 North American Model Boat Association Official Rule Book – Update	Update #	2018-2
	Date	5/13/18

Enclosed you will find the latest Rule Book updates. To keep your Rule Book current and up to date, please make the page replacements listed below. If you feel that you have missed any updates please call the Executive Secretary to get an additional copy and/or for clarification of current revisions. Proposals

Section

Summary of changes

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Remove pages: 5 - 6 (*dated 2/28/18*)
 Insert pages: 5 - 6 (*dated 5/13/18*)

Updates needed for below changes

16 - Race Organization

Remove pages: 3 - 5 (*dated 3/15/06*)
 Insert pages: 3 - 5 (*dated 5/13/18*)

Changes from proposals sent out in April 2018 Propwash:
 - Proposal 1: Change limit of one boat to one entry in Rule C.1
 - Proposal 2: Disallow the switching of hulls, new Rule C.2

27 - Gas

Remove pages: 1 - 9 (*dated various*)
 Insert pages: 1 - 10 (*dated 5/13/18*)

Changes from proposals sent out in April 2018 Propwash:
 - Proposal 3: G-Limited class specification, new Rule B.3; and update Classic Thunderboat motor specifications in Rule D.1.b

28 - Electric

Remove pages: 1 - 2 (*dated 6/14/15*)
 Insert pages: 1 - 2 (*dated 5/13/18*)
 13 - 17 (*dated various*)
 13 - 18 (*dated 5/13/18*)

Changes from proposals sent out in April 2018 Propwash:
 - Proposal 4: Electric 1/8 Scale Unlimited specifications, Rules 28.E.6.b-e

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3. The contestant is responsible for notifying the contest officials for their event in case of "back-to-back" races involving his entries and will receive a maximum of five minutes for "get ready" purposes.
4. There must be a minimum of three prepaid entries on compatible frequencies to make a class and/or race.

C. ENTRY LIMITATIONS AND QUALIFICATIONS

1. Contestants will be limited to one entry per hull/engine class at each sanctioned event, as to not increase their chances of winning an award or trophy in the class.
2. There shall be no switching of hulls in a class during a sanctioned event regardless of the circumstance (i.e. hull damage, current water conditions, etc.) after the start of round 1. For outriggers, the sponsons are not considered part of the hull and thus can be changed.
3. Two or more entrants may not race the same hull in the same class.
4. There will be no proxy entries in R/C competition unless the contestant is physically handicapped or aged. No proxy driver may enter a boat in the competition in which he is proxying. Proxy drivers must be members of NAMBA.

D. FREQUENCY CHANGES

1. Contestants will be held responsible for the correct frequency of their entry and the contest official will not be responsible for rescheduling, rearranging, or juggling of scheduled heats due to incorrect frequency on entry forms, unless such rescheduling is done at the discretion of the contest officials.
2. Frequency changes due to equipment failure will receive sympathetic treatment provided:
 - a. the proper contest official is notified immediately upon discovery of the necessity of a change and the frequency to which it will be changed;
 - b. that the entry has not been called to a stand-by status.

E. PRACTICE RUNNING

1. There will be no "open water" periods during the contest as all practice running will be controlled by a contest official. Procedures for controlled practice and test operations will be left to the discretion of the sponsoring club, but the following procedures are recommended:
 - a. Water or course time will be limited by the contest officials.

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- b. Only boats of compatible speed and maneuverability will be allowed on the water at one time.
- c. All practice running will be in a clockwise direction around the course set on the water at that time, boats may utilize the water available provided each "pass" is on the proper side of the course.
- d. Boats that obviously do not need practice may, at the discretion of the contest official, not be allowed to run, (i.e., boats that have finished their event).
- e. During open water, all drivers must have a pit person to call hazards and ensure proper safety during operation of a model boat.

F. DRIVERS' MEETINGS

- 1. Drivers' meetings will be held prior to each event or at any time the contest officials may deem necessary. It is the contestant's responsibility to attend these meetings.
- 2. A primary purpose of the drivers' meeting is for interpretation and clarification of rules and procedures, and any questions regarding said rules should be asked at this time.
- 3. Once an event is underway, the contest officials should not be distracted from their duties by questions that could or should have been asked at the drivers' meeting.

G. PROTESTS


- 1. In all sporting events, situations develop that require judgment calls or decisions on the part of contest officials and all such decisions made herein will be final and may not be protested.
- 2. Continued verbal protests, harangues and/or other abuse, either direct or indirect of any contest officials will be considered unsportsmanlike conduct and will be just cause to bar that contestant or crew person from any further participation in that contest.
- 3. All protests for engines and hulls must be accompanied by a \$25 protest fee. If the protest is found to be invalid, \$10 will go to NAMBA and \$15 will go to the owner of the protested boat. If the protest is found to be valid, the fee is to be returned to the protester.
- 4. A protested hull or engine will be measured by a committee made up of the Contest Director, the District Director or his authorized representative present at the event, and one other NAMBA member other than the protester or owner of the protested engine or hull. Measurements will be made in the presence of the owner and results thereof will be made known in writing and signed by each member of the three person committee and be forwarded with their decision to the Executive Secretary, the Board of Directors, and the President of NAMBA.

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5. A protested hull or engine will be allowed to run in the event(s) entered. However, any points, records, places, etc. won will be held pending the resolution of the protest.
6. Protests on the legality of a boat's engine will be done after the 4th round of the class. A boater that has an engine under protest will be allowed to complete the racing for the day.
7. Protests on the legality of a boat itself, will be done prior to the start of the 2nd round. When the 2nd round of racing begins, the opportunity to examine every boat in that class will have occurred, thus allowing the CD the opportunity to determine if it meets the minimum requirements to continue.
8. A protest of any kind must be made at the contest so all factors can be available.

H. AWARDS

1. The members of NAMBA will be allowed to accept merchandise, merchandise gift certificates, and trophies as competitive awards. Any NAMBA member can receive earned racing awards. However, the awarding of district points will be left to the discretion of the district in which the race is held. Cash awards are not permitted.

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A. GENERAL RULES

1. Gas racing rules are intended as a supplement to the general racing rules of NAMBA. In the case of a conflict, the Gas racing rules will prevail.

B. CLASS SPECIFICATIONS

1. G Class Rules

a. General Engine Specifications

- i) Engines in this class shall be highly mass-produced as evidenced by the process used to manufacture the major components. The cylinders and crankcases shall be die-castings, with cylinder and head as a one-piece unit. Examples of such engines are Zenoah, Chung Yang, Kawasaki, Homelite, and U.S. Engines.
- ii) Secondary parts such as water jackets, nose cones, drive components, shim plates, intake manifolds, carburetors, headers, pipes, etc. do not come under the “highly mass produced” rule. Major components such as cranks, rods, pistons, cases, ignition systems, cylinders, and cylinder heads do fall under the rule and must be parts of the original motor manufacturer. Interchanging of major parts from one engine series to another is legal as long as the parts used were available on another engine from the same manufacturer
- iii) Modifications are allowed to major and minor components. However, major components may only be modified by removing material. Adding material or parts to modify an engine's major components will be illegal. The only exception to this rule is that a cylinder may be modified to accept (add-on) a water jacket.
- iv) Induction systems must be piston-ported. Modifications incorporating induction systems other than piston-ported systems are illegal. Engines must be naturally aspirated. Tuned exhaust and intake systems are the only allowed method of altering cylinder pressures.
- v) Engines in this class must employ spark-induced combustion. Glow plug or compression-induced combustion is illegal.
- vi) Recoil starters must be included on the original engine and must be retained on engines in this class.

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vii) Displacement is the swept volume of the engine, which is the cross sectional area of the cylinder multiplied by the stroke of the engine and two displacement ranges will be offered within this class:

(a) G-1 will include engines from 15 to 25.99 cubic centimeters.

(b) G-2 will include engines from 26 to 35.99 cubic centimeters.

b. Fuel Specifications

i) Gasoline having an octane rating no higher than 100 must be used in this class. Gasoline is a mixture of hydrocarbons with no nitrogen bearing compounds. Ethers or alcohols may be added commercially as oxygenating agents. It can be mixed with oil in any proportion for lubrication, but no other additives are allowed that were not in the fuel as originally manufactured.

ii) To enforce this rule, a protest may be made to the contest director any time during the contest. Protests must be accompanied by a \$10.00 protest fee that will be awarded to the sponsoring club. The offending racer will be made to use the protesting racer's fuel for the duration of the contest. If the fuel is unacceptable to the offending racer, fuel from a neutral party must then be used by both the offending racer and the protesting racer. In this situation, the neutral party would be awarded the protest fee in payment for the fuel.

2. GX Class Rules

a. General Engine Specifications

i) Engines running in this class will not be required to fall under the "industrial" rule. Displacement is the swept volume of the engine, which is the cross sectional area of the cylinder multiplied by the stroke of the engine and three displacement ranges will be offered within this class:

(a) GX-1 will include engines from 15 to 25.99 cubic centimeters.

(b) GX-2 will include engines from 26 to 35.99 cubic centimeters.

(c) GX-Twin will include two engines or an engine with two cylinders with a maximum displacement of 64.00 cubic centimeters.

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- ii) Engines in this class must employ spark-induced combustion. Glow plug or compression-induced combustion is illegal.
- iii) Induction systems may include piston port induction, reed valve induction, rotor-valve induction and drum valve induction

b. Fuel Specifications

- i) Gasoline having an octane rating no higher than 117 must be used in this class. Gasoline is a mixture of hydrocarbons with no nitrogen bearing compounds. Ethers or alcohols may be added commercially as oxygenating agents. It can be mixed with oil in any proportion for lubrication, but no other additives are allowed that were not in the fuel as originally manufactured
- ii) To enforce this rule, a protest may be made to the contest director any time during the contest. Protests must be accompanied by a \$10.00 protest fee that will be awarded to the sponsoring club. At this point the offending racer will be made to use the protesting racer's fuel for the duration of the contest. If the fuel is unacceptable to the offending racer, fuel from a neutral party must then be used by both the offending racer and the protesting racer. In this situation, the neutral party would be awarded the protest fee in payment for the fuel.

3. G-Limited Class Rules

a. General Engine Specifications

- i) Engines will be a Zenoah G260 PUM with no modifications allowed except those noted below.
- ii) All replacement parts must be from the original manufacturer and the same type engine (Zenoah G260 PUM to Zenoah G260 PUM). No part swapping from other manufacturers or engine types is permitted.
- iii) The carburetor must be one of the following: Walbro WT-257, Walbro WT-644 or Zenoah WT-1027.
- iv) All carburetors will be stock with no modifications other than those noted below:
 - (a) The velocity stack/Air Funnel (part #848ES08300) may or may not be used.
 - (b) Any type of bolts may be used to mount the carburetor.
 - (c) The idle stop screw may be removed.

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- (d) A needle stop device may be used, to keep needle from turning/vibrating lose (i.e. fuel tubing, an aluminum clamp, etc.).
- (e) The exterior length of the needle may be shortened to fit under cowlings when necessary.
- (f) Any fuel pump diaphragm may be used.
- (g) Any metering diaphragm may be used
- v) Any exhaust manifold, header, and pipe may be used.
- vi) The spark plug must be one of the following: Champion RZ7C spark plug or a NGK CMR7H spark plug. Both must retain the factor seal washer.
- vii) Zenoah EZ Starter Kit (part #GR26099) will be allowed. The pulley assembly (part #848-ESZ-7520) of the pull starter may be modified for the purpose of not using the spacers (part #848-8Y4-6100) or the space plate (part #580-44-79-01).
- viii) The Mount Plate (part #1155-74110) may or may not be used.
- ix) Any standard type of shaft collet nut may be used. No geezer wheel, belt starting pulley, or extra weighted shaft collet nuts are allowed.
- x) The Zenoah water jacket (part #T2076-12210) may be modified on the outside by changing the color, and/or machining in a design. Stock M5 x.8 water fitting thread must be retained.
- xi) Any type of water jacket cooling nipples are allowed (i.e. 90 degree, drilled out, etc.).
- xii) Any type of replacement engine bolts may be used (i.e. stainless, chrome, etc.).
- xiii) The ignition coil (gray, part # 2629-71311) may be relocated using any type of bracket, but no shortening of the plug wire.
- xiv) If any updates are made to the standard G260 PUM motor by Zenoah, the Board of Directors can vote to allow or disallow the additional parts to the above rules by a simple majority vote.

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C. HULL SPECIFICATIONS

1. General

- a. All hulls will be limited to a maximum length of 60" and a maximum width of 30".
- b. Primary propulsion must be by a propeller making contact with the water. No air drive or jet drive propulsion is permitted.

2. Monoplane

- a. Mono hulls must have a single riding surface at planing speeds. This planing surface may be flat or a V configuration.
- b. No lateral side to side breaks are permitted.
- c. Lap strakes may be used. If used, they must be parallel to the keel for a minimum of 60 percent of the hull length, measuring from the transom forward. The strakes may merge to the keel after the 60 percent minimum has been exceeded.
- d. Lap strakes on hulls 46" long and under and with a beam width of 15" and under may have a maximum lap strake width of $\frac{3}{4}$ inch and depth of $\frac{1}{4}$ inch.
- e. Lap strakes on hulls over 46" long and with a beam width over 15" may have a maximum lap strake width of $\frac{3}{4}$ inch and a depth of $\frac{1}{2}$ inch.
- f. The depth of the lap strakes is measured from the bottom (primary running surface) to the lowest point on the lap strake.

3. Outrigger Hydroplane

- a. Outriggers may have more than two planing surfaces.
- b. General design will consist of two forward sponsons connected to the tub by booms.
- c. This class is an open design class.

4. Sport Hydroplane

- a. Sport hydroplanes may have more than two riding surfaces touching the water at planing speeds.
- b. This class will include both three-point hydros and canards.

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- c. All sport hydros must resemble full scale racing boats and may be of current or historical design.
- d. The sponsons may have pads or breaks that contact the water at planing speeds.
- e. Exposed exhaust systems are allowed.

5. Catamaran

- a. Catamarans have two sponsons that normally run the full length of the hull.
- b. Sponsons are separated and connected together by a tunnel.
- c. Sponsons may have lateral breaks.

6. Crackerbox

- a. All boats will be models of full sized crackerboxes.
- b. The letter "P" must precede or follow the NAMBA number on each side of the hull.
- c. The minimum length will be 43.5 inches and maximum length will be 49 inches.
- d. Minimum beam width will be 16.5 inches.
- e. The bottom must be generally flat with a maximum of a three-degree V across the full width of the transom and refer to rule C.6.a. There may not be any pads or lap strakes.
- f. The deck and hatch must resemble that of a full sized crackerbox.
- g. Two drivers of ¼ scale size and appearance, wearing helmets and life preservers must be used. A steering wheel, instrument panel, and other detailing is encouraged.
- h. No parts (rudder, prop, plates, etc.) may be more than four inches behind the transom.
- i. The exhaust system must be enclosed by the hull. No part of the exhaust system may extend beyond the transom with the exception of a small pipe muffler or transom exhaust flange.
- j. No servo adjusted trim tabs are permitted.

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7. Classic Crackerbox

- a. All general Crackerbox rules apply with the following exceptions:
- b. The hull must be made completely of wood. It is permissible to cover the hull with fiberglass and resin. The minimum running weight will be 15 pounds.
- c. Classic Crackerboxes may run in the general Crackerbox class but not on the same day.

D. SPECIALITY CLASSES

1. CLASSIC THUNDERBOAT

a. Hull Specifications

- i) The boat may be of wood or fiberglass construction.
- ii) The hull length will be between 48" – 56".
- iii) The hull width will be a minimum of 24".
- iv) The transom will be a minimum of 10" in width.
- v) The hull design will only be one of the following types: round nose, step deck, or chisel nose.
- vi) Nothing on the boat may be further than 5 1/4" behind the transom.

b. Motor Specifications

- i) Engines must conform to NAMBA Class G-Limited specifications, see rule B.3.a in this section.
- ii) The pipe and muffler must be inside the boat and exit through the transom.

c. Appearance

- i) The boat must have a sponsored paint scheme with sponsored IDs and U numbers on the boat.
- ii) The boat must have a human driver figure in a front or rear cockpit. The driver must be a scale of 1/8 to 1/6 in relationship to the size of the boat and wearing a life vest and helmet.
- iii) The boat must run with an engine cowling or dummy engine to cover as much of the boat's engine as possible.

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d. Race Format

- i) At the discretion of the Contest Director, races will be run either under the NAMBA Heat Racing Format or the “Love Plan” which is run as follows:
 - (a) The event must consist of four preliminary rounds of heats and one final round of concluding heats. The concluding round of heats must consist of one final heat and a consolation heat.
 - (b) The maximum number of boats in the final heat is six. The top five boats with the highest points after the four preliminary rounds will be eligible for the final heat. If a frequency conflict exists between two or more boats eligible for the final heat, preference goes to the boat that has accumulated the most points in the preliminary rounds, or to the boat with the fastest time should a tie in points occur. The other boat will have the option to change to any other available frequency.
 - (c) After the final heat field has been set, boats accumulating points in the four preliminary rounds after the fifth position will be used to fill the consolation heat. The winner of this heat will be used to fill the six boat final heat.
 - (d) The outcome of the consolation heat will not affect the overall standings or points for the day.
 - (e) Final race standings will be determined by order of finish in the final.

2. JERSEY SKIFF

a. General Specifications

- i) Prop shaft and tube must pass thru the bottom of the boat.
- ii) No fairing on top of prop shaft tube.
- iii) No hardware will extend beyond 4” from transom.
- iv) No skegs or turn fins.
- v) Strut must be rounded on bottom.

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- vi) Tuned pipes are allowed. Exhaust must exit thru transom and not extend more than 1 ½” past transom.
- vii) Motor will be covered; hood scoops and air vents are allowed.
- viii) Trim tabs allowed. No trim tabs with fins or skegs on bottom. Trim tabs can be angled up to prevent hooking.
- ix) Engines must confirm to NAMBA Class G-1 specifications, see rule B.1.a in this section.
- x) Boat must have numbers on both sides of hull in the following format - JS followed by NAMBA number. Minimum height of 3 inches.
- xi) Strakes or riding pads are NOT LEGAL. No keels or chines on bottom, bottom of hull is flat and smooth.
- xii) Must have two scale like drivers located at or near transom. Minimum height 3 ½” and maximum of 4”. Drivers must have life jacket and helmet.
- xiii) Wood/scratch builds are permitted, must simulate the lap strake construction.

b. Hull Specifications

- i) The hull length will be between 49”-51”.
- ii) Minimum width at center of hull 17”.
- iii) Maximum width of bottom at transom 11”.
- iv) Hull bottom maximum degree of at center of hull 1 degree.
- v) Hull bottom maximum degree of V at transom 1 degree.
- vi) Minimum transom height 5 ½” from bottom of hull to top of deck.
- vii) Minimum height of freeboard (bottom of hull to top of deck) at center of hull 5 ½”.
- viii) Minimum height of freeboard (bottom of hull to top of deck) at 10” from bow 5 ½”.

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3. GAS SCALE UNLIMITED HYDROPLANE

a. General


- i) Gas Scale Unlimited Hydroplane racing will follow Scale Unlimited Hydroplane rules in Section 21 with the exception of items listed below.

b. Hull Specifications

- i) All boats will be models of past or present Unlimited Hydroplanes that are listed on the Gas Scale Unlimited Hydroplane Master Hull Roster. The true scale dimensions of any Gas Scale Unlimited Hydroplane will be derived from the unlimited dimensions listed on the Gas Scale Unlimited Hydroplane Master Hull Roster.
- ii) Boats are to be built on a scale of 1.80 inches equals 1 foot of the actual boat (1/6.667 scale).
- iii) Boats will measure within the following tolerances of the true scale size, excluding appendages.
 - (a) Overall Length.....± 1 1/4 inches
 - (b) Beam.....± 12%
 - (c) Maximum Depth.....± 10%
 - (d) Afterplane Length (three point design).....± 10%
 - (e) Tunnel Width.....± 10%
- iv) Motor belly pan for motor and flywheel only. If applicable, the dimensions will not exceed five inches in width, nine inches in length, and one inch in depth. The belly pan can not exceed the depth of any riding surface or recovery surface. If the real boat had a full length belly pan, the model must conform.

c. Engine Specifications

- i) G or GX Class engines from 15 to 31 cubic centimeters.

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A. GENERAL RULES

1. Electric racing rules are intended as a supplement to the general racing rules of NAMBA. In the case of a conflict, the Electric racing rules will prevail.
2. A positive method of speed control must be used. On/Off micro or variable speed controls are allowed.
3. Battery Guidelines
 - a. The following battery chemistries will be considered official for electric racing in NAMBA:
 - i) Ni-chemistry: maximum of Sub-C sized cells with nominal 1.2 volt per cell.
 - ii) Li-polymer chemistry: nominal 3.7 volts per cell.
 - iii) Li-ion chemistry: nominal 3.3 volts per cell.
 - b. Racers wishing to run alternative chemistries to those listed will be required to provide data to the contest official to verify the chemistry's volts per cell and any special safety requirements. Allowing alternative chemistries will be at the discretion of the Contest Directory based on the data provided.
 - c. For the purposes of determining maximum allowances, a "pack" will be considered any number of cells in series whose min/max nominal voltage falls within the allowed nominal voltage range for the designated class.
 - d. It is recognized that the high energy potential of modern cells can pose a potential for danger to racers, fellow members, spectators, as well as to racers pit equipment. It is therefore required that each racer keep in their charging area appropriate safety equipment. This may include fire extinguishers, safe charging enclosures, sand buckets, etc. Additionally, the hosting clubs may provide additional equipment, charging procedures, and/or charging areas as they see fit.
 - e. Chargers must be used that are specifically designed for the chemistry of cell being charged, with strict adherence on charger settings that are within manufacturers specifications (charger and cells) for charge voltage, amperage and capacity. Any racer found not in compliance will be withdrawn from the class and may be banned from competition for the remainder of the event by the Contest Director.

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4. Hull Measurement Guidelines

- a. When a hull minimum or maximum length measurement is specified for any class, that hull will be measured by placing two vertical straight edges at the furthest points fore and aft of the bow and transom of the hull. The distance between those two vertical straight edges will be measured. Hardware will not be included in the measurement.
 - b. The hull will be placed between those two vertical edges and situated in the same horizontal position in which the hull would ride on the water. Any flanges, “shoebox” overhangs or other parts of the hull that are part of the original manufacturing process will be included in the measurement.
 - c. A hull may be lengthened to comply, but material additions must become an integral part of the hull structure. If for instance, material is added to the transom, the entire transom must be lengthened and the addition must be blended in to the rest of the hull.
5. With the exception of boats run in the ECO Specialty Class, boats that are capable of self-righting are not eligible for competition. If the boats self-righting design can be disabled or otherwise rendered useless, then the Contest Director may allow it to compete.

B. OFFICIAL COURSES

1. Oval

- a. Fast Electric will follow the Official Course outlined in Section 13.
- b. NAMBA Fast Electric Heat Racing records will be maintained for the N-1 Power Parameter and 1/10th Scale Crackerbox for 3 laps on an Official Course.
- c. If a host club of a sanctioned NAMBA event has a pond that cannot fit an official course, they are allowed to use a course dimension of their choice. This information shall be listed on the race flyer and heat racing shall remain 1 mile in length, unless otherwise specified in the rulebook. No records are allowed.

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d. Records

- i) OPC records can be set in the P-Limited, P and T Power Specifications.

5. ECO

- a. Purpose - to provide an “economical” electric class utilizing affordable and readily available 05 motors and economical hardware.

b. General Rules

- i) These ECO Class electric racing rules are intended as a supplement to the general and Electric racing rules of NAMBA. In the case of a conflict, ECO class rules will prevail.
- ii) This class will comply with the existing rules for electric Offshore with exceptions as specified below.

c. Hull Specifications

- i) This class will comply with the existing rules NAVIGA ECO class.
- ii) Boats must use a submerged drive with the rudder pivot forward of the transom.
- iii) There is no minimum or maximum hull length.

d. Motor Specifications

- i) A Limited Modified class utilizing any NORCA approved motor as defined by current NORCA 19T Limited Modified rules. 1-6 cells are permitted.
- ii) Any ROAR-approved stock motor as defined by current ROAR parameters. 1-6 cells are permitted.
- iii) Motors must be in accordance with current NORCA rules for 19T Limited Modified Motors, or with ROAR motor rules for stock motors. From 1 to 6 Sub-C cells only are permitted; any battery chemistry is allowed.

e. Official Courses

- i) The course size for records will be the standard electric Offshore course.
- ii) In the absence of a legal Offshore course, the host club may use any oval format desired. Records may not be set on such a course.

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- iii) The host club may elect to use a NAVIGA Triangle course as defined in current NAVIGA rules.
- iv) Straight-line racing will utilize the standard NAMBA 1/16 mile straight-line course. Straight-line records must be set using cells described above.
- v) Record Courses
 - (a) Must be a NAMBA 1/10 mile electric course.
 - (b) The left turn entrance buoy is to be located 45 feet from each turn exit buoy.
 - (c) The left turn exit buoy is to be located 45 feet from the left turn entrance buoy.

f. Race Format

- i) The length of each heat will be in two minute increments (i.e. four, six, eight, etc). When time is called, boats will race to the Start/Finish line to determine the final positions.
- ii) A flying clock start or a Le Mans type start may be used.

6. ELECTRIC 1/8 SCALE UNLIMITED HYDROPLANE

a. General Rules

- i) Electric Scale Unlimited Hydroplane rules will follow the Scale Unlimited Hydroplane rules (see Section 21) with the exception of the following:
- ii) Electric Scale Unlimited Hydroplane rules are intended as a supplement to the Electric general rules. In the case of a conflict with the Scale Unlimited Hydroplane rules (see Section 21), the Electric rules will prevail.

b. Power Specifications

- i) Approved Motors
 - (a) NEU 1527 1.5Y 850KV
 - (b) HET Typhoon 700-98 840KV
 - (c) Turnigy SK3-3994 850KV
- ii) Twin motors are not allowed.

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c. Drivetrain Specifications

- i) Either a cable or hard shafts may be used, no gear boxes allowed.
- ii) Any propeller may be used up to maximum of 57mm in diameter.

d. Electronic Speed Controls (ESC)

- i) Any ESC may be used as long as it is rated to a minimum 130 Amps and rated to handle a minimum of 8S battery configuration.
- ii) Anti-spark resistors are advised on all speed controllers.

e. Batteries

- i) A maximum capacity of 8S Lithium Polymer (LiPo) batteries are allowed. The maximum mAh capacity of the battery pack(s) will not exceed 6000 mAh. Only LiPo batteries with a cell rating of 4.20 or less volts per cell are allowed.
- ii) LiHV batteries with per cell capacities to 4.35 volts or higher are not allowed.
- iii) Manufacturer's minimum discharge of 30C constant but no higher than 65C constant is allowed.

7. ELECTRIC 1/10 SCALE UNLIMITED HYDROPLANE

a. General Rules

- i) The intent of this class is to replicate the look and competition of real unlimited hydroplane racing. Boats are 1/10-scale replicas (one inch equals 10 inches) of the real boats that have raced on the unlimited circuit. This class shall emphasize scale accuracy.
- ii) Electric 1/10 Scale Unlimited Hydroplane rules will follow the Scale Unlimited Hydroplane rules (see Section 21) with the exception of the following.
- iii) Electric 1/10 Scale Unlimited Hydroplane rules are intended as a supplement to the Electric General and Sport Hydro rules. In the case of a conflict with the Scale Unlimited Hydroplane rules (see Section 21) the Electric rules will prevail.

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b. Hull Specifications:

- i) Belly pans or blisters, if added, must be no larger than 2.5 inches wide by 4 inches long.
- ii) Air dams, if installed, must be below the deck line and unobtrusive and not extend beyond the bow.
- iii) Anhedraled left sponsons and modern style sponsons are not allowed on boats running in the vintage class.
- iv) Boats shall use a single rudder at any mounting location on the transom. The center of the rudder post shall not be located more than 1.75 inches behind the transom.

c. Drive Train

- i) Any shaft may be used provided it maintains a straight line from hull exit through the strut.
- ii) No gearbox of any configuration is allowed.
- iii) Any single propeller may be used, and a portion of the propeller must be under the transom. The drive dog is defined as not a part of the propeller

d. Motor Specifications

i) Currently approved motors

Brand	Model	Description
AquaCraft	AQUG7000	L36/56 7.2-18V – 6 pole brushless
Himax	HB3630	1500 brushless – 6 pole brushless
ProBoat	PRB3310	A3630-1500 – 6 pole brushless
	DYNM3835	A3630-1500kv – 6 pole brushless, water cooled, marine motor

- ii) No modifications may be made to the motor. Except for normal wear, drive flats or keys, electrical connectors and water cooling, it must be run as shipped from the manufacturer.
- iii) Power Limits: 10.1 to 15 Volts nominal, any chemistry. Maximum of 2 packs in parallel. Maximum total capacity shall be 10,000 mAh.

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e. Class Specifications

i) Vintage Class

(a) Defined as those boats conforming to NAMBA Master Hull Roster (MHR) numbers 2730 through 7008 inclusive, and MHR numbers: 7102, 7132, 7171, 7206, 7221, 7422, 7499 and 7505.

(b) Skid/turn fin shall be mounted to the inside of the left sponson and shall not extend beyond the back of the sponson. The size is limited to a maximum of 2 inches wide by 1 inch deep measured from the sponson riding surface. No hook shaped skid fins are allowed

ii) Modern Class

(a) Defined as those boats conforming to NAMBA Master Hull Roster numbers 7025, 7029, 7175, 7177, 7207, 7251, 7325, 7402, 7441, 7455, 7495, and numbers 7571 through 0717 and beyond.

(b) Follows all rules listed above except:

(c) Any shaft may be used.

(d) Sponson design shall be up to the builder as long as it does not change the outline shape of the hull.

(e) Skid/turn fin shall be similar in appearance and location to the full size boat (mounted to the back of the sponson). The size, shape and precise location shall be determined at the discretion of the owner. No hook-shaped skid fins are allowed.

f. Race Format

i) Shall be as set forth in Section 21 Rule B plus the following:

ii) All boats shall travel COUNTER-CLOCKWISE around the course turning LEFT.

iii) A one minute countdown procedure using an audio countdown clock shall be used to start each heat. The start of the race is at the initial sound of the horn/gun.

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- iv) A boat must be in the water and running at the 30-second mark. Once running, a boat must remain in constant forward motion or be assessed a one lap penalty.
- v) All boats must fully circle the right and left hand turns (in that order) before being allowed to start.

8. CATAMARAN

a. General Rules

- i) Catamaran rules are intended as a supplement to the General Racing rules of NAMBA. In the case of conflict, the Electric Catamaran rules will prevail.

b. Hull Specifications

- i) Catamarans shall be a stand-off scale version of an Offshore Catamaran style of hull, with two sponsons that normally run the full length of the hull.
- ii) Sponsons are separated and connected together by a tunnel.
- iii) Sponsons may have lateral breaks.
- iv) Inboard or outboard mounting of the motor(s) is permissible
- v) Hull length must conform to those listed in Rule D.2.a in this section for each Power Specification