Hull Busters

1991

APRIL 1991

At The First Florida Nats...

THE MOTHER OF ALL BATTLES

By Farley Hop

The arms build-up for 91 NATS may be record setting and will be global. A fast, error-filled, ball park tally is as follows:

Nos.	ALLIES	UNITS	Nos.	AXIES	UNITS
2	S.Dakotas	12	1	Yamoto	7
2	Californias	12	2	Bismarcks	13
2	Invincibles	12	3	Scharnhorsts	15
1	Iowa	6	3	Derflingers	12
1	Arizona	6	3	Kongos	12
1	Warspite	5	1	Von Der Tan	4
1	N.Carolina	6	4	Heavy Cruisers	12
2	Tigers	8	1	Destroyer	1/2
2	Gangets	8			
5	Heavy Cruisers	15			
19	Ships Units	90	17	Ships Units	75 1/2
	14 side mounts			13 side mounts	

Survey +/- 20% Axies Victory Guaranteed!

Observations of the Founding Father

By Stan Watkins, 3/16/91

Greetings Combatants! It was dissapointing to learn that the flooding in Alabama has so badly disrupted the lives of our great friends Dan and Mary Hamilton. The floor of their mobile home was buckling from swelling due to exposure to flood waters. The Hamilton shop roof and floor collapsed. This has definitely caused Dan and Mary to have to forget everything else and try to put their home back together. God Bless you, Dan and Mary. Our hearts go out to you. This will be the first interuption of a Southeast Regionals in many years. I and many others will miss it very much. I was looking forward to checking out my Detroit at the Southeast Regionals. Oh well, I probably would not have been ready anyway because of the time my GM cars have been requiring for maintenance. I didn't realise how much more reliable AMC cars were than GM cars. I have to admit the GM cars are nicer, but not nearly as reliable! My Olds Cutlass Ciera was leaking a quart of oil each 30 miles! I had to replace the crankshaft rear main bearing seal (which was quite a job on the sideways 2.8 liter chevy V6, don't ask). Now it uses less than a quart every 1000 miles. The $1266 repair bill (at only 48,000 miles) on the automatic transmission of my 86 Pontiac 6000 cost more than most of the AMC cars I have bought and taught me what "Pontiac Excitement" really means! I'm not sure I can afford to be a GM product owner. It is getting harder and harder to find good used AMCs.

Now that I have gotten my GM cars fixed again maybe I can work on the Detroit. I'm really looking forward to making the superstructure of high density foam. If you want to play with some of the high density foam get some "Tub Blocks" (they have them at "Toys R Us" and several other places). Using a band saw you can cut out sections of superstructure (except for Jap ships, they don't have any straight lines). Fluegel let me try it at his house this Christmas and I was vey impressed with how quick and easy it is to cut it out and smooth the surfaces with a bench disk sander. If this saves as much time with the building of superstructure as I think it will, this will be a great improvement in my ship building productivity. I will mention more about it in the next Founding Father article.

This article comes to you as done on a new IBM AT compatible computer that I purchased while visiting Fluegel at Christmas. Fluegel was very helpful in getting me around Dallas to get the computer and get the bugs out of all the systems. As battling season nears I look forward to hearing about the battle results. God bless you all.

Let's Battle!

Stan

Lifetime Turrets ?

by Lief Goodson

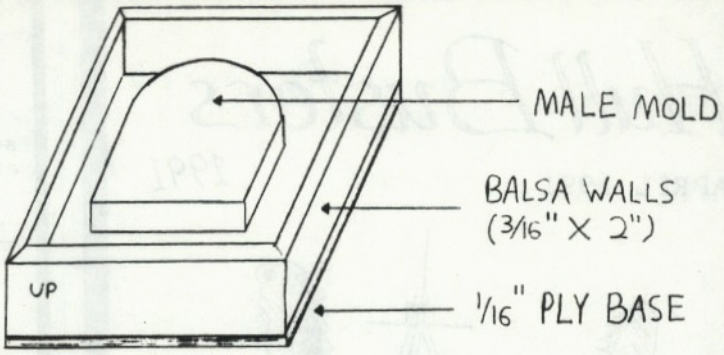
Although I am not as seasoned as many of the veterans of this hobby, I have built more than my fair share of gun turrets. Originally, I made my turrets out of hardwood, plywood, and/or balsa. My dissatisfaction with wood is this: it is hard to duplicate precise details on each subsequent turret; despite their thickness, I continued to have BB damage - dents, holes and cracks; and they did not hold up too well when I stepped on them (which seems to be inevitable). Next, I formed turrets out of lexan according to Tom Jass's article in the Feb'89 Hullbusters. These yielded identical turrets which seemed to endure battle damage fairly well. However, when using lexan thick enough to withstand combat, I had to accept somewhat rounded corners which detracted from the looks of the ship. Furthermore, even the heaviest lexan turrets did not hold up to well when I stepped on them.

As I was preparing to build turrets for my Bismark, I was once again faced with a turret construction dilemma. Unlike most turrets which have five or six distinct surfaces, Bismark turrets have fourteen distinct surfaces. I knew I would never be able to exactly duplicate the Bismark turret four times using wood, and lexan would not give me the crisp lines I wanted for my new ship. Therefore, I decided to investigate the process of casting turrets from fiberglass. This process and its amazing results are outlined in the following paragraphs.

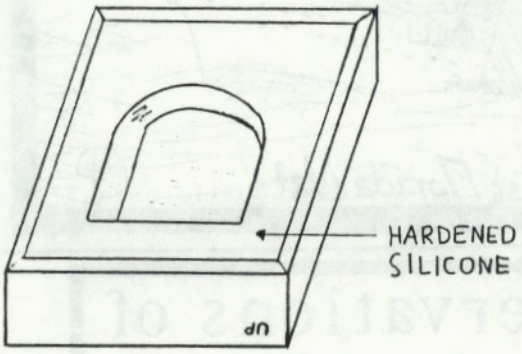
Since the outside dimensions of the turret are the ones that matter, I knew I would have to make a female mold. So I talked to various people who had experience casting things out of fiberglass. Although several materials were recommended, I decided to use silicone for the female mold because it does not require the use on any release agents. With this major decision out of the way, it was time to get started.

Building

The first step in this process was to build a turret blank to use as a male mold (plug). I used various scraps of wood, and with great haste shaped a Bismark turret less range finders and other small details. I sealed the turret with sanding sealer and glued it to a piece of 1/16" aircraft plywood (6" X 12"). Next, I zapped 2" walls around the turret utilizing 3/8" X 2" balsa stick. Then I mixed the viscous silicone with its hardener and poured into the box I had just built. After allowing the silicone to cure for 24 hours, I took an exacto knife and cut into the base of the box walls to separate the balsa walls from the plywood bottom. Then I tuned over the box and removed (with some force needed) the bottom with the male plug still attached. Somewhat to my surprise, I saw the perfect imprint of my turret in the silicone. I now had a female mold.



FEMALE MOLD



I was now ready to cast my first turret. Since I did not know exactly what was the best cloth or resin to use, I decided to use what I had: BONDO brand fiberglass and resin from the local autoparts store, along with some lightweight (.75 oz./sq.yd) fiberglass cloth from the local hobby store.

I used the lighter cloth for my first layer, as I thought it would fit into the corners of

President's Column

By Tom Jass

Spring is here and non too soon. Desert Storm has concluded with an unbelievable victory for the allies -- thank God for the light casualties on our side. Income taxes are due and warships are being readied for spring battles throughout the USA.

Dan Hamilton has canceled Southeastern Spring Regionals in Decatur because his workshop and home have experienced serious water damage from the severe rains that have pounded Alabama during the winter. The "Florida Gang" (Buddy Friend, Greg Wilson and Don Cole) have decided to sponsor the 1991 Spring Southeastern Regionals in Orlando, Florida on the weekend of April 27 & 28. Leif Goodson, the original Orlando battler has been lending his moral support to the operation from Ft. Sill, Oklahoma where he has been serving time in support of Desert Storm (Leif volunteered for this service to our country). If Leif gets released from the US Army in time for the regional in Orlando, we will fight Axis vs. Allies (he will be the sole Axis -- Fleugel will be proud of his scuttling technique). Steve Baker and I will be driving down to Orlando to open our 1991 battling season.

The HMS Sheffield article has appeared in the Spring 1991 issue of US Boat & Ship Modeler. A full sized planset is available for $17. I hope this article gives our hobby another membership boost. The second Sheffield article will be published in the Summer issue.

1991 Nationals is fast approaching. Please write up any rule proposals you wish to submit. So far we haven't seen many changes proposed -- we're probably all waiting to see how the latest changes effect the battling. The coming round of spring regionals in Texas, Maryland and Florida will provide some indication of the changes that half units, speed by length and no turning systems make in our battling. I have always felt that our method of proposing rule changes only after we actually observe battle conditions has been an excellent policy.

See you in Orlando in April!!

the mold better than the heavier cloth. I cut one piece of cloth so that it would lie flat in the mold without bunching, and also cut a number of cloth strips of various sizes. I placed the first piece of cloth into the mold and mixed up a 1 oz. cup of resin thinned with 1/2 oz. of acetone. I poured a little bit of resin into the mold on top of the cloth. I then lifted the mold an tilted it in various directions to insure that the resin completely soaked the cloth. I used my fingers to smear resin along the highest edges of the mold cavity. Then I took the fiberglass strips I had previously cut and placed them against the first cloth layer, using my fingers to press the cloth into the corners. As I would push the cloth into one corner, it seemed to pull away from the other corner. The cloth was also beginning to fray and stick all over my hands. I was not encouraged and decided to let this mess dry while I cleaned my hands. After the resin had cured, I pulled the now hardened fiberglass from the mold to throw it away and start again. To my surprise, the fiberglass had all the details om my male plug even though it was less than 1/64" thick and was no more rigid than starched cotton. So I neatly stuffed this ultra-thin turret back into the mold and decided to add more layers of cloth. This time I decided to use the heavier automotive grade fiberglass cloth. I added about four or five layers of this heavier cloth and then allowed the turret to cure for several hours. Before removing the turret from the mold, I took a hack saw and sawed off the excess fiberglass that stuck up from the sides of the turret. My turret (blank) was now complete. I had a great looking turret with sturdy walls averaging between 1/16" and 3/32" in thickness. But would this turret stand up in combat? What would happen when I accidently stepped on it? It was time to find out!

Testing

The easiest test to perform (and the one I was most interested in) was the load stress test. In this test I placed the turret on concrete, and place my foot on it. Gradually, I put the full weight on my body (167 lbs.) on top of the turret until I was standing wholly on its roof. After a couple minutes, I inspected the turret and found no damage. Wow! So I put it back on the ground and repeatedly jumped on it. Still no damage. I was getting excited.

The next test would be to see how the turret withstood BB fire. I painted the turret with Krylon spray paint before this test to get more accurate results. Using a Skunkworks BB cannon hooked directly to the 30 lb. freon tank, I tweaked the gun to fire as hard as possible. Then I fired three magazines full of BB's at the turret from ranges from six to twenty four inches. The turret was rotated to insure hits on all sides as well as the top. Since the turret seemed to be unphased by this "simulated combat", I decided to fire the final 30 BB's at the exact same spot on the turrets side from a range of four inches. When the test was complete, I thoroughly inspected the turret with the following results:

Hits witnessed during test:	126
Distinct hits visible on turret:	59
Holes:	0
Broken joints:	0
Cracks:	0
Chips (3mm X 2mm):	1
Dents requiring filling:	3
Minor scratches and dents:	55

The chip observed was on the top edge of the

How To Sink
A Guide for Young and Old

By Chris Pearce

Having been in this hobby for quite a while now, (but not yet long enough!) I have experienced the pleasure and pain of sinking many times (as most will attest...). With a grand total of fifteen sinks to my credit (or shame) I thought it might be a helpful idea to tell others of the things I have learned about sinking. Hopefully, these words can help those who haven't yet, get their feet wet with a minimum of trauma.

With this in mind, the first point I would like to make is that being sunk is not the end of the world. If your ship is designed and built properly, a sink should only result in getting wet, and having a little more to patch between battles. Indeed, if you've sank as many times as I have, you might even learn to enjoy the experience - it makes great video...

With this in mind, I would now like to explain some of the finer points of sinking. First, LET YOUR SHIP SINK!!! I don't know about all you guys, but I hate it when someone's sinking and they go out and pull the ship out before it is completely submerged. Indeed, I think that if a ship is retrieved before it is completely submerged or resting on the bottom, it should be considered a declared sink, worth 1-1/2 times sink points. Besides, it makes for rotten video.

Second, if at all possible, sink by the bow. Having the bow of your ship point to the sky as it sinks may be pretty, but can result in damage to propeller shafts and rudders when your ship hits bottom, which can be nasty to repair. To achieve this result, you can either mount your pump toward the stern of the ship, or else reverse as your ship begins to sink, so all the water rushes to the bow. Either method can work, but a combination of both is most effective.

Third, have a RELIABLE watertight box. A reliable watertight box is one which does not leak when held five feet below the surface for several minutes. Test it in a pool before putting the radio equipment inside. A ship with a leaky watertight box is like a ship with no watertight box at all. Waterproof servos help, but I recommend them only when placing that servo in a radio box would be excessively inconvenient, such as for gun elevate, and rudder applications. The result of an effective waterproofing system is a ship like my USS Michigan which could be controlled, even to firing the guns, while resting on the bottom. (A place where it was commonly seen...) After raising the hulk, it was a simple task to patch the holes, change batteries, reload and sortie again. An additional advantage of its underwater reliability was that it was easy to find underwater, by firing a couple of the guns.

Fourth, have a float attached to your ship, preferably with a long line. This may seem obvious, but there are two important things to remember here: 1) keep the string inside your ship in a place where it won't get tangled in the propeller shafts; and 2) put the float in a place where it won't get shot off in battle. The best idea I've seen for such a system is Will's

turret, while the three large dents were apparently the result of multiple hits at close range. All and all this turret held up better than any other.

Conclusions and Recommendations

After making several turrets with various numbers of layers of different cloth weights, I make the following recommendationations for those of you brave enough to try casting turrets for yourself:

1. Resin, fiberglass and acetone are readily available at autopart stores, Walmart and Kmart. Silicone can sometimes be found at art and craft stores, but is expensive and often difficult to locate at all. Therefore, other types of materials (i.e. epoxy, plaster, etc.) may be used to form the female mold.

2. Use the automotive grade of fiberglass cloth instead of the lighter hobby grades. I discovered that there were no disadvantages from exclusively using the heavier cloth and quite a few advantages; it requires fewer layers, provides greater strength, and costs less.

3. Make a pattern for your fiberglass cloth that will assure the cloth will lay flat against all sides of your female mold.

4. Use six layers of the automotive grade of fiberglass cloth. Although four layers provides adequate strength, six layers gives it that extra measure of strength that makes it virtually indestructible. Your turret will have a wall thickness of about 1/16".

5. Lay up your turrets using two batches of resin of about one ounce each. If you use the automotive grade of resin, you may want to thin it with approximately 25% acetone.

6. Place the first layer of cloth inside the mold before you pour in the resin. This helps alleviate air bubbles (voids) on the outer surface of the turret.

convoy ship where the float, and its string are mounted in the ship's PVC funnel. Another good system is in Dan Hamilton's convoy ship, which has an entire piece of floating superstructure mounted on a string. Either of these methods, and (I'm sure) others will allow you to find your ship easily on the bottom, while being in no danger of getting tangled in your line.

Fifth, if your ship is sinking, be sure and notify Mary, or the local video person, preferably be yelling who's sinking, and where it's sinking at. (Otherwise, your video will be likely to contain a nice shot of the trees...) Note -- "Here" does not qualify as proper directions... If your ship is forever captured on film while taking its plunge, you will be able to always relive that special moment. Which brings up the last point...

Remember, a sink is not the end of the world. As you watch your video, you may someday realize that, "Hmm... That wasn't so bad, and it does look awesome on the video..." and then you'll be cured. You'll be able and prepared to sink anytime, anyplace, with a minimum of fuss; you won't wake up at Nats shouting, "Oh [redacted]*! I sank!" and your therapist will assure you that you are a much more balanced person. Which explains why us Allies are much nicer (and better smelling) than the Axis - we're not afraid of the water...

* Removed to protect the innocent...

Enjoy.
Chas

Feb. 4, 1991

ACHTUNG! U-BOAT!
By: Brad Browne

Hey folks, this is the Canuck calling. Right now, we're in the middle of a warm spell, its about 5 degrees out, a welcome change from our seasonal temps of -15 to -20 for this time of the year. Just the other day we had a good foot of snow fall. Oh, by the way, for you Yanks that're freaking out over the weather up here, don't forget, we use Celsius up here, not Farenheit, so 0 degrees up here is actually about 32 down there, and boiling point of water up here is a nice round figure of 100degrees, not a wacky 212. Well enough of teaching metric conversion to you guys, on to the real content of this article.

Well gentlemen, since the allies are putting out their own propaganda in the way of a little construction article, I decided to let you all know about my little project. From the title, you may be able to guess what it is that I've built, a German type 9 D42 U-Boat. A little bit of background info on the beast, it's a class 7 warship that weighs in at 615g(1.35lbs for you imperialists). She's 607mm long(23.9inches), and she's all nastily beautiful.

I first began this project just before last summer, I built the hull, and once that had been completed, I found that the plans that I had for it's operation wouldn't work, so I shelved her for the summer while I was away. She sat in a box on a bottom shelf until I picked up the March/April edition of RCBM. It had an article in it which gave me enough ideas that I should be able to have her launched within 6 weeks from now.

I built the hull out of 1/16" balsa for the frames, and the typical 1/32" balsa covering. Completed, as it is now, the hull itself weighs only 45g(one and a half ounces). The hull was spray painted red and grey, and the waterline was put on. At this time

I am still fitting out the hull, as I've only got really one problem remaining, that's the gear box with which I'm getting some help from the local ship modelling club.

There's not much to the superstructure on a sub, just the conning tower, and a couple of guns, so I won't bother saying much about that area of the ship.

Not much remains to be accomplished before this beast will hit the water. The radio gear has to be put in, the deck sealed, and a couple of other little things like that, but upon completing the gear box, there will be almost nothing of serious difficulty left to do.

A note to any of those who are under the impression that this project was easy, it wasn't. I spent hours putting the 1/32" balsa onto the frames, and they're spaced about 5cm(2") apart, and I broke who knows how many little sections of the stuff, this is probably the hardest part in building this little tyke. Possibly the single greatest advantage to building a little ship like this one is it's size. It can be safely carried in a small suitcase.

Another little note, unless you have the expertise to build a gun and tank unit that can fit into an area about 3"squared, don't even think about arming this beastie. The only way it may work is if you make a system incorperating one of those CO2 cartriges used in those pistols and stuff. My opinion is that it's not worth it, unless a practical torpedo system can be made.

This being my first project, I've still a lot to learn, but it's been both a challenge and fun for me, and that's part of the basis for this sport, the other two being safety, and semi-scale naval warship combat. Well gentlemen, it's been. My next project is the Graf Spee, and it won't be near as hard as this sub(I hope!). 'Till next time, see y'all later.

***** If you want a copy of the plan set that I've put together, just send me a self adressed stamped envelope*****

My adress is: Brad Browne
1000 Stormont St.
Ottawa, ON
K2C-0M9
(That's in Canada, you know, the Great White North)

B Browne

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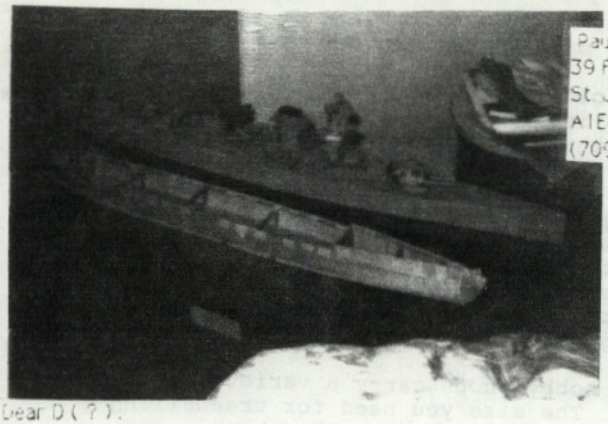

Paul March
39 Foran St.
St. John's, NF
A1E 4E9
(709)579-8941

Dear D (?),

I have been in contact with Curly for about three tapes (four months) and he suggested I contact you, as I am also a pro- axis allied hatter. I have also been talking to Tom J. and he has sent me gun parts. Tom's a nice guy (for an ally), and we had a 40 minute long distance chat that was informative. My main source of information has been Curly, I have a Graff Spee and Curly has a vested interest in this class as you know.

I have now reached an impass and have requested help from Curly, I would also appreciate any help you could give me. I have built a pump of the impeller design, but lacking any schematics I had to design it myself. It failed after 3 minutes running time, shaft seized up. I also have assembled the guns as far as the poppet valve but the interupter magazine and barrel are not finished. Today I was out on trails and was on the receiving end of a ram that put a hole approx. one and a half inch above the water line, whats the best way to repair this? I have joined the club but have yet to receive an issue of hullbusters, am I on your mailing list? I have generated some interest up here and will soon apply for affiliation status, the current roster is : Me (German), Kurt (Japenese- Tenryu), Scott (American- CH). We have a display planed at a local model contest at the end of april. If you want we could talk a tape. Happy battling and death to the allies.

Capt. Paul March
Commander, North Sea Operations
German High Seas Fleet

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ALLIED SECRET COMMUNIQUE
TOP SECRET
KEEP OUT OF AXIS HANDS AT ALL COSTS

EVERY THING OLD

Ron Thibault
02/20/91

There is a song that was popular a few years ago that said "Every thing that was old is new again." This is true of ships as well as fashion. For centuries ships were built of wood, and now they are built of steel. However when we reproduce them for our hobby we once again use wood. We might be wise to look at the methods of old to see if we can glean any useful ideas for ourselves.

A perennial problem with our ships, especially the older ones, is having the butt joints break lose. This is a common failure at the rib to deck joints.

There have been a few methods tried to solve this problem: live with it, use screws, route out a slot in the deck for the rib, and glue blocks to either side of the joint. These all work, but have drawbacks. Screws tend to add so much top weight that your ship lists like a sail boat. Also screws or metal rod is too strong a reinforcement, the rib will tend to crack or break making repair difficult. Blocks are a pain and are hard to place at the deck to rib joint without violating the solid area rule. The best of the above is slotting the

deck rim, however this takes great care to slot the proper spot and not every one has a router.

The old method that solves these problems is treenails. Treenails are the wooden pegs that held the wooden ships together before metal became plentiful enough. The old ship builders would drive wood pegs into a joint to hold it together. This has the advantage of being a little weaker than the rib so that the dowel, while reinforcing the joint, will break first saving the rib. Repair is then simply drilling out the old dowel and adding a new one.

The hobby shops carry a variety of wood dowels. The size you need for treenailing 1/4 inch ply is 1/16 in. The shops generally do not have them with the rest of the dowels, I found a package of 10 dowels hanging on the wall above the regular dowel display. If you can not find any, or use 1/8 ply for your ribs, look in the grocery store for round toothpicks. Just cut off the pointed ends. The dowels are a better choice if you can find them as they are more flexible and less brittle, and important trait in a reinforcement member.

I drill a 1/16 hole where I want the dowel to go, squirt in a little thick super glue, and tap in the dowel with a hammer. Leave some dowel sticking out and trim it after the glue sets, do not hit it with kicker yet. After the dowel is trimmed go back and put a drop of thin jet on the end of the dowel, this ensures that the whole length of the dowel is bonded. Now you can hit it with kicker.

My ships are built with a keel at the bow and stern only, with stringers along the bottom between. At a minimum I treenail each rib to deck joint, thru the keel to deck joints, and thru the top of the rib web into the keels where the keels end and the stringers start. I then look to see if any other areas could stand improvement. I also reinforced the joint between the hard casement blocks and the deck.

During construction I decided to eliminate a rib in the midship area and add another to the bow region. This presented a problem in that there was not enough room to get the rib in place in one piece. I cut the rib thru the web, inserted the two halves, and then treenailed them to the bow keel, making for a strong joint.

I do not use the treenails on the stringer to rib joints, as there is too little material and the hole could weaken the stringer.

Axis can ignore the above disinformation, Allies should follow it religiously. I hope that this method helps the Allies to build strong ships. See you on the water, or below it (if Axis)!

Dear Flugel
The following is for Hull Busters

Variety In Combat Ships?

Have you ,like a lot of us wondered what to build next?Then you look through the ships lists to find a ship that you like.We have all done this many times over,then you also listen to the Old Salts for their advice as to what to build.

My fellow Fla. Combatants and I were talking about this one day and discovered we had a common theme.People eventually get tired of seeing the same BBs,CAs,BCs,CLs,CVs,CVAs,on the pond.There is nothing wrong with this but you get this idea to do something a little bit different.

I would like,everyone to sit back and write down what kind of ships that they would like to see.What kind or class of BBs, BCs,CAs,CLs DDs,CVs,CVAs,would you like to see more of? Dont think just about what would be the best for Combat,remeber there is no bad ships just inexpericened Captains or plain bad luck.

With this in mind write down what you like maybe there is some one else that has the same idea.What I am going to do is take acount and see what ships there are out there and what unuasl ships people like.So get out that list again and lets have some wild ideas!Oh one thing no Star Wars ok ,lets keep it on the sea.

Send lists and ideas to
Buddy Friend
7309 Kaha St.
Orlando,Fla 32822
407/380/03I3

Also to put in

A Fla. group of people have decided to help their Combat budget and new people by putting together hulls or a hull kit for them.For fun the name they picked out is BCG DryDock,it means that Buddy's ,Charlie's,Greg's ships are usually in need of repairs in dry dock.

If you would like to have a kit or a Hull bulit,or you just dont have time or equipment to do it,just give us a call and well see what we acn do for you.We also have some plans of ships that others dont have,so we might help out that way too.For more Infor contact the following

Buddy Friend
7309 Kaha St
Orlando,Fla 32822
407/380/03I3

Greg Wilson
496 Tamarack St
AltmonteSprings,Fla 327I4
407/774/8[illegible]

WARSHIPS CONQUER ATLANTA
By Tom Jass

During the weekend of May 18, 19 and 20 Steve Baker and I attended the third annual IMS (International Model Show) at the Georgia World Congress Center in downtown Atlanta. Bill Northrop who publishes US Boat & Ship Modeler was the sponsor of this show. I had talked with him at the Fall 1989 Hobby Show in Chicago and he offered our club a free booth at the Atlanta show if we would show up and participate. I jumped at the chance to demonstrate our wares at Atlanta (hopefully to enlist new mwmbers in the area) and also to show our club support for Mr. Northrop who has published numerous articles about R/C Warship Combat in his magazine.

During the winter of 1990 I was in contact with Steve Baker who lives in the Atlanta area and Dan Hamilton who is only 4 hours down the road in Decatur, Alabama. After checking their work schedules for conflicts, Steve told me he could help me in the booth during the weekend, but Dan was unable to arrange for the vacation time so close after his Spring 1990 Regionals. However, I enlisted Dan's help -- he produced an edited video tape about 12 minutes long with numerous battling scenes and spectacular sinks. Steve and I must have watched the BISMARCK and the RODNEY (among others) sink at least 100 times during the weekend in Atlanta.

Bill Northrop told me there would be an

indoor pond at the Atlanta show so we could sail our ships around, but not fire their guns for obvious safety reasons. I felt we needed an exhibit in the booth to demonstrate the reliability of the bb guns and give the public living proof that our model warships carry installed guns. Steve agreed to construct a gun demonstration exhibit that would allow a bb gun to be safely fired within our booth. He build a slick model from plexiglass and wood; it was essentially a wooden box frame with a plexiglass front and back. The barrel of one of his guns was stuck through the side of the case. The gun was powered by freon from a 30# bottle beneath the table at the front of the booth. Steve also located a VCR unit (both screen and casette unit) from a local hobby shop that we could use throughout the weekend to play Dan's tape.

I built a 3' X 4' display poster that used US Boat & Ship Modeler covers and articles to draw crowds (hopefully) to our booth. I also created two handouts to explain our hobby to the masses at the show. I have been to several hobby shows in Chicago and I know that all the rugrats in attendance roam the show picking up all the available free literature from each booth whether they are interested in the product or not. To foil thier efforts I decided to make two handouts -- a one page flyer which we gave away, and a four page booklet which we sold for 25 cents to discourage the rugrats. Both types were doublesided so I was able to jam quite a bit of information into the 4 page booklet. I estimated that 500 of the free ones and 200 of the four pagers would more than cover the demand in Atlanta.

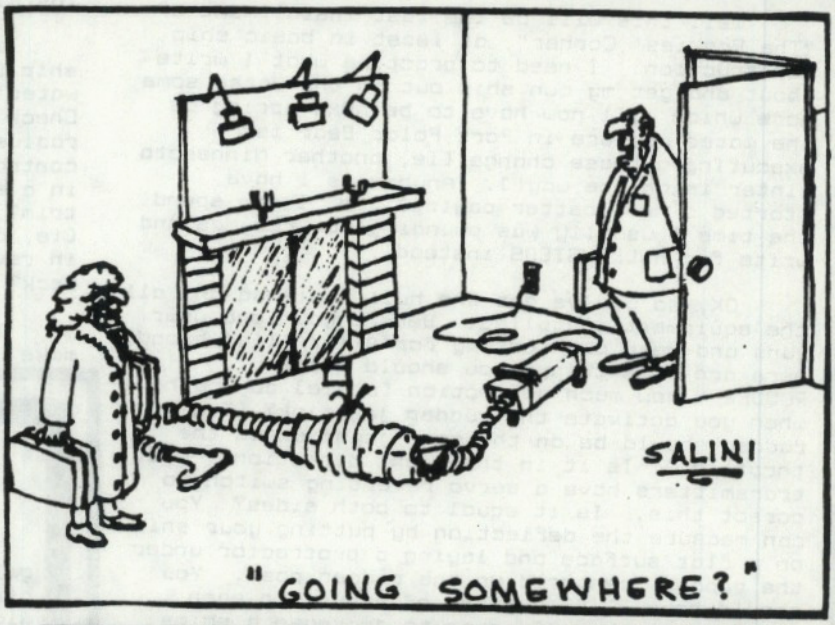
Steve and I set up our display equipment on Thursday afternoon. he good news was that our booth was located right beside the pond (it was about 70' X 30') and behind the SIG booth (a good place to be). The bad news was that we were directly behind a Limey fellow who was selling a diesel conversion kit for glow plug engines; he about smoked us out during the weekend each time he lit off the smelly diesel!! Steve brought the POLA and and I had BELFAST and TIGER in Atlanta to show the folks several examples of combat ships. We arranged the booth so that the VCR and the gun exhibit were on the front table along with the opened up BELFAST. POLA and TIGER were sitting assembled and ready to go on a folding picnic table that Steve brought from his home.

Friday morning was reserved for dealers, so Steve and I opened our booth at 2 PM when the general public was allowed in. We immediately had requests from several Atlanta TV station personnel to demonstrate the ships in action on the pond. We explained that we couldn't shoot bbs on the water for safety reasons, but we agreed to "sink" the POLA for their benefit (and ours). Steve had agreed to punch several holes in the POLA below her waterline and let her sink for TV. We'll do almost anything for publicity. As long as POLA's pump was on she could stay afloat and cruise. When Steve turned off her pump she sank in about 45 seconds. Good enough for the TV crews.

During the weekend we always had a crowd of people around the booth. We seemed to generate more spectator interest than most of the manufacturers at the show. Steve and I got adept at using the bb gun in combination with the video film to "lure" people (mostly men) to the booth for conversation. It was neat to see the big grins break out on their faces when they realized that the gun in the exhibit was the same gun as on the models, and the ships battle and actually SINK!! We put POLA and TIGER in the pond about 5 times per day, but Steve got so jaded that he would only sink POLA if TV cameras were present. After all, he had to get his feet wet each time she sank. On Sunday afternoon a camera crew from TNN (The Nashville Network) showed up and filmed some footage. Steve had a conversation with them and they are interested in filming a Decatur Regional since TNN is only 2 hours up the road from Dan's. That would be great if it happens!!

Talk about "the small world department" -- on Saturday a bloke with a strong British (?) accent came up to the booth and introduced himself. He's from New Zealand and knows Peter Futschik!! He was in Atlanta attending another trade show and just dropped in to see the American hobby goods. He noticed our club name on the list of exhibitors and made a beeline to our booth. He is building a warship and has several mates who are also interested. Another overseas c[illegible] in ANZAC land!!

We gave away about 250-300 free flyers and sold more than 100 of the four page booklets. We fired approximately 4000 bbs through the gun exhibit. We feel there may be two to four people in tha Atlanta area who will join R/C Warship Combat as a result of our efforts in the booth. Many thanks to Steve and Ginny, his wife, for all the support and help they gave me during the winter and weekend to make our efforts successful. Thanks also to Dan Hamilton who produced the fantastic video for the show. I believe we wowed them in Atlanta and our efforts will be rewarded with additional battlers and general publicity for our magnificent obcession!!



"GOING SOMEWHERE?"

HOW TO SOLVE THE LEAKY FREON CONNECTION PROBLEM
By Farley Hop
March 25,1991

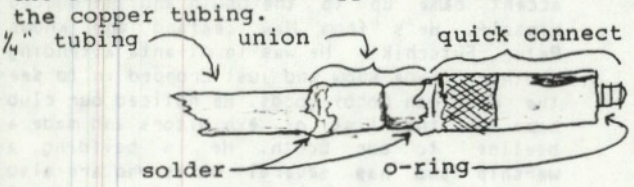
I have always had headaches from that blue nylon(?) freon line leaking (at the plastic end of the "quick connects"). I'm tired of it! So this is how I fixed it.

I DON'T USE IT.

Instead I am using 1/4" copper tubing I silver solder the tubing from the freon tank to the area of the valve. Now there was a good thing about the old "quick connects". I liked

the o-ring end (male) that screwed into the valve. So I'm keeping that part of the system. Now that you've got the general idea, I shall list the steps.

1.) Screw the quick connect to valve. Scratch the top of the quick connect in order to have it soldered at the rotation you will want your valve to tighten.
2.) Remove the rubber o-ring.
3.) Burn the plastic end out with a propane flame.
4.) Clean quick connect out in preparation for soldering.
5.) Insert 1/4" copper tubing union into the former plastic end of the quick connect. Into the other end of the copper tubing union, insert the copper tubing.



6.) Solder both ends of the union.
7.) Solder the other end of the copper tubing into your freon tank.
8.) Re-install 1/4" o-ring into the male end of the quick connect.
9.) Goose step around the dock yards 7 times.
10.) Stick the tank and plumbing system into lukewarm bathtub water. Check for tiny air bubble leaks.

In conclusion, you may experience a sense of superiority. I like to think of it as reality.

THE ROOKIES' CORNER

by Steve "Still wet behind the ears" Smith

SEA TRIALS

Well this will be the last installment of "The Rookies' Corner", at least in basic ship construction. I need to practice what I write about and get my own ship out on the water some more which will now have to be next spring as the water up here in Port Polar Bear is executing a phase change (ie, another Minnesota winter is on the way!). Anyhow as I have started a new (better paying) job, I can spend the time I usually was pounding out resumes and write for HULLBUSTERS instead.

OK, so you've got the hull finished and all the equipment installed. Before you load your guns and head out looking for Axis/Allied blood, here are some things you should check:

RUDDER - How much deflection (angle) do you have when you activate the rudder joystick? (The rudder should be on the same joystick as the throttle.) Is it in the right direction? Most transmitters have a servo reversing switch to corect this. Is it equal to both sides? You can measure the deflection by putting your ship on a flat surface and laying a protractor under the rudder, centered on the rudder post. You should have 30-45 degrees of travel to each side. More than 45 seems to decrease a ships speed excessively. If you use a cable activated rudder, make sure the servo end does not shift, which will change the angle. Also check for interference with other rudders (if more than one), props, and hull. Check the linkages inside for potential problems, ie jamming, binding.

THROTTLE CONTROL - Does it work? Consistently? Or does reverse only work 7 out of 10 times? Do the props turn in the correct direction for forward and reverse? NOTE: The throttle joystick should have a rachet feel to it, no spring centering.

PUMP - How well does it work where its located? Fill your hull with water until it turns on and you get a steady stream. Does turn-on system work reliably? Don't forget to have a debris screen over the inlet.

RADIO - Does your radio operate the correct devices when you move the joysticks? Do you get servo "chatter" (ie unwanted servo operation)? If so check for weak receiver or transmitter batteries, or interference from drive or pump motors. The latter can be solved be putting capacitors between the motor leads and the motor's metal case and a grounding lead from the motor case to the water, usually via the prop shaft tube. Also, keep the receiver antenna away from motors and motor leads.

Now that you've tested the basic systems and have a set of fully charged batteries, you're ready for the first trip to the local pond.

First, know how deep the pond is and be prepared to recover your ship if, -GASP!- it sinks on its maiden voyage. Its been known to happen, even with the real thing, so be especially cautious of icebergs. If the pond is deeper than you care to wade, wedge some chunks of styrofoam in the hull to provide emergency flotation. At the very least, have some type of float (fishing bobber, cork, etc) attached to your ship that will mark its watery grave if the worse happens. This float marker is useful during battle, too.

Second, choose a day with hospitable weather; balmy temps and light or no wind. The warm temperatures are for your comfort - in case you find yourself engaged in the task of deep-sea salvage. Also, if you have a freon system installed, it will operate better at higher temperatures. The wind conditions make it easier to judge your ships performance and lessen the chance of capsizing. This is especially important if you don't have a deck installed yet.

When you get out on the water, see if you ship floats on an even keel and on its waterline. Shift or add weight until it does. Check your speed (forward & reverse), turning radius to right & left, effective range of radio control, and battery endurance. DOes it travel in a straight line without excessive rudder trim? Also note stability due to winds and turns (ie, does your ship "lean" dangerously?). When in reverse, does water break over the stern deck?

These are a few of the basic things that make up your ships sea trials.

LEAD-ACID BATTERY CHARGER

Ron Thibault
11/14/90

For those of you who read my article on gelcells vs X-cells, this is the charger circuit I promised. For those of you who didn't, this is still the circuit, but shame on you!

This circuit will safely charge a gelcell or other lead-acid type battery. The circuit uses a 3 terminal regulator with a current limiting circuit to charge the battery. The charger starts by charging the battery at a maximum current limit and a lower voltage and progresses until the charging current is small and the output voltage approaches the set maximum.

The gelcells that I use are 6 volt 8.2 amp/hr batteries. The manufacturer's recommendation for charging the battery is to charge starting at the maximum current until the battery voltage reaches the

maximum voltage and the current has dropped to between C/50 to C/100 (where C = the battery's amp/hr capacity, or 8.2 in my case). The manufacturer's recommendation for charging limits are:

Max current = Battery capacity (C) / 5
Max charged voltage = 2.4 volts X # of Cells
Charge til current = C / 50 to C / 100
# of cells (lead-acid) = Rated voltage / 2

For my battery these would work out to 1.64 amps max current, 7.2 volts max volt, and charge til .164 to .082 amps. Some manufactures recommend a maximum current of C / 10, so if you are not sure use this value.

The voltage regulator in the parts list is limited internally to a maximum output of 1.5 amps. I have another set of batteries 6v 6 amp/hr so I set my charger up for the max current for these. The regulator listed was therefor sufficient. If you feel you need more than 1.5 amps use a LM350 which is rated at 3 amps. The transformer listed is good for any 6 volt or less battery that needs less than 3 amps. If you need to charge a higher voltage battery or need more current the transformer you choose should have a voltage rating of the (battery voltage X 1.5) + 3 v.

If you use a battery with a voltage higher than 6 volts you will also need to use a higher resistance pot than the one listed for R3. For batteries up to 12 volts (14.4 v max output) use a pot bigger than 2.6 K ohms.

Most of the parts are available from Radio Shack, including the case I used. The only parts that I had to get elsewhere were the sense resistor (R1) and an amp-meter to monitor the charging. I bought a separate case for the ammeter and connect it into the circuit externally to the charger case with aligator clips. This is so I can use the meter to measure other circuits, very handy.

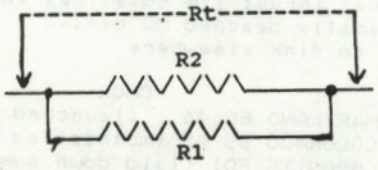
The only critical part value needed is the value of the sense resistor R1. The voltage across this resistor is used by the current limiting circuit to control the output of the regulator. The current limiting circuit turns "ON" when the voltage across this resistor reaches .6 volts. To choose the value for this resistor use the formula below:

R1 = .6 volt / Max Current

The value you get is guarantied to not match any available resistor value. Choose the next higher value available. Do not however go from say a calculated value of .456 ohms to 1 ohm this is to big a difference, try looking for say .5 ohms. If you can only find 1 ohm resistor connect 2 of them in parallel, this will give you .5 ohms.

If you want to dial-in the current even closer put a larger value resistor in parallel with R1 to decrease its total value even more. The formula to figure out what values to use to decrease the total value is:

R2 = Rt / (1 - Rt/R1)



occasionally, without harm. I also, every now and then, charge the batteries for an

Rt = Total resistance - final value of sense resistor.
R1 = Value of main sense resistor
R2 = Value of "tweaking" resistor

The main sense resistor should have a power dissipation capacity of 2 watts minimum (for up to 1.4 amp charge current). The power dissipation needed for the tweaking resistor will be :

Power = .6 X.6 / R2

For safety double this value when buying the resistor.

When building the circuit keep the parts a reasonable distance apart, as it will dissipate a fair amount of heat when running. Also be sure to use the heat sink and heat conducting grease on the voltage regulator. If you use a different case be sure that there are plenty of holes for air circulation.

To adjust the circuit after you have finished building you will need a volt meter (digital is best), an ammeter, and a load resistor (a few 10 watt 10 ohm resistors). First plug in the power and look/smell for smoke. Assuming no smoke, next with no load on the output adjust the output voltage to the value for your battery (2.4 volts per cell). This is where the digital meter is better, due to the easier and more accurate reading. Now hook the ammeter in series with one of the resistors across the output. There should be a current reading on the ammeter and the output voltage should drop some. Keep adding resistors in parallel to the first one until the current stops increasing. The value on the meter is now the value of max current. If it is not correct by a large value there is something wrong with the circuit. Otherwise, if it is close, you can leave it as is or try to tweak it some more. Be sure that it is equal or less than your desired value, you do not want to fry your battery.

For my setup with a 6 v 8.2 amp/hr battery, I have my charger setup for 7.2 volts max and 1.25 amps. I can recharge a battery that has gone 2 sorties in about 2.5 to 3.5 hrs. I stop the charging when the meter reads .2 amps. With this circuit a battery can be left on overnight, additional 3 hrs to top them up (generally before each major event and once or twice during the winter).

The transformer listed is capable of driving two of these circuits at the above current level and you might want to consider building your board this way, especially if you have a number of batteries to charge. If you have different capacity batteries set the current for the smaller set. You could also tie in an additional tweaking resistor, via a switch, to up the current for the larger batteries. The resistor in series with the pot is to up the effective resistance, due to the fact that Radio Shack does not carry the 1.5K or 2.6-3K pots. If you can find the correct value at another store eliminate this resistor.

PARTS LIST

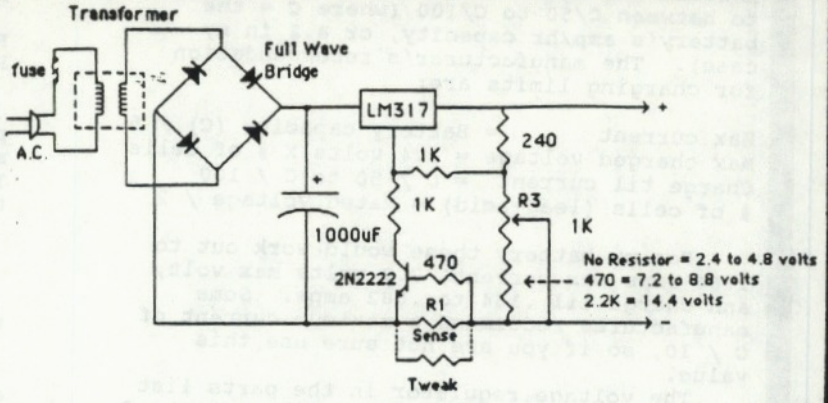
Parts available at Radio Shack

Part	Description	R Shack cat #	Price
Case		270-253	$6.79
Circuit card	IC spacing perfboard	276-1395	2.99
Fuse Holder	chassis mount	270-739	.99
Fuse	1/4 amp	270-1270	.79
LM317	Volt Reg	276-1778	1.99

Full Wave Bridge 4 amp 50v		276-1146	1.39
Heat Sink	TO-220	276-1363	.79
Mounting Hardware (TO-220)		276-1373	.99
Heat Sink Grease		276-1372	1.59
1K Pot	15 turn	271-342	1.49
(2)Resistor	470 ohm 1/4watt	271-1317	.39
(2)Resistor	1K ohm 1/4watt	271-1317	.39
Capacitor	1000 uf 35v	272-1032	1.59
Transistor	2N2222	276-2009	.59
Transformer	12v 3amp	273-1511	8.99
AC Line Cord	6 ft	278-1255	1.19
Strain Relief	for power cord	278-1636	.79

Other Parts

Resistor	240 ohm 1/8 watt
Resistor	Sense (see text)
Ammeter	0 - 5 amp
Case for ammeter	
Leads for ammeter	



" MAKE IT TURN "

1990 by Danny Schultz

At the S.E. Regionals I had yet another veiw of turning systems. Foster's ALABAMA cruising at 26 sec. Nathan's 28 sec ship which weighs about 8 or 9 lbs lighter then my MARYLAND (MD). Foster was believed to be speeding in a turn and Nathan insisted that he kept a steady 28 sec. in a turn. Both of these ships use turning systems and my MD does not. Yet it turns as good if not better than either one. Why ? Instead of putting my time in worry about speed and installing extra motors, micro switches, wiring, etc. I used top of the line equipment and basic fundamentals of physics.

In order to turn you need several things. One being a Axis to spin on. Two: Thrust Three: Direction of thrust. The MD carries 45% of her weight center. Has four 1.5 inch five blade props and uses one 3 sq inch rudder.

By putting the weight in the middle the ends are then lighter. This gives me my axis to spin on. The MD has always carried at least 11 lbs. of batterys. Ricky put the four strings of gates surplus batterys in the middle and then built around them. I recomend this method. I was taught that way and that's the way I always refit. With the batterys in the way all the time you keep moving your other lighter equipment toward the ends. The MD was originally equipped with 4 drive motors. The the two inner shafts have used the same 2 dumas 12 volt motors. These motors have been submerged many times, have only needed a little bit of oil and have never fail for 5 yrs. so if your going to build and play with BB's spend the extra bucks and use some "REAL" motors right from day one (4.8 are not designed to push a BB just ask Marty or his son-in-law Steve). In the MD the outsides were primarily used for turning. By the time her first refit with me (jan 87) they were removed and totally forgotton about (even now they are forgotton). Why? there's more to gain. If you use half the # of props you must increase the amount of water "thrust" to keep your speed. This also redirects the thrust into a smaller area so more of your thrust hits your rudder. I use five blade props which come from EXACT MINITURES in Oxford Maryland. It cost about 6 bucks for each one. They are made to order and he can usally get them out to you in a couple of weeks. The rules state that we must carry "the scale # of props". I carry all four props and all at 1.5 inches and five blades. The outsides are fixed which causes both a drag (which is more important) and redirects the water. The MD has been refitted many times and with each refit I install some type of added drag within reason. Ok now the MD is far from any sleek type ship and is not built to out run the dreaded CAPINTANA but due to the almost unseened drag system a increase in thrust is so nessarry to acheive that blinding speed of 28 sec. The five blades take more bites per turn and by adjusting the pitch on the props you can pump out alot of thrust. Now we have a ship that cruises at 28 sec. and is pumping out thrust to push a 22 sec ship. (A note on my throtale no multi speed. ie. full speed forward -stop - full speed reverse.)

The rudder on the MD is your standard type a piece of brass solder on a brass rod. My linkage is of the newer and I help design type which cosist of a timing type belt with gears to drive the belt (I don't remember if anybody is still producing it). The big advantages are almost no play (I mean none) won't lock up, easy to adjust and there's no rods to run the lenght of your ship. You do need a waterproof servo and some space in the far rear of your ship around you rudder. When you cut your rudder out and and solder to your rod try to go deep instead of long (if your thrust is catching the rudder you still need to grab some virgin water). This way you have both the thrust and directional it may not sound like it works but it does.

This is the way the MD operates. It has proven to me it is the best and simplest way to spin on a quarter without all that extra hardware. I do slow down quite a bit when turning but it is sharper and that's the ideal. It may work for you as it does for the MD it's not guaranteed. I was going to install a duct type rudder around my props (like tug boats have),but I figure that not to many of you would like that idea, so I'm going to install that on my drydock the " GRANITE " which fits in the same catagory as Marty's sailboat (non- conbatants)

In sumary I give up nothing but gain... good turning, acheieves max speed in shorter distance, able to stop faster and with all that thrust I'm sometimes able to pull a severally beached MD off...

...only to sink elsewhere

CMDR

USS MARYLAND BB 46 (launched Nov '84)
USS COLORADO BB 45 (mothballed fall 86)
TBSS GRANITE FD1 (laid down summer '87)
USS IOWA BB 61 (purchased fall '89)

END

"CALL THE DOCTOR!"

minutes, and using the thing to power an electric shock therapy device to keep my dog from peeing in my living room for a weekend. Let me tell you, those gel cells have power on demand and power to spare.

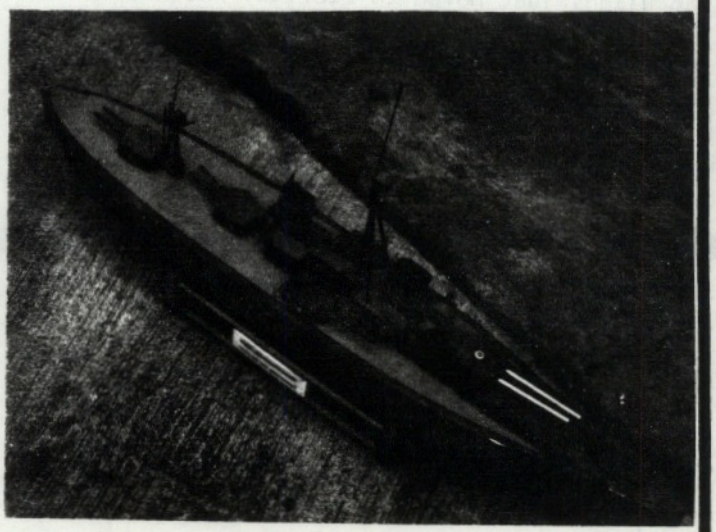
On to other things, you allied scum!!! I had been just about ready to buy the materials to build a ship, and you changed the rules on me. I have no trouble but that it was a sneaky underhanded allied plot to prevent the Axis's high speed cruisers like the Tone from being given her due, and that your wimpy little Houstons and stuff get the same chance as a better ship like the Tone. As a result, I have plans for a great cruiser, that used to be able to dust you allied scum in a foot race, and now, since the Tone no longer has this advantage, I am forced to go to the Graf Spee. You allied scum are going to pay dearly for this,once I've got her in the water, with the extra 1/2 unit I get as compensation, I'll leave an impression you bunch of dirtbags won't be able to forget!!!!!!!!!

--

GEL CELLS, and OTHER INTERESTS

BY: BRAD BROWNE

Ron Thibault's article in the October issue of H-Busters was the truth guys. Last fall I picked up a new gel cell for $20, an awesome deal here in the great white north where they'll usually run you about $40. The cell was charged when I bought it, and since then I've used the thing to test run my U.S.S. Missouri(a sort of a test bed for me, I'm axis, once I get a fighting ship ready, she'll probably become a target ship for me). Anyway, this cell weighs about 4 pounds, and I've not had to charge it yet, after running my ship for about 30



AT THE DOCK YARD
Larry Dahl's Exetor

--

NATS 91 Entry Form

Capt Name _____

Phone Number _____

Ship Name _____

Ship Class _____

Model Length _____

Model Weight _____

Rib Count & Thickness _____

Bow/Stern Thickness _____

Crystals (eg. FUTABA AM 78)

Brand	AM/FM/PCM	Channel

Zip 21060

Mail to: Will Mont, 110 Thomas rd, Glen Burnie, Md

Hull Busters The Form

Name_____ **Phone**(___)___-

Address_____**State**_____**Zip**_____

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AUTHORS
By EDITOR

I need articles. I appreciate the contributions of the many authors in this Hull Busters, but I could use a few more. Please include a "by line" and date. I also need the column 4 3/4 inchesseem too wide, but I reduce the articles. Please use a good type-writer ribbon. Also, photos are nice (close-ups!). --

CONCLUSION
Gross Admiral Fluegel

I would like to dedicate this issue of Hull Busters to U.S. Army Artillery Officer Lief Goodson. Lief is somewhere in the states and I'm not sure if he will be sent to the Middle East. Still, Lief volunteered to fight. Thanks Lief, we're proud of you.

On a sad note, Dan Hamilton's Regionals have been postponed due to a flood that extensively damaged Dan's home and shop. I know his regionals were the battling season for a few members. I hope that they will consider participating in the 91 NATS this year. Dan's leadership and side mount guns will be sorely missed this year at NATS. Who will be the Allied Admiral? Gosh, the Allies are pathetic. Still, their time will come, it always does. Before I forget, Dan's Regional's aren't cancelled, just moved to Florida, where some generous combatants are stepping-in for Dan.

The Axies are preparing for the 91 season with strategies that will attempt to incorporate "team work" into fleet battle in a significant way. Our ships are losing weight and consequently gaining free board. It seems that the new rudder rule is leading us to lighten up our ships so they will turn faster. What is a good turn in our hobby with the new rudder rules? My Lutzow turns 360° to port in 13.72 seconds with an 8 foot diameter. She turns to the starboard in 13.14 seconds and a 7 foot diameter. Is that good or bad? It's at 22.20 second per 100 feet. So it should be worse when I slow it down to 24 seconds per 100 feet.

If you will host 92 NATS, take some pictures and bring them to NATS. You may also want to consider an article in Hull Busters. I feel we select our locations on trust instead of information. It's always worked well, I just want to see some photos of potential sites.

The first stone of the Texas Triple Crown will be held in Fredericksburg Texas on April 13th and 14th. The next battle is tentatively planned for the first weekend in June in Abilene Texas. Call Dirty Dave Haynes for information. I'm excited about the new battling season. It's going to be a massacre! --

HULL BUSTERS