2013

Interagency Airtanker Board (IAB)

2013 PROCEDURES AND CRITERIA

This document provides the Procedures and Criteria for evaluating aircraft and dispensing systems used in aerial firefighting on wildland fires.

_/s/ *Scott A Fisher*
Scott A. Fisher
Chair, Interagency Airtanker Board
July 17th, 2013

PROCEDURES AND CRITERIA

for the INTERAGENCY
AIRTANKER BOARD (IAB)

17 July 2013

Board Chair: Scott Fisher
Telephone (208) 387-5968
National Interagency Fire Center
3833 S. Developmental Avenue
Boise, ID 83705

IAB Membership and Advisors July 2013

Scott Fisher,	Voting Member USFS, Chair	Large AT Program Manager
John Kent Hamilton,	Voting Member USFS	Safety Manager
Eric Shilling,	Voting Member USFS	Program Specialist
Guy Exon,	Voting Member USFS	Program Specialist
Glen Claypool,	Voting Member BLM	SEAT Program Manager
Greg House,	Voting Member BLM	Program Specialist
Rod Russell,	Voting Member AMD	Program Specialist
Steve Elwell,	Advisor State Agencies	State Representative
Brett Terning,	Advisor USFS	Technical Specialist
Walker Craig,	Advisor USFS	Helicopter Specialist
Rick Howe,	Advisor USFS	Technical Specialist
Greg Lovellette,	Advisor USFS, MTDC	Technical Specialist
Ryan Becker,	Advisor USFS, San Dimas	Technical Specialist
Matt Olson,	Advisor USFS	Contract Specialist
Vacant,	Advisor AMD	Contract Specialist

Section I. - APPROVAL PROCEDURES

The Board has established the following procedures as a step-by-step process for evaluation and approval of aircraft and tank delivery systems. Responsibilities of the Proponent and the IAB are provided in these procedures. All aircraft and tank delivery systems proposed for approval by the Board shall be submitted in writing by the Proponent to the IAB chairman for processing through this program. The Board shall review material submitted for each step and shall be satisfied that all requirements of a step are met.

The Board shall review these procedures periodically and make revisions commensurate with new technology and the needs of the government. Aviation managers who participate in the chartering authority must indicate a reasonable intent to use an approved resource in order for the Board to consider a proposal and grant full approval.

The Proponent shall bear the cost of and have the responsibility for conducting all tests and for preparing all submissions. The Proponent shall, at their expense, make available to the Board all required information for evaluation and review of the airtanker by the Board.

Commensurate with a FAA certification program under a TC or STC, the Board may request routine and/or special flight test requirements as noted in the IAB criteria.

New airtankers, and older airtankers with newly modified tank and gating systems, may be operated under the IAB "Interim Approval" while field evaluations are conducted.

Procedure A: New Airtanker

Airtanker proposals to which Procedures B or C herein do not apply.

Step 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 tank system and comparing these characteristics with the aircraft operating requirements and tank performance criteria contained herein.

The Board shall review and evaluate the proposed airtanker against aircraft operating requirements and tank performance criteria. The Board will provide advice to participating agency managers on the viability of the Proponents proposal.

Step 2 – Submission of Detailed Data

The Proponent shall submit a copy of the TC or STC and flight manual with the required supplement(s) defining limitations and restrictions imposed on the aircraft in airtanker configuration. The Proponent shall also submit a weight and balance report and center of gravity analysis. The weight and balance report shall include loading information, maximum gross weight, proposed **Board-approved** maximum operating weight (defined under the Aircraft Certification paragraph of the appropriate section), maximum landing weight, zero fuel weight, and maximum allowable retardant weight (figured at **9.0** lbs/gal). The center of gravity (c.g.) analysis shall include the most forward and aft c.g. conditions in both the drop and cruise configurations. The Proponent shall also submit a copy of the engineering drawings for the tank and gating 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 supporting documentation and FAA approvals acceptable to the Board substantiating that such changes do not compromise airworthiness.

Step 3 – Static Test and/or Drop Test Evaluation

The Proponent shall submit test data that substantiates the airtanker meets the requirements of the Retardant/Suppressant Systems paragraphs from the appropriate section.

Step 4 – Inspection by the Board

The Board shall conduct a physical inspection. The Proponent shall make available to the Board all engineering data and drawings of the aircraft and tank in their possession during this inspection. A weight and balance report in the proposed configuration will be provided to the Board during the inspection

Upon completion of this step, the Board shall either reject the airtanker or approve it for a field evaluation period (Interim Approval) **for a maximum of 18 months** performing fire missions.

Step 5 – Operational Field Evaluation

The Board shall obtain operational field evaluation reports at regular intervals from the operator and the using agency during the evaluation period. An extension of the Interim Approval may be granted by **the majority of the voting Board**.

Step 6 – Final Acceptance or Rejection

The Board shall make a final determination of suitability and approve, approve with corrective action, or reject the airtanker.

Procedure B: Airtankers Modified in Conformity to a TC or STC Previously Approved by the Board

Step 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 TC or STC to which it conforms.

Step 2 – Submission of Detailed Data

The Proponent shall submit a statement of conformity (FAA form 8130-9) and Approval for Return to Service after Major Repair or Alteration (FAA form 337), demonstrating compliance with and conformity to the TC or STC, and flight manual, including supplements. The Proponent shall submit a copy of the TC or STC and a flight manual with the required supplement(s) defining limitations and restrictions imposed on the aircraft in airtanker configuration.

The Proponent shall also submit a weight and balance report and center of gravity analysis **for the specific airframe**. The weight and balance report shall include loading information, maximum gross weight, proposed **Board-approved** maximum operating weight (defined under the Aircraft Certification paragraph of the appropriate section), maximum landing weight, zero fuel weight, and maximum allowable retardant weight (figured at **9.0** lbs/gal). The center of gravity analysis shall include the most forward and aft c.g. conditions in both drop and cruise configurations. The Proponent shall also submit a copy of the engineering drawings for the tank and gating 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 supporting documentation and FAA approvals acceptable to the Board which substantiates that such changes do not compromise airworthiness.

Step 3 – Static Test and/or Drop Test Evaluation

The Proponent shall submit test data that substantiates the airtanker meets the requirements of the retardant/suppressant systems paragraphs from the appropriate section.

Step 4 – Inspection by the Board

The Board shall conduct a physical inspection. The Proponent shall make available to the Board all engineering data and drawings of the aircraft and tank in their possession during this inspection. A weight and balance report in the proposed configuration will be provided to the Board during the inspection

Upon completion of this step, the Board shall either reject the airtanker or approve it for a field evaluation period (Interim Approval) performing fire missions.

Step 5 – Operational Field Evaluation

The Board shall obtain operational field evaluation reports at regular intervals from the operator and the using agency during the evaluation period. An extension of the Interim Approval may be granted by the Chair.

Step 6 – Final Acceptance or Rejection

The Board shall make a final determination of suitability and approve, approve with corrective action, or reject the airtanker.

Procedure C: Modification of Airtanker Previously Approved by the Board

This procedure shall be applicable to all prior approved airtankers, whether approved under these procedures or under "Grandfathered" procedures.

Step 1 – Basic Data

The Proponent of any modification to a previously 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 2 – Determination of Requirements

The Board shall review the proposed modification and establish appropriate requirements for approval thereof.

Step 3 – Final Acceptance or Rejection

The Board shall make a final determination of suitability and approve, approve with corrective action, or reject the airtanker.

Procedure D: Re-approval of Airtanker Previously Approved by the Board

All aircraft shown as approved on the IAB airtanker list shall conform to the Procedures and Criteria of the IAB. To remain on the approved list, aircraft shall receive a conformity inspection by the Board to verify compliance with requirements every six years, or at the discretion of the Board.

Approved aircraft transferred from one entity to another are removed from the list and shall seek re-approval through a conformity inspection.

Procedure E: Alternative Method of Compliance

A Proponent may elect to demonstrate that a computer simulation meets a Static or Drop Test requirement or other test method not provided by the IAB. Before the Board considers such simulation or test results, the Proponent shall provide the following to the Board:

1. A description of the proposed methodology.

2. A description of the test equipment and any and all controlling software.

3. The procedure for conducting the test/demonstration.

4. A description of the configuration control system used by the Proponent which assures traceability of changes to all test equipment, all documented procedures, and all software used in the conduct of the test/demonstration. The configuration control system shall be documented in the company manuals or operating procedures. These documents shall accompany the system description.

5. A comparison of the proposed method and the current method used to demonstrate compliance with the requirements. This comparison shall be in terms of accuracy, precision, and repeatability.

6. A description of the company metrology system for any and all test equipment used for the conduct of the test/demonstration procedure. The metrology system shall be documented in the company manuals or operating procedures. These documents shall accompany the system description.

7. Test data from the proposed system which clearly shows the repeatability of the system. The number of tests performed to demonstrate repeatability shall be statistically significant.

Once the Proponent receives approval of proposed methodology, the Proponent shall seek Board approval prior to each and every application. Any change in the approved

procedure, equipment employed, or software employed shall require re-approval by the Board prior to its use as a means of demonstration.

Procedure F: Evaluation of US Military Services Tank and Gating Systems

This procedure shall apply to the retardant delivery for operation by US Military Services on US Military inventory aircraft. Aircraft requirements, other than those associated with the retardant delivery system, described in any section of this document do not apply under this application procedure; the US Military Service seeking approval is responsible for aircraft flight safety and other aircraft and operational requirements. **Note:** The Proponent may elect to identify a designee for completion of the steps presented below.

Step 1 – Basic Data

The Proponent shall submit to the Board:

1. A description and sketches or drawings of the proposed tank and gating system

2. The carriage aircraft and anticipated build quantity

3. A proposed schedule for the development

Step 2 – Submission of Detailed Data

The Proponent shall submit a flight manual supplement that describes the operation of the retardant/suppressant system. The Proponent shall weigh the retardant/suppressant system and all airborne equipment, except for any equipment integrated into the aircraft. The Proponent shall prepare and submit a weight and center of gravity report on the removable equipment of the retardant/suppressant system. The report shall examine the retardant/suppressant system alone in the empty and uncharged condition (ready for storage/transport). All components that are disassembled and intended to be stored separately shall be analyzed separately.

Step 3 – Static Test or Drop Test Evaluations

The Proponent shall submit test data that substantiates the retardant/suppressant delivery system meets the requirements of the Retardant/Suppressant Systems paragraph from the appropriate section.

Step 4 – Inspection by the Board

The Board shall conduct a physical inspection of the equipment installed in the aircraft. The Proponent shall make available to the Board all engineering data and drawings of the tank and gating system during the inspection.

Upon completion of this step, the Board shall either inform the Proponent of deficiencies or approve the tank and gating system for an operational field evaluation. The length of field trial shall be defined by the Board and will be specified in operational flight hours.

Step 5 – Operational Field Evaluation

The Board shall obtain operational field evaluation reports from the US Military Service Branch and the using agency/agencies during the evaluation period.

Step 6 – Final Acceptance or Rejection

The Board shall review the proposal for operation by the US Military Service on agency fires and approve, approve with corrective action, or reject the system for use on inventory aircraft.

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

SECTION II—MULTI-ENGINE AMPHIBIOUS / WATER SCOOPING AIRCRAFT REQUIREMENTS

APPLICABILITY

These requirements, criteria, and evaluation procedures shall be applicable to all fixed-wing multi-engine amphibious and/or aircraft operating in the interagency fire suppression environment. Single engine amphibious water scooping aircraft will not be evaluated by the Board. Aircraft approved under this section will be those that function primarily in amphibious water scooping operations, but may be utilized as land based retardant aircraft if they meet land based airtanker criteria.

PROPONENT REQUIREMENTS

The Proponent shall establish that for:

AMPHIBIOUS AIRCRAFT OPERATING FROM LAND BASES. Amphibious aircraft operating from retardant bases will be capable of loading, carrying, and dispensing approved, long-term retardants as provided by those bases. When utilized as land based airtankers, operating from airtanker bases and airtanker reload facilities, amphibious aircraft are subject to the same Board requirements of multi-engine airtankers, pursuant to SECTION III: MULTI-ENGINE AIRTANKER REQUIREMENTS.

WATER SCOOPING AIRCRAFT. Suppression aircraft engaged in water scooping operations for the purpose of dispensing water, foam, or other chemical concentrate will adhere to the following criteria:

A. Aircraft Certification

1. The aircraft shall be certificated under Federal Aviation Regulations 14 CFR 21 and 14 CFR 25 or foreign or military certification procedures and airworthiness standards that provide equivalent safety.

2. 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, TC or STC, or approved FAA Flight Supplements.

3. The Proponent shall demonstrate that the aircraft is capable of being operated at **Board-approved** maximum after water scooping weight in accordance with operating limitations imposed by any applicable TC, STC or approved FAA Flight Supplements during all operations. **Board-approved** maximum after water scooping weight shall include the following:

a. Empty weight in water scooping configuration.
b. Minimum required crew and flight kit.
c. Fire suppressant additive sufficient for at least 10 aerial drops at a 0.3 percent concentration if so equipped.
d. Disposable load (being the maximum load for which the Proponent seeks approval).
e. Two and one-half hours of fuel at 55 percent power in cruise at 5,000 ft MSL
f. All other necessary fluids, i.e. oil, hydraulic fluid, etc.

4. Water scoopers shall have a limit load factor of not less than 2.5 g positive and 1.0 g negative, in cruise flight.

B. Aircraft Performance during Scooping Operations

1. An aircraft operating at the **Board-approved** maximum after water scooping weight (not to exceed the FAA approved maximum) with all engines operating shall be able to lift off and climb at a rate of at least 200 fpm, at 5,000 feet Pressure Altitude with zero wind and a temperature of ISA +15 C. Maximum after water scooping weight is the permissible maximum gross weight of the aircraft after water pickup or scooping. Total water pickup distance is defined as including touchdown beginning from an approach height of 50 ft, the filling of the tanks, and lift off and subsequent climb out to a height of 50 ft. The aircraft flight manual or approved FAA Flight Manual Supplements must verify that projected aircraft performance is compatible with the available water pickup distance to ensure safe operations.

2. The minimum drop speed is not less than the V_{mca} nor 1.25 V_s with both speeds being evaluated in the drop configuration.

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

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

5. Release offload in all normal drop configurations and at all normal drop speeds does not result in dangerous or seriously objectionable flight characteristics.

C. Congested Area Operations

The proposed scooper is capable of meeting the constraints of FAR 137.51 (b) (5) i and ii, “Operation Over Congested Areas,” at the atmospheric conditions present and at the **Board-approved** maximum after water scooping weight.

D. Engines

Aircraft is multi-engine powered (either by reciprocating or turbine power plants).

E. Retardant/Suppressant Systems

1. Flow rates shall be at least 400 gallons per second.

2. The following elements from section VII apply to Multi-engine Amphibious / Water Scooping Aircraft: **2a-c, 4a, and 5a.**

SECTION III—MULTI-ENGINE AIRTANKER REQUIREMENTS

APPLICABILITY

These requirements, criteria and evaluation procedures shall be applicable to all land based multi-engine fixed-wing airtankers submitted after July 2013. Those previously qualified under are considered "grandfathered" and the requirements from previous editions of the Procedures and Criteria applies to them unless they seek re-approval under this section.

(**Note:** Those paragraphs below bearing an asterisk (*) shall be subject to test during FAA certification testing and the FAA flight test report shall be submitted to the Board.)

PROPONENT REQUIREMENTS

The Proponent shall establish that:

A. Aircraft Certification

The aircraft shall be certificated under the Code of Federal Aviation Regulations (CFR), 14 CFR 21 and 14 CFR 25 or foreign or military certification procedures and airworthiness standards that provide equivalent safety.

A military surplus aircraft that is of a type that was originally certificated under the Federal Aviation Regulations (FAR) 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 STC.

The Proponent shall demonstrate that the aircraft is capable of being operated at the **Board-approved** maximum operating weight in accordance with operating limitations imposed by the applicable TC or STC during all approved operations. **Board approved** maximum operating weight shall include the following:

a. Empty weight in airtanker configuration.
b. Minimum required crew and flight kit.
c. Full retardant payload, being the maximum payload for which the Proponent seeks approval.
d. Two and one-half hours of fuel computed at 85% of maximum cruise speed at or above 14,000 feet MSL at ISA +10 C without exceeding manufacturer or FAA operating limitations. **(NOTE: The altitude will be based on a profile for a planned 30 minute response from takeoff role at Sea Level to arrival at 2500 feet over a hypothetical fire at Sea Level.)**
e. All other necessary fluids, i.e., engine oil, hydraulic fluid, water, methanol, etc.

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

B. Aircraft Ground Roll

Aircraft at the **Board-approved** maximum operating weight (not to exceed FAA approved gross weight) shall be able to takeoff at Sea Level with zero wind and a temperature of ISA +15 C and with a ground roll not to exceed 6,000 ft. Downloading from the maximum operating weight will occur so as to insure that:

1) With a critical engine failure at lift-off under the stated conditions, the aircraft shall be able to continue the takeoff and maintain at least a 100 fpm rate of climb, while retaining the retardant load and,

2) With a critical engine failure at lift-off under the stated conditions, and after jettison of the load, the aircraft shall be capable of exceeding the climb gradients required in FAR 25 for all takeoff segments.

C. Congested Area

The proposed airtanker shall be capable of meeting the constraints of FAR 137.51 (b) (5) i and ii, "Operation over Congested Areas," at assigned airtanker bases. If the proposed airtanker cannot meet this requirement at the **Board-approved** maximum operating weight, specified in B herein, then downloading will be allowed for congested area operation. For the purposes of IAB approval, the proposed airtanker must be capable of meeting accelerate-stop/balance field length with a ground roll not to exceed 7,000 ft.

D. Engine

Aircraft shall be multi-engine.

E.* Retardant Release Effect on Flight Conditions

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 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

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

G.* Climb Rate

Aircraft shall be capable of a minimum of 500 fpm rate of climb at the **Board-approved** maximum operating weight, at 14,000 ft pressure altitude, ISA +10 C at normal (published) climb speed with maximum allowable power.

H. Descent Profile

Aircraft shall be capable of descending at **Board-approved** maximum operating weight along a 13 percent (7.4°) slope for 30 seconds to 5,000 ft pressure altitude in the drop configuration without exceeding maximum drop speed. **At the 25 second mark, a full load of water shall be dispensed at coverage level 6 and again at coverage level 8 and demonstrate no more than 7% difference in average flow rate from grid results**.

I.* Stall Warning

At forward and aft c.g., at approach to stall, there shall be clear and distinct warning to the pilot and the aircraft shall have no adverse stall characteristics.

J.* Longitudinal Control Force

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

K.* Aircraft Dynamic Stability

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/Dioxide

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 Production

Aircraft proposed shall be in current production, or available in sufficient quantities to support twice the proposed number of flyable airtankers. **Support from the OEM or other engineering authority will be described.**

N. Damage Tolerance and Fatigue Evaluation

Proponent shall provide evidence of a Damage Tolerance and Fatigue Evaluation in accordance with 14 CFR 25.571 (a)(b) and/or (c). The evaluation must include a determination that the widespread fatigue damage will not occur within the design service goal of the airplane OR that the structure, as modified for dispensing liquids in aerial firefighting, be able to withstand repeated loads of variable magnitude expected during its service life without exhibiting detectable cracks.

O. Field of Vision

Field of vision shall be unobstructed. The visibility of an airtanker shall be quantified using the procedure described in Airtanker Cockpit Laser Visibility Evaluation Device, Revision I, 1992, USDA Forest Service, San Dimas Technology and Development Center (SDTDC), San Dimas, CA 91773.

A plot of cockpit visibility shall be made, showing the limits of clear visibility in angular coordinates. Plots shall be evaluated to determine the total area shown for clear visibility in units of degrees squared (deg^2). The minimum vision area shall be 4870 deg^2.

P. Retardant/Suppressant Systems

The following elements from section VII apply to Multi-engine Airtankers: **ALL**

SECTION IV—SINGLE-ENGINE AIRTANKER (SEAT) REQUIREMENTS

APPLICABILITY

These requirements, criteria, and evaluation procedures shall be applicable to all land based fixed-wing single engine airtankers (SEAT) operating in the interagency fire suppression environment with 800 or more gallons.

PROPONENT REQUIREMENTS

The Proponent shall establish that:

A. Aircraft Certification

1. The aircraft is certificated under Federal Aviation Regulations 14 CFR 21.

2. The Proponent shall demonstrate that the aircraft is capable of being operated at the **Board-approved** maximum operating weight in accordance with operating limitations imposed by the applicable TC, STC, or approved FAA Flight Supplements during all operations. **Board-approved** maximum operating weight shall include the following:

   a. Empty weight in airtanker configuration.
   b. Minimum required crew and flight kit.
   c. Full retardant or suppressant payload for which the Proponent seeks approval.
   d. Ninety minutes of fuel at the average burn rate.
   e. All other necessary fluids, i.e. oil, hydraulic fluid, etc.

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

B. Retardant Release Characteristics

1. The minimum drop speed is not less than 1.25 V_s in the drop configuration.

2. Longitudinal stability is positive in the drop configuration throughout the drop speed range.

3. Release of load in all normal drop configurations and at all normal drop speeds does not result in dangerous nor seriously objectionable flight characteristics.

C. Congested Area Operations

The proposed SEAT shall be capable of meeting the constraints of FAR 137.51 (b) (5) i and ii, “Operation over Congested Areas,” at the atmospheric conditions present.

D. Retardant/Suppressant Systems

1.Flow rates shall be at least 400 gallons per second.

2.The following elements from section VII apply to SEAT: **1, 2a-c, 3a, 4a, 5a and 8a**.

SECTION V—HELITANKER REQUIREMENTS

APPLICABILITY

These requirements, criteria, and evaluation procedures shall be applicable to all helicopters designated as helitankers used in fire suppression activities upon which are installed a fixed internal or external tank. Buckets will not be considered. Helitankers shall be a Type 1 helicopter **with a tank** capable of lifting 1000 gallons of water at sea level (STP).

PROPONENT REQUIREMENTS

The Proponent shall establish that:

A. Aircraft Certification

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.

1. The following for each proposed helitanker shall be submitted to the Board.
   a. TC or STC including installation of the fixed tank(s).
   b. Flight manual/supplement showing FAA limitations while equipped as a helitanker.
   c. Weight and balance showing loading information gross weight, retardant load weight and balance with retardant tanks empty, loaded and all possible partial load situations.

2. The Proponent shall demonstrate that the aircraft is capable of being operated at the **Board-approved** maximum operating weight in accordance with operating limitations imposed by the applicable TC or STC. **Board-approved** maximum operating weight shall include the following:

   a. Empty weight in the helitanker configuration.
   b. Minimum required crew and flight kit.
   c. Full retardant payload, being the maximum payload for which the Proponent seeks board approval.
   d. Weight for one and one-half hours of fuel at cruise power.
   e. All other necessary fluids, i.e., engine oil, hydraulic fluid, water-methanol, etc.

B. Retardant/Suppressant Systems

The following elements from section VII apply to Helitankers: **ALL**

SECTION VI — REQUIREMENTS for AIRTANKERS with OVER 8,000 GALLON CAPACITY

APPLICABILITY

These requirements, criteria and evaluation procedures shall be applicable to all land based multi-engine fixed-wing airtankers with over 8,000 gallon retardant capacity.

(**Note:** Those paragraphs below bearing an asterisk (*) shall be subject to test during FAA certification testing and the FAA flight test report shall be submitted to the Board.)

PROPONENT REQUIREMENTS

The Proponent shall establish that:

A. Aircraft Certification

The aircraft shall be certificated under the Code of Federal Aviation Regulations (CFR), 14 CFR 21 and 14 CFR 25 or foreign or military certification procedures and airworthiness standards that provide equivalent safety.

The Proponent shall demonstrate that the aircraft is capable of being operated at the **Board-approved** maximum operating weight in accordance with operating limitations imposed by the applicable TC or STC during all approved operations. **Board-approved** maximum operating weight shall include the following:

a. Empty weight in airtanker configuration.
b. Minimum required crew and flight kit.
c. Full retardant payload, being the maximum payload for which the Proponent seeks approval.
d. Two and one-half hours of fuel calculated at 85% of maximum cruise speed at 18,000 feet MSL at ISA +10 C without exceeding manufacturer or FAA operating limitations. (NOTE: The altitude will be based on a profile for a planned 30 minute response from takeoff role at Sea Level to arrival at 2500 feet over a hypothetical fire at Sea Level.)
e. All other necessary fluids, i.e., engine oil, hydraulic fluid, water, methanol, etc.

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

B. Aircraft Ground Roll

Aircraft at the **Board-approved** maximum operating weight (not to exceed FAA approved gross weight) shall be able to takeoff at Sea Level with zero wind and a temperature of ISA +15 C and with a ground roll equivalent for Part 121 operations. Downloading from the maximum operating weight will occur so as to insure that with a critical engine failure at lift-off under the existing conditions, the aircraft shall be capable of exceeding the climb gradients required in FAR 25 for all takeoff segments while retaining the original load of retardant.

C. Congested Area

The proposed airtanker shall be capable of meeting the constraints of FAR 137.51 (b) (5) i and ii, "Operation over Congested Areas," at a list of bases provided by the Proponent from which they intend to operate. The minimum number of bases proposed shall not be less than 10. For the purposes of IAB approval, the proposed airtanker must be capable of meeting accelerate-stop/balance field length with full retardant load for all of the proposed bases of operation.

D. Engine

Aircraft shall be multi-engine.

E.* Retardant Release Effect on Flight Conditions

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 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

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

G.* Climb Rate

Aircraft shall be capable of a minimum of 800 fpm rate of climb at the **Board-approved** maximum operating weight, at 14,000 ft pressure altitude, ISA +10 C with maximum allowable power.

H. Descent

Aircraft shall be capable of descending at **Board-approved** maximum operating weight along an 8 percent (4.6°) slope for 30 seconds to a 5,000 ft pressure altitude in the drop configuration without exceeding maximum drop speed. At the 20 second mark, a full load of water shall be dispensed at coverage level 6 and again at coverage level 8 and shall demonstrate no more than 7% difference in average flow rate from grid results.

I.* Stall Warning

At forward and aft c.g., at approach to stall, there shall be clear and distinct warning to the pilot and the aircraft shall have no adverse stall characteristics.

J.* Longitudinal Control Force

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

K.* Aircraft Dynamic Stability

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.* Reserved

M. Aircraft Production

Aircraft proposed shall be in current production, or available in sufficient quantities to support twice the proposed number of flyable airtankers. Support from the OEM or other engineering authority will be described.

N. Damage Tolerance and Fatigue Evaluation

Proponent shall provide evidence of a Damage Tolerance and Fatigue Evaluation in accordance with 14 CFR 25.571 (a) (b) and/or (c). The evaluation must include a determination that the widespread fatigue damage will not occur within the design service goal of the airplane OR that the structure, as modified for dispensing liquids in aerial firefighting, be able to withstand repeated loads of variable magnitude expected during its service life without exhibiting detectable cracks.

O. Field of Vision

Field of vision shall be unobstructed. The visibility of an airtanker shall be quantified using the procedure described in Airtanker Cockpit Laser Visibility Evaluation Device, Revision I, 1992, USDA Forest Service, San Dimas Technology and Development Center (SDTDC), San Dimas, CA 91773.

A plot of cockpit visibility shall be made, showing the limits of clear visibility in angular coordinates. Plots shall be evaluated to determine the total area shown for clear visibility in units of degrees squared (deg^2). The minimum vision area shall be 4870 deg^2.

P. Retardant/Suppressant Systems

The following elements from section VII apply to Over 8,000 Gallon Airtankers: **ALL**

SECTION VII – TANK SYSTEM CRITERIA

A. GENERAL

Discussion: The criteria in this section insure that tank systems from **August 2013** forward meet the minimum ground pattern performance requirements established by extensive test histories. They also require features that insure tank compatibility with existing agency airtanker and reload bases, as well as features that enhance safety in the event of an in-flight emergency.

Definition: Throughout this section, the term "door" shall refer to any opening(s) the retardant tank uses to release retardant in normal drop configurations.

Definition: Throughout this section, the term "gpc" shall mean gallons per hundred square feet, which is the standard unit of measurement used to report the coverage level attained by a retardant drop. The quantity measured is the same as that measured by standard rain gauges.

Definition: Throughout this section, the term Board-approved maximum volume refers to the volume of fluid that the aircraft can carry at the **Board Approved** maximum operating weight (or after scooping weight). If retardant is the normal fluid, then the weight of the volume is **based on 9.0 pounds per gallon**, otherwise it is based on water.

1. Leakage -

Requirement: The system shall not leak when loaded with water to the Board-approved maximum volume. Following initial loading, the tank system shall be capable of sitting loaded for a **minimum of 72 hours without leaking more than 1.5 gallons**.

Procedure: Load the tank to the Board-approved maximum volume with water using an approved meter or weighing system. Determine the leakage occurring over a 12-hour period (usually this will be overnight). The leakage volume for the 12-hour period shall not exceed one quart.

Requirement. For all systems **pressurized above 10 psig**, components upstream of the exit door(s) shall not leak when armed and loaded with water to the maximum Board approved retardant volume. Following initial loading, the tank system upstream of the exit door(s) shall be capable of sitting loaded and armed to operational pressure and display no signs of leakage (air or fluid). **While loaded and armed, the exit door (s) shall not leak or seep.**

Procedure: Load the tank to the maximum Board approved volume with water and arm the system at operational pressure. Inspect all components upstream of the exit door(s) for air or fluid leakage. Determine the leakage occurring at the exit door(s) over a 2 hour period while armed. **The observed cumulative leakage volume at the door(s) for the 2-hour period shall not exceed 6 ounces. For all locations upstream of the door(s) the observable leakage shall not create a drop in pressure over the21-hour period or show evidence of a seeping.**

2. Emergency Dump System –

Requirements:

a. All tanks shall be equipped with an independently controlled and operated emergency dump system.
b. The emergency dump control shall be within easy reach of each pilot while strapped into their respective seats.
c. The emergency dump system shall enable the entire load to be dropped in 6 seconds or at the maximum delivery flow rate, whichever is longer.
d. Normal function or failure of the main system shall not affect the emergency system.
e. Emergency systems dependent on normal operating aircraft or tank and gating system for initial charge shall have an independent pressure gauge or indicator readily visible to the crew.
f. Emergency systems dependent on pre-charged bottles shall have a positive means of checking system charge during preflight.
g. The **door operation for emergency dump shall be controlled by a redundant and separate system from the normal system. Normal function or failure of the aircraft's mechanical, pneumatic, hydraulic or electrical systems shall not affect the emergency system.**
h. Emergency systems operated by pneumatic or hydraulic pressure shall be isolated from the normal tank and gating system pressure.
i. Electrically operated controls shall be wired directly to a source of power isolated from the normal aircraft electrical buss and protected by a fuse or circuit breaker of adequate capacity.

Pressurized Systems (in addition to above requirements)

j. Gravity feed evacuation of tank may be **considered if it is determined that a pressurized release could cause adverse flight characteristics during an emergency situation** and is substantiated through a documented analysis.
k. All pressurized air (main tank and high pressure reservoir) **shall be vented to outside of aircraft** after emergency dump activation.
l. A single switch shall **activate the emergency dump**. There may be duplicate locations of the switch, but initiation of the emergency dump shall require the activation of a single switch. Conversely if duplicate switches exist, the

activation of any or all of them within any period of time shall not cause the emergency dump not to initiate.

m. Activation of the emergency dump shall be the same irrespective of the state of the tank (armed or disarmed), i.e. a single switch activation. The emergency dump implementation between armed and disarmed may be different, since the fluid is not under pressure in the disarmed state. However the disarmed implementation shall result in a time that is less than 3 times the armed value or 45 seconds, which ever is less.

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

3. Fill Rate and Distribution –

Requirements: All retardant tanks:

a. Shall use 3 inch diameter Kamloc or equivalent fittings for retardant loading.

b. Shall be capable of being filled in conformity with the approved retardant load at an average fill of not less than 500 gpm when filling through only one fill port. **If the tank system implementation results in a fluid head height greater than 12 feet during filling (as seen from the ramp location), the system shall provide a means of supplementing the filling process to achieve 500 gpm.** This supplement may be a separate piece of equipment.

c. Fill ports shall be available to loading personnel on both sides of the aircraft or at the tail.

d. The retardant shall be level throughout the tank within 30 seconds after the loading pump is stopped.

e. Shall not have sections that fill faster than others such that retardant overflows from the tank (other than level indicator holes) before the Board-approved maximum volume is reached.

Procedure: Fill the tanks to the Board-approved maximum volume at 500 gpm and check for even fill levels throughout the tank.

4. Tank Fill Gauge –

Requirements:

a. A positive level gauge or indicator shall be provided that shows when the tank is filled to the Board-approved maximum volume, or when the tank is filled to partial load points if reduced loads are used.

b. The gauge or indicator shall be readily visible to the loading crew at the loading ports and the tank capacity of each loading level shall be clearly marked.

Procedure: Check the 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 Board approved maximum volume.

5. Tank Drop Controller

Discussion: Tank drop controllers consist of three systems: the primary release **switch(es)** used by flight crew to release the retardant load; the **control panel** that allows setting of various drop configurations and displays current system status; and the **electronic and mechanical systems** that physically control the release of retardant from the aircraft. Each subsystem carries its own requirements, and the entire drop controller must operate in harmony to meet the general system performance requirements

a. Requirement: Each airtanker shall be equipped with a tank drop controller actuated by a positive returning primary drop switch located on the pilots flight controls. The controller shall include an arming switch or switches to prevent release of the retardant by inadvertent actuation of the primary drop switch.

b. Requirement: The drop controller shall include a selector that performs the programmed release information until the settings are manually changed. The selector shall be positioned within clear view and easy reach of the pilot(s) and/or crew during flight. The selector shall provide options corresponding to the ground pattern and multiple release performance requirements in Section 9 of this chapter, whichever applies to the tank system. The controller shall perform the programmed release configuration as long as the primary drop switch is actuated.

c. Requirement: The drop controller shall include indicators and/or an annunciator panel that indicates whether the tank is armed; the volume of retardant (and any other items required for normal releases) remaining in the system, and the currently programmed release configuration. The indicators/annunciator panel shall be positioned within clear view of the pilot(s) and/or crew during flight.

d. Requirement: The delay (or lack thereof) between drop control switch actuation and start of door opening shall not vary from drop to drop for any release configurations. When more than one door opens simultaneously, all doors involved shall begin opening **within 0.25** seconds of first door movement. **The System shall be implemented such that all doors shall reach the commanded position within 20 %(in both time and position) of each other.**

e. Requirement: All tank doors shall return to the closed position immediately after completing a normal release cycle.

Procedure: Inspect the physical layout and placement of controller components in the cockpit. Operate the system using all available selector combinations and observe indicator/annunciator changes and door action during normal system operation.

6. Offloading Requirements

a. Requirement: All tanks shall have the capability of being offloaded through standard 3 inch Kamloc or equivalent couplers.

b. Requirement: Upon offloading, the amount of retardant remaining in the tank shall be **no more than 3 percent or 100 gallons, whichever is less**, of the total **Board-approved** maximum volume.

Procedure: Demonstrate the offload capability by connecting a 3 inch diameter hose and offloading water from the tank, or by inspecting the operation of the offload mechanism and verifying that **no more than 3 percent or 100 gallons, whichever is less,** of the maximum volume can remain after offloading.

7. Spill Management Requirements

Discussion: Airtankers and helitankers are required to maintain acceptable performance in the event of a retardant system failure, particularly in the event that retardant inadvertently leaks or spills from the tank. For aircraft where all the retardant is contained outside the fuselage and no possible leak or spill could cause the aircraft balance to exceed cg limitations, no further consideration is necessary. For all other aircraft, the retardant system must not allow unsafe flight condition to develop.

a. Requirement: The tank system shall not leak, spill nor allow retardant to slosh out of the tank during aircraft taxi or flight.

b. Requirement: The tank system shall provide a means for releasing retardant from the fuselage in the event that a tank fails structurally and releases retardant into the fuselage **at a minimum rate of 5% per second of the maximum Board Approved volume**.

Procedure: The Proponent shall submit a written assessment of the potential for the tank to leak, burst, or rupture into the fuselage. Where this potential exists, design elements shall be incorporated to detect and evacuate or contain any spilled fluid. Check operation of any mechanical devices used to meet the requirement.

B. GROUND PATTERN PERFORMANCE

Discussion: The best information available indicates that the retardant coverage levels required to suppress typical fires occurring in forests and rangelands varies between 1 and 8 gallons per hundred square feet (gpc) depending on the fuels, weather, fire behavior, etc. Since the flow rate from an aerial delivery system is the most significant controllable factor in determining the level of retardant coverage that is obtained, the line building efficiency of individual airtankers is increased by incorporating the ability to regulate the flow rate of the retardant during release at different tank volumes. Regulation to maintain a constant flow rate throughout an entire release has proven to create a more effective ground pattern than poorly or unregulated flow.

In-flight drop testing is required for delivery systems where the ground pattern performance cannot be predicted from the measured flow rates because the data to form this relationship does not exist. This usually occurs when a system will be operated at a new drop height or speed, but may also be necessary if the system employs a significantly different means of releasing retardant than previously tested systems.

All new airtankers (that is, new airtankers applying for approval to which Procedure A applies) must also undergo static testing to collect information needed to verify the ability of the airtanker to reproduce the required constant flow rates and volumes discussed in this section, even if a drop test is not required. The static test provides information that will be used throughout the life of the airtanker type to verify that the retardant system is still capable of performing the required drop types and conforms to the original approval.

8. External Performance Requirements

a. Requirement: All tank systems shall demonstrate the ability to apply a ground pattern that is continuous at the selected coverage level for any available drop volume

Procedure: If the ground pattern performance of the system can be estimated by comparison to previously collected data, compare the flow rate histories collected during static testing to verify that flow rate does not deviate significantly during the release from the flow history collected during the comparison drop tests.

If the performance cannot be estimated, review the ground patterns collected during drop testing for any inconsistencies in the pattern. Inconsistencies appear as portions in the middle of the pattern where coverage level throughout the pattern width decreases by more than 20 percent of the value of adjacent downrange coverage levels. For example, a target 8 gpc drop containing a

crosswidth swath of 6 gpc between swaths of 8 gpc would fail, since the 2 gpc decrease represents 25 percent of the selected 8 gpc.

b. Requirement: All tank system proponents shall provide a means to make instantaneous digital measurements of flow rate during static testing. Each measurement shall include one value corresponding to a measurement of time (either relative to the actuation of the drop switch or absolute) and another value corresponding to volume in the tank. If the value corresponding to volume in the tank is not a direct measurement of retardant volume, the proponent shall provide a detailed explanation of how to interpret the data as a measurement of volume.

Procedure: Verify that a means exists to instantaneously measure flow rate during static testing. Check the accuracy of the measurements during static testing by comparing the reported average flow rate from that estimated by measuring the volume dropped and dividing by the total time required for the drop.

9. Release Control Requirements

a. Requirement: All airtankers shall be capable of making multiple equal volume releases as shown in Table 1.

Table 1
Minimum Number of Equal Volume Releases

Volume of Airtanker (gal)	Number of Equal Volume Releases
800 to 999	2 or more equal releases
1000 to 2499	4 or more equal releases
2500 to 3999	6 or more equal releases
4000 and greater	8 or more equal releases

b. Requirement: Based on the number of equal releases required by Table 1, the airtanker shall have the capability of dividing its load into the equal partial releases listed in Table 2:

Table 2
Required Fractional Drops

Number of Equal Releases	Number of Equal Volume Releases From a Full Load
2	2 or more
4	2 and 4 or more
6	2, 3 and 6 or more
8	2, 4 and 8 or more

Proponents of new systems shall define the number of equal volume releases for which they seek approval, provided the minimum number is not less than as shown in Table 1.

c. Requirement: No individual release shall release less than 200 gallons. There shall be less than 1% remaining fluid from a gravity drop systems, **and less than 3% remaining fluid from a pressurized system, after the last of the equal releases have been made.**

Volumes released from systems are considered equal when the measured volumes do not vary greater than plus or minus 25 percent from the volume of the equal releases defined by the proponent. All specified releases in a series must meet the plus or minus 25 percent standard for the series to be considered acceptable. For instance, a 2500-gallon tank is required to make six equal releases. Each release must be within 25 percent of 417 gallons, i.e. between 312 and 520 gallons. If the tank releases 520 gallons for each drop, the first four drops will meet the 25 percent requirement, as will the fifth 420 gallon drop, but at this point the tank will be empty and the sixth drop required to meet the equal volume drop requirement will be impossible. The tank would thus fail the equal volume release requirement. Similarly, if the same tank releases 466 gallons for each of the first five releases, the sixth release will only contain 170 gallons, which fails both the 25 percent requirement and the 200-gallon minimum release. The tank would again fail the equal volume release requirement.

Procedure: Record volume information collected during static testing and verify that the above requirements are met.

d. Requirement: The system shall demonstrate the ability to produce the lengths of line per 100 gallons of load released as defined in Table 3. Drops shall be made at a 200-foot drop height or the minimum safe drop height if greater than 200 feet, and a defined drop speed within operational limits of the airtanker. Minimum safe drop height for helicopters and SEATs may be less than 200 feet.

Table 3
Minimum Length of Line per 100 Gallons

	Volume Released – Gallons				
Coverage Level (gpc)	200-399	400-599	600-799	800-1399	>1399
	Feet of Line per 100 Gallons				
1.0	75	75	75	75	75
2.0	50	50	50	50	50
3.0	15	20	30	30	30
4.0	0	5	20	20	20
6.0	0	0	5	10	15
8.0	0	0	0	5	7

Procedure: Drop test the airtanker using a sampling grid to directly determine the ability of the airtanker to produce the required line lengths. This test consists of performing a series of drops over an array of plastic bowls much like Cool Whip containers and measuring the quantity of material in each bowl to determine the drop pattern.

This performance shall be determined by performing a series of drops to determine the drop patterns produced. If an accurate method of determining performance for the system exists based on the flow rate/performance information of a similar retardant delivery system, then a drop test may not be necessary. Flow rate and performance information is typically gathered by static testing when a drop test is not required.

The flow/performance of the retardant delivery system shall be reproducible for all drop types. The average flow rates for releases necessary to meet the coverage level requirements of the same volume and flow control setting shall vary within a range (low to high measured value) which is not greater than 15 percent of the mean value flow rate for the drop type. Drop types meeting the coverage level requirements will be identified.

SECTION VIII—FORMS

IAB AIRTANKER OPERATIONAL FIELD EVALUATION FOR INTERIM APPROVALS

Instructions: The Interagency Airtanker Board requests that you complete a written evaluation of the provisionally approved airtanker after carefully weighing observed operational characteristics. This information will be utilized for final Board **acceptance** or **rejection** of the airtanker as an approved airtanker. Use of this or other similar forms is approved for submittal of the requested information.

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
National Interagency Fire Center
3833 S. Developmental Avenue
Boise, ID 83705

Aircraft type_____

Manufacturer's Serial No._____

"N" No._____

A/T No._____

Assigned Base_____

Use following codes for Sections 1 through 3:

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

1. Base Manager Evaluation

A. Getaway time_____

B. Ground handling characteristics_____

C. Maintenance reliability (excluding tank and gating system)_____

D. Tank system reliability_____

(1) System breakdowns _____

(2) Leakage _____

2. Lead Plane—Air Attack—Helicopter Coordinator—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 _____

INTERAGENCY AIRTANKER BOARD CHANGE PROPOSAL

This form is provided to allow for the submission of proposed changes to the IAB Charter, Criteria and Forms document. Please provide all the information identified below to assure understanding of your change. Additionally, provide the exact wording of the change you would like to propose. When complete, send this form to:

Chairman, Interagency Airtanker Board
National Interagency Fire Center
3833 S. Developmental Avenue
Boise, ID 83705

Your Name _____

Your Affiliation/Company _____

Your Address _____

Your Phone Number _____

Your FAX Number _____

Your E-mail Address _____

Existing portion or section you are proposing be changed
Page No._____Paragraph No._____ Existing Text (If appropriate photo copy and paste here)

Proposed Change

Reason for Change (Please be explicit)

INTERAGENCY AIRTANKER BOARD

CONFORMITY INSPECTION

Inspector _____ Date _____

1. COMPANY NAME_____
Street Address: _____
City_____ State_____ Zip_____

2. TYPE OF AIRCRAFT_____
"N" number_____
S/N (per A/W Certificate)_____
Tanker Number_____
Tank Capacity for this installation_____

3. NUMBER OF STC OR TC FOR TANK INSTALLATION_____

A. Does flight manual supplement outline limitation? Yes_____ No _____
B. Copy of flight manual supplement furnished to inspector. Yes_____ No_____
C. If not, why? _____
D. Date of supplement_____

4. WEIGHT AND BALANCE INFORMATION (ref. section A.)
THE COMPANY MUST FURNISH THE INFORMATION IN THIS SECTION:

A. Aircraft maximum fluid weight from Zero Fuel Weight.

1. Empty Weight _____
2. Minimum required crew and flight kit _____
3. Unusable fluids - including unusable fuel _____
4. Total (lines 1, 2, 3) _____
5. Zero Fuel Weight _____
6. **Maximum fluid weight** (line 5. minus 4.) _____

B. Normal Operating Weight computations

1. Basic Operating Weight (BOW) (line A4.) lbs _____
2. Fuel (2 1/2 hours per section III A) lbs _____
3. Board-approved maximum fluid weight (A.6 above) lbs _____
4. Operating Fluids (fuel, oil etc. not included in BOW) lbs _____
5. Other weight (baggage, spares etc.) lbs _____
6. **Normal Operating Weight** (total lines 1 thru 5) lbs _____

C. Gross Weight Check

1. Max Takeoff Weight lbs _____
2. Normal Operating Weight (line B.6) lbs _____
3. Difference (line 1. minus line 2.) lbs _____

NOTE: If line 2. is greater than 1. complete D. below for retardant load adjustment. Notify the Board of this change

D. Adjusted retardant load calculations
1. Previous maximum fluid weight (line A.6.) lbs _____
2. Fluid weight correction (line C. 3.) lbs _____
3. New corrected maximum fluid weight (line 1. minus 2.) lbs _____

E. Copy of weight and balance information with limits of the:

Most fwd c/g tank full _____ Tank empty _____
Most aft c/g tank full _____ Tank empty _____

Copy of weight and balance of aircraft with tank installed _____

I _____ (print name) certify that I have examined the data submitted with due diligence, and to the best of my knowledge, they are true, correct, and complete.
(person must have contracting authority from the company) Signature _____

5. RETARDANT TANK (ref section VII of IAB Criteria)

A. **General**

1. Tank does not leak when filled with water (Max leakage 1/2 gallon / 24 hours)
(Note: one drop every 2 1/2 seconds will equal 1/2 gallons /24 hours.)
No leaks ____ Leaks____

2. Emergency Dump System.
a. Is emergency system independently controlled? Yes _____ No _____
b. Is emergency system independently operated? Yes _____ No _____
c. Is emergency system able to drop entire load in six seconds? Yes _____ No _____
d. Emergency system is operated by: (circle used – strike out not used)
Mechanical
Pneumatic
Is there a means to check emergency system pressure on preflight? Yes _____ No _____
Is this pressure isolated from normal system? Yes _____ No _____
Fluid Pressure
Is there an indicator readily visible to the crew seated in their in-flight positions?
Yes _____ No _____
Is emergency system isolated from normal system pressure? Yes _____ No _____
(normal function or failure shall not affect emergency system pressure)

Emergency Dump System (continued)

e. Is emergency system drop control within easy reach of all required flight crewmembers?
Yes _____ No _____

f. If electrically operated is emergency system wired to battery bus? Yes _____ No _____

g. Is emergency system protected by a fuse or circuit breaker of adequate capacity?
Yes _____ No _____

3. Offloading
   a. Do all tanks have the capability of being off-loaded through a standard 3 inch Kamloc?
   Yes_____ No _____
   b. Is there no more than 7% of the certified load capacity? Yes _____ No _____
   Other ____ (Information on file from original tank certification)

4. Are all doors closable in flight? Yes _____ No _____

5. Was tank loaded to certified amount, using approved metering system? Yes _____ No _____

A. Are all tanks capable of filling through a 3 inch single or dual Kamloc fitting(s) on either side or the tail of the aircraft at a fill rate of no less then 500 gallons/minute?
Yes _____ No _____

B. Is sufficient cross-flow provided to allow all compartments to be level in 30 seconds after pumping stops? Yes _____ No _____

C. Does any single compartment overfill during fill cycle at 500 gpm? Yes _____ No _____

6. Are compartments sequenced individually in normal drop configuration are constructed so as to eliminate leakage from one compartment to the other when one is evacuated. Yes _____ No _____

7. Is the door opening switch located on the flight controls? Yes _____ No _____

B. **Compartment size and flow rate/ performance**

1. The intervalometer provides accurate sequencing of doors at intervals continuously variable (Accuracy within plus or minus 0.05 seconds). Yes _____ No _____

2. Tank Performance
   a. The company shall provide a paper and/or electronic copy of a current set of traces or computer read-outs showing that the volume capture and flow rates are the same as the volume capture and flow rates from the original tests for compliance under the IAB Criteria (static test or drop test). This certification will be signed by a company official that has contracting authority.

I _____ (print name) certify that I have examined the data submitted with due diligence, and to the best of my knowledge, they are true, correct, and complete.
(requires contracting authority from the company)

Signature _____

b. Name of controller manufacturer_____

c. Version of software_____/ Date installed_____

e. Modification control number on controller_____

f. Tank capacity_____

C. Tank fill gauge

1. A positive level gauge or indicator is provided to show when each compartment is at certified load limit and at the partial load limits if required. Yes _____ No _____
2. Indicator is located readily visible to the loading crew at the loading port. Yes _____ No _____

D. Tank operation

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

2. Test Details:
   Locations: _____Date of test completion:_____
   Test Authority:_____

3. Inspection Details and Results
   a. Locations:_____
   b. Date of Inspection:_____
   c. Aircraft is: **Approved** _____ Rejected_____

Board Team Members: _____
_____
_____
_____

ALL "YES OR NO" QUESTIONS UNDER STEP 5 MUST BE ANSWERED "YES" FOR BOARD APPROVAL

REMARKS /
DISCREPANCIES_____
_____
_____
_____
_____
_____
_____
_____

INTERAGENCY AIRTANKER BOARD (IAB)
Probationary Airtanker Evaluation

The IAB requests that you complete this evaluation form after carefully weighing observed operational characteristics. The provided information will be utilized for final IAB 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 Airtanker will be flown by many pilots over its lifetime of service. Please base your answers on the Airtanker capabilities rather than pilot skill.

Airtanker Number: **Registration**: **Serial Number:**

Assigned Base: **Aircraft Type:** **Manufacture:**

Contract Number: ☐ ☐ ☐ Other: _____

Fire Incident: _____ **Location**: _____

Pilot: _____ **Co-Pilot:** _____

FIRE OPERATIONS

	Did Not Meet Expectation		Average		Exceeded Expectation	
I/A Response Time:	1	2	3	4	5	N/A
Reload Turn Times:	1	2	3	4	5	N/A
Maneuverability:	1	2	3	4	5	N/A
Steep Terrain Operations:	1	2	3	4	5	N/A
Drop Patterns	1	2	3	4	5	N/A
Light Fuels:	1	2	3	4	5	N/A
Moderate Fuels:	1	2	3	4	5	N/A
Heavy Fuels:	1	2	3	4	5	N/A
Uniformity of Coverage:	1	2	3	4	5	N/A

MAINTENANCE

Maintenance Reliability:	1	2	3	4	5	N/A
Tank Ground Handling:	1	2	3	4	5	N/A
Tank Breakdowns:	1	2	3	4	5	N/A
Tank Leakage:	1	2	3	4	5	N/A
Tank System Reliability:	1	2	3	4	5	N/A

PRODUCT DISPENSED

☐ Water ☐ Retardant ☐ Foam ☐ Gel ☐ Other: _____

Total Gallons Delivered (GD): _____ Number of Days: _____

Price per Gallon Delivered (PGD): $_____ (PGD = Daily Availability + Flight Time / GD)

EVALUATOR COMMENTS / OBSERVATIONS

EVALUATOR ☐ Incident Commander ☐ Air Attack ☐ Lead Plane ☐ Air Operations

☐ Air Support ☐ Airtanker Base Manager ☐ Division Supervisor

☐ Crew Boss ☐ Other: _____

Name: _____ Date: _____/_____/_____

Position: _____ Phone: (_____) _____--_____ Ex: _____

Organization: _____ Cell: (_____) _____--_____

Address: _____ Fax: (_____) _____--_____

_____ Email: _____

_____

_____

Please provide one copy to company representative and forward original through agency channels to;

Chairman, Interagency Air Tanker Board
National Interagency Fire Center
3833 South Development Drive
Boise ID 83705

INTERAGENCY AIRTANKER BOARD
HELI-TANKER CONFORMITY INSPECTION

Company Name: _____

Street Address: _____

City: _____ State: _____ Zip: _____

A. Fixed Tanks

1. Type of helicopter: _____ This FAA N# _____

   S/N of Tank: _____ Tank No: _____

2. Tank Capacity: _____ No. of Doors: _____ OR Constant Flow: _____

B. Aircraft Certification

1. Category that helicopter is certified in _____
2. Number of STC or TC for tank installation: _____
3. Does Flight Manual supplement outline limitation? Yes ☐ No ☐
4. Copy of Flight Manual Supplement furnished to Inspector: Yes ☐ No ☐

   If not, why? _____
5. Date of Supplement: _____
6. Does STC installation of tank cover installation of cockpit controls?

   Yes ☐ No ☐

7. The Company furnishing the Helicopter must furnish the following weight and balance information:

a. Copy of Weight and Balance with tank installed: _____

b. Copy of Weight and Balance information with:

(1) Most FWD C/G Tank Full _____ Tank Empty _____

(2) Most AFT C/G Tank Full _____ Tank Empty _____

Gross Weight allowable for takeoff: _____

Crew (with baggage) and equipment weight: _____

Weight of fuel for 1 ½ hours of flight: _____

I _____ (print name) certify that I have examined the data submitted with due diligence, and to the best of my knowledge, they are true, correct, and complete. (Person must have contracting authority from the company)

Signature _____

C. Retardant Tank

1. General

a. Does tank leak when filled with water? (Maximum leakage ½ Gallon/24 Hours (2 ½ drops per second is ½ Gallon / 24 Hour).

No ☐ Yes ☐

b. Is the Emergency System independently controlled and operated, enabling the entire load to be dropped in less than six (6) seconds?

Yes ☐ No ☐

(1) The Emergency System is operated by (Check one):

Mechanical ☐ Pneumatic ☐ Fluid Pressure ☐ Other ☐

(2) If electrically operated, is the controller wired directly to a source that would preclude an electrical failure from rendering the system inoperable?

Yes ☐ No ☐

Direct to the Battery Bus or such? Yes ☐ No ☐

(3) Pneumatic Systems. Is there a means available to check the system pressure in the Emergency Accumulators during flight? (Due to multi-loads on a fuel load this must be visible to the crew in flight.) Yes ☐ No ☐

(4) Is the Emergency Dump Control position Yes ☐ No ☐

(5) Are the primary drop controls on one of the primary flight controls for each crewmember? Yes ☐ No ☐

c. Do all tanks have the capability of being off loaded? Yes ☐ No ☐ To not more than 7% of the certified load capacity? Yes ☐ No ☐
Other ☐ (Information in file from original tank certification)

d. Are all tank doors closable in flight? Yes ☐ No ☐

e. Are all tanks capable of being filled through a three inch single Kamlock fitting, one on either side or either end of the helicopter?
Yes ☐ No ☐

(1) Was tank loaded to certified amount, using approved meter or weighing system? Yes ☐ No ☐

f. Is sufficient cross-flow provided to allow all compartments to be level in 30 seconds after pumping stops? Yes or N/A ☐ No ☐

g. No single compartments will overfill during fill cycle at 500 gpm.
Yes ☐ No ☐

h. Compartments sequenced individually in normal drop configuration are constructed so as to eliminate leakage from one compartment to the other when one is evacuated. Yes ☐ No ☐

i. Are doors opening switches located on:
collective? ☐ or cyclic ☐ ?

2. Compartment Size and Flow Rate/Performance

a. The intervalometer provides accurate sequencing of doors at intervals continuously variable (Accuracy within plus or minus 0.05 seconds).
Yes ☐ No ☐

3. Multiple Compartment Drops (describe if applicable)

4. Venting

a. Do vents prevent slosh over? Yes ☐ No ☐

b. Retardant Tank Operation: Has a tank static test and/or pattern evaluation been completed, and has all discrepancies been corrected?
Yes ☐ No ☐

5. Doors

a. For Non-Conventional Tanks / Constant Flow

The company shall provide a set of traces or computer read outs on paper showing that the volume capture rates are the same as when the original flow checks were performed over the grid or similar measuring system. A company official that has contracting authority will sign this certification.

I _____ (print name) certify that I have examined the data submitted with due diligence, and to the best of my knowledge, they are true, correct, and complete. (Person must have contracting authority from the company)
Signature: _____

(1) Are all doors closable in flight? Yes ☐ No ☐

6. Tank Drop Controllers

a. Name of controller manufacturer: _____

b. Version of Software: _____ Date Installed:_____

c. Modification number on controller: _____

7. Tank Fill-Gauge

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

b. Is the gauge or indicator located readily visible to the loading crew at loading port? Yes ☐ No ☐

c. Is a gauge or indicator visible to the flight crew for a hover pick up?
Yes ☐ No ☐

8. Self-Filling Capability

a. Weight of tank and Draft System not more than 12.5% of the weight of water in the tank. Weight of Tank: _____
b. System equipped with Overfill Limiting Device? Yes ☐ No ☐

9. Safety Valve

a. A over pressure relief system incorporated …….. Yes ☐ No ☐

10. Suppressant/Retardant Mixing System installed? Yes ☐ No ☐

a. Mixing ratios will vary from one tenth of one percent to one percent.
Yes ☐ No ☐

b. Capacity of suppressant tank: _____ Gallons

_____
Inspector (Please Print)

_____
Inspector (Signature)

_____
Location

_____
Date

INTERAGENCY AIRTANKER BOARD

WATER SCOOPER CONFORMITY INSPECTION

Inspector _____ Date _____

1. COMPANY NAME_____
Street Address: _____
City_____ State_____ Zip_____

2. TYPE OF AIRCRAFT_____
"N" number_____
S/N (per A/W Certificate)_____
ScooperNumber_____
Tank Capacity for this installation_____

4. NUMBER OF STC OR TC FOR TANK INSTALLATION_(if applicable) _____

A. Does flight manual / supplement outline limitation? Yes_____ No _____
B. Copy of flight manual / supplement furnished to inspector. Yes_____ No_____
C. If not, why? (e.g. previously provided)
D. Date of supplement_____
E. T/C Number _____

4. WEIGHT AND BALANCE INFORMATION (ref. section A.)

THE COMPANY MUST FURNISH THE INFORMATION IN THIS SECTION:

A. Aircraft maximum fluid weight from Zero Fuel Weight.

1. Empty Weight _____
2. Minimum required crew and flight kit _____
3. Unusable fluids - including unusable fuel _____
4. Total (lines 1, 2, 3) _____
5. Zero Fuel Weight _____
6. **Maximum fluid weight** (line 5. minus 4.) _____

B. Normal Operating Weight computations

1. Basic Operating Weight (BOW) (line A4.) lbs _____
2. Fuel (2 1/2 hours per section III A) lbs _____
3. Board-approved maximum fluid weight (A.6 above) lbs _____
4. Operating Fluids (fuel, oil etc. not included in BOW) lbs _____
5. Other weight (baggage, spares etc.) lbs _____
6. **Normal Operating Weight** (total lines 1 thru 5) lbs _____

C. Gross Weight Check

1. Max Takeoff Weight lbs _____
2. Normal Operating Weight (line B.6) lbs _____
3. Difference (line 1. minus line 2.) lbs _____

NOTE: If line 2. is greater than 1. complete D. below for fluid payload adjustment. Notify the Board of this change

D. Adjusted fluid payload calculations

1. Previous maximum fluid weight (line A.6.) lbs _____
2. Fluid weight correction (line C. 3.) lbs _____
3. New corrected maximum fluid weight (line 1. minus 2.) lbs _____

E. Copy of weight and balance information with limits of the:

Most fwd c/g tank full _____ Tank empty _____
Most aft c/g tank full _____ Tank empty _____

Copy of weight and balance of aircraft with tank installed _____

I _____ (print name) certify that I have examined the data submitted with due diligence, and to the best of my knowledge, they are true, correct, and complete.
(person must have contracting authority from the company) Signature _____

5. FLUID TANK (ref section VII of IAB Criteria)

A. General:

1. Leakage: **N/A**

2. Emergency Dump System.
   a. Is emergency system independently controlled? Yes _____ No _____
   b. Is emergency system independently operated? Yes _____ No _____
   c. Is emergency system able to drop entire load in six seconds? Yes _____ No _____
   d. thru g. **N/A**

4. Fill and Distribution: **N/A**

4. Fill Gage.
   a. Is there a gage or indicator that demonstrates the tank is filled to the **Board-approved** maximum after water scooping weight? Yes _____ No _____

5. Tank Control:
   a. Is the door opening switch located on the flight controls? Yes _____ No _____

Inspection Details and Results

a. Locations:_____

b. Date of Inspection:_____

c. Aircraft is: **Approved** _____ Rejected_____

Board Team Members: _____

_____

_____

_____

ALL "YES OR NO" QUESTIONS UNDER STEP 5 MUST BE ANSWERED "YES" FOR BOARD APPROVAL

REMARKS /
DISCREPANCIES_____
_____
_____
_____
_____
_____
_____
_____

SECTION IX—ACRONYMS, ABBREVIATIONS, DEFINITIONS, AND NOTES

ACRONYMS AND ABBREVIATIONS

cg: center of gravity

F: Fahrenheit temperature scale

fpm: feet per minute

ft: feet

gpc: gallons per 100 square feet

gpm: gallons per minute

ISA: International Standard Atmosphere

METO: Maximum Power Except Take-Off

DEFINITIONS

Conventional Tank: A conventional tank is one in which the total retardant load is divided into multiple isolated compartments. The release system is designed to sequence the doors of these compartments (with or without flow restrictors) over an interval of time, which results in the building of a retardant line.

Coverage Level: The amount of retardant covering the ground or foliage expressed in gallons per 100 square feet.

Drop: The release of retardant from the aircraft retardant/suppressant system.

Drop Controller: A device installed in an airtanker that allows the pilot to select and release retardant based on desired flow rate. The drop controller controls volume released, flow rate and drop sequence.

Drop Test: A dynamic flying test of the aircraft retardant delivery system over a cup/grid matrix, which is used to determine the coverage level production of the system for each drop type.

Drop Type: The characteristics of a release from an airtanker. Characteristics should include volume and/or number of tanks, flow rate, interval between releases etc., applicable to the system. For example, a conventional system with 6 equal tanks 2 flow rates and 2400 gallons total capacity releasing 3 compartments sequentially at 0.30 second intervals could be described as a 3 door 0.30 seconds low flow trail (1200

gallons). Similarly, a constant flow system of 2000 gallons capacity releasing 1000 gallons at flow rate 2, could be described as 1/2 load (1000 gal.) FR 2.

Intervalometer: A device installed in an aircraft which controls the open and close sequencing and time interval of the doors on a multiple compartment retardant tank (i.e. conventional tank).

Non-conventional Tank: A retardant tank which is other than a conventional tank and includes constant flow type tanks. Constant flow tanks utilize modulation of the doors on typically a single tank to control the drop.

Proponent: The person or entity seeking approval of an airtanker.

Release: The dropping or discharge of retardant from a tank or compartment of a retardant/suppressant system.

Static Test: A test of the aircraft retardant/suppressant system while on the ground at a flight attitude. The test is used to determine the characteristics and performance of the system. Static tests may include measurements of flow rate, flow characteristics, internal tank pressure, door opening, volume released, etc.

NOTES

1. Examples of flow rate requirement:

S2F - 800 gallons
The 800-gallon volume requires at least 2 releases (load to be split).

a. If 2 - 400 gallon compartments were used, each compartment would have to produce 3 flow rates; 1, 3, & 4.

b. If 4 - 200 gallon compartments were used, each compartment would have to produce 2 flow rates; 2 & 4.

c. 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 volume would require at least 4 releases (load to be divided into 4 equal drops).

a. If 4 - 500 gallon compartments were used, each compartment would have to produce 2 flow rates; 1 & 4.

b. If 6 - 335 gallon compartments were used, each compartment would have to produce 2 flow rates; 1 & 3 or 4.

c. 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).

a. If 6 - 500 gallon compartments were used, each compartment would have to produce 2 flow rates; 1 & 3 or 4.

b. If 8 - 375 gallon compartments were used, each compartment would have to produce 2 flow rates; 1 & 3 or 4.

c. If 12 - 250 gallon compartments were used, each compartment would have to produce 2 flow rates; 2 & 3 or 4.

2. Equal Drop Volume

Repeatability of the tanking system to achieve designated coverage levels is important.

Conventional Tanks: When tank and gating systems are divided into compartments equal volumes dropped from each compartment cannot be assumed. In fact and in practice, current systems do not achieve equal volumes dropped for a given coverage level. In operational use this may create thin coverage, or skip in the retardant line. Hence, it is required that the tank and gating system be designed such that equal volumes are released for each drop type or coverage level the system is designed to achieve. To be considered equal within the test series, the volumes dropped must not vary more than 12 percent of average.

Nonconventional Tanks: The definition of equal releases for conventional tanks (volumes shall not vary by more than 12 percent) is based on the need to use a constant interval between sequential releases in order to produce continuous coverage levels. Nonconventional systems do not depend on an interval between fixed tanks to produce a continuous coverage levels. Also, volume dropped must be effective for the size released. Volumes from nonconventional airtankers are considered equal when the measured volumes do not vary greater than plus or minus 25 percent from the volume of the equal releases defined by the proponent. There shall be no remaining fluid in the tank after the equal releases have been made.

To calculate equal volume for conventional tanks:
The difference in highest volume and lowest measured value must be less than the average value * 0.12.

For example:
A 1600 gallon conventional tank has 4 compartments of 400 gallons each. The following are measured for a given drop type.

Aircraft is loaded with 1595 gallons and doors sequence individually.

Door	Volume Measured
1	378
2	402
3	410
4	405

The average measured value is 398.75 gallons.
398.75 * 0.12 = 47.85 or 48 gallons. The difference between the highest measured value and the lowest measured value cannot exceed 48 gallons. High – Low = 410-378 = 32, so this passes this portion of the test.

To calculate equal volume for non-conventional tanks:
The volumes released must fall into the interval given by the fraction of the tank released in gallons ± 0.25 * fraction of the tank released in gallons.

For example:
A 3000 gallon constant flow tank is designed to make eight, equal volume drops.
The aircraft is loaded with 2994 gallons. The interval in which those eighths need to fall is found to be:
1/8(2994) ± .25*1/8(2994) = 374.25 ± 93.56
The volume of each of the eight releases needs to be within the calculated interval in order to be considered equal volume (or between 280 and 468 gallons in this example).

Pressurized System: reserved.

SECTION X – LIST OF IAB NUMBERS ASSIGNED TO AIRTANKERS

THIS INFORMATION CHANGES FREQUENTLY,
CONTACT IAB FOR CURRENT INFORMATION
REGARDING APPROVAL OF AN AIRTANKER
ITEMS WITH ASTERISKS ARE RECOGNIZED BY THE IAB
BUT HAVE NOT OBTAINED APPROVAL BY THE BOARD.

NO.	Owner/Operator	Aircraft Type	N No.	Aircraft Serial No.	NOT IAB Approved

Summary of Revision from 2006 to 2013 IAB Procedures and Criteria

These changes are reflected generally in bold lettering in the Procedures and Criteria (P&C).

1. Update the voting membership and advisors to the Board.
2. Change weight (density) of retardant used to 9.0 lbs per gallon. The weight of 9.3 still applies to those approved under the 2006 criteria.
3. Define maximum length of initial interim approval of 18 months.
4. Change approval for extension Interim (field evaluation) to majority of the Board.
5. Require a weight and balance for the specific airframe that is proposed.
6. Modify temperature from Fahrenheit to Celsius for ISA values to match what is found in most aviation publications.
7. Require the FAA Flight Test report be submitted to the board as part of the process for review.
8. Identify the conditions under which the fuel consumption will be calculated to a hypothetical fire 30 minutes away. Historically sorties have averaged just less than one hour.
9. Revise the language for determining minimum climb rate for aircraft at 14,000 feet from 100 fpm to 500 fpm at normal cruise climb speed and power.
10. Replace section VII for grandfathered approvals of Large Airtankers with verbiage for Very Large Airtankers (VLATs) and define similar criteria as is used for LATs. Take of performance does not include allowance for jettison on VLATs, decent profile is less aggressive, and a list of ten (10) proposed operating locations is required. VLAT defined as 8,000 plus gallons.
11. Decent profile: reduce from 60 seconds to 30, more closely defined, and requires full loads of water be dispensed at the end of the decent at CL6 and 8. Flow rate not to vary by more than +/- 7%. This should equate to about ½ of a Coverage Level setting. This results in about a 1600 fpm decent for LATs and about a 1100 fpm decent for VLATs at 130 to 140 knots.
12. Level of support from the manufacturer to be described by the proponent.
13. Emphasize that Helitankers are with tank only and not a bucket.
14. Applies to proponents who start 1 August 2013 going forward, language for leaking was revised to 72 hours, pressure system leaking requirements established, emergency dump system, fill augmentation, and no more than 1% or 3% fluid held in tank after drop.
15. Revised list of tanker numbers assigned or held in reserve.
16. Added the charter for the organization from NIAC.