MAGAZINE OF THE INTERNATIONAL DN ICE YACHT RACING ASSOCIATION

RUNNER TRACKS

DECEMBER 2022

FALL 2022 BALLOT RESULTS
MAST EVOLUTION: A HISTORY
THUNDER BAY TRAINING CAMP
THE GREAT WESTERN CHALLENGE
PROPOSALS FOR SPECIFICATIONS, IDNIYRA BY-LAWS, & EPIC

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Cover Photo: PRO Pat Heppert's C Skeeter DRIFTER was the talk of the town at the Western Challenge.
Photo by Kevin Barta

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RUNNER TRACKS is edited by IDNIYRA Secretary Deb Whitehorse

COMMODORE'S **REPORT**

FROM THE COMMODORE
JODY KJOLLER US5435, TEMPERANCE, MICHIGAN, USA

The 2022-2023 season has begun. The Great Western Challenge was epic. Perfect ice and some really fast sailors made for an amazing weekend. We had sailors from the east coast, San Diego, and multiple areas of Canada as well as Germany and Sweden (maybe others that I need to remember). Good times were had.

Registration for the Gold Cup World Championship and North American Championship is open, and the Notice of Race is available on idniyra.org. Western Rear Commodore Chris Burger and his team have been hard at work getting things ready for sailors from all over the world. Sailing instructions will be available soon. Please be sure to read all information carefully.
We have added a rule in support of the Technical Committees' ruling concerning Icewise planks. We encourage all Icewise planks owners to get in touch with a TC member to check the legality of your equipment before you get to the regattas. Your compliance would be greatly appreciated.

I hope to see you on the ice soon.
Think Ice

IDNIYRA Commodore Jody Kjoller US5435

Photo: gretchendorian.com

ULLMAN SAILS DETROIT

DN Sails built and designed by Mike Boston

World Championship
2019, 2020, 2022

NA Championship
2002 - 2020

mboston@ullmansails.com
+1586.792.7212

Photo: Sean R. Heavey

WESTERN CHALLENGE

An unofficial regatta.
December 3-4, 2022
Minnesota
icesailing.net

WORLD & NA CHAMPIONSHIP

World's 50th Anniversary Celebration
January 21-28, 2023
Host: Western Lakes Region
idniyra.org

CENTRAL LAKES

TBA
idniyra.org

WESTERN LAKES

December 31, 2022 - January 1, 2023
idniyra.org

EUROPEAN CHAMPIONSHIP

February 18 -25, 2023
idniyra.eu

DN & ICE OPTIMIST JUNIOR WORLD CHAMPIONSHIP

March 4 - 10, 2023
idniyra.eu

GRAND MASTERS CHAMPIONSHIP

February 7 - 9, 2023
dnsweden.se

EASTERN LAKES

TBA
idniyra.org

NEW ENGLAND CHAMPIONSHIPS

TBA
neiya.org

CANADIAN CHAMPIONSHIP

TBA
idniyra.org

GRETCHENDORIAN.COM
2020 NORTH AMERICAN CHAMPIONSHIP

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MEMBER PROPOSALS TO CHANGE THE SPECIFICATIONS, IDNIYRA BY-LAWS, AND EPIC AGREEMENT

1. PROPOSAL TO AMEND OFFICIAL SPECIFICATION B.3. RUNNER PLANK

Bob Gray (US65) has proposed an amendment to change OFFICIAL SPECIFICATION RUNNER PLANK B.3.

Wording from the 2023 yearbook:

B. RUNNER PLANK

	English		Metric	
	Max	Min	Max	Min
3. Thickness at centerline	1-5/8	1-1/8	41.2	28.6

Change wording to:

B. RUNNER PLANK

	English		Metric	
	Max	Min	Max	Min
3. Thickness at centerline	1-5/8	1"	41.2	25.4

Reasoning:

We all want to see the DN fleet grow. The largest pool of potential sailors is women. We presently have some excellent female sailors, but we sure could use more. One of the problems women and even younger, smaller male sailors have, is most of our equipment is made for men whose typical weight is between 170-200 pounds. While the equipment is great for them, it is generally too stiff for lighter-weight sailors. Fortunately, mast manufacturers are making limber masts that work fine for them, but planks are different. The new balsa-cored fiberglass stiffened planks can be made for them, but they are expensive and basically non-home buildable. It is extremely difficult to build a typical solid wooden plank (ash faces and softwood core) that is soft enough. The typical way to check the desired stiffness for a sailor is to stand on the plank, and it should deflect between 1 5/8" and 1 3/4". For a 180-pound sailor, this is a spring rate of around 105 pounds/inch. For a 130-pound sailor, it would be 77 pounds/inch. Anything above 100 pounds/inch is easy to make, but 77 pounds/inch is darn near impossible, even making it minimum width. I would like the specification to change from a minimum centerline thickness of 1.125 inches to 1.00 inch. 1.00 inch is the minimum thickness allowed at the ends. Reducing centerline thickness would make it much easier to build more limber planks. This change would not make present equipment obsolete; it would just help our lighter sailors.

2. PROPOSAL TO AMEND IDNIYRA BY-LAWS GENERAL 1.

Jody Kjoller US5435 has proposed an amendment to change IDNIYRA BY-LAWS General 1.

Wording from the 2023 yearbook:

IDNIYRA BY-LAWS

General

1) Membership dues are Twenty Five ($25.00) dollars for individuals annually, payable before November 1 to the Treasurer.

Change wording to:

General

1) Membership dues are Thirty ($30.00) dollars for individuals annually, payable before November 1 to the Treasurer.

Reasoning:

All costs have increased. The IDNIYRA must adjust it's membership dues accordingly.

3. PROPOSAL TO AMEND THE EPIC AGREEMENT, ARTICLE XI, ENFORCEMENT OF THE SPECIFICATIONS

Jody Kjoller US5435 has proposed an amendment to change EPIC Agreement, Article XI, Enforcement of the Specifications.

Wording from the 2023 yearbook:
EPIC AGREEMENT

Article XI- ENFORCEMENT OF THE SPECIFICATIONS
The OFFICIAL SPECIFICATIONS shall be enforced in two ways;

1.Through a protest filed by any contestant, Judge or Race Committee member at the Gold Cup, European Championship or North American Championship Regattas against any competing yacht; or,

2.By the Race Committee measuring yachts during a regatta described in the CGDs, NIA rules, or the regatta Sailing Instructions.

Change wording to:

EPIC AGREEMENT
Article XI- ENFORCEMENT OF THE SPECIFICATIONS

The OFFICIAL SPECIFICATIONS shall be enforced in three ways;

1.Through a protest filed by any contestant, Judge or Race Committee member at the Gold Cup, European Championship or North American Championship Regattas against any competing yacht; or,
2.By the Race Committee measuring yachts during a regatta described in the CGDs, NIA rules, or the regatta Sailing Instructions.

3. By an official ruling of the technical committee.

Reasoning:
This would allow the TC to implement testing procedures, and ban equipment that is widely known to be produced not in accordance with the official spedications. This would help ensure equipment is produced and distributed in complete compliance with the official spedications. When a concern of a specification violation arises, this change would allow the technical committee to swiftly enact a way to investigate, test, and implement procedures, along with banning or barring equipment.

Continued next page

FALL BALLOT- RESULTS TO CHANGE THE SPECIFICATIONS, AND EPIC AGREEMENT

During the 2022 European National Secretaries Meeting, 4 proposals were approved and forwarded to the IDNIYRA and IDNIYRA European class members for a vote. The vote took place in November 2022 and all 4 proposals were approved. They will take effect on May 31, 2023, as per the EPIC Agreement.

QUESTION 1: TECHNICAL SPECIFICATIONS AMENDMENT – DELETE BOOM STRIPE

Results:

Yes – I approve the amendment
142 (NA:78,EU:64) 82.08% (NA:80%,EU:85%)
No – I reject the amendment
31 (NA:20,EU:11) 17.92%(NA:20%,EU:15%)
Votes tallied: 173
Abstentions: 7
The proposal received the support of more than 2/3 of the votes cast.
PASSED

QUESTION 2: EPIC AGREEMENT AMENDMENT – TECHNICAL SPECIFICATIONS COMPLIANCE

Yes – I approve the amendment
163 (NA:95,EU:68) 95.32%(NA:96%,EU:94%)
No – I reject the amendment 8 (NA:4,EU:4)
4.68%(NA:4%,EU:6%)
Votes tallied: 171
Abstentions: 9
The proposal received the support of more than 2/3 (66,6%) of the votes cast. **PASSED**

Article XI – ENFORCEMENT OF THE SPECIFICATIONS
"Each and every sailor has the full responsibility to ensure that his/her iceboat is maintained to comply with her class rules and is in full compliance with the OFFICIAL SPECIFICATIONS

The OFFICIAL SPECIFICATIONS shall be enforced in two ways;

1. Through a protest filed by any contestant, Judge or Race Committee member at the Gold Cup, European Championship or North American Championship Regattas against any competing yacht; or,
2. By the Race Committee measuring yachts during a regatta described in the CGDs, NIA rules, or the regatta Sailing Instructions."

QUESTION 3: EPIC AGREEMENT AMENDMENT – TECHNICAL COMMITTEE

Yes – I approve the amendment
153 (NA:84,EU:63) 91.07%(NA:87,5%,EU:86%)
No – I reject the amendment 15 (NA:12,EU:3)
8.93%(NA:12,5%,EU:4%)
Votes tallied: 168
Abstentions: 12
The proposal received the support of more than 2/3 (66,6%) of the votes cast.
PASSED

Article VI – TECHNICAL COMMITTEE
"The DN Class Technical Committee (TC) shall consist of six members, three elected from North America and three elected from Europe. TC members shall be elected according to the respective Continental Governing Documents (CGD). One member will be elected every year, alternating between continents. North American members will be elected in even years and European members in odd years. The term of office is six years. Term of office will begin July 1, and expire June 30 of the appropriate year. Each second year the TC shall elect from its membership a chairperson to serve until June 30 of the appropriate year. The chairperson must be elected alternately from American and European members. If the chairperson resigns or

cannot fill out his/her term, a new chairperson from the appropriate continent is to be elected by the TC to fill out the remainder of the term. Upon resignation of a member prior to six years, a replacement member will be elected by the respective CGG to complete the unexpired term.

All decisions of the TC require 2/3 majority vote of all members. The Chairperson shall report to the CGGs on all recommendations of the TC. The TC may initiate changes in the OFFICIAL SPECIFICATIONS or OFFICIAL PLANS by proposing a change to both CGGs."

QUESTION 4: EPIC AGREEMENT AMENDMENT – VOTING

Yes – I approve the amendment
163 (NA:98,EU:65) 96.45%(NA:97%,EU:96%)
No – I reject the amendment 6 (NA:3,EU:3)
3.55%(NA:3%,EU:4%)
Votes tallied: 169
Abstentions: 11
The proposal received the support of more than 2/3 (66,6%) of the votes cast.
PASSED

Article IX VOTING

"The DN Class will submit a ballot to the membership, no later than Oct 1. All members having valid membership at Sept. 1 and a valid e-mail address on file will have the right to vote. The method of voting will be an electronic ballot or any other safe and reliable method. The voting will be closed 21 days after the submission. The chosen electronic voting system should be able to certify and to verify the voting results. DN Class members that are members of both the North American and European organizations may only cast one ballot.

Passage: To pass a proposal must get at least 2/3 yes votes from the votes cast. Abstentions count as votes that have not been cast and are therefore invalid. Any proposal which does not pass may not be resubmitted for one year.
Effective Date: Changes in the Official Specifications or Official Plans shall become effective May 31 unless both Governing Groups agree an earlier effective date, and that the effective date is on the ballot proposal. "

Photo: Kevin Barta

THUNDER BAY TRAINING CAMP

BY MIKE MADGE KC5449

The first annual Thunder Bay iceboat training camp in Thunder Bay, Ontario, Canada, spearheaded by IDNIYRA Vice Commodore David Frost, was held during the last weekend of November 2022. Four out-of-town sailors joined the local contingent for three days of training.

We broke down the training into three parts: sailing, fitness, and nutrition. While on the ice, we practiced better starts, mark roundings, boat handling, and short-course racing. Great ice and nice winds greeted

us daily. We began our mornings with a stretching and fitness component led by my wife, Pam Madge, followed by a nutritional breakfast. We were on the ice by 9 AM every day and finished up by sunset. We logged up to 50 miles of ice each day.

After a healthy supper, we gathered for a video analysis of the day with lots of tactical discussion and banter.

In all, the participants in the first annual Thunder Bay Training Camp left feeling more confident in their boat handling and increased their speeds. It was a huge success.

Thanks to all the participants, especially Paul Chambers and Martha Croasdale, for traveling so far. Hope to see everyone again next year for some early season training.

"The best $300 Canadian you could spend. This fine craft came with 3 sets of runners and the first time ice boater was having a ball, and then I let him take my boat out. The seed was planted."
David Frost US5358

Western Challenge Photo: Kevin Barta

2022 WINN
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by:

& Jeff Kent

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2022 World Champion Robert Graczyk P-31
2022 Europeans 2nd Tomasz Zakrzewski P-55
2022 Polish Champion Tomasz Zakrzewski P-55 *(Gen6 mast)*
2022 Polish Championship 2nd Robert Graczyk P-31
2022 Grand Masters Champion Tomas Lindgren S-81

BE FAST BE COMPETITIV


NG DESIGN
CARBON MAST
P-31
VE
BECOME THE WINNER

Jane Pegel c. 1965

Tom Dawson 2021 U.S. Nationals
Photo: Gretchen Dorian

MAST EVOLUTION

HOW THE DN MAST WENT FROM STRAIGHT TO BENDY

During his term in 1992-1993, Past Commodore Bob Schumacher and class officers began to address the issue of DN mast specifications by instituting an experimental mast program. This article records how wood and aluminum masts evolved into various combinations of glass, carbon and epoxy that we see today.

THE PROBLEM

Bob Schumacher:
"When you have a single race on sticky ice in 20 mph of wind and over five masts fail, you have a problem.

When competitors bring two masts out to the start line because they don't trust their mast to survive, you have a problem.

When you are racing and have to avoid broken mast remains on the ice, you have a problem.

When competitors with aluminum masts are seen between races straightening bends out of their masts, you have a problem."

THE PROBLEM WITH ALUMINUM

Jeff Kent, in his article for July 2011 Seahorse Magazine, identified the issue with aluminum masts:

"...a soft aluminium rig would bend to leeward beneath the hounds and absorb gusts. Although it looked bizarre this proved quite fast and also made the boat more forgiving to handle. Unfortunately, these softer aluminium rigs had a limited life span

as the material wasn't able to handle the repeat demands placed on it by the dynamic nature of the DN. It was also not possible to fine-tune the bend characteristics."

THE SOLUTIONS

Bob Schumacher:

"There were many opinions about a solution. Change cross-section dimensions, cut slots in aluminum mast luff tubes to make them easier to bend, remove the wood requirement, make wood veneer masts, change the hound position, etc.

After talking to many sailors, there was no clear solution to making a durable, reasonably priced mast that was competitive but did not have a competitive advantage that would obsolete all existing masts. While some thought we were trying to solve a non-existent problem, we pushed forward, sometimes a very hard push.

Without a firm solution, we came up with the idea of the experimental mast program, allowing all class members to develop masts and race with them to test and show that they might have a solution.

EXPERIMENTAL MAST PROGRAM RULES

Bob Schumacher:

"We were firm in some rules.

1. The mast overall dimension rules would not change. We did want a narrower section that would give an aerodynamic advantage.
2. Minimum weight rules would apply to try and prevent high-end, lightweight, and expensive materials from being used.
3. A balance point requirement to prevent a light mast with a lead brick in the bottom.
4. All masts would have to be registered with the class, and have an experimental mast sticker issued by the class.
5. All builders would have to share what they were building.

After the experimental period, the rest is history. The mast rules were changed, with many builders selling masts in the $1000 range.

Unfortunately, over the years, more carbon has been used than we had hoped, and the costs have gone up considerably. But overall, the new mast rules have been a huge success."

RUNNER TRACKS TIMELINE
A lightly edited compilation of Runner Tracks Newsletter articles from 1992-1996 relating to the Experimental Mast Program.

1992

RUNNER TRACKS NOVEMBER 1992

Annual Meeting Proposal

Lou Loenneke and Tom Hamill have submitted the following proposal for discussion at the next annual meeting.

Eliminate c.2 g.8 from the Official Specifications.
c. 2 g. 8 After July 1, 1993 no mast may be used in which any half section of the mast contains more than 2 pieces of wood thinner than .080 (2 mm). None of the pieces thinner than .080 can be wider than 4" (101.6 mm). (Temporary Note: sections c.2g.1 and 3 will be reworded to remove references to veneers after July 1, 1993.)

Eliminate c.2 g.3 from the Official Specifications.
c.2 g. 3 When the wall is constructed by laminating wood veneers, the sum of the veneers must comply with the maximum and minimum dimensions of the wall thickness in c. 2g. 2

Commentary by Tom Hamill

In a world of consumption we have placed a huge demand on wood products. Clear, high quality hard wood has become to hard to find. Clear ash and sitka spruce are almost a memory. Clear now means only a few tight knots.

The most available hardwood in the world is birch. It's best use is in clear high quality veneers. I saw that in North Europe trees grow large enough to produce good lumber, but not so in North America. With the advent of the $1,000 plus carbon fiber mast, (Carbon fiber is expensive!) the birch veneers are a way to lower the cost of vacuum molded masts. 1/8" veneers force a 1/4" wall thickness that means carbon must be used! With 1/16" veneers tuning can be done with wood alone.

As a builder of wood masts, I hope you will take action so that these spars can be developed before we all have to build or buy carbon masts. Please don't wait for the 1993 deadline.

RUNNER TRACKS DECEMBER 1992

Commodore Bob Schumacher:

I have had discussions with many members of the class concerning our current mast specifications. These discussions include the following:
1-Go back to aluminum only.
2-Change or eliminate the wood requirement.
3-Allow for an all fiberglass production mast
4-Allow veneers.
5-Eliminate carbon fiber.
6-Simplify specs. to dimensions, weight and list allowable materials only.
As a result of these discussions, we are going to have an informal meeting at the World Championships to discuss masts and the mast specs. We should all keep in mind that ideally the mast spec should allow for masts to be home buildable or available commercially, durable affordable and equally competitive no matter who makes it. If we can meet the above standards then the class will thrive.

Annual Meeting Proposals

Proposal Change

The November 1992 Newsletter stated that Lou Loenneke and Tom Hamill submitted two separate proposals regarding the veneer mast issue. Only

1984 World Championship Photo: Henry Bossett

Tom Hamill submitted the proposal to eliminate c.2.g.3 from the specifications. Since that time, Tom has withdrawn that proposal. Both Lou and Tom still support eliminating c.2.g.8 from the specifications.

1993

RUNNER TRACKS FEBRUARY 1993

The Equipment by Eric Armstrong

Excerpt

Spars

The Hall spars built by Jeff Kent were certainly fast, but the interesting thing to note was that Kent and Bossett proved irrevocably that you don't need to bend your mast to the end of the Earth to go fast. Watching them sail you will see their masts bending on the average only about one third of the other fast sailors. Everyone agrees that bending your mast too far is slow, the question seems to involve, how full is your sail? The veneer masts built by Tom Hamill a few years ago were still out going fast and Jan Gougeon proved once again that it doesn't take a high-tech mast go fast. To taper or not to taper was a major difference between European and North American philosophy. North American's are tapering like crazy, and Karol Jablonski's mast was visually untapered above the hound. An innovative idea seen on the boats from Bay City, Michigan was to move the pivot point on the mast as far up into the mast as possible, and in effect, lowering the hound.

Minutes of the 1993 IDNIYRA Annual Meeting

January 27, 1993 The Abbey, Fontana Wisconsin

In attendance at the meeting were approximately sixty members. The meeting was called to order at 8:00 PM by Commodore Bob Schumacher.

New Business

US 294, Lou Loenneke presented his and US 4065 Tom Hamill's proposal to eliminate c.2g.8 from the Official Specifications. Lou explained that he felt veneer masts should be allowed by the class. There was considerable discussion on this issue. A suggestion was made by H148 Bart Reedijk that an article on how to build a veneer mast be published in the newsletter, since many were not familiar with this building technique. Tom Hamill agreed to write an article for the newsletter. A hand vote was taken to determine if the proposal would be put to ballot. One proposal opposed.

Mail Bag

The following letter was sent by Meade and Jan Gougeon to Bob Schumacher. It is one of the subjects under discussion for experimentation in the class. Ed.

We would like to add one more subject to the discussion agenda for the meeting on informal mast specifications that you are scheduling for the Worlds.

We believe that there is a single simple specification change that could be in stipulated in the DN mast specification that could accomplish the following:

1. Increase the competitiveness of aluminum mast.
2. Increase the life span of all masts no matter what material they are made of by reducing column loading.
3. Improve the competitive level of the class by making available to more sailors, fast, forgiving, leach opening rigs that would not require unusual capabilities to build, set up, and tune.

The single specification change necessary to accomplish these goals is the change H-13 from minimum hound location of 127 1/2" from base of mast to 111 1/2" from base of mast.

DISCUSSION

At present, the minimum hound location is about 68.5 percent of minimum mast length. The lower aspect DN sail shape dictates that over 80 percent of the sail area is located below the present minimum hound position. The resulting loads on the unsupported column of 10' 6 1/4" with a typically minimal 2" x 4" shaped mast section results in huge strain rates with present successful "bendy" rigs. No matter what the material, loading side walls to 7000 microstrains or more in reverse axial cycling is not appropriate if any reasonable life span is to be had. Both wood and carbon strain to failure at about 10,000 microstrains (one percent of dimension); glass fiber will strain further, but not for very many cycles. None of these materials can strain much further than 5,000 microstrains in a reverse axial condition for very long. Until we figure out a way to reduce the loads on the mast and still go fast (i.e. be competitive) we as a class are doomed to continue suffering with the mast problem.

The reduction of a minimum of hound location from 127 1/2" to say, 111 1/2" may not seem significant, but its impact is to reduce loads far more than the 13.5 percent reduction of the column length. Hound location at 60 percent rather than the 68.5 percent of minimum mast length, improves staying angle considerable, further reducing compression loads on the unsupported column.

The real payoff of this change would be to put more sail area above the hounds with the added advantage of being able to more easily bend the mast up high. With aluminum masts, we believe this is crucial to making them competitive again. Most competitive composite masts (what else can you call them at this stage) are built to be very soft above the hounds with the ability to dump the leach in the puffs. The sailor with the present untapered aluminum mast configuration has to fight the sheet line constantly and loses in the end to the fine tuned composite masts that now dominate the class.

RISKS AND COSTS TO THE CLASS OF THIS PROPOSED CHANGE
What we are proposing would impose minimal cost to any class member who would chose to adopt his rig to this stress reducing change. One only has to lower the hounds on a present mast and shorten existing stay lengths accordingly. Some composite mast owners may find that they will want to increase stiffness above the hounds to keep the leach from dumping prematurely. This can be easily done with the proper addition of unidirectional carbon or glass fibers.

Sails may need to be recut to take maximum advantage of the new bending mode that the masts will assume. This could be the expensive part, as the sail making industry would immediately start tweaking this new mast behavior with appropriate sails.

Ultimately though, sails don't break, masts do, and they cost a lot more than sails if you have to buy a competitive one, I think the risk of making some sails obsolete is a small price to pay if we can make aluminum masts competitive and composite masts more long-lasting.

HOW COULD THIS PROPOSAL CHANGE BE EVALUATED AT LOW RISK TO THE CLASS?
We suggest a one time authorization be given by the class to those sailors who would like to incorporate these changes in their rigs for the 1994 DN North American Championships. participants would be aware that the class may not adopt the changes permanently beyond the 1994 DN North Americans and they would have to change back to original specifications.

One goal would be to encourage some of the better skippers, with the sail makers help, to tune up various commercially available aluminum selections, then race at the North Americans to see how they stack up. At the end of this experiment, the class can then make an informed decision on permanent adoption of this change.

These are the basics, hope we can have a fruitful discussion at the worlds to get more details about this potential out on the table. Sorry to add to your list, but we think this approach has great potential to solve some of our basic problems.
Meade and Jan Gougeon

RUNNER TRACKS MAY 1993
Experimental Mast Policy
The Governing Committee believes that there are the following problems with masts.
1) Competitive production masts have become too expensive.
2) Aluminum masts are no longer competitive.
3) Many masts are not home-buildable without special equipment or skills.
4) Many masts are not durable enough.

We feel that these problems are not good for the DN class. In order to find a solution to these problems we think a three (3) year experimentation period from Oct '93 to April '96 must be allowed. At the end of the three year period all experimental masts will be evaluated and any which appear to benefit the DN Class will be submitted as a specification change to be voted on by the Class. It must be emphasized that we do not want faster masts! We want less expensive, more durable, and easier built masts.

We would like to make the following proposal for discussion only:

For the period from 1 October 1993 until 1 April 1996 a DN may be sailed in all regattas except the World

1984 World Championship Photo: Henry Bossett

Cup with a mast that does not meet the current specification if it meets the following requirements:
1) All experimental masts must be registered with the North American. Secretary or the European Commodore 30 days prior to their use.
2) A brief description of the construction materials and methods must be included with the registration.
3) All experimental masts will be marked with an identification label provided at registration.
4) A description of all experimental masts registered will be published in the class newsletters.
5) The following will be allowed:
Aluminum masts
A) the hound may be in any location.
B) tapering above the current hound position will be allowed.
C) any material currently allowed may be used for reinforcement (carbon wood fiberglass etc.)
Other masts
A) any material currently allowed may be used.
B) there is no minimum thickness of wood.
C) minimum weight is 18 lbs All masts
A) diamond stays are allowed
6) If while racing in the NAs or EC the governing body for the regatta feels that an experimental mast being used might be giving the competitor an advantage the competitor will be required to stop using the mast immediately.

The goal of this policy is to explore new construction materials and methods which will allow cheaper production masts, more durable masts but not faster masts than are currently available. The Governing Committee feels that it is very important that these masts be allowed in the NAs and EC so that as many members as possible get to see the masts, learn how they are made and inspect them carefully. It is also important that they be clearly marked and written about in the Class newsletters.

The European Secretaries and Commodore disagree with the use of experimental masts in North American and European Championships. They are concerned that some sailors will produce masts under this policy that have a competitive advantage and will therefore upset the results of the regatta and ranking system. We would like to have your opinion on this issue.

The Governing Committee will have to aggressively control this policy for it to work. We do not want, and will not allow faster masts, or masts using high tech expensive materials to be developed under this policy for permanent use in the Class. If the Governing Committee feels that a mast may be giving the competitor an advantage over masts which meet our specifications than the mast will not be allowed in (or continue to be used in) the regatta.

RUNNER TRACKS SEPTEMBER 1993

Minutes from the 1993 European Secretaries Meeting

Item 20 Experimental Masts
The US outlined their position which is:

- Aluminum Masts are no longer competitive
- Home building is difficult if there is inad-

equate knowledge.

- Costs of competitive masts are high
- Rates of mast breakages are high.

The US also emphasized that their objective is not a higher speed mast but rather a search for an inexpensive production mast. The experimental period is proposed to be October "93 to April '96. Experimental masts should be registered 30 days before the intended use, and materials and construction method declared. They should be marked and descriptions published.
The meeting agreed and supported the concept, but could not agree the proposal to use experimental masts in the Worlds or the Europeans. Use in national championships should be at the discretion of the national commodore.

Under the experimental mast program the following is allowed:
Aluminum Masts
-The hound in any position
-Tapering above the current lower hound position
-Reinforced with any material currently allowed (wood, fiberglass, carbon, etc.) -No minimum wall thickness

Other Masts
-Any material that is currently allowed to be used with no minimum wall thickness
-Minimum weight 18 pounds
All Masts
-Allow diamond stays

Comments by Tom Hamill
This article was to be my description of the veneer mast that was constructed for a short time and then outlawed as too radical. I'll talk about the mast, but first I would like to bring up what to me is the real question to be answered.
Do we really have a problem with masts in our class? Let us take a look at the experimental mast policy that is proposed in the newsletter.

1.Competitive masts are too expensive. Too expensive to me means that it could be done cheaper. The truth is the price is too low or we could get a composite company (like Hall Spars or Offshore spars) to build them for us. The facts are the cost doubles if you put it out for bid, and they want to produce a run, [and]not wait for a phone call to maybe get an order for one spar.

Jane Pegel c.1965

2. Aluminum masts are no longer competitive. No one in the current class can say that for sure. I have no knowledge of anyone doing the research to get one going. You can not pull out a mast of any type and hope to do well today without R and D. The masts that I build or Jeff Kent or ??? are the culmination of research and money spent, no funding from the class or government. No tax credits, just an interest in taking a project forward into production. I can look in my shop and see the piles of tests that still hang out taking up space. I can remember the all-nighters trying to get a process figured out to be able to go on to the next step. Who are the sail makers that are building and racing those aluminum spars so they can pass on the tuning tips and develop the new sail shapes? Where are those individual sailors that are spending their nights and dollars studying the rig and boat to make it possible to sail an aluminum mast competitively? I know! I can remember that if the wind was puffy or the ice rough you had better be in shape because [you are] going to saw that sheet in and out and in and out and in and out. I remember the piles of bent extrusions. I also know what an extruded mast costs, and how many hours (seconds) it takes to produce it,

and how many hours (or seconds it takes to destroy it). If our wooden masts are priced the way aluminum spars are, $1,500 would be a reasonable price for hours and materials.

3. Many masts are not home producible. I'm afraid to tell you but the classes two largest suppliers work out of their homes with tools and equipment they built at home. I would say that no mast is home buildable without the commitment of time and money period. 100% of all wood spars are built at home and no aluminum masts are.

4. Many masts are not durable enough. That's the biggest bunch of baloney I ever heard!!! If you don't think so let me tune your boat for you at the next North Americans and I'll put money up that no matter which mast you put up you will not be able to make it even bend much less break! Masts don't fail! The sailors are pulling them in half!!!!!! It's up to you to tune not to break! If you want a mast that is soft enough to bend and make sailing a wonderful experience you must take responsibility to not sheet the mast into pieces Now for the part I can't understand at all. If you spend your time and money to build new mast this under the Experimental mast proposal; if it works and it takes care of the problems the G.C. is worried about-i.e.lets say your new invention is cheaper and won't break under any conditions, You had better hope that it's not fast or you will be thrown out.

Does that make sense to you? It doesn't to me, I know because I developed a cheaper mast that would have lasted (if developed) and it was fast, yep and it was thrown out.

Now I have requests for information on how to build this illegal spar, and I have to try to look past the fact that Jeff has refused to talk about his spar to the class, and that I lost a lot of money doing the work to produce those spars. For this reason, I will not be able to give you all the details and the fact is, I wouldn't build that exact mast again. What I will give you is some guide lines.

Even though I did vacuum mold my spars I don't think that I'm qualified to tell you how to do pressure molding. Since I stopped molding the spars several people have come up with better ways to do the molding, but I can tell you I found out what I needed to know by reading the Gougeon Book on vacuum molding and by visiting large operations that do vacuum molding. For the original tooling I used a bent Norton aluminum extrusion that I jumped on till straight, cut it off at the hounds and made a tapered tip of wood [*Editors note: Deleted a large portion of letter about how to make a stripper mast.]*

I don't really feel there are any secrets in the mast business. It's all up to you to put the time and energy into your sport. I constantly hear sailors complain about their not having the latest spar or sail and can't compete and then I find out they don't even have a way of sharpening their own runners or doing alignment.

That's how you can really go fast, (or slow). If you read Henry Bossett's article on the worlds this year you would notice that he had, "The right runners" and I'm pretty sure that Jeff Kent also had a set of long lead flat runners. Being from Michigan I am not sure we would have a runner like that in our quiver (now I will) It seems this runner is probably developed on that salt ice on Barnegat Bay.

I wish that I could tell you how to build a world class mast on paper but I have to just say YOU WIN THE RACE IN THE SHOP. That's where the fast iceboaters and iceboaters without ice spend their time. Get that alignment right. Get a good selection of runners and keep updating your equipment Stop making excuses and make saw dust instead. Be more realistic. Know your real position in the fleet and try to improve it with hard work and by sailing every chance you can and don't expect to beat Ron Sherry if you don't put 10-15 hours a week tweaking your old equipment and preparing the replacement parts before you need them. Ask the fast guys questions. I can't believe all the people who complain to me about high-tech equipment but never even ask one question about how it's made. It's made at home in my garage. It's made by hand with the help of molds and fixtures. It's made because,... well because Its fun!!

If you are still of the opinion that we should only have aluminum masts and no development to increase the speed maybe [you are] in the wrong ice boat. They make a boat that's called "The Skimmer" I think that's what [you are] looking for. Aluminum masts only and one set of runners. It's very one design, it's not fast, and it isn't any faster than it

ever was. Of course, the class isn't raced nationally or internationally, and if the wind is light, it won't sail (like the DN used to be in the beginning) and if the wind blows too much (about when modern DNs are really fun) all you can do is broach around the lake and break parts (Just like the DNs used to.)
Let's start dealing with our class as we should. The best damn sail boat for racing in the world. Home buildable and CHEAP!!!!!

Sheet in and Max out!
Tom Hamill

Comments by Doug Raymond Chickwaukee Iceboat Club Commodore
I may be missing something but this is my reaction. I have been trying to go faster. That is the focus of any DNer. I want to win. Why should I build a heavy slow mast and finish at the back of the pack? Altruism?

There is no quick easy fix. There are no total solutions to the problems confronting the class. From my point of view, I have to admit the Europeans were right all along. Carbon fiber, for all its merits (I use the stuff myself) has been a blight on our class. It's time we Americans fessed up and admit we were wrong we screwed up you (the Europeans) were right. Ban all carbon fiber from the class starting 94-95. OUCH! Just like kevlar, no carbon fiber. Period. That's a start that will head us back to normalcy. In the long run the class will be better off.

1994

RUNNER TRACKS JANUARY 1994

DN Experimental Mast Update by Bill Condon Vice Commodore US 4099
So far we have received 13 applications from sailors and manufacturers to experiment with the DN mast section. The following are some of the applications requested for experimentation:

1. Lowering mast hound height on both wood and aluminum sections. Height to be lowered up to 14" from present location.
2. Tapering the aluminum section of various manufacturers above the mast hound.
3. Addition of a second set of side stays that are adjustable.
4. The addition of a diamond stay.
5. Foam core or foam filled, carbon fiber section.
6. E-glass and polyester resin, vacuum molded section.

Since the season has just started, we have not received much feedback as to the viability of any of the above ideas. Once the sections have had a chance to be used on the ice awhile and either "make or break", we will start looking at the mast sections to see if they will be beneficial to the class.

The experimenting with the mast sections has just started. The program will run for two years. The ideas are starting to come in and the building is underway. It looks like the program is off to a good start. If you have an idea, don't hesitate to get an application and start building.

RUNNER TRACKS JUNE 1994

Minutes of the 1994 Annual Meeting
A report was given by the Vice Commodore, Bill Condon on the status of the Experimental Mast Program. [He} reported that there were currently fourteen applications and approvals for such masts.

1995

RUNNER TRACKS NOVEMBER 1995

Officers Corner

Experimental Mast Program

As discussed at the last annual meeting, the experimental mast program was not really tested and needs to be extended for another two year period due to the lack ice time over the past two years. A ballot to extend the program is a in the newsletter. I still think this is a good idea and some new ideas still need to be tried.

As with any new program, there no clear-cut answers to the problem. The question raised at the annual meeting was to possibly change the mast dimensions for experimental mast to allow for smaller than 2" width of the mast. The reason being, that carbon seems to respond better at perhaps a 1.5" or 1.75" width. But here lies the problem. I have spoken to many, many people and all agree that if the mast were allowed to this new size it would immediately make all the old masts obsolete. No matter how slight, there would be an aerodynamic advantage over the old masts. Secondly, and this had a different response from different people, sails would most likely need to be recut or made new. A new mast and possibly a new sail?... an expensive proposition. This was not the intent of the experimental mast program. The program should be allowed to continue as originally intended with the same parameters: weight, balance point, dimensions, etc, which all act as limit the 2" by foam, veneer or other material. Let's remember the intent of this program... a more durable and cost effective mast section that can be mass produced and available to all.

RUNNER TRACKS DECEMBER 1995

Spars: Time for a change. By Jeff Kent US 3535

As one of the leading spar builders in the DN class, I have witnessed many creative attempts to develop a fast spar that will last for many seasons. Many of which have been my own. I have never seen one that lives up to those expectations. To date I have built well over 200. Of these, all of them are reinforced with composite fibers, the majority being carbon. These masts have been more successful than most due to their relative durability combined with proper bending characteristics. In the 1995 Gold Cup, 8 of the top 15 boats including the winner sailed with them. By no means are they the long term solution! These masts have a limited life, better than most but not acceptable by my standards. They are also very expensive to build. Time for change!

I am not the only one of this opinion. Over the years there has been much discussion of what should be done with this sensitive issue and how it may affect the future of this class. In North America, an experimental mast program has been in place. Many good ideas are being tested and some of them have shown reasonable results. All of these attempts face the same obstacle, the 2 inch width specification.

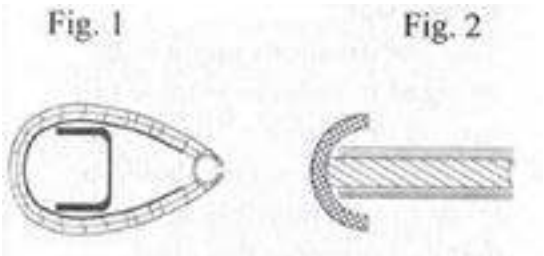
The style in which the DN is sailed currently requires the mast to be very flexible sideways. This induces compressive stresses greater than a section shape at 2 inch can handle while using the specified materials: wood, aluminum, etc. This is the real issue we are facing as a class.

The minimum specification of the spar at 2 inch has to be modified in my opinion. The sooner we face this issue head on, the quicker we will have masts that are consistent in production, predictably fast, durable and most important reasonably priced. When this is achieved we will have made great progress.

Existing construction method: There are many methods currently used in building the DN spar. They all have 1/4 inch or greater wall thickness (if wood). Some are pure wood, wood veneers, wood with glass, wood with carbon, or some hybrid of these materials. The method I use and am most familiar with is the later of these. I am of the belief that my approach is one of the most technically involved.

Five years ago I left the traditional method of making masts with port and starboard halves. I developed female molds in the fore and aft direction. By doing this I hoped to overcome several issues. First the joint between the halves is now on the sides where the shear loading of the joint is very low as compared to having it on the f/a centerline. Second, it was now very easy to mold the bolt rope tunnel in one step while laminating the mast. The wood I use is two layers of 1/8 inch western red cedar veneers that are cut into 1/2 inch wide

strips. These are vacuum molded with epoxy at room temperature with double bias glass +45°/-45° orientation on both the inside and the outside surfaces. The luff tube consists of an alloy tube 1/2 inch diameter x.035 inch wall. One 1- 1/2 inch strip of unidirectional carbon tow is placed on the forward edge of the mast for improved f/a stiffness. The two halves are trimmed while in the molds prior to demolding.
They are bonded together with a carbon "U" channel (fig. 1). This channel member is only 1.4 inches at it's widest point. It is constructed with unidirectional prepreg carbon tape and cured in an autoclave 250° f at 90 psi., 6 times the pressure of a standard vacuum bag. The carbon is specifically tapered in thickness along it's length to develop the proper bending characteristics needed. I consider this to be the major structural member of the mast even though technically it is not. A good example to prove this is last year at the Gold Cup. My own mast developed severe horizontal cracks throughout the outside wall stopping at the "U" channel. The mast did not fail. In fact it has been sailed much harder than at the Gold Cup and still is sailing, cracks and all.



That example proved to me in real terms, not theoretical that the specifications must be changed. To go to the extreme case at the end of last season, I built and tested a class legal mast (fig. 2) that was structurally only 1 inch wide. Shaped like a mushroom, it consisted of a 1/2 inch x 3-1/4 inch piece of cedar 16 feet long. On either side of this I attached 2 massive plates of tapered autoclaved carbon fiber 1/4 inch thick x 3-1/4 inches wide x 16 feet long.

On the front was attached a 1/4 inch thick semi-circular wood nose. This nose brought the mast into compliance with the rules! I sailed the mast and it was too soft for my weight however it was impressive with it's ability to bend excessively up to 2-3 feet! The wood nose section at 2 inches width disintegrated from bending compression during sailing although the spar's integrity is still intact. This further reinforced my conclusions that the masts need to be narrower in order to be durable.

Conclusion:
The specifications ought to be changed in order to resolve this instead of putting a "Band-Aid" on the issue. Firm action should be taken in a responsible approach that will preserve this class. Choose a direction that will provide a specification that allows long lasting masts that are high performance as well as less expensive and more commercially available.

Proposed Specification modifications:
My suggestions for changes to the specifications of the mast are as follows:

- Reduce minimum width of masts to 1.75 inches (44.45 mm).
- Remove mandatory requirement to have.25 inch wood walls (wooden mast), keep wood as optional material. Allowed mast materials (structural); alloy, carbon, glass, wood, and adhesives

Arguments:
A major concern that many will have to the proposed changes of the width and materials is that your existing equipment may become obsolete. Whether it is a performance increase or just a durability issue the answer is realistically, in time Yes! Nature will take care of them for you regardless if the specification is modified or not!

A complete 100% composite autoclaved carbon mast will cost about $ 1,100 US as compared to $1,800 for one of my current models! It will last multiple seasons and in the long run it will prove to be much less expensive to own than what you may currently have. Certainly less aggravating. I would also expect that there will be several new commercial sources forte them as well. Since they are not so prone to fail and that they are considerably simpler to manufacture, more interest will be taken by existing composite spar companies worldwide. If you home build your own, this change will improve the results of your efforts for the very same reasons. With materials available to the average home builder, a very competitive and durable mast will be much easier to build. You will spend more time sailing than picking up the pieces and putting new edges on your ruined leeward runners.

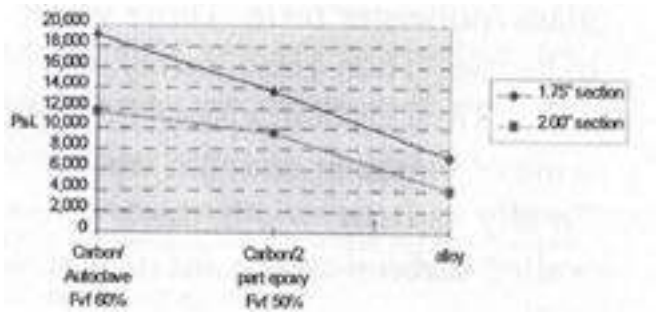
Tuning this type of mast shall prove to be more accurate since greater amounts of material will be needed to be added or subtracted for a given change in stiffness.

In engineering terms, the improved durability can be demonstrated. The attached data shows three examples of two different mast sections. They are, a 2 inch wide section like a Kenyon wing (fig.3), and the second is a 1.75" wide section as per section shown (fig. 4). The only variable is the materials and the curing process. All laminates were designed to resemble the alloy mast for equal stiffness, 4.21 inches of sideways bend. The results are shown as a load needed to fail a sample wall section of the sidewall 1.5 inches in fore and aft length at the mast's widest point due to compression developed in bending.

This was accomplished by designing specific angular orientations of the fibers in each of the mast's laminates. This is the best method for tailoring a composite's mechanical properties to suit the loads it is intended to react. The most common characteristics controlled by a specific laminate are as follows; overall stiffness, compressive strength, torsional strength, and section shape stability.

With these calculations, an "apple to apple" comparison between the different mast sections and their ability to handle compressive loads can be demonstrated.

The variable in width and related wall thickness controls the ability to handle bending compressive loads as shown. These examples only take into account compression due to bending, not local wall buckling. In turn, the narrower the width of mast the thicker the wall is required, which then reduces local buckling issues.



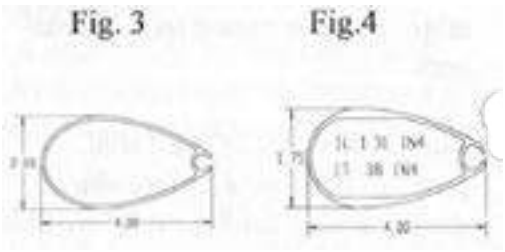
In all cases the 1.75 inch section had a much greater capacity to accommodate compressive loads. The actual increase in compressive strength was between 140% to 180% for the three examples

An S-glass laminate was not shown due to insufficient ability to have the required stiffness with the given wall thickness of the drawn sections. Sufficient glass laminates will show similar increased performances with increased wall thickness. One must consider this information as an example showing a great potential increase in durability with a narrower section regardless which material is used. With composites utilized, depending on type, as compared to an aluminum Kenyon wing mast, the increased ability to withstand compression is dramatic.

This all means longer lasting, durable masts! Sailboards have gone through the same evolution. Early on, they used aluminum spars. Those failed. Then they used glass/polyester resin. Those were to brittle. Then glass/epoxy, too soft. Then carbon/epoxy, but too wide of diameter and thin walled. Finally narrow width, thick walled carbon/epoxy masts that last!

A 1.75 inch section may look like the following (fig.4). This one that is drawn has the same stiffness as a Kenyon wing alloy mast. This section would be very simple to make in composites. Much simpler than any DN mast I currently produce.

Fig. 3 Fig.4



Response:
My hope is that this information is the start of a real movement to make a positive change to the mast specifications and related issues. Long term, I believe this will help strengthen the DN class, will enable new sailors to come into the sport, and start off with a highly competitive boat ready to race. This will eliminate the existing need to either spend much money on fragile masts or spend many frustrating years learning the quirks of building them by trail and error.
Jeff Kent

1996

RUNNER TRACKS MARCH 1996

Minutes from the 1996 Annual Meeting

3. Specification Proposals -
a. Mast - The mast specification change has been written and will be submitted as a proposal to the membership. The basic idea of the change is to get rid of the wood requirement and allow the use of certain materials. The masts must be built with the same dimensions and weight requirements.

A general discussion about the Mast Specifications continued with comments and suggestions from Bob Dill, Jan Mike O'Brien, Bob Struble, Ron Sherry, Mark Keifer, Andre Baby and Bill Condon.

Through the discussion, it was determined that materials should be defined in the specifications and not left unlimited. Part of the problem is the masts being cost prohibitive. The intent of the new designs is to be able to build or buy a mast that will be able to withstand multi-day regattas without breaking while keeping the cost reasonable. The question was asked if additional stickers would be issued for the Experimental Masts. The answer was that no more stickers would be issued for current designs. The Experimental Masts can be used in the North Americans and Gold Cup, unless they are banned. Make mast designs for all experimental masts available to the Technical Committee.

It was agreed by unanimous vote that the Revised Mast Specifications would go to ballot. The vote would need to be 2/3s majority to change it. The new Mast Specifications could be in effect for the 1996-1997 season.

Jan Gougeon US 1183, suggested that we vote on the lower shroud issue next year. He will put it in proposal format and submit it under mast or rig.

1996 Proposal & Ballot Explanation
Change 1:
REASON: The purpose of the change is to eliminate the wood requirement and the confusing, hard to enforce, wood-related specifications. The change keeps all dimensional minimum weight and center of gravity requirements the same. The change allows only the use of stated materials. will make it easier and less costly to build durable masts for suppliers and home builders. Old wood masts with compression failures can have sidewalls replaced with composites that will last and last. Several experimental masts made of fiberglass have proved to be extremely durable and less cost to build. Bob Schumacher has built several fiberglass masts, and has personally used the same mast for three years. Ron Sherry built 12 fiberglass masts this winter which were raced for 14 consecutive weekends including several Wednesdays and Fridays. These masts performed well in a wide range of conditions. None of the mast have failed even though they have been raced in 30+ knots of breeze on several occasions. (Note: If the mast proposal passes, an interpretation dated July 1, 1996, will read as follows. "Masts built prior to July 1, 1996, shall be considered legal if

they meet prior specifications.")

RUNNER TRACKS AUGUST 1996
From Commodore Bill Condon report from the 1996 European Secretaries Meeting

The meeting was attended by representatives from Poland, Germany, England, Sweden, Denmark and Netherlands. The main focus of my attending the meeting was to explain the proposal to change the mast specification, the pros and cons, and discuss the benefits that should follow.

During our discussions on mast building, Andreas Muller-Hartburg from Austria made a good point and one that must be watched if it develops. That is, if it becomes very "high-tech" to build a mast section (i.e. only with the use of autoclaves, very high pressures or some other "exotic" building system) that goes beyond the realm of our "home build ability" then the executive committee must look at the impact that may have and act accordingly.

The consensus of the meeting was to seek approval from the class to accept the new mast specification. As you can see from the ballot results, the new mast specification has been approved and, hopefully, it will perform as expected. I believe this is a major step forward in utilizing new materials as they are developed.

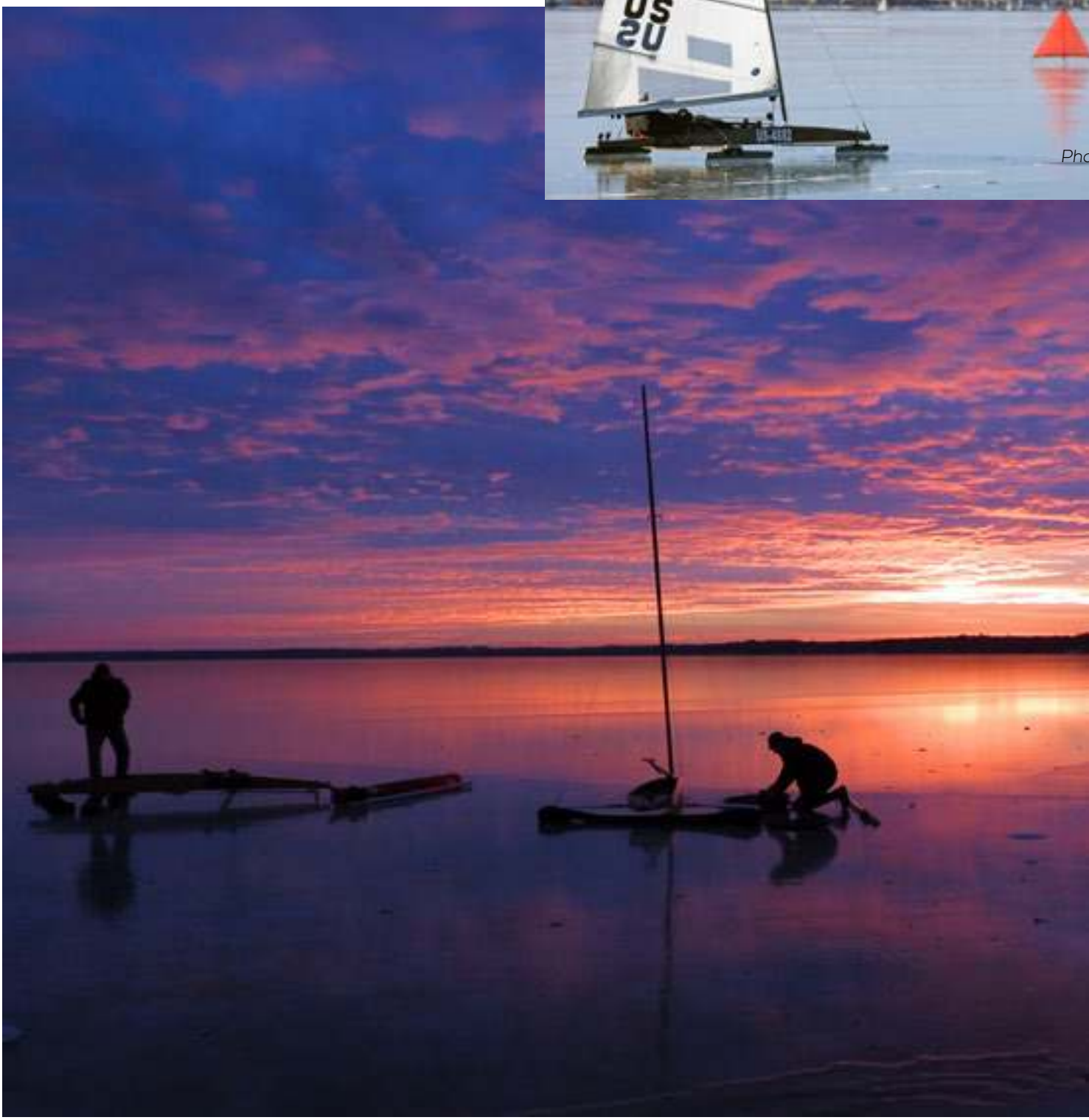
RESULTS OF THE 1996 SPRING BALLOT

NAME	Mast Specifition		Check Wire Spec.		Throwout		"Bart Rule"		Increase Dues $15	
	YES	NO	YES	NO	YES	NO	YES	NO	YES	NO
US Totals	161	11	174	3	149	23	162	13	164	11
Canada Totals	8	0	8	0	7	0	7	0	8	0
North Amer Totals	**169**	**11**	**182**	**3**	**156**	**23**	**169**	**13**	**172**	**11**
Late Ballot Totals	4	0	4	0	2	2	4	0	4	0
No Names Totals	3	2	4	1	4	1	4	1	2	3
Swedish Team	27	2	29	0						
Findland	7	0								
DN Nederland	106	3								
Austria	31	1	32	0						
German Fleet	91	2	93	0						
Denmark	13	0								
Latvian	3	8	2	0	2	0	2	0	2	0
Germany	4	1	4	1	3	2	5	0	2	2
Holland	3	0	2	1	3	0	3	0	3	0
England	5	0	5	0						
Switzerland	2	0	2	0	2	0	2	0	2	0
Europeans Tot	**292**	**17**	**169**	**2**	**10**	**2**	**12**	**0**	**9**	**2**
Grand Totals	**468**	**30**	**359**	**6**	**172**	**28**	**189**	**14**	**187**	**16**

OUR IDEAL

THE GREAT WESTERN CHALLENGE
Lake Minnewaska in Starbuck & Glenwood, MN.
Photos: Kevin Barta & Deb Whitehorse

Pho



oto: Kevin Barta

Photo: Kevin Barta

DNers from California to Nova Scotia and even Europe made their way to Lake Minnewaska in Starbuck, MN, for the 2022 Great Western Challenge.

Mother nature rewarded them with the most exquisite ice many had ever seen. When snow covered the primary sites, Minnesota sailors continued the hunt for ice. Dirk Siems, one of the GWC's well-known ice scouts, just happened to be visiting his daughter in Glenwood, MN (on the north end of the lake.) Mike Miller asked him to check the lake; the rest is history.

The welcome from the Starbuck and Glenwood residents was so warm that the ice was in danger of melting! Everyone ooohed and aahed over Pat Heppert's blue C Skeeter that became the super model of a photo shoot. Early each morning, Pat loaded the marks in his Skeeter, set, and sailed a course.

Sailors self-selected themselves into A and B fleets for some scrub racing with plenty of fast laps. As per GWC tradition, the no-scoring policy allowed sailors to try out gear and change settings and tactics. Everyone there will remember the 2022 Great Western Challenge as one of the best in recent years.

Photo: Kevin Barta

Canadian sailors were all smiles after an epic day of sailing.

Composite Concepts, Inc.

iceboatracing.com

Racing DN Ice Boats & Components

Over 27 years of continuous technology development and improvement. Our latest winning combination is the Prepreg Mast and the new Balsa Core Plank. See you at the Finish Line!

First Place U.S. Nationals 2021 & 2022

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