

Next "Dead Line" for HB is March 25th, THANKS SO MUCH FRIENDS!

## President IRCWCC

I hope everyone had a safe and happy holiday season. The new year, I hope will be the best battling season the great IRCWCC has ever had. The internet mail group seems to be loaded with rookies asking many good questions, and getting great responses from the veteran captains. This year might bring the largest rookie crop into our hobby ever. It should prove to be a most interesting season.

I really hope all our captain's are paying there due's as soon as possible this year so we can get everyone an assigned frequency as soon as possible. It will also help out our Freq. csar. and treasurer to know who will be taking to the pond this year. You must all remember that the E-BOARD is made up of volenters, and do there best to take care of everyone as soon as possible. Let's all do our part to help them out.

Mother nature must have known I needed some boat building time so she decided to dump 17.5 inches of the fluffy white stuff on us. Great for boat building, bad for the back.

Spring is not to far away. That means that the sound of bb's crushing balsa, and hull's imploding is not to far off, and I can't wait.

On a personal note the great Herr Fluegel made some comment in the last Issue of Hull Busters that he was thinking about putting the newsletter to sleep after 20 years. I hope that this is not the case. I can't wait to get every issue. I have been getting them for 13 or 14 years and still keep everyone i've gotten. Maybe he dose'nt realize what great enjoyment people get from them. I hope he keeps publishing them for many years to come. It is a very important part of the hobby. If this tradition dies whats next, having fun at the lake? We all need to help him out with articles and pictures.

Please do not let this vital part of the hobby die.

Sincerely  
Steve Andrews  
President IRCWCC



## MODEL WARSHIP 1601 COMBAT - GEORGIA NATS 2000

MWC's Nationals will be held July 9-14, 2000, at the Georgia National Fairgrounds and Agricenter (GNFA) in Perry, GA.

All participants will need MWC membership and liability insurance coverage through Sport Flyers of America. And you should know that only surface allowable frequencies are permitted at MWC functions.

Our motel is the Quality Inn, Perry, GA, 1-800-422-1345, and the cost per room is \$49.95 plus tax with 1-4 occupants per room. All rooms are ground floor with at-the-door parking and you must "guarantee" the first night's lodging when you make your reservation.

The Nats fee is \$85 if paid by April 1, 2000, and \$100 thereafter. CO2, wooden picnic tables, and a 40' x 80' canvas tent will be provided at the battle site.

This fee does not include lunch at lakeside. GNFA does not allow us to cater food or drink. There will be a concessions coach at lakeside and several fast-food establishments are within a couple of miles. Of course, you are free to bring your own foodstuffs for yourself and your family. Nor does this fee include the cost of your meal at the Awards Ceremony. Each individual will order from the menu at the restaurant located on the motel grounds,

Nearby attractions include the National POW Museum at Andersonville, GA and the Museum of Aviation on Robbins AFB at Warner Robbins, GA.

Make your check payable to Model Warship Combat and send it to Rick Whitsell, 9829 North Highlands Terrace, Kansas City, MO 64155. Also, tell Rick which ship(s) you will be fighting and what your surface allowable radio frequency will be. Maps and an information packet will be forthcoming.

Y'all come!

Bart Purvis

(912) 367-7306

purv@altamaha.net



## Rule proposal: IRCWCC

Change the statement in rule III.B.11:

Ships in Classes 7 through 4 which change any batteries (other than receiver batteries) will be penalized (for penalties, see section on scoring).

To:

Ships in Classes 7 through 4 which change or recharge any batteries (other than receiver batteries) will be penalized (for penalties, see section on scoring).

Okay, the above proposal will go in with the following proposers

Marty Hayes, Paul Broring, Orrill Ferguson

## 2000 IRCWCC Radio

### list

chris

Well, after many late nights, long email conversations, a significant phone bill, and many heated debates, the IRCWCC Radio List is now updated and ready for viewing and comments.

As many of you know, one of the duties of the club vice president is to maintain a list of the active members of the club and the primary radio they own. Since many of our members enjoy both surface and air hobbies, we decided some time ago to maintain one complete list to allow for easier maintenance.

An active captain needs to meet two criteria:

The captain must be a member in good standing during the previous year of the IRCWCC. That is, To be on this current list, the captain must have paid there club dues during 1999. Exceptions to this rule are rookies and new members.

The captain must have participated at a sanctioned event during the previous year. Again, exceptions are made to rookies and new members.

I have tried hard to ensure that the captains removed from the list are in fact not active. That being said, it is possible that I removed a captain that was in fact still active. If this happened to you, please contact me as soon as possible, either through email: cdecker@ptc.com or by phone 781-398-5966 so we can correct the problem. The quickest way to be removed from the list is to not pay your dues for the previous year. If you didn't participate in a sanctioned event during 1999 but paid your dues, I left you on the list for now. But be advised, I would expect that you will be removed from the list if you do not attend an event during 2000.

Just because a radio is not spoke for on this list does not mean it is available. Please contact me for a radio suggestion before you purchase a new one. That way, we can make sure the list stays up to date

11		63	
12	ORRIL FERGUSON WV	64	STAN WATKINS TN
13		65	
14	NATHAN BLATTAU MD	66	
15	TED BROGDEN OK	67	CHRIS GROSSAINT CO *
16		68	DON FISHER MA
17	FRANK WHITSELL MO	69	
18		70	WILLARD ADAMS MO *
19	DAVID HAYNES TX	71	STEVE MILLHOLLAND MO *
20	ERIC STEIMBERG MD	72	David Tuttle CT
21	RON THIBAUT SC	73	ROBERT SMITH FL *
22	MIKE BLATTAU MD	74	PAUL BRORING MD
23	MIKE TORDA NC	75	JOHN OSBORNE TN *
24	JOHN BOYER MD	76	DAVID RICCI MD
25		77	BOB AMEND MD
26	DAVID VOUGHTMAN MD *	78	FRANK PITTELLI MD
27		79	CHRIS DECKER MA
28	CAM MOURY MD	80	Chris Gamily MA
29	DOUG TORDA TX	81	ADAM THIBAUT SC
30	RON HUNT NC	82	DAVID LAWRENCE MD
31	CAMERON HUNT NC *	83	DAN McGUFFIN CAN
32		84	KURT LEWIS MD
33		85	DAVID LEWIS MD
34	JIM PATE TX	86	
35	STEVE PAVLOSKY MD	87	
36	RICH MACELROY MD	88	JOE KUTZ TX *
37		89	GEORGE GOFF FL *
38	TIM FILEMYR MD	90	MARTY HAYES MD
39			
40	CURLY BARRETT MN *	A1	AXIS CONVOY
41	DON COLE FL *	A2	AXIS CONVOY
42	MIKE MILLETE MD	A3	AXIS CONVOY
43	CODY MILELTE MD	A4	ALLIED CONVOY
44		A5	ALLIED CONVOY
45		A6	ALLIED CONVOY
46			
47		H1	BART PURVIS GA
48	CHUCK ????? MO	H2	DANNY BOYD TX
49		H3	GERALD ROBERTS TX
50	LIEF GOODSON FL *	H4	MIKE ELLEDGE FL
51	ALLEN TORDA TX	H5	Fluegel, on 53.05
52	WADE KOEHN LA *	H6	BART PURVIS GA
53		00	PATRICK HANSLIT MI
54	STEVE ANDREWS MD	01	CHRIS PIERCE TX
55	TOM TANNER MD	02	
56		03	
57		04	BRIAN MULLANEY NJ
58		05	Fluegel, on 53.05
59		06	
60	LARRY RICCI MD	07	
61	BOB POTTLE NS	08	
62	WILL MONTGOMERY MD		

## New Clubs New Rules.

Fluegel

I have been asked what passed on the new clubs ballet. Well, nothing. I think the way the club was set up, 2/3's of the

members had to vote for a new rule. Not 2/3's of the battlers, but the members. That's probably been changed to "eligible voters" or members who have battled in a sanctioned event in the past two years. I am only speculating here.

Also, you Prinze Eugene fans (that's all of us!). The new club has increased its

units by allowing her to have a half unit gun or pump. Formally the half unit was to only be used as an additional 25 bee bees on a full unit gun to make it a 75 shot gun. I would have not voted that way, but the rules had contradictory comments, allowing either interpretation, and the BOD chose the more powerful interpretation.

# The Rookies Ship

Marty

I don't know how many discussions I have heard or been a part of about what is the best boat for a rookie to build. I don't think I have found the ultimate answer yet either. But perhaps if I summarized the discussions it would help.

Our standard answer in days past was always "Build a cruiser". Our reasoning was that if the ship had fewer units the rookie would not be inundated with very many systems to keep going. Also the cruisers faster speed should keep the rookie out of trouble. Well, over the years we started to realize that even though the cruiser had less units, it had much less space to put them in. So, fitting the guns, batteries, pumps etc. into the narrow hull of a cruiser could be a greater challenge than trying to maintain one more combat unit. As far as the extra speed, some of the Vets found that the faster BC and BB made good cruiser killers because they had the same speed as the cruisers and much more firepower. And when the points are close, why not gain some easy ones by killing a few cruisers? So although cruisers are still good rookie boats, they do have some extra challenges.

Now-a-days, the answer seems to be "build a Class 4 boat". We chose this for all of the reasons we found wrong with the cruisers. Generally speaking, the inside of a class 4 boat is easier to cram units into because; they weigh more, they are wider, they are often deeper! Also the Class 4 boat allows side mounts so they can be battle either of the two prevailing ways which ships battle in R/C Combat: "Wail away" and "run and gun". However, many of the Class 4s have little leeboard which

leaves little space for error on damage control, and many or most are slower ships which allows them to be drawn right downtown in a battle! We were recently looking at the BC groups for a good rookie ship but most do not turn very well, although they could operate well as a oversized cruiser and run and gun on the outside of the pack.

So what boats are recommended in the discussions I have heard? The Lutzow because its bigger than most of the other cruisers and has a kit available, the Invincible because it has a kit available, the Molke also because it is available. Many others are recommended mainly because the fiberglass hull or a kit is available. We often recommend the Maryland and California Classes because even though they are bigger with more units, they also have freeboard, turn well, and can survive in a cat fight.

If we look at what rookies did well last year with what ships: Cruisers took the rookies awards at both Nationals (I think), a Lutzow at ours. Some of our rookies did well with other ships though: David Ritchie started with a used NC and his dad has it tuned up pretty good. Matt Moury did very well with a Von der Tann straight off the Tri-packs mold. Cammeron Moury has done well with a used California.

And the answer is: I don't know! I do know that the answer for the rookie who wants an Iowa for his first boat is build something smaller first, but past there I think the answer lies in informed personal choice, availability, and the group with which you are more closely connected.

Marty Hayes, IRCWCC

## the Southeast Missouri Spring BB Bash

I would like to take this opportunity to remind everyone that the Southeast Missouri Spring BB Bash May 20 and 21 is fast approaching. I have received firm commitments to attend from the following captains:

Captain	Radio Channel
Kevin Hovis	85
Mark Clauser	77
Robert Rucker	78
Kevin Bray	62
Ted Brogden	88
Steve Reichenbach (CD)	82
Patrick Clarke	86
Bob Eakin	?

I have also recieved possible attends from Bryan Finster and Mike Maxwell. From some of my other e-mail, there are some other captains thinking about coming. What I would ask of anyone who is thinking about coming, but hasn't made a definite decision yet to please let me know that you are thinking about coming and what radio frequency you will be using. I've been looking at the MWC frequency charts and we could have some conflicts if certain people from different regions show up for this event. I would like any conflicts worked out BEFORE everyone shows up. So, again, let me know if you thinking about coming!

Planning for the BB Bash continues with the schedule of events set. We are working the CO2 supply issue and working arrangements to handle any visitors to the battle we may have. See the SEMONAG website for more info at: <http://scribers.midwest.net/pooh1/> One thing you may notice is

Steve Reichenbach has agreed to lead a non-denominational devotion service on Sunday morning before the battle. This should be a treat!

Also, to remind everyone, the headquarters motel is Rosener's Inn in Park Hills, MO. The motel would like your reservations at least a month before the BB Bash to guarantee a room. They can be reached at 1-800-888-4241 or 573-431-4241.

The motel has a nice Smorgasboard restarant on the grounds for breakfast, lunch and dinner during your stay. We may decide to eat Friday dinner there and meet at another area restarant for Saturday.

As soon as the weather cooperates, Mark is going to start to expand the battle area of the pond before the Bash. This should nearly double the size of the useable portion of the pond and make for more comfortable battling for around 20 ships. See the website for pictures of the pond as it is now.

We have set the entry fee at \$10.00 if it is postmarked before May 1 and \$12.50 at the lakeside. The fee includes CO2 re-fill and lunch on Saturday. Please send checks payable to Kevin Hovis at 2295 Highway J, Fredericktown, MO 63645. For those that are planning to attend the Fray at Bray's at the end of April, I am planning to attend it also and will take your entry fee for the SEMO BB Bash there at the early entry rate.

Make your plans now and I hope to see you in May! If you are internet challenged, mail me at the above address. I'll try to get you any info you would like as soon as possible.

Kevin Hovis  
SEMONAG  
PS:

## "A Sub of a Different Caliber"

The Submarine in Model Warship Combat, Part I

By Timothy J. Blackman, Albany, N.Y.

My interest in submarines goes way back to my school days when I discovered in History class that in the US submarine fleet in World War II, which then comprised about 2% of the US Navy, destroyed over 50% of the Imperial Japanese Navy and their Merchant Marine. This so intrigued me that I continue researching the history, construction, and tactics of combat submarines to this day.

Back in the Fall of 98 I ran across an article in the November 98 issue of Scale R/C that was about a father and son that built a scale R/C model of a Japanese "Kaiten" suicide submarine. I was impressed at how easy the hull construction was using wood and PVC tubing and decided to build my first R/C submarine. After deciding that I would build a Los Angeles Class Attack Submarine, the USS Albany (SSN 753), I began to research the Internet on model submarine technology. I acquired several books, one of which is entitled Model Submarine Technology by Norbert Bruggen. This book is packed full of good ideas and I saw it as a common sense approach to Model Submarines. I drew my own plans from book drawings and sources on the net and read everything I could get my hands on. I contacted Skip Assay of SubTech for his assistance and received a lot of his help. I talked to him for about 30 minutes and received a crash course in model submarine technology.

It was about this time I found a reference on the net to something called Model Warship Combat. It intrigued me enough to start researching exactly what it was. What it was is exactly as I had hoped. They built and battled scale model R/C warships of the WW I and WW II era which mounted real, honest-to-God, low-powered CO 2 BB cannons on them. While there is a whole fraternity of Model Warship Combat Clubs out there, I decided to focus on one in particular, The International Radio Controlled Warship Combat Club

(IR/CWCC). As luck would have it the Spring Regional was taking place in June of '99. With bags packed and video camera in hand I proceeded South to Forest Hill, Maryland to witness the event. After observing for a while I concluded that I must get involved in this hobby. To further solidify this conclusion I purchased a Battleship hull to start out with.

While back in New York, I read something on the net about Submarines in Model Warship Combat. In other, larger scale combat clubs the submarines seemed like the perfect weapon platform of choice. It did seem at first the idea of shooting your enemy and diving away was not sporting. That feeling quickly subsided. I thought it sure beats the heck out of having to wade out to get your sunken Cruiser. When I asked the IR/CWCC membership how model submarines were regarded in our hobby I was met with a wall of animosity. "Those things won't work" I was told. Some others added "We had some once, (laughing) but they never came back! Some were even nice about it and said "They just aren't competitive in our scale". Myself being new to Model Warship Combat, I thought this might be true given that the U.S Gato class subs would measure in at under 26 inches and have a beam of 2.25 inches. So dashed my hopes for a combat sub. Enter a new party, Glenn Goetzinger. Recently hailed as the new father of Model Warship Combat in the IR/CWCC, Glenn is an innovative thinker and has an extensive background in submersible technology and miniature robotics, sponsored by our own U.S. Navy. Glenn has recently shared his views on the Combat Mail Group and helped rekindle the hopes of future Combat Sub Captains everywhere.

Currently the rules of the IR/CWCC allow subs but there is much controversy on their design and role in the hobby. There is not a lot of rules common to submarine construction, however the rules are specific in the hull construction of surface warships. The rules state that all ships are only allowed to fire BB's of .177 caliber, subs included. Another is that subs can only have one cannon with fifty BB's fired semi auto or 15 BB's if "spurred" (read full auto!) Although I have never participated in a battle competition it doesn't take a rocket scientist to see what 15 BB's

## Eye Shields

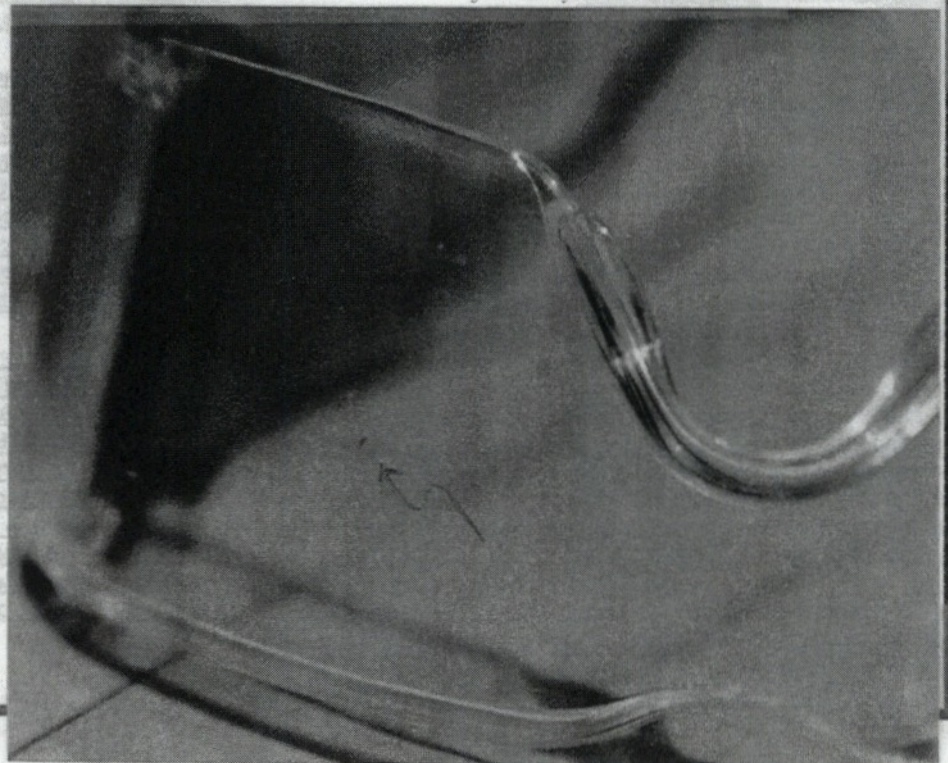
By Flugel

I have shopped for some safety shields for my glasses for years. Fashion wise, they have all yelled "geek-nerd". Well, I can build a Bismarck, so I can build safety shields that say "Axies Officer". The material is polycarbonate, or Lexan, or carbonated "plastic bottle". The larger liter size bottles are often cut into strips and used as internal armor (i.e. Chris Pearce), this stuff is really tough! Use a 12oz carbonated bottle. Cut out the form included, and trace it onto the bottle using a "sharpy" permanent marker - or equivalent. Cut the shape out of the bottle, use an exacto to cut the holes for the ear piece, and try them on. If they fit just the way you want, modify the pattern. These shields are CHEAP!

FYI. At the Oklahoma Nats, we shot this pair of safety glasses with one of the manly Chris Pearce THUNDER PIG guns, at point blank (?) range. The dent is so small that I am not sure it is visible. That's good news. I promise NO such security with my type glasses, nope, not any, zipo, nota, zilch, Zero, non ect.... However, at point blank range,

these shields showed no damage. Perhaps they would if I kept firing at the same spot, but they

also won't keep you from injury if you stick your neck into a chain saw. There not magic, just safety shields.



will do to a ship with 1/32" balsa for a hull!

This leads me and all other prospective sub drivers to the next problem of building and operating subs, watertight integrity. Current IR/CWCC construction rules say that the first two inches of hull from the bow and one inch from the stern may be impenetrable material. The kicker is that "The total hull length that can be solid material shall not exceed 15% of the total overall length of the hull." This includes the Bow and Stern sections and all ribs in between. The rest of the hull must be covered with 1/32" balsa with a thin covering of silkspan and model airplane dope to help keep the thin balsa from splintering. A question for you math types out there. How much pressure (psi) is there at a depth of two feet? That's about the scale depth that most of the combat subs will operate and will the 1/32" balsa covered with thin silkspan resist the pressure even for a short time? The span between the ribs that the balsa covers can be no less than one inch on center and there won't be that many ribs, believe me.

One of the rules on construction states that "there shall be no watertight compartments in the hull which would preclude the ship from sinking". As I have found out, the ballast tanks are considered a component and not necessarily a part of the hull. The other rule states that all ships must have a minimum of 1/2" freeboard on the hull. This will be a difficult problem for submarines in this scale. At the present time I am planning on building a French Surcouf submarine. I bought the Surcouf as a fiberglass hull in three parts, upper and lower hull halves and the conning tower. Since the scale for our hobby is 1/144th, the sub has a length of 30" and a beam of 2.75", not a lot of room I am told to put in all the associated equipment needed for a combat sub.

In order to fit everything into the hull and comply with the many construction rules of the hobby, I plan to build it as a "dry hull" design with only the micro-receiver and electronics in a watertight compartment with the motor and servos in the dry section of the hull. I can waterproof the servos with some plasti-dip and o-rings but if the sub goes "deep six" I am sure they will need replacing. No one said Model Warship Combat is easy or cheap! The hull halves will have to serve as the main sealing point. I plan to epoxy two pieces of 3/16" plexiglass on each hull half and seal the halves together with silicone or some other fast drying sealant. A few threaded brass alignment pins with nuts will secure the two together. Right now I plan on using a standard ballast tank system and because of the relatively small scale I have to manufacture my own ballast tank flood valve and ballast pump to remove the water. The valve is servo operated and will allow me to shut off the flow of water into the free flooding ballast tank. Since I have to incorporate a CO2

system into the sub for the BB cannon, I also plan to use a second Clippard mini-valve for an emergency ballast blow valve. While designing the sub I thought about it's inevitable deployment in combat. Since I certainly didn't want it to sink prematurely by gunfire I wanted to find a way to keep it to at least periscope depth and safe from hostile fire. I decided that the automatic leveler available from SubTech may be the answer to my problem. When asking other sub captains, they said it was "a very wise investment." I am told that this device, when hooked up between the receiver and stern planes servo will reduce the subs tendency to "porpoise" and keep it on a level keel. The main reason for building a combat sub is to send it into combat. While the real Surcouf sub mounted two eight-inch naval guns, mine is limited to one CO2 powered BB cannon firing a maximum of fifteen .177 cal. BB's. These cannons have been privately manufactured successfully for years so I will attempt my hand at a design to fit my sub. The cannons are very reliable when built correctly but most are fired without ever being submerged. Alas, another technical problem. Some extensive testing will have to be done to ensure the cannon will fire once it has surfaced from the depths.

Another problem once all the technical problems are half-way solved, is how to deploy the subs in combat. Given the fact that they can only mount one cannon, going against several cruisers and battleships I think would be suicide. All model warships in this hobby are vulnerable during a five-minute period at the end of their combat sortie. During this time they can run but may not fire on any pursuing warships. With proper planning I'll just bet that a sub (or two) could get in a couple of good hit's during this time. What do you think? Some other members have the larger subs like the US Argonaut/Narwhal Class and the Japanese I-400 as their combat sub of choice already in the planning stages.

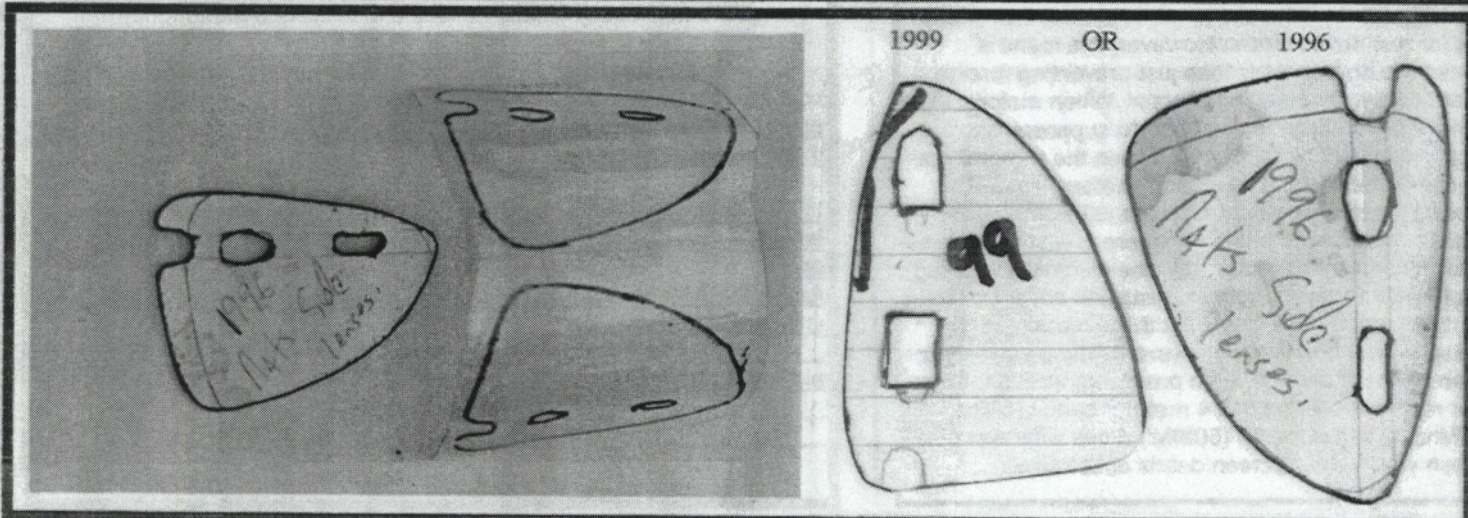
I am well aware that all sort of other technical problems await me in the design of my combat sub but I plan to tackle each problem as I come to it. The most important thing to remember in any project is to keep a positive attitude. I'll will try to keep everyone apprized of the progress of my combat sub in future issues of "Hullbusters". Thanks to advent of micro servos, micro-receivers, auto levelers, depth regulators and Nickel Metal Hydride Batteries (NiMH), I think a combat sub of the IR/CWCC could become a reality and make it's debut in the year 2000.

To contact the Eleventh Naval Combat Fleet (ENCF) send an e-mail to:

Warfleet11@aol.com

To contact Glenn Goetzinger at The Eastern Shipyard

<http://24.4.136.66/boats/>



## "Cruiser Construction

### Corner"

by Steve Reichenbach

In this column, I pick a good question about how to build a cruiser, and provide an answer. In this issue, I've chosen a question from Mike Boyles, who is building his first cruiser, a Prinz Eugen.

Q: How do I figure out where to put the stringers and ribs into my fiberglass hull?

A: The rule set for IRCWCC and MWC both specify that the forward 2" and stern 1" can be solid, and that the total solid area is allowed 15% of the ship length. For this example, the Prinz Eugen is 689 feet long (57.42 inches). Multiply by 0.15 to get the max allowed solid area of 8.61 inches. Subtract 2" from the bow, and 1" from the stern, gives 5.61 inches.

The ribs can be any size, but maximum of 3/8" wide. Take the 5.61 and divide by 3/8, you get 15 ribs. If you go with 1/4" wide ribs, you get 22 ribs. The ribs must be at least 1" apart (from rib centers), but otherwise can be spaced anywhere you wish. I prefer to put a few extra ribs in the vulnerable bow of a cruiser.

The purpose of the stringer is to allow armor belts, casements, or bulges to be modeled accurately. The stringer should be no more than 1/8" tall, but can be as deep as you like. I prefer to use 1/8" X 1/4" basswood, epoxied to the fiberglass. For best strength, add 1/4" square basswood behind each rib attaching the stringer to the subdeck (above the stringer).

The location of the stringer is determined by the hull shape. In the case of the Prinz Eugen or Lutzow, the hull is flat down to the stringer, and then bulges out. The stringer should be located at the hull transition, allowing the hull to be sheeted flat above the stringer, and along the curved hull contour below the stringer.

Send your comments or cruiser construction question to [wtpat2@yahoo.com](mailto:wtpat2@yahoo.com)

### 1. Motor Screening:

All good captains use mesh to screen their pump motor and drive motors. However, I've found a reason to do this other than just preventing foreign matter from damaging the motor. When motors run, they generate RF noise. We try to suppress this noise by putting capacitors between the motor poles and between each pole and the motor case. This does, in fact, prevent much of the RF interference with the radio gear. However, there is still RF noise leaking from the motor. If you use metal screening material (brass or copper is best) to cover the holes in the motor case, it will block the remaining RF noise. The metal screen prevents radio waves larger than 2x the mesh size from passing through. Since our radios operate at the 4 meter band (75Mhz, 72Mhz) or 6m for HAM (50Mhz) use whatever size mesh you feel will screen debris effectively

## NORTHERN HORDES GATHER STRENGTH

Bob Pottle

North of "the longest undefended border in the world" the Northern Hordes have been biding their time and increasing their strength.

The largest horde in the Great White North is based in the naval city of Halifax, Nova Scotia, "Guardian of the North" in WWII. There, the North Atlantic Battle Squadron has grown steadily since 1994 to a core membership of 12 captains and their warships.

NABS members have spread across the country to establish new hordes. Morgan Miller is now in the west coast naval base of Victoria, British Columbia with his HMS Invincible, eagerly looking for recruits.

Dave Austin and his Nassau have started a horde in "la belle province" of Quebec. Also in Quebec province is the as yet unaffiliated Martin Paradis with yet another Nassau.

In neighboring Ontario NABS ally Captain D. McGuffin has recently established the 'OAF Horde'.

So far the Northern Hordes follow IR/CWCC rules, though the number of actual IR/CWCC members is relatively small. Most barbarians do not intend to join until they're ready to cross the southern border in strength. (The Canadian dollar is weak, unlike our Hordes!!)

In 1999 NABS, my 'Home Horde', finished a busy season of high seas carnage and war games in preparation for future invasions southward. More than a dozen battles were held at our superb site, located in a lakeside park and accessed by a municipal permit for R/C warship combat.

During 6 months of combat 12 local warships plus a visiting HMS Warspite from New York State saw action, and an Akisuki Class DD ran sea trials and returned to drydock for modifications. Active warships were:

Bismarck, Moltke, Lutzow, Espana, Augusta, Northampton, Baltimore, Tennessee, Terror, Canberra, Barham, and Invincible. (50% of these used locally produced fiberglass hulls.)

Under construction and expected to battle in 2000 are North Carolina, Yamato, Graf Spee, Hipper, Gorgon (Class 1 monitor), and Canarias (Spanish cruiser), two of these being built by new recruits.

HMS Courageous is nearing the end of a major reconstruction and will see action again for the first time since 1998. HMAS Canberra is being converted to HMS Berwick or Cornwall during a major winter refit.

NABS' first convoy ships will appear in 2000: Eric Broderick has finished molds for the MV Pandua, a large 1945 British freighter, and the RCN Prince Class ships, Canadian coastal liners converted first to AMCs and then to AA ships/troop carriers for the D-Day and Southern France landings. Hull production will commence with the arrival of warmer weather.

Other local hull builders are at work on new projects, including at least two new heavy cruiser hulls and a Class 5 dreadnought.

Webmaster Peter Casey continues to update the website, kindly hosted by Dr. Pittelli (<http://www.pittelli.com/nabs>). Scott Ellis has produced an excellent color NABS brochure and T-shirts/golf shirts with the new NABS logo are planned.

With 12 veteran members and three rookies awaiting their first battles, members of the NABS 'Northern Horde' are looking forward to an exciting year of R/C warship combat under the leadership of the indomitable Adm. Curt Stokes.

New members and visiting captains from the 'Southern Hordes' are always welcome!

Bob Pottle,

NABS Ministry of Truth

## Beyond Combat – Looking Back at History

By: Christopher S. Gamaliy

### The Brooklyn Battery Naval Brigade (BBNB)

Several years ago, when I decided to get involved in the sport/hobby, my first choice for a model was an easy one. Being from good 'OLE Brooklyn, NY, the choice was simple.

As the model neared completion I began to think of the REAL ship, her service and her fate. I researched websites, naval records and local newspaper articles here in New York City. I became hooked on the history of the ship.

Last year I created a website devoted to the USS Brooklyn (CL-40) and incorporated as much information of the ship that I obtained through research; including pictures of my model and pictures of the actual warship. I received numerous hits, not on the website itself, **but on the guest book that I attached to the website.** (Several Captains have signed the book, thanks! ☺) Most of the guests were former crewmembers, or descendants of crewmembers, who were happy to see a site on the net devoted to their ship, or their father's ship. I also received numerous e-mails from individuals who built the ship at the Brooklyn Navy Yard in the 30s.

One such individual is George Armstrong, who served on the USS Brooklyn towards the end of WWII. It comes to be that Mr. Armstrong is the President of a local chapter of **The USS Brooklyn (CL-40) Historical Association, Inc.** I was quite surprised when I received this e-mail because I did not know that such an association has been in existence for numerous years!

We had a very lengthy conversation on the phone as he told me some old sea stories of the Brooklyn and how the association attempted to acquire her for a monument after her service in the Chilean Navy was complete. The Brooklyn was sold to Chile as part of the Naval Mutual Defense Agreement in the 1950s. There was a lack of interest in obtaining the ship through private funds and she was sold for scrap, but sunk on her way to the breakers.

Shortly in the mail, I received copies of letters he wrote while he served pictures of old shipmates, logs, etc. Items he loaned to me site unseen because I showed an interest in his old ship. Mr. Armstrong contacted other members of the association and they have as well sent me materials. I have now accumulated a wealth of information not public and history from a different viewpoint; the actual sailor.

Several weeks ago, I called Mr. Armstrong with an idea, what if I could write the Naval Historical Center in Washington, DC to see if the ship's bell still exists and if the Navy would loan the bell for display in Brooklyn, NY? He was overjoyed! I have yet to receive a response as to the status of the bell.

Because of my personal interest, the association has made me an Associate Member and I will be attending their annual reunion in May and the website reorganized as the Association's website.

The current website is at: <http://home.earthlink.net/~chris19/CL-40-brooklyn.html>

Hopefully, the new website will be - [ussbrooklyn.com](http://ussbrooklyn.com), or [ussbrooklyn.org](http://ussbrooklyn.org).

I think it is important that Captains understand the history behind the ship they are building for combat. Real men manned that 5.5 unit BB you are thinking about building. They can offer a perspective on the ship you could only dream about! Some places on the web to start are:

Warships of The World – Reunion Page:	<a href="http://www.warships1.com/reunion_index.htm">http://www.warships1.com/reunion_index.htm</a>
Naval Historical Center:	<a href="http://www.history.navy.mil/faqs/faq13-2.htm">http://www.history.navy.mil/faqs/faq13-2.htm</a>
Reunion Information Center:	<a href="http://www.reunionnet.com/military/navv_n.htm">http://www.reunionnet.com/military/navv_n.htm</a>
NavSource Naval History	<a href="http://www.navsource.org/archives/crwcon.htm">http://www.navsource.org/archives/crwcon.htm</a>
DAV Magazine	<a href="http://dav.org/mag/bin/print_article.cgi?article=66">http://dav.org/mag/bin/print_article.cgi?article=66</a>

As for Axis and Non-US Allied captains (this article is primarily geared towards the Allied US side, contacting the appropriate embassy may be the place to start.

I'm glad I did abit of digging, you will be too. ☺

## Sour Grapes

[ Editors note: I failed to attempt to receive permission to run this letter, but I doubt Lars can read. If you do Lars, could you send photos next time.]

Hey, Herr Fluegel.

After all those times I begged ya to put something in Hullbusters that I'd posted on the email lists, you had to go and print "Sinking's not so bad"?

When I think of all the jeweled retorts I've reported on, even some of your best zingers, that you've turned down flat, I can't imagine why you'd want to print the tripe that was "Sinking's not so bad".

That piece was supposed to be a bit of therapy. You know, admitting that you've had a few problems but you're hoping to get better. That therapy was admitting my faults to a few people that I trust, namely the MWC membership, NOT THE WHOLE DANG R/C COMBAT WARSHIP WORLD.

Do you realize what kind of damage that could do to my already admittedly shaky psyche? Do you realize how many taunts and ribbings I've received since that article was published? DO YOU WANT ME TO GET A REPUTATION?

Now, who was it that forwarded you my post on "Sinking's not so bad"? I want to include them in the lawsuit. That's right, I plan to sue, and it should be an open and shut case since you admit right in the article that you didn't have my permission.

Am I going to ask for all of your money? I would, but I doubt you have any. What about your ships? As a solid Brit, I suppose I could intern your fleet in Scapa Flow, but you'd undoubtedly scuttle them like the German weasels you fellows are, and as we know, Scapa is very deep in places. Curly's Konig is STILL down there.

So, what of value do you have that I would be interested in? The only thing that I can think of that might sooth my inner turmoil is a trophy that got away.

Yep, that's what I want. You may not remember, but at Nats 97, my Exeter sparred with your Scharnhorst. You didn't sink me, and I didn't damage you much either, especially since my bow gun was shooting too high. But it was just the right height to blow off one of your nicely detailed launches. That single event just made my whole rookie Nats. It was a visible symbol that I indeed did have some combat prowess, even though it was infinitesimally small in comparison with yours. However, that day we were fighting on the river, and the trophy floated away downstream in the heat of the battle and was lost.

That's what I want, one of your finely detailed launches from the Scharnhorst, and at last I've got the goods to wrest one from your trembling fingers.

So, will you be shipping UPS or parcel post?

With Love, Lars

## The Spring 2000 Fray @ Bray's

The South West Kreigsmarine proudly announces that it will be hosting: The Spring 2000 Fray @ Bray's. This event will be held April 29th and 30th in Owasso, Oklahoma. Too date, there are 17 battlers scheduled to come. This will be a MWC santioned event. The cost is \$10.00 before March 31st. After that and at lake side the cost will be \$15.00. CO2 is provided as well as refreshments. The captains that are present at the end of battle Sunday, will split any funds left over from the event. The hotel is Motel 6. It is located about 10 minutes from the battle pond. The phone number and address is:  
Motel 6, 1011 South Garnett Road, Tulsa, Oklahoma 74128, 18/234-6200

Please send your radio channel, ship designation, and entry fee to the following address: Captain Kevin A. Bray, 12724 East 89th Street North, Owasso, OK 74055

## Ham License

By D.W. Fluegel

Well, it's over, and I passed, I got an 86% on the combined Novice Technician class amateur radio test. Now I can operate a RC ship, legally with a "ham" channel. This is a significant issue for us that participate in both clubs, my old air frequency 72.910 (channel 56) was no good in the MWC club, and it was not working getting a surface channel reserved for me in both clubs. The clubs don't coordinate with each other, and why should they? Well, the joke was that the old club would be selling illegal regulators to the new club, and the new club would be selling their illegal radio's to the old club.

That reminds me, I have a Fataba T6XA (FM) 6 channel radio for sale. It's never gave me any problems, and it's pretty new... 9/12/98 ( I have the receipt, \$ 239.56 including tax, I bought it at the fall Springfield battle. I used it all of 99, but that's only one year of use.) I have not used the Futaba servos, I use subminiatures, so they are not like new, they are new, or at least unused. I will send three of them, and give you the fourth in person, if you attend a 2000 Nats. All this for \$120 including free postage and insurance. Oh, it has channel 56 crystals, but I bet I can find the channel 38 crystals it came with, if so, I will also include them, they're of no use to me. It's no good for me because I can not have it retuned to a Ham frequency, or even a surface frequency. To have such large retunings, your transmitter needs to have a plug in RF module. This one does not. Still, I will order the same radio from Futaba, already on my new Ham frequency, so I plan to replace it with a legal one just like it. I like it, though it's really more radio than we need. I use the 5th and 6th channels for lights and elevate. Both of which are optional, and I could operate the lights other ways with a 4 channel radio. I even have the box. Gosh, should I ask for more?

Back to the Ham test. I ordered a book, and a 2 disk study kit. I never read the book, but I took practice tests every night for three weeks (15 minutes each night). Gosh, I don't need that study program anymore. Well, it cost me \$30 and it's yours for \$15. Including postage. My cat puked on the book, nope, that was a map, never mind the puke story. Oh, you can get almost the same disks for free on the internet. Well, almost as good. It's [www.clicktron.com/ham/index.html](http://www.clicktron.com/ham/index.html) and it's free, not \$15. Again, back to the main story, which is about passing the ham test, it was not too bad. I didn't know I had to take the novice test before I took the technician test....did I mention I didn't read the book? Well, some of those novice test questions were major guesses. Still, the tests were all multiple choice, and came from a pool of ...450 (?) questions. I was really happy and a little suprised when they told me I passed the second test. The technician level test was easy, because I had studied for it.

It's a little difficult finding where you take the tests, but I found some phone numbers in a book that radio shack sold. Wade studied two months for a test and never took it because he couldn't find a place to administer the test. It cost \$6.75 to take the test. Tests are fun when you pass.

The hardest part of the test was deciding to take it. Emotionally I was ticked at the new club for outlawing my "new" radio. I had to deal with anger before I could deal with test questions. The anger was by far the bad part. The good part is the feeling of knowing I am legal, and a sense of accomplishment, some for passing the test, but more for appropriately dealing with misguided anger.



## Toshi here: A VIEW FROM A ROOKIE'S EYES

IRCWCC

### SATURDAY:

Arrived in Lake Junaluska about two p.m. in the afternoon and settled in to the room for the night -if this is not a bad omen the place that had been booked has not available until Sunday afternoon. My captain went to the Lake view motel and searched for David Lawrence who he found playing around near the pool- his roommate "Doc" Broring had not yet arrived.

Got the Kongo and figured that there was not much he could do until Tom Tanner arrived late Sunday night with a spare radio system that he could use (note: if you ever get spare crystals for an Airtronic Vanguard make sure they are Dual Conversion or you will damage the transmitter- It happened to my captain—its expensive!!!) He tried the cannon system and everything appeared to work OK. They went to Mike Torda's pizza where they partook of an excellent calzone.

### SUNDAY:

Moment of truth the Kongo padded the drop test and regulator whereas David Lawrence had to strip and resheet the Nagato as the rustoleum paint made the hull too hard. We meet alot of very nice people including the "Pav", Stan, D.W., Orrill, Kevin, Matt, Ronnie, Don, Ron, Larry, Jeff, and many more. During this time my captain was shown a number of things that he should get ready before the radio arrived- he was up to almost midnight wiring up and adjusting the cannon system to suit him a bit better— how wrong he was that he was finished and the fun could begin.

### MONDAY:

Orrill and "Doc" came to my rookie captain's rescue with a spar transmitter and receiver that was a perfect fit to the Futaba system already in the Kongo—my captain worked feverishly to get the receiver installed and the watertight box sealed so he thought (later). He was able to enter the fray on the second sortie - it proved the much work still needed to be done as the Kongo was less than effective but still not a burden on the Axis side. After an excellent lunch catered by Mrs. Torda (provided on all days of battles) my captain felt better and a little bolder as he tried to play with Stan Watkins but Stan is a hard target to hit and my captain suffered more than a few hits as Stan started to teach him how not to fight an opponent—still survived without sinking!!!!

### TUESDAY:

Recurring rudder problems again as my rookie captain tries to debug the Kongo. He was able to get the rudders working for campaign battle where he was alot more effective protecting the targets in the forward base (taking some sterns from Stan- a real honor to save some of the targets) then transferred to convoy escort runs until the rudders started acting up again. After three campaign replaced the rudder servo to make the rudder system more reliable(????). Also lent a cannon by Steve Andrews for stronger offense.

### WEDNESDAY:

No plans except for getting fudge for my captains other half -also a one on one on one plus the sight of my captain's first view of a night battle to be told in other short article.

### THURSDAY:

D-day for my captain- about ten minutes into the first sortie the rudder lit go again and this time he was a sitting duck for the North Carolina and California (Cameron and David) and they drilled the Kongo hull very good and as the water swiftly rose towards me my captain jumped in a raised the sunken hull out of the water as I shook the water out of my ears I could hear the cry of anguish from my

captain—water in the radio box. As my captain slowly took the boat to tent opened up the radio box and took everything out to dry out missing the rest of the day due to this setback. Since he could not battle my captain lent helping hand to D.W. and Kurt to help keep the convoy runs going and in a small way redeeming himself for letting the Axis down in there time of need.

### FRIDAY:

First sortie was good as my captain and David Tuttle teamed up to give some trouble during the first sortie to a North Carolina that tried to get to us—my captain baited and ran as David stern gunned the North Carolina as she tried to chase the Kongo down and when the North Carolina tried to chase the Graf Spee it was the Kongo's turn to gun the chaser—eventually the North Carolina left with empty hands that sortie which was for a change a bit of fun.

Second Sortie Admiral Fluegel said every one to launch together for Max effort, in about three minutes in the sortie my captain was non-damage ram accidentally by the "Pav" but in the heat of the furball about less than a minute later my captain accidentally rammed the "Pav" which didn't go too good with Fluegel or my captain's feeling of damaging some ones ship, even accidentally—about two minutes after that Cameron did the number on the Kongo and the bilge pump did not work and again I saw the water coming up to me again as the Kongo slowing tipped to the side and started to slip under the water—my captain jumped in tan brought the ship ashore only to discover that water had got into the water tight box again- this finished my captain battling as he wanted to give "Doc" back his receiver, Orrill his transmitter and crystal, and Steve his great gun.

The high point of the whole week for my captain after the last beautiful launch was being presented the Axis High Command award for dogged determination to battle and have FUN by the Gross Admiral himself D.W.. This made the long drive really worth a sport to be among friends - a lot of FUN and great comradery that makes this hobby a sport that should be all encompassing to all people without alot of problems.

Cheers

Toshi Kamikaze Rabbit.

Toshi recovers the Kongo

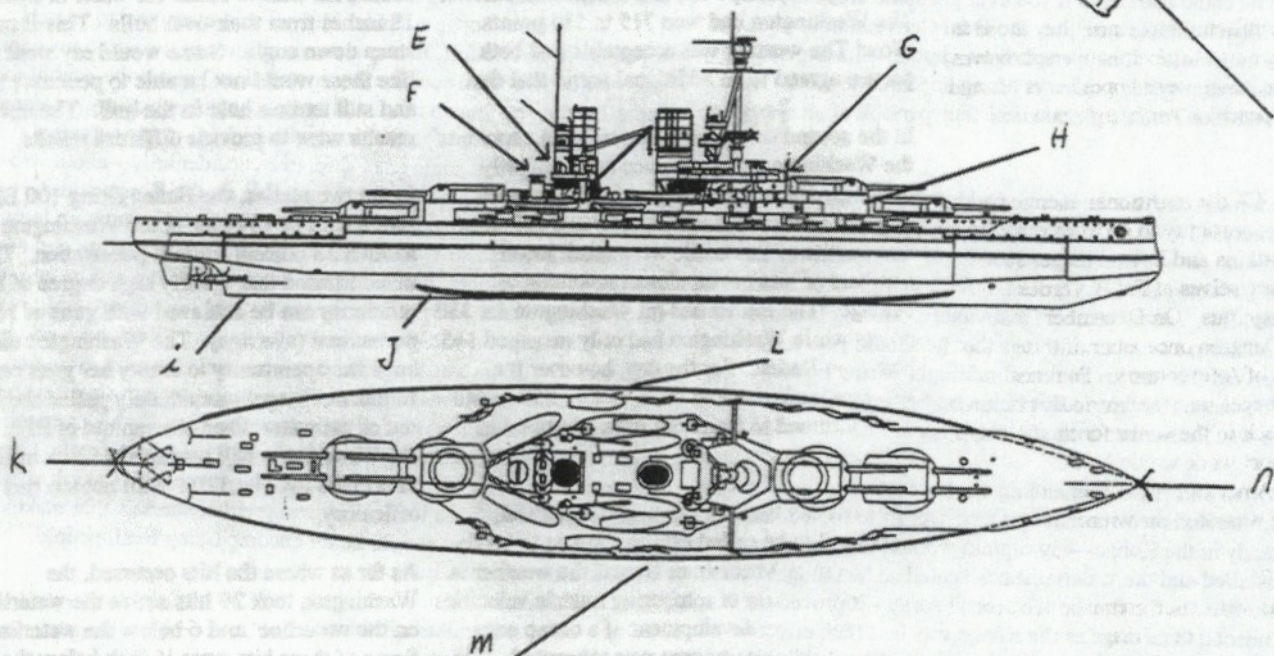
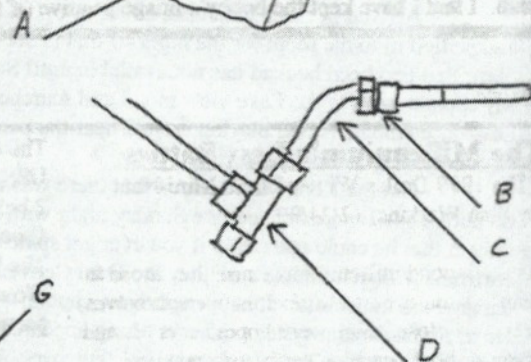


# Rookie Test 1999

## Ship Nomenclature

### Word Bank;

- |                                   |  |                          |
|-----------------------------------|--|--------------------------|
| 1 <u>G</u> Forecastle             | 7 <u>G</u> Bridge                        | 13 <u>   </u> Mr. Hitler |
| 2 <u>C</u> Riser tube             | 8 <u>L</u> Port                          | 14 <u>i</u> Skegg        |
| 3 <u>   </u> AC Delco spark plugs | 9 <u>K</u> Stern                         | 15 <u>J</u> Bilge Kiel   |
| 4 <u>D</u> Interrupter or tee     | 10 <u>N</u> Bow                          | 16 <u>E</u> Batt II      |
| 5 <u>A</u> Trim tab               | 11 <u>B</u> Breach                       | 17 <u>H</u> Barbett      |
| 6 <u>M</u> Starboard              | 12 <u>F</u> Gun director or Range finder |                          |



## HISTORY OF THE HOBBY

1. Sian Watkins is THE father of RC warship combat.
2. Who sank the first ship, using another ship?  
Jeff Poindexter
3. The first battle was between a ship and a(n)  
Air Plan
4. What does IRCWCC stand for? International Radio Control Warship Combat Club
5. The founding fathers had to build their own valves to fire the guns. T or F T
6. The French were both Axis and Allied T or F F
7. The Graf Spee was considered to be a small (pocket) battleship by the Germans. T or F F
8. The Axis won the first two Nats! T or F F
9. Propan was the original gas propellant.

## CONSTRUCTION

1. How many screws are needed to attach your ship's deck?  
Zero
2. The pump should be in the bow, not the stern. T or F F
3. A two quart per minutes pump is about right for a heavy cruiser. T or F F
4. Do not store or charge batteries on concrete. T or F T
5. Pump outlet's may not exceed 1/8 inch diameter.

## TACTICS.

1. There are two basic tactics, "hug and slug" or "Run and Gun"
2. The Stern gun is more important than the Bow gun. T or F T
3. A rookie's first tactic is to be in the second sortie. T or F T
4. You can tweak your guns on moss check. T or F F

## RULES.

1. If the opposing admiral says you can enter into the second sortie, even though you missed the first sortie, you can. T or F T
2. A hole in both the water line and the red (below the water line) counts for how many points? 50
3. French can either be Axis or Allied. T or F F
4. Submarines are legal. T or F T
5. A target is worth 100 points. T or F T
6. Smoke bombs are illegal. T or F F
7. The fleet admiral may declare "fleet five", at that time, his fleet may no longer fire. T or F T
8. Your ship must have all superstructure parts that measure larger than one cubic inch on the plans.

## Nats to You!

Site Host - NATS2000

David Lawrence

I've negotiated a hotel arrangement with the Best Western just off exit 77 (Interstate 95).

Price per night including taxes & fees is \$63. This includes a Continental Breakfast. Each room needs to be prepaid by a credit card at least two weeks before our event. I informed the hotel that our

members would be arriving Sunday, July 16 and departing July 21 or 22. Identify yourself as a member of the IRCWCC club. They have a nice pool & facilities. I was told that we could use their pool for boat testing between 8am & 10am (no gun testing in the pool, please).

They also have the advantage of parking close to the rooms. Many of our Captains have stayed here during the regional events held during 1999. I reserved 20 rooms for the club. More may

be available upon request. The hotel will place as many members on the first floor as possible. I recommend you reserve early if this is important to you. Call 1-800-528-1234 or 410-679-2997

You can see pictures of the hotel & obtain other information at their web site: <http://www.hesshotels.com/bwii/>

The event fee for NATS 2000 has not yet been determined. We need to have a fair idea of how many members plan to attend. ~~As a result, a refundable \$50 deposit will be required for each Captain to attend NATS2000 at Friends Park in Forest Hill, Maryland. The deposit is due by March 1st.~~ A \$30 late fee will be assessed to Captains who miss the March 1st deadline

The deposit is payable to the club Treasurer at:

Mr. D.W. Fluegel  
917 Hudson Drive  
Garland, TX 75043  
(972) 681-9471

If you have any questions, please email me directly.

David Lawrence  
Site Host - NATS2000

Email me directly if you have any questions.

Note the bridge and island.



## More on Sealing Servos

Marty

As many might know I was an early user of the "waterproofed servos", not because I'm so smart but because I lived close to the early innovator (Rick Schultx) who took his sealed servos (no waterproof box) to Knoxville Nationals and after he sank in the last battle simply poured the water out and sailed back to homeport. Over the years I have tried many different methods and

seen many more. Many of these probably work better than mine (I don't know), but my old Warspite had only its receiver in a waterproof box and is still operational (9 years later) with some (not all, the rudder servo has been taken apart and dried on occasion) of the original servos in it!

So anyway, what is the newest innovation that I bring to the table! Plastic tape (found in most hardware stores near the paint department)! I wrap up the servo case in plastic tape before using tool dip or RTV on the servo! Okay, you say what good is that!!!

Well, the tape seams are all that has to be sealed now (other than the "o" ring for the control horn), not the seams or the screws in the bottom of the case, not the seam just under the mounting horns. And.. A tape seam is a lot smaller area to seal than the other items mentioned. Also when the sealing has to come off, the tape comes off clean and the servo is ready to be redone if needed.

Well, that's it, no great step in technology, just a gentle nudge in a forward (I hope) direction.

Marty Hayes, IRCWCC

## To Join and or Subscribe.

To Join IRCWCC just mail me \$6.  
To Just subscribe to Hull Busters just mail me \$9. To do both, mail me \$15. I always feel I should tell you how to join the NWC, it's \$15

but its not to me! Send me \$15 and I will send you Hull Busters and membership into the old club. I will join the new club, but I am not sure how. I bet their fine newsletter will have that information, but I wish they would post it in Hull Busters as well.

If you have sent me money to join the

club, even way back in early December, be patient. I will mail your rules pack etc as soon as I get them....and I am a bit irritated I haven't gotten them in December.

Make checks payable to D.W. Fluegel, 917 Hudson dr. Garland TX 75043

## How to Test Hull Structure for Strength

By: Kevin Hovis

Andy Ray sent me a note the other day about my new Bismarck. He had seen the pictures of the Bismarck under construction and questioned whether the hull ribs would stand up to a ram by a big ship like the Iowa or Yamato. He thought the rib width was a little thin. I had done a computer stress analysis for the hull structure using a 50 lb. ship traveling at 24 sec speed as the design criteria when I made the rib design. After Andy sent the note, I went back to my notes and decided it would be good to test my assumptions to verify the analysis.

First, I'll review some of the calculation you need to make to do this test. The test is based on the law of conservation of energy in which the potential energy of a pendulum at a certain height above the ground is equal to its kinetic energy at the lowest point of its swing. Potential energy is defined by:  $PE = \text{mass} \times \text{acceleration of gravity} \times \text{height of swing (or above ground)}$ . The kinetic energy of the pendulum is also equal to the kinetic energy of the 50-lb. ship moving with 24 sec. Speed. You need to figure the kinetic energy of the ship first. Kinetic energy is defined by the equation:  $KE = 1/2 \times \text{mass} \times \text{velocity squared}$ . 24 sec. speed in 100 ft course is equal to 4.1667 ft/sec. I round this up to 4.2 ft/sec. The mass for the ship is 50 lb. / 32.2 ft/sec<sup>2</sup> which is 1.55 slugs (a slug is a mass unit used by we engineers for the English system, the units are more consistent in the Metric system). So put those numbers into the kinetic energy equation, you get a kinetic

momentum of 13.7 ft-lb.

Since  $PE = KE$ , plug the KE into this equation:  $\text{mass} \times \text{gravity} \times \text{height} = 13.7\text{ft-lbs}$ . Now, mass is equal to the weight of an object divided by the acceleration of gravity so the equation becomes:  $\text{weight of pendulum} \times \text{height} = 13.7$ . I chose a weight for the pendulum to make a convenient height for the pendulum swing, which is 4 lb. Putting 4 lb. for weight into the equation, the height becomes 3.425 ft. I round this up to 3.5 ft for ease of the test.

I have a weight and pendulum height, so how to do the test? It's actually pretty easy. I filled up a 20 oz plastic soda bottle with bb's until it weighed 4 lb. I then tied a strong string to the bottle and hung the bottle from a floor joist in my basement shop. I built a mock up of the ribs using the original design. The mock up is basically three ribs tied to a keel plate same as is used on the ship. I also made a cap rail and stringers where the hull of the ship would have them. I spaced the ribs the same as on the ship. One difference is the two end ribs have a very wide rib web that runs diagonally into the keel plate to brace the structure and force the entire load into the test rib. I clamped the mock up to my building table aligned with the pendulum and pulled the pendulum up 3.5 ft. I let it go and watched what happened. The first test failed miserably. The rib cracked apart in two places, at the top just below the armor transition stringer and at the thinnest part of the rib just below waterline. The stringers and cap rail also failed, but I think that happened after the rib broke. I then made a new, wider rib adding about a half-inch to the width over the original. I repeated the test. This time the rib survived the impact with only a little cracking at the slot where

the rib is glued into the keel. The bottle bounced back quite a ways, but I wasn't quick to catch it. The second impact freed the rib from the slot. I think I didn't allow enough time for the glue to cure before I did the second test, so I think I got a successful test.

<<...OLE\_Obj...>> This shows how the bottle will hit the ship if the real ship was used (I can't print off the internet, only snail mail).

<<...OLE\_Obj...>> Pulling the bottle back for the test. (No, I didn't test the real ship, the mock-ups weren't available at picture time! Also, I had to stand on a chair to get the pendulum at the right height.)

What conclusions do I have about this test? In my original analysis, I had made an assumption about the distance an impact will occur between two ships to figure the average force of the impact. I used 6 inches as the impact distance. The test shows a pretty high impact force to a structure clamped down onto a table, which doesn't have a lot "give" while going through the impact. That increases the impact force. I don't think that really models ships on the water that well. The ships will move a good amount when they collide and the greater distance the less force on impact. What I modeled could be seen as a non-moving ship stuck against a dock getting rammed square into the other side. My rib beef up plan did survive the test, so I'll go with it in my ship. I think I could get away with a thinner rib, but if I have a lot of extra weight to play with, the stronger the hull structure is, the better. I am curious how well a fiberglass hull with windows cut would survive. I think some captains may be surprised at how vulnerable a fiberglass hull really is.

### Hull Busters

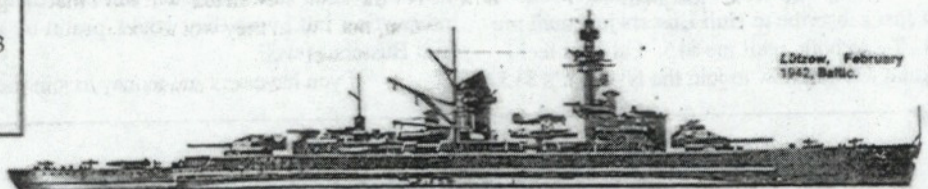
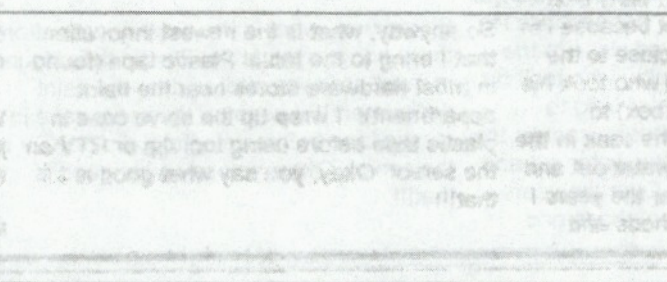
917 Hudson Dr.

Garland TX

75043

### Battle Calander

April 29-30(?) MWC Minnesota, Curly Barrett  
 April 29-30 MWC Tulsa OK, Kevin HB p 1603  
 May 20-21 MWC SE Missouri, Hovis HB p 1603  
 July 9- 15 MWC Georgia, Bart, HB p 1601  
 July 16-21 IRCWCC Maryland, HB p 1611



L.D. Crow, February 1942, Baltic.