

**2006 RCCA Rules for 2548 World War II Scale Fighter Combat (Provisional)****0. Document Control****0.1 Versions**

Version	Date	Author	Changes
2005.1	10/30/2004	Ed Kettler	Initial version submitted to RCCA Board with Provisional Status Application
2005.2	12/06/2004	Ed Kettler	Complete rewrite of the Scale Judging sections
2006.1	12/04/2005	Ed Kettler	Incorporated rules changes approved by Board.

**0.2 2548 Rules Committee.** Cash Hargett, JP Morere, Lee Liddle and Ed Kettler

**1. Objective.** To recreate the excitement of WWII fighter combat in an enjoyable, safe, scale competition that will be interesting for spectators and challenging for the contestants through the use of widely recognized propeller driven fighter aircraft types.

**2. General.** All AMA and FCC regulations covering the R/C flier and his or her plane and equipment shall apply to this event. Every contestant shall sign the AMA Flight Safety Declaration Form, and attest that he or she meets the requirements stated therein. Contestants are expected to act in a safe and sportsmanlike manner at all times. Any conduct by a contestant deemed by the Contest Director (CD) to be hazardous or unsportsmanlike will be cause for immediate disqualification of that contestant from the event at the discretion of the CD. The judgment of the CD on safety matters shall not be protested. The builder-of-the-model rule does not apply to this event. There shall be no limitation on the type of equipment fitted to the model, or the number of controls, except as specified in the following sections. The contestant shall be allowed only one (1) model per round (except as noted in section 4.5), but may switch to an alternate model of his/her choice for any following rounds. All models flown must be safety inspected for airworthiness and inspected for compliance with the model weight, key dimensions, Approved Aircraft list (Appendix A) and engine class requirements for which they are participating prior to the competition by the Contest Director or a CD appointed representative prior to competition.

**2.1 Safety.** Safety for spectators, contest personnel and contestants is of the utmost importance for this event. The CD has the authority to enhance safety requirements to suit the need of the flying site and the contestants. The Combat Engagement Line, Safety Line, Pilot Line and Spectator/Pit Line should be clearly marked for the duration of the event. Spectators shall maintain a distance from the Combat Engagement Line of at least 500 feet for every 1.0 cu. in total displacement of the largest displacement aircraft in the contest. All individuals forward of the Spectator/Pit Line shall wear protective headgear, as outlined in the Official AMA National Model Aircraft Safety Code, while combat flights are in progress. Each pilot is responsible for obtaining such headgear and shall have the sole responsibility to provide for his or her own protection.

**3. Model Aircraft Requirements**

Aircraft shall meet all requirements defined in sections 3.1, 3.2, 3.3 and 3.4 of these rules, or be disqualified from entry, judging and combat. The CD/judges may disqualify a model from the contest if they decide that it does not effectively represent a World War 2 fighter/fighter bomber on the Approved Aircraft List (Appendix A). A CD is under no requirement to allow a plane to fly because another CD allowed it at a prior contest.

**3.1 Aircraft Requirements.**

**3.1.1 Types.** The model must be a scale fighter/fighter bomber selected from the approved list of aircraft contained in Rules Appendix A.

**3.1.2 Key Dimensions.** Fuselages must be three-dimensional. Profile fuselages will not be allowed. The maximum wingspan shall be 48" for single engine fighters and 60" for multi-engine fighters.

**3.1.3 Weight.** The minimum dry weight shall be 3.25 pounds (52 ounces) for any single engine design. The minimum dry weight shall be 4.0 pounds (64 ounces) for twin-engine designs.

**3.1.4 Scale Fittings.** Landing gear is allowed but is not required unless the full scale aircraft had a fixed gear. Protrusions on the leading edges of the wing, scale or non-scale, shall not be allowed. Canopies, either structured or painted on, are required. The aircraft must begin the event with a cowling.

**3.1.5 Changes to the Approved Aircraft List (Rules Appendix A).** Changes to the Approved Aircraft List contained in Appendix A of these rules shall follow the prescribed procedures in the RCCA Protocols and Procedures (PnP). The proposed aircraft addition/deletion shall document the justification relative to Appendix A.3 Selection Criteria of these rules. Proposed changes not meeting the spirit and intent of section 1.0 Objective or the more detailed requirements in section Appendix A.3 shall be rejected. The RCCA Board, with input from the Technical Committee and the 2548 Rules Committee, shall approve all changes to the Approved Aircraft List.

### **3.2 Engines, Propellers and RPM.**

**3.2.1 Engine Displacement.** Maximum total nominal displacement for single engine designed aircraft shall be .25 cu. in. Maximum total combined nominal displacement for twin-engine designed aircraft shall be .30 cu. in.; both engines shall be the same displacement. The engine(s) must be complete with carburetor and muffler. The carburetor(s) must be fully R/C functional as intended by the manufacturer and servo operated.

#### **3.2.2 Electric Motors.**

The use of electric motors is acceptable as long as the aircraft meets the class weight with batteries in place and the RPM limits.

#### **3.2.3 Engine Shut Off.**

The pilot must be able to shut off the model's engine(s) by radio control with the plane in any position, (e.g., a servo dedicated to throttle control or a kill switch).

#### **3.2.4 Propellers.**

Single engine aircraft shall use an unmodified APC 10x3, *Kavan yellow 10x4* or MAS 10x4 propeller. Multi-engine aircraft shall use unmodified MAS 8x3 propellers (same as SSC). The propeller(s) may have coatings applied. *At contest site elevations of 3500' MSL or higher, unmodified APC 9.3x3 propellers may be substituted.*

#### **3.2.5 Exhaust Systems.**

Exhaust systems designed to increase performance through a "tuning" effect or use of an internal pipe or similar arrangement, are not allowed. Examples include, but are not limited to, tuned pipes and mousse cans. The front of the muffler must be closed and "flow through" mufflers are not allowed.

#### **3.2.6 Maximum RPMs.**

The maximum RPMs for single engine aircraft shall be *14,500 RPM*, and for twin-engine aircraft shall be 17,500 RPM measured on the ground with the carburetor barrel and throttle full open. Pilots are expected to bring their planes to the meet ready to meet the RPM limits, and should provide their own tachometer. Pilots should tach their own aircraft at the contest prior to official

RPM testing, and at other times during the contest to ensure conformance. It is the sole responsibility of the contestant to present an engine and aircraft that meet the specifications of the event.

The contest director will determine the frequency of RPM testing. The contest director may choose one or more of the following approaches to ensure engine RPM compliance at the contest:

- i. The Contest Director or his/her designated technical inspector may test every contestant's engine for maximum RPM compliance before the first round of the contest. In addition competitor's engines may be randomly tested during the contest. A competitor may be tested more than once during an event. If, in the opinion of the contest director, engine RPM testing is required more frequently to ensure that all participants are in compliance, the CD may choose to have each engine tested in any round by the pilot's judge.
- ii. The contestant may choose to have technical inspector or judge adjust the engine's needle valve to achieve maximum RPM for the check, or may elect to have inspector "pinch" the fuel line to achieve peak RPM. If the contestant chooses the "pinch" check method the inspector will hold the tachometer on the engine and he/she will "pinch" the fuel line to peak the engine's RPM ability. If the engine exceeds the RPM limits the engine and airplane to which it is attached are declared ineligible for combat and may not be launched for combat.
- iii. The contestant is allowed to make changes necessary to meet the specifications. The contestant may change fuels, make adjustments to the carburetor to limit its peak travel or utilize restrictions to the intake or exhaust system which limit the engines performance to that which is at or below the maximum allowable RPM specification. An ineligible engine and airplane may be tested after the pilot makes adjustments to his engine to bring it into RPM compliance. Testing may be conducted from "Start engines" through "End combat" of each round. If the contestant fails to achieve the RPM specifications the plane is ineligible from combat and may not be launched for combat.
- iv. Any engine, which in the CD's opinion is running over the limit in any round, may be tested at the end of that round.

A procedure shall be developed to test electric motors in the future.

### **3.2.7 Engine Claiming.**

All pilots entering the contest agree that in the event of their winning the contest that their engine(s) may be put up for sale to the highest bidder with a minimum bid of \$100 for .25 engines and \$150 for both twin engines. The owning pilot may not bid on their own engines(s). All engines flown in the contest by the winner are subject to this rule.

**3.3 Artificial Devices/Substances.** There will be no structures, roughened leading edges, or other devices allowed on the model that could aid in the cutting of an opponent's streamer. Sticky fluids, sticky pastes and tape are allowed.

**3.4 Scale Compliance Verification.** The 2548 scale compliance verification rules are designed to encourage pilots to fly model aircraft that represent WW2 fighters while taking into account the rigors of combat competition. 2548 is focused on getting the model to replicate the major aspects of the scale outline, color scheme and markings, and not focus on minor details that are fragile or hard to replicate. The burden of proof of scale fidelity shall reside solely with the pilot of the aircraft.

**3.4.1 Accuracy of Outline.** The model should closely match the scale outline as shown in a commercially available or RCCA-provided three (or more) view drawing. The contestant must

provide a three (or more) view drawing (line, tone or color). The drawing may not be distorted to reshape or distort the original outline of the subject plane. This counts as one (1) page of the Scale documentation as outlined in paragraph 3.4.4 below. Failure to closely match the scale outline may result in the model being banned from competition. See section 3.5.2 Exemptions From Downgrades for a list of items to be ignored when determining scale outline conformance.

**3.4.2 Color Scheme and Markings.** The model must appear in appropriate colors and markings of a WW2 combat aircraft of that type. At a minimum, the aircraft's national markings must be present, and the plane must be in the base colors of the plane in the documentation. A specific plane does not have to be replicated. A photograph of a plane of the same type in similar colors and markings is sufficient proof of compliance. Planes in civilian or sport colors and/or markings are not allowed, and automatically receive a "Fail" rating.

**3.4.3 Missing Documentation.** Scale documentation is mandatory. Failure to provide adequate documentation may cause a plane to receive a "Fail" result because the pilot is unable to defend the plane effectively. The pilot is responsible for making the decision to provide documentation.

**3.4.4 Documentation Limit.** To facilitate rapid judging, scale documentary presentations are limited to no more than two (2) pages (one (1) side) sized 8-1/2" x 11" or A4. Three-views larger than 8-1/2" x 11" or more than one (1) page are permitted and will also count as one (1) page of the two (2) allowed for documentation.

### 3.5 Scale Compliance Verification Process

**3.5.1 Setup.** Scale compliance verification shall be done as part of Technical Inspection at a distance of 15 feet from the model. All of the planes to be flown in the event shall be placed together on the ground so that the pilot judges can move around a 15' arc to judge the scale appearance score. All event pilots are required to be pilot judges. The owner/pilot may judge his own plane.

**3.5.2 Exemptions From Downgrades.** Scale combat is a unique form of RC scale flying, in that most of the planes are not fitted with landing gear, allowing minor details to be easily damaged in landing. Also, the planes are exposed to rough handling during launch, the possibility of midair collisions and crashes. The following items are not required to be present on the plane, and are not subject to downgrades for scale outline: exhaust stacks, guns, radiators/coolers, antennas, wing and tail fairings, gun bulges, pilot figure, cockpit detail, panel lines, air intakes or other protrusions, **unless they are a major part of the aircraft structure/outline**, such as a P-51 or Hawker Typhoon radiators, or the distinctive air filter on a tropical Spitfire). Multicolor spinners need only have one of the colors present. Minor shade differences between components and normal wear and tear/hangar rash shall be ignored. Items necessary for RC flight are also exempted from downgrades, including, but not limited to: exposed engine and muffler components, antenna, servo components, switches, charge jacks, control arms, pushrods, and wing attachment fittings/rubber bands. Safety markings on the underside of the wings and repaired battle damage are also exempt from scoring penalties.

**3.5.3 Scale Compliance Verification.** The planes will be segregated into four groups by simple vote by the pilot judges against the following criteria:

- **Bonus:** The model meets the Pass criteria, plus the model is in the group/squadron color scheme and markings shown in the documentation. All markings and color scheme components larger than 24" on the real plane must be present. Note: you do not have to replicate a specific plane if the minor markings are less than 24". The plane receives 20 bonus points per combat round flown.

- **Pass:** When compared at 15' to the supplied documentation, the model outline closely matches the documentation without easily recognizable changes that distort the outline, and the plane is in appropriate colors and markings of a WW2 combat plane of that type. At a minimum, the aircraft's national markings must be present, and the plane must be in the base colors of the plane in the documentation.
- **Penalty:** The model does not meet the Pass criteria because it has one or more major flaws in its outline, but is recognizable as the plane in the documentation, has a military paint scheme appropriate for the country and branch of service, and has the national markings. This rating may apply to first time contestants who bring a plane that is "questionable" but the judges may award this rating so the contestant may fly and develop combat skills. The plane receives 20 penalty points per combat round flown.
- **Fail:** When compared to the supplied documentation at 15', the model outline has been significantly altered and/or has multiple major flaws so that it is hard to recognize the model when compared to the documentation, or it fails to meet the minimum colors and markings outlined in the Penalty criteria. Models in civilian or sport colors and/or markings automatically receive a "Fail" score. Aircraft with Fail ratings are not eligible to fly, and must be removed from the pits and flight line.

To simplify judging, the planes shall be arranged in two groups: the Bonus group and the Regular group. Pilots wishing their planes to be judged as a Bonus plane shall place their planes in the Bonus group, the remainder of the planes shall go in the Regular group. The first group to be judged shall be the Bonus group. The CD or his designee shall identify the plane to be evaluated. The owner/pilot may provide documentation to support the model at this time. The CD shall then call for a vote by show of hands or other quick check of Pass/Fail; no ballots are used. A plane must achieve 60% votes in its favor in order to receive a Bonus rating. Failure to achieve 60% means the plane is removed from the Bonus group and placed with the Regular group. The CD shall mark the score sheet of all planes that have achieved a Bonus rating. These planes shall receive a 20 point bonus per combat round flown.

The Regular group is judged next. The CD or his designee shall identify the plane to be evaluated. The owner/pilot may provide documentation to support the model at this time. The CD shall then call for a vote by show of hands or other quick check of Pass/Fail; no ballots are used. A plane must achieve 60% votes in its favor in order to receive a Pass rating. Failure to achieve a Pass rating requires an immediate vote for Penalty. A plane must achieve 60% of the votes in order to receive a Penalty rating. Failure to achieve a Penalty rating means the plane has received a Fail rating, and must be removed from the pit and flight line areas. The CD shall mark the score sheet of all planes that have achieved a Penalty rating, indicating that that plane shall fly with a 20 point penalty each combat round flown. The CD shall mark the score sheet of all planes that receive a Pass rating, indicating that that plane shall fly with 0 bonus points per combat round.

**3.5.4 Alternative Scale Compliance Verification Voting Method 1.** This process may be used to speed up the execution of the voting process. The planes are arrayed so that the CD can stand behind the planes, facing the pilot judges. Starting from one end, he shall point at the plane to be judged and ask the pilot judges "OK?". If a pilot judge wishes for the plane to be voted on by the pilot judges, he shall loudly announce "Vote!". At that point, the CD shall execute the standard voting process in 3.5.3. If nobody calls "Vote!", the process continues to the next plane, until all planes have either been voted on or passed due to lack of challenge of a "Vote!" call.

**3.5.5 Alternative Scale Compliance Verification Voting Method 2.** This process may be used to speed up the execution of the voting process. The planes are arrayed so that the CD can stand behind the planes, facing the pilot judges. Starting from one end, he shall point at the plane to be

judged and ask the pilot judges "OK?". If a pilot judge wishes for the plane to be voted on by the pilot judges, he shall loudly announce "Vote!" or "Bonus!" if he thinks the plane should qualify for Bonus points. At that point, the CD shall execute the standard voting process in 3.5.3. If nobody calls "Vote!" or "Bonus!", the process continues to the next plane, until all planes have either been voted on or passed due to lack of challenge of a "Vote!" call.

#### **4. Contest Rules**

**4.1 Contest Site:** The contest site will be comprised of the areas/lines described below:

**4.1.1 Combat Arena:** The Combat Arena shall be an area of limited width and depth to be determined by the constraints of the flying facility and at the discretion of the Contest Director. The minimum width shall be 420 feet. The boundaries of the Combat Arena designate the *only* location where aircraft may engage in the act of combat. Once an aircraft leaves the Combat Arena, for any reason whatsoever, the act of combat by, or against, that aircraft must cease immediately.

**4.1.2 Combat Engagement Line:** The Combat Engagement Line shall be a line immediately adjacent to the Combat Arena. (See Contest Site Diagram in Section 4.1.9.) Planes may not engage in combat behind this line under any circumstances. (See these rules, Section 6, Scoring, for penalties to be imposed due to a violation of the Combat Engagement Line.)

**4.1.3 Safety Line:** The Safety Line shall be a line no less than 25 feet behind the Combat Engagement Line. At no time during the contest may an aircraft be flown behind the Safety Line except during the launch thereof (See Sections 4.1.5 Launch, 4.1.6 Landing and 4.1.8 Penalty Exceptions below). (See these rules, Section 6, Scoring, for penalties to be imposed due to a violation of the Safety Line.)

**4.1.4 Pilot Line:** The Pilot Line shall be a line no less than 15 feet behind the Safety Line. This area is where the pilots will stand during combat. Pilots must remain behind the Pilot Line at all times, except when launching or retrieving a landed aircraft. Permission for anyone to move beyond the Pilot Line to retrieve a downed or landed aircraft before all aircraft have landed at the end of combat is at the sole discretion of the Line Marshall. (See these rules, Section 6, Scoring, for penalties to be imposed due to a violation of the Pilot Line.)

**4.1.5 Launch:** Aircraft may be launched from between the Pilot Line and the Safety Line in a safe manner. A pilot or their helper may cross the Pilot Line for the express purpose of such launch.

**4.1.6 Landing:** Any landing, regardless of the reason, cannot be made any closer to the Pilot Line than the Safety Line. Any violation of the Safety Line on landing will incur the penalties designated for a Safety Line violation. No portion of the aircraft can be on or over the Safety Line. For this purpose the string and streamer(s) will not be considered part of the aircraft. (See penalty exceptions in Section 4.1.8.)

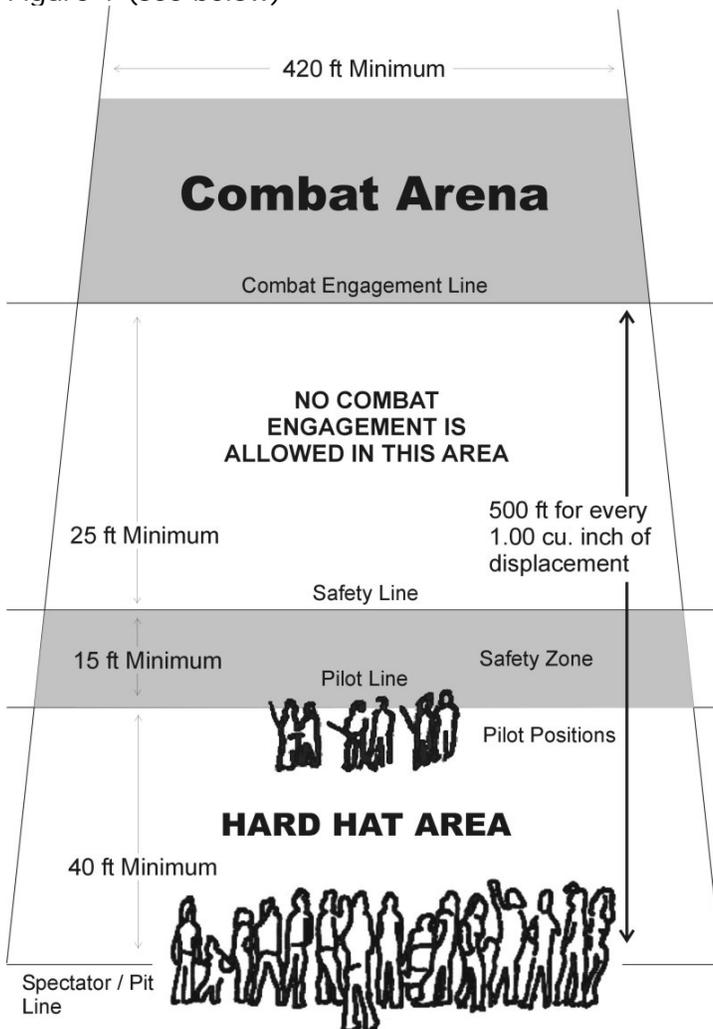
**4.1.7 Spectator/Pit Line:** Spectators shall maintain a distance from the Combat Engagement Line of at least 500 feet per cubic inch of engine displacement (See AMA Safety Code). The largest engine displacement allowed to compete in the contest shall be used to determine the required setback of the spectators from the Combat Engagement Line. In 2548, the minimum distance shall be established using .25 cubic inches, setting to minimum distance to 125'. Only contestants and contest personnel wearing hardhats may enter the area in front of the Spectator/Pit Line during combat. There must be a minimum of 40 feet between the Pilot Line and Spectator/Pit Line.

**4.1.8 Penalty Exceptions:** Planes that cross the Combat Engagement line, Safety Line or Pilot Line due to loss of control that is a direct result of a midair shall not be subject to penalty. However, if an aircraft is involved in a midair and it is determined by the pilot and the

pilot's judge to be able to safely continue, and the aircraft is reengaged in combat, the pilot forfeits any opportunity to have the penalty exception apply to a future violation due to **that** midair, regardless.

**4.1.9 Contest Site Setup Example:** Determine spectator location (spectator line), measure out to the combat engagement line the required distance for the largest engine displacement competing in that event (500 feet per cubic inch of displacement), determine where pilots will stand for flying (Pilot Line) then measure out 15 feet from Pilot Line for the Safety Line. If, with these measurements, the Combat Engagement Line is at least 25 feet in front of the safety line (Pilot Line can be no closer than 40 feet behind the Combat Engagement Line) and there is a minimum of 40 feet between the pilots and the spectators you are good to go.

Figure 1 (see below)



**4.2 Contest Structure.** The contest shall consist of at least 4 non-elimination rounds. Each round shall include as many heats as necessary to allow all contestants to fly the round. At least four (4) or more aircraft will be flown against each other in each heat provided the number of pilots allow and no frequency conflicts exist. After each pilot has had the opportunity to compete in at least four (4) rounds, the scores will be totaled. The pilot with the highest total score throughout the competition is the winner. In case of a point tie, the total of the previous rounds will be used to determine the winner of the tie. If a tie break can not be found in previous rounds scores, then a

simple coin toss shall be used to break the tie. The CD may option for a fly off or spot landing to break the tie if the pilots are in agreement.

If more than 18 pilots are entered the CD may, at his/her option, use a preliminary and finals format wherein the top scoring pilots from the preliminary four or more rounds advance into a series of at least three Finals rounds. The number of pilots advanced to the Finals will be at least one-third and at most one-half of the total entries, based on the total scores from the preliminary rounds. Final scores will be determined by adding the total scores for each pilot from the Finals rounds to one-half of his total score from the preliminary rounds. The CD must inform pilots of the intention to use a Preliminary/Finals format prior to the start of the event.

**4.3 Launching.** Aircraft may be launched by hand, dolly, landing gear or catapult. Every contestant is allowed the use of one (1) assistant to help with starting and launching.

**4.4 Round Structure.** Each round shall consist of:

**4.4.1 Preparation/Preflight.** The CD or Line Marshall shall ensure that each pilot has a pilot judge, then announce at least one (1) minute until the "Start Engines & Launch" signal.

**4.4.2 Scramble/Launch.** A call/signal to "Start Engines & Launch" begins a window of ninety (90) seconds for launching aircraft into the combat arena (no combat is allowed in this 90 second period). The period ends when the last aircraft is airborne, or ninety (90) seconds has elapsed, by the call/signal to "Start Combat".

**4.4.3 Duration/Combat.** The combat period has a duration of (5) five minutes. For scoring purposes, flight scoring entails all safety related scoring. Combat scoring entails all related streamer and length of flight scoring. The combat period and all combat scoring begins at the call to "Start Combat". The combat period and any combat scoring will end after the call to end combat. Flight scoring is in effect for the duration of the round, from the call to start engines and launch until all aircraft have landed. The CD or Line Marshall is responsible for keeping the time and advising the pilots of the time left or time passed during the round. The CD and Line Marshall are responsible for encouraging, or reminding the pilots to keep their aircraft near the center of the Combat Zone and at a reasonable distance and altitude in relationship to the Combat Engagement Line.

**4.4.4 Restarts/relaunches.** If a contestant's aircraft fails to launch on takeoff or must land any time during the combat period and is still airworthy, an unlimited amount of restarts are allowed within the five (5) minutes, provided the aircraft is down in an area that allows its safe retrieval. Aircraft that are down under the combat arena after "Start Combat" has been called may not be retrieved.

**4.4.5 Landing/Stand Down.** Landings will begin after the phrase/signal to "End Combat" has been given. Aircraft will land in an area designated by the CD and/or Line Marshall forward of the Pilot Line. Line rules are enforced. Aircraft known to be low in fuel are given first opportunity to land.

**4.5 Change of Aircraft.** During a round, no change of aircraft is allowed once the pilot has launched or attempted a launch. In between rounds, the contestants may freely choose from any aircraft available to them. All aircraft switched during a round, prior to an attempted launch, must be on the same frequency.

**4.6 Interround Safety Inspection.** The CD or his/her appointed representative, may, at his/her discretion, reinspect any aircraft that he/she suspects may have been made unsafe for flight. If the

CD pronounces the aircraft as unsafe, it will not be flown, until the aircraft has been repaired and resubmitted to the CD for inspection. The CD is obligated to inspect an aircraft resubmitted for safety inspection as soon as the aircraft is presented to him/her. If it passes inspection the aircraft is immediately available for use. The judgment of the CD on safety matters can not be protested.

**4.7** Streamers and string are provided by the CD to ensure uniformity. Crepe paper and cotton string are recommended. Streamers will be thirty (30) feet long and no less than five-eighths (5/8) inches wide and no more than one (1) inch wide, attached to the model by a cotton string extending at least five (5') feet from the tail of the model. (At the discretion of the Contest Director, alternate streamer materials not meeting these specifications may be used if weather conditions prevent the use of standard streamer material).

## **5.0 Officials.**

**5.1.1 Contest Director (CD):** A CD will be in charge of each event. The CD or his/her representative will, lay out and prepare the field, check each aircraft for conformance to scale, displacement, and safety requirements. The CD or his/her representative will be responsible for the making of flight matrices for all heats and rounds of the contest. The CD or his/her representative will use the start signal once the ninety (90) second launch window has elapsed or if all aircraft are airborne. At the end of the five (5) minute heat duration the CD or his/her representative will signal to the pilots to cease combat. The CD or his/her representative shall also tally scores from the individual aircraft judges for each individual in the competition. Streamers for the event will be supplied by the CD or his/her representative.

**5.1.2 Judges:** There will be one (1) judge for each aircraft flown per round. Each judge will register points gained or lost by the aircraft being judged, according to the scoring list. After the landing of that aircraft, the judge will inspect the streamer for final determination of points.

**5.1.3 Line Marshall:** The Line Marshall will signal all Combat Engagement Line, Safety Line and Pilot Line infractions. The individual judge scoring any plane confirmed as having crossed the Combat Engagement Line, Safety Line and/or Pilot Line by the Line Marshall is to inform the pilot of the infractions. If a pilot is disqualified for that round the judge will ask the pilot to land immediately.

**5.1.4 Pilot Judges:** All pilots flying in the event are required to participate in the scoring of the scale compliance verification portion of the competition. Pilots may judge their own aircraft. The pilot judges are responsible for evaluating the model aircraft against the pilot-supplied documentation and determining whether the model meets the minimum criteria to fly in the event, as outlined in section 3.5 Scale Compliance Verification Process.

## **6. Scoring**

<b>Points gained</b>	
Streamer cut (other than your own)	+100 per cut
Scale points: Section 3.5.3	Bonus rated planes: +20 points per round Pass rated planes: +0 points per round Penalty rated planes: -20 points per round
Launch within 90 second launch window (plane must be airborne with a complete streamer when Start Combat is called)	+20
Continuous 5 minute flight	+20
Remaining streamer	+4 points per foot of streamer remaining on aircraft. (+120 max.)
Non-engagement. Pilots will be given 1 verbal warning for not attempting to engage the opponent without penalty. Second offense and subsequent offenses will score -25 points. Non engagement shall be considered flying too high or too far from the combat area. Low level flying will not be considered non-engagement.	-25
<b>Points Lost</b>	
<b>Crossing Combat Engagement Line</b> This penalty is only enforced during the Combat Period, which is defined as the time between Start Combat and Stop Combat. Pilots who cross the Combat Engagement Line during the combat period while engaged in combat (i.e. not landing or taking off) shall receive a verbal warning by the Line Marshall. Pilots who commit a second or third violation in the same round shall have -25 added to his/her score for each. Should a fourth offense occur in the same round, the pilot shall lose any positive points earned in that round, have an additional -100 added to his/her score, be required to land immediately and remain grounded for the remainder of the round.	First occurrence - verbal warning  Second occurrence same round -25 added to score  Third occurrence same round -25 added to score  Fourth occurrence same round -100 added to score plus loss of positive points accrued in that round and pilot grounded for remainder of round.
<b>Crossing Safety Line</b> During each heat, the first time a pilot's plane crosses the Safety Line during the combat period, he will be verbally notified by his judge or the Line Marshall of the violation and have a -100 penalty added to his/her score. If a second offense shall occur in the same round, the pilot shall again be notified verbally of the violation, have another -100 added to his/her score, lose any positive points earned in that round, and be required to land immediately and remain grounded for the	First occurrence -100 added to score  Second occurrence same round -100 plus loss of positive points accrued in that round and pilot grounded for remainder of round.

remainder of the round.	
<b>Crossing Pilot Line</b> The first time a pilot's plane crosses the Pilot Line he will be verbally notified by his judge or the Line Marshall of the violation and have -300 added to his/her score and be required to land immediately and remain grounded for the remainder of the round. If a second offense shall occur in the same event the pilot shall lose any positive points earned in that round, have -300 added to his/her score, be required to land immediately and remain grounded for the remainder of the event.	First occurrence -300 and pilot grounded for remainder of round.  Second occurrence at the same event - 300 plus loss of positive points accrued in that round and pilot grounded for remainder of event.

**6.1 Loss of streamer.** A streamer shall be considered lost if it was improperly secured or broken in any way other than being cut by an opponent. Streamers lost or cut or not fully extended during launch for any reason shall be considered to have launched without a complete streamer. In these cases the pilot must land and secure another streamer, and the pilot is denied any positive scoring until a new streamer is attached. An aircraft that is airborne with a complete and extended streamer attached when the call to Start Combat is made will receive launch on time points, and is eligible for continuous flight points. Any time a pilot lands after Start Combat is called, continuous flight point will be lost (see exceptions to this in 6.2).

**6.2 Midairs.** Any pilot involved in a midair must disengage from combat, and leave the combat arena to the left, right or above, if possible. At the moment of impact of the midair, the plane shall be considered dead from positive and negative scoring (including penalties) or from being scored against. If the plane crashes as a result of the midair, the pilot shall earn +20 points for continuous flight. If the pilot can maneuver safely to an area outside the arena, and he/she and the Judge and/or Line Marshall all agree that the plane can safely continue, the plane shall be deemed alive and the pilot may re-engage and becomes subject to continuous flight scoring. If the plane is deemed unsafe to continue, the pilot shall land immediately beyond the safety line and he shall earn +20 points for continuous flight. If a flying facility makes the safe landing impossible, due to its size restrictions, the pilot shall remain airborne in an area away from the combat arena, pilots and spectators. After the round is complete and all other aircraft have landed, the pilot may be given clearance to land the crippled aircraft. It is the Line Marshall's responsibility to give a "heads up" warning in such case. At no time shall a pilot attempt to land a crippled aircraft inside the safety line or near the pilots during the round. Aircraft that midair during launch are considered failed launches, and shall be treated as if the plane failed to launch.

**6.3 Streamer Cut Scoring**

**6.3.1** A streamer cut is defined as any time one contestant's aircraft removes any part of a streamer attached to or being towed by another contestants aircraft between the announcement of "Start Combat" and "End Combat".

**6.3.2** Cutting or removing any streamer being towed by another contestant's aircraft will be scored as a cut.

**6.3.3** A cut must be observed and confirmed by a judge to be eligible for scoring. The decision of the judge(s) regarding scoring of cuts is final.

**6.3.4** If two streamers intertwine during combat and any part of one becomes removed, the pilot who's streamer remains intact will be awarded the cut.

**6.3.5** If more than two streamers are intertwined, the pilot(s) whose aircraft retain the original portions of their streamer will score the cut(s).

**6.3.6** If two streamers become intertwined and any portion of both are removed, both pilots will score a cut.

**6.3.7** Multiple cuts on multiple streamers towed by a single aircraft in a single pass count as one cut.

**6.3.8** Multiple cuts on a single streamer in a single pass count as one cut.

**6.3.9** Streamers not being towed by a contestant's aircraft (i.e. floating unattached) are not eligible for scoring.

#### **6.4 Scoring of Remaining Streamer**

**6.4.1** To be eligible for remaining streamer points, the aircraft must start the heat by completely crossing the Combat Engagement Line into the combat arena in controlled powered flight with an attached, fully extended streamer.

**6.4.2** To be eligible for remaining streamer points, the streamer must still be attached to string attached to the model (except as covered in 6.5.3), and may not be a streamer cut from an opponent.

**6.4.3** Should a streamer, string or attachment break on landing or in recovering the model from a crash site it may be taped together for scoring in a manner that does not increase the length of the streamer, provided that such action is observed and approved by a judge.

**6.4.4** Streamer length will be rounded down to the nearest foot when measuring remaining streamer.

**6.5 Reinstatement of points lost.** No incident may occur that would reinstate continuous flight points once lost. For example, a pilot does not launch on time (losing continuous flight points), and midairs later in the heat. While pilots do not lose continuous flight points because of a midair, the pilot had already lost them prior to the midair for not launching on time. Once continuous flight points are lost, they are lost for the entire round. Likewise, no incident may occur that would reinstate points lost for failure to launch on time.

**6.6 Combat Engagement Line, Safety and Pilot line violations.** Combat Engagement Line, Safety Line and Pilot Line violations will be scored independently. That is, if a pilot violates more than one line rule, multiple penalties will be assessed.

## Rules Appendix A: Approved Aircraft

### A1: Single Engine Aircraft

1. Bolton Paul Defiant - Commonwealth
2. Fairey Firefly - Commonwealth
3. Fairey Fulmar - Commonwealth
4. Gloster Gladiator - Commonwealth
5. Hawker Hurricane - Commonwealth
6. Hawker Tempest V - Commonwealth
7. Hawker Typhoon - Commonwealth
8. Supermarine Seafire I, IIc, III - Commonwealth
9. Supermarine Spitfire I, II, V, VI, VII, IX,X, XI, XII, XIV, XVI, XVIII - Commonwealth
10. D.520 - France
11. MB.152 - France
12. MS.406 - France
13. FW-190A/D/F - Germany
14. Me-109 D/E/F/G/K - Germany
15. Ta-152H - Germany
16. Fiat CR.42 Falco - Italy
17. Fiat G.50 - Italy
18. Fiat G.55 - Italy
19. Macchi C.200 - Italy
20. Macchi C.202/C.205 - Italy
21. Regianne Re.2000/2002 - Italy
22. Regianne Re.2001 - Italy
23. Regianne Re.2005 Sagittario - Italy
24. Kawanishi N1K2-J (George) - Japan
25. Kawasaki Ki.100 - Japan
26. Kawasaki Ki.61 Hien (Tony) - Japan
27. Mitsubishi A5M (Claude) - Japan
28. Mitsubishi A6M (Zero) - Japan
29. Mitsubishi J2M Raiden (Jack) - Japan
30. Nakajima Ki.27 (Nate) - Japan
31. Nakajima Ki.43 Hayabusa (Oscar) - Japan
32. Nakajima Ki.44 (Tojo) - Japan
33. Nakajima Ki.84 Hayate (Frank) - Japan
34. Fokker D.XXI - Netherlands, Finland
35. PZL P.11 - Poland
36. IAR 80 - Rumania
37. Polikarpov I-15 - Russia
38. Polikarpov I-153 - Russia
39. Lavochkin La-5/7 - Soviet Union
40. Lavochkin LaGG-3 - Soviet Union
41. MIG-3 - Soviet Union
42. Polikarpov I-16 - Soviet Union
43. YAK-1/3/7/9 - Soviet Union
44. F2A Buffalo - US
45. F4F Wildcat - US
46. F4U Corsair - US
47. F6F Hellcat - US
48. P-36 Hawk/Hawk 75 - US

49. P-39 Aircobra - US
50. P-40C-N Warhawk/Kittyhawk - US
51. P-47C/D/N Thunderbolt - US
52. P-51 Mustang - US
53. P-63 King Cobra - US
54. *II-2/II-10 Sturmovik – Russia*
55. *Hawker Sea Fury – Commonwealth*

### A2: Multi-Engine Aircraft

1. Beaufighter - Commonwealth
2. Mosquito - Commonwealth
3. Westland Whirlwind - Commonwealth
4. Potez 631 - France
5. Do-217N - Germany
6. Dornier Do-217J - Germany
7. He-219 - Germany
8. Ju-88C/G - Germany
9. Me-110 - Germany
10. Me-410 - Germany
11. J1N1 Gekko (Irving) - Japan
12. Kawasaki Ki.102 (Randy) - Japan
13. Ki-45-KAI Toryu (Nick) - Japan
14. Ki-46-III KAI (Dinah) - Japan
15. P-38 - US
16. P-61 - US
17. P-70 - US
18. Petlyakov Pe-3bis - USSR
19. *P-82 Twin Mustang – US*
20. *F7F Tigercat - US*

**A.3 Selection Criteria.** The model must be a scale replica of a propeller driven fighter or fighter bomber that was in active combat squadron service between 9/1939 and *7/1953* and scored aerial victories against manned aircraft during that period. Planes not designed for a primary or secondary offensive air-to-air combat role (e.g. dive bombers, ground attack, torpedo bombers, light bombers, medium bombers, etc.) are prohibited. Aircraft that had guns mounted for defensive purposes only shall not qualify as fighter/fighter bomber aircraft. Paper studies, mockups, prototypes, limited production and other types of aircraft that did not serve in active combat squadrons are prohibited, even if they did participate in combat. Active combat squadron service is defined as a unit of twelve or more production planes of the same type deployed to a combat theatre, certified as combat ready by their commanders.

**Revised Combat Score Sheet**

Scale Combat Score Sheet version 2006.1

Name: \_\_\_\_\_ Event: \_\_\_\_\_ Date: \_\_\_\_\_

AMA # \_\_\_\_\_ RCCA # \_\_\_\_\_

**2548 Model Scale Points**

Model	Type	Scheme	Points	Model	Type	Scheme	Points
1				5			
2				6			
3				7			
4				8			

Round	2548 Model/ Scale Points	Pre-Flight Check	Launch on Time	Flew Entire round	Kills	Cross CEL ground on 4th violation	Cross Safety Line ground on 2nd violation	Cross Pilot Line ground on 2nd violation	Non-Engagement each	Streamer 4 pts per foot	Round Total	Judge's/ Pilot's Initials
	1	/		+20	+20	+100 +100 +100 +100 +100 +100	Warning 25 -25 100*	-100 100*	-300 -300	-25 -25	+_____	
2	/		+20	+20	+100 +100 +100 +100 +100 +100	Warning 25 -25 100*	-100 100*	-300 -300	-25 -25	+_____		/
3	/		+20	+20	+100 +100 +100 +100 +100 +100	Warning 25 -25 100*	-100 100*	-300 -300	-25 -25	+_____		/
4	/		+20	+20	+100 +100 +100 +100 +100 +100	Warning 25 -25 100*	-100 100*	-300 -300	-25 -25	+_____		/
5	/		+20	+20	+100 +100 +100 +100 +100 +100	Warning 25 -25 100*	-100 100*	-300 -300	-25 -25	+_____		/
6	/		+20	+20	+100 +100 +100 +100 +100 +100	Warning 25 -25 100*	-100 100*	-300 -300	-25 -25	+_____		/
7	/		+20	+20	+100 +100 +100 +100 +100 +100	Warning 25 -25 100*	-100 100*	-300 -300	-25 -25	+_____		/
8	/		+20	+20	+100 +100 +100 +100 +100 +100	Warning 25 -25 100*	-100 100*	-300 -300	-25 -25	+_____		/
9	/		+20	+20	+100 +100 +100 +100 +100 +100	Warning 25 -25 100*	-100 100*	-300 -300	-25 -25	+_____		/
10	/		+20	+20	+100 +100 +100 +100 +100 +100	Warning 25 -25 100*	-100 100*	-300 -300	-25 -25	+_____		/
										<b>Total Score</b>		