

North West Scale Championships



2014 Competition guide
North West Scale Aero-Modelers

Championships 2014 Competition Guide

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Note: Red highlights indicate significant variations in rules.

IntroductNorth West Scale Championships *“A Scale Competition with a Difference”*

The North West Scale Aero-modeler organization (NWSAM) was created primarily to provide those scale enthusiasts living in the NW U.S. and bordering Canadian Provinces with an annual Scale Championships event

that would be located exclusively in the states of Idaho, Oregon, Utah, Washington, Montana, Provinces of British Columbia and Alberta. While the geographic region is defined, entrants from anywhere in the world will of course be welcomed and encouraged to attend.

Those responsible for the creation of the NWSAM organization have been active in other scale modeling groups for many years. The attendance at the 2009 USSMA Championships in Wenatchee Washington by modelers in the NW and Canada indicated that a regional Championships event would be well attended.

What follows are the Rules and Guidelines for the 2014 North West Scale Championships. The event will take place on August 15th thru 17th, 2014 and is hosted by the Red Apple Flyers in Wenatchee, Washington.

For more information visit www.NWSAM.org

Respectfully,
Mike Ingram
Vice Director NWSAM

Mission

The North West Scale Aero-Modelers exist to promote and provide support and guidelines that radio controlled scale aero-modelers and event organizers need to develop the skills required for any National or World Scale Aero-modeling event. “While competition is the forum, the emphasis is on Learning, Fun and Sportsmanship.”

Concept

The concept is quite simple. This event is essentially 2 events running simultaneously. A contestant can participate in either the North West Scale Championships, or the Scale Masters Qualifier, or **both**. A contestant becomes eligible for the Northwest Scale Championships by competing in at least 1 other scale competition during the year and bringing that final score to the Championships. The eligibility event for the NW Championships may be a Scale Masters Qualifier, AMA scale contest, or a MAAC scale contest.

Scope

The scope of this document shall be for defining the rules, documents, and foundation necessary for the Northwest Scale Championships. As with any competition, there needs to be rules! This Guide will serve as the rule book for the 2012 North West Scale Aero-Modelers Championships. The basis for this Guide is to provide the foundation for this Championship and hopefully the many to come.

Goal

To provide a fair and level playing field by which to conduct this Championship. While the rules are necessary, it is not necessary to have a rule book that is so complex and cumbersome, we forget to have fun! We want each contestant from beginner to expert, to have a positive experience. We also hope that you will meet many people that share your enthusiasm of this great hobby.

Section 1- General Requirements

1. All contestants must have and show proof of current Academy of Model Aeronautics (AMA) or Model Aeronautics Association of Canada (MAAC).
2. Any scale model airplane of a heavier than air, man carrying, fixed wing aircraft that was actually built and flown may be entered. If a pilot was visible in the full-scale aircraft, then a pilot figure of

- appropriate size and scale must be visible in the model during flight operations.
3. Each Expert and Team (Builder) contestant is required to sign a Builder of Model statement verifying that he/she is the builder of the model entered.
 4. All models are subject to a general safety inspection before being allowed to fly. Additionally, any model that is involved in an incident that resulted in structural damage to the model, shall undergo an additional safety inspection before being allowed to fly and continue in the competition.
 5. In order to be eligible for the North West Scale Championships, each contestant must bring a final score forward in the event class he/she wish to compete in. Additionally, You cannot bring a static score from 1 event and a flight score from another event. Both static and flight scores must have been awarded at the same event. The score that the contestant wishes to have counted toward the Championships must be verified by the Contest Director (CD) prior to the Championships. The score may be verified by a listing from an official web site, publication, or the CD of that event. If you are in doubt, contact the CD prior to the Championships. For the purpose of the 2014 NW Scale Championships, scores may be brought forward starting with the 2013 NWSAM Championship.
 6. Unless otherwise stated, the current North West Scale Aero-Modelers Competition Guide shall take precedence on all matters. The U.S. Scale Masters Competition Guide and AMA Competition rule book shall be used for items not specifically addressed in this guide in that order.

Section 2- Event Categories Defined

This event will have five (5) event classes in which to compete:

Expert (AMA 512), Team (AMA 522), Advanced, Pro/Am Pro, & Pro/Am Sportsman

1. Expert: This category is for the builder-pilot. Those competing in expert may also enter as either the builder or pilot in one (1) Team class, & may also enter in Pro/Am Pro class. All contestants in this category must sign a Builder of the Model declaration.
2. Team: This category is available to allow a pilot and a builder to participate in a competitive environment. The Team is a pilot and a builder that

- qualified. The builder of the model must be present. The pilot of the Team entry may not be a pilot in another team entry. **However, the builder & the pilot of a Team entry may also enter in Expert, or Pro/Am pro class or both.**
3. **Advanced:** This category is open to any modeler built, purchased built, or factory built (ARF) R/C Scale model. This category is intended for top level pilots that are using aircraft that are not governed by the Builder of the Model Rule. Judging criteria for both flying and static are identical to Expert and Team classes. Pilots competing in Advanced class may not compete in Expert class at the same contest. **However, those competing in the Advanced class may also enter as either the builder or pilot in one Team class, & may also enter the Pro/Am Pro class.**
 4. **Pro/Am Sportsman:** This category is open to any modeler built, purchased built, or factory built (ARF) R/C scale model. This category is intended for the true novice. If you have ever competed in Expert, Team (as a pilot), USSMA Advanced or Open class, AMA 523 Open- Expert or Novice, AMA 520 Fun Scale Division 2 Advanced, you cannot compete in this class. A static score of twenty five (25) points shall be awarded to contestants that show proof that a full size aircraft of this type, and in this general paint/markings scheme did exist. The contestant may provide a single photograph, plastic kit box, profile painting, etc. Contestant prepared documentation or a photo of the model is not considered proof of scale. If no proof is shown, a static score of zero (0) will be awarded. The contestant in this category cannot compete in any other class except in Team as the builder of the model. Flight scoring will be the same as Expert and Team classes. **If a contestant in this category finishes in the top 3 at the NWSAM Championship, the contestant may not compete in this event class thereafter.**
 5. **Pro/Am Pro:** This category is open to any modeler built, purchased built, or factory built (ARF) R/C scale model. This category is intended for the experienced modeler. If you have ever competed in Expert, Team (as a pilot), USSMA Advanced or Open class, AMA 523 Open- Expert or Novice, AMA 520 Fun Scale Division 2 Advanced, you may compete in this class. **A contestant in this class may also compete in the Team Class (builder or pilot) & the Advanced Class.** A static score of thirty (30) points shall be awarded to contestants that show proof that a full size aircraft of this type, and in this general paint/markings scheme did exist. The contestant may provide a single photograph, plastic kit box, profile painting, etc. Contestant prepared documentation or a photo of the model is not considered proof of scale. If no proof is shown, a static score of zero (0) will be awarded. The contestant in this category cannot compete in any other class except in Team as the builder of the model. Flight scoring will be the same as Expert and Team classes.

Section 3- General Rules

3.1 The 55 pound weight limit may be exceeded if aircraft & pilot have completed inspection & certification process as defined in AMA rules. Pilot must have appropriate documentation of certifications. Jet turbines may be flown only with a valid "AMA turbine waiver".

3.2 Craftsmanship shall be judged no closer than *four feet* distance for static judging.

3.3 Scale operations are only scored as **maneuver combinations** (see section 9) with pilot skill and scale operation score (10 point total) divided accordingly. For example, flaps and retracts may not be used as individual scale operations and would only be scored as part of Overall Realism, unless they are used in the “Slow Speed Dirty Inspection Pass (maneuver combination)”.

3.4 The only approved mechanical options permitted for a scored flight option are Multi-Engines, Swing or Folding Wings. All others (including scale operations) must be used with a maneuver identified as “maneuver combinations”. (see section 8)

3.5 The options of *straight flight out, procedure turn, and straight flight back* shall be scored as only *one* flight maneuver or “Procedure Turn”.

3.6 Takeoff shall *continue* to be scored until 30 feet elevation.

3.7 The landing will be scored from the time the aircraft enters the *final approach* to the point at which the aircraft sufficiently slows to permit a safe turn from the runway.

3.8 In strong crosswind situations, it will be up to the discretion of the **CD** to allow Takeoff and/or Landing as scored maneuvers to be optional. Other maneuvers must be selected to replace take off or landing maneuver should this occur.

3.9 Static Judges will compare the model to the documentation the contestant has provided. If the documentation is insufficient, the judges have no choice but to judge according to what they have been given by the contestant and their understanding of the process outlined in this Guide.

3.10 Flight Judges will compare the models flight to the written maneuvers described within this guide, the contestants approved Maneuver Declaration Sheet, or other approved Guides such as current AMA Competition Regulations and/or SM Competition Guide.

3.11 Tailskid aircraft will be allowed to attach a non-scale functional tail-wheel for flying off of paved surfaces only. Anti-scoff tape may also be applied to the bottom of the wing tips to protect the covering with no loss in points.

3.12 There is no provision for a contestant to “refly” any round in competition unless authorized by the CD. **Mulligan’s will be at the discretion of the CD during the first round only.** See section **13.8** for further clarification.

3.13 A gyro may be used on rudder control only.

3.14 Official Score: The official Championships score shall be the final score (static plus averaged flight scores) from another scale event in your event class combined with the static plus the total of all flight rounds flown at the Championships. Example: Contestant Competed in the Cascade Scale Rally in the Advanced Class. The Contestant had a final score of **170** which was brought to the Championships. The contestant had a static score of **80** and the 5 flight total of **445** (85 + 87 + 89 + 91 + 93) at the Championships. The final Championships score would be **170 + 80 + 445= 695**. To break a tie, the single best flight score will be added to the static score. If this does not break the tie, add the two (2) best flight scores to the static score. If this does not break the tie, add the three (3) best flight scores to the static score. In the event conditions prevent flying and the contest cannot be postponed, static scores alone shall be the official score. Ties shall be

broken by the outline score plus color and markings followed by ½ the craftsmanship score.

3.15 Time limit: Each contestant will have **15 minutes** to complete their flight. (See Section 13.1 for official delays).

Section 4- Safety

4.1 The importance of safety is the highest priority at any event. A contest director must make themselves aware of all possible safety hazards and do his best to prevent any occurrence of any safety violations. It is recommended that a Safety Coordinator be appointed who can focus on the safe operation of model aircraft and be on the lookout for accident prevention during the event. The Safety Coordinator shall conduct the preflight safety inspection and record his findings on the Preflight Safety Checklist form (located on the last section of this Guide). Any contestant refusing to follow recommendations for correcting safety issues found shall be disqualified and not allowed to fly. The contestant must declare that the model to be flown has had at least 3 consecutive successful flights prior to attempting round one of the competition.

4.2 Runway Safety: To insure safe operations there will be an **Air Boss** overseeing flight operations. In addition to the Air Boss, each pilot must have a **Caller** who will monitor other aircraft and advise the pilot of their positions and intentions; coordinating runway maneuvers with the Air Boss. All maneuvers requiring access to the runway must be cleared by the Air Boss. All maneuvers not requiring access to the runway to perform shall be placed beyond the far side of the "defined runway" on the *maneuvering line*. This is a notable change from descriptions provided by the AMA rules, which has certain flight maneuvers flown over the middle of the runway. Downgrade for drifting in over the defined runway in performing flight maneuvers will be proportional to severity. For example, a maneuver that violates one half the runway width (up to centerline of runway) will score no better than a five, etc. (This deduction is from the maximum 2.5 points for "placement" and a portion of the 5.0 points for "precision".) Maneuvers requiring access to the runway will include Takeoff, Landing, Touch and Go, as well as Overshoots. For Safety reasons, no exception to these maneuvers will be made unless the C.D. formally announces the exceptions prior to the beginning to the flight round, preferably in the pilots' meeting. The start of an optional Traffic Pattern must also begin beyond the far edge of the defined runway, but will be in alignment to the runway on final approach.

4.3 Deadline Infractions:

The Deadline is: The designated AMA/MAAC Safety line or Flight Safety line is the near edge of the runway to the pilots/judges station.

Crossing the **deadline**, as observed and agreed by the judges, during any part of a flight will incur a warning to the contestant and score a zero for the maneuver being performed (or the previous maneuver if the occurrence is between maneuvers). A repeat crossing disqualifies the flight and the contestant must land immediately. **100%** of the aircraft shall have crossed the deadline to be considered an infraction. Both flight judges must concur to the infraction.

4.4 Transmitter Control: An impound area for all transmitters shall be set up and strictly enforced. During the contest no one should have a transmitter in his/her possession without a frequency pin. After contest hours, open flying is permitted provided an announcement is made and a designated frequency control person is assigned.

4.5 Pyrotechnics: No pyrotechnics will be permitted at any time.

4.6 Dangerous flying of any sort, or **poor sportsmanship** of any kind, shall be grounds for disqualification of the contestant involved. Contest Director's decision is the final word.

4.7 Weight Limit : See general rules Section 3.1

4.8 Metal propellers are not allowed for flying but may be used for static judging.

4.9 Recommended Site Set-Up. Judging stations should be at a minimum of 30 feet from the edge of the active runway. Barriers should be set up to keep spectators out of the pit areas and no closer than 65 feet from the edge of the active runway. Judges stations should be at least 50 feet apart but in line with each other on the judges' deadline. Pilots are to stand 3 to 6 feet on either side of the judges' box and 1.5' behind the deadline. Callers are to stand in an area behind the Pilot. A protective fence or barrier should separate the judges from the engine start up area and from the active runway. See www.modelaircraft.org/files/706.pdf for AMA event site guidelines. It is recommended that the GPS coordinates for the flying site be posted in several areas around the contest site and also given to the nearest Emergency Medical Response Team office along with the dates of the event in case of emergency.

4.10 Traffic Pattern: All maneuvers must start in the same direction as the traffic pattern as determined by the "Air Boss" or wind direction.

Rational: To fly against the pattern is a safety concern for "mid-air collisions" and a distraction to other flyers on the flight line. There are enough maneuvers (Procedure Turns and Figure 8s) that have part of the sequence against the Traffic Pattern Direction without adding others.

Section 5- Static Judging

The static portion of the contest is very important since it makes up a significant portion of your overall score. Good documentation gives you the edge over a similar model with poor documentation. We would like to point out some common frustrations shared by contestants and static judges alike. We all have a favorite airplane that we want to build and fly; however, pick a color scheme that can be documented. Remember it is your choice on what you bring to the contest and Proof of Scale and Color is the contestant's responsibility. Please don't blame the judges for down grading your model if the documentation is poor, or if your model is poorly documented. Plan ahead and pick documentation that clearly shows outline, color, and markings of the aircraft you intend to model. The ideal situation would be three steps: 1) you decide to compete in the top level of the Championships; 2) you find documentation of the very aircraft you would like

to build, and; 3) you build your model to perfectly match the documentation. If you already have an airplane built and you then decide to enter the Masters, all you can do is to try and alter your model to match the documentation. The judges will in turn do the best they can with the information you provide them. Remember...it is your choice of model and documentation, not the judges. Color paint chips for proof of Color are not a requirement but simply one of many optional methods to document Color. Static judging will be conducted by a team of three (3) judges. The judging team shall consist of an **Outline judge**, a **Finish-Color-Marking judge**, and a **Craftsmanship judge**.

Judging for Outline and Finish-Color-Markings shall be judged at a distance of 15 feet. Craftsmanship shall be judged from no closer than 4 feet. Documentation for Outline and Finish-Color-Markings shall remain on the judges table. Documentation for Craftsmanship will not be placed closer the 4 feet from aircraft. The static judges shall not examine the models closely prior to the start of static judging. Static scores for Expert, Team and Open-expert class shall be from 0-10 points for each sub-category on the score sheets with the exception of Color, and Landing Gear under Craftsmanship. Color and Craftsmanship Landing Gear shall be 0-5 points each. The maximum static score for each category is:

Accuracy to Outline 40 points

Finish-Color-Markings 25 points

Craftsmanship 35 points

Static judging shall take place prior to flight judging. It is recommended that the documentation package be contained in a 3-ring binder so that each section can be removed and presented to the respective judge to allow simultaneous judging. The static judging process starts after the contestant places the various documentation pages in the judges' box on the table arranged according to the judge function, e.g. one three-view set is placed in the box labeled "Outline Judge" and another set is placed in the Finish-Color-Markings box. Color photos and/or color chips are also placed in a box labeled "Color-Markings", etc. A box will also be provided for Craftsmanship related documentation. The contestant then places the model on the judging stand/table and points it straight at the Outline judge. The Outline judge sets the pace and calls the position he wants the aircraft displayed in, starting with the front, head on view. The Craftsmanship judge walks around the aircraft, no closer than 4 feet, but does not talk to the contestant. If he has a question that needs clarification, he may refer to the photo documentation that the Finish-Color & Markings judge has, or the additional separate pages for Craftsmanship provided by the contestant. When the judges are ready, they will ask the contestant to position the model as necessary.

The viewing order is as follows:

1. Straight (head on) view
2. Side View (the side that matches the documentation)
3. Top View
4. Bottom View

Feedback comments from the judges are **required for any deductions** and should be written on the generic 3-view diagram on the score sheets or extra copies of the outline drawings if they are provided (1 for each judge type). The judge will highlight the area of mismatch and write in a couple of key words that denote the error. **If comments are not noted for any deduction, the deduction shall not be considered.**

Use of transmitter to operate mechanical scale operations during static judging will not be allowed.

Cockpit and cabin interiors, excepting those visible items called out in 5.2 Accuracy of Outline, or the interior of landing gear wheel wells, even if partially visible from the judging distances are not to be considered in scoring the model. All other visible features

will be judged. Simultaneous judging is a process where all three static judges judge the aircraft at the same time. For every minute the aircraft is in front of the judges being judged, 3 minutes of judging time elapses.

5.1 Documentation: A maximum of eight (8) pages equivalent in size to 8.5 x 11 inch paper is allowed, except the three or more view published or approved* outline drawings may be on larger size sheets (max size 11x17). The outline drawings will count as one page of the eight permitted. If a conflict exists between outline drawings and submitted photographs, the photos shall take precedence. Extra 3-views for judges' feedback, the cover page, index and signed Builder of the Model Declaration statement will not count toward the 8 maximum pages. Emphasis is placed on the quality of the documentation presented to the judges. Poor or hard to interpret drawings make it difficult for judges to compare to the model will not enable a good score. Many examples of excellent models that score poorly due to poor quality documentation (or not enough) happen each year. Be careful not to fall into the trap of "less is better" as the judges must have adequate documentation to compare each item they see on the model to some reference shown on the presented documentation (including views of the aircraft's underside).

.2 The Ideal Documentation Package should Contain;

- Cover Page and/or index page
- 3 or more view drawing(s) showing the aircraft outlines, color scheme and markings location. Separate drawing(s) may be used to show outline and color/markings scheme. Three ring binders work well for being able to quickly separate outline drawings from color and marking references such that each judge can have their own document to work with for Expert, Team and Advanced class.
- Photographs of the actual aircraft being modeled
- Paint chips or other proof of color for each color used
- Signed Builder of the Model **Declaration** statement (*see forms*) for Expert and Team class.

*Your regional AMA Scale Contest Board member can approve, by his signature, documentation that may not be from a published source. See AMA Model Aviation Magazine for name of your CBM.

.3 The flying spinner must be presented to static judges for comparison if it replaces the static spinner in flight. Any exposed flight "droppable" must also be presented including those that may be different from static display examples. No changes may be made between static judging and flying which alter the scale appearance except:

- a) Propeller. A flying propeller of any diameter and color may be substituted for a scale or static prop for flight.
- b) Radio antenna of any type may be added.
- c) Takeoff dollies may be used for models of seaplanes or flying boats in the absence of suitable water conditions. If dollies are used they must not remain attached to the model in flight. Deviations from scale appearance through the inclusion of permanently mounted recessed wheels, skids, or similar devices, if visible, result in downgrades in both static outline judging and overall realism during flight judging. Takeoffs or landing of such aircraft will be judged by the same criteria of Precision, Placement, and Realism except that the surface area such as rough grass may disrupt the Realism portion of the score of which the judges are to ignore for this situation only. The contestant may choose another optional maneuver to take the place of take off or landing for seaplanes if desired.
- d) If bombs, rockets, drop tanks, etc., are to be dropped or released during flight, they must be in place at the time of static judging. A scale "droppable" may be replaced during the flying portion of the contest as long as they are of the same size, shape, and color as those presented during static judging. Static judges will make a note on the static-judging sheet of all observed "droppable" stores in place on the model at the time of static judging.
- e) Pitot tubes projecting from the wing or fuselage should be removed for flying without

scoring penalty (unless damage to the model would be incurred); however these must be installed during static judging for optimum static score.

f) Subjects that provide no opportunity to conceal the engine or exhaust system (such as water cooled in-line engines like the Spitfire, P-39, etc.) will not be downgraded by the **outline judge** if: **1)** part of the model engine or exhaust system is exposed or: **2)** non scale openings that facilitate model engine cooling are visible. However, a higher Craftsmanship score may be awarded to those who conceal the engine and exhaust system as compared to those who don't.

g) Dummy fan blades in jets or turboprops may be used in the intake and exhaust regions where applicable during static judging and removed prior to flight with no scoring penalty. No plugs may be used to obscure these regions. Static presentation shall be as if the aircraft were ready for flight. No other changes may be made to intake or exhaust openings between static judging and flight. Documentation details of these regions are the responsibility of the contestant for static judging.

h) No pilot(s) need be in the cockpit during static judging, but must be in place for flight. If no pilot(s) are properly located in the cockpit during the flight, a downgrade in realism shall be given (see section 11.4c for further details)

5.2 Accuracy of Outline:

Outline consists of all major geometry features (location and proportion) of the full size aircraft including features of the cockpit or cabin that may be visible from the side view such as headrests, gun sights, etc. Other major geometric features, that may be located inside of the aircraft's profile, include control surfaces, wheel wells, exhaust stacks, pods, air louvers, gun troughs, windows, and doors. The Outline judge will compare the outline profiles from the provided three-or-more view drawings (from an approved source) with the features on the model that include the outline of landing gear, tail wheel outline, and other profile features that show on the drawings. Any surface detail features of the aircraft shall NOT be considered when scoring Outline features such as panel lines, inspection panel doors, and methods of hinging, connector detail, or any other feature listed for Craftsmanship in 5.4 herein to avoid double jeopardy. If no three-or-more view drawing exists, photos of the actual aircraft modeled may be used that are sufficient to show the outlines of the aircraft in side, front, and plan (top) view details. For optimum score, drawing/s and or photographs used for 3-views need to be taken from 90-degree angles to the side, front and top view to show true outline. Landing gear shall be considered only for size, angles and outline. Additional items such as panel lines, brake lines, jack points, fill ports, and tie-down hooks or any other detail features described under paragraph 5.4 for "Criteria for Craftsmanship" shall only be considered under that separate scoring category to avoid double jeopardy. Computer generated drawings or computer printed photos will be allowed if they have **not** been altered from their original published form. If any alterations have been made from published sources to reflect greater accuracy they must be approved by a Scale Board Member or other recognized authority with supporting documentation for those changes made. If no proof of Outline is presented, no points can be awarded for Accuracy of Outline (see criteria for Accuracy of Outline in paragraph 5.2).

5.3 Finish, Color and Markings

The intent of this section is to verify the contestant has properly researched the full-size aircraft to prove that the model they are presenting matches the full-size aircraft. The contestant may provide photographs, published artist conceptions, or published photos that show color, finish, and marking details of the actual aircraft being modeled. Proof of color may also be in the form of either; paint chips from approved sources such as Federal Standard 595, FTE Color Guide, Monogram Color Guide, factory color chips or other published color documentation sources.

Your AMA Scale Board Member can approve unpublished color documentation samples with supporting written documentation. Some vintage aircraft were flying before color film existed so modelers must rely on artist conceptions, black and white photos, or colored

line drawings of the subject to document color and markings. If black and white drawings and/or photos are used, a description from an approved source of the colors used for the aircraft color and markings and their location on the aircraft must be included in the documentation package. For subjects in which it is difficult or impossible to document more than one side or view of an aircraft, there shall be NO penalty for failure to show the other side or bottom of the aircraft.

For the judge to determine location, color, size, and graphic content, documentation of markings specific to the aircraft being modeled need to be provided. However the judging of color in these markings will be included only in the score provided for overall Color described previously (5 point maximum) to ensure the color score is not over emphasized. See Static Judging score sheets at the end of this Guide for Finish (10 points), Colors (5 points), and Markings (10 points). If no proof of Finish, Color, and/or Markings accompanies the model, no points can be awarded for Finish, Color, and/or Markings section of the score sheet.

5.4 Craftsmanship consists of judging the quality of workmanship on the model that is being presented. The Craftsmanship judge will judge no closer than four feet distance from the model surface to still permit definitive scoring of details. The Craftsmanship judge should consult with the Outline and Finish judge to ensure an item is not double downgraded (once by the Outline or Finish judge and once by the Craftsmanship judge). The quality of panel lines, brake lines, jack points, fill ports, inspection panels, tie-down hooks or any other scale detail feature will be considered by the Craftsmanship judge. Items such as non-scale exposed control horns would be a source of downgrade for craftsmanship. Craftsmanship will be separately itemized on the score sheets for wings (10 points), fuselage (10 points), and Tail Group (or their equivalent by design) (10 points) and Landing Gear (5 points). Emphasis is placed on how well the modeler created the illusion of scale detail on the model as compared to the documentation (NOTE: Close proximity photos or other documentation of the full-size aircraft may be beneficial to include for emphasizing applicable subtle features. Published 3 views may lack sufficient detail that may otherwise benefit a contestant's craftsmanship effort).

Section 6- Flight Judging

The intent of the flying portion of the contest is to determine the pilot's ability to match the model aircraft's flight performance to that of the full-size aircraft in the most realistic manner possible. The U.S. Scale Masters has emphasized this in the creation of maneuver combinations where mechanical operations must be combined with a flying maneuver to enhance realism. It is recommended that a theme or mission be established in choosing flight maneuvers so the flight routine's order is easier to track and is more pleasing to watch. The emphasis will be placed on scale realism, so be aware that your chosen aircraft type will determine your maneuver's parameters such as speed for correct attitudes, geometry, and positioning with respect to the judges' centerline. Contestants should indicate if their aircraft type is designated either Aerobatic capable or Non-Aerobatic by checking the appropriate box on the flight score sheet. To document maneuvers not contained in this guide or AMA or USSMA Competition Guide a Maneuver Declaration Sheet should be filled out by the contestant, signed by the Contest Director and presented to the judges before each flight. Each flight will be judged by two (2) flight judges who's scores will be averaged for the contestant's flight score for each round.

6.1 The contestant is encouraged to brief the flight judges when handing them the score sheets by going over atypical maneuvers and explaining exactly what the judges are to expect. This is the opportunity to clarify the particular maneuvers the contestant has chosen, not a license to tell the judges how to judge each maneuver. The information provided to the judges is what they will inspect for. During the flight the pilot will be responsible for calling the beginning and ending of each maneuver. However, some maneuvers will be judged in accordance with the maneuver criteria as set forth in the maneuver description. If the contestant says nothing, the judges will judge according to what they understand a maneuver should look like based on this guide and other guides such as AMA and USSMA Competition Guides. **Remember, your 15 minutes starts when you hand them your score sheets!**

6.2 The Flight Judge will not downgrade items that are beyond the pilot's control such as when a tailskid aircraft is slowing down from a landing, at the point where the model *takes control* and turns into the prevailing winds. The judge will stop judging at the point the model takes over and calculate the score. This is also true during wind conditions, which may adversely affect the aircraft. The judges will make every attempt to be familiar with areas of the flying field that exhibit these unstable air conditions and take this into consideration in scoring.

6.3 Tailskid aircraft will be allowed to attach a non-scale functional tail wheel and scuff-plates or wing-tip skids for flying off of paved surfaces only.

6.4 Each maneuver will start with a score of 10 points and the flight judge will deduct for errors noted during the execution of the maneuver. Errors will include mismatches noticed in precision, placement, and realism for each maneuver.

6.5 Judges are to **remain independent** in their scoring and are not expected to arrive at the same maneuver score. Judges are not allowed to communicate or check with each other in routine scoring during flight and are encouraged to sit at a sufficient distance from one another to maintain the integrity of statistically independent judging for subsequent score averaging. However if a 0 is given for a score, flight judges **must** confer, and in this case identical scores are required. At the conclusion of the flight, judges will confer on the Overall Flight Realism qualities and again need **not** award identical scores.

6.6 The following are examples of mandatory zero scores for specific maneuvers or sequence of maneuvers:

- .1 Crossing the deadline at any time during flight
(0 for the maneuver being performed or for the previous maneuver)
- .2 Maneuver(s) performed out of sequence
(0 for the skipped maneuver(s) but judge the rest normally)
- .3 Touching the model after any maneuver starts such as when restarting an engine after the takeoff roll has begun (10 point loss), see 13.5 for engine restarts (unless directed to do so by the CD or Air Boss).
- .4 Model flips over on its back on landing (except tailskid aircraft, see 7.4.2 on page 23)
- .5 Use of similar or redundant flight options for maneuvers or scale operations in maneuver combinations, e.g. Roll, then Military Roll, then 2 point Roll, etc.
- .6 If the aircraft becomes airborne with flying speed and is forced to land immediately or anytime thereafter before the flight is complete, any maneuvers not performed before landing have effectively been skipped and will be scored zero as in item 6.6.2 above.

6.7 Replacement of damaged parts is limited to props, spinners, wheels, tires, landing gear units, cowls, canopy, tail wheel units, antenna, flying wires, and struts as long as the replacements are of the same size, shape and color as those on the model when it was presented for static judging. If a flying spinner cannot be replaced or safely repaired,

the Contest Director may allow the aircraft to continue to fly in competition (without the spinner), however, the flight judges will make a 2 point reduction to the continuity of flight portion of the overall flight realism score for each round that the aircraft flies without the spinner. Any other damaged components will need to be repaired and retained as original equipment by the modeler. Damaged aircraft which have been repaired may require a new safety inspection before being allowed to re-enter competition.

6.8 With the exception of electric motors and turbine aircraft, the engine must be equipped with an effective muffler or silencer to limit noise output in flight. Tuned pipes are considered silencers.

6.9 Maneuver scoring content: Maneuvers and *maneuver combinations* with scale operation elements will be scored for three basic content considerations as listed below. These are similar to those found in the AMA Competition Regulations Rules Governing Model Aviation Competition in the United States, except provision is now made for *maneuver combinations* as further explained in section 9. The three contents are:

Maximum of 5.0 points for **Precision**.

Maximum of 2.5 points for **Placement**.

Maximum of 2.5 points for **Realism** for each maneuver.

Each of the contents is scored to the nearest ½ point. A maneuver starts at 10 and then deductions occur. A *maneuver combination* is primarily scored with equal emphasis between the maneuver and the scale operation feature. This is further detailed as follows:

6.9.1 Precision Content (5 pts.): The pilot's ability to perform the defined maneuver geometry, and when applicable, the Precision of scale operation features within a *maneuver combination*.

.1 A *maneuver combination's* precision content will be equally divided between maneuver and scale operation (or maximum of 2.5 points each). Should scale operational feature(s) fail to operate or deploy within a *maneuver combination* in a realistic and timely manner due to either mechanical malfunction or pilot error within a *maneuver combination*, the result will be a 50% downgrade in the score for "Precision".

.2 Precision of flaps, slats, and retracts is demonstrated by their prototypical operation and will only be judged on the pilot's Precision in the "Overall Flight Realism" score. They may also be judged as part of the "Slow Speed Dirty Inspection Pass" described in section 10 #20 as a maneuver combination.

6.9.2 Placement Content (2.5 points.): Most in-flight maneuvers (including those with a "droppable") will optimally be placed directly in front of the judges (judges' centerline) on the maneuvering line. This will typically be at 10 to 50 feet *beyond* the far side of the defined runway area for fly-by type maneuvers. There are times when the contestant will be allowed to offset maneuver to either side of judging center as long as the contestant informs the judges before the maneuver, otherwise the judges will have to default to the judges' centerline for placement. Judges may request maneuvers be offset to aid in visibility. The contestant is not obligated to offset the maneuver if asked, but he should be aware that if the judges cannot adequately view his maneuver it will be difficult to score. A *maneuver combination's* placement content will be approximately divided between maneuver and scale operations.

.1 Maneuvers with horizontal symmetry (Cuban Eight, Loop, Roll, Figure 8, etc.) should have their midpoints on the judges' centerline with equal distance on each side for optimal score.

.2 Some maneuvers due to their asymmetry are offset from judging center for best viewing, such as a Stall Turn or Wingover. Also the Procedure Turn is positioned in the Scale Masters Program where the initial 90 degree turn away from the runway begins *before* reaching judging center, and the remaining 270 degree turn starts at judging

center to the left or right.

.3 Although the placement of a maneuver normally represents only 2.5 points content, a greater penalty deduction will be imposed in the interest of safety when maneuvers are performed unnecessarily close to the flight line (over the runway) as described in "Runway Safety and Deadline Infractions" of this Guide.

.4 Optimum placement of bomb drops will be defined as the point of **impact** in front of the judges at the far side of the defined runway. When discussed with judges' prior to flight, the maneuver may be performed slightly to the left or right of the judges' centerline for best viewing. Parachute or empty tank drops will be scored for optimum placement as point of **release** rather than impact, since wind conditions may unpredictably affect point of landing.

.5 The optimum placement of flaps, slats, and retracts deployment is only included in Overall Flight Realism "Continuity" unless the optional **maneuver combination** of Slow Speed Dirty Inspection Pass is also selected.

6.9.3 Realism Content (2.5 pts.):

The realism content of the score is based upon the pilot's skill in performing maneuvers with the model like the full-size aircraft in actual flight. The size, shape, and speed of aerobatic maneuvers performed by a contestant should reflect the capabilities of the full-size prototype. For example, it would be expected that a loop performed by a J-3 Cub would be smaller in diameter and egg-shaped compared to a loop of a P-51 Mustang if both models were of the same scale. The speed at which each maneuver is performed should also reflect the capabilities of the prototype. Consideration should also be given to throttle position during flight. In many full scale aircraft, power must be reduced on the descent portion of that maneuver. Execution of such maneuvers by a model at a constant full throttle setting should be downgraded in realism portion. A particular maneuver may be downgraded for realism content if it is apparent it exceeded the performance capabilities of its full-size counterpart. Maneuvers that have been classified **only** for non-aerobatic aircraft will still be judged for all maneuver contents without downgrade for all aircraft. However, the "Overall Flight Realism" score may be penalized if such maneuvers were chosen as options by high-performance aircraft.

For **maneuver combinations** the realism score content will be appropriately divided between maneuvers and scale operations. See section 9 for maneuver combination examples.

.1 Consider the stability or "smoothness" aspect of each maneuver as well as the power management (throttle) expected for that specific maneuver of the model compared to its full-size counterpart. Both of these considerations will be influenced by aircraft design and wind conditions. Since slow, lightweight aircraft will be much *more visibly influenced by wind* than fast heavier aircraft, wind conditions should be taken into account during judging.

.2 Maneuvers should appear realistic in scale size of performance (site and conditions permitting). Attitude, bank angle and g-loading appearance through turns should be consistent with those generally observed in the full-size. With scale-size maneuvers, these prototypical attitude features are achieved through use of an optimum speed relationship to the full-size aircraft. Also see Definitions section later in this Guide for Optimum Speed.

.3 The realism content of a **maneuver combination** will also have approximately the same emphasis between the maneuver and the accompanying scale operation feature(s) regarding realistic motion or other intended activity displayed for realism. For a "droppable," this will include the manner in which the droppable was secured and carried in flight as well the trajectory likeness to that of the full size.

Section 7- Mandatory Maneuvers

The contestant must perform 5 mandatory maneuvers (includes Overall Flight Realism) and 5 optional maneuvers unless the CD indicates the Takeoff and Landing may be replaced with other options. They can be presented in any order except Flight Realism, which will be scored at the end of the flight. Models of pure seaplanes or other aircraft that do not have wheeled landing gear may select two other optional maneuvers in place of Takeoff and Landing as scored maneuvers.

7.1 Takeoff

Judges are to evaluate:

- Roll out straight and down the indicated centerline (see exception for “tail skid” aircraft).
- Gentle lift off, wings level, tracking straight, climb out angle consistent with prototype. NOTE: The CD will announce at the pilots meeting if there will be exceptions for takeoff or landing becoming optional for various aircraft.
- Gentle and steady climb out to 30 feet altitude
- Observe mechanical operations, i.e. retracts, gear door sequencing, flaps (when applicable) for Overall Flight Realism.

Judging for Take off and Landing scores will not consider wheels off or on runway location regarding Judges Centerline (some contestants felt lifting off at Judges Centerline was not possible to practice due to their club’s short field).

.1 The takeoff maneuver shall be scored after heading position is initially established with a brief hesitation near the lengthwise centerline of the active runway. (Exception: When safe operation permits, tail-skid aircraft can establish a heading more into the wind so the judges need to establish an imaginary centerline based on the initial path started at takeoff). This new established heading **shall not be directed toward the judges or deadline**. A full stop may be made, but is not required between the end of the taxi and the beginning of takeoff. The contestant must announce that “takeoff maneuver is starting now” prior to starting the takeoff roll. For optimum scoring, the roll must be parallel to, and in close proximity to lengthwise centerline of the runway. The roll distance and tracking prior to lift-off should be realistic in scale to that of the full-size aircraft (runway permitting). During climb out, the wings should remain reasonably level with original heading maintained. The takeoff optimum heading and prototypical ascent angle should be maintained to an elevation of at least 30 feet to complete the maneuver prior to making the initial turn away from the flight line. For optimum "Continuity" score in Overall Flight Realism if the prototypical aircraft design has retractable gear, gear retraction should be initiated sufficiently soon after lift off to allow completion (or near completion) of retraction prior to initial turn away from the flight line for optimum “Continuity” score in Overall Flight Realism. If the gear fails to retract and remain down during flight, a severe downgrade will apply to Overall Flight Realism “Options” and “Continuity”. Flaps and slats (if applicable) may be used during the takeoff maneuver, but are not required for most available runway lengths. Retracts, flaps or slats shall not dilute any of the scoring contents for pilot Precision, Placement, and Realism in takeoff. Also see item 9.7 for Aborted Takeoffs.

.2 In strong crosswind conditions, it will be the discretion of the CD to make Takeoff an optionally scored maneuver that would then require replacement with another maneuver.

7.2 Figure Eight

Judges are to evaluate:

- Maneuver called at 45 degrees from Judges' Centerline (left or right of judges)
- Bank angle typical of full-size aircraft at speed
- Crossover points on Judges' Centerline (directly in front of Judges)
- Crossover points at same altitude and location
- Symmetry same, left circle same size/diameter as right circle
- Exit altitude same as entry altitude

Perhaps more than any other maneuver, the horizontal figure 8 best reveals how well a pilot can position and control the aircraft with a prototypical attitude and precision over a large horizontal area in various environmental conditions. The maneuver starts with a straight and level entry. It can be flown from either direction depending on the wind. Usually it is flown starting into the wind. At a 45-degree angle to the judges the contestant calls, "maneuver beginning now." He then begins a 90 degree turn away from the judges followed by a 360 degree turn in the opposite direction, and then a 270 degree turn back toward judging center and completes with a straight and level fly past calling the "maneuver complete" at the judges' centerline. The prototypical bank angle used during the figure eight is anticipated to vary in windy conditions to maintain a figure eight pattern with respect to the ground and judges. Be aware that an optical illusion occurs, as the aircraft flies away from the judges as the aircraft, if altitude is perfectly maintained, will appear to lose altitude. Experienced pilots understand this and overcome the urge to climb on the backside, that otherwise would place the aircraft higher than it should be when it comes back around.

7.3 Fly Past

Judges are to evaluate:

- Direction is same as take off (into the wind)
- Altitude between 10 and 20 feet
- Heading is straight and tracks down the maneuvering line
- Maintains constant altitude
- Equal distance on Judges' Centerline, minimum 150 feet to left and right

The mandatory 10 to 20 foot elevation fly-past will be centered in front of the judges and located over the maneuvering line (see Definitions on page 43). Direction will be the same as designated takeoff unless otherwise specified by the CD or Air Boss.

Downgrading will also start occurring if the maneuver is too far out beyond the maneuvering line, or over the defined runway. For optimum score, the maneuver should track straight and level over the maneuvering line for at least 300 feet (not 5 seconds as AMA describes). Allowances shall be made for any aircraft for slight corrections due to gusty-wind conditions. No **maneuver combination** can be included with this maneuver.

7.4 Landing

Judges are to evaluate:

- Observe mechanical operations, i.e., slats, retracts, partial flaps on base leg, full flaps on final (Overall Flight Realism)
- Pilot calls maneuver when turning to final
- Wings level, gentle glide angle, constant rate of descent, tracks on runway centerline on rollout.

NOTE: The CD will announce at the pilots meeting if there will be exceptions for takeoff or landing becoming optional for various aircraft.

- Smooth flare, gentle contact with ground both wheels simultaneously, minimal bounce on touchdown
- Straight roll out, down runway centerline (see exception for "tail skid" aircraft).
- Slows to taxi speed before turning

7.4.1 The Landing maneuver will be scored from the time the aircraft enters the final approach to landing.

7.4.2 For optimum scoring of any landing, the roll out must be parallel to, and in close proximity of the lengthwise centerline of the runway. Tailskid aircraft are anticipated to experience visible corrections for crosswinds. Low speed aircraft such as WW-1 and civilian types like the J-3 Cub are permitted a flare and touchdown that may be directed more into the wind after an aligned approach. In any case their speed and momentum in roll out shall not be allowed to produce a safety hazard or deadline infraction. All other placement criteria apply. Bounces or deviations in described optimum roll out alignment

will be downgraded depending on severity of applicable skill contents. Uncontrolled premature turns will similarly be downgraded. "Noseovers" will be downgraded depending on severity. If "vintage prototypical" the downgrade will be slight, however a complete "nose-over" onto the back will score zero for skill (precision) and realism content features (placement may still be scored). A touchdown or roll out into any area outside of the defined runway will only be downgraded depending on severity, or scored entirely zero for the maneuver on a **deadline infraction**. Such downgrades will not be given for short runway facilities where roll out carries the aircraft beyond the end of the runway and touchdown and roll out commenced in the first half of the runway. If the aircraft touches down in the latter half of the available runway and then rolls off the defined runway, all applicable contents will be downgraded accordingly. As stated in "Maneuver Scoring Content," skill related precision and placement may be combined in scoring emphasis for this placement critical maneuver. The judging of roll out and overall landing maneuver is not complete until the aircraft has sufficiently slowed to permit a safe, controlled taxi from the active portion of the runway. Also see item 13.7 for Takeoff and Landing Aborts.

7.4.3 Scale operational features affecting landing can be complex in many aircraft (for past as well as present scoring methods). Some of them will be described as part of Overall Flight Realism in the following section 7.5, but others may be new. These judging considerations are as follows:

7.4.4 If flaps, slats, and/or retracts are prototypical features of the aircraft, they must be properly deployed prior to landing for optimum "Overall Flight Realism" qualities. In strong wind conditions the amount of flaps and /or slats may be reduced but not eliminated.

7.4.5 Flaps, slats, and retracts will not influence or share in the scoring content expected for landing. However their operation will influence the "Overall Flight Realism" score. Wheel brakes may be used within or after the landing maneuver, but will also be primarily judged in "Overall Flight Realism" for optimum judging.

7.4.6 If a landing gear failure occurs due to inadequate pilot precision or realism in "flare" the landing will be downgraded accordingly. If a "belly landing" is performed skillfully with a smooth touchdown and accurate placement after a gear malfunction during or prior to deployment, the landing may still be scored optimally" in all of its content features, but not in Overall Flight Realism. As will be described in the next section for Overall Flight Realism, the scale operation "Option" mechanical precision or "Continuity" content for gear, flaps, and slats is in Overall Flight Realism and are not a content element to the landing maneuver. (NOTE: Calling an emergency landing will help alert the judges to score the landing accordingly, but it will not save optimum points for Overall Flight Realism score.)

7.4.7 Scale operation of a drogue chute/s deployed in a timely and realistic manner during the landing roll out shall be scored as a **maneuver combination**. This **maneuver combination** of "landing with drogue chute" will partially share the precision content in piloting skill with an accompanying scale operation feature described in "Maneuver Scoring Content".

7.4.8 Inclusion of a drogue chute (or chutes) for optimizing Overall Flight Realism "Options" in the landing maneuver will be dictated by prototypical roll out and the "scale-length runway" facilities available. No downgrade in score will occur for not selecting the drogue chute option, if well-placed landings can be executed on longer runway facilities. The incentive for the use of drogue chutes(s) in modeling will therefore be the same as that in full scale.

7.4.9 In strong crosswind conditions, it will be the discretion of the CD to make Landing an optionally scored maneuver that would then require replacement with another maneuver.

7.4.10 Emergency Landing: In the event of a mechanical failure (engine out, failure of retractable landing gear to extend), the pilot may elect to declare an emergency landing. Such landing shall be substantially downgraded in realism content, but will be scored

“optimally” in placement and precision content if the pilot calls out “Emergency Landing” to the flight judges. Also see 7.4.6

7.5 Overall Flight Realism

Judges are to evaluate:

- Model performs smooth transitions through each axis (roll, pitch, and yaw) consistently throughout the entire flight (including in-between maneuvers)
- Bank angles consistent with full-size aircraft
- G-loading consistent with full-size aircraft
- Management of power appropriate with performed maneuvers
- Chosen maneuvers consistent with full-size aircraft’s capabilities

The **Overall Flight Realism** score shall be an objective summary based on three fundamental questions outlined in the following. A quick summary for judging or “policing” Overall Flight Realism can perhaps be remembered best as **COP** or Continuity, Options, and Power management. Scoring will be 2.5, 5.0, and 2.5 points respectively with Options having the greatest emphasis for potential deficiencies. Also see “Flight Realism and Score Sheet Review” in this Guide.

7.5.1 Continuity of Flight (2.5 pts.): Has the pilot demonstrated a flight performed with realistic continuity, from the moment the “show starts” as the aircraft taxis out to the time it taxis back?

.1 This shall primarily include how well the aircraft maintains a general realistic appearance on the ground and in the air before, between, or after selected maneuvers. Continuity includes taxi, airborne turnarounds, altitude, smoothness or stability, etc. except when such features are included in defined listed options such as Traffic Pattern, Procedure Turn, etc. It also includes takeoff and landing if not listed as part of scored options as ruled by the CD. When any maneuver option listed for score is started, the applicable deduction(s) will apply to that specific maneuver-realism content and not the Overall Flight Realism “continuity”. (NOTE: Any unrealistic actions achieved from flaps, slats, or retracts due to poor timing will be deducted in Overall Flight Realism for continuity, except when used for the optional scored **maneuver combination** of Slow Speed Inspection Pass.)

.2 Trim passes are permitted without deduction to continuity.

.3 If the aircraft design and vintage permits, it should taxi to and from the runway under its own power (with reference to the judging area) for optimum consideration in scoring the basic continuity to overall Flight Realism. Exceptions will be granted for aircraft with conventional gear and tailskids or float planes with removable “dollies” if they remain under power from time of initial transport to the runway through the final pickup or transport back.

.4 Taxi anomalies to and from the runway due to excessive wind or ground conditions are also accepted without deduction to the continuity portion of realism. These may include manually correcting or carrying the aircraft to or from the runway after such wind or ground conditions have become evident to the flight judges or have been announced by the CD. If conditions are **not** a factor for skipping or avoiding an unassisted taxi for applicable aircraft or, if **any** aircraft requires an engine restart after initially departing the immediate judging area, a 0.5 point deduction applies to flight realism for the departure. The 0.5 point deduction may occur again for a repeat occurrence after landing and return. The clock will not be extended for engine restarts. See “Time Limit and Official Delays” for exceptions caused by traffic.

7.5.2 Options Selected or Demonstrated (5.0 pts.): Have the notable prototypical characteristic features of the aircraft been well selected and demonstrated for its intended design mission by choice in Flight Maneuvers and complementing Scale Operations?

.1 The applicable scale operations of retractable gear, flaps, and slats shall primarily be inspected in flight for demonstrating mechanical precision in form-fit-function of

operation. This also includes the prototypical gear retraction, secured stowage qualities, and realistic mechanical deployment prior to entering the defined landing maneuver. If there is question of these qualities in flight that prevents accurate scoring, judge(s) may also request that these features be demonstrated on the ground **after** the flight. This may also include inspection of other basic control features to assure they are operable such as ailerons, elevator and rudder when such prototypical features are also in question.

.2 If a model does not have the notable characteristic design features of the full-size aircraft (such as retracts or flaps) or if they fail to operate when required in realistic flight, a corresponding downgrade will be made to the Overall Flight Realism Options such as a 4 to 5 point deduction.

.3 If flaps, slats, and retracts are used with the Slow Speed Inspection Pass the maneuver shall also be scored for precision for these scale operational content features per **maneuver combinations**.

.4 Aircraft entries that are indeed rated non-aerobatic must be indicated on the flight sheet checkbox. Similar to FAA practices, the Masters considers an airplane non-aerobatic when it is rated *not* to exceed 60-degree bank angles and 30-degree pitch angles.

7.5.3 Power Management (2.5 pts.): Has skill in throttle and power management been demonstrated? Power variations are anticipated to fly an aircraft at moderate speeds in interim flight for turnarounds compared to other fast or slow speeds applicable to the maneuvers performed. Consider that many early vintage (WW1) aircraft were not able to throttle in the conventional sense. Also determine if an idle control (for all prototypical engine arrangements) is adequate to permit a realistic, safe taxi and landing. Aerobatic aircraft should adequately reflect power capability in engine selection, particularly when vertical maneuver options are performed. Scoring of throttle management skill should be included in Overall Flight Realism (see definition section for optimum speed for flight realism as defined within this Guide in the Definitions section on page 44).

Section 8- Mechanical Options

1. Multi-Engines
2. Swing or Folded Wings

Multi-Engines

The mechanical option of multi-engines will be judged entirely for its mechanical fidelity in configuration and size to duplicate the performance of its full size counterpart. Refer to the Scalemasters Competition Guide, Para. 6.1 Multi-engines: for a complete description of this option.

Swing or Folded Wings

This option will be judged in two parts, as the aircraft is taxiing away from the judges before takeoff (up to 5 points) and after the aircraft lands and has begun the taxi back (up to 5 points for a total of ten).

The wings do not have to be synchronized in operation but should not "flop" unrealistically as they travel over center. On swing-wings, both wings should operate together in a synchronized manner, and be extended on the taxi out and retracted on the taxi back.

Section 9- Maneuver Combinations

All other scale operations that are briefly used or deployed for independent scoring must

be presented, or complemented, with a skill related optional flight maneuver. Each maneuver or maneuver combination must be a different recognized selection (non redundant). These optionally selected “maneuver combinations” will frequently be referred to in this Guide for a contestant to define a 10-point scored option. This is further described in Maneuver Scoring Content.

Examples:

□ Any **maneuver combinations** shall adequately be named and listed by the accompanying maneuver and scale operation feature(s) on the flight sheet for scoring. For example: Cuban Eight *with* Smoke, Rectangle Pattern *with* Parachute Drop, etc., should be listed. The contestant can expand upon these as may be applicable to the full size aircraft operation.

A straight and level strafing run is not permitted as a maneuver with or without a scale operation.

Options that include a "droppable" **must** be performed in conjunction with some non-redundant form of an applicable flight maneuver other than simply straight flight. For example, this may take the form of a rectangular or triangular pattern maneuver using the leg nearest the judges to execute a bombing run and bomb drop for a typical non-aerobatic loaded bomber. This might then be identified for example as a **rectangle pattern with bomb drop**. Other unique agile bombing runs may consist of a descending or “reverse Chandelle with bomb drop” on to the target area. Also a sustained bomb run with notable descending angle greater than 30 degrees may be used such as **glide descent with bomb drop** or near vertical greater than 70 degree **dive with bomb drop**. This can be further complemented with applicable high drag aerodynamic scale operational features. Tank drop maneuvers must also be combined with some action entry or exiting maneuver. For example, these could include **tank drop with Immelman turn, tank drop with procedure turn, tank drop with split S**, or each reversed in order, etc. A **torpedo drop with escape** must be low in approach and release must be immediately followed by a gradual ascending notable turn of 90 degrees or more away from the intended target. This may take the form of a Chandelle if the turn is 180 degrees.

Crop dusting (or smoke) must also be simultaneously complemented within the listed maneuver by some form of non-redundant and notably realistic flight skill precision. For “obstacles with crop dusting”, this would include descending abruptly for a low pass near crop level. After a brief period of spray, it must again ascend quickly to clear obstacles. A crop dusting low pass could also be immediately followed with a procedure turn or Chandelle, i.e. **crop dust with Chandelle**, etc.

Parachute drops by a non-aerobatic aircraft could also be complemented by a rectangular pattern, or by deploying at the end of a procedure turn for any aircraft.

9.1 Mechanical and Maneuver combinations Limited to 3 Total: The maximum total number of mechanical and **maneuver combination** options permitted in any flight will be 3. However, the same mechanical option or scale operation that supports a maneuver combination option may be used only once for scoring in a flight (see 6.6.5).

9.2 Maneuver variations based upon type of aircraft. The type of aircraft presented will determine the size, shape, and content of a maneuver. Flight judges will be open for verbal explanations of maneuvers that may vary slightly from those described in this publication. If not the case, a signed Maneuver Declaration Worksheet as described in section 10.26 should be shown to the flight judges. The following illustrations show some examples of maneuver variations based on aircraft types.

Note: “Maneuver Combination” is a U.S. Scale Masters exclusive invention over the last decade that addresses the concern of the “flip a switch for 10 points” and the advantages it had previously offered to various aircraft. This had also handicapped many vintage aircraft that had no retracts, flaps, slats, sliding canopy, tail hook, or other such items for corresponding exclusive scale operations on the score sheet. These scale operations also had little regard for true piloting skills. So while these neat mechanical options are still enjoyable to watch, it was very questionable these items represented

true piloting skills unless they were further combined with some flight maneuver. Hence the "Maneuver Combination" was implemented to place further emphasis on piloting skills.

Section 10- Optional Flight Maneuvers

All optional flight maneuvers are to be selected from the following list. Unless authorized by the CD prior to the event, the following are the only maneuvers that may be selected as Optional Flight Maneuvers.

1. Procedure Turn
2. Loops and More Loops
3. Vintage Loop
4. Inside Loop
5. Outside Loop
6. Immelmann Turn
7. Stall Turn
8. Wingover Aerobatic)
9. Wingover (Non-Aerobatic)
10. Split-S
11. Rolls and More Rolls
12. Rolls With a Break: Snap Roll-Inside, Snap Roll-Outside
13. Rolls Without a Break: Slow, Axial, Vintage and Barrel.
14. "N" Turns Spin
15. Cuban Eight and variations
16. Touch-and-Go
17. Overshoot (Missed Approach)
18. Standard Traffic Pattern Approach to Landing
19. Military Traffic Approach to Landing
20. Slow Speed Inspection Pass
21. Chandelle
22. 360 Descending Circle
23. Lazy Eight
24. Derry Turn
25. Spot landing
26. Other Maneuvers

1. Procedure Turn

This individual maneuver may be done by any aircraft similar to that described by the AMA rules. However, it shall not include the straight-flight entry or exit as additional scored options. The Procedure Turn is positioned where the initial 90 degree turn away from the runway begins *before* reaching judging center, and the remaining 270 degree turn optimally starts at judging center to the left or right. (NOTE: This is identical in desired position as the start of the mandatory figure eight for optimum judging view.)

Errors:

1. Altitude varies
2. Heading changes during straight runs
3. Radius of 90-degree & 270-degree turns dissimilar
4. Model does not make full 90-degree or 270-degree turns

2. Loops and More Loops:

The contestant should nominate which type of loop that will be performed, e.g. Inside, Outside, Vintage, etc. While the loop is intended to be a circular maneuver, the ability of a low powered aircraft to achieve a perfect circle will be less than that of an aerobatic airplane. A slightly elongated loop (a "Vintage loop") by the former would therefore expect to score as well as a circular loop.

3. Vintage Loop

The maneuver should begin with a shallow dive at full throttle to pick up speed. The aircraft then pulls up into a smooth elliptical loop and resumes straight and level flight on the same heading as the entry. The throttle should be cut back at the top of the loop and opened when normal flight is resumed.

Errors:

1. Maneuver does not begin or end in level flight
2. Wings are not level throughout the maneuver
3. Aircraft does not execute shallow dive before commencing the loop
4. Loop is not elliptical or is executed endwise
5. Inappropriate use of throttle
6. Size and speed of Vintage Loop not in manner of prototype

4. Inside Loop

From straight flight, the aircraft pulls up into a circular loop and resumes straight and level flight on the same heading as the entry. The throttle should be cut back at the top of the loop and opened when normal flight is resumed. Non aerobatic or low powered aircraft types would be expected to execute a shallow dive at full throttle in order to pick up speed before commencing the loop.

Errors:

1. Maneuver does not begin or end in level flight
2. Light aircraft type does not execute shallow dive before commencing the loop
3. Wings are not level throughout the maneuver
4. Loop is not round or is executed endwise
5. Light aircraft type does not execute shallow dive before commencing the loop
6. Throttle is not cut back at top of loop and opened when normal flight is resumed

5. Outside Loop

Starting in level flight, the model the model noses down to perform a smooth,

round, outside loop which is completed when the model regains its starting altitude and exits in level flight on the same heading as the entry. The throttle should be closed at entry and should be opened after completion of the first half of the loop when the model is inverted and is at a point closest to the ground.

Errors:

1. Maneuver does not begin and end in level flight
2. Exit altitude is not same as entry altitude
3. Model does not begin and finish on the same heading
4. Loop is not round
5. Wings do not remain level during the maneuver
6. Throttle is not closed during first half of maneuver

6. Immelmann Turn

From a straight and level flight, the model aircraft performs the first half of a circular loop (commensurate with the performance of the subject type), and when inverted, performs a half roll before resuming straight and level flight on the opposite heading. Light aircraft types would be expected to commence the maneuver by executing a shallow dive at full throttle in order to pick up the necessary speed.

Errors:

1. Wings are not level during half loop
2. Model does not resume straight and level flight on the correct heading
3. Model is climbing or diving during half roll
4. Roll is begun too early or too late

7. Stall Turn

From a straight and level flight the model aircraft noses up to the near vertical attitude, at which point the throttle is closed and the model yaws through 180 deg., then dives and finally recovers straight and level flight on a heading in the opposite direction to the entry. The contestant should specify if the turn will be to the left or right.

Errors:

1. Model does not assume the correct attitude
2. Throttle is not closed
3. Model turns in wrong direction
4. Model does not exit from the maneuver on the correct heading

8. Wingover (Aerobatic)

Model starts in level flight and noses up to the near vertical attitude, at which time it is flown through a 180-degree arc, using rudder to end up on a near vertical dive. Throttle should be closed at this point and the model pulls out of the dive at the same altitude as the entry on a parallel path, but on a 180-degree opposite heading.

Errors:

1. Model not level at start
2. Model rolls left or right during pull-up
3. Model tucks under a wing during 180-degree turn
4. Throttle not closed during dive
5. Return path not parallel to entry

6. Recovery not at same altitude as entry
7. Model does not fly straight and level to complete the maneuver

9. Wingover (Non-Aerobatic)

The aircraft approaches in straight and level flight on a line parallel with the judges' line. After passing the judges position, a smooth climbing turn is commenced away from the judges. At the apex of the turn the bank should be no greater than 60 degrees. The nose of the aircraft then lowers and the bank comes off at the same rate as it went on. The turn is continued through 180 degrees to recover straight and level flight at the same height and on a heading opposite to that of the entry. A low powered aircraft would be expected to execute a shallow dive at full throttle to pick up speed before commencing the maneuver. Note that this is an offset maneuver.

Errors:

1. Start and finish not centered on judges' position
2. Insufficient climb achieved
3. Climb is not smooth and continuous
4. Insufficient bank achieved
5. Climb and descent angles not equal throughout maneuver
6. Aircraft does not fly a smooth and symmetrical arc
7. Entry and exit paths not in straight and level flight

10. Split-S

From a straight and level flight, the model performs a half roll and when inverted, performs the second half of a loop and resumes straight and level flight on a heading opposite that of the entry. The throttle should be closed at the inverted position and opened when normal flight is resumed.

Errors:

1. Model changes heading (track) during half roll
2. Wings are not level during half loop
3. Throttle is not used
4. Track of half loop not on line or vertical
5. Model does not exit from maneuver on the exact opposite heading to entry

11. Rolls and More Rolls:

There are three styles of rolls that may be performed: A roll with a break, a roll without a break, and a slow roll. A roll without a break means that the maneuver is a continuous roll about an axis with no hesitation through its 360-degree of travel. Examples are a military roll, victory roll, axial roll, barrel roll, and snap roll. Rolls with interruption or breaks include a two-point, and the four- or eight-point roll. The last type of roll is the slow roll which is done for the approximate length of the flight line.

12. Rolls With a Break (2, 4 and 8 Point Rolls)

Rolls with interruption or breaks include a two-point, and the four- or eight-point roll. Only the four point roll is described. However, the two and 8 point rolls are performed in a similar manner and judged accordingly. The model starts in level flight, then assumes a slight climb, makes a quarter-roll in a nose up attitude, then makes another quarter-roll bring it to a level inverted position. It then makes another quarter-roll, slightly diving, and then makes the last quarter-roll into level

upright flight. Each point is held for approximately one second.

Errors:

1. No arc (trajectory) during maneuver
2. Points held too short or too long
3. Altitude at finish different from beginning
4. Wings not level or vertical at points
5. (8-point roll would also include 45-degree points)

13. Rolls Without a Break (Slow, Axial, Vintage and Barrel)

From straight and level flight, the aircraft rolls at a constant rate through one (1) complete rotation and resumes straight and level flight on the same heading. Non-aerobatic or low powered aircraft would be expected to execute a shallow dive at full throttle before the maneuver. The contestant should nominate which type of roll that will be performed, e.g. Slow, Axial, and Vintage.

Errors: Slow, Axial, Vintage Rolls

1. Model does not begin and end in level flight
2. Roll rate is not constant
3. Model does not finish maneuver on same heading and/or altitude as entry
4. Style of roll not as nominated

13.1 Barrel Roll

The maneuver should begin with a shallow dive at full throttle to pick up speed, the nose should then pull up and the aircraft begins what appears to be a climbing turn. Continued application of ailerons in the turn will roll the aircraft which when inverted, may be as much as 90 deg. off its original heading. No down elevator is applied in the inverted position so the nose will fall as both turn and roll continue until the aircraft returns to the upright position at the same altitude and on the same heading as the entry. The barrel roll orbit should be big and fat like a beer barrel.

Errors:

1. Roll rate is not constant
2. Model does not finish maneuver on same heading and/or altitude as the entry
3. Maneuver is not centered on judges' position
4. The barrel roll orbit is not big and fat like a beer barrel

13.2 Snap Roll-Inside

Model begins in level flight. As the nose is pulled up to the point where the wing will stall, rudder is applied to roll the model in the desired direction. The nose of the model should break the line of flight in a direction towards the pilot's cockpit, indicating that a stall has occurred. While most models will roll faster in a snap roll than in an aileron-induced roll, roll rate should not be a factor in judging. The roll should stop precisely when the model is again upright and the maneuver should be completed in straight and level flight. Snap rolls may be performed vertically or on a 45-degree climbing or diving flight path, but such maneuvers should always begin and end in straight and level flight.

Errors:

1. Model does not begin and end in level flight
2. Wing does not stall during roll
3. Roll is not terminated precisely after 360-degree rotation

4. Model does not exit from maneuver on the same heading as the entry

13.3 Snap Roll-Outside

This maneuver should be performed in a similar manner to the inside snap roll except that, as the break occurs, the nose of the model moves away from direction of the pilot's cockpit indicating that a stall was induced by the application of down elevator control.

Errors:

1. Model does not begin and end in level flight
2. Wing does not stall during roll
3. Roll is not terminated precisely after 360-degree rotation
4. Model does not exit from maneuver on the same heading as the entry

14. "N" Turns Spin

The number of turns to be performed shall be noted on the judges' score sheets. The contestant may choose any whole number. The entry shall be from straight and level flight parallel to the runway. Power shall be reduced and the aircraft should remain on heading in a slightly nose high attitude until it stalls and commences to spin. The model should auto-rotate through the prescribed number of turns and recover on the same heading at a lower altitude. The rate at which the model rotates in the spin will depend on its size and type, but judges should be alert to observe models which are performing a spiral dive rather than a true spin.

Errors:

1. Entry not from level flight parallel to runway
2. Entry into spin not clean and positive
3. Start of spin not centered at judges' position
4. Does not perform the prescribed number of complete turns
5. Does not recover on the same heading as entry
6. Wings not level on recovery
7. Not a true spin, but a spiral dive performed

15. Cuban Eight, Reverse Cuban Eight, ½ Cuban Eight, and Reverse ½ Cuban Eight

The model approaches in straight and level flight on the maneuver line. After passing the judges' position, the model pulls up into a circular inside loop and after completing half the loop, heads inverted downwards at 45-degrees and when half way down, does a half roll followed by another half inside loop to the inverted downwards 45-degree heading, then does another half roll and when again half way down, pulls out into straight level flight at the same altitude as the entry and on the same heading. A light aircraft type would be expected to execute a shallow dive at full throttle in order to pick up speed before commencing the maneuver. Throttle may be closed at the top of each loop and reopened during each descent. ½ Cuban maneuvers should be offset to the left or right of judging center depending on wind conditions and should end at judges center.

Errors:

1. Maneuver is not performed in a constant vertical plane or is executed endwise
2. Loop(s) are of unequal diameter
3. Half roll(s) are not executed at the correct point in the maneuver

4. Model does not exit from the maneuver at same height as entry

16. Touch-and-Go

The Touch-and-Go option requires the aircraft to slow sufficiently after landing to *below flying speed*, before again accelerating for the "GO" prior to take-off. This does *not* require that the tail wheel or skid settle to the ground for "tail draggers". ALL other qualities expected of landing and takeoff will prevail including the start of this maneuver at the beginning of the final approach. The start of the "GO" maneuver will coincide with the throttle acceleration after previously being slowed. On prototypes so equipped, flaps and retracts would be used on both sides of the maneuver. When coming in, the flaps and gear should be down. When departing, the gear and flaps should be retracted in the same sequential manner as would be expected for a Takeoff where flaps are retracted last to avoid stalls. Maneuver should be scored using the same criteria as a Landing. The maximum score for this maneuver sequence is 20 points, i.e., 10 points for "TOUCH" and 10 points for "GO". Each maneuver will be listed on two consecutive lines of the score sheet one as "TOUCH", the other, "GO".

Errors:

1. Maneuver does not commence when entering final approach
2. Descent from base leg not smooth and continuous
3. Model does not maintain a constant rate of descent and flare to touchdown
4. Model impacts or thuds on to ground due to lack of flare out
5. Model bounces on landing
6. Model does not slow sufficiently after landing to below flying speed
7. Take off roll and climb out not smooth and realistic
8. Inappropriate use of flaps and gear

17. Overshoot (Missed Approach)

The model makes a landing approach at low throttle to below 10 feet altitude without touching down, followed by a climb out at full throttle to resume level flight. Model should commence by flying a final crosswind leg followed by a turn onto a normal landing approach at a low throttle, using flaps and gear if applicable, until it reaches a point over the center of the runway at a point immediately opposite the judges at a height of 10 feet or less. At this point, full throttle is applied and the model climbs straight ahead to resume level flight. On prototypes so equipped, flaps and retracts would be used on both sides of the maneuver.

Errors:

1. Model does not commence maneuver with the correct landing approach
2. Model must be descending until full power is applied
3. Lowest point of maneuver not achieved in front of judges
4. Model does not climb away smoothly
5. Model simply dives or dips toward runway and climbs away
6. Inappropriate use of flaps and gear

18. Standard Traffic Pattern Approach to Landing

The primary objective is to fly a rectangular shaped maneuver. The model begins on an upwind heading on the far side of the runway. After passing in front of the judges, it should continue, straight and level, and at a constant altitude for

approximately 200 feet before making a turn away from the flight line onto the crosswind leg. A second turn begins a downwind leg with the model flying at a constant altitude and again passing in front of the judges. A third turn towards the flight line begins the base leg during which the model may begin its descent. A fourth turn, into the wind, should line up the model with the runway centerline, and straight descending flight should continue. Traffic Pattern is complete when the model is at 10 feet altitude, at which time a landing maneuver begins. Note that in some cases the third and fourth turns are joined to become one continuous 180-degree turn. When retractable landing gear and/or flaps are used, these should be deployed at appropriate points of the pattern.

Errors:

1. The upwind and downwind legs are not parallel to the runway
2. First turn not 90-degrees
3. Model does not reduce speed during the downwind leg
4. The gear/flaps are not deployed at appropriate points in the pattern
5. Model does not make a smooth, constant descent during the base and final legs
6. Model not lined up with centerline after turn to final
7. Excessive use of throttle during the final approach

19. Military Traffic Pattern Approach to Landing

The model begins with an upwind pass on the far side of the runway with a 180-degree turn away from the judges followed by a 180-degree turn to final. The traffic pattern ends at 10 feet altitude. An alternate military traffic pattern commences with a low entry approach on the far side of the runway with a climbing pitch out away from the judges culminating in another 180-degree turn to final. As before, the traffic pattern ends at 10 feet altitude. Flaps and landing gear are extended at the beginning of the 180-degree turn to final.

Errors:

1. Excessive use of throttle during the approach
2. Varying turn rate and glide path especially during the final 180-degree turn

20. Slow Speed Inspection Pass

This maneuver is only allowed for aircraft with flaps as a minimum. This maneuver includes the described transition periods on a common heading and elevation to enter and exit slow flight. The model will transition smoothly into and out of a high lift and high drag aerodynamic configuration using the applicable features of the aircraft. As a minimum, this maneuver must include the use of fully deployed flaps as the model is progressively brought to its slow fly by speed. This will be along a straight and level path parallel and over the far edge of the runway at an elevation of between 20 and 40 feet for a minimum of 5 seconds. This slow midpoint period of the maneuver should be opposite the judges. The model's flying speed should be much slower than the mandatory Fly Past, to the extent that the apparent stall speed has been effectively reduced by use of flaps and other applicable features. The model will often require some low level power to "drag" it through this high drag period. The model will then slowly transition out of this high lift and high drag profile while speed is again increased. This transition should not include immediate lifting of flaps prior to increasing speed, which could otherwise stall the model.

*** When electing this maneuver, it must immediately follow the mandatory**

Fly Past.

Errors:

1. A smooth, straight and level flight at a constant altitude is not provided to transition into, during, and out of the Slow Speed Inspection Pass
2. The model is not on the same heading
3. *Allowances should be made for corrections in gusty wind conditions*
4. Altitude is not between 20 and 40 feet
5. Maneuver is offset to the left or right of the judges
6. The 5 second slow speed portion is not remarkably slower than the Fly Past
7. All applicable high lift or high drag features such as flaps and retracts were not deployed
8. If flaps were not deployed, the maneuver will score a zero

21. Chandelle

This maneuver is an exaggerated maximum performance climbing turn in which the aircraft changes direction through 180- degrees. The model may begin with a shallow dive to pick up speed, the nose should then pull up and the model begins a climbing turn proceeding away from the flight line. The maximum climb and bank occur at approximately the midpoint during the change in direction. The maximum may only be 45 to 60-degrees for non-aerobatic aircraft and up to 90-degrees for fully aerobatic aircraft. Entry speed should be sufficient to prevent visible slipping or skidding and maintain the same turn rate throughout the maneuver. The degree of bank angle and rate of climb are constantly changing as the speed continues to decline through the maneuver. As the 180-degree point is reached in the turn where the aircraft is traveling in the opposite direction from which it entered, the wings are brought level for the maneuver completion. At this time, the aircraft would be flying at reduced speed (just above stall speed) compared to entry.

Errors:

1. Same turn rate is not maintained throughout the maneuver
2. The model slips or skids
3. The model does not provide a notable climb rate
4. The model does not finish with wings level on a heading opposite to that entered
5. Full power is not used though out the maneuver.

22. 360 Descending Circle

Commencing from straight and level flight, the model performs a gentle 360-degree descending circle in a direction away from the judges, at a constant low throttle setting. The maneuver terminates at a height of between 10 and 20 feet resuming straight and level flight on the same path.

Errors:

1. Rate of descent not constant
2. Descent too steep
3. Throttle not constant or low enough
4. Circle misshapen
5. No significant loss of height
6. Descent not to a height between 10 and 20 feet
7. Circle not centered on judges position
8. Entry and exit paths not on the maneuver line

9. Start and Finish not called in straight and level flight
10. Too far away, too close

23. Lazy Eight

The model aircraft approaches in straight and level flight on a line parallel with the judges' line. After passing the judges position, a smooth climbing turn is started away from the judges. At the apex of the turn, the bank should be at least 60 degrees. The nose of the model aircraft then lowers and the bank comes off at the same rate as it went on. The turn is continued beyond 180 degrees to cross in front of the judges with wings level before intercepting and turning on to the reciprocal of the original approach track. This completes half of the figure, which is then repeated in the opposite direction to give the full symmetrical maneuver about the judges' position. Intercepting the original approach track parallel with the judges' line completes the maneuver. A low powered aircraft would be expected to execute a shallow dive at full throttle in order to pick up speed before starting the maneuver. This maneuver is essentially two wingovers in opposite directions and should be capable of being flown by most aircraft.

Errors:

1. Entry and exit paths not parallel with maneuver line
2. Insufficient climb achieved
3. Insufficient bank achieved
4. Climb and descent angles not equal throughout the maneuver
5. Arcs misshapen
6. Maneuver not symmetrical about judges' position
7. Start and finish positions not as indicated
8. Overall size of maneuver not realistic for prototype
9. Aircraft flight path not smooth and steady
10. Too far away/too close/too high/too low

24. Derry Turn

The model approaches at a high speed in straight and level flight on a parallel line with the maneuver line. The model then makes a steep bank (in excess of 60 degrees) one-quarter circle turn in a direction away from the judges without losing height. When centered in front of the judges, the model makes a half roll in the same rolling direction as the entry, again directly followed by a steep one-quarter-circle turn in the opposite direction, and then flies off straight and level on a line parallel with that of the entry maneuver.

Errors:

1. Entry not parallel with maneuver line.
2. Maneuver not centered in front of judges.
3. The rolling maneuver in front of judges not axial on a line directly away from judges.
4. The roll in center is not in the same roll direction as the entry to the maneuver.
5. Any hesitation between the end of the first quarter turn, the roll and/or the start of the second turn.
6. Exit not parallel with entry.
7. Significant height difference during maneuver.
8. The maneuver misshapen (as seen as part of a figure eight).
9. Maneuver is too low or too high to be easily judged.

25. Spot Landing

This maneuver The optional Spot Landing maneuver is given the same score as Landing if the initial wheel touchdown is within a 100-foot diameter circle centered in front of the judges and defined runway. If the runway width prohibits this defined circle, then the judges and contestant must agree that the spot landing area be a rectangle whose width is that of the defined runway and length is 100 feet centered in front of the

judges, i.e. 50 feet to the left and right. **If** the aircraft initially touches down inside this defined area, the score for Spot Landing option becomes the *same* as that given for Landing. If the initial touchdown is outside this defined region, the Spot Landing option score becomes zero and the Landing is scored in the same manner it would have been without spot landing considerations. Both judges must agree as to whether or not the aircraft touched down in the defined region. This maneuver may not be listed as a **combination maneuver** with flaps/slats or retracts to dilute pilot precision. All other requirements of the Landing maneuver apply including starting this maneuver at the beginning of the final approach.

Due to difficulties in judging regions offset from *judges' centerline*, no offset centering of the defined 100-foot region will be permitted, unless approved by the CD.

NOTE: Contestant Beware: With limited runway length, this maneuver option may not be very practical for certain aircraft when runway facilities are not optimum. In such cases, the C.D. may preclude this option entirely at the event to preserve a high level of overall judging accuracy.

Judges Beware: This is the most frequently misjudged maneuver when different scores are given for Landing and Spot landing when the wheels did touch in the 100' diameter circle.

26. Other Maneuvers

Our intent is not to define the **only** maneuvers that can be performed at an event. Our intent is to define maneuvers that are typical or common in scale modeling events. As there are no K-factors with regard to maneuver difficulty, the modeler must be the judge as to what maneuvers best showcase the overall realism of the aircraft modeled. The AMA rulebook is a good source of flight maneuvers. Optional maneuvers to be considered could be:

Flight in a triangular pattern

Simulated pylon lap or speed run

Rolling circles

Flight in a rectangular circuit

Any other maneuver that the full size aircraft could perform and you can explain and execute.

Section 11- Judges Certification

Prerequisites

- Read and understand the NWSAM, USSMA, and AMA Competition Regulations
- Have 20-20 eyesight (correctable)
- Color Judge must pass Color Blind exam given at local DMV or health clinics or, on line at: <http://waynesword.palomar.edu/colorbl1.htm>
- Pass the corresponding Certification Exam with at least 90% score

Certification Process

1. Study the information contained within this guide. If your eyesight is good (and if Color Judge, pass the colorblind chart available from <http://waynesword.palomar.edu/colorbl1.htm> proceed with filling out the on-line application located at NWSAM website and take the exam, which is open book. At present the NWSAM judging Director is Doug MacMillan and can be reached at aronut@telus.net The honor system is used throughout the program.
2. Your exam will be graded and the results will be put in the mail within 1 week. If your score is 90% or better, a letter will be sent to the NW Scale Aero-modelers Director indicating your status.
3. The CD may contact you and schedule the judges' "calibration" session to be held sometime before the event start date. During the session, you will be filling out a flight sheet along with the others and your score will be compared to a reference score determined by the CD. If your scores after the first flight are within 1 point of the reference score (for each maneuver) the CD will sign your score sheet. A copy of this is then sent to HQ for the file. You are then qualified to judge at the event. The CD will ensure you are assigned to another Certified Judge for judging the contest.
4. After the contest, the CD will sign off your application as training complete and a copy is sent to NWSAM Director.

The Judging process to someone untrained can seem complicated. It is easy to fall back to ones own standards or background knowledge and fail to judge objectively Failure to judge objectively is dangerous and is guaranteed to fan the flames of emotion with any contestant.

The trained Judge will set his/her background knowledge aside and only compare the model with the documentation provided. Arriving at a score is simply subtracting the downgrades you find from 10. Each element starts at 10 and is downgraded as mismatches are found. A minor (m) mismatch is 1/2 point and a Major (M) mismatch is a full point. If this sounds too easy, relax - it actually is IF you follow the process.

There will be times when there is no documentation provided. No score can then be given for that element. This is the subjective part and every effort should be made to follow a set of standards available to everyone so that the default is the same for the judge and the contestant.

Training is the key to judging success and the North West Scale Aero-modelers is committed to develop and train to these standards. There is still much work to be done and your input is valued. Feel free to contact NWSAM with any suggestions or ideas that could help with this effort. The Outline judge will study the documentation item starting at the tip of the rudder then look up at the model. Does it match? If yes, proceed to the next element in a clockwise rotation. If not, look at the photos provided to see if the item shows up in the pictures as photos take precedence over 3-view drawings. If it matches, go to the next item. If the judge cannot find a photo that clearly shows the mismatch the judge must downgrade for that particular item and go to the next item.

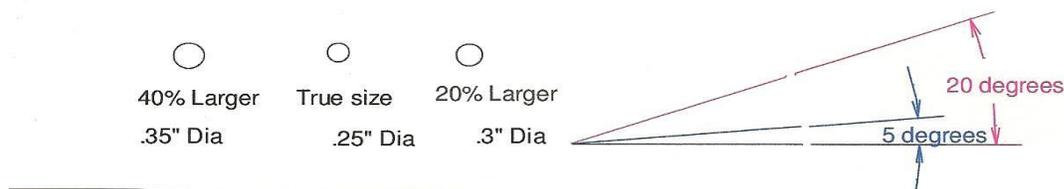
Static Judging Criteria

The following sections outline the criteria to objectively static judge a model. Develop your system and use this for every model. Judges who follow the judging process arrive at a consistent and accurate score each time.

11.1 Criteria for Accuracy of Outline

As an example of outline criteria, if the vertical stabilizer shape at the tip on the model does not match the 3-views, photo documentation (if supplied) will be reviewed for evidence supporting the model. Since photographs of the actual aircraft being modeled take precedence over 3-views they should be used as the final determination as to whether the vertical stabilizer matches or not. If there is no photo that clearly shows this view, downgrade ½ point if the size/location discrepancy is minor to moderate and a full

point if major. A minor deduction (1/2 point) is typically where the mismatch is 5% to 10% in relative size of the linear dimension relation and for angular relation 2 to 5 degrees. Major deductions of 1 point are for mismatches greater than 10% and 5 degrees. No deductions will occur for errors less than 5% or 2 degrees. To determine percentage, consider the following diagrams:



11.2 Criteria for Finish, Color, and Markings

A minor deduction (1/2 point) is typically given where a mismatch is noted but is minor. Moderate or major deductions (1/2 to 1 points) will be typical where the mismatch is readily apparent.

1. **Finish:** This is to include the sheen or reflective properties of the finish, weathering details, and the application of materials e.g.; many WWI aircraft were painted with a brush and brush marks were easily seen even from a distance. If the documentation shows brush marks in certain areas, the model should also show this artifact. The Finish judge should consult with the Craftsmanship judge to ensure an item is not double downgraded, once by the Finish judge and once by the Craftsmanship judge.
2. **Color:** It is the contestant's responsibility to authenticate the model colors by providing documentation such as color photos, published artist conceptions, paint chips, color reference guides, or factory paint samples. Color and hue of the model need to be checked against the color reference provided in the documentation packet. The "sheen" or reflective properties may also be verified from these same samples, but will only be used for scoring the Finish qualities as previously described. Black, Flat Black, or natural aluminum does not need paint reference samples.
3. **Markings:** This inspection verifies size and placement of markings to match the documentation. Ideally, the documentation would show the placement of all markings. However, if no documentation is available, a typical view showing that squadron's markings from references other than the aircraft modeled may be used to depict typical marking locations (these items need to be noted as TYPICAL MARKINGS for the judge in the documentation packet).

11.3 Criteria for Craftsmanship are as follows:

1. Inspect parting-line area of control surfaces for visibly unrealistic hinging, uneven fit, or gap on both top and bottom.
2. Inspect for inadequately disguised model-related disassembly sections in wings, cowls, empennage, etc., checking for poor fit or unrealistic appearance including large screw heads in conspicuous areas or "model" type exposed control horns that are not scale.
3. Inspect for correct prototypical choice in hidden or exposed control arms or linkages to elevator(s), rudder(s), ailerons, etc., as depicted in the documentation.
4. Inspect quality of simulated metal-skin features for applicable three-dimensional panel lines, scale rivets (raised or flush), or fastener detailing. Verify approximate scale uniformity in size, spacing and correct three-dimensional effects of these features top and bottom.
5. Inspect for applicable fabric-covered surface sections in cosmetic appearance. Also verify "taping" appearance when applicable for fabric-covered surfaces.
6. Inspect for quality in rigging or connector detail on externally braced aircraft such as biplanes.
7. Inspect for quality in detailing any applicable small protruding pitot tubes, antennas,

air scoops, hooks, pods, etc.

8. Inspect for quality in visible dummy engine detail including exhaust and stains where applicable.

9. Inspect for any unrealistic model damage anomalies regarding shrinkage, scuffing, scraping, peeling, tears, or gouges. Simulated wear such as realistic metal dents or exposed bare metal in painted regions for high-wear areas common to aircraft may enhance the model rather than be cause for downgrade.

10. Inspect for applicable window or canopy EXTERIOR detail quality insofar as framework and their resolution from the transparent window regions. Also verify overall exterior fit to airframe or adjoining multiple canopy sections when applicable. A functional sliding canopy is not required, but the described cosmetic static appearance is.

11. Inspect for realistic quality detail features of the landing gear, which are generally additional to the basic machined, stamped, or wire drawn strut components. A downgrade is applicable only if the gear struts are void of realistic detail qualities independent of materials used. Typical off the shelf landing gear do not include items such as brake lines, tie down hooks, fill ports, scissors, drag links, or wheel covers (front and back) that match full size aircraft. These are the "extras" that a modeler can detail out to affect the craftsmanship score in this area.

12. Inspect for applicable wing tip and taillight (etc.) feature qualities for their realistic detailed appearance. Functional illumination is not a requirement for optimum score.

13. Inspect for unrealistic surface defects like wood grain, sanding marks, fillet defects, cracks, voids, pinholes, etc.

Flight Judging Instructions and Automatic Downgrades

Most of the criteria have already been called out in the maneuver descriptions. There are a few items to ensure before and during the flight:

1. Ensure the flight sheet has been completely filled out by the contestant when they hand this to you. Common items that are missing are the checkbox in Aerobatic or Non-Aerobatic aircraft type, their name and registration number in each flight round box.

2. Check the flight sheet for any comments by the CD about items attached to the aircraft during static judging such as wing tanks, bombs, torpedoes, etc. These items if presented at static should be on the aircraft for flight.

3. Next, make sure there is a pilot visible in the aircraft if there should be one visible.

4. List of **Automatic Downgrades** are as follows:

a). No Retracts. If the model does not have retractable gear when the full size did, then deduct 4 points from the Overall Flight Realism score.

b). No Flaps. If the model does not have or the pilot does not use flaps during the flight where applicable, deduct 2 points from the Overall Flight Realism score.

c) No Pilot Figure. A pilot figure must be visible during flight (if the full size was visible) or the score will be downgraded by 2 points for Overall Flight Realism.

d). Flying through the sun. If the pilot flies his aircraft directly into the sun during the scoring portion of a maneuver, the flight judge downgrades that maneuver by 2.5 points (zero score for placement).

5. Remember that the contestant starts each maneuver with 10 points. Each maneuver is scored against the three elements; Precision, Placement, and Realism with downgrades according to the severity of the mismatch in each element

6. Be fair and be consistent. With each score, ask yourself is this fair? Is this consistent with other scores I have given for similar aircraft/maneuvers? Establish your own system of keeping track of the downgrades for each of the elements during the maneuver.

7. A Feedback Symbol key is provided on the bottom of the flight sheet and is used to point out the major source of downgrade for each maneuver. The flight judge should write in the box just to the right of the score box one (or more) symbols as feedback for the pilot so they can improve their score on the next flight.

Examples of Feedback Symbols:

Precision (5pts)		Placement (2.5pts)		Realism (2.5pts)	
	Heading Off		Too High	+	Bank Angle - extreme
	Symmetry Off		Too Low	—	Bank Angle - too shallow
	Off Center		Not Centered - too right		Jerky, Abrupt
	Wings not Level		Not Centered - too left		Throttle not Managed
	Entry altitude different than exit		Not Centered		Landing Gear Realism
	Roll Rate not Constant		Placement too Close		Type equation here.
	Turn not 90 degrees		Placement too Far		

August - 2010

Note: There is no symbol for "scale speed", instead the optimum speed required is determined by manoeuvre realism and speed-sensitive "realistic bank angles in turns" as described within the Definitions section of this Guide.

Note1: There may be other symbols used particular to a judge. It is okay to ask them what it means for clarification.

Note2: Judges are encouraged to share their symbols with NWSAM to include in the next revision of the Guide.

Note3: There is no symbol for "scale speed", instead the optimum speed required is determined by maneuver realism and speed-sensitive "realistic bank angles in turns" as described within the Definitions section of this Guide.

Section 12- Definitions

Builder of the Model is the individual who constructed the airframe from raw materials or from prefabricated components as found in a kit such as fiberglass formed skin components, foam cores, canopy or plastic molded exterior details, wheels, etc. The same individual, with material of his or her choosing, shall also perform all final assembly and finishing (painting) of the model. Any other commercially advertised products may also be used without penalty to the modeler at the various stages of construction. Hardware independent of airframe (visible or not) requiring machining or welding to assure reliability, safety or the required operations of the scale model aircraft such as radio, engine accessories and, undercarriage gear commercially acquired or designed by the modeler for optimum outline accuracy, may be commissioned independently when in the judgment of the modeler commercially available items are not adequate. No other airframe construction may be commissioned in this manner.

Optimum Speed for overall flight realism is defined as that optimum speed which provides maneuver realism for realistic flight attitude appearance including bank angles in turns, realistic g-loading appearance and with appropriate maneuver size. For example, the model should not be flown excessively fast where it may demonstrate unrealistic high bank angle attitudes and high g-loads.

Also, the model should not be flown too slowly where unrealistic shallow bank angles or flat turns do not simulate the full-scale aircraft.

CD: Contest Director, as certified by the AMA/MAAC. The CD is responsible for overall safety, organizing and running the contest.

Air Boss: The person in charge of the active flight line. Ensures safety of aircraft, pilots, crew, and spectators. Stages the aircraft up next on each flight line. Gives pilot's clearance to runway accesses.

Non Aerobatic means the aircraft was not capable of inverted flight or extreme attitudes that would endanger the aircraft and/or pilot. Similar to FAA descriptions, a non-aerobatic aircraft is not rated to exceed 60-degree bank angle or 30-degree pitch angle.

Judges' Centerline is an imaginary line straight out from the judges' position, perpendicular to the runway.

Maneuvering line is an imaginary line parallel to the runway, 10 to 50 feet beyond the far side of the active runway. The 10-foot line would be for slower flying aircraft and the 50-foot line would be for faster models like high-speed jets.

Judges' Deadline is an imaginary line parallel to the runway **at the near edge of the runway from the judges/pilot station**. It extends out to infinity both left and right directions.

Viewing Angle is defined as a 90-degree field of view for the judges equally spaced from the judges' centerline e.g., 45-degrees to the left and 45-degrees to the right of center.

Reference Documents

Federal Standard 595 Color Chip Book is used for color *reference*, available from the General Services Administration (GSA)¹.

AMA Competition Regulations available for \$2.50 from Academy of Model Aeronautics, 5151 East Memorial Drive, Muncie, Indiana, 47302

FEDERATION AERONAUTIQUE INTERNATIONALE (FAI) Sporting Code. Avenue Mon Repos 24, 1005 LAUSANNE, Switzerland. As found on the World Wide Web at:

<http://www.fai.org/aeromodelling/documents/sc4>

¹ General Services Administration, Rm. 6654, Attn: Specifications Section (3FBP-W), 7th and D Streets SW, Washington, DC 20407

Section 13- Logistics

13.1 Time Limits and "Official" Delays: Time limit for each flight will start from the moment the contestant begins his/her preflight discussion with the judges, and ends at the conclusion of the flight after taxi back (or carry back) to the judges. During the preflight discussion, the contestant can also present documentation he/she believes may be appropriate to explain or defend any unusual flight, mechanical, or scale operational feature(s) of the aircraft. However, this should be kept brief since the clock is running. The CD will designate actual time limit allowed as dictated by various logistical factors of the event at the pilots meeting. **This event will use a 15 minute flight window.** Once started, such time will be extended only for officially recognized delays (such as full-scale traffic). Also an additional one half minute (30 seconds) will be added for each "multi-engine" beyond the first engine.

13.1.1 If any maneuver is delayed or started and aborted due to an immediate and obvious traffic safety problem, the contestant will be granted a restart of that maneuver. In such recognized cases, the clock will be extended accordingly. An abort shall not have been deemed necessary for later restart if the maneuver was only *questionably*

interrupted as an afterthought, and instinctively continued and completed by the pilot in such a manner that it could be scored in a complete and fair manner by the flight judges. The decision by the witnessing flight judges will be final on such infrequent and unpredictable events!

13.1.2 The clock will also be extended for prevailing ground traffic contest related delays or safety requests to hold in taxi or takeoff without penalty to maneuver or continuity. If “official delays” result in “engine loading” and subsequent engine restart, the clock will also be extended if done in a timely manner without further technical problem(s) and delay. Engine restarts caused by official delays will be put back on the clock after restart or one minute of added time (whichever is shorter).

13.1.3 If any unusual combination of these unpredictable events results in a “formally extended time clock” as to make it unlikely to safely complete a flight, the contestant will be permitted an out of sequence emergency landing for refueling or, in the case of electric powered aircraft, battery replacement. The CD shall be consulted immediately upon landing by the flight judges as to the status and unusual circumstances leading up to this extended flight and emergency refueling. Only those portions of the flight yet to be completed in sequence (including landing) will be permitted immediately or later in that same flight round. The CD for suitable logistical timing within the event activities will further decide this when refueling is completed.

13.2 Transmitter Rule: Touching of the transmitter by anyone other than the contestant to make control or trim adjustment during the scored flight interval (from taxi out to taxi back), will disqualify the entire flight. This shall *also* include such violations during “trim” passes. An engine restart during taxi out or prior to becoming airborne will briefly permit handling the transmitter by another person for restart. However, see “Engine Restarts” for other applicable penalties for such restarts.

13.3 Loudly Announce Each Maneuver Entry: The pilot is expected to loudly announce each maneuver and its beginning to assure the judges are prepared for the specific scored item(s) to follow. Judges should not conclude the “judging period window” until a satisfactory clean exit is recognized, in spite of the contestant abruptly calling... “Maneuver complete!” Most maneuvers are entered and exited in straight and level flight. Therefore the Inverted Flight maneuver must include the half roll entry and exit. Also the combined maneuvers of tank drop entry or exit with other *action maneuvers* must also be considered.

NOTE: The judges should also be alert for realism features *throughout the flight* as described in Overall Flight Realism.

13.4 Ground Option Limitations: Flight options listed for scoring may not include any maneuver or maneuver combination done entirely on the ground. This ground restriction does not apply to Takeoff and Landing maneuvers that are considered important transitional maneuvers from ground to air or air to ground. The only exception to this ground option limitation is the demonstration of folding or swing-wings as a mechanical option done entirely on the ground (see 6.2). As an alternative, the contestant may instead use swing-wings for scoring in a flight maneuver combination (see 8.7) rather than a scored mechanical option on the ground. However the contestant cannot do both options (see 8.8 concerning no redundant options).

13.5 Engine Restarts: Engine restarts NOT caused by contest related or “official” delays that occur after departing the immediate judging area and prior to becoming airborne will have various deductions in score depending on when it occurs: A minimal 0.5 point deduction penalty will apply on the *informal* taxi out (or back) in the

CONTINUITY portion of Overall Flight Realism (whether it is taxied or carried). A zero score also applies during the roll sequence in a formal listed "Takeoff" (10-point loss) prior to becoming airborne. **If the model becomes airborne with flying speed and then immediately lands with engine failure, it is an official flight and may not be restarted.** Engine restarts will remain on the clock and contestant will immediately be informed and reminded.

13.6 Skipped Maneuvers: If any listed maneuver(s) are skipped from the order shown by the contestant on the score sheet, those skipped may not be retrieved once a subsequent maneuver has been entered or performed. If the aircraft becomes airborne with flying speed but is also forced to land immediately thereafter, it is an official flight and all other maneuvers have effectively been skipped without retrieval (regardless of aircraft and options).

13.7 Takeoff and Landing Aborts: In the interest of safety, a takeoff or landing may be aborted and restarted with 7 points (or 70% for each subsequent retry) rather than be given an automatic zero. The contestant will still be on the clock for these additional attempts. Example scoring: After the first abort, the *maximum* score for the first *retry* is 7 points, 2nd retry is 5 points (70% of 7), 3rd retry is 3.5 points, etc. The Scale Masters program does not want anyone to jeopardize safety of the judging line because the pilot felt compelled to continue a bad takeoff roll or landing simply to avoid an automatic zero score.

13.8 Flight Line Sequence Changes or "Mulligans": These are any contestant requested changes to the approved flight line order, or request to go to the end of a flight line **after** the contestant is on the clock.

13.8.1 The CD will announce in the pilots meeting which option is to be used as dictated by the number of contestants present and the logistical schedule of the meet. There are two options available:

A). The only flight order changes or second opportunities permitted are those for damage repair, technical anomalies, or transportation damage. All such anomalies used to justify changing the flight order must be declared by the contestant and be approved by the CD **after** the contestant has been put on the clock. **If more than 3 minutes have elapsed on the clock, the contestant cannot request a "Mulligan"** to go to the end of the line. When a "Mulligan" has been granted and the contestant is still not ready to fly at the end of the flight round, the flight will be forfeited.

B). No exceptions to listed flight order or "Mulligans" will be granted.

13.9 Maneuver change: Selected maneuver options for any flight may be changed by the contestant for the next round flown. Such changes on the flight score sheets are the responsibility of the contestant prior to each flight. If dropables are used in static, they must be used in the first flight. They may be deleted in listing as a complementing option thereafter if desired.

13.10 Flight Realism and Score Sheet Review: After the flight has concluded, the flight judges shall confer to review the numerous Overall Flight Realism qualities as described in this Guide. Identical flight realism scoring is not required. Individual judgment scores will still be of value for statistical averaging similar to others. Any zero scores given for any maneuver shall be mutually agreed upon by both flight judges and both will give identical scores of zero.

13.10.1 If the contestant had declared the aircraft to be Non-Aerobatic, that should be so noted on the check box of the flight score sheet for future reference. Before the score sheets are picked up, each individual judge must put his/her initial in the upper column heading for the flight round just concluded *after verifying that all line item scores have*

been included. The flight score sheet provides a space for each numerical digit (up to three spaces). Scores should be to the nearest $\frac{1}{2}$ point (for example 8.5). With the exception of the perfect score of 10.0 only two of the three spaces provided are required.

Builder of the Model Declaration

All Expert and Team Builder contestants competing in North West Scale Aero-Modelers events shall agree to the following "Scale Builder of the Model Rule" and assure the Contest Director that they understand the requirements of this rule before entering his/her model in competition at the Championships event.

Scale Builder of the Model Rule- The builder and flyer of a scale model shall be one and the same person except in Team Scale. There shall be no Team entries in the Expert category. The Contest Director will make every effort to assure himself/herself that each Expert contestant or Team Scale builder contestant has constructed the model that he/she uses in competition. "Constructed" shall mean the action required to complete a model airframe with no more prefabrication than is contained in the commercially available kit chosen to model.

Kits containing a large amount of prefabrication are permissible so long as the builder completes the final assembly and finishing of the parts, covering, final painting and applying the markings. This includes Almost-Ready-To-Cover (ARC) models if the model still requires these actions by the builder. If not, the model is relegated to compete in Open or Fun Scale Classes. Reworking of an Almost-Ready-To-Fly (ARF) model, no matter how extensive, does not constitute being the "Builder of the Model". The Builder of the Model shall have satisfied the requirements of the Builder of the Model Rule if the individual has constructed the airframe from raw materials or from prefabricated components as found in a kit with fiberglass formed skin components, foam cores, canopy or plastic molded exterior details, wheels, landing gear, etc.

The same individual, with material of his/her choosing, shall also perform all final assembly and finishing (painting, markings) of the model. Any other commercially advertised products may also be used without penalty to the modeler at various stages of construction.

Hardware independent of the basic airframe (visible or not) requiring machining or welding to assure safety and/or reliability or the required operations of the scale model aircraft such as engine accessories and undercarriage components, may be commercially acquired or designed by the modeler for optimum outline accuracy and may be commissioned independently when in the judgment of the modeler commercially available items are not adequate. No other airframe construction may be commissioned in this manner.

I have read the above Scale Builder of the Model Declaration and hereby attest to the fact that I am the builder of the model entered in this Championships.

Scale Model Entered

Contestant Signature

Date

Northwest Scale Aeromodelers

Official Protest Form

Purpose: To provide a forum for a contestant to log a complaint, request a review of a score, or a note a situation requiring investigation.

Process: Fill out the form and describe in detail the situation to review. Sign and date at the bottom. Give to the Contest Director and allow 1 hour to process. The CD will respond to you within the hour and may request additional information or present a solution. If you are not satisfied with the results, a copy of this can be sent to Headquarters for further investigation.

Name: _____ Aircraft: _____ Contest: _____

Description of Situation: _____

Requested Action: _____

Signature: _____ Date: _____ Time: _____

Contest Directors' Action/Solution:

NOTE to CD: Please report all Official Protests to HQ

CD Signature: _____ Date: _____ Time: _____

Sent to NWSAM Headquarters on: _____

Mike Ingram
25109 Elk Way
Caldwell, ID 83607

Pre-Flight Safety Inspection Checklist

Contestant Name: _____ Contestant # _____

Aircraft Modeled: _____ Event Name _____

In order to accomplish the required inspection, the insides of the aircraft will need to be visible. This may mean that the wing will need to be removed to expose the wiring, servo, receiver and fuel system installation.

I attest that this model has completed at least three successful flights prior to this contest.

Signed Date

: * * * * *

Safety Coordinator's checklist

Safety Coordinator: _____ Date _____

I. Mechanical Checks

- Elevator push rod straight to servo, no flexing of elevator push rod
- Aileron, elevator, rudder hinges secure
- Linkages attached securely
- Wing/empennage (if removable) attach mounts (blocks or tubes) secure

II. Electrical

- Battery is charged
 - Wires are routed away from receiver
 - Receiver On/Off switch is mounted isolated from vibration components
 - Wires supported away from any abrasive material i.e. fiberglass fuse
- (Look for possible metal-to-metal contact such as flying wires that could cause radio interference when vibrated together.)

III. Fuel System

- Fuel tank supported in anti vibration material
- Fuel lines are secure

IV. Engine System

- Spinner is secure
- Muffler is secure
- Flying propeller is free of nicks, cracks

V. **Comments** (Use back of form if needed)

Maneuver Declaration Sheet

Purpose: To assist Flight Judges in providing descriptions and graphical representations of maneuvers not commonly known or easily understood.

Contestant: _____ Aircraft: _____
 Aerobatic Non-Aerobatic

Maneuver Name: _____

Maneuver Description _____

(Separate documentation is also welcome)

Sign Off: _____ CD Comments: _____
Scale board member or CD

Top View:

Side view:

Notes:

STATIC JUDGING



Northwest Scale Aeromodelers 2011 Championship

Reg# _____

NAME: _____

NOTES TO JUDGES

- This form is intended to accomplish the following aims:
- a). Promote scoring consistency among a wide assortment of replicated aircraft.
 - b). Benefit the contestant with a specific and meaningful critique of his model, giving him direction for future improvements.

In scoring each box proceed as follows:

Highlight areas of mismatch on the diagram at right.

- 1) Ask yourself "Is this item Outstanding (the best of the best)?"
Does the model match the documentation exactly (no deviations)?
If so, enter a 10 in the box for that group and proceed to next box.
- 2) If not, ask yourself "What is missing or different that degrades it from being Outstanding?"
Briefly note each discrepancy in the Comments and mark the diagram at right at the location of the discrepancy.

- 3) Deduct in 1/2 point increments corresponding to the severity of the noted defect (Refer to Judges Guide for additional details).
- 4) Subtract the total discrepancy points for each box from 10 and enter the total points earned for that box.

Remember that an over-generous mark in even one box creates unfairness. It is unfair to everyone, even the recipient. A logical and honest mark is essential to every contestant and the well being of our sport.

COMMENTS: _____

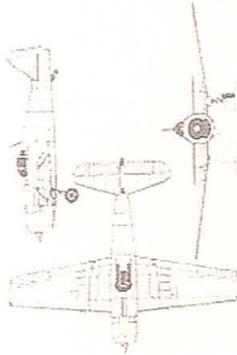
AIRCRAFT: _____

Mark in 1/2 point increments

FINISH	OUTSTANDING	10
	EXCELLENT	9
	GOOD	7-8
	FAIR	0-6
COLORS (Max 5 points)	OUTSTANDING	5
	EXCELLENT	4
	GOOD	2-3
	FAIR	0-1
MARKINGS	OUTSTANDING	10
	EXCELLENT	9
	GOOD	7-8
	FAIR	0-6
TOTAL		

Max 25 points

FINISH, COLOR & MARKINGS



Guide for noting mismatches



Northwest Scale Aeromodelers 2011 Championship

STATIC JUDGING

Reg# _____

NAME: _____

AIRCRAFT: _____

NOTES TO JUDGES

- This form is intended to accomplish the following aims:
- Promote scoring consistency among a wide assortment of replicated aircraft.
 - Benefit the contestant with a specific and meaningful critique of his model, giving him direction for future improvements.

In scoring each box proceed as follows:

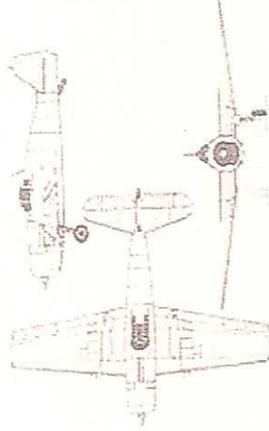
Highlight areas of mismatch on the diagram at right:

- Ask yourself "Is this item Outstanding (the best of the best)?"
Does the model match the documentation exactly (no deviations)?
If so, enter a 10 in the box for that group and proceed next box.
- If not, ask yourself "What is missing or different that degrades it from being Outstanding?"
Briefly note each discrepancy in the Comments and mark the diagram at right at the location of the discrepancy.
- Deduct in 1/2 point increments corresponding to the severity of the noted defect (Refer to Judges Guide for additional details).
- Subtract the total discrepancy points for each box from 10 and enter the total points earned for that box.

Remember that an over-generous mark in even one box creates unfairness. It is unfair to everyone, even the recipient. A logical and honest mark is essential to every contestant and the well being of our sport.

COMMENTS: _____

CRAFTSMANSHIP



Guide for noting mismatches

Mark in 1/2 point increments

WINGS	OUTSTANDING	10
	EXCELLENT	9
	GOOD	7-8
	FAIR	0-6
FUSELAGE	OUTSTANDING	10
	EXCELLENT	9
	GOOD	7-8
	FAIR	0-6
TAIL GROUP	OUTSTANDING	10
	EXCELLENT	9
	GOOD	7-8
	FAIR	0-6
LANDING GEAR (Max 5 points) (Craftsmanship Only)	OUTSTANDING	5
	EXCELLENT	4
	GOOD	2-3
	FAIR	0-1
TOTAL		

Max 35 points

STATIC JUDGING



Northwest Scale Aeromodelers 2011 Championship

Reg# _____

NAME: _____ AIRCRAFT: _____ Class: _____

Mark in 1/2 point increments

NOTES TO JUDGES

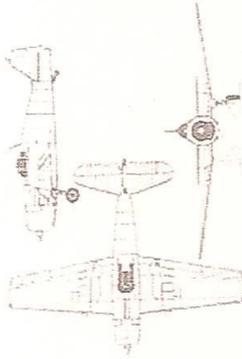
- This form is intended to accomplish the following aims:
- Promote scoring consistency among a wide assortment of replicated aircraft.
 - Benefit the contestant with a specific and meaningful critique of his model, giving him direction for future improvements.

In scoring each box proceed as follows:

Highlight areas of mismatch on the diagram at right:

- Ask yourself "Is this item Outstanding (the best of the best)?"
Does the model match the documentation exactly (no deviations)?
If so, enter a 10 in the box for that group and proceed to the next box.
- If not, ask yourself, "What is missing, or different, that degrades it from being Outstanding?"
Briefly note each discrepancy in the Comments and mark the diagram at right at the location of the discrepancy.
- Deduct in 1/4 point increments corresponding to the severity of the noted defect (Refer to Judges Guide for additional details).
- Subtract the total discrepancy points for each box from 10 and enter the total points earned for that box.

ACCURACY OF OUTLINE



WINGS	OUTSTANDING	10
	EXCELLENT	9
	GOOD	7-8
	FAIR	0-6
FUSELAGE	OUTSTANDING	10
	EXCELLENT	9
	GOOD	7-8
	FAIR	0-6
TAIL GROUP	OUTSTANDING	10
	EXCELLENT	9
	GOOD	7-8
	FAIR	0-6
LANDING GEAR	OUTSTANDING	10
	EXCELLENT	9
	GOOD	7-8
	Fair	0-6
TOTAL		

Max 40 points

COMMENTS: _____

Remember that an over-generous mark in even one box creates unfairness. It is unfair to everyone, even the recipient. A logical and honest mark is essential to every contestant and the well being of our sport.

**OPEN- Novice
STATIC JUDGING SHEET**

Reg# _____

NAME: _____



**Northwest Scale Aeromodelers
2011
Championship**

AIRCRAFT: _____

This form is intended to accomplish the following goals:

- a) Promote scoring consistency among a wide assortment of duplicated aircraft in the Open Class.
- b) Encourage the Open Class contestant to research and provide documentation for the model. The contestant is encouraged to modify the model to more closely match the documentation. This will help to advance his/her Scale modeling skills.

In scoring each box proceed as follows: **NOTE** If no documentation is provided, score **all** boxes zero (0).

- 1) Accuracy of Outline:
Outline will be based on 3 to 5 views that have been published or approved.
- 2) Color & Markings:
Documentation for color and markings requires published drawings, color chips and/or artist's renditions.
- 3) Craftsmanship:
Craftsmanship will be judged on the accuracy and quality of construction and the extent of detail added to the model.

Mark in full point increments	
ACCURACY OF OUTLINE	OUTSTANDING 10
	EXCELLENT 9
	GOOD 7-8
	FAIR 1-6
NO DOCUMENTATION PROVIDED: 0 POINTS	
COLOR & MARKINGS	OUTSTANDING 10
	EXCELLENT 9
	GOOD 7-8
	FAIR 1-6
NO DOCUMENTATION PROVIDED: 0 POINTS	
CRAFTSMANSHIP	OUTSTANDING 10
	EXCELLENT 9
	GOOD 7-8
	FAIR 1-6
TOTAL Max 30 points	

Judge's Comments:
