions of the Board.

10. Nothing in this Section shall preclude any agency from establishing additional requirements or operating limitations in contracting for the use of airtankers.

Membership of the Board

1. The Board shall be composed of eight voting members. Three members shall be appointed by the Director, Office of Aircraft Services (OAS), Department of the Interior. Three members shall be appointed by the Director of Fire and Aviation Management, U.S. Forest Service (USFS), Department of Agriculture. One member shall be appointed jointly by the two Directors from a list of candidates submitted by the National Association of State Foresters. The eighth member, who shall serve as Chairman, shall be appointed jointly by the two Directors for a term not to exceed 4 years. Reappointment for a second term is allowed.

2. The Board may call upon advisors as needed and these may come from industry, States, Research, Technology and Development, FAA, contracting or other technical specialists, to work with the Board, but they shall not be voting members.

3. Membership on the Board and participation as advisors to the Board shall be with the concurrence of the individual's organization. Individual expenses incident to the Board operations shall be funded by the unit of assignment of the individual, or the company of employment.

APPROVAL PROCEDURES

The Interagency Airtanker Board, hereinafter referred to as the Board, has established the following program as a step-by-step process of selection and approval of the airtanker aircraft and tanks. The responsibility of each person proposing an airtanker for approval (Proponent) is set out in these procedures. Also set out are the responsibilities of the Board in evaluating submitted material. All aircraft and tanks proposed as airtankers shall be processed through this program. The Board shall review all material submitted at each step and shall be satisfied that all requirements of a step are met before the Proponent will be allowed to proceed to the next step. The Proponent shall bear the cost of and have the responsibility for conducting all tests and preparing all submissions. The Proponent shall make available to the Board all required information for the Board's evaluation and review at the Proponent's cost.

As part of any FAA certification program under a Supplemental Type Certificate or Type Certificate, the Board shall request, in addition to normal flight test requirements, special tests as noted in the criteria and established by the Board.

Procedure A—*New Airtanker.*
Any proposed airtanker to which Procedures B and C herein do not apply.

Step Number 1—Basic Data
The Proponent of a new airtanker shall submit:

1. Make, model, series, date of manufacture, and serial number of the proposed aircraft.

2. Sketches or drawings of the proposed tank and gating systems.

3. An analysis of the proposed airtanker describing the characteristics of the aircraft and comparing these characteristics with the Requirements and Criteria contained herein.

4. An analysis of the proposed airtanker, comparing the aircraft to Aircraft Operating Criteria and Evaluation Procedure contained herein.

The Board shall review and evaluate the proposed airtanker against Requirements and Operating Criteria.

Step Number 2—Submission of Detailed Data
The Proponent shall submit a copy of the Type Certificate or Supplemental Type Certificate and a flight manual with the required supplement(s) defining limitations and restrictions imposed on the aircraft in airtanker configuration. The Proponent shall also weigh the aircraft and submit a weight and balance report and center of gravity analyses. The Proponent shall give five working days notice to the Board before the weighing is conducted. The weight and balance report shall include loading information, maximum gross weight, Board-approved operating gross weight (defined in A, Airtanker Requirements and Criteria herein), maximum landing weight, zero fuel weight, and maximum allowable retardant weight (figured at 9 lb/gal). The center of gravity analysis shall consider most adverse c.g. conditions and most fore and most aft c.g. in drop and cruise configurations. The proponent shall also submit a copy of the engineering drawings for the tanking systems.

The Proponent may propose increased weight or less restrictive flight performance limitations than those published in the original approved flight manual. If such weight or performance limitations are proposed, the Proponent shall submit engineering reports and FAA approvals acceptable to the Board substantiating that such changes do not compromise safety.

Step Number 3—Static Test or Drop Test Evaluation
The Proponent shall submit test data that substantiates the airtanker meets the requirements of item O of Requirements and Criteria herein.

Step Number 4—Inspection by the Board
A physical inspection shall be conducted by the Board. The Proponent shall make available to the Board all engineering data and drawings of the aircraft and tank in the Proponent's possession during this inspection. Upon completion of this step, the Board shall reject the airtanker or approve it for one year's field evaluation on fire missions.

Step Number 5—Field Evaluation
The Board shall obtain operational field evaluation reports during one normal year of use from the operator and the using agency.

Step Number 6—Final Acceptance or Rejection
The Board shall make a final determination of suitability and approve or reject the airtanker.

Procedure B—*Airtankers Modified in Conformity to an STC/TC Previously Approved by the Board*

Step Number 1—Basic Data
The Proponent of an aircraft of a previously approved configuration shall submit to the Board, the make, model, series, date of manufacture, registration number and serial number, and identify the Type Certificate or Supplemental Type Certificate to which it conforms.

Step Number 2—Submission of Detailed Data
The Proponent shall submit a statement of conformity (FAA form 8130-9, old 317) and Approval for Return to Service after Major Repair or Alteration (FAA form 337), demonstrating compliance with and conformity to the Type Certificate or Supplemental Type Certificate, and flight manual and supplements. The Proponent shall submit a

copy of the Type Certificate or Supplemental Type Certificate and a flight manual with the required supplement(s) defining limitations and restrictions imposed on the aircraft in airtanker configuration.

The Proponent shall also weigh the aircraft and submit a weight and balance report and center of gravity analyses. The Proponent shall give five working days notice to the Board before the weighing is conducted. The weight and balance report shall include loading information, maximum gross weight, Board-approved operating gross weight (defined in B, Airtanker Requirements and Criteria herein), maximum landing weight, zero fuel weight, and maximum allowable retardant weight (figured at 9 lb/gal). The center of gravity analysis shall consider most adverse c.g. conditions and most fore and most aft c.g. in drop and cruise configuration.

Step Number 3—Static Test or Drop Test Evaluation
The Proponent shall submit test data that substantiates the airtanker meets the requirements of item O of Requirements and Criteria herein.

Step Number 4—Field Evaluation
The Board shall obtain operational field evaluation reports during the one year of use from the operator and the using agency.

Step Number 5—Final Acceptance or Rejection
The Board shall make a final determination of suitability and approve or reject the airtanker.

Procedure C—*Modification of Airtanker Previously Approved by the Board*
This procedure shall be applicable to all airtankers, whether approved under these procedures or under "Grandfather" procedures (in use prior to 1970).

Step Number 1—Basic Data
The Proponent of any modification to an approved airtanker, including changes in the tank and gating system, shall submit a description of the modification to the Board, for determination of whether or not the modification will affect the aerodynamics of the aircraft, flight envelope of the aircraft (load factors and operating limitations), drop characteristics, or weight and balance.

Step Number 2—Determination of Requirements
The Board shall review the proposed modification and establish appropriate requirements for approval thereof.

Step Number 3—Final Acceptance or Rejection
The Board shall make a final determination of suitability and approve or reject the airtanker.

Procedure D—*Reapproval of Airtanker Previously Approved by the Board*
All aircraft shown on the Board's approved aircraft list shall, by March 1, 1990, conform to the Airtanker Requirements and Criteria. To remain on the approved list after this date, aircraft shall receive a conformity inspection by the Board to verify compliance with Board requirements each six years.

SINGLE-ENGINE AIRTANKER CRITERIA

Applicability. These requirements, criteria, and evaluation procedures shall be applicable to all airtankers which have one engine and a tank capacity of 600 gallons or more.

I. SINGLE-ENGINE AIRTANKER REQUIREMENTS*

The Proponent shall establish that:

A. The aircraft is certificated under the Federal Aviation Regulations, 14 CFR 21 and 14 CFR 23 or Foreign certification procedures and airworthiness standards that provide equivalent safety.

B. The aircraft is capable of being operated at Board-approved operational gross (BAOG) weight in accordance with operating limitations imposed by the applicable or Supplemental Type Certificate during all approved operations. BAOG weight shall include the following:

- Empty weight in airtanker configuration
- 200 lb for required crew (1 pilot at 170 lb) and flight kit (30 lb)
- Full retardant payload, (the maximum pay load for which Proponent seeks approval).
- 2.5 hours of fuel at 75 percent METO power in cruise at 5,000 ft MSL, 41°F with fuel type to be used as an airtanker.
- Full capacity of all other necessary fluids, i.e., engine oil, hydraulic fluid, water-methanol, etc.

C. The aircraft has positive and negative limit load factors at BAOG not less that the minimum prescribed in 14CFR. Limit load factor at BAOG shall be defined as the original certificated limit load factor divided by 1 plus the percentage gross-weight increase allowed by figure 7.1 of CAM 8.

D. Release of retardant in all normal drop configurations and at all normal drop speeds does not result in dangerous or seriously objectionable flight conditions.

1. The minimum drop speed is not less than 1.25 V_S (stall speed) in the drop configuration.

2. The maximum drop speed does not exceed V_a (design maneuvering speed).

3. Longitudinal stability is positive at drop configuration throughout the drop speed range.

4. .Stick-force gradients are positive at all aircraft accelerations up to applicable load limits, at all speeds, and in all approved configurations. (It is also desirable that these gradients be linear.) [Same as I. E.]

E. Aircraft is capable of 100 FPM rate of climb at Board-approved operational gross weight, at 10,000 ft pressure altitude, ISA +20°F with METO power. [Same as I. G.]

F. Aircraft is capable of descending at Board-approved operational gross weight along a 13 percent (7.41°) slope for 1 min and leveling off at 3,000 ft pressure altitude in drop configuration without exceeding maximum drop speed. [Same as I.H.]

G. At forward and aft c.g., at approach to stall, there is clear and distinct warning to the pilot, and the aircraft has no adverse stall characteristics. [Same as I.I.]

H. Longitudinal control stick force does not exceed 35 lb for all approved maneuvers, including drops. [Same as I.J.]

I. Aircraft dynamic stability is as required in MIL-F-8785A, Sections 3.3.5, 3.3.6, and 3.4.1, or 14 CFR 25.177m 25.181 (FAR 25.177, 181). [Same as I.K.]

J. Carbon monoxide concentrate in cockpit, in flight condition, does not exceed 50 ppm. Carbon dioxide concentration in cockpit does not exceed 3 percent by volume at sea level. [Same as I.L.]

K. Aircraft is in current production, i.e., orders for new aircraft are accepted by the manufacturer.

L. Aircraft shall be of a crashworthy design, and shall be equipped with a new production 5000 lb or greater belt-harness restraint system. Aircraft shall comply with the provisions of 14 CFR 23.561, for acrobatic category.

M. Visibility shall be unrestricted from the level flight horizon to the vertical, through an arc of 60° either side of the longitudinal centerline, except that 11.1% of the total angular area may be restricted by canopy frames, cowling, etc.

N. Aircraft is eligible for no less than 50 percent of total possible points in Section II, Single-engine Airtanker Operating Criteria and Evaluation Procedures.

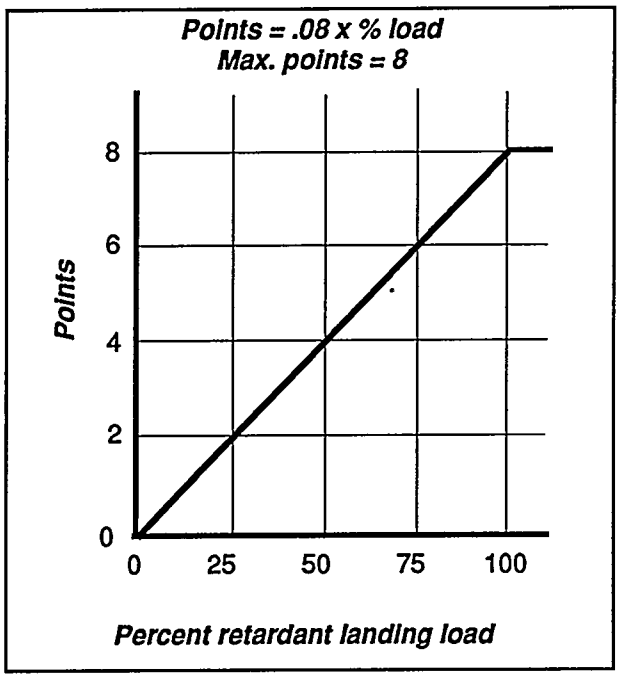
O. Retardant Systems: [Same as I.O, see Multi-engine Airtanker Requirements]

NOTE: If the Proponent wishes to substantiate compliance with this section using procedures other than those given, he shall submit these procedures to the board for approval.

**NOTE:* Numbers in [ ] indicate sections in the Multi-engine Airtanker Criteria.

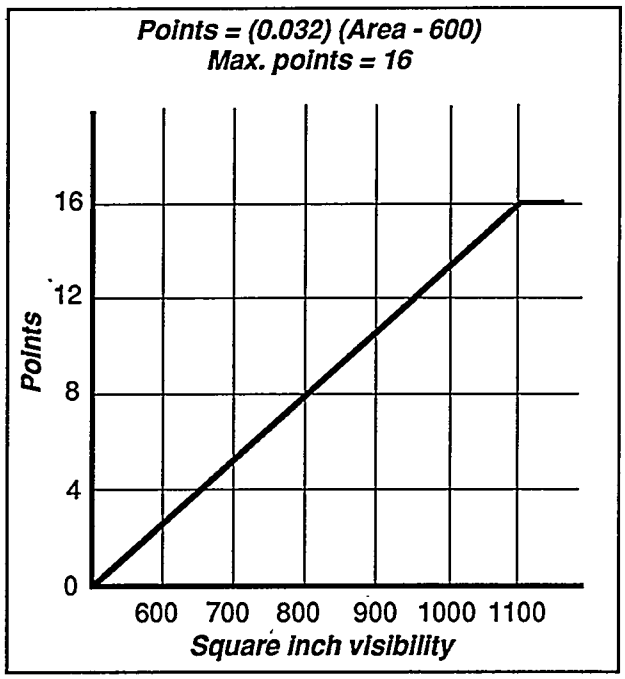
II. SINGLE-ENGINE AIRTANKER OPERATING CRITERIA AND EVALUATION PROCEDURES

A. Aircraft in proposed tank configuration shall be capable of landing with 2-1/2 hours of fuel (as specified in I.B.) and the following amount of retardant. [Same as II. A.]

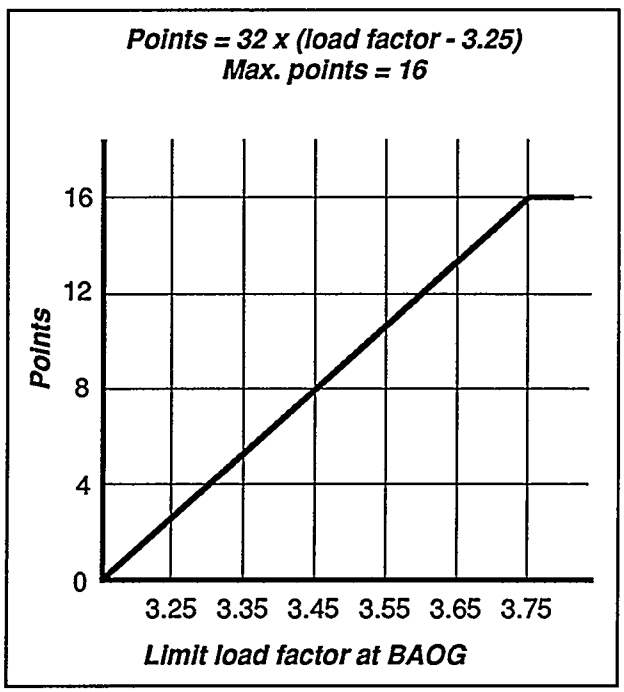


B. Field of vision shall be unobstructed. The visibility of the airtanker shall be quantified using the procedure described in Project Report, Airtanker Visibility Evaluation Device, 1987, USDA Forest Service, Equipment Development Center, San Dimas, CA 91773.

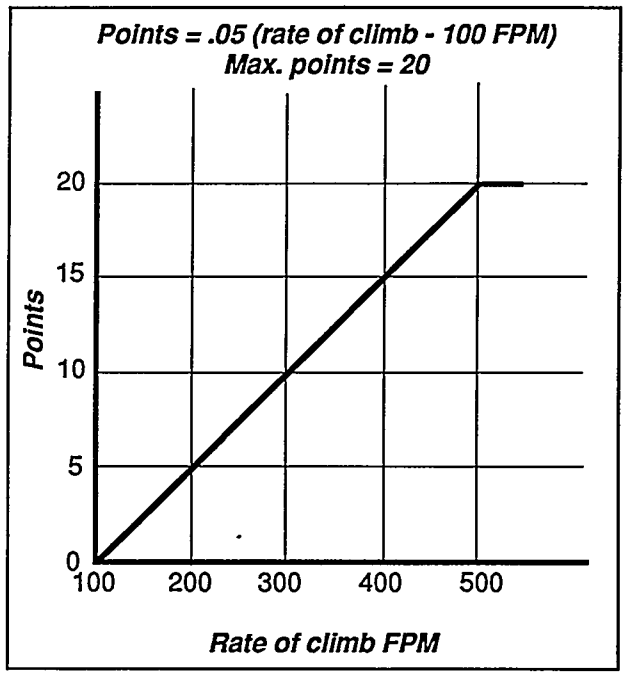
A plot of cockpit visibility shall be made, showing the limits of clear visibility in angular coordinates. The angular areas of clear unobstructed view shall be measured relative to the reference planes. The reference planes shall be established parallel to the horizon, and to the aircraft's longitudinal axis, which intersect at the point which is at normal height of the pilot's eyes and above the center of his seat. Normal flight altitude shall be used. The plot shall be made on quarter-inch squared paper, with a scale of quarter-inch equal to 1° of displacement. All clear vision windows and areas shall be plotted. Obstruction by wings, nacelles, etc., shall be shown. Propeller blades shall be omitted. Plots shall be evaluated to determine the total area shown for clear visibility in square inches (a count of the quarter-inch squares and estimates of fractional areas). The minimum area of 600 sq in is in the baseline and receives zero points. Maximum points will be for 1100 sq in. [Same as II.B. except for areas required.]



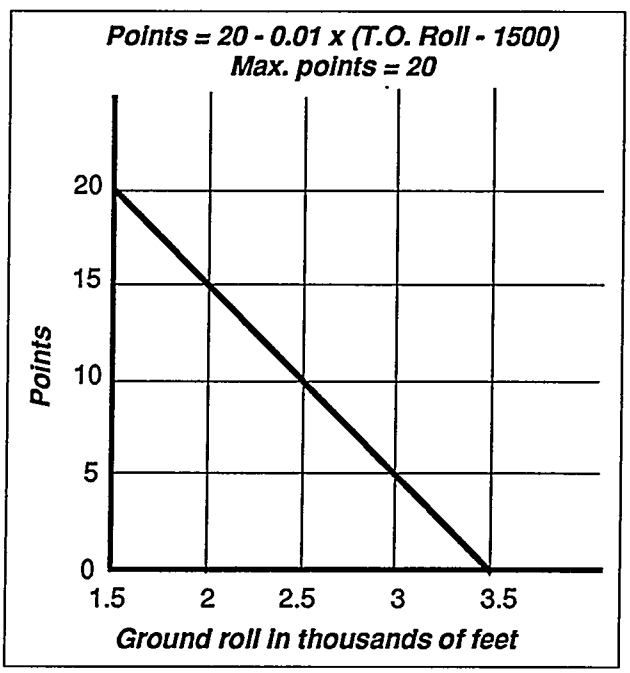
C. Aircraft shall have a minimum positive limit load factor of 3.25 g at FAA Certificated gross weight. Figure 7.1 of CAM 8, if applicable to the airplane under consideration, may be applied. Additional points will be awarded as follows:



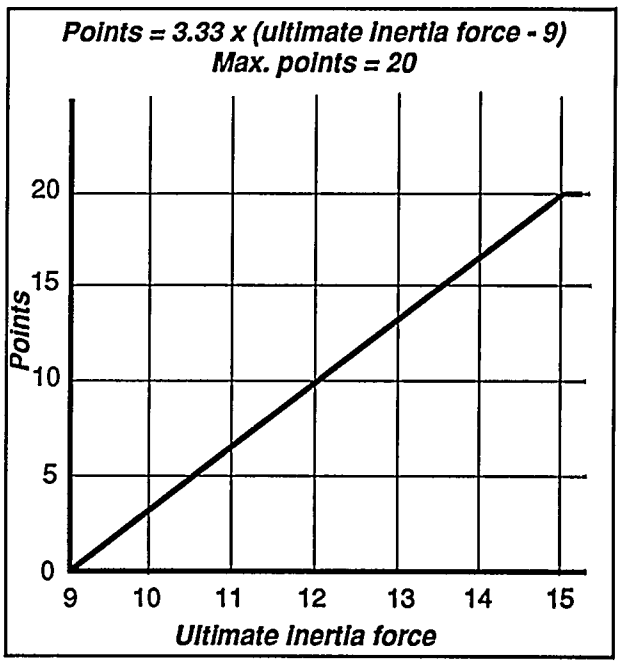
D. Aircraft shall be capable of 100 FPM rate of climb at Board-approved operational gross weight, at 10,000 ft pressure altitude, ISA +20°F with maximum continuous power. Additional points will be awarded as follows. [Same as II.D.]



E. Takeoff ground roll in the normal manufacturer's recommended takeoff configuration, at Board-approved operational gross weight, 5,000 ft pressure altitude, ISA +30°F and zero wind, shall not exceed 3,500 ft. Additional points will be awarded as follows. [Same as II.E. except for ground roll.]

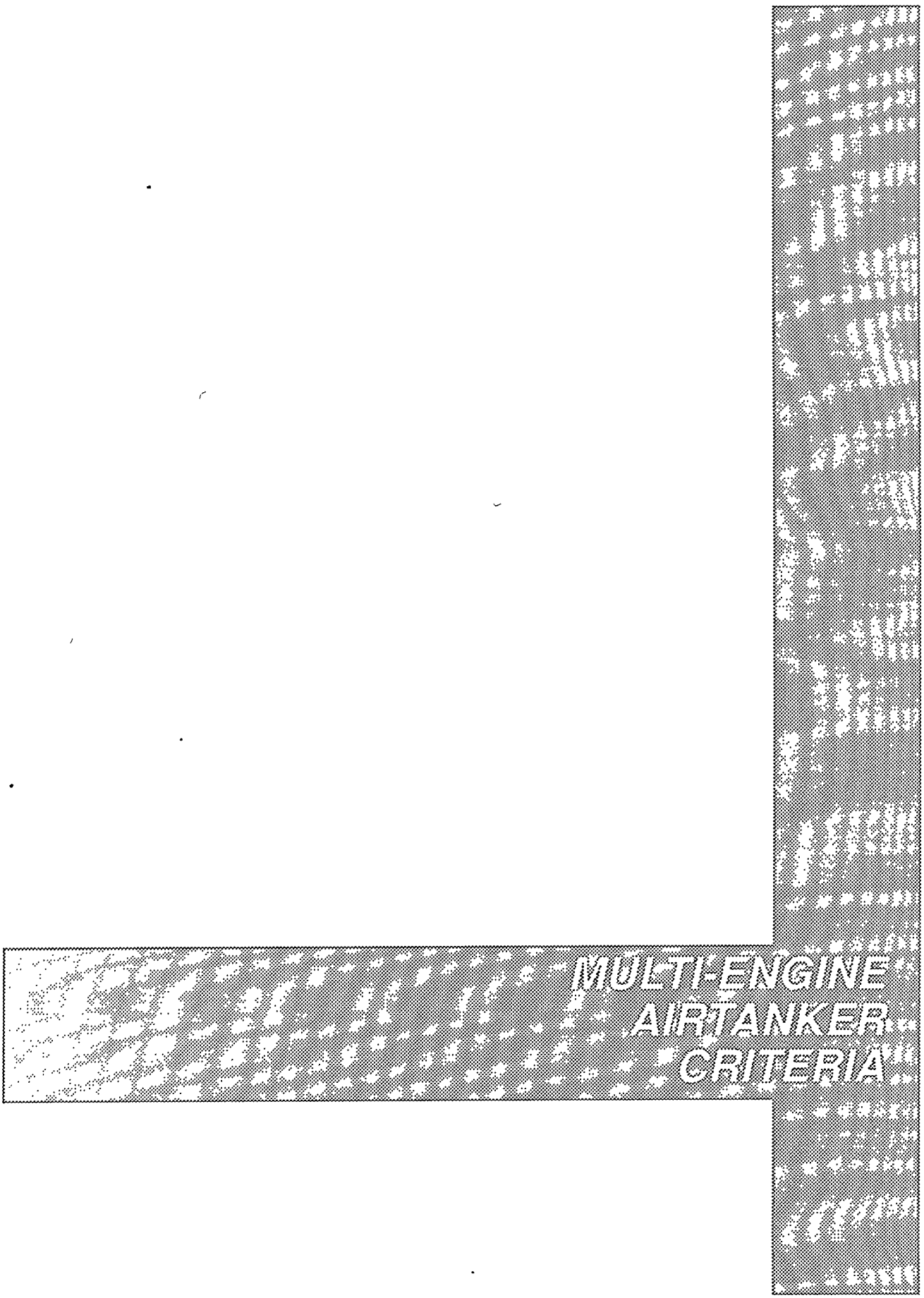


F. Aircraft shall comply with the provisions of 14 CFR 23.561, for acrobatic category aircraft. Additional points will be awarded as follows:



Point Summary

A.	Landing load	8
B.	Vision	16
C.	Load factor	16
D.	Rate of climb	20
E.	Takeoff roll	20
F.	Crashworthiness	20
	Total	100
	Qualifying Minimum	50


MULTI-ENGINE
AIRTANKER
CRITERIA

Applicability: These requirements, criteria, and evaluation procedures shall be applicable to all airtankers not covered by "Single Engine Airtankers Criteria".

I. MULTI-ENGINE AIRTANKER REQUIREMENTS

The Proponent shall establish that:

A. The aircraft is certicated under the Federal Aviation Regulations 14 CFR 21 and 14 CFR 25 or Foreign or Military Certification Procedures and Airworthiness Standards that provide equivalent safety.

1. A military surplus aircraft that is of a type that was originally certificated under the CAR's or FAR's as a civil aircraft shall be considered by the Board as a civil aircraft, and shall be subject to the limitations of the original type certificate, notwithstanding any less stringent limitations imposed on the aircraft by Military Regulations or Supplemental Type Certificate. This paragraph shall not apply to those aircraft for which the Board has accepted and approved reports as described in Procedure A, Step 2.

2. The aircraft is capable of being operated at Board-approved operational gross weight in accordance with operating limitations imposed by the applicable Type Certificate or Supplemental Type Certificate during all approved operations. Board approved operational weight shall include the following:

- Empty weight in airtanker configuration.
- Minimum required crew and flight kit.
- Full retardant payload, being the maximum payload for which the Proponent seeks approval.
- Two and one-half hours of fuel at 55 percent METO power in cruise at 5,000 ft MSL, with fuel type to be used as an airtanker. If aircraft normally uses jet engines for take off and climb then fuel flow for the jet engines will be added for 15 minutes of the 2-1/2 hours.
- All other necessary fluids, i.e., engine oil, hydraulic fluid, water-methanol, etc.

3. The aircraft has a limit load factor of not less than 2.5 g positive and 1.0 g negative, in cruise flight.

B. Aircraft at Board-approved operational gross weight (not to exceed FAA approved gross weight) is able to takeoff at 5,000 ft pressure altitude with zero wind and a temperature of ISA+30°F with a ground roll not to exceed 6,000 ft. With a critical engine failure at lift-off, aircraft is able to continue the takeoff and maintain at least 100 FPM rate of climb, while retaining the retardant load. (The landing gear may be retracted.)

C. The proposed airtanker is capable of meeting the constraints of FAR 137.51 (b) (5) i and ii, "Operation Over Congested Areas," at the atmospheric conditions and Board-approved operational gross weight, specified in B herein, not to exceed approved gross weight, with a ground roll not to exceed 6,000 ft.

D. Aircraft is multi-engine.

E.* Release of retardant in all normal drop configurations and at all normal drop speeds does not result in dangerous or seriously objectionable flight conditions.

1. The minimum drop speed is not less the V_{mc} (minimum control speed), nor 1.25 V_S (stall speed) both speeds being evaluated in the drop configuration.

2. The maximum drop speed does not exceed V_a (design maneuvering speed).

3. Longitudinal stability is positive at drop configuration throughout the drop speed range.

4. Stick-force gradients are positive at all aircraft accelerations up to applicable load limits, at all speeds, and in all approved configurations. (It is also desirable that these gradients be linear.)

F.* Asymmetric power complies with MIL-F-8785A, Section 3.4.12 or 14 CFR 25.149 (FAR 25.149).

G.* Aircraft is capable of 100 FPM rate of climb at Board-approved operational gross weight, at 10,000 ft pressure altitude, ISA +20 °F with METO power.

H.* Aircraft is capable of descending at Board-approved operational gross weight along a 13 percent (7.41°) slope for 1 min and leveling off at 3,000 ft pressure altitude in drop configuration without exceeding maximum drop speed.

I.* At forward and aft c.g., at approach to stall, there is clear and distinct warning to the pilot, and the aircraft has no adverse stall characteristics.

J.* Longitudinal control force does not exceed 35 lb for all approved maneuvers, including drops.

K.* Aircraft dynamic stability is as required in MIL-F-8785A, Sections 3.3.5, 3.3.6, and 3.4.1. or 14 CFR 25.177, 25.181 (FAR 25.177, 181).

L.* Carbon monoxide concentration in cockpit, in flight condition, does not exceed 50 ppm. Carbon dioxide concentration in cockpit does not exceed 3 percent by volume at sea level.

M. Aircraft is in current production, or available in a quantity of at least 15 flyable aircraft.

N. Aircraft is eligible for no less than 20 percent of total possible points in Section II, Aircraft Operations and Evaluation Procedures.

O. Retardant Systems:

1. General.

a. Requirement:

All tank systems do not leak when loaded with water to a volume equivalent to the volume of retardant at the maximum certificated retardant load. Following initial loading, the tank system is capable of sitting loaded as described above a minimum of 1 week without leaking more than 3-1.2 gal (1/2 gal/24 hr).

Procedure:
Load tank to certificated amount using approved meter or weighing system. Determine the leakage occurring over a 14-hr period (usually this will be overnight). The leakage volume for the 14-hr period shall not exceed 0.3 gal.

b. Requirement:

All tanks are equipped with an independent controlled and operated emergency dump system enabling the entire load to be dropped in less than 6 sec. This system may use only mechanical, pneumatic, or hydraulic pressure for operation.

Emergency systems operated by pneumatic or hydraulic pressure are isolated from the normal tank system pressure.

Normal function or failure of the normal system pressure does not affect the emergency system pressure. Emergency systems dependent on normal operating aircraft or tank system for initial charge have a pressure gauge or indicator readily visible to the crew. Emergency systems dependent on precharged bottles have a positive means of checking system charge during preflight.

The primary emergency dump control is positioned within easy reach of the pilot and co-pilot while strapped in their respective seats. Electrically operated controls are wired directly to a source of power isolated from the normal aircraft electrical bus and protected by a fuse or circuit breaker of adequate capacity.

Procedure:
Operate the emergency dump by operating the primary emergency dump switch(es) as described above. Observe that the requirements above are met.

c. Requirement:

All tanks have the capability of being offloaded through standard 3-in Kamlock or equivalent couplers. Upon offloading, the amount of retardant remaining in the tank is no more than 7 percent of the total approved load capacity.

Procedure:
Demonstrate the offload capability by connecting a 3-in diameter hose and offloading water from the tank.

d. Requirement:

All tank doors are closeable in flight.

Procedure:
Operate doors under static conditions. (Flight tests will be required at the Board's discretion; if failures of the system cause the Board to doubt its operative ability in flight.)

e. Requirement:

All retardant tanks are (1) capable of being filled in conformity with the approved retardant load through a 3-in diameter single or dual Kamlock fittings, on either side of the aircraft or from the tail, at an average fill of no less than 500 gal/min, (2) that there are sufficient cross flows so that the retardant will be level in all compartments within 30 seconds after the loading pump is stopped, and (3) no one or more compartments fill faster than others such that retardant over flows from the tank (other than level indicator holes) before the approved volume is reached.

Procedure:
Fill the tanks to the approved volume at 500 gpm and check for even fill levels in each tank compartment.

f. Requirement:

Compartments sequenced individually in the normal drop configuration are constructed so as to eliminate leakage from one compartment to the other when one of the compartments has been evacuated.

Procedure:
Fill all compartments to the level for a maximum approved load. Normally activate individual compartments in their normal sequence, checking each of the evacuated compartments for leaks from adjoining tanks. Leakage from adjoining tanks producing a combined flow of greater than 1 gal/min will constitute leakage within the means of this paragraph.

g. Requirement:

Opening of the doors is through primary switches or other mechanism located on the control yoke or stick.

Procedure:
Visually check the activating switches as the tank and gate system is operated for static test drops.

2. **Venting.**

a. Requirement:

Vents are constructed so that no retardant leakage or slosh-over occurs during taxi or take-off.

Procedure:
Make a visual check and measurements of vent construction, and check the height of the retardant in a full tank for distance below vent outlets. If clearance or vent door construction is questionable, taxi the aircraft when loaded at the maximum approved load and observe for slosh-over or leakage.

b. Requirement:

The vent area for any compartment or tank is such that when the retardant is released from any compartment or combination of compartments, resulting negative pressures do not create a "coke-bottling effect" causing non-uniform and turbulent flow. Ratio of door area to vent area for any compartment or drop combination employed is not greater than 10:1, or that in-flight negative pressure does not exceed 0.25 psi.

Procedure:
Check negative pressure with a pressure transducer during static test drops. Measure door opening and vent areas and calculate the vent to door area ratio.

3. **Intervalometer.**

a. Requirement:

A tank door drop selector/intervalometer actuated by the primary spring-loaded drop switch providing the following door selection options for simultaneous release:

Compartment doors in tank	*Compartments (doors) released at one time*
2	1 or 2
4	1,2, or 4
6	1,2,3, or 6
8	1,2,4, or 8
10	1,2,5 or 10
12	1,2,3,4,6, or 12

b. Requirement:

The intervalometer shall permit selection of time intervals in the automatic sequence of door releases in the range from 0.1 sec to 2.5 sec at 0.1 sec increments. The accuracy and repeatability of the intervalometer shall be plus or minus 0.05 sec at any setting.

c. Requirement:

A selector with continuous automatic repeating of the programmed door number combination at various selected time intervals, as long as the primary drop switch is held in the actuated position. If the primary drop switch is released during the automatic timed sequence of releases, the selector/intervalometer shall stop activating doors at that point.

The selector shall indicate those compartments that are armed and whether or not they have been released. The selector shall also indicate the type and the number or releases to be made.

d. Requirement:

Arming switch or switches to prevent release of doors by inadvertent actuation of the primary drop switch.

Procedure:
Accurately measure intervalometer timing, accuracy and repeatability with an electronic test instrument connected to the electrical circuits connecting the intervalometer to the door opening solenoids.

4. **Compartment size and flow rates.**

The best information available indicates that the retardant coverage levels required to suppress typical fires occurring in forest and rangelands varies between 0.5 and 10.0 gpe (gallons per hundred square feet) depending on the fuels, weather, fire behavior, etc. The concentration adequate for most fires and conditions is between 1 and 4 gpe. In conventional aerial delivery systems this coverage is attained by selecting the number of compartments released or dropped at one time (volume), the number of successive releases, and the time between releases. The combinations of different volumes and releases available determine the number of different flow rates that can be produced. The flow rate(s) determine the level of retardant coverage that can be obtained. Performance with conventional delivery systems can be specified by specifying the flow rate(s) and flow rate combinations. Measurement of flow rates attained from conventional delivery systems are relatively simple to measure and can be used to predict coverages. The ability to measure delivery system flow rates and predict retardant coverage levels provides a method by which tank performance and flexibility can be specified and evaluated (no simple methods exist for determining directly the retardant coverage levels that can be attained). See Table 1.

Table 1. Flow Rate Table

Drop size (gal)	Flow Rate (Min. gal/sec)	(Max. gal/sec)
200	98	445
250	123	550
300	148	653
350	172	754
500	246	1044
1000	493	1872
1200	591	2189
1500	739	2595
2000	985	3187
2400	1182	3598
2800	1379	3962
3000 & above	1478	4129

Using knowledge of volume, flow rate, release combinations and their relationship to retardant coverage levels the following performance requirements have been specified:

a. Requirement:

Minimum number of equal releases (drops per load):

Volume of airtanker (gal)	Number of drops/ equal volume releases
up to 999	2 (can split load)
1000-1999	3 (can split load into 3 drops)
2000-2499	4 (can quarter load)
2500-2999	5 (can make 5 or more releases)
3000 & above	6 (can make 6 or more releases)

NOTE: Odd numbers (3,5,7 etc.) of equal releases may be desirable due to lack of release symmetry, unless they are in-line (see section 5).

b. Requirement:

The size of the individual compartment, the number of compartments, and the number of flow restrictions and required flow rate range shall conform to the following criteria:

Individual compartm't volume	No. of compartments used			
	2	3,4	5,6	7&greater
200-300	3(2,3,4)	2(2,4)	2(2,3 or 4)	2(2,3 or 4)
301-400	3(1,3,4)	2(1,4)	2(1,3 or 4)	2(1,3 or 4)
>400	3(1,2 or 3,4)	2(1,4)	2(1,3 or 4)	2(1,3 or 4)

The first number is the number of different flow rates for each compartment, the numbers in parentheses are the required flow rates ranges from the flow rate table below:

Flow rate range	Flow rate (gps)
1	100-150
2	151-250
3	251-400
4	401 & greater

Procedure:
Accurately measure compartment capacity while the airtanker is parked in a normal loading attitude. Check existing marked fill levels and permanently mark new ones outside and inside the tanks when possible.

Measure flow rates by monitoring floats which follow the top surface of the water when tank doors are opened. Monitor floats for all normal drop combinations and flow restrictions. Calculate flow rates using a computer programmed algorithm which combines float travel distance and time with tank geometry.

Examples of flow rate requirements:

S2F—800 gallons

The 800-gallon volume requires at least 2 releases (load to be split)

(1) If 2—400 gallon compartments were used, each compartment would have to produce 3 flow rates; 1, 3, & 4.
(2) If 4—200 gallon compartments were used, each compartment would have to produce 2 flow rates; 2 & 4.
(3) Current CDF S2F's would require a restrictor in each tank that could produce a restricted flow rate 2 in addition to the unrestricted flow rate 4.

DC-4—2,000 gallons
The 2,000 gallon would require at least 4 releases (load to be divided into 4 equal drops)

(1) If 4—500 gallon compartments were used, each compartment would have to produce 2 flow rates; 1 & 4.
(2) If 6—335 gallon compartments were used, each compartment would have to produce 2 flow rates; 1 & 3 or 4.
(3) If 8—250 gallon compartments were used, each compartment would have to produce 2 flow rates; 2 & 3 or 4.

DC-6/7—3,000 gallons
Would require at least 6 releases (1/6 of the load)

(1) If 6—500 gallon compartments were used, each compartment would have to produce 2 flow rates; 1 & 3 or 4.
(2) If 8—375 gallon compartments were used, each compartment would have to produce 2 flow rates; 1 & 3 or 4.
(3) If 12—250 gallon compartments were used, each compartment would have to produce 2 flow rates; 2 & 3 or 4.

c. Optional compartment size and flow rate/performance requirement:

If the delivery system is not of the conventional type, that is it uses a delivery concept other than dropping increments of different volumes at varied release intervals to build a continuous retardant line, such as the MAFFS System, the system shall demonstrate that it has the ability to produce the following lengths of line per 100 gallons of load (at 200 ft drop height and 125 knot drop speed). This performance shall be determined using a cup/grid system for determining pattern performance.

Coverage level	Minimum length of line per 100 gal
0.5	125
1.0	75
2.0	50
3.0	30
4.0	20
6.0*	15
8.0*	7

5. Multiple compartment drops.

a. Requirement:

For drop combinations where two or more doors are opened simultaneously, the rules as shown in figure 1 are followed unless the drop configuration results in a weight distribution which causes the c.g., to be outside the acceptable flight envelope.

Procedure:
Check all compartment drop combinations visually during static test drops.

6. Doors.

The door size, shape, and opening speed are all parameters which can influence the retardant flow rate from a tank.

Many combinations of these parameters may provide acceptable flow rates as specified in item 4. The most desirable combination, however, should minimize the fluid frontal area, not significantly deflect the fluid, while providing this flow rate. Thus a long, narrow tank is to be preferred over a square tank; fast opening doors are preferable.

a. Requirement:

The door, when fully opened, does not restrict or deflect the flow of retardant from the tank. All doors, when activated to a fully open position, shall reach that position in less than 0.50 seconds.

** Only tanks with 1,400 gallons or more capacity are required to meet these coverage levels.*

Procedure:
Monitor door opening rates using a potentiometer that is fastened to the tank and in line with the door hinge. Use a wiper arm which makes contact with the door and is connected to a shaft of the potentiometer. Door angle versus time is transmitted to a recorder placed nearby. The measured door opening times are used as indicators in identifying problems in flow rate and sequencing. Check deflection of fluid exiting the tank visually. (The Board shall make recommendations for correcting the deflection caused by door opening times or structural configuration that can be corrected by minor modifications.

7. Tank fill-gauge.

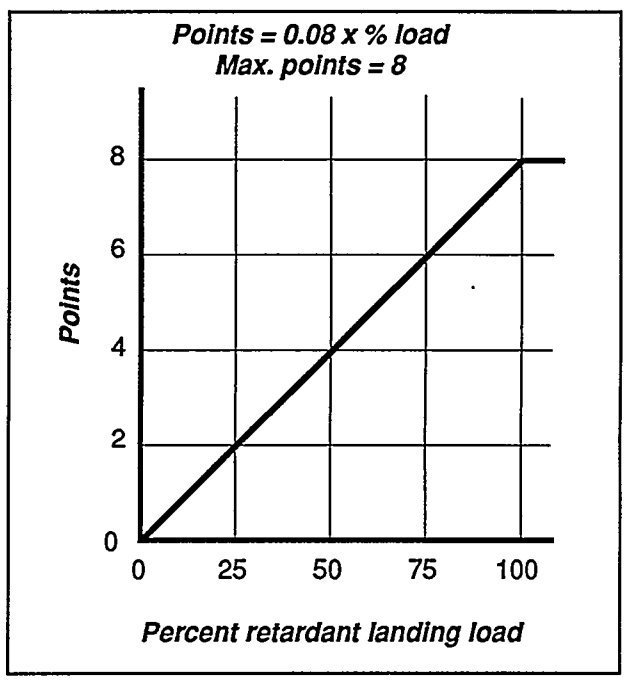
a. Requirement:

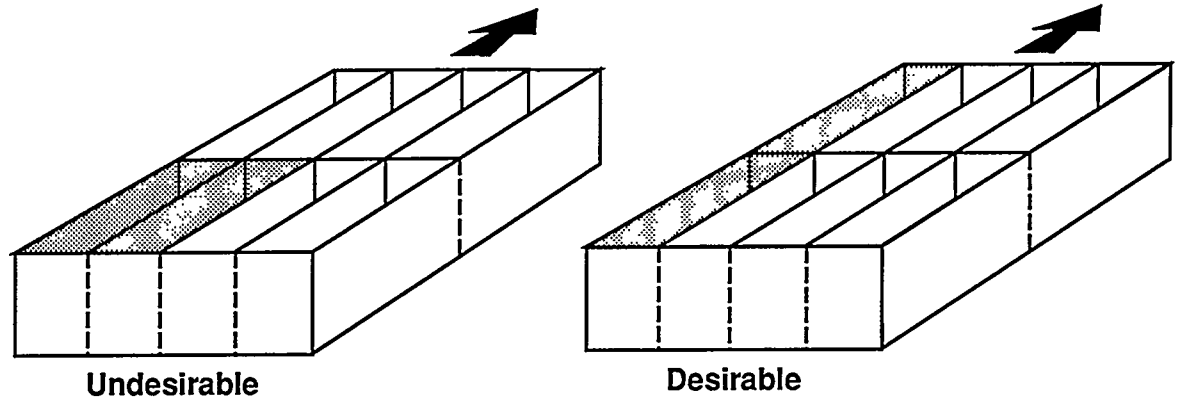
A positive level gauge or indicator is provided that shows when each compartment is filled to the certified load limit, or when each compartment is at predetermined partial load points if reduced loads are used. The gauge or indicator is readily visible to the loading crew at the loading points and the tank capacity of each loading level clearly marked.

Procedure:
Check fill level gauges by metering accurate volumes of water while the aircraft is in its normal filling attitude. Visually evaluate permanent markers placed to indicate the certified load limit levels.

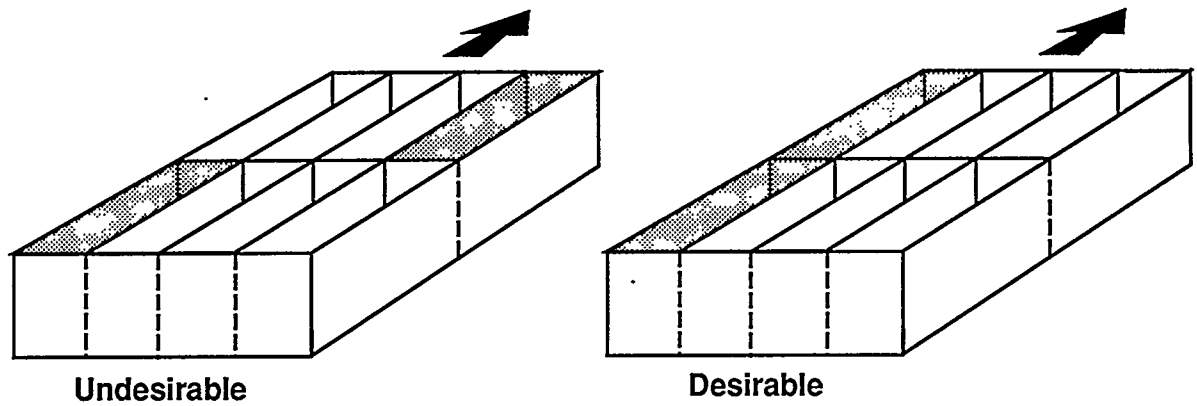
II. MULTI-ENGINE AIRTANKER OPERATING CRITERIA AND EVALUATION PROCEDURES

A. Aircraft in proposed tank configuration shall be capable of landing with 2-1/2 hours of fuel (as specified in I.A.2.4.) and the following amount of retardant.

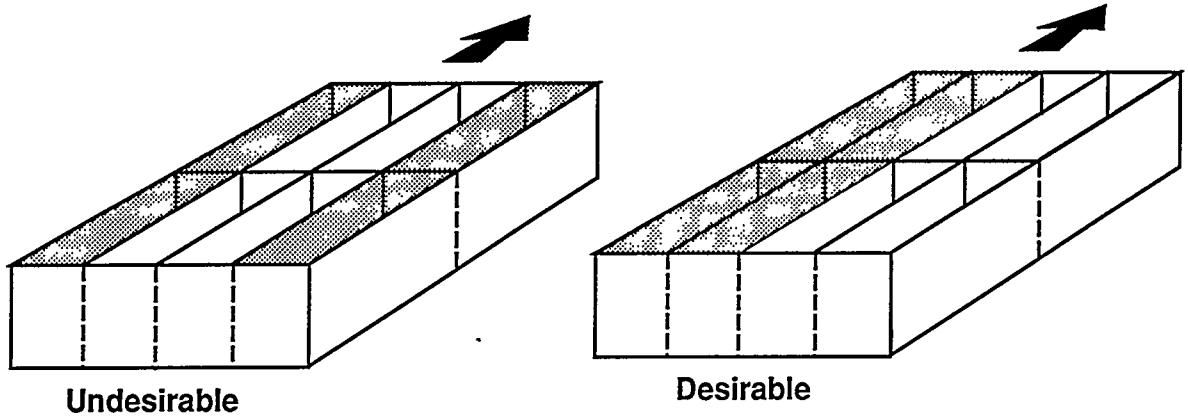




1. When two or more compartments are dropped simultaneously (non-salvo) and a choice of dropping forward and aft compartments, versus side-by-side compartment, is possible, the forward-aft combinations shall be employed.



2. Forward and aft compartment dropped simultaneously shall be in line with one another.

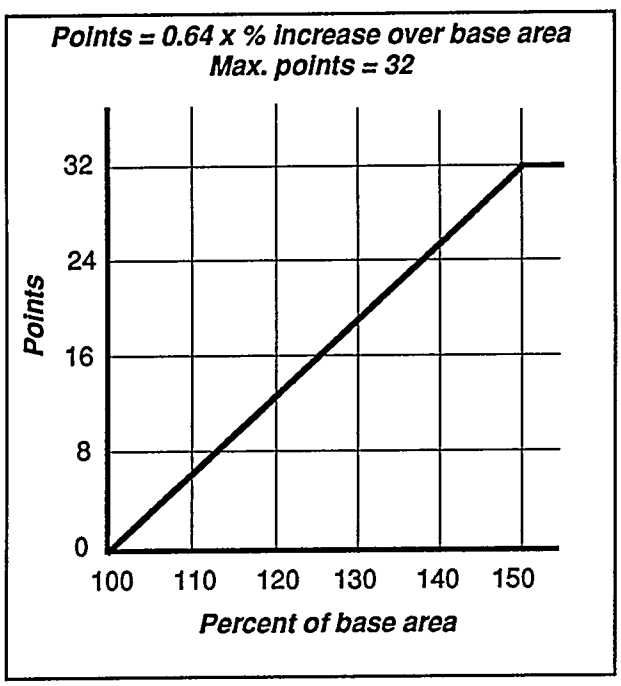


3. Side-by-side compartments dropped simultaneously shall be oriented in a manner to minimize separation.

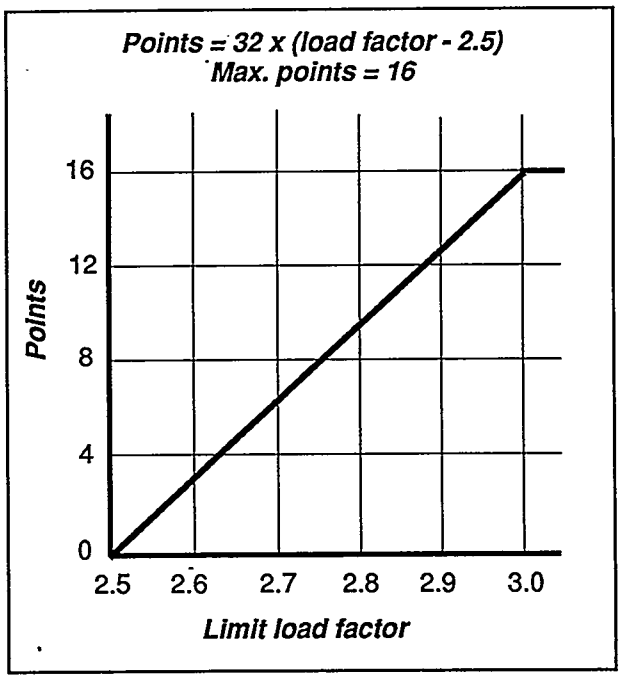
Figure 1. Rules of configuration for multiple compartment drops.

B. Field of vision shall be unobstructed. The visibility of an airtanker shall be quantified using the procedure described in Project Report, Airtanker Visibility Evaluation Device, 1987, USDA Forest Service, Equipment Development Center, San Dimas, CA 91773.

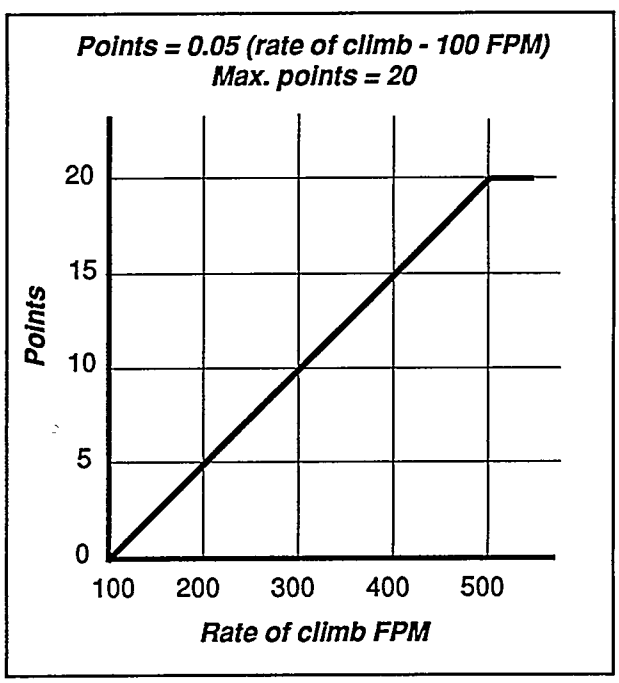
A plot of cockpit visibility shall be made, showing the limits of clear visibility in angular coordinates. The angular area of clear unobstructed view shall be measured relative to the reference planes. The reference planes shall be measured parallel to the horizon, and to the aircraft's longitudinal axis, which intersect at the point which is at normal height of the pilot's eyes and above the center of his seat. Normal flight altitude shall be used. The plot shall be made on quarter-inch squared paper, with a scale of quarter-inch equal to 1° of displacement. All clear vision windows shall be plotted. Obstruction by wings, nacelles, etc., shall be shown. Propeller blades shall be omitted. Plots shall be evaluated to determine the total area shown for clear visibility in square inches (a count of the quarter-inch squares and estimates of fractional areas). The minimum area of 244 sq in is the baseline and receives zero points. Maximum points will be for 150 percent of the baseline area. (*Note:* Standard DC-6 has been established as the baseline.)



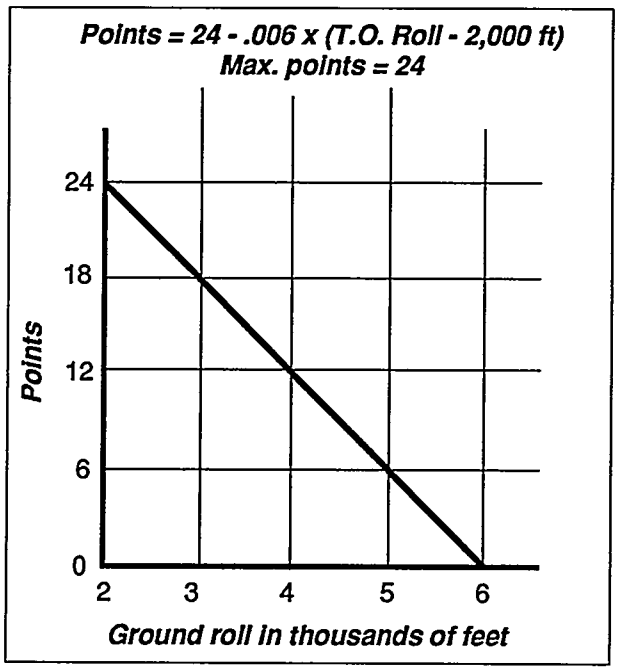
C. Aircraft shall have a minimum limit load factor of 2.5 g at Board-approved operational gross weight. Additional points will be awarded as follows:



D. Aircraft shall be capable of 100 FPM rate of climb at Board-approved operational gross weight, at 10,000 ft pressure altitude, ISA +20 °F with maximum continuous power. Additional points will be awarded as follows:



E. Takeoff ground roll in the normal manufacturer's recommended takeoff configuration, at Board-approved operational gross weight, 5,000 ft pressure altitude, ISA +30 °F and zero wind, shall not exceed 6,000 ft. Additional points will be awarded as follows:



Point Summary

A.	Landing load	8
B.	Vision	32
C.	Load factor	16
D.	Rate of climb	20
E.	Takeoff roll	24
	Total	100
	Qualifying Minimum	20

AIRTANKER CONFORMITY INSPECTION FORM

NATIONAL INTERAGENCY AIRTANKER BOARD

AIRTANKER COMFORMITY INSPECTION

1. Company name: _____

   Street address: _____

   City:_____ State: _____ Zip _____

2. Type of Aircraft: _____

   "N" No.: _____

   S/N (per A/W certificate): _____

   A. Tanker No.: _____

   B. Tank capacity _____ gal. No. of doors: _____

   C. Tank and systems in conformance with TC or STC No.: _____

   D. Flight manual supplement outlining limitation: Yes _____ No _____

3. Aircraft Weight Information

   A. Maximum retardant load at zero fuel weight (ZFW)

      1. Empty weight _____
      2. Minimum required crew & flight kit _____
      3. Fluids per 1.2., excluding fuel _____
      4. Total (1,2,3) _____ (BOW)*
      5. Zero fuel weight _____ (ZFW)
      6. Max. retardant load (5 minus 4) _____

   B. Normal operating weight computations

      1. Basic operating weight (A.4.) _____
      2. Fuel (2-1/2 hr @ 55% power per 1.2.) _____
      3. Retardant load _____
      4. Operating fluids (not included in BOW) _____
      5. Other load carried (spares, baggage, etc) _____
      6. Total (1,2,3,4,5) _____

**Basic Operating Weight (BOW)*

C. Gross weight check

1. Max takeoff gross weight _____
2. Normal operating weight (B.6.)_____
3. Difference (1 minus 2) _____

NOTE: If C.3. is a minus value, complete D for retardant load adjustment.

D. Adjusted retardant load calculation

1. Maximum retardant load (A.6.)_____
2. Minus difference (C.3.)_____
3. Corrected maximum allowable retardant load (1 minus 2) _____

4. Retardant tank

A. Tank does not leak when filled with water (max leakage 1/2 gal/24 hr)

Yes_____ No._____

B. Was tank loaded to certified amount, using approved meter or weighing system?

Yes_____No _____

C. Is the emergency system independently controlled and operated, enabling the entire load to be dropped in less than six (6) sec? Yes_____No_____

D. The emergency system is operated by (check one):

Mechanical _____

Pneumatic_____

Fluid pressure_____

E. Is the primary dump control positioned with easy reach of all required flight crewmembers?

Yes_____ No _____

1. If electrically operated, is the control wired direct to a source of power other than the normal aircraft electrical bus, and protected by a fuse or circuit breaker of adequate capacity? Yes_____ No_____

F. Pneumatic systems

1. Is a means available to check emergency system pressure on preflight prior to any mission?

Yes_____ No _____

2. Is emergency system pressure isolated for the normal system?

Yes_____ No _____

G. Fluid pressure systems

1. Is an emergency system pressure gauge readily visible to all required crew members while seated in their inflight positions? Yes_____ No_____
2. Is emergency dump system pressure isolated from normal system pressure? Normal function or failure shall not effect emergency system pressure.

Yes_____ No_____

H. Do all tanks have the capability of being off loaded thru a standard 3-in kamlock or equal coupler to no more than 7% of the total certified load capacity?

Yes_____No_____

I. Are all tank doors closable in flight? Yes_____No_____

J. Are all tanks capable of being filled through 3-in single or dual kamlock fittings on either side of the aircraft or tail at an average fill rate of no less than 500 gal/min?

Yes_____.No _____

1. Are sufficient cross flows provided so that the retardant will be level in all compartments within 30 sec after the pump is stopped, and that no compartment will fill and overflow during the fill cycle, prior to reaching certified volume?

Yes_____No _____

K. Compartments sequenced individually in normal drop configuration are constructed so as to eliminate leakage from one compartment to the other when one has been evacuated?

Yes_____No_____

L. Are door openings accomplished through primary switches or mechanism located on the control yoke or throttle/trim quadrant? Yes_____No_____

M. The intervolometer provides accurate sequencing of doors at intervals continuously variable (accuracy within ±0.05 sec) Yes_____No_____

N. A positive level gauge or indicator is provided to show when each compartment is at certified load limit and/or partial load limit if required. Yes_____No_____

1. Gauge or indicator is located readily visible to the loading crew at the loading port.

Yes_____No_____

O. Retardant tank operation

1. Has tank static test and/or pattern evaluation been completed, and all discrepancies been corrected? Yes_____ No_____
2. Test details

Location:_____ Date test completed: _____

Testing authority: _____

5. Inspection details and results

Location: _____

Date of inspection: _____

Aircraft is: Approved_____ Rejected _____

Board Team Members _____

_____

_____

_____

_____

All "Yes" or "No" answered questions must have "Yes" answers for Board approval of Step No 4.

REMARKS/DISCREPANCIES

HELITANKER CRITERIA

Applicability: These requirements, criteria, and evaluation procedures shall be applicable to all helicopters used in fire surpression activities upon which are installed on internal or external tank, or a bucket, with a capacity of 400 gallons or more.

I. HELITANKER REQUIREMENTS

A. Interagency Airtanker Board (IATB) Requirements

One of the following for each proposed helitanker shall be submitted to the Board.

1. Type Certificate or Supplemental Type Certificate including installation of the fixed retardant tank(s).

2. Flight manual/supplement showing FAA limitations while equipped as a helitanker.

3. Weight and balance showing loading information gross weight, retardant load weight and balance with retardant tanks empty, loaded and all possible partial load situations.

B. Federal Aviation Administration (FAA) Requirements

Helicopters shall be certified under FAR Parts 21.25 "Restricted Category,"27 "Normal Category," or 29 "Transport Category." Helicopter shall be operated in accordance with operating limitations imposed by the approved flight manual.

C. Height-Velocity

Helicopter delivery system shall not require that operations be conducted extensively while operating in hazardous areas of the Height-Velocity (H-V) curve.

D. Carbon Monoxide

Carbon monoxide concentration in cockpit in all flight conditions shall not exceed 50 ppm.

E. Delivery System

1. General—Release of stores in normal drop configuration shall not result in dangerous or seriously objectionable flight conditions.

(a) All tank systems shall not leak when loaded with water to a volume equivalent to the volume of retardant at the maximum certificated retardant load.

(b) Tanks shall be capable of being loaded with water or retardant form either side or from a single point accessible from either side, if a single point filler is chosen, the location must provide adequate clearance for the person(s) filling the tank from moving parts and exhaust blast.

(1) A three-inch, minimum size, filler on top of the tank.

(2) A three-inch Kamlock fitting (male).

(3) All filler ports shall be provided with flapper valves to prevent spillage during hover or flight.

(c) A mechanism shall be located between compartments to assure that the load is evenly distributed between all compartments.

(d) Tanks shall be capable of being off-loaded through one three-inch minimum size, Kamlock fitting located at the lowest part of the tank. The amount of retardant remaining in the tank after off-loading through the Kamlock fitting shall not exceed seven percent of the total tank capacity.

(e) All tank doors must be closable in flight after retardant has been dropped.

(f) Controls for primary operation of tank doors shall be on the collective or cyclic control.

(g) The tank and filling ports must be capable of accepting a fill rate of at least 500 gallons per minute.

F. Emergency Dump System

1. All tanks must be equipped with an independently controlled and operated emergency dump system enabling the entire load to be dropped in less than six (6) seconds. This system shall use mechanical, pneumatic, or fluid pressure for operation.

2. Emergency systems operated by pneumatic or fluid pressure shall be isolated from the normal tank system pressure.

3. Normal function or failure of the primary system shall not affect the emergency system. Emergency systems dependent on normal operating aircraft or tank systems for initial charge shall have a pressure gauge or indicator readily visible to the crew. Emergency systems dependent on precharged bottles shall have a positive means of checking systems charge during preflight.

4. The primary emergency dump control, either electric or manual, must be positioned within easy reach of the pilot and copilot while strapped in their respective seats. Electrically operated controls shall be wired direct to a source of power isolated from the normal aircraft electrical bus and protected by a fuse or circuit breaker of adequate capacity.

G. Venting

1. Vents shall be provided for each compartment.

2. Vent size shall be sufficient to allow total and immediate fluid evacuation with negative pressure in the tank headspace no greater than 0.25 psi.

3. Vents shall be constructed so that fluid leakage or sloshover will not occur while on the ground or in flight.

4. Vents shall be constructed to allow filling of all compartments of the tank at a rate of 500 gallons per minute.

H. Compartment Size

1. Individual compartments shall not be larger than 250 gallons in size unless the gating system allows for control of the retardant flow rate of the full load by another method.

2. Minimum compartment size shall be 125 gallons.

3. Compartments shall be constructed with baffles to prevent sloshing of the load during flight.

I. Tank Doors

1. Each compartment of the drop tank shall have a door designed to drop that compartment load.

J. Tank Fill Gauges

1. Positive level gauges, indicators or other visible means shall be provided showing when each compartment is full or when each compartment is at a predetermined partial load.

2. Indications shall be readily visible to the loading crew at the loading points and tank capacity of each loading level shall be clearly marked.

K. Multiple Compartment Operation

1. For drop combinations where more than one drop is made simultaneously, the following rules shall be followed unless the drop configuration results in a weight distribution which causes the c.g. to be outside the acceptable flight envelope:

(a) When two or more compartments are dropped simultaneously (non-salvo) and a choice of dropping forward and aft compartments versus side by side compartments is possible, the forward-aft combinations shall be employed.

(b) Forward and aft compartments dropped simultaneously shall be in-line with one another.

(c) Side-by-side compartments dropped simultaneously shall be oriented in a manner to minimize separation.

II. HELITANKER OPERATING CRITERIA AND EVALUATION PROCEDURES.

A. Tank Doors

1. The door size, shape and opening speed all influence the retardant flow rate. The most desirable combination should minimize the fluid frontal area, and not significantly deflect the fluid. A long, narrow tank with a fast opening door is preferable.

HELITANKER CONFORMITY INSPECTION FORM

NATIONAL INTERAGENCY AIRTANKER BOARD
HELITANKER CONFORMITY INSPECTION

1. Company name: _____

   Street address: _____

   City: _____ State: _____ Zip: _____

2. Type of Aircraft: _____

   "N" No." _____

   S/N: _____

   A. Tank No.: _____

      Internal tank capacity: _____

      External tank capacity (including buckets): _____

   B. Total tank capacity _____ gal. No of doors: _____

   C. Tank and systems in conformance with TC or STC No.: _____

   D Flight manual supplement outlining limitation: Yes _____ No _____

3. Weight and Balance Information

   A. Date aircraft weighed with tank installed: _____

   B. Empty weight computed to include tank? Yes _____ No _____

   C. Balance computed and within limits with empty tank? Yes _____ No _____

   D. Balance computed and within limits with full tank? Yes _____ No _____

   E. Gross weight allowable for takeoff (sea level; standard day) _____ lb

   F. Empty weight (including empty tank) _____ lb

   G. Useful load _____ lb

   H. Crew, equipment carried on fire missions _____ lb

   I. Weight of fuel for 1-1/2 hr mission _____ lb

   J. Retardant load allowable _____ lb

   K. Normal operating weight with 1-1/2 hr of fuel _____ lb

4. Retardant tank

   A. Tank of cross over tubes do not leak when filled with water?

      (Maximum leakage 1/2 gal/24 hr) Yes _____ No _____

   B. Is the emergency system independently controlled and operated, enabling the entire load to be dropped in less than six (6) sec? Yes _____ No _____

C. The emergency system is operated by (check one):

Mechanical _____ Pneumatic _____ FluidPressure _____

D. Is the primary dump control position dump control position within easy reach of all required flight crewmembers? Yes _____ No _____

(If electrically operated, is the control wired direct to a source of power such as the normal aircraft electrical bus, and protected by a fuse or circuit breaker of adequate capacity?)

Yes _____ No _____

E. Pneumatic systems. Is a means available to check system pressure on preflight prior to any mission? Yes _____ No _____

F. Do all tanks of 400 gal or more have the capability of being offloaded to no more than 7% of the total certified load capacity? Yes _____ No _____

G. Are all tank doors closable in flight? Yes _____ No _____

(If not, can helicopter land without damage to open doors?) Yes _____ No _____

H. Are all tanks capable of being filled through 3-in single or dual kamlock fittings on either side of the helicopters. Yes _____ No _____

(Are sufficient cross flows provided so that the retardant will be level in all compartments within 30 sec after the pump is stopped, and that no compartment will fill and overflow during the fill cycle, prior to reaching certified volume) Yes _____ No _____

I. Compartments sequenced individually in normal drop configuration are constructed so as to eliminate leakage from one compartment to the other when one has been evacuated?

Yes _____ No _____

J. Are door openings accomplished through primary switches or mechanism located on the cyclic or collective stick? Yes _____ No _____

K. The intervolumeter, if required, provides accurate sequencing of door at intervals continuously variable (accuracy within ±0.1 sec)? Yes _____ No _____

L. A positive level gauge or indicator is provided to show when each compartment is at certified load limit and/or partial load limit if required? Yes _____ No _____

(Gauge or indicator is located readily visible to the loading crew at the loading port)

Yes _____ No _____

M. Retardant Tank Operation

1. Has tank static test and/or pattern evaluation been completed, and all discrepancies been corrected? Yes _____ No _____
2. Test details:

Location: _____ Date of inspection: _____

Testing authority: _____

5. Inspection Details and Results

Location: _____

Date of inspection: _____

Aircraft is: Approved _____ Rejected _____

BOARD TEAM MEMBERS

_____

_____

_____

_____

All "Yes" or "No" answered questions must have "Yes" answers for Board approval of Step No 4.

REMARKS/DISCREPANCIES

AIRTANKER PROBATIONARY EVALUATION FORM

INTERAGENCY AIRTANKER BOARD
AIRTANKER PROBATIONARY EVALUATION

Instructions: The Interagency Airtanker Board requests that you complete this evaluation form after carefully weighing observed operational characteristics. This information will be utilized for final Board acceptance or rejection of the airtanker as a permanently qualified addition to the airtanker fleet.

This evaluation should be as objective as possible, realizing that the aircraft may be flown by many pilots over its lifetime of service. To the extent possible, base your answers on aircraft capabilities rather than pilot skills.

When complete, please send through channels to Chairman, Interagency Airtanker Board.

Aircraft type: _____

Manufacturer's serial No.: _____

"N" No.: _____

A/T No.: _____

Assigned base: _____

Use following code for Sections 1 through 111:

A	=	Average
AA	=	Above average
BA	=	Below average
UA	=	Unacceptable

1. Base Manager Evaluation
   - A. Getaway time _____
   - B. Ground handling characteristics _____
   - C. Maintenance reliability (excluding tank system) _____
   - D. Tank system reliability _____
     1. System breakdowns _____
     2. Leakage _____

2. Lead Plane—Air Attack Boss—Air Co—Evaluation
   - A. Observed maneuvering capability _____
   - B. Ability to approach steep targets _____
   - C. Tank system flexibility on different fuel types and at varying altitudes _____

3. Ground Observer(s)—Evaluation

A. Drop pattern characteristics on:

1. Light fuels _____

2. Intermediate fuels _____

3. Heavy fuels _____

4. Uniformity of coverage _____

4. General Comments:

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Evaluator _____ Date _____

Title and Administrative Organization: _____

*U.S. GOVERNMENT PRINTING OFFICE 1993-0-784-091/61028